7 APPENDICES

A. Source Emissions Calculations
B. Field Data
C. Calibration Data
D. Analytical Data
E. Unit Operational Data
F. Chain of Custody Records
G. Resumes

APPENDIX A

Nomenclature and Equations
for
Calculation of Source Emissions

NOMENCLATURE FOR PARTICULATE CALCULATIONS

Symbol	English Units	Metric Units	Description
A_s	in.^{2}	m^2	Stack Area
C_{an}	gr/dscf*	g/dscm*	Particulate - probe, cyclone, and filter
C_{ao}	gr/dscf*	g/dscm*	Particulate - total
C_{at}	gr/CF @ stack conditions	g/m^3	Particulate - probe, cyclone, and filter
C_{au}	gr/CF @ stack conditions	g/m^3	Particulate - total
C_{aw}	lbs/hr	kg/hr	Particulate - probe, cyclone, and filter
C_{ax}	lbs/hr	kg/hr	Particulate - total
C_p			Pitot Tube Calibration Factor
D_n	in.	m	Sampling Nozzle Diameter
%EA			Percent Excess Air at sampling point
g	32.174 ft/sec^2		Acceleration of Gravity
%I			Percent Isokinetic
%M			Percent Moisture in the stack gas by volume
M_d			Mole fraction of dry gas

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

Symbol	English Units	Metric Units	Description
m_f	mg	mg	Particulate - probe, cyclone, and filter
M_{water}	18 lb/lb-mole		Molecular Weight of water
m_t	mg	mg	Particulate - total
MW	lb/lb-mole	g/g-mole	Molecular Weight of stack gas
MW_{air}	28.96 lb/ lb-mole		Molecular Weight of air
MW_d	lb/lb-mole	g/g-mole	Molecular Weight of dry stack gas
P_b	"Hg Absolute	mm Hg	Barometric Pressure
P_m	"H_2O	mm H_2O	Orifice Pressure drop
P_s	"Hg Absolute	mm Hg	Stack Pressure
ΔP	"H_2O	mm H_2O	Velocity Head of stack gas
P_{std}	29.92 "Hg	760 mm Hg	Standard Barometric Pressure
Q_a	ACFM	m^3/hr	Stack Gas Volume at actual stack conditions
Q_s	DSCFM*	dscm/hr*	Stack Gas Volume at 29.92 "Hg, 528°R, dry
R	21.83 "Hg-ft^3/lb-mole°R		Universal Gas Constant
T_m	°F	°C	Average Gas Meter Temperature

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

Symbol	English Units	Metric Units	Description
T_t	min	min	Net time of test
T_s	°F	°C	Stack Temperature
T_{std}	528°R	293°K	Standard Temperature
V_m	ft^3	m^3	Volume of dry gas sampled @ meter conditions
Vm_{std}	dscf*	dscm*	Volume of dry gas sampled @ standard conditions
V_s	fpm	m/sec	Stack velocity @ stack conditions
V_w	ml	ml	Total water collected in impingers and silica gel
Vw_{gas}	scf*	scm*	Volume of water vapor collected @ standard conditions
ρ_{air}	0.0752 lbs/ft^3		Density of Air
ρ_{water}	1 g/ml		Density of Water
ρ_{man}	62.32 lbs/ft^3		Density of Manometer Oil

Standard Conditions: 29.92 "Hg, 68°F (760 mm Hg, 20°C)

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

EXAMPLE CALCULATIONS

1. Volume of dry gas sampled at standard conditions.*

$$Vm_{std} = Vm \left(\frac{T_{std}}{T_m + 460} \right) \left[\frac{P_b + \frac{P_m}{13.6}}{P_{std}} \right]$$

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460} \right] = dscf$$

$$Vm_{std} = dscf \times 0.028317 = dscm$$

2. Volume of water vapor collected at standard conditions.*

$$Vw_{gas} = \frac{(V_w - gms\ SO_2 - gms\ H_2S)\ \rho_{water}\ R\ T_{std}}{P_{std}\ M_{water}\ 453.6}$$

$$Vw_{gas} = 0.0472\ (V_w - gms\ SO_2 - gms\ H_2S) = scf$$

$$Vw_{gas} = scf \times 0.028317 = scm$$

3. Percent moisture in stack gas.

$$\%M = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \%$$

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

4. Mole fraction of dry gas.

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

5. Average molecular weight of dry stack gas.

$$MW_d = \left[\%CO_2 \times \frac{44}{100}\right] + \left[\%O_2 \times \frac{32}{100}\right] + \left[\%N_2 \times \frac{28}{100}\right] + \left[\%CO \times \frac{28}{100}\right] = lb/lb\text{-}mole$$

$$= g/g\text{-}mole$$

6. Molecular weight of stack gas.

$$MW = MW_d \times M_d + 18\ (1 - M_d) = \frac{lb}{lb\text{-}mole} = g/g\text{-}mole$$

7. Percent excess air at sampling point.

$$\%EA = \frac{100\ [\%O_2 - (0.5\ \%CO)]}{0.265\ (\%N_2) - [\%O_2 - (0.5\ \%CO)]}$$

8. Stack Pressure.

$$P_s = P_b + \frac{Stack\ Pressure\ "H_2O}{13.6} = "Hg\ Absolute$$

$$P_s = "Hg\ Abs. \times 25.4 = mm\ Hg$$

9. Stack velocity at stack conditions.

$$V_s = C_p\ 60 \left[\frac{2g \times \rho_{man} \times P_{std} \times MW_{air} \times (T_s + 460) \times \Delta P_s}{12 \times \rho_{air} \times P_s \times MW \times T_{std}} \right]^{1/2}$$

$$V_s = 5{,}123.8\ C_p \left[\frac{(T_s + 460)}{P_s \times MW} \right]^{1/2} \sqrt{\Delta P}\ average = fpm$$

$$V_s = fpm \times 0.00508 = m/sec$$

10. Dry stack gas volume at standard conditions.*

$$Q_s = \frac{1}{144}\ V_s \times A_s \times M_d \times \frac{T_{std}}{T_s + 460} \times \frac{P_s}{P_{std}}$$

$$Q_s = \frac{0.123\ V_s \times A_s \times M_d \times P_s}{T_s + 460} = DSCFM$$

$$Q_s = DSCFM \times 1.6990 = dscm/hr$$

11. Actual stack gas volume at stack conditions.

$$Q_a = \frac{V_s \times A_s}{144} = ACFM$$

$$Q_a = ACFM \times 1.6990 = m^3/hr$$

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

12. Percent isokinetic.

$$\%I = \frac{Vm_{std} \times (T_s + 460) \times P_{std} \times 100 \times 144\ in^2/ft^2}{M_d \times T_{std} \times P_s \times T_t \times V_s \left(\frac{\pi \times D_n^2}{4}\right)}$$

$$\%I = \frac{1039 \times Vm_{std} \times (T_s + 460)}{M_d \times P_s \times T_t \times V_s \times D_n^2}$$

13. Particulate - probe, cyclone, and filter.

$$C_{an} = \frac{m_f}{Vm_{std}} \times \frac{1\ gr}{64.8\ mg}$$

$$C_{an} = 0.0154 \times \frac{m_f}{Vm_{std}} = gr/dscf*$$

$$C_{an} = gr/dscf \times 2.290 = g/dscm*$$

14. Particulate total.

$$C_{ao} = 0.0154 \times \frac{m_t}{Vm_{std}} = gr/dscf*$$

$$C_{ao} = gr/dscf \times 2.290 = g/dscm*$$

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

15. Particulate - probe, cyclone, and filter at stack conditions.

$$C_{at} = C_{an} \times \frac{P_s}{P_{std}} \times \frac{(T_{std})}{(T_s + 460)} \times M_d$$

$$C_{at} = \frac{17.65 \times C_{an} \times P_s \times M_d}{T_s + 460} = gr/CF$$

$$C_{at} = gr/CF \times 2.290 = g/m^3$$

16. Particulate - total, at stack conditions.

$$C_{au} = \frac{17.65 \times C_{ao} \times P_s \times M_d}{T_s + 460} = gr/CF$$

$$C_{au} = gr/CF \times 2.290 = g/m^3$$

17. Particulate - probe, cyclone, and filter.

$$C_{aw} = C_{an} \times Q_s \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{1 \text{ lb}}{7000 \text{ gr}}$$

$$C_{aw} = 0.00857 \times C_{an} \times Q_s = lbs/hr$$

$$C_{aw} = lbs/hr \times 0.4536 = kg/hr$$

18. Particulate - total.

$$C_{ax} = 0.00857 \times C_{ao} \times Q_s = lbs/hr$$

$$C_{ax} = lbs/hr \times 0.4536 = kg/hr$$

19. Mercury – µg/dscm

µg /dscm = µg ÷ (Vm_{std} x 0.028317m^3/ft^3)

20. Mercury – lbs/10^{12} Btu

lbs/10^{12} Btu = µg ÷ Vm_{std} x (2.205 x 10^{-9} lbs/ug) x F_d x [20.9 ÷ (20.9 – O_2)] x (1.0 x 10^6)

F_d = Oxygen based F factor of 9,860 dscf*/million Btu

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER: 99-184
JOB NAME: TXU ELECTRIC
LOCATION: MT. PLEASANT, TEXAS
UNIT TESTED: MOSES UNIT NUMBER 1 BAGHOUSE A INLET DUCT

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			02/22/00	02/22/00	02/22/00
BEGIN TIME			0835	1200	1610
END TIME			1113	1530	1847
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	29.86 (758)	29.72 (755)	29.68 (754)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	0.561 (14.2)	0.442 (11.2)	0.430 (10.9)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	60.926 (1.725)	56.843 (1.610)	57.057 (1.616)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	72 (22)	80 (27)	83 (28)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	60.440 (1.711)	55.278 (1.565)	55.104 (1.560)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	222.1	199.4	198.0
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	10.483 (0.297)	9.412 (0.267)	9.346 (0.265)
%M	MOISTURE IN STACK GAS BY VOLUME	%	14.78	14.55	14.50

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

TXU ELECTRIC
MT. PLEASANT, TEXAS
MOSES UNIT NUMBER 1 BAGHOUSE A INLET DUCT

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.8522	0.8545	0.8550
CO2		%	15.0	13.8	12.2
O2		%	3.6	5.4	7.4
CO		%	0.0	0.0	0.0
N2		%	81.4	80.8	80.4
%EA	EXCESS AIR @ SAMPLING POINT	%	20.0	33.7	53.2
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	30.54 (30.54)	30.42 (30.42)	30.25 (30.25)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.69 (28.69)	28.62 (28.62)	28.47 (28.47)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.353 (9.0)	0.336 (8.5)	0.337 (8.6)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	352 (178)	362 (183)	360 (182)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	29.08 (739)	28.96 (736)	28.92 (735)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	2,383 (12.11)	2,331 (11.84)	2,344 (11.91)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	33,456 (21.58)	33,456 (21.58)	33,456 (21.58)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	299,284 (508,484)	288,775 (490,629)	290,862 (494,175)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	553,640 (940,634)	541,589 (920,160)	544,652 (925,364)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION CALCULATIONS

TXU ELECTRIC
MT. PLEASANT, TEXAS
MOSES UNIT NUMBER 1 BAGHOUSE A INLET DUCT

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	150	150	150
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.235 (0.006)	0.235 (0.006)	0.235 (0.006)
%I	PERCENT ISOKINETIC	%	104.2	98.8	97.8
Mf	PARTICULATE - PROBE, CYCLONE AND FILTER	mg	----	----	----
Mt	PARTICULATE - TOTAL	mg	----	----	----
Can	PARTICULATE - PROBE, CYCLONE AND FILTER	gr/DSCF* (g/DSCM)	----	----	----
Cao	PARTICULATE - TOTAL	gr/DSCF* (g/DSCM)	----	----	----
Cat	PARTIC.-PROBE, CYCLONE AND FILTER @ STACK COND.	gr/CF (g/m3)	----	----	----
Cau	PARTICULATE - TOTAL @ STACK CONDITIONS	gr/CF (g/m3)	----	----	----
Caw	PARTICULATE - PROBE, CYCLONE AND FILTER	LBS/HR (Kg/HR)	----	----	----
Cax	PARTICULATE - TOTAL	LBS/HR (Kg/HR)	----	----	----

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER: 99-184
JOB NAME: TXU ELECTRIC
LOCATION: MT. PLEASANT, TEXAS
UNIT TESTED: MOSES UNIT NUMBER 1 BAGHOUSE A OUTLET DUCT (N.E.)

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			02/22/00	02/22/00	02/22/00
BEGIN TIME			0835	1200	1610
END TIME			1105	1520	1840
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	29.86 (758)	29.72 (755)	29.68 (754)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	0.336 (8.5)	0.329 (8.4)	0.331 (8.4)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	57.880 (1.639)	49.075 (1.390)	52.736 (1.493)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	64 (18)	73 (23)	73 (23)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	58.263 (1.650)	48.337 (1.369)	51.873 (1.469)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	180.1	153.2	172.9
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	8.501 (0.241)	7.231 (0.205)	8.161 (0.231)
%M	MOISTURE IN STACK GAS BY VOLUME	%	12.73	13.01	13.59

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

TXU ELECTRIC
MT. PLEASANT, TEXAS
MOSES UNIT NUMBER 1 BAGHOUSE A OUTLET DUCT (N.E.)

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.8727	0.8699	0.8641
CO2		%	9.2	7.8	8.0
O2		%	10.4	11.4	12.2
CO		%	0.0	0.0	0.0
N2		%	80.4	80.8	79.8
%EA	EXCESS AIR @ SAMPLING POINT	%	95.4	113.9	136.4
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.89 (29.89)	29.70 (29.70)	29.77 (29.77)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.37 (28.37)	28.18 (28.18)	28.17 (28.17)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.280 (7.1)	0.272 (6.9)	0.264 (6.7)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	330 (166)	330 (166)	328 (164)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	28.77 (731)	28.57 (726)	28.58 (726)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	2,133 (10.84)	2,119 (10.76)	2,088 (10.61)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	15,094 (9.74)	15,094 (9.74)	15,094 (9.74)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	125,857 (213,831)	123,764 (210,275)	121,490 (206,412)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	223,585 (379,871)	222,120 (377,382)	218,841 (371,811)

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION CALCULATIONS

TXU ELECTRIC
MT. PLEASANT, TEXAS
MOSES UNIT NUMBER 1 BAGHOUSE A OUTLET DUCT (N.E.)

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	150	150	150
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.233 (0.006)	0.233 (0.006)	0.233 (0.006)
%I	PERCENT ISOKINETIC	%	109.7	92.5	101.1
Mf	PARTICULATE - PROBE, CYCLONE AND FILTER	mg	----	----	----
Mt	PARTICULATE - TOTAL	mg	----	----	----
Can	PARTICULATE - PROBE, CYCLONE AND FILTER	gr/DSCF* (g/DSCM)	----	----	----
Cao	PARTICULATE - TOTAL	gr/DSCF* (g/DSCM)	----	----	----
Cat	PARTIC.-PROBE, CYCLONE AND FILTER @ STACK COND.	gr/CF (g/m3)	----	----	----
Cau	PARTICULATE - TOTAL @ STACK CONDITIONS	gr/CF (g/m3)	----	----	----
Caw	PARTICULATE - PROBE, CYCLONE AND FILTER	LBS/HR (Kg/HR)	----	----	----
Cax	PARTICULATE - TOTAL	LBS/HR (Kg/HR)	----	----	----

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

APPENDIX B

Field Data

METCO ENVIRONMENTAL

Hg Field Data

Job Number 99-184
Job Name TXU
Run Number 1
Unit Unit 1 Baghouse A Inlet
Date 02-22-00
Operator J Brown/Betz/Chesshel/Bass
Sample Box No. Hg 1 Meter Box No. 12-1

Read and record at the start of each test point.

Purge to: —
Purge time: —
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 65
Assumed Moisture % 15.33
Probe Length 14'
C Factor 10 → 15.5 to reference
Initial Leak @ 15.00 "Hg = 0.000 cfm
Final Leak @ 14.50 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Heated Line °F	Remarks
A5	0835	340.594	0.60	0.95	0.95	8.00	322	260	258	47	69	68	250	CST
4	0840	343.18	0.53	0.84	0.84	8.00	318	259	262	46	70	68	263	Int. Orsat
3	0845	345.69	0.30	0.48	0.48	7.00	347	262	260	46	71	68	262	
2	0850	347.66	0.28	0.44	0.44	7.00	355	262	261	47	71	68	261	
1	0855	349.51	0.25	0.40	0.40	6.00	324	265	260	46	71	68	260	
B5	0900	351.19	0.55	0.88	0.88	9.00	327	265	258	46	72	68	260	
4	0905	353.48	0.45	0.71	0.71	9.00	340	262	259	46	73	68	260	
3	0910	355.80	0.30	0.48	0.48	8.00	355	263	259	48	73	69	261	
2	0915	357.73	0.20	0.34	0.34	7.00	359	262	258	49	73	69	259	
1	0920	359.37	0.19	0.30	0.30	7.00	355	265	259	49	73	69	258	
C5	0925	360.82	0.60	0.95	0.95	12.50	341	262	261	48	74	69	258	
4	0930	363.19	0.45	0.71	0.71	12.00	347	261	260	48	74	70	259	
3	0935	365.50	0.30	0.48	0.48	11.00	365	263	260	49	75	70	259	
2	0940	367.50	0.24	0.35	0.35	10.00	363	263	258	51	74	70	258	
1	0945	369.29	0.20	0.34	0.34	9.00	341	260	259	51	74	70	259	Leak @ 14.5 0.000
END	0950	370.879	—	—	—	—	—	—	—	—	—	—		change thimble filter
D5	0958	371.170	0.56	0.88	0.88	8.00	352	251	262	54	74	70		leak @ 14.5; 0.000 259
4	1003	373.77	0.45	0.71	0.71	7.00	361	254	263	55	75	71	259	

Pitot Tube Calibration Factor C_p 0.810
Volume Collected V_m 60.926 ft^3
Water Collected V_w 222.1 ml
Time of Test T_t 150 min.
Stack Pressure P_s -10.6 "H_2O

Pitot Tube No. M8
Baro. Press. P_b 29.86 "Hg
Probe Tip Dia. D_n ~~0.199~~ 0.235 in.
% CO_2 15.0 % CO 0.0
% O_2 3.6 % N_2 81.4
Area Stack A_s ~~37556~~ 33,456 in^2

Barometer No. 19-1
Probe Tip No. TFE1-78
Total Volume of Leak Checks After Start: 0.291 ft^3
V_m = Dry Gas Meter Calibration Factor 1.014 X 60.085
[Dry Gas Meter Reading — ft^3 - (T_t — min. X Leak Rate — cfm)]

Impinger Box No. Hg 1

Impinger 1	Final Weight	800.2	Water Weight Gain	Impinger 1	59.8
	Initial Weight	740.4	Imp & Final 980.0	Impinger 2	125.3
	Increase	59.8	Initial 966.3	Impinger 3	9.0
Impinger 2	Final Weight	880.0	13.7	Impinger 4	8.3
	Initial Weight	754.7		Impinger 5	5.1
	Increase	125.3		Impinger 6	0.3
Impinger 3	Final Weight	745.7	V_w =	Impinger 7	0.6
	Initial Weight	736.7	g SO_2 =	Imp 8	13.7
	Increase	9.0	V_w =	Total	222.1 = V_w
Impinger 4	Final Weight	760.5			
	Initial Weight	752.2			
	Increase	8.3			
Impinger 5	Final Weight	771.5	P_b = 29.86	%CO_2 = 15.0	
	Initial Weight	766.4	V_m = 60.926	%O_2 = 3.6	
	Increase	5.1	V_w = 222.1	%CO = 0.0	
			P_m = 0.561	%N_2 = 81.4	
Impinger 6	Final Weight	753.0	Avg ΔP = 0.353	A_s = ~~32556~~ 33456	
	Initial Weight	752.7		D_n = ~~0.199~~ 0.235	
	Increase	0.3	Avg$\sqrt{\Delta P}$ = 0.582	T_t = 150	
			C_p = 0.810		
Impinger 7	Final Weight	747.5	P_s = -10.6 "H_2O	29.08 "Hg	
	Initial Weight	746.9	T_m = 72 °F	532 °R	
	Increase	0.6	T_s = 352 °F	812 °R	

Moisture Content: %M = 14.78 M_d = 0.8522 MW_d = ~~29.944~~ 30.544 MW = ~~28.18~~ 28.69

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 60.926 \left[\frac{29.86 + \frac{0.561}{13.6}}{72 + 460}\right] = \frac{60.440\ sft^3}{0.403\ scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 222.1 = 10.483 sft^3

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{10.483}{60.440 + 10.483} \times 100 = 14.78\ \%$$

$$V_s = 5123.8 \times 0.810 \sqrt{\frac{812}{29.08 \times \cancel{28.18}\ 28.69}} \times 0.582 = \frac{2383}{\cancel{2404}}\ fpm$$

ACFM: 553640 ~~558,621~~

SCFM: 299284 ~~301,921~~

$$\%I = \frac{1{,}039 \times 60.440 \times 812}{29.08 \times 0.8522 \times \cancel{2404}\ 2383 \times 150 \times (\cancel{0.199}\ 0.235)^2} = \frac{104.2}{\cancel{103.3}}\ \%$$

%EA: 20.0

Run Number 1

Unit Unit 1 Baghouse A Inlet

Date 02-22-00

Hg FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	P_m Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Heated Line °F	Remarks
D3	1008	376.10	0.30	0.48	0.48	7.00	376	256	260	55	75	70	259	
2	1013	378.04	0.20	0.34	0.34	6.50	373	258	261	55	75	71	260	
1	1018	379.69	0.19	0.30	0.30	6.00	361	255	260	53	75	71	258	
E5	1023	381.19	0.60	0.95	0.95	10.00	359	255	260	50	76	71	258	
4	1028	383.74	0.45	0.71	0.71	10.00	370	256	259	50	76	71	259	
3	1033	386.12	0.30	0.48	0.48	9.00	382	261	259	54	76	71	260	
2	1038	388.12	0.22	0.35	0.35	8.90	380	262	258	54	76	72	260	
1	1043	389.95	0.19	0.30	0.30	7.00	360	260	259	57	76	72	260	
F5	1048	391.18	0.56	0.88	0.88	12.50	347	257	259	51	76	72	259	
4	1053	393.39	0.45	0.71	0.71	12.50	340	261	260	51	77	72	260	
3	1058	395.75	0.28	0.45	0.45	10.50	350	264	259	52	77	72	260	
2	1103	397.71	0.22	0.35	0.35	10.00	357	264	258	53	77	73	260	
1	1108	399.42	0.19	0.30	0.30	9.50	341	261	256	54	77	73	260	
END	1113	400.970	—	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Hg Field Data

Read and record at the start of each test point.

Job Number 99-184
Job Name TXU
Run Number 2
Unit Unit 1 Baghouse A Inlet
Date 02-22-06
Operator Brown/Betz/Chessla/Bass
Sample Box No. HS 3 Meter Box No. 12-1

Purge to: —
Purge time: —
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 65
Assumed Moisture % 15.33
Probe Length 14'
C Factor 10 → 15.5 to reference
Initial Leak @ 15.00 "Hg = 0.000 cfm
Final Leak @ 14.50 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H₂O (ΔP_s)	Orifice ΔH "H₂O Desired	Orifice ΔH "H₂O Actual	Pump Vacuum "Hg Guage (P_m)	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet (T_m)	Heated Line °F	Remarks
A5	1200	403.473	0.56	0.88	0.88	8.00	337	258	265	57	75	74	274	CST
4	1205	406.09	0.45	0.71	0.71	7.00	332	261	266	54	76	74	271	Int. Orsat
3	1210	408.50	0.25	0.39	0.39	6.00	352	262	267	54	77	74	274	
2	1215	410.31	0.22	0.35	0.35	5.50	365	270	266	54	77	75	271	
END	1220	412.210	—	—	—	—	—	—	—	—	—	—	—	leak ✓ @ 10.0; 0.000
A1	1300	412.490	0.16	0.21	0.21	4.50	355	274	265	60	77	76	258	Δ Ref 10 → 12.5; ✓ @ 18, 0.000
B5	1305	413.83	0.56	0.71	0.71	7.00	333	273	265	55	78	76	263	0.28 ✓
4	1310	416.10	0.42	0.53	0.53	6.50	344	275	264	55	79	76	266	
3	1315	418.19	0.30	0.38	0.38	6.00	361	271	266	54	79	76	268	
2	1320	419.97	0.22	0.28	0.28	5.50	365	271	267	56	80	77	268	
1	1325	421.53	0.16	0.21	0.21	4.50	341	272	268	57	80	77	268	
END	1330	422.871	—	—	—	—	—	—	—	—	—	—	—	Replace thimble ✓ @ 10, 0.000
C5	1350	423.065	0.62	0.80	0.80	7.00	337	263	264	60	80	77	258	leak ✓ @ 10, 0.000
4	1355	425.70	0.42	0.53	0.53	6.50	354	263	264	57	81	78	261	0.194 ✓
3	1400	427.77	0.27	0.34	0.34	6.00	374	256	263	58	81	78	261	
2	1405	429.49	0.22	0.28	0.28	5.50	368	266	264	58	81	78	260	
1	1410	431.04	0.18	0.23	0.23	5.00	360	264	266	59	82	79	260	
D5	1415	432.46	0.58	0.74	0.74	8.00	351	264	267	57	83	79	260	

Pitot Tube Calibration Factor C_p 0.810 ✓
Volume Collected V_m 56.843 ✓ ft³
Water Collected V_w 199.4 ✓ ml
Time of Test T_t 150 ✓ min.
Stack Pressure P_s -10.3 ✓ "H₂O

Pitot Tube No. M8 ✓
Baro. Press. P_b 29.72 ✓ "Hg
Probe Tip Dia. D_n 0.235 in.
% CO_2 13.8 ✓ % CO 0.0 ✓
% O_2 5.4 ✓ % N_2 80.8 ✓
Area Stack A_s 33456 ✓ in²

Barometer No. 19-1 ✓
Probe Tip No. TFE 1-8 ✓
Total Volume of Leak Checks After Start: 0.474 ✓ ft³
V_m = Dry Gas Meter Calibration Factor 1.014 ✓ X 56.058

[Dry Gas Meter Reading — ft³ - (T_t — min. X Leak Rate — cfm)]

Impinger Box No. Hg 3

Impinger 1	Final Weight	781.0
	Initial Weight	712.7
	Increase	68.3
Impinger 2	Final Weight	849.1
	Initial Weight	742.0
	Increase	107.1
Impinger 3	Final Weight	733.2
	Initial Weight	728.3
	Increase	4.9
Impinger 4	Final Weight	766.9
	Initial Weight	761.6
	Increase	5.3
Impinger 5	Final Weight	756.9
	Initial Weight	755.3
	Increase	1.6
Impinger 6	Final Weight	748.1
	Initial Weight	747.8
	Increase	0.3
Impinger 7	Final Weight	757.6
	Initial Weight	757.4
	Increase	0.2

Water Weight Gain

Imp 8 854.7
843.0
11.7

V_w =
g SO_2 = -
V_w =

Impinger 1	68.3
Impinger 2	107.1
Impinger 3	4.9
Impinger 4	5.3
Impinger 5	1.6
Impinger 6	0.3
Impinger 7	0.2
Total Imp. 8	11.7 / 199.4 = V_w

P_b =	29.72		%CO_2 =	13.8	
V_m =	56.843		%O_2 =	5.4	
V_w =	199.4		%CO =	0.0	
P_m =	0.442		%N_2 =	80.8	
Avg ΔP =	0.336		A_s =	33456	
			D_n =	0.235	
Avg$\sqrt{\Delta P}$ =	0.564		T_t =	150	
C_p =	0.810				
P_s =	-10.3	"H_2O		28.96	"Hg
T_m =	80	°F		540	°R
T_s =	362	°F		822	°R

Moisture Content: %M = 14.55 M_d = 0.8545 MW_d = 30.424 MW = 28.62

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 56.843 \left[\frac{29.72 + \frac{0.442}{13.6}}{80 + 460}\right] = \frac{55.278}{0.369}\ \frac{sft^3}{scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 199.4 = 9.412 sft^3

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{9.412}{55.278 + 9.412} \times 100 = 14.55\ \%$$

$$V_s = 5123.8 \times 0.810 \sqrt{\frac{822}{28.96 \times 28.62}} \times 0.564 = 2331\ fpm$$

ACFM: 541589

$$\%I = \frac{1{,}039 \times 55.278 \times 822}{0.8545 \times 28.96 \times 2331 \times 150 \times (0.235)^2} = 98.8\ \%$$

SCFM: 288775

%EA: 33.7

Run Number 2

Unit Unit 1 Baghouse Inlet

Date 02-22-00

Hg FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	P_m Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Heated Line °F	Remarks
4	1420	434.81	0.45	0.56	0.56	8.00	366	269	267	57	84	79	262	
3	1425	436.95	0.30	0.39	0.39	7.00	382	271	267	58	84	79	261	
2	1430	438.78	0.21	0.27	0.27	6.50	375	271	267	59	83	80	261	
1	1435	440.34	0.15	0.19	0.19	5.50	364	269	265	61	83	80	261	
E5	1440	442.00	0.60	0.76	0.76	11.00	356	263	265	58	86	80	262	
4	1445	444.13	0.45	0.56	0.56	10.00	376	262	264	58	85	80	262	
3	1450	446.29	0.30	0.39	0.39	9.00	387	265	264	58	85	80	262	
2	1455	448.07	0.20	0.25	0.25	8.00	386	265	264	58	85	80	262	
1	1500	449.66	0.16	0.21	0.21	7.00	372	262	264	58	84	81	262	
F5	1505	450.85	0.60	0.76	0.76	12.50	356	258	262	61	85	81	262	
4	1510	453.24	0.45	0.56	0.56	12.00	379	258	262	61	85	81	262	
3	1515	455.40	0.26	0.33	0.33	11.00	372	263	262	60	85	81	263	
2	1520	457.12	0.20	0.25	0.25	10.00	385	262	261	60	85	82	262	
1	1525	458.64	0.16	0.21	0.21	9.00	377	261	261	60	85	82	262	
END	1530	460.005	—	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Job Number 99-184 ✓
Job Name TXU ✓
Run Number 3 ✓
Unit Unit 1 Baghouse A Inlet ✓
Date 02-22-00 ✓
Operator BROWN/ Betz/ Chesslar/ BASS ✓
Sample Box No. Hg1 Meter Box No. 12-1 ✓

Hg Field Data

Read and record at the start of each test point.

Purge to: —
Purge time: —
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 65
Assumed Moisture % 15.58
Probe Length 14'
C Factor 1.0 → 12.5 to reference
Initial Leak @ 15.00 "Hg = 0.000 cfm
Final Leak @ 14.50 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Heated Line °F	Remarks
A5	1600	461.595	0.56	0.72	0.72	7.00	329	255	259	63	83	82	261	CST
4	1615	464.14	0.43	0.55	0.55	6.50	341	261	260	58	84	82	261	Int. Orsat
3	1620	466.28	0.33	0.41	0.41	6.00	358	268	264	56	84	83	261	
2	1625	468.15	0.20	0.26	0.26	5.00	365	274	265	55	84	83	262	
1	1630	469.66	0.16	0.21	0.21	4.50	357	272	265	55	84	83	261	
B5	1635	471.01	0.56	0.72	0.72	9.00	335	271	265	52	84	83	260	
4	1640	473.38	0.40	0.51	0.51	8.00	345	273	268	52	85	82	262	
3	1645	475.44	0.30	0.38	0.38	7.00	359	274	269	52	85	82	264	
2	1650	477.21	0.20	0.26	0.26	6.00	361	273	269	53	85	83	265	
1	1655	478.73	0.16	0.21	0.21	5.50	356	275	270	54	84	83	269	
C5	1700	480.09	0.60	0.76	0.76	10.00	336	274	270	53	85	83	270	
4	1705	482.48	0.45	0.56	0.56	10.00	348	273	270	51	85	83	270	
3	1710	484.70	0.28	0.36	0.36	9.00	362	267	270	51	85	83	270	
2	1715	486.38	0.20	0.26	0.26	8.00	365	267	270	53	85	83	268	
1	1720	487.90	0.18	0.23	0.23	7.00	361	265	269	54	84	82	267	
END	1725	489.254	—	—	—	—	—	—	—	—	—	—	—	Leak ✓ @ 12, 0.000 change thimble filter
D5	1732	489.640	0.56	0.72	0.72	7.00	344	261	261	55	83	82	267	Leak ✓ @ 12, 0.000
4	1737	491.99	0.44	0.56	0.56	6.50	361	263	262	54	84	82	267	

Pitot Tube Calibration Factor C_p 0.810 ✓
Volume Collected V_m 57.057 ✓ ft^3
Water Collected V_w 198.0 ✓ ml
Time of Test T_t 150 ✓ min.
Stack Pressure P_s -10.3 ✓ "H_2O

Pitot Tube No. M8 ✓
Baro. Press. P_b 29.68 ✓ "Hg
Probe Tip Dia. D_n 0.235 ✓ in.
% CO_2 12.2 ✓ % CO 0.0 ✓
% O_2 7.4 ✓ % N_2 80.4 ✓
Area Stack A_s 33456 ✓ in^2

Barometer No. 19-1 ✓
Probe Tip No. TFE 1-8 ✓
Total Volume of Leak Checks After Start: 0.386 ✓ ft^3
V_m = Dry Gas Meter Calibration Factor 1.014 ✓ X 56.269

[Dry Gas Meter Reading — ft^3 - (T_t — min. X Leak Rate — cfm)]

Impinger Box No. Hg 1

			Water Weight Gain		
Impinger 1	Final Weight	880.3	Final 990.4	Impinger 1	131.0
	Initial Weight	749.3	Initial 979.4	Impinger 2	41.8
	Increase	131.0	11.0	Impinger 3	4.2
Impinger 2	Final Weight	802.3		Impinger 4	-11.6
	Initial Weight	760.5		Impinger 5	20.8
	Increase	41.8		Impinger 6	0.3
Impinger 3	Final Weight	746.3	V_w =	Impinger 7	0.5
	Initial Weight	742.1	g SO_2 =	Impinger 8	11.0
	Increase	4.2	V_w =	Total	198.0 = V_w
Impinger 4	Final Weight	760.0			
	Initial Weight	771.6			
	Increase	-11.6			
Impinger 5	Final Weight	772.3	P_b = 29.68	%CO_2 = 12.2	
	Initial Weight	751.5	V_m = 57.057	%O_2 = 7.4	
	Increase	20.8	V_w = 198.0	%CO = 0.0	
			P_m = 0.430	%N_2 = 80.4	
Impinger 6	Final Weight	751.8	Avg ΔP = 0.337	A_s = 33456	
	Initial Weight	~~749.0~~ 751.5		D_n = 0.235	
	Increase	0.3	Avg$\sqrt{\Delta P}$ = 0.566	T_t = 150	
			C_p = 0.810		
Impinger 7	Final Weight	749.5	P_s = -10.3 "H_2O	28.92 "Hg	
	Initial Weight	749.0	T_m = 83 °F	543 °R	
	Increase	0.5	T_s = 360 °F	820 °R	

Moisture Content: %M = 14.50 M_d = 0.8550 MW_d = 30.248 MW = 28.47

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 57.057 \left[\frac{29.68 + \frac{0.430}{13.6}}{83 + 460}\right] = \frac{55.104\ sft^3}{0.367\ scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 198.0 = 9.346 sft^3

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{9.346}{9.346 + 55.104} \times 100 = 14.50\ \%$$

$$V_s = 5123.8 \times 0.810 \sqrt{\frac{820}{28.92 \times 28.47}} \times 0.566 = 2344\ fpm$$

$$\%I = \frac{1{,}039 \times 55.104 \times 820}{28.92 \times 0.8550 \times 2344 \times 150 \times (0.235)^2} = 97.8\ \%$$

ACFM: 544652

SCFM: 290862

%EA: 53.2

Run Number 3

Unit Unit 1 Baghouse A Inlet

Date 02-22-00

Hg FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Heated Line °F	Remarks
D3	1742	494.15	0.30	0.38	0.38	6.00	374	258	261	54	84	82	267	
2	1747	495.91	0.20	0.26	0.26	5.00	375	258	261	55	84	82	265	
1	1752	497.38	0.18	0.23	0.23	5.00	366	259	261	56	84	83	265	
E5	1757	498.83	0.60	0.76	0.76	9.00	351	259	261	56	84	82	265	
4	1802	501.39	0.40	0.51	0.51	8.00	356	259	261	56	84	82	265	
3	1807	503.42	0.30	0.38	0.38	8.00	379	260	260	53	84	82	265	
2	1812	505.25	0.20	0.26	0.26	7.50	377	262	260	55	84	82	266	
1	1817	506.84	0.16	0.21	0.21	7.00	366	262	260	55	84	82	265	
F5	1822	508.15	0.60	0.76	0.76	12.50	351	256	256	56	83	82	263	
4	1827	510.55	0.44	0.56	0.56	12.00	377	257	256	56	83	82	264	
3	1832	512.68	0.30	0.38	0.38	10.50	385	261	258	56	83	82	263	
2	1837	514.53	0.23	0.29	0.29	10.00	380	261	258	56	84	82	266	
1	1842	516.39	0.18	0.23	0.23	9.00	372	260	259	56	84	82	266	
END	1847	518.250	—	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Job Number 99-184
Job Name TXU (EPRD)
Run Number 1
Unit Unit 1 Baghouse "A" Outlet Duct 1-B NE
Date 2-22-00
Operator Hirt / McGeough / Bass
Sample Box No. Hs 4 Meter Box No. 291

Hs Field Data

Read and record at the start of each test point.

Purge to: —
Purge time: —
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 56
Assumed Moisture % 14.2
Probe Length 10'
C Factor 5 → 6 to reference
Initial Leak @ 17.0" "Hg = 0.000 cfm
Final Leak @ 10.0" "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H₂O (ΔP_s)	Orifice ΔH "H₂O Desired	Orifice ΔH "H₂O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Heated Line	Remarks
A 3	0835	501.733	0.25	0.30	0.30	6.0	320	264	255	59	59	60	263	Multi point
2	0840	503.72	0.25	0.30	0.30	6.0	337	264	255	56	60	60	262	Integrated orsat
1	0845	505.60	0.28	0.34	0.34	6.0	340	260	260	54	60	61	260	
B 3	0850	507.40	0.30	0.36	0.36	6.0	329	265	259	53	61	62	259	
2	0855	509.01	0.35	0.42	0.42	6.0	336	268	257	52	62	62	258	
1	0900	510.92	0.30	0.36	0.36	6.0	337	267	257	52	61	63	257	
C 3	0905	512.80	0.29	0.35	0.35	6.0	323	267	257	52	62	63	257	
2	0910	514.54	0.30	0.36	0.36	6.0	337	267	259	52	62	64	255	
1	0915	516.33	0.35	0.42	0.42	6.0	320	265	262	52	62	64	254	
D 3	0920	518.29	0.26	0.31	0.31	6.0	320	265	265	52	63	65	255	
2	0925	519.88	0.29	0.35	0.35	6.0	336	265	268	52	63	65	254	
1	0930	521.68	0.45	0.54	0.54	7.0	334	265	269	52	63	66	255	
E 3	0935	523.89	0.20	0.24	0.24	5.0	330	265	267	52	64	66	255	
2	0940	525.30	0.21	0.25	0.25	5.0	337	265	268	53	64	66	255	
1	0945	526.90	0.30	0.36	0.36	6.0	335	266	268	53	64	66	255	
F 3	0950	528.97	0.30	0.36	0.36	6.0	335	266	270	52	64	66	255	
2	0955	530.72	0.21	0.25	0.25	5.0	338	266	270	52	64	66	255	
1	1000	532.49	0.35	0.42	0.42	6.0	330	266	271	53	64	66	255	

Pitot Tube Calibration Factor C_p 0.806 ✓
Volume Collected V_m 57.880 ✓ ft³
Water Collected V_w 108.1 ✓ ml
Time of Test T_t 150 ✓ min.
Stack Pressure P_s -14.8 ✓ "H₂O

Pitot Tube No. M-5 ✓
Baro. Press. P_b 29.86 ✓ "Hg
Probe Tip Dia. D_n 0.233 ✓ in.
% CO_2 9.2 ✓ % CO 0.0 ✓
% O_2 10.4 ✓ % N_2 80.4 ✓
Area Stack A_s 150.94 ✓ in²

Barometer No. 19-1 ✓
Probe Tip No. TFE - II - 8 ✓
Total Volume of Leak Checks After Start: — ft³
V_m = Dry Gas Meter Calibration Factor 0.998 ✓ X 57.996
[Dry Gas Meter Reading — ft³ - (T_t — min. X Leak Rate — cfm)]

Impinger Box No. Hg 4

Impinger 1	Final Weight	841.6	Imp 8 Water Weight Gain	Impinger 1	93.0
	Initial Weight	748.6	Final 912.5	Impinger 2	63.2
	Increase	93.0	Initial 901.1	Impinger 3	4.7
			11.4	Impinger 4	5.5
Impinger 2	Final Weight	~~759.0~~ 810.5		Impinger 5	0.9
	Initial Weight	747.3		Impinger 6	0.8
	Increase	~~9.7~~ 63.2		Impinger 7	0.6
Impinger 3	Final Weight	759.0	V_w =	Imp 8	11.4
	Initial Weight	754.3	g SO_2 =	Total	180.1 = V_w
	Increase	4.7	V_w =		
Impinger 4	Final Weight	754.5			
	Initial Weight	749.0			
	Increase	5.5			
Impinger 5	Final Weight	761.5	P_b = 29.86	%CO_2 = 9.2	
	Initial Weight	760.6	V_m = 57.880	%O_2 = 10.9	
	Increase	0.9	V_w = 180.1	%CO = 0.0	
			P_m = 0.336	%N_2 = 80.4	
Impinger 6	Final Weight	755.0	Avg ΔP = 0.280	A_s = 15094	
	Initial Weight	754.2		D_n = 0.233	
	Increase	0.8	Avg$\sqrt{\Delta P}$ = 0.525	T_t = 150	
			C_p = 0.806		
Impinger 7	Final Weight	768.5	P_s = -14.8 "H_2O	28.77 "Hg	
	Initial Weight	767.9	T_m = ~~128~~ 64 °F	~~588~~ 524 °R	
	Increase	0.6	T_s = ~~345~~ 330 °F	~~307~~ 790 °R	

Moisture Content: %M = 12.73 M_d = 0.8727 MW_d = 29.888 MW = 28.37

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 57.880 \left[\frac{29.86 + \frac{0.336}{13.6}}{64 + 460}\right] = 58.263\ sft^3 = 0.388\ scfm$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 180.1 = 8.501 sft^3

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{8.501}{58.263 + 8.501} \times 100 = 12.73\ \%$$

$$V_s = 5123.8 \times 0.806 \sqrt{\frac{790}{28.77 \times 28.37}} \times 0.525 = 2133\ fpm$$

ACFM: 223,585

$$\%I = \frac{1{,}039 \times 58.263 \times 790}{28.77 \times 0.8727 \times 2133 \times 150 \times (0.233)^2} = 109.7\ \%$$

SCFM: 125,857

%EA: 95.4

Run Number 1

Unit Unit 1 Baghouse "A" Outlet Duct 1-8 NE

Date 2-22-00

Hg FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Heated Line	Remarks
			ΔP_s		P_m		T_s				T_m			
G 3	1005	534.61	0.25	0.30	0.30	6.0	326	263	266	53	64	66	255	
2	1010	536.15	0.25	0.30	0.30	6.0	334	263	266	53	64	66	255	
1	1015	538.17	0.45	0.54	0.54	6.0	320	264	270	53	64	66	255	
H 3	1020	540.38	0.42	0.50	0.50	7.0	328	265	270	53	64	66	255	
2	1025	542.42	0.30	0.36	0.36	6.0	328	265	270	53	65	67	254	
1	1030	544.47	0.20	0.24	0.24	6.0	328	265	270	53	65	67	254	
I 3	1035	546.52	0.20	0.24	0.24	6.0	328	267	268	53	65	67	255	
2	1040	548.85	0.20	0.24	0.24	6.0	336	267	269	53	65	67	256	
1	1045	551.67	0.30	0.36	0.36	6.0	337	267	269	53	65	67	256	
J 3	1050	554.42	0.20	0.24	0.24	6.0	337	268	269	53	65	67	256	
2	1055	556.86	0.15	0.18	0.18	5.5	318	265	267	53	65	68	256	
1	1100	558.31	0.25	0.30	0.30	6.0	320	265	266	59	67	68	255	
End	1105	559.729	—	—	—	—	—	—	—	—	—	—	—	

D 12

METCO ENVIRONMENTAL

Job Number 99-184 ✓
Job Name TXU EPRI ✓
Run Number 2 ✓
Unit Unit 1 Baghouse Outlet Duct ✓
Date 2-22-00 ✓
Operator Hart / McGeough / Boon ✓
Sample Box No. Hg-2 Meter Box No. 29-1 ✓

Hg Field Data

Read and record at the start of each test point.

Purge to: —
Purge time: —
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 66
Assumed Moisture % 14%
Probe Length 10'
C Factor 5 → 6 to reference
Initial Leak @ 15.0" "Hg = 0.000 cfm
Final Leak @ 8.0" "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Heated Line	Remarks
S 3	1200	561.332	0.23	0.28	0.28	5.0	323	253	260	53	66	67	254	ORSAT
2	1205	565.19	0.15	0.18	0.18	4.0	324	255	260	54	67	68	254	
1	1210	566.07	0.15	0.18	0.18	4.0	327	258	262	56	68	69	257	
I 3	1215	567.11	0.28	0.34	0.34	4.5	320	257	263	55	68	69	258	
2	1220	568.37	0.28	0.34	0.34	4.5	325	257	263	55	68	69	258	Pump off 1220
1	1305	569.65	0.28	0.34	0.34	4.5	325	260	265	59	68	69	256	Pump on 1300
H 3	1310	570.98	0.21	0.25	0.25	4.5	328	259	265	57	69	69	258	
2	1315	572.28	0.28	0.34	0.34	4.5	337	260	264	55	69	70	258	
1	1320	574.01	0.30	0.36	0.36	5.0	340	260	264	52	70	71	259	
G 3	1325	575.74	0.30	0.36	0.36	5.0	340	260	264	54	70	72	258	
2	1330	577.26	~~0.30~~ 0.25	0.30	0.30	5.0	336	260	266	52	71	73	258	
1	1335	578.79	0.33	0.40	0.40	5.5	330	260	261	52	71	74	260	
F 3	1340	580.62	0.30	0.36	0.36	5.0	331	260	262	52	71	74	260	Pump off 1340
2	1355	582.42	0.19	0.23	0.23	4.5	335	263	272	58	72	74	265	Pump on 1350
1	1400	583.41	0.35	0.41	0.41	5.5	335	263	272	55	73	74	265	
E 3	1405	585.09	0.35	0.41	0.41	5.5	335	263	272	55	73	74	265	
2	1410	586.68	0.25	0.30	0.30	5.0	335	263	272	55	73	74	265	
1	1415	588.24	0.28	0.34	0.34	5.0	330	263	272	54	74	76	265	

Pitot Tube Calibration Factor C_p 0.806 ✓
Volume Collected V_m 49.075 ✓ ft^3
Water Collected V_w 153.2 ✓ ml
Time of Test T_t 150 ✓ min.
Stack Pressure P_s -15.6 ✓ "H_2O

Pitot Tube No. M-5 ✓
Baro. Press. P_b 29.72 ✓ "Hg
Probe Tip Dia. D_n 0.233 ✓ in.
% CO_2 7.8 ✓ % CO 0.0 ✓
% O_2 11.4 ✓ % N_2 80.8 ✓
Area Stack A_s 150.94 ✓ in^2

Barometer No. 19-1 ✓
Probe Tip No. TFE II-8 ✓
Total Volume of Leak Checks After Start: — ft^3
V_m = Dry Gas Meter Calibration Factor 0.998 ✓ X 49.173

[Dry Gas Meter Reading — ft^3 - (T_t — min. X Leak Rate — cfm)]

Impinger Box No. Hg 2

Impinger 1	Final Weight	885.1	Water Weight Gain	Impinger 1	124.9
	Initial Weight	760.2	Imp 8 final 938.5	Impinger 2	11.8
	Increase	124.9	Initial 927.9	Impinger 3	1.7
Impinger 2	Final Weight	764.0	10.6	Impinger 4	3.5
	Initial Weight	752.2		Impinger 5	0.3
	Increase	11.8		Impinger 6	0.1
Impinger 3	Final Weight	760.0	V_w =	Impinger 7	0.3
	Initial Weight	758.3	g SO_2 =	Imp 8	10.6
	Increase	1.7	V_w =	Total	153.2 = V_w
Impinger 4	Final Weight	752.5			
	Initial Weight	749.0			
	Increase	3.5			
Impinger 5	Final Weight	767.5	P_b = 29.72	%CO_2 = 7.8	
	Initial Weight	767.2	V_m = 49.075	%O_2 = 11.4	
	Increase	0.3	V_w = 153.2	%CO = 0.0	
			P_m = 0.329	%N_2 = 80.8	
Impinger 6	Final Weight	652.0	Avg ΔP = 0.272	A_s = 15094	
	Initial Weight	651.9		D_n = 0.233	
	Increase	0.1	Avg$\sqrt{\Delta P}$ = 0.518	T_t = 150	
			C_p = 0.8016		
Impinger 7	Final Weight	754.4	P_s = -15.6 "H_2O	28.57 "Hg	
	Initial Weight	754.1	T_m = 73 °F	533 °R	
	Increase	0.3	T_s = 330 °F	790 °R	

Moisture Content: %M = 13.01 M_d = ~~0.8000~~ 0.8699 MW_d = 29.704 MW = ~~27.89~~ 28.18

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 49.075 \left[\frac{29.72 + \frac{0.329}{13.6}}{73 + 460}\right] = 48.337\ \text{sft}^3 = 0.322\ \text{scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 153.2 = 7.231 sft^3

$$\%\ \text{Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{7.231}{48.337 + 7.231} \times 100 = 13.01\ \%$$

$$V_s = 5123.8 \times 0.806 \sqrt{\frac{790}{28.57 \times \cancel{27.89}\ 28.18}} \times 0.518 = \cancel{2130}\ 2119\ \text{fpm}$$

$$\%I = \frac{1{,}039 \times 48.337 \times 790}{28.57 \times \cancel{.8000}\ 0.8699 \times \cancel{2123}\ \cancel{2130}\ 2119 \times 150 \times (.233)^2} = \cancel{93.1}\ 92.5\ \%$$

ACFM: 222120

SCFM: 123764

%EA: 113.9

Run Number 2

Unit unit 1 Baghouse Outlet Duct

Date 2-22-00

Hg FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	P_m Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Heated Line	Remarks
D 3	1420	589.99	0.29	0.35	0.35	5.0	333	260	266	55	75	77	268	
2	1425	591.59	0.29	0.35	0.35	5.0	330	260	266	55	75	77	268	
1	1430	593.31	0.39	0.47	0.47	5.0	330	260	266	55	75	77	268	
C 3	1435	595.14	0.23	0.28	0.28	5.0	330	260	266	55	75	77	268	
2	1440	596.45	0.28	0.34	0.34	5.0	330	260	266	55	75	77	268	
1	1445	598.17	0.46	0.56	0.56	6.0	330	261	267	55	75	77	268	
B 3	1450	600.19	0.18	0.22	0.22	4.5	334	261	268	58	76	77	270	
2	1455	601.60	0.21	0.25	0.25	4.5	334	261	268	58	76	77	270	
1	1500	603.34	0.24	0.29	0.29	5.0	334	260	265	58	76	77	270	
A 3	1505	604.65	0.24	0.29	0.29	5.0	315	260	265	58	76	77	273	
2	1510	606.13	0.30	0.38	0.38	5.5	330	260	265	58	76	77	273	
1	1515	607.97	0.30	0.38	0.38	5.5	310	260	265	60	76	78	273	
End	1520	610.505	—	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Job Number 99-184
Job Name TXU (EPRI)
Run Number 3
Unit Unit 1 Outlet Duct Baghouse A
Date 2-22-00
Operator Hart/McGough/Baas
Sample Box No. Hg-4 Meter Box No. 29-1

Hg Field Data

Read and record at the start of each test point.

Purge to: —
Purge time: —
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 74
Assumed Moisture % 14
Probe Length 10'
C Factor ~~5→~~ 8→10 to reference
Initial Leak @ 15.0" "Hg = 0.000 cfm
Final Leak @ 10.0" "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet (T_m)	Heated Line	Remarks
A3	1600	~~1617.400~~	0.27	0.34	0.34	5.0	330	260	270	62	73	73	263	Integrated
2	1615	618.97	0.30	0.38	0.38	5.0	336	261	270	62	73	73	264	orsat
1	1620	620.80	0.25	0.315	0.315	5.0	336	261	270	57	73	73	265	
B3	1625	622.44	0.17	0.21	0.21	4.5	336	261	265	51	74	74	264	
2	1630	623.75	0.25	0.315	0.315	5.0	336	261	265	51	74	74	264	
1	1635	625.43	0.23	0.29	0.29	5.0	336	261	265	51	74	74	265	
C3	1640	627.00	0.25	0.315	0.315	5.0	311	261	265	48	75	75	266	
2	1645	628.55	0.34	0.41	0.41	5.0	311	261	265	48	75	75	266	
1	1650	630.45	0.39	0.49	0.49	6.0	338	263	265	48	73	74	265	
D3	1655	632.51	0.27	0.34	0.34	6.0	338	263	265	48	73	74	265	
2	1700	634.15	~~0.25~~ 0.38	~~0.315~~ 0.38	0.38	5.5	338	260	267	50	73	74	264	
1	1705	636.03	0.34	0.41	0.41	5.0	338	260	265	50	73	74	264	
E3	1710	637.91	0.21	0.26	0.26	4.5	338	260	263	50	73	74	264	
2	1715	639.10	0.25	0.315	0.315	5.0	337	259	262	53	73	73	263	
1	1720	641.08	0.40	0.50	0.50	6.0	337	260	259	53	72	73	262	
F3	1725	643.07	0.25	0.315	0.315	5.0	330	260	259	53	72	73	262	
2	1730	644.68	0.20	0.25	0.25	5.0	330	260	259	55	72	72	261	
1	1735	646.43	0.30	0.38	0.38	5.0	320	262	260	55	72	72	260	

Pitot Tube Calibration Factor C_p 0.806
Volume Collected V_m 52.736 ft^3
Water Collected V_w ~~173.7~~ 172.9 ml
Time of Test T_t 150 min.
Stack Pressure P_s -15.0 "H_2O

Pitot Tube No. M-5
Baro. Press. P_b 29.68 "Hg
Probe Tip Dia. D_n 0.233 in.
% CO_2 8.0 % CO 0.0
% O_2 12.2 % N_2 79.8
Area Stack A_s 150.94 in^2

Barometer No. 19-1
Probe Tip No. TFC II-8
Total Volume of Leak Checks After Start: — ft^3
V_m = Dry Gas Meter Calibration Factor 0.998 X 52.842

[Dry Gas Meter Reading — ft^3 - (T_t — min. X Leak Rate — cfm)]

Impinger Box No. Hg 4

Impinger 1	Final Weight	856.2	Water Weight Gain	Impinger 1	103.9
	Initial Weight	752.3	Final 927.8	Impinger 2	46.5
	Increase	103.9	Initial 912.4	Impinger 3	2.5
			15.4	Impinger 4	4.6
Impinger 2	Final Weight	796.5		Impinger 5	-0.3
	Initial Weight	750.0		Impinger 6	-0.1
	Increase	46.5		Impinger 7	0.4
Impinger 3	Final Weight	756.7	V_w =	Impinger 8	15.4
	Initial Weight	754.2	g SO_2 =	Total	~~173.7~~ 172.9 = V_w
	Increase	2.5	V_w =		
Impinger 4	Final Weight	755.1			
	Initial Weight	750.5			
	Increase	4.6			
Impinger 5	Final Weight	764.0	P_b = 29.68	%CO_2 = 8.0	
	Initial Weight	764.3	V_m = 52.736	%O_2 = 12.2	
	Increase	-0.3	V_w = ~~173.7~~ 172.9	%CO = 0.0	
			P_m = ~~0.333~~ 0.351	%N_2 = 79.8	
Impinger 6	Final Weight	758.8	Avg ΔP = 0.264	A_s = 150.94	
	Initial Weight	758.9		D_n = 0.233	
	Increase	-0.1	Avg$\sqrt{\Delta P}$ = 0.511	T_t = 150	
Impinger 7	Final Weight	772.8	C_p = 0.806		
	Initial Weight	772.4	P_s = -15.0 "H_2O	~~29.67~~ 28.58 "Hg	
	Increase	0.4	T_m = 73 °F	533 °R	
			T_s = 328 °F	788 °R	

Moisture Content: %M = ~~14.0~~ 13.59 M_d = ~~0.8600~~ 0.8641 MW_d = ~~28.77~~ 29.768 MW = ~~28.12~~ 28.17

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 52.736 \left[\frac{29.68 + \frac{0.333}{13.6}}{73 + 460}\right] = \text{~~51.874~~ 51.873 sft}^3 = \text{0.346 scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x ~~173.7~~ 172.9 = ~~8.199~~ 8.161 sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{\text{~~8.198~~ 8.161}}{\text{51.873} + \text{~~8.199~~ 8.161}}$ x 100 = ~~13.65~~ 13.59%

V_s = 5123.8 x 0.806 $\sqrt{\frac{788}{\text{~~29.67~~ 28.58} \times \text{~~28.12~~ 28.17}}}$ x 0.511 = ~~2051~~ 2088 fpm

ACFM: ~~214974~~ 218841

SCFM: ~~123301~~ 121490

%I = $\frac{1{,}039 \times \text{~~51.874~~ 51.873} \times 788}{\text{~~0.8600~~ 0.8641} \times \text{~~29.67~~ 28.58} \times \text{~~2051~~ 2088} \times 150 \times (0.233)^2}$ = ~~99.10~~ 101.1 %

%EA: 136.4

Run Number 3

Unit Unit 1 Outlet Duct Baghouse A

Date 2-22-00

Hg FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	P_m Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Heated Line °F	Remarks
G 3	1740	648.27	0.20	0.25	0.25	5.0	320	262	260	55	71	71	259	
2	1745	649.76	0.25	0.315	0.315	5.0	326	260	260	56	71	71	258	
1	1750	651.51	0.30	0.38	0.38	5.5	322	260	260	56	72	72	257	
H 3	1755	653.92	0.30	0.38	0.38	5.5	322	260	260	56	72	72	257	
2	1800	655.18	0.25	0.315	0.315	5.0	322	260	260	56	72	72	257	
1	1805	656.90	0.28	0.36	0.36	5.0	322	260	260	59	72	72	257	
I 3	1810	658.51	0.20	0.25	0.25	5.0	322	260	260	60	72	72	257	
2	1815	660.17	0.20	0.25	0.25	5.0	335	258	262	60	72	72	257	
1	1820	662.03	0.25	0.315	0.315	5.0	320	258	262	60	72	72	257	
J 3	1825	663.90	0.25	0.315	0.315	5.0	320	258	262	60	72	72	257	
2	1830	665.79	0.21	0.26	0.26	5.0	320	258	262	60	72	72	257	
1	1835	668.20	0.25	0.315	0.315	5.0	320	258	262	60	72	72	257	
End	1840	670.242	—	—	—	—	—	—	—	—	—	—	—	

PRELIMINARY VELOCITY TRAVERSE DATA
AND
SAMPLING LOCATION DATA

Job Number 99-184

Job Name TXU

Sampling Location Unit 1 Baghouse Inlet

Date 02-21-00 Time 1615

Stack Height _____ ft.

Sampling Port Height Above Ground _____ ft.

	Port A	Port B	Port C	Port D	E	F	Average
Port & Inside Diameter (in.)	178	178	178	178	178	178	178
Port & Wall Thickness (in.)	14	14	14	14	14	14	14
Inside Stack Diameter (in.)	164	164	164	164	164	164	164 X 204"

Sampling Ports are 17 ft. 6 in. (1.15 equ. duct ~~stack~~ diameters) downstream from disturbance (inlet, constriction, bend, expansion) De = 182

Sampling Ports are 39 ft. 11 in. (2.63 equ. duct ~~stack~~ diameters) upstream from disturbance (outlet, constriction, bend, expansion)

Point Number	Percent Diameter	Distance from Ref. Point (decimal in.)	Distance from Ref. Point (fractional in.)	Port A $\Delta P/T_s/\alpha$	Port B $\Delta P/T_s/\alpha$	Port C $\Delta P/T_s/\alpha$	Port D $\Delta P/T_s/\alpha$
1	—	16.400	16 3/8	0.84356-5	0.33365-3	0.28370-4	0.31369+4
2	—	49.200	49 3/16	0.39367-5	0.43370 0	0.47370 0	0.57386 0
3	—	82.000	82	0.63360-2	0.49374-5	0.69381+0	0.70404 0
4	—	114.800	114 13/16	0.88340-3	0.83352+0	0.85376+0	0.85388+0
5	—	147.600	147 5/8	1.00333-3	0.96341-2	0.98352-3	0.96365-5
6				/ /	/ /	/ /	/ /
7				/ /	/ /	/ /	/ /
8				/ /	/ /	/ /	/ /
9				/ /	/ /	/ /	/ /
10				PORT E	PORT F	/ /	/ /
11				0.29389-2	0.29387 0	/ /	/ /
12				0.54392+2	0.40394 0	/ /	/ /
13				0.68408 0	0.52404 0	/ /	/ /
14				0.79392+0	0.85399+3	/ /	/ /
15				0.96367-5	0.93378+5	/ /	/ /
16				/ /	/ /	/ /	/ /
17				/ /	/ /	/ /	/ /
18				/ /	/ /	/ /	/ /
19				/ /	/ /	/ /	/ /
20				/ /	/ /	/ /	/ /
21				/ /	/ /	/ /	/ /
22				/ /	/ /	/ /	/ /
23				/ /	/ /	/ /	/ /
24				/ /	/ /	/ /	/ /

Pitot Tube No. ~~19-12-1~~ M8

C_p = 0.810

P_b = 29.90 "Hg

P_s = -9.8 "H_2O 29.22 "Hg

A_s = ~~45,571~~ 33456 in.²

Average ΔP 0.634

Average $\Delta P^{1/2}$ 0.779

Average T_x 374 °F

Average α 3.7 degrees

PRELIMINARY VELOCITY TRAVERSE DATA
AND
SAMPLING LOCATION DATA

Job Number 99-184

Job Name TYU

Sampling Location A Baghouse Outlet Duct 1-B NE

Date 2-21-00 Time 1530

Stack Height — ft.

Sampling Port Height Above Ground 75 ft.

	Port A	Port B	Port C	Port D	Average
Port & Inside Diameter (in.)					
Port & Wall Thickness (in.)	~~12 3/4~~	~~12 3/4~~	~~12 3/4~~	~~12 3/4~~	12 3/4 ✓
Inside Stack Diameter (in.)					

Sampling Ports are 2 ft. 3 in. (0.30 ~~stack~~ equ. duct diameters) downstream from disturbance (inlet, constriction, bend, expansion)

287 1/2" x 52" = De = 89

Sampling Ports are 11 ft. 1 in. (1.50 ~~stack~~ equ. duct diameters) upstream from disturbance (outlet, constriction, bend, expansion)

Point Number	Percent Diameter	Distance from Ref. Point (decimal in.)	Distance from Ref. Point (fractional in.)	Port A $\Delta P/T_s/\alpha$	Port B $\Delta P/T_s/\alpha$	Port C $\Delta P/T_s/\alpha$	Port D $\Delta P/T_s/\alpha$
1	—	—	8 3/4	0.43/346/5	0.75/348/0	1.00/341/25	0.55/347/10
2	—	—	26 1/2	0.45/345/20	0.56/341/25	0.60/340/20	0.55/349/10
3	—	—	43 3/4	0.44/340/40	0.44/340/~~29~~ 25	0.55/339/20	0.50/340/12
4				/ /	/ /	/ /	/ /
5				/ /	/ /	/ /	/ /
6				Port / E /	Port / F /	Port / G /	Port / H /
7				0.30/345/-7	0.48/348/0	0.52/346/0	0.51/340/-5
8				0.35/346/5	0.47/347/5	0.47/345/0	0.50/342/0
9				0.40/346/18	0.40/350/-5	0.40/345/0	0.44/340/0
10				/ /	/ /	/ /	/ /
11				/ /	/ /	/ /	/ /
12				Port / I /	Port / J /	/ /	/ /
13				0.47/340/12	0.52/345/10	/ /	/ /
14				0.49/342/12	0.49/346/10	/ /	/ /
15				0.45/340/10	0.45/350/10	/ /	/ /
16				/ /	/ /	/ /	/ /
17				/ /	/ /	/ /	/ /
18				/ /	/ /	/ /	/ /
19				/ /	/ /	/ /	/ /
20				/ /	/ /	/ /	/ /
21				/ /	/ /	/ /	/ /
22				/ /	/ /	/ /	/ /
23				/ /	/ /	/ /	/ /
24				/ /	/ /	/ /	/ /

Pitot Tube No. M-5 ✓

C_p = 0.80 ✓

P_b = ~~28.1~~ 29.53 "Hg

P_s = -18.1 "H_2O 28.20 "Hg ✓

A_s = 15094 ✓ in.^{2}

Average ΔP ~~0.498~~ 0.499 ✓

Average $\Delta P^{1/2}$ 0.701 ✓

Average T_s 344 ✓ °F

Average α 10.7 ✓ degrees

METCO ENVIRONMENTAL

ORSAT ANALYSIS DATA FORM

Job Number: 99-184 Sample Location: Unit 1 Baghouse A Inlet

Job Name: TXU Electric Analytical Method: 3B

Location: Mt. Pleasant, TX Sample Type: Single point or Multi point; Grab or Integrated

Date: 2-22-00 Leak Check: Time: 4 (min. 4 minutes) Rate: 0.0 mL

Operator: M. Bass Ambient Air Check:

CO_2 - % Vol.	0.0
O_2 - % Vol.	20.9
N_2 - % Vol.	79.1

Run Number 1 Run Time 0835-1113	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	15.0	15.0	15.0	15.0
O_2 - % Vol.	3.6	3.6	3.6	3.6
CO - % Vol.	0.0	0.0	0.0	0.0
N_2 - % Vol.	81.4	81.4	81.4	81.4

Fo = 1.153

Run Number 2 Run Time 1200-1530	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	13.8	13.8	13.8	13.8
O_2 - % Vol.	5.4	5.4	5.4	5.4
CO - % Vol.	0	0	0	0
N_2 - % Vol.	80.8	80.8	80.8	80.8

Fo = 1.123

Run Number 3 Run Time 1610-1847	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	12.2	12.2	12.2	12.2
O_2 - % Vol.	7.4	7.4	7.4	7.4
CO - % Vol.	0	0	0	0
N_2 - % Vol.	80.4	80.4	80.4	80.4

Fo = 1.107

METCO ENVIRONMENTAL

ORSAT ANALYSIS DATA FORM

Job Number: 99-184 Sample Location: Unit 1 Baghouse A ~~Dr~~ Outlet

Job Name: TXU Electric Analytical Method: 3B

Location: Mt. Pleasant, TX Sample Type: Single point or Multi point; Grab or Integrated

Date: 2-22-00 Leak Check: Time: 4 (min. 4 minutes) Rate: 0.0mL

Operator: J. Conway Ambient Air Check:

CO_2 - % Vol.	0.0
O_2 - % Vol.	20.9
N_2 - % Vol.	79.1

Run Number 1 Run Time 0835-1105	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	9.2	9.2	9.2	9.2
O_2 - % Vol.	~~19.6~~ 10.4	~~19.6~~ 10.4	~~19.6~~ 10.4	~~19.6~~ 10.4
CO - % Vol.	0	0	0	0
N_2 - % Vol.	80.4	80.4	80.4	80.4

Fo = 1.141

Run Number 2 Run Time 1200-1520	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	7.8	7.8	7.8	7.8
O_2 - % Vol.	11.4	11.4	11.4	11.4
CO - % Vol.	0	0	0	0
N_2 - % Vol.	80.8	80.8	80.8	80.8

Fo = 1.218

Run Number 3 Run Time 1610-1840	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	8.0	8.0	8.0	8.0
O_2 - % Vol.	12.2	12.2	12.2	12.2
CO - % Vol.	0	0	0	0
N_2 - % Vol.	79.8	79.8	79.8	79.8

Fo = 1.048

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APPENDIX C

Calibration Data

Equipment	Calibration Factor	Calibration Date
Pitot Tube #M-5	0.806	01/31/00
Pitot Tube #M-8	0.810	01/31/00
Probe Tip #TFE-1-8	0.235	01/31/00
Probe Tip #TFE-2-8	0.233	01/31/00
Dry Gas Meter #12-1	1.014	02/03/00
Stack Unit Orifice #12-1		02/04/00
Digital Temperature Indicator #12-1		02/02/00
Dry Gas Meter #29-1	0.998	02/07/00
Stack Unit Orifice #29-1		02/07/00
Digital Temperature Indicator #29-1		02/07/00
Barometer #19-1		01/31/00

APPENDIX C

Post Test

Calibration Data

Equipment	Calibration Factor	Calibration Date
Pitot Tube #M-5	0.807	04/11/00
Pitot Tube #M-8	0.810	04/11/00
Probe Tip #TFE-1-8	0.234	04/05/00
Probe Tip #TFE-2-8	0.233	04/05/00
Dry Gas Meter #12-1	0.987	03/06/00
Stack Unit Orifice #12-1		03/07/00
Digital Temperature Indicator #12-1		03/06/00
Dry Gas Meter #29-1	0.998	03/10/00
Stack Unit Orifice #29-1		03/16/00
Digital Temperature Indicator #29-1		03/10/00
Barometer #19-1		04/05/00

PITOT TUBE CALIBRATION

Date: 01-31-00

Time: 1130

Pitot No.: M5

T_s: 65 °F

Pitot Dimensions: 3/8" tips

C_{pstd}: 0.990

Motor Setting	fps mark	Calibration Standard Start	Calibration Standard End	$\sqrt{\text{Standard Average}}$	High	$\sqrt{\text{High}}$	Cal. Factor	Low	$\sqrt{\text{Low}}$	Cal. Factor
7	20	0.10	0.10	0.316	0.15	0.387	0.808	0.15	0.387	0.808
14	30	0.22	0.22	0.469	0.34	0.583	0.796	0.34	0.583	0.796
20	40	0.34	0.34	0.583	0.51	0.714	0.808	0.52	0.721	0.801
28	50	0.54	0.54	0.735	0.81	0.900	0.808	0.81	0.900	0.808
35	60	0.80	0.80	0.894	1.20	1.095	0.808	1.20	1.095	0.808
41	70	1.00	1.00	1.000	1.50	1.225	0.808	1.50	1.225	0.808
50	80	1.30	1.30	1.140	1.95	1.396	0.808	1.95	1.396	0.808
62	90	1.60	1.60	1.265	2.45	1.565	0.800	2.45	1.565	0.805
28	50	0.54	0.54	0.735	0.81	0.900	0.808	0.81	0.900	0.808
28	50	0.54	0.54	0.735	0.81	0.900	0.808	0.81	0.900	0.808
Average							0.806			0.805

Summary of Results:

Normal high side calibration factor 0.806

variation + 0.25%

variation - 1.24%

Normal low side calibration factor 0.805

variation + 0.37%

variation - 1.12%

Calibrator: Jason Brown 274

Checked By: Scott Hart 268

PITOT TUBE CALIBRATION

Date: 01-31-00

Time: 1145

Pitot No.: M8

T_s: 65 °F

Pitot Dimensions: 3/8" tips

C_{pstd}: 0.990

Motor Setting	fps mark	Calibration Standard Start	Calibration Standard End	$\sqrt{\text{Standard Average}}$	High	$\sqrt{\text{High}}$	Cal. Factor	Low	$\sqrt{\text{Low}}$	Cal. Factor
7	20	0.10	0.10	0.316	0.15	0.387	0.808 ✓	0.15	0.387	0.808 ✓
14	30	0.22	0.22	0.469	0.32	0.566	0.821 ✓	0.32	0.566	0.821 ✓
20	40	0.34	0.34	0.583	0.51	0.714	0.808 ✓	0.51	0.714	0.808 ✓
28	50	0.54	0.54	0.735	0.81	0.900	0.808 ✓	0.81	0.900	0.808 ✓
35	60	0.80	0.80	0.894	1.20	1.095	0.808 ✓	1.20	1.095	0.808 ✓
41	70	1.00	1.00	1.000	1.50	1.225	0.808 ✓	1.50	1.225	0.808 ✓
50	80	1.30	1.30	1.140	1.95	1.396	0.808 ✓	1.95	1.396	0.808 ✓
62	90	1.60	1.60	1.265	2.40	1.549	0.808 ✓	2.40	1.549	0.808 ✓
28	50	0.54	0.54	0.735	0.81	0.900	0.808 ✓	0.81	0.900	0.808 ✓
28	50	0.54	0.54	0.735	0.81	0.900	0.808 ✓	0.81	0.900	0.808 ✓
Average							0.810 ✓			0.810 ✓

Summary of Results:

Normal high side calibration factor 0.810 ✓

variation + 1.36% ✓

variation - 0.25% ✓

Normal low side calibration factor 0.810 ✓

variation + 1.36% ✓

variation - 0.25% ✓

Calibrator: Jim Brom 274

Checked By: Scott Hart 248

METCO ENVIRONMENTAL

NOZZLE CALIBRATION

Nozzle Set No. TFE-1 checked by Scott Hart 2168

Date 01-31-00 Calibrator: Jean Brown 274

	4	6	7	8	10	12
Reading 1	0.116	0.175	0.200	0.235	0.307	0.360
Reading 2	0.114	0.175	0.199	0.236	0.309	0.359
Reading 3	0.118	0.176	0.199	0.235	0.310	0.360
Reading 4	0.118	0.174	0.198	0.235	0.308	0.361
Reading 5	0.117	0.173	0.198	0.234	0.308	0.359
Reading 6	0.118	0.173	0.200	0.234	0.308	0.359
Reading 7	0.116	0.175	0.199	0.234	0.307	0.361
Reading 8	0.116	0.173	0.199	0.236	0.307	0.362
Reading 9	0.116	0.174	0.199	0.236	0.308	0.360
Reading 10	0.117	0.174	0.199	0.235	0.308	0.361
Average	0.117 ✓	0.174 ✓	0.199 ✓	0.235 ✓	0.308 ✓	0.360 ✓

	14	—	—	—	—	—
Reading 1	0.429					
Reading 2	0.431					
Reading 3	0.431					
Reading 4	0.430					
Reading 5	0.430					
Reading 6	0.430					
Reading 7	0.430					
Reading 8	0.429					
Reading 9	0.429					
Reading 10	0.428					
Average	0.430 ✓					

METCO ENVIRONMENTAL

NOZZLE CALIBRATION

Nozzle Set No. TFE-2 checked Scott Hart 268

Date 01-31-00 Calibrator: Jann Brown 274

	4	6a	7	8	10	12
Reading 1	0.114	0.175	0.195	0.230	0.310	0.361
Reading 2	0.115	0.173	0.196	0.234	0.310	0.359
Reading 3	0.116	0.165	0.195	0.231	0.309	0.361
Reading 4	0.115	0.169	0.193	0.235	0.310	0.362
Reading 5	0.114	0.171	0.195	0.234	0.308	0.362
Reading 6	0.116	0.171	0.194	0.234	0.310	0.363
Reading 7	0.115	0.173	0.193	0.235	0.310	0.360
Reading 8	0.114	0.169	0.197	0.232	0.309	0.360
Reading 9	0.115	0.171	0.195	0.234	0.309	0.361
Reading 10	0.115	0.171	0.195	0.234	0.310	0.361
Average	0.115 ✓	0.171 ✓	0.195 ✓	0.233 ✓	0.310 ✓	0.361 ✓

	14					
Reading 1	0.431					
Reading 2	0.434					
Reading 3	0.434					
Reading 4	0.433					
Reading 5	0.432					
Reading 6	0.435					
Reading 7	0.434					
Reading 8	0.434					
Reading 9	0.434					
Reading 10	0.435					
Average	0.434 ✓					

METCO ENVIRONMENTAL

Dry Gas Meter Calibration

Dry Gas Meter No.: 12-1

Date: 2-3-00

ΔH ("H_2O)	C_{DG}
0.5	1.000
1.0	1.008
1.5	1.006
2.0	1.012
3.0	1.030
4.0	1.027
Average	1.014

Variation: + 1.58

- 1.38

METER ADJUSTED

Calibrator: Kieran McGeagh #285

Checked By: Scott Hart #268

C_{DG} @ 2 liters/min. = 1.028

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 2-3-00

Calibrator: Kieran McGeagh

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 0.50

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

Wet Test Meter (No. 3)	Time	Meter Reading	Temp.	P_m
End	1317	5.342 cf	67 °F	-1.30 "H_2O
Start	1304	0.000 cf	67 °F	-1.30 "H_2O
Avg.	13 ✓	5.342 ✓ cf	67 ✓ °F	-1.30 ✓ "H_2O

Dry Gas Meter	Meter Reading	Temp. In	Temp. Out	P_m
End	200.478 cf	68 °F	67 °F	0.50 "H_2O
Start	195.161 cf	67 °F	68 °F	0.50 "H_2O
Avg.	5.317 ✓ cf	67 ✓ °F		✓ 0.50 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.342 \left[\frac{29.81 + \frac{-1.30}{13.6}}{67 + 460}\right] \times 1.000\ (C_f) = 5.316\ ✓\ dcsf$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.317 \left[\frac{29.81 + \frac{0.50}{13.6}}{67 + 460}\right] = 5.315\ ✓\ dcsf$$

$$C_{DG} = \frac{5.316}{5.315} = \boxed{1.000\ ✓}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 2-3-00

Calibrator: Kieran McGeagh

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 1.00

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

Wet Test Meter (No. 3)	Time	Meter Reading	Temp.	P_m
End	1329	5.200 cf	67 °F	-1.90 "H_2O
Start	1320	0.000 cf	67 °F	-1.90 "H_2O
Avg.	9 ✓	5.200 ✓ cf	67 ✓ °F	-1.90 ✓ "H_2O

Dry Gas Meter	Meter Reading	Temp. In	Temp. Out	P_m
End	206.170 cf	72 °F	68 °F	1.00 "H_2O
Start	201.019 cf	68 °F	68 °F	1.00 "H_2O
Avg.	5.151 ✓ cf	69 ✓	°F	✓ 1.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.200 \left[\frac{29.81 + \frac{-1.90}{13.6}}{67 + 460}\right] \times 1.000 \quad (C_f) = 5.167 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.151 \left[\frac{29.81 + \frac{1.00}{13.6}}{69 + 460}\right] = 5136 \text{ dcsf}$$

$$C_{DG} = \frac{5.167}{5.136} = \boxed{1.006}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 2-3-00

Calibrator: Kieran McGeagh

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 1.50

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1345	10.000 cf	67 °F	-2.10 "H_2O	216.458 cf	74 °F	69 °F	1.50 "H_2O
Start	1331	0.000 cf	67 °F	-2.10 "H_2O	206.554 cf	70 °F	68 °F	1.50 "H_2O
Avg.	14	10.000 cf	67 °F	-2.10 "H_2O	9.904 cf	70 °F		1.50 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.000 \left[\frac{29.81 + \frac{-2.10}{13.6}}{67 + 460}\right] \times 1.000 \ (C_f) = 9.932 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 9.904 \left[\frac{29.81 + \frac{1.50}{13.6}}{70 + 460}\right] = 9.868 \text{ dcsf}$$

$$C_{DG} = \frac{9.932}{9.868} = \boxed{1.006}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Calibrator: Kieran McGeagh

Date: 2-3-00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 2.00

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1402	10.595 cf	67 °F	-2.50 "H_2O	227.459 cf	77 °F	70 °F	2.00 "H_2O
Start	1350	0.000 cf	67 °F	-2.50 "H_2O	217.011 cf	73 °F	69 °F	2.00 "H_2O
Avg.	12 ✓	10.595 ✓ cf	67 ✓ °F	-2.50 ✓ "H_2O	10.448 ✓ cf	72 ✓ °F		✓ 2.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.595 \left[\frac{29.81 + \frac{-2.50}{13.6}}{67 + 460}\right] \times 1.000 \quad (C_i) = 10.513 \checkmark \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.448 \left[\frac{29.81 + \frac{2.00}{13.6}}{72 + 460}\right] = 10.384 \checkmark \text{ dcsf } \cancel{+0.384}$$

$$C_{DG} = \frac{10.513}{10.384} = \boxed{1.012 \checkmark}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1-00

Calibrator: Kieran McGeagh

Date: 2-3-00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 3.00

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

	Wet Test Meter (No. 3)					Dry Gas Meter				
	Time	Meter Reading	Temp.		P_m	Meter Reading	Temp. In		Temp. Out	P_m
End	1424	10.930 cf	67	°F	-3.50 "H_2O	240.124 cf	83	°F	71 °F	3.00 "H_2O
Start	1408	0.000 cf	67	°F	-3.50 "H_2O	229.524 cf	77	°F	70 °F	3.00 "H_2O
Avg.	16 ✓	10.930 ✓ cf	67 ✓	°F	-3.50 ✓ "H_2O	10.600 ✓ cf	75 ✓	°F	✓	3.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.930 \left[\frac{29.81 + \frac{-3.50}{13.6}}{67 + 460}\right] \times 1.000 \quad (C_f) = 10.818 \checkmark \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.600 \left[\frac{29.81 + \frac{3.00}{13.6}}{75 + 460}\right] = 10.502 \checkmark \text{ dcsf}$$

$$C_{DG} = \frac{10.818}{10.502} = \boxed{1.030 \checkmark}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 2-3-00

Calibrator: Kieran McGeagh

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 2 @ 4.00

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

	Wet Test Meter (No. 3)					Dry Gas Meter				
	Time	Meter Reading	Temp.	P_m		Meter Reading	Temp. In	Temp. Out	P_m	
End	1545	10.150 cf	68 °F	-4.30	"H_2O	283.180 cf	76 °F	72 °F	4.00	"H_2O
Start	1536	0.000 cf	68 °F	-4.30	"H_2O	273.384 cf	74 °F	72 °F	4.00	"H_2O
Avg.	9.1	10.150 ✓ cf	68 ✓ °F	-4.30 ✓	"H_2O	9.796 ✓ cf	74 ✓ °F	✓	4.00	"H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.150 \left[\frac{29.81 + \frac{-4.30}{13.6}}{68 + 460}\right] \times 1.000 \quad (C_f) = 10.007 \text{ dcsf} \checkmark$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 9.796 \left[\frac{29.81 + \frac{4.00}{13.6}}{74 + 460}\right] = 9.747 \text{ dcsf} \checkmark$$

$$C_{DG} = \frac{10.007}{9.747} = \boxed{1.027 \checkmark}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 2-3-00

Calibrator: Kieran McGeagh

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 4.00

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1437	10.241 cf	68 °F	-4.30 "H_2O
Start	1428	0.000 cf	68 °F	-4.30 "H_2O
Avg.	9 ✓	10.241 ✓ cf	68 ✓ °F	✓ -4.30 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	251.670 cf	84 °F	72 °F	4.00 "H_2O
Start	241.817 cf	81 °F	71 °F	4.00 "H_2O
Avg.	9.853 ✓ cf	77 ✓ °F	✓ 4.00	"H_2O

$$Wet\ Test\ Meter\ Vm_{std} = 17.65 \times 10.241 \left[\frac{29.81 + \frac{-4.30}{13.6}}{68 + 460}\right] \times 1.000\ (C_f) = 10.097\ ✓\ dcsf$$

$$Dry\ Gas\ Meter\ Vm_{std} = 17.65 \times 9.853 \left[\frac{29.81 + \frac{4.00}{13.6}}{77 + 460}\right] = 9.749\ ✓\ dcsf$$

$$C_{DG} = \frac{10.097}{9.749} = \boxed{1.036\ ✓}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 2-3-00

Calibrator: Kieran McGeagh

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 2L/min

P_b: 29.81 "Hg

Control Module Vacuum: 3.50 "Hg

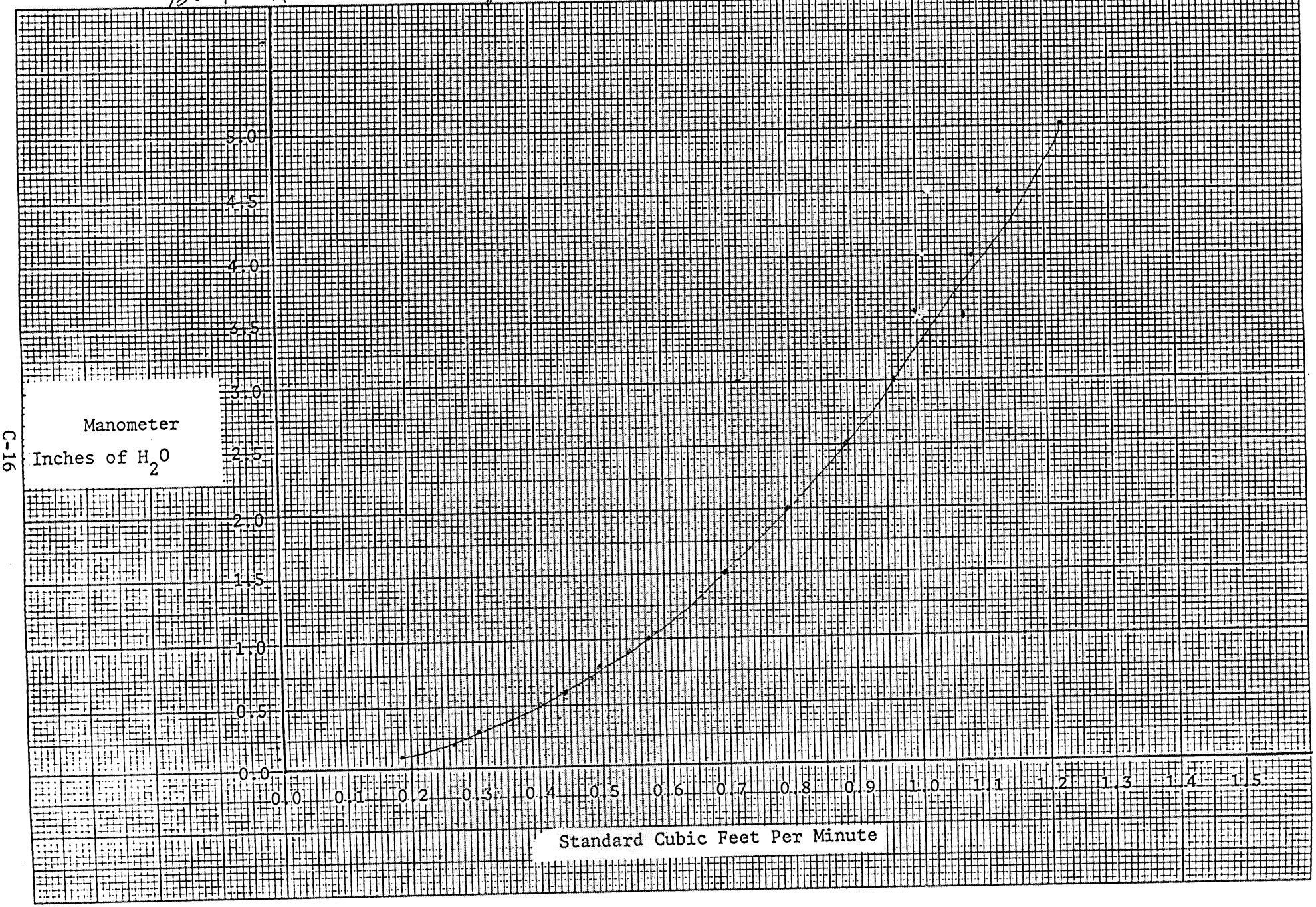
	Wet Test Meter (No. 1)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1656	2.092 cf	69 °F	-0.50 "H_2O	286.779 cf	72 °F	72 °F	0.02 "H_2O
Start	1626	0.000 cf	69 °F	-0.50 "H_2O	284.723 cf	72 °F	72 °F	0.02 "H_2O
Avg.	30 ✓	2.092 ✓ cf	69 ✓ °F	-0.50 ✓ "H_2O	2.056 ✓ cf	72 ✓ °F	✓	0.02 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.092 \left[\frac{29.81 + \frac{-0.50}{13.6}}{69 + 460}\right] \times 1.006 \ (C_i) = 2.091 \checkmark \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 2.056 \left[\frac{29.81 + \frac{0.02}{13.6}}{72 + 460}\right] = 2.033 \checkmark \text{ dcsf}$$

$$C_{DG} = \frac{2.091}{2.033} = \boxed{1.028 \checkmark}$$

12-1 Kieran McGeagh #285 Cal. 1.014 2-4-00



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 12-1

CALIBRATION DATA

Date: 2-2-00

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	1330	67	67
Ice Bath	1335	32	33
Boiling Water	1340	212	212
Oven	1350	249	250
Oven	1355	302	300
Oven	1410	354	350
Oven	1415	380	376

Meter Adjusted? Yes _____ No ✓

Calibrator: Kieran McGeagh #285

Checked By: Scott Hart 268

METCO ENVIRONMENTAL

Dry Gas Meter Calibration

Dry Gas Meter No.: 29-1

Date: 2-7-00

ΔH ("H_2O)	C_{DG}
0.5	0.990
1.0	0.996
1.5	1.001
2.0	1.004
3.0	1.005
4.0	0.991
Average	0.998 ✓

Variation: + 0.80% ✓

- 0.70% ✓

Calibrator: Steve Lee 261

Checked By: Jason Conway #273

C_{DG} @ 2 liters/min. = 1.023

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 2-7-00

Calibrator: Shane Lee 261

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 0.5" H_2O

P_b: 29.11 "Hg

Control Module Vacuum: 50 "Hg

Wet Test Meter (No. 3)					Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1148	5.093 cf	67 °F	-1.30 "H_2O	384.125 cf	61 °F	63 °F	0.50 "H_2O
Start	1136	0.000 cf	67 °F	-1.30 "H_2O	379.053 cf	62 °F	62 °F	0.50 "H_2O
Avg.	12	5.093 cf	67 °F	-1.30 "H_2O	5.072 cf	62 °F		0.50 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.093 \left[\frac{29.11 + \frac{-1.30}{13.6}}{67 + 460}\right] \times 1.000 \ (C_f) = 4.949 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.072 \left[\frac{29.11 + \frac{0.50}{13.6}}{62 + 460}\right] = 4.999 \text{ dcsf}$$

$$C_{DG} = \frac{4.949}{4.999} = \boxed{0.990}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 2-7-00

Calibrator: Shane Lee 261

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 1.0" H_2O

P_b: 29.11 "Hg

Control Module Vacuum: 5.0 "Hg

	Wet Test Meter (No. 3)					Dry Gas Meter				
	Time	Meter Reading	Temp.	P_m		Meter Reading	Temp. In	Temp. Out	P_m	
End	1200	5.152 cf	67 °F	-1.70	"H_2O	390.354 cf	61 °F	66 °F	1.00	"H_2O
Start	1152	0.000 cf	67 °F	-1.70	"H_2O	385.254 cf	62 °F	64 °F	1.00	"H_2O
Avg.	8	5.152 cf	67 °F	-1.70	"H_2O	5.100 cf	63 °F		1.00	"H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.152 \left[\frac{29.11 + \frac{-1.70}{13.6}}{67 + 460} \right] \times 1.000\ (C_i) = 5.001 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.100 \left[\frac{29.11 + \frac{1.00}{13.6}}{63 + 460} \right] = 5.023 \text{ dcsf}$$

$$C_{DG} = \frac{5.001}{5.023} = \boxed{0.996}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Calibrator: Shane Lee 261

Date: 2-7-00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 1.5 "H_2O

P_b: 29.11 "Hg

Control Module Vacuum: 5.0 "Hg

	Wet Test Meter (No. 3)					Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m		Meter Reading	Temp. In	Temp. Out	P_m
End	1326	10.185 cf	67 °F	-2.30 "H_2O		401.204 cf	60 °F	67 °F	1.50 "H_2O
Start	1312	0.000 cf	67 °F	-2.30 "H_2O		391.183 cf	64 °F	64 °F	1.50 "H_2O
Avg.	14	10.185 cf	67 °F	-2.30 "H_2O		10.021 cf	64 °F		1.50 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.185 \left[\frac{29.11 + \frac{-2.30}{13.6}}{67 + 460} \right] \times 1.000 \ (C_f) = 9.872 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.021 \left[\frac{29.11 + \frac{1.50}{13.6}}{64 + 460} \right] = 9.863 \text{ dcsf}$$

$$C_{DG} = \frac{9.872}{9.863} = \boxed{1.001}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 2-7-00

Calibrator: Shane Lee 261

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 2.0" H_2O

P_b: 29.11 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)					Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1340	10.182 cf	67 °F	-2.70 "H_2O	411.751 cf	58 °F	72 °F	2.00 "H_2O
Start	1329	0.000 cf	67 °F	-2.70 "H_2O	401.747 cf	63 °F	69 °F	2.00 "H_2O
Avg.	11	10.182 cf	67 °F	-2.70 "H_2O	10.004 cf	66 °F		2.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.182 \left[\frac{29.11 + \frac{-2.70}{13.6}}{67 + 460} \right] \times 1.000\ (C_f) = 9.859 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.004 \left[\frac{29.11 + \frac{2.00}{13.6}}{66 + 460} \right] = 9.821 \text{ dcsf}$$

$$C_{DG} = \frac{9.859}{9.821} = \boxed{1.004}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 2-7-00

Calibrator: Shane Lee 261

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 3.0" H_2O

P_b: 29.11 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)					Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1359	11.380 cf	67 °F	-3.80 "H_2O	424.224 cf	56 °F	74 °F	3.00 "H_2O
Start	1346	0.000 cf	67 °F	-3.80 "H_2O	413.070 cf	66 °F	74 °F	3.00 "H_2O
Avg.	11	11.380 cf	67 °F	-3.80 "H_2O	11.154 cf	68 °F		3.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 11.380 \left[\frac{29.11 + \frac{-3.80}{13.6}}{67 + 460} \right] \times 1.000\ (C_f) = 10.988 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 11.154 \left[\frac{29.11 + \frac{3.00}{13.6}}{68 + 460} \right] = 10.936 \text{ dcsf}$$

$$C_{DG} = \frac{10.988}{10.936} = \boxed{1.005}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 2-7-00

Calibrator: Shane Lee 261

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 4.0 "H_2O

P_b: 29.11 "Hg

Control Module Vacuum: 5.0 "Hg

	Wet Test Meter (No. 3)					Dry Gas Meter			
	Time	Meter Reading	Temp.		P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1412	10.533 cf	67	°F	-4.50 "H_2O	437.440 cf	53 °F	75 °F	4.00 "H_2O
Start	1403	0.000 cf	67	°F	-4.50 "H_2O	427.061 cf	62 °F	75 °F	4.00 "H_2O
Avg.	9	10.533 cf	67	°F	-4.50 "H_2O	10.379 cf	66	°F	4.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.533 \left[\frac{29.11 + \frac{-4.50}{13.6}}{67 + 460} \right] \times 1.000\ (C_i) = 10.152 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.379 \left[\frac{29.11 + \frac{4.00}{13.6}}{66 + 460} \right] = 10.241 \text{ dcsf}$$

$$C_{DG} = \frac{10.152}{10.241} = \boxed{0.991}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 2-7-00

Calibrator: Shane Lee 261

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 2L/min.

P_b: 29.11 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)	Time	Meter Reading	Temp.	P_m	Dry Gas Meter	Meter Reading	Temp. In	Temp. Out	P_m
End	1526	2.071 cf	68 °F	−0.30 "H_2O		440.205 cf	78 °F	78 °F	0.01 "H_2O
Start	1456	0.0000 cf	68 °F	−0.30 "H_2O		438.156 cf	72 °F	72 °F	0.01 "H_2O
Avg.	30	2.071 cf	68 °F	−0.30 "H_2O		2.049 cf	75 °F		0.01 "H_2O

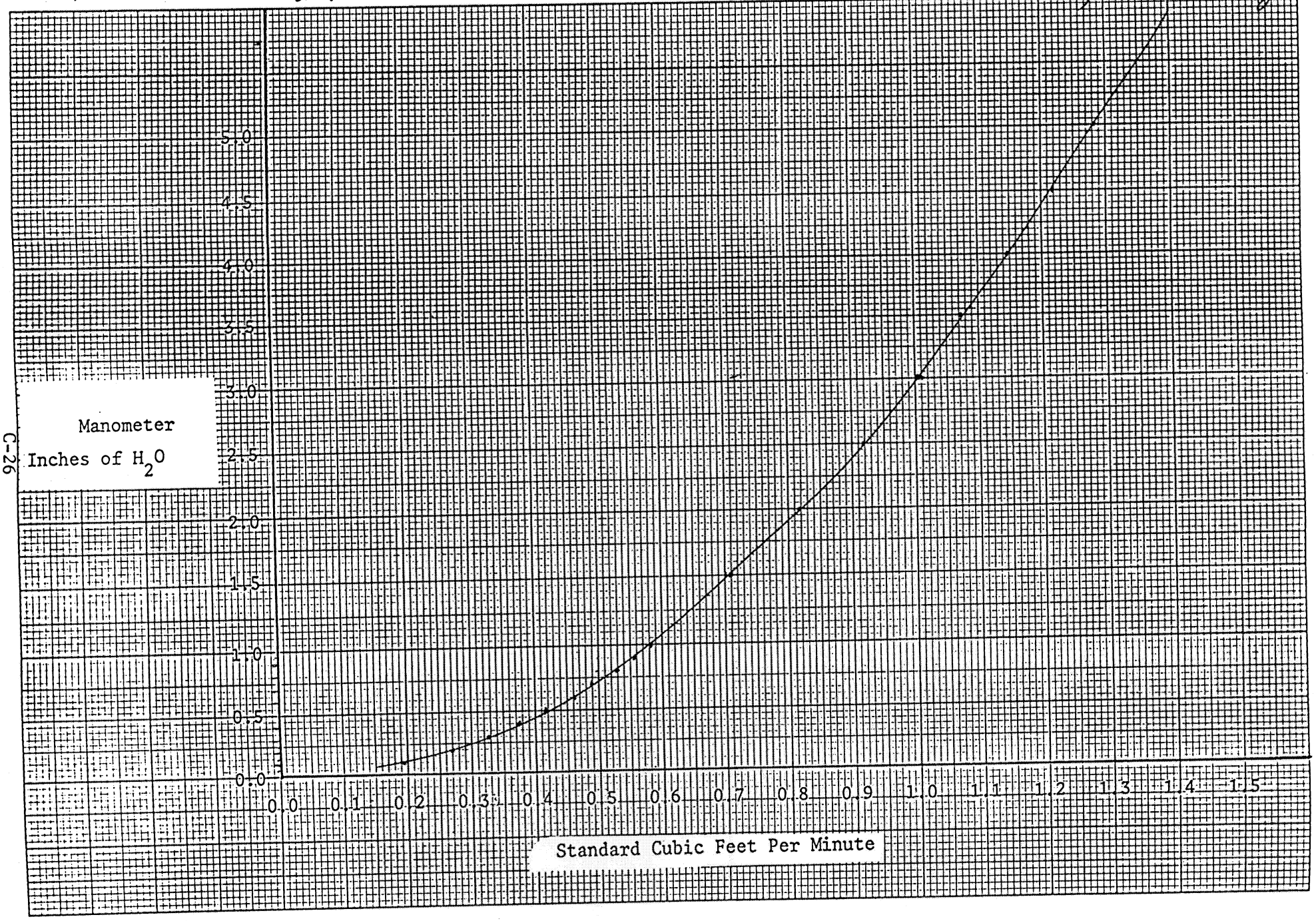
$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.071 \left[\frac{29.11 + \frac{-0.30}{13.6}}{68 + 460} \right] \times 1.000 \ (C_f) = 2.014 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 2.049 \left[\frac{29.11 + \frac{0.01}{13.6}}{75 + 460} \right] = 1.968 \text{ dcsf}$$

$$C_{DG} = \frac{2.014}{1.968} = \boxed{1.023}$$

Shane Lee 261
CM 29-1 0.998
2-7-00

✓ By Jason Conway #273



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 29-1

CALIBRATION DATA

Date: 2-7-00

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	1051	64	62
Ice Bath	1052	33	32
Boiling Water	1054	212	212
Oven	1058	250	250
Oven	1059	300	299
Oven	1101	350	351
Oven	1102	375	325

Meter Adjusted? Yes _____ No ✓

Calibrator: Shane Lee 261

Checked By: Jason Conway #273

METCO ENVIRONMENTAL

BAROMETER CALIBRATION

Barometer No. 19-1

Date: 01-31-00

Time: 1600

Barometric Pressure @ Addison Airport @ 719 ft.	=	30.17
	-	0.719
Absolute Pressure @ Addison Airport	=	29.451 ✓
	+	0.083
Absolute Pressure @ METCO @ 636 ft.	=	29.534 ✓
Barometer Reading	=	29.61
Variation	=	~~0.262~~ -0.08 ✓

Barometer Adjusted? Yes ✓ No _____

Brian Brown 274

Signature of Calibrator

PITOT TUBE CALIBRATION

Date: 4/11/00

Time: 0830

Pitot No.: M5

T_s: 70 °F

Pitot Dimensions: 3/8" tips

C_{pstd}: 0.990

Motor Setting	fps mark	Calibration Standard Start	Calibration Standard End	√Standard Average	High	√High	Cal. Factor	Low	√Low	Cal. Factor
7	20	0.10	0.10	0.316	0.15	0.387	0.808	0.15	0.387	0.808
14	30	0.22	0.22	0.469	0.34	0.583	0.796	0.33	0.574	0.808
20	40	0.34	0.34	0.583	0.52	0.721	0.801	0.51	0.714	0.808
28	50	0.54	0.54	0.735	0.81	0.900	0.808	0.81	0.900	0.808
35	60	0.80	0.80	0.894	1.20	1.095	0.808	1.20	1.095	0.808
41	70	1.00	1.00	1.000	1.50	1.225	0.808	1.50	1.225	0.808
50	80	1.30	1.30	1.140	1.90	1.378	0.819	1.95	1.396	0.808
62	90	1.60	1.60	1.265	2.40	1.549	0.808	2.40	1.549	0.808
28	50	0.54	0.54	0.735	0.81	0.900	0.808	0.81	0.900	0.808
28	50	0.54	0.54	0.735	0.81	0.900	0.808	0.81	0.900	0.808
Average							0.807			0.808

Summary of Results:

Normal high side calibration factor 0.807

variation + 1.49%

variation - 1.36%

Normal low side calibration factor 0.808

variation + 0.0%

variation - 0.00%

Calibrator: David A. Olsen #292

Checked By: 236

PITOT TUBE CALIBRATION

Date: 4/11/00

Time: 0930

Pitot No.: M8

T_s: 71 °F

Pitot Dimensions: 3/8" tips

C_{pstd}: 0.990

Motor Setting	fps mark	Calibration Standard Start	Calibration Standard End	√Standard Average	High	√High	Cal. Factor	Low	√Low	Cal. Factor
7	20	0.10	0.10	0.316	0.15	0.387	0.808	0.15	0.387	0.808
14	30	0.22	0.22	0.469	0.32	0.566	0.821	0.32	0.566	0.821
20	40	0.34	0.34	0.583	0.51	0.714	0.808	0.50	0.707	0.816
28	50	0.54	0.54	0.735	0.81	0.900	0.808	0.81	0.900	0.808
35	60	0.80	0.80	0.894	1.20	1.095	0.808	1.20	1.095	0.808
41	70	1.00	1.00	1.000	1.50	1.225	0.808	1.45	1.204	0.822
50	80	1.30	1.30	1.140	1.95	1.396	0.808	1.90	1.378	0.819
62	90	1.60	1.60	1.265	2.40	1.549	0.808	2.40	1.549	0.808
28	50	0.54	0.54	0.735	0.81	0.900	0.808	0.81	0.900	0.808
28	50	0.54	0.54	0.735	0.81	0.900	0.808	0.81	0.900	0.808
Average							0.810			0.814

Summary of Results:

Normal high side calibration factor 0.810

variation + 1.36%

variation - -0.25%

Normal low side calibration factor 0.814

variation + 0.98%

variation - -0.74%

Calibrator: David A. Olsen #292

Checked By: 236

METCO ENVIRONMENTAL

NOZZLE CALIBRATION

Nozzle Set No. TFE1

Date 04-05-00 Calibrator: JASON BROWN #274

	4	6	6a	8a	10	12
Reading 1	0.118	0.172	0.179	0.234	0.310	0.359
Reading 2	0.118	0.173	0.177	0.235	0.308	0.360
Reading 3	0.116	0.175	0.175	0.234	0.308	0.361
Reading 4	0.117	0.175	0.175	0.234	0.308	0.360
Reading 5	0.119	0.173	0.177	0.233	0.309	0.362
Reading 6	0.117	0.172	0.177	0.233	0.307	0.361
Reading 7	0.116	0.174	0.177	0.234	0.308	0.359
Reading 8	0.118	0.175	0.178	0.234	0.307	0.361
Reading 9	0.117	0.174	0.177	0.234	0.307	0.359
Reading 10	0.116	0.174	0.177	0.234	0.308	0.361
Average	0.117	0.174	0.177	0.234	0.308	0.360

	14	—	—	—	—	—
Reading 1	0.429					
Reading 2	0.431					
Reading 3	0.430					
Reading 4	0.431					
Reading 5	0.429					
Reading 6	0.430					
Reading 7	0.430					
Reading 8	0.430					
Reading 9	0.429					
Reading 10	0.428					
Average	0.430					

METCO ENVIRONMENTAL

NOZZLE CALIBRATION

Nozzle Set No. TFE 2

Date 04-05-00 Calibrator: JASON BROWN #274

	4	6a	7	8	10	12
Reading 1	0.115	0.171	0.196	0.232	0.309	0.359
Reading 2	0.114	0.171	0.196	0.233	0.310	0.361
Reading 3	0.114	0.174	0.194	0.233	0.310	0.361
Reading 4	0.115	0.171	0.193	0.234	0.308	0.363
Reading 5	0.115	0.173	0.195	0.235	0.310	0.362
Reading 6	0.116	0.173	0.194	0.234	0.309	0.360
Reading 7	0.115	0.172	0.195	0.233	0.309	0.362
Reading 8	0.115	0.173	0.195	0.232	0.310	0.361
Reading 9	0.114	0.171	0.196	0.234	0.310	0.361
Reading 10	0.115	0.172	0.196	0.233	0.309	0.360
Average	0.115	0.172	0.195	0.233	0.309	0.361

	14	—	—	—	—	—
Reading 1	0.435					
Reading 2	0.432					
Reading 3	0.433					
Reading 4	0.434					
Reading 5	0.434					
Reading 6	0.431					
Reading 7	0.434					
Reading 8	0.434					
Reading 9	0.435					
Reading 10	0.434					
Average	0.434					

METCO ENVIRONMENTAL

Dry Gas Meter Calibration

Dry Gas Meter No.: 12-1

Date: 3-6-00

ΔH ("H_2O)	C_{DG}
0.5	0.989 ✓
1.0	0.990 ✓
1.5	0.986 ✓
2.0	0.985 ✓
3.0	0.984 ✓
4.0	0.987 ✓
Average	0.987 ✓

Variation: + 0.30 % ✓

- 0.30 % ✓

Calibrator: Mike Bass

Checked By: [signature] 236

C_{DG} @ 2 liters/min. = 1.019 ✓

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Calibrator: Mike Bass

Date: 3/6/00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 0.50" H_2O

P_b: 29.38 "Hg

Control Module Vacuum: 2.0 "Hg

	Wet Test Meter (No. 3)					Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m		Meter Reading	Temp. In	Temp. Out	P_m
End	1519	5.416 cf	70 °F	-0.80 "H_2O		533.206 cf	76 °F	76 °F	0.50 "H_2O
Start	1506	0.000 cf	70 °F	-0.80 "H_2O		527.708 cf	74 °F	74 °F	0.50 "H_2O
Avg.	13	5.416 cf	70 °F	-0.800 "H_2O		5.498 cf	75 °F		0.500 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.416 \left[\frac{29.38 + \frac{-0.800}{13.6}}{70 + 460}\right] \times 0.998\ (C_f) = 5.278 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.498 \left[\frac{29.38 + \frac{0.500}{13.6}}{75 + 460}\right] = 5.336 \text{ dcsf}$$

$$C_{DG} = \frac{5.278}{5.336} = \boxed{0.989}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Calibrator: Mike Bass

Date: 3/6/00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 1.00" H_2O

P_b: 29.38 "Hg

Control Module Vacuum: 2.0 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1531	5.305 cf	69 °F	-1.35 "H_2O	539.076 cf	77 °F	75 °F	1.00 "H_2O
Start	1522	0.000 cf	70 °F	-1.35 "H_2O	533.697 cf	75 °F	76 °F	1.00 "H_2O
Avg.	9	5.305 cf	70 °F	-1.35 "H_2O	5.379 cf	76 °F		1.000 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.305 \left[\frac{29.38 + \frac{-1.35}{13.6}}{70 + 460} \right] \times 0.998\ (C_f) = 5.163 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.379 \left[\frac{29.38 + \frac{1.000}{13.6}}{76 + 460} \right] = 5.217 \text{ dcsf}$$

$$C_{DG} = \frac{5.163}{5.217} = \boxed{0.990}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Calibrator: Mike Bass

Date: 3/6/00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 1.5" H_2O

P_b: 29.38 "Hg

Control Module Vacuum: 2.0 "Hg

	Wet Test Meter (No. 3)					Dry Gas Meter			
	Time	Meter Reading	Temp.		P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1548	10.315 cf	69	°F	-1.90 "H_2O	549.799 cf	81 °F	75 °F	1.50 "H_2O
Start	1533	0.000 cf	69	°F	-1.90 "H_2O	539.288 cf	77 °F	75 °F	1.50 "H_2O
Avg.	15	10.315 cf	69	°F	-1.90 "H_2O	10.511 cf	77	°F	1.500 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.315 \left[\frac{29.38 + \frac{-1.90}{13.6}}{69 + 460}\right] \times 0.998\ (C_f) = 10.043 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.511 \left[\frac{29.38 + \frac{1.500}{13.6}}{77 + 460}\right] = 10.188 \text{ dcsf}$$

$$C_{DG} = \frac{10.043}{10.188} = \boxed{0.986}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Calibrator: Mike Bass

Date: 3/6/00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 2.00" H_2O

P_b: 29.38 "Hg

Control Module Vacuum: 2 "Hg

Wet Test Meter (No. 3)					Dry Gas Meter				
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1602	10.325 cf	69 °F	-2.25 "H_2O	560.492 cf	84 °F	76 °F	2.00 "H_2O
Start	1549	0.000 cf	69 °F	-2.25 "H_2O	549.949 cf	80 °F	76 °F	2.00 "H_2O
Avg.	13	10.325 cf	69 °F	-2.250 "H_2O	10.543 cf	79 °F		2.000 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.325 \left[\frac{29.38 + \frac{-2.250}{13.6}}{69 + 460}\right] \times 0.998 \ (C_f) = 10.044 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.543 \left[\frac{29.38 + \frac{2.000}{13.6}}{79 + 460}\right] = 10.194 \text{ dcsf}$$

$$C_{DG} = \frac{10.044}{10.194} = \boxed{0.985}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Calibrator: Mike Bass

Date: 3/6/00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 3.00 "H_2O

P_b: 29.38 "Hg

Control Module Vacuum: 2 "Hg

	Wet Test Meter (No. 3)					Dry Gas Meter			
	Time	Meter Reading	Temp.		P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1616	10.410 cf	70	°F	-3.20 "H_2O	571.394 cf	85 °F	76 °F	3.00 "H_2O
Start	1605	0.000 cf	69	°F	-3.20 "H_2O	560.804 cf	82 °F	76 °F	3.00 "H_2O
Avg.	11	10.410 cf	70	°F	-3.20 "H_2O	10.590 cf	80 °F		3.000 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.410 \left[\frac{29.38 + \frac{-3.20}{13.6}}{70 + 460} \right] \times 0.998 \ (C_f) = 10.083 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.590 \left[\frac{29.38 + \frac{3.000}{13.6}}{80 + 460} \right] = 10.246 \text{ dcsf}$$

$$C_{DG} = \frac{10.083}{10.246} = \boxed{0.984}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Calibrator: Mike Bass

Date: 3/6/00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 4.00" H_2O

P_b: 29.38 "Hg

Control Module Vacuum: 2.0 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1630	10.628 cf	70 °F	-4.00 "H_2O	585.918 cf	88 °F	77 °F	4.00 "H_2O
Start	1621	0.000 cf	70 °F	-4.00 "H_2O	575.166 cf	83 °F	77 °F	4.00 "H_2O
Avg.	9	10.628 cf	70 °F	-4.00 "H_2O	10.752 cf	81 °F		4.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.628 \left[\frac{29.38 + \frac{-4.00}{13.6}}{70 + 460}\right] \times 0.998\ (C_f) = 10.274 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.752 \left[\frac{29.38 + \frac{4.00}{13.6}}{81 + 460}\right] = 10.409 \text{ dcsf}$$

$$C_{DG} = \frac{10.274}{10.409} = \boxed{0.987}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Calibrator: Mike Bass

Date: 3-07-00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 2.0 L/min

P_b: 29.40 "Hg

Control Module Vacuum: 2 "Hg

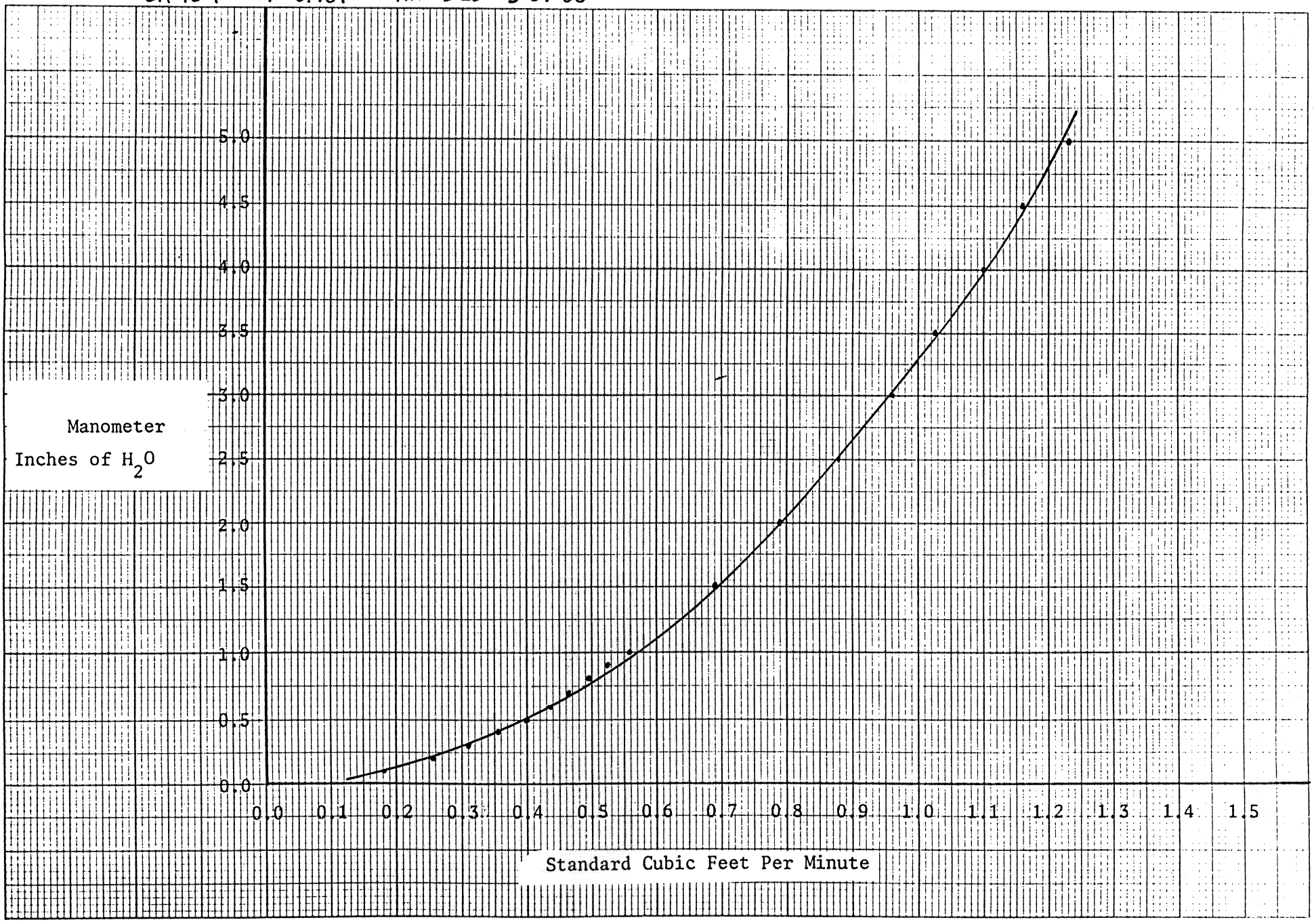
	Wet Test Meter (No. 1)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	0914	2.250 cf	71 °F	-0.50 "H_2O	597.739 cf	70 °F	70 °F	0.01 "H_2O
Start	0841	0.000 cf	71 °F	-0.50 "H_2O	595.561 cf	69 °F	69 °F	0.01 "H_2O
Avg.	33	2.250 cf	71 °F	-0.50 "H_2O	2.178 cf	70 °F		0.01 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.250 \left[\frac{29.40 + \frac{-0.50}{13.6}}{71 + 460}\right] \times 0.990\ (C_f) = 2.174 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 2.178 \left[\frac{29.40 + \frac{0.01}{13.6}}{70 + 460}\right] = 2.132 \text{ dcsf}$$

$$C_{DG} = \frac{2.174}{2.132} = \boxed{1.019}$$

CM 12-1 C_F: 0.987 Mike Bass 3-07-00



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 12-1

CALIBRATION DATA

Date: 3-6-00

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	1439	75	74
Ice Bath	1441	36	37
Boiling Water	1502	212	212
Oven	1515	275	274
Oven	1519	300	301
Oven	1522	350	350
Oven	1524	375	376

Meter Adjusted? Yes _____ No X

Calibrator: Mike Bass

Checked By: [signature] 236

METCO ENVIRONMENTAL

Dry Gas Meter Calibration

Dry Gas Meter No.: 29-1

Date: 3-10-00

ΔH ("H_2O)	C_{DG}
0.5	1.000 ✓
1.0	1.006 ✓
1.5	1.004 ✓
2.0	1.000 ✓
3.0	0.995 ✓
4.0	0.985 ✓
Average	0.998 ✓

Variation: + 0.80% ✓

- 1.30% ✓

Calibrator: Mike Bass

Checked By: James Meade 236

C_{DG} @ 2 liters/min. = 1.010 ✓

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Calibrator: Mike Bass

Date: 3-10-00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 0.5" H_2O

P_b: 29.33 "Hg

Control Module Vacuum: 5.0 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	0930	5.305 cf	69 °F	-0.85 "H_2O	933.377 cf	67 °F	72 °F	0.50 "H_2O
Start	0918	0.000 cf	69 °F	-0.85 "H_2O	928.108 cf	64 °F	68 °F	0.50 "H_2O
Avg.	12	5.305 cf	69 °F	-0.850 "H_2O	5.269 cf	68 °F		0.500 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.305 \left[\frac{29.33 + \frac{-0.850}{13.6}}{69 + 460}\right] \times 0.998 \quad (C_f) = 5.170 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.269 \left[\frac{29.33 + \frac{0.500}{13.6}}{68 + 460}\right] = 5.172 \text{ dcsf}$$

$$C_{DG} = \frac{5.170}{5.172} = \boxed{1.000}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Calibrator: Mike Bass

Date: 3-10-00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 1.0" H_2O

P_b: 29.33 "Hg

Control Module Vacuum: 5.0 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	0942	5.302 cf	69 °F	-1.35 "H_2O	939.313 cf	66 °F	73 °F	1.00 "H_2O
Start	0933	0.000 cf	69 °F	-1.35 "H_2O	934.076 cf	68 °F	73 °F	1.00 "H_2O
Avg.	9	5.302 cf	69 °F	-1.350 "H_2O	5.237 cf	70 °F		1.000 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.302 \left[\frac{29.33 + \frac{-1.350}{13.6}}{69 + 460}\right] \times 0.998\ (C_f) = 5.161 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.237 \left[\frac{29.33 + \frac{1.000}{13.6}}{70 + 460}\right] = 5.128 \text{ dcsf}$$

$$C_{DG} = \frac{5.161}{5.128} = \boxed{1.006}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 3-10-00

Calibrator: Mike Bass

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 1.5" H2O

P_b: 29.33 "Hg

Control Module Vacuum: 5.5 "Hg

Wet Test Meter (No. 3)					Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	0958	10.301 cf	69 °F	-1.80 "H_2O	949.792 cf	63 °F	74 °F	1.50 "H_2O
Start	0944	0.000 cf	69 °F	-1.80 "H_2O	939.619 cf	67 °F	74 °F	1.50 "H_2O
Avg.	14	10.301 cf	69 °F	-1.800 "H_2O	10.173 cf	70 °F		1.500 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.301 \left[\frac{29.33 + \frac{-1.800}{13.6}}{69 + 460}\right] \times 0.998\ (C_t) = 10.015 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.173 \left[\frac{29.33 + \frac{1.500}{13.6}}{70 + 460}\right] = 9.974 \text{ dcsf}$$

$$C_{DG} = \frac{10.015}{9.974} = \boxed{1.004}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Calibrator: Mike Bass

Date: 3-10-00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 2.0 " H_2O

P_b: 29.33 "Hg

Control Module Vacuum: ~~6.0~~ 5.5 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1012	10.427 cf	69 °F	-2.30 "H_2O	960.503 cf	62 °F	74 °F	2.00 "H_2O
Start	0959	0.000 cf	69 °F	-2.30 "H_2O	950.213 cf	65 °F	74 °F	2.00 "H_2O
Avg.	13	10.427 cf	69 °F	-2.300 "H_2O	10.290 cf	69	°F	2.000 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.427 \left[\frac{29.33 + \frac{-2.300}{13.6}}{69 + 460}\right] \times 0.998\ (C_f) = 10.125 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.290 \left[\frac{29.33 + \frac{2.000}{13.6}}{69 + 460}\right] = 10.120 \text{ dcsf}$$

$$C_{DG} = \frac{10.125}{10.120} = \boxed{1.000}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Calibrator: Mike Bass

Date: 3-10-00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 3.0" H_2O

P_b: 29.33 "Hg

Control Module Vacuum: 5.0 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1024	10.503 cf	69 °F	-3.20 "H_2O	971.172 cf	59 °F	73 °F	3.00 "H_2O
Start	1013	0.000 cf	69 °F	-3.20 "H_2O	960.821 cf	64 °F	74 °F	3.00 "H_2O
Avg.	11	10.503 cf	69 °F	-3.200 "H_2O	10.351 cf	68 °F		3.000 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.503 \left[\frac{29.33 + \frac{-3.200}{13.6}}{69 + 460}\right] \times 0.998\,(C_f) = 10.175 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.351 \left[\frac{29.33 + \frac{3.000}{13.6}}{68 + 460}\right] = 10.225 \text{ dcsf}$$

$$C_{DG} = \frac{10.175}{10.225} = \boxed{0.995}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Calibrator: Mike Bass

Date: 3-10-00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 4.0" H_2O

P_b: 29.33 "Hg

Control Module Vacuum: 5.0 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1034	10.511 cf	69 °F	-4.15 "H_2O	982.264 cf	59 °F	73 °F	4.00 "H_2O
Start	1025	0.000 cf	69 °F	-4.15 "H_2O	971.867 cf	62 °F	73 °F	4.00 "H_2O
Avg.	9	10.511 cf	69 °F	-4.150 "H_2O	10.397 cf	67	°F	4.000 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.511 \left[\frac{29.33 + \frac{-4.150}{13.6}}{69 + 460}\right] \times 0.998\ (C_f) = 10.159 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.397 \left[\frac{29.33 + \frac{4.000}{13.6}}{67 + 460}\right] = 10.315 \text{ dcsf}$$

$$C_{DG} = \frac{10.159}{10.315} = \boxed{0.985}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Calibrator: Mike Bass

Date: 3-10-00

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 2.0 L/min

P_b: 29.35 "Hg

Control Module Vacuum: < 2.0 "Hg

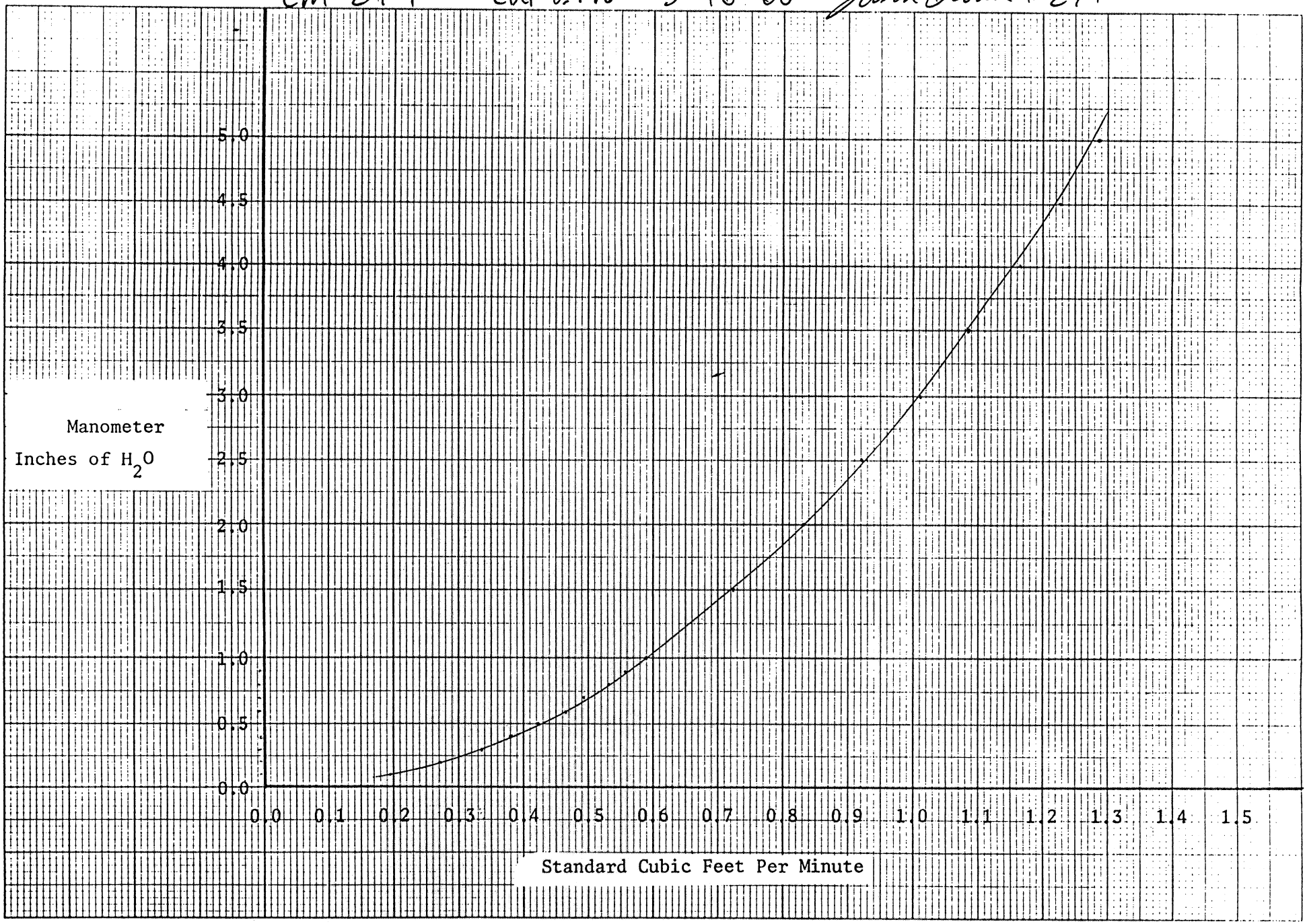
	Wet Test Meter (No. 1)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1152	2.141 cf	68 °F	-0.250 "H_2O	8.127 cf	75 °F	75 °F	0.010 "H_2O
Start	1119	0.000 cf	68 °F	-0.250 "H_2O	6.013 cf	68 °F	71 °F	0.010 "H_2O
Avg.	33	2.141 cf	68 °F	-0.250 "H_2O	2.114 cf	72 °F		0.010 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.141 \left[\frac{29.35 + \frac{-0.250}{13.6}}{68 + 460}\right] \times 0.990\ (C_f) = 2.078 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 2.114 \left[\frac{29.35 + \frac{0.010}{13.6}}{72 + 460}\right] = 2.059 \text{ dcsf}$$

$$C_{DG} = \frac{2.078}{2.059} = \boxed{1.010}$$

checked by M. Bass 263 CM 29-1 COG 0.998 3-16-00 Jann Brown #274



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 29-1

CALIBRATION DATA

Date: 3-10-00

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	0903	68	68
Ice Bath	0905	32	32
Boiling Water	0915	212	211
Oven	0919	255	255
Oven	0921	300	301
Oven	0924	350	349
Oven	0927	376	374

Meter Adjusted? Yes _____ No X

Calibrator: Mike Bass

Checked By: [illegible] 236

METCO ENVIRONMENTAL

BAROMETER CALIBRATION

Barometer No. 19-1

Date: 04-05-00

Time: 1620

Barometric Pressure @ Addison Airport @ 719 ft.	=	29.92
	-	0.719
Absolute Pressure @ Addison Airport	=	29.201
	+	0.083
Absolute Pressure @ METCO @ 636 ft.	=	29.28
Barometer Reading	=	29.28
Variation	=	0.0

Barometer Adjusted? Yes _____ No ✓

Sam Brown #274

Signature of Calibrator

APPENDIX D

Analytical Data

TestAmerica
INCORPORATED

Doug Saathoff
METCO Environmental
P.O. Box 598
Addison, Texas 75001

April 17, 2000

Dear Doug,

Please find included with this letter the analytical report and data package for the TXU samples from Unit 1 submitted to TestAmerica for analysis. The samples were analyzed following the SOPs based on the Ontario-Hydro Method and ASTM 6414-99.

Case Narrative

TestAmerica received the samples for analysis on March 6, 2000. All samples were intact when received. Please note the following:

- The Reagent Blank (Container #10) for Container #5 had a low level Hg detection. All Container #5 results have been blank corrected based upon the initial volume upon receipt at the laboratory.
- Filter Q112 (From the Baghouse Inlet Run 3) was prepared 4 days past the recommended hold time listed in the Ontario Hydro Method.
- All Duplicate and Triplicate sample results had a Relative Percent Difference of <10 %.
- All Matrix Spike sample results had a % Recovery between 75 % and 125 %.
- All other Quality Control Indicators were within acceptance limits.

If you have any questions or need additional information about this data package, please feel free to contact me at 937-294-6856.

Sincerely,

James A. Davis

James A. Davis
QA Coordinator

3601 SOUTH DIXIE DRIVE / DAYTON, OH 45439 / 937-294-6856 / FAX: 937-294-7816

Ontario Hydro Method Results

TestAmerica
INCORPORATED

Sample ID: TXU Electric
Unit 1
Mt. Pleasant, Texas

Hg Analysis
Ontario Hydro Method

Summary Report

	Baghouse A Outlet Run 1	Baghouse A Outlet Run 2	Baghouse A Outlet Run 3	Baghouse A Inlet Run 1	Baghouse A Inlet Run 2	Baghouse A Inlet Run 3
Particle Bound Hg (ug)	0.160	0.085	0.058	26.43	0.50	9.40
Oxidized Hg (ug)	31.1	57.0	62.4	37.3	20.1	26.8
Elemental Hg (ug)	1.53	10.9	13.3	14.6	62.8	52.1
Total Hg (ug)	32.8	68.0	75.8	78.4	83.4	88.3

	Baghouse A Outlet Blank Train	Baghouse A Inlet Blank Train
Particle Bound Hg (ug)	0.000	0.000
Oxidized Hg (ug)	0.132	0.142
Elemental Hg (ug)	0.038	0.031
Total Hg (ug)	0.170	0.173

	Reagent Blanks
Container # 7 (ug/L)	<0.050
Container # 8 (ug/L)	<0.070
Container # 9 (ug/L)	<0.149
Container # 10 (ug/L)	0.062
Container # 11 (ug/L)	<0.050
Container # 12 (47 mm) (ug)	<0.003

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TestAmerica
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Sample ID: TXU Electric
Unit 1
Mt. Pleasant, Texas

Hg Analysis
Ontario Hydro Method

Duplicate Summary Report

	Baghouse A Outlet Run 1	Baghouse A Outlet Run 2	Baghouse A Outlet Run 3	Baghouse A Inlet Run 1	Baghouse A Inlet Run 2	Baghouse A Inlet Run 3
Particle Bound Hg (ug)	0.162	0.084	0.057	26.84	0.48	9.09
Oxidized Hg (ug)	31.40	58.00	64.60	38.00	20.10	26.10
Elemental Hg (ug)	1.54	11.02	13.14	14.51	62.30	53.30
Total Hg (ug)	33.10	69.10	77.80	79.36	82.88	88.49

	Baghouse A Outlet Blank Train	Baghouse A Inlet Blank Train
Particle Bound Hg (ug)	0.000	0.000
Oxidized Hg (ug)	0.132	0.143
Elemental Hg (ug)	0.034	0.034
Total Hg (ug)	0.166	0.177

	Reagent Blanks
Container # 7 (ug/L)	<0.050
Container # 8 (ug/L)	<0.070
Container # 9 (ug/L)	<0.149
Container # 10 (ug/L)	0.066
Container # 11 (ug/L)	<0.050
Container # 12 (47 mm) (ug)	<0.003

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TestAmerica
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Sample ID: TXU Electric
Unit 1
Mt. Pleasant, Texas

Hg Analysis
Ontario Hydro Method

Spike Summary Report

TestAmerica ID	Sample ID	Sample Result	Spike Result	Spike Amount	% Recovery
I#3,3	Unit 1 Baghouse A Inlet Run 3, Cont. #3	26.8 ug	48.6 ug	21.4 ug	102
O#3,3	Unit 1 Baghouse A Outlet Run 3, Cont. #3	62.4 ug	127 ug	56.7 ug	114
O#3,4	Unit 1 Baghouse A Outlet Run 3, Cont. #4	0.449 ug	0.938 ug	0.462 ug	106
O#3,5	Unit 1 Baghouse A Outlet Run 3, Cont. #5	12.9 ug	21.7 ug	9.00 ug	98

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TestAmerica
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Sample ID: **TXU Electric**
Unit 1
Mt. Pleasant, Texas
Reagent Blanks

Hg Analysis
Ontario Hydro Method

Collected On: 2/22/00
Collected By: METCO

Container # 7 - 0.1 N HNO_3 Blank
Container # 8 - 1 N KCl Blank
Container # 9 - 5 % HNO_3/10 % H_2O_2 Blank
Container # 10 - H_2SO_4-/$KMnO_4$ Blank
Container # 11 - 10 % Hydroxylamine Sulfate/Sodium Chloride Blank
Container # 12 Filter Blank

	ID	Digestion Date	Analysis Date	Analyst	Results	Duplicate Result	RPD	Triplicate Result	RPD	Units	Flags	Notes
Container # 7	ORB 7	---	04/05/00	jpp	<0.050	<0.050	<1.0	---	---	ug/L		
Container # 8	ORB 8	03/17/00	03/17/00	jpp	<0.070	<0.070	<1.0	---	---	ug/L		
Container # 9	ORB 9	03/22/00	03/24/00	jpp	<0.149	<0.149	<1.0	---	---	ug/L		
Container # 10	ORB 10	03/27/00	04/14/00	epk	0.062	0.066	6.3	---	---	ug/L		
Container # 11	ORB 11	---	04/05/00	jpp	<0.050	<0.050	<1.0	---	---	ug/L		
Container # 12	47Q179	04/04/00	04/07/00	epk	<0.003	<0.003	<1.0	---	---	ug	*	47 mm

Notes: *1 It was not neceassy to analyze a thimble blank as only the particulate matter was digested.

TestAmerica
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Sample ID: **TXU Electric**
Unit 1
Mt. Pleasant, Texas
Baghouse A Inlet Run 1

Hg Analysis
Ontario Hydro Method

Collected On: 2/22/00
Collected By: METCO

Container # 1A - Main Filter
Container # 1B - Backup Filter
Container # 2 - 0.1 N HNO3 Rinse
Container # 3 - KCl Impingers (1,2,3)/10 %HNO3 Rinse
Container # 4 - HNO3/H2O2 Impinger (4)/0.1 N HNO3 Rinse
Container # 5 - H2SO4/KMnO4 Impinger (5,6,7)/0.1 N HNO3 Rinse

	ID	Digestion Date	Analysis Date	Analyst	Results	Duplicate Result	RPD	Triplicate Result	RPD	Units	Flags	Notes
Container # 1A	Q90	04/03/00	04/07/00	epk	19.4	19.7	1.5	---	---	ug		
Container # 1A	Q118	04/04/00	04/07/00	epk	6.91	7.02	1.7	---	---	ug		
Container # 1B	47Q176	04/03/00	04/07/00	epk	0.038	0.038	<1.0	---	---	ug		
Container # 1B	47Q148	04/03/00	04/07/00	epk	0.013	0.013	4.7	0.012	2.0	ug		
Container # 2	I#1,2	03/17/00	03/17/00	jpp	0.073	0.072	2.1	---	---	ug		
Container # 3	I#1,3	03/17/00	03/17/00	jpp	37.3	38.0	1.7	---	---	ug		
Container # 4	I#1,4	03/22/00	03/24/00	jpp	0.116	0.113	2.8	---	---	ug		
Container # 5	I#1,5	03/27/00	03/27/00	jpp	14.5	14.4	<1.0	---	---	ug	*1	

Particle Bound Hg (ug) **26.43**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **37.30**
(Containers 3)

Elemental Hg (ug) **14.62**
(Containers 4 and 5)

Total Hg (ug) **78.35**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **26.84**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **38.00**
(Containers 3)

Dup. Elemental Hg (ug) **14.51**
(Containers 4 and 5)

Dup. Total Hg (ug) **79.36**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: * 1 Reagent Blank Corrected.

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TestAmerica
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Sample ID: **TXU Electric**
Unit 1
Mt. Pleasant, Texas
Baghouse A Inlet Run 2

Hg Analysis
Ontario Hydro Method

Collected On: 2/22/00
Collected By: METCO

Container # 1A - Main Filter
Container # 1B - Backup Filter
Container # 2 - 0.1 N HNO3 Rinse
Container # 3 - KCl Impingers (1,2,3)/10 %HNO3 Rinse
Container # 4 - HNO3/H2O2 Impinger (4)/0.1 N HNO3 Rinse
Container # 5 - H2SO4/KMnO4 Impinger (5,6,7)/0.1 N HNO3 Rinse

	ID	Digestion Date	Analysis Date	Analyst	Results	Duplicate Result	RPD	Triplicate Result	RPD	Units	Flags	Notes
Container # 1A	Q121	04/04/00	04/07/00	epk	0.483	0.466	5.5	---	---	ug		
Container # 1B	47Q181	04/03/00	04/07/00	epk	0.012	0.011	6.0	---	---	ug		
Container # 2	I#2,2	03/17/00	03/17/00	jpp	<0.009	<0.009	<1.0	---	---	ug		
Container # 3	I#2,3	03/17/00	03/17/00	jpp	20.1	20.1	<1.0	---	---	ug		
Container # 4	I#2,4	03/22/00	03/24/00	jpp	1.12	1.10	1.6	---	---	ug		
Container # 5	I#2,5	03/27/00	03/27/00	jpp	61.7	61.2	<1.0	---	---	ug	*1	

Particle Bound Hg (ug) **0.50**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **20.10**
(Containers 3)

Elemental Hg (ug) **62.82**
(Containers 4 and 5)

Total Hg (ug) **83.42**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.48**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **20.10**
(Containers 3)

Dup. Elemental Hg (ug) **62.30**
(Containers 4 and 5)

Dup. Total Hg (ug) **82.88**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: * 1 Reagent Blank Corrected.

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Sample ID: **TXU Electric**
Unit 1
Mt. Pleasant, Texas
Baghouse A Inlet Run 3

Hg Analysis
Ontario Hydro Method

Collected On: 2/22/00
Collected By: METCO

Container # 1A - Main Filter
Container # 1B - Backup Filter
Container # 2 - 0.1 N HNO3 Rinse
Container # 3 - KCl Impingers (1,2,3)/10 %HNO3 Rinse
Container # 4 - HNO3/H2O2 Impinger (4)/0.1 N HNO3 Rinse
Container # 5 - H2SO4/KMnO4 Impinger (5,6,7)/0.1 N HNO3 Rinse

	ID	Digestion Date	Analysis Date	Analyst	Results	Duplicate Result	RPD	Triplicate Result	RPD	Units	Flags	Notes
Container # 1A	Q112	04/11/00	04/11/00	sah	9.11	8.80	3.4	---	---	ug	*1	
Container # 1A	Q116	04/03/00	04/07/00	epk	0.116	0.117	1	---	---	ug		
Container # 1B	47Q141	04/03/00	04/07/00	epk	0.082	0.084	<1.0	---	---	ug		
Container # 1B	47Q182	04/03/00	04/07/00	epk	0.019	0.018	4.8	---	---	ug		
Container # 2	I#3,2	03/21/00	03/24/00	jpp	0.077	0.075	2.2	---	---	ug		
Container # 3	I#3,3	03/17/00	03/17/00	jpp	26.8	26.1	2.4	---	---	ug		
Container # 4	I#3,4	03/22/00	03/24/00	jpp	1.10	1.10	<1.0	---	---	ug		
Container # 5	I#3,5	03/27/00	03/27/00	jpp	51.0	52.2	2.4	---	---	ug	*2	

Particle Bound Hg (ug) **9.40**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **26.80**
(Containers 3)

Elemental Hg (ug) **52.10**
(Containers 4 and 5)

Total Hg (ug) **88.30**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **9.09**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **26.10**
(Containers 3)

Dup. Elemental Hg (ug) **53.30**
(Containers 4 and 5)

Dup. Total Hg (ug) **88.49**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: *1 Sample was prepared 4 days past the reccomended holding time listed in the Ontario Hydro Method.
* 2 Reagent Blank Corrected.

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TestAmerica
INCORPORATED

Sample ID: **TXU Electric**
Unit 1
Mt. Pleasant, Texas
Baghouse A Outlet Run 1

Hg Analysis
Ontario Hydro Method

Collected On: 2/22/00
Collected By: METCO

Container # 1A - Main Filter
Container # 1B - Backup Filter
Container # 2 - 0.1 N HNO3 Rinse
Container # 3 - KCl Impingers (1,2,3)/10 %HNO3 Rinse
Container # 4 - HNO3/H2O2 Impinger (4)/0.1 N HNO3 Rinse
Container # 5 - H2SO4/KMnO4 Impinger (5,6,7)/0.1 N HNO3 Rinse

	ID	Digestion Date	Analysis Date	Analyst	Results	Duplicate Result	RPD	Triplicate Result	RPD	Units	Flags	Notes
Container # 1A	47Q147	04/04/00	04/07/00	epk	0.147	0.149	1.4	---	---	ug		
Container # 1B		Not Provided			---	---	---	---	---	ug		
Container # 2	O#1,2	03/17/00	03/17/00	jpp	0.013	0.013	1.2	---	---	ug		
Container # 3	O#1,3	03/17/00	03/17/00	jpp	31.1	31.4	<1.0	---	---	ug		
Container # 4	O#1,4	03/22/00	03/24/00	jpp	<0.023	<0.023	<1.0	---	---	ug		
Container # 5	O#1,5	03/27/00	03/27/00	jpp	1.53	1.54	1.0	---	---	ug	*1	

Particle Bound Hg (ug) **0.160**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **31.10**
(Containers 3)

Elemental Hg (ug) **1.53**
(Containers 4 and 5)

Total Hg (ug) **32.79**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.162**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **31.40**
(Containers 3)

Dup. Elemental Hg (ug) **1.54**
(Containers 4 and 5)

Dup. Total Hg (ug) **33.10**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: * 1 Reagent Blank Corrected.

TestAmerica
INCORPORATED

Sample ID: **TXU Electric**
Unit 1
Mt. Pleasant, Texas
Baghouse A Outlet Run 2

Hg Analysis
Ontario Hydro Method

Collected On: 2/22/00
Collected By: METCO

Container # 1A - Main Filter
Container # 1B - Backup Filter
Container # 2 - 0.1 N HNO3 Rinse
Container # 3 - KCl Impingers (1,2,3)/10 %HNO3 Rinse
Container # 4 - HNO3/H2O2 Impinger (4)/0.1 N HNO3 Rinse
Container # 5 - H2SO4/KMnO4 Impinger (5,6,7)/0.1 N HNO3 Rinse

	ID	Digestion Date	Analysis Date	Analyst	Results	Duplicate Result	RPD	Triplicate Result	RPD	Units	Flags	Notes
Container # 1A	47Q149	04/04/00	04/07/00	epk	0.077	0.076	1.3	0.076	2.0	ug		
Container # 1B		Not Provided			---	---	---	---	---	ug		
Container # 2	O#2,2	03/17/00	03/17/00	jpp	0.008	0.008	1.3	---	---	ug		
Container # 3	O#2,3	03/17/00	03/17/00	jpp	57.0	58.0	1.8	---	---	ug		
Container # 4	O#2,4	03/22/00	03/24/00	jpp	0.416	0.417	<1.0	0.432	3.8	ug		
Container # 5	O#2,5	03/27/00	03/27/00	jpp	10.5	10.6	<1.0	10.3	1.6	ug	*1	

Particle Bound Hg (ug) **0.085**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **57.00**
(Containers 3)

Elemental Hg (ug) **10.92**
(Containers 4 and 5)

Total Hg (ug) **68.00**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.084**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **58.00**
(Containers 3)

Dup. Elemental Hg (ug) **11.02**
(Containers 4 and 5)

Dup. Total Hg (ug) **69.10**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: * 1 Reagent Blank Corrected.

TestAmerica
INCORPORATED

Sample ID: **TXU Electric**
Unit 1
Mt. Pleasant, Texas
Baghouse A Outlet Run 3

Hg Analysis
Ontario Hydro Method

Collected On: 2/22/00
Collected By: METCO

Container # 1A - Main Filter
Container # 1B - Backup Filter
Container # 2 - 0.1 N HNO3 Rinse
Container # 3 - KCl Impingers (1,2,3)/10 %HNO3 Rinse
Container # 4 - HNO3/H2O2 Impinger (4)/0.1 N HNO3 Rinse
Container # 5 - H2SO4/KMnO4 Impinger (5,6,7)/0.1 N HNO3 Rinse

	ID	Digestion Date	Analysis Date	Analyst	Results	Duplicate Result	RPD	Triplicate Result	RPD	Units	Flags	Notes
Container # 1A	47Q180	04/04/00	04/07/00	epk	0.058	0.057	1.8	---	---	ug		
Container # 1B		Not Provided			---	---	---	---	---	ug		
Container # 2	O#3,2	03/17/00	03/17/00	jpp	<0.004	<0.004	<1.0	<0.004	<1.0	ug		
Container # 3	O#3,3	03/17/00	03/17/00	jpp	62.4	64.6	3.6	---	---	ug		
Container # 4	O#3,4	03/22/00	03/24/00	jpp	0.449	0.442	1.6	---	---	ug		
Container # 5	O#3,5	03/27/00	03/27/00	jpp	12.9	12.7	2.1	---	---	ug	*1	

Particle Bound Hg (ug) **0.058**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **62.40**
(Containers 3)

Elemental Hg (ug) **13.35**
(Containers 4 and 5)

Total Hg (ug) **75.81**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.057**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **64.60**
(Containers 3)

Dup. Elemental Hg (ug) **13.14**
(Containers 4 and 5)

Dup. Total Hg (ug) **77.80**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: * 1 Reagent Blank Corrected.

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TestAmerica
INCORPORATED

Sample ID: **TXU Electric**
Unit 1
Mt. Pleasant, Texas
Baghouse A Inlet Blank Train

Hg Analysis
Ontario Hydro Method

Collected On: 2/22/00
Collected By: METCO

Container # 1A - Main Filter
Container # 1B - Backup Filter
Container # 2 - 0.1 N HNO3 Rinse
Container # 3 - KCl Impingers (1,2,3)/10 %HNO3 Rinse
Container # 4 - HNO3/H2O2 Impinger (4)/0.1 N HNO3 Rinse
Container # 5 - H2SO4/KMnO4 Impinger (5,6,7)/0.1 N HNO3 Rinse

	ID	Digestion Date	Analysis Date	Analyst	Results	Duplicate Result	RPD	Triplicate Result	RPD	Units	Flags	Notes
Container # 1A		Not Provided		---	---	---	---	---	---	ug		
Container # 1B		Not Provided		---	---	---	---	---	---	ug		
Container # 2		Not Provided		---	---	---	---	---	---	ug		
Container # 3	IBT3	03/17/00	03/17/00	jpp	0.142	0.143	<1.0	---	---	ug		
Container # 4	IBT4	03/22/00	03/24/00	jpp	<0.021	<0.021	<1.0	---	---	ug		
Container # 5	IBT5	03/27/00	02/27/00	jpp	0.031	0.034	4.3	---	---	ug	*1	

Particle Bound Hg (ug) **0.00**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **0.14**
(Containers 3)

Elemental Hg (ug) **0.03**
(Containers 4 and 5)

Total Hg (ug) **0.17**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.00**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **0.14**
(Containers 3)

Dup. Elemental Hg (ug) **0.03**
(Containers 4 and 5)

Dup. Total Hg (ug) **0.18**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: * 1 Reagent Blank Corrected.

TestAmerica
INCORPORATED

Sample ID: **TXU Electric**
Unit 1
Mt. Pleasant, Texas
Baghouse A Outlet Blank Train

Hg Analysis
Ontario Hydro Method

Collected On: 2/22/00
Collected By: METCO

Container # 1A - Main Filter
Container # 1B - Backup Filter
Container # 2 - 0.1 N HNO3 Rinse
Container # 3 - KCl Impingers (1,2,3)/10 %HNO3 Rinse
Container # 4 - HNO3/H2O2 Impinger (4)/0.1 N HNO3 Rinse
Container # 5 - H2SO4/KMnO4 Impinger (5,6,7)/0.1 N HNO3 Rinse

	ID	Digestion Date	Analysis Date	Analyst	Results	Duplicate Result	RPD	Triplicate Result	RPD	Units	Flags	Notes
Container # 1A		Not Provided		---	---	---	---	---	---	ug		
Container # 1B		Not Provided		---	---	---	---	---	---	ug		
Container # 2		Not Provided		---	---	---	---	---	---	ug		
Container # 3	OBT 3	03/17/00	03/17/00	jpp	0.132	0.132	<1.0	---	---	ug		
Container # 4	OBT 4	03/22/00	03/24/00	jpp	<0.019	<0.019	<1.0	---	---	ug		
Container # 5	OBT 5	03/27/00	03/27/00	jpp	0.038	0.034	7.1	---	---	ug	*1	

Particle Bound Hg (ug) **0.00**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **0.13**
(Containers 3)

Elemental Hg (ug) **0.04**
(Containers 4 and 5)

Total Hg (ug) **0.17**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.00**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **0.13**
(Containers 3)

Dup. Elemental Hg (ug) **0.03**
(Containers 4 and 5)

Dup. Total Hg (ug) **0.17**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: * 1 Reagent Blank Corrected.

ASTM D6414-99 Results

TestAmerica
INCORPORATED

Sample ID: **TXU Electric**
Unit 1
Mt. Pleasant, Texas
Coal Samples

Hg Analysis
ASTM D6414-99

Collected On: 3/22/2000
Collected By: METCO

	Digestion Date	Analysis Date	Analyst	Results	Duplicate Result	RPD	Units	Dry Weight (%)	Flags	Notes
Run 1 Composite	4/4/00	4/6/00	jpp	0.318	0.315	1.0	ug/g	79.4		
Run 2 Composite	4/4/00	4/6/00	jpp	0.325	0.325	<1.0	ug/g	78.5		
Run 3 Composite	4/4/00	4/6/00	jpp	0.472	0.464	1.9	ug/g	84.7		

Notes:

3601 SOUTH DIXIE DRIVE / DAYTON, OH 45439 / 937-294-6856 / FAX: 937-294-7816

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-184

Location ID/Run #
Unit #1
Baghouse A Inlet

BLANK TRAIN

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 ( )	___ + ___ + ___ = ___ .	~~IBT3~~ 3/16/00	
3 (1)	390 + – + – = 390 .	IBT3	
4 (1)	135 + – + – = 135 .	IBT4	
5 (1)	420 + – + – = 420 .	IBT5	
7 ( )	___ + ___ + ___ = ___ .		
8 ( )	___ + ___ + ___ = ___ .		
9 ( )	___ + ___ + ___ = ___ .		
10 ( )	___ + ___ + ___ = ___ .		
11 ( )	___ + ___ + ___ = ___ .		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A ( )			
1B ( )			
12	(47 mm)		
	(88 mm)		
	(Thimble)	–	

Notes: _____

Checked By: [illegible]
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX
99-184

Location ID/Run #
UNIT #1
Baghouse A Inlet
Run #1

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	180 + — + — = 180.	I#1, 2	
3 (2)	490 + 255 + — = 745.	I#1, 3 (A+B)	
4 (1)	130 + — + — = 130.	I#1, 4	
5 (1)	470 + — + — = 470.	I#1, 5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (2)			
1B (2)			
12	Q90 176, 148 (47 mm)		
	(88 mm)		
	Q90, Q118 (Thimble)		

Notes: Wmain 176 = 8.9389g Q90 = 8.9389
Wmain 148 = 9.1678g Q118 = 9.1678

Checked By: MP
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX
99-184

Location ID/Run #
Unit #1
Baghouse A Inlet
Run #2

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	125 + — + — = 125.	I #2, 2	
3 (2)	490 + 305 + — = 795.	I #2, 3 (A+B)	
4 (1)	140 + — + — = 140.	I #2, 4	
5 (1)	490 + — + — = 490.	I #2, 5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)			
1B (1)			
12	47Q181 (47 mm)		
	(88 mm)		
	Q121 (Thimble)		

Notes: Wmain = 13.3167 g

Checked By: [illegible]
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-184

Location ID/Run #
Unit #1
Baghouse A Inlet

Run #3

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	155 + – + – = 155.	I#3, 2	
3 (2)	480 + 285 + – = 765.	I#3, 3A, 3B	
4 (1)	160 + – + – = 160.	I#3, 4	
5 (1)	405 + – + – = 405.	I#3, 5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (2)			
1B (2)			
12	470182, 141 (47 mm)		
	(88 mm)		
	Q112, Q116 (Thimble)		

Notes: W_{main} = 116 + 141 = 12.7650g

W_{main} Q112/470182 = 10.2451g

Checked By: DBB

Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT PLEASANT, TX
99-184

Location ID/Run #
Unit #1
Baghouse A Outlet A
Reagent Blanks

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 ( )	___ + ___ + ___ = ___.		
3 ( )	___ + ___ + ___ = ___.		
4 ( )	___ + ___ + ___ = ___.		
5 ( )	___ + ___ + ___ = ___.		
7 (1)	50 + – + – = 50.	ORB 7	
8 (1)	50 + – + – = 50.	ORB 8	
9 (1)	53 + – + – = 53.	ORB 9	
10 (1)	50 + – + – = 50.	ORB 10	
11 (1)	125 + – + – = 125.	ORB 11	

Filters:

Cont. ID/(#)	Filter ID(s)		
1A ( )			
1B ( )			
12 (6)	472 177, 178, 179 (47 mm)		
	(88 mm)		
	Q113, 117, 122 (Thimble)		

Notes: _____

Checked By: SPP
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-184

Location ID/Run #
Unit # 1
Baghouse A Outlet

Blank Train

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 ( )	___ + ___ + ___ = ___.		
3 (1)	385 + – + – = 385.	OBT 3	
4 (1)	125 + – + – = 125.	OBT 4	
5 (1)	385 + – + – = 385.	OBT 5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A ( )			
1B ( )			
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes: _____

Checked By: SBD
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

Location ID/Run #
Unit #1
Baghouse A Outlet
Run #1

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	37 + – + – = 37.	01, 2	
3 (3)	500 + 355 + – = 855.	01, 3A, 3B	
4 (1)	150 + – + – = 150.	01, 4	
5 (1)	395 + – + – = 395.	01, 5	
7 ( )	+ + = .		
8 ( )	+ + = .		
9 ( )	+ + = .		
10 ( )	+ + = .		
11 ( )	+ + = .		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)			
1B ( )			
12	472147 (47 mm)		
	(88 mm)		
	(Thimble)		

Notes: $W_{main,147}$ = 12.1mg

Checked By: BBP
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-184

Location ID/Run #
Unit #1
Baghouse A Outlet

Run #2

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	39 + – + – = 39.	O #2, 2	
3 (2)	490 + 250 + – = 740.	O #2, 3A, 3B	
4 (1)	155 + – + – = 155.	O #2, 4	
5 (1)	420 + – + – = 420.	O #2, 5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)			
1B ( )			
12	47Q149 (47 mm)		
	(88 mm)		
	(Thimble)		

Notes: $W_{main\ 149}$ = 7.0mg

Checked By: DBP
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-184

Location ID/Run #
Unit #1
Baghouse A Outlet

Run #3

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	51 + – + – = 51.	O#3,2	
3 (2)	500 + 310 + – = 810.	O#3,3A,3B	
4 (1)	170 + – + – = 170.	O#3,4	
5 (1)	450 + – + – = 450.	O#3,5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)			
1B ( )			
12	47Q180 (47 mm)		*
	(88 mm)		
	(Thimble)		

Notes: $W_{main;80} = 3.6$ mg

* COC has 47mm filter labelled 77Q180

Checked By: DBB
Date: 3/16/00

TestAmerica INCORPORATED

Sample Batch Preparation Records

METCO COALS 1.0g

NONAQUEOUS MERCURY BATCH SHEET

Analyst: EPK Date: 4/4/00 Water Bath: start mid end

Standard Reference: 67-29-15 temp: 95

ICV Reference: 67-29-17 date:

$NH_2OH \cdot HCl$
NaCl

	Sample # / Client	Weight	MS	MSD
	BLANK			
1	1630 A	1.0366 g		
2	7023	1.0010 g		MB
4	7024	1.0671 g		
5	7025	1.0048 g		
6	~~7026~~	~~[illegible]~~ g		
7	7027	1.0192 g		ICV
8	~~[illegible]~~	~~[illegible]~~ g		
EPK 4/4/00				
				MS
				MSD
				RPD
				FLAG

SECONDARY DATA CHECK: analyst:
date:

Comments: HCl - 67-32-4
HNO3 67-32-23
KMnO4 67-32-1 4/30/00

Mercury in Flue Gas
Aqueous Preparation Batch Log

Analyst(s) SSC/JPP Preparation Date 3/17/00

Reagent Reference #'s

HCl	N/A	$SnCl_2$	67-27-70
$NH_2OH*HCl$	67-27-6	Calibration Standards	67-16-15
$KMnO_4$	67-26-1	ICV Standard	67-16-16
HNO_3	67-26-21	$K_2S_2O_8$	67-26-4
H_2SO_4	67-23-23		

Lab ID	Cont. #	Sample Description	Init Cont Vol (mL)	Init Prep Vol (mL)	Final Vol (mL)	Lab ID	Cont. #	Sample Description	Init Cont Vol (mL)	Init Prep Vol (mL)	Final Vol (mL)
	~~8~~	~~ORB~~ EPK 3/17/00									
	3	IBT	390	20	28						
	2	I #1	180								
	3	I #1	745								
	2	I #2	125								
	3	I #2	795								
**	2	I #3 TRP	155								
	3	I #3 SPK	765								
	8	ORB	50	20	28						
	3	O BT	385								
	2	O #1	37								
	3	O #1	855								
	2	O #2	39								
	3	O #2	740								
	2	O #3 TRP	51								
	3	O #3 SPK	810								

NOTES * Baghouse 99-184 TXU ELECTRIC MT. PLEASANT, TX

** I#3.2 Reprep, See run from 3/22/00

Mercury in Flue Gas
Aqueous Preparation Batch Log

Analyst(s) SSC Preparation Date 3/22/00

Reagent Reference #'s

HCl	67-27-25	$SnCl_2$	67-29-19
$NH_2OH*HCl$	67-18-18	Calibration Standards	67-29-15
$KMnO_4$	67-28-3	ICV Standard	67-29-17
HNO_3	NA	$K_2S_2O_8$ - NA	

Lab ID	Cont. #	Sample Description	Init Cont Vol (mL)	Init Prep Vol (mL)	Final Vol (mL)	Lab ID	Cont. #	Sample Description	Init Cont Vol (mL)	Init Prep Vol (mL)	Final Vol (mL)
							4	IBT	135	15	45.75
							4	I#1	130	15	45.75
							4	I#2	140	15	46.75
							4	I#3	160	15	41.75
							9	ORB	53	15	44.75
							4	OBT	125	15	44.75
							4	O#1	150	15	46.75
							4	O#2	155	15	43.75
							4	O#3	170	15	40.75
								BLANK	—	15	16
							2	I#3 (reprep)	155	20	31

NOTES These are the MT, Pleasant, TX Samples. 99-184
I #3,2 reprep from 3/17/00

Mercury in Flue Gas
Aqueous Preparation Batch Log

Analyst(s) EPK/JPP Preparation Date 3/27/00

Reagent Reference #'s

HCl	N/A	$SnCl_2$	EPK 3/27/00 ~~N/A~~ 67-30-7
$NH_2OH*HCl$	67-27-7	Calibration Standards	~~67-29-17~~ 15 3/27/00
$KMnO_4$	N/A	ICV Standard	67-29-17
HNO_3	67-29-7		

Lab ID	Cont. #	Sample Description	Init Cont Vol (mL)	Init Prep Vol (mL)	Final Vol (mL)
	~~5~~	~~IBT 99-183~~	~~435~~		
	5	I#1 99-183	420		
	5	I#2 99-183	415		
	5	I#3 99-183	390		
	5	OBT 99-183	430		
	5	O#1 TRAP 99-183	410		
	5	O#2 SPIL 99-183	425		
	5	O#3 99-183	405		
	5	SBT 99-183	460		
	5	S#1 99-183	400		
	5	S#2 TRP 99-183	425		
	5	S#3 SPL 99-183	375		
	~~10~~	~~ORB 99-183~~	~~55~~		

Lab ID	Cont. #	Sample Description	Init Cont Vol (mL)	Init Prep Vol (mL)	Final Vol (mL)
	5	IBT 99-184	420		
	5	I#1 99-184	470		
	5	I#2 99-184	490		
	5	I#3 99-184	405		
	5	OBT 99-184	385		
	5	O#1 99-184	395		
	5	O#2 99-184	420		
	5	O#3 99-184	450		
	10	ORB 99-184	50		
		~~EERC B1~~	~~500~~		
		EERC B2	500		
		EERC #110299-02	500		
		~~EERC #110399-01~~	~~500~~		

NOTES TXU Electric, Mt. Pleasant, TX (99-184)
Unit 3 FGD Inlet ; Unit 1 Baghouse A Inlet (99-183)
EERC PE Run again 3/28/00

NOTEBOOK #1

TestAmerica INCORPORATED

Mercury in Flue Gas
Filter Preparation Batch Log

Analyst(s) SAH / EDK Preparation Date 4/3/00 Ano 4/4/00

Reagent Reference #'s

HCl	67-35-17	$SnCl_2$	67-35-7
$NH_2OH*HCl$	N/A	Calibration Standards	67-29-15
$KMnO_4$	N/A	ICV Standard	67-29-17
HNO_3	67-36-1 4/3/00	HF	67-21-14 4/4/00

Lab ID	Filter ID	Sample Description	Final Vol (mL)
1	Q116	0.5359	50 ~~150~~ SH 4/3/00
2	Q90	0.5990	1 4/3/00
3	BLANK	~~0.5~~ SH 4/3/00	50
4	1633b	0.5871	
5	47Q176		
6	47Q141		
7	47Q181		
8	47Q182		
9	47Q148	trp	
~~10~~	~~88Q125~~	~~spk~~	
~~11~~	~~[illegible]~~		
~~12~~	~~88Q147~~		

Lab ID	Filter ID	Sample Description	Final Vol (mL)
13	Q118	0.5906	50
14	47Q147		
15	47Q180		
16	47Q179		
17	Q121	0.5486	
~~18~~	~~47Q188~~		
19	47Q149	trp	
~~20~~	~~47Q183~~	~~spk~~	
21	88Q144	trp	
~~22~~	~~Blank~~	SH 4/3/00	
~~[illegible]~~	~~88Q131~~	~~SAK~~ ~~EDK~~	
~~24~~ 23 SH 4/3/00	Blank	EDK 4/6/00	
24	1633b	0.5442	

NOTES

TestAmerica INCORPORATED

Mercury in Flue Gas

Filter Preparation Batch Log

Analyst(s) EPK / SH Preparation Date 4/11/00

Reagent Reference #'s

HCl	67-35-17	$SnCl_2$	67-36-9 EPK ~~67-35~~ 4/17/00
$NH_2OH*HCl$	N/A	Calibration Standards	67-29-15
$KMnO_4$	N/A	ICV Standard	67-29-17
HNO_3	67-36-1	HF	67-21-14

Lab ID	Filter ID	Sample Description	Final Vol (mL)	Lab ID	Filter ID	Sample Description	Final Vol (mL)
~~1~~	~~88R126~~						
~~2~~	~~88R146~~						
3	Q112	0.5540 g					
~~4~~	~~470187~~						
5	470184						
6	MVS #1	16336	0.5025 g				
~~7~~	~~MVS #2~~	~~16336~~	~~0.5010~~ g				
8	MVS #3	16336	0.5050 g				
~~9~~	~~MVS #4~~	~~16336~~	~~0.5104~~ g				
10	Blank						

NOTES

TestAmerica INCORPORATED

3/17/2000 Analytical Data

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 21:37:19  04 Jan 1980
Folder: 17MAR00    Seq: 117                    Print: On
User:              Batch:            Id: Std6Rep1   Cup: 1 21 Gas:    0.23 LPM
State: Idle                                     Xmit: Off Autosampler: On
```

AUTOSAMPLER: Rack entry Rack 031700c

cup	Id	Extended id	Weight	Volume	Macro	check	Help
1	mb #99-184		1.0000	1.0000			
2	ibt 3		1.0000	1.0000			
3	ibt3 dup		1.0000	1.0000			
4	i#1 2		1.0000	1.0000			
5	i#1 2dup		1.0000	1.0000			
6	i#1 3 1:20		1.0000	1.0000			
7	i#1 3dup 1:20		1.0000	1.0000			
8	i#2 2		1.0000	1.0000			
9	i#2 2dup		1.0000	1.0000			
10	i#2 3 1:20		1.0000	1.0000			
11	i#2 3dup 1:20		1.0000	1.0000			
12	i#3 2		1.0000	1.0000			
13	i#3 2dup		1.0000	1.0000			
14	i#3 2trp		1.0000	1.0000			
15	i#3 3 1:20 ~~1:10~~ 9/17		1.0000	1.0000			

Repeat

PgDn

Cup 1 ID: mb #99-184 Cell entry, Ins to switch

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 21:37:22  04 Jan 1980
Folder: 17MAR00    Seq: 117                    Print: On
User:              Batch:            Id: Std6Rep1   Cup: 1 21 Gas:    0.23 LPM
State: Idle                                        Xmit: Off Autosampler: On
```

```
AUTOSAMPLER:  Rack entry   Rack 031700c                                    PgUp
cup Id          Extended id          Weight Volume Macro check Help
16 i#3 3dup 1:20 1:10 0.0033/17/00   1.00000 1.00000
17 i#3 3spk 1:20                     1.00000 1.00000
18 ccb                               1.00000 1.00000
19 ccv                               1.00000 1.00000
20 o rb 8                            1.00000 1.00000
21 o rb 8dup                         1.00000 1.00000
22 o bt 3                            1.00000 1.00000
23 o bt 3dup                         1.00000 1.00000
24 o#1 2                             1.00000 1.00000
25 o#1 2dup                          1.00000 1.00000
26 o#1 3  1:20                       1.00000 1.00000
27 o#1 3dup 1:20                     1.00000 1.00000
28 o#2 2                             1.00000 1.00000
29 o#2 2dup                          1.00000 1.00000
30 o#2 3 1:50                        1.00000 1.00000
                                                                           PgDn
```

```
Cup 16 ID: i#3 3dup                          Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 21:37:24  04 Jan 1980
Folder: 17MAR00    Seq: 117                    Print: On
User:              Batch:            Id: Std6Rep1   Cup: 1 21 Gas:    0.23 LPM
State: Idle                                        Xmit: Off Autosampler: On
```

AUTOSAMPLER: Rack entry Rack 031700c PgUp

cup	Id	Extended id	Weight	Volume	Macro	check	Help
31	o#2 3dup 1:50		1.0000	1.0000			
32	o#3 2		1.0000	1.0000			
33	o#3 2dup		1.0000	1.0000			
34	o#3 2trp		1.0000	1.0000			
35	o#3 3 1:50		1.0000	1.0000			
36	o#3 3dup 1:50		1.0000	1.0000			
37	o#3 3spk 1:50		1.0000	1.0000			
38	ccb		1.0000	1.0000			
39	ccv		1.0000	1.0000			
40			1.0000	1.0000			
41			1.0000	1.0000			
42			1.0000	1.0000			
43			1.0000	1.0000			
44			1.0000	1.0000			

PgDn

Cup 31 ID: o#2 3dup Cell entry, Ins to switch

*** Standard: 1 Rep: 1 Seq: 148 23:04:15 04 Jan 1980 HG

Hg .000 ug/L 205
Ave. Int. = 205 S. D. = 0

*** Standard: 2 Rep: 1 Seq: 149 23:06:32 04 Jan 1980 HG

Hg .050 ug/L 9841
Ave. Int. = 9841 S. D. = 0

*** Standard: 3 Rep: 1 Seq: 150 23:08:50 04 Jan 1980 HG

Hg .200 ug/L 20314
Ave. Int. = 20314 S. D. = 0

*** Standard: 4 Rep: 1 Seq: 151 23:11:10 04 Jan 1980 HG

Hg 1.00 ug/L 100669
Ave. Int. = 100669 S. D. = 0

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Standard: 5 Rep: 1 Seq: 152 23:13:51 04 Jan 1980 HG

Hg 2.00 ug/L 201266
Ave. Int. = 201266 S. D. = 0

*** Standard: 6 Rep: 1 Seq: 153 23:16:39 04 Jan 1980 HG

Hg 3.00 ug/L 307445
Ave. Int. = 307445 S. D. = 0

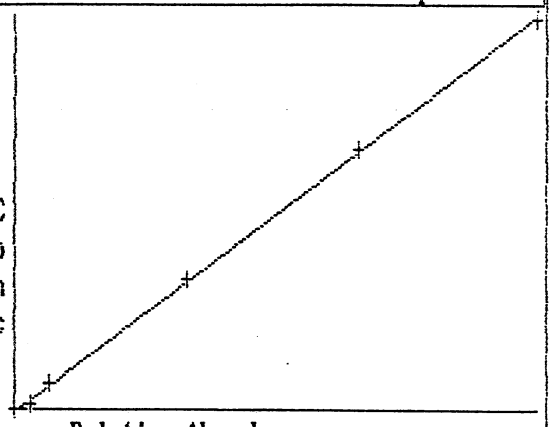
Protocol: SYSTEST labsys2
Rev: 3.001 Time: 23:18:12 04 Jan 1980
Folder: 17MAR00 Seq: 154 Print: On
User: Batch: Id: Std6Rep1 Cup: 1 19 Gas: 8.23 LPM
State: Idle Xmit: Off Autosampler: On

CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted LiNear	
S1	.000	-.007	-.007	Quadratic	
S2	.050	.088	.038	WtdLinear	
S3	.200	.191	-.009		C
S4	1.00	.983	-.017	Accept	o
S5	2.00	1.97	-.025		n
S6	3.00	3.02	.022	StdAdd	c

A .0000000 r .999805
B 9.85883e-6 C -9.51511e-3



	Mean	%RSD	
S1	205	0	205
S2	9841	0	9841
S3	20314	0	20314
S4	100669	0	100669
S5	201266	0	201266
S6	307445	0	307445

New calibration coefficients stored

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Check Standard: 2 Ck2 Seq: 154 23:20:03 04 Jan 1980 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		106.	.639	.600	ug/L	.000

*** Sample ID: mb #99-184 Seq: 155 23:23:19 04 Jan 1980 HG

Hg -.014 ug/L .000 -.014 <0.05 µg 1L

*** Sample ID: ibt 3 Seq: 156 23:25:32 04 Jan 1980 HG

Hg .260 ug/L .000 .260 0.142 µg

*** Sample ID: ibt3 dup Seq: 157 23:27:46 04 Jan 1980 HG RPD = <1.0 %

Hg .262 ug/L .000 .262 0.143 µg

*** Sample ID: i#1 2 Seq: 158 23:29:59 04 Jan 1980 HG

Hg .291 ug/L .000 .291 0.073 µg

*** Sample ID: i#1 2dup Seq: 159 23:32:22 04 Jan 1980 HG RPD = 2.1%

Hg .285 ug/L .000 .285 0.072 µg

*** Sample ID: i#1 3 1/20 Seq: 160 23:34:45 04 Jan 1980 HG

Hg 1.79 ug/L .000 1.79 ~~1.87 µg~~ 37.3 ug

JAO 4/13

*** Sample ID: i#1 3dup 1/20 Seq: 161 23:37:22 04 Jan 1980 HG RPD = ~~17%~~ 1.7

Hg 1.82 ug/L .000 1.82 ~~1.90 µg~~ 38.0 ug

JAO 4/13

*** Sample ID: i#2 2 Seq: 162 23:39:55 04 Jan 1980 HG

Hg .019 ug/L .000 .019 <0.009 µg

*** Sample ID: i#2 2dup Seq: 163 23:42:08 04 Jan 1980 HG RPD = N/A

Hg .027 ug/L .000 .027 <0.009 µg

*** Sample ID: i#2 3 1/20 Seq: 164 23:44:21 04 Jan 1980 HG

Hg .904 ug/L .000 .904 ~~1.01 µg~~ 20.1 ug

JAO 4/13

*** Sample ID: i#2 3dup 1/20 Seq: 165 23:46:49 04 Jan 1980 HG RPD = <1.0

Line	Conc.	Units	SD/RSD	1	2	3	4	5
~~*** Sample ID: i#3 2~~					~~Seq: 166~~	~~23:49:28 04 Jan 1980 HG~~		
Hg	.058	ug/L	.000	.058				
*** Sample ID: i#3 2dup					Seq: 167	23:51:40 04 Jan 1980 HG		
Hg	.056	ug/L	.000	.056				
*** Sample ID: i#3 2trp					Seq: 168	23:53:56 04 Jan 1980 HG		
~~Hg~~	~~.051~~	~~ug/L~~	~~.000~~	~~.051~~				
*** Sample ID: i#3 3 1/20					Seq: 169	23:56:09 04 Jan 1980 HG		
Hg	1.25	ug/L	.000	1.25				
*** Sample ID: i#3 3dup 1/20					Seq: 170	23:58:44 04 Jan 1980 HG		
Hg	1.22	ug/L	.000	1.22				
*** Sample ID: i#3 3spk 1/20					Seq: 171	00:01:17 05 Jan 1980 HG		
Hg	2.27	ug/L	.000	2.27				
*** Sample ID: ccb					Seq: 172	00:03:55 05 Jan 1980 HG		
Hg	-.023	ug/L	.000	-.023				
*** Sample ID: ccv					Seq: 173	00:06:08 05 Jan 1980 HG		
Hg	2.04	ug/L	.000	2.04				
*** Sample ID: o rb 8					Seq: 174	00:08:52 05 Jan 1980 HG		
Hg	-.013	ug/L	.000	-.013				
*** Sample ID: o rb 8dup					Seq: 175	00:11:06 05 Jan 1980 HG		
Hg	-.008	ug/L	.000	-.008				
*** Sample ID: o bt 3					Seq: 176	00:13:20 05 Jan 1980 HG		
Hg	.245	ug/L	.000	.245				
*** Sample ID: o bt 3dup					Seq: 177	00:15:36 05 Jan 1980 HG		

NO DATA REPREP

0.013 µg

RPD = 3.5

0.012 µg

RPD =

NO DATA, RPD > 10%

26.8 µg

~~1.34 µg~~ JAO 4/12

RPD = 2.4%

~~1.31 µg~~ JAO 4/12 26.1 µg

~~TV = 1.0~~

~~2.43 µg~~ JAO 4/12

TV = 2.0 JAO 4/12 102%

<0.05 µg/L

TV = 2.0

102%

~~<0.05 µg/L~~ JAO 4/12 <0.070 µg/L

RPD = N/A

~~<0.05 µg/L~~ JAO 4/12 <0.070 µg/L

0.132 µg

RPD = <1.0

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: o#1 2					Seq: 178	00:17:53 05 Jan 1980 HG		
Hg	.253	ug/L	.000	.253			0.013 µg	
*** Sample ID: o#1 2dup					Seq: 179	00:20:12 05 Jan 1980 HG RPD=1.2%		
Hg	.250	ug/L	.000	.250			0.013 µg	
*** Sample ID: o#1 3					Seq: 180	00:22:29 05 Jan 1980 HG		
Hg	22.9	ug/L	.000	22.9			NO DATA	
*** Sample ID: o#1 3			1:20		Seq: 181	00:25:54 05 Jan 1980 HG		
Hg	1.30	ug/L	.000	1.30			31.12 µg	
*** Sample ID: o#1 3dup			1:20		Seq: 182	00:28:29 05 Jan 1980 HG RPD = <1.0%		
Hg	1.31	ug/L	.000	1.31			31.36 µg	
*** Sample ID: o#2 2					Seq: 183	00:31:07 05 Jan 1980 HG		
Hg	.153	ug/L	.000	.153			0.008 µg	
*** Sample ID: o#2 2dup					Seq: 184	00:33:23 05 Jan 1980 HG RPD=1.3%		
Hg	.151	ug/L	.000	.151			0.008 µg	
*** Sample ID: o#2 3					Seq: 185	00:35:40 05 Jan 1980 HG		
Hg	43.1	ug/L	.000	43.1			NO DATA	
*** Sample ID: o#2 3			1:50		Seq: 186	00:39:25 05 Jan 1980 HG		
Hg	1.10	ug/L	.000	1.10			56.98 µg	
*** Sample ID: o#2 3dup			1:50		Seq: 187	00:41:55 05 Jan 1980 HG RPD = 1.8%		
Hg	1.12	ug/L	.000	1.12			58.02 µg	
*** Sample ID: o#3 2					Seq: 188	00:44:24 05 Jan 1980 HG		
Hg	.006	ug/L	.000	.006			<0.0036 µg ~~<0.05 µg~~ DB 3/27/00	
*** Sample ID: o#3 2dup					Seq: 189	00:46:38 05 Jan 1980 HG RPD=N/A		
							<0.0036 µg ~~<0.05 µg~~	

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: o#3 2trp					Seq: 190	00:48:53 05 Jan 1980 HG RPD- N/A		
						<0.0036 µg		
Hg	.024	ug/L	.000	.024		~~<0.005 µg~~ 03/29/00		
*** Sample ID: o#3 3					Seq: 191	00:51:08 05 Jan 1980 HG		
Hg	44.1	ug/L	.000	44.1		NO DATA		
*** Sample ID: o#3 3		1:50			Seq: 192	00:54:50 05 Jan 1980 HG		
Hg	1.10	ug/L	.000	1.10		62.37 µg		
*** Sample ID: o#3 3dup		1:50			Seq: 193	00:57:27 05 Jan 1980 HG RPD = 3.6%		
Hg	1.14	ug/L	.000	1.14		64.64 µg		
*** Sample ID: o#3 3spk		1:50			Seq: 194	01:00:00 05 Jan 1980 HG		
						~~N=1.0~~		
Hg	2.24	ug/L	.000	2.24		Spike 50.7 ug 127.01 µg	114%	
*** Sample ID: i#3 2					Seq: 195	01:02:52 05 Jan 1980 HG		
Hg	6.90	ug/L	.000	6.90		NO DATA		
*** Sample ID: i#3 2					Seq: 196	01:05:51 05 Jan 1980 HG		
Hg	6.76	ug/L	.000	6.76		NO DATA		
*** Sample ID: ccb					Seq: 197	01:08:59 05 Jan 1980 HG		
Hg	-.035	ug/L	.000	-.035		<0.05 µg 1L		
*** Sample ID: ccv					Seq: 198	01:11:15 05 Jan 1980 HG		
						N=2.0		
Hg	2.09	ug/L	.000	2.09		105%		

3/24/2000 Analytical Data

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 22:14:32  11 Jan 1980
Folder: 24MAR00C   Seq: 105                    Print: On
User:              Batch:            Id: Std6Rep1   Cup: 1 14 Gas:    0.23 LPM
State: Idle IPP                                   Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 032400F
cup Id          Extended id          Weight Volume Macro check Help
 1 99-184 BLK                        1.0000 1.0000
 2 99-184 BLK                        1.0000 1.0000
 3 IBT #4                            1.0000 1.0000
 4 IBT #4DUP                         1.0000 1.0000
 5 I 1, #4                           1.0000 1.0000
 6 I1, #4DUP                         1.0000 1.0000
 7 I2, #4                            1.0000 1.0000
 8 I2, #4DUP                         1.0000 1.0000
 9 I3, #4                            1.0000 1.0000
10 I3,#4DUP                          1.0000 1.0000
11 OUTRB                             1.0000 1.0000
12 OUTRBDUP                          1.0000 1.0000
13 OUTBT                             1.0000 1.0000
14 OUTBTDUP                          1.0000 1.0000
15 O1,#4                             1.0000 1.0000
                                                                        PgDn

Cup 1  ID: 99-184 BLK                          Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001    Time: 22:27:15  11 Jan 1980
Folder: 24MAR00C   Seq: 105                     Print: On
User:              Batch:            Id: Std6Repl   Cup: 1 14 Gas:    0.23 LPM
State: Idle                                       Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 032400F                                    PgUp
cup Id        Extended id          Weight Volume Macro check Help
16 O 1, #4DUP                      1.0000 1.0000
17 O 2, #4                         1.0000 1.0000
18 O 2,#4DUP                       1.0000 1.0000
19 O 2, #4TRP                      1.0000 1.0000
20 O 3, #4                         1.0000 1.0000
21 O 3, #4DUP                      1.0000 1.0000
22 O 3, #4SPK                      1.0000 1.0000
23 CCB                             1.0000 1.0000
24 CCV                             1.0000 1.0000
25 I 3, #2                         1.0000 1.0000
26 I 3, #2DUP                      1.0000 1.0000
27 CCB                             1.0000 1.0000
28 CCV                             1.0000 1.0000
29                                 1.0000 1.0000
30                                 1.0000 1.0000
                                                                          PgDn

Cup 16 ID: O 1, #4DUP                          Cell entry, Ins to switch
```

*** Standard: 1 Rep: 1 Seq: 99 21:56:26 11 Jan 1980 HG

Hg .000 ug/L -240
Ave. Int. = -240 S. D. = 0

*** Standard: 2 Rep: 1 Seq: 100 21:58:43 11 Jan 1980 HG

Hg .050 ug/L 5294
Ave. Int. = 5294 S. D. = 0

*** Standard: 3 Rep: 1 Seq: 101 22:01:01 11 Jan 1980 HG

Hg .200 ug/L 21811
Ave. Int. = 21811 S. D. = 0

*** Standard: 4 Rep: 1 Seq: 102 22:03:19 11 Jan 1980 HG

Hg 1.00 ug/L 113728
Ave. Int. = 113728 S. D. = 0

*** Standard: 5 Rep: 1 Seq: 103 22:05:49 11 Jan 1980 HG

Hg 2.00 ug/L 221764
Ave. Int. = 221764 S. D. = 0

*** Standard: 6 Rep: 1 Seq: 104 22:08:35 11 Jan 1980 HG

Hg 3.00 ug/L 336109
Ave. Int. = 336109 S. D. = 0

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 22:08:53  11 Jan 1980
Folder: 24MAR00C   Seq: 105                    Print: On
User:              Batch:          Id: Std6Rep1   Cup: 1 14 Gas:    0.23 LPM
State: Idle                                       Xmit: Off Autosampler: On
```

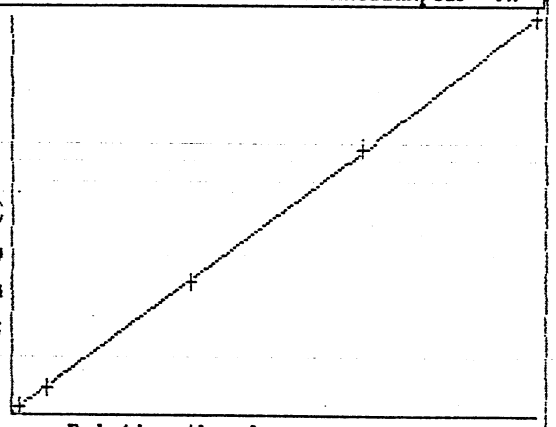
CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted LiNear	
S1	.000	-.001	-.001	Quadratic	
S2	.050	.049	-.001	WtdLinear	
S3	.200	.196	-.004		C
S4	1.00	1.02	.018	Accept	o
S5	2.00	1.98	-.017		n
S6	3.00	3.01	.005	StdAdd	c

A .0000000 r .999958

B 8.93790e-6 C 1.19636e-3



Relative Absorbance

	Mean	%RSD	
S1	-240	0	-240
S2	5294	0	5294
S3	21811	0	21811
S4	113728	0	113728
S5	221764	0	221764
S6	336109	0	336109

New calibration coefficients stored

*** Check Standard: 2 Ck2 Seq: 106 22:32:37 11 Jan 1980 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		103.	.617	.600	ug/L	.000

*** Sample ID: 99-184 BLK Seq: 107 22:35:05 11 Jan 1980 HG

Hg .024 ug/L .000 .025 <0.05 µg/L

*** Sample ID: 99-184 BLK Seq: 108 22:37:18 11 Jan 1980 HG

Hg .029 ug/L .000 .029 <0.05 µg/L

*** Sample ID: IBT #4 Seq: 109 22:39:31 11 Jan 1980 HG

Hg .044 ug/L .000 .044 <0.021 µg

*** Sample ID: IBT #4DUP Seq: 110 22:41:44 11 Jan 1980 HG

Hg .027 ug/L .000 .027 <0.021 µg

*** Sample ID: I 1, #4 Seq: 111 22:43:57 11 Jan 1980 HG

Hg .292 ug/L .000 .292 0.116 µg

*** Sample ID: I1, #4DUP Seq: 112 22:46:20 11 Jan 1980 HG RPD = 2.8%

Hg .284 ug/L .000 .284 0.113 µg

*** Sample ID: I2, #4 Seq: 113 22:48:41 11 Jan 1980 HG

Hg 2.56 ug/L .000 2.56 1.12 µg

*** Sample ID: I2, #4DUP Seq: 114 22:51:29 11 Jan 1980 HG RPD = 1.6%

Hg 2.52 ug/L .000 2.52 1.10 µg

*** Sample ID: I3, #4 Seq: 115 22:54:12 11 Jan 1980 HG

Hg 1.89 ug/L .000 1.89 NO DATA, RPD >10%

*** Sample ID: I3,#4DUP Seq: 116 22:57:01 11 Jan 1980 HG RPD = 23%

Hg 2.38 ug/L .000 2.38 NO DATA, RPD >10%

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: I3, #4					Seq:	117	23:00:28 11 Jan 1980 HG	
Hg	2.48	ug/L	.000	2.48			1.10 µg	
*** Sample ID: I3,#4DUP					Seq:	118	23:03:15 11 Jan 1980 HG RPD = <1.0	
Hg	2.47	ug/L	.000	2.47			1.10 µg	
*** Sample ID: OUTRB					Seq:	119	23:05:53 11 Jan 1980 HG	
Hg	-.010	ug/L	.000	-.010			<0.149 ~~<0.008~~ µg/L	
*** Sample ID: OUTRBDUP					Seq:	120	23:08:07 11 Jan 1980 HG RPD = N/A	
Hg	.011	ug/L	.000	.011			<0.149 ~~<0.008~~ µg/L	
*** Sample ID: OUTBT					Seq:	121	23:10:20 11 Jan 1980 HG	
Hg	.024	ug/L	.000	.024			< 0.019 µg	
*** Sample ID: OUTBTDUP					Seq:	122	23:12:33 11 Jan 1980 HG RPD = N/A	
Hg	.032	ug/L	.000	.032			< 0.019 µg	
*** Sample ID: O1,#4					Seq:	123	23:14:46 11 Jan 1980 HG	
Hg	.014	ug/L	.000	.014			< 0.023 µg	
*** Sample ID: O 1, #4DUP					Seq:	124	23:16:59 11 Jan 1980 HG RPD = N/A	
Hg	.002	ug/L	.000	.002			< 0.023 µg	
*** Sample ID: O 2, #4					Seq:	125	23:19:12 11 Jan 1980 HG	
Hg	.920	ug/L	.000	.920			0.416 µg	
*** Sample ID: O 2,#4DUP					Seq:	126	23:21:45 11 Jan 1980 HG RPD = <1.0	
Hg	.922	ug/L	.000	.922			0.417 µg	
*** Sample ID: O 2, #4TRP					Seq:	127	23:24:20 11 Jan 1980 HG RPD = 3.8	
Hg	.956	ug/L	.000	.956			0.432 µg	
*** Sample ID: O 3, #4					Seq:	128	23:26:54 11 Jan 1980 HG	
Hg	.946	ug/L	.000	.946			NO DATA	

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: O 3, #4DUP					Seq:	129	23:29:29 11 Jan 1980 HG	
Hg	-.010	ug/L	.000	-.010			NO DATA	
*** Sample ID: O 3, #4SPK					Seq:	130	23:31:43 11 Jan 1980 HG	
Hg	1.96	ug/L	.000	1.96			NO DATA	
*** Sample ID: O 3, #4					Seq:	131	23:35:48 11 Jan 1980 HG	
Hg	.972	ug/L	.000	.972			0.449 µg	
*** Sample ID: O 3, #4DUP					Seq:	132	23:38:15 11 Jan 1980 HG RPD=1.6%	
Hg	.957	ug/L	.000	.957			0.442 µg	
*** Sample ID: O 3, #4SPK					Seq:	133	23:40:45 11 Jan 1980 HG	
Hg	2.03	ug/L	.000	2.03			0.938 µg 106% SPK = 0.462 µg	
*** Sample ID: CCB					Seq:	134	23:43:20 11 Jan 1980 HG	
Hg	-.020	ug/L	.000	-.020			<0.05 µg/L	
*** Sample ID: CCV					Seq:	135	23:45:35 11 Jan 1980 HG	
Hg	2.02	ug/L	.000	2.02			101%	
*** Sample ID: I 3, #2					Seq:	136	23:48:15 11 Jan 1980 HG	
Hg	-.016	ug/L	.000	-.016			NO DATA	
*** Sample ID: I 3, #2DUP					Seq:	137	23:50:29 11 Jan 1980 HG	
Hg	.329	ug/L	.000	.329			NO DATA	
*** Sample ID: I 3, #2 Reprep					Seq:	138	23:53:23 11 Jan 1980 HG	
Hg	.321	ug/L	.000	.321			0.077 µg	
*** Sample ID: I 3, #2DUP Reprep					Seq:	139	23:55:42 11 Jan 1980 HG RPD=2.2%	
Hg	.314	ug/L	.000	.314			0.075 µg	
*** Sample ID: CCB					Seq:	140	23:58:06 11 Jan 1980 HG	
Hg	-.013	ug/L	.000	-.013			<0.05 µg/L	

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: CCV Seq: 141 00:00:20 12 Jan 1980 HG

Hg	1.99	ug/L	.000	1.99

99%

3/27/2000 Analytical Data

Protocol: SYSTEST labsys2

Rev: 3.001 Time: 20:38:09 14 Jan 1980

Folder: 032700c Seq: 0 Print: On

User: JPP Batch: Id: Std6Rep1 Cup: 1 28 Gas: 0.23 LPM

State: Idle Xmit: Off Autosampler: On

AUTOSAMPLER: Rack entry Rack 032700c

cup	Id	Extended id	Weight	Volume	Macro	check	Help
1	ICB		1.0000	1.0000			
2	[redacted]		1.0000	1.0000			
3	EERC B1DUP 1:5		1.0000	1.0000			
4	EERC B[redacted]		1.0000	1.0000			
5	EERC [redacted]2DUP		1.0000	1.0000			
6	110[redacted]9-02		1.0000	1.0000			
7	11[redacted]299-02D		1.0000	1.0000			
8	1[redacted]0399-12		1.0000	1.0000			
9	[redacted]		1.0000	1.0000			
10	CCB		1.0000	1.0000			
11	CCV		1.0000	1.0000			
12	[redacted]		1.0000	1.0000			
13	IRB99-[redacted]3D		1.0000	1.0000			
14	IBT9[redacted]-183		1.0000	1.0000			
15	I[redacted]D		1.0000	1.0000			

RUN #3 CONT'D 5

PgDn

Cup 1 ID: ICB Cell entry, Ins to switch

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 20:39:45  14 Jan 1980
Folder: 032700c    Seq: 0                      Print: On
User:              Batch:            Id: Ck2        Cup: 1 28 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 032700C  Range  1-44 Clear seQ Undo eXit   PgUp
cup Id        Extended id                Weight Volume Macro check Help
16 I #1 1:50                             1.0000 1.0000
17 I #1 DUP 1:50                         1.0000 1.0000
18 I #2 1:50                             1.0000 1.0000
19 I #2 DUP 1:50                         1.0000 1.0000
20 I #3 1:50                             1.0000 1.0000
21 I #3 DUP 1:50                         1.0000 1.0000
22 O BT                                  1.0000 1.0000
23 O BT DUP                              1.0000 1.0000
24 O #1 1:50                             1.0000 1.0000
25 O #1 DUP 1:50                         1.0000 1.0000
26 O #1 TRP 1:50                         1.0000 1.0000
27 O #2 1:50                             1.0000 1.0000
28 O #2 DUP 1:50                         1.0000 1.0000
29 O                                     1.0000 1.0000
30 CCB                                   1.0000 1.0000
                                                                          PgDn

                                   Column entry, Ins to switch
```

Run 3
Cont #5

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 00:57:58  15 Jan 1980
Folder: 032700c    Seq: 83                     Print: On
User:              Batch:          Id: CCV     Cup: 1 21 Gas:    0.23 LPM
State: Idle                                    Xmit: Off Autosampler: On

AUTOSAMPLER: Rack entry  Rack 032700C                                  PgUp
cup Id        Extended id          Weight Volume Macro check Help
31 CCV                              1.0000 1.0000
32 O #3                             1.0000 1.0000
33 O #3 DUP1:50                     1.0000 1.0000
34 S BT                             1.0000 1.0000
35 S BT DUP                         1.0000 1.0000
36 S #1 1:50                        1.0000 1.0000
37 S #1 DUP1:50                     1.0000 1.0000
38 S #2 1:50                        1.0000 1.0000
39 S #2 DUP1:50                     1.0000 1.0000
40 S #2 TRP1:50                     1.0000 1.0000
41 S #3 1:50                        1.0000 1.0000
42 S #3 DUP1:50                     1.0000 1.0000
43 S #3 SPK 1:50                    1.0000 1.0000
44 CCB                              1.0000 1.0000
                                                                       PgDn
Cup 44 ID: CCV                                   Cell entry, Ins to switch
```

Rons 3 CONTROLS

```
Protocol: SYSTEST  labsys2
                    Rev: 3.001   Time: 00:53:34  15 Jan 1980
Folder: 032700c     Seq: 83                     Print: On
User:               Batch:          Id: CCV     Cup: 1 21 Gas:    0.23 LPM
State: Idle                                     Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 032700C
cup Id          Extended id          Weight Volume Macro check Help
 1 CCV                               1.0000 1.0000
 2 IBT 99-184                        1.0000 1.0000
 3 IBT99-184D                        1.0000 1.0000
 4 I #1                              1.0000 1.0000
 5 I #1 DUP                          1.0000 1.0000
 6 I #2                              1.0000 1.0000
 7 I #2 DUP                          1.0000 1.0000
 8 I #3                              1.0000 1.0000
 9 I #3 DUP                          1.0000 1.0000
10 OBT 99-184                        1.0000 1.0000
11 OBT99-184D                        1.0000 1.0000
12 O #1                              1.0000 1.0000
13 O #1 DUP                          1.0000 1.0000
14 O #2                              1.0000 1.0000
15 O #2 DUP                          1.0000 1.0000
                                                                    PgDn

Cup 1  ID: CCV                                  Cell entry, Ins to switch
```

45

57

Run 1
CONT #5

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 00:53:40  15 Jan 1980
Folder: 032700c    Seq: 83                     Print: On
User:              Batch:          Id: CCV        Cup: 1 21 Gas:    0.23 LPM
State: Idle                                       Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 032700C                                  PgUp
cup Id          Extended id          Weight Volume Macro check Help
16 O #2 TRP                          1.0000 1.0000
17 O #3                              1.0000 1.0000
18 O #3 DUP                          1.0000 1.0000
19 O #3 SPK                          1.0000 1.0000
20 CCB                               1.0000 1.0000
21 CCV                               1.0000 1.0000
22                                   1.0000 1.0000
23                                   1.0000 1.0000
24                                   1.0000 1.0000
25                                   1.0000 1.0000
26                                   1.0000 1.0000
27                                   1.0000 1.0000
28                                   1.0000 1.0000
29                                   1.0000 1.0000
30                                   1.0000 1.0000
                                                                        PgDn

Cup 16 ID: O #2 TRP                          Cell entry, Ins to switch
```

60

65

Rows

*** Standard: 1 Rep: 1 Seq: 30 20:09:18 14 Jan 1980 HG

Hg .000 ug/L -1583
Ave. Int. = -1583 S. D. = 0

*** Standard: 2 Rep: 1 Seq: 31 20:11:35 14 Jan 1980 HG

Hg .050 ug/L 3665
Ave. Int. = 3665 S. D. = 0

*** Standard: 3 Rep: 1 Seq: 32 20:13:52 14 Jan 1980 HG

Hg .200 ug/L 20351
Ave. Int. = 20351 S. D. = 0

*** Standard: 4 Rep: 1 Seq: 33 20:16:10 14 Jan 1980 HG

Hg 1.00 ug/L 99389
Ave. Int. = 99389 S. D. = 0

*** Standard: 5 Rep: 1 Seq: 34 20:18:49 14 Jan 1980 HG

Hg 2.00 ug/L 200394
Ave. Int. = 200394 S. D. = 0

20:22:44 14 Jan 1980 Folder: 032700b Page 78
Protocol: SYSTEST labsys2

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Standard: 6 Rep: 1 Seq: 35 20:22:44 14 Jan 1980 HG

Hg 3.00 ug/L 302597
Ave. Int. = 302597 S. D. = 0

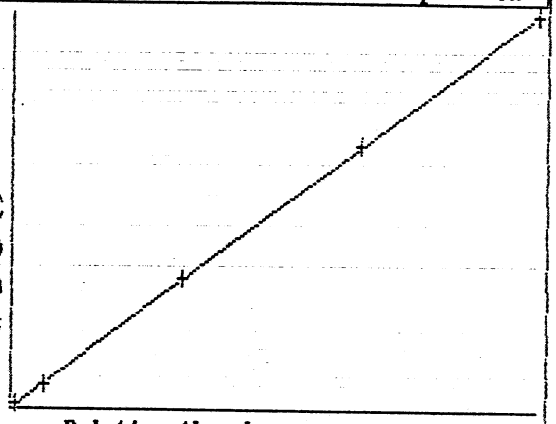
Protocol: SYSTEST labsys2
Rev: 3.001 Time: 20:23:10 14 Jan 1980
Folder: 032700b Seq: 36 Print: On
User: Batch: Id: Std6Rep1 Cup: 1 28 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted LiNear	
S1	.000	-.004	-.004	Quadratic	
S2	.050	.048	-.002	WtdLinear	
S3	.200	.213	.013		C
S4	1.00	.995	-.005	Accept	o
S5	2.00	1.99	-.006		n
S6	3.00	3.00	.005	StdAdd	c

A .0000000 r .999982
B 9.89238e-6 C 1.15187e-2



Relative Absorbance

	Mean	%RSD	
S1	-1583	0	-1583
S2	3665	0	3665
S3	20351	0	20351
S4	99389	0	99389
S5	200394	0	200394
S6	302597	0	302597

New calibration coefficients stored

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Check Standard: 2 Ck2 Seq: 0 20:42:00 14 Jan 1980 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg	H	113.	.681	.600	ug/L	.000

*** Check Standard: 2 Ck2 Seq: 1 20:45:21 14 Jan 1980 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		106.	.634	.600	ug/L	.000

*** Sample ID: ICB Seq: 2 20:48:56 14 Jan 1980 HG

Hg .001 ug/L .000 .001 <0.05 µg 1L

*** Sample ID: EERC B1 Seq: 3 20:51:08 14 Jan 1980 HG

Hg 7.96 ug/L .000 7.96 NO DATA

*** Sample ID: EERC B1 1:5 Seq: 4 20:54:10 14 Jan 1980 HG

Hg 1.61 ug/L .000 1.61 4.02 µg ~~0.805 µg~~ ~~0.805 µg~~

*** Sample ID: EERC B1DUP 1:5 Seq: 5 20:56:43 14 Jan 1980 HG RPD = <1.0

Hg 1.62 ug/L .000 1.62 4.05 µg ~~0.810 µg~~ ~~0.810 µg~~

*** Sample ID: EERC B2 Seq: 6 20:59:16 14 Jan 1980 HG

Hg .015 ug/L .000 .015 <0.025 µg

*** Sample ID: EERC B2DUP Seq: 7 21:01:29 14 Jan 1980 HG RPD = N/A

Hg .040 ug/L .000 .040 <0.025 µg

*** Sample ID: 110299-02 Seq: 8 21:03:42 14 Jan 1980 HG

Hg .074 ug/L .000 .074 NO DATA

*** Sample ID: 110299-02D Seq: 9 21:05:55 14 Jan 1980 HG

Hg .088 ug/L .000 .088 NO DATA

*** Sample ID: 110299-02 Seq: 10 21:08:08 14 Jan 1980 HG

Hg .073 ug/L .000 .073 ~~0.037 µg~~ 3/29/00

*** Sample ID: 110299-02D Seq: 11 21:10:21 14 Jan 1980 HG RPD = 4.0%

Hg .076 ug/L .000 .076 ~~0.037 µg~~ 3/29/00

DATA = BLANK CORRECTED

21:12:34 14 Jan 1980 Folder: 032700c Protocol: SYSTEST labsys2 Page 80

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: 110377-12					Seq: 12	21:12:34 14 Jan 1980 HG		
Hg	.138	ug/L	.000	.138				
*** Sample ID: 110399-12D					Seq: 13	21:14:47 14 Jan 1980 HG		
Hg	.145	ug/L	.000	.145				
*** Sample ID: CCB					Seq: 14	21:17:01 14 Jan 1980 HG		
Hg	.010	ug/L	.000	.010				
*** Sample ID: CCV					Seq: 15	21:19:14 14 Jan 1980 HG		
Hg	2.04	ug/L	.000	2.04				
*** Sample ID: IRB 99-183					Seq: 16	21:21:58 14 Jan 1980 HG		
Hg	.144	ug/L	.000	.144				
*** Sample ID: IRB99-183D					Seq: 17	21:24:14 14 Jan 1980 HG		
Hg	.158	ug/L	.000	.158				
*** Sample ID: IBT99-183					Seq: 18	21:26:28 14 Jan 1980 HG		
Hg	.105	ug/L	.000	.105				
*** Sample ID: IBT99-183D					Seq: 19	21:28:43 14 Jan 1980 HG		
Hg	.112	ug/L	.000	.112				
*** Sample ID: I #1					Seq: 20	21:30:56 14 Jan 1980 HG		
Hg	46.0	ug/L	.000	46.0				
*** Sample ID: I #1					Seq: 21	21:34:45 14 Jan 1980 HG		
Hg	1.30	ug/L	.000	1.30				
*** Sample ID: I #1 DUP					Seq: 22	21:37:19 14 Jan 1980 HG		
Hg	1.28	ug/L	.000	1.28				
*** Sample ID: I #2					Seq: 23	21:40:02 14 Jan 1980 HG		
Hg	1.38	ug/L	.000	1.38				

~~0.096 µg~~ 3/29/00 DPP

0.145 µg RPD = 4.9%

~~0.073 µg~~ DPP 3/29/00

<0.05 µg 1L

102%

CONT #10

0.144 µg 0.144 ug/L

RPD = 9.3%

~~0.008~~ µg 0.158 ug/L

<0.022 µg 0.046 µg

RPD = 6.5%

<0.022 µg

NO DATA

1:50

27.2 µg 27.3 µg

RPD = 1.6%

27.8 µg 27.7 µg

1:50

28.6 µg 28.5 µg

CONT #5

DATA = BLANK CORRECTED

21:42:36 14 Jan 1980 Folder: 032700c Protocol: SYSTEST labsys2 Page 81

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: I #2 DUP 1:50 Seq: 24 21:42:36 14 Jan 1980 HG RPD = 1.5%								
Hg	1.36	ug/L	.000	1.36				
28.2 µg (28.1 ug)								
*** Sample ID: I #3 1:50 Seq: 25 21:45:09 14 Jan 1980 HG								
Hg	1.39	ug/L	.000	1.39				
27.45 µg (27.4 ug)								
*** Sample ID: I #3 DUP 1:50 Seq: 26 21:47:4[illegible] 14 Jan 1980 HG RPD = <1.0%								
Hg	1.38	ug/L	.000	1.38				
27.26 µg (27.2 ug)								
*** Sample ID: O BT S Seq: 27 21:50:19 14 Jan 1980 HG								
Hg	.836	ug/L	.000	.836				
0.359 µg (0.297 ug)								
*** Sample ID: O BT DUP Seq: 28 21:52:54 14 Jan 1980 HG RPD = 1.2%								
Hg	.846	ug/L	.000	.846				
0.364 µg (0.302 ug)								
*** Sample ID: O #1 Seq: 29 21:55:24 14 Jan 1980 HG								
Hg	49.4	ug/L	.000	49.4				
NO DATA								
*** Sample ID: O #1 DUP Seq: 30 21:59:21 14 Jan 1980 HG								
Hg	49.4	ug/L	.000	49.4				
NO DATA								
*** Sample ID: O #1 1:50 Seq: 31 22:06:28 14 Jan 1980 HG								
Hg	1.45	ug/L	.000	1.45				
29.73 µg (29.7 ug)								
*** Sample ID: O #1 DUP 1:50 Seq: 32 22:09:05 14 Jan 1980 HG RPD = <1.0%								
Hg	1.44	ug/L	.000	1.44				
29.52 µg (29.5 ug)								
*** Sample ID: O #1 TRP 1:50 Seq: 33 22:11:40 14 Jan 1980 HG RPD = 2.8%								
Hg	1.41	ug/L	.000	1.41				
28.91 µg (28.9 ug)								
*** Sample ID: O #2 1:50 Seq: 34 22:14:17 14 Jan 1980 HG								
Hg	1.27	ug/L	.000	1.27				
26.99 µg (26.9 ug)								
*** Sample ID: O #2 DUP 1:50 Seq: 35 22:16:56 14 Jan 1980 HG RPD = 2.3%								
Hg	1.30	ug/L	.000	1.30				
27.63 µg (27.6 ug)								

CONT. #5

DATA = BLANK CORRECTED

22:19:27 14 Jan 1980 Folder: 032700c Protocol: SYSTEST labsys2 Page 82

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: O #2 SPK					Seq: 36	22:19:27 14 Jan 1980 HG		
Hg	[illegible]	ug/L	.000	[illegible]		47.9ug	47.8ug	
						SPIK = 21.0 ug		100%
*** Sample ID: CCB					Seq: 37	22:22:11 14 Jan 1980 HG		
Hg	-.006	ug/L	.000	-.006		<0.05µg/L		
*** Sample ID: CCV					Seq: 38	22:24:25 14 Jan 1980 HG		
Hg	2.01	ug/L	.000	2.01		100%		
*** Sample ID: O #3 1:50					Seq: 39	22:27:01 14 Jan 1980 HG		
Hg	1.28	ug/L	.000	1.28		25.9ug	25.72µg	
*** Sample ID: O #3 DUP 1:50					Seq: 40	22:29:36 14 Jan 1980 HG	RPD = <1.0	
Hg	1.27	ug/L	.000	1.27		25.7ug	25.72µg	
*** Sample ID: S BT					Seq: 41	22:32:18 14 Jan 1980 HG		
Hg	.122	ug/L	.000	.122		<0.023ug	0.056µg	
*** Sample ID: S BT DUP					Seq: 42	22:34:34 14 Jan 1980 HG	RPD = 4.8%	
Hg	.128	ug/L	.000	.128		<0.023ug	0.059µg	
*** Sample ID: S #1					Seq: 43	22:36:52 14 Jan 1980 HG		
Hg	56.4	ug/L	.000	56.4	-	NO DATA		
*** Sample ID: S #1 1:50					Seq: 44	22:43:17 14 Jan 1980 HG		
Hg	1.81	ug/L	.000	1.81		36.1ug	36.2µg	
*** Sample ID: S #1 DUP 1:50					Seq: 45	22:45:57 14 Jan 1980 HG	RPD = <1.0%	
Hg	1.81	ug/L	.000	1.81		36.1ug	36.2µg	
*** Sample ID: S #2 1:50					Seq: 46	22:52:24 14 Jan 1980 HG		
Hg	1.80	ug/L	.000	1.80		38.2ug	38.25µg	
*** Sample ID: S #2 DUP 1:50					Seq: 47	22:55:01 14 Jan 1980 HG	RPD = 1.7%	
Hg	1.77	ug/L	.000	1.77		37.6ug	37.61µg	

CONT #5

DATA = BLANK CORRECTED

22:57:40 14 Jan 1980 Folder: 032700c Protocol: SYSTEST labsys2 Page 83

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: S #3 DUP 1:50					Seq: 48	22:57:40 14 Jan 1980 HG		1.1%
Hg	1.82	ug/L	.000	1.82		38.6ug 38.68µg		
*** Sample ID: S #3 1:50					Seq: 49	23:00:19 14 Jan 1980 HG		
Hg	1.84	ug/L	.000	1.84		34.4 ug 34.50µg		
*** Sample ID: S #3 DUP 1:50					Seq: 50	23:02:59 14 Jan 1980 HG	RPD = 1.6%	
Hg	1.87	ug/L	.000	1.87		35.0 ug 35.06µg		
*** Sample ID: S #3 SPK 1:50					Seq: 51	23:05:46 14 Jan 1980 HG		
Hg	[illegible]	ug/L	.000	2.91		54.5ug [illegible]		101%
*** Sample ID: CCB				TV = 16.8 ug	Seq: 52	23:09:49 14 Jan 1980 HG		
Hg	.015	ug/L	.000	.015		<0.05µg/L		
*** Sample ID: CCV					Seq: 53	23:14:44 14 Jan 1980 HG		
Hg	2.02	ug/L	.000	2.02		101%		
*** Sample ID: IBT 99-184					Seq: 54	23:17:31 14 Jan 1980 HG		
Hg	.114	ug/L	.000	.114		NO DATA RPD > 10%		
*** Sample ID: IBT99-184D					Seq: 55	23:19:49 14 Jan 1980 HG	~~RPD = 4.3%~~	
Hg	.131	ug/L	.000	.131		NO DATA RPD > 10%		
*** Sample ID: I #1					Seq: 56	23:22:02 14 Jan 1980 HG		
Hg	25.8	ug/L	.000	25.8		NO DATA		
*** Sample ID: IBT 99-184					Seq: 57	23:27:47 14 Jan 1980 HG		
Hg	.135	ug/L	.000	.136		0.031 ug 0.057µg		
*** Sample ID: IBT99-184D					Seq: 58	23:31:19 14 Jan 1980 HG	RPD = 4.3%	
Hg	.142	ug/L	.000	.142		0.060µg ~~0.060µg~~ 0.034 ug [illegible] 3/29/00		
*** Sample ID: I #1 1:20					Seq: 59	23:33:35 14 Jan 1980 HG		
Hg	1.54	ug/L	.000	1.54		14.48µg 14.5ug		

DATA = BLANK CORRECTED

23:36:08 14 Jan 1980 Folder: 032700c Protocol: SYSTEST labsys2 Page 84

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: I #1 DUP 1:20				Seq: 60	23:36:08 14 Jan 1980 HG RPD = <1.0			
Hg	1.53	ug/L	.000	1.53	14.38 µg (14.4 ug)			
*** Sample ID: I #2 1:20				Seq: 61	23:38:44 14 Jan 1980 HG			
Hg	6.14	ug/L	.000	6.14	NO DATA			
*** Sample ID: I #2 1:100				Seq: 62	23:43:13 14 Jan 1980 HG			
Hg	1.26	ug/L	.000	1.26	61.74 µg (61.7 ug)			
*** Sample ID: I #2 DUP 1:100				Seq: 63	23:45:42 14 Jan 1980 HG RPD = <1.0			
Hg	1.25	ug/L	.000	1.25	61.25 µg (61.2 ug)			
*** Sample ID: I #3 1:20				Seq: 64	23:48:10 14 Jan 1980 HG			
Hg	6.36	ug/L	.000	6.36	NO DATA			
*** Sample ID: I #3 1:100				Seq: 65	23:51:00 14 Jan 1980 HG			
Hg	1.26	ug/L	.000	1.26	51.03 µg (51.0 ug)			
*** Sample ID: I #3 DUP 1:100				Seq: 66	23:53:29 14 Jan 1980 HG RPD = 2.4%			
Hg	1.29	ug/L	.000	1.29	52.25 µg (52.2 ug)			
*** Sample ID: OBT 99-184				Seq: 67	23:56:07 14 Jan 1980 HG			
Hg	.161	ug/L	.000	.161	0.062 µg (0.038 ug)			
*** Sample ID: OBT99-184D				Seq: 68	23:58:20 14 Jan 1980 HG RPD = 7.1%			
Hg	.150	ug/L	.000	.150	0.058 µg (0.034 ug)			
*** Sample ID: O #1				Seq: 69	00:00:34 15 Jan 1980 HG			
Hg	3.90	ug/L	.000	3.90	NO DATA			
*** Sample ID: O #1 1:2				Seq: 70	00:04:58 15 Jan 1980 HG			
Hg	1.96	ug/L	.000	1.96	1.55 µg (1.53 ug)			
*** Sample ID: O #1 DUP 1:2				Seq: 71	00:07:33 15 Jan 1980 HG RPD = 1.0%			
Hg	1.98	ug/L	.000	1.98	1.56 µg (1.54 ug)			

DATA = BLANK CORRECTED

00:10:09 15 Jan 1980 Folder: 032700c Protocol: SYSTEST labsys2 Page 85

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: O #2					Seq: 72	00:10:09 15 Jan 1980 HG		
Hg	3.87	ug/L	.000	3.87		NO DATA		
*** Sample ID: O #2			1:2		Seq: 73	00:13:16 15 Jan 1980 HG		
Hg	11.9	ug/L	.000	11.9		NO DATA		
*** Sample ID: O #2			1:20		Seq: 74	00:17:28 15 Jan 1980 HG		
Hg	1.25	ug/L	.000	1.25		10.50 µg (10.5 ug)		
*** Sample ID: O #2 DUP			1:20		Seq: 75	00:20:02 15 Jan 1980 HG RPD = 1.6		
Hg	1.26	ug/L	.000	1.26		10.58 µg (10.6 ug)		
*** Sample ID: O #2 TRP			1:20		Seq: 76	00:22:35 15 Jan 1980 HG RPD = 1.6 %		
Hg	1.23	ug/L	.000	1.23		10.33 µg (10.3 ug)		
*** Sample ID: O #3					Seq: 77	00:25:04 15 Jan 1980 HG		
Hg	24.8	ug/L	.000	24.8		NO DATA		
*** Sample ID: O #3			1:20		Seq: 78	00:28:16 15 Jan 1980 HG		
Hg	1.44	ug/L	.000	1.44		12.96 µg (12.9 ~~12.60~~ ug) JAD 4/14		
*** Sample ID: O #3 DUP			1:20		Seq: 79	00:30:45 15 Jan 1980 HG RPD = 2.1 %		
Hg	1.41	ug/L	.000	1.41 –		12.69 µg ~~12.6~~ 9 DJB 3/29/00 (12.7 ~~12.60~~ ug) JAD 4.		
*** Sample ID: O #3 SPK			1:20		Seq: 80	00:33:22 15 Jan 1980 HG		
Hg	2.41	ug/L	.000	2.41		SPK - 9 ug 21.7 ug 90 % 100 %		
*** Sample ID: CCB					Seq: 81	00:36:09 15 Jan 1980 HG		
Hg	-.021	ug/L	.000	-.021		<0.05		
*** Sample ID: CCV					Seq: 82	00:38:23 15 Jan 1980 HG		
Hg	2.08	ug/L	.000	2.08		104%		

4/4/2000 Analytical Data

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 14:53:24  05 Jan 1980
Folder: 04APR05B   Seq: 6                      Print: On
User:              Batch:            Id: Std6Rep1   Cup: 1 29 Gas:    0.23 LPM
State: Idle                                     Xmit: Off Autosampler: On
```

JPP

```
AUTOSAMPLER:  Rack entry   Rack 040500B
cup Id          Extended id          Weight Volume Macro check Help
 1 [redacted]                        1.0000 1.0000
 2 99183I[redacted]DU                1.0000 1.0000
 3 IRE#7[redacted]183                1.0000 1.0000
 4 IRE[redacted]DUP                  1.0000 1.0000
 5 I[redacted]#11183                 1.0000 1.0000
 6 [redacted]                        1.0000 1.0000
 7 ORE#7184                          1.0000 1.0000
 8 ORE#7DUP                          1.0000 1.0000
 9 ORE#11184                         1.0000 1.0000
10 ORE#11DUP                         1.0000 1.0000
11 CCB                               1.0000 1.0000
12 CCV                               1.0000 1.0000
13                                   1.0000 1.0000
14                                   1.0000 1.0000
15                                   1.0000 1.0000
                                                                    PgDn

Cup 13 ID:                                   Cell entry, Ins to switch
```

*** Standard: 1 Rep: 1 Seq: 0 14:30:19 05 Jan 1980 HG

Hg .000 ug/L -1203
Ave. Int. = -1203 S. D. = 0

*** Standard: 2 Rep: 1 Seq: 1 14:32:36 05 Jan 1980 HG

Hg .050 ug/L 3371
Ave. Int. = 3371 S. D. = 0

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Standard: 3 Rep: 1 Seq: 2 14:34:54 05 Jan 1980 HG

Hg .200 ug/L 20503
Ave. Int. = 20503 S. D. = 0

*** Standard: 4 Rep: 1 Seq: 3 14:37:19 05 Jan 1980 HG

Hg 1.00 ug/L 117940
Ave. Int. = 117940 S. D. = 0

*** Standard: 5 Rep: 1 Seq: 4 14:39:45 05 Jan 1980 HG

Hg 2.00 ug/L 243026
Ave. Int. = 243026 S. D. = 0

*** Standard: 6 Rep: 1 Seq: 5 14:42:23 05 Jan 1980 HG

Hg 3.00 ug/L 363442
Ave. Int. = 363442 S. D. = 0

Protocol: SYSTEST labsys2
Rev: 3.001 Time: 14:42:48 05 Jan 1980
Folder: 04APR05B Seq: 6 Print: On
User: Batch: Id: Std6Rep1 Cup: 1 29 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

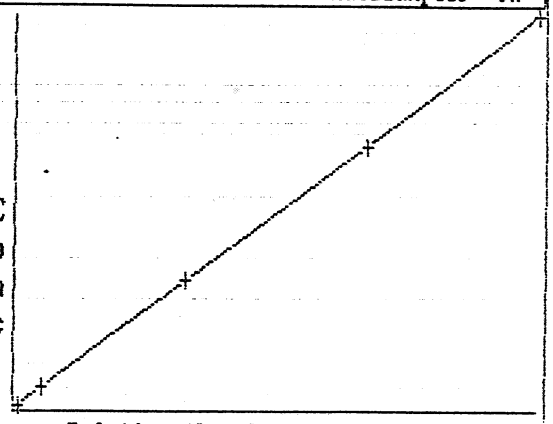
CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted
S1	.000	.013	.013	LiNear
S2	.050	.050	.000	Quadratic
S3	.200	.191	-.009	WtdLinear
S4	1.00	.988	-.012	Accept
S5	2.00	2.01	.011	
S6	3.00	3.00	-.003	StdAdd

A .0000000 r .999964
B 8.18388e-6 C 2.27668e-2

Conc



Relative Absorbance

	Mean	%RSD	
S1	-1203	0	-1203
S2	3371	0	3371
S3	28503	0	28503
S4	117940	0	117940
S5	243026	0	243026
S6	363442	0	363442

New calibration coefficients stored

*** Check Standard: 2 Ck2 Seq: 7 14:58:05 05 Jan 1980 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		100.	.602	.600	ug/L	.000

*** Sample ID: Seq: 8 15:00:54 05 Jan 1980 HG

Hg .049 ug/L .000 .049

*** Sample ID: 99-183 ICB Seq: 9 15:03:09 05 Jan 1980 HG

Hg -.003 ug/L .000 -.003 <0.050 ug/L

*** Sample ID: 99183ICBDU Seq: 10 15:05:23 05 Jan 1980 HG

Hg .006 ug/L .000 .006 <0.050 ug/L

*** Sample ID: IRB#7 183 Seq: 11 15:07:36 05 Jan 1980 HG

Hg .008 ug/L .000 .008 <0.050 ug/L

*** Sample ID: IRB7DUP Seq: 12 15:09:50 05 Jan 1980 HG

Hg .007 ug/L .000 .007 <0.050 ug/L

*** Sample ID: IRB#11183 Seq: 13 15:12:03 05 Jan 1980 HG

Hg .003 ug/L .000 .003 <0.050 ug/L

*** Sample ID: IRB#11DUP Seq: 14 15:14:16 05 Jan 1980 HG

Hg .003 ug/L .000 .003 <0.050 ug/L

*** Sample ID: ORB#7184 Seq: 15 15:16:29 05 Jan 1980 HG

Hg .018 ug/L .000 .018 <0.050 ug/L

*** Sample ID: ORB#7DUP Seq: 16 15:18:42 05 Jan 1980 HG

Hg .001 ug/L .000 .001 <0.050 ug/L

*** Sample ID: ORB#11184 Seq: 17 15:20:56 05 Jan 1980 HG

Hg .010 ug/L .000 .010 <0.050 ug/L

*** Sample ID: CRB#11DUP Seq: 18 15:23:09 05 Jan 1980 HG

Hg -.001 ug/L .000 -.001 <0.050 ug/L

*** Sample ID: CCB Seq: 19 15:25:23 05 Jan 1980 HG

Hg -.018 ug/L .000 -.018 <0.050 ug/L

*** Sample ID: CCV Seq: 20 15:27:37 05 Jan 1980 HG

Hg 2.03 ug/L .000 2.03 TV. = 2.0 102 %

4/6/2000 Analytical Data (Coals)

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 15:45:58  06 Jan 1980
Folder: 06APR00C   Seq: 6                      Print: On
User:              Batch:            Id: Std6Rep1   Cup: 1 29 Gas:    0.23 LPM
State: Idle                                       Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 040600C
cup Id        Extended id          Weight Volume Macro check Help
 1 ICB                              1.0000 1.0000
 2 ICB DUP                          1.0000 1.0000
 3 BLANK                            1.0000 1.0000
 4 BLANK DUP                        1.0000 1.0000
 5 1630A                            1.0000 1.0000
 6 1630A DUP                        1.0000 1.0000
 7 1397023                          1.0000 1.0000
 8 1397023DUP                       1.0000 1.0000
 9 1397024                          1.0000 1.0000
10 1397024DUP                       1.0000 1.0000
11 1397025                          1.0000 1.0000
12 1397025DUP                       1.0000 1.0000
13 1397026                          1.0000 1.0000
14 1397026DUP                       1.0000 1.0000
15 1397027                          1.0000 1.0000
                                                                    PgDn

Cup 1  ID: ICB                                   Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 15:46:01  06 Jan 1980
Folder: 06APR00C   Seq: 6                      Print: On
User:              Batch:            Id: Std6Rep1   Cup: 1 29 Gas:    0.23 LPM
State: Idle                                       Xmit: Off Autosampler: On
```

AUTOSAMPLER: Rack entry Rack 040600C PgUp

cup	Id	Extended id	Weight	Volume	Macro check	Help
16	1397027DUP		1.0000	1.0000		
17	1397027TRP		1.0000	1.0000		
18	1397028		1.0000	1.0000		
19	1397028DUP		1.0000	1.0000		
20	1397028SPK		1.0000	1.0000		
21	CCB		1.0000	1.0000		
22	CCV		1.0000	1.0000		
23			1.0000	1.0000		
24			1.0000	1.0000		
25			1.0000	1.0000		
26			1.0000	1.0000		
27			1.0000	1.0000		
28			1.0000	1.0000		
29			1.0000	1.0000		
30			1.0000	1.0000		

PgDn

Cup 16 ID: 1397027DUP Cell entry, Ins to switch

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Standard: 1 Rep: 1 Seq: 17 16:41:54 06 Jan 1980 HG

Hg .000 ug/L -769
Ave. Int. = -769 S. D. = 0

*** Standard: 2 Rep: 1 Seq: 18 16:44:12 06 Jan 1980 HG

Hg .200 ug/L 25944
Ave. Int. = 25944 S. D. = 0

*** Standard: 3 Rep: 1 Seq: 19 16:46:34 06 Jan 1980 HG

Hg .500 ug/L 64662
Ave. Int. = 64662 S. D. = 0

*** Standard: 4 Rep: 1 Seq: 20 16:48:55 06 Jan 1980 HG

Hg 1.00 ug/L 130054
Ave. Int. = 130054 S. D. = 0

*** Standard: 5 Rep: 1 Seq: 21 16:51:19 06 Jan 1980 HG

Hg 2.00 ug/L 256484
Ave. Int. = 256484 S. D. = 0

*** Standard: 6 Rep: 1 Seq: 22 16:55:36 06 Jan 1980 HG

Hg 3.00 ug/L 382030
Ave. Int. = 382030 S. D. = 0

Protocol: SYSTEST labsys2

Rev: 3.001 Time: 16:57:20 06 Jan 1980

Folder: 06APR00C Seq: 23 Print: On

[illegible] Cup: [illegible] Gas: [illegible]

State: Idle Xmit: Off Autosampler: On

CALIBRATION: Line Calibration

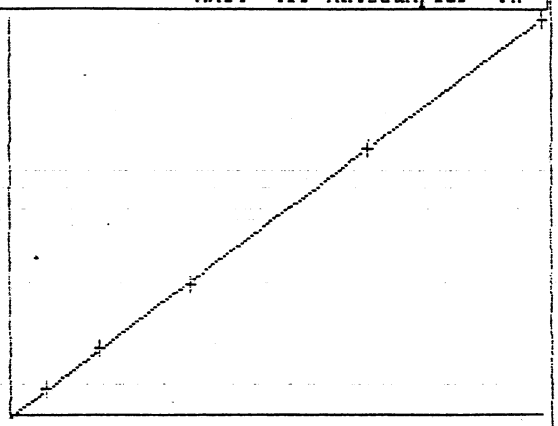
Line: Hg

	Conc.	Calc.	Dev.	Accepted LiNear	
S1	.000	-.011	-.011	Quadratic	
S2	.200	.198	-.002	WtdLinear	
S3	.500	.502	.002		C
S4	1.00	1.01	.015	Accept	o
S5	2.00	2.01	.006		n
S6	3.00	2.99	-.009	StdAdd	c

A .0000000 r .999965

B 7.84244e-6 C -5.33136e-3

	Mean	%RSD	
S1	-769	0	-769
S2	25944	0	25944
S3	64662	0	64662
S4	130054	0	130054
S5	256484	0	256484
S6	382030	0	382030



Relative Absorbance

New calibration coefficients stored

Line Conc. Units SD/RSD 1 2 3 4 5

*** Check Standard: 2 Ck2 Seq: 23 16:59:53 06 Jan 1980 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		96.1	.576	.600	ug/L	.000

*** Sample ID: ICB Seq: 24 17:02:14 06 Jan 1980 HG

Hg -.010 ug/L .000 -.010 <0.2 ug/L

*** Sample ID: ICB DUP Seq: 25 17:04:28 06 Jan 1980 HG

Hg -.007 ug/L .000 -.007 <0.2 ug/L

*** Sample ID: BLANK Seq: 26 17:06:41 06 Jan 1980 HG

Hg .181 ug/L .000 .181 <0.2 ug/L

*** Sample ID: BLANK DUP Seq: 27 17:08:55 06 Jan 1980 HG

Hg .197 ug/L .000 .197 <0.2 ug/L

*** Sample ID: 1630A Seq: 28 17:11:08 06 Jan 1980 HG

Hg 1.89 ug/L .000 1.89 TV = 0.106 ug/kg ± 30% 91 ug/g

*** Sample ID: 1630A DUP Seq: 29 17:13:34 06 Jan 1980 HG RPD <1.0

Hg 1.88 ug/L .000 1.88 91 ug/g

*** Sample ID: 1397023 Seq: 30 17:16:07 06 Jan 1980 HG

Hg 4.82 ug/L .000 4.82 REPEAT

*** Sample ID: 1397023 1/5 UNIT 1, RUN 1 Seq: 31 17:20:49 06 Jan 1980 HG

Hg 1.01 ug/L .000 1.01 0.318 ug/g DW

*** Sample ID: 1397023DUP 1/5 Seq: 32 17:23:12 06 Jan 1980 HG RPD 1.0%

Hg 1.00 ug/L .000 1.00 0.315 ug/g DW

*** Sample ID: 1397024 Seq: 33 17:25:41 06 Jan 1980 HG

Hg 5.12 ug/L .000 5.12 REPEAT

*** Sample ID: 1397024 1/5 UNIT 1 RUN 2 Seq: 34 17:28:38 06 Jan 1980 HG

Hg 1.09 ug/L .000 1.09 0.325 ug/g DW

Line	Conc.	Units	SD/RSD	1	2	3	4	5	
*** Sample ID: 1397024DUP 4/5 UNIT 1 RUN 2					Seq: 35	17:31:03 06 Jan 1980 HG			RPD <1.0
Hg	1.09	ug/L	.000	1.09					0.325 ug/g DW
*** Sample ID: 1397025 4/5 UNIT 1 RUN 3					Seq: 36	17:33:23 06 Jan 1980 HG			
Hg	1.61	ug/L	.000	1.61					0.472 ug/g DW
*** Sample ID: 1397025DUP 4/5					Seq: 37	17:35:50 06 Jan 1980 HG			RPD 1.9%
Hg	1.58	ug/L	.000	1.58					0.464 ug/g DW
[illegible] UNIT 3 RUN 1									
Hg	1.33	ug/L	.000	1.33					0.388 ug/g DW
*** Sample ID: 1397026DUP 4/5					Seq: 39	17:40:44 06 Jan 1980 HG			RPD <1.0%
Hg	1.33	ug/L	.000	1.33					0.388 ug/g DW
*** Sample ID: 1397027 4/5 UNIT 3 RUN 2					Seq: 40	17:43:10 06 Jan 1980 HG			
Hg	1.31	ug/L	.000	1.31					0.375 ug/g DW
*** Sample ID: 1397027DUP 4/5					Seq: 41	17:45:36 06 Jan 1980 HG			RPD 21.0%
Hg	1.31	ug/L	.000	1.31					0.375 ug/g DW
*** Sample ID: 1397027TRP 4/5					Seq: 42	17:48:01 06 Jan 1980 HG			RPD <1.0%
Hg	1.31	ug/L	.000	1.31					0.375 ug/g DW
*** Sample ID: 1397028 4/5 UNIT 3 RUN 3					Seq: 43	17:50:26 06 Jan 1980 HG			
Hg	1.66	ug/L	.000	1.66					0.482 ug/g DW
*** Sample ID: 1397028DUP 4/5					Seq: 44	17:52:52 06 Jan 1980 HG			RPD 1.2%
Hg	1.64	ug/L	.000	1.64					0.476 ug/g DW
*** Sample ID: 1397028SPK 4/5					Seq: 45	17:59:23 06 Jan 1980 HG			TV = 0.290 ug/kg
Hg	2.88	ug/L	.000	2.88					0.772 ug/kg 102%
*** Sample ID: CCB					Seq: 46	18:01:49 06 Jan 1980 HG			
Hg	-.008	ug/L	.000	-.008					<0.2 ug/L

18:04:05 06 Jan 1980 Protocol: SYSTEST labsys2

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: CCV				Seq: 47	18:04:05 06 Jan 1980 HG			
Hg	1.99	ug/L	.000	1.99				

100%

4/7/2000 Analytical Data

Protocol: SYSTEST labsys2
Rev: 3.001 Time: 11:46:45 07 Jan 1980
Folder: 07APR00A Seq: 40 Print: On
User: Batch: Id: Std6Rep1 Cup: 1 27 Gas: 0.23 LPM
State: Idle EPK Xmit: Off Autosampler: On

AUTOSAMPLER: Rack entry Rack 040700A

cup Id	Extended id	Weight	Volume	Macro	check	Help
1 ICB		1.0000	1.0000			
2 ICB DUP		1.0000	1.0000			
3 Q116	:5	1.0000	1.0000			
4 Q116 DUP	:5	1.0000	1.0000			
5 Q90	EPK ~~:20~~ :10	1.0000	1.0000			
6 Q90 DUP	4/7/00 ~~:20~~ :10	1.0000	1.0000			
7 BLANK		1.0000	1.0000			
8 BLANK DUP		1.0000	1.0000			
9 1633B		1.0000	1.0000			
10 1633B DUP		1.0000	1.0000			
11 47Q176		1.0000	1.0000			
12 47Q176 DUP		1.0000	1.0000			
13 47Q141		1.0000	1.0000			
14 47Q141 DUP		1.0000	1.0000			
15 47Q181		1.0000	1.0000			

PgDn

Cup 1 ID: ICB Cell entry, Ins to switch

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 11:46:49  07 Jan 1990
Folder: 07APR00A   Seq: 40                     Print: On
User:              Batch:            Id: Std6Rep1   Cup: 1 27 Gas:    0.23 LPM
State: Idle                                     Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 0407000A                                  PgUp
cup Id        Extended id          Weight Volume Macro check Help
16 47Q181 DUP                      1.0000 1.0000
17 47Q182                          1.0000 1.0000
18 47Q182 DUP                      1.0000 1.0000
19 47Q148                          1.0000 1.0000
20 47Q148 DUP                      1.0000 1.0000
21 47Q148 TRP                      1.0000 1.0000
[redacted]                         1.0000 1.0000
23 88QI25 [redacted] :2            1.0000 1.0000
24 [redacted]                      1.0000 1.0000
25 CCB                             1.0000 1.0000
26 CCV                             1.0000 1.0000
27 [redacted]                      1.0000 1.0000
28 88QI41 [redacted] :5            1.0000 1.0000
29 88Q47[redacted] :5              1.0000 1.0000
30 8[redacted] DUP :5              1.0000 1.0000
                                                                          PgDn

Cup 16 ID: 47Q181 DUP                          Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 11:46:54  07 Jan 1980
Folder: 07APR00A   Seq: 40                      Print: On
User:              Batch:            Id: Std6Repl   Cup: 1 27 Gas:    0.23 LPM
State: Idle                                       Xmit: Off Autosampler: On
```

```
AUTOSAMPLER:  Rack entry   Rack 040700A                                  PgUp
cup Id        Extended id          Weight Volume Macro check Help
31 Q118       :5                   1.00000 1.00000
32 Q118 DUP   :5                   1.00000 1.00000
33 47Q147     :2                   1.00000 1.00000
34 47Q147 DUP :2                   1.00000 1.00000
35 47Q180                          1.00000 1.00000
36 47Q180 DUP                      1.00000 1.00000
37 47Q179                          1.00000 1.00000
38 47Q179 DUP                      1.00000 1.00000
39 Q121                            1.00000 1.00000
40 Q121 DUP                        1.00000 1.00000
41 [redacted]                      1.00000 1.00000
42 [redacted]                      1.00000 1.00000
43                                 1.00000 1.00000
44                                 1.00000 1.00000

                                                                         PgDn
```

```
Cup 31 ID: Q118                                  Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 16:04:02  07 Jan 1980
Folder: 07APR00A   Seq: 125                    Print: On
User:              Batch:            Id: CCV        Cup: 2 20 Gas:    0.23 LPM
State: Idle                                        Xmit: Off Autosampler: On
```

AUTOSAMPLER: Rack entry Rack 040700B

cup	Id	Extended id	Weight	Volume	Macro	check	Help
1	47Q149		1.0000	1.0000			
2	47Q149 DUP		1.0000	1.0000			
3	47Q149 TRP		1.0000	1.0000			
4	[redacted]		1.0000	1.0000			
5	47[redacted]83 DUP		1.0000	1.0000			
6	[redacted]		1.0000	1.0000			
7	CCB		1.0000	1.0000			
8	CCV		1.0000	1.0000			
9	BLANK #2		1.0000	1.0000			
10	BLANK#2DUP		1.0000	1.0000			
11	1633B #2		1.0000	1.0000			
12	1633#2DUP		1.0000	1.0000			
13	[redacted]		1.0000	1.0000			
14	88Q[redacted]4 DUP		1.0000	1.0000			
15	[redacted] TRP		1.0000	1.0000			

PgDn

Cup 1 ID: 47Q149 Cell entry, Ins to switch

Protocol: SYSTEST labsys2

Rev: 3.001 Time: 16:04:59 07 Jan 1980

Folder: 07APR00A Seq: 125 Print: On
User: Batch: Id: CCV Cup: 2 20 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

AUTOSAMPLER: Rack entry Rack 040700B PgUp

cup	Id	Extended id	Weight	Volume	Macro	check	Help
16	[redacted]		1.00000	1.00000			
17	88QI37 DUP		1.00000	1.00000			
18	[redacted]		1.00000	1.00000			
19	CCB		1.00000	1.00000			
20	CCV		1.00000	1.00000			
21			1.00000	1.00000			
22			1.00000	1.00000			
23			1.00000	1.00000			
24			1.00000	1.00000			
25			1.00000	1.00000			
26			1.00000	1.00000			
27			1.00000	1.00000			
28			1.00000	1.00000			
29			1.00000	1.00000			
30			1.00000	1.00000			

PgDn

Cup 16 ID: 88QI37 Cell entry, Ins to switch

```
*** Standard: 1 Rep: 1                Seq:  34      11:21:53 07 Jan 1980 HG

Hg     .000     ug/L     -510
                         Ave. Int. =      -510 S. D. =          0

*** Standard: 2 Rep: 1                Seq:  35      11:24:11 07 Jan 1980 HG

Hg     .050     ug/L      5629
                         Ave. Int. =      5629 S. D. =          0

*** Standard: 3 Rep: 1                Seq:  36      11:26:28 07 Jan 1980 HG

Hg     .200     ug/L     25889
                         Ave. Int. =     25889 S. D. =          0

*** Standard: 4 Rep: 1                Seq:  37      11:28:50 07 Jan 1980 HG

Hg     1.00     ug/L    129793
                         Ave. Int. =    129793 S. D. =          0

*** Standard: 5 Rep: 1                Seq:  38      11:31:14 07 Jan 1980 HG

Hg     2.00     ug/L    252676
                         Ave. Int. =    252676 S. D. =          0

*** Standard: 6 Rep: 1                Seq:  39      11:34:07 07 Jan 1980 HG

Hg     3.00     ug/L    379362
                         Ave. Int. =    379362 S. D. =          0
```

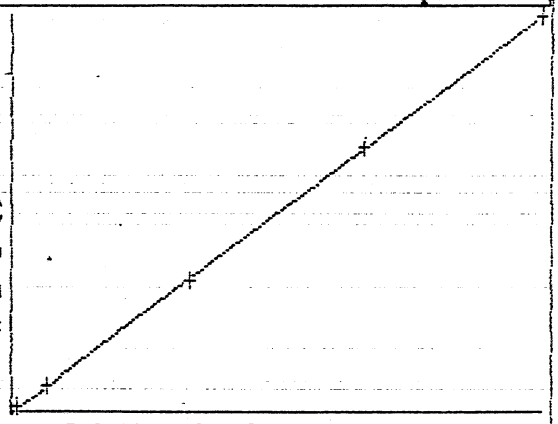
Protocol: SYSTEST labsys2
Rev: 3.001 Time: 11:35:21 07 Jan 1980
Folder: 07APR80A Seq: 40 Print: On
User: Batch: Id: Std6Rep1 Cup: 1 27 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted LiNear	
S1	.000	-.007	-.007	Quadratic	
S2	.050	.042	-.008	WtdLinear	
S3	.200	.202	.002		C
S4	1.00	1.02	.023	Accept	o
S5	2.00	1.99	-.006		n
S6	3.00	3.00	-.004	StdAdd	c

A .0000000 r .999953
B 7.90434e-6 C -2.81105e-3



Relative Absorbance

	Mean	%RSD	
S1	-510	0	-510
S2	5629	0	5629
S3	25889	0	25889
S4	129793	0	129793
S5	252676	0	252676
S6	379362	0	379362

New calibration coefficients stored

*** Check Standard: 2 Ck2 Seq: 48 12:19:50 07 Jan 1980 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		98.5	.591	.600	ug/L	.000

*** Sample ID: ICB Seq: 49 12:30:31 07 Jan 1980 HG

Hg -.005 ug/L .000 -.005

*** Sample ID: ICB DUP Seq: 50 12:32:45 07 Jan 1980 HG

Hg .003 ug/L .000 .003

*** Sample ID: Q116 Seq: 51 12:34:59 07 Jan 1980 HG

Hg .096 ug/L .000 .096

REPEAT

Folder: 07APR00A Page 40

12:37:12 07 Jan 1980 Protocol: SYSTEST labsys2

Line	Conc.	Units	SD/RSD	1	2	3	4	5

REPEAT

*** Sample ID: Q116 DUP Seq: 52 12:37:12 07 Jan 1980 HG RPD 18 %

Hg .115 ug/L .000 .115

*** Sample ID: Q90 Seq: 53 12:39:25 07 Jan 1980 HG

~~.29~~ :10

Hg 2.60 ug/L .000 2.60

19.4 ug

*** Sample ID: Q90 DUP Seq: 54 12:42:10 07 Jan 1980 HG RPD 1.5 %

~~.29~~ :10

Hg 2.64 ug/L .000 2.64

19.7 ug

~~*** Sample ID: BLANK Seq: 55 12:44:40 07 Jan 1980 HG~~

~~Hg .045 ug/L .000 .045~~

REPEAT

*** Sample ID: BLANK DUP Seq: 56 12:46:53 07 Jan 1980 HG

Hg .067 ug/L .000 .067

~~*** Sample ID: BLANK DUP Seq: 57 12:49:06 07 Jan 1980 HG~~

~~Hg .052 ug/L .000 .052~~

*** Sample ID: 1633B Seq: 58 12:51:20 07 Jan 1980 HG

*** Sample ID: 1633B DUP Seq: 59 12:53:56 07 Jan 1980 HG ~~RPD 3.9%~~

Hg 1.55 ug/L .000 1.55 TV = 0.141 ug/g ±0.019 ug/g 0.132 ug/g

*** Sample ID: 47Q176 Seq: 60 12:56:21 07 Jan 1980 HG

Hg .766 ug/L .000 .766 0.038 ug

*** Sample ID: 47Q176 DUP Seq: 61 12:58:39 07 Jan 1980 HG RPD <1.0

Hg .759 ug/L .000 .759 0.038 ug

*** Sample ID: 47Q141 Seq: 62 13:01:03 07 Jan 1980 HG

Hg 1.64 ug/L .000 1.64 0.082 ug

*** Sample ID: 47Q141 DUP Seq: 63 13:03:28 07 Jan 1980 HG RPD <1.0

Hg 1.68 ug/L .000 1.68 0.084 ug

Folder: 07APR00A Page 41

13:05:54 07 Jan 1980 Protocol: SYSTEST labsys2

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: 47Q181 Seq: 64 13:05:54 07 Jan 1980 HG

Hg .241 ug/L .000 .241 0.012 ug

*** Sample ID: 47Q181 DUP Seq: 65 13:08:07 07 Jan 1980 HG RPD - 6.0 %

Hg .227 ug/L .000 .227 0.011 ug

*** Sample ID: 47Q182 Seq: 66 13:10:20 07 Jan 1980 HG

Hg .382 ug/L .000 .382 0.019 ug

*** Sample ID: 47Q182 DUP Seq: 67 13:12:36 07 Jan 1980 HG RPD 4.8 %

Hg .364 ug/L .000 .364 0.018 ug

*** Sample ID: 47Q148 Seq: 68 13:14:55 07 Jan 1980 HG

Hg .251 ug/L .000 .251 0.013 ug

*** Sample ID: 47Q148 DUP Seq: 69 13:17:09 07 Jan 1980 HG RPD 4.7 %

Hg .263 ug/L .000 .263 0.013 ug

*** Sample ID: 47Q148 TRP Seq: 70 13:19:23 07 Jan 1980 HG RPD 2.0 %

*** Sample ID: 88QI25 Seq: [illegible] [illegible] 07 Jan 1980 HG

:2

Hg 1.66 ug/L .000 1.66 0.166 ug CORRECTED 0.163

*** Sample ID: 88QI25 DUP Seq: 72 13:[illegible] 07 Jan 1980 HG RPD - <1.0 %

:2

Hg 1.65 ug/L .000 1.65 0.165 ug CORRECTED 0.162 ug

*** Sample ID: 88QI25 SPK Seq: 73 SAP 13:26:44 07 Jan 1980 HG

:2

Hg [illegible] ug/L .000 [illegible] SMC 0.266 ug 100%

*** Sample ID: CCB Seq: 74 13:29:24 07 Jan 1980 HG

Hg -.001 ug/L .000 -.001 <0.050 ug/L

*** Sample ID: CCV Seq: 75 13:31:38 07 Jan 1980 HG

Hg 1.98 ug/L .000 1.98 99%

Folder: 07APR00A Page 42

13:34:18 07 Jan 1980 Protocol: SYSTEST labsys2

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: [illegible] Seq: [illegible] [illegible] 07 Jan 1980 HG CORRECTED

:5

Hg 2.49 ug/L .000 2.49 0.623 ug 0.620 ug

*** Sample ID: 88QI41 DUP Seq: 77 13:36:53 07 Jan 1980 HG RPD - 1.2%

:5

Hg 2.48 ug/L .000 2.48 0.615 ug CORRECTED 0.612 ug

*** Sample ID: 88Q47 Seq: 78 13:39:22 07 Jan 1980 HG

:5

Hg 4.09 ug/L .000 4.09 OVER RANGE - NO DATA.

*** Sample ID: Q118 Seq: 79 13:42:06 07 Jan 1980 HG

:5

Hg 1.78 ug/L .000 1.78 6.91 ug

*** Sample ID: Q118 DUP Seq: 80 13:44:34 07 Jan 1980 HG RPD - 1.7%

:5

Hg 1.81 ug/L .000 1.81 7.02 ug

*** Sample ID: 47Q147 Seq: 81 13:47:04 07 Jan 1980 HG

:2

Hg 1.47 ug/L .000 1.47 0.147 ~~0.074~~ ug JAD 4/13

*** Sample ID: 47Q147 DUP Seq: 82 13:49:32 07 Jan 1980 HG RPD - 1.4%

0.149

*** Sample ID: 47Q190 Seq: 83 13:52:04 07 Jan 1980 HG

Hg 1.15 ug/L .000 1.15 0.058 ug

*** Sample ID: 47Q190 DUP Seq: 84 13:54:30 07 Jan 1980 HG RPD 1.8%

Hg 1.13 ug/L .000 1.13 0.057 ug

*** Sample ID: 47Q179 Seq: 85 13:56:57 07 Jan 1980 HG

Hg .013 ug/L .000 .013 <0.003 ug

*** Sample ID: 47Q179 DUP Seq: 86 13:59:13 07 Jan 1980 HG RPD <1.0

Hg .017 ug/L .000 .017 <0.003 ug

*** Sample ID: Q121 Seq: 87 14:01:30 07 Jan 1980 HG

Hg .398 ug/L .000 .398 ~~0.020~~ 0.483 ug JAD 4/13

Folder: 07APR00A Page 43

14:03:47 07 Jan 1980 Protocol: SYSTEST labsys2

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: Q121 DUP Seq: 88 14:03:47 07 Jan 1980 HG RPD 5.5%

Hg .384 ug/L .000 .384 ~~0.019~~ 0.466 ug JAD 4/13

*** Sample ID: 47Q[illegible] Seq: 89 14:05:07 07 Jan 1980 HG

Hg 2.55 ug/L .000 2.55 0.128 ug

*** Sample ID: 47Q[illegible] DUP Seq: 90 14:08:36 07 Jan 1980 HG RPD <1.0 %

Hg [illegible] ug/L .000 [illegible] ~~0.130~~ ug

*** Sample ID: 47Q149 Seq: 91 14:20:20 07 Jan 1980 HG

Hg 1.54 ug/L .000 1.54 0.077 ug

*** Sample ID: 47Q149 DUP Seq: 92 14:23:00 07 Jan 1980 HG RPD - 1.3 %

Hg 1.52 ug/L .000 1.52 0.076 ug

*** Sample ID: 47Q149 TRP Seq: 93 14:25:27 07 Jan 1980 HG RPD - 2.0 %

Hg 1.51 ug/L .000 1.51 0.076 ug

*** Sample ID: 47Q183 Seq: 94 14:27:47 07 Jan 1980 HG

*** Sample ID: 470183 DUP Seq: 95 14:30:25 07 Jan 1980 HG RPD <1.0

Hg 2.36 ug/L .000 2.36 0.118 ug

*** Sample ID: 470183 SPK Seq: 96 14:32:53 07 Jan 1980 HG

Hg 3.37 ug/L .000 3.37 TV=0.09 0.169 ug 104 %

*** Sample ID: CCB Seq: 97 14:35:31 07 Jan 1980 HG

Hg -.013 ug/L .000 -.013 <0.050 ug/L

*** Sample ID: CCV Seq: 98 14:37:49 07 Jan 1980 HG

Hg 1.94 ug/L .000 1.94 97 %

*** Sample ID: BLANK #2 Seq: 99 14:40:21 07 Jan 1980 HG

Hg .017 ug/L .000 .017 <0.050 ug/L

Folder: 07APR00A Page 44

14:42:39 07 Jan 1980 Protocol: SYSTEST labsys2

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: BLANK#2DUP Seq: 100 14:42:39 07 Jan 1980 HG RPD <1.0 % <0.050 ug/L

Hg .044 ug/L .000 .044

*** Sample ID: 1633B #2 Seq: 101 14:44:57 07 Jan 1980 HG

Hg 1.56 ug/L .000 1.56 TV = 0.141 ug/kg ±0.019 0.143 ug/g

*** Sample ID: 1633#2DUP Seq: 102 14:47:36 07 Jan 1980 HG RPD 1.3 %

Hg 1.54 ug/L .000 1.54 TV = 0.141 ug/kg ±0.019 0.142 ug/g

*** Sample ID: Q116 Seq: 103 14:50:08 07 Jan 1980 HG

Hg .097 ug/L .000 .097 0.116 ug

*** Sample ID: Q116 DUP Seq: 104 14:52:21 07 Jan 1980 HG RPD 1.0 %

Hg .098 ug/L .000 .098 0.117 ug

*** Sample ID: BLANK Seq: 105 14:54:35 07 Jan 1980 HG

Hg .051 ug/L .000 .051

*** Sample ID: BLANK Seq: 106 14:58:58 07 Jan 1980 HG

*** Sample ID: BLANK DUP Seq: 107 15:01:11 07 Jan 1980 HG RPD - 5.0%

Hg .046 ug/L .000 .046 0.050 ug/L

*** Sample ID: 88Q47 88QF47 Seq: 108 15:03:27 07 Jan 1980 HG

:5

Hg .849 ug/L .000 .849 0.212 ug CORRECTED 0.209 ug

*** Sample ID: 88Q47 DUP 88QF47 Seq: 109 15:05:51 07 Jan 1980 HG RPD - 2.8%

:5

Hg .826 ug/L .000 .826 0.207 ug CORRECTED 0.204 ug

*** Sample ID: 88QI44 Seq: 110 15:11:55 07 Jan 1980 HG

Hg .058 ug/L .000 .058 REPEAT

*** Sample ID: 88QI44 DUP Seq: 111 15:14:14 07 Jan 1980 HG RPD - 10.5% OUT

Hg .052 ug/L .000 .052 REPEAT

Folder: 07APR00A Page 45

15:17:25 07 Jan 1980 Protocol: SYSTEST labsys2

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: 88QI44 Seq: 112 15:17:25 07 Jan 1980 HG RPD 3.9%

Hg .051 ug/L .000 .051 0.003

*** Sample ID: 88QI44 DUP Seq: 113 15:19:44 07 Jan 1980 HG

Hg .053 ug/L .000 .053 0.003

*** Sample ID: 88QI44 TRP Seq: 114 15:22:03 07 Jan 1980 HG RPD 9.4%

Hg .056 ug/L .000 .056 0.003

*** Sample ID: 88QI37 Seq: 115 15:24:22 07 Jan 1980 HG

Hg 7.91 ug/L .000 7.91 REPEAT - OVER RANGE

*** Sample ID: 88QI37 DUP Seq: 116 15:28:41 07 Jan 1980 HG

Hg 8.09 ug/L .000 8.09

*** Sample ID: 88QI37 SPK Seq: 117 15:31:42 07 Jan 1980 HG

Hg 8.92 ug/L .000 8.92

*** Sample ID: CCB Seq: 118 15:34:32 07 Jan 1980 HG

*** Sample ID: CCV Seq: 119 15:36:52 07 Jan 1980 HG

Hg 1.93 ug/L .000 1.93 97%

*** Sample ID: 88QI37 1/10 Seq: 120 15:41:32 07 Jan 1980 HG

Hg .878 ug/L .000 .878 0.439 ug

*** Sample ID: 88QI37 DUP 1/10 Seq: 121 15:44:04 07 Jan 1980 HG

Hg .852 ug/L .000 .852 0.426 ug

*** Sample ID: 88QI37 SPK 1/10 Seq: 122 15:46:28 07 Jan 1980 HG

Hg 1.82 ug/L .000 1.82 1.500 ug 0.91 ug 91%

*** Sample ID: CCB Seq: 123 15:49:04 07 Jan 1980 HG

Hg -.016 ug/L .000 -.016

<0.050 ug/L

Folder: 07APR00A Page 46

15:51:24 07 Jan 1980 Protocol: SYSTEST labsys2

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: CCV Seq: 124 15:51:24 07 Jan 1980 HG

Hg 1.88 ug/L .000 1.88 94%

4/11/2000 Analytical Data

```
Protocol: SYSTEST   labsys2
          4/11/00   Rev: 3.001   Time: 19:18:43  11 Jan 1980
Folder: 10APR00C    Seq: 44                     Print: On
User:               Batch:            Id: Std6Rep1   Cup: 1 11 Gas:    0.23 LPM
State: Idle  SAH                                     Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 041100M
cup Id        Extended id          Weight Volume Macro check Help
 1 ICB                             1.00000 1.00000
 2 [redacted]                      1.00000 1.00000
 3 88Q[redacted] DUP               1.00000 1.00000
 4 [redacted]Q146                  1.00000 1.00000
 [redacted] DUP                    1.00000 1.00000
 6 Q112                            1.00000 1.00000
 7 Q112 DUP                        1.00000 1.00000
 8 [redacted]                      1.00000 1.00000
 9 47Q187 DUP                      1.00000 1.00000
10 4[redacted]Q184                 1.00000 1.00000
1[redacted] DUP                    1.00000 1.00000
12 [redacted]                      1.00000 1.00000
13 [redacted] DUP                  1.00000 1.00000
14 MVS#2                           1.00000 1.00000
15 MVS#2 DUP                       1.00000 1.00000
                                                                        PgDn

Cup 1. ID: ICB                                   Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 19:18:47  11 Jan 1980
Folder: 10APR00C   Seq: 44                     Print: On
User:              Batch:            Id: Std&Rep1   Cup: 1 11 Gas:    0.23 LPM
State: Idle                                        Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 041100M                                    PgUp
cup Id          Extended id          Weight Volume Macro check Help
16 M[redacted]                       1.00000 1.00000
17 MVS#3 DUP                         1.00000 1.00000
18 MVS#3 TRIP                        1.00000 1.00000
19 MVS#[redacted]                    1.00000 1.00000
20 M[redacted]#4 DUP                 1.00000 1.00000
21 [redacted] SPI                    1.00000 1.00000
22 BLANK                             1.00000 1.00000
23 BLANK DUP                         1.00000 1.00000
24 CCV                               1.00000 1.00000
25 CCB                               1.00000 1.00000
26                                   1.00000 1.00000
27                                   1.00000 1.00000
28                                   1.00000 1.00000
29                                   1.00000 1.00000
30                                   1.00000 1.00000
                                                                          PgDn

Cup 16 ID: MVS#3                          Cell entry, Ins to switch
```

*** Standard: 1 Rep: 1 Seq: 38 18:01:55 11 Jan 1980 HG

Hg .000 ug/L -2217
Ave. Int. = -2217 S. D. = 0

*** Standard: 2 Rep: 1 Seq: 39 18:04:13 11 Jan 1980 HG

Hg .050 ug/L 4747
Ave. Int. = 4747 S. D. = 0

*** Standard: 3 Rep: 1 Seq: 40 18:06:41 11 Jan 1980 HG

Hg .200 ug/L 21333
Ave. Int. = 21333 S. D. = 0

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Standard: 4 Rep: 1 Seq: 41 18:09:00 11 Jan 1980 HG

Hg 1.00 ug/L 112025
Ave. Int. = 112025 S. D. = 0

*** Standard: 5 Rep: 1 Seq: 42 18:11:32 11 Jan 1980 HG

Hg 2.00 ug/L 228367
Ave. Int. = 228367 S. D. = 0

*** Standard: 6 Rep: 1 Seq: 43 - 18:14:15 11 Jan 1980 HG

Hg 3.00 ug/L 347511
Ave. Int. = 347511 S. D. = 0

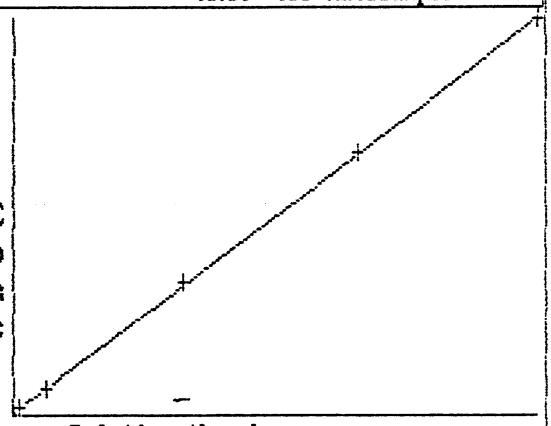
Protocol: SYSTEST Labsys2
Rev: 3.001 Time: 18:15:37 11 Jan 1980
Folder: 10APR00C Seq: 44 Print: On
User: Batch: Id: Std6Rep1 Cup: 1 11 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted LiNear	
S1	.000	.001	.001	Quadratic	
S2	.050	.061	.011	WtdLinear	
S3	.200	.204	.004		C
S4	1.00	.985	-.015	Accept	o
S5	2.00	1.99	-.013		n
S6	3.00	3.01	.013	StdAdd	c

A .0000000 r .999953
B 8.61346e-6 C 1.98718e-2



	Mean	%RSD	
S1	-2217	0	-2217
S2	4747	0	4747
S3	21333	0	21333
S4	112025	0	112025
S5	228367	0	228367
S6	347511	0	347511

New calibration coefficients stored

*** Check Standard: 2 Ck2 Seq: 45 19:22:56 11 Jan 1980 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		105.	.628	.600	ug/L	.000

*** Sample ID: ICB Seq: 46 19:25:23 11 Jan 1980 HG

Hg .027 ug/L .000 .027 <0.050

*** Sample ID: 88QI26 Seq: 47 19:27:[illegible] 11 Jan 1980 HG

Hg 4.36 ug/L .000 4.36 REPEAT

*** Sample ID: 88QI26 1/10 Seq: 48 19:30:18 11 Jan 1980 HG

Hg .466 ug/L .000 .466 0.233 ug CORRECTED 0.230 ug

*** Sample ID: 88QI26 DUP 1/10 Seq: 49 19:32:33 11 Jan 1980 HG RPD 1.7 %

Hg .458 ug/L .000 .458 0.229 ug CORRECTED 0.226 ug

*** Sample ID: 88QI46 Seq: 50 19:34:46 11 Jan 1980 HG

NO DATA

Hg .011 ug/L .000 .011 NO DATA

*** Sample ID: 88QI46 Seq: 51 20:23:00 11 Jan 1980 HG

Hg 6.09 ug/L .000 6.09 REPEAT

*** Sample ID: 88QI46 1/10 Seq: 52 20:26:33 11 Jan 1980 HG

Hg .623 ug/L .000 .623 0.312 ug CORRECTED 0.309 ug

*** Sample ID: 88QI46 DUP 1/10 Seq: 53 20:28:47 11 Jan 1980 HG RPD <1.0 %

Hg .627 ug/L .000 .627 0.314 ug CORRECTED 0.311 ug

*** Sample ID: Q112 Seq: 54 20:31:06 11 Jan 1980 HG

Hg .985 ug/L .000 .985 9.11 ug

*** Sample ID: Q112 DUP 1/10 Seq: 55 20:33:30 11 Jan 1980 HG RPD 3.4 %

Hg .952 ug/L .000 .952 8.80 ug

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: 47Q187					Seq: 56	20:35:56 11 Jan 1980 HG		
Hg	1.38	ug/L	.000	1.38			0.069 ug	
*** Sample ID: 47Q187 DUP					Seq: 57	20:38:24 11 Jan 1980 HG	RPD - 2.2%	
Hg	1.35	ug/L	.000	1.35			0.068 ug	
*** Sample ID: 47Q184					Seq: 58	20:40:48 11 Jan 1980 HG		
Hg	.048	ug/L	.000	.048			<0.003 ug	
*** Sample ID: 47Q184 DUP					Seq: 59	20:43:01 11 Jan 1980 HG	RPD <1.0	
Hg	.036	ug/L	.000	.036			<0.003 ug	
*** Sample ID: MVS#1	1/10				Seq: 60	20:47:13 11 Jan 1980 HG		
Hg	.176	ug/L	.000	.176			0.175 ug/g	
*** Sample ID: MVS#1 DUP	1/10				Seq: 61	20:51:04 11 Jan 1980 HG	RPD 5.9%	
Hg	.166	ug/L	.000	.166			0.165 ug/g	
*** Sample ID: MVS#2	1/10				Seq: 62	20:53:17 11 Jan 1980 HG		
Hg	.156	ug/L	.000	.156			0.156 ug/g	
*** Sample ID: MVS#2 DUP	1/10				Seq: 63	20:55:30 11 Jan 1980 HG	RPD 6.8%	
Hg	.167	ug/L	.000	.167			0.167 ug/g	
*** Sample ID: MVS#3	1/10				Seq: 64	20:57:44 11 Jan 1980 HG		
Hg	.139	ug/L	.000	.139			0.138 ug/kg	
*** Sample ID: MVS#3 DUP	1/10				Seq: 65	20:59:58 11 Jan 1980 HG	RPD <1.0%	
Hg	.140	ug/L	.000	.140			0.139 ug/kg	
*** Sample ID: MVS#3 TRIP	1/10				Seq: 66	21:03:28 11 Jan 1980 HG	RPD 6.3%	
Hg	.148	ug/L	.000	.148			0.147 ug/kg	
*** Sample ID: MVS#4	1/10				Seq: 67	21:06:12 11 Jan 1980 HG		
Hg	.175	ug/L	.000	.175			0.169 ug/kg	REPEAT

LOSE AS BATCH LCS

TV = 0.141 ug ± 0.019

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: MVS#4 DUP 1/10 Seq: 68 21:[illegible]:36 11 Jan 1980 HG RPD 21.5 %

Hg .141 ug/L .000 .141 0.137 ug/g REPEAT

*** Sample ID: MVS#4 SPI 1/10 Seq: 69 21:10:40 11 Jan 1980 HG

Hg 1.29 ug/L .000 1.29 REPEAT

*** Sample ID: MVS#4 1/10 Seq: 70 21:21:37 11 Jan 1980 HG

Hg .171 ug/L .000 .171 0.166 ug/g

*** Sample ID: MVS#4 DUP 1/10 Seq: 71 21:23:50 11 Jan 1980 HG

Hg .176 ug/L .000 .176 0.176 ug/g

*** Sample ID: MVS#4 SPI 1/10 Seq: 72 21:26:04 11 Jan 1980 HG

Hg 1.27 ug/L .000 1.27 1.0-0.07 ug/g 1.23 ug/g 110%

*** Sample ID: BLANK Seq: 73 21:28:24 11 Jan 1980 HG

Hg .031 ug/L .000 .031 <0.050 ug/L

*** Sample ID: BLANK DUP Seq: 74 21:30:43 11 Jan 1980 HG

Hg .045 ug/L .000 .045 <0.050 ug/L

*** Sample ID: CCV Seq: 75 21:32:59 11 Jan 1980 HG

Hg 2.15 ug/L .000 2.15 108%

*** Sample ID: CCB Seq: 76 21:35:25 11 Jan 1980 HG

Hg .025 ug/L .000 .025 <0.050 ug/L

4/14/2000 Analytical Data

Protocol: SYSTEST labsys2
Rev: 3.001 Time: 12:21:21 14 Apr 2000
Folder: 14APR00A Seq: 37 Print: On
User: Batch: Id: CCV Cup: 1 19 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

AUTOSAMPLER: Rack entry Rack 041400A

cup	Id	Extended id	Weight	Volume	Macro	check	Help
1	ICB		1.00000	1.00000			
2	ORB10 184		1.00000	1.00000			
3	ORB10184DU		1.00000	1.00000			
4	[illegible]		1.00000	1.00000			
5	O#1-3184DU		1.00000	1.00000			
6	O#1-3 183		1.00000	1.00000			
7	O#1-3183DU	1:20	1.00000	1.00000			
8	O#1-5 18[illegible]		1.00000	1.00000			
9	O#1-518[illegible]DU	1:50	1.00000	1.00000			
10	I#1-5[illegible]3		1.00000	1.00000			
11	I#1-[illegible]183DU	1:25	1.00000	1.00000			
12	I#[illegible]-5183TR		1.00000	1.00000			
13	I[illegible]2-5183		1.00000	1.00000			
14	[illegible]#2-5183DU	1:50	1.00000	1.00000			
15	[illegible]		1.00000	1.00000			

PgDn

Cup 1 ID: ICB Cell entry, Ins to switch

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 12:21:32  14 Apr 2000
Folder: 14APR00A   Seq: 37                     Print: On
User:              Batch:            Id: CCV        Cup: 1 19 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 0414000A                                    PgUp
cup Id          Extended id          Weight Volume Macro check Help
16 [redacted]                        1.00000 1.00000
1[redacted]                          1.00000 1.00000
18 CCB                               1.00000 1.00000
19 CCV                               1.00000 1.00000
20                                   1.00000 1.00000
21                                   1.00000 1.00000
22                                   1.00000 1.00000
23                                   1.00000 1.00000
24                                   1.00000 1.00000
25                                   1.00000 1.00000
26                                   1.00000 1.00000
27                                   1.00000 1.00000
28                                   1.00000 1.00000
29                                   1.00000 1.00000
30                                   1.00000 1.00000
                                                                          PgDn

Cup 16 ID: O#2-5183                          Cell entry, Ins to switch
```

*** Standard: 1 Rep: 1 Seq: 0 09:38:43 14 Apr 2000 HG

Hg .000 ug/L -3758
Ave. Int. = -3758 S. D. = 0

*** Standard: 2 Rep: 1 Seq: 1 09:41:05 14 Apr 2000 HG

Hg .050 ug/L 6846
Ave. Int. = 6846 S. D. = 0

*** Standard: 3 Rep: 1 Seq: 2 09:43:22 14 Apr 2000 HG

Hg .200 ug/L 32953
Ave. Int. = 32953 S. D. = 0

*** Standard: 4 Rep: 1 Seq: 3 09:45:56 14 Apr 2000 HG

Hg 1.00 ug/L 177037
Ave. Int. = 177037 S. D. = 0

*** Standard: 5 Rep: 1 Seq: 4 09:48:28 14 Apr 2000 HG

Hg 2.00 ug/L 350207
Ave. Int. = 350207 S. D. = 0

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Standard: 6 Rep: 1 Seq: 5 09:50:59 14 Apr 2000 HG

Hg 3.00 ug/L 511063
Ave. Int. = 511063 S. D. = 0

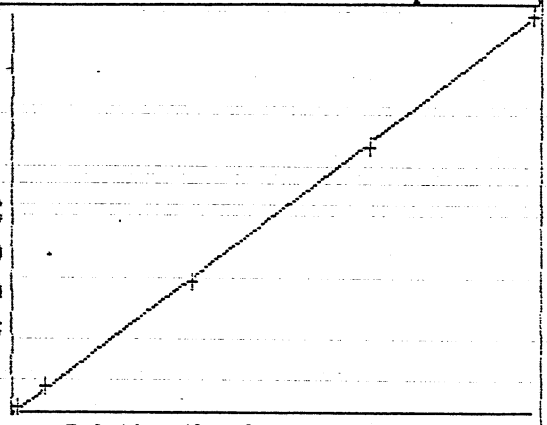
Protocol: SYSTEST labsys2
Rev: 3.001 Time: 09:52:15 14 Apr 2000
Folder: 14APR00A Seq: 6 Print: On
User: Batch: Id: Std6Rep1 Cup: 1 29 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted LiNear	
S1				Quadratic	
S2	.050	.035	-.015	WtdLinear	
S3	.200	.187	-.013		C
S4	1.00	1.03	.025	Accept	o
S5	2.00	2.03	.033		n
S6	3.00	2.97	-.031	StdAdd	c

A .0000000 r .999752
B 5.81987e-6 C -4.88721e-3



Relative Absorbance

	Mean	%RSD	
S1			-3758?
S2	6846	0	6846
S3	32953	0	32953
S4	177037	0	177037
S5	350207	0	350207
S6	511063	0	511063

New calibration coefficients stored

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Check Standard: 2 Ck2 Seq: 6 10:06:13 14 Apr 2000 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
?Hg		100.	.603	.600	ug/L	.000

*** Sample ID: ICB Seq: 7 10:09:57 14 Apr 2000 HG

Hg -.015 ug/L .000 -.015

*** Sample ID: ORB10 184 Seq: 8 10:12:10 14 Apr 2000 HG

Hg .061 ug/L .000 .061 REPEAT

*** Sample ID: ORB10184DU Seq: 9 10:14:23 14 Apr 2000 HG RSD↑

Hg .072 ug/L .000 .072 REPEAT

*** Sample ID: ORB10 184 Seq: 10 10:26:28 14 Apr 2000 HG

Hg .070 ug/L .000 .070 REPEAT

*** Sample ID: ORB10184DU Seq: 11 10:28:41 14 Apr 2000 HG RSD↑

Hg .063 ug/L .000 .063 REPEAT

*** Sample ID: ORB10 184 Seq: 12 10:35:41 14 Apr 2000 HG

Hg .062 ug/L .000 .062

*** Sample ID: ORB10184DU Seq: 13 10:40:04 14 Apr 2000 HG

Hg .066 ug/L .000 .066

*** Sample ID: O#1-3184 Seq: 14 10:47:17 14 Apr 2000 HG

Hg 16.8 ug/L .000 16.8

*** Sample ID: O#1-3184 Seq: 15 10:56:32 14 Apr 2000 HG

Hg 1.05 ug/L .000 1.05

*** Sample ID: O#1-3184DU Seq: 16 10:58:58 14 Apr 2000 HG

Hg 1.08 ug/L .000 1.08

*** Sample ID: O#1-3 183 Seq: 17 11:02:25 14 Apr 2000 HG

Hg .942 ug/L .000 .942

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: O#1-3183DU					Seq: 18	11:04:43 14 Apr 2000 HG		
Hg	[illegible]	ug/L	.000	[illegible]				
*** Sample ID: CCB					Seq: 19	11:24:26 14 Apr 2000 HG		
Hg	-.018	ug/L	.000	-.018				
*** Sample ID: O#1-5183					Seq: 20	11:26:55 14 Apr 2000 HG		
Hg	1.56	ug/L	.000	1.56				
*** Sample ID: O#1-5183DU					Seq: 21	11:29:19 14 Apr 2000 HG		
Hg	1.53	ug/L	.000	1.53				
*** Sample ID: I#1-5183					Seq: 22	11:33:18 14 Apr 2000 HG		
Hg	3.45	ug/L	.000	3.45				
*** Sample ID: I#1-5183					Seq: 23	11:38:41 14 Apr 2000 HG		
Hg	2.79	ug/L	.000	2.79				
*** Sample ID: I#1-5183DU					Seq: 24	11:41:19 14 Apr 2000 HG		
Hg	2.74	ug/L	.000	2.74				
*** Sample ID: I#1-5183TR					Seq: 25	11:43:53 14 Apr 2000 HG		
Hg	2.77	ug/L	.000	2.77				
*** Sample ID: I#2-5183					Seq: 26	11:48:07 14 Apr 2000 HG		
Hg	3.61	ug/L	.000	3.61				
*** Sample ID: I#2-5183					Seq: 27	11:53:10 14 Apr 2000 HG		
Hg	1.49	ug/L	.000	1.49				
*** Sample ID: I#2-5183DU					Seq: 28	11:55:35 14 Apr 2000 HG		
Hg	1.47	ug/L	.000	1.47				
*** Sample ID: I#2-5183SP					Seq: 29	11:58:44 14 Apr 2000 HG		
Hg	2.60	ug/L	.000	2.60				

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: CCB					Seq: 30	12:01:16 14 Apr 2000 HG		
Hg	-.013	ug/L	.000	-.013				
*** Sample ID: CCV					Seq: 31	12:03:29 14 Apr 2000 HG		
Hg	[illegible]	ug/L	[illegible]	[illegible]				
*** Sample ID: O#2-5183					Seq: 32	12:10:35 14 Apr 2000 HG		
Hg	3.34	ug/L	.000	3.34				
*** Sample ID: O#2-5183					Seq: 33	12:13:13 14 Apr 2000 HG		
Hg	1.36	ug/L	.000	1.36				
*** Sample ID: O#2-5183DU					Seq: 34	12:15:37 14 Apr 2000 HG		
Hg	1.37	ug/L	.000	1.37				
*** Sample ID: CCB					Seq: 35	12:18:00 14 Apr 2000 HG		
Hg	-.019	ug/L	.000	-.019				
*** Sample ID: CCV					Seq: 36	12:20:14 14 Apr 2000 HG		
Hg	2.17	ug/L	.000	2.17				

Dry Weight Analysis Data

Dry Weight/Total Volatile Solids (TVS) Notebook # 2000-033

Sample Number	1397023	1397024	1397025	[illegible]	[illegible]	[illegible]
Client/Pan #	UNIT 1 1 RUN 1	UNIT 1 2 RUN 1	UNIT 1 3 RUN 1	UNIT 3 4 RUN 1	UNIT 3 5 RUN 2	UNIT 3 6 RUN 3
Wt of Pan + Sample	10.3556	10.2680	10.0289	10.6964	10.3702	10.7882
Wt after Drying (1)	8.4350	8.2750	8.6488	9.2401	9.0424	9.4057
Wt after Drying (2)	8.4480	8.2909	8.6620	9.2538	9.0[illegible]	9.4190
Wt after Drying (3)	8.4287	8.2705	8.6449	9.2338	9.[illegible]426	9.4027
Wt of Pan or Wt After Ignition	0.9963	0.9962	1.0024	1.0026	1.0003	0.9973
Difference	7.4324	7.2743	7.6425	8.23[illegible]2	8.0421	8.4054
Sample amount g	9.3593	9.2718	9.0265	9.[illegible]938	9.3699	9.7909
Result	79.4%	78.5%	84.7%	[illegible]	[illegible]	[illegible]

Sample Number						
Client/Pan #						
Wt of Pan + Sample						
Wt after Drying (1)						
Wt after Drying (2)						
Wt after Drying (3)						
Wt of Pan or Wt After Ignition						
Difference						
Sample amount g						
Result						

Sample Number				
Client/Pan #				
Wt of Pan + Sample				
Wt after Drying (1)				
Wt after Drying (2)				
Wt after Drying (3)				
Wt of Pan or Wt After Ignition				
Difference				
Sample amount g				
Result				

Batch Number: —

Notes:
METCO ENV.
(metals)

The sample should be weighed at least twice to a constant weight. If necessary weigh a third time. Use final weighing for calculation. Criteria 0.5mg or 4%. Each additional weighing is 1 hour.

Analyst: [illegible] Date: 4/5/00

TestAmerica INCORPORATED

METCO Particulate Analysis

METCO Environmental

Particulate Analysis EPA Method 17

Thimbles and Backup Filters

Job Number 99-184 Location Mt. Pleasant, In

Job Name TXU - MOSES Unit Tested Unit 1 Baghouse A Inlet

Desiccator Time In					
Desiccator Time Out					

Run No. 1 1 of 2	Thimble No. Q 118		Filter No. 47Q 148		
Thimble Final Weight (g)	12.4455				
Thimble Initial Weight (g)	3.2777				
Particulate (g)	9.1678				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.1149	0			

Filter and Particulate Average (g) 0.1149

Initial Filter Weight (g) 0.1161

Filter Particulate Average (mg) 0

Thimble Particulate Average (mg) 9,167.8

Total Particulate (mg) 9,167.8

Run No. 1 2 of 2	Thimble No. Q 90		Filter No. 47Q 176		
Thimble Final Weight (g)	12.3609				
Thimble Initial Weight (g)	3.4220				
Particulate (g)	8.9389				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.1126				

Filter and Particulate Average (g) 0.1126

Initial Filter Weight (g) 0.1158

Filter Particulate Average (mg) 0

Thimble Particulate Average (mg) 8,938.9

Total Particulate (mg) 8,938.9

Run No. 2 1 of 1	Thimble No. Q 121		Filter No. 47Q 181		
Thimble Final Weight (g)	16.8362				
Thimble Initial Weight (g)	3.5195				
Particulate (g)	13.3167				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.1053				

Filter and Particulate Average (g) 0.1053

Initial Filter Weight (g) 0.1151

Filter Particulate Average (mg) 0

Thimble Particulate Average (mg) 13,316.7

Total Particulate (mg) 13,316.7

DPB

MS

Analyst

METCO Environmental

Particulate Analysis EPA Method 17

Thimbles and Backup Filters

Job Number 99-184 Location Mt. Pleasant, Tx.

Job Name TXU - MOSES Unit Tested Unit 1 Baghouse A Inlet

Desiccator Time In					
Desiccator Time Out	2/99				

Run No. 3 1 of 2	Thimble No. Q116		Filter No. 47Q141		
Thimble Final Weight (g)	16.3436				
Thimble Initial Weight (g)	3.5786				
Particulate (g)	12.7650				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.1174				

Filter and Particulate Average (g) 0.1174

Initial Filter Weight (g) 0.1196

Filter Particulate Average (mg) 0

Thimble Particulate Average (mg) 12,765.0

Total Particulate (mg) 12,765.0

Run No. 3 1 of 1	Thimble No. Q112		Filter No. 47Q182		
Thimble Final Weight (g)	13.9138				
Thimble Initial Weight (g)	3.6687				
Particulate (g)	10.2451				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.1148				

Filter and Particulate Average (g) 0.1148

Initial Filter Weight (g) 0.1153

Filter Particulate Average (mg) 0

Thimble Particulate Average (mg) 10,245.1

Total Particulate (mg) 10,245.1

Run No.	Thimble No.		Filter No.		
Thimble Final Weight (g)					
Thimble Initial Weight (g)					
Particulate (g)					
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)					

Filter and Particulate Average (g)

Initial Filter Weight (g)

Filter Particulate Average (mg)

Thimble Particulate Average (mg)

Total Particulate (mg)

DPS

MK

Analyst

METCO Environmental

Particulate Analysis EPA Method 5

Stack Filters

Job Number 99-184 Location Mt. Pleasant, Ia.

Job Name TXU - MOSES Unit Tested # 1 Baghouse A Outlet

Desiccator Time In					
Desiccator Time Out	1355 2/29				

Run No. 1	Filter No. 47Q147				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.1277	✓			

Filter & Particulate Average (g) 0.1277 ✓
Initial Filter Weight (g) 0.1156 ✓
Total Particulate (mg) 12.1 ✓

Run No. 2	Filter No. 47Q149				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.1212	✓			

Filter & Particulate Average (g) 0.1212 ✓
Initial Filter Weight (g) 0.1142 ✓
Total Particulate (mg) 7.0 ✓

Run No. 3	Filter No. 47Q180				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)		–			
Filter & Particulate (g)	0.1196	✓			

Filter & Particulate Average (g) 0.1196 ✓
Initial Filter Weight (g) 0.1160 ✓
Total Particulate (mg) 3.6 ✓

DPS

MH
Analyst

PHILIP ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0
• AIHA ACCREDITATION NO. 100439
• NY DOH 10903
• PA DER 06-353
• NJ DEP 77678

ANALYTICAL REPORT

Client: METCO Environmental

Report to: Doug Saathoff
METCO Environmental
P. O. Box 598
Addison TX 75001

Project: 191487
Received: 20-MAR-00
Reported: 03-APR-00

Project Description: Monticello Plant, TXU, Mount Pleasant Texas
Short Prox/Cl2/Hg - 2 Units, 3 Runs each

	AS RECEIVED BASIS	DRY BASIS	UNITS	METHOD	DATE	ANALYST
Unit 1, Run 1 - MoSES						
Lab Sample: 1397023						
Moisture, Total	22.8		%	D 3302	20-MAR-00	GLB
Chlorine, Total	0.02	0.02	%	EPA 300.0	27-MAR-00	DRK
SHORT PROX - COAL						
Ash	16.4	21.2	%	D 3174	28-MAR-00	VJO
Sulfur	0.45	0.58	%	D 4239	27-MAR-00	VJO
Heating Value	6350	8220	BTU/lb	D 3286	28-MAR-00	VJO
Unit 1, Run 2 - MoSES						
Lab Sample: 1397024						
Moisture, Total	22.9		%	D 3302	20-MAR-00	GLB
Chlorine, Total	0.01	0.01	%	EPA 300.0	27-MAR-00	DRK
SHORT PROX - COAL						
Ash	15.0	19.5	%	D 3174	28-MAR-00	VJO
Sulfur	0.49	0.64	%	D 4239	27-MAR-00	VJO
Heating Value	6440	8340	BTU/lb	D 3286	28-MAR-00	VJO
Unit 1, Run 3 - MoSES						
Lab Sample: 1397025						
Moisture, Total	23.3		%	D 3302	20-MAR-00	GLB
Chlorine, Total	0.02	0.02	%	EPA 300.0	27-MAR-00	DRK
SHORT PROX - COAL						
Ash	21.1	27.5	%	D 3174	28-MAR-00	VJO
Sulfur	1.19	1.55	%	D 4239	27-MAR-00	VJO
Heating Value	5940	7740	BTU/lb	D 3286	28-MAR-00	VJO

Philip Analytical Services
Quality Assurance Protocol

PAS Sample #: 1397028

Client Name: Metco

PAS Project #: 191487

Job ID :

Units: mg/l

O1 SUMMARY FORM

Sample # & Parameter	Matrix Spike				Matrix Spike Duplicate				Laboratory Control Sample		
	Sample Conc.	Spike Conc.	Matrix Spike Conc.	Recovery	Matrix Spike Dup Conc.	Recovery	Precision RPD	Method Blank	Spikes Conc.	Found Conc.	Recovery
1397028-Chloride	1.442	10.000	12.376	109	14.053	126	13	0.107	10.000	10.045	100

Sample # & Parameter	Matrix Spike				Duplicate			Laboratory Control Sample			Method Blank	Detection Limits
	Sample Conc.	Spike Conc.	Matrix Spike Conc.	Recovery	Sample Conc.	Sample Duplicate Conc.	Precision RPD	Spikes Conc.	Found Conc.	Recovery		
1397028-Chloride	1.442	10.000	12.376	109	1.442	1.367	5	10.000	10.045	100	0.107	1.00

Matrix Spike	75 - 125
Laboratory Control Sample	80 - 120
Duplicate	0 - 20

SN 329623

TU SYSTEM COMPANIES

№ 1777

SHIPPING ORDER

191487

A

____ SAFETY RELATED ✓ NON-SAFETY RELATED ____ HAZARDOUS MATERIAL ____ RADIOACTIVE ____ RETURNED TO WHSE

WAREHOUSE	DATE PREPARED
Montville Plant	3-17-00

VENDOR / SHIP TO	ADDRESS	CITY	STATE	ZIP
Philip Analytical Service	[illegible]	Mattiville Pike	Reading Pa.	[illegible]

P.O. NUMBER	MR REFERENCE NUMBER

DATE RECEIVED (FOR DISCREPANCIES)	DO # (MINING)	OS&D/RUC NO. (PROD)

MATERIAL SHIPPED FOR:

____ REPAIR
____ CALIBRATION
____ FABRICATION
✓ TESTING
____ SALE TO OUTSIDE PARTY
____ DISCREPANCY
____ SALVAGE SALE
____ OTHER

DISCREPANCY TYPE

____ DAMAGE
____ NONCONFORMING
____ OVERAGE
____ CONCEALED DAMAGE

RETURN FOR:
____ CREDIT
____ EXCHANGE

B

P.O. ITEM NUMBER	TSN	UNIT OF MEASURE	ORDER QUANTITY	RECEIVED QUANTITY	SERIAL NUMBER	REMARKS / DESCRIPTION
		EA	1			[illegible]
						FOR [illegible]
						[illegible]
						[illegible]

SHIPPING INSTRUCTIONS:

VENDOR AUTHORIZING RETURN ____

RETURN AUTHORIZATION NO. ____

VENDOR PHONE NUMBER ____

CHG ORG	ORG CHG	ACCOUNT PRIME	ACCOUNT SUB	EXP CODE	COST ELEMENT	PROJECT/ VEHICLE	LOC/ USER	ACT OR PROP	AMOUNT
[illegible]				[illegible]		[illegible]	[illegible]		

PREPARED BY	DATE
[illegible]	3-17-00

C

FREIGHT: ____ PREPAID ____ COLLECT

FOB: ____ ORIGIN ____ DESTINATION

SHIPPED VIA TOC Ex

DATE SHIPPED 3-17-00

PROTECTION CLASSIFICATION LEVEL (NUCLEAR) !

BILL OF LADING NO. ____

SHIPPER SIGNATURE & DATE ____

WAREHOUSE SIGNATURE	DATE
[signature]	3 17 00
APPROVED: rec'd @ lab: Nguenauzex / PAS Rdg	DATE: 3/20/00 @ 0900

D

COMMENTS

Tubes [illegible] taken from Unit 1 and Unit 2 Feeders

See attachment for details, [illegible]

ROUTING

ORIGINAL - INVENTORY ACCT GREEN - PROCUREMENT/RESOURCE RECOVERY CANARY - ATTACH TO MATERIAL PINK - SITE ACCT GOLDENROD - WHSE

APPENDIX E

Unit Operational Data

MOSES Unit 1 EPA Mercury Test Data - 02/22/2000

Date	Unit Load	Nox	SO2	CO2	O2	Opacity	Stack Moisture	Stack Flow	Stack Temp
	1cqmw.pv	1d224.pv	1d222.pv	1d228.pv	1d182.pv	1d180env.pv	1d229.pv	1d221.pv	1d220.pv
	MW	PPM	PPM	%	%	%	%	MCFH	DEGF
2/22/00 8:45	577.0	210.6	662.8	12.8	6.0	15.9	12.6	99.6	365.0
2/22/00 9:00	576.5	212.0	661.8	12.8	6.0	16.1	15.6	100.6	365.2
2/22/00 9:15	576.7	211.7	682.4	12.8	5.9	15.3	10.8	100.3	365.9
2/22/00 9:30	577.1	214.6	663.9	12.7	6.0	15.3	13.1	100.6	367.1
2/22/00 9:45	576.2	211.4	690.2	12.8	6.0	14.9	13.7	100.1	366.1
2/22/00 10:00	576.6	213.2	660.7	12.8	6.1	15.6	12.9	100.4	367.1
2/22/00 10:15	576.7	223.6	673.0	12.8	6.0	15.0	7.6	100.9	367.0
2/22/00 10:30	577.6	216.0	665.8	12.8	6.0	14.6	12.1	100.0	370.0
2/22/00 10:45	577.0	213.9	687.3	12.9	6.1	14.9	13.6	100.4	369.0
2/22/00 11:00	576.8	212.4	666.6	12.9	6.1	16.7	11.9	101.1	370.0
2/22/00 11:15	575.7	216.8	677.7	12.9	6.2	15.4	11.7	102.2	370.1
Run 1 Avg.	576.7	214.2	672.0	12.8	6.0	15.4	12.3	100.6	367.5
2/22/00 12:00	576.2	211.8	669.8	12.8	6.4	17.0	12.4	103.4	374.8
2/22/00 12:15	577.0	209.0	668.9	12.8	6.3	21.2	13.8	102.6	373.9
2/22/00 12:30	576.4	206.4	671.8	12.8	6.3	17.5	11.2	101.6	373.0
2/22/00 12:45	577.1	211.0	643.5	12.7	6.5	18.9	13.4	103.0	373.1
2/22/00 13:00	577.0	211.6	665.1	12.7	6.5	18.6	12.6	103.0	373.0
2/22/00 13:15	576.9	211.7	641.0	12.5	6.6	20.7	13.5	104.9	374.0
2/22/00 13:30	578.8	214.9	653.7	12.5	6.5	18.8	10.5	102.6	373.1
2/22/00 13:45	576.2	214.2	629.8	12.4	6.5	20.7	13.4	104.2	371.0
2/22/00 14:00	576.2	216.5	650.1	12.4	6.6	20.1	12.0	104.1	373.8
2/22/00 14:15	578.0	225.4	656.0	12.4	6.6	21.6	11.5	105.4	375.0
2/22/00 14:30	576.5	208.4	648.3	12.5	6.5	19.9	12.0	102.2	374.0
2/22/00 14:45	577.5	210.9	652.2	12.5	6.5	19.3	12.2	103.0	374.0
2/22/00 15:00	576.8	219.1	616.9	12.5	6.8	21.4	12.3	104.1	374.0
2/22/00 15:15	575.1	210.3	636.8	12.5	6.5	21.6	12.0	103.2	372.0
Run 2 Avg.	576.8	212.9	650.3	12.6	6.5	19.8	12.3	103.4	373.5
2/22/00 16:15	572.2	215.5	634.8	12.4	6.8	22.1	12.0	105.5	375.0
2/22/00 16:30	575.2	201.5	637.8	12.6	6.3	19.9	12.7	100.8	374.0
2/22/00 16:45	578.4	214.6	663.1	12.7	6.3	20.0	13.7	102.3	373.0
2/22/00 17:00	575.9	211.3	666.1	12.8	6.2	20.4	13.9	101.2	371.0
Run 3 Avg.	575.4	210.7	650.5	12.6	6.4	20.6	13.1	102.4	373.3

MOSES Unit 1 EPA Mercury Test Data - 02/22/2000

Date	A BH D/P 1cpabhdp.pv INH2O	B BH D/P 1cpbbhdp.pv INH2O	A ID Fan Inlet Temp 1d194.pv DEGF	B ID Fan Inlet Temp 1d195.pv DEGF	A AH Gas Outlt Temp 1d147.pv DEGF	B AH Gas Outlt Temp 1d148.pv DEGF	Coal Burned Prev Hour 1f500hs.pre_data(1) TON/HR	Coal Heat Input 1mfuelct.pv BTU/LB	Turb Steam Flow 1bm1p03.pv %
2/22/00 8:45	3.6	5.0	337.9	338.4	408.2	401.4	444.5	6465.7	91.4
2/22/00 9:00	3.3	5.0	337.9	338.3	408.9	401.5	445.6	6443.5	91.3
2/22/00 9:15	3.6	5.0	338.3	339.9	409.0	402.1	445.7	6440.8	91.0
2/22/00 9:30	3.4	5.1	339.0	340.1	409.1	402.9	445.7	6393.2	90.8
2/22/00 9:45	3.6	5.2	339.6	340.5	409.8	403.7	445.7	6407.3	90.8
2/22/00 10:00	3.6	4.8	339.9	339.9	410.8	403.6	451.8	6381.6	90.9
2/22/00 10:15	3.6	4.9	341.2	342.0	412.4	405.3	452.1	6478.6	90.9
2/22/00 10:30	3.4	4.8	343.6	344.1	413.4	407.5	452.1	6353.8	91.0
2/22/00 10:45	3.6	5.0	342.1	342.7	412.1	406.0	452.1	6463.2	90.9
2/22/00 11:00	3.4	4.7	342.3	343.0	411.4	406.6	454.3	6452.3	90.8
2/22/00 11:15	3.4	5.0	342.7	343.4	411.9	407.8	454.4	6355.6	90.6
Run 1 Avg.	3.5	4.9	340.4	341.1	410.6	404.4	449.4	6421.4	90.9
2/22/00 12:00	3.6	4.9	342.0	345.1	414.5	411.0	456.8	6219.8	90.9
2/22/00 12:15	3.7	5.2	344.0	346.5	415.6	412.3	457.0	6532.9	90.8
2/22/00 12:30	3.3	5.4	341.9	347.1	411.1	411.2	457.0	6556.9	90.7
2/22/00 12:45	3.3	5.3	341.0	344.9	410.8	409.1	457.0	6305.3	90.7
2/22/00 13:00	3.6	5.0	338.6	343.4	410.5	408.8	455.6	6284.9	90.8
2/22/00 13:15	3.5	5.2	339.9	342.5	412.0	409.3	455.5	6359.8	90.7
2/22/00 13:30	3.6	5.3	340.5	341.0	412.8	406.6	455.5	6374.3	90.7
2/22/00 13:45	3.4	5.3	340.3	342.0	412.4	406.7	455.5	6452.7	90.6
2/22/00 14:00	3.6	5.2	339.9	342.9	413.4	408.7	456.6	6335.8	90.6
2/22/00 14:15	3.5	5.3	340.9	343.3	414.3	409.9	456.7	6200.2	90.6
2/22/00 14:30	3.4	5.4	342.7	345.3	414.6	411.3	456.7	6429.1	90.6
2/22/00 14:45	3.3	5.5	341.6	344.7	412.6	409.1	456.7	6408.9	90.8
2/22/00 15:00	3.6	5.4	341.4	342.3	413.2	407.3	458.9	6507.7	90.7
2/22/00 15:15	3.6	5.6	341.0	342.5	411.4	406.6	459.0	6551.9	90.6
Run 2 Avg.	3.5	5.3	341.1	343.8	412.8	409.1	456.7	6394.3	90.7
2/22/00 16:15	3.6	5.4	339.6	345.0	414.9	409.9	452.3	6166.2	89.4
2/22/00 16:30	3.4	5.4	345.6	347.6	414.2	410.9	452.3	6535.7	91.3
2/22/00 16:45	3.7	5.5	341.4	342.7	409.8	405.4	452.3	6300.1	91.6
2/22/00 17:00	3.6	5.2	340.5	343.6	410.2	405.2	458.2	6397.8	91.1
Run 3 Avg.	3.6	5.4	341.8	344.7	412.3	407.9	453.8	6349.9	90.9

MOSES Unit 1 EPA Mercury Test Data - 02/22/2000

Date	A Mill Running 1f008.pv Brkr Status	B Mill Running 1f009.pv Brkr Status	C Mill Running 1f010.pv Brkr Status	D Mill Running 1f011.pv Brkr Status	E Mill Running 1f012.pv Brkr Status	F Mill Running 1f013.pv Brkr Status	G Mill Running 1f014.pv Brkr Status	H Mill Running 1f015.pv Brkr Status
2/22/00 8:45	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 9:00	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 9:15	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 9:30	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 9:45	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 10:00	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 10:15	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 10:30	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 10:45	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 11:00	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 11:15	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 12:00	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 12:15	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 12:30	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 12:45	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 13:00	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 13:15	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 13:30	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 13:45	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 14:00	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 14:15	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 14:30	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 14:45	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 15:00	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 15:15	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 16:15	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 16:30	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 16:45	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2/22/00 17:00	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED

APPENDIX F

Chain of Custody Records

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-184
Job Name: TXU Electric
Location: Mt. Pleasant, TX
Unit: Unit 1 Baghouse A Inlet

Collected By/Company: METCO

SAMPLE ANALYSIS REQUIRED

Run 1 SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI-VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods)
Run 1 Container 1 thimble, filter	2/22/00	1135	/				1111	MB									/			thimble Q90; Q118 filter 47Q176 47Q148
Run 1 Container 2 0.1N HNO_3 FW	2/22/00	1140	/				1	JC									/			
Run 1 Container 3 10% HNO_3 HNO_3 rinse Imp. 1,2,3	2/22/00	1224 ~~1149~~	/				11	JC									/			Added Potassium Permanganate solution
Run 1 Container 4 0.1N HNO_3 rinse Imp. 4	2/22/00	1225 ~~1150~~	/				1	JC									/			
Run 1 Container 5 0.1N HNO_3 rinse Imp. 5,6,7	2/22/00	1230	/				1	JC									/			used hydroxylamine solution.

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
[signature]	2-25-00 1435	Douglas R Southoff	Douglas R Southoff	3/2/00 0855	Fed X
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: JAD GRP
Date/Time: 3/6/00 / 3/14/00

Send Samples to:
Phone: Fax:

F-2

05/99

TRC ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-184
Job Name: TXU Electric
Location: Mt. Pleasant, TX
Unit: Unit 1 Baghouse A Duct Inlet

Collected By/Company: METCO

Run 2 SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI-VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods)
Container 1 - run 2 thimble / filter	2/22/00	1647	/				11	JC									/			thimble Q121 filter 47Q181
Container 2 - run 2 0.1N HNO_3 FW	2/22/00	1655	/				1	JC									/			
Container 3 - run 2 10% HNO_3 rinse Imp. 1,2,3	2/22/00	1713	/				11	JC									/			Added Potassium Permanganate solution
Container 4 - run 2 0.1N HNO_3 rinse Imp. 4	2/22/00	1714	/				1	JC									/			
Container 5 - run 2 0.1N HNO_3 rinse Imp. 5,6,7	2/22/00	1725	/				1	JC									/			Used hydroxylamine solution

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
[illegible]	2/25/00 1439	[illegible]	[illegible]	3/2/00 0855	Fed X
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: JAD / [illegible]
Date/Time: 3/6/00 / 3/14/00

Send Samples to:
Phone: Fax:

05/99

MITRIX ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-184
Job Name: TXU Electric
Location: Mt. Pleasant, TX
Unit: Unit 1 Baghouse A Inlet

Collected By/Company: METCO

SAMPLE ANALYSIS REQUIRED

Run 3 SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI-VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods) Analyze according to Ontario-Hydro Method
Container 1 - Run 3 thimble / filter	2-22-00	1855	✓				1111	MR									✓			thimbles Q112, Q116 Filters 47Q141, 182
Container 2 - Run 3 0.1N HNO_3 FW	2-22-00	1856	✓				1	MR									✓			
Container 3 - Run 3 10% HNO_3 rinse Imp. 1,2,3	2-22-00	1901	✓				11	MR									✓			Added Potassium Permanganate Solution
Container 4 - Run 3 0.1N HNO_3 rinse Imp 4	2-22-00	1905	✓				1	MR									✓			
Container 5 - Run 3 0.1N HNO_3 rinse Imp. 5,6,7	2-22-00	1904	✓				1	MR									✓			Used Hydroxylamine solution

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
MR	2/25/00 1448	[signature]	[signature]	3/2/00 0857	FedX
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: [signature] Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

F-4

MITKW ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-184
Job Name: TXU Electric
Location: Mt. Pleasant, TX
Unit: Unit 1 Baghouse A Inlet

Collected By/Company: METCO

SAMPLE ANALYSIS REQUIRED

Blank Train SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI--VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods)
Container 3 10% HNO_3 rinse Imp. 1,2,3	2/22/00	1417	/				1	JC									/			Used Potassium-Permanganate
Container 4 0.1 N HNO_3 rinse Imp 4	2/22/00	1418	/				1	JC									/			
Container 5 0.1 N HNO_3 rinse Imp 5,6,7	2/22/00	1426	/				1	JC									/			Used hydroylamine soln.

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
[illegible]	2/25/00 1440	[illegible]	[illegible]	3/2/00 0850	FedX
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: JAD/JBP
Date/Time: 3/6/00 3/14/00

Send Samples to:
Phone: Fax:

F-5

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-184
Job Name: TXU Electric
Location: Mt. Pleasant, TX
Unit: Unit 1 Baghouse A Outlet

Collected By/Company: METCO

SAMPLE ANALYSIS REQUIRED

Run 1 SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI-VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods)
Container 1 - Run 1 Filter	2/22/00	1120	/				1	MR									/			Filter 47Q147
Container 2 - Run 1 0.1 N HNO_3 FW	2/22/00	1139	/				1	JC									/			
Container 3 - Run 1 10% HNO_3 rinse Imp. 1,2,3	2/22/00	1149	/				11	JC									/			Added Potassium Permanganate soln.
Container 4 - Run 1 0.1N HNO_3 rinse Imp. 4	2/22/00	1150	/				1	JC									/			
Container 5 - Run 1 0.1N HNO_3 rinse Imp. 5,6,7	2/22/00	1200	/				1	JC									/			used hydroxylamine soln.

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
MR	2-25-00 1438	[signature]	[signature]	3/2/00 0835	FedX
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: JAD
Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

F-6

MITECO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-184
Job Name: TXU Electric
Location: Mt. Pleasant, TX
Unit: Unit 1 Baghouse A-outlet

Collected By/Company

Run 2 SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI-VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods)
Container 1 Run 2 Filter	2-22-00	1541	✓				1	MB									✓			Filter 47Q149
Container 2 Run 2 0.1N HNO_3 FW	2-22-00	1550	✓				1	MB									✓			
Container 3 - Run 2 10% HNO_3 rinse Imp 1,2,3	2-22-00	1631	✓				11	MB									✓			Added Potassium Permanganate solution
Container 4 - Run 2 0.1N HNO_3 Imp. 4	2-22-00	1633	✓				1	MB									✓			
Container 5 - Run 2 0.1N HNO_3 rinse Imp 5,6,7	2-22-00	1639	✓				1	MB									✓			Used hydroxylamine soln.

SAMPLE ANALYSIS REQUIRED

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
[illegible]	2/25/00 1439	[signature]	[signature]	3/2/00 0840	FedX
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: SAD
Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-184
Job Name: TXU Electric
Location: Mt. Pleasant, TX
Unit: Unit 1 Baghouse A Outlet

Collected By/Company: METCO

Run 3 SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI-VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods) Analyze according to Ontario-Hydro method
Container 1 - Run 3 filter	2/22/00	1850	/				1										/			Filter 77Q180
Container 2 - Run 3 0.1 N HNO_3 ~~rinse~~ FW	2/22/00	1851	/				1	MB									/			
Container 3 - Run 3 10% HNO_3 rinse Imp. 1,2,3	2/22/00	1854	/				1	MB									/			Added Potassium Permanganate
Container 4 - Run 3 0.1 N HNO_3 rinse Imp. 4	2/22/00	1855	/				1	MB									/			
Container 5 - Run 3 0.1 N HNO_3 rinse Imp. 5,6,7	2/22/00	1858	/				1	MB									/			Used hydroxylamine solution

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Mike D	2/25/00 1447	[signature]	[signature]	3/2/00 0850	FED X
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Received for Laboratory By/Signature: [signature]		Date/Time 3/6/00	Send Samples to: Phone:	Fax:	

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-184
Job Name: TXU Electric
Location: Mt. Pleasant, TX
Unit: Unit 1 Baghouse A

Collected By/Company: METCO

SAMPLE ANALYSIS REQUIRED

Reagent Blanks SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI-VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods)
Container 7 0.1N HNO_3 Blank	2/22/00	0958	/				1	MB									/			
Container 8 1N KCl Blank	2/22/00	1000	/				1	MB									/			
Container 9 5% HNO_3 - 10% H_2O_2 Blank	2/22/00	1001	/				1	MB									/			
Container 10 H_2SO_4-$KMnO_4$ Blank	2/22/00	1002	/				1	MB									/			
Container 11 Hydroxylamine Sulfate/Sodium Chloride Blank	2/22/00	1030	/				1	MB									/			
Container 12 Sample Filter Blank	2/22/00	1035	/				IIII	MB									/			Filters 47Q 177,178,179 Thimbles Q113 Q117 Q122

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
MB	2/25/00 1440	[illegible]	[illegible]	3/2/00 0910	FedX
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: JAD
Date/Time: 3/6/00

Send Samples to:
Phone:
Fax:

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-184
Job Name: TXU Electric
Location: Mt. Pleasant, TX
Unit: Unit 1 Baghouse A Outlet

Collected By/Company: METCO

Blank Train SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI-VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods)
Container 3 10% HNO_3 rinse Imp. 1,2,3	2/22/00	1406	/				1	JC									/			Used Potassium Permanganate solution
Container 4 0.1 N HNO_3 rinse Imp 4	2/22/00	1407	/				1	JC									/			
Container 5 0.1 N HNO_3 rinse Imp 5,6,7	2/22/00	1414	/				1	JC									/			Used hydroxylamine solution

SAMPLE ANALYSIS REQUIRED

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
[signature]	2/25/00 1440	[signature]	[signature]	3/2/00 0830	FedX
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: JAD
Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

F-10

Sample Train Receipt Records

APPENDIX G

Resumes

BILLY J. MULLINS, JR.; President

Education	Post Graduate Study Environmental Engineering at Southern Methodist University; Dallas, Texas 1970. M.S. 1969, New York University; New York, New York, in Civil Engineering (Air Resources). B.S. 1968, Texas Tech University; Lubbock, Texas, in Civil Engr. (Water Resources). Studies in Engineering at U.S. Naval Academy; Annapolis, Maryland, 1963-1964.
Professional Training Courses	Attended Short Course on Air Pollution Engineering at the University of Texas at Austin, February 1970. Attended four-week management course presented by the American Management Association, 1976.
Certification	Registered Professional Engineer Certified Visible Emissions Evaluator Licensed Private Pilot (Multi-Engine-Land, Instrument) Diplomat in the American Academy of Environmental Engineers Inductee into the Stack Sampling Hall of Fame Certified as Qualified Environmental Professional (QEP)
Professional Memberships	**Air & Waste Management Association** - Past Chairman, Past Vice Chairman, and Past Board of Directors of North Texas Chapter and Southwest Section; Past Chairman, Consultants Committee; Past Chairman, Source Measurement Committee **Source Evaluation Society** - Past President, Past Board of Directors **American Management Association**

MULLINS

Publications

Authored "Real World Experience with USEPA's New Sampling and Analytical Methods for Conducting Risk Burn," - May 1998.

Co-authored "Sulfur Compound Emissions of the Petroleum Production Industry," December 1974.

Co-authored "Field Procedure for Stabilizing Hydrogen Sulfide Samples to be Analyzed Using Modified Methylene Blue Technique," presented at the Conference on Ambient Air Quality Measurements, Austin, Texas, March 1975.

Co-authored "Atmospheric Emissions Survey of the Sour Gas Industry," October 1975.

Co-authored "Technique for Insuring the Validity of Samples for High Concentrations of Sulfur Dioxide Using the EPA Method 5 Sampling Train," presented at the Third National Conference on Energy and the Environment, College Corner, Ohio, September 1975.

Teaching Experience

Conducted training seminars on sampling methods periodically since 1974 to present.

Conducted a one-day seminar on Part 75 Testing over ten times in 1993 and 1994.

Served as a lecturer in the Environmental Protection Agency's training course number 450, "Source Sampling for Particulate Pollutants," for two years from January 1974 to October 1975 and in March, 1992.

Conducted a two-day training course entitled "Technical Assistance in Source Sampling" at Iowa State University, Ames, Iowa, for the Environmental Protection Agency, October 1974.

MULLINS

Teaching Experience (Cont'd)

Conducted EPA's training course number 450, "Source Sampling for Particulate Pollutants," for the EPA at Research Triangle Park, North Carolina, September 1975.

Conducted a two-day short course entitled "Performing and Observing Source Sampling" at Dallas, Texas; July 1976, May 1977, October 1977, November 1987 and November 1988; at Lake Charles, Louisiana, May 1977; at Casper, Wyoming, May 1977; and at Point Comfort, Texas, November 1992.

Served as a lecturer in the Environmental Protection Agency's two-day seminar entitled "Asphalt Industry Environmental Solutions," presented in Dallas, Texas, on March 21 and 22, 1979.

Conducted a two-day short course entitled "Performing and Observing Source Sampling" in Phoenix, Arizona in August, 1990 for the State of Arizona, Department of Environmental Quality; in Lincoln, Nebraska, in March 1980 for the State of Nebraska, Air Quality Control Division.

Technical Experience

Directed and performed stack sampling on over 2000 sources of which over 500 were sampled simultaneously using more than one sampling train at several points in the flue gas stream; 1972-present.

Directed and performed over 200 short-term ambient air studies using mobile sampling vans and various ambient air sampling equipment; 1972-present.

Designed, directed and operated over 20 permanent ambient air networks of various size and duration for a variety of parameters; 1972-present.

Designed surface and underground drainage systems for residential subdivisions, public works projects, and shopping centers; 1969-1972.

MULLINS

Designed several residential subdivisions including lot layout, street design, drainage design, and utility design; 1969-1972.

Research Projects

Supervised and conducted a study made by the Hawaiian Sugar Planters' Association to characterize the emissions for several bagasse-fired boilers. April-May 1976.

Supervised and conducted a study made by the Rio Grande Valley Sugar Growers, Inc. to determine the area affected by the burning of sugarcane fields prior to harvesting. November 1974-April 1975.

Supervised and conducted a study by a lightweight aggregate manufacturer to develop a material balance around the process through sampling and analysis of several parameters. November 1973.

Conducted a study in New York City to attempt to develop a correlation in the ambient air between carbon dioxide and sulfur dioxide to provide a tool for predicting air pollution episodes. January-May 1969.

Related Projects

Served as Chairman of the Engineering Foundation Conference on Stack Sampling and Source Evaluation in Santa Barbara, California, 1985.

Served as Session Chairman at the Engineering Foundation Conference on Stack Sampling and Source Evaluation in Hershey, Pennsylvania, 1984; in San Diego, California, 1993; and in Palm Coast, Florida, 1994.

STEVEN J. BORNSEN; Project Supervisor I

Education	B.S. 1995, University of Texas at Arlington; Arlington, Texas, in Geology.
Professional Training Courses	Attended 40-hour Occupational & Environmental Training Program on Hazardous Materials (CFR 1910.120); Dallas, Texas, January, 1996. Attended Bill Mullins' Performing and Observing Source Sampling Short Course; Dallas, Texas; September, 1996.
Technical Experience	Participated in the sampling of over 150 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures. 1995-Present Experienced with calibration techniques for all field testing equipment.

MICHAEL BASS; Environmental Technician II

Education	B. S. Geography, August 1998; Texas A&M University, College Station, Texas
Technical Experience	Participated in the sampling of over 50 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 1998-Present.

SHANE LEE; Environmental Technician III

Education	B. S. - Environmental Science-Biology, December 20, 1997; Sul Ross State University; Alpine, Texas.
Technical Experience	Participated in the sampling of over 100 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 1998-present.

SCOTT HART; Environmental Technician I

Education	Associate Degree-Environmental Science, March 1999; Texas State Technical College, Breckenridge, Texas
Technical Experience	Participated in the sampling of over 25 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA procedures, 1999-Present.

JASON BROWN; Environmental Technician I

Education	B. S. in Zoology, 1995; University of Oklahoma, Norman, Oklahoma.
Technical Experience	Participated in the sampling of over 25 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 1999-Present.

JASON CONWAY; Environmental Technician I

Education	B.S. Biology, July 1999; Southeastern Oklahoma State University; Durant, Oklahoma.
Technical Experience	Participated in the sampling of over 25 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 1999-Present.

JASON CHESSHER; Environmental Technician II

Education	Masters of Science - Environmental Science; August 1999, University of North Texas, Denton, Texas
Technical Experience	Participated in the sampling of over 50 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 1999-present.

JOHN BETZ; Environmental Technician II

Education	B. S. Bioenvironmental Science, August 1999; Texas A&M University; College Station, Texas.
Technical Experience	Participated in the sampling of over 50 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 1999-present.

KIERAN McGEAGH; Environmental Technician I

Education	B. S. Geoscience-Environmental Science Track, December 1999; Texas A & M - College Station, Texas.
Technical Experience	Participated in the sampling of over 25 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 1999-present