STD-801, 9-86

COMMONWEALTH OF PENNSYLVANIA
Environmental Resources
8-468-4175

DATE: August 13, 1992

SUBJECT: E. J. Breneman's Inc.
Drum Asphalt Plant
File No. 06-303-021A
Spring Township, Berks County

TO: L. Blaine DeHaven, Chief
Source Testing & Monitoring Section
Division of Technical Services & Monitoring

FROM: Roger A. Fitterling
Air Pollution Control Engineer

Technical Services personnel are requested to review the attached stack test report to determine compliance with the requirements of Chapter 139. Sampling for particulate, visible and volatile organic compound emissions from the company's No. 2 drum mix asphalt plant was conducted on July 14, 1992 by representatives of Gilbert/Commonwealth. The source is covered by Plan Approval No. 06-303-021A, and issuance of an Operating Permit will be based upon the acceptability of the test.

This source is subject to the following standards: Particulate shall not exceed 0.02 gr/dscf, and volatile organic compounds shall not exceed 0.07 #/T of asphalt concrete produced.

Attachments

cc: Abatement and Compliance
Reading District
Lancaster District
Southcentral Regional Office
cc: Re30 RF226.2

9/2

SOURCE SAMPLING REPORT FOR MEASUREMENT OF PARTICULATE, VISIBLE AND VOC EMISSIONS

E. J. BRENNEMAN, INC.
SINKING SPRING, PA.
BATCH ASPHALT PLANT
EXHAUST STACK

G/C, INC., REPORT R-04-6317-012
JULY, 1992

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E. J. BRENEMAN, INC.
SINKING SPRING, PA
BATCH ASPHALT PLANT
EXHAUST STACK

G/C, INC., REPORT R-04-6317-012
JULY, 1992

PREPARED BY

GILBERT/COMMONWEALTH, INC.
P.O. BOX 1498
READING, PENNSYLVANIA 19603

M. GARY HELM
ENVIRONMENTAL SPECIALIST
TESTING SERVICES GROUP

Gilbert/Commonwealth engineers and consultants

P.O. Box 1498, Reading, PA 19603-1498 · Telephone 215-775-2600 · FAX 215-775-2670 · Telex 173-228

August 7, 1992

Mr. Larry Yerger
E. J. Brenneman, Inc.
P.O. Box 2126
Sinking Spring, PA. 19608

Re: Submittal of Source Sampling Report for
Measurement of Particulate, Visible, and VOC
Emissions
Batch Asphalt Plant
Baghouse Exhaust Stack
G/C, Inc., Report R-04-6317-012

Dear Mr. Yerger:

We are pleased to submit four copies of our Report R-04-6317-012, dated August, 1992. This report contains results of source sampling for particulate, visible and VOC emissions and determination of flue gas characteristics from the baghouse exhaust stack, conducted on July 14, 1992.

The source sampling program defined by this report incorporates standard sampling procedures. The results of the sampling program are representative of flue gas emissions at the baghouse exhaust stack under referenced operating conditions.

Information contained in this report and the accompanying appendices includes field data, laboratory analyses, and a computer printout of all results developed by the testing program. We have attempted to present this information in a form that is readily discernible and suitable for your continued use.

Gilbert/Commonwealth, Inc. is pleased to have been of service to E. J. Brenneman, Inc. and trusts that this report will meet your acceptance.

Very truly yours,

for Steven G. Folk
Manager
Testing Services Group

SGF:mgla

Enclosures

FOREWORD

The source sampling program as defined by this report was confined to the measurement of particulate, visible and VOC emissions, and pertinent flue gas characteristics at the baghouse exhaust stack at referenced operating conditions.

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SUMMARY OF TEST RESULTS

A summary of test results developed by the source sampling program conducted on July 14, 1992 are presented in Tables 1 and 2. As such, the results are considered representative of the emissions from the baghouse exhaust stack under referenced operating conditions.

The results show that the exhaust stack has an average particulate concentration of 0.034 gr/dscf, and an emission rate of 6.20 lbs/hr. These particulate emissions are over the allowable emission level of 0.02 gr/dscf.

The average visible emissions for the three runs is 15.0 percent. This is under the allowable visible emission level of 20 percent.

The average VOC emissions is 406.5 ppm(dry) of methane, and 0.13 lbs/ton of asphalt produced, which is over the allowable level of 0.07 lbs/ton of asphalt produced. The third VOC Test was completed after the particulate testing was completed. For this reason, a lower than average flow rate of 20,000 dscfm, and moisture of 22.5% was used to calculate VOC emissions for the third run due to the reduced production rate (145 tons/hr) of asphalt occuring during the time of the test. VOC Test Run #1 utilizes the flows from Particulate Run #2, and VOC Test Run #2 utilizes the flow from Particulate Run #3.

Concerning the particulate emissions, it was noted during sample clean-up that there was a film of oil in the impinger catch. This showed up in the lab results on the 0.22 micron filter catch. This catch from the impinger contents accounted for the greatest percent of particulate caught. If the samples from test runs 1, 2, and 3 were not analyzed for the back-half (impinger) catch their respective emission concentrations would have been 0.006, 0.013, and 0.015 gr/dscf, which is under the allowable emission level. The cause of this catch of particulate in the back-half of the impinger train may be attributed to hot oil in a vapor form passing through the filter and condensing in the impingers.

TABLE 1

SUMMARY OF TEST RESULTS
E. J. BRENEMAN - SINKING SPRING, PA
BATCH ASPHALT PLANT - BAGHOUSE EXHAUST STACK
PARTICULATE AND VISIBLE EMISSIONS
G/C, INC. REPORT R-04-6317-012

DATE	7/14/92		
LOCATION	BAGHOUSE EXHAUST STACK		
RUN NO.	B-P-1	B-P-2	B-P-3
TIME	0845-1035	1134-1313	1330-1455
FLUE GAS CHARACTERISTICS			
DSCFM	20,402	21,684	21,834
MOISTURE	23.7	22.3	22.8
PARTICULATE EMISSIONS			
GR/DSCF	.022	.031	.048
AVERAGE		.034	
ALLOWABLE		0.02	
LBS/HR	3.86	5.80	8.93
AVERAGE		6.20	
VISIBLE EMISSIONS			
PERCENT	12.9	14.0	18.4
AVERAGE		15	
ALLOWABLE		20	

TABLE 2

SUMMARY OF TEST RESULTS
E. J. BRENEMAN, INC - SINKING SPRING, PA.
BATCH ASPHALT PLANT - BAGHOUSE EXHAUST STACK
VOC EMISSIONS
G/C, INC. REPORT R-04-6317-012

DATE		7/14/92	
LOCATION		BAGHOUSE EXHAUST STACK	
RUN NO.	1	2	3
TIME	1205-1305	1346-1446	1506-1607
FLUE GAS CHARACTERISTICS			
DSCFM	21,684	21,834	20,000
MOISTURE, %	22.3	22.8	22.5
OPERATING DATA			
ASPHALT, TON/HR	175.62	189.86	145.00
EMISSIONS			
PPM OF PROPANE	114.8	110.3	89.8
PPM OF METHANE (WET)	344.5	330.8	269.4
PPM OF METHANE (DRY)	443.4	428.5	347.6
LBS/HR	24.06	23.41	17.39
LBS/TON OF ASPHALT	0.14	0.12	0.12
AVERAGE		0.13	
ALLOWABLE		0.07	

SECTION III - ANALYSIS

1. Introduction

The data presented in this report represents the results of a source sampling program for the determination of particulate, visible, and VOC emissions, and flue gas characteristics at the baghouse exhaust stack during referenced operating conditions.

Specific requirements of this source sampling program include the following:

a. Identification of particulate emissions expressed as a concentration (gr/dscf) and an emission rate (lbs/hr).

b. Identification of visible emissions expressed as a percent.

c. Identification of VOC emissions expressed as a concentration (ppm of methane) and an emission rate (lbs/ton of asphalt produced).

d. Average flue gas temperature, moisture, and volume of flow at the sampling location.

e. Orsat analysis of flue gas conditions at the point of sampling.

The sampling program was completed on July 14, 1992, by the Gilbert field test crew, with the assistance of personnel assigned by E. J. Breneman.

2. Sampling Program Explanation

To satisfy the objectives established for the baghouse exhaust stack, the sampling program was set-up on a basis of using one test train positioned at the test location per test and completing three tests for particulate emissions using a PADDER approved EPA Method 5. Conducted simultaneously with the particulate test were three one-hour minimum visible emissions tests.

VOC emissions were sampled for three - one hour periods using EPA Method 25A.

The location and number of sampling ports and traverse points are detailed in Figure 1.

3. Operating Conditions

In the execution of this sampling program, the plant was operated a near normal conditions using an aggregate in percentage by weight: 15% sand, 10% recycled asphalt products, and less than 5% chipped shingles.

4. Results

Test data developed by each test run, together with analytical results from laboratory analysis of samples generated by the field sampling program, are reproduced in the Appendices included with this report. Information on basic gas characteristics developed by each test run is contained in the printout of the computer program included as Appendix 7.

A summary of pertinent test results and essential information to evaluate test results developed for each test run is included with this report as Tables 1 and 2.

5. Discussion

5.1 Sampling Conditions

Most of the field sampling work was completed out of doors and subject to prevailing weather conditions. However, there were no interruptions or delays due to weather or equipment malfunction.

During the first particulate run, the control box was substituted before sampling the final port. This was necessary as a result of a pump malfunction. All necessary calculation adjustments were made, and the test run completed.

During the completion of this test program, the asphalt plant was operated at near normal capacity.

5.2 Exhaust Flue Gas Volume and Composition

Test data for measurement of exhaust flue gas volume and related velocities developed by traversing of the stack show that the measured gas volumes during tests were consistent with expected values. For purposes of this report, indicated emissions are based on these measured gas volumes.

5.3 Unit Operating Conditions

This sampling program was undertaken as a test program for the baghouse exhaust stack at normal capacity. In the execution of this program, all applicable operating conditions were referenced.

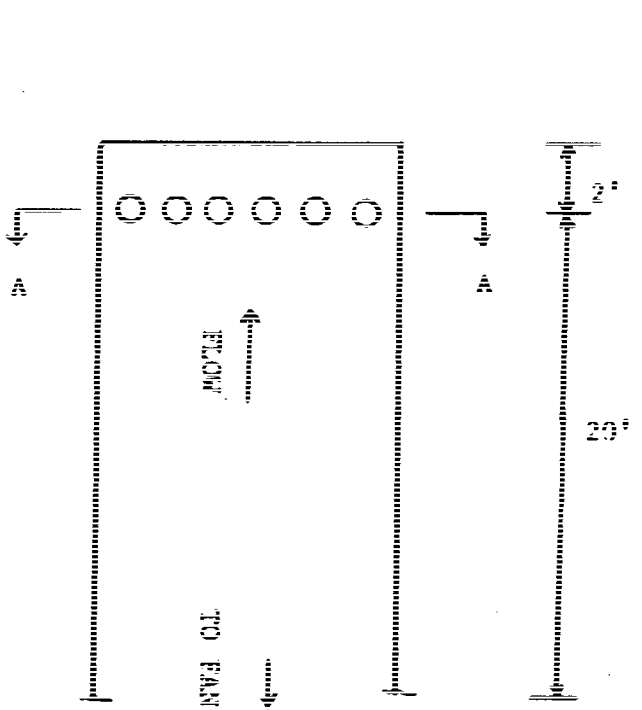
Operating conditions were monitored throughout the duration of the sampling program by E. J. Breneman personnel.

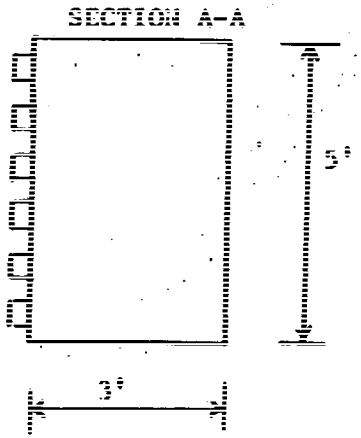
5.4 Emissions

The reported particulate emissions as summarized in Table 1 are expressed as a concentration (gr/dscf) and an emission rate (lbs/hr) as measured.

The reported visible emissions as summarized in Table 1 are expressed as a percent.

The reported VOC emissions as summarized in Table 2 are expressed as a concentration (ppm of methane) and an emission rate (lbs/ton of asphalt produced) as measured.





POINT NO.	DISTANCE FROM PORT, INCHES
1	4.5
2	13.5
3	22.5
4	31.5

FIGURE 1

SUMMARY OF TEST PORTS & TRAVERSE POINTS
E. J. BRENEMAN, INC.
SINKING SPRING FACILITY

SECTION III

APPENDICES

SECTION III - APPENDICES

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APPENDIX 1

PROJECT PARTICIPANTS

APPENDIX 1
PROJECT PARTICIPANTS

The following members of Gilbert/Commonwealth staff participated in the planning and execution of this project and preparation of this report.

Field Sampling Crew:

Steve Polk	Project Manager
George Albright	Senior Engineering Technician
Gary Hehn	Environmental Specialist
Eric Roland	Environmental Specialist
Steve Schell	Engineering Technician

Laboratory Participants:

Vaughan O'Neill	SSM/Laboratories

All field tests were completed with the assistance of technical personnel from E. J. Brememan.

APPENDIX 2

TESTING AND ANALYTICAL PROCEDURES

2.1 REFERENCE TO EPA TEST METHODS

2.2 MODIFIED EPA METHOD 5 SUMMARY

2.3 EPA METHOD 9 SUMMARY

2.4 EPA METHOD 25A SUMMARY

APPENDIX 2

TESTING AND ANALYTICAL PROCEDURES

2.1 REFERENCE TO EPA TEST METHODS

Particulate	Method 5
Visible	Method 9
VOC	Method 25A

Methods appear in their entirety in Title 40 of the Code of Federal Regulations (CFR), Part 60, Appendix A.

APPENDIX 2

TESTING AND ANALYTICAL PROCEDURES

2.2 MODIFIED EPA METHOD 5 SUMMARY

APPENDIX 2

TESTING AND ANALYTICAL PROCEDURES

2.2 MODIFIED EPA METHOD 5 SUMMARY

The following is a summary of PADER modified EPA Method 5, which is used for the measurement of particulate emissions from stationary sources.

In this method flue gas is withdrawn isokinetically from the source. Particulate matter is collected in the sample train, then removed and quantified after the test run.

The set up for the sample train is shown in Figure 5-1 (Appendix A of the Code of Federal Regulations). The following components are used: stainless steel or glass nozzle; a heated, stainless steel probe lined with inconel tubing, or borosilicate quartz glass, capable of maintaining a gas temperature of 248 +/-25°F; a glass fiber filter heated to 248 +/-25°F; glass impingers, the first two containing 150ml of deionized water each, the third impinger empty, and the fourth impinger containing a known amount of silica gel.

The flow monitoring system consists of a Type S Pitot tube, and an inclined manometer. The meter system consists of a vacuum pump, dry gas meter, meter orifice, vacuum guage, and thermometers.

The test run must be a least one hour in duration, and at least 50 dscf of gas must be sampled. A set number of points are sampled, the flow and temperature being monitored and the corresponding sampling rates being adjusted at each point. Also, during the run static pressure is recorded, and the O_2 and CO_2 content of the flue gas is determined. Preceding and following each test run a leak check is performed on the sample train to assure there is no unacceptable in-leakage of ambient air.

Following the final leak check the sample is recovered. The front half of the train (nozzle, probe, front half of filter holder) is rinsed with deionized water (DI) into one sample jar, then rinsed with acetone into another sample jar. The filter is removed from the filter holder and transferred to its original container. The contents of the back half of the train (three impingers) are measured for volume, then placed in one common sample jar. This volume is used in calculating flue gas moisture percentage. Next, these three impingers are rinsed with DI, and the rinsed placed in the same jar as the impinger contents were. Then the impingers are rinsed with acetone, and this wash is placed in a fourth sample jar. Finally the silica gel is removed from the remaining impinger and weighed, this is also for use in determining moisture content.

All samples are then sent to a Gilbert Commonwealth appointed lab for analysis. Upon receipt of the lab analysis particulate results are determined using the equations exhibited in the sample calculations section.

APPENDIX 2

TESTING AND ANALYTICAL PROCEDURES

2.3 EPA METHOD 9 SUMMARY

APPENDIX 2

TESTING AND ANALYTICAL PROCEDURES

2.3 EPA METHOD 9 SUMMARY

The following is a summary of EPA Method 9 Opacity Measurement. This Method appears in its entirety in Title 40 of the Code of Federal Regulations (CFR), Part 60, Appendix A.

This method involves the visible determination of plume opacity by qualified observers on stationary sources. The appearance of a plume depends upon a number of variables some of which are controllable and some of which are not controllable. The qualified observer alleviates any controllable variables by following a detailed list of procedures cited in the Code of Federal Regulations.

The observer makes his observations from a distance sufficient to provide a clear view of the stack emissions. Consistent with maintaining the above requirements, the observer makes his observations from a position where his line of vision is perpendicular to the plume direction whenever possible. Opacity observations are made at the point of greatest opacity in that portion of the plume where condensed water vapor is not present. These opacity observations are ultimately averaged to compute an average percent opacity.

APPENDIX 2

TESTING AND ANALYTICAL PROCEDURES

2.4 EPA METHOD 25A SUMMARY

APPENDIX 2

TESTING AND ANALYTICAL PROCEDURES

2.4 EPA METHOD 25A SUMMARY

The following is a summary of EPA Method 25A Total Gaseous Organic Concentration Measurement. This Method appears in its entirety in Title 40 of the Code of Federal Regulations (CFR), Part 60, Appendix A.

In this method a sample is extracted from a source and transported, through a heated sample line made of stainless steel or teflon tubing, to a flame ionization analyzer (FIA). Results from the FIA are recorded as a concentration (PPM) in relation to the calibration gas or carbon equivalent.

Prior to conducting the test, a calibration test must be conducted. A zero gas and high-level calibration gas are introduced first. After the analyzer has been adjusted accordingly, a low-level and mid-level calibration gas are introduced. The results recorded must be within 5% of the calibration gas value. No adjustments to the analyzer are to be made after the initial calibration test.

Following the completion of the test and hourly during the testing period a calibration drift test must be conducted. When conducting the drift test, the zero and mid-level calibration gases must be reintroduced to the analyzer one at a time. The values recorded during the drift test must be within 3% of the initial span value recorded. Any difference in value greater than 3% invalidates the test.

APPENDIX 3

OPERATING DATA

Agg Rep - Shingle
ACY - Fensby Sand

06:12 07/14/92 MIX #= 3 MIX TPH=147.8 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	96.2%	3.8%	0%	100%	0%	0%	0%	0%
ACT %	96.1%	3.9%	0%	99%	0%	0%	0%	0%
TPH	142.1	5.73	.0	141.2	.0	.0	.0	.0
TONS	21.32	.70	.04	20.25	.00	.00	.00	.00
NOISE	5.0%		3.5%	3.0%	4.0%	2.8%	2.0%	4.0%

AC ACCUM. PERCENT= 2.56
MIX TONS = 21.19
SILO INVENTORIES= 7.45 .00 .00 .00

SILO #= 1

06:13 07/14/92 MIX #= 3 MIX TPH=145.1 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	96.2%	3.8%	0%	100%	0%	0%	0%	0%
ACT %	96.2%	3.8%	0%	98%	0%	0%	0%	0%
TPH	143.4	5.69	.0	142.3	.0	.0	.0	.0
TONS	22.56	.75	.04	21.44	.00	.00	.00	.00
NOISE	5.0%		3.5%	3.0%	4.0%	2.8%	2.0%	4.0%

AC ACCUM. PERCENT= 3.08
MIX TONS = 22.43
SILO INVENTORIES= 8.69 .00 .00 .00

SILO #= 1

06:33 07/14/92 MIX #= 3 MIX TPH=174.3 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	96.2%	3.8%	0%	100%	0%	0%	0%	0%
ACT %	96.1%	3.9%	0%	100%	0%	0%	0%	0%
TPH	167.6	6.71	.0	166.3	.0	.0	.0	.0
TONS	31.55	1.84	.04	52.28	.00	.00	.00	.00
NOISE	5.0%		3.5%	3.0%	4.0%	2.8%	2.0%	4.0%

AC ACCUM. PERCENT= 3.54
MIX TONS = 54.70
SILO INVENTORIES= 12.99 .00 .00 .00

SILO #= 1

06:33 07/14/92 MIX #= 3 MIX TPH=176.5 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	96.2%	3.8%	0%	100%	0%	0%	0%	0%
ACT %	96.2%	3.7%	0%	101%	0%	0%	0%	0%
TPH	173.0	6.54	.0	170.2	.0	.0	.0	.0
TONS	25.35	2.91	.04	80.28	.00	.00	.04	.00
NOISE	5.0%		3.5%	3.0%	4.0%	2.8%	2.0%	4.0%

AC ACCUM. PERCENT= 3.53
MIX TONS = 79.19
SILO INVENTORIES= 18.41 .00 .00 .00

SILO #= 1

LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	96.2%	3.8%	0%	100%	0%	0%	20%	0%
ACT %	96.4%	3.6%	0%	100%	0%	0%	0%	0%
TPH	171.2	6.46	.0	169.2	.0	.0	.0	.0
TONS	81.84	3.01	.04	82.82	.00	.00	.04	.00
MOIS%	2.8%		3.5%	3.0%	4.0%	2.8%	2.0%	4.0%

AC ACCUM. PERCENT= 3.5%
MIX TONS = 82.20
SILO INVENTORIES= 21.00 .00 .00 .00

SILO #= 1

06:35 07/14/92 MIX #= 6 MIX TPH=169.9 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	96.5%	3.5%	0%	80%	0%	0%	20%	0%
ACT %	96.6%	3.4%	0%	80%	0%	0%	20%	0%
TPH	164.1	5.78	.0	134.7	.0	.0	33.7	.0
TONS	96.63	3.56	.04	95.18	.00	.00	2.73	.00
MOIS%	2.8%		3.5%	3.0%	4.0%	2.8%	2.0%	4.0%

AC ACCUM. PERCENT= 3.5%
MIX TONS = 97.97
SILO INVENTORIES= 12.46 .00 .00 .00

SILO #= 1

06:49 07/14/92 MIX #= 6 MIX TPH=200.9 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	96.5%	3.5%	0%	80%	0%	0%	20%	0%
ACT %	96.5%	3.5%	0%	78%	0%	0%	20%	0%
TPH	193.2	7.10	.0	152.0	.0	.0	39.2	.0
TONS	126.10	4.68	.04	120.79	.00	.00	9.11	.00
MOIS%	2.8%		3.5%	3.0%	4.0%	2.8%	2.0%	4.0%

AC ACCUM. PERCENT= 3.5%
MIX TONS = 129.79
SILO INVENTORIES= 43.93 .00 .00 .00

SILO #= 1

06:54 07/14/92 MIX #= 6 MIX TPH=195.3 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	96.5%	3.5%	0%	80%	0%	0%	20%	0%
ACT %	96.5%	3.5%	0%	79%	0%	0%	17%	0%
TPH	168.5	6.86	.0	133.5	.0	.0	38.1	.0
TONS	142.97	5.22	.04	132.86	.00	.00	12.14	.00
MOIS%	2.8%		3.5%	3.0%	4.0%	2.8%	2.0%	4.0%

AC ACCUM. PERCENT= 3.5%
MIX TONS = 145.17
SILO INVENTORIES= 59.35 .00 .00 .00

SILO #= 1

07:04 07/14/92 MIX #= 6 MIX TPH=230.6 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	96.5%	3.5%	0%	80%	0%	0%	20%	0%
ACT %	96.4%	3.6%	0%	80%	0%	0%	20%	0%
TPH	212.5	7.93	.0	174.7	.0	.0	44.4	.0

```
                                                                                
NOISE    3.5%                3.5%     5.0%     4.0%     3.8%     2.0%     4.0%
AC ACCUM. PERCENT=    3.5%
MIX TONS =   181.56
SILO INVENTORIES=    26.59      .00      .00      .00

SILO #=   1


07:09 07/14/92     MIX #=    6     MIX TPH=216.1    AC SP. GR.=1.030     AC IN RECYC
LE=   .0
             AGG       AC      AG1      AG2      AG3      AG4      AG5      RCY
DES %     96.5%     3.5%       0%       0%       0%       0%      20%       0%
ACT %     96.4%     3.6%       0%       0%       0%       0%      19%       0%
TPH       210.2      7.9       .0    172.1       .0       .0     33.2       .0
TONS      197.3      7.4       .0    176.9       .0       .0     23.1       .0
NOISE%      2.8%                3.5%     3.0%     4.0%     2.8%     2.0%     4.0%
AC ACCUM. PERCENT=    3.5%
MIX TONS =   200.08
SILO INVENTORIES=    21.92      .00      .00      .00

SILO #=   1




08:47 07/14/92     MIX #=    7     MIX TPH=171.7    AC SP. GR.=1.030     AC IN RECYC
LE=   .0
             AGG       AC      AG1      AG2      AG3      AG4      AG5      RCY
DES %     96.0%     4.0%       0%      75%       0%       0%      10%      15%
ACT %     96.0%     4.0%       0%      74%       0%       0%      10%      17%
TPH       164.8      6.8       .0    124.3       .0       .0     16.8     29.0
TONS      504.74    18.24      .04   422.92      .00      .00    74.70    16.12
NOISE%      3.0%                3.5%     3.0%     4.0%     2.8%     2.0%     4.0%
AC ACCUM. PERCENT=    3.4%
MIX TONS =   520.97
SILO INVENTORIES=   146.80      .00      .00      .00

SILO #=   1


08:54 07/14/92     MIX #=    7     MIX TPH=170.7    AC SP. GR.=1.030     AC IN RECYC
LE=   .0
             AGG       AC      AG1      AG2      AG3      AG4      AG5      RCY
DES %     96.0%     4.0%       0%      75%       0%       0%      10%      15%
ACT %     95.9%     4.1%       0%      74%       0%       0%      10%      14%
TPH       163.8      6.9       .0    129.6       .0       .0     17.4     25.0
TONS      525.91    19.03      .04   437.52      .00      .00    76.65    19.07
NOISE%      3.0%                3.5%     3.0%     4.0%     2.8%     2.0%     4.0%
AC ACCUM. PERCENT=    3.9%
MIX TONS =   540.50
SILO INVENTORIES=   155.37    11.20      .00      .00

SILO #=   2
```

05:00 07/14/92 MIX #= 7 MIX TPH=168.8 AC SP. GR.=1.030 AC IN RECYC
LE= .3

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.7%	4.3%	0%	74%	0%	0%	9%	16%
TPH	152.8	7.28	.0	124.9	.0	.0	16.5	28.2
TONS	551.09	30.22	.06	458.38	.00	.00	79.44	23.18
MOIST	3.0%		3.5%	3.0%	4.0%	2.8%	2.0%	4.0%

AC ACCUM. PERCENT= 3.5%
MIX TONS = 565.71
SILO INVENTORIES= 109.17 39.75 .00 .00

SILO #= 1

05:10 07/14/92 MIX #= 7 MIX TPH=173.7 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	76%	0%	0%	9%	15%
TPH	166.4	7.34	.0	127.0	.0	.0	16.1	22.5
TONS	566.90	21.01	.06	472.06	.00	.00	81.25	25.93
MOIST	3.0%		3.5%	3.0%	4.0%	2.8%	2.0%	4.0%

AC ACCUM. PERCENT= 3.5%
MIX TONS = 587.55
SILO INVENTORIES= 85.14 58.27 .00 .00

SILO #= 2

05:20 07/14/92 MIX #= 7 MIX TPH=166.5 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.6%	4.4%	0%	75%	0%	0%	10%	15%
ACT %	95.6%	4.4%	0%	75%	0%	0%	9%	15%
TPH	156.3	7.27	.0	125.5	.0	.0	16.6	25.8
TONS	565.11	32.34	.06	452.54	.00	.00	84.04	30.15
MOIST	3.0%		3.5%	3.0%	4.0%	2.8%	2.0%	4.0%

AC ACCUM. PERCENT= 3.5%
MIX TONS = 615.77
SILO INVENTORIES= 61.99 86.68 .00 .00

SILO #= 2

05:30 07/14/92 MIX #= 7 MIX TPH=165.0 AC SP. GR.=1.030 AC IN RECYC
LE= .3

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.6%	4.4%	0%	75%	0%	0%	10%	15%
ACT %	95.6%	4.4%	0%	74%	0%	0%	9%	15%
TPH	157.7	7.30	.0	124.8	.0	.0	16.4	25.9
TONS	625.29	25.49	.06	513.86	.00	.00	86.83	34.37
MOIST	3.0%		3.5%	3.0%	4.0%	2.8%	2.0%	4.0%

AC ACCUM. PERCENT= 3.6%
MIX TONS = 644.22
SILO INVENTORIES= 38.05 115.19 .00 .00

SILO #= 2

05:45 07/14/92 MIX #= 7 MIX TPH=173.9 AC SP. GR.=1.030 AC IN RECYC
LE= .5

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.6%	4.4%	0%	75%	0%	0%	10%	15%
ACT %	95.7%	4.3%	0%	75%	0%	0%	10%	16%

```
TONS    625.72    24.06      .05   529.45      .00      .00    95.11    36.27
NOISE     3.0X                3.5X    3.0X     4.0X     2.8X     3.0X     4.5X
AC ACCUM. PERCENT=    3.6%
MIX TONS =   657.18
SILO INVENTORIES=    20.85   138.03      .00      .00

SILO #=   2


05:45 07/14/92     MIX #=    7     MIX TPH=167.0    AC SP. GR.=1.030     AC IN RECYC
LB=   .0
            AGG       AC      AG1      AG2      AG3      AG4      AG5      RCY
DES %     95.8%     4.2%       0%      75%       0%       0%      10%      15%
ACT %     95.8%     4.2%       0%      73%       0%       0%       9%      12%
TPH      159.9      7.03      .0    133.2       .0       .0     16.1     21.2
TONS     682.74    25.25      .06   544.33      .00      .00    90.91    40.42
NOISE     3.2X                3.5X    3.0X     4.0X     2.8X     3.0X     4.5X
AC ACCUM. PERCENT=    3.6%
MIX TONS =   685.42
SILO INVENTORIES=      .00   146.44      .00      .00

SILO #=   2


05:55 07/14/92     MIX #=    7     MIX TPH=172.0    AC SP. GR.=1.030     AC IN RECYC
LB=   .0
            AGG       AC      AG1      AG2      AG3      AG4      AG5      RCY
DES %     95.8%     4.2%       0%      75%       0%       0%      10%      15%
ACT %     95.8%     4.2%       0%      75%       0%       0%       9%      13%
TPH      164.8      7.23      .0    126.1       .0       .0     16.3     23.1
TONS     685.89    26.44      .11   565.23      .00      .00    93.69    44.62
NOISE     3.2X                3.5X    3.0X     4.0X     2.8X     3.0X     4.5X
AC ACCUM. PERCENT=    3.6%
MIX TONS =   713.56
SILO INVENTORIES=    19.54   132.56      .00      .00

SILO #=   1


10:05 07/14/92     MIX #=    7     MIX TPH=173.4    AC SP. GR.=1.030     AC IN RECYC
LB=   .0
            AGG       AC      AG1      AG2      AG3      AG4      AG5      RCY
DES %     95.8%     4.2%       0%      75%       0%       0%      10%      15%
ACT %     95.6%     4.4%       0%      74%       0%       0%       9%      15%
TPH      165.9      7.71      .0    124.4       .0       .0     15.5     25.2
TONS     716.52    27.62      .11   586.10      .00      .00    96.46    48.76
NOISE     3.2X                3.5X    3.0X     4.0X     2.8X     3.0X     4.5X
AC ACCUM. PERCENT=    3.7%
MIX TONS =   741.59
SILO INVENTORIES=    47.60    90.29      .00      .00

SILO #=   1


10:15 07/14/92     MIX #=    7     MIX TPH=170.1    AC SP. GR.=1.030     AC IN RECYC
LB=   .0
            AGG       AC      AG1      AG2      AG3      AG4      AG5      RCY
DES %     95.8%     4.2%       0%      75%       0%       0%      10%      15%
ACT %     95.8%     4.2%       0%      75%       0%       0%      10%      15%
TPH      162.9      7.15      .0    126.7       .0       .0     17.1     25.8
TONS     701.25    26.80      .12   606.95      .00      .00    99.24    52.52
NOISE     3.2X                3.5X    3.0X     4.0X     2.8X     3.0X     4.5X
AC ACCUM. PERCENT=    3.7%
MIX TONS =   755.50
SILO INVENTORIES=    57.95    90.25      .07      .00
```

SILO #= 1

10:35 07/14/92 MIX #= 7 MIX TPH=165.4 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.0%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.7%	4.3%	0%	74%	0%	0%	9%	14%
TPH	158.3	7.07	.0	125.2	.0	.0	16.2	24.5
TONS	770.07	34.37	.12	609.83	.00	.00	102.02	57.09
NOISE%	3.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 797.46.
SILO INVENTORIES= 85.32 90.25 .00 .00

SILO #= 1

10:35 07/14/92 MIX #= 7 MIX TPH=166.9 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.0%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	74%	0%	0%	9%	15%
TPH	159.9	6.99	.0	125.1	.0	.0	15.9	25.9
TONS	756.85	31.14	.12	648.68	.00	.00	104.80	61.27
NOISE%	3.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 825.41
SILO INVENTORIES= 113.43 84.05 .00 .00

SILO #= 1

10:35 07/14/92 MIX #= 6 MIX TPH=169.7 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.0%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	74%	0%	0%	8%	14%
TPH	162.7	7.05	.0	124.4	.0	.0	15.2	23.4
TONS	806.91	34.96	.12	656.91	.000	.00	105.84	62.85
NOISE%	3.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 835.91
SILO INVENTORIES= 123.92 -1.55 .00 .00

SILO #= 1

10:49 07/14/92 MIX #= 6 MIX TPH=164.5 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	96.5%	3.5%	0%	80%	0%	0%	20%	0%
ACT %	96.4%	3.2%	0%	79%	.0%	0%	17%	0%
TPH	158.2	5.34	.0	134.9	.0	.0	30.2	.0
TONS	833.66	32.54	.12	678.96	.00	.00	111.33	62.97
NOISE%	3.0%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 865.64
SILO INVENTORIES= 126.66 .00 .00 .00

SILO #= 1

10:59 07/14/92 MIX #= 6 MIX TPH=166.3 AC SP. GR.=1.030 AC IN RECYC
LB= .0

DES %	96.7%	3.3%	0%	80%	0%	0%	20%	0%
ACT %	96.7%	3.4%	0%	80%	0%	0%	19%	0%
TPH	160.7	5.56	.0	135.5	.0	.0	32.5	.0
TONS	860.49	35.45	.12	700.49	.00	.00	116.96	62.97
NOISE	3.0%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 861.36
SILO INVENTORIES= 107.42 .00 .00 .00

SILO #= 1

11:04 07/14/92 MIX #= 6 MIX TPH=165.6 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	96.7%	3.3%	0%	80%	0%	0%	20%	0%
ACT %	96.7%	3.5%	0%	80%	0%	0%	24%	0%
TPH	160.1	5.46	.0	136.6	.0	.0	35.4	.0
TONS	876.07	33.58	.12	714.56	.00	.00	120.22	62.97
NOISE	3.0%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 907.47
SILO INVENTORIES= 101.34 .00 .00 .00

SILO #= 1

11:14 07/14/92 MIX #= 6 MIX TPH=144.4 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	96.7%	3.3%	0%	80%	0%	0%	20%	0%
ACT %	96.6%	3.4%	0%	80%	0%	0%	20%	0%
TPH	156.5	4.85	.0	116.7	.0	.0	29.7	.0
TONS	856.20	34.80	.12	736.03	.00	.00	125.10	62.97
NOISE	3.0%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 891.78
SILO INVENTORIES= 108.80 .00 .00 .00

SILO #= 1

11:23 07/14/92 MIX #= 7 MIX TPH=140.8 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	94.7%	5.3%	0%	80%	0%	0%	10%	0%
ACT %	96.6%	5.4%	0%	80%	0%	0%	20%	0%
TPH	136.1	4.76	.0	116.5	.0	.0	29.1	.0
TONS	915.67	35.49	.12	751.34	.00	.00	129.42	62.97
NOISE	3.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 952.97
SILO INVENTORIES= 86.90 .00 .00 .00

SILO #= 1

11:34 07/14/92 MIX #= 7 MIX TPH=140.7 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	96.7%	3.3%	0%	75%	0%	0%	10%	15%
ACT %	96.6%	3.4%	0%	77%	0%	0%	11%	0%
TPH	135.9	4.77	.0	111.4	.0	.0	18.6	.0
TONS	877.80	34.54	.12	752.38	.00	.00	129.63	62.97
NOISE	3.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

MIX TONS = 554.27
SILO INVENTORIES= 91.20 .00 .00 .00

SILO #= 1

11:34 07/14/92 MIX #= 7 MIX TPH=168.9 AC SP. GR.=1.030 AC IN RECYC
LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	.0%	75%	0%	0%	10%	15%
ACT %	95.5%	4.1%	0%	74%	0%	0%	9%	14%
TPH	162.0	6.91	.0	124.5	.0	.0	15.9	24.5
TONS	547.04	36.63	.12	779.11	.00	.00	132.43	66.77
RGEX	3.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 583.76
SILO INVENTORIES= 93.10 .00 .00 .00

SILO #= 1

11:44 07/14/92 MIX #= 7 MIX TPH=167.1 AC SP. GR.=1.030 AC IN RECYC
LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.5%	4.5%	0%	76%	0%	0%	10%	15%
TPH	159.6	7.47	.0	122.0	.0	.0	16.0	25.6
TONS	570.71	77.81	.12	793.89	.00	.00	135.21	70.96
RGEX	3.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 1068.55
SILO INVENTORIES= 79.00 .00 .00 .00

SILO #= 1

11:54 07/14/92 MIX #= 7 MIX TPH=168.1 AC SP. GR.=1.030 AC IN RECYC
LB= .5

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	96.0%	4.0%	0%	75%	0%	0%	10%	15%
TPH	161.4	6.73	.0	125.6	.0	.0	16.9	25.2
TONS	1056.37	76.58	.12	804.81	.00	.00	138.02	75.12
RGEX	3.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 1056.59
SILO INVENTORIES= 84.80 .00 .00 .00

SILO #= 1

11:04 07/15/92 MIX #= 7 MIX TPH=165.0 AC SP. GR.=1.030 AC IN RECYC

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	75%	0%	0%	10%	13%
TPH	158.2	6.65	.0	126.0	.0	.0	16.9	23.0
TONS	1027.04	40.15	.12	835.71	.00	.00	140.81	79.29
NOISE	3.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 1064.62
SILO INVENTORIES= 65.59 .00 .00 .00

SILO #= 1

12:14 07/14/92 MIX #= 7 MIX TPH=164.2 AC SP. GR.=1.030 AC IN RECYC
LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	74%	0%	0%	10%	14%
TPH	157.3	6.91	.0	123.61	.0	.0	18.1	24.6
TONS	1053.63	41.32	.12	856.57	.00	.00	143.58	83.49
NOISE	3.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 1092.41
SILO INVENTORIES= 68.29 .00 .00 .00

SILO #= 1

12:24 07/14/92 MIX #= 7 MIX TPH=164.7 AC SP. GR.=1.030 AC IN RECYC
LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.6%	4.4%	0%	75%	0%	0%	10%	15%
TPH	157.4	7.32	.0	125.87	.0	.0	17.7	26.2
TONS	1080.25	42.50	.12	877.48	.00	.00	146.36	87.67
NOISE	3.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 1130.18
SILO INVENTORIES= 15.97 .00 .00 .00

SILO #= 1

12:28 07/14/92 MIX #= 7 MIX TPH=168.9 AC SP. GR.=1.030 AC IN RECYC
LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.7%	4.3%	0%	74%	0%	0%	10%	14%
TPH	161.6	7.24	.0	124.4	.0	16.3	17.2	23.5
TONS	1052.09	43.01	.12	866.78	.00	.00	147.99	89.53
NOISE	3.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.7%
MIX TONS = 1132.53
SILO INVENTORIES= 28.17 .00 .00 .00

SILO #= 1

17:55 07/14/92 MIX #= 7 MIX TPH=165.9 AC SP. GR.=1.030 AC IN RECYC
LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	74%	0%	0%	10%	14%
TPH	161.1	7.02	.0	142.9	.0	.0	19.5	27.4
TONS	1153.35	50.21	.12	910.49	.00	.00	150.75	94.29

AC ACCUM. PERCENT= 3.7%
MIX TONS = 1153.71
SILO INVENTORIES= 35.63 .00 .00 .00

SILO #= 1

12:48 07/14/92 MIX #= 7 MIX TPH=194.2 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	74%	0%	0%	9%	16%
TPH	186.1	8.08	.0	142.8	.0	.0	18.7	31.2
TONS	1153.00	45.66	.12	934.30	.00	.00	153.92	99.05
MOIST%	5.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.8%
MIX TONS = 1195.72
SILO INVENTORIES= 49.72 .00 .00 .00

SILO #= 1

12:58 07/14/92 MIX #= 7 MIX TPH=191.2 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	74%	0%	0%	9%	15%
TPH	185.1	8.08	.0	142.1	.0	.0	18.7	29.8
TONS	1155.66	47.01	.12	956.25	.00	.00	157.10	103.63
MOIST%	5.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.8%
MIX TONS = 1229.71
SILO INVENTORIES= 37.75 .00 .00 .00

SILO #= 1

13:08 07/14/92 MIX #= 7 MIX TPH=188.6 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	74%	0%	0%	10%	14%
TPH	181.6	8.00	.0	142.0	.0	.0	19.3	28.5
TONS	1214.58	48.35	.12	962.12	.00	.00	160.29	108.61
MOIST%	5.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.8%
MIX TONS = 1256.66
SILO INVENTORIES= 45.79 .00 .00 .00

SILO #= 1

13:18 07/14/92 MIX #= 7 MIX TPH=192.8 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	74%	0%	0%	9%	14%
TPH	184.9	8.06	.0	142.7	.0	.0	18.3	28.3
TONS	1244.80	47.69	.12	1005.98	.00	.00	163.47	113.39
MOIST%	5.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.8%
MIX TONS = 1301.55
SILO INVENTORIES= 53.70 .00 .00 .00

SILO #= 1

13:33 07/14/92 MIX #= 7 MIX TPH=193.2 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.5%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.9%	4.2%	0%	73%	0%	0%	8%	14%
TPH	185.1	8.02	.0	140.9	.0	.0	17.0	27.1
TONS	1275.37	51.04	.12	1025.84	.00	.00	166.65	116.16
MOIST	5.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.8%
MIX TONS = 1333.46
SILO INVENTORIES= 67.49 .00 .00 .00

SILO #= 1

13:35 07/14/92 MIX #= 7 MIX TPH=192.4 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.5%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.9%	4.1%	0%	74%	0%	0%	10%	6%
TPH	184.5	7.93	.0	142.7	.0	.0	19.1	11.5
TONS	1302.84	52.57	.12	1053.73	.00	.00	169.43	122.86
MOIST	5.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.8%
MIX TONS = 1355.31
SILO INVENTORIES= 75.36 .00 .00 .00

SILO #= 1

13:46 07/14/92 MIX #= 7 MIX TPH=190.0 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.5%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	74%	0%	0%	10%	14%
TPH	182.0	7.97	.0	142.9	.0	.0	20.8	26.2
TONS	1355.89	59.65	.14	1077.60	.00	.00	173.02	127.30
MOIST	5.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACCUM. PERCENT= 3.8%
MIX TONS = 1396.52
SILO INVENTORIES= 18.43 .00 .00 .00

SILO #= 1

13:48 07/14/92 MIX #= 7 MIX TPH=188.2 AC SP. GR.=1.030 AC IN RECYC LB= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.5%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	74%	0%	0%	10%	14%

AGG	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TPH	140.4	7.86	.0	143.7	.0	.0	20.4	30.7	
TONS	1155.32	64.62	.14	1101.46	.00	.00	176.22	132.08	
MOIST	5.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%	

AC ACTUAL PERCENT= 3.80%
MIX TONS = 1418.32
SILO INVENTORIES= 32.11 .00 .00 .00

SILO #= 1

14:08 07/14/92 MIX #= 7 MIX TPH=188.9 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	96.0%	4.0%	0%	75%	0%	0%	9%	15%
TPH	181.3	7.64	.0	143.5	.0	.0	18.7	29.3
TONS	1355.60	57.35	.14	1129.38	.00	.00	179.39	136.86
MOIST	5.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACTUAL PERCENT= 3.80%
MIX TONS = 1451.03
SILO INVENTORIES= 19.57 .00 .00 .00

SILO #= 1

14:16 07/14/92 MIX #= 7 MIX TPH=188.0 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	74%	0%	0%	9%	14%
TPH	180.3	7.95	.0	142.5	.0	.0	18.2	28.9
TONS	1475.87	65.04	.14	1165.22	.00	.00	182.58	141.66
MOIST	5.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACTUAL PERCENT= 3.80%
MIX TONS = 1441.60
SILO INVENTORIES= 27.28 .00 .00 .00

SILO #= 1

14:25 07/14/92 MIX #= 7 MIX TPH=189.6 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.8%	4.2%	0%	73%	0%	0%	10%	14%
TPH	181.2	7.97	.0	140.5	.0	.0	19.1	28.6
TONS	1457.16	64.03	.14	1173.10	.00	.00	185.75	146.45
MOIST	5.2%		3.5%	3.0%	4.0%	2.8%	3.0%	4.5%

AC ACTUAL PERCENT= 3.80%
MIX TONS = 1536.24
SILO INVENTORIES= 35.94 .00 .00 .00

SILO #= 1

14:32 07/14/92 MIX #= 7 MIX TPH=191.9 AC SP. GR.=1.030 AC IN RECYC
LE= .0

	AGG	AC	AG1	AG2	AG3	AG4	AG5	RCY
DES %	95.8%	4.2%	0%	75%	0%	0%	10%	15%
ACT %	95.5%	4.2%	0%	75%	0%	0%	11%	15%

APPENDIX 4

ANALYTICAL RESULTS

SSM /Laboratories

ANALYTICAL REPORT

Client: Gilbert/Commonwealth, Inc.

Report to: Steve Folk
Gilbert/Commonwealth, Inc.
P. O. Box 1498
Reading PA 19603

Project: 114552
Received: 15-JUL-92
Reported: 28-JUL-92

PURCHASE ORDER: 52977

Project Description: E.J. Brenneman Asphalt Batch Plant

Sampled: 15-JUL-92 10:00 By: G/C

	RESULT	UNITS	METHOD	DATE	ANALYST
B-P-1					
SSM Sample: 1056520					
Particulate Weight - Filter	9.2	mg	EPA 5	20 JUL 92	VJO
PARTICULATE WEIGHT - WASH SOLUTIONS			EPA 5	20-JUL-92	VJO
Wt - Wash Soln' (0.22u filter)	49.7	mg			
Wt - Acetone Impinger	6.5	mg			
Wt - Acetone Probe	6.8	mg			
Wt - Water Probe	4.1	mg			
Wt - Water Impinger	52.7	mg			
B-P-2					
SSM Sample: 1056521					
Particulate Weight - Filter	34.9	mg	EPA 5	20 JUL 92	VJO
PARTICULATE WEIGHT - WASH SOLUTIONS			EPA 5	20-JUL-92	VJO
Wt - Wash Soln' (0.22u filter)	67.4	mg			
Wt - Acetone Impinger	3.9	mg			
Wt - Acetone Probe	11.4	mg			
Wt - Water Probe	0.8	mg			
Wt - Water Impinger	36.4	mg			
B-P-3					
SSM Sample: 1056522					
Particulate Weight - Filter	5.8	mg	EPA 5	20 JUL 92	VJO
PARTICULATE WEIGHT - WASH SOLUTIONS			EPA 5	20-JUL-92	VJO
Wt - Wash Soln' (0.22u filter)	106.3	mg			
Wt - Acetone Impinger	19.7	mg			
Wt - Acetone Probe	43.9	mg			
Wt - Water Probe	0.2	mg			

SSM /Laboratories

Client: Gilbert/Commonwealth, Inc.
Project: 114552

	RESULT	UNITS	METHOD	DATE	ANALYST
R-P-3					
SSM Sample: 105652.2 - continued					
Wt - Water Impinger	44.8	mg			

Respectfully submitted,

Craig L. Stewart,
Inorganics Supervisor

SSM — REQUEST FOR LABORATORY ANALYTICAL SERVICES

11592

Page 1 of 1

SSM Project No.:

INVOICE TO	Name		REPORT RESULTS TO	Name	Steve Folk
	Company			Company	
	Address			Mailing Address	
	City, State, Zip			City, State, Zip	
				Telephone No. ( )	FAX No. ( )

P.O. # WO # Quote #

Date Results Required: Normal TAT Accord

Priority Charges Authorized? ☐ Yes ☒ No

Lab Approval for Rush TAT (initial)

Comments: Index - Particulate Analysis; Normal Turnaround Time; Light Brown Powder D3

Phone Report ☐ Yes ☐ No

FAX Report ☐ Yes ☐ No

Project Description: Asbestos Bulk; E.J. Bronnimann; Bulk Report

Sampled by: BZ

Date/Time: 3/4/92

Sample Condition (upon receipt):

CLIENT SAMPLE IDENTIFICATION	Date / Time	COMP	GRAB	Number of Containers	ANALYSIS REQUESTED: Bulk Index; Bulk Particulate; Bulk Analysis
B-1-1	3/5/92			1	INDEX / PART / Point Report / Bulk Analysis / Filter
B-1-2	3/4/92			1	〃 〃 〃 〃 〃
B-1-3	3/4/92			1	〃 〃 〃 〃 〃
B-2-1	3/4/92			1	INDEX ONLY > DO NOT LOG
Asbestos Report	3/4/92			1	INDEX PART /

CHAIN OF CUSTODY

Relinquished by:	Date/Time 3/4/92 Am	Relinquished by:	Date/Time
Relinquished to:	Date/Time 3/4/92	Relinquished to:	Date/Time
Relinquished by:	Date/Time	Relinquished by:	Date/Time
Relinquished to:	Date/Time	Relinquished to:	Date/Time

Form No. LOSA REV. 9/92

APPENDIX 5

RAW FIELD DATA

5.1 Particulate

5.2 Visible

5.3 VOC

APPENDIX 5

RAW FIELD DATA

5.1 Particulate

Sheet 1 of 2

PARTICULATE FIELD DATA

Client EG Pharmaco

W. O. No. _____

Plant Sinking

Run No. B-P-1

Location Baghouse Outlet

Date 7/14/92

Operator SAW

Sample Box No. _____

Meter Box No. 2793

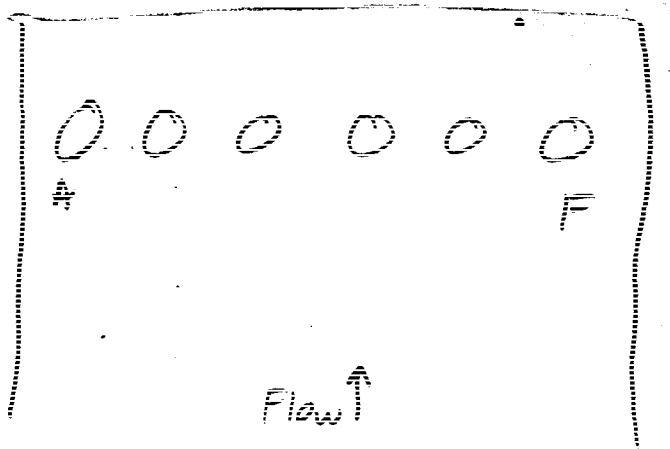
Meter ΔH 2.02 Y 1.02

C Factor _____

VERY IMPORTANT - FILL IN ALL BLANKS

Read and record at the start of each test point

SKETCH



Pitot Calibration _____

Thimble No. _____

Filter No. S-636

Ambient Temp. °F 80

Bar. Press. "Hg 29.41

Assumed Moisture % 20

Heater Box Setting, °F _____

Probe Tip Dia., In. .252

Probe Length _____

Probe Heater Setting _____

Avg. ΔP _____ Avg. ΔH _____

POINT	DISTANCE IN INCHES	CLOCK TIME ACTUAL	CLOCK TIME RUN	DRY GAS METER, CF	PITOT IN. H2O ΔP	ORIFICE ΔH IN. H2O DESIRED	ORIFICE ΔH IN. H2O ACTUAL	DRY GAS TEMP. °F INLET	DRY GAS TEMP. °F OUTLET	PUMP VACUUM IN. Hg GAUGE	BOX TEMP. °F	IMPINGER TEMP. °F	%CO2/O2	STACK TEMP. °F
A-1		0945	0.0	921.422	0.120		0.295	90	90	0	250	65	N/A	264
2			4.0	924.8	0.135		0.317	94	91	0			10.6	265
3			8.0	928.9	0.110		0.269	94	92	0	245	63		257
4			12.0	932.1	0.120		0.294	93	88	0			/	252
Stop			16.0	938.432									14.0/13.0	
B-1			0.0	938.432	0.170		0.413	95	85	0	240	64	/	256
2			4.0	930.0	0.260		0.645	99	86	0			3.6/14.2	261
3			8.0	932.0	0.230		0.519	104	95	0	250	64		259
4			12.0	933.8	0.440		1.141	104	90	0				257
Stop			16.0	936.192										
C-1			0.0	936.192	0.210		0.505	100	90	0	250	64	3.4/	254
2			4.0	938.0	0.310		0.786	101	92	0			/14.4	257
3			8.0	940.0	0.640		1.607	107	92	0	250	66	/	260
4			12.0	941.5	0.670		1.645	115	94	0				260
Stop			16.0	945.390										

COMMENTS:

Pretest 0.0" @ 15 min

Static
- 0.09
-0.22
-0.25

Client BJ Bowman

PARTICULATE FIELD DATA
(continued)

Sheet 2 of 2

W.O. No.

Plant Sinking Spring

Location Baghouse Outlet

Run No. B-P-1

Date 7/14/92

POINT	DISTANCE IN INCHES	CLOCK TIME ACTUAL	CLOCK TIME RUN	DRY GAS METER, CF	PITOT IN. H_2O ΔP	ORIFICE ΔH IN. H_2O DESIRED	ORIFICE ΔH IN. H_2O ACTUAL	DRY GAS TEMP. °F INLET	DRY GAS TEMP. °F OUTLET	PUMP VACUUM IN. Hg_e GAUGE	BOX TEMP °F	IMPINGER TEMP °F	%O_2	STACK TEMP. °F
P-1	0		0.0	945.390	0.240	0	0.609	109	96	0	250	64	Hg/	257
2			4.0	947.2	0.370		0.939	114	98	0			/130	260
3			8.0	949.4	0.530		1.363	112	98		250	62		261
4			12.0	952.2	0.760		1.964	102	100					259
Stop			16.0	955.209										
P-1			0.0	955.209	0.240		0.617	112	100		250	61	4%	256
2			4.0	957.1	0.420		1.100	115	102				10.9	260
3			8.0	959.3	0.600		1.533	116	102		250	62		261
4			12.0	962.09	0.820		1.594	122	102					264
Stop			16.0	964.787										
P-1		Change box	0.0	26.461	0.280		0.719	104	102		250	64		258
2			4.0	28.9	0.460		1.173	104	100					259
3			8.0	31.2	0.530		1.350	105	104		250	65		259
4			12.0	33.8	0.450		1.145	106	103					258
Stop	1035		16.0	36.244										
				974.254										

= End leak 0.00 at 10 in

Static
-0.40
-0.29

CHILDERS ASSOCIATES, INC.
AIR POLLUTION CONTROL DEPT.
PARTICULATE STACK GP AND REPORT SHEET

Run Date: 7/24/72
Run No.: 5-SA
Sample Box No.:
Operators:

Client: EPA
W. O. No.:
Plant: Salem Steel
Sampling Location: Outlet Stack Baghouse Exhaust

LABORATORY

Determinations Made
Probe, Nozzle Holder, Cyclone (Organic),
Flask, Front Half Filter Holder-Connector Rods

Laboratory Number

Lab No. ..... Receipt .....
Lab No. ..... Receipt .....

Initial Wt.	Lab Wt.	Gain, Loss
.....	.....	.....mg
.....	.....	.....mg
.....	.....	.....mg
.....	.....	.....mg

Nozzle particulate weight .....mg

Final Wt.	Lab Wt.	Gain, Loss
5-SA	.....	.....mg
.....	.....	.....mg
.....	.....	.....mg
.....	.....	.....mg

Filter particulate weight .....mg

FRONT HALF Sub Total .....mg

BACK HALF

Impinger Contents and Water Rinse of Impingers
Connectors and Back Half of Filter Holder

Lab No. ..... Ether-Chloroform Extract .....mg
Collected on 0.22u Filter .....mg
Aqueous Rinsing .....mg

Impinger, Connectors and Back Half of
Filter Holder + Acetone Wash

Lab No. .....Receipt .....mg
BACK HALF Sub Total .....mg
TOTAL WEIGHT .....mg

REMARKS

Impingers

Final Volume	225
Initial Volume	195
Net Volume	30

Meter Volumes

Output after test: 25+
Output before test: 23
Net Output 2.8
Connection No.: 1. ..... 2. ..... 3. ..... 4. .....
TOTAL WEIGHT-Filter Cat 2.2
TOTAL WEIGHT-Impingers 30
TOTAL WEIGHT 32.2

Comments: .....

Lab: DATE RECEIVED .....
DATE REPORTED .....

.....
ANALYTICAL CHEMIST

EPA/APC 12/70

Sheet 1 of 2.

PARTICULATE FIELD DATA

Client EJ Bowman

W. O. No. _____

Plant Sinking Spring

Run No. B-P-2

Location Baghouse Outlet

Date 7/14/92

Operator _____

Sample Box No. _____

Meter Box No. 1559

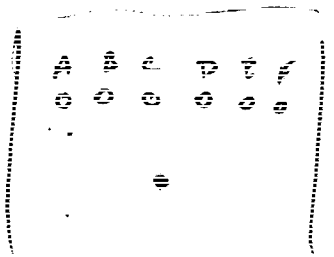
Meter ΔH 1.99 Y .98

C Factor _____

VERY IMPORTANT - FILL IN ALL BLANKS

Read and record at the start of each test point

SKETCH



Pitot Calibration _____

Thimble No. _____

Filter No. S-637

Ambient Temp. °F 92

Bar. Press. "Hg 29.46

Assumed Moisture % 20

Heater Box Setting, °F _____

Probe Tip Dia., In. .290

Probe Length _____

Probe Heater Setting _____

Avg. ΔP _____ Avg. ΔH _____

POINT	DISTANCE IN INCHES	CLOCK TIME ACTUAL	CLOCK TIME RUN	DRY GAS METER, CF	PITOT IN. H2O ΔP	ORIFICE ΔH IN. H2O DESIRED	ORIFICE ΔH IN. H2O ACTUAL	DRY GAS TEMP. °F INLET	DRY GAS TEMP. °F OUTLET	PUMP VACUUM IN. Hg GAUGE	BOX TEMP. °F	IMPINGER TEMP. °F	%O2/CO2	STACK TEMP. °F
P-1		1134	0.0	36.726	0.180		0.607	94	93	2	230	59		240
2			9.6	38.2	0.370		1.144	96	95	2				255
3			17.0	41.9	0.45		2.115	100	95	3			/	257
4			10.5	43.8	0.44		2.07	100	95	3	235	60	3.7/11.4	257
Stop		1140	11.0	44.518										
P-1		1151	0.0	44.518	0.210		0.645	104	95	2	240	61		260
2			2.5	45.4	0.35		1.076	105	96	2				254
3			7.0	46.90	0.52		1.66	110	96	3	250	61		257
4			10.5	53.88	0.56		2.66	114	97	3			3.9/11.1	257
Stop		1205	11.0	50.999										
P-1		1217	0.0	50.999	0.20		0.594	109	97	2	240	60		251
2			3.5	52.10	0.49		2.169	109	98	2				252
3			7.0	53.5	0.45		1.405	111	99	4	255	61		257
4		1234	10.5	54.9	0.83		2.957	120	100	5				256
Stop			11.0	55.346										

COMMENTS:

Probe 0.00 at 10"w.

Static = 0.39
= 0.19

Client EJ Brannan — PARTICULATE FIELD DATA (continued) — Sheet 2 of 2

W.O. No.

Plant Sinking Spring — Location Baghouse Outlet

Run No. B-P-2 — Date 7/14/92

POINT	DISTANCE IN INCHES	CLOCK TIME ACTUAL	CLOCK TIME RUN	DRY GAS METER, CF	PITOT IN. H_2O ΔP	ORIFICE ΔH IN. H_2O DESIRED	ORIFICE ΔH IN. H_2O ACTUAL	DRY GAS TEMP. °F INLET	DRY GAS TEMP. °F OUTLET	PUMP VACUUM IN. Hg GAUGE	BOX TEMP °F	IMPINGER TEMP °F	CO_2 / O_2	STACK TEMP. °F
1		1423	0	670.765	0.20		0.943	111	100	2	250	41		243
2			2.5	71.0	0.38		1.849	111	101	2				252
3			7.0	73.2	0.61		2.934	114	101	2	250	42	Mol/34	251
4			10.5	76.6	0.85		4.092	117	104	5			1	253
Stop		1437	14.0	80.147										
B-1		1441	0.0	80.147	0.170		0.917	101	98	2	250	44		247
2			3.5	82.1	0.32		1.539	108	100	2			Mol/34	249
3			7.0	84.4	0.49		2.358	111	104	2	250	44	1	249
4			10.5	87.4	0.680		2.796	114	100	2				248
Stop		1455	14.0	90.587										
A-1		1459	0.0	90.587	0.21		1.019	110	104	2	250	45		237
2			3.5	92.4	0.19		0.929	110	100	2				248
3			7.0	94.5	0.21		1.014	111	102	2			Mol/34	249
4			10.5	96.6	0.29		1.402	112	102	2	250	46	1	249
Stop		1513	14.0	98.904										

End leak 0.020 cfm @ 15"

Static
- 0.18
- 0.38

GILBERT ASSOCIATES, INC.
AIR POLLUTION CONTROL DEPT.
PARTICULATE CLEAN UP AND REPORT SHEET

Run Date: 2/1/72
Run No.: 3-P-2
Sample Box No.: Simpkins
Operators:

Client: E.T. Blake coal
U. S. No.:
Plant: Sharpe
Sampling Location: Bop duct

FRONT HALF

Acetone-wash Data
Probe, Nozzle Holder, Cyclone (Organic),
Plus, Front Half Filter Holder-wash Data

Lab No. ..... Residue .....mg
Lab No. ..... Residue .....mg

Number	Ml.	Weight Residue
Acetone		mg
		mg
		mg
		mg

Nozzle particulate weight .....mg

Filter No.	Ml.	Weight Residue
S-432		mg
		mg
		mg
		mg

Filter particulate weight .....mg

FRONT HALF Sub Total .....mg

BACK HALF

Impinger Contents and Wash Out of Impingers
Connectors and Back Half of Filter Holder

Lab No. ..... Ether-Chloroform Extract .....mg
Chloroform on Ether Blank .....mg
Aqueous Residue .....mg

Impinger, Connectors and Back Half of
Filter Holder + Acetone Wash

Lab No. .....Residue .....mg

BACK HALF Sub Total .....mg

TOTAL CATCH .....mg

METERING

Impingers:

	37
	285
Final Volume	217
Initial Volume	300
Net Volume	317

Silica Gel:

Weight after case	257		
Weight before case	235		
Net Weight	37		
Container No.:	1.	2.	3.

TOTAL METERED-GAS VOL. 24.7 ft³
TOTAL GASEOUS Impingers 31.7 ml
TOTAL METERED 354 ml

Comments: .....

Lab: SAMPLE RECEIVED .....
SAMPLE REPORTED .....

.....
ANALYZED CHECKED

APTD.FORM 13/70

Sheet 1 of 2

PARTICULATE FIELD DATA

Client EJ Bramman

W. O. No. _____

Plant Sinking Spring

Run No. B-P-5

Location Baghouse Outlet

Date 7/14/92

Operator _____

Sample Box No. _____

Meter Box No. 1559

MeterΔH 1.94 Y-.98

C Factor _____

VERY IMPORTANT - FILL IN ALL BLANKS

Read and record at the start of each test point

SKETCH

Pitot Calibration _____

Thimble No. _____

Filter No. 5-635

Ambient Temp. °F 98

Bar. Press. "Hg 29.50

Assumed Moisture % 20

Heater Box Setting, °F _____

Probe Tip Dia., In. .290

Probe Length _____

Probe Heater Setting _____

Avg.ΔP _____ Avg. ΔH _____

POINT	DISTANCE IN INCHES	CLOCK TIME ACTUAL	CLOCK TIME RUN	DRY GAS METER, CF	PITOT IN. H2O ΔP	ORIFICE Δ H IN. H2O DESIRED	ORIFICE Δ H IN. H2O ACTUAL	DRY GAS TEMP. °F INLET	DRY GAS TEMP. °F OUTLET	PUMP VACUUM IN. Hg GAUGE	BOX TEMP. °F	IMPINGER TEMP. °F	%O2	STACK TEMP. °F
P-1		0920	0	99.078	0.170		1.829	100	99	0	240	62		243
2			3.0	101.1	0.200		0.963	103	100	0			8.6/	250
3			6.0	102.5	0.170		0.813	105	100	0	240	62	11.4	245
4			9.0	104.0	0.190		0.968	106	100	0				248
Step			12.0	105.645										
C-1			0.0	105.645	0.230		1.112	106	100	0	245	62		249
2			3.0	107.5	0.290		1.403	110	100	1				254
3			6.0	109.7	0.450		2.164	112	101	1	245	62		254
4			9.0	112.2	0.460		2.210	116	102	1				252
Step			12.0	114.605										
C-1			0.0	114.605	0.240		1.915	101	100	1	245	63		241
2			3.0	116.4	0.340		1.659	102	102	1				255
3			6.0	117.9	0.69		2.291	114	102	1				256
4			9.0	121.1	0.42		2.274	120	102	2	240	64		265
Step			12.0	124.073										

COMMENTS:

Qs leak 0.00 @ 15 Vac

Static
-0.09 +0.34
-0.24

Client EJ Bronsman

PARTICULATE FIELD DATA
(continued)

Sheet 2 of 2

W.O. No.

Plant Smoky Spring

Location Baghouse Outlet

Run No. B-P-2

Date 7/14/92

POINT	DISTANCE IN INCHES	CLOCK TIME ACTUAL	CLOCK TIME RUN	DRY GAS METER, CF	PITOT IN. H_2O ΔP	ORIFICE ΔH IN. H_2O DESIRED	ORIFICE ΔH IN. H_2O ACTUAL	DRY GAS TEMP. °F INLET	DRY GAS TEMP. °F OUTLET	PUMP VACUUM IN. Hg GAUGE	BOX TEMP °F	IMPINGER TEMP °F	CO_2/O_2	STACK TEMP. °F
D-1			0.0	124.095	0.38*		1.451	116	103	1	250	45	3.8/	250
2			3.0	126.2	0.45		2.169	115	104	1			/20.2	253
3			6.0	128.5	0.640		3.101	120	105	1	240		/	254
4			9.0	131.5	0.820		3.952	120	106	4				258
Disp			12.0	134.900										
E-1			0.0	134.600	0.250		1.213	116	104	1	250	62	3.9/	252
2			3.0	136.30	0.45		2.18	116	106	1			/11.2	253
3			6.0	138.2	0.630		3.055	121	106	1	240	61	/	254
4			9.0	140.4	0.78		3.912	122	106	2				256
Disp			12.0	143.144										
P-1			0.0	143.244	0.330		1.661	117	104	2	240	63		249
2			3.0	145.4	0.46		2.237	121	106	2			3.0/	256
3			6.0	147.9	0.60		2.996	121	107	2			/13	256
4			9.0	150.6	0.49		2.429	121	107	2	255	64		256
Disp		1155	12.0	153.044										

* Bad leak 0.017" at 14"

Static
-0.30 -0.25
-0.21

ENERGY ABSORBERS, INC.
AIR POLLUTION CONTROL DEPT.
PARTICULATE CLEAN UP AND REPORT SHEET

Run Date: 7/21/72
Run No.: R-23
Duplo Run No.:
Sponsor: Schaller
Client: E.J.B
W. O. No.:
Plant: S.Bend
Sampling Location: Bypass Exhaust

INLET

Quantitative Data
Probe, Thimble Holder, Cyclone (Square),
Flask, Front Half Filter Holder-Connection Tube

Number	Lab No.	Result Weight
7098		mg
		mg
		mg
		mg

Number	Lab No.	Result Weight
3233		mg
		mg
		mg
		mg

Laboratory Results

Lab No. ..... Result ..... mg
Lab No. ..... Result ..... mg

Solvent particulate weight ..... mg

Filter particulate weight ..... mg

FRONT HALF Sub Total ..... mg

BACK HALF

Impinger Contents and Water Wash of Impinger Connection and Back Half of Filter Holder

Lab No. ..... Ether-Chloroform Extract ..... mg
Collected on 0.22u Filter ..... mg
Aqueous Residue ..... mg

Impinger, Connection and Back Half of Filter Holder + Acetone Wash

Lab No. ..... Residue ..... mg

BACK HALF Sub Total ..... mg

TOTAL CATCH ..... mg

VOLUMES

Titrations

Blank	42		

Final Volume 58
Initial Volume 30
Net Volume 28

Titrations

Output above cone:	26		
Output before cone:	23		
Net Output	3		
Container No.:	1.	2.	3. 4.

TOTAL ORIFICE-Dilution Gal. 29 ft³
TOTAL VOLUME, Impingers 28 ml
TOTAL CATCH 342 mg

Comments: .....

Lab SAMPLE RECEIVED .....
SAMPLE OPENED .....

SIGNATURE .....

EPA/APC 12/70

APPENDIX 5

RAW FIELD DATA

5.2 Visible

VISIBLE EMISSION OBSERVATION FORM

No. B-2

COMPANY NAME: L. D. Barnes Co.

STREET ADDRESS:

CITY: Salt Lake City | STATE: UT | ZIP:

PHONE (KEY CONTACT): 582-3781 | SOURCE ID NUMBER:

PROCESS EQUIPMENT: Asphalt Plant Batch Mix | OPERATING MODE:

CONTROL EQUIPMENT: Baghouse | OPERATING MODE:

DESCRIBE EMISSION POINT: Rectangular Stack

HEIGHT ABOVE GROUND LEVEL: 45' | HEIGHT RELATIVE TO OBSERVER: Bot. 15' End 22'

DISTANCE FROM OBSERVER: Bot. 125' End 125' | DIRECTION FROM OBSERVER: Bot. NW End NW

DESCRIBE EMISSION: Bot. Detached Plume End Same

EMISSION COLOR: Bot. White End Same | IF WATER DROPLET PLUME: Attached ☐ Detached ☒

POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED: Bot. 5' End

DESCRIBE PLUME BACKGROUND: Bot. Blue Sky End Same

BACKGROUND COLOR: Bot. Blue End Same | SKY CONDITIONS: Bot. Partly Cloudy End Same

WIND SPEED: Bot. 2-5 End Same | WIND DIRECTION: Bot. S End Same

AMBIENT TEMP: Bot. 90 End Same | WET BULB TEMP °F: | RH, percent:

SOURCE LAYOUT SKETCH — Draw North Arrow

Sun ⊕ Plume ⊕ Sun ⊕ Wind →

(S) Emission Point

Observer's Position

100' ± ft

Background

ADDITIONAL INFORMATION: 10 mph SSE Winds

OBSERVATION DATE: 7/19/82	START TIME: 0945	END TIME:

SEC NO.	0	15	30	45	COMMENTS
1	0	5	10	10	
2	10	15	15	20	
3	10	20	10	10	
4	10	20	15	20	
5	20	10	10	10	
6	15	15	10	15	
7	10	10	10	15	
8	15	10	20	15	
9	10	10	10	15	
10	10	10	10	15	
11	10	10	10	15	
12	15	10	10	10	
13	15	15	15	15	
14	10	10	15	15	
15	10	10	15	15	
16	15	10	15	15	
17	10	15	15	15	
18	15	10	15	10	
19	15	15	15	10	
20	10	10	10	15	
21	10	10	10	10	
22	15	10	20	15	
23	10	10	15	10	
24	15	10	10	15	
25	15	15	15	15	
26	15	10	15	20	
27	10	15	15	10	
28	10	15	10	15	
29	15	15	10	15	
30	15	15	10	15	

OBSERVER'S NAME (PRINT): [illegible]

OBSERVER'S SIGNATURE: [illegible] | DATE:

ORGANIZATION: [illegible]

CERTIFIED BY: [illegible] | DATE:

CONTINUED ON VEO FORM NUMBER:

VISIBLE EMISSION OBSERVATION FORM
(CONTINUED)

COMPANY NAME: L.J. Berardo

CITY: Stony Spring

TEST NO.: B-P-1

PAGE 2 OF 2

TYPE OF FACILITY: Asphalt Batch Plant

EMISSION POINT: Baghouse Exhaust Stack

OBSERVER: Hales

OBSERVATION DATE			START TIME		END TIME
MIN \ SEC	0	15	30	45	COMMENTS
1	10	15	15	10	50
2	10	15	15	10	50
3	15	15	15	15	60
4	10	15	15	15	65
5	15	15	15	15	60
6	15	10	10	15	60
7	15	15	15	20	65
8	10	10	15	15	60
9	15	15	10	15	55
10	15	15	15	15	60
11	15	15	10	15	55
12	15	15	15	15	60
13	15	15	15	15	60
14	15	15	15	15	55
15	10	10	10	15	45
16	15	15	[illegible]	[illegible]	55
17	[illegible]	[illegible]	[illegible]	[illegible]	55
18	15	15	15	15	60
19	15	15	15	15	55
20	15	15	15	15	55
21	15	15	15	15	60
22	15	15	15	15	60
23	15	15	15	10	55
24	10	15	15	15	50
25	15	15	15	15	60
26	15	10	10	10	45
27	10	15	15	15	55
28	10	10	10	10	40
29	15	15	15	15	60
30	15	15	15	15	60

OBSERVATION DATE			START TIME		END TIME 0525
MIN \ SEC	0	15	30	45	COMMENTS
1	15	15	15	15	60
2	10	15	10	15	50
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					Avg 13.6

Total Avg 12.8

VISIBLE EMISSION OBSERVATION FORM

No. 8-92

COMPANY NAME: EJ Brewing Co.

STREET ADDRESS:

CITY: Spring Spring | STATE: PA | ZIP:

PHONE NO. (AREA): 215 678-3179 | BOILER ID NUMBER:

PROCESS EQUIPMENT: Asphalt Batch Plant Dryer | OPERATING MODE:

CONTROL EQUIPMENT: Cyclone | OPERATING MODE:

DESCRIBE EMISSION POINT: Stack - Rectangular

OBSERVER ABOVE GROUND LEVEL: 50'

OBSERVER RELATIVE TO EMISSION: Sun 140° to 40° Clock

DISTANCE FROM EMISSION: Sun 300' to 360'

DIRECTION FROM EMISSION: Sun N to NW

DESCRIBE EMISSION: Sun Detached Plume | Type: to

EMISSION COLOR: Sun Gray to White

IF WATER DROPLET PLUME: Attached / Detached

POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED: Sun 30' | to Exit

DESCRIBE PLUME BACKGROUND: Sun Light Blue Sky | to Gray

BACKGROUND COLOR: Sun Light Blue to Gray | to

SKY CONDITIONS: Sun Hazy | to

WIND SPEED: Sun 5 to 10 | WIND DIRECTION: Sun SW | to

AMBIENT TEMP: Sun 90° to 92° | WET BULB TEMP: | RH: Percent | Not Recorded

BOUNDER LAYOUT SKETCH

Sun 135°
Plume
Sun
Wind

Emission Point

Observer Position

Sun Location

ADDITIONAL INFORMATION: 15Sec, 15 Rd, 45° Angle

OBSERVATION DATE: 7/14/92 | START TIME: 1140 | END TIME:

MIN	0	15	30	45	SUM	COMMENTS
1	15	15	15	15	60	
2	15	15	15	15	60	
3	15	15	15	15	60	
4	10	05	15	10	40	
5	10	15	15	10	60	
6	10	15	15	15	55	Blocked by railroad car
7	15	10	05	10	40	Shadow - Cleared mid-way
8	15	15	15	15	60	
9	10	10	10	10	40	
10	10	15	10	15	50	
11	10	10	10	15	45	
12	10	10	10	10	40	
13	15	15	10	10	50	
14	10	15	15	15	55	
15	15	10	15	15	55	
16	15	10	15	15	55	
17	10	10	15	15	50	
18	10	10	10	10	40	
19	15	15	10	15	55	
20	10	10	10	10	40	
21	10	10	10	10	40	
22	10	15	10	15	50	
23	10	10	10	10	40	
24	15	10	10	10	45	
25	10	10	10	10	40	
26	10	10	10	15	45	
27	10	15	15	15	55	
28	10	15	10	15	50	Shadowing Operation Begin
29	15	15	15	15	60	
30	10	10	15	15	50	Shadowed Again Begin

OBSERVED BY (PRINT): C. Seal

OBSERVER SIGNATURE: R. Seal | DATE: 7/14/92

ORGANIZATION: Cal Environmental

CERTIFIED BY: ETA, Inc. | DATE: 7/92

CONTINUED ON VEO FORM NUMBER:

VISIBLE EMISSION OBSERVATION FORM
(CONTINUED)

COMPANY NAME: [illegible]

CITY: Lake Spring

TEST NO.: B-42

PAGE 1 OF 2

TYPE OF FACILITY: Bulk Asphalt Plant

EMISSION POINT: Baghouse Exhaust

OBSERVER: [illegible]

OBSERVATION DATE			START TIME		END TIME
SEC / MIN	0	15	30	45	COMMENTS
1	10	15	15	15	SV
2	15	15	15	15	60
3	20	20	10	15	65
4	15	15	15	15	60
5	15	15	15	15	60
6	15	15	15	15	60
7	20	20	15	10	65
8	15	10	20	15	50
9	20	15	15	15	60
10	10	15	15	15	55
11	10	15	15	15	55
12	15	15	15	15	60
13	10	10	15	15	50
14	15	20	20	15	70
15	15	15	15	15	60
16	15	15	15	15	60
17	10	15	15	15	65
18	15	15	20	15	70
19	15	10	15	15	65
20	20	20	15	15	70
21	15	20	20	15	70
22	15	15	15	15	60
23	15	20	20	20	75
24	15	15	15	20	65
25	15	15	20	20	70
26	15	15	15	15	60
27	15	15	15	10	55
28	15	15	15	20	65
29	15	15	15	15	60
30	15	15	15	20	65

OBSERVATION DATE			START TIME		END TIME 1244
SEC / MIN	0	15	30	45	COMMENTS
1	20	15	15	20	70
2	20	15	15	10	60
3	10	15	15	15	55
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					Avg 13.9

Total Avg 13.9

VISIBLE EMISSION OBSERVATION FORM

No. 2-23

COMPANY NAME: El Segundo

STREET ADDRESS:

CITY: Marina Del Rey | STATE: | ZIP:

PHONE (DEV CONTACT): 213-322-2424 | SOURCE ID NUMBER:

PROCESS EQUIPMENT: Boiler Asphalt Plant | OPERATING MODE:

CONTROL EQUIPMENT: Baghouse | OPERATING MODE:

DESCRIBE EMISSION POINT: Stack Exhaust

HEIGHT ABOVE GROUND LEVEL: 60 | HEIGHT RELATIVE TO OBSERVER: Start 140 End 140

DISTANCE FROM OBSERVER: Start 350' End 350' | DIRECTION FROM OBSERVER: Start NW End NW

DESCRIBE EMISSIONS: Start Black Vapor End

EMISSION COLOR: Start Gray/White End | IF WATER DROPLET PLUME: Attached

POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED: Start Top End

DESCRIBE PLUME BACKGROUND: Start Partly Cloudy End

BACKGROUND COLOR: Start Blue-Gray End | SKY CONDITIONS: Start Partly Cloudy End

WIND SPEED: Start 5-10 End | WIND DIRECTION: Start SW End

AMBIENT TEMP: Start 90 End | WET BULB TEMP: | RELATIVE HUMIDITY:

SOURCE LAYOUT SKETCH

Stack with Plume

Sun

Wind

Emission Point

Observer's Position

Sun Location Line

ADDITIONAL INFORMATION:

OBSERVATION DATE: 7/7/22	START TIME: 1340	END TIME:

MIN \ SEC	0	15	30	45	COMMENTS
1	15	15	15	35	
2	15	10	00	15	
3	15	15	15	15	
4	15	15	20	15	
5	20	10	15	20	15
6	15	20	20	15	
7	15	15	20	20	
8	15	20	20	20	
9	20	15	20	20	
10	20	20	15	20	
11	15	10	15	15	
12	15	15	20	15	
13	15	15	15	15	
14	20	15	20	15	
15	20	15	20	20	
16	20	20	20	15	
17	20	15	15	15	
18	15	15	20	20	
19	15	20	20	15	
20	15	20	20	20	
21	20	15	20	20	
22	15	15	15	15	
23	15	15	15	15	
24	15	15	15	20	
25	20	20	20	20	
26	15	20	20	15	
27	20	20	20	15	
28	20	20	15	15	
29	20	20	15	15	
30	15	15	15	15	

OBSERVER'S NAME (PRINT): [illegible]

OBSERVER'S SIGNATURE: [illegible] | DATE: 7/7/22

ORGANIZATION: [illegible]

CERTIFIED BY: ETA | DATE: 07/07/22

CONTINUED ON VEO FORM NUMBER:

VISIBLE EMISSION OBSERVATION FORM
(CONTINUED)

COMPANY NAME: [illegible]	TYPE OF FACILITY: Batch Asphalt Plant
CITY: [illegible] Springs	EMISSION POINT: Baghouse Exhaust Stack
TEST NO. 8-9-3 — PAGE 2 OF 2	OBSERVER: Helms

OBSERVATION DATE: 7/?/92 — START TIME: — END TIME:

MIN \ SEC	0	15	30	45	COMMENTS
1	20	15	15	20	70
2	20	10	20	25	80
3	20	20	20	20	80
4	20	20	20	20	80
5	20	20	20	20	80
6	20	15	15	20	70
7	20	25	20	20	85
8	20	20	20	15	75
9	15	15	20	20	70
10	20	20	20	20	80
11	15	25	25	30	95
12	20	20	20	20	80
13	20	20	20	20	80
14	20	20	15	20	75
15	20	15	20	20	75
16	15	20	15	15	65
17	15	20	20	20	75
18	20	20	20	20	80
19	20	20	20	20	80
20	15	15	20	25	75
21	15	15	20	20	70
22	20	20	15	15	70
23	15	15	15	15	60
24	15	20	15	15	65
25	20	15	20	15	70
26	20	20	20	15	75
27	15	15	20	20	70
28	20	15	15	15	65
29	15	15	15	15	60
30	15	15	15	15	60

OBSERVATION DATE: 7/19/92 — START TIME: — END TIME: 1442

MIN \ SEC	0	15	30	45	COMMENTS
1	15	20	20	20	75
2	20	20	20	20	80
3	20	15	20	20	75
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					Avg 18.5
30					

Total Avg 18.1

APPENDIX 5

RAW FIELD DATA

5.3 VOC

Date: 2/25/92 G/C, Inc. Test Data for ~~[illegible]~~ Test VOC-1 Run#: ______

Mid-range Gas Value ______ ppm High-range Gas Value ______ ppm

Analyzer Calibration Data

ZERO = 0

	Cylinder Value (indicate units)	Analyzer Calib. Resp. (indicate units)	Abs. Difference (indicate units)	Difference (percent of span)
Low ~~Zero~~ Gas	84.8			
Mid-range Gas	257.4			
High-range Gas	551.6			

+/- 2% Maximum Allowable Difference

Orsat CO2	Results O2
Avg. ______	______

System Calibration Bias and Drift Data

	Anal. Calib. Resp.	Initial Values: Syst. Calib. Resp.	Initial Values: Syst. Calib. Bias (percent of span)	Final Values: Syst. Calib Resp.	Final Values: Syst. Calib. Bias (percent of span)	Drift (percent of span)
Zero Gas		0		54 ppm		
Upscale Gas mid						

+/- 5% Maximum Allowable Difference

System Calibration Bias = [(Syst. Cal.Resp. - Analyzer Cal. Resp.) / Span] x 100

Zero Gas [(______-______)/______]x100=______ Upscale Gas [(______-______)/______]x100=______

Drift = [(Final Syst. Cal. Resp. - Initial Syst. Cal. Resp.) / Span] x 100

Zero Gas [(______-______)/______]x100=______ Upscale Gas [(______-______)/______]x100=______

Probe in Por) 0 800 /

Time	Run Time	(PPM)	Time	Run Time	(PPM)	Time	Run Time	(PPM)	Time	Run Time	(PPM)	Time	Run Time	(PPM)
1205	1	120		13	104		25	95		37	106		49	121
	2	112		14	110		26	89		38	109		50	Probe
	3	107		15	121		27	98		39	116		51	out
	4	102		16	120		28	106		40	114		52	X
	5	96		17	115		29	119		41	115		53	119
	6	102		18	116		30	P o		42	120		54	119
	7	102		19	115		31	r u		43	125		55	124
	8	103		20	120		32	o T		44	129		56	126
	9	103		21	125		33	b		45	135		57	131
	10	104		22	127		34	e		46	128		58	131
	11	105		23	113		35	106		47	124		59	131
	12	97		24	107		36	108		48	122		60	133

Average 114.8 ppm

Gas Concentration:

Cgas = (C - Co) x [Cma / (Cm - Co)]

C gas = (______-______)x[______/(______-______)]
= ______

Cgas= Effluent Gas Concentration, Wet Basis, ppm
C= Average Gas Concentration Indicated By Gas Analyzer, Wet Basis, ppm
Co= Average of Initial and Final System Calib. Bias Check Responses for the Zero Gas, ppm
Cm= Average of Initial and Final System Calib. Bias Check Responses for the Upscale Calib. Gas, ppm
Cma= Actual Concentration of the Upscale Calib. Gas, ppm

.18 lb/hr

EMISSION OBSERVATION FORM (CONTINUED)

COMPANY NAME: El Segundo

BDP: Pro as Propane

TEST NO.: Voc2

PAGE 1 OF 2

TYPE OF FACILITY: Asphalt Plant

EMISSION POINT: Boom 1

OBSERVER:

OBSERVATION DATE: 2/19/92			START TIME: 1345		END TIME: 1544
MIN \ SEC	0	15	30	45	COMMENTS
1	95				
2	89				
3	92				
4	99				
5	100				
6	105				
7	107				
8	106				
9	116				
10	113				
11	111				
12	110				
13	95				
14	103				
15	110				
16	108				
17	114				
18	99				
19	110				
20	84				
21	100				
22	111				
23	114				
24	118				
25	109				
26	112				
27	110				
28	117				
29	117				
30	117				

OBSERVATION DATE			START TIME		END TIME
MIN \ SEC	0	15	30	45	COMMENTS
31	108				
32	116				
33	118				
34	103				
35	110				
36	116				
37	116				
38	116				
39	120				
40	121				
41	125				
42	125				
43	126				
44	112				
45	111				
46	110				
47	94				
48	103				
49	107				
50	100				
51	92				
52	107				
53	102				
54	109				
55	132				
56	133				
57	106				
58	103				
59	101				
60	96				

Avg 113 pm

VISIBLE EMISSION OBSERVATION FORM
(CONTINUED)

COMPANY NAME: Ed. Brown and

NAME: PM 45 Probe

TEST NO.: Run-3

PAGE 1 OF 2

TYPE OF FACILITY: Asphalt

EMISSION POINT:

OBSERVER:

OBSERVATION DATE: 7/21/2			START TIME: 1506		END TIME: 1657
MIN \ SEC	0	15	30	45	COMMENTS
1	92				
2	92				
3	96				
4	86				
5	83				
6	83				
7	87				
8	86				
9	86				
10	94				
11	97				
12	92				
13	91				
14	96				
15	98				
16	100				
17	97				
18	96				
19	93				
20	92				
21	91				
22	90				
23	89				
24	91				
25	92				
26	92				
27	92				
28	94				
29	93				
30	94				

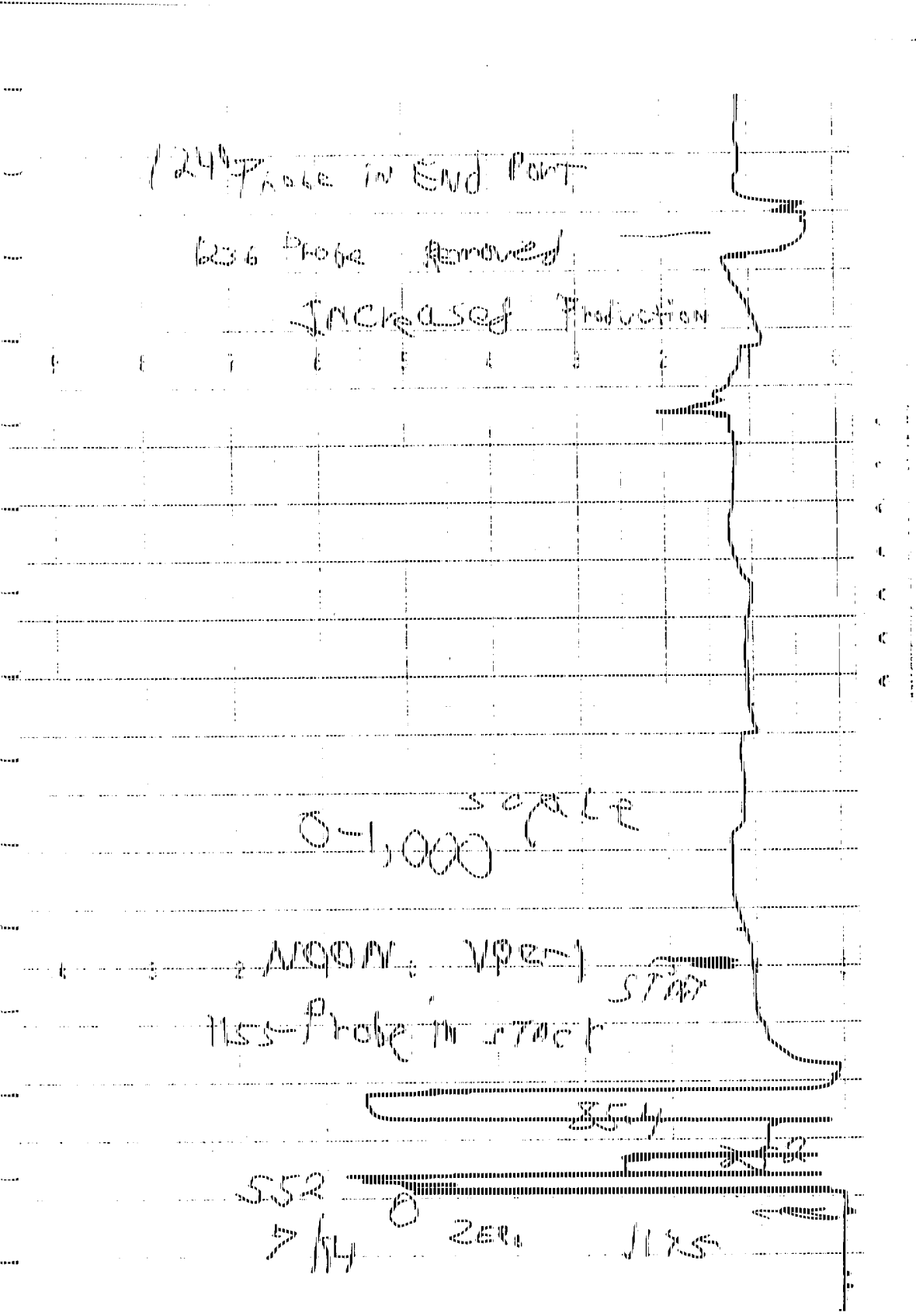
OBSERVATION DATE:			START TIME:		END TIME:
MIN \ SEC	0	15	30	45	COMMENTS
31	89				
32	90				
33	92				
34	92				
35	91				
36	85				
37	80				
38	82				
39	93				
40	87				
41	96				
42	91				
43	95				
44	86				
45	88				
46	100				
47	93				
48	89				
49	87				
50	85				
51	73				
52	80				
53	85				
54	85				
55	86				
56	88				
57	85				
58	82				
59	89				
60	89				

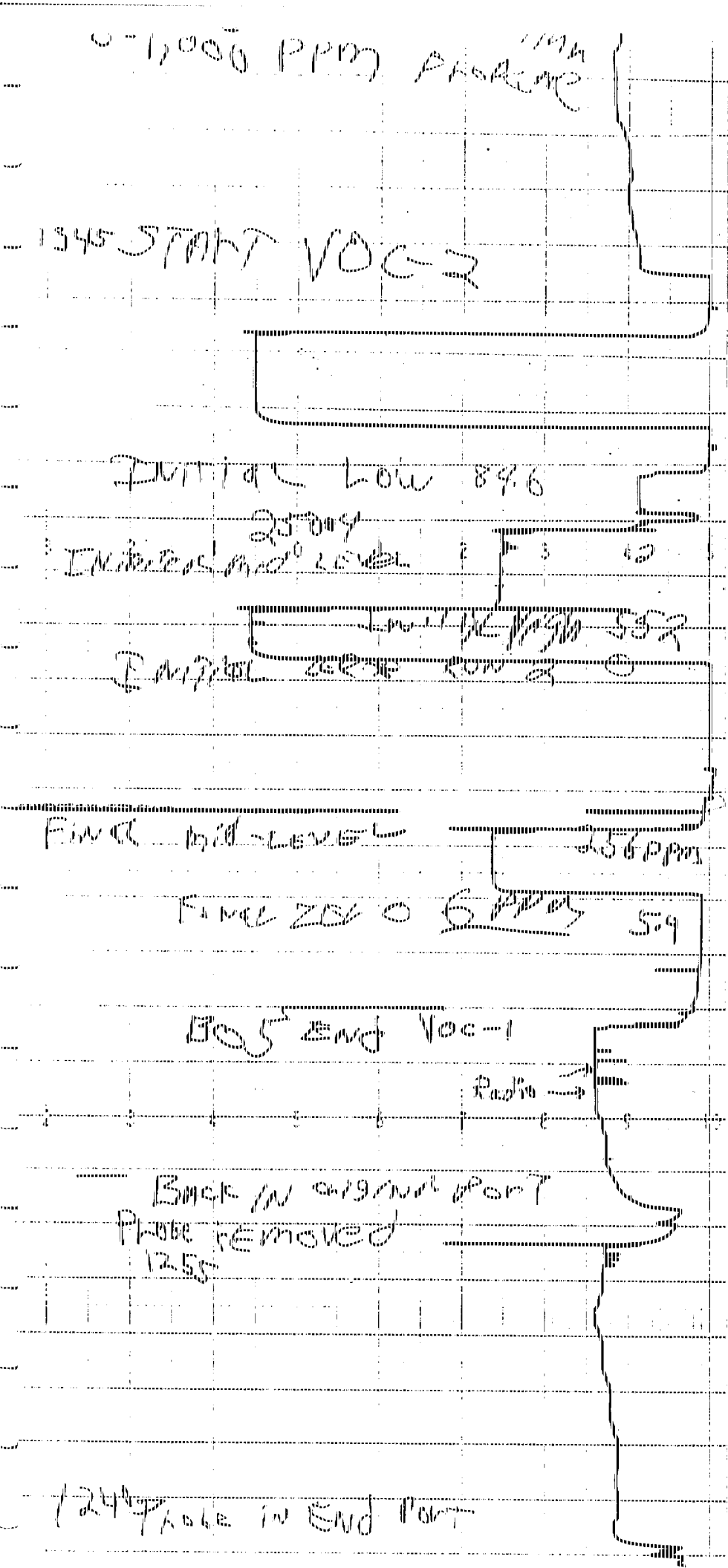
Smaller

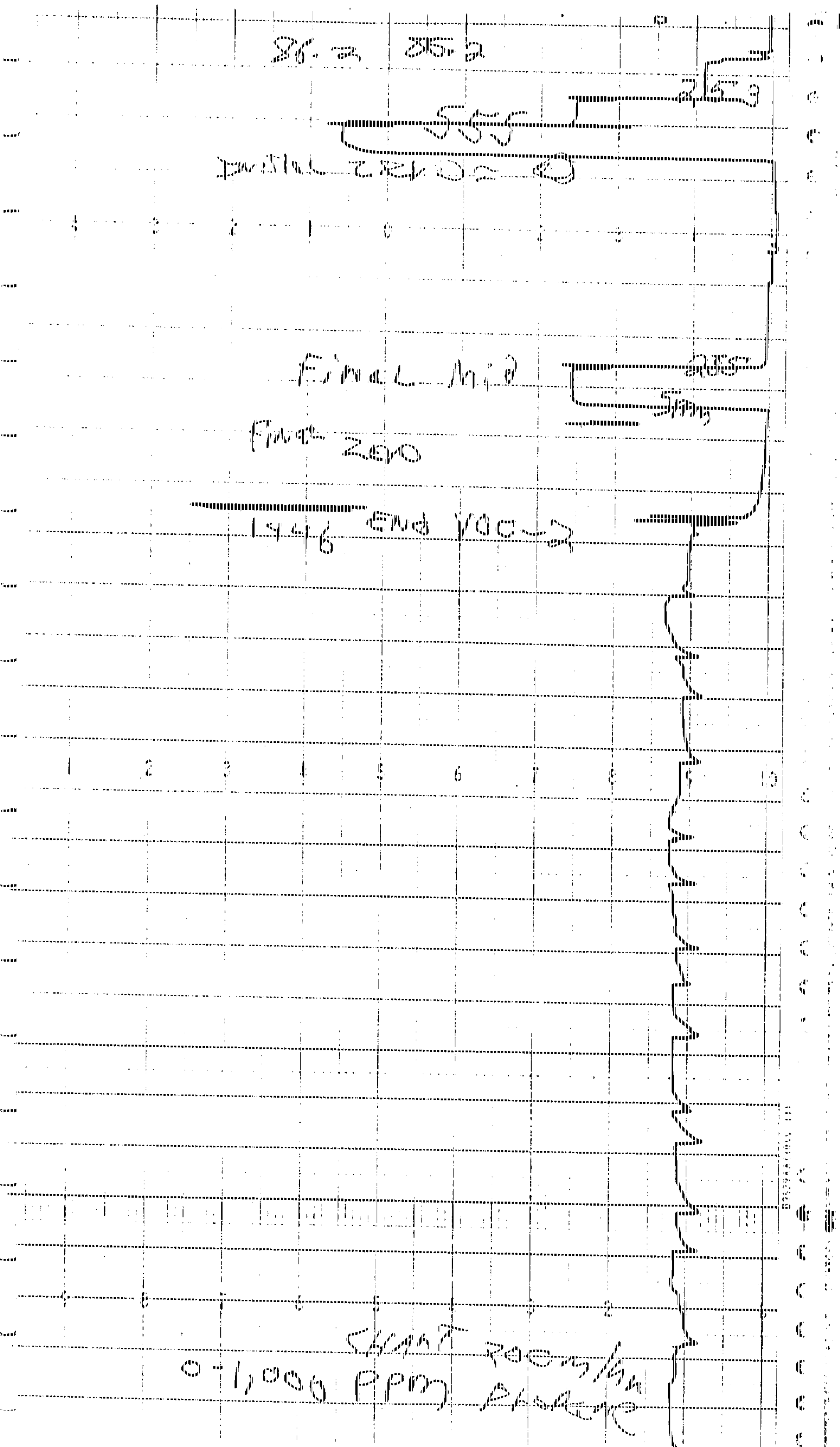
Final zero = 4.0 ppm

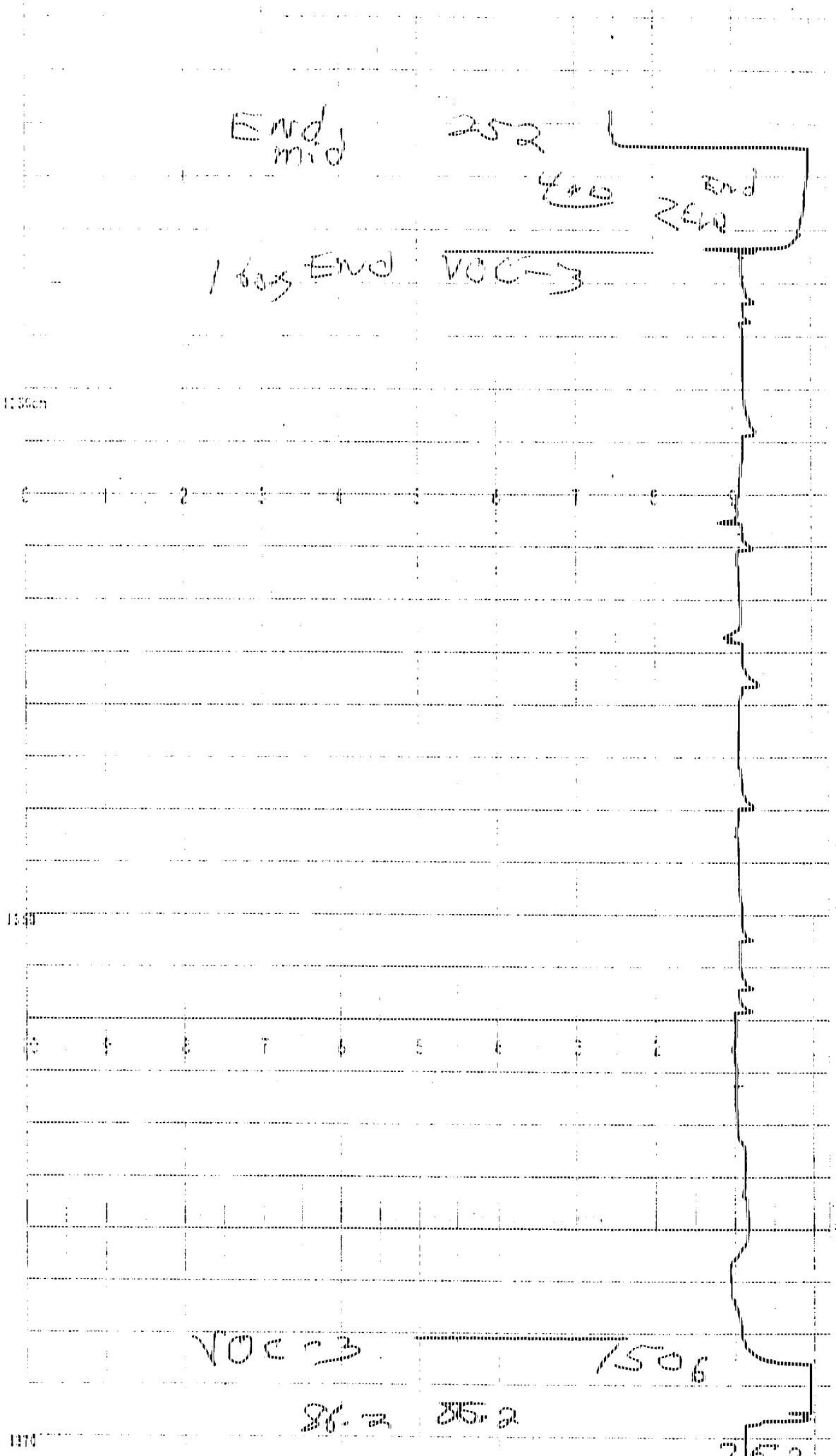
Final mid-level = 252.0

Aug 99


1247 Probe in End Port
826 Probe Removed
Increased Induction
0-1,000 Scale
ADDM, VPC-1
HS-Probe in Port
Zero


Ethernet VOCR
Embedded Low 846
Embedded Low 3 F 3 2
Low Profile SSR
Empty Slot Row 3
Fiber Optic Low SFP
Fiber Optic Low SFP
Rear Panel Vocr
Row 3
Back of server port
Plate removed
125
Plate in End Port


Final Mid
End VOC-2
Chart 20cm/hr
0-1,000 PPM


End
mid
25R
Yes
End
Zen
Mid End VCS
1:50cm
VCS
756
25a
Sa

APPENDIX 6

CALIBRATION DATA

Gilbert/Commonwealth Inc.
Testing Services Group
METER BOX CALIBRATION

DATE: 6/30/92 METER BOX NUMBER: 1529

BAROMETRIC PRESS. (Pb) = 29.58 in. Hg CALIBRATED BY: SCHELL

Orifice Manometer Setting (delta H) in. H2O	GAS VOLUME: Wet Test Meter (Vw) cu. ft.	GAS VOLUME: Dry Gas Meter (Vd) cu. ft.	TEMPERATURES: Wet Test Meter (Tw) deg. F	TEMPERATURES: Dry Gas Meter: Inlet (Tdi) deg. F	TEMPERATURES: Dry Gas Meter: Outlet (Tdo) deg. F	TEMPERATURES: Dry Gas Meter: Average (Td) deg. F	Time min.	Yi	delta Hi
0.5	5.000	5.271	74.0	95.5	83.0	89.3	13.67	0.97	1.73
1.0	5.000	5.368	74.0	104.0	85.0	94.5	9.37	0.98	1.68
1.5	5.000	5.305	74.0	107.5	83.0	95.3	7.68	0.96	1.72
2.0	5.000	5.327	74.0	115.5	91.5	103.5	6.73	0.99	1.98
3.0	4.998	5.360	74.0	120.5	94.0	107.3	5.60	0.98	2.04
4.0	5.000	5.432	74.0	124.0	95.5	109.8	4.97	0.97	2.11
							AVERAGE	0.98	1.94

FORMULAS

$$Yi = \frac{(Vw)(Pb)(Td+460)}{(Vd)(Pb+(H/13.6))(Tw+460)}$$

$$delta\ Hi = \frac{0.321}{(Qa)(Qa)}$$

$$Qa = Gs \sqrt{\frac{(Pb)(29)}{(Tdo+460)(delta\ H)}}$$

$$Qa = \frac{(Vd)(Td+460)}{(Time)(Td+460)}$$

Gilbert/Commonwealth Inc.
Testing Services Group
METER BOX CALIBRATION

DATE: 7/15/93 METER BOX NUMBER: 1559

BAROMETRIC PRESS. (Pb) = 29.58 in. Hg CALIBRATED BY: SCHELL

Orifice Manometer Setting (delta H) in. H2O	GAS VOLUME: Wet Test Meter (Vw) cu. ft.	GAS VOLUME: Dry Gas Meter (Vd) cu. ft.	TEMPERATURES: Wet Test Meter (Tw) deg. F	TEMPERATURES: Dry Gas Meter Inlet (Tdi) deg. F	TEMPERATURES: Dry Gas Meter Outlet (Tdo) deg. F	TEMPERATURES: Dry Gas Meter Average (Td) deg. F	Time min.	Y	delta H@
0.5	5.000	5.040	74.5	84.0	83.5	83.8	12.43	1.00	1.97
1.0	5.000	5.045	74.5	85.0	84.0	83.5	8.85	1.01	1.97
1.5	5.000	5.075	74.5	84.0	83.5	83.3	7.48	1.00	1.94
2.0	5.000	5.110	74.5	84.0	83.5	83.8	6.51	1.00	1.97
3.0	5.000	5.134	74.5	85.5	83.0	83.3	5.43	0.99	1.91
4.0	5.000	5.200	74.5	103.0	84.5	83.5	4.81	0.99	1.95
						AVERAGE	1.00	1.95

FORMULAS

$$Y = \frac{Vw\,(Pb + (Tb+460))}{Vd\,(Pb+\Delta H/13.6)\,(Tw+460)}$$

$$\text{delta H@} = \frac{0.0319}{(\theta w)\,(Qw)}$$

$$Qw = Qa \left[\frac{(Pb+\Delta H/13.6)\,(Tw+460)}{Y\,(Tdo+460)\,(\text{delta H@})} \right]$$

$$Qa = \frac{(Vd)\,(Tdo+460)}{(Time)\,(Td+460)}$$

Gilbert/Commonwealth Inc.
Testing Services Group
METER BOX CALIBRATION

DATE: 7/1/92 METER BOX NUMBER: 2795

BAROMETRIC PRESS. (Pb) = 29.58 in. Hg CALIBRATED BY: MSL/RB

Orifice Manometer Setting (delta H) in. H2O	GAS VOLUME: Wet Test Meter (Vw) cu. ft.	GAS VOLUME: Dry Gas Meter (Vd) cu. ft.	TEMPERATURES: Wet Test Meter (Tw) deg. F	TEMPERATURES: Dry Gas Meter Inlet (Tdi) deg. F	TEMPERATURES: Dry Gas Meter Outlet (Tdo) deg. F	TEMPERATURES: Dry Gas Meter Average (Td) deg. F	Time min.	Yi	delta Hi
0.5	5.000	5.046	74	93.5	73	86.3	13.43	1.01	1.01
1.0	5.000	5.059	74	102	81.5	91.8	9.08	1.02	1.95
1.5	5.000	5.035	74	108	84	95.0	7.47	1.02	1.37
2.0	5.000	5.365	74	113.5	85.5	99.5	6.52	1.02	3.85
3.0	5.000	5.139	74	115	87.5	101.3	5.52	1.02	2.15
4.0	4.997	5.166	74	118	89	103.5	4.87	1.01	2.21
								AVERAGE: 1.02	2.02

FORMULAS

$$Yi = \frac{(Vw)(Pb)(Td+460)}{(Vd)(Pb+dH/13.6)(Tw+460)}$$

$$delta\ dH = \frac{0.021}{(Qw)(Qw)}$$

$$Qw = Qm \sqrt{\frac{(Pb)(Td)}{Vi\ (Tdm+460)\ (delta\ H)}}$$

$$Qm = \frac{(Vd)(Tdm+460)}{(Time)(Td+460)}$$

Gilbert/Commonwealth, Inc.
Testing Services Group
PETER BOX CALIBRATION

DATE: 7/15/92

BAROMETRIC PRESS. (Pb) = 29.63 in. Hg

METER BOX NUMBER:

CALIBRATED BY: JCS

Orifice Manometer Setting (delta H) in. H2O	Gas Volume		Temperatures				Time		
	Wet Test Meter (Vw) cu. ft.	Dry Gas Meter (Vd) cu. ft.	Wet Test Meter (Tw) deg. F	Dry Gas Meter Inlet (Td1) deg. F	Dry Gas Meter Outlet (Td2) deg. F	Dry Gas Meter Average (Td) deg. F	min.	sec	Delta Hd
0.5	5.000	5.171	75	81.5	82.5	87.0	12:60	0.99	1.75
1.0	5.000	5.337	75	93.5	86.5	55.0	8:22	0.99	1.66
1.5	5.000	5.513	75	103.5	85	95.3	7:07	0.99	1.66
2.0	5.000	5.689	75	113.5	89.5	101.5	6:19	0.99	1.66
3.0	5.000	6.032	75	123	89	97.0	5:03	0.99	1.11
4.0	5.000	6.270	75	133	97.5	95.3	4:36	0.99	1.14
							AVERAGE	0.99	1.95

FORM3.38

$$Y = \frac{(Vw)(Pb)(Td+460)}{(Vd)(Pb+(delta\ H/13.6))(Tw+460)}$$

$$delta\ Hd = \frac{0.321}{(Qs)(Qs)}$$

$$Qm = Qs \sqrt{\frac{(Td+460)}{(Tstd+460)(delta\ H)}}$$

$$Qs = \frac{(Vd)(Td+460)}{(Tstd)(Td+460)}$$

Gilbert/Commonwealth Inc.
Air Quality Testing Services Group

POT METER CALIBRATION

DATE: 5/2/92 CALIBRATED BY: ROLAND

POT METER NUMBER: 3 THERMOCOUPLE TYPE: K

TEST	INSTRUMENT	DEGREES FAHRENHEIT
ICE BATH	MERCURY THERMOMETER	33
	POT METER	41
	difference	-8
AMBIENT AIR	MERCURY THERMOMETER	76
	POT METER	77
	difference.	-1
HOT OIL	MERCURY THERMOMETER	331
	POT METER	330
	difference	1

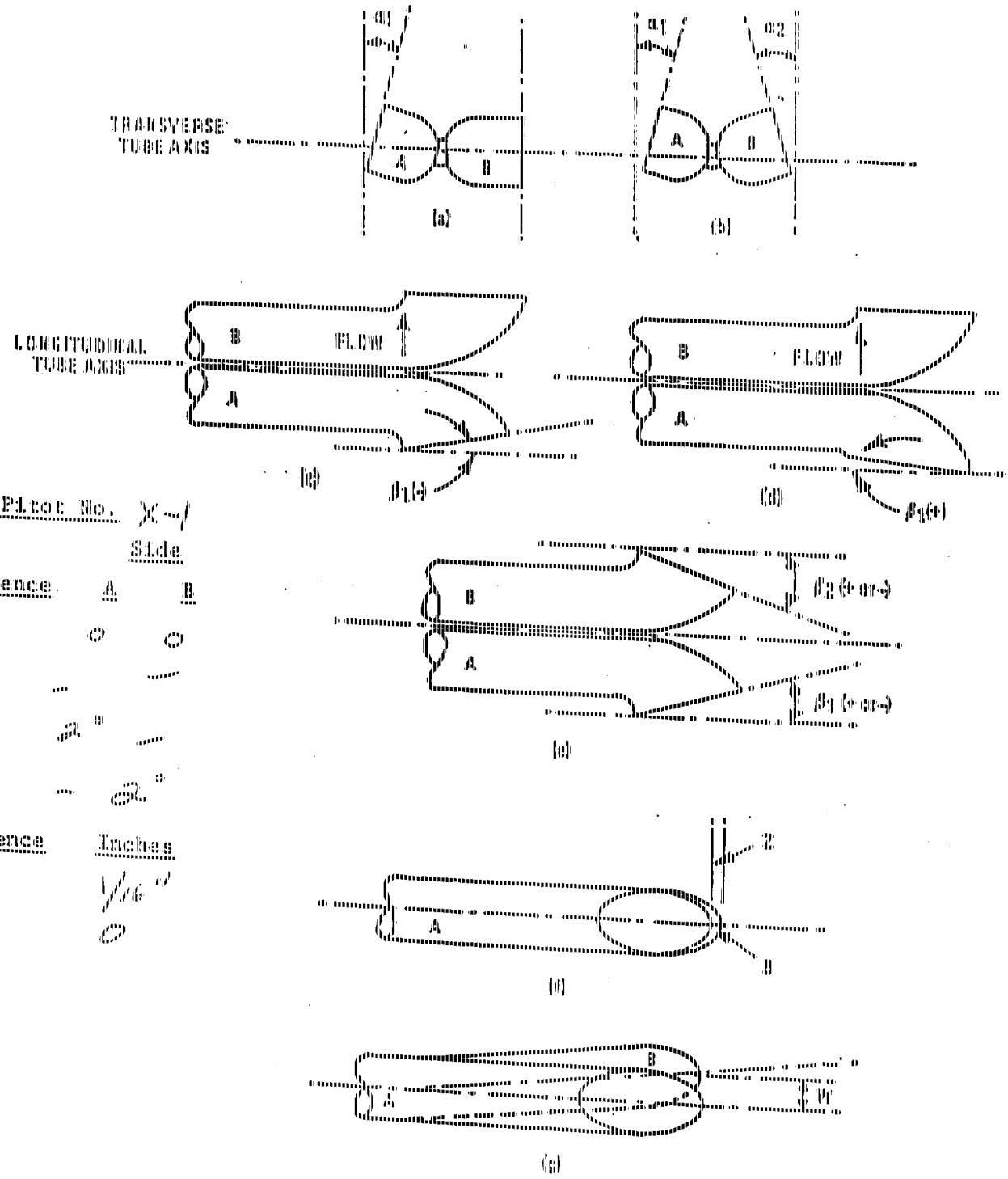


Figure 2-3. Types of face-opening misalignment that can result from field use or improper construction of Type S pitot tubes. These will not affect the baseline value of $C_p(s)$ so long as α_1 and $\alpha_2 \leq 10^\circ$, β_1 and $\beta_2 \leq 5^\circ$, $z \leq 0.32$ cm (1/8 in.) and $w \leq 0.08$ cm (1/32 in.) (citation 11 in Section 6).

Scott Specialty Gases

a division of Scott Environmental Technology, Inc.

1290 COMBERMERE STREET, TROY, MICHIGAN 48084 (313) 588-2950

Shipped From : Scott Troy

Our Project # : 527476

Your P.O. # : 3114-71500

Expiration Date : 2-27-93

Cylinder Number AAL-16818

Cylinder Pressure 1900 psig

Customer :
C A E INSTRUMENT RENTAL
246 WOODWORK LANE
PALATINE, IL. 60067

**** CERTIFICATE OF ANALYSIS - EPA PROTOCOL BASED ****
PERFORMED ACCORDING TO SECTION 3.0.4

Certified Per Traceability Protocol # 1

Procedure # G1

File # PD-1148

Certified Accuracy 1 % NBS Traceable

REFERENCE STD

COMPONENT	CERTIFIED CONC.
PROPANE	551.6 PPM

BALANCE GAS : NITROGEN

SRM # (CRM #)	CYLINDER NUMBER	CONC.
2646	AAL-18432	973.2 PPM
GMIS9	IA-4258	279.7 PPM

GAS ANALYZER

MAKE/MODEL/SERIAL #	LAST CALIBRATION DATE	ANALYTICAL PRINCIPLE
BECKMAN/400/10020059	6-20-91	FLAME IONIZATION DETECTOR

ANALYSIS

DATE : 8-27-91

ZERO GAS (mV)	TEST GAS (mV)	RESULTS PPM	REFERENCE GAS CONC.	REFERENCE GAS (mV)	RESULTS PPM
0.00	54.60	552.6	973.3 PPM	96.40	975.1
0.00	54.60	552.6		96.40	975.1
0.00	54.60	552.6		96.40	975.1

CALCULATED RESULTS 551.6
551.6
551.6

AVERAGE : 551.6 PPM

CALIBRATION CURVE 1 st DEGREE

SRM # (CRM #)	CONC. PPM	SPLIT PT (I)	DVM (mV)	FITTED VALUE	PERCENT ERROR
	1012	100	100.00	1012	0.00
2646	973.2	96	96.40	975.1	0.20
	777.8	77	77.10	800.3	0.05
	279.7	28	27.60	279.7	0.00
	189.2	19	18.60	188.7	-0.24
	0.0000	0	-0.01	0.0000	0.00
		0		0.00	0.00
	189.2	LOW	18.60	188.7	-0.24
2646	973.2	HIGH	96.40	975	0.20

GMIS - GAS MANUFACTURER'S INTERNAL STANDARD

The sole liability of this Company for any [illegible] shall not exceed the purchase price.

Analyst : [signature] Approved By : [signature]

Scott Specialty Gases

a division of Scott Environmental Technology, Inc.

1290 COMBERMERE STREET, TROY, MICHIGAN 48084 (313) 588-2950

Shipped From : Scott Michigan

Our Project # : 527478

Your P.O. # : 3114-71500

Customer :
C A E INSTRUMENT RENTAL
246 WOODWORK LANE
PALATINE, IL. 60067

CERTIFICATE OF ANALYSIS - EPA PROTOCOL GASES # # #
PERFORMED ACCORDING TO SECTION 3.0.4

Certified Per Traceability Protocol # 1 — Procedure # 81

File # PD-1144

Certified Accuracy 1 % NBS Traceable

Expiration Date : 2-27-93

Cylinder Number : ALM-023121

Cylinder Pressure 1900 psig

ANALYZED CYLINDER

COMPONENT	CERTIFIED CONC.
PROPANE	251.4 PPM

BALANCE GAS : NITROGEN

REFERENCE STD

SRM # (CRM #)	CYLINDER NUMBER	CONC.
2645A	PF-26811	498.5 PPM
GMIS#	A-10236	189.2 PPM

INSTRUMENTATION

ANALYTICAL PRINCIPLE	INSTR/MODEL/SERIAL #	LAST CALIBRATION DATE
FLAME IONIZATION DETECTOR	BECKMAN 400 10020059	8-16-91

ANALYSIS

DATE : 8-27-91

ZERO GAS (mV)	TEST GAS (mV)	RESULTS PPM	REFERENCE GAS CONC.	(mV)	RESULTS PPM
0.00	50.50	251.4	498.5 PPM	100.00	498.5
0.00	50.50	251.4		100.00	498.5
0.00	50.50	251.4		100.00	498.5
CALCULATED RESULTS		251.4			
		251.4			
		251.4			
AVERAGE :		251.4 PPM			

CALIBRATION CURVE 1 st DEGREE

SRM # (CRM #)	CONC. PPM	SPLIT PT (%)	DVM (mV)	FITTED VALUE	PERCENT ERROR
2645A	498.5	100	100.00	498.5	-0.00
	189.2	38	38.20	189.9	0.40
	100.0	20	20.30	100.5	0.50
2643	98.54	20	19.90	98.58	0.04
	0.0000	0	0.00	0.0000	0.00
		0		0.0000	0.00
		0		0.00	0.00
2643	98.54	LOW	19.90	98.58	0.04
2645A	498.5	HIGH	100.00	498.5	-0.00

GMIS - GAS MANUFACTURER'S INTERNAL STANDARD — Traceability of this Compound/Concentration to NIST Standard Reference Materials or Primary Gas Mixtures

Approved Signatory

Scott Specialty Gases

a division of Scott Environmental Technology, Inc.

1290 COMBERMERE STREET, TROY, MICHIGAN 48084 (313) 588-2950

Shipped From : Scott Michigan

Our Project # : 337473

Your P.O. # : 3446-71300

Customer :
C A E INSTRUMENT RENTAL
246 WOODWORK LANE
PALATINE IL 60067

CERTIFICATE OF ANALYSIS - EPA PROTOCOL GASES

PERFORMED ACCORDING TO SECTION 3.0.4

Certified Per Traceability Procedure # G1

Protocol # 1

File # PG-3492

Certified Accuracy 1 % NBS Traceable

Expiration Date : 12-17-93

Cylinder Number : ALM020720

Cylinder Pressure 1900 psig

1 of 1 Component(s)

ANALYZED CYLINDER

COMPONENT	CERTIFIED CONC.
PROPANE	84.81 PPM

BALANCE GAS : NITROGEN

REFERENCE STD

GMA # (CGA G)	CYLINDER NUMBER	CONC.
2443A	EA-20305	99.12 PPM
GMIBB	EA-4113	48.40 PPM

INSTRUMENTATION

INSTR/MODEL/SERIAL #	LAST CALIBRATION DATE
BECKMAN	5-26-92
400	
10020059	

ANALYTICAL PRINCIPLE

FLAME IONIZATION DETECTOR

ANALYSIS

DATE : 6-17-92

ZERO GAS (mV)	TEST GAS (mV)	RESULTS PPM	REFERENCE GAS CONC.	(mV)	RESULTS PPM
0.00	84.90	84.91	99.12 PPM	99.10	99.12
0.00	84.70	84.71		99.10	99.12
0.00	84.80	84.81		99.10	99.12

CALCULATED RESULTS: 84.91, 84.71, 84.81

AVERAGE : 84.81 PPM

CALIBRATION CURVE 1 st DEGREE

GMA # (CGA G)	CONC. PPM	SPLIT PT (%)	DVM (mV)	FITTED VALUE	PERCENT ERROR
2443A	99.12	100	99.10	99.12	-0.00
GMIB	48.40	49	48.30	48.29	-0.22
	25.00	25	25.00	25.08	0.31
GMIB	10.36	10	10.30	10.27	-0.86
	0.00	0	0.00	0.00	0.00
		0	0.0000	0.00	0.00
		0	0.00	0.00	0.00
GMIB	10.36	LOW	10.30	10.27	-0.86
2443A	99.12	HIGH	99.10	99.12	-0.00

GMIB = GAS MANUFACTURER'S INTERNAL STANDARD

Analyst :

Approved BY

APPENDIX 7

COMPUTER PRINTOUT

(FLUE GAS CHARACTERISTICS, ISOKINETICS CALCULATIONS AND TEST RESULTS)

7.1 Particulate

7.2 Visible

7.3 VOC

APPENDIX 7

COMPUTER PRINTOUT

(FLUE GAS CHARACTERISTICS, ISOKINETICS CALCULATIONS AND TEST RESULTS)

7.1. Particulate

GILBERT/COMMONWEALTH, INC.
TESTING SERVICES GROUP
ISOKINETIC SAMPLING ANALYSIS

Client: E.J. BRENEMAN Plant: SINKING SPRING

Unit Tested: BATCH ASPHALT Tests: PARTICULATES & FLOW

Sampling Location: BAGHOUSE OUTLET

Run No: B-P-1 Date: 7/16/92 Start Time: 845
End Time: 1035

DATA

NOZZLE DIAMETER: 0.252 AREA OF STACK: 2,160.0
BAROMETRIC PRESSURE: 29.41 FIRST Y-FACTOR: 1.02 VOLUME OF MOISTURE: 322
GAS METER Y-FACTOR: 1.00 AVG. SECOND Y-FACTOR: 0.98 EXCESS AIR % : 151.7

	SAMPLE POINT	TIME AT POINT	GAS METER	VELOCITY HEAD	PRESSURE ORIFICE	METER TEMPERATURE IN	METER TEMPERATURE OUT	STACK TEMP.	CO2	O2	STATIC PRESSURE	SQE	VEL
	A-1	4.0	921.822	0.120	0.307	80	80	256	4.0	12.6		9.26	1,429
	2	4.0	924.600	0.130	0.339	86	81	258				9.66	1,491
	3	4.0	925.900	0.110	0.287	84	82	257				8.88	1,371
	4	4.0	927.100	0.120	0.314	93	83	252			-0.09	9.24	1,427
	B-1	4.0	928.432	0.190	0.506	93	85	256	4.0	13.0		11.66	1,801
	2	4.0	930.000	0.260	0.688	99	86	261				13.69	2,114
	3	4.0	931.700	0.330	0.872	104	88	259	3.6	14.2		15.40	2,378
	4	4.0	933.800	0.440	1.174	108	90	257			-0.22	17.76	2,742
	C-1	4.0	936.192	0.260	0.645	100	90	254				13.09	2,021
	2	4.0	938.000	0.310	0.831	104	92	259				14.93	2,305
	3	4.0	940.000	0.440	1.213	107	92	260	3.4	13.4		21.47	3,314
	4	4.0	942.500	0.670	1.795	115	94	260			-0.35	21.96	3,391
	D-1	4.0	945.390	0.240	0.649	109	96	257				13.12	2,025
	2	4.0	947.200	0.370	1.001	114	98	260				16.32	2,520
	3	4.0	949.400	0.630	1.709	118	98	261	4.8	13.0		21.31	3,290
	4	4.0	952.200	0.780	2.120	122	100	259				23.68	3,656
	E-1	4.0	955.203	0.240	0.658	112	100	256			-0.40	13.11	2,024
	2	4.0	957.100	0.430	1.173	115	102	260	4.0	12.9		17.60	2,716
	3	4.0	959.300	0.600	1.634	118	102	261				20.80	3,211
	4	4.0	962.000	0.620	1.691	123	102	261			-0.29	21.14	3,264
26.861	F-1	4.0	964.707	0.280	0.737	104	108	258				14.18	2,189
	2	4.0	28.800	0.460	1.201	104	106	258				18.17	2,805
	3	4.0	31.200	0.530	1.382	105	104	259				19.52	3,013
36.388	4	4.0	33.800	0.450	1.171	108	103	258				17.97	2,775
			974.234										

RESULTS	TT	VM	PIT	PM	TM	TS	CO2	O2	PST	SQE	VEL
	96.0	52.412	0.383	1.025	100	258	4.0	13.2	-0.27	16.00	2,470
	net	net	avg	avg	avg	avg	avg	avg	avg	avg	avg
	PBM=	29.49	VMSTD=	48.734	VMGAS=	15.166	%M=	23.7	RMS OF VEL =	27.5	
	MD=	0.76	MWD=	29.16	MG=	26.51	PS=	29.39			

STACK GAS VELOCITY = 2,469 AFPM
STACK GAS VOLUME = 20,402 DSCFM
STACK GAS VOLUME = 37,039 ACFM
STACK GAS VOLUME = 112,494 LBS/HR
ISOKINETIC RATIO = 107.0

TON/HR = 169.67

PARTICULATE EMISSIONS

Weight, mg	69.8
GR/DSCF =	0.022
LBS/HR =	3.86
LBS/TON =	0.023

GILBERT/COMMONWEALTH, INC.
TESTING SERVICES GROUP
ISOKINETIC SAMPLING ANALYSIS

Client: E.J. BRENEMAN Plant: SINKING SPRING

Unit Tested: BATCH ASPHALT Test: PARTICULATES & FLOW

Sampling Location: BAGHOUSE OUTLET

Run No: B-P-2 Date: 7/14/92 Start Time: 1136
End Time: 1313

DATA

NOZZLE DIAMETER: 0.290
BAROMETRIC PRESSURE: 29.65
GAS METER Y-FACTOR: 0.98

AREA OF STACK: 2,160.0
VOLUME OF MOISTURE: 344
EXCESS AIR %: 124.9

SAMPLE POINT	TIME AT POINT	GAS METER	VELOCITY HEAD	PM ORIFICE	METER TEMPERATURE IN	METER TEMPERATURE OUT	STACK TEMP.	CO2	O2	STATIC PRESSURE	SQE	VEL.
E-1	3.5	36.726	0.180	0.807	96	95	240	3.4	11.4		11.22	1,728
2	3.5	38.600	0.390	1.866	96	95	255				16.70	2,571
3	3.5	40.900	0.450	2.115	100	95	257				17.96	2,766
4	3.5	43.800	0.440	2.070	106	95	257			-0.29	17.76	2,735
E-1	3.5	46.518	0.210	0.993	104	95	247				12.18	1,876
2	3.5	48.400	0.350	1.676	105	96	254				15.81	2,434
3	3.5	50.900	0.560	2.660	110	96	257				20.04	3,086
4	3.5	53.800	0.560	2.660	114	97	257				20.04	3,086
D-1	3.5	56.996	0.200	0.954	109	97	251	3.4	13.6	-0.19	11.92	1,836
2	3.5	59.000	0.440	2.108	109	98	256				17.75	2,733
3	3.5	61.500	0.650	3.095	111	99	257				21.59	3,324
4	3.5	64.900	0.830	3.957	120	100	256				24.38	3,754
C-1	3.5	68.765	0.200	0.963	111	100	243	4.0	13.6		11.86	1,826
2	3.5	71.000	0.380	1.849	111	101	252				16.45	2,533
3	3.5	73.200	0.610	2.934	114	101	253				20.85	3,211
4	3.5	76.600	0.850	4.093	117	101	253				24.62	3,791
B-1	3.5	80.147	0.190	0.917	106	98	247				11.59	1,785
2	3.5	82.100	0.320	1.539	108	100	249			-0.18	15.06	2,319
3	3.5	84.600	0.490	2.358	110	100	249	3.9	13.0		18.64	2,870
4	3.5	87.400	0.580	2.796	116	100	248				20.26	3,120
A-1	3.5	90.587	0.210	1.019	110	100	239			-0.30	12.12	1,866
2	3.5	92.600	0.190	0.929	110	100	248				11.60	1,786
3	3.5	94.500	0.210	1.014	111	102	249				12.20	1,879
4	3.5	96.600	0.290	1.402	112	102	249	3.6	10.0		14.34	2,208
		98.904										

RESULTS	TT	VM	PST	PM	TM	TS	CO2	O2	PST	SQE	VEL
	84.0	62.178	0.408	1.949	104	251	3.7	12.3	-0.24	16.54	2,547
	sec	cec	avg	avg	avg	avg	avg	avg	avg	avg	avg
	PSM=	29.59	VMSTD=	56.447	VMGAS=	16.202	SM=	22.3	RMS OF VEL =	26.8	
	MD=	0.78	MWD=	29.08	MW=	26.61	PS=	29.43			

STACK GAS VELOCITY = 2,547 AFPM
STACK GAS VOLUME = 21,684 DSCFM
STACK GAS VOLUME = 38,198 ACFM
STACK GAS VOLUME = 117,604 LBS/HR
ISOKINETIC RATIO = 100.7

TON/HR = 175.62

PARTICULATE EMISSIONS

Weight, mg	114.5
GR/DSCF =	0.031
LBS/HR =	5.80
LBS/TON =	0.033

GILBERT/COMMONWEALTH, INC.
TESTING SERVICES GROUP
ISOKINETIC SAMPLING ANALYSIS

Client: E.J. BRENNAN Plant: SINKING SPRING

Unit Tested: BATCH ASPHALT Tests: PARTICULATES & FLOW

Sampling Location: BAGHOUSE OUTLET

Run No: B-P-3 Date: 7/14/92 Start Time: 1330
End Time: 1455

DATA

NOZZLE DIAMETER: 0.290
BAROMETRIC PRESSURE: 29.50
GAS METER Y-FACTOR: 0.98

AREA OF STACK: 2,160.0
VOLUME OF MOISTURE: 316
EXCESS AIR % : 73.3

SAMPLE POINT	TIME AT POINT	GAS METER	VELOCITY HEAD	PM ORIFICE	METER TEMPERATURE IN	METER TEMPERATURE OUT	STACK TEMP.	CO2	O2	STATIC PRESSURE	SQE	VEL
A-1	3.0	99.170	0.170	0.762	100	99	243	0.0	0.0		10.93	1,690
2	3.0	101.100	0.200	0.963	103	100	250				11.92	1,842
3	3.0	102.500	0.170	0.813	105	100	248			-0.09	10.97	1,696
4	3.0	104.000	0.180	0.865	108	100	246	3.6	12.4		11.27	1,742
B-1	3.0	105.685	0.230	1.112	106	100	244				12.72	1,967
2	3.0	107.500	0.290	1.403	110	100	254				14.39	2,224
3	3.0	109.700	0.450	2.154	113	101	254				17.92	2,770
4	3.0	112.200	0.460	2.210	116	102	252			-0.24	18.10	2,797
C-1	3.0	114.605	0.210	1.015	111	100	241			-0.52	12.13	1,875
2	3.0	116.400	0.340	1.659	112	102	255				15.59	2,410
3	3.0	118.600	0.540	2.591	116	102	255				19.65	3,037
4	3.0	121.100	0.680	3.274	120	103	255			-0.36	22.05	3,408
D-1	3.0	126.093	0.300	1.451	116	103	250				14.59	2,256
2	3.0	126.200	0.450	2.186	118	104	253				17.91	2,768
3	3.0	128.500	0.640	3.101	120	105	256	3.8	12.2		21.44	3,313
4	3.0	131.500	0.820	3.956	126	106	258				24.26	3,750
E-1	3.0	134.800	0.250	1.213	116	104	252				13.34	2,062
2	3.0	136.700	0.450	2.180	116	105	253				17.91	2,768
3	3.0	139.200	0.630	3.053	121	106	258	3.8	11.2	-0.30	21.27	3,287
4	3.0	142.400	0.700	3.383	122	106	256				22.39	3,460
F-1	3.0	145.284	0.330	1.601	117	104	249				15.30	2,364
2	3.0	147.400	0.460	2.239	121	106	256			-0.21	18.15	2,805
3	3.0	149.900	0.500	2.423	121	107	257	3.0	13.0		18.93	2,926
4	3.0	152.600	0.440	2.131	121	107	256			-0.28	17.75	2,743
		155.094										

RESULTS	TT	VM	PTT	PM	TM	TS	CO2	O2	PST	SQE	VEL
	72.0	55.916	0.412	1.989	109	252	2.8	9.8	-0.29	16.70	2,582
	net	net	avg	avg	avg	avg	avg	avg	avg	avg	avg
	PBM=	29.65	VMSTD=	50.400	VMGAS=	16.884	%M=	22.8	RMS OF VEL =	23.3	
	MD=	0.77	MWD=	28.84	MW=	26.37	PS=	29.48			

STACK GAS VELOCITY = 2,583 AFPM
STACK GAS VOLUME = 21,884 DSCFM
STACK GAS VOLUME = 30,719 ACFM
STACK GAS VOLUME = 117,946 LBS/HR
ISOKINETIC RATIO = 104.1

TON/HR = 189.86

PARTICULATE EMISSIONS

Weight, mg	156.2
GR/DSCF =	0.068
LBS/HR =	8.93
LBS/TON =	0.047

APPENDIX 7

COMPUTER PRINTOUT

(FLUE GAS CHARACTERISTICS, ISOKINETICS CALCULATIONS AND TEST RESULTS)

7.2 Visible

GILBERT/COMMONWEALTH, INC.
TESTING SERVICES GROUP
VISIBLE EMISSION ANALYSIS

Client: E.J. BRENEMAN

Plant: SINKING SPRING

Unit Tested: BATCH ASPHALT

Test: OPACITY

Sampling Location:BAGHOUSE OUTLET

Run No: 8-P-1

Date: 7/14/92

Start Time: 848
End Time: 950

EMISSIONS DESCRIPTION

PLUME: Detached; Looping
PLUME COLOR: Gray
OBSERVATION DISTANCE: 900 ft.
BACKGROUND: Blue-Gray Sky
AMBIENT TEMP.: 80 F
WIND: S, 2-5 mph

TIME (MIN)	% OPACITY (SEC) 0	15	30	45
1	10	15	10	10
2	10	15	15	10
3	10	10	10	10
4	10	10	10	10
5	10	10	10	10
6	15	15	10	15
7	10	10	10	15
8	15	10	10	15
9	10	10	10	15
10	10	10	10	10
11	10	10	10	15
12	15	10	10	10
13	15	15	15	15
14	10	10	15	15
15	10	10	15	15
16	15	10	15	15
17	10	15	15	15
18	15	10	15	10
19	15	15	15	10
20	10	10	10	15
21	10	10	10	10
22	10	10	10	15
23	10	10	10	15
24	15	10	10	15
25	15	15	15	15
26	15	10	15	10
27	10	15	15	10
28	10	15	10	10
29	15	15	10	15
30	10	10	10	10
31	10	15	15	10

% OPACITY
12.0
avg

TIME (MIN)	% OPACITY (SEC) 0	15	30	45
32	10	15	15	10
33	15	15	15	15
34	10	15	15	15
35	15	15	15	15
36	15	10	10	15
37	15	15	15	10
38	10	10	15	15
39	15	15	10	15
40	15	15	15	15
41	15	15	10	15
42	15	15	15	15
43	15	15	15	15
44	15	10	15	15
45	10	10	10	15
46	15	15	10	15
47	10	15	15	15
48	15	15	15	15
49	15	10	15	15
50	15	10	15	15
51	15	15	15	15
52	15	15	10	15
53	15	15	15	10
54	10	10	15	15
55	15	15	15	15
56	15	10	10	10
57	10	15	15	15
58	10	10	10	10
59	15	15	15	15
60	15	15	15	15
61	15	15	15	15
62	10	15	10	15

% OPACITY
13.7
avg

TOTAL AVG. OPACITY (%) = 12.9

GILBERT/COMMONWEALTH, INC.
TESTING SERVICES GROUP
VISIBLE EMISSION ANALYSIS

Client: E.J. BRENEMAN

Plant: SINKING SPRING

Unit Tested: BATCH ASPHALT

Tests: OPACITY

Sampling Location: BAGHOUSE OUTLET

Run No: B-P-2

Date: 7/14/92

Start Time: 1140
End Time: 1244

EMISSIONS DESCRIPTION

PLUME: Detached; Looping
PLUME COLOR: Gray-White
OBSERVATION DISTANCE: 300 ft.
AMBIENT TEMP.: 90 F
WIND: W, 5-10 mph

TIME (MIN)	% OPACITY (SEC) 0	15	30	45
1	15	15	15	15
2	15	15	15	10
3	15	15	15	15
4	10	15	15	10
5	10	15	15	10
6	10	15	15	15
7	15	10	15	10
8	15	15	15	15
9	10	10	10	10
10	10	15	10	15
11	10	10	10	15
12	10	10	10	10
13	15	15	10	10
14	10	15	15	15
15	15	10	15	15
16	15	10	10	15
17	10	10	15	15
18	10	10	10	10
19	15	15	10	15
20	10	10	10	10
21	10	10	10	10
22	10	15	10	15
23	10	10	10	10
24	15	10	10	10
25	10	10	10	10
26	10	10	10	15
27	10	15	15	15
28	10	15	10	15
29	15	15	15	10
30	10	10	15	15
31	10	15	15	15

% OPACITY
12.4
avg

TIME (MIN)	% OPACITY (SEC) 0	15	30	45
32	15	15	15	15
33	20	20	10	15
34	15	15	15	15
35	15	15	15	15
36	15	15	15	15
37	20	20	15	10
38	15	10	10	15
39	20	15	10	15
40	10	15	15	15
41	10	15	15	15
42	15	15	15	15
43	10	10	15	15
44	15	20	20	15
45	15	15	15	15
46	15	15	15	15
47	20	15	15	15
48	20	15	20	15
49	15	20	15	15
50	20	20	15	15
51	15	20	20	15
52	15	15	15	15
53	15	20	20	20
54	15	15	15	20
55	15	15	20	20
56	15	15	15	15
57	15	15	15	10
58	15	15	15	20
59	15	15	15	15
60	15	15	15	20
61	20	15	15	20
62	20	15	15	10
63	10	15	15	15

% OPACITY
15.5
avg

TOTAL AVG. OPACITY (%) = 14.0

GILBERT/COMMONWEALTH, INC.
TESTING SERVICES GROUP
VISIBLE EMISSION ANALYSIS

Client: B.J. BRENEMAN

Plant: SINKING SPRING

Unit Tested: BATCH ASPHALT

Tests: OPACITY

Sampling Location: BAGHOUSE OUTLET

Run No: B-P-3

Date: 7/14/92

Start Time: 1340
End Time: 1442

EMISSIONS DESCRIPTION

PLUME: Detached; Looping
PLUME COLOR: Gray-White
OBSERVATION DISTANCE: 300 ft.
AMBIENT TEMP.: 90 F
WIND: W, 5-10 mph

TIME (MIN)	% OPACITY (SEC) 0	15	30	45
1	15	15	15	15
2	15	10	15	15
3	15	15	15	15
4	15	15	20	15
5	20	20	15	20
6	15	20	20	15
7	15	15	20	15
8	15	20	20	25
9	20	15	20	20
10	20	20	15	20
11	15	10	15	15
12	15	15	20	15
13	15	15	15	15
14	20	15	20	15
15	20	15	20	20
16	20	20	20	15
17	20	15	15	15
18	15	15	20	20
19	15	20	20	15
20	15	20	20	20
21	20	15	20	20
22	15	15	15	15
23	15	15	15	15
24	15	15	15	20
25	20	20	20	20
26	25	20	20	20
27	20	20	20	25
28	20	20	25	25
29	20	20	20	20
30	20	20	20	20
31	20	15	20	20

% OPACITY
17.7
avg

TIME (MIN)	% OPACITY (SEC) 0	15	30	45
32	20	20	20	20
33	20	20	20	20
34	20	20	20	20
35	20	20	20	20
36	20	15	15	20
37	20	25	20	20
38	20	20	20	15
39	15	15	20	20
40	20	20	20	20
41	15	25	25	20
42	20	20	20	20
43	20	20	20	20
44	20	20	15	20
45	20	15	20	20
46	15	20	15	15
47	15	20	20	20
48	20	20	20	20
49	20	20	20	20
50	20	15	20	20
51	15	15	20	20
52	20	20	15	15
53	15	15	15	15
54	15	20	15	15
55	20	15	20	15
56	20	20	20	15
57	15	15	20	20
58	20	15	15	15
59	15	15	15	15
60	15	15	15	15
61	15	20	20	20
62	20	20	20	20
63	20	15	20	20

% OPACITY
18.5
avg

TOTAL AVG. OPACITY (%) = 18.1

APPENDIX 7

COMPUTER PRINTOUT

(FLUE GAS CHARACTERISTICS, ISOKINETICS CALCULATIONS AND TEST RESULTS)

7.3 VOC

GILBERT/COMMONWEALTH, INC.
TESTING SERVICES GROUP
VOC SAMPLING ANALYSIS

Client: E.J. BRENEMAN Plant: SINKING SPRING

Unit Tested: BATCH ASPHALT Tests: VOC's

Sampling Location: BAGHOUSE OUTLET

Run No: VOC-1 Dates: 7/14/92 Start Time: 1205
End Time: 1305

DATA

STACK TEMPERATURE (F): 251
BAROMETRIC PRESSURE (in Hg): 29.41
STACK GAS VOLUME (dscfm): 21,684
MOISTURE (%): 22.3

VOC MEASURED IN: Propane (ppm)
VOC REPORTED IN: Methane (lbs/cf)

SAMPLE PORT	RUN TIME	PPM
B	1	120
	2	117
	3	107
	4	102
	5	96
	6	102
	7	102
	8	103
	9	103
	10	104
	11	100
	12	97
	13	104
	14	110
	15	121
	16	120
	17	115
	18	116
	19	118
	20	120
		PPM
		108.9
		avg

SAMPLE PORT	RUN TIME	PPM
B	21	125
	22	127
	23	118
	24	107
	25	95
	26	99
	27	98
	28	106
	29	119
	30	P O
	31	R U
	32	O T
	33	B
	34	E
	35	106
	36	108
	37	106
	38	109
	39	116
	40	114
		PPM
		110.1
		avg

SAMPLE PORT	RUN TIME	PPM
B	41	115
	42	120
	43	125
	44	129
	45	135
	46	128
	47	124
	48	122
	49	121
	50	PROBE
	51	
	52	OUT
	53	119
	54	119
	55	124
	56	126
	57	131
	58	131
	59	131
	60	133
		PPM
		125.5
		avg

TOTAL AVG. PPM (PROPANE): 114.8

RESULTS

METHANE (PPM wet) =	344.5
METHANE (PPM dry) =	663.4
METHANE (LB/HR) =	24.06
PRODUCTION RATE (TON/HR) =	175.62
VOC EMISSIONS (LB/TON) =	0.14

GILBERT/COMMONWEALTH, INC.
TESTING SERVICES GROUP
VOC SAMPLING ANALYSIS

Client: E.J. BRENEMAN Plant: SINKING SPRING

Unit Tested: BATCH ASPHALT Test: VOC's

Sampling Location: BAGHOUSE OUTLET

Run No: VOC-2 Date: 7/16/92 Start Time: 1346
End Time: 1446

DATA

STACK TEMPERATURE (F): 252
BAROMETRIC PRESSURE (in Hg): 29.45
STACK GAS VOLUME (dscfm): 21,834
MOISTURE (%): 22.8

VOC MEASURED IN: Propane (ppm)
VOC REPORTED IN: Methane (lbs/cf)

SAMPLE PORT	RUN TIME	PPM
A	1	95
	2	98
	3	97
	4	98
	5	100
	6	115
	7	117
	8	116
	9	116
	10	117
	11	111
	12	110
	13	95
	14	103
	15	110
	16	118
	17	114
	18	99
	19	110
	20	84
		PPM
		106.2
		avg

SAMPLE PORT	RUN TIME	PPM
A	21	100
	22	111
	23	111
	24	112
	25	100
	26	117
	27	110
	28	117
	29	117
	30	117
	31	100
	32	116
	33	118
	34	103
	35	110
	36	115
	37	117
	38	120
	39	121
	40	124
		PPM
		112.8
		avg

SAMPLE PORT	RUN TIME	PPM
A	41	125
	42	125
	43	126
	44	112
	45	111
	46	110
	47	91
	48	103
	49	107
	50	100
	51	97
	52	107
	53	102
	54	119
	55	132
	56	133
	57	106
	58	103
	59	101
	60	96
		PPM
		111.9
		avg

TOTAL AVG. PPM (PROPANE): 110.3

RESULTS

METHANE (PPM wet) = 330.8
METHANE (PPM dry) = 428.5
METHANE (LB/HR) = 23.41
PRODUCTION RATE (TON/HR) = 189.86
VOC EMISSIONS (LB/TON) = 0.12

GILBERT/COMMONWEALTH, INC.
TESTING SERVICES GROUP
VOC SAMPLING ANALYSIS

Client: E.J. BRENEMAN Plant: SINKING SPRING

Unit Tested: BATCH ASPHALT Test: VOC's

Sampling Location: BAGHOUSE OUTLET

Run No: VOC-3 Date: 7/16/92 Start Time: 1506
End Time: 1606

DATA

STACK TEMPERATURE (F):	251.5
BAROMETRIC PRESSURE (in Hg):	29.45
STACK GAS VOLUME (dscfm):	20,000
MOISTURE (%):	22.5

VOC MEASURED IN: Propane (ppm)
VOC REPORTED IN: Methane (lbs/cf)

SAMPLE PORT	RUN TIME	PPM
A	1	92
	2	97
	3	106
	4	86
	5	83
	6	83
	7	85
	8	86
	9	86
	10	94
	11	97
	12	97
	13	96
	14	96
	15	98
	16	100
	17	99
	18	76
	19	93
	20	92
		PPM
		92.1
		avg

SAMPLE PORT	RUN TIME	PPM
A	21	91
	22	90
	23	89
	24	91
	25	92
	26	92
	27	92
	28	94
	29	93
	30	84
	31	89
	32	90
	33	92
	34	92
	35	91
	36	85
	37	80
	38	87
	39	93
	40	89
		PPM
		89.8
		avg

SAMPLE PORT	RUN TIME	PPM
A	41	90
	42	91
	43	88
	44	80
	45	88
	46	100
	47	93
	48	89
	49	87
	50	85
	51	73
	52	80
	53	85
	54	85
	55	85
	56	84
	57	88
	58	85
	59	82
	60	87
		PPM
		87.5
		avg

TOTAL AVG. PPM (PROPANE): 89.8

RESULTS

METHANE (PPM wet) =	269.4
METHANE (PPM dry) =	347.6
METHANE (LB/HR) =	17.39
PRODUCTION RATE (TON/HR) =	145
VOC EMISSIONS (LB/TON) =	0.12

APPENDIX 8

SAMPLE CALCULATIONS

SAMPLE CALCULATIONS

Particulate Isokinetic Sampling

I. Calculations for stack volume and Isokinetic Ratio.

Time	Dry Gas Meter Ft^3	Pitot ΔP, In. H_2O	Orifice ΔH, In. H_2O	Dry Gas Temp °F In	Out	Stack Static Pressure In. H_2O	Stack Temp °F
T	VM	ΔP	PM	TMI	TMO	PST	TS

1. DN = Nozzle Diameter, inches

2. PB = Barometric Pressure, inches Hg

3. TT = Net Sampling Time, minutes

4. VM = VM final - VM initial = Sample Gas Volume; Ft^3

5. TM = Average Dry Gas Temperature at Meter, °F

$$TM = \frac{\text{Avg. TMI} + \text{Avg. TMO}}{2}$$

6. PM = Average Orifice Pressure Drop, inches H_2O

PM = Avg. ΔH

7. Volume of dry gas sampled at standard conditions[a], DSCF

$$VMSTD = \frac{17.65 \times VM \times Y \left(PB + \frac{PM}{13.6}\right)}{(TM + 460)}$$

8. VW = Total Water Collected = gm H_2O Silica gel + ml Imp. H_2O = ml

9. Volume of water vapor at standard conditions[b], SCF

VW gas = 0.0471 x VW = SCF

10. Percent moisture in stack gas

$$\%M = \frac{100 \times VW\ gas}{VM\ STD + VW\ gas}$$

11. Mole fraction of dry gas

$$MD = \frac{100 - \%M}{100}$$

12. Molecular weight of dry stack gas

$$MWD = \left(\%CO_2 \times \frac{44}{100}\right) + \left(\%O_2 \times \frac{32}{100}\right) + \left[\left(\%CO + \%N_2\right) \times \frac{28}{100}\right]$$

12A. $\%EA = \%\text{ Excess Air} = \dfrac{[(\%\ O_2) - 0.5\ (\%CO)]}{0.264\ (\%N_2) - [(\%O_2) + 0.5\%\ (CO)]} \times 100$

13. Molecular weight of wet stack gas

$$MW = MWD \times MD + 18\ (1 - MD)$$

14. AS = Stack Area, square inches

15. PS = Stack Pressure, inches Hg

$$PS = PB \pm \text{Avg. PST}$$

NOTE: $\text{PST in. Hg.} = \dfrac{\text{PST in. } H_2O}{13.6}$

16. TS = Average Stack Temperature, °F

TS = Average TS

17. SDE = Average $\sqrt{\text{Velocity Head } (\Delta P) \times (\text{Stack Temperature} + 460)}$

(Calculated each line)

$$SDE = \text{Avg } \sqrt{\Delta P \times (TS + 460)}$$

18. Stack gas velocity at stack conditions, fpm

$$VS = 5130 \times Cp \times \text{Avg}(SDE) \times \left[\frac{1}{PS \times MW}\right]^{1/2} = FPM$$

Cp = pitot tube coefficient

19. Stack gas volumetric flow rate at standard conditions[c], DSCFM

$$Q_s = \frac{0.123 \times VS \times AS \times MD \times PS}{(TS + 460)} = DSCFM$$

20. Stack gas volumetric flow rate at stack conditions, ACFM

$$Q_a = \frac{.05667 \times QS\ (TS + 460)}{PS \times MD} = ACFM$$

21. Percent Isokinetic

$$\%I = \frac{1.032 \times (TS + 460) \times VMSTD}{VS \times TT \times PS \times MD \times (DN)^2}$$

NOTES: [a]Dry standard cubic feet at 69°F, 29.92 in. Hg.

[b]Standard conditions at 68°F, 29.92 in. Hg.

[c]Dry standard cubic feet per minute at 68°F, 29.92 in. Hg.

II. Calculations for grain loading and emission rates

22. Particulate, gr/DSCF

$$\text{gr/DSCF} = 0.0154 \times \frac{\text{mg}}{\text{VMSTD}}$$

23. Particulate at stack conditions, gr/ACF

$$\text{gr/ACF} = \frac{17.65 \text{ gr/DSCF} \times \text{PS} \times \text{MD}}{(\text{TS} + 460)}$$

24. Particulate, lb/hr conc. method

$$\text{lb/hr} = 0.00857 \times \text{gr/DSCF} \times \text{QS}$$

25. Particulate lb/hr area method = $0.132 \times \frac{\text{rms particulate} \times \text{AS}}{\left(\frac{\text{DN}^2}{2}\right) \times \text{TT}}$

26. Particulate, combustion

$$\frac{\text{lb/hr}}{10^6 \text{ BTU/hr}}$$

27. Particulate, process lb/ton

$$\text{lb/ton} = \frac{\text{lb/hr}}{\text{tons/hr}}$$

28. Particulate, lb/MMBTU, F-Factor Method =

Using O_2 =

$$\frac{0.0154 \times \text{mg} \times \text{F-Factor} \times 20.9}{7000 \times \text{VMSTD} \times (20.9 - \%O_2)}$$

Using CO_2:

$$\frac{0.0154 \times \text{mg} \times \text{F-Factor} \times 100}{7000 \times \text{VMSTD} \times \% CO_2}$$

29. F-Factor, dscf/mmBtu

O_2 Format:

$$\text{F-Factor} = \frac{10^6(3.64(\%H)+1.53(\%C)+0.57(\%S)+0.14(\%N)-0.46(\%O_2))}{\text{GCV}}$$

CO_2 Format:

$$\frac{10^6(0.321)(\%C)}{\text{GCV}}$$

Calculation of VOC Emissions (lbs Methane/Ton Asphalt)

The Ratfisch Model RS55 Flame Ionization Detector was calibrated with Propane (C_3H_8). Therefore, the analyzer output was in PPM$_c$ propane. To express emissions as Methane (CH_4), the PPM as Propane must be multiplied by 3 because Propane has 3 times as many carbon atoms as Methane. To covert 1 PPM Methane to lbs/ft^3, divide the molecular wt of Methane (16.043) by $385.1 \times 10^{-6} = 4.166 \times 10^{-8}$.

Therefore, lbs/ft^3 of Methane = PPM (Methane) x 4.166×10^{-8}.

$$\frac{\text{Lbs Methane}}{\text{Ton asphalt}} = \frac{\text{PPM (propane)} \times 3 \times 4.166 \times 10^{-8} \text{ stack flow (ACFM)} \times 60}{\text{Tons asphalt production/hour}}$$