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

TEST NO. 83-327

TEST DATE: November 23, 1983

SOURCE TEST - CANYON ROCK COMPANY
7500 Mission Gorge Road
San Diego, CA

UNIT TESTED: WET SCRUBBER

PERFORMED BY: HUNTER
DEMPSEY
SMITH
SPEER

REPORT PREPARED BY:
G. HUNTER

APPROVED BY: Stella Willcox
for GARY PETROWSKI
SENIOR AIR POLLUTION CHEMIST

REPORT DATE: Dec. 23, 1983

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SAN DIEGO COUNTY AIR POLLUTION CONTROL DISTRICT

TEST DATE: November 23, 1983

TEST NO: 83-327

SUMMARY: EMISSIONS TO ATMOSPHERE

NAME OF FIRM: CANYON ROCK COMPANY

LOCATION OF PLANT: 7500 Mission Gorge Road, San Diego, California

TYPE OF OPERATION: Hot Mix Asphalt Plant, operating at 173 tons/hour

UNIT TESTED: Wet Scrubber

		MEASURED EMISSIONS		ALLOWABLE EMISSIONS	
Rule 52	Particulate Matter, Dry	0.371	Grains per SCF	n/a	Grains per SCF
Rule 53A	Sulfur Compounds as SO_2, Dry		% by Vol.	0.05	% by Vol.
Rule 53B	Combustion Contaminants		Grains per SCF @12% CO_2		Grains per SCF @12% CO_2
Rule 53C	Incinerators		Grains per SCF @12% CO_2		Grains per SCF @12% CO_2
Rule 54	Dust and Fumes	28.67	Lbs/Hr	40.00	Lbs/Hr
	NO_2 (Final Readings)		ppm by Vol. @ 3% O_2		ppm by Vol. @ 3% O_2
			ppm by Vol. @ 3% O_2		ppm by Vol. @ 3% O_2

Gas Flow Rate, DSCFM 9006

Gas Temperature, °F 155 (Avg)

Process Weight 270,000 lbs/hr

EMISSION RATES

Particulates: 28.67 Lbs/Hr

Oxides of Nitrogen: _____ Lbs/Hr

TEST DESCRIPTION

Introduction

This report presents the results of velocity profile and particulate loading tests performed at V.R. Dennis - Canyon Rock on November 23, 1983. The tests were performed on the exhaust from the wet scrubber serving the hot mix asphalt plant, while asphalt production averaged 135 ton/hour.

System Description

The asphalt plant combines crushed rock and sand with hot asphalt oil in batches of 6,000 pounds. Each batch can be carried by conveyor to a silo or loaded directly into trucks. The rock and sand is dried in a rotary drier, which is heated with natural gas. The exhaust from this drier is vented through a cyclone to a wet scrubber, which exhausts tangentially into a 9-foot diameter stack. The water flow rate through the wet scrubber could not be determined because of an inoperative flow meter.

Procedures

Previous testing has shown that there is significant cyclonic flow in this stack, due to the tangential inlet. EPA NSPS Methods 2 and 5 are not applicable to this stack, and require significant modification to enable testing, allowing both isokinetic sampling and the determination of the stack volumetric flow rate. The volumetric flow rate of the stack was determined by using the following procedure for the 48 traverse points, 12 from each sampling port as shown in Figure 1.

The pitot tube on the sampling probe was placed at a traverse point with the pitot tube faces in a vertical plane. The probe was then rotated until the ΔP was 0.00" H_2O. The angle of rotation (α) was measured with a clinometer and recorded. This was done for the twelve points at each sample port just prior to sampling. These measurements were taken with the sampling nozzle removed to prevent flow interference.

After the direction of flow was determined at each of the points at a particular port, the sampling nozzle was installed, and the probe placed at the first sample point. The probe was rotated α degrees from the vertical so that the nozzle was aligned with the stack flow. The ΔP was measured and a sample extracted isokinetically. In order to obtain a representative sample, the sampling time was made proportional to the cosine of α. This procedure was repeated at each of the twelve points at that sample port, adjusting the angle of rotation of the probe and the sample time for each new "α ". A sample was not taken at points where α was greater than 89°; however, the probe was rotated α^{o} and the ΔP measured.

Calculations

The velocity at all 48 points was calculated. These calculations were presented on Pages 10 and 11. The vertical component of the velocity vector was calculated by multiplying the velocity by the cosine of α. The average of these 48 components was found to be feet per second. The particulate concentration calculations were done using normal methods. The emission rate in pounds per hour was calculated using the grain loading and the stack flow based on the vertical compoent of the stack velocity vector. An adjusted emission rate was also calculated based on the bias attributed to the high isokinetic sampling rate.

Gas Analysis

Carbon dioxide content of the stack gas was measured by an ANARAD AR 400 Infrared CO_2 analyzer. Since natural gas was used in the drier accurate estimates of O_2 and N_2 can be calculated, based on theoretical combustion values. These estimates are shown on Page 5.

AIR POLLUTION CONTROL DEPARTMENT - COUNTY OF SAN DIEGO

TEST NO. 327 TEST DATE NOVEMBER 23,1983
CANYON ROCK
RUN 1

A. V_m	METER VOLUME, UNCORRECTED*FACTOR	=	33.36	cu ft
B. P_m	METER PRESSURE, $P_{bar} + H/13.6$	=	30.09	in Hg
C. T_m	METER TEMPERATURE, $460+(T_1+T_2)/2$	=	547	DEG. R
D. T_m	IMPINGER TEMPERATURE	=	61	DEG. F
E. T_i	AVERAGE STACK TEMPERATURE, 460+DEG. F	=	615	DEG. R
F. P_s	STACK PRESSURE, $P_{bar} + P_g/13.6$	=	30.00	in Hg
G. VP_s	MAX.H_2O VP PERMITTED AT T_i (SEE APPENDIX)	=	0.547	in Hg
H. V_{i2}	VOLUME OF CONDENSED H_2O (SEE LAB SHEET)	=	190	ml
I. V_{lc2}	H_2O VAPOR , METER COND., H*C/B*0.00267	=	9.23	cu ft
J. V_{calc2}	MOISTURE METERED AT METER COND., A*G/B	=	0.61	cu ft
K. V_{wv}	SAMPLE VOLUME AT METER COND., DRY, A-J	=	32.76	cu ft
L. $\%M_{dry}$	PER CENT MOISTURE CALC. 100*(I+J)/(A+I)	=	23.09	%
M. VP_c	MAX. H_2O VP PERMITTED AT T_s (SEE APPENDIX)	=	8.56	in Hg
N. $\%M_{s2}$	PER CENT MOISTURE PERMITTED, M/F*100	=	28.5	%
B_s	ENTER LOWER OF L OR N	=	23.1	%
O. $M.C._{ws}$	MOISTURE CORRECTION FACTOR, (100-L OR N)/100	=	0.769	
P. $V_{m(std)}$	SAMPLE VOL.,STD COND.(DRY),K*528/29.92*B/C	=	31.76	cu ft
S. m	WEIGHT OF PARTICULATE MATTER COLLECTED	=	0.665	g
T. c_n	GRAIN LOADING (DRY),15.43*S/P	=	0.323	grains/scf
	ADJUSTED GRAIN LOADING FOR HIGH ISOKINETIC	=	0.371	grains/scf

AIR POLLUTION CONTROL DEPARTMENT - COUNTY OF SAN DIEGO

TEST NO. 327
CANYON ROCK
RUN 1

TEST DATE NOVEMBER 23,1983

COMPONENT	GAS ANALYSIS VOL.%/100	*MOISTURE CORR	*MOL.WT. =	WT./MOLE WET BASIS
WATER, B_{ws}	0.2309	1.00000	18.0	4.156
OXYGEN	0.1410	0.76909	32.0	3.470
CARBON MONOXIDE	0.0000	0.76909	28.0	0.000
CARBON DIOXIDE	0.0390	0.76909	44.0	1.320
NITROGEN & INERTS	0.8200	0.76909	28.2	17.785
AA. M_s AVERAGE MOLECULAR WEIGHT				26.731

DD. C_p PITOT TUBE CORRECTION FACTOR	=	0.84	
EE. V_s STACK VELOCITY AT STACK COND. (Excludes Neg. Velocities)	=	15.31	ft/sec
Stack Velocity at Stack Conditions (Vertical Component Only)	=	3.70	ft/sec
FF. $V_{s(std)}$ STACK VEL. AT STD COND.(DRY),EE*528/29.92*F/E*0=		10.14	ft/sec
Stack Velocity at STD Cond. (Vertical Component Only)	=	2.45	ft/sec
GG. DURATION OF SAMPLING	=	63	min
HH. AVERAGE SAMPLING RATE (DRY),P/GG	=	0.504	scfm
II. SELECTED NOZZLE DIAMETER	=	0.364	in
JJ SAMPLING VELOCITY AT STD COND.,HH/II↑2*144/60*4/3.14	=	11.63	ft/sec
KK. I ISOKINETIC VARIATION, JJ/FF*100	=	115	%
LL. A_s AREA OF STACK	=	61.28	sq ft
MM. Q_{sd} FLOW RATE AT STD. COND.(DRY), FF*LL*60	=	9006	scfm
NN. Q_s FLOW RATE AT STACK COND., EE*LL*60	=	13604	acfm
UU. PARTICULATE EMISSION RATE, 0.00857*T*MM	=	24.93	lb/hr
ADJUSTED PARTICULATE EMISSION RATE FOR HIGH ISOKINETIC	=	28.67	lb/hr

AIR POLLUTION CONTROL DEPARTMENT - COUNTY OF SAN DIEGO

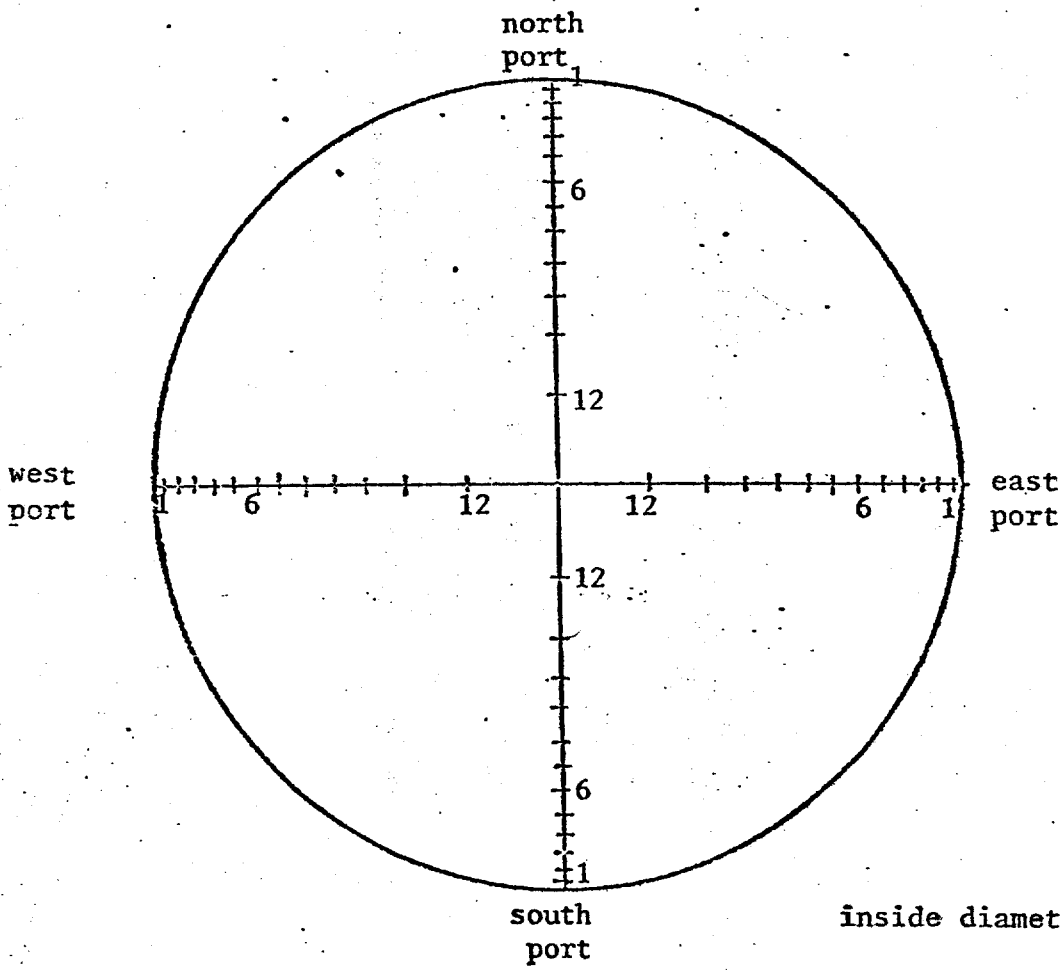
SUMMARY FINAL CALCULATIONS

TEST NO. 327 TEST DATE NOVEMBER 23,1983
CANYON ROCK
RUN 1

T. c_s	GRAIN LOADING(DRY)	=	0.323 grains/scf
UU.	PARTICULATE EMISSION RATE	=	24.93 lb/hr
ZZ.	EXCESS AIR = $\frac{(\%\ \text{OXYGEN} - \%\ \text{CO}) \quad * 100}{0.264*(\%\ \text{N2}) - (\%\ \text{OX}) + 0.5*(\%\ \text{CO})}$	=	187 %

SAN DIEGO COUNTY AIR POLLUTION CONTROL DISTRICT

TRAVERSE POINTS



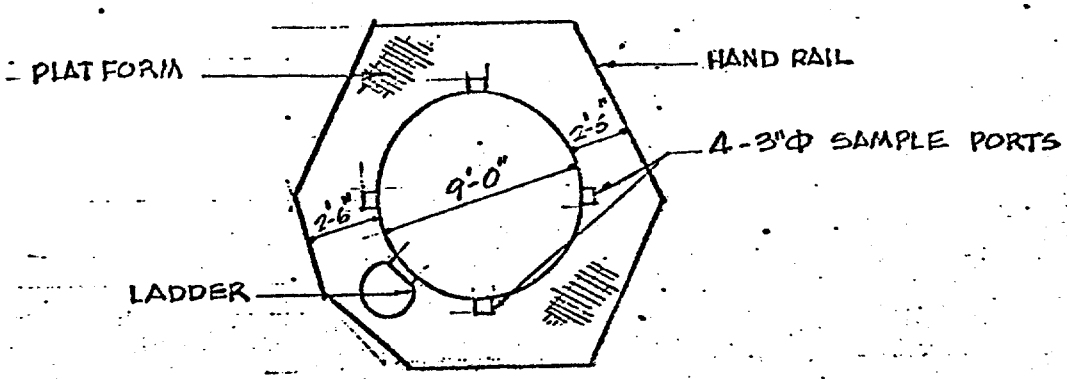
inside diameter = 106"

Point	Distance
1	1.1"
2	3.4"
3	5.8"
4	8.4"
5	11.1"
6	14.0"
7	17.1"
8	20.5"
9	24.4"
10	28.8"
11	34.3"
12	42.2"

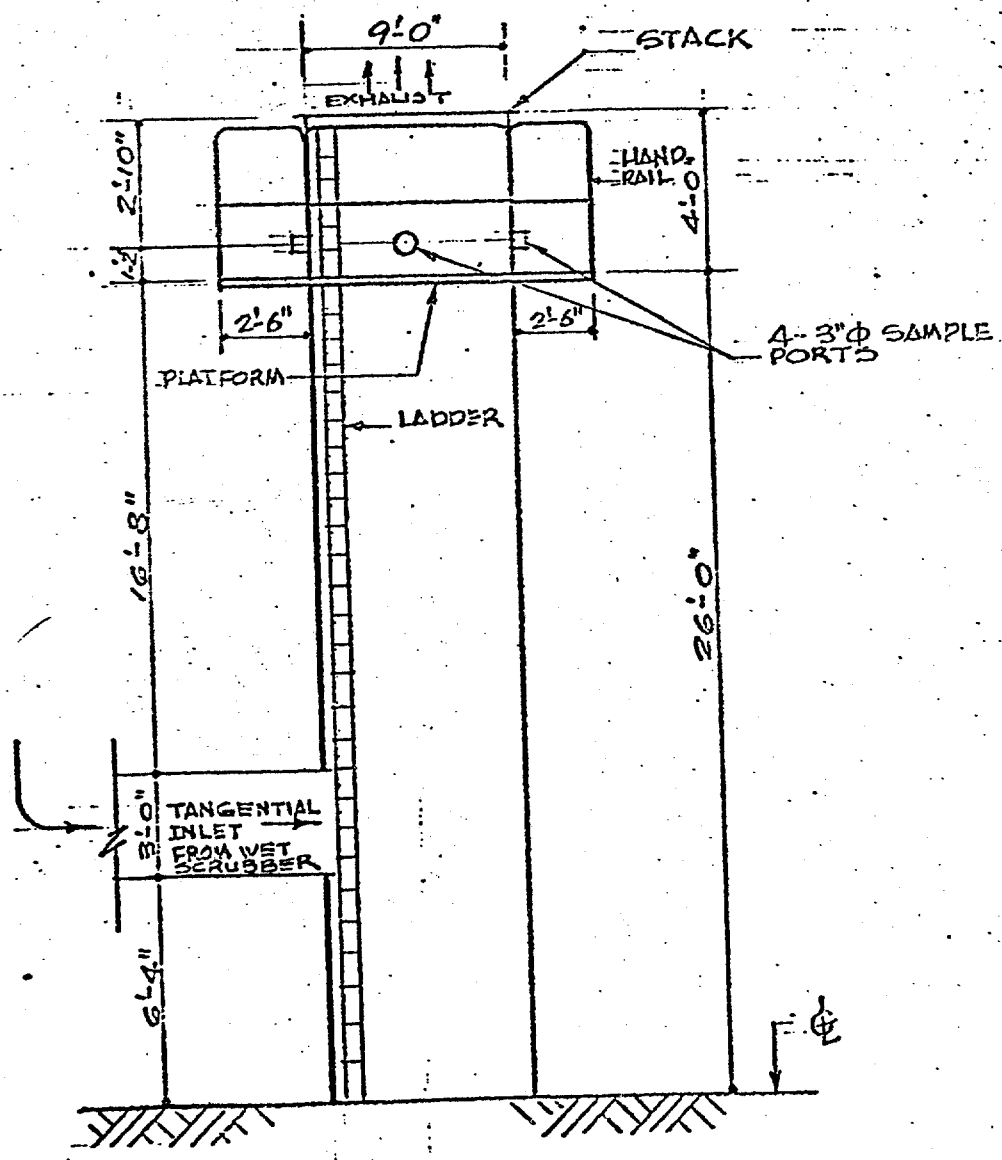
FIGURE 1

Test No. 83327

SITE DESCRIPTION
SAN DIEGO AIR POLLUTION CONTROL DISTRICT
V.R. DENNIS-CANYON ROCK ASPHALT PLANT

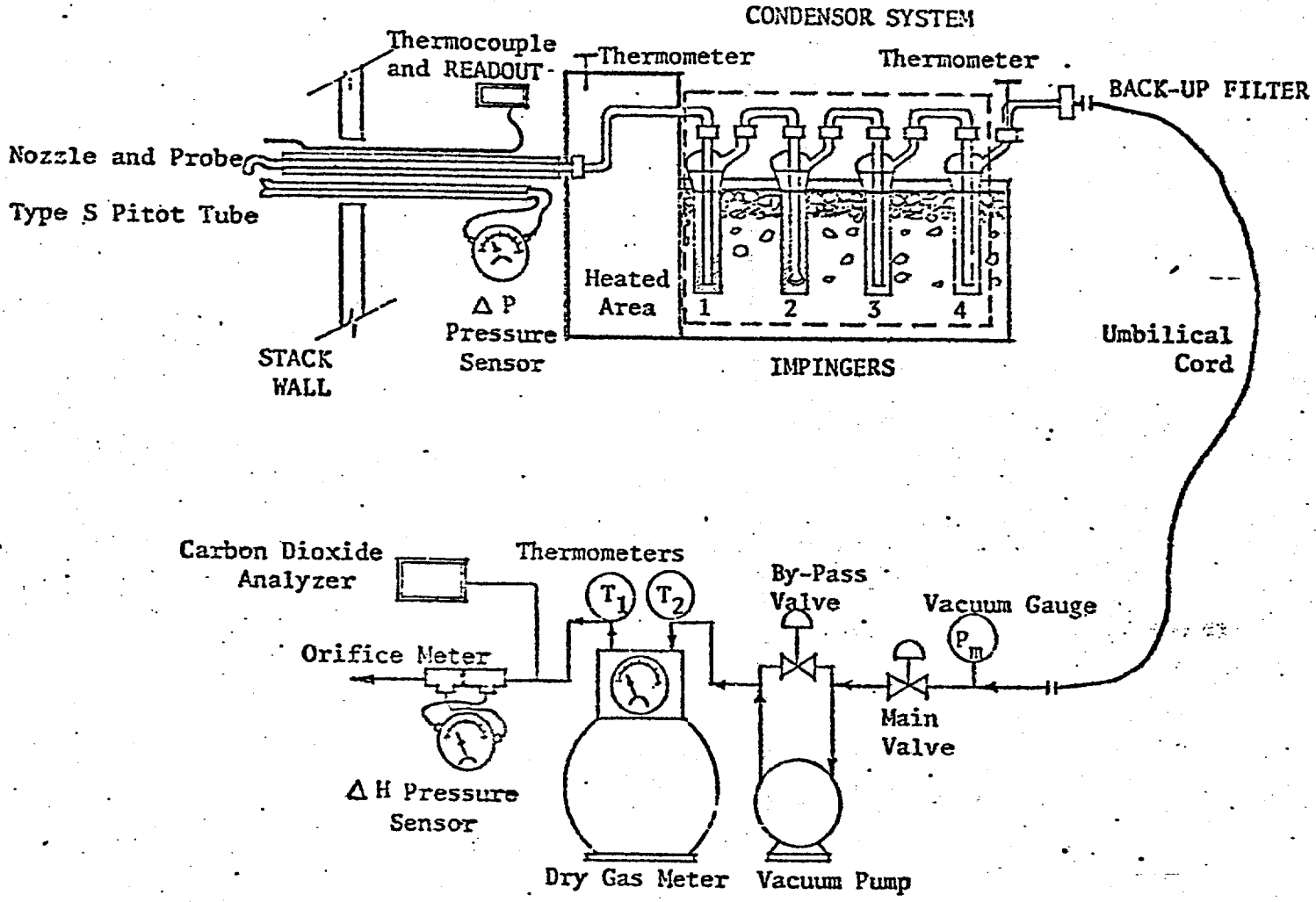


TOP VIEW
NO SCALE



SIDE VIEW
NO SCALE

SAN DIEGO COUNTY AIR POLLUTION CONTROL DISTRICT



LEGEND

Greenburg-Smith Type Impingers

No. 1 Mod- 100 ML Deionized Water

No. 2 Std- 100 ML Deionized Water

No. 3 Mod- Dry

No. 4 Mod- Dry

Mod - Modified Type
Std - Standard Type

FIELD DATA ABBREVIATIONS

PT = Point Number
T_s = Stack Temperature, ^oF
P = Pitot Tube Pressure Differential, in.H_2O
VEL= Stack Velocity, fps
H = Orifice Meter Pressure Drop, in. H_2O
T_1 = Meter Inlet Temperature, ^oF
T_2 = Meter Outlet Temperature, ^oF
P_m = Pump Vacuum, in. Hg
T_i = Impinger Temperature, ^oF
P_{bar} = Barometric Pressure, in. Hg

FIGURE 3: PARTICULATE MATTER SAMPLING TRAIN

AIR POLLUTION CONTROL DEPARTMENT - COUNTY OF SAN DIEGO

SAMPLE COLLECTION DATA

TEST NO. 327 TEST DATE NOVEMBER 23,1983
CANYON ROCK
RUN 1

PT	T s	P	VEL	H	T 1	T 2	P m	T i	ANG	(VEL)
N-01	138	0.060	15.2	1.10	70.0	58.0	1.4	59.0	70	5.2
N-02	140	0.090	18.6	1.70	78.0	58.0	2.4	58.0	70	6.4
N-03	141	0.090	18.7	1.70	82.0	58.0	2.4	57.0	70	6.4
N-04	143	0.100	19.7	1.85	86.0	59.0	4.0	56.0	70	6.7
N-05	145	0.070	16.5	1.30	88.0	60.0	2.2	56.0	70	5.6
N-06	145	0.060	15.3	1.20	90.0	60.0	2.0	55.0	80	2.7
N-07	146	0.050	14.0	0.95	90.0	60.0	1.4	55.0	80	2.4
N-08	146	0.020	8.8	0.38	90.0	62.0	0.4	53.0	80	1.5
N-09	146	0.030	10.8	0.57	90.0	62.0	0.0	53.0	90	0.0
#N-10	146	0.020	8.8	0.38	90.0	62.0	0.0	53.0	95	-0.8
#N-11	146	0.020	8.8	0.38	90.0	62.0	0.0	53.0	120	-4.4
#N-12	146	0.020	8.8	0.38	90.0	62.0	0.0	53.0	120	-4.4
W-01	146	0.080	17.7	1.50	76.0	69.0	2.8	56.0	60	6.6
W-02	146	0.080	17.7	1.50	88.0	68.0	2.8	53.0	70	6.0
W-03	146	0.080	17.7	1.50	94.0	68.0	2.8	54.0	65	7.5
W-04	146	0.080	17.7	1.50	97.0	69.0	2.8	53.0	65	7.5
W-05	146	0.075	17.1	1.40	99.0	70.0	2.6	52.0	65	7.2
W-06	146	0.075	17.1	1.30	102.0	70.0	2.4	53.0	65	7.2
W-07	146	0.050	14.0	0.95	103.0	71.0	1.7	56.0	75	3.6
W-08	146	0.050	14.0	0.95	104.0	72.0	1.7	56.0	75	3.6
W-09	152	0.040	12.5	0.75	104.0	72.0	1.2	56.0	75	3.2
W-10	150	0.020	8.9	0.38	104.0	73.0	0.3	56.0	75	2.3
W-11	145	0.020	8.8	0.38	104.0	73.0	0.3	57.0	75	2.3
W-12	144	0.020	8.8	0.38	104.0	73.0	0.3	57.0	75	2.3
S-01	159	0.085	18.4	1.60	94.0	80.0	2.8	69.0	65	7.8
S-02	160	0.090	18.9	1.70	102.0	80.0	3.2	69.0	65	8.0
S-03	162	0.090	19.0	1.70	106.0	79.0	3.2	68.0	65	8.0
S-04	165	0.090	19.0	1.70	108.0	79.0	3.2	67.0	65	8.0
S-05	166	0.085	18.5	1.60	110.0	80.0	3.0	67.0	70	6.3
S-06	164	0.050	14.2	0.90	106.0	80.0	1.8	67.0	85	1.2

AIR POLLUTION CONTROL DEPARTMENT - COUNTY OF SAN DIEGO

SAMPLE COLLECTION DATA

TEST NO. 327 TEST DATE NOVEMBER 23,1983
CANYON ROCK
RUN 1

PT	T s	P	VEL	H	T 1	T 2	P m	T i	ANG	(VEL)
S-07	169	0.050	14.2	0.90	106.0	80.0	1.8	66.0	85	1.2
S-08	164	0.040	12.7	0.75	108.0	80.0	1.6	66.0	85	1.1
#S-09	164	0.040	12.7	0.75	108.0	80.0	0.0	66.0	90	0.0
#S-10	164	0.040	12.7	0.75	108.0	80.0	0.0	66.0	110	-4.3
#S-11	164	0.040	12.7	0.75	108.0	80.0	0.0	66.0	110	-4.3
#S-12	164	0.040	12.7	0.75	108.0	80.0	0.0	66.0	110	-4.3
E-01	164	0.050	14.2	0.95	96.0	83.0	0.9	72.0	60	7.1
E-02	164	0.050	14.2	0.95	103.0	82.0	0.9	71.0	60	7.1
E-03	165	0.080	17.9	1.50	108.0	82.0	1.3	69.0	60	9.0
E-04	164	0.080	17.9	1.50	111.0	82.0	2.0	66.0	60	9.0
E-05	164	0.080	17.9	1.50	113.0	82.0	3.0	64.0	65	7.6
E-06	164	0.080	17.9	1.50	115.0	83.0	3.0	62.0	72	5.5
E-07	164	0.050	14.2	0.95	115.0	83.0	1.9	65.0	75	3.7
E-08	164	0.050	14.2	0.95	110.0	84.0	1.9	68.0	80	2.5
E-09	164	0.040	12.7	0.75	113.0	85.0	1.9	67.0	80	2.2
E-10	164	0.040	12.7	0.75	113.0	85.0	1.9	67.0	80	2.2
E-11	165	0.040	12.7	0.75	115.0	85.0	1.9	66.0	80	2.2
E-12	163	0.040	12.7	0.75	115.0	85.0	1.9	66.0	80	2.2
AVG	155	0.054	14.6	1.06	*100.5	*74.1	*2.0	*61.3	78	3.7

$$VEL = 85.48 * C_p * SQ.RT.((P_s * T_s)/(P_s * M_s))$$

DRY GAS METER VOLUME UNCORRECTED = 32.882 P_{bar} = 30.00 in Hg

METER CORRECTION FACTOR = 1.0187 P_g (STACK PRESSURE) = 0.0 in water

NOTES - 1. AVG P IS THE SQUARE OF THE MEAN (SQ.RT.(P))
2. (VEL) = VEL*COS(ANG)

#Indicates points where no sampling done
*Averages exclude points where no sampling done

TEST No. 83-327
V.R. DENNIS

COUNTY OF SAN DIEGO

AIR POLLUTION CONTROL DISTRICT

Particulate Matter
Laboratory Data

I. PARTICULATES

A. PROBE RINSE ACETONE — Final 2.0406 g
Tare 1.3797 g .6609 g

B. IMPINGER CATCH — Final _____ g
Included Item* A
Tare _____ g _____ g

C. BACK-UP FILTER — Final .1219 g
Filter # G-16 Tare .1165 g .0054 g

D. SOLVENT EXTRACTION — Final _____ g
Tare _____ g _____ g

E. BLANKS

_____ ml Sol _____
350 ml Water .00048 (Factor = .00138 mg/ml × 10^{-6})
350 ml Acetone .001 _____ g _____ g

TOTAL WEIGHT (A+B+C+D-E) Particulate Matter .6649 g

II. CONDENSED MOISTURE Final 390 ml
Tare 200 ml Net 190 ml

Reference Laboratory Notebook [illegible], Pg. 47

ENGINEERING SOURCE TEST DATA - DECEMBER 1, 1983

Source: Canyon Rock/V. R. Dennis, 583-7611
7500 Mission Gorge Road
San Diego, CA 92120

Test Date: November 23, 1983

Test Number: 83327

Permit to Operate No.: 00254

Equipment Tested: Hot Asphalt Batch Plant

Contact: Ken Atwood

Fuel: Natural Gas

Total Production: 309 tons

Total Production Time: 2.29 hours

Average Process Weight: 135 tons/hour

Plant Rating: 200 tons/hour

Scrubber Water Flow: Not Available

Asphalt Temperature: 270° F to 300° F

MATERIAL COMPOSITION

Material Input	Analysis of Aggregate	
Fines 60.7% or 3640 lbs/batch	Passing 3/8"	96.2%
3/8" Rock 32.6% or 1957 lbs/batch	Passing #4	70
AR 4000 Oil 6.7% or 403 lbs/batch	Passing #8	59
	Passing #30	26
	Passing #200	5

Elapsed Time		No. of Batches		Process Wt. Rate	
(min)	(hrs)	(Number)	(Tons)	(Tons/hr)	
10.612	0.1769	7	21	119	
39.400	0.6567	27	81	123	
37.800	0.6300	29	87	138	
49.700	0.8283	40	120	145	
137.512	2.2919	103	309	135	(AVERAGE)

COMMENTS:

Process activity during the test proceeded without irregularities other than minor changes made to establish their effect on blue smoke emissions.

The first such change was to reduce the asphalt temperature from 300° F to 270° F. This change did reduce visible emissions but not sufficiently to comply with Rule 50. In addition to this temperature reduction, a soapy solution which is being added to the silo conveyor in place of oil to extend belt life was curtailed. This elimination of the soapy solution also reduced the visible emissions but not sufficiently to comply with Rule 50.

Because these measures did not result in compliance with Rule 50 the asphalt temperature was returned to 300° F and addition of the soapy solution was continued.

It is curious to note that in other plants, the reduction of the asphalt temperature below 300° F has resulted in compliance with Rule 50. It is possible that either the oil temperature itself or a variation in the composition of the asphalt oil may be causing this inconsistency.

Although this plant is rated at 200 tons/hour production capacity it only averaged 135 tons/hour production during the test. Plant personnel indicate that the plant was being operated at its maximum capacity, however, the excessively wet condition of the aggregate reduced the plant's production capability. Upon observation the aggregate pile was found to be visibly damp. It is recommended that tests of hot asphalt plants be conducted in the drier summer months to provide a worst case situation concerning emissions and production rate.

David A. Speer

DANIEL A. SPEER
Senior Air Pollution Control Engineer

CANYON ROCK HOT ASPHALT BATCH PLANT
7500 MISSION GORGE ROAD, SAN DIEGO
P/O No. 0254

I. AGGREGATE COMPOSITION PER BATCH

		1/2" Mix
Bin #1	Sand & Dust	2815 lbs.
Bin #2	3/8" Rock	1985 lbs.
Bin #3	1/2" Rock	844 lbs.
AR 4000 Oil		356 lbs.
		6000 lbs.

II. ASPHALT PRODUCTION DURING SAMPLING TEST

TIME	DRYER TEMP., °F	NAT. GAS PRESS, OZ.	REMARKS
0835	300	2 1/4	North Port, Pt. 1
0930	-	-	Reduced nat. gas flow to minimize dryer dust emissions at rotary seal
0949	345 (spike)	3/4	South Port, Pt. 1
1043	255	.8	West Port, Pt. 1
1100	-	-	Shutdown at end of West Port (Pt. 12) Traverse
	146 Batches of 1/2" Mix Continuous Operation (145 mins.)		
1206	300	.8	East Port, Pt. 1
1237	270	.8	
1240			Test Complete
	26 Batches of 1/2" Mix Continuous Operation (34 mins.)		

TOTAL PRODUCTION TIME: 145 + 34 = 179 minutes

TOTAL PRODUCTION: 146 + 26 = 172 Batches
172 Batches x 3 tons/batch = 516 tons

AVERAGE PRODUCTION RATE: 173 tons/hr.

START Time : 8:33

CANYON ROCK 1

~~[illegible]~~ TEST #83327

FILTER NO G-16 NOZZLE DIA .364 in.
SAMPLE BOX NO 337
P. BARO ____ in.Hg. P.STACK ____ in.H2O

SAN DIEGO APCD
SAMPLE COLLECTION DATA
Initial Vol. 108.251
Initial Lk .013 @ 4"

DATE 11-23-83
TEST NO ____ RUN ____
OPERATOR Hunter, Dempsey, Sporn, Smith, Hill

CHECKS	North POINT NO.	STACK TEMP. °F	PITOT P in.H_2O	GAS METER H	GAS METER T_1	GAS METER T_2	GAS METER VAC	T I °F	GAS VOL. Ft^3	TIME (11.17, 10ths)	CARD 2	(Span 9.3%) or %CO_2
INITIAL												
Pitot ___	N-01	138	.06	1.1	70	58	1.4	59		1.71	~~80~~ 70-	3.4
Thermo. ___	N-02	140	.09	1.7	78	58	2.4	58		1.71	70-	3.7
Train ___	N-03	141	.09	1.7	82	58	2.4	57		1.71	70-	3.7
INTERMEDIATE												
Pitot ___	N-04	143	.10	1.85	86	59	4.0	56		1.71	70-	3.5
Train ___	N-05	145	.07	1.30	88	60	2.2	56		1.71	70-	3.5
FINAL ___												
Pitot ___	N-06	145	.06	1.20	90	60	2.0	55		0.86	80-	3.5
Train ___	N-07	146	.05	.95	90	60	1.4	55		0.86	80-	3.5
	N-08	146	.02	.38	90	62	0.4	53	→ 114.123	0.86	80-	3.5
	N-09	146	.03	.57	90	62	0.0	53		0.0	90-	—
SDAPCD ST #53 (2/79)	N-10	146	.02	.38	90	62	0.0	53		0.0	95-	—
	N-11	146	.02	.38	90	62	0.0	53		~~0~~ 0.0	120-	—
	N-12	146	.02	.38	90	62	0.0	53		0.0	120-	—

Elapsed Clock Time 11' 10"

CANYON ROCK

2

FILTER NO _____ NOZZLE DIA _____ in.
SAMPLE BOX NO _____
P. BARO _____ in.Hg. P.STACK _____ in.H2O

SAN DIEGO APCD
SAMPLE COLLECTION DATA

DATE 11-23-83

TEST NO _____ RUN _____
OPERATOR _____

CHECKS	POINT NO.	STACK TEMP. °F	PITOT P in.H_2O	GAS METER H	GAS METER T_1	GAS METER T_2	GAS METER VAC	T I °F	GAS VOL. Ft^3	TIME 1982 NOTES	CARD a	%K or $\%CO_2$
INITIAL	W-01	146	.08	1.5	76	69	2.8	56		1.87	68 -	3.7
Pitot ___	W-02	146	.08	1.5	88	68	2.8	53		1.71 .	70 -	4.1
Thermo. ___	W-03	146	.08	1.5	98	68	2.8	54		2.11 .	65 -	4.1
Train ___												
INTERMEDIATE												
Pitot ___	W-04	146	.08	1.5	97	69	2.8	53		2.11	65 -	4.0
Train						70						
FINAL ___	W-05	146	.075	1.4	99	68	2.6	52		2.11 .	65 -	4.0
Pitot ___	W-06	146	.075	1.3	102	70	2.4	53		2.11	65 -	3.8
Train ___												
	W-07	146	.05	.95	103	71	1.7	56		1.30	75 -	3.7
	W-08	146	.05	.95	104	72	1.7	56		1.30	75 -	3.6
	W-09	152	.04	.75	104	72	1.2	56		1.30	75 -	3.4
	W-10	150	.02	.38	104	73	0.3	56		1.30	75 -	2.8
	W-11	145	.02	.38	104	73	0.3	57		1.30	75 -	2.7
	W-12	144	.02	.38	104	73	0.3	57	124.028	1.30	75 -	2.6

SDAPCD ST #53
(2/79)

CANYON ROCK

3

FILTER NO _____ NOZZLE DIA _____ in. SAN DIEGO APCD DATE 11-23-83
SAMPLE BOX NO _____ SAMPLE COLLECTION DATA
P. BARO _____ in.Hg. P.STACK _____ in.H2O TEST NO _____ RUN _____
OPERATOR _____

CHECKS	POINT NO.	STACK TEMP. °F	PITOT P in.H_2O	GAS METER H	GAS METER T_1	GAS METER T_2	GAS METER VAC	T I °F	GAS VOL. Ft^3	TIME 11.44	CARD 4	~~%~~ or $\%CO_2$
INITIAL	S-01	158	.085	1.6	74	85	2.8	59		2.11	65	4.6
Pitot ___	S-02	160	.09	1.7	102	80	3.2	59		2.11	65	4.6
Thermo. ___	S-03	162	.09	1.7	106	79	3.2	58		2.11	65	4.7
Train ___												
INTERMEDIATE	S-04	165	.09	1.7	108	79	3.2	57		2.11	65	4.8
Pitot ___												
Train	S-05	166	.085	1.6	110	80	3.0	57		1.71	70	4.8
FINAL ___												
Pitot ___	S-06	164	.05	.9	106	80	1.8	57		0.43	85	4.6
Train ___												
	S-07	164	.05	.9	106	80	1.8	56		0.43	85	4.6
	S-08	164	.04	.75	108	80	1.6	56	131.018	0.43	85	4.6
	S-09	164	.09	.75	108	80	0.0	66		0.0	90	
	S-10	164	.04	.75	108	80	0.0	66		0.0	110	
	S-11	164	.04	.75	108	80	0.0	66		0.0	110	
	S-12	164	.04	.75	108	80	0.0	66		0.0	110	

SDAPCD ST #53
(2/79)

Final Vol 141.133
Final Lk .006 @ 4"

~~Ind metals~~ WRF

4

SAN DIEGO APCD
SAMPLE COLLECTION DATA
Canyon Rock

FILTER NO ______ NOZZLE DIA ______ in.
SAMPLE BOX NO ______
P. BARO ______ in.Hg. P.STACK ______ in.H2O

DATE ~~10-6-83~~ 11-23-83
TEST NO ______ RUN ______
OPERATOR Hunter, Dempsey, Segal

Final CO_2 4.64

CHECKS

INITIAL
Pitot ___
Thermo. ___
Train ___
INTERMEDIATE
Pitot ___
Train ___
FINAL ___
Pitot ___
Train ___

POINT NO. (EAST)	STACK TEMP. °F	PITOT P in.H_2O	GAS METER H	GAS METER T_1	GAS METER T_2	GAS METER VAC	T I °F	GAS VOL. Ft^3	TIME 20.26	CARD	or $\%CO_2$
E-01	164	.05	.95	96	83	.90	72		2.50	60 -	3.6
E-02	164	.05	.75	103	82	.90	71		2.50	60 -	2.8
E-03	165	.08	1.5	108	82	1.3	69		2.50	60 -	2.7
E-04	164	.08	1.5	111	82	2.0	66		2.50	60 -	3.7
E-05	164	.08	1.5	113	82	3.0	64		2.11	65 -	4.6
E-06	164	.08	1.5	115	83	3.0	62		2.55	72 -	4.3
E-07	164	.05	.95	115	83	1.9	65		1.30	75 -	4.6
E-08	164	.05	.95	110	84	1.9	68		0.86	80 -	4.4
E-09	164	.04	.75	113	85	1.9	67		0.86	80 -	4.3
E-10	164	.04	.75	113	85	1.9	67		0.86	80 -	4.4
E-11	165	.04	.75	115	85	1.9	66		0.86	80 -	4.2
E-12	163	.04	.75	115	85	1.9	66		0.86	80 -	4.3

SDAPCD ST #53
(2/79)