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**AP42 Section: 11.1**

**Reference Number: 43**

**Title: Particulate Emission Testing on the Baghouse Exhaust, Blythe Industries, Inc.,  
Concord, North Carolina,  
Analytical Testing Consultants, Inc., Kannapolis, NC,  
June 1989.**

AP-42 Section 11.1  
Reference 43  
Report Sect. 4  
Reference 43

PARTICULATE EMISSION TESTING  
BAGHOUSE EXHAUST

BLYTHE INDUSTRIES

POPLAR TENT ROAD  
CONCORD, NC  
JUNE 27, 1989  
REPORT # 4896

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COMMUNITY DEVELOPMENT

JUL 14 1989

DIVISION OF CONSERVATION AND RECREATION  
MOORESVILLE REGIONAL OFFICE

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## INTRODUCTION

This report presents the results of particulate emission testing performed on the baghouse exhaust at Blythe Industries, Inc., Poplar Tent Road, Concord, NC on June 27, 1989.

The purpose of this test was to determine compliance with applicable emission rate codes of the state of North Carolina.

The test was conducted by ANALYTICAL TESTING CONSULTANTS, INC. Kannapolis, N. C. Members of the test team were Dan McCombs, Richard Westbrook, and Joe Wengryniuk.

## SOURCE DESCRIPTION

The system tested was the exhaust of the bag collector exhaust which is utilized for particulate emissions control of the kiln dryer. Production rates were determined by periodic recording of the system computer production read-out.

# RESULTS SUMMARY

SYSTEM            BLYTHE INDUSTRIES  
                  POPLAR TENT ROAD  
                  CONCORD, NC

TEST DATE        JUNE 27, 1989

| PARAMETER             | RUN #1 | RUN #2 | RUN #3 | AVERAGE |
|-----------------------|--------|--------|--------|---------|
| Qs, FLOW, ACFM        | 40024  | 52553  | 48479  | 47019   |
| Qs dry, FLOW SCFM     | 22073  | 28218  | 26376  | 25556   |
| Vm std, CUBIC FT.     | 30.54  | 37.19  | 36.59  |         |
| %I                    | 107.9  | 102.8  | 108.2  |         |
| PMR AVG, LB/HR        | 3.4    | 1.3    | 1.8    | 2.2     |
| Cs, GR/SCF            | .0175  | .0051  | .0077  | .0101   |
| PROCESS INPUT, TON/HR |        |        |        | 267.7   |
| ALLOWABLE, GR/SCFD    |        |        |        | .04     |

## RESULTS, CONCLUSIONS AND COMMENTS

Results of the particulate emission testing are presented in the preceding Test Summary. Additional information may be reviewed in the Calculations and Data Sheets sections of this report.

The emission concentration measured during this testing was well below the NSPS standard of .04 gr/scf.

The averages for the visible emission observations were not calculated, but were significantly below the 20% opacity maximum limit.

## SAMPLING AND ANALYTICAL PROCEDURES

Particulate testing and analysis were performed according to procedures developed by the U. S. Environmental Protection Agency (EPA) and referred to as Method 5. Sampling port locations and number of test points to be used were determined according to Method 1. Gas sampling was performed in accordance with EPA Method 3, Fyerite Analyzer method. Stack volumetric flow rates were determined utilizing EPA Method 2, and moisture content by EPA Method 4.



#### REFERENCES

1. CODE OF FEDERAL REGULATIONS, Title 40, Part 60, Appendix A, July 1, 1988.

## CALCULATIONS

Particulate Emission Rate Calculation  
Square Root of DP  
Nomenclature  
Calculation Formulae

# PARTICULATE EMISSION RATE CALCULATION

| DATA/CALCULATION      | RUN 1    | RUN 2    | RUN 3    | AVERAGE  |
|-----------------------|----------|----------|----------|----------|
| DATE                  | 6/27/89  | 6/27/89  | 6/27/89  |          |
| AVG DH (IN H2O)       | 0.8      | 1.62     | 1.2      |          |
| P ATM (IN HG)         | 29.18    | 29.18    | 29.18    |          |
| PM (IN HG)            | 29.23882 | 29.29911 | 29.26823 |          |
| PS (GAUGE)            | 1.3      | 1.3      | 1.3      |          |
| PS (IN HG)            | 29.27558 | 29.27558 | 29.27558 |          |
| tM (DEG F)            | 90       | 92       | 95       |          |
| TM (DEG R)            | 550      | 552      | 555      |          |
| VM (FT3)              | 32.55    | 39.7     | 39.32    |          |
| VM STD (FT3)          | 30.53658 | 37.18590 | 36.59227 |          |
| VLQ (ML)              | 181.4    | 254.7    | 237.5    |          |
| VV STD (FT3)          | 8.547141 | 12.00086 | 11.19044 |          |
| V STD (FT3)           | 39.08373 | 49.18676 | 47.78271 |          |
| %M                    | 21.86879 | 24.39856 | 23.41943 | 23.22893 |
| MD                    | 0.781312 | 0.756014 | 0.765805 |          |
| MWD                   | 29.24    | 29.24    | 29.24    |          |
| M                     | 26.78194 | 26.49760 | 26.60765 |          |
| tS (DEG F)            | 271      | 268      | 267      | 268.6666 |
| TS (DEG R)            | 731      | 728      | 727      | 728.6666 |
| SUM SQRT DP           | 25.072   | 32.813   | 30.353   |          |
| N DP                  | 24       | 24       | 24       |          |
| AVG SQRT DP           | 1.044666 | 1.367208 | 1.264708 |          |
| CP                    | 0.84     | 0.84     | 0.84     |          |
| VS (FT/SEC)           | 72.42797 | 95.10165 | 87.72942 | 85.08635 |
| AS (FT2)              | 9.21     | 9.21     | 9.21     |          |
| QS, ACFM              | 40023.69 | 52553.17 | 48479.27 | 47018.71 |
| Q STD (FT3/MIN)       | 28250.88 | 37324.54 | 34442.17 | 33339.20 |
| Q STD DRY, SCFM       | 22072.75 | 28217.88 | 26376.01 | 25555.55 |
| WT (GM)               | 0.0346   | 0.0124   | 0.0183   |          |
| PMRC (LB/HR)          | 3.308811 | 1.244880 | 1.745141 | 2.099611 |
| DN (IN)               | 0.19     | 0.19     | 0.19     |          |
| AN (IN2)              | 0.028338 | 0.028338 | 0.028338 |          |
| TIME (MIN)            | 60       | 60       | 60       |          |
| PMRA (LB/HR)          | 3.570507 | 1.279603 | 1.888447 | 2.246186 |
| %I                    | 107.9090 | 102.7892 | 108.2117 |          |
| PMR AVG (LB/HR)       | 3.439659 | 1.262242 | 1.816794 | 2.172898 |
| %CO2                  | 3.5      | 3.5      | 3.5      | 3.5      |
| %O2                   | 17       | 17       | 17       | 17       |
| %CO                   | 0        | 0        | 0        | 0        |
| %N2                   | 79.5     | 79.5     | 79.5     | 79.5     |
| CS (GR/SCFD)          | 0.017483 | 0.005145 | 0.007716 | 0.010115 |
| PROCESS INPUT, TON/HR |          |          |          | 267.7    |
| ALLOWABLE, GR/SCFD    |          |          |          | 0.04     |

# SUM SQRT DP CALCULATION

DATE 6/27/89

| RUN 1 |          | RUN 2 |          | RUN 3 |          |
|-------|----------|-------|----------|-------|----------|
| DP    | SQRT DP  | DP    | SQRT DP  | DP    | SQRT DP  |
| 0.62  | 0.787400 | 0.48  | 0.692820 | 8     | 2.828427 |
| 0.55  | 0.741619 | 0.58  | 0.761577 | 7     | 2.645751 |
| 0.52  | 0.721110 | 0.58  | 0.761577 | 5.5   | 2.345207 |
| 0.42  | 0.648074 | 0.5   | 0.707106 | 5.5   | 2.345207 |
| 0.38  | 0.616441 | 0.44  | 0.663324 | 1     | 1        |
| 0.52  | 0.721110 | 0.6   | 0.774596 | 1.2   | 1.095445 |
| 1.3   | 1.140175 | 0.6   | 0.774596 | 1.4   | 1.183215 |
| 1.6   | 1.264911 | 0.6   | 0.774596 | 1.5   | 1.224744 |
| 1.2   | 1.095445 | 0.55  | 0.741619 | 1.5   | 1.224744 |
| 1.8   | 1.341640 | 0.55  | 0.741619 | 1.5   | 1.224744 |
| 1.5   | 1.224744 | 1     | 1        | 1.2   | 1.095445 |
| 0.9   | 0.948683 | 1     | 1        | 1.2   | 1.095445 |
| 1.8   | 1.341640 | 1.4   | 1.183215 | 0.98  | 0.989949 |
| 1.8   | 1.341640 | 1.5   | 1.224744 | 0.98  | 0.989949 |
| 1.5   | 1.224744 | 1.5   | 1.224744 | 0.85  | 0.921954 |
| 1.4   | 1.183215 | 2.1   | 1.449137 | 0.85  | 0.921954 |
| 1.1   | 1.048808 | 3     | 1.732050 | 0.9   | 0.948683 |
| 1.2   | 1.095445 | 3.2   | 1.788854 | 0.9   | 0.948683 |
| 1.4   | 1.183215 | 3.2   | 1.788854 | 0.85  | 0.921954 |
| 1.5   | 1.224744 | 3.6   | 1.897366 | 0.84  | 0.916515 |
| 1.4   | 1.183215 | 7     | 2.645751 | 0.84  | 0.916515 |
| 1.4   | 1.183215 | 8     | 2.828427 | 0.75  | 0.866025 |
| 0.82  | 0.905538 | 8     | 2.828427 | 0.75  | 0.866025 |
| 0.82  | 0.905538 | 8     | 2.828427 | 0.7   | 0.836660 |
|       | 25.07232 |       | 32.81343 |       | 30.35325 |

## NOMENCLATURE

|          |                                                         |
|----------|---------------------------------------------------------|
| AN       | (square inches), Cross sectional area of nozzle         |
| AS       | (square feet), Cross sectional area of stack            |
| CP       | Pitot tube calibration coefficient                      |
| % EA     | Percent Excess Air                                      |
| F        | (scfd/10 <sup>6</sup> BTU), F factor                    |
| DH       | (inches of water) Average orifice meter reading         |
| HI       | (million BTU/hr), Heat Input Rate                       |
| % I      | Percent Isokineticity                                   |
| M        | (lb/lb mole), Molecular Weight of wet gas               |
| % M      | Percent Moisture                                        |
| MD       | Mole fraction of dry gas                                |
| MWD      | (lb/lb mole) molecular weight of dry gas                |
| N DP     | Number of sample points                                 |
| P ATM    | (in Hg), Local atmospheric pressure                     |
| PM       | (in Hg), Absolute pressure in dry gas meter             |
| PS       | (in Hg), Absolute stack pressure                        |
| PS GAUGE | (inches of water), Measured static stack pressure gauge |
| P STD    | (29.92 in Hg), Standard pressure                        |
| PMRA     | (lb/hr), Pollutant mass rate based on ratio of areas    |
| PMR AVG. | (lb/hr), Average pollutant mass rate                    |
| PMRC     | (lb/hr), Pollutant mass rate based on concentration     |
| PMRU     | (lb/million BTU), Specific emission rate                |
| DP       | (inches of water), Velocity pressure                    |
| QS       | (cubic feet/min.), Actual stack volume flow rate        |

|             |                                                                                 |
|-------------|---------------------------------------------------------------------------------|
| Q STD       | (cubic feet/min.), Stack volume flow rate at standard conditions                |
| TM          | (degrees R), Average dry gas meter temperature                                  |
| TS          | (degrees R), Average stack temperature                                          |
| T STD       | (528 degrees R), Standard temperature                                           |
| VLQ         | (ml), Liquid volume                                                             |
| VM          | (cubic feet), Sample volume measured by dry gas meter                           |
| VM STD      | (cubic feet), Sample volume at standard conditions                              |
| VS          | (ft/sec), stack velocity                                                        |
| VV STD      | (cubic feet), Volume of water vapor collected, corrected to standard conditions |
| WT          | (gm), Total weight of particulate collected                                     |
| TIME (MIN.) | Duration of test                                                                |

# CALCULATION FORMULAE

1. Absolute pressure in dry gas meter

$$PM = P \text{ ATM} + DH/13.6$$

2. Absolute Stack Pressure

$$PS = P \text{ ATM} + PS \text{ gauge}/13.6$$

3. Sample volume at standard conditions

$$VM \text{ STD} = (VM) (T \text{ STD}/TM) (PM/P \text{ STD})$$

4. Volume of water collected, corrected to standard conditions

$$VV \text{ STD} = (.00267) (VLQ) (T \text{ STD}/P \text{ STD})$$

5. Total sample volume at standard conditions

$$V \text{ STD} = VM \text{ STD} + VV \text{ STD}$$

6. Percent moisture in stack gas

$$\%M = (100) (VV \text{ STD})/V \text{ STD}$$

7. Mole Fraction of dry gas

$$MD = (100 - \%M)/100$$

8. Molecular weight of the wet gas

$$M = (MWD) (MD) + 18(1 - MD)$$

9. Stack velocity

$$VS = (85.48)(CP)((TS/(PS)(PM))^{1/2}((\text{Sum } DP)^{1/2} N \text{ DP}))$$

10. Stack volume flow rate

$$QS = (60)(VS)(AS)$$

11. Stack volume flow rate, standard conditions including moisture

$$Q \text{ STD} = (T \text{ STD}/P \text{ STD})(P \text{ STD}/T \text{ STD})(Q \text{ STD})$$

12. Stack volume flow rate standard conditions dry

$$Q \text{ STD DRY} = (Q \text{ STD})(1 - \%M)$$

13. Pollutant mass rate, concentration basis

$$PMRC = (.1323)(WT)(Q \text{ STD})/V \text{ STD}$$

14. Pollutant mass rate ratio of areas basis

$$PMRA = (.1323)(WT)(AS)(144)/(\text{Time})(AN)$$

15. Percent Isokineticity

$$\%I = (100) (PMRA)/PMRC$$

16. Average pollutant mass rate

$$PMR \text{ AVG} = (PMRA + PMRC)/2$$

17. % EXCESS AIR

$$\%EA = (100) (\%oxygen - (.5)(\%carbon \text{ monoxide}) \\ (.264)(\%nitrogen) - \%oxygen + (.5) (\%carbon \text{ monoxide}))$$

18. Heat input rate

$$HI = ((.6) (Q \text{ STD DRY})/F)((20.9 - \%oxygen)/20.9)$$

19. Specific emission rate

$$PMRU = PMR \text{ AVG}/HI$$



## DATA SHEETS

Method 5 Sampling Data Sheets  
Impinger Data Sheets  
Temperature Data Sheets  
Chain of Custody Sheets  
Source Test Survey  
Equal Area Determinations  
Laboratory Reports  
Visible Emission Observations Sheets  
Process Data  
Calibration Information

MODULE SAMPLING DATA SHEET

CLIENT Blythe Industries

DATE 6/27/89

LOCATION Concord, N.C.

SOURCE Bayhous Exh.

TEST TEAM RW, DM, JW

RUN # 1

Pressure 29.18V

P. 13

MODULE RNW 1

FILTER 141

NOZZLE 32

PITOT 34

METHOD 5

| TIME        | POINT | LINE<br>VAC            | t <sub>m</sub><br>° F | t <sub>a</sub><br>° F | V <sub>o</sub><br>H <sub>2</sub> O | P <sub>m</sub><br>H <sub>2</sub> O | V <sub>m</sub><br>ft <sup>3</sup> | REMARKS |
|-------------|-------|------------------------|-----------------------|-----------------------|------------------------------------|------------------------------------|-----------------------------------|---------|
| 7:45        | 0 A   | 1                      | 86                    | 270                   | 0.62                               | 0.44                               | 780.58                            | Begin   |
|             |       | 2                      | 86                    | 275                   | 0.55                               | 0.38                               | 781.68                            |         |
| 5           |       | 3                      | 87                    | 275                   | 0.52                               | 0.37                               | 782.69                            |         |
|             |       | 4                      | 87                    | 262                   | 0.42                               | 0.30                               | 783.58                            |         |
| 10          |       | SHUT DOWN CHANGE PORTS |                       |                       |                                    |                                    | 784.43                            |         |
| 8:00        | 0 B   | 1                      | 89                    | 274                   | 0.38                               | 0.27                               | 784.43                            |         |
|             |       | 2                      | 89                    | 269                   | 0.52                               | 0.37                               | 785.41                            |         |
| 5           |       | 3                      | 91                    | 274                   | 1.30                               | 0.90                               | 786.26                            |         |
|             |       | 4                      | 91                    | 273                   | 1.60                               | 1.10                               | 787.65                            |         |
| 10          |       | SHUT DOWN CHANGE PORTS |                       |                       |                                    |                                    | 789.20                            |         |
| 8:12        | 0 C   | 1                      | 91                    | 268                   | 1.20                               | 0.84                               | 789.20                            |         |
|             |       | 2                      | 91                    | 272                   | 1.80                               | 1.25                               | 790.58                            |         |
| 5           |       | 3                      | 90                    | 274                   | 1.50                               | 1.05                               | 792.22                            |         |
|             |       | 4                      | 90                    | 271                   | 0.90                               | 0.63                               | 793.88                            |         |
| 10          |       | SHUT DOWN CHANGE PORTS |                       |                       |                                    |                                    | 795.07                            |         |
| 8:24        | 0 D   | 1                      | 90                    | 275                   | 1.80                               | 1.25                               | 795.07                            |         |
|             |       | 2                      | 90                    | 274                   | 1.80                               | 1.25                               | 796.79                            |         |
| 5           |       | 3                      | 91                    | 272                   | 1.50                               | 1.05                               | 798.37                            |         |
|             |       | 4                      | 91                    | 273                   | 1.40                               | 0.98                               | 800.08                            |         |
| AVERAGE/NET |       |                        | 90                    | 271                   | 25.012                             | 1.80                               | 32.55                             |         |
| NOTES:      |       |                        |                       |                       |                                    |                                    |                                   |         |

LEAK RATES:

Start @ 16

End @ 15

Pitot:

Start

A 7.9 B 8.2

OK

End

A 8.0 B 8.9

OK

SETUP:

E 1.54

t<sub>m</sub> 100

% H<sub>2</sub>O 0.24

NOZZLE 190

C 73

t<sub>a</sub> 250

Theo. Pitot

2.8

# MODULE SAMPLING DATA SHEET

DATE 6/27/89

SOURCE Baughouse Exhaust

RUN # 10

Рубль \_\_\_\_\_

P. \_\_\_\_\_

MODULE /

FILTER/

NOZZLE

PI/TOT

## METHOD

LEAK RATES:

Start @

End /@

Pitot:

Start

A        B       

~~End~~

A. B.

SETUP: 71

2

$$t_m$$
% H<sub>2</sub>O / \_\_\_\_\_

NOZZLE \_\_\_\_\_

C /

✓

Theo. Pitot

[illegible]

AVERAGE/NET  
NOTES:

|   |  |  |  |  |
|---|--|--|--|--|
| 7 |  |  |  |  |
|---|--|--|--|--|

MODULE SAMPLING DATA SHEET

CLIENT Blythe

DATE 6/27/89

LOCATION Concord NC

SOURCE Baghouse Exhaust

TEST TEAM DM, JW, RW

RUN # 2

P<sub>bar</sub> 29.180

P<sub>a</sub> 1.3

MODULE RNW 1

FILTER 140

NOZZLE 32

PITOT 36

METHOD 5

LEAK RATES:

Start @ .016 10

End @ .012 15

Pitot: Start

A 7.9 B 6.8

OK

End A 6.2 B 5.0

SETUP: S \_\_\_\_\_

t<sub>m</sub> \_\_\_\_\_

% H<sub>2</sub>O \_\_\_\_\_

NOZZLE \_\_\_\_\_

C \_\_\_\_\_

t<sub>p</sub> \_\_\_\_\_

Theo. Pitot \_\_\_\_\_

| TIME  | POINT | LINE<br>VAC            | t <sub>m</sub><br>° F | t <sub>p</sub><br>° F | V <sub>m</sub><br>H <sub>2</sub> O | P <sub>m</sub><br>H <sub>2</sub> O | V <sub>m</sub><br>ft <sup>3</sup> | REMARKS |
|-------|-------|------------------------|-----------------------|-----------------------|------------------------------------|------------------------------------|-----------------------------------|---------|
| 9:35  | 0     | A 1                    | 1                     | 91                    | 262                                | 0.48                               | 0.34                              | 820.74  |
|       |       | 2                      | 1                     | 92                    | 263                                | 0.58                               | 0.42                              | 821.74  |
| 5     |       | 3                      | 1                     | 91                    | 258                                | 0.58                               | 0.42                              | 822.70  |
|       |       | 4                      | 1                     | 91                    | 264                                | 0.50                               | 0.36                              | 823.88  |
| 10    |       | SHUT Down Change Ports |                       |                       |                                    |                                    |                                   | 824.75  |
| 9:48  | 0     | B 1                    | 1                     | 90                    | 265                                | 0.44                               | 0.34                              | 824.75  |
|       |       | 2                      | 1                     | 91                    | 267                                | 0.60                               | 0.43                              | 826.28  |
| 5     |       | 3                      | 1                     | 90                    | 265                                | 0.60                               | 0.43                              | 827.38  |
|       |       | 4                      | 1                     | 93                    | 259                                | 0.60                               | 0.43                              | 828.34  |
| 10    |       | SHUT Down Change Ports |                       |                       |                                    |                                    |                                   | 829.48  |
| 10:04 | 0     | C 1                    | 1                     | 92                    | 266                                | 0.55                               | 0.38                              | 829.48  |
|       |       | 2                      | 1                     | 92                    | 267                                | 0.55                               | 0.38                              | 830.62  |
| 5     |       | 3                      | 2                     | 91                    | 269                                | 1.00                               | 0.70                              | 831.55  |
|       |       | 4                      | 2                     | 91                    | 259                                | 1.00                               | 0.70                              | 832.82  |
| 10    |       | SHUT Down Change Ports |                       |                       |                                    |                                    |                                   | 834.44  |
| 0     |       | D 1                    | 3                     | 92                    | 270                                | 1.4                                | 0.98                              | 834.44  |
|       |       | 2                      | 4                     | 92                    | 268                                | 1.5                                | 1.05                              | -       |
| 5     |       | 3                      | 4                     | 92                    | 270                                | 1.5                                | 1.05                              | 837.72  |
|       |       | 4                      | 5                     | 92                    | 267                                | 2.10                               | 1.50                              | 839.23  |

AVERAGE/NET  
NOTES:

|    |     |        |      |       |
|----|-----|--------|------|-------|
| 92 | 268 | 30.813 | 1.62 | 39.70 |
|----|-----|--------|------|-------|

# MODULE SAMPLING DATA SHEET

DATE 6/26/89

SOURCE Backhouse Exhaust

RUN # 2

~~Phar \_\_\_\_\_~~  
~~P. \_\_\_\_\_~~  
~~MODULE \_\_\_\_\_~~  
~~FILTER \_\_\_\_\_~~  
~~NOZZLE \_\_\_\_\_~~  
~~PITOT \_\_\_\_\_~~  
~~METHOD \_\_\_\_\_~~

Theo. Pitot

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|--|--|--|--|--|

ANALYTICAL TESTING CONSULTANTS, INC.  
Kannapolis, N. C. Atlanta, Ga.

MODULE SAMPLING DATA SHEET

CLIENT Blythe Industries

DATE 6/27/89

LOCATION Concord NC

SOURCE Baghouse Exhaust

TEST TEAM OM RW JW

RUN # 3

| TIME                  | POINT | LINE<br>VAC | t <sub>m</sub><br>° F | t <sub>a</sub><br>° F | V <sub>m</sub><br>H <sub>2</sub> O | P <sub>m</sub><br>H <sub>2</sub> O | V <sub>m</sub><br>ft <sup>3</sup> | REMARKS |
|-----------------------|-------|-------------|-----------------------|-----------------------|------------------------------------|------------------------------------|-----------------------------------|---------|
| 11:25                 | A 1   | 8           | 93                    | 271                   | 8.0                                | 54                                 | 861.95                            |         |
|                       | 2     | 6           | 93                    | 273                   | 7.0                                | 4.6                                | 865.52                            |         |
| 5                     | 3     | 5           | 93                    | 275                   | 5.5                                | 3.7                                | 866.88                            |         |
|                       | 4     | 5           | 94                    | 272                   | 5.5                                | 3.7                                | 871.89                            |         |
| 11:37                 | 10    | SHUT Down   |                       |                       |                                    |                                    | 874.59                            |         |
|                       | B 1   | 1           | 94                    | 272                   | 1.00                               | 0.70                               | 874.59                            |         |
|                       | 2     | 1           | 94                    | 273                   | 1.20                               | 0.83                               | 875.91                            |         |
| 5                     | 3     | 1           | 94                    | 270                   | 1.40                               | 0.98                               | 877.36                            |         |
|                       | 4     | 1           | 95                    | 270                   | 1.50                               | 1.05                               | 878.87                            |         |
| 11:50                 | 10    | SHUT Down   |                       |                       |                                    |                                    | 880.50                            |         |
|                       | C 1   | 1           | 95                    | 268                   | 1.50                               | 1.05                               | 880.50                            |         |
|                       | 2     | 1           | 95                    | 270                   | 1.50                               | 1.05                               | 882.28                            |         |
| 5                     | 3     | 1           | 95                    | 269                   | 1.20                               | 0.83                               | -                                 |         |
|                       | 4     | 1           | 95                    | 266                   | 1.20                               | 0.83                               | 885.13                            |         |
| 10                    | 10    | SHUT Down   |                       |                       |                                    |                                    | 886.53                            |         |
|                       | D 1   | 1           | 95                    | 267                   | 0.98                               | 0.68                               | 886.53                            |         |
|                       | 2     | 1           | 95                    | 266                   | 0.98                               | 0.68                               | 887.93                            |         |
| 5                     | 3     | 1           | 95                    | 263                   | 0.85                               | 0.61                               | 889.28                            |         |
|                       | 4     | 1           | 95                    | 260                   | 0.85                               | 0.61                               | 890.47                            |         |
| AVERAGE/NET<br>NOTES: |       |             | 95                    | 267                   | 30.55                              | 1.20                               | 39.32                             |         |

P<sub>bar</sub> 29.80

P<sub>a</sub> 1.3

MODULE RNW1

FILTER 3139

NOZZLE 32

PITOT 433

METHOD 5

LEAK RATES:

Start @ 0.17 15

End @ 0.12 12

Pitot: Start

A 7.6 B 8.1

End

A 6.2 B 6.5

OK

SETUP:

E \_\_\_\_\_

t<sub>m</sub> \_\_\_\_\_

% H<sub>2</sub>O \_\_\_\_\_

NOZZLE \_\_\_\_\_

C \_\_\_\_\_

t<sub>a</sub> \_\_\_\_\_

Theo. Pitot \_\_\_\_\_

# MODULE SAMPLING DATA SHEET

RUN # 3

Page 2918

7. FEB. 1961

AVERAGE/NET  
NOTES:

## ANALYTICAL TESTING CONSULTANTS, INC.

## IMPINGER DATA SHEET

JOE R. J. H.LOCATION 1/2UNIT Kilobyte

| RUN # | X     | DATE   | CYCL-ONE | CONTENTS OF IMPINGERS |     |     |                      | TOTAL CONDENSATE    |                            | LOCATION & REMARKS |
|-------|-------|--------|----------|-----------------------|-----|-----|----------------------|---------------------|----------------------------|--------------------|
|       |       |        |          | 1                     | 2   | 3   | 4 (cc)               | V <sub>1c</sub> EPA | (OR V <sub>w</sub> ) WF-50 |                    |
| 1     | START | 6/1/82 |          | 100                   | 100 | Dry | 300 SiD <sub>2</sub> |                     |                            |                    |
|       | END   |        |          | 283                   | 108 |     | 518.4                |                     |                            |                    |
|       | Δ     |        |          | 183                   |     |     | 18.4                 | 181.4               | ml                         |                    |
|       |       |        |          |                       |     |     |                      |                     |                            |                    |
| 2     | START | 6/1/82 |          | 100                   | 100 | Dry | 300 SiD <sub>2</sub> |                     |                            |                    |
|       | END   |        |          | 321                   | 112 |     | 516.7                |                     |                            |                    |
|       | Δ     |        |          | 221                   | 12  |     | 16.7                 | 251.7               | ml                         |                    |
|       |       |        |          |                       |     |     |                      |                     |                            |                    |
| 3     | START | 6/1/82 |          | 100                   | 100 | Dry | 300 SiD <sub>2</sub> |                     |                            |                    |
|       | END   |        |          | 309                   | 112 |     | 512.5                |                     |                            |                    |
|       | Δ     |        |          | 209                   | 12  |     | 12.5                 | 232.5               | ml                         |                    |
|       |       |        |          |                       |     |     |                      |                     |                            |                    |
|       | START |        |          |                       |     |     |                      |                     |                            |                    |
|       | END   |        |          |                       |     |     |                      |                     |                            |                    |
|       | Δ     |        |          |                       |     |     |                      |                     | ml                         |                    |
|       |       |        |          |                       |     |     |                      |                     |                            |                    |
|       | START |        |          |                       |     |     |                      |                     |                            |                    |
|       | END   |        |          |                       |     |     |                      |                     |                            |                    |
|       | Δ     |        |          |                       |     |     |                      |                     | ml                         |                    |
|       |       |        |          |                       |     |     |                      |                     |                            |                    |

Data by Frank

Approved by \_\_\_\_\_

80% IPA - Δ WT = 83.4 G  
 3% H<sub>2</sub>O - " = 99.8 G  
 (100 - 0)



## ANALYTICAL TESTING CONSULTANTS, INC.

## TEMPERATURE DATA

JOB Blythe Ind. LOCATION Concord UNIT Mayhouse Exhaust  
 DATE 6/27/89 MADE BY Joe Wengert CHECKED BY \_\_\_\_\_

| Run #       |                |                    |                   | Run # 2     |                |                    |                   | Run # 3     |                |                    |                   |
|-------------|----------------|--------------------|-------------------|-------------|----------------|--------------------|-------------------|-------------|----------------|--------------------|-------------------|
| Time or Pt. | Probe Temp. F. | "Hot Box" Temp. F. | Exit Gas Temp. F. | Time or Pt. | Probe Temp. F. | "Hot Box" Temp. F. | Exit Gas Temp. F. | Time or Pt. | Probe Temp. F. | "Hot Box" Temp. F. | Exit Gas Temp. F. |
| A 1         | OK             | 225                | 70                | A 1         | OK             | 225                | 64                | A 1         | OK             | 240                | 65                |
| 2           |                | 236                | 70                | 2           |                | 240                | 64                | 2           |                | 255                | 65                |
| 3           |                | 246                | 70                | 3           |                | 250                | 64                | 3           |                | 265                | 65                |
| 4           |                | 250                | 70                | 4           |                | 255                | 64                | 4           |                | 270                | 65                |
| B 1         |                | 260                | 70                | B 1         |                | 260                | 64                | B 1         |                | 270                | 66                |
| 2           |                | 260                | 70                | 2           |                | 260                | 65                | 2           |                | 260                | 66                |
| 3           |                | 265                | 70                | 3           |                | 265                | 65                | 3           |                | 260                | 66                |
| 4           |                | 265                | 70                | 4           |                | 270                | 65                | 4           |                | 250                | 66                |
| C 1         |                | 250                | 68                | C 1         |                | 275                | 66                | C 1         |                | 246                | 66                |
| 2           |                | 240                | 68                | 2           |                | 260                | 66                | 2           |                | 250                | 67                |
| 3           |                | 235                | 68                | 3           |                | 260                | 67                | 3           |                | 248                | 67                |
| 4           |                | 235                | 68                | 4           |                | 255                | 67                | 4           |                | 250                | 68                |
| D 1         |                | 232                | 68                | D 1         |                | 250                | 68                | D 1         |                | 250                | 68                |
| 2           |                | 232                | 70                | 2           |                | 245                | 68                | 2           |                | 246                | 68                |
| 3           |                | 230                | 70                | 3           |                | 240                | 68                | 3           |                | 248                | 69                |
| 4           |                | 232                | 70                | 4           |                | 235                | 68                | 4           |                | 250                | 69                |
| E 1         |                | 236                | 70                | E 1         |                | 230                | 69                | E 1         |                | 250                | 69                |
| 2           |                | 232                | 70                | 2           |                | 225                | 69                | 2           |                | 250                | 69                |
| 3           |                | 230                | 70                | 3           |                | 225                | 70                | 3           |                | 246                | 69                |
| 4           |                | 230                | 70                | 4           |                | 225                | 70                | 4           |                | 250                | 70                |
| F 1         |                | 232                | 70                | F 1         |                | 235                | 70                | F 1         |                | 250                | 70                |
| 2           |                | 225                | 70                | 2           |                | 245                | 70                | 2           |                | 250                | 70                |
| 3           |                | 225                | 70                | 3           |                | 250                | 70                | 3           |                | 250                | 70                |
| 4           |                | 225                | 70                | 4           |                | 250                | 70                | 4           |                | 250                | 70                |

# CHAIN OF CUSTODY FORM

Plant Blythe Ind- Apler Tent Rd

Run No. 1, 2, 3

Sampling Location Bayhouse Exhaust

Filter No. A141, A140, A139

## Test Method

☒ EPA 5 ☐ EPA 8

☐ EPA 6 ☐ \_\_\_\_\_

☐ EPA 7 ☐ \_\_\_\_\_

| Container No.                       | Contents                           | Sample Recovered by | Remarks |
|-------------------------------------|------------------------------------|---------------------|---------|
| Filter Bells<br>1, 2, 3             | Filter                             | RW                  |         |
| Dry 1, 2, 3<br>-Dry Catch Wash      | Probe, nozzle and cyclone washings | RW                  |         |
| Imp. 1, 2, 3<br>-Wet Catch Solution | Impinger solutions                 | Frick               |         |
| -Wet Catch Wash                     | Impinger washings                  |                     |         |
| Imp 1, 2, 3                         | Silica gel                         | Frick               |         |
| Blank                               | Solvent blank                      | RW                  |         |
|                                     |                                    |                     |         |
|                                     |                                    |                     |         |

Note: Liquid levels to be marked with grease pencil on all sample containers and to be checked when delivered to lab.

Delivered to lab by: RW Date 6/27/89

Received in lab by: RW Date 6/27/89

Analysis completed by Frick Date 6/27/89

# SOURCE TEST SURVEY

SOURCE NAME: Blythe

LOCATION: Concord, N.C.

DATE: 5/1/89

OBSERVER'S NAME: Keith Poole

PURPOSE OF TEST: Compliance

TESTING DONE BY: ATC

LAB ANALYSIS DONE BY: ATC

COMPANY CONTACT: Horace Turbyville

TELEPHONE: (704) 375-8474

CONTROL EQUIPMENT OPERATING: Baghouse

Bill Christy - 788-9733

OPACITY READING MADE: ☒ YES ☐ NO

UNIT/PROCESS NAME: Baghouse Exhaust - Asphalt Kilo

RATED CAPACITY: \_\_\_\_\_

TYPE FUEL USED: \_\_\_\_\_

APPROX. PROCESS RATE: 0.50 ton/hr

METHOD OF DETERMINING PROCESS RATE: Computer Read-Out

STACK HEIGHT: \_\_\_\_\_

INDIVIDUAL STACK ☒

COMMON STACK

DIAMETER: (IF ROUND) \_\_\_\_\_

(IF RECTANGULAR) WIDTH \_\_\_\_\_

LENGTH 34 1/8"

Ac = 36.33

2(39 x 34)

34 x 34:

38 3/8 4 1/8"  
NIP

## I. SAMPLING POINT LOCATION

A. DISTANCE DOWNSTREAM FROM ANY FLOW DISTURBANCE: \_\_\_\_\_

NATURE OF DISTURBANCE 7' 6" FAN

(BEND, CONTRACTION, EXPANSION, FAN, BAFFLES, ETC.)

B. DISTANCE UPSTREAM FROM ANY FLOW DISTURBANCE: \_\_\_\_\_

NATURE OF DISTURBANCE 10' 1"

(BEND, STACK EXIT, CONTRACTION, FAN, BAFFLES, EXPANSION, ETC.)

C. NUMBER OF PORTS IN STACK: 6 (3" Nipples)

4 1/2" Port Depth

D. NUMBER OF POINTS SAMPLED PER PORT: 4

## II. STACK GAS

A. STACK TEMPERATURE: 250

B. ORSAT ANALYSIS: Fyrite

GRAV ☒

CONTINUOUS

NUMBER OF INTEGRATED SAMPLES \_\_\_\_\_

C. PRELIMINARY ΔP: MIN. \_\_\_\_\_

MAX. \_\_\_\_\_

## III. PARTICULATE TEST

A. SAMPLING TRAIN:

1. TEST METHOD: EPA METHOD 5

ASME PTC 21/27

OTHER (DISCRIBE) \_\_\_\_\_

2. TYPE FILTERS \_\_\_\_\_

3. PROBE IDENTIFICATION \_\_\_\_\_

4. METER CALIBRATION FACTOR \_\_\_\_\_

5. ORIFICE ΔH @ FACTOR \_\_\_\_\_

6. DATE OF LAST CALIBRATION CHECK \_\_\_\_\_

a. ORIFICE METER

b. TEMPERATURE DEVICES

c. NOZZLE DIAMETER

d. DRY GAS METER

e. PITOT TUBE

f. OTHER \_\_\_\_\_

Rly the  
Poplar Tent Rd  
Concord NC

6 ports

4 points per Port

$$34\frac{1}{4} = 8.5\frac{1}{2}$$

1<sup>st</sup> Point - 4.25"

2<sup>nd</sup> Point - 12.75"

3<sup>rd</sup> Point - 21.25"

4<sup>th</sup> Point - 29.75"

|   |  |  |  |  |  |
|---|--|--|--|--|--|
| 0 |  |  |  |  |  |
| 0 |  |  |  |  |  |
| 0 |  |  |  |  |  |
| 0 |  |  |  |  |  |

4" Port

1 8.25

2 16.75

3 25.25

4 33.75

00000

KA

Blythe - Poplar Tent

6/27/89

Bal ck - Auto Cal

Probe Wash

| Run # | Beaker # | Final   | Init    | Net   |
|-------|----------|---------|---------|-------|
| 1     | B1       | 80.1396 | 80.1361 | .0035 |
| 2     | B2       | 82.2245 | 82.2273 | .0022 |
| 3     | B3       | 80.3103 | 80.3095 | .0008 |
| Blank | B        | 82.6478 | 82.6477 | .0001 |

Filters

| Run | Filt # | Final 1 | Final 2 | Init  | Net   |
|-----|--------|---------|---------|-------|-------|
| 1   | A141   | .3810   | .3810   | .3499 | .0311 |
| 2   | A140   | .3588   | .3586   | .3486 | .0102 |
| 3   | A139   | .3680   | .3680   | .3505 | .0175 |

Test Totals

| Run | Filter | Wash  | Total |
|-----|--------|-------|-------|
| 1   | .0311  | .0035 | .0346 |
| 2   | .0102  | .0022 | .0124 |
| 3   | .0175  | .0008 | .0183 |

WKF

7/3/89

# VISIBLE EMISSION OBSERVATION FORM

No. 0001

|                                          |                      |                  |
|------------------------------------------|----------------------|------------------|
| COMPANY NAME<br><u>Blythe Industries</u> |                      |                  |
| STREET ADDRESS<br><u>Poplar Tent Rd.</u> |                      |                  |
| CITY<br><u>Concord</u>                   | STATE<br><u>N.C.</u> | ZIP              |
| PHONE (KEY CONTACT)                      |                      | SOURCE ID NUMBER |

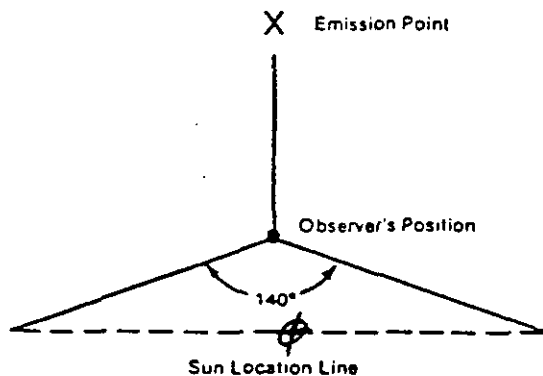
|                                       |                                 |
|---------------------------------------|---------------------------------|
| PROCESS EQUIPMENT<br><u>Dryer</u>     | OPERATING MODE<br><u>Normal</u> |
| CONTROL EQUIPMENT<br><u>Bag house</u> | OPERATING MODE<br><u>Normal</u> |

|                                                             |                                                                |
|-------------------------------------------------------------|----------------------------------------------------------------|
| DESCRIBE EMISSION POINT<br><u>stack outlet</u>              |                                                                |
| HEIGHT ABOVE GROUND LEVEL<br><u>40'</u>                     | HEIGHT RELATIVE TO OBSERVER<br>Start <u>40'</u> End <u>40'</u> |
| DISTANCE FROM OBSERVER<br>Start <u>150'</u> End <u>150'</u> | DIRECTION FROM OBSERVER<br>Start <u>West</u> End <u>West</u>   |

|                                                    |                                                                     |
|----------------------------------------------------|---------------------------------------------------------------------|
| DESCRIBE EMISSIONS                                 |                                                                     |
| Start <u>NONE</u>                                  | End <u>NONE - pale white</u>                                        |
| EMISSION COLOR                                     | IF WATER DROPLET PLUME                                              |
| Start <u>—</u> End <u>—</u>                        | Attached <input type="checkbox"/> Detached <input type="checkbox"/> |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED |                                                                     |
| Start <u>STACK Exit</u>                            | End <u>Stack Exit</u>                                               |

|                                   |                                     |
|-----------------------------------|-------------------------------------|
| DESCRIBE PLUME BACKGROUND         |                                     |
| Start <u>Blue sky</u>             | End                                 |
| BACKGROUND COLOR                  | SKY CONDITIONS                      |
| Start <u>Blue</u> End <u>same</u> | Start <u>Clear</u> End <u>Clear</u> |
| WIND SPEED                        | WIND DIRECTION                      |
| Start <u>Calm</u> End <u>same</u> | Start <u>Calm</u> End <u>Calm</u>   |
| AMBIENT TEMP                      | WET BULB TEMP                       |
| Start <u>80°F</u> End <u>82°F</u> | RH, percent                         |

|                                 |                      |                      |
|---------------------------------|----------------------|----------------------|
| Stack with Plume<br>Sun<br>Wind | SOURCE LAYOUT SKETCH | Draw North Arrow<br> |
|---------------------------------|----------------------|----------------------|



|                        |
|------------------------|
| ADDITIONAL INFORMATION |
|------------------------|

| OBSERVATION DATE |   | START TIME |    | END TIME |          |
|------------------|---|------------|----|----------|----------|
| 6/27/89          |   | 0715       |    | 0815     |          |
| SEC              | 0 | 15         | 30 | 45       | COMMENTS |
| MIN              |   |            |    |          |          |
| 1                | 0 | 0          | 5  | 0        |          |
| 2                | 0 | 5          | 0  | 0        |          |
| 3                | 0 | 0          | 0  | 0        |          |
| 4                | 0 | 0          | 5  | 0        |          |
| 5                | 0 | 0          | 0  | 0        |          |
| 6                | 0 | 0          | 5  | 0        |          |
| 7                | 0 | 0          | 0  | 0        |          |
| 8                | 0 | 0          | 0  | 5        |          |
| 9                | 5 | 0          | 0  | 0        |          |
| 10               | 0 | 0          | 0  | 0        |          |
| 11               | 0 | 0          | 0  | 0        |          |
| 12               | 0 | 0          | 5  | 0        |          |
| 13               | 5 | 0          | 0  | 0        |          |
| 14               | 0 | 0          | 5  | 0        |          |
| 15               | 0 | 0          | 0  | 0        |          |
| 16               | 0 | 0          | 0  | 0        |          |
| 17               | 0 | 0          | 0  | 0        |          |
| 18               | 0 | 0          | 5  | 0        |          |
| 19               | 5 | 0          | 0  | 5        |          |
| 20               | 0 | 0          | 0  | 0        |          |
| 21               | 0 | 0          | 0  | 0        |          |
| 22               | 0 | 0          | 0  | 0        |          |
| 23               | 0 | 0          | 5  | 0        |          |
| 24               | 0 | 0          | 0  | 0        |          |
| 25               | 5 | 0          | 5  | 0        |          |
| 26               | 0 | 0          | 0  | 0        |          |
| 27               | 0 | 0          | 0  | 0        |          |
| 28               | 0 | 0          | 0  | 0        |          |
| 29               | 0 | 5          | 5  | 0        |          |
| 30               | 0 | 0          | 0  | 0        |          |

|                                                             |                         |
|-------------------------------------------------------------|-------------------------|
| OBSERVER'S NAME (PRINT)<br><u>R N Westbrak</u>              |                         |
| OBSERVER'S SIGNATURE<br><u>[Signature]</u>                  | DATE<br><u>6/27/89</u>  |
| ORGANIZATION<br><u>ANALYTICAL TESTING CONSULTANTS, INC.</u> |                         |
| CERTIFIED BY<br><u>Gra DNR</u>                              | DATE<br><u>April 89</u> |
| CONTINUED ON VEO FORM NUMBER                                | <u>0002</u>             |

# VISIBLE EMISSION OBSERVATION FORM

No. 0002

|                                           |                      |                  |
|-------------------------------------------|----------------------|------------------|
| COMPANY NAME<br><i>Bly the Industries</i> |                      |                  |
| STREET ADDRESS<br><i>Poplar Tent Rd.</i>  |                      |                  |
| CITY<br><i>Concord</i>                    | STATE<br><i>N.C.</i> | ZIP              |
| PHONE (KEY CONTACT)                       |                      | SOURCE ID NUMBER |

|                   |                |
|-------------------|----------------|
| PROCESS EQUIPMENT | OPERATING MODE |
| CONTROL EQUIPMENT | OPERATING MODE |

|                                          |                                               |
|------------------------------------------|-----------------------------------------------|
| DESCRIBE EMISSION POINT                  |                                               |
| HEIGHT ABOVE GROUND LEVEL                | HEIGHT RELATIVE TO OBSERVER<br>Start      End |
| DISTANCE FROM OBSERVER<br>Start      End | DIRECTION FROM OBSERVER<br>Start      End     |

|                                                    |                                                                                               |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------|
| DESCRIBE EMISSIONS                                 |                                                                                               |
| EMISSION COLOR                                     | IF WATER DROPLET PLUME<br>Attached <input type="checkbox"/> Detached <input type="checkbox"/> |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED |                                                                                               |

|                           |                                |
|---------------------------|--------------------------------|
| DESCRIBE PLUME BACKGROUND |                                |
| BACKGROUND COLOR          | SKY CONDITIONS                 |
| WIND SPEED                | WIND DIRECTION                 |
| AMBIENT TEMP              | WET BULB TEMP      RH, percent |

Stack with Plume

Sun

Wind

SOURCE LAYOUT SKETCH

Draw North Arrow

X Emission Point

Observer's Position

140°

Sun Location Line

| OBSERVATION DATE<br><i>6/27/89</i> |   | START TIME<br><i>0745</i> |    | END TIME<br><i>0815</i> | COMMENTS |
|------------------------------------|---|---------------------------|----|-------------------------|----------|
| SEC<br>MIN                         | 0 | 15                        | 30 | 45                      |          |
| 1                                  | 0 | 0                         | 5  | 0                       |          |
| 2                                  | 0 | 5                         | 0  | 0                       |          |
| 3                                  | 0 | 0                         | 0  | 0                       |          |
| 4                                  | 0 | 0                         | 0  | 0                       |          |
| 5                                  | 0 | 0                         | 0  | 5                       |          |
| 6                                  | 0 | 0                         | 0  | 5                       |          |
| 7                                  | 0 | 0                         | 0  | 0                       |          |
| 8                                  | 5 | 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 | 5                         | 0  | 0                       |          |
| 14                                 | 0 | 0                         | 0  | 0                       |          |
| 15                                 | 5 | 0                         | 0  | 0                       |          |
| 16                                 | 0 | 0                         | 0  | 0                       |          |
| 17                                 | 5 | 0                         | 0  | 5                       |          |
| 18                                 | 0 | 0                         | 0  | 0                       |          |
| 19                                 | 0 | 0                         | 0  | 0                       |          |
| 20                                 | 0 | 0                         | 0  | 0                       |          |
| 21                                 | 0 | 5                         | 5  | 0                       |          |
| 22                                 | 0 | 0                         | 0  | 0                       |          |
| 23                                 | 0 | 0                         | 0  | 0                       |          |
| 24                                 | 5 | 0                         | 0  | 0                       |          |
| 25                                 | 0 | 0                         | 5  | 0                       |          |
| 26                                 | 0 | 0                         | 0  | 0                       |          |
| 27                                 | 0 | 5                         | 0  | 0                       |          |
| 28                                 | 0 | 0                         | 0  | 0                       |          |
| 29                                 | 0 | 0                         | 0  | 5                       |          |
| 30                                 | 0 | 0                         | 0  | 0                       |          |

|                                                             |  |                        |
|-------------------------------------------------------------|--|------------------------|
| OBSERVER'S NAME (PRINT)<br><i>RN Westbrook</i>              |  | DATE<br><i>6/27/89</i> |
| OBSERVER'S SIGNATURE<br><i>[Signature]</i>                  |  |                        |
| ORGANIZATION<br><i>ANALYTICAL TESTING CONSULTANTS, INC.</i> |  |                        |
| CERTIFIED BY<br><i>Co. DNR</i>                              |  | DATE<br><i>7/1/89</i>  |
| CONTINUED ON VEO FORM NUMBER                                |  | <i>0003</i>            |

# VISIBLE EMISSION OBSERVATION FORM

No. 0003

|                                          |                      |                  |
|------------------------------------------|----------------------|------------------|
| COMPANY NAME<br><i>Blythe Industries</i> |                      |                  |
| STREET ADDRESS<br><i>Poplar Tent Rd.</i> |                      |                  |
| CITY<br><i>Concord</i>                   | STATE<br><i>N.C.</i> | ZIP              |
| PHONE (KEY CONTACT)                      |                      | SOURCE ID NUMBER |

|                                          |                                 |
|------------------------------------------|---------------------------------|
| PROCESS EQUIPMENT<br><i>Same as 0001</i> | OPERATING MODE<br><i>Normal</i> |
| CONTROL EQUIPMENT<br><i>Same</i>         | OPERATING MODE<br><i>Normal</i> |

|                                                             |                                                                |
|-------------------------------------------------------------|----------------------------------------------------------------|
| DESCRIBE EMISSION POINT<br><i>stack outlet</i>              |                                                                |
| HEIGHT ABOVE GROUND LEVEL<br><i>40'</i>                     | HEIGHT RELATIVE TO OBSERVER<br>Start <i>40'</i> End <i>40'</i> |
| DISTANCE FROM OBSERVER<br>Start <i>150'</i> End <i>150'</i> | DIRECTION FROM OBSERVER<br>Start <i>W</i> End <i>W</i>         |

|                                                                                                     |                                                                                               |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| DESCRIBE EMISSIONS<br>Start <i>No Color - pale white</i> End <i>Same</i>                            |                                                                                               |
| EMISSION COLOR<br>Start <i>pale white</i> End <i>Same</i>                                           | IF WATER DROPLET PLUME<br>Attached <input type="checkbox"/> Detached <input type="checkbox"/> |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br>Start <i>stack exit</i> End <i>stack exit</i> |                                                                                               |

|                                                              |                                                       |
|--------------------------------------------------------------|-------------------------------------------------------|
| DESCRIBE PLUME BACKGROUND<br>Start <i>sky</i> End <i>sky</i> |                                                       |
| BACKGROUND COLOR<br>Start <i>Blue</i> End <i>Blue</i>        | SKY CONDITIONS<br>Start <i>Clear</i> End <i>Clear</i> |
| WIND SPEED<br>Start <i>0-3</i> End <i>0-3</i>                | WIND DIRECTION<br>Start <i>NW</i> End <i>NW</i>       |
| AMBIENT TEMP<br>Start <i>82°F</i> End                        | WET BULB TEMP<br>RH, percent                          |

Stack with Plume

Sun

Wind

SOURCE LAYOUT SKETCH

Draw North Arrow

X Emission Point

Observer's Position

140°

Sun Location Line

| OBSERVATION DATE<br><i>6/27/89</i> |   | START TIME<br><i>0815</i> |    | END TIME |
|------------------------------------|---|---------------------------|----|----------|
| SEC                                | 0 | 15                        | 30 | 45       |
| MIN                                |   |                           |    |          |
| 1                                  | 0 | 0                         | 5  | 0        |
| 2                                  | 0 | 0                         | 0  | 0        |
| 3                                  | 0 | 0                         | 0  | 5        |
| 4                                  | 0 | 5                         | 0  | 0        |
| 5                                  | 0 | 0                         | 0  | 0        |
| 6                                  | 0 | 5                         | 0  | 5        |
| 7                                  | 0 | 0                         | 0  | 0        |
| 8                                  | 0 | 0                         | 5  | 0        |
| 9                                  | 0 | 0                         | 0  | 0        |
| 10                                 | 0 | 0                         | 0  | 0        |
| 11                                 | 0 | 0                         | 0  | 0        |
| 12                                 | 0 | 0                         | 5  | 0        |
| 13                                 | 5 | 0                         | 0  | 0        |
| 14                                 | 0 | 0                         | 0  | 0        |
| 15                                 | 0 | 0                         | 0  | 0        |
| 16                                 | 0 | 0                         | 0  | 5        |
| 17                                 | 0 | 0                         | 0  | 0        |
| 18                                 | 0 | 0                         | 0  | 0        |
| 19                                 | 0 | 0                         | 0  | 0        |
| 20                                 | 5 | 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 | 5                         | 0  | 0        |
| 26                                 | 0 | 0                         | 0  | 0        |
| 27                                 | 0 | 0                         | 0  | 0        |
| 28                                 | 0 | 5                         | 0  | 0        |
| 29                                 | 0 | 0                         | 0  | 0        |
| 30                                 | 0 | 0                         | 0  | 0        |

|                                                             |  |                        |
|-------------------------------------------------------------|--|------------------------|
| OBSERVER'S NAME (PRINT)<br><i>RN Westbrook</i>              |  | DATE<br><i>6/27/89</i> |
| OBSERVER'S SIGNATURE<br><i>[Signature]</i>                  |  |                        |
| ORGANIZATION<br><i>ANALYTICAL TESTING CONSULTANTS, INC.</i> |  |                        |
| CERTIFIED BY<br><i>G. DNR</i>                               |  | DATE<br><i>6/1/89</i>  |
| CONTINUED ON VEO FORM NUMBER                                |  | <i>0004</i>            |

|                        |
|------------------------|
| ADDITIONAL INFORMATION |
|                        |



# VISIBLE EMISSION OBSERVATION FORM

No. 0004

|                                          |                      |                  |
|------------------------------------------|----------------------|------------------|
| COMPANY NAME<br><i>Blythe Industries</i> |                      |                  |
| STREET ADDRESS<br><i>Poplar Tent Rd.</i> |                      |                  |
| CITY<br><i>Concord</i>                   | STATE<br><i>N.C.</i> | ZIP              |
| PHONE (KEY CONTACT)                      |                      | SOURCE ID NUMBER |

|                   |                |
|-------------------|----------------|
| PROCESS EQUIPMENT | OPERATING MODE |
| CONTROL EQUIPMENT | OPERATING MODE |

|                                     |                                          |
|-------------------------------------|------------------------------------------|
| DESCRIBE EMISSION POINT             |                                          |
| HEIGHT ABOVE GROUND LEVEL           | HEIGHT RELATIVE TO OBSERVER<br>Start End |
| DISTANCE FROM OBSERVER<br>Start End | DIRECTION FROM OBSERVER<br>Start End     |

|                                                    |                                                                                               |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------|
| DESCRIBE EMISSIONS                                 |                                                                                               |
| Start                                              | End                                                                                           |
| EMISSION COLOR                                     | IF WATER DROPLET PLUME<br>Attached <input type="checkbox"/> Detached <input type="checkbox"/> |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED |                                                                                               |
| Start                                              | End                                                                                           |

|                           |                           |
|---------------------------|---------------------------|
| DESCRIBE PLUME BACKGROUND |                           |
| Start                     | End                       |
| BACKGROUND COLOR          | SKY CONDITIONS            |
| Start End                 | Start End                 |
| WIND SPEED                | WIND DIRECTION            |
| Start End                 | Start End                 |
| AMBIENT TEMP              | WET BULB TEMP RH. percent |
| Start End                 |                           |

|                                 |                                              |
|---------------------------------|----------------------------------------------|
| Slack with Plume<br>Sun<br>Wind | SOURCE LAYOUT SKETCH<br>Draw North Arrow<br> |
|---------------------------------|----------------------------------------------|

|                        |
|------------------------|
| ADDITIONAL INFORMATION |
|------------------------|

| OBSERVATION DATE |   | START TIME |    | END TIME |             |
|------------------|---|------------|----|----------|-------------|
| 6/27/89          |   | 1815       |    | 10:00    |             |
| SEC              | 0 | 15         | 30 | 45       | COMMENTS    |
| MIN              |   |            |    |          |             |
| 1                | 0 | 0          | 0  | 0        | 9:30 Report |
| 2                | 0 | 0          | 0  | 0        |             |
| 3                | 0 | 0          | 0  | 0        |             |
| 4                | 0 | 0          | 0  | 0        |             |
| 5                | 0 | 0          | 5  | 0        |             |
| 6                | 0 | 0          | 0  | 0        |             |
| 7                | 0 | 0          | 0  | 0        |             |
| 8                | 5 | 0          | 0  | 0        |             |
| 9                | 0 | 0          | 0  | 0        |             |
| 10               | 0 | 0          | 0  | 0        |             |
| 11               | 0 | 0          | 0  | 0        |             |
| 12               | 0 | 0          | 5  | 0        |             |
| 13               | 0 | 0          | 0  | 0        |             |
| 14               | 0 | 0          | 0  | 0        |             |
| 15               | 0 | 0          | 0  | 0        |             |
| 16               | 0 | 5          | 0  | 0        |             |
| 17               | 5 | 0          | 0  | 0        |             |
| 18               | 0 | 0          | 0  | 0        |             |
| 19               | 0 | 0          | 0  | 0        |             |
| 20               | 0 | 0          | 0  | 0        |             |
| 21               | 0 | 0          | 0  | 5        |             |
| 22               | 0 | 0          | 0  | 0        |             |
| 23               | 0 | 0          | 0  | 0        |             |
| 24               | 0 | 0          | 0  | 0        |             |
| 25               | 0 | 0          | 0  | 0        |             |
| 26               | 0 | 0          | 5  | 0        |             |
| 27               | 0 | 0          | 0  | 0        |             |
| 28               | 0 | 0          | 0  | 0        |             |
| 29               | 0 | 0          | 0  | 0        |             |
| 30               | 0 | 0          | 0  | 0        |             |

|                                                             |                         |
|-------------------------------------------------------------|-------------------------|
| OBSERVER'S NAME (PRINT)<br><i>RN Westbrook</i>              | DATE<br><i>6/27/89</i>  |
| OBSERVER'S SIGNATURE<br><i>[Signature]</i>                  |                         |
| ORGANIZATION<br><i>ANALYTICAL TESTING CONSULTANTS, INC.</i> |                         |
| CERTIFIED BY<br><i>Gen DNR</i>                              | DATE<br><i>April 89</i> |
| CONTINUED ON VEO FORM NUMBER                                | <i>0005</i>             |

# VISIBLE EMISSION OBSERVATION FORM

No. 0005

|                                          |                      |                  |
|------------------------------------------|----------------------|------------------|
| COMPANY NAME<br><i>Blythe Industries</i> |                      |                  |
| STREET ADDRESS<br><i>Poplar Tent Rd.</i> |                      |                  |
| CITY<br><i>Concord</i>                   | STATE<br><i>N.C.</i> | ZIP              |
| PHONE (KEY CONTACT)                      |                      | SOURCE ID NUMBER |

|                                       |                                 |
|---------------------------------------|---------------------------------|
| PROCESS EQUIPMENT<br><i>Dryer</i>     | OPERATING MODE<br><i>normal</i> |
| CONTROL EQUIPMENT<br><i>Bag house</i> | OPERATING MODE<br><i>normal</i> |

|                                                             |                                                                |
|-------------------------------------------------------------|----------------------------------------------------------------|
| DESCRIBE EMISSION POINT<br><i>stack Exit</i>                |                                                                |
| HEIGHT ABOVE GROUND LEVEL<br><i>40'</i>                     | HEIGHT RELATIVE TO OBSERVER<br>Start <i>40'</i> End <i>40'</i> |
| DISTANCE FROM OBSERVER<br>Start <i>150'</i> End <i>150'</i> | DIRECTION FROM OBSERVER<br>Start <i>W</i> End <i>W</i>         |

|                                                    |                                                                     |
|----------------------------------------------------|---------------------------------------------------------------------|
| DESCRIBE EMISSIONS                                 |                                                                     |
| Start <i>pale white</i>                            | End <i>same</i>                                                     |
| EMISSION COLOR                                     | IF WATER DROPLET PLUME                                              |
| Start <i>white</i> End <i>white</i>                | Attached <input type="checkbox"/> Detached <input type="checkbox"/> |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED |                                                                     |
| Start <i>stack Exit</i>                            | End <i>Stack Exit</i>                                               |

|                                   |                                     |
|-----------------------------------|-------------------------------------|
| DESCRIBE PLUME BACKGROUND         |                                     |
| Start <i>sky</i>                  | End <i>sky</i>                      |
| BACKGROUND COLOR                  | SKY CONDITIONS                      |
| Start <i>Blue</i> End <i>Blue</i> | Start <i>Clear</i> End <i>Clear</i> |
| WIND SPEED                        | WIND DIRECTION                      |
| Start <i>0-5</i> End <i>0-5</i>   | Start <i>NW</i> End <i>NW</i>       |
| AMBIENT TEMP                      | WET BULB TEMP                       |
| Start <i>85°</i> End <i>87°</i>   | RH. percent                         |

|                  |                                                     |
|------------------|-----------------------------------------------------|
| Stack with Plume | <p>SOURCE LAYOUT SKETCH</p> <p>Draw North Arrow</p> |
| Sun              |                                                     |
| Wind             |                                                     |

| OBSERVATION DATE<br>6/27/89 |   |    | START TIME<br>10:00 |    | END TIME   |
|-----------------------------|---|----|---------------------|----|------------|
| SEC<br>MIN                  | 0 | 15 | 30                  | 45 | COMMENTS   |
|                             |   |    |                     |    |            |
| 1                           | 0 | 0  | 0                   | 0  |            |
| 2                           | 0 | 0  | 0                   | 0  |            |
| 3                           | 0 | 5  | 0                   | 0  |            |
| 4                           | 0 | 0  | 0                   | 0  |            |
| 5                           | 0 | 0  | 0                   | 0  |            |
| 6                           | 0 | 0  | 0                   | 0  |            |
| 7                           | 0 | 0  | 0                   | 0  |            |
| 8                           | 5 | 0  | 0                   | 0  |            |
| 9                           | 0 | 0  | 0                   | 0  |            |
| 10                          | 0 | 0  | 0                   | 0  |            |
| 11                          | 0 | 0  | 0                   | 5  |            |
| 12                          | 0 | 0  | 0                   | 0  |            |
| 13                          | 0 | 0  | 0                   | 0  |            |
| 14                          | 0 | 0  | 0                   | 0  |            |
| 15                          | 5 | 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  | 5                   | 0  |            |
| 23                          | 0 | 0  | 0                   | 0  |            |
| 24                          | 0 | 0  | 0                   | 0  |            |
| 25                          | 0 | 0  | 0                   | 0  |            |
| 26                          | 0 | 0  | 0                   | 5  |            |
| 27                          | 0 | 0  | 0                   | 0  |            |
| 28                          | 0 | 0  | 0                   | 0  |            |
| 29                          | 0 | 0  | 0                   | 0  |            |
| 30                          | 0 | 0  | 0                   | 0  | STOP 10:30 |

|                                                             |                         |
|-------------------------------------------------------------|-------------------------|
| OBSERVER'S NAME (PRINT)<br><i>RN Westbrook</i>              |                         |
| OBSERVER'S SIGNATURE<br><i>RN Westbrook</i>                 | DATE<br><i>6/27/89</i>  |
| ORGANIZATION<br><i>ANALYTICAL TESTING CONSULTANTS, INC.</i> |                         |
| CERTIFIED BY<br><i>Gr. DNR</i>                              | DATE<br><i>April 89</i> |
| CONTINUED ON VEO FORM NUMBER                                | <i>0006</i>             |

|                        |
|------------------------|
| ADDITIONAL INFORMATION |
|------------------------|

# VISIBLE EMISSION OBSERVATION FORM

No. 0006

|                                          |                       |                  |
|------------------------------------------|-----------------------|------------------|
| COMPANY NAME<br><u>Blythe Industries</u> |                       |                  |
| STREET ADDRESS<br><u>Poplar Tent Rd.</u> |                       |                  |
| CITY<br><u>Concord</u>                   | STATE<br><u>N. C.</u> | ZIP              |
| PHONE (KEY CONTACT)                      |                       | SOURCE ID NUMBER |

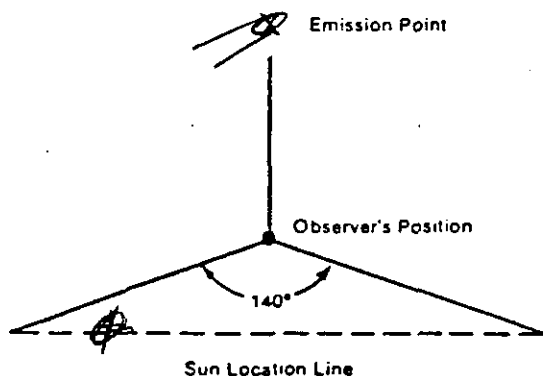
|                                      |                                 |
|--------------------------------------|---------------------------------|
| PROCESS EQUIPMENT<br><u>Dryer</u>    | OPERATING MODE<br><u>Normal</u> |
| CONTROL EQUIPMENT<br><u>Bayhouse</u> | OPERATING MODE<br><u>Normal</u> |

|                                                             |                                                                |
|-------------------------------------------------------------|----------------------------------------------------------------|
| DESCRIBE EMISSION POINT<br><u>stack Exit</u>                |                                                                |
| HEIGHT ABOVE GROUND LEVEL<br><u>40'</u>                     | HEIGHT RELATIVE TO OBSERVER<br>Start <u>40'</u> End <u>40'</u> |
| DISTANCE FROM OBSERVER<br>Start <u>150'</u> End <u>150'</u> | DIRECTION FROM OBSERVER<br>Start                      End      |

|                                                    |                                                                     |
|----------------------------------------------------|---------------------------------------------------------------------|
| DESCRIBE EMISSIONS                                 |                                                                     |
| Start <u>white pale</u>                            | End <u>same</u>                                                     |
| EMISSION COLOR                                     | IF WATER DROPLET PLUME                                              |
| Start <u>white</u> End <u>same</u>                 | Attached <input type="checkbox"/> Detached <input type="checkbox"/> |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED |                                                                     |
| Start <u>2 feet Exit</u>                           | End <u>same</u>                                                     |

|                                   |                                     |
|-----------------------------------|-------------------------------------|
| DESCRIBE PLUME BACKGROUND         |                                     |
| Start <u>sky</u>                  | End <u>sky</u>                      |
| BACKGROUND COLOR                  | SKY CONDITIONS                      |
| Start <u>Blue</u> End <u>Blue</u> | Start <u>Clear</u> End <u>Clear</u> |
| WIND SPEED                        | WIND DIRECTION                      |
| Start <u>0-5</u> End <u>0-5</u>   | Start <u>NW</u> End <u>NW</u>       |
| AMBIENT TEMP                      | WET BULB TEMP      RH, percent      |
| Start <u>85</u> End <u>88</u>     |                                     |

|                                 |                                                                                                            |
|---------------------------------|------------------------------------------------------------------------------------------------------------|
| Stack with Plume<br>Sun<br>Wind | SOURCE LAYOUT SKETCH <div style="float: right; text-align: right;">           Draw North Arrow<br/> </div> |
|---------------------------------|------------------------------------------------------------------------------------------------------------|



|                        |
|------------------------|
| ADDITIONAL INFORMATION |
|                        |

| OBSERVATION DATE |   | START TIME |    |    |          | END TIME |
|------------------|---|------------|----|----|----------|----------|
| 6/27/89          |   | 11:30      |    |    |          | 12:00    |
| SEC              | 0 | 15         | 30 | 45 | COMMENTS |          |
| MIN              |   |            |    |    |          |          |
| 1                | 0 | 0          | 0  | 0  |          |          |
| 2                | 0 | 0          | 0  | 5  |          |          |
| 3                | 0 | 5          | 0  | 0  |          |          |
| 4                | 0 | 0          | 0  | 0  |          |          |
| 5                | 0 | 0          | 0  | 0  |          |          |
| 6                | 0 | 0          | 0  | 0  |          |          |
| 7                | 5 | 0          | 0  | 0  |          |          |
| 8                | 0 | 0          | 0  | 0  |          |          |
| 9                | 0 | 0          | 5  | 0  |          |          |
| 10               | 0 | 0          | 0  | 0  |          |          |
| 11               | 0 | 0          | 0  | 0  |          |          |
| 12               | 0 | 0          | 5  | 0  |          |          |
| 13               | 0 | 0          | 0  | 0  |          |          |
| 14               | 0 | 0          | 0  | 0  |          |          |
| 15               | 0 | 0          | 0  | 0  |          |          |
| 16               | 5 | 0          | 0  | 0  |          |          |
| 17               | 0 | 0          | 0  | 5  |          |          |
| 18               | 0 | 0          | 0  | 0  |          |          |
| 19               | 0 | 0          | 0  | 0  |          |          |
| 20               | 0 | 0          | 0  | 0  |          |          |
| 21               | 0 | 5          | 0  | 0  |          |          |
| 22               | 0 | 0          | 0  | 0  |          |          |
| 23               | 0 | 0          | 0  | 0  |          |          |
| 24               | 0 | 0          | 0  | 0  |          |          |
| 25               | 5 | 0          | 0  | 0  |          |          |
| 26               | 5 | 0          | 0  | 0  |          |          |
| 27               | 0 | 0          | 0  | 0  |          |          |
| 28               | 0 | 0          | 0  | 0  |          |          |
| 29               | 0 | 0          | 5  | 0  |          |          |
| 30               | 0 | 0          | 0  | 0  |          |          |

|                                                             |                         |
|-------------------------------------------------------------|-------------------------|
| OBSERVER'S NAME (PRINT)<br><u>RN Westlake</u>               |                         |
| OBSERVER'S SIGNATURE<br><u>[Signature]</u>                  | DATE<br><u>6/27/89</u>  |
| ORGANIZATION<br><u>ANALYTICAL TESTING CONSULTANTS, INC.</u> |                         |
| CERTIFIED BY<br><u>GA DNR</u>                               | DATE<br><u>April 89</u> |

CONTINUED ON VEO FORM NUMBER

Blythe  
Concord  
6-27-89

PIEDMONT

Mill Supply

SALISBURY, N.C.  
704-636-4241  
N.C. TOLL FREE  
1-800-222-9116

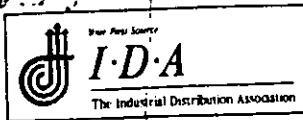
COMPANY

P.O. BOX 2009  
1531 S. MAIN ST.

SALISBURY, NORTH CAROLINA 28144

STATESVILLE, N.C.  
704-873-6348  
N.C. TOLL FREE  
1-800-332-8595

|       |   |     |       |   |     |
|-------|---|-----|-------|---|-----|
| 715   | - | 249 | 11:15 | - | 271 |
| 730   | - | 268 | 11:30 | - | 270 |
| 745   | - | 274 | 11:45 | - | 266 |
| 800   | - | 270 | 12:   | - | 268 |
| 815   | - | 270 | 12:15 | - | 240 |
| 830   | - | 271 | 12:30 | - | 266 |
| 845   | - | 266 | 12:45 | - | 265 |
| 9:00  | - | 261 |       |   |     |
| 9:15  | - | 267 |       |   |     |
| 9:30  | - | 271 |       |   |     |
| 9:45  | - | 260 |       |   |     |
| 10    | - | 260 |       |   |     |
| 10:15 | - | 270 |       |   |     |
| 10:30 | - | 275 |       |   |     |
| 10:45 | - | 265 |       |   |     |
| 11:00 | - | 273 |       |   |     |



# PRIMARY MODULE CALIBRATION CALCULATION

DATE 6/2/89  
 P BAR 29.85  
 MODULE ID RNW 1  
 BY FAHLAS

| ORIFICE | Vw    | Vd    | Tw | Td   | TIME | D H@     | Y        |
|---------|-------|-------|----|------|------|----------|----------|
| 0.5     | 4.15  | 4.27  | 73 | 93   | 10   | 1.583864 | 1.007125 |
| 1       | 5.91  | 6.08  | 73 | 93.5 | 10   | 1.560546 | 1.006945 |
| 1.5     | 7.31  | 7.51  | 73 | 94.5 | 10   | 1.527299 | 1.008904 |
| 2       | 8.33  | 8.59  | 73 | 95   | 10   | 1.566810 | 1.004808 |
| 3       | 10.21 | 10.57 | 73 | 95.5 | 10   | 1.562985 | 0.999332 |
|         |       |       |    |      |      | 1.560301 | 1.005423 |

# POSTTEST MODULE CALIBRATION CALCULATION

DATE 7/3/89  
P BAR 29.11  
MODULE ID RNW #1  
VACUUM 5  
BY FINK

| ORIFICE | Vw   | Vd   | Tw | Td | TIME | D H@     | Y        |
|---------|------|------|----|----|------|----------|----------|
| 1       | 6.11 | 6.15 | 79 | 84 | 10   | 1.557805 | 1.000185 |
| 1       | 6.11 | 6.18 | 79 | 87 | 10   | 1.549261 | 1.000819 |
| 1       | 6.11 | 6.19 | 79 | 88 | 10   | 1.546434 | 1.001029 |
|         |      |      |    |    |      | 1.551167 | 1.000678 |

## NOZZLE CALIBRATION SHEET

NOVEMBER 14, 1988

NOZZLE  
NUMBER

DIAMETER

|    |       |       |       |       |       |       |
|----|-------|-------|-------|-------|-------|-------|
| 31 | 0.173 | 0.173 | 0.174 | 0.173 | 0.172 | 0.173 |
| 32 | 0.190 | 0.190 | 0.191 | 0.190 | 0.190 | 0.191 |
| 33 | 0.191 | 0.191 | 0.190 | 0.192 | 0.191 | 0.191 |
| 34 | 0.192 | 0.192 | 0.192 | 0.191 | 0.192 | 0.192 |
| 35 | 0.190 | 0.190 | 0.190 | 0.190 | 0.190 | 0.190 |
| 36 | 0.192 | 0.192 | 0.191 | 0.191 | 0.192 | 0.192 |
| 37 | 0.2   | 0.201 | 0.2   | 0.201 | 0.2   | 0.199 |
| 38 | 0.2   | 0.2   | 0.201 | 0.199 | 0.2   | 0.2   |
| 41 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| 42 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| 43 | 0.250 | 0.251 | 0.250 | 0.250 | 0.251 | 0.250 |
| 44 | 0.250 | 0.251 | 0.250 | 0.251 | 0.250 | 0.250 |
| 45 | 0.251 | 0.250 | 0.250 | 0.250 | 0.249 | 0.249 |
| 46 | 0.250 | 0.250 | 0.250 | 0.250 | 0.251 | 0.250 |
| 47 | 0.252 | 0.250 | 0.253 | 0.253 | 0.252 | 0.252 |
| 51 | 0.300 | 0.300 | 0.300 | 0.300 | 0.300 | 0.300 |
| 52 | 0.300 | 0.300 | 0.300 | 0.300 | 0.300 | 0.300 |
| 53 | 0.312 | 0.312 | 0.312 | 0.313 | 0.313 | 0.312 |
| 54 | 0.313 | 0.313 | 0.312 | 0.312 | 0.312 | 0.313 |
| 55 | 0.312 | 0.312 | 0.313 | 0.312 | 0.312 | 0.312 |
| 61 | 0.376 | 0.375 | 0.376 | 0.376 | 0.378 | 0.376 |
| 62 | 0.375 | 0.375 | 0.375 | 0.375 | 0.375 | 0.375 |
| 63 | 0.376 | 0.376 | 0.375 | 0.376 | 0.376 | 0.377 |
| 64 | 0.377 | 0.378 | 0.378 | 0.376 | 0.376 | 0.376 |
| 65 | 0.374 | 0.374 | 0.375 | 0.375 | 0.375 | 0.374 |
| 66 | 0.375 | 0.375 | 0.376 | 0.376 | 0.375 | 0.375 |
| 71 | 0.440 | 0.440 | 0.440 | 0.440 | 0.440 | 0.440 |
| 72 | 0.440 | 0.440 | 0.440 | 0.440 | 0.440 | 0.440 |
| 81 | 0.500 | 0.500 | 0.500 | 0.500 | 0.501 | 0.500 |
| 82 | 0.501 | 0.502 | 0.501 | 0.501 | 0.500 | 0.501 |
| 83 | 0.500 | 0.500 | 0.500 | 0.500 | 0.501 | 0.501 |
| 84 | 0.502 | 0.502 | 0.503 | 0.502 | 0.502 | 0.503 |
| 85 | 0.502 | 0.503 | 0.503 | 0.501 | 0.501 | 0.502 |

NOZZLE  
NUMBER

AVERAGE

|    |       |       |       |       |       |
|----|-------|-------|-------|-------|-------|
| 31 | 0.173 | 0.174 | 0.173 | 0.174 | 0.173 |
| 32 | 0.190 | 0.190 | 0.189 | 0.191 | 0.190 |
| 33 | 0.191 | 0.192 | 0.190 | 0.191 | 0.191 |
| 34 | 0.191 | 0.193 | 0.192 | 0.192 | 0.192 |
| 35 | 0.190 | 0.190 | 0.190 | 0.190 | 0.190 |
| 36 | 0.192 | 0.192 | 0.191 | 0.193 | 0.192 |
| 37 | 0.2   | 0.2   | 0.201 | 0.201 | 0.200 |
| 38 | 0.201 | 0.201 | 0.2   | 0.2   | 0.200 |
| 41 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| 42 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| 43 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| 44 | 0.251 | 0.250 | 0.250 | 0.250 | 0.250 |
| 45 | 0.250 | 0.250 | 0.249 | 0.251 | 0.250 |
| 46 | 0.251 | 0.251 | 0.250 | 0.250 | 0.250 |
| 47 | 0.251 | 0.251 | 0.250 | 0.252 | 0.252 |
| 51 | 0.300 | 0.300 | 0.300 | 0.300 | 0.300 |
| 52 | 0.300 | 0.300 | 0.300 | 0.300 | 0.300 |
| 53 | 0.312 | 0.312 | 0.312 | 0.313 | 0.312 |
| 54 | 0.313 | 0.311 | 0.312 | 0.313 | 0.312 |
| 55 | 0.312 | 0.313 | 0.312 | 0.313 | 0.313 |
| 61 | 0.375 | 0.376 | 0.376 | 0.376 | 0.376 |
| 62 | 0.375 | 0.375 | 0.375 | 0.375 | 0.375 |
| 63 | 0.377 | 0.376 | 0.376 | 0.376 | 0.376 |
| 64 | 0.377 | 0.377 | 0.377 | 0.377 | 0.377 |
| 65 | 0.374 | 0.374 | 0.374 | 0.373 | 0.374 |
| 66 | 0.374 | 0.374 | 0.375 | 0.375 | 0.375 |
| 71 | 0.440 | 0.440 | 0.440 | 0.440 | 0.440 |
| 72 | 0.440 | 0.440 | 0.440 | 0.440 | 0.440 |
| 81 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 |
| 82 | 0.502 | 0.501 | 0.500 | 0.501 | 0.501 |
| 83 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 |
| 84 | 0.501 | 0.501 | 0.502 | 0.502 | 0.502 |
| 85 | 0.502 | 0.503 | 0.502 | 0.501 | 0.502 |



TYPE S PITOT TUBE INSPECTION DATA FORM

#33

Pitot tube assembly level? ☒ yes ☐ no

Pitot tube openings damaged? ☐ yes (explain below) ☒ no

$\alpha_1 = 0^\circ (<10^\circ)$ ,  $\alpha_2 = 0^\circ (<10^\circ)$ ,  $\beta_1 = 0^\circ (<5^\circ)$ ,  
 $\beta_2 = 0^\circ (<5^\circ)$

$\gamma = 0^\circ$ ,  $\theta = 0^\circ$ ,  $A = 1.0$  cm (in.)

$z = A \sin \gamma = 0$  cm (in.);  $<0.32$  cm ( $<1/8$  in.),

$w = A \sin \theta = 0$  cm (in.);  $<0.08$  cm ( $<1/32$  in.)

$P_A = .5$  cm (in.)  $P_B = .5$  cm (in.)

$D_t = 3/8$  cm (in.)

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Calibration required? ☐ yes ☒ no

K.P.  
 7-7-88

## TYPE S PITOT TUBE INSPECTION DATA FORM

#34

Pitot tube assembly level? ☒ yes ☐ noPitot tube openings damaged? ☐ yes (explain below) ☒ no $\alpha_1 = 0^\circ (<10^\circ)$ ,  $\alpha_2 = 0^\circ (<10^\circ)$ ,  $\beta_1 = 8^\circ (<5^\circ)$ , $\beta_2 = 0^\circ (<5^\circ)$  $\gamma = 0^\circ$ ,  $\theta = 0^\circ$ ,  $A = 1.0$  cm (in.) $z = A \sin \gamma = 0$  cm (in.);  $<0.32$  cm ( $<1/8$  in.), $w = A \sin \theta = 0$  cm (in.);  $<.08$  cm ( $<1/32$  in.) $P_A = .50$  cm (in.)  $P_B = .56$  cm (in.) $D_t = 3/8$  cm (in.)

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Calibration required? ☐ yes ☒ noK.P.  
7.7.88

#36

## TYPE S PITOT TUBE INSPECTION DATA FORM

Pitot tube assembly level? ☒ yes ☐ noPitot tube openings damaged? ☐ yes (explain below) ☒ no $\alpha_1 = 0^\circ (<10^\circ)$ ,  $\alpha_2 = 0^\circ (<10^\circ)$ ,  $\beta_1 = 0^\circ (<5^\circ)$ , $\beta_2 = 0^\circ (<5^\circ)$  $\gamma = 0^\circ$ ,  $\theta = 0^\circ$ ,  $A = 1.1$  cm (in.) $z = A \sin \gamma = 0$  cm (in.);  $<0.32$  cm ( $<1/8$  in.), $w = A \sin \theta = 0$  cm (in.);  $<.08$  cm ( $<1/32$  in.) $P_A = .55$  cm (in.)  $P_b = .55$  cm (in.) $D_t = 3/8$  cm (in.)Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_Calibration required? ☐ yes ☒ noKP  
10-17-88

# STACK TEMPERATURE SENSOR CALIBRATION DATA FORM

Date 2/12/88 Thermocouple number 33 3 E 1  
 Ambient temperature 63 °F Barometric pressure 29.32 in. Hg  
 Calibrator Pyle Reference: mercury-in-glass ✓  
TE LEAD 1 other         

| Reference point number <sup>a</sup> | Source <sup>b</sup> (specify) | Reference thermometer temperature, °F | Thermocouple potentiometer temperature, °F | Temperature difference, % <sup>c</sup> |
|-------------------------------------|-------------------------------|---------------------------------------|--------------------------------------------|----------------------------------------|
|                                     | Refrigerator                  | 41                                    | 41                                         |                                        |
|                                     | Ambient                       | 63                                    | 63                                         |                                        |
|                                     | Thelco oven                   | 124                                   | 124                                        |                                        |
|                                     |                               | 166                                   | 167                                        | < 1                                    |
|                                     |                               | 221                                   | 221                                        | < 1                                    |
|                                     |                               | 272                                   | 272                                        |                                        |
|                                     |                               | 318                                   | 319                                        | < 1                                    |
|                                     |                               | 362                                   | 362                                        |                                        |

<sup>a</sup>Every 30°C (50°F) for each reference point.

<sup>b</sup>Type of calibration system used.

<sup>c</sup>
$$\left[ \frac{(\text{ref temp, } ^\circ\text{C} + 273) - (\text{test thermom temp, } ^\circ\text{C} + 273)}{\text{ref temp, } ^\circ\text{C} + 273} \right] 100 \leq 1.5\%$$

# STACK TEMPERATURE SENSOR CALIBRATION DATA FORM

Date 2/12/88 Thermocouple number 34/3 E2  
 Ambient temperature 63 °F Barometric pressure 29.32 in. Hg  
 Calibrator Pocle Reference: mercury-in-glass ☒  
TE LEND 2 other \_\_\_\_\_

| Reference point number <sup>a</sup> | Source <sup>b</sup> (specify) | Reference thermometer temperature, °F | Thermocouple potentiometer temperature, °F | Temperature difference, <sup>c</sup> % |
|-------------------------------------|-------------------------------|---------------------------------------|--------------------------------------------|----------------------------------------|
|                                     | Refrigerator                  | 41                                    | 41                                         |                                        |
|                                     | AMBIENT                       | 63                                    | 63                                         |                                        |
|                                     | Thelco OVEN                   | 124                                   | 124                                        |                                        |
|                                     |                               | 166                                   | 166                                        |                                        |
|                                     |                               | 220                                   | 221                                        | 21                                     |
|                                     |                               | 272                                   | 273                                        | 21                                     |
|                                     |                               | 318                                   | 318                                        |                                        |
|                                     |                               | 362                                   | 363                                        | 21                                     |

<sup>a</sup>Every 30°C (50°F) for each reference point.

<sup>b</sup>Type of calibration system used.

<sup>c</sup>
$$\left[ \frac{(\text{ref temp, } ^\circ\text{C} + 273) - (\text{test thermom temp, } ^\circ\text{C} + 273)}{\text{ref temp, } ^\circ\text{C} + 273} \right] 100 \leq 1.5\%$$

#36

## STACK TEMPERATURE SENSOR CALIBRATION DATA FORM

Date 10/17/84 Thermocouple number #36Ambient temperature 61 °F Barometric pressure — in. HgCalibrator RH Reference: mercury-in-glass ✓

other

| Reference point number <sup>a</sup> | Source <sup>b</sup> (specify) | Reference thermometer temperature, °F | Thermocouple potentiometer temperature, °F | Temperature difference, % <sup>c</sup> |
|-------------------------------------|-------------------------------|---------------------------------------|--------------------------------------------|----------------------------------------|
|                                     | Refrigerator                  | 40                                    | 40                                         |                                        |
|                                     | Ambient                       | 61                                    | 61                                         |                                        |
|                                     | Thermal Oven                  | 220                                   | 222                                        | <1                                     |
|                                     |                               | 273                                   | 274                                        | <1                                     |
|                                     |                               | 324                                   | 326                                        | <1                                     |
|                                     |                               | 358                                   | 359                                        | <1                                     |

<sup>a</sup>Every 30°C (50°F) for each reference point.<sup>b</sup>Type of calibration system used.<sup>c</sup>
$$\left[ \frac{(\text{ref temp, } ^\circ\text{C} + 273) - (\text{test thermom temp, } ^\circ\text{C} + 273)}{\text{ref temp, } ^\circ\text{C} + 273} \right] 100 < 1.5\%$$

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Report no good unless: Ref 16

1) Better process description

2) Units for production data

3) Calc. production rate for each test.

Emission Test Report  
Review ChecklistReviewer: Brian ShragerReview Date: 4/8/92

## A. Background Information

1. Facility name: Blythe Industries, Inc.Location: Concord, North Carolina2. Source category: Asphaltic Concrete Plants3. Test date: June 27, 19894. Test sponsor: Blythe Industries, Inc.5. Testing contractor: Analytical Testing Consultants, Inc.

6. Purpose of test: \_\_\_\_\_

7. Pollutants measured

PM

PM-10

CO

SO<sub>2</sub>NO<sub>x</sub>

VOC

Pb

CO<sub>2</sub>Others (list): To determine compliance with applicable  
emission rate codes of the State of North Carolina.

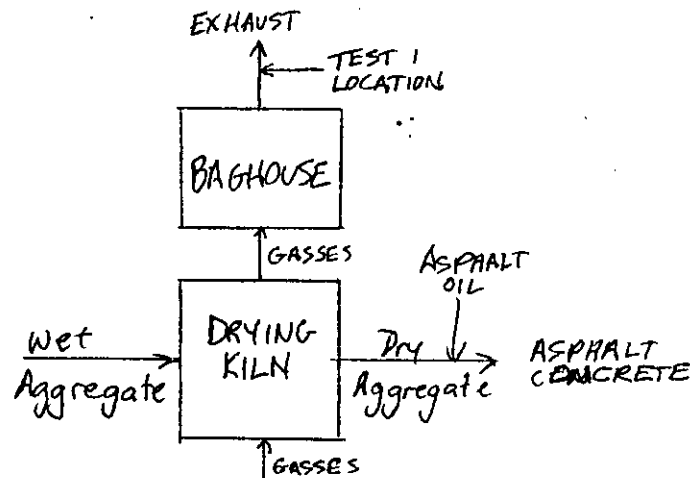
8. Process overview: On an attached page provide a block diagram of the unit operations and associated air pollution control systems at the facility. Identify process tested with letters from the beginning of the alphabet (A, B, C, etc.) and APC systems with letters from end of alphabet (V, W, X, etc.). Also identify test locations with Arabic numerals (1, 2, 3, ...). Using the ID symbols from that sketch complete the table below that identifies processes or unit operations tested.

| Test ID | Process    | Process ID | Emissions tested |            | APCD (controlled emissions only) |
|---------|------------|------------|------------------|------------|----------------------------------|
|         |            |            | Uncontrolled     | Controlled |                                  |
| 1       | Dryer Kiln | A          |                  | ✓          | Baghouse                         |
|         |            |            |                  |            |                                  |
|         |            |            |                  |            |                                  |
|         |            |            |                  |            |                                  |
|         |            |            |                  |            |                                  |

## B. Process Information

1. Provide a brief narrative description of the process. With as much detail as possible, (e.g., if a furnace or conveyor system is used, identify the type of unit) describe the equipment used for those operations tested. (Note: If process description provided in test report is adequate, attach copy or reproduce here.)

The system tested was the bag collector exhaust which is utilized for PM emissions control of the Kilndryer. Aggregate is dried in the kiln, and then asphalt oil is added to make asphalt concrete.





2. For each process tested list feedstock materials and products. Indicate if activity factors are for feed (F) rate or product (P) rate.

| Process ID | Feedstock materials | Products         | Basis for activity factor | F/P |
|------------|---------------------|------------------|---------------------------|-----|
| A          | Wet Aggregate       | Asphalt Concrete | Asphalt Concrete          | P   |
|            |                     |                  |                           |     |
|            |                     |                  |                           |     |
|            |                     |                  |                           |     |
|            |                     |                  |                           |     |
|            |                     |                  |                           |     |
|            |                     |                  |                           |     |
|            |                     |                  |                           |     |

Basis for data: Source Test Survey  
(Indicate page/table Nos. in test report)

3. For each process or operation tested and each test run note process capacity and operating rate during test.

| Process ID | Capacity | Units | Test run | Process rate | Units  |
|------------|----------|-------|----------|--------------|--------|
| A          |          |       | 1        | 250          | ton/hr |
|            |          |       | 2        | 250          | ton/hr |
|            |          |       | 3        | 250          | ton/hr |
|            |          |       | 4        |              |        |
|            |          |       | 1        |              |        |
|            |          |       | 2        |              |        |
|            |          |       | 3        |              |        |
|            |          |       | 4        |              |        |
|            |          |       | 1        |              |        |
|            |          |       | 2        |              |        |
|            |          |       | 3        |              |        |
|            |          |       | 4        |              |        |
|            |          |       | 1        |              |        |
|            |          |       | 2        |              |        |
|            |          |       | 3        |              |        |
|            |          |       | 4        |              |        |

Basis for data: Source Test Survey

C. Air Pollution Control Systems Tested

1. For each air pollution control system pollution control system identified in A.8, note the following

| ID | Type of APCD | Manufacturer | Model No. |
|----|--------------|--------------|-----------|
| Z  | Baghouse     |              |           |
|    |              |              |           |
|    |              |              |           |
|    |              |              |           |
|    |              |              |           |
|    |              |              |           |
|    |              |              |           |

Note: Be as specific as possible in identifying APCD. For example, indicate "pulse jet fabric filter" rather than simply "fabric filter."

2. For each system identified above, provide a narrative description. For fugitive systems describe capture techniques as well as the removal techniques (use a separate page if necessary)

3. Using the attached parameter list for guidance complete the table below. (Use additional pages as needed.)

[illegible]

D. Sampling and Analysis Methods

1. Complete the following table

| Test location | Pollutant | S & A method | Reference/<br>conditional<br>method | Deviations<br>noted |
|---------------|-----------|--------------|-------------------------------------|---------------------|
| 1             | PM        | Method 5     | (Y/N)                               | Y(N)                |
|               | Gases     | Method 3     | (Y/N)                               | Y(N)                |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |
|               |           |              | Y/N                                 | Y/N                 |

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2. If a method used was not a reference or conditional method, provide a narrative discussion including any data manipulation needed to make results correspond to reference or conditional method results.

3. Describe any deviations identified above.

E. Emission Data Documentation

1. Tabulate the following stack gas data from the test report. (Use additional pages as needed.)

| Test ID | Parameter                 | Units   | Values reported |          |          |       |
|---------|---------------------------|---------|-----------------|----------|----------|-------|
|         |                           |         | Run 1           | Run 2    | Run 3    | Run 4 |
| 1       | Stack temperature         | °F      | 271             | 268      | 267      |       |
|         | Moisture                  | %       | 21.9            | 24.4     | 23.4     |       |
|         | Oxygen                    | %       | 17              | 17       | 17       |       |
|         | Volumetric flow, actual   | ACFM    | 40,024          | 52,553   | 48,479   |       |
|         | Volumetric flow, standard | SCFM    | 28,251          | 37,325   | 34,442   |       |
|         | Percent isokinetic        |         | 107.9           | 102.8    | 108.2    |       |
|         | Pollutant concentration:  |         |                 |          |          |       |
|         | PM                        | GR/SCFD | 0.017483        | 0.005145 | 0.007716 |       |
|         | CO <sub>2</sub>           | %       | 3.5             | 3.5      | 3.5      |       |
|         |                           |         |                 |          |          |       |
|         | Stack temperature         |         |                 |          |          |       |
|         | Moisture                  |         |                 |          |          |       |
|         | Oxygen                    |         |                 |          |          |       |
|         | Volumetric flow, actual   |         |                 |          |          |       |
|         | Volumetric flow, standard |         |                 |          |          |       |
|         | Percent isokinetic        |         |                 |          |          |       |
|         | Pollutant concentration:  |         |                 |          |          |       |
|         |                           |         |                 |          |          |       |
|         |                           |         |                 |          |          |       |
|         |                           |         |                 |          |          |       |
|         | Stack temperature         |         |                 |          |          |       |
|         | Moisture                  |         |                 |          |          |       |
|         | Oxygen                    |         |                 |          |          |       |
|         | Volumetric flow, actual   |         |                 |          |          |       |
|         | Volumetric flow, standard |         |                 |          |          |       |
|         | Percent isokinetic        |         |                 |          |          |       |
|         | Pollutant concentration:  |         |                 |          |          |       |
|         |                           |         |                 |          |          |       |
|         |                           |         |                 |          |          |       |
|         |                           |         |                 |          |          |       |

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## 2. Tabulate pollutant mass flux rates

[illegible]

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3. Present example emission factor calculations below.

$$\begin{array}{l} \text{TEST 1} \\ \text{PM} = \frac{(3.31 + 1.24 + 1.75)}{3} \frac{\text{lb}}{\text{hr}} \div 250 \frac{\text{tons}}{\text{hr}} = 8.4 \text{ E-03 lb/ton produced} \end{array}$$



4. Tabulate emission factors

? Product or aggregate?

| Process | Pollutant | Units        | Average emission factor |            |
|---------|-----------|--------------|-------------------------|------------|
|         |           |              | Uncontrolled            | Controlled |
| A       | PM        | lb/ton prod. |                         | 8.4E-03    |
|         | CO2       |              | 32.8                    |            |
|         |           |              |                         |            |
|         |           |              |                         |            |
|         |           |              |                         |            |
|         |           |              |                         |            |
|         |           |              |                         |            |
|         |           |              |                         |            |
|         |           |              |                         |            |
|         |           |              |                         |            |
|         |           |              |                         |            |
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|         |           |              |                         |            |
|         |           |              |                         |            |
|         |           |              |                         |            |
|         |           |              |                         |            |
|         |           |              |                         |            |
|         |           |              |                         |            |
|         |           |              |                         |            |
|         |           |              |                         |            |

**ATTACHMENT A**  
**APCD PARAMETERS**

| <b>Type of<br/>APCD</b>                            | <b>Parameters</b>                                                                                                                                                                 |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fabric filter</b>                               | Cleaning mechanism<br>Bag type<br>Cleaning frequency<br>Air to cloth ratio (A/C)<br>Pressure drop<br>Inlet temperature                                                            |
| <b>ESP</b>                                         | Type (wet or dry)<br>Number of fields<br>Rapping cycle (if dry)<br>Specific Collection Area (SCA)<br>Particulate resistivity (if known)<br>Spark rate<br>Current and power levels |
| <b>Venturi (or other high<br/>energy) scrubber</b> | Pressure drop<br>Liquid/gas (L/G) ratio<br>Mist eliminator type                                                                                                                   |
| <b>Packed-bed scrubber</b>                         | Packing depth<br>L/G ratio<br>Caustic use (Y/N)<br>pH<br>Mist eliminator type                                                                                                     |
| <b>Carbon absorber</b>                             | Bed depth<br>Superficial gas velocity<br>Bed temperature<br>Desorption mechanism (media)<br>Flue-gas moisture<br>Cycle length<br>Time-on-line after breakthrough                  |