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1992

**USS CLAIRTON WORKS  
COMPLIANCE DEMONSTRATION  
#1 BATTERY COMBUSTION STACK**

**Prepared for:**

**USS CLAIRTON WORKS  
A DIVISION OF USX CORPORATION  
CLAIRTON, PA**

**Prepared by:**

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

**PROJECT NUMBER: 605016-01**

**FEBRUARY 1992**

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## **ABSTRACT**

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

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

## **1.0 INTRODUCTION**

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

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

## 2.0 METHODOLOGIES

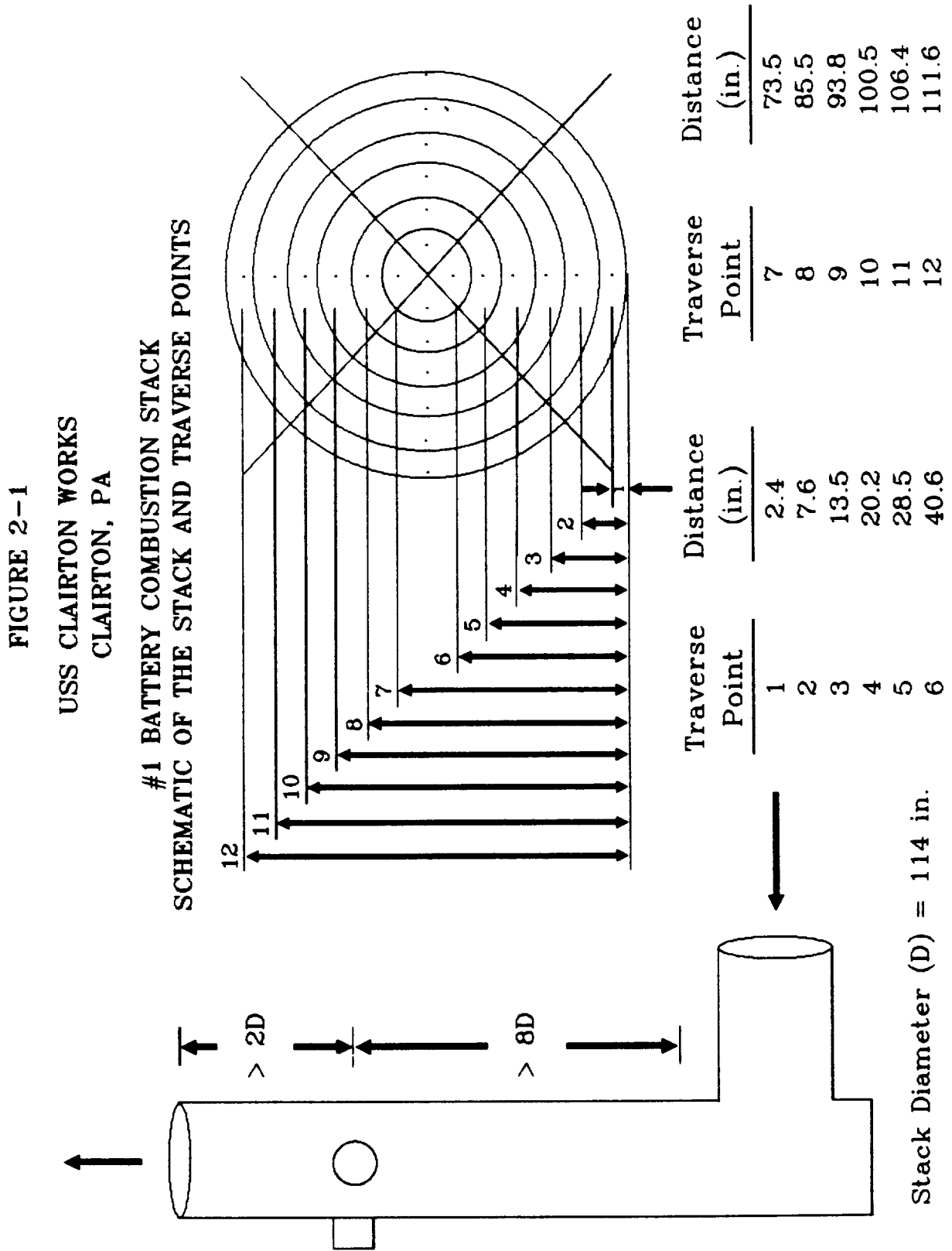
Particulate matter sampling was performed in accordance with EPA Stationary Source Sampling Methods 1 through 5. A total of four test runs were performed, three while ovens were being pushed and charged (push periods) and one while no ovens were pushed or charged (non-push periods). Prior to this test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

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

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

During each test, gas concentrations of CO<sub>2</sub>, O<sub>2</sub>, and N<sub>2</sub> (by difference) were measured with a Fyrite apparatus as specified by EPA Method 3. The gas concentrations were later used to calculate molecular weight of the gas on a dry basis.

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



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

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

### **3.0 RESULTS**

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

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

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

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



**TABLE 3-1**

**USS CLAIRTON WORKS**  
**CLAIRTON, PA**

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

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

TABLE 3-2

USS CLAIRTON WORKS  
CLAIRTON, PA

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

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

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

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

**COMPLIANCE DEMONSTRATION  
#1 BATTERY COMBUSTION STACK**

**USS CLAIRTON WORKS  
CLAIRTON, PA**

**APPENDIX A**

**OPERATIONAL DATA**

# Allegheny County Health Department

## COUNTY COMMISSIONERS

TOM FOERSTER  
chairman

PETE FLAHERTY

LAWRENCE W. DUNN

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



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

October 28, 1991

## BOARD OF HEALTH

ROY L. TITCHWORTH, M.D.  
chairman  
MARTIN KRAUSS, O.D.  
vice chairman

ROBERT ENGEL, ESQ.  
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Megr. CHARLES OWEN RICE  
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KATHERINE L. WISNER, M.D., M.S.

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

Dear Mr. Shimshock:

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

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

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

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

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

Sincerely yours,

*Harilal L. Patel*  
Harilal L. Patel  
Air Pollution Control

HLP:cag

UNITED STATES STEEL CORPORATION  
CLAIRTON COKE AND COAL CHEMICAL WORKS

PUSHING AND CHARGING REPORT

UNIT NO. 1

12 Hrs. Beginning 12:00 AM

Date 11-26-91

| BATTERY NO. <u>A-4</u> |             |              |       | BATTERY NO. <u>B-1</u> |             |              |       | BATTERY NO. <u>A-2</u> |             |              |       |
|------------------------|-------------|--------------|-------|------------------------|-------------|--------------|-------|------------------------|-------------|--------------|-------|
| OVEN NO.               | TIME PUSHED | TIME CHARGED | NOTES | OVEN NO.               | TIME PUSHED | TIME CHARGED | NOTES | OVEN NO.               | TIME PUSHED | TIME CHARGED | NOTES |
| 1                      | 2 42        | 2 58         |       | 1                      |             |              |       | 1                      | 9 49        | 10 30        |       |
| 3                      | 2 52        | 3 09         |       | 3                      |             |              |       | 3                      | 9 59        | 10 31        |       |
| 5                      | 3 04        | 3 20         |       | 5                      |             |              |       | 5                      | 10 10       | 10 41        |       |
| 7                      | 3 14        | 3 32         |       | 7                      |             |              |       | 7                      | 10 22       | 10 52        |       |
| 9                      | 3 24        | 3 44         |       | 9                      |             |              |       | 9                      | 10 33       | 11 04        |       |
| 11                     | 3 36        | 4 29         |       | 11                     |             |              |       | 11                     | 10 43       | 11 17        |       |
| 13                     | 3 48        | 4 34         |       | 13                     |             |              |       | 13                     | 10 54       | 11 33        | HO-RO |
| 15                     | 3 58        | 4 40         |       | 15                     |             |              |       | 15                     | 11 06       | 11 43        |       |
| 17                     | 4 30        | 4 50         |       | 17                     |             |              |       | 17                     | 11 19       | 11 53        |       |
| 19                     | 4 46        | 5 -          |       | 19                     |             |              |       | 19                     | 11 35       |              |       |
| 21                     | 4 54        | 5 10         |       | 21                     |             |              |       | 21                     | 11 45       |              |       |
| 23                     | 5 04        | 5 20         |       | 23                     |             |              |       | 23                     | 11 55       |              |       |
| 25                     | 5 14        | 5 32         |       | 25                     |             |              |       | 25                     |             |              |       |
| 27                     | 5 28        | 5 46         |       | 27                     |             |              |       | 27                     |             |              |       |
| 29                     | 5 56        | 6 12         |       | 29                     |             | 4 30         |       | 29                     |             |              |       |
| 31                     | 6 08        | 6 24         |       | 31                     |             |              |       | 31                     |             |              |       |
| 2                      |             |              |       | 2                      | 6 20        | 6 36         |       | 2                      |             |              |       |
| 4                      |             |              |       | 4                      | 6 32        | 6 48         |       | 4                      |             | 12 08        |       |
| 6                      |             |              |       | 6                      | 6 44        | 6 58         |       | 6                      |             | 12 14        |       |
| 8                      |             |              |       | 8                      | 6 54        | 7 06         |       | 8                      |             | 12 22        |       |
| 10                     |             |              |       | 10                     | 7 04        | 7 20         |       | 10                     | 12 16       | 12 32        |       |
| 12                     |             |              |       | 12                     | 7 16        | 7 34         |       | 12                     | 12 28       | 12 44        |       |
| 14                     |             |              |       | 14                     | 7 26        | 8 08         |       | 14                     | 12 40       | 12 56        |       |
| 16                     |             |              |       | 16                     | 7 38        | 8 19         |       | 16                     | 12 54       | 1 10         |       |
| 18                     |             |              |       | 18                     | 7 50        | 8 33         |       | 18                     | 1 08        | 1 24         |       |
| 20                     |             |              |       | 20                     | 8 10        | 8 46         |       | 20                     | 1 20        | 1 36         |       |
| 22                     |             |              |       | 22                     | 8 21        | 8 58         |       | 22                     | 1 32        | 1 48         |       |
| 24                     |             |              |       | 24                     | 8 35        | 9 21         |       | 24                     | 1 42        | 1 58         |       |
| 26                     |             |              |       | 26                     | 8 48        | 9 35         |       | 26                     | 1 54        | 2 10         |       |
| 28                     |             |              |       | 28                     | 9 -         | 9 47         |       | 28                     | 2 06        | 2 24         |       |
| 30                     |             |              |       | 30                     | 9 23        | 9 57         |       | 30                     | 2 16        | 2 32         |       |
| 1                      |             |              |       | 1                      |             |              |       | B1                     | 9 37        | 10 08        |       |
| 2                      |             |              |       | 2                      |             |              |       | 2                      |             |              |       |

REMARKS:

Condition of Signals

Condition of Pusher

HOURLY REPORT OF OPERATION

| TIME | OVENS PUSHED | OVENS CHARGED | OVENS SCHEDULED | TIME  | OVENS PUSHED | OVENS CHARGED | OVENS SCHEDULED |
|------|--------------|---------------|-----------------|-------|--------------|---------------|-----------------|
| 12-1 | 4            | 6             |                 | 6-7   | 5            | 5             |                 |
| 1-2  | 5            | 5             |                 | 7-8   | 5            | 3             |                 |
| 2-3  | 5            | 5             |                 | 8-9   | 4            | 5             |                 |
| 3-4  | 6            | 4             |                 | 9-10  | 5            | 4             |                 |
| 4-5  | 3            | 5             |                 | 10-11 | 5            | 5             |                 |
| 5-6  | 4            | 5             |                 | 11-12 | 5            | 5             |                 |
|      | 27           | 30            |                 |       | 29           | 27            |                 |

Total Ovens Pushed 56

Total Ovens Charged 57

Pusherman

Battery Foreman

UNITED STATES STEEL CORPORATION  
CLAIRTON COKE AND COAL CHEMICAL WORKS

## PUSHING AND CHARGING REPORT

UNIT NO. 1

12 Hrs. Beginning 12:00 P.M.

Date 11-26-91

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

REMARKS:

Condition of Signals

Condition of Pusher

## HOURLY REPORT OF OPERATION

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

UNITED STATES STEEL CORPORATION  
CLAIRTON COKE AND COAL CHEMICAL WORKS

PUSHING AND CHARGING REPORT

UNIT NO. 1

12 Hrs. Beginning 12:00 P.M.

Date 11-27-91

| BATTERY NO. <u>A-1</u> |             |              |       | BATTERY NO. <u>B-1</u> |             |              |       | BATTERY NO. <u>A-2</u> |             |              |       |
|------------------------|-------------|--------------|-------|------------------------|-------------|--------------|-------|------------------------|-------------|--------------|-------|
| OVEN NO.               | TIME PUSHED | TIME CHARGED | NOTES | OVEN NO.               | TIME PUSHED | TIME CHARGED | NOTES | OVEN NO.               | TIME PUSHED | TIME CHARGED | NOTES |
| 1                      | 9 26        | 10 15        |       | 1                      | 2 23        | 3 07         |       | 1                      |             | 6 00         |       |
| 3                      | 9 52        | 10 26        |       | 3                      | 2 35        | 3 19         |       | 3                      |             |              |       |
| 5                      | 10 02       | 10 38        |       | 5                      | 2 59        | 3 29         |       | 5                      |             |              |       |
| 7                      | 10 17       | 10 50        |       | 7                      | 3 09        | 3 40         |       | 7                      |             |              |       |
| 9                      | 10 28       | 11 00        |       | 9                      | 3 21        | 3 51         |       | 9                      |             |              |       |
| 11                     | 10 40       | 11 13        |       | 11                     | 3 31        | 4 10         |       | 11                     |             |              |       |
| 13                     | 10 52       | 11 23        |       | 13                     | 3 42        | 4 21         |       | 13                     |             |              |       |
| 15                     | 11 02       | 11 33        |       | 15                     | 3 53        | 4 31         |       | 15                     |             |              |       |
| 17                     | 11 15       | 11 44        |       | 17                     | 4 12        | 4 42         |       | 17                     |             |              |       |
| 19                     | 11 25       |              |       | 19                     | 4 23        | 4 53         |       | 19                     |             |              |       |
| 21                     | 11 35       |              |       | 21                     | 4 33        | 5 03         |       | 21                     |             |              |       |
| 23                     | 11 46       |              |       | 23                     | 4 44        | 5 13         |       | 23                     |             |              |       |
| 25                     |             |              |       | 25                     | 4 55        | 5 25         |       | 25                     |             |              |       |
| 27                     |             |              |       | 27                     | 5 05        | 5 39         |       | 27                     |             |              |       |
| 29                     |             |              |       | 29                     | 5 15        | 5 53         |       | 29                     |             |              |       |
| 31                     |             |              |       | 31                     | 5 27        | 6 06         |       | 31                     |             |              |       |
| 2                      |             |              |       | 2                      |             |              |       | 2                      |             |              |       |
| 4                      |             |              |       | 4                      |             |              |       | 4                      | 5 54        | 6 35         |       |
| 6                      |             |              |       | 6                      |             |              |       | 6                      | 6 08        | 6 45         |       |
| 8                      |             |              |       | 8                      |             |              |       | 8                      | 6 27        | 7 10         |       |
| 10                     |             |              |       | 10                     |             |              |       | 10                     | 6 37        | 7 40         |       |
| 12                     |             |              |       | 12                     |             |              |       | 12                     | 6 47        | 7 52         |       |
| 14                     |             | 12 08        |       | 14                     |             |              |       | 14                     | 7 12        | 8 29         |       |
| 16                     |             | 12 53        |       | 16                     |             |              |       | 16                     | 7 42        | 8 41         |       |
| 18                     |             | 1 08         |       | 18                     |             |              |       | 18                     | 7 54        | 8 51         |       |
| 20                     | 12 10       | 1 25         |       | 20                     |             |              |       | 20                     | 8 31        | 9 04         |       |
| 22                     | 12 55       | 1 43         |       | 22                     |             |              |       | 22                     | 8 43        | 9 10         |       |
| 24                     | 1 10        | 2 08         |       | 24                     |             |              |       | 24                     | 8 53        | 9 19         |       |
| 26                     | 1 27        | 2 21         |       | 26                     |             |              |       | 26                     | 9 06        | 9 24         |       |
| 28                     | 1 45        | 2 33         |       | 28                     |             |              |       | 28                     | 9 12        | 9 50         |       |
| 30                     | 2 10        | 2 57         |       | 30                     |             |              |       | 30                     | 9 21        | 10 00        |       |
| 1                      |             |              |       | 1                      |             |              |       | 1                      |             |              |       |
| 2                      |             |              |       | 2                      | 5 41        | 6 25         |       | 2                      |             |              |       |

REMARKS:

Condition of Signals

Condition of Pusher

HOURLY REPORT OF OPERATION

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



UNITED STATES STEEL CORPORATION  
CLAIRTON COKE AND COAL CHEMICAL WORKS

PUSHING AND CHARGING REPORT

UNIT NO. 1

12 Hrs. Beginning 12:00 A.M.

Date 11-27-91

| BATTERY NO. A-1 |             |              |       | BATTERY NO. B-1 |             |              |        | BATTERY NO. A-2 |             |              |         |
|-----------------|-------------|--------------|-------|-----------------|-------------|--------------|--------|-----------------|-------------|--------------|---------|
| OVEN NO.        | TIME PUSHED | TIME CHARGED | NOTES | OVEN NO.        | TIME PUSHED | TIME CHARGED | NOTES  | OVEN NO.        | TIME PUSHED | TIME CHARGED | NOTES   |
| 1               |             |              |       | 1               |             |              |        | 1               | 10 22       |              | sticke  |
| 3               |             |              |       | 3               |             |              |        | 3               | 6 34        | 6 48         |         |
| 5               |             |              |       | 5               |             |              |        | 5               | 6 46        | 6 58         |         |
| 7               |             | 12 02        |       | 7               |             |              |        | 7               | 6 56        | 7 00         |         |
| 9               |             | 12 10        |       | 9               |             |              |        | 9               | 7 08        | 7 24         |         |
| 11              |             | 12 16        |       | 11              |             |              |        | 11              | 7 18        | 2 36         |         |
| 13              | 12 06       | 12 22        |       | 13              |             |              |        | 13              | 7 28        | 8 08         |         |
| 15              | 12 18       | 12 34        |       | 15              |             |              |        | 15              | 7 50        | 8 38         | K.O.P.B |
| 17              | 12 38       | 12 44        |       | 17              |             |              |        | 17              | 8 10        | 8 50         |         |
| 19              | 12 38       | 12 54        |       | 19              |             |              |        | 19              | 8 35        | 9 10         |         |
| 21              | 12 48       | 1 04         |       | 21              |             |              |        | 21              | 8 40        | 9 20         |         |
| 23              | 12 58       | 1 14         |       | 23              |             |              |        | 23              | 8 52        | 9 32         |         |
| 25              | 1 10        | 1 26         |       | 25              |             |              |        | 25              | 9 12        | 9 40         |         |
| 27              | 1 20        | 1 36         |       | 27              |             |              |        | 27              | 9 22        | 9 49         |         |
| 29              | 1 32        | 1 48         |       | 29              |             |              |        | 29              | 9 34        | 10 13        |         |
| 31              | 1 42        | 1 58         |       | 31              |             |              |        | 31              | 9 42        | 10 33        |         |
| 2               | 10 15       | 10 56        |       | 2               | 1 34        | 2 08         |        | 2               |             |              |         |
| 4               | 10 35       | 11 07        |       | 4               | 2 04        | 2 20         |        | 4               |             |              |         |
| 6               | 10 47       | 11 19        |       | 6               | 2 14        | 2 30         |        | 6               |             |              |         |
| 8               | 10 58       | 11 31        |       | 8               | 2 24        | 2 40         |        | 8               |             |              |         |
| 10              | 11 09       | 11 41        |       | 10              | 2 36        | 2 50         |        | 10              |             |              |         |
| 12              | 11 21       | 11 53        |       | 12              | 2 46        | 3 -          |        | 12              |             |              |         |
| 14              | 11 33       |              |       | 14              | 2 56        | 3 10         |        | 14              |             |              |         |
| 16              | 11 43       |              |       | 16              | 10 02       | 10 49        | sticke | 16              |             |              |         |
| 18              | 11 55       |              |       | 18              | 3 18        | 3 34         | P.B.   | 18              |             |              |         |
| 20              |             |              |       | 20              | 3 28        | 4 -          |        | 20              |             |              |         |
| 22              |             |              |       | 22              | 3 40        | 4 36         |        | 22              |             |              |         |
| 24              |             |              |       | 24              | 3 52        | 4 46         |        | 24              |             |              |         |
| 26              |             |              |       | 26              | 4 04        | 4 58         |        | 26              |             |              |         |
| 28              |             |              |       | 28              | 4 38        | 5 02         |        | 28              |             |              |         |
| 30              |             |              |       | 30              | 4 48        | 5 06         |        | 30              |             |              |         |
| 1               |             |              |       | 1               | 9 51        | 10 45        |        | 1               | 4 58        | 5 26         |         |
| 2               |             |              |       | 2               |             |              |        | 2               |             |              |         |

REMARKS:

Condition of Signals

Condition of Pusher

HOURLY REPORT OF OPERATION

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

Total Ovens Pushed 52

Total Ovens Charged 51

Pusherman

Battery Foreman

80

OVENS

## 1-2-3 BATTERIES PUSHING SCHEDULE

DATE

11/26/91

TURN

1288

A 1 /1  
 B 3 /2  
 A 3 /1  
 B 5 /2  
 A 5 /1  
 B 7 /2  
 A 7 /1  
 B 9 /2  
 A 9 /1  
 B11 /2  
 A11 /1  
 B13 /2  
 A13 /1  
 B15 /2  
 A15 /1  
 B17 /2  
 A17 /1  
 B19 /2  
 A19 /1  
 B21 /2  
 A21 /1  
 B23 /2  
 A23 /1  
 B25 /2  
 A25 /1  
 B27 /2  
 A27 /1  
 B29 /2  
 A29 /1  
 B31 /2  
 A31 /1  
 C 2 /2  
 B 2 /1  
 A 2 /3  
 B 4 /1  
 A 4 /3  
 B 6 /1  
 A 6 /3  
 B 8 /1  
 A 8 /3  
 B10 /1  
 A10 /3  
 B12 /1  
 A12 /3  
 B14 /1  
 A14 /3  
 B16 /1  
 A16 /3

B18 /1  
 A18 /3  
 B20 /1  
 A20 /3  
 B22 /1  
 A22 /3  
 B24 /1  
 A24 /3  
 B26 /1  
 A26 /3  
 B28 /1  
 A28 /3  
 B30 /1  
 A30 /3  
 B 1 /2  
 B 1 /3  
 A 1 /2  
 B 3 /3  
 A 3 /2  
 B 5 /3  
 A 5 /2  
 B 7 /3  
 A 7 /2  
 B 9 /3  
 A 9 /2  
 B11 /3  
 A11 /2  
 B13 /3  
 A13 /2  
 B15 /3  
 A15 /2  
 B17 /3  
 A17 /2  
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 B23 /3  
 A23 /2  
 B25 /3  
 A25 /2  
 B27 /3  
 A27 /2  
 B29 /3  
 A29 /2  
 B31 /3  
 A31 /2  
 C 2 /3

C 1 /1  
 B 2 /2  
 A 2 /1  
 B 4 /2  
 A 4 /1  
 B 6 /2  
 A 6 /1  
 B 8 /2  
 A 8 /1  
 B10 /2  
 A10 /1  
 B12 /2  
 A12 /1  
 B14 /2  
 A14 /1  
 B16 /2  
 A16 /1  
 B18 /2  
 A18 /1  
 B20 /2  
 A20 /1  
 B22 /2  
 A22 /1  
 B24 /2  
 A24 /1  
 B26 /2  
 A26 /1  
 B28 /2  
 A28 /1  
 B30 /2  
 A30 /1  
 C 1 /2  
 B 1 /1  
 A 1 /3  
 B 3 /1  
 A 3 /3  
 B 5 /1  
 A 5 /3  
 B 7 /1  
 A 7 /3  
 B 9 /1  
 A 9 /3  
 B11 /1  
 A11 /3  
 B13 /1  
 A13 /3  
 B15 /1  
 A15 /3

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

START

B-8-3

FINISH

B-24-1

PASS-UP

PICK-UP

78

OVENS

## 1-2-3 BATTERIES PUSHING SCHEDULE

DATE 11-26-91TURN 874

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

START A18/2FINISH C1/2

PASS-UP

PICK-UP

80

OVENS

## 1-2-3 BATTERIES PUSHING SCHEDULE

DATE 4/12TURN 11-26-91

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

PASS-UP

PICK-UP

START

FINISH

A-28-1A-13-1

79

OVENS

## 1-2-3 BATTERIES PUSHING SCHEDULE

DATE 11/27/91TURN 12-8

|        |  |        |    |        |  |        |  |
|--------|--|--------|----|--------|--|--------|--|
| A 1 /1 |  | B18 /1 |    | C 1 /1 |  | B17 /1 |  |
| B 3 /2 |  | A18 /3 |    | B 2 /2 |  | A17 /3 |  |
| A 3 /1 |  | B20 /1 |    | A 2 /1 |  | B19 /1 |  |
| B 5 /2 |  | A20 /3 |    | B 4 /2 |  | A19 /3 |  |
| A 5 /1 |  | B22 /1 |    | A 4 /1 |  | B21 /1 |  |
| B 7 /2 |  | A22 /3 |    | B 6 /2 |  | A21 /3 |  |
| A 7 /1 |  | B24 /1 |    | A 6 /1 |  | B23 /1 |  |
| B 9 /2 |  | A24 /3 |    | B 8 /2 |  | A23 /3 |  |
| A 9 /1 |  | B26 /1 |    | A 8 /1 |  | B25 /1 |  |
| B11 /2 |  | A26 /3 |    | B10 /2 |  | A25 /3 |  |
| A11 /1 |  | B28 /1 |    | A10 /1 |  | B27 /1 |  |
| B13 /2 |  | A28 /3 |    | B12 /2 |  | A27 /3 |  |
| A13 /1 |  | B30 /1 |    | A12 /1 |  | B29 /1 |  |
| B15 /2 |  | A30 /3 |    | B14 /2 |  | A29 /3 |  |
| A15 /1 |  | B 1 /2 |    | A14 /1 |  | B31 /1 |  |
| B17 /2 |  | B 1 /3 |    | B16 /2 |  | A31 /3 |  |
| A17 /1 |  | A 1 /2 |    | A16 /1 |  | C 2 /1 |  |
| B19 /2 |  | B 3 /3 |    | B18 /2 |  | B 2 /3 |  |
| A19 /1 |  | A 3 /2 |    | A18 /1 |  | A 2 /2 |  |
| B21 /2 |  | B 5 /3 |    | B20 /2 |  | B 4 /3 |  |
| A21 /1 |  | A 5 /2 |    | A20 /1 |  | A 4 /2 |  |
| B23 /2 |  | B 7 /3 |    | B22 /2 |  | B 6 /3 |  |
| A23 /1 |  | A 7 /2 |    | A22 /1 |  | A 6 /2 |  |
| B25 /2 |  | B 9 /3 |    | B24 /2 |  | B 8 /3 |  |
| A25 /1 |  | A 9 /2 |    | A24 /1 |  | A 8 /2 |  |
| B27 /2 |  | B11 /3 |    | B26 /2 |  | B10 /3 |  |
| A27 /1 |  | A11 /2 |    | A26 /1 |  | A10 /2 |  |
| B29 /2 |  | B13 /3 |    | B28 /2 |  | B12 /3 |  |
| A29 /1 |  | A13 /2 |    | A28 /1 |  | A12 /2 |  |
| B31 /2 |  | B15 /3 |    | B30 /2 |  | B14 /3 |  |
| A31 /1 |  | A15 /2 |    | A30 /1 |  | A14 /2 |  |
| C 2 /2 |  | B17 /3 |    | C 1 /2 |  | B16 /3 |  |
| B 2 /1 |  | A17 /2 |    | B 1 /1 |  | A16 /2 |  |
| A 2 /3 |  | B19 /3 |    | A 1 /3 |  | B18 /3 |  |
| B 4 /1 |  | A19 /2 |    | B 3 /1 |  | A18 /2 |  |
| A 4 /3 |  | B21 /3 |    | A 3 /3 |  | B20 /3 |  |
| B 6 /1 |  | A21 /2 |    | B 5 /1 |  | A20 /2 |  |
| A 6 /3 |  | B23 /3 |    | A 5 /3 |  | B22 /3 |  |
| B 8 /1 |  | A23 /2 |    | B 7 /1 |  | A22 /2 |  |
| A 8 /3 |  | B25 /3 |    | A 7 /3 |  | B24 /3 |  |
| B10 /1 |  | A25 /2 |    | B 9 /1 |  | A24 /2 |  |
| A10 /3 |  | B27 /3 |    | A 9 /3 |  | B26 /3 |  |
| B12 /1 |  | A27 /2 | 79 | B11 /1 |  | A26 /2 |  |
| A12 /3 |  | B29 /3 |    | A11 /3 |  | B28 /3 |  |
| B14 /1 |  | A29 /2 |    | B13 /1 |  | A28 /2 |  |
| A14 /3 |  | B31 /3 |    | A13 /3 |  | B30 /3 |  |
| B16 /1 |  | A31 /2 |    | B15 /1 |  | A30 /2 |  |
| A16 /3 |  | C 2 /3 |    | A15 /3 |  | C 1 /3 |  |

START

A-13-1

PASS-UP

FINISH

A-27-2

PICK-UP

78

OVENS

## 1-2-3 BATTERIES PUSHING SCHEDULE

DATE 11-27-91TURN 874

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

START B17/3

PASS-UP

FINISH B29/1

PICK-UP

78

OVENS

## 1-2-3 BATTERIES PUSHING SCHEDULE

DATE 11-27-91TURN 4-12

A 1 /1  
B 3 /2  
A 3 /1  
B 5 /2  
A 5 /1  
B 7 /2  
A 7 /1  
B 9 /2  
A 9 /1  
B11 /2  
A11 /1  
B13 /2  
A13 /1  
B15 /2  
A15 /1  
B17 /2  
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A27 /1  
B29 /2  
A29 /1  
B31 /2  
A31 /1  
C 2 /2  
B 2 /1  
A 2 /3  
B 4 /1  
A 4 /3  
B 6 /1  
A 6 /3  
B 8 /1  
A 8 /3  
B10 /1  
A10 /3  
B12 /1  
A12 /3  
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B 1 /2  
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A 1 /2  
B 3 /3  
A 3 /2  
B 5 /3  
A 5 /2  
B 7 /3  
A 7 /2  
B 9 /3  
A 9 /2  
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A29 /2  
B31 /3  
A31 /2  
C 2 /3

C 1 /1  
B 2 /2  
A 2 /1  
B 4 /2  
A 4 /1  
B 6 /2  
A 6 /1  
B 8 /2  
A 8 /1  
B10 /2  
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B30 /2  
A30 /1  
C 1 /2  
B 1 /1  
A 1 /3  
B 3 /1  
A 3 /3  
B 5 /1  
A 5 /3  
B 7 /1  
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B31 /1  
A31 /3  
C 2 /1  
B 2 /3  
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B 4 /3  
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A24 /2  
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A26 /2  
B28 /3  
A28 /2  
B30 /3  
A30 /2  
C 1 /3

BANKED

START A-15-3

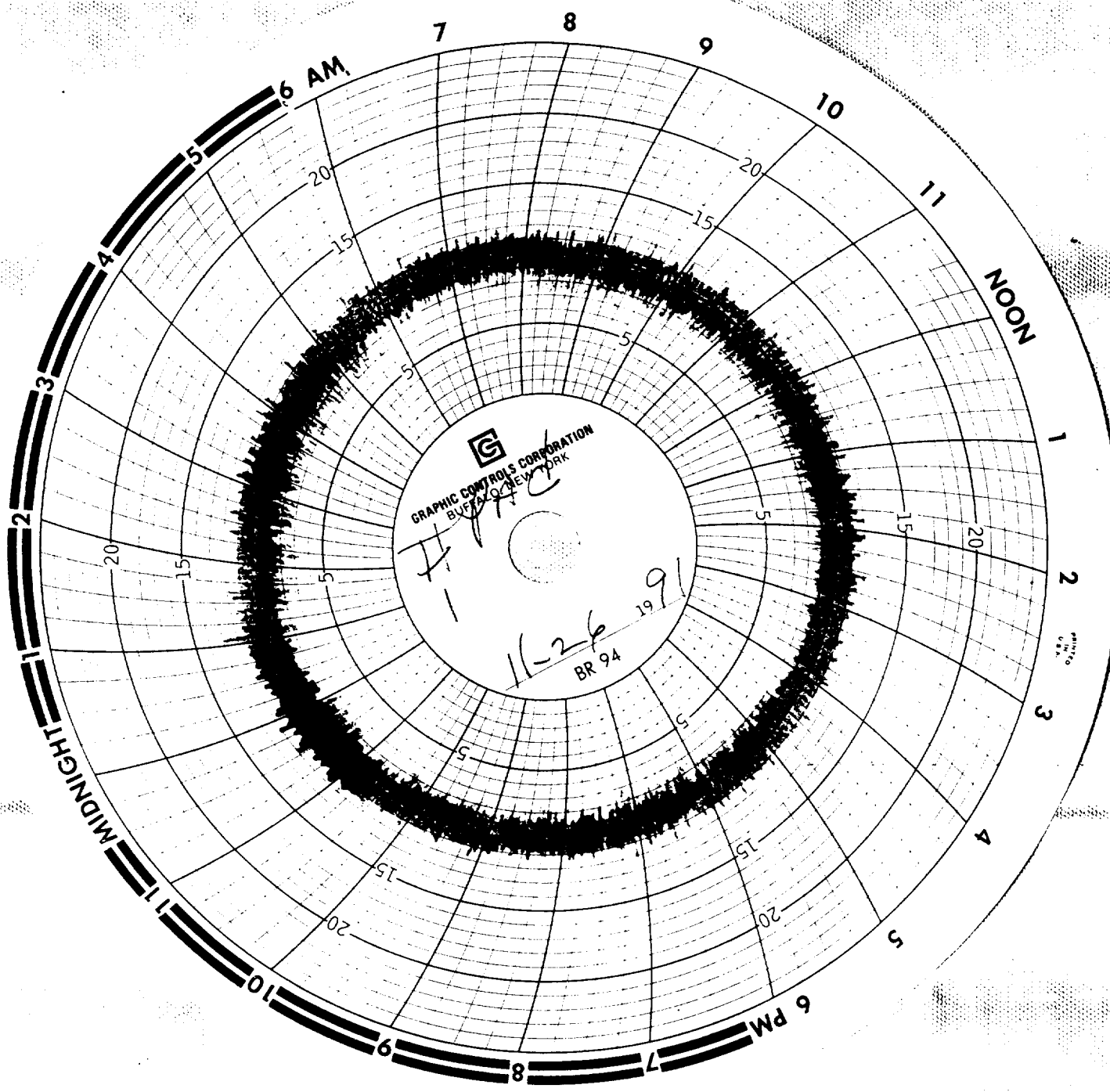
PASS-UP

-A2 BANKED

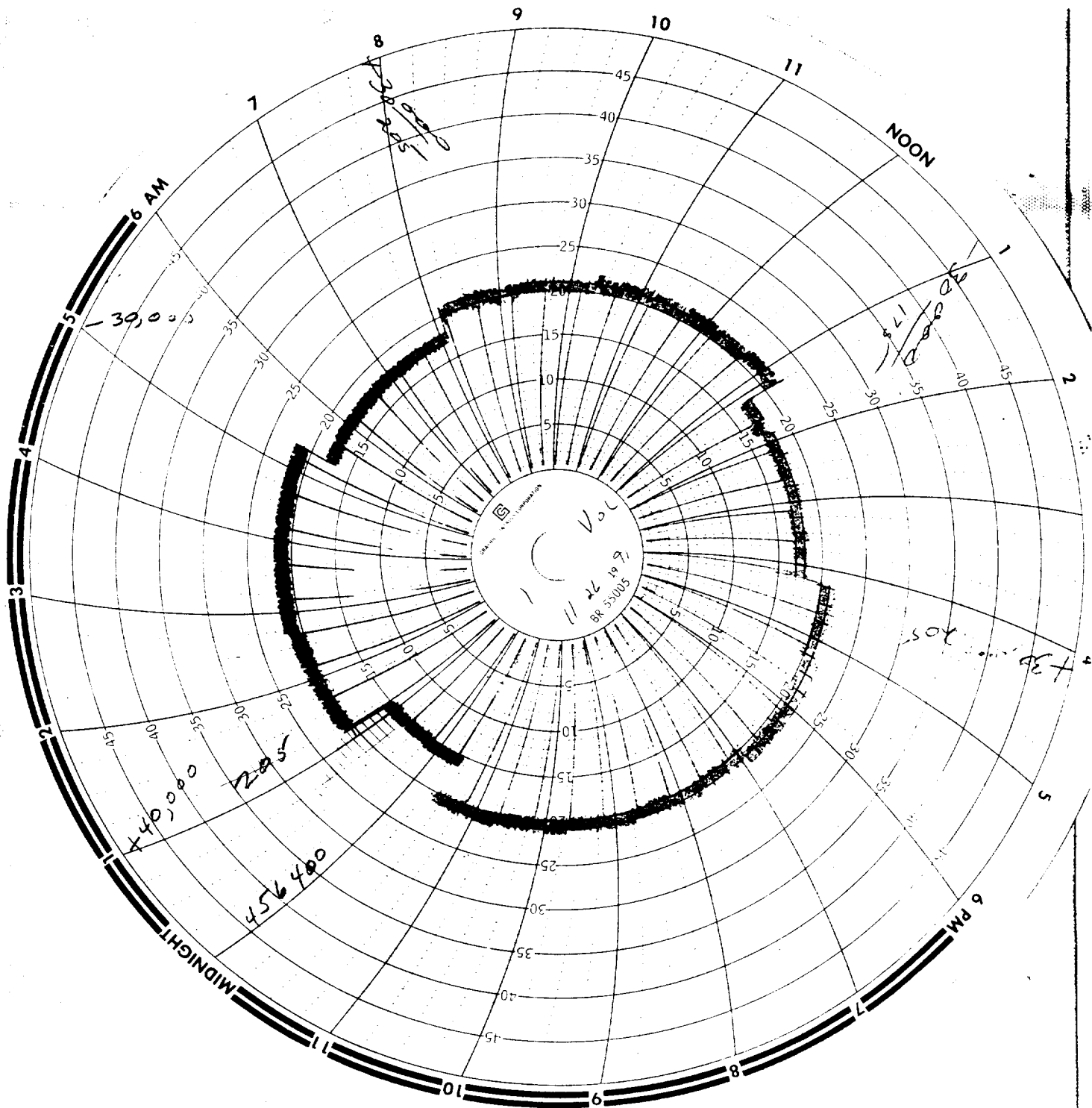
FINISH

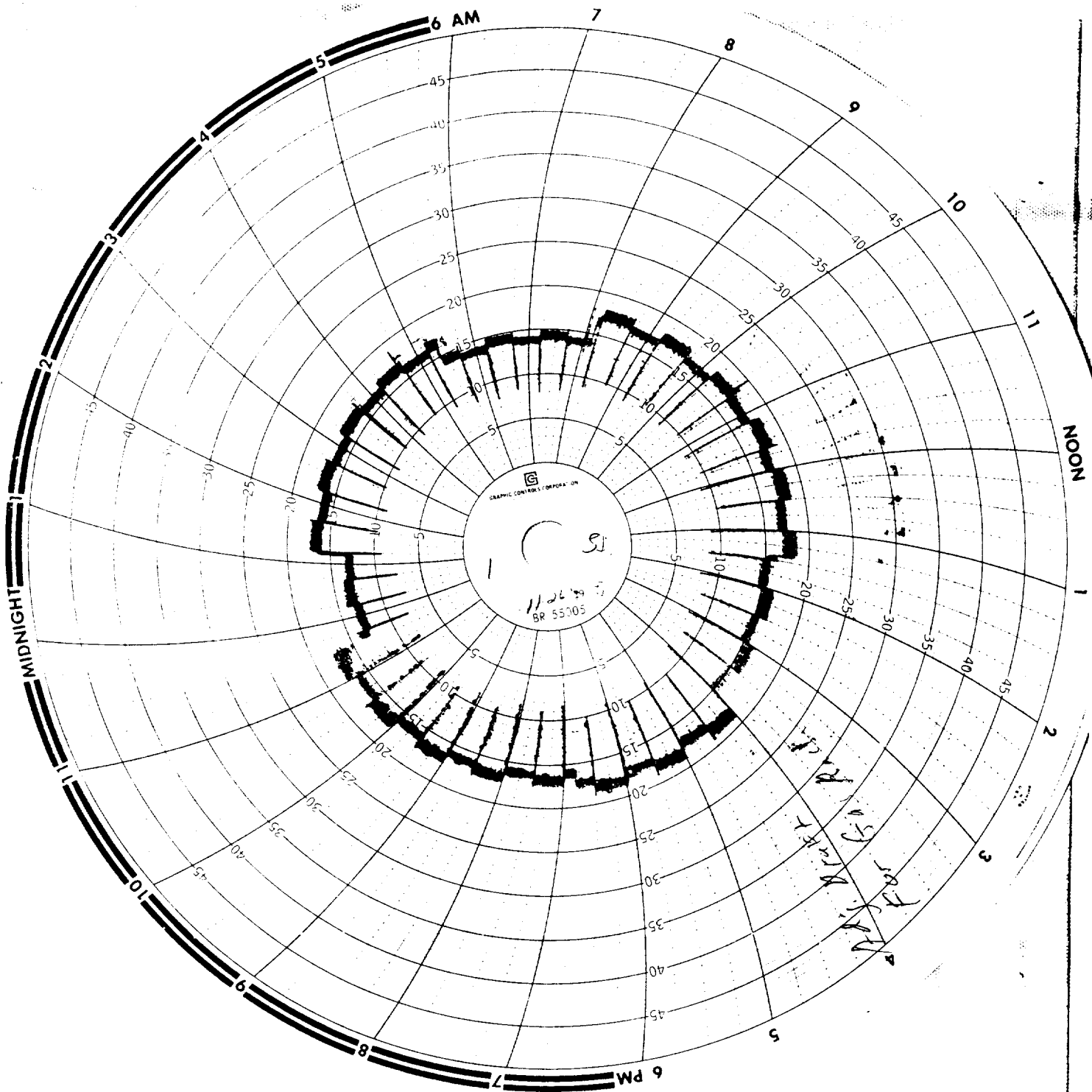
B-31-2

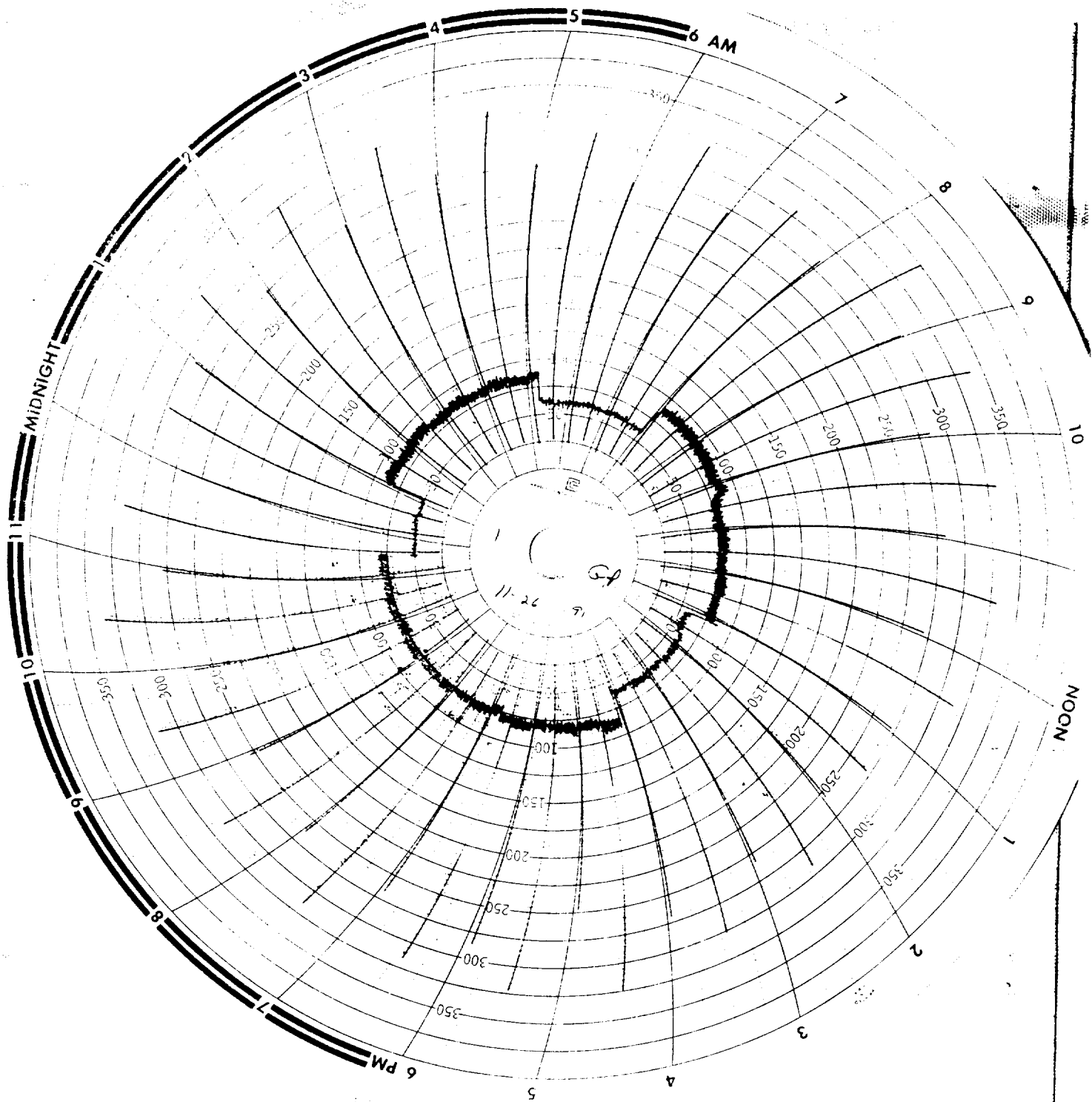
PICK-UP

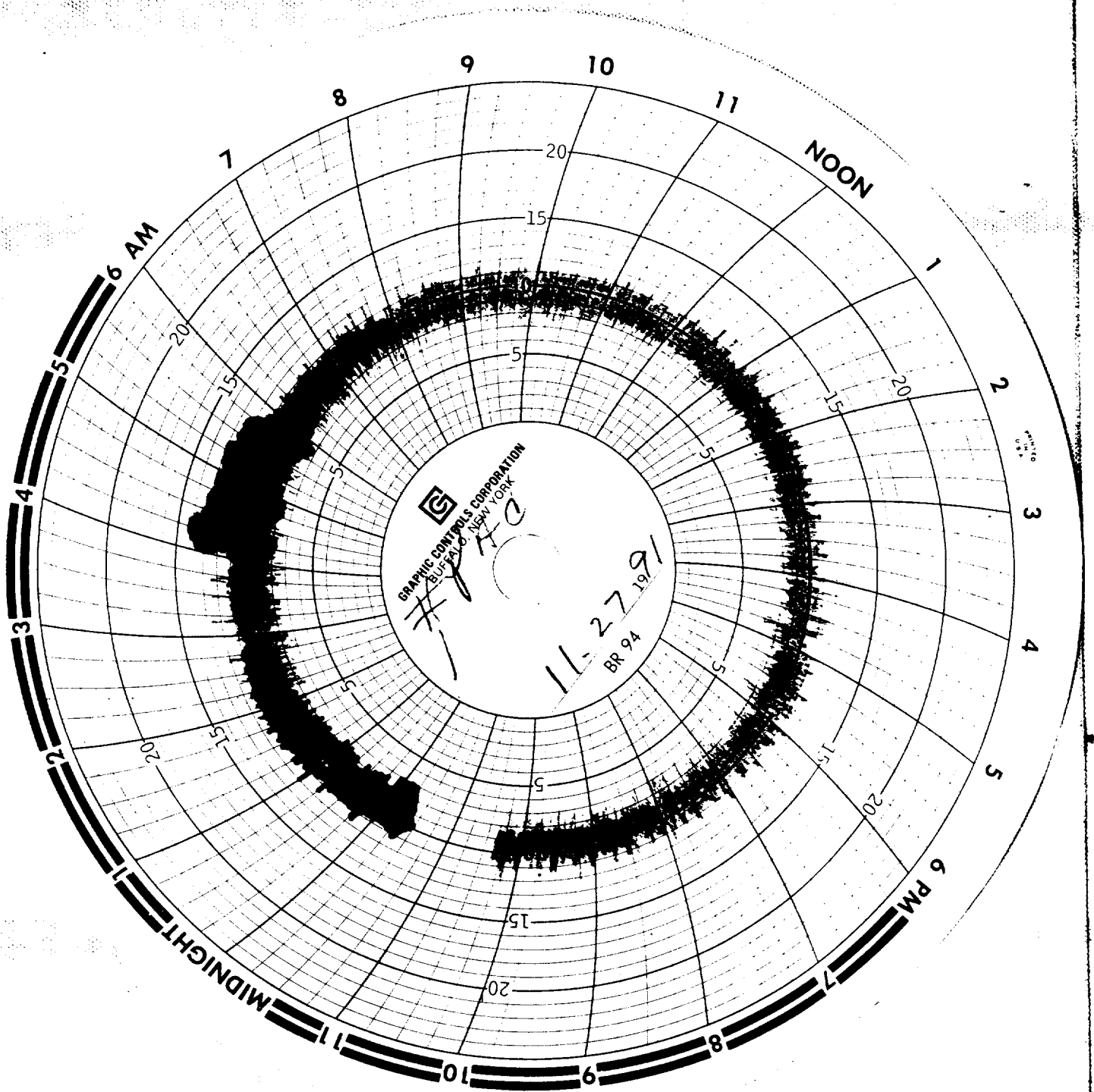


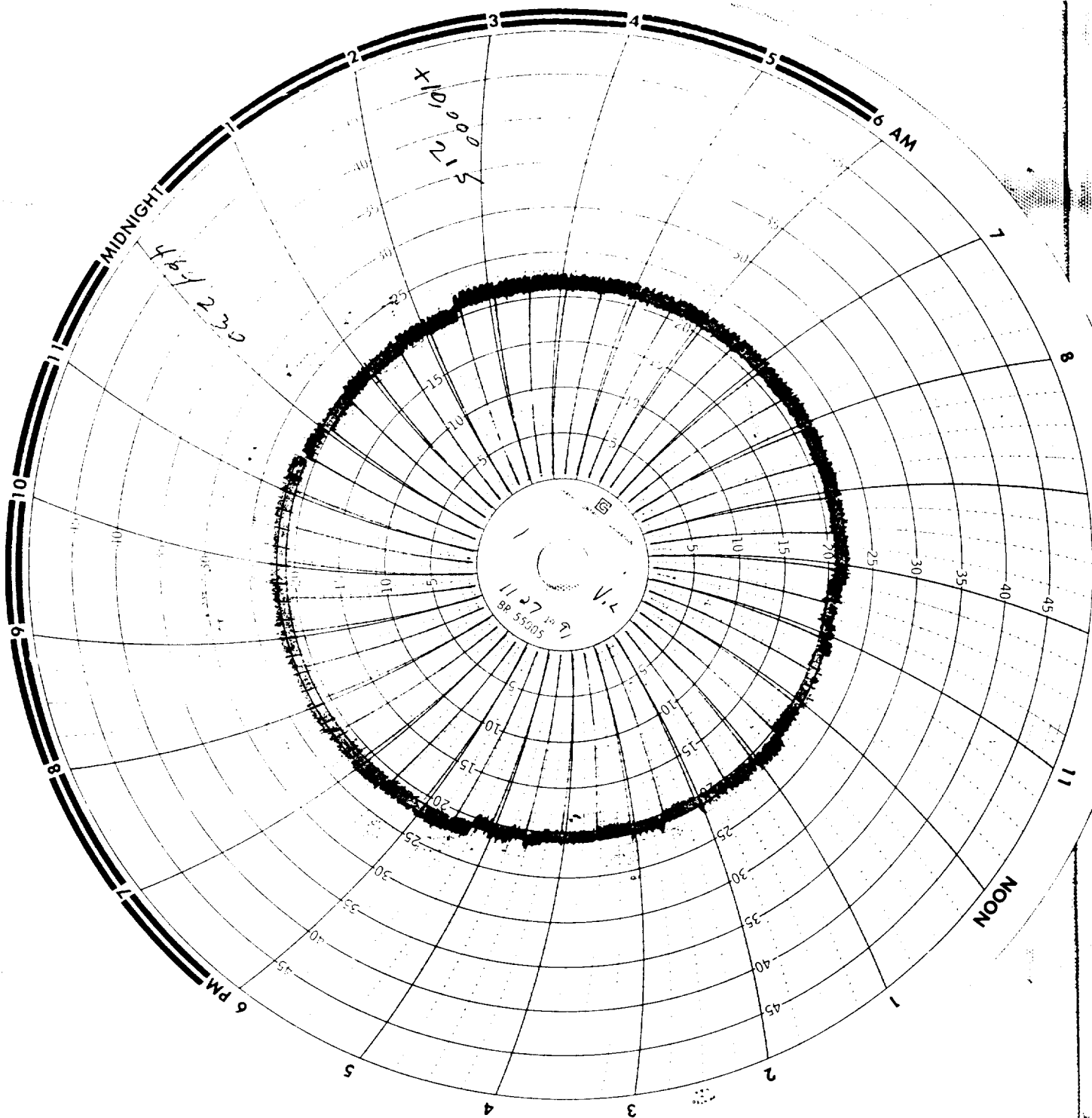


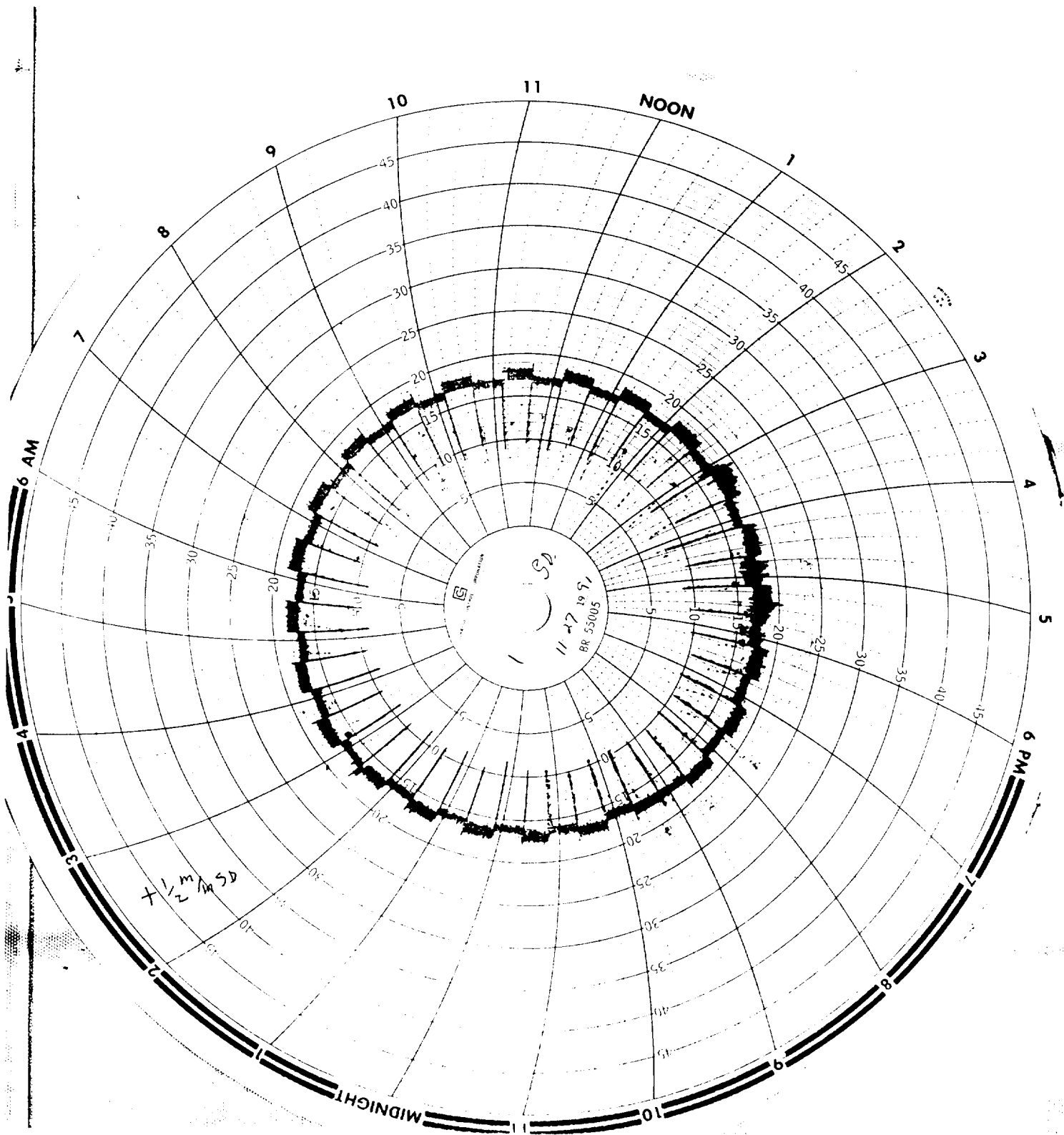


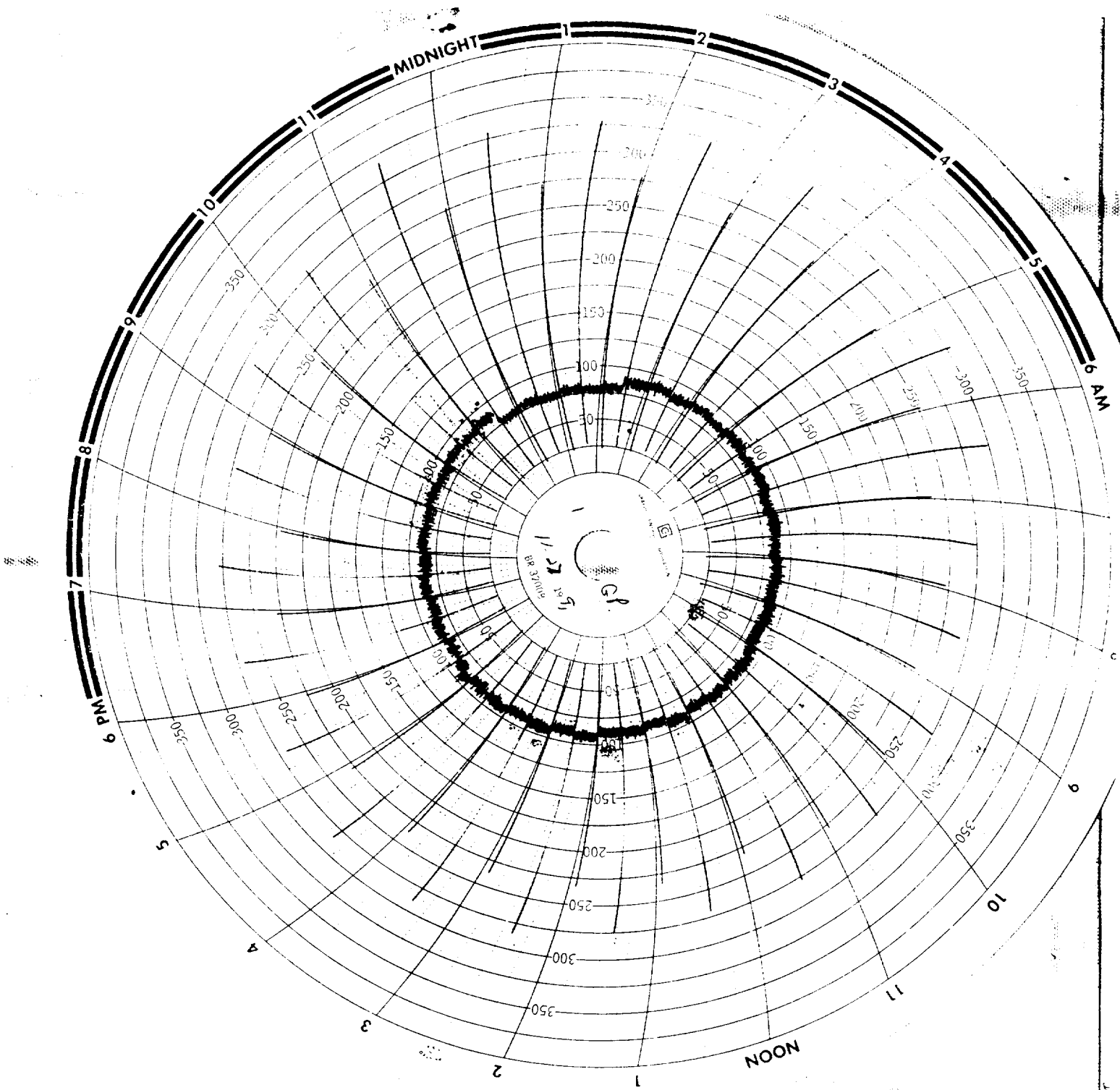












**COMPLIANCE DEMONSTRATION  
#1 BATTERY COMBUSTION STACK**

**USS CLAIRTON WORKS  
CLAIRTON, PA**

**APPENDIX B**

**CALIBRATION RESULTS**



# CONTROL BOX CALIBRATION

## THREE POINT CALIBRATION

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

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

POST TEST

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

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

PRE-TEST MAGNEHELIC CALIBRATION

BOX# 3

DATE 10-25-91

OPERATOR RPC

0 to 10" H2O RANGE

| MAGNEHELIC | $\Delta P$ | MANOMETER |
|------------|------------|-----------|
|            | 0.50       | 0.55      |
|            | 1.00       | 1.10      |
|            | 2.00       | 2.10      |
|            | 4.00       | 4.10      |
|            | 6.00       | 6.10      |
|            | 8.00       | 8.00      |

0 to 0.50" H2O RANGE

| MAGNEHELIC | $\Delta P$ | MANOMETER |
|------------|------------|-----------|
|            | 0.50       | 0.48      |
|            | 0.40       | 0.38      |
|            | 0.30       | 0.29      |
|            | 0.20       | 0.20      |
|            | 0.10       | 0.10      |

0 to 5" H2O RANGE

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

PRE-TEST LEAK CHECK

DATE 10-31-91

OPERATOR RPC

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

PYROMETER CALIBRATION

DATE 04-28-88

OPERATOR AGL

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

PRE-TEST PYROMETER CHECK

DATE 10-25-91

OPERATOR RPC

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

POST-TEST MAGNEHELIC CALIBRATION

BOX# 3

DATE 01-17-92

OPERATOR RPC

0 to 10" H2O RANGE

| MAGNEHELIC<br>DELTA P | MANOMETER |
|-----------------------|-----------|
| 0.50                  | 0.51      |
| 1.00                  | 1.00      |
| 2.00                  | 2.00      |
| 4.00                  | 4.00      |
| 6.00                  | 6.00      |
| 8.00                  | 8.00      |

0 to 0.50" H2O RANGE

| MAGNEHELIC<br>DELTA P | MANOMETER |
|-----------------------|-----------|
| 0.50                  | 0.50      |
| 0.40                  | 0.40      |
| 0.30                  | 0.30      |
| 0.20                  | 0.20      |
| 0.10                  | 0.10      |

0 to 5" H2O RANGE

| MAGNEHELIC<br>DELTA H | MANOMETER |
|-----------------------|-----------|
| 4.00                  | 4.00      |
| 3.00                  | 3.00      |
| 2.00                  | 2.00      |
| 1.00                  | 1.05      |
| 0.50                  | 0.50      |

POST-TEST LEAK CHECK

DATE 01-27-92

OPERATOR RPC

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

PYROMETER CALIBRATION

DATE 04-28-88

OPERATOR AGL

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

POST-TEST PYROMETER CHECK

DATE 01-17-92

OPERATOR RPC

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

BOX #3

## QA ORIFICE AUDIT

 AGENCY BAPC  
 DATE 10-25-91  
 OPERATOR RPC

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

Box #3

## QA ORIFICE AUDIT

AGENCY BAPC

DATE 01-17-92

OPERATOR RPC

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

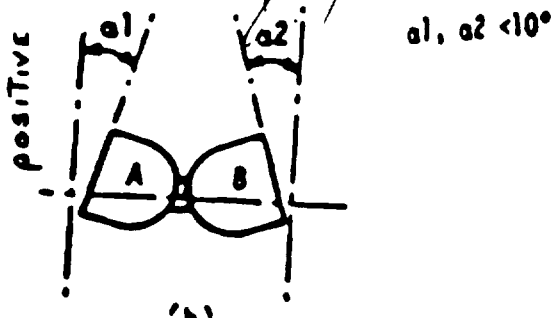
PROBE #: 7-1

# GEOMETRIC PITOT CALIBRATION

*per stick*

DATE: 8-2-91

INITIALS: 5/11



$$a_1 = \underline{7^\circ}$$

$$a_2 = \underline{5^\circ}$$

$a_1, a_2 = < 10^\circ$

$$B_1 = \underline{0.5}$$

$$B_2 = \underline{1^\circ}$$

$B_1, B_2 = < 5^\circ$

$$\Lambda = \underline{1.040}$$

$$\mu = \underline{0.182} \quad \mu = \leq 0.1250"$$

$$V = \underline{0.82} \quad V = \leq 0.03125"$$

$$W = \underline{0.161} \quad W \geq 0$$

(3/4" using 1/2" nozzle)

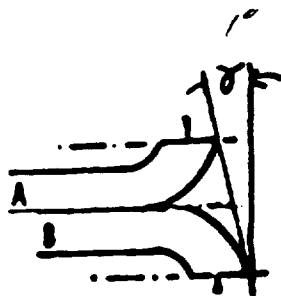
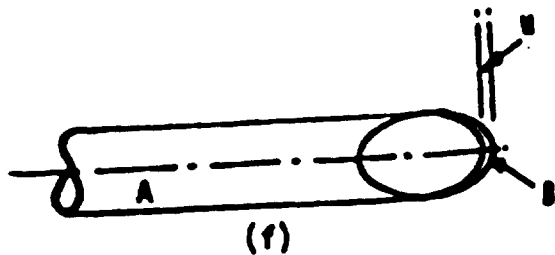
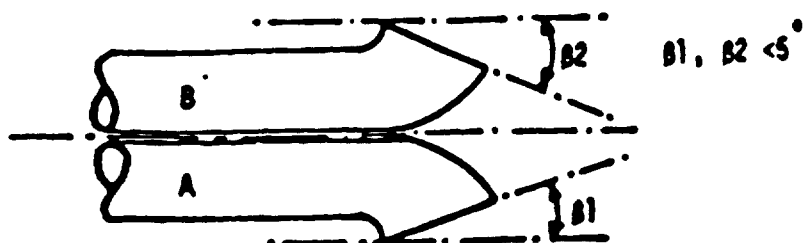
$$X = \underline{.756} \quad X \geq 0.750$$

$$Y = \underline{5.790} \quad Y \geq 3.0"$$

$$Z = \underline{2.013} \quad Z > 2.0"$$

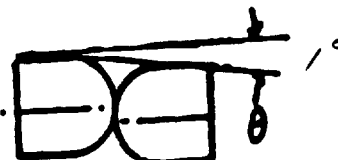
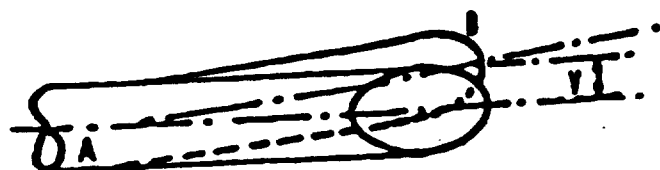
$$D_t = \underline{0.325} \quad D_t > .1875 \text{ to } .375$$

(3/16" to 3/8")

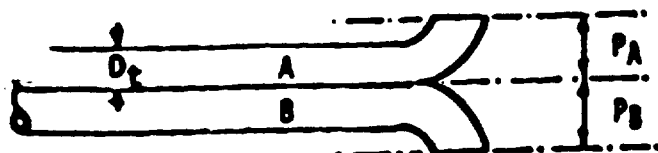


$$\mu = A \sin \theta$$

$$V = A \sin \phi$$



A-SIDE PLANE



B-SIDE PLANE

$$1.05 D_t \leq \phi < 1.50 D_t$$

$$P_A = P_B$$

$$2.10 D_t < A < 3.00 D_t$$

PROBE #: 7-1

DATE: 1-22-92

INITIALS: TJ/11

# GEOMETRIC PITOT CALIBRATION

POST-CHECK

CALIPER # XFS68

$$a1 = \underline{2^\circ}$$

$$a2 = \underline{1^\circ}$$

$a1, a2 = < 10^\circ$

$$B1 = \underline{1.5^\circ}$$

$$B2 = \underline{1.5^\circ}$$

$B1, B2 = < 5^\circ$

$$\lambda = \underline{1.039}$$

$$\mu = \underline{0.0091} \quad \mu = \leq 0.1250"$$

$$V = \underline{0.0091} \quad V = \leq 0.03125"$$

$$W = \underline{0.227} \quad W \geq 0$$

(3/4" using 1/2" nozzle)

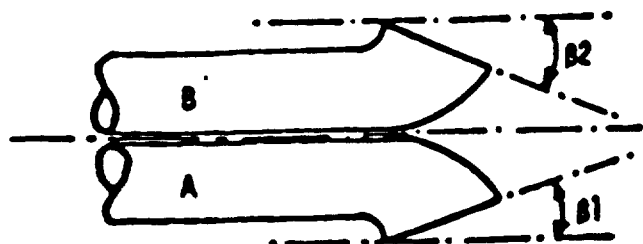
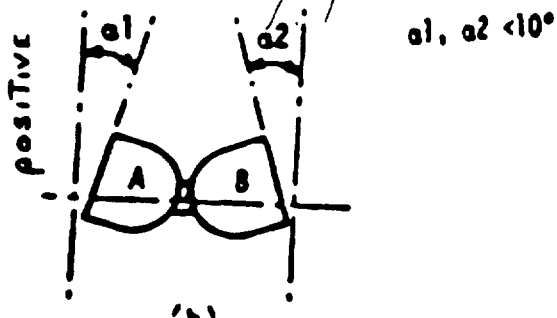
$$X = \underline{0.805} \quad X \geq 0.750$$

$$Y = \underline{5.742} \quad Y \geq 3.0"$$

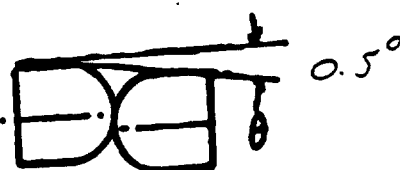
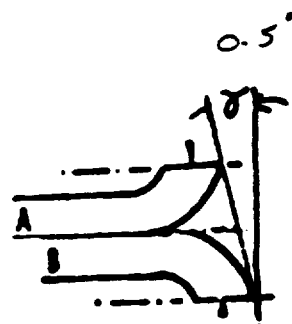
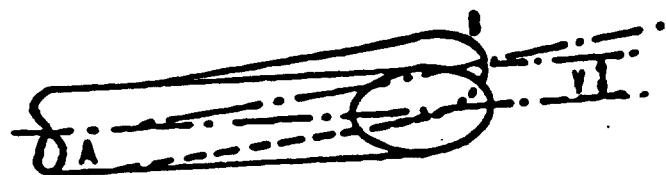
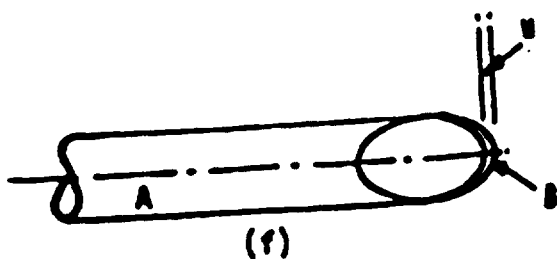
$$Z = \underline{2.284} \quad Z > 2.0"$$

$$D_t = \underline{0.376} \quad D_t > .1875 \text{ to } .375$$

(3/16" to 3/8")



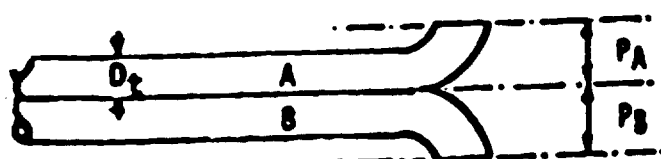
$$B1, B2 < 5^\circ$$



$$\mu = A \sin \theta$$

$$V = A \sin \theta$$

A-SIDE PLANE



B-SIDE PLANE

$$1.05 D_t \leq < 1.50 D_t$$

$$P_A = P_B$$

$$2.10 D_t \leq < 3.00 D_t$$



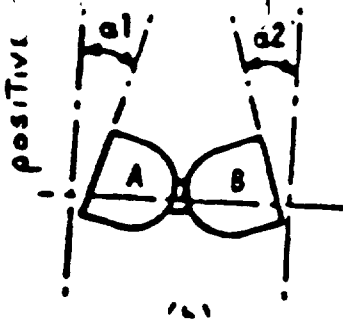
PROBE #: 7-2

GEOMETRIC PITOT CALIBRATION

PRE-CHECK

DATE: 8-2-91

INITIALS: S/n



$a_1, a_2 < 10^\circ$

$a_1 = 1^\circ$   
 $a_2 = 4^\circ$   $\swarrow$   $a_1, a_2 = < 10^\circ$

$B_1 = 7^\circ$   
 $B_2 = 1^\circ$   $\swarrow$   $B_1, B_2 = < 5^\circ$

$A = 0.940$

$\mu = 0.0491$   $\mu = \leq 0.1250''$

$V = 0.016$   $V = \leq 0.03125''$

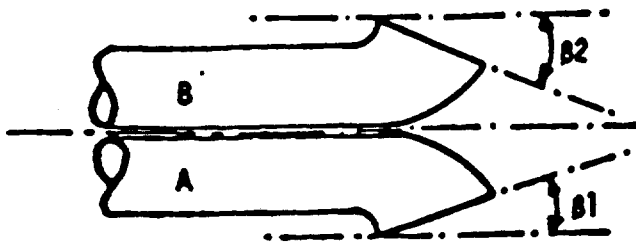
$W = 0.566$   $W \geq 0$

$X = 0.935$   $X \geq 0.750$   $\leftarrow$  (3/4" using 1/2" nozzle)

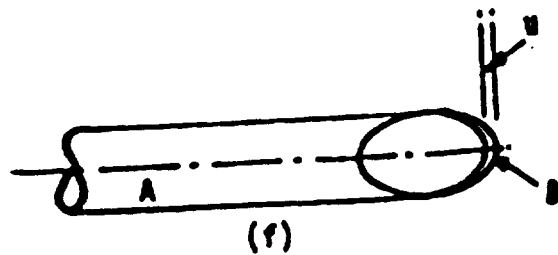
$Y = 5.600$   $Y \geq 3.0''$

$Z = 2.275$   $Z > 2.0''$

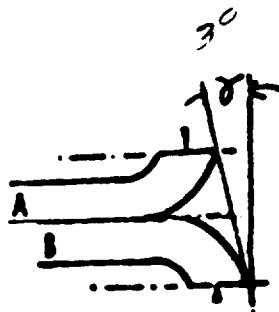
$D_t = 0.375$   $D_t > .1875$  to  $.375$   
 (3/16" to 3/8")



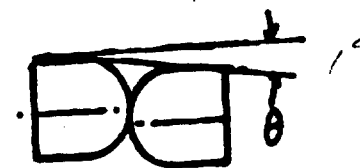
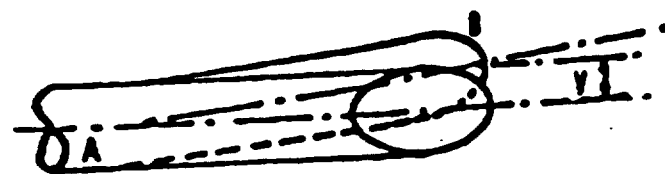
$B_1, B_2 < 5^\circ$



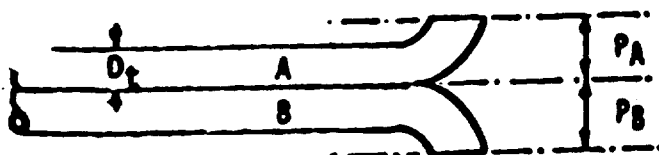
(f)



$\mu = A \sin \theta$   $3^\circ$   
 $V = A \sin \theta$



A-SIDE PLANE



B-SIDE PLANE

$1.05 D_t < A < 1.50 D_t$

$P_A = P_B$

$2.10 D_t < A < 3.00 D_t$

PROBE #: 7-2

DATE: 1-22-72

INITIALS: [Signature]

# GEOMETRIC PITOT CALIBRATION

POST-CHECK

Calipers x F568

$a_1 = 1^\circ$

$a_2 = 5^\circ$

$a_1, a_2 = < 10^\circ$

$B_1 = 1.5^\circ$

$B_2 = 1.5^\circ$

$B_1, B_2 = < 5^\circ$

$\lambda = 0.939$

$\mu = 0.0409$

$\mu = \leq 0.1250"$

$V = 0.0246$

$V = \leq 0.03125"$

$W = 0.510$

$W \geq 0$

$X = 0.876$

$(3/4"$  using  $1/2"$  nozzle)  
 $X \geq 0.750$

$Y = 5.683$

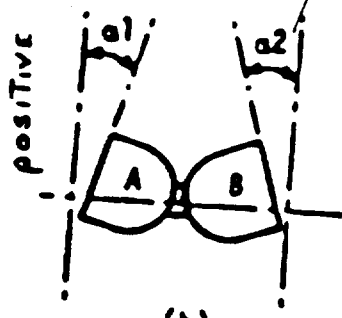
$Y \geq 3.0"$

$Z = 2.016$

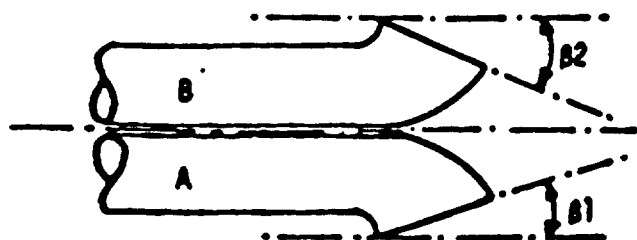
$Z > 2.0"$

$D_t = 0.377$

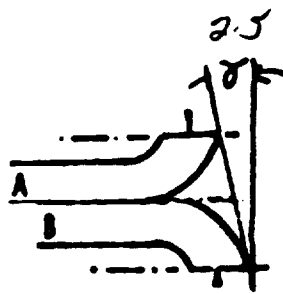
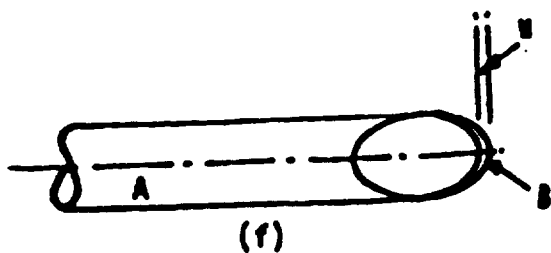
$D_t > .1875$  to  $.375$   
 $(3/16"$  to  $3/8"$ )



$a_1, a_2 < 10^\circ$

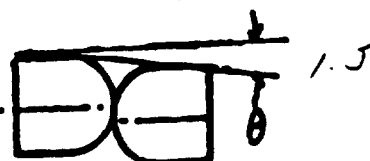
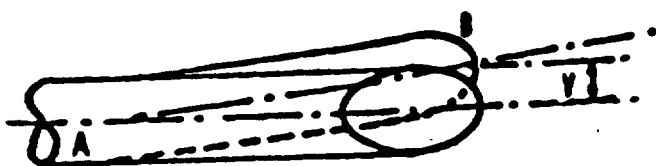


$B_1, B_2 < 5^\circ$

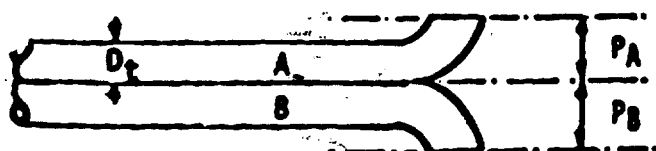


$$\mu = A \sin \theta$$

$$V = A \sin \theta$$



A-SIDE PLANE



B-SIDE PLANE

$$1.05 D_t \leq \leq 1.50 D_t$$

$$P_A = P_B$$

$$2.10 D_t \leq \leq 3.00 D_t$$

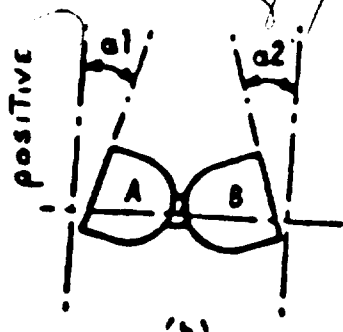
PROBE #: 7-3

GEOMETRIC PITOT CALIBRATION

pre-check

DATE: 8-2-91

INITIALS: F/A



$\alpha 1, \alpha 2 < 10^\circ$

$$\alpha 1 = 0^\circ$$

$$\alpha 2 = 4^\circ$$

$\alpha 1, \alpha 2 < 10^\circ$

$$B 1 = 2^\circ$$

$$B 2 = 3^\circ$$

$B 1, B 2 < 5^\circ$

$$A = 0.976$$

$$\mu = 0 \quad \mu = \leq 0.1250"$$

$$V = 0.0170 \quad V = \leq 0.03125"$$

$$W = 3.027 \quad W \geq 0$$

(3/4" using 1/2" nozzle)

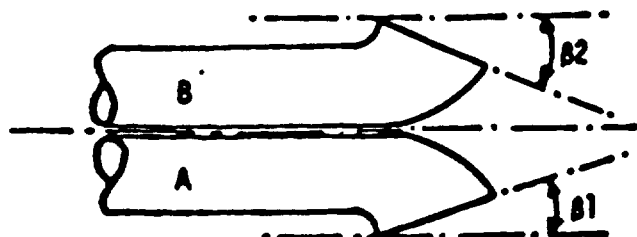
$$X = 1.029 \quad X \geq 0.750$$

$$Y = 5.686 \quad Y \geq 3.0"$$

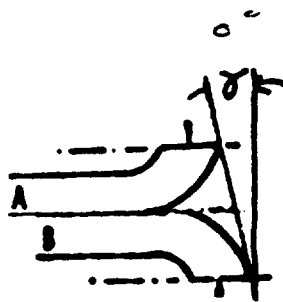
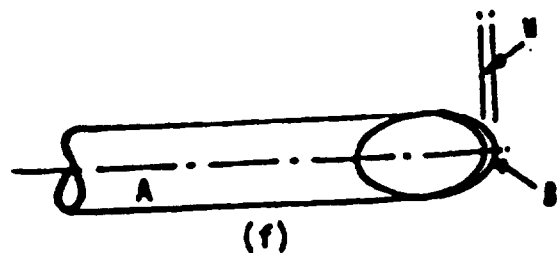
$$Z = 2.175 \quad Z > 2.0"$$

$$D_t = 0.375 \quad D_t > .1875 \text{ to } .375$$

(3/16" to 3/8")

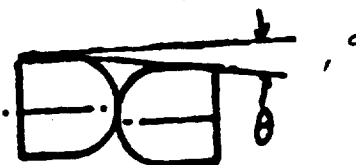
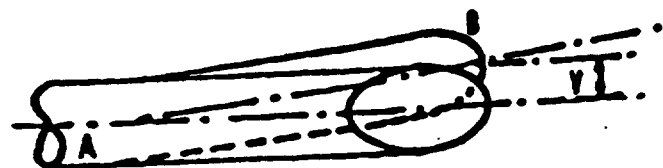


$\beta 1, \beta 2 < 5^\circ$

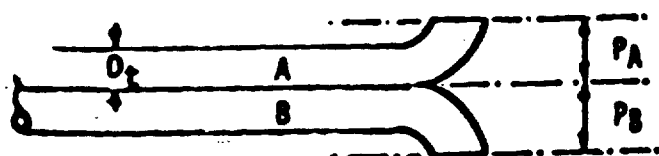


$$\mu = A \sin \theta$$

$$V = A \sin \theta$$



A-SIDE PLANE



B-SIDE PLANE

$$1.05 D_t < P < 1.50 D_t$$

$$P_A = P_B$$

$$2.10 D_t < A < 3.00 D_t$$

PROBE #: 7-3

DATE: 1-22-72

INITIALS: ELH

GEOMETRIC PITOT CALIBRATION

POST-CHECK

CALIPERS XFS68

$a1 = 1^\circ$   
 $a2 = 5^\circ$   $\swarrow$   $a1, a2 = < 10^\circ$

$B1 = 2^\circ$   
 $B2 = 1^\circ$   $\swarrow$   $B1, B2 = < 5^\circ$

$\lambda = 0.980$

$\mu = 0$   $\mu = \leq 0.1250''$

$V = 0.0257$   $V = \leq 0.03125''$

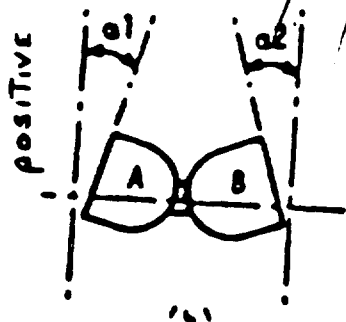
$W = 0.319$   $W \geq 0$   
 (3/4" using 1/2" nozzle)

$X = 0.930$   $X \geq 0.750$

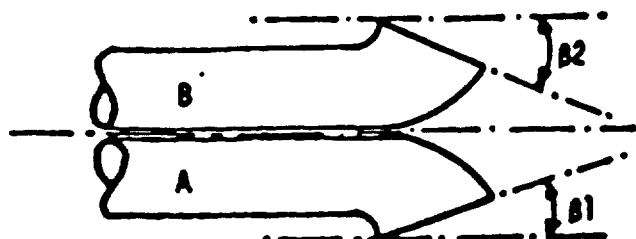
$Y = 5.725$   $Y \geq 3.0''$

$Z = 2.184$   $Z > 2.0''$

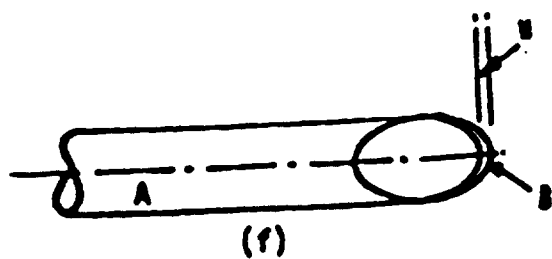
$D_t = 0.376$   $D_t > .1875$  to  $.375$   
 (3/16" to 3/8")



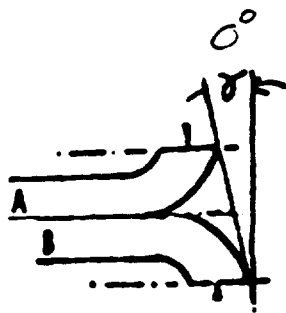
$a1, a2 < 10^\circ$



$B1, B2 < 5^\circ$

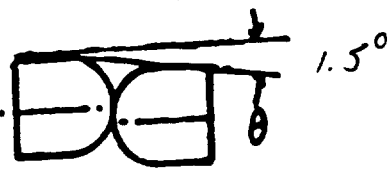
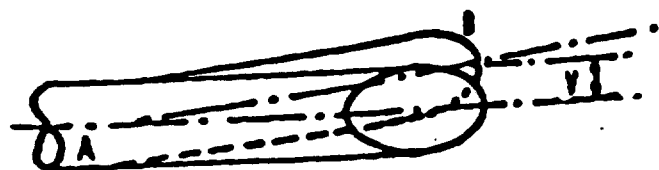


(f)

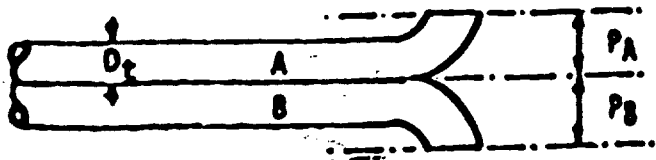


$\mu = A \sin \theta$

$V = A \sin \theta$



A-SIDE PLANE



B-SIDE PLANE

$1.05 D_t < P < 1.50 D_t$

$P_A = P_B$

$2.10 D_t < A < 3.00 D_t$

**COMPLIANCE DEMONSTRATION  
#1 BATTERY COMBUSTION STACK**

**USS CLAIRTON WORKS  
CLAIRTON, PA**

**APPENDIX C**

**FIELD DATA SHEETS**

#1 Battery Inerting

#1 Battery Stack - Test #1

P. 1 of 2

STACK SAMPLING DATA SHEET

DATE: 11-24-91  
 TEST NO.: CUE-6 BSI-1  
 NOZZLE: #50-428  
 STATIC PRESSURE: 1.2  
 PORT DIRECTION: 192  
 BAROMETRIC PRESSURE: 29.60  
 CONTROL BOX OPERATOR: [blank]  
 CORE HANDLER: [blank]  
 AN UP: [blank]

ΔH@: 1.713 (110.91)  
 METER CORRECTION: -9761  
 PITOT CORRECTION: 0.84  
 CONTROL BOX NO.: 3  
 NOMOGRAPH SET POINT: [blank]

HOT BOX NO.: 2  
 COLD BOX NO.: 2  
 PROBE NO.: 7-1  
 FILTER NO.: 711  
 STACK DIA.: 14" x 50'

| Time  | Meter Reading (dry) CF | Velocity HD in. H <sub>2</sub> O | Orifice Δ H in. H <sub>2</sub> O | Meter Temp In | Meter Temp Out | Vacuum in. Hg | Stack Temp °F | Probe Temp °F | Imp. Temp. °C/F | Hot Box °F | Comments   |
|-------|------------------------|----------------------------------|----------------------------------|---------------|----------------|---------------|---------------|---------------|-----------------|------------|------------|
| 10:20 | 367.848                | .07                              | 1.07                             | 47            | 47             | 2.5           | 430           | 260           | 488F            | 250        | 5 min / pt |
| 10:25 |                        | .07                              | 1.10                             | 56            | 41             | 2.5           | 457           | 225           | 50              | 220        |            |
| 10:30 |                        | .07                              | 1.10                             | 61            | 42             | 2.5           | 460           | 235           | 52              | 225        |            |
| 10:35 |                        | .05                              | .78                              | 64            | 45             | 2.0           | 445           | 235           | 55              | 225        |            |
| 10:40 |                        | .04                              | .63                              | 65            | 47             | 1.0           | 460           | 240           | 55              | 230        |            |
| 10:45 | 384.676                | .04                              | .63                              | 66            | 49             | 1.0           | 461           | 240           | 56              | 235        |            |
| 11:00 | 384.676                | .08                              | 1.25                             | 67            | 51             | 3.0           | 465           | 235           | 54              | 235        |            |
| 28.5  |                        | .07                              | 1.10                             | 70            | 52             | 3.0           | 446           | 235           | 52              | 240        |            |
| 20.2  |                        | .05                              | .78                              | 72            | 54             | 2.0           | 445           | 235           | 56              | 240        |            |
| 13.5  |                        | .06                              | .94                              | 72            | 54             | 3.0           | 441           | 236           | 58              | 240        |            |
| 7.6   |                        | .03                              | .47                              | 74            | 56             | 1.0           | 440           | 235           | 58              | 229        |            |
| 2.4   | 401.066                | .03                              | .47                              | 73            | 56             | 1.0           | 445           | 235           | 60              | 240        |            |

Impinger No. 1

Final Initial Difference

624.0 543.5 80.5

616.8 580.2 36.6

407.1 402.0 5.1

684.2 667.5 16.7

PITOT LEAK CHECK

| POS.   | NEG.   |
|--------|--------|
| 0.534C | 0.534C |
| 0.534C | 0.534C |

LEAK CHECK

| in. Hg.    | Rate     |
|------------|----------|
| Before 5.0 | .014 gpm |
| After 5.0  | .014 gpm |

CO<sub>2</sub> 3.0 3.0

O<sub>2</sub> 16.5 17.0

CO [blank]

N<sub>2</sub> [blank]

Estimates:

11-24-91

KEYSTONE  
ENVIRONMENTAL RESOURCES, INC.

DATE: 11-26-91

TEST NO.: CCR-BS1-1

NOZZLE: 428 #60

STATIC PRESSURE Ps: 1.2

PORT DIRECTION: 443

BAROMETRIC PRESSURE: 29.60

CLEAN UP:

PLANT USS Clanton Works

LOCATION: Clanton, PA

ACTIVITY NO. #1 Battery Stack

CONTROL BOX OPERATOR:

PROBE HANDLER:

DATE: 11-26-91

TEST NO.: CCR-BS1-1

NOZZLE: 428 #60

STATIC PRESSURE Ps: 1.2

PORT DIRECTION: 443

BAROMETRIC PRESSURE: 29.60

CLEAN UP:

PLANT USS Clanton Works

LOCATION: Clanton, PA

ACTIVITY NO. #1 Battery Stack

CONTROL BOX OPERATOR:

PROBE HANDLER:

DATE: 11-26-91

TEST NO.: CCR-BS1-1

NOZZLE: 428 #60

STATIC PRESSURE Ps: 1.2

PORT DIRECTION: 443

BAROMETRIC PRESSURE: 29.60

CLEAN UP:

STACK SAMPLING DATA SHEET

PLANT USS Clanton Works DATE: 11-26-91 TEST NO.: CCR-BS1-1 NOZZLE: 428 #60 STATIC PRESSURE Ps: 1.2 PORT DIRECTION: 443 BAROMETRIC PRESSURE: 29.60 CLEAN UP:

LOCATION: Clanton, PA ACTIVITY NO. #1 Battery Stack CONTROL BOX OPERATOR: PROBE HANDLER:

DATE: 11-26-91 TEST NO.: CCR-BS1-1 NOZZLE: 428 #60 STATIC PRESSURE Ps: 1.2 PORT DIRECTION: 443 BAROMETRIC PRESSURE: 29.60 CLEAN UP:

LOCATION: Clanton, PA ACTIVITY NO. #1 Battery Stack CONTROL BOX OPERATOR: PROBE HANDLER:

DATE: 11-26-91 TEST NO.: CCR-BS1-1 NOZZLE: 428 #60 STATIC PRESSURE Ps: 1.2 PORT DIRECTION: 443 BAROMETRIC PRESSURE: 29.60 CLEAN UP:

LOCATION: Clanton, PA ACTIVITY NO. #1 Battery Stack CONTROL BOX OPERATOR: PROBE HANDLER:

| BAROMETRIC PRESSURE: 29.60 LENGTHS OF UMBILICAL |       |                           |                                     |                                     |      |                  |     |                  |                  |                  |                     | x 25'         | x 50'      |
|-------------------------------------------------|-------|---------------------------|-------------------------------------|-------------------------------------|------|------------------|-----|------------------|------------------|------------------|---------------------|---------------|------------|
| Point                                           | Time  | Meter Reading<br>(dry) CF | Velocity<br>HD in. H <sub>2</sub> O | Orifice Δ H<br>in. H <sub>2</sub> O |      | Meter Temp<br>°F |     | Vacuum<br>in. Hg | Stack Temp<br>°F | Probe Temp<br>°F | Imp. Temp.<br>°C/°F | Hot Box<br>°F | Comments   |
|                                                 |       |                           |                                     | Reg.                                | Act. | In               | Out |                  |                  |                  |                     |               |            |
| 40.6                                            | 11:47 | 401.006                   | .08                                 | 1.25                                | 25   | 54               | 52  | 3.5              | 457              | 260              | 468°F               | 250           | 5 min / pt |
| 28.5                                            |       |                           | .07                                 | 1.10                                | 1.10 | 68               | 53  | 3.0              | 471              | 235              | 55                  | 225           |            |
| 20.2                                            |       |                           | .07                                 | 1.10                                | 1.10 | 70               | 53  | 3.0              | 458              | 235              | 49                  | 230           |            |
| 13.5                                            |       |                           | .07                                 | 1.10                                | 1.10 | 71               | 52  | 3.0              | 436              | 235              | 45                  | 230           |            |
| 7.6                                             |       |                           | .03                                 | 47                                  | 47   | 69               | 52  | 1.0              | 425              | 230              | 46                  | 225           |            |
| 2.4                                             | 12:17 | 418.676                   | .02                                 | 31                                  | 31   | 67               | 52  | 2.0              | 425              | 230              | 45                  | 230           |            |
| 28.5                                            | 12:25 | 418.676                   | .08                                 | 1.25                                | 1.25 | 57               | 50  | 3.5              | 457              | 230              | 46                  | 220           |            |
| 20.2                                            |       |                           | .09                                 | 1.41                                | 1.41 | 65               | 56  | 4.0              | 456              | 235              | 45                  | 225           |            |
| 13.5                                            |       |                           | .07                                 | 1.10                                | 1.10 | 69               | 50  | 2.5              | 459              | 235              | 50                  | 225           |            |
| 7.6                                             |       |                           | .05                                 | .78                                 | .78  | 70               | 50  | 1.0              | 457              | 236              | 56                  | 230           |            |
| 2.4                                             | 12:25 | 436.933                   | .03                                 | .47                                 | .47  | 70               | 57  | 1.0              | 461              | 235              | 50                  | 220           |            |

LEAK CHECK

|        |         |      |
|--------|---------|------|
| Before | in. Hg. | Rate |
| After  |         |      |

PITOT LEAK CHECK

|                 |   |   |
|-----------------|---|---|
| CO <sub>2</sub> | 1 | 2 |
| O <sub>2</sub>  |   |   |
| CO              |   |   |
| N <sub>2</sub>  |   |   |

Impinger No. Final Initial Difference

|   |  |  |  |
|---|--|--|--|
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |



BATTERY STACK TEST #3

Pg 1 of 2 D

## STACK SAMPLING DATA SHEET

PLANT USS Claiton Works DATE: 1-27-91 ΔH@: 1.713 (11-1-91) HOT BOX NO.: 4  
LOCATION (Comb. Stack #1) TEST NO.: GR-B51-2 METER CORRECTION: 0.9761 COLD BOX NO.: 4  
ACTIVITY NO.: 0.428 # 50 NOZZLE: 0.84 PITOT CORRECTION: 0.84 PROBE NO.: 7-2  
CONTROL BOX OPERATOR: BS STATIC PRESSURE PS: -1.2 CONTROL BOX NO.: 3 FILTER NO.: 712  
PROBE HANDLER: TH PORT DIRECTION: 1, 4 NOMOGRAPH SET POINT: 114" STACK DIA.: 14"  
CLEAN UP: BAROMETRIC PRESSURE: 29.50 LENGTHS OF UMBILICAL 25' 1 x 50' (4) #4

| Point | Time | Meter Reading<br>(dry) CF | Velocity<br>HD in. H <sub>2</sub> O | Orifice ΔH<br>in. H <sub>2</sub> O | Reg. | Act. | Meter Temp<br>In °F | Out °F | Vacuum<br>in. Hg | Stack Temp<br>°F | Probe Temp<br>°F | Imp. Temp.<br>°C/°F | Hot Box<br>°F | Comments    |
|-------|------|---------------------------|-------------------------------------|------------------------------------|------|------|---------------------|--------|------------------|------------------|------------------|---------------------|---------------|-------------|
| 40.6  | 940  | 536.317                   | 0.08                                | 1.22                               | 1.22 | 51   | 43                  |        | 5.2              | 456              | 250              | ICE BATH<br>28°F    | 230           | 5 min / st  |
| 28.5  |      |                           | 0.07                                | 1.07                               | 1.07 | 66   | 47                  |        | 5.2              | 474              |                  |                     | 230           |             |
| 20.2  |      |                           | 0.065                               | 0.99                               | 0.99 | 67   | 48                  |        | 5.0              | 480              | 250              |                     | 235           |             |
| 13.5  |      |                           | 0.055                               | 0.84                               | 0.84 | 68   | 49                  |        | 5.0              | 460              |                  |                     | 240           | Battery #1  |
| 7.6   |      |                           | 0.015                               | 0.23                               | 0.23 | 65   | 50                  |        | 1.5              | 403              | 250              |                     | 245           | active      |
| 2.4   | 1010 | 551.398                   | 0.01                                | 0.15                               | 0.15 | 63   | 50                  |        | 1.0              | 388              |                  |                     | 245           | during test |
| 40.6  | 1012 | 551.398                   | 0.085                               | 1.29                               | 1.29 | 67   | 50                  |        | 5.0              | 409              | 250              |                     | 235           |             |
| 28.5  |      |                           | 0.08                                | 1.22                               | 1.22 | 71   | 51                  |        | 7.0              | 457              |                  |                     | 238           |             |
| 20.2  |      |                           | 0.07                                | 1.07                               | 1.07 | 71   | 51                  |        | 6.5              | 461              | 250              |                     | 240           |             |
| 13.5  |      |                           | 0.055                               | 0.85                               | 0.85 | 72   | 52                  |        | 6.2              | 468              |                  |                     | 237           |             |
| 7.6   |      |                           | 0.02                                | 0.31                               | 0.31 | 68   | 52                  |        | 2.0              | 471              | 251              |                     | 233           |             |
| 2.4   | 1042 | 567.677                   | 0.01                                | 0.15                               | 0.15 | 67   | 53                  |        | 2.0              | 477              | 253              |                     | 235           |             |

| LEAK CHECK |      | PITOT LEAK CHECK |                | Impinger No. |      | Final | Initial | Difference |
|------------|------|------------------|----------------|--------------|------|-------|---------|------------|
| in. Hg.    | Rate | CO <sub>2</sub>  | O <sub>2</sub> | CO           | N    | 1     | 2       |            |
| Before     | 5.0  | 17.0             | 17.0           | 17.0         | 17.0 | 562.0 | 465.5   | 96.5       |
| After      | 8.0  | 15.0             | 15.0           | 15.0         | 15.0 | 603.4 | 570.0   | 33.4       |
|            |      | 15.0             | 15.0           | 15.0         | 15.0 | 440.6 | 436.8   | 3.8        |
|            |      | 15.0             | 15.0           | 15.0         | 15.0 | 636.3 | 624.2   | 12.1       |

MIN = 27.7  
13.96





**ENVIRONMENTAL RESOURCES, INC.**

PLANT USS Cluiven Works  
 LOCATION: Comb. Stack #1  
 ACTIVITY NO.: \_\_\_\_\_  
 CONTROL BOX OPERATOR: DB  
 PROBE HANDLER: TM  
 CLEAN UP: \_\_\_\_\_

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

$\Delta H@$ : 1,713 (11-1-91)  
 METER CORRECTION: 0.9761  
 PITOT CORRECTION: 0.84  
 CONTROL BOX NO.: 3  
 NOMOGRAPH SET POINT: \_\_\_\_\_

HOT BOX NO.: 4  
 COLD BOX NO.: 4  
 PROBE NO.: 7-2  
 FILTER NO.: 712  
 STACK DIA.: 114" | x 50'

LENGTHS OF UMBILICAL | x 25'

| Point | Time | Meter Reading<br>(dry) CF | Velocity<br>HD in. H <sub>2</sub> O | Orifice ΔH<br>in. H <sub>2</sub> O |      | Meter Temp<br>°F |     | Vacuum<br>in. Hg | Stack Temp<br>°F | Probe Temp<br>°F | Imp. Temp.<br>°C/°F | Hot Box<br>°F | Comments                |
|-------|------|---------------------------|-------------------------------------|------------------------------------|------|------------------|-----|------------------|------------------|------------------|---------------------|---------------|-------------------------|
|       |      |                           |                                     | Reg.                               | Act. | In               | Out |                  |                  |                  |                     |               |                         |
| 40.6  | 1046 | 567.671                   | 0.09                                | 1.39                               | 1.39 | 65               | 53  | 7.7              | 462              | 250              | RED<br>DOWN         | 245           | 5 min / pt              |
| 28.5  |      |                           | 0.095                               | 1.47                               | 1.47 | 73               | 53  | 8.0              | 481              | 252              | <68°F               | 240           | Battery #1              |
| 20.2  |      |                           | 0.07                                | 1.08                               | 1.08 | 72               | 54  | 6.0              | 485              | 250              |                     | 235           | active during           |
| 13.5  |      | 0.025                     | 0.225                               | 0.39                               | 0.39 | 70               | 54  | 2.5              | 483              | 250              |                     | 235           | sampling                |
| 7.6   |      |                           | 0.01                                | 0.15                               | 0.15 | 68               | 55  | 1.0              | 479              | 250              |                     | 245           |                         |
| 2.4   | 1116 | 582.903                   | 0.01                                | 0.15                               | 0.15 | 67               | 55  | 1.0              | 475              | 250              |                     | 240           |                         |
| 40.6  | 1120 | 582.903                   | 0.07                                | 1.08                               | 1.08 | 69               | 55  | 6.0              | 458              | 250              |                     | 230           | Estimates               |
| 28.5  |      |                           | 0.065                               | 1.01                               | 1.01 | 75               | 56  | 5.5              | 472              | 255              |                     | 225           | MW=27.7                 |
| 20.2  |      |                           | 0.06                                | 0.93                               | 0.93 | 77               | 57  | 5.5              | 471              | 250              |                     | 225           | %H <sub>2</sub> O = 13% |
| 13.5  |      |                           | 0.06                                | 0.93                               | 0.93 | 77               | 58  | 5.5              | 475              | 250              |                     | 230           |                         |
| 7.6   |      |                           | 0.015                               | 0.23                               | 0.23 | 74               | 59  | 1.5              | 470              | 250              |                     | 230           |                         |
| 2.4   | 1150 | 598.161                   | 0.01                                | 0.15                               | 0.15 | 73               | 62  | 1.2              | 472              | 750              |                     | 235           |                         |

| LEAK CHECK |         |      | 1               |  | 2              |  | PITOT LEAK CHECK |      | Impinging No. | Final | Initial | Difference |
|------------|---------|------|-----------------|--|----------------|--|------------------|------|---------------|-------|---------|------------|
|            | in. Hg. | Rate | CO <sub>2</sub> |  | O <sub>2</sub> |  | POS.             | NEG. |               |       |         |            |
| Before     |         |      |                 |  |                |  |                  |      | 1             |       |         |            |
| After      |         |      |                 |  |                |  |                  |      | 2             |       |         |            |
|            |         |      |                 |  |                |  |                  |      | 3             |       |         |            |
|            |         |      |                 |  |                |  |                  |      | 4             |       |         |            |
|            |         |      |                 |  |                |  |                  |      | 5             |       |         |            |



## STACK SAMPLING DATA SHEET

PLANT USS Clinton Works DATE: 11-27-91 ΔH@: 1.713 (11-1-91) HOT BOX NO.: 5  
LOCATION Comb. Stack #1 TEST NO.: CLR-351-3 METER CORRECTION: 0.9761 COLD BOX NO.: 5  
ACTIVITY NO.: NOZZLE: 0.428 #50 PITOT CORRECTION: 0.84 PROBE NO.: 7-3  
CONTROL BOX OPERATOR: DB STATIC PRESSURE Ps: -1.15 CONTROL BOX NO.: 3 FILTER NO.: 716  
PROBE HANDLER: M PORT DIRECTION: 2,3 NOMOGRAPH SET POINT: 114" STACK DIA.: 114"  
CLEAN UP: BAROMETRIC PRESSURE: 29.30 LENGTHS OF UMBILICAL x 25' x 50'

| Point  | Time | Meter Reading<br>(dry) CF | Velocity<br>HD in. H <sub>2</sub> O | Orifice ΔH<br>in. H <sub>2</sub> O | Meter Temp<br>°F |    | Vacuum<br>in. Hg | Stack Temp<br>°F | Probe Temp<br>°F | Imp. Temp.<br>°C/°F | Hot Box<br>°F | Comments    |
|--------|------|---------------------------|-------------------------------------|------------------------------------|------------------|----|------------------|------------------|------------------|---------------------|---------------|-------------|
| 2 40.6 | 1207 | 598.428                   | 0.07                                | 0.93                               | 0.93             | 70 | 58               | 4.5              | 440              | 250                 | 230           | 5 min/pt    |
| 28.5   | 1212 |                           | 0.065                               | 1.01                               | 1.01             | 75 | 58               | 5.0              | 450              |                     |               |             |
| 20.2   | 1217 |                           | 0.065                               | 1.01                               | 1.01             | 80 | 60               | 5.5              | 451              | 250                 | 235           | Battery #1  |
| 13.5   | 1222 |                           | 0.05                                | 0.79                               | 0.79             | 78 | 59               | 5.5              | 455              |                     |               | Active      |
| 7.6    | 1227 | 615.714                   | 0.01                                | 0.15                               | 0.15             | 77 | 60               | 28.0             | 450              | 250                 | 230           |             |
| 2.4    | 1237 | 645.714                   | 0.01                                | 0.15                               | 0.15             | 75 | 61               | 1.0              | 452              |                     |               | 96.160 = 13 |
| 3 40.6 | 1240 | 615.714                   | 0.09                                | 1.43                               | 1.43             | 79 | 60               | 7.5              | 466              | 250                 | 220           | MW = 27.7   |
| 28.5   |      |                           | 0.09                                | 1.43                               | 1.43             | 80 | 61               | 8.0              | 473              |                     |               |             |
| 20.2   |      |                           | 0.08                                | 1.27                               | 1.27             | 81 | 61               | 7.0              | 472              | 245                 | 225           |             |
| 13.5   |      |                           | 0.075                               | 1.19                               | 1.19             | 82 | 62               | 7.0              | 484              |                     |               |             |
| 7.6    |      |                           | 0.055                               | 0.87                               | 0.87             | 82 | 62               | 6.5              | 471              | 250                 | 220           |             |
| 3 2.4  | 1310 | 635.620                   | 0.04                                | 0.63                               | 0.63             | 82 | 63               | 6.5              | 476              |                     |               |             |

635.620

## LEAK CHECK

|        | in. Hg. | Rate      |
|--------|---------|-----------|
| Before | 5.0     | <0.02 CFM |
| After  | 8.0     | 0.001 CFM |

## PITOT LEAK CHECK

| POS.      | NEG.      |
|-----------|-----------|
| OK 15 sec | OK 15 sec |
| OK 15 sec | OK 15 sec |

| Impinger No. | Final | Initial | Difference |
|--------------|-------|---------|------------|
| 1 100 ml     | 662.9 | 556.6   | 106.3      |
| 2 100 ml     | 530.5 | 488.8   | 41.7       |
| 3 100 ml     | 451.6 | 447.2   | 4.4        |
| 4 50 ml      | 675.9 | 656.4   | 19.5       |
| 5            |       |         |            |

932820



# STACK SAMPLING DATA SHEET

PLANT USS Chlor-Alkali DATE: 11-27-91 ΔH@: 1,713 (11-1-91) HOT BOX NO.: #5  
 LOCATION: Comb. Stack #1 TEST NO.: CLR-851-3 METER CORRECTION: 0.9761 COLD BOX NO.: 5  
 ACTIVITY NO.: NOZZLE: 0.428 #50 PITOT CORRECTION: 0.84 PROBE NO.: 7-3  
 CONTROL BOX OPERATOR: DB STATIC PRESSURE Ps: -1.15 CONTROL BOX NO.: 3 FILTER NO.: 716  
 PROBE HANDLER: TM PORT DIRECTION: 4,1 NOMOGRAPH SET POINT: — STACK DIA.: 114"  
 CLEAN UP: — BAROMETRIC PRESSURE: 29.50 LENGTHS OF UMBILICAL — x 25' — x 50'

| Point | Time | Meter Reading<br>(dry) CF | Velocity<br>HD in. H <sub>2</sub> O | Orifice ΔH<br>in. H <sub>2</sub> O |      | Meter Temp<br>°F |    | Vacuum<br>in. Hg | Stack Temp<br>°F | Probe Temp<br>°F | Imp. Temp.<br>°C/°F | Hot Box<br>°F | Comments                     |
|-------|------|---------------------------|-------------------------------------|------------------------------------|------|------------------|----|------------------|------------------|------------------|---------------------|---------------|------------------------------|
| 40.6  | 1313 | 635.620                   | 0.07                                | 1.11                               | 1.11 | 79               | 63 | 6.0              | 453              | 240              |                     | 220           |                              |
| 28.5  | ✓    |                           | 0.07                                | 1.11                               | 1.11 | 80               | 63 | 6.0              | 466              |                  |                     |               | 2 minute<br>power<br>failure |
| 20.2  |      |                           | 0.075                               | 1.19                               | 1.19 | 82               | 64 | 6.5              | 472              | 245              |                     | 225           |                              |
| 13.5  |      |                           | 0.05                                | 0.79                               | 0.79 | 83               | 64 | 6.5              | 481              |                  |                     |               |                              |
| 7.6   |      |                           | 0.06                                | 0.95                               | 0.95 | 83               | 64 | 5.0              | 480              | 250              |                     | 230           | Battery #1<br>Active         |
| 2.4   | 1343 | 653.565                   | 0.01                                | 0.15                               | 0.15 | 83               | 64 | 5.0              | 479              |                  |                     |               |                              |
| 10.6  | 1346 | 653.565                   | 0.075                               | 1.19                               | 1.19 | 80               | 64 | 6.5              | 459              | 245              |                     | 225           |                              |
| 2.5   |      |                           | 0.07                                | 1.11                               | 1.11 | 82               | 64 | 4.5              | 485              |                  |                     |               |                              |
| 20.2  |      |                           | 0.065                               | 1.03                               | 1.03 | 84               | 64 | 7.0              | 489              | 250              |                     | 220           |                              |
| 13.5  |      |                           | 0.05                                | 0.79                               | 0.79 | 84               | 65 | 6.2              | 487              |                  |                     |               |                              |
| 7.6   |      |                           | 0.015                               | 0.24                               | 0.24 | 80               | 65 | 1.5              | 480              | 250              |                     | 230           |                              |
| 2.4   | 1416 | 669.445                   | 0.01                                | 0.15                               | 0.15 | 78               | 65 | 1.5              | 475              |                  |                     |               |                              |

## LEAK CHECK

|        |         | Impinger No.     |   | Final |      | Initial |  | Difference |  |
|--------|---------|------------------|---|-------|------|---------|--|------------|--|
|        |         | 1                | 2 |       |      |         |  |            |  |
|        |         | PITOT LEAK CHECK |   |       |      |         |  |            |  |
|        |         | CO <sub>2</sub>  |   | POS.  | NEG. |         |  |            |  |
| Before | in. Hg. |                  |   |       |      |         |  |            |  |
| After  | Rate    |                  |   |       |      |         |  |            |  |



## STACK SAMPLING DATA SHEET

PLANT USS Clariden WorksDATE: 11-27-91ΔH@: 1.713 (11-1-91)HOT BOX NO.: 3LOCATION: Comb. Stack #1TEST NO.: CLR-BS 1-AMETER CORRECTION: 0.9761COLD BOX NO.: 3

ACTIVITY NO.: \_\_\_\_\_

NOZZLE: 0.428 #50PITOT CORRECTION: 0.84PROBE NO.: 7-2CONTROL BOX OPERATOR: DBSTATIC PRESSURE PS: -1.2CONTROL BOX NO.: 3FILTER NO.: 709PROBE HANDLER: JMPORT DIRECTION: 1,4

NOMOGRAPH SET POINT: \_\_\_\_\_

STACK DIA.: 11.4"

CLEAN UP: \_\_\_\_\_

BAROMETRIC PRESSURE: 29.50

LENGTHS OF UMBILICAL \_\_\_\_\_ x 25' \_\_\_\_\_ x 50'

| Point  | Time | Meter Reading (dry) CF | Velocity HD in. H <sub>2</sub> O | Orifice Δ H in. H <sub>2</sub> O<br>Reg. Act. | Meter Temp<br>In Out<br>°F | Vacuum in. Hg | Stack Temp<br>°F | Probe Temp<br>°F | Imp. Temp.<br>°C/°F | Hot Box<br>°F | Comments                  |
|--------|------|------------------------|----------------------------------|-----------------------------------------------|----------------------------|---------------|------------------|------------------|---------------------|---------------|---------------------------|
| 1 40.6 | 1500 | 670.313                | 0.09                             | 1.43 1.43                                     | 59 61                      | 2.2           | 496              | 240              | 200<br>Down<br>68°F | 220           | 5 m/s pt                  |
| 28.5   |      |                        | 0.08                             | 1.19 1.19                                     | 79 62                      | 3.0           | 450              |                  |                     | 225           |                           |
| 20.2   |      |                        | 0.07                             | 1.04 1.04                                     | 80 62                      | 2.5           | 457              | 245              |                     | 230           |                           |
| 13.5   |      |                        | 0.07                             | 1.04 1.04                                     | 81 63                      | 2.5           | 460              | 250              |                     | 235           | Battery #1                |
| 7.6    |      |                        | 0.035                            | 0.52 0.52                                     | 80 64                      | 1.5           | 462              |                  |                     |               | Active                    |
| 2.4    | 1530 | 687.272                | 0.01                             | 0.15 0.15                                     | 80 64                      | 1.0           | 470              |                  |                     |               |                           |
| 4 40.6 | 1533 | 687.272                | 0.08                             | 1.19 1.19                                     | 82 64                      | 3.0           | 453              | 240              |                     | 235           |                           |
| 28.5   |      |                        | 0.07                             | 1.04 1.04                                     | 82 64                      | 2.5           | 469              |                  |                     |               | % H <sub>2</sub> O = 13.8 |
| 20.2   |      |                        | 0.075                            | 1.12 1.12                                     | 84 65                      | 2.7           | 471              | 245              |                     | 240           | MW = 27.7                 |
| 13.5   |      |                        | 0.10                             | 1.49 1.49                                     | 85 65                      | 3.5           | 473              | 240              |                     | 240           |                           |
| 7.6    |      |                        | 0.085                            | 1.27 1.27                                     | 85 66                      | 3.0           | 468              |                  |                     |               |                           |
| 4 2.4  | 1603 | 705.846                | 0.01                             | 0.15 0.15                                     | 87 66                      | 3.0           | 465              | 245              |                     | 240           |                           |

## LEAK CHECK

|        | in. Hg. | Rate       |
|--------|---------|------------|
| Before | 5.0     | 10.009 CFM |
| After  | 5.0     | 9.011 CFM  |

|                 | 1    | 2    |
|-----------------|------|------|
| CO <sub>2</sub> | 3.0  | 2.5  |
| O <sub>2</sub>  | 16.0 | 17.0 |
| CO              |      |      |
| N               |      |      |

| PITOT LEAK CHECK |           |
|------------------|-----------|
| POS.             | NEG.      |
| 15 sec OK        | 15 sec OK |
| 15 sec OK        | 15 sec OK |

| Impinger No.       | Final | Initial | Difference |
|--------------------|-------|---------|------------|
| 1 H <sub>2</sub> O | 646.9 | 569.4   | 78.5       |
| 2 H <sub>2</sub> O | 595.1 | 565.6   | 29.5       |
| 3 Del              | 455.5 | 450.7   | 4.8        |
| 4 5:1.6E           | 687.9 | 671.2   | 16.7       |
| 5                  |       |         |            |

**STACK SAMPLING DATA SHEET**

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

| Point       | Time | Meter Reading<br>(dry) CF | Velocity<br>HD in. H <sub>2</sub> O | Orifice $\Delta H$<br>in. H <sub>2</sub> O | Meter Temp<br>In °F Out °F | Vacuum<br>in. Hg | Stack Temp<br>°F | Probe Temp<br>°F | Imp. Temp.<br>°C °F | Hot Box<br>°F | Comments   |
|-------------|------|---------------------------|-------------------------------------|--------------------------------------------|----------------------------|------------------|------------------|------------------|---------------------|---------------|------------|
| 3 40.6      | 1607 | 705.846                   | 0.06                                | 0.90 0.90                                  | 83 66                      | 2.5              | 444              | 240              | ICE DRY W 268°F     | 250           | 5 min/pt   |
| 28.5        |      |                           | 0.075                               | 1.12 1.12                                  | 85 67                      | 2.5              | 455              | 245              | 268°F               | 250           |            |
| 20.2        |      |                           | 0.06                                | 0.90 0.90                                  | 86 67                      | 2.0              | 456              | 250              |                     | 240           |            |
| 13.5        |      |                           | 0.035                               | 0.52 0.52                                  | 85 67                      | 1.2              | 460              | 250              |                     | 240           | Battery #1 |
| 7.6         |      |                           | 0.01                                | 0.15 0.15                                  | 80 67                      | 1.0              | 463              | 255              |                     | 245           | Active     |
| 2.4 1637    |      | 720.268                   | 0.01                                | 0.15 0.15                                  | 78 66                      | 1.0              | 468              | 250              |                     | 240           |            |
| 2 40.6 1639 |      | 720.268                   | 0.08                                | 1.19 1.19                                  | 79 67                      | 1.5              | 464              | 255              |                     | 230           |            |
| 20.2        |      |                           | 0.075                               | 1.12 1.12                                  | 85 66                      | 2.5              | 480              | 250              |                     | 230           |            |
| 7.6         |      |                           | 0.07                                | 1.04 1.04                                  | 85 66                      | 2.5              | 477              | 245              |                     | 220           |            |
| 13.5 7.6    |      |                           | 0.05                                | 0.75 0.75                                  | 84 66                      | 2.0              | 473              | 240              |                     | 225           |            |
| 7.6         |      |                           | 0.015                               | 0.22 0.22                                  | 80 66                      | 1.0              | 470              | 250              |                     | 220           |            |
| 2 2.4 1709  |      | 735.651                   | 0.01                                | 0.15 0.15                                  | 78 65                      | 1.0              | 472              | 250              |                     | 225           |            |

**LEAK CHECK**

|        | in. Hg. | Rate |
|--------|---------|------|
| Before |         |      |
| After  |         |      |

**Impinger No.**

Final Initial Difference

| Impinger No. | Final | Initial | Difference |
|--------------|-------|---------|------------|
| 1            |       |         |            |
| 2            |       |         |            |
| 3            |       |         |            |
| 4            |       |         |            |
| 5            |       |         |            |

**PITOT LEAK CHECK**

|   | POS. | NEG. |
|---|------|------|
| 1 |      |      |
| 2 |      |      |
| 3 |      |      |
| 4 |      |      |
| 5 |      |      |

**COMPLIANCE DEMONSTRATION  
#1 BATTERY COMBUSTION STACK**

**USS CLAIRTON WORKS  
CLAIRTON, PA**

**APPENDIX D**

**EMISSIONS CALCULATIONS**

KEYSTONE ENVIRONMENTAL RESOURCES  
AIR QUALITY ENGINEERING

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

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

1. EMISSION RESULTS

| PARAMETER   | GR/SCFD | LB/HR   |
|-------------|---------|---------|
| PARTICULATE | .00640  | 2.14275 |

2. STACK CONDITIONS

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

3. SAMPLING CONDITIONS

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

KEYSTONE ENVIRONMENTAL RESOURCES, INC.  
AIR QUALITY ENGINEERING

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

FIELD DATA AND VELOCITY CALCULATIONS

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

O R S A T

|              |      |              |   |      |
|--------------|------|--------------|---|------|
| CO2          | 3.0  | IMPINGER NO. | 1 | 80.5 |
| O2           | 16.5 |              | 2 | 36.6 |
| CO           | .0   |              | 3 | 5.1  |
| N            | 80.5 |              | 4 | .0   |
| ABSORBED H2O |      |              |   | 16.7 |

CONTROL BOX CALIBRATIONS

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

LEAK CHECK

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

CONTROL BOX NO. 3

PROBE NO. 7-1

NOZZLE NO. 50



KEYSTONE ENVIRONMENTAL RESOURCES, INC.  
AIR QUALITY ENGINEERING

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

STACK SAMPLING CALCULATIONS

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

V.                      MOLECULAR WEIGHT OF STACK GAS

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

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

KEYSTONE ENVIRONMENTAL RESOURCES, INC.  
AIR QUALITY ENGINEERING

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

| PARAMETER   | CYCLONE<br>WT. (G) | MATL.ON<br>FILTER(G) | INSOL.MATL.<br>IN PROBE(G) | SOL.MATL.<br>IN PROBE(G) |
|-------------|--------------------|----------------------|----------------------------|--------------------------|
| PARTICULATE | .00000             | .01470               | .00000                     | .01360                   |

| PARAMETER   | INSOL.MATL.<br>IN IMP.(G) | SOLUBLE MATL.<br>IN IMP.(G) |
|-------------|---------------------------|-----------------------------|
| PARTICULATE | .00000                    | .00000                      |

|             |        |
|-------------|--------|
| PARTICULATE | .02830 |
|-------------|--------|

|            |        |
|------------|--------|
| ALL MATLS. | .02830 |
|------------|--------|

| PARAMETER   | GR/SCFD | LB/HR   |
|-------------|---------|---------|
| PARTICULATE | .00640  | 2.14275 |

Emission rates are based on EPA Method 5.

KEYSTONE ENVIRONMENTAL RESOURCES  
AIR QUALITY ENGINEERING

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

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

1. EMISSION RESULTS

| PARAMETER   | GR/SCFD | LB/HR   |
|-------------|---------|---------|
| -----       | -----   | -----   |
| PARTICULATE | .00586  | 1.71649 |

2. STACK CONDITIONS

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

3. SAMPLING CONDITIONS

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

KEYSTONE ENVIRONMENTAL RESOURCES, INC.  
AIR QUALITY ENGINEERING

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

FIELD DATA AND VELOCITY CALCULATIONS

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

O R S A T

CO2 3.0  
O2 17.0  
CO .0  
N 80.0

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

CONTROL BOX CALIBRATIONS

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

LEAK CHECK

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

CONTROL BOX NO. 3

PROBE NO. 7-2

NOZZLE NO. 50

KEYSTONE ENVIRONMENTAL RESOURCES, INC.  
AIR QUALITY ENGINEERING

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

STACK SAMPLING CALCULATIONS

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

V. MOLECULAR WEIGHT OF STACK GAS

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

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

KEYSTONE ENVIRONMENTAL RESOURCES, INC.  
AIR QUALITY ENGINEERING

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

| PARAMETER   | CYCLONE<br>WT. (G) | MATL.ON<br>FILTER(G) | INSOL.MATL.<br>IN PROBE(G) | SOL.MATL.<br>IN PROBE(G) |
|-------------|--------------------|----------------------|----------------------------|--------------------------|
| PARTICULATE | .00000             | .00880               | .00000                     | .01420                   |

| PARAMETER   | INSOL.MATL.<br>IN IMP. (G) | SOLUBLE MATL.<br>IN IMP. (G) |
|-------------|----------------------------|------------------------------|
| PARTICULATE | .00000                     | .00000                       |

|             |        |
|-------------|--------|
| PARTICULATE | .02300 |
|-------------|--------|

|            |        |
|------------|--------|
| ALL MATLS. | .02300 |
|------------|--------|

| PARAMETER   | GR/SCFD | LB/HR   |
|-------------|---------|---------|
| PARTICULATE | .00586  | 1.71649 |

Emission rates are based on EPA Method 5.

KEYSTONE ENVIRONMENTAL RESOURCES  
AIR QUALITY ENGINEERING

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

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

1. EMISSION RESULTS

| PARAMETER   | GR/SCFD | LB/HR   |
|-------------|---------|---------|
| PARTICULATE | .00683  | 2.19148 |

2. STACK CONDITIONS

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

3. SAMPLING CONDITIONS

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

KEYSTONE ENVIRONMENTAL RESOURCES, INC.  
AIR QUALITY ENGINEERING

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

FIELD DATA AND VELOCITY CALCULATIONS

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

O R S A T

CO2 2.5  
O2 16.0  
CO .0  
N 81.5

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

CONTROL BOX CALIBRATIONS

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

LEAK CHECK

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

CONTROL BOX NO. 3

PROBE NO. 7-3

NOZZLE NO. 50



KEYSTONE ENVIRONMENTAL RESOURCES, INC.  
AIR QUALITY ENGINEERING

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

STACK SAMPLING CALCULATIONS

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

V.                      MOLECULAR WEIGHT OF STACK GAS

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

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

KEYSTONE ENVIRONMENTAL RESOURCES, INC.  
AIR QUALITY ENGINEERING

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

| PARAMETER   | CYCLONE<br>WT. (G) | MATL.ON<br>FILTER(G) | INSOL.MATL.<br>IN PROBE(G) | SOL.MATL.<br>IN PROBE(G) |
|-------------|--------------------|----------------------|----------------------------|--------------------------|
| PARTICULATE | .00000             | .01590               | .00000                     | .01430                   |

| PARAMETER   | INSOL.MATL.<br>IN IMP.(G) | SOLUBLE MATL.<br>IN IMP.(G) |
|-------------|---------------------------|-----------------------------|
| PARTICULATE | .00000                    | .00000                      |

|             |        |
|-------------|--------|
| PARTICULATE | .03020 |
|-------------|--------|

|            |        |
|------------|--------|
| ALL MATLS. | .03020 |
|------------|--------|

| PARAMETER   | GR/SCFD | LB/HR   |
|-------------|---------|---------|
| PARTICULATE | .00683  | 2.19148 |

Emission rates are based on EPA Method 5.

KEYSTONE ENVIRONMENTAL RESOURCES  
AIR QUALITY ENGINEERING

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

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

1. EMISSION RESULTS

| PARAMETER   | GR/SCFD | LB/HR   |
|-------------|---------|---------|
| PARTICULATE | .00668  | 2.10103 |

2. STACK CONDITIONS

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

3. SAMPLING CONDITIONS

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

KEYSTONE ENVIRONMENTAL RESOURCES, INC.  
AIR QUALITY ENGINEERING

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

FIELD DATA AND VELOCITY CALCULATIONS

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

O R S A T

CO2 2.7  
O2 16.5  
CO .0  
N 80.8

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

CONTROL BOX CALIBRATIONS

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

LEAK CHECK

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

CONTROL BOX NO. 3

PROBE NO. 7-2

NOZZLE NO. 50

KEYSTONE ENVIRONMENTAL RESOURCES, INC.  
AIR QUALITY ENGINEERING

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

STACK SAMPLING CALCULATIONS

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

V. MOLECULAR WEIGHT OF STACK GAS

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

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

KEYSTONE ENVIRONMENTAL RESOURCES, INC.  
AIR QUALITY ENGINEERING

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

| PARAMETER   | CYCLONE<br>WT. (G) | MATL.ON<br>FILTER(G) | INSOL.MATL.<br>IN PROBE(G) | SOL.MATL.<br>IN PROBE(G) |
|-------------|--------------------|----------------------|----------------------------|--------------------------|
| PARTICULATE | .00000             | .01370               | .00000                     | .01340                   |

| PARAMETER   | INSOL.MATL.<br>IN IMP.(G) | SOLUBLE MATL.<br>IN IMP.(G) |
|-------------|---------------------------|-----------------------------|
| PARTICULATE | .00000                    | .00000                      |

|             |        |
|-------------|--------|
| PARTICULATE | .02710 |
|-------------|--------|

|            |        |
|------------|--------|
| ALL MATLS. | .02710 |
|------------|--------|

| PARAMETER   | GR/SCFD | LB/HR   |
|-------------|---------|---------|
| PARTICULATE | .00668  | 2.10103 |

Emission rates are based on EPA Method 5.

Date Analyzed: 12/3/91

Date Analyzed: 12/3/91

# PARTICULATE REPORTING FORM

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

**COMPLIANCE DEMONSTRATION  
#1 BATTERY COMBUSTION STACK**

**USS CLAIRTON WORKS  
CLAIRTON, PA**

**APPENDIX E**

**VISIBLE EMISSIONS DATA**



# VISIBLE EMISSIONS OBSERVATIONS FORM

OBSERVER: Pat Malone

DATE: 11-26-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 10:20

END TIME: 11:20

OBSERVATION POINT:

Maple Ave Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 7 mph

DIRECTION: West

TEMPERATURE: 19°

SKY CONDITION: Scattered Clouds

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% —

No. READINGS  $\geq$  60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS:                     

#1 Stack Test

#1 TEST

Stack  
Test

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

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

# VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

OBSERVER: Pat Malone

DATE: 11-26-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 11:20

END TIME: 12:20

OBSERVATION POINT:

Maple Ave. Lot.

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 14 mph

DIRECTION: West

TEMPERATURE: 26° (wc. +5)

SKY CONDITION: Scattered Clouds

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% —

No. READINGS  $\geq$  60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS: —

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

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

#1 TEST

# VISIBLE EMISSIONS OBSERVATIONS FORM

#1 Stack Test

OBSERVER: Pat Mancini

DATE: 11-26-91

FACILITY: USS - Chair top

OBSERVATION: START TIME: 12:20

END TIME: 1:20

OBSERVATION POINT:

Maple Ave. lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft

WIND:

SPEED: 10 mph

DIRECTION: West

TEMPERATURE: 28° (wc +13)

SKY CONDITION: Scattered Clouds

BACKGROUND: Sky

READING CONDITIONS: Good

COLOR OF EMISSION: ---

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% ---

No. READINGS  $\geq$  60% ---

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS: ---

|    |                          |                          |                          |                          |
|----|--------------------------|--------------------------|--------------------------|--------------------------|
| 0  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 22 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 24 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 25 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 26 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 27 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 28 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 29 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|    |                          |                          |                          |                          |
|----|--------------------------|--------------------------|--------------------------|--------------------------|
| 30 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 31 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 32 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 33 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 34 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 35 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 36 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 37 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 38 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 39 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 40 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 41 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 42 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 43 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 44 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 45 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 46 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 47 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 48 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 49 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 50 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 51 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 52 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 53 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 54 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 55 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 56 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 57 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 58 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 59 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

#1 TEST

End of Test

# VISIBLE EMISSIONS OBSERVATIONS FORM

OBSERVER: Pat Macone

DATE: 11-26-91

FACILITY: USS-Clinton

OBSERVATION: START TIME: 1:20

END TIME: 2:20

OBSERVATION POINT:

Maple Ave lot

SOURCE: #1 Stack

DISTANCE: ~800 ft

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 10 mph

DIRECTION: SW

TEMPERATURE: 30°

SKY CONDITION: Scattered clouds

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% —

No. READINGS  $\geq$  60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: HARRIS

COMMENTS: —

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

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

VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

This test  
was voided

#2 TEST

OBSERVER: Pat Marume

DATE: 11-26-91

FACILITY: USS - Claitor

OBSERVATION: START TIME: 2:20

END TIME: 3:20

OBSERVATION POINT:

Maple Ave Lot

SOURCE: #1 STACK

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 10 mph

DIRECTION: SW

TEMPERATURE: 30°

SKY CONDITION: Scattered Clouds

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% —

No. READINGS  $\geq$  60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: HARRIS

COMMENTS:

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

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

Start  
Test

End #1  
Port

Start #2  
Port

# VISIBLE EMISSIONS OBSERVATIONS FORM

## #1 STACK TEST

## #2 TEST

OBSERVER: Pat Malone

DATE: 11-26-91

FACILITY: USS - Clanton

OBSERVATION: START TIME: 3:20

END TIME: 4:20

OBSERVATION POINT:

Maple One hot

SOURCE: #1 STACK

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 8 mph

DIRECTION: SW

TEMPERATURE: 31°

SKY CONDITION: Clear

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: Black

TOTAL No. OF READINGS: 240

No. READINGS >= 20% —

No. READINGS >= 60% —

GREATEST OPACITY: 15%

CREW: C FOREMAN: Harris

COMMENTS: \_\_\_\_\_

|     |    |   |   |    |
|-----|----|---|---|----|
| 320 |    |   |   |    |
| 0   | 0  | 0 | 0 | 0  |
| 1   | 0  | 0 | 0 | 0  |
| 2   | 0  | 0 | 0 | 0  |
| 3   | 0  | 0 | 0 | 0  |
| 4   | 0  | 0 | 0 | 0  |
| 5   | 0  | 0 | 0 | 0  |
| 6   | 0  | 0 | 0 | 0  |
| 7   | 0  | 0 | 0 | 0  |
| 8   | 0  | 0 | 0 | 0  |
| 9   | 0  | 0 | 0 | 0  |
| 330 | 0  | 0 | 5 | 15 |
| 10  | 15 | 5 | 5 | 5  |
| 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  |
| 340 | 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  |

|     |   |   |   |   |
|-----|---|---|---|---|
| 350 |   |   |   |   |
| 30  | 0 | 0 | 0 | 0 |
| 31  | 0 | 0 | 0 | 0 |
| 32  | 0 | 0 | 0 | 0 |
| 33  | 0 | 0 | 0 | 0 |
| 34  | 0 | 0 | 0 | 0 |
| 35  | 0 | 0 | 0 | 0 |
| 36  | 0 | 0 | 0 | 0 |
| 37  | 0 | 0 | 0 | 0 |
| 38  | 0 | 0 | 0 | 0 |
| 39  | 0 | 0 | 0 | 0 |
| 360 | 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 |
| 370 | 0 | 0 | 0 | 0 |
| 50  | 0 | 0 | 0 | 0 |
| 51  | 0 | 0 | 0 | 0 |
| 52  | 0 | 0 | 0 | 0 |
| 53  | 0 | 0 | 0 | 0 |
| 54  | 0 | 0 | 0 | 0 |
| 55  | 0 | 0 | 0 | 0 |
| 56  | 0 | 0 | 0 | 0 |
| 57  | 0 | 0 | 0 | 0 |
| 58  | 0 | 0 | 0 | 0 |
| 59  | 0 | 0 | 0 | 0 |

End #2 Port

Start #3 Port

Start #4 Port

End #3 Port

Start #3 Port

VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

OBSERVER: Pat Malone

DATE: 11-26-91

FACILITY: USS Clanton

OBSERVATION: START TIME: 4:20  
END TIME: 5:20

OBSERVATION POINT:  
Maple Oak lot

SOURCE: #1 STACK

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 8 mph

DIRECTION: SW

TEMPERATURE: 31°

SKY CONDITION: Clear

BACKGROUND: SKY

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% —

No. READINGS  $\geq$  60% —

GREATEST OPACITY: 0%

CREW: D FOREMAN: McCoole

COMMENTS: \_\_\_\_\_

|            |  |  |  |  |
|------------|--|--|--|--|
| 4:20<br>0  |  |  |  |  |
| 1          |  |  |  |  |
| 2          |  |  |  |  |
| 3          |  |  |  |  |
| 4          |  |  |  |  |
| 5          |  |  |  |  |
| 6          |  |  |  |  |
| 7          |  |  |  |  |
| 8          |  |  |  |  |
| 9          |  |  |  |  |
| 4:30<br>10 |  |  |  |  |
| 11         |  |  |  |  |
| 12         |  |  |  |  |
| 13         |  |  |  |  |
| 14         |  |  |  |  |
| 15         |  |  |  |  |
| 16         |  |  |  |  |
| 17         |  |  |  |  |
| 18         |  |  |  |  |
| 19         |  |  |  |  |
| 4:40<br>20 |  |  |  |  |
| 21         |  |  |  |  |
| 22         |  |  |  |  |
| 23         |  |  |  |  |
| 24         |  |  |  |  |
| 25         |  |  |  |  |
| 26         |  |  |  |  |
| 27         |  |  |  |  |
| 28         |  |  |  |  |
| 29         |  |  |  |  |

|            |  |  |  |  |
|------------|--|--|--|--|
| 4:50<br>30 |  |  |  |  |
| 31         |  |  |  |  |
| 32         |  |  |  |  |
| 33         |  |  |  |  |
| 34         |  |  |  |  |
| 35         |  |  |  |  |
| 36         |  |  |  |  |
| 37         |  |  |  |  |
| 38         |  |  |  |  |
| 39         |  |  |  |  |
| 5:00<br>40 |  |  |  |  |
| 41         |  |  |  |  |
| 42         |  |  |  |  |
| 43         |  |  |  |  |
| 44         |  |  |  |  |
| 45         |  |  |  |  |
| 46         |  |  |  |  |
| 47         |  |  |  |  |
| 48         |  |  |  |  |
| 49         |  |  |  |  |
| 50         |  |  |  |  |
| 51         |  |  |  |  |
| 52         |  |  |  |  |
| 53         |  |  |  |  |
| 54         |  |  |  |  |
| 55         |  |  |  |  |
| 56         |  |  |  |  |
| 57         |  |  |  |  |
| 58         |  |  |  |  |
| 59         |  |  |  |  |

#2 TEST  
=

End TEST  
←

# VISIBLE EMISSIONS OBSERVATIONS FORM

## #1 STACK TEST

OBSERVER: Rat Maena

DATE: 11-27-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 9:37

END TIME: 10:37

OBSERVATION POINT: 10:37

Maple Ave lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 7 mph

DIRECTION: SE

TEMPERATURE: 27°

SKY CONDITION: Lt. Clouds

BACKGROUND: sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% —

No. READINGS  $\geq$  60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS: —

START  
TEST

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

START  
TEST

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

#3 Test

END  
TEST



# VISIBLE EMISSIONS OBSERVATIONS FORM

## #1 STACK TEST

OBSERVER: Pat Malone

DATE: 11-27-91

FACILITY: USS - Charleston

OBSERVATION: START TIME: 10:37

END TIME: 11:37

OBSERVATION POINT:

Maple Ave. Lot

SOURCE: #1 STACK

DISTANCE: ~800 ft

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 7 mph

DIRECTION: SE

TEMPERATURE: 27°

SKY CONDITION: Lt. Clouds

BACKGROUND: sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% —

No. READINGS  $\geq$  60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS: —

|     |   |   |   |   |
|-----|---|---|---|---|
| 107 | 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 |

|     |    |   |   |   |
|-----|----|---|---|---|
| 107 | 30 | 0 | 0 | 0 |
| 31  | 0  | 0 | 0 | 0 |
| 32  | 0  | 0 | 0 | 0 |
| 33  | 0  | 0 | 0 | 0 |
| 34  | 0  | 0 | 0 | 0 |
| 35  | 0  | 0 | 0 | 0 |
| 36  | 0  | 0 | 0 | 0 |
| 37  | 0  | 0 | 0 | 0 |
| 38  | 0  | 0 | 0 | 0 |
| 39  | 0  | 0 | 0 | 0 |
| 40  | 0  | 0 | 0 | 0 |
| 41  | 0  | 0 | 0 | 0 |
| 42  | 0  | 0 | 0 | 0 |
| 43  | 0  | 0 | 0 | 0 |
| 44  | 0  | 0 | 0 | 0 |
| 45  | 0  | 0 | 0 | 0 |
| 46  | 0  | 0 | 0 | 0 |
| 47  | 0  | 0 | 0 | 0 |
| 48  | 0  | 0 | 0 | 0 |
| 49  | 0  | 0 | 0 | 0 |
| 50  | 0  | 0 | 0 | 0 |
| 51  | 0  | 0 | 0 | 0 |
| 52  | 0  | 0 | 0 | 0 |
| 53  | 0  | 0 | 0 | 0 |
| 54  | 0  | 0 | 0 | 0 |
| 55  | 0  | 0 | 0 | 0 |
| 56  | 0  | 0 | 0 | 0 |
| 57  | 0  | 0 | 0 | 0 |
| 58  | 0  | 0 | 0 | 0 |
| 59  | 0  | 0 | 0 | 0 |

#3 TEST

Start #3 Port

# VISIBLE EMISSIONS OBSERVATIONS FORM

OBSERVER: Pat Maene

DATE: 11-27-91

FACILITY: USS - Clairtop

OBSERVATION START TIME: 11:37

END TIME: 12:37

OBSERVATION POINT:

Maple One hot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 8 mph

DIRECTION: SE

TEMPERATURE: 32°

SKY CONDITION: Lt. Clouds

BACKGROUND: SKY

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% —

No. READINGS  $\geq$  60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: HARRIS

COMMENTS: —

## #1 STACK TEST

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

START  
TEST  
#4

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

#3 TEST  
= +

#4 TEST

End of  
TEST  
#3

End #  
2 Port

# VISIBLE EMISSIONS OBSERVATIONS FORM

OBSERVER: Rat Malone

DATE: 11-27-91

FACILITY: USS - CLinton

OBSERVATION START TIME: 12:37

END TIME: 1:37

OBSERVATION POINT:

Maple One Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 12 mph

DIRECTION: South

TEMPERATURE: 41°

SKY CONDITION: Overcast

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% —

No. READINGS  $\geq$  60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: HARRIS

COMMENTS: —

#1 STACK TEST

|            |   |   |   |   |
|------------|---|---|---|---|
| 1257<br>0  | 0 | 0 | 0 | 0 |
| 1          | 0 | 0 | 0 | 0 |
| 2          | 0 | 0 | 0 | 0 |
| 1258<br>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 |
| 1259<br>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 |
| 1260<br>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 |
| 1261<br>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 |
| 1262<br>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 |
| 1263<br>28 | 0 | 0 | 0 | 0 |
| 29         | 0 | 0 | 0 | 0 |

START  
Point

END  
Point

#4 TEST

|           |   |   |   |   |
|-----------|---|---|---|---|
| 107<br>30 | 0 | 0 | 0 | 0 |
| 31        | 0 | 0 | 0 | 0 |
| 32        | 0 | 0 | 0 | 0 |
| 110<br>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 |
| 111<br>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 |
| 112<br>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 |
| 113<br>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 |
| 114<br>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 |
| 115<br>58 | 0 | 0 | 0 | 0 |
| 59        | 0 | 0 | 0 | 0 |

END  
Point #3

# VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

#1 TEST

OBSERVER: Pat Malone

DATE: 11-27-91

FACILITY: USS-Clarton

OBSERVATION: START TIME: 1:37

END TIME: 2:37

OBSERVATION POINT:

Maple Ave Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft

DIRECTION FROM: SW

HEIGHT: ~200 ft

WIND:

SPEED: 12 mph

DIRECTION: South

TEMPERATURE: 41°

SKY CONDITION: Overcast

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% —

No. READINGS  $\geq$  60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS: —

Start  
#1 Port

Stop  
#1 Port

End #1  
Port

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

# VISIBLE EMISSIONS OBSERVATIONS FORM

## #1 STACK TEST

OBSERVER: Pat Malone

DATE: 11-27-91

FACILITY: USS - CLAYTON

OBSERVATION: START TIME: 2:37

END TIME: 3:37

OBSERVATION POINT:

Maple Ave Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 12 mph

DIRECTION: South

TEMPERATURE: 41°

SKY CONDITION: Overcast

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% —

No. READINGS  $\geq$  60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS: —

|           |   |   |   |   |
|-----------|---|---|---|---|
| 0         | 0 | 0 | 0 | 0 |
| 1         | 0 | 0 | 0 | 0 |
| 2         | 0 | 0 | 0 | 0 |
| 240<br>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 |
| 240<br>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 |
| 240<br>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 |
| 240<br>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 |
| 240<br>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 |
| 300<br>28 | 0 | 0 | 0 | 0 |
| 29        | 0 | 0 | 0 | 0 |

Start  
Test

Start  
Test

|           |   |   |   |   |
|-----------|---|---|---|---|
| 307<br>30 | 0 | 0 | 0 | 0 |
| 31        | 0 | 0 | 0 | 0 |
| 32        | 0 | 0 | 0 | 0 |
| 330<br>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 |
| 380<br>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 |
| 430<br>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 |
| 480<br>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 |
| 530<br>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 |
| 580<br>58 | 0 | 0 | 0 | 0 |
| 59        | 0 | 0 | 0 | 0 |

#5 TEST

End #1  
Port

# VISIBLE EMISSIONS OBSERVATIONS FORM

## #1 STACK TEST

OBSERVER: Pat Malone

DATE: 11-27-91

FACILITY: USS - Clairton

OBSERVATION: START TIME: 3:57

END TIME: 4:37

OBSERVATION POINT:

Maple One Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 18 mph

DIRECTION: SW

TEMPERATURE: 43°

SKY CONDITION: Overcast

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: ---

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% ---

No. READINGS  $\geq$  60% ---

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS:

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

Stack  
#3  
Port

End  
#4  
Port

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

#5 TEST

End  
#3  
Port

# VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

OBSERVER: Pat Malone

DATE: 11-27-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 4:37

END TIME: 5:37

OBSERVATION POINT:

Maple One Lot

SOURCE: #1 STACK

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 18 mph

DIRECTION: SW

TEMPERATURE: 43°

SKY CONDITION: Overcast

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: ---

TOTAL No. OF READINGS: 240

No. READINGS  $\geq$  20% ---

No. READINGS  $\geq$  60% ---

GREATEST OPACITY: 0%

CREW: D FOREMAN: McCord

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

#5 TEST

End #2 Port