SAN DIEGO AIR POLLUTION CONTROL DISTRICT
9150 CHESAPEAKE DRIVE
SAN DIEGO, CA. 92123

SUMMARY:
SOURCE TEST OF PARTICULATE EMISSIONS TO THE ATMOSPHERE

TEST SITE: Asphalt, Inc.
Hiway 67, Slaughterhouse Canyon Rd.
Lakeside, Ca.

TEST #: 89285 P/O # : 115 TEST DATE: 12 Oct. 89

EQUIPMENT: Asphalt batch plant, Hot-mix(200-ton/hr cap):
Madsen 6000-lbs per batch (Appl. #2942)

UNIT TESTED: Baghouse

SITE PERSONNEL: Jerry Richardson
APCD PERSONNEL: T. Wood, A. Segel, G. Mazis, and J. Jackson
REPORT BY: J.Jackson DATE 12 Dec. 89
APPROVED BY: C.W. Ridenour DATE 12/13/89
C.W. RIDENOUR
SENIOR AIR POLLUTION CHEMIST

PARAMETERS:	MEASURED:
STACK GAS FLOW RATE (DSCFM):	21,203
STACK GAS TEMPERATURE °F (AVG):	162
PRODUCTION RATE (AVG):	249 Ton/hr

RESULTS:

TEST	PERMIT LIMIT (lbs/hr)	MEASURED PARTICULATE	PERFORMANCE
RULE 54 DUST AND FUME	40.00 lb/hr	30.49 lbs/hr	PASSED

TEST REFERENCE:
San Diego Air Pollution Control District Quality Assurance Manual Method 5 for Particulate Emissions from Stationary Sources.

TEST DESCRIPTION

Introduction: This report presents the results of particulate loading and gas volume tests at Asphalt, Inc. The test was performed on a baghouse stack serving the hot mix plant.

System Description:
This asphalt plant combines crushed rock and sand with hot asphalt oil in batch loads of varying sizes. The rock and sand are dried in a rotary dryer which is heated by diesel fuel oil. The exhaust from this dryer is pulled through a baghouse, the emissions to the atmosphere from this baghouse are the subject of this report.

Procedures:
The procedures and equipment utilized in performing these tests are based on EPA New Source Performance Standards Method 5. The sampling train was modified to exclude the front-end filter and include a back-end filter, per the San Diego Air Pollution Control District Method 5 testing guidelines. The calculations were designed to include the impinger catch so that the test results can be compared to Rule 54 of SDAPCD.

Velocity Traverse:
Prior information regarding the stack velocity profile eliminated the need for a separate exploratory traverse. Temperature and pitot tube data collected during actual sampling were used to calculate stack volume.

Particulate Sampling:
This sample consisted of 33 traverse points, 4-5 from each of 8 sample ports as shown in Figure 1&2. The sample was collected 18 inches below the top of the stack. Field data associated with sample collection has been transferred to computer printout and is shown in the report. Calculations were done by computer and are also shown within the report.

Gas Analysis:
An integrated bag sample was collected on site and measured. The oxygen and carbon dioxide content of the stack gas was measured using a Teledyne model #320P-4 serial # 66676, and an Anarad gas analyzer model # AR-400, serial # 305, respectively, as per Method 3 in SDAPCD test guidelines.

SITE: Asphalt, Inc. OPERATOR: J.Jackson

TEST DATE: 12 Oct. 89 TEST: 89285

DATA SUMMARY: #

TRAVERSE POINT NUMBER	GAS METER READING (Vm), ft3	PRESS. DIFF. ACROSS PITOT TUBES	PRESS. DIFF. ACROSS ORIF.	DRY GAS METER TEMPERATURE		STACK TEMP	IMP. TEMP	STACK FLOW (velocity)
				INLET	OUTLET			
	480.569		ACTUAL					
1		0.79	0.90	76	80	155	64	56.48
2		0.97	1.11	76	99	160	48	62.84
3		0.75	0.90	75	102	160	50	55.26
4		0.35	0.40	75	104	160	51	37.75
5		0.50	0.57	76	94	160	57	45.12
6		0.50	0.57	76	104	162	52	45.19
7		0.40	0.45	78	105	163	52	40.45
8		0.40	0.45	80	95	164	61	40.48
9		0.40	0.45	80	102	164	52	40.48
10		0.40	0.45	80	90	165	56	40.52
11		0.45	0.51	79	102	156	55	42.66
12		0.50	0.57	79	108	165	49	45.30
13		0.30	0.34	80	109	165	51	35.09
14		0.95	1.08	81	98	155	56	61.94
15		0.65	0.74	80	110	165	48	51.65
16		0.70	0.80	80	111	165	52	53.60
17		0.80	0.91	81	112	167	48	57.39
18		0.74	0.84	81	99	144	58	54.17
19		0.70	0.80	81	111	165	51	53.60
20		0.50	0.57	81	113	165	52	45.30
21		0.50	0.57	82	113	167	52	45.37
22		1.35	1.54	85	113	153	60	73.72
23		1.50	1.71	84	113	166	52	78.52
24		1.50	1.71	84	114	165	51	78.46
25		1.00	1.14	84	116	164	50	64.01
26		0.30	0.34	86	105	155	60	34.81
27		0.35	0.40	86	114	166	55	37.93
28		0.30	0.34	86	114	166	55	35.12
29		0.30	0.34	86	114	167	55	35.14
30		0.53	0.64	86	105	154	59	46.23
31		0.55	0.62	87	115	167	54	47.59
32		0.35	0.40	88	118	168	53	37.99
33	528.1550	0.45	0.51	88	119	167	55	43.04

$\Delta P = K \Delta H$

Pressures are in inches of water, Temperatures are in degrees Fahrenheit, Velocities are in ft/sec. All measurements are actual - uncorrected - values.

Average:	Vm	ΔP	ΔH	t1	t2	ts	ti	vs
	47.586	0.63	0.72	81	107	162	54	49.19

DATA SUMMARY:

PRESSURES

P bar 29.6 in Hg

P static -4.50 in H2O

Ps 29.2 in Hg

AVERAGE TEMPERATURES

ts = 162 F

tm = 1/2(ave.t1+ave.t2) = 94 F

ti = 54 F

VOLUMES

Vm, meter 47.586 ft^3

Vlc, impingers 249.8 ml

VAPOR PRESSURES

Vpw @ imp = 0.420 inHg

METER BOX PARAMETERS

ΔH@ = 1.93 inH2O

ΔP = 0.63 inH2O

ΔH = 0.72 inH2O

METER BOX I.D.# C138

NOZZLE AND PROBE

Dn = 0.204 in

An = Dn^2*π/4 = .0327 sq in

Cp = 0.840

Y = .9822

STACK MEASUREMENTS

%CO2 6.60

%CO 0.00

%O2 12.00

%N2 81.40

Ø = sampling time 99 minutes

mn=particulate collect'd 0.4781 grams

STACK PARAMETERS

Stack Diameter = N.A. ft

Ao=Area stack = 11.25 sq ft

CALCULATIONS:

			EQUATION NUMBER
corr Vwm = ((Vm*Vpw@imp/Pm)*Pm*Tstd)/(Tm*Pstd) = water volume correction at meter w/o silica gel =	0.637	ft^3	1
Vm std = (Vm*Y*Tstd*Pm/(Pstd*Tm))-corr Vwm = meter volume corrected to STP =	43.45	ft^3	2
Pm= Pbar+(ΔH/13.6)= corrected pressure of meter =	29.61	in Hg	3
Tm= (t1+t2)/2 + 460 = meter temperature =	554.1	°R	4
Ts = ts+460 = corrected stack temperature =	622.1	°R	5
Ps= Pbar + (P static/13.6)= corrected stack pressure =	29.23	in Hg	6
Vw std = Vlc*∂*R*Tstd/(Pstd*Md)+corr Vwm = water volume at STP =	12.43	ft^3	7
Bws = (Vw std+corr Vwm)/(Vw std+corr Vwm+Vm std) = percent moisture =	0.2312		8
mn= grams of particulate (from laboratory sheet) =	0.4781	grams	9
Cs = 15.43*mn/Vm std = grain loading (dry) =	0.1698	grains/dscf	10

GAS ANALYSIS

component	gas comp.	Bws	Mw g/g*mole	Mw wet
H2O	23.12%	0.2312	18	4.16
		1 - Bws		
Oxygen	12.0%	0.7688	32	2.95
Carbon monoxide	0.00%	0.7688	28	0.00
Carbon dioxide	6.60%	0.7688	44	2.23
N2 + inerts	81.40%	0.7688	28	17.65

Md = 0.32*%O2+0.44*%CO2+0.28*(100-%O2-%CO2) = average molecular weight, dry	(g/g*mol)=	26.99
vs= 85.49*Cp*((Ts*ΔP)/(Ps*Ms))^.5 = stack velocity	(ft/s)=	49.19
Qs = (vs)*Ao*60 = stack flow rate	(acfm)=	33,202
Qstd =17.68*Qs*(1-Bws)*Ps/Ts =flow rate at STP	(dscfm)=	21,203
I = 144*100*Ts*(.002669*Vlc+(Vm/Tm)*Pm)/(60*Ø*vs*Ps*An) =isokinetic	(%) =	95.96
E = (0.00847)*(Qstd)*Cs = particulate emission rate	(lbs/hr) =	30.49

SUMMARY OF CALCULATIONS:

I = % isokinetics = 96.0 %

Cs = grain loading (dry) = 0.170 grains/dscf

E = particulate emission rate = 30.49 lbs/hr

% CO2 = 6.60 %

C12 = grain loading at 12% CO2
= (12)*(Cs)/%CO2 = 0.309 grains/dscf

% Excess Air =

$$\frac{(\%O2 - \%CO) * 100}{(.264(\%N2) - (\%O2) - 0.5(\%CO))} = 126.5 \%$$

NOMENCLATURE:

* = multiplication
/ = division
^ = exponentiation
Vm = sample gas volume, uncorrected = (ft^3)
ΔP = root mean pitot tube differential pressure
= (summation(press.diff. across pitot tubes^.5)/number entries)^2 = (in H2O)
ΔH = average differential pressure across the orifice = (in H2O)
t1 = dry gas meter inlet temperature = (°F)
t2 = dry gas meter outlet temperature = (°F)
ts = stack temperature = (°F)
ti = Impinger out temperature = (°F)
vs = stack gas velocity = 85.49*Cp*(Ts*ΔP/(Ps*Ms))^.5 = (ft/s)
Pbar = barometric pressure = (in Hg)
Pstatic = stack static pressure = (in Hg)
Ps = Absolute stack pressure = Pbar +(Pstatic/13.6) = (in Hg)
tm = dry gas meter temperature =(t1+t2)/2 = (°F)
Vlc = collected water,impingers = (ml)
Vpw = Vapor pressure of water = (in Hg)
ΔH @ = orifice pressure differential that equates to 0.75 cfm of air @ 68ºF and 29.92 in Hg
Dn = nozzle diameter = (in)
An = nozzle area = π*Dn^2/4 = (in^2)
π = the ratio of circumference of a circle to its diameter = 22/7 (dimensionless)
Cp = pitot tube coefficient = (dimensionless)
Y = meter box coefficient = (dimensionless)
CO2 = carbon dioxide = (%)
CO = carbon monoxide = (%)
O2 = oxygen = (%)
N2 = nitrogen = (%)
Ø = sampling time = (minutes)
mn = particulate found in sample train = (grams)
Ao = stack area = stack diameter^2*π/4 if round; length *width if rectanglar = (ft^2)
Corr Vwm = ((Vm*Vpw@imp/Pm)*Pm*Tstd)/(Tm*Pstd) = (ft^3)
Pm = absolute meter pressure = Pbar+(ΔH/13.6) = (in Hg)
Tstd = temperature at standard conditions = (528°R)
Tm = dry gas meter temperature =(t1+t2)/2+460 = (°R)
Pstd = pressure at standard condition = (29.92 in. Hg)
Vm std = corrected volume of meter = Vm*Y*T std*Pm/(Pstd*Tm) = (ft^3)
Ts = stack temperature = (°R)
Vw std = water volume at STP = Vlc*∂*R*Tstd/(Pstd*Md) = (ft^3)

NOMENCLATURE: cont.

∂ = density of water at STP = 0.002201 = (lb/ml)
R = ideal gas constant = 21.85 in. Hg*ft^3/°R*lb*mole
Md = dry stack gas molecular weight = 0.32*%O2+0.44*%CO2+0.28(100-%O2-%CO2)
= (g/g*mole)
Bws = fractional stack gas moisture content = (Vw std+Corr Vwm)/(Vwstd+Corr Vwm+Vm std
= (%/100)
Cs = grain loading = 15.430*mn/Vm std = (grains/dscf)
Mw = molecular weight = (g/g*mole)
Ms = wet stack gas molecular weight = Md*(1-Bws)+Bws*18 = (g/g*mole)
Qs = flow rate = vs*Ao*60 = (acfm)
Qstd = flow rate at standard conditions = 17.68*Qs*(1-Bws)*Ps/Ts = (dscfm)
I = isokinetics = 144*100*Ts*(.002669*Vlc+Vm/Tm)*Pm/(60*Ø*vs*Ps*An) = (%)
E = particulate emissions rate = 0.00847*Cs*Qstd = (lbs/hr)

CONSTANTS:

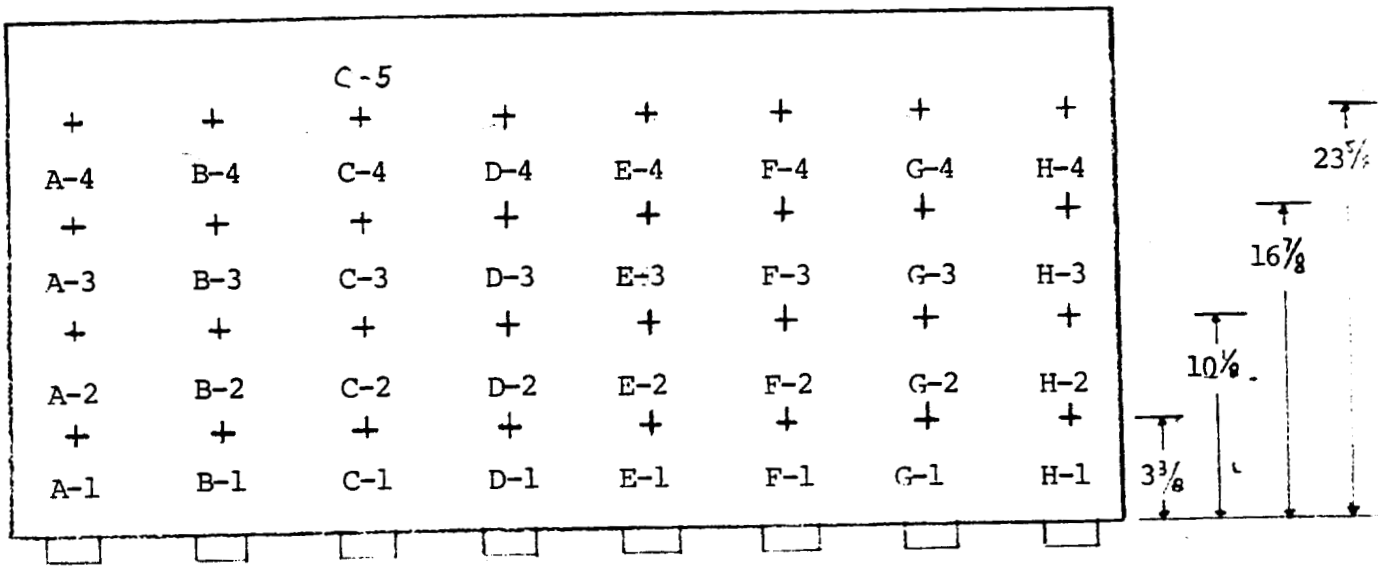
0.00847 lb/(gr*min/hr) = 1 lb/7000grains*60 min/hr
13.6 in H2O/in Hg
17.68 °R/in Hg
60 sec/min
32 g/g*mole = O2 molecular weight
44 g/g*mole = CO2 molecular weight
28 g/g*mole = N2 molecular weight
18 g/g*mole = H2O molecular weight
85.49 (ft/sec)*(lb*in Hg/(lb*mole*°R*in H2O))^.5
0.04707 = ft^3/ml
460 (demensionless) = conversion °F to °R
144 in^2/ft^2
15.43 gr/g
0.002669 in Hg*ft^3/(°R*ml)

SAN DIEGO AIR POLLUTION CONTROL DISTRICT

TRAVERSE POINTS

ASPHALT INC.

BAGHOUSE EXHAUST DUCT



DUCT MEASURES 27" BY 60"

NOT TO SCALE

Figure 1

SIT DESCRIPTION

ASPHALT INC.

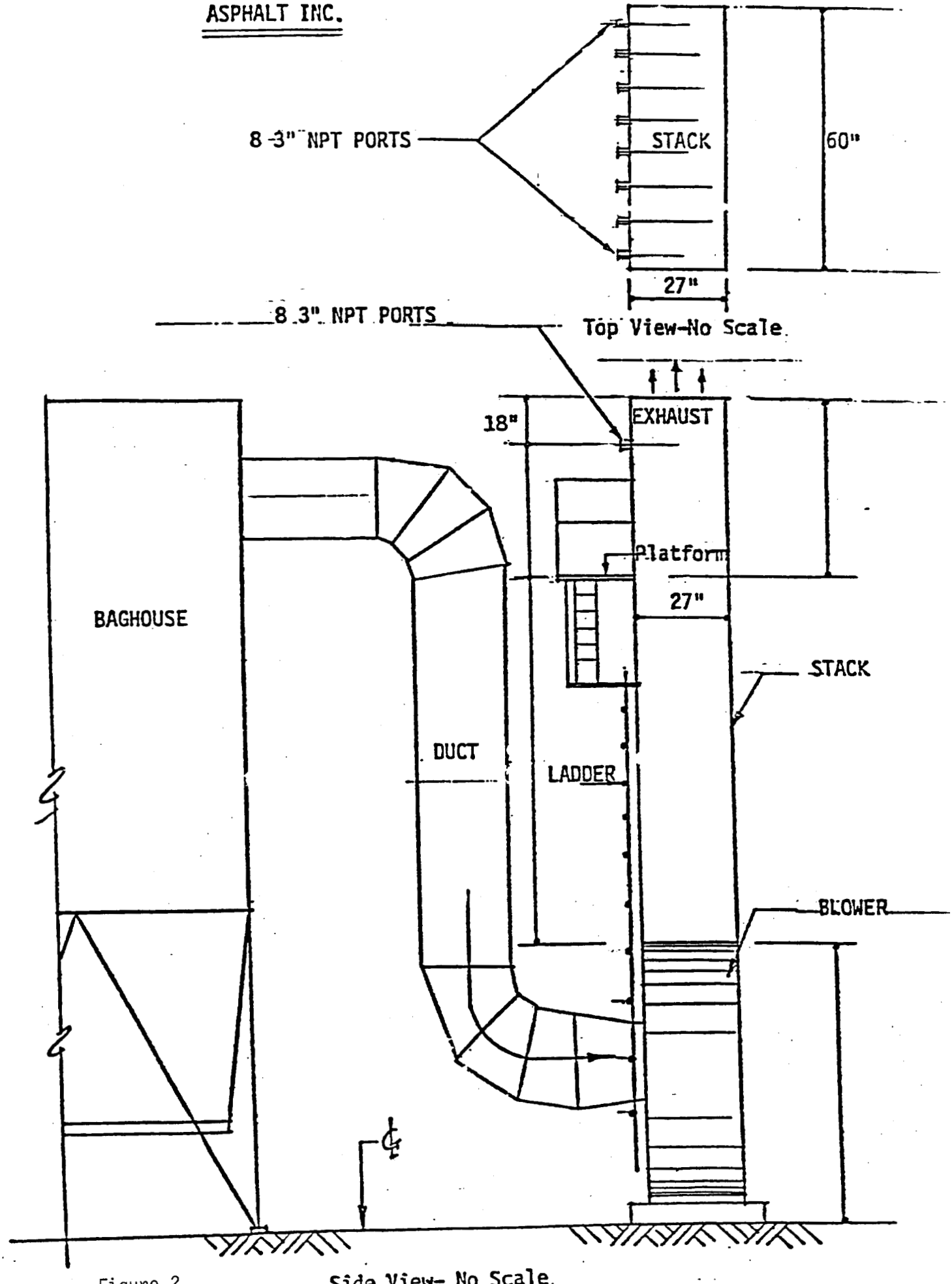


Figure 2

APCD ENGINEERING OBSERVATION REPORT

APCD TEST NO. 89285 **TEST DATE: OCTOBER 12, 1989**

ASPHALT INC.
SLAUGHTERHOUSE CANYON ROAD (OFF HIGHWAY 67)
LAKESIDE, CA 92040

P/O NO.: 0115

I. ASPHALT COMPOSITION PER NOMINAL 3 TON BATCH

	1/2" Mix Medium County
Bin #1 Sand & Dust	2740 lbs
Bin #2 3/8" Rock	1690 lbs
Bin #3 1/2" Rock	1130 lbs
Baghouse Dust	84 lbs
Asphalt Oil (AR4000)	356 lbs
Total	6000 lbs

II. ASPHALT PRODUCTION/OPERATIONAL DATA DURING SAMPLING TEST

		Material Baghouse		Baghouse Fuel Oil		
TIME	TEST PT	TEMP °F	INLET TEMP °F	ΔP "H_2O	PRESS PSIG	REMARKS
0849						Start Prod. Count #86
0850	A-1					Start Test
0855		360	120	5.8	30	
0902	A-4					
0906	C-1					Leakage at Stack Valve Shafts
0918						Lost Test Instrument Power
0923						Instrument Power On
0927	C-4					
0930		342	125	6.0	30	
0936	E-1					No V. E. @ Dryer Rotary Seals
0945	E-4					Dryer Flame Bright Yellow
0948	G-1					Light Tan Stack Steam Plume
1000	G-4					Silo Truck Loading, 40% Opacity Max.
1005	B-1					Shuttle Transfer 20% Opacity
1015		360	128	6.3	30	Impinger Break During Port Chg.
1016	B-4					
1040	H-1					

II. ASPHALT PRODUCTION/OPERATIONAL DATA DURING SAMPLING TEST (Cont.)

		Material Baghouse		Baghouse Fuel Oil		
TIME	TEST PT	TEMP °F	INLET TEMP °F	ΔP "H_2O	PRESS PSIG	REMARKS
1045		355	130	6.3	30	Asphalt Oil Temp 340°F @ Batch Tower
1051	H-4					
1109	F-1					
1115		350	132	6.3	30	
1121	F-4					End Test
1124						End Production Count #300
1130		355	132	6.4	---	

Production Time: 0849 -1124 = 155 Minutes (2.58 Hrs)

Production: 1/2" Mix (300 - 86) Batches x 3 $\frac{\text{Tons}}{\text{Batch}}$ = 642 Tons

Average Production Rate: $\frac{642 \text{ Tons}}{2.58 \text{ Hours}} = 248.8 \frac{\text{Tons}}{\text{Hour}}$

Comments

1. This test was conducted by the San Diego Air Pollution Control District (APCD) Source Test Team.

2. The baghouse exhaust stack was evaluated for APCD Rule 54 particulate emissions (40 lbs/hr maximum) and APCD Rule 50 (visible emissions not to exceed Ringelmann No. 1 (20% opacity) for excess of three minutes in any 60 minute consecutive time period.)

3. The sampling time was 3 minutes per point, 4 points per traverse for each of 8 traverses for a total of 32 test points.

4. All the asphalt production was conveyed to the three storage silos for dropping into the delivery trucks. The asphalt shuttle conveyor during asphalt transfer had visible emissions "blue smoke"at 20% opacity. The silo truck loading had visible emissions of 40% opacity peaking to 50% opacity during each asphalt drop.

5. The baghouse exhaust stack had a steam plume that occasionally appeared tan in color. No trailing particulate plume was observed after the steam dissipated. There were no visible emissions observed at the rotary dryer seals.

6. Compliance with APCD Rule 50 at the silo truck drop could not be determined due to the position of the sun. Recommend an inspector check this site for Rule 50 compliance.

7. The rotary dryer was fired with diesel fuel oil. An oil sample was taken to check for sulfur content.

AS:ap 110289

Andrew Segal

ASSOC. AIR POLLUTION CONTROL ENGR.

SDC APCD METHOD 5 LAB SHEET

SITE = Asiphalt, Inc., Lakeside P.O. #115

TEST # = #89285

VOLUMES

(1) IMPINGER VOLUMES

	final			initial			Δ
#1	770.4	ml	-	538.3	ml	=	232.1
#2	554.5	ml	-	537.9	ml	=	16.6
#3	459.5	ml	-	458.4	ml	=	1.1
#4	441	ml	-	441	ml	=	0

TOTAL VOLUME LIQUID COLLECTED = 249.8

comments: Imp. #4's exit stem was broken during a port change. Top piece was replaced.
No visible liquid in imp. #4 at end of test.
No sample was recovered from imp. #4 to avoid any glass chips.
Imp. #1 had significant dark brown particles.

(2) BEAKER RINSES

ACETONE		**WATER**	
BKR ID =	#85	BKR ID =	#87 & #91
FRONT HALF =	ml	FRONT HALF =	ml
BACK HALF =	455 ml	BACK HALF =	795 ml
BEAKER RINSES =	25 ml	BEAKER RINSES =	95 ml
		IMPINGERS =	200 ml
total acetone =	480.0 ml	total water =	1090.0 ml

* All data and calculations may be found on file at the San Diego County Air Pollution Control District.

SDC APCD METHOD 5 LAB SHEET

TEST # = #89285

STANDARDS

volume Ac = 500 ml volume water = 1000 ml

	ACETONE	WATER
BKR ID =	#86	#88
f:	49.4049 g	49.9947 g
i:	49.4049 g	49.9946 g
Δ:	0 g	0.0001 g

Limits:

limit for acetone is 7.9 μg/ml (7.9 * 10^-6 g/ml)
limit for water is 4 μg/ml (4 * 10^-6 g/ml)

The Acetone **PASSED** The Water **PASSED**

0 g/ml 1E-07 g/ml

(3) CORRECTIONS- (volume used)*(std wt)

	ACETONE	**WATER**
FRONT HALF =	0 g	0 g
BACK HALF =	0 g	7.95E-05 g
BKR RINSES =	0 g	9.5E-06 g

tot. front half =	0 g	tot. impingers =	2E-05 g
tot. back half =	7.95E-05 g		
total rinses =	9.5E-06 g	**total grams from solvents** =	**0.0001 g**

SDC APCD METHOD 5 LAB SHEET

TEST # = #89285

WEIGHTS

	FRONT HALF	BACK HALF
ACETONE		
BKR ID =		#85
f:	g	49.6932 g
i:	g	49.5394 g
Δ:	0.0000 g	0.1538 g
WATER		
BKR ID =	#91	#87
f:	49.322 g	50.3473 g
i:	49.3165 g	50.0294 g
Δ:	0.0055 g	0.3179 g
ORGANIC		
BKR ID =		
f:	g	g
i:	g	g
Δ:	0.0000 g	0.0000 g
FILTERS		
ID =		#89028
f:	g	0.1209 g
i:	g	0.1199 g
Δ:	0.0000 g	0.0010 g

SDC APCD METHOD 5 LAB SHEET

TEST # = #89285

(4) FINAL WEIGHTS

(total weight gained)

FRONT HALF= 0.0055 BACK HALF= 0.4717 ORGANIC= 0.0000
(front and back)

TOTAL WEIGHT GAINED = 0.4772 g

correction for solvents (acetone and water)

TOTAL WEIGHT GAINED FROM SOLVENTS = 0.0001 g

(5) CORRECTED WEIGHTS

TOTAL WEIGHT GAINED CORRECTED = 0.4771 g

(6) FILTERS

FRONT HALF= 0.0000 BACK HALF= 0.0010

TOTAL WEIGHT GAINED = 0.4781 g

Comments - The water rinses sample was put into two beakers, #87 & #91; the weights are combined and do not represent a split into front & back half.

Backup Data

SAN DI[illegible]O COUNTY AIR POLLUTION CONTROL D[illegible]RICT

TEST # 99285 DATE: [illegible]

SITE [illegible]

C 138

Pm, absolute	30
Ps, absolute	29.7
Tm, absolute	[illegible]
∂H@ across meter	1.42
% moisture of stack	19%
correction factor	0.864
Ts, absolute	136
∂P stack	1.36
ideal nozzle diameter	[illegible]
nozzle used	0.2055
test dfferential pressure	1.64 / 1.9

Vol = [illegible] 0.14 + 0.58 = [illegible] ft³/min

Change the Schedule

SAN DIEGO COUNTY AIR POLLUTION CONTROL DISTRICT

TRAVERSE POINT NUMBER	SAMPLING TIME, min	GAS METER READING (Vm), ft3	VELOCITY HEAD (dP), InHg	ORIFICE PRESSURE DIFFERENTIAL (dH), in Hg		STACK TEMPERATURE (Ts), F	DRY GAS METER TEMPERATURE		PUMP VACUUM in Hg	SAMPLE BOX TEMPERATURE	IMPINGER TEMPERATURE
		502.500		DESIRED	ACTUAL		INLET (T1)	OUTLET (T2)			
G-4	10:00	504.256	0.80	0.91	Start Time	167	81	112	2	—	48
B-1	10107	506.011	0.74	0.84	10:04	144	81	99	2	—	58
2	10:10	507.541	0.70	0.80		165	81	111	2	—	51
3	10:13	508.883	0.50	0.57		165	81	113	2	—	52
4	10:16	510.156	0.50	0.57		167	82	113	2	—	52
H-1	10142	510.442 / 512.474	1.35	1.54	10139	153	85	113	3	—	60
2	10:45	514.700	1.50	1.71		166	84	113	4	—	52
3	10:48	516.900	1.50	1.71		165	84	114	4	—	51
4	10:51	518.742	1.0	1.14		164	84	116	4	—	50
D-1	10:57	519.793	0.3	0.342	10:54	155	86	105	2	—	60
2	11:00	520.900	0.35	0.4		166	86	114	2	—	55
3	11:03	521.948	0.30	0.34		166	86	114	2	—	55
4	11:06	523.979	0.30	0.34		167	86	114	1	—	55
F-1	11:12	524.401	0.53	0.642	11:09	154	86	105	1	—	59
2	11:15	525.783	0.55	0.62		167	87	115	2	—	54
3	11:18	526.925	0.35	0.40		168	88	118	2	—	53
4	11:21	528.155	0.45	0.51		167	88	119	2	—	55

Bag Sample collected over ½ hr. Period on Port B, F & D

COMMENTS:

GEORGE MAZIS
AIR POLLUTION CONTROL DISTRICT
SEPTEMBER 29, 1989

B-4 Port change- the last impinger Broken top half. & Changed out New top 0.286 ft3 Condition Leak ✓

SDC APCD METHOD 5 LAB SHEET

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ACETONE		**WATER**	
BKR ID =	#85	BKR ID =	#87 & #91
FRONT HALF =	ml	FRONT HALF =	ml
BACK HALF =	455 ml	BACK HALF =	795 ml
BEAKER RINSES =	25 ml	BEAKER RINSES =	95 ml
		IMPINGERS =	200 ml
total acetone =	480.0 ml	total water =	1090.0 ml

* All data and calculations may be found on file at the San Diego County Air Pollution Control District.

TEST # = #89285

STANDARDS

volume Ac = 500 ml volume water = 1000 ml

	ACETONE	WATER
BKR ID =	#86	#88
f:	49.4049 g	49.9947 g
i:	49.4049 g	49.9946 g
Δ:	0 g	0.0001 g

Limits:

limit for acetone is 7.9 μg/ml (7.9 * 10^-6 g/ml)
limit for water is 4 μg/ml (4 * 10^-6 g/ml)

The Acetone **PASSED** The Water **PASSED**

0 g/ml 1E-07 g/ml

(3) CORRECTIONS- (volume used)*(std wt)

	ACETONE	**WATER**
FRONT HALF =	0 g	0 g
BACK HALF =	0 g	7.95E-05 g
BKR RINSES =	0 g	9.5E-06 g

tot. front half = 0 g tot. impingers = 2E-05 g

tot. back half = 7.95E-05 g

total rinses = 9.5E-06 g **total grams = 0.0001 g from solvents**

SDC APCD METHOD 5 LAB SHEET

TEST # = #89285

WEIGHTS

	FRONT HALF	BACK HALF
ACETONE		
BKR ID =		#85
f:	g	49.6932 g
i:	g	49.5394 g
Δ:	0.0000 g	0.1538 g
WATER		
BKR ID =	#91	#87
f:	49.322 g	50.3473 g
i:	49.3165 g	50.0294 g
Δ:	0.0055 g	0.3179 g
ORGANIC		
BKR ID =		
f:	g	g
i:	g	g
Δ:	0.0000 g	0.0000 g
FILTERS		
ID =		#89028
f:	g	0.1209 g
i:	g	0.1199 g
Δ:	0.0000 g	0.0010 g

TEST # = #89285

(4) FINAL WEIGHTS

(total weight gained)

FRONT HALF= 0.0055 BACK HALF= 0.4717 ORGANIC= 0.0000
(front and back)

TOTAL WEIGHT GAINED = 0.4772 g

correction for solvents (acetone and water)

TOTAL WEIGHT GAINED FROM SOLVENTS = 0.0001 g

(5) CORRECTED WEIGHTS

TOTAL WEIGHT GAINED CORRECTED = 0.4771 g

(6) FILTERS

FRONT HALF= 0.0000 BACK HALF= 0.0010

TOTAL WEIGHT GAINED = 0.4781 g

Comments - The water rinses sample was put into two beakers, #87 & #91; the weights are combined and do not represent a split into front & back half.

ASPHALT, INC, LAKESIDE
TEST # 89285
TEST DATE: 10/12/89

Sample No. Box #2

Impinger No.	Solution Used	Amount of Solution (ml)	Imp. Tip Configuration	Weight (grams)
1	DI. H_2O	100	MOD.	Final ★ Initial 538.3 Wt. gain 232.1
2	DI. H_2O	100	STD	Final 554.5 Initial 537.9 Wt. gain 16.6
3	—	—	MOD.	Final 459.5 Initial 458.4 Wt. gain 1.1
4	—	—	MOD	Final ★★ Initial 441.0 Wt. gain -0-
~~5~~				Final Initial Wt. gain
~~6~~				Final Initial Wt. gain
Flask				Final Initial Wt. gain

TOTAL WEIGHT GAIN OF IMPINGERS (grams) 249.8

PRED. & TARE WTS. - 10/9/89 T.C.W.

Date 10-12-89

Signature T. Wood

★★ IMP. #4'S STEM WAS BROKEN DURING A PORT CHANGE, TOP PIECE WAS REPLACED. NO VISIBLE LIQUID IN IMPINGER.

★ Poured some of IMP #1 catch into sample beaker to weigh.

IMP #1 592.6 − 538.3 = 54.3 (partial)

Beaker 581.0 − 403.2 = 177.8

Imp #1 wt gain = 54.3 + 177.8 = 232.1 g

ORSAT ANALYSIS RESULTS

Gas Fractional Part

CO_2 6.6%

O_2 12.0%

CO

N_2

QC 12 Dec 89

Date

Time

Signature

TEST # 89235
TEST DATE - 10-12-89

ASPHALT, INC, LAKESIDE

10-12-89 T.C.W.

RECOVER PROBE & NOZZLE (T.C.W. & J.J.)

P&N WERE CLEANED ON THE OUTSIDE BEFORE FINAL RECOVERY.
P&N WERE RINSED & BRUSHED WITH ACETONE THEN DI WATER.
BOTH P&N HAD DARK BROWN PARTICLES IN ACETONE RINSE.

RECOVER IMPINGERS

FIRST "U" TUBE INSIDE OVEN BOX HAD A LOT OF DK BROWN PARTICLES.
IMP # 1 HAS SIGNIFICANT DK. BROWN PARTICLES.
IMP # 2 HAS SOME CLOUDINESS IN THE WATER.
IMPS. WERE RINSED & BRUSHED WITH DI WATER, THEN ACETONE
IMP # 4 WAS NOT RINSED & RECOVERED USED SAMPLE BEC. OF GLASS SHARDS.

RECOVER FILTER # 99029

FILTER PLACED IN PLASTIC PETRI DISH. EDGES ON GASKET WERE SCRAPED.
GLASS SHARDS FROM BROKEN IMP # 4 STEM WERE REMOVED.
NO SIGNIFICANT LOSS OF SAMPLE OCCURRED. ALSO NO GLASS WAS LEFT ON FILTER.
FILTER PLACED IN DESSICATOR (10-17-89 @ 1651)

ACETONE RINSES (USED EM SCIENCE OMNISOLV, LOT # 8301)

BKR #85
250 ml
+ 200
450
- 195 remaining
255
+ 200 (BKR RINSE)
455 ml + 25 ml = 480 ml

TRFR TO BKR # 85 (10-18-89)

DI WATER RINSES (APCO LAB DI WATER)

BKR #87
920 ml
+ 75
995 ml
(INCLUDES IMP CHARGE & CATCH)
BKR RINSE = 20 ml

TRFR TO BKR # 87 (partial) (10-18-89)

BKR #91 10-25-89 RINSED MORE SAMPLE INTO ANOTHER TARED BEAKER TO SEPARATE OUT SOME GLASS SHARDS. (J.J.)
BKR RINSE = 75 mL.
BKR TO DESS. (10-26-89 @ 0814)

TEST # 89285

ASPHALT, INK, LAKESIDE

T.C.W.

ACETONE BLANK (USED EM SCIENCE, OMNISOLV, GLASS DISTILLED 0.1 ppm RESIDUE, LOT # 83301)

BKR # 86 — EVAP AT ROOM TEMP. (10-6-89)

500 ml. — TRFR TO BKR # 86 (10-18-89)

DI WATER BLANK (ARCO LAB WATER)

BKR # 88 — TRFR TO BKR # 88 (10-19-89)

1000 ml.

SAMPLE WEIGHTS (IN GRAMS)

BKR/FILTER	WT. 1	WT. 2	WT. 3	(COMMENTS)		FINAL WT.	INIT. WT.
# 85 ACETONE SAMPLE	10-24 @ 0947 49.6923	10-24 @ 1551 49.6933	10-25 @ 1443 49.6934		10/26 @ 0725 49.6929	49.6932	49.5394
# 87 (1 of 2) WATER SAMPLE	10-25 @ 1445 50.3513	10-26 @ 0733 50.3503	10-26 @ 1557 50.3505	10-30 @ 0836 50.3472	10-31 @ 0747 50.3474	see below	50.0294
# 86 ACETONE BLANK	10-24 @ 1603 49.4049	10-25 @ 1455 49.4049	10-26 @ 0757 49.4046			49.4048	49.4049
# 88 DI WATER BLANK	10-24 @ 1605 49.9949	10-25 @ 1511 49.9946	10-26 @ 0758 49.9946			49.9947	49.9946
FILTER # 89028	10-19 @ 1326 0.1210	10-24 @ 1631 0.1209	10-25 @ 1558 0.1209			0.1209	0.1199
# 91 WATER SAMPLE (2 of 2)	10-30-89 @ 0930 49.3220	10-31 @ 0740 49.3219	10/31 @ 1611 49.3220			49.3220	49.3165
#87 (1 of 2) WATER SAMPLE	11/1/89 50.3474	(USED LAST 3 WEIGHTS.)				50.3473	50.0294

10-11-89

ASPHALT INC. RESIDE

P.O. # 000115

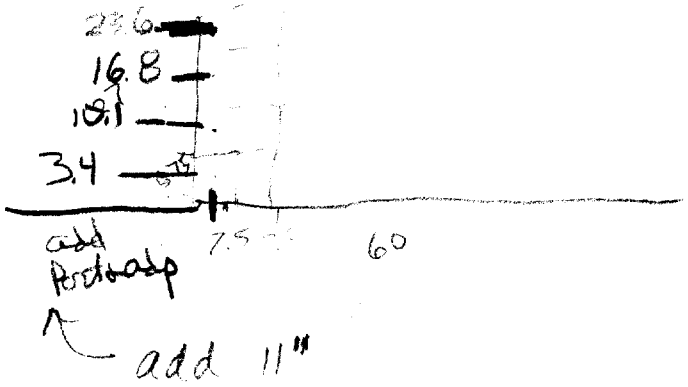
$$De = \frac{2LW}{(L+W)} = \frac{2(27\times 60)}{(27+60)} = 37.2" \quad \text{(Rect. Stack)}$$

$$\text{Upstream} = \frac{18"}{37.2"} = 0.5$$

$$\text{Downstream} = \frac{74" \text{ to location}}{37.2} = \cancel{4.2}\ 1.98$$

MINIMUM NO. OF TRAVERSE POINTS = 25 POINTS (USE 32 PTS.)

$$\frac{80 \text{ MINS TESTING}}{32 \text{ pts}} = 2.5 \text{ MINS/PT}$$



De		MACK PROBE
1	—	34.6 in.
2	—	23.8 in.
3	—	21.1 in.
4	—	14.4 in.