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

METCO ENVIRONMENTAL

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.

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

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

$$V_s = fpm \times 0.00508 = m/\text{sec}$$

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: 99-183
JOB NAME: TXU ELECTRIC
LOCATION: MT. PLEASANT, TEXAS
UNIT TESTED: MOSES UNIT NUMBER 3 SCRUBBER INLET

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			02/23/00	02/24/00	02/24/00
BEGIN TIME			1550	0835	1210
END TIME			1851	1105	1440
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	29.58 (751)	29.74 (755)	29.76 (756)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	0.387 (9.8)	0.392 (10.0)	0.390 (9.9)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	54.554 (1.545)	59.496 (1.685)	60.483 (1.713)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	90 (32)	90 (32)	98 (37)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	51.835 (1.468)	56.837 (1.609)	56.990 (1.614)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	124.3	162.7	156.8
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	5.867 (0.166)	7.679 (0.217)	7.401 (0.210)
%M	MOISTURE IN STACK GAS BY VOLUME	%	10.17	11.90	11.49

* 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 3 SCRUBBER INLET

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.8983	0.8810	0.8851
CO2		%	10.0	10.0	9.4
O2		%	9.4	9.4	9.6
CO		%	0.0	0.0	0.0
N2		%	80.6	80.6	81.0
%EA	EXCESS AIR @ SAMPLING POINT	%	78.6	78.6	80.9
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.98 (29.98)	29.98 (29.98)	29.89 (29.89)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	28.76 (28.76)	28.55 (28.55)	28.52 (28.52)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	1.022 (26.0)	1.033 (26.2)	1.030 (26.2)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	354 (179)	347 (175)	347 (175)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	28.46 (723)	28.57 (726)	28.58 (726)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	4,172 (21.19)	4,190 (21.29)	4,183 (21.25)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	31,248 (20.16)	31,248 (20.16)	31,248 (20.16)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	503,621 (855,652)	502,289 (853,389)	503,960 (856,228)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	905,311 (1,538,123)	909,246 (1,544,809)	907,773 (1,542,306)

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

SOURCE EMISSION CALCULATIONS

TXU ELECTRIC
MT. PLEASANT, TEXAS
MOSES UNIT NUMBER 3 SCRUBBER INLET

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	150	150	150
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.174 (0.004)	0.174 (0.004)	0.174 (0.004)
%I	PERCENT ISOKINETIC	%	90.5	99.5	99.4
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: 99-183
JOB NAME: TXU ELECTRIC
LOCATION: MT. PLEASANT, TEXAS
UNIT TESTED: MOSES UNIT NUMBER 3 SCRUBBER OUTLET

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			02/23/00	02/24/00	02/24/00
BEGIN TIME			1550	0835	1210
END TIME			1845	1055	1430
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	29.58 (751)	29.74 (755)	29.76 (756)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	0.601 (15.3)	0.593 (15.1)	0.618 (15.7)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	56.994 (1.614)	59.270 (1.678)	60.806 (1.722)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	78 (26)	78 (26)	87 (31)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	55.391 (1.569)	57.913 (1.640)	58.479 (1.656)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	279.3	284.0	293.2
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	13.183 (0.373)	13.405 (0.380)	13.839 (0.392)
%M	MOISTURE IN STACK GAS BY VOLUME	%	19.22	18.80	19.14

* 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 3 SCRUBBER OUTLET

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.8078	0.8120	0.8086
CO2		%	10.8	10.8	10.8
O2		%	9.0	9.0	9.0
CO		%	0.0	0.0	0.0
N2		%	80.2	80.2	80.2
%EA	EXCESS AIR @ SAMPLING POINT	%	73.5	73.5	73.5
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	30.09 (30.09)	30.09 (30.09)	30.09 (30.09)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	27.76 (27.76)	27.82 (27.82)	27.77 (27.77)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.769 (19.5)	0.697 (17.7)	0.695 (17.7)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	138 (59)	135 (57)	136 (58)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	29.76 (756)	29.92 (760)	29.94 (760)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	2,917 (14.82)	2,758 (14.01)	2,758 (14.01)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	43,884 (28.31)	43,884 (28.31)	43,884 (28.31)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	632,970 (1,075,416)	607,864 (1,032,761)	604,707 (1,027,397)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	888,844 (1,510,146)	840,509 (1,428,025)	840,620 (1,428,213)

* 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 3 SCRUBBER OUTLET

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	140	140	140
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.195 (0.005)	0.195 (0.005)	0.195 (0.005)
%I	PERCENT ISOKINETIC	%	92.2	100.4	101.9
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: 99-183
JOB NAME: TXU ELECTRIC
LOCATION: MT. PLEASANT, TEXAS
UNIT TESTED: UNIT NUMBER 3 STACK

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			02/23/00	02/23/00	02/24/00
BEGIN TIME			1550	0835	1210
END TIME			1844	1050	1431
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	29.38 (746)	29.54 (750)	29.76 (756)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.127 (28.6)	1.113 (28.3)	1.127 (28.6)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	75.689 (2.143)	74.242 (2.102)	74.940 (2.122)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	74 (23)	69 (21)	74 (23)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	73.707 (2.087)	73.375 (2.078)	73.919 (2.093)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	388.1	325.3	324.7
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	18.318 (0.519)	15.354 (0.435)	15.326 (0.434)
%M	MOISTURE IN STACK GAS BY VOLUME	%	19.91	17.30	17.17

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

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

TXU ELECTRIC
MT. PLEASANT, TEXAS
UNIT NUMBER 3 STACK

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.8009	0.8270	0.8283
CO2		%	8.8	11.0	10.8
O2		%	10.4	8.0	8.2
CO		%	0.0	0.0	0.0
N2		%	80.8	81.0	81.0
%EA	EXCESS AIR @ SAMPLING POINT	%	94.4	59.4	61.8
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.82 (29.82)	30.08 (30.08)	30.06 (30.06)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	27.47 (27.47)	27.99 (27.99)	27.99 (27.99)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	2.454 (62.3)	2.417 (61.4)	2.429 (61.7)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	194 (90)	192 (89)	192 (89)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	29.28 (744)	29.44 (748)	29.66 (753)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	5,846 (29.70)	5,723 (29.07)	5,716 (29.04)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	83,648 (53.97)	83,648 (53.97)	83,648 (53.97)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	2,156,707 (3,664,245)	2,198,772 (3,735,714)	2,215,971 (3,764,935)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	3,395,958 (5,769,733)	3,324,307 (5,647,998)	3,320,480 (5,641,496)

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

SOURCE EMISSION CALCULATIONS

TXU ELECTRIC
MT. PLEASANT, TEXAS
UNIT NUMBER 3 STACK

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	120	120	120
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.171 (0.004)	0.171 (0.004)	0.171 (0.004)
%I	PERCENT ISOKINETIC	%	104.1	101.7	101.6
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

Job Number 99-183
Job Name TXU Electric Mt. Pleasant
Run Number 1
Unit Unit 3 FGD Inlet
Date 02-23-00
Operator BROWN/Betz/BASS
Sample Box No. Hg 1 Meter Box No. 27-2

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 92
Assumed Moisture % 10.00
Probe Length 10'
C Factor 10 → 3.7 to reference
Initial Leak @ 15.00 "Hg = 0.000 cfm
Final Leak @ 11.00 "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	Heated Line °F (T_m)	Remarks
	A5	1550	663.694	1.00	0.38	0.38	5.00	362	270	265	60	93	94	271	CST
	4	1555	665.70	1.20	0.45	0.45	6.00	365	271	266	60	92	93	271	Int. Orsat
	3	1600	667.61	1.10	0.42	0.42	5.50	367	269	266	59	91	93	273	
	2	1605	669.44	0.95	0.36	0.36	5.50	365	269	265	59	92	92	271	
	1	1610	671.15	1.30	0.49	0.49	6.00	360	268	265	59	92	92	272	
C	B5	1615	673.17	0.85	0.32	0.32	5.00	351	268	265	58	92	92	272	
	4	1620	674.83	1.00	0.38	0.38	6.00	360	270	267	58	91	92	271	
	3	1625	676.59	1.00	0.38	0.38	6.00	365	272	268	58	91	92	269	
	END	1630	678.237	—	—	—	—	—	—	—	—	—	—	—	standby for stack
	2	1701	678.237	0.90	0.34	0.34	5.50	363	264	262	61	90	91	265	
	1	1706	679.96	1.20	0.45	0.45	6.00	360	262	263	61	89	90	267	
E	E5	1711	681.87	0.98	0.37	0.37	6.00	344	268	264	60	90	91	267	
	4	1716	683.63	1.10	0.42	0.42	6.50	353	271	266	60	90	90	268	
	3	1721	685.46	1.10	0.42	0.42	6.50	352	273	267	60	92	90	268	
	2	1726	687.29	0.85	0.32	0.32	6.00	350	274	267	59	90	90	268	
	1	1731	689.00	0.60	0.23	0.23	5.00	341	274	267	59	90	90	267	
G	G5	1736	690.37	1.00	0.38	0.38	6.50	349	273	267	58	90	90	265	
	4	1741	692.12	1.30	0.49	0.49	7.50	358	274	268	58	89	90	266	

Pitot Tube Calibration Factor C_p 0.810
Volume Collected V_m 54.554 ft^3
Water Collected V_w 124.3 ml
Time of Test T_t 150 min.
Stack Pressure P_s -15.3 "H_2O

Pitot Tube No. M8
Baro. Press. P_b 29.58 "Hg
Probe Tip Dia. D_n 0.174 in.
% CO_2 10.0 % CO 0.0
% O_2 9.4 % N_2 80.6
Area Stack A_s 31248 in^2

Barometer No. 19-1
Probe Tip No. TFE 1-6
Total Volume of Leak Checks After Start: — ft^3
V_m = Dry Gas Meter Calibration Factor 1.008 X 54.121

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

Impinger Box No. Hg-1

Impinger 1	Final Weight	852.7	Imp 8 Final Weight 1001.6	Impinger 1	~~758.4~~ 94.3
	Initial Weight	758.4	Initial Weight 985.4		
	Increase	94.3	Increase 16.2	Impinger 2	9.2
Impinger 2	Final Weight	757.2		Impinger 3	1.9
	Initial Weight	748.0			
	Increase	9.2		Impinger 4	3.1
Impinger 3	Final Weight	742.1	V_w =	Impinger 5	-0.7
	Initial Weight	740.2	g SO_2 = -		
	Increase	1.9	V_w =	Impinger 6	0.0
Impinger 4	Final Weight	757.5	25 22.5 25 06.0	Impinger 7	0.3
	Initial Weight	754.4			16.2
	Increase	3.1		Total	124.3 = V_w
Impinger 5	Final Weight	752.4	P_b = 29.58	$\%CO_2$ =	10.0
	Initial Weight	753.1	V_m = 54.554	$\%O_2$ =	~~0.09.4~~
	Increase	-0.7	V_w = 124.3	%CO =	0.0
			P_m = 0.387	$\%N_2$ =	80.6
Impinger 6	Final Weight	773.9	Avg ΔP = 1.022	A_s =	31248
	Initial Weight	773.9		D_n =	0.174
	Increase	0.0	Avg$\sqrt{\Delta P}$ = 1.008	T_t =	150
			C_p = 0.810		
Impinger 7	Final Weight	747.0	P_s = -15.3 "H_2O		28.46 "Hg
	Initial Weight	746.7	T_m = 90 °F		550 °R
	Increase	0.3	T_s = 354 °F		814 °R

Water Weight Gain

Moisture Content: %M = 10.17 M_d = 0.8983 MW_d = 29.976 MW = 28.76

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 54.554 \left[\frac{29.58 + \frac{0.387}{13.6}}{90 + 460}\right] = \frac{51.835\ sft^3}{0.346\ scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 124.3 = 5.8670 sft^3

$$\%\ Moisture = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{5.867}{51.835 + 5.867} \times 100 = 10.17\ \%$$

$$V_s = 5123.8 \times 0.810 \sqrt{\frac{814}{28.46 \times 28.76}} \times 1.008 = 4172\ fpm$$

ACFM: 905311

SCFM: 503621

$$\%I = \frac{1{,}039 \times 51.835 \times 814}{28.46 \times 0.8983 \times \cancel{28.76}\ 4172 \times 150 \times (0.174)^2} = 90.5\ \%$$

%EA: 78.6

Run Number i

Unit Unit 3 FGD Inlet

Date 02-23-00

Hg FIELD DATA

	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
G	~~1~~3	1746	694.09	1.30	0.49	0.49	7.50	361	275	268	58	90	90	265	
	2	1751	696.08	1.10	0.42	0.42	7.50	362	274	268	59	89	89	264	
	1	1756	697.94	0.77	0.29	0.29	6.50	341	275	267	58	89	89	266	
I	~~2~~5	1801	699.53	1.00	0.38	0.38	7.50	348	274	268	58	90	89	266	
	4	1806	701.26	1.10	0.42	0.42	8.00	358	274	269	58	89	89	266	
	3	1811	703.11	1.10	0.42	0.42	8.00	365	274	267	58	89	89	266	
	2	1816	705.00	1.00	0.38	0.38	8.00	356	272	267	59	90	90	268	
	1	1821	706.90	0.90	0.34	0.34	7.50	342	275	268	59	90	90	266	
K	~~1~~5	1826	708.88	0.85	0.32	0.32	8.00	343	273	269	59	90	90	267	
	4	1831	710.65	1.00	0.38	0.38	9.00	356	274	270	59	90	90	267	
	3	1836	712.38	1.20	0.45	0.45	9.00	351	273	269	59	89	90	267	
	2	1841	714.13	1.00	0.38	0.38	8.50	346	273	268	60	89	90	266	
	1	1846	716.00	0.90	0.34	0.34	8.00	340	272	264	60	89	90	264	
	END	1851	717.815	—	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Job Number 99-183
Job Name TXU
Run Number 2
Unit Unit 3 FGD Inlet
Date 02-24-00
Operator BROWN/Betz/BASS
Sample Box No. Hg 6 Meter Box No. 27-2

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 83
Assumed Moisture % 10.17
Probe Length 10'
C Factor 10 → 3.7 to reference
Initial Leak @ 15.00 "Hg = 0.000 cfm
Final Leak @ 11.00 "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	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 (T_m)	Dry Gas Temp. °F Outlet	Heated Line °F	Remarks
	A5	0835	719.348	1.10	0.42	0.42	6.00	345	270	268	60	87	86	266	CST
	4	0840	721.24	1.10	0.42	0.42	6.00	355	271	268	60	86	87	268	Int. Orsat
	3	0845	723.13	1.10	0.42	0.42	6.00	356	272	269	59	87	87	270	
	2	0850	725.00	0.85	0.32	0.32	5.00	349	272	268	59	86	87	272	
	1	0855	726.88	1.20	0.45	0.45	6.50	343	272	267	58	87	87	272	
C	B5	0900	728.86	0.95	0.36	0.36	6.00	339	271	267	57	88	88	272	
	4	0905	730.78	0.95	0.36	0.36	6.00	353	268	267	57	88	88	272	
	3	0910	732.65	1.20	0.45	0.45	6.50	356	269	268	57	88	88	270	
	2	0915	734.56	1.10	0.42	0.42	6.00	348	269	267	57	90	89	270	
	1	0920	736.50	1.00	0.38	0.38	6.00	341	268	267	58	91	89	270	
E	C5	0925	738.41	1.00	0.38	0.38	6.00	342	267	267	58	91	90	270	
	4	0930	740.29	1.10	0.42	0.42	6.50	345	267	269	58	91	90	271	
	3	0935	742.23	1.10	0.42	0.42	6.50	342	268	269	58	92	90	271	
	2	0940	744.13	0.70	0.27	0.27	5.50	340	269	269	58	92	91	271	
	1	0945	746.03	0.90	0.34	0.34	6.00	337	269	270	59	92	91	272	
G	D5	0950	747.93	1.00	0.38	0.38	7.00	344	269	271	58	92	91	272	
	4	0955	749.84	1.10	0.42	0.42	7.50	349	268	271	59	91	91	272	
	3	1000	751.75	1.20	0.45	0.45	8.00	352	268	271	59	91	91	271	

Pitot Tube Calibration Factor C_p 0.810 ✓
Volume Collected V_m 59.496 ✓ ft^3
Water Collected V_w 162.7 ✓ ml
Time of Test T_t 150 ✓ min.
Stack Pressure P_s -15.9 ✓ "H_2O

Pitot Tube No. M8 ✓
Baro. Press. P_b 29.74 ✓ "Hg
Probe Tip Dia. D_n 0.174 ✓ in.
% CO_2 10.0 ✓ % CO 0.0 ✓
% O_2 9.4 ✓ % N_2 80.6 ✓
Area Stack A_s 31248 ✓ in^2

Barometer No. 19-1 ✓
Probe Tip No. TFE 1-6 ✓
Total Volume of Leak Checks After Start: — ✓ ft^3
V_m = Dry Gas Meter Calibration Factor 1.008 ✓ X 59.024

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

Impinger Box No. Hg 6

Impinger 1	Final Weight	792.6 ~~891.1~~	Water Weight Gain	Impinger 1	129.5
	Initial Weight	663.1			
	Increase	129.5		Impinger 2	12.4
			Imp 8 924.6 − 909.5 = 15.1		
Impinger 2	Final Weight	758.0		Impinger 3	1.5
	Initial Weight	745.6			
	Increase	12.4		Impinger 4	2.4
			V_w =		
Impinger 3	Final Weight	656.5	g SO_2 = -	Impinger 5	-1.0
	Initial Weight	655.0	V_w =		
	Increase	1.5		Impinger 6	0.1
Impinger 4	Final Weight	765.9	23.52.3 / 23.77 / 23.77	Impinger 7	2.7
	Initial Weight	763.5		Impinger 8	15.1
	Increase	2.4		Total	162.7 = V_w
Impinger 5	Final Weight	654.2	P_b = 29.74	$\%CO_2$ =	10.0
	Initial Weight	655.2	V_m = 59.496	$\%O_2$ =	9.4
	Increase	-1.0	V_w = 162.7	%CO =	0.0
			P_m = 0.392	$\%N_2$ =	80.6
Impinger 6	Final Weight	756.4	Avg ΔP = ~~1.041~~ 1.033	A_s =	31248
	Initial Weight	756.3		D_n =	0.174
	Increase	0.1	Avg$\sqrt{\Delta P}$ = ~~1.018~~ 1.015	T_t =	150
			C_p = 0.810		
Impinger 7	Final Weight	671.3	P_s = -15.9 "H_2O	28.57	"Hg
	Initial Weight	668.6	T_m = 90 °F	550	°R
	Increase	2.7	T_s = 347 °F	807	°R

Moisture Content: %M = 11.90 M_d = 0.8810 MW_d = 29.976 MW = 28.55

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 59.496 \left[\frac{29.74 + \frac{0.392}{13.6}}{90 + 460}\right] = 56.837\ sft^3 = 0.379\ scfm$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 162.7 = 7.679 sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{7.679}{56.837 + 7.679}$ x 100 = 11.90 %

V_s = 5123.8 x 0.810 $\sqrt{\frac{807}{28.57 \times 28.55}}$ x ~~1.018~~ 1.015 = ~~4202~~ 4190 fpm

ACFM: 909246

SCFM: 502289

%I = $\frac{1{,}039 \times 56.837 \times 807}{0.8810 \times 28.57 \times 4190 \times 150 \times (0.174)^2}$ = ~~99.2~~ 99.5 %

%EA: 78.6

Run Number 2

Unit Unit 3 FGD Inlet

Date 02-24-00

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
G	02	1005	753.70	1.20	0.45	0.45	8.00	349	268	271	58	91	90	272	
	1	1010	755.70	0.95	0.36	0.36	7.00	347	269	270	59	90	90	271	
I	05	1015	757.81	1.00	0.38	0.38	7.50	344	269	270	59	91	90	270	
	4	1020	760.10	1.20	0.45	0.45	8.50	354	267	271	59	91	90	270	
	3	1025	762.18	1.10	0.42	0.42	8.50	353	271	270	60	90	90	270	
	2	1030	764.35	0.95	0.36	0.36	7.50	350	270	270	59	91	91	269	
	1	1035	766.46	1.00	0.38	0.38	7.50	342	268	270	59	91	90	269	
K	05	1040	768.38	0.85	0.32	0.32	7.00	347	268	271	58	90	89	269	
	4	1045	770.28	1.10	0.42	0.42	8.50	351	269	271	59	90	89	269	
	3	1050	772.29	1.10	0.42	0.42	8.50	351	268	271	59	91	90	270	
	2	1055	774.32	0.90	0.34	0.34	8.50	346	269	272	59	91	90	272	
	1	1100	776.31	1.00	0.38	0.38	9.00	343	269	272	59	92	90	271	
	END	1105	778.372	—	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Hg Field Data

Job Number 99-183
Job Name TXU
Run Number 3
Unit Unit 3 FGD Inlet
Date 02-24-00
Operator BROWN/Betz/BASS
Sample Box No. Hg1 Meter Box No. 27-2

Read and record at the start of each test point.

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

Ambient Temp. °F 94
Assumed Moisture % 10.17
Probe Length 10'
C Factor 10 → 3.7 to reference
Initial Leak @ 15.00 "Hg = 0.000 cfm
Final Leak @ 10.50 "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	1210	779.956	0.90	0.34	0.34	5.00	342	256	260	60	90	91	258	CST
	4	1215	781.90	1.10	0.42	0.42	6.00	349	257	260	60	90	92	258	Int. Orsat
	3	1220	783.82	1.10	0.42	0.42	6.00	351	261	263	60	96	96	261	
	2	1225	785.74	1.10	0.42	0.42	6.00	353	265	263	59	96	97	264	
	1	1230	787.69	0.80	0.30	0.30	5.00	340	267	265	58	98	98	265	
C	B5	1235	789.72	0.85	0.32	0.32	5.50	337	268	265	58	98	98	267	
	4	1240	791.55	1.00	0.38	0.38	6.00	348	269	265	58	98	99	267	
	3	1245	793.53	1.20	0.45	0.45	6.50	353	270	266	58	98	99	267	
	2	1250	795.50	1.00	0.38	0.38	6.00	352	272	267	58	98	98	267	
	1	1255	797.49	1.00	0.38	0.38	6.00	341	271	267	58	98	98	267	
E	C5	1300	799.60	1.10	0.42	0.42	6.50	340	271	267	58	98	98	266	
	4	1305	801.55	1.20	0.45	0.45	7.00	346	271	269	59	99	98	268	
	3	1310	803.54	1.10	0.42	0.42	6.50	344	270	269	59	98	98	268	
	2	1315	805.49	0.85	0.32	0.32	6.00	345	269	269	58	98	99	268	
	1	1320	807.43	0.80	0.30	0.30	6.00	342	269	268	58	98	98	268	
G	D5	1325	809.45	1.00	0.38	0.38	6.50	342	269	266	58	98	98	268	
	4	1330	811.38	1.20	0.45	0.45	7.50	350	268	266	58	98	98	267	
	3	1335	813.34	1.20	0.45	0.45	7.50	354	268	267	57	99	99	268	

Pitot Tube Calibration Factor C_p 0.810
Volume Collected V_m 60.483 ft^3
Water Collected V_w 156.8 ml
Time of Test T_t 150 min.
Stack Pressure P_s -16.0 "H_2O

Pitot Tube No. M8
Baro. Press. P_b 29.76 "Hg
Probe Tip Dia. D_n 0.174 in.
% CO_2 9.4 % CO 0.0
% O_2 9.6 % N_2 81.0
Area Stack A_s 31248 in^2

Barometer No. 19-1
Probe Tip No. TFE 1-6
Total Volume of Leak Checks After Start: — ft^3
V_m = Dry Gas Meter Calibration Factor 1.008 X 60.003

[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	878.4		Impinger 1	121.6
	Initial Weight	756.8	1015.0		
	Increase	121.6	Imp 8 1001.7	Impinger 2	11.8
			13.3		
Impinger 2	Final Weight	757.7		Impinger 3	5.6
	Initial Weight	745.9			
	Increase	11.8		Impinger 4	3.9
			V_w =		
Impinger 3	Final Weight	743.8	g SO_2 =	Impinger 5	0.1
	Initial Weight	738.2	V_w =		
	Increase	5.6		Impinger 6	0.3
			2631.2 2631.5		
Impinger 4	Final Weight	760.6		Impinger 7	0.2
	Initial Weight	756.7		Impinger 8	13.3
	Increase	3.9		Total	156.8 = V_w
Impinger 5	Final Weight	749.2	P_b = 29.76	$\%CO_2$ =	9.4
	Initial Weight	749.1	V_m = 60.483	$\%O_2$ =	9.6
	Increase	0.1	V_w = 156.8	%CO =	0.0
			P_m = 0.390	$\%N_2$ =	81.0
Impinger 6	Final Weight	771.7	Avg ΔP = 1.030	A_s =	31248
	Initial Weight	771.4		D_n =	0.174
	Increase	0.3	Avg$\sqrt{\Delta P}$ = 1.013	T_t =	150
			C_p = 0.810		
Impinger 7	Final Weight	744.6	P_s = -16.0 "H_2O		28.58 "Hg
	Initial Weight	744.4	T_m = 98 °F		558 °R
	Increase	0.2	T_s = 347 °F		807 °R

Moisture Content: %M = 11.49 M_d = 0.8851 MW_d = 29.888 MW = 28.52

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 60.483 \left[\frac{29.76 + \frac{0.390}{13.6}}{98 + 460}\right] = \frac{56.990\ sft^3}{0.380\ scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 156.8 = 7.4010 sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{7.401}{56.990 + 7.401}$ x 100 = 11.49 %

V_s = 5123.8 x 0.810 $\sqrt{\frac{807}{28.58 \times 28.52}}$ x 1.013 = 4183 fpm

ACFM: 907773

SCFM: 503960

%I = $\frac{1{,}039 \times 56.990 \times 807}{0.8851 \times 28.58 \times 4183 \times 150 \times (0.174)^2}$ = 99.4 %

%EA: 80.98

Run Number 3
Unit Unit 3 FGD Inlet
Date 02-24-00

Hg FIELD DATA

	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
G	~~0~~2	1340	815.33	1.00	0.38	0.38	7.00	359	269	267	57	98	99	266
	1	1345	817.38	1.20	0.45	0.45	8.00	351	269	267	57	98	98	268
I	~~E~~5	1350	819.54	1.00	0.38	0.38	7.50	346	268	267	57	98.	99	268
	4	1355	821.69	1.10	0.42	0.42	8.00	356	269	266	58	98	99	268
	3	1400	823.83	1.10	0.42	0.42	8.00	355	268	266	58	99	99	268
	2	1405	825.98	1.10	0.42	0.42	8.00	351	268	267	58	99	99	267
	1	1410	828.08	1.00	0.38	0.38	8.00	341	271	269	58	99	99	267
K	~~F~~5	1415	830.20	0.85	0.32	0.32	7.00	347	271	268	58	99	99	268
	4	1420	832.05	0.95	0.36	0.36	7.50	351	271	268	58	99	99	268
	3	1425	834.15	1.00	0.38	0.38	8.00	349	270	269	59	99	99	267
	2	1430	835.84	1.00	0.38	0.38	8.00	345	270	269	59	99	99	266
	1	1435	837.70	1.10	0.42	0.42	8.50	341	270	269	59	99	99	265
	END	1440	839.959	—	—	—	—	—	—	—	—	—	—	—

METCO ENVIRONMENTAL

Job Number 99-183 ✓
Job Name TXU - Mt. pleasant ✓
Run Number 1 ✓
Unit FGD Outlet Duct ✓
Date 2-23-00 ✓
Operator Conway / Bornsen / Bass ✓
Sample Box No. D-4 Meter Box No. 19-2 ✓

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 78
Assumed Moisture % 17.00
Probe Length 12'
C Factor 0.7 → 0.9 to reference
Initial Leak @ 15 "Hg = 0.001 cfm
Final Leak @ 10 "Hg = 0.001 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
A-4	1550	692.626	0.10	0.08	0.08	0.00	140	250	251	65	82	82	250
A-3	1555	698.39	1.30	1.00	1.00	6.5	132	250	251	64	80	83	251
A-2	1600	701.31	0.94	0.74	0.74	5.0	143	250	251	63	82	83	251
A-1	1605	703.79	0.74	0.58	0.58	4.5	136	251	251	60	82	83	251
B-4	1610	705.98	0.20	~~0.160~~ 0.16	0.16	2.0	140	251	250	66	82	83	250
B-3	1615	706.86	1.15	0.90	0.90	6.0	137	251	250	66	84	84	250
B-2	1620	709.64	0.81	0.64	0.64	5.0	138	251	250	66	84	82	250
B-1	1625	712.00	0.80	0.62	0.62	4.5	138	250	250	58	82	82	250
—	~~1630~~ 1638	714.216	—	—	—	—	—	—	—	—	—	—	— Pump off @ 1630
C-4	1705	714.216	0.10	~~0.08~~ ~~0.78~~	~~0.08~~ ~~0.78~~	0.5	144	250	250	67	76	79	254 ΔH = 0.08
C-3	1710	715.02	1.10	0.86	0.86	6.5	140	250	251	59	76	79	252
C-2	1715	717.71	0.90	0.70	0.70	5.5	142	250	251	54	76	79	252
C-1	1720	720.14	0.76	0.60	0.60	5.0	141	250	251	53	75	77	252 ΔP = 0.09
D-4	1725	722.35	0.08	0.07	0.07	0.50	139	250	251	58	76	77	251
D-3	1730	723.02	0.95	0.74	0.74	5.50	136	250	251	53	76	77	251
D-2	1735	725.72	0.99	0.76	0.76	5.50	137	250	251	53	76	76	251
P-1	1740	728.08	0.84	0.66	0.66	5.0	138	250	250	51	76	76	251
E-4	1745	730.29	0.10	~~0.08~~ 0.08	~~0.08~~ 0.08	1.0	136	250	250	51	76	75	251

Pitot Tube Calibration Factor C_p 0.840 ✓
Volume Collected V_m 56.994 ✓ ft^3
Water Collected V_w 279.3 ✓ ml
Time of Test T_t 140 ✓ min.
Stack Pressure P_s +2.5 ✓ "H_2O

Pitot Tube No. M-7 ✓
Baro. Press. P_b 29.58 ✓ "Hg
Probe Tip Dia. D_n 0.195 ✓ in.
% CO_2 10.8 ✓ % CO 0.0 ✓
% O_2 9.0 ✓ % N_2 80.2 ✓
Area Stack A_s 43,884 ✓ in^2

Barometer No. 19-1 ✓
Probe Tip No. TFE2-7 ✓
Total Volume of Leak Checks After Start: 0 ft^3
V_m = Dry Gas Meter Calibration Factor 57.396 X 0.993 ✓

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

Impinger Box No. Hg-3

Impinger 1	Final Weight	796.0	Final Weight	863.1	Impinger 1	80.5
	Initial Weight	715.5	Initial Weight	851.9		
	Increase	80.5	Increase	11.2	Impinger 2	179.5
Impinger 2	Final Weight	924.3			Impinger 3	5
	Initial Weight	744.8				
	Increase	179.5			Impinger 4	2.9
			V_w =			
Impinger 3	Final Weight	736.6	g SO_2 =	—	Impinger 5	0.2
	Initial Weight	731.6	V_w =			
	Increase	5			Impinger 6	0.0
Impinger 4	Final Weight	764.1			Impinger 7	0.0
	Initial Weight	761.2			Imp 8	11.2
	Increase	2.9			Total	279.3 = V_w
Impinger 5	Final Weight	751.6	P_b =	29.58	$\%CO_2$ =	10.8
	Initial Weight	751.4	V_m =	56.994	$\%O_2$ =	9.0
	Increase	0.2	V_w =	279.3	%CO =	0.0
			P_m =	~~0.625~~ 0.601	$\%N_2$ =	80.2
Impinger 6	Final Weight	756.4	Avg ΔP =	0.769	A_s =	43,884
	Initial Weight	756.4			D_n =	0.195
	Increase	0.0	Avg$\sqrt{\Delta P}$ =	0.8268	T_t =	140
			C_p =	0.810		
Impinger 7	Final Weight	760.2	P_s =	+2.5 "H_2O	29.76	"Hg
	Initial Weight	760.2	T_m =	78 °F	538	°R
	Increase	0.0	T_s =	138 °F	598	°R

Water Weight Gain

Moisture Content: %M = 19.22 M_d = 0.8078 MW_d = 30.088 MW = 27.76

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 56.994 \left[\frac{29.58 + \frac{0.601}{13.6}}{78 + 460}\right] = \frac{\cancel{55.394}\ 55.391}{\cancel{.0551}\ \text{sft}^3}$$

$$\frac{\cancel{0.396}\ 0.396}{\text{scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 279.3 = 13.183 sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{13.183}{55.391 + 13.183}$ x 100 = 19.22 %

V_s = 5123.8 x 0.810 $\sqrt{\frac{598}{29.76 \times 27.76}}$ x 0.826 = 2917 fpm

ACFM: 888,844

SCFM: 632,970

%I = $\frac{1,039 \times \cancel{55.394}\ 55.391 \times 598}{29.76 \times \cancel{0.8075}\ 0.8078 \times 2917 \times 140 \times (0.195)^2}$ = 92.2 %

%EA: 73.5

Run Number 1

Unit FGD Outlet Duct

Date 2-23-00

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
E-3	1750	730.69	1.10	0.86	0.86	6.0	143	250	251	53	75	75	251	
E-2	1755	733.28	1.10	0.86	0.86	6.0	140	250	251	52	75	75	251	
E-1	1800	735.88	0.86	0.68	0.68	5.0	140	250	250	51	75	75	251	
F-4	1805	738.18	0.10	0.08	0.08	0.5	136	250	251	56	75	75	250	
F-3	1810	739.89	1.10	0.86	0.86	6.0	133	250	252	53	75	75	250	
F-2	1815	741.52	1.10	0.86	0.86	6.0	135	250	252	51	76	74	250	
F-1	1820	744.15	0.90	0.70	0.70	5.0	135	250	251	50	76	74	250	
G-4	1825	746.53	0.10	0.08	0.08	0.5	136	251	253	52	74	74	251	
G-3	1830	747.10	1.10	0.86	0.86	6.0	137	251	252	54	72	74	253	
G-2	1835	749.85	1.00	0.78	0.78	5.5	136	251	252	50	76	74	253	
G-1	1840	752.31	1.20	0.94	0.94	6.0	135	251	252	50	76	74	253	
End	1845	755.022	—	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Job Number 49-193
Job Name TXU MOSES 3
Run Number 2
Unit FGD OUTLET DUCT
Date 2-24-00
Operator BOENSEN/CONWAY/BASS
Sample Box No. Hg 5 Meter Box No. 19-2

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 70
Assumed Moisture % 19.0%
Probe Length 12'
C Factor 1 @ 1.2" 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 (T_m)	Dry Gas Temp. °F Outlet	FLEX LINE	Remarks
A4	0835	760.415	0.10	0.08	0.08	2.0	134	251	252	66	76	74	252	INT. ORSAT
3	0840	761.17	0.85	0.72	0.72	5.0	135	250	251	63	75	75	251	
2	0845	763.70	0.77	0.66	0.66	4.5	133	250	251	62	75	75	251	
1	0850	766.08	0.81	~~0.52~~ 0.69	0.69 ~~0.52~~	4.0	132	251	250	62	75	75	251	
B4	0855	768.46	0.13	0.11	0.11	2.0	134	251	250	62	76	75	252	
3	0900	769.42	1.20	1.03	1.03	5.5	134	252	251	59	76	75	253	
2	0905	772.30	0.83	0.71	0.71	5.0	134	252	252	52	75	75	252	
1	0910	774.77	0.79	0.67	0.67	5.0	134	251	251	52	76	75	251	
C4	0915	777.15	0.06	0.05	0.05	2.0	136	252	250	52	77	75	250	
3	0920	777.75	1.00	0.85	0.85	5.0	135	251	251	53	79	76	250	
2	0925	780.48	0.91	0.77	0.77	5.0	137	252	251	51	79	76	250	
1	0930	783.05	0.75	0.64	0.64	4.0	136	251	250	51	79	76	251	
D4	0935	785.46	0.11	0.09 ~~0.90~~	0.09	2.0	134	250	252	53	80	77	253	
3	0940	786.34	0.98	0.83	0.83	5.0	137	250	252	55	81	78	252	
2	0945	789.01	0.81	0.69	0.69	4.5	136	251	252	53	81	78	251	
1	0950	791.48	0.78	0.67	0.67	4.5	135	251	252	53	81	78	250	
E4	0955	793.86	0.05	0.04	0.04	2.0	136	251	252	55	80	79	251	
3	1000	794.52	1.10	0.94	0.94	6.0	133	252	251	59	79	~~78~~ 78	250	

Pitot Tube Calibration Factor C_p 0.810
Volume Collected V_m 59.270 ft³
Water Collected V_w 284.0 ml
Time of Test T_t 140 min.
Stack Pressure P_s +2.40 "H_2O

Pitot Tube No. M7
Baro. Press. P_b 29.74 "Hg
Probe Tip Dia. D_n 0.195 in.
% CO_2 10.8 % CO 0.0
% O_2 9.0 % N_2 80.2
Area Stack A_s 43.884 in²

Barometer No. 19-1
Probe Tip No. TFE 2-7
Total Volume of Leak Checks After Start: — ft³
V_m = Dry Gas Meter Calibration Factor 0.993 X 59.688

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

Impinger Box No. Hg-5

Impinger 1	Final Weight	~~861.4~~ 831.4	
	Initial Weight	674.8	
204.0	Increase	~~186.6~~ 156.6	
Impinger 2	Final Weight	778.0	
	Initial Weight	671.3	
	Increase	106.7	
Impinger 3	Final Weight	657.0	
	Initial Weight	654.9	
	Increase	2.1	
Impinger 4	Final Weight	661.2	
	Initial Weight	660.6	
	Increase	0.6	
Impinger 5	Final Weight	664.1	
	Initial Weight	662.6	
	Increase	1.5	
Impinger 6	Final Weight	654.0	
	Initial Weight	653.6	
	Increase	0.4	
Impinger 7	Final Weight	679.9	
	Initial Weight	678.8	
	Increase	1.1	

Water Weight Gain

Imp 8 849.4 − 834.4 = 15.0

V_w =

g SO_2 = -

V_w =

Impinger 1	156.6
Impinger 2	106.7
Impinger 3	2.1
Impinger 4	0.6
Impinger 5	1.5
Impinger 6	0.4
Impinger 7	1.1
Imp 8	15.0
Total	284.0 = V_w

P_b =	29.74		$\%CO_2$ =	10.8
V_m =	59.270		$\%O_2$ =	9.0
V_w =	284.0		%CO =	0.0
P_m =	0.593		$\%N_2$ =	80.2
Avg ΔP =	0.697		A_s =	43.884
			D_n =	0.195
Avg$\sqrt{\Delta P}$ =	0.786		T_t =	140
C_p =	0.810			
P_s =	+2.40	"H_2O	29.92	"Hg
T_m =	78	°F	538	°R
T_s =	135	°F	595	°R

Moisture Content: %M = 18.80 M_d = 0.8120 MW_d = 30.088 MW = 27.82

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 59.270 \left[\frac{29.74 + \frac{0.593}{13.6}}{78 + 460}\right] = \frac{57.913\ sft^3}{0.414\ scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 284.0 = 13.405 sft^3

$$\%\ Moisture = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{13.405}{57.913 + 13.405} \times 100 = 18.80\ \%$$

$$V_s = 5123.8 \times 0.810 \sqrt{\frac{595}{29.92 \times 27.82}} \times 0.786 = 2758\ fpm$$

ACFM: 840,509

SCFM: 607,864

$$\%I = \frac{1{,}039 \times 57.913 \times 595}{29.92 \times 0.8120 \times 2758 \times 140 \times (0.195)^2} = 100.4\ \%$$

%EA: 73.5

Run Number 2

Unit FGD OUTLET DUCT

Date 2-24-00

Hg FIELD DATA

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	FLEX LINE	Remarks
E2	1005	797.33	0.96	0.82	0.82	5.0	136	250	251	51	80	78	253	
1	1010	800.10	0.86	0.73	0.73	4.5	138	252	251	51	80	78	253	
E4	1015	802.65	0.15	0.13	0.13	2.0	136	251	253	52	80	78	252	
3	1020	803.71	0.86	0.74	0.74	5.0	135	252	253	54	80	78	252	
2	1025	806.41	0.88	0.76	0.76	5.0	137	252	253	52	80	78	255	
1	1030	808.90	0.75	0.64	0.64	4.5	137	251	255	51	80	78	255	
G4	1035	811.25	0.10	0.08	0.08	2.0	135	250	251	53	80	78	256	
3	1040	812.08	1.10	0.94	0.94	6.0	136	250	256	55	78	77	255	
2	1045	814.92	1.00	0.85	0.85	5.0	136	251	255	52	78	77	253	
1	1050	817.60	0.82	0.69	0.69	5.0	135	252	254	52	78	77	252	
END	1055	820.133	–	–	–	–	–	–	–	–	–	–		

METCO ENVIRONMENTAL

Job Number 99-183 ✓
Job Name TXU MOSES 3 ✓
Run Number 3 ✓
Unit FGD OUTLET DUCT ✓
Date 12-24-00 ✓
Operator B.SANSEN/CONWAY / BASS ✓
Sample Box No. HG3 Meter Box No. 19-2 ✓

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 78
Assumed Moisture % 19.0
Probe Length 12'
C Factor 1@1.15" to reference
Initial Leak @ 15.0 "Hg = 0.004 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	FLEX LINE	Remarks
A4	1210	822.280	0.10	0.09	0.09	2.0	136	252	255	67	85	85	253	INT. OCSAT
3	1215	823.20	1.20	1.05	1.05	6.0	136	252	254	63	86	85	253	
2	1220	826.26	0.94	0.83	0.83	6.0	136	251	254	59	85	85	252	
1	1225	828.95	0.81	0.72	0.72	6.0	136	251	254	58	85	85	252	
B4	1230	831.44	0.14	0.12	0.12	2.0	135	252	254	57	86	85	252	
3	1235	832.40	1.00	0.90	0.90	5.0	137	252	254	57	85	85	252	
2	1240	835.20	0.90	0.80	0.80	5.0	136	252	253	58	86	85	251	
1	1245	837.88	0.70	0.62	0.62	4.0	134	251	253	59	86	85	250	
C4	1250	840.27	0.07	0.06	0.06	2.0	135	252	253	58	86	85	250	
3	1255	840.92	0.91	0.82	0.82	5.0	137	252	253	59	86	86	251	
2	1300	843.58	0.95	0.84	0.84	5.0	137	252	253	61	88	86	252	
1	1305	846.27	0.74	0.66	0.66	5.0	138	252	254	61	88	87	252	
D4	1310	848.47	0.10	0.09	0.09	2.0	136	253	255	61	87	87	251	
3	1315	849.17	0.86	0.77	0.77	5.0	137	253	255	62	87	87	252	
2	1320	852.45	0.88	0.78	0.78	5.0	136	254	256	59	88	87	252	
1	1325	855.76	0.75	0.66	0.66	5.0	137	255	254	60	89	87	252	
E4	1330	857.70	0.15	0.13	0.13	2.0	136	254	253	60	89	87	251	
3	1335	858.75	0.92	0.82	0.82	5.0	136	254	253	61	89	88	251	

Pitot Tube Calibration Factor C_p 0.810 ✓
Volume Collected V_m 60.806 ✓ ft^3
Water Collected V_w 293.2 ✓ ml
Time of Test T_t 140 ✓ min.
Stack Pressure P_s 42.40 ✓ "H_2O

Pitot Tube No. M7 ✓
Baro. Press. P_b 29.76 ✓ "Hg
Probe Tip Dia. D_n 0.195 ✓ in.
% CO_2 10.8 ✓ % CO 0.1 ✓
% O_2 9.0 ✓ % N_2 80.2 ✓
Area Stack A_s 43.894 ✓ in^2

Barometer No. 19-1 ✓
Probe Tip No. TFE 2-7 ✓
Total Volume of Leak Checks After Start: — ✓ ft^3
V_m = Dry Gas Meter Calibration Factor 0.993 ✓ X 61.235

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

Impinger Box No. Hg 3

Impinger 1	Final Weight	825.4		Impinger 1	114.3
	Initial Weight	711.1			
	Increase	114.3		Impinger 2	147.6
Impinger 2	Final Weight	890.5		Impinger 3	7.1
	Initial Weight	742.9			
	Increase	147.6		Impinger 4	4.6
Impinger 3	Final Weight	737.6		Impinger 5	0.4 9.6
	Initial Weight	730.5			
	Increase	7.1		Impinger 6	0.4
Impinger 4	Final Weight	764.5		Impinger 7	0.4
	Initial Weight	757.5		IMP 8	11.8
	Increase	7.0		Total	293.2 = V_w
Impinger 5	Final Weight	751.6			
	Initial Weight	747.0			
	Increase	4.6			
Impinger 6	Final Weight	753.5			
	Initial Weight	753.1			
	Increase	0.4			
Impinger 7	Final Weight	760.0			
	Initial Weight	759.6			
	Increase	0.4			

Water Weight Gain

Imp 8 878.2 − 866.4 = 11.8

V_w =
g SO_2 = -
V_w =

P_b =	29.76		$\%CO_2$ =	10.8
V_m =	60.806		$\%O_2$ =	9.0
V_w =	293.2		%CO =	0.0
P_m =	0.618		$\%N_2$ =	80.2
Avg ΔP =	~~0.646~~ 0.695		A_s =	~~43.884~~
Avg$\sqrt{\Delta P}$ =	~~0.756~~ ~~0.770~~ 0.785		D_n =	0.195
C_p =	0.810		T_t =	140
P_s =	+2.40	H_2O	29.94	"Hg
T_m =	87	°F	547	°R
T_s =	136	°F	596	°R

Moisture Content: %M = 19.14 M_d = 0.8086 MW_d = 30.088 MW = 27.77

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 60.806 \left[\frac{29.76 + \frac{0.618}{13.6}}{87 + 460}\right] = 58.479\ sft^3 = 0.418\ scfm$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 293.2 = 13.839 sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{13.839}{58.479 + 13.839}$ x 100 = 19.14 %

V_s = 5123.8 x 0.810 $\sqrt{\frac{596}{29.94 \times 27.77}}$ x ~~0.770~~ 0.785 = ~~2776~~ 2758 fpm

ACFM: ~~845,775~~ 840,620

SCFM: ~~628,653~~ 604,707

%I = $\frac{1{,}039 \times 58.479 \times 596}{29.94 \times 0.8086 \times \text{~~2776~~ } 2758 \times 140 \times (0.195)^2}$ = ~~101.2~~ 101.9 %

%EA: 73.5

Run Number 3

Unit FGD OUTLET DUCT

Date 2-24-00

HG FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O 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 (T_m)	Dry Gas Temp. °F Outlet	FLUE LINE	Remarks
E2	1340	861.42	0.96	0.84	0.84	5.0	137	252	251	60	90	87	252	
1	1345	864.11	0.83	0.74	0.74	5.0	136	251	252	61	90	88	253	
F4	1350	866.70	0.10	0.09	0.09	2.0	136	252	251	62	90	88	253	
3	1355	867.61	1.10	0.99	0.99	6.0	136	253	252	62	89	88	252	
2	1400	870.57	0.92	0.82	0.82	5.0	136	252	253	62	90	88	253	
1	1405	873.69	0.77	0.69	0.69	5.0	137	253	252	63	91	88	253	
G4	1410	875.75	0.05	0.04	0.04	2.0	136	253	252	62	91	88	254	
3	1416	876.50	1.10	0.99	0.99	5.0	137	253	251	62	91	88	253	
2	1420	879.46	0.81	0.72	0.72	5.0	136	254	251	62	91	88	253	
1	1425	881.90	0.69	0.62	0.62	5.0	137	253	252	62	92	88	253	
END	1430	883.515	—	—	—	—	—	—	—	—	—	—		

METCO ENVIRONMENTAL

Job Number 99-183
Job Name TXU (EPRI)
Run Number 1
Unit Unit 3 Stack
Date 2-23-00
Operator Hart / LEE
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 70
Assumed Moisture % 15.0
Probe Length ~~14~~ 16
C Factor 10 → ~~46~~ 4.6 to reference
Initial Leak @ 15.0" "Hg = 0.000 cfm
Final Leak @ 15.0" "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	Remarks
A~~B~~1	1550	680.101	2.50	1.15	1.15	5.0	194	270	255	60	72	72	880125
B1	1555	683.22	2.50	1.15	1.15	5.0	195	270	253	60	73	73	
2	1600	686.55	2.70	1.25	1.25	5.0	193	268	255	58	74	74	
2	1605	690.00	2.70	1.25	1.25	5.0	194	268	255	56	74	75	
3	1610	694.01	2.40	1.10	1.10	5.0	194	268	255	54	74	76	
3	1615	697.22	2.50	1.15	1.15	5.0	184	268	259	58	75	76	
End	1620	700.276	—	—	—	—	—	—	—	—	—	—	Leak ✓ to 700.276 @ 10.0" 0.000
B1	1701	700.535	2.20	1.00	1.00	5.0	194	265	260	60	74	74	Leak ✓ to 700.535 @ 11.0" 0.000
1	1706	703.54	2.50	1.15	1.15	5.0	195	265	263	58	74	74	0.259 ✓
2	1711	706.70	2.50	1.15	1.15	5.0	194	258	265	54	74	75	
2	1716	709.88	2.50	1.15	1.15	5.0	195	262	266	53	75	76	
3	1721	713.32	2.50	1.15	1.15	5.0	194	264	264	53	75	76	
3	1726	716.24	2.60	1.20	1.20	5.0	195	264	264	53	75	76	
End	1731	719.420	—	—	—	—	—	—	—	—	—	—	Leak ✓ to 719.420 @ 11.0" 0.000
C1	1738	719.783	2.20	1.00	1.00	5.0	193	266	265	55	76	77	Leak ✓ to 719.783 @ 11.0" 0.000
1	1743	723.01	2.20	1.00	1.00	5.0	195	267	265	54	76	76	0.363 ✓
2	1748	725.79	2.40	1.10	1.10	5.0	195	267	265	54	76	76	
2	1753	729.09	2.40	1.10	1.10	5.0	194	268	268	55	75	76	

Pitot Tube Calibration Factor C_p 0.808 ✓
Volume Collected V_m 75.689 ✓ ft^3
Water Collected V_w 388.1 ✓ ml
Time of Test T_t ~~144~~ 120 ✓ min.
Stack Pressure P_s -1.40 ✓ "H_2O

Pitot Tube No. m-3 ✓
Baro. Press. P_b 29.38 ✓ "Hg
Probe Tip Dia. D_n 0.171 ✓ in.
% CO_2 8.8 ✓ % CO 0.0 ✓
% O_2 10.4 ✓ % N_2 80.8 ✓
Area Stack A_s 83648 ✓ in^2

Barometer No. 19-1 ✓
Probe Tip No. TFE II-6A ✓
Total Volume of Leak Checks After Start: 0.832 ✓ ft^3
V_m = Dry Gas Meter Calibration Factor 0.998 ✓ X 75.841

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

Impinger Box No. Hg-2

Impinger 1	Final Weight	969.4	Water Weight Gain		Impinger 1	212
	Initial Weight	757.4	Final Weight	952.4		
	Increase	212	Initial Weight	935.5		
			Increase	16.9	Impinger 2	186.4
Impinger 2	Final Weight	934.7			Impinger 3	-0.9
	Initial Weight	748.3				
	Increase	186.4			Impinger 4	-3.3
			V_w =			
Impinger 3	Final Weight	754.8	g SO_2 =	-	Impinger 5	99.2
	Initial Weight	755.7	V_w =			
	Increase	-0.9			Impinger 6	-61.8
Impinger 4	Final Weight	752.4			Impinger 7	-60.4
	Initial Weight	~~744.0~~ 755.7			Imp 8	16.9
	Increase	-3.3			Total	~~640.9~~ 388.1 = V_w
Impinger 5	Final Weight	~~960.8~~ 860.8	P_b =	29.38	$\%CO_2$ =	8.8
	Initial Weight	~~753.1~~ 761.6	V_m =	75.689	$\%O_2$ =	10.4
	Increase	99.2	V_w =	~~640.9~~ 388.1	%CO =	0.0
			P_m =	1.127	$\%N_2$ =	80.8
Impinger 6	Final Weight	585.1	Avg ΔP =	2.454	A_s =	836.48
	Initial Weight	646.9			D_n =	0.171
	Increase	-61.8	Avg$\sqrt{\Delta P}$ =	1.5666	T_t =	120
			C_p =	0.808		
Impinger 7	Final Weight	692.7	P_s =	-1.40 "H_2O	29.28	"Hg
	Initial Weight	~~761.6~~ 753.1	T_m =	74 °F	534	°R
	Increase	-60.4	T_s =	194 °F	654	°R

Moisture Content: %M = ~~15.0~~ 19.91 M_d = ~~0.8500~~ 0.8009 MW_d = 29.824 MW = ~~28.05~~ 27.47

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 75.689 \left[\frac{29.38 + \frac{1.127}{13.6}}{74 + 460}\right] = \frac{73.707}{0.614}\ \frac{sft^3}{scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x ~~640.9~~ 388.1 = ~~30.250~~ 18.318 sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{\cancel{30.250}\ 18.318}{73.707 + \cancel{30.250}\ 18.318}$ x 100 = ~~29.10~~ 19.91 %

V_s = 5123.8 x $\sqrt{\frac{0.808 \times 654}{29.28 \times \cancel{28.05}\ 27.47}}$ x 1.5666 = ~~5785~~ 5846 fpm

ACFM: ~~3360442~~ 3,395,958

SCFM: ~~2265042~~ 2,156,707

%I = $\frac{1{,}039 \times 73.707 \times 654}{\cancel{0.8500}\ 0.8009 \times 29.28 \times \cancel{5785}\ 5846 \times 120 \times (0.171)^2}$ = ~~99.1~~ 104.1 %

%EA: ~~0.0490~~ 94.4

Run Number 1.

Unit Unit 3 stack

Date 2-23-00

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	Remarks
C3	1758	732.05	2.50	1.15	1.15	5.0	194	269	268	56	75	75	
3	1803	735.18	2.50	1.15	1.15	5.0	195	268	265	56	75	75	
End	1808	738.149	—	—	—	—	—	—	—	—	—	—	LEAK ✓ +0 738.149 @ 10.0" 0.000
D1	1814	738.359	2.30	1.05	1.05	5.0	193	266	265	58	75	75	LEAK ✓ +0 738.359 @ 10.0" 0.000
1	1819	741.38	2.30	1.05	1.05	5.0	192	268	263	58	73	73	0.210 ✓
2	1824	744.44	2.50	1.15	1.15	5.0	192	269	263	55	72	72	
2	1829	747.60	2.50	~~2.5~~ 1.15	1.15	5.0	194	269	264	57	72	72	
3	1834	750.75	2.50	1.15	1.15	5.0	195	269	265	58	72	73	
3	1839	753.90	2.50	1.15	1.15	5.0	195	269	265	58	72	73	
End	1844	756.774	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Job Number: CA-183
Job Name: TXU
Run Number: 2
Unit: Unit 3 Stack
Date: 2-23-00
Operator: Hart / Lee / Boon
Sample Box No. Hg4 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 64
Assumed Moisture % 15.0
Probe Length ~~11~~ 16
C Factor .0 → 46 to reference
Initial Leak @ 15.0" "Hg = 0.000 cfm
Final Leak @ 14.0" "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	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 (T_m)	Dry Gas Temp. °F Outlet	Remarks
D1	0835	761.081	2.20	1.00	1.00	~~191~~ 5.0	~~268~~ 191	268	270	51	66	66	CST
1	0840	763.66	2.20	1.00	1.00	5.0	191	270	270	49	66	67	int. orsat
2	0845	766.70	2.40	1.10	1.10	5.0	192	270	269	48	67	67	
2	0850	769.82	2.40	1.10	1.10	5.0	193	269	269	47	67	68	
3	0855	772.94	2.40	1.10	1.10	5.0	193	269	269	47	67	68	
3	0900	776.04	2.40	1.10	1.10	5.0	193	269	269	47	67	69	
End	0905	779.052	—	—	—	—	—	—	—	—	—	—	Leak ✓ to 779.052 @ 10.0" 0.000
C1	0910	779.420	2.30	1.05	1.05	5.0	192	269	269	52	69	70	Leak ✓ to 779.420 @ 11.0" 0.000
1	0915	782.38	2.40	1.10	1.10	5.0	192	268	265	53	68	70	0.368 ✓
2	0920	785.49	2.40	1.10	1.10	5.0	192	268	265	54	68	70	
2	0925	788.57	2.50	1.15	1.15	5.0	193	266	265	55	68	70	
3	0930	791.67	2.50	1.15	1.15	5.0	192	266	265	55	68	70	
3	0935	794.79	2.50	1.15	1.15	5.0	192	263	265	56	69	70	
End	0940	797.841	—	—	—	—	—	—	—	—	—	—	Leak ✓ to 797.841 @ 11.0" 0.000
B1	0945	798.098	2.50	1.15	1.15	5.0	192	263	265	56	69	70	Leak ✓ to 798.098 @ 11.0" 0.000
1	0950	801.25	2.30	1.05	1.05	5.0	190	262	260	55	68	70	0.257 ✓
2	0955	804.54	2.40	1.15	1.15	5.0	191	262	260	55	68	70	ΔH → 4.7
2	1000	807.64	2.40	1.15	1.15	5.0	190	262	261	57	69	70	

Pitot Tube Calibration Factor C_p 0.808 ✓
Volume Collected V_m 74.242 ✓ ft^3
Water Collected V_w 325.3 ✓ ml
Time of Test T_t 120 ✓ min.
Stack Pressure P_s −1.30 ✓ "H_2O

Pitot Tube No. M-3 ✓
Baro. Press. P_b 29.54 ✓ "Hg
Probe Tip Dia. D_n 0.171 ✓ in.
% CO_2 11.0 ✓ % CO 0.0 ✓
% O_2 8.0 ✓ % N_2 81.0 ✓
Area Stack A_s 83648 ✓ in^2

Barometer No. 19-1 ✓
Probe Tip No. TFE II-6a ✓
Total Volume of Leak Checks After Start: 1.016 ✓ ft^3
V_m = Dry Gas Meter Calibration Factor 0.998 ✓ X 74.391

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

Impinger Box No. Hg-4

			Water Weight Gain		
Impinger 1	Final Weight	972.8		Impinger 1	217.4
	Initial Weight	755.4	949.7		
	Increase	217.4	Imp. 8 928.3	Impinger 2	80.2
			21.4		
Impinger 2	Final Weight	830.2		Impinger 3	5.3
	Initial Weight	750.0			
	Increase	80.2		Impinger 4	3.2
			V_w =		
Impinger 3	Final Weight	760.3	g SO_2 =	Impinger 5	-1.0
	Initial Weight	755.0	V_w =		
	Increase	5.3		Impinger 6	-0.7
Impinger 4	Final Weight	754.5		Impinger 7	-0.5
	Initial Weight	751.3		8	21.4
	Increase	3.2		Total	325.3 = V_w
Impinger 5	Final Weight	758.6	P_b = 29.54	$\%CO_2$ =	11.0
	Initial Weight	759.6	V_m = 74.242	$\%O_2$ =	8.0
	Increase	-1.0	V_w = 325.3	%CO =	0.0
			P_m = 1.113	$\%N_2$ =	81.0
Impinger 6	Final Weight	754.9	Avg ΔP = 2.417	A_s =	83.648
	Initial Weight	755.6		D_n =	0.171
	Increase	-0.7	Avg$\sqrt{\Delta P}$ = 1.554	T_t =	120
			C_p = 0.808		
Impinger 7	Final Weight	764.3	P_s = -1.30 "H_2O	29.44	"Hg
	Initial Weight	764.8	T_m = 69 °F	529	°R
	Increase	-0.5	T_s = 192 °F	652	°R

Moisture Content: %M = 17.30 M_d = 0.8270 MW_d = 30.080 MW = 27.99

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 74.242 \left[\frac{29.54 + \frac{1.113}{13.6}}{69 + 460}\right] = \frac{73.375\ sft^3}{0.611\ scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 325.3 = 15.354 sft^3

$$\%\ Moisture = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{15.354}{73.375 + 15.354} \times 100 = 17.30\ \%$$

$$V_s = 5123.8 \times 0.808 \sqrt{\frac{652}{29.44 \times 27.99}} \times 1.554 = 5723\ fpm$$

ACFM: 3,324,307

SCFM: 2,198,772

$$\%I = \frac{1{,}039 \times 73.375 \times 652}{0.8270 \times 29.44 \times 5723 \times 120 \times (0.171)^2} = 101.7\ \%$$

%EA: 59.4

Run Number 2

Unit Unit 3 Stack

Date 2-24-00

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	Remarks
B3	1005	810.76	2.50	1.15	1.15	5.0	191	261	264	59	69	70	
3	1010	813.92	2.50	1.15	1.15	5.0	191	261	265	59	69	70	
End	1015	817.034	—	—	—	—	—	—	—	—	—	—	Leak ✓ to 817.034 @ 10.0" 0.000
A1	1020	817.435	2.40	1.10	1.10	5.5	191	261	267	60	69	70	Leak ✓ to 817.435 @ 10.0" 0.000
1	1025	820.60	2.40	1.10	1.10	5.5	192	261	267	59	69	70	0.391 ✓
2	1030	823.82	2.50	1.15	1.15	5.0	191	260	265	59	69	70	
2	1035	826.969	2.50	1.15	1.15	5.0	192	260	265	59	69	70	
3	1040	830.20	2.50	1.15	1.15	5.0	192	260	265	59	69	70	
3	1045	833.38	2.50	1.15	1.15	5.0	192	260	265	60	69	70	
End	1050	836.488	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Job Number 99 - 183
Job Name TXU
Run Number 3
Unit Unit 3 Stack
Date 2-24-00
Operator Hart / Lee / Boos
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 68
Assumed Moisture % 15.0
Probe Length ~~14~~ 16
C Factor 10 → 46 to reference
Initial Leak @ 15.0" "Hg = 0.000 cfm
Final Leak @ 14.0" "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	Remarks
A1	1210	836.981	2.40	1.10	1.10	5.0	191	270	270	57	70	70	
1	1215	840.13	2.30	1.10	1.10	5.0	191	270	269	52	71	71	
2	1220	843.28	2.30	1.10	1.10	5.0	191	270	269	52	71	71	
2	1225	846.32	2.30	1.10	1.10	5.0	191	269	269	52	72	72	
3	1230	849.41	2.50	1.15	1.15	5.0	191	269	269	53	72	73	
3	1235	852.55	2.50	1.15	1.15	5.0	190	267	271	55	73	73	
End	1240	855.596	—	—	—	—	—	—	—	—	—	—	Leak ✓ to 855.596 @ 12.0" 0.000
B1	1245	855.915	2.50	1.15	1.15	5.0	190	267	271	55	73	73	Leak ✓ to 855.915 @ 11.0" 0.000
1	1250	859.30	2.50	1.15	1.15	5.0	190	267	271	55	73	73	0.319 ✓
2	1255	861.40	2.50	1.15	1.15	5.0	190	267	271	55	73	73	
2	1300	864.62	2.60	1.20	1.20	5.0	193	265	269	58	73	73	
3	1305	868.02	2.60	1.20	1.20	5.0	194	263	269	59	73	74	
3	1310	871.23	2.50	1.15	1.15	5.0	193	260	267	59	73	74	
End	1315	874.800	—	—	—	—	—	—	—	—	—	—	Leak ✓ to 874.800 @ 11.0" 0.000
C1	1327	875.055	2.20	1.05	1.05	5.0	192	260	267	59	73	74	Leak ✓ to 875.055 @ 11.0" 0.000
1	1332	878.12	2.40	1.10	1.10	5.0	193	260	265	60	74	75	0.255 ✓
2	1337	881.27	2.50	1.15	1.15	5.0	192	260	265	60	74	75	
2	1342	884.40	2.50	1.15	1.15	5.0	192	260	265	60	74	75	

Pitot Tube Calibration Factor C_p 0.808 ✓
Volume Collected V_m 74.940 ✓ ft^3
Water Collected V_w 324.7 ✓ ml
Time of Test T_t 120 ✓ min.
Stack Pressure P_s -1.30 ✓ "H_2O

Pitot Tube No. m-3 ✓
Baro. Press. P_b 29.86 ✓ "Hg
Probe Tip Dia. D_n 0.171 ✓ in.
% CO_2 10.8 ✓ % CO 0.0 ✓
% O_2 8.2 ✓ % N_2 81.0 ✓
Area Stack A_s 83648 ✓ in^2

Barometer No. 19-1 ✓
Probe Tip No. TFE II-6a ✓
Total Volume of Leak Checks After Start: 0.869 ✓ ft^3
V_m = Dry Gas Meter Calibration Factor 0.998 ✓ X 75.090

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

Impinger Box No. Hg 2

Impinger 1	Final Weight	922.8
	Initial Weight	755.0
	Increase	167.8
Impinger 2	Final Weight	867.3
	Initial Weight	753.2
	Increase	114.1
Impinger 3	Final Weight	773.9
	Initial Weight	765.8
	Increase	8.1
Impinger 4	Final Weight	752.6
	Initial Weight	748.1
	Increase	4.5
Impinger 5	Final Weight	656.2
	Initial Weight	653.1
	Increase	3.1
Impinger 6	Final Weight	765.5
	Initial Weight	761.7
	Increase	3.8
Impinger 7	Final Weight	755.8
	Initial Weight	752.0
	Increase	3.8

Water Weight Gain

Imp 8 971.0 − 951.5 = 19.5

V_w =

g SO_2 = -

V_w =

Impinger 1	167.8
Impinger 2	114.1
Impinger 3	8.1
Impinger 4	4.5
Impinger 5	3.1
Impinger 6	3.8
Impinger 7	3.8
Imp 8	19.5
Total	324.7 = V_w

P_b =	29.76	%CO_2 =	10.8
V_m =	74.940	%O_2 =	8.2
V_w =	324.7	%CO =	0.0
P_m =	1.127	%N_2 =	81.0
Avg ΔP =	2.429	A_s =	83648
		D_n =	0.171
Avg$\sqrt{\Delta P}$ =	1.558	T_t =	120
C_p =	0.808		
P_s =	-1.30 "H_2O		29.66 "Hg
T_m =	74 °F		534 °R
T_s =	192 °F		652 °R

Moisture Content: %M = 17.17 M_d = 0.8283 MW_d = ~~30.060~~ 30.056 MW = 27.99

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 74.940 \left[\frac{29.76 + \frac{1.127}{13.6}}{74 + 460}\right] = 73.919\ sft^3 = 0.6616\ scfm$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 324.7 = 15.326 sft^3

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{15.326}{73.919 + 15.326} \times 100 = 17.17\ \%$$

$$V_s = 5123.8 \times 0.808 \sqrt{\frac{652}{29.66 \times 27.99}} \times 1.558 = 5716\ fpm$$

ACFM: ~~3320300~~ 3,320,480

SCFM: 221597

$$\%I = \frac{1{,}039 \times 73.919 \times 652}{0.8283 \times 29.66 \times 5716 \times 120 \times (0.171)^2} = 101.6\ \%$$

%EA: ~~0.049~~ 61.8

Run Number 3

Unit Unit 3 Stack

Date 2-24-00

Hg FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O (ΔP_s)	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O 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 (T_m)	Dry Gas Temp. °F Outlet	Remarks
C3	1347	887.57	2.50	1.15	1.15	5.0	192	261	265	60	76	78	
3	1352	890.72	2.40	1.10	1.10	5.0	192	261	265	60	76	78	
End	1357	893.825	—	—	—	—	—	—	—	—	—	—	Leak ✓ to 893.825 @ 11.0" 0.000
D1	1401	894.120	2.20	1.05	1.05	5.0	190	261	265	60	76	78	Leak ✓ to 894.120 @ 11.0" 0.000
1	1406	897.20	2.20	1.05	1.05	5.0	190	261	265	60	76	78	0.295 ✓
2	1411	900.39	2.50	1.15	1.15	5.0	191	261	265	60	76	78	
2	1416	903.58	2.40	1.10	1.10	5.0	193	262	266	59	77	78	
3	1421	906.80	2.50	1.15	1.15	5.0	192	262	266	59	77	78	
3	1426	909.92	2.50	1.15	1.15	5.0	192	262	266	59	77	78	
End	1431	912.940	—	—	—	—	—	—	—	—	—	—	

PRELIMINARY VELOCITY TRAVERSE DATA
AND
SAMPLING LOCATION DATA

Job Number 99-183

Job Name TXU Electric

Sampling Location Unit 3 FGD Inlet

Date 2-23-00 Time 1100

Stack Height — ft.

Sampling Port Height Above Ground 75 ft.

	Port A	Port B	Port C	Port D	Average
Port & Inside Diameter (in.)					111
Port & Wall Thickness (in.)					27
Inside Stack Diameter (in.)					84

372 x 84

De = 137

Sampling Ports are 11 ft. 6 in. (1.01 stack diameters) downstream from disturbance (inlet, constriction, bend, expansion)

Sampling Ports are 7 ft. 6 in. (0.66 stack diameters) upstream from disturbance (outlet, constriction, bend, expansion)

The Sampling ports are Located in a Transitional area.

Point Number	Percent Diameter	Distance from Ref. Point (decimal in.)	Distance from Ref. Point (fractional in.)	Port A ΔP/T_s/α	Port C ΔP/T_s/α	Port E ΔP/T_s/α	Port G ΔP/T_s/α
1		8.4	8 3/16	0.52133	0.88343	0.53328	1.30357
2		25.2	25 3/16	0.00348	0.95364	0.86345	1.30374
3		42.0	42	1.20135	1.00369	1.10356	1.30369
4		58.8	58 13/16	1.10349	0.81347	1.30348	1.00337
5		75.6	75 5/8	0.87343	0.76332	0.94332	0.90335
6				/ /	/ /	/ /	/ /
7				/ /	/ /	/ /	/ /
8				Port I	Point K	/ /	/ /
9		10 foot probe		ΔP / T_s / α	ΔP / T_s / α	/ /	/ /
10		6 × 5 × 5	= 150 min.	~~0.73347~~	/ /	/ /	/ /
11		ports points min.		0.73347	1.00329	/ /	/ /
12				1.10357	0.94349	/ /	/ /
13				1.10349	1.30359	/ /	/ /
14				0.93337	1.30345	/ /	/ /
15				0.90349	0.70338	/ /	/ /
16				/ /	/ /	/ /	/ /
17				/ /	/ /	/ /	/ /
18				/ /	/ /	/ /	/ /
19				/ /	/ /	/ /	/ /
20				/ /	/ /	/ /	/ /
21				/ /	/ /	/ /	/ /
22				/ /	/ /	/ /	/ /
23				/ /	/ /	/ /	/ /
24				/ /	/ /	/ /	/ /

Pitot Tube No. M8

C_p = 0.810

P_b = 29.67 "Hg

P_s = -15.3 "H_2O 28.55 "Hg

A_s = 31248 in.²

Average ΔP 0.987

Average $\Delta P^{1/2}$ 0.987

Average T_x 346 °F

Average α — degrees

PRELIMINARY VELOCITY TRAVERSE DATA
AND
SAMPLING LOCATION DATA

Job Number 99-183

Job Name TXU MOSES

Sampling Location Unit 3 FGD Outlet

Date 2-23-00 Time 1200

Stack Height 100' ft.

Sampling Port Height Above Ground 100' ft.

	Port A	Port B	Port C	Port D	Average
Port & Inside Diameter (in.)					164"
Port & Wall Thickness (in.)					26"
Inside Stack Diameter (in.)					138"

138 x 3.18

De = 192

Sampling Ports are 4 ft. 0 in. (0.25 stack diameters) downstream from disturbance (inlet, constriction, bend, expansion)

Sampling Ports are 5 ft. 6 in. (0.34 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 ΔP/T$_s$/α	Port B ΔP/T$_s$/α	Port C ΔP/T$_s$/α	Port D ΔP/T$_s$/α
1		17.25	17 1/4	0.70/135 0	0.70/133 0	0.90/133 0	0.87/136 -0
2		~~34.5~~ 51.75	51 3/4	0.84/135 5	0.92/134 -5	0.87/134 5	0.87/136 -5
3		~~34.5~~ 86.25	86 1/4	0.94/135 5	1.40/135 5	1.30/133 0	1.30/136 5
4		120.75	120 3/4	0.25/135 -5	0.20/135 0	0.05/132 0	0.03/135 0
5				/ /	/ /	/ /	/ /
6				PORT 1E	PORT 1F	PORT 1G	/ /
~~7~~ 1		17.25	17 1/4	0.32/135 0	0.86/135 5	0.94/135 0	/ /
~~8~~ 2		51.75	51 3/4	0.96/134 -5	1.10/133 0	1.05/136 -5	/ /
~~9~~ 3		86.25	86 1/4	0.94/135 -5	1.40/135 0	1.30/134 5	/ /
~~10~~ 4		120.75	120 3/4	0.00/135 0	0.00/135 5	0.02/135 5	/ /
11				/ /	/ /	/ /	/ /
12		7 PORTS x 4 POINTS		/ /	/ /	/ /	/ /
13		MATRIX		/ /	/ /	/ /	/ /
14				/ /	/ /	/ /	/ /
15				/ /	/ /	/ /	/ /
16				/ /	/ /	/ /	/ /
17				/ /	/ /	/ /	/ /
18				/ /	/ /	/ /	/ /
19				/ /	/ /	/ /	/ /
20				/ /	/ /	/ /	/ /
21				/ /	/ /	/ /	/ /
22				/ /	/ /	/ /	/ /
23				/ /	/ /	/ /	/ /
24				/ /	/ /	/ /	/ /

Pitot Tube No. MT

C_p = 0.84

P_b = 29.67 "Hg

P_s = + 1.90 "H_2O 29.81 "Hg

A_s = 43,884 in.^{2}

Average ΔP 0.768

Average $\Delta P^{1/2}$ 0.798

Average T_x 135 °F

Average α 3.04 degrees

PRELIMINARY VELOCITY TRAVERSE DATA
AND
SAMPLING LOCATION DATA

Job Number 99-183

Job Name TXU Electric

Sampling Location Unit 3 Stack

Date 2-23-00 Time 1300

Stack Height 460 ft.

Sampling Port Height Above Ground 365 1/2 ft.

	Port A	Port B	Port C	Port D	Average
Port & Inside Diameter (in.)					397 5/8
Port & Wall Thickness (in.)					71 1/4
Inside Stack Diameter (in.)					326 3/8 (326.35)

Sampling Ports are 242 ft. 5 in. (8.91 stack diameters) downstream from disturbance (inlet, constriction, bend, expansion)

Sampling Ports are 94 ft. 7 in. (3.48 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	4.4	14.359	14 3/8	2.20/193/	2.20/195/	2.20/190/	2.20/189/
2	14.6	47.647	47 5/8	2.50/192/	2.50/194/	2.40/189/	2.50/192/
3	29.6	96.600	96 5/8	2.50/190/	2.40/194/	2.50/192/	2.40/192/
4				/ /	/ /	/ /	/ /
5				/ /	/ /	/ /	/ /
6				/ /	/ /	/ /	/ /
7		14 foot probe minimum		/ /	/ /	/ /	/ /
8		4 x 3 x 12	= 144 min. total	/ /	/ /	/ /	/ /
9		ports points min		/ /	/ /	/ /	/ /
10				/ /	/ /	/ /	/ /
11		4 min. data points		/ /	/ /	/ /	/ /
12				/ /	/ /	/ /	/ /
13				/ /	/ /	/ /	/ /
14				/ /	/ /	/ /	/ /
15				/ /	/ /	/ /	/ /
16				/ /	/ /	/ /	/ /
17				/ /	/ /	/ /	/ /
18				/ /	/ /	/ /	/ /
19				/ /	/ /	/ /	/ /
20				/ /	/ /	/ /	/ /
21				/ /	/ /	/ /	/ /
22				/ /	/ /	/ /	/ /
23				/ /	/ /	/ /	/ /
24				/ /	/ /	/ /	/ /

Pitot Tube No. M-3

C_p = 0.808

P_b = 29.56 "Hg

P_s = −1.20 "H_2O 29.47 "Hg

A_s = 83648 in.²

Average ΔP 2.375

Average $\Delta P^{1/2}$ 1.541

Average T_x 192 °F

Average α — degrees

METCO ENVIRONMENTAL

ORSAT ANALYSIS DATA FORM

Job Number: 99-183 Sample Location: Unit 3 FGD Inlet

Job Name: TXU Analytical Method: 3B

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

Date: 2-23-00 Leak Check: Time: 4 (min. 4 minutes) Rate: ~~0.0 mL~~ 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 1550 - 1851	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	10.0	10.0	10.0	10.0
O_2 - % Vol.	9.4	9.4	9.4	9.4
CO - % Vol.	0	0	0	0
N_2 - % Vol.	80.6	80.6	80.6	80.6

Fo = 1.150

Run Number 2 Run Time 0835 - 1105	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	10.0	10.0	10.0	10.0
O_2 - % Vol.	9.4	9.4	9.4	9.4
CO - % Vol.	0.0	0.0	0.0	0.0
N_2 - % Vol.	80.6	80.6	80.6	80.6

Fo = 1.150

Run Number 3 Run Time 1210 - 1440	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	9.4	9.6	9.2	9.4
O_2 - % Vol.	9.6	9.6	9.6	9.6
CO - % Vol.	0.0	0.0	0.0	0.0
N_2 - % Vol.	81.0	80.8	81.2	81.0

Fo = 1.205

METCO ENVIRONMENTAL

ORSAT ANALYSIS DATA FORM

Job Number: 99-183 Sample Location: Unit 3 FGD Outlet

Job Name: TXU Analytical Method: 3B

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

Date: 2-23-00 Leak Check: Time: 4 (min. 4 minutes) Rate: 0.0 mL

Operator: J. Conway Ambient Air Check:

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

Run Number 1 Run Time 1550-1845	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	~~7.6~~ 10.8	~~7.6~~ 10.8	~~7.6~~ 10.8	~~7.6~~ 10.8
O_2 - % Vol.	9.0	9.0	9.0	9.0
CO - % Vol.	0.0	0.0	0.0	0.0
N_2 - % Vol.	80.2	80.2	80.2	80.2

Fo = 1.102

Run Number 2 Run Time 0835-1055	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	10.8	10.6	~~10.1~~ 11.0	10.8
O_2 - % Vol.	9.0	9.0	9.0	9.0
CO - % Vol.	0.0	0.0	0.0	0.0
N_2 - % Vol.	80.2	80.4	80.0	80.2

Fo = 1.102

Run Number 3 Run Time 1210-1430	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	10.8	10.8	10.8	10.8
O_2 - % Vol.	9.0	9.0	9.0	9.0
CO - % Vol.	0.0	0.0	0.0	0.0
N_2 - % Vol.	80.2	80.2	80.2	80.2

Fo = 1.102

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METCO ENVIRONMENTAL

ORSAT ANALYSIS DATA FORM

Job Number: 99-183 Sample Location: Unit 3 Stack

Job Name: TXU Analytical Method: 3B

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

Date: 2-23-00 Leak Check: Time: 4 (min. 4 minutes) Rate: ~~0.2~~ 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 1550-1844	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	8.8	8.8	8.8	8.8
O_2 - % Vol.	10.4	10.4	10.4	10.4
CO - % Vol.	0.0	0.0	0.0	0.0
N_2 - % Vol.	80.8	80.8	80.8	80.8

Fo= 1.193

Run Number 2 Run Time 0835-1050	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	11.0	11.1	11.0	11.0
O_2 - % Vol.	8.0	8.0	7.9	8.0
CO - % Vol.	0.0	0.0	0.0	0.0
N_2 - % Vol.	81.0	80.9	81.1	81.0

Fo= 1.173

Run Number 3 Run Time 1210-1431	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	10.8	10.8	10.8	10.8
O_2 - % Vol.	8.1	8.2	8.2	8.2
CO - % Vol.	0.0	0.0	0.0	0.0
N_2 - % Vol.	81.1	81.0	81.0	81.0

Fo= 1.176

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APPENDIX C

Calibration Data

Equipment	Calibration Factor	Calibration Date
Pitot Tube #M-3	0.808	01/31/00
Pitot Tube #M-7	0.810	01/31/00
Pitot Tube #M-8	0.810	01/31/00
Probe Tip #TFE-1-6	0.174	01/31/00
Probe Tip #TFE-2-6a	0.171	01/31/00
Probe Tip #TFE-2-7	0.195	01/31/00
Dry Gas Meter #19-2	0.993	12/16/99
Stack Unit Orifice #19-2		12/23/99
Digital Temperature Indicator #19-2		12/13/99
Dry Gas Meter #27-2	1.008	01/10/00
Stack Unit Orifice #27-2		01/14/00
Digital Temperature Indicator #27-2		01/10/00
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-3	0.808	04/06/00
Pitot Tube #M-7	0.811	04/11/00
Pitot Tube #M-8	0.810	04/11/00
Probe Tip #TFE-1-6	0.174	04/05/00
Probe Tip #TFE-2-6a	0.172	04/05/00
Probe Tip #TFE-2-7	0.195	04/05/00
Dry Gas Meter #19-2	0.967	03/07/00
Stack Unit Orifice #19-2		03/21/00
Digital Temperature Indicator #19-2		03/07/00
Dry Gas Meter #27-2	1.028	03/09/00
Stack Unit Orifice #27-2		03/09/00
Digital Temperature Indicator #27-2		03/09/00
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: 1030

Pitot No.: M3

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	0.33	0.574	0.808 ✓	0.33	0.574	0.808 ✓
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							0.808 ✓			0.808 ✓

Summary of Results:

Normal high side calibration factor 0.808 ✓

variation + 0% ✓

variation - 0% ✓

Normal low side calibration factor 0.808 ✓

variation + 0% ✓

variation - 0% ✓

Calibrator: Brian Baton 274

Checked By: Scott Hart 268

PITOT TUBE CALIBRATION

Date: 01-31-00

Time: 1115

Pitot No.: 117

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	0.33	0.574	0.808 ✓	0.33	0.574	0.808 ✓
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	1.45	1.204	0.822 ✓	1.45	1.204	0.822 ✓
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 + 1.48% ✓

variation - 0.25% ✓

Normal low side calibration factor 0.810 ✓

variation + 1.48% ✓

variation - 0.25% ✓

Calibrator: Jason Brown 274

Checked By: Scott Hart 268

PITOT TUBE CALIBRATION

Date: 01-31-00

Time: 1145

Pitot No.: 1118

T_s: 65 °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 ✓	0.51	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 Brown 274

Checked By: Scott Hart 268

METCO ENVIRONMENTAL

NOZZLE CALIBRATION

Nozzle Set No. TFE-1 checked by Scott Hart 2/08

Date 01-31-00 Calibrator: [illegible] 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: Jerm 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

After Adjustment

Dry Gas Meter No.: 19-2

Date: 12/16/99

ΔH ("H_2O)	C_{DG}
0.5	1.006
1.0	1.000
1.5	0.992
2.0	0.991
3.0	0.984
4.0	0.985
Average	0.993

Variation: + 1.31%

- 0.91%

Calibrator: John Betz

Checked By: John Pellegrini

C_{DG} @ 2 liters/min. = 1.650

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 19-2

Date: 12/17/99

Calibrator: John Pellegrini

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

Run No.: 2 @ 0.50 "H2O

P_b: 29.48 "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	1003	7.282	cf	70	°F	-0.75	"H_2O	585.819	cf	80	°F	73 °F	0.50 "H_2O
Start	0945	0.000	cf	70	°F	-0.75	"H_2O	578.509	cf	80	°F	74 °F	0.50 "H_2O
Avg.	18	7.282	cf	70	°F	-0.75	"H_2O	7.310	cf			77 °F	0.50 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 7.282 \left[\frac{29.48 + \frac{-0.75}{13.6}}{70 + 460} \right] \times 1.000 \, (C_f) = 7.136 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 7.310 \left[\frac{29.48 + \frac{0.50}{13.6}}{77 + 460} \right] = 7.092 \text{ dcsf}$$

$$C_{DG} = \frac{7.136}{7.092} = \boxed{1.006}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 19-2

Date: 12-16-99

Calibrator: John Betz

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

Run No.: 1 @ 1.0 "H_2O

P_b: 29.59 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1550	5.153 cf	73 °F	-1.20 "H_2O
Start	1541	0.000 cf	73 °F	-1.20 "H_2O
Avg.	9	5.153 cf	73 °F	-1.20 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	461.254 cf	80 °F	74 °F	1.00 "H_2O
Start	456.099 cf	76 °F	73 °F	1.00 "H_2O
Avg.	5.155 cf	76 °F		1.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.153 \left[\frac{29.59 + \frac{-1.20}{13.6}}{73 + 460}\right] \times 1.000 \quad (C_f) = 5.034 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.155 \left[\frac{29.59 + \frac{1.00}{13.6}}{76 + 460}\right] = \text{dcsf } 5.035$$

$$C_{DG} = \frac{5.034}{5.035} = \boxed{1.000}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 19-2

Calibrator: John Betz

Date: 12-16-99

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

Run No.: 1 @ 1.5" H_2O

P_b: 29.59 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1615	10.458 cf	73 °F	-1.75 "H_2O
Start	1600	0.000 cf	73 °F	-1.75 "H_2O
Avg.	15	10.458 cf	73 °F	-1.75 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	472.450 cf	83 °F	75 °F	1.50 "H_2O
Start	461.917 cf	76 °F	75 °F	1.50 "H_2O
Avg.	10.533 cf	77 °F		1.50 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.458 \left[\frac{29.59 + \frac{-1.75}{13.6}}{73 + 460}\right] \times 1.000 \quad (C_f) = 10.203 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.533 \left[\frac{29.59 + \frac{1.50}{13.6}}{77 + 460}\right] = 10.282 \text{ dcsf}$$

$$C_{DG} = \frac{10.203}{10.282} = \boxed{0.992}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 19-2

Date: 12-16-99

Calibrator: John Betz

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

Run No.: 1 @ 2.0" H_2O

P_b: 29.59 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1635	10.364 cf	73 °F	-2.10 "H_2O
Start	1622	0.000 cf	73 °F	-2.10 "H_2O
Avg.	13	10.364 cf	73 °F	-2.10 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	484.674 cf	88 °F	75 °F	2.00 "H_2O
Start	474.188 cf	81 °F	74 °F	2.00 "H_2O
Avg.	10.486 cf	80 °F		2.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.364 \left[\frac{29.59 + \frac{-2.10}{13.6}}{73 + 460}\right] \times 1.000\ (C_f) = 10.102 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.486 \left[\frac{29.59 + \frac{2.00}{13.6}}{80 + 460}\right] = 10.192 \text{ dcsf}$$

$$C_{DG} = \frac{10.102}{10.192} = \boxed{0.991}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 19-2

Date: 12-16-99

Calibrator: John Betz

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

Run No.: 1 @ 30" H_2O

P_b: 29.59 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1655	10.656 cf	73 °F	-2.95 "H_2O
Start	1644	0.000 cf	73 °F	-2.95 "H_2O
Avg.	11	10.656 cf	73 °F	-2.95 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	496.403 cf	90 °F	76 °F	3.00 "H_2O
Start	485.574 cf	81 °F	75 °F	3.00 "H_2O
Avg.	10.829 cf		81 °F	3.00 "H_2O

$$Wet\ Test\ Meter\ Vm_{std} = 17.65 \times 10.656 \left[\frac{29.59 + \frac{-2.95}{13.6}}{73 + 460}\right] \times 1.000\ (C_f) = 10.365\ dcsf$$

$$Dry\ Gas\ Meter\ Vm_{std} = 17.65 \times 10.829 \left[\frac{29.59 + \frac{3.00}{13.6}}{81 + 460}\right] = 10.532\ dcsf$$

$$C_{DG} = \frac{10.365}{10.532} = \boxed{0.984}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 19-2

Date: 12/17/99

Calibrator: John Pellegrini

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

Run No.: 1 @ 4.00 "H2O

P_b: 29.48 "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	14.535 cf	70 °F	-4.10	"H_2O	574.508 cf	92 °F	75 °F	4.00 "H_2O
Start	0917	0.000 cf	70 °F	-4.10	"H_2O	559.692 cf	88 °F	75 °F	4.00 "H_2O
Avg.	13	14.535 cf	70 °F	-4.10	"H_2O	14.816 cf	83 °F		4.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 14.530 \left[\frac{29.48 + \frac{-4.10}{13.6}}{70 + 460}\right] \times 1.000 \ (C_f) = 14.119 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 14.816 \left[\frac{29.48 + \frac{4.00}{13.6}}{83 + 460}\right] = 14.339 \text{ dcsf}$$

$$C_{DG} = \frac{14.119}{14.339} = \boxed{0.985}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 19-2

Date: 12/17/99

Calibrator: John Pellegrini

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

Run No.: 1 @ 2.0 l/min.

P_b: 29.48 "Hg

Control Module Vacuum: 5.0 "Hg

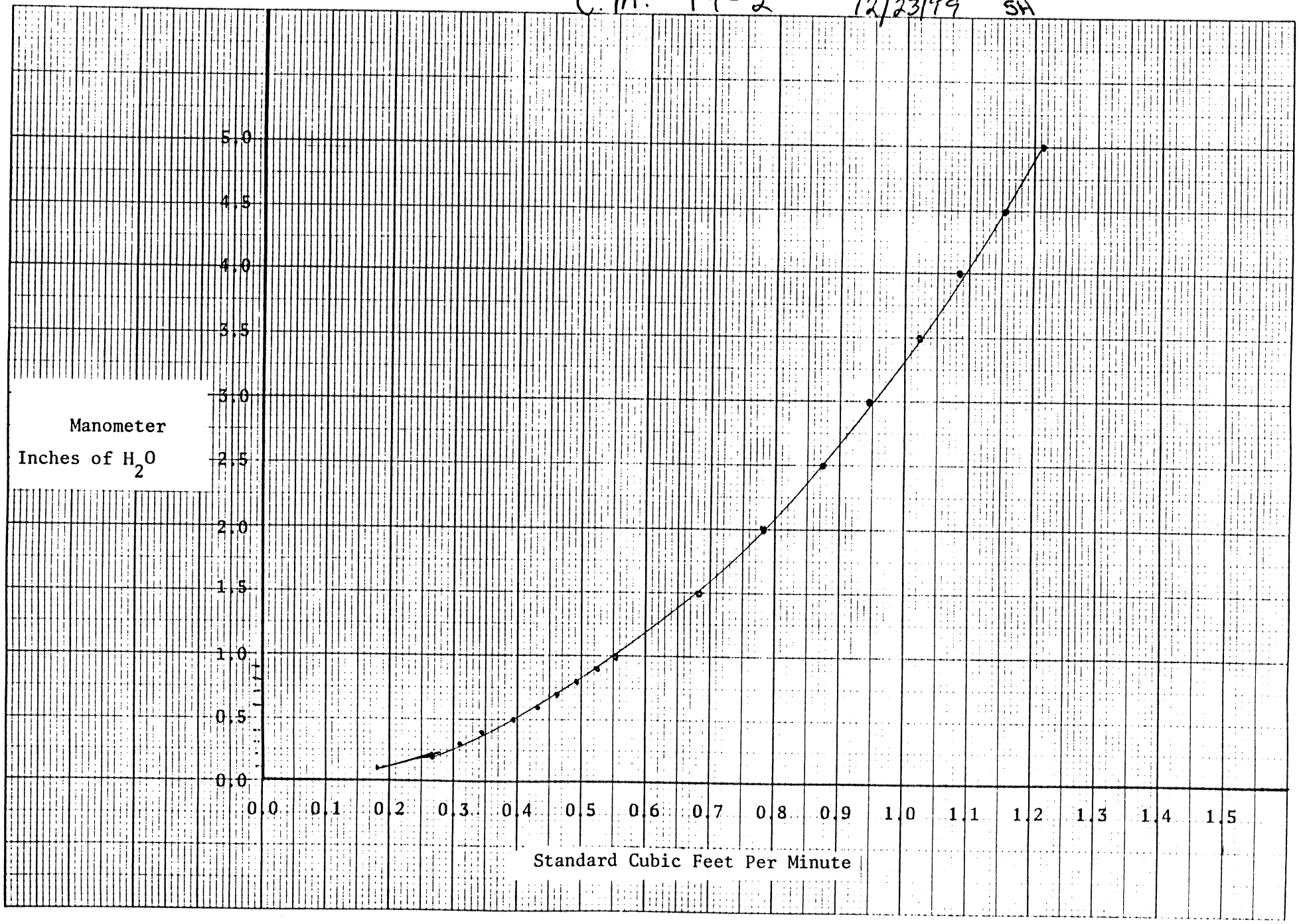
	Wet Test Meter (No. 1)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1145	2.144 cf	71 °F	-0.65 "H_2O	591.062 cf	71 °F	71 °F	0.02 "H_2O
Start	1117	0.000 cf	71 °F	-0.65 "H_2O	589.757 cf	71 °F	71 °F	0.02 "H_2O
Avg.	28	2.144 cf	71 °F	-0.65 "H_2O	1.305 cf	71 °F		0.02 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.144 \left[\frac{29.48 + \frac{-0.65}{13.6}}{71 + 460}\right] \times 1.006\ (C_f) = 2.110 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 1.305 \left[\frac{29.48 + \frac{0.02}{13.6}}{71 + 460}\right] = 1.279 \text{ dcsf}$$

$$C_{DG} = \frac{2.110}{1.279} = \boxed{1.650}$$

C.M. 19-2 12/23/99 SH



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 19-2

CALIBRATION DATA

Date: 12-13-99

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	1030	68	68
Ice Bath	1035	32	32
Boiling Water	1045	212	210
Oven	1050	252	249
Oven	1055	304	300
Oven	1100	355	352
Oven	1105	378	375

Meter Adjusted? Yes _____ No ✓

Calibrator: JASON BROWN #274

Checked By: John Pellegrini

METCO ENVIRONMENTAL

Dry Gas Meter Calibration

Dry Gas Meter No.: 27 - 2

Date: 1-10-00

ΔH ("H_2O)	C_{DG}
0.5	1.003
1.0	1.002
1.5	1.014
2.0	1.015
3.0	1.011
4.0	1.005
Average	1.008

Variation: + 0.69%

- 0.60%

Calibrator: Jason Brown 274

Checked By: Jason Conway #273

C_{DG} @ 2 liters/min. = 1.059

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27-2

Date: 01-10-00

Calibrator: JASON BROWN 274

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

Run No.: 1 @ 0.5 "H_2O

P_b: 29.25 "Hg

Control Module Vacuum: 6.00 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1520	5.0 cf	70 °F	-0.8 "H_2O	107.484 cf	78 °F	77 °F	0.5 "H_2O
Start	1508	0.0 cf	70 °F	-0.6 "H_2O	102.449 cf	77 °F	76 °F	0.5 "H_2O
Avg.	12	5.0 cf	70 °F	-0.7 "H_2O	5.035 cf	77 °F		0.5 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.0 \left[\frac{29.25 + \frac{-0.7}{13.6}}{70 + 460}\right] \times 1.000 (C_f) = 4.862 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.035 \left[\frac{29.25 + \frac{0.5}{13.6}}{77 + 460}\right] = 4.847 \text{ dcsf}$$

$$C_{DG} = \frac{4.862}{4.847} = \boxed{1.003}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27-2

Date: 1-10-00

Calibrator: Jason Brown

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

Run No.: 1 @ 1.00" H_2O

P_b: 29.25 "Hg

Control Module Vacuum: 6.00 "Hg

Wet Test Meter (No. 3)					Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1532	5.0 cf	70 °F	-1.4 "H_2O	112.714 cf	80 °F	78 °F	1.00 "H_2O
Start	1523	0.0 cf	70 °F	-1.3 "H_2O	107.676 cf	78 °F	77 °F	1.00 "H_2O
Avg.	9	5.0 cf	70 °F	-1.35 "H_2O	5.038 cf	78 °F		1.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.0 \left[\frac{29.25 + \frac{-1.35}{13.6}}{70 + 460}\right] \times 1.000(C_f) = 4.854 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.038 \left[\frac{29.25 + \frac{1.00}{13.6}}{78 + 460}\right] = 4.847 \text{ dcsf}$$

$$C_{DG} = \frac{4.854}{4.847} = \boxed{1.002}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27-2

Calibrator: JASON BROWN

Date: 01-10-00

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

Run No.: 1 @ 1.50

P_b: 29.25 "Hg

Control Module Vacuum: 6.00 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1613	10.0 cf	70 °F	-1.80 "H_2O	135.128 cf	85 °F	80 °F	1.50 "H_2O
Start	1557	0.0 cf	70 °F	-1.80 "H_2O	125.130 cf	82 °F	79 °F	1.50 "H_2O
Avg.	16	10.0 cf	70 °F	-1.80 "H_2O	9.998 cf	82 °F		1.50 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.00 \left[\frac{29.25 + \frac{-1.80}{13.6}}{70 + 460}\right] \times 1.000\ (C_f) = 9.697 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 9.998 \left[\frac{29.25 + \frac{1.50}{13.6}}{82 + 460}\right] = 9.559 \text{ dcsf}$$

$$C_{DG} = \frac{9.697}{9.559} = \boxed{1.014}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27-2

Date: 1-10-00

Calibrator: Jason Brown

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

Run No.: 1 @ 2.00" H_2O

P_b: 29.25 "Hg

Control Module Vacuum: 6.00 "Hg

Wet Test Meter (No. 3)					Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1628	10.0 cf	70 °F	-2.3 "H_2O	145.335 cf	88 °F	83 °F	2.00 "H_2O
Start	1614	0.0 cf	70 °F	-2.4 "H_2O	135.310 cf	86 °F	81 °F	2.00 "H_2O
Avg.	14	10.0 cf	70 °F	-2.35 "H_2O	10.025 cf	85 °F		2.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.0 \left[\frac{29.25 + \frac{-2.35}{13.6}}{70 + 460}\right] \times 1.000\ (C_f) = 9.683 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.025 \left[\frac{29.25 + \frac{2.00}{13.6}}{85 + 460}\right] = 9.544 \text{ dcsf}$$

$$C_{DG} = \frac{9.683}{9.544} = \boxed{1.015}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27-2

Calibrator: Jason Brown

Date: 1-10-00

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

Run No.: 1 @ 3.00" H_2O

P_b: 29.25 "Hg

Control Module Vacuum: 6.00 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1640	10.0 cf	70 °F	-3.10 "H_2O	155.984 cf	90 °F	83 °F	3.00 "H_2O
Start	1629	0.0 cf	70 °F	-3.10 "H_2O	145.950 cf	88 °F	82 °F	3.00 "H_2O
Avg.	11	10.0 cf	70 °F	-3.10 "H_2O	10.034 cf	86 °F		3.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times \cancel{29.25}\ 10.0 \left[\frac{29.25 + \frac{-3.10}{13.6}}{70 + 460}\right] \times 1.000\ (C_f) = 9.665 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.034 \left[\frac{29.25 + \frac{3.00}{13.6}}{86 + 460}\right] = 9.559 \text{ dcsf}$$

$$C_{DG} = \frac{9.665}{9.559} = \boxed{1.011}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27-2

Calibrator: JASON BROWN

Date: 1-10-00

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

Run No.: 1 @ 4.00" H_2O

P_b: 29.25 "Hg

Control Module Vacuum: 6.00 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1651	10.0 cf	70 °F	-4.00 "H_2O	166.410 cf	93 °F	84 °F	4.00 "H_2O
Start	1641	0.0 cf	70 °F	-4.10 "H_2O	156.330 cf	91 °F	83 °F	4.00 "H_2O
Avg.	10	10.0 cf	70 °F	-4.05 "H_2O	10.080 cf	88 °F		4.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.0 \left[\frac{29.25 + \frac{-4.05}{13.6}}{70 + 460}\right] \times 1.000 (C_p) = 9.642 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.080 \left[\frac{29.25 + \frac{4.00}{13.6}}{88 + 460}\right] = 9.592 \text{ dcsf}$$

$$C_{DG} = \frac{9.642}{9.592} = \boxed{1.005}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27-2

Date: 1-14-00

Calibrator: Jason Conway #273

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

Run No.: 1 @ 2L/min

P_b: 30.50 "Hg

Control Module Vacuum: 0.00 "Hg

Wet Test Meter (No. 1)

	Time	Meter Reading	Temp.	P_m
End	1530	2.093 cf	68 °F	-0.7 "H_2O
Start	1500	0.000 cf	68 °F	-0.7 "H_2O
Avg.	30	2.093 cf	68 °F	-0.7 "H_2O

Dry Gas Meter

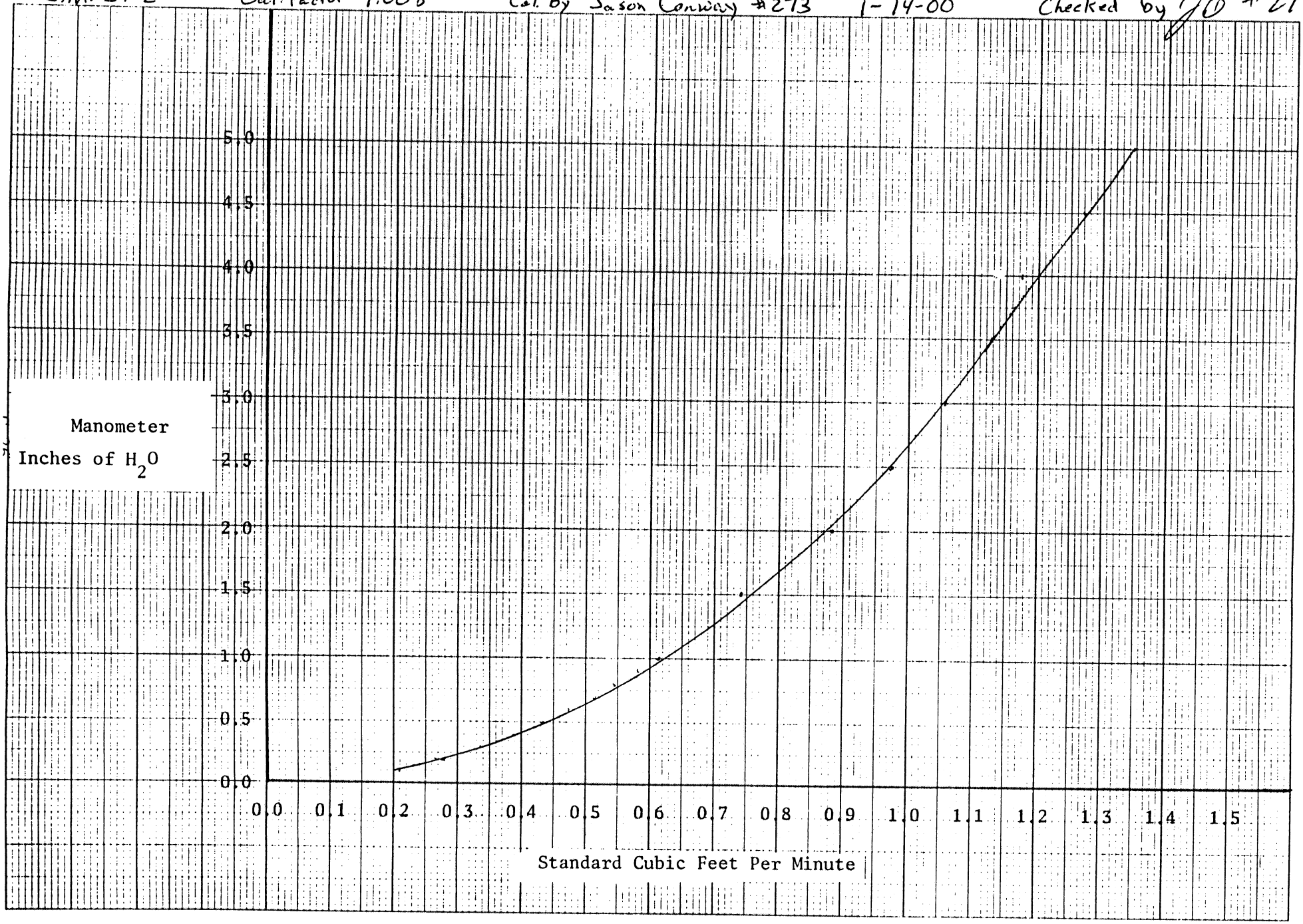
	Meter Reading	Temp. In	Temp. Out	P_m
End	255.920 cf	78 °F	76 °F	0.01 "H_2O
Start	253.905 cf	75 °F	75 °F	0.01 "H_2O
Avg.	2.015 cf	76 °F		0.01 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.093 \left[\frac{30.50 + \frac{-0.7}{13.6}}{68 + 460}\right] \times 1.006 (C_f) = 2.143 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 2.015 \left[\frac{30.50 + \frac{0.01}{13.6}}{76 + 460}\right] = 2.024 \text{ dcsf}$$

$$C_{DG} = \frac{2.143}{2.024} = \boxed{1.059}$$

C.M. 27-2 Cal. factor 1.008 Cal. by Jason Conway #273 1-14-00 Checked by JB #274



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 27-2

CALIBRATION DATA

(NEW)

Date: 01-10-00

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	1425	72	75
Ice Bath	1428	37	40
Boiling Water	1434	212	214
Oven	1440	251	254
Oven	1445	300	298
Oven	1449	350	346
Oven	1454	376	371

Meter Adjusted? Yes _____ No ✓

Calibrator: JASON BROWN 274

Checked By: Jason Conway #273

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: Shane 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)	Time	Meter Reading	Temp.	P_m
End	1148	5.093 cf	67 °F	-1.30 "H_2O
Start	1136	0.000 cf	67 °F	-1.30 "H_2O
Avg.	12	5.093 cf	67 °F	-1.30 "H_2O

Dry Gas Meter	Meter Reading	Temp. In	Temp. Out	P_m
End	384.125 cf	61 °F	63 °F	0.50 "H_2O
Start	379.053 cf	62 °F	62 °F	0.50 "H_2O
Avg.	5.072 cf	62 °F		0.50 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.093 \left[\frac{29.11 + \frac{-1.30}{13.6}}{67 + 460}\right] \times 1.000 \ (C_1) = 4.949 \text{ dcsf}$$

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

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

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: 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	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

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

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

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

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

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 @ 1.5" 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	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

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

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

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

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)

	Time	Meter Reading	Temp.	P_m
End	1340	10.182 cf	67 °F	-2.70 "H_2O
Start	1329	0.000 cf	67 °F	-2.70 "H_2O
Avg.	11 ✓	10.182 ✓ cf	67 ✓ °F	-2.70 ✓ "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	411.751 cf	58 °F	72 °F	2.00 "H_2O
Start	401.747 cf	63 °F	69 °F	2.00 "H_2O
Avg.	10.004 ✓ cf	66 ✓ °F		2.00 ✓ "H_2O

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

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

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

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	1357	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

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 11.380 \left[\frac{29.11 + \frac{-3.80}{13.6}}{67 + 460} \right] \times 1.000\ (C_1) = 10.988 \text{ dcsf}$$

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

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

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

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

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

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

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
End	1526	2.071 cf	68 °F	−0.30 "H_2O
Start	1456	0.000 cf	68 °F	−0.30 "H_2O
Avg.	30	2.071 cf	68 °F	−0.30 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	440.205 cf	78 °F	78 °F	0.01 "H_2O
Start	438.156 cf	72 °F	72 °F	0.01 "H_2O
Avg.	2.049 cf	75 °F		0.01 "H_2O

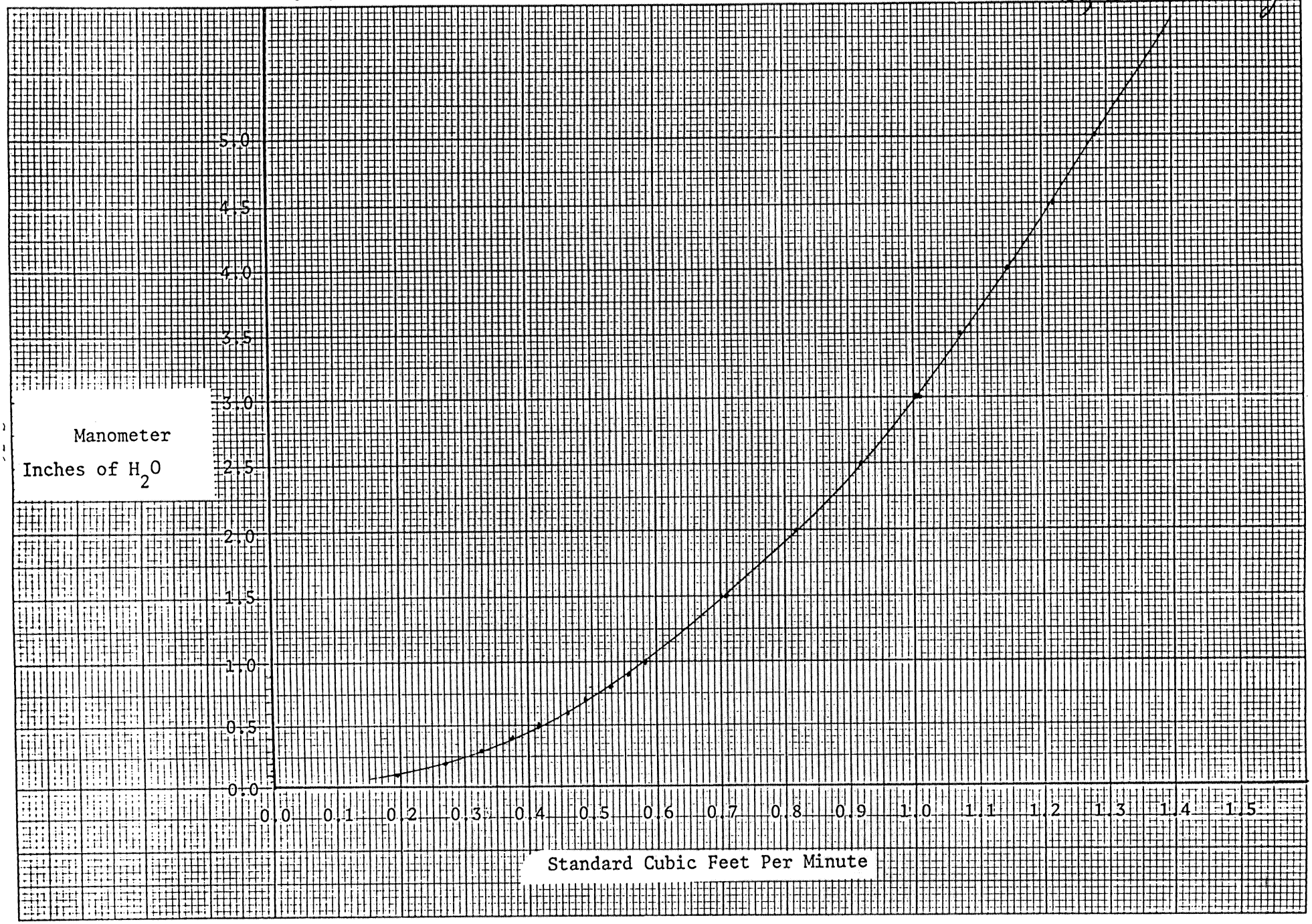
$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.071 \left[\frac{29.11 + \frac{-0.30}{13.6}}{68 + 460} \right] \times 1.000 \ (C_t) = 2.014 \text{ dcsf}$$

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

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

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

✓ By Jason Conway 2.73



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	375

Meter Adjusted? Yes _____ No ✓

Calibrator: Frane 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	=	~~0.269~~ -0.08 ✓

Barometer Adjusted? Yes ✓ No _____

Tom Brown 274

Signature of Calibrator

PITOT TUBE CALIBRATION

Date: 04-06-00

Time: 0930

Pitot No.: M3

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	0.33	0.574	0.808	0.33	0.574	0.808 ✓
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							0.808			0.808 ✓

Summary of Results:

Normal high side calibration factor 0.808 ✓

variation + 0.0% ✓

variation - 0.0% ✓

Normal low side calibration factor 0.808 ✓

variation + 0.0% ✓

variation - 0.0% ✓

Calibrator: Jam Brown #274

Checked By: Jason Chunka #275

PITOT TUBE CALIBRATION

Date: 4/11/00

Time: 0915

Pitot No.: M7

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	0.33	0.574	0.808	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	1.45	1.204	0.822	1.45	1.204	0.822
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	2.35	1.533	0.817	2.35	1.533	0.817
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							0.811			0.813

Summary of Results:

Normal high side calibration factor 0.811

variation + 1.36%

variation - 0.40%

Normal low side calibration factor 0.813

variation + 1.11%

variation - 0.62%

Calibrator: David A. Olson #292

Checked By: [signature] C36

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					

* New Nozzles

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.: 19-2

Date: 3-7-00

ΔH ("H_2O)	C_{DG}
0.5	0.967
1.0	0.969
1.5	0.967
2.0	0.968
3.0	0.967
4.0	0.965
Average	0.967

Variation: + 0.21%

- 0.21%

Calibrator: Mike Bass

Checked By: 236

C_{DG} @ 2 liters/min. = —

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 19-2

Date: 3-07-00

Calibrator: Mike Bass

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

Run No.: 1 @ 0.5" H_2O

P_b: 29.31 "Hg

Control Module Vacuum: 6.0 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1343	5.164 cf	71 °F	-0.70 "H_2O	911.462 cf	79 °F	72 °F	0.50 "H_2O
Start	1330	0.000 cf	71 °F	-0.70 "H_2O	906.109 cf	78 °F	71 °F	0.50 "H_2O
Avg.	13	5.164 cf	71 °F	-0.70 "H_2O	5.353 cf	75	°F	0.500 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.164 \left[\frac{29.31 + \frac{-0.70}{13.6}}{71 + 460}\right] \times 0.998\ (C_f) = 5.012 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.353 \left[\frac{29.31 + \frac{0.500}{13.6}}{75 + 460}\right] = 5.183 \text{ dcsf}$$

$$C_{DG} = \frac{5.012}{5.183} = \boxed{0.967}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 19-2

Date: 3-07-00

Calibrator: Mike Bass

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

Run No.: 1 @ 1.00" H_2O

P_b: 29.31 "Hg

Control Module Vacuum: 6.0 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1355	5.250 cf	71 °F	-1.20 "H_2O	917.417 cf	81 °F	72 °F	1.00 "H_2O
Start	1346	0.000 cf	71 °F	-1.20 "H_2O	911.987 cf	77 °F	72 °F	1.00 "H_2O
Avg.	9	5.250 cf	71 °F	-1.20 "H_2O	5.430 cf	76 °F		1.000 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.250 \left[\frac{29.31 + \frac{-1.20}{13.6}}{71 + 460}\right] \times 0.998 \ (C_f) = 5.089 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.430 \left[\frac{29.31 + \frac{1.000}{13.6}}{76 + 460}\right] = 5.254 \text{ dcsf}$$

$$C_{DG} = \frac{5.089}{5.254} = \boxed{0.969}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 19-2

Date: 3-07-00

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" H_2O

P_b: 29.31 "Hg

Control Module Vacuum: 6.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1412	10.417 cf	71 °F	-1.70 "H_2O
Start	1357	0.000 cf	71 °F	-1.70 "H_2O
Avg.	15	10.417 cf	71 °F	-1.70 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	928.517 cf	85 °F	73 °F	1.50 "H_2O
Start	917.710 cf	80 °F	72 °F	1.50 "H_2O
Avg.	10.807 cf	78 °F		1.500 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.417 \left[\frac{29.31 + \frac{-1.700}{13.6}}{71 + 460}\right] \times 0.998 \quad (C_f) = 10.085 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.807 \left[\frac{29.31 + \frac{1.500}{13.6}}{78 + 460}\right] = 10.431 \text{ dcsf}$$

$$C_{DG} = \frac{10.085}{10.431} = \boxed{0.967}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 19-2

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" H_2O

P_b: 29.31 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1426	10.415 cf	71 °F	-2.15 "H_2O
Start	1413	0.000 cf	71 °F	-2.15 "H_2O
Avg.	13	10.415 cf	71 °F	-2.15 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	939.633 cf	83 °F	74 °F	2.00 "H_2O
Start	928.829 cf	83 °F	73 °F	2.00 "H_2O
Avg.	10.804 cf	80 °F		2.000 "H_2O

$$Wet\ Test\ Meter\ Vm_{std} = 17.65 \times 10.415 \left[\frac{29.31 + \frac{-2.15}{13.6}}{71 + 460}\right] \times 0.998\ (C_f) = 10.072\ dcsf$$

$$Dry\ Gas\ Meter\ Vm_{std} = 17.65 \times 10.804 \left[\frac{29.31 + \frac{2.000}{13.6}}{80 + 460}\right] = 10.402\ dcsf$$

$$C_{DG} = \frac{10.072}{10.402} = \boxed{0.968}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 19-2

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 @ 3.0 "H_2O

P_b: 29.31 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1439	10.435 cf	71 °F	-2.90 "H_2O
Start	1428	0.000 cf	71 °F	-2.90 "H_2O
Avg.	11	10.435 cf	71 °F	-2.90 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	950.897 cf	91 °F	75 °F	3.00 "H_2O
Start	940.062 cf	87 °F	74 °F	3.00 "H_2O
Avg.	10.835 cf	82 °F		3.000 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.435 \left[\frac{29.31 + \frac{-2.90}{13.6}}{71 + 460}\right] \times 0.998 \ (C_f) = 10.072 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.835 \left[\frac{29.31 + \frac{3.000}{13.6}}{82 + 460}\right] = 10.419 \text{ dcsf}$$

$$C_{DG} = \frac{10.072}{10.419} = \boxed{0.967}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 19-2

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 @ 4.0" H_2O

P_b: 29.31 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1450	10.430 cf	71 °F	-3.55 "H_2O
Start	1440	0.000 cf	71 °F	-3.55 "H_2O
Avg.	10	10.430 cf	71 °F	-3.550 "H_2O

Dry Gas Meter

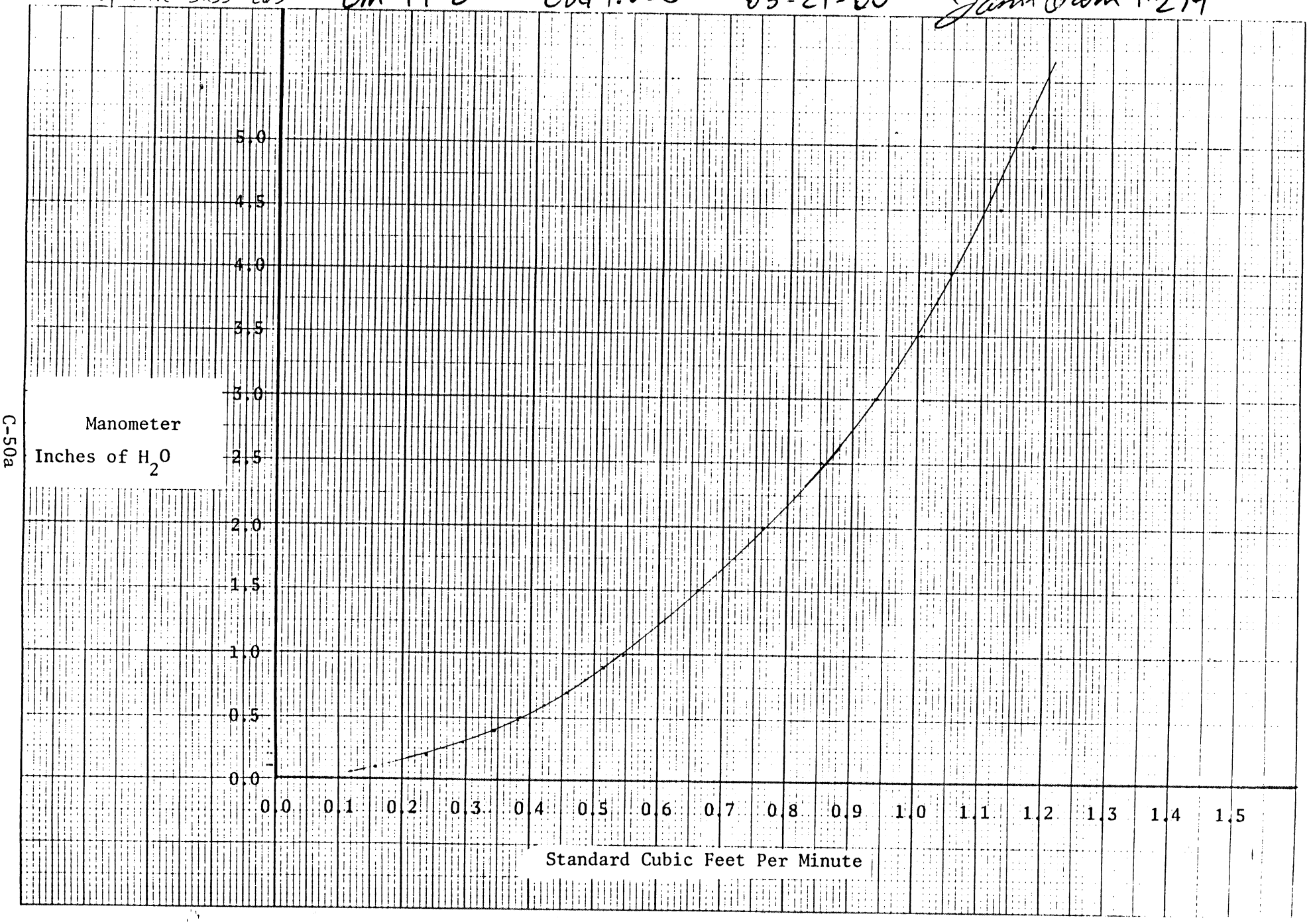
	Meter Reading	Temp. In	Temp. Out	P_m
End	962.153 cf	93 °F	76 °F	4.00 "H_2O
Start	951.324 cf	88 °F	75 °F	4.00 "H_2O
Avg.	10.829 cf	83 °F		4.000 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.430 \left[\frac{29.31 + \frac{-3.550}{13.6}}{71 + 460}\right] \times 0.998\ (C_f) = 10.051 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.829 \left[\frac{29.31 + \frac{4.000}{13.6}}{83 + 460}\right] = 10.420 \text{ dcsf}$$

$$C_{DG} = \frac{10.051}{10.420} = \boxed{0.965}$$

Cal by Mike Bass #263 CM 19-2 COG 1.003 03-21-00 Jann Brom #274



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 19-2

CALIBRATION DATA

Date: 3-07-00

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	1114	69	68
Ice Bath	1118	36	36
Boiling Water	1121	210	209
Oven	1146	250	252
Oven	1149	300	301
Oven	1152	350	349
Oven	1154	375	373

Meter Adjusted? Yes _____ No X

Calibrator: Mike Bass

Checked By: [illegible] 236

METCO ENVIRONMENTAL

Dry Gas Meter Calibration

Dry Gas Meter No.: 27-2

Date: 3-09-00

ΔH ("H_2O)	C_{DG}
0.5	1.031 ✓
1.0	1.032 ✓
1.5	1.031 ✓
2.0	1.028 ✓
3.0	1.022 ✓
4.0	1.021
Average	1.028

Variation: + 0.39 %

- 0.68 %

Calibrator: Mike Bass

Checked By: [signature]

C_{DG} @ 2 liters/min. = 0.963

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27-2

Calibrator: Mike Bass

Date: 3-09-00

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

Run No.: 1 @ 0.5" H_2O

P_b: 29.41 "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	1029	5.244 cf	70 °F	-0.85 "H_2O	853.599 cf	75 °F	73 °F	0.50 "H_2O
Start	1016	0.000 cf	70 °F	-0.85 "H_2O	848.501 cf	74 °F	72 °F	0.50 "H_2O
Avg.	13	5.244 cf	70 °F	-0.85 "H_2O	5.098 cf	74	°F	0.500 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.244 \left[\frac{29.41 + \frac{-0.850}{13.6}}{70 + 460}\right] \times 0.998\ (C_f) = 5.115 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.098 \left[\frac{29.41 + \frac{0.500}{13.6}}{74 + 460}\right] = 4.962 \text{ dcsf}$$

$$C_{DG} = \frac{5.115}{4.962} = \boxed{1.031}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27-2

Date: 3-09-00

Calibrator: Mike Bass

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

Run No.: 1 @ 1.0" H_2O

P_b: 29.41 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1040	5.362 cf	70 °F	-1.35 "H_2O
Start	1031	0.000 cf	70 °F	-1.35 "H_2O
Avg.	9	5.362 cf	70 °F	-1.35 "H_2O

Dry Gas Meter

Meter Reading	Temp. In	Temp. Out	P_m
859.101 cf	75 °F	73 °F	1.00 "H_2O
853.906 cf	75 °F	73 °F	1.00 "H_2O
5.195 cf	74 °F		1.000 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.362 \left[\frac{29.41 + \frac{-1.350}{13.6}}{70 + 460}\right] \times 0.998\ (C_f) = 5.223 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.195 \left[\frac{29.41 + \frac{1.000}{13.6}}{74 + 460}\right] = 5.063 \text{ dcsf}$$

$$C_{DG} = \frac{5.223}{5.063} = \boxed{1.032}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27-2

Calibrator: Mike Bass

Date: 3-09-00

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

Run No.: 1 @ 1.5" H_2O

P_b: 29.41 "Hg

Control Module Vacuum: 6.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1057	10.625 cf	70 °F	-1.80 "H_2O
Start	1042	0.000 cf	70 °F	-1.80 "H_2O
Avg.	15	10.625 cf	70 °F	-1.80 "H_2O

Dry Gas Meter

Meter Reading	Temp. In	Temp. Out	P_m
869.702 cf	77 °F	75 °F	1.50 "H_2O
859.402 cf	75 °F	74 °F	1.50 "H_2O
10.300 cf	75 °F		1.500 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.625 \left[\frac{29.41 + \frac{-1.800}{13.6}}{70 + 460}\right] \times 0.998\ (C_f) = 10.339 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.300 \left[\frac{29.41 + \frac{1.500}{13.6}}{75 + 460}\right] = 10.031 \text{ dcsf}$$

$$C_{DG} = \frac{10.339}{10.031} = \boxed{1.031}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27.2

Date: 3-09-00

Calibrator: Mike Bass

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

Run No.: 1 @ 2.0" H_2O

P_b: 29.41 "Hg

Control Module Vacuum: 6.0 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1013	10.738 cf	70 °F	-2.10 "H_2O	880.444 cf	77 °F	75 °F	2.00 "H_2O
Start	1059	0.000 cf	70 °F	-2.10 "H_2O	870.007 cf	76 °F	75 °F	2.00 "H_2O
Avg.	14	10.738 cf	70 °F	-2.100 "H_2O	10.437 cf	76 °F		2.000 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.738 \left[\frac{29.41 + \frac{-2.100}{13.6}}{70 + 460}\right] \times 0.998\ (C_f) = 10.441 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.437 \left[\frac{29.41 + \frac{2.000}{13.6}}{76 + 460}\right] = 10.158 \text{ dcsf}$$

$$C_{DG} = \frac{10.441}{10.158} = \boxed{1.028}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27-2

Date: 3-09-00

Calibrator: Mike Bass

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

Run No.: 1 @ 3.0" H_2O

P_b: 29.41 "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	1134	10.635 cf	70	°F	-2.90 "H_2O	893.404 cf	79 °F	76 °F	3.00 "H_2O
Start	1123	0.000 cf	70	°F	-2.90 "H_2O	883.037 cf	77 °F	75 °F	3.00 "H_2O
Avg.	11	10.635 cf	70	°F	-2.900 "H_2O	10.367 cf	77 °F		3.000 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.635 \left[\frac{29.41 + \frac{-2.900}{13.6}}{70 + 460}\right] \times 0.998 \quad (C_f) = 10.320 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.367 \left[\frac{29.41 + \frac{3.000}{13.6}}{77 + 460}\right] = 10.096 \text{ dcsf}$$

$$C_{DG} = \frac{10.320}{10.096} = \boxed{1.022}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27-2

Calibrator: Mike Bass

Date: 3-09-00

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

Run No.: 1 @ 3.75" H_2O

P_b: 29.41 "Hg

Control Module Vacuum: 2.5 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1150	10.682 cf	70 °F	-3.50 "H_2O
Start	1140	0.000 cf	70 °F	-3.50 "H_2O
Avg.	10	10.682 cf	70 °F	-3.500 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	904.404 cf	81 °F	77 °F	3.750 "H_2O
Start	893.991 cf	77 °F	76 °F	3.750 "H_2O
Avg.	10.413 cf	78 °F		3.750 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.682 \left[\frac{29.41 + \frac{-3.500}{13.6}}{70 + 460}\right] \times 0.998\,(C_f) = 10.350 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.413 \left[\frac{29.41 + \frac{3.750}{13.6}}{78 + 460}\right] = 10.141 \text{ dcsf}$$

$$C_{DG} = \frac{10.370}{10.141} = \boxed{1.021}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 27-2

Calibrator: Mike Bass

Date: 3-09-00

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

Run No.: 1 @ 2.0 L/min

P_b: 29.40 "Hg

Control Module Vacuum: < 2 "Hg

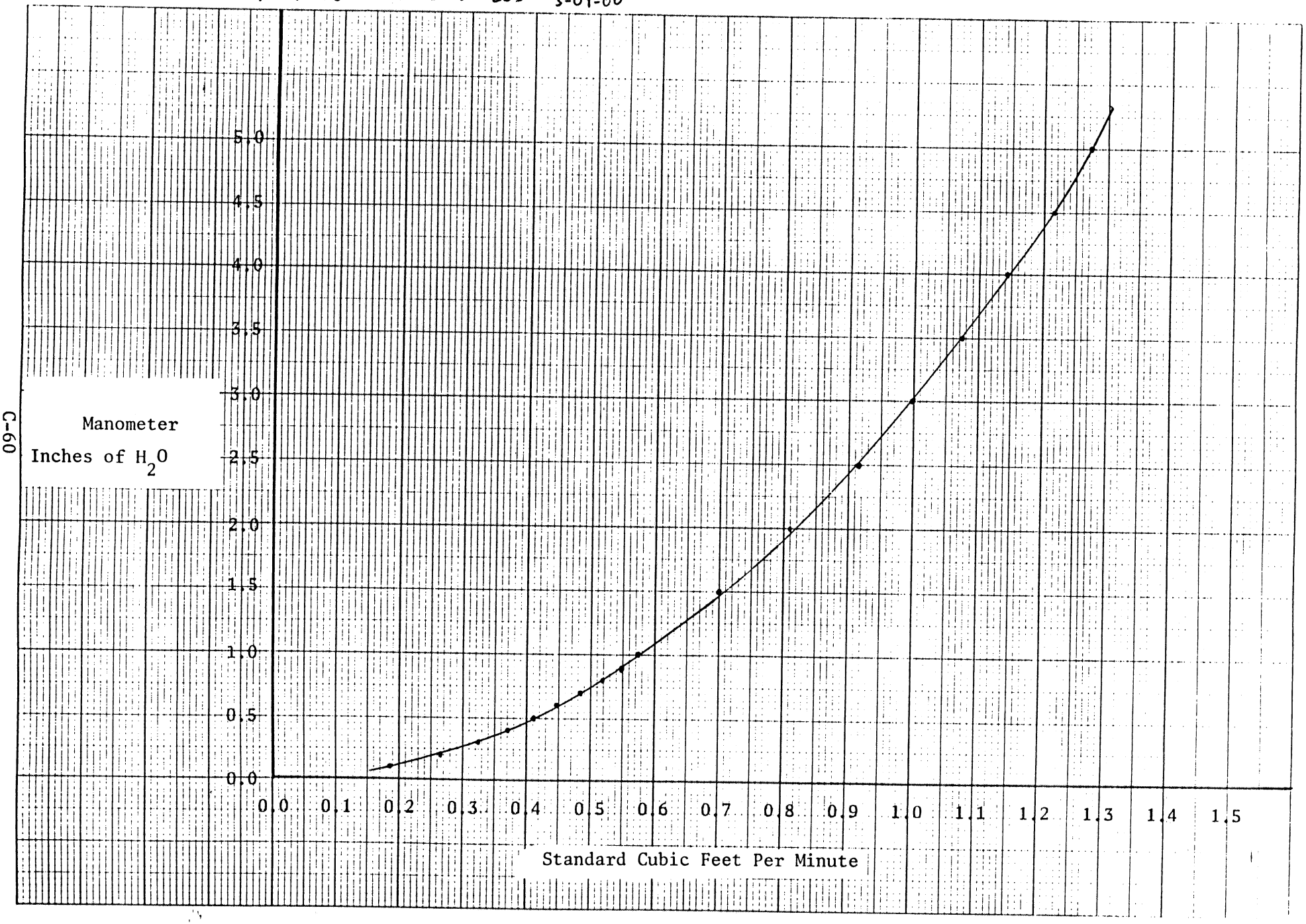
Wet Test Meter (No. 1)					Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1353	2.102 cf	69 °F	-0.30 "H_2O	909.861 cf	76 °F	76 °F	0.015 "H_2O
Start	1320	0.000 cf	69 °F	-0.30 "H_2O	907.673 cf	76 °F	76 °F	0.015 "H_2O
Avg.	33	2.102 cf	69 °F	-0.30 "H_2O	2.188 cf	76	°F	0.015 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.102 \left[\frac{29.40 + \frac{-0.300}{13.6}}{69 + 460}\right] \times 0.990\ (C_f) = 2.040 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 2.188 \left[\frac{29.40 + \frac{0.015}{13.6}}{76 + 460}\right] = 2.118 \text{ dcsf}$$

$$C_{DG} = \frac{2.040}{2.118} = \boxed{0.963}$$

CM 27-2 Cf: 1.028 Mike Bass #263 3-09-00



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 27-2

CALIBRATION DATA

Date: 3-09-00

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	1003	72	72
Ice Bath	1005	35	36
Boiling Water	1007	212	213
Oven	1018	250	250
Oven	1025	297	297
Oven	1029	351	351
Oven	1031	374	374

Meter Adjusted? Yes _____ No X

Calibrator: Mike Bass

Checked By: [illegible] 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 Mudd 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)

	Time	Meter Reading	Temp.	P_m
End	0930	5.305 cf	69 °F	-0.85 "H_2O
Start	0918	0.000 cf	69 °F	-0.85 "H_2O
Avg.	12	5.305 cf	69 °F	-0.850 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	933.377 cf	67 °F	72 °F	0.50 "H_2O
Start	928.108 cf	64 °F	68 °F	0.50 "H_2O
Avg.	5.269 cf	68 °F		0.500 "H_2O

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

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

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

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)

	Time	Meter Reading	Temp.	P_m
End	0942	5.302 cf	69 °F	-1.35 "H_2O
Start	0933	0.000 cf	69 °F	-1.35 "H_2O
Avg.	9	5.302 cf	69 °F	-1.350 "H_2O

Dry Gas Meter

Meter Reading	Temp. In	Temp. Out	P_m
939.313 cf	66 °F	73 °F	1.00 "H_2O
934.076 cf	68 °F	73 °F	1.00 "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

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 @ 1.5" H_2O

P_b: 29.33 "Hg

Control Module Vacuum: 5.5 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	0958	10.301 cf	69 °F	-1.80 "H_2O
Start	0944	0.000 cf	69 °F	-1.80 "H_2O
Avg.	14	10.301 cf	69 °F	-1.800 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	949.792 cf	63 °F	74 °F	1.50 "H_2O
Start	939.619 cf	67 °F	74 °F	1.50 "H_2O
Avg.	10.173 cf	70 °F		1.500 "H_2O

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

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

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

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

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 @ 2.0 " H_2O

P_b: 29.33 "Hg

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

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1012	10.427 cf	69 °F	-2.30 "H_2O
Start	0959	0.000 cf	69 °F	-2.30 "H_2O
Avg.	13	10.427 cf	69 °F	-2.300 "H_2O

Dry Gas Meter

Meter Reading	Temp. In	Temp. Out	P_m
960.503 cf	62 °F	74 °F	2.00 "H_2O
950.213 cf	65 °F	74 °F	2.00 "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

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 @ 3.0" H_2O

P_b: 29.33 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1024	10.503 cf	69 °F	-3.20 "H_2O
Start	1013	0.000 cf	69 °F	-3.20 "H_2O
Avg.	11	10.503 cf	69 °F	-3.200 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	971.172 cf	59 °F	73 °F	3.00 "H_2O
Start	960.821 cf	64 °F	74 °F	3.00 "H_2O
Avg.	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

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 @ 4.0" H_2O

P_b: 29.33 "Hg

Control Module Vacuum: 5.0 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1034	10.511 cf	69 °F	-4.15 "H_2O
Start	1025	0.000 cf	69 °F	-4.15 "H_2O
Avg.	9	10.511 cf	69 °F	-4.150 "H_2O

Dry Gas Meter

Meter Reading	Temp. In	Temp. Out	P_m
982.264 cf	59 °F	73 °F	4.00 "H_2O
971.867 cf	62 °F	73 °F	4.00 "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 Basc

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)

	Time	Meter Reading	Temp.	P_m
End	1152	2.141 cf	68 °F	-0.250 "H_2O
Start	1119	0.000 cf	68 °F	-0.250 "H_2O
Avg.	33	2.141 cf	68 °F	-0.250 "H_2O

Dry Gas Meter

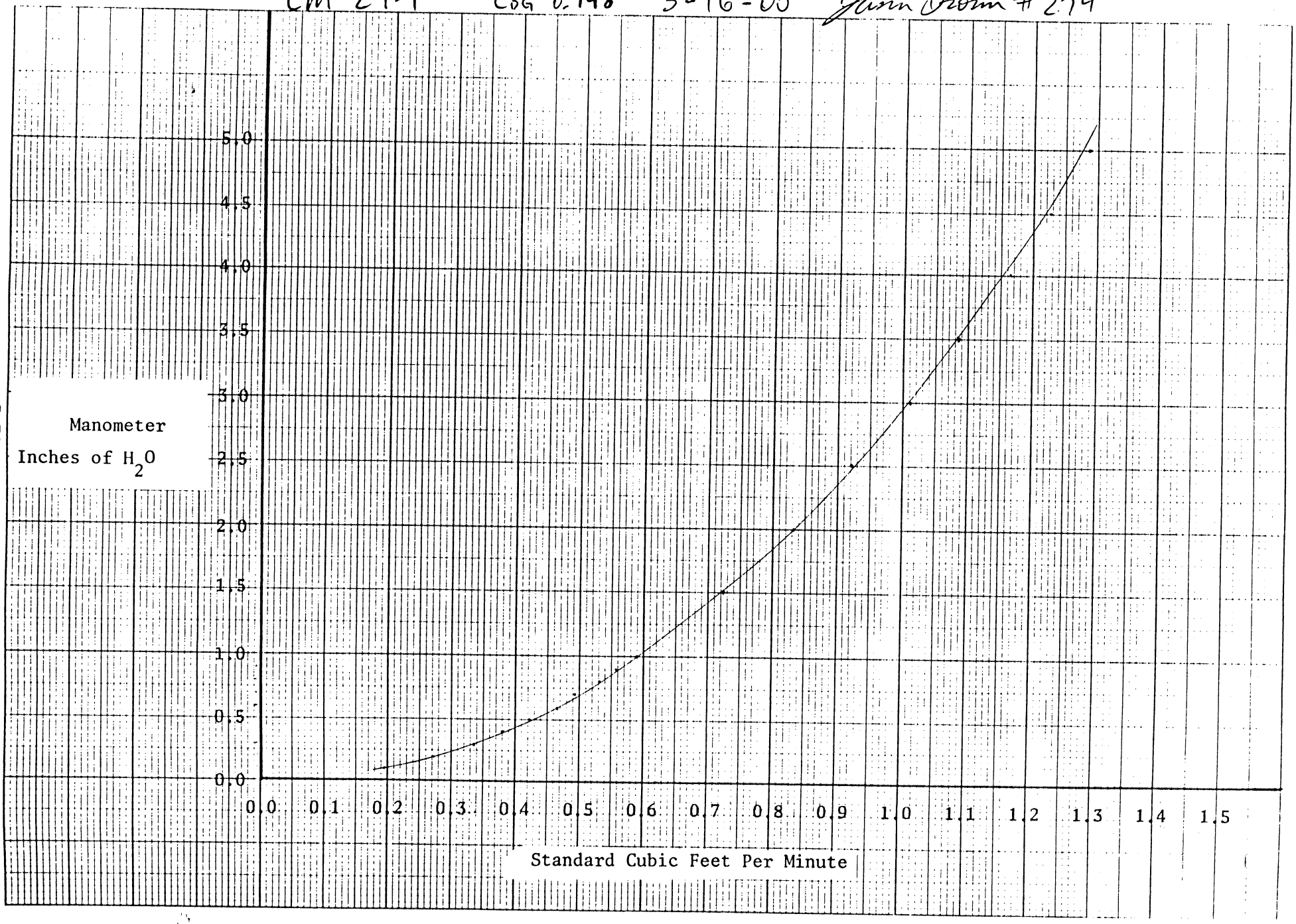
Meter Reading	Temp. In	Temp. Out	P_m
8.127 cf	75 °F	75 °F	0.010 "H_2O
6.013 cf	68 °F	71 °F	0.010 "H_2O
2.114 cf	72 °F		0.010 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.141 \left[\frac{29.35 + \frac{-0.250}{13.6}}{68 + 460}\right] \times 0.940\ (C_f) = 2.078 \text{ dcsf}$$

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

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

checked by M. Bass 263 CM 29-1 Cog 0.998 3-16-00 Jann Broom #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 ✓

Jean Brown #274

Signature of Calibrator

✓ JB

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 3 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.
- The 88 mm Filter Blank had a low level Hg detection. All 88 mm Filter samples have been blank corrected.
- Filter 47Q184 (Reagent Blank) was prepared 3 days past the recommended hold time listed in the Ontario Hydro Method. Filter 88QI26 (Stack Run 2), Filter 88QI46 (Stack Run 3), and Filter 47Q187 (FGD Inlet Run 2) were prepared 2 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 3 Monticello SES
Mt. Pleasant, Texas

Hg Analysis
Ontario Hydro Method

Summary Report

	FGD Outlet Run 1	FGD Outlet Run 2	FGD Outlet Run 3	FGD Inlet Run 1	FGD Inlet Run 2	FGD Inlet Run 3
Particle Bound Hg (ug)	10.3	3.84	1.12	0.182	0.111	0.13
Oxidized Hg (ug)	25.0	4.0	3.5	15.6	20.5	26.4
Elemental Hg (ug)	29.7	27.5	25.9	27.8	29.2	27.8
Total Hg (ug)	65.0	35.3	30.5	43.6	49.8	54.4

	Stack Run 1	Stack Run 2	Stack Run 3	FGD Outlet Blank Train	FGD Inlet Blank Train	Stack Blank Train
Particle Bound Hg (ug)	0.370	0.275	0.359	0.000	0.000	0.0
Oxidized Hg (ug)	7.99	0.67	10.8	5.260	0.000	0.00
Elemental Hg (ug)	36.2	38.3	34.4	0.297	0.000	0.00
Total Hg (ug)	44.6	39.2	45.6	5.557	0.000	0.0

	Reagent Blanks
Container # 7 (ug/L)	<0.050
Container # 8 (ug/L)	<0.070
Container # 9 (ug/L)	<0.14
Container # 10 (ug/L)	0.144
Container # 11 (ug/L)	<0.050
Container # 12 (47 mm) (ug)	<0.003
Container # 12 (47 mm) (ug)	0.00

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TestAmerica
INCORPORATED

Sample ID: TXU Electric
Unit 3 Monticello SES
Mt. Pleasant, Texas

Hg Analysis
Ontario Hydro Method

Duplicate Summary Report

	FGD Outlet Run 1	FGD Outlet Run 2	FGD Outlet Run 3	FGD Inlet Run 1	FGD Inlet Run 2	FGD Inlet Run 3
Particle Bound Hg (ug)	10.243	3.802	1.106	0.18	0.11	0.13
Oxidized Hg (ug)	24.80	3.97	3.41	15.60	20.30	25.70
Elemental Hg (ug)	29.50	28.20	25.74	28.33	28.76	27.63
Total Hg (ug)	64.54	35.97	30.26	44.11	49.17	53.46

	Stack Run 1	Stack Run 2	Stack Run 3	FGD Outlet Blank Train	FGD Inlet Blank Train	Stack Blank Train
Particle Bound Hg (ug)	0.383	0.271	0.359	0.000	0.000	0.000
Oxidized Hg (ug)	8.140	0.667	11.000	5.160	0.000	0.000
Elemental Hg (ug)	36.221	37.710	35.042	0.302	0.000	0.000
Total Hg (ug)	44.744	38.648	46.401	5.462	0.000	0.000

	Reagent Blanks
Container # 7 (ug/L)	<0.050
Container # 8 (ug/L)	<0.070
Container # 9 (ug/L)	<0.14
Container # 10 (ug/L)	0.158
Container # 11 (ug/L)	<0.050
Container # 12 (47 mm) (ug)	<0.003
Container # 12 (88 mm) (ug)	0.00

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TestAmerica
INCORPORATED

Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas

Hg Analysis
Ontario Hydro Method

Spike Summary Report

TestAmerica ID	Sample ID	Sample Result	Spike Result	Spike Amount	% Recovery
88QI25	7 Stack Run 1, Cont. 1A	0.163 ug	0.263 ug	0.100 ug	100 ✓
47Q183	1 FGD Inlet Run 1, Cont. 1A	0.117 ug	0.169 ug	0.050 ug	104 ✓
O#2,5	4 FGD Outlet Run 2, Cont. 5	26.9 ug	47.9 ug	21.0 ug	100 ✓
S#3,5	11 Stack Run 3, Cont. 5	34.4 ug	54.5 ug	18.8 ug	107 ✓
I#3,4	3 FGD Inlet Run 3, Cont. 4	0.432 ug	1.28 ug	0.824 ug	103 ✓
O#3,4	6 FGD Outlet Run 3, Cont. 4	0.045 ug	0.449 ug	0.428 ug	95 ✓
S#1,4	8 Stack Run 1, Cont. 4	0.126 ug	0.539 ug	0.442 ug	95 ✓
S#3,4	10 Stack Run 3, Cont. 4	0.042 ug	0.381 ug	0.367 ug	92 ✓
I#3,3	2 FGD Inlet Run 3, Cont. 3	26.4 ug	44.3 ug	18.8 ug	95 ✓
O#3,3	5 FGD Outlet Run 3, Cont. 3	3.48 ug	10.1 ug	6.23 ug	106 ✓
S#3,3	9 Stack Run 3, Cont. 3	10.8 ug	21.2 ug	10.1 ug	101

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TestAmerica
INCORPORATED

Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas
FGD Inlet Run 1

Hg Analysis
Ontario Hydro Method

Collected On: 2/23/00
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	47Q183	04/04/00	04/07/00	sah	0.117	0.118	<1.0	---	---	ug		
Container # 1B		Not Provided			---	---	---	---	---	ug		
Container # 2	I#1,2	03/28/00	03/28/00	jpp	0.065	0.065	<1.0	---	---	ug		
Container # 3	I#1,3	03/28/00	03/28/00	jpp	15.6	15.6	<1.0	---	---	ug		
Container # 4	I#1,4	03/29/00	04/04/00	jpp	0.625	0.625	<1.0	---	---	ug		
Container # 5	I#1,5	03/27/00	03/27/00	jpp	27.2	27.7	1.6	---	---	ug	*1	

Particle Bound Hg (ug) **0.18**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **15.60**
(Containers 3)

Elemental Hg (ug) **27.83**
(Containers 4 and 5)

Total Hg (ug) **43.61**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.18**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **15.60**
(Containers 3)

Dup. Elemental Hg (ug) **28.33**
(Containers 4 and 5)

Dup. Total Hg (ug) **44.11**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: *1 Result is blank corrected.

TestAmerica
INCORPORATED

Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas
FGD Inlet Run 2

Hg Analysis
Ontario Hydro Method

Collected On: 2/24/00
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	47Q187	04/11/00	04/11/00	sah	0.069	0.068	2.2	---	---	ug	*1	
Container # 1B		Not Provided			---	---	---	---	---	ug		
Container # 2	I#2,2	03/28/00	03/28/00	jpp	0.042	0.042	<1.0	---	---	ug		
Container # 3	I#2,3	03/28/00	03/28/00	jpp	20.5	20.3	<1.0	---	---	ug		
Container # 4	I#2,4	03/29/00	04/04/00	jpp	0.651	0.655	<1.0	0.643	1.3	ug		
Container # 5	I#2,5	03/27/00	03/27/00	jpp	28.5	28.1	1.5	---	---	ug	*2	

Particle Bound Hg (ug) **0.11**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **20.50**
(Containers 3)

Elemental Hg (ug) **29.15**
(Containers 4 and 5)

Total Hg (ug) **49.76**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.11**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **20.30**
(Containers 3)

Dup. Elemental Hg (ug) **28.76**
(Containers 4 and 5)

Dup. Total Hg (ug) **49.17**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: *1 Sample was analyzed 2 days past the reccomended holding time listed in the Ontario Hydro Method.
*2 Result is blank corrected.

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TestAmerica
INCORPORATED

Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas
FGD Inlet Run 3

Hg Analysis
Ontario Hydro Method

Collected On: 2/24/00
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	47Q188	04/04/00	04/07/00	sah	0.128	0.128	<1.0	---	---	ug		
Container # 1B		Not Provided			---	---	---	---	---	ug		
Container # 2	I#3,2	03/28/00	03/28/00	jpp	<0.003	<0.003	<1.0	<0.003	<1.0	ug		
Container # 3	I#3,3	03/28/00	03/28/00	jpp	26.4	25.7	2.5	---	---	ug		
Container # 4	I#3,4	03/29/00	04/04/00	jpp	0.432	0.43	<1.0	---	---	ug		
Container # 5	I#3,5	03/27/00	03/27/00	jpp	27.4	27.2	<1.0	---	---	ug	*1	

Particle Bound Hg (ug) **0.13**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **26.40**
(Containers 3)

Elemental Hg (ug) **27.83**
(Containers 4 and 5)

Total Hg (ug) **54.36**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.13**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **25.70**
(Containers 3)

Dup. Elemental Hg (ug) **27.63**
(Containers 4 and 5)

Dup. Total Hg (ug) **53.46**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: *1 Result is blank corrected.

TestAmerica
INCORPORATED

Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas
FGD Inlet Blank Train

Hg Analysis
Ontario Hydro Method

Collected On: 2/23/00
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	IBT 3	03/28/00	03/28/00	jpp	<0.028	<0.028	<1.0	---	---	ug		
Container # 4	IBT 4	03/29/00	04/04/00	jpp	<0.021	<0.021	<1.0	---	---	ug		
Container # 5	IBT 5	03/27/00	03/27/00	jpp	<0.022	<0.022	6.5	---	---	ug	*1	

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

Oxidized Hg (ug) **0.00**
(Containers 3)

Elemental Hg (ug) **0.00**
(Containers 4 and 5)

Total Hg (ug) **0.00**
(Containers 1A, 1B, 2, 3, 4, and 5)

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

Dup. Oxidized Hg (ug) **0.00**
(Containers 3)

Dup. Elemental Hg (ug) **0.00**
(Containers 4 and 5)

Dup. Total Hg (ug) **0.00**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: *1 Result is blank corrected.

TestAmerica
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Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas
FGD Outlet Run 1

Hg Analysis
Ontario Hydro Method

Collected On: 2/23/00
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	88QI37	04/04/00	04/07/00	sah	0.436	0.423	3.0			ug	*1	
Container # 1B		Not Provided								ug		
Container # 2	O#1,2	03/28/00	03/28/00	jpp	9.82	9.82	<1.0			ug		
Container # 3	O#1,3	03/28/00	03/28/00	jpp	25.0	24.8	<1.0			ug		
Container # 4	O#1,4	03/29/00	04/04/00	jpp	<0.022	<0.022	<1.0			ug		
Container # 5	O#1,5	03/27/00	03/27/00	jpp	29.7	29.5	<1.0	28.9	2.8	ug	*1	

Particle Bound Hg (ug) **10.256**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **25.00**
(Containers 3)

Elemental Hg (ug) **29.70**
(Containers 4 and 5)

Total Hg (ug) **64.96**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **10.243**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **24.80**
(Containers 3)

Dup. Elemental Hg (ug) **29.50**
(Containers 4 and 5)

Dup. Total Hg (ug) **64.54**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: *1 Result is blank corrected.

TestAmerica
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Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas
FGD Outlet Run 2

Hg Analysis
Ontario Hydro Method

Collected On: 2/24/00
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	88QI41	04/03/00	04/07/00	sah	0.620	0.612	1.2			ug	*1	
Container # 1B		Not Provided								ug		
Container # 2	O#2,2	03/28/00	03/28/00	jpp	3.22	3.19	<1.0			ug		
Container # 3	O#2,3	03/28/00	03/28/00	jpp	4.00	3.97	<1.0			ug		
Container # 4	O#2,4	03/29/00	04/04/00	jpp	0.595	0.595	<1.0	0.564	5.3	ug		
Container # 5	O#2,5	03/27/00	03/27/00	jpp	26.9	27.6	2.3			ug	*1	

Particle Bound Hg (ug) **3.840**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **4.00**
(Containers 3)

Elemental Hg (ug) **27.50**
(Containers 4 and 5)

Total Hg (ug) **35.34**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **3.802**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **3.97**
(Containers 3)

Dup. Elemental Hg (ug) **28.20**
(Containers 4 and 5)

Dup. Total Hg (ug) **35.97**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: *1 Result is blank corrected.

TestAmerica
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Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas
FGD Outlet Run 3

Hg Analysis
Ontario Hydro Method

Collected On: 2/24/00
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	88QI47	04/03/00	04/07/00	sah	0.209	0.204	2.8			ug	*1	
Container # 1B		Not Provided								ug		
Container # 2	O#3,2	03/28/00	03/28/00	jpp	0.912	0.902	1.1	0.888	2.7	ug		
Container # 3	O#3,3	03/28/00	03/28/00	jpp	3.48	3.41	1.8			ug		
Container # 4	O#3,4	03/29/00	04/04/00	jpp	0.045	0.042	5.9			ug		
Container # 5	O#3,5	03/27/00	03/27/00	jpp	25.9	25.7	<1.0			ug	*1	

Particle Bound Hg (ug) **1.121**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **3.48**
(Containers 3)

Elemental Hg (ug) **25.95**
(Containers 4 and 5)

Total Hg (ug) **30.55**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **1.106**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **3.41**
(Containers 3)

Dup. Elemental Hg (ug) **25.74**
(Containers 4 and 5)

Dup. Total Hg (ug) **30.26**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: *1 Result is blank corrected.

TestAmerica
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Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas
FGD Outlet Blank Train

Hg Analysis
Ontario Hydro Method

Collected On: 2/23/00
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	03/28/00	03/28/00	jpp	5.26	5.16	2	---	---	ug		
Container # 4	OBT 4	03/29/00	04/04/00	jpp	<0.022	<0.022	<1.0	---	---	ug		
Container # 5	OBT 5	03/27/00	03/27/00	jpp	0.297	0.302	1.2	---	---	ug	*1	

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

Oxidized Hg (ug) **5.26**
(Containers 3)

Elemental Hg (ug) **0.30**
(Containers 4 and 5)

Total Hg (ug) **5.56**
(Containers 1A, 1B, 2, 3, 4, and 5)

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

Dup. Oxidized Hg (ug) **5.16**
(Containers 3)

Dup. Elemental Hg (ug) **0.30**
(Containers 4 and 5)

Dup. Total Hg (ug) **5.46**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: *1 Result is blank corrected.

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Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas
Stack Run 1

Hg Analysis
Ontario Hydro Method

Collected On: 2/23/00
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	88QI25	04/03/00	04/07/00	sah	0.163	0.162	<1.0	---	---	ug	*1	
Container # 1B		Not Provided			---	---	---	---	---	ug		
Container # 2	S#1,2	03/28/00	03/28/00	jpp	0.207	0.221	6.7	---	---	ug		
Container # 3	S#1,3	03/28/00	03/28/00	jpp	7.99	8.14	1.8	---	---	ug		
Container # 4	S#1,4	03/29/00	04/04/00	jpp	0.126	0.121	3.9	---	---	ug		
Container # 5	S#1,5	03/27/00	03/27/00	jpp	36.1	36.1	<1.0	---	---	ug	*1	

Particle Bound Hg (ug) **0.370**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **7.99**
(Containers 3)

Elemental Hg (ug) **36.23**
(Containers 4 and 5)

Total Hg (ug) **44.59**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.383**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **8.14**
(Containers 3)

Dup. Elemental Hg (ug) **36.22**
(Containers 4 and 5)

Dup. Total Hg (ug) **44.74**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: *1 Result is blank corrected.

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Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas
Stack Run 2

Hg Analysis
Ontario Hydro Method

Collected On: 2/24/00
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	88QI26	04/11/00	04/11/00	sah	0.230	0.226	1.7	---	---	ug	*1, *2	
Container # 1B		Not Provided			---	---	---	---	---	ug		
Container # 2	S#2,2	03/28/00	03/28/00	jpp	0.045	0.045	<1.0	---	---	ug		
Container # 3	S#2,3	03/28/00	03/28/00	jpp	0.667	0.667	<1.0	---	---	ug		
Container # 4	S#2,4	03/29/00	04/04/00	jpp	0.102	0.110	7.8	0.110	7.4	ug		
Container # 5	S#2,5	03/27/00	03/27/00	jpp	38.2	37.6	1.7	38.6	1.1	ug	*1	

Particle Bound Hg (ug) **0.275**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **0.67**
(Containers 3)

Elemental Hg (ug) **38.30**
(Containers 4 and 5)

Total Hg (ug) **39.24**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.271**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **0.67**
(Containers 3)

Dup. Elemental Hg (ug) **37.71**
(Containers 4 and 5)

Dup. Total Hg (ug) **38.65**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: *1 Sample was analyzed 2 days past the reccomended holding time listed in the Ontario Hydro Method.
*2 Result is blank corrected.

TestAmerica
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Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas
Stack Run 3

Hg Analysis
Ontario Hydro Method

Collected On: 2/24/00
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	88QI46	04/11/00	04/11/00	sah	0.309	0.311	<1.0	---	---	ug	*1, *2	
Container # 1B		Not Provided			---	---	---	---	---	ug		
Container # 2	S#3,2	03/28/00	03/28/00	jpp	0.050	0.048	3.9	0.047	7.1	ug		
Container # 3	S#3,3	03/28/00	03/28/00	jpp	10.8	11.0	1.9	---	---	ug		
Container # 4	S#3,4	03/29/00	04/04/00	jpp	0.042	0.042	<1.0	---	---	ug		
Container # 5	S#3,5	03/27/00	03/27/00	jpp	34.4	35.0	1.6	---	---	ug	*1	

Particle Bound Hg (ug) **0.359**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **10.80**
(Containers 3)

Elemental Hg (ug) **34.44**
(Containers 4 and 5)

Total Hg (ug) **45.60**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.359**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **11.00**
(Containers 3)

Dup. Elemental Hg (ug) **35.04**
(Containers 4 and 5)

Dup. Total Hg (ug) **46.40**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes:
*1 Sample was analyzed 2 days past the reccomended holding time listed in the Ontario Hydro Method.
*2 Result is blank corrected.

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Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas
Stack Blank Train

Hg Analysis
Ontario Hydro Method

Collected On: 2/23/00
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	SBT 3	03/28/00	03/28/00	jpp	<0.029	<0.029	<1.0	---	---	ug		
Container # 4	SBT 4	03/29/00	04/04/00	jpp	<0.020	<0.020	<1.0	<0.020	<1.0	ug		
Container # 5	SBT 5	03/27/00	03/27/00	jpp	<0.023	<0.023	<1.0	---	---	ug	*1	

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

Oxidized Hg (ug) **0.00**
(Containers 3)

Elemental Hg (ug) **0.00**
(Containers 4 and 5)

Total Hg (ug) **0.00**
(Containers 1A, 1B, 2, 3, 4, and 5)

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

Dup. Oxidized Hg (ug) **0.00**
(Containers 3)

Dup. Elemental Hg (ug) **0.00**
(Containers 4 and 5)

Dup. Total Hg (ug) **0.00**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: *1 Result is blank corrected.

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Sample ID: **TXU Electric**
Unit 3 Monticello SES
Mt. Pleasant, Texas
Reagent Blanks

Hg Analysis
Ontario Hydro Method

Collected On: 2/23/00
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	IRB7	---	04/04/00	jpp	<0.050	<0.050	<1.0	---	---	ug/L		
Container # 8	IRB8	03/28/00	03/28/00	jpp	<0.070	<0.070	<1.0	---	---	ug/L		
Container # 9	IRB9	03/29/00	04/04/00	jpp	<0.14	<0.14	<1.0	---	---	ug/L		
Container # 10	IRB10	03/27/00	03/27/00	jpp	0.144	0.158	9.3	---	---	ug/L		
Container # 11	IRB11	---	04/04/00	jpp	<0.050	<0.050	<1.0	---	---	ug/L		
Container # 12	47Q184	04/11/00	04/11/00	sah	<0.003	<0.003	<1.0	---	---	ug	*1	47 mm
Container # 12	88QI44	04/04/00	04/07/00	sah	0.003	0.003	3.9	0.003	9.4	ug		88 mm

Notes: *1 Sample was analyzed 3 days past the reccomended holding time listed in the Ontario Hydro Method.

ASTM D6414-99 Results

TestAmerica
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Sample ID: TXU Electric
Unit 3
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	0.388	0.388	<1.0	ug/g	84.9		
Run 2 Composite	4/4/00	4/6/00	jpp	0.375	0.375	<1.0	ug/g	85.8	*1	
Run 3 Composite	4/4/00	4/6/00	jpp	0.482	0.476	1.2	ug/g	85.8	*2	

Notes:
*1 Sample was analyzed in triplicate. The triplicate result was 0.375 ug/g with an RPD of <1.0 %.
*2 Sample was spiked. The spike recovery was 102 %.

Sample Train Receipt Records

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-183

Location ID/Run #
Unit #3
FGD INLET

Reagent BLANKS

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 ( )	___ + ___ + ___ = ___.		
3 ( )	___ + ___ + ___ = ___.		
4 ( )	___ + ___ + ___ = ___.		
5 ( )	___ + ___ + ___ = ___.		
7 (1)	50 + — + — = 50.	IRB 7	
8 (1)	52 + — + — = 52.	IRB 8	
9 (1)	49 + — + — = 49.	IRB 9	
10 (1)	53 + — + — = 53.	IRB 10	
11 (1)	58 + — + — = 58.	IRB 11	

Filters:

Cont. ID/(#)	Filter ID(s)		
1A ( )			
1B ( )			
12 (6)	47Q 184, 185, 186 (47 mm)		
	88QF 42, 43, 44 (88 mm)		
	(Thimble)		

Notes: _____

Checked By: DSB
Date: 3/16/00

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Mercury Sample Train Receipt Record

Client ID	Location ID/Run #
TXU ELECTRIC	Unit #3
MT. PLEASANT, TX	FGD Inlet
99-183	Blank Train

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 ( )	___ + ___ + ___ = ___.		
3 (1)	405 + – + – = 405.	IBT, 3	
4 (1)	135 + – + – = 135.	IBT, 4	
5 (1)	435 + – + – = 435.	IBT, 5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

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

Notes: _____

Checked By: MB

Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID	Location ID/Run #
TXU ELECTRIC	Unit # 3
MT. PLEASANT TX	FGD Inlet
99-183	Run #1

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	37 + — + — = 37.	I #1, 2	
3 (2)	500 + 125 + — = 625.	I #1, 3A, 3B	
4 (1)	140 + — + — = 140.	I #1, 4	
5 (1)	420 + — + — = 420.	I #1, 5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)			
1B ( )			
12	47Q183 (47 mm)		
	(88 mm)		
	(Thimble)		

Notes: _____

Checked By: MR

Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-183

Location ID/Run #
Unit #3
FGD Inlet

Run #2

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	80 + — + — = 80.	I #2, 2	
3 (2)	420 + 240 + — = 660.	I #2, 3A, 3B	
4 (1)	145 + — + — = 145.	I #2, 4	
5 (1)	415 + — + — = 415.	I #2, 5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)	470187		
1B ( )			
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes:

Checked By: DRP
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-183

Location ID/Run #
Unit #3
FGD Inlet

Run #3

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	49 + — + — = 49.	I #3, 2	
3 (2)	460 + 210 + — = 670.	I #3, 3A, 3B	
4 (1)	135 + — + — = 135.	I #3, 4	
5 (1)	395 + — + — = 395.	I #3, 5	
7 ( )	+ + = .		
8 ( )	+ + = .		
9 ( )	+ + = .		
10 ( )	+ + = .		
11 ( )	+ + = .		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)	470188		
1B ( )			
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes: W_{main} = 93.9 mg
Q185
Q187 = 50.2 mg
Q186 = 63.9 mg

Checked By: DBP
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-183

Location ID/Run #
Unit #3
FGD OUTLET

BLANK TRAIN

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 ( )	___ + ___ + ___ = ___.		
3 (1)	400 + — + — = 400.	OBT 3	
4 (1)	155 + — + — = 155.	OBT 4	
5 (1)	430 + — + — = 430.	OBT 5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

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

Notes:

Checked By: DJS
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-183

Location ID/Run #
Unit #3
FGD Outlet

Run #1

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	84 + — + — = 84.	O#1,2	
3 (2)	470 + 450 + — = 920.	O#1,3A,3B	
4 (1)	155 + — + — = 155.	O#1,4	
5 (1)	410 + — + — = 410.	O#1,5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)	88QI37		
1B ( )			
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes:

Checked By: DPS
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-183

Location ID/Run #
Unit #3
FGD Outlet

Run #2

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	100 + — + — = 100.	O #2, 2	
3 (2)	510 + 200 + — = 710.	O #2, 3A, 3B	
4 (1)	120 + — + — = 120.	O #2, 4	
5 (1)	425 + — + — = 425.	O #2, 5	
7 ( )	+ + = .		
8 ( )	+ + = .		
9 ( )	+ + = .		
10 ( )	+ + = .		
11 ( )	+ + = .		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)	88QI41		
1B ( )			
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes:

Checked By: MY
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-183

Location ID/Run #
Unit #3
FGD Outlet

Run #1

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	90 + — + — = 90.	O #3, 2	
3 (2)	450 + 440 + — = 890.	O #3, 3A, 3B	
4 (1)	150 + — + — = 150.	O #3, 4	
5 (1)	405 + — + — = 405.	O #3, 5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)	88QI47		
1B ( )			
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes:

Checked By: DSP
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-183

Location ID/Run #
Unit #3
STACK

BLANK TRAIN

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 ( )	___ + ___ + ___ = ___.		
3 (1)	415 + — + — = 415.	SBT, 3	
4 (1)	140 + — + — = 140.	SBT, 4	
5 (1)	460 + — + — = 460.	SBT, 5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

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

Notes: _____

Checked By: DJB
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-183

Location ID/Run #
Unit #3
STACK

Run #1

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	185 + — + — = 185.	S #1, 2	
3 (1)	390 + — + — = 390.	S #1, 3	
4 (1)	155 + — + — = 155.	S #1, 4	
5 (1)	400 + — + — = 400.	S#1, 5	
7 ( )	+ + = .		
8 ( )	+ + = .		
9 ( )	+ + = .		
10 ( )	+ + = .		
11 ( )	+ + = .		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)	88QI25		
1B ( )			
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes:

Checked By: SBP
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-183

Location ID/Run #
Unit #3
STACK

Run #2

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	255 + — + — = 255.	S #2, 2	
3 (2)	480 + 260 + — = 740.	S #2, 3A, 3B	
4 (1)	145 + — + — = 145.	S #2, 4	
5 (1)	425 + — + — = 425.	S #2, 5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)	88QI 26		
1B ( )			
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes:

Checked By: DAP
Date: 3/16/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
TXU ELECTRIC
MT. PLEASANT, TX

99-183

Location ID/Run #
Unit #3
STACK

Run #3

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	225 + — + — = 225.	S#3, 2	
3 (2)	480 + 240 + — = 720.	S#3, 3A 3B	
4 (1)	135 + — + — = 135.	S#3, 4	
5 (1)	375 + — + — = 375.	S#3, 5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)	88QI 46		
1B ( )			
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes:

Checked By: DAP
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~~		
4	7024	~~1.0011~~ g		
5	~~[illegible]~~	~~1.0040~~ g		
6	7026	1.0102 g		
7	7027	1.0192 g		
8	7028	1.0044 g		
	EPK 4/4/00			

MB

ICV

MS

MSD

RPD

FLAG

SECONDARY DATA CHECK: analyst:
date:

Comments: HCl - 67-32-4
HNO_3 67-32-23
$KMnO_4$ 67-32-1 4/30/00

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 4/17/00 ~~67-35-~~
$NH_2OH*HCl$	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	88QI26						
2	88QI46						
3	[redacted]	[redacted]					
4	47Q187						
5	47Q184						
6	[redacted]	[redacted]					
7	[redacted]	1633b [redacted]					
8	MVS #3	1633b 0.5050 g					
9	[redacted]	[redacted]					
10	Blank						

NOTES

TestAmerica INCORPORATED

Mercury in Flue Gas
Filter Preparation Batch Log

Analyst(s) SAH/EDK Preparation Date 4/3/00 AND 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	[redacted]	[redacted]	~~50~~ 50
2	[redacted]	[redacted]	1 SH 4/3/00
3	BLANK	~~0.5~~ SH 4/3/00	50
4	1633b	0.5871	
5	[redacted]		
6	[redacted]		
7	[redacted]		
8	[redacted]		
9	[redacted]		
10	88QI25	spk	
11	88QI41		
12	88QI47		

Lab ID	Filter ID	Sample Description	Final Vol (mL)
13	[redacted]	[redacted]	50
14	479147		
15	479150		
16	479179		
17	[redacted]	[redacted]	
18	479188		
19	[redacted]		
20	479183	spk	
21	88QI44	dup	
~~22~~	~~Blank~~	SH 4/3/00	
22	88QI37	SDK	
~~24~~ 23	Blank	EDK 4/6/00	
24	1633b	0.5442	

NOTES

TestAmerica INCORPORATED

Mercury in Flue Gas
Aqueous Preparation Batch Log

Analyst(s) EPK Preparation Date 3/28/00

Reagent Reference #'s

HCl N/A $SnCl_2$ 67-33-1 (4/3/00)
$NH_2OH*HCl$ 67-18-18 (2.0 mL) Calibration Standards 67-30-18 (3/28/00) 67-29-15
$KMnO_4$ 67-26-1 ICV Standard 67-29-17
HNO_3 EPK 3/28/00 ~~67-27~~ 67-30-11 $K_2S_2O_8$ 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)
	+8	IRB 99-183	52	20	28
	+3	IBT 99-183	405	↓	↓
	+2	I#1 99-183	37		
	+3	I#1 99-183	625		
	+2	I#2 99-183	80		
	+3	I#2 99-183 ~~520~~ 1060 EPK 3/28/00			
	+2	I#3 99-183	49		
	+3	I#3 99-183	670		
	3	OBT 99-183	400		
	2	O#1 99-183	84		
	3	O#1 99-183	920		
	2	O#2 99-183	100		
	3	O#2 99-183	710		
	2	O#3 MP 99-183	90		
	3	O#3 SPK 99-183	890		
	3	SBT 99-183	415		
	2	S#1 MP 99-183	185		
	3	S#1 SPK 99-183	390		
	2	S#2 99-183	255		
	3	S#2 99-183	740		

Lab ID	Cont. #	Sample Description	Init Cont Vol (mL)	Init Prep Vol (mL)	Final Vol (mL)
	2	S#3 MP 99-183	225	20	28
	3	S#3 SPK 99-183	720	↓	↓
~~++~~	~~PE~~	~~#110399-15~~		~~20~~	~~28~~
++	PE	#110399-64			
++	PE	EERC Solution A1	500		
++	PE	EERC Solution A2	500		
~~++~~	~~PE~~	~~10% HCl SOLN D~~			
	7	I RB			
	11	I RB			
	7	O RB			
	11	O RB			

NOTES Mt. Pleasant, TX Soln. D - unprepped
99-183 + Highlighted samples run 3/28/00
++ Highlighted samples run 3/28/00 and 3/29/00

Mercury in Flue Gas
Aqueous Preparation Batch Log

Analyst(s) EPK Preparation Date 3/29/00

Reagent Reference #'s

HCl	67-32-4	$SnCl_2$	67-34-1
$NH_2OH*HCl$	67-18-18	Calibration Standards	67-33-1
$KMnO_4$	67-31-3	ICV Standard	67-29-15
HNO_3	N/A		67-29-17

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)
	9	IRB 99-183	49	15	42.25						
	4	IBT 99-183	135	15	45.75						
	4	I #1 99-183	140	15	43.75						
	4	I #2 dup 99-183	145	15	43.75						
	4	I #3 spk 99-183	135	15	45.75						
	4	OBT 99-183	155	15	42.75						
	4	O #1 99-183	155	15	42.75						
	4	O #2 dup 99-183	120	15	42.75						
	4	O #3 spk 99-183	150	15	42.75						
	4	SBT 99-183	140	15	42.75						
	4	S #1 99-183	155	15	42.75						
	4	S #2 dup 99-183	145	15	42.75						
	4	S #3 spk 99-183	135	15	42.75						
	~~PE~~	~~C1 EERC~~	~~250~~	~~15~~	~~40.25~~						
	PE	C2 EERC	250	15	40.25						
	PE	C1 dup EERC	250	15	40.25						
	~~PE~~	~~C2 dup EERC~~	~~250~~	~~15~~	~~40.25~~						

NOTES TXU Electric Mt. Pleasant, TX
Unit #3 FGD Inlet, FGD Outlet, Stack 99-183

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	395		
	5	OBT 99-183	430		
	5	O#1 TRP 99-183	410		
	5	O#2 SPL 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	IRB 99-183	53		

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	47[illegible]		
	5	I#2 99-184	410		
	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	500 500		
		EERC B2	500 500		
		EERC #11029-02	500		
		~~EERC #11029-03~~	~~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

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:              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                        1.0000 1.0000
 4 EERC B2                           1.0000 1.0000
 5 EERC B2DUP                        1.0000 1.0000
 6 110299-02                         1.0000 1.0000
 7 110299-02D                        1.0000 1.0000
 8 110399-12                         1.0000 1.0000
 9 [redacted]                        1.0000 1.0000
10 CCB                               1.0000 1.0000
11 CCV                               1.0000 1.0000
12 IRB 99-183                        1.0000 1.0000
13 IRB99-183D                        1.0000 1.0000
14 IBT99-183                         1.0000 1.0000
15 IBT99-183D                        1.0000 1.0000
                                                                          PgDn

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

JPP

RUN #3 CONT'D 5

```
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                       1.00000 1.00000
17 I #1 DUP 1:50                   1.00000 1.00000
18 I #2 1:50                       1.00000 1.00000
19 I #2 DUP 1:50                   1.00000 1.00000
20 I #3 1:50                       1.00000 1.00000
21 I #3 DUP 1:50                   1.00000 1.00000
22 O BT                            1.00000 1.00000
23 O BT DUP                        1.00000 1.00000
24 O #1 1:50                       1.00000 1.00000
25 O #1 DUP 1:50                   1.00000 1.00000
26 O #1 TRP 1:50                   1.00000 1.00000
27 O #2 1:50                       1.00000 1.00000
28 O #2 DUP 1:50                   1.00000 1.00000
29 O #2 SPK 1:50                   1.00000 1.00000
30 CCB                             1.00000 1.00000
                                                                        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 1:50                       1.0000 1.0000
33 O #3 DUP 1:50                   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 DUP 1:50                   1.0000 1.0000
38 S #2 1:50                       1.0000 1.0000
39 S #2 DUP 1:50                   1.0000 1.0000
40 S #2 TRP 1:50                   1.0000 1.0000
41 S #3 1:50                       1.0000 1.0000
42 S #3 DUP 1:50                   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
```

Run 3 CONT #5

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	[redacted]		1.0000	1.0000			
3	IBT99-184		1.0000	1.0000			
4	I #1		1.0000	1.0000			
5	I #1 DU		1.0000	1.0000			
6	I #2		1.0000	1.0000			
7	I #2 UP		1.0000	1.0000			
8	I #3		1.0000	1.0000			
9	I # DUP		1.0000	1.0000			
10	OBT 99-184		1.0000	1.0000			
11	OB 99-184D		1.0000	1.0000			
12	O #1		1.0000	1.0000			
13	#1 DUP		1.0000	1.0000			
14	O #2		1.0000	1.0000			
15	[redacted]		1.0000	1.0000			

45

57

Run 1 Cont #5

PgDn

Cup 1 ID: CCV Cell entry, Ins to switch

```
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 #2                              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

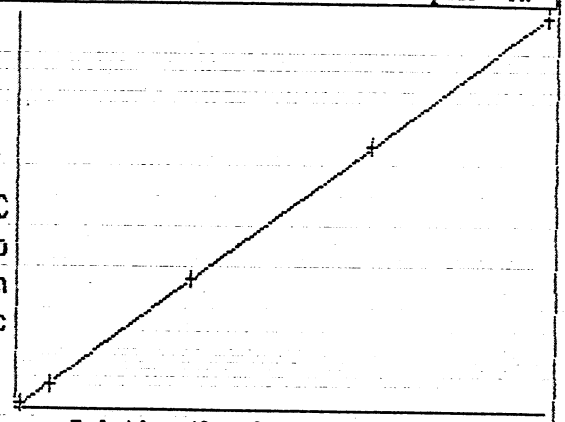
Protocol: SYSTEST labsys2
Rev: 3.001 Time: 20:23:10 14 Jan 1980
Folder: 032700b Seq: 36 Print: On
User: Batch: Id: Std6Rep1 Cup: 1 28 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

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 [illegible] 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 20:56:4[illegible] 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~~ 0.0183 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 ~~0.038 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: 110399-12					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	.143	ug/L	.000	.143				
*** 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 1:50					Seq: 21	21:34:45 14 Jan 1980 HG		
Hg	1.30	ug/L	.000	1.30				
*** Sample ID: I #1 DUP 1:50					Seq: 22	21:37:19 14 Jan 1980 HG		
Hg	1.28	ug/L	.000	1.28				
*** Sample ID: I #2 1:50					Seq: 23	21:40:02 14 Jan 1980 HG		
Hg	1.38	ug/L	.000	1.38				

~~0.068 µg 3/29/00 RPP~~

RPD = 4.9%

~~0.073 µg RPP 3/29/00~~

<0.05 µg 1L

102%

CONT #10

~~0.008~~ µg 0.144 ug/L

JMG 4/13

RPD = 9.3%

~~0.008~~ µg 0.158 ug/L

JMG 4/13

<0.022 ug

0.046 µg

RPD = 6.5%

<0.022 ug

0.049 µg

NO DATA

CONT #5

27.2 ug

27.3 µg

RPD = 1.6%

27.8 µg

27.7 ug

28.6 µg

28.5 ug

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	21:47:44 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 5				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

CONT #5

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	2.28	ug/L	.000	2.28		47.9ug (47.8ug) 100%		
*** Sample ID: CCB					Seq: 37	SPK = 21.0 ug 22:22:11 14 Jan 1980 HG		
Hg	-.006	ug/L	.000	-.006		<0.05 µg/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) 25.92 µg		
*** 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) 25.72 µg		
*** Sample ID: S BT					Seq: 41	22:32:18 14 Jan 1980 HG		
Hg	.122	ug/L	.000	.122		(<0.023 ug) 0.056 µg		
*** Sample ID: S BT DUP					Seq: 42	22:34:34 14 Jan 1980 HG RPD = 4.8%		
Hg	.128	ug/L	.000	.128		(<0.023 ug) 0.059 µg		
*** 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) 36.2 µg		
*** 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) 36.2 µg		
*** 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) 38.25 µg		
*** 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) 37.61 µg		

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 #2 TRP 1:50				Seq: 48	22:57:40 14 Jan 1980 HG RPD = 1.1%			
Hg	1.82	ug/L	.000	1.82	38.6 ug	38.68 µg		
*** 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	34.50 µg		
*** 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	35.06 µg		
*** Sample ID: S #3 SPK 1:50				Seq: 51	23:05:46 14 Jan 1980 HG			
Hg	2.91	ug/L	.000	2.91	54.5 ug	54.50	107%	
*** Sample ID: CCB				TV: 16.8 ug Seq: 52	23:09:49 14 Jan 1980 HG			
Hg	.015	ug/L	.000	.015	<0.05 µg/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	0.057 µg	0.031 ug		
*** Sample ID: IBT99-184D				Seq: 58	23:31:19 14 Jan 1980 HG RPD = 4.3%			
Hg	.142	ug/L	.000	.142	0.060 µg ~~0.060 µg~~ JMP 3/29/00	0.034 ug		
*** Sample ID: I #1 1:20				Seq: 59	23:33:35 14 Jan 1980 HG			
Hg	1.54	ug/L	.000	1.54	~~14.48 µg~~	14.5 ug		

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: OBT 99-184D 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 ~~12.69~~ DDP 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%		

3/28/2000 Analytical Data

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 21:47:56  04 Jan 1980
Folder: 032800a    Seq: 15                     Print: On
User:              Batch:          Id: Std6Rep1  Cup:      Gas:    0.23 LPM
State: Idle                                      Xmit: Off Autosampler: On
```

AUTOSAMPLER: Rack entry Rack 032800A

cup	Id	Extended id	Weight	Volume	Macro	check	Help
1	ICB		1.0000	1.0000			
2	MB 99-183		1.0000	1.0000			
3	MB 99-183D		1.0000	1.0000			
4	[redacted]		1.0000	1.0000			
5	EERC B1DUP 1:10		1.0000	1.0000			
6	EERC B2		1.0000	1.0000			
7	[redacted]		1.0000	1.0000			
8	[redacted]		1.0000	1.0000			
9	110299-03		1.0000	1.0000			
10	110399-12		1.0000	1.0000			
11	11039[redacted]-12D		1.0000	1.0000			
12	EERC A1 1:10		1.0000	1.0000			
13	EERC A1DUP 1:10		1.0000	1.0000			
14	EERC A2		1.0000	1.0000			
15	EERC A2DUP		1.0000	1.0000			

PgDn

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

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001    Time: 21:48:02  04 Jan 1980
Folder: 032800a    Seq: 15                      Print: On
User:              Batch:              Id: Std6Rep1   Cup:      Gas:    0.23 LPM
State: Idle                                           Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 032800A                                      PgUp
cup Id          Extended id          Weight Volume Macro check Help
16 [redacted]                        1.00000 1.00000
17 110299-1[redacted]                1.00000 1.00000
18 110399[redacted]4                 1.00000 1.00000
19 110[redacted]-04D                 1.00000 1.00000
20 S[redacted]N D  1:5               1.00000 1.00000
21 [redacted]                        1.00000 1.00000
22 CCB                               1.00000 1.00000
23 CCV                               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: 110299-15                          Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 23:18:07  04 Jan 1980
Folder: 032800a    Seq: 49                     Print: On
User:              Batch:            Id: CCV        Cup: 1 23 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 032800A
cup Id          Extended id          Weight Volume Macro check Help
 1 I#8 99-183                        1.00000 1.00000
 2 I#899183DU                        1.00000 1.00000
 3 I BT #3                           1.00000 1.00000
 4 IBT#3DUP                          1.00000 1.00000
 5 I #1, 2                           1.00000 1.00000
 6 I #1,2DUP                         1.00000 1.00000
 7 I #1, 3 1:10                      1.00000 1.00000
 8 I #1, 3DUP 1:10                   1.00000 1.00000
 9 I #2, 2                           1.00000 1.00000
10 I #2,2DUP                         1.00000 1.00000
11 I #2, 3 1:10                      1.00000 1.00000
12 I #2,3DUP 1:10                    1.00000 1.00000
13 I #3, 2                           1.00000 1.00000
14 I #3, 2DUP                        1.00000 1.00000
15 I #3,2TRP                         1.00000 1.00000
                                                                    PgDn

Cup 1  ID: I#8 99-183                     Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 23:19:18  04 Jan 1980
Folder: 032800a    Seq: 49                     Print: On
User:              Batch:            Id: CCV        Cup: 1 23 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 032800A                                    PgUp
cup Id          Extended id          Weight Volume Macro check Help
16 I #3, 3 1:10                      1.0000 1.0000
17 I #3,3DUP                         1.0000 1.0000
18 I #3,3SPK                         1.0000 1.0000
19 CCB                               1.0000 1.0000
20 CCV                               1.0000 1.0000
21                                   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: I #3, 3                          Cell entry, Ins to switch
```

```
*** Standard: 1 Rep: 1                Seq:  9       21:29:27 04 Jan 1980 HG

Hg     .000     ug/L     870
                         Ave. Int. =      870 S. D. =          0

*** Standard: 2 Rep: 1                Seq:  10      21:31:45 04 Jan 1980 HG

Hg     .050     ug/L     2661
                         Ave. Int. =     2661 S. D. =          0

*** Standard: 3 Rep: 1                Seq:  11      21:34:03 04 Jan 1980 HG

Hg     .200     ug/L     28739
                         Ave. Int. =    28739 S. D. =          0

*** Standard: 4 Rep: 1                Seq:  12      21:36:22 04 Jan 1980 HG

Hg     1.00     ug/L     126522
                         Ave. Int. =   126522 S. D. =          0

*** Standard: 5 Rep: 1                Seq:  13      21:38:46 04 Jan 1980 HG

Hg     2.00     ug/L     252275
                         Ave. Int. =   252275 S. D. =          0

*** Standard: 6 Rep: 1                Seq:  14      21:41:52 04 Jan 1980 HG

Hg     3.00     ug/L     376316
                         Ave. Int. =   376316 S. D. =          0
```

Protocol: SYSTEST labsys2

Rev: 3.001 Time: 21:42:10 04 Jan 1980

Folder: 032800a Seq: 15 Print: On

User: Batch: Id: Std6Rep1 Cup: Gas: 0.23 LPM

State: Idle Xmit: Off Autosampler: On

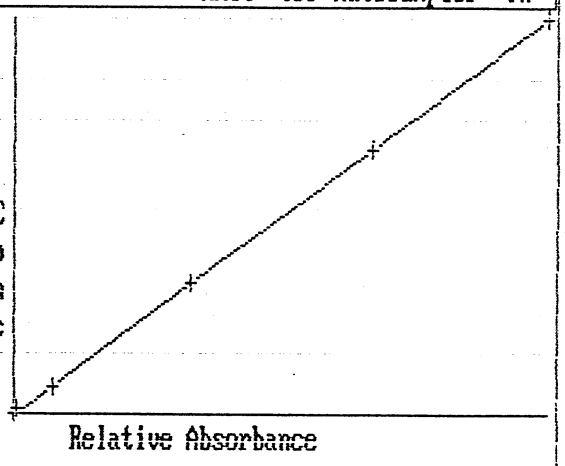
CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted LiNear	
S1	.000	.004	.004	Quadratic	
S2	.050	.018	-.032	WtdLinear	
S3	.200	.226	.026		C
S4	1.00	1.00	.004	Accept	o
S5	2.00	2.01	.005		n
S6	3.00	2.99	-.007	StdAdd	c

A .0000000 r .999881

B 7.96258e-6 C -3.26665e-3



	Mean	%RSD	
S1	870	0	870
S2	2661	0	2661
S3	28739	0	28739
S4	126522	0	126522
S5	252275	0	252275
S6	376316	0	376316

New calibration coefficients stored

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

*** Check Standard: 2 Ck2 Seq: 15 21:49:26 04 Jan 1980 HG

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

*** Sample ID: ICB Seq: 16 21:53:53 04 Jan 1980 HG

Hg -.009 ug/L .000 -.009 <0.05µg/L

*** Sample ID: MB 99-183 Seq: 17 21:56:06 04 Jan 1980 HG

Hg -.004 ug/L .000 -.004 <0.05 µg/L

*** Sample ID: MB 99-183D Seq: 18 21:58:19 04 Jan 1980 HG RPD= N/A

Hg .011 ug/L .000 .011 <0.05µg/L

*** Sample ID: [illegible] Seq: [illegible] [illegible]

Hg 7.59 ug/L .000 7.59 NODATA

*** Sample ID: EERC B1 1:10 Seq: 20 22:04:08 04 Jan 1980 HG

Hg .762 ug/L .000 .762 ~~3.81~~ 3.81µg

*** Sample ID: EERC B1DUP 1:10 Seq: 21 22:06:31 04 Jan 1980 HG RPD= 1.6%

Hg .774 ug/L .000 .774 3.87µg

*** Sample ID: EERC B2 Seq: 22 22:08:50 04 Jan 1980 HG

Hg .017 ug/L .000 .017 <0.025µg

*** Sample ID: EERC B2DUP Seq: 23 22:11:03 04 Jan 1980 HG RPD= N/A

Hg .028 ug/L .000 .028 <0.025µg

*** Sample ID: 110299-02 Seq: 24 22:13:16 04 Jan 1980 HG

Hg .069 ug/L .000 .069

*** Sample ID: 110299-02D Seq: 25 22:15:30 04 Jan 1980 HG RPD= 41.0

Hg .073 ug/L .000 .073

*** Sample ID: 110399-12 Seq: 26 22:17:43 04 Jan 1980 HG

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: 110399-12				Seq: 27		22:19:57 04 Jan 1980 HG		
Hg	.102	ug/L	.000	.102		NODATA		
*** Sample ID: 110399-12				Seq: 28		22:22:12 04 Jan 1980 HG		
Hg	.109	ug/L	.000	.109		NODATA		
*** Sample ID: 110399-12D				Seq: 29		22:24:29 04 Jan 1980 HG		
Hg	.001	ug/L	.000	.001		NODATA		
*** Sample ID: 110399-12D				Seq: 30		22:26:39 04 Jan 1980 HG		
Hg	.131	ug/L	.000	.131		NODATA		
*** Sample ID: 110399-12				Seq: 31		22:28:53 04 Jan 1980 HG		
Hg	.112	ug/L	.000	.112				
*** Sample ID: 110399-12D				Seq: 32		22:31:07 04 Jan 1980 HG	RPD= 6.5%	
Hg	.105	ug/L	.000	.105				
*** Sample ID: EERC A1				Seq: 33		22:33:20 04 Jan 1980 HG		
Hg	10.6	ug/L	.000	10.6		NODATA		
*** Sample ID: EERC A1 1:10				Seq: 34		22:36:13 04 Jan 1980 HG		
Hg	1.15	ug/L	.000	1.15		5.75 µg		
*** Sample ID: EERC A1DUP 1:10				Seq: 35		22:38:35 04 Jan 1980 HG	RPD= <1.0	
Hg	1.14	ug/L	.000	1.14		5.70 µg		
*** Sample ID: EERC A2				Seq: 36		22:41:09 04 Jan 1980 HG		
Hg	.018	ug/L	.000	.018		<0.025 µg		
*** Sample ID: EERC A2DUP				Seq: 37		22:43:22 04 Jan 1980 HG	RPD= N/A	
Hg	.031	ug/L	.000	.031		<0.025 µg		
*** Sample ID: 110299-15				Seq: 38		22:45:35 04 Jan 1980 HG		

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: [illegible]					Seq: [illegible]	22:47:48 04 Jan 1980 HG RPD = 1.0%		
Hg	.124	ug/L	.000	.124				
*** Sample ID: 110399-04					Seq: 40	22:50:01 04 Jan 1980 HG		
Hg	.152	ug/L	.000	.152			NO DATA	
*** Sample ID: 110399-04D					Seq: 41	22:52:16 04 Jan 1980 HG RPD =		
Hg	.133	ug/L	.000	.133			NO DATA	
*** Sample ID: 110399-04					Seq: 42	22:55:45 04 Jan 1980 HG		
Hg	.127	ug/L	.000	.127				
*** Sample ID: 110399-04D					Seq: 43	22:57:58 04 Jan 1980 HG RPD = 5.4%		
Hg	.134	ug/L	.000	.134				
*** Sample ID: SOLN D					Seq: 44	23:00:11 04 Jan 1980 HG		
Hg	5.11	ug/L	.000	5.11			NO DATA	
*** Sample ID: SOLN D 1:5					Seq: 45	23:02:50 04 Jan 1980 HG		
Hg	1.03	ug/L	.000	1.03				
*** Sample ID: SOLN D DUP 1:5					Seq: 46	23:05:10 04 Jan 1980 HG RPD = <1.0		
Hg	1.03	ug/L	.000	1.03				
*** Sample ID: CCB					Seq: 47	23:07:37 04 Jan 1980 HG		
Hg	.014	ug/L	.000	.014			<0.05 µg/L	
*** Sample ID: CCV					Seq: 48	23:09:51 04 Jan 1980 HG		
Hg	2.02	ug/L	.000	2.02			101%	

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: I#8 99-183 IRB 8					Seq: 49	23:21:59 04 Jan 1980 HG		
Hg	.014	ug/L	.000	.014			<0.070µg/L	
*** Sample ID: I#899183DU					Seq: 50	23:24:12 04 Jan 1980 HG RPD=N/A		
Hg	.016	ug/L	.000	.016			<0.070µg/L	
*** Sample ID: I BT #3					Seq: 51	23:26:25 04 Jan 1980 HG		
Hg	.038	ug/L	.000	.038			<0.028µg	
*** Sample ID: IBT#3DUP					Seq: 52	23:28:38 04 Jan 1980 HG RPD=N/A		
Hg	.023	ug/L	.000	.023			<0.028µg	
*** Sample ID: I #1, 2					Seq: 53	23:30:51 04 Jan 1980 HG		
Hg	1.25	ug/L	.000	1.25			0.065µg	
*** Sample ID: I #1,2DUP					Seq: 54	23:33:19 04 Jan 1980 HG RPD=<1.0%		
Hg	1.25	ug/L	.000	1.25			0.065µg	
*** Sample ID: I #1, 3					Seq: 55	23:35:47 04 Jan 1980 HG		
Hg	15.8	ug/L	.000	15.8			NO DATA	
*** Sample ID: I #1, 3 1:10					Seq: 56	23:38:39 04 Jan 1980 HG		
Hg	1.78	ug/L	.000	1.78			15.58µg	
*** Sample ID: I #1, 3DUP 1:10					Seq: 57	23:41:03 04 Jan 1980 HG RPD=<1.0%		
Hg	1.78	ug/L	.000	1.78			15.58µg	
*** Sample ID: I #2, 2					Seq: 58	23:43:27 04 Jan 1980 HG		
Hg	.373	ug/L	.000	.373			0.042µg	
*** Sample ID: I #2,2DUP					Seq: 59	23:45:46 04 Jan 1980 HG RPD=<1.0%		
Hg	.374	ug/L	.000	.374			0.042µg	
*** Sample ID: I #2, 3					Seq: 60	23:48:05 04 Jan 1980 HG		
Hg	19.1	ug/L	.000	19.1			NO DATA	

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: I #2, 3 1:10					Seq: 61	23:51:03 04 Jan 1980 HG		
Hg	2.22	ug/L	.000	2.22			20.51 µg	
*** Sample ID: I #2,3DUP 1:10					Seq: 62	23:53:27 04 Jan 1980 HG RPD = <1.0%		
Hg	2.20	ug/L	.000	2.20			20.34 µg	
*** Sample ID: I #3, 2					Seq: 63	23:55:50 04 Jan 1980 HG		
Hg	.030	ug/L	.000	.030			<0.003 µg	
*** Sample ID: I #3, 2DUP					Seq: 64	23:58:02 04 Jan 1980 HG RPD = N/A		
Hg	.041	ug/L	.000	.041			<0.003 µg	
*** Sample ID: I #3,2TRP					Seq: 65	00:00:15 05 Jan 1980 HG RPD = N/A		
Hg	.041	ug/L	.000	.041			<0.003 µg	
*** Sample ID: I #3, 3 1:10					Seq: 66	00:02:29 05 Jan 1980 HG		
Hg	2.81	ug/L	.000	2.81			26.36 µg	
*** Sample ID: I #3,3DUP 1:10					Seq: 67	00:04:57 05 Jan 1980 HG RPD = 2.5%		
Hg	2.74	ug/L	.000	2.74			25.70 µg	
*** Sample ID: I #3,3SPK 1:20					Seq: 68	00:07:31 05 Jan 1980 HG		
Hg	2.36	ug/L	.000	2.36				
TV = 18.8 µg - 44.3 µg 95%								
*** Sample ID: CCB					Seq: 69	00:09:56 05 Jan 1980 HG		
Hg	-.005	ug/L	.000	-.005			<0.05 µg/L	
*** Sample ID: CCV					Seq: 70	00:12:09 05 Jan 1980 HG		
Hg	2.00	ug/L	.000	2.00			100%	

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: Std6Repl   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 99-183 ICB                        1.00000 1.00000
 2 99183ICBDU                        1.00000 1.00000
 3 IRB#7 183                         1.00000 1.00000
 4 IRB7DUP                           1.00000 1.00000
 5 IRB#11183                         1.00000 1.00000
 6 IRB#11DUP                         1.00000 1.00000
 7 [redacted]                        1.00000 1.00000
 8 [redacted]7DUP                    1.00000 1.00000
 9 [redacted]RB#11184                1.00000 1.00000
10 [redacted]                        1.00000 1.00000
11 CCB                               1.00000 1.00000
12 CCV                               1.00000 1.00000
13                                   1.00000 1.00000
14                                   1.00000 1.00000
15                                   1.00000 1.00000
                                                                    PgDn
Cup 13 ID:                                   Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 15:34:25  05 Jan 1980
Folder: 04APR05B   Seq: 21                     Print: On
User:              Batch:            Id: CCV        Cup: 1 12 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 040500B
cup Id          Extended id          Weight Volume Macro check Help
 1 99-183 ICB                        1.0000 1.0000
 2 99183ICBDU                        1.0000 1.0000
 3 IRB#9 183                         1.0000 1.0000
 4 I RB #9 DU                        1.0000 1.0000
 5 I BT #4                           1.0000 1.0000
 6 I BT #4DUP                        1.0000 1.0000
 7 I #1, 4                           1.0000 1.0000
 8 I #1,4DUP                         1.0000 1.0000
 9 I #2, 4                           1.0000 1.0000
10 I #2,4DUP                         1.0000 1.0000
11 I #2,4TRP                         1.0000 1.0000
12 I #3, 4                           1.0000 1.0000
13 I #3,4DUP                         1.0000 1.0000
14 I #3,4SPK - SPIKED AT 2.0µg/L     1.0000 1.0000
15 CCB         1:2 (SHORT VOLUME)    1.0000 1.0000
                                                                          PgDn

Cup 1  ID: 99-183 ICB                     Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 15:35:25  05 Jan 1980
Folder: 04AFR05B   Seq: 21                     Print: On
User:              Batch:            Id: CCV        Cup: 1 12 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On
```

```
AUTOSAMPLER:  Rack entry   Rack 040500B                                  PgUp
cup Id        Extended id          Weight Volume Macro check Help
16 CCV                             1.00000 1.00000
17 O BT                            1.00000 1.00000
18 O BTDUP                         1.00000 1.00000
19 O #1, 4                         1.00000 1.00000
20 O #1, 4DUP                      1.00000 1.00000
21 O #2, 4                         1.00000 1.00000
22 O #2, 4DUP                      1.00000 1.00000
23 O #2, 4TRP                      1.00000 1.00000
24 O #3, 4                         1.00000 1.00000
25 O #3, 4DUP                      1.00000 1.00000
26 O #3, 4SPK                      1.00000 1.00000
[illegible]                        1.00000 1.00000
28 EERC [illegible]DUP             1.00000 1.00000
29 [illegible]C C1 #2              1.00000 1.00000
[illegible]                        1.00000 1.00000
                                                                         PgDn
```

```
Cup 16 ID: CCV                                   Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 15:36:36  05 Jan 1980
Folder: 04APR05B   Seq: 21                     Print: On
User:              Batch:            Id: CCV     Cup: 1 12 Gas:    0.23 LPM
State: Idle                                      Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 040500B                                  PgUp
cup Id        Extended id          Weight Volume Macro check Help
31 EERC C2 #1                      1.0000 1.0000
32 EERC C2 DU                      1.0000 1.0000
33 EERC C2 #2                      1.0000 1.0000
34 EERC [illegible]                1.0000 1.0000
35 CCB                             1.0000 1.0000
36 CCV                             1.0000 1.0000
37                                 1.0000 1.0000
38                                 1.0000 1.0000
39                                 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: EERC C2 #1                          Call entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 18:15:33  05 Jan 1980
Folder: 04APR05B   Seq: 59                     Print: On
User:              Batch:            Id: CCV        Cup: 1 36 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 040500B
cup Id          Extended id          Weight Volume Macro check Help
 1 99-183 ICB                        1.0000 1.0000
 2 99183ICBDU                        1.0000 1.0000
 3 PEEERCA2                          1.0000 1.0000
 4 PEEERCA2DU                        1.0000 1.0000
 5 PEEERCA1                          1.0000 1.0000
 6 PEEERCA1DU                        1.0000 1.0000
 7 PE11039904                        1.0000 1.0000
 8 11039904DU                        1.0000 1.0000
 9 PE11029915                        1.0000 1.0000
10 11029915DU                        1.0000 1.0000
11 SOL D HCL                         1.0000 1.0000
12 SOL D DUP                         1.0000 1.0000
13 S BT 4                            1.0000 1.0000
14 S BT 4 DUP                        1.0000 1.0000
15 S BT 4 TRI                        1.0000 1.0000
                                                                          PgDn

Cup 1  ID: 99-183 ICB                          Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001    Time: 18:15:32  05 Jan 1980
Folder: 04APR05B   Seq: 59                       Print: On
User:              Batch:              Id: CCV        Cup: 1 36 Gas:    0.23 LPM
State: Idle                                           Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 040500B                                      PgUp
cup Id          Extended id          Weight Volume Macro check Help
16 S #1 4                            1.0000 1.0000
17 S #1 4 DUP                        1.0000 1.0000
18 S #1 4 SPI                        1.0000 1.0000
19 CCV                               1.0000 1.0000
20 CCB                               1.0000 1.0000
21 C1                                1.0000 1.0000
22 C1 DUP                            1.0000 1.0000
23 C1 DUP                            1.0000 1.0000
24 C1 DUP DUP                        1.0000 1.0000
25 C2                                1.0000 1.0000
26 C2 DUP                            1.0000 1.0000
27 C2 DUP                            1.0000 1.0000
28 C2 DUP DUP                        1.0000 1.0000
29 S #2 4                            1.0000 1.0000
30 S #2 4 DUP                        1.0000 1.0000
                                                                            PgDn

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

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 18:15:26  05 Jan 1980
Folder: 04APR05B   Seq: 59                     Print: On
User:              Batch:            Id: CCV        Cup: 1 36 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 040500B                                    PgUp
cup Id          Extended id          Weight Volume Macro check Help
31 S #2 4 TRI                        1.0000 1.0000
32 S #3 4                            1.0000 1.0000
33 S #3 4 DUP                        1.0000 1.0000
34 S #3 4 SPI                        1.0000 1.0000
35 CCV                               1.0000 1.0000
36 CCB                               1.0000 1.0000
37                                   1.0000 1.0000
38                                   1.0000 1.0000
39                                   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 44 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

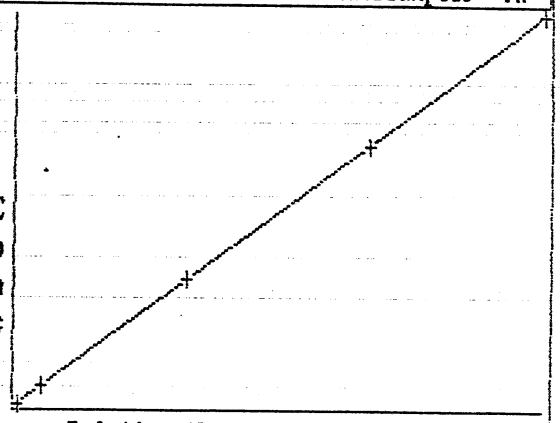
CALIBRATION: Line Calibration

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

	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 ugl

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

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

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

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

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

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

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

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

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

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

*** Sample ID: ORB#7[illegible] Seq: 15 15:16:29 05 Jan 1980 HG

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

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

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

*** Sample ID: ORB#11[illegible]4 Seq: 17 15:20:56 05 Jan 1980 HG

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

[redacted]

*** 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%

Line	Conc.	Units	SD/RSD	1	2	3	4	5	
*** Sample ID: 99-183 ICB					Seq: 21	15:42:40 05 Jan 1980 HG			
Hg	.015	ug/L	.000	.015					<0.050 ug/L
*** Sample ID: 99183ICBDU					Seq: 22	15:44:53 05 Jan 1980 HG			
Hg	.007	ug/L	.000	.007					<0.050 ug/L
*** Sample ID: IRB#9 183					Seq: 23	15:47:07 05 Jan 1980 HG			
Hg	.011	ug/L	.000	.011					<0.14 ug/L
*** Sample ID: I RB #9 DU					Seq: 24	15:49:22 05 Jan 1980 HG			<1.0 RPD
Hg	.006	ug/L	.000	.006					<0.14 ug/L
*** Sample ID: I BT #4					Seq: 25	15:51:35 05 Jan 1980 HG			
Hg	-.009	ug/L	.000	-.009					<0.021 ug
*** Sample ID: I BT #4DUP					Seq: 26	15:53:48 05 Jan 1980 HG			RPD <1.0
Hg	-.016	ug/L	.000	-.016					<0.021 ug
*** Sample ID: I #1, 4					Seq: 27	15:56:01 05 Jan 1980 HG			
Hg	1.53	ug/L	.000	1.53					0.625 ug
*** Sample ID: I #1,4DUP					Seq: 28	15:58:34 05 Jan 1980 HG			RPD <1.0
Hg	1.53	ug/L	.000	1.53					0.625 ug
*** Sample ID: I #2, 4					Seq: 29	16:01:02 05 Jan 1980 HG			
Hg	1.54	ug/L	.000	1.54					0.651 ug
*** Sample ID: I #2,4DUP					Seq: 30	16:04:56 05 Jan 1980 HG			RPD <1.0
Hg	1.55	ug/L	.000	1.55					0.655 ug
*** Sample ID: I #2,4TRP					Seq: 31	16:07:33 05 Jan 1980 HG			RPD 1.3
Hg	1.52	ug/L	.000	1.52					0.643 ug
*** Sample ID: I #3, 4					Seq: 32	16:10:07 05 Jan 1980 HG			
Hg	1.05	ug/L	.000	1.05					0.432 ug

Line	Conc.	Units	SD/RSD	1	2	3	4	5	
*** Sample ID: I #3,4DUP					Seq: 33	16:12:33 05 Jan 1980 HG			RPD <1.0
Hg	1.05	ug/L	.000	1.05					0.432 ug
*** Sample ID: I #3,4SPK 1/2					Seq: 34	16:15:12 05 Jan 1980 HG			
Hg	1.56	ug/L	.000	1.56					TV-0.624 ug 1.28 ug ~~0.002 ug~~ JAN 9/13 103 %
*** Sample ID: CCB					Seq: 35	16:18:34 05 Jan 1980 HG			
Hg	.003	ug/L	.000	.003					<0.050 ug/L
*** Sample ID: CCV					Seq: 36	16:20:47 05 Jan 1980 HG			
Hg	2.06	ug/L	.000	2.06					103 %
*** Sample ID: O BT					Seq: 37	16:23:21 05 Jan 1980 HG			
Hg	-.010	ug/L	.000	-.010					<0.022 ug
*** Sample ID: O BTDUP					Seq: 38	16:25:35 05 Jan 1980 HG			RPD <1.0
Hg	-.001	ug/L	.000	-.001					<0.022 ug
*** Sample ID: O #1, 4					Seq: 39	16:27:48 05 Jan 1980 HG			
Hg	.007	ug/L	.000	.007					<0.022 ug
*** Sample ID: O #1, 4DUP					Seq: 40	16:30:01 05 Jan 1980 HG			RPD <1.0
Hg	.006	ug/L	.000	.006					<0.022 ug
*** Sample ID: O #2, 4					Seq: 41	16:32:16 05 Jan 1980 HG			
Hg	1.74	ug/L	.000	1.74					0.595 ug
*** Sample ID: O #2, 4DUP					Seq: 42	16:35:00 05 Jan 1980 HG			RPD <1.0
Hg	1.74	ug/L	.000	1.74					0.595 ug
*** Sample ID: O #2, 4TRP					Seq: 43	16:37:37 05 Jan 1980 HG			RPD 5.3
Hg	1.65	ug/L	.000	1.65					0.564 ug
*** Sample ID: O #3, 4					Seq: 44	16:40:12 05 Jan 1980 HG			
Hg	.082	ug/L	.000	.082					REPEAT

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: O #3, 4DUP					Seq: 45	16:42:26 05 Jan 1980 HG		
Hg	.094	ug/L	.000	.094				REPEAT
*** Sample ID: O #3, 4					Seq: 46	16:49:12 05 Jan 1980 HG		
Hg	.105	ug/L	.000	.105				0.045 ug
*** Sample ID: O #3, 4DUP					Seq: 47	16:51:27 05 Jan 1980 HG		RPD 5.9 %
Hg	.099	ug/L	.000	.099				0.042 ug
*** Sample ID: O #3, 4SPK					Seq: 48	16:53:45 05 Jan 1980 HG		
Hg	1.05	ug/L	.000	1.05				
*** Sample ID: EERC C1 #1					Seq: 49	16:56:11 05 Jan 1980 HG		
Hg	1.17	ug/L	.000	1.17				
*** Sample ID: EERC C1DUP					Seq: 50	16:58:37 05 Jan 1980 HG		
Hg	1.18	ug/L	.000	1.18				
*** Sample ID: EERC C1 #2					Seq: 51	17:01:02 05 Jan 1980 HG		
Hg	1.22	ug/L	.000	1.22				
*** Sample ID: EERCC1#2DU					Seq: 52	17:03:31 05 Jan 1980 HG		
Hg	1.23	ug/L	.000	1.23				
*** Sample ID: EERC C2 #1					Seq: 53	17:06:03 05 Jan 1980 HG		
Hg	.014	ug/L	.000	.014				
*** Sample ID: EERC C2DU					Seq: 54	17:08:18 05 Jan 1980 HG		
Hg	.025	ug/L	.000	.025				
*** Sample ID: EERC C2 #2					Seq: 55	17:10:33 05 Jan 1980 HG		
Hg	.031	ug/L	.000	.031				
*** Sample ID: EERC C2DUP					Seq: 56	17:12:48 05 Jan 1980 HG		
Hg	.031	ug/L	.000	.031				

N = 0.428 0.449 ug 95 %

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: CCB					Seq: 57	17:15:04 05 Jan 1980 HG		
Hg	.011	ug/L	.000	.011			<0.050 ug/L	
*** Sample ID: CCV					Seq: 58	17:17:20 05 Jan 1980 HG		
Hg	2.06	ug/L	.000	2.06			103%	

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: 99-183 ICB					Seq: 59	18:33:53 05 Jan 1980 HG		
Hg	-.002	ug/L	.000	-.002				
*** Sample ID: 99183ICBDU					Seq: 60	18:36:06 05 Jan 1980 HG		
Hg	.003	ug/L	.000	.003				
*** Sample ID: PEEERCA2					Seq: 61	18:38:19 05 Jan 1980 HG		
Hg	.022	ug/L	.000	.022				
*** Sample ID: PEEERCA2DU					Seq: 62	18:40:32 05 Jan 1980 HG		
Hg	.033	ug/L	.000	.033				
*** Sample ID: PEEERCA1					Seq: 63	18:42:45 05 Jan 1980 HG		
Hg	10.5	ug/L	.000	10.5				
*** Sample ID: PEEERCA1					Seq: 64	18:50:05 05 Jan 1980 HG		
Hg	1.17	ug/L	.000	1.17				
*** Sample ID: PEEERCA1DU					Seq: 65	18:52:22 05 Jan 1980 HG	RPD = 0.8	
Hg	1.18	ug/L	.000	1.18				
*** Sample ID: PE11039904					Seq: 66	18:54:46 05 Jan 1980 HG		
Hg	.139	ug/L	.000	.140				
*** Sample ID: 11039904DU					Seq: 67	18:57:00 05 Jan 1980 HG	RPD = 8.9	
Hg	.152	ug/L	.000	.152				
*** Sample ID: PE11029915					Seq: 68	18:59:15 05 Jan 1980 HG		
Hg	.116	ug/L	.000	.116				
*** Sample ID: 11029915DU					Seq: 69	19:01:29 05 Jan 1980 HG	RPD = 0.9	
Hg	.115	ug/L	.000	.115				
*** Sample ID: SDL D HCL					Seq: 70	19:03:42 05 Jan 1980 HG		
Hg	5.08	ug/L	.000	5.08				

Line	Conc.	Units	SD/RSD	1	2	3	4	5
[redacted]								
*** Sample ID: S BT 4					Seq: 72	19:09:01 05 Jan 1980 HG		
Hg	.017	ug/L	.000	.017				<0.020 ug
*** Sample ID: S BT 4 DUP					Seq: 73	19:11:14 05 Jan 1980 HG		RPD <1.0
Hg	.027	ug/L	.000	.027				<0.020 ug
*** Sample ID: S BT 4 TRI					Seq: 74	19:13:29 05 Jan 1980 HG		RPD <1.0
Hg	.030	ug/L	.000	.030				<0.020 ug
*** Sample ID: S #1 4					Seq: 75	19:15:42 05 Jan 1980 HG		
Hg	.285	ug/L	.000	.285				0.126 ug
*** Sample ID: S #1 4 DUP					Seq: 76	19:17:56 05 Jan 1980 HG		RPD = 3.9
Hg	.274	ug/L	.000	.274				0.121 ug
*** Sample ID: S #1 4 SPI					Seq: 77	19:20:10 05 Jan 1980 HG		
Hg	1.22	ug/L	.000	1.22	TV = 0.442	0.539 ug		95 %
*** Sample ID: CCV					Seq: 78	19:22:37 05 Jan 1980 HG		
Hg	2.05	ug/L	.000	2.05				103 %
*** Sample ID: CCB					Seq: 79	19:25:16 05 Jan 1980 HG		
Hg	.015	ug/L	.000	.015				<0.050 ug/L
*** Sample ID: C1					Seq: 80	[redacted]		
Hg	1.19	ug/L	.000	1.19				
*** Sample ID: C1 DUP					Seq: 81	19:30:00 05 Jan 1980 HG		RPD = 0.8
Hg	1.18	ug/L	[redacted]	1.18				
*** Sample ID: C1 DUP					Seq: 82	19:32:35 05 Jan 1980 HG		
Hg	1.52	ug/L	[redacted]	1.52				

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: C1 DUP DUP					Seq: 83	19:35:11 05 Jan 1980 HG		
Hg	1.54	ug/L	.000	1.54				
*** Sample ID: C2					Seq: 84	19:37:45 05 Jan 1980 HG		
Hg	.086	ug/L	.000	.086				
*** Sample ID: C2 DUP					Seq: 85	19:40:04 05 Jan 1980 HG		
Hg	.078	ug/L	.000	.078				
*** Sample ID: C2 DUP					Seq: 86	19:42:18 05 Jan 1980 HG		
Hg	.080	ug/L	.000	.080				
*** Sample ID: C2 DUP DUP					Seq: 87	19:44:33 05 Jan 1980 HG		
Hg	.079	ug/L	.000	.079				
*** Sample ID: S #2 4					Seq: 88	19:46:47 05 Jan 1980 HG		
Hg	.259	ug/L	.000	.259				
*** Sample ID: S #2 4 DUP					Seq: 89	19:49:07 05 Jan 1980 HG		
Hg	.280	ug/L	.000	.280				
*** Sample ID: S #2 4 TRI					Seq: 90	19:51:27 05 Jan 1980 HG		
Hg	.279	ug/L	.000	.279				
*** Sample ID: S #3 4					Seq: 91	19:53:49 05 Jan 1980 HG		
Hg	.106	ug/L	.000	.106				
*** Sample ID: S #3 4 DUP					Seq: 92	19:56:03 05 Jan 1980 HG		
Hg	.085	ug/L	.000	.085				
*** Sample ID: S #3 4 SPI					Seq: 93	19:58:19 05 Jan 1980 HG		
Hg	1.04	ug/L	.000	1.04				

RPD = 1.3

RPD = 9.8

RPD = 1.2

0.102 ug

RPD = 7.8

0.110 ug

RPD - 7.4

0.110 ug

REPEAT

REPEAT

REPEAT

*** Sample ID: SOL D HCL Seq: 94 20:28:32 05 Jan 1980 HG

Hg .522 ug/L .000 .522

Folder: 04APR05B Page 23

20:30:45 05 Jan 1980 Protocol: SYSTEST labsys2

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

*** Sample ID: SOL D DUP Seq: 95 20:30:45 05 Jan 1980 HG

Hg .552 ug/L .000 .552

*** Sample ID: S #3 4 Seq: 96 20:33:02 05 Jan 1980 HG

Hg .115 ug/L .000 .115 0.042 ug

*** Sample ID: S #3 4 DUP Seq: 97 20:35:16 05 Jan 1980 HG RPD <1.0

Hg .114 ug/L .000 .114 0.042 ug

*** Sample ID: S #3 4 SPI Seq: 98 20:37:32 05 Jan 1980 HG

Hg 1.04 ug/L .000 1.04 TV=0.367 ug 0.381 ug 92%

*** Sample ID: S #3 4 Seq: 99 20:43:17 05 Jan 1980 HG

Hg .099 ug/L .000 .099 NO DATA

*** Sample ID: S #3 4 DUP Seq: 100 20:45:31 05 Jan 1980 HG

Hg .089 ug/L .000 .089

*** Sample ID: S #3 4 SPI Seq: 101 20:47:47 05 Jan 1980 HG

Hg 1.05 ug/L .000 1.05

*** Sample ID: CCV Seq: 102 20:50:16 05 Jan 1980 HG

Hg 2.10 ug/L .000 2.10 105%

*** Sample ID: CCB Seq: 103 20:52:46 05 Jan 1980 HG

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                                   Call 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                      1.00000 1.00000
17 1397027TRP                      1.00000 1.00000
18 1397028                         1.00000 1.00000
19 1397028DUP                      1.00000 1.00000
20 1397028SPK                      1.00000 1.00000
21 CCB                             1.00000 1.00000
22 CCV                             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: 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 1900

Folder: 06APR00C Seq: 23 Print: On

State: Idle Xmit: Off Autosampler: On

CALIBRATION: Line Calibration

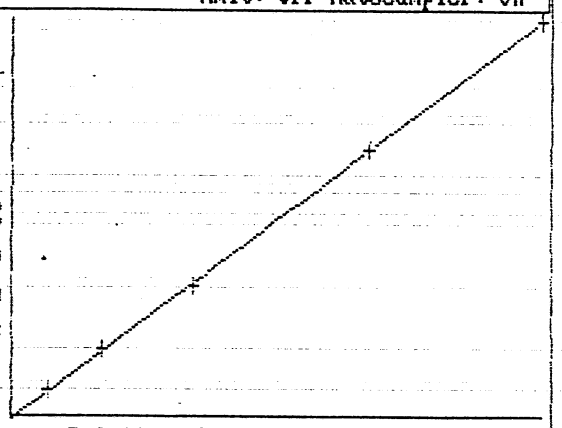
Line: Hg

	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



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 17:20:47 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 5 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 2					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		
*** Sample ID: 1397026 4/5 UNIT 3 RUN 1					Seq: 38	17:38:20 06 Jan 1980 HG		
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		
Hg	2.66	ug/L	.000	2.66		TV = 0.250 ug/kg 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		

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                                       Xmit: Off Autosampler: On
```

EPK

```
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
 [redacted]                            1.0000 1.0000
 4 Q116 DUP                            1.0000 1.0000
 5 Q90                                 1.0000 1.0000
 [redacted]                            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 [redacted]                          1.0000 1.0000
12 47Q176 DUP                          1.0000 1.0000
13 47Q141                              1.0000 1.0000
14 47Q1[redacted] DUP                  1.0000 1.0000
15 [redacted]                          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 1980
Folder: 07APR00A   Seq: 40                     Print: On
User:              Batch:            Id: Std&Rep1   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
16 [redacted]                        1.00000 1.00000
17 47Q182                            1.00000 1.00000
18 47Q182 [redacted]                 1.00000 1.00000
19 47Q1[redacted]                    1.00000 1.00000
20 47[redacted]48 DUP                1.00000 1.00000
21 [redacted] TRP                    1.00000 1.00000
22 88QI25        :2                  1.00000 1.00000
23 88QI25 DUP    :2                  1.00000 1.00000
24 88QI25 SPK    :2                  1.00000 1.00000
25 CCB                               1.00000 1.00000
26 CCV                               1.00000 1.00000
27 [redacted]                        1.00000 1.00000
28 88QI41 [redacted]  :5             1.00000 1.00000
29 88Q4[redacted]     :5             1.00000 1.00000
30 [redacted]                        1.00000 1.00000
                                                                          PgDn

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

OK JAO 4.7

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 11:46:54  07 Jan 1980
Folder: 07APR00A   Seq: 40                     Print: On
User:              Batch:            Id: Std&Repl   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 [redacted]                      1.0000 1.0000
32 Q118 DUP   :5                   1.0000 1.0000
33 47Q147     :[redacted]          1.0000 1.0000
34 47Q147 DUP [redacted]2          1.0000 1.0000
35 47Q180                          1.0000 1.0000
36 47Q180 [redacted]UP             1.0000 1.0000
37 47Q1[redacted]                  1.0000 1.0000
38 47[redacted]79 DUP              1.0000 1.0000
39 Q[redacted]21                   1.0000 1.0000
40 [redacted]                      1.0000 1.0000
41 47Q188                          1.0000 1.0000
42 47Q188 DUP                      1.0000 1.0000
43                                 1.0000 1.0000
44                                 1.0000 1.0000

                                                                           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 [redacted]                      1.0000 1.0000
 2 47Q149 DUP                      1.0000 1.0000
 3 [redacted]                      1.0000 1.0000
 4 47Q183                          1.0000 1.0000
 5 47Q183 DUP                      1.0000 1.0000
 6 47Q183 SPK                      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 88QI44                          1.0000 1.0000
14 88QI44 DUP                      1.0000 1.0000
15 88QI44 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 cneck Help
16 88QI37                           1.00000 1.00000
17 88QI37 DUP                       1.00000 1.00000
18 88QI37 SPK                       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

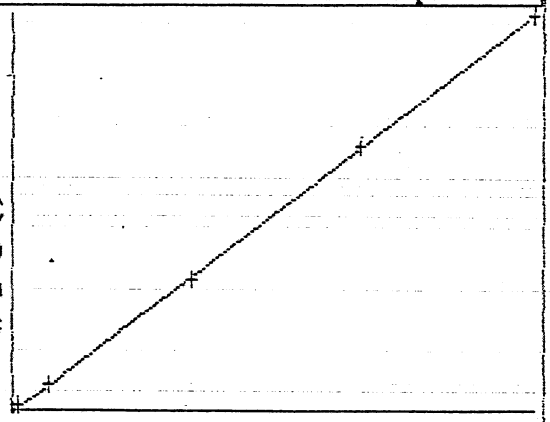
Protocol: SYSTEST labsys2
Rev: 3.001 Time: 11:35:21 07 Jan 1980
Folder: 07APR00A Seq: 48 Print: On
User: Batch: Id: Std6Rep1 Cup: 1 27 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

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

[redacted] HG

[redacted] 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

[redacted] HG RPD 18 %

Hg .115 ug/L .000 .115

*** Sample ID: Q90 Seq: [redacted] 12:39:25 07 Jan 1980 HG

Hg 2.60 ug/L [redacted] :10 2.60 19.4 ug

*** Sample ID: Q90 DUP Seq: 54 12:42:10 07 Jan 1980 HG RPD 1.5 %

[redacted] :10 2.64 19.1 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

D-196/- 0.141 ug/L 0.137 ug/L

*** 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

[redacted]

Hg .766 ug/L .000 .766 0.038 ug

*** Sample ID: 47Q176 DUP Seq: 61 13:08:39 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

[redacted]

Folder: 07APR00A Page 41

13:05:54 07 Jan 1980 Protocol: SYSTEST labsys2

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

[redacted]

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: 71 13:21:40 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 13:24:09 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 13:26:44 07 Jan 1980 HG

:2

Hg 2.66 ug/L .000 2.66 SPK = 0.100 ug 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: 88QI41 Seq: 76 13:34:18 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 2.46 ug/L .000 2.46 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: [illegible] [illegible] 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

Hg 1.47 ug/L .000 1.47 0.147 ~~0.074~~ ug JAN 4/13

*** Sample ID: 47Q147 DUP Seq: 82 13:49:32 07 Jan 1980 HG RPD - 1.4%

:2 0.149

*** Sample ID: [illegible] Seq: 83 13:52:04 07 Jan 1980 HG

Hg 1.15 ug/L .000 1.15 0.058 ug

*** Sample ID: 47Q180 DUP Seq: 84 13:54:[illegible] 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

0.483

Hg [illegible] ug/L .000 .398 [illegible] 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%

0.466

Hg [illegible] ug/L .000 .384 0.019 ug

JAD 4/13

*** Sample ID: 47Q188 Seq: 89 14:06:07 07 Jan 1980 HG

Hg 2.55 ug/L .000 2.55 0.128 ug

*** Sample ID: 47Q188 DUP Seq: 90 14:08:36 07 Jan 1980 HG RPD <1.0 %

Hg 2.55 ug/L .000 2.55 0.128 ug

*** Sample ID: 47Q149 Seq: 91 14:20:20 07 Jan 1980 HG

Hg 1.54 ug/L .000 1.54 [illegible] 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 14:27:57 07 Jan 1980 HG

*** Sample ID: 47Q183 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: 47Q183 SPK Seq: 96 14:32:53 07 Jan 1980 HG

Hg 3.37 ug/L .000 3.37 TV=0.050 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: Q110 Seq: 103 14:50:08 07 Jan 1980 HG~~

~~Hg .097 ug/L .000 .097~~ 0.116 ug

~~*** Sample ID: Q110 DUP Seq: 104 14:52:21 07 Jan 1980 HG~~ RPD 1.0 %

~~Hg .095 ug/L .000 .095~~ 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 - 51.0%~~

Hg .046 ug/L .000 .046 <0.050 ug/L

*** Sample ID: ~~88Q47~~ 88QI47 :5 Seq: 108 15:03:27 07 Jan 1980 HG

Hg .849 ug/L .000 .849 0.212 ug/L CORRECTED 0.209 ug

*** Sample ID: ~~88Q47~~ DUP 88QI47 :5 Seq: 109 15:05:51 07 Jan 1980 HG RPD - 2.8%

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 CORRECTED

Hg .878 ug/L .000 .878 0.439 ug 0.436 ug

*** Sample ID: 88QI37 DUP Seq: 121 15:44:04 07 Jan 1980 HG RDP - 3.0%

1/10

Hg .852 ug/L .000 .852 0.426 ug CORRECTED 0.423 ug

*** Sample ID: 88QI37 SPK Seq: 122 15:46:28 07 Jan 1980 HG

Hg 1.82 ug/L 1/10 .000 1.82 TV = 0.500 ug 0.91 ug 97%

*** Sample ID: CCB Seq: 123 15:49:04 07 Jan 1980 HG

Hg -.016 ug/L .000 -.016 <0.050 ug/L

15:51:24 07 Jan 1980 Folder: 07APR00A Page 46
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: SAH Batch: Id: Std6Rep1 Cup: 1 11 Gas: 0.23 LPM
State: Idle 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	88QI26		1.00000	1.00000			
3	88QI26 DUP		1.00000	1.00000			
4	88QI46		1.00000	1.00000			
5	88QI46 DUP		1.00000	1.00000			
~~6~~	~~QI12~~		1.00000	1.00000			
~~7~~	~~QI12 DUP~~		1.00000	1.00000			
8	47Q187		1.00000	1.00000			
9	47Q187 DUP		1.00000	1.00000			
10	47Q184		1.00000	1.00000			
11	47Q184 DUP		1.00000	1.00000			
~~12~~	~~MVS#1~~		1.00000	1.00000			
13	MVS#1 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 1990
Folder: 10APR00C   Seq: 44                     Print: On
User:              Batch:            Id: Std6Rep1   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	MVS#3	1/10	1.00000	1.00000		
17	MVS#3 DUP	1/10	1.00000	1.00000		
18	MVS#3 TRIP	1/10	1.00000	1.00000		
19	[redacted]	1/10	1.00000	1.00000		
20	[redacted] DUP	1/10	1.00000	1.00000		
21	[redacted]	1/10	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

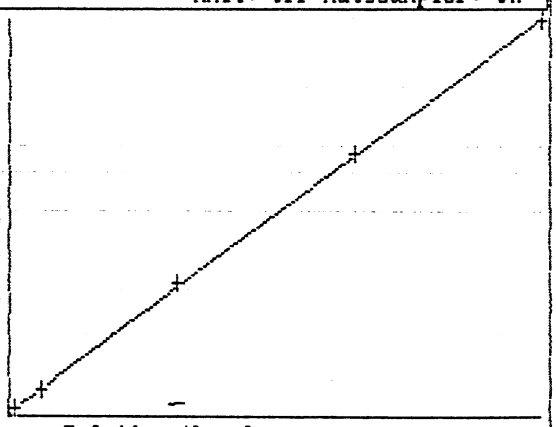
CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted
S1	.000	.001	.001	LiNear
S2	.050	.061	.011	Quadratic
S3	.200	.204	.004	WtdLinear
S4	1.00	.985	-.015	Accept
S5	2.00	1.99	-.013	
S6	3.00	3.01	.013	StdAdd

A .0000000 r .999953
B 8.61346e-6 C 1.98718e-2

Conc



Relative Absorbance

	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	.0000

*** 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 19:27:37 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 20:31:00 11 Jan 1980 HG~~

~~Hg .985 ug/L .000 .985 9.11 ug~~

~~*** Sample ID: Q112 DUP Seq: 55 20:33:30 11 Jan 1980 HG RPD 3.4 %~~

~~Hg .952 ug/L .000 .952 8.60 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: [illegible]	[illegible]		
Hg	.176	ug/L	.000	.176		0.175 ug/kg		
*** 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/kg		
*** Sample ID: MVS#2		1/10			Seq: 62	20:53:17 11 Jan 1980 HG		
Hg	.156	ug/L	.000	.156		0.156 ug/kg		
*** Sample ID: MVS#2 DUP		1/10			Seq: 63	20:55:30 11 Jan 1980 HG	RPD 6.8%	
Hg	.147	ug/L	[illegible]	.147		0.161 ug/kg		
*** 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		TV = 0.141 ug ± 0.029	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	[illegible]	.175		0.169 ug/kg	REPEAT	

USE AS BATCH LCS

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: MVS#4 DUP				1/10	Seq:	68	21:08:26 11 Jan 1980 HG	
Hg	.141	ug/L	.0000	.141			0.137 ug/kg	REPEAT
*** Sample ID: MVS#4 SPI				1/10	Seq:	69	21:10:40 11 Jan 1980 HG	
Hg	1.29	ug/L	.0000	1.29				REPEAT
*** Sample ID: MVS#4				1/10	Seq:	70	21:21:37 11 Jan 1980 HG	
Hg	.171	ug/L	.0000	.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	.0000	.176			0.170 ug/kg	
*** Sample ID: MVS#4 SPI				1/10	Seq:	72	21:26:04 11 Jan 1980 HG	
Hg	1.27	ug/L	.0000	1.27			T.V = 0.1 ug/g 1.23 ug/kg	110 %
*** Sample ID: BLANK					Seq:	73	21:28:24 11 Jan 1980 HG	
Hg	.031	ug/L	.0000	.031				<0.050 ug/L
*** Sample ID: BLANK DUP					Seq:	74	21:30:43 11 Jan 1980 HG	
Hg	.045	ug/L	.0000	.045				<0.050 ug/L
*** Sample ID: CCV					Seq:	75	21:32:59 11 Jan 1980 HG	
Hg	2.15	ug/L	.0000	2.15				108 %
*** Sample ID: CCB					Seq:	76	21:35:25 11 Jan 1980 HG	
Hg	.025	ug/L	.0000	.025				<0.050 ug/L

Dry Weight Analysis Data

Dry Weight/Total Volatile Solids (TVS) Notebook # 2000-033

Sample Number	[illegible]	1397024	1397025	1397026	1397027	1397028
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	8.27[illegible]	8.6488	9.2401	9.0424	9.4057
Wt after Drying (2)	8.4480	8.[illegible]709	8.6620	9.2538	9.0613	9.4190
Wt after Drying (3)	8.4287	[illegible].2705	8.6449	9.2338	9.0426	9.4027
Wt of Pan or Wt After Ignition	0.99[illegible]3	0.9962	1.0024	1.0026	1.0003	0.9973
Difference	7.[illegible]324	7.2743	7.6425	8.2312	8.0421	8.4054
Sample amount g	[illegible]3593	9.2718	9.0265	9.6938	9.3699	9.7909
Result	[illegible] %	78.3 %	84.[illegible] %	84.9 %	85.8 %	85.8 %

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

METCO Particulate Analysis

METCO Environmental

Particulate Analysis EPA Method 5

Stack Filters

Job Number 99--183 Location Mt. Pleasant, Tx.

Job Name TXU-MOSES Unit Tested #3 FGD Inlet

Desiccator Time In					
Desiccator Time Out	1400 2/29				

Run No. 1	Filter No. 47Q183				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.2099				

Filter & Particulate Average (g) 0.2099

Initial Filter Weight (g) 0.1160

Total Particulate (mg) 93.9

Run No. 2	Filter No. 47Q187				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.1669				

Filter & Particulate Average (g) 0.1669

Initial Filter Weight (g) 0.1167

Total Particulate (mg) 50.2

Run No. 3	Filter No. 47Q188				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)		–			
Filter & Particulate (g)	0.1790				

Filter & Particulate Average (g) 0.1790

Initial Filter Weight (g) 0.1151

Total Particulate (mg) 63.9

Analyst

METCO Environmental

Particulate Analysis EPA Method 5

Stack Filters

Job Number 99-183 Location Mt. Pleasant, Pa.

Job Name TXU - MOSES Unit Tested

Desiccator Time In					
Desiccator Time Out					

Run No. Blank	Filter No. 47Q 184, 185, 186				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.3510				

184 .1172
185 .1162
186 .1154
0.3488

Filter & Particulate Average (g) .3510
Initial Filter Weight (g) .3488
Total Particulate (mg) 2.2

Run No. Blank	Filter No. 88Q I 42, 43, 44				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	1.5280				

42 .5113
43 .5031
44 .5120
1.5264

Filter & Particulate Average (g) 1.5280
Initial Filter Weight (g) 1.5264
Total Particulate (mg) 1.6

Run No. _____	Filter No. _____				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)		–			
Filter & Particulate (g)					

Filter & Particulate Average (g) _____
Initial Filter Weight (g) _____
Total Particulate (mg) _____

TAS

Analyst

METCO Environmental

Particulate Analysis EPA Method 5

Stack Filters

Job Number 99-183 Location Mt. Pleasant, Iy

Job Name TXU-MOSES Unit Tested # 3 FGD Outlet

Desiccator Time In					
Desiccator Time Out					

Run No. 1	Filter No. 88QI37				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.5125				

Filter & Particulate Average (g) 0.5125

Initial Filter Weight (g) 0.5062

Total Particulate (mg) 6.3

Run No. 2	Filter No. 88QI41				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.5206				

Filter & Particulate Average (g) 0.5206

Initial Filter Weight (g) 0.5116

Total Particulate (mg) 9.0

Run No. 3	Filter No. 88QI47				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.5099				

Filter & Particulate Average (g) 0.5099

Initial Filter Weight (g) 0.5045

Total Particulate (mg) 5.4

Run No.	Filter No.				
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)					

Filter & Particulate Average (g)

Initial Filter Weight (g)

Total Particulate (mg)

Analyst

METCO Environmental

Particulate Analysis EPA Method 5

Stack Filters

Job Number 99-183 Location Mt. Pleasant, Ky.

Job Name TXU-MOSES Unit Tested Unit 3 Stack

Desiccator Time In					
Desiccator Time Out	1338 2/24				

Run No. 1 Filter No. 88Q I25					
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.5310				

Filter & Particulate Average (g) 0.5310

Initial Filter Weight (g) 0.5119

Total Particulate (mg) 19.1

Run No. 2 Filter No. 88Q I26					
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.5223				

Filter & Particulate Average (g) 0.5223

Initial Filter Weight (g) 0.5104

Total Particulate (mg) 11.9

Run No. 3 Filter No. 88Q I46					
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)	0.5297				

Filter & Particulate Average (g) 0.5297

Initial Filter Weight (g) 0.5083

Total Particulate (mg) 21.4

Run No. _____ Filter No. _____					
Filter & Particulate + Tare Weight (g)					
Tare Weight (g)					
Filter & Particulate (g)					

Filter & Particulate Average (g) _____

Initial Filter Weight (g) _____

Total Particulate (mg) _____

MA

Analyst

DB

PHILIP ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

Client: METCO Environmental
Project: 191487

	AS RECEIVED BASIS	DRY BASIS	UNITS	METHOD	DATE	ANALYST
Unit 3, Run 1 - MoSES						
Lab Sample: 1397026						
Moisture, Total	22.4		%	D 3302	20-MAR-00	GLB
Chlorine, Total	0.01	0.01	%	EPA 300.0	27-MAR-00	DRK
SHORT PROX - COAL						
Ash	15.4	19.8	%	D 3174	28-MAR-00	VJO
Sulfur	0.51	0.66	%	D 4239	27-MAR-00	VJO
Heating Value	6740	8680	BTU/lb	D 3286	28-MAR-00	VJO
Unit 3, Run 2 - MoSES						
Lab Sample: 1397027						
Moisture, Total	25.0		%	D 3302	20-MAR-00	GLB
Chlorine, Total	0.02	0.02	%	EPA 300.0	27-MAR-00	DRK
SHORT PROX - COAL						
Ash	18.9	25.2	%	D 3174	28-MAR-00	VJO
Sulfur	0.43	0.57	%	D 4239	27-MAR-00	VJO
Heating Value	6180	8250	BTU/lb	D 3286	28-MAR-00	VJO
Unit 3, Run 3 - MoSES						
Lab Sample: 1397028						
Moisture, Total	24.8		%	D 3302	20-MAR-00	GLB
Chlorine, Total	0.01	0.01	%	EPA 300.0	27-MAR-00	DRK
SHORT PROX - COAL						
Ash	16.6	22.1	%	D 3174	28-MAR-00	VJO
Sulfur	0.47	0.63	%	D 4239	27-MAR-00	VJO
Heating Value	6570	8740	BTU/lb	D 3286	28-MAR-00	VJO

< Indicates less than the limit of quantitation.

Philip Analytical Services
Quality Assurance Protocol

PAS Sample #: 1397023-1397028

Client Name: Metco

PAS Project #: 191487

Job ID :

Units: %,BTU/lb

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

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		
1397025-Sulfur					1.46	1.49	2.0	1.86	1.70	96		0.01
1397027-Ash					23.7	23.8	0.42	11.8	11.8	100		0.01
1397026-Heating Value					8305	8291	0.17	13370	13390	100		50

Matrix Spike	75 - 125
Laboratory Control Sample	80 - 120
Duplicate	0 - 20

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.	Matrix Spike Recovery	Matrix Spike Dup Conc.	Matrix Spike Dup 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.	Matrix Spike 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

TSN 329623

TU SYSTEM COMPANIES

SHIPPING ORDER

191487

№ 1777

A

____ SAFETY RELATED ✓ NON-SAFETY RELATED ____ HAZARDOUS MATERIAL ____ RADIOACTIVE ____ RETURNED TO WHSE

WAREHOUSE	DATE PREPARED
Montgomery Plant	3-17-00

VENDOR / SHIP TO	ADDRESS	CITY	STATE	ZIP
Philip Analytical Services	441 Mottsville Pike	Reading	PA	19605

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
		1 PG	4			4 [illegible] SHIPPED
						FOR MAXIMUM
						[illegible] AND SHIP [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]				136		[illegible]	4/[illegible]		

PREPARED BY	DATE
Pat Marshall	3-17-00

C

FREIGHT: ____ PREPAID ____ COLLECT

FOB: ____ ORIGIN ____ DESTINATION

SHIPPED VIA FedEx

DATE SHIPPED 3-17-00

PROTECTION CLASSIFICATION LEVEL (NUCLEAR) !

BILL OF LADING NO. _____

SHIPPER SIGNATURE & DATE _____

WAREHOUSE SIGNATURE	DATE
[signature]	3-17-00

APPROVED	DATE
[illegible] lab: [illegible] / PAS Rdg	3/20/00 @ 0900

D

COMMENTS

[illegible] FROM UNIT 1 AND UNIT 2 [illegible]

[illegible] ATTACHMENT FOR DETAILS. ATTN

D-131

ROUTING

APPENDIX E

Unit Operational Data

Unit 3 EPA Mercury Test Data - 02/23/2000
Run Number 1

Date	Unit Load	Nox	SO2	CO2	O2	Opacity	Stack Moisture	Stack Flow	Stack Temp	Coal Heat Input
	3e104.pv		3sicempm.pv			3sicemo2.pv		3sicemsf.pv	3sicemst.pv	3mfuelct.pv
	MW	PPM	PPM	%	%	%	%	MCFH	DEGF	BTU/LB
2/23/00 16:00	772.5	115.1	171.0	11.3	7.8	14.0	17.1	1557.1	202.7	6626.1
2/23/00 16:15	771.0	110.8	143.2	11.3	7.7	19.2	16.5	1560.9	196.9	6504.3
2/23/00 16:30	772.2	111.4	165.4	11.4	7.7	13.2	16.6	1555.3	200.8	6401.1
2/23/00 16:45	773.4	112.7	171.1	11.4	7.7	13.8	16.3	1571.5	201.7	6588.6
2/23/00 17:00	773.4	114.1	166.1	11.3	7.8	12.1	16.6	1555.1	201.8	6451.7
2/23/00 17:15	769.2	112.5	169.1	11.3	7.7	13.1	16.6	1557.1	199.9	6506.0
2/23/00 17:30	770.7	115.0	171.0	11.3	7.8	11.6	15.5	1561.4	200.8	6601.7
2/23/00 17:45	767.6	112.0	188.7	11.4	7.6	11.7	16.1	1549.2	201.8	6519.7
2/23/00 18:00	772.5	113.4	184.2	11.4	7.6	13.1	16.6	1563.2	200.7	6548.5
2/23/00 18:15	767.3	112.0	175.9	11.5	7.5	11.2	16.0	1557.9	200.7	6386.3
2/23/00 18:30	773.9	113.3	176.3	11.5	7.6	11.3	16.5	1556.1	199.8	6367.9
2/23/00 18:45	772.5	110.7	173.1	11.6	7.5	11.0	17.1	1545.0	199.8	6349.0
2/23/00 19:00	774.1	113.5	176.8	11.6	7.6	10.6	16.3	1541.9	201.9	6472.8
Average	771.6	112.8	171.7	11.4	7.7	12.8	16.4	1556.3	200.7	6486.4

Unit 3 EPA Mercury Test Data - 02/23/2000

Run Number 1

B Tower Gas Inlet Temp 3ctbinfg.pv DEGF	B Tower Gas Out Temp 3ctbotfg.pv DEGF	B Tower SO2 at Inlet 3cabiso2.pv DEGF	B Tower D/P 3cdbinsp.pv INWC	Precip A Gas Out Right 3d260.pv DEGF	Precip A Gas Out Left 3d261.pv DEGF	SAH A Gas Out 3d248.pv DEGF	SAH A Gas Out 3d249.pv DEGF	PAH A Gas Out 3d252.pv DEGF	PAH A Gas Out 3d253.pv DEGF
367.4	141.9	477.3	1.8	335.0	322.4	374.4	358.0	393.6	407.4
367.0	141.7	463.4	1.7	335.1	322.4	373.5	357.0	392.8	406.6
366.1	141.7	463.4	1.7	334.5	322.3	375.0	358.4	391.9	405.6
367.4	139.9	476.7	1.8	334.5	322.3	376.9	360.2	395.7	409.3
368.1	141.7	454.5	1.7	334.8	322.6	375.6	358.9	394.9	408.6
367.8	141.7	452.5	1.7	335.1	322.5	376.2	359.1	394.1	408.1
368.4	140.0	452.5	1.7	335.3	322.8	376.9	360.5	395.1	409.6
367.5	139.0	477.3	1.7	335.5	323.3	376.3	359.8	393.5	407.1
368.0	139.5	488.0	1.7	335.7	323.5	378.2	361.2	394.8	408.6
367.9	140.4	489.0	1.7	335.7	323.7	377.1	360.3	393.9	408.1
368.7	141.2	489.0	1.7	336.0	323.8	378.7	361.9	395.3	409.6
369.3	141.3	469.2	1.7	336.6	324.4	379.7	362.9	395.6	409.8
369.7	141.7	467.2	1.8	336.9	324.9	380.4	363.5	394.7	409.0
367.9	140.9	470.8	1.7	335.4	323.1	376.8	360.1	394.3	408.3

Unit 3 EPA Mercury Test Data - 02/23/2000
Run Number 1

Pulv A Mtr Current 3f172.pv AMPS	Pulv B Mtr Current 3f173.pv AMPS	Pulv C Mtr Current 3f174.pv AMPS	Pulv D Mtr Current 3f175.pv AMPS	Pulv E Mtr Current 3f176.pv AMPS	Pulv F Mtr Current 3f177.pv AMPS	Pulv G Mtr Current 3f178.pv AMPS	Pulv H Mtr Current 3f179.pv AMPS	Pulv J Mtr Current 3f180.pv AMPS	Pulv K Mtr Current 3f181.pv AMPS
67.2	67.3	64.8	75.6	75.7	76.1	68.0	76.4	70.4	65.8
67.0	65.5	65.8	73.4	73.4	78.4	67.5	75.1	71.5	67.4
65.2	67.1	66.7	75.5	74.9	77.8	66.4	76.3	72.5	67.7
66.4	67.1	66.1	76.5	73.8	78.6	69.0	76.7	74.1	66.5
65.0	67.0	65.3	74.2	74.3	77.0	67.6	75.8	74.2	66.1
65.9	69.3	65.5	75.6	73.8	78.9	69.0	78.1	75.9	67.2
65.1	67.7	66.6	75.8	72.3	76.4	67.7	77.1	78.2	67.1
64.4	68.2	66.7	75.0	73.9	79.9	68.1	81.5	74.7	69.0
66.9	68.5	67.2	74.8	72.8	77.1	70.4	81.6	72.3	67.7
69.2	67.4	66.7	76.5	74.3	79.3	70.6	79.8	73.0	66.7
67.3	67.9	67.0	76.0	71.3	78.4	68.5	79.3	72.7	66.7
66.9	70.2	67.8	76.0	72.6	79.0	69.0	79.0	75.0	67.5
65.9	69.4	66.8	75.5	74.7	77.9	70.7	78.5	74.1	67.3

Unit 3 EPA Mercury Test Data - 02/24/2000
Run Number 2

Date	Unit Load	Nox	SO2	CO2	O2	Opacity	Stack Moisture	Stack Flow	Stack Temp	Coal Heat Input
	3e104.pv		3sicempm.pv			3sicemo2.pv		3sicemsf.pv	3sicemst.pv	3mfuelct.pv
	MW	PPM	PPM	%	%	%	%	MCFH	DEGF	BTU/LB
2/24/00 8:45	769.1	109.9	191.0	11.8	7.4	8.8	18.2	1540.6	202.2	5828.5
2/24/00 9:00	765.3	112.2	179.3	11.7	7.4	8.0	17.3	1547.1	201.8	5562.9
2/24/00 9:15	769.8	113.2	177.9	11.7	7.5	8.3	17.3	1537.0	200.8	5864.3
2/24/00 9:30	763.4	108.5	171.9	11.9	7.4	8.7	17.7	1538.8	200.0	5905.4
2/24/00 9:45	754.7	111.1	172.8	11.7	7.5	8.9	17.6	1516.6	200.9	5858.2
2/24/00 10:00	768.7	106.8	165.3	11.9	7.3	8.7	17.7	1521.0	200.8	6183.4
2/24/00 10:15	769.4	110.0	156.5	11.8	7.6	8.2	17.0	1523.9	199.3	5936.2
2/24/00 10:30	772.5	108.4	159.9	11.8	7.5	8.4	17.4	1540.1	199.8	6194.6
2/24/00 10:45	767.5	106.9	155.8	11.8	7.4	9.4	17.3	1539.7	199.8	6130.4
Average	766.7	109.7	170.0	11.8	7.4	8.6	17.5	1533.9	200.6	5940.4

Unit 3 EPA Mercury Test Data - 02/24/2000
Run Number 2

B Tower Gas Inlet Temp 3ctbinfg.pv DEGF	B Tower Gas Out Temp 3ctbotfg.pv DEGF	B Tower SO2 at Inlet 3cabiso2.pv DEGF	B Tower D/P 3cdbinsp.pv INWC	Precip A Gas Out Right 3d260.pv DEGF	Precip A Gas Out Left 3d261.pv DEGF	SAH A Gas Out 3d248.pv DEGF	SAH A Gas Out 3d249.pv DEGF	PAH A Gas Out 3d252.pv DEGF	PAH A Gas Out 3d253.pv DEGF
359.4	143.4	554.4	1.8	328.7	322.5	379.4	362.1	384.6	399.1
358.6	142.6	540.8	1.7	329.1	323.0	377.9	361.0	380.9	395.2
359.0	142.8	539.6	1.8	329.3	323.7	378.5	361.5	382.2	396.3
359.4	143.4	539.6	1.8	329.6	324.0	378.8	361.5	382.1	396.2
358.6	143.5	533.8	1.8	329.6	324.1	376.8	360.2	378.9	392.8
357.6	142.6	475.9	1.7	329.7	324.5	377.0	360.3	377.6	391.5
356.4	143.1	470.6	1.8	329.1	323.8	374.0	357.2	377.5	390.8
357.5	143.3	470.6	1.7	328.4	323.2	374.5	357.7	381.2	394.0
356.6	142.8	468.5	1.8	328.1	322.8	371.0	354.6	380.6	394.2
358.1	143.0	510.4	1.8	329.1	323.5	376.4	359.6	380.6	394.5

Unit 3 EPA Mercury Test Data - 02/24/2000
Run Number 2

Pulv A Mtr Current 3f172.pv AMPS	Pulv B Mtr Current 3f173.pv AMPS	Pulv C Mtr Current 3f174.pv AMPS	Pulv D Mtr Current 3f175.pv AMPS	Pulv E Mtr Current 3f176.pv AMPS	Pulv F Mtr Current 3f177.pv AMPS	Pulv G Mtr Current 3f178.pv AMPS	Pulv H Mtr Current 3f179.pv AMPS	Pulv J Mtr Current 3f180.pv AMPS	Pulv K Mtr Current 3f181.pv AMPS
66.8	66.3	66.8	69.1	75.1	71.2	67.2	70.9	72.0	65.4
65.0	65.5	66.7	68.7	74.4	72.1	67.8	72.1	73.5	67.1
68.0	67.8	66.6	68.8	72.2	71.7	69.1	71.1	71.1	67.4
67.4	67.4	64.7	68.2	73.1	71.4	68.8	71.3	71.1	66.2
65.8	66.9	64.2	68.6	73.6	69.8	68.7	72.3	70.2	66.2
65.1	66.5	64.5	68.2	73.4	70.3	67.8	71.9	71.5	66.1
64.1	66.2	64.1	73.2	72.3	72.1	71.7	72.3	70.9	63.7
65.1	65.3	64.3	72.7	71.3	72.5	70.5	72.0	70.0	66.5
65.0	65.8	64.0	73.1	71.0	71.3	71.1	72.0	71.9	64.6

Unit 3 EPA Mercury Test Data - 02/24/2000
Run Number 3

Date	Unit Load	Nox	SO2	CO2	O2	Opacity	Stack Moisture	Stack Flow	Stack Temp	Coal Heat Input
	3e104.pv		3sicempm.pv			3sicemo2.pv		3sicemsf.pv	3sicemst.pv	3mfuelct.pv
	MW	PPM	PPM	%	%	%	%	MCFH	DEGF	BTU/LB
2/24/00 12:15	776.1	110.9	160.0	11.8	7.6	8.3	17.7	1549.9	199.8	6203.1
2/24/00 12:30	764.1	109.4	156.0	11.9	7.4	8.7	17.4	1538.0	199.8	6237.2
2/24/00 12:45	773.9	113.6	172.7	11.8	7.6	9.7	17.1	1537.8	198.9	6105.8
2/24/00 13:00	771.9	110.0	180.7	11.8	7.5	9.7	17.4	1545.0	201.8	6312.9
2/24/00 13:15	767.7	109.4	167.0	11.8	7.5	9.6	17.2	1527.3	202.7	6226.1
2/24/00 13:30	774.6	111.7	153.4	11.7	7.6	10.0	15.7	1540.1	200.8	6289.2
2/24/00 13:45	769.5	105.9	148.9	11.8	7.5	9.9	16.9	1545.1	200.8	6510.5
2/24/00 14:00	765.8	101.5	144.3	11.9	7.4	9.4	17.6	1522.5	197.0	6467.4
2/24/00 14:15	767.4	106.4	155.7	11.9	7.5	10.1	16.6	1532.8	199.8	6504.7
2/24/00 14:30	769.9	108.8	158.1	11.8	7.4	9.6	16.5	1513.1	200.8	6453.3
Average	770.1	108.8	159.7	11.8	7.5	9.5	17.0	1535.2	200.2	6331.0

Unit 3 EPA Mercury Test Data - 02/24/2000
Run Number 3

B Tower Gas Inlet Temp 3ctbinfg.pv DEGF	B Tower Gas Out Temp 3ctbotfg.pv DEGF	B Tower SO2 at Inlet 3cabiso2.pv DEGF	B Tower D/P 3cdbinsp.pv INWC	Precip A Gas Out Right 3d260.pv DEGF	Precip A Gas Out Left 3d261.pv DEGF	SAH A Gas Out 3d248.pv DEGF	SAH A Gas Out 3d249.pv DEGF	PAH A Gas Out 3d252.pv DEGF	PAH A Gas Out 3d253.pv DEGF
355.5	142.9	464.2	1.7	326.3	320.3	373.0	356.2	381.2	393.5
356.1	142.9	464.2	1.7	326.2	320.2	372.9	356.3	380.5	393.1
357.2	142.8	428.3	1.8	326.2	320.6	374.0	357.2	383.6	396.1
359.8	142.8	441.1	1.8	326.9	321.0	376.4	359.9	388.0	401.6
360.1	140.7	442.2	1.8	327.9	321.8	374.9	358.5	386.0	399.6
360.7	141.8	442.2	1.8	328.8	322.3	376.3	359.3	388.1	400.8
361.4	142.1	467.0	1.7	329.7	322.6	375.7	358.5	387.7	401.0
359.4	141.8	479.2	1.8	330.0	322.9	372.0	355.6	381.9	394.7
357.1	141.6	480.3	1.8	329.4	322.4	372.0	355.9	380.3	392.8
355.9	141.4	480.3	1.9	328.5	321.5	371.6	355.4	378.4	390.5
358.3	142.1	458.9	1.8	328.0	321.6	373.9	357.3	383.6	396.4

Unit 3 EPA Mercury Test Data - 02/24/2000

Run Number 3

Pulv A Mtr Current 3f172.pv AMPS	Pulv B Mtr Current 3f173.pv AMPS	Pulv C Mtr Current 3f174.pv AMPS	Pulv D Mtr Current 3f175.pv AMPS	Pulv E Mtr Current 3f176.pv AMPS	Pulv F Mtr Current 3f177.pv AMPS	Pulv G Mtr Current 3f178.pv AMPS	Pulv H Mtr Current 3f179.pv AMPS	Pulv J Mtr Current 3f180.pv AMPS	Pulv K Mtr Current 3f181.pv AMPS
64.6	66.2	64.9	74.6	72.6	73.8	70.0	74.7	72.2	64.5
64.9	64.9	64.5	73.7	72.4	72.2	69.9	72.2	71.4	63.6
65.5	65.7	65.6	74.6	73.2	72.9	70.4	75.6	73.5	64.5
63.3	66.1	64.3	73.6	71.7	71.3	69.6	75.7	71.2	64.1
63.0	66.1	64.4	74.8	71.1	70.4	69.0	72.6	69.8	63.8
63.7	65.8	64.7	72.0	73.2	71.0	69.6	73.6	71.8	63.8
63.1	64.8	63.7	71.8	70.7	73.3	68.9	71.3	69.4	63.6
65.3	64.3	63.4	72.0	71.7	71.7	70.5	71.0	70.6	64.4
63.4	63.7	63.6	73.5	71.3	73.2	70.7	72.2	70.9	65.0
64.1	63.8	63.2	72.9	70.3	73.2	67.8	73.3	71.2	63.1

Unit 3 EPA Mercury Test Data

Run Number 1		Run Number 2		Run Number 3	
Date / Time	TONS/HR	Date / Time	TONS/HR	Date / Time	TONS/HR
23-Feb-00 16:00	615	24-Feb-00 08:00	649	24-Feb-00 12:00	640
23-Feb-00 17:00	611	24-Feb-00 09:00	661	24-Feb-00 13:00	634
23-Feb-00 18:00	606	24-Feb-00 10:00	667	24-Feb-00 14:00	637
Average	611	24-Feb-00 11:00	652	Average	637
		Average	657		

APPENDIX F

Chain of Custody Records

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-183
Job Name: TXU Electric
Location: Mt. Pleasant, TX - Monticello SES
Unit: Unit 3 FGD 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)
Container 1 - Run 1 filter	2-23-00	2209	✓				1	MB									✓			Filter # 47Q 183
Container 2 - Run 1 0.1 N HNO_3 FW	2-23-00	2208	✓				1	MB									✓			
Container 3 - Run 1 10% HNO_3 rinse Imp. 1,2,3	2-23-00	2023	✓				1	MB									✓			Added Potassium Permanganate solution
Container 4 - Run 1 0.1 N HNO_3 rinse Imp. 4	2-23-00	2024	✓				1	MB									✓			
Container 5 - Run 1 0.1 N HNO_3 rinse Imp. 5,6,7	2-23-00	2031	✓				1	MB									✓			Used hydroxylamine solution.

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Mike MB	2/25/00 1445	Douglas Scathoff	Douglas Scathoff	3/2/00 0925	Feel X
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: Evan Kaplan
Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

F-2

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-183
Job Name: TXU Electric
Location: Mt. Pleasant, TX - Monticello SES
Unit: Unit 3 FGD Inlet

Collected By/Company: METCO

SAMPLE ANALYSIS REQUIRED

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	2-24-00	1144	✓				1	MM									✓			Filter # 47Q187
Container 2 - Run 2 0.1 N HNO_3 FW	2-24-00	1145	✓				1	MM									✓			
Container 3 - Run 2 10% HNO_3 rinse Imp. 1,2,3	2-24-00	1402	✓				1	MM									✓			Added potassium permanganate solution
Container 4 - Run 2 0.1 N HNO_3 rinse Imp. 4	2-24-00	1404	✓				1	MM									✓			
Container 5 - Run 2 0.1 N HNO_3 rinse Imp. 5,6,7	2-24-00	1409	✓				1	MM									✓			Used hydroxylamine solution.

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Mike Ry	2/25/00 1443	Doug Scathoff	Doug Scathoff	3/2/00 0925	Fed X
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: Evan Keelay
Date/Time: 3/6/00

Send Samples to:
Phone:
Fax:

F-3

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-183
Job Name: TXU Electric
Location: Mt. Pleasant, TX - MOSES
Unit: Unit 3 FGD Inlet

Collected By/Company: R 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)
Container 1 - Run 3 Filter	2-24-00	1522	✓				1	MTS									✓			Filter: 47Q 188
Container 2 - Run 3 0.1 N HNO_3 ~~rinse~~ FW	2-24-00	1521	✓				1	MTS									✓			
Container 3 - Run 3 10% HNO_3 rinse Imp. 1,2,3	2-24-00	1532	✓				1	MTS									✓			Added Potassium Permanganate solution
Container 4 - Run 3 0.1 N HNO_3 rinse Imp. 4	2-24-00	1534	✓				1	MTS									✓			
Container 5 - Run 3 0.1 N HNO_3 rinse Imp. 5,6,7	2-24-00	1539	✓				1	MTS									✓			Used hydroxylamine solution

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
[signature]	2/25/00 1442	[signature]	[signature]	3/2/00 0930	FedX
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: Evan Keelan
Date/Time: 3/6/00

Send Samples to:
Phone:
Fax:

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-183
Job Name: TXU Electric
Location: Mt. Pleasant, TX
Unit: Unit 3 FGD 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 Imp1,2,3	2-23-00	1350	/				1	MB									/			Added Potassium Permanganate soln.
✓ Container 4 0.1 N HNO_3 rinse Imp. 4	2-23-00	1352	/				1	MB									/			
✓ Container 5 0.1 N HNO_3 rinse Imp. 5,6,7	2-23-00	1403	/				1	MB									/			Used hydroxylame solution.

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Mike Bg	2/25/00 1414	Dayles Southoff	Dayles Southoff	3/2/00 0920	Fed X
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: Evan Keslar
Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

F-5

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-183
Job Name: TXU Electric
Location: Mt. Pleasant, TX - Monticello SES
Unit: Unit 3 FGD outlet

Collected By/Company: METCO

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	2-23-00	1939	✓				1	MB									✓			Filter # 88QI37
Container 2 - Run 1 0.1 N HNO_3 FW	2-23-00	1940	✓				1	MB									✓			
Container 3 - Run 1 10% HNO_3 rinse Imp. 1,2,3	2-23-00	1949	✓				1	MB									✓			Added Potassium Permanganate
Container 4 - Run 1 0.1 N HNO_3 rinse Imp. 4	2-23-00	1957	✓				1	MB									✓			
Container 5 - Run 1 0.1 N HNO_3 rinse Imp. 5,6,7	2-23-00	2004	✓				1	MB									✓			Used hydroxylamine solution

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
MB	2/25/00 1445	Douglas Southoff	Douglas Southoff	3/2/00 0945	Fed X
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: EPK
Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-183
Job Name: TXU Electric
Location: Mt. Pleasant, TX - MOSES
Unit: Unit 3 FGD Outlet

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 Filter	2-24-00	1344	✓				1	MRO									✓			Filter # 88QI41
Container 2 - Run 2 0.1 N HNO_3 FW	2-24-00	1345	✓				1	MRO									✓			
Container 3 - Run 2 10% HNO_3 rinse Imp. 1,2,3	2-24-00	1350	✓				1	MRO									✓			Added potassium permanganate soln.
Container 4 - Run 2 0.1 N HNO_3 rinse Imp 4	2-24-00	1352	✓				1	MRO									✓			
Container 5 - Run 2 0.1 N HNO_3 rinse Imp. 5,6,7	2-24-00	1356	✓				1	MRO									✓			Used hydroxylamine soln.

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
[illegible]	2/25/00 1443	[illegible]	[illegible]	3/2/00 0952	
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: EPK
Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

MITRIC ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-183
Job Name: TXU Electric
Location: Mt. Pleasant, TX - MOSES
Unit: Unit 3 FGD Outlet

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)
Container 1 - Run 3 ~~0.1 N HNO3~~ Filter	2-24-00	1544	✓				1	MTO									✓			Filter: 88QI47
Container 2 - Run 3 0.1 N HNO_3 FW	2-24-00	1543	✓				1	MTO									✓			
Container 3 - Run 3 10% HNO_3 rinse Imp. 1,2,3	2-24-00	1550	✓				11	MTO									✓			Added Potassium Permanganate solution
Container 4 - Run 3 0.1 N HNO_3 rinse Imp. 4	2-24-00	1553	✓				1	MTO									✓			
Container 5 - Run 3 0.1 N HNO_3 rinse Imp. 5,6,7	2-24-00	1557	✓				1	MTO									✓			Used hydroxylamine solution

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Mike Ty	2/25/00 1442	[signature]	[signature]	3/2/00 0935	
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: EPK
Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-183
Job Name: TXU Electric
Location: Mt. Pleasant, TX - MOSES
Unit: Unit 3 FGD outlet

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. 5,6,7	2-23-00	1331	✓				1	MB									✓			Added Potassium Permanganate soln.
Container 4 0.1N HNO_3 rinse Imp. 4	2-23-00	1333	✓				1	MB									✓			
Container 5 0.1N HNO_3 rinse Imp. 5,6,7	2-23-00	1340	✓				1	MB									✓			Used hydroxylamine solution.

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
[signature]	2/25/00 1444	[signature]	[signature]	3/2/00 1005	Fed X
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: Evem Keslar
Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

Fig 9

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-183
Job Name: TXU Electric
Location: Mt. Pleasant, TX
Unit: Unit 3 Stack

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	2-23-00	1919	/				1	MH									/			Filter 88QI25
Container 2 - Run 1 0.1N HNO_3 FW	2-23-00	1920	/				1	MH									/			
Container 3 - Run 1 10% HNO_3 rinse Imp. 1,2,3	2-23-00	1930	/				1	MH									/			Added Potassium Permanganate
Container 4 - Run 1 0.1N HNO_3 rinse Imp. 4	2-23-00	1931	/				1	MH									/			
Container 5 - Run 1 0.1N HNO_3 rinse Imp. 5,6,7	2-23-00	1940	/				1	MH									/			used hydroxylamine solution

REMARKS: Analyze according to Ontario-hydro method.

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
[signature]	2/25/00 1446	[signature]	[signature]	3/2/00 1000	FedX
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: Evan Kerlan
Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

F-10

MITRECO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-183
Job Name: TXU Electric
Location: Mt. Pleasant, TX - MOSES
Unit: Unit 3 Stack

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 Filter	2-24-00	1324	✓				1	MTB									✓			Filter # 88Q IZ6
Container 2 - Run 2 0.1 N HNO_3 FW	2-24-00	1325	✓				1	MTB									✓			
Container 3 - Run 2 10% HNO_3 rinse Imp. 1,2,3	2-24-00	1333	✓				1	MTB									✓			Added Potassium Permanganate soln.
Container 4 - Run 2 0.1 N HNO_3 rinse Imp. 4	2-24-00	1334	✓				1	MTB									✓			
Container 5 - Run 2 0.1 N HNO_3 rinse Imp. 5,6,7	2-24-00	1339	✓				1	MTB									✓			Used hydroxylamine soln.

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Mitch Bg	2/25/00 1413	[signature]	[signature]	3/2/00 1000	Fed X
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
		[signature]			

Received for Laboratory By/Signature: Evan Kesler
Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

E-11

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-183
Job Name: TXU Electric
Location: Mt. Pleasant, TX - MOSES
Unit: Unit 3 Stack

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)
Container 1 - Run 3 Filter	2-24-00	1514	✓				1	MTO									✓			Filter: 88QI46 ✓
Container 2 - Run 3 0.1 N HNO_3 FW	2-24-00	1513	✓				1	MTO									✓			
Container 3 - Run 3 10% HNO_3 rinse Imp. 1,2,3	2-24-00	1501	✓				1	MTO									✓			Added Potassium Permanganate soln.
Container 4 - Run 3 0.1 N HNO_3 rinse Imp. 4	2-24-00	1505	✓				1	MTO									✓			
Container 5 - Run 3 0.1 N HNO_3 rinse Imp. 5,6,7	2-24-00	1508	✓				1	MTO									✓			Used hydroxylamine solution

REMARKS (Specific Compounds/Methods): Analyze according to Ontario-Hydro method

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Mike Bog	2/25/00 1412	[signature]	[signature]	3/2/00 1005	Fed X
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: Evan Kiolan
Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-183
Job Name: TXU Electric
Location: Mt. Pleasant, TX
Unit: Unit 3 Stack

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 ~~0.1 N~~ 10% HNO_3 rinse Imp. 1,2,3	2-23-00	1256	✓				1	MB									✓			Added Potassium Permanganate
Container 4 0.1 N HNO_3 rinse Imp. 4	2-23-00	1247	✓				1	MB									✓			
Container 5 0.1 N HNO_3 rinse Imp. 5,6,7	2-23-00	1310	✓				1	MB									✓			Used hydroxylamine solution

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
[signature]	2/25/00 1445	[signature]	[signature]	3/2/00 1000	FedX
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: Evan Keslar
Date/Time: 3/6/00

Send Samples to:
Phone: Fax:

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 49-183
Job Name: TXU Electric
Location: Mt. Pleasant, TX - Monticello SES
Unit: Unit 3 ~~Stack~~ MOSES FGD Inlet

Collected By/Company: METCO

SAMPLE ANALYSIS REQUIRED

Reagent Blank 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 0.1 N HNO_3 Blank	2-23-00	1609	/				1	MB									/			Analyze according to Ontario-Hydro method.
Container 8 1N KCl Blank	2-23-00	1610	/				1	MB									/			
Container 9 5% HNO_3 - 10% H_2O_2 Blank	2-23-00	1611	/				1	MB									/			
Container 10 H_2SO_4 - $KMnO_4$ Blank	2-23-00	1612	/				1	MB									/			
Container 11 Hydroxylamine Sulfate/Sodium chloride Blank	2-23-00	1616	/				1	MB									/			
Container 12 Sample Filter Blank	2-23-00	1750	/				11	MB									/			Filters 47Q 184, 185, 186 88Q I 42, 43, 44

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
[signature]	2/25/00 1446	[signature]	[signature]	3/2/00 0932	Fed X
Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:

Received for Laboratory By/Signature: Eiron Keslar
Date/Time: 3/6/00

Send Samples to:
Phone:
Fax:

F-14

APPENDIX G

Resumes

METCO ENVIRONMENTAL

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.

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

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.