AP42 Section: 11.1

Reference Number: 320

Title: Source Sampling For Particulate Emissions, Valley Asphalt Corp., Plant #7, Dayton, OH,

Ramcon Environmental Corp., Memphis, TN,

May 14, 1993.

AP-42 Section 11.1
Reference
Report Sect. 4
Reference ~~319~~ 320

APPENDIX K

OEPA STACK TEST REVIEW SUMMARY FORM

APPLICATION NUMBER 08-2456 P001

FACILITY NAME VALLEY ASPHALT PLANT #7

SOURCE DESCRIPTION (OR SCC CODE) 180 T/HR Asphaltic Concrete Batch Plant #7

CONTROL EQUIPMENT Barber Greene Baghouse

DATE(S) OF TEST 5/14/93

FINAL TEST REPORT RECEIVED ON 6/24/93

POLLUTANT(S) TESTED Particulate / Lead

TEST METHOD 5/12

TEST FIRM RAMCON

EMISSION RATES*:

ACTUAL (lb(s)/hr) 2.91 ALLOWABLE** 10.7

OPERATING RATES*:

DURING TEST** 162-179 TPH MAXIMUM** 179 TPH

MISSION FACTOR***

COMMENTS:

I HEREBY VERIFY THAT THE INFORMATION CONTAINED WITHIN THE STACK TEST REPORT HAS BEEN REVIEWED AND IT HAS BEEN DETERMINED THAT THE TEST PROCEDURES, ANALYSES AND CALCULATIONS ARE:

[X] AN ACCEPTABLE DEMONSTRATION OF CONFORMANCE WITH THE APPROVED TESTING METHODOLOGY.

[ ] AN UNACCEPTABLE DEMONSTRATION OF CONFORMANCE WITH THE APPROVED TESTING METHODOLOGY.

7/13/93
DATE OF REVIEW

Jeffrey W. Adams
REVIEWED BY

* BASED ON 3 RUN AVERAGE

** SPECIFY APPLICABLE UNITS

***SPECIFY IN UNITS OF MASS/INPUT

<u>**CONTACT REPORT**</u>

FACILITY: Valley Asphalt Plant 7

PREMISES NO.: 0857821893

CONTACT: Ken Eakins, Chris Haggerty

RAPCA: Brian Marlatt, Jeff Adams

DATE: 5/13/93, 5/14/93

The purpose of this visit was to observe source testing of Valley Asphalt Plant 7. The plant uses used oil (no.4 fuel oil) as a fuel source so the emissions were tested for particulates and lead. The plant burns ~1.6 gal/ton of material processed.

No recycled asphalt products were processed during any of the three test runs. The filter bags were replaced ~3 weeks prior to the testing (540 bags). The baghouse pulses ~4 rows every ten seconds. USEPA RM9 opacity observations are recorded on the attached forms. The following data were collected during the tests:

Test 1: start time: 09:18

@ 09:25 Δp 0.4" H2O
material temp. 325°F

test stopped @ 09:33, restarted @ 09:56

@ 09:56 Δp 0.4" H2O
material temp. 340°F

@ 10:23 Δp 0.4 " H2O
material temp. 320°F
production rate 171 TPH

@ 10:56 Δp 0.4" H2O
material temp. 325°F
production rate 177 TPH

end test 1 @ 10:56

Test 2 start time: 13:00

@ 13:11 Δp 0.6" H2O
material temp. 300°F
production rate 166 TPH

@ 13:35 Δp 1.0" H2O
material temp. 275°F
production rate 164 TPH

@ 13:40 the test was temporarily stopped because of problems with the filter box temperature. Restart @ 13:49.

@ 14:02 Δp 1.2" H2O
material temp. 300°F
production rate 165 TPH

@ 14:18 Δp 1.2" H2O
material temp. 300°F
production rate 166 TPH

end test 2 @ 14:18

5/14/93

Test 3 start time: 08:08

@ 08:08 Δp 1.5" H2O
material temp. 310°F
production rate 162 TPH

@ 08:33 Δp 1.5" H2O
material temp. 280°F
production rate 163 TPH

@ 09:12 Δp 2.6" H2O
material temp. 325°F
production rate 179 TPH

end test 3 @ 09:18

Visible Emission Observation Form

SOURCE NAME VALLEY ASPHALT PLANT #7

ADDRESS 6900 RIP RAP RD.

CITY DAYTON **STATE** OH **ZIP** 45424

PHONE

SOURCE ID NUMBER P001

PROCESS EQUIPMENT ASPHALT PLANT **OPERATING MODE** ON

CONTROL EQUIPMENT BAGHOUSE **OPERATING MODE** ON

DESCRIBE EMISSION POINT
START SQUARE METAL STACK **STOP** ✓

HEIGHT ABOVE GROUND LEVEL **START** ~50 Ft **STOP** ✓

HEIGHT RELATIVE TO OBSERVER **START** ~50 Ft **STOP**

DISTANCE FROM OBSERVER **START** ~100 Ft **STOP** ✓

DIRECTION FROM OBSERVER **START** N/NW **STOP** ✓

DESCRIBE EMISSIONS
START STEAM PLUME w/ LIGHT BROWN HAZE **STOP** ✓

EMISSION COLOR **START** BROWN **STOP** ✓

PLUME TYPE: CONTINUOUS ☒ FUGITIVE ☐ INTERMITTENT ☐

WATER DROPLETS PRESENT: NO ☐ YES ☒

IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☒

POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED
START ~60 Ft FROM STACK **STOP** ✓

DESCRIBE BACKGROUND
START BLUE SKY **STOP** ✓

BACKGROUND COLOR **START** BLUE **STOP** ✓

SKY CONDITIONS **START** CLEAR **STOP** ✓

WIND SPEED **START** 20-25 MPH **STOP** ✓

WIND DIRECTION **START** N/NE **STOP** ✓

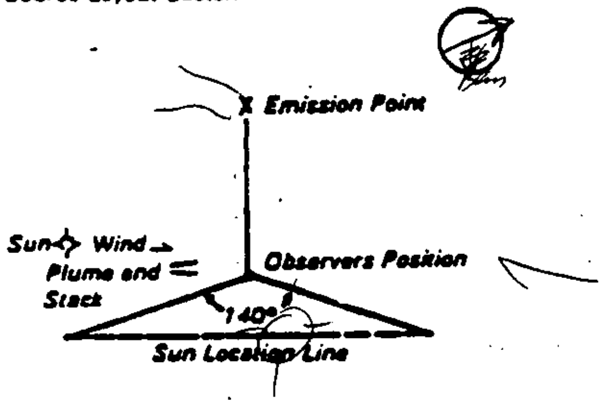
AMBIENT TEMP. **START** ~60°F **STOP** ✓

WET BULB TEMP. — **RH, percent** —

OBSERVATION DATE 5/13/93 **START TIME** 10:04 **STOP TIME** 10:22

MIN \ SEC	0	15	30	45	MIN \ SEC	0	15	30	45
1	5	10	0	0	31				
2	5	0	5	10	32				
3	0	5	0	0	33				
4	0	5	0	5	34				
5	0	0	0	5	35				
6	0	0	5	10	36				
7	15	10	5	5	37				
8	5	10	5	5	38				
9	5	15	0	5	39				
10	0	20	5	10	40				
11	5	10	5	5	41				
12	20	0	5	15	42				
13	20	5	15	5	43				
14	10	5	10	20	44				
15	10	5	10	5	45				
16	0	5	10	20	46				
17	10	15	10	15	47				
18	20	5	10	5	48				
19					49				
20					50				
21					51				
22					52				
23					53				
24					54				
25					55				
26					56				
27					57				
28					58				
29					59				
30					60				

Source Layout Sketch **Draw North Arrow**



AVERAGE OPACITY FOR HIGHEST PERIOD

NUMBER OF READINGS ABOVE % WERE

RANGE OF OPACITY READINGS MINIMUM MAXIMUM

OBSERVER'S NAME (PRINT) BRIAN MARIATT

OBSERVER'S SIGNATURE [signature] **DATE** 5/13/93

ORGANIZATION RAPCA

CERTIFIED BY ETA **DATE** 3/93

VERIFIED BY **DATE**

COMMENTS
DIFFICULT TO READ DUE TO CONDENSING STEAM PLUME

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE **DATE**

Visible Emission Observation Form

SOURCE NAME: VALLEY ASPHALT PLANT #7

ADDRESS: 6900 [illegible] RD.

CITY: DAYTON | **STATE:** OH | **ZIP:**

PHONE: | **SOURCE ID NUMBER:** P001

PROCESS EQUIPMENT: ASPHALT PLANT | **OPERATING MODE:** ON

CONTROL EQUIPMENT: BAGHOUSE | **OPERATING MODE:** ON

DESCRIBE EMISSION POINT
START SQUARE METAL STACK STOP ✓

HEIGHT ABOVE GROUND LEVEL START ~50ft STOP ✓ | **HEIGHT RELATIVE TO OBSERVER** START ~50ft STOP ✓

DISTANCE FROM OBSERVER START ~100ft STOP ✓ | **DIRECTION FROM OBSERVER** START W/NW STOP ✓

DESCRIBE EMISSIONS
START STEAM PLUME W/LIGHT BROWN HAZE STOP ✓

EMISSION COLOR START BROWN STOP ✓ | **PLUME TYPE:** CONTINUOUS ☒ FUGITIVE ☐ INTERMITTENT ☐

WATER DROPLETS PRESENT: NO ☐ YES ☒ | **IF WATER DROPLET PLUME:** ATTACHED ☐ DETACHED ☒

POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED
START ABOVE STACK ~6" STOP ✓

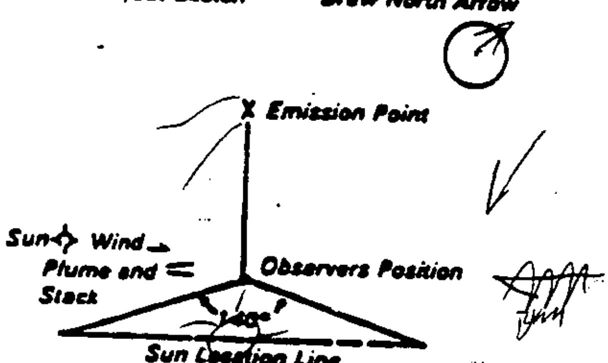
DESCRIBE BACKGROUND
START BLUE SKY STOP ✓

BACKGROUND COLOR START BLUE STOP ✓ | **SKY CONDITIONS** START CLEAR STOP ✓

WIND SPEED START 20-25MPH STOP ✓ | **WIND DIRECTION** START [illegible] STOP ✓

AMBIENT TEMP. START ~65°F STOP ✓ | **WET BULB TEMP.** — | **RH, percent** —

Source Layout Sketch **Draw North Arrow**



OBSERVATION DATE: 5/13 | **START TIME:** 13:16 | **STOP TIME:** 13:34

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	10	5	5	10	31				
2	5	5	5	5	32				
3	5	10	15	10	33				
4	10	5	5	15	34				
5	5	0	5	0	35				
6	0	0	5	5	36				
7	5	5	10	5	37				
8	0	5	5	5	38				
9	0	5	10	10	39				
10	5	5	5	10	40				
11	15	10	5	0	41				
12	5	10	5	5	42				
13	5	5	10	5	43				
14	5	20	5	5	44				
15	0	5	5	5	45				
16	0	5	5	5	46				
17	5	5	10	5	47				
18	0	5	5	10	48				
19					49				
20					50				
21					51				
22					52				
23					53				
24					54				
25					55				
26					56				
27					57				
28					58				
29					59				
30					60				

AVERAGE OPACITY FOR HIGHEST PERIOD | **NUMBER OF READINGS ABOVE % WERE**

RANGE OF OPACITY READINGS MINIMUM MAXIMUM

OBSERVER'S NAME (PRINT): BRIAN MARLATT

OBSERVER'S SIGNATURE: Brian Marlatt | **DATE:** 5/13/93

ORGANIZATION: RAPCA

CERTIFIED BY: ETA | **DATE:** 3/93

VERIFIED BY: | **DATE:**

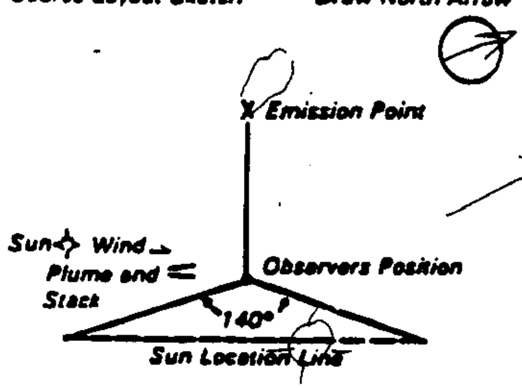
COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE | **DATE**

Visible Emission Observation Form

SOURCE NAME: VALLEY ASPHALT PLANT 7
ADDRESS: 6900 RIP RAP RD.
CITY: DAYTON **STATE:** OH **ZIP:**
PHONE: **SOURCE ID NUMBER:**
PROCESS EQUIPMENT: ASPHALT PLANT **OPERATING MODE:** ON
CONTROL EQUIPMENT: BAGHOUSE **OPERATING MODE:** ON
DESCRIBE EMISSION POINT START SQUARE METAL STACK STOP ✓
HEIGHT ABOVE GROUND LEVEL START ~50FT STOP ✓
HEIGHT RELATIVE TO OBSERVER START ~50FT STOP ✓
DISTANCE FROM OBSERVER START ~100FT STOP ✓
DIRECTION FROM OBSERVER START NW STOP ✓
DESCRIBE EMISSIONS START CONDENSING STEAM PLUME W/LIGHT BROWN HAZE STOP
EMISSION COLOR START BROWN STOP ✓
PLUME TYPE: CONTINUOUS ☒ FUGITIVE ☐ INTERMITTENT ☐
WATER DROPLETS PRESENT: NO ☐ YES ☒
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☒
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START ~6" ABOVE STACK STOP ✓
DESCRIBE BACKGROUND START BLUE SKY/LIGHT CLOUDS STOP ✓
BACKGROUND COLOR START BLUE/WHITE STOP ✓
SKY CONDITIONS START PARTLY CLOUDY STOP ✓
WIND SPEED START 0-10MPH STOP ✓
WIND DIRECTION START S STOP ✓
AMBIENT TEMP. START ~60°F STOP ✓
WET BULB TEMP. —
RH.percent —

Source Layout Sketch — Draw North Arrow



COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE **DATE**

OBSERVATION DATE: 5/14/93 **START TIME:** 0840 **STOP TIME:** 08:58

MIN \ SEC	0	15	30	45	MIN \ SEC	0	15	30	45
1	5	10	10	5	31				
2	10	5	10	10	32				
3	5	15	5	5	33				
4	5	5	10	5	34				
5	10	10	5	5	35				
6	5	5	5	5	36				
7	5	5	5	5	37				
8	5	5	10	5	38				
9	10	5	5	10	39				
10	5	5	5	5	40				
11	5	5	5	10	41				
12	15	10	5	5	42				
13	5	10	5	10	43				
14	5	5	5	5	44				
15	10	5	5	5	45				
16	5	5	10	5	46				
17	5	5	15	10	47				
18	5	5	5	5	48				
19					49				
20					50				
21					51				
22					52				
23					53				
24					54				
25					55				
26					56				
27					57				
28					58				
29					59				
30					60				

AVERAGE OPACITY FOR HIGHEST PERIOD
NUMBER OF READINGS ABOVE % WERE
RANGE OF OPACITY READINGS MINIMUM MAXIMUM
OBSERVER'S NAME (PRINT): BRIAN MARLATT
OBSERVER'S SIGNATURE: Brian Marlatt **DATE:** 5/14/93
ORGANIZATION: RAPCA
CERTIFIED BY: ETA **DATE:** 3/93
VERIFIED BY **DATE**

==

PARTICULATE EMISSION TEST DATA

FACILITY :VALLEY ASPHALT PLANT #7
PROCESS/RUN NUMBER :
SOURCE/RUN :1
TEST DATE :5/14/93

✓ JWA

****

VOLUME METERED AT STD. CONDITIONS	= 46.67209688316036 DSCF
VOLUME WATER COLLECTED AT STP.	= 14.704668 SCF
PERCENT MOISTURE BY VOLUME	= 23.95803693464862 %
MOLECULAR WEIGHT OF STACK GAS	= 26.51669986331936 LB/LB-MOL
PERCENT EXCESS AIR	= 183.0543933054393 %
AVERAGE STACK GAS VELOCITY	= 58.20089579797589 FT/SEC
ABSOLUTE STACK PRESSURE	= 30.03073529411765 IN. HG
STACK FLOW RATE AT ACTUAL COND.	= 39215.99057216977 ACFM
STACK FLOW RATE AT STD. COND.	= 23815.04556586379 DSCFM
STACK EMISSIONS	= 1.210959090642275E-002 GR/DSCF .0120
	= 1.73046054052781E-006 LB/DSCF
STACK EMISSION RATE	= 2.472659797355945 LB/HR 2.44
ISOKINETIC VARIATION	= 107.610474117841 % 108.6

****

TIME OF TEST	= 60 MIN
VOLUME METERED	= 45.083 CU.FT
DRY GAS METER CALB. FACT.	= 1.006
TEST BAR. PRESSURE	= 30.03 IN HG
AVERAGE DELTA H	= 1.505
AVG. METER TEMP.	= 56.66 DEG. F
VOL. H2O (IMPINGERS)	= 305 ML
WEIGHT GAIN OF SILICA GEL	= 7.4 GM
%CO2	= 4 %
%CO	= 0 %
%O2	= 14 %
%N2	= 82 %
STATIC P OF STACK	= 1E-002 IN. H2O
STACK TEMP.	= 203.33 DEG. F
PITOT COEFFICIENT	= .84
AVG. ROOT DELTA P	= .888
STACK DIAMETER	= 0 IN.
MASS PARTICULATE	= 36.7 MG
NOZZLE DIAMETER	= .25 IN

****

==

PARTICULATE EMISSION TEST DATA

FACILITY :VALLEY ASPHALT PLANT #7
PROCESS/RUN NUMBER :
SOURCE/RUN :2
TEST DATE :5/14/93

****

VOLUME METERED AT STD. CONDITIONS	= 42.44354391068813 DSCF
VOLUME WATER COLLECTED AT STP.	= 15.806106 SCF
PERCENT MOISTURE BY VOLUME	= 27.13510900792515 %
MOLECULAR WEIGHT OF STACK GAS	= 26.19001374750922 LB/LB-MOL
PERCENT EXCESS AIR	= 234.9624060150376 %
AVERAGE STACK GAS VELOCITY	= 57.49059769757095 FT/SEC
ABSOLUTE STACK PRESSURE	= 30.03073529411765 IN. HG
STACK FLOW RATE AT ACTUAL COND.	= 38737.38894195433 ACFM
STACK FLOW RATE AT STD. COND.	= 22204.45399160573 DSCFM
STACK EMISSIONS	= 1.389657756291815E-002 GR/DSCF .0138
	= 1.985820933741004E-006 LB/DSCF
STACK EMISSION RATE	= 2.645644173529178 LB/HR 2.62
ISOKINETIC VARIATION	= 104.9599125658265 % 105.4

****

TIME OF TEST	= 60 MIN
VOLUME METERED	= 41.39 CU.FT
DRY GAS METER CALB. FACT.	= 1.006
TEST BAR. PRESSURE	= 30.03 IN HG
AVERAGE DELTA H	= 1.242
AVG. METER TEMP.	= 61.26 DEG. F
VOL. H2O (IMPINGERS)	= 330 ML
WEIGHT GAIN OF SILICA GEL	= 5.8 GM
%CO2	= 4 %
%CO	= 0 %
%O2	= 15 %
%N2	= 81 %
STATIC P OF STACK	= 1E-002 IN. H2O
STACK TEMP.	= 213.4 DEG. F
PITOT COEFFICIENT	= .84
AVG. ROOT DELTA P	= .8652
STACK DIAMETER	= 0 IN.
MASS PARTICULATE	= 38.3 MG
NOZZLE DIAMETER	= .25 IN

****

==

PARTICULATE EMISSION TEST DATA

✓ JwA

FACILITY :VALLEY ASPHALT PLANT #7
PROCESS/RUN NUMBER :
SOURCE/RUN :3
TEST DATE :5/14/93

****

VOLUME METERED AT STD. CONDITIONS	= 40.35373097794199 DSCF
VOLUME WATER COLLECTED AT STP.	= 14.539923 SCF
PERCENT MOISTURE BY VOLUME	= 26.48743879546186 %
MOLECULAR WEIGHT OF STACK GAS	= 26.23340685490827 LB/LB-MOL
PERCENT EXCESS AIR	= 183.0543933054393 %
AVERAGE STACK GAS VELOCITY	= 56.71940706787861 FT/SEC
ABSOLUTE STACK PRESSURE	= 30.01073529411765 IN. HG
STACK FLOW RATE AT ACTUAL COND.	= 38217.75768802418 ACFM
STACK FLOW RATE AT STD. COND.	= 21679.03140801839 DSCFM
STACK EMISSIONS	= 1.995899711083111E-002 GR/DSCF .0198
	= 2.852140687137765E-006 LB/DSCF
STACK EMISSION RATE	= 3.709898852192806 LB/HR 3.67
ISOKINETIC VARIATION	= 102.2103963778132 % 103%

****

TIME OF TEST	= 60 MIN
VOLUME METERED	= 39.772 CU.FT
DRY GAS METER CALB. FACT.	= 1.006
TEST BAR. PRESSURE	= 30.01 IN HG
AVERAGE DELTA H	= 1.159
AVG. METER TEMP.	= 66.366 DEG. F
VOL. H2O (IMPINGERS)	= 302 ML
WEIGHT GAIN OF SILICA GEL	= 6.9 GM
%CO2	= 4 %
%CO	= 0 %
%O2	= 14 %
%N2	= 82 %
STATIC P OF STACK	= 1E-002 IN. H2O
STACK TEMP.	= 226.06 DEG. F
PITOT COEFFICIENT	= .84
AVG. ROOT DELTA P	= .8461
STACK DIAMETER	= 0 IN.
MASS PARTICULATE	= 52.3 MG
NOZZLE DIAMETER	= .25 IN

****

PARTICULATE EMISSION TEST REVIEW SHEET

1. Facility Name: [illegible]
2. Run Number: 1 2 3
3. Test Date: 5/14/93
4. Time of Test: 60 min (min)
5. Volume Metered: 45.022, 41.21 37.776 (ft^3)
6. Dry Gas Meter Calb. Factor: [illegible]
7. Test Barometric Pressure: 30.03, 30.03, 30.03 (in. Hg)
8. Avg. Delta H: 1.55, 1.242 1.151 (in. H_2O)
9. Avg. Meter Temp: 56.66, 61.26 60.30 (Deg. F)
10. Volume H_2O (Impingers): 305 330 302 (ML)
11. Weight Gain of Silica Gel: 14 8 61 (GM)
12. % CO_2: 4 4 4
13. % CO: 0 0 0
14. % O_2: 14 [illegible] [illegible]
15. % N_2: 82 82 82
16. Static Pressure of Stack: +.01, +.01, +.01 (in. H_2O)
17. Stack Temp: 232.3, 213.4, 226.0 (Deg. F)
18. Pitot Coefficient: .84
19. Avg. Root Delta P: .882, .7652, .8461
20. Stack Diameter: 33 (in.)
21. Mass Particulate: .0036, .07383, .00533 (mg)
22. Nozzle Diameter: .25 (in.)

Coal Data

1. % Hydrogen:
2. % Carbon:
3. % Sulfur
4. % Nitrogen:
5. % Oxygen:
6. F Factor:
7. Gross Calorific Value:

RAMCON
ENVIRONMENTAL CORPORATION

RECEIVED
JUN 24 1993
REGIONAL AIR POLLUTION CONTROL AGENCY

SOURCE SAMPLING FOR PARTICULATE AND LEAD EMISSIONS

VALLEY ASPHALT CORPORATION
PLANT NO. 7
DAYTON, OHIO
May 13-14, 1993

Fred Bremmer
Valley Asphalt Corporation

William Joseph Sewell, II
Vice President
RAMCON Environmental Corporation

RAMCON BUILDING, 6707 FLETCHER CREEK COVE, MEMPHIS, TENNESSEE 38133
TELEPHONE 800/458-4567 IN TENNESSEE 901/387-0500 FAX 901/387-0400

RAMCON

ENVIRONMENTAL CORPORATION

June 14, 1993

Mr. Fred Bremmer
Valley Asphalt Corporation
11641 Mosteller Road
Cincinnati, Ohio 45421

RE: Particulate Emissions Test — Plant No. 7: May 13-14, 1993

Dear Mr. Bremmer:

Enclosed you will find four copies (4) copies of our report on the particulate and lead emissions test we conducted at your asphalt plant located near Dayton, Ohio. Based on our test results, the average grain loading of the three test runs do pass the standards set both EPA New Source Performance Standards and those set by the State of Ohio for particulate matter. Therefore, the plant is operating in compliance with State standards.

You will want to sign the report covers and send two copies to:

Mr. Wayne B. Kenfield
Regional Air Pollution
Control Agency — Ohio
P. O. Box 972
Dayton, Ohio 45422

You will need to keep one copy of the report at the plant.

We certainly have enjoyed working with you. Please let us know if we can be of further assistance.

Sincerely,

William Joseph Sewell, II
Vice President

WJSii:wpc
Enclosures

RAMCON BUILDING, 6707 FLETCHER CREEK COVE, MEMPHIS, TENNESSEE 38133
TELEPHONE 800/458-4567 IN TENNESSEE 901/387-0500 FAX 901/387-0400

TABLE OF CONTENTS

SECTION A.

1. INTRODUCTION

On May 13-14, 1993 personnel from RAMCON Environmental Corporation conducted a source emissions test for particulate and lead emissions compliance at Valley Asphalt Corporation's Barber-Greene batch-mix asphalt plant (Plant No. 7) located in , Ohio. RAMCON personnel conducting the test were Chuck Hughes, Team Leader, and Bobby Coleman. Tommy South was responsible for the laboratory analysis including taring the beakers and filters and recording final data in the laboratory record books. Custody of the samples was limited to Mr. Hughes and Mr. South.

The purpose of the test was to determine if the rate of particulate and lead emissions from this plant's baghouse is below or equal to the allowable emissions limit set by US EPA and the State of Ohio.

2. TEST RESULTS

Table I summarizes the test results. The particulate grain loading limitation for EPA is .04 gr/dscf as specified in 39 FR 9314, March 8, 1974, 60.92 Standards for Particulate Matter (1), as amended. The allowable emissions for the State of Ohio are the same as those set by EPA.

The lead analysis results yielded values below the detection limit of the analysis procedure. The calculations are based on the detection limit and therefore represent the worst case scenario.

Mr. Jeff Adams of Ohio's Regional Air Pollution Control Agency observed the testing conducted by RAMCON Environmental.

SUMMARY OF TEST RESULTS

TABLE I

May 13-14, 1993

Test Run	Time	Conc. Emissions gr/dscf	Lead Conc., gr/dscf	Isokinetic Variation	Particulate Emissions lbs/hr	Lead Emissions lb/hr
1	09:15 - 10:53	0.0120	<0.000007	108.6%	2.44	<0.0014
2	12:59 - 14:15	0.0138	<0.000007	105.4%	2.62	<0.0013
3	08:05 - 09:15	0.0198	<0.000008	103.0%	3.67	<0.0015
	Average:	0.0152	<0.000007		2.91	<0.0014

On the basis of these test results, the average grain loading of the three test runs is below the .04 gr/DSCF allowable emissions limitation set by EPA and the State of Ohio. Therefore, the plant is operating in compliance with State and Federal standards.

3. TEST PROCEDURES

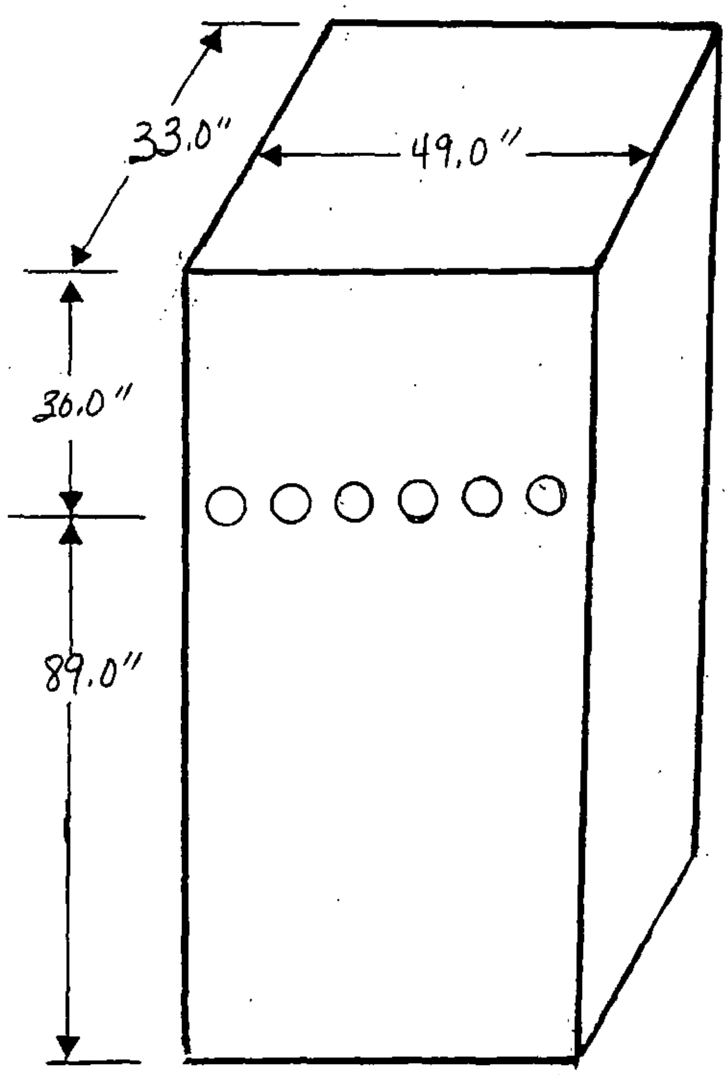
(a) Method Used: Method 5/12 source sampling was conducted in accordance with requirements of the U.S. Environmental Protection Agency as set forth in 39 FR 9314, March 8, 1974, 60.93, as amended.

(b) Problems Encountered: No problems were encountered that affected testing.

(c) Sampling Site: The emissions test was conducted after a baghouse on a rectangular stack measuring 33" x 49" with an equivalent diameter of 39.4". Six (6) sampling ports were placed 30" down (.76 diameters upstream) from the top of the stack and 89" up (2.26 diameters downstream) from the last flow disturbance. The ports were evenly spaced on 8.2" centers. The two outside ports are 4.1" from the side walls of the stack. Thirty (30) points were sampled, five (5) through each port for two (2) minutes each for a total testing time of sixty (60) minutes.

Points on a Diameter	Probe Mark*
1	11.4"
2	18.0"
3	24.8"
4	31.4"
5	38.1"

*Measurements include an 8" standoff.



THE SOURCE

Valley Asphalt Corporation employs a Barber-Greene batch mix asphalt plant which is used to manufacture hot mix asphalt for road pavement. The process consists of blending prescribed portions of cold feed materials (sand, gravel, screenings, chips, etc.) uniformly and adding sufficient hot asphalt oil to bind the mixture together. After the hot asphalt mix is manufactured at the plant, it is transported to the location where it is to be applied. The hot asphalt mix is spread evenly over the surface with a paver then compacted with a heavy roller to produce the final product.

The following is a general description of the plant's manufacturing process: The cold feed materials (aggregate) are dumped into separate bins which in turn feed a common continuous conveyor. The aggregate is dispensed from the bins in accordance with the desired formulation onto the cold feed system conveyor, to an inclined weigh conveyor, then to a rotating drum for continuous mixing and drying at approximately 300°F. When recycled asphalt mix is used, it is added directly into the pugmill. The dried aggregate is pulled by a bucket elevator to the top of a gradation control unit which separates and stores the aggregate by size. The required amount of each aggregate is dispensed into a weigh-hopper and from there into a pugmill where the hot liquid asphalt pavement is mixed thoroughly with the aggregate. The hot asphalt mix is then discharged from the storage silo through a slide gate into waiting dump trucks which transports the material to a final destination for spreading. The rated capacity of the plant will vary with each aggregate mix and moisture content with a 5% surface moisture removal.

The mixer uses a burner fired with No. 4 fuel oil to heat air to dry the aggregate. The air is drawn into the system via an exhaust fan. After passing through the gas burner, the air passes through a baghouse. The baghouse is manufactured by Barber-Greene. The exhaust gas is drawn through the baghouse and discharged to the atmosphere through the stack. The design pressure drop across the tube sheet is 2 - 6 inches of water. The particulate matter, which is removed by the baghouse, is reinjected into the pugmill.

Form ?C#?? Pla - ?

5-13-93

DATA ON FACILITY BEING STACK TESTED

236-3310

COMPANY NAME Valley Asphalt COMPANY REP. Ken Eakins PHONE (513) [redacted]
LOCATION OF FACILITY Rip Rap Rd Dayton ORIGINAL START-UP DATE ______ DESIGNED CAPACITY ______
OEM ______ MODEL NO. ______ TYPE ______ AC TYPE ______

1	2	3	4	5		6	7	8	9		10	11	12
Time (24 HR)	Fuel Use			Production Rate					__Venturi Scrubber __Baghouse		Ambient Temp.	Relative Humidity	
NOTE: check small box in column when moisture sample is taken	4 #Fuel Oil __ Nat. Gas __ Propane __ Coal __ #4 __ other	Burner Setting	Blower Pressure	__Mix __Aggregate TPH	__RAP TPH	Asphalt Cement %	Mix Temp. °F	Exhaust Gas Temp. °F	Pressure Drop in w.g.	Water Pressure psi	°F	%	Exhaust Damper Position
9:00	#4	4%		172		5.6	300	230	1½%				100
9:45	#4	4.5%		174		5.6	300	235	1½%				100
10:00	#4	4.'		168		5.6	310	220	1½				100
10:15	4.	3.5		176		5.6	305	230	1½%				100
10:30	4	4.0		175		5.6	300	230	1½%				100
10:45	4	4.0		178		5.6	308	235	1½%				100
1:55	4	4.0		170		5.6	320	205	1½%				100
2:10	4	3.5		168		5.6	320	220	1.0%				100
2:25	4	3.75		172		5.6	295	230	1.5				100
2:40	4	4.0		178		5.6	310	235	1.5				100
2:55	4	3.75		172		5.6	315	245	1.25				100

rm : #0 P...N1 #7

DATA ON FACILITY BEING STACK TESTED

TODAY'S DATE: 5-14-93

COMPANY NAME VALLEY ASPHALT COMPANY REP. KEN EAKINS PHONE (513) 236-3310
LOCATION OF FACILITY RIP RAP RD DAYTON ORIGINAL START-UP DATE ______ DESIGNED CAPACITY ______
OEM ______ MODEL NO. ______ TYPE ______ AC TYPE ______

1 Time (24 HR) NOTE: check small box in column when moisture sample is taken	2 Fuel Use (#Fuel Oil, Nat. Gas, Propane, Coal, other)	3 Burner Setting	4 Blower Pressure	5 Production Rate: Mix / Aggregate TPH	5 Production Rate: RAP TPH	6 Asphalt Cement %	7 Mix Temp. °F	8 Exhaust Gas Temp. °F	9 Venturi Scrubber / Baghouse: Pressure Drop in w.g.	9 Venturi Scrubber / Baghouse: Water Pressure psi	10 Ambient Temp. °F	11 Relative Humidity %	12 Exhaust Damper Position
8:05	#4	3		168		5.6	300	250	1 1/2				100
8:20	#4	3		170		5.6	300	250	1 1/2				100
8:35	#4	3		168		5.6	300	250	1.6				100
8:50	#4	5		176		5.6	300	250	2.0				100
9:05	#4	3		175		5.6	300	250	2.2				100
9:20	#4	3		176		5.6	300	250	2.5				100

1. Aggregate bins: Virgin aggregate is fed individually into bins by type. It is metered onto a conveyor belt running under the bins to a shaker screen. The proportion to each aggregate type is determined by the job mix formula and pre-set to be metered out to meet these specifications.

2. Preliminary oversize screen: The aggregate is fed through a shaker screen where oversize rocks and foreign material is screened out of the mix.

3. Weigh conveyor belt: The aggregate is conveyed to the rotary drum dryer on a conveyor belt which weighs the material. The production rate is determined by this weight reading.

4. Rotary drum/dryer mixer: The aggregate is fed into the rotary drum dryer where it is tumbled by flighting into a veil in front of a flame which drives off the moisture. Further mixing is also accomplished in an outer shell of this drum. Hot liquid asphalt is injected in the outer shell of the drum where it is mixed with the aggregate.

5. Burner: The fuel fired burner is used to provide the flame which drys the aggregate.

6. Knock off baffling: A baffling plate is inserted in the "dirty" side plenum as a knock out for heavy particles in the air stream. These particles fall to the bottom of the baghouse.

7. Baghouse: The hot gases are pulled through the bags into the clean air plenum. The solid particulate matter is trapped on the dust coat buildup on the bags. A bag cleaning cycle consisting of jet burst of air from the inside (or clean air side) of the bags sends a large bubble of air down the inside of the bags shaking loose buildup on the bag surface. This particulate matter is collected at the bottom of the baghouse and reinjected into the drum mixer where it is used as part of the finished product.

8. Liquid asphalt storage: The liquid asphalt is stored in this heated tank until it is needed in the mixer. The amount of asphalt content and its temperature are pre-set for each different type job.

9. Conveyor to surge/storage bin: The finished product of aggregate mixed with liquid asphalt is conveyed to a surge bin.

10. Surge/Storage bin: The asphaltic cement is dumped into this surge bin and metered out to dump trucks which pull underneath a slide gate at the bottom of the bin.

11. Control/operators house: The entire plant operation is controlled from this operator's house.

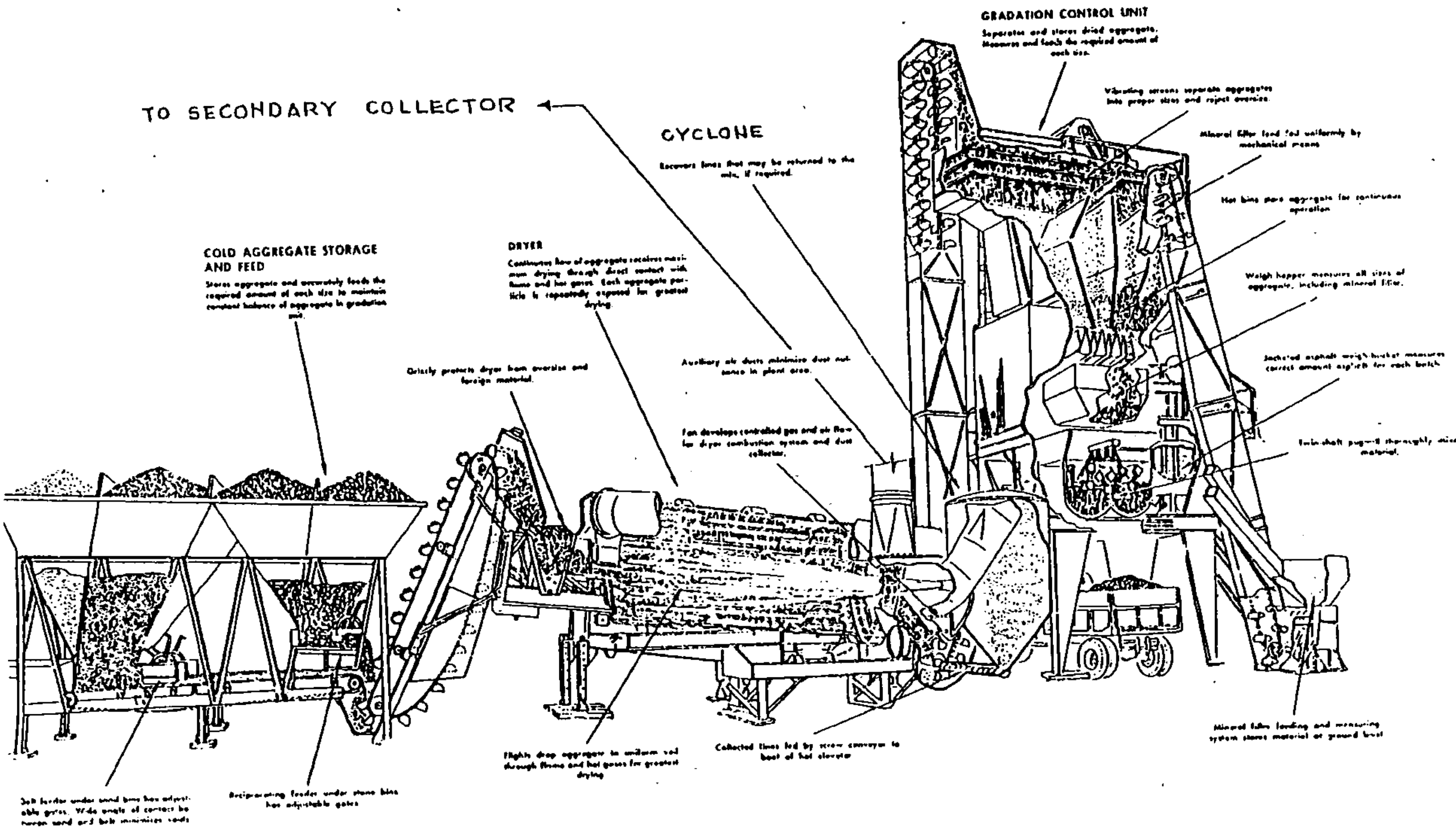
12. Truck loading scale: As the trucks receive the asphalt from the storage/surge bin, they are weighed on the lading scale which tells the plant operator the amount of asphalt that is being trucked on each individual load.

13. Fuel storage.

14. Stack

Figure 4-1

ASPHALT BATCH MIX PLANT - AN EXPLODED VIEW



Source: Asphalt Plant Manual, The Asphalt Institute, 1967

EQUIPMENT USED

Equipment used to conduct the particulate emissions test was:

A. A Lear Siegler PM-100 stack sampler with appropriate auxiliary equipment and glassware (with train set up according to the schematic on the next page).

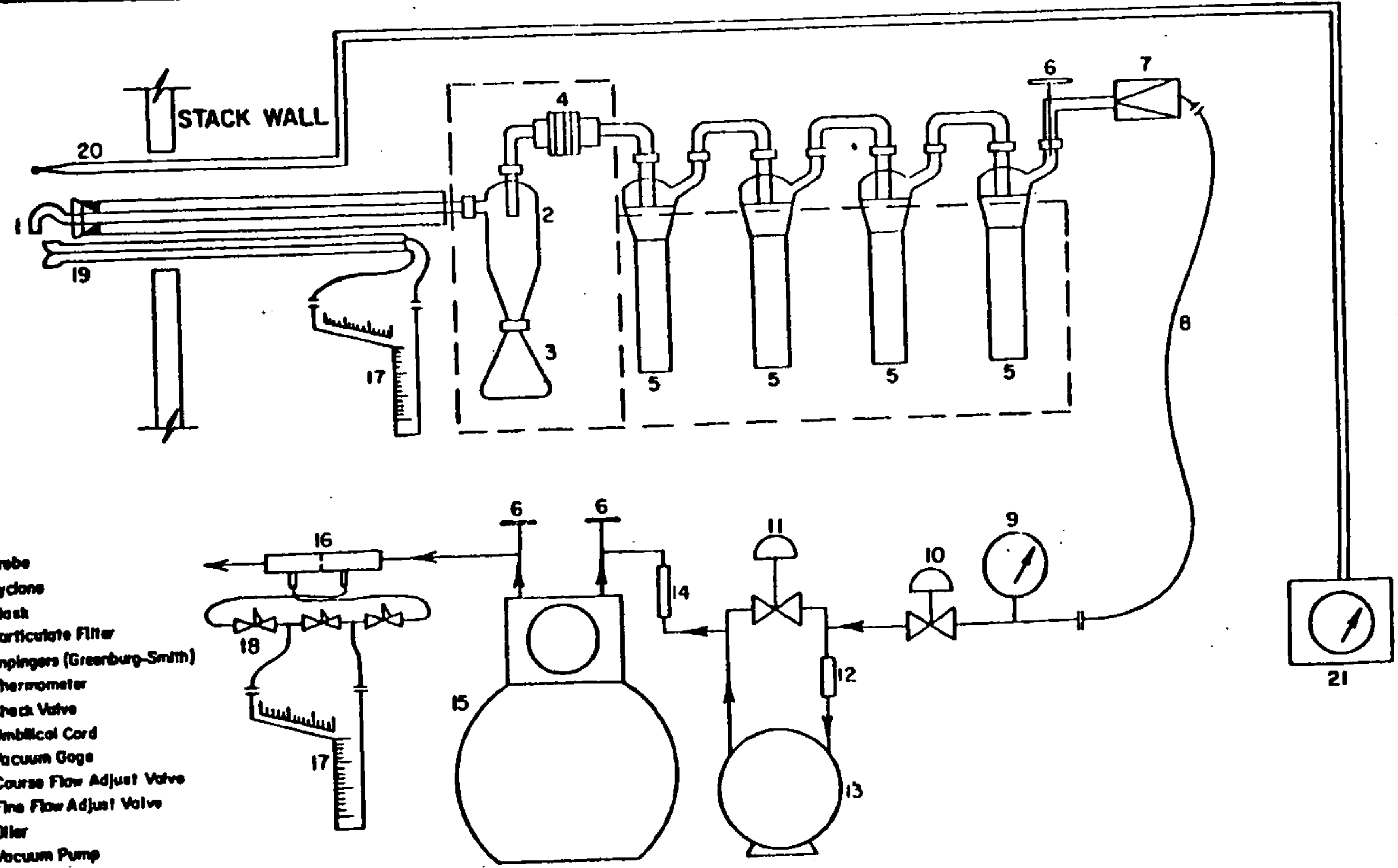
B. An Airguide Instruments Model 211-B (uncorrected) aneroid barometer for checking the barometric pressure.

C. Weston dial thermometers to check meter temperatures or an Analogic Model 2572 Digital Thermocouple to check stack temperatures.

D. A Hays 621 Analyzer to measure the oxygen, carbon dioxide and carbon monoxide content of the stack gases or, for non-combustion sources, a Bacharach Instrument Company Fyrite for gas analysis.

E. Schleicher and Schuell Type 1-HV filters with a porosity of .03 microns.

F. Reagent- or ACS-grade acetone with a residue of ≤ .001.



1) Probe
2) Cyclone
3) Flask
4) Particulate Filter
5) Impingers (Greenburg-Smith)
6) Thermometer
7) Check Valve
8) Umbilical Cord
9) Vacuum Gage
10) Course Flow Adjust Valve
11) Fine Flow Adjust Valve
12) Oiler
13) Vacuum Pump
14) Filter
15) Dry Gas Meter
16) Orifice Tube
17) Incline Manometer
18) Solenoid Valves
19) Pitot
20) Thermocouple
21) Pyrometer

SAMPLING TRAIN
USED FOR ISOKINETIC SAMPLING

LABORATORY PROCEDURES FOR PARTICULATE SAMPLING

I. Field Preparation

A. FILTERS: Fiberglass 4" sampling filters are prepared as follows:

Filters are removed from their box and numbered on the back side with a felt pen. The numbering system is continuous from job to job. The filters are placed in a desiccator to dry for at least 24 hours. Clean plastic petri dishes, also numbered, top and bottom, are placed in the desiccator with the filters. After desiccation, the filters are removed, one at a time, and weighed on the Sartorius analytical balance then placed in the correspondingly numbered petri dish. Weights are then recorded in the lab record books. Three filters are used for each complete particulate source emissions test and there should be several extra filters included as spares.

B. SILICA GEL: Silica Gel used for the test is prepared as follows:

Approximately 200 g of silica gel is placed in a wide mouth "Mason" type jar and dried in an oven at 175°C for two hours. The open jars are removed and placed in a desiccator until cool for two hours and then tightly sealed. The jars are then numbered and weighed on the triple beam balance to the closest tenth of a gram. This weight is recorded for each sealed jar. The number of silica gel jars used is the same as the number of filters. Silica gel should be indicating type, 6-16 mesh.

II. Post - Testing Lab Analysis

A. FILTERS: The filters are returned to the lab in their sealed petri dishes. In the lab, the dishes are opened and placed into a desiccator for at least 24 hours. Then the filters are weighed continuously every six hours until a constant weight is achieved. All data is recorded on the laboratory forms that will be bound in the test report.

B. SILICA GEL: The silica gel used in the stack test is returned to the appropriate mason jar and sealed for transport to the laboratory where it is reweighed to a constant weight on a triple beam balance to the nearest tenth of a gram.

C. PROBE RINSINGS: In all tests where a probe washout analysis is necessary, this is accomplished in accordance with procedures specified in "EPA Reference Method 5". These samples are returned to the lab in sealed mason jars for analysis. The front half of the filter holder is washed in accordance with the same procedures and included with the probe wash. Reagent or ACS grade acetone is used as the solvent. The backhalf of the filter holder is washed with deionized water into the impinger catch for appropriate analysis.

D. IMPINGER CATCH: In some testing cases, the liquid collected in the impingers must be analyzed for solid content. This involves a similar procedure to the probe wash solids determination, except that the liquid is deionized water.

E. ACETONE: A blank analysis of acetone is conducted from the one gallon glass container used in the field preparation. This acetone was used in the field for rinsing the probe, nozzle, and top half of the filter holder. A blank analysis is performed prior to testing on all new containers of acetone received from the manufacturer to insure that the quality of the acetone used will be exceed the .001% residual purity standard.

SPECIAL NOTE

When sampling sources high in moisture content, (such as asphalt plants) the filter paper sometimes sticks to the filter holder. When removing the filter, it may tear. In order to maintain control of any small pieces of filter paper which may be easily lost, they are washed with acetone into the probe washing. This makes the filter weight light (sometimes negative) and the probe wash correspondingly heavier. this laboratory procedure is taught by EPA in the "Quality Assurance for Source Emissions Workshop" at Research Triangle Park and is approved by EPA.

WEIGHING PROCEDURE - SARTORIUS ANALYTICAL BALANCE

The Sartorius balance is accurate to 0.1 mg and has a maximum capacity of 200 grams. The balance precision (standard deviation) is 0.05 mg. Before weighing an item, the balance should first be zeroed. This step should be taken before every series of weighings. To do this, the balance should have all weight adjustments at the "zero" position. The beam arrest lever (on the lower left hand side toward the rear of the balance) is then slowly pressed downward to the full release position. The lighted vernier scale on the front of the cabinet should align with the "zero" with the mark on the cabinet. If it is not so aligned, the adjustment knob on the right hand side (near the rear of the cabinet) should be turned carefully until the marks align. Now return the beam arrest to the horizontal arrest position. The balance is now "zeroed".

To weigh an item, it is first placed on the pan. And the sliding doors are closed to avoid air current disturbance. The weight adjustment knob on the right hand side must be at "zero". The beam arrest is then slowly turned upward. The lighted scale at the front of the cabinet will now indicate the weight of the item in grams. If the scale goes past the divided area, the item then exceeds 100 g weight (about 3 1/2 ounces) and it is necessary to arrest the balance (beam arrest lever) and move the lever for 100 g weight away from you. It is located on the left hand side of the cabinet near the front, and is the knob closest to the side of the cabinet. The balance will not weigh items greater than 200 grams in mass, and trying to do this might harm the balance. Remember, this is a delicate precision instrument.

After the beam is arrested in either weight range, the procedure is the same. When the weight of the item in grams is found, "dial in" that amount with the two knobs on the left hand side (near the 100 g lever) color coded yellow and green. As you dial the weight, the digits will appear on the front of the cabinet. When the proper amount is dialed, carefully move the arrest lever down with a slow, steady turn of the wrist. The lighted dial will appear, and the right hand side knob (front of cabinet) is turned to align the mark with the lower of the two lighted scale divisions which the mark appears between. when these marks are aligned, the two lighted digits along with the two indicated on the right hand window on the cabinet front are fractional weight in grams (the decimal would appear before the lighted digits) and the whole number of grams weight is the amount "dialed in" on the left.

In general, be sure that the beam is in "arrest" position before placing weight on or taking weight off of the pan. Don't "dial in" weight unless the beam is arrested. The balance is sensitive to even a hand on the table near the balance, so be careful and painstaking in every movement while weighing.

Form REC#8

SAMPLE ANALYTICAL DATA FORM

Company Name Valley asphalt #7

Sample Location ______

Blank Volume (V_a) 100 ml

Date/Time wt. blank 5/17 2:00p

Date/Time wt. blank 5/18 8:30A

Relative Humidity in Lab 48 %

Density of Acetone (ρ_a) .7857 mg/ml

Gross wt. 102.6924 g

Gross wt. 102.6922 g

Ave. Gross wt. 102.6923 g

Tare wt. 102.6922 g

Weight of blank (m_{ab}) .0001 g

Acetone blank residue concentration (C_a) : $(C_a) = (m_{ab}) / (V_a) (\rho_a)$ = (.000001 mg/g)

Acetone Blank Wt. : $W_a = C_a V_{aw} \rho_a$ = (.000001)(350)(.7857) = (.0003 g)

		Run # 1	Run # 2	Run # 3
Acetone rinse volume (V_{aw})	ml	350	350	350
Date/Time of wt. 5/17 2:00p Gross wt.	g	154.4990	157.2101	164.5320
Date/Time of wt. 5/18 830A Gross wt.	g	154.4992	157.2100	164.5317
Average Gross wt.	g	154.4991	157.2101	164.5319
Tare wt.	g	154.4784	157.1883	164.5018
Less Acetone blank wt. (W_a)	g	.0003	.0003	.0003
Weight of particulate in acetone rinse (m_a)	g	0.0204	0.0215	0.0298

Filter Numbers	#	TS00264	TS00266	TS00265
Date/Time of wt. 5/17 2:00p Gross wt.	g	01.6925	01.6743	01.6840
Date/Time of wt. 5/18 8:30A Gross wt.	g	01.6927	01.6743	01.6838
Average Gross wt.	g	01.6926	01.6743	01.6839
Tare wt.	g	01.6763	01.6575	01.6614

Weight of particulate on filter (m_f)	g	0.0163	0.0168	0.0225
Weight of particulate in acetone rinse (m_a)	g	0.0204	0.0215	0.0298
Total weight of particulate (m_n)	g	0.0367	0.0383	0.0523

NOTE: In no case should a blank residue greater than 0.01 mg/g (or 0.001% of the blank weight) be subtracted from the sample weight.

Remarks: ______

Signature of Analyst Thomas South   Signature of Reviewer ______

D:\DONNA\FORMS\LAB\SAMPLE.TBL

AMERICAN INTERPLEX
CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, AR 72204-2322
(501) 224-5060

June 7, 1993

Ramcon Environmental Corporation (C-488)
6707 Fletcher Creek Cove
Memphis, TN 38134

Control No. 2280

ATTN: Mr. Sumner Buck

Sample Description: Six (6) filter, Six (6) impinger solution, and Six (6) fuel oil received on 5/21/93
Re: Valley Asphalt
P.O. No. 080340

Result:

	FUEL OIL	FILTERS/IMPINGER
Sample Identification	Lead, mg/kg	Lead, mg
Plant 6 Run 1	49	<0.02
Plant 6 Run 2	47	<0.02
Plant 6 Run 3	46	<0.02
Plant 7 Run 1	71	<0.02
Plant 7 Run 2	72	<0.02
Plant 7 Run 3	74	<0.02

Method: EPA 6010, 3040, Methodology for the determination of methods emissions in Exhaust hoses from stationary source comustion processes.

AMERICAN INTERPLEX CORPORATION

By Steven Lovell
Steven Lovell
Technical Director

SL/tm

☐ Chemistry — Materials Science — Environmental Analyses

Valley #7
Company Name

5-13/14-93
Date

REFERENCE METHOD 3: GAS ANALYSIS BY FYRITE

FUEL	F_o FACTORS
WOOD	1.0540
BARK	1.0830
ANTHRACITE	1.0699
BITUMINOUS	1.1398
LIGNITE	1.0761
OIL	1.3465
GAS	1.7489
PROPANE	1.5095
BUTANE	1.4791

$$O_2\% = 20.9 - [F_o \times CO_2\%]$$

RUN #1: ____ = 20.9 - [____ x ____]

RUN #2: ____ = 20.9 - [____ x ____]

RUN #3 ____ = 20.9 - [____ x ____]

RUN 1:	CO_{2X}	4	CO_{2X}	4	CO_{2X}	4	AVG.	4
	O_{2X}	14	O_{2X}	14	O_{2X}	14	AVG.	14
	N_{2X}		N_{2X}		N_{2X}		AVG.	
RUN 2:	CO_{2X}	5	CO_{2X}	4	CO_{2X}	4	AVG.	4
	O_{2X}	14	O_{2X}	15	O_{2X}	15	AVG.	15
	N_{2X}		N_{2X}		N_{2X}		AVG.	
RUN 3:	CO_{2X}	4	CO_{2X}	4	CO_{2X}	4	AVG.	4
	O_{2X}	14	O_{2X}	14	O_{2X}	14	AVG.	14
	N_{2X}		N_{2X}		N_{2X}		AVG.	

NAME: VALLEY ASPHALT #7
LOCATION: DAYTON, OHIO

DATE: May 13-14, 1993

SUMMARY OF TEST DATA

			05-13-93	05-13-93	05-14-93
			Run #1	Run #2	Run #3
		start	09:15	12:59	08:05
		finish	10:53	14:15	09:15
	SAMPLING TRAIN DATA				
1.	Sampling time, minutes	Θ	60	60	60
2.	Sampling nozzle diameter, inches	D_n	0.250	0.250	0.250
3.	Sampling nozzle cross-section area, ft^2	A_n	0.000341	0.000341	0.000341
4.	Isokinetic variation	I	108.6	105.4	103.0
5.	Sample gas volume — meter condition, cf	V_m	46.347	42.553	40.833
6.	Average meter temperature, °R	T_m	528	534	537
7.	Average orifice pressure drop, inches H_2O	dH	1.51	1.24	1.16
8.	Total particulate collected, mg.	M_n	36.70	38.30	52.30
	VELOCITY TRAVERSE DATA				
9.	Stack area, ft^2	A	11.23	11.23	11.23
10.	Absolute stack gas pressure, inches Hg.	P_s	30.03	30.03	30.01
11.	Barometric pressure, inches Hg.	P_{bar}	30.03	30.03	30.01
12.	Average absolute stack temperature, R°	T_s	663	673	686
13.	Average $\sqrt{}$vel. head, (C_p = .84)	$\sqrt{dP}$	0.88	0.86	0.84
14.	Average stack gas velocity, ft/second	V_s	57.65	57.12	56.29
	STACK MOISTURE CONTENT				
15.	Total water collected by train, ml	V_{lc}	312.40	335.80	308.90
16.	Moisture in stack gas, percent (%)	B_{ws}	23.84	27.06	26.31
	EMISSIONS DATA				
17.	Stack gas flow rate, dscf/hr	Q_{sd}	1,418,804.8	1,326,321.5	1,294,602.0
18.	Stack gas flow rate, cfm	acfm	38,845	38,487	37,928
19.	Particulate concentration, gr/dscf	C_s	0.0120	0.0138	0.0198
20.	Particulate concentration, lb/hr	E	2.44	2.62	3.67
	ORSAT DATA				
21.	Percent CO_2 by volume	CO_2	4.0	4.0	4.0
22.	Percent O_2 by volume	O_2	14.0	15.0	14.0
23.	Percent CO by volume	CO	0.0	0.0	0.0
24.	Percent N_2 by volume	N_2	82.0	81.0	82.0

Format: summryR3

NAME: VALLEY ASPHALT #7 **DATE:** May 13-14, 1993
LOCATION: DAYTON, OHIO **SOURCE:** BAGHOUSE

DRY GAS VOLUME

$$V_{m(std)} =$$

$$V_m \left[\frac{T_{(std)}}{T_m}\right] \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{P_{std}}\right] = 17.64 \frac{°R}{\epsilon.\ Hg} Y\, V_m \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right]$$

Where:

- $V_{m(std)}$ = Dry gas volume through meter at standard conditions, ft^3.
- V_m = Dry gas volume measured by meter, ft^3.
- P_{bar} = Barometric pressure at orifice meter, in. Hg.
- P_{std} = Standard absolute pressure, (29.92 in. Hg.).
- T_m = Absolute temperature at meter, °R.
- T_{std} = Standard absolute temperature, (528°R).
- ΔH = Avg. pressure drop across orifice meter, in. H_2O.
- Y = Dry gas meter calibration factor.
- 13.6 = Inches of water per Hg.

Run #1:

$$V_{m(std)} = (17.64)\ (1.006)\ (46.347) \left[\frac{(30.03) + \frac{1.51}{13.6}}{528}\right] = 46.951 \quad \text{dscf}$$

Run #2:

$$V_{m(std)} = (17.64)\ (1.006)\ (42.553) \left[\frac{(30.03) + \frac{1.24}{13.6}}{534}\right] = 42.595 \quad \text{dscf}$$

Run #3:

$$V_{m(std)} = (17.64)\ (1.006)\ (40.833) \left[\frac{(30.01) + \frac{1.16}{13.6}}{537}\right] = 40.610 \quad \text{dscf}$$

NAME: VALLEY ASPHALT #7
LOCATION: DAYTON, OHIO

DATE: May 13-14, 1993
SOURCE: BAGHOUSE

TOTAL CONTAMINANTS BY WEIGHT: GRAIN LOADING

Particulate Concentration: C_s' gr/dscf

$$C_s' - \left[0.0154 \frac{gr}{mg}\right] \left[\frac{M_n}{V_{m(std)}}\right]$$

Where:

C_s' - Concentration of particulate in stack gas, dry basis, corrected to standard conditions, gr/dscf.

M_n - Total amount of particulate collected, mg.

$V_{m(std)}$ - Dry gas volume through meter at standard conditions, cu. ft.

Run #1:

$$C_s' = \left[0.0154 \frac{gr}{mg}\right] \left[\frac{36.70}{46.951}\right] = 0.0120 \text{ gr/dscf}$$

Run #2:

$$C_s' = \left[0.0154 \frac{gr}{mg}\right] \left[\frac{38.30}{42.595}\right] = 0.0138 \text{ gr/dscf}$$

Run #3:

$$C_s' = \left[0.0154 \frac{gr}{mg}\right] \left[\frac{52.30}{40.610}\right] = 0.0198 \text{ gr/dscf}$$

NAME: VALLEY ASPHALT CORPORATION
LOCATION: DAYTON, OHIO

DATE: May 13, 1993
SOURCE: Plant No. 7 Baghouse

TOTAL CONTAMINANTS BY WEIGHT: GRAIN LOADING

Lead Concentration: $C_s^`$ gr/dscf

$$C_s^` = \left[0.0154 \frac{gr}{mg}\right] \left[\frac{M_n}{V_{m(std)}}\right]$$

Where:

$C_s^`$ = Concentration of lead in stack gas, dry basis, corrected to standard conditions, gr/dscf.

M_n = Total amount of lead matter collected, mg.

$V_{m(std)}$ = Dry gas volume through meter at standard conditions, cu. ft.

Run #1:

$$C_s^` = \left[0.0154 \frac{gr}{mg}\right] \left[\frac{<0.02}{46.951}\right] = <0.000007 \text{ gr/dscf}$$

#2: Run

$$C_s^` = \left[0.0154 \frac{gr}{mg}\right] \left[\frac{<0.02}{42.595}\right] = <0.000007 \text{ gr/dscf}$$

#3: Run

$$C_s^` = \left[0.0154 \frac{gr}{mg}\right] \left[\frac{<0.02}{40.610}\right] = <0.000008 \text{ gr/dscf}$$

NAME: VALLEY ASPHALT #7
LOCATION: DAYTON, OHIO

DATE: May 13-14, 1993
SOURCE: BAGHOUSE

DRY MOLECULAR WEIGHT

$$M_d = 0.44\ (\%CO_2) + 0.32\ (\%O_2) + 0.28\ (\%CO + \%N_2)$$

Where:

M_d	=	Dry molecular weight, lb/lb-mole.
$\%CO_2$	=	Percent carbon dioxide by volume, dry basis.
$\%O_2$	=	Percent oxygen by volume, dry basis.
$\%N_2$	=	Percent nitrogen by volume, dry basis.
$\%CO$	=	Percent carbon monoxide by volume, dry basis.
0.264	=	Ratio of O_2 to N_2 in air, v/v.
0.28	=	Molecular weight of N_2 or CO, divided by 100.
0.32	=	Molecular weight of O_2 divided by 100.
0.44	=	Molecular weight of CO_2 divided by 100.

Run #1:

$$M_d = 0.44\ (4.0\%) + 0.32\ (14.0\%) + 0.28\ (.00\% + 82.0\%) = 29.20\ \frac{lb}{lb\text{-}mole}$$

Run #2:

$$M_d = 0.44\ (4.0\%) + 0.32\ (15.0\%) + 0.28\ (.00\% + 81.0\%) = 29.24\ \frac{lb}{lb\text{-}mole}$$

Run #3:

$$M_d = 0.44\ (4.0\%) + 0.32\ (14.0\%) + 0.28\ (.00\% + 82.0\%) = 29.20\ \frac{lb}{lb\text{-}mole}$$

NAME: VALLEY ASPHALT #7
LOCATION: DAYTON, OHIO

DATE: May 13-14, 1993
SOURCE: BAGHOUSE

WATER VAPOR CONDENSED

$$V_{wc_{std}} = [V_f - V_i]\left[\frac{P_w\ R\ T_{(std)}}{M_w\ \ P_{(std)}}\right] = 0.04707\ \ [V_f - V_i]$$

$$V_{wsg_{std}} = [W_f - W_i]\left[\frac{R\ \ T_{(std)}}{M_w\ \ P_{(std)}}\right] = 0.04715\ \ [W_f - W_i]$$

Where:

0.04707	-	Conversion factor, ft^3/ml.
0.04715	-	Conversion factor, ft^3/g.
Vwc_{std}	-	Volume of water vapor condensed (std. cond.), ml.
$Vwsg_{std}$	-	Volume of water vapor collected in silica gel (standard conditions), ml.
$V_f - V_i$	-	Final volume of impinger contents less initial volume, ml.
$W_f - W_i$	-	Final weight of silica gel less initial weight, g.
P_w	-	Density of water, 0.002201 lb/ml.
R	-	Ideal gas constant, 21.85 in.Hg. (cu.ft./lb-mole)(°R).
M_w	-	Molecular weight of water vapor, 18.0 lb/lb-mole.
T_{std}	-	Absolute temperature at standard conditions, 528°R.
P_{std}	-	Absolute pressure at standard conditions, 29.92 inches Hg.

Run 1:

$V_{wc(std)}$	=	(0.04707) (305.00)	=	14.4	cu. ft
$V_{wsg(std)}$	=	(0.04715) (7.40)	=	0.3	cu. ft

Run 2:

$V_{wc(std)}$	=	(0.04707) (330.00)	=	15.5	cu. ft
$V_{wsg(std)}$	=	(0.04715) (5.80)	=	0.3	cu. ft

Run 3:

$V_{wc(std)}$	=	(0.04707) (302.00)	=	14.2	cu. ft
$V_{wsg(std)}$	=	(0.04715) (6.90)	=	0.3	cu. ft

NAME: VALLEY ASPHALT #7
LOCATION: DAYTON, OHIO

DATE: May 13-14, 1993
SOURCE: BAGHOUSE

MOISTURE CONTENT OF STACK GASES

$$B_{ws} = \left[\frac{V_{wc_{std}} + V_{wsg_{std}}}{V_{wc_{std}} + V_{wsg_{std}} + V_{mstd}} \right] \times 100$$

Where:

B_{ws} = Proportion of water vapor, by volume, in the gas stream.

V_m = Dry gas volume measured by dry gas meter, dcf.

Vwc_{std} = Volume of water vapor condensed, corrected to standard conditions, scf.

$Vwsg_{std}$ = Volume of water vapor collected in silica gel corrected to std. cond., scf.

Run 1:

$$B_{ws} = \frac{14.4 + 0.3}{14.4 + 0.3 + 46.951} \text{ X } 100 = 23.84\ \%$$

Run 2:

$$B_{ws} = \frac{15.5 + 0.3}{15.5 + 0.3 + 42.595} \text{ X } 100 = 27.06\ \%$$

Run 3:

$$B_{ws} = \frac{14.2 + 0.3}{14.2 + 0.3 + 40.610} \text{ X } 100 = 26.31\ \%$$

NAME: VALLEY ASPHALT #7
LOCATION: DAYTON, OHIO

DATE: May 13-14, 1993
SOURCE: BAGHOUSE

MOLECULAR WEIGHT OF STACK GASES

$$M_s = M_d (1 - B_{ws}) + 18 (B_{ws})$$

Where:

M_s = Molecular weight of stack gas, wet basis (lb./lb.-mole).

M_d = Molecular weight of stack gas, dry basis (lb./lb.-mole).

Run #1:

$$M_s = 29.20 \ (1 - 0.2384) + 18 \ (0.2384) = 26.53 \ \frac{lb}{lb\text{-}mole}$$

Run #2:

$$M_s = 29.24 \ (1 - 0.2706) + 18 \ (0.2706) = 26.20 \ \frac{lb}{lb\text{-}mole}$$

Run #3:

$$M_s = 29.20 \ (1 - 0.2631) + 18 \ (0.2631) = 26.25 \ \frac{lb}{lb\text{-}mole}$$

NAME: VALLEY ASPHALT #7
LOCATION: DAYTON, OHIO

DATE: May 13-14, 1993
SOURCE: BAGHOUSE

STACK GAS VELOCITY

$$V_s - K_p \ C_p \ [\sqrt{\Delta P}] \text{ avg} \ \sqrt{\frac{T_s(\text{avg})}{P_s \ M_s}}$$

Where:

- V_s = Average velocity of gas stream in stack, ft/sec.
- K_p = 85.49 ft/sec [(g/g-mole) - (mm Hg)/(°K)(mm H_2O)]^{½}
- C_p = Pitot tube coefficient, dimensionless.
- ΔP = Velocity head of stack gas, in. H_2O.
- P_{bar} = Barometric pressure at measurement site, in. Hg.
- P_g = Stack static pressure, in. Hg.
- P_s = Absolute stack gas pressure, in. Hg. = $P_{bar} + P_g$
- P_{std} = Standard absolute pressure, 29.92 in. Hg.
- t_s = Stack temperature, °F.
- T_s = Absolute stack temperature, °R. = 460 + t_s.
- M_s = Molecular weight of stack gas, wet basis, lb/lb-mole.

Run #1:

$$V = (85.49) \ (0.84) \ (0.88) \sqrt{\frac{663}{(30.03) \ (26.53)}} = 57.65 \text{ ft/sec}$$

Run #2:

$$V = (85.49) \ (0.84) \ (0.86) \sqrt{\frac{673}{(30.03) \ (26.20)}} = 57.12 \text{ ft/sec}$$

Run #3:

$$V = (85.49) \ (0.84) \ (0.84) \sqrt{\frac{686}{(30.01) \ (26.25)}} = 56.29 \text{ ft/sec}$$

NAME: VALLEY ASPHALT #7
LOCATION: DAYTON, OHIO

DATE: May 13-14, 1993
SOURCE: BAGHOUSE

STACK GAS FLOW RATE

$$Q_{sd} - 3600 \left[1 - B_{wc} \right] V_s \; A \left[\frac{T_{std}}{T_{stk}} \right] \left[\frac{P_s}{P_{std}} \right]$$

Where:

Q_{sd} - Dry volumetric stack gas flow rate corrected to standard conditions (dscf/hr).
A - Cross sectional area of stack (ft^2).
3600 - Conversion factor (sec/hr).
T_{stk} - Absolute stack temperature (°R).
T_{std} - Standard absolute temperature (528°R).
P_{bar} - Barometric pressure at measurement site (in. Hg.).
P_g - Stack static pressure (in. Hg.).
P_s - Absolute stack gas pressure (in. Hg.) - $P_{bar} + P_g$
P_{std} - Standard absolute pressure (29.92 in. Hg.).

Run #1: Q_{sd} =

$$3600 \; (1 - 0.2384)\; (57.65)\; (11.23) \left[\frac{528}{663} \right] \left[\frac{30.03}{29.92} \right] = 1{,}418{,}804.8 \; \frac{dscf}{hr}$$

Run #2: Q_{sd} =

$$3600 \; (1 - 0.2706)\; (57.12)\; (11.23) \left[\frac{528}{673} \right] \left[\frac{30.03}{29.92} \right] = 1{,}326{,}321.5 \; \frac{dscf}{hr}$$

Run #3: Q_{sd} =

$$3600 \; (1 - 0.2631)\; (56.29)\; (11.23) \left[\frac{528}{686} \right] \left[\frac{30.01}{29.92} \right] = 1{,}294{,}602.0 \; \frac{dscf}{hr}$$

NAME: VALLEY ASPHALT #7
LOCATION: DAYTON, OHIO

DATE: May 13-14, 1993
SOURCE: BAGHOUSE

EMISSIONS RATE FROM STACK

$$E - \left[\frac{(C_s')\quad(Q_{sd})}{7{,}000\ gr/lb}\right]$$

Where:

E - Emissions rate, lbs/hr.

C_s - Concentration of particulate in stack gas, dry basis, corrected to standard conditions, gr/dscf.

Q_{sd} - Dry volumetric stack gas flow rate corrected to standard conditions, dscf/hr.

Run #1:

$$E = \frac{(0.0120)\quad(1{,}418{,}804.8)}{7000} = 2.44\ lb/hr$$

Run #2:

$$E = \frac{(0.0138)\quad(1{,}326{,}321.5)}{7000} = 2.62\ lb/hr$$

Run #3:

$$E = \frac{(0.0198)\quad(1{,}294{,}602.0)}{7000} = 3.67\ lb/hr$$

Format: csR3/05-005

NAME: VALLEY ASPHALT CORPORATION
LOCATION: DAYTON, OHIO

DATE: May 13, 1993
SOURCE: Plant No. 7 Baghouse

LEAD EMISSIONS RATE FROM STACK

$$E = \left[\frac{(C_s^{`})\quad(Q_{sd})}{7{,}000\ gr/lb}\right]$$

Where:

E = Emissions rate, lbs/hr.

$C_s^{`}$ = Concentration of lead in stack gas, dry basis, corrected to standard conditions, gr/dscf.

Q_{sd} = Dry volumetric stack gas flow rate corrected to standard conditions, dscf/hr.

Run #1:

$$E = \frac{(\leq 0.000007)\quad(1{,}418{,}804.8)}{7{,}000} = <0.0014\ lb/hr$$

Run #2:

$$E = \frac{(\leq 0.000007)\quad(1{,}326{,}321.5)}{7{,}000} = <0.0013\ lb/hr$$

Run #3:

$$E = \frac{(\leq 0.000008)\quad(1{,}294{,}602.0)}{7{,}000} = <0.0015\ lb/hr$$

Format: csR3/03-004

NAME: VALLEY ASPHALT #7
LOCATION: DAYTON, OHIO

DATE: May 13-14, 1993
SOURCE: BAGHOUSE

ISOKINETIC VARIATION

$$I - 100\ T_s \left[\frac{(0.002669)\ (V_{ic} + (V_m/T_m)\ (P_{bar} + \Delta H/13.6)}{60\quad \theta\quad V_s\quad P_s\quad A_n}\right]$$

Where:

I	-	Percent isokinetic sampling.
100	-	Conversion to percent.
T_s	-	Absolute average stack gas temperature, °R.
0.002669	-	Conversion factor, Hg - ft³/ml - °R.
V_{ic}	-	Total volume of liquid collected in impingers and silica gel, ml.
T_m	-	Absolute average dry gas meter temperature, °R.
P_{bar}	-	Barometric pressure at sampling site, in. Hg.
ΔH	-	Average pressure differential across the orifice meter, in. H_2O.
13.6	-	Specific gravity of mercury.
60	-	Conversion seconds to minutes.
Θ	-	Total sampling time, minutes.
V_s	-	Stack gas velocity, ft/sec.
P_s	-	Absolute stack gas pressure, in. Hg.
A_n	-	Cross sectional area of nozzle, ft².

Run #1:

$$I = (100)\ (663) \left[\frac{(0.002669)\ (312.40) + \frac{46.347}{528.0}\left[30.03 + \frac{1.51}{13.6}\right]}{60\ (60)\ (57.65)\ (30.03)\ (0.000341)}\right] = 108.6\%$$

Run #2:

$$I = (100)\ (673) \left[\frac{(0.002669)\ (335.80) + \frac{42.553}{534.0}\left[29.95 + \frac{1.24}{13.6}\right]}{60\ (60)\ (57.12)\ (29.95)\ (0.000341)}\right] = 105.4\%$$

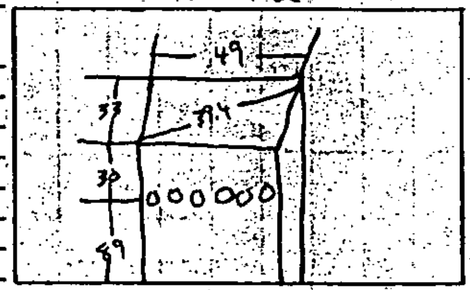
Run #3:

$$I = (100)\ (673) \left[\frac{(0.002669)\ (308.90) + \frac{40.833}{537.0}\left[29.95 + \frac{1.16}{13.6}\right]}{60\ (60)\ (56.29)\ (29.95)\ (0.000341)}\right] = 103.0\%$$

RAMCON ENVIRONMENTAL CORPORATION

M12

Plant: Valley #7
Location: Dayton, OH
Operator: C. Hughes
Date: 5-13-93
Run No.: 1
Sample Box No.: 1
Meter Box No.: C-145
Meter H @: 1.41
C Factor: 1.006
Pitot Tube Coefficient Cp: .84



Schematic of Stack Cross Section

Ambient Temperature: 55
Barometric Pressure: 30.03
Assumed Moisture, %: .19
Probe Length, m(ft):
Nozzle Identification No.: .0003409
Avg. Calibrated Nozzle Dia., (in.): .250/.250/.250
Probe Heater Setting: 4
Leak Rate, m^3/min. (cfm): .007 @ 5"
Probe Liner Material: Stainless
Static Pressure, mm Hg (in. Hg): +.01
Filter No.: ~~T50062?~~ T500264

	IMPINGER VOLUME ml	SILICA GEL WEIGHT g
FINAL	505	363.5
INITIAL	200	356.1
DIFFERENCE	305	7.4

TRAV. PT NO.	SAMPLING TIME (θ) min.	VACUUM in. Hg	STACK TEMP (T_s) °F	VELOCITY HEAD (P_s) in H2O	PRESSURE DIFF. ORF. MTR in H_2O	GAS SAMPLE VOLUME ft^3	GAS SAMPLE TEMP. AT DRY GAS METER °F Inlet	GAS SAMPLE TEMP. AT DRY GAS METER °F Outlet	FILTER HOLDER TEMP °F	GAS TEMP LVG CONDENSER OR LAST IMPINGER °F
1	0915.30 / 0917.30	1	175	.50	.96	112.136 / 113.4	58	50	256	58
2	0919.30	2	175	.70	1.3	114.9	64	50	249	51
3	0921.30	2	180	.79	1.5	116.3	68	50	255	48
4	0923.30	2	180	.80	1.5	117.8	69	50	257	48
5	0925.30	2	184	.77	1.5	119.4	70	50	258	47
1	0953.30 / 0955.30	1	175	.58	1.0	120.7	63	53	248	52
2	0957.30	2	182	.59	1.1	122.1	69	53	254	47
3	0959.30	2	185	.63	1.2	123.4	72	54	255	47
4	1001.30	2	191	.85	1.6	124.9	75	54	253	46
5	1003.30	2	195	.75	1.4	126.5	77	55	251	46
1	1006 / 1008	3	199	.85	1.7	128.2	74	55	257	48
2	1010	3	201	.81	1.6	129.8	76	56	258	45
3	1012	3	206	.95	1.8	131.4	80	56	259	44

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RAMCON emissions test log sheet, cont. DATE 5-13-93 LOCATION Dayton, OH TEST NO. 1

TRAVERSE POINT	SAMPLING TIME θ (min)	VACUUM mm Hg (in. Hg)	STACK TEMP T_s (°F)	VELOCITY HEAD ΔP_s (in. H_2O)	ORFICE DIFF. PRESSURE ΔH (in. H_2O)	GAS VOLUME V_m (ft^3)	GAS SAMPLE TEMP. (°F) in	GAS SAMPLE TEMP. (°F) out	SAMPLE BOX TEMP. (°F)	IMPINGER TEMP (°F)
4	1014	3	209	.95	1.8	133.1	82	56	261	45
5	1016	3	211	.78	1.5	134.5	83	57	262	45
1	1017.30 / 1019.30	3	211	.81	1.6	136.1	78	58	256	48
2	1021.30	3	212	.85	1.6	137.7	82	58	256	48
3	1023.30	4	214	1.0	1.9	139.5	84	58	255	48
4	1025.30	4	213	1.0	1.9	141.2	85	58	256	48
5	1027.30	3	210	.84	1.6	142.8	86	59	258	49
1	1029 / 1031	3	214	.73	1.4	144.3	82	60	246	51
2	1033	3	215	.81	1.6	145.9	85	60	237	50
3	1035	4	218	.95	1.8	147.6	86	60	234	50
4	1037	4	218	1.0	1.9	148.3	88	60	235	51
5	1039	4	219	1.0	1.9	151.1	88	60	235	52
1	1043 / 1045	2	215	.53	1.0	152.4	80	62	238	55
2	1047	2	218	.60	1.2	153.8	83	62	239	53
3	1049	3	223	.79	1.5	155.3	86	62	239	52
4	1051	3	225	.75	1.4	156.8	87	62	244	53
5	1053	3	227	.75	1.4	158.483	88	62	244	54
			2753		45.10			5[illegible]		

RAMCON ENVIRONMENTAL CORPORATION

Plant Valley #7

Location Dayton, OH
Operator C. Hughes
Date 5-13-93
Run No. 2
Sample Box No. 1
Meter Box No. C-185
Meter H @ 1.41
C Factor 1.006
Pitot Tube Coefficient Cp .84

Schematic of Stack Cross Section: M12

Ambient Temperature 55
Barometric Pressure 30.03
Assumed Moisture, % .25
Probe Length, m(ft)
Nozzle Identification No. .0003409
Avg. Calibrated Nozzle Dia., (in.) .250/.250/.25
Probe Heater Setting 4
Leak Rate, m^3/min. (cfm) .007 @ 4"
Probe Liner Material Stainless
Static Pressure, mm Hg (in. Hg) +.01
Filter No. TS00266

	IMPINGER VOLUME ml	SILICA GEL WEIGHT, g
FINAL	530	432.0
INITIAL	200	426.2
DIFFERENCE	330	5.8

TRAV. PT NO.	SAMPLING TIME (θ)min.	VACUUM in. Hg	STACK TEMP (T_s) °F	VELOCITY HEAD (P_s) in H20	PRESSURE DIFF. ORF. MTR in H20	GAS SAMPLE VOLUME ft^3	GAS SAMPLE TEMP. AT DRY GAS METER °F Inlet	Outlet	FILTER HOLDER TEMP °F	GAS TEMP LVG CONDENSER OR LAST IMPINGER °F
1	1259 / 1301	2	180	.51	.84	158.642 / 159.8	66	58	252	61
2	1303	2	191	.55	.91	161.0	71	59	249	56
3	1305	2	196	.63	1.0	162.3	75	59	247	54
4	1307	3	200	.65	1.1	163.6	78	59	240	52
5	1309	3	205	.75	1.2	165.1	79	60	237	51
1	1311.30 / 1313.30	2	205	.50	.83	166.2	76	61	244	56
2	1315.30	2	208	.55	.91	167.5	80	61	244	52
3	1317.30	2	208	.62	1.0	168.7	82	61	243	51
4	1319.30	3	209	.78	1.3	170.2	83	61	244	50
5	1321.30	3	210	.75	1.2	171.6	84	62	245	51
1	1323 / 1325	2	211	.62	1.0	172.9	82	62	249	54
2	1327	3	215	.75	1.2	174.3	85	62	248	51
3	1329	3	218	.90	1.5	175.9	86	63	248	49

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Form #REC-06

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RAMCON emissions test log sheet, cont. DATE 5-13-93 LOCATION Dayton, OH TEST NO. 2

TRAVERSE POINT	SAMPLING TIME θ (min)	VACUUM mm Hg (in. Hg)	STACK TEMP T_s (°F)	VELOCITY HEAD ΔP_s (in. H_2O)	ORFICE DIFF. PRESSURE ΔH (in. H_2O)	GAS VOLUME V_m (ft^3)	GAS SAMPLE TEMP. (°F) in	GAS SAMPLE TEMP. (°F) out	SAMPLE BOX TEMP. (°F)	IMPINGER TEMP (°F)
4	1331	4	220	1.0	1.7	177.6	89	63	248	48
5	1333	4	220	.95	1.6	179.2	90	63	248	49
1	1335 / 1337	3	214	.71	1.2	180.6	83	64	239	54
2	1339	3	219	.83	1.4	182.1	88	64	235	50
3	1346 / 1348	3	210	.95	1.6	183.7	80	65	236	54
4	1350	3	220	.95	1.6	185.3	83	65	242	52
5	1352	3	222	.95	1.6	186.9	86	65	246	53
1	1354 / 1356	3	215	.71	1.2	188.3	83	65	252	57
2	1358	3	221	.75	1.2	189.3	86	65	257	55
3	1400	3	222	.90	1.5	191.3	89	66	261	54
4	1402	4	224	.95	1.6	192.9	90	66	261	54
5	1404	4	227	.97	1.6	194.5	91	66	256	55
1	1405.30 / 1407.30	2	214	.52	.86	195.7	86	66	256	56
2	1409.30	2	221	.55	.91	196.9	88	67	253	55
3	1411.30	3	224	.71	1.2	198.3	91	67	247	54
4	1413.30	3	226	.79	1.3	199.8	92	67	246	55
5	1415.30	3	227	.71	1.2	201.195	92	67	249	55

Hot Box

RAMCON ENVIRONMENTAL CORPORATION

Plant: Valley #7
Location: Dayton, OH
Operator: C. Hughes
Date: 5-14-93
Run No.: 3
Sample Box No.: 1
Meter Box No.: C-185
Meter H @: 1.41
C Factor: 1.006
Pitot Tube Coefficient Cp: .84

M12

Schematic of Stack Cross Section

Ambient Temperature: 55
Barometric Pressure: 30.01
Assumed Moisture, %: 1.25
Probe Length, m(ft):
Nozzle Identification No.: .0003409
Avg. Calibrated Nozzle Dia., (in.): .250/.250/.250
Probe Heater Setting: 4
Leak Rate, m³/min.(cfm): .009 @ 4"
Probe Liner Material: stainless
Static Pressure, mm Hg(in.Hg): +.01
Filter No.: TS00265

	IMPINGER VOLUME ml	SILICA GEL WEIGHT g
FINAL	502	405.3
INITIAL	200	398.4
DIFFERENCE	302	6.9

TRAV. PT NO.	SAMPLING TIME (θ)min.	VACUUM in. Hg	STACK TEMP (T_S) °F	VELOCITY HEAD (P_S) in H2O	PRESSURE DIFF. ORF. MTR in H2O	GAS SAMPLE VOLUME ft3	GAS SAMPLE TEMP. AT DRY GAS METER °F Inlet	Outlet	FILTER HOLDER TEMP °F	GAS TEMP LVG CONDENSER OR LAST IMPINGER °F
1	0805 / 0807	1	215	.47	.77	201.539 / 202.6	68	59	263	58
2	0809	2	220	.50	.82	203.8	71	59	264	54
3	0811	2	225	.65	1.1	205.1	74	59	264	52
4	0813	2	226	.70	1.1	206.4	78	59	263	50
5	0815	2	227	.71	1.2	207.8	79	59	262	49
1	0817 / 0819	2	217	.45	.73	208.9	78	60	259	52
2	0821	2	224	.49	.79	210.0	81	61	258	50
3	0823	3	228	.67	1.0	211.2	83	61	256	49
4	0825	3	230	.74	1.2	212.6	85	61	255	48
5	0827	3	229	.69	1.1	214.0	86	62	255	48
1	0828.30 / 0830.30	2	225	.62	1.0	215.2	85	64	252	50
2	0832.30	2	230	.65	1.1	216.6	87	65	252	47
3	0834.30	3	230	.75	1.2	217.9	89	65	252	48

Form #REC-06

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RAMCON emissions test log sheet, cont. DATE 5-14-93 LOCATION Dayton, OH TEST NO. 3

TRAVERSE POINT	SAMPLING TIME θ (min)	VACUUM mm Hg (in. Hg)	STACK TEMP T_s (°F)	VELOCITY HEAD ΔP_s (in. H_2O)	ORFICE DIFF. PRESSURE ΔH (in. H_2O)	GAS VOLUME V_m (ft^3)	GAS SAMPLE TEMP. (°F) in	GAS SAMPLE TEMP. (°F) out	SAMPLE BOX TEMP. (°F)	IMPINGER TEMP (°F)
						219.9 ~~217.9~~	91	66	251	48
4	0836.30	3	231	.90	1.5	221.0	92	66	250	50
5	0838.30	3	233	.81	1.3	222.3	88	67	251	53
1	0840.30 / 0842.30	2	220	.65	1.1	223.8	91	68	252	53
2	0844.30	3	225	.80	1.3	225.4	93	68	251	53
3	0846.30	3	230	.95	1.5	226.9	95	69	252	53
4	0848.30	3	231	.96	1.5	228.4	96	69	252	54
5	0850.30	3	232	.88	1.4	229.7	92	70	252	55
1	0852 / 0854	3	226	.72	1.2	231.2	94	71	252	55
2	0856	3	229	.75	1.2	232.6	96	71	251	55
3	0858	3	229	.80	1.3	234.2	98	71	248	54
4	0900	3	230	.95	1.5	235.8	98	72	242	53
5	0902	3	229	.95	1.5	236.9	91	73	232	55
1	0905 / 0907	2	217	.54	.87	238.1	94	73	243	53
2	0909	2	220	.55	.89	239.5	97	74	250	54
3	0911	2	224	.65	1.1	240.9	98	74	252	55
4	0913	3	225	.77	1.2	242.372	99	75	255	56
5	0915	3	225	.80	1.3					

POSTTEST DRY GAS METER CALIBRATION DATA FORM (English units)

Test number ______ Date 5-18-93 Meter box number C-185 Plant ______

Barometric pressure, P_b = 30.06 in. Hg Dry gas meter number 638809 Pretest Y ______

Orifice manometer setting, (ΔH), in. H_2O	Gas volume: Wet test meter (V_w), ft^3	Gas volume: Dry gas meter (V_d), ft^3	Temperature: Wet test meter (t_w), °F	Temperature: Dry gas meter: Inlet (t_{d_i}), °F	Temperature: Dry gas meter: Outlet (t_{d_o}), °F	Temperature: Dry gas meter: Average[a] (t_d), °F	Time (θ), min	Vacuum setting, in. Hg	Y_i	Y_i = $\frac{V_w P_b (t_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$
1.0	10	337.264 / 347.534	76°	102 / 106	86 / 86	95°	16:05	8"	1.005	1.406
2.0	10	326.839 / 337.043	76°	104 / 110	84 / 86	96°	11:45	6"	1.011	1.428
3.0	10	316.764 / 326.718	76°	98 / 106	84 / 84	93°	9:2	11"	1.029	1.391
									Y = 1.015	1.408

[a] If there is only one thermometer on the dry gas meter, record the temperature under t_d

where

V_w = Gas volume passing through the wet test meter, ft^3.

V_d = Gas volume passing through the dry gas meter, ft^3.

t_w = Temperature of the gas in the wet test meter, °F.

t_{d_i} = Temperature of the inlet gas of the dry gas meter, °F.

t_{d_o} = Temperature of the outlet gas of the dry gas meter, °F.

t_d = Average temperature of the gas in the dry gas meter, obtained by the average of t_{d_i} and t_{d_o}, °F.

ΔH = Pressure differential across orifice, in. H_2O.

Y_i = Ratio of accuracy of wet test meter to dry gas meter for each run.

Y = Average ratio of accuracy of wet test meter to dry gas meter for all three runs; tolerance = pretest Y $\pm 0.05Y$.

P_b = Barometric pressure, in. Hg.

θ = Time of calibration run, min.

Form #REC-01

Name: Mr. Sumner Buck
Title: President

Qualifications: Mr. Buck is a graduate of the University of Mississippi with graduate studies at Memphis State University and State Technical Institute of Memphis. He is a graduate of the EPA 450 "Source Sampling for Particulate Pollutant's" course and the 474 "Continuous Emissions Monitoring" courses outlined by EPA at Research Triangle Park, N.C. He has been directly involved in conducting and supervising air emission testing for over 15 years. He has personally conducted over 400 air emission tests. He currently sponsors and directs visual emission certification schools for US EPA Method 9.

Project Duties: Mr. Buck is responsible for the overall supervision of each testing project. This includes the correspondence to the State Regulatory Agency and the plant personnel regarding scheduling, testing requirements, etc. He will assist in supervision of the project preparation for each team involved and the overall organization between the testing crew(s) and facility.

Name: Mr. Joe Sewell
Title: Vice President

Qualifications: Mr. Sewell is currently serving as the Vice President of RAMCON Environmental Corporation. Mr. Sewell is a graduate of Christian Brothers University in Memphis, Tennessee where he obtained a Bachelor of Science degree in Chemical Engineering. He has conducted and supervised air emissions testing projects ranging a broad spectrum of facility process categories. His accomplishments include the development of the instrumental branch of emissions testing utilizing continuous emission monitors and gas chromatography. Mr. Sewell performs a major role in the upgrading of testing capabilities and professional quality that RAMCON Environmental Corporation offers.

Project Duties: Mr. Sewell provides staff engineering and project administration to ensure the integrity of the requested services. He serves as the primary contact person for

RAMCON Environmental Corporation handling all correspondence between the facility personnel involved in the project and respective state agency representative(s). He provides project leadership to RAMCON Environmental Corporation field supervisors and managers involved in the testing project.

Name: Mr. Ray Jenkins
Title: Source Sampling Director

Qualifications: Mr. Jenkins is serving as the Source Sampling Director for RAMCON Environmental Corporation. He was promoted to this leadership position after gaining a significant amount of experience in conducting and providing field supervision of a variety of air testing projects. Mr. Jenkins has personally conducted and/or supervised all of the prevalent EPA approved procedures with expertise in the instrumental analyzer procedures. He graduated from Memphis State University obtaining a Bachelor of Science degree in Biology. He is also currently certified to conduct US EPA Reference Method 9 for the visual determination of emission opacity.

Project Duties: Mr. Jenkins provides project leadership to the Team Leaders and Field Technicians. He ensures the test crew(s) involved in the test project will be properly informed to his respective duties and responsibilities during the testing process. Mr. Jenkins also serves as the Quality Assurance/Quality Control Coordinator and provides guidance in QA/QC to each Team Leader with regard to sample integrity.

Name: Mr. Tommy South
Title: Laboratory Technician

Qualifications: Mr. South is currently serving as Laboratory Technician. He is proficient in conducting many analysis procedures such as front and back-half particulate analysis, titrations, extractions, etc.

Project Duties: Mr. South conducts the laboratory analysis on the particulate samples. He is also responsible for accepting the remaining field samples from the Field Sample Bank Manager and performing inspection as to integrity. He documents the transfer on the chain of custody forms and distributed the subcontracted samples to the respective laboratories.

Name: Chuck Hughes
Title: Team Leader

Qualifications: Mr. Hughes is currently serving RAMCON Environmental Corporation as an Isokinetic Team Leader. He is proficient in all sampling procedures employing this type of testing. He is currently certified in conducting US EPA Reference Method 9 for opacity.

Project Duties: Mr. Hughes is responsible for conducting isokinetic sampling procedures at the facility. He is also responsible for preparation and calibration of the necessary equipment for the project. His duties on-site include assembling the sample train, operation of the sampling equipment, sample recovery, and quality assurance/quality control checks.