INDUSTRIAL ASPHALT COMPANY
11099 OLD FRIANT ROAD
FRESNO, CALIFORNIA 93710

INDUSTRIAL ASPHALT COMPANY
WOODWARD PLANT
BAGHOUSE

ANNUAL COMPLIANCE TEST
MAY 12, 1992

PREPARED BY:
GENESIS ENVIRONMENTAL SERVICES COMPANY
1145 WEST COLUMBUS AVENUE
BAKERSFIELD, CALIFORNIA 93301

APCD NO 5210130103

REPORT #7777-0346

TEST CONDUCTED BY MICHAEL L. BAKALOR
RESULTS VERIFIED BY MICHAEL L. BAKALOR
OPERATIONS MANAGER

TABLE OF CONTENTS

INTRODUCTION

At the request of Mr. Jerry Gowens of Industrial Asphalt Company, Genesis Environmental Services conducted an Annual Compliance Test on the Woodward Plant, Baghouse outlet.

The purpose of this testing was to determine if stack emissions would meet permit conditions as required by Fresno County Air Pollution Control District Permit # 5210130103.

The compliance test was conducted on May 12, 1992, by Mr. Michael L. Bakalor, Mr. Tom Clisham, and Mr. Jeff Harris of Genesis Environmental Services. Industrial Asphalt representative Mr. Jerry Gowens was present during the test. The following is a summary of tests performed on the Baghouse, Unit # 1.

Test Summary
Industrial Asphalt
Woodward Plant
May 12, 1992

Production Rate of 400 Tons/Hour

CONSTITUENT	**METHOD**	**QUANTITY**
NO_x	CARB-100 for NO_x (Teco Model 10AR)	(TRIPLICATE)
O_2	CARB-100 for O_2 (Teledyne Model 326RA)	(TRIPLICATE)
CO	CARB-100 for CO (Teco Model 48)	(TRIPLICATE)
PM10	CARB METHOD 501	(DUPLICATE)

Section 2.0

Summary of Results

SUMMARY OF SOURCE TEST RESULTS

Company: Industrial Asphalt APCD No. 52101301103

Test Date: 5-12-92 Unit No. # 1

EMISSIONS

POLLUTANT	Concentration gr/dscf	@12%	PPMv	@3% O2	lb/hr	lb/MMBTU
Particulate (PM10)	0.0091 0.0089 ------ 0.0090	0.0238 0.0231 ------ 0.0235			2.33 2.27 ------ 2.30	
Sulfate						
SO2 (wet)						
NOx as NO2 (dry)			45.0 48.3 44.3 ------ 45.9		9.76 10.47 9.60 ------ 9.95	
HC						
CO			122.5 155.6 157.5 ------ 145.2		16.17 20.58 20.81 ------ 19.19	

Comments:

FIELD DATA SHEET

Site/Location: Industrial Asphalt, Woodward Plant, 5-12-92

Test #		Test # 1	Test # 2
Vlc	- Volume of water collected in train, ml	177.20	160.10
Vm	- Sample gas volume, dcf	27.99	28.92
Yd	- Meter calibration factor	1.00	1.00
Pbar	- Barometric pressure, in. Hg.	30.04	29.72
Ps	- Stack static pressure, inches of H2O	0.64	0.66
Delta H	- Average meter differential pressure, inches of H2O	0.35	0.35
Tm	- Absolute meter temperature, R	537.86	547.84
Vm(std)	- Standard sample gas volume	27.20	27.30
Bws	- Water vapor in gas stream, % moisture	0.23	0.21
MF	- Moisture factor	0.77	0.79
CO2	- Dry, volume %	4.60	4.60
O2	- Dry, volume %	13.73	13.62
N2	- Dry, volume %	81.68	81.78
CO	- Dry, volume %	0.00	0.00
Md	- Molecular weight of stack gas, dry	29.29	29.28
Ms	- Molecular weight of stack gas, wet	26.67	26.87
Cp	- Pitot tube coefficient	0.83	0.83
P (avg)	- Average of the square roots of each delta P	1.01	1.00
Ts	- Absolute stack temperature, R	757.33	756.94
As	- Area of the stack, sq. ft.	13.50	13.50
Qstd	- Volumetric flowrate, dscfm	29804	29852
An	- Nozzle Area, sq. ft.	1.8E-04	1.8E-04
O	- Sample time	70.00	65.00
%I	- Isokinetic variation	95.31	102.83

Calculations of Results

Sample Gas Volume

$$Vm(std) = VmY \left[\frac{Tstd}{T_m}\right]\left[\frac{Pbar \ (\frac{\Delta H}{13.6})}{P_{std}}\right] = K_1 V_m Y \left[\frac{Pbar + (\frac{\Delta H}{13.6})}{T_m}\right]$$

$= K_1 = 17.38$ R/Hg @ 520R

Volume of Water Collected

$Vmc(std) = K(Wf-W1)$

Where: $K_3 = 0.0471\ ft^3/g$

$W_f =$ Final weight of all impingers and silica

$W_1 =$ Initial weight of all impingers and silica gel

Moisture Content

$$Bws = \left[\frac{Vwc(std) + Vwsg(std)}{Vwc(std) + Vwsg(std) \quad Vm(std)}\right]$$

Bws x 100 = $\%H_2O$ in gas stream

MF = 1 - Bws

Leak Rate Adjustment

For leak rates beyond allowable limits, correct the above equation as follows:

No component changes made during run.

Vm = Vm - (Lp - La) 0

Calculation of Results

Dry Molecular Weight of Stack Gas

$$M_d = 0.440 \quad (\%CO_2) \quad + \quad 0.320 \quad (\%O_2) \quad + \quad 0.280 \quad (\%N_2 + \%CO)$$

$$P_g = \frac{[\text{Static Pressure, "}H_2O\text{"}P_g]}{13.6}$$

$$P_s = P_{bar} + P_g$$

$$V_s = K_p C_p \quad (\Delta p) \text{ avg.} \qquad \frac{[Ts(avg)]}{P_s M_s}$$

Wet Molecular Weight of Stack Gas

$$M_s = M_d(i-B_{ws}) \quad + \quad 18(B_{ws})$$

Average Stack Gas Dry Volumetric Flow Rate

$$Qstd = 60(1-B_{ws})V_s A \quad \left[\frac{Tstd}{T_s(avg)}\right] \quad \left[\frac{Ps}{P_{std}}\right]$$

Isokinetic Variation

$$\%I = 100 \text{ X } T_s \quad \left[\frac{VlcK_3 + V_m/T_m \; (P_b + \frac{\Delta H}{13.6})}{60 \quad 0 \; A_n \; V_s \; P_s}\right]$$

Where $K_3 = 0.002669$

Calculation of Results

CALCULATION OF EMISSION RATES

Particulate Calculation

Acetone Blank Concentration

$$C_a = \left[\frac{ma}{V_{ab}\rho a}\right]$$

Acetone Wash Blank

$$W_a = C_a\ V_{aw}\rho a$$

Particulate Concentration

$$C_s = (0.001\ g/mg)\ \ (m_n/V_{(std)})\ \ (15.432)\ \ = gr/dscf$$

$$gr/scf = (gr/dscf)\ \ (MF)$$

$$gr/dscf\ @\ 12\%\ CO_2 = \left[\frac{gr/dscf \times 12}{\%CO_2\ (dry)}\right]$$

$$lb/hr = (gr/dscf)\ \ (dscfm)\ \ (60\ min/hr)\ \ (1\ lb/7000\ gr)$$

Calculation of Results

DETERMINATION OF SULFURIC ACID MIST AND SULFUR DIOXIDE EMISSIONS FROM STATIONARY SOURCES

Sulfate Calculations

$$C_{H2}\ SO_4 = K1^N \frac{[^{Vt-Vtb}][\frac{V^{soln}}{Va}]}{V_{m(std)}} = \text{lb/dscf}$$

Where $K_1 = 1.081 \times 10^{-4}$ lb/meq

$$\text{lbs } SO_4/\text{hr} = (C_{H2}\ SO_4)\ (Qstd)\ (60\ \text{min/hr})$$

Sulfur Dioxide Concentration

$$C_{so2} = K_1 N \frac{[V_t - V_{tb}][\frac{Vsoln}{Va}]}{V_{m(std)}} = \text{lb/dscf}$$

Where $K_1 = 7.061 \times 10^{-5}$ lb/meq

(lb/dscf) (MF) = lb/scf

$$\text{Dry ppm } SO_2 = (C_{so2})\ (3.795 \times 10^8)\ (1/64)$$

$$\text{Wet ppm } SO_2 = (\text{lb/scf})\ (3.795 \times 10^8)\ (1/64)$$

$$lb_{so2}/\text{hr} = (C_{so2})\ (Qstd)\ (60\ \text{min/hr})$$

Calculation of Results

F FACTOR CALCULATIONS

1. $Fd_{68} = [\frac{10^6 \quad (3.64\%H + 1.53\%C + 0.57\%S + 0.14\%N - 0.46\%O)}{GCV}]$

$Fd_{60} = \frac{520 \ Fd_{68}}{528}$ Note: Fd_{68} for EPA
Fd_{60} for KCAPCD

2. $SDCFM = [\frac{(Fd) \quad (GCV) \quad (FOR)}{1440}] \quad [\frac{(20.9)}{(20.9 - O_2\%)}]$

Where: GCV - 10_6 BTU/Bbl
FOR - Fuel Oil Rate (Bbls/day)

3. Corrected to 3% O_2

$ppm @ 3\% \ O_2 = ppm[\frac{(17.9)}{(20.9 - O_2\%)}]$

4. $C_s = (ppm) \quad (X)$

Where: C_s = pollutant concentration (lbs/scf)

		EPA	KCAPCD
X =	NOx	$1.194x10^{-7}$	$1.212x10^{-7}$
X =	CO	$7.268x10^{-8}$	$7.378x10^{-8}$
X =	HC	$4.153x10^{-8}$	$4.216x1^{-8}$

5. $E = (C_s) \quad (Fd) \ [\frac{(20.9)}{(20.9-O_2\%)}]$

Where: E = emission rate (lbs/MMBTU)

6. $E = (C_s) \quad (SDCFM) \quad (60)$

Where: E = emission rate (lbs/hr)

NOMENCLATURE

A	= Cross-sectional area of stack (ft^2)
A_n	= Cross-sectional area of nozzle (ft^2)
B_{ws}	= Proportion of water vapor, by volume, in the gas stream
C_a	= Acetone blank residue concentration, (mg/g)
Cp	= Pitot tube coefficient, dimensionless
C_s	= Concentration of particulate matter in stack gas, dry basis, corrected to standard conditions, (gr.dscf)
C_{so2}	= Concentration of sulfur dioxide, dry basis corrected to standard conditions, (lb/dscf)
$C_{h2s}O_4$	= Sulfuric acid (including SO_2) concentration, corrected to standard conditions, (lb/dscf)
ΔH	= Average pressure differential across the orifice meter, (in H_2O)
Kp	= Pitot tube constant $85.49 \; \frac{ft}{sec} \left[\frac{(lb/lb\text{-}mole)\ (in.\ Hg)}{(R)}\right] \frac{1/2}{(in\ H_2O)}$
Lp	= Leakage rate observed during the post-test check, (cfm)
L_a	= Maximum acceptable leakage rate, (0.02 cfm or 4% of average sampling rate, whichever is less)
L_i	= Individual leakage rate observed during the leak check conducted prior to the "n_{th}" component change, (cfm)
m_a	= Mass of residue of acetone after evaporation, mg.
M_d	= Molecular weight of stack gas, dry basis, (lb/lb-mole)
m_n	= Total weight of particulate matter collected, mg.
M_s	= Molecular weight of stack gas, wet basis, (lb/lb-mole)
M_w	= Molecular weight of water, 18 lb/lb-mole
N	= Normality of barium perchlorate titrant, (milliequivalents/ml)
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_m	= Absolute pressure at the dry gas meter
P_s	= Absolute stack gas pressure (in. Hg)
P_{std}	= Standard absolute pressure, 29.92 in. Hg
Q_{std}	= Dry volumetric stack gas flow rate, standard conditions (dscfm)
R	= Ideal gas constant, 21.85 (in Hg) (ft_3)/lb/-mole) (R)
t_s	= Stack temperature, (F)
T_m	= Absolute temperature at meter, (R)
T_{std}	= Standard absolute temperature at meter, (520R)
T_s	= Absolute stack temperature, (460 + t_s)
V_a	= Volume of sample aliquot titrated, (ml)
V_{ab}	= Volume of acetone blank, ml
V_m	= Dry gas volume measured by dry gas meter, (dcf)

$V_{m(std)}$	= Dry gas volume measured by dry gas meter, corrected to standard conditions, (dscf)
$V_{wc(std)}$	= Volume of water vapor condensed corrected to standard conditions, (scf)
$V_{wsg(std)}$	= Volume of water vapor collected in silica gel corrected to standard conditions (scf)
V_{lc}	= Volume of water vapor condensed in impingers and silica gel, (ml)
V_f	= Final volume of condensed water, ml
V_I	= Initial volume of condensed water, ml
V_s	= Average stack gas velocity, (ft/sec)
V_{soln}	= Total volume of solution in which the sulfur dioxide sample is contained (ml)
V_t	= Volume of barium perchlorate titrant used for the sample is contained (ml)
V_{tb}	= Volume of barium perchlorate titrant used for the blank, (ml)
W	= Final weight of silica gel or silica gel plus impinger, (g)
W_i	= Initial weight of silica gel or silica gel plus impinger, (g)
Y	= Dry gas meter calibration factor
ρw	= Density of water, (0.002202 lb.ml @ 60F)
ρa	= Density of acetone, (g/ml) (see bottle label)
MF	= Moisture factor
$\%CO_2$	= Percent CO_2 by volume (dry basis)
$\%O_2$	= Percent O_2 by volume (dry basis)
%CO	= Percent CO by volume (dry basis)
%N	= Percent N by volume (dry basis)
0.264	= Ratio of O_2 to N_2 in air v/v
0.280	= Molecular weight of N_2 or CO, divided by 100
0.320	= Molecular weight of O_2, divided by 100
0.440	= Molecular weight of CO_2, divided by 100
60	= Conversion Factor, (sec/min)
18.0	= Molecular weight of water, (lb/lb-mole)
32.02	= Equivalent weight of sulfur dioxide
0	= Total sampling time (min)
0^1	= Sampling time interval, from the run beginning until first component change, (min)
0_1	= Sampling time interval, between two successive component changes, beginning with the interval between the first and second changes, (min)
0p	= Sampling time interval, from the final (n_{th}) component change until the end of the sampling run, (min)

Section 3.0

Continuous Emission Monitoring

SECTION 3.0

CONTINUOUS EMISSION MONITORING : NO_x, CO, & O_2

The analyzers utilized in the GENESIS continuous monitor test trailer are presented in Table 3-3. Figure 3-1 is a schematic of the continuous monitoring system. The protocol used to continuously monitor stack gases for NO_x, Oxygen and CO follows CARB Method 100 recommendations.

Stack gas is extracted from the stack using a 316 stainless steel probe. A stainless steel sintered filter (99 percent efficiency @ 0.6 micron particles) is attached to the inlet of the probe. From the sample probe, sample gas is transported through a heated Teflon sample line by a Teflon-lined diaphragm pump to a series of Greenburg-Smith knock-out impinger and condenser system. The clean, dry sample gas is then transported to the continuous analyzer system through a Teflon line. Prior to the analyzers, another filter (Balston glass fiber filter, efficiency of 99 percent @ 0.3 microns) is installed. A series of flowmeters, valves, and a by-pass regulator maintain constant flow through the system at a constant pressure.

At the onset of each test series, a leak-check is performed on the continuous monitor sampling system. The sample probe is removed from the stack and the inlet is sealed. A leak free system is verified when flow through the rotameters to the individual analyzers all drop to zero. A mandatory leak-check is performed at the completion of each test series.

Analyzer calibrations are performed at the start of the test run by introducing zero and span gases for each analyzer and making necessary adjustments. EPA Protocal 1 certified calibration gas values are recorded on the strip chart and field data sheet. A calibration check is also performed at the end of the twenty minute test run and recorded on the strip chart. If adjustments are necessary to the analyzers they are made after documentation has been made of any zero or calibration drift. At the conclusion of the test, a system calibration is performed on the sample system. This is accomplished by first removing the sample probe from the stack and allowing ambient air to purge the systems. After the system has been purged to verify a zero reading, a system gas, which has been named against the standard EPA protocal gas, is introduced at the sample nozzle. System pressure and vaccuum are maintained as in normal operation during this procedure. The system gas is then allowed to flow through the sample conditioning system to the analyzers. Once a stable reading has been achieved, it is recorded and used to calculate the system efficiency which has a tolerance of 5% of the system gas introduced.

Data is recorded in 10 minute averages for one hour test run. Table 3-1 gives a summary of 10 minute averages. Table 3-2 gives a summary of one hour averages and emission factors. No corrections for zero or span drift were necessary due to a less than 2% drift.

TABLE 3-1a

Continuous Monitor Data Summary
Ten Minute Averages
Test # 1
Industrial Asphalt

Time	% O2	CO ppm	NOx ppm	SDCFM	CO Lbs/hr	NOx Lbs/hr
720	13.90	105.0	41.8	29804	13.86	9.06
730	13.75	90.0	46.5	29804	11.88	10.08
750	13.55	147.5	47.5	29804	19.47	10.29
800	13.70	147.5	44.3	29804	19.47	9.60
AVG.	13.73	122.5	45.0	29804	16.17	9.76

Calibration Data

	% O2	CO ppm	NOxppm
ZERO	0.00	0.0	-3.5
Span	15.00	102.5	77.8
Gas Value	15.00	100.3	77.0
Zero Factor	0	0	0
Span Factor	0	0	0

TABLE 3-1b

Continuous Monitor Data Summary
Ten Minute Averages
Test # 2
Industrial Asphalt

Time	% O2	CO ppm	NOx ppm	SDCFM	CO Lbs/hr	NOx Lbs/hr
830	13.60	165.0	47.0	29852	21.82	10.20
840	13.70	165.0	47.0	29852	21.82	10.20
850	13.63	147.5	49.0	29852	19.51	10.64
900	13.55	145.0	50.0	29852	19.18	10.85
AVG.	13.62	155.6	48.3	29852	20.58	10.47

Calibration Data

	% O2	CO ppm	NOxppm
ZERO	0.0	0.0	1.3
Span	15.08	100.0	79.0
Gas Value	15.00	100.3	77.0
Zero Factor	0	0	0
Span Factor	0	0	0

TABLE 3-1c

Continuous Monitor Data Summary
Ten Minute Averages
Test # 3
Industrial Asphalt

Time	% O2	CO ppm	NOx ppm	SDCFM	CO Lbs/hr	NOx Lbs/hr
1025	13.55	162.5	44.8	29828	21.47	9.72
1035	13.33	145.0	46.5	29828	19.16	10.09
1045	13.75	172.5	41.0	29828	22.79	8.89
1055	13.55	150.0	44.8	29828	19.82	9.72
AVG.	13.55	157.5	44.3	29828	20.81	9.60

Calibration Data

	% O2	CO ppm	NOxppm
ZERO	0.0	0.0	-2.0
Span	14.75	100.1	75.0
Gas Value	15.00	100.3	77.0
Zero Factor	0	0	0
Span Factor	0	0	0

TABLE 3-2

Continuous Monitor Data Summary
Industrial Asphalt
May 12, 1992

Time	% O2	CO ppm	NOx ppm	SDCFM	CO Lbs/hr	NOx Lbs/hr
1	13.73	122.5	45.03	29804	16.17	9.76
2	13.62	155.6	48.25	29852	20.58	10.47
3	13.55	157.5	44.28	29828	20.81	9.60
AVG.	13.63	145.2	45.85	29828	19.19	9.95

Figure 3-1

Continuous Emission Monitoring System

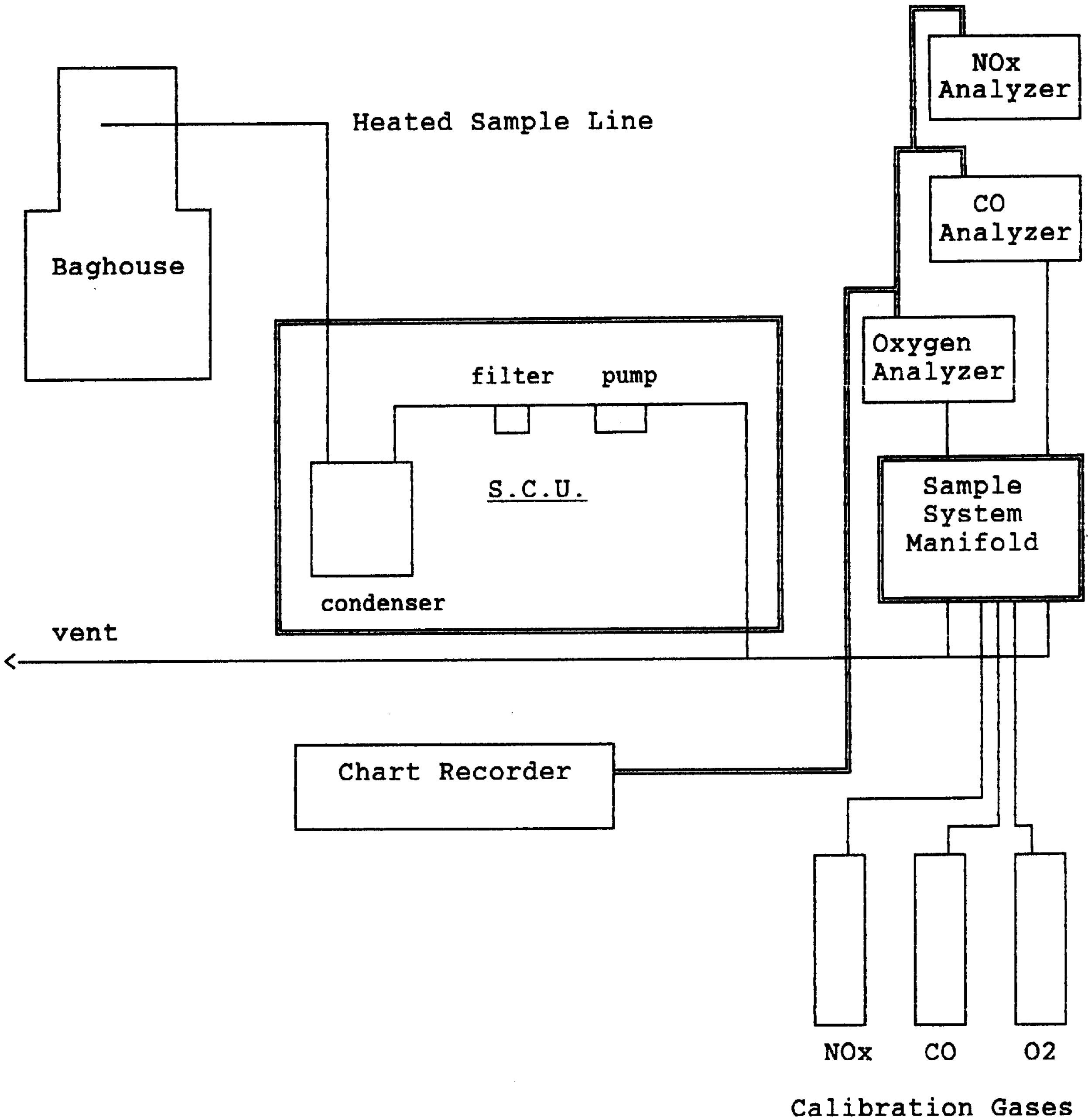


Table 3-3

Analyzer Specifications

NOx CHEMILUMINESCENT ANALYZER -- THERMO ELECTRON MODEL 10AR

Response time	(0-90%)	1.5 sec-- NO mode 1.7 sec -- NOx mode
Zero Drift		Negligible after 1/2 hour warmup
Linearity		less than 1% of full scale
Accuracy		Derived from the NO or NO_2 calibration gas, 1% of full scale
Output		0.100 mV, 0-10 mV, 0-5 V, 0-10 V

O_2 ANALYZER, FUEL TYPE -- TELEDYNE MODEL 326RA

Response Time	(0-90%)	60 seconds
Accuracy		less than 1% of scale at constant temperatures; less than 1% of scale of less than 5%of reading, whichever is greater, over the operating temp. range 0-1 V

CO INFRARED ANALYZER -- TECO MODEL 48

Response Time	(0-90%)	1.2 seconds
Zero Drift		less than 1% / 24 hr full scale
Span Drift		less than 1% / 24 hr full scale
Linearity		1%
Repeatability		less than 0.5% of full scale
Output		0-1 V

STRIP CHART RECORDED (4 PEN) -- Linseis Model 7045

Response Time	less than 0.35 sec.
Span -- Full Scale	1 mV through 10 V
Zero Set	Electronically adjustable full scale with 1 full scale of zero suppression
Accuracy	Plus or minus 0.35 %
Linearity	Plus or minus 0.25 %

Section 4.0

Particulate Sampling Protocol

Section 4.0

Particulate Sampling Protocol

The source test is performed in accordance with specifications of EPA method 5 and 8 of the Federal Register. The following sections are designed to give an outline of the procedures used during the test in addition to what is outlined in the Federal Register.

4.1 Preliminary Determinations

Molecular Weight of the Stack Gas. The molecular weight of the stack gas will be determined by entering Carbon Dioxide, Oxygen, and CO concentration into the following equations:

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

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

Where :

M_d = Dry molecular weight of the stack gas

M_s = Wet molecular weight of the stack gas

B_{ws} = Fractional moisture content of the stack gas

Oxygen and Carbon Monoxide concentrations will be determined by continuous monitors. Carbon Dioxide will be determined according to EPA Method 3, using a fyrite gas analyzer.

Stack Gas Velocity. This is determined by use of a Type-S pitot tube and a magnehelic gauge following guidelines set in EPA Method 2. The stack gas velocity and stack temperature will be used in the determination of the nozzle size. Stack velocity is calculated by the following equation.

$$V_s = 85.49\ C_p\ (\sqrt{\Delta p})\ \text{avg.}\left[\frac{T_s}{P_s M_s}\right]$$

Determination of Moisture

Moisture content of the stack gas will be determined using EPA Method 2 guidelines. A condensing impinger train will be used to collect moisture from the stack at measured values by a calibrated dry gas meter. The collected moisture will be weighed and used to determine the stack gas moisture by the following equations:

$$B_{ws} = 100 \times \left[\frac{V_{wc}(std)}{V_{wc}(std) + V_m(std)} \right]$$

$$V_{wc}(std) = 0.0464\ (w_f - w_1)$$

Where:

B_{ws} = Percent moisture in gas stream
$V_{wc}(std)$ = Corrected to standard conditions
$V_m(std)$ = Dry volume measured by the dry gas meter corrected to standard conditions
W_f = Final weight of all impingers
W_1 = Initial weight of the impingers

4.2 Selection of Nozzle Size. Once the preliminary determinations are made in Section 4.1, the nozzle size is selected using the following equation:

$$D_n = \left[\frac{0.0014\ Q_m}{T_m C_p (1 - B_{ws})} \frac{P_m}{P_s} \frac{T_s M_s}{(\Delta p)} \right]$$

Where:

Q_m = Test meter volumetric flowrate (cfm)
P_m = Pressure at meter (barometric pressure) (in. Hg)
T_m = Temperature at meter (R)
C_p = Pitot tube coefficient
B_{ws} = Moisture content of the stack gas, volume fraction
T_s = Temperature of the stack (R)
M_s = Molecular weight of the stack gas (lb/lb-mole)
P_s = Pressure of the stack (in. Hg)
p = Average velocity head of the stack gas (in. H_2O)
D_n = Diameter of the nozzle (in.)

Select the nozzle size closest to the value of D_n.

4.3 Particulate Sampling

After the preliminary results have been calculated, these results are used to determine the ideal sampling rate. The following equation will determine the delta H setting to be used each sampling point.

Isokinetic Sampling

$$\Delta H = 846.72\ D_4\ H\ @\ C_p 2(1-B_{ws})^2 \left[\frac{M_d T_m P_s}{M_s T_s P_m}\right] \Delta p$$

Where:

D_n = Diameter of the nozzle (in.)

$\Delta H\ @$ = Differential pressure of orifice meter for 0.75 cfm flow rate at standard conditions

C_p = Pitot tube coefficient

B_{ws} = Moisture content of the stack gas, volume fraction

M_d = Dry molecular weight of the stack gas (lb/lb-mole)

M_s = Wet molecular weight of the stack gas (lb/lb-mole)

T_m = Temperature of the meter (R)

T_s = Temperature of the stack (R)

P_s = Pressure of the stack (in. Hg)

P_m = Pressure of the meter (in. Hg)

ΔH = Differential pressure across orifice meter (in H_2O)

Δp = Velocity head (in H_2O)

4.4 Particulate Sampling Train. The sample train and associated sampling equipment used to measure particulate sulfur dioxide and sulfuric acid mist is assembled at the test site. All reagents are prepared in the laboratory prior to the day of the test. The following is a list of sampling equipment used.

COMPONENT	DESCRIPTION
Metrix Model 1000 Control Box	Measures dry gas volume, stack temperature, probe temperature, filter temperature, and impinger temperature. Controls probe heater, filter heater, and sample flow rate.
Heated Sample Line	A 3/8 inch Teflon heated sample line used between the filter box and Impinger train.
Impinger Train	Consists of a Greenburg-Smith impinger and 3 modified Greenburg-Smith impingers, assembled in a series, which contain, 100 ml of distilled water in the first and second impinger, the third impinger is dry, and the fourth containing 200 grams of drierite.
Umbilical	Connects control box to sample probe and sample train.
Heated Filter Box	A heated filter assembly containing a 3 inch Pyrex filter holder and a heating unit capable of maintaining filter temperature of 250 F.
Sample Probe	A Pyrex lined heated sample probe which also contains a S-type pitot tube to measure velocity and a type-K thermocouple to measure stack temperature.
Sample Nozzle	A calibrated, stainless steel, button hook type sample nozzle.

Section 5.0

Sample Recovery and Analysis

Section 5.0

Sample Recovery and Analysis

Sample Analysis. The sample analysis is performed gravimetricly. Analyses will always conform to the Federal Register guidelines.

5.1 Gravimetric Analysis. A gravimetric analysis is performed when determining the moisture content of the stack gas and the weight of the particulate collected on the filter, the probe, and the nozzle.

5.1.1 Moisture Content. When the test is complete, the moisture content is determined by the weight gain of the impingers.

5.1.2 Filtered Particulate. The glass fiber filter is oven dried at 220 F. for two hours and then desiccated for 24 hours. The filter is then weighed to a constant weight of plus or minus 0.5 mg.

5.1.3 Particulate Residue. Acetone rinse of the probe, sample nozzle and front half of the filter holder are measured and volume recorded. Total volume of the rinse is then transfered into a tapered weighing dish. The dish is place on a hot plate and lightly heated to a dry residue. The dish and residue are desiccated for 24 hours and weighed to a constant weight of plus or minus 0.5 mg. An acetone blank is treated in the manner.

5.1.4 Condensable Particulate. Total volume from the first impinger and rinse are measured and recorded. An aliquot of 50 percent of total is dried to a residue in a tared weighing dish.

Section 6.0

Equipment Calibrations

Section 6.0
Equipment Calibration

All equipment calibration will be performed prior to their initial field use and periodically as needed using the methods described for each piece of equipment.

Nozzle Diameter. The calibration of the probe nozzle will be performed before initial use using a micrometer to measure the diameter at three different points 60 from each other as outlined in Section 5.1 of EPA Method 5. The average diameter will be entered into the logbook. Should the nozzle become damaged and does not meet calibration specifications, it will be reshaped, and recalibrated. Each nozzle will also have an I.D. number permanently etched into it.

Pitot Tubes. The pitot tubes will be calibrated before initial use either by inspection or by using a wind tunnel as outlined in EPA Method 2. The pitot tube calibration data will be entered on the calibration sheet and will be entered into the logbook after each calibration. The pitot tubes will be recalibrated every four weeks.

Dry Gas Meters and Orifice Meters. The dry gas meters in the control box will be calibrated once every month.

Temperature Sensing Devices. The Thermocouples will be calibrated before initial use, before each test series and periodically as necessary. They will be calibrated against a mercury-in-glass thermometer through a range of temperatures as outlined in Section 4.3 of EPA Method 2. The calibration data sheet will be completed and entered into the logbook.

Barometer. The barometer calibration will be checked daily as outlined in EPA 650/4-74-005-d.

Magnehelic Gauges. The magnehelic gauges will be calibrated against an inclined manometer before initial use as outlined in Section 2.2 of EPA Method 2. In addition, the gauge will be checked periodically every month, before the start of each test series or, should a malfunction be suspect, in the gauge.

The calibration will be performed as described in Section 2.2 of the Federal Register. The calibration data sheet will be completed and entered into the logbook.

Analytical Balance. The balance calibration will be checked with a set of standard weights each day that is to be used or should a malfunction be suspected. The calibration procedure will be performed as described in Section 2.2.8 of EPA 650/4-74-005-d. The filter balance will be calibrated with 5 standard weights between 0.2 and 2.0 grams. The balance weight must agree within 0.3 mg of the true weight for each weight.

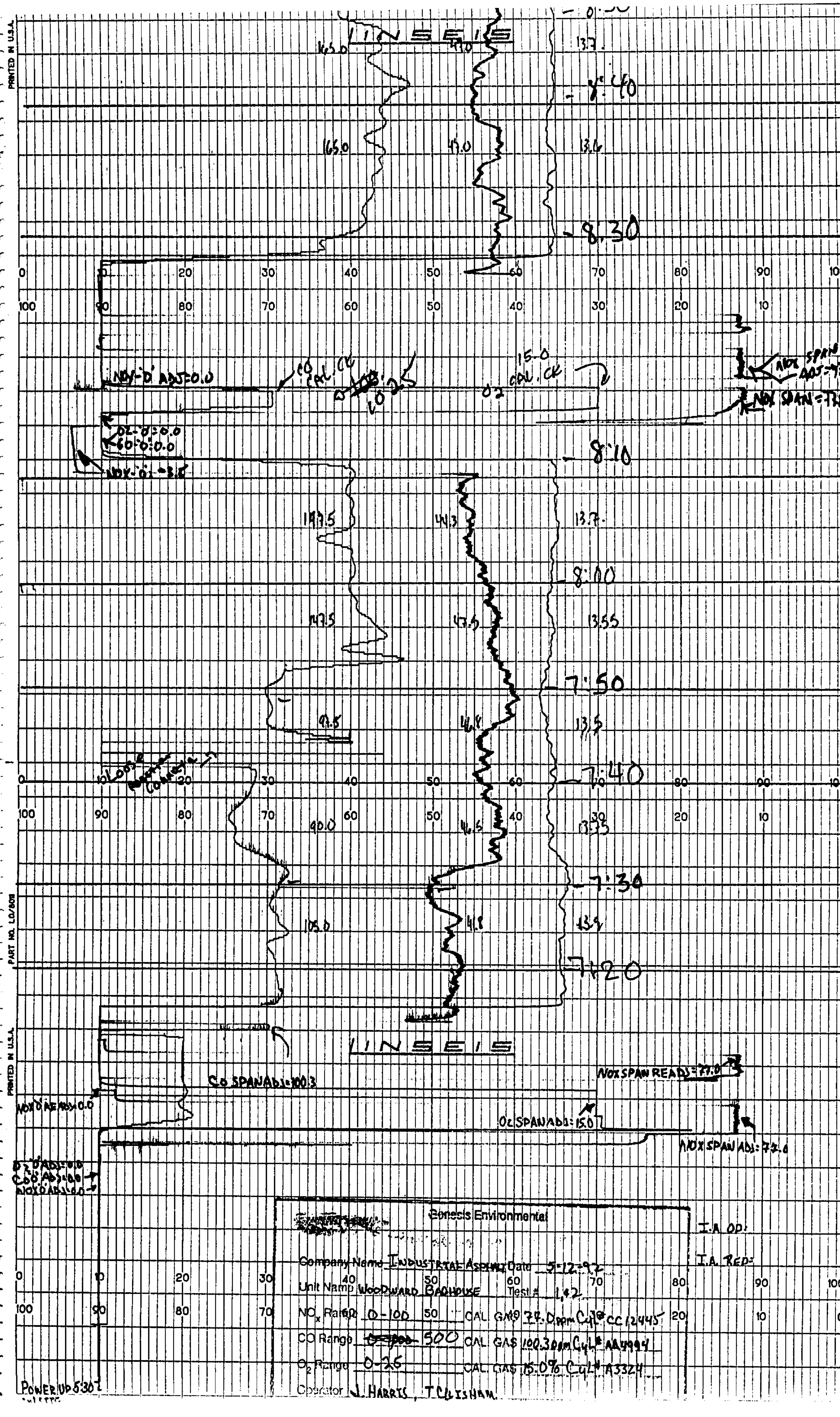
The Ohaus Triple Beam balance will be used to weigh the collected water and Silica gel and will be calibrated with 5 standard weights between 400 g and 1000 g. The balance weight and the true weight must agree within 0.5 mg for each weight.

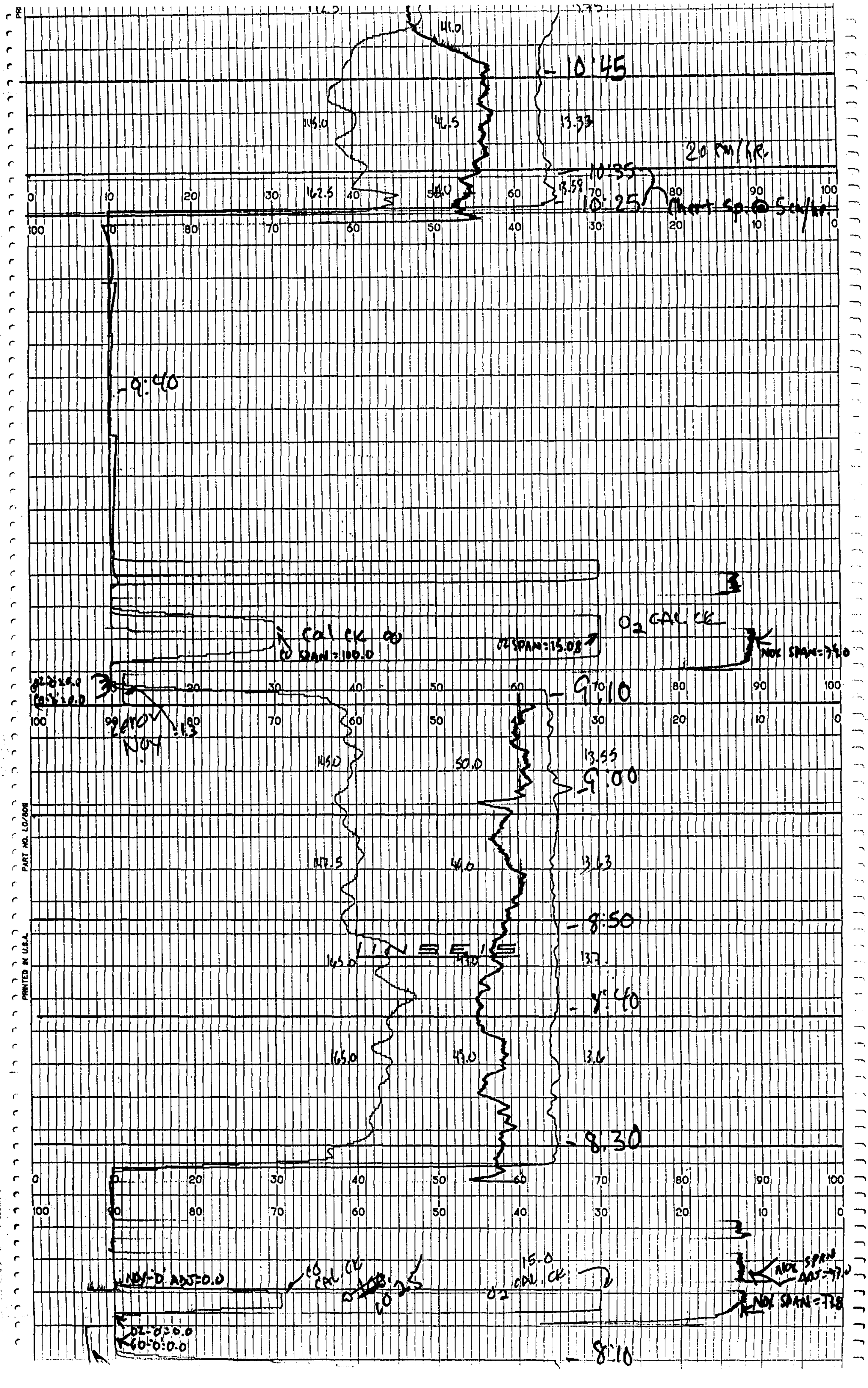
Serial numbers are marked on each balance, and a calibration data sheet will be completed and entered into the logbook each day the balance is used.

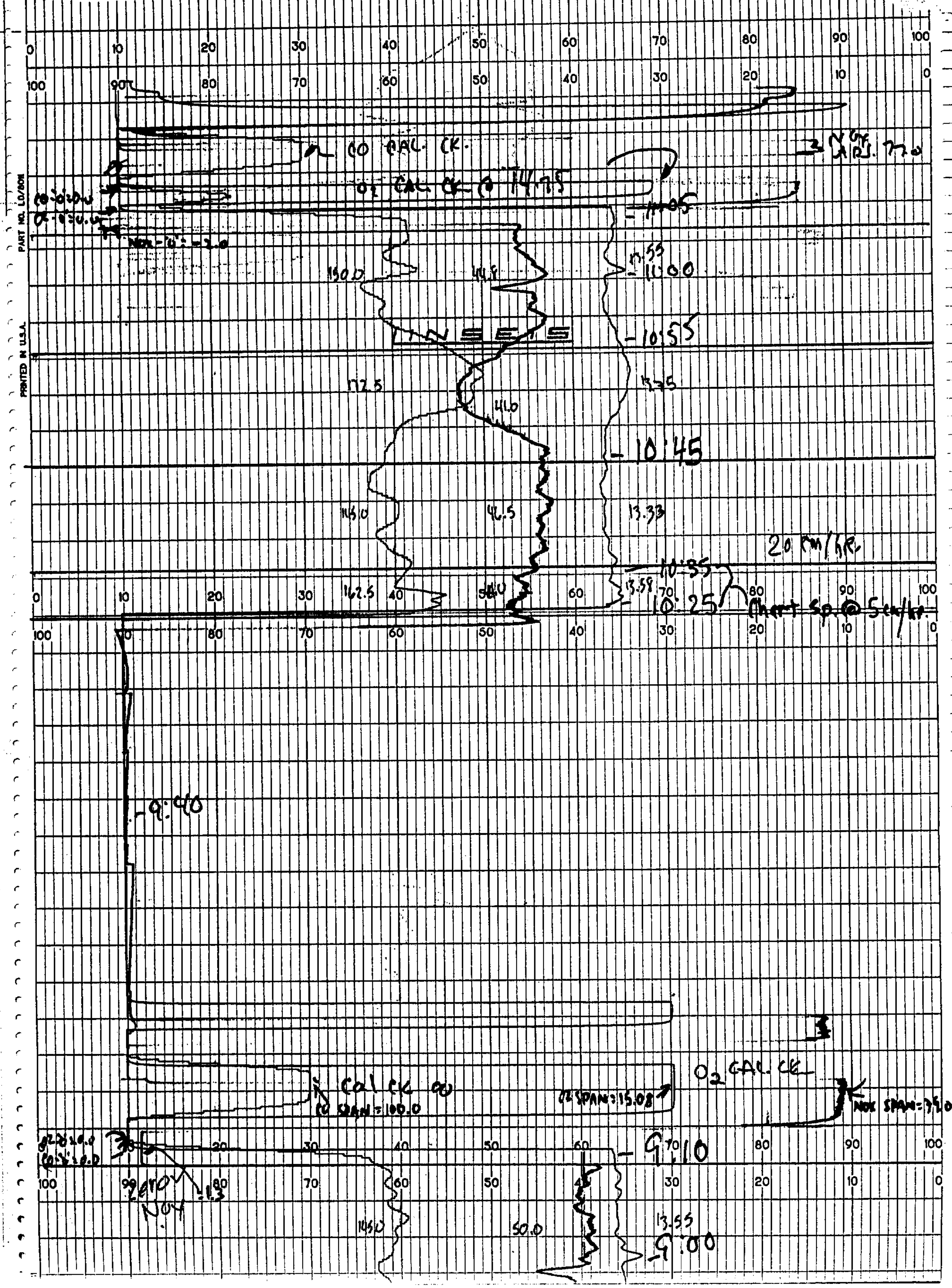
If the balance does not meet calibration specifications, the proper actions will be taken to correct the problem.

Appendix A-1

Raw Data


LINSEIS
8:40
8:30
8:10
8:00
7:50
7:40
7:30
7:20
165.0
43.0
13.7
13.6
15.0 CAL. CK
CO CAL. CK
NOX-0 ADJ=0.0
NOX SPAN ADJ=77.0
NOX SPAN=77.8
O2-0:0.0
CO-0:0.0
NOX-0:-3.0
147.5
44.3
13.55
47.5
93.5
44.8
13.5
90.0
46.5
13.35
105.0
41.8
13.4
LOOSE ... CONVEYOR
CO SPAN ADJ=100.3
NOX SPAN READ=77.0
O2 SPAN ADJ=15.0
NOX SPAN ADJ=77.0
NOX 0 READ ADJ=0.0
O2 0 ADJ=0.0
CO 0 ADJ=0.0
NOX 0 ADJ=0.0
POWER UP 5:30
Genesis Environmental
I.A. OD:
I.A. RED:
Company Name INDUSTRIAL ASPHALT Date 5-12-92
Unit Name WOODWARD BAGHOUSE Test # 1,2
NOx Range 0-100 CAL GAS 77.0ppm Cyl # CC12445
CO Range 500 CAL GAS 100.3ppm Cyl # AA4994
O2 Range 0-25 CAL GAS 15.0% Cyl # A3324
Operator J. HARRIS, T. CLISHAM
PRINTED IN U.S.A.
PART NO. LO/608


10:45
41.0
46.5
13.33
20 cm/hr.
10:35
13.59
162.5
10:25
Chart Sp. @ 5cm/hr.
9:40
Cal ck
CO SPAN = 100.0
O2 SPAN = 15.08
O2 CAL CK
9:10
ZERO NOx
13.55
9:00
145.0
50.0
147.5
46.0
13.63
8:50
165.0
13.7
8:40
165.0
43.0
13.6
8:30
NOx 'O' ADJ = 0.0
CO CAL CK
15.0
O2 CAL CK
NOx SPAN
O2-0 = 0.0
CO-0 = 0.0
8:10
PART NO. LO/8011
PRINTED IN U.S.A.



PART NO. LO/80M
PRINTED IN U.S.A.
CO CAL. CK.
O_2 CAL. CK. @ 14.75
-11:05
-11:00
150.0
44.8
-10:55
172.5
41.0
-10:45
140
46.5
13.33
20 cm/hr.
-10:35
162.5
10:25
Chart Sp. @ 5cm/hr.
-9:40
CO Cal ck
CO SPAN = 100.0
O_2 SPAN = 15.08
O_2 CAL. CK.
NOX SPAN = 75.0
-9:10
ZERO NOX
13.55
145.0
50.0
-9:00

Company Industrial Asphalt

Date 5-12-92

Station Baghouse Fabric Collector

Test Run 1

Time	%O_2	%CO_2	ppm CO		ppm SO_2		ppm NO_x	
			drift not corrected	drift corrected	drift not corrected	drift corrected	drift not corrected	drift corrected
07:20	13.9	N/A	105.0		N/A	N/A	41.8	
07:30	13.75		90.0				46.5	
07:50	13.55		147.5				47.5	
08:00	13.70		147.5				44.3	
Mean								

Calibration	%O_2	%CO_2	ppm CO	ppm SO_2	ppm NO_x
zero reading	0.0	N/A	0.0	N/A.	-3.5
span reading	15.0		102.5		77.8
span gas value	15.0 % CYL# A3324		100.3 CYL# AA 4994.		77.0 CYL# CC12445
* span drift corr. factor					
* zero drift corr. factor					

*Apply drift correction factors to the mean value only, for each test run.
See calculations on next page.

MR ✓

Company Industrial Asphalt   Date 5-12-92

Station Woodward Fabric Collector   Test Run 2

Time	%O_2	%CO_2	ppm CO drift not corrected	ppm CO drift corrected	ppm SO_2 drift not corrected	ppm SO_2 drift corrected	ppm NO_x drift not corrected	ppm NO_x drift corrected
08:30	13.60	N/A	165.0		N/A	N/A	47.0	
08:40	13.70		165.0				47.0	
08:50	13.63		147.5				49.0	
09:00	13.55		145.0				50.0	
Mean								

Calibration	%O_2	%CO_2	ppm CO	ppm SO_2	ppm NO_x
zero reading	0.0	N/A	0.0	N/A.	1.3
span reading	15.08		100.0		79.0
span gas value	15.08 cyl# A3324		100.3 cyl# AA 4994		77.0 cyl# CC12445
* span drift corr. factor					
* zero drift corr. factor					

*Apply drift correction factors to the mean value only, for each test run.
See calculations on next page.

WD

Company Industrial Asphalt Date 5-12-92

Station Woodward Fabric Collector Test Run 3

Time	%O_2	%CO_2	ppm CO drift not corrected	ppm CO drift corrected	ppm SO_2 drift not corrected	ppm SO_2 drift corrected	ppm NO_x drift not corrected	ppm NO_x drift corrected
10:25	13.58	N/A	162.5		N/A	N/A	44.8	
10:35	13.33		145.0				46.5	
10:45	13.75		172.5				41.0	
10:55	13.55		150.0				44.8	
Mean								

Calibration	%O_2	%CO_2	ppm CO	ppm SO_2	ppm NO_x
zero reading	0.0	N/A	0.0	N/A	-2.0
span reading	14.75		100.1		75.0 75.0 MB
span gas value	15.0% cyl# A3324		100.3 MB cyl# AA4444		77.0 cyl# CC12445 77.0 MB
* span drift corr. factor					
* zero drift corr. factor					

*Apply drift correction factors to the mean value only, for each test run.
See calculations on next page.

MB

GENESIS ENVIRONMENTAL SERVICES COMPANY

Post test leak check 0.007 @ 10" Hg

Company Woodward Ind Asphalt
Date 5-12-92
Operator T. Clisham
Test # 1
Stack Diameter 3'X4½'
Barometer 29.71

Meter Box # CB1002
Meter Delta H 1.25
Y Factor 1.001
Pitot Coifc. 0.83
Probe Length 5'
Stack Pressure .64

Nozzle I.D.
Nozzle Diam. 0.184
Leak Rate
Liner Material GLS
Filter # PM-10/10
K = .33
pre test leak check .014 @ 15" Hg

Start time 7:32 am Stop 8:42

1st D point

Trav. Pnt. #	Sample Time	DGM Meter CF	P H2O "	H H2O "	Stack Temp F	DGM IN Temp	DGM Out Temp	Probe Temp	Box Temp	Imp. Temp	Vac. Hg"
1	0	791.429	1.05	0.35	288.8	79.2	75.1	125			4
2	5	794.37			291.2	82.4	75.4	129			4
3	10	796.39			290.9	82.3	75.5	129			4
4	15	798.37			291.0	80.9	75.3	129			4
5	20	800.35			290.5	79.5	74.5	129			4
6	25	802.30			289.2	79.6	74.4	128			4
7	30	804.28			289.9	79.8	74.2	128			4
8	35	806.23			290.7	81.2	74.1	129			4
9	40	808.15			290.1	81.4	74.1	131			4
10	45	810.05			290.0	80.8	74.3	130			4
11	50	811.94			289.8	80.9	74.5	131			4
12	55	813.82			290.3	81.2	74.5	131			4
0	60	815.69			290.4	81.9	74.6	131			4
1	65	817.55			291.5	83.5	75.1	130			4
2	70	819.420									
3											
4											
5											
6	Total	CF	27	.991							
7											
8	Post	test traverse									
9	Δ	mag	gages ✓								
10											
11											
12											
0											

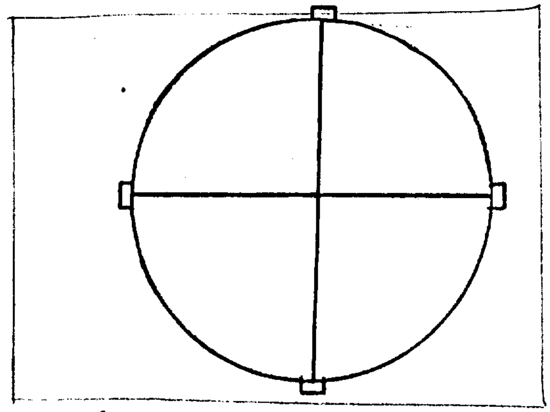
SEE SECOND PAGE FOR VELOCITY DATA.

Average Δp used for single point due to extreme Δp variation.

GENESIS
ENVIRONMENTAL SERVICES COMPANY

Nail
o-e

Company *Ind. Asphalt* *Woodward*
Date *5-12-92*
Unit *Baghouse*
Power *110 AC*
Stack I.D. *36 x 54"* *3x4.5*
Nipple *3"*
Operator *T Click*



A B C D E F

N

used straight pitot line

Point #	inches	+nipple
1	24"	
2	18"	
3	6"	
4		
5		
6		
7		
8		
9		
10		
11		
12		

VELOCITY TRAVERSE

Port	Point	^P	Ts	Point	^P	Ts	
	1	1.50	296	1	0.70	296	E
A	2	1.45	297	2	0.85	298	
	3	1.30	296	3	0.65	298	
	4	1.30	298	4	0.50	294	
B	5	1.55	299	5	0.60	296	F
	6	1.45	298	6	0.50	296	
	7	1.15	298	7			
C	8	1.35	299	8			
	9	1.30	298	9			
	10	0.85	298	10			
D	11	1.10	299	11			
	12	0.80	298	12			
	AVG.	1.26		AVG.	.633		

1.05

COMMENTS:

EQUIPMENT:

Meter Box # Probe Length
Pitot Coif. Pitot Leak CK.
Barometer Date & Time *6:47 5/12/92*

GENESIS
ENVIRONMENTAL SERVICES COMPANY

Woodward
Company Ind. Asphalt
Date 5-12-92
Operator T. Clishen
Test # 2
Stack Diameter 3' x 4.5'
Barometer 29.72

Meter Box # CB 1002
Meter Delta H 1.25
Y Factor 1.001
Pitot Coifc. 0.83
Probe Length 5'
Stack Pressure .06

Nozzle I.D.
Nozzle Diam. 0.184
Leak Rate
Liner Material GLS
Filter # PM10/10
pretest leak ck 0.018 @ 8" Hg
post test 0.004 @ 6" Hg

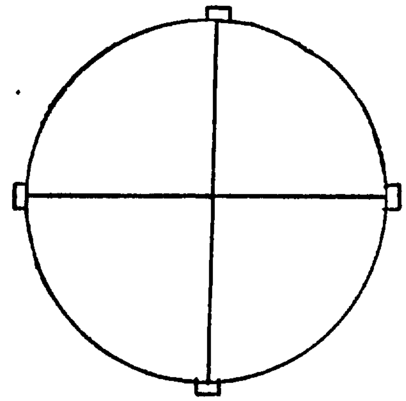
start 10:36a Stop 11:41 K=.33

port D
port 2

Trav. Pnt. #	Sample Time	DGM Meter CF	P H2O "	H H2O "	Stack Temp F	DGM IN Temp	DGM Out Temp	Probe Temp	Box Temp	Imp. Temp	Vac. Hg"
1	0	820.946	1.05	0.35	292.4	85.0	82.8	X	X		4
2	5	823.12			290.0	87.1	83.0				4
3	10	825.33			296.1	89.1	83.1				4
4	15	827.56			292.0	90.4	83.4				4
5	20	829.80			290.2	90.7	84.0				4
6	25	832.02			292.5	91.1	84.6				4
7	30	834.25			293.9	91.8	84.3				4
8	35	836.49			296.0	92.5	84.6				4
9	40	838.71			295.1	92.1	84.9				4
10	45	840.94			294.6	92.2	84.3				4
11	50	843.17			296.0	93.2	84.8				4
12	55	845.40			295.1	95.2	85.7				4
0	60	847.63			295.2	97.4	86.5				4
1	65	849.863									
2											
3											
4	Total										
5	CF =	28.917									
6											
7											
8											
9											
10											
11											
12											
0											

Please see second page for velocity data.
Single point sampling done on average due to ΔP of .5-1.5

GENESIS
ENVIRONMENTAL SERVICES COMPANY



A — F

Company Ind. Asphalt
Date 5-12-92
Unit Woodward Baghouse
Power 110 v
Stack I.D. 3' x 4.5'
Nipple 3"
Operator T. Clisham

Point #	inches	+nipple
1	24	27
2	18	21
3	12	15
4		
5		
6		
7		
8		
9		
10		
11		
12		

VELOCITY TRAVERSE

Port ______ Port ______

	Point	^P	Ts	Point	^P	Ts	
	1	1.40	296	1	0.75	296	
A	2	1.35	297	2	0.90	296	D
	3	1.20	297	3	0.55	296	
	4	1.35	298	4	0.45	296	
B	5	1.60	298	5	0.60	296	E
	6	1.40	298	6	0.50	296	
	7	1.15	298	7			
C	8	1.40	298	8			
	9	1.20	298	9			
	10	0.85	297	10			
	11	1.10	297	11			
	12	0.70	297	12			
	AVG.			AVG.	1.03		

COMMENTS: ______

EQUIPMENT: ______

Meter Box # ______ Probe Length ______

Pitot Coif. ______ Pitot Leak CK. ✓

Barometer ______ Date & Time 11:40

GENESIS

Moisture Content

Site: Industrial Asphalt Sample Date: 5-12-92
Sample Location: Woodward Operator(s): T. Clisham, J. Harris
Comments:

Sample Run No.: 1 Analysis Date: ____ Analyzed By: ____
P_m: ____ in. Hg T_m: ____ °R V_m: ____ DCF
$V_{M(Std)}$: ____ SDCF B_{ws}: ____ Comments: ____

Impinger	Contents	Final Weight grams	Tare Weight grams	Net Weights grams
#1	100 ml DI	751.6	584.0	167.6
#2	100 ml DI	594.8	591.1	3.7
#3	empty	479.7	479.0	0.7
#4	—			
Silica Gel	✓	687.2	682.0	5.2
			Total	177.2

Sample Run No.: 2 Analysis Date: ____ Analyzed By: ____
P_m: ____ in. Hg T_m: ____ °R V_m: ____ DCF
$V_{M(Std)}$: ____ SDCF B_{ws}: ____ Comments: ____

Impinger	Contents	Final Weight grams	Tare Weight grams	Net Weights grams
#1	100 ml DI	713.1	561.3	151.8
#2	100 ml DI	605.2	600.6	4.6
#3	empty	489.6	488.9	0.7
#4	—			
Silica Gel	✓	698.4	695.4	3.0
			Total	160.1

PM10 DATA SUMMARY

Industrial Asphalt
Woodward Plant
May 12, 1992
TEST # 1

STAGE #	FILTER #	SAMPLE WT (mg)	% TOTAL WT	CUMULATIVE % < Dp	DP u
0	1300-1	52.80	76.63%	23.37%	>10.59
1	1300-2	2.60	3.77%	19.59%	10.59
2	1300-3	1.90	2.76%	16.84%	7.19
3	1300-4	3.40	4.93%	11.90%	4.89
4	1300-5	2.70	3.92%	7.98%	3.20
5	1300-6	1.90	2.76%	5.22%	1.60
6	1300-7	1.40	2.03%	3.19%	1.00
7	1300-8	0.50	0.73%	2.47%	0.68
F	1300-9	1.70	2.47%	0.00%	<0.68
	TOTAL(mg)	68.90			
	PM10 (mg)	16.10	7.00		

PM10 lbs/hr = 2.33
Vm (std) = 27.20
SDCFM = 29804.2
CFM = 0.39

PM10 DATA SUMMARY

Industrial Asphalt
Woodward Plant
May 12, 1992
TEST # 2

STAGE #	FILTER #	SAMPLE WT (mg)	% TOTAL WT	CUMULATIVE % < Dp	DP u
0	1400-1	46.90	73.05%	26.95%	>10.58
1	1400-2	1.60	2.49%	24.45%	10.58
2	1400-3	2.70	4.21%	20.25%	7.19
3	1400-4	4.40	6.85%	13.40%	4.89
4	1400-5	4.40	6.85%	6.54%	3.19
5	1400-6	2.80	4.36%	2.18%	1.60
6	1400-7	1.10	1.71%	0.47%	1.00
7	1400-8	0.20	0.31%	0.16%	0.68
F	1400-9	0.10	0.16%	0.00%	<0.68
	TOTAL(mg)	64.20			
	PM10 (mg)	15.70			

PM10 lbs/hr = 2.27
Vm (std) = 27.30
SDCFM = 29851.9
CFM = 0.42

Appendix A-2

Calibrations and Certifications

SCOTT-MARRIN, INC.
6531 BOX SPRINGS BLVD. • RIVERSIDE, CA 92507
TELEPHONE (714) 653-6780 • FAX (714) 653-2430

REPORT OF ANALYSIS
EPA PROTOCOL GAS MIXTURES

GENE01
TO:

DATE : 03/27/92

GENESIS ENVIRONMENTAL
1145 W. COLUMBUS
BAKERSFIELD, CA 93301-

IMPORTANT ANALYSIS REPORT
Please forward to user
of calibration gases.

CUSTOMER ORDER NUMBER: VERBAL: KEVIN

COMPONENT	CONCENTRATION (v/v)	REFERENCE STANDARD	ANALYZER MAKE, MODEL, S/N, DETECTION	EXPIRATION DATE	REPLICATE ANALYSIS DATA	
CYLINDER NO.:	CC12445					
			Monitor Labs Model 8440		03/19/92	03/26/92
Nitric Oxide	77.0 ± 0.8 ppm	GMIS	S/N 136	09/26/93	77.0 ppm	77.1 ppm
		Cylinder #	Continuous		77.2 ppm	76.8 ppm
Nitrogen, O2-Free Balance		CC88868	Chemiluminescence		76.9 ppm	77.2 ppm
Cylinder Pressure: 2000 psig		@ 102.7 ppm	Last Cal Date: 03/05/92	Mean:	77.0 ppm	77.0 ppm

ppm = umole/mole   % = mole-%

The above analyses were performed in accordance with EPA-1987 Traceability Protocol # 1, Section 3.0.4, Procedure G1.

Analyst: B.E. Gross

Approved: J.T. Marrin

Scott Specialty Gases, Inc.

Shipped From: 2600 CAJON BLVD. SAN BERNARDINO CA 92411-0000
Phone: 714-887-2571 Fax: 714-887-0549

C E R T I F I C A T E O F A N A L Y S I S

GENESIS ENVIRONMENTAL
ATTN: MIKE BAKALOR
1145 W. COLUMBUS AVENUE

BAKERSFIELD CA 93301

PROJECT #: 02-16930
PO#: 7223
ITEM #: 02023332 2A
DATE:11/25/91

CYLINDER #: A3324 ANALYTICAL ACCURACY: +/-1%

COMPONENT	REQUESTED GAS CONC MOLES		ANALYSIS (MOLES)	
OXYGEN	15.	PCT	15.00	PCT
NITROGEN		BAL		BAL

CYLINDER PRESSURE 2000 PSI

ANALYST: MAYNARD JOHNSON APPROVED BY: DR ARMAND LANGE PHD

Scott Specialty Gases

2600 CAJON BLVD., SAN BERNARDINO, CA. 92411 PHONE (714) 887-2571

Date: October 2, 1987

Our Project No.: 408650

Your P.O. No.: 1001

Genesis Environmental

Attn: Mike Bakalor

Gentlemen:

Thank you for choosing Scott for your Specialty Gas needs. The analyses for the gases ordered, as reported by our laboratory, are listed below. Results are in volume percent, unless otherwise indicated.

ANALYTICAL REPORT

Cyl. No. AAL-4062 Analytical Accuracy

Component	Concentration
Oxygen	6.51%
Nitrogen	Balance

Cyl. No. AAL-4994 Analytical Accuracy

Component	Concentration
Carbon Monoxide	100.0 PPM
Nitrogen	Balance

Cyl. No. Analytical Accuracy

Component	Concentration

Cyl. No. Analytical Accuracy

Component	Concentration

CERTIFIED

Analyst

Approved By

FRESNO COUNTY AIR POLLUTION CONTROL DISTRICT
1 Fulton Mall, Fresno, California 93721
Telephone: (209) 445-3239

PERMIT TO OPERATE

A Permit to Operate is hereby granted to:

Industrial Asphalt

For equipment located at:

11099 Old Friant Road, Fresno, CA

Equipment Description:

Asphalt Batch Plant

<u>Dryer Drum with Baghouse</u>

A. Parallel flow drum mixer 9'-6" dia. x 49' long-Magnum

4 - Drum mixer drive - 60 HP
1 - Slinger belt conveyor for 30" aggregate
1 - Screw conveyor - 14" dia.

B. Automatic Burner/blower assy-Genco Astraflame Model AF-100, 150 MM Btu/Hr

1 - Air blower motor - 10,000 scfm
1 - Fuel pump motor - 7.5 HP

C. Fabric collector - Size 36 Magnum 16.5 Baghouse

Screw conveyor
Fan - 70,000 scfm
Screw conveyor (fine return)
Compressor - 460/3/60 cycle, 60 HP screw type

Total number of filter bags: 576 bags made of P84 needle felts manufactured by BHA Group, Inc.

Air to cloth ratio: 4.5:1

Rating: 120x10^6 BT.

Issue Date: September 15, 1989

P/O #: 5210130103

This Permit becomes void upon any change of ownership or location.

Equipment modification requires a new Permit to Operate.

GEORGE BLETH
Air Pollution Control Officer

By: Simeon T. Bugay
Simeon T. Bugay
Supervising Air Quality Engineer

DOH 4810-26 (11/88)
permit3 pg4

Design Conditions:

1. The fabric collector operation differential pressure indicator, temperature controller, and draft control shall be maintained in good operating conditions at all times.

2. The automatic burner/blower shall be operated with continuously recording fuel gas flow meter and fuel injection pressure indicator at any given time.

3. The dryer drum mixer equipped with temperature indicator shall be maintained as per manufacturer's specifications and instructions for the prevention of process leaks.

4. Spare bags for the fabric collector shall be kept on site at all times.

Operational Conditions:

a. Operating Schedule: 14 hrs/day, 5 days/wk
7 hrs/day, 1 days/wk

b. This operation is subject to rules and regulations under the New Source Performance Standards for Asphalt Batch plant facility (40 CFR 60, Subpart I), whereby the said NSPS require this source to meet the PM (PM10) emissions not to exceed 0.04 grains per dry standard cubic foot (gr/dscf) of air flow and to meet the opacity of less than 20 percent.

c. Total facility process weight rate shall not exceed 550 short tons/hr with a total not to exceed 7,700 short tons/day.

d. The maximum temperature of the product in the mixer shall not exceed 375°F.

e. Air pollution control equipment shall be maintained in good operating condition and shall be operated in accordance with the manufacturer's instructions at all times when the process equipment is in operation.

f. All process equipment shall be maintained and operated to control emissions of air contaminants to the atmosphere.

g. Baghouse pressure drop shall be monitored at all times when processing is taking place. The pressure drop shall be maintained between five (5) to six (6) inches of water.

h. Fines collected by fabric collector shall be disposed of in a manner preventing entrainment in the atmosphere.

i. Only Liquefied Petroleum Gas (LPG) shall be burned with a fuel flow rate of 120 million Btu/hr or less, not to exceed 1,680 million Btu/day.

j. Burner fuel injection pressure and atomization equipment shall be maintained per burner manufacturer's recommendation.

k. Each year report to Fresno County Air Pollution Control District the amount of fuel used.

SM

l. Compliance with the daily emission limits shall be demonstrated by determining the hourly emission rate and multiplying by the number of operating hours per day.

m. Equipment shall be operated per procedures outlined in the Drum Plant Control System Operators Manual.

n. Only qualified and trained personnel are to operate equipment.

Emission Sampling Limits:

PM: 3.16 lbs/hr with a total not to exceed 44.24 lbs/day
0.04 gr/dscf

SOX: 0.27 lbs/hr with a total not to exceed 3.80 lbs/day

NOX: 16.80 lbs/hr with a total not to exceed 232.2 lbs/day

HC: 2.0 lbs/hr with a total not to exceed 28.1 lbs/day

CO: 23.74 lbs/hr with a total not to exceed 232.4 lbs/day

Compliance Testing Requirement:

1. Compliance with all emission limits shall be demonstrated by District witnessed sample collection by independent testing laboratory annually and the official test results and field data submitted within 30 days thereafter. The test shall be conducted for NMHC, PM(PM10), CO, SOx, and NOx pollutants only.

2. A pretest plan outlining test methods, procedures and operating parameters shall be submitted to the District for approval at least 30 days prior to the test.

Special Conditions:

1. Industrial Asphalt shall maintain accurate daily records of:

   a. Total production rate in tons per hour.
   b. Fuel usage in gallons per hour or cubic ft. of LPG fuel per hour.
   c. Asphalt % of final mix
   d. Aggregate material moisture
   e. Mix formulas - % aggregate and % asphalt
   f. Mix temperature
   g. Asphalt temperature
   h. Baghouse inlet and exhaust temperature
   i. Baghouse pressure drop manometer readings in inches of water.

2. These records shall be kept onsite at all times and made available to the District upon request.

WARNING: Failure to meet the above District permit conditions will result to stringent District enforcement action or denial of Permit to Operate.

Simeon T. Bugay
Simeon T. Bugay
Supervising Air Quality Engineer

FRESNO COUNTY AIR POLLUTION CONTROL DISTRICT
1 Fulton Mall, Fresno, Califor . 93721
Telephone: (209) 445-3239

P E R M I T   T O   O P E R A T E

A Permit to Operate is hereby granted to:

Industrial Asphalt

For equipment located at:

11099 Old Friant Road, Fresno, CA

Equipment Description:

Asphalt Batch Plant

<u>Load Out</u>

a. Main conveyor-26"x54"x108' covered drag slat conveyor
b. Batch-Glasgow-7' dia.x5'6" high, 6 ton
c. Bins-5 @ 300 tons, Magnum
d. Shuttle conveyor-36"x30"x20'-6", covered drag slat conveyor
e. Hydraulic power unit-2HP
f. Powdered batcher-10 ton

Rating: 170 HP

Operational Conditions:

a. Operating Schedule - 14 ~~lbs~~ hours/day, 5 days/wk
   7 lbs/day, 1 day/wk

b. Visible emissions from any single source operation shall be less than 20% opacity.

c. There shall be no "blue smoke" emissions from hot asphaltic conveyor, hot asphaltic storage bins or truck loading operations.

d. All process equipment shall be maintained and operated efficiently to control emissions of air contaminants to the atmosphere.

WARNING: Failure to meet the above district permit conditions will result to stringent District enforcement action or denial of Permit to Operate.

Issue Date: September 15, 1989

P/O #: 5210130104

This Permit becomes void upon any change of ownership or location.

Equipment modification requires a new Permit to Operate.

GEORGE BLETH
Air Pollution Control Officer

jp By: Simeon T. Bugay
Simeon T. Bugay
Supervising Air Quality Engineer

DOH 4810-26 (11/88)
permit3 pg7

FRESNO COUNTY AIR POLLUTION CONTROL DISTRICT
1221 Fulton Mall, Fresno, California 93721
Telephone: (209) 445-3239

PERMIT TO OPERATE

A Permit to Operate is hereby granted to:

Industrial Asphalt

For equipment located at:

11099 Old Friant Road, Fresno, CA

Equipment Description:

Asphalt Batch Plant

<u>Asphalt heater</u>

A. Hot oil heater - 3.3 MMbtu/hr., oil/gas fired
B. Asphalt metering unit - Standard Havens
C. Asphalt storage tanks - 3 @ 30,000 gallons

Rating: 3.3×10^6 BTU

Design Conditions:

1. Hot oil heater shall be equipped with an operational temperature control.
2. Equipment shall be maintained per manufacturers recommendations.

Operational Conditions:

hours

a. Operating Schedule 14 lbs/day, 5 days/wk
   7 lbs/day, 1 day/wk

b. Particulate matter emissions from any single source operation shall be no more than 0.04 gr/dscf and visible emissions from any single emission point shall be less than 20% opacity.

c. The #2 fuel oil sulfur content shall be limited to a maximum of .5% by weight. A current record of the fuel oil analysis indicating the sulfur content of the fuel shall be kept for each delivery and make available to the District upon request.

Operational Conditions (continued)

Issue Date: September 15, 1989

P/O #: 5210130105

This Permit becomes void upon any change of ownership or location.

Equipment modification requires a new Permit to Operate.

GEORGE BLETH
Air Pollution Control Officer

By: Simeon T. Bugay
Simeon T. Bugay
Supervising Air Quality Engineer

DOH 4810-26 (11/88)
Permit 3 pg 8

d. No more than 317.52 gallons of fuel oil #2 (.5% sulfur content) shall be burned by the 3.3 MM btu/hr hot oil heater during any day. A record of the gallons of fuel oil burned per day and the date shall be maintained and kept on the premises.

e. Each year report to Fresno County Air Pollution Control District amount of fuel used.

WARNING: Failure to meet the above District permit conditions will result to stringent District enforcement action or denial of Permit to Operate.

Emission Sampling Limits:

PM: 0.18 lbs/hr with a total not to exceed 2.54 lbs/day
0.04 gr./dscf.

SOx: 1.61 lbs/hr with a total not to exceed 22.54 lbs/day

NOx: 0.45 lb/hr with a total not to exceed 6.35 lbs/day

HC: 0.008 lb/hr with a total not to exceed 0.11 lb/day

CO: 0.11 lb/hr with a total not to exceed 1.60 lbs/day

jr Simeon T. Bugay

Simeon T. Bugay
Supervising Air Quality Engineer