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 77

reviewed

USS CLAIRTON WORKS
CLAIRTON, PENNSYLVANIA

Report on

COMPLIANCE DEMONSTRATION
NO. 9 BATTERY COMBUSTION STACK

JUNE 1994

Prepared By: Chester Environmental
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Project No.: 3934-45-02

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EXECUTIVE SUMMARY

On May 11 and 12, 1994, a compliance test program was conducted for USS Clairton Works, Clairton, PA, on the #9 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.

The results of the testing showed an average particulate matter concentration and emission rate of 0.0152 grains per dry standard cubic feet (gr/dscf) and 4.72 pounds per hour (lb/hr), respectively. As promulgated by the Amended Mon Valley Consent Decree, Paragraph V.A.(6), the allowable particulate matter concentration for #9 Battery Combustion Stack is 0.030 gr/dscf. Thus, the average particulate matter concentration in the stack gas is less than the allowable concentration.

The opacity of the exhaust gas during any of the three tests was less than or equal to 10 percent. The average opacity of the exhaust gas in any 3 consecutive minute period was less than or equal to 5 percent. 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."

1.0 INTRODUCTION

On May 11 and 12 1994, a compliance test program was conducted for USS Clairton Works, Clairton, PA, on the #9 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 Chester Environmental. All test procedures were witnessed by Phil Lawrence from the Allegheny County Health Department - Department of Air Quality (DAQ).

2.0 METHODOLOGIES

The compliance test program was conducted in accordance with the emissions measurement test protocol, which can be found in Appendix A.

Particulate matter sampling was performed in accordance with EPA Stationary Source Sampling Methods 1 through 5. Three two-hour tests were executed during normal, maximum operation and production of the battery.

The process exhausts through a 114 inch inside 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, with six traverse points sampled per port. Each traverse point was sampled for 5 minutes, thus bringing the total sampling time to 120 minutes for each test run.

In accordance with EPA Method 2, velocities and volumetric flow rates of the exhaust gas were determined using a calibrated S type pitot tube. Positive and negative pitot lines were leak-checked at the beginning and end of each test run. Gas velocity differential pressures along with stack gas temperatures were recorded at each sampling point.

At the beginning and end of each test, gas concentrations of carbon dioxide (CO_2), oxygen (O_2), and nitrogen (N_2, by difference) were determined with the use of Fyrite apparatus as specified by EPA Method 3. Gas concentrations were used to obtain molecular weight of the process gas on a dry basis.

Percent moisture content, by volume, of the exhaust gas was determined by measuring the weight gain of the four sample train impingers in accordance with EPA Method 4.

As specified by EPA Method 5, each sample train was assembled as required by the method, leak-checked on site at the beginning and end of each test run, and operated such that isokinetic conditions were maintained. Clean up of the sampling train included an acetone rinse of the front-half components of the sample train. Front-half acetone rinses were evaporated to dryness, desiccated, and weighed to a constant weight. Sample train

filters were desiccated for 24 hours, and particulate matter weight was determined gravimetrically. Rinse residue weights and filter weights were measured to the nearest 0.1 mg. One acetone blank was prepared in the same manner as the test sample rinses. The blank residue weight was subtracted from the test sample residue weights. After blank correction, the acetone rinse residue weights and sample train filter weights were used to determine total particulate matter catch.

All visible emissions determinations were performed in accordance with EPA Stationary Source Sampling Method 9. Visible emission readings were recorded for the duration of each particulate matter test.

3.0 RESULTS

All testing was performed during periods of normal plant operation. The test results have been summarized in Table 1. The results of the testing showed an average particulate matter concentration and emission rate of 0.0152 grains per dry standard cubic feet (gr/dscf) and 4.72 pounds per hour (lb/hr), respectively. As promulgated by the Amended Mon Valley Consent Decree, Paragraph V.A.(6), the allowable particulate matter concentration for #9 Battery Combustion Stack is 0.030 gr/dscf. Thus, the average particulate matter concentration in the stack gas is less than the allowable concentration.

Table 1 also lists other pertinent stack and sampling parameters which include stack gas flow rate in units of actual cubic feet per minute (acfm), standard cubic feet per minute (scfm), and dry standard cubic feet per minute (dscfm), stack gas temperature (^{o}F), moisture content of the stack gas (percent by volume), 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 the three test runs were 95.1 percent, 98.7 percent, and 106.4 percent; therefore, all values were within the acceptable range. Actual test sampling times have also been included in Table 1.

Copies of the field data sheets for the visible emissions readings can be found in Appendix A. 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." The opacity of the exhaust gas during any of the three tests was less than or equal to 10 percent. The average opacity of the exhaust gas in any 3 consecutive minute period was less than or equal to 5 percent.

Copies of the field data sheets 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 DAQ can be found in Appendix A.

Copies of the plant operational data can be found in Appendix B. The gravimetric results and the emissions calculations for each test can be found in Appendix C.

USS CLAIRTON WORKS
CLAIRTON, PA

TABLE 1

#9 BATTERY COMBUSTION STACK
PARTICULATE MATTER EMISSIONS DATA

		Run 1	Run 2	Run 3	Average
Test Number		CLR-BS#9-1	CLR-BS#9-2	CLR-BS#9-3	
Test Date		05-11-94	05-11-94	05-12-94	
Mass Emissions Rate and Concentration					
Particulate Matter	(lb/hr)	4.57	5.00	4.58	4.72
	(gr/dscf)	0.0142	0.0157	0.0157	0.0152
Stack Conditions					
Flow Rate	(acfm)	82700	82900	75800	80500
	(scfm)	43200	43100	39200	41800
	(dscfm)	37400	37200	33900	36200
Temperature	(°F)	533	537	540	537
Moisture Content	(%)	13.4	13.6	13.4	13.5
Sampling Conditions					
Test times		1040 to 1110	1320 to 1350	0818 to 0848	
		1114 to 1144	1353 to 1423	0852 to 0922	
		1147 to 1217	1426 to 1456	0925 to 0955	
		1220 to 1250	1500 to 1530	0958 to 1028	
Sampling Time	(minutes)	120	120	120	
Sample Volume	(dscf)	78.872	81.485	80.067	
Isokinetics	(%)	95.1	98.7	106.4	

COMPLIANCE DEMONSTRATION
NO. 9 BATTERY COMBUSTION STACK

USS CLAIRTON WORKS
CLAIRTON, PENNSYLVANIA

APPENDIX A

TEST PROTOCOL, FIELD DATA SHEETS, CALIBRATION RESULTS

CHESTER
ENVIRONMENTAL

TEST PROTOCOL
COMPLIANCE DEMONSTRATION
#9 BATTERY COMBUSTION STACK

USS CLAIRTON WORKS
CLAIRTON, PA

Particulate matter sampling will be performed in accordance with EPA Stationary Source Sampling Methods 1 through 5 (40 CFR, Part 60, Appendix A) and Sections 139.11 and 139.12 of the Pennsylvania Department of Environmental Resources (PA DER) Source Testing Manual. Three two-hour tests will be executed during normal operating conditions. Greater than 50 dry standard cubic feet of sample gas will be collected during each test run.

The process exhausts through a 114 inch diameter stack. A total of 24 traverse points (12 per diameter) will be sampled; the traverse points will be calculated in accordance with EPA Method 1. Sampling will be conducted through four equally spaced ports, with six traverse points sampled per port. Each point will be sampled for 5 minutes, thus bringing the total sampling time to 120 minutes.

In accordance with EPA Method 2, velocities and volumetric flow rates of the exhaust gas will be determined using a calibrated S type pitot tube. Positive and negative pitot lines will be leak-checked at the beginning and end of each test run. Gas velocity differential pressures along with stack gas temperatures will be recorded at each sampling point. Static pressure of the exhaust gas stream will be measured with the same pitot tube.

At the beginning and end of each test, gas concentrations of CO_2, O_2, and N_2 (by difference) will be determined with the use of Fyrite apparatus as specified by EPA Method 3. Gas concentrations will be used to obtain molecular weight of the process gas on a dry basis.

Percent moisture content, by volume, of the exhaust gas will determined by measuring the weight gain of the four sample train impingers in accordance with EPA Method 4.

As specified by EPA Method 5, each sample train will be assembled as required by the method, leak-checked on site at the beginning and end of each test run, and operated such that isokinetic conditions are maintained. Clean up of the sampling train will include an acetone rinse of the front-half components of the sample train. Front-half acetone rinses will be evaporated to dryness, desiccated, and weighed to a constant weight. Sample train glass fiber filters will be desiccated for 24 hours, and particulate matter weight will be determined gravimetrically. Rinse residue weights and filter weights will be measured to the nearest 0.1 milligram. One acetone blank will be prepared in the same manner as the test sample rinses. The blank residue weight will be subtracted from the test sample residue weights. After blank correction, front-half acetone rinse residue weights and sample train filter weights will be used to determine total particulate matter catch. Clean up and analytical procedures will follow the methodology of EPA Method 5.

All visible emissions determinations will be performed in accordance with EPA Stationary Source Sampling Method 9. Visible emission readings will be recorded for the duration of each particulate matter test.

A report summarizing the compliance test program will be submitted within 60 days following completion of field work. The report will describe test methodologies utilized and present a textual and tabular summary of the emissions results and related sampling information. Copies of operational data will be included in the report to verify that all testing was performed during periods of normal plant operation. Also incorporated into the report will be copies of the pre-test calibration results, post-test calibration results, the results of an audit conducted with a critical orifice provided by the Allegheny County Health Department Bureau of Air Quality, field data sheets for the particulate matter sampling and visible emissions determinations, computer-generated emissions calculations, and analytical results for each test.

STACK SAMPLING DATA SHEET

CLIENT USS- CLAIRTON WORKS
TEST UNIT BATTERY STACK #9
PROJECT NO. 3934-45-02
TEST CREW RJC, MV
BAROMETRIC PRESSURE 29.45

TEST DATE 05-11-94 (USA)
TEST NO. USS-CLR-BS9-#1
NOZZLE (SIZE,#) 0.490"
STATIC PRESSURE -.90" H2O
PORT DIRECTION EAST, NORTH

ORIFICE CORRECTION (ΔH@) 1.814
METER CORRECTION (Y) 1.0128
CALIBRATION DATE 02-02-94
PITOT CORRECTION 0.84
CONTROL BOX NO. SIK

HOT/COLD BOX NO. 2
PROBE NO. 7-1
FILTER NO. 1228
STACK DIA. " 14
PORT SIZE 4" PURGE

Traverse Point (inches)	Time	Dry Gas Meter Reading (dcf)	Pitot ΔP (in. H2O)	Orifice ΔH Required (in. H2O)	Orifice ΔH Actual (in. H2O)	Meter Temperature In (°F)	Meter Temperature Out (°F)	Vacuum (in. Hg)	Stack Temp. (°F)	Probe Temp. (°F)	Impinger Temp. (°F)	Hot Box Temp. (°F)	Comments
40.6	10:40	488.250	.05	1.46	1.46	75	73	2.0	536	~250°F	<68°F	~250°F	5 min./point
28.5			.07	2.05	2.05	86	72	3.0	542				
20.2			.06	1.75	1.75	90	75	3.0	550				
13.5			.08	2.34	2.34	99	76	3.5	555				
7.6			.06	1.75	1.75	103	78	3.0	524				
2.4	11:10	509.254	.03	0.88	0.88	105	80	3.0	520				
40.6	11:14	509.254	.04	1.17	1.17	93	82	3.5	534				
28.5			.04	1.17	1.17	95	82	3.5	530				
20.2			.08	2.34	2.34	101	83	4.5	564				
13.5			.07	2.05	2.05	107	84	4.0	528				
7.6			.06	1.75	1.75	109	85	3.5	525				
2.4	11:44	529.300	.03	0.88	0.88	110	87	3.0	521				

Estimates:
MW= 28.
%H2O= 10.

SYSTEM LEAK CHECK

	Vacuum (in. Hg)	DGM Rate (cfm)
Before	5.0	<0.02cfm
After	7.0	<0.02cfm

PITOT LEAK CHECK

	Positive	Negative
Before	OK/15sec	OK/15sec
After	OK/15sec	OK/15sec

GAS	1	2
CO2	4.0	4.0
O2	12.5	12.5
CO	0	0
N2	83.5	83.5

12.55

Impinger No.	Impinger Contents	Final	Initial	Difference
1.	100mL DI H2O	728.4	532.2	196.2
2.	100mL DI H2O	594.3	559.1	35.2
3.	EMPTY	443.9	438.3	5.6
4.	SILICA GEL	677.3	655.8	21.5
5.				
6.				
7.				
8.			total=	258.5g

237.0g

CHESTER ENVIRONMENTAL

STACK SAMPLING DATA SHEET

CLIENT USS-CLAIRTON WORKS
TEST UNIT BATTERY STACK #9
PROJECT NO. 3934-45-02
TEST CREW RPC, MV
BAROMETRIC PRESSURE 29.45

TEST DATE 05-11-94 (WED)
TEST NO. USS-CLR-BS9-#1
NOZZLE (SIZE,#) 0.440 "
STATIC PRESSURE -0.90" H_2O
PORT DIRECTION WEST, SOUTH

ORIFICE CORRECTION (ΔH@) 1.814
METER CORRECTION (Y) 1.0128
CALIBRATION DATE 02-02-94
PITOT CORRECTION 0.84
CONTROL BOX NO. SIX

HOT/COLD BOX NO. 2
PROBE NO. 2-1
FILTER NO. 1228
STACK DIA. 114"
PORT SIZE 4" FLANGE

Traverse Point (inches)	Time	Dry Gas Meter Reading (dcf)	Pitot ΔP (in. H2O)	Orifice ΔH Required (in. H2O)	Orifice ΔH Actual (in. H2O)	Meter Temperature In (°F)	Meter Temperature Out (°F)	Vacuum (in. Hg)	Stack Temp. (°F)	Probe Temp. (°F)	Impinger Temp. (°F)	Hot Box Temp. (°F)	Comments
40.6	1147	529.300	.09	2.63	2.63	95	87	3.5	523	~250°F	<68°F	~250°F	5 min./point
28.5			.07	2.05	2.05	107	86	3.0	557				
20.2			.07	2.05	2.05	108	87	3.0	520				
13.5			.06	1.75	1.75	110	87	3.0	534				
7.6			.05	1.46	1.46	111	87	2.5	541				
2.4	12:17	550.822	.03	.88	.88	110	88	2.0	520				
40.6	1220	550.822	.08	2.34	2.34	101	89	3.5	538				
28.5			.06	1.75	1.75	109	88	3.0	529				
20.2			.06	1.75	1.75	110	89	3.0	520				
13.5			.04	1.17	1.17	110	89	2.0	525				
7.6			.05	1.46	1.46	109	89	2.5	532				
2.4	12:50	570.772	.03	.88	.88	110	89	2.0	537				
Test Totals	Δ=120 min	Δ=82.522 dcf	$(\Delta P)_{AVG}$ = .06	$(\Delta H)_{AVG}$ = 1.66		$(T_{meter})_{AVG}$ = 93.8			$(T_{stack})_{AVG}$ = 533.8				

Estimates:
MW= 28.1
%H2O= 10

SYSTEM LEAK CHECK

	Vacuum (in. Hg)	DGM Rate (cfm)
Before		
After		

PITOT LEAK CHECK

	Positive	Negative
Before		
After		

GAS	1	2
CO2		
O2		
CO		
N2		

Impinger No.	Impinger Contents	Final	Initial	Difference
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

CHESTER ENVIRONMENTAL

STACK SAMPLING DATA SHEET

CLIENT USS CLAIRTON WORKS
TEST UNIT Battery Stack #9
PROJECT NO. 3934-45-02
TEST CREW RPC, MV
BAROMETRIC PRESSURE 29.45

TEST DATE 05-11-94 (WED)
TEST NO. USS-CLR-BS9-#2
NOZZLE (SIZE,#) 0.490"
STATIC PRESSURE -0.90" H_2O
PORT DIRECTION South West

ORIFICE CORRECTION (ΔH@) 1.814
METER CORRECTION (Y) 1.0128
CALIBRATION DATE 02-02-94
PITOT CORRECTION 0.84
CONTROL BOX NO. S.K

HOT/COLD BOX NO. 3
PROBE NO. 7-1
FILTER NO. 1251
STACK DIA. 114"
PORT SIZE 4" Flange

Traverse Point (inches)	Time	Dry Gas Meter Reading (dcf)	Pitot ΔP (in. H2O)	Orifice ΔH Required (in. H2O)	Orifice ΔH Actual (in. H2O)	Meter Temperature In (°F)	Meter Temperature Out (°F)	Vacuum (in. Hg)	Stack Temp. (°F)	Probe Temp. (°F)	Impinger Temp. (°F)	Hot Box Temp. (°F)	Comments
406	13:20	571.050	.08	2.34	2.34	84	82	5.0	562	~250°F	<68°F	~250°F	5 min./point
285			.09	2.63	2.63	98	82	6.0	568				
202			.08	2.34	2.34	102	83	5.0	520				
135			.05	1.46	1.46	105	85	4.0	527				
76			.05	1.46	1.46	106	85	4.0	531				
24	13:50	593.595	.04	1.17	1.17	107	85	3.5	530				
406	13:53	593.595	.06	1.75	1.75	100	88	5.5	519				
285			.06	1.75	1.75	107	89	5.5	557				
202			.07	2.05	2.05	110	90	6.0	539				
135			.07	2.05	2.05	113	91	6.0	545				
76			.08	2.34	2.34	114	92	6.5	550				
24	14:23	615.500	.04	1.17	1.17	115	94	4.0	544				

Estimates:
MW= 28.8
%H2O= 12 %

SYSTEM LEAK CHECK

	Vacuum (in. Hg)	DGM Rate (cfm)
Before	5.0	<0.02 CFM
After	8.0	<0.02 CFM

PITOT LEAK CHECK

	Positive	Negative
Before	0" / 15 sec	-0" / 15 sec
After	0" / 15 sec	0" / 15 sec

GAS	1	2
CO2	4.0	4.0
O2	12.5	12.0
CO	0	0
N2	83.5	83.5

1440

Impinger No.	Impinger Contents	Final	Initial	Difference
1.	100 mL DI H_2O	693.2	539.5	153.7
2.	100 mL DI H_2O	634.5	571.2	63.3
3.	EMPTY	470.7	455.1	15.6
4.	Silica Gel	668.5	630.8	37.7
5.				
6.			total =	270.3
7.				
8.				

232.0

CHESTER ENVIRONMENTAL

STACK SAMPLING DATA SHEET

CLIENT USS-CLAIRTON WORKS
TEST UNIT BATTERY STACK #9
PROJECT NO. 3934-15-02
TEST CREW RPC, MV
BAROMETRIC PRESSURE 29.45

TEST DATE 05-11-94 (WED)
TEST NO. USS-CLR-BS9-#2
NOZZLE (SIZE,#) 0.490"
STATIC PRESSURE -.90" H2O
PORT DIRECTION NORTH EAST

ORIFICE CORRECTION (ΔH@) 1.814
METER CORRECTION (Y) 1.0128
CALIBRATION DATE 02-02-94
PITOT CORRECTION 0.84
CONTROL BOX NO. 5.6

HOT/COLD BOX NO. 3
PROBE NO. 7-1
FILTER NO. 1251
STACK DIA. 114"
PORT SIZE 4" flange

Traverse Point (inches)	Time	Dry Gas Meter Reading (dcf)	Pitot ΔP (in. H2O)	Orifice ΔH Required (in. H2O)	Orifice ΔH Actual (in. H2O)	Meter Temperature In (°F)	Meter Temperature Out (°F)	Vacuum (in. Hg)	Stack Temp. (°F)	Probe Temp. (°F)	Impinger Temp. (°F)	Hot Box Temp. (°F)	Comments
40.6	14:26	615.500	.08	2.34	2.34	109	95	6.0	509	~250°F	<68°F	~250°F	5 min./point
28.5			.09	2.63	2.63	114	95	7.0	524				
20.2			.05	1.46	1.46	114	95	4.0	530				
13.5			.06	1.75	1.75	115	95	5.0	537				
7.6			.05	1.46	1.46	116	95	4.5	540				
2.4	14:56	636.612	.03	.88	.88	116	96	3.5	530				
40.6	15:00	636.612	.08	2.34	2.34	105	95	6.5	513				
28.6			.06	1.75	1.75	115	95	5.5	540				
20.2			.06	1.75	1.75	117	97	5.5	549				
13.5			.05	1.46	1.46	117	97	4.0	554				
7.6			.06	1.75	1.75	117	97	5.5	550				
2.4	15:00	657.511	.03	0.88	0.88	118	98	2.5	529				
Test Totals	Δ=120 min	Δ=86.461 dcf	$(\Delta P)_{AVG}$ = .06	$(\Delta H)_{AVG}$ = 1.79		$(T_{meter})_{AVG}$ = 101°F			$(T_{stack})_{AVG}$ = 537°F				Estimates: MW= 28.8 %H2O= 12%

SYSTEM LEAK CHECK

	Vacuum (in. Hg)	DGM Rate (cfm)
Before		
After		

PITOT LEAK CHECK

	Positive	Negative
Before		
After		

GAS	1	2
CO2		
O2		
CO		
N2		

Impinger No.	Impinger Contents	Final	Initial	Difference
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

CHESTER ENVIRONMENTAL

STACK SAMPLING DATA SHEET

CLIENT USS CLAIRTON WORKS
TEST UNIT BATTERY STACK #9
PROJECT NO. 3934-45-02
TEST CREW RPC, MV
BAROMETRIC PRESSURE 29.38

TEST DATE 05-12-94 (THUR.)
TEST NO. USS-CLR-B59-#3
NOZZLE (SIZE,#) 0.490"
STATIC PRESSURE -.90" H2O
PORT DIRECTION EAST, NORTH

ORIFICE CORRECTION (ΔH@) 1.814
METER CORRECTION (Y) 1.0128
CALIBRATION DATE 02-02-94
PITOT CORRECTION 0.84
CONTROL BOX NO. SIX

HOT/COLD BOX NO. 2
PROBE NO. 7-1
FILTER NO. 1248
STACK DIA. 114"
PORT SIZE 4" Flange

Traverse Point (inches)	Time	Dry Gas Meter Reading (dcf)	Pitot ΔP (in. H2O)	Orifice ΔH Required (in. H2O)	Orifice ΔH Actual (in. H2O)	Meter Temperature In (°F)	Meter Temperature Out (°F)	Vacuum (in. Hg)	Stack Temp. (°F)	Probe Temp. (°F)	Impinger Temp. (°F)	Hot Box Temp. (°F)	Comments
40.6	08:18	657.940	.06	1.68	1.68	64	63	2.0	545	~250°F	<68°F	~250°F	5 min./point
28.5			.08	2.23	2.23	76	63	3.5	560				
20.2			.09	2.51	2.51	83	65	3.5	538				
13.5			.06	1.68	1.68	83	65	3.5	540				
7.6			.04	1.12	1.12	88	68	2.0	536				
2.4	0848	679.465	.04	1.12	1.12	89	69	2.0	540				
40.6	0852	679.465	.07	1.96	1.96	78	69	3.5	522				
28.5			.09	2.51	2.51	88	70	4.0	563				
20.2			.06	1.68	1.68	89	70	2.5	538				
13.5			.06	1.68	1.68	88	71	2.5	541				
7.6			.03	0.84	0.84	88	70	1.0	557				
2.4	0922	699.635	.03	0.84	0.84	89	70	1.0	552				

Estimates:
MW= 28.8
%H2O= 10

SYSTEM LEAK CHECK

	Vacuum (in. Hg)	DGM Rate (cfm)
Before	5.0	<0.02 cfm
After	6.0	<0.02 cfm

PITOT LEAK CHECK

	Positive	Negative
Before	ok/15 sec	ok/15 sec
After	ok/15 sec	ok/15 sec

GAS	1	2
CO2	4.5	4.5
O2	12.0	12.0
CO	0	0
N2	83.5	83.5

Impinger No.	Impinger Contents	Final	Initial	Difference
1.	100 mL DI H2O	727.9	533.2	194.7
2.	100 mL DI H2O	635.4	594.3	41.1
3.	Empty	449.4	443.9	5.5
4.	Silica gel	672.8	652.5	20.30
5.				
6.				
7.				
8.			total =	261.6 g

241.3 g

13.3%

CHESTER ENVIRONMENTAL

STACK SAMPLING DATA SHEET

CLIENT USS-CLARION WORKS
TEST UNIT BATTERY STACK 9
PROJECT NO. 3934-45-02
TEST CREW RPC, MV
BAROMETRIC PRESSURE 29.38

TEST DATE 05-12-94 (Thur)
TEST NO. USS-CLR-BS9-2
NOZZLE (SIZE,#) 0.490"
STATIC PRESSURE -.90"
PORT DIRECTION WEST SOUTH

ORIFICE CORRECTION (ΔH@) 1.814
METER CORRECTION (Y) 1.0128
CALIBRATION DATE 02-02-94
PITOT CORRECTION 0.84
CONTROL BOX NO. SIX

HOT/COLD BOX NO. 2
PROBE NO. 7-1
FILTER NO. 1248
STACK DIA. 114"
PORT SIZE 4" flange

Traverse Point (inches)	Time	Dry Gas Meter Reading (dcf)	Pitot ΔP (in. H2O)	Orifice ΔH Required (in. H2O)	Orifice ΔH Actual (in. H2O)	Meter Temperature In (°F)	Meter Temperature Out (°F)	Vacuum (in. Hg)	Stack Temp. (°F)	Probe Temp. (°F)	Impinger Temp. (°F)	Hot Box Temp. (°F)	Comments
406	09:25	699.635	.07	1.96	1.96	76	68	3.0	536	~250°F	<68	~250°F	5 min./point
285			.08	2.23	2.23	84	68	3.0	528				
202			.05	1.40	1.40	86	68	2.0	529				
135			.05	1.40	1.40	86	67	2.0	530				
76			.03	0.84	0.84	86	68	1.0	530				
24	09:55	719.848	.04	1.12	1.12	87	68	1.0	528				
406	09:58	719.848	.08	2.23	2.23	75	68	3.0	510				
285			.06	1.68	1.68	85	68	2.5	539				
202			.07	1.96	1.96	87	69	3.0	546				
135			.05	1.40	1.40	87	69	2.0	550				
76			.03	0.84	0.84	87	69	1.0	557				
24	10:28	739.348	.03	0.84	0.84	84	68	1.0	554				
Test Totals	Δθ=120 min	Δ=81.408 dcf	$(\Delta P)_{Avg}$= .05	$(\Delta H)_{Avg}$= 1.57		$(t_{meter})_{Avg}$= 76°F			$(t_{stack})_{Avg}$= 540°F				

Estimates:
MW= 28.8
%H2O= 12

SYSTEM LEAK CHECK

	Vacuum (in. Hg)	DGM Rate (cfm)
Before		
After		

PITOT LEAK CHECK

	Positive	Negative
Before		
After		

GAS	1	2
CO2		
O2		
CO		
N2		

Impinger No.	Impinger Contents	Final	Initial	Difference
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

CHESTER ENVIRONMENTAL

CHESTER ENVIRONMENTAL RESOURCES
AIR QUALITY ENGINEERING

ANALYTICAL REPORTING FORM

CLIENT: USS-Clairton Works
PLANT LOCATION: Clairton, PA
PROJECT NUMBER: 343445-02
UNIT TESTED: Battery Stack #9

TEST DATE: 5/11 + 5/12/94
DATE RECEIVED: 5/11 + 5/12/94
DATE ANALYZED: 5/20/94
ANALYTICAL METHOD:

Test Number	Filter ID Number	Component	Cyclone Weight Units ( )	Filter Weight Units (grams)	Soluble Portion of Front Half H2O Rinse Units ( )	Soluble Portion of Front Half Acetone Rinse Units (grams)	Soluble Portion of Back Half H2O Rinse Units ( )	Soluble Portion of Back Half Acetone Rinse Units ( )	0.22μm Filter Insoluble Portion of Back Half H2O Rinse Units ( )
CLR-BS9-1	1228	Particulate		0.0403		0.0325			
CLR-BS9-2	1251	Particulate		0.0350		0.0477			
CLR-BS9-3	1248	Particulate		0.0349		0.0467			

Analyst's Signature: Patricia J. Stockton
Date: 5/23/94

Comments

AQE 10/92

VISIBLE EMISSIONS OBSERVATIONS FORM

9 STACK

OBSERVER: Mark Zaleski

DATE: 5-11-94

FACILITY: USX - Clairton

OBSERVATION: START TIME: 10:35

END TIME: 11:35

OBSERVATION POINT:
Parking lot outside main gate Maple St.

SOURCE:

DISTANCE: 950'

DIRECTION FROM: S

HEIGHT: 200'

WIND:

SPEED: 17 mph

DIRECTION: SW

TEMPERATURE: 61°

SKY CONDITION: 25% Cloud Cover

BACKGROUND: Sky

READING CONDITIONS: fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% 0

No. READINGS >= 60% 0

GREATEST OPACITY: 0

CREW: ____ FOREMAN: ____

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

9 STACK

OBSERVER: Mark Zaleski

DATE: 5-11-94

FACILITY: USK-Clanton

OBSERVATION: START TIME: 11:35

END TIME: 12:35

OBSERVATION POINT:

Parking lot at Maple St gate

SOURCE: Batt. 9. Stack

DISTANCE: 950'

DIRECTION FROM: S

HEIGHT: 200'

WIND:

SPEED: 17

DIRECTION: SW

TEMPERATURE: 61

SKY CONDITION: 50% Clouds

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% 0

No. READINGS >= 60% 0

GREATEST OPACITY: 0

CREW: ____ FOREMAN: ____

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

9 STACK

OBSERVER: Mark Zaleski

DATE: 5-11-94

FACILITY: USX-Clairton

OBSERVATION: START TIME: 12:35

END TIME: 1:35

OBSERVATION POINT: Parking Lot of Maplest gate

SOURCE: Batt. 9 stack

DISTANCE: 950'

DIRECTION FROM: SE

HEIGHT: 200'

WIND:

SPEED: 17mph

DIRECTION: SW

TEMPERATURE: 68

SKY CONDITION: Mostly Cloudy

BACKGROUND: sky

READING CONDITIONS: fair

COLOR OF EMISSION:

TOTAL No. OF READINGS: 240

No. READINGS >= 20% 0

No. READINGS >= 60% 0

GREATEST OPACITY: 0

CREW: ____ FOREMAN: ____

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

9 STACK

OBSERVER: Mark Zalcski

DATE: 5-11-94

FACILITY: USX-Clairton

OBSERVATION: START TIME: 1:35

END TIME: 2:35

OBSERVATION POINT:
Maple St gate parking lot

SOURCE: Batt. 9 Stack

DISTANCE: 950'

DIRECTION FROM: S

HEIGHT: 200'

WIND:

SPEED: 10mph

DIRECTION: SW

TEMPERATURE: 69

SKY CONDITION: Mostly Cloudy

BACKGROUND: Sky

READING CONDITIONS: fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% 0

No. READINGS >= 40% 0

GREATEST OPACITY: 0

CREW: ____ FOREMAN: ____

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

9 STACK

OBSERVER: Mark Zaleski

DATE: 5-11-94

FACILITY: USX - Clairton

OBSERVATION: START TIME: 2:35

END TIME: 3:35

OBSERVATION POINT:

Maple St gate Parking Lot

SOURCE:

DISTANCE: 950'

DIRECTION FROM: S

HEIGHT: 200'

WIND:

SPEED: 17mph

DIRECTION: SW

TEMPERATURE: 74

SKY CONDITION: Mostly Cloudy

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: Black

TOTAL No. OF READINGS: 226

No. READINGS >= 20% 0

No. READINGS >= 60% 0

GREATEST OPACITY: 10

CREW: ____ FOREMAN: ____

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	5
15	5	10	10	10
16	5	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				
57				
58				
59				

VISIBLE EMISSIONS OBSERVATIONS FORM

9 STACK

OBSERVER: Mark Zaleski

DATE: 5-12-94

FACILITY: USX - Clairton

OBSERVATION: START TIME: 8:00

END TIME: 9.00

OBSERVATION POINT:

Maple St gate parkinglot

SOURCE: Batt. 9 Stack

DISTANCE: 950'

DIRECTION FROM: S

HEIGHT: 200'

WIND:

SPEED: 14 mph

DIRECTION: NW

TEMPERATURE: 53°F

SKY CONDITION: Mostly Cloudy

BACKGROUND: Sky

READING CONDITIONS: fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% 0

No. READINGS >= 60% 0

GREATEST OPACITY: 0

CREW: ____ FOREMAN: ____

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

9 STACK

OBSERVER: Mark Zaleski

DATE: 5-12-94

FACILITY: USA - Clainton

OBSERVATION: START TIME: 9:00

END TIME: 10:00

OBSERVATION POINT:

Magest gate parking lot

SOURCE: Batt. 9 Stack

DISTANCE: 950'

DIRECTION FROM: S

HEIGHT: 200'

WIND:

SPEED: 14 mph

DIRECTION: NW

TEMPERATURE: 50

SKY CONDITION: Overcast

BACKGROUND: Sky

READING CONDITIONS: fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% 0

No. READINGS >= 60% 0

GREATEST OPACITY: 0

CREW: ____ FOREMAN: ____

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

9 STACK

OBSERVER: Mark Zaleski

DATE: 5-12-94

FACILITY: USX - Clairton

OBSERVATION: START TIME: 10:00

END TIME: 11:00

OBSERVATION POINT: Maplest. gate parking lot

SOURCE: Batt. 9 Stack

DISTANCE: 950'

DIRECTION FROM: S

HEIGHT: 200'

WIND:

SPEED: 14 mph

DIRECTION: N

TEMPERATURE: 49

SKY CONDITION: Overcast

BACKGROUND: Sky

READING CONDITIONS: fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% 0

No. READINGS >= 60% 0

GREATEST OPACITY: 0

CREW: ____ FOREMAN: ____

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

9 STACK

OBSERVER: Mark Zaleski

DATE: 5-12-94

FACILITY: USX Clairton

OBSERVATION: START TIME: 11:00

END TIME: 1130

OBSERVATION POINT:

Maple St. gate parking lot

SOURCE: Batt. 9 Stack

DISTANCE: 950'

DIRECTION FROM: S

HEIGHT: 200'

WIND:

SPEED: 14mph

DIRECTION: N

TEMPERATURE: 50

SKY CONDITION: Overcast

BACKGROUND: Sky

READING CONDITIONS: fair

COLOR OF EMISSION: black

TOTAL No. OF READINGS: 120

No. READINGS >= 20% 0

No. READINGS >= 60% 0

GREATEST OPACITY: 10

CREW: ____ FOREMAN: ____

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	5	5	5
24	5	5	5	10
25	10	10	5	5
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0

30				
31				
32				
33				
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CONTROL BOX CALIBRATION

THREE POINT CALIBRATION

BOX # 6 BP 29 in. Hg
DATE 02-02-94 OPERATOR RPC

	WET TEST METER				DRY TEST METER						
	TIME (min)	TEMP TW	VOLUME VM	PRESSURE PW	TEMP IN TI	TEMP OUT TO	TEMP AVG TA	ORIFICE PD	VOLUME VD	METER COEFFICIENT Y	ORIFICE COEFFICIENT ΔH@
START			0.000	29.00					265.100		
HALF		69.0			90.0	76.0	83.0	0.50			
STOP	12.90		5.000						270.200		
CALCULATION	12.90	529.0	5.013	29.00							
START			0.000	29.00			543.0	29.04	5.100	1.0076	1.866
HALF		69.0			96.0	82.0	89.0	1.00	270.500		
STOP	9.00		5.000						275.602		
CALCULATION	9.00	529.0	5.013	29.00							
START			0.000	29.00			549.0	29.07	5.102	1.0170	1.796
HALF		69.0			96.0	81.0	88.5	2.00	276.100		
STOP	6.33		5.000						281.200		
CALCULATION	6.33	529.0	5.013	29.00							
AVERAGE							548.5	29.15	5.100	1.0139	1.779
										1.0128	1.814

POST TEST

BOX # 6 BP 29.00 in. Hg
DATE 06-09-94 OPERATOR RPC

	WET TEST METER				DRY TEST METER					METER COEFFICIENT 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	29.00				1.70	135.300		
HALF		78.0			112.0	96.0	104.0				
STOP	6.95		5.000						140.394		
CALCULATION	6.95	538.0	5.013	29.00			564.0	29.13	5.094	1.0271	1.833
START			0.000	29.00				1.70	140.900		
HALF		78.0			116.0	97.0	106.5				
STOP	7.00		5.000						146.000		
CALCULATION	7.00	538.0	5.013	29.00			566.5	29.13	5.100	1.0305	1.852
START			0.000	29.00				1.70	146.700		
HALF		78.0			117.0	97.0	107.0				
STOP	7.00		5.000						151.809		
CALCULATION	7.00	538.0	5.013	29.00			567.0	29.13	5.109	1.0296	1.850
AVERAGE										1.0291	1.845
DIFFERENCE										-1.6%	-1.7%

PRE-TEST MAGNEHELIC CALIBRATION
BOX# 6
DATE 02-02-94
OPERATOR RPC

0 to 3.0" H2O RANGE

MAGNEHELIC

Δ P	MANOMETER
0.50	0.50
1.00	1.00
2.00	2.00
3.00	3.00

0 to 0.50" H2O RANGE
SLANT TUBE
PRIMARY STANDARD

0 to 5" H2O RANGE

MAGNEHELIC

Δ H	MANOMETER
4.00	4.00
3.00	3.00
2.00	2.00
1.00	1.00
0.50	0.50

PRE-TEST LEAK CHECK
DATE 02-02-94
OPERATOR RPC

	START CF	STOP CF	VOLUME CF	TIME (min)	LEAK RATE
DRY	264.400	264.560	0.160	10.000	-0.001
WET	0.000	0.150	0.150		

PYROMETER CALIBRATION
DATE 04-28-88
OPERATOR AGL

VOLTAGE INPUT (mV)	ARGE 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 02-02-94
OPERATOR RPC

VOLTAGE INPUT (mV)	TARGET 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	300.0
8.31	400	400.0
10.57	500	500.0

POST-TEST MAGNEHELIC CALIBRATION
BOX# 6
DATE 06-09-94
OPERATOR RPC

0 to 3.0" H2O RANGE

MAGNEHELIC

Δ P	MANOMETER
0.50	0.50
1.00	1.00
2.00	2.00
3.00	3.00

0 to 0.50" H2O RANGE
SLANT TUBE
PRIMARY STANDARD

0 to 5" H2O RANGE

MAGNEHELIC

Δ H	MANOMETER
4.00	4.00
3.00	3.00
2.00	2.00
1.00	1.00
0.50	0.50

POST-TEST LEAK CHECK
DATE 06-09-94
OPERATOR RPC

	START CF	STOP CF	VOLUME CF	TIME (min)	LEAK RATE
DRY	134.261	134.471	0.210	10.000	-0.0000
WET	0.000	0.210	0.210		

PYROMETER CALIBRATION
DATE 04-28-88
OPERATOR AGL

VOLTAGE INPUT (mV)	ARGE 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 06-09-94
OPERATOR RPC

VOLTAGE INPUT (mV)	TARGET 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	402.0
10.57	500	502.0

QA ORIFICE AUDIT

ORIFICE BAPC-3 DATE 06-09-94 B.P. 29.00
OPERATOR RPC BOX # 6

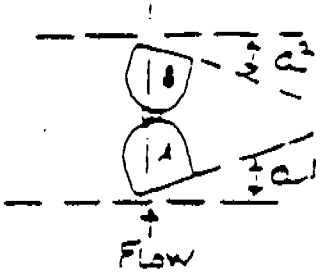
RUN	1		2		3	
INITIAL CF	110.300		118.300		126.300	
FINAL CF	117.825		125.828		133.810	
DIFFERENCE	7.525		7.528		7.510	
	IN	OUT	IN	OUT	IN	OUT
TEMP INITIAL	105	100	102	98	102	97
TEMP 5 MIN	102	99	101	97	102	97
TEMP 10 MIN	102	98	102	97	103	98
TEMP 15 MIN	102	98	102	97	103	98
		TEMP R		TEMP R		TEMP R
TEMP AVG	100.75	560.75	99.5	559.5	100	560
TIME (MIN.)	15.00		15.00		15.00	
	N WATE	IN HG	IN WATER	IN HG	IN WATER	IN HG
ORIFICE	0.75	0.06	0.75	0.06	0.75	0.06
METER PRESSURE		29.06		29.06		29.06
	°F	°C	°F	°C	°F	°C
AMBIENT TEMP.	78.0	25.6	78.0	25.6	78.0	25.6
VACUUM IN HG	21.0		21.0		21.0	
DGM CAL Y	1.0128		1.0128		1.0128	
STD CF	6.995		7.014		6.991	
STD CUBIC METERS	0.1981		0.1986		0.1980	

GEOMETRIC PITOT CALIBRATION

Caliper # XCE-59
Precheck:
Post Check:

Probe #: 7-1
Date: 1-24-94
Initials: gm

①

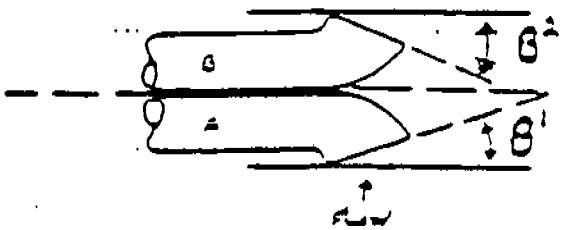


a^2 = 1.0°
a^1 = 4.0°
a^1, a^2 = <10°

B^1 = 1.0°
B^2 = 1.0°
B^1, B^2 = <5°

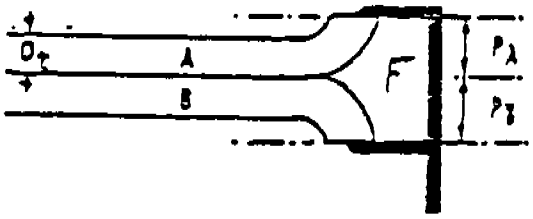
F = 1.042"

②



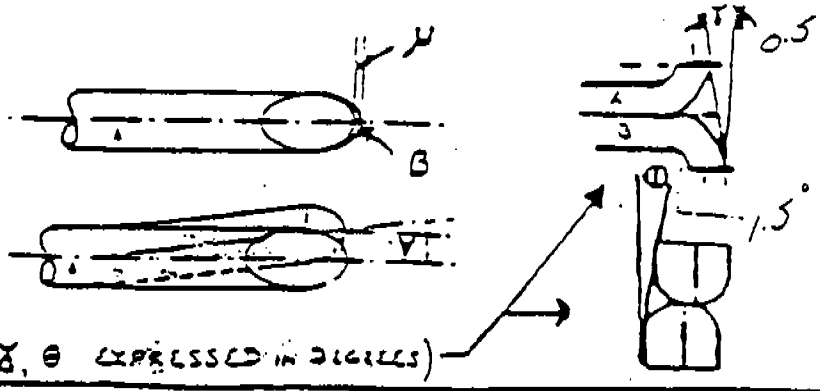
μ = .0008 — μ = ≤ 0.1250" (μ = F tan γ)
V = 0.0262 — V = ≤0.03125" (V = F tan θ)
W = 1.160 — W ≥ 0"
X = 1.491 — X ≥ 0.750" (3/4" using 1/2" nozzle)
Y = 6.000 — Y ≥ 3.0"
Z = 2.551 — Z > 2.0"
D_t = .374 — D_t > .1875"

③



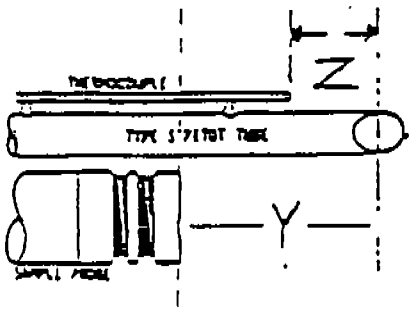
1.05 D_t < d < 1.50 D_t
P_A = P_B
2.10 D_t < d < 3.00 D_t

④

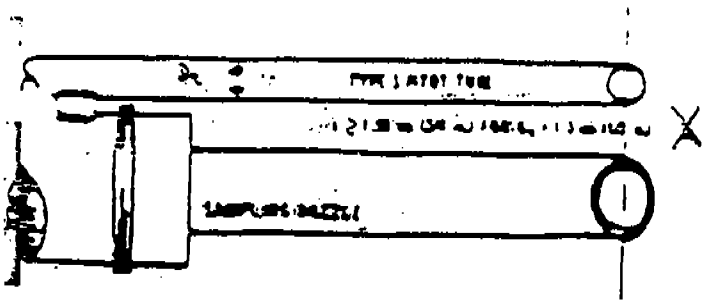


(γ, θ EXPRESSED IN DEGREES)

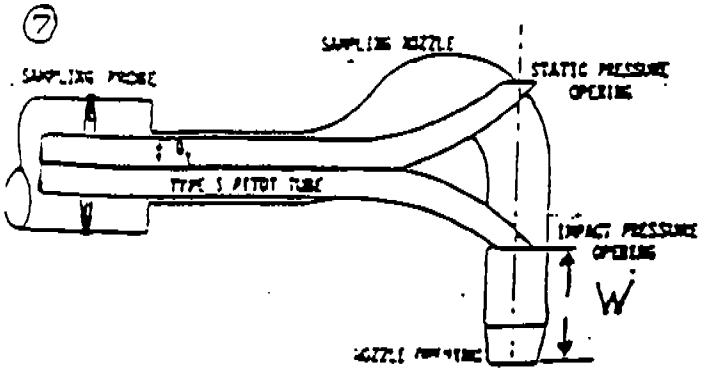
⑥



⑤



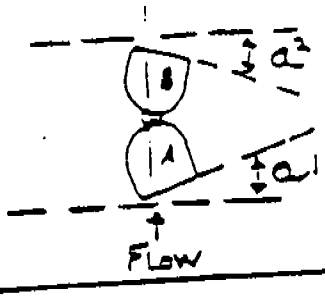
⑦



GEOMETRIC PITOT CALIBRATION

Caliper # XEF-59
Precheck: _____
Post Check: _____

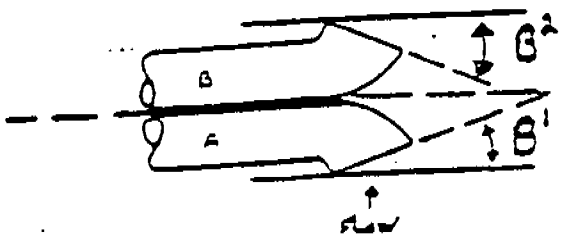
Probe #: 7-1
Date: 06-10-94
Initials: PPC



a^1 = 1°
a^2 = 2°
a^1, a^2 = <10°

B^1 = 1°
B^2 = 1°
B^1, B^2 = <5°

F = 1.50"

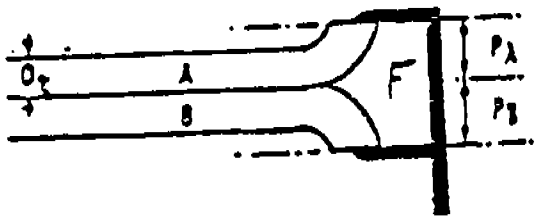


μ = 0 — μ = ≤ 0.1250" (μ = F TAN γ)

V = 0 — V = ≤0.03125" (V = F TAN θ)

W = .25 — W ≥ 0"

X = .850 — X ≥ 0.750" (3/4" using 1/2" nozzle)

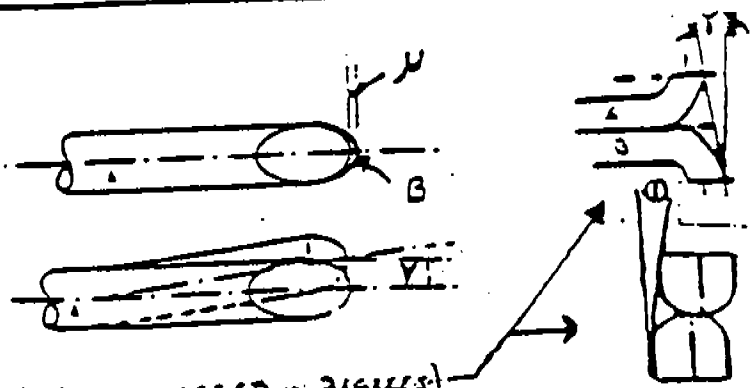


1.05 D_t ≤ <1.50 D_t
P_A = P_B
2.10 D_t <A <3.00 D_t

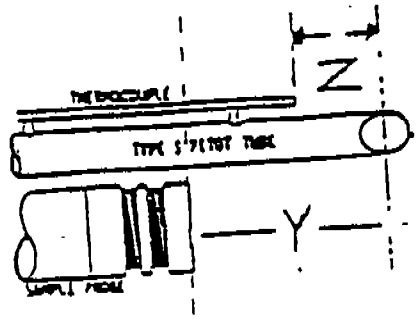
Y = 6.10 — Y ≥ 3.0"

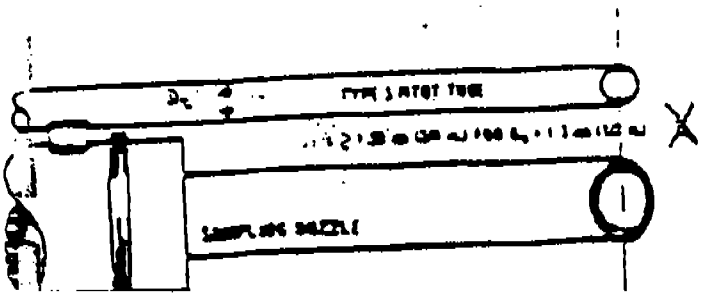
Z = 2.6 — Z > 2.0"

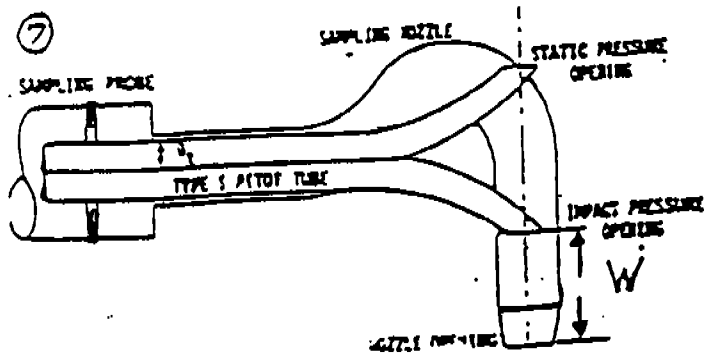
D_t = .390 — D_t > .1875"



(γ, θ EXPRESSED IN DEGREES)







COMPLIANCE DEMONSTRATION
NO. 9 BATTERY COMBUSTION STACK

USS CLAIRTON WORKS
CLAIRTON, PENNSYLVANIA

APPENDIX B

PLANT OPERATIONAL DATA

CHESTER
ENVIRONMENTAL

Batteries: 7-9_2

Oven	Last Pushed	Earliest	Desired	Latest
A20/8	16:39	11:49pm	12:02am	12:11am
B21/7	16:44	11:55pm	12:05am	12:12am
B20/7	16:44	12:00am	12:11am	12:22am
A22/8	16:44	12:04am	12:17am	12:28am
B23/7	16:44	12:11am	12:24am	12:35am
A24/8	16:44	12:15am	12:27am	12:38am
B24/7	16:44	12:20am	12:33am	12:40am
A26/8	16:44	12:24am	12:37am	12:46am
B25/7	16:44	12:27am	12:40am	12:51am
A28/8	16:44	12:30am	12:43am	12:57am
B26/7	16:44	12:41am	12:52am	1:03am
A30/8	16:44	12:47am	12:56am	1:09am
B30/7	16:44	12:52am	1:04am	1:15am
A1 /9	16:44	12:59am	1:10am	1:21am
B1 /8	16:44	1:05am	1:16am	1:27am
A3 /9	16:43	1:10am	1:21am	1:32am
B3 /8	16:44	1:15am	1:27am	1:38am
A5 /9	16:44	1:20am	1:33am	1:44am
B5 /8	16:44	1:26am	1:39am	1:50am
A7 /9	16:44	1:34am	1:45am	1:56am
B7 /8	16:44	1:40am	1:51am	2:02am
A9 /9	16:44	1:46am	1:57am	2:06am
B9 /8	16:43	1:51am	2:02am	2:13am
A11/9	16:44	1:57am	2:05am	2:17am
B11/8	16:44	2:03am	2:14am	2:25am
A13/9	16:44	2:09am	2:20am	2:32am
B13/8	16:44	2:15am	2:25am	2:37am
A15/9	16:44	2:21am	2:32am	2:43am
B15/8	16:44	2:27am	2:36am	2:49am
A17/9	16:43	2:32am	2:42am	2:54am
B17/8	16:43	2:38am	2:47am	3:02am
A19/9	16:43	2:44am	2:55am	3:08am
B19/8	16:43	2:50am	3:01am	3:12am
A21/9	16:43	2:56am	3:07am	3:16am
B21/8	16:43	3:02am	3:13am	3:24am
A23/9	16:43	3:08am	3:19am	3:30am
B23/8	16:43	3:13am	3:24am	3:35am
A25/9	16:43	3:17am	3:30am	3:41am
B25/8	16:43	3:24am	3:36am	3:47am
A27/9	16:43	3:30am	3:41am	3:53am
B27/8	16:43	3:36am	3:46am	3:59am
A29/9	16:43	3:41am	3:54am	4:05am
B29/8	16:41	3:48am	3:59am	4:10am
A31/9	16:41	3:54am	4:05am	4:16am
B31/8	16:41	4:00am	4:11am	4:22am
A1 /8	16:41	4:06am	4:17am	4:26am
B2 /9	16:41	4:12am	4:22am	4:33am
A3 /8	16:41	4:19am	4:26am	4:40am
B4 /9	16:41	4:24am	4:35am	4:45am
A5 /8	16:42	4:30am	4:40am	4:51am
B6 /9	16:40	4:36am	4:46am	4:57am
A7 /8	16:40	4:41am	4:52am	5:02am
B8 /9	16:40	4:47am	4:56am	5:07am
A9 /8	16:40	4:53am	5:04am	5:15am
B10/9	16:40	4:59am	5:10am	5:21am
A12/8	16:40	5:05am	5:16am	5:27am
B12/9	16:37	5:10am	5:22am	5:32am
A14/8	16:37	5:16am	5:26am	5:38am
B14/9	16:37	5:22am	5:33am	5:44am
A16/8	16:37	5:29am	5:39am	5:50am
B16/9	16:37	5:34am	5:45am	5:56am
A18/8	16:37	5:40am	5:51am	6:02am
B18/9	16:37	5:46am	5:57am	6:03am
A20/8	16:37	5:51am	6:02am	6:13am
B20/9	16:36	5:57am	6:08am	6:19am
A22/8	16:36	6:03am	6:14am	6:25am
B22/9	16:36	6:09am	6:20am	6:31am
A24/8	16:36	6:15am	6:26am	6:37am
B24/9	16:36	6:21am	6:32am	6:43am
A26/8	16:36	6:27am	6:38am	6:49am
B26/9	16:36	6:33am	6:43am	6:54am
A28/8	16:36	6:39am	6:49am	7:00am
B28/9	16:36	6:44am	6:55am	7:05am
A30/8	16:36	6:50am	7:01am	7:12am
B30/9	16:36	6:56am	7:07am	7:18am
A1 /8	16:36	7:02am	7:13am	7:24am
B1 /9	16:36	7:08am	7:19am	7:30am
A3 /8	16:36	7:14am	7:25am	7:36am
B3 /9	16:36	7:20am	7:31am	7:42am

+B 3/9 wA 28/8

PUSHING SCHEDULE

Wednesday, May 11, 1994 Turn 1

Batteries: 7-9_2

Oven	Last Pushed	Earliest	Desired	Latest
A 7/8	16:36	7:37am	7:43am	7:53am
B 7/9	16:36	7:43am	7:54am	8:05am

Batteries: 7-[illegible]

Oven	Last Pushed	Earliest	Desired	Latest
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

— B 8/7

Batteries: 7-9_2

Oven	Last Pushed	Earliest	Desired	Latest
A22/7	18:44	3:49pm	4:02pm	4:11pm
B22/9	18:44	4:55pm	4:05pm	4:16pm
A23/7	18:44	4:00pm	4:11pm	4:22pm
B27/9	18:44	4:06pm	4:17pm	4:28pm
A27/7	18:44	4:12pm	4:23pm	4:35pm
B29/9	18:44	4:18pm	4:29pm	4:40pm
A29/7	18:44	4:24pm	4:35pm	4:46pm
B31/9	18:44	4:29pm	4:40pm	4:51pm
A31/7	18:44	4:35pm	4:46pm	4:57pm
C2 /9	18:44	4:41pm	4:52pm	5:03pm
A2 /8	18:44	4:47pm	4:58pm	5:09pm
B2 /7	18:44	4:53pm	5:04pm	5:15pm
A4 /6	18:44	4:59pm	5:10pm	5:21pm
B4 /7	18:44	5:05pm	5:16pm	5:27pm
A6 /6	18:44	5:10pm	5:22pm	5:33pm
B6 /7	18:44	5:15pm	5:28pm	5:39pm
A8 /8	18:44	5:22pm	5:34pm	5:46pm
B8 /7	18:44	5:28pm	5:40pm	5:52pm
A10/6	18:44	5:33pm	5:45pm	5:58pm
B10/7	18:44	5:39pm	5:51pm	6:03pm
A12/6	18:44	5:44pm	5:57pm	6:09pm
B12/7	18:44	5:40pm	5:52pm	6:05pm
A14/8	18:44	5:46pm	5:58pm	6:11pm
B14/7	18:44	5:51pm	6:03pm	6:15pm
A16/8	18:44	5:57pm	6:09pm	6:21pm
B16/7	18:44	6:03pm	6:15pm	6:27pm
A18/8	18:44	6:09pm	6:21pm	6:33pm
B18/7	18:44	6:15pm	6:27pm	6:39pm
A20/6	18:44	6:21pm	6:33pm	6:45pm
B20/7	18:44	6:27pm	6:39pm	6:51pm
A22/6	18:36	6:32pm	6:45pm	6:57pm
B22/7	18:36	6:38pm	6:51pm	7:03pm
A24/6	18:36	6:44pm	6:57pm	7:09pm
B24/7	18:36	6:50pm	7:03pm	7:15pm
A26/9	18:36	6:56pm	7:09pm	7:21pm
B26/7	18:39	7:02pm	7:15pm	7:27pm
A28/8	18:38	7:08pm	7:21pm	7:33pm
B28/7	18:38	7:13pm	7:26pm	7:38pm
A30/8	18:38	7:19pm	7:32pm	7:44pm
B30/7	18:38	7:25pm	7:38pm	7:50pm
A1 /9	18:38	7:31pm	7:44pm	7:56pm
B1 /8	18:38	7:37pm	7:50pm	8:02pm
A3 /9	18:38	7:43pm	7:56pm	8:08pm
B3 /8	18:38	7:48pm	8:01pm	8:14pm
A5 /9	18:38	7:54pm	8:07pm	8:20pm
B5 /8	18:38	8:00pm	8:13pm	8:26pm
A7 /9	18:38	8:06pm	8:19pm	8:32pm
B7 /8	18:38	8:12pm	8:25pm	8:38pm
A9 /9	18:38	8:18pm	8:31pm	8:44pm
B9 /8	18:38	8:24pm	8:37pm	8:50pm
A11/9	18:38	8:29pm	8:43pm	8:56pm
B11/8	18:38	8:35pm	8:49pm	9:02pm
A13/9	18:38	8:41pm	8:55pm	9:08pm
B13/8	18:38	8:47pm	9:01pm	9:14pm
A15/9	18:38	8:53pm	9:07pm	9:20pm
B15/8	18:38	8:59pm	9:13pm	9:26pm
A17/9	18:38	9:05pm	9:19pm	9:32pm
B17/8	18:38	9:11pm	9:25pm	9:38pm
A19/9	18:38	9:16pm	9:31pm	9:44pm
B19/8	18:38	9:22pm	9:37pm	9:50pm
A21/9	18:38	9:28pm	9:43pm	9:56pm
B21/8	18:38	9:34pm	9:49pm	10:02pm
A23/9	18:38	9:40pm	9:55pm	10:08pm
B23/8	18:38	9:46pm	10:01pm	10:14pm
A25/9	18:38	9:51pm	10:07pm	10:20pm
B25/8	18:38	9:57pm	10:13pm	10:26pm
A27/9	18:38	10:03pm	10:19pm	10:32pm
B27/8	18:38	10:09pm	10:25pm	10:38pm
A29/9	18:38	10:15pm	10:31pm	10:44pm
B29/8	18:38	10:21pm	10:37pm	10:50pm
A31/9	18:38	10:27pm	10:43pm	10:56pm
B31/8	18:38	10:32pm	10:49pm	11:02pm
A2 /9	18:38	10:38pm	10:55pm	11:08pm
B2 /8	18:38	10:44pm	11:01pm	11:14pm
A4 /9	18:38	10:50pm	11:07pm	11:20pm
B4 /8	18:38	10:56pm	11:13pm	11:26pm
A6 /9	18:38	11:02pm	11:19pm	11:32pm
B6 /8	18:38	11:08pm	11:25pm	11:38pm
A8 /9	18:38	11:13pm	11:31pm	11:44pm
B8 /8	18:38	11:19pm	11:37pm	11:50pm
A10/9	18:38	11:25pm	11:43pm	11:56pm
B10/8	18:38	11:31pm	11:49pm	12:02am
A12/9	18:38	11:37pm	11:55pm	12:08am
B12/8	18:38	11:43pm	12:01am	12:14am
A14/9	18:38	11:49pm	12:07am	12:20am
B14/8	18:38	11:55pm	12:13am	12:26am
A16/9	18:38	12:01am	12:19am	12:32am
B16/8	18:38	12:07am	12:25am	12:38am
A18/9	18:38	12:13am	12:31am	12:44am
B18/8	18:38	12:19am	12:37am	12:50am
A20/9	18:38	12:25am	12:43am	12:56am
B20/8	18:38	12:31am	12:49am	1:02am
A22/9	18:38	12:37am	12:55am	1:08am
B22/8	18:38	12:43am	1:01am	1:14am
A24/9	18:38	12:49am	1:07am	1:20am
B24/8	18:38	12:55am	1:13am	1:26am
A26/9	18:38	1:01am	1:19am	1:32am
B26/8	18:38	1:07am	1:25am	1:38am
A28/9	18:38	1:13am	1:31am	1:44am
B28/8	18:38	1:19am	1:37am	1:50am
A30/9	18:38	1:25am	1:43am	1:56am
B30/8	18:38	1:31am	1:49am	2:02am
A1 /10	18:38	1:37am	1:55am	2:08am
B1 /9	18:38	1:43am	2:01am	2:14am
A3 /10	18:38	1:49am	2:07am	2:20am
B3 /9	18:38	1:55am	2:13am	2:26am
A5 /10	18:38	2:01am	2:19am	2:32am
B5 /9	18:38	2:07am	2:25am	2:38am
A7 /10	18:38	2:13am	2:31am	2:44am
B7 /9	18:38	2:19am	2:37am	2:50am
A9 /10	18:38	2:25am	2:43am	2:56am
B9 /9	18:38	2:31am	2:49am	3:02am
A11/10	18:38	2:37am	2:55am	3:08am
B11/9	18:38	2:43am	3:01am	3:14am
A13/10	18:38	2:49am	3:07am	3:20am
B13/9	18:38	2:55am	3:13am	3:26am
A15/10	18:38	3:01am	3:19am	3:32am
B15/9	18:38	3:07am	3:25am	3:38am
A17/10	18:38	3:13am	3:31am	3:44am
B17/9	18:38	3:19am	3:37am	3:50am
A19/10	18:38	3:25am	3:43am	3:56am
B19/9	18:38	3:31am	3:49am	4:02am
A21/10	18:38	3:37am	3:55am	4:08am
B21/9	18:38	3:43am	4:01am	4:14am
A23/10	18:38	3:49am	4:07am	4:20am
B23/9	18:38	3:55am	4:13am	4:26am
A25/10	18:38	4:01am	4:19am	4:32am
B25/9	18:38	4:07am	4:25am	4:38am
A27/10	18:38	4:13am	4:31am	4:44am
B27/9	18:38	4:19am	4:37am	4:50am
A29/10	18:38	4:25am	4:43am	4:56am
B29/9	18:38	4:31am	4:49am	5:02am
A31/10	18:38	4:37am	4:55am	5:08am
B31/9	18:38	4:43am	5:01am	5:14am
A2 /11	18:38	4:49am	5:07am	5:20am
B2 /10	18:38	4:55am	5:13am	5:26am
A4 /11	18:38	5:01am	5:19am	5:32am
B4 /10	18:38	5:07am	5:25am	5:38am
A6 /11	18:38	5:13am	5:31am	5:44am
B6 /10	18:38	5:19am	5:37am	5:50am
A8 /11	18:38	5:25am	5:43am	5:56am
B8 /10	18:38	5:31am	5:49am	6:02am
A10/11	18:38	5:37am	5:55am	6:08am
B10/10	18:38	5:43am	6:01am	6:14am
A12/11	18:38	5:49am	6:07am	6:20am
B12/10	18:38	5:55am	6:13am	6:26am
A14/11	18:38	6:01am	6:19am	6:32am
B14/10	18:38	6:07am	6:25am	6:38am
A16/11	18:38	6:13am	6:31am	6:44am
B16/10	18:38	6:19am	6:37am	6:50am
A18/11	18:38	6:25am	6:43am	6:56am
B18/10	18:38	6:31am	6:49am	7:02am
A20/11	18:38	6:37am	6:55am	7:08am
B20/10	18:38	6:43am	7:01am	7:14am
A22/11	18:38	6:49am	7:07am	7:20am
B22/10	18:38	6:55am	7:13am	7:26am
A24/11	18:38	7:01am	7:19am	7:32am
B24/10	18:38	7:07am	7:25am	7:38am
A26/11	18:38	7:13am	7:31am	7:44am
B26/10	18:38	7:19am	7:37am	7:50am
A28/11	18:38	7:25am	7:43am	7:56am
B28/10	18:38	7:31am	7:49am	8:02am
A30/11	18:38	7:37am	7:55am	8:08am
B30/10	18:38	7:43am	8:01am	8:14am
A2 /12	18:38	7:49am	8:07am	8:20am
B2 /11	18:38	7:55am	8:13am	8:26am
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B8 /11	18:38	8:31am	8:49am	9:02am
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A16/12	18:38	9:13am	9:31am	9:44am
B16/11	18:38	9:19am	9:37am	9:50am
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B18/11	18:38	9:31am	9:49am	10:02am
A20/12	18:38	9:37am	9:55am	10:08am
B20/11	18:38	9:43am	10:01am	10:14am
A22/12	18:38	9:49am	10:07am	10:20am
B22/11	18:38	9:55am	10:13am	10:26am
A24/12	18:38	10:01am	10:19am	10:32am
B24/11	18:38	10:07am	10:25am	10:38am
A26/12	18:38	10:13am	10:31am	10:44am
B26/11	18:38	10:19am	10:37am	10:50am
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A30/12	18:38	10:37am	10:55am	11:08am
B30/11	18:38	10:43am	11:01am	11:14am
A2 /13	18:38	10:49am	11:07am	11:20am
B2 /12	18:38	10:55am	11:13am	11:26am
A4 /13	18:38	11:01am	11:19am	11:32am
B4 /12	18:38	11:07am	11:25am	11:38am
A6 /13	18:38	11:13am	11:31am	11:44am
B6 /12	18:38	11:19am	11:37am	11:50am
A8 /13	18:38	11:25am	11:43am	11:56am
B8 /12	18:38	11:31am	11:49am	12:02am
A10/13	18:38	11:37am	11:55am	12:08am
B10/12	18:38	11:43am	12:01am	12:14am
A12/13	18:38	11:49am	12:07am	12:20am
B12/12	18:38	11:55am	12:13am	12:26am
A14/13	18:38	12:01am	12:19am	12:32am
B14/12	18:38	12:07am	12:25am	12:38am
A16/13	18:38	12:13am	12:31am	12:44am
B16/12	18:38	12:19am	12:37am	12:50am
A18/13	18:38	12:25am	12:43am	12:56am
B18/12	18:38	12:31am	12:49am	1:02am
A20/13	18:38	12:37am	12:55am	1:08am
B20/12	18:38	12:43am	1:01am	1:14am
A22/13	18:38	12:49am	1:07am	1:20am
B22/12	18:38	12:55am	1:13am	1:26am
A24/13	18:38	1:01am	1:19am	1:32am
B24/12	18:38	1:07am	1:25am	1:38am
A26/13	18:38	1:13am	1:31am	1:44am
B26/12	18:38	1:19am	1:37am	1:50am
A28/13	18:38	1:25am	1:43am	1:56am
B28/12	18:38	1:31am	1:49am	2:02am
A30/13	18:38	1:37am	1:55am	2:08am
B30/12	18:38	1:43am	2:01am	2:14am
A2 /14	18:38	1:49am	2:07am	2:20am
B2 /13	18:38	1:55am	2:13am	2:26am
A4 /14	18:38	2:01am	2:19am	2:32am
B4 /13	18:38	2:07am	2:25am	2:38am
A6 /14	18:38	2:13am	2:31am	2:44am
B6 /13	18:38	2:19am	2:37am	2:50am
A8 /14	18:38	2:25am	2:43am	2:56am
B8 /13	18:38	2:31am	2:49am	3:02am
A10/14	18:38	2:37am	2:55am	3:08am
B10/13	18:38	2:43am	3:01am	3:14am
A12/14	18:38	2:49am	3:07am	3:20am
B12/13	18:38	2:55am	3:13am	3:26am
A14/14	18:38	3:01am	3:19am	3:32am
B14/13	18:38	3:07am	3:25am	3:38am
A16/14	18:38	3:13am	3:31am	3:44am
B16/13	18:38	3:19am	3:37am	3:50am
A18/14	18:38	3:25am	3:43am	3:56am
B18/13	18:38	3:31am	3:49am	4:02am
A20/14	18:38	3:37am	3:55am	4:08am
B20/13	18:38	3:43am	4:01am	4:14am
A22/14	18:38	3:49am	4:07am	4:20am
B22/13	18:38	3:55am	4:13am	4:26am
A24/14	18:38	4:01am	4:19am	4:32am
B24/13	18:38	4:07am	4:25am	4:38am
A26/14	18:38	4:13am	4:31am	4:44am
B26/13	18:38	4:19am	4:37am	4:50am
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B28/13	18:38	4:31am	4:49am	5:02am
A30/14	18:38	4:37am	4:55am	5:08am
B30/13	18:38	4:43am	5:01am	5:14am
A2 /15	18:38	4:49am	5:07am	5:20am
B2 /14	18:38	4:55am	5:13am	5:26am
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B10/14	18:38	5:43am	6:01am	6:14am
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B12/14	18:38	5:55am	6:13am	6:26am
A14/15	18:38	6:01am	6:19am	6:32am
B14/14	18:38	6:07am	6:25am	6:38am
A16/15	18:38	6:13am	6:31am	6:44am
B16/14	18:38	6:19am	6:37am	6:50am
A18/15	18:38	6:25am	6:43am	6:56am
B18/14	18:38	6:31am	6:49am	7:02am
A20/15	18:38	6:37am	6:55am	7:08am
B20/14	18:38	6:43am	7:01am	7:14am
A22/15	18:38	6:49am	7:07am	7:20am
B22/14	18:38	6:55am	7:13am	7:26am
A24/15	18:38	7:01am	7:19am	7:32am
B24/14	18:38	7:07am	7:25am	7:38am
A26/15	18:38	7:13am	7:31am	7:44am
B26/14	18:38	7:19am	7:37am	7:50am
A28/15	18:38	7:25am	7:43am	7:56am
B28/14	18:38	7:31am	7:49am	8:02am
A30/15	18:38	7:37am	7:55am	8:08am
B30/14	18:38	7:43am	8:01am	8:14am
A2 /16	18:38	7:49am	8:07am	8:20am
B2 /15	18:38	7:55am	8:13am	8:26am
A4 /16	18:38	8:01am	8:19am	8:32am
B4 /15	18:38	8:07am	8:25am	8:38am
A6 /16	18:38	8:13am	8:31am	8:44am
B6 /15	18:38	8:19am	8:37am	8:50am
A8 /16	18:38	8:25am	8:43am	8:56am
B8 /15	18:38	8:31am	8:49am	9:02am
A10/16	18:38	8:37am	8:55am	9:08am
B10/15	18:38	8:43am	9:01am	9:14am
A12/16	18:38	8:49am	9:07am	9:20am
B12/15	18:38	8:55am	9:13am	9:26am
A14/16	18:38	9:01am	9:19am	9:32am
B14/15	18:38	9:07am	9:25am	9:38am
A16/16	18:38	9:13am	9:31am	9:44am
B16/15	18:38	9:19am	9:37am	9:50am
A18/16	18:38	9:25am	9:43am	9:56am
B18/15	18:38	9:31am	9:49am	10:02am
A20/16	18:38	9:37am	9:55am	10:08am
B20/15	18:38	9:43am	10:01am	10:14am
A22/16	18:38	9:49am	10:07am	10:20am
B22/15	18:38	9:55am	10:13am	10:26am
A24/16	18:38	10:01am	10:19am	10:32am
B24/15	18:38	10:07am	10:25am	10:38am
A26/16	18:38	10:13am	10:31am	10:44am
B26/15	18:38	10:19am	10:37am	10:50am
A28/16	18:38	10:25am	10:43am	10:56am
B28/15	18:38	10:31am	10:49am	11:02am
A30/16	18:38	10:37am	10:55am	11:08am
B30/15	18:38	10:43am	11:01am	11:14am
A2 /17	18:38	10:49am	11:07am	11:20am
B2 /16	18:38	10:55am	11:13am	11:26am
A4 /17	18:38	11:01am	11:19am	11:32am
B4 /16	18:38	11:07am	11:25am	11:38am
A6 /17	18:38	11:13am	11:31am	11:44am
B6 /16	18:38	11:19am	11:37am	11:50am
A8 /17	18:38	11:25am	11:43am	11:56am
B8 /16	18:38	11:31am	11:49am	12:02am
A10/17	18:38	11:37am	11:55am	12:08am
B10/16	18:38	11:43am	12:01am	12:14am
A12/17	18:38	11:49am	12:07am	12:20am
B12/16	18:38	11:55am	12:13am	12:26am
A14/17	18:38	12:01am	12:19am	12:32am
B14/16	18:38	12:07am	12:25am	12:38am
A16/17	18:38	12:13am	12:31am	12:44am
B16/16	18:38	12:19am	12:37am	12:50am
A18/17	18:38	12:25am	12:43am	12:56am
B18/16	18:38	12:31am	12:49am	1:02am
A20/17	18:38	12:37am	12:55am	1:08am
B20/16	18:38	12:43am	1:01am	1:14am
A22/17	18:38	12:49am	1:07am	1:20am
B22/16	18:38	12:55am	1:13am	1:26am
A24/17	18:38	1:01am	1:19am	1:32am
B24/16	18:38	1:07am	1:25am	1:38am
A26/17	18:38	1:13am	1:31am	1:44am
B26/16	18:38	1:19am	1:37am	1:50am
A28/17	18:38	1:25am	1:43am	1:56am
B28/16	18:38	1:31am	1:49am	2:02am
A30/17	18:38	1:37am	1:55am	2:08am
B30/16	18:38	1:43am	2:01am	2:14am
A2 /18	18:38	1:49am	2:07am	2:20am
B2 /17	18:38	1:55am	2:13am	2:26am
A4 /18	18:38	2:01am	2:19am	2:32am
B4 /17	18:38	2:07am	2:25am	2:38am
A6 /18	18:38	2:13am	2:31am	2:44am
B6 /17	18:38	2:19am	2:37am	2:50am
A8 /18	18:38	2:25am	2:43am	2:56am
B8 /17	18:38	2:31am	2:49am	3:02am
A10/18	18:38	2:37am	2:55am	3:08am
B10/17	18:38	2:43am	3:01am	3:14am
A12/18	18:38	2:49am	3:07am	3:20am
B12/17	18:38	2:55am	3:13am	3:26am
A14/18	18:38	3:01am	3:19am	3:32am
B14/17	18:38	3:07am	3:25am	3:38am
A16/18	18:38	3:13am	3:31am	3:44am
B16/17	18:38	3:19am	3:37am	3:50am
A18/18	18:38	3:25am	3:43am	3:56am
B18/17	18:38	3:31am	3:49am	4:02am
A20/18	18:38	3:37am	3:55am	4:08am
B20/17	18:38	3:43am	4:01am	4:14am
A22/18	18:38	3:49am	4:07am	4:20am
B22/17	18:38	3:55am	4:13am	4:26am
A24/18	18:38	4:01am	4:19am	4:32am
B24/17	18:38	4:07am	4:25am	4:38am
A26/18	18:38	4:13am	4:31am	4:44am
B26/17	18:38	4:19am	4:37am	4:50am
A28/18	18:38	4:25am	4:43am	4:56am
B28/17	18:38	4:31am	4:49am	5:02am
A30/18	18:38	4:37am	4:55am	5:08am
B30/17	18:38	4:43am	5:01am	5:14am
A2 /19	18:38	4:49am	5:07am	5:20am
B2 /18	18:38	4:55am	5:13am	5:26am
A4 /19	18:38	5:01am	5:19am	5:32am
B4 /18	18:38	5:07am	5:25am	5:38am
A6 /19	18:38	5:13am	5:31am	5:44am
B6 /18	18:38	5:19am	5:37am	5:50am
A8 /19	18:38	5:25am	5:43am	5:56am
B8 /18	18:38	5:31am	5:49am	6:02am
A10/19	18:38	5:37am	5:55am	6:08am
B10/18	18:38	5:43am	6:01am	6:14am
A12/19	18:38	5:49am	6:07am	6:20am
B12/18	18:38	5:55am	6:13am	6:26am
A14/19	18:38	6:01am	6:19am	6:32am
B14/18	18:38	6:07am	6:25am	6:38am
A16/19	18:38	6:13am	6:31am	6:44am
B16/18	18:38	6:19am	6:37am	6:50am
A18/19	18:38	6:25am	6:43am	6:56am
B18/18	18:38	6:31am	6:49am	7:02am
A20/19	18:38	6:37am	6:55am	7:08am
B20/18	18:38	6:43am	7:01am	7:14am
A22/19	18:38	6:49am	7:07am	7:20am
B22/18	18:38	6:55am	7:13am	7:26am
A24/19	18:38	7:01am	7:19am	7:32am
B24/18	18:38	7:07am	7:25am	7:38am
A26/19	18:38	7:13am	7:31am	7:44am
B26/18	18:38	7:19am	7:37am	7:50am
A28/19	18:38	7:25am	7:43am	7:56am
B28/18	18:38	7:31am	7:49am	8:02am
A30/19	18:38	7:37am	7:55am	8:08am
B30/18	18:38	7:43am	8:01am	8:14am
A2 /20	18:38	7:49am	8:07am	8:20am
B2 /19	18:38	7:55am	8:13am	8:26am
A4 /20	18:38	8:01am	8:19am	8:32am
B4 /19	18:38	8:07am	8:25am	8:38am
A6 /20	18:38	8:13am	8:31am	8:44am
B6 /19	18:38	8:19am	8:37am	8:50am
A8 /20	18:38	8:25am	8:43am	8:56am
B8 /19	18:38	8:31am	8:49am	9:02am
A10/20	18:38	8:37am	8:55am	9:08am
B10/19	18:38	8:43am	9:01am	9:14am
A12/20	18:38	8:49am	9:07am	9:20am
B12/19	18:38	8:55am	9:13am	9:26am
A14/20	18:38	9:01am	9:19am	9:32am
B14/19	18:38	9:07am	9:25am	9:38am
A16/20	18:38	9:13am	9:31am	9:44am
B16/19	18:38	9:19am	9:37am	9:50am
A18/20	18:38	9:25am	9:43am	9:56am
B18/19	18:38	9:31am	9:49am	10:02am
A20/20	18:38	9:37am	9:55am	10:08am
B20/19	18:38	9:43am	10:01am	10:14am
A22/20	18:38	9:49am	10:07am	10:20am
B22/19	18:38	9:55am	10:13am	10:26am
A24/20	18:38	10:01am	10:19am	10:32am
B24/19	18:38	10:07am	10:25am	10:38am
A26/20	18:38	10:13am	10:31am	10:44am
B26/19	18:38	10:19am	10:37am	10:50am
A28/20	18:38	10:25am	10:43am	10:56am
B28/19	18:38	10:31am	10:49am	11:02am
A30/20	18:38	10:37am	10:55am	11:08am
B30/19	18:38	10:43am	11:01am	11:14am
A2 /21	18:38	10:49am	11:07am	11:20am
B2 /20	18:38	10:55am	11:13am	11:26am
A4 /21	18:38	11:01am	11:19am	11:32am
B4 /20	18:38	11:07am	11:25am	11:38am
A6 /21	18:38	11:13am	11:31am	11:44am
B6 /20	18:38	11:19am	11:37am	11:50am
A8 /21	18:38	11:25am	11:43am	11:56am
B8 /20	18:38	11:31am	11:49am	12:02am
A10/21	18:38	11:37am	11:55am	12:08am
B10/20	18:38	11:43am	12:01am	12:14am
A12/21	18:38	11:49am	12:07am	12:20am
B12/20	18:38	11:55am	12:13am	12:26am
A14/21	18:38	12:01am	12:19am	12:32am
B14/20	18:38	12:07am	12:25am	12:38am
A16/21	18:38	12:13am	12:31am	12:44am
B16/20	18:38	12:19am	12:37am	12:50am
A18/21	18:38	12:25am	12:43am	12:56am
B18/20	18:38	12:31am	12:49am	1:02am
A20/21	18:38	12:37am	12:55am	1:08am
B20/20	18:38	12:43am	1:01am	1:14am
A22/21	18:38	12:49am	1:07am	1:20am
B22/20	18:38	12:55am	1:13am	1:26am
A24/21	18:38	1:01am	1:19am	1:32am
B24/20	18:38	1:07am	1:25am	1:38am
A26/21	18:38	1:13am	1:31am	1:44am
B26/20	18:38	1:19am	1:37am	1:50am
A28/21	18:38	1:25am	1:43am	1:56am
B28/20	18:38	1:31am	1:49am	2:02am
A30/21	18:38	1:37am	1:55am	2:08am
B30/20	18:38	1:43am	2:01am	2:14am
A2 /22	18:38	1:49am	2:07am	2:20am
B2 /21	18:38	1:55am	2:13am	2:26am
A4 /22	18:38	2:01am	2:19am	2:32am
B4 /21	18:38	2:07am	2:25am	2:38am
A6 /22	18:38	2:13am	2:31am	2:44am
B6 /21	18:38	2:19am	2:37am	2:50am
A8 /22	18:38	2:25am	2:43am	2:56am
B8 /21	18:38	2:31am	2:49am	3:02am
A10/22	18:38	2:37am	2:55am	3:08am
B10/21	18:38	2:43am	3:01am	3:14am
A12/22	18:38	2:49am	3:07am	3:20am
B12/21	18:38	2:55am	3:13am	3:26am
A14/22	18:38	3:01am	3:19am	3:32am
B14/21	18:38	3:07am	3:25am	3:38am
A16/22	18:38	3:13am	3:31am	3:44am
B16/21	18:38	3:19am	3:37am	3:50am
A18/22	18:38	3:25am	3:43am	3:56am
B18/21	18:38	3:31am	3:49am	4:02am
A20/22	18:38	3:37am	3:55am	4:08am
B20/21	18:38	3:43am	4:01am	4:14am
A22/22	18:38	3:49am	4:07am	4:20am
B22/21	18:38	3:55am	4:13am	4:26am
A24

Oven	Last Pushed	Earliest	Desired	Latest
A12/7	18:43	7:45ae	7:22ae	7:11ae
A13/7	18:44	7:22ae	7:07ae	7:11ae
A14/7	18:44	7:06ae	7:07ae	7:11ae
A15/7	18:44	7:06ae	7:07ae	7:11ae
A16/7	18:44	7:06ae	7:07ae	7:11ae
A17/7	18:44	7:06ae	7:07ae	7:11ae
A18/7	18:44	7:06ae	7:07ae	7:11ae
A19/7	18:44	7:06ae	7:07ae	7:11ae
A20/7	18:44	7:06ae	7:07ae	7:11ae
A21/7	18:44	7:06ae	7:07ae	7:11ae
A22/7	18:44	7:06ae	7:07ae	7:11ae
A23/7	18:44	7:06ae	7:07ae	7:11ae
A24/7	18:44	7:06ae	7:07ae	7:11ae
A25/7	18:44	7:06ae	7:07ae	7:11ae
A26/7	18:44	7:06ae	7:07ae	7:11ae
A27/7	18:44	7:06ae	7:07ae	7:11ae
A28/7	18:44	7:06ae	7:07ae	7:11ae
A29/7	18:44	7:06ae	7:07ae	7:11ae
A30/7	18:44	7:06ae	7:07ae	7:11ae
A1 /8	18:45	7:06ae	7:07ae	7:11ae
A2 /8	18:45	7:06ae	7:07ae	7:11ae
A3 /8	18:45	7:06ae	7:07ae	7:11ae
A4 /8	18:45	7:06ae	7:07ae	7:11ae
A5 /8	18:45	7:06ae	7:07ae	7:11ae
A6 /8	18:45	7:06ae	7:07ae	7:11ae
A7 /8	18:45	7:06ae	7:07ae	7:11ae
A8 /8	18:45	7:06ae	7:07ae	7:11ae
A9 /8	18:45	7:06ae	7:07ae	7:11ae
A10/8	18:45	7:06ae	7:07ae	7:11ae
A11/8	18:45	7:06ae	7:07ae	7:11ae
A12/8	18:45	7:06ae	7:07ae	7:11ae
A13/8	18:45	7:06ae	7:07ae	7:11ae
A14/8	18:45	7:06ae	7:07ae	7:11ae
A15/8	18:45	7:06ae	7:07ae	7:11ae
A16/8	18:45	7:06ae	7:07ae	7:11ae
A17/8	18:45	7:06ae	7:07ae	7:11ae
A18/8	18:45	7:06ae	7:07ae	7:11ae
A19/8	18:45	7:06ae	7:07ae	7:11ae
A20/8	18:45	7:06ae	7:07ae	7:11ae
A21/8	18:45	7:06ae	7:07ae	7:11ae
A22/8	18:45	7:06ae	7:07ae	7:11ae
A23/8	18:45	7:06ae	7:07ae	7:11ae
A24/8	18:45	7:06ae	7:07ae	7:11ae
A25/8	18:45	7:06ae	7:07ae	7:11ae
A26/8	18:45	7:06ae	7:07ae	7:11ae
A27/8	18:45	7:06ae	7:07ae	7:11ae
A28/8	18:45	7:06ae	7:07ae	7:11ae
A29/8	18:45	7:06ae	7:07ae	7:11ae
A30/8	18:45	7:06ae	7:07ae	7:11ae
A1 /9	18:45	7:06ae	7:07ae	7:11ae
A2 /9	18:45	7:06ae	7:07ae	7:11ae
A3 /9	18:45	7:06ae	7:07ae	7:11ae
A4 /9	18:45	7:06ae	7:07ae	7:11ae
A5 /9	18:45	7:06ae	7:07ae	7:11ae
A6 /9	18:45	7:06ae	7:07ae	7:11ae
A7 /9	18:45	7:06ae	7:07ae	7:11ae
A8 /9	18:45	7:06ae	7:07ae	7:11ae
A9 /9	18:45	7:06ae	7:07ae	7:11ae
A10/9	18:45	7:06ae	7:07ae	7:11ae
A11/9	18:45	7:06ae	7:07ae	7:11ae
A12/9	18:45	7:06ae	7:07ae	7:11ae
A13/9	18:45	7:06ae	7:07ae	7:11ae
A14/9	18:45	7:06ae	7:07ae	7:11ae
A15/9	18:45	7:06ae	7:07ae	7:11ae
A16/9	18:45	7:06ae	7:07ae	7:11ae
A17/9	18:45	7:06ae	7:07ae	7:11ae
A18/9	18:45	7:06ae	7:07ae	7:11ae
A19/9	18:45	7:06ae	7:07ae	7:11ae
A20/9	18:45	7:06ae	7:07ae	7:11ae
A21/9	18:45	7:06ae	7:07ae	7:11ae
A22/9	18:45	7:06ae	7:07ae	7:11ae
A23/9	18:45	7:06ae	7:07ae	7:11ae
A24/9	18:45	7:06ae	7:07ae	7:11ae
A25/9	18:45	7:06ae	7:07ae	7:11ae
A26/9	18:45	7:06ae	7:07ae	7:11ae
A27/9	18:45	7:06ae	7:07ae	7:11ae
A28/9	18:45	7:06ae	7:07ae	7:11ae
A29/9	18:45	7:06ae	7:07ae	7:11ae
A30/9

Batteries, [illegible]

Oven	Last Pushed	Earliest	Desired	Latest
A30/9	10:26	7:45am	8:00am	8:15am
B30/9	10:26	7:51am	8:06am	8:21am
C1 /8	10:26	7:57am	8:12am	8:27am
B1 /9	10:26	8:03am	8:18am	8:33am
A1 /7	10:26	8:09am	8:24am	8:39am
B3 /9	10:26	8:15am	8:30am	8:45am
A3 /7	10:26	8:21am	8:36am	8:51am
B5 /9	10:26	8:27am	8:42am	8:57am
A5 /7	10:26	8:33am	8:48am	9:03am
B7 /9	10:26	8:39am	8:54am	9:09am
A7 /7	10:26	8:45am	9:00am	9:15am
B9 /9	10:26	8:51am	9:06am	9:21am
A9 /7	10:26	8:57am	9:12am	9:27am
B11/9	10:26	9:03am	9:18am	9:33am
A11/7	10:26	9:09am	9:24am	9:39am
B13/9	10:36	9:15am	9:30am	9:45am
A13/7	10:36	9:21am	9:36am	9:51am
B15/9	10:36	9:27am	9:42am	9:57am
A15/7	10:36	9:33am	9:48am	10:03am
B17/9	10:36	9:39am	9:54am	10:09am
A17/7	10:36	9:45am	10:00am	10:15am
B19/9	10:36	9:51am	10:06am	10:21am
A19/7	10:36	9:57am	10:12am	10:27am
B21/9	10:36	10:03am	10:18am	10:33am
A21/7	10:36	10:09am	10:24am	10:39am
B23/9	10:36	10:15am	10:30am	10:45am
A23/7	10:36	10:21am	10:36am	10:51am
B25/9	10:37	10:27am	10:42am	10:57am
A25/7	10:37	10:33am	10:48am	11:03am
B27/9	10:37	10:39am	10:54am	11:09am
A27/7	10:37	10:45am	11:00am	11:15am
B29/9	10:37	10:51am	11:06am	11:21am
A29/7	10:37	10:57am	11:12am	11:27am
B31/9	10:37	11:03am	11:18am	11:33am
A31/7	10:38	11:09am	11:24am	11:39am
C2 /9	10:38	11:15am	11:30am	11:45am
A2 /8	10:38	11:21am	11:36am	11:51am
B2 /7	10:38	11:27am	11:42am	11:57am
A4 /8	10:38	11:33am	11:48am	12:03pm
B4 /7	10:38	11:39am	11:54am	12:09pm
A6 /8	10:38	11:45am	12:00pm	12:15pm
B6 /7	10:39	11:51am	12:06pm	12:21pm
A8 /8	10:39	11:57am	12:12pm	12:27pm
B8 /7	10:39	12:03pm	12:18pm	12:33pm
A10/8	10:39	12:09pm	12:24pm	12:39pm
B10/7	10:39	12:15pm	12:30pm	12:45pm
A12/8	10:39	12:21pm	12:36pm	12:51pm
B12/7	10:40	12:27pm	12:42pm	12:57pm
A14/8	10:40	12:33pm	12:48pm	1:03pm
B14/7	10:40	12:39pm	12:54pm	1:09pm
A16/8	10:40	12:45pm	1:00pm	1:15pm
B16/7	10:40	12:51pm	1:06pm	1:21pm
A18/8	10:40	12:57pm	1:12pm	1:27pm
B18/7	10:41	1:03pm	1:18pm	1:33pm
A20/8	10:41	1:09pm	1:24pm	1:39pm
B20/7	10:41	1:15pm	1:30pm	1:45pm
A22/8	10:41	1:21pm	1:36pm	1:51pm
B22/7	10:41	1:27pm	1:42pm	1:57pm
A24/8	10:41	1:33pm	1:48pm	2:03pm
B24/7	10:41	1:39pm	1:54pm	2:09pm
A26/8	10:41	1:45pm	2:00pm	2:15pm
B26/7	10:41	1:51pm	2:06pm	2:21pm
A28/8	10:42	1:57pm	2:12pm	2:27pm
B28/7	10:42	2:03pm	2:18pm	2:33pm
A30/8	10:42	2:09pm	2:24pm	2:39pm
B30/7	10:42	2:15pm	2:30pm	2:45pm
A1 /9	10:42	2:21pm	2:36pm	2:51pm
B1 /8	10:42	2:27pm	2:42pm	2:57pm
A3 /9	10:42	2:33pm	2:48pm	3:03pm
B3 /8	10:43	2:39pm	2:54pm	3:09pm
A5 /9	10:43	2:45pm	3:00pm	3:15pm
B5 /8	10:43	2:51pm	3:06pm	3:21pm
A7 /9	10:43	2:57pm	3:12pm	3:27pm
B7 /8	10:43	3:03pm	3:18pm	3:33pm
A9 /9	10:43	3:09pm	3:24pm	3:39pm
B9 /8	10:43	3:15pm	3:30pm	3:45pm
A11/9	10:43	3:21pm	3:36pm	3:51pm
B11/8	10:43	3:27pm	3:42pm	3:57pm
A13/9	10:43	3:33pm	3:48pm	4:03pm
B13/8	10:43	3:39pm	3:54pm	4:09pm
A15/9	10:43	3:45pm	4:00pm	4:15pm
B15/8	10:43	3:51pm	4:06pm	4:21pm
A17/9	10:43	3:57pm	4:12pm	4:27pm
B17/8	10:43	4:03pm	4:18pm	4:33pm
A19/9	10:43	4:09pm	4:24pm	4:39pm
B19/8	10:43	4:15pm	4:30pm	4:45pm
A21/9	10:43	4:21pm	4:36pm	4:51pm
B21/8	10:43	4:27pm	4:42pm	4:57pm
A23/9	10:43	4:33pm	4:48pm	5:03pm
B23/8	10:43	4:39pm	4:54pm	5:09pm
A25/9	10:43	4:45pm	5:00pm	5:15pm
B25/8	10:43	4:51pm	5:06pm	5:21pm
A27/9	10:43	4:57pm	5:12pm	5:27pm
B27/8	10:43	5:03pm	5:18pm	5:33pm
A29/9	10:43	5:09pm	5:24pm	5:39pm
B29/8	10:43	5:15pm	5:30pm	5:45pm
A31/9	10:43	5:21pm	5:36pm	5:51pm
B31/8	10:43	5:27pm	5:42pm	5:57pm
C2 /10	10:43	5:33pm	5:48pm	6:03pm
A2 /9	10:43	5:39pm	5:54pm	6:09pm
B2 /8	10:43	5:45pm	6:00pm	6:15pm
A4 /9	10:43	5:51pm	6:06pm	6:21pm
B4 /8	10:43	5:57pm	6:12pm	6:27pm
A6 /9	10:43	6:03pm	6:18pm	6:33pm
B6 /8	10:43	6:09pm	6:24pm	6:39pm
A8 /9	10:43	6:15pm	6:30pm	6:45pm
B8 /8	10:43	6:21pm	6:36pm	6:51pm
A10/9	10:43	6:27pm	6:42pm	6:57pm
B10/8	10:43	6:33pm	6:48pm	7:03pm
A12/9	10:43	6:39pm	6:54pm	7:09pm
B12/8	10:43	6:45pm	7:00pm	7:15pm
A14/9	10:43	6:51pm	7:06pm	7:21pm
B14/8	10:43	6:57pm	7:12pm	7:27pm
A16/9	10:43	7:03pm	7:18pm	7:33pm
B16/8	10:43	7:09pm	7:24pm	7:39pm
A18/9	10:43	7:15pm	7:30pm	7:45pm
B18/8	10:43	7:21pm	7:36pm	7:51pm
A20/9	10:43	7:27pm	7:42pm	7:57pm
B20/8	10:43	7:33pm	7:48pm	8:03pm
A22/9	10:43	7:39pm	7:54pm	8:09pm
B22/8	10:43	7:45pm	8:00pm	8:15pm
A24/9	10:43	7:51pm	8:06pm	8:21pm
B24/8	10:43	7:57pm	8:12pm	8:27pm
A26/9	10:43	8:03pm	8:18pm	8:33pm
B26/8	10:43	8:09pm	8:24pm	8:39pm
A28/9	10:43	8:15pm	8:30pm	8:45pm
B28/8	10:43	8:21pm	8:36pm	8:51pm
A30/9	10:43	8:27pm	8:42pm	8:57pm
B30/8	10:43	8:33pm	8:48pm	9:03pm
A1 /10	10:43	8:39pm	8:54pm	9:09pm
B1 /9	10:43	8:45pm	9:00pm	9:15pm
A3 /10	10:43	8:51pm	9:06pm	9:21pm
B3 /9	10:43	8:57pm	9:12pm	9:27pm
A5 /10	10:43	9:03pm	9:18pm	9:33pm
B5 /9	10:43	9:09pm	9:24pm	9:39pm
A7 /10	10:43	9:15pm	9:30pm	9:45pm
B7 /9	10:43	9:21pm	9:36pm	9:51pm
A9 /10	10:43	9:27pm	9:42pm	9:57pm
B9 /9	10:43	9:33pm	9:48pm	10:03pm
A11/10	10:43	9:39pm	9:54pm	10:09pm
B11/9	10:43	9:45pm	10:00pm	10:15pm
A13/10	10:43	9:51pm	10:06pm	10:21pm
B13/9	10:43	9:57pm	10:12pm	10:27pm
A15/10	10:43	10:03pm	10:18pm	10:33pm
B15/9	10:43	10:09pm	10:24pm	10:39pm
A17/10	10:43	10:15pm	10:30pm	10:45pm
B17/9	10:43	10:21pm	10:36pm	10:51pm
A19/10	10:43	10:27pm	10:42pm	10:57pm
B19/9	10:43	10:33pm	10:48pm	11:03pm
A21/10	10:43	10:39pm	10:54pm	11:09pm
B21/9	10:43	10:45pm	11:00pm	11:15pm
A23/10	10:43	10:51pm	11:06pm	11:21pm
B23/9	10:43	10:57pm	11:12pm	11:27pm
A25/10	10:43	11:03pm	11:18pm	11:33pm
B25/9	10:43	11:09pm	11:24pm	11:39pm
A27/10	10:43	11:15pm	11:30pm	11:45pm
B27/9	10:43	11:21pm	11:36pm	11:51pm
A29/10	10:43	11:27pm	11:42pm	11:57pm
B29/9	10:43	11:33pm	11:48pm	12:03am
A31/10	10:43	11:39pm	11:54pm	12:09am
B31/9	10:43	11:45pm	12:00am	12:15am
C1 /11	10:43	11:51pm	12:06am	12:21am
A1 /10	10:43	11:57pm	12:12am	12:27am
B1 /9	10:43	12:03am	12:18am	12:33am
A3 /11	10:43	12:09am	12:24am	12:39am
B3 /10	10:43	12:15am	12:30am	12:45am
A5 /11	10:43	12:21am	12:36am	12:51am
B5 /10	10:43	12:27am	12:42am	12:57am
A7 /11	10:43	12:33am	12:48am	1:03am
B7 /10	10:43	12:39am	12:54am	1:09am
A9 /11	10:43	12:45am	1:00am	1:15am
B9 /10	10:43	12:51am	1:06am	1:21am
A11/11	10:43	12:57am	1:12am	1:27am
B11/10	10:43	1:03am	1:18am	1:33am
A13/11	10:43	1:09am	1:24am	1:39am
B13/10	10:43	1:15am	1:30am	1:45am
A15/11	10:43	1:21am	1:36am	1:51am
B15/10	10:43	1:27am	1:42am	1:57am
A17/11	10:43	1:33am	1:48am	2:03am
B17/10	10:43	1:39am	1:54am	2:09am
A19/11	10:43	1:45am	2:00am	2:15am
B19/10	10:43	1:51am	2:06am	2:21am
A21/11	10:43	1:57am	2:12am	2:27am
B21/10	10:43	2:03am	2:18am	2:33am
A23/11	10:43	2:09am	2:24am	2:39am
B23/10	10:43	2:15am	2:30am	2:45am
A25/11	10:43	2:21am	2:36am	2:51am
B25/10	10:43	2:27am	2:42am	2:57am
A27/11	10:43	2:33am	2:48am	3:03am
B27/10	10:43	2:39am	2:54am	3:09am
A29/11	10:43	2:45am	3:00am	3:15am
B29/10	10:43	2:51am	3:06am	3:21am
A31/11	10:43	2:57am	3:12am	3:27am
B31/10	10:43	3:03am	3:18am	3:33am
C2 /12	10:43	3:09am	3:24am	3:39am
A2 /11	10:43	3:15am	3:30am	3:45am
B2 /10	10:43	3:21am	3:36am	3:51am
A4 /12	10:43	3:27am	3:42am	3:57am
B4 /11	10:43	3:33am	3:48am	4:03am
A6 /12	10:43	3:39am	3:54am	4:09am

Batteries: 7-9_2

Oven	Last Pushed	Earliest	Desired	Latest
A15/9	18:44	3:49pm	4:00pm	4:11pm
B15/6	18:44	3:55pm	4:05pm	4:15pm
A17/9	18:44	4:00pm	4:11pm	4:22pm
B17/6	18:44	4:05pm	4:11pm	4:22pm
A19/9	18:44	4:11pm	4:23pm	4:34pm
B19/6	18:44	4:15pm	4:25pm	4:42pm
A21/9	18:44	4:20pm	4:30pm	4:40pm
B21/6	18:43	4:25pm	4:42pm	4:52pm
A23/9	18:44	4:35pm	4:46pm	4:55pm
B23/6	18:44	4:41pm	4:53pm	5:02pm
A25/9	18:44	4:47pm	4:55pm	5:05pm
B25/6	18:44	4:55pm	5:04pm	5:15pm
A27/9	18:44	4:59pm	5:10pm	5:21pm
B27/6	18:44	5:05pm	5:16pm	5:27pm
A29/9	18:43	5:10pm	5:22pm	5:33pm
B29/6	18:44	5:12pm	5:23pm	5:36pm
A31/9	18:44	5:15pm	5:28pm	5:44pm
B31/6	18:44	5:20pm	5:33pm	5:50pm
[illegible]	18:44	5:40pm	5:45pm	5:50pm
[illegible]	18:44	5:42pm	5:51pm	6:02pm
A[illegible]/7	18:44	5:46pm	5:57pm	6:08pm
B4/9	18:43	5:51pm	6:02pm	6:13pm
A4/7	18:44	5:59pm	6:05pm	6:19pm
B6/9	18:44	6:03pm	6:14pm	6:25pm
A6/7	18:44	6:07pm	6:20pm	6:31pm
B8/9	18:44	6:15pm	6:25pm	6:37pm
A8/7	18:44	6:21pm	6:35pm	6:40pm
B10/9	18:44	6:27pm	6:35pm	6:49pm
A10/7	18:43	6:35pm	6:47pm	6:54pm
B12/9	18:44	6:40pm	6:49pm	7:00pm
A12/7	18:44	6:44pm	6:55pm	7:00pm
B14/9	18:44	6:50pm	7:01pm	7:[illegible]
A14/7	18:43	6:55pm	7:07pm	7:[illegible]
B16/9	18:43	7:02pm	7:12pm	7:[illegible]
A16/7	18:44	7:08pm	7:19pm	7:[illegible]
B18/9	18:44	7:15pm	7:25pm	7:[illegible]
A18/7	18:44	7:20pm	7:30pm	7:[illegible]
B20/9	18:44	7:25pm	7:40pm	7:[illegible]
A20/7	18:44	7:31pm	7:42pm	7:[illegible]
B22/9	18:44	7:35pm	7:46pm	7:[illegible]
A22/7	18:44	7:40pm	7:54pm	8:05pm
B24/9	18:44	7:45pm	7:59pm	8:10pm
A24/7	18:44	7:54pm	8:05pm	8:[illegible]
B26/9	18:44	8:00pm	8:11pm	8:[illegible]
A26/7	18:43	8:05pm	8:17pm	8:[illegible]
B28/9	18:44	8:10pm	8:22pm	8:[illegible]
A28/7	18:44	8:15pm	8:26pm	8:[illegible]
B30/9	18:44	8:20pm	8:32pm	8:[illegible]
A30/7	18:44	8:25pm	8:42pm	9:20am
B32/9	18:44	8:30pm	8:50pm	9:[illegible]
A32/7	18:44	8:35pm	8:42pm	9:[illegible]
B34/9	18:44	8:40pm	8:46pm	9:[illegible]
A34/7	18:44	8:45pm	8:53pm	9:[illegible]
B36/9	18:44	8:50pm	8:59pm	9:[illegible]
A36/7	18:44	8:55pm	9:04pm	9:[illegible]
B38/9	18:44	9:00pm	9:10pm	9:[illegible]
A38/7	18:44	9:05pm	9:15pm	9:[illegible]
B40/9	18:44	9:10pm	9:20pm	9:44pm
A40/7	18:44	9:15pm	9:25pm	9:50pm
B42/9	18:44	9:20pm	9:45pm	9:55pm
A42/7	18:44	9:40pm	9:51pm	10:[illegible]
B44/9	18:44	9:40pm	9:57pm	10:05pm
A44/7	18:44	9:51pm	10:03pm	10:[illegible]
B46/9	18:44	9:57pm	10:08pm	10:[illegible]
A46/7	18:44	10:03pm	10:14pm	10:[illegible]
B48/9	18:44	10:08pm	10:20pm	10:[illegible]
A48/7	18:44	10:09pm	10:20pm	10:[illegible]
B50/9	18:44	10:15pm	10:25pm	10:[illegible]
A50/7	18:44	10:19pm	10:31pm	10:[illegible]
B52/9	18:44	10:22pm	10:34pm	10:[illegible]
A52/7	18:44	10:25pm	10:40pm	10:[illegible]
B54/9	18:44	10:30pm	10:45pm	10:[illegible]
A54/7	18:44	10:35pm	10:45pm	11:[illegible]
B56/9	18:44	10:40pm	10:55pm	11:[illegible]
A56/7	18:44	10:45pm	10:55pm	11:[illegible]
B58/9	18:44	10:50pm	11:00pm	11:[illegible]
A58/7	18:44	10:55pm	11:05pm	11:[illegible]
B60/9	18:44	11:00pm	11:10pm	11:[illegible]
A60/7	18:44	11:05pm	11:15pm	11:[illegible]
B62/9	18:44	11:10pm	11:20pm	11:[illegible]
A62/7	18:44	11:15pm	11:25pm	11:[illegible]
B64/9	18:44	11:20pm	11:30pm	11:[illegible]
A64/7	18:44	11:25pm	11:35pm	11:[illegible]
B66/9	18:44	11:30pm	11:40pm	11:[illegible]
A66/7	18:44	11:35pm	11:45pm	11:[illegible]
B68/9	18:44	11:40pm	11:50pm	11:[illegible]
A68/7	18:44	11:45pm	11:55pm	11:[illegible]
B70/9	18:44	11:50pm	11:60pm	11:[illegible]
A70/7	18:44	11:55pm	11:65pm	11:[illegible]
B72/9	18:44	11:60pm	11:70pm	11:[illegible]
A72/7	18:44	11:65pm	11:75pm	11:[illegible]

7/-B31

PUSHING SCHEDULE

Thursday, May 12, 1994 Turn 3
Batteries: 7-9_2

Oven	Last Pushed	Earliest	Desired	Latest
A1/9	18:34	11:37am	11:48am	11:55am
A/9	18:42	11:42am	11:54am	12:05pm

CC-10285 REV. 1181
93.003.0020

UNITED STATES STEEL CORPORATION
CLAIRTON COKE AND COAL CHEMICAL WORKS

PUSHING AND CHARGING REPORT

UNIT NO. 3

12 Hrs. Beginning 12:00 AM

Date 5-11-94

BATTERY NO. 9 As

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1	1	13	1	35	
3	1	22	1	46	
5	1	37	1	57	
7	1	48	2	08	
9	1	55	2	19	
11	2	10	2	28	
13	2	21	2	40	
15	2	30	2	52	
17	2	42	3	04	
19	2	54	3	16	
21	3	06	3	28	
23	3	18	3	40	
25	3	30	3	52	
27	3	42	4	04	
29	3	54	4	22	
31	4	06	4	34	
2	10	41	11	07	
4	10	52	11	20	
6	11	09	11	33	
8	11	22	11	43	
10	11	35	11	54	PB
12	11	45			
14	11	56			
16					
18					
20					
22					
24					
26					
28					
30					
1					
2					

BATTERY NO. 9 Bs

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1					
3					
5					
7					
9					
11					
13					
15					
17					
19					
21					
23					
25					
27					
29					
31					
2	4	24	4	46	
4	4	36	4	58	
6	4	48	5	10	
8	5	—	5	22	
10	5	12	5	34	
12	5	24	5	46	
14	5	36	5	58	
16	5	48	6	10	
18	6	—	6	22	
20	6	12	6	34	PB
22	6	24	6	46	
24	6	36	6	58	
26	6	48	7	10	
28	7	—	7	16	
30	7	12	7	28	
C1	7	18	7	40	
2					

BATTERY NO. 9 As

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1	2	30	2	52	
3	2	40	8	16	
5	7	54	8	27	
7	8	18	8	38	
9	8	29	8	49	
11	8	40	9	01	
13	8	51	9	11	
15	9	03	9	22	
17	9	13	9	32	
19	9	24	9	43	
21	9	34	9	53	
23	9	45	10	04	
25	9	55	10	18	
27	10	06	10	28	
29	10	20	10	39	
31	10	30	10	50	
2					
4					
6					
8					
10					
12					
14					
16			12	09	
18			12	19	
20	12	11	12	29	
22	12	21	12	39	
24	12	31	12	49	
26	12	41	1	—	
28	12	51	1	11	
30	1	02	1	25	
1					
2					

REMARKS: 23 / 21 / 16 / 10 / 22 / 24

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	5	5		6-7	5	5	
1-2	6	6		7-8	6	5	
2-3	5	5		8-9	4	4	
3-4	5	5		9-10	6	6	
4-5	4	5		10-11	5	5	
5-6	5	5		11-12	5	5	
	30	31			31	30	

Total Ovens Pushed 61

Total Ovens Charged 61

Pusherman

Battery Foreman

CC-10295 REV. 1181
03.001.0020

UNITED STATES STEEL CORPORATION
CLAIRTON COKE AND COAL CHEMICAL WORKS

PUSHING AND CHARGING REPORT

UNIT NO. 3

12 Hrs. Beginning 12:00 P.M.

Date 05-11-94

BATTERY NO. A-9

OVEN NO.	TIME PUSHED	TIME CHARGED	NOTES
1	7 26	7 34	
3	7 37	7 45	
5	7 48	7 56	
7	7 59	8 08	
9	8 11	8 18	
11	8 22	8 29	
13	8 35	8 42	
15	8 45	8 52	
17	8 56	9 03	
19	9 10	9 18	
21	9 22	9 30	
23	9 34	9 41	
25	9 45	9 52	
27	9 55	9 59	
29	10 02	10 06	
31	10 08	10 14	
2			
4			
6			
8			
10			
12		12 05	
14		12 16	
16	12 07	12 29	
18	12 18	12 37	
20	12 29	12 49	
22	12 39	12 58	
24	12 49	1 08	
26	1 00	1 18	
28	1 10	1 28	
30	1 20	1 39	
1			
2			

REMARKS: 24/26

BATTERY NO. B-9

OVEN NO.	TIME PUSHED	TIME CHARGED	NOTES
1	1 37	1 57	
3	1 48	2 07	
5	1 59	2 18	
7	2 09	2 28	
9	2 20	2 37	
11	2 30	2 49	
13	2 41	2 59	
15	2 51	3 09	
17	3 02	3 19	
19	3 12	3 28	
21	3 21	3 38	
23	3 31	3 48	
25	4 08	4 17	
27	4 20	4 27	
29	4 30	4 38	
31	4 42	4 49	
2	10 40	10 47	
4	10 50	10 57	
6	11 02	11 10	
8	11 13	11 21	
10	11 25	11 32	
12			
14			
16			
18			
20			
22			
24			
26			
28			
30			
1			
2	4 52	4 59	

22/22

BATTERY NO. A-8

OVEN NO.	TIME PUSHED	TIME CHARGED	NOTES
1			
3			
5			
7			
9			
11			
13			
15			
17			
19			
21			
23			
25			
27			
29			
31			
2	4 57	5 03	
4	5 06	5 13	
6	5 16	5 24	
8	5 27	5 34	
10	5 37	5 45	
12	5 47	5 53	
14	5 56	5 59	
16	6 05	6 10	
18	6 15	6 21	
20	6 25	6 32	
22	6 35	6 42	
24	6 45	6 53	
26	6 55	7 02	
28	7 05	7 13	
30	7 16	7 23	
1			
3			

15/15

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	5	6		6-7	6	5	
1-2	6	5		7-8	6	6	
2-3	5	6		8-9	5	5	
3-4	4	5		9-10	5	6	
4-5	6	5		10-11	4	4	
5-6	6	7		11-12	3	3	
	32	34			29	29	

Total Ovens Pushed

Total Ovens Charged

Pusherman

Battery Foreman

CC-102.15 REV. 1161
03.001.0020

UNITED STATES STEEL CORPORATION
CLAIRTON COKE AND COAL CHEMICAL WORKS

PUSHING AND CHARGING REPORT

UNIT NO. 3
12 Hrs. Beginning 12:00 AM
Date 5-12-94

BATTERY NO. AS-9

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1					
3					
5					
7					
9					
11					
13					
15					
17					
19					
21					
23					
25					
27					
29					
31					
2	5	22	5	38	
4	5	35	5	49	
6	5	40	5	59	
8	5	51	6	10	
10	6	01	6	20	
12	6	12	6	28	
14	6	23	6	35	
16	6	32	6	46	
18	6	43	6	57	
20	6	54	7	09	
22	7	06	7	21	
24	7	18	7	33	
26	7	30	7	39	
28	7	42	7	45	PB
30	8	16	8	25	
1					
2					

BATTERY NO. BS-9

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1	8	33	8	45	
3	8	48	8	55	
5	8	59	9	15	
7	9	10	9	30	
9	9	21	9	40	
11	9	33	9	53	
13	9	51	10	05	
15	9	56	10	17	
17	10	03	10	28	
19	10	19	10	42	
21	10	30	10	52	
23	10	44	11	05	
25	10	54	11	15	
27	11	10	11	22	
29	11	20	11	32	
31	11	30	11	39	
2					
4					
6					
8					
10					
12	12	10	12	19	
14	12	15	12	25	
16	12	21	12	31	
18	12	27	12	37	
20	12	33	12	52	
22	12	39	1	02	
24	1	20	1	28	
26	1	25	1	36	
28	1	31	1	44	
30	1	47	1	54	
C1	2	27	2	46	
C2	11	41	11	45	

BATTERY NO. AS-8

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1	2	37	2	56	
3	2	48	3	06	
5	2	58	3	16	
7	3	08	3	26	
9	3	18	3	36	
11	3	28	3	48	
13	3	38	3	59	
15	3	50	4	11	
17	4	01	4	21	
19	4	13	4	31	
21	4	23	4	41	
23	4	33	4	52	
25	4	43	4	57	
27	4	54	5	07	
29	4	59	5	20	
31	5	09	5	33	
2	11	47	11	56	
4	11	58			
6					
8					
10					
12					
14					
16					
18					
20					
22					
24					
26					
28					
30					
1					
2					

REMARKS: 15/15 28/28 18/17
Need = New Chair

Condition of Signals OK

Condition of Pusher OK

HOURLY REPORT OF OPERATION

TIME	OVENS PUSHED	OVENS CHARGED	OVENS SCHEDULED	TIME	OVENS PUSHED	OVENS CHARGED	OVENS SCHEDULED
12-1	6	5		6-7	6	6	
1-2	4	5		7-8	4	5	
2-3	4	2		8-9	4	3	
3-4	5	5		9-10	5	4	
4-5	7	6		10-11	5	5	
5-6	5	6		11-12	6	7	
	31	30			30	30	

Total Ovens Pushed 61
Total Ovens Charged 60

Pusherman 20481
Battery Foreman

SC-10255 Rev. 1161
93.001.0020

UNITED STATES STEEL CORPORATION
CLAIRTON COKE AND COAL CHEMICAL WORKS

PUSHING AND CHARGING REPORT

UNIT NO. 3

12 hrs. Beginning 12:00 N Night

Date 5-12-44

BATTERY NO. 9 A

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1	2	43	2	52	
3	2	54	3	05	
5	3	07	3	15	
7	3	17	3	25	
9	3	27	3	35	
11	3	37	3	45	
13	3	47	3	50	
15	4	05	4	12	
17	4	17	4	24	
19	4	27	4	35	
21	4	40	4	48	
23	4	51	4	59	
25	5	03	5	11	
27	5	09	5	18	
29	5	27	5	34	
31	5	38	5	45	
2					
4					
6					
8					
10					
12					
14					
16					
18					
20					
22					
24					
26					
28					
30					
1					
2					

REMARKS: 16/16

BATTERY NO. 9 B

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1					
3					
5					
7					
9					
11					
13					
15					
17					
19					
21					
23					
25					
27					
29					
31					
2	5	53	5	59	
4	6	04	6	12	
6	6	18	6	24	
8	6	28	6	36	
10	6	38	6	45	
12	6	48	6	54	
14	6	58	7	05	
16	7	07	7	14	
18	7	17	7	24	
20	7	27	7	33	
22	7	37	7	43	
24	7	48	7	54	
26	7	59	8	05	
28	8	09	8	16	
30	8	20	8	24	
1	8	27	8	32	
2					

16/16

BATTERY NO. 8 A

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1	8	40	8	46	
3	8	51	8	58	
5	9	02	9	08	
7	9	12	9	15	
9	9	17	9	24	
11	9	27	9	34	
13	9	37	9	44	
15	9	50	9	56	
17	10	00	10	12	
19	10	10	10	27	
21	10	20	10	37	
23	10	30	10	47	
25	10	40	11	06	
27	10	50	11	17	
29	11	10			
31	11	20			
2					
4			12	09	
6	12	11	12	21	
8	12	23	12	33	
10	12	35	12	45	
12	12	47	12	57	
14	12	59	1	10	
16	1	12	1	21	
18	1	23	1	33	
20	1	35	1	46	
22	1	46	1	55	
24	1	57	2	11	
26	2	09	2	18	
28	2	20	2	28	
30	2	30	2	41	
1					
2					

29/28

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	5	5		6-7	6	5	
1-2	5	5		7-8	6	6	
2-3	5	5		8-9	5	6	
3-4	5	6		9-10	6	6	
4-5	5	5		10-11	6	4	
5-6	5	5		11-12	2	2	
	30	31			31	29	

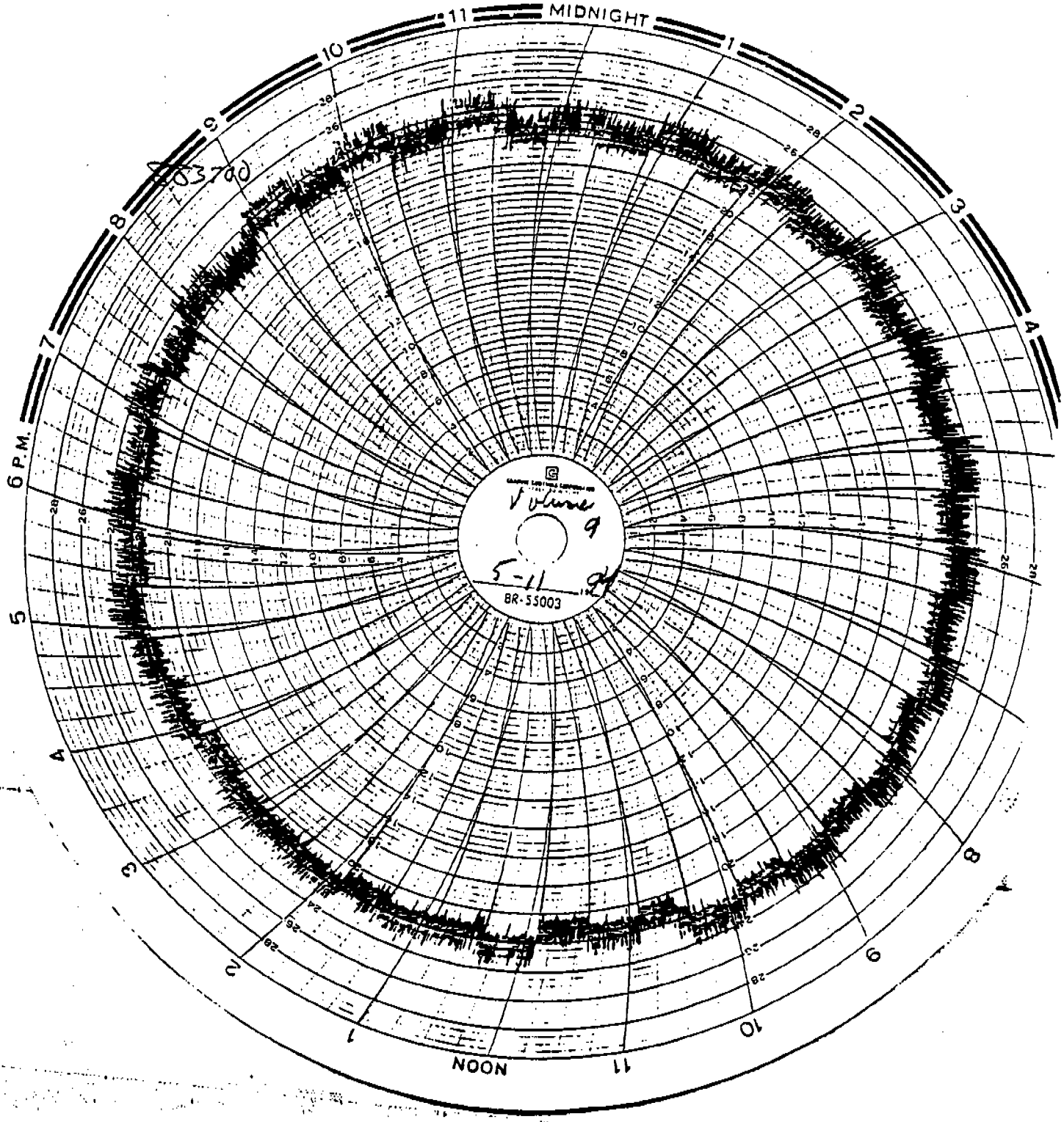
Total Ovens Pushed 61

Total Ovens Charged 60

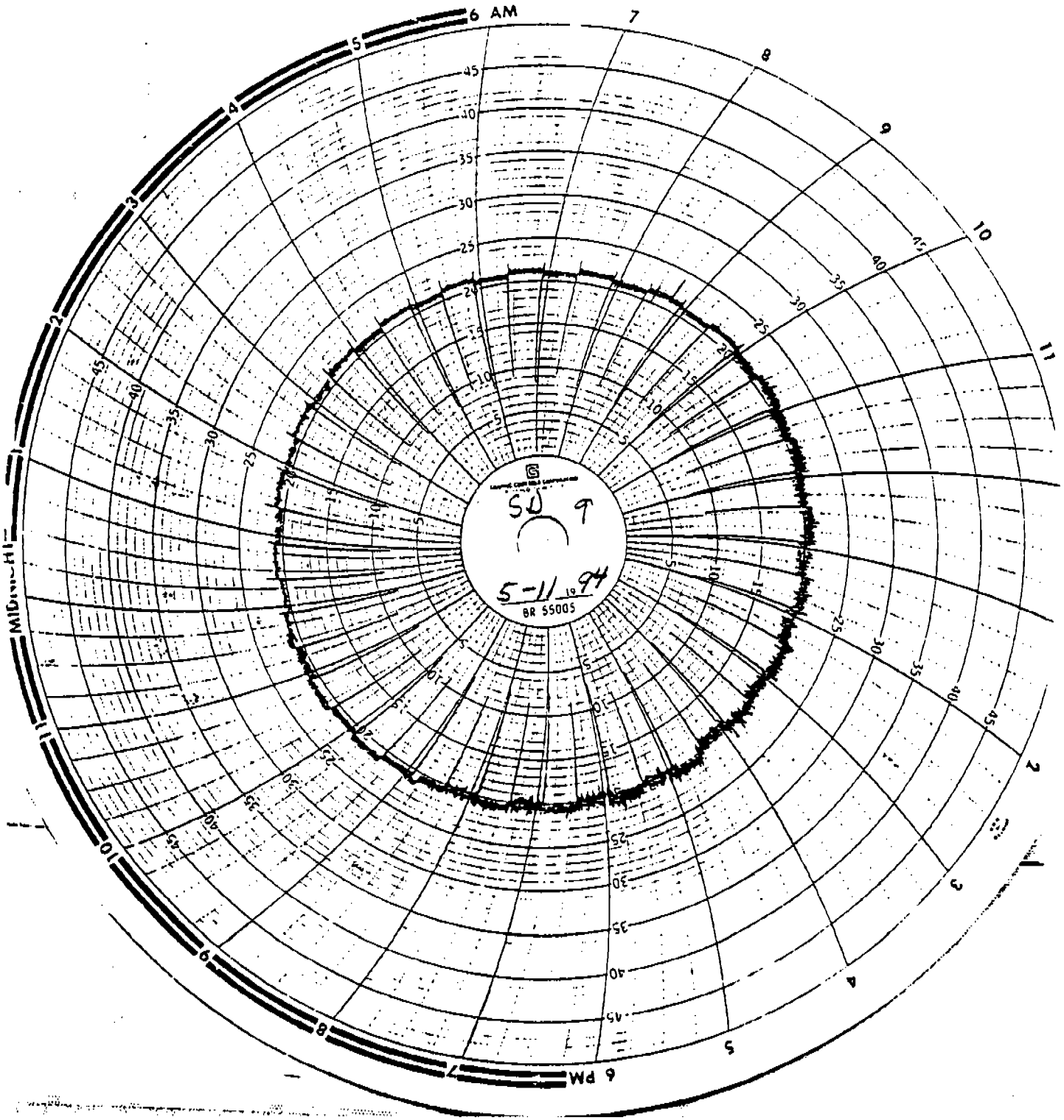
Pusherman

Battery Foreman

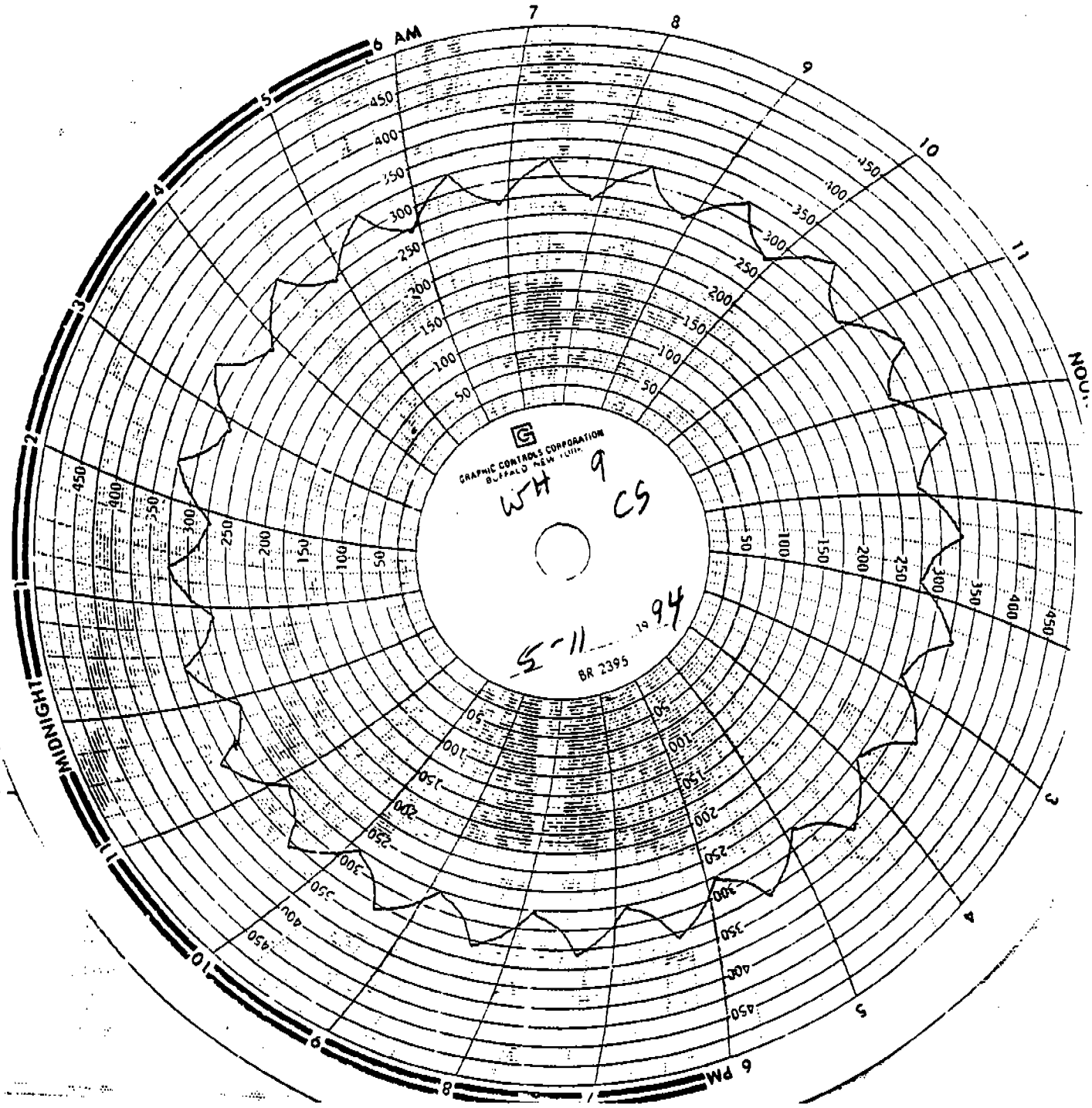
MIDNIGHT
6 AM
NOON
6 PM
GRAPHIC CONTROLS CORPORATION
BR 727
1994
5-11


MIDNIGHT
NOON
6 P.M.
Volume 9
5-11
BR-55003

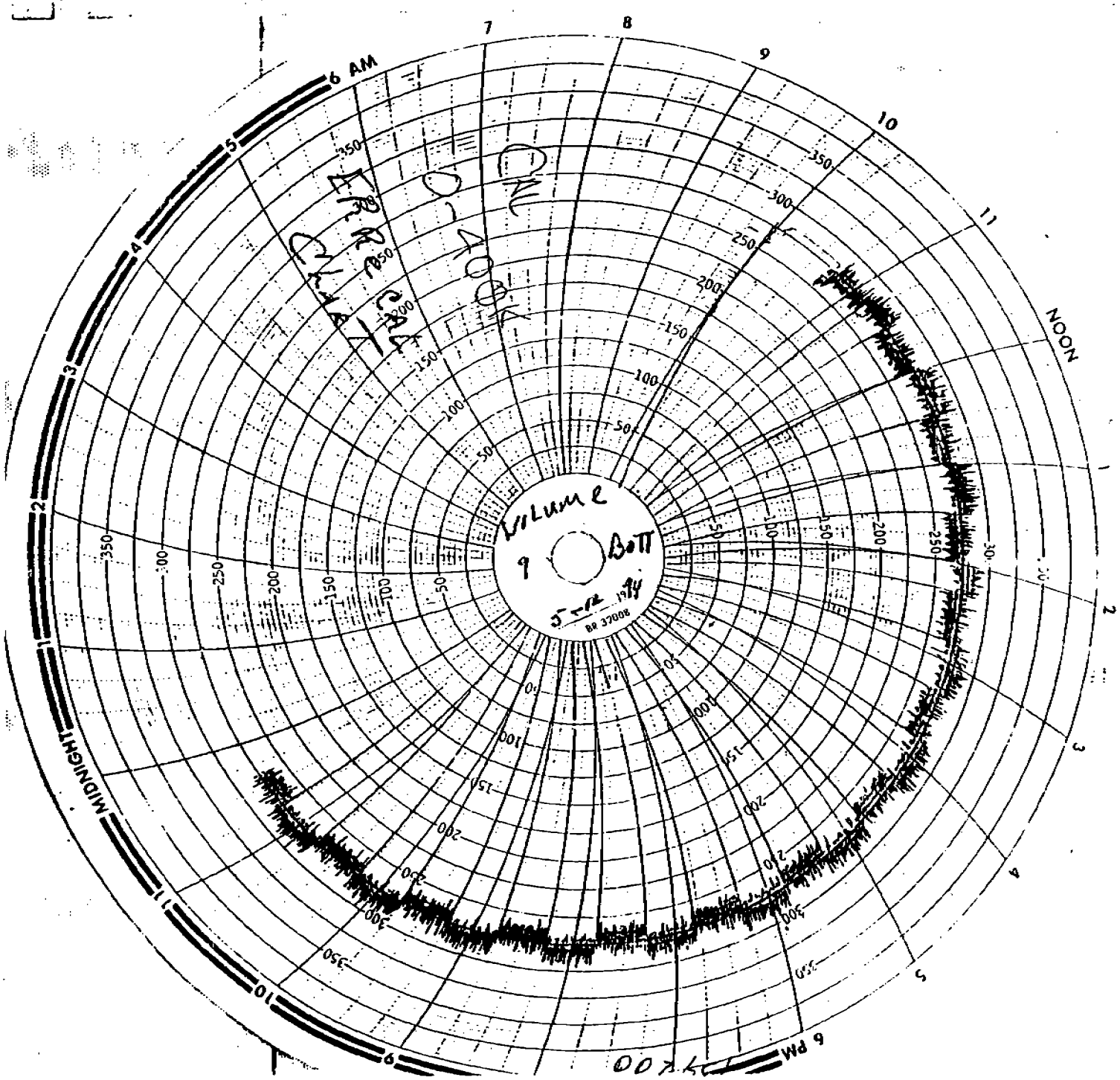
MIDNIGHT
NOON
6 AM
6 PM
S-11 9K
BP trend

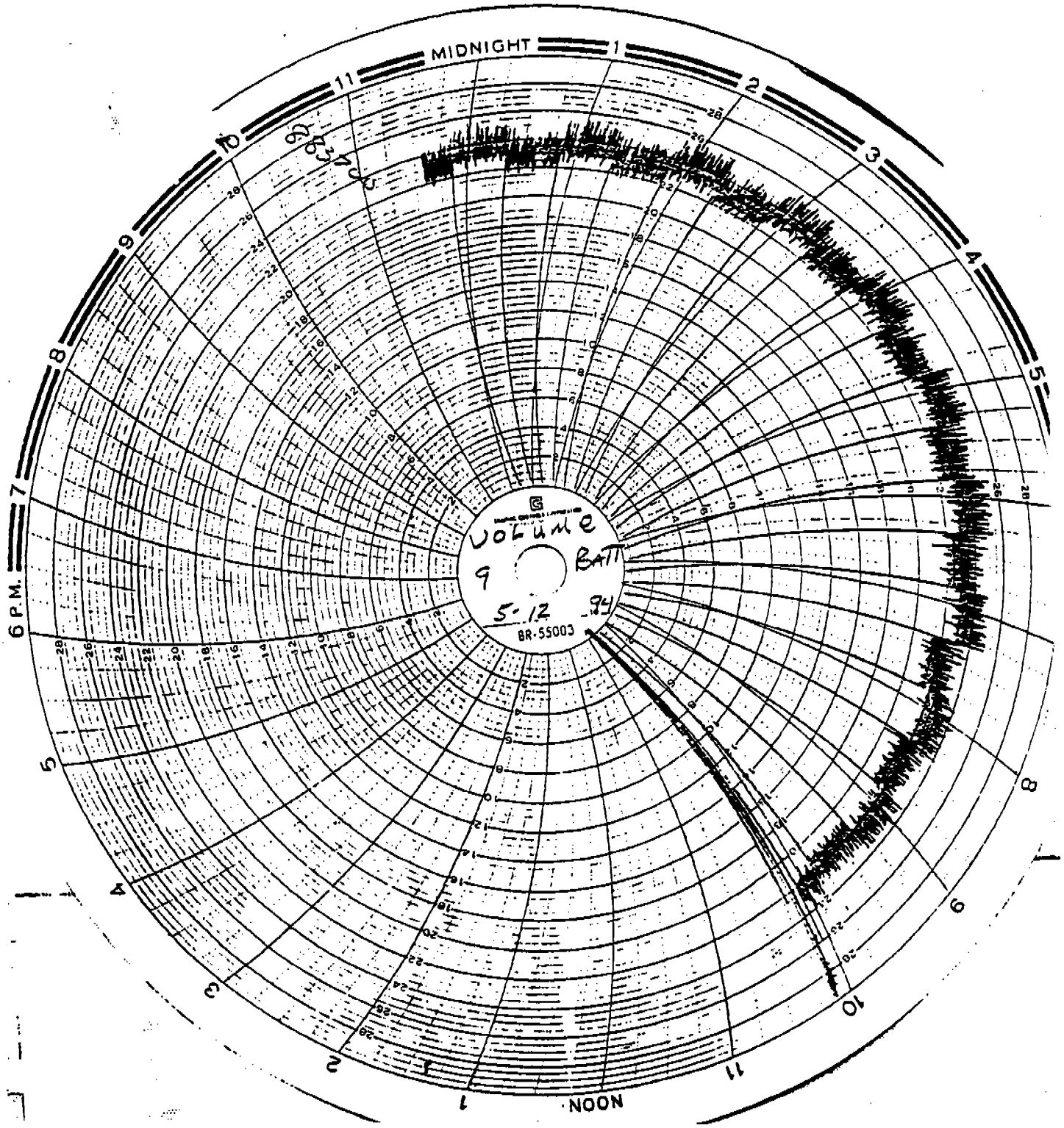

6 AM
6 PM
SD 9
5-11 1994
BR 55005

6 AM
MIDNIGHT
6 PM
NOON
7
8
9
10
11
5
4
3
2
1
12
1
2
3
4
5
6
7
8
9
10
11
50
100
150
200
250
300
350
400
450


GRAPHIC CONTROLS CORPORATION
BUFFALO NEW YORK
WH 9
CS
5-11 1994
BR 2395
MIDNIGHT
6 AM
6 PM
NOON

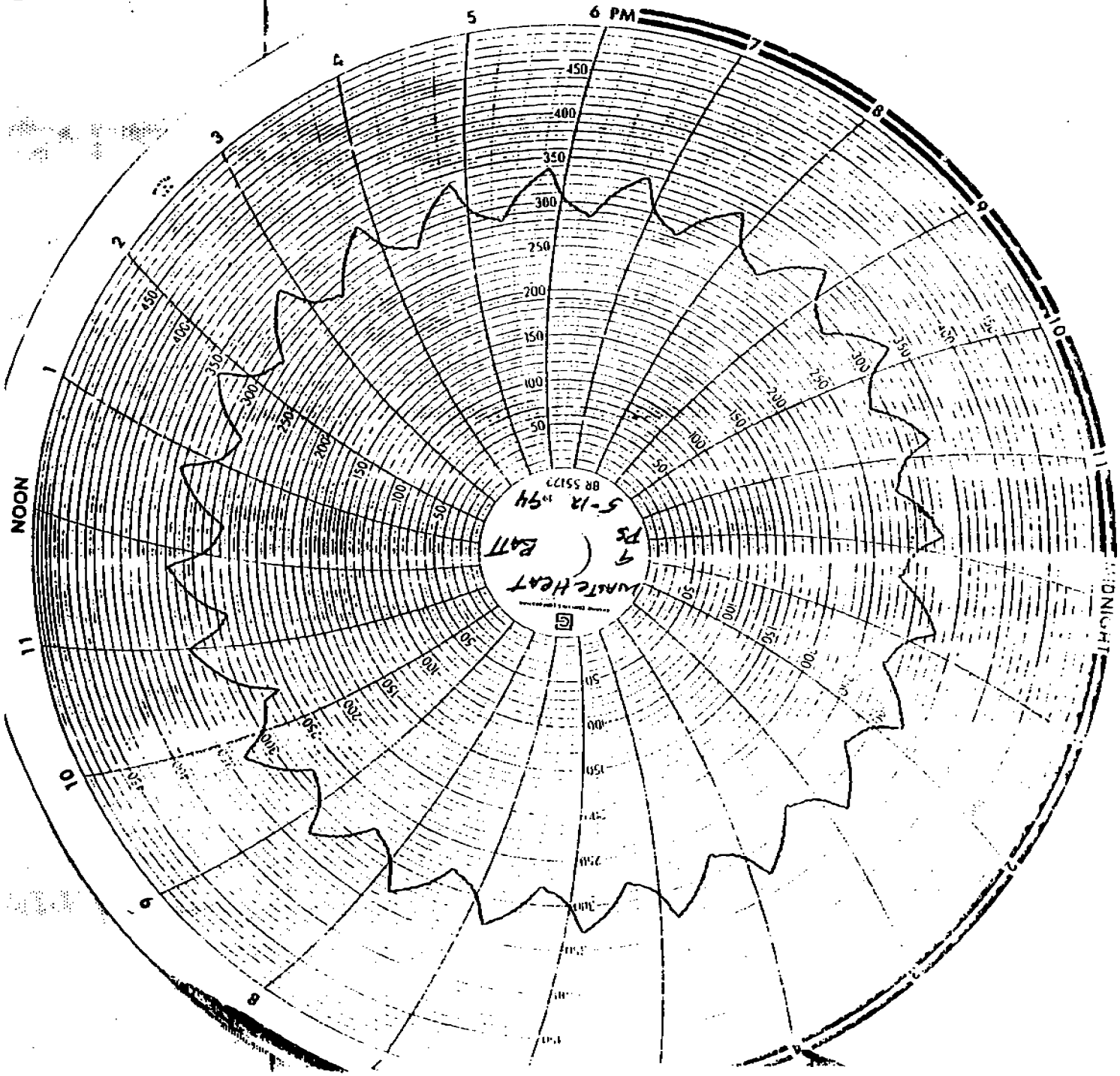
Pad Pressure
Bar
q
BR 727
NOON
MIDNIGHT
6 PM
6 AM

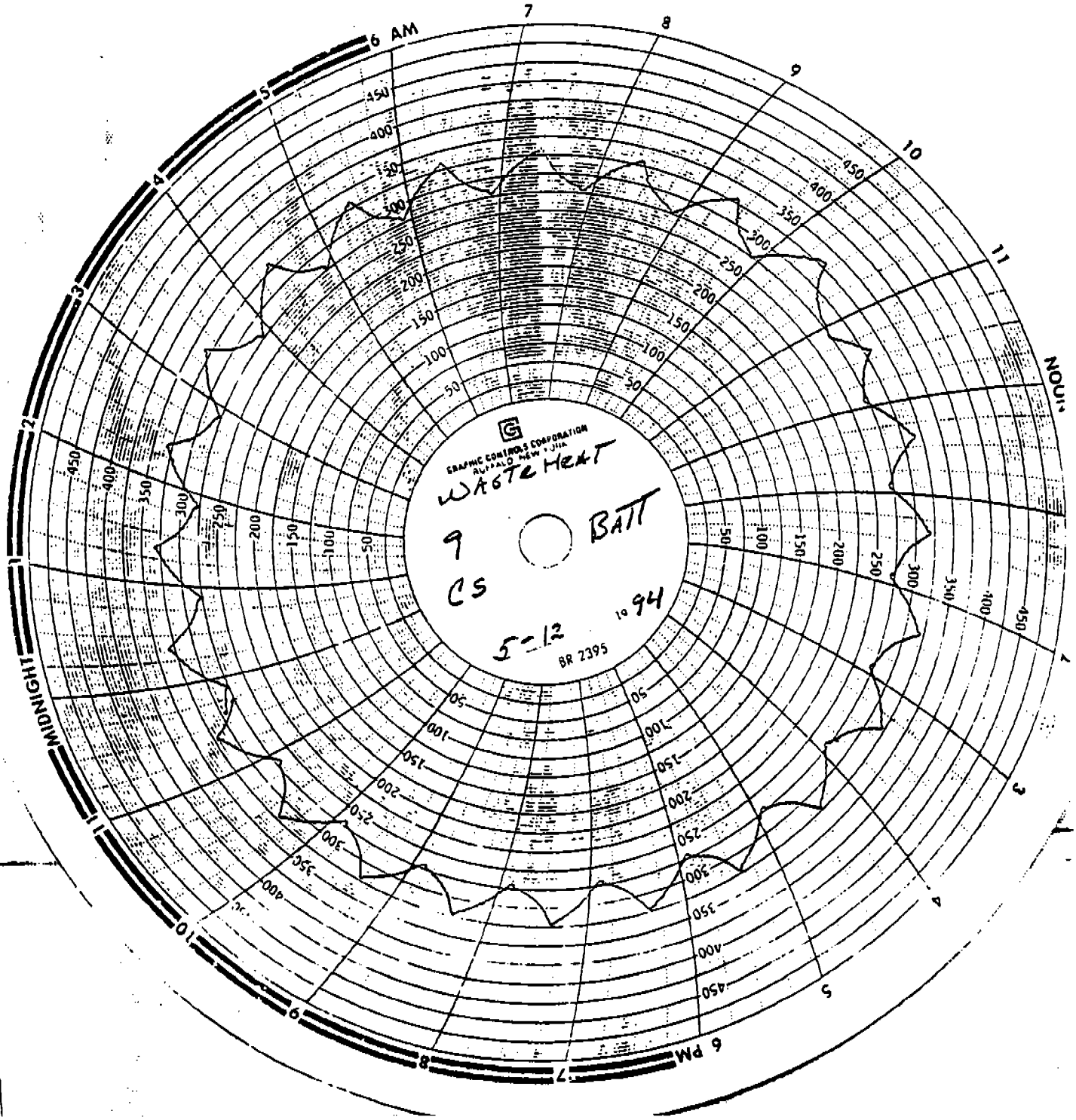

6 AM
7
8
9
10
11
NOON
1
2
3
4
5
6 PM
MIDNIGHT
Volume
9
Bott
BP 37008


MIDNIGHT
NOON
6 P.M.
Volume
9
BATT
5-12
94
BR-55003

MIDNIGHT
6 PM
6 AM
NOON
GAS PRESSURE
BATT
5-12-94

6 PM
7
8
9
10
11
MIDNIGHT
1
2
3
4
5
6 AM
7
8
9
10
11
NOON
STACK DATA
BATT
9
5-12 1994
BA 55005


MIDNIGHT
1
2
3
4
5
6 PM
7
8
9
10
11
NOON
450
400
350
300
250
200
150
100
50
Waste Heat
Q
PS
BTU
5-12 PM
BR 55123


GRAPHIC CONTROLS CORPORATION
BUFFALO NEW YORK
WASTE HEAT
9
BATT
CS
5-12
1994
BR 2395
6 AM
7
8
9
10
11
NOON
1
2
3
4
5
6 PM
7
8
9
10
MIDNIGHT
50
100
150
200
250
300
350
400
450

COMPLIANCE DEMONSTRATION
NO. 9 BATTERY COMBUSTION STACK

USS CLAIRTON WORKS
CLAIRTON, PENNSYLVANIA

APPENDIX C

GRAVIMETRIC RESULTS, EMISSIONS CALCULATIONS

CHESTER
ENVIRONMENTAL

STACK SAMPLING CALCULATIONS

CLIENT: USS CLAIRTON WORKS — TEST DATE: 05-11-94

TEST SITE #9 BATTERY COMBUSTION STACK — TEST NUMBER: CLR-BS#9-1

A.	Barometric Pressure	29.45	in. Hg	
B.	Static Pressure	-0.90	in. H2O	
C.	Stack Pressure	29.38	in. Hg	[A+(B/13.6)]
D.	Average ΔH	1.66	in. H2O	
E.	Meter Pressure	29.57	in. Hg	[A+(D/13.6)]
F.	Average ΔP	0.06	in. H2O	
G.	Pitot Coefficient	0.84		
H.	Gas Meter Coefficient	1.0128		
I.	Stack Diameter	114	in.	
J.	Stack Area	70.88	ft^2	$(0.00545*I^2)$
K.	Nozzle Diameter	0.490	in.	
L.	Nozzle Area	1.31E-03	ft^2	$(0.00545*K^2)$
M.	Average Stack Temperature	533	°F	
N.	Average Stack Temperature	993	°R	(460+M)
O.	Average Meter Temperature	93	°F	
P.	Average Meter Temperature	553	°R	(460+O)
Q.	Condensate Volume	237.0	mL	
R.	Absorbed H2O	21.5	mL	
S.	Total H2O	258.5	mL	(Q+R)
T.	Filter Weight	0.0403	g	
U.	Probe Weight	0.0325	g	
V.	Impinger Weight		g	
W.	Total Weight	0.0728	g	(T+U+V)
X.	Metered Gas Volume	82.522	dcf	
Y.	Corrected Metered Gas Volume	83.578	dcf	(X*H)
Z.	H2O Gas Volume	12.960	cf	(0.00267*S*P/A)
AA.	Total Sample Volume	96.538	cf	(Y+Z)
BB.	Percent H2O	13.4	%	(100*Z/AA)
CC.	Gas Volume Sampled	78.872	dscf	[Y*(528/P)*(E/29.92)]
DD.	Grain Loading	0.0142	gr/dscf	(15.43*W/CC)

EE. Average Molecular Weight:

Component	% Volume ÷ 100	*(1-BB/100)	* Mol. Weight	= Weight/Mol
H2O	0.134	[illegible]	18	2.416
CO2	0.040	0.866	44	1.524
CO	0.000	0.866	28	0.000
O2	0.125	0.866	32	3.463
N2	0.835	0.866	28	20.241

Average Molecular Weight 27.64 lb./lb. mol

FF.	Average Stack Velocity	19.4	fps	{85.49*G*[(F*N)/(C*EE)]^0.5}
GG.	Averge Flow Rate	82700	acfm	(60*FF*J)
HH.	Standard Flow Rate	43200	scfm	[GG*(528/N)*(C/29.92)]
II.	Sample Time	7200	sec	
JJ.	Percent Isokinetic	95.1	%	{[100*CC*60*J]/[HH*L*II*(1-BB/100)]}
KK.	Mass Flow Rate	4.57	lb/hr	[DD*HH*(1-BB/100)*60/7000]

STACK SAMPLING CALCULATIONS

TEST DATE: 05-11-94
TEST NUMBER: CLR-BS#9-2

CLIENT: USS CLAIRTON WORKS
TEST SITE #9 BATTERY COMBUSTION STACK

A.	Barometric Pressure	29.45	in. Hg	
B.	Static Pressure	-0.90	in. H2O	
C.	Stack Pressure	29.38	in. Hg	[A+(B/13.6)]
D.	Average ΔH	1.79	in. H2O	
E.	Meter Pressure	29.58	in. Hg	[A+(D/13.6)]
F.	Average ΔP	0.06	in. H2O	
G.	Pitot Coefficient	0.84		
H.	Gas Meter Coefficient	1.0128		
I.	Stack Diameter	114	in.	
J.	Stack Area	70.88	ft²	(0.00545*I²)
K.	Nozzle Diameter	0.490	in.	
L.	Nozzle Area	1.31E-03	ft²	(0.00545*K²)
M.	Average Stack Temperature	537	°F	
N.	Average Stack Temperature	997	°R	(460+M)
O.	Average Meter Temperature	101	°F	
P.	Average Meter Temperature	561	°R	(460+O)
Q.	Condensate Volume	232.6	mL	
R.	Absorbed H2O	37.7	mL	
S.	Total H2O	270.3	mL	(Q+R)
T.	Filter Weight	0.0350	g	
U.	Probe Weight	0.0477	g	
V.	Impinger Weight		g	
W.	Total Weight	0.0827	g	(T+U+V)
X.	Metered Gas Volume	86.461	dcf	
Y.	Corrected Metered Gas Volume	87.568	dcf	(X*H)
Z.	H2O Gas Volume	13.748	cf	(0.00267*S*P/A)
AA.	Total Sample Volume	101.316	cf	(Y+Z)
BB.	Percent H2O	13.6	%	(100*Z/AA)
CC.	Gas Volume Sampled	81.485	dscf	[Y*(528/P)*(E/29.92)]
DD.	Grain Loading	0.0157	gr/dscf	(15.43*W/CC)

EE. Average Molecular Weight:

Component	% Volume ÷100	*(1-BB/100)	* Mol. Weight	= Weight/Mol
H2O	0.136	[illegible]	18	2.442
CO2	0.040	0.864	44	1.521
CO	0.000	0.864	28	0.000
O2	0.125	0.864	32	3.457
N2	0.835	0.864	28	20.207

Average Molecular Weight 27.63 lb./lb. mol

FF.	Average Stack Velocity	19.5	fps	{85.49*G*[(F+N)/(C*EE)]^0.5}
GG.	Averge Flow Rate	82900	acfm	(60*FF*J)
HH.	Standard Flow Rate	43100	scfm	[GG*(528/N)*(C/29.92)]
II.	Sample Time	7200	sec	
JJ.	Percent Isokinetic	98.7	%	{[100*CC*60*J]/[HH*L*II*(1-BB/100)]}
KK.	Mass Flow Rate	5.00	lb/hr	[DD*HH*(1-BB/100)*60/7000]

STACK SAMPLING CALCULATIONS

CLIENT: USS CLAIRTON WORKS
TEST SITE #9 BATTERY COMBUSTION STACK

TEST DATE: 05-12-94
TEST NUMBER: CLR-BS#9-3

A.	Barometric Pressure	29.38	in. Hg	
B.	Static Pressure	-0.90	in. H2O	
C.	Stack Pressure	29.31	in. Hg	[A+(B/13.6)]
D.	Average ΔH	1.57	in. H2O	
E.	Meter Pressure	29.50	in. Hg	[A+(D/13.6)]
F.	Average ΔP	0.05	in. H2O	
G.	Pitot Coefficient	0.84		
H.	Gas Meter Coefficient	1.0128		
I.	Stack Diameter	114	in.	
J.	Stack Area	70.88	ft^2	$(0.00545*I^2)$
K.	Nozzle Diameter	0.490	in.	
L.	Nozzle Area	1.31E-03	ft^2	$(0.00545*K^2)$
M.	Average Stack Temperature	540	°F	
N.	Average Stack Temperature	1000	°R	(460+M)
O.	Average Meter Temperature	76	°F	
P.	Average Meter Temperature	536	°R	(460+O)
Q.	Condensate Volume	241.3	mL	
R.	Absorbed H2O	20.3	mL	
S.	Total H2O	261.6	mL	(Q+R)
T.	Filter Weight	0.0349	g	
U.	Probe Weight	0.0467	g	
V.	Impinger Weight		g	
W.	Total Weight	0.0816	g	(T+U+V)
X.	Metered Gas Volume	81.408	dcf	
Y.	Corrected Metered Gas Volume	82.450	dcf	(X*H)
Z.	H2O Gas Volume	12.743	cf	(0.00267*S*P/A)
AA.	Total Sample Volume	95.193	cf	(Y+Z)
BB.	Percent H2O	13.4	%	(100*Z/AA)
CC.	Gas Volume Sampled	80.067	dscf	[Y*(528/P)*(E/29.92)]
DD.	Grain Loading	0.0157	gr/dscf	(15.43*W/CC)

EE. Average Molecular Weight:

Component	% Volume ÷100	*(1-BB/100)	* Mol. Weight	= Weight/Mol
H2O	0.134	[illegible]	18	2.410
CO2	0.045	0.866	44	1.715
CO	0.000	0.866	28	0.000
O2	0.120	0.866	32	3.326
N2	0.835	0.866	28	20.250

Average Molecular Weight 27.70 lb./lb. mol

FF.	Average Stack Velocity	17.8	fps	{85.49*G*[(F*N)/(C*EE)]^0.5}
GG.	Averge Flow Rate	75800	acfm	(60*FF*J)
HH.	Standard Flow Rate	39200	scfm	[GG*(528/N)*(C/29.92)]
II.	Sample Time	7200	sec	
JJ.	Percent Isokinetic	106.4	%	{[100*CC*60*J]/[HH*L*II*(1-BB/100)]}
KK.	Mass Flow Rate	4.58	lb/hr	[DD*HH*(1-BB/100)*60/7000]