APPENDIX A

Nomenclature and Equations
for
Calculation of Source Emissions

NOMENCLATURE FOR PARTICULATE CALCULATIONS

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

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

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

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

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

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

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

EXAMPLE CALCULATIONS

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

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

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

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

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

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

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

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

3. Percent moisture in stack gas.

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

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

4. Mole fraction of dry gas.

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

5. Average molecular weight of dry stack gas.

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

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

6. Molecular weight of stack gas.

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

7. Percent excess air at sampling point.

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

8. Stack Pressure.

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

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

9. Stack velocity at stack conditions.

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

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

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

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 – ug/dscm

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

20. Mercury – lbs/10^{12} Btu

lbs/10^{12} Btu = ug ÷ 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 9,780 dscf*/million Btu

* 29.92 "Hg, 68 °F (760 mm Hg, 20 °C)

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER: 99-95CRL2
JOB NAME: AEC
LOCATION: LEROY, ALABAMA
UNIT TESTED: UNIT NUMBER 2A ABSORBER INLET DUCT - Hg

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			01/25/00	01/26/00	01/26/00
BEGIN TIME			1650	0820	1135
END TIME			1850	1035	1335
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.08 (764)	30.36 (771)	30.34 (771)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.081 (27.5)	0.779 (19.8)	0.941 (23.9)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	60.920 (1.725)	53.721 (1.521)	60.621 (1.717)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	51 (11)	35 (2)	41 (5)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	63.461 (1.797)	58.264 (1.650)	64.943 (1.839)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	99.1	93.2	94.9
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	4.678 (0.132)	4.399 (0.125)	4.479 (0.127)
%M	MOISTURE IN STACK GAS BY VOLUME	%	6.86	7.02	6.45
Tt	NET TIME OF TEST	MINUTES	120	120	120

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

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

AEC
LEROY, ALABAMA
UNIT NUMBER 2A ABSORBER INLET DUCT - Hg

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9314	0.9298	0.9355
CO2		%	13.0	13.2	12.8
O2		%	5.8	6.2	6.7
CO		%	0.0	0.0	0.0
N2		%	81.2	80.6	80.5
%EA	EXCESS AIR @ SAMPLING POINT	%	36.9	40.9	45.8
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	30.31 (30.31)	30.36 (30.36)	30.32 (30.32)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.47 (29.47)	29.49 (29.49)	29.52 (29.52)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.077 (2.0)	0.078 (2.0)	0.096 (2.4)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	303 (151)	294 (146)	294 (146)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	30.19 (767)	30.47 (774)	30.44 (773)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	992 (5.04)	985 (5.00)	1,144 (5.81)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	19,294 (12.45)	19,294 (12.45)	19,294 (12.45)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	86,759 (147,404)	87,832 (149,227)	102,535 (174,207)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	132,861 (225,731)	131,932 (224,152)	153,323 (260,496)

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

SOURCE EMISSION CALCULATIONS

AEC
LEROY, ALABAMA
UNIT NUMBER 2A ABSORBER INLET DUCT - Hg

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	120	120	120
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.430 (0.011)	0.362 (0.009)	0.362 (0.009)
%I	PERCENT ISOKINETIC	%	81.3	104.0	99.3
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: 99-95CRL2
JOB NAME: AEC
LOCATION: LEROY, ALABAMA
UNIT TESTED: UNIT NUMBER 2A ABSORBER INLET DUCT - Hg

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			4		
DATE			01/26/00		
BEGIN TIME			1425		
END TIME			1625		
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.33 (770)		
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	0.835 (21.2)		
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	59.774 (1.693)		
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	44 (7)		
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	63.618 (1.801)		
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	108.9		
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	5.140 (0.146)		
%M	MOISTURE IN STACK GAS BY VOLUME	%	7.48		
Tt	NET TIME OF TEST	MINUTES	120		

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

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

AEC
LEROY, ALABAMA
UNIT NUMBER 2A ABSORBER INLET DUCT - Hg

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9252		
CO2		%	12.9		
O2		%	6.8		
CO		%	0.0		
N2		%	80.3		
%EA	EXCESS AIR @ SAMPLING POINT	%	47.0		
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	30.34 (30.34)		
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.41 (29.41)		
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.084 (2.1)		
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	296 (147)		
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	30.43 (773)		
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	1,060 (5.38)		
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	19,294 (12.45)		
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	93,680 (159,162)		
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	142,084 (241,401)		

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

SOURCE EMISSION CALCULATIONS

AEC
LEROY, ALABAMA
UNIT NUMBER 2A ABSORBER INLET DUCT - Hg

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	120		
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.362 (0.009)		
%I	PERCENT ISOKINETIC	%	106.5		
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: 99-95CRL2
JOB NAME: AEC
LOCATION: LEROY, ALABAMA
UNIT TESTED: UNIT NUMBER 2B ABSORBER INLET DUCT

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			01/25/00	01/26/00	01/26/00
BEGIN TIME			1650	0820	1145
END TIME			1735	0905	1230
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.08 (764)	30.36 (771)	30.34 (771)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.200 (30.5)	1.100 (27.9)	1.178 (29.9)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	25.798 (0.731)	25.837 (0.732)	25.961 (0.735)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	58 (14)	50 (10)	48 (9)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	26.519 (0.751)	27.219 (0.771)	27.445 (0.777)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	42.9	40.2	41.9
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	2.025 (0.057)	1.897 (0.054)	1.978 (0.056)
%M	MOISTURE IN STACK GAS BY VOLUME	%	7.09	6.52	6.72
Tt	NET TIME OF TEST	MINUTES	45	45	45

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

SOURCE EMISSION CALCULATIONS

AEC
LEROY, ALABAMA
UNIT NUMBER 2B ABSORBER INLET DUCT

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9291	0.9348	0.9328
CO2		%	10.8	11.6	12.8
O2		%	8.2	8.0	6.5
CO		%	0.0	0.0	0.0
N2		%	81.0	80.4	80.7
%EA	EXCESS AIR @ SAMPLING POINT	%	61.8	60.1	43.7
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	30.06 (30.06)	30.18 (30.18)	30.31 (30.31)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.20 (29.20)	29.38 (29.38)	29.48 (29.48)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.111 (2.8)	0.133 (3.4)	0.112 (2.8)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	322 (161)	320 (160)	319 (159)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	30.19 (767)	30.47 (774)	30.45 (773)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	1,227 (6.23)	1,325 (6.73)	1,191 (6.05)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	18,720 (12.08)	18,720 (12.08)	18,720 (12.08)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	101,338 (172,173)	111,410 (189,286)	99,991 (169,885)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	159,562 (271,096)	172,239 (292,634)	154,804 (263,012)

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

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER: 99-95CRL2
JOB NAME: AEC
LOCATION: LEROY, ALABAMA
UNIT TESTED: UNIT NUMBER 2B ABSORBER INLET DUCT

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			4		
DATE			01/26/00		
BEGIN TIME			1425		
END TIME			1510		
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.33 (770)		
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	1.100 (27.9)		
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	26.405 (0.748)		
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	50 (10)		
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	27.790 (0.787)		
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	31.1		
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	1.468 (0.042)		
%M	MOISTURE IN STACK GAS BY VOLUME	%	5.02		
Tt	NET TIME OF TEST	MINUTES	45		

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

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

AEC
LEROY, ALABAMA
UNIT NUMBER 2B ABSORBER INLET DUCT

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9498		
CO2		%	12.7		
O2		%	6.8		
CO		%	0.0		
N2		%	80.5		
%EA	EXCESS AIR @ SAMPLING POINT	%	46.8		
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	30.30 (30.30)		
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.69 (29.69)		
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.109 (2.8)		
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	320 (160)		
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	30.44 (773)		
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	1,176 (5.97)		
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	18,720 (12.08)		
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	100,369 (170,527)		
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	152,876 (259,736)		

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

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER: 99-95CRL2
JOB NAME: AEC
LOCATION: LEROY, ALABAMA
UNIT TESTED: UNIT NUMBER 2 STACK - Hg

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			01/25/00	01/26/00	01/26/00
BEGIN TIME			1650	0820	1135
END TIME			1901	1028	1341
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	29.82 (757)	30.10 (765)	30.08 (764)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	0.948 (24.1)	0.893 (22.7)	0.868 (22.0)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	66.114 (1.872)	64.348 (1.822)	65.214 (1.847)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	58 (14.00)	50 (10.00)	52 (11.00)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	67.333 (1.907)	67.177 (1.902)	67.766 (1.919)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	139.7	131.6	114.9
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	6.594 (0.187)	6.212 (0.176)	5.423 (0.154)
%M	MOISTURE IN STACK GAS BY VOLUME	%	8.92	8.46	7.41
Tt	NET TIME OF TEST	MINUTES	120	120	120

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

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

AEC
LEROY, ALABAMA
UNIT NUMBER 2 STACK - Hg

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9108	0.9154	0.9259
CO2		%	12.6	13.0	13.2
O2		%	6.7	6.6	6.4
CO		%	0.0	0.0	0.0
N2		%	80.7	80.4	80.4
%EA	EXCESS AIR @ SAMPLING POINT	%	45.6	44.9	42.9
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	30.28 (30.28)	30.34 (30.34)	30.37 (30.37)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.19 (29.19)	29.30 (29.30)	29.45 (29.45)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	1.049 (26.6)	1.021 (25.9)	1.023 (26.0)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	248 (120)	251 (122)	250 (121)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	29.73 (755)	30.00 (762)	29.98 (761)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	3,810 (19.35)	3,750 (19.05)	3,735 (18.97)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	31,573 (20.37)	31,573 (20.37)	31,573 (20.37)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	565,888 (961,444)	562,490 (955,671)	567,086 (963,479)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	835,474 (1,419,470)	822,104 (1,396,755)	818,890 (1,391,294)

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

SOURCE EMISSION CALCULATIONS

AEC
LEROY, ALABAMA
UNIT NUMBER 2 STACK - Hg

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	120	120	120
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.195 (0.005)	0.195 (0.005)	0.195 (0.005)
%I	PERCENT ISOKINETIC	%	105.2	105.6	105.7
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: 99-95CRL2
JOB NAME: AEC
LOCATION: LEROY, ALABAMA
UNIT TESTED: UNIT NUMBER 2 STACK - Hg

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			4		
DATE			01/26/00		
BEGIN TIME			1425		
END TIME			1631		
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.07 (764)		
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	0.798 (20.3)		
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	64.264 (1.820)		
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	56 (13.00)		
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	66.228 (1.875)		
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	129.1		
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	6.094 (0.173)		
%M	MOISTURE IN STACK GAS BY VOLUME	%	8.43		
Tt	NET TIME OF TEST	MINUTES	120		

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

SOURCE EMISSION CALCULATIONS

AEC
LEROY, ALABAMA
UNIT NUMBER 2 STACK - Hg

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9157		
CO2		%	13.2		
O2		%	6.4		
CO		%	0.0		
N2		%	80.4		
%EA	EXCESS AIR @ SAMPLING POINT	%	42.9		
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	30.37 (30.37)		
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.33 (29.33)		
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.999 (25.4)		
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	254 (123)		
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	29.97 (761)		
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	3,720 (18.90)		
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	31,573 (20.37)		
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	555,272 (943,407)		
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	815,646 (1,385,783)		

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

SOURCE EMISSION CALCULATIONS

AEC
LEROY, ALABAMA
UNIT NUMBER 2 STACK - Hg

SYMBOL	DESCRIPTION	UNITS			
Tt	NET TIME OF TEST	MINUTES	120		
Dn	SAMPLING NOZZLE DIAM.	IN. (m)	0.195 (0.005)		
%I	PERCENT ISOKINETIC	%	105.5		
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: 99-95CRL2
JOB NAME: AEC
LOCATION: LEROY, ALABAMA
UNIT TESTED: UIT NUMBER 2 STACK - FLOW RATE

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			1	2	3
DATE			01/25/00	01/26/00	01/26/00
BEGIN TIME			1645	0815	1130
END TIME			1705	0835	1150
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	29.82 (757)	30.10 (765)	30.08 (764)
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	0.948 (24.1)	0.893 (22.7)	0.868 (22.0)
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	66.114 (1.872)	64.348 (1.822)	65.214 (1.847)
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	58 (14)	50 (10)	52 (11)
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	67.333 (1.907)	67.177 (1.902)	67.766 (1.919)
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	139.7	131.6	114.9
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	6.594 (0.187)	6.212 (0.176)	5.423 (0.154)
%M	MOISTURE IN STACK GAS BY VOLUME	%	8.92	8.46	7.41
Tt	NET TIME OF TEST	MINUTES	20	20	20

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

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

AEC
LEROY, ALABAMA
UIT NUMBER 2 STACK - FLOW RATE

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9108	0.9154	0.9259
CO2		%	12.6	13.0	13.2
O2		%	6.7	6.6	6.4
CO		%	0.0	0.0	0.0
N2		%	80.7	80.4	80.4
%EA	EXCESS AIR @ SAMPLING POINT	%	45.6	44.9	42.9
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	30.28 (30.28)	30.34 (30.34)	30.37 (30.37)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.19 (29.19)	29.30 (29.30)	29.45 (29.45)
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.958 (24.3)	0.954 (24.2)	0.945 (24.0)
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	258 (126)	251 (122)	250 (121)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	29.73 (755)	30.00 (762)	29.98 (761)
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	3,675 (18.67)	3,619 (18.38)	3,590 (18.24)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	31,573 (20.37)	31,573 (20.37)	31,573 (20.37)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	538,235 (914,461)	542,840 (922,285)	545,071 (926,076)
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	805,850 (1,369,139)	793,530 (1,348,207)	787,144 (1,337,358)

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

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER: 99-95CRL2
JOB NAME: AEC
LOCATION: LEROY, ALABAMA
UNIT TESTED: UNIT NUBMER 2 STACK - FLOW RATE

SOURCE EMISSION CALCULATIONS

SYMBOL	DESCRIPTION	UNITS			
RUN #			4		
DATE			01/26/00		
BEGIN TIME			1415		
END TIME			1435		
P(b)	BAROMETRIC PRESSURE	"Hg Abs. (mm Hg)	30.07 (764)		
P(m)	ORIFICE PRESSURE DROP	"H2O (mm H2O)	0.798 (20.3)		
V(m)	VOLUME DRY GAS SAMPLED @ METER CONDITIONS	ft.^3 (m^3)	64.264 (1.820)		
T(m)	AVERAGE GAS METER TEMPERATURE	DEG.F (DEG.C)	56 (13)		
V(m[std])*	VOLUME DRY GAS SAMPLED @ STANDARD CONDITIONS*	DSCF (DSCM)	66.228 (1.875)		
V(w)	TOTAL WATER COLLECTED, IMPINGERS & SILICA GEL	ml	129.1		
V(w[gas])	VOLUME WATER VAPOR COLLECTED @ STANDARD CONDITIONS*	SCF (SCM)	6.094 (0.173)		
%M	MOISTURE IN STACK GAS BY VOLUME	%	8.43		
Tt	NET TIME OF TEST	MINUTES	20		

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

METCO ENVIRONMENTAL

SOURCE EMISSION CALCULATIONS

AEC
LEROY, ALABAMA
UNIT NUBMER 2 STACK - FLOW RATE

SYMBOL	DESCRIPTION	UNITS			
Md	MOL FRACTION OF DRY GAS		0.9157		
CO2		%	13.2		
O2		%	6.4		
CO		%	0.0		
N2		%	80.4		
%EA	EXCESS AIR @ SAMPLING POINT	%	42.9		
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	30.37 (30.37)		
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.33 (29.33)		
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.933 (23.7)		
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	253 (123)		
Ps	STACK PRESSURE	"Hg Abs. (mm Hg)	29.97 (761)		
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	3,587 (18.22)		
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	31,573 (20.37)		
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR)	536,170 (910,953)		
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	786,461 (1,336,197)		

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

APPENDIX B

Field Data

METCO ENVIRONMENTAL

Job Number 99-95CRL2
Job Name AEC
Run Number 1
Unit Unit Number 2A Absorber Inlet Duct
Date 1-25-00
Operator J Brown / J Conway / M Bass
Sample Box No. Hg-1 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 50
Assumed Moisture % 9.60
Probe Length 10'
C Factor ~~1.43~~ 100 AM - 7.1 to reference
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 14.0 "Hg = 0.002 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	Heated Line °F
H3	1650	111.185	0.130	1.80	1.80	10.00	306	256	271	51	48	48	Int Dosat	261
2	1655	114.79	0.065	0.91	0.91	7.00	307	257	271	51	48	48	CST	261
1	1700	117.95	0.015	0.22	0.22	3.00	304	263	269	51	49	49	Low flow manometer	262
G3	1705	119.56	0.140	2.00	2.00	10.00	308	265	269	52	49	49		263
2	1710	122.62	0.050	0.70	0.70	6.00	305	274	267	52	49	50		264
1	1715	125.26	0.015	0.22	0.22	3.00	302	279	268	53	50	51		264
F3	1720	126.73	0.120	1.70	1.70	9.50	308	279	269	53	51	52		265
2	1725	129.94	0.070	0.99	0.99	7.50	305	258	269	53	50	53		265
1	1730	133.00	0.020	0.28	0.28	4.00	292	257	271	54	51	54		264
E3	1735	134.65	0.160	2.20	2.20	12.00	306	257	270	53	50	54		265
2	1740	138.39	0.070	0.99	0.99	7.50	304	260	272	54	50	54		265
1	1745	141.33	0.020	0.28	0.28	4.00	293	264	273	55	51	54		267
D3	1750	142.94	0.120	1.70	1.70	9.50	299	261	272	55	52	54		267
2	1755	146.15	0.080	1.10	1.10	8.50	307	261	273	55	49	54		267
1	1800	149.38	0.015	0.22	0.22	3.00	299	262	273	56	51	54		267
C3	1805	150.88	0.120	1.70	1.70	9.50	303	261	272	57	50	54		266
2	1810	154.09	0.110	1.50	1.50	9.50	305	262	273	57	50	54		266
1	1815	157.68	0.020	0.28	0.28	4.00	299	262	273	56	50	54		267

Pitot Tube Calibration Factor C_p 0.810
Volume Collected V_m 60.920 ft^3
Water Collected V_w 99.10 ml
Time of Test T_t 120 min.
Stack Pressure P_s +1.5 "H_2O

Pitot Tube No. M8
Baro. Press. P_b 30.08 "Hg
Probe Tip Dia. D_n 0.430 in.
% CO_2 13.0 % CO 0.0
% O_2 ~~5.8~~ 5.8 % N_2 ~~80.2~~ 81.2
Area Stack A_s ~~10634~~ 19,294 in^2

Barometer No. 19-1
Total Volume of Leak Checks After Start: — ft^3
V_m = Dry Gas Meter Calibration Factor 60.920 X 1.000
[Dry Gas Meter Reading — ft^3 - (T_t — min. X Leak Rate — cfm)]

Probe Tip No. TFE 1-14

Impinger Box No. 14g-1

Impinger 1	Final Weight	744.6 ~~738.8~~	
	Initial Weight	710.5	
	Increase	34.1	
Impinger 2	Final Weight	781.2	
	Initial Weight	747.5	
	Increase	33.7	
Impinger 3	Final Weight	684.0	
	Initial Weight	671.4	
	Increase	12.6	
Impinger 4	Final Weight	752.5	
	Initial Weight	746.9	
	Increase	5.6	
Impinger 5	Final Weight	758.7	
	Initial Weight	757.3	
	Increase	1.4	
Impinger 6	Final Weight	655.2	
	Initial Weight	654.7	
	Increase	0.5	
Impinger 7	Final Weight	770.1	
	Initial Weight	770.4	
	Increase	-0.3	

Water Weight Gain

Imp. 8: 876.1 − 864.6 = 11.5

V_w =

g SO_2 = -

V_w =

Impinger 1	34.1
Impinger 2	33.7
Impinger 3	12.6
Impinger 4	5.6
Impinger 5	1.4
Impinger 6	0.5
Impinger 7	-0.3
Total	11.5 = V_w

P_b =	30.08	%CO_2 =	13.0
V_m =	60.920	%O_2 =	~~3.8~~ 5.8
V_w =	99.10	%CO =	0.0
P_m =	1.081	%N_2 =	~~83.0~~ 81.2
Avg ΔP =	0.077	A_s =	19.294
		D_n =	0.430
Avg$\sqrt{\Delta P}$ =	0.258	T_t =	120
C_p =	0.810		
P_s =	+1.50 "H_2O		30.19 "Hg
T_m =	~~303~~ 51 °F		~~763~~ 511 °R
T_s =	303 °F		763 °R

Moisture Content: %M = ~~6.86~~ 6.86 (~~6.89~~ 6.86 mr) M_d = ~~0.9314~~ 0.9314 (0.9314 mr) MW_d = ~~30.264~~ 30.312 MW = ~~29.42~~ 29.47 (~~29.47~~ 29.46 mr)

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 60.920 \left[\frac{30.08 + \frac{1.081}{13.6}}{51 + 460}\right] = \frac{63.461}{0.5288} \text{ sft}^3 \text{ scfm } 0.529$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 99.10 = 4.678 sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{4.678}{63.461 + 4.678}$ x 100 = ~~6.87~~ 6.86 (~~6.89~~ 6.86 mr) % 992

V_s = 5123.8 x 0.810 $\sqrt{\frac{763}{30.19 \times 29.42 \text{ (29.47, 29.46, 29.47)}}}$ x 0.258 = ~~9925~~ fpm

%I = $\frac{1{,}039 \times 63.461 \times 763}{30.19 \times 0.9314 \text{ (0.9314, 0.9313)} \times 992 \times 120 \times (0.430)^2}$ = 81.3 %

132,861 (132,883 mr) ~~132,861~~

ACFM: ~~132,974~~

SCFM: ~~86,750~~ 86,759

%EA: ~~20.88~~ 36.9

Run Number 1

Unit Number 2A Absorber Inlet Duct

Date 1-25-00

Hg FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Remarks Heated Line °F
			ΔP_s		P_m		T_s				T_m		
B3	1820	159.30	0.160	2.20	2.20	12.00	304	265	274	56	50	54	267
2	1825	162.41	0.080	1.10	1.10	8.00	305	264	274	56	50	53	266
1	1830	164.80	0.015	0.22	0.22	3.00	306	260	274	56	51	53	266
A3	1835	165.66	0.140	2.00	2.00	11.00	306	260	273	57	51	53	265
2	1840	168.60	0.110	1.50	1.50	9.50	304	262	273	57	50	54	264
1	1845	171.26	0.010	0.14	0.14	2.00	302	262	275	56	51	53	265
END	1850	172.105	—	—	—	—	—	—	—	—	—	—	—

METCO ENVIRONMENTAL

Job Number 99-95
Job Name AEC
Run Number 002
Unit ~~Inlet~~ Unit #2A Absorber Inlet Duct
Date 1-26-00
Operator BRIJUNI / CONWAY / BASS
Sample Box No. Hg1 Meter Box No. 29-1

Rig Field Data

Read and record at the start of each test point.

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

Ambient Temp. °F 26
Assumed Moisture % 6.86
Probe Length 16'
C Factor 10Δ1 - 90 to reference
Initial Leak @ 15.0 "Hg = 0.020 cfm
Final Leak @ 14.0 "Hg = 0.010 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H₂O (ΔP_s)	Orifice ΔH "H₂O Desired	Orifice ΔH "H₂O Actual	Pump Vacuum "Hg Guage (P_m)	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks	Heated Line °F
H3	0820	187.878	0.130	1.20	1.20	8.50	304	250	248	38	30	31	CST	25-7
2	0825	190.73	0.070	0.64	0.64	5.50	302	255	258	35	30	31	int. orsat	260
1	0830	193.25	0.030	0.27	0.27	3.50	303	251	267	37	31	32	lowflow manometer	260
END	0835	194.589	—	—	—	—	—	—	—	—	—	—	change thermal wire	—
G3	0843	194.589	0.140	1.25	1.25	7.50	280	254	276	37	33	34		260
2	0848	197.48	0.050	0.46	0.46	4.50	286	252	282	37	32	33		263
1	0853	199.45	0.010	0.09	0.09	2.50	291	254	280	35	33	34		263
END	0858	200.323	—	—	—	—	—	—	—	—	—	—	Acal. 10-247	—
F3	0905	200.323	0.120	1.20	1.20	7.00	297	252	281	39	34	35		262
2	0910	203.22	0.060	0.60	0.60	5.00	294	257	278	39	33	35		264
1	0915	205.44	0.010	0.10	0.10	2.00	283	251	289	39	33	35		264
E3	0920	206.36	0.120	1.20	1.20	7.50	290	258	291	42	34	35		262
2	0925	208.77	0.060	0.60	0.60	5.00	285	250	285	40	33	36		270
1	0930	211.17	0.010	0.10	0.10	2.00	280	252	279	40	34	36		268
D3	0935	212.05	0.130	1.30	1.30	9.00	299	254	275	40	33	37		267
2	0940	214.73	0.090	0.89	0.89	9.00	298	255	274	40	33	38		273
1	0945	217.44	0.015	0.15	0.15	2.50	298	252	271	41	35	38		268
C3	0950	218.67	0.150	1.50	1.50	10.00	296	257	272	41	34	38		267

Pitot Tube Calibration Factor C_p 0.810 ✓
Volume Collected V_m 53.721 ft³ ✓
Water Collected V_w 93.2 ✓ ml
Time of Test T_t 120 ✓ min.
Stack Pressure P_s +1.5 ✓ "H₂O

Pitot Tube No. M-8 ✓
Baro. Press. P_b 30.36 ✓ "Hg
Probe Tip Dia. D_n 0.362 ✓ in.
% CO_2 13.2 ✓ % CO 0.0 ✓
% O_2 6.2 ✓ % N_2 80.6 ✓
Area Stack A_s 192.94 ✓ in²

Barometer No. 19-1 ✓
Probe Tip No. TFE2-12 ✓
Total Volume of Leak Checks After Start: — ft³
V_m = Dry Gas Meter Calibration Factor 53.721 X 1.000 ✓

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

Impinger Box No. Hg-3

Impinger 1	Final Weight	814.7	Water Weight Gain	Impinger 1	52.1
	Initial Weight	762.6	Imp 8 Fin. 953.5	Impinger 2	20.1
	Increase	52.1	Int. 943.4		
			10.1		
Impinger 2	Final Weight	773.9		Impinger 3	6.1
	Initial Weight	753.8			
	Increase	20.1		Impinger 4	4.0
			V_w =		
Impinger 3	Final Weight	773.5	g SO_2 =	Impinger 5	0.5
	Initial Weight	767.4	V_w =		
	Increase	6.1		Impinger 6	0.5
Impinger 4	Final Weight	750.9		Impinger 7	-0.2
	Initial Weight	746.9		Imp. 8	10.1
	Increase	4.0		Total	93.2 = V_w
Impinger 5	Final Weight	765.6	P_b = 30.36	$\%CO_2$ =	13.2
	Initial Weight	765.1	V_m = 53.721	$\%O_2$ =	6.2
	Increase	0.5	V_w = 93.2	%CO =	0.0
			P_m = 0.779	$\%N_2$ =	80.6
Impinger 6	Final Weight	738.9	Avg ΔP = 0.078	A_s =	19294
	Initial Weight	738.4		D_n =	0.362
	Increase	0.5	Avg$\sqrt{\Delta P}$ = 0.259	T_t =	120
			C_p = 0.810		
Impinger 7	Final Weight	760.2	P_s = +1.5 H_2O	30.47	"Hg
	Initial Weight	760.4	T_m = 35 °F	495	°R
	Increase	-0.2	T_s = 294 °F	754	°R

Moisture Content: %M = 7.02 M_d = 0.9298 MW_d = 30.360 MW = 29.49

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 53.721 \left[\frac{30.36 + \frac{0.779}{13.6}}{35 + 460}\right] = \begin{matrix} 58.264 \text{ sft}^3 \\ 0.486 \text{ scfm} \end{matrix}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 93.2 = 4.399 sft^3

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{4.399}{58.264 + 4.399} \times 100 = 7.02\ \%$$

$$V_s = 5123.8 \times 0.810 \sqrt{\frac{754}{30.47 \times 29.49}} \times 0.259 = 985 \text{ fpm}$$

ACFM: ~~25,196~~ ~~131932~~ 131,932

SCFM: 87832

$$\%I = \frac{1{,}039 \times 58.264 \times 754}{30.47 \times 0.9298 \times 985 \times 120 \times (0.362)^2} = 104.0\ \%$$

%EA: 40.9

Run Number 2

Unit ~~Inlet~~ Unit #2A Absorber Inlet Duct

Date 1-26-00

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	Heated Line °F
C2	0955	221.59	0.110	1.10	1.10	8.00	296	255	263	42	34	39		263
1	1000	224.66	0.020	0.20	0.20	3.00	298	257	267	42	35	38		262
B3	1005	226.06	0.170	0.80	1.80	12.00	298	253	262	41	34	38	ΔPH. 100-9.1	273
2	1010	229.43	0.130	1.40	1.40	11.00	296	253	263	41	33	38		271
1	1015	232.87	0.030	0.33	0.33	4.00	294	255	266	42	34	38		269
A3	1020	234.60	0.100	1.10	1.10	7.50	294	255	267	43	34	38		273
2	1025	237.38	0.090	0.99	0.99	6.50	297	253	263	42	34	38		270
1	1030	240.20	0.020	0.22	0.22	3.50	293	253	266	44	36	39		270
END	1035	241.599	–	–	–	–	–	–	–	–	–	–		–

METCO ENVIRONMENTAL

Job Number 99-95CRL2
Job Name AEC
Run Number 3
Unit ~~Inlet (mg)~~ Unit #2A Absorber Inlet Duct
Date 6-26-00
Operator D.RGZUN/Conway/Bass
Sample Box No. Hg 1 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 90
Assumed Moisture % 6.86
Probe Length 10'
C Factor 10 → 100 to reference
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 12.0 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H₂O (ΔP_s)	Orifice ΔH "H₂O Desired	Orifice ΔH "H₂O Actual (P_m)	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Heated Line °F	Remarks
H 3	1135	244.499	0.130	1.30	1.30	8.00	294	268	264	39	36	36	274	thimble Q#6
2	1140	247.64	0.070	0.70	0.70	6.00	292	259	266	40	36	37	275	filter 470143
1	1145	250.15	0.020	0.20	0.20	3.00	288	258	256	41	36	38	275	int. or set
G 3	1150	251.50	0.140	1.40	1.40	8.50	297	259	260	41	36	39	278	CST
2	1155	254.67	0.080	0.80	0.80	6.00	295	256	260	40	36	40	277	low-flow manometer
1	1200	257.30	0.050	0.50	0.50	5.00	297	254	264	41	38	41	279	
F 3	1205	259.34	0.150	1.50	1.50	10.00	297	257	264	41	37	42	280	
2	1210	262.72	0.080	0.80	0.80	6.50	292	261	263	41	37	42	280	
1	1215	265.28	0.045	0.45	0.45	4.00	290	260	267	42	39	43	281	
E 3	1220	267.18	0.150	1.50	1.50	10.00	298	261	269	44	38	43	280	
2	1225	270.39	0.080	0.80	0.80	6.50	296	260	272	42	38	42	280	
1	1230	272.95	0.040	0.40	0.40	4.00	286	255	264	43	39	42	280	
D 3	1235	274.82	0.160	1.60	1.60	10.00	296	255	269	43	39	42	279	
2	1240	278.31	0.080	0.80	0.80	6.50	295	254	265	44	39	44	278	
1	1245	281.00	0.065	0.65	0.65	4.00	293	254	265	45	40	44	280	
C 3	1250	283.28	0.170	1.60	1.60	10.00	295	256	270	44	39	44	280	ΔRef 10 → 95
2	1255	286.45	0.110	1.05	1.05	7.00	298	265	271	44	39	44	281	ΔRef 10 → 95
1	1300	289.22	0.070	0.68	0.68	6.00	290	250	272	45	40	44	279	

Pitot Tube Calibration Factor C_p 0.810
Volume Collected V_m 60.621 ft³
Water Collected V_w ~~46.8~~ 94.9 ml
Time of Test T_t 120 min.
Stack Pressure P_s +1.4 "H₂O

Pitot Tube No. M-8
Baro. Press. P_b 30.34 "Hg
Probe Tip Dia. D_n 0.362 in.
% CO_2 12.8 % CO 0.0
% O_2 6.7 % N_2 80.5
Area Stack A_s 19,294 in²

Barometer No. 19-1
Total Volume of Leak Checks After Start: — ft³
V_m = Dry Gas Meter Calibration Factor 1.000 X 60.621

Probe Tip No. TFE 2-12

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

Impinger Box No. Hg-1

Impinger 1	Final Weight	768.0	Water Weight Gain	Impinger 1	55.4
	Initial Weight	712.6	886.3		
	Increase	55.4	Imp. 8 876.0	Impinger 2	20.9
			10.3		
Impinger 2	Final Weight	767.0		Impinger 3	5.5
	Initial Weight	746.1			
	Increase	20.9		Impinger 4	3.5
			V_w =		
Impinger 3	Final Weight	678.8	g SO_2 =	Impinger 5	-0.2
	Initial Weight	673.3	V_w =		
	Increase	5.5		Impinger 6	-0.1
Impinger 4	Final Weight	752.0		Impinger 7	-0.4
	Initial Weight	748.5			
	Increase	3.5		~~Total~~ Imp. 8	10.3

Total V_w = 94.9

Impinger 5	Final Weight	760.0	P_b =	30.34	%CO_2 =	12.8	
	Initial Weight	760.2	V_m =	60.621	%O_2 =	6.7	
	Increase	-0.2	V_w =	94.9	%CO =	0.0	
			P_m =	0.941	%N_2 =	80.5	
Impinger 6	Final Weight	653.3	Avg ΔP =	0.096	A_s =	19.294	
	Initial Weight	653.4			D_n =	0.362	
	Increase	-0.1	Avg$\sqrt{\Delta P}$ =	0.301	T_t =	120	
			C_p =	0.810			
Impinger 7	Final Weight	772.2	P_s =	+1.4 "H_2O		30.44	"Hg
	Initial Weight	772.6	T_m =	41 °F		501	°R
	Increase	-0.4	T_s =	294 °F		754	°R

Moisture Content: %M = 6.45 M_d = 0.9355 MW_d = 30.316 MW = 29.52

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 60.621 \left[\frac{30.34 + \frac{0.941}{13.6}}{41 + 460}\right] = \frac{64.943\ sft^3}{0.541\ scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 94.9 = 4.479 sft^3

$$\% \text{ Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{4.479}{4.479 + 64.943} \times 100 = 6.45\ \%$$

$$V_s = 5123.8 \times 0.810 \sqrt{\frac{754}{30.44 \times 29.52}} \times 0.301 = 1144 \text{ fpm}$$

ACFM: 153,323

SCFM: 102,535

$$\%I = \frac{1{,}039 \times 64.943 \times 754}{120 \times 0.9355 \times 30.44 \times 1144 \times (0.362)^2} = 99.3\ \%$$

%EA: 45.8

Run Number 3

Unit ~~Inlet~~ Unit #2A Absorber Inlet Duct

Date 1-26-00

Hg FIELD DATA

Point	Clock Time	Dry Gas Meter, CF	ΔP_s "Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	P_m Pump Vacuum "Hg Guage	T_s Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	T_m Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Heated Line °F	Remarks
B3	1305	291.58	0.170	1.60	1.60	10.00	296	254	275	44	40	45	281	
2	1310	294.53	0.090	0.87	0.87	6.50	299	256	272	45	40	45	280	
1	1315	297.07	0.060	0.58	0.58	5.00	293	257	273	47	41	45	278	
A3	1320	299.09	0.135	1.30	1.30	7.50	294	254	270	46	42	45	277	
2	1325	301.65	0.100	0.97	0.97	6.00	298	253	269	48	41	45	275	
1	1330	304.23	0.055	0.53	0.53	3.00	296	252	263	48	41	45	270	
END	1335	305.120	–	–	–	–	–	–	–	–	–	–	–	

METCO ENVIRONMENTAL

Hg Field Data

Job Number 99-95
Job Name AEC
Run Number 4
Unit Unit #2A ~~Scrubber~~ Absorber Inlet Duct
Date 1-26-00
Operator BROWN/CONWAY/BASS
Sample Box No. Hg 3 Meter Box No. 29-1

Read and record at the start of each test point.

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

Ambient Temp. °F 38
Assumed Moisture % 6.86
Probe Length 10'
C Factor 10 → 99 to reference
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 12.0 "Hg = 0.000 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H₂O (ΔP_s)	Orifice ΔH "H₂O Desired	Orifice ΔH "H₂O Actual	Pump Vacuum "Hg Guage (P_m)	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Heated Line °F	Remarks
H3	1425	306.726	0.120	1.20	1.20	7.00	291	270	270	42	41	41	280	Int Duct
2	1430	309.62	0.050	0.49	0.49	4.50	290	264	270	40	41	41	280	C>T
1	1435	311.69	0.030	0.30	0.30	3.50	291	260	269	39	41	42	284	Low-flow
G3	1440	313.30	0.130	1.30	1.30	8.00	296	264	269	37	41	42	280	manometer
2	1445	316.29	0.070	0.69	0.69	5.50	294	266	267	37	41	44	277	
1	1450	318.71	0.040	0.39	0.39	4.00	292	265	271	38	42	44	274	
F3	1455	320.51	0.140	1.40	1.40	9.00	300	258	268	38	42	45	273	
2	1500	323.71	0.060	0.59	0.59	5.00	293	256	260	37	42	46	272	
1	1505	326.06	0.040	0.39	0.39	4.00	288	259	266	39	43	46	271	
E3	1510	327.87	0.150	1.50	1.50	9.00	299	263	260	41	42	46	271	
2	1515	331.16	0.080	0.79	0.79	6.00	298	264	262	42	42	46	270	
1	1520	333.81	0.035	0.34	0.34	3.50	289	260	265	43	43	46	269	
D3	1525	335.55	0.150	1.50	1.50	9.00	300	257	263	44	43	47	270	
2	1530	338.91	0.065	0.69	0.69	6.00	300	257	267	44	42	47	268	
1	1535	341.42	0.040	0.39	0.39	4.00	291	253	257	44	43	47	268	
C3	1540	343.28	0.160	1.60	1.60	9.00	299	256	266	45	42	46	268	
2	1545	346.77	0.130	1.30	1.30	8.50	304	262	268	45	42	47	267	
1	1550	350.10	0.030	0.29	0.29	3.50	292	265	270	45	42	47	268	

Pitot Tube Calibration Factor C_p 0.810 ✓
Volume Collected V_m 59.774 ✓ ft³
Water Collected V_w 108.9 ✓ ml
Time of Test T_t 120 ✓ min.
Stack Pressure P_s +1.4 ✓ "H₂O

Pitot Tube No. 118 ✓
Baro. Press. P_b 30.33 ✓ "Hg
Probe Tip Dia. D_n 0.362 in.
% CO_2 ~~12.6~~ 12.9 ✓ % CO 0.0 ✓
% O_2 6.8 % N_2 80.3 ✓
Area Stack A_s 19.294 ✓ in²

Barometer No. 19-1 ✓
Probe Tip No. TFE 2-12 ✓
Total Volume of Leak Checks After Start: — ft³
V_m = Dry Gas Meter Calibration Factor 1.000 ✓ X 59.774 ✓

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

Impinger Box No. Hg-3

Impinger 1	Final Weight	~~907.1~~ 806.7	
	Initial Weight	757.8	
	Increase	~~149.3~~ 48.9	
Impinger 2	Final Weight	775.9	
	Initial Weight	748.5	
	Increase	27.4	
Impinger 3	Final Weight	766.3	
	Initial Weight	759.9	
	Increase	6.4	
Impinger 4	Final Weight	749.6	
	Initial Weight	743.0	
	Increase	6.6	
Impinger 5	Final Weight	764.0	
	Initial Weight	761.4	
	Increase	2.6	
Impinger 6	Final Weight	742.7	
	Initial Weight	740.4	
	Increase	2.3	
Impinger 7	Final Weight	759.9	
	Initial Weight	757.7	
	Increase	2.2	

Water Weight Gain

Imp 8. 962.4 − 949.9 = 12.5

V_w =

g SO_2 = -

V_w =

Impinger 1	~~149.3~~ 48.9
Impinger 2	27.4
Impinger 3	6.4
Impinger 4	6.6
Impinger 5	2.6
Impinger 6	2.3
Impinger 7	2.2
Imp. 8	12.5
Total	~~209.3~~ 108.9 = V_w

P_b =	30.33		%CO_2 =	12.9
V_m =	59.774		%O_2 =	6.8
V_w =	~~209.3~~ 108.9		%CO =	0.0
P_m =	0.835		%N_2 =	80.3
Avg ΔP =	0.084		A_s =	19294
			D_n =	0.362
Avg$\sqrt{\Delta P}$ =	0.278		T_t =	120
C_p =	0.810			
P_s =	+1.4	"H_2O	30.43	"Hg
T_m =	44	°F	504	°R
T_s =	296	°F	756	°R

Moisture Content: %M = 7.48 M_d = 0.9252 MW_d = 30.336 MW = 29.41

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 59.774 \left[\frac{30.33 + \frac{0.835}{13.6}}{44 + 460}\right] = \frac{63.618\ \text{sft}^3}{0.530\ \text{scfm}}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x ~~209.3~~ 108.9 = ~~9.879~~ 5.140 sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{\text{~~9.879~~ 5.140}}{\text{~~9.879~~ 5.140} + 63.618}$ x 100 = 7.48 %

V_s = 5123.8 x 0.810 $\sqrt{\frac{756}{30.43 \times 29.41}}$ x 0.278 = 1060 fpm

ACFM: 142,084

SCFM: 93,680

%I = $\frac{1{,}039 \times 63.618 \times 756}{120 \times 0.9252 \times 30.43 \times 1060 \times (0.362)^2}$ = 106.5 %

%EA: ~~46~~ 47.0

Run Number 4

Unit Inlet Duct

Date 1-26-00

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
B3	1555	351.84	0.170	1.70	1.70	10.00	300	257	260	45	42	46	265	
2	1600	355.46	0.100	0.99	0.99	7.00	300	261	269	46	42	46	265	
1	1605	358.39	0.035	0.34	0.34	4.00	298	265	269	46	43	47	268	
A3	1610	360.16	0.090	0.89	0.89	6.50	290	258	266	46	44	47	268	
2	1615	362.81	0.070	0.69	0.69	5.50	301	255	252	46	44	47	265	
1	1620	365.14	0.030	0.29	0.29	4.00	298	258	254	46	44	47	260	
END	1625	366.500	—	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Job Number 99-95CRLZ
Job Name AEC
Run Number 1 (One)
Unit Unit Number 2B Asorber Inlet Duct
Date 1-25-00
Operator Hollingsworth / Hobbs / Bass
Sample Box No. 19-3 Meter Box No. 27-2

Mo Flows Field Data

Read and record at the start of each test point.

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

Ambient Temp. °F 53
Assumed Moisture % 20
Probe Length 5' S.S.
C Factor — to reference
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 18.0 "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
A 3	1650	519.512	0.02	1.20	1.20	15.0	315	250	—	59	56	55	~~Filter #70139~~
2	1655	522.45	0.09	1.20	1.20	15.0	319	248	—	60	56	55	
1	1700	525.30	0.20	1.20	1.20	15.0	319	247	—	60	57	58	
B 3	1705	528.35	0.05	1.20	1.20	15.0	322	246	—	61	58	58	
2	1710	531.51	0.13	1.20	1.20	15.0	324	249	—	61	58	58	Grab Orsat
1	1715	533.74	0.28	1.20	1.20	15.0	325	251	—	61	59	58	CST
C 3	1720	536.50	0.03	1.20	1.20	15.0	320	256	—	61	59	59	heated line
2	1725	540.19	0.16	1.20	1.20	15.0	322	251	—	62	59	60	
1	1730	542.12	0.43	1.20	1.20	16.0	324	250	—	64	59	59	
D 3	1735	545.105	0.67	—	—	—	324	—	—	—	—	—	End
2	~~1740~~	—	0.08	—	—	—	323	—	—	—	—	—	
1	~~1745~~	—	0.08	—	—	—	323	—	—	—	—	—	
E 3	~~1750~~	—	0.02	—	—	—	319	—	—	—	—	—	
2	—	—	0.06	—	—	—	321	—	—	—	—	—	
1	—	—	0.12	—	—	—	324	—	—	—	—	—	
F 3	—	—	0.06	—	—	—	324	—	—	—	—	—	
2	—	—	0.12	—	—	—	325	—	—	—	—	—	
1	—	—	0.09	—	—	—	325	—	—	—	—	—	

Pitot Tube Calibration Factor C_p 0.510 ✓
Volume Collected V_m 25.798 ✓ ft^3
Water Collected V_w 42.9 ✓ ml
Time of Test T_t 45 ✓ min.
Stack Pressure P_s -1.5 ✓ "H_2O

Pitot Tube No. 17-10-2 ✓
Baro. Press. P_b 30.08 ✓ "Hg
Probe Tip Dia. D_n N/A in.
% CO_2 10.8 ✓ % CO 0.0 ✓
% O_2 8.2 ✓ % N_2 81.0 ✓
Area Stack A_s 18720 ✓ in^2

Barometer No. 19-1 ✓ Probe Tip No. ~~77-10-2~~
Total Volume of Leak Checks After Start: — ft^3
V_m = Dry Gas Meter Calibration Factor 1.009 ✓ X 25.593
[Dry Gas Meter Reading — ft^3 - (T_t — min. X Leak Rate — cfm)]

Impinger Box No. 19-3

Impinger 1	Final Weight	742.6		Impinger 1	11.2
	Initial Weight	731.4		Impinger 2	13.0
	Increase			Impinger 3	3.8
Impinger 2	Final Weight	758.1		Impinger 4	14.9
	Initial Weight	745.1		Impinger 5	–
	Increase			Impinger 6	–
Impinger 3	Final Weight	546.4		Impinger 7	–
	Initial Weight	542.6		Total	42.9 = V_w
	Increase				
Impinger 4	Final Weight	968.9			
	Initial Weight	954.0			
	Increase				
Impinger 5	Final Weight				
	Initial Weight				
	Increase				
Impinger 6	Final Weight				
	Initial Weight				
	Increase				
Impinger 7	Final Weight				
	Initial Weight				
	Increase				

Water Weight Gain

V_w =
g SO_2 = –
V_w =

P_b =	30.08	%CO_2 =	10.8
V_m =	25.798	%O_2 =	8.2
V_w =	42.9	%CO =	0.0
P_m =	1.200	%N_2 =	81
Avg ΔP =	0.111	A_s =	18720
		D_n =	N/A
Avg$\sqrt{\Delta P}$ =	0.314	T_t =	45
C_p =	0.840		
P_s =	+1.5 "H_2O	30.19 "Hg	
T_m =	58 °F	518 °R	
T_s =	322 °F	782 °R	

Moisture Content: %M = ~~7.08~~ 7.09 M_d = ~~0.9292~~ 0.9291 MW_d = 30.056 MW = 29.20

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 25.798 \left[\frac{30.08 + \frac{1.200}{13.6}}{58 + 460}\right] = \frac{26.519\ \text{sft}^3}{\cancel{0.5897}\ \text{scfm}\ 0.589}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 42.9 = 2.025 sft^3

$$\%\ \text{Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{2.025}{\cancel{26.798}\ 26.519 + 2.025} \times 100 = \cancel{7.08}\ 7.09\ \%$$

$$V_s = 5123.8 \times 0.810 \sqrt{\frac{\cancel{45^\circ R}\ 782}{30.19 \times 29.20}} \times 0.314 = 1227\ \text{fpm}$$

ACFM: 159562

SCFM: ~~101349~~ 101,338

$$\%I = \frac{1{,}039 \times \quad \times}{\times \quad \times \quad \times \quad \times (\quad)^2} = \text{–}\ \%$$

%EA: 61.8

Run Number 1 (one)

Unit Unit # 2B Absorber Inlet Duct

Date 1-25-00

moisture / Flows 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
6 S	–	–	0.06	–	–	–	325	–	–	–	–	–	
2	–	–	0/0	–	–	–	324	–	–	–	–	–	
1	–	–	0.07	–	–	–	324	–	–	–	–	–	
H 3	–	–	0.09	–	–	–	322	–	–	–	–	–	
2	–	–	0.14	–	–	–	323	–	–	–	–	–	
1	–	–	0.13	–	–	–	322	–	–	–	–	–	
END	–	–	–	–	–	–	–	–	–	–	–	–	

METCO ENVIRONMENTAL

Moisture / Flows Field Data

Read and record at the start of each test point.

Job Number 99-95CRL2
Job Name AEC
Run Number 2
Unit Unit Number 2B Absorber Inlet Duct
Date 1-26-00
Operator Hollingsworth / Hobbs / BASS
Sample Box No. 19-3 Meter Box No. 27-2

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

Ambient Temp. °F 31
Assumed Moisture % 7.0 %
Probe Length 5' 5S
C Factor N/A to reference
Initial Leak @ 15" "Hg = 0.000 cfm
Final Leak @ 20" "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
A 3	0800	573.700	0.07	1.10	1.10	18.0	315	255	—	45	49	50	
2	0805	577.01	0.12	1.10	1.10	18.0	315	253	—	47	49	50	
1	0810	579.70	0.21	1.10	1.10	18.0	317	251	—	48	49	50	
B 3	0815	582.55	0.02	1.10	1.10	18.0	317	250	—	48	49	50	
2	0820	585.30	0.15	1.10	1.10	18.0	319	249	—	48	49	50	
1	0825	588.35	0.25	1.10	1.10	18.0	320	250	—	49	50	50	
C 3	0830	592.20	0.43	1.10	1.10	18.0	320	251	—	50	50	50	heated line
2	0835	597.90	0.10	1.10	1.10	18.0	319	251	—	49	49	50	Grab Orsat
1	0900	596.70	0.20	1.10	1.10	18.0	318	250	—	49	49	50	CST
D 3	0905	599.532	0.02	—	—	—	318	—	—	—	—	—	End Moisture
2	—	—	0.15	—	—	—	320	—	—	—	—	—	
1	—	—	0.23	—	—	—	321	—	—	—	—	—	
E 3	—	—	0.02	—	—	—	322	—	—	—	—	—	
2	—	—	0.17	—	—	—	322	—	—	—	—	—	
1	—	—	0.18	—	—	—	323	—	—	—	—	—	
F 3	—	—	0.09	—	—	—	322	—	—	—	—	—	
2	—	—	0.21	—	—	—	321	—	—	—	—	—	
1	—	—	0.17	—	—	—	321	—	—	—	—	—	

Pitot Tube Calibration Factor C_p 0.510 ✓
Volume Collected V_m 25.637 ✓ ft^3
Water Collected V_w 40.2 ✓ ml
Time of Test T_t 45 ✓ min.
Stack Pressure P_s ± 1.5 ✓ "H_2O

Pitot Tube No. 17-10-2 ✓
Baro. Press. P_b 30.36 ✓ "Hg
Probe Tip Dia. D_n N/A in.
% CO_2 11.6 ✓ % CO 0.0 ✓
% O_2 8.0 ✓ % N_2 80.4 ✓
Area Stack A_s 1872 ✓ in^2

Barometer No. 14-1
Probe Tip No. N/A
Total Volume of Leak Checks After Start: — ft^3
V_m = Dry Gas Meter Calibration Factor 1.005 ✓ X 25.632

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

Impinger Box No. 19-3

Impinger 1	Final Weight	820.0		Impinger 1	21.7
	Initial Weight	798.3			
	Increase	21.7		Impinger 2	9.3
Impinger 2	Final Weight	824.4		Impinger 3	0.50
	Initial Weight	815.3			
	Increase	9.3		Impinger 4	8.7
Impinger 3	Final Weight	545.7	V_w =	Impinger 5	—
	Initial Weight	545.2	g SO_2 = -		
	Increase	0.5	V_w =	Impinger 6	—
Impinger 4	Final Weight	977.8		Impinger 7	—
	Initial Weight	969.1			
	Increase	8.7		Total	40.2 = V_w
Impinger 5	Final Weight		P_b = 30.36	$\%CO_2$ =	11.6
	Initial Weight		V_m = 25.837	$\%O_2$ =	8.0
	Increase		V_w = 40.2	%CO =	0.0
			P_m = 1.100	$\%N_2$ =	80.4
Impinger 6	Final Weight		Avg ΔP = ~~0.342~~ 0.133	A_s =	18720
	Initial Weight			D_n =	N/A
	Increase		Avg$\sqrt{\Delta P}$ = 0.342	T_t =	45
			C_p = 0.810		
Impinger 7	Final Weight		P_s = +1.5 "H_2O	~~30.46~~ 30.47	"Hg
	Initial Weight		T_m = 50 °F	510	°R
	Increase		T_s = 320 °F	780	°R

Water Weight Gain

Moisture Content: %M = 6.52 M_d = 0.9348 MW_d = 30.174 MW = 29.38

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 25.837 \left[\frac{30.36 + \frac{1.100}{13.6}}{50 + 460}\right] = \frac{27.219}{\cancel{0.6049}\ 0.605}\ \text{sft}^3/\text{scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 40.2 = 1.897 sft^3

$$\%\ \text{Moisture} = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{1.897}{27.219 + 1.897} \times 100 = 6.52\ \%$$

$$V_s = 5123.8 \times 0.810 \sqrt{\frac{\cancel{787}\ 780}{\cancel{30.06}\ 30.47 \times 29.38}} \times 0.342 = \cancel{1335}\ \cancel{1327}\ 1325\ \text{fpm}$$

ACFM: ~~173,574~~ ~~173~~ ~~172,460~~ 172,239

SCFM: ~~112,214~~ ~~111,578~~ 111,410

$$\%I = \frac{1{,}039 \times \quad \times}{\times \quad \times \quad \times \quad \times (\quad)^2} = \text{—}\ \%$$

%EA: 60.1

Run Number 2

Unit Unit number 2B Ash Cooler Inlet

Date 1-26-00

Moisture / Flows 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
G 3	–	–	0.03	–	–	–	319	–	–	–	–	–	
2	–	–	0.09	–	–	–	318	–	–	–	–	–	
1	–	–	0.08	–	–	–	318	–	–	–	–	–	
H 3	–	–	0.04	–	–	–	320	–	–	–	–	–	
2	–	–	0.09	–	–	–	321	–	–	–	–	–	
1	–	–	0.05	–	–	–	321	–	–	–	–	–	
End	–	–	–	–	–	–	–	–	–	–	–	–	

METCO ENVIRONMENTAL

Job Number 99-95 CRL2
Job Name AEC
Run Number 3
Unit Unit Number 2B Absorber Inlet Duct
Date 1-26-00
Operator Hollingsworth / Hobbs / BASS
Sample Box No. 19-3 Meter Box No. 27-2

Moisture / Flow Field Data

Read and record at the start of each test point.

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

Ambient Temp. °F 40
Assumed Moisture % 6.52
Probe Length 5'55
C Factor N/A to reference
Initial Leak @ 15" "Hg = 0.000 cfm
Final Leak @ 21.5" "Hg = 0.000 cfm

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
A 3	1145	605.700	0.02	1.20	1.20	19.0	317	247	—	48	47	49	
2	1150	608.65	0.18	1.20	1.20	19.0	316	245	—	48	47	49	
1	1155	612.25	0.25	1.20	1.20	19.0	316	249	—	49	48	49	
B 3	1200	614.60	0.03	1.20	1.20	19.0	317	251	—	49	48	49	
2	1205	617.52	0.13	1.20	1.20	19.0	318	250	—	49	47	49	
1	1210	620.43	0.37	1.20	1.20	19.0	320	252	—	50	46	49	
C 3	1215	623.00	0.03	1.20	1.20	19.0	320	251	—	51	47	49	
2	1220	626.14	0.15	1.10	1.10	19.0	319	246	—	52	47	49	
1	1225	629.00	0.34	1.10	1.10	19.0	319	247	—	52	47	49	
D 3	1230	631.655	0.03	—	—	—	321	—	—	—	—	—	End moisture
2	—	—	0.11	—	—	—	320	—	—	—	—	—	Grabbsat
1	—	—	0.22	—	—	—	321	—	—	—	—	—	CST
E 3	—	—	0.02	—	—	—	321	—	—	—	—	—	used heated line
2	—	—	0.12	—	—	—	320	—	—	—	—	—	
1	—	—	0.19	—	—	—	320	—	—	—	—	—	
F 3	—	—	0.04	—	—	—	319	—	—	—	—	—	
2	—	—	0.11	—	—	—	319	—	—	—	—	—	
1	—	—	0.04	—	—	—	319	—	—	—	—	—	

Pitot Tube Calibration Factor C_p 0.810
Volume Collected V_m 25.961 ft^3
Water Collected V_w 41.9 ml
Time of Test T_t 45 min.
Stack Pressure P_s + 1.5 "H_2O

Pitot Tube No. 17-10-2
Baro. Press. P_b ~~30.34~~ 30.34 "Hg
Probe Tip Dia. D_n N/A in.
% CO_2 12.8 % CO 0.0
% O_2 6.5 % N_2 80.7
Area Stack A_s 18720 in^2

Barometer No. 19-1 Probe Tip No. N/A
Total Volume of Leak Checks After Start: — ft^3
V_m = Dry Gas Meter Calibration Factor 1.008 X ~~25.775~~ 25.755

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

Impinger Box No. 19-3

Impinger 1	Final Weight	~~820~~ 847.6		Impinger 1	47.6
	Initial Weight	800		Impinger 2	-15.5
	Increase	47.6		Impinger 3	1.6
Impinger 2	Final Weight	809.1		Impinger 4	8.2
	Initial Weight	824.6		Impinger 5	—
	Increase	-15.5		Impinger 6	—
Impinger 3	Final Weight	547.3		Impinger 7	—
	Initial Weight	545.7		Total	41.9 = V_w
	Increase	1.6			
Impinger 4	Final Weight	986.0			
	Initial Weight	977.8			
	Increase	8.2			
Impinger 5	Final Weight				
	Initial Weight				
	Increase				
Impinger 6	Final Weight				
	Initial Weight				
	Increase				
Impinger 7	Final Weight				
	Initial Weight				
	Increase				

Water Weight Gain

V_w =
g SO_2 = -
V_w =

P_b =	~~30.34~~ 30.34 mr	$\%CO_2$ =	12.8	
V_m =	25.961	$\%O_2$ =	6.5	
V_w =	41.9	%CO =	0.00	
P_m =	~~1.19~~ 1.178 mr	$\%N_2$ =	80.7	
Avg ΔP =	0.112	A_s =	18720	
		D_n =	N/A	
Avg$\sqrt{\Delta P}$ =	0.308	T_t =	45	
C_p =	0.810			
P_s =	+1.5	"H_2O	~~30.47~~ 30.45	"Hg
T_m =	48	°F	508	°R
T_s =	314	°F	779	°R

Moisture Content: %M = 6.72 M_d = 0.9328 MW_d = ~~30.31~~ 30.308 mr MW = 29.48

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 25.961 \left[\frac{30.34 + \frac{1.178}{13.6}}{48 + 460}\right] = 27.445\ \text{sft}^3 \quad 0.610\ \text{scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 41.9 = ~~1.98~~ 1.978 mr sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{1.978}{25.961 + 1.978}$ x 100 = 6.72 %

V_s = 5123.8 x 0.810 $\sqrt{\frac{779}{30.45} \times \frac{0.308}{29.48}}$ = 1191 fpm

ACFM: 154804 mr

SCFM: 99991

%I = 1,039 x ___ x ___ x ___ x ( )² = — %

%EA: 43.7

Run Number 3

Unit Unit Number 2B Absorber Inlet Duct

Date 1-26-00

moisture / Flows 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
G 3	–	–	0.04	–	–	–	322	–	–	–	–	–	
2	–	–	0.11	–	–	–	321	–	–	–	–	–	
1	–	–	0.09	–	–	–	321	–	–	–	–	–	
1+ 3	–	–	0.04	–	–	–	321	–	–	–	–	–	
2	–	–	0.07	–	–	–	320	–	–	–	–	–	
1	–	–	0.03	–	–	–	318	–	–	–	–	–	

METCO ENVIRONMENTAL

Job Number 99-95 CRLZ
Job Name AEC
Run Number 4
Unit Unit Number 2 B Absorber Inlet Duct
Date 6-26-00
Operator Hollingsworth / Hobbs / BASS
Sample Box No. 19-3 Meter Box No. 27-2

Moisture/Flows Field Data

Read and record at the start of each test point.

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

Ambient Temp. °F 52
Assumed Moisture % 6.5
Probe Length 5'55
C Factor N/A to reference
Initial Leak @ 15" "Hg = 0.000 cfm
Final Leak @ 21.5" "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
A 3	1425	633.200	0.02	1.10	1.10	19.0	314	245	—	48	49	49	Probe WORST
2	1430	635.125	0.03	1.10	1.10	19.0	316	249	—	49	49	50	heated line
1	1435	638.03	0.20	1.10	1.10	19.0	315	250	-	49	49	50	CST
B 3	1440	641.00	0.08	1.10	1.10	19.0	318	257	-	49	49	50	
2	1445	643.95	0.09	1.10	1.10	19.0	320	253	—	49	49	50	
1	1450	646.78	0.32	1.10	1.10	19.0	321	248	—	49	50	50	
C 3	1455	649.78	0.02	1.10	1.10	19.0	321	249	—	49	50	50	
2	1500	654.60	0.15	1.10	1.10	19.0	320	248	—	49	50	50	
1	1505	655.60	0.34	1.10	1.10	19.0	318	248	—	50	50	50	
D 3	1510	658.375	0.02	—	—	—	319	—	—	—	—	—	End moisture
2	—		0.12				319						
1	—		0.23				320						
E 3	—		0.05				320						
2	—		0.14				320						
1	—		0.14				321						
F 3	—		0.03				322						
2	—		0.13				322						
1	—		0.11				322						

Pitot Tube Calibration Factor C_p 0.810
Volume Collected V_m 26.405 ft^3
Water Collected V_w 31.1 ml
Time of Test T_t 45 min.
Stack Pressure P_s +1.5 "H_2O

Pitot Tube No. 17-10-2
Baro. Press. P_b ~~30.34~~ 30.33 "Hg
Probe Tip Dia. D_n N/A in.
% CO_2 12.7 % CO 0.0
% O_2 6.8 % N_2 80.5
Area Stack A_s 18720 in^2

Barometer No. 19-1
Probe Tip No. N/A
Total Volume of Leak Checks After Start: — ft^3
V_m = Dry Gas Meter Calibration Factor 1.008 X 26.195

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

Impinger Box No. 19-3

Impinger 1	Final Weight	892.7		Impinger 1	25.1
	Initial Weight	867.6			
	Increase	25.1		Impinger 2	4.5
Impinger 2	Final Weight	813.6		Impinger 3	-2.9
	Initial Weight	809.1			
	Increase	4.5		Impinger 4	4.4
			V_w =		
Impinger 3	Final Weight	544.4	g SO_2 = -	Impinger 5	✓
	Initial Weight	547.3	V_w =		
	Increase	-2.9		Impinger 6	-
		990.4			
Impinger 4	Final Weight	~~986.0~~		Impinger 7	✓
	Initial Weight	986.0			
	Increase	4.4		Total	31.1 ! = V_w

Water Weight Gain

Impinger 5	Final Weight		P_b = ~~30.36~~ 30.33 ✓	$\%CO_2$ =	12.7 ✓
	Initial Weight		V_m = 26.405 ✓	$\%O_2$ =	6.8 ✓
	Increase		V_w = 31.1 ✓	%CO =	0.0 ✓
			P_m = 1.100 ✓	$\%N_2$ =	80.5 ✓
Impinger 6	Final Weight		Avg ΔP = 0.109 ✓	A_s =	18,720 ✓
	Initial Weight			D_n =	— ✓
	Increase		Avg$\sqrt{\Delta P}$ = ~~0.3047~~ 0.305	T_t =	45 ✓
			C_p = .801 ✓		
Impinger 7	Final Weight		P_s = +1.5 "H_2O	~~30.47~~ 30.44 ✓	"Hg
	Initial Weight		T_m = 50 ✓ °F	510 ✓	°R
	Increase		T_s = 320 ✓ °F	~~780~~ ✓	°R

Moisture Content: %M = ~~5.00~~ 5.02 ✓ M_d = ~~0.9499~~ ~~0.9500~~ 0.9498 ✓ MW_d = 30.304 ✓ MW = 29.69 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 26.405 \left[\frac{30.33 + \frac{1.100}{13.6}}{50 + 460}\right] = \frac{27.790 \text{ ✓}}{\cancel{27.844}\ \cancel{27.817}} \text{ sft}^3 = \frac{\cancel{0.618}\ 0.618 \text{ ✓}}{\cancel{0.620}} \text{ scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 31.1 = 1.468 ✓ sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{1.468}{1.468 + 27.894}$ x 100 = ~~5.04~~ ~~5.00~~ 5.02 ✓ %

V_s = 5123.8 x 0.810 $\sqrt{\frac{780}{\cancel{30.47}\ 30.44 \times 29.69}}$ x 0.305 = ~~1175~~ 1176 ✓ fpm

ACFM: ~~152,801~~ 152,876 ✓

SCFM: ~~100,390~~ ~~100,393~~ 100,369 ✓

%I = $\frac{1{,}039 \times \quad \times}{\times \quad \times \quad \times \quad \times (\quad)^2}$ = — %

%EA: 46.8 ✓

Run Number 4

Unit unit Number 2B Absorber Inlet Duct

Date 1-26-00

Moisture/Flow 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
G3	-	-	0.03	-	-	-	321	-	-	-	-	-	
2	-	-	0.08	-	-	-	320	-	-	-	-	-	
1	-	-	0.06	-	-	-	320	-	-	-	-	-	
H3	-	-	0.03	-	-	-	321	-	-	-	-	-	
2	-	-	0.05	-	-	-	321	-	-	-	-	-	
1	-	-	0.05	-	-	-	321	-	-	-	-	-	End

METCO ENVIRONMENTAL

Job Number 99-95CRL2
Job Name AEC
Run Number 1
Unit Unit Number 2 Stack
Date 1-25-00
Operator Hart / Lee / Bass
Sample Box No. Hg 4 Meter Box No. ~~19-2~~ 12-1 SN

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 54
Assumed Moisture % 10
Probe Length 10'
C Factor 0.90 ⇒ 1.0 to reference
Initial Leak @ 15.0 "Hg = 0.007 cfm
Final Leak @ 10.0 "Hg = 0.005 cfm

0 1/25/00

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H₂O (ΔP_s)	Orifice ΔH "H₂O Desired	Orifice ΔH "H₂O Actual	Pump Vacuum "Hg Guage (P_m)	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (T_m)	Dry Gas Temp. °F Outlet	Remarks
B1	1650	787.789	0.70	0.62	0.62	5.5	245	252	255	46	55	53	88QA108
~~B~~1	1655	789.78	0.70	0.62	0.62	5.5	246	253	257	46	56	54	~~neither~~ 5
2	1700	791.86	0.99	0.89	0.89	5.5	246	253	257	45	56	54	CST
2	1705	794.38	0.99	0.89	0.89	5.5	246	253	257	45	56	54	int. or sit
3	1710	796.64	1.10	0.99	0.99	6.0	246	254	255	45	56	54	out-of-stack filtration
3	1715	799.77	1.10	0.99	0.99	6.0	246	254	255	45	56	54	
4	1720	802.67	1.20	1.09	1.09	6.0	247	255	256	45	56	54	
4	1725	805.57	1.20	1.09	1.09	6.0	247	255	256	44	60	56	
5	1730	808.48	1.20	1.09	1.09	6.0	247	255	256	44	60	56	
5	1735	811.40	1.20	1.09	1.09	6.0	247	255	256	45	60	57	
6	1740	814.33	1.10	0.99	0.99	6.0	248	256	258	45	62	57	
6	1745	817.30	1.10	0.99	0.99	6.0	250	254	260	45	62	57	
End	1750	820.156	—	—	—	—	—	—	—	—	—	—	Leak @ 10" 0.007 820.309 (after port change)
A1	1801	820.309	0.60	0.54	~~0.54~~ 0.54	5.0	250	254	261	45	62	57	0.153
1	1806	822.56	0.60	0.54	0.54	5.0	250	254	260	46	62	58	
2	1811	824.80	1.00	0.90	0.90	6.0	248	254	260	45	62	58	
2	1816	827.48	1.00	0.90	0.90	6.0	248	254	260	44	61	58	
3	1821	830.19	1.10	0.99	0.99	6.0	248	254	261	44	62	58	

Pitot Tube Calibration Factor C_p 0.808
Volume Collected V_m ~~64.617~~ ft^3 66.114
Water Collected V_w 139.7 ml
Time of Test T_t 120 min.
Stack Pressure P_s ~~31573~~ $'H_2O$
-1.20

Pitot Tube No. M-3
Baro. Press. P_b 29.82 "Hg
Probe Tip Dia. D_n 0.195 in.
% CO_2 12.6 % CO 0
% O_2 6.7 % N_2 80.7
Area Stack A_s 31573 in^2

Barometer No. 19-1
Probe Tip No. TFE II-7
Total Volume of Leak Checks After Start: 0.153 ft^3
V_m = Dry Gas Meter Calibration Factor ~~0.993~~ 1.016 X 65.073

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

Impinger Box No. Hg-4

Impinger 1	Final Weight	837.5		Impinger 1	90.6
	Initial Weight	746.9			
	Increase	90.6		Impinger 2	28.5
Impinger 2	Final Weight	694.3	Imp. 8 1007.4 − 994.9 = 12.5	Impinger 3	4.6
	Initial Weight	665.8			
	Increase	28.5		Impinger 4	3.5
Impinger 3	Final Weight	765.6	V_w =	Impinger 5	−0.2
	Initial Weight	761.0	g SO_2 =		
	Increase	4.6	V_w =	Impinger 6	0.1
Impinger 4	Final Weight	754.4		Impinger 7	0.1
	Initial Weight	750.9		8	12.5
	Increase	3.5		Total	139.7 = V_w
Impinger 5	Final Weight	655.5	P_b = 29.82	$\%CO_2$ =	12.6
	Initial Weight	655.7	V_m = ~~64.617~~ 66.114	$\%O_2$ =	6.7
	Increase	−0.2	V_w = 139.7	%CO =	∅
			P_m = 0.948	$\%N_2$ =	80.7
Impinger 6	Final Weight	668.7	Avg ΔP = 1.049	A_s =	31.573
	Initial Weight	668.6		D_n =	0.195
	Increase	0.1	Avg$\sqrt{\Delta P}$ = ~~1.024~~ 1.019	T_t =	120
			C_p = 0.808		
Impinger 7	Final Weight	661.2	P_s = −1.20 "H_2O	~~29.89~~ 29.73 mm	"Hg
	Initial Weight	661.1	T_m = ~~58.4~~ °F	518	°R
	Increase	0.1	T_s = 248 °F	708	°R

Moisture Content: %M = ~~9.10~~ ~~9.09~~ 8.92 M_d = ~~0.9091~~ 0.9108 MW_d = 30.284 MW = ~~29.17~~ 29.19

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times \text{~~64.617~~ 66.114} \left[\frac{\text{~~29.89~~ 29.82} + \frac{\text{~~1.20~~ 0.948}}{13.6}}{\text{~~248~~ 68} + 460}\right] = \text{~~65.963~~ 67.333} \text{ sft}^3 = 0.550 \text{ scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 139.7 = 6.594 sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = ~~139.7~~ 6.594 / (65.963 + 6.594) x 100 = ~~9.09~~ 8.92 %

V_s = 5123.8 x 0.808 $\sqrt{\frac{708}{\text{~~29.89~~ 29.73} \times \text{~~29.17~~ 29.19}}}$ x 1.019 = ~~3802~~ 3812 mm 3810 fpm

%I = $\frac{1{,}039 \times 65.963 \times 708}{120 \times \text{~~0.9091~~ 0.9108} \times \text{~~29.89~~ 29.73} \times \text{~~3802~~ 3812} \times (0.195)^2}$ = ~~102.9~~ 103.2 mm 105.2 %

ACFM: ~~833,521~~ 835,474 mm ~~835,761~~ 565,888

SCFM: ~~571,345~~ 566,679 mm

%EA: 45.6

Run Number 1

Unit #2 Stack

Date 1-25-00

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
A3	1826	832.91	1.10	0.99	0.99	6.0	248	254	260	43	62	59	
4	1831	835.63	1.20	1.09	1.09	6.0	249	255	260	43	62	59	
4	1836	838.50	1.20	1.09	1.09	6.0	249	255	260	43	62	59	
5	1841	841.42	1.20	1.09	1.09	7.0	249	256	260	43	63	59	
5	1846	844.32	1.20	1.09	1.09	7.0	249	256	259	43	63	60	
6	1851	847.23	1.20	1.09	1.09	7.0	249	256	259	43	63	60	
6	1856	850.14	1.20	1.09	1.09	7.0	249	256	259	43	63	60	
End	1901	853.015	—	—	—	—	—	—	—	—	—	—	

0/100
25/1

METCO ENVIRONMENTAL

Job Number 99-95 CRL2
Job Name EPRI
Run Number 8
Unit Unit 2 Stack
Date 1-26-00
Operator Hart/Lee/Bass
Sample Box No. Hg-2 Meter Box No. 12-1

Hg Field Data

Read and record at the start of each test point.

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

Ambient Temp. °F 37
Assumed Moisture % 10%
Probe Length 10'
C Factor 0.90 → 1.0 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" "H₂O (ΔP_s)	Orifice ΔH "H₂O Desired	Orifice ΔH "H₂O Actual	Pump Vacuum "Hg Guage	Stack Temp °F (T_s)	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp. °F Inlet (P_m)	Dry Gas Temp. °F Outlet (T_m)	Remarks
A1	0820	865.471	0.73	~~0.64~~ 0.44	0.64	5.5	249	267	257	45	52	52	Integ. Orsat
1	0825	867.82	0.73	0.64	0.64	5.5	249	267	257	45	52	52	CST
2	0830	870.05	0.90	0.79	0.79	5.5	249	268	257	45	52	52	
2	0835	872.57	0.90	0.79	0.79	5.5	248	268	258	47	54	52	
3	0840	874.92	1.10	0.96	0.96	6.5	250	266	257	46	50	50	
3	0845	877.55	1.10	0.96	0.96	6.5	252	267	258	44	50	48	
4	0850	880.24	1.10	0.96	0.96	6.5	252	266	259	43	51	49	
4	0855	882.90	1.10	0.96	0.96	6.5	252	266	260	43	51	49	
5	0900	885.58	1.20	1.05	1.05	6.5	252	266	260	43	51	49	
5	0905	888.32	1.20	1.05	1.05	6.5	253	266	260	43	51	49	
6	0910	891.07	1.10	0.96	0.96	6.5	251	267	259	42	52	49	
6	0915	893.82	1.10	0.96	0.96	6.5	252	267	259	40	52	49	
End	0920	896.830	—	—	—	—	—	—	—	—	—	—	Leak @ 10.0" 896.830 (after port change)
B1	0928	896.948	0.73	0.64	0.64	5.5	250	267	259	39	50	49	Vol. = 0.118
1	0933	899.22	0.73	0.64	0.64	5.5	250	268	260	40	50	49	
2	0938	901.38	0.94	0.83	0.83	6.0	250	269	260	40	50	49	
2	0943	903.86	0.94	0.83	0.83	6.0	251	268	260	40	50	49	
3	0948	906.35	1.10	0.96	0.96	6.5	251	268	260	40	50	49	

Pitot Tube Calibration Factor C_p 0.808
Volume Collected V_m 64.348 ft^3
Water Collected V_w 131.6 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 30.10 "Hg
Probe Tip Dia. D_n 0.195 in.
% CO_2 13.0 % CO 0.0
% O_2 6.6 % N_2 80.4
Area Stack A_s 31573 in^2

Barometer No. 19-1 Probe Tip No. TFE II-7
Total Volume of Leak Checks After Start: 0.118 ft^3
V_m = Dry Gas Meter Calibration Factor 1.016 X ~~63.453~~ 63.335

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

Impinger Box No. Hg-2

Impinger 1	Final Weight	770.5	Water Weight Gain	Impinger 1	95.8
	Initial Weight	674.7	Imp 8 Initial 881.6	Impinger 2	17.5
	Increase	95.8	Final ~~893.4~~ 893.4	Impinger 3	2.1
			11.8	Impinger 4	2.9
Impinger 2	Final Weight	769.3		Impinger 5	0.2
	Initial Weight	751.8		Impinger 6	0.4
	Increase	17.5		Impinger 7	0.9
Impinger 3	Final Weight	763.1		Imp. 8	11.8 ~~11.8~~
	Initial Weight	761.0		Total	131.6 = V_w
	Increase	2.1			
Impinger 4	Final Weight	768.5			
	Initial Weight	765.6			
	Increase	2.9			
Impinger 5	Final Weight	654.2			
	Initial Weight	654.0			
	Increase	0.2			
Impinger 6	Final Weight	751.2			
	Initial Weight	750.8			
	Increase	0.4			
Impinger 7	Final Weight	758.9			
	Initial Weight	758.0			
	Increase	0.9			

V_w =
g SO_2 = -
V_w =

P_b =	30.10	$\%CO_2$ =	13.0
V_m =	64.348	$\%O_2$ =	6.6
V_w =	131.6	%CO =	0.0
P_m =	~~0.851~~ 0.893	$\%N_2$ =	80.4
Avg ΔP =	~~1.035~~ 1.021	A_s =	31573
		D_n =	0.195
Avg$\sqrt{\Delta P}$ =	~~1.014~~ 1.007	T_t =	120
C_p =	0.808		
P_s =	-1.30 "H_2O	30.00	"Hg
T_m =	50 °F	510	°R
T_s =	251 °F	711	°R

Moisture Content: %M = 8.46 M_d = 0.9154 MW_d = 30.344 MW = 29.30

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 64.348 \left[\frac{30.10 + \frac{0.893}{13.6}}{50 + 460}\right] = \frac{67.177}{\cancel{67.201}}\ sft^3 = \frac{\cancel{0.560}}{0.560}\ scfm$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 131.6 = 6.212 sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{6.212}{6.212 + \cancel{67.201}\ 67.177}$ x 100 = 8.46 %

V_s = 5123.8 x ~~0.810~~ 0.808 $\sqrt{\frac{711}{30.00 \times 29.30}}$ x ~~0.1014~~ 1.007 = ~~3785~~ ~~3759~~ 3750 fpm

%I = $\frac{1,039 \times 67.201 \times 711}{120 \times 0.9154 \times 30.00 \times \cancel{3785}\ \cancel{3759}\ 3750 \times (0.195)^2}$ = ~~104.7~~ 105.6 %

ACFM: ~~829,868~~ ~~824,139~~ 822104

SCFM: ~~567,740~~ ~~563,840~~ 562490

%EA: 44.9

Run Number 2

Unit Unit 2 stack

Date 1-26-00

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	0953	909.05	1.10	0.96	0.96	6.5	253	268	259	42	51	49	
4	0958	911.72	1.10	0.96	0.96	6.5	253	268	259	42	51	49	
4	1003	914.48	1.10	0.96	0.96	6.5	253	269	259	42	52	49	
5	1008	917.24	1.10	0.96	0.96	6.5	252	268	260	42	52	49	
5	1013	920.00	1.10	0.96	0.96	6.5	252	268	260	42	52	49	
6	1018	922.80	1.15	1.00	1.00	6.5	252	268	261	42	52	49	
6	1023	925.69	1.15	1.00	1.00	6.5	252	268	261	42	52	49	
End	1028	928.924	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Job Number 99-95 CRL-2
Job Name ~~[illegible]~~ AEC
Run Number 3
Unit Unit 2 Stack
Date 1-26-00
Operator Hart / Lee / Boop
Sample Box No. Hg-4 Meter Box No. 12-1

Hg Field Data

Read and record at the start of each test point.

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

Ambient Temp. °F 36
Assumed Moisture % 10%
Probe Length 10'
C Factor 0.95 → 1.00 to reference
Initial Leak @ 15.0" "Hg = 0.007 cfm
Final Leak @ 10.0" "Hg = 0.007 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
B1	1135	929.174	0.52	0.48	0.48	5.0	230	255	258	47	49	50	filter
1	1140	931.17	0.52	0.48	0.48	5.0	235	257	258	47	49	50	BBQ B48
2	1145	933.19	1.05	0.92	0.92	6.0	240	258	260	46	50	50	
2	1150	935.74	1.05	0.92	0.92	6.0	248	259	262	46	50	50	
3	1155	938.32	1.10	0.96	0.96	6.0	250	259	260	44	52	50	
3	1200	940.96	1.10	0.96	0.96	6.0	252	260	260	43	52	50	
4	1205	943.59	1.10	0.96	0.96	6.0	253	260	259	43	53	50	
4	1210	946.83	1.10	0.96	0.96	6.0	253	260	259	43	53	50	
5	1215	948.88	1.10	0.92	0.92	6.0	254	261	260	44	54	51	
5	1220	951.43	1.10	0.92	0.92	6.0	254	261	260	44	54	51	int. or set
6	1225	953.97	1.15	0.96	0.96	6.0	254	261	260	44	54	51	CST
6	1230	956.59	1.15	0.96	0.96	6.0	252	261	260	44	54	51	
End	1235	959.676	—	—	—	—	—	—	—	—	—	—	Leak ✓ @ 10" 0.009 959.769 (after
A1	1241	959.769	0.80	0.67	0.67	6.0	250	260	261	44	54	51	Vol. = 0.093 port change)
1	1246	962.31	0.80	0.67	0.67	6.0	251	259	260	42	54	52	
2	1251	964.89	0.95	0.80	0.80	6.0	251	259	260	42	54	52	
2	1256	967.46	0.95	0.80	0.80	6.0	251	259	260	42	54	52	
3	1301	970.03	1.10	0.92	0.92	6.0	251	259	259	42	54	52	

Pitot Tube Calibration Factor C_p 0.808
Volume Collected V_m 65.214 ft^3
Water Collected V_w 114.9 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 30.08 "Hg
Probe Tip Dia. D_n 0.195 in.
% CO_2 13.2 % CO 0.0
% O_2 6.4 % N_2 80.4
Area Stack A_s 31573 in^2

Barometer No. 19-1
Probe Tip No. TFE II-7
Total Volume of Leak Checks After Start: 0.093 ft^3
V_m = Dry Gas Meter Calibration Factor 1.016 X 64.187

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

Impinger Box No. Hg-4

Impinger 1	Final Weight	845.8		Impinger 1	96.1
	Initial Weight	749.7			
	Increase	96.1		Impinger 2	19.1
Impinger 2	Final Weight	691.2		Impinger 3	3.6
	Initial Weight	672.1			
	Increase	19.1		Impinger 4	-0.6
Impinger 3	Final Weight	767.5		Impinger 5	-4.0
	Initial Weight	763.9			
	Increase	3.6		Impinger 6	-3.5
Impinger 4	Final Weight	752.5		Impinger 7	-3.9
	Initial Weight	753.1		Imp. 8	8.1
	Increase	-0.6		Total	114.9 = V_w
Impinger 5	Final Weight	665.0			
	Initial Weight	669.0			
	Increase	-4.0			
Impinger 6	Final Weight	649.8			
	Initial Weight	653.3			
	Increase	-3.5			
Impinger 7	Final Weight	657.6			
	Initial Weight	661.5			
	Increase	-3.9			

Water Weight Gain

Imp. 8: 1014.9 − 1006.8 = 8.1

V_w =

g SO_2 = -

V_w =

P_b =	30.08		%CO_2 =	13.2	
V_m =	65.214		%O_2 =	6.4	
V_w =	114.9		%CO =	0.0	
P_m =	0.868		%N_2 =	80.4	
Avg ΔP =	~~1.0325~~ 1.023		A_s =	31573	
			D_n =	0.195	
Avg$\sqrt{\Delta P}$ =	1.006		T_t =	120	
C_p =	0.808				
P_s =	-1.30	"H_2O		29.98	"Hg
T_m =	52	°F		512	°R
T_s =	250	°F		710	°R

Moisture Content: %M = 7.41 M_d = 0.9259 MW_d = 30.368 MW = 29.45

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 65.214 \left[\frac{30.08 + \frac{0.868}{13.6}}{52 + 460}\right] = \frac{67.766\ sft^3}{0.565\ scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 114.9 = 5.423 sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{5.423}{5.423 + 67.766}$ x 100 = 7.41 %

V_s = 5123.8 x 0.808 $\sqrt{\frac{710}{29.98 \times 29.45}}$ x 1.006 = 3735 fpm

ACFM: 818,890

SCFM: 567,086

%I = $\frac{1{,}039 \times 67.766 \times 710}{120 \times 0.9259 \times 29.98 \times 3735 \times (0.195)^2}$ = 105.7 %

%EA: 42.9

Run Number 3

Unit Unit 2 Stack

Date 1-26-00

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
A3	1306	972.96	1.10	0.92	0.92	6.0	251	259	259	42	54	52	
4	1311	975.89	1.10	0.92	0.92	6.0	251	260	258	42	54	52	
4	1316	978.82	1.10	0.92	0.92	6.0	253	261	260	42	56	53	
5	1321	981.73	1.15	0.95	0.95	6.0	253	262	260	42	57	53	
5	1326	984.66	1.15	0.95	0.95	6.0	253	262	260	42	57	53	
6	1331	987.59	1.15	0.95	0.95	6.0	253	262	261	42	57	53	
6	1336	990.49	1.15	0.95	0.95	6.0	252	262	261	42	57	53	
End	1341	993.454	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Job Number 99-95 CRL-2
Job Name EPRI
Run Number 4
Unit Stack 2
Date 1-26-00
Operator Hart/Lee/Boss
Sample Box No. Hg-2 Meter Box No. 12-1

Hg Field Data

Read and record at the start of each test point.

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

Ambient Temp. °F 44
Assumed Moisture % 10%
Probe Length 10'
C Factor 0.95 → 1.00 to reference
Initial Leak @ 15.0" "Hg = 0.007 cfm
Final Leak @ 10.0" "Hg = 0.007 cfm

Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Guage	Stack Temp °F (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	1425	993.754	0.77	0.64	0.64	5.0	241	260	265	46	53	54	
1	1430	996.07	0.77	0.64	0.64	5.0	251	260	268	46	53	54	int. orsat
2	1435	998.36	0.92	0.77	0.77	5.0	250	261	269	46	53	55	CST
2	1440	1000.83	0.92	0.77	0.77	5.0	253	260	270	45	55	54	
3	1445	1003.38	1.05	0.87	0.87	5.0	254	260	270	45	55	54	
3	1450	1006.00	1.05	0.87	0.87	5.0	254	259	271	43	56	54	
4	1455	1008.60	1.10	0.92	0.92	5.0	254	259	271	43	56	54	
4	1500	1011.21	1.10	0.92	0.92	5.0	255	260	273	42	57	54	
5	1505	1013.83	1.10	0.92	0.92	5.0	255	260	273	42	57	54	
5	1510	1016.43	1.10	0.92	0.92	5.0	255	260	273	42	57	54	
6	1515	1019.03	1.05	0.87	0.87	5.0	255	259	273	42	57	54	
6	1520	1021.63	1.05	0.87	0.87	5.0	254	259	272	43	57	54	
End	1525	1024.401	—	—	—	—	—	—	—	—	—	—	Leak ✓ @ 10" 0.007 1024.465
B1	1531	1024.465	0.65	0.50	0.50	4.5	253	259	270	45	57	54	(after point change)
1	1536	1026.37	0.65	0.50	0.50	4.5	253	259	270	45	57	54	0.064
2	1541	1028.31	0.95	0.73	0.73	5.5	253	260	269	44	57	54	
2	1546	1030.64	0.95	0.73	0.73	5.5	255	260	269	44	57	54	
3	1551	1033.09	1.10	0.84	0.84	5.5	255	260	269	45	58	55	

Pitot Tube Calibration Factor C_p 0.808
Volume Collected V_m 64.264 ✓ ft^3
Water Collected V_w 129.1 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 30.07 "Hg
Probe Tip Dia. D_n 0.195 in.
% CO_2 13.2 % CO 0.0
% O_2 6.4 % N_2 80.4
Area Stack A_s 31573 in^2

Barometer No. 19-1
Probe Tip No. TFE II-7 ✓
Total Volume of Leak Checks After Start: 0.064 ft^3
V_m = Dry Gas Meter Calibration Factor 1.016 ✓ X 63.252 ✓

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

Impinger Box No. Hg-2

Impinger 1	Final Weight	771.2		Impinger 1	97.4
	Initial Weight	673.8	903.0		
	Increase	97.4	Imp 8 890.8	Impinger 2	17.8
Impinger 2	Final Weight	767.7	12.2	Impinger 3	2.4
	Initial Weight	749.9			
	Increase	17.8		Impinger 4	2.2
Impinger 3	Final Weight	763.2	V_w =	Impinger 5	-1.1
	Initial Weight	760.8	g SO_2 =		
	Increase	2.4	V_w =	Impinger 6	-0.7
Impinger 4	Final Weight	766.7		Impinger 7	-1.1
	Initial Weight	764.5		Imp 8	12.2
	Increase	2.2		Total	~~129.73~~ 129.1 = V_w

Water Weight Gain

Impinger 5	Final Weight	654.3	P_b = 30.07	$\%CO_2$ =	13.2
	Initial Weight	655.4	V_m = 64.264	MB $\%O_2$ =	6.4
	Increase	-1.1	V_w = ~~129.73~~ 129.1	%CO =	0.0
			P_m = 0.798	$\%N_2$ =	80.4
Impinger 6	Final Weight	743.7	Avg ΔP = 0.999	A_s =	31573
	Initial Weight	744.4		D_n =	0.195
	Increase	-0.7	Avg$\sqrt{\Delta P}$ = 0.997	T_t =	120
			C_p = 0.808		
Impinger 7	Final Weight	760.5	P_s = -1.30 "H_2O	29.97	"Hg
	Initial Weight	761.6	T_m = 56 °F	516	°R
	Increase	-1.1	T_s = 254 °F	714	°R

Moisture Content: %M = 8.43 M_d = 0.9157 MW_d = 30.368 MW = 29.33

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times \frac{64.264}{\cancel{30.07}} \left[\frac{30.07 + \frac{0.798}{13.6}}{56 + 460}\right] = \frac{66.228}{\cancel{66.228}}\ \text{sft}^3 \text{ scfm}$$

0.552

Vw_{gas} = 0.0472 x Vw = 0.0472 x ~~129.73~~ 129.1 = 6.094 sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{6.094}{6.094 + 66.228}$ x 100 = 8.43 %

V_s = 5123.8 x 0.808 $\sqrt{\frac{714}{29.97 \times 29.33}}$ x 0.997 = 3720 fpm

ACFM: 815,646

SCFM: 555,272

%I = $\frac{1{,}039 \times 66.228 \times 714}{120 \times 0.9157 \times 29.97 \times 3720 \times (0.195)^2}$ = 105.5 %

%EA: 42.9

Run Number 4

Unit Unit 2 Stack

Date 1-26-00

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	1556	1035.82	1.10	0.84	0.84	5.5	255	260	269	45	58	55	
4	1601	1038.53	1.10	0.84	0.84	5.5	255	260	269	45	58	55	
4	1606	1041.25	1.10	0.84	0.84	5.5	257	260	268	46	60	56	
5	1611	1044.06	1.10	0.84	0.84	5.5	257	260	269	46	60	56	
5	1616	1046.97	1.10	0.84	0.84	5.5	257	260	269	46	60	56	
6	1621	1050.05	1.10	0.84	0.84	5.5	257	260	269	46	60	56	
6	1626	1053.65	1.10	0.84	0.84	5.5	257	261	268	45	61	56	
End	1631	1057.070	—	—	—	—	—	—	—	—	—	—	

METCO ENVIRONMENTAL

Job Number 99-95CRL 2 ✓
Job Name EPRR ✓
Run Number 1 ✓
Unit Unit 2 Stack ✓
Date 1-25-00 ✓
Operator Hardt / Lee / Baas ✓
Sample Box No. - Meter Box No. 12-1 ✓

flow data Field Data

Read and record at the start of each test point.

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

Ambient Temp. °F 54
Assumed Moisture % ~~10~~
Probe Length ~~10~~ 20'
C Factor ~~0.98 > 1.0~~ to reference
Initial Leak @ ~~15.0~~ "Hg = ~~0.007~~ cfm
Final Leak @ ~~10.0~~ "Hg = ~~0.005~~ 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
B1			0.49				252						traverse 1645-1705
2			0.83				258						
3			0.98				258						
4			1.05				258						
5			1.10				259						
6			1.15				259						
7			1.05				259						
8			1.00				259						
9			1.05				259						
10			0.99				259						
11			0.95				259						
12			0.83				259						
A1			0.65				257						
A2			0.77				250						
3			0.98				257						
4			1.05				258						
5			1.10				258						
6			1.05				258						

Pitot Tube Calibration Factor C_p 0.808 ✓
Volume Collected V_m — ft^3
Water Collected V_w — ml
Time of Test T_t 20 ✓ min.
Stack Pressure P_s -1.20 ✓ "H_2O

Pitot Tube No. M-1 ✓
Baro. Press. P_b 29.82 ✓ "Hg
Probe Tip Dia. D_n — in.
% CO_2 12.6 ✓ % CO 0.0 ✓
% O_2 6.7 ✓ % N_2 80.7 ✓
Area Stack A_s 31,573 ✓ in^2

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

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

Impinger Box No. ~

Water Weight Gain

Impinger 1	Final Weight			Impinger 1
	Initial Weight			
	Increase			Impinger 2
Impinger 2	Final Weight			Impinger 3
	Initial Weight			
	Increase			Impinger 4
			V_w =	
Impinger 3	Final Weight		g SO_2 =	Impinger 5
	Initial Weight		V_w =	
	Increase			Impinger 6
Impinger 4	Final Weight			Impinger 7
	Initial Weight			
	Increase			Total ~ = V_w

Impinger 5	Final Weight	P_b = 29.82		$\%CO_2$ = 12.4	
	Initial Weight	V_m = ~		$\%O_2$ = 6.7	
	Increase	V_w = ~		%CO = 0.0	
		P_m = ~		$\%N_2$ = 80.7	
Impinger 6	Final Weight	Avg ΔP = 0.958		A_s = 31.573	
	Initial Weight		0.976	D_n = ~	
	Increase	Avg$\sqrt{\Delta P}$ = ~~0.934~~		T_t = 20	
		C_p = 0.808			
Impinger 7	Final Weight	P_s = -1.20	$'H_2O$	29.73	$'Hg$
	Initial Weight	T_m = ~	°F	~	°R
	Increase	T_s = 258	°F	718	°R

Moisture Content: %M = ~~Assume 9.09~~ 8.92 M_d = ~~0.9091~~ 0.9108 MW_d = 30.284 MW = ~~29.17~~ 29.19

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65\ x \left[\frac{\ + \frac{\ }{13.6}}{\ + 460}\right] = \underline{\ \sim\ }\ sft^3 = \underline{\ \sim\ }\ scfm$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x _____ = ~ sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = _____ x 100 = ~ ~~Assume~~ ~~9.09~~ MD %

V_s = 5123.8 x 0.808 $\sqrt{\frac{718}{29.73 \times \cancel{29.17}\ 29.19}}$ x ~~0.934~~ 0.974 = ~~3518~~ 3675 fpm

ACFM: ~~771437~~ 805,850

SCFM: ~~514279~~ 538,235

%I = 1,039 x _____ x _____ x _____ x( )^2 = ~ %

%EA: 45.6

Run Number 1

Unit Unit 2 Stack

Date 1-25-00

~~Field~~ Flow Data 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
A7			1.05				258						
8			1.00				259						
9			0.99				259						
10			1.00				259						
11			0.95				259						
12			0.94				259						

METCO ENVIRONMENTAL

Job Number 99-95 CR12
Job Name Epri
Run Number 2
Unit Unit 2 Stack
Date 4-26-00
Operator Hood/Lee/Bass
Sample Box No. — Meter Box No. 12-1

Flow Data Field Data

Read and record at the start of each test point.

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

Ambient Temp. °F 37
Assumed Moisture % 10%
Probe Length ~~10'~~ 20'
C Factor — to reference
Initial Leak @ — "Hg = — cfm
Final Leak @ — "Hg = — 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
B12			0.45				240						traverse 0815-0835
11			0.89				250						
10			0.92				253						
9			0.98				255						
8			1.10				258						
7			1.10				258						
6			1.10				257						
5			1.10				255						
4			1.00				251						
3			1.05				251						
2			0.96				251						
1			0.91				251						
A12			0.55				243						
11			0.80				246						
10			0.82				247						
9			0.98				252						
8			0.98				255						
7			1.10				253						

Pitot Tube Calibration Factor C_p 0.808 ✓
Volume Collected V_m — ft^3
Water Collected V_w — ml
Time of Test T_t 20 ✓ min.
Stack Pressure P_s -1.30 ✓ "H_2O

Pitot Tube No. M-1 ✓
Baro. Press. P_b 30.10 ✓ "Hg
Probe Tip Dia. D_n — in.
% CO_2 13.0 ✓ % CO 0.0 ✓
% O_2 6.4 ✓ % N_2 80.4 ✓
Area Stack A_s 31,573 ✓ in^2

Barometer No. 19-1 ✓
Probe Tip No. —
Total Volume of Leak Checks After Start: — ft^3
V_m = Dry Gas Meter Calibration Factor ~~1.016~~ X —

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

Impinger Box No. –

Water Weight Gain

Impinger 1	Final Weight			Impinger 1
	Initial Weight			
	Increase			Impinger 2
Impinger 2	Final Weight			Impinger 3
	Initial Weight			
	Increase			Impinger 4
			V_w =	
Impinger 3	Final Weight		g SO_2 =	Impinger 5
	Initial Weight		V_w =	
	Increase			Impinger 6
Impinger 4	Final Weight			Impinger 7
	Initial Weight			
	Increase			Total – = V_w

Impinger 5	Final Weight		P_b =	30.10 ✓	$\%CO_2$ =	13.0 ✓	
	Initial Weight		V_m =	–	$\%O_2$ =	6.6 ✓	
	Increase		V_w =	–	%CO =	0.0 ✓	
			P_m =	–	$\%N_2$ =	80.4 ✓	
Impinger 6	Final Weight		Avg ΔP =	0.954 ✓	A_s =	31,573 ✓	
	Initial Weight				D_n =	– ✓	
	Increase		Avg$\sqrt{\Delta P}$ =	0.972 ✓	T_t =	20 ✓	
			C_p =	0.808 ✓			
Impinger 7	Final Weight		P_s =	-1.30 ✓ "H_2O		30.00 ✓ "Hg	
	Initial Weight		T_m =	– °F		– °R	
	Increase		T_s =	251 ✓ °F		711 ✓ °R	

Moisture Content: %M = Assume 8.46 ✓ M_d = 0.9154 ✓ MW_d = 30.344 ✓ MW = 29.30 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65\ x \left[\frac{\quad + \frac{\quad}{13.6}}{\quad + 460}\right] = \underline{\ -\ }\ sft^3 = \underline{\ -\ }\ scfm$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x _____ = – sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = _____ x 100 = – %

V_s = 5123.8 x $\sqrt{\frac{0.808 \times 711}{30.00 \times 29.30}}$ x 0.972 = 3619 ✓ fpm

ACFM: 793530 ✓ ~~160715~~ MS

SCFM: 542840 ✓

%I = 1,039 x _____ x _____ x _____ x( )² = – %

%EA: 44.9 ✓

Run Number 2

Unit 2 Stack

Date 1-26-00

Flow Data 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
A6			1.10				254						
5			1.05				252						
4			1.05				252						
3			1.00				250						
2			0.97				248						
1			0.94				251						

METCO ENVIRONMENTAL

Job Number 99-95 CRL-2 ✓
Job Name EPRI ✓
Run Number 3 ✓
Unit Unit 2 Stack ✓
Date 1-26-00 ✓
Operator Hart Ikel/Bass ✓
Sample Box No. — Meter Box No. 12-1 ✓

Flow Data Field Data

Read and record at the start of each test point.

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

Ambient Temp. °F 36
Assumed Moisture % 10%
Probe Length 20'
C Factor — to reference
Initial Leak @ — "Hg = — cfm
Final Leak @ — "Hg = — 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			0.47				250						traverse 1130 - 1150
2			0.75				250						
3			1.05				249						
4			1.10				250						
5			1.10				251						
6			1.10				252						
7			1.05				251						
8			1.00				251						
9			0.98				251						
10			0.99				250						
11			0.95				249						
12			0.85				249						
B1			0.50				246						
2			0.80				248						
3			0.99				249						
4			1.00				250						
5			1.10				249						
6			1.10				249						

Pitot Tube Calibration Factor C_p 0.808 ✓
Volume Collected V_m — ft^3
Water Collected V_w — ml
Time of Test T_t 20 ✓ min.
Stack Pressure P_s - 1.30 ✓ "H_2O

Pitot Tube No. M-1 ✓
Baro. Press. P_b 30.08 ✓ "Hg
Probe Tip Dia. D_n — in.
% CO_2 13.2 ✓ % CO 0.0 ✓
% O_2 6.4 ✓ % N_2 80.4 ✓
Area Stack A_s 31573 ✓ in^2

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

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

Impinger Box No. –

Impinger 1	Final Weight			Water Weight Gain	
	Initial Weight			Impinger 1	
	Increase			Impinger 2	
Impinger 2	Final Weight			Impinger 3	
	Initial Weight			Impinger 4	
	Increase		V_w =		
Impinger 3	Final Weight		g SO_2 =	Impinger 5	
	Initial Weight		V_w =		
	Increase			Impinger 6	
Impinger 4	Final Weight			Impinger 7	
	Initial Weight				
	Increase			Total –	= V_w
Impinger 5	Final Weight		P_b = 30.08	$\%CO_2$ = 13.2	
	Initial Weight		V_m = –	$\%O_2$ = 6.4	
	Increase		V_w = –	%CO = 0.0	
			P_m = –	$\%N_2$ = 80.4	
Impinger 6	Final Weight		Avg ΔP = 0.945	A_s = 31573	
	Initial Weight			D_n = –	
	Increase		Avg$\sqrt{\Delta P}$ = 0.967	T_t = 20	
			C_p = 0.808		
Impinger 7	Final Weight		P_s = –1.30 "H_2O	29.98 "Hg	
	Initial Weight		T_m = – °F	– °R	
	Increase		T_s = 250 °F	710 °R	

Moisture Content: %M = Assume 7.41 M_d = 0.9259 MW_d = 30.368 MW = 29.45

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65\ x \left[\frac{\ + \frac{\ }{13.6}}{\ + 460}\right] = \underline{\ –\ }\ sft^3 = \underline{\ –\ }\ scfm$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x _____ = – sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = _____ x 100 = – %

V_s = 5123.8 x 0.808 $\sqrt{\frac{710}{29.98 \times 29.45}}$ x 0.967 = 3590 fpm

ACFM: 787144

SCFM: 545071

%I = 1,039 x _____ x _____ x _____ x ( )^2 = – %

%EA: 42.9

Run Number 3

Unit Unit 2 Stack

Date 1-26-00

Flow Data 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
B 7			1.10				248						
8			1.05				250						
9			0.98				250						
10			0.92				251						
11			0.90				250						
12			0.85				249						

METCO ENVIRONMENTAL

Job Number 99-95 CRL-2
Job Name EPRI
Run Number 4
Unit Unit 2 Stack
Date 1-26-00
Operator Hart / Leo / Bass
Sample Box No. ____ Meter Box No. 12-1

Flow Data Field Data

Read and record at the start of each test point.

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

Ambient Temp. °F 44
Assumed Moisture % 10
Probe Length 20'
C Factor — to reference
Initial Leak @ — "Hg = — cfm
Final Leak @ — "Hg = — 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
B1			0.52				250						traverse 1415-1435
2			0.75				254						
3			0.96				253						
4			1.05				253						
5			1.10				254						
6			1.10				254						
7			1.05				252						
8			0.98				253						
9			1.00				253						
10			0.96				252						
11			0.91				253						
12			0.84				252						
A1			0.58				253						
2			0.72				254						
3			0.98				254						
4			1.05				255						
5			1.10				254						
6			1.10				254						

Pitot Tube Calibration Factor C_p 0.808
Volume Collected V_m — ft^3
Water Collected V_w — ml
Time of Test T_t 20 min.
Stack Pressure P_s -1.30 "H_2O

Pitot Tube No. M1
Baro. Press. P_b 30.07 "Hg
Probe Tip Dia. D_n — in.
% CO_2 13.2 % CO 0.0
% O_2 6.4 % N_2 80.4
Area Stack A_s 31573 in^2

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

Probe Tip No. —

Impinger Box No. –

Water Weight Gain

Impinger 1	Final Weight			Impinger 1
	Initial Weight			
	Increase			Impinger 2
Impinger 2	Final Weight			Impinger 3
	Initial Weight			
	Increase			Impinger 4
			V_w =	
Impinger 3	Final Weight		g SO_2 = -	Impinger 5
	Initial Weight		V_w =	
	Increase			Impinger 6
Impinger 4	Final Weight			Impinger 7
	Initial Weight			
	Increase			Total – = V_w

Impinger 5	Final Weight		P_b = 30.07	$\%CO_2$ = 13.2	
	Initial Weight		V_m = –	$\%O_2$ = 6.4	
	Increase		V_w = –	%CO = 0.0	
			P_m = –	$\%N_2$ = 80.4	
Impinger 6	Final Weight		Avg ΔP = 0.933	A_s = 31573	
	Initial Weight			D_n = –	
	Increase		Avg$\sqrt{\Delta P}$ = 0.962	T_t = 20	
			C_p = 0.808		
Impinger 7	Final Weight		P_s = -1.30 "H_2O	29.97 "Hg	
	Initial Weight		T_m = – °F	– °R	
	Increase		T_s = 253 °F	713 °R	

Moisture Content: %M = Assume 8.43 M_d = 0.9157 MW_d = 30.368 MW = 29.33

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65\ x \left[\frac{+\frac{\quad}{13.6}}{+\ 460}\right] = \underline{-}\ sft^3 = \underline{-}\ scfm$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x _____ = – sft^3

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = _____ x 100 = – %

V_s = 5123.8 x $\sqrt{\frac{713}{29.97 \times 29.33}}$ x 0.962 = 3587 fpm

ACFM: 786461

SCFM: 536170

%I = 1,039 x _____ x _____ x _____ x _____ x( )^2 = – %

%EA: 42.9

Run Number 4

Unit Unit 2 Stack

Date 1-26-00

Flow data 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
A7			1.00				250						
8			1.00				251						
9			0.98				252						
10			0.92				252						
11			0.90				251						
12			0.85				250						

PRELIMINARY VELOCITY TRAVERSE DATA
AND
SAMPLING LOCATION DATA

Job Number 99-95 CRL 2

Job Name Alabama Electric

Sampling Location Unit #2A Absorber Inlet Duct

Date 1-25-00 Time 1200

Stack Height ~~44~~ ft. 8 in.

Sampling Port Height Above Ground 44 ft. 8 in.

	A	B	C	D	E	F	G	H	Average
	Port A		Port B		Port C		Port D		
Port & Inside Diameter (in.)	118	118	122	122	121	120	122	122	120 5/8
Port & Wall Thickness (in.)	13 1/2	14 1/2	13 1/4"	13 1/2"	14"	13 1/4"	12 1/2"	13 1/4"	13 7/16
Inside Stack Diameter (in.)	104 1/2	103 1/2	108 3/4	108 1/2	107	106 3/4	109 1/2	108 3/4	107 3/16

Sampling Ports are 8 ft. 0 in. (96") ~~1.40~~ 0.72 stack diameters) ~~downstream~~ upstream from disturbance (~~inlet~~, constriction, bend, expansion)

Sampling Ports are — ft. — in. (— stack diameters) ~~upstream~~ downstream from disturbance (outlet, ~~constriction, bend, expansion~~ expansion) ports in disturbance

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		17.8646	17 7/8	0.005130617	0.0812921+5	0.021303L-3	0.021304+2
2		35.7292	53 5/8	0.101309+5	0.101296+0	0.101308+2	0.081303+2
3		35.7292	89 3/8	0.101307+5	0.151291+2	0.111304+2	0.11304+2
4				/ /	/ /	/ /	/ /
5				/ /	/ /	/ /	/ /
6				/ /	/ /	/ /	/ /
7				/ /	/ /	/ /	/ /
8				/ /	/ /	/ /	/ /
9				/ /	/ /	/ /	/ /
10				PORT E	PORT F	PORT G	PORT H
11				0.005129+2	0.005129+2	0.005129+2	0.001295+2
12				0.003130+2	0.005129+2	0.005129+2	0.001299+2
13				0.11 B30 0	0.11 B30 1+3	0.11 B30 0	0.0913060
14				/ /	/ /	/ /	/ /
15				/ /	/ /	/ /	/ /
16				/ /	/ /	/ /	/ /
17				/ /	/ /	/ /	/ /
18				/ /	/ /	/ /	/ /
19				/ /	/ /	/ /	/ /
20				/ /	/ /	/ /	/ /
21				/ /	/ /	/ /	/ /
22				/ /	/ /	/ /	/ /
23				/ /	/ /	/ /	/ /
24				/ /	/ /	/ /	/ /

Pitot Tube No. M8

C_p = 0.810

P_b = 30.00 "Hg

P_s = +1.7 "H_2O 30.19 "Hg

A_s = ~~30634~~ 19294 in.^{2}

Average ΔP 0.057

Average $\Delta P^{1/2}$ 0.206

Average T_s 300 °F

Average α ~~2.8~~ 2.3 degrees

PRELIMINARY VELOCITY TRAVERSE DATA
AND
SAMPLING LOCATION DATA

B

Job Number 99-95CRL-2

Job Name AEC

Sampling Location Unit # 2B Absorber Inlet Duct

Date 1/25/00 Time 1000

Stack Height ~~44' 8"~~ ft.

Sampling Port Height Above Ground 44' 8" ft.

	Port A B	Port C D	Port E F	Port G H	Average
Port & Inside Diameter (in.)	120 / 120	120 / 120	120 / 120	120 / 120	120
Port & Wall Thickness (in.)	16" ~~16.5"~~ / ~~17.5~~ 16"	16" / 16"	16" / 16"	16" / 16"	16"
Inside Stack Diameter (in.)	104 / 104	104 / 104	104 / 104	104 / 104	104

Sampling Ports are 87 ft. 0 in. (~~1.40~~ 0.64 stack diameters) downstream from disturbance (inlet, constriction, bend, expansion)

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

Points are in a disturbance.

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			17 3/4 ✓	0.021351 +12	/ 1+10	/ 1+15	/ 1+15
2			52 1/16 ✓	0.021391 +10	/ 1+5	/ 1+10	/ 1+5
3			86 3/4 ✓	0.021391 +10	/ 1+5	/ 1+15	/ 1+10
4				/	/	/	/
5				/	/	/	/
6				Port E	Port F	Port G	Port H
7				/ 1+5	/ 1+5	/ 1+20	/ 1+15
8				/ 1+5	/ 1+10	/ 1+15	/ 1+5
9				/ 1+10	/ 1+10	/ 1+15	/ 1+5
10				/	/	/	/
11				/	/	/	/
12				/	/	/	/
13				/	/	/	/
14				/	/	/	/
15				/	/	/	/
16				/	/	/	/
17				/	/	/	/
18				/	/	/	/
19				/	/	/	/
20				/	/	/	/
21				/	/	/	/
22				/	/	/	/
23				/	/	/	/
24				/	/	/	/

Pitot Tube No. 17-10-2 ✓

C_p = 0.810 ✓

P_b = 30.06 "Hg

P_s = +1.50 "H_2O 30.17 "Hg ✓

A_s = 18,720 ✓ in.^{2}

Average ΔP —

Average $\Delta P^{1/2}$ —

Average T_x — °F

Average α +10.1 ✓ degrees

PRELIMINARY VELOCITY TRAVERSE DATA
AND
SAMPLING LOCATION DATA

Job Number 99-95CRL 2
Job Name EPRR
Sampling Location Unit 2 Stack
Date 1-25-00 Time 1015

Stack Height ~~441~~ 426 ft. 3"
Sampling Port Height Above Ground ~~271~~ 261 ft. ~~6~~ 3"

	Port A	Port B	Port C	Port D	Average
Port & Inside Diameter (in.)	18'2"	18'2"			18'2" ✓ 218"
Port & Wall Thickness (in.)	17½"	17½"			17½" ✓
Inside Stack Diameter (in.)	16'~~10~~ 8.5"	16'8.5"			16'8.5" 200½"

Sampling Ports are ~~169~~ 165 ft. ~~6~~ 0 in. 9.88 (~~12.4~~ stack diameters) ~~downstream~~ upstream from disturbance (~~inlet~~ outlet, constriction, bend, expansion)

Sampling Ports are ~~124~~ 116 ft. ~~1.5~~ 3 in. 6.96 (~~7.43~~ stack diameters) ~~upstream~~ downstream from disturbance (~~outlet~~ inlet, 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	2.1 ✓	4.211	4 3/16 ✓	0.68 / 240 / 0	0.68 / 194 / 2	/ /	/ /
2	6.7 ✓	13.434	13 7/16 ✓	0.95 / 245 / 2	0.92 / 228 / 1	/ /	/ /
3	11.8 ✓	23.659	23 ~~3/16~~ 11/16	1.10 / 249 / 0	1.10 / 247 / 1	/ /	/ /
4	17.7 ✓	35.489	35 ~~7/16~~ 1/2	1.20 / 250 / 0	1.20 / 244 / 0	/ /	/ /
5	25.0 ✓	50.125	50 1/8 ~~49 1/2~~	1.20 / 254 / 1	1.20 / 248 / -1	/ /	/ /
6	35.6 ✓	71.378	71 3/8 ~~70 1/2~~	1.30 / 256 / 0	1.20 / 252 / 1	/ /	/ /
7				/ /	/ /	/ /	/ /
8				/ /	/ /	/ /	/ /
9				/ /	/ /	/ /	/ /
10				/ /	/ /	/ /	/ /
11				/ /	/ /	/ /	/ /
12				/ /	/ /	/ /	/ /
13				/ /	/ /	/ /	/ /
14				/ /	/ /	/ /	/ /
15				/ /	/ /	/ /	/ /
16				/ /	/ /	/ /	/ /
17				/ /	/ /	/ /	/ /
18				/ /	/ /	/ /	/ /
19				/ /	/ /	/ /	/ /
20				/ /	/ /	/ /	/ /
21				/ /	/ /	/ /	/ /
22				/ /	/ /	/ /	/ /
23				/ /	/ /	/ /	/ /
24				/ /	/ /	/ /	/ /

Pitot Tube No. M-3 ✓
C_p = 0.808 ✓
P_b = 29.58 "Hg
P_s = -1.20 "H_2O 29.49 ✓ "Hg
A_s = 31.573 ✓ in.²

Average ΔP 1.056 ✓
Average $\Delta P^{1/2}$ ~~1.028~~ 1.022 ✓
Average T_x 242 ✓ °F
Average α 0.75 ✓ degrees

METCO ENVIRONMENTAL

ORSAT ANALYSIS DATA FORM

Job Number: 99-95CRLZ
Sample Location: Unit Number 2A Absorber Inlet Duct
Job Name: AEC
Analytical Method: 3B
Location: Leroy, AL
Sample Type: Single point or Multi point; Grab or Integrated
Date: 1/26/00
Leak Check: Time: 4 min. (min. 4 minutes) Rate: 0.0 ml
Operator: J. Roche
Ambient Air Check:

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

Run Number 2 Run Time 0820-1035	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	13.2	13.2	13.3	13.2 ✓
O_2 - % Vol.	6.3	6.2	6.1	~~0.0~~ 6.2 ✓
CO - % Vol.	0.0	0.0	0.0	0.0 ✓
N_2 - % Vol.	80.5	80.6	80.6	80.6 ✓

Fo = 1.114

Run Number 3 Run Time 1135-1335	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	13.0	12.8	12.7	12.8 ✓
O_2 - % Vol.	6.6	6.8	6.8	6.7 ✓
CO - % Vol.	0.0	0.0	0.0	0.0 ✓
N_2 - % Vol.	80.4	80.4	80.5	80.5 ✓

Fo = 1.109

Run Number 4 Run Time 1425-1625	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	12.9	12.9	12.9	12.9 ✓
O_2 - % Vol.	6.7	6.8	6.8	6.8 ✓
CO - % Vol.	0.0	0.0	0.0	0.0 ✓
N_2 - % Vol.	80.4	80.3	80.3	80.3 ✓

Fo = 1.093

METCO ENVIRONMENTAL

ORSAT ANALYSIS DATA FORM

Job Number: 99-95 CRL 2 Sample Location: Unit Number 2 Stack

Job Name: AEC Analytical Method: 3B

Location: Leroy, AL Sample Type: Single point or Multi point; Grab or Integrated

Date: 1-26-00 Leak Check: Time: 4 min (min. 4 minutes) Rate: 0.0 ml

Operator: Rocha Ambient Air Check:

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

Run Number 2 Run Time 0820-1028	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	13.0	13.0	12.9	13.0 ✓
O_2 - % Vol.	6.6	6.6	6.6	6.6 ✓
CO - % Vol.	0.0	0.0	0.0	0.0 ✓
N_2 - % Vol.	80.4	80.4	80.5	80.4 ✓

FO = 1.100

Run Number 3 Run Time 1135-1341	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	13.2	13.2	13.2	13.2 ✓
O_2 - % Vol.	6.4	6.4	6.4	6.4 ✓
CO - % Vol.	0.0	0.0	0.0	0.0 ✓
N_2 - % Vol.	80.4	80.4	80.4	80.4 ✓

FO = 1.098

Run Number 4 Run Time 1425-1631	Analysis 1	Analysis 2	Analysis 3	Average - % Vol.
CO_2 - % Vol.	13.2	13.2	13.2	13.2 ✓
O_2 - % Vol.	6.4	6.4	6.4	6.4 ✓
CO - % Vol.	0.0	0.0	0.0	0.0 ✓
N_2 - % Vol.	80.4	80.4	80.4	80.4 ✓

FO = 1.098

APPENDIX C

Calibration Data

Equipment	Calibration Factor	Calibration Date
Pitot Tube #17-10-2	0.810	01/03/00
Pitot Tube #M-1	0.808	11/22/99
Pitot Tube #M-3	0.808	11/22/99
Pitot Tube # M-8	0.810	11/22/99
Probe Tip #TFE-1-14	0.430	11/19/99
Probe Tip #TFE-2-7	0.195	11/19/99
Probe Tip #TFE-2-12	0.362	11/19/99
Dry Gas Meter #12-1	1.016	11/23/99
Stack Unit Orifice #12-1		11/23/99
Digital Temperature Indicator #12-1		11/23/99
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	1.000	11/22/99
Stack Unit Orifice #29-1		11/22/99
Digital Temperature Indicator #29-1		11/22/99
Barometer #19-1		11/22/99

APPENDIX C

Post Test

Calibration Data

Equipment	Calibration Factor	Calibration Date
Pitot Tube #17-10-2	0.809	04/17/00
Pitot Tube #M-1	0.810	01/31/00
Pitot Tube #M-3	0.808	01/31/00
Pitot Tube # M-8	0.810	01/31/00
Probe Tip #TFE-1-14	0.430	01/31/00
Probe Tip #TFE-2-7	0.195	01/31/00
Probe Tip #TFE-2-12	0.361	01/31/00
Dry Gas Meter #12-1	1.014	02/03/00
Stack Unit Orifice #12-1		02/04/00
Digital Temperature Indicator #12-1		02/02/00
Dry Gas Meter #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	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

PITOT TUBE CALIBRATION

Date: 1-3-00

Time: 0845

Pitot No.: 17-10-2

T_s: 64 °F

Pitot Dimensions: 10' x 1/4"

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	0.82	0.906	0.803	0.80	0.894	0.813
35	60	0.80	0.81	0.897	1.20	1.095	0.811	1.20	1.095	0.811
41	70	1.00	1.00	1.000	1.50	1.225	0.808	1.50	1.225	0.808
50	80	1.30	1.30	1.140	1.90	1.378	0.819	1.95	1.396	0.808
62	90	1.60	1.60	1.265	2.35	1.533	0.817	2.35	1.533	0.817
28	50	0.54	0.54	0.735	0.82	0.906	0.803	0.80	0.894	0.813
28	50	0.54	0.54	0.735	0.82	0.906	0.803	0.80	0.894	0.813
Average							0.810			0.810

Summary of Results:

Normal high side calibration factor 0.810

variation + 1.11%

variation - 0.86%

Normal low side calibration factor 0.810

variation + 0.86%

variation - 0.25%

Calibrator: Mike Bass

Checked By: [signature]

PITOT TUBE CALIBRATION

Date: 11-22-99

Time: 1300

Pitot No.: M1

T_s: 68 °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	~~0.587~~ 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 + 0.00%

variation - 0.00%

Normal low side calibration factor 0.808

variation + 0.00%

variation - 0.00%

Calibrator: Scott Hart #268

Checked By: Juan Conway #273

PITOT TUBE CALIBRATION

Date: 11-22-99

Time: 1330

Pitot No.: M3

T_s: 68 °F

Pitot Dimensions: 3/2" 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 + 0.00%

variation - 0.00%

Normal low side calibration factor 0.808

variation + 0.00%

variation - 0.00%

Calibrator: Scott Hart #248

Checked By: Jason Conway #273

PITOT TUBE CALIBRATION

Date: 11-22-99 Time: 0925

Pitot No.: m8 T_s: 70 °F

Pitot Dimensions: 3/8" tips C_{pstd}: 0.990

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

Summary of Results:

Normal high side calibration factor 0.810

variation + 1.36%

variation - 0.25%

Normal low side calibration factor 0.810

variation + 1.36%

variation - 0.25%

Calibrator: Scott Hart #268

Checked By: Jason Conway #273

MITCO ENVIRONMENTAL

NOZZLE CALIBRATION

Nozzle Set No. TFE-1

Date 11-19-99 Calibrator: Shane Dee 261

	4	6	7	8	10	12
Reading 1	0.117	0.175	0.200	0.234	0.309	0.362
Reading 2	0.116	0.174	0.200	0.232	0.308	0.360
Reading 3	0.118	0.173	0.198	0.236	0.308	0.359
Reading 4	0.118	0.173	0.196	0.235	0.307	0.363
Reading 5	0.120	0.174	0.199	0.235	0.308	0.362
Reading 6	0.119	0.173	0.200	0.235	0.306	0.359
Reading 7	0.117	0.173	0.199	0.234	0.306	0.360
Reading 8	0.116	0.174	0.199	0.236	0.308	0.359
Reading 9	0.117	0.175	0.200	0.235	0.308	0.361
Reading 10	0.118	0.175	0.200	0.236	0.306	0.360
Average	0.118 ✓	0.174 ✓	0.199 ✓	0.235 ✓	0.307 ✓	0.361 ✓

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

MIRIKO ENVIRONMENTAL

NOZZLE CALIBRATION

Nozzle Set No. TFF-2

Date 11-19-99 Calibrator: Mike Bass

	4	6a	7	8	10	12
Reading 1	0.116	0.174	0.193	0.235	0.309	0.363
Reading 2	0.115	0.170	0.195	0.232	0.309	0.362
Reading 3	0.114	0.170	0.195	0.232	0.310	0.363
Reading 4	0.114	0.172	0.194	0.234	0.309	0.363
Reading 5	0.115	0.174	0.197	0.235	0.308	0.361
Reading 6	0.115	0.173	0.196	0.235	0.309	0.361
Reading 7	0.115	0.172	0.197	0.235	0.311	0.362
Reading 8	0.114	0.174	0.195	0.234	0.310	0.362
Reading 9	0.116	0.171	0.196	0.234	0.309	0.363
Reading 10	0.115	0.172	0.195	0.233	0.309	0.363
Average	0.115	0.172	0.195	0.234	0.309	0.362

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

METCO ENVIRONMENTAL

Dry Gas Meter Calibration

Dry Gas Meter No.: 12-1

Date: 11-23-99

ΔH ("H_2O)	C_{DG}
0.5	1.012 ✓
1.0	1.014 ✓
1.5	1.020 ✓
2.0	1.012 ✓
3.0	1.017 ✓
4.0	1.018 ✓
Average	1.016 ✓

Variation: + 0.39% ✓

- 0.39% ✓

Calibrator: Jason Conway #273

Checked By: Scott Hart #268

C_{DG} @ 2 liters/min. = 0.937

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 11-23-99

Calibrator: Jason Conway

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

Run No.: 1 @ 0.5 "H_2O

P_b: 29.55 "Hg

Control Module Vacuum: 0.00 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1127	5.002 cf	68 °F	-1.2 "H_2O
Start	1117	0.000 cf	68 °F	-1.2 "H_2O
Avg.	10 ✓	5.002 ✓ cf	68 ✓ °F	-1.2 ✓ "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	700.121 cf	70 °F	69 °F	0.5 "H_2O
Start	695.189 cf	69 °F	69 °F	0.5 "H_2O
Avg.	4.932 ✓ cf	69 ✓ °F	✓ 0.5	"H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.002 \left[\frac{29.55 + \frac{-1.2}{13.6}}{68 + 460}\right] \times 1.000\ (C_f) = 4.926 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 4.932 \left[\frac{29.55 + \frac{0.5}{13.6}}{69 + 460}\right] = 4.869^{\checkmark} \text{ dcsf}$$

$$C_{DG} = \frac{4.953}{4.869} = \boxed{1.012^{\checkmark}}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 11-23-99

Calibrator: Jason Conway

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

Run No.: 1 @ 1.00 "H2O

P_b: 29.55 "Hg

Control Module Vacuum: 0.000 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1138	5.001 cf	68 °F	-1.6 "H_2O
Start	1130	0.000 cf	68 °F	-1.6 "H_2O
Avg.	8 ✓	5.001 ✓ cf	68 ✓ °F	-1.6 ✓ "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	705.386 cf	72 °F	70 °F	1.0 "H_2O
Start	700.465 cf	70 °F	69 °F	1.0 "H_2O
Avg.	4.921 ✓ cf	✓ 70 °F		✓ 1.0 "H_2O

$$Wet\ Test\ Meter\ Vm_{std} = 17.65 \times 5.001 \left[\frac{29.55 + \frac{-1.6}{13.6}}{68 + 460} \right] \times 1.000\ (C_f) = 4.920\ ✓\ dcsf$$

$$Dry\ Gas\ Meter\ Vm_{std} = 17.65 \times 4.921 \left[\frac{29.55 + \frac{1.0}{13.6}}{70 + 460} \right] = 4.855\ ✓\ dcsf$$

$$C_{DG} = \frac{4.920}{4.855} = \boxed{1.014\ ✓}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 11-23-99

Calibrator: Jason Conway

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

Run No.: 2 @ 1.50 "H2O

P_b: 29.55 "Hg

Control Module Vacuum: 0.00 "Hg

Wet Test Meter (No. 3)					Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1332	5.099 cf	70 °F	-1.9 "H_2O	732.922 cf	75 °F	70 °F	1.5 "H_2O
Start	1325	0.000 cf	70 °F	-1.9 "H_2O	727.945 cf	73 °F	70 °F	1.5 "H_2O
Avg.	7 ✓	5.099 ✓cf	70 ✓ °F	-1.9 ✓"H_2O	4.977 ✓cf	✓ 72 °F		✓ 1.5 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.099 \left[\frac{29.55 + \frac{-1.9}{13.6}}{70 + 460} \right] \times 1.000 \ (C_f) = 4.994 \checkmark \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 4.977 \left[\frac{29.55 + \frac{1.5}{13.6}}{72 + 460} \right] = 4.898 \checkmark \text{ dcsf}$$

$$C_{DG} = \frac{4.994}{4.898} = \boxed{1.020 \checkmark}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 11-23-99

Calibrator: Jason Conway

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

Run No.: 1 @ 2.00 "H2O

P_b: 29.55 "Hg

Control Module Vacuum: 0.00 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1307	5.014 cf	69 °F	-2.4 "H_2O
Start	1301	0.000 cf	69 °F	-2.4 "H_2O
Avg.	6 ✓	5.014✓ cf	69✓ °F	-2.4✓ "H_2O

Dry Gas Meter

Meter Reading	Temp. In	Temp. Out	P_m
716.433 cf	71 °F	70 °F	2.0 "H_2O
711.524 cf	70 °F	70 °F	2.0 "H_2O
4.909✓ cf	✓70 °F		✓2.0 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.014 \left[\frac{29.55 + \frac{-2.4}{13.6}}{69 + 460}\right] \times 1.000 \quad (C_f) = 4.914^{\checkmark} \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 4.909 \left[\frac{29.55 + \frac{2.0}{13.6}}{70 + 460}\right] = 4.955^{\checkmark} \text{ dcsf}$$

$$C_{DG} = \frac{4.914}{4.855} = \boxed{1.012^{\checkmark}}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Calibrator: Jason Conway

Date: 11-23-99

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

Run No.: 1 @ 3.00 "H2O

P_b: 29.55 "Hg

Control Module Vacuum: 0.00 "Hg

Wet Test Meter (No. 3)							Dry Gas Meter				
	Time	Meter Reading		Temp.		P_m	Meter Reading		Temp. In	Temp. Out	P_m
End	1314	5.148	cf	70	°F	-3.3 "H_2O	721.770	cf	72 °F	70 °F	3.0 "H_2O
Start	1309	0.000	cf	70	°F	-3.3 "H_2O	716.776	cf	71 °F	70 °F	3.0 "H_2O
Avg.	5 ✓	5.148 ✓	cf	70 ✓	°F	✓ -3.3 "H_2O	4.994 ✓	cf	✓ 71	°F	✓ 3.0 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.148 \left[\frac{29.55 + \frac{-3.3}{13.6}}{70 + 460}\right] \times 1.000\ (C_f) = 5.024 \checkmark \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 4.994 \left[\frac{29.55 + \frac{3.0}{13.6}}{71 + 460}\right] = 4.942 \checkmark \text{ dcsf}$$

$$C_{DG} = \frac{5.024}{4.942} = \boxed{1.017 \checkmark}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 11-23-99

Calibrator: Jason Conway

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

Run No.: 1 @ 4.00 "H2O

P_b: 29.55 "Hg

Control Module Vacuum: 0.000 "Hg

Wet Test Meter (No. 3)	Time	Meter Reading	Temp.	P_m
End	1320	5.311 cf	70 °F	-4.1 "H_2O
Start	1316	0.000 cf	70 °F	-4.1 "H_2O
Avg.	4 ✓	✓5.311 cf	✓70 °F ✓	-4.1 "H_2O

Dry Gas Meter	Meter Reading	Temp. In	Temp. Out	P_m
End	727.544 cf	76 °F	70 °F	4.0 "H_2O
Start	722.413 cf	72 °F	70 °F	4.0 "H_2O
Avg.	5.131 ✓cf	✓72 °F	✓4.0 "H_2O	

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.311 \left[\frac{29.55 + \frac{-4.1}{13.6}}{70 + 460}\right] \times 1.000\ (C_f) = 5.173^{\checkmark}\ dcsf$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.131 \left[\frac{29.55 + \frac{4.0}{13.6}}{72 + 460}\right] = 5.080^{\checkmark}\ dcsf$$

$$C_{DG} = \frac{5.173}{5.080} = \boxed{1.018^{\checkmark}}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 11-23-99

Calibrator: Jason Conway

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

Run No.: 1 @ 2L/min

P_b: 29.55 "Hg

Control Module Vacuum: 0.00 "Hg

Wet Test Meter (No. 1)

	Time	Meter Reading	Temp.	P_m
End	1336	2.180 cf	66 °F	-0.6 "H_2O
Start	1304	0.000 cf	66 °F	-0.6 "H_2O
Avg.	32 ✓	2.180 ✓ cf	66 ✓ °F	-0.6 ✓ "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	786.061 cf	65 °F	65 °F	0.01 "H_2O
Start	783.728 cf	64 °F	64 °F	0.01 "H_2O
Avg.	2.333 ✓ cf	65 °F	✓	0.01 ✓ "H_2O

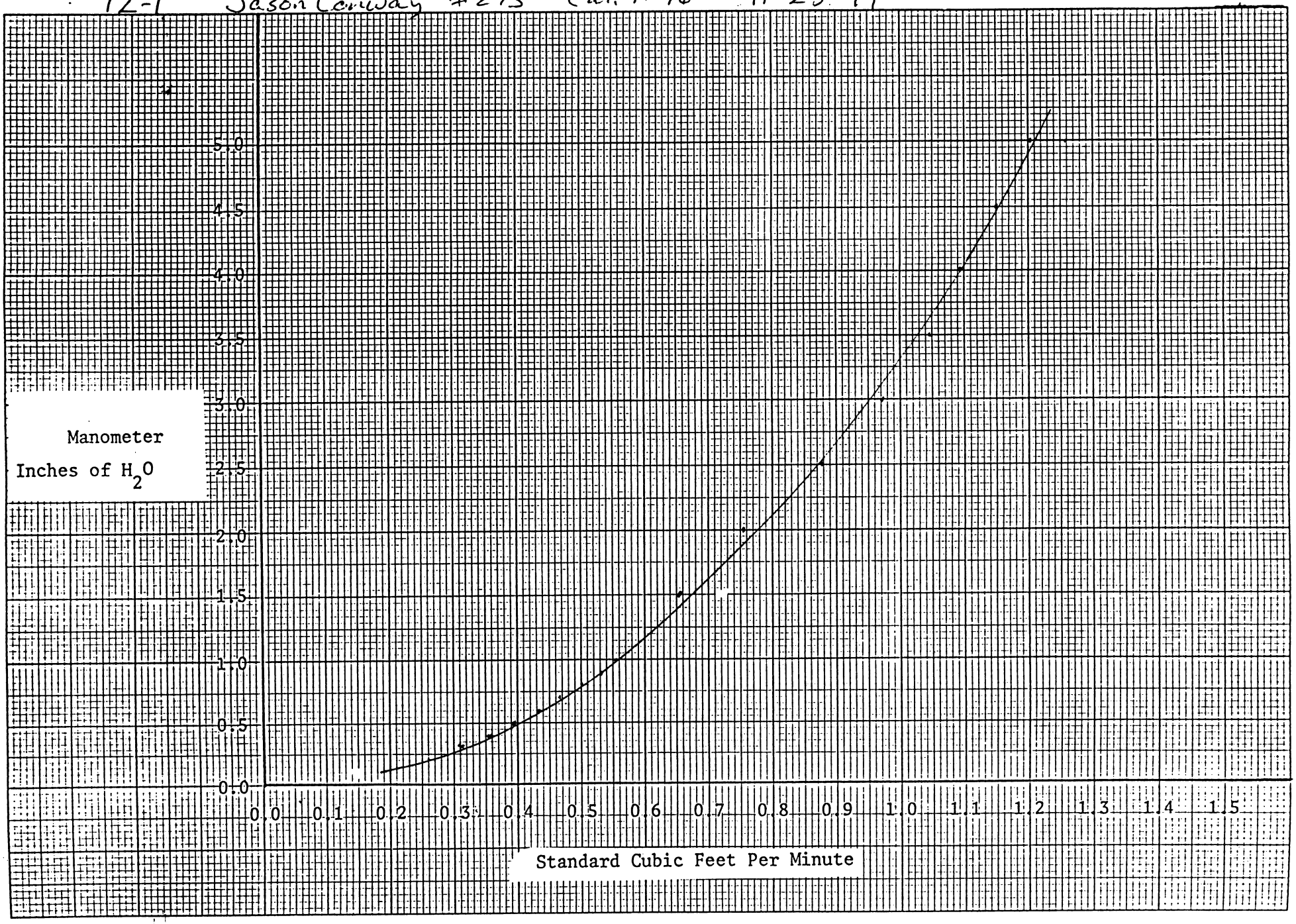
$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.180 \left[\frac{29.55 + \frac{-0.6}{13.6}}{66 + 460}\right] \times 1.006\ (C_f) = 2.171\ \text{dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 2.333 \left[\frac{29.55 + \frac{0.01}{13.6}}{65 + 460}\right] = 2.318\ \text{dcsf}$$

$$C_{DG} = \frac{2.171}{2.318} = \boxed{0.937}$$

✓ by Scott Hart # 218

12-1 Jason Conway #273 Cal. 1.016 11-23-99



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 12-1

CALIBRATION DATA

Date: 11-23-99

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	1315	70	71
Ice Bath	1323	36	34
Boiling Water	1144	212	213
Oven	1345	250	250
Oven	1353	301	299
Oven	1423	352	350
Oven	1450	375	373

Meter Adjusted? Yes _____ No X

Calibrator: Jason Conway #273

Checked By: Scott Hart #068

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

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

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

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

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

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	°F	1.00 "H_2O

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

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

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

DRY GAS METER CALIBRATION

Meter Number: 27-2

Date: 01-10-00

Calibrator: Jason Brown

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

Run No.: 1 @ 1.50

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

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

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

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

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

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

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

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

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 @ 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

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

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

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

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

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

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

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

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

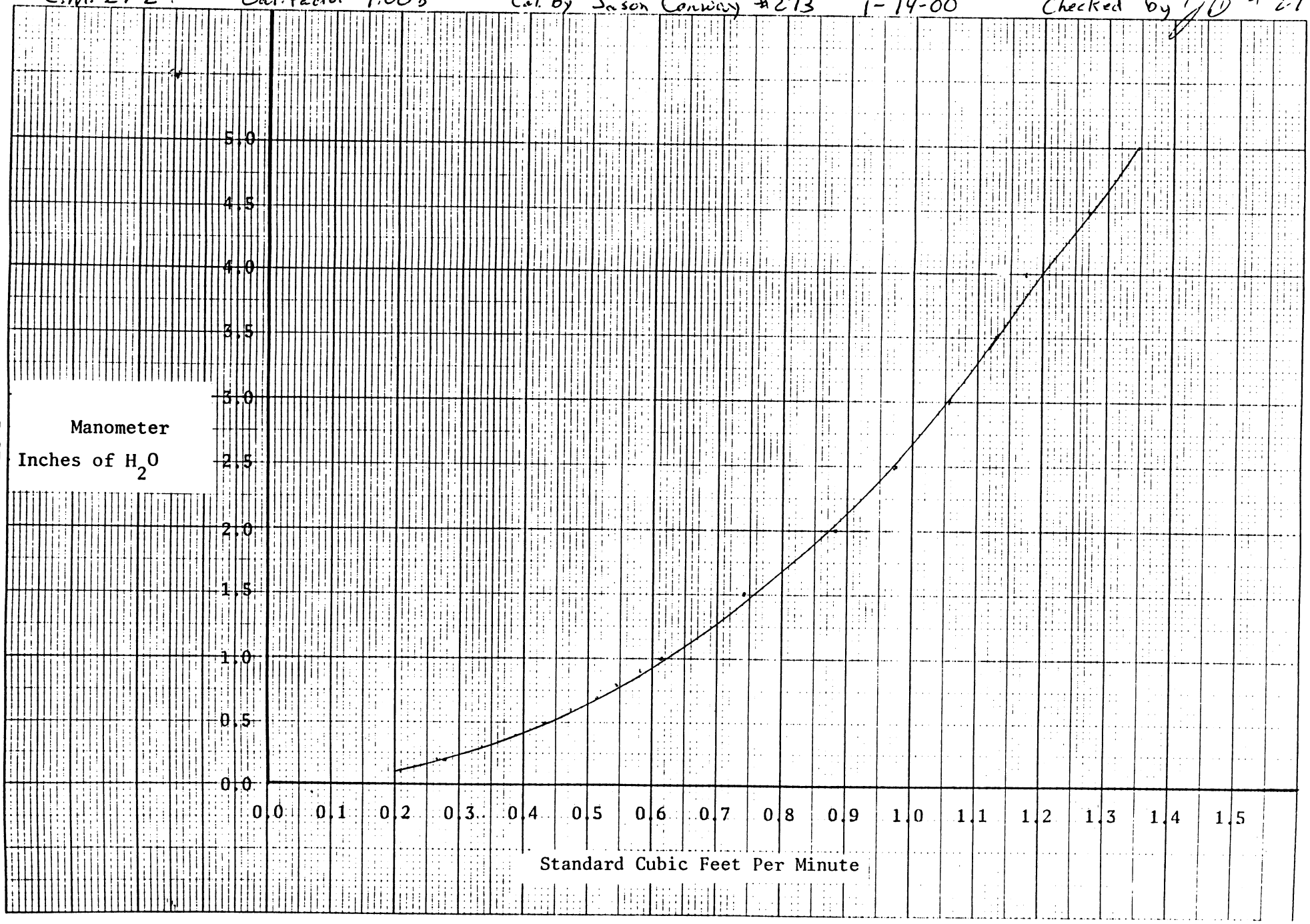
	Meter Reading	Temp. In	Temp. Out	P_m
End	255.920 cf	78 °F	76 °F	0.01 "H_2O
Start	253.905 cf	75 °F	75 °F	0.01 "H_2O
Avg.	2.015 cf	76 °F		0.01 "H_2O

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

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

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

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: 11-22-99

ΔH ("H_2O)	C_{DG}
0.5	1.005 ✓
1.0	0.999 ✓
1.5	1.003 ✓
2.0	1.000 ✓
3.0	0.994 ✓
4.0	0.999 ✓
Average	1.000 ✓

Variation: + 0.5% ✓

- 0.6% ✓

Calibrator: Jason Conway #273

Checked By: Scott Hart #268

C_{DG} @ 2 liters/min. = 1.013

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 11-22-99

Calibrator: Jason Conway

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

Run No.: 1 @ 0.50" H2O

P_b: 29.24 "Hg

Control Module Vacuum: 0.00 "Hg

	Wet Test Meter (No. 3)					Dry Gas Meter			
	Time	Meter Reading	Temp.		P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	0935	5.003 cf	69	°F	-0.8	738522 cf	87 °F	71 °F	0.5 "H_2O
Start	0922	0.000 cf	69	°F	-0.8	733.505 cf	72 °F	71 °F	0.5 "H_2O
Avg.	13 ✓	5.0031 ✓ cf	69 ✓	°F	-0.8 ✓	5.017 ✓ cf	75 ✓	°F	✓ 0.5 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.003 \left[\frac{29.24 + \frac{-0.8}{13.6}}{69 + 460}\right] \times 1.000 \quad (C_f) = 4.871 \checkmark \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.017 \left[\frac{29.24 + \frac{0.5}{13.6}}{75 + 460}\right] = 4.846 \checkmark \text{ dcsf}$$

$$C_{DG} = \frac{4.871}{4.846} = \boxed{1.005 \checkmark}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 11-22-99

Calibrator: Jason Conway

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

Run No.: 1 @ 1.00" H2O

P_b: 29.24 "Hg

Control Module Vacuum: 0.06 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1031	5.004 cf	69 °F	-13 "H_2O
Start	1021	0.000 cf	69 °F	-13 "H_2O
Avg.	10 ✓	5.004 ✓ cf	69 ✓ °F	-13 ✓ "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	244.777 cf	68 °F	71 °F	1.0 "H_2O
Start	239.786 cf	70 °F	71 °F	1.0 "H_2O
Avg.	4.991 ✓ cf	70 ✓ °F		✓ 1.0 "H_2O

$$Wet\ Test\ Meter\ Vm_{std} = 17.65 \times 5.004 \left[\frac{29.24 + \frac{-13}{13.6}}{69 + 460}\right] \times 1.000\ (C_f) = 4.866 \checkmark\ dcsf$$

$$Dry\ Gas\ Meter\ Vm_{std} = 17.65 \times 4.991 \left[\frac{29.24 + \frac{1.0}{13.6}}{70 + 460}\right] = 4.872 \checkmark\ dcsf$$

$$C_{DG} = \frac{4.866}{4.872} = \boxed{0.999 \checkmark}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 11-22-99

Calibrator: Jason Conway

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

Run No.: 1 @ 1.50 "H2O

P_b: 29.24 "Hg

Control Module Vacuum: 0.00 "Hg

Wet Test Meter (No. 3)						Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m		Meter Reading	Temp. In	Temp. Out	P_m
End	1049	10,009 cf	69 °F	-16	"H_2O	755.874 cf	65 °F	71 °F	1.50 "H_2O
Start	1034	0.000 cf	69 °F	-16	"H_2O	745.977 cf	69 °F	71 °F	1.50 "H_2O
Avg.	15 ✓	10.009 ✓ cf	69 ✓ °F	-16 ✓	"H_2O	9.897 ✓ cf	69 ✓ °F	✓ 1.50	"H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.009 \left[\frac{29.24 + \frac{-16}{13.6}}{69 + 460}\right] \times 1.000\ (C_f) = 9.725\ \text{dcsf}$$ ✓

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 9.897 \left[\frac{29.24 + \frac{1.50}{13.6}}{69 + 460}\right] = 9.692\ \text{dcsf}$$ ✓

$$C_{DG} = \frac{9.725}{9.692} = \boxed{1.003}$$ ✓

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29.1

Date: 11-22-99

Calibrator: Jason Conway

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

Run No.: 1 @ 2.00 "H2O

P_b: 29.24 "Hg

Control Module Vacuum: 0.00 "Hg

Wet Test Meter (No. 3)							Dry Gas Meter			
	Time	Meter Reading	Temp.		P_m		Meter Reading	Temp. In	Temp. Out	P_m
End	1103	10.088	cf	69	°F	-20	"H_2O	766.667 cf	69 °F	72 °F	2.0 "H_2O
Start	1051	0.000	cf	69	°F	-20	"H_2O	756.663 cf	68 °F	72 °F	2.0 "H_2O
Avg.	12	10.088	cf	69	°F	-20	"H_2O	10.004 cf	70 °F		2.0 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.088 \left[\frac{29.24 + \frac{-2.0}{13.6}}{69 + 460}\right] \times 1.000\,(C_f) = 9.792 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.004 \left[\frac{29.24 + \frac{2.0}{13.6}}{70 + 460}\right] = 9.790 \text{ dcsf}$$

$$C_{DG} = \frac{9.792}{9.790} = \boxed{1.000}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 11-22-99

Calibrator: Jason Conway

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

Run No.: 1 @ 3.00 "H2O

P_b: 29.24 "Hg

Control Module Vacuum: 0.00 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1134	10.011 cf	69 °F	-3.0 "H_2O
Start	1124	0.000 cf	69 °F	-3.0 "H_2O
Avg.	10.0 ✓	10.011 cf	69 ✓ °F	-3.0 ✓ "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	789.042 cf	69 °F	73 °F	3.0 "H_2O
Start	779.107 cf	66 °F	73 °F	3.0 "H_2O
Avg.	9.935 ✓ cf	70 ✓ °F		✓ 3.0 "H_2O

$$Wet\ Test\ Meter\ Vm_{std} = 17.65 \times 10.011 \left[\frac{29.24 + \frac{-3.0}{13.6}}{69 + 460}\right] \times 1.000\ (C_f) = 9.693\ ✓\ dcsf$$

$$Dry\ Gas\ Meter\ Vm_{std} = 17.65 \times 9.935 \left[\frac{29.24 + \frac{3.0}{13.6}}{70 + 460}\right] = 9.747\ ✓\ dcsf$$

$$C_{DG} = \frac{9.693}{9.747} = \boxed{0.994\ ✓}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 11-21-99

Calibrator: Jason Conway

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

Run No.: 2 @ 4.00 "H2O

P_b: 29.24 "Hg

Control Module Vacuum: 0.00 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1311	10.002 cf	70 °F	-3.8 "H_2O	817.238 cf	68 °F	72 °F	4.0 "H_2O
Start	1302	0.000 cf	70 °F	-3.8 "H_2O	807.425 cf	70 °F	72 °F	4.0 "H_2O
Avg.	9 ✓	10.002 ✓ cf	70 ✓ °F	-3.8 ✓ "H_2O	9.813 ✓ cf	71 ✓ °F		✓ 4.0 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.002 \left[\frac{29.24 + \frac{-3.8}{13.6}}{70 + 460}\right] \times 1.000\,(C_f) = 9.646 \checkmark \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 9.813 \left[\frac{29.24 + \frac{4.0}{13.6}}{71 + 460}\right] = \cancel{9.651}\ 9.633 \checkmark \text{ dcsf}$$

$$C_{DG} = \frac{9.646}{9.651} = \boxed{0.999 \checkmark}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 11-22-99

Calibrator: Jason Conway

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

Run No.: 1 @ 2L/min

P_b: 29.15 "Hg

Control Module Vacuum: 0.00 "Hg

Wet Test Meter (No. 1)

	Time	Meter Reading	Temp.	P_m
End	1637	2.229 cf	70 °F	-0.6 "H_2O
Start	1605	0.000 cf	70 °F	-0.6 "H_2O
Avg.	32 ✓	2.229 ✓ cf	70 ✓ °F	-0.6 ✓ "H_2O

Dry Gas Meter

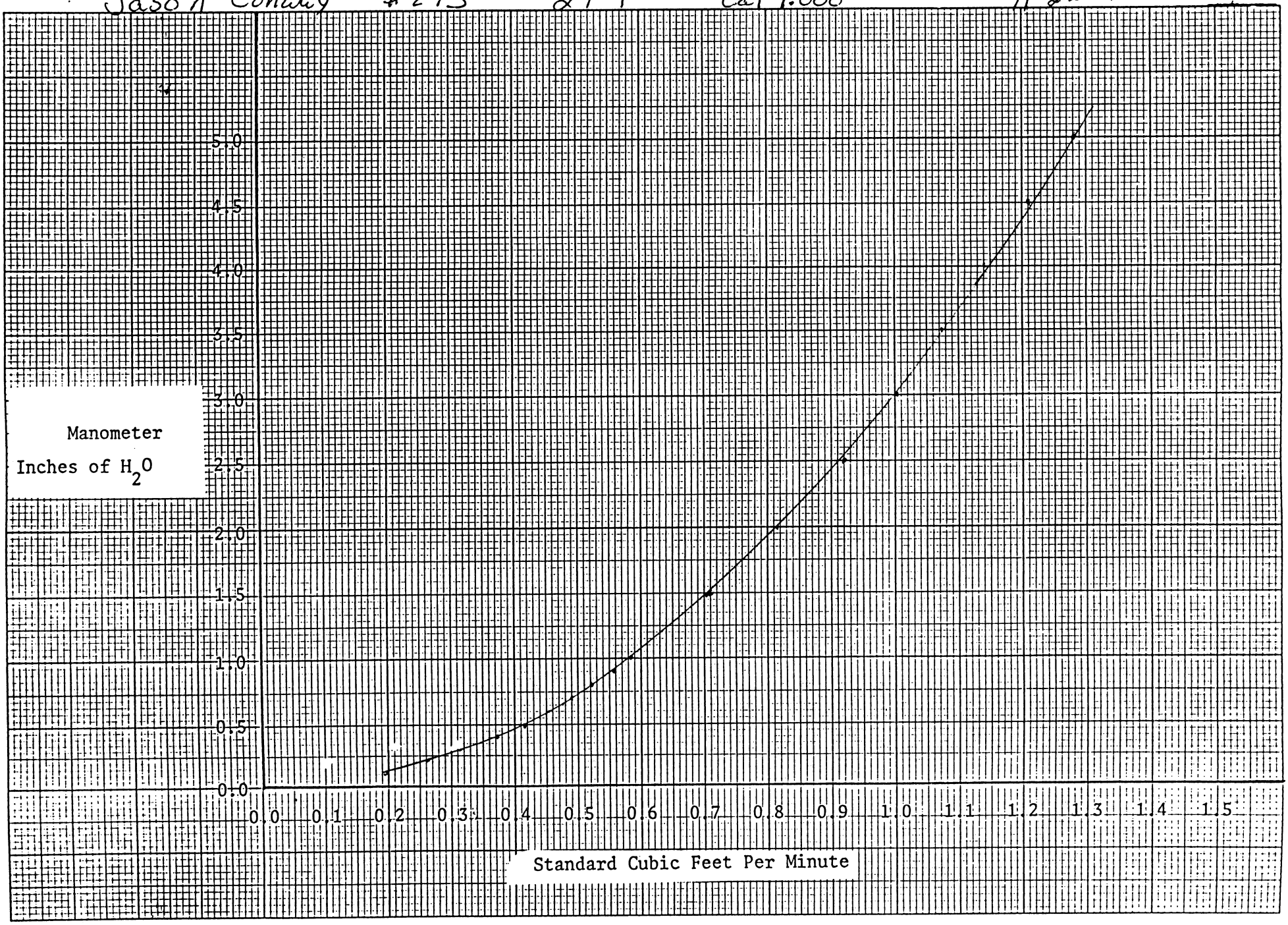
	Meter Reading	Temp. In	Temp. Out	P_m
End	873.468 cf	77 °F	72 °F	0.04 "H_2O
Start	871.246 cf	72 °F	72 °F	0.04 "H_2O
Avg.	2.222 ✓ cf	73 ✓ °F	✓ 0.04	"H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.229 \left[\frac{29.15 + \frac{-0.6}{13.6}}{70 + 460}\right] \times 1.006 (C_f) = 2.173 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 2.222 \left[\frac{29.15 + \frac{0.04}{13.6}}{73 + 460}\right] = 2.145 \text{ dcsf}$$

$$C_{DG} = \frac{2.173}{2.145} = \boxed{1.013}$$

Jason Conway #273 29-1 Cal 1.000 11-22-99



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 29-1

CALIBRATION DATA

Date: 11-22-99

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	1025	70	70
Ice Bath	1112	35	36
Boiling Water	1050	212	212
Oven	1130	250	251
Oven	1141	300	300
Oven	1153	350	353
Oven	1200	375	375

Meter Adjusted? Yes _____ No ✓

Calibrator: Jason Conway #273

Checked By: Scott [illegible] #268

METCO ENVIRONMENTAL

BAROMETER CALIBRATION

Barometer No. 19-1

Date: 11-22-99

Time: 1115

Barometric Pressure @ Addison Airport @ 719 ft.	=	29.86
	-	0.719
Absolute Pressure @ Addison Airport	=	29.141
	+	0.083
Absolute Pressure @ METCO @ 636 ft.	=	29.224
Barometer Reading	=	29.18
Variation	=	0.044

Barometer Adjusted? Yes ✓ No _____

Scott Hart #268 ✓

Signature of Calibrator

PITOT TUBE CALIBRATION

Date: 04-17-00

Time: 1530

Pitot No.: 17-10-2

T_s: 72 °F

Pitot Dimensions: 10' x 1/4"

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	.316	0.15	.387	.808	0.15	.387	.808
14	30	0.22	0.22	.469	0.33	.575	.808	0.33	.575	.808
20	40	0.34	0.34	.583	0.51	.714	.808	0.51	.714	.808
28	50	0.54	0.54	.735	0.81	.900	.808	0.81	.900	.808
35	60	0.80	0.80	.894	1.20	1.095	.808	1.25	1.118	.792
41	70	1.00	1.00	1.0	1.50	1.225	.808	1.50	1.225	.808
50	80	1.30	1.30	1.140	1.90	1.378	.819	1.95	1.396	.808
62	90	1.60	1.60	1.265	2.40	1.549	.808	2.40	1.549	.808
28	50	0.54	0.54	.735	.81	.900	.808	.81	.900	.808
28	50	0.54	0.54	.735	.81	.900	.808	.81	.900	.808
Average							.809			.806

Summary of Results:

Normal high side calibration factor .809

variation + 1.24%

variation - 0.12%

Normal low side calibration factor .806

variation + 0.25%

variation - 1.74%

Calibrator: Bill Tolle #290

Checked By: Jamm Burn #274

PITOT TUBE CALIBRATION

Date: 01-31-00

Time: 0900

Pitot No.: M1

T_s: 65 °F

Pitot Dimensions: 3/8" fps

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	0.35	0.587	0.50	0.707	0.822	0.50	0.707	0.822
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	1.95	1.396	0.808
62	90	1.60	1.60	1.265	2.40	1.549	0.808	2.45	1.565	0.800
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			0.811

Summary of Results:

Normal high side calibration factor 0.810

variation + 1.48%

variation - 0.25%

Normal low side calibration factor 0.811

variation + 1.36%

variation - 1.36%

Calibrator: Jim Brown 274

Checked By: Scott Hart #268

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	√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% ✓

variation - 0% ✓

Normal low side calibration factor 0.808 ✓

variation + 0% ✓

variation - 0% ✓

Calibrator: Jason Baron 274

Checked By: Scott Hart 268

PITOT TUBE CALIBRATION

Date: 01-31-00

Pitot No.: 1118

Pitot Dimensions: 3/8" tips

Time: 1145

T_s: 65 °F

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 Brom 274

Checked By: Scott Hart 268

MITCO ENVIRONMENTAL

NOZZLE CALIBRATION

Nozzle Set No. TFE-1 checked by Scott Hart 2/28

Date 01-31-00 Calibrator: Gavin Brown 274

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

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

MITCO ENVIRONMENTAL

NOZZLE CALIBRATION

Nozzle Set No. TFE-2 checked Scott Hoit 368

Date 01-31-00 Calibrator: Brian Brown 274

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

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

METCO ENVIRONMENTAL

Dry Gas Meter Calibration

Dry Gas Meter No.: 12-1

Date: 2-3-00

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

Variation: + 1.58

- 1.38

METER ADJUSTED

Calibrator: Kieran McGeagh #285

Checked By: Scott Hart #268

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

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 2-3-00

Calibrator: Kieran McGeagh

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

Run No.: 1 @ 0.50

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1317	5.342 cf	67 °F	-1.30 "H_2O
Start	1304	0.000 cf	67 °F	-1.30 "H_2O
Avg.	13 ✓	5.342 ✓ cf	67 ✓ °F	-1.30 ✓ "H_2O

Dry Gas Meter

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

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

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

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

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 2-3-00

Calibrator: Kieran McGeough

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

Run No.: 1 @ 1.00

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1329	5.200 cf	67 °F	-1.90 "H_2O
Start	1320	0.000 cf	67 °F	-1.90 "H_2O
Avg.	9 ✓	5.200 ✓ cf	67 ✓ °F	-1.90 ✓ "H_2O

Dry Gas Meter

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

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

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

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

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 2-3-00

Calibrator: Kieran McGeagh

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

Run No.: 1 @ 1.50

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1345	10.000 cf	67 °F	-2.10 "H_2O
Start	1331	0.000 cf	67 °F	-2.10 "H_2O
Avg.	14:	10.000 cf	67 °F	-2.10 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	216.458 cf	74 °F	69 °F	1.50 "H_2O
Start	206.554 cf	70 °F	68 °F	1.50 "H_2O
Avg.	9.904 cf	70 °F		1.50 "H_2O

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

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

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

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 2-3-00

Calibrator: Kieran McGeagh

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

Run No.: 1 @ 2.00

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

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

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

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

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

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1-00

Date: 2-3-00

Calibrator: Kieran McGeagh

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

Run No.: 1 @ 3.00

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

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

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

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

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

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 2-3-00

Calibrator: Kieran McGeagh

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

Run No.: 2 @ 4.00

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

	Wet Test Meter (No. 3)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1545	10.150 cf	68 °F	-4.30 "H_2O	283.180 cf	76 °F	72 °F	4.00 "H_2O
Start	1536	0.000 cf	68 °F	-4.30 "H_2O	273.384 cf	74 °F	72 °F	4.00 "H_2O
Avg.	9	10.150 cf	68 °F	-4.30 "H_2O	9.796 cf	74 °F		4.00 "H_2O

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

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

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

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 2-3-00

Calibrator: Kieran McGeagh

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

Run No.: 1 @ 4.00

P_b: 29.81 "Hg

Control Module Vacuum: 5.00 "Hg

Wet Test Meter (No. 3)

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

Dry Gas Meter

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

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

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

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

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 12-1

Date: 2-3-00

Calibrator: Kieran McGeagh

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

Run No.: 1 @ 2L/min

P_b: 29.81 "Hg

Control Module Vacuum: 3.50 "Hg

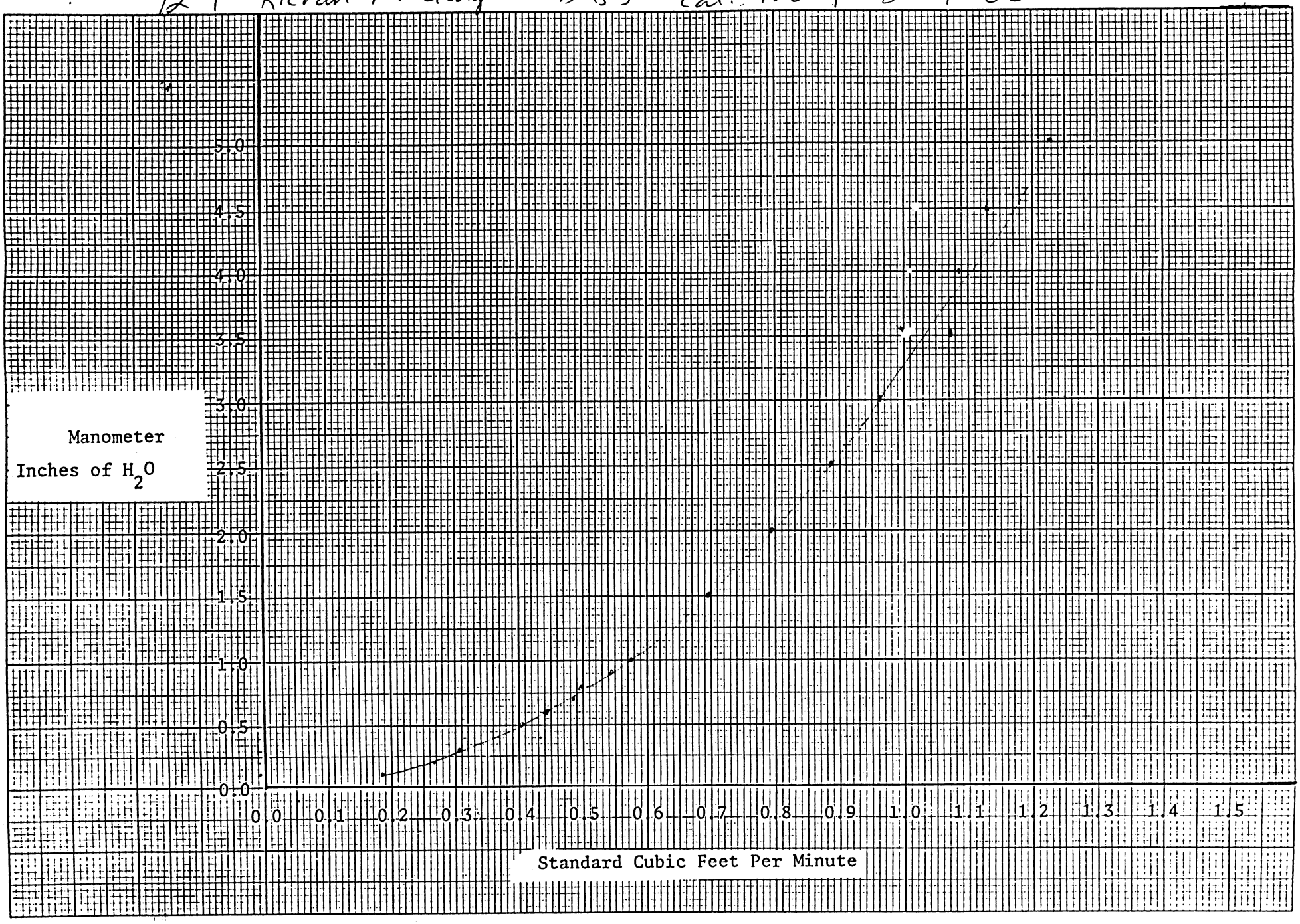
	Wet Test Meter (No. 1)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1656	2.092 cf	69 °F	-0.50 "H_2O	286.779 cf	72 °F	72 °F	0.02 "H_2O
Start	1626	0.000 cf	69 °F	-0.50 "H_2O	284.723 cf	72 °F	72 °F	0.02 "H_2O
Avg.	30 ✓	2.092 ✓ cf	69 ✓ °F	-0.50 ✓ "H_2O	2.056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

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

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

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

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



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 12-1

CALIBRATION DATA

Date: 2-2-00

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

Meter Adjusted? Yes _____ No ✓

Calibrator: Kieran M'Keagh #285

Checked By: Scott Hart 268

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] 236

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

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 @ 0.5" H_2O

P_b: 29.41 "Hg

Control Module Vacuum: 5.5 "Hg

Wet Test Meter (No. 3)

	Time	Meter Reading	Temp.	P_m
End	1029	5.244 cf	70 °F	-0.85 "H_2O
Start	1016	0.000 cf	70 °F	-0.85 "H_2O
Avg.	13	5.244 cf	70 °F	-0.85 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	853.599 cf	75 °F	73 °F	0.50 "H_2O
Start	848.501 cf	74 °F	72 °F	0.50 "H_2O
Avg.	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
End	869.702 cf	77 °F	75 °F	1.50 "H_2O
Start	859.402 cf	75 °F	74 °F	1.50 "H_2O
Avg.	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)

	Time	Meter Reading	Temp.	P_m
End	1013	10.738 cf	70 °F	-2.10 "H_2O
Start	1059	0.000 cf	70 °F	-2.10 "H_2O
Avg.	14	10.738 cf	70 °F	-2.100 "H_2O

Dry Gas Meter

	Meter Reading	Temp. In	Temp. Out	P_m
End	880.444 cf	77 °F	75 °F	2.00 "H_2O
Start	870.007 cf	76 °F	75 °F	2.00 "H_2O
Avg.	10.437 cf	76 °F		2.000 "H_2O

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

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

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

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)

	Time	Meter Reading	Temp.	P_m
End	1134	10.635 cf	70 °F	-2.90 "H_2O
Start	1123	0.000 cf	70 °F	-2.90 "H_2O
Avg.	11	10.635 cf	70 °F	-2.900 "H_2O

Dry Gas Meter

Meter Reading	Temp. In	Temp. Out	P_m
893.404 cf	79 °F	76 °F	3.00 "H_2O
883.037 cf	77 °F	75 °F	3.00 "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)					Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1150	10.682 cf	70 °F	-3.50 "H_2O	904.404 cf	81 °F	77 °F	3.750 "H_2O
Start	1140	0.000 cf	70 °F	-3.50 "H_2O	893.991 cf	77 °F	76 °F	3.750 "H_2O
Avg.	10	10.682 cf	70 °F	-3.500 "H_2O	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

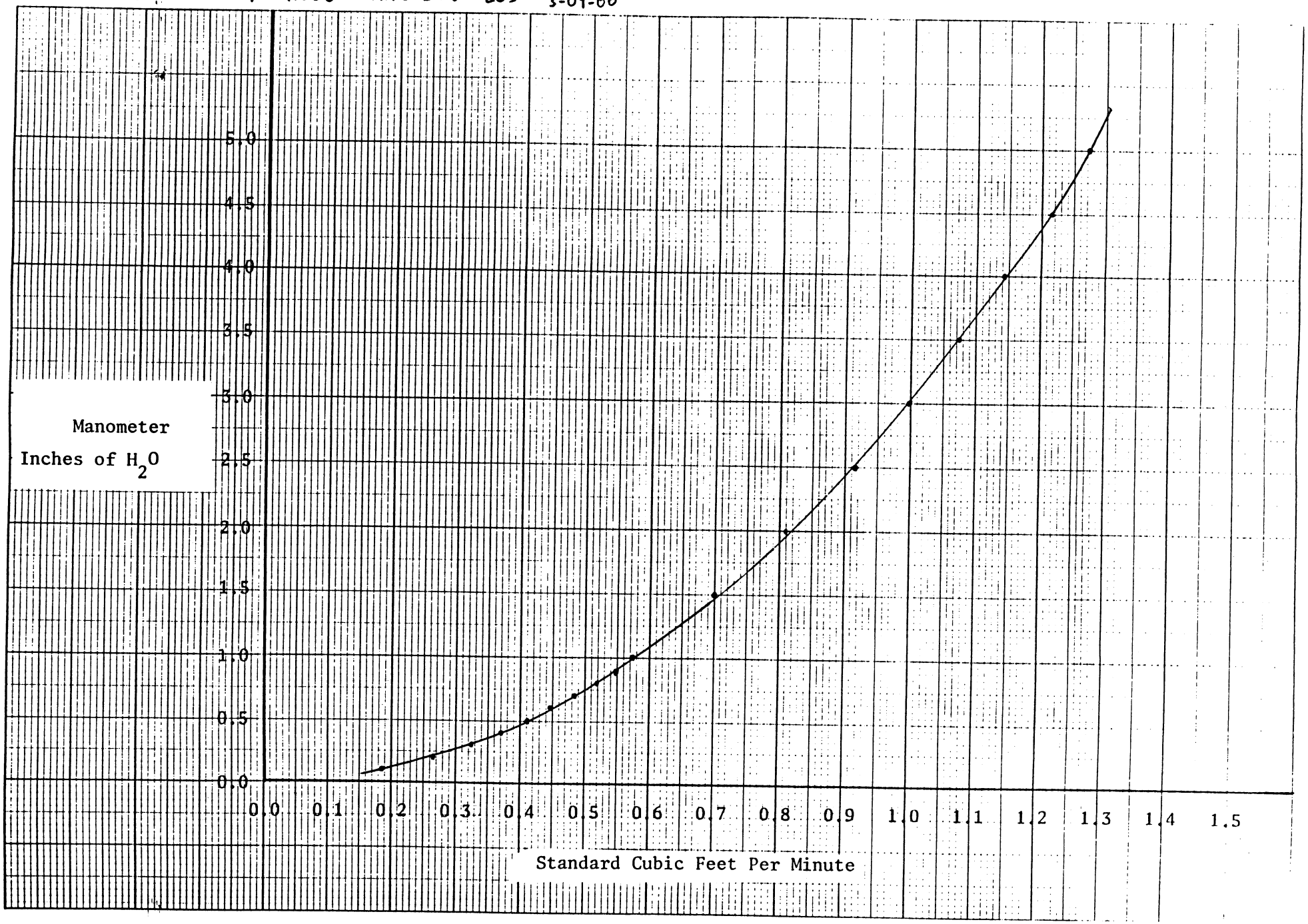
Wet Test Meter (No. 1)					Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1353	2.102 cf	69 °F	-0.30 "H_2O	909.861 cf	76 °F	76 °F	0.015 "H_2O
Start	1320	0.000 cf	69 °F	-0.30 "H_2O	907.673 cf	76 °F	76 °F	0.015 "H_2O
Avg.	33	2.102 cf	69 °F	-0.30 "H_2O	2.188 cf	76 °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: [signature] 236

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

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

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

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

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 @ 20" H_2O

P_b: 29.11 "Hg

Control Module Vacuum: 5.0 "Hg

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

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

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

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

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

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

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

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

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 2-7-00

Calibrator: Shane Lee 261

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

Run No.: 1 @ 40" 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)					Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	1526	2.071 cf	68 °F	−0.30 "H_2O	440.205 cf	78 °F	78 °F	0.01 "H_2O
Start	1456	0.000 cf	68 °F	−0.30 "H_2O	438.156 cf	72 °F	72 °F	0.01 "H_2O
Avg.	30	2.071 cf	68 °F	−0.30 "H_2O	2.049 cf	75 °F		0.01 "H_2O

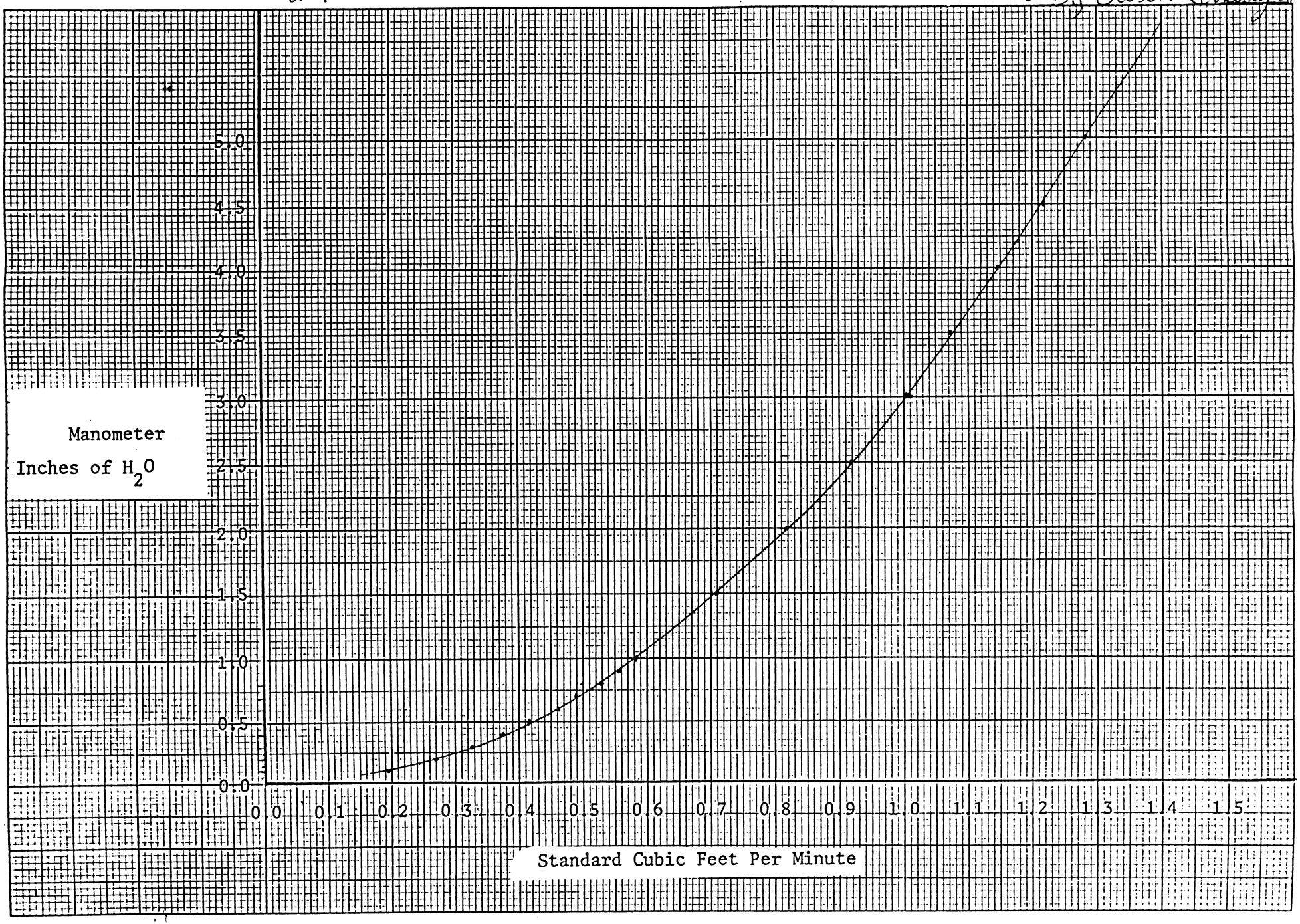
$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 2.071 \left[\frac{29.11 + \frac{-0.30}{13.6}}{68 + 460} \right] \times 1.000 \ (C_1) = 2.014 \text{ dcsf}$$

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

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

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

✓ By Jason Conway #27



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 29-1

CALIBRATION DATA

Date: 2-7-00

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

Meter Adjusted? Yes _____ No ✓

Calibrator: Shane Lee #261

Checked By: Jason Conway #273

METCO ENVIRONMENTAL

BAROMETER CALIBRATION

Barometer No. 19-1

Date: 01-31-00

Time: 1600

Barometric Pressure @ Addison Airport @ 719 ft.	=	30.17
	-	0.719
Absolute Pressure @ Addison Airport	=	29.451 ✓
	+	0.083
Absolute Pressure @ METCO @ 636 ft.	=	29.534 ✓
Barometer Reading	=	29.61
Variation	=	~~0.267~~ -0.08 ✓

Barometer Adjusted? Yes ✓ No _____

Signature of Calibrator

APPENDIX D

Analytical Data

TestAmerica
INCORPORATED

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

March 28, 2000

Dear Doug,

Please find included with this letter the analytical report and data package for the AEC samples 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 by the Ontario Hydro Method on February 9, 2000. The coal samples were received February 18, 2000. All samples were intact when received. Please note the following:

- The Thimble Reagent Blank had a low level Hg detection (0.009 ug). All thimble samples were blank corrected.
- The Thimble sample (Container #1A) for Unit 2A Absorber Inlet Duct Run 2 was lost due to a lab accident during preparation. The sample could not be re-prepared because the entire filter was used during the initial preparation. Particle Bound Mercury and Total Mercury Results for Unit 2A Absorber Inlet Duct Run 2 do not include Container #1A. All other thimbles were successfully prepared.
- 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

TestAmerica
INCORPORATED

Sample ID: AEC
Leroy, Alabama

Hg Analysis
Ontario Hydro Method

Summary Report

	Unit 2 Stack Run 1	Unit 2 Stack Run 2	Unit 2 Stack Run 3	Unit 2 Stack Run 4	Unit 2 Stack Blank Train
Particle Bound Hg (ug)	0.046	0.086	0.109	0.080	0.000
Oxidized Hg (ug)	3.99	2.54	2.89	3.14	0.135
Elemental Hg (ug)	5.18	5.16	5.45	4.86	0.040
Total Hg (ug)	9.22	7.79	8.45	8.08	0.175

	Unit 2A Absorber Inlet Duct Run 1	Unit 2A Absorber Inlet Duct Run 2 *1	Unit 2A Absorber Inlet Duct Run 3	Unit 2A Absorber Inlet Duct Run 4	Unit 2A Absorber Inlet Duct Blank Train
Particle Bound Hg (ug)	7.00	0.10	2.26	4.90	0.000
Oxidized Hg (ug)	4.93	4.52	5.82	5.04	0.000
Elemental Hg (ug)	3.99	2.84	3.17	2.86	0.030
Total Hg (ug)	15.92	7.46	11.25	12.80	0.030

	Reagent Blanks*2
Container # 7 (ug/L)	<0.050
Container # 8 (ug/L)	<0.056
Container # 9 (ug/L)	<0.107
Container # 10 (ug/L)	<0.050
Container # 11 (ug/L)	<0.050
Container # 12 (47 mm) (ug)	<0.003
Container # 12 (88 mm) (ug)	<0.003
Container # 12 (Thimble) (ug)	0.009

Notes

*1 Due to a lab accident sample could not be analyzed. Particle Bound Mercury and Total Mercury Results do not include Container #1A

*2 A slight detect was found in the thimble blank

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

TestAmerica
INCORPORATED

Sample ID: AEC
Leroy, Alabama

Hg Analysis
Ontario Hydro Method

Duplicate Summary Report

	Unit 2 Stack Run 1	Unit 2 Stack Run 2	Unit 2 Stack Run 3	Unit 2 Stack Run 4	Unit 2 Stack Blank Train
Particle Bound Hg (ug)	0.05	0.09	0.11	0.079	0.000
Oxidized Hg (ug)	4.03	2.52	2.85	3.09	0.137
Elemental Hg (ug)	5.18	5.07	5.29	4.82	0.038
Total Hg (ug)	9.26	7.68	8.25	7.99	0.175

	Unit 2A Absorber Inlet Duct Run 1	Unit 2A Absorber Inlet Duct Run 2 *1	Unit 2A Absorber Inlet Duct Run 3	Unit 2A Absorber Inlet Duct Run 4	Unit 2A Absorber Inlet Duct Blank Train
Particle Bound Hg (ug)	6.70	0.11	2.31	4.81	0.000
Oxidized Hg (ug)	4.80	4.37	5.86	4.90	0.000
Elemental Hg (ug)	3.97	2.77	3.12	2.87	0.030
Total Hg (ug)	15.47	7.25	11.29	12.58	0.030

	Reagent Blanks*2
Container # 7 (ug/L)	<0.050
Container # 8 (ug/L)	<0.056
Container # 9 (ug/L)	<0.107
Container # 10 (ug/L)	<0.050
Container # 11 (ug/L)	<0.050
Container # 12 (47 mm) (ug)	<0.003
Container # 12 (88 mm) (ug)	<0.003
Container # 12 (Thimble) (ug)	0.009

Notes

*1 Due to a lab accident sample could not be analyzed. Particle Bound Mercury and Total Mercury Results do not include Container #1A

*2 A slight detect was found in the thimble blank

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

TestAmerica
INCORPORATED

Sample ID: **AEC**
Leroy, Alabama

Hg Analysis
Ontario Hydro Method

Spike Summary Report

TestAmerica ID	Sample ID	Sample Result	Spike Result	Spike Amount	% Recovery
SALR4-2	Unit 2 Stack Run 4, Container #2	0.037 ug	0.238 ug	0.189 ug	106
SALR4-3	Unit 2 Stack Run 4, Container #3	3.14 ug	7.16 ug	3.68 ug	109
SALR4-4	Unit 2 Stack Run 4, Container #4	<0.018 ug	0.334 ug	0.360 ug	93
IR4AL-4	Unit 2A Absorber Inlet Duct Run 4, Container #4	<0.018 ug	0.337 ug	0.360 ug	94
SALR4-5	Unit 2 Stack Run 4, Container #5	4.86 ug	8.14 ug	3.60 ug	91
IR4AL-5	Unit 2A Absorber Inlet Duct Run 4, Container #5	2.86 ug	7.34 ug	4.15 ug	109
Q96	Unit 2A Absorber Inlet Duct Run 3, Container #1A	2.21 ug	5.12 ug	3.00 ug	97
Q95	Unit 2A Absorber Inlet Duct Run 1, Container #1A	6.86 ug	14.77 ug	7.50 ug	105
88QH98	Reagent Blank	<0.003 ug	0.054 ug	0.050 ug	108

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

TestAmerica
INCORPORATED

Sample ID: **AEC**
Leroy, Alabama

Reagent Blanks

Hg Analysis
Ontario Hydro Method

Collected On: 1/26/00
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	RBAL-7	---	03/03/00	jpp	<0.050	<0.050	<1.0	---	---	ug/L		
Container # 8	RBAL-8	02/28/00	03/08/00	jpp	<0.056	<0.056	<1.0	---	---	ug/L		
Container # 9	RBAL-9	02/28/00	03/03/00	jpp	<0.107	<0.107	<1.0	---	---	ug/L		
Container # 10	RBAL-10	02/24/00	02/24/00	jpp	<0.050	<0.050	<1.0	---	---	ug/L		
Container # 11	RBAL-11	---	03/03/00	jpp	<0.050	<0.050	<1.0	---	---	ug/L		
Container # 12	47Q144	03/03/00	03/10/00	jpp	<0.003	<0.003	<1.0	---	---	ug		(47 mm)
Container # 12	88QH98	03/03/00	03/10/00	jpp	<0.003	<0.003	<1.0	---	---	ug		(88 mm)
Container # 12	Q124	03/03/00	03/08/00	jpp	0.009	0.009	5.1	---	---	ug	*1	(Thimble)

Notes: *1 A low level detect was found in the Thimble Blank. The related samples were blank corrected. (Q95, Q96, and Q99).

TestAmerica
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Sample ID: **AEC**
Leroy, Alabama

Unit 2 Stack Run 1

Hg Analysis
Ontario Hydro Method

Collected On: 1/25/00
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	88QA108	03/03/00	03/10/00	jpp	0.021	0.021	<1.0	---	---	ug		
Container # 1B		Not Provided		jpp	---	---	---	---	---	ug		
Container # 2	SALR1-2	02/28/00	03/08/00	jpp	0.025	0.026	2.0	---	---	ug		
Container # 3	SALR1-3	02/28/00	03/08/00	jpp	3.99	4.03	1.1	---	---	ug		
Container # 4	SALR1-4	02/28/00	03/03/00	jpp	0.030	0.028	4.2	---	---	ug		
Container # 5	SALR1-5	02/24/00	02/24/00	jpp	5.15	5.15	<1.0	---	---	ug		

Particle Bound Hg (ug) **0.046**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **3.99**
(Containers 3)

Elemental Hg (ug) **5.18**
(Containers 4 and 5)

Total Hg (ug) **9.22**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.047**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **4.03**
(Containers 3)

Dup. Elemental Hg (ug) **5.18**
(Containers 4 and 5)

Dup. Total Hg (ug) **9.26**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes:

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Sample ID: **AEC**
Leroy, Alabama

Unit 2 Stack Run 2

Hg Analysis
Ontario Hydro Method

Collected On: 1/26/00
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	88QB47	03/03/00	03/08/00	jpp	0.035	0.036	4.9	---	---	ug		
Container # 1B		Not Provided			---	---	---	---	---	ug		
Container # 2	SALR2-2	02/28/00	03/08/00	jpp	0.051	0.051	<1.0	---	---	ug		
Container # 3	SALR2-3	02/28/00	03/08/00	jpp	2.54	2.52	<1.0	---	---	ug		
Container # 4	SALR2-4	02/28/00	03/03/00	jpp	0.040	0.039	2.8	---	---	ug		
Container # 5	SALR2-5	02/24/00	02/24/00	jpp	5.12	5.03	1.7	---	---	ug		

Particle Bound Hg (ug) **0.086**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **2.54**
(Containers 3)

Elemental Hg (ug) **5.16**
(Containers 4 and 5)

Total Hg (ug) **7.79**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.087**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **2.52**
(Containers 3)

Dup. Elemental Hg (ug) **5.07**
(Containers 4 and 5)

Dup. Total Hg (ug) **7.68**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes:

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 Cameron #273

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

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 2-7-00

Calibrator: Shane Lee 261

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

Run No.: 1 @ 0.5" H_2O

P_b: 29.11 "Hg

Control Module Vacuum: 50 "Hg

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

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

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

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

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 29-1

Date: 2-7-00

Calibrator: Shane Lee 261

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

Run No.: 1 @ 1.0 "H_2O

P_b: 29.11 "Hg

Control Module Vacuum: 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	

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

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

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

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Sample ID: **AEC**
Leroy, Alabama

Unit 2 Stack Run 3

Hg Analysis
Ontario Hydro Method

Collected On: 1/26/00
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	88QB48	03/03/00	03/08/00	jpp	0.062	0.064	2.4	---	---	ug		
Container # 1B		Not Provided			---	---	---	---	---	ug		
Container # 2	SALR3-2	02/28/00	03/08/00	jpp	0.047	0.045	3.1	0.045	4.9	ug		
Container # 3	SALR3-3	02/28/00	03/08/00	jpp	2.89	2.85	1.4	2.96	2.2	ug		
Container # 4	SALR3-4	02/28/00	03/03/00	jpp	0.039	0.040	2.7	0.041	3.6	ug		
Container # 5	SALR3-5	02/24/00	02/24/00	jpp	5.41	5.25	3.1	5.33	1.5	ug		

Particle Bound Hg (ug) **0.109**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **2.89**
(Containers 3)

Elemental Hg (ug) **5.45**
(Containers 4 and 5)

Total Hg (ug) **8.45**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.109**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **2.85**
(Containers 3)

Dup. Elemental Hg (ug) **5.29**
(Containers 4 and 5)

Dup. Total Hg (ug) **8.25**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: * 1 Reagent Blank Corrected.

TestAmerica
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Sample ID: **AEC**
Leroy, Alabama

Unit 2 Stack Run 4

Hg Analysis
Ontario Hydro Method

Collected On: 1/26/00
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	88QH97	03/03/00	03/08/00	jpp	0.043	0.043	<1.0	0.044	<1.0	ug		
Container # 1B		Not Provided			—	—	—	—	—	ug		
Container # 2	SALR4-2	02/28/00	03/08/00	jpp	0.037	0.036	4.1	—	—	ug		
Container # 3	SALR4-3	02/28/00	03/08/00	jpp	3.14	3.09	1.9	—	—	ug		
Container # 4	SALR4-4	02/28/00	03/03/00	jpp	<0.018	<0.018	<1.0	—	—	ug		
Container # 5	SALR4-5	02/24/00	02/24/00	jpp	4.86	4.82	<1.0	—	—	ug		

Particle Bound Hg (ug) **0.080**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **3.14**
(Containers 3)

Elemental Hg (ug) **4.86**
(Containers 4 and 5)

Total Hg (ug) **8.08**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **0.079**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **3.09**
(Containers 3)

Dup. Elemental Hg (ug) **4.82**
(Containers 4 and 5)

Dup. Total Hg (ug) **7.99**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes:

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Sample ID: **AEC**
Leroy, Alabama

Hg Analysis
Ontario Hydro Method

Unit 2A Absorber Inlet Duct Run 1

Collected On: 1/25/00
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	Q95	03/08/00	03/08/00	jpp	6.86	6.56	4.5	---	---	ug		*1
Container # 1B	47Q140	03/03/00	03/10/00	jpp	0.04	0.039	2.2	0.039	1.4	ug		
Container # 2	IR1AL-2	02/28/00	03/08/00	jpp	0.096	0.096	<1.0	---	---	ug		
Container # 3	IR1AL-3	02/28/00	03/08/00	jpp	4.93	4.80	2.7	---	---	ug		
Container # 4	IR1AL-4	02/28/00	03/03/00	jpp	<0.021	<0.021	<1.0	---	---	ug		
Container # 5	IR1AL-5	02/24/00	02/24/00	jpp	3.99	3.97	<1.0	---	---	ug		

Particle Bound Hg (ug) **7.00**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **4.93**
(Containers 3)

Elemental Hg (ug) **3.99**
(Containers 4 and 5)

Total Hg (ug) **15.92**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **6.70**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **4.80**
(Containers 3)

Dup. Elemental Hg (ug) **3.97**
(Containers 4 and 5)

Dup. Total Hg (ug) **15.47**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: * 1 Reagent Blank Corrected.

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Sample ID: AEC
Leroy, Alabama

Hg Analysis
Ontario Hydro Method

Unit 2A Absorber Inlet Duct Run 2 *1

Collected On: 1/26/00
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	Q149	---	---	jpp				---	---	ug	*1	
Container # 1B	47Q142	03/08/00	03/08/00	jpp	0.012	0.012	3.3	0.012	2.4	ug		
Container # 2	IR2AL-2	02/28/00	03/08/00	jpp	0.092	0.094	1.7	---	---	ug		
Container # 3	IR2AL-3	02/28/00	03/08/00	jpp	4.52	4.37	3.2	---	---	ug		
Container # 4	IR2AL-4	02/28/00	03/03/00	jpp	<0.020	<0.020	<1.0	---	---	ug		
Container # 5	IR2AL-5	02/24/00	02/24/00	jpp	2.84	2.77	2.6	---	---	ug		

Particle Bound Hg (ug) **0.10**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **4.52**
(Containers 3)

Elemental Hg (ug) **2.84**
(Containers 4 and 5)

Total Hg (ug) **7.46**
(Containers 1A, 1B, 2, 3, 4, and 5)

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

Dup. Oxidized Hg (ug) **4.37**
(Containers 3)

Dup. Elemental Hg (ug) **2.77**
(Containers 4 and 5)

Dup. Total Hg (ug) **7.25**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: *1 Due to a lab accident sample could not be analyzed. Particle Bound Mercury and Total Mercury Results do not include Container #1A

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Sample ID: AEC
Leroy, Alabama

Hg Analysis
Ontario Hydro Method

Unit 2A Absorber Inlet Duct Run 3

Collected On: 1/26/00
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	Q96	03/03/00	03/08/00	jpp	2.21	2.26	2.1	---	---	ug		*1
Container # 1B	47Q143	03/03/00	03/10/00	jpp	0.007	0.007	<1.0	---	---	ug		
Container # 2	IR3AL-2	02/28/00	03/08/00	jpp	0.045	0.045	<1.0	---	---	ug		
Container # 3	IR3AL-3	02/28/00	03/08/00	jpp	5.82	5.86	<1.0	---	---	ug		
Container # 4	IR3AL-4	02/28/00	03/03/00	jpp	0.021	0.022	5.8	0.023	9.5	ug		
Container # 5	IR3AL-5	02/24/00	02/24/00	jpp	3.15	3.10	1.6	3.13	<1.0	ug		

Particle Bound Hg (ug) **2.26**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **5.82**
(Containers 3)

Elemental Hg (ug) **3.17**
(Containers 4 and 5)

Total Hg (ug) **11.25**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **2.31**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **5.86**
(Containers 3)

Dup. Elemental Hg (ug) **3.12**
(Containers 4 and 5)

Dup. Total Hg (ug) **11.29**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: * 1 Reagent Blank Corrected.

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Sample ID: **AEC**
Leroy, Alabama

Hg Analysis
Ontario Hydro Method

Unit 2A Absorber Inlet Duct Run 4

Collected On: 1/26/00
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	Q99	03/03/00	03/08/00	jpp	4.79	4.70	1.9	—	—	ug		*1
Container # 1B	47Q138	03/03/00	03/10/00	jpp	0.009	0.009	1.2	—	—	ug		
Container # 2	IR4AL-2	02/28/00	03/08/00	jpp	0.099	0.099	<1.0	—	—	ug		
Container # 3	IR4AL-3	02/28/00	03/08/00	jpp	5.04	4.90	2.8	—	—	ug		
Container # 4	IR4AL-4	02/28/00	03/03/00	jpp	<0.018	<0.018	<1.0	—	—	ug		
Container # 5	IR4AL-5	02/24/00	02/24/00	jpp	2.86	2.87	<1.0	—	—	ug		

Particle Bound Hg (ug) **4.90**
(Containers 1A, 1B, and 2)

Oxidized Hg (ug) **5.04**
(Containers 3)

Elemental Hg (ug) **2.86**
(Containers 4 and 5)

Total Hg (ug) **12.80**
(Containers 1A, 1B, 2, 3, 4, and 5)

Dup. Part. Bound Hg (ug) **4.81**
(Containers 1A, 1B, and 2)

Dup. Oxidized Hg (ug) **4.90**
(Containers 3)

Dup. Elemental Hg (ug) **2.87**
(Containers 4 and 5)

Dup. Total Hg (ug) **12.58**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes: * 1 Reagent Blank Corrected.

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Sample ID: **AEC**
Leroy, Alabama

Unit 2 Stack Blank Train

Hg Analysis
Ontario Hydro Method

Collected On: 1/26/00
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		jpp	---	---	---	---	---	ug		
Container # 1B		Not Provided		jpp	---	---	---	---	---	ug		
Container # 2		Not Provided		jpp	---	---	---	---	---	ug		
Container # 3	SBTAL-3	02/28/00	03/08/00	jpp	0.135	0.137	1.6	---	---	ug		
Container # 4	SBTAL-4	02/28/00	03/03/00	jpp	<0.015	<0.015	<1.0	---	---	ug		
Container # 5	SBTAL-5	02/24/00	03/03/00	jpp	0.040	0.038	3.4	---	---	ug		

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

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

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

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

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

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

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

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

Notes:

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

TestAmerica
INCORPORATED

Sample ID: **AEC**
Leroy, Alabama

Hg Analysis
Ontario Hydro Method

Unit 2A Absorber Inlet Duct Blank Train

Collected On: 1/26/00
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		jpp	---	---	---	---	---	ug		
Container # 1B		Not Provided		jpp	---	---	---	---	---	ug		
Container # 2		Not Provided		jpp	---	---	---	---	---	ug		
Container # 3	IBTAL-3	02/28/00	03/08/00	jpp	<0.029	<0.029	<1.0	---	---	ug		
Container # 4	IBTAL-4	02/28/00	03/03/00	jpp	<0.017	<0.017	<1.0	---	---	ug		
Container # 5	IBTAL-5	02/24/00	02/24/00	jpp	0.030	0.030	4.3	---	---	ug		

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

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

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

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

Dup. Total Hg (ug) **0.03**
(Containers 1A, 1B, 2, 3, 4, and 5)

Notes:

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

ASTM D6414-99 Results

TestAmerica
INCORPORATED

Sample ID: AEC
Leroy, Alabama
Coal Samples

Hg Analysis
ASTM D6414-99

Collected On: 01/26/2000
Collected By: METCO

	Digestion Date	Analysis Date	Analyst	Results	Duplicate Result	RPD	Units	Dry Weight (%)	Flags	Notes
Run 2 Composite	2/23/00	2/23/00	jpp	0.084	0.084	<1.0	ug/g	93.8		
Run 3 Composite	2/23/00	2/23/00	jpp	0.077	0.076	1.4	ug/g	94.0	*2	
Run 4 Composite	2/23/00	2/23/00	jpp	0.080	0.082	2.5	ug/g	95.1	*1	

Notes:
*1 - Sample was analyzed in triplicate. The triplicate result was 0.082 ug/g with an RPD of 2.5 %.
*2 - Sample was spiked. The spike reovery was 103 %.

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

Sample Train Receipt Records

Mercury Sample Train Receipt Record

Client ID
AEC
LeRoy, AL

Location ID/Run #
Reagent Blank
Unit # 2

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 ( )	___ + ___ + ___ = ___.		
3 ( )	___ + ___ + ___ = ___.		
4 ( )	___ + ___ + ___ = ___.		
5 ( )	___ + ___ + ___ = ___.		
7 (1)	71 + — + — = 71.	RBAL-7	
8 (1)	115 + — + — = 115.	RBAL-8	
9 (1)	120 + — + — = 120.	RBAL-9	
10 (1)	145 + — + — = 145.	RBAL-10	
11 (1)	110 + — + — = 110.	RBAL-11	

Filters:

Cont. ID/(#)	Filter ID(s)		
1A ( )			
1B ( )			
12(9)	470 144, 145, 146 (47 mm)		
	880 A98, 99 100 (88 mm)		
	Q97, 124, 98 (Thimble)		*see note*

Notes: The chain of custody indicated # of containers equal 6 Remarks column indicated 3 of each.

Checked By: SSC/JPP/EPK
Date: 02-09-00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
AEC
Leroy, Al

Location ID/Run #
Unit Number 2A Asorber Inlet Duct
Run 1

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	160 + — + — = 160.	IRIAL-2	
3 (2)	480 + 300 + — = 780.	IRIAL-3 (A+B)	
4 (1)	165 + — + — = 165.	IRIAL-4	
5 (2)	460 + 130 + ___ = 590.	IRIAL-5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)	Q95	IRIAL-1A	
1B (1)	47Q140	IRIAL-1B	
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes: _____

Checked By: EDK/SSC/JPP
Date: 2/9/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
AEC
LeRoy, AL

Location ID/Run #
Asorber Inlet Duct
Unit #2A Run2

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (/)	105 + — + — = 105.	IALR2	
3 (2)	490 + 230 + ___ = 720.	IALR3 (A&B)	
4 (/)	155 + — + — = 155.	IALR2-4	
5 (/)	450 + — + — = 450.	IALR2-5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (/)	Q149		
1B (/)	47Q142		
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes: _____

Checked By: SSC/EPK/JPP
Date: 02-09-00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
AEC
Leroy, AL

Location ID/Run #
Unit Number 2A Asorber Inlet Duct
Run 3

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	160 + — + — = 160.	IR3AL-2	
3 (2)	490 + 180 + — = 670.	IR3AL-3 (A+B)	
4 (1)	150 + — + — = 150.	IR3AL-4	
5 (1)	460 + — + — = 460.	IR3AL-5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)	Q96	IR3AL-1A	
1B (1)	47Q143	IR3AL-1B	
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes:

Checked By: EDK/SSC/JPP
Date: 2/9/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
AFC
LeRoy, AL

Location ID/Run #
Asober Inlet Duct
Unit #2A Run 4

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	43 + — + — = 43.	IALR4-2	
3 (2)	500 + 160 + — = 660.	IALR4-3(A&B)	
4 (1)	125 + — + — = 125.	IALR4-4	
5 (1)	410 + — + — = 410.	IALR4-5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)	Q99		
1B (1)	470138		
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes:

Checked By: SSC/JPP/EPK
Date: 02-09-00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
AEC
LEROY, AL

Location ID/Run #
Stack
Unit #2 Run 1

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	185 + — + — = 185.	SALR1-2	
3 (2)	470 + 150 + — = 620.	SALR1-3(A&B)	
4 (1)	165 + — + — = 165.	SALR1-4	
5 (1)	460 + — + — = 460.	SALR1-5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (1)	88QA108		
1B ( )			
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes:

Checked By: SSC/JPP/EPK
Date: 02/09/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
AEC
LeRoy, AL

Location ID/Run #
Stack
Unit #2 Run 2

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (/)	115 + — + — = 115.	SALR2-2	
3 (2)	490 + 47 + — = 537.	SALR2-3(A&B)	
4 (/)	140 + — + — = 140.	SALR2-4	
5 (/)	430 + — + — = 430.	SALR2-5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (/)	88Q B47		
1B ( )			
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes:

Checked By: SSC/JPP/EPK
Date: 02-09-00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
AEC
LeRoy, AL

Location ID/Run #
Stack
Unit# 2 Run 3

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (/)	145 + — + — = 145.	SALR3-2	
3 (2)	440 + 42 + — = 482.	SALR3-3(A&B)	
4 (/)	130 + — + — = 130.	SALR3-4	
5 (/)	410 + — + — = 410.	SALR3-5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A (/)	880B48		
1B ( )			
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes:

Checked By: SSC/JPP/EPK
Date: 02/09/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
AEC
Leroy, AL

Location ID/Run #
Unit #2 Stack
Run 4

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 (1)	135 + — + — = 135.	SR4 AL-2	
3 (2)	450 + 71 + — = 521.	SR4AL-3(A+B)	
4 (1)	135 + — + — = 135.	SR4AL-4	
5 (1)	360 + — + — = 360.	SR4AL-5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

Cont. ID/(#)	Filter ID(s)		
1A ( )			
1B (1)	88Q#97	SR4AL-1B	
12	(47 mm)		
	(88 mm)		
	(Thimble)		

Notes: _____

Checked By: EDK/SSC/JPP
Date: 2/9/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
AEC
Leroy, AL

Location ID/Run #
Unit Number 2 Stack
Blank Train

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 ( )	___ + ___ + ___ = ___.		
390 3 (1)	~~105~~ + — + — = ~~105~~ .390	SBTAL-3	
4 (1)	125 + — + — = 125.	SBTAL-4	
5 (1)	440 + — + — = 440.	SBTAL-5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

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

Notes: _____

Checked By: EOK/SSC/JPP
Date: 2/9/00

TestAmerica INCORPORATED

Mercury Sample Train Receipt Record

Client ID
AEC
LeRoy, AL

Location ID/Run #
BLANK TRAIN
Inlet Asorber Duct

Solutions:

Cont. ID/(#)	Volumes (mL)	TestAmerica ID(s)	Comments
2 ( )	___ + ___ + ___ = ___.		
3 (/)	410 + — + — = 410.	IBTAL-3	
4 (/)	150 + — + — = 150.	IBTAL-4	
5 (/)	420 + — + — = 420.	IBTAL-5	
7 ( )	___ + ___ + ___ = ___.		
8 ( )	___ + ___ + ___ = ___.		
9 ( )	___ + ___ + ___ = ___.		
10 ( )	___ + ___ + ___ = ___.		
11 ( )	___ + ___ + ___ = ___.		

Filters:

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

Notes:

Checked By: SSC/JPP/EPK
Date: 02-09-00

TestAmerica INCORPORATED

Sample Preparation Batch Sheets

AEC COALS

LEROY, AL

NONAQUEOUS MERCURY BATCH SHEET

Analyst: JPP Date: 2/23/00 Water Bath: start mid end

Standard Reference: 67-16-15 temp: 80°C

ICV Reference: 67-16-16 date:

Cont #	Sample # / Client	Weight	MS	MSD
10	BLANK			
6	NIST 1630A	1.0186	49.1	
7	067 RUN #2	1.0335	48.4	
8	068 RUN #3 SPK	1.0200	49.0	
9	069 RUN #4	1.0539	47.4	

MB

ICV

MS

MSD

RPD

FLAG

HNO_3 - 67-17-2
HCl - 67-15-1
$KMnO_4$ - 67-15-
$SnCl_2$ - 67-17-

SECONDARY DATA CHECK: analyst:
date:

Comments: NIST 1630 TV = 0.106 ± 0.023 mg Hg, V_F = 50 mL

Mercury in Flue Gas
Filter Preparation Batch Log

Analyst(s) SAH/JRP

Preparation Date 3/3/00

Reagent Reference #'s

HCl 67-19-2

$NH_2OH*HCl$ —

$KMnO_4$ —

HNO_3 67-19-1

HF 67-21-14

$SnCl_2$ 67-23-24 (3/10/00)

$SnCl_2$ 67-21-24 (3/3/00)

Calibration Standards 67-16-15

ICV Standard 67-16-16

$SnCl_2$ (#13-24) 67-23-19 (3/8/00

Lab ID	Filter ID	Sample Description	Final Vol (mL)
1	88QA198	run 3/10/00	50
2	47Q137	KCPL RUN 3/3/00	50
3	BLANK		50
4	16333	USED 3/8/00 + 3/10/00 0.5885	50
5	47Q138	Run 3/10/00	50
6	47Q144	run 3/10/00	50
7	47Q143	run 3/10/00	50
8	47Q140	run 3/10/00 TRP	50
9	Q149	LOST - LAB ACCIDENT	150
10	Q149		
11	Q149		
12	88QH98	run 3/10/00 SPK	50

Lab ID	Filter ID	Sample Description	Final Vol (mL)
13	88QB48		50
14	88QH97	TRP	50
15	88QB47		50
16	Q96	SPK	150
17	Q96		
18	Q96		
19	Q124		150
20	Q124		
21	Q124		
22	Q99		150
23	Q99		
24	Q99		

LCS CCV

NOTES Filters #13-24 run 3/8/00, 16333 from 3/3/00 used 3/8/00

TestAmerica INCORPORATED

Mercury in Flue Gas
Filter Preparation Batch Log

Analyst(s) SAM Preparation Date 3/8/00

Reagent Reference #'s

HCl	67-23-8	$SnCl_2$	67-23-19
$NH_2OH*HCl$	—	Calibration Standards	67-16-15
$KMnO_4$	—	ICV Standard	67-16-16
HNO_3	67-23-7	HF	67-21-14
BORIC ACID	67-23-18		

	Lab ID	Filter ID	Sample Description	Final Vol (mL)
26	~~29~~ SA 3-3	Q95	SPIK	150
27	~~26~~	Q95		
28	~~27~~	Q95		
	25	47Q142	TRP	50
	~~29~~	~~BLANK~~	~~3/8/00 RUN~~	~~50~~
	~~30~~	~~1633B~~	~~SA 3/6/00~~	
	30	MDL 1	1633B 0.5025	50
	31	MDL 2	1633B 0.5563	50
	32	MDL 3	1633B 0.5277	50
	33	MDL 4	1633B 0.5040	50
	34	~~BLANK2~~		~~50~~

Lab ID	Filter ID	Sample Description	Final Vol (mL)

NOTES #29 BLK USED FOR ALL FILTERS 3/8/00 (see previous pg.)

TestAmerica INCORPORATED

Mercury in Flue Gas
Aqueous Preparation Batch Log

Analyst(s) SAH, EPK, JPP Preparation Date 2/28/00

Reagent Reference #'s

HCl	67-19-2	$SnCl_2$	4723-44
$NH_2OH*HCl$	67-18-18	Calibration Standards	47-16-15
$KMnO_4$	67-19-3	ICV Standard	67-16-16
HNO_3	67-19-1		
H_2SO_4	67-16-10		
$K_2S_2O_8$	67-19-6		

Lab ID	Cont. #	Sample Description	Init Cont Vol (mL)	Init Prep Vol (mL)	Final Vol (mL)
	8	RB AL	115	20	28
	2	IR1 AL	160	20	28
	2	IR2 AL	105	20	28
	2	IR3 AL	160	20	28
	2	IR4 AL	43	20	28
	~~2~~	~~SBTAL~~ JPP 2/28/00	~~340~~		
	2	SR1AL	185	20	28
	2	SR2AL	115	20	28
	2	SR3AL	145	20	28
	2	SR4AL	135	20	28

Lab ID	Cont. #	Sample Description	Init Cont Vol (mL)	Init Prep Vol (mL)	Final Vol (mL)
	3	IBTAL	410	20	28
	3	IR1AL	780	20	28
	3	IR2AL	720	20	28
	3	IR3AL	670	20	28
	3	IR4AL	660	20	28
	3	SBTAL	390	20	28
	3	SR1AL	620	20	28
	3	SR2AL	537	20	28
	3	SR3AL	482	20	28
	3	SR4AL	521	20	28
	3	IBTKC *	465	20	28
	3	SBTKC *	460	20	28

NOTES * REPREPS RSD, RUN

Mercury in Flue Gas
Aqueous Preparation Batch Log

Analyst(s) EPK/JPS Preparation Date 2/28/00

Reagent Reference #'s

HCl	67-19-2	$SnCl_2$	67-21-24
$NH_2OH*HCl$	67-1	Calibration Standards	67-16-15
$KMnO_4$	67-19-3 / 67-19-13	ICV Standard	67-16-16
HNO_3	67-19-1		

Lab ID	Cont. #	Sample Description	Init Cont Vol (mL)	Init Prep Vol (mL)	Final Vol (mL)
	9	RB AL	120	25	53.25
	4	FBT AL	150	25	56.25
	4	IR1 AL 2/28/00 ~~780~~	165	25	63.75
	4	IR2 AL	155	25	63.75
	4	IR3 AL	150	25	68.75
	4	IR4 AL	125	25	71.25
	4	S BT AL	125	25	58.75
	4	S R1 AL	165	25	61.25
	4	S R2 AL	140	25	66.25
	4	S R3 AL	130	25	68.75
	4	S R4 AL	135	25	66.25

Lab ID	Cont. #	Sample Description	Init Cont Vol (mL)	Init Prep Vol (mL)	Final Vol (mL)
	7	RB AL	71	–	–
	11	RB AL	110	–	–

NOTES

Mercury in Flue Gas
Aqueous Preparation Batch Log

Analyst(s) JRP Preparation Date 2/24/00

Reagent Reference #'s

HCl	N/A	$SnCl_2$	67-18-17
$NH_2OH*HCl$	67-7-4	Calibration Standards	67-16-15
$KMnO_4$	N/A	ICV Standard	67-16-16
HNO_3	N/A		

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)
	10	RB AL 10	145	N/A	N/A						
	5	IBT AL 5	420								
	5	IR1 AL 5	590								
	5	IR2 AL 5	450								
	5	IR3 AL 5	460								
	5	IR4 AL 5	410								
	5	SBT AL 5	440								
	5	SR1 AL 5	460								
	5	SR2 AL 5	430								
	5	SR3 AL 5	410								
	5	SR4 AL 5	360								

NOTES K CPL STACK BLANK TRAIN SAMPLE RUN WITH THE SET OF DATA.

2/23/2000 Analytical Data

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001    Time: 18:38:48  23 Feb 2000
Folder: FEB00B     Seq: 397                     Print: On
User:              Batch:            Id: Std6Reol   Cup: 1 15 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 022300c
cup Id        Extended id          Weight Volume Macro check Help
 1 icb                             1.0000 1.0000
 2 AEC blk                         1.0000 1.0000
 3 AECblkdup                       1.0000 1.0000
 4 1630a                           1.0000 1.0000
 5 1630adup                        1.0000 1.0000
 6 067#2                           1.0000 1.0000
 7 067#2dup                        1.0000 1.0000
 8 068 #3                          1.0000 1.0000
 9 068#3dup                        1.0000 1.0000
10 068#3spk                        1.0000 1.0000
11 069 #4                          1.0000 1.0000
12 069#4dup                        1.0000 1.0000
13 069#4trp                        1.0000 1.0000
14 ccb                             1.0000 1.0000
15 ccv                             1.0000 1.0000
                                                                          PgDn

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

*** Standard: 1 Rep: 1 Seq: 391 18:20:14 23 Feb 2000 HG

Hg .000 ug/L -1097
Ave. Int. = -1097 S. D. = 0

*** Standard: 2 Rep: 1 Seq: 392 18:22:37 23 Feb 2000 HG

Hg .050 ug/L 3420
Ave. Int. = 3420 S. D. = 0

*** Standard: 3 Rep: 1 Seq: 393 18:25:00 23 Feb 2000 HG

Hg .200 ug/L 14165
Ave. Int. = 14165 S. D. = 0

*** Standard: 4 Rep: 1 Seq: 394 18:27:24 23 Feb 2000 HG

Hg 1.00 ug/L 66310
Ave. Int. = 66310 S. D. = 0

*** Standard: 5 Rep: 1 Seq: 395 18:30:09 23 Feb 2000 HG

Hg 2.00 ug/L 130974
Ave. Int. = 130974 S. D. = 0

18:35:31 23 Feb 2000 Folder: FEB00B Page 45
Protocol: SYSTEST labsys2

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

*** Standard: 6 Rep: 1 Seq: 396 18:35:31 23 Feb 2000 HG

Hg 3.00 ug/L 191414
Ave. Int. = 191414 S. D. = 0

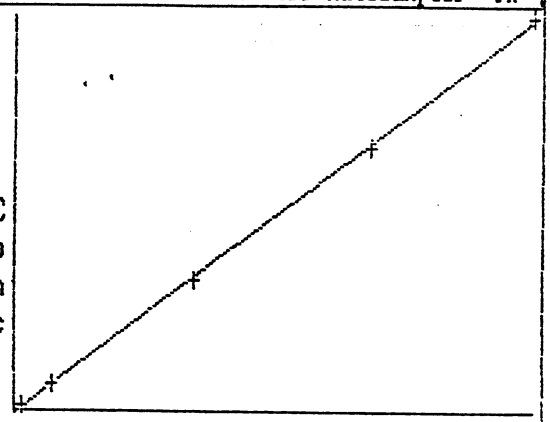
Protocol: SYSTEST labsys2
Rev: 3.001 Time: 18:35:58 23 Feb 2000
Folder: FEB00B Seq: 397 Print: On
User: Batch: Id: Std6Rep1 Cup: 1 15 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted LiNear	
S1	.000	-.027	-.027	Quadratic	
S2	.050	.043	-.007	WtdLinear	
S3	.200	.211	.011		C
S4	1.00	1.02	.023	Accept	o
S5	2.00	2.03	.030		n
S6	3.00	2.97	-.029	StdAdd	c

A .0000000 r .999792
B 1.55739e-5 C -1.00517e-2



	Mean	%RSD	
S1	-1097	0	-1097
S2	3420	0	3420
S3	14165	0	14165
S4	66310	0	66310
S5	130974	0	130974
S6	191414	0	191414

New calibration coefficients stored

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

*** Check Standard: 2 Ck2 Seq: 397 18:43:50 23 Feb 2000 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD	
Hg		107.	.640	.600	ug/L	.000	107%

*** Sample ID: icb Seq: 398 18:46:23 23 Feb 2000 HG

Hg	-.023	ug/L	.000	-.023	<0.05 mg/L

*** Sample ID: AEC blk Seq: 399 18:48:41 23 Feb 2000 HG

Hg	.035	ug/L	.000	.035	<0.05 mg/L

*** Sample ID: AECblkdup Seq: 400 18:51:00 23 Feb 2000 HG

Hg	.033	ug/L	.000	.033	<0.05 mg/L

*** Sample ID: 1630a Seq: 401 18:53:19 23 Feb 2000 HG

Hg	2.43	ug/L	.000	2.43	TV = 0.106 mg/kg ± 0.023 0.120 mg/kg 113%

*** Sample ID: 1630adup Seq: 402 18:56:02 23 Feb 2000 HG RPD = <1.0%

Hg	2.45	ug/L	.000	2.45	TV = 0.106 mg/kg ± 0.023 0.121 mg/kg 114%

*** Sample ID: 067#2 Seq: 403 18:58:44 23 Feb 2000 HG

Hg	1.63	ug/L	.000	1.63	0.084 mg/kg

*** Sample ID: 067#2dup Seq: 404 19:01:24 23 Feb 2000 HG RPD = <1.0%

Hg	1.63	ug/L	.000	1.63	0.084 mg/kg

*** Sample ID: 068 #3 Seq: 405 19:04:00 23 Feb 2000 HG

Hg	1.47	ug/L	.000	1.47	0.077 mg/kg

*** Sample ID: 068#3dup Seq: 406 19:06:40 23 Feb 2000 HG RPD = 1.4%

Hg	1.45	ug/L	.000	1.45	0.076 mg/kg

*** Sample ID: 068#3spk Seq: 407 19:09:20 23 Feb 2000 HG

Hg	2.50	ug/L	.000	2.50	TV = 1.0 103%

*** Sample ID: 069 #4 Seq: 408 19:12:01 23 Feb 2000 HG

Hg	1.61	ug/L	.000	1.61	0.080 mg/kg

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: 069#4dup					Seq: 409	19:14:41 23 Feb 2000 HG RPD = 2.5%		
Hg	1.65	ug/L	.000	1.65		0.082 mg/kg		
*** Sample ID: 069#4trp					Seq: 410	19:17:20 23 Feb 2000 HG RPD = 2.5%		
Hg	1.65	ug/L	.000	1.65		0.082 mg/kg		
*** Sample ID: ccb					Seq: 411	19:20:01 23 Feb 2000 HG		
Hg	-.021	ug/L	.000	-.021		<0.05 mg/L		
*** Sample ID: ccv					Seq: 412	19:22:20 23 Feb 2000 HG		
Hg	2.04	ug/L	.000	2.04		TV = 2.0 102%		

Dry Weight/Total Volatile Solids (TVS) Notebook # 6

Sample Number	1392067	1392068	REPLICAT 1392069	1391368	1391369	1391370
Client/Pan #	1	2	3	4	5	6
Wt of Pan + Sample	21.3806	21.4453	21.1115	21.1620	21.8788	21.4211
Wt after Drying	20.1279	20.2170	RP 2/23/00	16.3895	16.9942	16.7594
Wt of Pan or Wt After Ignition	1.0206	1.0243	1.0121	1.0187	1.0146	1.0140
Difference	19.1073	19.1927		15.3708	15.8796	15.7454
Sample amount g	20.3600	20.4210	20.0994	20.1133	20.8637	20.4071
Result	93.8%	94.0%		~~76.3%~~	76.1%	77.2%

Sample Number						
Client/Pan #						
Wt of Pan + Sample						
Wt after Drying						
Wt of Pan or Wt After Ignition						
Difference						
Sample amount g						
Result						

Sample Number					Batch Number: N/A
Client/Pan #					
Wt of Pan + Sample					Note: METCO ENV. (METALS)
Wt after Drying					
Wt of Pan or Wt After Ignition					
Difference					
Sample amount g					
Result					

Analyst: RXP Date: 2/22/00

TestAmerica INCORPORATED

2/24/2000 Analytical Data

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 20:50:36  24 Feb 2000
Folder: FEB00B     Seq: 531                    Print: On
User:              Batch:            Id: Std6Rep1   Cup: 1 25 Gas:    0.23 LPM
State: Idle                                        Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 022400d
cup Id        Extended id          Weight Volume Macro check Help
 1 icb                             1.0000 1.0000
 2 rbal 10                         1.0000 1.0000
 3 rbal10dup                       1.0000 1.0000
 4 ibtal 5                         1.0000 1.0000
 5 ibtal5dup                       1.0000 1.0000
 6 ir1al 5 1:10                    1.0000 1.0000
 7 ir1al5dup 1:10                  1.0000 1.0000
 8 ir2al 5 1:10                    1.0000 1.0000
 9 ir2al5dup 1:10                  1.0000 1.0000
10 ir3al 5 1:10                    1.0000 1.0000
11 ir3al5dup 1:10                  1.0000 1.0000
12 ir3al5trp 1:10                  1.0000 1.0000
13 ir4al 5  1:10                   1.0000 1.0000
14 ir4al5dup 1:10                  1.0000 1.0000
15 ir4al5spk 1:10                  1.0000 1.0000
                                                                    PgDn

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

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 22:26:41  24 Feb 2000
Folder: FEB00B     Seq: 565                    Print: On
User:              Batch:            Id: sr4al 5    Cup: 1 23 Gas:    0.23 LPM
State: Idle        Macro AR       not found         Xmit: Off Autosampler: On
```

```
AUTOSAMPLER:  Rack entry   Rack 022400d                                    PgUp
cup Id          Extended id          Weight Volume Macro check Help
16 sr1al 5 1:10                      1.0000 1.0000
17 sr1al5dup 1:10                    1.0000 1.0000
18 sr2al 5 1:10                      1.0000 1.0000
19 sr2al5dup 1:10                    1.0000 1.0000
20 sr3al 5 1:10                      1.0000 1.0000
21 sr3al5dup 1:10                    1.0000 1.0000
22 sr3al5trp 1:10                    1.0000 1.0000
23 sr4al 5 1:10                      1.0000 1.0000
24 sr4al5dup 1:10                    1.0000 1.0000
25 sr4al5spk 1:10                    1.0000 1.0000
26 ccb                               1.0000 1.0000
27 ccv                               1.0000 1.0000
28 sbtal5                            1.0000 1.0000
29 sbtal5dup                         1.0000 1.0000
30 sbtkc 5                           1.0000 1.0000
                                                                           PgDn
```

```
Cup 16 ID: sr1al 5                          Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 22:26:47  24 Feb 2000
Folder: FEB00B     Seq: 565                    Print: On
User:              Batch:            Id: sr4al 5    Cup: 1 23 Gas:    0.23 LPM
State: Idle        Macro AR       not found         Xmit: Off Autosampler: On
```

```
AUTOSAMPLER:  Rack entry   Rack 022400d                                    PgUp
cup Id          Extended id          Weight Volume Macro check Help
31 sbtkc5dup                         1.0000 1.0000
32 ccb                               1.0000 1.0000
33 ccv                               1.0000 1.0000
34                                   1.0000 1.0000
35                                   1.0000 1.0000
36                                   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: sbtkc5dup                          Cell entry, Ins to switch
```

*** Standard: 1 Rep: 1 Seq: 525 20:32:51 24 Feb 2000 HG

Hg .000 ug/L -108
Ave. Int. = -108 S. D. = 0

20:35:14 24 Feb 2000 Folder: FEB00B Protocol: SYSTEST labsys2 Page 58

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

*** Standard: 2 Rep: 1 Seq: 526 20:35:14 24 Feb 2000 HG

Hg .050 ug/L 3227
Ave. Int. = 3227 S. D. = 0

*** Standard: 3 Rep: 1 Seq: 527 20:37:37 24 Feb 2000 HG

Hg .200 ug/L 13671
Ave. Int. = 13671 S. D. = 0

*** Standard: 4 Rep: 1 Seq: 528 20:40:01 24 Feb 2000 HG

Hg 1.00 ug/L 66724
Ave. Int. = 66724 S. D. = 0

*** Standard: 5 Rep: 1 Seq: 529 20:42:36 24 Feb 2000 HG

Hg 2.00 ug/L 130949
Ave. Int. = 130949 S. D. = 0

*** Standard: 6 Rep: 1 Seq: 530 20:45:22 24 Feb 2000 HG

Hg 3.00 ug/L 186403
Ave. Int. = 186403 S. D. = 0

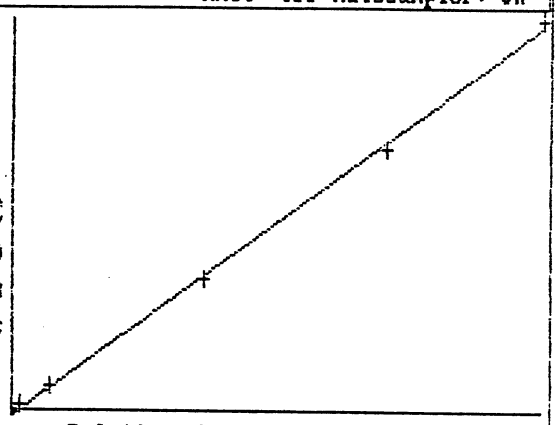
Protocol: SYSTEST labsys2
Rev: 3.001 Time: 20:45:45 24 Feb 2000
Folder: FEB00B Seq: 531 Print: On
User: Batch: Id: Std6Rep1 Cup: 1 25 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted LiNear
S1	.000	-.022	-.022	Quadratic
S2	.050	.031	-.019	WtdLinear
S3	.200	.197	-.003	C
S4	1.00	1.04	.040	Accept o
S5	2.00	2.06	.061	n
S6	3.00	2.94	-.057	StdAdd c

A .0000000 r .999368
B 1.58987e-5 C -2.05382e-2



Relative Absorbance

	Mean	%RSD	
S1	-108	0	-108
S2	3227	0	3227
S3	13671	0	13671
S4	66724	0	66724
S5	130949	0	130949
S6	186403	0	186403

New calibration coefficients stored

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

*** Check Standard: 2 Ck2 Seq: 531 20:52:23 24 Feb 2000 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		103.	.620	.600	ug/L	.000

*** Sample ID: icb Seq: 532 20:54:54 24 Feb 2000 HG

Hg -.030 ug/L .000 -.030 <0.05µg/L

*** Sample ID: rbal 10 Seq: 533 20:57:13 24 Feb 2000 HG

Hg -.002 ug/L .000 -.002 <0.05µg/L

*** Sample ID: rbal10dup Seq: 534 20:59:32 24 Feb 2000 HG RPD-N/A

Hg -.007 ug/L .000 -.007 <0.05µg/L

*** Sample ID: ibtal 5 Seq: 535 21:01:51 24 Feb 2000 HG

Hg .071 ug/L .000 .071 0.03µg

*** Sample ID: ibtal5dup Seq: 536 21:04:10 24 Feb 2000 HG RPD=43%

Hg .068 ug/L .000 .068 0.030µg

*** Sample ID: ir1al 5 1:10 Seq: 537 21:06:30 24 Feb 2000 HG

Hg .676 ug/L .000 .676 0.399µg x10 = 3.99µg

*** Sample ID: ir1al5dup 1:10 Seq: 538 21:08:56 24 Feb 2000 HG RPD=<1.0%

Hg .673 ug/L .000 .673 0.397µg x10 = 3.97µg

*** Sample ID: ir2al 5 1:10 Seq: 539 21:11:25 24 Feb 2000 HG

Hg .631 ug/L .000 .631 0.284µg x10 = 2.84µg

*** Sample ID: ir2al5dup 1:10 Seq: 540 21:13:55 24 Feb 2000 HG RPD=2.6%

Hg .615 ug/L .000 .615 0.277µg x10 = 2.77µg

*** Sample ID: ir3al 5 1:10 Seq: 541 21:16:25 24 Feb 2000 HG

Hg .684 ug/L .000 .684 0.315µg x10 = 3.15µg

*** Sample ID: ir3al5dup 1:10 Seq: 542 21:18:59 24 Feb 2000 HG RPD=1.6%

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: ir3al5tro 1:10				Seq: 543	21:21:31 24 Feb 2000 HG RPD = <1.0%			
Hg	.680	ug/L	.000	.680		3.13 µg		
*** Sample ID: ir4al 5 1:10				Seq: 544	21:24:00 24 Feb 2000 HG			
Hg	.698	ug/L	.000	.698		2.86 µg		
*** Sample ID: ir4al5dup 1:10				Seq: 545	21:26:29 24 Feb 2000 HG RPD = <1.0%			
Hg	.700	ug/L	.000	.700		2.87 µg		
*** Sample ID: ir4al5spk 1:10				Seq: 546	21:28:53 24 Feb 2000 HG TV = 1.0			
Hg	1.79	ug/L	.000	1.79		109%		
*** Sample ID: sr1al 5 1:10				Seq: 547	21:31:27 24 Feb 2000 HG			
Hg	1.12	ug/L	.000	1.12		5.15 µg		
*** Sample ID: sr1al5dup 1:10				Seq: 548	21:34:07 24 Feb 2000 HG RPD = N/A			
Hg	1.12	ug/L	.000	1.12		5.15 µg		
*** Sample ID: sr2al 5 1:10				Seq: 549	21:36:39 24 Feb 2000 HG			
Hg	1.19	ug/L	.000	1.19		5.12 µg		
*** Sample ID: sr2al5dup 1:10				Seq: 550	21:39:20 24 Feb 2000 HG RPD = 1.7%			
Hg	1.17	ug/L	.000	1.17		5.03 µg		
*** Sample ID: sr3al 5 1:10				Seq: 551	21:42:00 24 Feb 2000 HG			
Hg	1.32	ug/L	.000	1.32		5.41 µg		
*** Sample ID: sr3al5dup 1:10				Seq: 552	21:44:40 24 Feb 2000 HG RPD = 3.1%			
Hg	1.28	ug/L	.000	1.28		5.25 µg		
*** Sample ID: sr3al5tro 1:10				Seq: 553	21:47:15 24 Feb 2000 HG RPD = 1.5%			
Hg	1.30	ug/L	.000	1.30		5.33 µg		
*** Sample ID: sr4al 5 1:10				Seq: 554	21:49:55 24 Feb 2000 HG			

Line	Conc.	Units	SD/RSD	1	2	3	4	5	
*** Sample ID: sr4al5dup 1:10					Seq: 565	22:29:19 24 Feb 2000 HG			RPD = 21.0 %
Hg	1.34	ug/L	.000	1.34					4.82 ug
*** Sample ID: sr4al5spk 1:10					Seq: 566	22:32:00 24 Feb 2000 HG			
Hg	2.26	ug/L	.000	2.26					91%
*** Sample ID: ccb					Seq: 567	22:34:51 24 Feb 2000 HG			
Hg	-.030	ug/L	.000	-.030					<0.05 µg/L
*** Sample ID: ccv					Seq: 568	22:37:11 24 Feb 2000 HG			
Hg	1.98	ug/L	.000	1.98					N=2.0 99%
*** Sample ID: sbtal5					Seq: 569	22:39:56 24 Feb 2000 HG			
Hg	.054	ug/L	.000	.054					NO DATA
*** Sample ID: sbtal5dup					Seq: 570	22:42:16 24 Feb 2000 HG			RPD~12%
Hg	.061	ug/L	.000	.061					NO DATA
*** Sample ID: sbtkc 5					Seq: 571	22:44:37 24 Feb 2000 HG			
Hg	.100	ug/L	.000	.100					0.044 µg
*** Sample ID: sbtkc5dup					Seq: 572	22:46:58 24 Feb 2000 HG			RPD = 21.0%
Hg	.100	ug/L	.000	.100					0.044 µg
*** Sample ID: ccb					Seq: 573	22:49:19 24 Feb 2000 HG			
Hg	-.026	ug/L	.000	-.026					<0.05 µg/L
*** Sample ID: ccv					Seq: 574	22:51:39 24 Feb 2000 HG			
Hg	2.02	ug/L	.000	2.02					N=2.0 101%

3/3/2000 Analytical Data

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 17:20:36  03 Mar 2000
Folder: MARA00     Seq: 422                     Print: On
User:              Batch:            Id: CCV        Cup: 1 41 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 030300E
cup Id        Extended id          Weight Volume Macro check Help
 1 CCB                             1.0000 1.0000
 2 CCV                             1.0000 1.0000
 3 BLK                             1.0000 1.0000
 4 BLK DUP                         1.0000 1.0000
 5 1633B                           1.0000 1.0000
 6 1633BDUP                        1.0000 1.0000
 7 47Q137                          1.0000 1.0000
 8 47Q137DUP                       1.0000 1.0000
 9 CCB                             1.0000 1.0000
10 CCV                             1.0000 1.0000
11 REAL 7                          1.0000 1.0000
12 REAL7DUP                        1.0000 1.0000
13 REAL11                          1.0000 1.0000
14 REAL11DUP                       1.0000 1.0000
15 SBTAL 5                         1.0000 1.0000
                                                                    PgDn

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

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001    Time: 17:20:43  03 Mar 2000
Folder: MARA00     Seq: 422                     Print: On
User:              Batch:            Id: CCV        Cup: 1 41 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 030300E                                    PgUp
cup Id        Extended id          Weight Volume Macro check Help
16 SBTAL5DUP                       1.00000 1.00000
17 RBAL 9                          1.00000 1.00000
18 RBAL 9DUP                       1.00000 1.00000
19 IBTAL 4                         1.00000 1.00000
20 IBTAL 4DUP                      1.00000 1.00000
21 IR1AL 4                         1.00000 1.00000
22 IR1AL 4DUP                      1.00000 1.00000
23 IR2AL 4                         1.00000 1.00000
24 IR2AL 4DUP                      1.00000 1.00000
25 IR3AL 4                         1.00000 1.00000
26 IR3AL 4DUP                      1.00000 1.00000
27 IR3AL 4TRP                      1.00000 1.00000
28 IR4AL 4                         1.00000 1.00000
29 IR4AL 4DUP                      1.00000 1.00000
30 IR4AL 4SPK                      1.00000 1.00000
                                                                           PgDn

Cup 16 ID: SBTAL5DUP                          Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 17:20:46  03 Mar 2000
Folder: MARA00     Seq: 422                    Print: On
User:              Batch:            Id: CCV        Cup: 1 41 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 030300E                                    PgUp
cup Id        Extended id          Weight Volume Macro check Help
31 CCB                             1.00000 1.00000
32 CCV                             1.00000 1.00000
33 SBTAL 4                         1.00000 1.00000
34 SBTAL 4DUP                      1.00000 1.00000
35 SR1AL 4                         1.00000 1.00000
36 SR1AL 4DUP                      1.00000 1.00000
37 SR2AL 4                         1.00000 1.00000
38 SR2AL 4DUP                      1.00000 1.00000
39 SR3AL 4                         1.00000 1.00000
40 SR3AL 4DUP                      1.00000 1.00000
41 SR3AL 4TRP                      1.00000 1.00000
42 SR4AL 4                         1.00000 1.00000
43 SR4AL 4DUP                      1.00000 1.00000
44 SR4AL 4SPK                      1.00000 1.00000
45 ccB
46 ccV
                                                                           PgDn

Cup 31 ID: CCB                                   Cell entry, Ins to switch
```

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

*** Standard: 1 Rep: 1 Seq: 316 09:47:52 03 Mar 2000 HG

Hg .000 ug/L 466
Ave. Int. = 466 S. D. = 0

*** Standard: 2 Rep: 1 Seq: 317 09:50:15 03 Mar 2000 HG

Hg .050 ug/L 6818
Ave. Int. = 6818 S. D. = 0

*** Standard: 3 Rep: 1 Seq: 318 09:52:38 03 Mar 2000 HG

Hg .200 ug/L 28591
Ave. Int. = 28591 S. D. = 0

*** Standard: 4 Rep: 1 Seq: 319 09:55:02 03 Mar 2000 HG

Hg 1.00 ug/L 134408
Ave. Int. = 134408 S. D. = 0

*** Standard: 5 Rep: 1 Seq: 320 09:57:40 03 Mar 2000 HG

Hg 2.00 ug/L 265560
Ave. Int. = 265560 S. D. = 0

*** Standard: 6 Rep: 1 Seq: 321 10:00:30 03 Mar 2000 HG

Hg 3.00 ug/L 408720
Ave. Int. = 408720 S. D. = 0

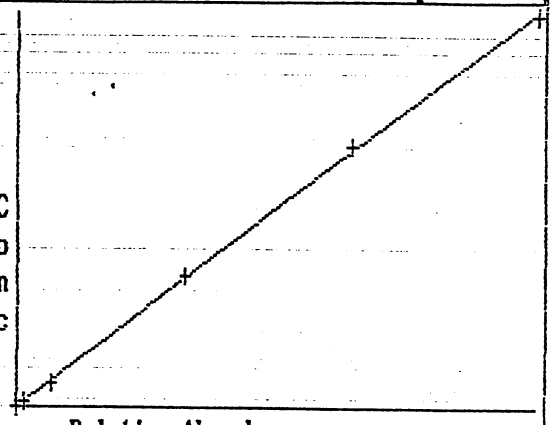
Protocol: SYSTEST labsys2
Rev: 3.001 Time: 10:01:52 03 Mar 2000
Folder: MARA00 Seq: 322 Print: On
User: Batch: Id: Std6Rep1 Cup: 1 17 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted LiNear
S1	.000	.004	.004	Quadratic
S2	.050	.051	.001	WtdLinear
S3	.200	.212	.012	C
S4	1.00	.995	-.005	Accept o
S5	2.00	1.96	-.035	n
S6	3.00	3.02	.024	StdAdd c

A .0000000 r .999868
B 7.39699e-6 C 4.62402e-4



Relative Absorbance

	Mean	%RSD	
S1	466	0	466
S2	6818	0	6818
S3	28591	0	28591
S4	134408	0	134408
S5	265560	0	265560
S6	408720	0	408720

New calibration coefficients stored

*** Sample ID: CCB Seq: 425 17:35:50 03 Mar 2000 HG

Hg -.002 ug/L .000 -.002 <0.05µg/L

*** Sample ID: CCV Seq: 426 17:38:09 03 Mar 2000 HG

Hg 1.94 ug/L .000 1.94 TV=2.0 97%

*** Sample ID: BLK Seq: 427 17:40:42 03 Mar 2000 HG

Hg .015 ug/L .000 .015 <0.05µg/L

*** Sample ID: BLK DUP Seq: 428 17:43:01 03 Mar 2000 HG RPD=N/A

Hg .018 ug/L .000 .018 <0.05µg/L

*** Sample ID: 1633B 0.5885g Seq: 429 17:45:20 03 Mar 2000 HG

Hg 1.91 ug/L .000 1.91 TV=0.141±0.019 0.163 mg/kg

*** Sample ID: 1633BDUP Seq: 430 17:47:59 03 Mar 2000 HG RPD=1.6%

Hg 1.88 ug/L .000 1.88 TV=0.141±0.019 0.160 mg/kg

*** Sample ID: 47Q137 Seq: 431 17:50:39 03 Mar 2000 HG

Hg .129 ug/L .000 .129 NO DATA, RPD>10%

*** Sample ID: 47Q137DUP Seq: 432 17:52:58 03 Mar 2000 HG

Hg .143 ug/L .000 .143 NO DATA, RPD>10%

*** Sample ID: CCB Seq: 433 17:55:17 03 Mar 2000 HG

Hg -.006 ug/L .000 -.006 <0.05µg/L

17:57:37 03 Mar 2000 Folder: MARA00 Protocol: SYSTEST laosys2 Page 50

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

*** Sample ID: CCV Seq: 434 17:57:37 03 Mar 2000 HG

Hg 1.94 ug/L .000 1.94 TV=2.0 97%

*** Sample ID: REAL 7 Seq: 435 18:00:00 03 Mar 2000 HG

Hg -.000 ug/L .000 -.000 <0.05µg/L

*** Sample ID: RBAL/DUP Seq: 436 18:02:19 03 Mar 2000 H5 RPD-N/A

Hg	.002	ug/L	.000	.002

<0.05 µg/L

*** Sample ID: RBAL11 Seq: 437 18:04:38 03 Mar 2000 HG

Hg -.001 ug/L .000 -.001 <0.05 µg/L

*** Sample ID: RBAL11DUP Seq: 438 18:06:58 03 Mar 2000 HG RPD = N/A

Hg -.003 ug/L .000 -.003 <0.05 µg/L

*** Sample ID: SBTAL 5 Seq: 439 18:09:17 03 Mar 2000 HG

Hg .091 ug/L .000 .091 0.040 µg

*** Sample ID: SBTAL5DUP Seq: 440 18:11:37 03 Mar 2000 HG RPD = 3.4%

Hg .087 ug/L .000 .087 0.038 µg

*** Sample ID: 47Q132 Seq: 441 18:15:21 03 Mar 2000 HG

Hg .099 ug/L .000 .099

*** Sample ID: 47Q132DUP Seq: 442 18:17:40 03 Mar 2000 HG RPD = 1.0%

Hg .098 ug/L .000 .098

*** Sample ID: 47Q132TRP Seq: 443 18:20:00 03 Mar 2000 HG RPD = 5.6%

Hg .105 ug/L .000 .105

*** Sample ID: REAL 9 Seq: 444 18:22:19 03 Mar 2000 HG

Hg .007 ug/L .000 .007 <0.107 µg/L

*** Sample ID: REAL 9DUP Seq: 445 18:24:38 03 Mar 2000 HG RPD = N/A

Hg -.005 ug/L .000 -.005 <0.107 µg/L

Folder: MARA00 Page 51

18:26:58 03 Mar 2000 Protocol: SYSTEST labsys2

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

*** Sample ID: IBTAL 4 Seq: 446 18:26:58 03 Mar 2000 HG

Hg .042 ug/L .000 .042 <0.017 µg

*** Sample ID: IBTAL 4DUP Seq: 447 18:29:17 03 Mar 2000 HG RPD = N/A

Hg .027 ug/L .000 .027 <0.017 µg

*** Sample ID: CCB Seq: 448 18:31:38 03 Mar 2000 HG

Hg -.001 ug/L .000 -.001 <0.05µg/L

*** Sample ID: CCV Seq: 449 18:33:58 03 Mar 2000 HG

Hg 1.94 ug/L .000 1.94 TV-2.0 97%

*** Sample ID: IR1AL 4 Seq: 450 18:36:37 03 Mar 2000 HG

Hg .049 ug/L .000 .049

<0.021 µg

*** Sample ID: IR1AL 4DUP Seq: 451 18:38:57 03 Mar 2000 HG RPD = N/A

Hg .041 ug/L .000 .041

<0.021 µg

*** Sample ID: IR2AL 4 Seq: 452 18:41:18 03 Mar 2000 HG

Hg .048 ug/L .000 .048

NO DATA, RPD>10%

*** Sample ID: IR2AL 4DUP Seq: 453 18:43:38 03 Mar 2000 HG

Hg .058 ug/L .000 .058

NO DATA, RPD>10%

*** Sample ID: IR2AL 4 Seq: 454 18:47:05 03 Mar 2000 HG

Hg .049 ug/L .000 .049

<0.02 µg

*** Sample ID: IR2AL 4DUP Seq: 455 18:50:40 03 Mar 2000 HG RPD = N/A

Hg .037 ug/L .000 .037

<0.02 µg

*** Sample ID: IR3AL 4 Seq: 456 18:53:01 03 Mar 2000 HG

Hg .050 ug/L .000 .050

0.021 µg

*** Sample ID: IR3AL 4DUP Seq: 457 18:55:21 03 Mar 2000 HG RPD = 5.8%

Hg .053 ug/L .000 .053

0.022 µg

18:57:42 03 Mar 2000 Folder: MARA00 Protocol: SYSTEST labsys2 Page 52

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

*** Sample ID: IR3AL 4TRP Seq: 458 18:57:42 03 Mar 2000 HG RPD = 9.5%

Hg .055 ug/L .000 .055

0.023 µg

*** Sample ID: IR4AL 4 Seq: 459 19:00:03 03 Mar 2000 HG

Hg .057 ug/L .000 .057

NO DATA, RPD>10%

*** Sample ID: IR4AL 4DUP Seq: 460 19:02:23 03 Mar 2000 HG

Hg .048 ug/L .000 .048

NO DATA RPD>10%

*** Sample ID: IR4AL 4 Seq: 461 19:07:49 03 Mar 2000 HG

Hg .045 ug/L .000 .045 <0.018 µg

*** Sample ID: IR4AL 4DUP Seq: 462 19:10:10 03 Mar 2000 HG RPD = N/A

Hg .042 ug/L .000 .042 <0.018 µg

*** Sample ID: IR4AL 4SPK Seq: 463 19:12:31 03 Mar 2000 HG

Hg .936 ug/L .000 .936 TV=1.0 94%

*** Sample ID: 47Q137 Seq: 464 19:16:15 03 Mar 2000 HG

Hg .147 ug/L .000 .147

*** Sample ID: 47Q137DUP Seq: 465 19:18:35 03 Mar 2000 HG RPD = 4.7%

Hg .154 ug/L .000 .154

*** Sample ID: CCB Seq: 466 19:22:33 03 Mar 2000 HG

Hg .004 ug/L .000 .004 <0.05 µg/L

*** Sample ID: CCV Seq: 467 19:24:54 03 Mar 2000 HG

Hg 1.93 ug/L .000 1.93 TV=2.0 97%

*** Sample ID: SBTAL 4 Seq: 468 19:27:31 03 Mar 2000 HG

Hg .007 ug/L .000 .007 <0.015 µg

*** Sample ID: SBTAL 4DUP Seq: 469 19:29:53 03 Mar 2000 HG RPD = N/A

Hg .014 ug/L .000 .014 <0.015 µg

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

*** Sample ID: SR1AL 4 Seq: 470 19:32:14 03 Mar 2000 HG

Hg .069 ug/L .000 .069 NO DATA, RPD > 10%

*** Sample ID: SR1AL 4DUP Seq: 471 19:34:35 03 Mar 2000 HG

[illegible] RPD > 10%

*** Sample ID: SR1AL 4 Seq: 472 19:37:39 03 Mar 2000 HG

Hg .047 ug/L .000 .047 NO DATA, RPD > 10%

*** Sample ID: SR1AL 4DUP Seq: 473 19:40:01 03 Mar 2000 HG

Hg .055 ug/L .000 .055 NO DATA, RPD > 10%

*** Sample ID: SR1AL 4 Seq: 474 19:44:27 03 Mar 2000 HG

Hg .073 ug/L .000 .073 0.030 µg

*** Sample ID: SR1AL 4DUP Seq: 475 19:48:05 03 Mar 2000 HG RPD = 4.2%

Hg .070 ug/L .000 .070 0.028 µg

*** Sample ID: SR2AL 4 Seq: 476 19:50:26 03 Mar 2000 HG

Hg .107 ug/L .000 .107 0.040 µg

*** Sample ID: SR2AL 4DUP Seq: 477 19:52:50 03 Mar 2000 HG RPD = 2.8%

Hg .104 ug/L .000 .104 0.039 µg

*** Sample ID: SR3AL 4 Seq: 478 19:55:13 03 Mar 2000 HG

Hg .110 ug/L .000 .110 0.039 µg

*** Sample ID: SR3AL 4DUP Seq: 479 19:57:41 03 Mar 2000 HG RPD = 2.7%

Hg .113 ug/L .000 .113 0.040 µg

*** Sample ID: SR3AL 4TRP Seq: 480 20:00:06 03 Mar 2000 HG RPD = 3.6%

Hg .114 ug/L .000 .114 0.041 µg

*** Sample ID: SR4AL 4 Seq: 481 20:02:29 03 Mar 2000 HG

Hg .024 ug/L .000 .024 <0.018 µg

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

*** Sample ID: SR4AL 4DUP Seq: 482 20:04:51 03 Mar 2000 HG RPD = N/A

Hg .020 ug/L .000 .020 <0.018 µg

*** Sample ID: SR4AL 4SPK Seq: 483 20:07:13 03 Mar 2000 HG

 TV = 1.0

*** Sample ID: CCB Seq: 484 20:09:52 03 Mar 2000 HG

Hg -.007 ug/L .000 -.007 <0.05 µg/L

*** Sample ID: CCV Seq: 485 20:12:13 03 Mar 2000 HG

Hg 1.94 ug/L .000 1.94 TV=2.0

97%

3/8/2000 Analytical Data
Run 1

3/8/00 Run A

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 12:25:37  08 Mar 2000
Folder: MARA00     Seq: 695                     Print: On
User:              Batch:            Id: Std6Rep1   Cup: 1 29 Gas:    0.23 LPM
State: Idle                                        Xmit: Off Autosampler: On
```

```
AUTOSAMPLER:  Rack entry   Rack 030800B
cup Id        Extended id          Weight Volume Macro check Help
 1 ICB                             1.0000 1.0000
 2 CCV                             1.0000 1.0000
 3 BLANK                           1.0000 1.0000
 4 BLANK DUP                       1.0000 1.0000
 5 REAL8                           1.0000 1.0000
 6 REAL8 DUP                       1.0000 1.0000
 7 IR1AL2                          1.0000 1.0000
 8 IR1AL2 DUP                      1.0000 1.0000
 9 IR2AL2                          1.0000 1.0000
10 IR2AL2 DUP                      1.0000 1.0000
11 IR3AL2                          1.0000 1.0000
12 IR3AL2 DUP                      1.0000 1.0000
13 IR4AL2                          1.0000 1.0000
14 IR4AL2 DUP                      1.0000 1.0000
15 SR1AL2                          1.0000 1.0000
                                                                    PgDn
```

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

Protocol: SYSTEST labsys2
Rev: 3.001 Time: 12:25:38 08 Mar 2000
Folder: MARA00 Seq: 695 Print: On
User: Batch: Id: Std6Repl Cup: 1 29 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

AUTOSAMPLER: Rack entry Rack 030800B PgUp

Cup	Id	Extended id	Weight	Volume	Macro check	Help
16	SR1AL2 DUP		1.00000	1.00000		
17	SR2AL2		1.00000	1.00000		
18	SR2AL2 DUP		1.00000	1.00000		
19	SR3AL2		1.00000	1.00000		
20	SR3AL2 DUP		1.00000	1.00000		
21	SR3AL2 TRP		1.00000	1.00000		
22	SR4AL2		1.00000	1.00000		
23	SR4AL2 DUP		1.00000	1.00000		
24	SR4AL2 SPK REPEAT		1.00000	1.00000		
25	CCB		1.00000	1.00000		
26	CCV		1.00000	1.00000		
27	IBTAL3 ~~1:5~~ 3/8/00		1.00000	1.00000		
28	IBTAL3 DUP ~~1:5~~ 3/8/00		1.00000	1.00000		
29	IR1AL3 1:5		1.00000	1.00000		
30	IR1AL3 DUP 1:5		1.00000	1.00000		

PgDn

Cup 16 ID: SR1AL2 DUP Cell entry, Ins to switch

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001    Time: 12:25:41  08 Mar 2000
Folder: MARA00     Seq: 695                     Print: On
User:              Batch:            Id: Std6Rep1   Cup: 1 29 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 030800B                                    PgUp
cup Id        Extended id          Weight Volume Macro check Help
31 IR2AL3 1:5                      1.0000 1.0000
32 IR2AL3 DUP 1:5                  1.0000 1.0000
33 IR3AL3 1:5                      1.0000 1.0000
34 IR3AL3 DUP 1:5                  1.0000 1.0000
35 IR4AL3 1:5                      1.0000 1.0000
36 IR4AL3 DUP 1:5                  1.0000 1.0000
37 SBTAL3 HT .247                  1.0000 1.0000
38 SBTAL3 DUP HT .251              1.0000 1.0000
39 SR1AL3 1:5                      1.0000 1.0000
40 SR1AL3 DUP 1:5                  1.0000 1.0000
41 SR2AL3 1:5                      1.0000 1.0000
42 SR2AL3 DUP 1:5                  1.0000 1.0000
43 SR3AL3 1:5  LCCB/CCV            1.0000 1.0000
44 SR3AL3 DUP 1:5                  1.0000 1.0000

                                                                          PgDn
Cup 31 ID: IR2AL3                          Cell entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 12:28:19  08 Mar 2000
Folder: MARA00     Seq: 695                     Print: On
User:              Batch:            Id: Std6Repl   Cup: 1 29 Gas:    0.23 LPM
State: Idle                                       Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 030800C
cup Id          Extended id          Weight Volume Macro check Help
 1 SR3AL3 TRP  1:5                   1.0000 1.0000
 2 SR4AL3  1:5                       1.0000 1.0000
 3 SR4AL3 DUP 1:5                    1.0000 1.0000
 4 SR4AL3 SPK 1:5                    1.0000 1.0000
 5 CCB                               1.0000 1.0000
 6 CCV                               1.0000 1.0000
 7                                   1.0000 1.0000
 8                                   1.0000 1.0000
 9                                   1.0000 1.0000
10                                   1.0000 1.0000
11                                   1.0000 1.0000
12                                   1.0000 1.0000
13                                   1.0000 1.0000
14                                   1.0000 1.0000
15                                   1.0000 1.0000
                                                                          PgDn

Cup 1   ID: SR3AL3 TRP                          Cell entry, Ins to switch
```

*** Standard: 1 Rep: 1 Seq: 689 11:20:42 08 Mar 2000 HG

Hg .000 ug/L 333
Ave. Int. = 333 S. D. = 0

*** Standard: 2 Rep: 1 Seq: 690 11:23:06 08 Mar 2000 HG

Hg .050 ug/L 5253
Ave. Int. = 5253 S. D. = 0

*** Standard: 3 Rep: 1 Seq: 691 11:25:29 08 Mar 2000 HG

Hg .200 ug/L 20979
Ave. Int. = 20979 S. D. = 0

*** Standard: 4 Rep: 1 Seq: 692 11:27:53 08 Mar 2000 HG

Hg 1.00 ug/L 104050
Ave. Int. = 104050 S. D. = 0

*** Standard: 5 Rep: 1 Seq: 693 11:30:23 08 Mar 2000 HG

Hg 2.00 ug/L 217713
Ave. Int. = 217713 S. D. = 0

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

*** Standard: 6 Rep: 1 Seq: 694 11:39:31 08 Mar 2000 HG

Hg 3.00 ug/L 321057
Ave. Int. = 321057 S. D. = 0

Protocol: SYSTEST labsys2

Rev: 3.001 Time: 11:40:12 08 Mar 2000

Folder: MARA00 Seq: 695 Print: On

User: Batch: Id: Std6Rep1 Cup: 1 29 Gas: 0.23 LPM

State: Idle Xmit: Off Autosampler: On

CALIBRATION: Line Calibration

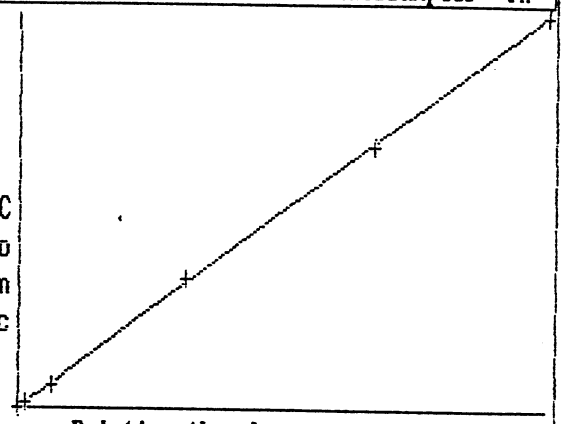
Line: Hg

	Conc.	Calc.	Dev.	Accepted LiNear
S1	.000	.007	.007	Quadratic
S2	.050	.053	.003	WtdLinear
S3	.200	.199	-.001	
S4	1.00	.972	-.028	Accept
S5	2.00	2.03	.029	
S6	3.00	2.99	-.010	StdAdd

Conc

A .0000000 r .999881

B 9.29862e-6 C 4.27436e-3



Relative Absorbance

	Mean	%RSD	
S1	333	0	333
S2	5253	0	5253
S3	20979	0	20979
S4	104050	0	104050
S5	217713	0	217713
S6	321057	0	321057

New calibration coefficients stored

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

*** Check Standard: 2 Ck2 Seq: 695 12:32:08 08 Mar 2000 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		106.	.636	.600	ug/L	.0000

106%

*** Sample ID: ICB Seq: 696 12:37:28 08 Mar 2000 HG

Hg .003 ug/L .000 .003 <0.05 µg/L

*** Sample ID: CCV Seq: 697 12:39:47 08 Mar 2000 HG

TV = 2.0

Hg 2.01 ug/L .000 2.01 101%

*** Sample ID: BLANK Seq: 698 12:42:19 08 Mar 2000 HG

Hg .007 ug/L .000 .007 <0.05 µg/L

*** Sample ID: BLANK DUP Seq: 699 12:44:38 08 Mar 2000 HG RPD = N/A

Hg .018 ug/L .000 .018 <0.05 µg/L

*** Sample ID: REAL8 Seq: 700 12:46:57 08 Mar 2000 HG

Hg .024 ug/L .000 .024 ~~<0.056 µg/L~~ OK <0.056 µg/L

*** Sample ID: REAL8 DUP Seq: 701 12:49:17 08 Mar 2000 HG RPD = N/A

Hg .021 ug/L .000 .021 ~~<0.056 µg/L~~ OK <0.056 µg/L

*** Sample ID: IR1AL2 Seq: 702 12:51:36 08 Mar 2000 HG

Hg .430 ug/L .000 .430 0.096 µg

*** Sample ID: IR1AL2 DUP Seq: 703 12:53:56 08 Mar 2000 HG RPD = <1.0%

Hg .429 ug/L .000 .429 0.096 µg

*** Sample ID: IR2AL2 Seq: 704 12:56:16 08 Mar 2000 HG

Hg .626 ug/L .000 .626 0.092 µg

*** Sample ID: IR2AL2 DUP Seq: 705 12:58:41 08 Mar 2000 HG RPD = 1.7%

Hg .637 ug/L .000 .637 0.094 µg

*** Sample ID: IR3AL2 Seq: 706 13:01:02 08 Mar 2000 HG

Hg .200 ug/L .000 .200 0.045 µg

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: IR3AL2 DUP					Seq: 707	13:03:20 08 Mar 2000 HG RPD = <1.0%		
Hg	.202	ug/L	.000	.202		0.045 µg		
*** Sample ID: IR4AL2					Seq: 708	13:05:39 08 Mar 2000 HG		
Hg	1.64	ug/L	.000	1.64		0.099 µg		
*** Sample ID: IR4AL2 DUP					Seq: 709	13:08:10 08 Mar 2000 HG RPD = N/A		
Hg	1.64	ug/L	.000	1.64		0.099 µg		
*** Sample ID: SR1AL2					Seq: 710	13:10:42 08 Mar 2000 HG		
Hg	.098	ug/L	.000	.098		0.025 µg		
*** Sample ID: SR1AL2 DUP					Seq: 711	13:13:01 08 Mar 2000 HG RPD = 2.0%		
Hg	.100	ug/L	.000	.100		0.026 µg		
*** Sample ID: SR2AL2					Seq: 712	13:15:20 08 Mar 2000 HG		
Hg	.314	ug/L	.000	.314		0.051 µg		
*** Sample ID: SR2AL2 DUP					Seq: 713	13:17:40 08 Mar 2000 HG RPD = <1.0%		
Hg	.317	ug/L	.000	.317		0.051 µg		
*** Sample ID: SR3AL2					Seq: 714	13:20:01 08 Mar 2000 HG		
Hg	.231	ug/L	.000	.231		0.047 µg		
*** Sample ID: SR3AL2 DUP					Seq: 715	13:22:20 08 Mar 2000 HG RPD = 3.1%		
Hg	.224	ug/L	.000	.224		0.045 µg		
*** Sample ID: SR3AL2 TRP					Seq: 716	13:24:40 08 Mar 2000 HG RPD = 4.9%		
Hg	.220	ug/L	.000	.220		0.045 µg		
*** Sample ID: SR4AL2					Seq: 717	13:27:01 08 Mar 2000 HG		
Hg	.198	ug/L	.000	.198		0.037 µg		
*** Sample ID: SR4AL2 DUP					Seq: 718	13:29:21 08 Mar 2000 HG RPD = 4.1%		
Hg	.190	ug/L	.000	.190		0.036 µg		

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: SR4AL2 SPK					Seq: 719	13:31:41 08 Mar 2000 HG		
Hg	2.82	ug/L	.000	2.82		TV=1.0 NODATA, >±10%		
*** Sample ID: CCB					Seq: 720	13:34:17 08 Mar 2000 HG		
Hg	-.007	ug/L	.000	-.007		<0.05µg/L		
*** Sample ID: CCV					Seq: 721	13:36:37 08 Mar 2000 HG		
Hg	2.03	ug/L	.000	2.03		TV=2.0 102%		
*** Sample ID: IBTAL3					Seq: 722	13:39:13 08 Mar 2000 HG		
Hg	.022	ug/L	.000	.022		<0.029µg		
*** Sample ID: IBTAL3 DUP					Seq: 723	13:41:33 08 Mar 2000 HG RPD=N/A		
Hg	.031	ug/L	.000	.031		<0.029µg		
*** Sample ID: IR1AL3					Seq: 724	13:43:53 08 Mar 2000 HG		
Hg	4.23	ug/L	.000	4.23		NODATA, >LR		
*** Sample ID: SR4AL2 SPK					Seq: 725	13:47:09 08 Mar 2000 HG		
Hg	1.26	ug/L	.000	1.26		TV=1.0 106%		
*** Sample ID: IR1AL3					Seq: 726	13:51:31 08 Mar 2000 HG		
Hg	.903	ug/L	:5 .000	.903		4.93µg		
*** Sample ID: IR1AL3 DUP					Seq: 727	13:54:02 08 Mar 2000 HG RPD=2.7%		
Hg	.879	ug/L	:5 .000	.879		4.80µg		
*** Sample ID: IR2AL3					Seq: 728	13:56:26 08 Mar 2000 HG		
Hg	4.18	ug/L	.000	4.18		NO DATA, >RL		
*** Sample ID: IR2AL3					Seq: 729	14:01:41 08 Mar 2000 HG		
Hg	.896	ug/L	:5 .000	.896		4.52µg		
*** Sample ID: IR2AL3 DUP					Seq: 730	14:04:06 08 Mar 2000 HG RPD=3.2%		
Hg	.868	ug/L	:5 .000	.868		4.37µg		

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: IR3AL3					Seq: 731	14:06:29 08 Mar 2000 HG		
Hg	1.24	ug/L	.000 :5	1.24		5.82 µg		
*** Sample ID: IR3AL3 DUP					Seq: 732	14:08:56 08 Mar 2000 HG RPD = <1.0%		
Hg	1.25	ug/L	.000 :5	1.25		5.86 µg		
*** Sample ID: IR4AL3					Seq: 733	14:11:22 08 Mar 2000 HG		
Hg	1.09	ug/L	.000 :5	1.09		5.04 µg		
*** Sample ID: IR4AL3 DUP					Seq: 734	14:13:53 08 Mar 2000 HG RPD = 2.8%		
Hg	1.06	ug/L	.000 :5	1.06		4.90 µg		
*** Sample ID: SBTAL3					Seq: 735	14:16:19 08 Mar 2000 HG		
Hg	.247	ug/L	.000	.247		0.135 µg		
*** Sample ID: SBTAL3 DUP					Seq: 736	14:18:41 08 Mar 2000 HG RPD = 1.6%		
Hg	.251	ug/L	.000	.251		0.137 µg		
*** Sample ID: SR1AL3					Seq: 737	14:21:03 08 Mar 2000 HG		
Hg	4.54	ug/L	.000	4.54		NO DATA, >LR		
*** Sample ID: SR1AL3					Seq: 738	14:26:13 08 Mar 2000 HG		
Hg	.919	ug/L	.000 :5	.919		3.99 µg		
*** Sample ID: SR1AL3 DUP					Seq: 739	14:28:40 08 Mar 2000 HG RPD = 1.1%		
Hg	.929	ug/L	.000 :5	.929		4.03 µg		
*** Sample ID: SR2AL3					Seq: 740	14:31:05 08 Mar 2000 HG		
Hg	.677	ug/L	.000 :5	.677		2.54 µg		
*** Sample ID: SR2AL3 DUP					Seq: 741	14:33:28 08 Mar 2000 HG RPD = <1.0%		
Hg	.671	ug/L	.000 :5	.671		2.52 µg		
*** Sample ID: CCB					Seq: 742	14:36:23 08 Mar 2000 HG		
Hg	.004	ug/L	.000	.004		<0.05 µg/L		

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: CCV					Seq: 743	14:38:43 08 Mar 2000 HG		
						TV-2.0		
Hg	2.04	ug/L	.000	2.04				
						102%		
*** Sample ID: SR3AL3 TRP					Seq: 744	14:41:17 08 Mar 2000 HG		
Hg	4.10	ug/L	.000	4.10		NODATA, >RL		
*** Sample ID: SR4AL3					Seq: 745	14:43:59 08 Mar 2000 HG		
Hg	-.005	ug/L	.000	-.005		NODATA		
*** Sample ID: SR4AL3 DUP					Seq: 746	14:46:22 08 Mar 2000 HG		
Hg	-.001	ug/L	.000	-.001		NODATA		
*** Sample ID: SR3AL3			:5		Seq: 747	15:01:15 08 Mar 2000 HG		
Hg	.858	ug/L	.000	.858		2.89 µg		
*** Sample ID: SR3AL3 DUP			:5		Seq: 748	15:03:38 08 Mar 2000 HG RPD = 1.4%		
Hg	.846	ug/L	.000	.846		2.85 µg		
*** Sample ID: SR3AL3 TRP 1:5					Seq: 749	15:06:02 08 Mar 2000 HG RPD = 2.2%		
Hg	.877	ug/L	.000	.877		2.96 µg		
*** Sample ID: SR4AL3 1:5					Seq: 750	15:11:48 08 Mar 2000 HG		
Hg	.862	ug/L	.000	.863		3.14 µg		
*** Sample ID: SR4AL3 DUP 1:5					Seq: 751	15:14:11 08 Mar 2000 HG RPD = 1.9%		
Hg	.846	ug/L	.000	.846		3.09 µg		
*** Sample ID: SR4AL3 SPK 1:5					Seq: 752	15:16:36 08 Mar 2000 HG		
						TV=1.0		
Hg	1.95	ug/L	.000	1.95				
						109%		
*** Sample ID: CCB					Seq: 753	15:19:10 08 Mar 2000 HG		
Hg	-.004	ug/L	.000	-.004		<0.05 µg/L		
*** Sample ID: CCV					Seq: 754	15:21:34 08 Mar 2000 HG		
Hg	2.04	ug/L	.000	2.04		TV=2.0		
						102%		

0.230

3/8/2000 Analytical Data
Run 2

3/8/00 RUN B

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 16:36:35  08 Mar 2000
Folder: MARA00     Seq: 755                    Print: On
User:              Batch:            Id: CCV        Cup: 2 06 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 030800D
cup Id        Extended id          Weight Volume Macro check Help
 1 CCB                             1.00000 1.00000
 2 CCV                             1.00000 1.00000
 3 3/8/00 BLK                      1.00000 1.00000
 4 3/8BLKDUP                       1.00000 1.00000
 5 1633B                           1.00000 1.00000
 6 1633BDUP                        1.00000 1.00000
 7 88QB48                          1.00000 1.00000
 8 88QB48DUP                       1.00000 1.00000
 9 88QH97                          1.00000 1.00000
10 88QH97DUP                       1.00000 1.00000
11 88QH97TRP                       1.00000 1.00000
12 Q 96 1:20                       1.00000 1.00000
13 Q 96DUP 1:20                    1.00000 1.00000
14 Q 96 SPK 1:20                   1.00000 1.00000
15 88QB47                          1.00000 1.00000
                                                                    PgDn

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

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001    Time: 16:38:40  08 Mar 2000
Folder: MARA00     Seq: 755                     Print: On
User:              Batch:            Id: CCB        Cup: 2 06 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 030800D  Range  1-44 Clear seQ Undo eXit   PgUp
cup Id        Extended id          Weight Volume Macro checK Help
16 88QB47DUP                       1.0000 1.0000
17 Q 124                           1.0000 1.0000
18 Q 124DUP                        1.0000 1.0000
19 Q 99 1:20                       1.0000 1.0000
20 Q 99 DUP 1:20                   1.0000 1.0000
21 CCB                             1.0000 1.0000
22 CCV                             1.0000 1.0000
23 47Q142                          1.0000 1.0000
24 47Q142DUP                       1.0000 1.0000
25 47Q142TRP                       1.0000 1.0000
26 Q 95 1:20                       1.0000 1.0000
27 Q 95 DUP 1:20                   1.0000 1.0000
28 Q 95 SPK 1:50                   1.0000 1.0000
29 BLK                             1.0000 1.0000
30 BLK DUP Repeat (MIT)            1.0000 1.0000
                                                                          PgDn

                                        Column entry, Ins to switch
```

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 16:38:44  08 Mar 2000
Folder: MARA00     Seq: 755                     Print: On
User:              Batch:            Id: CCB        Cup: 2 06 Gas:    0.23 LPM
State: Idle                                         Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 030800D  Range  1-44 Clear seQ Undo eXit    PgUp
cup Id        Extended id          Weight Volume Macro check Help
31 BLK2 Repeat                     1.0000 1.0000
32 BLK2DUP repeat                  1.0000 1.0000
33 ~~MDL~~ 1 MVS 1633B             1.0000 1.0000
34 ~~MDL~~ 1 DUP MVS 1633B         1.0000 1.0000
35 ~~MDL~~ 2 MVS 1633B             1.0000 1.0000
36 ~~MDL~~ 2 DUP MVS 1633B         1.0000 1.0000
37 ~~MDL~~ 3 MVS 1633B             1.0000 1.0000
38 ~~MDL~~ 3 DUP MVS 1633B         1.0000 1.0000
39 ~~MDL~~ 4 MVS 1633B             1.0000 1.0000
40 ~~MDL~~ 4 DUP MVS 1633B         1.0000 1.0000
41 CCB                             1.0000 1.0000
42 CCV                             1.0000 1.0000
43                                 1.0000 1.0000
44                                 1.0000 1.0000
                                                                            PgDn

                                                Column entry, Ins to switch
```

3/12/00 TM

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: CCB					Seq: 755	16:42:14 08 Mar 2000 HG		
Hg	.003	ug/L	.000	.003		<0.05µg/L		
*** Sample ID: CCV					Seq: 756	16:44:33 08 Mar 2000 HG		
Hg	2.02	ug/L	.000	2.02		TV-2.0 101%		
*** Sample ID: 3/8/00 BLK					Seq: 757	16:47:15 08 Mar 2000 HG		
Hg	.034	ug/L	.000	.034		<0.05µg/L		
*** Sample ID: 3/8BLKDUP					Seq: 758	16:49:34 08 Mar 2000 HG		
Hg	.048	ug/L	.000	.048		<0.05µg/L		
*** Sample ID: 1633B 0.5885g					Seq: 759	16:51:53 08 Mar 2000 HG		
Hg	1.74	ug/L	.000	1.74		TV=0.141mg/kg ± 0.019mg/kg 0.148mg/kg		105%
*** Sample ID: 1633BDUP					Seq: 760	16:54:24 08 Mar 2000 HG RPD=<1.0%		
Hg	1.75	ug/L	.000	1.75		0.149 mg/kg		
*** Sample ID: 88QB48					Seq: 761	16:56:58 08 Mar 2000 HG		
Hg	1.24	ug/L	.000	1.24		0.062µg		
*** Sample ID: 88QB48DUP					Seq: 762	16:59:28 08 Mar 2000 HG RPD=2.4%		
Hg	1.27	ug/L	.000	1.27		0.064µg		
*** Sample ID: 88QH97					Seq: 763	17:01:58 08 Mar 2000 HG		
Hg	.864	ug/L	.000	.864		0.043µg		
*** Sample ID: 88QH97DUP					Seq: 764	17:04:21 08 Mar 2000 HG RPD=<1.0%		
Hg	.867	ug/L	.000	.867		0.043µg		
*** Sample ID: 88QH97TRP					Seq: 765	17:06:41 08 Mar 2000 HG RPD=<1.0%		
Hg	.872	ug/L	.000	.872		0.0414µg		
*** Sample ID: Q 96					Seq: 766	17:09:01 08 Mar 2000 HG		
Hg	13.2	ug/L	.000	13.2				

D-86

3/14/00

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: Q 96 1:20					Seq: 767	17:12:04 08 Mar 2000 HG		
Hg	.739	ug/L	.000	.739		2.22 µg		
*** Sample ID: Q 96DUP 1:20					Seq: 768	17:14:27 08 Mar 2000 HG RPD = 2.1%		
Hg	.755	ug/L	.000	.755		2.27 µg		
*** Sample ID: Q 96 SPK 1:20					Seq: 769	17:16:49 08 Mar 2000 HG		
Hg	1.71	ug/L	.000	1.71		TV=1.0 97%		
*** Sample ID: 88QB47					Seq: 770	17:19:28 08 Mar 2000 HG		
Hg	.694	ug/L	.000	.694		0.035 µg		
*** Sample ID: 88QB47DUP					Seq: 771	17:21:50 08 Mar 2000 HG RPD = 4.9%		
Hg	.729	ug/L	.000	.729		0.036 µg		
*** Sample ID: Q 124					Seq: 772	17:24:10 08 Mar 2000 HG		
Hg	.057	ug/L	.000	.057		0.009 µg		
*** Sample ID: Q 124DUP					Seq: 773	17:26:29 08 Mar 2000 HG RPD = 5.1%		
Hg	.060	ug/L	.000	.060		0.009 µg		
*** Sample ID: Q 99 1:20					Seq: 774	17:28:48 08 Mar 2000 HG		
Hg	1.60	ug/L	.000	1.60		4.80 µg		
*** Sample ID: Q 99 DUP 1:20					Seq: 775	17:31:22 08 Mar 2000 HG RPD = 1.9%		
Hg	1.57	ug/L	.000	1.57		4.71 µg		
*** Sample ID: CCB					Seq: 776	17:33:57 08 Mar 2000 HG		
Hg	-.004	ug/L	.000	-.004		<0.05 µg/L		
*** Sample ID: CCV					Seq: 777	17:36:18 08 Mar 2000 HG		
Hg	2.01	ug/L	.000	2.01		TV=2.0 101%		
*** Sample ID: 47Q142					Seq: 778	17:38:58 08 Mar 2000 HG		
Hg	.000	ug/L	.000	.000				

BLANK CORRECTED 2.21

BLANK CORRECTED 2.26

BLANK CORRECTED 4.79

BLANK CORRECTED 4.70

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: 47Q142					Seq: 779	17:42:52 08 Mar 2000 HG		
Hg	.243	ug/L	.000	.243		0.012 µg		
*** Sample ID: 47Q142DUP					Seq: 780	17:45:15 08 Mar 2000 HG RPD = 3.3%		
Hg	.235	ug/L	.000	.235		0.012 µg		
*** Sample ID: 47Q142TRP					Seq: 781	17:47:36 08 Mar 2000 HG RPD = 2.4%		
Hg	.249	ug/L	.000	.249		0.012 µg		
*** Sample ID: Q 95 1:20					Seq: 782	17:49:56 08 Mar 2000 HG		
Hg	2.29	ug/L	.000	2.29		6.87 µg		
*** Sample ID: Q 95 DUP 1:20					Seq: 783	17:52:30 08 Mar 2000 HG RPD = 4.5%		
Hg	2.19	ug/L	.000	2.19		6.57 µg		
*** Sample ID: Q 95 SPK 1:50					Seq: 784	17:55:06 08 Mar 2000 HG TV = 2.0		105%
Hg	1.97	ug/L	.000	1.97				
~~*** Sample ID: BLK~~					~~Seq: 785~~	~~17:57:49 08 Mar 2000 HG~~		
Hg	.038	ug/L	.000	.038		NO DATA, RPD > 10%		
*** Sample ID: BLK DUP					Seq: 786	18:00:10 08 Mar 2000 HG		
Hg	.052	ug/L	.000	.052		NO DATA, RPD > 10%		
*** Sample ID: BLK DUP					Seq: 787	18:02:30 08 Mar 2000 HG		
Hg	.050	ug/L	.000	.050		NO DATA, RPD > 10%		
*** Sample ID: BLK2					Seq: 788	18:04:51 08 Mar 2000 HG		
Hg	.075	ug/L	.000	.075		0.075 µg/L		
*** Sample ID: BLK2DUP					Seq: 789	18:07:11 08 Mar 2000 HG RPD = 6.5%		
Hg	.080	ug/L	.000	.080		0.080 µg/L		
*** Sample ID: ~~MBL~~ 1MUS1633B 0.5025 g					Seq: 790	18:09:31 08 Mar 2000 HG TV = ~~0.141 mg/kg~~ ± 0.019 mg/kg		
Hg	1.58	ug/L	.000	1.58	D 88	0.158		

BLANK CORRECTED 6.86 µg

BLANK CORRECTED 6.57 µg

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: ~~MDL~~ 1 DUP MVS1633B 0.5025g					Seq: 791	18:12:04 08 Mar 2000 HG RPD = <1.0% TV = 0.141 mg/kg ± 0.019		
Hg	1.57	ug/L	.000	1.57		0.157 mg/kg	111%	
*** Sample ID: ~~MDL~~ 2 MVS1633B 0.5563g					Seq: 792	18:14:35 08 Mar 2000 HG TV = 0.141 mg/kg ± 0.019		
Hg	1.81	ug/L	.000	1.81		0.163 mg/kg	116%	
*** Sample ID: ~~MDL~~ 2 DUP MVS1633B 0.5563g					Seq: 793	18:17:10 08 Mar 2000 HG RPD = <1.0% TV = 0.141 mg/kg ± 0.019		
Hg	1.82	ug/L	.000	1.82		0.164 mg/kg	116%	
*** Sample ID: ~~MDL~~ 3 MVS1633B 0.5277g					Seq: 794	18:19:44 08 Mar 2000 HG TV = 0.141 mg/kg ± 0.019		
Hg	1.65	ug/L	.000	1.65		0.157 mg/kg	111%	
*** Sample ID: ~~MDL~~ 3 DUP MVS1633B 0.5277g					Seq: 795	18:22:12 08 Mar 2000 HG RPD = 1.2% TV = 0.141 mg/kg ± 0.019		
Hg	1.63	ug/L	.000	1.63		0.155 mg/kg	110%	
*** Sample ID: ~~MDL~~ 4 MVS1633B 0.5040g					Seq: 796	18:24:44 08 Mar 2000 HG TV = 0.141 mg/kg ± 0.019		
Hg	1.55	ug/L	.000	1.55		0.154 mg/kg	109%	
*** Sample ID: ~~MDL~~ 4 DUP MVS1633B 0.5040g					Seq: 797	18:27:17 08 Mar 2000 HG RPD = 2.0% TV = 0.141 mg/kg ± 0.019		
Hg	1.52	ug/L	.000	1.52		0.151 mg/kg	107%	
*** Sample ID: CCB					Seq: 798	18:29:49 08 Mar 2000 HG		
Hg	-.003	ug/L	.000	-.003		<0.05 µg/L		
*** Sample ID: BLK2					Seq: 799	18:32:10 08 Mar 2000 HG		
Hg	.081	ug/L	.000	.081		0.081 µg/L		
*** Sample ID: BLK2DUP					Seq: 800	18:34:30 08 Mar 2000 HG RPD = 3.8%		
Hg	.078	ug/L	.000	.078		~~0.078 µg/L~~		
*** Sample ID: CCB					Seq: 801	18:36:58 08 Mar 2000 HG		
Hg	.006	ug/L	.000	.006		<0.05 µg/L		
*** Sample ID: CCV					Seq: 802	18:39:20 08 Mar 2000 HG TV = 2.0		
Hg	2.02	ug/L	.000	2.02				

3/10/2000 Analytical Data

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 10:24:34  10 Mar 2000
Folder: MARA00     Seq: 810                     Print: On
User:              Batch:            Id: Std6Rep1   Cup: 1 42 Gas:    0.23 LPM
State: Idle                                        Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 031000A .
cup Id        Extended id          Weight Volume Macro check Help
 1 ICB                             1.00000 1.00000
 2 BLK                             1.00000 1.00000
 3 BLK DUP                         1.00000 1.00000
 4 1633B                           1.00000 1.00000
 5 1633BDUP                        1.00000 1.00000
 6 88QH108                         1.00000 1.00000
 7 88QH108DUP                      1.00000 1.00000
 8 47Q138                          1.00000 1.00000
 9 47Q138DUP                       1.00000 1.00000
10 47Q144                          1.00000 1.00000
11 47Q144DUP                       1.00000 1.00000
12 47Q143                          1.00000 1.00000
13 47Q143DUP                       1.00000 1.00000
14 47Q140                          1.00000 1.00000
15 47Q140DUP                       1.00000 1.00000
                                                                          PgDn

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

```
Protocol: SYSTEST  labsys2
                   Rev: 3.001   Time: 10:24:38  10 Mar 2000
Folder: MARA00     Seq: 810                     Print: On
User:              Batch:            Id: Std6Rep1   Cup: 1 42 Gas:    0.23 LPM
State: Idle                                        Xmit: Off Autosampler: On

AUTOSAMPLER:  Rack entry   Rack 031000A .                                  PgUp
cup Id        Extended id          Weight Volume Macro check Help
16 47Q140TRP                       1.0000 1.0000
17 88QH98                          1.0000 1.0000
18 88QH98DUP                       1.0000 1.0000
19 88QH98SPK                       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: 47Q140TRP                          Cell entry, Ins to switch
```

*** Standard: 1 Rep: 1 Seq: 804 09:51:55 10 Mar 2000 HG

Hg .000 ug/L 2051
Ave. Int. = 2051 S. D. = 0

*** Standard: 2 Rep: 1 Seq: 805 09:54:19 10 Mar 2000 HG

Hg .050 ug/L 7415
Ave. Int. = 7415 S. D. = 0

*** Standard: 3 Rep: 1 Seq: 806 09:56:43 10 Mar 2000 HG

Hg .200 ug/L 27963
Ave. Int. = 27963 S. D. = 0

*** Standard: 4 Rep: 1 Seq: 807 09:59:09 10 Mar 2000 HG

Hg 1.00 ug/L 124116
Ave. Int. = 124116 S. D. = 0

*** Standard: 5 Rep: 1 Seq: 808 10:01:49 10 Mar 2000 HG

Hg 2.00 ug/L 254243
Ave. Int. = 254243 S. D. = 0

*** Standard: 6 Rep: 1 Seq: 809 10:17:03 10 Mar 2000 HG

Hg 3.00 ug/L 362471
Ave. Int. = 362471 S. D. = 0

Protocol: SYSTEST labsys2
Rev: 3.001 Time: 10:19:19 10 Mar 2000
Folder: MARA00 Seq: 810 Print: On
User: Batch: Id: Std6Rep1 Cup: 1 42 Gas: 0.23 LPM
State: Idle Xmit: Off Autosampler: On

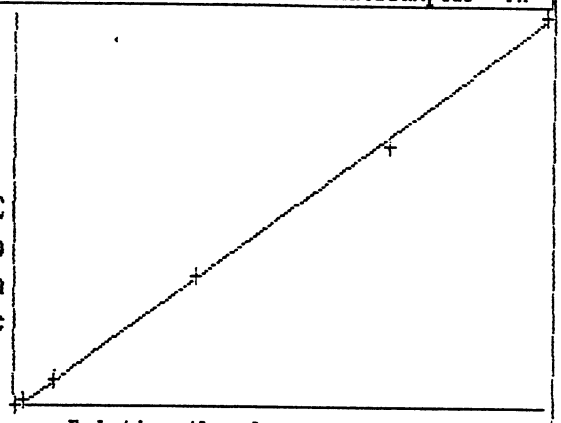
CALIBRATION: Line Calibration

Line: Hg

	Conc.	Calc.	Dev.	Accepted
S1	.000	-.009	-.009	LiNear
S2	.050	.036	-.014	Quadratic
S3	.200	.205	.005	WtdLinear
S4	1.00	.996	-.004	Accept
S5	2.00	2.07	.066	
S6	3.00	2.96	-.045	StdAdd

Conc

A .0000000 r .999563
B 8.22196e-6 C -2.48029e-2



Relative Absorbance

	Mean	%RSD	
S1	2051	0	2051
S2	7415	0	7415
S3	27963	0	27963
S4	124116	0	124116
S5	254243	0	254243
S6	362471	0	362471

New calibration coefficients stored

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

*** Check Standard: 2 Ck2 Seq: 810 10:27:35 10 Mar 2000 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		106.	.635	.600	ug/L	.0000

106%

*** Sample ID: ICB Seq: 811 10:30:12 10 Mar 2000 HG

Hg -.030 ug/L .000 -.030 <0.05µg/L

*** Sample ID: BLK Seq: 812 10:32:31 10 Mar 2000 HG

Hg -.000 ug/L .000 -.001 <0.05µg/L

*** Sample ID: BLK DUP Seq: 813 10:34:51 10 Mar 2000 HG RPD=N/A

Hg -.006 ug/L .000 -.006 <0.05µg/L

*** Sample ID: 1633B Seq: 814 10:37:10 10 Mar 2000 HG

Hg 1.94 ug/L .000 1.94 NO DATA, ~~>RL~~ WRONG SAMPLE

*** Sample ID: 1633BDUP Seq: 815 10:40:00 10 Mar 2000 HG

Hg 1.91 ug/L .000 1.91 NO DATA, >RL

*** Sample ID: 88Q/A108 A SMJ 3/23 Seq: 816 10:42:49 10 Mar 2000 HG

Hg .421 ug/L .000 .421 0.021µg

*** Sample ID: 88Q/A108DUP A SMJ 3/23 Seq: 817 10:45:19 10 Mar 2000 HG RPD=<1.0%

Hg .424 ug/L .000 .424 0.021µg

*** Sample ID: 47Q138 Seq: 818 10:47:48 10 Mar 2000 HG

Hg .174 ug/L .000 .174 0.009µg

*** Sample ID: 47Q138DUP Seq: 819 10:50:08 10 Mar 2000 HG RPD=1.2%

Hg .172 ug/L .000 .172 0.009µg

*** Sample ID: 47Q144 Seq: 820 10:52:28 10 Mar 2000 HG

Hg .002 ug/L .000 .002 <0.003µg

*** Sample ID: 47Q144DUP Seq: 821 10:54:47 10 Mar 2000 HG RPD=N/A

Hg -.001 ug/L .000 -.001 <0.003µg

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: 47Q143					Seq: 822	10:57:07 10 Mar 2000 HG		
Hg	.143	ug/L	.000	.143		0.007 µg		
*** Sample ID: 47Q143DUP					Seq: 823	10:59:26 10 Mar 2000 HG RPD = <1.0%		
Hg	.144	ug/L	.000	.144		0.007 µg		
*** Sample ID: 47Q140					Seq: 824	11:01:46 10 Mar 2000 HG		
Hg	.790	ug/L	.000	.790		0.040 µg		
*** Sample ID: 47Q140DUP					Seq: 825	11:04:20 10 Mar 2000 HG RPD = 2.2%		
Hg	.773	ug/L	.000	.773		0.039 µg		
*** Sample ID: 47Q140TRP					Seq: 826	11:06:59 10 Mar 2000 HG RPD = 1.4%		
Hg	.779	ug/L	.000	.779		0.039 µg		
*** Sample ID: 88QH98					Seq: 827	11:09:34 10 Mar 2000 HG		
Hg	.026	ug/L	.000	.026		<0.003 µg		
*** Sample ID: 88QH98DUP					Seq: 828	11:11:53 10 Mar 2000 HG RPD = N/A		
Hg	.023	ug/L	.000	.023		<0.003 µg		
*** Sample ID: 88QH98SPK					Seq: 829	11:14:13 10 Mar 2000 HG		
Hg	1.08	ug/L	.000	1.08		TV = 1.0 108%		
*** Sample ID: 1633B	0.5885				Seq: 830	11:16:52 10 Mar 2000 HG		
Hg	1.56	ug/L	.000	1.56		TV = 0.141 mg/kg ± 0.019 94% 0.133 mg/kg		
*** Sample ID: 1633BDUP					Seq: 831	11:19:31 10 Mar 2000 HG RPD = 1.3%		
Hg	1.58	ug/L	.000	1.58		TV = 0.141 mg/kg ± 0.019 95% 0.135 mg/kg		
*** Sample ID: CCB					Seq: 832	11:23:38 10 Mar 2000 HG		
Hg	-.026	ug/L	.000	-.026		~~TV = 0.141 mg/kg ± 0.019~~ ~~95%~~ 3/13/00 <0.05 µg/L		
*** Sample ID: CCV					Seq: 833	11:25:58 10 Mar 2000 HG		
Hg	2.07	ug/L	.000	2.07		TV = 2.0 104%		

Dry Weight Analytical Data

Dry Weight/Total Volatile Solids (TVS) Notebook # 6

Sample Number	1392069					
Client/Pan #	METCO 1					
Wt of Pan + Sample	21.0933					
Wt after Drying	20.1159					
Wt of Pan or Wt After Ignition	1.0236					
Difference	19.0923					
Sample amount g	20.0697					
Result	95.1%					

Sample Number						
Client/Pan #						
Wt of Pan + Sample						
Wt after Drying						
Wt of Pan or Wt After Ignition						
Difference						
Sample amount g						
Result						

Sample Number					Batch Number: N/A
Client/Pan #					
Wt of Pan + Sample					Note: METCO ENV. (METALS)
Wt after Drying					
Wt of Pan or Wt After Ignition					
Difference					
Sample amount g					
Result					

Analyst: RXP Date: 2/23/00

Test America

PHILIP ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

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

ANALYTICAL REPORT

Client: METCO Environmental

Report to: Doug Saathoff
METCO Environmental
P. O. Box 598
Addison TX 75001

Project: 190278
Received: 08-FEB-00
Reported: 22-FEB-00

Project Description: 99-95CRL2/AEC, Unit 2
3 Runs - Coal Samples

	AS RECEIVED BASIS	DRY BASIS	UNITS	METHOD	DATE	ANALYST
Run 2, Test 1 (1/26/00, 0820-1035)						
Lab Sample: 1392067						
sampled: 26-JAN-00 10:35						
Moisture, Total	12.0		%	D 3302	08-FEB-00	GLB
Chlorine, Total	0.04	0.04	%	300.0	15-FEB-00	DRK
SHORT PROX - COAL						
Ash	4.09	4.65	%	D 3174	14-FEB-00	VJO
Sulfur	0.47	0.53	%	D 4239	17-FEB-00	VJO
Heating Value	11750	13360	BTU/lb	D 3286	11-FEB-00	VJO
Run 3, Test 2 (1/26/00, 1135-1341)						
Lab Sample: 1392068						
sampled: 26-JAN-00 13:41						
Moisture, Total	12.1		%	D 3302	08-FEB-00	GLB
Chlorine, Total	0.04	0.04	%	300.0	15-FEB-00	DRK
SHORT PROX - COAL						
Ash	4.65	5.29	%	D 3174	14-FEB-00	VJO
Sulfur	0.46	0.52	%	D 4239	17-FEB-00	VJO
Heating Value	11740	13360	BTU/lb	D 3286	11-FEB-00	VJO
Run 4, Test 3 (1/26/00, 1425-1631)						
Lab Sample: 1392069						
sampled: 26-JAN-00 16:31						
Moisture, Total	12.0		%	D 3302	08-FEB-00	GLB
Chlorine, Total	0.03	0.03	%	300.0	15-FEB-00	DRK
SHORT PROX - COAL						
Ash	4.34	4.93	%	D 3174	14-FEB-00	VJO
Sulfur	0.47	0.53	%	D 4239	17-FEB-00	VJO

4418 POTTSVILLE PIKE, READING, PENNSYLVANIA 19605 610-921-8833 FAX 610-921-9667

PHILIP ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

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

Client: METCO Environmental
Project: 190278

	AS RECEIVED BASIS	DRY BASIS	UNITS	METHOD	DATE	ANALYST
Run 4, Test 3 (1/26/00, 1425-1631)						
Lab Sample: 1392069 - continued						
Heating Value	11750	13360	BTU/lb	D 3286	11-FEB-00	VJO

< Indicates less than the limit of quantitation.

4418 POTTSVILLE PIKE, READING, PENNSYLVANIA 19605 610-921-8833 FAX 610-921-9667

CHAIN OF CUSTODY RECORD

Job No: 99-95CRL2
Job Name: AEC
Location: Leroy, AL
Unit: Unit 2

Collected By/Company: AEC

SAMPLE ANALYSIS REQUIRED 190278

Coal Samples SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI-VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods)
Run 2	1-26-00	0820 ~~1652~~ 1035			/		1	DG									/			Marked as Test 1 originally Container now marked as Test 2
Run 3	1-26-00	1135-1341 ~~1652~~			/		1	DG									/			marked as Test 2 originally now marked as #3
Run 4	1-26-00	1425-1631 ~~1652~~			/		1	DG									/			marked as Test 3 originally now marked as #4
~~Fly Ash~~ BH101	~~1-26-00~~	~~1652~~ ~~1652~~			X		~~1~~	~~DG~~												

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Donald C Dorman	1/26/00 16:52	Mike Pa	Jason Brown	1415 1-28-00	
Relinquished By/Sign: Mike Pa	Date/Time 1/26/00 1830	Received By/Sign: Jason Brown	Relinquished By/Sign: Fed Ex	Date/Time 2/8/00 0920	Received By/Sign: [illegible]
Received for Laboratory By/Signature:		Date/Time	Send Samples to: Phone:	Fax:	

APPENDIX E

Unit Operational Data

Plant Name: LPP

General Average Report

Reporting Period: 01/25/2000 to 01/25/2000

Site Name: LPP2

Data Averaging Type: 15m

Time of Report: 01/25/00 20:06

Rolling Average Interval: 1

Date	Time	LOAD (MW)	CO2C (percent)	TEMPF (degF)	FLOWSCFH (scfh)	SO2#/MM (lb/Mbtu)	NOX#/MM (lb/Mbtu)
01/25/00	16:45	246.	12.5	258.5	37065172.	0.562	0.494
	17:00	245.	12.6	258.4	37146012.	0.556	0.480
	17:15	246.	12.6	259.3	37061772.	0.557	0.469
	17:30	246.	12.6	259.6	36996256.	0.560	0.469
	17:45	246.	12.6	259.4	37100120.	0.558	0.473
	18:00	246.	12.6	259.6	37038476.	0.560	0.477
	18:15	246.	12.6	259.3	36986520.	0.556	0.477
	18:30	246.	12.5	258.5	37434980.	0.550	0.516
	18:45	246.	12.4	258.4	37828588.	0.552	0.526
	19:00	250.	12.6	257.6	38216900.	0.547	0.530
	19:15	255.	12.4	257.6	39120692.	0.549	0.539
Average =		247.	12.5	258.8	37454135.	0.555	0.495
Maximum =		255.	12.6	259.6	39120692.	0.562	0.539
Minimum =		245.	12.4	257.6	36986520.	0.547	0.469
Possible Values =		11	11	11	11	11	11
Included Values =		11	11	11	11	11	11
Total =		2715.	138.0	2846.3	411995488	6.107	5.450

* - excluded values (missing, OOC, invalid, suspect)
< - missing
T - out-of-control
I - invalid
S - suspect
V - invalid for state
H - exceedance
F - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value
-888 - value could not be calculated

Run 1

Plant Name: LPP

General Average Report

Reporting Period: 01/26/2000 to 01/26/2000

Site Name: LPP2

Data Averaging Type: 15m

Time of Report: 01/26/00 13:33

Rolling Average Interval: 1

Date	Time	LOAD (MW)	CO2C (percent)	TEMPF (degF)	FLOWSCFH (scfh)	SO2#/MM (lb/Mbtu)	NOX#/MM (lb/Mbtu)
01/26/00	08:15	245.	12.4	252.3	37902348.	0.511	0.411
	08:30	245.	12.4	251.3	38087080.	0.511	0.414
	08:45	246.	12.4	250.7	38113064.	0.511	0.418
	09:00	245.	12.5	250.4	38116384.	0.510	0.410
	09:15	245.	12.5	250.6	38105920.	0.510	0.414
	09:30	245.	12.5	250.4	37894552.	0.516	0.416
	09:45	245.	12.5	250.1	37879984.	0.518	0.414
	10:00	245.	12.5	250.4	37712272.	0.521	0.417
	10:15	245.	12.5	250.4	38206412.	0.530	0.416
	10:30	245.	12.5	250.2	37907948.	0.532	0.423
	10:45	245.	12.5	250.4	37779220.	0.535	0.424
Average =		245.	12.5	250.6	37973199.	0.519	0.416
Maximum =		246.	12.5	252.3	38206412.	0.535	0.424
Minimum =		245.	12.4	250.1	37712272.	0.510	0.410
Possible Values =		11	11	11	11	11	11
Included Values =		11	11	11	11	11	11
Total =		2700.	137.3	2757.1	417705184	5.705	4.577

* - excluded values (missing, OOC, invalid, suspect)
< - missing
T - out-of-control
I - invalid
S - suspect
V - invalid for state
H - exceedance
F - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value
-888 - value could not be calculated

Run 2

Plant Name: LPP

General Average Report

Reporting Period: 01/26/2000 to 01/26/2000

Site Name: LPP2

Data Averaging Type: 15m

Time of Report: 01/26/00 16:07

Rolling Average Interval: 1

Date	Time	LOAD (MW)	CO2C (percent)	TEMPF (degF)	FLOWSCFH (scfh)	SO2#/MM (lb/Mbtu)	NOX#/MM (lb/Mbtu)
01/26/00	11:30	245.	12.5	250.3	38076644.	0.549	0.421
	11:45	245.	12.6	250.6	37877120.	0.553	0.420
	12:00	245.	12.5	251.0	37868032.	0.566	0.420
	12:15	245.	12.6	251.0	37568992.	0.565	0.418
	12:30	245.	12.6	251.0	37646500.	0.563	0.418
	12:45	245.	12.6	250.9	37663108.	0.565	0.420
	13:00	245.	12.6	251.4	37334072.	0.564	0.423
	13:15	245.	12.6	251.6	37235092.	0.563	0.423
	13:30	245.	12.6	251.7	37541364.	0.563	0.422
	13:45	245.	12.6	251.9	37438668.	0.560	0.421
Average =		245.	12.6	251.1	37624959.	0.561	0.421
Maximum =		245.	12.6	251.9	38076644.	0.566	0.423
Minimum =		245.	12.5	250.3	37235092.	0.549	0.418
Possible Values =		10	10	10	10	10	10
Included Values =		10	10	10	10	10	10
Total =		2454.	125.6	2511.4	376249592	5.611	4.207

* - excluded values (missing, OOC, invalid, suspect)
< - missing
T - out-of-control
I - invalid
S - suspect
V - invalid for state
H - exceedance
F - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value
-888 - value could not be calculated

Run 3

Plant Name: LPP

General Average Report

Reporting Period: 01/26/2000 to 01/26/2000

Site Name: LPP2

Data Averaging Type: 15m

Time of Report: 01/26/00 17:06

Rolling Average Interval: 1

Date	Time	LOAD (MW)	CO2C (percent)	TEMPF (degF)	FLOWSCFH (scfh)	SO2#/MM (lb/Mbtu)	NOX#/MM (lb/Mbtu)
01/26/00	14:15	245.	12.6	252.6	37330764.	0.562	0.425
	14:30	245.	12.6	252.7	37375872.	0.560	0.420
	14:45	245.	12.6	252.8	37325776.	0.559	0.422
	15:00	245.	12.6	253.1	37457124.	0.558	0.423
	15:15	245.	12.6	253.4	37349988.	0.558	0.432
	15:30	245.	12.6	253.6	37332780.	0.557	0.429
	15:45	245.	12.6	253.9	37291116.	0.552	0.427
	16:00	245.	12.6	254.1	37416472.	0.551	0.424
	16:15	245.	12.6	253.8	37435708.	0.550	0.424
	16:30	244.	12.6	254.7	37274832.	0.548	0.423
	16:45	247.	12.7	252.3	37445236.	0.560	0.417
Average =		245.	12.6	253.4	37366879.	0.556	0.424
Maximum =		247.	12.7	254.7	37457124.	0.562	0.432
Minimum =		244.	12.6	252.3	37274832.	0.548	0.417
Possible Values =		11	11	11	11	11	11
Included Values =		11	11	11	11	11	11
Total =		2700.	138.7	2787.0	411035668	6.115	4.667

* - excluded values (missing, OOC, invalid, suspect)
< - missing
T - out-of-control
I - invalid
S - suspect
V - invalid for state
H - exceedance
F - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value
-888 - value could not be calculated

Run 4

UNIT 2
1/26/00
TEST 1

ALABAMA ELECTRIC COOPERATIVE

:15 min

TIME	LOAD	A MILL A1	A MILL A2	B MILL B1	B MILL B2	C MILL C1	C MILL C2	#/HR STM FLOW
8:20	246	652141	664451	353349	624723	769697	926462	1711844
8:35	245	652204	664525	353433	624829	769824	926525	1711859
8:50	245	652265	664596	353514	624927	769931	926588	1716301
9:05	245	652329	664672	353601	625032	770030	926653	1724879
9:20	245	652389	664742	353681	625129	770158	926718	1715250
9:35	245	652452	664816	353765	625231	770238	926784	1714590
9:50	245	652512	664887	353845	625328	770346	926847	1725084
10:05	245	652574	664960	353929	625430	770454	926912	1713539
10:20	246	652635	665032	354011	625530	770573	926977	1712708
10:35	245	652697	665105	354093	625623	770651	927042	1721024

	#/HR	#/HR	#/HR	#/HR	#/HR	#/HR	T/HR
8:20 - 8:35	12.60	14.80	16.80	21.20	25.40	12.60	103.40 ✓
8:35 - 8:50	12.20	14.20	16.20	19.60	21.40	12.60	96.20 ✓
8:50 - 9:05	12.80	15.20	17.40	21.00	19.80	13.00	99.20 ✓
9:05 - 9:20	12.00	14.00	16.00	19.40	25.60	13.00	100.00 ✓
9:20 - 9:35	12.60	14.80	16.80	20.40	16.00	13.20	93.80 ✓
9:35 - 9:50	12.00	14.20	16.00	19.40	21.60	12.60	95.80 ✓
9:50 - 10:05	12.40	14.60	16.80	20.40	21.60	13.00	98.80 ✓
10:05 - 10:20	12.20	14.40	16.40	20.00	23.80	13.00	99.80 ✓
10:20 - 10:35	12.40	14.60	16.40	18.60	15.60	13.00	90.60 ✓

UNIT 2
1/26/00
TEST 2

ALABAMA ELECTRIC COOPERATIVE

:15 min

TIME	LOAD	A MILL A1	A MILL A2	B MILL B1	B MILL B2	C MILL C1	C MILL C2	STM FLOW
11:35	245	652941	665393	354423	626027	771078	927304	1714384
~~11:50~~	~~246~~	653000	665462	354506	626127	771197	927368	1719746
12:05	246	653060	665534	354589	626229	771303	927431	1716981
12:20	245	653117	665602	354672	626328	771410	927494	1709024
12:35	245	653177	665673	354756	626430	771508	927558	1709642
12:50	245	653235	665741	354838	626529	771604	927621	1714796
13:05	246	653294	665814	354922	626631	771704	927685	1713539
13:20	245	653365	665896	355021	626750	771827	927762	1712500
13:35	245	653413	665953	355088	626831	771879	927813	1714384
13:41	245	653436	665980	355121	626871	771913	927838	1714384

	A1 T/HR	A2 T/HR	B1 T/HR	B2 T/HR	C1 T/HR	C2 T/HR	TOTAL T/HR
11:35-11:50	11.80	13.80	16.60	20.00	23.80	12.80	98.80 ✓
11:50-12:05	12.00	14.40	16.60	20.40	21.20	12.60	97.20 ✓
12:05-12:20	11.40	13.60	16.60	19.80	21.40	12.60	95.40 ✓
12:20-12:35	12.00	14.20	16.80	20.40	19.60	12.80	95.80 ✓
12:35-12:50	11.60	13.60	16.40	19.80	19.20	12.60	93.20 ✓
12:50-13:05	11.80	14.60	16.80	20.40	20.00	12.80	96.40 ✓
13:05-13:23	11.80	13.70	16.50	19.80	20.50	12.80	95.10 ✓
13:23-13:35	12.00	14.20	16.80	20.20	18.00	12.80	94.00 ✓
13:35-13:41	11.50	13.50	16.50	20.00	22.00	12.50	96.00 ✓
						AVG	95.77 ✓

UNIT 2
1/26/00
TEST 3

ALABAMA ELECTRIC COOPERATIVE 15 min

TIME	LOAD	A MILL A1	A MILL A2	B MILL B1	B MILL B2	C MILL C1	C MILL C2	STM FLOW
14:25	246	653608	666185	355365	627163	772161	928026	1716341
14:40	245	653668	666256	355449	627263	772279	928090	1712276
14:55	245	653727	666326	355532	627368	772377	928155	1709491
15:10	246	653785	666395	355614	627467	772475	928219	1715457
15:25	246	653845	666466	355698	627569	772574	928284	1715457
15:40	245	653904	666536	355780	627669	772672	928349	1715250
15:55	245	653962	666605	355862	627768	772769	928412	1710962
16:10	245	654021	666674	355946	627870	772887	928477	1713989
16:25	246	654080	666744	356029	627970	773017	928542	1713764
16:31	245	654106	666776	356066	628014	773056	928571	1710529

	A1 T/HR	A2 T/HR	B1 T/HR	B2 T/HR	C1 T/HR	C2 T/HR	TOTAL T/HR
14:25-14:40	12.00	14.20	16.80	20.00	23.60	12.80	99.40 ✓
14:40-14:55	11.80	14.00	16.60	21.00	19.60	13.00	96.00 ✓
14:55-15:10	11.60	13.80	16.40	19.80	19.60	12.80	94.00 ✓
15:10-15:25	12.00	14.20	16.80	20.40	19.80	13.00	96.20 ✓
15:25-15:40	11.10	14.00	16.40	20.00	19.60	13.00	94.10 ✓
15:40-15:55	11.60	13.80	16.40	19.80	19.40	12.60	93.60 ✓
15:55-16:10	11.80	13.80	16.80	20.40	23.60	13.00	99.40 ✓
16:10-16:25	11.80	14.00	16.60	20.00	26.00	13.00	101.40 ✓
16:25-16:31	13.00	16.00	18.50	22.00	19.50	14.50	103.50 ✓
AVG							97.54

ALABAMA ELECTRIC COOPERATIVE, INC.
LOWMAN POWER PLANT
LEROY, AL 36548

ABSORBER UNIT: 2

DATE: 1-26-00

TIME	PLANT LOAD	"A" ABS PRESSURE	"A" UPPER MIST INLET PRESSURE	"A" LOWER MIST INLET PRESSURE	"A" ABS INLET TEMP.	"A" ABS OUTLET TEMP.	"A" ABS TEMP.	"A" INLET WASH WATER FLOW	A1 RECYCLE PUMP DISCHARGE PRESSURE	A2 RECYCLE PUMP DISCHARGE PRESSURE	A3 RECYCLE PUMP DISCHARGE PRESSURE	A1 RECYCLE PUMP AMPS	A2 RECYCLE PUMP AMPS	A3 RECYCLE PUMP AMPS	A1 PUMP MOTOR STATION TEMPERATURE	A2 PUMP MOTOR STATION TEMPERATURE	A3 PUMP MOTOR STATION TEMPERATURE	"B" ABS PRESSURE	"B" UPPER MIST INLET PRESSURE	"B" LOWER MIST INLET PRESSURE	"B" ABS INLET TEMP.	"B" ABS OUTLET TEMP.	"B" ABS TEMPERATURE	"B" INLET WASH WATER FLOW	B1 RECYCLE PUMP DISCHARGE PRESSURE	B2 RECYCLE PUMP DISCHARGE PRESSURE	B3 RECYCLE PUMP DISCHARGE PRESSURE	B1 RECYCLE PUMP AMPS	B2 RECYCLE PUMP AMPS	B3 RECYCLE PUMP AMPS	B1 PUMP MOTOR STATION TEMPERATURE	B2 PUMP MOTOR STATION TEMPERATURE	B3 PUMP MOTOR STATION TEMPERATURE	"A" DEMISTER UNDERSPRAY FLOW	"B" DEMISTER UNDERSPRAY FLOW	"A" HYDROCLONE FLOW	"B" HYDROCLONE FLOW	STACK TEMPERATURE	RECYCLE TANK PH	SO_2	NO_x	BY-PASS DAMPER	RECYCLE TANK LEVEL
12 MN	245	1.0	.5	.4	310	110	69	680	31			30						1.0	.8	.6	330	115	67	730	32			32										260	6.9	.54	.50	100	100
1 AM	247	1.0	.5	.4	305	110	70	680	31			30						1.0	.8	.6	330	115	60	720	32			32										250	6.9	.55	.50	100	100
2 AM	245	1.0	.5	.4	305	110	69	670	30			30						1.0	.8	.6	330	115	65	730	32			32										250	6.8	.53	.51	100	100
3 AM	245	1.0	.5	.4	305	110	65	670	30			30						1.0	.8	.6	330	115	65	730	32			32										250	6.8	.53	.51	100	100
4 AM	246	1.0	.5	.4	305	106	70	680	30			30						1.0	.8	.6	320	115	63	730	32			32										250	6.8	.53	.51	100	100
5 AM	246	1.0	.5	.4	305	106	70	680	30			30						1.0	.8	.6	320	115	63	730	32			32										250	6.8	.53	.49	100	100
6 AM	256	1.0	.5	.4	305	106	68	680	30			30						1.1	.9	.6	330	115	65	730	32			32										250	6.8	.53	.49	100	100
7 AM	254	1.0	.5	.4	310	108	70	680	30			30						.9	.8	.6	330	116	65	730	32			32										250	6.8	.53	.49	100	100
8 AM	243	1.0	.5	.4	310	116	75	660	30			30						.9	.9	.6	330	116	65	730	32			32										250	6.8	.51	.44	100	100
9 AM	243	1.0	.5	.4	310	116	72	660	30			30						1.0	.8	.6	320	115	64	730	32			32										250	6.8	.51	.41	100	100
10 AM	243	1.0	.5	.4	310	116	72	660	30			30						1.0	.8	.6	320	115	64	730	32			32										250	6.8	.51	.41	100	100
11 AM	244	1.0	.5	.4	300	105	70	660	30			30						1.0	.8	.6	320	115	65	730	32			32										250	6.6	.53	.42	100	100
12 N	244	1.0	.5	.4	300	105	70	660	30			30						1.0	.8	.6	320	115	65	730	32			32										250	6.6	.55	.42	100	100
1 PM	244	1.0	.5	.4	300	105	70	660	30			30						1.0	.9	.6	320	115	65	730	32			32										250	6.6	.56	.41	100	100
2 PM	244	1.0	.5	.4	300	105	70	680	30			30						1.0	.9	.6	320	115	65	730	32			32										250	6.6	.56	.42	100	100
3 PM	244	1.0	.5	.4	300	105	70	680	30			30						1.0	.9	.6	320	115	65	730	32			32										250	6.6	.56	.42	100	100
4 PM	243	1.0	.5	.4	300	105	70	660	30			30						1.0	.9	.6	320	115	65	730	32			32										250	6.6	.55	.42	100	100
5 PM	245	1.1	.6	.5	300	105	73	660	30			30						1.2	.9	.6	320	115	65	730	32			32										250	6.6	.55	.42	75	100
6 PM																																												
7 PM																																												
8 PM																																												
9 PM																																												
10 PM																																												
11 PM																																												
12 MN																																												

Run 2 — E-9
Run 3
Run 4

REMARKS:

APPENDIX F

Chain of Custody Records

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-95CRL 2
Job Name: AEC
Location: Leroy, AL
Unit: Unit Number 2A Asorber Inlet Duct

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 A thimble 93filter	1-25-00	1932	/				11	MB									/			Thimble: Q95 Filter: 47Q140
Container 2 0.1 N HNO_3 FW	1-25-00	1933	/				1	MB									/			Container 2A not recovered
Container 3 10% ~~N~~ HNO_3 rinse Imp. 1,2,3	1-25-00	1943	/				11	MB									/			Added 5% Potassium Permanganate
Container 4 0.1 N HNO_3 rinse Imp. 4	1-25-00	1946	/				1	MB									/			
Container 5 0.1 N HNO_3 rinse Imp. 5,6,7	1-25-00	1958	/				11	MB									/			used hydroxylamine solution

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
[illegible]	1-26-00 1830	[illegible]		2/9/00	EPK
[illegible]	1-28-00 1416		PM metco M. Gantt	2/7/00 1000	
Received for Laboratory By/Signature:		Date/Time	Send Samples to: Phone:		Fax:

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-95CRL2
Job Name: AEC
Location: Leroy, AL
Unit: Unit Number 2A Asorber Inlet Duct

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 thimble filter	1-26-00	1125	✓				11	MB									✓			thimble Q149 filter 47Q142
Container 2 0.1 N HNO_3 FW	1-26-00	1128	✓				1	MB									✓			Container 2A not recovered
Container 3 10% HNO_3 rinse BH, Imp 1,2,3	1-26-00	1142	✓				11	MB									✓			Added 5% Potassium Permaganate
Container 4 0.1 N HNO_3 rinse Imp. 4	1-26-00	1146	✓				1	MB									✓			
Container 5 0.1 N HNO_3 rinse Imp 5,6,7	1-26-00	1155	✓				1	MB									✓			used hydroxylamine soln.

Analyze according to Ontario-Hydro method.

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Mike Bo	1-26-00 1830	Jim Brown		2/9/00	EPK
Relinquished By/Sign: Jim Brown	Date/Time 1-28-00 1416	Received By/Sign:	~~Relinquished~~ PM / metco By/Sign: M. Hunter	Date/Time 2/7/00 1000	Received By/Sign:
Received for Laboratory By/Signature:		Date/Time	Send Samples to: Phone:	Fax:	

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METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-95CRL2
Job Name: AEC
Location: Leroy, AL
Unit: Unit Number 2A Asorber Duct

Collected By/Company: METCO

Run 3 SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI-VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods)
																				Analyze according to Ontario-Hydro method
✓ Container 1 thimble/filter	1-26-00	1524	✓				11	MB									✓			thimble Q94 filter 47Q193
✓ Container 2 0.1 N HNO_3 FW	1-26-00	1525	✓				1	MB									✓			Container 2A not recovered
✓ Container 3 10% HNO_3 rinse BH Imp. 1,2,3	1-26-00	1531	✓				11	MB									✓			Added 5% Potassium Permangate
✓ Container 4 0.1 N HNO_3 rinse Imp. 4	1-26-00	1533	✓				1	MB									✓			
✓ Container 5 0.1 N HNO_3 rinse Imp. 5,6,7	1-26-00	1540	✓				1	MB									✓			Used Hydroxylamine solution.

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
MB	1-26-00 1830	Jann Brown		2/9/00	EPK
Jann Brown	1-28-00 1416	Received By/Sign:	PM/Metco M. Baxter	2/7/00 1600	Received By/Sign:
Received for Laboratory By/Signature:		Date/Time	Send Samples to: Phone:	Fax:	

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99.95CRL2
Job Name: AEC
Location: Leroy, AL
Unit: Unit Number 2A Asorber Inlet Duct

Collected By/Company: METCO

Run 4 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 thimble filter	1-26-00	1759	/				11	JC									/			thimble Q99 filter 47Q138
Container 2 0.1 N HNO_3 FW	1-26-00	1801	/				1	JC									/			Container 2A not recovered
Container 3 10% HNO_3 rinse Imp. 1,2,3	1-26-00	1805	/				11	JC									/			Added 5% Potassium Permanganate
Container 4 0.1 N HNO_3 rinse Imp. 4	1-26-00	1807	/				1	JC									/			
Container 5 0.1N HNO_3 rinse Imp 5,6,7	1-26-00	1812 ~~1824~~	/				1 ~~11~~	JC									/			used hydroxylamine solution

Analyze according to Ontario-Hydro method.

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Mike Bo	1-26-00 1830	Jann Brown		2/9/00	EPK
Jann Brown	1-28-00 1416		PM/Metco M. Baxter	2/7/00 1000	

Received for Laboratory By/Signature: Date/Time

Send Samples to:
Phone: Fax:

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-95 CRLZ
Job Name: AEC
Location: Leroy, AL
Unit: Unit Number 2A Asorber Inlet Duct

Collected By/Company: METCO

SAMPLE ANALYSIS REQUIRED

Blank Train SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI-VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods)
Container 3 10% HNO_3 rinse Imp 1,2,3	1-26-00	1703	✓				1	MB									✓			Added 5% Potassium Permanganate
Container 4 0.1 N HNO_3 rinse Imp. 4	1-26-00	1704	✓				1	MB									✓			
Container 5 0.1 N HNO_3 rinse Imp 5,6,7	1-26-00	1714	✓				1	MB									✓			used hydroxylamine solution

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
MB	1-26-00 1830	Jason Brown		2/9/00	EPK
Relinquished By/Sign: Jason Brown	Date/Time 1-28-00 1416	Received By/Sign:	Relinquished By/Sign: Pm / Metco M. Hunter	Date/Time 2/7/00 1000	Received By/Sign:
Received for Laboratory By/Signature:		Date/Time	Send Samples to: Phone:	Fax:	

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METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-95CRL2
Job Name: AEC
Location: Leroy, AL
Unit: Unit Number 2 Stack

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 filter	1-25-00	2008	/				1	MB									/			Filter # 88QA108
Container 2 0.1 N HNO_3 FW	1-25-00	2014	/				1	MB									/			Container 2A not recovered
Container 3 10% HNO_3 rinse Imp. 1,2,3	1-25-00	2023	/				1	MB									/			added 5% Potassium Permanganate
Container 4 0.1 N HNO_3 rinse Imp. 4	1-25-00	2025	/				1	MB									/			
Container 5 0.1 N HNO_3 rinse Imp. 5,6,7	1-25-00	2035	/				1	MB									/			Used hydroxylamine solution

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
[signature]	1-26-00 1830	[signature]		2/9/00	EDK
Relinquished By/Sign: [signature]	Date/Time 1-28-00 1417	Received By/Sign:	~~Relinquished~~ Received By/Sign: M. Hunter	Date/Time 2/7/00 1000	Received By/Sign:
Received for Laboratory By/Signature:		Date/Time	Send Samples to: Phone:		Fax:

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-95 CRL 2
Job Name: AEC
Location: Leroy, AL
Unit: Unit Number 2 Stack

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 filter	1-26-00	1220	/				1	MB									/			filter 88Q B47
Container 2 0.1 N HNO_3 FW	1-26-00	1222	/				1	MB SL									/			Container 2A not recovered
Container 3 10% HNO_3 rinse BH, Imp. 1,2,3	1-26-00	1228	/				11	MB									/			Added 5% Potassium Permanganate
Container 4 0.1 N HNO_3 rinse Imp. 4	1-26-00	1231	/				1	MB									/			
Container 5 0.1 N HNO_3 rinse Imp. 5,6,7	1-26-00	1237	/				1	MB									/			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 Bo	1-26-00 1830	Jam Brom		2/9/00	EPK
Jam Brom	1-28-00 1417		PM ~~Relinquished~~ By/Sign: M. Banter	2/7/00 1000	

Received for Laboratory By/Signature: Date/Time

Send Samples to:
Phone: Fax:

METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-95 CRL2
Job Name: AEC
Location: Leroy, AL
Unit: Unit Number 2 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 filter	1-26-00	1602	/				1	MB									/			filter 88QB48
Container 2 0.1N HNO_3 FW	1-26-00	1603	/				1	MB									/			Container 2A not recovered
Container 3 10% HNO_3 rinse Imp 1,2,3	1-26-00	1606	/				1	MB									/			Added 5% Potassium Permanganate
Container 4 0.1N HNO_3 rinse Imp. 4	1-26-00	1608	/				1	MB									/			
Container 5 0.1N HNO_3 rinse Imp. 5,6,7	1-26-00	1616	/				1	MB									/			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:
MB	1-26-00 1830	Jim Brown		2/9/00	EPK
Jim Brown	1-28-00 1417		~~Relinquished~~ By/Sign: PM by M. Hartley	2/7/00 1000	

Received for Laboratory By/Signature: Date/Time

Send Samples to:
Phone: Fax:

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METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-95 CRL2
Job Name: AEC
Location: Leroy, AL
Unit: Unit Number 2 Stack

Collected By/Company: METCO

Run 4

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 filter	1-26-00	1738	/				1	SC									/			Filter 88QH97
Container 2 0.1 N HNO_3 ~~rinse~~ FW	1-26-00	1739	/				1	SC ~~SC~~									/			Container 2A not recovered
Container 3 10% HNO_3 rinse Imp. 1,2,3	1-26-00	1744	/				11	SC									/			Added 5% Potassium Permanganate
Container 4 0.1N HNO_3 rinse Imp. 4	1-26-00	1746	/				1	SC									/			
Container 5 0.1 N HNO_3 rinse Imp. 5,6,7	1-26-00	1754	/				1	SC									/			Used hydroxylamine solution

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Mk By	1-26-00 1830	Jason Brown		2/9/00	EJK
Relinquished By/Sign: Jason Brown	Date/Time 1-28-00 1417	Received By/Sign:	~~Relinquished By/Sign:~~ PM by M. Hunter	Date/Time 2/7/00 1000	Received By/Sign:
Received for Laboratory By/Signature:		Date/Time	Send Samples to: Phone:	Fax:	

METCO ENVIRONMENTAL®

CHAIN OF CUSTODY RECORD

Job No: 99-95CRL2
Job Name: AEC
Location: Leroy, AL
Unit: Unit Number 2 Stack

Collected By/Company: METCO

SAMPLE ANALYSIS REQUIRED

Blank Train SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI--VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods)
Container 3 10% HNO_3 rinse Imp 1,2,3	1-26-00	1639	✓				1	MB									✓			Added 5% Potassium Permanganate
Container 4 0.1N HNO_3 rinse Imp. 4	1-26-00	1640	✓				1	MB									✓			
Container 5 0.1N HNO_3 rinse Imp 5,6,7	1-26-00	1649	✓				1	MB									✓			used hydroxylamine solution

Analyze according to Ontario-Hydro method

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Mike Hy	1-26-00 1830	Jann Brown		2/9/00	EDK
Jann Brown	1-28-00 1417		PM - Metco M. Baxter	2/7/00 1000	

Received for Laboratory By/Signature: Date/Time

Send Samples to:
Phone: Fax:

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METCO ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-95 CRL2
Job Name: AEC
Location: Leroy, AL
Unit: Unit Nymber 2

Collected By/Company: METCO

SAMPLE ANALYSIS REQUIRED

Reagent Blanks SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI-VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods)
Container 7 50mL 0.1 N HNO_3	1-26-00	1813	✓				1	MB									✓			Analyze according to Ontario-Hydro method.
Container 8 50mL KCl	1-26-00	1814	✓				1	MB									✓			
Container 9 50mL HNO_3-H_2O_2	1-26-00	1815	✓				1	MB									✓			
Container 10 50mL H_2SO_4-$KMnO_4$	1-26-00	1816	✓				1	MB									✓			
Container 11 100mL Hydroxylamine soln.	1-26-00	1817	✓				1	MB									✓			
Container 12 sample filters	1-26-00	1824	✓				~~1~~	MB									✓			Q97 88Q H98 47Q144 Q124 88Q H99 47Q145 Q98 88Q H100 47Q146

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Mike Hy	1-26-00 1830	Jam Brown		2/9/00	EDK
Jam Brown	1-28-00 1415			2/7/00 1330	

Received for Laboratory By/Signature: ← Date/Time

Send Samples to:
Phone: Fax:

TRW ENVIRONMENTAL

CHAIN OF CUSTODY RECORD

Job No: 99-95CRLZ
Job Name: AEC
Location: Leroy, AL
Unit: Unit 2

Collected By/Company: AEC

SAMPLE ANALYSIS REQUIRED: 190278

Coal Samples SAMPLE I.D.	DATE	TIME	AIR	SOLID	COMP	GRAB	# of CONTAINERS	RECOVERED BY	PART	HCL	CL2	METALS	PCDD/PCDF	SEMI-VOC	VOST	HEXCHROME	Hg			REMARKS (Specific Compounds/Methods)
Run 2	1-26-00	0820-~~1652~~ 1035			/		1	DG									/			Marked as Test 1 originally Container now marked as Test 2
Run 3	1-26-00	1135-1341 ~~1652~~			/		1	DG									/			marked as Test 2 originally now marked as #3
Run 4	1-26-00	1425-1631 ~~1652~~			/		1	DG									/			marked as Test 3 originally now marked as #4
~~Fly Ash~~ BH101	~~1-26-00~~	~~1652~~ ~~1652~~			X		~~1~~	~~DG~~												

Relinquished By/Sign:	Date/Time	Received By/Sign:	Relinquished By/Sign:	Date/Time	Received By/Sign:
Donald C Dorman	1/26/00 16:52	Mike Pa	Jason Brown	1415 1-28-00	
Mike Pa	1/26/00 1830	Jason Brown	Fed Ex	2/8/00 0920	Greenwald

Received for Laboratory By/Signature: [illegible] 1/28/00 10:20

Date/Time:

Send Samples to:

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.

JESSE ROCHA; Project Supervisor III

Education	B.S. 1992, West Texas State University; Canyon, Texas, in Chemistry and Biology.
Professional Training Courses	Attended 40-hour Occupational and Environmental Training Program on Hazardous Materials (CFR 1910.120) Dallas, Texas, October 1992. Also attended an 8-hour refresher course, February, 1995.
Certifications	Certified in Visible Emissions.
Technical Experience	Participated in the sampling of over 900 Sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 1992 - Present.

Experienced in the analysis of commercial calibration gas cylinders for CO_2, O_2, NO_x, SO_2, and CO.

Experienced with VOST sampling procedure (Method 0030).

Experienced with calibration techniques for all field testing equipment.

Experienced with various multiple metals and acid gas sampling trains.

Has performed on-site SO_2 analysis and Total Reduced Sulfur Analysis.

Has performed on-site Particulate Analysis

Experienced with 3-Dimensional velocity probe procedure.

Experienced with Ambient Air monitoring.

ROCHA

Monitors

Thoroughly trained in the operation and routine maintenance of the following:

Thermo Environmental Model 10AR and 10S Oxides of Nitrogen Analyzers

Teledyne Model 326 Oxygen Analyzer

Thermo Environmental Model 48 Carbon Monoxide Analyzer

J.U.M. Model VE-7 Total Hydrocarbon Analyzer

Ratfisch Model RS-55 Total Hydrocarbon Analyzer

Western Research Model 721M Sulfur Dioxide Analyzer

Horiba PIR-2000 Carbon Dioxide Analyzer

SHANE LEE; Environmental Technician II

Education	B. S. - Environmental Science-Biology, December 20, 1997; Sul Ross State University; Alpine, 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.

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.

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 CONWAY; Environmental Technician I

Education	B.S. Biology, July 1999; Southeastern Oklahoma State University; Durant, Oklahoma.
Technical Experience	Participated in the sampling of over 25 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 1999-Present.

JASON 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.

CHARLES (JEFF) HOLLINGSWORTH; Project Supervisor I

Education	General Studies, August 1987; Brower State Community College; Fayette, Alabama
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, 1999-present

SEAN HOBBS; Environmental Technician II

Education	B. S. Environmental Studies/Natural Science, December 1998; University of West Florida; Pensacola, Florida
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