



WHEELABRATOR NORTH BROWARD
A WASTE MANAGEMENT COMPANY

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January 18, 2002

CERTIFIED MAIL # 7000 0520 0020 9339 5764

Ms. Melissa L. Meeker
Florida Department of Environmental Protection
P.O. Box 15425
West Palm Beach, FL 33416-5425

Re: Wheelabrator North Broward
F.A.C. 62-296.416 Quarterly Mercury Testing
Fourth Quarter of 2001

RECEIVED
JAN 28 2002
BUREAU OF AIR REGULATION

Dear Ms. Meeker:

As required by F.A.C. 62-296.416, please find enclosed the 2001 fourth quarter report on mercury stack testing which was conducted on Unit #2.

If there are any questions, or if additional information is required, please contact this office at (954) 971-8701.

Sincerely,

Paul Grego
Plant Manager

cc: USEPA, Region IV, Air, Pesticides & Toxics Management Division, Air & EPCRA Enforcement
Branch, Air Enforcement Section (with) CERTIFIED MAIL # 7001 1940 0006 8151 8966
FDEP, Tallahassee, Bureau of Air Regulation, New Source Review Section (with)
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Broward County Department of Planning and Environmental Protection, Air Quality Division
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Chuck Faller (with)
Tim Porter (without)
Matt Killeen (without)
Scott Shannon – MPI (with)
File: 3.7.2 (without)
5.1.3.2 (without)

s:01180201

① Mike - F.Y.I.

Low mercury & they don't
inject carbon.

② Cindy Phillips -

③ John Glenn -

Save or pitch.

ae



Clean Air Engineering

500 W. Wood St. • Palatine, IL 60067 • 847-991-3300

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Wheelabrator North Broward, Inc.
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Pompano Beach, Florida 33073

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BUREAU OF AIR REGULATION

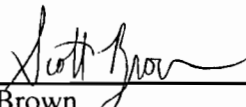
REPORT ON MERCURY TESTING

Performed for:
WHEELABRATOR NORTH BROWARD, INC.
UNIT 2 FF OUTLET
POMPAÑO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-3
Revision 0: January 8, 2002

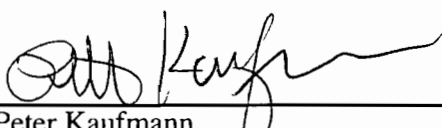
To the best of my knowledge, the data presented in this report are accurate and complete.

Submitted by,



Scott Brown
Project Manager
(847) 991-6200 ext. 2044

Reviewed by,



Peter Kaufmann
Manager, Midwest Source Group

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PROJECT OVERVIEW

1-1

Wheelabrator North Broward, Inc. operates a Refuse to Energy Facility located in Pompano Beach, Florida. The facility's emission levels are regulated by the Florida Department of Environmental Protection. Wheelabrator North Broward, Inc. contracted Clean Air Engineering to perform a compliance test program at their municipal waste combustor (MWC) facility in Pompano Beach, Florida. Testing was conducted in accordance with 40 CFR 60 Subpart Cb and applicable sections of PSD-FL-112(B) and PA86-22. The sampling was conducted at the Unit 2 Fabric Filter (FF) Outlet on December 11, 2001.

The testing included the determination of the following constituents:

- moisture (H₂O);
- oxygen (O₂);
- carbon dioxide (CO₂);
- total flow (dscfm);
- mercury (Hg).

Coordinating and observing the field portion of the program were:

C. Faller	- Wheelabrator North Broward, Inc.
P. Tinkham	- Clean Air Engineering

The schedule of activities is shown in Table 1-1. A summary of the results is presented in Table 1-2 on page 1-2.

Table 1-1:
Schedule of Activities

<u>Date(2001)</u>	<u>Start Time</u>	<u>Stop Time</u>	<u>Unit</u>	<u>Location</u>	<u>Pollutant</u>	<u>Method</u>	<u>Run No.</u>
<u>December 11</u>							
	10:43	12:59	2	FF Outlet	Mercury	EPA 29	1
	13:15	15:28	2	FF Outlet	Mercury	EPA 29	2
	15:32	17:45	2	FF Outlet	Mercury	EPA 29	3

PROJECT OVERVIEW

1-2

Table 1-2:
Summary of Test Results

Source Constituent (Units)	Sampling Method	Average Emission	Permit Limit ¹
<u>Unit 2 FF Outlet</u>			
Mercruy ($\mu\text{g}/\text{dscm}$ @ 7% O_2)	EPA M29	5.8	70

¹ Limits obtained from 40 Code of Federal Register part 60 Subpart Cb - Emission Guidelines and Compliance Times for Large Municipal Waste Combustors That Are Constructed on or Before September 20, 1994 published in Federal Register as 62 FR 45123 on December 19, 1995 as modified on August 25, 1997, Florida's Rule 62-296.416, F.A.C. and PSD-FL-105.

The test conditions and results of analysis are presented in Table 2-1 on page 2-1 and the Quality Control and Quality Assurance Results are shown in Table 2-2 on page 2-2.

RESULTS

2-1

Table 2-1:
Unit 2 FF Outlet - Mercury

Run No.	1	2	3	Average
Date (2001)	December 11	December 11	December 11	
Start Time (approx.)	10:43	13:15	15:32	
Stop Time (approx.)	12:59	15:28	17:45	
<u>Process Conditions¹</u>				
Steam Flow (klb/hr)	184.2	183.5	183.9	183.9
Fabric Filter Inlet Temperature (°F)	285.1	285.1	285.1	285.1
<u>Gas Conditions</u>				
O ₂ Oxygen (dry volume %)	9.5	10.2	9.9	9.9
CO ₂ Carbon Dioxide (dry volume %)	9.5	8.8	8.9	9.1
T _s Temperature (°F)	269	269	271	270
Q _a Volumetric flow rate, actual (acfm)	194,300	205,300	207,500	202,367
Q _{std} Volumetric flow rate, standard (dscfm)	106,500	113,900	113,700	111,367
<u>Test Conditions</u>				
V _{msld} Volume metered, standard (ft ³)	72.03	78.72	78.62	76.46
%I Isokinetic sampling (%)	100.8	100.6	103.0	101.5
<u>Mercury (Hg) Totals</u>				
m _n Net weight (µg)	8.8	11.0	10.1	10.0
C Concentration (µg/dscm)	4.3	4.9	4.5	4.6
C Corrected to 7% O ₂ (µg/dscm)	5.3	6.4	5.7	5.8
C Corrected to 12% CO ₂ (µg/dscm)	5.4	6.7	6.1	6.1
E Emission rate (lb/hr)	1.72E-03	2.10E-03	1.93E-03	1.92E-03
E Emission rate (lb/10 ⁶ Btu) ²	4.73E-06	5.39E-06	4.97E-06	5.03E-06

¹ Process conditions were provided by Wheelabrator personnel.

² Calculated based on an Fd of 9570 per EPA Method 19.

RESULTS

2-2

**Table 2-2:
Quality Assurance and Quality Control**

EPA Method 29

	Method Blank Results (µg)	Reagent Blank Results (µg)	Field Blank Results (µg)
Hg Front half filter and probe rinse (1B)	ND(0.030)	ND(0.030)	ND(0.030)
Hg (Impingers 1-3 Fraction 2B)	ND(0.010)	ND(0.29)	<0.31
Hg (Impinger 4 Fraction 3A)	ND(0.010)	ND(0.010)	ND(0.010)
Hg (Impingers 5-6 Fraction 3B)	ND(0.050)	ND(0.050)	ND(0.050)
Hg (HCl rinse of impingers 5-6 Fraction 3C)	ND(0.050)	ND(0.050)	0.072

**Sample ID: Unit 2 Outlet Run 1
Fraction**

	Results	Duplicate	M. Spike	MS % Rec.	MS Dup.	MSD %
Hg Front half filter and probe rinse (1B)	0.50	0.51	0.80	100	0.81	110
Hg (Impingers 1-3 Fraction 2B)	7.3	7.2	14	96	14	98
Hg (Impinger 4 Fraction 3A) (from South Broward)	-	-	-	-	-	-
Hg (Impingers 5-6 Fraction 3B)	ND(0.050)	ND(0.050)	0.52	100	0.51	100
Hg (HCl rinse of impingers 5-6 Fraction 3C)	1.0	0.99	1.4	86	1.4	85

Sample ID: Unit 3 Outlet Run 1 (South Broward)

Hg (Impinger 4 Fraction 3A) (from South Broward)	0.047	0.047	0.15	97	0.16	100

Sample ID: Blank Spike

Fraction	BS #1 (µg)	BS % Rec. # 1	BS #2 (µg)	BS % Rec. # 2
Hg Front half filter and probe rinse (1B)	0.31	100	0.30	100
Hg (Impingers 1-3 Fraction 2B)	0.10	100	0.098	97
Hg (Impinger 4 Fraction 3A)	0.10	100	0.11	110
Hg (Impingers 5-6 Fraction 3B)	0.51	100	0.51	100
Hg (HCl rinse of impingers 5-6 Fraction 3C)	0.52	100	0.52	100

RB - Reagent blank

ND - Not detected. The detection limit is denoted in parentheses.

BS - Blank spike

BS % Rec. - Blank Spike Percent Recovery

M. Spike - Matrix Spike

MS % Rec. - Matrix Spike Percent Recovery

MS Dup. - Matrix Spike Duplicate

MSD % Rec. - Matrix Spike Duplicate Percent Recovery

DESCRIPTION OF INSTALLATION

3-1

The North Broward Resource Recovery Facility operates three 750 tons per day municipal refuse fired, water wall boiler trains. The trains were manufactured by Babcock and Wilcox to produce electricity for sale to a local utility company. Each boiler is equipped a spray dryer absorber (SDA) for acid gas removal, followed by a fabric filter (FF) baghouse for the control of particulate emissions. The control equipment is manufactured by Wheelabrator Air Pollution Control, Inc. Each fabric filter baghouse is followed by an induced draft fan, which directs the flue gas to a dedicated flue in a common stack.

Figure 3-1 shows a general schematic for the facility. The testing occurred at the Unit 2 FF Outlet as shown in Figure 3-2.

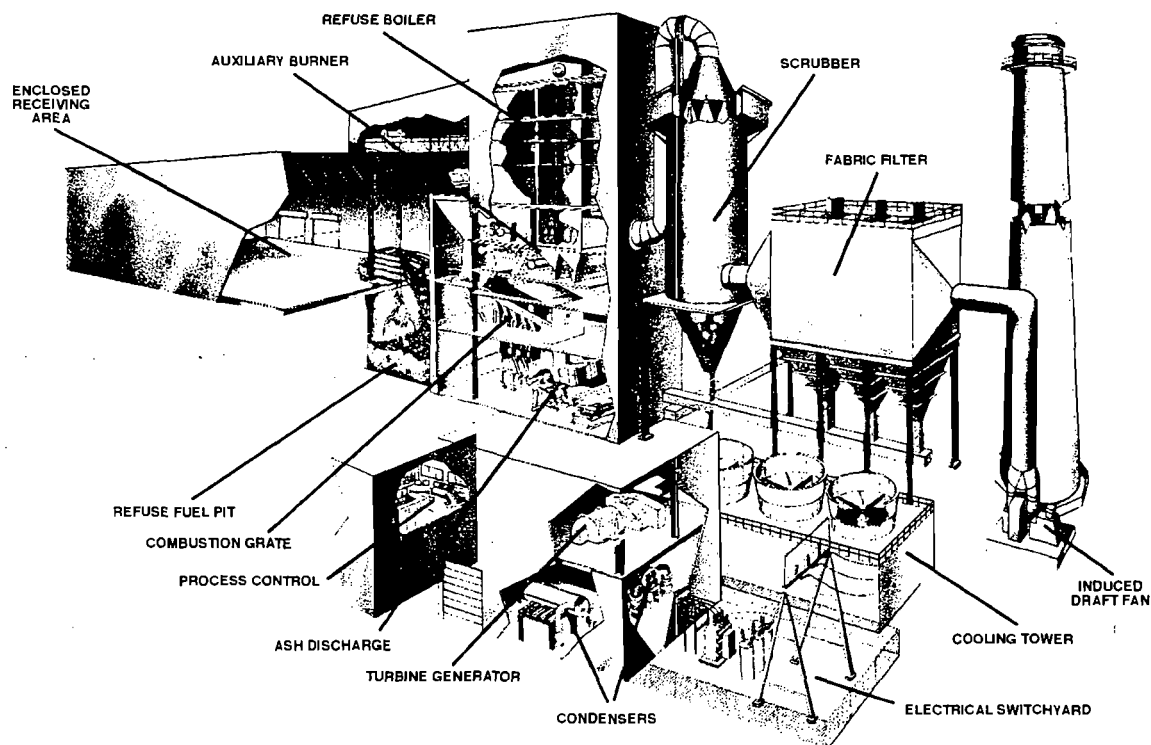


Figure 3-1: General Process Schematic

DESCRIPTION OF INSTALLATION

3-2

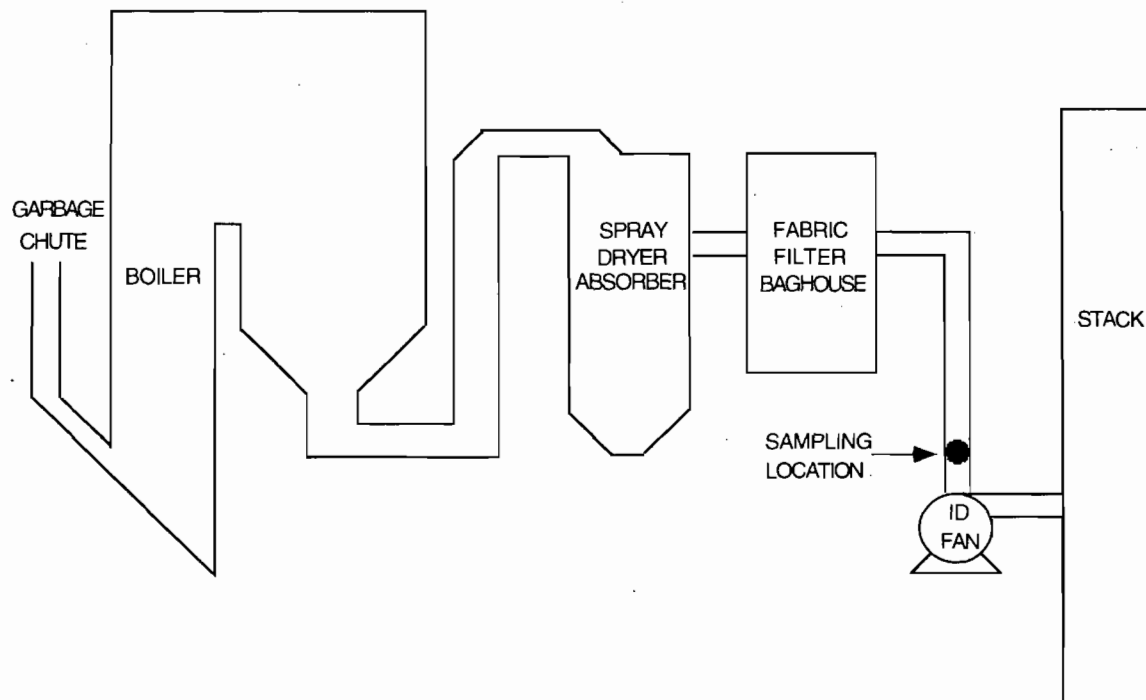


Figure 3-2: Process Schematic

METHODOLOGY

4-1

The sampling followed procedures as detailed in U.S. Environmental Protection Agency (EPA) Methods 1, 2, 3, 3B, 4 and 29. The following table summarizes the methods and their respective sources.

Table 4-1:
Summary of Sampling Procedures

Title 40 CFR Part 60 Appendix A

Method 1	"Sample and Velocity Traverses for Stationary Sources"
Method 2	"Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)"
Method 3	"Gas Analysis for the Determination of Dry Molecular Weight"
Method 3B	"Gas Analysis for the Determination of Emission Rate Correction Factor or Excess Air"
Method 4	"Determination of Moisture Content in Stack Gases"
Method 29	"Determination of Metals Emissions from Stationary Sources"

These methods appear in detail in Title 40 of the Code of Federal Regulations (CFR).

These sampling, recovery and analytical procedures are summarized on pages 4-1 through 4-7.

The sampling nozzles were calibrated on site. All other equipment was calibrated at the Clean Air Engineering laboratory prior to shipment to the job site. A post-test calibration was performed on the meter boxes at the conclusion of testing to verify that calibration was maintained throughout the test program. Calibration sheets can be found in Appendix Section C.

SAMPLING POINT DETERMINATION - EPA METHOD 1

Sampling point locations were determined according to EPA Method 1.

Table 4-2 outlines the sampling point configurations. Figure 4-1 illustrates the sampling points and orientation of sampling ports for the source tested in the program.

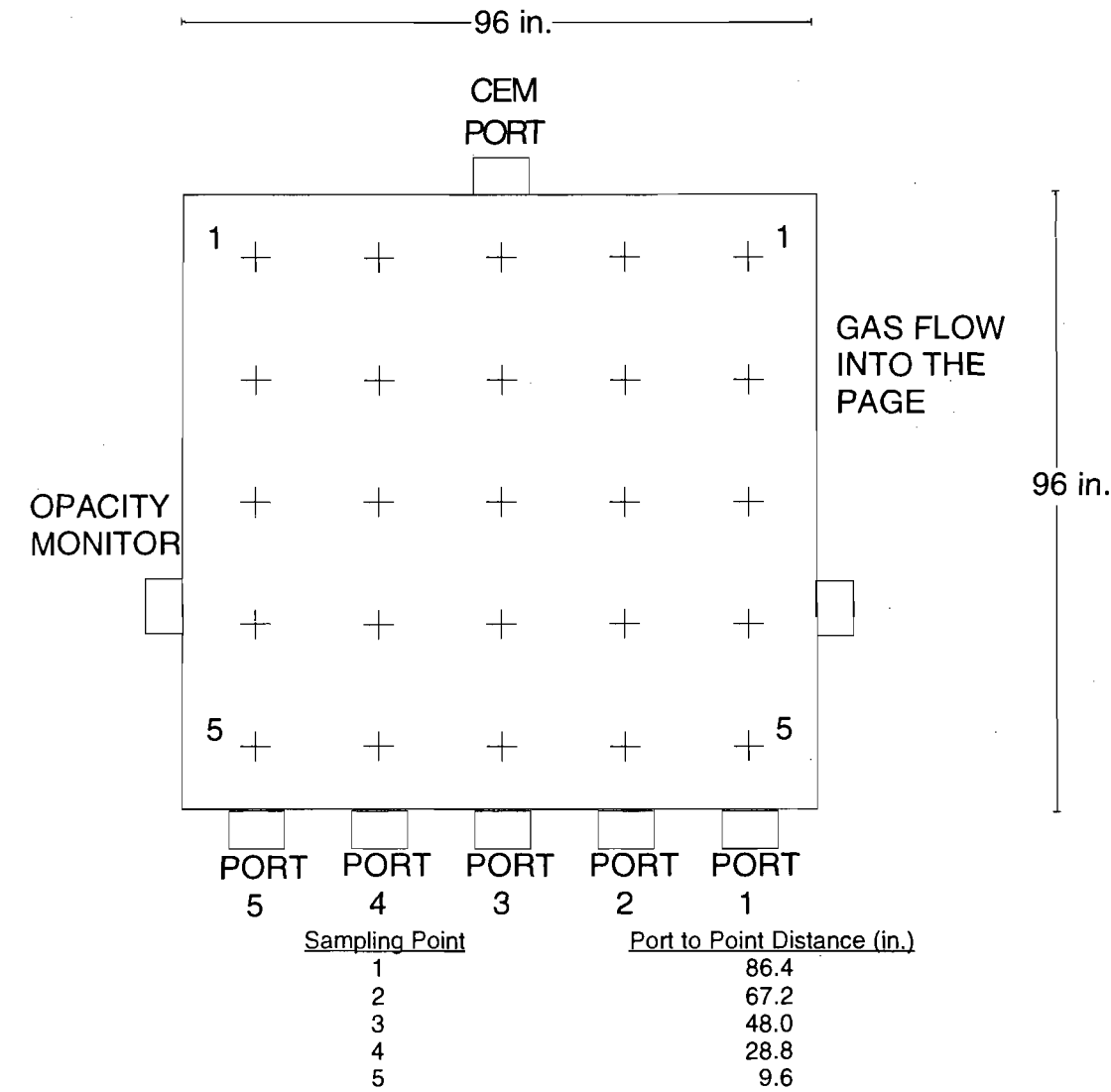
Table 4-2:
Sampling Points

Location		Run	Points	Minutes	Total	
Constituent	Method	No.	Ports	per Port	per Point	Minutes Figure
<u>Unit 3 FF Outlet</u>						
Mercury	29	1-3	5	5	5	125 4-1

METHODOLOGY

4-2

SAMPLING POINT DETERMINATION (CONTINUED)



Diameters upstream from disturbance: 2 diameters Limit: 2
Diameters downstream from disturbance: 0.5 diameters Limit: 0.5

Figure 4-1: Unit 2 FF Outlet - Sampling Point Determination (EPA Method 1)

METHODOLOGY

4-3

VELOCITY AND VOLUMETRIC FLOW RATE - EPA METHOD 2

EPA Method 2 was used, in conjunction with the wet method testing, to determine the gas velocity and flow rate at the FF Outlet test location.

Each set of velocity determinations included the measurement of gas velocity pressure and gas temperature at each of the EPA Method 1 traverse points. The velocity pressures were measured with a Type S pitot tube. Gas temperature measurements were made using a Type K thermocouple and digital pyrometer. Figure 4-2 includes the components of the EPA Method 2 sampling apparatus.

GAS COMPOSITION AND MOLECULAR WEIGHT - EPA METHOD 3B

In order to determine the oxygen (O₂) concentration, carbon dioxide (CO₂) concentration and gas molecular weight, a time-integrated sample of the gas was obtained for each sampling train and analyzed in accordance with EPA Method 3B. The gas sample was collected into a vinyl sample bag from isokinetic test methods. The contents of the bag was analyzed for O₂ and CO₂ concentrations using an Orsat gas analyzer.

MOISTURE CONTENT - EPA METHOD 4

The flue gas moisture content at each of the test locations was determined in accordance with EPA Method 4, in conjunction with the mercury testing. Figure 4-2 includes the components of the EPA Method 4 sampling apparatus. The gas moisture was determined by quantitatively condensing the moisture in chilled impingers. The amount of moisture condensed was determined gravimetrically. A dry gas meter was used to measure the volume of gas sampled. The amount of water condensed and the volume of gas sampled were used to calculate the gas moisture content in accordance with EPA Method 4.

METHODOLOGY

4-4

MERCURY EMISSIONS - EPA METHOD 29

EPA Method 29 was used to measure mercury emissions at the Unit 2 FF Outlet. This method defines metal emissions as particulate and gaseous material isokinetically withdrawn through a temperature controlled probe and collected on a high-efficiency filter and in acidified absorbing solutions.

Figure 4-2 illustrates the EPA Method 29 sampling train which was used. The sampling apparatus contained a glass-lined temperature-controlled probe equipped with a pitot tube (for measuring stack flow rate) and a sharp-edged glass button-hook nozzle. The exit of the probe was connected to a high efficiency quartz fiber filter (Pallflex 2500QAT-UP) supported in a glass filter holder inside an oven. The exit of the filter holder connected directly to a series of seven full size impingers.

The first impinger of the sampling train was left empty to accommodate collection of the flue gas moisture. The second and third impingers of the sampling apparatus each contained 100 milliliters of 5% nitric acid/10% hydrogen peroxide solution. The fourth impinger was left empty. The fifth and sixth impingers each contained 100 milliliters of 4% potassium permanganate/10% sulfuric acid solution. The seventh impinger contained 200 to 300 grams of silica gel. All of the impingers were maintained at a temperature below 68°F for the duration of each test.

Procedures for selecting sampling locations and for the operation of the apparatus was derived from EPA Method 29 and associated EPA Methods 1 through 5. The entire sampling apparatus was leak-checked before and after each test run. Sampling was performed at an average isokinetic rate greater than 90% and less than 110%.

At the conclusion of each test run, the probe and nozzle was rinsed and brushed with 0.1 Normal nitric acid to remove any particulate matter. These rinses were collected into polyethylene sample containers. The quartz fiber filter was recovered and placed into a polyethylene sample container. The volume of liquid collected in each of the impingers was quantified.

The liquid from the first three impingers was transferred to a leak-free polyethylene storage container. The back-half of the filter housing, the first three impingers and all connecting glassware were rinsed with 0.1 Normal nitric acid which was be added to the storage container.

METHODOLOGY

4-5

MERCURY EMISSIONS (CONTINUED)

Any liquid collected in the fourth impinger was transferred to a separate polyethylene container, and the impinger was rinsed into the same container with 0.1 Normal nitric acid. The contents of impingers 5 and 6 were collected into an amber glass container. Both impingers 5 and 6 and the connecting glassware were then rinsed with acidified potassium permanganate followed by distilled water. These rinses were collected in the glass container. Any residual potassium permanganate retained by the impingers was removed using a rinse of 8 Normal hydrochloric acid, which was collected into a separate glass container. 200 milliliters of distilled water was used to rinse impingers 5 and 6 and added to the same container to also dilute the acid.

All containers were sealed, labeled and liquid levels marked prior to transport to the laboratory. The silica gel weight and the volume of condensate collected in the impingers were used to determine moisture content of the stack gas.

The nitric acid probe rinses and samples recovered from impingers 1 through 3 were each reduced to near dryness and digested with hydrofluoric acid and concentrated nitric acid. The filter was also digested with hydrofluoric and nitric acids. The samples obtained from impingers 4, 5 and 6 were digested separately with acidified potassium permanganate and subsequently analyzed for mercury. Blank correction was done as specified in EPA Method 29 if applicable. One complete train was set up, leak checked, heated to 248 °F left at the sample location for 2 hours and recovered as a standard train for a field blank. The digested samples were analyzed by atomic absorption and plasma emission spectroscopy for each of the target metals by PSC Analytical Services located in Burlington, Ontario. All analytes were analyzed in duplicate as specified in Method 29 section 7.2.1, 7.2.2 and 7.2.3.

METHODOLOGY

4-6

MERCURY EMISSIONS (CONTINUED)

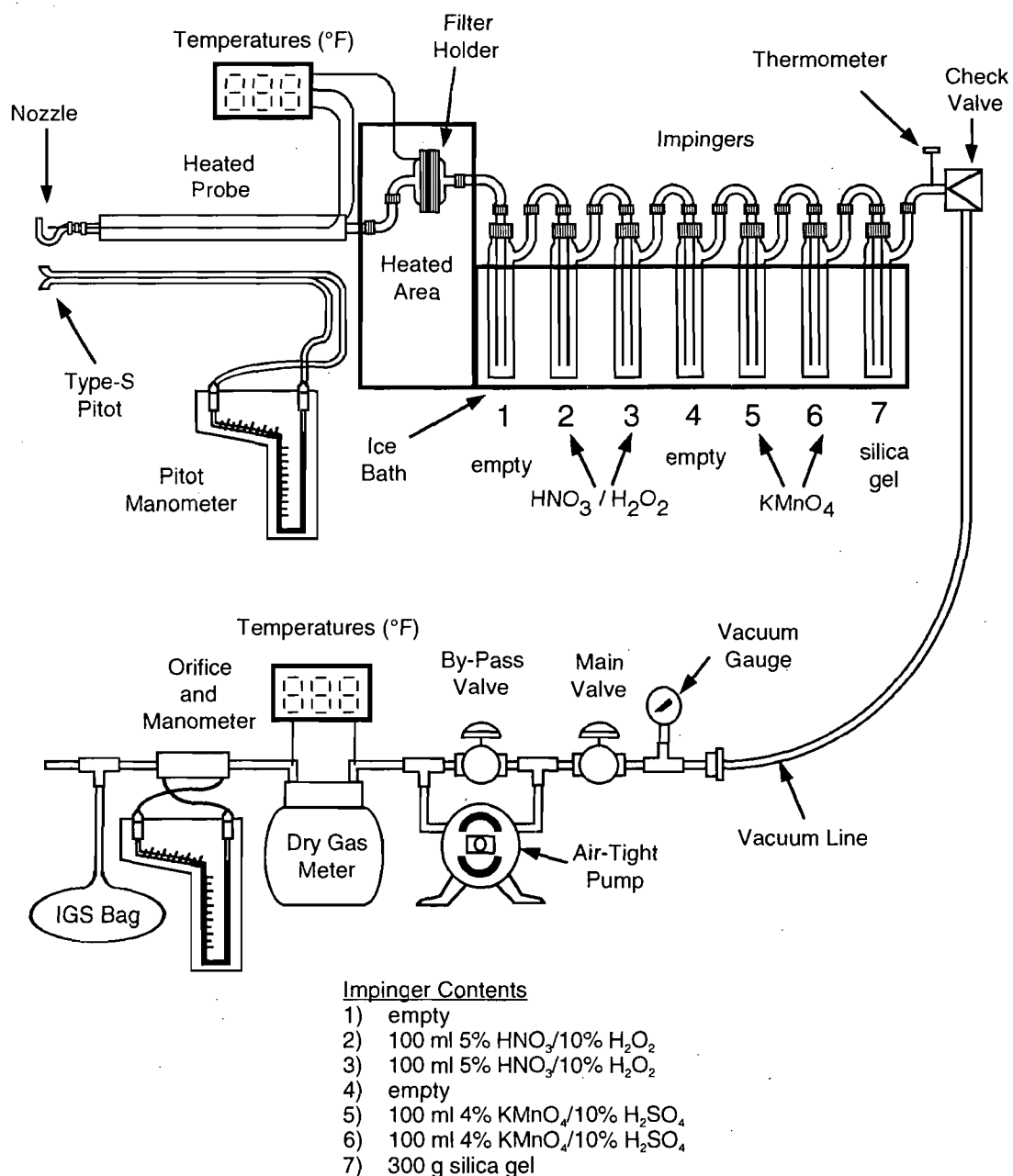


Figure 4-2: Metals Sampling Apparatus (EPA Method 29)

METHODOLOGY

4-7

QUALITY ASSURANCE AND QUALITY CONTROL

All testing followed the EPA quality assurance and quality control guidelines as outlined in the respective methods. Field blanks and matrix spikes for the mercury testing were done as shown in the following Table 4-3. The results of the analysis are shown in Table 2-2. There was some contamination observed in the 3C reagent blank fraction. The final results were corrected by the maximum allowable correction factor according to 40CFR Pt. 60 App. A, Method 29, Section 8.5.4.

Table 4-3:
Method Field Blanks and Matrix Spikes

<u>Method</u>	<u>Reagent Blank Sets</u>	<u>Field Blank</u>	<u>Duplicate Analysis</u>	<u>Matrix Spikes</u>
EPA M29	1	1	On all analysis	1 predigested filter blank and 1 postdigested sample

APPENDIX

Sample Calculations A
Parameters..... B
Calibration Data..... C
Field Data D
Field Data Printouts..... E
Laboratory Data..... F
Operating Data..... G

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-3

SAMPLE CALCULATIONS

A

SAMPLE CALCULATIONS

1. Volume of water collected (wscf)

$$V_{wstd} = (0.04707)(V_{lc})$$

Where:

V_{lc} total volume of liquid collected in impingers and silica gel (ml)
 V_{wstd} volume of water collected at standard conditions (ft³)
 0.04707 conversion factor (ft³/ml)

2. Volume of gas metered, standard conditions (dscf)

$$V_{mstd} = \frac{(17.64)(V_m) \left(P_{bar} + \frac{\Delta H}{13.6} \right) (Y_d)}{(460 + T_m)}$$

Where:

P_{bar} barometric pressure (in. Hg)
 T_m average dry gas meter temperature (°F)
 V_m volume of gas sample through the dry gas meter at meter conditions (ft³)
 V_{mstd} volume of gas sample through the dry gas meter at standard conditions (ft³)
 Y_d gas meter correction factor (dimensionless)
 ΔH average pressure drop across meter box orifice (in. H₂O)
 17.64 conversion factor (°R/in. Hg)
 13.6 conversion factor (in. H₂O/in. Hg)
 460 °F to °R conversion constant

3. Sample gas pressure (in. Hg)

$$P_s = P_{bar} + \left(\frac{P_g}{13.6} \right)$$

Where:

P_{bar} barometric pressure (in. Hg)
 P_g sample gas static pressure (in. H₂O)
 P_s absolute sample gas pressure (in. Hg)
 13.6 conversion factor (in. H₂O/in. Hg)

4. Actual vapor pressure (in. Hg)¹

$$P_v = P_s$$

Where:

P_v vapor pressure, actual (in. Hg)
 P_s absolute sample gas pressure (in. Hg)

¹ For effluent gas temperatures over 212°F, P_v is assumed to be equal to P_s .

SAMPLE CALCULATIONS (CONTINUED)

5. Moisture content (%)

$$B_{wo} = \frac{V_{wstd}}{V_{mstd} + V_{wstd}} \times 100\%$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume (%)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft ³)
V_{wstd}	volume of water collected at standard conditions (ft ³)

6. Saturated moisture content (%)

$$B_{ws} = \frac{(P_v)}{(P_s)} \times 100\%$$

Where:

B_{ws}	proportion of water vapor in the gas stream by volume at saturated conditions (%)
P_s	absolute sample gas pressure (in. Hg)
P_v	vapor pressure, actual (in. Hg)

Whichever moisture value is smaller is used for B_{wo} in the following calculations.

7. Molecular weight of dry gas stream (lb/lb-mole)

$$M_d = M_{CO_2} \frac{(CO_2)}{(100)} + M_{O_2} \frac{(O_2)}{(100)} + M_{CO+N_2} \frac{(CO+N_2)}{(100)}$$

Where:

M_d	dry molecular weight of sample gas (lb/lb-mole)
M_{CO_2}	molecular weight of carbon dioxide (lb/lb-mole)
M_{O_2}	molecular weight of oxygen (lb/lb-mole)
M_{CO+N_2}	molecular weight of carbon monoxide and nitrogen (lb/lb-mole)
CO_2	proportion of carbon dioxide in the gas stream by volume (%)
O_2	proportion of oxygen in the gas stream by volume (%)
$CO+N_2$	proportion of carbon monoxide and nitrogen in the gas stream by volume (%)
100	conversion factor (%)

8. Molecular weight of sample gas (lb/lb-mole)

$$M_s = (M_d)(1 - B_{wo}) + (M_{H_2O})(B_{wo})$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume
M_d	dry molecular weight of sample gas (lb/lb-mole)
M_{H_2O}	molecular weight of water (lb/lb-mole)
M_s	molecular weight of sample gas, wet basis (lb/lb-mole)

SAMPLE CALCULATIONS (CONTINUED)

9. Velocity of sample gas (ft/sec)

$$V_s = (K_p)(C_p)(\sqrt{\Delta P}) \left(\sqrt{\frac{(\bar{T}_s + 460)}{(M_s)(P_s)}} \right)$$

Where:

K_p	velocity pressure constant $\left(\frac{\text{ft}}{\text{sec}} \left[\frac{(\text{lb/lb} \cdot \text{mole})(\text{in. Hg})}{(^{\circ}\text{R})(\text{in. H}_2\text{O})} \right] \right)$
C_p	pitot tube coefficient
M_s	molecular weight of sample gas, wet basis (lb/lb-mole)
P_s	absolute sample gas pressure (in. Hg)
T_s	average sample gas temperature ($^{\circ}\text{F}$)
V_s	sample gas velocity (ft/sec)
$\sqrt{\Delta P}$	average square roots of velocity heads of sample gas (in. H_2O)
460	$^{\circ}\text{F}$ to $^{\circ}\text{R}$ conversion constant

10. Total flow of sample gas (acfm)

$$Q_a = (60)(A_s)(V_s)$$

Where:

A_s	cross sectional area of sampling location (ft^2)
Q_a	volumetric flow rate at actual conditions (acfm)
V_s	sample gas velocity (ft/sec)
60	conversion factor (sec/min)

11. Total flow of sample gas (dscfm)

$$Q_{std} = \frac{(Q_a)(P_s)(17.64)(1 - B_{wo})}{(\bar{T}_s + 460)}$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume
P_s	absolute sample gas pressure (in. Hg)
Q_a	volumetric flow rate at actual conditions (acfm)
Q_{std}	volumetric flow rate at standard conditions, dry basis (dscfm)
T_s	average sample gas temperature ($^{\circ}\text{F}$)
17.64	conversion factor ($^{\circ}\text{R/in. Hg}$)
460	$^{\circ}\text{F}$ to $^{\circ}\text{R}$ conversion constant

SAMPLE CALCULATIONS (CONTINUED)

12. Percent isokinetic (%)

$$I = \frac{(0.09450)(\bar{T}_s + 460)(V_{mstd})}{(P_s)(V_s)\left(\frac{(D_n)^2(\pi)}{(144)(4)}\right)(\Theta)(1 - B_{wo})}$$

Where:

D_n	diameter of nozzle (in)
B_{wo}	proportion of water vapor in the gas stream by volume
I	percent of isokinetic sampling (%)
P_s	absolute sample gas pressure (in. Hg)
$\bar{T}_s$	average sample gas temperature (°F)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft ³)
V_s	sample gas velocity (ft/sec)
Θ	total sampling time (min)
0.09450	constant
460	°F to °R conversion constant

13. Mercury concentration (µg/dscm)

$$C_{\mu g / dscm} = \frac{(m_n)}{(V_{mstd})}(35.31)(1,000)$$

Where:

$C_{\mu g / dscm}$	concentration (µg/dscm)
m_n	net mass of metal collected (mg)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft ³)
35.31	conversion factor (ft ³ /m ³)
1,000	conversion factor (µg/mg)

14. Mercury concentration (lb/dscf)

$$C_{lb / dscf} = \frac{(m_n)}{(V_{mstd})(453,590)}(1,000)$$

Where:

$C_{lb / dscf}$	concentration (lb/dscf)
m_n	net mass of metal collected (mg)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft ³)
453,590	conversion factor (mg/lb)
1,000	conversion factor (µg/mg)

15. Mercury concentration (µg/dscm corrected to 7% O₂)

$$C_{\mu g / dscm @ 7\% O_2} = \frac{(C_{\mu g / dscm})(20.9 - 7.0)}{(20.9 - O_2)}$$

Where:

$C_{\mu g / dscm}$	concentration (µg/dscm)
$C_{\mu g / dscm @ 7\% O_2}$	concentration (µg/dscm corrected to 7% O ₂)
O_2	proportion of oxygen in the gas stream by volume (%)
20.9	proportion of oxygen in ambient air by volume (%)

SAMPLE CALCULATIONS (CONTINUED)

16. Mercury concentration ($\mu\text{g}/\text{dscm}$ corrected to 12% CO_2)

$$C_{\mu\text{g}/\text{dscm} @ 12\% \text{CO}_2} = (C_{\mu\text{g}/\text{dscm}}) \frac{(12)}{(\text{CO}_2)}$$

Where:

$C_{\mu\text{g}/\text{dscm}}$	concentration ($\mu\text{g}/\text{dscm}$)
$C_{\mu\text{g}/\text{dscm} @ 12\% \text{CO}_2}$	concentration ($\mu\text{g}/\text{dscm}$ corrected to 12% CO_2)
CO_2	proportion of carbon dioxide in the gas stream by volume (%)

17. Mercury emission (g/sec)¹

$$E_{\text{g}/\text{sec}} = \frac{(m_n)(Q_{\text{std}})}{(V_{\text{mstd}})(10^6)(60)}$$

Where:

$E_{\text{g}/\text{sec}}$	emission rate (g/sec)
m_n	net mass of metal collected (μg)
Q_{std}	volumetric flow rate at standard conditions, dry basis (dscfm)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft^3)
60	conversion factor (sec/min)
10^6	conversion factor ($\mu\text{g}/\text{g}$)

18. Mercury emission (lb/hr)

$$E_{\text{lb}/\text{hr}} = \frac{(C_{\mu\text{g}/\text{dscm}})(Q_{\text{std}})(60)}{(453,590)(1,000)(35.31)}$$

Where:

$C_{\mu\text{g}/\text{dscm}}$	concentration ($\mu\text{g}/\text{dscm}$)
Q_{std}	volumetric flow rate at standard conditions, dry basis (dscfm)
$E_{\text{lb}/\text{hr}}$	emission rate (lb/hr)
60	conversion factor (min/hr)
35.31	conversion factor (ft^3/m^3)
1,000	conversion factor ($\mu\text{g}/\text{mg}$)
453,590	conversion factor (mg/lb)

19. Mercury emission, using F_d factor ($\text{lb}/10^6\text{Btu}$)

$$E_{\text{lb}/10^6 \text{Btu}} = \frac{(C_{\text{lb}/\text{scf}})(F_d)(20.9)}{(20.9 - \text{O}_2)}$$

Where:

$C_{\text{lb}/\text{scf}}$	measured concentration in the gas stream (lb/dscf)
$E_{\text{lb}/10^6 \text{Btu}}$	emission rate ($\text{lb}/10^6\text{Btu}$)
F_d	volume of combustion component per unit of heat content ($\text{dscf}/10^6\text{Btu}$)= 9,570
O_2	proportion of oxygen in the gas stream by volume (%)
20.9	proportion of oxygen in ambient air by volume (%)

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-3

PARAMETERS

B

WHEELABRATOR NORTH BROWARD, INC.

Clean Air Project No: 8964-3

Unit 2 Outlet

MERCURY

VELOCITY AND MOISTURE PARAMETERS

Run No.	1	2	3
Date (2001)	December 11	December 11	December 11
Start Time (approx.)	10:43	13:15	15:32
Stop Time (approx.)	12:59	15:28	17:45
Sampling Conditions			
Y_d Dry gas meter correction factor	1.0024	0.9851	1.0024
C_p Pitot tube coefficient	0.84	0.84	0.84
P_{st} Static pressure (in. H ₂ O)	-11.8	-14.0	-14.3
A_s Sample location area (ft ²)	64.00	64.00	64.00
P_{bar} Barometric pressure (in. Hg)	30.25	30.25	30.25
D_n Nozzle diameter (in.)	0.251	0.254	0.251
O_2 Oxygen (dry volume %)	9.5	10.2	9.9
CO_2 Carbon dioxide (dry volume %)	9.5	8.8	8.9
V_{lc} Liquid collected (ml)	453.7	458.9	478.1
V_m Volume metered, meter conditions (ft ³)	73.89	82.19	80.54
T_m Dry gas meter temperature (°F)	90	91	90
T_s Sample temperature (°F)	269	269	271
ΔH Meter box orifice pressure drop (in. H ₂ O)	1.15	1.34	1.32
Θ Total sampling time (min)	125	125	125
Flow Results			
V_{wstd} Volume of water collected (ft ³)	21.36	21.60	22.50
V_{mstd} Volume metered, standard (ft ³)	72.03	78.72	78.62
P_s Sample gas pressure, absolute (in. Hg)	29.38	29.22	29.20
P_v Vapor pressure, actual (in. Hg)	29.38	29.22	29.20
B_{wo} Moisture in sample (% by volume)	22.87	21.53	22.25
B_{ws} Saturated moisture (% by volume)	100.00	100.00	100.00
$\sqrt{\Delta P}$ Velocity head ($\sqrt{\text{in. H}_2\text{O}}$)	0.737	0.778	0.784
M_d MW of sample gas, dry (lb/lb-mole)	29.90	29.82	29.82
M_s MW of sample gas, wet (lb/lb-mole)	27.18	27.27	27.19
V_s Velocity of sample (ft/sec)	50.6	53.5	54.0
%I Isokinetic sampling (%)	100.8	100.6	103.0
Q_a Volumetric flow rate, actual (acfm)	194,300	205,300	207,500
Q_{std} Volumetric flow rate, standard (dscfm)	106,500	113,900	113,700

METALS PARAMETERS

Run No.	Blank	1	2	3
Date (2001)		December 11	December 11	December 11
Start Time (approx.)		10:43	13:15	15:32
Stop Time (approx.)		12:59	15:28	17:45
Gas Conditions				
O ₂	Oxygen (dry volume %)	9.5	10.2	9.9
CO ₂	Carbon Dioxide (dry volume %)	9.5	8.8	8.9
V _{std}	Volume metered, standard (ft ³)	72.03	78.72	78.62
Q _{std}	Volumetric flow rate, standard (dscfm)	106,500	113,900	113,700
F	Fuel factor (dscf/10 ⁶ Btu) ¹	9.570	9.570	9.570
Mercury (Hg) Fraction 1B - Filter, FH Probe Rinse				
m _g	Gross weight (μg)	ND	0.030	0.50
m _n	Net weight (μg)		0.50	1.0
C	Concentration, standard conditions (μg/dscm)		0.25	0.45
C	Corrected to 7% O ₂ (μg/dscm)		0.30	0.57
C	Corrected to 12% CO ₂ (μg/dscm)		0.31	0.61
C	Concentration (lb/dscf)		1.53E-11	2.80E-11
C	Corrected to 7% O ₂ (lb/dscf)		1.87E-11	3.54E-11
C	Corrected to 12% CO ₂ (lb/dscf)		1.93E-11	3.78E-11
E	Emission rate (g/sec)		1.23E-05	2.41E-05
E	Emission rate (lb/hr)		9.78E-05	1.91E-04
E	Emission rate (lb/10 ⁶ Btu) ¹		2.68E-07	4.92E-07
Mercury (Hg) Fraction 2B - Impingers 1,2 and 3				
m _g	Gross weight (μg)	ND	0.290	7.3
m _n	Net weight (μg)		7.3	9.3
C	Concentration, standard conditions (μg/dscm)		3.6	4.2
C	Corrected to 7% O ₂ (μg/dscm)		4.4	5.4
C	Corrected to 12% CO ₂ (μg/dscm)		4.5	5.7
C	Concentration (lb/dscf)		2.23E-10	2.60E-10
C	Corrected to 7% O ₂ (lb/dscf)		2.72E-10	3.38E-10
C	Corrected to 12% CO ₂ (lb/dscf)		2.82E-10	3.55E-10
E	Emission rate (g/sec)		1.80E-04	2.24E-04
E	Emission rate (lb/hr)		1.43E-03	1.78E-03
E	Emission rate (lb/10 ⁶ Btu) ¹		3.92E-06	4.57E-06
Mercury (Hg) Fraction 3A - Impinger 4				
m _g	Gross weight (μg)	ND	0.010	ND
m _n	Net weight (μg)		(0.010)	ND
C	Concentration, standard conditions (μg/dscm)		(0.005)	(0.010)
C	Corrected to 7% O ₂ (μg/dscm)		(0.0060)	(0.0058)
C	Corrected to 12% CO ₂ (μg/dscm)		(0.0062)	(0.0061)
C	Concentration (lb/dscf)		(3.06E-13)	(2.80E-13)
C	Corrected to 7% O ₂ (lb/dscf)		(3.73E-13)	(3.54E-13)
C	Corrected to 12% CO ₂ (lb/dscf)		(3.87E-13)	(3.82E-13)
E	Emission rate (g/sec)		(2.46E-07)	(2.41E-07)
E	Emission rate (lb/hr)		(1.96E-06)	(1.91E-06)
E	Emission rate (lb/10 ⁶ Btu) ¹		(5.37E-09)	(4.91E-09)
Mercury (Hg) Fraction 3B - Impingers 5 and 6				
m _g	Gross weight (μg)	ND	0.050	ND
m _n	Net weight (μg)		(0.10)	ND
C	Concentration, standard conditions (μg/dscm)		(0.049)	(0.050)
C	Corrected to 7% O ₂ (μg/dscm)		(0.060)	(0.029)
C	Corrected to 12% CO ₂ (μg/dscm)		(0.062)	(0.031)
C	Concentration (lb/dscf)		(3.06E-12)	(1.40E-12)
C	Corrected to 7% O ₂ (lb/dscf)		(3.73E-12)	(1.82E-12)
C	Corrected to 12% CO ₂ (lb/dscf)		(3.87E-12)	(1.91E-12)
E	Emission rate (g/sec)		(2.46E-06)	(1.21E-06)
E	Emission rate (lb/hr)		(1.96E-05)	(9.57E-06)
E	Emission rate (lb/10 ⁶ Btu) ¹		(5.37E-08)	(2.46E-08)
Mercury (Hg) Fraction 3C - Impingers 5 and 6 HCl Rinse				
m _g	Gross weight (μg)	ND	0.050	1.0
m _n	Net weight (μg)		1.0	0.66
C	Concentration, standard conditions (μg/dscm)		0.49	0.30
C	Corrected to 7% O ₂ (μg/dscm)		0.60	0.38
C	Corrected to 12% CO ₂ (μg/dscm)		0.62	0.40
C	Concentration (lb/dscf)		3.06E-11	1.85E-11
C	Corrected to 7% O ₂ (lb/dscf)		3.73E-11	2.40E-11
C	Corrected to 12% CO ₂ (lb/dscf)		3.87E-11	2.52E-11
E	Emission rate (g/sec)		2.46E-05	1.59E-05
E	Emission rate (lb/hr)		1.96E-04	1.26E-04
E	Emission rate (lb/10 ⁶ Btu) ¹		5.37E-07	3.24E-07
Mercury (Hg) Totals				
m _g	Gross weight (μg)	ND	0.43	8.8
m _n	Net weight (μg)		8.8	11.0
C	Concentration, standard conditions (μg/dscm)		4.3	4.9
C	Corrected to 7% O ₂ (μg/dscm)		5.3	6.4
C	Corrected to 12% CO ₂ (μg/dscm)		5.4	6.7
C	Concentration (lb/dscf)		2.69E-10	3.07E-10
C	Corrected to 7% O ₂ (lb/dscf)		3.28E-10	3.99E-10
C	Corrected to 12% CO ₂ (lb/dscf)		3.40E-10	4.19E-10
E	Emission rate (g/sec)		2.17E-04	2.64E-04
E	Emission rate (lb/hr)		1.72E-03	2.10E-03
E	Emission rate (lb/10 ⁶ Btu) ¹		4.73E-06	5.39E-06

¹ Calculated based on a Fd of 9,570 (dscf/10⁶BTU) for MSW as per EPA Method 19.

ND - Indicates the constituent was not detected. The detection limit is shown in parentheses.

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-3

CALIBRATION DATA

C

NOZZLE CALIBRATION SHEET

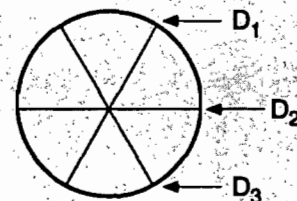
Client	Wheeler	Project Number	8964-3
Calibrated by	PT	Unit	2
Date	12/1/01	Runs	123456

Nozzle Identification	D ₁ (inches)	D ₂ (inches)	D ₃ (inches)	ΔD (inches)	ΔD _{ave} (inches)
.251	.251	.251	.252	0.001	.251
.254	.254	.255	.253	.002	.254

D₁, D₂, D₃ = three nozzle diameter measurements

ΔD = maximum difference between any two diameters
ΔD ≤ 0.004 inches*

ΔD_{avg} = average of D₁, D₂, D₃



* (40 CFR 60, Appendix A, Method 5, Section 5.1)

Sample Probe Calibration

Probe Type: M-5

I.D. Number: 67-8-10

Thermocouple Calibration

Reference Type: _____

Reference I.D. No: _____

Pyrometer I.D. No: _____

Degrees: _____

Point No.	Target Temp.	Reference Temp.	Indicated Temp.	Temp. Difference	% Difference*
1	Ice-32F				
2	Ambient-70F				
3	Hot Oil-150F				
4	Boiling H ₂ O-212F				
5	Hot Oil-320F				

Specification

%Difference ≤ 1.5

* Based on Absolute Temperature (Rankine)

Does assembly meet specifications?

Geometric Pitot Calibration

"S" Pitot

Measurement	
$\alpha 1(^{\circ}) =$ <u>2</u>	$\alpha 2(^{\circ}) =$ <u>1</u>
$\beta 1(^{\circ}) =$ <u>2</u>	$\beta 2(^{\circ}) =$ <u>3</u>
$\gamma(^{\circ}) =$ <u>1</u>	$\theta(^{\circ}) =$ <u>1</u>
$P a(^{\circ}) =$ <u>.353</u>	$P b(^{\circ}) =$ <u>.357</u>
$A(^{\circ}) =$ <u>.712</u>	$D t(^{\circ}) =$ <u>.250</u>
Calculations	
$Z(^{\circ}) = A \sin \gamma =$ <u>0.012</u>	
$W(^{\circ}) = A \sin \theta =$ <u>0.012</u>	

Specification

≤ 10°

≤ 05°

$P a + P b = A$

≤ 0.125"

≤ 0.03125"

Standard Pitot

Measurement (Inches)	Specification
Tube O.D.	(D)
Static Hole I.D.	≈ 0.1 x (D)
Length:	
Tip to Static	≥ 6 x (D)
Static to Bend	≥ 8 x (D)

Does assembly meet specifications?

yes

If "Yes", "S" pitot $C_p = 0.84$; Std. Pitot = 0.99. If "No", wind tunnel calibration is required.

Wind Tunnel Calibration

Reference Pitot I.D. No: _____

Reference Pitot C_p : _____

Pitot Side 'A':

Trial No.	Reference ΔP	Probe ΔP	Probe C_p^*	Deviation from Average C_p^*
1				
2				
3				

Specification

C_p Deviations ≤ 0.01

Side 'A' Average Probe $C_p =$ _____

Pitot Side 'B':

Trial No.	Reference ΔP	Probe ΔP	Probe C_p^*	Deviation from Average C_p^*
1				
2				
3				

Specification

C_p Deviations ≤ 0.01

Side 'B' Average Probe $C_p =$ _____

*Probe $C_p = (\text{Reference } C_p) \sqrt{(\text{Reference } \Delta P / \text{Probe } \Delta P)}$; C_p Deviation = Trial C_p - Average Probe C_p

'A' Average C_p

'B' Average C_p

Difference

$| \text{Difference} | \leq 0.01$

Does assembly meet specifications?

If "Yes", $C_p =$ Average of Side 'A' and 'B' C_p values. If "No", Pitot must be replaced.

All specifications are from EPA 600/9-76-005, section 3.11

Probe $C_p =$ 0.84

Calibrated by: Rob Shup

Date: 12/11/01



Probe Type:

MS Probe

Sample Probe Calibration

I.D. Number:

67-8-18

Thermocouple Calibration

Reference Type:

Reference I.D. No:

Pyrometer I.D. No:

Degrees:

Point No.	Target Temp.	Reference Temp.	Indicated Temp.	Temp. Difference	% Difference*
1	Ice-32F				
2	Ambient-70F				
3	Hot Oil-150F				
4	Boiling H ₂ O-212F				
5	Hot Oil-320F				

Specification

%Difference $\leq$ 1.5

* Based on Absolute Temperature (Rankine)

Does assembly meet specifications?

Geometric Pitot Calibration

"S" Pitot

Measurement	Specification
$\alpha(^\circ) = 2$	$\leq 10^\circ$
$\beta(^\circ) = 2$	$\leq 05^\circ$
$\theta(^\circ) = 2$	
$a(^\circ) = .377$	$P_a + P_b = A$
$b(^\circ) = .377$	
$\theta(^\circ) = .25$	

Calculations

$$Z(^\circ) = A \sin \gamma = .026318$$

$$W(^\circ) = A \sin \theta = .026318$$

$\leq 0.125^\circ$

$\leq 0.03125^\circ$

Standard Pitot

Measurement (Inches)	Specification
Tube O.D.	(D)
Static Hole I.D.	$\approx 0.1 \times (D)$
Length:	
Tip to Static	$\geq 6 \times (D)$
Static to Bend	$\geq 8 \times (D)$

Does assembly meet specifications?

YES

If "Yes", "S" pitot $C_p=0.84$; Std. Pitot=0.99. If "No", wind tunnel calibration is required.

Wind Tunnel Calibration

Reference Pitot I.D. No:

Reference Pitot C_p :

Pitot Side 'A':

Trial No.	Reference P	Probe P	Probe C_p^*	Deviation from Average C_p^*
1				
2				
3				

Specification

 C_p Deviations $\leq$ 0.01Side 'A' Average Probe C_p =

Pitot Side 'B':

Trial No.	Reference P	Probe P	Probe C_p^*	Deviation from Average C_p^*
1				
2				
3				

Specification

 C_p Deviations $\leq$ 0.01Side 'B' Average Probe C_p =*Probe C_p = (Reference C_p) / (Reference ΔP / Probe ΔP); C_p Deviation = Trial C_p - Average Probe C_p 'A' Average C_p 'B' Average C_p

Difference

|Difference| $\leq$ 0.01

Does assembly meet specifications?

If "Yes", C_p = Average of Side 'A' and 'B' C_p values. If "No", Pitot must be replaced.

All specifications are from EPA-600/9-76-005, section 3.1

Probe C_p =

0.84

Calibrated by:

Jung Anthony

Date:

2-28-01



Clean Air Engineering

Meter Box Full Test Calibration

DATE: 10/22/01

Operator: M. V.

Meter Box No: 66-16				Meter Box $\Delta H@$: 1.7758						Meter Box Y_d : 0.9851			Barometric Pressure: 29.36					
				Standard Meter Gas Volume			Meter Box Gas Volume (ft ³)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)					
Q	ΔH	ΔP	Y_{ds}	Initial	Final	V_{ds}	Initial	Final	V_d	Inlet	Outlet	T_{ds}	Inlet	T_o	T_d	Time	Y_d	H@
0.964	3.00	-1.80	1.0000	0.0	10.000	10.000	265.418	275.640	10.222	69.0	69.0	69.0	81.0	75.0	78.0	10.16	0.9831	1.7600
0.963	3.00	-1.80	1.0000	0.0	10.000	10.000	275.640	285.870	10.230	69.0	69.0	69.0	82.0	75.0	78.5	10.17	0.9832	1.7634
0.389	0.50	-1.10	1.0000	0.0	5.000	5.000	314.808	319.913	5.105	69.5	69.5	69.5	77.0	75.0	76.0	12.56	0.9875	1.7965
0.388	0.50	-1.10	1.0000	0.0	5.000	5.000	319.913	325.016	5.103	69.5	69.5	69.5	78.0	75.0	76.5	12.59	0.9888	1.8051
0.681	1.50	-1.50	1.0000	0.0	10.000	10.000	291.814	302.050	10.236	69.5	69.5	69.5	80.0	75.0	77.5	14.37	0.9843	1.7637
0.680	1.50	-1.50	1.0000	0.0	10.000	10.000	302.050	312.294	10.244	69.5	69.5	69.5	80.0	75.0	77.5	14.38	0.9835	1.7661
AVERAGE																	0.9851	1.7758

Nomenclature

P_b	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential (in. H ₂ O)
ΔP	Inlet Pressure Differential (in. H ₂ O)
V_d	Gas Meter Volume - Dry (ft ³)
V_{ds}	Standard Meter Volume - Dry (ft ³)
T_d	Average Meter Box Temperature (°F)
T_o	Outlet Meter Box Temperature (°F)
T_{ds}	Average Standard Meter Temperature (°F)
Y_d	Meter Correction Factor (unitless)
Y_{ds}	Standard Meter Correction Factor (unitless)
$\Delta H@$	Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H ₂ O)

Vacuum Gauge

Standard (in. Hg)	Vacuum Gauge
4.6	5.0
9.8	10.0
15.2	15.0
20.3	20.0
24.5	24.0

Thermometers

Standard (°F)	Inlet	Outlet

Equations

$$Y_d = (Y_{ds}) \left[\frac{V_{ds}}{V_d} \right] \left[\frac{T_d + 460}{T_{ds} + 460} \right] \left[\frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6} \right]$$

$$\Delta H@ = \frac{0.0319(\Delta H)}{P_b(T_o + 460)} \left[\frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})} \right]^2$$

$$Q = \frac{17.64 (V_{ds}) (P_b)}{(T_{ds} + 460) (\Theta)}$$



Clean Air Engineering

Pyrometer Calibration Test Report

Pyrometer No.: 66-16
Calibrated By: M. V.
Date: 10/22/01

Office: Palatine, Il
Client: _____
Job Number: _____

Calibration Reference Settings for Fahrenheit Scale	Pyrometer Reading
50 °F	48 °F
100 °F	98 °F
150 °F	148 °F
200 °F	199 °F
250 °F	249 °F
300 °F	298 °F
350 °F	348 °F
400 °F	398 °F
450 °F	448 °F
500 °F	498 °F
550 °F	548 °F
600 °F	599 °F

Calibration Reference Information

Reference Used: Omega CL23A
Calibrated By: Omega Engineering;Inc.
Report No: RF-T-225950

Serial No: T-225950
Date: 3/15/01

Meter Box Critical Orifice Post-Test Calibration Data

CAE Project No. 8963/8964
 Location OUTLET
 Date 12/14/01
 Operator Name A. BISINGER

Meter No. 66-16
 Meter Y_d 0.9851
 Meter ΔH_o 1.7758
 Full-Test Cal. Date 11/19/01 AR
10/22/01

Orifice I.D. 43
 Orifice K' 0.551
 Orifice Cal. Date 11/19/01

Leak Checks

Negative Pressure
 No Movement of Meter in 1 minute ☒ Pass
☐ Fail
 Positive Pressure
 No Movement of Manometer in 1 minute ☒ Pass
☐ Fail

Barom. Press. (P_b) 30.25 in. Hg

Important: All leak checks must pass in order for calibration to be valid.

Run	Elapsed Time (minutes)	Meter Volume (dcf)	Meter Temperature		Ambient Temp. - T_{amb} (°F)	Orifice ΔH (in. W.C.)	Vacuum (in. Hg)	Net Run Time - θ (minutes)	Net Meter Volume for Run - V_m (dcf)	Avg Meter Temp. for Run - T_m	DGM Calibration Factor - Y_i	Percent Variation - ΔY_i
			Inlet (°F)	Outlet (°F)								
	0.0	784.90	93	87								
1	5.0	788.68	92	87	79	1.6	19					%
2	10.0	792.45	91	86	80	1.6	19					%
3	15.0	796.22	90	87	80	1.6	19					%

Calculations and Specifications

$$Y_i = \frac{K' \times P_b \times (T_m + 460) \times \theta}{17.64 \times V_m \times \left(P_b + \frac{\Delta H}{13.6}\right) \times \sqrt{T_{amb} + 460}}$$

$$\Delta Y_i = \frac{Y_i - \bar{Y}_i}{\bar{Y}_i} \times 100$$

$$\text{Spec.: } \Delta Y_i \leq \pm 2\%$$

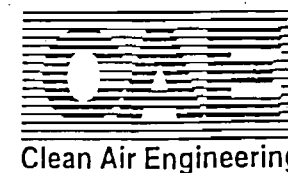
$$\text{Cal. Error} = \frac{\bar{Y}_i - Y_d}{Y_d} \times 100$$

$$\text{Spec.: } \text{Cal. Error} \leq \pm 5\%$$

Average Y_i

Cal. Error

%



Meter Box Critical Orifice Post-Test Calibration Data

CAE Project No. 8964/8963
 Location Outlet
 Date 12/14/01
 Operator A> Risinger
 Name

Meter No. 66-16
 Meter Y_d 0.9851
 Meter ΔH_m 1.7758
 Full-Test 10/22/01
 Cal. Date

Orifice I.D. A-3
 Orifice K' 0.551
 Orifice 11/19/01
 Cal. Date

Leak Checks

Negative Pressure
 No Movement of
 Meter in 1 minute ☐ Pass
☐ Fail

Positive Pressure
 No Movement of
 Manometer in 1 minute ☐ Pass
☐ Fail

Barom. Press. (P_b) 30.25 in. Hg

Important: All leak checks must pass in order for calibration to be valid.

Run	Elapsed Time (minutes)	Meter Volume (dcf)	Meter Temperature		Ambient Temp. T_{amb} (°F)	Orifice ΔH	Vacuum (in. Hg)	Net Run Time - θ (minutes)	Net Meter Volume for Run - V_m (dcf)	Avg Meter Temp. T_m (°F)	DGM Calibration Factor - Y_i	Percent Variation - ΔY_i
			Inlet (°F)	Outlet (°F)								
	0.0	784.90	93	87								
1	5.0	788.68	92	87	79	1.60	19.0	5.0	3.78	89.8	0.9746	0.0%
2	10.0	792.45	91	86	80	1.60	19.0	5.0	3.77	89.0	0.9749	0.0%
3	15.0	796.22	90	87	80	1.60	19.0	5.0	3.77	88.5	0.9740	0.0%

Calculations and Specifications

$$Y_i = \frac{K' \times P_b \times (T_m + 460) \times \theta}{17.64 \times V_m \times \left(P_b + \frac{\Delta H}{13.6} \right) \times \sqrt{T_{amb} + 460}}$$

$$\Delta Y_i = \frac{Y_i - \bar{Y}_i}{\bar{Y}_i} \times 100$$

$$Cal. Error = \frac{\bar{Y}_i - Y_d}{Y_d} \times 100$$

Spec.: $\Delta Y_i \leq \pm 2\%$

Spec.: $Cal. Error \leq \pm 5\%$

Average Y_i

Cal. Error

0.9745

-1.1%

Clean Air Engineering

500 W. Wood Street
 Palatine, IL 60067

(847) 991-3300

Meter Box Full Test Calibration

DATE: 7/13/01

Operator: R.R.

Meter Box No: 85-4				Meter Box ΔH@: 1.7941						Meter Box Y _d : 1.0024				Barometric Pressure: 29.53				
				Standard Meter Gas Volume			Meter Box Gas Volume (ft ³)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)					
Q	ΔH	ΔP	Y _{ds}	Initial	Final	V _{ds}	Initial	Final	V _d	Inlet	Outlet	T _{ds}	Inlet	T _o	T _d	Time	Y _d	H@
0.961	3.00	-1.80	1.0000	0.0	10.000	10.000	776.707	786.758	10.051	75.5	75.5	75.5	90.0	82.0	86.0	10.12	1.0024	1.7560
0.961	3.00	-1.80	1.0000	0.0	10.000	10.000	786.758	796.834	10.076	75.5	75.5	75.5	90.0	82.0	86.0	10.12	0.9999	1.7560
0.383	0.50	-1.20	1.0000	0.0	5.000	5.000	797.398	802.434	5.036	75.5	75.5	75.5	85.0	83.0	84.0	12.71	1.0043	1.8432
0.383	0.50	-1.20	1.0000	0.0	5.000	5.000	802.434	807.460	5.026	75.5	75.5	75.5	83.0	82.0	82.5	12.70	1.0036	1.8437
0.675	1.50	-1.50	1.0000	0.0	10.000	10.000	819.869	829.941	10.072	75.5	75.5	75.5	87.0	82.0	84.5	14.42	1.0020	1.7827
0.675	1.50	-1.50	1.0000	0.0	10.000	10.000	829.941	840.024	10.083	75.5	75.5	75.5	88.0	82.0	85.0	14.42	1.0019	1.7827
AVERAGE																	1.0024	1.7941

Nomenclature

P_b	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential (in. H ₂ O)
ΔP	Inlet Pressure Differential (in. H ₂ O)
V_d	Gas Meter Volume - Dry (ft ³)
V_{ds}	Standard Meter Volume - Dry (ft ³)
T_d	Average Meter Box Temperature (°F)
T_o	Outlet Meter Box Temperature (°F)
T_{ds}	Average Standard Meter Temperature (°F)
Y_d	Meter Correction Factor (unitless)
Y_{ds}	Standard Meter Correction Factor (unitless)
$\Delta H@$	Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H ₂ O)

Vacuum Gauge

Standard (in. Hg)	Vacuum Gauge
5.2	5.0
10.0	10.0
14.8	15.0
19.6	20.0
25.0	25.0

Thermometers

Standard (°F)	Inlet	Outlet

Equations

$$Y_d = (Y_{ds}) \left[\frac{V_{ds}}{V_d} \right] \left[\frac{T_d + 460}{T_{ds} + 460} \right] \left[\frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6} \right]$$

$$\Delta H@ = \frac{0.0319(\Delta H)}{P_b(T_o + 460)} \left[\frac{(T_{ds} + 460) \Theta}{(V_{ds})(Y_{ds})} \right]^2$$

$$Q = \frac{17.64 (V_{ds}) (R_b)}{(T_{ds} + 460) (\Theta)}$$

Pyrometer Calibration Test Report

Pyrometer No.: 85-4
Calibrated By: R.R.
Date: 7/13/01

Office: Palatine, IL
Client: _____
Job Number: _____

Calibration Reference Settings for Fahrenheit Scale	Pyrometer Reading
50 °F	51 °F
100 °F	100 °F
150 °F	151 °F
200 °F	202 °F
250 °F	252 °F
300 °F	302 °F
350 °F	352 °F
400 °F	401 °F
450 °F	450 °F
500 °F	500 °F
550 °F	550 °F
600 °F	601 °F

Calibration Reference Information

Reference Used: Omega CL23A
Calibrated By: J.H. Metrology Co.
Report No: RO26517

Serial No: T-123216
Date: 9/11/00

Meter Box Critical Orifice Post-Test Calibration Data

CAE Project No. _____

Location Warehouse

Date 11/7/02

Operator Name J. Hefferman

Meter No. 35-4

Meter Y_d 1.0024

Meter ΔH_o 1.7941

Full-Test Cal. Date 7-13-01

Orifice I.D. C-4

Orifice K' .479

Orifice Cal. Date 9-20-01

Leak Checks

Negative Pressure

No Movement of
Meter in 1 minute

☒ Pass

☐ Fail

Positive Pressure

No Movement of
Manometer in 1 minute

☒ Pass

☐ Fail

Barom. Press. (P_b) 29.60 in. Hg

Important: All leak checks must pass in order for calibration to be valid.

Run	Elapsed Time (minutes)	Meter Volume (dcf)	Meter Temperature		Ambient Temp. - T_{amb} (°F)	Orifice ΔH (in. W.C.)	Vacuum (in. Hg)	Net Run Time - θ (minutes)	Net Meter Volume for Run - V_m (dcf)	Avg Meter Temp. for Run - T_m	DGM Calibration Factor - Y_i	Percent Variation - ΔY_i
			Inlet (°F)	Outlet (°F)								
	0.0	751.30	73	71								
1	5	754.27	73	71	69	1.1	21					%
2	10	757.26	73	71	69	1.1	21					%
3	15	760.24	74	72	71	1.1	21					%

Calculations and Specifications

$$Y_i = \frac{K' \times P_b \times (T_m + 460) \times \theta}{17.64 \times V_m \times \left(P_b + \frac{\Delta H}{13.6}\right) \times \sqrt{T_{amb} + 460}}$$

$$\Delta Y_i = \frac{Y_i - \bar{Y}_i}{\bar{Y}_i} \times 100$$

Spec.: $\Delta Y_i \leq \pm 2\%$

$$Cal. Error = \frac{\bar{Y}_i - Y_d}{Y_d} \times 100$$

Spec.: $Cal. Error \leq \pm 5\%$

Average Y_i

Cal. Error

%



Meter Box Critical Orifice Post-Test Calibration Data

CAE Project No. 8963/8964

Location Warehouse

Date 1/7/02

Operator J. Heffernan
Name

Meter No. 85-4

Meter Y_d 1.0024

Meter ΔH_a 1.7941

Full-Test 7/13/01
Cal. Date

Orifice I.D. C-4

Orifice K' 0.479

Orifice 9/20/01
Cal. Date

Leak Checks

Negative Pressure
No Movement of
Meter in 1 minute ☐ Pass
☐ Fail

Positive Pressure
No Movement of
Manometer in 1 minute ☐ Pass
☐ Fail

Barom. Press. (P_b) 29.60 in. Hg

Important: All leak checks must pass in order for calibration to be valid.

Run	Elapsed Time (minutes)	Meter Volume (dcf)	Meter Temperature		Ambient Temp. T_{amb} (°F)	Orifice ΔH	Vacuum (in. Hg)	Net Run Time - θ (minutes)	Net Meter Volume for Run - V_b (dcf)	Avg Meter Temp. T_m (°F)	DGM Calibration Factor - Y_i	Percent Variation - ΔY_i
			Inlet (°F)	Outlet (°F)								
	0.0	751.30	73	71								
1	5.0	754.27	73	71	69	1.10	21.0	5.0	2.97	72.0	1.0545	0.4%
2	10.0	757.26	73	71	69	1.10	21.0	5.0	2.99	72.0	1.0475	-0.3%
3	15.0	760.24	74	72	71	1.10	21.0	5.0	2.98	72.5	1.0500	-0.1%

Calculations and Specifications

$$Y_i = \frac{K' \times P_b \times (T_m + 460) \times \theta}{17.64 \times V_m \times \left(P_b + \frac{\Delta H}{13.6} \right) \times \sqrt{T_{amb} + 460}}$$

$$\Delta Y_i = \frac{Y_i - \bar{Y}_i}{\bar{Y}_i} \times 100$$

Spec.: $\Delta Y_i \leq \pm 2\%$

$$Cal. Error = \frac{\bar{Y}_i - Y_d}{Y_d} \times 100$$

Spec.: $Cal. Error \leq \pm 5\%$

Average Y_i

Cal. Error

1.0506

4.8%

Clean Air Engineering

500 W. Wood Street
Palatine, IL 60067

(847) 991-3300

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-3

FIELD DATA	

D

UNIT: 2 RUN: 1

MERCURY TESTING FIELD DATA SHEET

METHOD: 29 **PAGE** 1 **OF** 2

Client	WHEELABRATOR	Project No.	8964-3
Plant	N. BROWARD	Date	12-11-01
Meter Operator	A. RISINGER		
Probe Operator	SAME		

85-4 AB		Yd = 1.0024		$\Delta H = 1.794$	
Meter Box No.	66-116	Sample Box No.	67-37		
Meter Yd	1.7851	Meter ΔH	1.7753		
K Factor	2.08 AB	Pitot Cp	.84		
Leak Rate Before	.001	(cfm) [Lpm] @	15	(in.Hg)	
Leak Rate After	.001	(cfm) [Lpm] @	12	(in.Hg)	
Pitot Leak Check Before:	☒	After:	Good	☒	Bad ☐

Cross-Section of Test Location



Static Press. (in. H₂O) -11.8

Port Len. (in.) 15

Gas Flow (In) (Out) of page

First point all the way (In) (Out)

Amb. Temp. (°F)	75	Bar. Press.	30.25 (In. Hg) [mbar]
Probe I.D. No.	67-8-18		
Liner Material	GLASS		

Filter No.	RUN 1		
Thimble No.	NA		
Nozzle Diameter	251	Nozzle I.D.	

H ₂ O	347.1	[ml]	[gm]	Silica Gel (gm)	16.6
Total V _c	413.7				

Start Time:	10:43	Stop Time:	17:59

Traverse Point Number	Min/pt 5.0 Elapsed Time	Velocity Head ΔP's (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume - V _m Init. Vol. [ft ³] [L] 268.60	Stack Temp. T _s (°F)	Probe T _p (°F)	Filter T _f (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{min} (°F)	DGM Outlet T _{max} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T _t (°F)	Notes
						Set Points							
						250	250						
1-1	5.0	.55 ^{AR}	1.12 ^{AL}	271.58	270	248	245	67	84	82	3	NA	ΔH = .55
2	10.0	.47	.96 ^{AR}	274.26	266	252	245	50	86	82	3		
3	15.0	.48	.98	276.97	266	247	245	48	88	83	3		
4	20.0	.47	.96	279.64	271	246	248	49	90	84	3		
5	25.0	.65	1.32	282.74	271	249	247	53	92	84	3		282.82 = .08
2-1	30.0	.56	1.14	285.79	268	245	248	62	91	85	3		
2	35.0	.63	1.29	288.97	269	248	249	52	92	85	4		K = 2.12
3	40.0	.46	.98	291.70	269	251	249	49	94	86	3		
4	45.0	.54	1.15	294.73	270	245	248	49	94	86	3		
5	50.0	.63	1.34	297.93	269	247	248	50	94	86	4		298.00 = .07
3-1	55.0	.45	.95	300.70	267	248	249	55	94	87	3		
2	60.0	.45	.95	303.39	268	252	250	54	94	87	3		
	Total	8.7023	13.14	73.89	3224				1093	1017			Clean Air Engineering
	Average	.7374	1.1456		269.24				90.22				

Clean Air Engineering

TEST LOCATION: OUTLETUNIT: 2 RUN: 1

Client	WHEELABRATOR	Project No.	
Plant	N. BROWARD	Date	12/11/01
Meter Operator	A. RISINGER		
Probe Operator	SAME		

Meter Box No.	Sample Box No.
Meter Yd	Meter ΔH@
K Factor	Pitot Cp
Leak Rate Before	[cfm] [Lpm] @ (in. Hg)
Leak Rate After	[cfm] [Lpm] @ (in. Hg)
Pitot Leak Check Before:	☐ After: Good ☐ Bad ☐

MERCURY TESTING FIELD DATA SHEET

METHOD: 29 PAGE 2 OF 2

Cross-Section of Test Location			
↑ [N] [UP]			
Duct Dimensions (in.)			
Static Press. (in. H ₂ O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]

Amb. Temp. (°F)	Bar. Press.	[in. Hg] [mbar]
Probe I.D. No.		
Liner Material		

Filter No.		
Thimble No.		
Nozzle Diameter	Nozzle I.D.	

H ₂ O	[ml] [gm]	Silica Gel (gm)
Total V _{lc}		

Start Time:	Stop Time:

Traverse Point Number	Min/pt 5.0 Elapsed Time	Velocity Head ΔP's (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume - V _m Init. Vol. [ft ³] [L]	Stack Temp. T _s (°F)	Probe T _p (°F) Set Points 250 250	Filter T _f (°F) 250 250	Cond. Temp. T _c (°F)	DGM Inlet T _{min} (°F)	DGM Outlet T _{max} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T _t (°F)	Notes
3-3	65.0	.52	1.10	306.26	269	250	251	54	95	87	3	NA	
4	70.0	.54	1.45	309.51	269	249	250	55	96	88	3		
5	75.0	.56	1.19	312.16	269	249	249	57	97	89	3		312.23 = .07
4-1	80.0	.47	1.00	314.99	269	251	251	62	94	89	3		
2	85.0	.51	1.08	317.80	269	253	243	53	96	89	3		
3	90.0	.55	1.17	320.87	270	250	243	49	96	89	3		
4	95.0	.57	1.21	323.95	272	249	244	49	97	89	4		
5	100.0	.63	1.34	327.12	269	251	244	50	96	88	4		327.18 = .06
5-1	105.0	.48	1.02	330.00	270	249	244	59	94	90	4		
2	110.0	.52	1.10	332.97	270	251	246	53	96	89	4		
3	115.0	.64	1.34	336.14	271	250	248	53	96	89	4		
4	120.0	.66	1.40	339.45	269	250	247	54	96	89	4		
	125.0	.66	1.40	342.77	271	250	248	56	97	90	4		
Total		9.7331	15.50		3507				1246	1155			
Average													

Clean Air
Engineering

TEST LOCATION: OUTLETUNIT: 2 RUN: 2

Client	WHEELABRATOR	Project No.	8964
Plant	N. BROWARD	Date	12/11/01
Meter Operator	A. RISINLER		
Probe Operator	SAME		

Meter Box No.	85-4	Sample Box No.	67-30
Meter Yd.	9571.0024	Meter ΔH	1.79477.768
K Factor	2.2	Pitot Cp	.84
Leak Rate Before	.001	(cfm) [Lpm] @	15 (in. Hg)
Leak Rate After	.001	(cfm) [Lpm] @	15 (in. Hg)
Pitot Leak Check Before	☒	After: Good	☒ Bad ☐

Mercury TESTING FIELD DATA SHEET

METHOD: 29 PAGE 1 OF 2

Cross-Section of Test Location			
Duct Dimensions (in.) <u>96 x 96</u>			
Static Press. (in. H ₂ O)	Port Len. (in.)	Gas Flow (In) [Out]	First point all the way (In) [Out]
<u>-14.0</u>	<u>6</u>	<u>(In)</u> [Out]	<u>(In)</u> [Out]

Amb. Temp. (°F)	<u>43</u>	Bar. Press.	<u>30.25</u> (in. Hg) [mbar]
Probe I.D. No.	<u>67-3-10</u>		
Liner Material	<u>GLASS</u>		

Filter No.	<u>RUN 2</u>		
Thimble No.	<u>NA</u>		
Nozzle Diameter	<u>.254</u>	Nozzle I.D.	

H ₂ O	<u>440.4</u> (gm)	Silica Gel (gm)	<u>440.4</u>
Total Vol.	<u>458.9</u>		

Start Time:	<u>13:15</u>	Stop Time:	<u>15:28</u>

Traverse Point Number	Min/pt 5.0 Elapsed Time	Velocity Head ΔP 's (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume - V _m Init. Vol. [ft ³] [L]	Stack Temp. T _s (°F)	Probe T _p (°F)	Filter T _f (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{min} (°F)	DGM Outlet T _{max} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T _t (°F)	Notes
				327.66		250	250						
1-1	5.0	.63	1.39	331.03	267	247	245	67	84	84	6	NA	
2	10.0	.51	1.22	334.15	267	249	245	59	86	84	5		
3	15.0	.54	1.19	337.26	266	249	250	57	88	84	5		
4	20.0	.60	1.32	340.54	271	250	250	58	90	84	6		
5	25.0	.63	1.39	343.90	269	249	250	60	92	85	6		343.98 = .05
2-1	30.0	.55	1.21	347.98	266	248	251	63	91	86	5		
2	35.0	.62	1.36	350.22	268	249	251	60	94	86	5		
3	40.0	.61	1.34	353.40	267	249	247	56	95	86	6		
4	45.0	.63	1.39	356.79	273	249	251	55	95	87	6		
5	50.0	.75	1.65	360.47	270	249	249	56	96	87	7		360.57 = .10
3-1	55.0	.48	1.06	363.49	267	250	251	60	93	88	5		
2	60.0	.59	1.30	366.72	268	250	250	59	96	88	6		
Total		9.2418	15.82	82.19	3219				1100	1029			
Average		.7783	1.3432		269.20				90.62				

Clean Air
Engineering

TEST LOCATION: OUTLETUNIT: 2 RUN: 2

Client	WHEELABRATOR	Project No.	8964
Plant	N. BROWARD	Date	12/11/01
Meter Operator	A. RISINGER		
Probe Operator	SAME		

Meter Box No.	Sample Box No.
Meter Yd	Meter ΔH ₀
K Factor	Pitot Cp
Leak Rate Before	[cfm] [Lpm] @ (in. Hg)
Leak Rate After	[cfm] [Lpm] @ (in. Hg)
Pitot Leak Check Before:	☐ After: Good ☐ Bad ☐

MERCURY TESTING FIELD DATA SHEET

METHOD: 29 PAGE 2 OF 2

Cross-Section of Test Location			
↑ [N] [UP]			
Duct Dimensions (in.) <u>96 x 96</u>			
Static Press. (in. H ₂ O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]

Amb. Temp. (°F)	Bar. Press.	[in. Hg] [mbar]
Probe I.D. No.		
Liner Material		
Filter No.		
Thimble No.		
Nozzle Diameter	Nozzle I.D.	
H ₂ O	[ml] [gm]	Silica Gel (gm)
Total V _{lc}		
Start Time:	Stop Time: <u>15:28</u>	

Traverse Point Number	Min/pt Elapsed Time	Velocity Head ΔP's (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume - V _m Init. Vol. [ft ³] [L]	Stack Temp. T _s (°F)	Probe T _p (°F) Set Points 250 250	Filter T _f (°F) 250 250	Cond. Temp. T _c (°F)	DGM Inlet T _{min} (°F)	DGM Outlet T _{max} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T _t (°F)	Notes
3-3	65.0	.60	1.32	370.08	275	250	251	59	97	89	6	NA	
4	70.0	.63	1.39	373.45	268	250	249	60	97	89	6		
5	75.0	.67	1.47	376.96	271	250	249	63	97	89	6		377.02 = .06
4-1	80.0	.55	1.21	380.14	267	250	251	66	94	89	6		
2	85.0	.63	1.39	383.40	270	250	248	58	96	89	6		
3	90.0	.59	1.30	386.69	268	250	250	54	96	89	6		
4	95.0	.64	1.41	390.10	274	250	250	54	95	89	6		
5	100.0	.65	1.43	393.54	271	250	250	56	96	88	6		393.61 = .07
5-1	105.0	.51	1.12	396.59	268	250	249	61	93	89	5		
2	110.0	.60	1.32	399.69	269	250	250	56	95	89	6		
3	115.0	.64	1.41	403.16	269	250	250	53	96	89	7		
4 5	120.0 125.0	.65 .68	1.43 1.50	406.59 410.13	271 270	250 249	250 250	53 56	96 97	89 89	6		
	Total	10.2161	17.76		3511				1245	1157			
	Average												

Clean Air
Engineering

TEST LOCATION: OUTLETUNIT: 2 RUN: 3

Client	WHEELABRATOR	Project No.	8964
Plant	N. BROWARD	Date	12/11/01
Meter Operator	A. RISINGER		
Probe Operator	SAME		

Meter Box No.	85-4	Sample Box No.	67-56
Meter Yd	1.0024	Meter ΔH	1.7941
K Factor	2.02.12	Pitot Cp	.84
Leak Rate Before	.002	(cfm) [Lpm]	@ 15 (in. Hg)
Leak Rate After	.003	(cfm) [Lpm]	@ 16 (in. Hg)
Pitot Leak Check Before:	☒	After:	Good ☒ Bad ☐

MERCURY TESTING FIELD DATA SHEET

METHOD: 24 PAGE 1 OF 2

Cross-Section of Test Location			
Duct Dimensions (in.) <u>96 x 96</u>			
Static Press. (in. H ₂ O)	Port Len. (in.)	Gas Flow (in) [Out] of page	First point all the way (in) [Out]
-14.3	10		

Amb Temp. (°F)	80	Bar. Press.	30.25 (in. Hg) [mbar]
Probe I.D. No.	67-8-18		
Liner Material	GLASS		

Filter No.	RUN 3		
Thimble No.	NA		
Nozzle Diameter	.251	Nozzle I.D.	

H ₂ O	458.6	[ml] (gm)	Silica Gel (gm)	19.5
Total V _{ic}	478.1			

Start Time:	15:32	Stop Time:	17:45

Traverse Point Number	Min/pt 5 Elapsed Time	Velocity Head ΔP's (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume - V _m Init. Vol. [ft ³] [L] 344.04	Stack Temp. T _s (°F)	Probe T _p (°F) Set Points 250 250	Filter T _f (°F) 250 250	Cond. Temp. T _c (°F)	DGM Inlet T _{min} (°F)	DGM Outlet T _{max} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T _t (°F)	Notes
1-1	5	.65	1.38	347.26	272	251	244	60	83	81	3	NA	
2	10	.50	1.01	350.09	273	248	246	52	86	82	3		
3	15	.55	1.2	353.14	269	248	246	50	87	82	3		
4	20	.55	1.2	356.27	270	248	248	53	90	83	3		
5	25	.67	1.42	359.60	273	248	249	53	91	83	3		359.65 = .05
2-1	30	.60	1.27	362.70	269	247	247	57	91	85	3		
2	35	.57	1.21	365.91	271	256	249	55	93	85	3		
3	40	.59	1.25	369.06	271	248	249	57	93	85	3		
4	45	.68	1.40	372.39	272	247	250	53	94	86	3		
5	50	.69	1.46	375.76	269	248	249	53	95	87	3		375.88 = .12
3-1	55.0	.65	1.38	379.05	269	245	248	57	93	87	3		
2	60.0	.55	1.17	382.10	268	249	250	53	96	88	3	↓	
	Total	9.3037	15.35	80.54	3246				1092	1014			
	Average	.7844	33.03	270.72					89.72				

Clean Air
Engineering

TEST LOCATION: OUTLETUNIT: 2 RUN: 3

Client	WHEELABRATOR	Project No.	8964
Plant	N. BROWARD	Date	12/1/01
Meter Operator	A. RISINGER		
Probe Operator	SAME		

Meter Box No.	Sample Box No.
Meter Yd	Meter ΔH ₀
K Factor	Pitot Cp
Leak Rate Before	[cfm] [Lpm] @ (in. Hg)
Leak Rate After	[cfm] [Lpm] @ (in. Hg)
Pitot Leak Check Before:	☐ After: Good ☐ Bad ☐

Mercury TESTING FIELD DATA SHEET

METHOD: 29 PAGE 2 OF 2

Cross-Section of Test Location			
↑ [N] [UP]			
Duct Dimensions (in.)			
Static Press. (in. H ₂ O)	Port Len. (in.)	Gas Flow [In] [Out] all the way of page	First point [In] [Out]
-14.3			

Amb. Temp. (°F)	Bar. Press.	[in. Hg] [mbar]
Probe I.D. No.		
Liner Material		
Filter No.		
Thimble No.		
Nozzle Diameter	Nozzle I.D.	
H ₂ O	[ml] [gm]	Silica Gel (gm)
Total V _{IC}		
Start Time:	Stop Time:	

Traverse Point Number	Min/pt 5.0 Elapsed Time	Velocity Head ΔP's (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume - V _m Init. Vol. (ft ³) [L]	Stack Temp. T _s (°F)	Probe T _p (°F) Set Points	Filter T _f (°F)	Cond. Temp. T _c (°F)	DGM Inlet T _{min} (°F)	DGM Outlet T _{max} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T _t (°F)	Notes
3-3	65.0	.56	1.19	385.23	271	251	249	53	95	88	3	NA	
4	70.0	.63	1.34	388.47	270	252	249	54	95	88	3		
5	75.0	.71	1.51	391.91	272	250	250	55	96	88	3		392.02 = .11
4-1	80.0	.58	1.23	395.14	268	247	248	60	93	88	3		
2	85.0	.54	1.45	398.47	271	251	250	57	98	89	4		
3	90.0	.62	1.31	401.68	270	249	250	58	95	88	4		
4	95.0	.67	1.42	405.05	273	249	250	58	95	88	4		
5	100.0	.66	1.40	408.40	270	249	249	60	95	88	4		408.51 = .11
5-1	105.0	.63	1.34	411.88	269	247	249	65	93	88	4		
2	110.0	.60	1.27	415.08	269	250	251	58	95	88	4		
3	115.0	.68	1.44	418.48	271	251	251	55	95	87	4		
4	120.0	.75	1.59	421.80	276	250	250	55	95	88	4		
5	125.0	.56	1.19	424.97	272	249	250	55	96	88	4		
Total		10.3067	17.68		3522				1236	1144			
Average													

Clean Air
Engineering

ORSAT READINGS

TEST LOCATION: FF Outlet

PAGE 1 OF 1

Client: <u>Wheelabrator</u>	Project Number: <u>8914-4</u>	$F_o = \frac{20.9 - \%O_2}{\%CO_2}$
Plant: <u>North Brown</u>	Unit: <u>2</u>	
Orsat ID: <u>#2</u>	Fuel Type: <u>MW</u>	Leak Check Passed ☐

Run Number	Method Number	Trial	Percent CO ₂	Percent O ₂ +CO ₂	Percent O ₂	F _o	Analyst	Analysis	
								Date	Time
1	29	1	9.5	19.0	8.5		PT	12/11/01	14:42
		2	9.5	19.0	8.5				
		3	9.5	19.0	8.5				
		Avg.	(9.5)		(8.5)				
2	29	1	8.8	19.0	9.2		PT	12/11/01	17:01
		2	8.8	19.0	9.2				
		3	8.8	19.0	9.2				
		Avg.	(8.8)		(9.2)				
3	29	1	8.9	18.8	9.9		AR	12/11/01	18:15
		2	8.9	18.8	9.9				
		3	8.9	18.8	9.9				
		Avg.	(8.9)		(9.9)				
4	29	1	9.2	19.6	10.4		PT	12/12/01	10:31
		2	9.2	19.6	10.4				
		3	9.2	19.6	10.4				
		Avg.	(9.2)		(10.4)				
5	29	1	8.8	19.2	10.4		PT	12/12/01	12:38
		2	8.8	19.2	10.4				
		3	8.8	19.2	10.4				
		Avg.	(8.8)		(10.4)				
		1	9.0	19.8	10.8		AR	12/12/01	15:08
		2	9.0	19.8	10.8				
		3	9.0	19.8	10.8				
		Avg.	(9.0)		(10.8)				

Repeat the analysis procedure until the results of any three analyses differ by no more than 0.2 percent by volume. Average the three acceptable values and report the results to the nearest 0.1 percent. Calculate F_o to verify results.

Acceptable ranges for F_o:

Coal:	Anthracite and lignite	1.016-1.130	Gas:	Natural	1.600-1.836
	Bituminous	1.083-1.230		Propane	1.434-1.586
Oil:	Distillate	1.260-1.413		Butane	1.405-1.553
	Residual	1.210-1.370	Wood:		1.000-1.120



Impinger Weight Sheet

Client: Wheelabrator

Unit Name: FF 0111 Unit #2

Plant: North Broward

Job #: 8964-3

Method: 29

Sample Box #: 67-37

Date: 12/11/01

Run #: 1

	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	Empty	770.2	456.0	312.2	
Impinger 2	100ml 5% 10%	624.7	527.1	97.6	
Impinger 3	100ml 5% 10%	550.8	535.4	15.4	
Impinger 4	Empty	458.5	456.9	1.6	
Impinger 5	100ml 4% 10%	535.7	535.7	0	
Impinger 6	100ml 4% 10%	530.6	~~528.1~~ 530.3	0.3	
Impinger 7	Silica Gel	705.1	646.5	16.6	
					AWK ~~387.1~~ 437.1 <u>(403.7)</u> 453.7

Sample Box #: 67-30

Date: 12/11/01

Run #: 2

	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	Empty	721.2	462.6	258.6	
Impinger 2	100ml 5% 10%	680.1	545.0	135.1	
Impinger 3	100ml 5% 10%	579.0	543.3	35.7	
Impinger 4	Empty	471.2	463.0	8.2	
Impinger 5	100ml 4% 10%	529.2	527.2	2.0	
Impinger 6	100ml 4% 10%	554.6	553.8	.8	
Impinger 7	Silica Gel	735.5	717.0	18.5	
					440.4 <u>(458.9)</u>

Sample Box #: 67-56

Date: 12/11/01

Run #: _____

	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	Empty	724.3	433.8	290.50	
Impinger 2	100ml 5% 10%	661.9	~~539.9~~ 526.8	135.1	
Impinger 3	100ml 5% 10%	566.4	538.2	28.2	
Impinger 4	Empty	441.7	437.9	3.8	
Impinger 5	100ml 4% 10%	535.9	534.0	1.9	
Impinger 6	100ml 4% 10%	644.7	645.6	-.9	
Impinger 7	Silica Gel	707.6	688.1	19.5	
					458.6 <u>(478.1)</u>

Impinger Weight Sheet

Client: Wheelabrator

Unit Name: FF 1st Unit #

Plant: North Brown

Job #: 8964

Method: 29

Sample Box #: 67-56

Date: 12/12/01

Run #: <u>Field Blank</u>	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	<u>Empty</u>	<u>432.5</u>	<u>432.5</u>	<u>0</u>	
Impinger 2	<u>100ml 5% 10%</u>	<u>541.1</u>	<u>541.1</u>	<u>0</u>	
Impinger 3	<u>100ml 5% 10%</u>	<u>540.7</u>	<u>540.7</u>	<u>0</u>	
Impinger 4	<u>Empty</u>	<u>439.2</u>	<u>439.2</u>	<u>0</u>	
Impinger 5	<u>100ml 4% 10%</u>	<u>536.7</u>	<u>536.7</u>	<u>0</u>	
Impinger 6	<u>100ml 4% 10%</u>	<u>651.7</u>	<u>651.7</u>	<u>0</u>	<u>0</u>
Impinger 7	<u>Silica Gel</u>	<u>715.2</u>	<u>715.2</u>	<u>0</u>	<u>0</u>

Sample Box #: _____

Date: _____

Run #: _____	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	<u>Empty</u>	_____	_____	_____	
Impinger 2	<u>100ml 5% 10%</u>	_____	_____	_____	
Impinger 3	<u>100ml 5% 10%</u>	_____	_____	_____	
Impinger 4	<u>Empty</u>	_____	_____	_____	
Impinger 5	<u>100ml 4% 10%</u>	_____	_____	_____	
Impinger 6	<u>100ml 4% 10%</u>	_____	_____	_____	
Impinger 7	<u>Silica Gel</u>	_____	_____	_____	

Sample Box #: _____

Date: _____

Run #: _____	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	<u>Empty</u>	_____	_____	_____	
Impinger 2	<u>100ml 5% 10%</u>	_____	_____	_____	
Impinger 3	<u>100ml 5% 10%</u>	_____	_____	_____	
Impinger 4	<u>Empty</u>	_____	_____	_____	
Impinger 5	<u>100ml 4% 10%</u>	_____	_____	_____	
Impinger 6	<u>100ml 4% 10%</u>	_____	_____	_____	
Impinger 7	<u>Silica Gel</u>	_____	_____	_____	

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-3

FIELD DATA PRINTOUTS

E

Field Data Printout

Location: Unit 2 Outlet Method: M29 Bar. Press. (in. Hg): 30.25
 Test Run: 1 Testing Type: Mercury Actual Moisture (%): 22.9
 Client: Wheelabrator North Broward, Inc.
 Project No: 8964-3 Nozzle Diameter (D_n): 0.251
 Test Date: 12/11/01 O₂ (dry volume %): 9.5
 Meter ΔH@: 1.7941 Area (ft²): 64.00 CO₂ (dry volume %): 9.5
 Meter Y_g: 1.0024 Start Time (approx.): 10:43
 Pitot C_p: 0.84 Filter No: NA Stop Time (approx.): 12:59
 Static P: -11.8 Thimble No: NA H₂O (condensate, ml): 437.1
 Leak Rate Before: 0.001 cfm @ 15 "Hg Beaker No: NA H₂O (silica, g): 16.6
 Leak Rate After: 0.001 cfm @ 12 "Hg

Traverse Point	Run Time	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (ft ³)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
	0.0			268.60		T _{m in} (°F)	T _{m out} (°F)			
1-01	5.0	0.55	1.12	271.58	270	84	82	0.74	2.98	102.4
1-02	10.0	0.47	0.96	274.26	266	86	82	0.69	2.68	99.1
1-03	15.0	0.48	0.98	276.97	266	88	83	0.69	2.71	98.9
1-04	20.0	0.47	0.96	279.64	271	90	84	0.69	2.67	98.6
1-05	25.0	0.65	1.32	282.74	271	92	84	0.81	3.10	97.2
LEAK CHECK	25.0			282.82						
2-01	30.0	0.56	1.14	285.79	268	91	85	0.75	2.97	100.1
2-02	35.0	0.63	1.29	288.97	269	92	85	0.79	3.18	101.1
2-03	40.0	0.46	0.98	291.70	269	94	86	0.68	2.73	101.2
2-04	45.0	0.54	1.15	294.73	270	94	86	0.73	3.03	103.8
2-05	50.0	0.63	1.34	297.93	269	94	86	0.79	3.20	101.4
LEAK CHECK	50.0			298.00						
3-01	55.0	0.45	0.95	300.70	267	94	87	0.67	2.70	100.9
3-02	60.0	0.45	0.95	303.39	268	94	87	0.67	2.69	100.6
3-03	65.0	0.52	1.10	306.26	269	95	87	0.72	2.87	99.9
3-04	70.0	0.54	1.15	309.51	269	96	88	0.73	3.25	110.8*
3-05	75.0	0.56	1.19	312.16	269	97	89	0.75	2.65	88.6*
LEAK CHECK	75.0			312.23						
4-01	80.0	0.47	1.00	314.99	269	94	89	0.69	2.76	100.9
4-02	85.0	0.51	1.08	317.80	269	96	89	0.71	2.81	98.5
4-03	90.0	0.55	1.17	320.87	270	96	89	0.74	3.07	103.7
4-04	95.0	0.57	1.21	323.95	272	97	89	0.75	3.08	102.3
4-05	100.0	0.63	1.34	327.12	269	96	88	0.79	3.17	100.1
LEAK CHECK	100.0			327.18						
5-01	105.0	0.48	1.02	330.00	270	94	90	0.69	2.82	102.0
5-02	110.0	0.52	1.10	332.97	270	96	89	0.72	2.97	103.2
5-03	115.0	0.64	1.34	336.14	271	96	89	0.80	3.17	99.4
5-04	120.0	0.66	1.40	339.45	269	96	89	0.81	3.31	102.1
5-05	125.0	0.66	1.40	342.77	271	97	90	0.81	3.32	102.3
Final	125.0	0.74	1.15	73.89	269	90				

Field Data Printout

Location: Unit 2 Outlet	Method: M29	Bar. Press. (in. Hg): 30.25
Test Run: 2	Testing Type: Mercury	Actual Moisture (%): 21.5
Client: Wheelabrator North Broward, Inc.		
Project No: 8964-3		Nozzle Diameter (D _n): 0.254
Test Date: 12/11/01		O ₂ (dry volume %): 10.2
Meter ΔH@: 1.7758	Area (ft²): 64.00	CO ₂ (dry volume %): 8.8
Meter Y _p : 0.9851		Start Time (approx.): 13:15
Pitot C _p : 0.84	Filter No: NA	Stop Time (approx.): 15:28
Static P: -14.0	Thimble No: NA	H ₂ O (condensate, ml): 440.4
Leak Rate Before: 0.001 cfm @ 15 "Hg	Beaker No: NA	H ₂ O (silica, g): 18.5
Leak Rate After: 0.001 cfm @ 15 "Hg		

Traverse Point	Run Time	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (ft³)	Stack T _s (°F)	Dry Gas Meter T _{min} (°F)	T _{max} (°F)	√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft³)	Isokinetics (calculated) (%)
	0.0			327.66						
1-01	5.0	0.63	1.39	331.03	267	84	84	0.79	3.37	102.2
1-02	10.0	0.51	1.22	334.15	267	86	84	0.71	3.12	104.9
1-03	15.0	0.54	1.19	337.26	266	88	84	0.73	3.11	101.4
1-04	20.0	0.60	1.32	340.54	271	90	84	0.77	3.28	101.6
1-05	25.0	0.63	1.39	343.90	269	92	85	0.79	3.36	101.2
LEAK CHECK	25.0			343.95						
2-01	30.0	0.55	1.21	347.98	266	91	86	0.74	4.03	129.6*
2-02	35.0	0.62	1.36	350.22	268	94	86	0.79	2.24	67.8*
2-03	40.0	0.61	1.34	353.40	267	95	86	0.78	3.18	96.8
2-04	45.0	0.63	1.39	356.79	273	95	87	0.79	3.39	101.9
2-05	50.0	0.75	1.65	360.47	270	96	87	0.87	3.68	101.2
LEAK CHECK	50.0			360.57						
3-01	55.0	0.48	1.06	363.49	267	93	88	0.69	2.92	100.2
3-02	60.0	0.59	1.30	366.72	268	96	88	0.77	3.23	99.8
3-03	65.0	0.60	1.32	370.08	275	97	89	0.77	3.36	103.3
3-04	70.0	0.63	1.39	373.45	268	97	89	0.79	3.37	100.6
3-05	75.0	0.67	1.47	376.96	271	97	89	0.82	3.51	101.8
LEAK CHECK	75.0			377.02						
4-01	80.0	0.55	1.21	380.14	267	94	89	0.74	3.12	99.9
4-02	85.0	0.63	1.39	383.40	270	96	89	0.79	3.26	97.6
4-03	90.0	0.59	1.30	386.69	268	96	89	0.77	3.29	101.6
4-04	95.0	0.64	1.41	390.10	274	95	89	0.80	3.41	101.6
4-05	100.0	0.65	1.43	393.54	271	96	88	0.81	3.44	101.5
LEAK CHECK	100.0			393.61						
5-01	105.0	0.51	1.12	396.59	268	93	89	0.71	2.98	99.2
5-02	110.0	0.60	1.32	399.69	269	95	89	0.77	3.10	95.1
5-03	115.0	0.64	1.41	403.16	269	96	89	0.80	3.47	103.0
5-04	120.0	0.65	1.43	406.59	271	96	89	0.81	3.43	101.1
5-05	125.0	0.68	1.50	410.13	270	97	89	0.82	3.54	101.9
Final	125.0	0.78	1.34	82.19	269	91				

Field Data Printout

Location: Unit 2 Outlet Method: M29 Bar. Press. (in. Hg): 30.25
 Test Run: 3 Testing Type: Mercury Actual Moisture (%): 22.3
 Client: Wheelabrator North Broward, Inc.
 Project No: 8964-3 Nozzle Diameter (D_n): 0.251
 Test Date: 12/11/01 O₂ (dry volume %): 9.9
 Meter ΔH@: 1.7941 Area (ft²): 64.00 CO₂ (dry volume %): 8.9
 Meter Y_d: 1.0024 Start Time (approx.): 15:32
 Pitot C_p: 0.84 Filter No: NA Stop Time (approx.): 17:45
 Static P: -14.3 Thimble No: NA H₂O (condensate, ml): 458.6
 Leak Rate Before: 0.002 cfm @ 15 "Hg Beaker No: NA H₂O (silica, g): 19.5
 Leak Rate After: 0.003 cfm @ 16 "Hg

Traverse Point	Run Time	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (ft ³)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft ³)	Isokinetics (calculated) (%)
	0.0			344.04		T _{m in} (°F)	T _{m out} (°F)			
1-01	5.0	0.65	1.38	347.26	272	83	81	0.81	3.22	101.7
1-02	10.0	0.50	1.01	350.09	273	86	82	0.71	2.83	101.5
1-03	15.0	0.55	1.20	353.14	269	87	82	0.74	3.05	104.0
1-04	20.0	0.55	1.20	356.27	270	90	83	0.74	3.13	106.4
1-05	25.0	0.67	1.42	359.60	273	91	83	0.82	3.33	102.7
LEAK CHECK	25.0			359.65						
2-01	30.0	0.60	1.27	362.70	269	91	85	0.77	3.05	99.0
2-02	35.0	0.57	1.21	365.91	271	93	85	0.75	3.21	106.8
2-03	40.0	0.59	1.25	369.06	271	93	85	0.77	3.15	103.0
2-04	45.0	0.66	1.40	372.39	272	94	86	0.81	3.33	102.9
2-05	50.0	0.69	1.46	375.76	269	95	87	0.83	3.37	101.5
LEAK CHECK	50.0			375.88						
3-01	55.0	0.65	1.38	379.05	269	93	87	0.81	3.17	98.5
3-02	60.0	0.55	1.17	382.10	268	96	88	0.74	3.05	102.5
3-03	65.0	0.56	1.19	385.23	271	95	88	0.75	3.13	104.6
3-04	70.0	0.63	1.34	388.47	270	95	88	0.79	3.24	102.0
3-05	75.0	0.71	1.51	391.91	272	96	88	0.84	3.44	102.1
LEAK CHECK	75.0			392.02						
4-01	80.0	0.58	1.23	395.14	268	93	88	0.76	3.12	102.4
4-02	85.0	0.54	1.45	398.47	271	98	89	0.73	3.33	113.0*
4-03	90.0	0.62	1.31	401.68	270	95	88	0.79	3.21	101.9
4-04	95.0	0.67	1.42	405.05	273	95	88	0.82	3.37	103.1
4-05	100.0	0.66	1.40	408.40	270	95	88	0.81	3.35	103.1
LEAK CHECK	100.0			408.51						
5-01	105.0	0.63	1.34	411.88	269	93	88	0.79	3.37	106.2
5-02	110.0	0.60	1.27	415.08	269	95	88	0.77	3.20	103.2
5-03	115.0	0.68	1.44	418.48	271	95	87	0.82	3.40	103.2
5-04	120.0	0.75	1.59	421.80	276	95	88	0.87	3.32	96.3
5-05	125.0	0.56	1.19	424.97	272	96	88	0.75	3.17	105.9
Final	125.0	0.78	1.32	80.54	271	90				

Whelabrator @ North Broward
 Clean Air Project No: 8963-3
 Unit 2 Fabric Filter Outlet

Impinger Weight Sheet

Method 29 Multi-Metals

Run No: 1
 Sample Box No: 67-37
 Date: 12/11/01

	Contents	Gross	Impinger Weight		Total
			Tare	Net Gain	
Impinger 1	Empty	778.2	456.0	322.2	
Impinger 2	10% H_2O_2 /5% HNO_3	624.7	527.1	97.6	
Impinger 3	10% H_2O_2 /5% HNO_3	550.8	535.4	15.4	
Impinger 4	Empty	458.5	456.9	1.6	
Impinger 5	10% H_2SO_4 /4% KMnO_4	535.7	535.7	0.0	
Impinger 6	10% H_2SO_4 /4% KMnO_4	530.6	530.3	0.3	437.1
Impinger 7	Silica Gel	705.1	688.5	16.6	453.7

Run No: 2
 Sample Box No: 67-30
 Date: 12/11/01

	Contents	Gross	Impinger Weight		Total
			Tare	Net Gain	
Impinger 1	Empty	721.2	462.6	258.6	
Impinger 2	10% H_2O_2 /5% HNO_3	680.1	545.0	135.1	
Impinger 3	10% H_2O_2 /5% HNO_3	579.0	543.3	35.7	
Impinger 4	Empty	471.2	463.0	8.2	
Impinger 5	10% H_2SO_4 /4% KMnO_4	529.2	527.2	2.0	
Impinger 6	10% H_2SO_4 /4% KMnO_4	554.6	553.8	0.8	440.4
Impinger 7	Silica Gel	735.5	717.0	18.5	458.9

Run No: 3
 Sample Box No: 67-56
 Date: 12/11/01

	Contents	Gross	Impinger Weight		Total
			Tare	Net Gain	
Impinger 1	Empty	724.3	433.8	290.5	
Impinger 2	10% H_2O_2 /5% HNO_3	661.9	526.8	135.1	
Impinger 3	10% H_2O_2 /5% HNO_3	566.4	538.2	28.2	
Impinger 4	Empty	441.7	437.9	3.8	
Impinger 5	10% H_2SO_4 /4% KMnO_4	535.9	534.0	1.9	
Impinger 6	10% H_2SO_4 /4% KMnO_4	644.7	645.6	-0.9	458.6
Impinger 7	Silica Gel	707.6	688.1	19.5	478.1

Run No: Field Blank
 Sample Box No: 67-56
 Date: 12/12/01

	Contents	Gross	Impinger Weight		Total
			Tare	Net Gain	
Impinger 1	Empty	432.5	432.5	0.0	
Impinger 2	10% H_2O_2 /5% HNO_3	541.1	541.1	0.0	
Impinger 3	10% H_2O_2 /5% HNO_3	540.7	540.7	0.0	
Impinger 4	Empty	439.2	439.2	0.0	
Impinger 5	10% H_2SO_4 /4% KMnO_4	536.7	536.7	0.0	
Impinger 6	10% H_2SO_4 /4% KMnO_4	651.7	651.7	0.0	0.0
Impinger 7	Silica Gel	715.2	715.2	0.0	0.0

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-3

LABORATORY DATA	

F



Inorganic Data Package

For

Clean Air Engineering

Project # 32677

Wheelabrator ~~South~~ Broward

North

Prepared by PSC Analytical Services Corp.

5555 North Service Road

Burlington, ON

Canada L7L 5H7

PSC Project #: AN010793

Submission #(s): 1L0657

PSC Sample ID: 081578 01 – 081583 01

Prepared By: Tara Bovenkamp - Project Manager Assistant

JB

Reviewed By: Shari Typer – Project Manager

ST

1. CASE NARRATIVE

PROJECT NARRATIVE

PHILIP Analytical Services Inc (Burlington ON)

Philip Project: AN010794

Philip Submission #:1L0657

Client: Clean Air Engineering

Client Project: 8964

I. SAMPLE RECEIPT/ANALYSIS

a) Sample Listing

Philip ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Run Date
<i>Mercury 1B via EPA Method 29</i>					
081578 01	Method Blank	01/12/11	01/12/17	02/01/04	02/01/04
081579 01	M29HG U2-NORTH-RB	01/12/11	01/12/17	02/01/04	02/01/04
081580 01	M29HG U2-NORTH-FB	01/12/12	01/12/17	02/01/04	02/01/04
081581 01	M29HG U2-NORTH-Run#1	01/12/11	01/12/17	02/01/04	02/01/04
081582 01	M29HG U2-NORTH-Run#2	01/12/11	01/12/17	02/01/04	02/01/04
081583 01	M29HG U2-NORTH-Run#3	01/12/11	01/12/17	02/01/04	02/01/04
<i>Mercury 2B via EPA Method 29</i>					
081578 01	Method Blank	01/12/11	01/12/17	01/12/31	02/01/02
081579 01	M29HG U2-NORTH-RB	01/12/11	01/12/17	01/12/31	02/01/02
081580 01	M29HG U2-NORTH-FB	01/12/12	01/12/17	01/12/31	02/01/02
081581 01	M29HG U2-NORTH-Run#1	01/12/11	01/12/17	01/12/31	02/01/02
081582 01	M29HG U2-NORTH-Run#2	01/12/11	01/12/17	01/12/31	02/01/02
081583 01	M29HG U2-NORTH-Run#3	01/12/11	01/12/17	01/12/31	02/01/02
<i>Mercury 3A via EPA Method 29</i>					
081578 01	Method Blank	01/12/11	01/12/17	02/01/02	02/01/02
081579 01	M29HG U2-NORTH-RB	01/12/11	01/12/17	02/01/02	02/01/02
081580 01	M29HG U2-NORTH-FB	01/12/12	01/12/17	02/01/02	02/01/02
081581 01	M29HG U2-NORTH-Run#1	01/12/11	01/12/17	02/01/02	02/01/02
081582 01	M29HG U2-NORTH-Run#2	01/12/11	01/12/17	02/01/02	02/01/02
081583 01	M29HG U2-NORTH-Run#3	01/12/11	01/12/17	02/01/02	02/01/02
<i>Mercury 3B via EPA Method 29</i>					
081578 01	Method Blank	01/12/11	01/12/17	01/12/28	01/12/28
081579 01	M29HG U2-NORTH-RB	01/12/11	01/12/17	01/12/28	01/12/28
081580 01	M29HG U2-NORTH-FB	01/12/12	01/12/17	01/12/28	01/12/28
081581 01	M29HG U2-NORTH-Run#1	01/12/11	01/12/17	01/12/28	01/12/28
081582 01	M29HG U2-NORTH-Run#2	01/12/11	01/12/17	01/12/28	01/12/28
081583 01	M29HG U2-NORTH-Run#3	01/12/11	01/12/17	01/12/28	01/12/28

Mercury 3C via EPA Method 29

081578 01	Method Blank	01/12/11	01/12/17	02/01/02	02/01/02
081579 01	M29HG U2-NORTH-RB	01/12/11	01/12/17	02/01/02	02/01/02
081580 01	M29HG U2-NORTH-FB	01/12/12	01/12/17	02/01/02	02/01/02
081581 01	M29HG U2-NORTH-Run#1	01/12/11	01/12/17	02/01/02	02/01/02
081582 01	M29HG U2-NORTH-Run#2	01/12/11	01/12/17	02/01/02	02/01/02
081583 01	M29HG U2-NORTH-Run#3	01/12/11	01/12/17	02/01/02	02/01/02

Run Date is defined as the date of injection of the last calibration standard (12 hour or less) prior to the samples analyzed within that run sequence. Therefore the time of calibration injection that defines the run date is always within 12 hours of the time of sample injection.

b) Shipping Problems: none encountered

c) Documentation Problems: none encountered

II. SAMPLE PREP:

No problems encountered

III. SAMPLE ANALYSIS:

See also comments within the appropriate Certificate of Analysis.

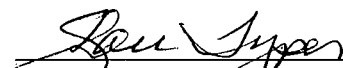
a) Hold Times: all within recommended hold times

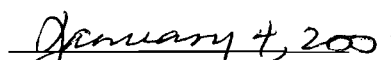
b) Instrument Calibration: all within control limits

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above.

In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate.

Release of the data contained in this data package has been authorized by the cognizant laboratory official or his/her designee, as verified by this signature.


 Shari Typer, Project Manager


 Date

2. ANALYTICAL DATA REPORT



Certificate of Analysis

CLIENT INFORMATION

Attention: Scott Brown
Client Name: Clean Air Engineering
Project: 8964
Project Desc: Wheelabrator North Broward

Address: 500 W. Wood Street
 Palatine, IL
 IL 60067

Fax Number: 847-991-0036

Phone Number: 847-991-3300

LABORATORY INFORMATION

Contact: Ada Blythe, B.Sc., C.Chem.
Project: AN010794
Date Received: 17-Dec-2001
Date Reported: 04-Jan-2002

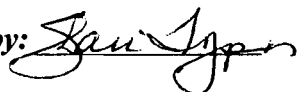
Submission No.: 1L0657
Sample No.: 081578-081583

NOTES: *"-" = not analysed "<" = less than Method Detection Limit (MDL) 'NA' = no data available*
LOQ can be determined for all analytes by multiplying the appropriate MDL X 3.33
Blank correction is only performed on oil and grease, BTEX, total purgeable hydrocarbons
and VOC analyses when Canadian methods are utilized.
Solids data is based on dry weight except for biota analyses.
Organic analyses are not corrected for extraction recovery standards except for isotope
dilution methods, (i.e. CARB 429 PAH, all PCDD/F and DBD/DBF analyses)

Methods used by PSC Analytical Services are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of MISA or EPA methodologies. New York State: ELAP Identification Number 10756.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at PSC Analytical Services for a period of three weeks from receipt of data or as per contract.

COMMENTS:

Certified by: 

PASC - Certificate of Analysis

Component	<i>Client ID:</i>		Method	Blank	Blank	Blank	Blank	M29HG	M29HG
	<i>Lab No.:</i>		Blank	Spike #1	Spike #1	Spike #2	Spike #2	U2-NORTH-RB	U2-NORTH-FB
	<i>Date Sampled:</i>		081578 01	081578 01	081578 01	081578 01	081578 01	081579 01	081580 01
	MDL	Units	-	-	-	-	-	11-Dec-2001	12-Dec-2001
			% Recoveries		% Recoveries				
Sample Volume - Container 5A	0	ml	-	-	-	-	-	100	110
Sample Volume - Container 4		"	-	-	-	-	-	290	310
Mercury - 1B	0.030	ug	<	0.31	100	0.30	100	<	<
Mercury - 2B	0.010	"	<	0.10	100	0.098	97	<0.29	<0.31
Mercury - 3A	0.010	"	<	0.10	100	0.11	110	<	<
Mercury - 3B	0.050	"	<	0.51	100	0.51	100	<	<
Mercury - 3C	0.050	"	<	0.52	100	0.52	100	<	0.072

90000

PASC - Certificate of Analysis

Component	Client ID:		M29HG	M29HG	M29HG	M29HG
	Lab No.:		U2-NORTH-Run#1	U2-NORTH-Run#1	U2-NORTH-Run#1	U2-NORTH-Run#1
	Date Sampled:		081581 01	081581 01	081581 01	081581 01
	MDL		11-Dec-2001	11-Dec-2001	11-Dec-2001	11-Dec-2001
		Units		Duplicate	M. Spike	MS % Rec.
Sample Volume - Container 5A	0	ml	100	-	-	-
Sample Volume - Container 4		"	730	-	-	-
Mercury - 1B	0.030	ug	0.50	0.51	0.80	100
Mercury - 2B	0.010	"	7.3	7.2	14	96
Mercury - 3A	0.010	"	<	-	-	-
Mercury - 3B	0.050	"	<	<	0.52	100
Mercury - 3C	0.050	"	1.00	0.99	1.4	86

Component	Client ID:		M29HG	M29HG	M29HG	M29HG
	Lab No.:		U2-NORTH-Run#1	U2-NORTH-Run#1	U2-NORTH-Run#2	U2-NORTH-Run#3
	Date Sampled:		081581 01	081581 01	081582 01	081583 01
	MDL	Units	11-Dec-2001	11-Dec-2001	11-Dec-2001	11-Dec-2001
			MS Dup	MSD % Rec.		
Sample Volume - Container 5A	0	ml	-	-	110	100
Sample Volume - Container 4		"	-	-	720	740
Mercury - 1B	0.030	ug	0.81	100	1.0	1.0
Mercury - 2B	0.010	"	14	98	9.3	8.4
Mercury - 3A	0.010	"	-	-	<	<
Mercury - 3B	0.050	"	0.51	100	<	<
Mercury - 3C	0.050	"	1.4	85	0.66	0.70

Batch Code: 01046M1B
Mercury - 1B
081578 01
081579 01
081580 01
081581 01
081582 01
081583 01
Date Analysed: 02/01/04
Date Prepared: 02/01/04

Batch Code: 12318M2B
Mercury - 2B
081578 01
081579 01
081580 01
081581 01
081582 01
081583 01
Date Analysed: 02/01/02
Date Prepared: 01/12/31

Batch Code: 01021M3A
Mercury - 3A
081578 01
081579 01
081580 01
081581 01
081582 01
081583 01
Date Analysed: 02/01/02
Date Prepared: 02/01/02

Batch Code: 12286M3B
Mercury - 3B
081578 01
081579 01
081580 01
081581 01
081582 01
081583 01
Date Analysed: 01/12/28
Date Prepared: 01/12/28

Batch Code:	01022M3C	01023M3C
Mercury - 3C	081578 01	081581 01
	081579 01	081583 01
	081580 01	
	081582 01	
Date Analysed:	02/01/02	02/01/02
Date Prepared:	02/01/02	02/01/02

00010

3. RAW DATA

Inorganic Analysis Action/Comment Form

*** Please note any action or anomalies impacting this set of samples**

Client ID: CLEANAIR

*** For additional comments, please
staple additional pages(s)**

PSC sample ID range: 081578-583

Analysis: HG

Submission #: 1L0657

Actions:

Impacted sample Ids

Additional digestion needed

#: NO

Re-analysis needed (alternate technique)

#: NO

Re-analysis needed (contract technique)

#: NO

Bottle discrepancies

#: NO

Interferences observed

#: NO

Dilutions needed

#: NO

Internal calculations modified

#: NO

Field/Trip blanks missing

#: NO

Other

#:

Explanation/comments:

[illegible]



DATA REVIEW CHECKLIST:

ANALYSIS: MERCURY M29.RUN CODE: 01.12.28-AD11

Primary Review (Analyst):		ok	no	n/a
1	Analysis set-up meets method criteria	☒	☐	☐
2	Calibration criteria meets method criteria	☒	☐	☐
3	SQC/Control Charts updated, analysis in statistical control	☐	☐	☒
4	Internal area counts checked (if applicable)	☒	☐	☐
5	Mass Spectra checked for positives (if applicable)	☐	☐	☒
6	Run and Preparation Logs completed, signed and attached	☒	☐	☐
7	Standards and reagents traceable to Certificates of Analysis	☒	☐	☐
8	Sample analyses meet Hold Time criteria	☒	☐	☐
9	Identified Client specific criteria met	☐	☐	☒
10	Analytical observations/anomalies documented in LIMs	☒	☐	☐
11	Random calculation checked	☒	☐	☐
12	Samples above calibration range diluted and reanalyzed	☒	☐	☐
13	Runs checked for carryover	☒	☐	☐
14	Run and Batch Codes are correct	☒	☐	☐
15	Method Blank meets acceptance criteria	☒	☐	☐
16	Duplicate precision meets acceptance criteria	☒	☐	☐
17	Matrix Spike recovery (s) meets acceptance criteria	☒	☐	☐
18	Surrogate Recovery (s) meets acceptance criteria	☐	☐	☒
19	Laboratory Control Sample, (BWMS), meets acceptance criteria	☒	☐	☐
20	Validation Sheet signed and dated	☒	☐	☐
21	Data Package completed (if required)	☐	☐	☐

Reviewed By: [Signature] Date: 01.12.28

Comments: _____

Secondary Supervisor/Peer Data Review (frequency as defined in QA - 504 Section 6.3):		ok	no	n/a
1	Primary Review complete and correct	☐	☐	☐
2	Repeats documented and included	☐	☐	☐
3	Method and sample deviations noted, anomalies described (if applicable)	☐	☐	☐
4	Data and QC validated in LIMS	☐	☐	☐
5	Random calculation checked	☐	☐	☐
6	Benchsheet (s) signed and dated	☐	☐	☐
7	Data Package checked for completeness (if required)	☐	☐	☐

Reviewed By: _____ Date: _____

Comments: _____

Tertiary Review (Project Manager):		ok	no	n/a
1	Project Specific criteria met	☐	☐	☐
2	Repeats documented and included	☐	☐	☐
3	Random calculation checked	☐	☐	☐
4	Data Inter-relationships checked	☐	☐	☐
5	Client specific criteria met	☐	☐	☐
6	Data Package complete (if required)	☐	☐	☐

Reviewed By: _____ Date: _____

Comments: _____

01/12/31 12:45:02

Printed by AWHITMEL

LDCA

DATA TO BE VALIDATED (METVAL')

Analyzed by AWHITM

Page 1 of 1

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
081578	CLEANAIR	MB R456	Mercury -	P	-0.050	-99999.0	0.512	102.	0.513	102.	01/12/28	6M3B	01/12/28	AW11	17.	11.	
081579	CLEANAIR	M29HG U2-NORTH-RB	Mercury -	P	-0.050						01/12/28	6M3B	01/12/28	AW11	17.	11.	
081580	CLEANAIR	M29HG U2-NORTH-FB	Mercury -	P	-0.050						01/12/28	6M3B	01/12/28	AW11	16.	11.	
081581	CLEANAIR	M29HG U2-NORTH-Run#1	Mercury -	P	-0.050	-0.050	0.520	103.	0.510	101.	01/12/28	6M3B	01/12/28	AW11	17.	11.	
081582	CLEANAIR	M29HG U2-NORTH-Run#2	Mercury -	P	-0.050						01/12/28	6M3B	01/12/28	AW11	17.	11.	
081583	CLEANAIR	M29HG U2-NORTH-Run#3	Mercury -	P	-0.050						01/12/28	6M3B	01/12/28	AW11	17.	11.	
BL1228	INTERNAL		Mercury -	P	-0.050	-99999.0	0.512	102.	0.513	102.	01/12/28	6M3B	01/12/28	AW11	\$\$\$	\$\$\$	

7 Tests for 29HG-3B with an MDL of 0.050 ug

Validated By

Control Chart Updated

IO Requirements met

00013

29HG-3B

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL1228-6M3B	0.006	1	500	0.003	0.05	0.05		500
BL1228S	1.023	1	500	0.512	0.05	0.05	102	500
BL1228DS	1.026	1	500	0.513	0.05	0.05	102	500
81581	0.004	1	500	0.002	0.05	0.05		500
81581D	0.008	1	500	0.004	0.05	0.05		500
81581S	1.039	1	500	0.520	0.05	0.05	103	500
81581DS	1.020	1	500	0.510	0.05	0.05	101	500
81578	0.008	1	500	0.004	0.05	0.05		500
81579	0.007	1	500	0.004	0.05	0.05		500
81580	0.008	1	500	0.004	0.05	0.05		500
81582	0.007	1	500	0.004	0.05	0.05		500
81583	0.007	1	500	0.004	0.05	0.05		500

Sample Information File C:\FIMS\AAUSER\SAMPINFO\011228F1.SIF

Description : 011228 AW11 SCREEN
Batch ID : 1228AW11
Volume Units :
Weight Units :
Analyst : AWHITMEL
Sample Volume : 0.00

AS Sample ID Loc	Sample Sample Weight Units	User Dilution	Remarks
14 BL1228-1M3A			
15 BL1228S			
16 BL1228DS			
17 080959			
18 080959D			
19 080959S			
20 080959DS			
21 080960			
22 080961			
23 080962			
24 080963			
25 080964			
26 BL1228-2M3A			
27 BL1228S			
28 BL1228DS			
29 081269		10.0000	
30 081269D		10.0000	
31 081269S		10.0000	
32 081269DS		10.0000	
33 081270			
34 081271			
35 081272			
36 BL1228-3M3B			
37 BL1228S			
38 BL1228DS			
39 081269			
40 081269D			
41 081269S			
42 081269DS			
43 081268			
44 081270			
45 081271			
46 081272			
47 BL1228-4M3B			
48 BL1228S			
49 BL1228DS			
50 081550			
51 081550D			
52 081550S			
53 081550DS			
54 081548			
55 081549			
56 081551			
57 081552			
58 BL1228-5M3B			
59 BL1228S			
60 BL1228DS			
61 081557			
62 081557D			
63 081557S			

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Perkin-Elmer AAWinLab: 12/28/2001, 05:37:55 PM

64	081557DS	
65	081554	
66	081555	
67	081556	
68	081558	
69	081559	
70	BL1228-7M2B	
71	BL1228S	
72	BL1228DS	
73	081269	10.0000
74	081269D	10.0000
75	081269S	10.0000
76	081269DS	10.0000
77	081270	10.0000
78	081271	10.0000
79	081272	10.0000
80	BL1228-8M1B	
81	BL1228S	
82	BL1228DS	
83	078886	
84	078886D	
85	078886S	
86	078886DS	
87	078884	
88	078885	
89	078887	
90	078888	
91	078465	ADL RCHK
92	078465D	ADL RCHK
93	078465S	ADL RCHK
94	078465DS	ADL RCHK
95	BL1228-6M3B	
96	BL1228S	
97	BL1228DS	
98	081581	
99	081581D	
100	081581S	
101	081581DS	
102	081578	
103	081579	
104	081580	
105	081582	
106	081583	

00017

Perkin-Elmer AAWinLab: 12/28/2001, 12:52:40 AM

Method Name: EPA 7470
 Method Description: EPA 7470
 Element: Hg

Date: 12/28/2001
 Technique: FI-MHS
 Calibration Type:
 Hg, Zero Intercept: Linear
 Wavelength: 253.7 nm
 Sample Info Name: 011228F1.SIF

Results Data Set Name: 011228F1

Element: Hg Seq. No.: 1 AS Loc.: 1 Date: 12/28/2001
 Sample ID: Calib Blank

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored

Method Name: EPA 7470
 Method Description: EPA 7470
 Element: Hg

Date: 12/28/2001
 Technique: FI-MHS
 Calibration Type:
 Hg, Zero Intercept: Linear
 Wavelength: 253.7 nm
 Sample Info Name: 011228F1.SIF

Results Data Set Name: 011228F1

Element: Hg Seq. No.: 1 AS Loc.: 1 Date: 12/28/2001
 Sample ID: Calib Blank

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0009	0.0009	12:53:59	Yes
2			0.0001	0.0001	12:54:32	Yes
3			0.0001	0.0001	12:55:04	Yes
Mean:			0.0004			
SD :			0.0004			
%RSD:			122.4568			

Auto-zero performed.

Element: Hg Seq. No.: 2 AS Loc.: 2 Date: 12/28/2001
 Sample ID: STD1

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0314	0.0318	12:55:54	Yes
2			0.0308	0.0311	12:56:27	Yes
3			0.0307	0.0311	12:57:00	Yes
Mean:			0.0310			
SD :			0.0004			
%RSD:			1.2126			

[Hg] Standard number 1 applied. [2.500]

Correlation Coefficient: 1.00000

Slope: 0.01239

Element: Hg Seq. No.: 3 AS Loc.: 3 Date: 12/28/2001
 Sample ID: STD2

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored

00018

Perkin-Elmer AAWinLab: 12/28/2001, 12:57:50 AM

1	0.0626	0.0630	12:57:50	Yes
2	0.0617	0.0621	12:58:23	Yes
3	0.0620	0.0623	12:58:56	Yes
Mean:	0.0621			
SD :	0.0005			
%RSD:	0.7515			
[Hg] Standard number 2 applied. [5.000]				
Correlation Coefficient: 0.99999			Slope: 0.01241	

=====

Element: Hg Seq. No.: 4 AS Loc.: 4 Date: 12/28/2001

Sample ID: STD3

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0925	0.0929	01:00:10	Yes
2			0.0918	0.0922	01:00:43	Yes
3			0.0913	0.0917	01:01:16	Yes
Mean:			0.0919			
SD :			0.0006			
%RSD:			0.6776			
[Hg] Standard number 3 applied. [7.500]						
Correlation Coefficient: 0.99986			Slope: 0.01231			

=====

Element: Hg Seq. No.: 5 AS Loc.: 5 Date: 12/28/2001

Sample ID: STD4

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.1281	0.1284	01:02:32	Yes
2			0.1275	0.1278	01:03:05	Yes
3			0.1265	0.1269	01:03:38	Yes
Mean:			0.1273			
SD :			0.0008			
%RSD:			0.6213			
[Hg] Standard number 4 applied. [10.00]						
Correlation Coefficient: 0.99909			Slope: 0.01254			

=====

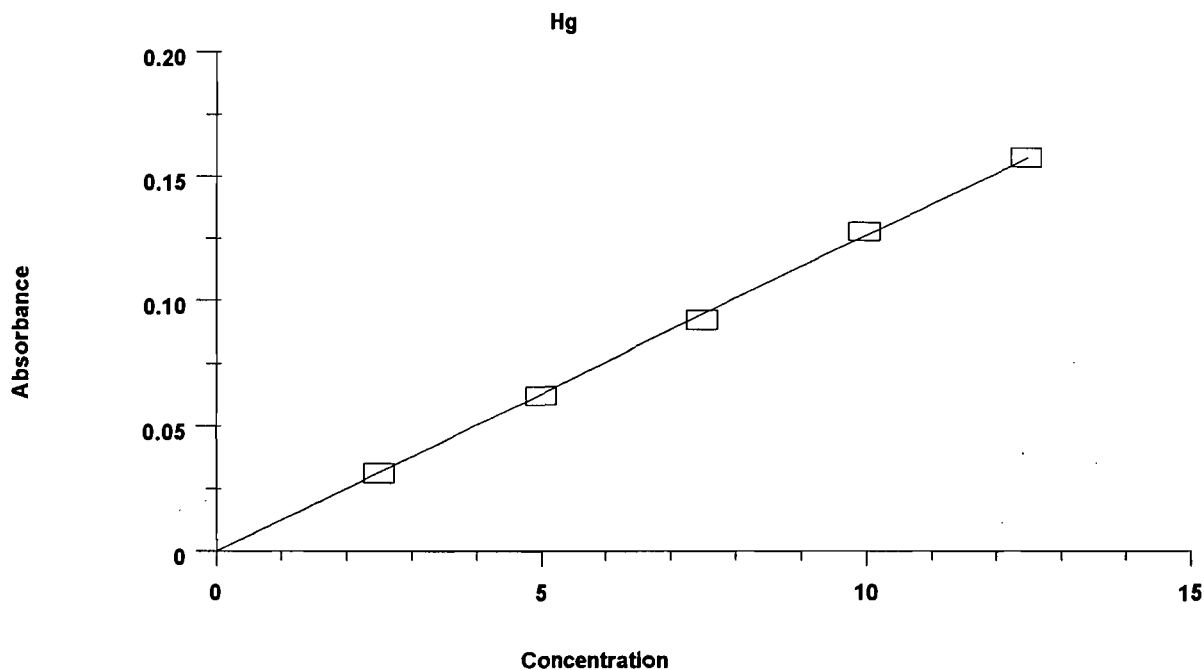
Element: Hg Seq. No.: 6 AS Loc.: 6 Date: 12/28/2001

Sample ID: STD5

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.1632	0.1635	01:04:54	Yes
2			0.1562	0.1565	01:05:27	Yes
3			0.1531	0.1535	01:06:00	Yes
Mean:			0.1575			
SD :			0.0051			
%RSD:			3.2667			
[Hg] Standard number 5 applied. [12.50]						
Correlation Coefficient: 0.99953			Slope: 0.01257			

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration ($\mu\text{g/L}$)	Calculated Concentration ($\mu\text{g/L}$)	Standard Deviation	%RSD
Calib Blank	0.0004	---	---	---	---
STD1	0.0310	2.500	2.464	0.0004	1.2
STD2	0.0621	5.000	4.942	0.0005	0.8
STD3	0.0919	7.500	7.312	0.0006	0.7
STD4	0.1273	10.000	10.13	0.0008	0.6
STD5	0.1575	12.500	12.53	0.0051	3.3
Correlation Coefficient: 0.99953 Slope: 0.01257 ----					



=====
 Element: Hg Seq. No.: 7 AS Loc.: 9 Date: 12/28/2001
 Sample ID: ICV

Repl #	SampleConc $\mu\text{g/L}$	StdConc $\mu\text{g/L}$	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.464	1.464	0.0184	0.0188	01:07:19	Yes
2	1.436	1.436	0.0180	0.0184	01:07:52	Yes
3	1.450	1.450	0.0182	0.0186	01:08:25	Yes
Mean:	1.450	1.450	0.0182			
SD :	0.0144	0.0144	0.0002			
%RSD:	1.0	1.0	0.9904			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 8 AS Loc.: 10 Date: 12/28/2001
 Sample ID: ICB

Repl #	SampleConc $\mu\text{g/L}$	StdConc $\mu\text{g/L}$	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.011	-0.011	-0.0001	0.0002	01:09:14	Yes
2	-0.022	-0.022	-0.0003	0.0001	01:09:47	Yes

00020

Perkin-Elmer AAWinLab: 12/28/2001, 01:10:20 PM

3 -0.018 -0.018 -0.0002 0.0001 01:10:20 Yes
 Mean: -0.017 -0.017 -0.0002
 SD : 0.0057 0.0057 0.0001
 %RSD: 33.9 33.9 33.8626
 QC value within specified limits.

=====

Element: Hg Seq. No.: 9 AS Loc.: 11 Date: 12/28/2001
 Sample ID: SPEX HG-STD

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	3.061	3.061	0.0385	0.0388	01:11:09	Yes
2	3.044	3.044	0.0382	0.0386	01:11:42	Yes
3	3.056	3.056	0.0384	0.0388	01:12:15	Yes
Mean:	3.053	3.053	0.0384			
SD :	0.0086	0.0086	0.0001			
%RSD:	0.3	0.3	0.2828			

QC value within specified limits.

=====

Element: Hg Seq. No.: 10 AS Loc.: 12 Date: 12/28/2001
 Sample ID: LLC

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.235	0.235	0.0030	0.0033	01:13:04	Yes
2	0.218	0.218	0.0027	0.0031	01:13:37	Yes
3	0.223	0.223	0.0028	0.0032	01:14:10	Yes
Mean:	0.225	0.225	0.0028			
SD :	0.0085	0.0085	0.0001			
%RSD:	3.8	3.8	3.7837			

QC value within specified limits.

=====

Element: Hg Seq. No.: 11 AS Loc.: 13 Date: 12/28/2001
 Sample ID: DIL.CHECK

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.021	-0.021	-0.0003	0.0001	01:14:58	Yes
2	-0.022	-0.022	-0.0003	0.0001	01:15:31	Yes
3	-0.020	-0.020	-0.0003	0.0001	01:16:04	Yes
Mean:	-0.021	-0.021	-0.0003			
SD :	0.0011	0.0011	0.0000			
%RSD:	5.2	5.2	5.2481			

QC value within specified limits.

=====

Element: Hg Seq. No.: 12 AS Loc.: 14 Date: 12/28/2001
 Sample ID: BL1228-1M3A

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.017	-0.017	-0.0002	0.0002	01:16:53	Yes
2	-0.012	-0.012	-0.0001	0.0002	01:17:26	Yes
3	-0.015	-0.015	-0.0002	0.0002	01:18:00	Yes
Mean:	-0.015	-0.015	-0.0002			
SD :	0.0026	0.0026	0.0000			
%RSD:	18.0	18.0	17.9985			

=====

Element: Hg Seq. No.: 13 AS Loc.: 15 Date: 12/28/2001
 Sample ID: BL1228S

00021

Perkin-Elmer AAWinLab: 12/28/2001, 01:18:00 PM

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.997	0.997	0.0125	0.0129	01:18:48	Yes
2	0.992	0.992	0.0125	0.0128	01:19:22	Yes
3	0.994	0.994	0.0125	0.0129	01:19:55	Yes
Mean:	0.994	0.994	0.0125			
SD :	0.0024	0.0024	0.0000			
%RSD:	0.2	0.2	0.2454			

=====

Element: Hg Seq. No.: 14 AS Loc.: 16 Date: 12/28/2001
Sample ID: BL1228DS

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.008	1.008	0.0127	0.0130	01:20:44	Yes
2	0.989	0.989	0.0124	0.0128	01:21:17	Yes
3	0.992	0.992	0.0125	0.0128	01:21:50	Yes
Mean:	0.996	0.996	0.0125			
SD :	0.0098	0.0098	0.0001			
%RSD:	1.0	1.0	0.9856			

=====

Element: Hg Seq. No.: 15 AS Loc.: 17 Date: 12/28/2001
Sample ID: 080959

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	2.205	2.205	0.0277	0.0281	01:22:39	Yes
2	2.186	2.186	0.0275	0.0278	01:23:12	Yes
3	2.190	2.190	0.0275	0.0279	01:23:45	Yes
Mean:	2.194	2.194	0.0276			
SD :	0.0097	0.0097	0.0001			
%RSD:	0.4	0.4	0.4407			

=====

Element: Hg Seq. No.: 16 AS Loc.: 18 Date: 12/28/2001
Sample ID: 080959D

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	2.127	2.127	0.0267	0.0271	01:24:34	Yes
2	2.118	2.118	0.0266	0.0270	01:25:07	Yes
3	2.124	2.124	0.0267	0.0271	01:25:40	Yes
Mean:	2.123	2.123	0.0267			
SD :	0.0045	0.0045	0.0001			
%RSD:	0.2	0.2	0.2120			

=====

Element: Hg Seq. No.: 17 AS Loc.: 19 Date: 12/28/2001
Sample ID: 080959S

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	3.198	3.198	0.0402	0.0405	01:26:28	Yes
2	3.183	3.183	0.0400	0.0404	01:27:01	Yes
3	3.170	3.170	0.0398	0.0402	01:27:34	Yes
Mean:	3.184	3.184	0.0400			
SD :	0.0137	0.0137	0.0002			
%RSD:	0.4	0.4	0.4311			

=====

Element: Hg Seq. No.: 18 AS Loc.: 20 Date: 12/28/2001
Sample ID: 080959DS

00022

Perkin-Elmer AAWinLab: 12/28/2001, 01:27:35 PM

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	3.234	3.234	0.0406	0.0410	01:28:23	Yes
2	3.229	3.229	0.0406	0.0409	01:28:56	Yes
3	3.196	3.196	0.0402	0.0405	01:29:30	Yes
Mean:	3.220	3.220	0.0405			
SD :	0.0205	0.0205	0.0003			
%RSD:	0.6	0.6	0.6357			

=====

Element: Hg Seq. No.: 19 AS Loc.: 21 Date: 12/28/2001

Sample ID: 080960

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	2.029	2.029	0.0255	0.0259	01:30:18	Yes
2	2.000	2.000	0.0251	0.0255	01:30:52	Yes
3	2.009	2.009	0.0252	0.0256	01:31:25	Yes
Mean:	2.012	2.012	0.0253			
SD :	0.0149	0.0149	0.0002			
%RSD:	0.7	0.7	0.7418			

=====

Element: Hg Seq. No.: 20 AS Loc.: 22 Date: 12/28/2001

Sample ID: 080961

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.753	1.753	0.0220	0.0224	01:32:14	Yes
2	1.745	1.745	0.0219	0.0223	01:32:47	Yes
3	1.737	1.737	0.0218	0.0222	01:33:20	Yes
Mean:	1.745	1.745	0.0219			
SD :	0.0080	0.0080	0.0001			
%RSD:	0.5	0.5	0.4613			

=====

Element: Hg Seq. No.: 21 AS Loc.: 23 Date: 12/28/2001

Sample ID: 080962

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.501	0.501	0.0063	0.0067	01:34:08	Yes
2	0.493	0.493	0.0062	0.0066	01:34:41	Yes
3	0.489	0.489	0.0061	0.0065	01:35:14	Yes
Mean:	0.494	0.494	0.0062			
SD :	0.0063	0.0063	0.0001			
%RSD:	1.3	1.3	1.2648			

=====

Element: Hg Seq. No.: 22 AS Loc.: 7 Date: 12/28/2001

Sample ID: CCV

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.954	0.954	0.0120	0.0123	01:36:03	Yes
2	0.948	0.948	0.0119	0.0123	01:36:36	Yes
3	0.945	0.945	0.0119	0.0122	01:37:09	Yes
Mean:	0.949	0.949	0.0119			
SD :	0.0043	0.0043	0.0001			
%RSD:	0.4	0.4	0.4498			

QC value within specified limits.

=====

Element: Hg Seq. No.: 23 AS Loc.: 8 Date: 12/28/2001

Sample ID: CCB

00023

Perkin-Elmer AAWinLab: 12/28/2001, 01:37:10 PM

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.021	-0.021	-0.0003	0.0001	01:37:57	Yes
2	-0.024	-0.024	-0.0003	0.0001	01:38:30	Yes
3	-0.023	-0.023	-0.0003	0.0001	01:39:03	Yes
Mean:	-0.022	-0.022	-0.0003			
SD :	0.0014	0.0014	0.0000			
%RSD:	6.2	6.2	6.2227			

QC value within specified limits.

=====

Element: Hg Seq. No.: 24 AS Loc.: 4 Date: 12/28/2001

Sample ID: Reslope

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0927	0.0931	01:39:54	Yes
2			0.0925	0.0928	01:40:26	Yes
3			0.0921	0.0925	01:40:59	Yes
Mean:			0.0924			
SD :			0.0003			
%RSD:			0.3104			

[Hg] Reslope standard applied. [7.500]

Correlation Coefficient: 0.99953 Slope: 0.01281

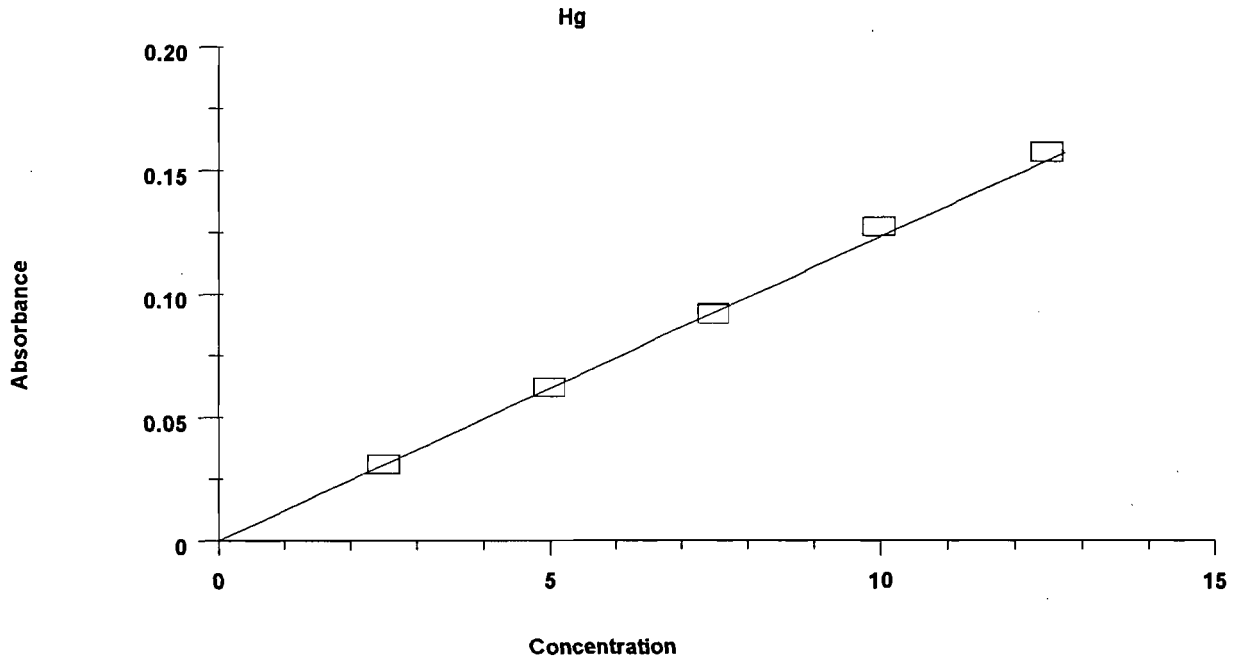
Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0004	---	0.029	0.0004	122.5
STD1	0.0310	2.500	2.513	0.0004	1.2
STD2	0.0621	5.000	5.039	0.0005	0.8
STD3	0.0919	7.500	7.455	0.0006	0.7
STD4	0.1273	10.000	10.33	0.0008	0.6
STD5	0.1575	12.500	12.78	0.0051	3.3
Reslope	0.0924	7.500	7.500	0.0003	0.3

Correlation Coefficient: 0.99953 Slope: 0.01281 ----

00024

Perkin-Elmer AAWinLab: 12/28/2001, 01:41:28 PM



Element: Hg Seq. No.: 25 AS Loc.: 24 Date: 12/28/2001
Sample ID: 080963

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.279	0.279	0.0034	0.0038	01:42:17	Yes
2	0.265	0.265	0.0033	0.0036	01:42:50	Yes
3	0.267	0.267	0.0033	0.0037	01:43:23	Yes
Mean:	0.270	0.270	0.0033			
SD :	0.0075	0.0075	0.0001			
%RSD:	2.8	2.8	2.7675			

Element: Hg Seq. No.: 26 AS Loc.: 25 Date: 12/28/2001
Sample ID: 080964

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.361	0.361	0.0045	0.0048	01:44:11	Yes
2	0.354	0.354	0.0044	0.0047	01:44:44	Yes
3	0.350	0.350	0.0043	0.0047	01:45:17	Yes
Mean:	0.355	0.355	0.0044			
SD :	0.0057	0.0057	0.0001			
%RSD:	1.6	1.6	1.6187			

Element: Hg Seq. No.: 27 AS Loc.: 26 Date: 12/28/2001
Sample ID: BL1228-2M3A

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.011	-0.011	-0.0001	0.0002	01:46:06	Yes
2	-0.015	-0.015	-0.0002	0.0002	01:46:39	Yes
3	-0.014	-0.014	-0.0002	0.0002	01:47:12	Yes
Mean:	-0.014	-0.014	-0.0002			

00025

Perkin-Elmer AAWinLab: 12/28/2001, 01:47:13 PM

SD : 0.0020 0.0020 0.0000
%RSD: 14.9 14.9 14.9066

=====
Element: Hg Seq. No.: 28 AS Loc.: 27 Date: 12/28/2001
Sample ID: BL1228S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.028	1.028	0.0127	0.0130	01:48:00	Yes
2	1.025	1.025	0.0126	0.0130	01:48:33	Yes
3	1.016	1.016	0.0125	0.0129	01:49:06	Yes
Mean:	1.023	1.023	0.0126			
SD :	0.0060	0.0060	0.0001			
%RSD:	0.6	0.6	0.5885			

=====
Element: Hg Seq. No.: 29 AS Loc.: 28 Date: 12/28/2001
Sample ID: BL1228DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.034	1.034	0.0127	0.0131	01:49:55	Yes
2	1.016	1.016	0.0125	0.0129	01:50:28	Yes
3	1.022	1.022	0.0126	0.0130	01:51:01	Yes
Mean:	1.024	1.024	0.0126			
SD :	0.0095	0.0095	0.0001			
%RSD:	0.9	0.9	0.9237			

=====
Element: Hg Seq. No.: 30 AS Loc.: 29 Date: 12/28/2001
Sample ID: 081269

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.336	0.034	0.0004	0.0008	01:51:50	Yes
2	0.283	0.028	0.0003	0.0007	01:52:23	Yes
3	0.260	0.026	0.0003	0.0007	01:52:56	Yes
Mean:	0.293	0.029	0.0004			
SD :	0.0392	0.0039	0.0000			
%RSD:	13.4	13.4	13.3844			

=====
Element: Hg Seq. No.: 31 AS Loc.: 30 Date: 12/28/2001
Sample ID: 081269D

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.303	0.030	0.0004	0.0007	01:53:46	Yes
2	0.216	0.022	0.0003	0.0006	01:54:18	Yes
3	0.264	0.026	0.0003	0.0007	01:54:52	Yes
Mean:	0.261	0.026	0.0003			
SD :	0.0435	0.0043	0.0001			
%RSD:	16.7	16.7	16.6517			

=====
Element: Hg Seq. No.: 32 AS Loc.: 31 Date: 12/28/2001
Sample ID: 081269S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	10.29	1.029	0.0127	0.0130	01:55:41	Yes
2	10.09	1.009	0.0124	0.0128	01:56:14	Yes
3	10.09	1.009	0.0124	0.0128	01:56:47	Yes
Mean:	10.16	1.016	0.0125			

00026

Perkin-Elmer AAWinLab: 12/28/2001, 01:56:47 PM

SD : 0.1151 0.0115 0.0001
%RSD: 1.1 1.1 1.1337

=====
Element: Hg Seq. No.: 33 AS Loc.: 32 Date: 12/28/2001
Sample ID: 081269DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	10.39	1.039	0.0128	0.0132	01:57:36	Yes
2	10.39	1.039	0.0128	0.0132	01:58:09	Yes
3	10.24	1.024	0.0126	0.0130	01:58:42	Yes
Mean:	10.34	1.034	0.0127			
SD :	0.0875	0.0087	0.0001			
%RSD:	0.8	0.8	0.8462			

=====
Element: Hg Seq. No.: 34 AS Loc.: 33 Date: 12/28/2001
Sample ID: 081270

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.582	0.582	0.0072	0.0075	01:59:30	Yes
2	0.575	0.575	0.0071	0.0075	02:00:03	Yes
3	0.569	0.569	0.0070	0.0074	02:00:36	Yes
Mean:	0.575	0.575	0.0071			
SD :	0.0063	0.0063	0.0001			
%RSD:	1.1	1.1	1.0980			

=====
Element: Hg Seq. No.: 35 AS Loc.: 7 Date: 12/28/2001
Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.983	0.983	0.0121	0.0125	02:01:26	Yes
2	0.978	0.978	0.0121	0.0124	02:01:59	Yes
3	0.971	0.971	0.0120	0.0123	02:02:32	Yes
Mean:	0.978	0.978	0.0120			
SD :	0.0061	0.0061	0.0001			
%RSD:	0.6	0.6	0.6272			

QC value within specified limits.

=====
Element: Hg Seq. No.: 36 AS Loc.: 8 Date: 12/28/2001
Sample ID: CCB

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.007	-0.007	-0.0001	0.0003	02:03:21	Yes
2	-0.020	-0.020	-0.0002	0.0001	02:03:54	Yes
3	-0.022	-0.022	-0.0003	0.0001	02:04:28	Yes
Mean:	-0.016	-0.016	-0.0002			
SD :	0.0078	0.0078	0.0001			
%RSD:	47.6	47.6	47.6176			

QC value within specified limits.

=====
Element: Hg Seq. No.: 37 AS Loc.: 4 Date: 12/28/2001
Sample ID: Reslope

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0912	0.0916	02:05:19	Yes
2			0.0909	0.0913	02:05:51	Yes

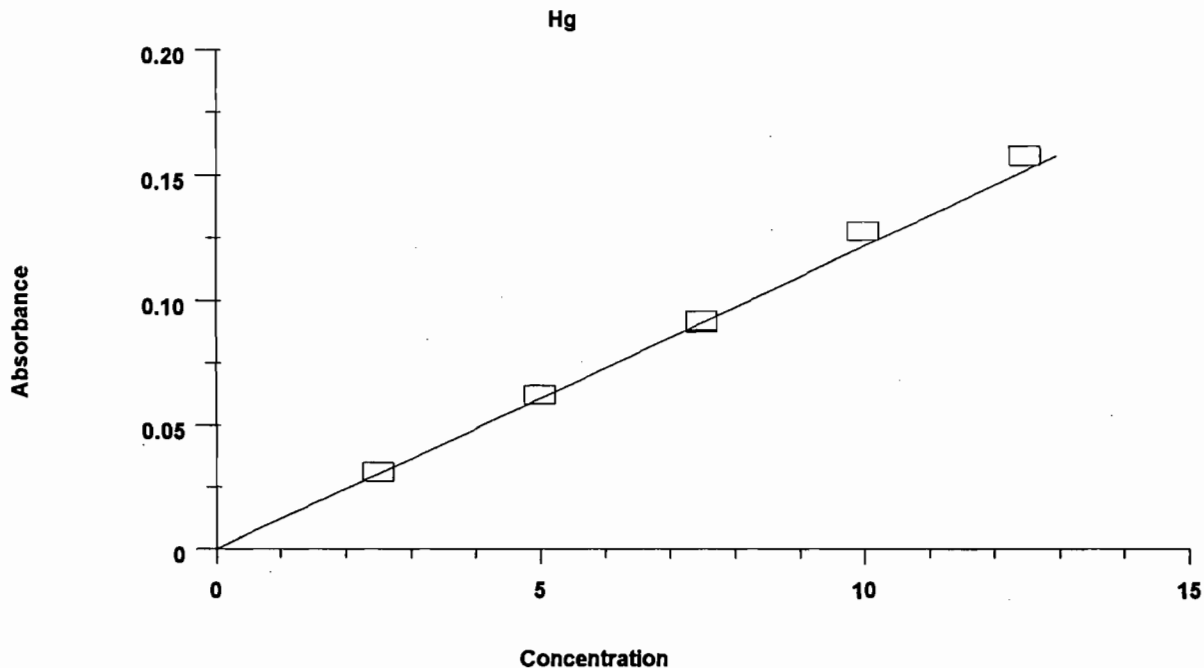
00027

Perkin-Elmer AAWinLab: 12/28/2001, 02:06:25 PM

3 0.0908 0.0912 02:06:25 Yes
 Mean: 0.0910
 SD : 0.0002
 %RSD: 0.2373
 [Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99953 Slope: 0.01302

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration ($\mu\text{g/L}$)	Calculated Concentration ($\mu\text{g/L}$)	Standard Deviation	%RSD
Calib Blank	0.0004	---	0.030	0.0004	122.5
STD1	0.0310	2.500	2.553	0.0004	1.2
STD2	0.0621	5.000	5.120	0.0005	0.8
STD3	0.0919	7.500	7.575	0.0006	0.7
STD4	0.1273	10.000	10.50	0.0008	0.6
STD5	0.1575	12.500	12.98	0.0051	3.3
Reslope	0.0910	7.500	7.500	0.0002	0.2
Correlation Coefficient: 0.99953		Slope:	0.01302	----	



=====
 Element: Hg Seq. No.: 38 AS Loc.: 34 Date: 12/28/2001
 Sample ID: 081271

Repl #	SampleConc $\mu\text{g/L}$	StdConc $\mu\text{g/L}$	BlkCorr Signal	Peak Height	Time	Peak Stored
1	2.752	2.752	0.0334	0.0337	02:07:44	Yes
2	2.731	2.731	0.0331	0.0335	02:08:17	Yes
3	2.737	2.737	0.0332	0.0336	02:08:50	Yes
Mean:	2.740	2.740	0.0332			
SD :	0.0108	0.0108	0.0001			
%RSD:	0.4	0.4	0.3953			

=====
 Element: Hg Seq. No.: 39 AS Loc.: 35 Date: 12/28/2001

00028

Perkin-Elmer AAWinLab: 12/28/2001, 02:08:51 PM

Sample ID: 081272

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.010	0.010	0.0001	0.0005	02:09:38	Yes
2	-0.018	-0.018	-0.0002	0.0001	02:10:11	Yes
3	-0.012	-0.012	-0.0001	0.0002	02:10:44	Yes
Mean:	-0.007	-0.007	-0.0001			
SD :	0.0150	0.0150	0.0002			
%RSD:	226.1	226.1	226.1430			

Element: Hg Seq. No.: 40 AS Loc.: 36 Date: 12/28/2001
Sample ID: BL1228-3M3B

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.004	-0.004	-0.0001	0.0003	02:11:32	Yes
2	-0.001	-0.001	0.0000	0.0003	02:12:05	Yes
3	-0.003	-0.003	0.0000	0.0003	02:12:38	Yes
Mean:	-0.003	-0.003	0.0000			
SD :	0.0016	0.0016	0.0000			
%RSD:	60.8	60.8	60.7656			

Element: Hg Seq. No.: 41 AS Loc.: 37 Date: 12/28/2001
Sample ID: BL1228S

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.031	1.031	0.0125	0.0129	02:13:27	Yes
2	1.028	1.028	0.0125	0.0128	02:14:00	Yes
3	1.029	1.029	0.0125	0.0128	02:14:33	Yes
Mean:	1.029	1.029	0.0125			
SD :	0.0017	0.0017	0.0000			
%RSD:	0.2	0.2	0.1665			

Element: Hg Seq. No.: 42 AS Loc.: 38 Date: 12/28/2001
Sample ID: BL1228DS

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.055	1.055	0.0128	0.0132	02:15:22	Yes
2	1.047	1.047	0.0127	0.0131	02:15:55	Yes
3	1.034	1.034	0.0125	0.0129	02:16:28	Yes
Mean:	1.045	1.045	0.0127			
SD :	0.0107	0.0107	0.0001			
%RSD:	1.0	1.0	1.0206			

Element: Hg Seq. No.: 43 AS Loc.: 39 Date: 12/28/2001
Sample ID: 081269

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.003	0.003	0.0000	0.0004	02:17:18	Yes
2	0.002	0.002	0.0000	0.0004	02:17:51	Yes
3	0.002	0.002	0.0000	0.0004	02:18:24	Yes
Mean:	0.002	0.002	0.0000			
SD :	0.0005	0.0005	0.0000			
%RSD:	25.3	25.3	25.2899			

Element: Hg Seq. No.: 44 AS Loc.: 40 Date: 12/28/2001

Sample ID: 081269D

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.006	0.006	0.0001	0.0004	02:19:16	Yes
2	-0.006	-0.006	-0.0001	0.0003	02:19:49	Yes
3	-0.001	-0.001	0.0000	0.0004	02:20:22	Yes
Mean:	0.000	0.000	0.0000			
SD :	0.0060	0.0060	0.0001			
%RSD:	1685	1685	1684.5823			

Element: Hg Seq. No.: 45 AS Loc.: 41 Date: 12/28/2001
Sample ID: 081269S

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.079	1.079	0.0131	0.0135	02:21:11	Yes
2	1.067	1.067	0.0129	0.0133	02:21:44	Yes
3	1.072	1.072	0.0130	0.0134	02:22:17	Yes
Mean:	1.073	1.073	0.0130			
SD :	0.0062	0.0062	0.0001			
%RSD:	0.6	0.6	0.5805			

Element: Hg Seq. No.: 46 AS Loc.: 42 Date: 12/28/2001
Sample ID: 081269DS

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.051	1.051	0.0127	0.0131	02:23:06	Yes
2	1.052	1.052	0.0128	0.0131	02:23:39	Yes
3	1.048	1.048	0.0127	0.0131	02:24:12	Yes
Mean:	1.050	1.050	0.0127			
SD :	0.0019	0.0019	0.0000			
%RSD:	0.2	0.2	0.1797			

Element: Hg Seq. No.: 47 AS Loc.: 43 Date: 12/28/2001
Sample ID: 081268

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.019	0.019	0.0002	0.0006	02:25:00	Yes
2	0.016	0.016	0.0002	0.0006	02:25:33	Yes
3	0.018	0.018	0.0002	0.0006	02:26:07	Yes
Mean:	0.018	0.018	0.0002			
SD :	0.0014	0.0014	0.0000			
%RSD:	8.2	8.2	8.1698			

Element: Hg Seq. No.: 48 AS Loc.: 7 Date: 12/28/2001
Sample ID: CCV

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.993	0.993	0.0120	0.0124	02:26:57	Yes
2	0.989	0.989	0.0120	0.0124	02:27:31	Yes
3	0.979	0.979	0.0119	0.0122	02:28:04	Yes
Mean:	0.987	0.987	0.0120			
SD :	0.0068	0.0068	0.0001			
%RSD:	0.7	0.7	0.6939			

QC value within specified limits.

00030

Perkin-Elmer AAWinLab: 12/28/2001, 02:28:05 PM

Element: Hg Seq. No.: 49 AS Loc.: 8 Date: 12/28/2001
 Sample ID: CCB

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.015	-0.015	-0.0002	0.0002	02:28:53	Yes
2	-0.023	-0.023	-0.0003	0.0001	02:29:26	Yes
3	-0.019	-0.019	-0.0002	0.0001	02:29:59	Yes
Mean:	-0.019	-0.019	-0.0002			
SD :	0.0038	0.0038	0.0000			
%RSD:	20.2	20.2	20.1983			

QC value within specified limits.

Element: Hg Seq. No.: 50 AS Loc.: 4 Date: 12/28/2001
 Sample ID: Reslope

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.0911	0.0914	02:30:49	Yes
2			0.0912	0.0916	02:31:22	Yes
3			0.0908	0.0912	02:31:55	Yes
Mean:			0.0910			
SD :			0.0002			
%RSD:			0.2420			

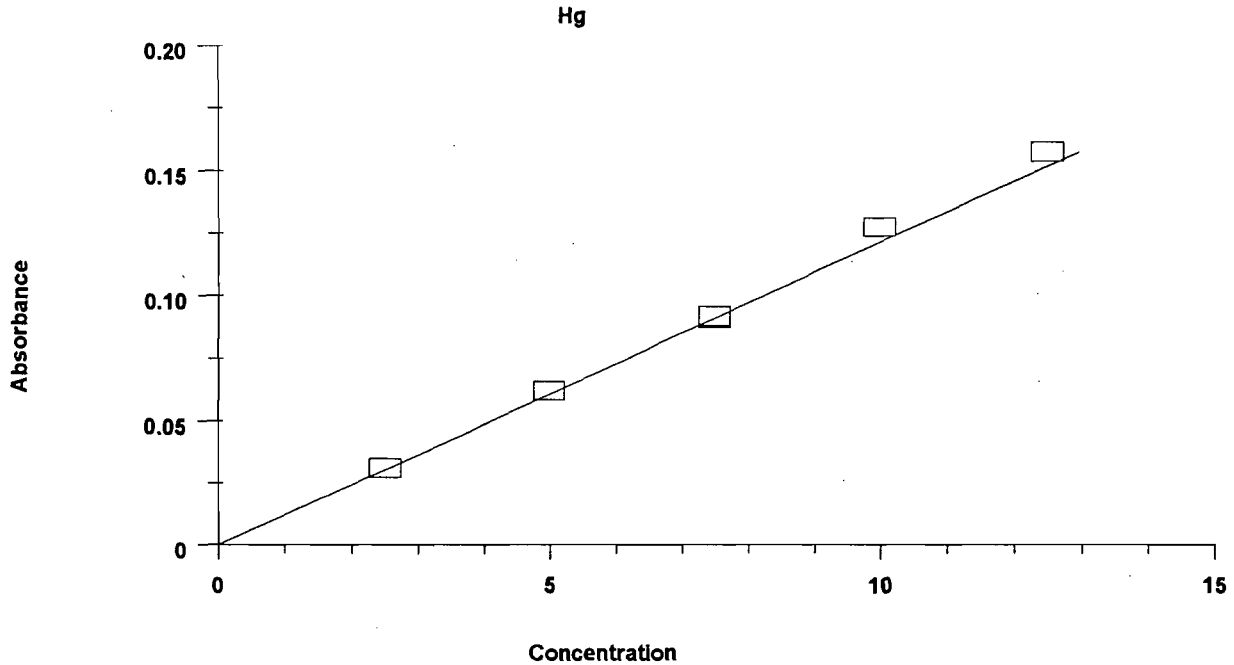
[Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99953 Slope: 0.01301

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0004	---	0.030	0.0004	122.5
STD1	0.0310	2.500	2.551	0.0004	1.2
STD2	0.0621	5.000	5.115	0.0005	0.8
STD3	0.0919	7.500	7.569	0.0006	0.7
STD4	0.1273	10.000	10.49	0.0008	0.6
STD5	0.1575	12.500	12.97	0.0051	3.3
Reslope	0.0910	7.500	7.500	0.0002	0.2
Correlation Coefficient:		0.99953	Slope:	0.01301	----

00031

Perkin-Elmer AAWinLab: 12/28/2001, 02:32:23 PM



Element: Hg Seq. No.: 51 AS Loc.: 44 Date: 12/28/2001
Sample ID: 081270

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.006	0.006	0.0001	0.0004	02:33:14	Yes
2	-0.003	-0.003	0.0000	0.0003	02:33:47	Yes
3	-0.007	-0.007	-0.0001	0.0003	02:34:20	Yes
Mean:	-0.001	-0.001	0.0000			
SD :	0.0065	0.0065	0.0001			
%RSD:	469.6	469.6	469.6151			

Element: Hg Seq. No.: 52 AS Loc.: 45 Date: 12/28/2001
Sample ID: 081271

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.001	-0.001	0.0000	0.0003	02:35:09	Yes
2	-0.007	-0.007	-0.0001	0.0003	02:35:42	Yes
3	-0.005	-0.005	-0.0001	0.0003	02:36:15	Yes
Mean:	-0.005	-0.005	-0.0001			
SD :	0.0031	0.0031	0.0000			
%RSD:	67.9	67.9	67.9325			

Element: Hg Seq. No.: 53 AS Loc.: 46 Date: 12/28/2001
Sample ID: 081272

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.001	0.001	0.0000	0.0004	02:37:04	Yes
2	-0.005	-0.005	-0.0001	0.0003	02:37:37	Yes
3	-0.003	-0.003	0.0000	0.0003	02:38:10	Yes
Mean:	-0.002	-0.002	0.0000			

00032

Perkin-Elmer AAWinLab: 12/28/2001, 02:38:11 PM

SD : 0.0029 0.0029 0.0000
 %RSD: 126.6 126.6 126.5960

=====
 Element: Hg Seq. No.: 54 AS Loc.: 47 Date: 12/28/2001
 Sample ID: BL1228-4M3B
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.001	0.001	0.0000	0.0004	02:39:00	Yes
2	-0.005	-0.005	-0.0001	0.0003	02:39:32	Yes
3	-0.004	-0.004	0.0000	0.0003	02:40:06	Yes
Mean:	-0.003	-0.003	0.0000			
SD :	0.0029	0.0029	0.0000			
%RSD:	109.6	109.6	109.6373			

=====
 Element: Hg Seq. No.: 55 AS Loc.: 48 Date: 12/28/2001
 Sample ID: BL1228S
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.041	1.041	0.0126	0.0130	02:40:54	Yes
2	1.029	1.029	0.0125	0.0129	02:41:27	Yes
3	1.028	1.028	0.0125	0.0128	02:42:00	Yes
Mean:	1.033	1.033	0.0125			
SD :	0.0067	0.0067	0.0001			
%RSD:	0.7	0.7	0.6514			

=====
 Element: Hg Seq. No.: 56 AS Loc.: 49 Date: 12/28/2001
 Sample ID: BL1228DS
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.052	1.052	0.0128	0.0131	02:42:48	Yes
2	1.049	1.049	0.0127	0.0131	02:43:21	Yes
3	1.048	1.048	0.0127	0.0131	02:43:54	Yes
Mean:	1.049	1.049	0.0127			
SD :	0.0019	0.0019	0.0000			
%RSD:	0.2	0.2	0.1781			

=====
 Element: Hg Seq. No.: 57 AS Loc.: 50 Date: 12/28/2001
 Sample ID: 081550
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.843	0.843	0.0102	0.0106	02:44:43	Yes
2	0.840	0.840	0.0102	0.0106	02:45:16	Yes
3	0.840	0.840	0.0102	0.0106	02:45:49	Yes
Mean:	0.841	0.841	0.0102			
SD :	0.0019	0.0019	0.0000			
%RSD:	0.2	0.2	0.2241			

=====
 Element: Hg Seq. No.: 58 AS Loc.: 51 Date: 12/28/2001
 Sample ID: 081550D
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.836	0.836	0.0102	0.0105	02:46:38	Yes
2	0.839	0.839	0.0102	0.0105	02:47:11	Yes
3	0.834	0.834	0.0101	0.0105	02:47:44	Yes
Mean:	0.836	0.836	0.0102			

00033

Perkin-Elmer AAWinLab: 12/28/2001, 02:47:45 PM

SD : 0.0023 0.0023 0.0000
%RSD: 0.3 0.3 0.2795

=====
Element: Hg Seq. No.: 59 AS Loc.: 52 Date: 12/28/2001
Sample ID: 081550S

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.870	1.870	0.0227	0.0231	02:48:33	Yes
2	1.869	1.869	0.0227	0.0231	02:49:06	Yes
3	1.860	1.860	0.0226	0.0229	02:49:39	Yes
Mean:	1.866	1.866	0.0227			
SD :	0.0054	0.0054	0.0001			
%RSD:	0.3	0.3	0.2892			

=====
Element: Hg Seq. No.: 60 AS Loc.: 53 Date: 12/28/2001
Sample ID: 081550DS

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.903	1.903	0.0231	0.0235	02:50:29	Yes
2	1.879	1.879	0.0228	0.0232	02:51:02	Yes
3	1.900	1.900	0.0231	0.0234	02:51:35	Yes
Mean:	1.894	1.894	0.0230			
SD :	0.0131	0.0131	0.0002			
%RSD:	0.7	0.7	0.6918			

=====
Element: Hg Seq. No.: 61 AS Loc.: 7 Date: 12/28/2001
Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.989	0.989	0.0120	0.0124	02:52:25	Yes
2	0.982	0.982	0.0119	0.0123	02:52:58	Yes
3	0.988	0.988	0.0120	0.0124	02:53:31	Yes
Mean:	0.986	0.986	0.0120			
SD :	0.0034	0.0034	0.0000			
%RSD:	0.3	0.3	0.3407			

QC value within specified limits.

=====
Element: Hg Seq. No.: 62 AS Loc.: 8 Date: 12/28/2001
Sample ID: CCB

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	-0.021	-0.021	-0.0003	0.0001	02:54:20	Yes
2	-0.022	-0.022	-0.0003	0.0001	02:54:53	Yes
3	-0.021	-0.021	-0.0003	0.0001	02:55:26	Yes
Mean:	-0.021	-0.021	-0.0003			
SD :	0.0005	0.0005	0.0000			
%RSD:	2.1	2.1	2.1183			

QC value within specified limits.

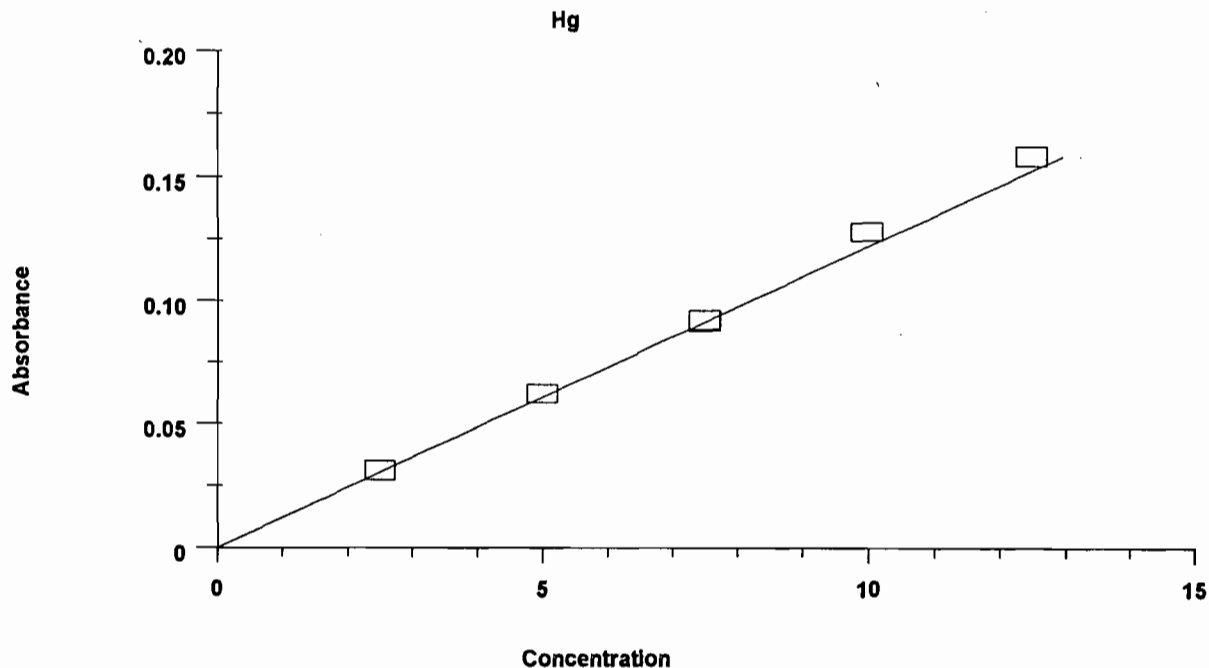
=====
Element: Hg Seq. No.: 63 AS Loc.: 4 Date: 12/28/2001
Sample ID: Reslope

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0912	0.0916	02:56:16	Yes
2			0.0908	0.0912	02:56:49	Yes

3 0.0911 0.0915 02:57:22 Yes
Mean: 0.0911
SD : 0.0002
%RSD: 0.2114
[Hg] Reslope standard applied. [7.500]
Correlation Coefficient: 0.99953 Slope: 0.01301

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0004	---	0.030	0.0004	122.5
STD1	0.0310	2.500	2.551	0.0004	1.2
STD2	0.0621	5.000	5.115	0.0005	0.8
STD3	0.0919	7.500	7.569	0.0006	0.7
STD4	0.1273	10.000	10.49	0.0008	0.6
STD5	0.1575	12.500	12.97	0.0051	3.3
Reslope	0.0911	7.500	7.500	0.0002	0.2
Correlation Coefficient: 0.99953		Slope: 0.01301		----	



Element: Hg Seq. No.: 64 AS Loc.: 54 Date: 12/28/2001
Sample ID: 081548

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.012	0.012	0.0002	0.0005	02:58:43	Yes
2	-0.007	-0.007	-0.0001	0.0003	02:59:16	Yes
3	-0.002	-0.002	0.0000	0.0003	02:59:49	Yes
Mean:	0.001	0.001	0.0000			
SD :	0.0103	0.0103	0.0001			
%RSD:	1092	1092	1091.5821			

Element: Hg Seq. No.: 65 AS Loc.: 55 Date: 12/28/2001

Sample ID: 081549

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.000	0.000	0.0000	0.0004	03:00:41	Yes
2	-0.004	-0.004	-0.0001	0.0003	03:01:15	Yes
3	-0.004	-0.004	0.0000	0.0003	03:01:48	Yes
Mean:	-0.003	-0.003	0.0000			
SD :	0.0024	0.0024	0.0000			
%RSD:	90.3	90.3	90.2522			

=====
Element: Hg Seq. No.: 66 AS Loc.: 56 Date: 12/28/2001
Sample ID: 081551

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.050	1.050	0.0128	0.0131	03:02:36	Yes
2	1.020	1.020	0.0124	0.0127	03:03:10	Yes
3	1.019	1.019	0.0124	0.0127	03:03:43	Yes
Mean:	1.030	1.030	0.0125			
SD :	0.0179	0.0179	0.0002			
%RSD:	1.7	1.7	1.7357			

=====
Element: Hg Seq. No.: 67 AS Loc.: 57 Date: 12/28/2001
Sample ID: 081552

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.478	1.478	0.0179	0.0183	03:04:32	Yes
2	1.479	1.479	0.0180	0.0183	03:05:05	Yes
3	1.465	1.465	0.0178	0.0181	03:05:38	Yes
Mean:	1.474	1.474	0.0179			
SD :	0.0082	0.0082	0.0001			
%RSD:	0.6	0.6	0.5546			

=====
Element: Hg Seq. No.: 68 AS Loc.: 58 Date: 12/28/2001
Sample ID: BL1228-5M3B

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.003	0.003	0.0000	0.0004	03:06:27	Yes
2	-0.001	-0.001	0.0000	0.0003	03:07:00	Yes
3	0.004	0.004	0.0000	0.0004	03:07:33	Yes
Mean:	0.002	0.002	0.0000			
SD :	0.0029	0.0029	0.0000			
%RSD:	156.0	156.0	156.0263			

=====
Element: Hg Seq. No.: 69 AS Loc.: 59 Date: 12/28/2001
Sample ID: BL1228S

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.019	1.019	0.0124	0.0127	03:08:21	Yes
2	1.014	1.014	0.0123	0.0127	03:08:54	Yes
3	1.020	1.020	0.0124	0.0128	03:09:27	Yes
Mean:	1.018	1.018	0.0124			
SD :	0.0031	0.0031	0.0000			
%RSD:	0.3	0.3	0.3055			

=====
Element: Hg Seq. No.: 70 AS Loc.: 60 Date: 12/28/2001

Sample ID: BL1228DS

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.036	1.036	0.0126	0.0129	03:10:16	Yes
2	1.035	1.035	0.0126	0.0129	03:10:49	Yes
3	1.025	1.025	0.0124	0.0128	03:11:22	Yes
Mean:	1.032	1.032	0.0125			
SD :	0.0061	0.0061	0.0001			
%RSD:	0.6	0.6	0.5872			

=====
Element: Hg Seq. No.: 71 AS Loc.: 61 Date: 12/28/2001
Sample ID: 081557

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.017	0.017	0.0002	0.0006	03:12:11	Yes
2	0.013	0.013	0.0002	0.0005	03:12:44	Yes
3	0.015	0.015	0.0002	0.0005	03:13:17	Yes
Mean:	0.015	0.015	0.0002			
SD :	0.0021	0.0021	0.0000			
%RSD:	14.5	14.5	14.5263			

=====
Element: Hg Seq. No.: 72 AS Loc.: 62 Date: 12/28/2001
Sample ID: 081557D

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.013	0.013	0.0002	0.0005	03:14:07	Yes
2	0.007	0.007	0.0001	0.0004	03:14:39	Yes
3	0.009	0.009	0.0001	0.0005	03:15:13	Yes
Mean:	0.010	0.010	0.0001			
SD :	0.0031	0.0031	0.0000			
%RSD:	31.3	31.3	31.3162			

=====
Element: Hg Seq. No.: 73 AS Loc.: 63 Date: 12/28/2001
Sample ID: 081557S

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.078	1.078	0.0131	0.0135	03:16:01	Yes
2	1.079	1.079	0.0131	0.0135	03:16:34	Yes
3	1.087	1.087	0.0132	0.0136	03:17:07	Yes
Mean:	1.082	1.082	0.0131			
SD :	0.0047	0.0047	0.0001			
%RSD:	0.4	0.4	0.4303			

=====
Element: Hg Seq. No.: 74 AS Loc.: 7 Date: 12/28/2001
Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.977	0.977	0.0119	0.0122	03:17:57	Yes
2	0.976	0.976	0.0118	0.0122	03:18:30	Yes
3	0.982	0.982	0.0119	0.0123	03:19:03	Yes
Mean:	0.978	0.978	0.0119			
SD :	0.0035	0.0035	0.0000			
%RSD:	0.4	0.4	0.3554			

QC value within specified limits.

00037

Perkin-Elmer AAWinLab: 12/28/2001, 03:19:04 PM

Element: Hg Seq. No.: 75 AS Loc.: 8 Date: 12/28/2001
 Sample ID: CCB

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.019	-0.019	-0.0002	0.0001	03:19:52	Yes
2	-0.019	-0.019	-0.0002	0.0001	03:20:25	Yes
3	-0.019	-0.019	-0.0002	0.0001	03:20:58	Yes
Mean:	-0.019	-0.019	-0.0002			
SD :	0.0004	0.0004	0.0000			
%RSD:	2.1	2.1	2.1169			

QC value within specified limits.

Element: Hg Seq. No.: 76 AS Loc.: 4 Date: 12/28/2001
 Sample ID: Reslope

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0895	0.0899	03:21:48	Yes
2			0.0895	0.0899	03:22:21	Yes
3			0.0077	0.0081	03:22:54	Yes
Mean:			0.0622			
SD :			0.0472			
%RSD:			75.8830			

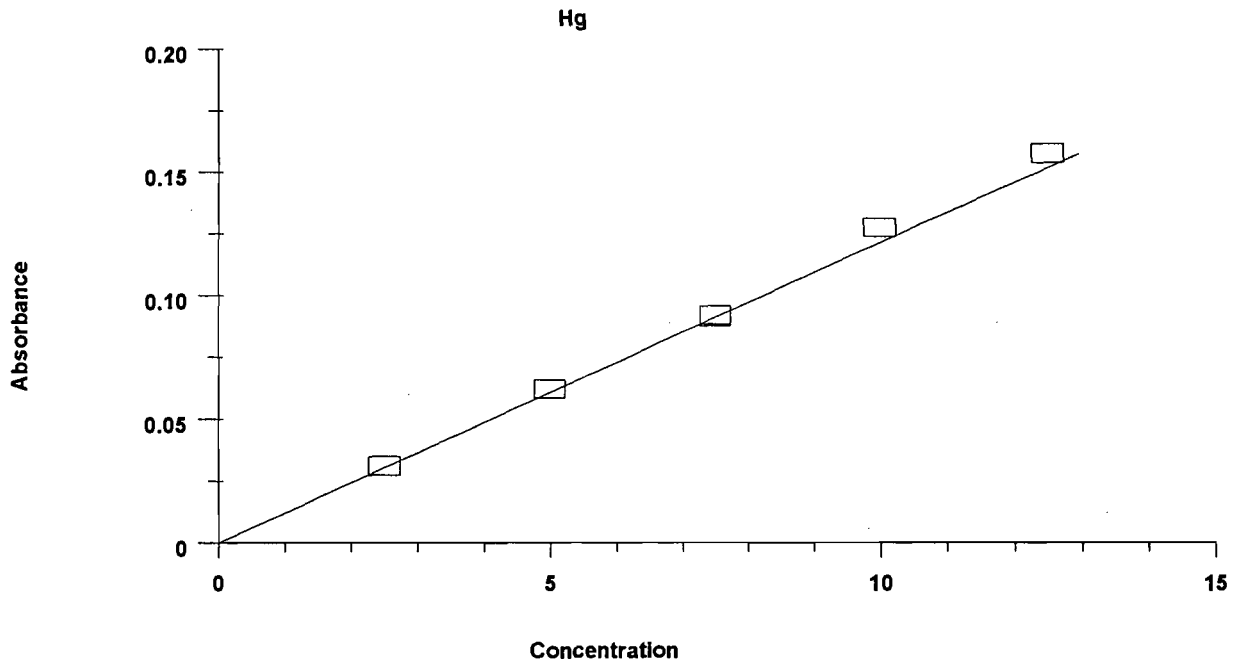
No reslope because measured value >20% different from expected value.
 Reslope standard not applied. [-----]

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0004	---	0.030	0.0004	122.5
STD1	0.0310	2.500	2.551	0.0004	1.2
STD2	0.0621	5.000	5.115	0.0005	0.8
STD3	0.0919	7.500	7.569	0.0006	0.7
STD4	0.1273	10.000	10.49	0.0008	0.6
STD5	0.1575	12.500	12.97	0.0051	3.3
Reslope	0.0622	7.500	5.127	0.0472	75.9
Correlation Coefficient:		0.99953	Slope:	0.01301	----

00038

Perkin-Elmer AAWinLab: 12/28/2001, 03:23:23 PM



Element: Hg Seq. No.: 77 AS Loc.: 64 Date: 12/28/2001
Sample ID: 081557DS

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.043	1.043	0.0127	0.0130	03:24:14	Yes
2	1.038	1.038	0.0126	0.0130	03:24:47	Yes
3	1.031	1.031	0.0125	0.0129	03:25:20	Yes
Mean:	1.037	1.037	0.0126			
SD :	0.0061	0.0061	0.0001			
%RSD:	0.6	0.6	0.5834			

Element: Hg Seq. No.: 78 AS Loc.: 65 Date: 12/28/2001
Sample ID: 081554

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.005	0.005	0.0001	0.0004	03:26:09	Yes
2	-0.003	-0.003	0.0000	0.0003	03:26:43	Yes
3	0.003	0.003	0.0000	0.0004	03:27:16	Yes
Mean:	0.001	0.001	0.0000			
SD :	0.0042	0.0042	0.0001			
%RSD:	338.9	338.9	338.9007			

Element: Hg Seq. No.: 79 AS Loc.: 66 Date: 12/28/2001
Sample ID: 081555

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.035	0.035	0.0004	0.0008	03:28:05	Yes
2	0.035	0.035	0.0004	0.0008	03:28:38	Yes
3	0.035	0.035	0.0004	0.0008	03:29:11	Yes
Mean:	0.035	0.035	0.0004			

00039

Perkin-Elmer AAWinLab: 12/28/2001, 03:29:12 PM

SD : 0.0002 0.0002 0.0000
 %RSD: 0.5 0.5 0.5042

Element: Hg Seq. No.: 80 AS Loc.: 67 Date: 12/28/2001
 Sample ID: 081556

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.020	0.020	0.0002	0.0006	03:30:00	Yes
2	0.021	0.021	0.0003	0.0006	03:30:33	Yes
3	0.017	0.017	0.0002	0.0006	03:31:06	Yes
Mean:	0.019	0.019	0.0002			
SD :	0.0018	0.0018	0.0000			
%RSD:	9.3	9.3	9.3179			

Element: Hg Seq. No.: 81 AS Loc.: 68 Date: 12/28/2001
 Sample ID: 081558

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.008	0.008	0.0001	0.0005	03:31:55	Yes
2	0.006	0.006	0.0001	0.0004	03:32:28	Yes
3	0.008	0.008	0.0001	0.0005	03:33:01	Yes
Mean:	0.008	0.008	0.0001			
SD :	0.0011	0.0011	0.0000			
%RSD:	13.9	13.9	13.8876			

Element: Hg Seq. No.: 82 AS Loc.: 69 Date: 12/28/2001
 Sample ID: 081559

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.002	0.002	0.0000	0.0004	03:33:50	Yes
2	-0.002	-0.002	0.0000	0.0003	03:34:23	Yes
3	-0.002	-0.002	0.0000	0.0003	03:34:56	Yes
Mean:	-0.001	-0.001	0.0000			
SD :	0.0024	0.0024	0.0000			
%RSD:	322.3	322.3	322.3204			

Element: Hg Seq. No.: 83 AS Loc.: 70 Date: 12/28/2001
 Sample ID: BL1228-7M2B

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.006	0.006	0.0001	0.0004	03:35:46	Yes
2	0.003	0.003	0.0000	0.0004	03:36:18	Yes
3	0.009	0.009	0.0001	0.0005	03:36:51	Yes
Mean:	0.006	0.006	0.0001			
SD :	0.0030	0.0030	0.0000			
%RSD:	49.6	49.6	49.5750			

Element: Hg Seq. No.: 84 AS Loc.: 71 Date: 12/28/2001
 Sample ID: BL1228S

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.001	1.001	0.0121	0.0125	03:37:44	Yes
2	0.996	0.996	0.0121	0.0124	03:38:17	Yes
3	0.990	0.990	0.0120	0.0124	03:38:50	Yes
Mean:	0.996	0.996	0.0121			

00040

Perkin-Elmer AAWinLab: 12/28/2001, 03:38:50 PM

SD : 0.0051 0.0051 0.0001
%RSD: 0.5 0.5 0.5086

Element: Hg Seq. No.: 85 AS Loc.: 72 Date: 12/28/2001
Sample ID: BL1228DS

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.017	1.017	0.0123	0.0127	03:39:38	Yes
2	1.009	1.009	0.0122	0.0126	03:40:11	Yes
3	1.013	1.013	0.0123	0.0127	03:40:44	Yes
Mean:	1.013	1.013	0.0123			
SD :	0.0041	0.0041	0.0000			
%RSD:	0.4	0.4	0.4025			

Element: Hg Seq. No.: 86 AS Loc.: 73 Date: 12/28/2001
Sample ID: 081269

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.770	0.177	0.0021	0.0025	03:41:33	Yes
2	1.790	0.179	0.0022	0.0025	03:42:06	Yes
3	1.758	0.176	0.0021	0.0025	03:42:39	Yes
Mean:	1.772	0.177	0.0022			
SD :	0.0165	0.0017	0.0000			
%RSD:	0.9	0.9	0.9327			

Element: Hg Seq. No.: 87 AS Loc.: 7 Date: 12/28/2001
Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.970	0.970	0.0118	0.0121	03:43:31	Yes
2	0.973	0.973	0.0118	0.0122	03:44:04	Yes
3	0.097	0.097	0.0012	0.0015	03:44:37	Yes
Mean:	0.680	0.680	0.0083			
SD :	0.5048	0.5048	0.0061			
%RSD:	74.2	74.2	74.2237			

QC failed, value less than lower limit for Hg.

Element: Hg Seq. No.: 88 AS Loc.: 7 Date: 12/28/2001
Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.008	-0.008	-0.0001	0.0003	03:45:25	Yes
2	-0.013	-0.013	-0.0002	0.0002	03:45:58	Yes
3	-0.008	-0.008	-0.0001	0.0003	03:46:31	Yes
Mean:	-0.010	-0.010	-0.0001			
SD :	0.0028	0.0028	0.0000			
%RSD:	28.4	28.4	28.4218			

QC failed, value less than lower limit for Hg.
Current analysis method being continued.

Element: Hg Seq. No.: 89 AS Loc.: 8 Date: 12/28/2001
Sample ID: CCB

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.017	-0.017	-0.0002	0.0002	03:47:20	Yes

*Run out of solution
(2nd)*

00041

Perkin-Elmer AAWinLab: 12/28/2001, 03:47:54 PM

2	-0.020	-0.020	-0.0002	0.0001	03:47:54	Yes
3	-0.011	-0.011	-0.0001	0.0002	03:48:27	Yes
Mean:	-0.016	-0.016	-0.0002			
SD :	0.0043	0.0043	0.0001			
%RSD:	26.8	26.8	26.7966			

QC value within specified limits.

=====

Element: Hg Seq. No.: 90 AS Loc.: 4 Date: 12/28/2001

Sample ID: Reslope

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0910	0.0914	03:49:17	Yes
2			0.0901	0.0904	03:49:50	Yes
3			0.0901	0.0905	03:50:23	Yes
Mean:			0.0904			
SD :			0.0005			
%RSD:			0.5876			

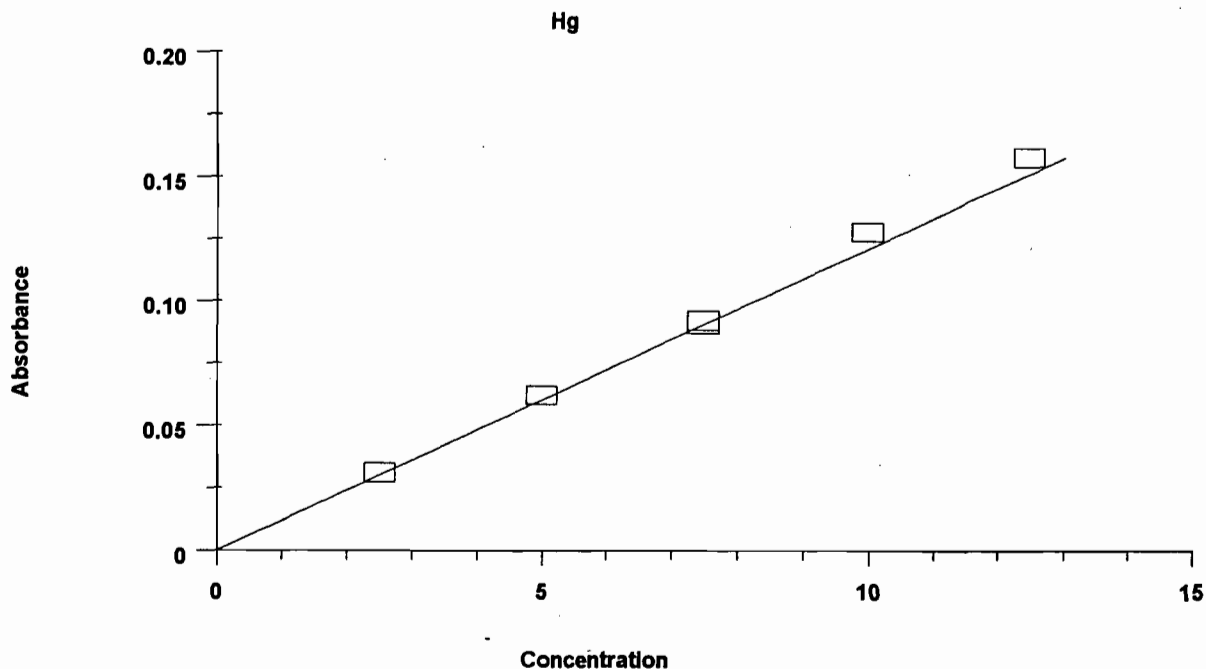
[Hg] Reslope standard applied. [7.500]

Correlation Coefficient: 0.99953 Slope: 0.01310

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0004	---	0.030	0.0004	122.5
STD1	0.0310	2.500	2.570	0.0004	1.2
STD2	0.0621	5.000	5.153	0.0005	0.8
STD3	0.0919	7.500	7.624	0.0006	0.7
STD4	0.1273	10.000	10.57	0.0008	0.6
STD5	0.1575	12.500	13.07	0.0051	3.3
Reslope	0.0904	7.500	7.500	0.0005	0.6

Correlation Coefficient: 0.99953 Slope: 0.01310 ----



=====
Element: Hg Seq. No.: 91 AS Loc.: 74 Date: 12/28/2001
Sample ID: 081269D
=====

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Height	Time	Peak Stored
1	2.442	0.244	0.0029	0.0033	03:51:41	Yes
2	2.382	0.238	0.0029	0.0032	03:52:14	Yes
3	2.339	0.234	0.0028	0.0032	03:52:47	Yes
Mean:	2.388	0.239	0.0029			
SD :	0.0519	0.0052	0.0001			
%RSD:	2.2	2.2	2.1755			

=====
Element: Hg Seq. No.: 92 AS Loc.: 75 Date: 12/28/2001
Sample ID: 081269S
=====

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Height	Time	Peak Stored
1	11.90	1.190	0.0143	0.0147	03:53:35	Yes
2	11.92	1.192	0.0144	0.0147	03:54:08	Yes
3	11.87	1.187	0.0143	0.0147	03:54:41	Yes
Mean:	11.90	1.190	0.0143			
SD :	0.0261	0.0026	0.0000			
%RSD:	0.2	0.2	0.2191			

=====
Element: Hg Seq. No.: 93 AS Loc.: 76 Date: 12/28/2001
Sample ID: 081269DS
=====

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Height	Time	Peak Stored
1	12.08	1.208	0.0146	0.0149	03:55:30	Yes
2	12.01	1.201	0.0145	0.0148	03:56:03	Yes
3	12.05	1.205	0.0145	0.0149	03:56:36	Yes
Mean:	12.05	1.205	0.0145			
SD :	0.0329	0.0033	0.0000			
%RSD:	0.3	0.3	0.2731			

=====
Element: Hg Seq. No.: 94 AS Loc.: 77 Date: 12/28/2001
Sample ID: 081270
=====

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Height	Time	Peak Stored
1	2.069	0.207	0.0025	0.0029	03:57:25	Yes
2	2.059	0.206	0.0025	0.0028	03:57:58	Yes
3	2.082	0.208	0.0025	0.0029	03:58:31	Yes
Mean:	2.070	0.207	0.0025			
SD :	0.0114	0.0011	0.0000			
%RSD:	0.6	0.6	0.5520			

=====
Element: Hg Seq. No.: 95 AS Loc.: 78 Date: 12/28/2001
Sample ID: 081271
=====

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Height	Time	Peak Stored
1	4.533	0.453	0.0055	0.0058	03:59:21	Yes
2	4.595	0.459	0.0055	0.0059	03:59:54	Yes
3	4.483	0.448	0.0054	0.0058	04:00:26	Yes
Mean:	4.537	0.454	0.0055			
SD :	0.0561	0.0056	0.0001			
%RSD:	1.2	1.2	1.2365			

00043

Perkin-Elmer AAWinLab: 12/28/2001, 04:00:27 PM

Element: Hg Seq. No.: 96 AS Loc.: 79 Date: 12/28/2001
Sample ID: 081272

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.118	0.012	0.0001	0.0005	04:01:15	Yes
2	0.093	0.009	0.0001	0.0005	04:01:48	Yes
3	0.077	0.008	0.0001	0.0005	04:02:21	Yes
Mean:	0.096	0.010	0.0001			
SD :	0.0203	0.0020	0.0000			
%RSD:	21.2	21.2	21.2136			

Element: Hg Seq. No.: 97 AS Loc.: 80 Date: 12/28/2001
Sample ID: BL1228-8M1B

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.002	0.002	0.0000	0.0004	04:03:09	Yes
2	0.000	0.000	0.0000	0.0004	04:03:42	Yes
3	0.000	0.000	0.0000	0.0004	04:04:15	Yes
Mean:	0.001	0.001	0.0000			
SD :	0.0010	0.0010	0.0000			
%RSD:	195.5	195.5	195.4884			

Element: Hg Seq. No.: 98 AS Loc.: 81 Date: 12/28/2001
Sample ID: BL1228S

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.033	1.033	0.0124	0.0128	04:05:04	Yes
2	1.029	1.029	0.0124	0.0128	04:05:37	Yes
3	1.020	1.020	0.0123	0.0127	04:06:10	Yes
Mean:	1.027	1.027	0.0124			
SD :	0.0069	0.0069	0.0001			
%RSD:	0.7	0.7	0.6731			

Element: Hg Seq. No.: 99 AS Loc.: 82 Date: 12/28/2001
Sample ID: BL1228DS

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.051	1.051	0.0127	0.0130	04:06:59	Yes
2	1.046	1.046	0.0126	0.0130	04:07:32	Yes
3	1.049	1.049	0.0126	0.0130	04:08:05	Yes
Mean:	1.049	1.049	0.0126			
SD :	0.0029	0.0029	0.0000			
%RSD:	0.3	0.3	0.2783			

Element: Hg Seq. No.: 100 AS Loc.: 83 Date: 12/28/2001
Sample ID: 078886

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.141	0.141	0.0017	0.0021	04:08:54	Yes
2	0.138	0.138	0.0017	0.0020	04:09:27	Yes
3	0.137	0.137	0.0017	0.0020	04:10:00	Yes
Mean:	0.139	0.139	0.0017			
SD :	0.0023	0.0023	0.0000			
%RSD:	1.6	1.6	1.6479			

Element: Hg Seq. No.: 101 AS Loc.: 7 Date: 12/28/2001
Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.000	0.000	0.0000	0.0004	04:10:50	Yes
2	-0.015	-0.015	-0.0002	0.0002	04:11:23	Yes
3	-0.016	-0.016	-0.0002	0.0002	04:11:56	Yes
Mean:	-0.010	-0.010	-0.0001			
SD :	0.0087	0.0087	0.0001			
%RSD:	83.9	83.9	83.8704			

QC failed, value less than lower limit for Hg.

*Run on 10/28/01
#W
1228*

Element: Hg Seq. No.: 102 AS Loc.: 7 Date: 12/28/2001
Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	-0.013	-0.013	-0.0002	0.0002	04:12:44	Yes
2	-0.012	-0.012	-0.0001	0.0002	04:13:17	Yes
3	-0.013	-0.013	-0.0002	0.0002	04:13:50	Yes
Mean:	-0.013	-0.013	-0.0002			
SD :	0.0002	0.0002	0.0000			
%RSD:	1.9	1.9	1.8600			

QC failed, value less than lower limit for Hg.
Current analysis method being continued.

Element: Hg Seq. No.: 103 AS Loc.: 8 Date: 12/28/2001
Sample ID: CCB

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	-0.012	-0.012	-0.0001	0.0002	04:14:39	Yes
2	-0.012	-0.012	-0.0001	0.0002	04:15:12	Yes
3	-0.013	-0.013	-0.0002	0.0002	04:15:45	Yes
Mean:	-0.013	-0.013	-0.0002			
SD :	0.0005	0.0005	0.0000			
%RSD:	4.1	4.1	4.1031			

QC value within specified limits.

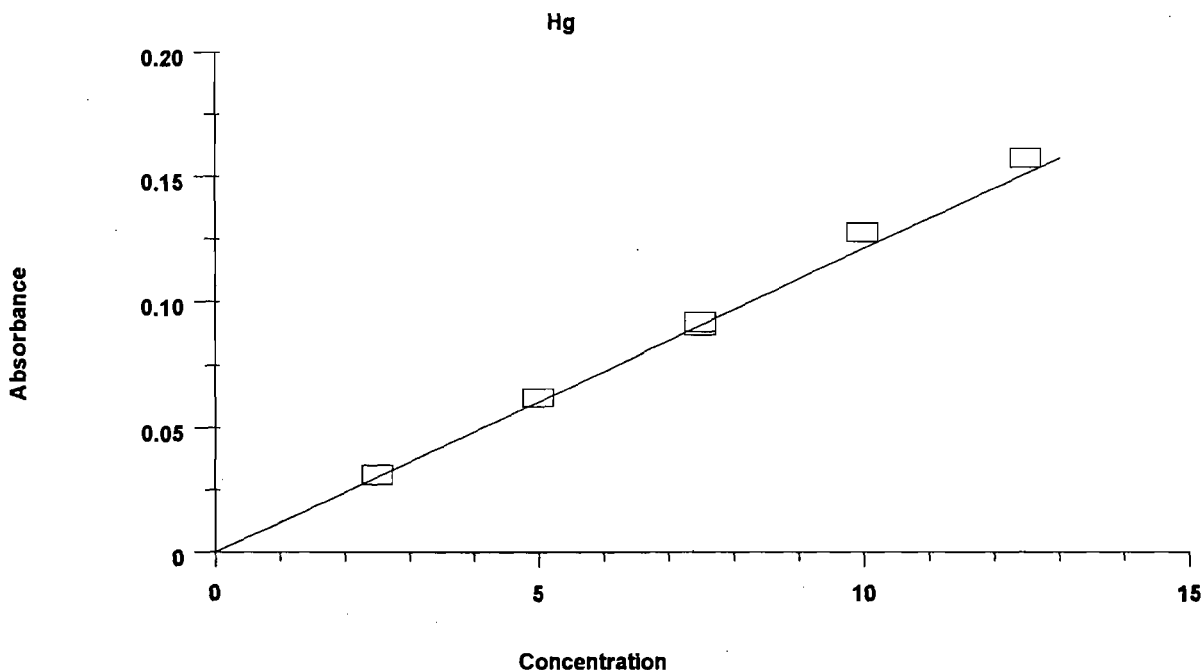
Element: Hg Seq. No.: 104 AS Loc.: 4 Date: 12/28/2001
Sample ID: Reslope

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0908	0.0912	04:16:36	Yes
2			0.0905	0.0909	04:17:09	Yes
3			0.0906	0.0910	04:17:42	Yes
Mean:			0.0906			
SD :			0.0002			
%RSD:			0.1721			

[Hg] Reslope standard applied. [7.500]
Correlation Coefficient: 0.99953 Slope: 0.01307

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0004	---	0.030	0.0004	122.5
STD1	0.0310	2.500	2.563	0.0004	1.2
STD2	0.0621	5.000	5.139	0.0005	0.8
STD3	0.0919	7.500	7.604	0.0006	0.7
STD4	0.1273	10.000	10.54	0.0008	0.6
STD5	0.1575	12.500	13.03	0.0051	3.3
Reslope	0.0906	7.500	7.500	0.0002	0.2
Correlation Coefficient: 0.99953 Slope: 0.01307 ----					



Element: Hg Seq. No.: 105 AS Loc.: 84 Date: 12/28/2001
Sample ID: 078886D

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored

Element: Hg Seq. No.: 105 AS Loc.: 9 Date: 12/28/2001
Sample ID: ICV

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored

Element: Hg Seq. No.: 105 AS Loc.: 7 Date: 12/28/2001
Sample ID: Sample007 *CCV 1228*

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.974	0.974	0.0118	0.0121	04:20:39	Yes

2	0.958	0.958	0.0116	0.0119	04:21:12 Yes
3	0.961	0.961	0.0116	0.0120	04:21:45 Yes
Mean:	0.964	0.964	0.0117		
SD :	0.0086	0.0086	0.0001		
%RSD:	0.9	0.9	0.8935		

Element: Hg Seq. No.: 106 AS Loc.: 9 Date: 12/28/2001
Sample ID: ICV

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored

Element: Hg Seq. No.: 106 AS Loc.: 84 Date: 12/28/2001
Sample ID: 078886D

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.127	0.127	0.0015	0.0019	04:26:33	Yes
2	0.117	0.117	0.0014	0.0018	04:27:06	Yes
3	0.129	0.129	0.0016	0.0019	04:27:39	Yes
Mean:	0.124	0.124	0.0015			
SD :	0.0064	0.0064	0.0001			
%RSD:	5.1	5.1	5.1352			

Element: Hg Seq. No.: 107 AS Loc.: 85 Date: 12/28/2001
Sample ID: 078886S

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.176	1.176	0.0142	0.0146	04:28:28	Yes
2	1.175	1.175	0.0142	0.0146	04:29:01	Yes
3	1.176	1.176	0.0142	0.0146	04:29:34	Yes
Mean:	1.176	1.176	0.0142			
SD :	0.0006	0.0006	0.0000			
%RSD:						

Element: Hg Seq. No.: 108 AS Loc.: 86 Date: 12/28/2001
Sample ID: 078886DS

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.173	1.173	0.0142	0.0145	04:30:26	Yes
2	1.170	1.170	0.0141	0.0145	04:30:59	Yes
3	1.169	1.169	0.0141	0.0145	04:31:32	Yes
Mean:	1.171	1.171	0.0141			
SD :	0.0017	0.0017	0.0000			
%RSD:	0.1	0.1	0.1492			

Element: Hg Seq. No.: 109 AS Loc.: 87 Date: 12/28/2001
Sample ID: 078884

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	-0.006	-0.006	-0.0001	0.0003	04:32:21	Yes
2	-0.005	-0.005	-0.0001	0.0003	04:32:55	Yes
3	-0.002	-0.002	0.0000	0.0003	04:33:27	Yes
Mean:	-0.004	-0.004	-0.0001			
SD :	0.0018	0.0018	0.0000			
%RSD:	43.7	43.7	43.6762			

Element: Hg Seq. No.: 110 AS Loc.: 88 Date: 12/28/2001
Sample ID: 078885

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	-0.002	-0.002	0.0000	0.0003	04:34:16	Yes
2	0.000	0.000	0.0000	0.0004	04:34:49	Yes

3	0.002	0.002	0.0000	0.0004	04:35:21	Yes
Mean:	0.000	0.000	0.0000			
SD :	0.0019	0.0019	0.0000			
%RSD:	2194	2194	2193.7614			

=====

Element: Hg Seq. No.: 111 AS Loc.: 89 Date: 12/28/2001
Sample ID: 078887

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.103	0.103	0.0012	0.0016	04:36:10	Yes
2	0.102	0.102	0.0012	0.0016	04:36:43	Yes
3	0.097	0.097	0.0012	0.0015	04:37:16	Yes
Mean:	0.101	0.101	0.0012			
SD :	0.0036	0.0036	0.0000			
%RSD:	3.5	3.5	3.5419			

=====

Element: Hg Seq. No.: 112 AS Loc.: 90 Date: 12/28/2001
Sample ID: 078888

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.096	0.096	0.0012	0.0015	04:38:05	Yes
2	0.097	0.097	0.0012	0.0015	04:38:38	Yes
3	0.093	0.093	0.0011	0.0015	04:39:11	Yes
Mean:	0.095	0.095	0.0012			
SD :	0.0022	0.0022	0.0000			
%RSD:	2.3	2.3	2.2820			

=====

Element: Hg Seq. No.: 113 AS Loc.: 91 Date: 12/28/2001
Sample ID: 078465

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.008	0.008	0.0001	0.0005	04:40:00	Yes
2	0.006	0.006	0.0001	0.0004	04:40:33	Yes
3	0.007	0.007	0.0001	0.0004	04:41:06	Yes
Mean:	0.007	0.007	0.0001			
SD :	0.0012	0.0012	0.0000			
%RSD:	17.7	17.7	17.7175			

=====

Element: Hg Seq. No.: 114 AS Loc.: 92 Date: 12/28/2001
Sample ID: 078465D

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.008	0.008	0.0001	0.0005	04:41:55	Yes
2	0.008	0.008	0.0001	0.0005	04:42:28	Yes
3	0.011	0.011	0.0001	0.0005	04:43:01	Yes
Mean:	0.009	0.009	0.0001			
SD :	0.0018	0.0018	0.0000			
%RSD:	20.6	20.6	20.6341			

=====

Element: Hg Seq. No.: 115 AS Loc.: 93 Date: 12/28/2001
Sample ID: 078465S

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.059	1.059	0.0128	0.0132	04:43:49	Yes
2	1.059	1.059	0.0128	0.0132	04:44:22	Yes

3	1.065	1.065	0.0129	0.0132	04:44:55	Yes
Mean:	1.061	1.061	0.0128			
SD :	0.0031	0.0031	0.0000			
%RSD:	0.3	0.3	0.2907			

=====

Element: Hg Seq. No.: 116 AS Loc.: 94 Date: 12/28/2001
Sample ID: 078465DS

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.030	1.030	0.0124	0.0128	04:45:44	Yes
2	1.030	1.030	0.0125	0.0128	04:46:17	Yes
3	1.030	1.030	0.0124	0.0128	04:46:50	Yes
Mean:	1.030	1.030	0.0124			
SD :	0.0004	0.0004	0.0000			
%RSD:						

=====

Element: Hg Seq. No.: 117 AS Loc.: 95 Date: 12/28/2001
Sample ID: Sample095

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.069	0.069	0.0008	0.0012	04:47:39	Yes
2	-0.006	-0.006	-0.0001	0.0003	04:48:12	Yes
3	-0.011	-0.011	-0.0001	0.0002	04:48:45	Yes
Mean:	0.017	0.017	0.0002			
SD :	0.0447	0.0447	0.0005			
%RSD:	260.1	260.1	260.0664			

*DSU
No Sample*

=====

Element: Hg Seq. No.: 118 AS Loc.: 7 Date: 12/28/2001
Sample ID: Sample007 *CCV 12/28/01*

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.965	0.965	0.0117	0.0120	04:49:35	Yes
2	0.965	0.965	0.0117	0.0120	04:50:08	Yes
3	0.967	0.967	0.0117	0.0120	04:50:41	Yes
Mean:	0.965	0.965	0.0117			
SD :	0.0011	0.0011	0.0000			
%RSD:	0.1	0.1	0.1105			

=====

Element: Hg Seq. No.: 119 AS Loc.: 8 Date: 12/28/2001
Sample ID: Sample008 *CCB 12/28/01*

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	-0.015	-0.015	-0.0002	0.0002	04:51:30	Yes
2	-0.017	-0.017	-0.0002	0.0002	04:52:03	Yes
3	-0.018	-0.018	-0.0002	0.0001	04:52:36	Yes
Mean:	-0.017	-0.017	-0.0002			
SD :	0.0015	0.0015	0.0000			
%RSD:	8.8	8.8	8.7908			

00050

Element: Hg Seq. No.: 120 AS Loc.: 1 Date: 12/28/2001
 Sample ID: Calib Blank

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0001	0.0001	04:54:32	Yes
2			0.0001	0.0001	04:55:05	Yes
3			0.0001	0.0001	04:55:38	Yes
Mean:			0.0001			
SD :			0.0000			
%RSD:			27.4106			

Auto-zero performed.

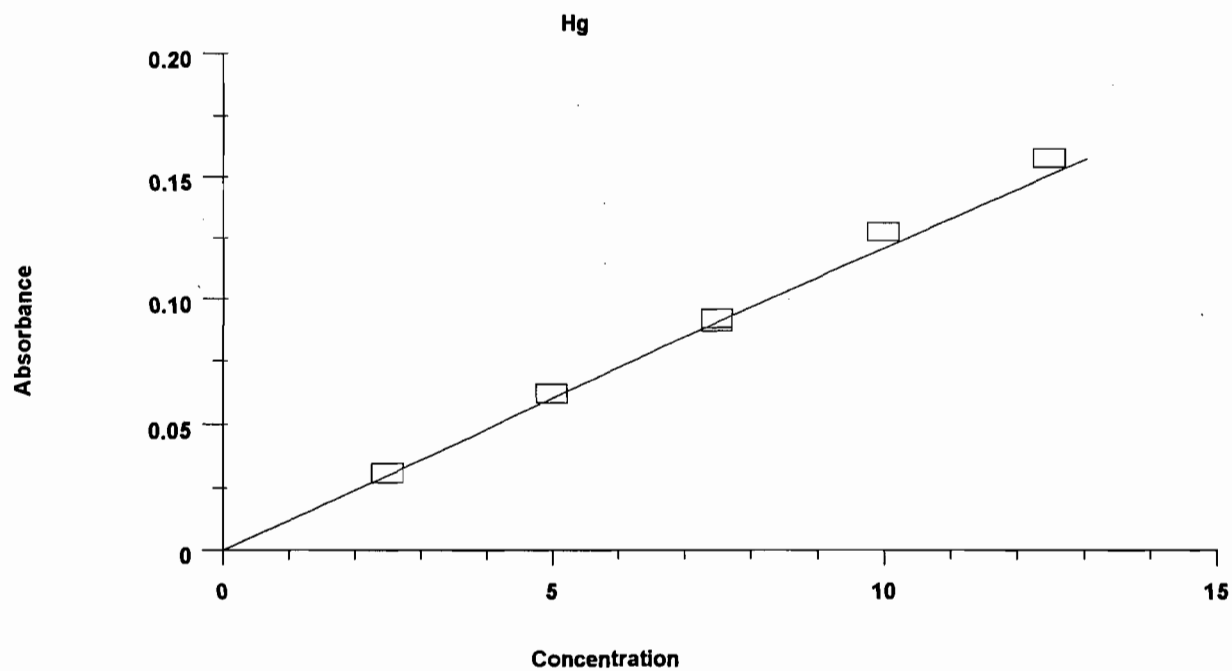
Element: Hg Seq. No.: 121 AS Loc.: 4 Date: 12/28/2001
 Sample ID: Reslope

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0906	0.0907	04:56:28	Yes
2			0.0903	0.0904	04:57:01	Yes
3			0.0902	0.0903	04:57:35	Yes
Mean:			0.0904			
SD :			0.0002			
%RSD:			0.2591			

[Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99953 Slope: 0.01310

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.008	0.0000	27.4
STD1	0.0310	2.500	2.570	0.0004	1.2
STD2	0.0621	5.000	5.153	0.0005	0.8
STD3	0.0919	7.500	7.625	0.0006	0.7
STD4	0.1273	10.000	10.57	0.0008	0.6
STD5	0.1575	12.500	13.07	0.0051	3.3
Reslope	0.0904	7.500	7.500	0.0002	0.3
Correlation Coefficient:	0.99953	Slope:	0.01310	----	



Element: Hg Seq. No.: 122 AS Loc.: 95 Date: 12/28/2001
 Sample ID: BL1228-6M3B

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.023	0.023	0.0003	0.0004	05:10:34	Yes
2	-0.005	-0.005	-0.0001	0.0000	05:11:07	Yes
3	0.001	0.001	0.0000	0.0001	05:11:40	Yes
Mean:	0.006	0.006	0.0001			
SD :	0.0147	0.0147	0.0002			
%RSD:	237.3	237.3	237.3478			

Element: Hg Seq. No.: 123 AS Loc.: 96 Date: 12/28/2001
 Sample ID: BL1228S

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.024	1.024	0.0123	0.0124	05:12:29	Yes
2	1.017	1.017	0.0123	0.0124	05:13:02	Yes
3	1.026	1.026	0.0124	0.0125	05:13:35	Yes
Mean:	1.023	1.023	0.0123			
SD :	0.0048	0.0048	0.0001			
%RSD:	0.5	0.5	0.4646			

Element: Hg Seq. No.: 124 AS Loc.: 97 Date: 12/28/2001
 Sample ID: BL1228DS

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.027	1.027	0.0124	0.0125	05:14:24	Yes
2	1.027	1.027	0.0124	0.0125	05:14:57	Yes
3	1.025	1.025	0.0124	0.0125	05:15:30	Yes
Mean:	1.026	1.026	0.0124			
SD :	0.0011	0.0011	0.0000			
%RSD:	0.1	0.1	0.1029			

Element: Hg Seq. No.: 125 AS Loc.: 98 Date: 12/28/2001
 Sample ID: 081581

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.007	0.007	0.0001	0.0002	05:16:18	Yes
2	0.002	0.002	0.0000	0.0001	05:16:51	Yes
3	0.002	0.002	0.0000	0.0001	05:17:24	Yes
Mean:	0.004	0.004	0.0000			
SD :	0.0030	0.0030	0.0000			
%RSD:	79.3	79.3	79.2976			

Element: Hg Seq. No.: 126 AS Loc.: 99 Date: 12/28/2001
 Sample ID: 081581D

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.010	0.010	0.0001	0.0002	05:18:13	Yes
2	0.008	0.008	0.0001	0.0002	05:18:46	Yes
3	0.006	0.006	0.0001	0.0002	05:19:19	Yes
Mean:	0.008	0.008	0.0001			
SD :	0.0022	0.0022	0.0000			
%RSD:	26.9	26.9	26.9382			

Element: Hg Seq. No.: 127 AS Loc.: 100 Date: 12/28/2001

Sample ID: 081581S

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.043	1.043	0.0126	0.0127	05:20:08	Yes
2	1.038	1.038	0.0125	0.0126	05:20:41	Yes
3	1.035	1.035	0.0125	0.0126	05:21:13	Yes
Mean:	1.039	1.039	0.0125			
SD :	0.0042	0.0042	0.0001			
%RSD:	0.4	0.4	0.4045			

=====
Element: Hg Seq. No.: 128 AS Loc.: 101 Date: 12/28/2001
Sample ID: 081581DS

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.019	1.019	0.0123	0.0124	05:22:02	Yes
2	1.024	1.024	0.0123	0.0124	05:22:35	Yes
3	1.017	1.017	0.0123	0.0123	05:23:08	Yes
Mean:	1.020	1.020	0.0123			
SD :	0.0035	0.0035	0.0000			
%RSD:	0.3	0.3	0.3449			

=====
Element: Hg Seq. No.: 129 AS Loc.: 102 Date: 12/28/2001
Sample ID: 081578

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.011	0.011	0.0001	0.0002	05:24:00	Yes
2	0.007	0.007	0.0001	0.0002	05:24:33	Yes
3	0.007	0.007	0.0001	0.0002	05:25:06	Yes
Mean:	0.008	0.008	0.0001			
SD :	0.0023	0.0023	0.0000			
%RSD:	27.9	27.9	27.9247			

=====
Element: Hg Seq. No.: 130 AS Loc.: 103 Date: 12/28/2001
Sample ID: 081579

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.008	0.008	0.0001	0.0002	05:25:55	Yes
2	0.006	0.006	0.0001	0.0002	05:26:28	Yes
3	0.006	0.006	0.0001	0.0002	05:27:01	Yes
Mean:	0.007	0.007	0.0001			
SD :	0.0008	0.0008	0.0000			
%RSD:	12.2	12.2	12.1578			

=====
Element: Hg Seq. No.: 131 AS Loc.: 104 Date: 12/28/2001
Sample ID: 081580

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.013	0.013	0.0002	0.0003	05:27:49	Yes
2	0.007	0.007	0.0001	0.0002	05:28:22	Yes
3	0.003	0.003	0.0000	0.0001	05:28:55	Yes
Mean:	0.008	0.008	0.0001			
SD :	0.0048	0.0048	0.0001			
%RSD:	61.1	61.1	61.0859			

=====
Element: Hg Seq. No.: 132 AS Loc.: 105 Date: 12/28/2001

Sample ID: 081582

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.005	0.005	0.0001	0.0002	05:29:44	Yes
2	0.007	0.007	0.0001	0.0002	05:30:17	Yes
3	0.009	0.009	0.0001	0.0002	05:30:51	Yes
Mean:	0.007	0.007	0.0001			
SD :	0.0019	0.0019	0.0000			
%RSD:	27.0	27.0	26.9643			

Element: Hg Seq. No.: 133 AS Loc.: 106 Date: 12/28/2001
Sample ID: 081583

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.007	0.007	0.0001	0.0002	05:31:39	Yes
2	0.007	0.007	0.0001	0.0002	05:32:13	Yes
3	0.007	0.007	0.0001	0.0002	05:32:46	Yes
Mean:	0.007	0.007	0.0001			
SD :	0.0003	0.0003	0.0000			
%RSD:	4.8	4.8	4.8084			

Element: Hg Seq. No.: 134 AS Loc.: 7 Date: 12/28/2001
Sample ID: Sample007 *CCV 1228*

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.979	0.979	0.0118	0.0119	05:33:38	Yes
2	0.978	0.978	0.0118	0.0119	05:34:11	Yes
3	0.974	0.974	0.0117	0.0118	05:34:44	Yes
Mean:	0.977	0.977	0.0118			
SD :	0.0025	0.0025	0.0000			
%RSD:	0.3	0.3	0.2592			

Element: Hg Seq. No.: 135 AS Loc.: 8 Date: 12/28/2001
Sample ID: Sample008 *CCB 1228*

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.004	0.004	0.0000	0.0001	05:35:33	Yes
2	0.001	0.001	0.0000	0.0001	05:36:06	Yes
3	0.003	0.003	0.0000	0.0001	05:36:39	Yes
Mean:	0.003	0.003	0.0000			
SD :	0.0016	0.0016	0.0000			
%RSD:	61.0	61.0	61.0034			



DATA REVIEW CHECKLIST:

ANALYSIS: FIMS H9RUN CODE: HR11

Primary Review (Analyst):		ok	no	n/a
1	Analysis set-up meets method criteria	☒	☐	☐
2	Calibration criteria meets method criteria	☒	☐	☐
3	SQC/Control Charts updated, analysis in statistical control	☒	☐	☐
4	Internal area counts checked (if applicable)	☒	☐	☐
5	Mass Spectra checked for positives (if applicable)	☐	☐	☒
6	Run and Preparation Logs completed, signed and attached	☒	☐	☐
7	Standards and reagents traceable to Certificates of Analysis	☒	☐	☐
8	Sample analyses meet Hold Time criteria	☒	☐	☐
9	Identified Client specific criteria met	☒	☐	☐
10	Analytical observations/anomalies documented in LIMs	☒	☐	☐
11	Random calculation checked	☒	☐	☐
12	Samples above calibration range diluted and reanalyzed	☒	☐	☐
13	Runs checked for carryover	☒	☐	☐
14	Run and Batch Codes are correct	☒	☐	☐
15	Method Blank meets acceptance criteria	☒	☐	☐
16	Duplicate precision meets acceptance criteria	☒	☐	☐
17	Matrix Spike recovery (s) meets acceptance criteria	☒	☐	☐
18	Surrogate Recovery (s) meets acceptance criteria	☒	☐	☒
19	Laboratory Control Sample, (BWMS), meets acceptance criteria	☒	☐	☐
20	Validation Sheet signed and dated	☒	☐	☐
21	Data Package completed (if required)	☒	☐	☐

Reviewed By: HKen Date: Jan 02, 2002

Comments: _____

Secondary Supervisor/Peer Data Review (frequency as defined in QA - 504 Section 6.3):		ok	no	n/a
1	Primary Review complete and correct	☐	☐	☐
2	Repeats documented and included	☐	☐	☐
3	Method and sample deviations noted, anomalies described (if applicable)	☐	☐	☐
4	Data and QC validated in LIMS	☐	☐	☐
5	Random calculation checked	☐	☐	☐
6	Benchsheet (s) signed and dated	☐	☐	☐
7	Data Package checked for completeness (if required)	☐	☐	☐

Reviewed By: _____ Date: _____

Comments: _____

Tertiary Review (Project Manager):		ok	no	n/a
1	Project Specific criteria met	☐	☐	☐
2	Repeats documented and included	☐	☐	☐
3	Random calculation checked	☐	☐	☐
4	Data Inter-relationships checked	☐	☐	☐
5	Client specific criteria met	☐	☐	☐
6	Data Package complete (if required)	☐	☐	☐

Reviewed By: _____ Date: _____

Comments: _____

02/01/02 15:13:39

Printed by HREN

LDCA

DATA TO BE VALIDATED (METVAL')

Analyzed by HREN

Page 1 of 1

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
081578	CLEANAIR	MB R456	Mercury -	P	-0.010	-99999.0	0.101	100.	0.098	97.	01/12/31	8M2B	02/01/02	HR11	20.	14.	
081579	CLEANAIR	M29HG U2-NORTH-RB	Mercury -	P	-0.290						01/12/31	8M2B	02/01/02	HR11	20.	14.	*DIL10*
081580	CLEANAIR	M29HG U2-NORTH-FB	Mercury -	P	-0.310						01/12/31	8M2B	02/01/02	HR11	19.	14.	*DIL10*
081581	CLEANAIR	M29HG U2-NORTH-Run#1	Mercury -	P	7.307	7.183	14.286	96.	14.406	98.	01/12/31	8M2B	02/01/02	HR11	20.	14.	*DIL10*
081582	CLEANAIR	M29HG U2-NORTH-Run#2	Mercury -	P	9.310						01/12/31	8M2B	02/01/02	HR11	20.	14.	*DIL10*
081583	CLEANAIR	M29HG U2-NORTH-Run#3	Mercury -	P	8.429						01/12/31	8M2B	02/01/02	HR11	20.	14.	*DIL10*
BL1231	INTERNAL		Mercury -	P	-0.010	-99999.0	0.101	100.	0.098	97.	01/12/31	8M2B	02/01/02	HR11	\$\$\$	\$\$\$	

7 Tests for 29HG-2B with an MDL of 0.010 ug

Validated By HKControl Chart Updated ✓10 Requirements met ✓

00056

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
BL0102	INTERNAL		Mercury -	P	-0.010	-99999.0	0.103	103.	0.105	105.	02/01/02	1M3A	02/01/02	HR11	\$\$\$	\$\$\$	
081554	CLEANAIR MB R456		Mercury -	P	-0.010	-99999.0	0.103	103.	0.105	105.	02/01/02	1M3A	02/01/02	HR11	20.	16.	
081555	CLEANAIR M29HG U3-South-RB		Mercury -	P	-0.010						02/01/02	1M3A	02/01/02	HR11	20.	16.	
081556	CLEANAIR M29HG U3-South-FB		Mercury -	P	-0.010						02/01/02	1M3A	02/01/02	HR11	19.	16.	
081557	CLEANAIR M29HG U3-South-Run#1		Mercury -	P	0.047	0.047	0.151	97.	0.155	101.	02/01/02	1M3A	02/01/02	HR11	20.	16.	
081558	CLEANAIR M29HG U3-South-Run#2		Mercury -	P	0.216						02/01/02	1M3A	02/01/02	HR11	20.	16.	
081559	CLEANAIR M29HG U3-South-Run#3		Mercury -	P	0.177						02/01/02	1M3A	02/01/02	HR11	20.	16.	
081578	CLEANAIR MB R456		Mercury -	P	-0.010	-99999.0	0.103	103.	0.105	105.	02/01/02	1M3A	02/01/02	HR11	22.	16.	
081579	CLEANAIR M29HG U2-NORTH-RB		Mercury -	P	-0.010						02/01/02	1M3A	02/01/02	HR11	22.	16.	
081580	CLEANAIR M29HG U2-NORTH-FB		Mercury -	P	-0.010						02/01/02	1M3A	02/01/02	HR11	21.	16.	
081581	CLEANAIR M29HG U2-NORTH-Run#1		Mercury -	P	-0.010						02/01/02	1M3A	02/01/02	HR11	22.	16.	
081582	CLEANAIR M29HG U2-NORTH-Run#2		Mercury -	P	-0.010						02/01/02	1M3A	02/01/02	HR11	22.	16.	
081583	CLEANAIR M29HG U2-NORTH-Run#3		Mercury -	P	-0.010						02/01/02	1M3A	02/01/02	HR11	22.	16.	

13 Tests for 29HG-3A with an MDL of 0.010 ug

Validated By PKLControl Chart Updated ✓IO Requirements met ✓

00057

02/01/02 16:46:18

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FIMSA

DATA TO BE VALIDATED (METVAL')

Analyzed by HREN

Page 1 of 1

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
BL0102	INTERNAL		Mercury -	P	-0.050	-99999.0	0.515	103.	0.515	103.	02/01/02	2M3C	02/01/02	HR11	\$\$\$	\$\$\$	
			Mercury -	P	-0.050	-99999.0	0.530	106.	0.519	104.	02/01/02	3M3C	02/01/02	HR11	\$\$\$	\$\$\$	
081554	CLEANAIR	MB R456	Mercury -	P	-0.050	-99999.0	0.515	103.	0.515	103.	02/01/02	2M3C	02/01/02	HR11	20.	16.	
081555	CLEANAIR	M29HG U3-South-RB	Mercury -	P	-0.050						02/01/02	2M3C	02/01/02	HR11	20.	16.	
081556	CLEANAIR	M29HG U3-South-FB	Mercury -	P	-0.050						02/01/02	2M3C	02/01/02	HR11	19.	16.	
081557	CLEANAIR	M29HG U3-South-Run#1	Mercury -	P	0.689	0.678	1.158	95.	1.167	97.	02/01/02	2M3C	02/01/02	HR11	20.	16.	
081558	CLEANAIR	M29HG U3-South-Run#2	Mercury -	P	0.692						02/01/02	2M3C	02/01/02	HR11	20.	16.	
081559	CLEANAIR	M29HG U3-South-Run#3	Mercury -	P	0.578						02/01/02	2M3C	02/01/02	HR11	20.	16.	
081578	CLEANAIR	MB R456	Mercury -	P	-0.050	-99999.0	0.515	103.	0.515	103.	02/01/02	2M3C	02/01/02	HR11	22.	16.	
081579	CLEANAIR	M29HG U2-NORTH-RB	Mercury -	P	-0.050						02/01/02	2M3C	02/01/02	HR11	22.	16.	
081580	CLEANAIR	M29HG U2-NORTH-FB	Mercury -	P	0.072						02/01/02	2M3C	02/01/02	HR11	21.	16.	
081582	CLEANAIR	M29HG U2-NORTH-Run#2	Mercury -	P	0.660						02/01/02	2M3C	02/01/02	HR11	22.	16.	
081581	CLEANAIR	M29HG U2-NORTH-Run#1	Mercury -	P	0.995	0.987	1.423	86.	1.416	85.	02/01/02	3M3C	02/01/02	HR11	22.	16.	
081583	CLEANAIR	M29HG U2-NORTH-Run#3	Mercury -	P	0.698						02/01/02	3M3C	02/01/02	HR11	22.	16.	

14 Tests for 29HG-3C with an MDL of 0.050 ug

Validated By HLControl Chart Updated ✓IO Requirements met ✓

000000

29HG-3C

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL0102-2M3C	-0.005	1	500	-0.003	0.05	0.05		500
BL0102S	1.029	1	500	0.515	0.05	0.05	103	500
BL0102DS	1.029	1	500	0.515	0.05	0.05	103	500
81557	1.377	1	500	0.689	0.05	0.05		500
81557D	1.355	1	500	0.678	0.05	0.05		500
81557S	2.315	1	500	1.158	0.05	0.05	95	500
81557DS	2.334	1	500	1.167	0.05	0.05	97	500
81554	-0.002	1	500	-0.001	0.05	0.05		500
81555	0.000	1	500	0.000	0.05	0.05		500
81556	0.056	1	500	0.028	0.05	0.05		500
81558	1.383	1	500	0.692	0.05	0.05		500
81559	1.156	1	500	0.578	0.05	0.05		500
81578	-0.006	1	500	-0.003	0.05	0.05		500
81579	0.018	1	500	0.009	0.05	0.05		500
81580	0.143	1	500	0.072	0.05	0.05		500
81582	1.320	1	500	0.660	0.05	0.05		500

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL0102-3M3C	0.001	1	500	0.001	0.05	0.05		500
BL0102D	1.059	1	500	0.530	0.05	0.05	106	500
BL0102DS	1.038	1	500	0.519	0.05	0.05	104	500
81581	1.990	1	500	0.995	0.05	0.05		500
81581D	1.973	1	500	0.987	0.05	0.05		500
81581S	2.846	1	500	1.423	0.05	0.05	86	500
81581DS	2.831	1	500	1.416	0.05	0.05	85	500
81583	1.396	1	500	0.698	0.05	0.05		500

00060

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL1231-7M2B	0.006	1	100	0.001	0.01	0.01		100
BL1231S	1.016	1	100	0.102	0.01	0.01	101	100
BL1231DS	1.002	1	100	0.100	0.01	0.01	100	100
81557	7.670	20	685	105.079	0.01	1.37		100
81557D	7.734	20	685	105.956	0.01	1.37		100
81557S PDS	8.597	20	685	117.779	0.01	1.37	90	100
81557DS PDS	8.812	20	685	120.724	0.01	1.37	111	100
81555	0.032	10	400	0.128	0.01	0.40		100
81556	0.780	10	360	2.808	0.01	0.36		100
81558	5.918	20	655	77.526	0.01	1.31		100
81559	8.719	10	670	58.417	0.01	0.67		100

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL1231-8M2B	0.013	1	100	0.001	0.01	0.01		100
BL1231S	1.012	1	100	0.101	0.01	0.01	100	100
BL1231DS	0.984	1	100	0.098	0.01	0.01	97	100
81581	1.001	10	730	7.307	0.01	0.73		100
81581D	0.984	10	730	7.183	0.01	0.73		100
81581S	1.957	10	730	14.286	0.01	0.73	96	100
81581DS	1.973	10	730	14.403	0.01	0.73	98	100
81579	0.030	10	290	0.087	0.01	0.29		100
81580	0.030	10	310	0.093	0.01	0.31		100
81582	1.293	10	720	9.310	0.01	0.72		100
81583	1.139	10	740	8.429	0.01	0.74		100

00061

29HG-3A

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL0102-1M3A	-0.005	1	100	-0.001	0.01	0.01		100
BL0102S	1.027	1	100	0.103	0.01	0.01	103	100
BL0102DS	1.051	1	100	0.105	0.01	0.01	105	100
81557	0.431	1	108	0.047	0.01	0.01		100
81557D	0.433	1	108	0.047	0.01	0.01		100
81557S	1.400	1	108	0.151	0.01	0.01	97	100
81557DS	1.439	1	108	0.155	0.01	0.01	101	100
81555	0.000	1	100	0.000	0.01	0.01		100
81556	0.090	1	102	0.009	0.01	0.01		100
81558	1.893	1	114	0.216	0.01	0.01		100
81559	1.475	1	120	0.177	0.01	0.01		100
81579	0.004	1	100	0.000	0.01	0.01		100
81580	-0.002	1	108	0.000	0.01	0.01		100
81581	0.004	1	104	0.000	0.01	0.01		100
81582	0.037	1	110	0.004	0.01	0.01		100
81583	0.014	1	103	0.001	0.01	0.01		100

00062

Perkin-Elmer AAWinLab: 01/02/2002, 02:12:11 PM

Sample Information File C:\FIMS\AAUSER\SAMPINFO\020102F1.SIF

Description : 020102 TRAIN
Batch ID : HR11
Volume Units :
Weight Units :
Analyst : HREN
Sample Volume : 0.00

Sample ID	Sample Weight Units	User Dilution	Remarks
7 CCV			
8 CCB			
4 BL1231-4M2B			
15 BL1231S			
16 BL1231DS			
17 80959		10.0000	
18 80959D		10.0000	
19 80959S		10.0000	
20 80959DS		10.0000	
21 80960		10.0000	
22 80961		10.0000	
23 80962		10.0000	
24 80963		50.0000	
25 80964		10.0000	
26 BL1231-5M2B			
27 BL1231S			
28 BL1231DS			
29 81025		10.0000	
30 81025D		10.0000	
31 81025S		10.0000	
32 81025DS		10.0000	
33 81024		10.0000	
34 81026		10.0000	
35 81027		10.0000	
36 BL1231-6M2B			
37 BL1231S			
38 BL1231DS			
39 81550		10.0000	
40 81550D		10.0000	
41 81550S		10.0000	
42 81550DS		10.0000	
43 81549		10.0000	
44 81551		10.0000	
45 81552		10.0000	
46 BL1231-7M2B			
47 BL1231S			
48 BL1231DS			
49 81557		20.0000	
50 81557D		20.0000	
51 81557S		20.0000	
52 81557DS		20.0000	
53 81555		10.0000	
54 81556		10.0000	
55 81558		20.0000	
56 81559		10.0000	
57 BL1231-8M2B			
58 BL1231S			
59 BL1231DS			
60 81581		10.0000	
61 81581D		10.0000	

00063

Perkin-Elmer AAWinLab: 01/02/2002, 02:12:12 PM

62	81581S	10.0000
63	81581DS	10.0000
64	81579	10.0000
65	81580	10.0000
66	81582	10.0000
67	81583	10.0000
68	81557S PDS	20.0000
69	81557DS PDS	20.0000
70	BL0102-1M3A	
71	BL0102S	
72	BL0102DS	
73	81557	
74	81557D	
75	81557S	
76	81557DS	
77	81555	
78	81556	
79	81558	
80	81559	
81	81579	
82	81580	
83	81581	
84	81582	
85	81583	
86	BL0102-2M3C	
87	BL0102S	
88	BL0102DS	
89	81557	
90	81557D	
91	81557S	
92	81557DS	
93	81554	
94	81555	
95	81556	
96	81558	
97	81559	
98	81578	
99	81579	
100	81580	
101	81582	
102	BL0102-3M3C	
103	BL0102S	
104	BL0102DS	
105	81581	
106	81581D	
107	81581S	
108	81581DS	
109	81583	
110	SPEX STD	

00064

Perkin-Elmer AAWinLab: 01/02/2002, 10:22:44 AM

Method Name: EPA 7470
Method Description: EPA 7470
Element: Hg

Date: 01/02/2002
Technique: FI-MHS
Calibration Type:
Hg, Zero Intercept: Linear
Wavelength: 253.7 nm
Sample Info Name: 020102F1.SIF

Results Data Set Name: 020102F11

Element: Hg Seq. No.: 23 AS Loc.: 1 Date: 01/02/2002
Sample ID: Calib Blank

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0002	0.0002	10:23:35	Yes
2			0.0001	0.0001	10:24:08	Yes
3			0.0001	0.0001	10:24:41	Yes
Mean:			0.0001			
SD :			0.0000			
%RSD:			38.7892			

Auto-zero performed.

Element: Hg Seq. No.: 24 AS Loc.: 2 Date: 01/02/2002
Sample ID: STD1

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0303	0.0304	10:25:30	Yes
2			0.0303	0.0304	10:26:03	Yes
3			0.0303	0.0304	10:26:36	Yes
Mean:			0.0303			
SD :			0.0000			
%RSD:						

[Hg] Standard number 1 applied. [2.500]
Correlation Coefficient: 1.00000 Slope: 0.01211

Element: Hg Seq. No.: 25 AS Loc.: 3 Date: 01/02/2002
Sample ID: STD2

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0619	0.0620	10:27:25	Yes
2			0.0620	0.0621	10:27:58	Yes
3			0.0615	0.0616	10:28:31	Yes
Mean:			0.0618			
SD :			0.0003			
%RSD:			0.4076			

[Hg] Standard number 2 applied. [5.000]
Correlation Coefficient: 0.99967 Slope: 0.01231

Element: Hg Seq. No.: 26 AS Loc.: 4 Date: 01/02/2002
Sample ID: STD3

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0921	0.0922	10:29:45	Yes
2			0.0928	0.0929	10:30:18	Yes
3			0.0923	0.0924	10:30:51	Yes

00065

Perkin-Elmer AAWinLab: 01/02/2002, 10:30:52 AM

Mean: 0.0924
 SD : 0.0004
 %RSD: 0.3961
 [Hg] Standard number 3 applied. [7.500]
 Correlation Coefficient: 0.99992

Slope: 0.01231

=====

Element: Hg Seq. No.: 27 AS Loc.: 5 Date: 01/02/2002
 Sample ID: STD4

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.1236	0.1237	10:32:08	Yes
2			0.1228	0.1229	10:32:40	Yes
3			0.1238	0.1239	10:33:13	Yes
Mean:			0.1234			
SD :			0.0005			
%RSD:			0.4111			
[Hg] Standard number 4 applied. [10.00]						
Correlation Coefficient:			0.99996	Slope: 0.01233		

=====

Element: Hg Seq. No.: 28 AS Loc.: 6 Date: 01/02/2002
 Sample ID: STD5

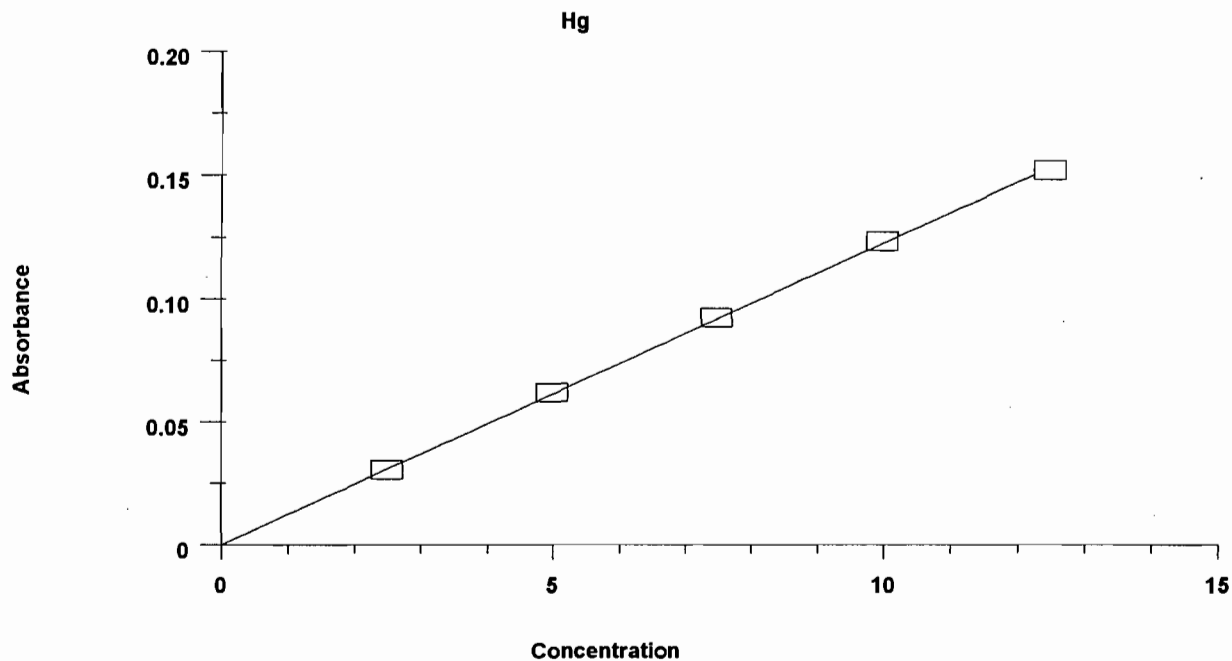
Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.1522	0.1524	10:34:29	Yes
2			0.1524	0.1525	10:35:03	Yes
3			0.1514	0.1515	10:35:36	Yes
Mean:			0.1520			
SD :			0.0006			
%RSD:			0.3634			
[Hg] Standard number 5 applied. [12.50]						
Correlation Coefficient:			0.99985	Slope: 0.01225		

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	---	---	---
STD1	0.0303	2.500	2.471	0.0000	---
STD2	0.0618	5.000	5.043	0.0003	0.4
STD3	0.0924	7.500	7.540	0.0004	0.4
STD4	0.1234	10.000	10.07	0.0005	0.4
STD5	0.1520	12.500	12.41	0.0006	0.4
Correlation Coefficient:		0.99985	Slope:	0.01225	---

00066

Perkin-Elmer AAWinLab: 01/02/2002, 10:36:05 AM



Element: Hg Seq. No.: 29 AS Loc.: 9 Date: 01/02/2002
Sample ID: ICV

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.468	1.468	0.0180	0.0181	10:36:55	Yes
2	1.462	1.462	0.0179	0.0180	10:37:28	Yes
3	1.466	1.466	0.0180	0.0181	10:38:01	Yes
Mean:	1.465	1.465	0.0180			
SD :	0.0029	0.0029	0.0000			
%RSD:	0.2	0.2	0.1984			

QC value within specified limits.

Element: Hg Seq. No.: 30 AS Loc.: 10 Date: 01/02/2002
Sample ID: ICB

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.003	-0.003	0.0000	0.0001	10:38:50	Yes
2	-0.005	-0.005	-0.0001	0.0000	10:39:23	Yes
3	-0.006	-0.006	-0.0001	0.0000	10:39:56	Yes
Mean:	-0.005	-0.005	-0.0001			
SD :	0.0012	0.0012	0.0000			
%RSD:	25.6	25.6	25.5920			

QC value within specified limits.

Element: Hg Seq. No.: 31 AS Loc.: 11 Date: 01/02/2002
Sample ID: SPEX HG-STD

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	3.074	3.074	0.0377	0.0378	10:40:45	Yes
2	3.081	3.081	0.0377	0.0379	10:41:18	Yes

00067

Perkin-Elmer AAWinLab: 01/02/2002, 10:41:51 AM

3 3.065 3.065 0.0375 0.0377 10:41:51 Yes
 Mean: 3.073 3.073 0.0377
 SD : 0.0080 0.0080 0.0001
 %RSD: 0.3 0.3 0.2615
 QC value within specified limits.

=====
 Element: Hg Seq. No.: 32 AS Loc.: 12 Date: 01/02/2002
 Sample ID: LLC

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.261	0.261	0.0032	0.0033	10:42:40	Yes
2	0.260	0.260	0.0032	0.0033	10:43:13	Yes
3	0.255	0.255	0.0031	0.0032	10:43:46	Yes
Mean:	0.259	0.259	0.0032			
SD :	0.0034	0.0034	0.0000			
%RSD:	1.3	1.3	1.3019			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 33 AS Loc.: 13 Date: 01/02/2002
 Sample ID: DIL.CHECK

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.002	0.002	0.0000 -	0.0001	10:44:36	Yes
2	0.005	0.005	0.0001 -	0.0002	10:45:09	Yes
3	0.006	0.006	0.0001	0.0002	10:45:41	Yes
Mean:	0.004	0.004	0.0001			
SD :	0.0023	0.0023	0.0000			
%RSD:	50.9	50.9	50.9446			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 34 AS Loc.: 14 Date: 01/02/2002
 Sample ID: BL1231-4M2B

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.001	-0.001	0.0000 -	0.0001	10:46:30	Yes
2	0.002	0.002	0.0000	0.0001	10:47:03	Yes
3	0.003	0.003	0.0000	0.0001	10:47:36	Yes
Mean:	0.001	0.001	0.0000			
SD :	0.0024	0.0024	0.0000			
%RSD:	189.8	189.8	189.8241			

=====
 Element: Hg Seq. No.: 35 AS Loc.: 15 Date: 01/02/2002
 Sample ID: BL1231S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.042	1.042	0.0128	0.0129	10:48:24	Yes
2	1.032	1.032	0.0126	0.0128	10:48:57	Yes
3	1.031	1.031	0.0126	0.0127	10:49:30	Yes
Mean:	1.035	1.035	0.0127			
SD :	0.0064	0.0064	0.0001			
%RSD:	0.6	0.6	0.6233			

=====
 Element: Hg Seq. No.: 36 AS Loc.: 16 Date: 01/02/2002
 Sample ID: BL1231DS

Repl	SampleConc	StdConc	BlkCorr	Peak	Time	Peak

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Perkin-Elmer AAWinLab: 01/02/2002, 10:49:31 AM

#	µg/L	µg/L	Signal	Height	Stored
1	1.020	1.020	0.0125	0.0126	10:50:19 Yes
2	1.028	1.028	0.0126	0.0127	10:50:52 Yes
3	1.028	1.028	0.0126	0.0127	10:51:25 Yes
Mean:	1.025	1.025	0.0126		
SD :	0.0048	0.0048	0.0001		
%RSD:	0.5	0.5	0.4717		

=====

Element: Hg Seq. No.: 37 AS Loc.: 17 Date: 01/02/2002
Sample ID: 80959

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	32.69	3.269	0.0401	0.0402	10:52:13	Yes
2	32.72	3.272	0.0401	0.0402	10:52:46	Yes
3	33.00	3.300	0.0404	0.0405	10:53:19	Yes
Mean:	32.80	3.280	0.0402			
SD :	0.1687	0.0169	0.0002			
%RSD:	0.5	0.5	0.5144			

=====

Element: Hg Seq. No.: 38 AS Loc.: 18 Date: 01/02/2002
Sample ID: 80959D

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	34.41	3.441	0.0422	0.0423	10:54:08	Yes
2	34.41	3.441	0.0422	0.0423	10:54:41	Yes
3	34.43	3.443	0.0422	0.0423	10:55:14	Yes
Mean:	34.41	3.441	0.0422			
SD :	0.0112	0.0011	0.0000			
%RSD:						

=====

Element: Hg Seq. No.: 39 AS Loc.: 19 Date: 01/02/2002
Sample ID: 80959S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	44.82	4.482	0.0549	0.0550	10:56:03	Yes
2	44.98	4.498	0.0551	0.0552	10:56:36	Yes
3	45.02	4.502	0.0552	0.0553	10:57:09	Yes
Mean:	44.94	4.494	0.0551			
SD :	0.1080	0.0108	0.0001			
%RSD:	0.2	0.2	0.2403			

=====

Element: Hg Seq. No.: 40 AS Loc.: 20 Date: 01/02/2002
Sample ID: 80959DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	45.07	4.507	0.0552	0.0553	10:58:25	Yes
2	44.83	4.483	0.0549	0.0550	10:58:59	Yes
3	44.98	4.498	0.0551	0.0552	10:59:32	Yes
Mean:	44.96	4.496	0.0551			
SD :	0.1222	0.0122	0.0001			
%RSD:	0.3	0.3	0.2718			

=====

Element: Hg Seq. No.: 41 AS Loc.: 21 Date: 01/02/2002
Sample ID: 80960

Repl	SampleConc	StdConc	BlkCorr	Peak	Time	Peak

00069

Perkin-Elmer AAWinLab: 01/02/2002, 10:59:56 AM

#	µg/L	µg/L	Signal	Height		Stored
1	66.21	6.621	0.0811	0.0812	11:00:49	Yes
2	65.99	6.599	0.0809	0.0810	11:01:22	Yes
3	66.15	6.615	0.0810	0.0812	11:01:55	Yes
Mean:	66.12	6.612	0.0810			
SD :	0.1095	0.0110	0.0001			
%RSD:	0.2	0.2	0.1657			

Element: Hg Seq. No.: 42 AS Loc.: 22 Date: 01/02/2002
Sample ID: 80961

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	40.39	4.039	0.0495	0.0496	11:03:12	Yes
2	40.25	4.025	0.0493	0.0494	11:03:45	Yes
3	40.28	4.028	0.0493	0.0495	11:04:18	Yes
Mean:	40.31	4.031	0.0494			
SD :	0.0742	0.0074	0.0001			
%RSD:	0.2	0.2	0.1840			

Element: Hg Seq. No.: 43 AS Loc.: 23 Date: 01/02/2002
Sample ID: 80962

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	84.78	8.478	0.1039	0.1040	11:05:35	Yes
2	84.59	8.459	0.1036	0.1038	11:06:08	Yes
3	84.48	8.448	0.1035	0.1036	11:06:41	Yes
Mean:	84.62	8.462	0.1037			
SD :	0.1482	0.0148	0.0002			
%RSD:	0.2	0.2	0.1751			

Element: Hg Seq. No.: 44 AS Loc.: 7 Date: 01/02/2002
Sample ID: CCV

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.003	1.003	0.0123	0.0124	11:07:58	Yes
2	0.990	0.990	0.0121	0.0122	11:08:31	Yes
3	0.999	0.999	0.0122	0.0124	11:09:04	Yes
Mean:	0.997	0.997	0.0122			
SD :	0.0069	0.0069	0.0001			
%RSD:	0.7	0.7	0.6968			

QC value within specified limits.

Element: Hg Seq. No.: 45 AS Loc.: 8 Date: 01/02/2002
Sample ID: CCB

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.007	-0.007	-0.0001	0.0000	11:09:54	Yes
2	-0.012	-0.012	-0.0001	0.0000	11:10:27	Yes
3	-0.007	-0.007	-0.0001	0.0000	11:11:00	Yes
Mean:	-0.009	-0.009	-0.0001			
SD :	0.0029	0.0029	0.0000			
%RSD:	32.8	32.8	32.8288			

QC value within specified limits.

Element: Hg Seq. No.: 46 AS Loc.: 4 Date: 01/02/2002
Sample ID: Reslope

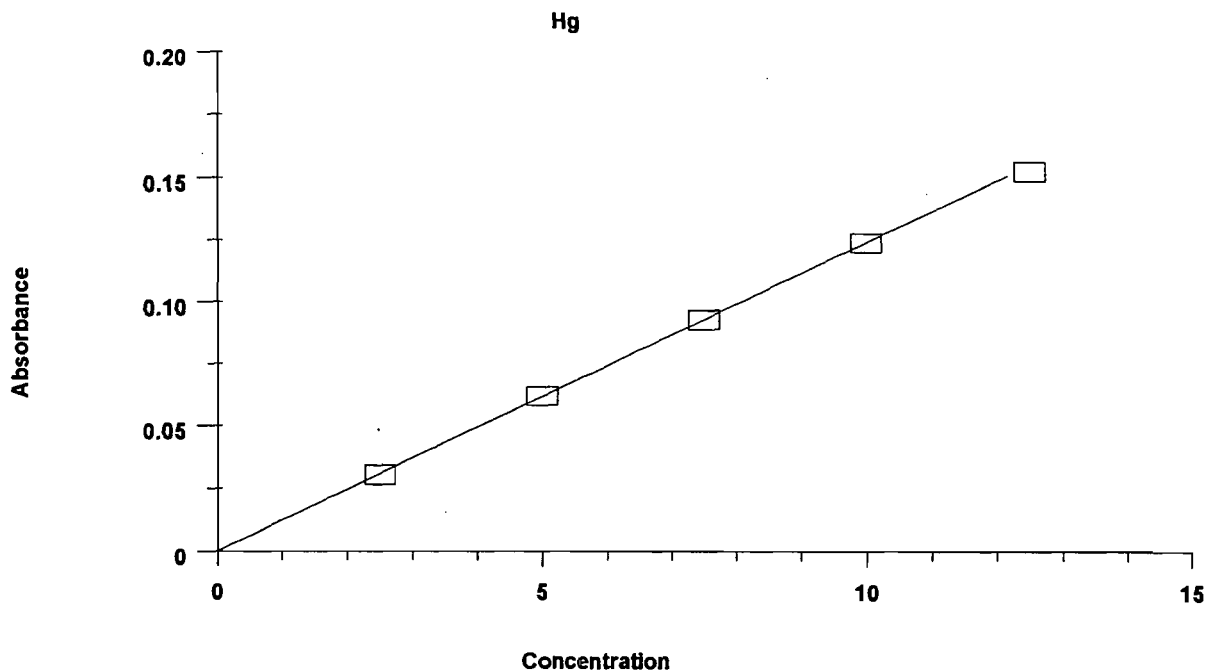
00070

Perkin-Elmer AAWinLab: 01/02/2002, 11:11:01 AM

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0931	0.0932	11:11:50	Yes
2			0.0922	0.0923	11:12:23	Yes
3			0.0929	0.0930	11:12:56	Yes
Mean:			0.0927			
SD :			0.0005			
%RSD:			0.5096			
[Hg] Reslope standard applied. [7.500]						
Correlation Coefficient:			0.99985	Slope: 0.01214		

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.009	0.0000	38.8
STD1	0.0303	2.500	2.449	0.0000	----
STD2	0.0618	5.000	4.998	0.0003	0.4
STD3	0.0924	7.500	7.472	0.0004	0.4
STD4	0.1234	10.000	9.980	0.0005	0.4
STD5	0.1520	12.500	12.29	0.0006	0.4
Reslope	0.0927	7.500	7.500	0.0005	0.5
Correlation Coefficient:		0.99985	Slope:	0.01214	----



Element: Hg Seq. No.: 47 AS Loc.: 24 Date: 01/02/2002
Sample ID: 80963

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	183.0	3.660	0.0453	0.0454	11:14:14	Yes
2	183.5	3.671	0.0454	0.0455	11:14:47	Yes
3	184.2	3.683	0.0455	0.0457	11:15:20	Yes
Mean:	183.6	3.671	0.0454			

00071

Perkin-Elmer AAWinLab: 01/02/2002, 11:15:21 AM

SD : 0.5930 0.0119 0.0001
%RSD: 0.3 0.3 0.3230

=====
Element: Hg Seq. No.: 48 AS Loc.: 25 Date: 01/02/2002
Sample ID: 80964
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	99.66	9.966	0.1232	0.1233	11:16:09	Yes
2	99.13	9.913	0.1226	0.1227	11:16:42	Yes
3	99.75	9.975	0.1233	0.1234	11:17:15	Yes
Mean:	99.51	9.951	0.1230			
SD :	0.3359	0.0336	0.0004			
%RSD:	0.3	0.3	0.3376			

=====
Element: Hg Seq. No.: 49 AS Loc.: 26 Date: 01/02/2002
Sample ID: BL1231-5M2B
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.004	0.004	0.0001	0.0002	11:18:26	Yes
2	0.013	0.013	0.0002	0.0003	11:18:59	Yes
3	0.011	0.011	0.0001	0.0002	11:19:33	Yes
Mean:	0.009	0.009	0.0001			
SD :	0.0044	0.0044	0.0001			
%RSD:	47.0	47.0	47.0394			

=====
Element: Hg Seq. No.: 50 AS Loc.: 27 Date: 01/02/2002
Sample ID: BL1231S
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.008	1.008	0.0125	0.0126	11:20:21	Yes
2	1.005	1.005	0.0124	0.0125	11:20:55	Yes
3	1.012	1.012	0.0125	0.0126	11:21:28	Yes
Mean:	1.009	1.009	0.0125			
SD :	0.0035	0.0035	0.0000			
%RSD:	0.3	0.3	0.3449			

=====
Element: Hg Seq. No.: 51 AS Loc.: 28 Date: 01/02/2002
Sample ID: BL1231DS
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.017	1.017	0.0126	0.0127	11:22:17	Yes
2	1.023	1.023	0.0127	0.0128	11:22:50	Yes
3	1.023	1.023	0.0126	0.0128	11:23:23	Yes
Mean:	1.021	1.021	0.0126			
SD :	0.0034	0.0034	0.0000			
%RSD:	0.3	0.3	0.3328			

=====
Element: Hg Seq. No.: 52 AS Loc.: 29 Date: 01/02/2002
Sample ID: 81025
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	15.10	1.510	0.0187	0.0188	11:24:11	Yes
2	15.19	1.519	0.0188	0.0189	11:24:44	Yes
3	15.07	1.507	0.0186	0.0187	11:25:17	Yes
Mean:	15.12	1.512	0.0187			

00072

Perkin-Elmer AAWinLab: 01/02/2002, 11:25:18 AM

SD : 0.0626 0.0063 0.0001
 %RSD: 0.4 0.4 0.4143

=====
 Element: Hg Seq. No.: 53 AS Loc.: 30 Date: 01/02/2002
 Sample ID: 81025D

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	15.12	1.512	0.0187	0.0188	11:26:05	Yes
2	15.09	1.509	0.0187	0.0188	11:26:38	Yes
3	14.97	1.497	0.0185	0.0186	11:27:11	Yes
Mean:	15.06	1.506	0.0186			
SD :	0.0770	0.0077	0.0001			
%RSD:	0.5	0.5	0.5111			

=====
 Element: Hg Seq. No.: 54 AS Loc.: 31 Date: 01/02/2002
 Sample ID: 81025S

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	25.08	2.508	0.0310	0.0311	11:28:00	Yes
2	25.00	2.500	0.0309	0.0310	11:28:33	Yes
3	25.22	2.522	0.0312	0.0313	11:29:06	Yes
Mean:	25.10	2.510	0.0310			
SD :	0.1077	0.0108	0.0001			
%RSD:	0.4	0.4	0.4291			

=====
 Element: Hg Seq. No.: 55 AS Loc.: 32 Date: 01/02/2002
 Sample ID: 81025DS

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	24.81	2.481	0.0307	0.0308	11:29:55	Yes
2	24.81	2.481	0.0307	0.0308	11:30:28	Yes
3	24.87	2.487	0.0308	0.0309	11:31:01	Yes
Mean:	24.83	2.483	0.0307			
SD :	0.0360	0.0036	0.0000			
%RSD:	0.1	0.1	0.1450			

=====
 Element: Hg Seq. No.: 56 AS Loc.: 33 Date: 01/02/2002
 Sample ID: 81024

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.291	0.029	0.0004	0.0005	11:31:50	Yes
2	0.250	0.025	0.0003	0.0004	11:32:22	Yes
3	0.202	0.020	0.0002	0.0004	11:32:56	Yes
Mean:	0.248	0.025	0.0003			
SD :	0.0449	0.0045	0.0001			
%RSD:	18.1	18.1	18.1117			

=====
 Element: Hg Seq. No.: 57 AS Loc.: 7 Date: 01/02/2002
 Sample ID: CCV

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.984	0.984	0.0122	0.0123	11:33:45	Yes
2	0.978	0.978	0.0121	0.0122	11:34:18	Yes
3	0.983	0.983	0.0122	0.0123	11:34:51	Yes
Mean:	0.982	0.982	0.0121			

00073

Perkin-Elmer AAWinLab: 01/02/2002, 11:34:52 AM

SD : 0.0032 0.0032 0.0000
 %RSD: 0.3 0.3 0.3266
 QC value within specified limits.

=====

Element: Hg Seq. No.: 58 AS Loc.: 8 Date: 01/02/2002
 Sample ID: CCB

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.005	-0.005	-0.0001	0.0001	11:35:40	Yes
2	-0.006	-0.006	-0.0001	0.0000	11:36:13	Yes
3	-0.005	-0.005	-0.0001	0.0000	11:36:46	Yes
Mean:	-0.005	-0.005	-0.0001			
SD :	0.0008	0.0008	0.0000			
%RSD:	14.4	14.4	14.4434			

QC value within specified limits.

=====

=====

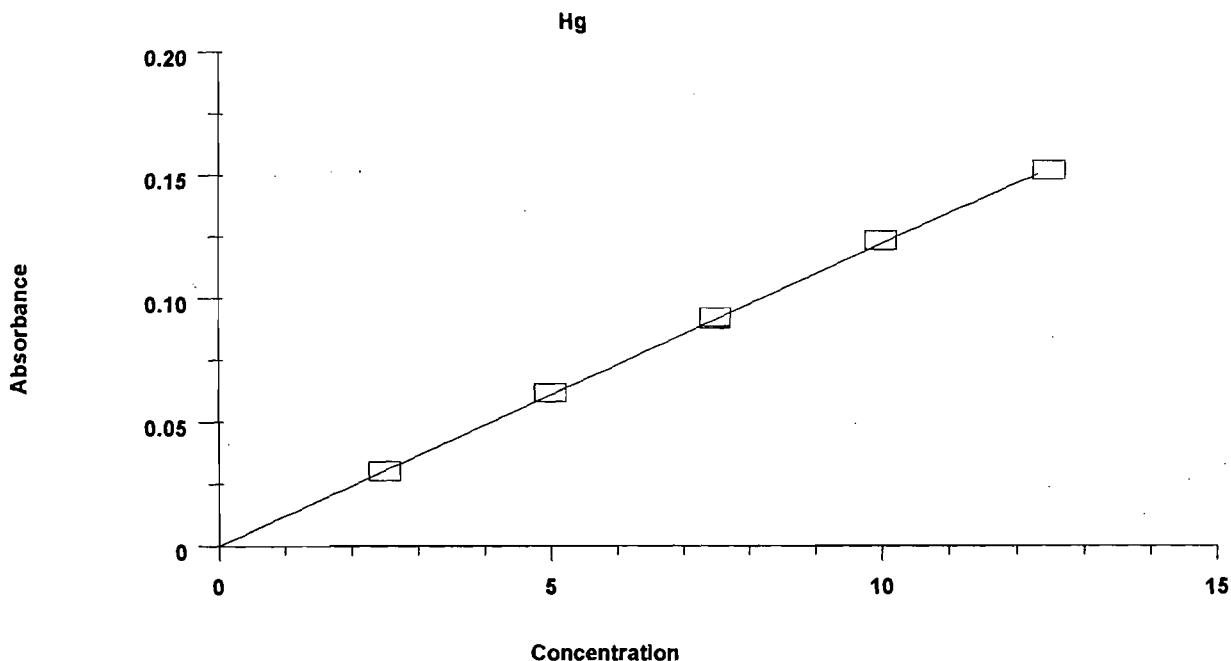
Element: Hg Seq. No.: 59 AS Loc.: 4 Date: 01/02/2002
 Sample ID: Reslope

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0918	0.0919	11:37:37	Yes
2			0.0915	0.0916	11:38:10	Yes
3			0.0913	0.0914	11:38:44	Yes
Mean:			0.0915			
SD :			0.0002			
%RSD:			0.2617			

[Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99985 Slope: 0.01230

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.009	0.0000	38.8
STD1	0.0303	2.500	2.481	0.0000	----
STD2	0.0618	5.000	5.063	0.0003	0.4
STD3	0.0924	7.500	7.570	0.0004	0.4
STD4	0.1234	10.000	10.11	0.0005	0.4
STD5	0.1520	12.500	12.46	0.0006	0.4
Reslope	0.0915	7.500	7.500	0.0002	0.3
Correlation Coefficient: 0.99985		Slope:	0.01230	----	



Element: Hg Seq. No.: 60 AS Loc.: 34 Date: 01/02/2002
Sample ID: 81026

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	26.62	2.662	0.0325	0.0326	11:40:03	Yes
2	26.80	2.680	0.0327	0.0328	11:40:37	Yes
3	26.65	2.665	0.0325	0.0326	11:41:10	Yes
Mean:	26.69	2.669	0.0326			
SD :	0.0971	0.0097	0.0001			
%RSD:	0.4	0.4	0.3640			

Element: Hg Seq. No.: 61 AS Loc.: 35 Date: 01/02/2002
Sample ID: 81027

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	29.25	2.925	0.0357	0.0358	11:41:59	Yes
2	29.08	2.908	0.0355	0.0356	11:42:32	Yes
3	29.24	2.924	0.0357	0.0358	11:43:05	Yes
Mean:	29.19	2.919	0.0356			
SD :	0.0920	0.0092	0.0001			
%RSD:	0.3	0.3	0.3153			

Element: Hg Seq. No.: 62 AS Loc.: 36 Date: 01/02/2002
Sample ID: BL1231-6M2B

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.007	0.007	0.0001	0.0002	11:43:54	Yes
2	0.010	0.010	0.0001	0.0002	11:44:27	Yes
3	0.010	0.010	0.0001	0.0002	11:45:00	Yes
Mean:	0.009	0.009	0.0001			

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Perkin-Elmer AAWinLab: 01/02/2002, 11:45:00 AM

SD : 0.0021 0.0021 0.0000
%RSD: 22.9 22.9 22.9479

=====
Element: Hg Seq. No.: 63 AS Loc.: 37 Date: 01/02/2002
Sample ID: BL1231S
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.021	1.021	0.0125	0.0126	11:45:49	Yes
2	1.017	1.017	0.0124	0.0125	11:46:22	Yes
3	1.019	1.019	0.0124	0.0125	11:46:55	Yes
Mean:	1.019	1.019	0.0124			
SD :	0.0018	0.0018	0.0000			
%RSD:	0.2	0.2	0.1746			

=====
Element: Hg Seq. No.: 64 AS Loc.: 38 Date: 01/02/2002
Sample ID: BL1231DS
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.030	1.030	0.0126	0.0127	11:47:44	Yes
2	1.039	1.039	0.0127	0.0128	11:48:17	Yes
3	1.024	1.024	0.0125	0.0126	11:48:50	Yes
Mean:	1.031	1.031	0.0126			
SD :	0.0079	0.0079	0.0001			
%RSD:	0.8	0.8	0.7667			

=====
Element: Hg Seq. No.: 65 AS Loc.: 39 Date: 01/02/2002
Sample ID: 81550
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	34.54	3.454	0.0422	0.0423	11:49:38	Yes
2	34.51	3.451	0.0421	0.0422	11:50:11	Yes
3	34.68	3.468	0.0423	0.0424	11:50:45	Yes
Mean:	34.58	3.458	0.0422			
SD :	0.0910	0.0091	0.0001			
%RSD:	0.3	0.3	0.2632			

=====
Element: Hg Seq. No.: 66 AS Loc.: 40 Date: 01/02/2002
Sample ID: 81550D
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	34.59	3.459	0.0422	0.0423	11:51:36	Yes
2	34.52	3.452	0.0421	0.0422	11:52:09	Yes
3	34.54	3.454	0.0422	0.0423	11:52:43	Yes
Mean:	34.55	3.455	0.0422			
SD :	0.0362	0.0036	0.0000			
%RSD:	0.1	0.1	0.1047			

=====
Element: Hg Seq. No.: 67 AS Loc.: 41 Date: 01/02/2002
Sample ID: 81550S
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	44.89	4.489	0.0548	0.0549	11:53:32	Yes
2	44.76	4.476	0.0546	0.0547	11:54:05	Yes
3	44.86	4.486	0.0547	0.0549	11:54:38	Yes
Mean:	44.84	4.484	0.0547			

00076

Perkin-Elmer AAWinLab: 01/02/2002, 11:54:38 AM

SD : 0.0669 0.0067 0.0001
 %RSD: 0.1 0.1 0.1492

=====
 Element: Hg Seq. No.: 68 AS Loc.: 42 Date: 01/02/2002
 Sample ID: 81550DS

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	44.99	4.499	0.0549	0.0550	11:55:49	Yes
2	44.97	4.497	0.0549	0.0550	11:56:22	Yes
3	44.95	4.495	0.0549	0.0550	11:56:55	Yes
Mean:	44.97	4.497	0.0549			
SD :	0.0220	0.0022	0.0000			
%RSD:						

=====
 Element: Hg Seq. No.: 69 AS Loc.: 43 Date: 01/02/2002
 Sample ID: 81549

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	5.632	0.563	0.0069	0.0070	11:58:06	Yes
2	5.646	0.565	0.0069	0.0070	11:58:39	Yes
3	5.587	0.559	0.0068	0.0069	11:59:12	Yes
Mean:	5.621	0.562	0.0069			
SD :	0.0306	0.0031	0.0000			
%RSD:	0.5	0.5	0.5451			

=====
 Element: Hg Seq. No.: 70 AS Loc.: 7 Date: 01/02/2002
 Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.991	0.991	0.0121	0.0122	12:00:02	Yes
2	0.996	0.996	0.0122	0.0123	12:00:35	Yes
3	0.986	0.986	0.0120	0.0121	12:01:08	Yes
Mean:	0.991	0.991	0.0121			
SD :	0.0053	0.0053	0.0001			
%RSD:	0.5	0.5	0.5396			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 71 AS Loc.: 8 Date: 01/02/2002
 Sample ID: CCB

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.005	-0.005	-0.0001	0.0001	12:01:57	Yes
2	-0.007	-0.007	-0.0001	0.0000	12:02:30	Yes
3	-0.007	-0.007	-0.0001	0.0000	12:03:03	Yes
Mean:	-0.006	-0.006	-0.0001			
SD :	0.0015	0.0015	0.0000			
%RSD:	23.8	23.8	23.7988			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 72 AS Loc.: 4 Date: 01/02/2002
 Sample ID: Reslope

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.0923	0.0924	12:03:54	Yes
2			0.0913	0.0914	12:04:28	Yes

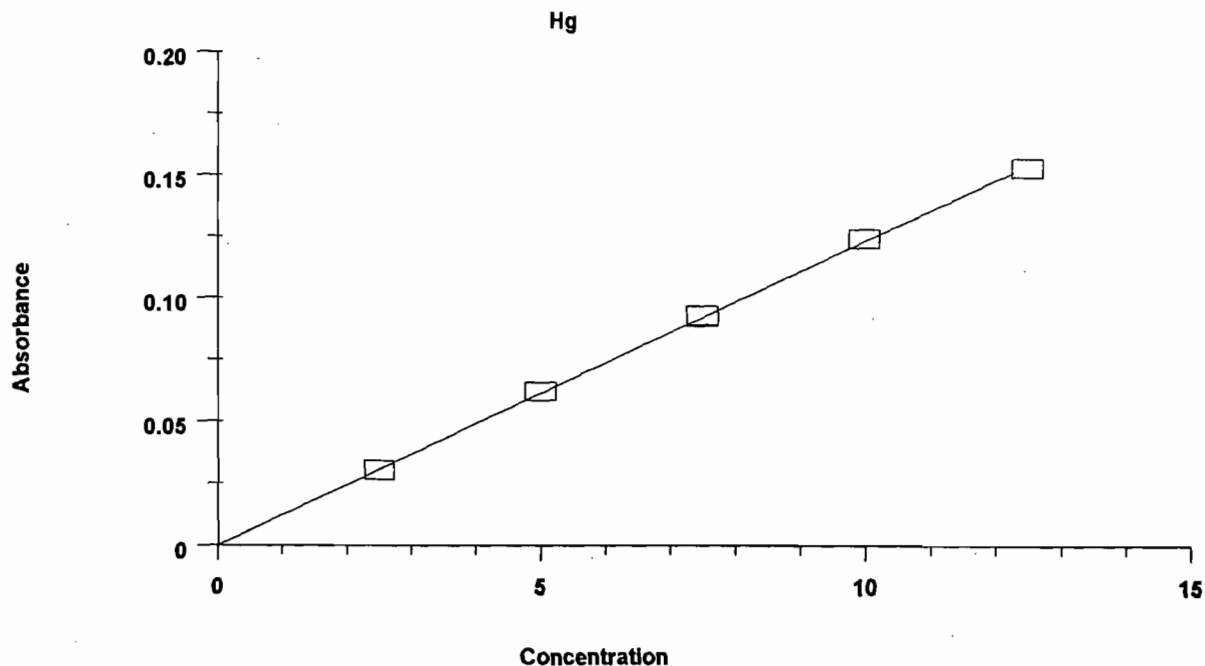
00077

Perkin-Elmer AAWinLab: 01/02/2002, 12:05:01 AM

3 0.0917 0.0918 12:05:01 Yes
 Mean: 0.0917
 SD : 0.0005
 %RSD: 0.5544
 [Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99985 Slope: 0.01227

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration ($\mu\text{g/L}$)	Calculated Concentration ($\mu\text{g/L}$)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.009	0.0000	38.8
STD1	0.0303	2.500	2.475	0.0000	----
STD2	0.0618	5.000	5.052	0.0003	0.4
STD3	0.0924	7.500	7.552	0.0004	0.4
STD4	0.1234	10.000	10.09	0.0005	0.4
STD5	0.1520	12.500	12.43	0.0006	0.4
Reslope	0.0917	7.500	7.500	0.0005	0.6
Correlation Coefficient: 0.99985		Slope:	0.01227	----	



Element: Hg Seq. No.: 73 AS Loc.: 44 Date: 01/02/2002
 Sample ID: 81551

Repl #	Sample Conc $\mu\text{g/L}$	Std Conc $\mu\text{g/L}$	Blk Corr Signal	Peak Height	Time	Peak Stored
1	60.93	6.093	0.0745	0.0746	12:06:20	Yes
2	61.42	6.142	0.0751	0.0752	12:06:53	Yes
3	61.00	6.100	0.0746	0.0747	12:07:26	Yes
Mean:	61.12	6.112	0.0748			
SD :	0.2669	0.0267	0.0003			
%RSD:	0.4	0.4	0.4367			

Element: Hg Seq. No.: 74 AS Loc.: 45 Date: 01/02/2002

Sample ID: 81552

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	52.87	5.287	0.0647	0.0648	12:08:39	Yes
2	52.78	5.278	0.0646	0.0647	12:09:12	Yes
3	52.72	5.272	0.0645	0.0646	12:09:45	Yes
Mean:	52.79	5.279	0.0646			
SD :	0.0722	0.0072	0.0001			
%RSD:	0.1	0.1	0.1368			

Element: Hg Seq. No.: 75 AS Loc.: 46 Date: 01/02/2002
Sample ID: BL1231-7M2B

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.006	0.006	0.0001	0.0002	12:10:58	Yes
2	0.007	0.007	0.0001	0.0002	12:11:31	Yes
3	0.005	0.005	0.0001	0.0002	12:12:04	Yes
Mean:	0.006	0.006	0.0001			
SD :	0.0011	0.0011	0.0000			
%RSD:	19.2	19.2	19.1502			

Element: Hg Seq. No.: 76 AS Loc.: 47 Date: 01/02/2002
Sample ID: BL1231S

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.022	1.022	0.0125	0.0126	12:12:53	Yes
2	1.015	1.015	0.0124	0.0125	12:13:26	Yes
3	1.011	1.011	0.0124	0.0125	12:13:59	Yes
Mean:	1.016	1.016	0.0124			
SD :	0.0054	0.0054	0.0001			
%RSD:	0.5	0.5	0.5318			

Element: Hg Seq. No.: 77 AS Loc.: 48 Date: 01/02/2002
Sample ID: BL1231DS

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.002	1.002	0.0123	0.0124	12:14:48	Yes
2	1.008	1.008	0.0123	0.0124	12:15:21	Yes
3	0.997	0.997	0.0122	0.0123	12:15:54	Yes
Mean:	1.002	1.002	0.0123			
SD :	0.0058	0.0058	0.0001			
%RSD:	0.6	0.6	0.5754			

Element: Hg Seq. No.: 78 AS Loc.: 49 Date: 01/02/2002
Sample ID: 81557

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	153.0	7.652	0.0936	0.0937	12:16:42	Yes
2	153.7	7.685	0.0940	0.0941	12:17:16	Yes
3	153.4	7.672	0.0939	0.0940	12:17:49	Yes
Mean:	153.4	7.670	0.0938			
SD :	0.3323	0.0166	0.0002			
%RSD:	0.2	0.2	0.2166			

Element: Hg Seq. No.: 79 AS Loc.: 50 Date: 01/02/2002

00079

Perkin-Elmer AAWinLab: 01/02/2002, 12:18:12 AM

Sample ID: 81557D

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	155.1	7.753	0.0948	0.0949	12:19:04	Yes
2	155.1	7.754	0.0949	0.0950	12:19:37	Yes
3	153.9	7.694	0.0941	0.0942	12:20:10	Yes
Mean:	154.7	7.734	0.0946			
SD :	0.6852	0.0343	0.0004			
%RSD:	0.4	0.4	0.4430			

Element: Hg Seq. No.: 80 AS Loc.: 51 Date: 01/02/2002
Sample ID: 81557S

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	168.0	8.398	0.1027	0.1028	12:21:24	Yes
2	167.3	8.363	0.1023	0.1024	12:21:57	Yes
3	167.4	8.369	0.1024	0.1025	12:22:30	Yes
Mean:	167.5	8.376	0.1025			
SD :	0.3753	0.0188	0.0002			
%RSD:	0.2	0.2	0.2240			

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2/1/02

Element: Hg Seq. No.: 81 AS Loc.: 52 Date: 01/02/2002
Sample ID: 81557DS

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	179.3	8.966	0.1097	0.1098	12:23:45	Yes
2	175.1	8.753	0.1071	0.1072	12:24:18	Yes
3	169.7	8.486	0.1038	0.1039	12:24:51	Yes
Mean:	174.7	8.735	0.1069			
SD :	4.814	0.2407	0.0029			
%RSD:	2.8	2.8	2.7556			

Element: Hg Seq. No.: 82 AS Loc.: 53 Date: 01/02/2002
Sample ID: 81555

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.346	0.035	0.0004	0.0005	12:26:08	Yes
2	0.299	0.030	0.0004	0.0005	12:26:41	Yes
3	0.308	0.031	0.0004	0.0005	12:27:14	Yes
Mean:	0.317	0.032	0.0004			
SD :	0.0248	0.0025	0.0000			
%RSD:	7.8	7.8	7.8209			

Element: Hg Seq. No.: 83 AS Loc.: 7 Date: 01/02/2002
Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.987	0.987	0.0121	0.0122	12:28:04	Yes
2	0.982	0.982	0.0120	0.0121	12:28:37	Yes
3	0.979	0.979	0.0120	0.0121	12:29:10	Yes
Mean:	0.983	0.983	0.0120			
SD :	0.0038	0.0038	0.0000			
%RSD:	0.4	0.4	0.3851			

QC value within specified limits.

Element: Hg Seq. No.: 84 AS Loc.: 8 Date: 01/02/2002
Sample ID: CCB

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.002	-0.002	0.0000	0.0001	12:29:59	Yes
2	-0.005	-0.005	-0.0001	0.0000	12:30:32	Yes
3	-0.004	-0.004	0.0000	0.0001	12:31:05	Yes
Mean:	-0.004	-0.004	0.0000			
SD :	0.0019	0.0019	0.0000			
%RSD:	50.8	50.8	50.8455			

QC value within specified limits.

=====
Element: Hg Seq. No.: 85 AS Loc.: 4 Date: 01/02/2002
Sample ID: Reslope

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.0905	0.0907	12:31:55	Yes
2			0.0909	0.0910	12:32:28	Yes
3			0.0914	0.0916	12:33:01	Yes
Mean:			0.0910			
SD :			0.0005			
%RSD:			0.4955			

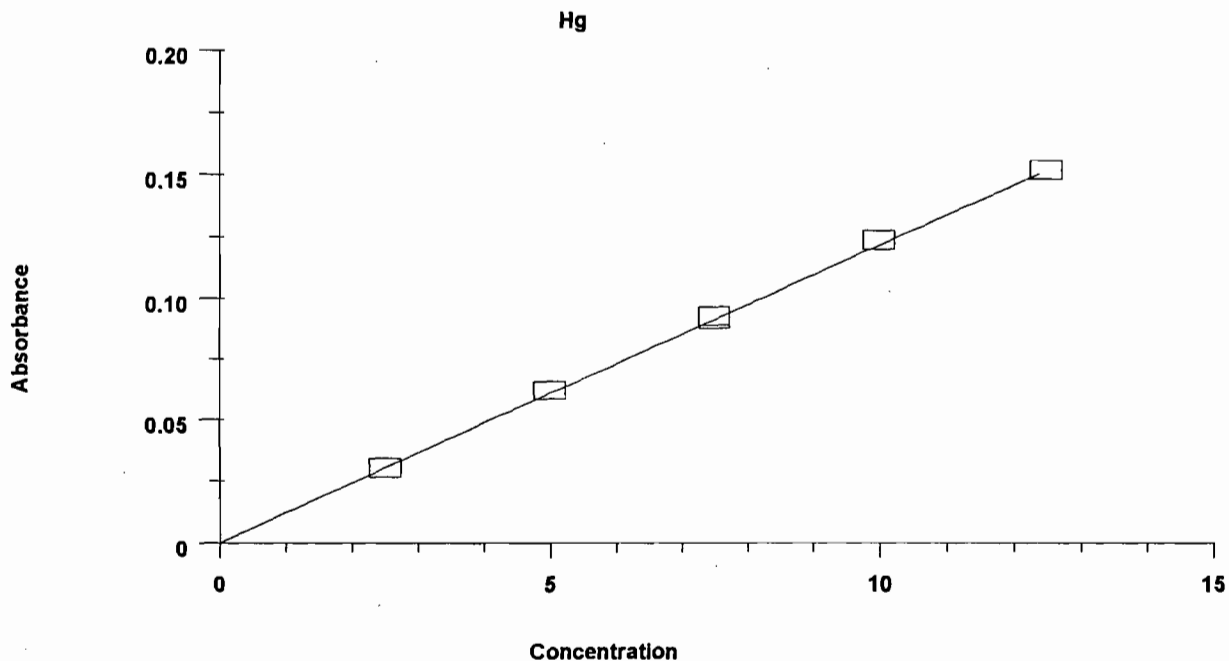
[Hg] Reslope standard applied. [7.500]
Correlation Coefficient: 0.99985 Slope: 0.01238

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.009	0.0000	38.8
STD1	0.0303	2.500	2.496	0.0000	---
STD2	0.0618	5.000	5.094	0.0003	0.4
STD3	0.0924	7.500	7.616	0.0004	0.4
STD4	0.1234	10.000	10.17	0.0005	0.4
STD5	0.1520	12.500	12.53	0.0006	0.4
Reslope	0.0910	7.500	7.500	0.0005	0.5
Correlation Coefficient:		0.99985	Slope:	0.01238	----

00081

Perkin-Elmer AAWinLab: 01/02/2002, 12:33:29 AM



=====
 Element: Hg Seq. No.: 86 AS Loc.: 54 Date: 01/02/2002
 Sample ID: 81556
 =====

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	7.814	0.781	0.0095	0.0096	12:34:22	Yes
2	7.764	0.776	0.0094	0.0095	12:34:55	Yes
3	7.826	0.783	0.0095	0.0096	12:35:28	Yes
Mean:	7.802	0.780	0.0095			
SD :	0.0327	0.0033	0.0000			
%RSD:	0.4	0.4	0.4196			

=====
 Element: Hg Seq. No.: 87 AS Loc.: 55 Date: 01/02/2002
 Sample ID: 81558
 =====

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	118.7	5.936	0.0720	0.0721	12:36:20	Yes
2	117.8	5.889	0.0714	0.0715	12:36:53	Yes
3	118.6	5.928	0.0719	0.0720	12:37:26	Yes
Mean:	118.4	5.918	0.0718			
SD :	0.5041	0.0252	0.0003			
%RSD:	0.4	0.4	0.4259			

=====
 Element: Hg Seq. No.: 88 AS Loc.: 56 Date: 01/02/2002
 Sample ID: 81559
 =====

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	86.82	8.682	0.1053	0.1054	12:38:36	Yes
2	87.57	8.757	0.1062	0.1063	12:39:09	Yes
3	87.16	8.716	0.1057	0.1058	12:39:42	Yes
Mean:	87.19	8.719	0.1058			

SD : 0.3742 0.0374 0.0005
%RSD: 0.4 0.4 0.4291

=====
Element: Hg Seq. No.: 89 AS Loc.: 57 Date: 01/02/2002
Sample ID: BL1231-8M2B

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.011	0.011	0.0001	0.0002	12:40:51	Yes
2	0.014	0.014	0.0002	0.0003	12:41:24	Yes
3	0.016	0.016	0.0002	0.0003	12:41:57	Yes
Mean:	0.013	0.013	0.0002			
SD :	0.0026	0.0026	0.0000			
%RSD:	19.2	19.2	19.1535			

=====
Element: Hg Seq. No.: 90 AS Loc.: 58 Date: 01/02/2002
Sample ID: BL1231S

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.032	1.032	0.0125	0.0126	12:42:46	Yes
2	1.036	1.036	0.0126	0.0127	12:43:19	Yes
3	1.031	1.031	0.0125	0.0126	12:43:52	Yes
Mean:	1.033	1.033	0.0125			
SD :	0.0027	0.0027	0.0000			
%RSD:	0.3	0.3	0.2632			

=====
Element: Hg Seq. No.: 91 AS Loc.: 59 Date: 01/02/2002
Sample ID: BL1231DS

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.008	1.008	0.0122	0.0123	12:44:41	Yes
2	1.011	1.011	0.0123	0.0124	12:45:14	Yes
3	1.018	1.018	0.0123	0.0125	12:45:47	Yes
Mean:	1.012	1.012	0.0123			
SD :	0.0050	0.0050	0.0001			
%RSD:	0.5	0.5	0.4982			

=====
Element: Hg Seq. No.: 92 AS Loc.: 60 Date: 01/02/2002
Sample ID: 81581

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	10.09	1.009	0.0122	0.0124	12:46:35	Yes
2	9.969	0.997	0.0121	0.0122	12:47:08	Yes
3	9.981	0.998	0.0121	0.0122	12:47:41	Yes
Mean:	10.01	1.001	0.0121			
SD :	0.0680	0.0068	0.0001			
%RSD:	0.7	0.7	0.6787			

=====
Element: Hg Seq. No.: 93 AS Loc.: 61 Date: 01/02/2002
Sample ID: 81581D

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	9.839	0.984	0.0119	0.0120	12:48:30	Yes
2	9.887	0.989	0.0120	0.0121	12:49:03	Yes
3	9.793	0.979	0.0119	0.0120	12:49:36	Yes
Mean:	9.840	0.984	0.0119			

SD : 0.0471 0.0047 0.0001
%RSD: 0.5 0.5 0.4786

=====
Element: Hg Seq. No.: 94 AS Loc.: 62 Date: 01/02/2002
Sample ID: 81581S
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	19.66	1.966	0.0238	0.0240	12:50:26	Yes
2	19.53	1.953	0.0237	0.0238	12:50:59	Yes
3	19.53	1.953	0.0237	0.0238	12:51:32	Yes
Mean:	19.57	1.957	0.0237			
SD :	0.0726	0.0073	0.0001			
%RSD:	0.4	0.4	0.3707			

=====
Element: Hg Seq. No.: 95 AS Loc.: 63 Date: 01/02/2002
Sample ID: 81581DS
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	19.77	1.977	0.0240	0.0241	12:52:21	Yes
2	19.64	1.964	0.0238	0.0239	12:52:54	Yes
3	19.79	1.979	0.0240	0.0241	12:53:27	Yes
Mean:	19.73	1.973	0.0239			
SD :	0.0793	0.0079	0.0001			
%RSD:	0.4	0.4	0.4018			

=====
Element: Hg Seq. No.: 96 AS Loc.: 7 Date: 01/02/2002
Sample ID: CCV
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.000	1.000	0.0121	0.0122	12:54:17	Yes
2	0.987	0.987	0.0120	0.0121	12:54:50	Yes
3	0.999	0.999	0.0121	0.0122	12:55:23	Yes
Mean:	0.995	0.995	0.0121			
SD :	0.0073	0.0073	0.0001			
%RSD:	0.7	0.7	0.7294			

QC value within specified limits.

=====
Element: Hg Seq. No.: 97 AS Loc.: 8 Date: 01/02/2002
Sample ID: CCB
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.005	-0.005	-0.0001	0.0001	12:56:12	Yes
2	-0.005	-0.005	-0.0001	0.0000	12:56:45	Yes
3	-0.004	-0.004	0.0000	0.0001	12:57:18	Yes
Mean:	-0.005	-0.005	-0.0001			
SD :	0.0008	0.0008	0.0000			
%RSD:	18.4	18.4	18.3771			

QC value within specified limits.

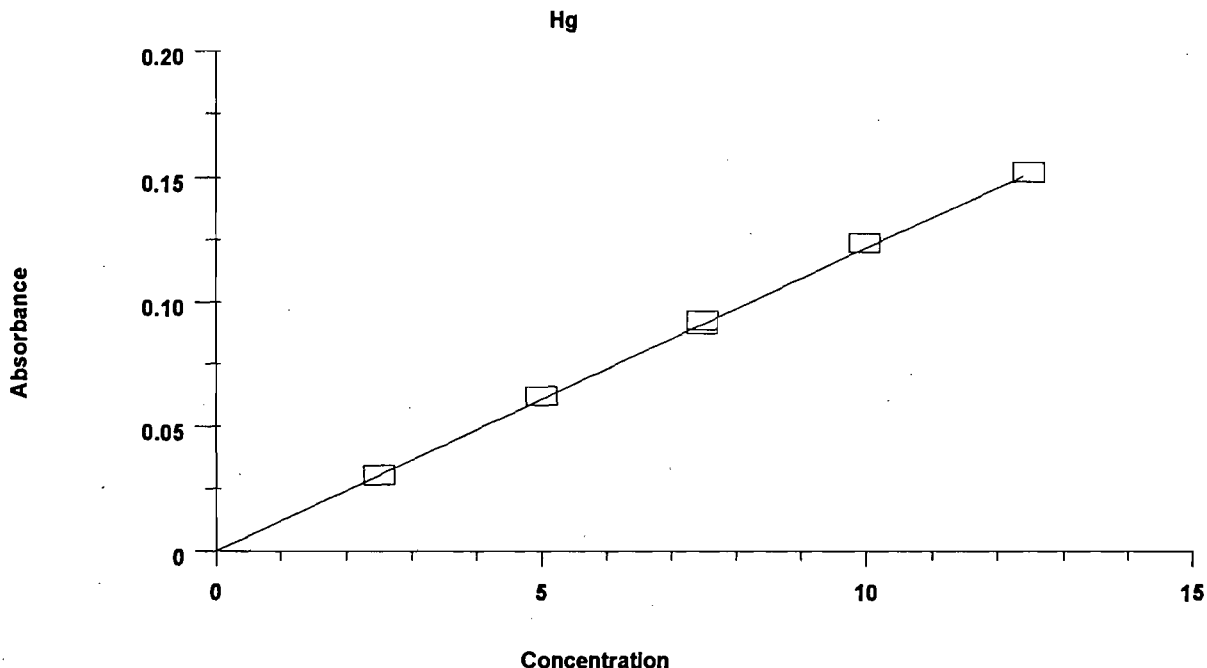
=====
Element: Hg Seq. No.: 98 AS Loc.: 4 Date: 01/02/2002
Sample ID: Reslope
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.0917	0.0918	12:58:08	Yes
2			0.0906	0.0907	12:58:41	Yes

3 0.0903 0.0904 12:59:14 Yes
Mean: 0.0909
SD : 0.0008
%RSD: 0.8459
[Hg] Reslope standard applied. [7.500]
Correlation Coefficient: 0.99985 Slope: 0.01239

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.009	0.0000	38.8
STD1	0.0303	2.500	2.499	0.0000	---
STD2	0.0618	5.000	5.100	0.0003	0.4
STD3	0.0924	7.500	7.624	0.0004	0.4
STD4	0.1234	10.000	10.18	0.0005	0.4
STD5	0.1520	12.500	12.55	0.0006	0.4
Reslope	0.0909	7.500	7.500	0.0008	0.8
Correlation Coefficient: 0.99985		Slope:	0.01239	----	



Element: Hg Seq. No.: 99 AS Loc.: 64 Date: 01/02/2002
Sample ID: 81579

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.279	0.028	0.0003	0.0004	01:00:33	Yes
2	0.309	0.031	0.0004	0.0005	01:01:06	Yes
3	0.303	0.030	0.0004	0.0005	01:01:40	Yes
Mean:	0.297	0.030	0.0004			
SD :	0.0159	0.0016	0.0000			
%RSD:	5.3	5.3	5.3402			

Element: Hg Seq. No.: 100 AS Loc.: 65 Date: 01/02/2002

Sample ID: 81580

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.322	0.032	0.0004	0.0005	01:02:28	Yes
2	0.289	0.029	0.0003	0.0005	01:03:02	Yes
3	0.284	0.028	0.0003	0.0005	01:03:35	Yes
Mean:	0.298	0.030	0.0004			
SD :	0.0209	0.0021	0.0000			
%RSD:	7.0	7.0	7.0061			

Element: Hg Seq. No.: 101 AS Loc.: 66 Date: 01/02/2002
Sample ID: 81582

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	12.96	1.296	0.0157	0.0158	01:04:24	Yes
2	12.98	1.298	0.0157	0.0158	01:04:57	Yes
3	12.86	1.286	0.0156	0.0157	01:05:30	Yes
Mean:	12.93	1.293	0.0157			
SD :	0.0663	0.0066	0.0001			
%RSD:	0.5	0.5	0.5130			

Element: Hg Seq. No.: 102 AS Loc.: 67 Date: 01/02/2002
Sample ID: 81583

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	11.58	1.158	0.0140	0.0141	01:12:31	Yes
2	11.28	1.128	0.0137	0.0138	01:13:03	Yes
3	11.32	1.132	0.0137	0.0138	01:13:36	Yes
Mean:	11.39	1.139	0.0138			
SD :	0.1648	0.0165	0.0002			
%RSD:	1.4	1.4	1.4461			

Element: Hg Seq. No.: 103 AS Loc.: 68 Date: 01/02/2002
Sample ID: 81557S PDS

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	170.7	8.533	0.1034	0.1035	01:14:25	Yes
2	172.7	8.633	0.1046	0.1047	01:14:58	Yes
3	172.5	8.625	0.1045	0.1046	01:15:31	Yes
Mean:	171.9	8.597	0.1042			
SD :	1.111	0.0556	0.0007			
%RSD:	0.6	0.6	0.6463			

Element: Hg Seq. No.: 104 AS Loc.: 69 Date: 01/02/2002
Sample ID: 81557DS PDS

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	177.9	8.895	0.1078	0.1079	01:16:46	Yes
2	178.6	8.930	0.1082	0.1083	01:17:19	Yes
3	177.9	8.893	0.1078	0.1079	01:17:52	Yes
Mean:	178.1	8.906	0.1079			
SD :	0.4186	0.0209	0.0003			
%RSD:	0.2	0.2	0.2350			

Element: Hg Seq. No.: 105 AS Loc.: 7 Date: 01/02/2002

Sample ID: CCV

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored

=====
Element: Hg Seq. No.: 105 AS Loc.: 69 Date: 01/02/2002
Sample ID: 81557DS PDS

1	176.2	8.810	0.1068	0.1069	01:21:52	Yes
2	175.2	8.762	0.1062	0.1063	01:22:26	Yes
3	177.3	8.864	0.1074	0.1075	01:22:59	Yes
Mean:	176.2	8.812	0.1068			
SD :	1.025	0.0512	0.0006			
%RSD:	0.6	0.6	0.5814			

=====
Element: Hg Seq. No.: 106 AS Loc.: 7 Date: 01/02/2002
Sample ID: CCV

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.990	0.990	0.0120	0.0121	01:24:16	Yes
2	0.976	0.976	0.0118	0.0119	01:24:49	Yes
3	0.984	0.984	0.0119	0.0120	01:25:22	Yes
Mean:	0.983	0.983	0.0119			
SD :	0.0066	0.0066	0.0001			
%RSD:	0.7	0.7	0.6710			

=====
Element: Hg Seq. No.: 107 AS Loc.: 8 Date: 01/02/2002
Sample ID: CCB

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	-0.002	-0.002	0.0000	0.0001	01:26:11	Yes
2	-0.006	-0.006	-0.0001	0.0000	01:26:44	Yes
3	-0.005	-0.005	-0.0001	0.0000	01:27:17	Yes
Mean:	-0.005	-0.005	-0.0001			
SD :	0.0020	0.0020	0.0000			
%RSD:	42.7	42.7	42.6611			

Element: Hg Seq. No.: 128 AS Loc.: 1 Date: 01/02/2002
 Sample ID: Calib Blank

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0003	0.0003	02:35:35	Yes
2			0.0001	0.0001	02:36:08	Yes
3			0.0002	0.0002	02:36:41	Yes
Mean:			0.0002			
SD :			0.0001			
%RSD:			52.5171			

Auto-zero performed.

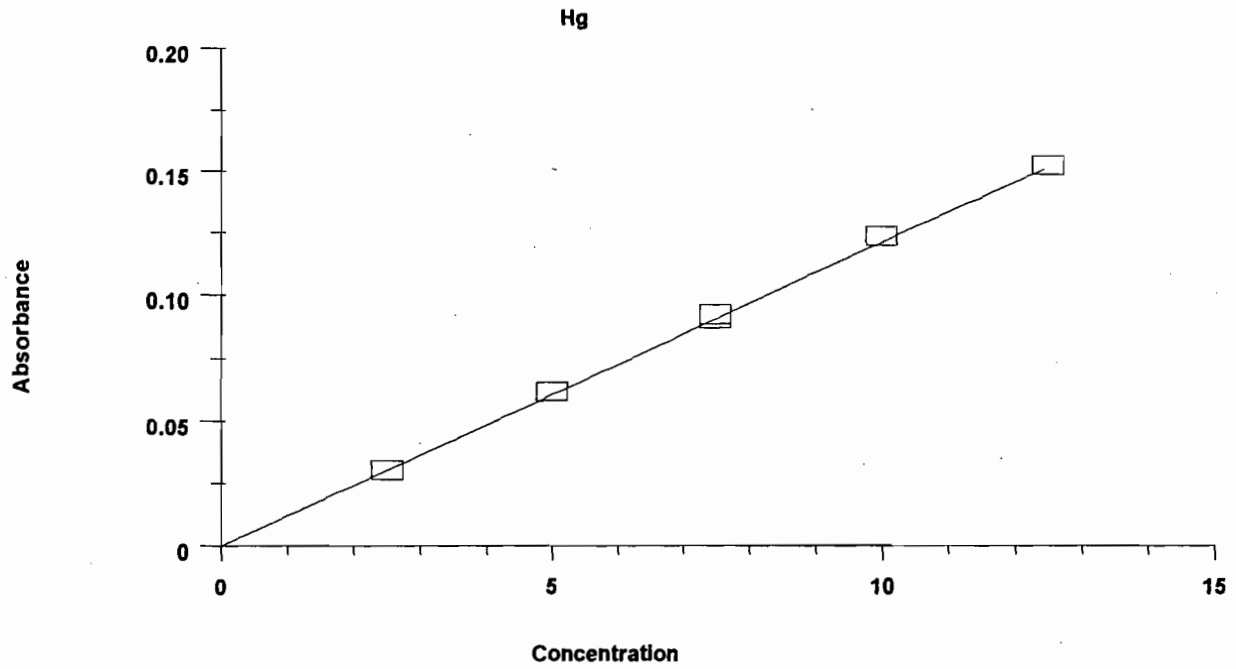
Element: Hg Seq. No.: 129 AS Loc.: 4 Date: 01/02/2002
 Sample ID: Reslope

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0907	0.0909	02:37:31	Yes
2			0.0910	0.0912	02:38:05	Yes
3			0.0904	0.0906	02:38:38	Yes
Mean:			0.0907			
SD :			0.0003			
%RSD:			0.3065			

[Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99985 Slope: 0.01241

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0002	---	0.015	0.0001	52.5
STD1	0.0303	2.500	2.503	0.0000	---
STD2	0.0618	5.000	5.110	0.0003	0.4
STD3	0.0924	7.500	7.639	0.0004	0.4
STD4	0.1234	10.000	10.20	0.0005	0.4
STD5	0.1520	12.500	12.57	0.0006	0.4
Reslope	0.0907	7.500	7.500	0.0003	0.3
Correlation Coefficient:		0.99985	Slope:	0.01241	----



Element: Hg Seq. No.: 130 AS Loc.: 70 Date: 01/02/2002
 Sample ID: BL0102-1M3A

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.006	0.006	0.0001	0.0003	02:48:25	Yes
2	-0.020	-0.020	-0.0002	-0.0001	02:48:59	Yes
3	-0.001	-0.001	0.0000	0.0002	02:49:32	Yes
Mean:	-0.005	-0.005	-0.0001			
SD :	0.0134	0.0134	0.0002			
%RSD:	290.0	290.0	290.0206			

Element: Hg Seq. No.: 131 AS Loc.: 71 Date: 01/02/2002
 Sample ID: BL0102S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.029	1.029	0.0124	0.0126	02:50:23	Yes
2	1.030	1.030	0.0125	0.0126	02:50:57	Yes
3	1.023	1.023	0.0124	0.0126	02:51:30	Yes
Mean:	1.027	1.027	0.0124			
SD :	0.0035	0.0035	0.0000			
%RSD:	0.3	0.3	0.3384			

Element: Hg Seq. No.: 132 AS Loc.: 72 Date: 01/02/2002
 Sample ID: BL0102DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.050	1.050	0.0127	0.0129	02:52:19	Yes
2	1.048	1.048	0.0127	0.0128	02:52:52	Yes
3	1.055	1.055	0.0128	0.0129	02:53:25	Yes
Mean:	1.051	1.051	0.0127			
SD :	0.0036	0.0036	0.0000			
%RSD:	0.3	0.3	0.3467			

Element: Hg Seq. No.: 133 AS Loc.: 73 Date: 01/02/2002
 Sample ID: 81557

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.431	0.431	0.0052	0.0054	02:54:13	Yes
2	0.429	0.429	0.0052	0.0054	02:54:46	Yes
3	0.432	0.432	0.0052	0.0054	02:55:19	Yes
Mean:	0.431	0.431	0.0052			
SD :	0.0018	0.0018	0.0000			
%RSD:	0.4	0.4	0.4141			

Element: Hg Seq. No.: 134 AS Loc.: 74 Date: 01/02/2002
 Sample ID: 81557D

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.433	0.433	0.0052	0.0054	02:56:07	Yes
2	0.432	0.432	0.0052	0.0054	02:56:40	Yes
3	0.432	0.432	0.0052	0.0054	02:57:13	Yes
Mean:	0.433	0.433	0.0052			
SD :	0.0005	0.0005	0.0000			
%RSD:	0.1	0.1	0.1185			

Element: Hg Seq. No.: 135 AS Loc.: 75 Date: 01/02/2002

Sample ID: 81557S

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.404	1.404	0.0170	0.0172	02:58:02	Yes
2	1.403	1.403	0.0170	0.0171	02:58:35	Yes
3	1.393	1.393	0.0169	0.0170	02:59:08	Yes
Mean:	1.400	1.400	0.0169			
SD :	0.0057	0.0057	0.0001			
%RSD:	0.4	0.4	0.4073			

=====
Element: Hg Seq. No.: 136 AS Loc.: 76 Date: 01/02/2002
Sample ID: 81557DS

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.446	1.446	0.0175	0.0177	02:59:57	Yes
2	1.428	1.428	0.0173	0.0175	03:00:30	Yes
3	1.443	1.443	0.0174	0.0176	03:01:03	Yes
Mean:	1.439	1.439	0.0174			
SD :	0.0091	0.0091	0.0001			
%RSD:	0.6	0.6	0.6341			

=====
Element: Hg Seq. No.: 137 AS Loc.: 77 Date: 01/02/2002
Sample ID: 81555

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.000	0.000	0.0000	0.0002	03:01:53	Yes
2	0.000	0.000	0.0000	0.0002	03:02:25	Yes
3	0.000	0.000	0.0000	0.0002	03:02:59	Yes
Mean:	0.000	0.000	0.0000			
SD :	0.0004	0.0004	0.0000			
%RSD:	474.2	474.2	474.1991			

=====
Element: Hg Seq. No.: 138 AS Loc.: 78 Date: 01/02/2002
Sample ID: 81556

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.089	0.089	0.0011	0.0013	03:03:48	Yes
2	0.090	0.090	0.0011	0.0013	03:04:21	Yes
3	0.092	0.092	0.0011	0.0013	03:04:54	Yes
Mean:	0.090	0.090	0.0011			
SD :	0.0016	0.0016	0.0000			
%RSD:	1.8	1.8	1.7602			

=====
Element: Hg Seq. No.: 139 AS Loc.: 79 Date: 01/02/2002
Sample ID: 81558

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.902	1.902	0.0230	0.0232	03:05:43	Yes
2	1.885	1.885	0.0228	0.0230	03:06:16	Yes
3	1.893	1.893	0.0229	0.0231	03:06:49	Yes
Mean:	1.893	1.893	0.0229			
SD :	0.0085	0.0085	0.0001			
%RSD:	0.5	0.5	0.4508			

=====
Element: Hg Seq. No.: 140 AS Loc.: 7 Date: 01/02/2002

00091

Perkin-Elmer AAWinLab: 01/02/2002, 03:06:50 PM

Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.008	1.008	0.0122	0.0124	03:07:40	Yes
2	1.009	1.009	0.0122	0.0124	03:08:13	Yes
3	1.005	1.005	0.0122	0.0123	03:08:46	Yes
Mean:	1.007	1.007	0.0122			
SD :	0.0019	0.0019	0.0000			
%RSD:	0.2	0.2	0.1901			

=====

Element: Hg Seq. No.: 141 AS Loc.: 8 Date: 01/02/2002

Sample ID: CCB

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.009	-0.009	-0.0001	0.0001	03:09:35	Yes
2	-0.014	-0.014	-0.0002	0.0000	03:10:08	Yes
3	-0.014	-0.014	-0.0002	0.0000	03:10:41	Yes
Mean:	-0.013	-0.013	-0.0002			
SD :	0.0031	0.0031	0.0000			
%RSD:	25.1	25.1	25.1061			

00092

=====
 Element: Hg Seq. No.: 142 AS Loc.: 1 Date: 01/02/2002
 Sample ID: Calib Blank
 =====

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.0001	0.0001	03:11:54	Yes
2			0.0002	0.0002	03:12:27	Yes
3			0.0002	0.0002	03:13:01	Yes
Mean:			0.0002			
SD :			0.0000			
%RSD:			21.8812			

Auto-zero performed.

=====
 Element: Hg Seq. No.: 143 AS Loc.: 4 Date: 01/02/2002
 Sample ID: Reslope
 =====

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.0914	0.0916	03:13:51	Yes
2			0.0919	0.0921	03:14:24	Yes
3			0.0918	0.0919	03:14:57	Yes
Mean:			0.0917			
SD :			0.0002			
%RSD:			0.2579			

[Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99985 Slope: 0.01228

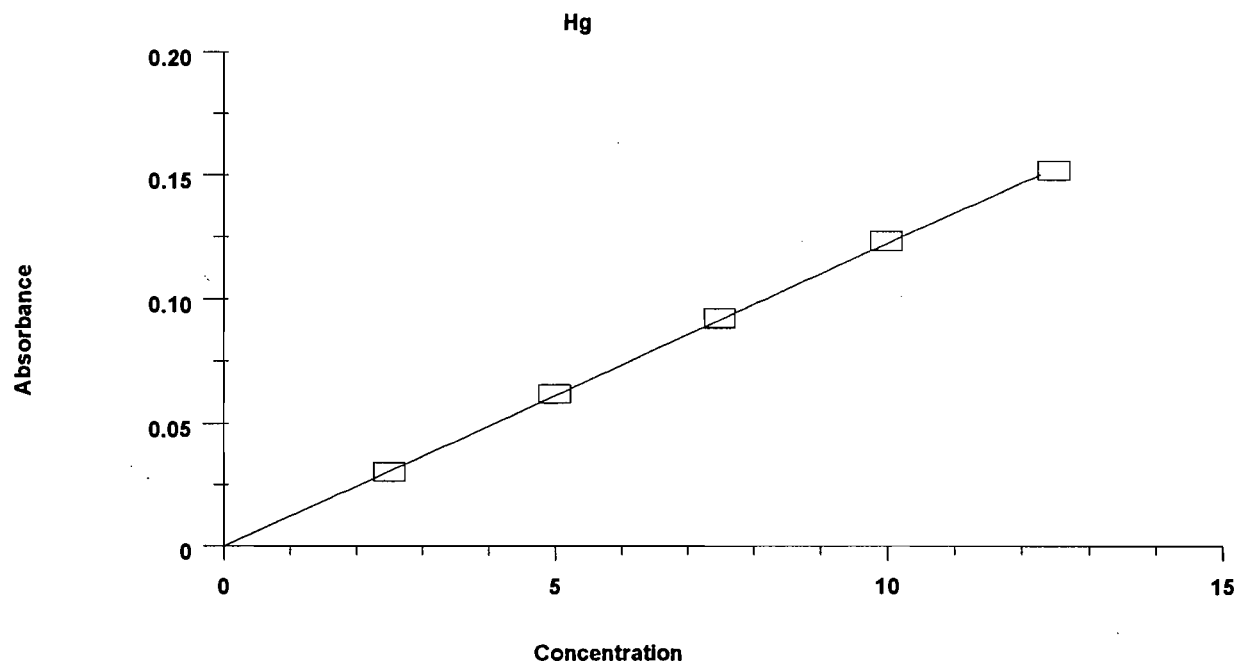
Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0002	---	0.013	0.0000	21.9
STD1	0.0303	2.500	2.476	0.0000	----
STD2	0.0618	5.000	5.054	0.0003	0.4
STD3	0.0924	7.500	7.556	0.0004	0.4
STD4	0.1234	10.000	10.09	0.0005	0.4
STD5	0.1520	12.500	12.43	0.0006	0.4
Reslope	0.0917	7.500	7.500	0.0002	0.3

Correlation Coefficient: 0.99985 Slope: 0.01228 ----

00093

Perkin-Elmer AAWinLab: 01/02/2002, 03:15:25 PM



00094

Element: Hg Seq. No.: 144 AS Loc.: 80 Date: 01/02/2002
Sample ID: 81559

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.486	1.486	0.0182	0.0183	03:16:37	Yes
2	1.472	1.472	0.0180	0.0182	03:17:10	Yes
3	1.467	1.467	0.0179	0.0181	03:17:43	Yes
Mean:	1.475	1.475	0.0180			
SD :	0.0101	0.0101	0.0001			
%RSD:	0.7	0.7	0.6817			

Element: Hg Seq. No.: 145 AS Loc.: 81 Date: 01/02/2002
Sample ID: 81579

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.009	0.009	0.0001	0.0003	03:18:31	Yes
2	0.000	0.000	0.0000	0.0002	03:19:04	Yes
3	0.002	0.002	0.0000	0.0002	03:19:37	Yes
Mean:	0.004	0.004	0.0000			
SD :	0.0050	0.0050	0.0001			
%RSD:	132.5	132.5	132.4741			

Element: Hg Seq. No.: 146 AS Loc.: 82 Date: 01/02/2002
Sample ID: 81580

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.003	-0.003	0.0000	0.0001	03:20:26	Yes
2	-0.001	-0.001	0.0000	0.0001	03:20:59	Yes
3	-0.002	-0.002	0.0000	0.0001	03:21:32	Yes
Mean:	-0.002	-0.002	0.0000			
SD :	0.0010	0.0010	0.0000			
%RSD:	42.8	42.8	42.8022			

Element: Hg Seq. No.: 147 AS Loc.: 83 Date: 01/02/2002
Sample ID: 81581

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.006	0.006	0.0001	0.0002	03:22:21	Yes
2	0.004	0.004	0.0001	0.0002	03:22:54	Yes
3	0.002	0.002	0.0000	0.0002	03:23:27	Yes
Mean:	0.004	0.004	0.0001			
SD :	0.0023	0.0023	0.0000			
%RSD:	54.9	54.9	54.9227			

Element: Hg Seq. No.: 148 AS Loc.: 84 Date: 01/02/2002
Sample ID: 81582

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.035	0.035	0.0004	0.0006	03:24:17	Yes
2	0.039	0.039	0.0005	0.0006	03:24:50	Yes
3	0.037	0.037	0.0005	0.0006	03:25:22	Yes
Mean:	0.037	0.037	0.0005			
SD :	0.0018	0.0018	0.0000			
%RSD:	4.8	4.8	4.8055			

Element: Hg Seq. No.: 149 AS Loc.: 85 Date: 01/02/2002

Sample ID: 81583

Repl #	SampleConc µg/L	StdndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.015	0.015	0.0002	0.0003	03:26:11	Yes
2	0.015	0.015	0.0002	0.0003	03:26:44	Yes
3	0.011	0.011	0.0001	0.0003	03:27:17	Yes
Mean:	0.014	0.014	0.0002			
SD :	0.0023	0.0023	0.0000			
%RSD:	17.2	17.2	17.1664			

Element: Hg Seq. No.: 150 AS Loc.: 86 Date: 01/02/2002
Sample ID: BL0102-2M3C

Repl #	SampleConc µg/L	StdndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	-0.003	-0.003	0.0000	0.0001	03:28:09	Yes
2	-0.003	-0.003	0.0000	0.0001	03:28:42	Yes
3	-0.009	-0.009	-0.0001	0.0001	03:29:15	Yes
Mean:	-0.005	-0.005	-0.0001			
SD :	0.0034	0.0034	0.0000			
%RSD:	68.8	68.8	68.8108			

Element: Hg Seq. No.: 151 AS Loc.: 87 Date: 01/02/2002
Sample ID: BL0102S

Repl #	SampleConc µg/L	StdndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.030	1.030	0.0126	0.0128	03:30:04	Yes
2	1.031	1.031	0.0126	0.0128	03:30:37	Yes
3	1.025	1.025	0.0125	0.0127	03:31:10	Yes
Mean:	1.029	1.029	0.0126			
SD :	0.0034	0.0034	0.0000			
%RSD:	0.3	0.3	0.3291			

Element: Hg Seq. No.: 152 AS Loc.: 88 Date: 01/02/2002
Sample ID: BL0102DS

Repl #	SampleConc µg/L	StdndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.032	1.032	0.0126	0.0128	03:31:58	Yes
2	1.023	1.023	0.0125	0.0127	03:32:31	Yes
3	1.033	1.033	0.0126	0.0128	03:33:04	Yes
Mean:	1.029	1.029	0.0126			
SD :	0.0058	0.0058	0.0001			
%RSD:	0.6	0.6	0.5668			

Element: Hg Seq. No.: 153 AS Loc.: 89 Date: 01/02/2002
Sample ID: 81557

Repl #	SampleConc µg/L	StdndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.377	1.377	0.0168	0.0170	03:33:52	Yes
2	1.374	1.374	0.0168	0.0170	03:34:25	Yes
3	1.381	1.381	0.0169	0.0170	03:34:58	Yes
Mean:	1.377	1.377	0.0168			
SD :	0.0035	0.0035	0.0000			
%RSD:	0.3	0.3	0.2558			

Element: Hg Seq. No.: 154 AS Loc.: 7 Date: 01/02/2002

Sample ID: CCV

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.982	0.982	0.0120	0.0122	03:35:51	Yes
2	0.979	0.979	0.0120	0.0121	03:36:24	Yes
3	0.977	0.977	0.0120	0.0121	03:36:57	Yes
Mean:	0.980	0.980	0.0120			
SD :	0.0026	0.0026	0.0000			
%RSD:	0.3	0.3	0.2627			

=====

Element: Hg Seq. No.: 155 AS Loc.: 8 Date: 01/02/2002
Sample ID: CCB

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.008	-0.008	-0.0001	0.0001	03:37:46	Yes
2	-0.015	-0.015	-0.0002	0.0000	03:38:19	Yes
3	-0.012	-0.012	-0.0001	0.0000	03:38:52	Yes
Mean:	-0.011	-0.011	-0.0001			
SD :	0.0035	0.0035	0.0000			
%RSD:	31.0	31.0	30.9740			

Element: Hg Seq. No.: 156 AS Loc.: 1 Date: 01/02/2002
 Sample ID: Calib Blank

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0002	0.0002	03:40:07	Yes
2			0.0001	0.0001	03:40:40	Yes
3			0.0001	0.0001	03:41:13	Yes
Mean:			0.0001			
SD :			0.0000			
%RSD:			17.0423			

Auto-zero performed.

Element: Hg Seq. No.: 157 AS Loc.: 4 Date: 01/02/2002
 Sample ID: Reslope

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0910	0.0911	03:42:02	Yes
2			0.0907	0.0908	03:42:35	Yes
3			0.0915	0.0917	03:43:08	Yes
Mean:			0.0911			
SD :			0.0004			
%RSD:			0.4825			

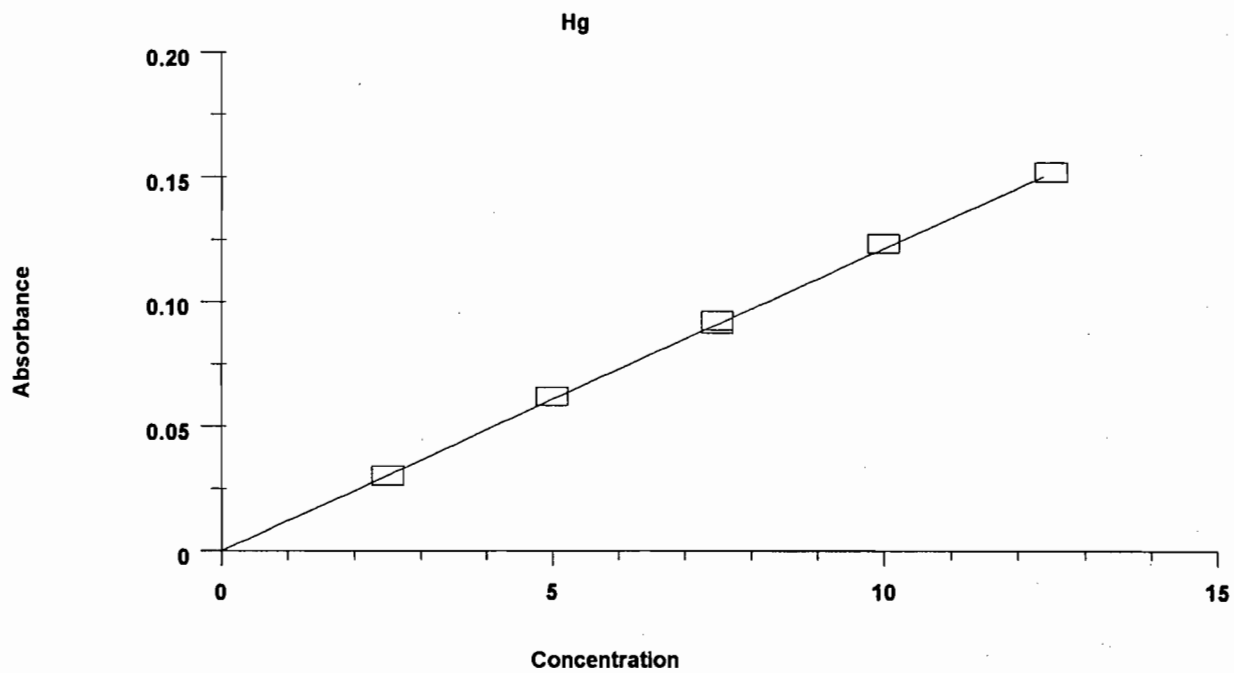
[Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99985 Slope: 0.01237

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.012	0.0000	17.0
STD1	0.0303	2.500	2.494	0.0000	---
STD2	0.0618	5.000	5.090	0.0003	0.4
STD3	0.0924	7.500	7.610	0.0004	0.4
STD4	0.1234	10.000	10.16	0.0005	0.4
STD5	0.1520	12.500	12.52	0.0006	0.4
Reslope	0.0911	7.500	7.500	0.0004	0.5
Correlation Coefficient: 0.99985		Slope: 0.01237		----	

00098

Perkin-Elmer AAWinLab: 01/02/2002, 03:43:36 PM



Element: Hg Seq. No.: 158 AS Loc.: 90 Date: 01/02/2002
 Sample ID: 81557D

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.366	1.366	0.0166	0.0167	03:45:47	Yes
2	1.350	1.350	0.0164	0.0165	03:46:20	Yes
3	1.349	1.349	0.0164	0.0165	03:46:52	Yes
Mean:	1.355	1.355	0.0165			
SD :	0.0096	0.0096	0.0001			
%RSD:	0.7	0.7	0.7068			

Element: Hg Seq. No.: 159 AS Loc.: 91 Date: 01/02/2002
 Sample ID: 81557S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	2.305	2.305	0.0280	0.0281	03:47:41	Yes
2	2.320	2.320	0.0282	0.0283	03:48:14	Yes
3	2.320	2.320	0.0282	0.0283	03:48:47	Yes
Mean:	2.315	2.315	0.0281			
SD :	0.0087	0.0087	0.0001			
%RSD:	0.4	0.4	0.3756			

Element: Hg Seq. No.: 160 AS Loc.: 92 Date: 01/02/2002
 Sample ID: 81557DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	2.335	2.335	0.0283	0.0285	03:49:36	Yes
2	2.332	2.332	0.0283	0.0285	03:50:09	Yes
3	2.335	2.335	0.0283	0.0285	03:50:42	Yes
Mean:	2.334	2.334	0.0283			
SD :	0.0019	0.0019	0.0000			
%RSD:						

Element: Hg Seq. No.: 161 AS Loc.: 93 Date: 01/02/2002
 Sample ID: 81554

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.003	-0.003	0.0000	0.0001	03:51:31	Yes
2	0.000	0.000	0.0000	0.0001	03:52:04	Yes
3	-0.003	-0.003	0.0000	0.0001	03:52:37	Yes
Mean:	-0.002	-0.002	0.0000			
SD :	0.0017	0.0017	0.0000			
%RSD:	93.2	93.2	93.1705			

Element: Hg Seq. No.: 162 AS Loc.: 94 Date: 01/02/2002
 Sample ID: 81555

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.006	0.006	0.0001	0.0002	03:53:26	Yes
2	-0.002	-0.002	0.0000	0.0001	03:53:59	Yes
3	-0.003	-0.003	0.0000	0.0001	03:54:32	Yes
Mean:	0.000	0.000	0.0000			
SD :	0.0049	0.0049	0.0001			
%RSD:	1772	1772	1772.3601			

Element: Hg Seq. No.: 163 AS Loc.: 95 Date: 01/02/2002

Sample ID: 81556

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.059	0.059	0.0007	0.0009	03:55:21	Yes
2	0.052	0.052	0.0006	0.0008	03:55:55	Yes
3	0.055	0.055	0.0007	0.0008	03:56:27	Yes
Mean:	0.056	0.056	0.0007			
SD :	0.0034	0.0034	0.0000			
%RSD:	6.1	6.1	6.1060			

Element: Hg Seq. No.: 164 AS Loc.: 96 Date: 01/02/2002
Sample ID: 81558

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.388	1.388	0.0169	0.0170	03:57:16	Yes
2	1.383	1.383	0.0168	0.0169	03:57:49	Yes
3	1.379	1.379	0.0167	0.0169	03:58:22	Yes
Mean:	1.383	1.383	0.0168			
SD :	0.0047	0.0047	0.0001			
%RSD:	0.3	0.3	0.3409			

Element: Hg Seq. No.: 165 AS Loc.: 97 Date: 01/02/2002
Sample ID: 81559

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.156	1.156	0.0140	0.0142	03:59:11	Yes
2	1.159	1.159	0.0141	0.0142	03:59:44	Yes
3	1.153	1.153	0.0140	0.0141	04:00:17	Yes
Mean:	1.156	1.156	0.0140			
SD :	0.0030	0.0030	0.0000			
%RSD:	0.3	0.3	0.2601			

Element: Hg Seq. No.: 166 AS Loc.: 98 Date: 01/02/2002
Sample ID: 81578

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	-0.010	-0.010	-0.0001	0.0000	04:01:06	Yes
2	-0.007	-0.007	-0.0001	0.0001	04:01:39	Yes
3	-0.002	-0.002	0.0000	0.0001	04:02:12	Yes
Mean:	-0.006	-0.006	-0.0001			
SD :	0.0040	0.0040	0.0000			
%RSD:	62.5	62.5	62.5490			

Element: Hg Seq. No.: 167 AS Loc.: 99 Date: 01/02/2002
Sample ID: 81579

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.017	0.017	0.0002	0.0004	04:03:01	Yes
2	0.019	0.019	0.0002	0.0004	04:03:34	Yes
3	0.018	0.018	0.0002	0.0004	04:04:07	Yes
Mean:	0.018	0.018	0.0002			
SD :	0.0009	0.0009	0.0000			
%RSD:	5.1	5.1	5.1100			

Element: Hg Seq. No.: 168 AS Loc.: 7 Date: 01/02/2002

Sample ID: CCV

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.989	0.989	0.0120	0.0122	04:04:57	Yes
2	0.995	0.995	0.0121	0.0122	04:05:30	Yes
3	0.991	0.991	0.0120	0.0122	04:06:03	Yes
Mean:	0.992	0.992	0.0120			
SD :	0.0030	0.0030	0.0000			
%RSD:	0.3	0.3	0.3030			

=====
Element: Hg Seq. No.: 169 AS Loc.: 8 Date: 01/02/2002
Sample ID: CCB

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	-0.006	-0.006	-0.0001	0.0001	04:06:53	Yes
2	-0.013	-0.013	-0.0002	0.0000	04:07:26	Yes
3	-0.010	-0.010	-0.0001	0.0000	04:07:58	Yes
Mean:	-0.010	-0.010	-0.0001			
SD :	0.0034	0.0034	0.0000			
%RSD:	35.1	35.1	35.0806			

=====
 Element: Hg Seq. No.: 170 AS Loc.: 1 Date: 01/02/2002
 Sample ID: Calib Blank
 =====

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.0001	0.0001	04:09:07	Yes
2			0.0001	0.0001	04:09:40	Yes
3			0.0001	0.0001	04:10:13	Yes
Mean:			0.0001			
SD :			0.0000			
%RSD:			5.1527			

Auto-zero performed.

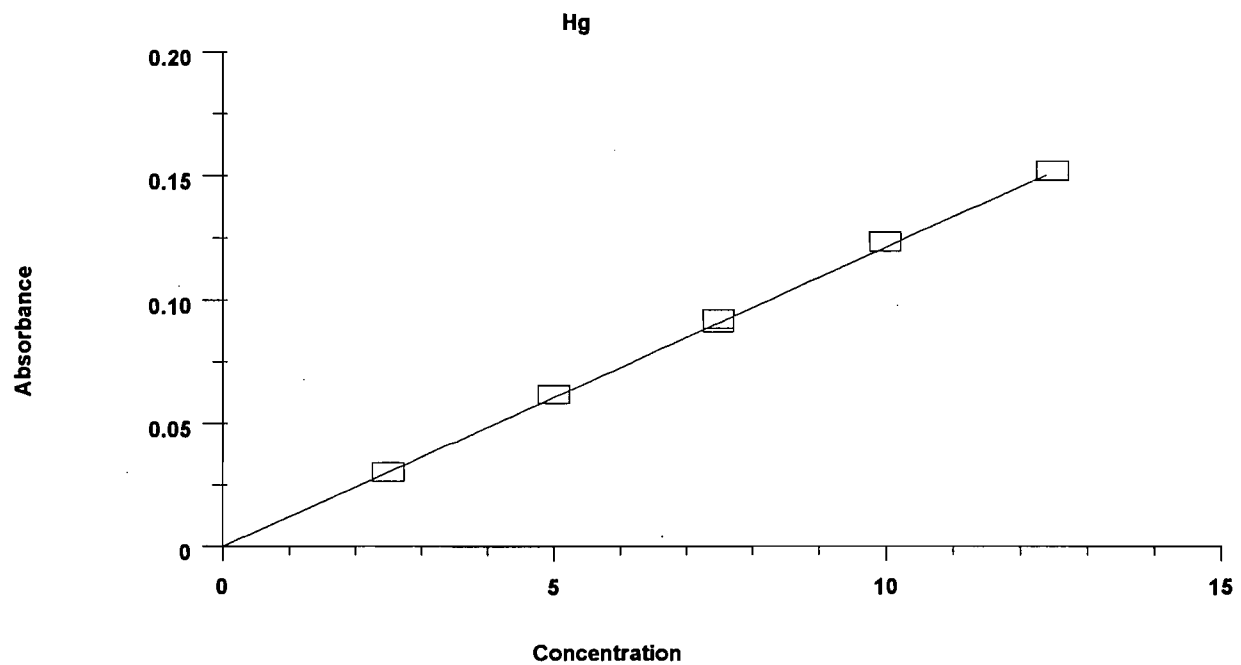
=====
 Element: Hg Seq. No.: 171 AS Loc.: 4 Date: 01/02/2002
 Sample ID: Reslope
 =====

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.0908	0.0910	04:11:03	Yes
2			0.0911	0.0913	04:11:36	Yes
3			0.0908	0.0909	04:12:09	Yes
Mean:			0.0909			
SD :			0.0002			
%RSD:			0.2108			

[Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99985 Slope: 0.01239

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.011	0.0000	5.2
STD1	0.0303	2.500	2.498	0.0000	----
STD2	0.0618	5.000	5.099	0.0003	0.4
STD3	0.0924	7.500	7.622	0.0004	0.4
STD4	0.1234	10.000	10.18	0.0005	0.4
STD5	0.1520	12.500	12.54	0.0006	0.4
Reslope	0.0909	7.500	7.500	0.0002	0.2
Correlation Coefficient:		0.99985	Slope:	0.01239	----



Element: Hg Seq. No.: 172 AS Loc.: 100 Date: 01/02/2002
Sample ID: 81580

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.146	0.146	0.0018	0.0019	04:14:10	Yes
2	0.142	0.142	0.0017	0.0019	04:14:43	Yes
3	0.141	0.141	0.0017	0.0018	04:15:16	Yes
Mean:	0.143	0.143	0.0017			
SD :	0.0026	0.0026	0.0000			
%RSD:	1.9	1.9	1.8507			

Element: Hg Seq. No.: 173 AS Loc.: 101 Date: 01/02/2002
Sample ID: 81582

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.323	1.323	0.0160	0.0162	04:16:05	Yes
2	1.315	1.315	0.0159	0.0161	04:16:38	Yes
3	1.322	1.322	0.0160	0.0162	04:17:11	Yes
Mean:	1.320	1.320	0.0160			
SD :	0.0040	0.0040	0.0000			
%RSD:	0.3	0.3	0.3036			

Element: Hg Seq. No.: 174 AS Loc.: 102 Date: 01/02/2002
Sample ID: BL0102-3M3C

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.004	0.004	0.0000	0.0002	04:18:02	Yes
2	-0.003	-0.003	0.0000	0.0001	04:18:36	Yes
3	0.003	0.003	0.0000	0.0002	04:19:08	Yes
Mean:	0.001	0.001	0.0000			
SD :	0.0037	0.0037	0.0000			
%RSD:	284.4	284.4	284.3994			

Element: Hg Seq. No.: 175 AS Loc.: 103 Date: 01/02/2002
Sample ID: BL0102S

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.056	1.056	0.0128	0.0129	04:19:57	Yes
2	1.060	1.060	0.0129	0.0130	04:20:30	Yes
3	1.061	1.061	0.0129	0.0130	04:21:03	Yes
Mean:	1.059	1.059	0.0128			
SD :	0.0025	0.0025	0.0000			
%RSD:	0.2	0.2	0.2371			

Element: Hg Seq. No.: 176 AS Loc.: 104 Date: 01/02/2002
Sample ID: BL0102DS

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.037	1.037	0.0126	0.0127	04:21:52	Yes
2	1.038	1.038	0.0126	0.0127	04:22:25	Yes
3	1.037	1.037	0.0126	0.0127	04:22:58	Yes
Mean:	1.038	1.038	0.0126			
SD :	0.0006	0.0006	0.0000			
%RSD:						

Element: Hg Seq. No.: 177 AS Loc.: 105 Date: 01/02/2002

Sample ID: SPEX STD

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	3.194	3.194	0.0387	0.0388	04:33:21	Yes
2	3.202	3.202	0.0388	0.0389	04:33:54	Yes
3	3.214	3.214	0.0390	0.0391	04:34:27	Yes
Mean:	3.203	3.203	0.0388			
SD :	0.0103	0.0103	0.0001			
%RSD:	0.3	0.3	0.3226			

=====

Element: Hg Seq. No.: 183 AS Loc.: 7 Date: 01/02/2002

Sample ID: CCV

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.002	1.002	0.0121	0.0123	04:35:18	Yes
2	0.995	0.995	0.0121	0.0122	04:35:51	Yes
3	0.995	0.995	0.0121	0.0122	04:36:24	Yes
Mean:	0.997	0.997	0.0121			
SD :	0.0040	0.0040	0.0000			
%RSD:	0.4	0.4	0.4059			

=====

Element: Hg Seq. No.: 184 AS Loc.: 8 Date: 01/02/2002

Sample ID: CCB

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	-0.005	-0.005	-0.0001	0.0001	04:37:13	Yes
2	-0.010	-0.010	-0.0001	0.0000	04:37:46	Yes
3	-0.009	-0.009	-0.0001	0.0000	04:38:19	Yes
Mean:	-0.008	-0.008	-0.0001			
SD :	0.0027	0.0027	0.0000			
%RSD:	32.7	32.7	32.6580			

Sample ID: 81581

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	2.000	2.000	0.0242	0.0244	04:23:47	Yes
2	1.987	1.987	0.0241	0.0242	04:24:20	Yes
3	1.983	1.983	0.0240	0.0242	04:24:53	Yes
Mean:	1.990	1.990	0.0241			
SD :	0.0088	0.0088	0.0001			
%RSD:	0.4	0.4	0.4407			

=====
Element: Hg Seq. No.: 178 AS Loc.: 106 Date: 01/02/2002
Sample ID: 81581D

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.974	1.974	0.0239	0.0241	04:25:42	Yes
2	1.976	1.976	0.0239	0.0241	04:26:15	Yes
3	1.970	1.970	0.0239	0.0240	04:26:48	Yes
Mean:	1.973	1.973	0.0239			
SD :	0.0031	0.0031	0.0000			
%RSD:	0.2	0.2	0.1574			

=====
Element: Hg Seq. No.: 179 AS Loc.: 107 Date: 01/02/2002
Sample ID: 81581S

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	2.845	2.845	0.0345	0.0346	04:27:36	Yes
2	2.825	2.825	0.0342	0.0344	04:28:09	Yes
3	2.867	2.867	0.0348	0.0349	04:28:42	Yes
Mean:	2.846	2.846	0.0345			
SD :	0.0210	0.0210	0.0003			
%RSD:	0.7	0.7	0.7380			

=====
Element: Hg Seq. No.: 180 AS Loc.: 108 Date: 01/02/2002
Sample ID: 81581DS

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	2.828	2.828	0.0343	0.0344	04:29:31	Yes
2	2.839	2.839	0.0344	0.0345	04:30:04	Yes
3	2.826	2.826	0.0343	0.0344	04:30:37	Yes
Mean:	2.831	2.831	0.0343			
SD :	0.0068	0.0068	0.0001			
%RSD:	0.2	0.2	0.2413			

=====
Element: Hg Seq. No.: 181 AS Loc.: 109 Date: 01/02/2002
Sample ID: 81583

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.397	1.397	0.0169	0.0171	04:31:26	Yes
2	1.390	1.390	0.0168	0.0170	04:31:59	Yes
3	1.400	1.400	0.0170	0.0171	04:32:32	Yes
Mean:	1.396	1.396	0.0169			
SD :	0.0048	0.0048	0.0001			
%RSD:	0.3	0.3	0.3464			

=====
Element: Hg Seq. No.: 182 AS Loc.: 110 Date: 01/02/2002

02/01/04 16:13:23

Printed by AWHITMEL

FIMSA

DATA TO BE VALIDATED (METVAL')

Analyzed by AWHITM

Page 1 of 1

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
BL0104	INTERNAL		Mercury -	P	-0.030	-99999.0	0.308	102.	0.302	100.	02/01/04	6M1B	02/01/04	HR21	\$\$\$	\$\$\$	
081578	CLEANAIR MB R456		Mercury -	P	-0.030	-99999.0	0.308	102.	0.302	100.	02/01/04	6M1B	02/01/04	HR21	24.	18.	
081579	CLEANAIR M29HG U2-NORTH-RB		Mercury -	P	-0.030						02/01/04	6M1B	02/01/04	HR21	24.	18.	
081580	CLEANAIR M29HG U2-NORTH-FB		Mercury -	P	-0.030						02/01/04	6M1B	02/01/04	HR21	23.	18.	
081581	CLEANAIR M29HG U2-NORTH-Run#1		Mercury -	P	0.499	0.505	0.804	101.	0.805	101.	02/01/04	6M1B	02/01/04	HR21	24.	18.	
081582	CLEANAIR M29HG U2-NORTH-Run#2		Mercury -	P	1.015						02/01/04	6M1B	02/01/04	HR21	24.	18.	
081583	CLEANAIR M29HG U2-NORTH-Run#3		Mercury -	P	1.047						02/01/04	6M1B	02/01/04	HR21	24.	18.	

7 Tests for 29HG-1B with an MDL of 0.030 ug

Validated By

Control Chart Updated

10 Requirements met

00106

29HG-1B

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL0104-4M1B	-0.012	1	300	-0.004	0.03	0.03		300
BL0104S	1.005	1	300	0.302	0.03	0.03	102	300
BL0104DS	1.038	1	300	0.311	0.03	0.03	105	300
081025	0.038	1	300	0.011	0.03	0.03		300
081025D	0.033	1	300	0.010	0.03	0.03		300
081025S	1.125	1	300	0.338	0.03	0.03	109	300
081025DS	1.132	1	300	0.340	0.03	0.03	110	300
081023	-0.006	1	300	-0.002	0.03	0.03		300
081024	0.005	1	300	0.002	0.03	0.03		300
081024D	0.019	1	300	0.006	0.03	0.03		300
081026	0.143	1	300	0.043	0.03	0.03		300
081027	0.517	1	300	0.155	0.03	0.03		300

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL0104-5M1B	0.006	1	300	0.002	0.03	0.03		300
BL0104S	1.029	1	300	0.309	0.03	0.03	102	300
BL0104DS	1.042	1	300	0.313	0.03	0.03	104	300
081557	0.451	1	300	0.135	0.03	0.03		300
081557D	0.401	1	300	0.120	0.03	0.03		300
081557S	1.444	1	300	0.433	0.03	0.03	102	300
081557DS	1.427	1	300	0.428	0.03	0.03	100	300
081554	0.003	1	300	0.001	0.03	0.03		300
081555	0.015	1	300	0.005	0.03	0.03		300
081556	0.014	1	300	0.004	0.03	0.03		300
081558	0.171	1	300	0.051	0.03	0.03		300
081559	0.317	1	300	0.095	0.03	0.03		300

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL0104-6M1B	0.004	1	300	0.001	0.03	0.03		300
BL0104S	1.028	1	300	0.308	0.03	0.03	102	300
BL0104DS	1.006	1	300	0.302	0.03	0.03	100	300
081581	1.662	1	300	0.499	0.03	0.03		300
081581D	1.684	1	300	0.505	0.03	0.03		300
081581S	2.679	1	300	0.804	0.03	0.03	101	300
081581DS	2.683	1	300	0.805	0.03	0.03	101	300
081578	0.011	1	300	0.003	0.03	0.03		300
081579	0.003	1	300	0.001	0.03	0.03		300
081580	0.004	1	300	0.001	0.03	0.03		300
081582	3.383	1	300	1.015	0.03	0.03		300
081583	3.491	1	300	1.047	0.03	0.03		300

Sample Information File C:\FIMS\AAUSER\SAMPINFO\020104F1.SIF

Description : 020104 HR21
 Batch ID : 020104 HR21
 Volume Units :
 Weight Units :
 Analyst : HREN
 Sample Volume : 0.00

Sample ID Loc	Sample Weight Units	User Dilution	Remarks
7 CCV			
8 CCB			
14 BL0104-1MN4			
15 BL0104S			
16 BL0104DS			
17 79202			
18 79202D			
19 79202S			
20 79202DS			
21 79196			
22 79197			
23 79198			
24 79199			
25 79200			
26 79201			
27 79203			
28 79204			
29 79205			
30 79206			
31 79207			
32 BL0104-2MN4			
33 BL0104S			
34 BL0104DS			
35 81652		20.0000	
36 81652D		20.0000	
37 81652S PDS		20.0000	
38 81652DS PDS		20.0000	
39 81653		50.0000	
40 81654		50.0000	DOF
41 81662		5.0000	
42 81666		5.0000	
43 81657		5.0000	
44 81658		5.0000	
45 81659		50.0000	
46 81660			
47 81661		5.0000	
48 BL0104-3MN4			
49 BL0104S			
50 BL0104DS			
51 81663			
52 81663D		10.0000	DOF
53 81663S		10.0000	
54 81663DS		10.0000	
55 81664		10.0000	
56 81665		10.0000	
57 81666		10.0000	
58 082302-3B			
59 BL0104-4M1B			

00109

Perkin-Elmer AAWinLab: 01/04/2002, 12:32:05 AM

60 BL0104S
61 BL0104DS
62 081025
63 081025D
64 081025S
65 081025DS
-66 081023
-67 081024
-68 081024D
69 081026
70 081027
71 BL0104-5M1B
72 BL0104S
73 BL0104DS
74 081557
75 081557D
76 081557S
77 081557DS
-78 081554
79 081555
80 081556
81 081558
82 081559
83 BL0104-6M1B
84 BL0104S
85 BL0104DS
86 081581
87 081581D
88 081581S
89 081581DS
-90 081578
91 081579
92 081580
93 081582
94 081583

Perkin-Elmer AAWinLab: 01/04/2002, 09:13:08 AM

Method Name: EPA 7470
 Method Description: EPA 7470
 Element: Hg

Date: 01/04/2002
 Technique: FI-MHS
 Calibration Type:
 Hg, Zero Intercept: Linear
 Wavelength: 253.7 nm
 Sample Info Name: 020104F1.SIF

Results Data Set Name: 020104F1

Element: Hg Seq. No.: 1 AS Loc.: 1 Date: 01/04/2002
 Sample ID: Calib Blank

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0001	0.0001	09:13:59	Yes
2			0.0002	0.0002	09:14:32	Yes
3			0.0001	0.0001	09:15:04	Yes
Mean:			0.0001			
SD :			0.0000			
%RSD:			40.2306			

Auto-zero performed.

Element: Hg Seq. No.: 2 AS Loc.: 2 Date: 01/04/2002
 Sample ID: STD1

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0281	0.0282	09:15:54	Yes
2			0.0282	0.0283	09:16:27	Yes
3			0.0280	0.0281	09:17:00	Yes
Mean:			0.0281			
SD :			0.0001			
%RSD:			0.3014			

[Hg] Standard number 1 applied. [2.500]
 Correlation Coefficient: 1.00000 Slope: 0.01125

Element: Hg Seq. No.: 3 AS Loc.: 3 Date: 01/04/2002
 Sample ID: STD2

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0569	0.0570	09:17:50	Yes
2			0.0573	0.0574	09:18:23	Yes
3			0.0573	0.0574	09:18:56	Yes
Mean:			0.0571			
SD :			0.0002			
%RSD:			0.3175			

[Hg] Standard number 2 applied. [5.000]
 Correlation Coefficient: 0.99980 Slope: 0.01139

Element: Hg Seq. No.: 4 AS Loc.: 4 Date: 01/04/2002
 Sample ID: STD3

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0863	0.0864	09:20:09	Yes

00111

Perkin-Elmer AAWinLab: 01/04/2002, 09:20:42 AM

2 0.0854 0.0855 09:20:42 Yes
 3 0.0855 0.0856 09:21:15 Yes
 Mean: 0.0857
 SD : 0.0005
 %RSD: 0.6209
 [Hg] Standard number 3 applied. [7.500]
 Correlation Coefficient: 0.99994 Slope: 0.01142

Element: Hg Seq. No.: 5 AS Loc.: 5 Date: 01/04/2002
 Sample ID: STD4

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.1153	0.1154	09:22:31	Yes
2			0.1145	0.1146	09:23:04	Yes
3			0.1148	0.1150	09:23:37	Yes
Mean:			0.1149			
SD :			0.0004			
%RSD:			0.3361			

[Hg] Standard number 4 applied. [10.00]
 Correlation Coefficient: 0.99995 Slope: 0.01146

Element: Hg Seq. No.: 6 AS Loc.: 6 Date: 01/04/2002
 Sample ID: STD5

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.1390	0.1391	09:24:53	Yes
2			0.1394	0.1395	09:25:26	Yes
3			0.1392	0.1393	09:25:59	Yes
Mean:			0.1392			
SD :			0.0002			
%RSD:			0.1303			

[Hg] Standard number 5 applied. [12.50]
 Correlation Coefficient: 0.99943 Slope: 0.01131

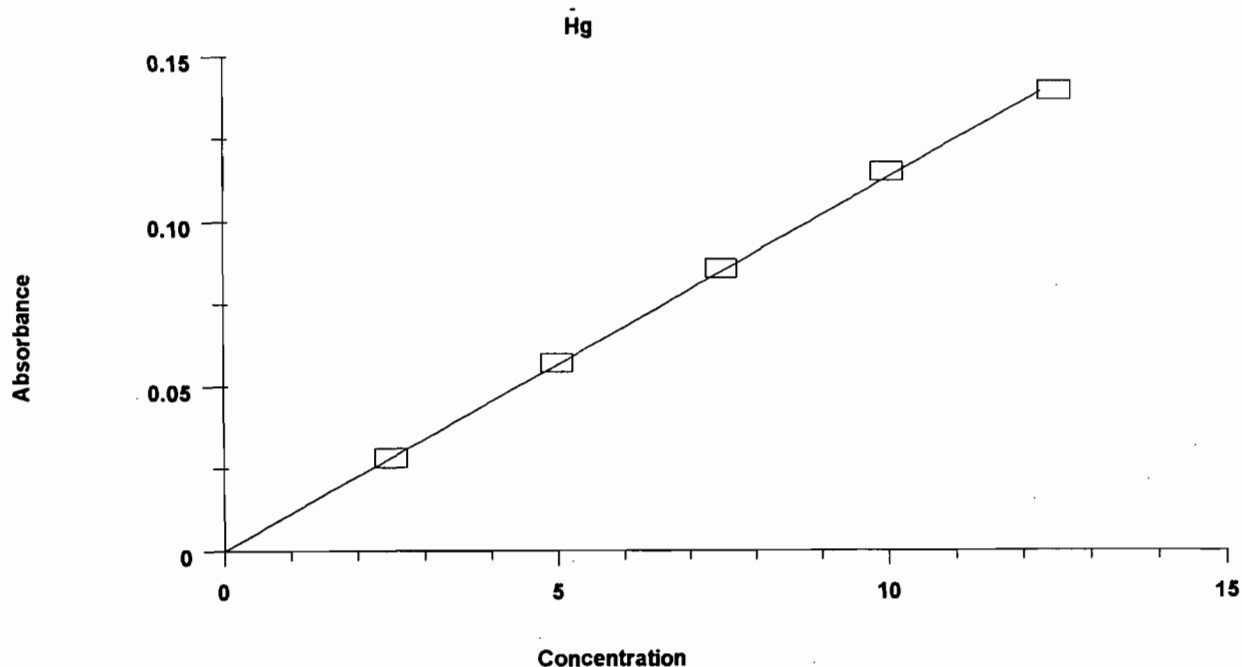
Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	----	----	----
STD1	0.0281	2.500	2.486	0.0001	0.3
STD2	0.0571	5.000	5.052	0.0002	0.3
STD3	0.0857	7.500	7.577	0.0005	0.6
STD4	0.1149	10.000	10.16	0.0004	0.3
STD5	0.1392	12.500	12.31	0.0002	0.1

Correlation Coefficient: 0.99943 Slope: 0.01131 ----

00112

Perkin-Elmer AAWinLab: 01/04/2002, 09:26:29 AM



=====
 Element: Hg Seq. No.: 7 AS Loc.: 9 Date: 01/04/2002
 Sample ID: ICV
 =====

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.555	1.555	0.0176	0.0177	09:27:19	Yes
2	1.550	1.550	0.0175	0.0176	09:27:52	Yes
3	1.549	1.549	0.0175	0.0176	09:28:25	Yes
Mean:	1.551	1.551	0.0175			
SD :	0.0031	0.0031	0.0000			
%RSD:	0.2	0.2	0.2002			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 8 AS Loc.: 10 Date: 01/04/2002
 Sample ID: ICB
 =====

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.005	0.005	0.0001	0.0002	09:29:14	Yes
2	-0.010	-0.010	-0.0001	0.0000	09:29:47	Yes
3	-0.005	-0.005	-0.0001	0.0001	09:30:20	Yes
Mean:	-0.003	-0.003	0.0000			
SD :	0.0078	0.0078	0.0001			
%RSD:	244.2	244.2	244.1865			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 9 AS Loc.: 11 Date: 01/04/2002
 Sample ID: SPEX HG-STD
 =====

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored

00113

Perkin-Elmer AAWinLab: 01/04/2002, 09:31:09 AM

1	3.047	3.047	0.0345	0.0346	09:31:09	Yes
2	3.050	3.050	0.0345	0.0346	09:31:42	Yes
3	3.073	3.073	0.0348	0.0349	09:32:15	Yes
Mean:	3.057	3.057	0.0346			
SD :	0.0144	0.0144	0.0002			
%RSD:	0.5	0.5	0.4715			

QC value within specified limits.

=====

Element: Hg Seq. No.: 10 AS Loc.: 12 Date: 01/04/2002

Sample ID: LLC

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.259	0.259	0.0029	0.0030	09:33:04	Yes
2	0.252	0.252	0.0028	0.0030	09:33:37	Yes
3	0.251	0.251	0.0028	0.0029	09:34:10	Yes
Mean:	0.254	0.254	0.0029			
SD :	0.0044	0.0044	0.0000			
%RSD:	1.7	1.7	1.7261			

QC value within specified limits.

=====

Element: Hg Seq. No.: 11 AS Loc.: 13 Date: 01/04/2002

Sample ID: DIL. CHECK

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.016	0.016	0.0002	0.0003	09:34:59	Yes
2	0.004	0.004	0.0000	0.0002	09:35:32	Yes
3	0.002	0.002	0.0000	0.0001	09:36:05	Yes
Mean:	0.007	0.007	0.0001			
SD :	0.0080	0.0080	0.0001			
%RSD:	110.9	110.9	110.8711			

QC value within specified limits.

=====

Element: Hg Seq. No.: 12 AS Loc.: 14 Date: 01/04/2002

Sample ID: BL0104-LMN4

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.006	0.006	0.0001	0.0002	09:36:53	Yes
2	0.013	0.013	0.0001	0.0003	09:37:27	Yes
3	0.007	0.007	0.0001	0.0002	09:38:00	Yes
Mean:	0.009	0.009	0.0001			
SD :	0.0036	0.0036	0.0000			
%RSD:	40.6	40.6	40.5780			

=====

Element: Hg Seq. No.: 13 AS Loc.: 15 Date: 01/04/2002

Sample ID: BL0104S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.065	1.065	0.0121	0.0122	09:38:49	Yes
2	1.058	1.058	0.0120	0.0121	09:39:22	Yes
3	1.059	1.059	0.0120	0.0121	09:39:55	Yes
Mean:	1.061	1.061	0.0120			
SD :	0.0040	0.0040	0.0000			
%RSD:	0.4	0.4	0.3749			

=====

=====

Element: Hg Seq. No.: 86 AS Loc.: 1 Date: 01/04/2002

Sample ID: Calib Blank

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0005	0.0005	12:47:56	Yes
2			0.0002	0.0002	12:48:29	Yes
3			0.0001	0.0001	12:49:02	Yes
Mean:			0.0003			
SD :			0.0002			
%RSD:			86.6818			

Auto-zero performed.

=====

Element: Hg Seq. No.: 87 AS Loc.: 4 Date: 01/04/2002

Sample ID: Reslope

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0842	0.0845	12:49:52	Yes
2			0.0849	0.0851	12:50:25	Yes
3			0.0846	0.0849	12:50:58	Yes
Mean:			0.0846			
SD :			0.0003			
%RSD:			0.4031			

[Hg] Reslope standard applied. [7.500]

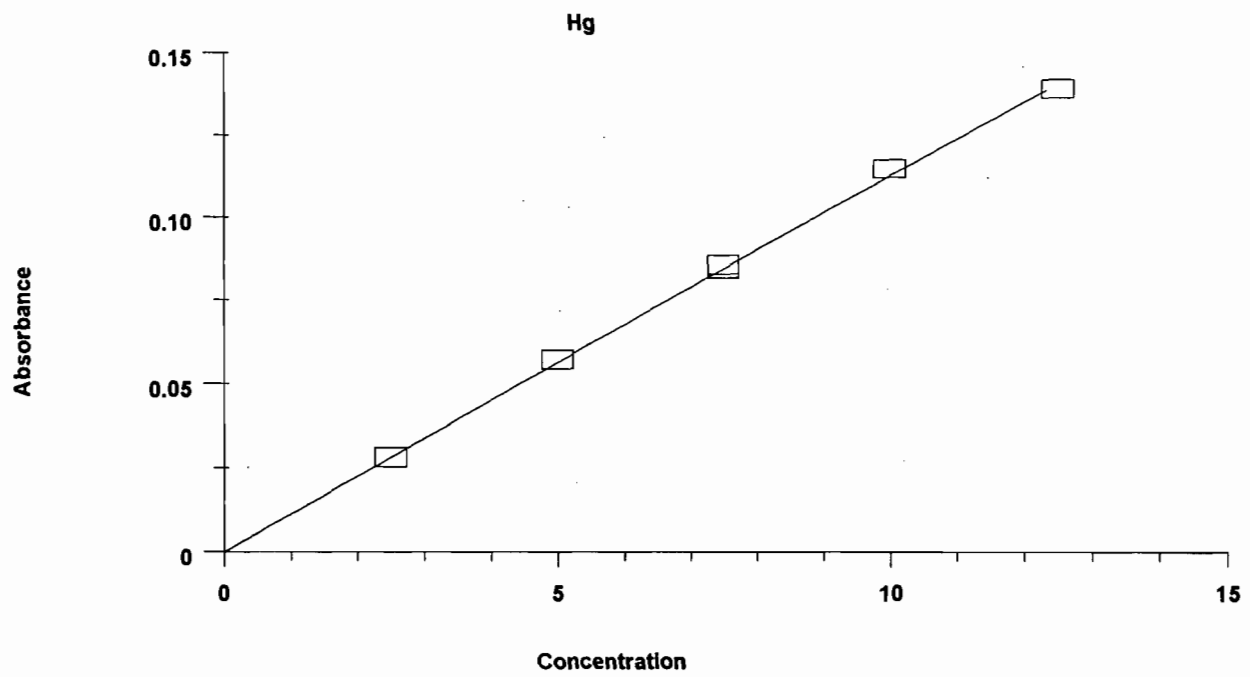
Correlation Coefficient: 0.99943 Slope: 0.01135

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0003	---	0.023	0.0002	86.7
STD1	0.0281	2.500	2.494	0.0001	0.3
STD2	0.0571	5.000	5.069	0.0002	0.3
STD3	0.0857	7.500	7.603	0.0005	0.6
STD4	0.1149	10.000	10.19	0.0004	0.3
STD5	0.1392	12.500	12.35	0.0002	0.1
Reslope	0.0846	7.500	7.500	0.0003	0.4
Correlation Coefficient: 0.99943		Slope:	0.01135	----	

00115

Perkin-Elmer AAWinLab: 01/04/2002, 12:51:26 AM



Element: Hg Seq. No.: 88 AS Loc.: 58 Date: 01/04/2002
 Sample ID: 082302-3B

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.010	-0.010	-0.0001	0.0001	12:53:29	Yes
2	-0.002	-0.002	0.0000	0.0002	12:54:02	Yes
3	-0.009	-0.009	-0.0001	0.0002	12:54:35	Yes
Mean:	-0.007	-0.007	-0.0001			
SD :	0.0043	0.0043	0.0000			
%RSD:	58.7	58.7	58.6895			

Element: Hg Seq. No.: 89 AS Loc.: 59 Date: 01/04/2002
 Sample ID: BL0104-4M1B

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.007	-0.007	-0.0001	0.0002	12:55:24	Yes
2	-0.013	-0.013	-0.0002	0.0001	12:55:57	Yes
3	-0.015	-0.015	-0.0002	0.0001	12:56:30	Yes
Mean:	-0.012	-0.012	-0.0001			
SD :	0.0038	0.0038	0.0000			
%RSD:	32.5	32.5	32.4850			

Element: Hg Seq. No.: 90 AS Loc.: 60 Date: 01/04/2002
 Sample ID: BL0104S

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.015	1.015	0.0114	0.0117	12:57:19	Yes
2	1.000	1.000	0.0113	0.0115	12:57:52	Yes
3	1.001	1.001	0.0113	0.0115	12:58:25	Yes
Mean:	1.005	1.005	0.0113			
SD :	0.0083	0.0083	0.0001			
%RSD:	0.8	0.8	0.8306			

Element: Hg Seq. No.: 91 AS Loc.: 61 Date: 01/04/2002
 Sample ID: BL0104DS

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.036	1.036	0.0117	0.0119	12:59:14	Yes
2	1.036	1.036	0.0117	0.0119	12:59:47	Yes
3	1.040	1.040	0.0117	0.0120	01:00:20	Yes
Mean:	1.038	1.038	0.0117			
SD :	0.0025	0.0025	0.0000			
%RSD:	0.2	0.2	0.2408			

Element: Hg Seq. No.: 92 AS Loc.: 62 Date: 01/04/2002
 Sample ID: 081025

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.043	0.043	0.0005	0.0007	01:01:09	Yes
2	0.038	0.038	0.0004	0.0007	01:01:42	Yes
3	0.034	0.034	0.0004	0.0006	01:02:15	Yes
Mean:	0.038	0.038	0.0004			
SD :	0.0045	0.0045	0.0001			
%RSD:	11.7	11.7	11.7066			

=====
 Element: Hg Seq. No.: 93 AS Loc.: 63 Date: 01/04/2002
 Sample ID: 081025D
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.038	0.038	0.0004	0.0007	01:03:03	Yes
2	0.031	0.031	0.0004	0.0006	01:03:37	Yes
3	0.031	0.031	0.0003	0.0006	01:04:09	Yes
Mean:	0.033	0.033	0.0004			
SD :	0.0040	0.0040	0.0000			
%RSD:	11.9	11.9	11.9190			

=====

=====
 Element: Hg Seq. No.: 94 AS Loc.: 64 Date: 01/04/2002
 Sample ID: 081025S
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.116	1.116	0.0126	0.0128	01:04:58	Yes
2	1.123	1.123	0.0127	0.0129	01:05:31	Yes
3	1.137	1.137	0.0128	0.0131	01:06:04	Yes
Mean:	1.125	1.125	0.0127			
SD :	0.0111	0.0111	0.0001			
%RSD:	1.0	1.0	0.9855			

=====

=====
 Element: Hg Seq. No.: 95 AS Loc.: 65 Date: 01/04/2002
 Sample ID: 081025DS
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.122	1.122	0.0127	0.0129	01:06:53	Yes
2	1.142	1.142	0.0129	0.0131	01:07:26	Yes
3	1.132	1.132	0.0128	0.0130	01:07:59	Yes
Mean:	1.132	1.132	0.0128			
SD :	0.0097	0.0097	0.0001			
%RSD:	0.9	0.9	0.8581			

=====

=====
 Element: Hg Seq. No.: 96 AS Loc.: 66 Date: 01/04/2002
 Sample ID: 081023
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.002	0.002	0.0000	0.0003	01:08:47	Yes
2	-0.011	-0.011	-0.0001	0.0001	01:09:20	Yes
3	-0.011	-0.011	-0.0001	0.0001	01:09:53	Yes
Mean:	-0.006	-0.006	-0.0001			
SD :	0.0077	0.0077	0.0001			
%RSD:	119.1	119.1	119.1273			

=====

=====
 Element: Hg Seq. No.: 97 AS Loc.: 67 Date: 01/04/2002
 Sample ID: 081024
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.007	0.007	0.0001	0.0003	01:10:42	Yes
2	0.006	0.006	0.0001	0.0003	01:11:15	Yes
3	0.003	0.003	0.0000	0.0003	01:11:48	Yes
Mean:	0.005	0.005	0.0001			
SD :	0.0022	0.0022	0.0000			

00118

Perkin-Elmer AAWinLab: 01/04/2002, 01:11:49 PM

%RSD: 42.9 42.9 42.8987

=====
Element: Hg Seq. No.: 98 AS Loc.: 7 Date: 01/04/2002
Sample ID: CCV
=====

Repl	SampleConc	StdConc	BlkCorr	Peak	Time	Peak
#	µg/L	µg/L	Signal	Height		Stored
1	1.028	1.028	0.0116	0.0119	01:12:38	Yes
2	1.031	1.031	0.0116	0.0119	01:13:11	Yes
3	1.027	1.027	0.0116	0.0118	01:13:44	Yes
Mean:	1.029	1.029	0.0116			
SD :	0.0020	0.0020	0.0000			
%RSD:	0.2	0.2	0.1898			

=====
Element: Hg Seq. No.: 99 AS Loc.: 8 Date: 01/04/2002
Sample ID: CCB
=====

Repl	SampleConc	StdConc	BlkCorr	Peak	Time	Peak
#	µg/L	µg/L	Signal	Height		Stored
1	-0.020	-0.020	-0.0002	0.0000	01:14:33	Yes
2	-0.021	-0.021	-0.0002	0.0000	01:15:06	Yes
3	-0.018	-0.018	-0.0002	0.0001	01:15:39	Yes
Mean:	-0.020	-0.020	-0.0002			
SD :	0.0015	0.0015	0.0000			
%RSD:	7.4	7.4	7.3571			

=====

Element: Hg Seq. No.: 100 AS Loc.: 1 Date: 01/04/2002

Sample ID: Calib Blank

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0001	0.0001	01:17:19	Yes
2			0.0000	0.0000	01:17:52	Yes
3			0.0001	0.0001	01:18:25	Yes
Mean:			0.0001			
SD :			0.0001			
%RSD:			70.8771			

Auto-zero performed.

=====

Element: Hg Seq. No.: 101 AS Loc.: 4 Date: 01/04/2002

Sample ID: Reslope

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0851	0.0852	01:19:15	Yes
2			0.0856	0.0857	01:19:48	Yes
3			0.0860	0.0861	01:20:21	Yes
Mean:			0.0856			
SD :			0.0004			
%RSD:			0.5174			

[Hg] Reslope standard applied. [7.500]

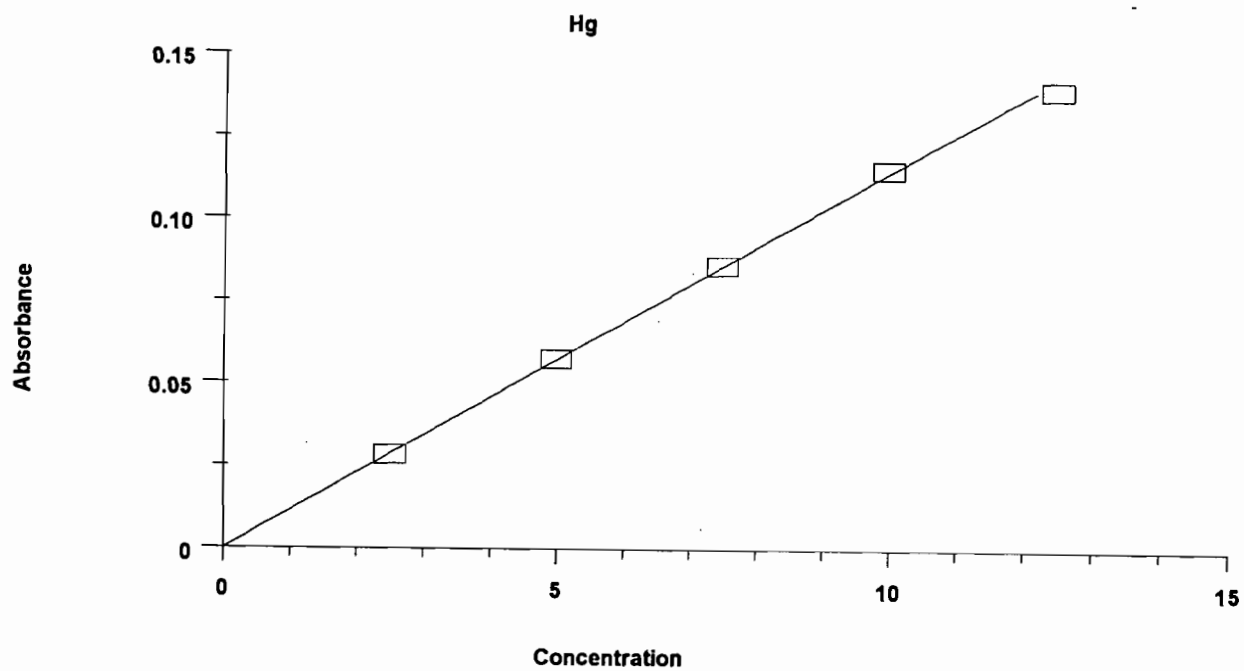
Correlation Coefficient: 0.99943 Slope: 0.01121

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.006	0.0001	70.9
STD1	0.0281	2.500	2.464	0.0001	0.3
STD2	0.0571	5.000	5.007	0.0002	0.3
STD3	0.0857	7.500	7.510	0.0005	0.6
STD4	0.1149	10.000	10.07	0.0004	0.3
STD5	0.1392	12.500	12.20	0.0002	0.1
Reslope	0.0856	7.500	7.500	0.0004	0.5
Correlation Coefficient: 0.99943 Slope: 0.01121 ----					

00120

Perkin-Elmer AAWinLab: 01/04/2002, 01:20:49 PM



=====
 Element: Hg Seq. No.: 102 AS Loc.: 68 Date: 01/04/2002
 Sample ID: 081024D
 =====

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.020	0.020	0.0002	0.0003	01:22:31	Yes
2	0.018	0.018	0.0002	0.0003	01:23:04	Yes
3	0.018	0.018	0.0002	0.0003	01:23:37	Yes
Mean:	0.019	0.019	0.0002			
SD :	0.0010	0.0010	0.0000			
%RSD:	5.2	5.2	5.2114			

=====
 Element: Hg Seq. No.: 103 AS Loc.: 69 Date: 01/04/2002
 Sample ID: 081026
 =====

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.144	0.144	0.0016	0.0017	01:24:26	Yes
2	0.145	0.145	0.0017	0.0017	01:24:59	Yes
3	0.139	0.139	0.0016	0.0017	01:25:32	Yes
Mean:	0.143	0.143	0.0016			
SD :	0.0035	0.0035	0.0000			
%RSD:	2.5	2.5	2.4642			

=====
 Element: Hg Seq. No.: 104 AS Loc.: 70 Date: 01/04/2002
 Sample ID: 081027
 =====

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.521	0.521	0.0060	0.0060	01:26:21	Yes
2	0.508	0.508	0.0058	0.0059	01:26:55	Yes
3	0.522	0.522	0.0060	0.0060	01:27:27	Yes
Mean:	0.517	0.517	0.0059			
SD :	0.0078	0.0078	0.0001			
%RSD:	1.5	1.5	1.5126			

=====
 Element: Hg Seq. No.: 105 AS Loc.: 71 Date: 01/04/2002
 Sample ID: BL0104-5M1B
 =====

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.011	0.011	0.0001	0.0002	01:28:20	Yes
2	0.002	0.002	0.0000	0.0001	01:28:53	Yes
3	0.005	0.005	0.0001	0.0001	01:29:25	Yes
Mean:	0.006	0.006	0.0001			
SD :	0.0047	0.0047	0.0001			
%RSD:	81.1	81.1	81.0525			

=====
 Element: Hg Seq. No.: 106 AS Loc.: 72 Date: 01/04/2002
 Sample ID: BL0104S
 =====

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.024	1.024	0.0117	0.0118	01:30:14	Yes
2	1.032	1.032	0.0118	0.0119	01:30:47	Yes
3	1.030	1.030	0.0118	0.0118	01:31:20	Yes
Mean:	1.029	1.029	0.0117			
SD :	0.0045	0.0045	0.0001			
%RSD:	0.4	0.4	0.4402			

00122

Perkin-Elmer AAWinLab: 01/04/2002, 01:31:21 PM

=====

Element: Hg Seq. No.: 107 AS Loc.: 73 Date: 01/04/2002

Sample ID: BL0104DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.047	1.047	0.0119	0.0120	01:32:09	Yes
2	1.032	1.032	0.0118	0.0119	01:32:42	Yes
3	1.047	1.047	0.0120	0.0120	01:33:15	Yes
Mean:	1.042	1.042	0.0119			
SD :	0.0086	0.0086	0.0001			
%RSD:	0.8	0.8	0.8280			

=====

Element: Hg Seq. No.: 108 AS Loc.: 74 Date: 01/04/2002

Sample ID: 081557

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.453	0.453	0.0052	0.0052	01:34:04	Yes
2	0.445	0.445	0.0051	0.0052	01:34:37	Yes
3	0.456	0.456	0.0052	0.0053	01:35:10	Yes
Mean:	0.451	0.451	0.0052			
SD :	0.0058	0.0058	0.0001			
%RSD:	1.3	1.3	1.2887			

=====

Element: Hg Seq. No.: 109 AS Loc.: 75 Date: 01/04/2002

Sample ID: 081557D

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.397	0.397	0.0045	0.0046	01:35:59	Yes
2	0.402	0.402	0.0046	0.0047	01:36:32	Yes
3	0.405	0.405	0.0046	0.0047	01:37:05	Yes
Mean:	0.401	0.401	0.0046			
SD :	0.0038	0.0038	0.0000			
%RSD:	1.0	1.0	0.9520			

=====

Element: Hg Seq. No.: 110 AS Loc.: 76 Date: 01/04/2002

Sample ID: 081557S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.437	1.437	0.0164	0.0165	01:37:54	Yes
2	1.452	1.452	0.0166	0.0166	01:38:28	Yes
3	1.444	1.444	0.0165	0.0166	01:39:01	Yes
Mean:	1.444	1.444	0.0165			
SD :	0.0071	0.0071	0.0001			
%RSD:	0.5	0.5	0.4908			

=====

Element: Hg Seq. No.: 111 AS Loc.: 77 Date: 01/04/2002

Sample ID: 081557DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.423	1.423	0.0162	0.0163	01:39:49	Yes
2	1.430	1.430	0.0163	0.0164	01:40:23	Yes
3	1.426	1.426	0.0163	0.0164	01:40:56	Yes
Mean:	1.427	1.427	0.0163			
SD :	0.0036	0.0036	0.0000			

00123

Perkin-Elmer AAWinLab: 01/04/2002, 01:40:56 PM

%RSD: 0.2 0.2 0.2490

=====
Element: Hg Seq. No.: 112 AS Loc.: 7 Date: 01/04/2002
Sample ID: CCV
=====

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.033	1.033	0.0118	0.0119	01:41:47	Yes
2	1.037	1.037	0.0118	0.0119	01:42:20	Yes
3	1.034	1.034	0.0118	0.0119	01:42:53	Yes
Mean:	1.035	1.035	0.0118			
SD :	0.0022	0.0022	0.0000			
%RSD:	0.2	0.2	0.2111			

==========
Element: Hg Seq. No.: 113 AS Loc.: 8 Date: 01/04/2002
Sample ID: CCB
=====

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.004	0.004	0.0000	0.0001	01:43:42	Yes
2	-0.010	-0.010	-0.0001 -	0.0000	01:44:15	Yes
3	-0.007	-0.007	-0.0001 -	0.0000	01:44:48	Yes
Mean:	-0.004	-0.004	0.0000			
SD :	0.0073	0.0073	0.0001			
%RSD:	167.6	167.6	167.5676			

=====

Element: Hg Seq. No.: 114 AS Loc.: 1 Date: 01/04/2002

Sample ID: Calib Blank

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0001	0.0001	01:48:15	Yes
2			0.0001	0.0001	01:48:48	Yes
3			0.0001	0.0001	01:49:21	Yes
Mean:			0.0001			
SD :			0.0000			
%RSD:			19.8462			

Auto-zero performed.

=====

Element: Hg Seq. No.: 115 AS Loc.: 4 Date: 01/04/2002

Sample ID: Reslope

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0848	0.0849	01:50:11	Yes
2			0.0847	0.0848	01:50:45	Yes
3			0.0848	0.0849	01:51:18	Yes
Mean:			0.0847			
SD :			0.0001			
%RSD:						

[Hg] Reslope standard applied. [7.500]

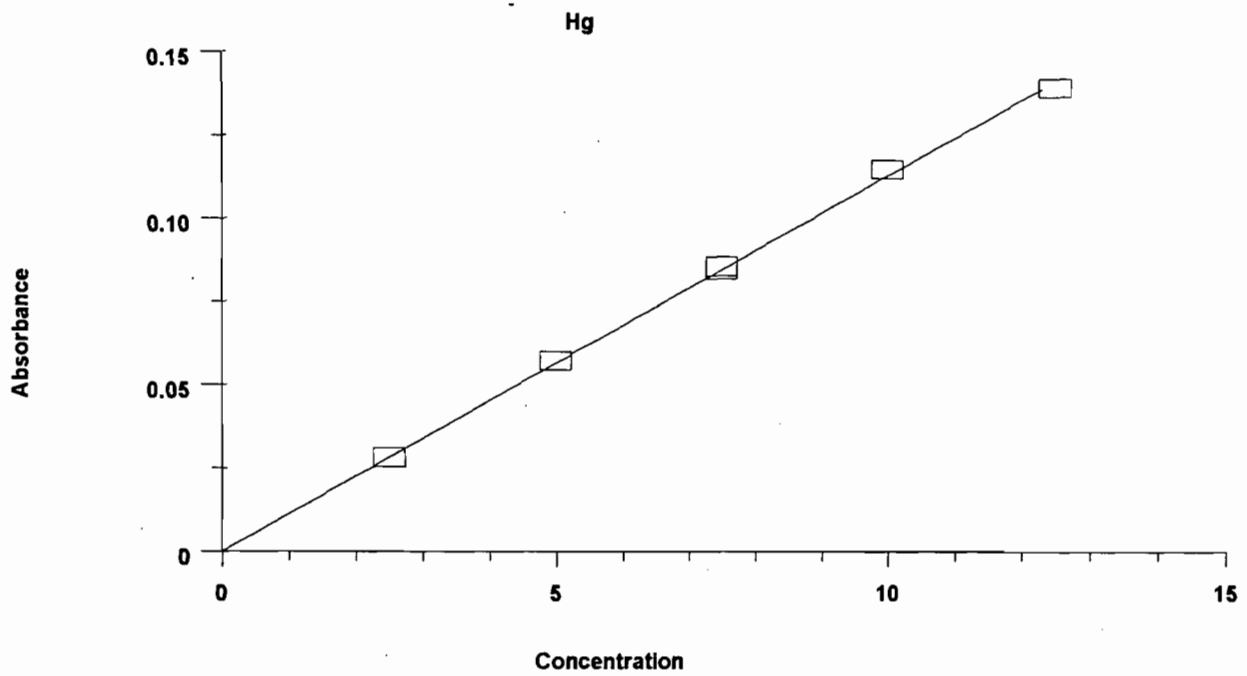
Correlation Coefficient: 0.99943 Slope: 0.01133

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.009	0.0000	19.8
STD1	0.0281	2.500	2.489	0.0001	0.3
STD2	0.0571	5.000	5.058	0.0002	0.3
STD3	0.0857	7.500	7.587	0.0005	0.6
STD4	0.1149	10.000	10.17	0.0004	0.3
STD5	0.1392	12.500	12.32	0.0002	0.1
Reslope	0.0847	7.500	7.500	0.0001	----
Correlation Coefficient: 0.99943		Slope:	0.01133	----	

00125

Perkin-Elmer AAWinLab: 01/04/2002, 01:51:46 PM



=====
 Element: Hg Seq. No.: 116 AS Loc.: 78 Date: 01/04/2002
 Sample ID: 081554
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.003	0.003	0.0000	0.0001	01:53:31	Yes
2	0.000	0.000	0.0000	0.0001	01:54:04	Yes
3	0.006	0.006	0.0001	0.0002	01:54:37	Yes
Mean:	0.003	0.003	0.0000			
SD :	0.0033	0.0033	0.0000			
%RSD:	109.9	109.9	109.9297			

=====

=====
 Element: Hg Seq. No.: 117 AS Loc.: 79 Date: 01/04/2002
 Sample ID: 081555
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.014	0.014	0.0002	0.0003	01:55:26	Yes
2	0.013	0.013	0.0001	0.0002	01:55:59	Yes
3	0.018	0.018	0.0002	0.0003	01:56:32	Yes
Mean:	0.015	0.015	0.0002			
SD :	0.0028	0.0028	0.0000			
%RSD:	18.5	18.5	18.4679			

=====

=====
 Element: Hg Seq. No.: 118 AS Loc.: 80 Date: 01/04/2002
 Sample ID: 081556
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.022	0.022	0.0002	0.0003	01:57:20	Yes
2	0.012	0.012	0.0001	0.0002	01:57:53	Yes
3	0.008	0.008	0.0001	0.0002	01:58:26	Yes
Mean:	0.014	0.014	0.0002			
SD :	0.0070	0.0070	0.0001			
%RSD:	50.5	50.5	50.5345			

=====

=====
 Element: Hg Seq. No.: 119 AS Loc.: 81 Date: 01/04/2002
 Sample ID: 081558
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.175	0.175	0.0020	0.0021	01:59:15	Yes
2	0.175	0.175	0.0020	0.0021	01:59:48	Yes
3	0.162	0.162	0.0018	0.0019	02:00:21	Yes
Mean:	0.171	0.171	0.0019			
SD :	0.0075	0.0075	0.0001			
%RSD:	4.4	4.4	4.4161			

=====

=====
 Element: Hg Seq. No.: 120 AS Loc.: 82 Date: 01/04/2002
 Sample ID: 081559
 =====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.310	0.310	0.0035	0.0036	02:01:09	Yes
2	0.310	0.310	0.0035	0.0036	02:01:43	Yes
3	0.332	0.332	0.0037	0.0038	02:02:16	Yes
Mean:	0.317	0.317	0.0036			
SD :	0.0126	0.0126	0.0001			
%RSD:	4.0	4.0	3.9684			

00127

Perkin-Elmer AAWinLab: 01/04/2002, 02:02:17 PM

=====

Element: Hg Seq. No.: 121 AS Loc.: 83 Date: 01/04/2002

Sample ID: BL0104-6M1B

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.002	0.002	0.0000	0.0001	02:03:05	Yes
2	0.010	0.010	0.0001	0.0002	02:03:38	Yes
3	0.000	0.000	0.0000	0.0001	02:04:11	Yes
Mean:	0.004	0.004	0.0000			
SD :	0.0049	0.0049	0.0001			
%RSD:	118.5	118.5	118.5332			

=====

Element: Hg Seq. No.: 122 AS Loc.: 84 Date: 01/04/2002

Sample ID: BL0104S

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.015	1.015	0.0115	0.0116	02:05:00	Yes
2	1.033	1.033	0.0117	0.0118	02:05:33	Yes
3	1.035	1.035	0.0117	0.0118	02:06:06	Yes
Mean:	1.028	1.028	0.0116			
SD :	0.0113	0.0113	0.0001			
%RSD:	1.1	1.1	1.0988			

=====

Element: Hg Seq. No.: 123 AS Loc.: 85 Date: 01/04/2002

Sample ID: BL0104DS

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.001	1.001	0.0113	0.0114	02:06:54	Yes
2	1.009	1.009	0.0114	0.0115	02:07:27	Yes
3	1.006	1.006	0.0114	0.0115	02:08:00	Yes
Mean:	1.006	1.006	0.0114			
SD :	0.0042	0.0042	0.0000			
%RSD:	0.4	0.4	0.4176			

=====

Element: Hg Seq. No.: 124 AS Loc.: 86 Date: 01/04/2002

Sample ID: 081581

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.659	1.659	0.0187	0.0188	02:08:52	Yes
2	1.661	1.661	0.0188	0.0189	02:09:25	Yes
3	1.667	1.667	0.0188	0.0189	02:09:58	Yes
Mean:	1.662	1.662	0.0188			
SD :	0.0039	0.0039	0.0000			
%RSD:	0.2	0.2	0.2348			

=====

Element: Hg Seq. No.: 125 AS Loc.: 87 Date: 01/04/2002

Sample ID: 081581D

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.675	1.675	0.0189	0.0190	02:10:47	Yes
2	1.693	1.693	0.0191	0.0192	02:11:20	Yes
3	1.686	1.686	0.0190	0.0191	02:11:53	Yes
Mean:	1.684	1.684	0.0190			
SD :	0.0089	0.0089	0.0001			

00128

Perkin-Elmer AAWinLab: 01/04/2002, 02:11:54 PM

%RSD: 0.5 0.5 0.5254

=====
Element: Hg Seq. No.: 126 AS Loc.: 7 Date: 01/04/2002
Sample ID: CCV
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.034	1.034	0.0117	0.0118	02:12:45	Yes
2	1.023	1.023	0.0116	0.0117	02:13:19	Yes
3	1.031	1.031	0.0117	0.0117	02:13:52	Yes
Mean:	1.030	1.030	0.0116			
SD :	0.0055	0.0055	0.0001			
%RSD:	0.5	0.5	0.5356			

=====
Element: Hg Seq. No.: 127 AS Loc.: 8 Date: 01/04/2002
Sample ID: CCB
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.001	-0.001	0.0000 -	0.0001	02:14:41	Yes
2	-0.003	-0.003	0.0000	0.0001	02:15:14	Yes
3	-0.007	-0.007	-0.0001 -	0.0000	02:15:47	Yes
Mean:	-0.004	-0.004	0.0000			
SD :	0.0032	0.0032	0.0000			
%RSD:	84.0	84.0	83.9858			

=====
 Element: Hg Seq.-No.: 128 AS Loc.: 1 Date: 01/04/2002
 Sample ID: Calib Blank
 =====

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0001	0.0001	02:16:55	Yes
2			0.0001	0.0001	02:17:28	Yes
3			0.0001	0.0001	02:18:01	Yes
Mean:			0.0001			
SD :			0.0000			
%RSD:			23.2590			

Auto-zero performed.

=====
 Element: Hg Seq. No.: 129 AS Loc.: 4 Date: 01/04/2002
 Sample ID: Reslope
 =====

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0849	0.0850	02:18:51	Yes
2			0.0853	0.0854	02:19:24	Yes
3			0.0853	0.0854	02:19:57	Yes
Mean:			0.0851			
SD :			0.0002			
%RSD:			0.2679			

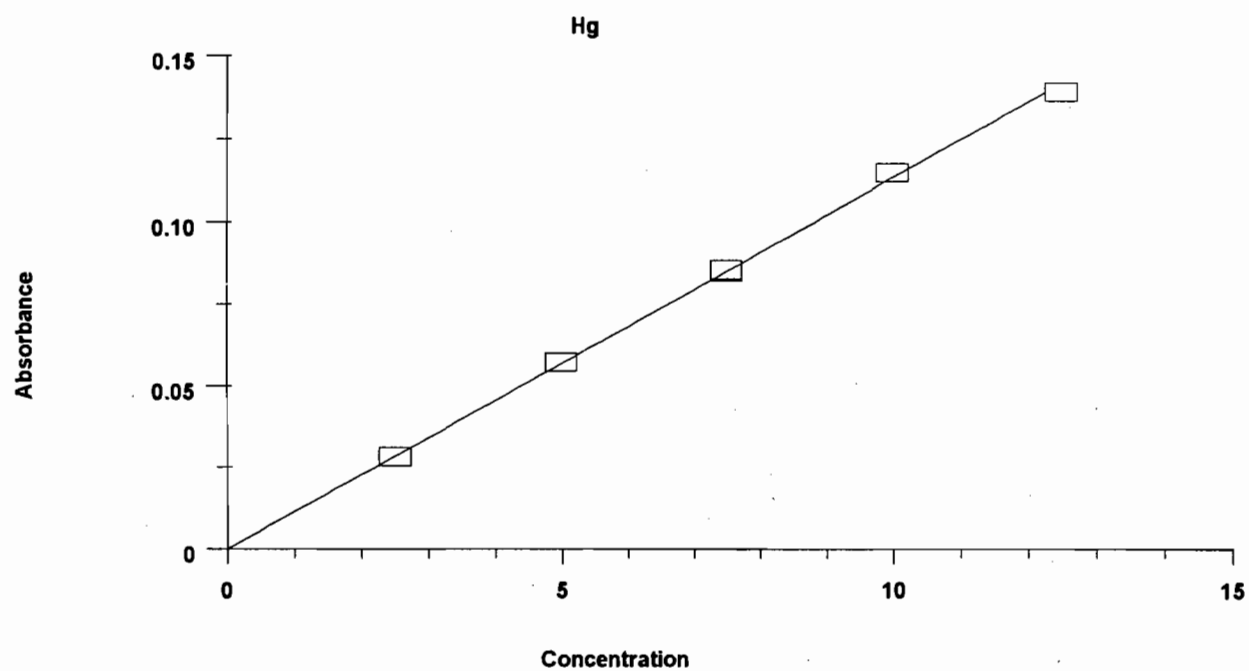
[Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99943 Slope: 0.01127

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.011	0.0000	23.3
STD1	0.0281	2.500	2.477	0.0001	0.3
STD2	0.0571	5.000	5.034	0.0002	0.3
STD3	0.0857	7.500	7.551	0.0005	0.6
STD4	0.1149	10.000	10.12	0.0004	0.3
STD5	0.1392	12.500	12.26	0.0002	0.1
Reslope	0.0851	7.500	7.500	0.0002	0.3
Correlation Coefficient: 0.99943 Slope: 0.01127 ----					

00130

Perkin-Elmer AAWinLab: 01/04/2002, 02:20:25 PM



=====

Element: Hg Seq. No.: 130 AS Loc.: 88 Date: 01/04/2002
 Sample ID: 081581S

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	2.672	2.672	0.0303	0.0305	02:22:01	Yes
2	2.691	2.691	0.0305	0.0307	02:22:34	Yes
3	2.674	2.674	0.0304	0.0305	02:23:07	Yes
Mean:	2.679	2.679	0.0304			
SD :	0.0102	0.0102	0.0001			
%RSD:	0.4	0.4	0.3804			

=====

Element: Hg Seq. No.: 131 AS Loc.: 89 Date: 01/04/2002
 Sample ID: 081581DS

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	2.686	2.686	0.0305	0.0306	02:23:56	Yes
2	2.669	2.669	0.0303	0.0304	02:24:29	Yes
3	2.696	2.696	0.0306	0.0307	02:25:02	Yes
Mean:	2.683	2.683	0.0305			
SD :	0.0137	0.0137	0.0002			
%RSD:	0.5	0.5	0.5124			

=====

Element: Hg Seq. No.: 132 AS Loc.: 90 Date: 01/04/2002
 Sample ID: 081578

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.027	0.027	0.0003	0.0004	02:25:52	Yes
2	0.001	0.001	0.0000	0.0001	02:26:24	Yes
3	0.005	0.005	0.0001	0.0002	02:26:58	Yes
Mean:	0.011	0.011	0.0001			
SD :	0.0139	0.0139	0.0002			
%RSD:	126.0	126.0	126.0151			

=====

Element: Hg Seq. No.: 133 AS Loc.: 91 Date: 01/04/2002
 Sample ID: 081579

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.005	0.005	0.0001	0.0002	02:27:47	Yes
2	0.000	0.000	0.0000	0.0001	02:28:20	Yes
3	0.003	0.003	0.0000	0.0002	02:28:53	Yes
Mean:	0.003	0.003	0.0000			
SD :	0.0022	0.0022	0.0000			
%RSD:	78.1	78.1	78.0548			

=====

Element: Hg Seq. No.: 134 AS Loc.: 92 Date: 01/04/2002
 Sample ID: 081580

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.008	0.008	0.0001	0.0002	02:29:42	Yes
2	-0.004	-0.004	0.0000	0.0001	02:30:15	Yes
3	0.007	0.007	0.0001	0.0002	02:30:48	Yes
Mean:	0.004	0.004	0.0000			
SD :	0.0069	0.0069	0.0001			
%RSD:	192.5	192.5	192.4654			

=====

=====

Element: Hg Seq. No.: 135 AS Loc.: 93 Date: 01/04/2002
Sample ID: 081582

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	3.398	3.398	0.0386	0.0387	02:31:37	Yes
2	3.382	3.382	0.0384	0.0385	02:32:10	Yes
3	3.368	3.368	0.0382	0.0384	02:32:43	Yes
Mean:	3.383	3.383	0.0384			
SD :	0.0150	0.0150	0.0002			
%RSD:	0.4	0.4	0.4442			

=====

Element: Hg Seq. No.: 136 AS Loc.: 94 Date: 01/04/2002
Sample ID: 081583

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	3.489	3.489	0.0396	0.0397	02:33:32	Yes
2	3.500	3.500	0.0397	0.0399	02:34:05	Yes
3	3.484	3.484	0.0396	0.0397	02:34:38	Yes
Mean:	3.491	3.491	0.0396			
SD :	0.0083	0.0083	0.0001			
%RSD:	0.2	0.2	0.2378			

=====

Element: Hg Seq. No.: 137 AS Loc.: 95 Date: 01/04/2002
Sample ID: SPEX STD

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	3.223	3.223	0.0366	0.0367	02:35:26	Yes
2	3.197	3.197	0.0363	0.0364	02:36:00	Yes
3	3.197	3.197	0.0363	0.0364	02:36:33	Yes
Mean:	3.206	3.206	0.0364			
SD :	0.0147	0.0147	0.0002			
%RSD:	0.5	0.5	0.4587			

=====

Element: Hg Seq. No.: 138 AS Loc.: 7 Date: 01/04/2002
Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.018	1.018	0.0116	0.0117	02:37:24	Yes
2	1.004	1.004	0.0114	0.0115	02:37:56	Yes
3	1.024	1.024	0.0116	0.0117	02:38:30	Yes
Mean:	1.016	1.016	0.0115			
SD :	0.0104	0.0104	0.0001			
%RSD:	1.0	1.0	1.0241			

=====

Element: Hg Seq. No.: 139 AS Loc.: 8 Date: 01/04/2002
Sample ID: CCB

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.004	0.004	0.0000	0.0002	02:39:19	Yes
2	-0.017	-0.017	-0.0002	-0.0001	02:39:52	Yes
3	-0.010	-0.010	-0.0001	-0.0000	02:40:25	Yes
Mean:	-0.008	-0.008	-0.0001			
SD :	0.0103	0.0103	0.0001			

00133

Perkin-Elmer AAWinLab: 01/04/2002, 02:40:26 PM

%RSD: 136.2 136.2 136.1962

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG, DGHGLEACH, DG29*

Calibration Solutions:

#	I.D.	**Conc.	Spike	***Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	1.67	500 ul of 0.1 ppm working cal standard	2.5
4	Standard 3	3.33	1000 ul of 0.1 ppm working cal standard	5.0
5	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
6	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
7	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
8	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
9	Standard 5	6.67	2000 ul of 0.1 ppm working cal standard	10.0
10	Standard 6	8.33	2500 ul of 0.1 ppm working cal standard	12.5

Check List

- ☒ Digest Code/Labels
- ☒ Samples poured out
- ☒ Acids added
- ☒ Reagents added
- ☒ Samples spiked
- ☒ Bath at 95 degrees C
- ☒ Samples digested
- ☒ Hydroxylamine HCl added
- ☒ Samples shaken and bulked
- ☒ Rack order checked

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
11	ICV (Init. Calib. Verif.)	4H3B	20 ml	30 ml	1 X	1.5 ppb = 600 ul of 0.05ppm Working Reference QC Std.
12	LLC (low level check)	-	-	-	-	0.25ppb = 50ul of 0.1 ppm Working Cal Std.
13	External Ref.	-	-	-	-	3.0ppb = 600ul of 0.1ppm Intermediate Spex Reference Std.
14	Organic Ref.	-	-	-	-	2.0ppb = 600ul of Intermediate Organic Reference Std.
15	BL 12 28	-	-	-	-	(Processed Blank)
16	BL S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std. ---
17	BL OS	-	-	-	-	(Duplicate Blank Spike)
18	081 570	-	-	-	-	
19	D	-	-	-	-	(Duplicate sample)
20	S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
21	OS	-	-	-	-	(Duplicate Spiked sample)
22	48	-	-	-	-	
23	49	-	-	-	-	
24	51	-	-	-	-	
25	52	-	-	-	-	
26		-	-	-	-	
27		-	-	-	-	
28		-	-	-	-	
29		-	-	-	-	
30		-	-	-	-	
31	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
32	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
33	BL 12 28	SH3B	20 ml	30 ml	-	(Processed Blank)
34	BL S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
35	BL OS	-	-	-	-	(Duplicate Blank Spike)
36	081 557	-	-	-	-	
37	D	-	-	-	-	(Duplicate sample)
38	S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
39	OS	-	-	-	-	(Duplicate Spiked sample)
40	54	-	-	-	-	
41	55	-	-	-	-	
42	56	-	-	-	-	
43	58	-	-	-	-	
44	59	-	-	-	-	
45		-	-	-	-	
46		-	-	-	-	
47		-	-	-	-	
48		-	-	-	-	
49	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
50	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Comments: ** concentration based on 30 ml final volume, *** concentration based on 20 ml final volume

Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C

DG29HGI, DG29HGF, DG101AA1, DG101AA2

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
51	BL 12 28	6M3B	-	-	-	(Processed Blank)
52	BL	S	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
53	BL	DS	-	-	-	(Duplicate Blank Spike)
1 54	081581	-	-	-	-	
1 55	0	D	-	-	-	(Duplicate sample)
1 56		S	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
1 57		DS	-	-	-	(Duplicate Spiked sample)
2 58	78	-	-	-	-	
3 59	79	-	-	-	-	
4 60	80	-	-	-	-	
5 61	P2	-	-	-	-	
6 62	83	-	-	-	-	
7 63		-	-	-	-	
8 64		-	-	-	-	
9 65		-	-	-	-	
10 66		-	-	-	-	
67	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
68	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Procedure/Methodology:

Note: Calibration Standards, ICVs, CCVs, CCBs and LCS are prepared the same as the samples but are not digested.

- 1 Prepare 25 ppm Intermediate Calibration Standard (if required) by pipetting 625 ul. of 1000 ppm Stock to 25 ml final volume of 2% HNO₃
- 2 Prepare 0.1 ppm Working calibration standard daily by pipetting 400 ul. of 25 ppm Intermediate to 100 ml final volume of 2% HNO₃
- 3 Prepare a 0.05 ppm Working Reference QC Standard daily by pipetting 50 ul of Stock Reference Standard to 100 ml final vol of 2% HNO₃
- 4 Using the LIMS Screen "SCNDIG" enter the required samples into LIMS
- 5 Using the labeling program, "DIGLBL", retrieve the "SCNDIG" list and create labels for the required samples.
- 6 Label the falcon tubes appropriately
- 7 Include one External Reference Material sample per run
- 8 Include one Organic Mercury Control Standard per run
- 9 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
- 10 Spike the tubes as indicated in the comment sector of the digestion sheet
- 11 Add 0.5 ml. of conc. Nitric Acid (HNO₃), and 1 ml. of conc. Sulphuric acid, (H₂SO₄), to each tube
- 12 Add 3 ml. 0.6% KMnO₄, purple colour must remain for the duration of digest.
- 13 Add 1.5 ml. of 5% potassium persulphate, (K₂S₂O₈), to each tube
- 14 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
- 15 Remove tubes and allow to cool to room temperature
- 16 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
- 17 Recap tubes and shake until KMnO₄ is destroyed and sample becomes colourless
Dilute the sample to a final volume of 30 ml.

Supplier/Lot Information	Supplier	Lot	Expiry Date
Stock Calibration Standard	AccuTrace	A 9121032	OCT-02
Intermediate Cal Standard	Internal	0111130	07/12/30
Stock Reference Standard	High Purity	0033536	7th Nov. 02
External Reference Material	SPEX	012-38H6	APRIL 15, 2002
Organic Mercury Control Standard	Aldrich	N/A	N/A
6% potassium permanganate	Internal	0112120	02/02/20
5% potassium persulphate	Internal	0112119	02/02/19
20% hydroxylamine hydrochloride	Internal	0112119	02/02/19
HNO ₃	Anachemia	1101080	02/02/28
H ₂ SO ₄	Anachemia	3100090	02/02/28
Bath Temps: 194T C	Time ON: 11:00	Time OFF: 1:00	
Prepared By: MB	Date: 07/12/02	Checked by: MB	

Revision 3
Effective 0010822

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG, DGHGLEACH, DG29*

Calibration Solutions:

#	I.D.	**Conc.	Spike	***Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	1.67	500 ul of 0.1 ppm working cal standard	2.5
4	Standard 3	3.33	1000 ul of 0.1 ppm working cal standard	5.0
5	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
6	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
7	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
8	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
9	Standard 5	6.67	2000 ul of 0.1 ppm working cal standard	10.0
10	Standard 6	8.33	2500 ul of 0.1 ppm working cal standard	12.5

Check List

- ☒ Digest Code/labels
- ☒ Samples poured out
- ☒ Acids added
- ☒ Reagents added
- ☒ Samples spiked
- ☒ Bath at 95 degrees C
- ☒ Samples digested
- ☒ Hydroxylamine HCl added
- ☒ Samples shaken and bulked
- ☒ Rack order checked

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
11	ICV (Int. Calib. Verif.)	7H2B	20 ml	30 ml	1 X	1.5 ppb = 600 ul of 0.05ppm Working Reference QC Std.
12	LLC (low level check)	-	-	-	-	0.25ppb = 50ul of 0.1 ppm Working Cal Std.
13	External Ref.	-	-	-	-	3.0ppb = 600ul of 0.1ppm Intermediate Spex Reference Std.
14	Organic Ref.	-	-	-	-	2.0ppb = 600ul of Intermediate Organic Reference Std.
15	BL 12 31	-	-	-	-	(Processed Blank) 081554
16	BL S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std. ---
17	BL DS	-	-	-	-	(Duplicate Blank Spike)
1	18 081557	-	-	-	-	
1	19 D	-	-	-	-	(Duplicate sample)
1	20 S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
1	21 DS	-	-	-	-	(Duplicate Spiked sample)
2	22 55	-	-	-	-	
3	23 56	-	-	-	-	
4	24 58	-	-	-	-	
5	25 59	-	-	-	-	
6	26	-	-	-	-	
7	27	-	-	-	-	
8	28	-	-	-	-	
9	29	-	-	-	-	
10	30	-	-	-	-	
31	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
32	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
33	BL 12 31	8H2B	20 ml	30 ml	-	(Processed Blank) 081578
34	BL S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
35	BL DS	-	-	-	-	(Duplicate Blank Spike)
1	36 081781	-	-	-	-	
1	37 D	-	-	-	-	(Duplicate sample)
1	38 S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
1	39 DS	-	-	-	-	(Duplicate Spiked sample)
2	40 79	-	-	-	-	
3	41 80	-	-	-	-	
4	42 82	-	-	-	-	
5	43 83	-	-	-	-	
6	44	-	-	-	-	
7	45	-	-	-	-	
8	46	-	-	-	-	
9	47	-	-	-	-	
10	48	-	-	-	-	
49	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
50	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Comments:*** concentration based on 30 ml final volume, *** concentration based on 20 ml final volume

Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C

DG29HGI, DG29HGF, DG101AA1, DG101AA2

PSC Analytical Services-Burlington

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
51	BL	-	-	-	-	(Processed Blank)
52	BL S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
53	BL DS	-	-	-	-	(Duplicate Blank Spike)
1 54		-	-	-	-	
1 55	D	-	-	-	-	(Duplicate sample)
1 56	S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
1 57	DS	-	-	-	-	(Duplicate Spiked sample)
2 58		-	-	-	-	
3 59		-	-	-	-	
4 60		-	-	-	-	
5 61		-	-	-	-	
6 62		-	-	-	-	
7 63		-	-	-	-	
8 64		-	-	-	-	
9 65		-	-	-	-	
10 66		-	-	-	-	
67	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
68	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Procedure/Methodology:

Note: Calibration Standards, ICVs, CCVs, CCBs and LCS are prepared the same as the samples but are not digested.

- 1 Prepare 25 ppm Intermediate Calibration Standard (if required) by pipetting 625 ul. of 1000 ppm Stock to 25 ml final volume of 2% HNO₃
- 2 Prepare 0.1 ppm Working calibration standard daily by pipetting 400 ul. of 25 ppm Intermediate to 100 ml final volume of 2% HNO₃
- 3 Prepare a 0.05 ppm Working Reference QC Standard daily by pipetting 50 ul of Stock Reference Standard to 100 ml final vol of 2% HNO₃
- 4 Using the LIMS Screen "SCNDIG" enter the required samples into LIMS
- 5 Using the labeling program, "DIGLBL", retrieve the "SCNDIG" list and create labels for the required samples.
- 6 Label the falcon tubes appropriately
- 7 Include one External Reference Material sample per run
- 8 Include one Organic Mercury Control Standard per run
- 9 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
- 10 Spike the tubes as indicated in the comment sector of the digestion sheet
- 11 Add 0.5 ml. of conc. Nitric Acid (HNO₃), and 1 ml. of conc. Sulphuric acid, (H₂SO₄), to each tube
- 12 Add 3 ml. of 6% KMnO₄, purple colour must remain for the duration of digest.
- 13 Add 1.5 ml. of 5% potassium persulphate, (K₂S₂O₈), to each tube
- 14 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
- 15 Remove tubes and allow to cool to room temperature
- 16 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
- 17 Recap tubes and shake until KMnO₄ is destroyed and sample becomes colourless
Dilute the sample to a final volume of 30 ml.

Supplier/Lot Information	Supplier	Lot	Expiry Date
Stock Calibration Standard	AccuTrace	A912 50 32	oct-02
Intermediate Cal Standard	Internal	01/12/ 31	02/01/ 31
Stock Reference Standard	High Purity	00 3-3 53 L	JAN. 02
External Reference Material	SPEX	CL2 -38 H6	APRIL 15, 2002
Organic Mercury Control Standard	Aldrich	414	N/A
6% potassium permanganate	Internal	01/12/ 31	02/02/ 28
5% potassium persulphate	Internal	01/12/ 28	02/02/ 28
20% hydroxylamine hydrochloride	Internal	01/12/ 19	02/02/ 19
HNO ₃	Anachemia	11010 80	02/02/ 28
H ₂ SO ₄	Anachemia	31000 91	02/02/ 28
Bath Temps: 195 C	Time ON: 9:05	Time OFF: 11:05	
Prepared By: MB	Date: 01/12/31	Checked by: MB	

Revision 3
Effective 0010822

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG, DGHGLEACH, DG29*

Calibration Solutions:

#	I.D.	**Conc.	Spike	***Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	1.67	500 ul of 0.1 ppm working cal standard	2.5
4	Standard 3	3.33	1000 ul of 0.1 ppm working cal standard	5.0
5	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
6	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
7	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
8	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
9	Standard 5	6.67	2000 ul of 0.1 ppm working cal standard	10.0
10	Standard 6	8.33	2500 ul of 0.1 ppm working cal standard	12.5

Check List

- ☒ Digest Code/labels
- ☒ Samples poured out
- ☒ Acids added
- ☒ Reagents added
- ☒ Samples spiked
- ☒ Bath at 95 degrees C
- ☒ Samples digested
- ☒ Hydroxylamine HCl added
- ☒ Samples shaken and buffed
- ☒ Rack order checked

#	Sample I.D.	B.Code	Init.Vol.	F.Vol.	Dil	Comment
11	ICV (Init. Calib. Verif.)	143A	20 ml	30 ml	1 X	1.5 ppb = 600 ul of 0.05ppm Working Reference QC Std.
12	LLC (low level check)	-	-	-	-	0.25ppb = 50ul of 0.1 ppm Working Cal Std.
13	External Ref.	-	-	-	-	3.0ppb = 600ul of 0.1ppm Intermediate Spex Reference Std.
14	Organic Ref.	-	-	-	-	2.0ppb = 600ul of Intermediate Organic Reference Std.
15	BL 0101	-	-	-	-	(Processed Blank) 081 555, 081 578
16	BL S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std. ---
17	BL DS	-	-	-	-	(Duplicate Blank Spike)
18	081 557	-	-	-	-	(Duplicate sample)
19	S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
20	DS	-	-	-	-	(Duplicate Spiked sample)
21	56	-	-	-	-	
22	58	-	-	-	-	
23	59	-	-	-	-	
24	081 579	-	-	-	-	
25	80	-	-	-	-	
26	81	-	-	-	-	
27	82	-	-	-	-	
28	83	-	-	-	-	
29	081 555	-	-	-	-	
30	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
31	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
32	BL 0192	243C	20 ml	30 ml	-	(Processed Blank)
33	BL S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
34	BL DS	-	-	-	-	(Duplicate Blank Spike)
35	081 557	-	-	-	-	(Duplicate sample)
36	D	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
37	S	-	-	-	-	(Duplicate Spiked sample)
38	DS	-	-	-	-	
39	59	-	-	-	-	
40	55	-	-	-	-	
41	56	-	-	-	-	
42	58	-	-	-	-	
43	59	-	-	-	-	
44	081 578	-	-	-	-	
45	79	-	-	-	-	
46	80	-	-	-	-	
47	82	-	-	-	-	
48	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
49	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Comments: ** concentration based on 30 ml final volume, *** concentration based on 20 ml final volume

Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C

DG29HGI, DG29HGF, DG101AA1, DG101AA2

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
51	BL 0102	3H30	-	-	-	(Processed Blank)
52	BL S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
53	BL DS	-	-	-	-	(Duplicate Blank Spike)
1 54	081CP1	-	-	-	-	
1 55	D	-	-	-	-	(Duplicate sample)
1 56	S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
1 57	DS	-	-	-	-	(Duplicate Spiked sample)
2 58	081CP3	-	-	-	-	
3 59		-	-	-	-	
4 60		-	-	-	-	
5 61		-	-	-	-	
6 62		-	-	-	-	
7 63		-	-	-	-	
8 64		-	-	-	-	
9 65		-	-	-	-	
10 66		-	-	-	-	
67	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
68	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Procedure/Methodology:

Note: Calibration Standards, ICVs, CCVs, CCBs and LCS are prepared the same as the samples but are not digested.

- 1 Prepare 25 ppm Intermediate Calibration Standard (if required) by pipetting 625 ul. of 1000 ppm Stock to 25 ml final volume of 2% HNO₃
- 2 Prepare 0.1 ppm Working calibration standard daily by pipetting 400 ul. of 25 ppm Intermediate to 100 ml final volume of 2% HNO₃
- 3 Prepare a 0.05 ppm Working Reference QC Standard daily by pipetting 50 ul of Stock Reference Standard to 100 ml final vol of 2% HNO₃
- 4 Using the LIMS Screen "SCNDIG" enter the required samples into LIMS
- 5 Using the labeling program, "DIGLBL", retrieve the "SCNDIG" list and create labels for the required samples.
- 6 Label the falcon tubes appropriately
- 7 Include one External Reference Material sample per run
- 8 Include one Organic Mercury Control Standard per run
- 9 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
- 10 Spike the tubes as indicated in the comment sector of the digestion sheet
- 11 Add 0.5 ml. of conc. Nitric Acid (HNO₃), and 1 ml. of conc. Sulphuric acid, (H₂SO₄), to each tube
- 12 Add 3 ml. of 6% KMnO₄, purple colour must remain for the duration of digest.
- 13 Add 1.5 ml. of 5% potassium persulphate, (K₂S₂O₈), to each tube
- 14 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
- 15 Remove tubes and allow to cool to room temperature
- 16 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
- 17 Recap tubes and shake until KMnO₄ is destroyed and sample becomes colourless
Dilute the sample to a final volume of 30 ml.

Supplier/Lot Information	Supplier	Lot	Expiry Date
Stock Calibration Standard	AccuTrace	A9125032	01-02
Intermediate Cal Standard	Internal	01/12/31	02/01/31
Stock Reference Standard	High Purity	0033536	74H.02
External Reference Material	SPEX	012-3846	APRIL 15, 2002
Organic Mercury Control Standard	Aldrich	N/A	N/A
6% potassium permanganate	Internal	01/12/31	02/02/28
5% potassium persulphate	Internal	01/12/28	01/02/28
20% hydroxylamine hydrochloride	Internal	01/12/19	02/02/19
HNO ₃	Anachemia	9101080	02/02/28
H ₂ SO ₄	Anachemia	3100091	02/02/28
Bath Temps: 195°C	Time ON: 10:01	Time OFF: 12:05	
Prepared By: MB	Date: 02/01/02	Checked by: MB	

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG, DGHGLEACH, DG29*

Calibration Solutions:

#	I.D.	**Conc.	Spike	***Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	1.67	500 ul of 0.1 ppm working cal standard	2.5
4	Standard 3	3.33	1000 ul of 0.1 ppm working cal standard	5.0
5	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
6	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
7	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
8	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
9	Standard 5	6.67	2000 ul of 0.1 ppm working cal standard	10.0
10	Standard 6	8.33	2500 ul of 0.1 ppm working cal standard	12.5

Check List

- ☒ Digest Codelabels
- ☒ Samples poured out
- ☒ Acids added
- ☒ Reagents added
- ☒ Samples spiked
- ☒ Bath at 95 degrees C
- ☒ Samples digested
- ☒ Hydroxylamine HCl added
- ☒ Samples shaken and bulked
- ☒ Rack order checked

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
11	ICV (Int. Calib. Verif.)	4011B	20 ml	30 ml	1 X	1.5 ppb = 600 ul of 0.05ppm Working Reference QC Std.
12	LLC (low level check)	-	-	-	-	0.25ppb = 50ul of 0.1 ppm Working Cal Std.
13	External Ref.	-	-	-	-	3.0ppb = 600ul of 0.1ppm Intermediate Spex Reference Std.
14	Organic Ref.	-	-	-	-	2.0ppb = 600ul of Intermediate Organic Reference Std.
15	BL 01 04	-	-	-	-	(Processed Blank)
16	BL S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std. ---
17	BL DS	-	-	-	-	(Duplicate Blank Spike)
18	81025	-	-	-	-	
19	D	-	-	-	-	(Duplicate sample)
20	S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
21	DS	-	-	-	-	(Duplicate Spiked sample)
22	23	-	-	-	-	
23	24	-	-	-	-	
24	26	-	-	-	-	
25	27	-	-	-	-	
26	081024D	-	-	-	-	
27		-	-	-	-	
28		-	-	-	-	
29		-	-	-	-	
30		-	-	-	-	
31	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
32	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
33	BL 01 04	SH1B	20 ml	30 ml	-	(Processed Blank)
34	BL S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
35	BL DS	-	-	-	-	(Duplicate Blank Spike)
36	081557	-	-	-	-	
37	D	-	-	-	-	(Duplicate sample)
38	S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
39	DS	-	-	-	-	(Duplicate Spiked sample)
40	54	-	-	-	-	
41	55	-	-	-	-	
42	56	-	-	-	-	
43	58	-	-	-	-	
44	59	-	-	-	-	
45		-	-	-	-	
46		-	-	-	-	
47		-	-	-	-	
48		-	-	-	-	
49	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
50	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Comments: ** concentration based on 30 ml final volume, *** concentration based on 20 ml final volume

Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C

DG29HGI, DG29HGF, DG101AA1, DG101AA2

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
51	BL 0109	64/B	-	-	-	(Processed Blank)
52	BL	S	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
53	BL	DS	-	-	-	(Duplicate Blank Spike)
1 54	08/581	-	-	-	-	
1 55		D	-	-	-	(Duplicate sample)
1 56		S	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
1 57		DS	-	-	-	(Duplicate Spiked sample)
2 58	28	-	-	-	-	
3 59	29	-	-	-	-	
4 60	80	-	-	-	-	
5 61	M.B. 81	-	-	-	-	
6 62	82	-	-	-	-	
7 63	83	-	-	-	-	
8 64		-	-	-	-	
9 65		-	-	-	-	
10 66		-	-	-	-	
67	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
68	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Procedure/Methodology:

Note: Calibration Standards, ICVs, CCVs, CCBs and LCS are prepared the same as the samples but are not digested.

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- 3 Prepare a 0.05 ppm Working Reference QC Standard daily by pipetting 50 ul of Stock Reference Standard to 100 ml final vol of 2% HNO₃
- 4 Using the LIMS Screen "SCNDIG" enter the required samples into LIMS
- 5 Using the labeling program, "DIGLBL", retrieve the "SCNDIG" list and create labels for the required samples.
- 6 Label the falcon tubes appropriately
- 7 Include one External Reference Material sample per run
- 8 Include one Organic Mercury Control Standard per run
- 9 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
- 10 Spike the tubes as indicated in the comment sector of the digestion sheet
- 11 Add 0.5 ml. of conc. Nitric Acid (HNO₃), and 1 ml. of conc. Sulphuric acid, (H₂SO₄), to each tube
- 12 Add 3 ml. of 6% KMnO₄, purple colour must remain for the duration of digest.
- 13 Add 1.5 ml. of 5% potassium persulphate, (K₂S₂O₈), to each tube
- 14 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
- 15 Remove tubes and allow to cool to room temperature
- 16 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
- 17 Recap tubes and shake until KMnO₄ is destroyed and sample becomes colourless
Dilute the sample to a final volume of 30 ml.

Supplier/Lot Information	Supplier	Lot	Expiry Date
Stock Calibration Standard	AccuTrace	A9125052	Oct. 02
Intermediate Cal Standard	Internal	07112131	0210131
Stock Reference Standard	High Purity	0033536	JAN. 02
External Reference Material	SPEX	CL2-38HC	APRIL 15, 2002
Organic Mercury Control Standard	Aldrich	N/A	N/A
6% potassium permanganate	Internal	01112131	02/02/28
5% potassium persulphate	Internal	01112128	02/02/28
20% hydroxylamine hydrochloride	Internal	01112119	02/02/19
HNO ₃	Anachemia	110108	02/02/28
H ₂ SO ₄	Anachemia	3600091	02/02/28
Bath Temps: 195T C	Time ON: 9:25	Time OFF: 11:05	
Prepared By: MB	Date: 02/01/04	Checked by: MB	

4. SHIPPING/RECEIVING DOCUMENTS

Airbills (No. of shipments = _____)

Chain-of-Custody Records

Sample Log-In Sheets

Miscellaneous Shipping/Receiving Records (describe or list)

00143


FedEx USA Airbill FedEx Tracking Number 813526450045
Form
I.D. No.

0200

Recipient's Copy

From 12/14/01
Date
Sender's Name PETE TINKHAM **Phone** 917 991-6200
Company Clean Air Engineering @ Wadsworth South Parade
Address 4400 S. State Rd. 7
City Ft. Lauderdale **State** FL **ZIP** 33314

Your Internal Billing Reference

To
Recipient's Name John Blythe **Phone** 905 332-9789
Company PSC Analytical
Address 799 Cayuga Rd. (Fed Ex Depot)
We cannot deliver to P.O. boxes or P.O. ZIP codes.

To "HOLD" at FedEx location, print FedEx address here.
City Chickadee **State** NY **ZIP** 14225



4a Express Package Service

☒ **FedEx Priority Overnight**
Next business morning
☐ **FedEx Standard Overnight**
Next business afternoon
Packages up to 150 lbs.
Delivery commitment may be later in some areas.
☐ **FedEx First Overnight**
Earliest next business morning delivery to select locations
☐ **FedEx 2Day***
Second business day
☐ **FedEx Express Saver***
Third business day
* FedEx Letter Rate not available Minimum charge: One-pound rate

4b Express Freight Service

☐ **FedEx 1Day Freight***
Next business day
☐ **FedEx 2Day Freight**
Second business day
☐ **FedEx 3Day Freight**
Third business day
Packages over 150 lbs.
Delivery commitment may be later in some areas.

* Call for Confirmation:

5 Packaging

☐ **FedEx Letter***
☐ **FedEx Pak***

* Declared value limit \$500

☒ **Other Pkg.**
Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

☐ **Saturday Delivery**
Available for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
☐ **Sunday Delivery**
Available for FedEx Priority Overnight to select ZIP codes
☐ **HOLD Weekday**
at FedEx Location
☐ **HOLD Saturday**
at FedEx Location
Does this shipment contain dangerous goods?
One box must be checked.
☐ **No**
☒ **Yes**
As per attached Shipper's Declaration
☐ **Yes**
Shipper's Declaration not required
☐ **Dry Ice**
Dry Ice, 9, UN 1845
☒ **Cargo Aircraft Only**

7 Payment

Bill to: Enter FedEx Acct. No. or Credit Card No. below.

☒ **Sender**
Acct. No. in Section 1 will be billed.
☐ **Recipient**
☐ **Third Party**
☐ **Credit Card**
☐ **Obtain Recip. Acct. No.**
☒ **Cash/Check**

Total Packages

Total Weight

Total Declared Value†

Total Charges

1

42

\$ NDV .00

† Our liability is limited to \$100 unless you declare a higher value. See back for details.

8 Release Signature

Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.
Questions? Call 1-800-Go-FedEx (800-463-3339)

Visit our Web site at www.fedex.com
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360

00144


FedEx USA Airbill FedEx Tracking Number **813526450023**

 From **12/14/01**

 Sender's Name **PETE TINKHAM** Phone **947 991-6200**

 Company **Clear Air Engineering @ Wheelabrator South Broward**

 Address **4400 S. State Rd. 7**

 City **H. Lenddale** State **FL** ZIP **33314**

Your Internal Billing Reference

 To Recipient's Name **Ada Rhythe** Phone **905 3329749**

 Company **PSC Analytical**

 Address **299 Cayuga Rd. (Fed Ex Depot)**

 To Recipient's Name **Chuck Lawica** State **NY** ZIP **14125**

 Form I.D. No. **0200** Recipient's Copy +

4a Express Package Service
☒ FedEx Priority Overnight
Next business morning

☐ FedEx Standard Overnight
Next business afternoon

☐ FedEx First Overnight
Earliest next business morning delivery to select locations

☐ FedEx 2Day*
Second business day

☐ FedEx Express Saver*
Third business day

* FedEx Letter Rate not available. Minimum charge: One-pound rate.

4b Express Freight Service
☐ FedEx 1Day Freight*
Next business day

☐ FedEx 2Day Freight
Second business day

☐ FedEx 3Day Freight
Third business day

* Call for Confirmation:

* Declared value limit \$500

5 Packaging
☐ FedEx Letter*

☐ FedEx Pak*

☒ Other Pkg.
Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling
☐ Saturday Delivery
Available for FedEx Priority Overnight and FedEx 2Day to select ZIP codes

☐ Sunday Delivery
Available for FedEx Priority Overnight to select ZIP codes

☐ HOLD Weekday at FedEx Location
Not available with FedEx First Overnight

☐ HOLD Saturday at FedEx Location
Available for FedEx Priority Overnight and FedEx 2Day to select locations

 Does this shipment contain dangerous goods?
One box must be checked.

☒ No

☐ Yes
As per attached Shipper's Declaration

☒ Yes
Shipper's Declaration not required

☐ Dry Ice
Dry Ice, 9, UN 1845 x kg

Dangerous Goods cannot be shipped in FedEx packaging.

☐ Cargo Aircraft Only

7 Payment

Bill to: Enter FedEx Acct. No. or Credit Card No. below.

☐ Obtain Recip. Acct. No.

☒ Sender
Acct. No. in Section I will be billed.

☐ Recipient

☐ Third Party

☐ Credit Card

☐ Cash/Check

Total Packages	Total Weight	Total Declared Value ¹	Total Charges
1	40	\$ NDV .00	

¹ Our liability is limited to \$100 unless you declare a higher value. See back for details.

8 Release Signature

Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

Questions? Call 1-800-Go-FedEx (800-463-3339)

Visit our Web site at www.fedex.com

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360


00145


FedEx USA Airbill
Express

 FedEx Tracking Number **828408657697**

Form ID: No.

0200

Recipient's Copy

From 
 Date _____
 Sender's Name **PETE TINKHAM** Phone **417 991-6200**
 Company **Clean Air Engineering @ Wheelabrator South Florida**
 Address **4400 S. State Rd. 7**
 City **Fort Lauderdale** State **FL** ZIP **33314**

Your Internal Billing Reference

To Recipient's Name **Aida Blythe** Phone **905 332 9788**
 Company **PSC Analytical**
 Address **399 Cayuga Rd. (Fed Ex Depot)**
 To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.
 City **Cherkawaga** State **NY** ZIP **14115**


4a Express Package Service

☒ **FedEx Priority Overnight** Next business morning
☐ **FedEx Standard Overnight** Next business afternoon
☐ **FedEx 2Day** Second business day
☐ **FedEx Express Saver** Third business day
☐ **FedEx First Overnight** Earliest next business morning delivery to select locations
☐ **NEW FedEx Extra Hours** Later drop-off with next business afternoon delivery for select locations
 FedEx Envelope rate not available. Minimum charge: One-pound rate.

4b Express Freight Service

☐ **FedEx 1Day Freight*** Next business day
☐ **FedEx 2Day Freight** Second business day
☐ **FedEx 3Day Freight** Third business day

* Call for Confirmation.

5 Packaging

☐ **FedEx Envelope*** ☐ **FedEx Pak*** Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
☒ **Other Pkg.** Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

☐ **SATURDAY Delivery** Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
☐ **SUNDAY Delivery** Available only for FedEx Priority Overnight to select ZIP codes
☐ **HOLD Weekday at FedEx Location** Not available with FedEx First Overnight
☐ **HOLD Saturday at FedEx Location** Available only for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods?

☐ **No** ☒ **Yes** As per attached Shipper's Declaration
☐ **Dry Ice** Dry Ice, 9 UN 1845 x _____ kg
☒ **Cargo Aircraft Only**

Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service.

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below. ☐ **Obtain Recip. Acct. No.**
☒ **Sender** Acct. No. in Section 1 will be billed. ☐ **Recipient** ☐ **Third Party** ☐ **Credit Card** ☐ **Cash/Check**

Total Packages **1** Total Weight **140** Total Declared Value* \$ **NDV** .00
 Total Charges **NDV**
 Credit Card Auth.

*Our liability is limited to \$100 unless you declare a higher value. See back for details.

8 Release Signature

Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

 Questions? Visit our Web site at fedex.com

or call 1-800-Go-FedEx® (800) 463-3339.

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404

00146


FedEx USA Airbill
Express

 FedEx Tracking Number **828408657701**

 From **12/14/01**
 Date
 Sender's Name **PETE TENKHAM** Phone **947 991-6200**
 Company **Clean Air Engineering @ Wheelabrator South Broward**
 Address **4400 S. State Rd. 7**
 City **Ft. Lauderdale** State **FL** ZIP **33314**
Internal Billing Reference

 Recipient's Name **Ada Plythe** Phone **905 332-8788**
 Company **PSC Analytical**
 Address **799 Cayuga Rd. (Fed Ex Depot)**
 Dept./Floor/Suite/Room

 City **Chickadee** State **NY** ZIP **14225**

 Form I.D. No. **0200**

Recipient's Copy

4a Express Package Service

 Packages up to 150 lbs.
☒ FedEx Priority Overnight Next business morning
☐ FedEx Standard Overnight Next business afternoon
☐ FedEx First Overnight Earliest next business morning delivery to select locations
☐ FedEx 2Day Second business day
☐ FedEx Express Saver Third business day
☐ NEW FedEx Extra Hours Later drop-off with next business afternoon delivery for select locations

4b Express Freight Service

 Packages over 150 lbs.
☐ FedEx 1Day Freight* Next business day
☐ FedEx 2Day Freight Second business day
☒ FedEx 3Day Freight Third business day

* Call for Confirmation

5 Packaging
☐ FedEx Envelope*
☐ FedEx Pak* Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
☒ Other Pkg. Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

 Include FedEx address in Section 3.
☐ SATURDAY Delivery Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
☐ SUNDAY Delivery Available only for FedEx Priority Overnight to select ZIP codes
☐ HOLD Weekday at FedEx Location Not available with FedEx First Overnight
☐ HOLD Saturday at FedEx Location Available only for FedEx Priority Overnight and FedEx 2Day to select locations
 Does this shipment contain dangerous goods?
☐ No ☒ Yes As per attached Shipper's Declaration
☐ Dry Ice Dry Ice, 9, UN 1845 x kg
☒ Cargo Aircraft Only

7 Payment

 Bill to: Enter FedEx Acct. No. or Credit Card No. below.
☒ Sender Acct. No. in Section 1 will be billed.
☐ Recipient
☐ Third Party
☐ Credit Card
☐ Obtain Recip. Acct. No.
☐ Cash/Check

 Total Packages **1** Total Weight **1.51** Total Declared Value* **\$ NDV** .00
 Total Charges
 Credit Card Auth.

8 Release Signature Sign to authorize delivery without obtaining signature.

 By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.
Questions? Visit our Web site at fedex.com
 or call 1-800-Go-FedEx® (800)463-3339.
 Rev. Date 12/00 • Part #155915 • ©1994-2000 FedEx • PRINTED IN U.S.A. • GBFE 3/01

404

00147


FedEx USA Airbill FedEx Tracking Number **813526450012**

From XXXXXXXXXXXXXXXXXXXX
Date 12/14/01
Sender's Name PETE TENKHAM **Phone** 447 991-6100
Company Clean Air Engineering @ Wheelabrator South Broward
Address 4400 S. State Rd 7
City Ft. Lauderdale **State** FL **ZIP** 33314

Your Internal Billing Reference

To Recipient's Name A.J. Elythe **Phone** 905 332-9748
Company PSC Analytical
Address 299 Cayuga Rd. (Fed Ex Depot)
 We cannot deliver to P.O. boxes or P.O. ZIP codes.

To "HOLD" at FedEx location, print FedEx address here.
City Chesham **State** NY **ZIP** 14225



Form 101 No.

0200

Recipients Copy

4a Express Package Service
☒ **FedEx Priority Overnight**
 Next business morning

☐ **FedEx Standard Overnight**
 Next business afternoon

Packages up to 150 lbs.
 Delivery commitment may be later in some areas.
☐ **FedEx First Overnight**
 Earliest next business morning delivery to select locations

☐ **FedEx 2Day***
 Second business day

☐ **FedEx Express Saver***
 Third business day

 * FedEx Letter Rate not available
 Minimum charge: One-pound rate

4b Express Freight Service
☐ **FedEx 1Day Freight***
 Next business day

☐ **FedEx 2Day Freight**
 Second business day

☐ **FedEx 3Day Freight**
 Third business day

Packages over 150 lbs.
 Delivery commitment may be later in some areas.

* Call for Confirmation.

5 Packaging
☐ **FedEx Letter***
☐ **FedEx Pak***
☒ **Other Pkg.**
 Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling
☐ **Saturday Delivery**
 Available for FedEx Priority Overnight and FedEx 2Day to select ZIP codes

☐ **Sunday Delivery**
 Available for FedEx Priority Overnight to select ZIP codes

☐ **HOLD Weekday at FedEx Location**
 Not available with FedEx First Overnight

☐ **HOLD Saturday at FedEx Location**
 Available for FedEx Priority Overnight and FedEx 2Day to select locations

 Does this shipment contain dangerous goods?
 One box must be checked.

☐ **No**
☒ **Yes**
 As per attached Shipper's Declaration

☐ **Yes**
 Shipper's Declaration not required

☐ **Dry Ice**
 Dry Ice, 9 UN 1845 x _____ kg

Dangerous Goods cannot be shipped in FedEx packaging.

☒ **Cargo Aircraft Only**
7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below.

☐ **Obtain Recip. Acct. No.**
☒ **Sender**
 Acct. No. in Section 1 will be billed.

☐ **Recipient**
☐ **Third Party**
☐ **Credit Card**
☐ **Cash/Check**

Total Packages

1

Total Weight

42

Total Declared Value¹

\$ NDV .00

Total Charges

Credit Card Auth.

¹Our liability is limited to \$100 unless you declare a higher value. See back for details.

8 Release Signature

Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

Questions? Call 1-800-Go-FedEx® (800-463-3339)
Visit our Web site at www.fedex.com

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360

CHAIN OF CUSTODY FORM

CLIENT <u>Wheelabrator</u>		PROJECT NO. <u>8964-3</u>		NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED <i>Hg (Only)</i>				PAGE <u>4</u> OF <u> </u>																																																																		
PLANT <u>North Board</u>		DEPT. <u>66</u>								REVISION NO. <u> </u>																																																																		
PROJECT MANAGER <u>S. Brown</u>		RECOVERY PERSON: <u>P. Tinkham</u>								ADDITIONAL INFORMATION																																																																		
JOB LEADER <u>P. Tinkham</u>																																																																												
MB-81578																																																																												
<table border="1"> <thead> <tr> <th>CAE LAB NO.</th> <th>RUN NO.</th> <th>TEST LOCATION</th> <th>DATE</th> <th>SAMPLE MATRIX</th> </tr> </thead> <tbody> <tr> <td></td> <td>NA</td> <td>Field Blank</td> <td>B1 12/12</td> <td>Fitter</td> </tr> <tr> <td>81580</td> <td></td> <td></td> <td>B1</td> <td>F_{1/2} .1N HNO₃ Rinse</td> </tr> <tr> <td></td> <td></td> <td></td> <td>B2</td> <td>Imp 1,2,3 Catch + Rinse</td> </tr> <tr> <td></td> <td></td> <td></td> <td>B1</td> <td>Imp 4 Catch + Rinse</td> </tr> <tr> <td></td> <td></td> <td></td> <td>B3</td> <td>Imp 5,6 Catch + Rinse</td> </tr> <tr> <td></td> <td>↓</td> <td>↓</td> <td>B5</td> <td>Imp 5,6 8N HCl Rinse</td> </tr> <tr> <td>81579</td> <td>NA</td> <td>Reagent Blank</td> <td>B1 12/11/01</td> <td>Fitter</td> </tr> <tr> <td></td> <td></td> <td></td> <td>B1</td> <td>300mls .1N HNO₃</td> </tr> <tr> <td></td> <td></td> <td></td> <td>B2</td> <td>300mls 4% B₂O₃</td> </tr> <tr> <td></td> <td></td> <td></td> <td>B3</td> <td>300mls 5% B₂O₃</td> </tr> <tr> <td></td> <td>↓</td> <td>↓</td> <td>B1</td> <td>200mls DI H₂O</td> </tr> <tr> <td></td> <td>↓</td> <td>↓</td> <td>B5</td> <td>25ml 8N HCl / 20ml DI H₂O</td> </tr> </tbody> </table>												CAE LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX		NA	Field Blank	B1 12/12	Fitter	81580			B1	F _{1/2} .1N HNO ₃ Rinse				B2	Imp 1,2,3 Catch + Rinse				B1	Imp 4 Catch + Rinse				B3	Imp 5,6 Catch + Rinse		↓	↓	B5	Imp 5,6 8N HCl Rinse	81579	NA	Reagent Blank	B1 12/11/01	Fitter				B1	300mls .1N HNO ₃				B2	300mls 4% B ₂ O ₃				B3	300mls 5% B ₂ O ₃		↓	↓	B1	200mls DI H ₂ O		↓	↓	B5	25ml 8N HCl / 20ml DI H ₂ O
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Relinquished by: (Signature) <i>P. Tinkham</i>	Date/Time 12/14/01 17:00	Received by: (Signature) <i>[Signature]</i>	Date/Time 12/17/01	Relinquished by: (Signature)	Date/Time
Courier:	Date/Time	Relinquished by: (Signature)	Date/Time	Rec'd for Analysis by:	Date/Time

Special Handling Instructions		This form was completed by: <i>P. Tinkham</i>		 Clean Air Engineering DS COC Palatine EXCL.R0-6/7/96	500 West Wood Street Palatine, IL 60067
Forwarding Lab:		Signature <i>[Signature]</i>			(847) 991-3300 phone
PO Number:		Date 12/14/01			(847) 991-3385 fax

00147

CHAIN OF CUSTODY FORM

CLIENT <u>Wheelabrator</u>	PROJECT NO. <u>894-3</u>	NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED				PAGE <u>1</u> OF <u> </u>
PLANT <u>North Broward</u>	DEPT. <u>66</u>			<u>Hg (only)</u>				REVISION NO. <u> </u>
PROJECT MANAGER <u>Scott Brown</u>	RECOVERY PERSON: <u>P. Tinkham</u>							ADDITIONAL INFORMATION
JOB LEADER <u>Pete Tinkham</u>								
CAE LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX				

81581		FF Outlet Unit # 2 B1	12/11/01	Filter	1		X				
		B1		F _{1/2} .1N HNO ₃ Rinse	1		X				
		B2		Imp 1,2,3 Catch + Rinse	1		X				
		B1		Imp 4 Catch + Rinse	1		X				
		B3		Imp 5,6 Catch + Rinse	1		X				
	✓	B5	✓	Imp 5,6 8N HCl Rinse	1		X				
81582	2	FF Outlet Unit # 2 B1	12/11/01	Filter	1		X				
		B1		F _{1/2} .1N HNO ₃ Rinse	1		X				
		B2		Imp 1,2,3 Catch + Rinse	1		X				
		B1		Imp 4 Catch + Rinse	1		X				
		B3		Imp 5,6 Catch + Rinse	1		X				
	✓	B5	✓	Imp 5,6 8N HCl Rinse	1		X				

Relinquished by: (Signature) <u>Pete Tinkham</u>	Date/Time <u>12/14/01 17:00</u>	Received by: (Signature) <u>[Signature]</u>	Date/Time	Relinquished by: (Signature)	Date/Time
Courier:	Date/Time	Relinquished by: (Signature)	Date/Time	Rec'd for Analysis by:	Date/Time

Special Handling Instructions	This form was completed by: <u>P. Tinkham</u>	 Clean Air Engineering DS COC Palatine EXCL.R0-6/7/96	500 West Wood Street Palatine, IL 60067 (847) 991-3300 phone (847) 991-3385 fax
Forwarding Lab:	Signature <u>[Signature]</u> Date <u>12/14/01</u>		

00149

CHAIN OF CUSTODY FORM

CLIENT <u>Wheelabrator</u>	PROJECT NO. <u>8964-3</u>	NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED				PAGE <u>2</u> OF <u> </u>
PLANT <u>North Broward</u>	DEPT. <u>66</u>			<u>46 (Only)</u>	<u>Archive</u>			REVISION NO. <u> </u>
PROJECT MANAGER <u>S. Brown</u>	RECOVERY PERSON: <u>P. Tinkham</u>							ADDITIONAL INFORMATION
JOB LEADER <u>P. Tinkham</u>								

CAE LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX						
81583	3	FF Outlet Unit #2 B1	12/11/01	Filter	1		X			
		B1		Fl. 1N HNO ₃ Rinse	1		X			
		B2		Imp 1,2,3 Catch + Rinse	1		X			
		B1		Imp 4 Catch + Rinse	1		X			
		B3		Imp 5,6 Catch + Rinse	1		X			
		B5		Imp 5,6 8N HCl Rinse	1		X			
81584	4	FF Outlet Unit #2 B1	12/12	Filter	1		~~X~~	X		
		B1		Fl. 1N HNO ₃ Rinse	1		~~X~~	X		
		B2		Imp 1,2,3 Catch + Rinse	1		~~X~~	X		
		~~B3~~		Imp 4 Catch + Rinse	1		~~X~~	X		
		B3		Imp 5,6 Catch + Rinse	1		~~X~~	X		
		B5		Imp 5,6 8N HCl Rinse	1		~~X~~	X		

Relinquished by: (Signature) <u>P. Tinkham</u>	Date/Time <u>12/19/01 17:00</u>	Received by: (Signature) <u>[Signature]</u>	Date/Time <u>12/17/12 30</u>	Relinquished by: (Signature)	Date/Time
Courier:	Date/Time	Relinquished by: (Signature)	Date/Time	Rec'd for Analysis by:	Date/Time

Special Handling Instructions Forwarding Lab: _____ PO Number: _____	This form was completed by: <u>P. Tinkham</u> Signature _____ Date <u>12/14/01</u>	 Clean Air Engineering DS COC Palatine EXCL.R0-6/7/96 500 West Wood Street Palatine, IL 60067 (847) 991-3300 phone (847) 991-3385 fax

00150

CHAIN OF CUSTODY FORM

CLIENT <u>Wheelabrator</u>		PROJECT NO. <u>8964-3</u>		NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED				PAGE <u>3</u> OF <u> </u>	
PLANT <u>North Broward</u>		DEPT. <u>66</u>								REVISION NO. <u> </u>	
PROJECT MANAGER <u>Scott Brown</u>		RECOVERY PERSON: <u>P. Tinkham</u>				ADDITIONAL INFORMATION					
JOB LEADER <u>P. Tinkham</u>											
CAE	LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX						
	81585	5	FF Outlet Unit #2B1	12/12	Filter	1		X			
			B1		Fl ₂ IN HNO ₃ Rinse	1		X			
			B2		Imp 1,2,3 Catch + Rinse	1		X			
			B1		Imp 4 Catch + Rinse	1		X			
			B3		Imp 5,6 Catch + Rinse	1		X			
			B5		Imp 5,6 8N HCl Rinse	1		X			
	86	6	FF Outlet Unit #2B1	12/12	Filter	1		X			
			B1		Fl ₂ IN HNO ₃ Rinse	1		X			
			B2		Imp 1,2,3 Catch + Rinse	1		X			
			B3		Imp 5,6 Catch + Rinse	1		X			
			B1		Imp 4 Catch + Rinse	1		X			
			B5		Imp 5,6 8N HCl Rinse	1		X			
Relinquished by: (Signature) <u>P. Tinkham</u>		Date/Time <u>12/14/01 17:06</u>		Received by: (Signature) <u>M. J. Scott</u>		Date/Time <u>12/17/02 30</u>		Relinquished by: (Signature)		Date/Time	
Courier:		Date/Time		Relinquished by: (Signature)		Date/Time		Rec'd for Analysis by:		Date/Time	
Special Handling Instructions				This form was completed by: <u>P. Tinkham</u>				 Clean Air Engineering 500 West Wood Street Palatine, IL 60067 (847) 991-3300 phone (847) 991-3385 fax			
Forwarding Lab: <u> </u>				Signature <u>P. Tinkham</u> Date <u>12/14/01</u>							

00152

US SAMPLE RECEIPT LOG

Page ____ of ____

CLEAN AIR

Lab Name: PSC Analytical Services, Burlington Laboratory

FT L.

Pickup/received by (Print Name): E JONES

Pickup/received by (Signature): *E Jones*

Date: 12/17/11 - Time: 12:30

Client Project ID:

REMARKS:

Condition of Samples/Sample Shipment:

Comments

Driver Documentation

Samples Packed in Coolers? Yes _____ No ☒

Cooler contains ice? Yes _____ No ☒

Chain of Custody present? Yes ☒ No _____

Custody Seal(s) on cooler? Yes _____ No _____

Client aware of deficiencies? Yes _____ No _____

5 Boxes

Sample Reception Documentation

Date and Time Rec'd at Lab 01-12-17 1230

Cooler Temperatures Measured? Yes _____ No _____

Containers intact? Yes ☒ No _____

Correct containers used? Yes ☒ No _____

Sufficient Containers for analysis? Yes ☒ No _____

Correct preservatives used? Yes _____ No _____

Extra preservative added? Yes _____ No _____

Headspace present in VOC vials? Yes _____ No _____

Info on C of C agrees with samples? Yes ☒ No _____

Samples received after hold time? Yes _____ No _____

Project Mgr contacted for clarification? Yes _____ No _____

Client contacted by Project Mgr? Yes _____ No _____

Client acceptance of deficiencies? Yes _____ No _____

Airbill Present?

Yes ☒ No _____

Airbill No.

① 813524450023 ④ 828408657701

② " 045 ⑤ " 7697

③ " 012

Cooler temperatures upon receipt

Cooler ID: Temp.

Cooler ID: Temp.

Cooler ID: Temp.

Relinquished By: _____

Logbook No: _____

Date: _____

Logbook Page No. _____

Client ID: Clean Air North

METHOD 20 SUBMISSION STATUS

PASC Sample #: 81579 81581
81580 81582

M29 Container #	Receipt Confirmation (P/A)	Volume Mark (P/A)	Volume as Marked*** (Y/N)	Comments	M29 Container #	Receipt Confirmation (P/A)	Volume Mark (P/A)	Volume as Marked*** (Y/N)	Comments
Reagent Blank					Run # 1 U2-outlet				
Portions for all Metals					Portions for all Metals				
12	Filters (3 min.): # of filters = 1	P/A		250P	1	Filter	P/A		same
7	Acetone (Req. 100 ml)	P/A	P/A	Y/N	2	Acetone Rinse	P/A	P/A	Y/N
8A	0.1 N Nitric Acid (Req. 300 ml**)	P/A	P/A	Y/N	3	Nitric Probe Rinse	P/A	P/A	Y/N
9	Nitric/Peroxide (Req. 200 ml)	P/A	P/A	Y/N	4	Nitric/Peroxide and Rinses	P/A	P/A	Y/N
Portions for Mercury only					Portions for Mercury only				
10	KMnO4/H2SO4 (Req. 100 ml)	P/A	P/A	Y/N	5A	Impinger 4 and Rinses	P/A	P/A	Y/N
8B	Water (Req. 100 ml)	P/A	P/A	Y/N	5B	Permanganate and Rinses	P/A	P/A	Y/N
11	HCl (Req. 200 ml water + 25 ml 8N HCl)	P/A	P/A	Y/N	5C	HCl Rinse	P/A	P/A	Y/N
Run # Field Blank					Run # 2 U2-outlet				
Portions for all Metals					Portions for all Metals				
1	Filter	P/A		250P	1	Filter	P/A		same
2	Acetone Rinse	P/A	P/A	Y/N	2	Acetone Rinse	P/A	P/A	Y/N
3	Nitric Probe Rinse	P/A	P/A	Y/N	3	Nitric Probe Rinse	P/A	P/A	Y/N
4	Nitric/Peroxide and Rinses	P/A	P/A	Y/N	4	Nitric/Peroxide and Rinses	P/A	P/A	Y/N
Portions for Mercury only					Portions for Mercury only				
5A	Impinger 4 and Rinses	P/A	P/A	Y/N	5A	Impinger 4 and Rinses	P/A	P/A	Y/N
5B	Permanganate and Rinses	P/A	P/A	Y/N	5B	Permanganate and Rinses	P/A	P/A	Y/N
5C	HCl Rinse	P/A	P/A	Y/N	5C	HCl Rinse	P/A	P/A	Y/N

* 6 filters requested; 2 for laboratory method blanks, 2 for ICAP blank spikes & 2 for low level (ICP-MS/GFAA) blank spikes

** 200 ml required if Hg is not requested: 100 ml for FH rinse, 100 ml for peroxide rinses and 100 ml for Imp 4 rinses.

*** Estimated to be within 5% of the marked volume.

P = Present, A = Absent, Y = Yes, N = No.

Inspected By: _____

00153

METHOD 29 SUBMISSION STATUS

Client ID: Cleanair NorthPASC Sample #: 81583 ⁸¹⁵⁸⁴ 81585

M29 Container #	Receipt Confirmation (P/A)	Volume Mark (P/A)	Volume as Marked*** (Y/N)	Comments	M29 Container #	Receipt Confirmation (P/A)	Volume Mark (P/A)	Volume as Marked*** (Y/N)	Comments
Reagent Blank Portions for all Metals 12 Filters (3 min. *): # of filters = <u> </u> P/A 7 Acetone (Req. 100 ml) P/A P/A Y/N 8A 0.1 N Nitric Acid (Req. 300 ml**) P/A P/A Y/N 9 Nitric/Peroxide (Req. 200 ml) P/A P/A Y/N Portions for Mercury only 10 KMnO4/H2SO4 (Req. 100 ml) P/A P/A Y/N 8B Water (Req. 100 ml) P/A P/A Y/N 11 HCl (Req. 200 ml water + 25 ml 8N HCl) P/A P/A Y/N					Run # 4 U2-outlet Portions for all Metals 1 Filter P/A 2 Acetone Rinse P/A P/A Y/N 3 Nitric Probe Rinse P/A P/A Y/N 4 Nitric/Peroxide and Rinses P/A P/A Y/N Portions for Mercury only 5A Impinger 4 and Rinses P/A P/A Y/N 5B Permanganate and Rinses P/A P/A Y/N 5C HCl Rinse P/A P/A Y/N				
Run # 3 U2-outlet Portions for all Metals 1 Filter P/A 250P 2 Acetone Rinse P/A P/A Y/N 3 Nitric Probe Rinse P/A P/A Y/N 250P 4 Nitric/Peroxide and Rinses P/A P/A Y/N 1LP Portions for Mercury only 5A Impinger 4 and Rinses P/A P/A Y/N 250P 5B Permanganate and Rinses P/A P/A Y/N 1LP 5C HCl Rinse P/A P/A Y/N 250P					Run # 5 U2-outlet Portions for all Metals 1 Filter P/A 2 Acetone Rinse P/A P/A Y/N 3 Nitric Probe Rinse P/A P/A Y/N 4 Nitric/Peroxide and Rinses P/A P/A Y/N Portions for Mercury only 5A Impinger 4 and Rinses P/A P/A Y/N 5B Permanganate and Rinses P/A P/A Y/N 5C HCl Rinse P/A P/A Y/N				

* 6 filters requested; 2 for laboratory method blanks, 2 for ICAP blank spikes & 2 for low level (ICP-MS/GFAA) blank spikes

** 200 ml required if Hg is not requested; 100 ml for FH rinse, 100 ml for peroxide rinses and 100 ml for Imp 4 rinses.

*** Estimated to be within 5% of the marked volume.

P = Present, A = Absent, Y = Yes, N = No.

Inspected By: _____

METHOD 29 SUBMISSION STATUS

Client ID: Clean Air North

PASC Sample #: 81580

M29 Container #	Receipt Confirmation (P/A)	Volume Mark (P/A)	Volume as Marked*** (Y/N)	Comments
Reagent Blank				
Portions for all Metals				
12	Filters (3 min.): # of filters =	P/A		
7	Acetone (Req. 100 ml)	P/A	P/A	Y/N
8A	0.1 N Nitric Acid (Req. 300 ml**)	P/A	P/A	Y/N
9	Nitric/Peroxide (Req. 200 ml)	P/A	P/A	Y/N
Portions for Mercury only				
10	KMnO4/H2SO4 (Req. 100 ml)	P/A	P/A	Y/N
8B	Water (Req. 100 ml)	P/A	P/A	Y/N
11	HCl (Req. 200 ml water + 25 ml 8N HCl)	P/A	P/A	Y/N
Run # <u>6-09 Oct 1st</u>				
Portions for all Metals				
1	Filter	P/A		250P
2	Acetone Rinse	P/A	P/A	Y/N
3	Nitric Probe Rinse	P/A	P/A	Y/N
4	Nitric/Peroxide and Rinses	P/A	P/A	Y/N
Portions for Mercury only				
5A	Impinger 4 and Rinses	P/A	P/A	Y/N
5B	Permanganate and Rinses	P/A	P/A	Y/N
5C	HCl Rinse	P/A	P/A	Y/N
Run # <u>6-09 Oct 1st</u>				
Portions for all Metals				
1	Filter	P/A		250P
2	Acetone Rinse	P/A	P/A	Y/N
3	Nitric Probe Rinse	P/A	P/A	Y/N
4	Nitric/Peroxide and Rinses	P/A	P/A	Y/N
Portions for Mercury only				
5A	Impinger 4 and Rinses	P/A	P/A	Y/N
5B	Permanganate and Rinses	P/A	P/A	Y/N
5C	HCl Rinse	P/A	P/A	Y/N

* 8 filters requested; 2 for laboratory method blanks, 2 for ICAP blank spikes & 2 for low level (ICP-MS/GFAA) blank spikes

** 200 ml required if Hg is not requested: 100 ml for FH rinse, 100 ml for peroxide rinses and 100 ml for Imp 4 rinses.

*** Estimated to be within 5% of the marked volume.

P = Present, A = Absent, Y = Yes, N = No.

Inspected By: _____

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-3

OPERATING DATA

G

**Wheelabrator
NORTH BROWARD
Emission Test Log**

Date: 12/11/01
Start Time: 10:43:00
End Time: 12:59:00

SDA INLET TEMP	SDA OUTLET TEMP	TOTAL SLURRY FL	DIL WATER FLOW	LIME CONC	FF OUT TEMP	FF DP	ID INLET PRESS	STEAM FLOW

	DEG F	DEG F	GPM	GPM	%	DEG F	" H2O	" H2O	KLBs/hr
Unit 1	501.23	285.35	50.78	35.57	26.47	268.89	6.83	-11.93	183.81
Unit 2	441.59	285.13	48.17	34.68	27.71	278.77	7.57	-11.55	184.22
Unit 3	82.91	80.80	1.58	-0.07	17.26	82.91	0.10	0.31	0.00

FEED H2O FLOW	SH OUT STM PRESS	FINAL STM TEMP	TOT AIR FLOW	FURNACE DRAFT	ECONO OUT TEMP	SH ROLL AVG	SNCR CHEM FLOW

	KLBs/hr	DEG F	DEG F	KSCFM	" H2O	DEG F	DEG F	GPH
Unit 1	185.27	864.51	788.10	82.93	-0.09	244.51	1090.87	10.07
Unit 2	199.60	841.56	829.66	73.43	-0.09	241.52	1121.04	18.75
Unit 3	0.00	4.71	487.52	9.82	-0.01	89.04	80.43	0.00

Wheelabrator
NORTH BROWARD
Emission Test Log

Date: 12/11/01
Start Time: 13:15:00
End Time: 15:28:00

SDA INLET TEMP	SDA OUTLET TEMP	TOTAL SLURRY FL	DIL WATER FLOW	LIME CONC	FF OUT TEMP	FF DP	ID INLET PRESS	STEAM FLOW

	DEG F	DEG F	GPM	GPM	%	DEG F	" H2O	" H2O	KLBS/hr
Unit 1	501.72	285.57	50.53	34.67	26.84	269.66	6.83	-12.04	184.02
Unit 2	450.95	285.05	53.13	38.61	25.19	279.34	8.25	-12.64	183.52
Unit 3	85.30	49.23	5.97	-0.07	20.94	8.24	0.12	0.39	0.00

FEED H2O FLOW	SH OUT STM PRESS	FINAL STM TEMP	TOT AIR FLOW	FURNACE DRAFT	ECONO OUT TEMP	SH ROLL AVG	SNCR CHEM FLOW

	KLBS/hr	DEG F	DEG F	KSCFM	" H2O	DEG F	DEG F	GPH
Unit 1	186.64	865.06	789.19	83.31	-0.10	244.78	1090.22	7.85
Unit 2	199.16	840.95	829.94	78.96	-0.08	241.78	1131.73	18.77
Unit 3	0.00	4.43	487.62	9.92	-0.18	89.02	80.86	0.00

**Wheelabrator
NORTH BROWARD
Emission Test Log**

Date: 12/11/01
Start Time: 15:32:00
End Time: 17:45:00

SDA INLET TEMP	SDA OUTLET TEMP	TOTAL SLURRY FL	DIL WATER FLOW	LIME CONC	FF OUT TEMP	FF DP	ID INLET PRESS	STEAM FLOW

	DEG F	DEG F	GPM	GPM	%	DEG F	" H2O	" H2O	KLBs/hr
Unit 1	492.11	284.86	47.83	33.63	28.04	268.28	6.62	-11.66	184.39
Unit 2	450.49	285.14	52.59	38.72	25.39	279.01	8.46	-12.88	183.92
Unit 3	87.20	56.63	-0.04	-0.07	19.51	27.26	0.10	0.27	0.00

FEED H2O FLOW	SH OUT STM PRESS	FINAL STM TEMP	TOT AIR FLOW	FURNACE DRAFT	ECONO OUT TEMP	SH ROLL AVG	SNCR CHEM FLOW

	KLBs/hr	DEG F	DEG F	KSCFM	" H2O	DEG F	DEG F	GPH
Unit 1	186.39	865.35	787.29	81.71	-0.10	244.62	1076.69	8.97
Unit 2	199.36	841.25	829.76	78.66	-0.09	241.58	1134.13	18.55
Unit 3	6.78	4.58	487.58	10.03	-0.01	89.15	123.67	0.00

Clean Air Engineering Trademark Case Summary

Clean Air Engineering is currently involved in litigation over its "CAE" service mark. Clean Air Engineering applied for the use of 'CAE' as a service mark in November of 1991. During the opposition period, CAE, Inc. of Canada filed an opposition to our use of "CAE" in our "CAE Clean Air Engineering" logo. CAE, Inc. (the Canadian firm) lost its claim in the initial trademark judicial hearing. In 1997 CAE, Inc. filed suit in the US District Court for the Northeastern District of Illinois.

In January 2000, Judge Warren K. Urbom overturned the decision of the trademark board and awarded the mark to CAE, Inc. This decision would require Clean Air Engineering to alter or destroy of all marketing materials, products, signs, etc. displaying Clean Air Engineering's "CAE Clean Air Engineering" logo.

Clean Air Engineering filed a Motion with the trial Judge requesting reconsideration of his original decision. On August 4, 2000 Judge Urbom, though denying the Motion to Reconsider, agreed to stay a portion of his original decision which would allow Clean Air Engineering to continue using the "CAE Clean Air Engineering Logo" if our use of same is accompanied by the following statement: "CAE Clean Air Engineering, Inc. (or the appropriate division) is not affiliated with CAE, Inc." in conjunction with the distribution of all products, services and marketing materials which contain the current CAE Logo.

Clean Air Engineering has taken an appeal of Judge Urbom's rulings to the U.S. Court of Appeals for the Seventh Circuit. Clean Air Engineering is seeking to reverse the ruling of the Trial Court, and reinstatement of the original decision of the Trademark Board. Clean Air Engineering will ask the U.S. Court of Appeals for the Seventh Circuit to stay the use of any disclaimer as otherwise required by Judge Urbom's last order. It is possible that the Court of Appeals will not yet have acted on our request by the deadline date set by Judge Urbom, being October 11, 2000. If this is the case, all Clean Air Engineering products, services and marketing materials will be accompanied by the above disclaimer.

We ask for your patience and understanding during our ongoing litigation. Any questions or comments please contact Bill Walker or Frank Kilvinger.

Clean Air Engineering, Inc. has served the air quality management industry since 1972 - providing consulting, monitoring and testing services, instrumentation rental and equipment sales. Clean Air Engineering has a staff of over 80 environmental engineers, equipment specialists, manufacturing/electronics technicians, and regulatory analysts and support personnel. <http://www.cleanair.com>

**CAE Clean Air Engineering, Inc. is not
affiliated with CAE, Inc.**



Wheelabrator North Broward Inc.

A Waste Management Company

2600 N.W. 48th Street
Pompano Beach, FL 33073
(954) 971-8701
(954) 971-8703 Fax

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BUREAU OF AIR REGULATION

October 19, 2001

CERTIFIED MAIL # 7000 0520 0017 9091 0409

Ms. Melissa L. Meeker
Florida Department of Environmental Protection
P.O. Box 15425
West Palm Beach, FL 33416-5425

Re: Wheelabrator North Broward
F.A.C. 62-296.416 Quarterly Mercury Testing
Third Quarter of 2001

Mike -
Hg info from
unit w/o
carbon injection
CO

Dear Ms. Meeker:

As required by F.A.C. 62-296.416, please find enclosed the 2001 third quarter report on mercury stack testing which was conducted on Unit #3.

If there are any questions, or if additional information is required, please contact this office at (954) 971-8701.

Sincerely,

Paul Grego
Plant Manager

cc: USEPA, Region IV, Air, Pesticides & Toxics Management Division, Air & EPCRA Enforcement
Branch, Air Enforcement Section (with) CERTIFIED MAIL # 7000 0520 0017 9091 0416
FDEP, Tallahassee, Bureau of Air Regulation, New Source Review Section (with)
CERTIFIED MAIL # 7000 0520 0017 9091 0423
Broward County Department of Planning and Environmental Protection, Air Quality Division
(with) CERTIFIED MAIL # 7000 0520 0017 9091 0430
Chuck Faller (with)
Tim Porter (without)
Matt Killeen (without)
Scott Shannon - MPI (with)
File: 3.7.2 (without)
5.1.3.2 (without)

s:10190101



Waste Management, Inc.



Clean Air Engineering

500 W. Wood St. • Palatine, IL 60067 • 847-991-3300

Fax: 847-991-3385
Internet: www.cleanair.com

Wheelabrator North Broward, Inc.
2600 NW 48th Street
Pompano Beach, Florida 33073

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BUREAU OF AIR REGULATION

REPORT ON MERCURY TESTING

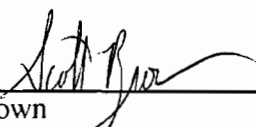
Performed for:
WHEELABRATOR NORTH BROWARD, INC.
UNIT 3 FF OUTLET
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-2
Revision 0: October 18, 2001

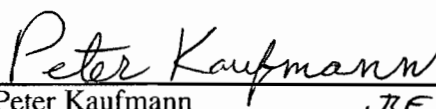
To the best of my knowledge, the data presented in this report are accurate and complete.

Submitted by,

Reviewed by,



Scott Brown
Project Manager
(847) 991-6200 ext. 2044



Peter Kaufmann *JKF*
Manager, Midwest Source Group

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BUREAU OF AIR REGULATION

PROJECT OVERVIEW

1-1

Wheelabrator North Broward, Inc. operates a Refuse to Energy Facility located in Pompano Beach, Florida. The facility's emission levels are regulated by the Florida Department of Environmental Protection. Wheelabrator North Broward, Inc. contracted Clean Air Engineering to perform a compliance test program at their facility municipal waste combustor (MWC) facility in Pompano Beach, Florida. Testing was conducted in accordance with 40 CFR 60 Subpart Cb and applicable sections of PSD-FL-112(B) and PA86-22. The sampling was conducted at the Unit 3 Fabric Filter (FF) Outlet on September 13, 2001.

The testing included the determination of the following constituents:

- moisture (H₂O);
- oxygen (O₂);
- carbon dioxide (CO₂);
- total flow (dscfm);
- mercury (Hg).

Coordinating and observing the field portion of the program were:

C. Faller	- Wheelabrator North Broward, Inc.
P. Tinkham	- Clean Air Engineering

The schedule of activities is shown in Table 1-1. A summary of the results is presented in Table 1-2 on page 1-2.

Table 1-1:
Schedule of Activities

<u>Date(2001)</u>						
<u>Start Time</u>	<u>Stop Time</u>	<u>Unit</u>	<u>Location</u>	<u>Pollutant</u>	<u>Method</u>	<u>Run No.</u>
<u>September 13</u>						
09:01	11:20	3	FF Outlet	Mercury	EPA 29	1
11:25	13:38	3	FF Outlet	Mercury	EPA 29	2
13:42	15:55	3	FF Outlet	Mercury	EPA 29	3

PROJECT OVERVIEW

1-2

Table 1-2:
Summary of Test Results

Source Constituent (Units)	Sampling Method	Average Emission	Permit Limit ¹
<u>Unit 3 FF Outlet</u>			
Mercruy (µg/dscm @ 7% O ₂)	EPA M29	8.6	70

¹ Limits obtained from 40 Code of Federal Register part 60 Subpart Cb - Emission Guidelines and Compliance Times for Large Municipal Waste Combustors That Are Constructed on or Before September 20, 1994 published in Federal Register as 62 FR 45123 on December 19, 1995 as modified on August 25, 1997, Florida's Rule 62-296.416, F.A.C. and PSD-FL-105.

The test conditions and results of analysis are presented in Table 2-1 on page 2-1 and the Quality Control and Quality Assurance Results are shown in Table 2-2 on page 2-2.

RESULTS

2-1

Table 2-1:
Unit 3 FF Outlet - Mercury

Run No.	1	2	3	Average
Date (2001)	September 13	September 13	September 13	
Start Time (approx.)	09:01	11:25	13:42	
Stop Time (approx.)	11:20	13:38	15:55	
<u>Process Conditions¹</u>				
Steam Flow (klb/hr)	184.4	183.8	182.9	183.7
Fabric Filter Inlet Temperature (°F)	295.1	295.0	295.0	295.0
<u>Gas Conditions</u>				
O ₂ Oxygen (dry volume %)	11.0	11.0	11.4	11.1
CO ₂ Carbon Dioxide (dry volume %)	6.8	7.0	6.8	6.9
T _s Temperature (°F)	277	277	277	277
Q _a Volumetric flow rate, actual (acfm)	200,400	203,100	217,500	207,000
Q _{std} Volumetric flow rate, standard (dscfm)	106,600	106,400	117,400	110,133
<u>Test Conditions</u>				
V _{msld} Volume metered, standard (ft ³)	80.54	81.15	91.77	84.49
%I Isokinetic sampling (%)	101.0	101.9	104.5	102.5
<u>Mercury (Hg) Totals</u>				
m _n Net weight (µg)	14.6	15.7	12.8	14.4
C Concentration (µg/dscm)	6.4	6.8	4.9	6.1
C Corrected to 7% O ₂ (µg/dscm)	9.0	9.6	7.2	8.6
C Corrected to 12% CO ₂ (µg/dscm)	11.3	11.7	8.7	10.6
E Emission rate (lb/hr)	2.56E-03	2.73E-03	2.16E-03	2.48E-03
E Emission rate (lb/10 ⁶ Btu) ²	8.08E-06	8.64E-06	6.21E-06	7.64E-06

¹ Process conditions were provided by Wheelabrator personnel.

² Calculated based on an Fd of 9570 per EPA Method 19.

RESULTS

2-2

Table 2-2:
Quality Assurance and Quality Control

EPA Method 29

	Method Blank Results (µg)	Reagent Blank Results (µg)	Field Blank Results (µg)
Hg Front half filter and probe rinse (1B)	ND(0.030)	ND(0.030)	ND(0.030)
Hg (Impingers 1-3 Fraction 2B)	ND(0.010)	<0.30	<0.31
Hg (Impinger 4 Fraction 3A)	ND(0.010)	ND(0.010)	ND(0.010)
Hg (Impingers 5-6 Fraction 3B)	ND(0.050)	ND(0.050)	ND(0.050)
Hg (HCl rinse of impingers 5-6 Fraction 3C)	ND(0.050)	ND(0.050)	ND(0.050)

Sample ID: Unit 2 Outlet Run 1 (South Broward)

Fraction	Results	Duplicate	M. Spike	MS % Rec.	MS Dup.	MSD %
Hg Front half filter and probe rinse (1B)	0.79	0.75	1.1	110	1.1	110
Hg (Impingers 1-3 Fraction 2B)	19	19	27	110	27	110
Hg (Impinger 4 Fraction 3A)	ND(0.010)	ND(0.010)	0.11	100	0.11	100
Hg (Impingers 5-6 Fraction 3B)	ND(0.050)	ND(0.050)	0.51	100	0.51	100
Hg (HCl rinse of impingers 5-6 Fraction 3C)	1.2	1.2	1.6	85	1.6	89

Sample ID: Blank Spike

Fraction	BS #1 (µg)	BS % Rec. # 1	BS #2 (µg)	BS % Rec. # 2
Hg Front half filter and probe rinse (1B)	0.29	98	0.28	94
Hg (Impingers 1-3 Fraction 2B)	0.10	100	0.10	100
Hg (Impinger 4 Fraction 3A)	0.10	100	0.10	99
Hg (Impingers 5-6 Fraction 3B)	0.49	86	0.49	97
Hg (HCl rinse of impingers 5-6 Fraction 3C)	0.50	99	0.49	98

RB -Reagent blank

ND - Not detected. The detection limit is denoted in parentheses.

BS - Blank spike

BS % Rec. - Blank Spike Percent Recovery

M. Spike - Matrix Spike

MS % Rec. - Matrix Spike Percent Recovery

MS Dup. - Matrix Spike Duplicate

MSD % Rec. - Matrix Spike Duplicate Percent Recovery

DESCRIPTION OF INSTALLATION

3-1

The North Broward Resource Recovery Facility operates three 750 tons per day municipal refuse fired, water wall boiler trains. The trains were manufactured by Babcock and Wilcox to produce electricity for sale to a local utility company. Each boiler is equipped a spray dryer absorber (SDA) for acid gas removal, followed by a fabric filter (FF) baghouse for the control of particulate emissions. The control equipment is manufactured by Wheelabrator Air Pollution Control, Inc. Each fabric filter baghouse is followed by an induced draft fan, which directs the flue gas to a dedicated flue in a common stack.

Figure 2-1 shows a general schematic for the facility. The testing occurred at the Unit 3 FF Outlet as shown in Figure 3-2.

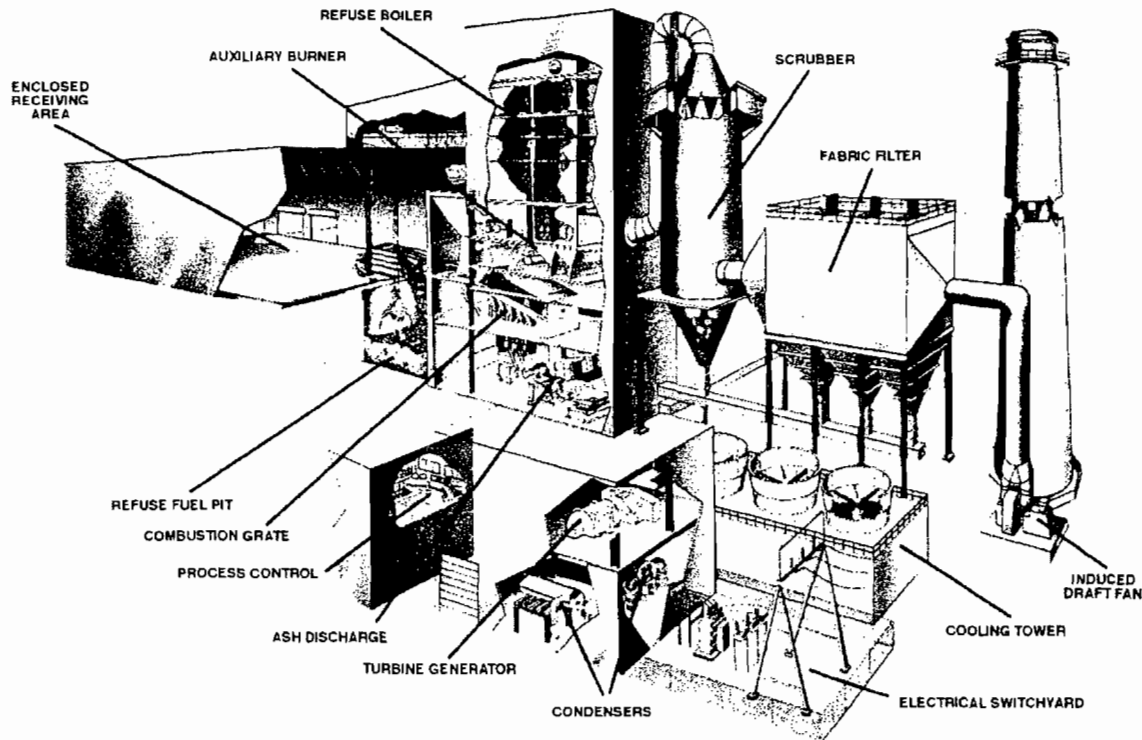


Figure 3-1: General Process Schematic

DESCRIPTION OF INSTALLATION

3-2

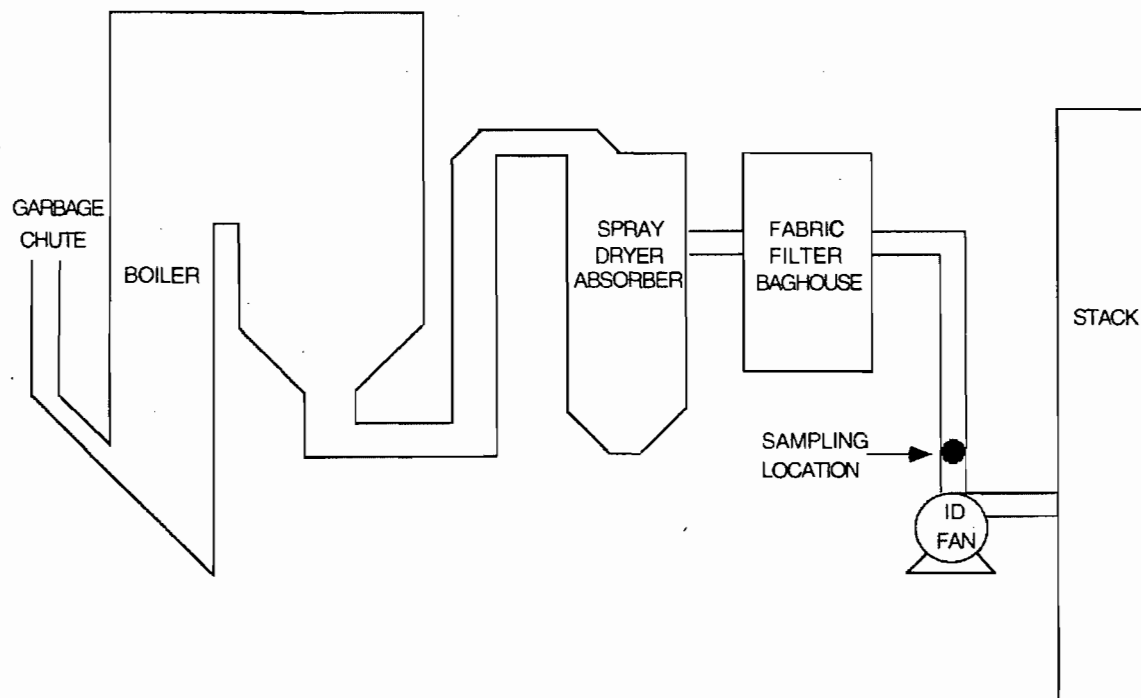


Figure 3-2: Process Schematic

METHODOLOGY

4-1

The sampling followed procedures as detailed in U.S. Environmental Protection Agency (EPA) Methods 1, 2, 3, 3B, 4 and 29. The following table summarizes the methods and their respective sources.

**Table 4-1:
Summary of Sampling Procedures**

Title 40 CFR Part 60 Appendix A

Method 1	"Sample and Velocity Traverses for Stationary Sources"
Method 2	"Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)"
Method 3	"Gas Analysis for the Determination of Dry Molecular Weight"
Method 3B	"Gas Analysis for the Determination of Emission Rate Correction Factor or Excess Air"
Method 4	"Determination of Moisture Content in Stack Gases"
Method 29	"Determination of Metals Emissions from Stationary Sources"

These methods appear in detail in Title 40 of the Code of Federal Regulations (CFR).

These sampling, recovery and analytical procedures are summarized on pages 4-1 through 4-7.

The sampling nozzles were calibrated on site. All other equipment was calibrated at the Clean Air Engineering laboratory prior to shipment to the job site. A post-test calibration was performed on the meter boxes at the conclusion of testing to verify that calibration was maintained throughout the test program. Calibration sheets can be found in Appendix Section C.

SAMPLING POINT DETERMINATION - EPA METHOD 1

Sampling point locations were determined according to EPA Method 1.

Table 4-2 outlines the sampling point configurations. Figure 4-1 illustrates the sampling points and orientation of sampling ports for the source tested in the program.

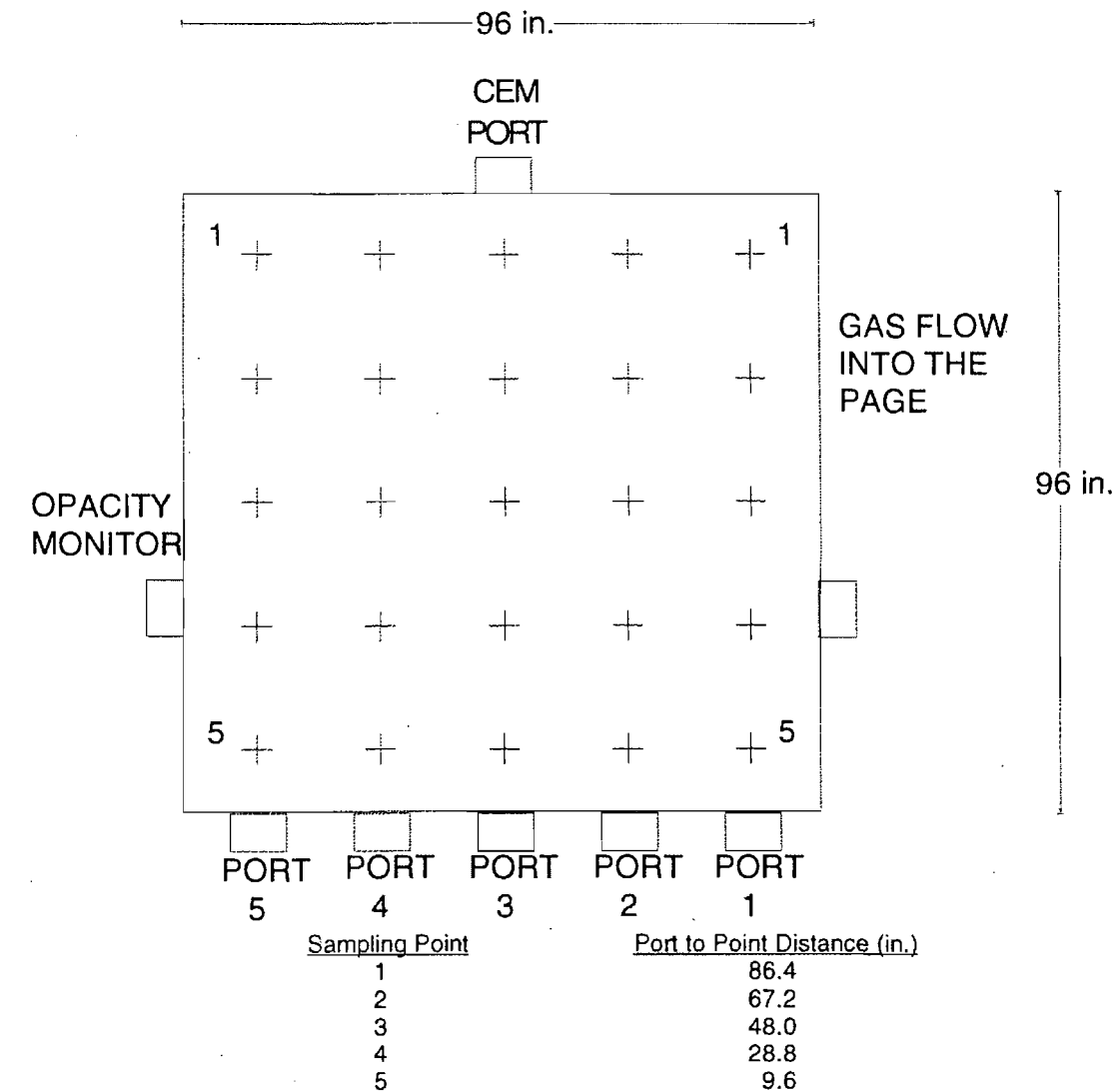
**Table 4-2:
Sampling Points**

Location	Run	Points	Minutes	Total		
Constituent	Method	No.	Ports	per Port	per Point	Minutes Figure
<u>Unit 3 FF Outlet</u>						
Mercury	29	1-3	5	5	5	125 4-1

METHODOLOGY

4-2

SAMPLING POINT DETERMINATION (CONTINUED)



Diameters upstream from disturbance: 2 diameters Limit: 2
Diameters downstream from disturbance: 0.5 diameters Limit: 0.5

Figure 4-1: Unit 3 FF Outlet - Sampling Point Determination (EPA Method 1)

METHODOLOGY

4-3

VELOCITY AND VOLUMETRIC FLOW RATE - EPA METHOD 2

EPA Method 2 was used, in conjunction with the wet method testing, to determine the gas velocity and flow rate at the FF Outlet test location.

Each set of velocity determinations included the measurement of gas velocity pressure and gas temperature at each of the EPA Method 1 traverse points. The velocity pressures were measured with a Type S pitot tube. Gas temperature measurements were made using a Type K thermocouple and digital pyrometer. Figure 4-2 includes the components of the EPA Method 2 sampling apparatus.

GAS COMPOSITION AND MOLECULAR WEIGHT - EPA METHOD 3B

In order to determine the oxygen (O_2) concentration, carbon dioxide (CO_2) concentration and gas molecular weight, a time-integrated sample of the gas was obtained for each sampling train and analyzed in accordance with EPA Method 3B. The gas sample was collected into a vinyl sample bag from isokinetic test methods. The contents of the bag were analyzed for O_2 and CO_2 concentrations using a Servomex O_2/CO_2 analyzer. The analyzer was calibrated and checked for linearity using EPA Protocol 1 certified gases. The gas certificates are presented in Appendix C.

MOISTURE CONTENT - EPA METHOD 4

The flue gas moisture content at each of the test locations was determined in accordance with EPA Method 4, in conjunction with the mercury testing. Figure 4-2 includes the components of the EPA Method 4 sampling apparatus. The gas moisture was determined by quantitatively condensing the moisture in chilled impingers. The amount of moisture condensed was determined gravimetrically. A dry gas meter was used to measure the volume of gas sampled. The amount of water condensed and the volume of gas sampled were used to calculate the gas moisture content in accordance with EPA Method 4.

METHODOLOGY

4-4

MERCURY EMISSIONS - EPA METHOD 29

EPA Method 29 was used to measure mercury emissions at the Unit 3 FF Outlet. This method defines metal emissions as particulate and gaseous material isokinetically withdrawn through a temperature controlled probe and collected on a high-efficiency filter and in acidified absorbing solutions.

Figure 4-2 illustrates the EPA Method 29 sampling train which was used. The sampling apparatus contained a glass-lined temperature-controlled probe equipped with a pitot tube (for measuring stack flow rate) and a sharp-edged glass button-hook nozzle. The exit of the probe was connected to a high efficiency quartz fiber filter (Pallflex 2500QAT-UP) supported in a glass filter holder inside an oven. The exit of the filter holder connected directly to a series of seven full size impingers.

The first impinger of the sampling train was left empty to accommodate collection of the flue gas moisture. The second and third impingers of the sampling apparatus each contained 100 milliliters of 5% nitric acid/10% hydrogen peroxide solution. The fourth impinger was left empty. The fifth and sixth impingers each contained 100 milliliters of 4% potassium permanganate/10% sulfuric acid solution. The seventh impinger contained 200 to 300 grams of silica gel. All of the impingers were maintained at a temperature below 68°F for the duration of each test.

Procedures for selecting sampling locations and for the operation of the apparatus was derived from EPA Method 29 and associated EPA Methods 1 through 5. The entire sampling apparatus was leak-checked before and after each test run. Sampling was performed at an average isokinetic rate greater than 90% and less than 110%.

At the conclusion of each test run, the probe and nozzle was rinsed and brushed with 0.1 Normal nitric acid to remove any particulate matter. These rinses were collected into polyethylene sample containers. The quartz fiber filter was recovered and placed into a polyethylene sample container. The volume of liquid collected in each of the impingers was quantified.

The liquid from the first three impingers was transferred to a leak-free polyethylene storage container. The back-half of the filter housing, the first three impingers and all connecting glassware were rinsed with 0.1 Normal nitric acid which was be added to the storage container.

METHODOLOGY

4-5

MERCURY EMISSIONS (CONTINUED)

Any liquid collected in the fourth impinger was transferred to a separate polyethylene container, and the impinger was rinsed into the same container with 0.1 Normal nitric acid. The contents of impingers 5 and 6 were collected into an amber glass container. Both impingers 5 and 6 and the connecting glassware were then rinsed with acidified potassium permanganate followed by distilled water. These rinses were collected in the glass container. Any residual potassium permanganate retained by the impingers was removed using a rinse of 8 Normal hydrochloric acid, which was collected into a separate glass container. 200 milliliters of distilled water was used to rinse impingers 5 and 6 and added to the same container to also dilute the acid.

All containers were sealed, labeled and liquid levels marked prior to transport to the laboratory. The silica gel weight and the volume of condensate collected in the impingers were used to determine moisture content of the stack gas.

The nitric acid probe rinses and samples recovered from impingers 1 through 3 were each reduced to near dryness and digested with hydrofluoric acid and concentrated nitric acid. The filter was also digested with hydrofluoric and nitric acids. The samples obtained from impingers 4, 5 and 6 were digested separately with acidified potassium permanganate and subsequently analyzed for mercury. Blank correction was done as specified in EPA Method 29 if applicable. One complete train was set up, leak checked, heated to 248 °F left at the sample location for 2 hours and recovered as a standard train for a field blank. The digested samples were analyzed by atomic absorption and plasma emission spectroscopy for each of the target metals by PSC Analytical Services located in Burlington, Ontario. All analytes were analyzed in duplicate as specified in Method 29 section 7.2.1, 7.2.2 and 7.2.3.

METHODOLOGY

4-6

MERCURY EMISSIONS (CONTINUED)

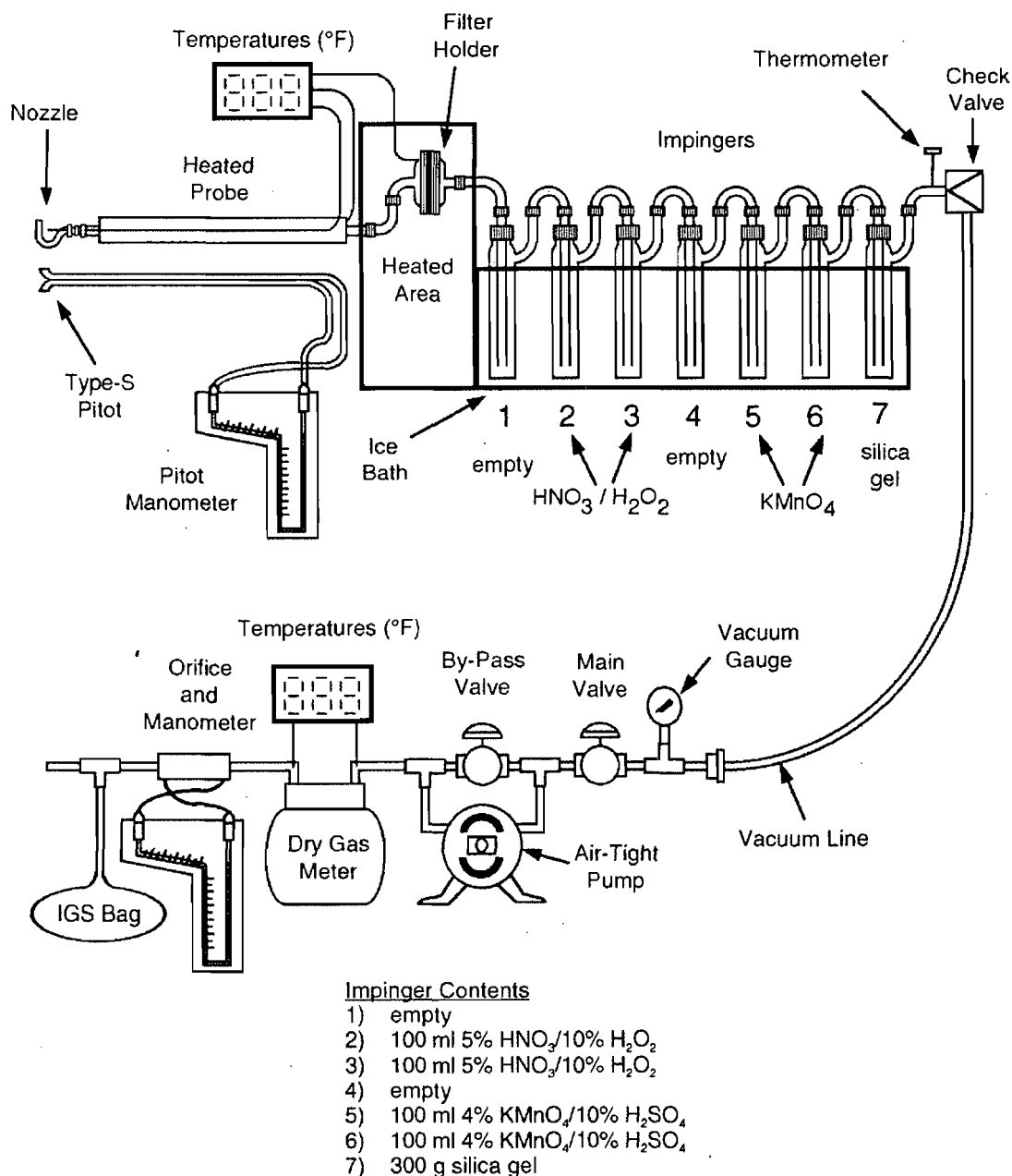


Figure 4-2: Metals Sampling Apparatus (EPA Method 29)

METHODOLOGY

4-7

QUALITY ASSURANCE AND QUALITY CONTROL

All testing followed the EPA quality assurance and quality control guidelines as outlined in the respective methods. Field blanks and matrix spikes for the mercury testing were done as shown in the following Table 4-3. The results of the analysis are shown in Table 2-2. There was some contamination observed in the 3C reagent blank fraction. The final results were corrected by the maximum allowable correction factor according to 40CFR Pt. 60 App. A, Method 29, Section 8.5.4.

Table 4-3:
Method Field Blanks and Matrix Spikes

<u>Method</u>	<u>Reagent Blank Sets</u>	<u>Field Blank</u>	<u>Duplicate Analysis</u>	<u>Matrix Spikes</u>
EPA M29	1	1	On all analysis	1 predigested filter blank and 1 postdigested sample

APPENDIX

Sample Calculations	A
Parameters.....	B
Calibration Data.....	C
Field Data	D
Field Data Printouts.....	E
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Operating Data.....	G

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-2

SAMPLE CALCULATIONS

A

Revision 0



SAMPLE CALCULATIONS

1. Volume of water collected (wscf)

$$V_{wstd} = (0.04707)(V_{lc})$$

Where:

V_{lc}	total volume of liquid collected in impingers and silica gel (ml)
V_{wstd}	volume of water collected at standard conditions (ft ³)
0.04707	conversion factor (ft ³ /ml)

2. Volume of gas metered, standard conditions (dscf)

$$V_{mstd} = \frac{(17.64)(V_m) \left(P_{bar} + \frac{\Delta H}{13.6} \right) (Y_d)}{(460 + T_m)}$$

Where:

P_{bar}	barometric pressure (in. Hg)
T_m	average dry gas meter temperature (°F)
V_m	volume of gas sample through the dry gas meter at meter conditions (ft ³)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft ³)
Y_d	gas meter correction factor (dimensionless)
ΔH	average pressure drop across meter box orifice (in. H ₂ O)
17.64	conversion factor (°R/in. Hg)
13.6	conversion factor (in. H ₂ O/in. Hg)
460	°F to °R conversion constant

3. Sample gas pressure (in. Hg)

$$P_s = P_{bar} + \left(\frac{P_g}{13.6} \right)$$

Where:

P_{bar}	barometric pressure (in. Hg)
P_g	sample gas static pressure (in. H ₂ O)
P_s	absolute sample gas pressure (in. Hg)
13.6	conversion factor (in. H ₂ O/in. Hg)

4. Actual vapor pressure (in. Hg)¹

$$P_v = P_s$$

Where:

P_v	vapor pressure, actual (in. Hg)
P_s	absolute sample gas pressure (in. Hg)

¹ For effluent gas temperatures over 212°F, P_v is assumed to be equal to P_s .

SAMPLE CALCULATIONS (CONTINUED)

5. Moisture content (%)

$$B_{wo} = \frac{V_{wstd}}{V_{mstd} + V_{wstd}} \times 100\%$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume (%)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft ³)
V_{wstd}	volume of water collected at standard conditions (ft ³)

6. Saturated moisture content (%)

$$B_{ws} = \frac{(P_v)}{(P_s)} \times 100\%$$

Where:

B_{ws}	proportion of water vapor in the gas stream by volume at saturated conditions (%)
P_s	absolute sample gas pressure (in. Hg)
P_v	vapor pressure, actual (in. Hg)

Whichever moisture value is smaller is used for B_{wo} in the following calculations.

7. Molecular weight of dry gas stream (lb/lb-mole)

$$M_d = M_{CO_2} \frac{(CO_2)}{(100)} + M_{O_2} \frac{(O_2)}{(100)} + M_{CO+N_2} \frac{(CO + N_2)}{(100)}$$

Where:

M_d	dry molecular weight of sample gas (lb/lb-mole)
M_{CO_2}	molecular weight of carbon dioxide (lb/lb-mole)
M_{O_2}	molecular weight of oxygen (lb/lb-mole)
M_{CO+N_2}	molecular weight of carbon monoxide and nitrogen (lb/lb-mole)
CO_2	proportion of carbon dioxide in the gas stream by volume (%)
O_2	proportion of oxygen in the gas stream by volume (%)
$CO+N_2$	proportion of carbon monoxide and nitrogen in the gas stream by volume (%)
100	conversion factor (%)

8. Molecular weight of sample gas (lb/lb-mole)

$$M_s = (M_d)(1 - B_{wo}) + (M_{H_2O})(B_{wo})$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume
M_d	dry molecular weight of sample gas (lb/lb-mole)
M_{H_2O}	molecular weight of water (lb/lb-mole)
M_s	molecular weight of sample gas, wet basis (lb/lb-mole)

SAMPLE CALCULATIONS (CONTINUED)

9. Velocity of sample gas (ft/sec)

$$V_s = (K_p)(C_p)(\sqrt{\Delta P}) \left(\sqrt{\frac{(\bar{T}_s + 460)}{(M_s)(P_s)}} \right)$$

Where:

K_p	velocity pressure constant $\left(\frac{\text{ft}}{\text{sec}} \left[\frac{(\text{lb/lb} \cdot \text{mole})(\text{in. Hg})}{(^{\circ}\text{R})(\text{in. H}_2\text{O})} \right] \right)$
C_p	pitot tube coefficient
M_s	molecular weight of sample gas, wet basis (lb/lb-mole)
P_s	absolute sample gas pressure (in. Hg)
T_s	average sample gas temperature ($^{\circ}\text{F}$)
V_s	sample gas velocity (ft/sec)
$\sqrt{\Delta P}$	average square roots of velocity heads of sample gas (in. H_2O)
460	$^{\circ}\text{F}$ to $^{\circ}\text{R}$ conversion constant

10. Total flow of sample gas (acfm)

$$Q_a = (60)(A_s)(V_s)$$

Where:

A_s	cross sectional area of sampling location (ft^2)
Q_a	volumetric flow rate at actual conditions (acfm)
V_s	sample gas velocity (ft/sec)
60	conversion factor (sec/min)

11. Total flow of sample gas (dscfm)

$$Q_{std} = \frac{(Q_a)(P_s)(17.64)(1 - B_{wo})}{(\bar{T}_s + 460)}$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume
P_s	absolute sample gas pressure (in. Hg)
Q_a	volumetric flow rate at actual conditions (acfm)
Q_{std}	volumetric flow rate at standard conditions, dry basis (dscfm)
T_s	average sample gas temperature ($^{\circ}\text{F}$)
17.64	conversion factor ($^{\circ}\text{R/in. Hg}$)
460	$^{\circ}\text{F}$ to $^{\circ}\text{R}$ conversion constant

SAMPLE CALCULATIONS (CONTINUED)

12. Percent isokinetic (%)

$$I = \frac{(0.09450)(\bar{T}_s + 460)(V_{mstd})}{(P_s)(V_s)\left(\frac{(D_n)^2(\pi)}{(144)(4)}\right)(\Theta)(1 - B_{wo})}$$

Where:

D_n	diameter of nozzle (in)
B_{wo}	proportion of water vapor in the gas stream by volume
I	percent of isokinetic sampling (%)
P_s	absolute sample gas pressure (in. Hg)
T_s	average sample gas temperature (°F)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft ³)
V_s	sample gas velocity (ft/sec)
Θ	total sampling time (min)
0.09450	constant
460	°F to °R conversion constant

13. Mercury concentration (µg/dscm)

$$C_{\mu g / dscm} = \frac{(m_n)}{(V_{mstd})} (35.31)(1,000)$$

Where:

$C_{\mu g / dscm}$	concentration (µg/dscm)
m_n	net mass of metal collected (mg)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft ³)
35.31	conversion factor (ft ³ /m ³)
1,000	conversion factor (µg/mg)

14. Mercury concentration (lb/dscf)

$$C_{lb / dscf} = \frac{(m_n)}{(V_{mstd})} (453,590)$$

Where:

$C_{lb / dscf}$	concentration (lb/dscf)
m_n	net mass of metal collected (mg)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft ³)
453,590	conversion factor (mg/lb)
1,000	conversion factor (µg/mg)

15. Mercury concentration (µg/dscm corrected to 7% O₂)

$$C_{\mu g / dscm @ 7\% O_2} = \frac{(C_{\mu g / dscm})(20.9 - 7.0)}{(20.9 - O_2)}$$

Where:

$C_{\mu g / dscm}$	concentration (µg/dscm)
$C_{\mu g / dscm @ 7\% O_2}$	concentration (µg/dscm corrected to 7% O ₂)
O_2	proportion of oxygen in the gas stream by volume (%)
20.9	proportion of oxygen in ambient air by volume (%)

SAMPLE CALCULATIONS (CONTINUED)

16. Mercury concentration ($\mu\text{g}/\text{dscm}$ corrected to 12% CO_2)

$$C_{\mu\text{g}/\text{dscm} @ 12\% \text{CO}_2} = (C_{\mu\text{g}/\text{dscm}}) \frac{(12)}{(\text{CO}_2)}$$

Where:

$C_{\mu\text{g}/\text{dscm}}$	concentration ($\mu\text{g}/\text{dscm}$)
$C_{\mu\text{g}/\text{dscm} @ 12\% \text{CO}_2}$	concentration ($\mu\text{g}/\text{dscm}$ corrected to 12% CO_2)
CO_2	proportion of carbon dioxide in the gas stream by volume (%)

17. Mercury emission (g/sec)¹

$$E_{\text{g}/\text{sec}} = \frac{(m_n)(Q_{\text{std}})}{(V_{\text{mstd}})(10^6)(60)}$$

Where:

$E_{\text{g}/\text{sec}}$	emission rate (g/sec)
m_n	net mass of metal collected (μg)
Q_{std}	volumetric flow rate at standard conditions, dry basis (dscfm)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft^3)
60	conversion factor (sec/min)
10^6	conversion factor ($\mu\text{g}/\text{g}$)

18. Mercury emission (lb/hr)

$$E_{\text{lb}/\text{hr}} = \frac{(C_{\mu\text{g}/\text{dscm}})(Q_{\text{std}})(60)}{(453,590)(1,000)(35.31)}$$

Where:

$C_{\mu\text{g}/\text{dscm}}$	concentration ($\mu\text{g}/\text{dscm}$)
Q_{std}	volumetric flow rate at standard conditions, dry basis (dscfm)
$E_{\text{lb}/\text{hr}}$	emission rate (lb/hr)
60	conversion factor (min/hr)
35.31	conversion factor (ft^3/m^3)
1,000	conversion factor ($\mu\text{g}/\text{mg}$)
453,590	conversion factor (mg/lb)

19. Heat input, (in lb/MBtu)

$$\text{HI} = \frac{(\text{SF})(h)(1,000)}{(e/100)(1,000,000)}$$

Where:

HI	heat input (MBtu/hr)
SF	measured steam flow (Klb/hr)
h	steam enthalpy (Btu/lb)
1,000	conversion factor (lb/Klb)
e	boiler efficiency (%)
1,000,000	conversion factor ($\text{BTU}/10^6 \text{ BTU}$)

SAMPLE CALCULATIONS (CONTINUED)

20. Determination of F-factor using heat input (dscf/10⁶Btu @ 12% CO₂)

$$F - \text{factor @ 12\% CO}_2 = \frac{(Q_{\text{std}})(60)(\text{CO}_2)}{(\text{HI})(12)}$$

Where:

HI	heat input (MBtu/hr)
F-factor	average volume of combustion average component per unit of heat content (dscf/10 ⁶ Btu @ 12% CO ₂)
Q _{std}	average volumetric flow rate at standard conditions, dry basis (dscfm)
60	conversion factor (min/hr)

21. Mercury emission rate , using average F_c factor (lb/10⁶Btu)

$$E_{\text{lb/10}^6 \text{ Btu}} = \frac{(C_{\text{mg/dscm @ 12\% CO}_2})(F - \text{factor @ 12\% CO}_2)}{(35.31)(10^6)(453.6)}$$

Where:

C _{μg/dscm @ 12% CO₂}	measured concentration in the gas stream (μg/dscm @ 12% CO ₂)
35.31	conversion factor (m ³ /ft ³)
10 ⁶	conversion factor (μg/g)
453.6	conversion factor (g/lb)
F-factor	average volume of combustion average component per unit of heat content (dscf/10 ⁶ Btu @ 12% CO ₂)

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-2

PARAMETERS

B

WHEELABRATOR NORTH BROWARD, INC.

Clean Air Project No: 8964-2

Unit 3 FF Outlet

MERCURY
VELOCITY AND MOISTURE PARAMETERS

Run No.	1	2	3
Date (2001)	September 13	September 13	September 13
Start Time (approx.)	09:01	11:25	13:42
Stop Time (approx.)	11:20	13:38	15:55

Sampling Conditions

Y_d	Dry gas meter correction factor	1.0053	1.0024	1.0053
C_p	Pitot tube coefficient	0.84	0.84	0.84
P_o	Static pressure (in. H ₂ O)	-12.0	-12.0	-12.0
A_s	Sample location area (ft ²)	64.00	64.00	64.00
P_{bar}	Barometric pressure (in. Hg)	30.15	30.15	30.15
D_n	Nozzle diameter (in.)	0.265	0.265	0.265
O_2	Oxygen (dry volume %)	11.0	11.0	11.4
CO_2	Carbon dioxide (dry volume %)	6.8	7.0	6.8
V_{lc}	Liquid collected (ml)	542.0	579.9	581.3
V_m	Volume metered, meter conditions (ft ³)	83.36	83.37	95.34
T_m	Dry gas meter temperature (°F)	95	90	98
T_s	Sample temperature (°F)	277	277	277
ΔH	Meter box orifice pressure drop (in. H ₂ O)	1.33	1.45	1.72
Θ	Total sampling time (min)	125	125	125

Flow Results

V_{wstd}	Volume of water collected (ft ³)	25.51	27.30	27.36
V_{mstd}	Volume metered, standard (ft ³)	80.54	81.15	91.77
P_s	Sample gas pressure, absolute (in. Hg)	29.27	29.27	29.27
P_v	Vapor pressure, actual (in. Hg)	29.27	29.27	29.27
B_{wo}	Moisture in sample (% by volume)	24.06	25.17	22.97
B_{ws}	Saturated moisture (% by volume)	100.00	100.00	100.00
$\sqrt{\Delta P}$	Velocity head ($\sqrt{\text{in. H}_2\text{O}}$)	0.749	0.758	0.815
M_d	MW of sample gas, dry (lb/lb-mole)	29.53	29.56	29.54
M_s	MW of sample gas, wet (lb/lb-mole)	26.75	26.65	26.89
V_s	Velocity of sample (ft/sec)	52.2	52.9	56.6
%I	Isokinetic sampling (%)	101.0	101.9	104.5
Q_a	Volumetric flow rate, actual (acfm)	200,400	203,100	217,500
Q_{std}	Volumetric flow rate, standard (dscfm)	106,600	106,400	117,400

METALS PARAMETERS

Run No.	Blank	1	2	3
Date (2001)		September 13	September 13	September 13
Start Time (approx.)		09:01	11:25	13:42
Stop Time (approx.)		11:20	13:38	15:55
Gas Conditions				
O ₂	Oxygen (dry volume %)	11.0	11.0	11.4
CO ₂	Carbon Dioxide (dry volume %)	6.8	7.0	6.8
V _{std}	Volume metered, standard (ft ³)	80.54	81.15	91.77
Q _{std}	Volumetric flow rate, standard (dscfm)	106,600	106,400	117,400
F	Fuel factor (dscf/10 ⁶ Btu) ¹	9,570	9,570	9,570
Mercury (Hg) Fraction 1B - Filter, FH Probe Rinse				
m _g	Gross weight (μg)	ND	0.030	0.17
m _n	Net weight (μg)		(0.030)	0.17
C	Concentration, standard conditions (μg/dscm)		(0.013)	0.065
C	Corrected to 7% O ₂ (μg/dscm)		(0.018)	0.096
C	Corrected to 12% CO ₂ (μg/dscm)		(0.023)	0.12
C	Concentration (lb/dscf)		(8.21E-13)	4.08E-12
C	Corrected to 7% O ₂ (lb/dscf)		(1.15E-12)	5.98E-12
C	Corrected to 12% CO ₂ (lb/dscf)		(1.45E-12)	7.21E-12
E	Emission rate (g/sec)		(6.62E-07)	3.62E-06
E	Emission rate (lb/hr)		(5.25E-06)	2.88E-05
E	Emission rate (lb/10 ⁶ Btu) ¹		(1.66E-08)	8.25E-08
Mercury (Hg) Fraction 2B - Impingers 1,2 and 3				
m _g	Gross weight (μg)	ND	0.300	12.0
m _n	Net weight (μg)		14.0	12.0
C	Concentration, standard conditions (μg/dscm)		6.1	4.6
C	Corrected to 7% O ₂ (μg/dscm)		8.6	6.8
C	Corrected to 12% CO ₂ (μg/dscm)		10.8	8.1
C	Concentration (lb/dscf)		3.83E-10	2.88E-10
C	Corrected to 7% O ₂ (lb/dscf)		5.38E-10	4.22E-10
C	Corrected to 12% CO ₂ (lb/dscf)		6.76E-10	5.09E-10
E	Emission rate (g/sec)		3.09E-04	2.56E-04
E	Emission rate (lb/hr)		2.45E-03	2.03E-03
E	Emission rate (lb/10 ⁶ Btu) ¹		7.74E-06	5.82E-06
Mercury (Hg) Fraction 3A - Impinger 4				
m _g	Gross weight (μg)	ND	0.010	ND
m _n	Net weight (μg)		(0.010)	ND
C	Concentration, standard conditions (μg/dscm)		(0.004)	(0.004)
C	Corrected to 7% O ₂ (μg/dscm)		(0.0062)	(0.0062)
C	Corrected to 12% CO ₂ (μg/dscm)		(0.0077)	(0.0075)
C	Concentration (lb/dscf)		(2.74E-13)	(2.72E-13)
C	Corrected to 7% O ₂ (lb/dscf)		(3.84E-13)	(3.81E-13)
C	Corrected to 12% CO ₂ (lb/dscf)		(4.83E-13)	(4.66E-13)
E	Emission rate (g/sec)		(2.21E-07)	(2.19E-07)
E	Emission rate (lb/hr)		(1.75E-06)	(1.73E-06)
E	Emission rate (lb/10 ⁶ Btu) ¹		(5.53E-09)	(5.49E-09)
Mercury (Hg) Fraction 3B - Impingers 5 and 6				
m _g	Gross weight (μg)	ND	0.050	ND
m _n	Net weight (μg)		(0.10)	ND
C	Concentration, standard conditions (μg/dscm)		(0.044)	(0.022)
C	Corrected to 7% O ₂ (μg/dscm)		(0.062)	(0.031)
C	Corrected to 12% CO ₂ (μg/dscm)		(0.077)	(0.037)
C	Concentration (lb/dscf)		(2.74E-12)	(1.36E-12)
C	Corrected to 7% O ₂ (lb/dscf)		(3.84E-12)	(1.91E-12)
C	Corrected to 12% CO ₂ (lb/dscf)		(4.83E-12)	(2.33E-12)
E	Emission rate (g/sec)		(2.21E-06)	(1.09E-06)
E	Emission rate (lb/hr)		(1.75E-05)	(8.67E-06)
E	Emission rate (lb/10 ⁶ Btu) ¹		(5.53E-08)	(2.74E-08)
Mercury (Hg) Fraction 3C - Impingers 5 and 6 HCl Rinse				
m _g	Gross weight (μg)	ND	0.050	0.62
m _n	Net weight (μg)		0.61	0.62
C	Concentration, standard conditions (μg/dscm)		0.27	0.24
C	Corrected to 7% O ₂ (μg/dscm)		0.38	0.35
C	Corrected to 12% CO ₂ (μg/dscm)		0.47	0.42
C	Concentration (lb/dscf)		1.67E-11	2.01E-11
C	Corrected to 7% O ₂ (lb/dscf)		2.34E-11	2.82E-11
C	Corrected to 12% CO ₂ (lb/dscf)		2.95E-11	3.45E-11
E	Emission rate (g/sec)		1.35E-05	1.62E-05
E	Emission rate (lb/hr)		1.07E-04	1.28E-04
E	Emission rate (lb/10 ⁶ Btu) ¹		3.37E-07	4.06E-07
Mercury (Hg) Totals				
m _g	Gross weight (μg)		14.6	15.9
m _n	Net weight (μg)		14.6	15.7
C	Concentration, standard conditions (μg/dscm)		6.4	6.8
C	Corrected to 7% O ₂ (μg/dscm)		9.0	9.6
C	Corrected to 12% CO ₂ (μg/dscm)		11.3	11.7
C	Concentration (lb/dscf)		4.00E-10	4.28E-10
C	Corrected to 7% O ₂ (lb/dscf)		5.61E-10	6.00E-10
C	Corrected to 12% CO ₂ (lb/dscf)		7.06E-10	7.33E-10
E	Emission rate (g/sec)		3.22E-04	3.44E-04
E	Emission rate (lb/hr)		2.56E-03	2.73E-03
E	Emission rate (lb/10 ⁶ Btu) ¹		8.08E-06	8.64E-06

¹ Calculated based on a Fd of 9,570 (dscf/10⁶Btu) for MSW as per EPA Method 19.

ND - Indicates the constituent was not detected. The detection limit is shown in parentheses.

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-2

CALIBRATION DATA

C

Meter Box Full Test Calibration

DATE: 11/9/00

Operator: M. V.

Meter Box No: 66-18				Meter Box $\Delta H@$: 1.6920						Meter Box Y_d : 1.0053			Barometric Pressure: 29.00					
				Standard Meter Gas Volume			Meter Box Gas Volume (ft ³)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)					
Q	ΔH	ΔP	Y_{ds}	Initial	Final	V_{ds}	Initial	Final	V_d	Inlet	Outlet	T_{ds}	Inlet	T_o	T_d	Time	Y_d	H@
0.988	3.00	-2.00	1.0000	0.0	10.000	10.000	241.711	251.733	10.022	67.5	67.5	67.5	81.0	73.0	77.0	9.82	1.0030	1.6613
0.986	3.00	-2.00	1.0000	0.0	10.000	10.000	251.733	261.771	10.038	67.5	67.5	67.5	82.0	74.0	78.0	9.84	1.0033	1.6650
0.393	0.50	-1.20	1.0000	0.0	5.000	5.000	265.437	270.440	5.003	67.5	67.5	67.5	77.0	74.0	75.5	12.33	1.0102	1.7428
0.395	0.50	-1.20	1.0000	0.0	5.000	5.000	270.440	275.434	4.994	67.5	67.5	67.5	77.0	74.0	75.5	12.28	1.0120	1.7287
0.694	1.50	-1.60	1.0000	0.0	10.000	10.000	288.640	298.733	10.093	67.5	67.5	67.5	81.0	75.0	78.0	13.97	1.0026	1.6748
0.693	1.50	-1.60	1.0000	0.0	10.000	10.000	298.733	308.843	10.110	67.5	67.5	67.5	81.0	75.0	78.0	13.99	1.0009	1.6796
AVERAGE																	1.0053	1.6920

Nomenclature

P_b	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential (in. H ₂ O)
ΔP	Inlet Pressure Differential (in. H ₂ O)
V_d	Gas Meter Volume - Dry (ft ³)
V_{ds}	Standard Meter Volume - Dry (ft ³)
T_d	Average Meter Box Temperature (°F)
T_o	Outlet Meter Box Temperature (°F)
T_{ds}	Average Standard Meter Temperature (°F)
Y_d	Meter Correction Factor (unitless)
Y_{ds}	Standard Meter Correction Factor (unitless)
$\Delta H@$	Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H ₂ O)

Vacuum Gauge

Standard (in. Hg)	Vacuum Gauge
4.5	5.0
9.8	10.0
15.0	15.0
20.2	20.0
24.6	24.5

Thermometers

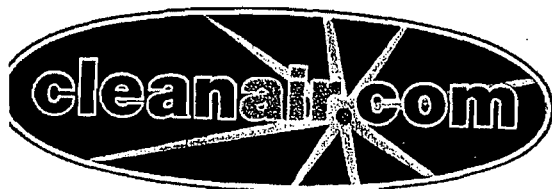
Standard (°F)	Inlet	Outlet

Equations

$$Y_d = (Y_{ds}) \left[\frac{V_{ds}}{V_d} \right] \left[\frac{T_d + 460}{T_{ds} + 460} \right] \left[\frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6} \right]$$

$$\Delta H@ = \frac{0.0319 (\Delta H)}{P_b (T_o + 460)} \left[\frac{(T_{ds} + 460) \Theta}{(V_{ds}) (Y_{ds})} \right]^2$$

$$Q = \frac{17.64 (V_{ds}) (P_b)}{(T_{ds} + 460) (\Theta)}$$



Meter Box Critical Orifice Post-Test Calibration Data

CAE Project No. 8963/8964

Location FF Outlet

Date 9/14/01

Operator J. Heffernan
Name

Meter No. 66-18

Meter Y_d 1.0053

Meter ΔH_m 1.6920

Full-Test 11/9/01
Cal. Date

Orifice I.D. B-3

Orifice K' 0.430

Orifice 10/27/00
Cal. Date

Leak Checks

Negative Pressure

No Movement of
Meter in 1 minute

☐ Pass
☐ Fail

Positive Pressure

No Movement of
Manometer in 1 minute

☐ Pass
☐ Fail

Barom. Press. (P_b) 30.20 in. Hg

Important: All leak checks must pass in order for calibration to be valid.

Run	Elapsed Time (minutes)	Meter Volume (dcf)	Meter Temperature		Ambient Temp. T_{amb} (°F)	Orifice ΔH	Vacuum (in. Hg)	Net Run Time - θ (minutes)	Net Meter Volume for Run - V_n (dcf)	Avg Meter Temp. T_m (°F)	DGM Calibration Factor - Y	Percent Variation - ΔY
			Inlet (°F)	Outlet (°F)								
	0.0	931.20	94	90								
1	5.0	934.03	95	90	84	0.93	20.0	5.0	2.83	92.3	1.0174	0.0%
2	10.0	936.85	93	85	84	0.93	20.0	5.0	2.82	90.8	1.0183	0.1%
3	15.0	939.67	94	87	84	0.93	20.0	5.0	2.82	89.8	1.0164	-0.1%

Calculations and Specifications

$$Y_i = \frac{K' \times P_b \times (T_m + 460) \times \theta}{17.64 \times V_m \times \left(P_b + \frac{\Delta H}{13.6} \right) \times \sqrt{T_{amb} + 460}}$$

$$\Delta Y_i = \frac{Y_i - \bar{Y}_i}{\bar{Y}_i} \times 100$$

Spec.: $\Delta Y_i \leq \pm 2\%$

$$Cal. Error = \frac{\bar{Y}_i - Y_d}{Y_d} \times 100$$

Spec.: $Cal. Error \leq \pm 5\%$

Average Y_i

1.0174

Cal. Error

1.2%

Clean Air Engineering

500 W. Wood Street
Palatine, IL 60067

(847) 991-3300

Meter Box Critical Orifice Post-Test Calibration Data

CAE Project No. 8963/8964
 Location Outlet
 Date 9-14-01
 Operator Name Jul Hefner

Meter No. 66-18
 Meter Y_d 1.0053
 Meter ΔH_o 1.6920
 Full-Test Cal. Date 11/9/00

Orifice I.D. B3
 Orifice K' .43
 Orifice Cal. Date 10/27/00

Leak Checks

Negative Pressure
 No Movement of Meter in 1 minute ☒ Pass ☐ Fail
 Positive Pressure
 No Movement of Manometer in 1 minute ☒ Pass ☐ Fail

Important: All leak checks must pass in order for calibration to be valid.

Barom. Press. (P_b) _____ in. Hg

Run	Elapsed Time (minutes)	Meter Volume (dcf)	Meter Temperature		Ambient Temp. - T_{amb} (°F)	Orifice ΔH (in. W.C.)	Vacuum (in. Hg)	Net Run Time - t (minutes)	Net Meter Volume for Run - V_m (dcf)	Avg Meter Temp. for Run - T_m	DGM Calibration Factor - Y_i	Percent Variation - ΔY_i
			Inlet (°F)	Outlet (°F)								
	0.0	931.20	94	90								
1	5	934.03	95	90	84	.93	20					%
2	10	936.85	93	85	~~84~~ 78	.93	20					%
3	15	939.67	94	87	~~84~~ 76	.93	20					%

Calculations and Specifications

$$Y_i = \frac{K' \times P_b \times (T_m + 460) \times \theta}{17.64 \times V_m \times \left(P_b + \frac{\Delta H}{13.6} \right) \times \sqrt{T_{amb} + 460}}$$

$$\Delta Y_i = \frac{Y_i - \bar{Y}_i}{\bar{Y}_i} \times 100$$

$$\text{Spec.: } \Delta Y_i \leq \pm 2\%$$

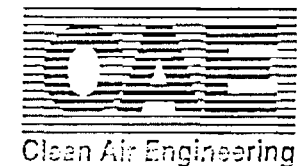
$$\text{Cal. Error} = \frac{\bar{Y}_i - Y_d}{Y_d} \times 100$$

$$\text{Spec.: } \text{Cal. Error} \leq \pm 5\%$$

Average Y_i

Cal. Error

%



Pyrometer Calibration Test Report

Pyrometer No.: 66-18
Calibrated By: M. V.
Date: 11/9/00

Office: Palatine, IL
Client:
Job Number:

Calibration Reference Settings for Fahrenheit Scale	Pyrometer Reading
50 °F	49 °F
100 °F	99 °F
150 °F	149 °F
200 °F	199 °F
250 °F	249 °F
300 °F	299 °F
350 °F	349 °F
400 °F	398 °F
450 °F	450 °F
500 °F	499 °F
550 °F	548 °F
600 °F	598 °F

Calibration Reference Information

Reference Used: Omega CL23A
Calibrated By: J.H. Metrology Co.
Report No: RO26517

Serial No: T-123216
Date: 9/11/00



Meter Box Full Test Calibration

DATE: 7/13/01

Operator: R.R.

Meter Box No: 85-4				Meter Box ΔH@: 1.7941						Meter Box Y _d : 1.0024				Barometric Pressure: 29.53				
				Standard Meter Gas Volume			Meter Box Gas Volume (ft ³)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)					
Q	ΔH	ΔP	Y _{ds}	Initial	Final	V _{ds}	Initial	Final	V _d	Inlet	Outlet	T _{ds}	Inlet	T _o	T _d	Time	Y _d	H@
0.961	3.00	-1.80	1.0000	0.0	10.000	10.000	776.707	786.758	10.051	75.5	75.5	75.5	90.0	82.0	86.0	10.12	1.0024	1.7560
0.961	3.00	-1.80	1.0000	0.0	10.000	10.000	786.758	796.834	10.076	75.5	75.5	75.5	90.0	82.0	86.0	10.12	0.9999	1.7560
0.383	0.50	-1.20	1.0000	0.0	5.000	5.000	797.398	802.434	5.036	75.5	75.5	75.5	85.0	83.0	84.0	12.71	1.0043	1.8432
0.383	0.50	-1.20	1.0000	0.0	5.000	5.000	802.434	807.460	5.026	75.5	75.5	75.5	83.0	82.0	82.5	12.70	1.0036	1.8437
0.675	1.50	-1.50	1.0000	0.0	10.000	10.000	819.869	829.941	10.072	75.5	75.5	75.5	87.0	82.0	84.5	14.42	1.0020	1.7827
0.675	1.50	-1.50	1.0000	0.0	10.000	10.000	829.941	840.024	10.083	75.5	75.5	75.5	88.0	82.0	85.0	14.42	1.0019	1.7827
AVERAGE																	1.0024	1.7941

Nomenclature	
P _b	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential (in. H ₂ O)
ΔP	Inlet Pressure Differential (in. H ₂ O)
V _d	Gas Meter Volume - Dry (ft ³)
V _{ds}	Standard Meter Volume - Dry (ft ³)
T _d	Average Meter Box Temperature (°F)
T _o	Outlet Meter Box Temperature (°F)
T _{ds}	Average Standard Meter Temperature (°F)
Y _d	Meter Correction Factor (unitless)
Y _{ds}	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H ₂ O)

Vacuum Gauge

Standard (in. Hg)	Vacuum Gauge
5.2	5.0
10.0	10.0
14.8	15.0
19.6	20.0
25.0	25.0

Thermometers

Standard (°F)	Inlet	Outlet

Equations

$$Y_d = (Y_{ds}) \left[\frac{V_{ds}}{V_d} \right] \left[\frac{T_d + 460}{T_{ds} + 460} \right] \left[\frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6} \right]$$

$$\Delta H@ = \frac{0.0319(\Delta H)}{P_b(T_o + 460)} \left[\frac{(T_{ds} + 460) \Theta}{(V_{ds})(Y_{ds})} \right]^2$$

$$Q = \frac{17.64 (V_{ds}) (P_b)}{(T_{ds} + 460) (\Theta)}$$

Meter Box Critical Orifice Post-Test Calibration Data

CAE Project No. 8963/8964

Location FF Outlet

Date 9/14/01

Operator J. Heffernan
Name

Meter No. 85-4

Meter Y_d 1.0024

Meter ΔH_a 1.7941

Full-Test 7/13/01
Cal. Date

Orifice I.D. B-3

Orifice K' 0.430

Orifice
Cal. Date 10/27/00

Leak Checks

Negative Pressure

No Movement of
Meter in 1 minute

☐ Pass

☐ Fail

Positive Pressure

No Movement of
Manometer in 1 minute

☐ Pass

☐ Fail

Barom. Press. (P_b) 30.20 in. Hg

Important: All leak checks must pass in order for calibration to be valid.

Run	Elapsed Time (minutes)	Meter Volume (dcf)	Meter Temperature		Ambient Temp. T_{amb} (°F)	Orifice ΔH	Vacuum (in. Hg)	Net Run Time - 0 (minutes)	Net Meter Volume for Run - V_n (dcf)	Avg Meter Temp. T_m (°F)	DGM Calibration Factor - Y_i	Percent Variation - ΔY_i
			Inlet (°F)	Outlet (°F)								
	0.0	515.00	88	85								
1	5.0	517.81	88	86	89	0.87	23.0	5.0	2.81	86.8	1.0100	-3.9%
2	10.0	520.48	89	86	89	0.87	23.0	5.0	2.67	87.3	1.0639	1.2%
3	15.0	523.11	88	86	89	0.87	23.0	5.0	2.63	87.3	1.0801	2.7%

Calculations and Specifications

$$Y_i = \frac{K' \times P_b \times (T_m + 460) \times \theta}{17.64 \times V_m \times \left(P_b + \frac{\Delta H}{13.6} \right) \times \sqrt{T_{amb} + 460}}$$

$$\Delta Y_i = \frac{Y_i - \bar{Y}_i}{\bar{Y}_i} \times 100$$

Spec.: $\Delta Y_i \leq \pm 2\%$

$$Cal. Error = \frac{\bar{Y}_i - Y_d}{Y_d} \times 100$$

Spec.: $Cal. Error \leq \pm 5\%$

Average Y_i

1.0513

Cal. Error

4.9%

Clean Air Engineering

500 W. Wood Street
Palatine, IL 60067

(847) 991-3300

Meter Box Critical Orifice Post-Test Calibration Data

CAE Project No. 8963/8964
 Location Outlet
 Date 9-14-01
 Operator Name Joe Heffernan

Meter No. 85-4
 Meter Y_d 1.0024
 Meter ΔH_o 1.7941
 Full-Test Cal. Date 7/13/01

Orifice I.D. 0.83
 Orifice K' 0.430
 Orifice Cal. Date 10/17/00

Leak Checks

Negative Pressure
 No Movement of
 Meter in 1 minute ☒ Pass
☐ Fail
 Positive Pressure
 No Movement of
 Manometer in 1 minute ☒ Pass
☐ Fail

Important: All leak checks must pass in order for calibration to be valid.

Barom. Press. (P_b) _____ in. Hg

Run	Elapsed Time (minutes)	Meter Volume (dcf)	Meter Temperature		Ambient Temp. - T_{amb} (°F)	Orifice ΔH (in. W.C.)	Vacuum (in. Hg)	Net Run Time - θ (minutes)	Net Meter Volume for Run - V_m (dcf)	Avg Meter Temp. for Run - T_m	DGM Calibration Factor - Y_i	Percent Variation - ΔY_i
			Inlet (°F)	Outlet (°F)								
	0.0	515.0	88	85								
1	5	517.81	88	86	89	.87	23					%
2	10	520.48	89	86	89	.87	23					%
3	15	523.11	88	86	89	.87	23					%

Calculations and Specifications

$$Y_i = \frac{K' \times P_b \times (T_m + 460) \times \theta}{17.64 \times V_m \times \left(P_b + \frac{\Delta H}{13.6} \right) \times \sqrt{T_{amb} + 460}}$$

$$\Delta Y_i = \frac{Y_i - \bar{Y}_i}{\bar{Y}_i} \times 100$$

Spec.: $\Delta Y_i \leq \pm 2\%$

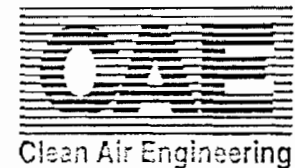
$$Cal. Error = \frac{\bar{Y}_i - Y_d}{Y_d} \times 100$$

Spec.: $Cal. Error \leq \pm 5\%$

Average Y_i

Cal. Error

%



Pyrometer Calibration Test Report

Pyrometer No.: 85-4

Office: Palatine, IL

Calibrated By: R.R.

Client:

Date: 7/13/01

Job Number:

Calibration Reference Settings for Fahrenheit Scale	Pyrometer Reading
50 °F	51 °F
100 °F	100 °F
150 °F	151 °F
200 °F	202 °F
250 °F	252 °F
300 °F	302 °F
350 °F	352 °F
400 °F	401 °F
450 °F	450 °F
500 °F	500 °F
550 °F	550 °F
600 °F	601 °F

Calibration Reference Information

Reference Used: Omega CL23A

Serial No: T-123216

Calibrated By: J.H. Metrology Co.

Date: 9/11/00

Report No: RO26517

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-2

FIELD DATA

D

TEST LOCATION: OutletUNIT: 3 RUN: 1Metals TESTING
FIELD DATA SHEETMETHOD: 29 PAGE 1 OF 2

Client	<u>Wheelabrator</u>	Project No.	<u>8964</u>
Plant	<u>N. Broward</u>	Date	<u>9-13-01</u>
Meter Operator	<u>Jul Heffernan</u>		
Probe Operator	<u>Jul Heffernan</u>		

Meter Box No.	<u>66-1B</u>	Sample Box No.	<u>67-56</u>
Meter Yd	<u>1.0057</u>	Meter ΔH@	<u>1.6920</u>
K Factor	<u>2.31</u>	Pitot Cp	<u>.84</u>
Leak Rate Before	<u>.001</u> (cfm) [Lpm] @ <u>17</u> (in. Hg)		
Leak Rate After	<u>(cfm)</u> [Lpm] @ <u></u> (in. Hg)		
Pilot Leak Check Before	☒ After: Good ☐ Bad ☐		

Cross-Section of Test Location			
Duct Dimensions (in.)			
Static Press. (in. H ₂ O)	Port Len. (in.)	Gas Flow (In) (Out) of page	First point all the way (In) (Out)

Amb. Temp (°F)	Bar. Press. <u>30.15</u> [(in. Hg) (mbar)]
Probe I.D. No.	<u>67-8-13</u>
Liner Material	<u>Glass</u>

Filter No.	<u>NA</u>	
Thimble No.	<u>NA</u>	
Nozzle Diameter	<u>.265</u>	Nozzle I.D. <u>NA</u>

H ₂ O	[ml] [gm]	Silica Gel (gm)
Total V _{lc}		

Start Time	<u>9:01</u>	Stop Time	<u>11:20</u>

Traverse Point Number	Min/pl 5 Elapsed Time	Velocity Head ΔP's (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume - V _m Init. Vol. [ft ³] [L] 565.13	Stack Temp T _s (°F)	Probe T _p (°F) Set Points 250 250	Filter T _f (°F) 250 250	Cond. Temp. T _c (°F)	DGM Inlet T _{min} (°F)	DGM Outlet T _{max} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T _i (°F)	Notes
5-1	5	.59	1.4	568.99	277	250	250	55	85	82	4	NA	
2	10	.59	1.4	572.0	275	250	250	43	88	82	4		
3	15	.35	.81	574.65	275	250	250	42	92	83	3		
4	20	.61	1.4	577.99	275	250	250	46	94	84	4		New-K-
5	25	.66	1.6	581.56	276	250	250	48	97	85	4		2.36
4-1	30	.74	1.7	585.94	274	250	250	53	97	86	4		
2	35	.71	1.7	589.73	280	250	250	45	101	87	5		582.19
3	40	.65	1.5	593.35	276	250	250	45	102	89	4		.63
4	45	.64	1.5	596.92	277	250	250	45	103	89	4		
5	50	.47	1.1	600.08	277	250	250	46	102	90	4		600.44
3-1	55	.39	.92	603.23	277	250	250	50	100	90	4		.38
2	60	.53	1.3	606.43	277	250	250	53	101	91	4		
	Total	18.72	16.33	87.34	3316				1162	1038			
	Average	.7490	1.33		277.20				95.16				

TEST LOCATION: Outlet
 UNIT: 3 RUN: 1

Metals TESTING
 FIELD DATA SHEET

METHOD: 29 PAGE 2 OF 2

Client <u>wheelabrator</u>	Project No. <u>B964</u>
Plant <u>N. Brown</u>	Date <u>9-13-01</u>
Meter Operator <u>Joe McFadden</u>	
Probe Operator <u>Joe McFadden</u>	

Meter Box No.	Sample Box No.
Meter Yd	Meter ΔH
K Factor	Pitot Cp
Leak Rate Before	[cfm] [Lpm] @ (in. Hg)
Leak Rate After	[cfm] [Lpm] @ (in. Hg)
Pitot Leak Check Before	After: Good ☐ Bad ☐

Cross-Section of Test Location			
↑ [N] [UP]			
Duct Dimensions (in.)			
Static Press. (in. H ₂ O)	Port Len. (in.)	Gas Flow [In] [Out]	First point all the way [In] [Out]

Amb Temp (°F)	Bar. Press.	[in. Hg] [mbar]
Probe I.D. No.		
Liner Material		
Filter No.		
Thimble No.		
Nozzle Diameter	Nozzle I.D.	
H ₂ O <u>525.1</u> [ml] (gm)	Silica Gel (gm) <u>16.9</u>	
Total V _{ic} <u>542.0</u>		
Start Time	Stop Time	

Traverse Point Number	Min/pt 5 Elapsed Time	Velocity Head ΔP's (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume - V _m Init. Vol. [ft ³] [L]	Stack Temp. T _s (°F)	Probe T _p (°F) Set Points 250	Filter T _f (°F) 250	Cond. Temp. T _c (°F)	DGM Inlet T _{min} (°F)	DGM Outlet T _{max} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T ₁ (°F)	Notes
3-3	65	.50	1.2	609.64	278	250	250	53	102	92	4	N/A	
4	70	.54	1.3	616.97	279	250	250	54	102	91	4		
5	75	.58	1.4	616.40	277	250	250	57	104	92	4		616.95
2-1	80	.52	1.2	620.20	277	250	250	58	102	92	4		.55
2	85	.57	1.3	623.49	276	250	250	48	104	93	4		
3	90	.50	1.2	626.66	278	250	250	47	104	94	4		
4	95	.54	1.3	629.93	277	250	250	48	104	94	4		
5	100	.51	1.2	633.11	279	250	250	50	104	94	4		633.70
1-1	105	.56	1.3	637.04	279	250	250	55	100	94	4		.59
2	110	.59	1.4	640.46	276	250	250	47	103	94	5		
3	115	.61	1.4	643.87	281	250	250	45	105	94	5		
4	120	.59	1.4	647.27	280	250	250	45	105	95	5		
5	Total	.57	1.3	650.62	277	250	250	46	165	95	5		
	Average		16.9		3614				1344	1214			

TEST LOCATION: OutletUNIT: 3 RUN: 2

Client <u>Wheelabrator</u>	Project No. <u>8964</u>
Plant <u>N. Broward</u>	Date <u>9-13-01</u>
Meter Operator <u>Jae Heffernan</u>	
Probe Operator <u>Jae Heffernan</u>	

Meter Box No. <u>85-4</u>	Sample Box No. <u>67-30</u>
Meter Yd <u>1.0024</u>	Meter ΔH @ <u>1.7941</u>
K Factor <u>2.5</u>	Pitot Cp <u>1.84</u>
Leak Rate Before <u>.002</u> [cfm] [Lpm] @ <u>14</u> (in. Hg)	
Leak Rate After <u>.003</u> [cfm] [Lpm] @ <u>11</u> (in. Hg)	
Pitot Leak Check Before: ☒ After: Good ☒ Bad ☐	

Metals TESTING FIELD DATA SHEET

METHOD: 29 PAGE 1 OF 2

Cross-Section of Test Location			
Duct Dimensions (in.)			
Static Press. (in. H ₂ O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]
<u>-12.0</u>			<u>10</u> [Out]

Amb. Temp. (°F)	Bar. Press. <u>29.15</u> [in. Hg] [mbar]
Probe I.D. No. <u>67-8-18</u>	
Liner Material <u>61455</u>	

Filter No. <u>NA</u>	
Thimble No. <u>NA</u>	
Nozzle Diameter <u>1.265</u>	Nozzle I.D. <u>NA</u>

H ₂ O	[ml] [gm]	Silica Gel (gm)
Total V _{ic}		

Start Time: <u>11:25</u>	Stop Time: <u>13:38</u>

Traverse Point Number	Min/pt 5 Elapsed Time	Velocity Head ΔP 's (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume - V _m Init. Vol. [ft ³] [L] 336.05	Stack Temp. T _s (°F)	Probe T _p (°F) Set Points 250 250	Filter T _f (°F) 250 250	Cond. Temp. T _c (°F)	DGM Inlet T _{min} (°F)	DGM Outlet T _{max} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T _t (°F)	Notes
5-1	5	.36	.90	339.23	278	250	250	50	84	84	3	NA	
2	10	.33	.83	341.78	277	250	250	55	86	84	3		
3	15	.39	.98	344.51	266	250	250	55	87	84	3		
4	20	.54	1.4	347.68	277	250	250	55	88	85	4		
5	25	.77	1.9	351.41	279	250	250	55	91	85	5		352.26
4-1	30	.74	1.9	355.95	276	250	250	58	91	86	5		.85
2	35	.64	1.6	359.49	278	250	250	56	93	86	5		
3	40	.71	1.8	363.15	276	250	250	54	94	86	5		
4	45	.69	1.7	366.74	278	250	250	56	93	86	5		
5	50	.69	1.7	370.35	278	250	250	57	92	86	5		371.06
3-1	55	.52	1.3	374.23	277	250	250	58	91	87	4		.71
2	60	.54	1.4	377.51	278	250	250	56	92	87	4		
Total		18.94		377.77									
Average		1.757	1.45		277.76				89.66				

TEST LOCATION: Outlet
 UNIT: 3 RUN: 2

Metals TESTING
 FIELD DATA SHEET

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Client	<u>Wheplabor</u>	Project No.	<u>8964</u>
Plant	<u>N. Broward</u>	Date	<u>9-13-01</u>
Meter Operator	<u>Joe Heffernan</u>		
Probe Operator	<u>Joe Heffernan</u>		

Meter Box No.	Sample Box No.
Meter Yd	Meter ΔH @
K Factor	Pitot Cp
Leak Rate Before	[cfm] [Lpm] @ (in. Hg)
Leak Rate After	[cfm] [Lpm] @ (in. Hg)
Pitot Leak Check Before:	☐ After: Good ☐ Bad ☐

Cross-Section of Test Location			
↑ [N] [UP]			
Duct Dimensions (in.)			
Static Press. (in. H ₂ O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]

Amb Temp. (°F)	Bar. Press.	[in. Hg] [mbar]
Probe I.D. No.		
Liner Material		

Filter No.	
Thimble No.	
Nozzle Diameter	Nozzle I.D.

H ₂ O	[ml] [gm]	Silica Gel (gm)
Total V _{lc}		

Start Time:	Stop Time:

Traverse Point Number	Min/pt 5 Elapsed Time	Velocity Head ΔP's (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume - V _m Init. Vol. [ft³] [L]	Stack Temp. T _s (°F)	Probe T _p (°F) Set Points 250 250	Filter T _f (°F) 250 250	Cond. Temp. T _c (°F)	DGM Inlet T _{min} (°F)	DGM Outlet T _{max} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T _t (°F)	Notes
3-3	65	.57	1.4	380.79	280	250	250	55	94	88	4	NA	
3-4	70	.53	1.3	384.01	279	250	250	54	93	87	4		
5	75	.55	1.4	387.29	277	250	250	55	94	88	5		388.07
2-1	80	.58	1.5	391.48	278	250	250	57	93	88	5		.78
2	85	.57	1.4	394.76	277	250	250	58	95	89	5		
3	90	.54	1.4	398.02	280	250	250	57	95	88	5		
4	95	.56	1.4	401.31	278	250	250	53	95	88	5		
5	100	.58	1.5	404.72	277	250	250	52	94	88	5		405.60
1-1	105	.61	1.5	408.99	278	250	250	56	94	88	5		.88
2	110	.61	1.5	412.35	279	250	250	57	94	89	5		
3	115	.64	1.6	415.82	279	250	250	58	96	89	5		
4	120	.61	1.5	419.25	277	250	250	59	95	89	5		
5	125 Total	.61	1.5	422.64	277	250	250	59	95	89	5		
	Average		18.90		3616				1227	1148			

TEST LOCATION: outletUNIT: 3 RUN: 7Metals TESTING
FIELD DATA SHEETMETHOD: 29 PAGE 1 OF 2

Client	<u>Wheelabrator</u>	Project No.	<u>8464</u>
Plant	<u>N. Blomard</u>	Date	<u>9-17-01</u>
Meter Operator	<u>Joe Heffernan</u>		
Probe Operator	<u>Joe Heffernan</u>		

Meter Box No.	<u>66-13</u>	Sample Box No.	<u>67-56</u>
Meter Yd	<u>1.0053</u>	Meter ΔH @	<u>1.6920</u>
K Factor	<u>2.32</u>	Pilot Cp	<u>.84</u>
Leak Rate Before	<u>.001</u> [cfm] [Lpm] @ <u>14</u> (in. Hg)		
Leak Rate After	<u>.001</u> [cfm] [Lpm] @ <u>10</u> (in. Hg)		
Pilot Leak Check Before:	☐ After: Good	☒ Bad	☐

Cross-Section of Test Location			
Duct Dimensions (in.)			
Static Press. (in. H ₂ O)	Port Len. (in.)	Gas Flow [in] [out] of page	First point all the way [in] [out]
<u>-12.0</u>			

Amb. Temp. (°F)	Bar. Press. <u>30.15</u> [in. Hg] [mbar]
Probe I.D. No.	<u>67-8-13</u>
Liner Material	<u>Glass</u>

Filter No.	<u>NA</u>	
Thimble No.	<u>NA</u>	
Nozzle Diameter	<u>.265</u>	Nozzle I.D. <u>NA</u>

H ₂ O	<u>45.1</u> [ml] [imp]	Silica Gel (gm)	<u>16.2</u>
Total V _{ic}	<u>351.3</u>		

Start Time:	<u>13:42</u>	Stop Time:	<u>15:55</u>

Traverse Point Number	Min/pt 5 Elapsed Time	Velocity Head ΔP's (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume - V _m Init. Vol. [ft ³] [L] <u>651.33</u>	Stack Temp. T _s (°F)	Probe T _p (°F) Set Points <u>250</u> <u>250</u>	Filter T _f (°F) <u>250</u> <u>250</u>	Cond. Temp. T _c (°F)	DGM Inlet T _{in} (°F)	DGM Outlet T _{out} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T _t (°F)	Notes
5-1	5	.77	2.6	655.87	277	250	250	50	90	89	5	NA	
2	10	.65	2.2	660.22	276	250	250	49	93	89	5		
3	15	.40	1.3	663.67	270	250	250	48	95	90	4		
4	20	.69	2.3	667.75	278	250	250	48	98	90	6		
5	25	.73	2.6	672.52	278	250	250	49	100	90	7		673.16
4-1	30	.71	2.4	678.21	277	250	250	54	101	91	9		3.32 -1.64
2	35	.81	1.9	682.44	276	250	250	54	101	91	9		2.32
3	40	.82	1.9	686.48	278	250	250	54	102	94	5		
4	45	.85	2.0	690.60	279	250	250	50	105	93	5		
5	50	.81	1.9	694.67	276	250	250	50	105	93	5		695.39
3-1	55	.64	1.5	699.00	277	250	250	50	103	93	4		.72
2	60	.64	1.5	702.55	275	250	250	50	105	93	5		
	Total	20.38	24.10	95.34	3317				1198	1096			
	Average	.8151	1.72		277.0				97.8				

TEST LOCATION: OutletUNIT: 3 RUN: 3

Client	<u>Wheelabrator</u>	Project No.	<u>8964</u>
Plant	<u>N. Broward</u>	Date	<u>9-13-01</u>
Meter Operator	<u>Tal Heffernan</u>		
Probe Operator	<u>Tal Heffernan</u>		

Meter Box No.	Sample Box No.
Meter Yd	Meter ΔH ₀
K Factor	Pitot Cp
Leak Rate Before	[cfm] [Lpm] @ (in. Hg)
Leak Rate After	[cfm] [Lpm] @ (in. Hg)
Pitot Leak Check Before:	☐ After: Good ☐ Bad ☐

Metals TESTING FIELD DATA SHEET

METHOD: 29 PAGE 2 OF 2

Cross-Section of Test Location			
			
Duct Dimensions (in.)			
Static Press. (in. H ₂ O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]

Amb Temp. (°F)	Bar. Press.	[in. Hg] [mbar]
Probe I.D. No.		
Liner Material		

Filter No.		
Thimble No.		
Nozzle Diameter	Nozzle I.D.	

H ₂ O	[ml] [gm]	Silica Gel (gm)
Total V _{lc}		

Start Time:	Stop Time:

Traverse Point Number	Min/pt 5 Elapsed Time	Velocity Head ΔP's (in. H ₂ O)	Orifice Setting ΔH (in. H ₂ O)	Gas Sample Volume - V _m Init. Vol. [ft ³] [L]	Stack Temp. T _s (°F)	Probe T _p (°F) Set Points 250 250	Filter T _f (°F) 250 250	Cond. Temp. T _c (°F)	DGM Inlet T _{min} (°F)	DGM Outlet T _{max} (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp T _t (°F)	Notes
3-3	65	.59	1.4	709.99	280	250	250	50	105 TH	94 TH	4	NA	
4	70	.60	1.4	709.41	278	250	250	51	105	94	4		
5	75	.66	1.5	712.95	276	250	250	52	105 TH	94	5		
2-1	80	.59	1.4	716.77	275	250	250	48	104	94	4		713.30
2	85	.65	1.5	720.31	277	250	250	45	104	94	5		.35
3	90	.63	1.5	723.83	278	250	250	43	106	94	5		
4	95	.54	1.3	727.14	277	250	250	43	106	95	5		
5	100	.66	1.5	730.65	278	250	250	44	105	95	5		731.12
1-1	105	.74	1.7	734.87	278	250	250	47	104	95	5		.47
2	110	.61	1.4	738.40	279	250	250	47	105	95	5		
3	115	.69	1.6	742.01	276	250	250	46	106	95	5		
4	120	.62	1.4	745.51	278	250	250	49	106	95	5		
5	125 Total	.56	1.3	748.85	278	250	250	49	106	95	5		
	Average		18.90		3608				1367	1229			

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-2

FIELD DATA PRINTOUTS

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Field Data Printout

Location: Unit 3 FF Outlet Method: M29 Bar. Press. (in. Hg): 30.15
 Test Run: 1 Testing Type: Metals Actual Moisture (%): 24.1
 Client: Wheelabrator North Broward, Inc.
 Project No: 8964-2 Nozzle Diameter (D_n): 0.265
 Test Date: 9/13/01 O₂ (dry volume %): 11.0
 Meter ΔH@: 1.6920 Area (ft²): 64.00 CO₂ (dry volume %): 6.8
 Meter Y_s: 1.0053 Start Time (approx.): 09:01
 Pitot C_p: 0.84 Filter No: NA Stop Time (approx.): 11:20
 Static P: -12.0 Thimble No: NA H₂O (condensate, ml): 525.1
 Leak Rate Before: 0.001 cfm @ 13 "Hg Beaker No: NA H₂O (silica, g): 16.9
 Leak Rate After: 0.001 cfm @ 13 "Hg

Traverse Point	Run Time	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (ft³)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft³)	Isokinetics (calculated) (%)
	0.0			565.13		T _{m in} (°F)	T _{m out} (°F)			
5-01	5.0	0.59	1.40	568.59	277	85	82	0.77	3.46	104.4
5-02	10.0	0.59	1.40	572.00	275	88	82	0.77	3.41	102.5
5-03	15.0	0.35	0.81	574.65	275	92	83	0.59	2.65	102.8
5-04	20.0	0.61	1.40	577.95	275	94	84	0.78	3.30	96.8
5-05	25.0	0.66	1.60	581.56	276	97	85	0.81	3.61	101.6
LEAK CHECK	25.0			582.19						
4-01	30.0	0.74	1.70	585.94	274	97	86	0.86	3.75	99.5
4-02	35.0	0.71	1.70	589.73	280	101	87	0.84	3.79	102.6
4-03	40.0	0.65	1.50	593.35	276	102	89	0.81	3.62	101.8
4-04	45.0	0.64	1.50	596.92	277	103	89	0.80	3.57	101.1
4-05	50.0	0.47	1.10	600.08	277	102	90	0.69	3.16	104.4
LEAK CHECK	50.0			600.44						
3-01	55.0	0.39	0.92	603.23	277	100	90	0.62	2.79	101.3
3-02	60.0	0.53	1.30	606.43	277	101	91	0.73	3.20	99.6
3-03	65.0	0.50	1.20	609.64	278	102	92	0.71	3.21	102.7
3-04	70.0	0.54	1.30	612.97	279	102	91	0.73	3.33	102.7
3-05	75.0	0.58	1.40	616.40	277	104	92	0.76	3.43	101.7
LEAK CHECK	75.0			616.95						
2-01	80.0	0.52	1.20	620.20	277	102	92	0.72	3.25	101.9
2-02	85.0	0.57	1.30	623.49	276	104	93	0.75	3.29	98.2
2-03	90.0	0.50	1.20	626.66	278	104	94	0.71	3.17	101.1
2-04	95.0	0.54	1.30	629.93	277	104	94	0.73	3.27	100.3
2-05	100.0	0.51	1.20	633.11	279	104	94	0.71	3.18	100.5
LEAK CHECK	100.0			633.70						
1-01	105.0	0.56	1.30	637.04	279	100	94	0.75	3.34	101.1
1-02	110.0	0.59	1.40	640.46	276	103	94	0.77	3.42	100.4
1-03	115.0	0.61	1.40	643.87	281	105	94	0.78	3.41	98.6
1-04	120.0	0.59	1.40	647.27	280	105	95	0.77	3.40	99.8
1-05	125.0	0.57	1.30	650.62	277	105	95	0.75	3.35	99.8
Final	125.0	0.75	1.33	83.36	277	95				

Field Data Printout

Location: Unit 3 FF Outlet	Method: M29	Bar. Press. (in. Hg): 30.15
Test Run: 2	Testing Type: Metals	Actual Moisture (%): 25.2
Client: Wheelabrator North Broward, Inc.		
Project No: 8964-2		Nozzle Diameter (D _n): 0.265
Test Date: 9/13/01		O ₂ (dry volume %): 11.0
Meter ΔH@: 1.7941	Area (ft²): 64.00	CO ₂ (dry volume %): 7.0
Meter Y _d : 1.0024		Start Time (approx.): 11:25
Pitot C _p : 0.84	Filter No: NA	Stop Time (approx.): 13:38
Static P: -12.0	Thimble No: NA	H ₂ O (condensate, ml): 560.3
Leak Rate Before: 0.002 cfm @ 14 "Hg	Beaker No: NA	H ₂ O (silica, g): 19.6
Leak Rate After: 0.003 cfm @ 11 "Hg		

Traverse Point	Run Time	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (ft³)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft³)	Isokinetics (calculated) (%)
	0.0			336.05		T _{m in} (°F)	T _{m out} (°F)			
5-01	5.0	0.36	0.90	339.23	278	84	84	0.60	3.18	123.9*
5-02	10.0	0.33	0.83	341.78	277	86	84	0.57	2.55	103.5
5-03	15.0	0.39	0.98	344.51	266	87	84	0.62	2.73	101.1
5-04	20.0	0.54	1.40	347.68	277	88	85	0.73	3.17	100.4
5-05	25.0	0.77	1.90	351.41	279	91	85	0.88	3.73	99.0
LEAK CHECK	25.0			352.26						
4-01	30.0	0.74	1.90	355.95	276	91	86	0.86	3.69	99.6
4-02	35.0	0.64	1.60	359.49	278	93	86	0.80	3.54	102.6
4-03	40.0	0.71	1.80	363.15	276	94	86	0.84	3.66	100.5
4-04	45.0	0.69	1.70	366.74	278	93	86	0.83	3.59	100.2
4-05	50.0	0.69	1.70	370.35	278	92	86	0.83	3.61	100.9
LEAK CHECK	50.0			371.06						
3-01	55.0	0.52	1.30	374.23	277	91	87	0.72	3.17	101.9
3-02	60.0	0.54	1.40	377.51	278	92	87	0.73	3.28	103.4
3-03	65.0	0.57	1.40	380.79	280	94	88	0.75	3.28	100.5
3-04	70.0	0.53	1.30	384.01	279	93	87	0.73	3.22	102.4
3-05	75.0	0.55	1.40	387.29	277	94	88	0.74	3.28	102.1
LEAK CHECK	75.0			388.07						
2-01	80.0	0.58	1.50	391.48	278	93	88	0.76	3.41	103.6
2-02	85.0	0.57	1.40	394.76	277	95	89	0.75	3.28	100.2
2-03	90.0	0.54	1.40	398.02	280	95	88	0.73	3.26	102.6
2-04	95.0	0.56	1.40	401.31	278	95	88	0.75	3.29	101.5
2-05	100.0	0.58	1.50	404.72	277	94	88	0.76	3.41	103.4
LEAK CHECK	100.0			405.60						
1-01	105.0	0.61	1.50	408.95	278	94	88	0.78	3.35	99.2
1-02	110.0	0.61	1.50	412.35	279	94	89	0.78	3.40	100.6
1-03	115.0	0.64	1.60	415.82	279	96	89	0.80	3.47	100.1
1-04	120.0	0.61	1.50	419.25	277	95	89	0.78	3.43	101.3
1-05	125.0	0.61	1.50	422.64	277	95	89	0.78	3.39	100.1
Final	125.0	0.76	1.45	83.37	277	90				

Field Data Printout

Location: Unit 3 FF Outlet Method: M29 Bar. Press. (in. Hg): 30.15
 Test Run: 3 Testing Type: Metals Actual Moisture (%): 23.0
 Client: Wheelabrator North Broward, Inc.
 Project No: 8964-2 Nozzle Diameter (D_n): 0.265
 Test Date: 9/13/01 O₂ (dry volume %): 11.4
 Meter ΔH@: 1.6920 Area (ft²): 64.00 CO₂ (dry volume %): 6.8
 Meter Y_g: 1.0053 Start Time (approx.): 13:42
 Pitot C_p: 0.84 Filter No: NA Stop Time (approx.): 15:55
 Static P: -12.0 Thimble No: NA H₂O (condensate, ml): 565.1
 Leak Rate Before: 0.001 cfm @ 14 "Hg Beaker No: NA H₂O (silica, g): 16.2
 Leak Rate After: 0.001 cfm @ 10 "Hg

Traverse Point	Run Time	Pitot ΔP _s (in. H ₂ O)	Sample ΔH (in. H ₂ O)	Metered (ft³)	Stack T _s (°F)	Dry Gas Meter		√ΔP _s (calculated) (√in. H ₂ O)	Volume (calculated) (ft³)	Isokinetics (calculated) (%)
	0.0			651.33		T _{m in}	T _{m out}			
						(°F)	(°F)			
5-01	5.0	0.77	2.60	655.87	277	90	89	0.88	4.54	117.6*
5-02	10.0	0.65	2.20	660.22	276	93	89	0.81	4.35	122.1*
5-03	15.0	0.40	1.30	663.67	270	95	90	0.63	3.45	122.3*
5-04	20.0	0.69	2.30	667.75	278	98	90	0.83	4.08	110.7*
5-05	25.0	0.78	2.60	672.52	278	100	90	0.88	4.77	121.6*
LEAK CHECK	25.0			673.16						
4-01	30.0	0.71	2.40	678.21	277	101	91	0.84	5.05	134.6*
4-02	35.0	0.81	1.90	682.44	276	101	91	0.90	4.23	105.3
4-03	40.0	0.82	1.90	686.48	278	102	94	0.91	4.04	99.8
4-04	45.0	0.85	2.00	690.60	279	105	93	0.92	4.12	99.8
4-05	50.0	0.81	1.90	694.67	276	105	93	0.90	4.07	100.8
LEAK CHECK	50.0			695.39						
3-01	55.0	0.64	1.50	699.00	277	103	93	0.80	3.61	100.7
3-02	60.0	0.64	1.50	702.55	275	105	93	0.80	3.55	98.7
3-03	65.0	0.59	1.40	705.99	280	105	94	0.77	3.44	99.9
3-04	70.0	0.60	1.40	709.41	278	105	94	0.77	3.42	98.3
3-05	75.0	0.66	1.50	712.95	276	105	94	0.81	3.54	96.9
LEAK CHECK	75.0			713.30						
2-01	80.0	0.59	1.40	716.77	275	104	94	0.77	3.47	100.5
2-02	85.0	0.65	1.50	720.31	277	104	94	0.81	3.54	97.8
2-03	90.0	0.63	1.50	723.83	278	106	94	0.79	3.52	98.7
2-04	95.0	0.54	1.30	727.14	277	106	95	0.73	3.31	100.1
2-05	100.0	0.66	1.50	730.65	278	105	95	0.81	3.51	96.2
LEAK CHECK	100.0			731.12						
1-01	105.0	0.74	1.70	734.87	278	104	95	0.86	3.75	97.2
1-02	110.0	0.61	1.40	738.40	279	105	95	0.78	3.53	100.6
1-03	115.0	0.69	1.60	742.01	276	106	95	0.83	3.61	96.5
1-04	120.0	0.62	1.40	745.51	278	106	95	0.79	3.50	98.8
1-05	125.0	0.56	1.30	748.85	278	106	95	0.75	3.34	99.2
Final	125.0	0.82	1.72	95.34	277	98				

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-2

LABORATORY DATA

F



Inorganic Data Package

For

CLEAN AIR ENGINEERING

Project # 8964

Prepared by PSC Analytical Services Corp.

5555 North Service Road

Burlington, ON

Canada L7L 5H7

PSC Project #: AN010794

Submission #(s): 1I0713

PSC Sample ID: 056739-056743

Prepared By: Cheryl-Anne Miller – Project Managers Assistant

Reviewed By: Ada Blythe – Project Manager



1. CASE NARRATIVE

PROJECT NARRATIVE**PHILIP Analytical Services Inc (Burlington ON)****Philip Project: AN010794****Philip Submission #:110713****Client: Clean Air Engineering****Client Project: 8964****I. SAMPLE RECEIPT/ANALYSIS****a) Sample Listing**

Philip ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Run Date
<i>Mercury 1B via EPA Method 29</i>					
056739 01	M29-Reagent Blank	01/09/13	01/09/21	01/10/04	01/10/04
056740 01	M29-Field Blank	01/09/13	01/09/21	01/10/04	01/10/04
056741 01	M29-Unit 3 Outlet R1	01/09/13	01/09/21	01/10/04	01/10/04
056742 01	M29-Unit 3 Outlet R2	01/09/13	01/09/21	01/10/04	01/10/04
056743 01	M29-Unit 3 Outlet R3	01/09/13	01/09/21	01/10/04	01/10/04
<i>Mercury 2B via EPA Method 29</i>					
056739 01	M29-Reagent Blank	01/09/13	01/09/21	01/09/26	01/09/27
056740 01	M29-Field Blank	01/09/13	01/09/21	01/09/26	01/09/27
056741 01	M29-Unit 3 Outlet R1	01/09/13	01/09/21	01/09/26	01/09/27
056742 01	M29-Unit 3 Outlet R2	01/09/13	01/09/21	01/09/26	01/09/27
056743 01	M29-Unit 3 Outlet R3	01/09/13	01/09/21	01/09/26	01/09/27
<i>Mercury 3A via EPA Method 29</i>					
056739 01	M29-Reagent Blank	01/09/13	01/09/21	01/10/03	01/10/03
056740 01	M29-Field Blank	01/09/13	01/09/21	01/10/03	01/10/03
056741 01	M29-Unit 3 Outlet R1	01/09/13	01/09/21	01/10/03	01/10/03
056742 01	M29-Unit 3 Outlet R2	01/09/13	01/09/21	01/10/03	01/10/03
056743 01	M29-Unit 3 Outlet R3	01/09/13	01/09/21	01/10/03	01/10/03
<i>Mercury 3B via EPA Method 29</i>					
056739 01	M29-Reagent Blank	01/09/13	01/09/21	01/09/27	01/09/28
056740 01	M29-Field Blank	01/09/13	01/09/21	01/09/27	01/09/28
056741 01	M29-Unit 3 Outlet R1	01/09/13	01/09/21	01/10/05	01/10/05
056742 01	M29-Unit 3 Outlet R2	01/09/13	01/09/21	01/09/27	01/09/28
056743 01	M29-Unit 3 Outlet R3	01/09/13	01/09/21	01/09/27	01/09/28
<i>Mercury 3C via EPA Method 29</i>					
056739 01	M29-Reagent Blank	01/09/13	01/09/21	01/10/03	01/10/04
056740 01	M29-Field Blank	01/09/13	01/09/21	01/10/03	01/10/04
056741 01	M29-Unit 3 Outlet R1	01/09/13	01/09/21	01/10/03	01/10/04
056742 01	M29-Unit 3 Outlet R2	01/09/13	01/09/21	01/10/03	01/10/04
056743 01	M29-Unit 3 Outlet R3	01/09/13	01/09/21	01/10/03	01/10/04

Run Date is defined as the date of injection of the last calibration standard (12 hour or less) prior to the samples analyzed within that run sequence. Therefore the time of calibration injection that defines the run date is always within 12 hours of the time of sample injection.

b) Shipping Problems: none encountered

c) Documentation Problems: none encountered

II. SAMPLE PREP:

No problems encountered

III. SAMPLE ANALYSIS:

See also comments within the appropriate Certificate of Analysis.

a) Hold Times: all within recommended hold times

b) Instrument Calibration: all within control limits

c) Surrogate/Internal Recoveries: except where noted otherwise, all within control limits

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above.

In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate. Release of the data contained in this data package has been authorized by the cognizant laboratory official or his/her designee, as verified by this signature.



Ada Blythe, Project Manager



Date

2. DATA SUMMARY

- Certificate of Analysis -

- Sample analyte result
- Method blank result
- LCS Results with % Recoveries
- Matrix Spike data with % Recoveries
- Matrix Spike Duplicate data with % Recoveries
- Surrogate recoveries



ANALYTICAL SERVICES

Certificate of Analysis

CLIENT INFORMATION

Attention: Scott Brown
Client Name: Clean Air Engineering
Project: 8964
Project Desc: Wheelabrator North Broward

Address: 500 W. Wood Street
 Palatine, IL
 IL 60067

Fax Number: 847-991-0036
Phone Number: 847-991-3300

LABORATORY INFORMATION

Contact: Ada Blythe, B.Sc., C.Chem.
Project: AN010794
Date Received: 21-Sep-2001
Date Reported: 05-Oct-2001

Submission No.: 110713
Sample No.: 056738-056743

NOTES: "–" = not analysed "<" = less than Method Detection Limit (MDL) "NA" = no data available
 LOQ can be determined for all analytes by multiplying the appropriate MDL X 3.33
 Blank correction is only performed on oil and grease, BTEX, total purgeable hydrocarbons
 and VOC analyses when Canadian methods are utilized.
 Solids data is based on dry weight except for biota analyses.
 Organic analyses are not corrected for extraction recovery standards except for isotope
 dilution methods, (i.e. CARB 429 PAH, all PCDD/F and DBD/DBF analyses)

Methods used by PSC Analytical Services are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of MISA or EPA methodologies. New York State: ELAP Identification Number 10756.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at PSC Analytical Services for a period of three weeks from receipt of data or as per contract.

COMMENTS:

* MDL raised due to insufficient sample digest volume.

Certified by:

Page 1 of 1

Component			Method	Blank	%	Blank Spike	%	M29-Reagent	M29-Field
			Blank	Spike	Recovery	Duplicate	Recovery	Blank	Blank
			056738 01	056738 01	056738 01	056738 01	056738 01	056739 01	056740 01
			13-Sep-2001	13-Sep-2001	13-Sep-2001	13-Sep-2001	13-Sep-2001	13-Sep-2001	13-Sep-2001
	MDL	Units							
Sample Volume - Container 5A	0	ml	-	-	-	-	-	100	110
Sample Volume - Container 4		"	-	-	-	-	-	300	310
Mercury - 1B	0.030	ug	<	0.29	98	0.28	94	<	<
Mercury - 2B	0.010	"	<	0.10	100	0.10	100	<0.30	<0.31
Mercury - 3A	0.010	"	<	0.10	100	0.10	99	<	<
Mercury - 3B	0.050	"	<	0.49	86	0.49	97	<	<
Mercury - 3C	0.050	"	<	0.50	99	0.49	98	<	<

PASC - Certificate of Analysis

Component	<i>Client ID:</i>		M29-Unit 3	M29-Unit 3	M29-Unit 3	M29-Unit 3	M29-Unit 3	M29-Unit 3	M29-Unit 3	M29-Unit 3
	<i>Lab No.:</i>		Outlet R1	Outlet R1	Outlet R1	Outlet R1	Outlet R1	Outlet R1	Outlet R2	Outlet R3
	<i>Date Sampled:</i>		056741 01	056741 01	056741 01	056741 01	056741 01	056741 01	056742 01	056743 01
			13-Sep-2001	13-Sep-2001	13-Sep-2001	13-Sep-2001	13-Sep-2001	13-Sep-2001	13-Sep-2001	13-Sep-2001
	MDL	Units		Duplicate	M. Spike	MS % Rec.	MS Dup	MSD % Rec.		
Sample Volume - Container 5A	0	ml	100	-	-	-	-	-	100	110
Sample Volume - Container 4		"	830	-	-	-	-	-	860	860
Mercury - 1B	0.030	ug	<	-	-	-	-	-	0.13	0.17
Mercury - 2B	0.010	"	14	-	-	-	-	-	15	12
Mercury - 3A	0.010	"	<	-	-	-	-	-	<	<0.011
Mercury - 3B	0.050	"	<0.10*	<0.10*	1.0	100	1.1	100	<	<
Mercury - 3C	0.050	"	0.61	-	-	-	-	-	0.74	0.62

00007

05/10/2001

PASC - Summary of Analysis Pre. Dates

Page MS-4 of 5

Batch Code: 10041R1B
Mercury - 1B
056738 01
056739 01
056740 01
056741 01
056742 01
056743 01
Date Analysed: 01/10/04
Date Prepared: 01/10/04

Batch Code: 09263M2B
Mercury - 2B
056738 01
056739 01
056740 01
056741 01
056742 01
056743 01
Date Analysed: 01/09/27
Date Prepared: 01/09/26

05/10/2001

PASC - Summary of Analysis Pre. Dates

Page MS-5 of 5

Batch Code: 10037R3A

Mercury - 3A

056738 01

056739 01

056740 01

056741 01

056742 01

056743 01

Date Analysed: 01/10/03

Date Prepared: 01/10/03

Batch Code:

Mercury - 3B

09276M3B 10051R3B 09277M3B

056738 01 056741 01 056743 01

056739 01

056740 01

056742 01

Date Analysed: 01/09/28 01/10/05 01/09/28

Date Prepared: 01/09/27 01/10/05 01/09/27

Batch Code:

Mercury - 3C

10035R3C

056738 01

056739 01

056740 01

056741 01

056742 01

056743 01

Date Analysed: 01/10/04

Date Prepared: 01/10/03

3. RAW DATA

A. CVAA

Inorganic Analysis Action/Comment Form

* Please note any action or anomalies impacting this set of samples

Client ID: CLEANAIR

*** For additional comments, please
staple additional pages(s)**

PSC sample ID range: 56738-56743

Analysis: MERCURY

Submission #: 110713

Actions:

Impacted sample Ids

Additional digestion needed #: **NO**

Re-analysis needed (alternate technique) #: NO

Re-analysis needed (contract technique) #: NO

Bottle discrepancies #: NO

Interferences observed	#:	NO

Dilutions needed #: **NO**

Internal calculations modified #: NO

Field/Trip blanks missing #: NO

Other	#:	N/A

Explanation/comments:

Analyst: MGAS

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
056729	CLEANAIR	MB R456	Mercury -	PV	-0.030	-99999.0	0.294	98.	0.281	94.	01/10/04	1R1B	01/10/04	MG21	23.	13.	
056730	CLEANAIR	M29-Reagent Blank	Mercury -	PV	-0.030						01/10/04	1R1B	01/10/04	MG21	23.	13.	
056731	CLEANAIR	M29-Field Blank	Mercury -	PV	-0.030						01/10/04	1R1B	01/10/04	MG21	23.	13.	
056732	CLEANAIR	M29-Unit 2 Outlet R1	Mercury -	PV	0.793	0.754	1.095	107.	1.089	105.	01/10/04	1R1B	01/10/04	MG21	23.	13.	
056733	CLEANAIR	M29-Unit 2 Outlet R2	Mercury -	PV	1.216						01/10/04	1R1B	01/10/04	MG21	23.	13.	
056734	CLEANAIR	M29-Unit 2 Outlet R3	Mercury -	PV	0.539						01/10/04	1R1B	01/10/04	MG21	23.	13.	
056738	CLEANAIR	MB R456	Mercury -	PV	-0.030	-99999.0	0.294	98.	0.281	94.	01/10/04	1R1B	01/10/04	MG21	21.	13.	
056739	CLEANAIR	M29-Reagent Blank	Mercury -	PV	-0.030						01/10/04	1R1B	01/10/04	MG21	21.	13.	
056740	CLEANAIR	M29-Field Blank	Mercury -	PV	-0.030						01/10/04	1R1B	01/10/04	MG21	21.	13.	
056741	CLEANAIR	M29-Unit 3 Outlet R1	Mercury -	PV	-0.030						01/10/04	1R1B	01/10/04	MG21	21.	13.	
056742	CLEANAIR	M29-Unit 3 Outlet R2	Mercury -	PV	0.126						01/10/04	1R1B	01/10/04	MG21	21.	13.	
056743	CLEANAIR	M29-Unit 3 Outlet R3	Mercury -	PV	0.167						01/10/04	1R1B	01/10/04	MG21	21.	13.	
BL1004	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.294	98.	0.281	94.	01/10/04	1R1B	01/10/04	MG21	\$\$\$	\$\$\$	

13 Tests for 29HG-1B with an MDL of 0.030 ug

Validated By CMAControl Chart Updated N/AIO Requirements met N/A

00013

00014

29HG-1B

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL1004-1R1B	0.000	1	300	0.000	0.03	0.03		300
BL1004S	0.979	1	300	0.294	0.03	0.03	98	300
BL1004DS	0.936	1	300	0.281	0.03	0.03	94	300
56732	2.642	1	300	0.793	0.03	0.03		300
56732D	2.514	1	300	0.754	0.03	0.03		300
56732S	3.649	1	300	1.095	0.03	0.03	107	300
56732DS	3.629	1	300	1.089	0.03	0.03	105	300
56729	0.012	1	300	0.004	0.03	0.03		300
56730	0.012	1	300	0.004	0.03	0.03		300
56731	0.014	1	300	0.004	0.03	0.03		300
56733	4.052	1	300	1.216	0.03	0.03		300
56734	1.798	1	300	0.539	0.03	0.03		300
56738	0.013	1	300	0.004	0.03	0.03		300
56739	0.008	1	300	0.002	0.03	0.03		300
56740	0.007	1	300	0.002	0.03	0.03		300
56741	0.044	1	300	0.013	0.03	0.03		300
56742	0.419	1	300	0.126	0.03	0.03		300
56743	0.556	1	300	0.167	0.03	0.03		300

0.0015

Sample Information File C:\FIMS\AAUSER\SAMPINFO\011004F2.SIF

Description : MG21
Batch ID : MGAS
Volume Units :
Weight Units :
Analyst : MGAS
Sample Volume : 0.00

AS Sample ID Loc	Sample Sample Weight Units	User Dilution	Remarks
14 BL1004-1R1B			
15 BL1004S			
16 BL1004DS			
17 56732			
18 56732D			
19 56732S			
20 56732DS			
21 56729			
22 56730			
23 56731			
24 56733			
25 56734			
26 56738			
27 56739			
28 56740			
29 56741			
30 56742			
31 56743			
32 BL1004-2R1B			
33 BL1004S			
34 BL1004DS			
35 59997			
36 59997D			
37 59997S			
38 59997DS			
39 59994			
40 59995			
41 59996			
42 59998			
43 59999			
44 56000			
45 56001			
46 56002			
47 56003			
48 56004			
49 BL1004-3R1B			
50 BL1004S			
51 BL1004DS			
52 56008			
53 56008D			
54 56008S			
55 56008DS			
56 56005			
57 56006			
58 56007			
59 56009			
60 56010			
61 56011			

00016

62 56012
63 56013
64 56014
65 56015
66 56016

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Method Name: EPA 7470
Method Description: EPA 7470
Element: Hg

Date: 10/04/2001
Technique: FI-MHS
Calibration Type:
Hg, Zero Intercept: Linear
Wavelength: 253.7 nm
Sample Info Name: 011004F2.SIF

Results Data Set Name: 011004F2

Element: Hg Seq. No.: 1 AS Loc.: 1 Date: 10/04/2001
Sample ID: Calib Blank

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0001	0.0001	01:44:27	Yes
2			0.0001	0.0001	01:45:00	Yes
3			0.0001	0.0001	01:45:33	Yes
Mean:			0.0001			
SD :			0.0000			
%RSD:			12.8550			

Auto-zero performed.

Element: Hg Seq. No.: 2 AS Loc.: 2 Date: 10/04/2001
Sample ID: STD1

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0279	0.0280	01:46:21	Yes
2			0.0277	0.0279	01:46:54	Yes
3			0.0280	0.0281	01:47:27	Yes
Mean:			0.0279			
SD :			0.0001			
%RSD:			0.4511			

[Hg] Standard number 1 applied. [2.500]
Correlation Coefficient: 1.00000 Slope: 0.01115

Element: Hg Seq. No.: 3 AS Loc.: 3 Date: 10/04/2001
Sample ID: STD2

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0554	0.0555	01:48:17	Yes
2			0.0551	0.0552	01:48:50	Yes
3			0.0547	0.0549	01:49:23	Yes
Mean:			0.0551			
SD :			0.0003			
%RSD:			0.5624			

[Hg] Standard number 2 applied. [5.000]
Correlation Coefficient: 0.99987 Slope: 0.01104

Element: Hg Seq. No.: 4 AS Loc.: 4 Date: 10/04/2001
Sample ID: STD3

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.0838	0.0839	01:50:38	Yes

00018

2 0.0841 0.0842 01:51:11 Yes
 3 0.0835 0.0836 01:51:44 Yes
 Mean: 0.0838
 SD : 0.0003
 %RSD: 0.3763
 [Hg] Standard number 3 applied. [7.500]
 Correlation Coefficient: 0.99985 Slope: 0.01113

=====
 Element: Hg Seq. No.: 5 AS Loc.: 5 Date: 10/04/2001
 Sample ID: STD4

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.1126	0.1127	01:53:00	Yes
2			0.1115	0.1116	01:53:33	Yes
3			0.1124	0.1125	01:54:06	Yes
Mean:			0.1122			
SD :			0.0006			
%RSD:			0.4983			

 [Hg] Standard number 4 applied. [10.00]
 Correlation Coefficient: 0.99989 Slope: 0.01117

=====
 Element: Hg Seq. No.: 6 AS Loc.: 6 Date: 10/04/2001
 Sample ID: STD5

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.1397	0.1398	01:55:22	Yes
2			0.1382	0.1383	01:55:55	Yes
3			0.1385	0.1386	01:56:28	Yes
Mean:			0.1388			
SD :			0.0008			
%RSD:			0.5776			

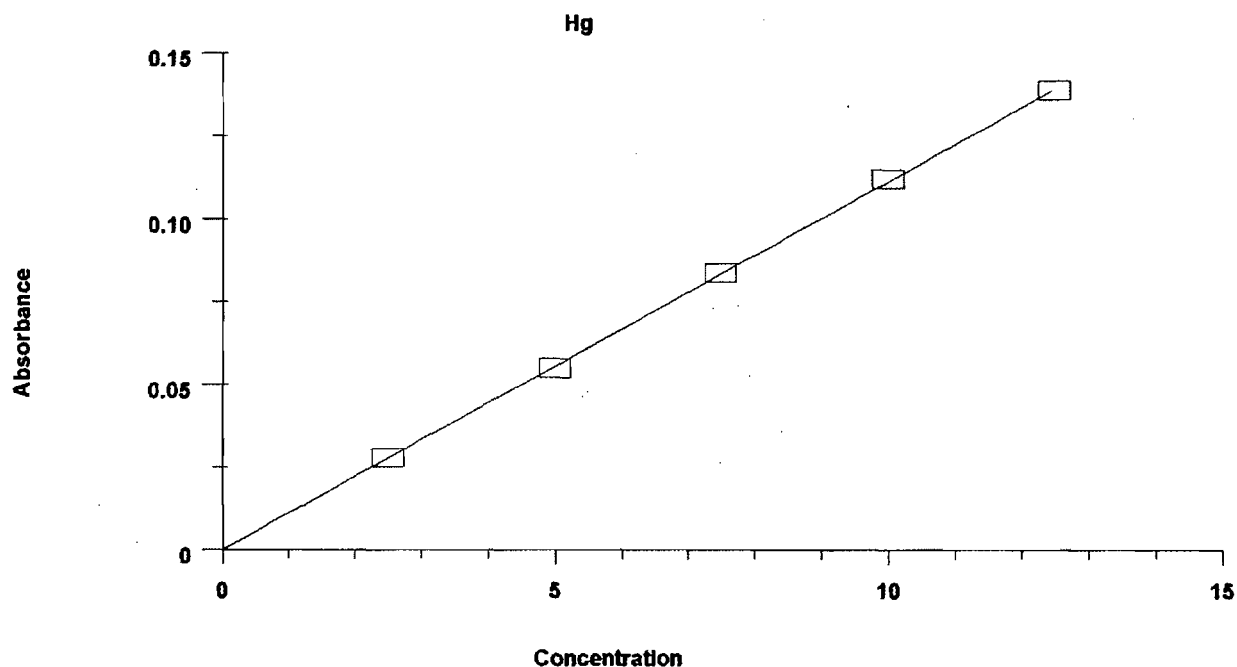
 [Hg] Standard number 5 applied. [12.50]
 Correlation Coefficient: 0.99992 Slope: 0.01114

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	---	---	---
STD1	0.0279	2.500	2.502	0.0001	0.5
STD2	0.0551	5.000	4.941	0.0003	0.6
STD3	0.0838	7.500	7.522	0.0003	0.4
STD4	0.1121	10.000	10.06	0.0006	0.5
STD5	0.1388	12.500	12.46	0.0008	0.6
Correlation Coefficient: 0.99992		Slope:	0.01114	----	

00019

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=====
 Element: Hg Seq. No.: 7 AS Loc.: 9 Date: 10/04/2001
 Sample ID: ICV

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.523	1.523	0.0170	0.0171	01:57:47	Yes
2	1.506	1.506	0.0168	0.0169	01:58:20	Yes
3	1.519	1.519	0.0169	0.0170	01:58:53	Yes
Mean:	1.516	1.516	0.0169			
SD :	0.0087	0.0087	0.0001			
%RSD:	0.6	0.6	0.5763			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 8 AS Loc.: 10 Date: 10/04/2001
 Sample ID: ICB

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.003	-0.003	0.0000	0.0001	01:59:41	Yes
2	-0.007	-0.007	-0.0001	0.0000	02:00:15	Yes
3	-0.010	-0.010	-0.0001	0.0000	02:00:48	Yes
Mean:	-0.007	-0.007	-0.0001			
SD :	0.0035	0.0035	0.0000			
%RSD:	49.0	49.0	49.0149			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 9 AS Loc.: 11 Date: 10/04/2001
 Sample ID: SPEX HG-STD

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored

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1	3.083	3.083	0.0343	0.0345	02:01:37	Yes
2	3.058	3.058	0.0341	0.0342	02:02:10	Yes
3	3.057	3.057	0.0341	0.0342	02:02:43	Yes
Mean:	3.066	3.066	0.0342			
SD :	0.0144	0.0144	0.0002			
%RSD:	0.5	0.5	0.4706			

QC value within specified limits.

=====

Element: Hg Seq. No.: 10 AS Loc.: 12 Date: 10/04/2001
Sample ID: LLC

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.240	0.240	0.0027	0.0028	02:03:32	Yes
2	0.244	0.244	0.0027	0.0028	02:04:05	Yes
3	0.240	0.240	0.0027	0.0028	02:04:38	Yes
Mean:	0.241	0.241	0.0027			
SD :	0.0023	0.0023	0.0000			
%RSD:	0.9	0.9	0.9495			

QC value within specified limits.

=====

Element: Hg Seq. No.: 11 AS Loc.: 13 Date: 10/04/2001
Sample ID: DIL. CHECK

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.001	0.001	0.0000	0.0001	02:05:27	Yes
2	-0.002	-0.002	0.0000	0.0001	02:06:00	Yes
3	0.001	0.001	0.0000	0.0001	02:06:33	Yes
Mean:	0.000	0.000	0.0000			
SD :	0.0017	0.0017	0.0000			
%RSD:	1649	1649	1649.0089			

QC value within specified limits.

=====

Element: Hg Seq. No.: 12 AS Loc.: 14 Date: 10/04/2001
Sample ID: BL1004-1R1B

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	-0.003	-0.003	0.0000	0.0001	02:07:22	Yes
2	0.002	0.002	0.0000	0.0001	02:07:55	Yes
3	-0.003	-0.003	0.0000	0.0001	02:08:28	Yes
Mean:	-0.001	-0.001	0.0000			
SD :	0.0026	0.0026	0.0000			
%RSD:	177.4	177.4	177.3539			

=====

Element: Hg Seq. No.: 13 AS Loc.: 15 Date: 10/04/2001
Sample ID: BL1004S

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.980	0.980	0.0109	0.0110	02:09:17	Yes
2	0.976	0.976	0.0109	0.0110	02:09:50	Yes
3	0.982	0.982	0.0109	0.0111	02:10:23	Yes
Mean:	0.979	0.979	0.0109			
SD :	0.0030	0.0030	0.0000			
%RSD:	0.3	0.3	0.3036			

=====

00021

Element: Hg Seq. No.: 14 AS Loc.: 16 Date: 10/04/2001
 Sample ID: BL1004DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.938	0.938	0.0104	0.0106	02:11:12	Yes
2	0.934	0.934	0.0104	0.0105	02:11:45	Yes
3	0.935	0.935	0.0104	0.0105	02:12:18	Yes
Mean:	0.936	0.936	0.0104			
SD :	0.0019	0.0019	0.0000			
%RSD:	0.2	0.2	0.2059			

Element: Hg Seq. No.: 15 AS Loc.: 17 Date: 10/04/2001
 Sample ID: 56732

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	2.645	2.645	0.0295	0.0296	02:13:07	Yes
2	2.643	2.643	0.0295	0.0296	02:13:40	Yes
3	2.638	2.638	0.0294	0.0295	02:14:14	Yes
Mean:	2.642	2.642	0.0294			
SD :	0.0041	0.0041	0.0000			
%RSD:	0.2	0.2	0.1543			

Element: Hg Seq. No.: 16 AS Loc.: 18 Date: 10/04/2001
 Sample ID: 56732D

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	2.524	2.524	0.0281	0.0282	02:15:02	Yes
2	2.513	2.513	0.0280	0.0281	02:15:35	Yes
3	2.506	2.506	0.0279	0.0280	02:16:08	Yes
Mean:	2.514	2.514	0.0280			
SD :	0.0092	0.0092	0.0001			
%RSD:	0.4	0.4	0.3671			

Element: Hg Seq. No.: 17 AS Loc.: 19 Date: 10/04/2001
 Sample ID: 56732S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	3.651	3.651	0.0407	0.0408	02:16:56	Yes
2	3.669	3.669	0.0409	0.0410	02:17:29	Yes
3	3.627	3.627	0.0404	0.0405	02:18:02	Yes
Mean:	3.649	3.649	0.0407			
SD :	0.0210	0.0210	0.0002			
%RSD:	0.6	0.6	0.5751			

Element: Hg Seq. No.: 18 AS Loc.: 20 Date: 10/04/2001
 Sample ID: 56732DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	3.626	3.626	0.0404	0.0405	02:18:51	Yes
2	3.621	3.621	0.0403	0.0405	02:19:24	Yes
3	3.638	3.638	0.0405	0.0407	02:19:57	Yes
Mean:	3.629	3.629	0.0404			
SD :	0.0088	0.0088	0.0001			
%RSD:	0.2	0.2	0.2435			

Element: Hg Seq. No.: 19 AS Loc.: 21 Date: 10/04/2001
 Sample ID: 56729

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.014	0.014	0.0002	0.0003	02:20:46	Yes
2	0.013	0.013	0.0001	0.0003	02:21:19	Yes
3	0.010	0.010	0.0001	0.0002	02:21:52	Yes
Mean:	0.012	0.012	0.0001			
SD :	0.0022	0.0022	0.0000			
%RSD:	17.6	17.6	17.6227			

Element: Hg Seq. No.: 20 AS Loc.: 22 Date: 10/04/2001
 Sample ID: 56730

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.010	0.010	0.0001	0.0002	02:22:40	Yes
2	0.004	0.004	0.0000	0.0002	02:23:14	Yes
3	0.012	0.012	0.0001	0.0002	02:23:47	Yes
Mean:	0.009	0.009	0.0001			
SD :	0.0039	0.0039	0.0000			
%RSD:	44.9	44.9	44.8732			

Element: Hg Seq. No.: 21 AS Loc.: 23 Date: 10/04/2001
 Sample ID: 56731

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.014	0.014	0.0002	0.0003	02:24:36	Yes
2	0.019	0.019	0.0002	0.0003	02:25:09	Yes
3	0.009	0.009	0.0001	0.0002	02:25:42	Yes
Mean:	0.014	0.014	0.0002			
SD :	0.0050	0.0050	0.0001			
%RSD:	35.8	35.8	35.7923			

Element: Hg Seq. No.: 22 AS Loc.: 7 Date: 10/04/2001
 Sample ID: CCV

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.005	1.005	0.0112	0.0113	02:26:31	Yes
2	1.004	1.004	0.0112	0.0113	02:27:04	Yes
3	1.006	1.006	0.0112	0.0113	02:27:37	Yes
Mean:	1.005	1.005	0.0112			
SD :	0.0011	0.0011	0.0000			
%RSD:	0.1	0.1	0.1049			

QC value within specified limits.

Element: Hg Seq. No.: 23 AS Loc.: 8 Date: 10/04/2001
 Sample ID: CCB

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.008	0.008	0.0001	0.0002	02:28:26	Yes
2	0.003	0.003	0.0000	0.0002	02:28:59	Yes
3	0.004	0.004	0.0000	0.0002	02:29:32	Yes
Mean:	0.005	0.005	0.0001			
SD :	0.0025	0.0025	0.0000			
%RSD:	51.6	51.6	51.5966			

00023

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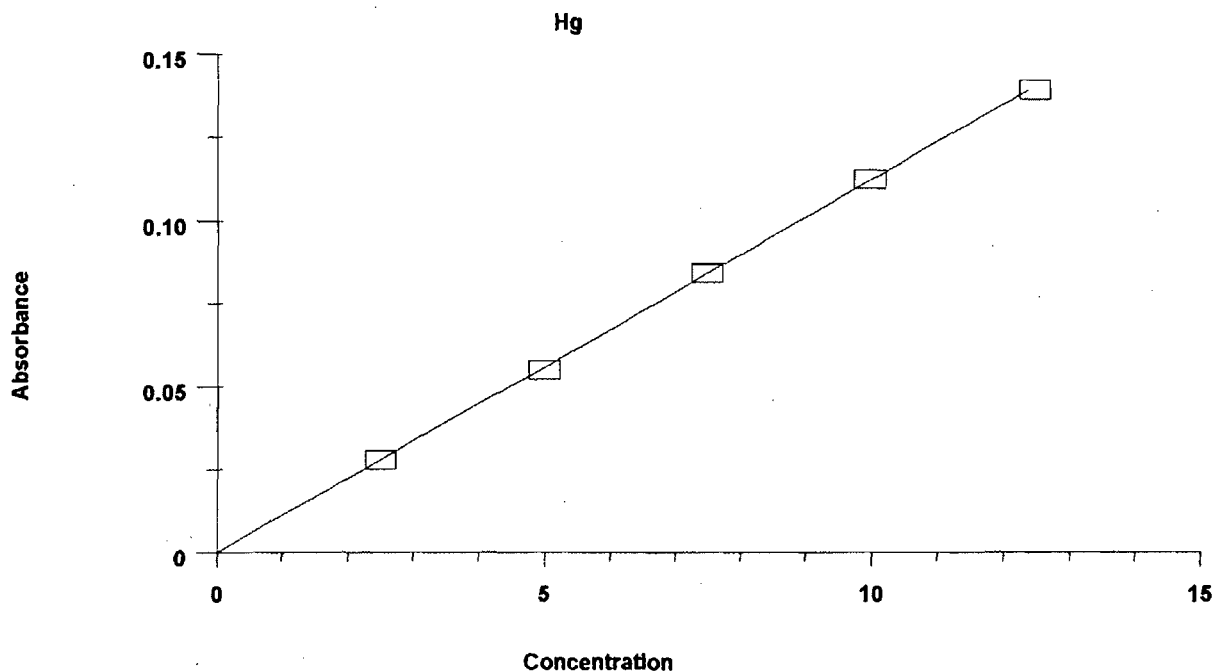
QC value within specified limits.

Element: Hg Seq. No.: 24 AS Loc.: 4 Date: 10/04/2001
 Sample ID: Reslope

Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Height	Time	Peak Stored
1			0.0832	0.0833	02:30:22	Yes
2			0.0842	0.0843	02:30:55	Yes
3			0.0845	0.0846	02:31:28	Yes
Mean:			0.0840			
SD :			0.0007			
%RSD:			0.8113			
[Hg] Reslope standard applied. [7.500]						
Correlation Coefficient: 0.99992				Slope: 0.01109		

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.010	0.0000	12.9
STD1	0.0279	2.500	2.490	0.0001	0.5
STD2	0.0551	5.000	4.918	0.0003	0.6
STD3	0.0838	7.500	7.487	0.0003	0.4
STD4	0.1121	10.000	10.02	0.0006	0.5
STD5	0.1388	12.500	12.40	0.0008	0.6
Reslope	0.0840	7.500	7.500	0.0007	0.8
Correlation Coefficient: 0.99992		Slope: 0.01109		----	



Element: Hg Seq. No.: 25 AS Loc.: 24 Date: 10/04/2001
 Sample ID: 56733

00024

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Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	4.043	4.043	0.0453	0.0454	02:32:46	Yes
2	4.062	4.062	0.0455	0.0456	02:33:19	Yes
3	4.049	4.049	0.0453	0.0454	02:33:52	Yes
Mean:	4.052	4.052	0.0454			
SD :	0.0093	0.0093	0.0001			
%RSD:	0.2	0.2	0.2290			

Element: Hg Seq. No.: 26 AS Loc.: 25 Date: 10/04/2001
Sample ID: 56734

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.809	1.809	0.0202	0.0204	02:35:04	Yes
2	1.791	1.791	0.0200	0.0202	02:35:37	Yes
3	1.796	1.796	0.0201	0.0202	02:36:09	Yes
Mean:	1.798	1.798	0.0201			
SD :	0.0093	0.0093	0.0001			
%RSD:	0.5	0.5	0.5170			

Element: Hg Seq. No.: 27 AS Loc.: 26 Date: 10/04/2001
Sample ID: 56738

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.014	0.014	0.0002	0.0003	02:36:58	Yes
2	0.013	0.013	0.0001	0.0003	02:37:31	Yes
3	0.013	0.013	0.0001	0.0003	02:38:04	Yes
Mean:	0.013	0.013	0.0001			
SD :	0.0006	0.0006	0.0000			
%RSD:	4.6	4.6	4.5962			

Element: Hg Seq. No.: 28 AS Loc.: 27 Date: 10/04/2001
Sample ID: 56739

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.009	0.009	0.0001	0.0002	02:38:53	Yes
2	0.009	0.009	0.0001	0.0002	02:39:26	Yes
3	0.007	0.007	0.0001	0.0002	02:39:59	Yes
Mean:	0.008	0.008	0.0001			
SD :	0.0010	0.0010	0.0000			
%RSD:	12.1	12.1	12.0696			

Element: Hg Seq. No.: 29 AS Loc.: 28 Date: 10/04/2001
Sample ID: 56740

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.004	0.004	0.0000	0.0002	02:40:48	Yes
2	0.011	0.011	0.0001	0.0002	02:41:21	Yes
3	0.007	0.007	0.0001	0.0002	02:41:54	Yes
Mean:	0.007	0.007	0.0001			
SD :	0.0035	0.0035	0.0000			
%RSD:	48.4	48.4	48.4038			

00025

Element: Hg Seq. No.: 30 AS Loc.: 29 Date: 10/04/2001
 Sample ID: 56741

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.045	0.045	0.0005	0.0006	02:42:43	Yes
2	0.044	0.044	0.0005	0.0006	02:43:16	Yes
3	0.042	0.042	0.0005	0.0006	02:43:49	Yes
Mean:	0.044	0.044	0.0005			
SD :	0.0014	0.0014	0.0000			
%RSD:	3.2	3.2	3.1772			

Element: Hg Seq. No.: 31 AS Loc.: 30 Date: 10/04/2001
 Sample ID: 56742

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.414	0.414	0.0046	0.0048	02:44:37	Yes
2	0.421	0.421	0.0047	0.0048	02:45:10	Yes
3	0.420	0.420	0.0047	0.0048	02:45:43	Yes
Mean:	0.419	0.419	0.0047			
SD :	0.0038	0.0038	0.0000			
%RSD:	0.9	0.9	0.9074			

Element: Hg Seq. No.: 32 AS Loc.: 31 Date: 10/04/2001
 Sample ID: 56743

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.556	0.556	0.0062	0.0063	02:46:32	Yes
2	0.561	0.561	0.0063	0.0064	02:47:05	Yes
3	0.551	0.551	0.0062	0.0063	02:47:39	Yes
Mean:	0.556	0.556	0.0062			
SD :	0.0049	0.0049	0.0001			
%RSD:	0.9	0.9	0.8788			

Element: Hg Seq. No.: 33 AS Loc.: 32 Date: 10/04/2001
 Sample ID: BL1004-2R1B

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.000	0.000	0.0000	0.0001	02:48:27	Yes
2	0.000	0.000	0.0000	0.0001	02:49:01	Yes
3	0.008	0.008	0.0001	0.0002	02:49:34	Yes
Mean:	0.002	0.002	0.0000			
SD :	0.0044	0.0044	0.0000			
%RSD:	178.6	178.6	178.5971			

Element: Hg Seq. No.: 34 AS Loc.: 33 Date: 10/04/2001
 Sample ID: BL1004S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.962	0.962	0.0108	0.0109	02:50:23	Yes
2	0.966	0.966	0.0108	0.0109	02:50:56	Yes
3	0.964	0.964	0.0108	0.0109	02:51:29	Yes
Mean:	0.964	0.964	0.0108			
SD :	0.0017	0.0017	0.0000			
%RSD:	0.2	0.2	0.1800			

00026

Element: Hg Seq. No.: 35 AS Loc.: 7 Date: 10/04/2001
 Sample ID: CCV

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.979	0.979	0.0110	0.0111	02:52:19	Yes
2	0.983	0.983	0.0110	0.0111	02:52:52	Yes
3	0.991	0.991	0.0111	0.0112	02:53:25	Yes
Mean:	0.984	0.984	0.0110			
SD :	0.0063	0.0063	0.0001			
%RSD:	0.6	0.6	0.6381			

QC value within specified limits.

Element: Hg Seq. No.: 36 AS Loc.: 8 Date: 10/04/2001
 Sample ID: CCB

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.000	0.000	0.0000	0.0001	02:54:14	Yes
2	0.000	0.000	0.0000	0.0001	02:54:47	Yes
3	0.002	0.002	0.0000	0.0001	02:55:20	Yes
Mean:	0.001	0.001	0.0000			
SD :	0.0009	0.0009	0.0000			
%RSD:	157.6	157.6	157.5986			

QC value within specified limits.

Element: Hg Seq. No.: 37 AS Loc.: 4 Date: 10/04/2001
 Sample ID: Reslope

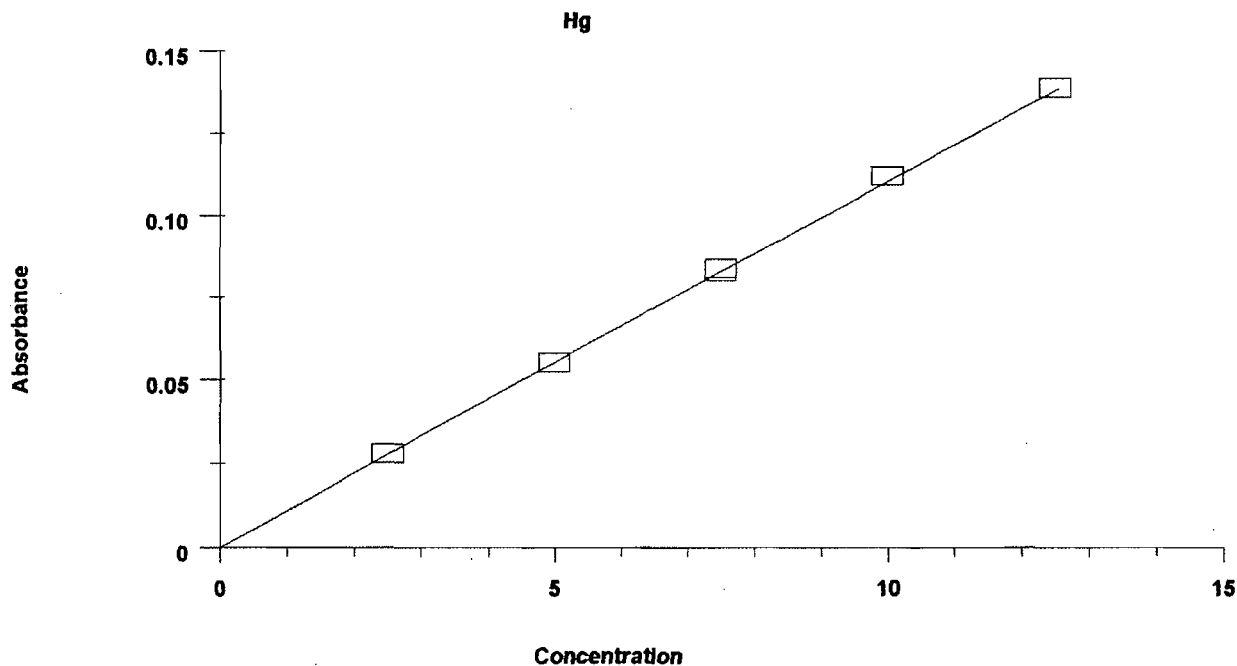
Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.0828	0.0829	02:56:10	Yes
2			0.0831	0.0832	02:56:43	Yes
3			0.0827	0.0828	02:57:16	Yes
Mean:			0.0829			
SD :			0.0002			
%RSD:			0.2805			

[Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99992 Slope: 0.01124

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.010	0.0000	12.9
STD1	0.0279	2.500	2.523	0.0001	0.5
STD2	0.0551	5.000	4.983	0.0003	0.6
STD3	0.0838	7.500	7.585	0.0003	0.4
STD4	0.1121	10.000	10.15	0.0006	0.5
STD5	0.1388	12.500	12.56	0.0008	0.6
Reslope	0.0829	7.500	7.500	0.0002	0.3
Correlation Coefficient: 0.99992		Slope:	0.01124	----	

00027



Element: Hg Seq. No.: 38 AS Loc.: 34 Date: 10/04/2001
Sample ID: BL1004DS

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.978	0.978	0.0108	0.0109	02:58:36	Yes
2	0.980	0.980	0.0108	0.0109	02:59:09	Yes
3	0.988	0.988	0.0109	0.0110	02:59:43	Yes
Mean:	0.982	0.982	0.0108			
SD :	0.0056	0.0056	0.0001			
%RSD:	0.6	0.6	0.5672			

Element: Hg Seq. No.: 39 AS Loc.: 35 Date: 10/04/2001
Sample ID: 59997

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.033	0.033	0.0004	0.0005	03:00:32	Yes
2	0.026	0.026	0.0003	0.0004	03:01:05	Yes
3	0.015	0.015	0.0002	0.0003	03:01:38	Yes
Mean:	0.025	0.025	0.0003			
SD :	0.0086	0.0086	0.0001			
%RSD:	35.0	35.0	34.9589			

Element: Hg Seq. No.: 40 AS Loc.: 36 Date: 10/04/2001
Sample ID: 59997D

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.009	0.009	0.0001	0.0002	03:02:26	Yes
2	0.012	0.012	0.0001	0.0002	03:02:59	Yes

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG, DGHGLEACH, DG29*

Calibration Solutions:

#	I.D.	**Conc.	Spike	***Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	1.67	500 ul of 0.1 ppm working cal standard	2.5
4	Standard 3	3.33	1000 ul of 0.1 ppm working cal standard	5.0
5	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
6	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
7	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
8	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
9	Standard 5	6.67	2000 ul of 0.1 ppm working cal standard	10.0
10	Standard 6	8.33	2500 ul of 0.1 ppm working cal standard	12.5

Check List

- ☒ Digest Code/labels
- ☒ Samples poured out
- ☒ Acids added
- ☒ Reagents added
- ☒ Samples spiked
- ☒ Bath at 95 degrees C
- ☒ Samples digested
- ☒ Hydroxylamine HCl added
- ☒ Samples shaken and bulked
- ☒ Rack order checked

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
11	ICV (Int. Calib. Verif.)	IRIB	20 ml	30 ml	1 X	1.5 ppb = 600 ul of 0.05ppm Working Reference QC Std.
12	LLC (low level check)	"	"	"	"	0.25ppb = 50ul of 0.1 ppm Working Cal Std.
13	External Ref.	"	"	"	"	3.0ppb = 600ul of 0.1ppm Intermediate Spex Reference Std.
14	Organic Ref.	"	"	"	"	2.0ppb = 600ul of Intermediate Organic Reference Std.
15	BL 1004	"	"	"	"	(Processed Blank)
16	BL S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std. - - - -
17	BL DS	"	"	"	"	(Duplicate Blank Spike)
18	56732	"	"	"	"	
19	D	"	"	"	"	(Duplicate sample)
20	S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
21	DS	"	"	"	"	(Duplicate Spiked sample)
22	56729	"	"	"	"	
23	30	"	"	"	"	
24	31	"	"	"	"	
25	33	"	"	"	"	
26	34	"	"	"	"	
27	38	"	"	"	"	
28	39	"	"	"	"	
29	40	"	"	"	"	
30	41	"	"	"	"	
31	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
32	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
33	BL 1004	2RIB	20 ml	30 ml	"	(Processed Blank)
34	BL S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
35	BL DS	"	"	"	"	(Duplicate Blank Spike)
36	55997	"	"	"	"	
37	D	"	"	"	"	(Duplicate sample)
38	S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
39	DS	"	"	"	"	(Duplicate Spiked sample)
40	55995	"	"	"	"	
41	96	"	"	"	"	
42	98	"	"	"	"	
43	99	"	"	"	"	
44	56000	"	"	"	"	
45	01	"	"	"	"	
46	02	"	"	"	"	
47	03	"	"	"	"	
48	55994	"	"	"	"	
49	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
50	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Comments:** concentration based on 30 ml final volume, *** concentration based on 20 ml final volume

Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C

DG29HGI, DG29HGF, DG101AA1, DG101AA2

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
51	BL 1004	3R1B	"	"	"	(Processed Blank)
52	BL ↓ S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
53	BL ↓ DS	"	"	"	"	(Duplicate Blank Spike)
1 54	56008	"	"	"	"	
1 55	↓ D	"	"	"	"	(Duplicate sample)
1 56	↓ S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
1 57	↓ DS	"	"	"	"	(Duplicate Spiked sample)
2 58	56005	"	"	"	"	
3 59	06	"	"	"	"	
4 60	07	"	"	"	"	
5 61	09	"	"	"	"	
6 62	10	"	"	"	"	
7 63	11	"	"	"	"	
8 64	12	"	"	"	"	
9 65	13	"	"	"	"	
10 66	14	"	"	"	"	
67	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
68	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Procedure/Methodology:

Note: Calibration Standards, ICVs, CCVs, CCBs and LCS are prepared the same as the samples but are not digested.

- 1 Prepare 25 ppm Intermediate Calibration Standard (if required) by pipetting 625 ul. of 1000 ppm Stock to 25 ml final volume of 2% HNO₃
- 2 Prepare 0.1 ppm Working calibration standard daily by pipetting 400 ul. of 25 ppm Intermediate to 100 ml final volume of 2% HNO₃
- 3 Prepare a 0.05 ppm Working Reference QC Standard daily by pipetting 50 ul of Stock Reference Standard to 100 ml final vol of 2% HNO₃
- 4 Using the LIMS Screen "SCNDIG" enter the required samples into LIMS
- 5 Using the labeling program, "DIGLBL", retrieve the "SCNDIG" list and create labels for the required samples.
- 6 Label the falcon tubes appropriately
- 7 Include one External Reference Material sample per run
- 8 Include one Organic Mercury Control Standard per run
- 9 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
- 10 Spike the tubes as indicated in the comment sector of the digestion sheet
- 11 Add 0.5 ml. of conc. Nitric Acid (HNO₃), and 1 ml. of conc. Sulphuric acid, (H₂SO₄), to each tube
- 12 Add 3 ml. Of 6% KMnO₄, purple colour must remain for the duration of digest.
- 13 Add 1.5 ml. of 5% potassium persulphate, (K₂S₂O₈), to each tube
- 14 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
- 15 Remove tubes and allow to cool to room temperature
- 16 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
- 17 Recap tubes and shake until KMnO₄ is destroyed and sample becomes colourless
Dilute the sample to a final volume of 30 ml.

Supplier/Lot Information	Supplier	Lot	Expiry Date
Stock Calibration Standard	AccuTrace	A9125032	Oct 02
Intermediate Cal Standard	Internal	A9125032	01/10/14
Stock Reference Standard	High Purity	33536	Jan 02
External Reference Material	SPEX	CL2-38HG	Apr 15/02
Organic Mercury Control Standard	Aldrich	N/A	N/A
6% potassium permanganate	Internal	18116C1	01/11/28
5% potassium persulphate	Internal	22829	01/12/01
20% hydroxylamine hydrochloride	Internal	00801C0	01/14/27
HNO ₃	Anachemia	1101040	01/12/03
H ₂ SO ₄	Anachemia	3100091	01/11/20
Bath Temps: 195 ± 2°C	Time ON: 9:00	Time OFF: 11:00	
Prepared By: IR	Date: Oct 4/01	Checked by: IR	

01/09/28 12:28:11

Printed by MGAS

LDCA

DATA TO BE VALIDATED (METVAL')

Analyzed by MGAS

Page 1 of 1

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's	Comments
056729	CLEANAIR	MB R456	Mercury -	PV	-0.010	-99999.0	0.103	102.	0.101	100.	01/09/26	3M2B	01/09/27	MG02	15.	5.		
056730	CLEANAIR	M29-Reagent Blank	Mercury -	PV	-0.290						01/09/26	3M2B	01/09/27	MG02	15.	5.	*DDL*	
056731	CLEANAIR	M29-Field Blank	Mercury -	PV	-0.280						01/09/26	3M2B	01/09/27	MG02	15.	5.	*DDL*	
056732	CLEANAIR	M29-Unit 2 Outlet R1	Mercury -	PV	18.850	19.102	26.676	107.	26.654	107.	01/09/26	3M2B	01/09/27	MG02	15.	5.		
056733	CLEANAIR	M29-Unit 2 Outlet R2	Mercury -	PV	19.755						01/09/26	3M2B	01/09/27	MG02	15.	5.		
056734	CLEANAIR	M29-Unit 2 Outlet R3	Mercury -	PV	22.207						01/09/26	3M2B	01/09/27	MG02	15.	5.		
056738	CLEANAIR	MB R456	Mercury -	PV	-0.010	-99999.0	0.103	102.	0.101	100.	01/09/26	3M2B	01/09/27	MG02	13.	5.		
056739	CLEANAIR	M29-Reagent Blank	Mercury -	PV	-0.300						01/09/26	3M2B	01/09/27	MG02	13.	5.		
056740	CLEANAIR	M29-Field Blank	Mercury -	PV	-0.310						01/09/26	3M2B	01/09/27	MG02	13.	5.		
056741	CLEANAIR	M29-Unit 3 Outlet R1	Mercury -	PV	14.182						01/09/26	3M2B	01/09/27	MG02	13.	5.		
056742	CLEANAIR	M29-Unit 3 Outlet R2	Mercury -	PV	15.153						01/09/26	3M2B	01/09/27	MG02	13.	5.		
056743	CLEANAIR	M29-Unit 3 Outlet R3	Mercury -	PV	12.453						01/09/26	3M2B	01/09/27	MG02	13.	5.		
BL0926	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.103	102.	0.101	100.	01/09/26	3M2B	01/09/27	MG02	\$\$\$	\$\$\$		

13 Tests for 29HG-2B with an MDL of 0.010 ug

Validated By UMBControl Chart Updated N/AIO Requirements met N/A

00030

29HG-2B

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL0926-3M2B	0.006	1	100	0.001	0.01	0.01		100
BL0926S	1.025	1	100	0.103	0.01	0.01	102	100
BL0926DS	1.010	1	100	0.101	0.01	0.01	100	100
56732	2.618	10	720	18.850	0.01	0.72		100
56732D	2.653	10	720	19.102	0.01	0.72		100
56732S	3.705	10	720	26.676	0.01	0.72	107	100
56732DS	3.702	10	720	26.654	0.01	0.72	107	100
56730	0.013	10	290	0.038	0.01	0.29		100
56731	0.009	10	280	0.025	0.01	0.28		100
56733	2.634	10	750	19.755	0.01	0.75		100
56734	3.001	10	740	22.207	0.01	0.74		100
56739	0.011	10	300	0.033	0.01	0.30		100
56740	0.025	10	310	0.078	0.01	0.31		100
56741	1.719	10	825	14.182	0.01	0.83		100
56742	1.762	10	860	15.153	0.01	0.86		100
56743	1.448	10	860	12.453	0.01	0.86		100

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL0926-6M2B	0.005	1	100	0.001	0.01	0.01		100
BL0926S	1.024	1	100	0.102	0.01	0.01	102	100
BL0926DS	1.020	1	100	0.102	0.01	0.01	102	100
55343	5.846	100	390	227.994	0.01	3.90		100
55343D	5.842	100	390	227.838	0.01	3.90		100
55343S PDS	6.671	100	390	260.169	0.01	3.90	83	100
55343DS PDS	6.714	100	390	261.846	0.01	3.90	87	100
55315	0.048	10	300	0.144	0.01	0.30		100
55316	6.550	20	720	94.320	0.01	1.44		100
55317	4.817	50	710	171.004	0.01	3.55		100
55318	5.905	50	760	224.390	0.01	3.80		100
55344	4.898	100	400	195.920	0.01	4.00		100
55345	4.968	100	400	198.720	0.01	4.00		100
56583	10.340	10	300	31.020	0.01	0.30		100
56584	6.276	10	300	18.828	0.01	0.30		100
56585	0.910	10	570	5.187	0.01	0.57		100

00032

Sample Information File C:\FIMS\AAUSER\SAMPINFO\010927F1.SIF

Description : TRAIN
Batch ID : MG02
Volume Units :
Weight Units :
Analyst : MGAS
Sample Volume : 0.00

AS Sample ID	Sample Sample Weight Units	User Dilution	Remarks
14 BL0926-3M2B			
15 BL0926S			
16 BL0926DS			
17 56732		10.0000	
18 56732D		10.0000	
19 56732S		10.0000	
20 56732DS		10.0000	
21 56730		10.0000	
22 56731		10.0000	
23 56733		10.0000	
24 56734		10.0000	
25 56739		10.0000	
26 56740		10.0000	
27 56741		10.0000	
28 56742		10.0000	
29 56743		10.0000	
30 BL0926-6M2B			
31 BL0926S			
32 BL0926DS			
33 55343		100.0000	
34 55343D		100.0000	
35 55343S PDS		100.0000	
36 55343DS PDS		100.0000	
37 55315		10.0000	
38 55316		20.0000	
39 55317		50.0000	
40 55318		50.0000	
41 55344		100.0000	
42 55345		100.0000	
43 57013-3B			
44 56583-2B		10.0000	
45 56584-2B		10.0000	
46 56585-2B		10.0000	

Method Name: EPA 7470
 Method Description: EPA 7470
 Element: Hg

Date: 09/27/2001
 Technique: FI-MHS
 Calibration Type:
 Hg, Zero Intercept: Linear
 Wavelength: 253.7 nm
 Sample Info Name: 010927F1.SIF

Results Data Set Name: 010927F1

Element: Hg Seq. No.: 72 AS Loc.: 1 Date: 09/27/2001
 Sample ID: Calib Blank

Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Height	Time	Peak Stored
1			0.0002	0.0002	02:55:37	Yes
2			0.0001	0.0001	02:56:10	Yes
3			0.0001	0.0001	02:56:43	Yes
Mean:			0.0002			
SD :			0.0000			
%RSD:			16.3726			

Auto-zero performed.

Element: Hg Seq. No.: 73 AS Loc.: 2 Date: 09/27/2001
 Sample ID: STD1

Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Height	Time	Peak Stored
1			0.0320	0.0322	02:57:32	Yes
2			0.0322	0.0324	02:58:05	Yes
3			0.0321	0.0322	02:58:39	Yes
Mean:			0.0321			
SD :			0.0001			
%RSD:			0.3564			

[Hg] Standard number 1 applied. [2.500]
 Correlation Coefficient: 1.00000 Slope: 0.01284

Element: Hg Seq. No.: 74 AS Loc.: 3 Date: 09/27/2001
 Sample ID: STD2

Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Height	Time	Peak Stored
1			0.0640	0.0642	02:59:28	Yes
2			0.0639	0.0641	03:00:00	Yes
3			0.0636	0.0638	03:00:34	Yes
Mean:			0.0639			
SD :			0.0002			
%RSD:			0.3168			

[Hg] Standard number 2 applied. [5.000]
 Correlation Coefficient: 0.99998 Slope: 0.01279

Element: Hg Seq. No.: 75 AS Loc.: 4 Date: 09/27/2001
 Sample ID: STD3

Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Height	Time	Peak Stored
1			0.0964	0.0966	03:01:48	Yes
2			0.0964	0.0965	03:02:21	Yes
3			0.0964	0.0966	03:02:54	Yes
Mean:			0.0964			

SD : 0.0000

%RSD:

[Hg] Standard number 3 applied. [7.500]

Correlation Coefficient: 0.99997

Slope: 0.01283

=====

Element: Hg Seq. No.: 76 AS Loc.: 5 Date: 09/27/2001

Sample ID: STD4

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.1275	0.1276	03:04:10	Yes
2			0.1275	0.1277	03:04:43	Yes
3			0.1273	0.1274	03:05:16	Yes

Mean: 0.1274

SD : 0.0001

%RSD: 0.1067

[Hg] Standard number 4 applied. [10.00]

Correlation Coefficient: 0.99995

Slope: 0.01278

=====

Element: Hg Seq. No.: 77 AS Loc.: 6 Date: 09/27/2001

Sample ID: STD5

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.1566	0.1568	03:06:31	Yes
2			0.1564	0.1566	03:07:04	Yes
3			0.1565	0.1567	03:07:37	Yes

Mean: 0.1565

SD : 0.0001

%RSD:

[Hg] Standard number 5 applied. [12.50]

Correlation Coefficient: 0.99969

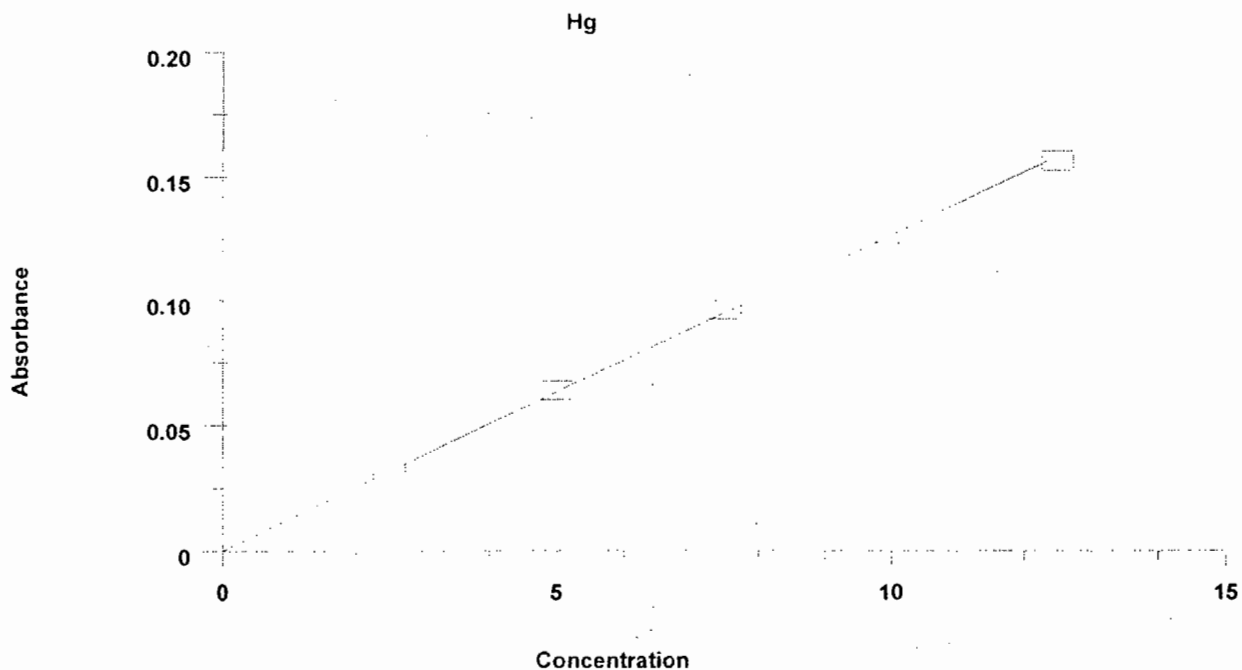
Slope: 0.01266

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0002	---	---	---	---
STD1	0.0321	2.500	2.534	0.0001	0.4
STD2	0.0639	5.000	5.043	0.0002	0.3
STD3	0.0964	7.500	7.611	0.0000	---
STD4	0.1274	10.000	10.06	0.0001	0.1
STD5	0.1565	12.500	12.36	0.0001	---

Correlation Coefficient: 0.99969 Slope: 0.01266 -----

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Element: Hg Seq. No.: 78 AS Loc.: 9 Date: 09/27/2001
Sample ID: ICV

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.453	1.453	0.0184	0.0186	03:08:56	Yes
2	1.452	1.452	0.0184	0.0186	03:09:30	Yes
3	1.451	1.451	0.0184	0.0185	03:10:03	Yes
Mean:	1.452	1.452	0.0184			
SD :	0.0006	0.0006	0.0000			
%RSD:						

QC value within specified limits.

Element: Hg Seq. No.: 79 AS Loc.: 10 Date: 09/27/2001
Sample ID: ICB

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.012	-0.012	-0.0002	0.0000	03:10:52	Yes
2	-0.008	-0.008	-0.0001	0.0001	03:11:25	Yes
3	-0.008	-0.008	-0.0001	0.0001	03:11:58	Yes
Mean:	-0.009	-0.009	-0.0001			
SD :	0.0026	0.0026	0.0000			
%RSD:	27.9	27.9	27.9037			

QC value within specified limits.

Element: Hg Seq. No.: 80 AS Loc.: 11 Date: 09/27/2001
Sample ID: SPEX HG-STD

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	3.151	3.151	0.0399	0.0401	03:12:47	Yes
2	3.136	3.136	0.0397	0.0399	03:13:20	Yes
3	3.149	3.149	0.0399	0.0401	03:13:53	Yes

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Mean: 3.145 3.145 0.0398
 SD : 0.0080 0.0080 0.0001
 %RSD: 0.3 0.3 0.2533
 QC value within specified limits.

=====
 Element: Hg Seq. No.: 81 AS Loc.: 12 Date: 09/27/2001
 Sample ID: LLC

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.245	0.245	0.0031	0.0033	03:14:42	Yes
2	0.247	0.247	0.0031	0.0033	03:15:15	Yes
3	0.244	0.244	0.0031	0.0033	03:15:48	Yes
Mean:	0.245	0.245	0.0031			
SD :	0.0011	0.0011	0.0000			
%RSD:	0.5	0.5	0.4635			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 82 AS Loc.: 13 Date: 09/27/2001
 Sample ID: DIL.CHECK

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.008	0.008	0.0001	0.0003	03:16:37	Yes
2	0.007	0.007	0.0001	0.0003	03:17:10	Yes
3	0.008	0.008	0.0001	0.0003	03:17:43	Yes
Mean:	0.008	0.008	0.0001			
SD :	0.0004	0.0004	0.0000			
%RSD:	4.9	4.9	4.9478			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 83 AS Loc.: 14 Date: 09/27/2001
 Sample ID: BL0926-3M2B

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.006	0.006	0.0001	0.0002	03:18:32	Yes
2	0.005	0.005	0.0001	0.0002	03:19:05	Yes
3	0.008	0.008	0.0001	0.0003	03:19:38	Yes
Mean:	0.006	0.006	0.0001			
SD :	0.0014	0.0014	0.0000			
%RSD:	22.4	22.4	22.3510			

=====
 Element: Hg Seq. No.: 84 AS Loc.: 15 Date: 09/27/2001
 Sample ID: BL0926S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.026	1.026	0.0130	0.0132	03:20:27	Yes
2	1.031	1.031	0.0131	0.0132	03:21:01	Yes
3	1.018	1.018	0.0129	0.0131	03:21:33	Yes
Mean:	1.025	1.025	0.0130			
SD :	0.0067	0.0067	0.0001			
%RSD:	0.7	0.7	0.6518			

=====
 Element: Hg Seq. No.: 85 AS Loc.: 16 Date: 09/27/2001
 Sample ID: BL0926DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.010	1.010	0.0128	0.0130	03:22:21	Yes

2	1.012	1.012	0.0128	0.0130	03:22:54	Yes
3	1.010	1.010	0.0128	0.0130	03:23:27	Yes
Mean:	1.010	1.010	0.0128			
SD :	0.0013	0.0013	0.0000			
%RSD:	0.1	0.1	0.1307			

=====

Element: Hg Seq. No.: 86 AS Loc.: 17 Date: 09/27/2001
Sample ID: 56732

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Height	Time	Peak Stored
1	26.28	2.628	0.0333	0.0334	03:24:16	Yes
2	26.24	2.624	0.0332	0.0334	03:24:49	Yes
3	26.01	2.601	0.0329	0.0331	03:25:22	Yes
Mean:	26.18	2.618	0.0332			
SD :	0.1432	0.0143	0.0002			
%RSD:	0.5	0.5	0.5471			

=====

Element: Hg Seq. No.: 87 AS Loc.: 18 Date: 09/27/2001
Sample ID: 56732D

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Height	Time	Peak Stored
1	26.47	2.647	0.0335	0.0337	03:26:10	Yes
2	26.46	2.646	0.0335	0.0337	03:26:43	Yes
3	26.66	2.666	0.0338	0.0339	03:27:16	Yes
Mean:	26.53	2.653	0.0336			
SD :	0.1127	0.0113	0.0001			
%RSD:	0.4	0.4	0.4248			

=====

Element: Hg Seq. No.: 88 AS Loc.: 19 Date: 09/27/2001
Sample ID: 56732S

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Height	Time	Peak Stored
1	36.90	3.690	0.0467	0.0469	03:28:05	Yes
2	37.14	3.714	0.0470	0.0472	03:28:38	Yes
3	37.12	3.712	0.0470	0.0472	03:29:11	Yes
Mean:	37.05	3.705	0.0469			
SD :	0.1341	0.0134	0.0002			
%RSD:	0.4	0.4	0.3620			

=====

Element: Hg Seq. No.: 89 AS Loc.: 20 Date: 09/27/2001
Sample ID: 56732DS

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Height	Time	Peak Stored
1	36.75	3.675	0.0465	0.0467	03:30:00	Yes
2	37.22	3.722	0.0471	0.0473	03:30:33	Yes
3	37.09	3.709	0.0470	0.0471	03:31:06	Yes
Mean:	37.02	3.702	0.0469			
SD :	0.2459	0.0246	0.0003			
%RSD:	0.7	0.7	0.6643			

=====

Element: Hg Seq. No.: 90 AS Loc.: 21 Date: 09/27/2001
Sample ID: 56730

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Height	Time	Peak Stored
1	0.100	0.012	0.0002	0.0003	03:31:55	Yes
2	0.100	0.013	0.0002	0.0003	03:32:29	Yes

3 0.138 0.014 0.0002 0.0003 03:33:02 Yes
 Mean: 0.131 0.013 0.0002
 SD : 0.0069 0.0007 0.0000
 %RSD: 5.2 5.2 5.2466

=====

Element: Hg Seq. No.: 91 AS Loc.: 22 Date: 09/27/2001
 Sample ID: 56731

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.091	0.009	0.0001	0.0003	03:33:52	Yes
2	0.088	0.009	0.0001	0.0003	03:34:25	Yes
3	0.094	0.009	0.0001	0.0003	03:34:57	Yes
Mean:	0.091	0.009	0.0001			
SD :	0.0031	0.0003	0.0000			
%RSD:	3.4	3.4	3.4172			

=====

Element: Hg Seq. No.: 92 AS Loc.: 23 Date: 09/27/2001
 Sample ID: 56733

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	26.34	2.634	0.0334	0.0335	03:35:46	Yes
2	26.32	2.632	0.0333	0.0335	03:36:19	Yes
3	26.35	2.635	0.0334	0.0335	03:36:52	Yes
Mean:	26.34	2.634	0.0334			
SD :	0.0139	0.0014	0.0000			
%RSD:						

=====

Element: Hg Seq. No.: 93 AS Loc.: 7 Date: 09/27/2001
 Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.986	0.986	0.0125	0.0127	03:37:41	Yes
2	0.978	0.978	0.0124	0.0126	03:38:14	Yes
3	0.988	0.988	0.0125	0.0127	03:38:47	Yes
Mean:	0.984	0.984	0.0125			
SD :	0.0052	0.0052	0.0001			
%RSD:	0.5	0.5	0.5306			

QC value within specified limits.

=====

Element: Hg Seq. No.: 94 AS Loc.: 8 Date: 09/27/2001
 Sample ID: CCB

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.002	0.002	0.0000	0.0002	03:39:36	Yes
2	0.003	0.003	0.0000	0.0002	03:40:09	Yes
3	0.005	0.005	0.0001	0.0002	03:40:42	Yes
Mean:	0.003	0.003	0.0000			
SD :	0.0016	0.0016	0.0000			
%RSD:	52.7	52.7	52.6945			

QC value within specified limits.

=====

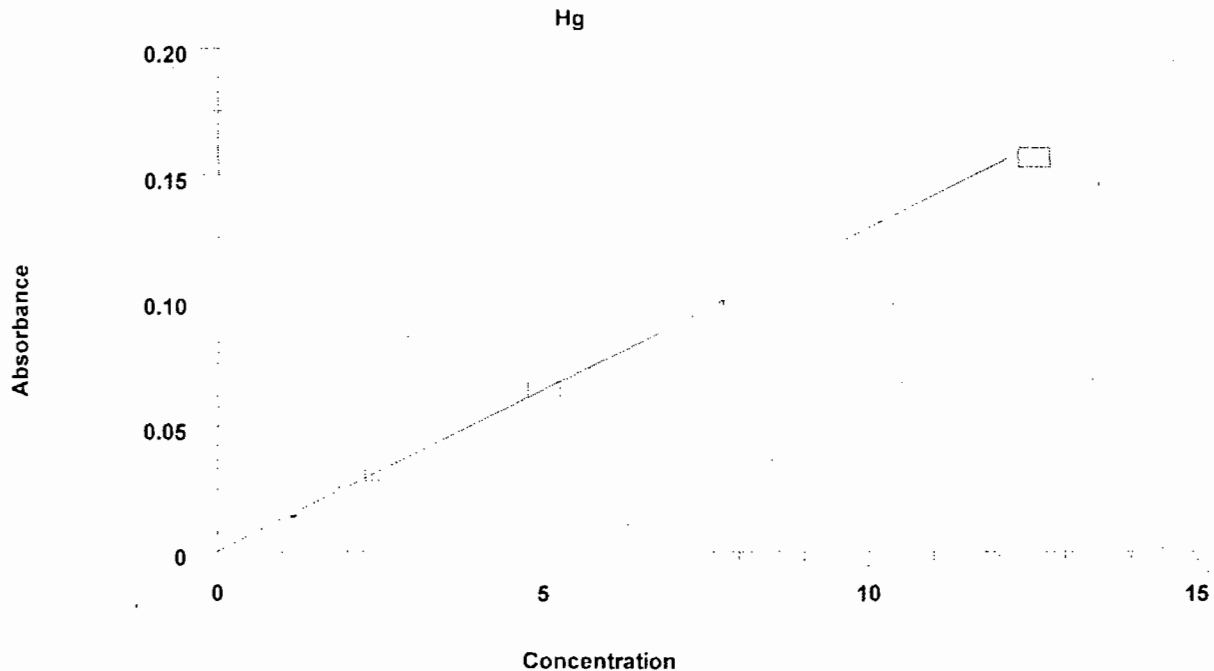
Element: Hg Seq. No.: 95 AS Loc.: 4 Date: 09/27/2001
 Sample ID: Reslope

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0971	0.0972	03:41:32	Yes

2 0.0971 0.0973 03:42:05 Yes
3 0.0967 0.0969 03:42:38 Yes
Mean: 0.0970
SD : 0.0002
%RSD: 0.2156
[Hg] Reslope standard applied. [7.500]
Correlation Coefficient: 0.99969 Slope: 0.01241

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0002	---	0.013	0.0000	16.4
STD1	0.0321	2.500	2.483	0.0001	0.4
STD2	0.0639	5.000	4.940	0.0002	0.3
STD3	0.0964	7.500	7.457	0.0000	----
STD4	0.1274	10.000	9.856	0.0001	0.1
STD5	0.1565	12.500	12.11	0.0001	----
Reslope	0.0970	7.500	7.500	0.0002	0.2
Correlation Coefficient: 0.99969 Slope: 0.01241 ----					



=====
Element: Hg Seq. No.: 96 AS Loc.: 24 Date: 09/27/2001
Sample ID: 56734

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	30.16	3.016	0.0390	0.0392	03:43:57	Yes
2	29.98	2.998	0.0388	0.0389	03:44:29	Yes
3	29.87	2.987	0.0386	0.0388	03:45:02	Yes
Mean:	30.01	3.001	0.0388			
SD :	0.1475	0.0148	0.0002			
%RSD:	0.5	0.5	0.4916			

=====
Element: Hg Seq. No.: 96 AS Loc.: 24 Date: 09/27/2001

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Sample ID: 56739

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.099	0.010	0.0001	0.0003	03:45:51	Yes
2	0.109	0.011	0.0001	0.0003	03:46:25	Yes
3	0.109	0.011	0.0001	0.0003	03:46:58	Yes
Mean:	0.106	0.011	0.0001			
SD :	0.0060	0.0006	0.0000			
%RSD:	5.7	5.7	5.6512			

=====
 Element: Hg Seq. No.: 98 AS Loc.: 26 Date: 09/27/2001
 Sample ID: 56740

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.245	0.025	0.0003	0.0005	03:47:47	Yes
2	0.246	0.025	0.0003	0.0005	03:48:20	Yes
3	0.259	0.026	0.0003	0.0005	03:48:53	Yes
Mean:	0.250	0.025	0.0003			
SD :	0.0079	0.0008	0.0000			
%RSD:	3.2	3.2	3.1517			

=====
 Element: Hg Seq. No.: 99 AS Loc.: 27 Date: 09/27/2001
 Sample ID: 56741

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	17.27	1.727	0.0223	0.0225	03:49:42	Yes
2	17.12	1.712	0.0221	0.0223	03:50:15	Yes
3	17.17	1.717	0.0222	0.0224	03:50:48	Yes
Mean:	17.19	1.719	0.0222			
SD :	0.0792	0.0079	0.0001			
%RSD:	0.5	0.5	0.4606			

=====
 Element: Hg Seq. No.: 100 AS Loc.: 28 Date: 09/27/2001
 Sample ID: 56742

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	17.77	1.777	0.0230	0.0231	03:51:37	Yes
2	17.52	1.752	0.0226	0.0228	03:52:10	Yes
3	17.57	1.757	0.0227	0.0229	03:52:43	Yes
Mean:	17.62	1.762	0.0228			
SD :	0.1331	0.0133	0.0002			
%RSD:	0.8	0.8	0.7551			

=====
 Element: Hg Seq. No.: 101 AS Loc.: 29 Date: 09/27/2001
 Sample ID: 56743

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	14.52	1.452	0.0188	0.0189	03:53:32	Yes
2	14.45	1.445	0.0187	0.0188	03:54:05	Yes
3	14.46	1.446	0.0187	0.0189	03:54:38	Yes
Mean:	14.48	1.448	0.0187			
SD :	0.0383	0.0038	0.0000			
%RSD:	0.3	0.3	0.2645			

=====
 Element: Hg Seq. No.: 102 AS Loc.: 30 Date: 09/27/2001
 Sample ID: 56744

00041

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.005	0.005	0.0001	0.0002	03:55:27	Yes
2	0.004	0.004	0.0001	0.0002	03:55:59	Yes
3	0.006	0.006	0.0001	0.0002	03:56:32	Yes
Mean:	0.005	0.005	0.0001			
SD :	0.0007	0.0007	0.0000			
%RSD:	14.5	14.5	14.5360			

=====
 Element: Hg Seq. No.: 103 AS Loc.: 31 Date: 09/27/2001
 Sample ID: BL0926S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.026	1.026	0.0133	0.0134	03:57:21	Yes
2	1.028	1.028	0.0133	0.0135	03:57:54	Yes
3	1.018	1.018	0.0132	0.0133	03:58:27	Yes
Mean:	1.024	1.024	0.0132			
SD :	0.0055	0.0055	0.0001			
%RSD:	0.5	0.5	0.5399			

=====
 Element: Hg Seq. No.: 104 AS Loc.: 32 Date: 09/27/2001
 Sample ID: BL0926DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.024	1.024	0.0132	0.0134	03:59:16	Yes
2	1.015	1.015	0.0131	0.0133	03:59:49	Yes
3	1.020	1.020	0.0132	0.0134	04:00:22	Yes
Mean:	1.020	1.020	0.0132			
SD :	0.0045	0.0045	0.0001			
%RSD:	0.4	0.4	0.4379			

=====
 Element: Hg Seq. No.: 105 AS Loc.: 33 Date: 09/27/2001
 Sample ID: 55343

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	588.6	5.886	0.0761	0.0763	04:01:11	Yes
2	580.6	5.806	0.0751	0.0752	04:01:44	Yes
3	~~40.19~~ * <i>MA</i>	~~0.402~~ <i>MA</i>	0.0052	0.0054	04:02:17	Yes
Mean:	~~403.15846~~	~~4.0315846~~	0.0521			
SD :	314.3	3.143	0.0406			
%RSD:	78.0	78.0	77.9750			

* INSUFFICIENT SAMPLE
 USED 2 READINGS ONLY

=====
 Element: Hg Seq. No.: 106 AS Loc.: 7 Date: 09/27/2001
 Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.967	0.967	0.0125	0.0127	04:03:33	Yes
2	0.961	0.961	0.0124	0.0126	04:04:06	Yes
3	0.964	0.964	0.0125	0.0126	04:04:39	Yes
Mean:	0.964	0.964	0.0125			
SD :	0.0031	0.0031	0.0000			
%RSD:	0.3	0.3	0.3224			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 107 AS Loc.: 8 Date: 09/27/2001
 Sample ID: CCB

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.000	0.000	0.0000	0.0002	04:05:29	Yes
2	0.001	0.001	0.0000	0.0002	04:06:01	Yes
3	0.005	0.005	0.0001	0.0002	04:06:35	Yes
Mean:	0.002	0.002	0.0000			
SD :	0.0026	0.0026	0.0000			
%RSD:	137.3	137.3	137.3033			

QC value within specified limits.

Element: Hg Seq. No.: 108 AS Loc.: 4 Date: 09/27/2001
Sample ID: Reslope

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1			0.0971	0.0973	04:07:25	Yes
2			0.0970	0.0971	04:07:58	Yes
3			0.0970	0.0972	04:08:31	Yes
Mean:			0.0970			
SD :			0.0001			

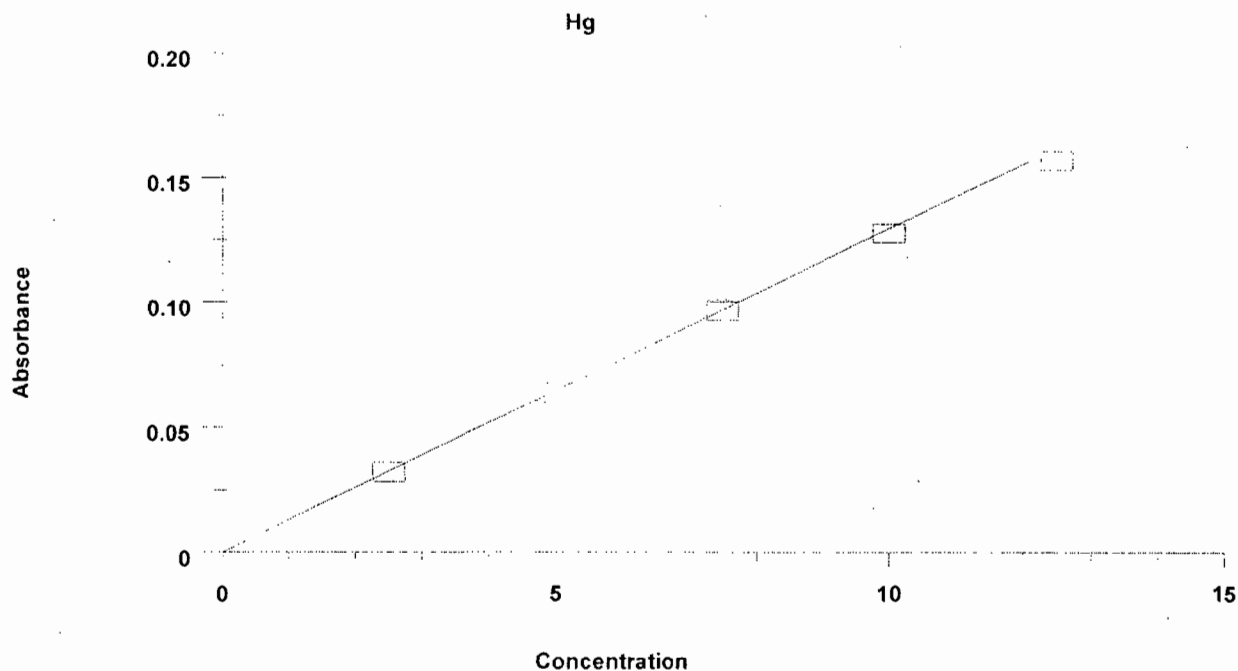
%RSD:
[Hg] Reslope standard applied. [7.500]

Correlation Coefficient: 0.99969

Slope: 0.01240

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0002	---	0.013	0.0000	16.4
STD1	0.0321	2.500	2.481	0.0001	0.4
STD2	0.0639	5.000	4.936	0.0002	0.3
STD3	0.0964	7.500	7.451	0.0000	----
STD4	0.1274	10.000	9.848	0.0001	0.1
STD5	0.1565	12.500	12.10	0.0001	----
Reslope	0.0970	7.500	7.500	0.0001	----
Correlation Coefficient: 0.99969		Slope:	0.01240	----	



Element: Hg Seq. No.: 109 AS Loc.: 34 Date: 09/27/2001
Sample ID: 55343D

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	582.8	5.828	0.0754	0.0756	04:09:51	Yes
2	584.5	5.845	0.0756	0.0758	04:10:24	Yes
3	585.2	5.852	0.0757	0.0759	04:10:57	Yes
Mean:	584.2	5.842	0.0756			
SD :	1.185	0.0118	0.0002			
%RSD:	0.2	0.2	0.2028			

Element: Hg Seq. No.: 110 AS Loc.: 35 Date: 09/27/2001
Sample ID: 55343S PDS

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	668.1	6.681	0.0864	0.0866	04:12:12	Yes
2	664.9	6.649	0.0860	0.0862	04:12:45	Yes
3	668.3	6.683	0.0865	0.0866	04:13:18	Yes
Mean:	667.1	6.671	0.0863			
SD :	1.935	0.0193	0.0003			
%RSD:	0.3	0.3	0.2900			

Element: Hg Seq. No.: 111 AS Loc.: 36 Date: 09/27/2001
Sample ID: 55343DS PDS

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	672.4	6.724	0.0870	0.0872	04:14:34	Yes
2	672.7	6.727	0.0870	0.0872	04:15:07	Yes
3	669.0	6.690	0.0865	0.0867	04:15:40	Yes
Mean:	671.4	6.714	0.0869			
SD :	1.77	0.0208	0.0003			

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG, DGHGLEACH, DG29*

Calibration Solutions:

#	I.D.	**Conc.	Spike	***Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	1.67	500 ul of 0.1 ppm working cal standard	2.5
4	Standard 3	3.33	1000 ul of 0.1 ppm working cal standard	5.0
5	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
6	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
7	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
8	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
9	Standard 5	6.67	2000 ul of 0.1 ppm working cal standard	10.0
10	Standard 6	8.33	2500 ul of 0.1 ppm working cal standard	12.5

Check List

- ☒ Digest Code/labels
- ☒ Samples poured out
- ☒ Acids added
- ☒ Reagents added
- ☒ Samples spiked
- ☒ Bath at 95 degrees C
- ☒ Samples digested
- ☒ Hydroxylamine HCl added
- ☒ Samples shaken and bulked
- ☒ Rack order checked

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
11	ICV (Init. Calib. Verif.)	1M 2B	20 ml	30 ml	1 X	1.5 ppb = 600 ul of 0.05ppm Working Reference QC Std.
12	LLC (low level check)	"	"	"	"	0.25ppb = 50ul of 0.1 ppm Working Cal Std.
13	External Ref.	"	"	"	"	3.0ppb = 600ul of 0.1ppm Intermediate Spex Reference Std.
14	Organic Ref.	"	"	"	"	2.0ppb = 600ul of Intermediate Organic Reference Std.
15	BL 0926	"	"	"	"	(Processed Blank) 057013
16	BL S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std. ---
17	BL DS	"	"	"	"	(Duplicate Blank Spike)
18	057015	"	"	"	"	
19	D	"	"	"	"	(Duplicate sample)
20	S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
21	DS	"	"	"	"	(Duplicate Spiked sample)
22	14	"	"	"	"	
23	16	"	"	"	"	
24	17	"	"	"	"	
25	18	"	"	"	"	
26	19	"	"	"	"	
27	20	"	"	"	"	
28	21	"	"	"	"	
29	22	"	"	"	"	
30	23	"	"	"	"	
31	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
32	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
33	BL 0926	2H 2B	20 ml	30 ml	"	(Processed Blank)
34	BL S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
35	BL DS	"	"	"	"	(Duplicate Blank Spike)
36	057024	"	"	"	"	
37	D	"	"	"	"	(Duplicate sample)
38	S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
39	DS	"	"	"	"	(Duplicate Spiked sample)
40	25	"	"	"	"	
41	26	"	"	"	"	
42		"	"	"	"	
43		"	"	"	"	
44		"	"	"	"	
45		"	"	"	"	
46		"	"	"	"	
47		"	"	"	"	
48		"	"	"	"	
49	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
50	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Comments:** concentration based on 30 ml final volume, *** concentration based on 20 ml final volume

Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C

DG29HGI, DG29HGF, DG101AA1, DG101AA2

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
51	BL 0916	342B	"	"	"	(Processed Blank) 056238
52	BL S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
53	BL DS	"	"	"	"	(Duplicate Blank Spike)
1 54	056232	"	"	"	"	
1 55	D	"	"	"	"	(Duplicate sample)
1 56	S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
1 57	DS	"	"	"	"	(Duplicate Spiked sample)
2 58	31	"	"	"	"	
3 59	33	"	"	"	"	
4 60	34	"	"	"	"	
5 61	39	"	"	"	"	
6 62	40	"	"	"	"	
7 63	41	"	"	"	"	
8 64	42	"	"	"	"	
9 65	43	"	"	"	"	
10 66	056230	"	"	"	"	
67	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
68	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Procedure/Methodology:

Note: Calibration Standards, ICVs, CCVs, CCBs and LCS are prepared the same as the samples but are not digested.

- 1 Prepare 25 ppm Intermediate Calibration Standard (if required) by pipetting 625 ul., of 1000 ppm Stock to 25 ml final volume of 2% HNO₃
- 2 Prepare 0.1 ppm Working calibration standard daily by pipetting 400 ul., of 25 ppm Intermediate to 100 ml final volume of 2% HNO₃
- 3 Prepare a 0.05 ppm Working Reference QC Standard daily by pipetting 50 ul of Stock Reference Standard to 100 ml final vol of 2% HNO₃
- 4 Using the LIMS Screen "SCNDIG" enter the required samples into LIMS
- 5 Using the labeling program, "DIGLBL", retrieve the "SCNDIG" list and create labels for the required samples.
- 6 Label the falcon tubes appropriately
- 7 Include one External Reference Material sample per run
- 8 Include one Organic Mercury Control Standard per run
- 9 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
- 10 Spike the tubes as indicated in the comment sector of the digestion sheet
- 11 Add 0.5 ml. of conc. Nitric Acid (HNO₃), and 1 ml. of conc. Sulphuric acid, (H₂SO₄), to each tube
- 12 Add 3 ml. of 6% KMnO₄, purple colour must remain for the duration of digest.
- 13 Add 1.5 ml. of 5% potassium persulphate, (K₂S₂O₈), to each tube
- 14 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
- 15 Remove tubes and allow to cool to room temperature
- 16 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
- 17 Recap tubes and shake until KMnO₄ is destroyed and sample becomes colourless
Dilute the sample to a final volume of 30 ml.

Supplier/Lot Information	Supplier	Lot	Expiry Date
Stock Calibration Standard	AccuTrace	A9125032	oct. 02
Intermediate Cal Standard	Internal	0109114	01/10/14
Stock Reference Standard	High Purity	0033536	JAN. 02
External Reference Material	SPEX-TECH	002-38HG	APR 15, 2002
Organic Mercury Control Standard	Aldrich	N/A	N/A
6% potassium permanganate	Internal	01109112	01/11/12
5% potassium persulphate	Internal	01109112	01/11/12
20% hydroxylamine hydrochloride	Internal	01109112	01/11/12
HNO ₃	Anachemia	1101040	01/11/14
H ₂ SO ₄	Anachemia	3100091	01/11/10
Bath Temps: 145 C	Time ON: 10:40	Time OFF: 12:40	
Prepared By: MB	Date: 01/09/12	Checked by: MB	

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
056729	CLEANAIR	MB R456	Mercury -	PV	-0.010	-99999.0	0.100	100.	0.100	99.	01/10/03	7R3A	01/10/03	MG21	22.	12.	
056730	CLEANAIR	M29-Reagent Blank	Mercury -	PV	-0.010						01/10/03	7R3A	01/10/03	MG21	22.	12.	
056731	CLEANAIR	M29-Field Blank	Mercury -	PV	-0.010						01/10/03	7R3A	01/10/03	MG21	22.	12.	
056732	CLEANAIR	M29-Unit 2 Outlet R1	Mercury -	PV	-0.010	-0.010	0.105	101.	0.105	101.	01/10/03	7R3A	01/10/03	MG21	22.	12.	
056733	CLEANAIR	M29-Unit 2 Outlet R2	Mercury -	PV	-0.010						01/10/03	7R3A	01/10/03	MG21	22.	12.	
056734	CLEANAIR	M29-Unit 2 Outlet R3	Mercury -	PV	0.422						01/10/03	7R3A	01/10/03	MG21	22.	12.	
056738	CLEANAIR	MB R456	Mercury -	PV	-0.010	-99999.0	0.100	100.	0.100	99.	01/10/03	7R3A	01/10/03	MG21	20.	12.	
056739	CLEANAIR	M29-Reagent Blank	Mercury -	PV	-0.010						01/10/03	7R3A	01/10/03	MG21	20.	12.	
056740	CLEANAIR	M29-Field Blank	Mercury -	PV	-0.010						01/10/03	7R3A	01/10/03	MG21	20.	12.	
056741	CLEANAIR	M29-Unit 3 Outlet R1	Mercury -	PV	-0.010						01/10/03	7R3A	01/10/03	MG21	20.	12.	
056742	CLEANAIR	M29-Unit 3 Outlet R2	Mercury -	PV	0.000						01/10/03	7R3A	01/10/03	MG21	20.	12.	
056743	CLEANAIR	M29-Unit 3 Outlet R3	Mercury -	PV	-0.011						01/10/03	7R3A	01/10/03	MG21	20.	12.	
BL1003	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.100	100.	0.100	99.	01/10/03	7R3A	01/10/03	MG21	\$\$\$	\$\$\$	

13 Tests for 29HG-3A with an MDL of 0.010 ug

Validated By cmfControl Chart Updated N/AIO Requirements met N/A

00046

29HG-3A

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL1003-7R3A	0.007	1	100	0.001	0.01	0.01		100
BL1003S	1.003	1	100	0.100	0.01	0.01	100	100
BL1003DS	0.998	1	100	0.100	0.01	0.01	99	100
56732	0.022	1	102	0.002	0.01	0.01		100
56732D	0.020	1	102	0.002	0.01	0.01		100
56732S	1.027	1	102	0.105	0.01	0.01	101	100
56732DS	1.031	1	102	0.105	0.01	0.01	101	100
56730	0.011	1	100	0.001	0.01	0.01		100
56731	0.010	1	104	0.001	0.01	0.01		100
56733	0.034	1	108	0.004	0.01	0.01		100
56734	4.059	1	104	0.422	0.01	0.01		100
56739	0.009	1	100	0.001	0.01	0.01		100
56740	0.008	1	108	0.001	0.01	0.01		100
56741	0.036	1	102	0.004	0.01	0.01		100
56742	0.048	1	104	0.005	0.01	0.01		100
56743	0.044	1	114	0.005	0.01	0.01		100

00048

Sample Information File C:\FIMS\AAUSER\SAMPINFO\011003F2.SIF

Description : TRAIN
Batch ID : MG21
Volume Units :
Weight Units :
Analyst : MGAS
Sample Volume : 0.00

AS Sample ID	Sample Sample	User	Remarks
Loc	Weight Units	Dilution	
4 BL1003-1R1B			
15 BL1003S			
16 BL1003DS			
17 54138			
18 54138D			
19 54138S			
20 54138DS			
21 54136			
22 54137			
23 54139			
24 54140			
25 54141			
26 54142			
27 54143			
28 54144			
29 54146			
30 BL1003-2R1B			
31 BL1003S			
32 BL1003DS			
33 54149			
34 54149D			
35 54149S			
36 54149DS			
37 54145			
38 54147			
39 54148			
40 54150			
41 54151			
42 BL1003-7R3A			
43 BL1003S			
44 BL1003DS			
45 56732			
46 56732D			
47 56732S			
48 56732DS			
49 56730			
50 56731			
51 56733			
52 56734			
53 56739			
54 56740			
55 56741			
56 56742			
57 56743			

00049

Method Name: EPA 7470
 Method Description: EPA 7470
 Element: Hg

Date: 10/03/2001
 Technique: FI-MHS
 Calibration Type:
 Hg, Zero Intercept: Linear
 Wavelength: 253.7 nm
 Sample Info Name: 011003F2.SIF

Results Data Set Name: 011003F2

Element: Hg Seq. No.: 1 AS Loc.: 1 Date: 10/03/2001
 Sample ID: Calib Blank

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0001	0.0001	01:17:44	Yes
2			0.0001	0.0001	01:18:17	Yes
3			0.0001	0.0001	01:18:50	Yes
Mean:			0.0001			
SD :			0.0000			
%RSD:			17.7670			

Auto-zero performed.

Element: Hg Seq. No.: 2 AS Loc.: 2 Date: 10/03/2001
 Sample ID: STD1

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0297	0.0298	01:19:39	Yes
2			0.0297	0.0298	01:20:12	Yes
3			0.0297	0.0298	01:20:45	Yes
Mean:			0.0297			
SD :			0.0000			
%RSD:						

[Hg] Standard number 1 applied. [2.500]
 Correlation Coefficient: 1.00000 Slope: 0.01189

Element: Hg Seq. No.: 3 AS Loc.: 3 Date: 10/03/2001
 Sample ID: STD2

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0601	0.0601	01:21:35	Yes
2			0.0600	0.0601	01:22:08	Yes
3			0.0594	0.0595	01:22:41	Yes
Mean:			0.0598			
SD :			0.0003			
%RSD:			0.5835			

[Hg] Standard number 2 applied. [5.000]
 Correlation Coefficient: 0.99996 Slope: 0.01195

Element: Hg Seq. No.: 4 AS Loc.: 4 Date: 10/03/2001
 Sample ID: STD3

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0913	0.0913	01:23:56	Yes

00050

2 0.0907 0.0908 01:24:29 Yes
 3 0.0921 0.0922 01:25:02 Yes
 Mean: 0.0914
 SD : 0.0007
 %RSD: 0.7369
 [Hg] Standard number 3 applied. [7.500]
 Correlation Coefficient: 0.99970 Slope: 0.01210

Element: Hg Seq. No.: 5 AS Loc.: 5 Date: 10/03/2001
 Sample ID: STD4

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.1211	0.1212	01:26:18	Yes
2			0.1207	0.1208	01:26:51	Yes
3			0.1205	0.1206	01:27:24	Yes
Mean:			0.1208			
SD :			0.0003			
%RSD:			0.2579			

[Hg] Standard number 4 applied. [10.00]
 Correlation Coefficient: 0.99988 Slope: 0.01209

Element: Hg Seq. No.: 6 AS Loc.: 6 Date: 10/03/2001
 Sample ID: STD5

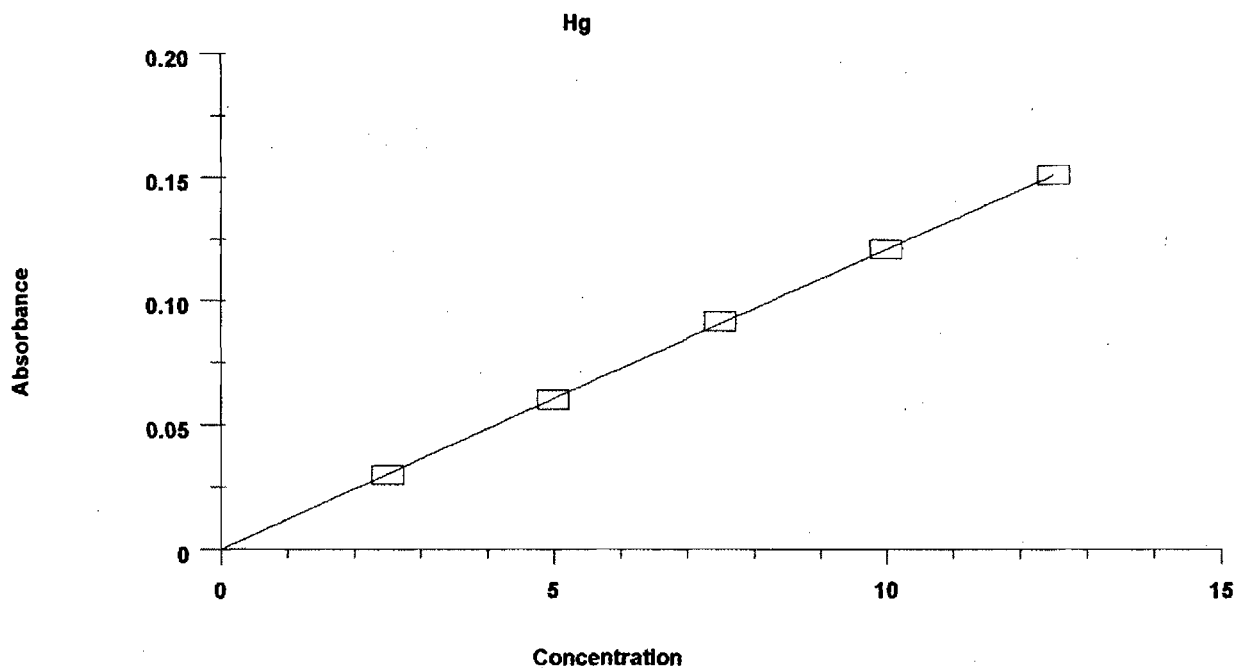
Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.1516	0.1517	01:28:39	Yes
2			0.1505	0.1506	01:29:12	Yes
3			0.1508	0.1509	01:29:45	Yes
Mean:			0.1510			
SD :			0.0006			
%RSD:			0.3650			

[Hg] Standard number 5 applied. [12.50]
 Correlation Coefficient: 0.99994 Slope: 0.01208

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	---	---	---
STD1	0.0297	2.500	2.459	0.0000	---
STD2	0.0598	5.000	4.951	0.0003	0.6
STD3	0.0914	7.500	7.560	0.0007	0.7
STD4	0.1208	10.000	9.994	0.0003	0.3
STD5	0.1510	12.500	12.50	0.0006	0.4
Correlation Coefficient: 0.99994		Slope: 0.01208		----	

D0051



Element: Hg Seq. No.: 7 AS Loc.: 9 Date: 10/03/2001
Sample ID: ICV

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.552	1.552	0.0188	0.0188	01:31:04	Yes
2	1.537	1.537	0.0186	0.0186	01:31:37	Yes
3	1.545	1.545	0.0187	0.0187	01:32:10	Yes
Mean:	1.545	1.545	0.0187			
SD :	0.0073	0.0073	0.0001			
%RSD:	0.5	0.5	0.4700			

QC value within specified limits.

Element: Hg Seq. No.: 8 AS Loc.: 10 Date: 10/03/2001
Sample ID: ICB

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.007	-0.007	-0.0001	0.0000	01:32:59	Yes
2	-0.005	-0.005	-0.0001	0.0000	01:33:32	Yes
3	-0.005	-0.005	-0.0001	0.0000	01:34:05	Yes
Mean:	-0.006	-0.006	-0.0001			
SD :	0.0009	0.0009	0.0000			
%RSD:	15.1	15.1	15.0693			

QC value within specified limits.

Element: Hg Seq. No.: 9 AS Loc.: 11 Date: 10/03/2001
Sample ID: SPEX HG-STD

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored

00052

1	3.116	3.116	0.0376	0.0377	01:34:54	Yes
2	3.105	3.105	0.0375	0.0376	01:35:28	Yes
3	3.103	3.103	0.0375	0.0376	01:36:01	Yes
Mean:	3.108	3.108	0.0376			
SD :	0.0069	0.0069	0.0001			
%RSD:	0.2	0.2	0.2221			

QC value within specified limits.

=====

Element: Hg Seq. No.: 10 AS Loc.: 12 Date: 10/03/2001
Sample ID: LLC

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.244	0.244	0.0030	0.0030	01:36:50	Yes
2	0.243	0.243	0.0029	0.0030	01:37:23	Yes
3	0.249	0.249	0.0030	0.0031	01:37:56	Yes
Mean:	0.245	0.245	0.0030			
SD :	0.0036	0.0036	0.0000			
%RSD:	1.4	1.4	1.4489			

QC value within specified limits.

=====

Element: Hg Seq. No.: 11 AS Loc.: 13 Date: 10/03/2001
Sample ID: DIL. CHECK

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.005	-0.005	-0.0001	0.0000	01:38:45	Yes
2	-0.003	-0.003	0.0000	0.0000	01:39:18	Yes
3	-0.002	-0.002	0.0000	0.0001	01:39:51	Yes
Mean:	-0.003	-0.003	0.0000			
SD :	0.0019	0.0019	0.0000			
%RSD:	56.8	56.8	56.8015			

QC value within specified limits.

=====

Element: Hg Seq. No.: 12 AS Loc.: 14 Date: 10/03/2001
Sample ID: BL1003-1R1B

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.011	0.011	0.0001	0.0002	01:40:40	Yes
2	0.015	0.015	0.0002	0.0002	01:41:13	Yes
3	0.012	0.012	0.0001	0.0002	01:41:46	Yes
Mean:	0.012	0.012	0.0001			
SD :	0.0021	0.0021	0.0000			
%RSD:	16.7	16.7	16.7134			

=====

Element: Hg Seq. No.: 13 AS Loc.: 15 Date: 10/03/2001
Sample ID: BL1003S

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.973	0.973	0.0118	0.0118	01:42:35	Yes
2	0.969	0.969	0.0117	0.0118	01:43:08	Yes
3	0.967	0.967	0.0117	0.0118	01:43:41	Yes
Mean:	0.970	0.970	0.0117			
SD :	0.0032	0.0032	0.0000			
%RSD:	0.3	0.3	0.3299			

=====

00053

Element: Hg Seq. No.: 19 AS Loc.: 21 Date: 10/03/2001
 Sample ID: 54136

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.014	0.014	0.0002	0.0002	01:54:05	Yes
2	0.009	0.009	0.0001	0.0002	01:54:38	Yes
3	0.014	0.014	0.0002	0.0002	01:55:11	Yes
Mean:	0.012	0.012	0.0001			
SD :	0.0027	0.0027	0.0000			
%RSD:	22.3	22.3	22.3344			

Element: Hg Seq. No.: 20 AS Loc.: 22 Date: 10/03/2001
 Sample ID: 54137

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.115	0.115	0.0014	0.0015	01:56:00	Yes
2	0.120	0.120	0.0015	0.0015	01:56:34	Yes
3	0.115	0.115	0.0014	0.0015	01:57:06	Yes
Mean:	0.117	0.117	0.0014			
SD :	0.0029	0.0029	0.0000			
%RSD:	2.5	2.5	2.5071			

Element: Hg Seq. No.: 21 AS Loc.: 23 Date: 10/03/2001
 Sample ID: 54139

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.254	0.254	0.0031	0.0031	01:58:00	Yes
2	0.259	0.259	0.0031	0.0032	01:58:34	Yes
3	0.256	0.256	0.0031	0.0032	01:59:07	Yes
Mean:	0.257	0.257	0.0031			
SD :	0.0027	0.0027	0.0000			
%RSD:	1.1	1.1	1.0682			

Element: Hg Seq. No.: 22 AS Loc.: 7 Date: 10/03/2001
 Sample ID: CCV

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.018	1.018	0.0123	0.0124	01:59:56	Yes
2	1.018	1.018	0.0123	0.0124	02:00:29	Yes
3	1.020	1.020	0.0123	0.0124	02:01:02	Yes
Mean:	1.019	1.019	0.0123			
SD :	0.0010	0.0010	0.0000			
%RSD:	0.1	0.1	0.1015			

QC value within specified limits.

Element: Hg Seq. No.: 23 AS Loc.: 8 Date: 10/03/2001
 Sample ID: CCB

Repl #	SampleConc µg/L	StndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.005	0.005	0.0001	0.0001	02:01:51	Yes
2	0.000	0.000	0.0000	0.0001	02:02:24	Yes
3	0.007	0.007	0.0001	0.0002	02:02:57	Yes
Mean:	0.004	0.004	0.0000			
SD :	0.0033	0.0033	0.0000			
%RSD:	85.6	85.6	85.5662			

00054

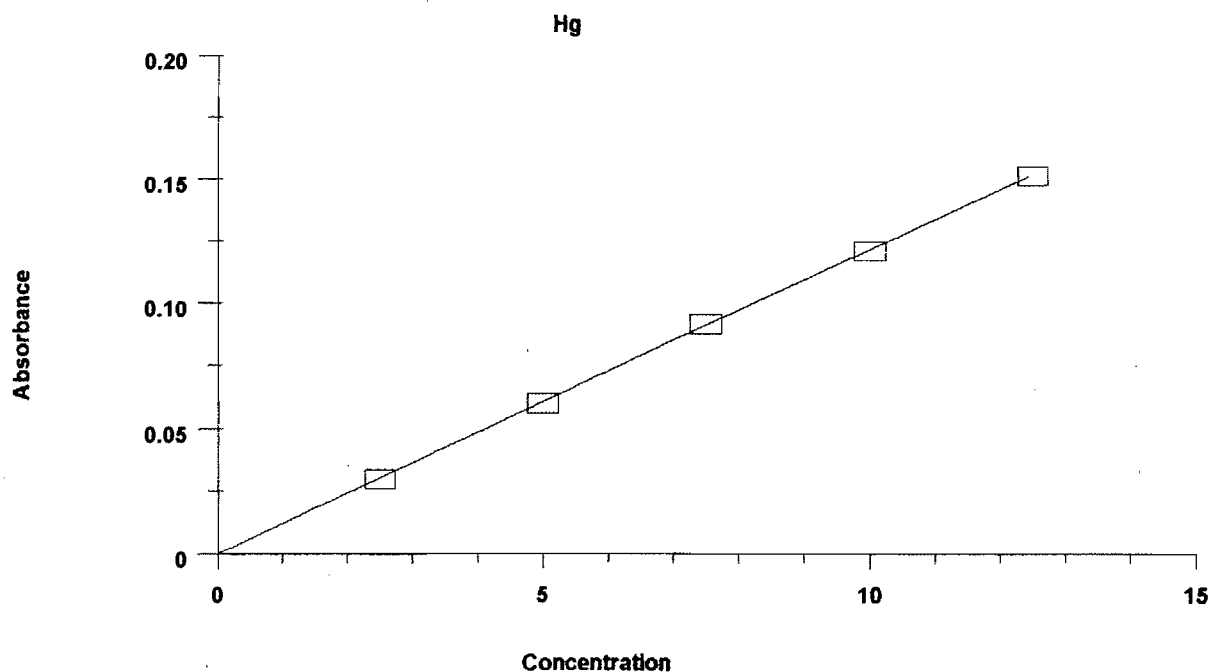
QC value within specified limits.

Element: Hg Seq. No.: 24 AS Loc.: 4 Date: 10/03/2001
 Sample ID: Reslope

Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Height	Time	Peak Stored
1			0.0914	0.0915	02:03:47	Yes
2			0.0911	0.0912	02:04:20	Yes
3			0.0907	0.0908	02:04:53	Yes
Mean:			0.0911			
SD :			0.0003			
%RSD:			0.3542			
[Hg] Reslope standard applied. [7.500]						
Correlation Coefficient:			0.99994	Slope: 0.01202		

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.006	0.0000	17.8
STD1	0.0297	2.500	2.447	0.0000	---
STD2	0.0598	5.000	4.927	0.0003	0.6
STD3	0.0914	7.500	7.523	0.0007	0.7
STD4	0.1208	10.000	9.945	0.0003	0.3
STD5	0.1510	12.500	12.43	0.0006	0.4
Reslope	0.0911	7.500	7.500	0.0003	0.4
Correlation Coefficient:		0.99994	Slope:	0.01202	----



Element: Hg Seq. No.: 25 AS Loc.: 24 Date: 10/03/2001
 Sample ID: 54140

00055

Element: Hg Seq. No.: 35 AS Loc.: 7 Date: 10/03/2001
 Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.015	1.015	0.0123	0.0124	02:25:24	Yes
2	1.019	1.019	0.0124	0.0124	02:25:57	Yes
3	1.023	1.023	0.0124	0.0125	02:26:30	Yes
Mean:	1.019	1.019	0.0124			
SD :	0.0037	0.0037	0.0000			
%RSD:	0.4	0.4	0.3676			

QC value within specified limits.

Element: Hg Seq. No.: 36 AS Loc.: 8 Date: 10/03/2001
 Sample ID: CCB

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.004	0.004	0.0001	0.0001	02:27:19	Yes
2	0.002	0.002	0.0000	0.0001	02:27:52	Yes
3	0.001	0.001	0.0000	0.0001	02:28:25	Yes
Mean:	0.002	0.002	0.0000			
SD :	0.0018	0.0018	0.0000			
%RSD:	77.3	77.3	77.3376			

QC value within specified limits.

Element: Hg Seq. No.: 37 AS Loc.: 4 Date: 10/03/2001
 Sample ID: Reslope

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0905	0.0906	02:29:15	Yes
2			0.0908	0.0909	02:29:48	Yes
3			0.0904	0.0905	02:30:21	Yes
Mean:			0.0906			
SD :			0.0002			
%RSD:			0.2140			

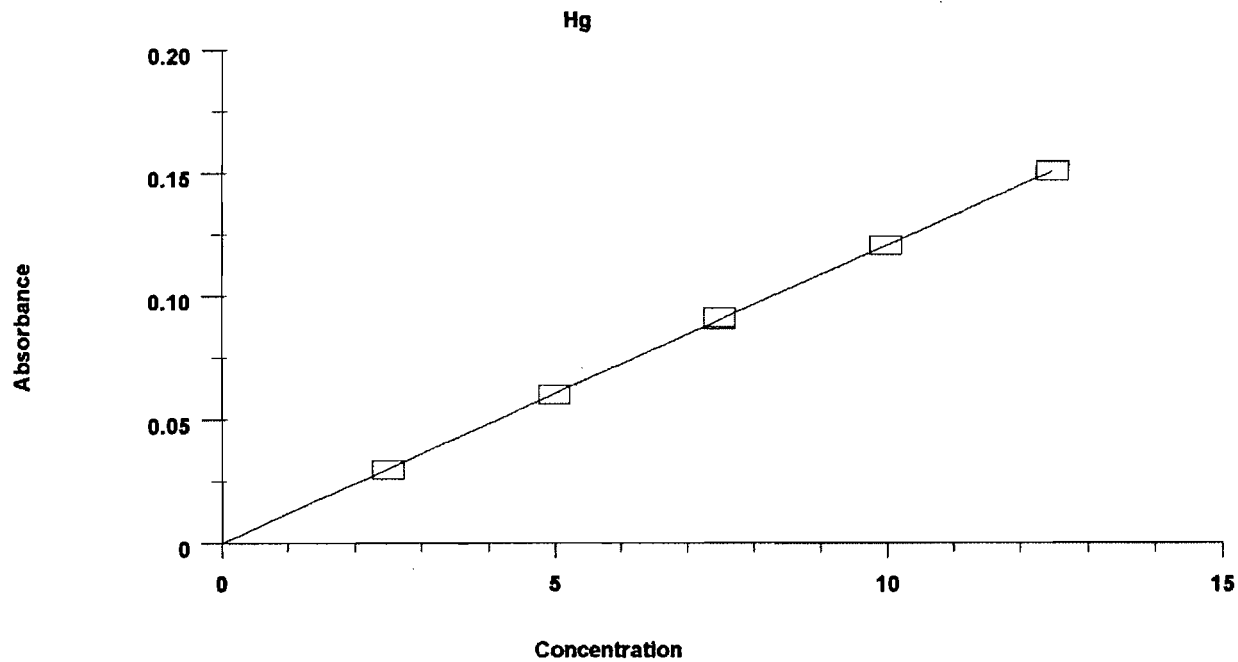
[Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99994 Slope: 0.01209

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.006	0.0000	17.8
STD1	0.0297	2.500	2.460	0.0000	---
STD2	0.0598	5.000	4.954	0.0003	0.6
STD3	0.0914	7.500	7.564	0.0007	0.7
STD4	0.1208	10.000	9.998	0.0003	0.3
STD5	0.1510	12.500	12.50	0.0006	0.4
Reslope	0.0906	7.500	7.500	0.0002	0.2

Correlation Coefficient: 0.99994 Slope: 0.01209

00036



Element: Hg Seq. No.: 38 AS Loc.: 34 Date: 10/03/2001
Sample ID: 54149D

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.037	0.037	0.0004	0.0005	02:31:42	Yes
2	0.039	0.039	0.0005	0.0005	02:32:15	Yes
3	0.036	0.036	0.0004	0.0005	02:32:47	Yes
Mean:	0.037	0.037	0.0004			
SD :	0.0014	0.0014	0.0000			
%RSD:	3.7	3.7	3.7347			

Element: Hg Seq. No.: 39 AS Loc.: 35 Date: 10/03/2001
Sample ID: 54149S

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.051	1.051	0.0127	0.0128	02:33:36	Yes
2	1.048	1.048	0.0127	0.0127	02:34:09	Yes
3	1.046	1.046	0.0126	0.0127	02:34:42	Yes
Mean:	1.048	1.048	0.0127			
SD :	0.0025	0.0025	0.0000			
%RSD:	0.2	0.2	0.2350			

Element: Hg Seq. No.: 40 AS Loc.: 36 Date: 10/03/2001
Sample ID: 54149DS

Repl #	SampleConc µg/L	StdConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.071	1.071	0.0129	0.0130	02:35:31	Yes
2	1.067	1.067	0.0129	0.0130	02:36:04	Yes

00057

1	0.108	0.108	0.0013	0.0014	02:45:09	Yes
2	0.108	0.108	0.0013	0.0014	02:45:43	Yes
3	0.109	0.109	0.0013	0.0014	02:46:16	Yes
Mean:	0.108	0.108	0.0013			
SD :	0.0006	0.0006	0.0000			
%RSD:	0.6	0.6	0.5769			

=====
 Element: Hg Seq. No.: 46 AS Loc.: 42 Date: 10/03/2001
 Sample ID: BL1003-7R3A

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.007	0.007	0.0001	0.0002	02:47:04	Yes
2	0.001	0.001	0.0000	0.0001	02:47:37	Yes
3	0.013	0.013	0.0002	0.0002	02:48:10	Yes
Mean:	0.007	0.007	0.0001			
SD :	0.0059	0.0059	0.0001			
%RSD:	86.5	86.5	86.4727			

=====
 Element: Hg Seq. No.: 47 AS Loc.: 43 Date: 10/03/2001
 Sample ID: BL1003S

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.008	1.008	0.0122	0.0123	02:48:58	Yes
2	0.996	0.996	0.0120	0.0121	02:49:31	Yes
3	1.004	1.004	0.0121	0.0122	02:50:04	Yes
Mean:	1.003	1.003	0.0121			
SD :	0.0061	0.0061	0.0001			
%RSD:	0.6	0.6	0.6121			

=====
 Element: Hg Seq. No.: 48 AS Loc.: 7 Date: 10/03/2001
 Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.026	1.026	0.0124	0.0125	02:50:54	Yes
2	1.023	1.023	0.0124	0.0124	02:51:27	Yes
3	1.031	1.031	0.0124	0.0125	02:52:00	Yes
Mean:	1.027	1.027	0.0124			
SD :	0.0039	0.0039	0.0000			
%RSD:	0.4	0.4	0.3813			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 49 AS Loc.: 8 Date: 10/03/2001
 Sample ID: CCB

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	0.011	0.011	0.0001	0.0002	02:52:49	Yes
2	0.006	0.006	0.0001	0.0001	02:53:22	Yes
3	0.008	0.008	0.0001	0.0002	02:53:55	Yes
Mean:	0.008	0.008	0.0001			
SD :	0.0026	0.0026	0.0000			
%RSD:	31.1	31.1	31.1006			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 50 AS Loc.: 4 Date: 10/03/2001

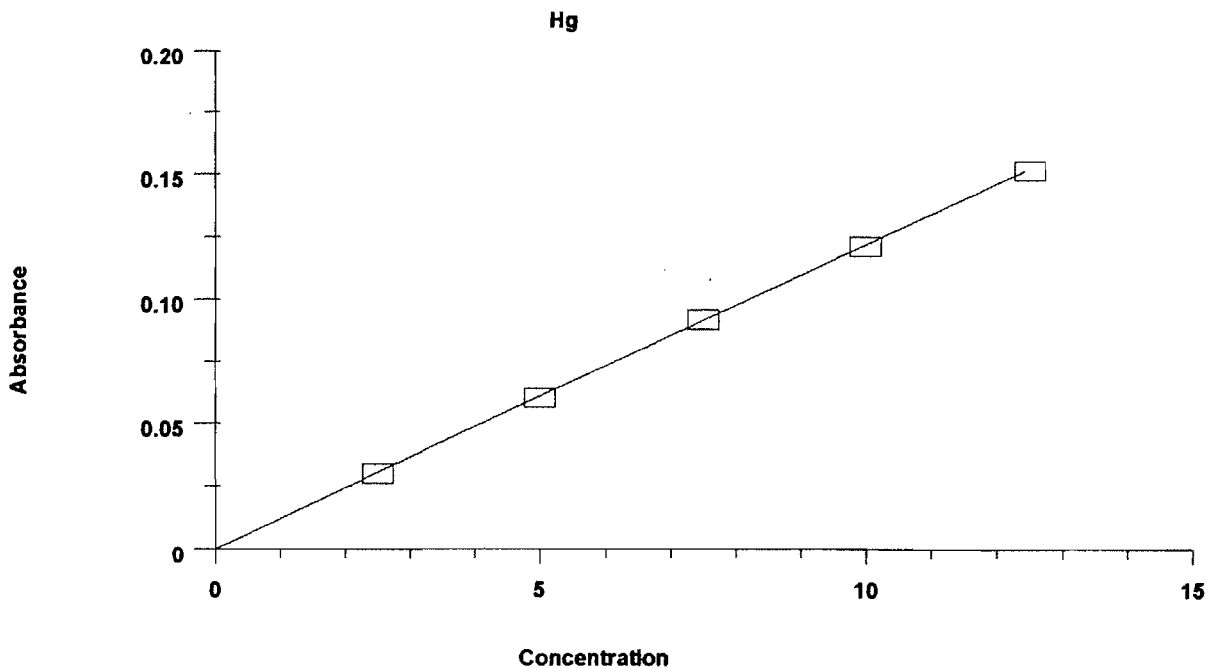
00038

Sample ID: Reslope

Repl #	SampleConc $\mu\text{g/L}$	StdConc $\mu\text{g/L}$	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0916	0.0917	02:54:45	Yes
2			0.0910	0.0911	02:55:19	Yes
3			0.0908	0.0909	02:55:52	Yes
Mean:			0.0912			
SD :			0.0004			
%RSD:			0.4645			
[Hg] Reslope standard applied. [7.500]						
Correlation Coefficient:			0.99994	Slope: 0.01201		

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration ($\mu\text{g/L}$)	Calculated Concentration ($\mu\text{g/L}$)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.006	0.0000	17.8
STD1	0.0297	2.500	2.444	0.0000	---
STD2	0.0598	5.000	4.922	0.0003	0.6
STD3	0.0914	7.500	7.516	0.0007	0.7
STD4	0.1208	10.000	9.935	0.0003	0.3
STD5	0.1510	12.500	12.42	0.0006	0.4
Reslope	0.0912	7.500	7.500	0.0004	0.5
Correlation Coefficient:		0.99994	Slope:	0.01201	----



Element: Hg Seq. No.: 51 AS Loc.: 44 Date: 10/03/2001
Sample ID: BL1003DS

Repl #	SampleConc $\mu\text{g/L}$	StdConc $\mu\text{g/L}$	BlkCorr Signal	Peak Height	Time	Peak Stored

Element: Hg Seq. No.: 51 AS Loc.: 44 Date: 10/03/2001
 Sample ID: BL1003DS

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.006	1.006	0.0122	0.0123	02:59:12	Yes
2	0.997	0.997	0.0121	0.0122	02:59:45	Yes
3	0.990	0.990	0.0120	0.0121	03:00:18	Yes
Mean:	0.998	0.998	0.0121			
SD :	0.0084	0.0084	0.0001			
%RSD:	0.8	0.8	0.8453			

Element: Hg Seq. No.: 52 AS Loc.: 45 Date: 10/03/2001
 Sample ID: 56732

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.019	0.019	0.0002	0.0003	03:01:07	Yes
2	0.023	0.023	0.0003	0.0003	03:01:40	Yes
3	0.023	0.023	0.0003	0.0004	03:02:13	Yes
Mean:	0.022	0.022	0.0003			
SD :	0.0026	0.0026	0.0000			
%RSD:	11.9	11.9	11.9215			

Element: Hg Seq. No.: 53 AS Loc.: 46 Date: 10/03/2001
 Sample ID: 56732D

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.018	0.018	0.0002	0.0003	03:03:01	Yes
2	0.020	0.020	0.0002	0.0003	03:03:34	Yes
3	0.022	0.022	0.0003	0.0003	03:04:07	Yes
Mean:	0.020	0.020	0.0002			
SD :	0.0023	0.0023	0.0000			
%RSD:	11.3	11.3	11.3311			

Element: Hg Seq. No.: 54 AS Loc.: 47 Date: 10/03/2001
 Sample ID: 56732S

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.026	1.026	0.0125	0.0125	03:04:55	Yes
2	1.019	1.019	0.0124	0.0125	03:05:29	Yes
3	1.035	1.035	0.0126	0.0127	03:06:02	Yes
Mean:	1.027	1.027	0.0125			
SD :	0.0080	0.0080	0.0001			
%RSD:	0.8	0.8	0.7831			

Element: Hg Seq. No.: 55 AS Loc.: 48 Date: 10/03/2001
 Sample ID: 56732DS

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.032	1.032	0.0125	0.0126	03:06:51	Yes
2	1.035	1.035	0.0126	0.0127	03:07:24	Yes
3	1.026	1.026	0.0125	0.0125	03:07:57	Yes
Mean:	1.031	1.031	0.0125			
SD :	0.0044	0.0044	0.0001			
%RSD:	0.4	0.4	0.4232			

00060

=====
Element: Hg Seq. No.: 56 AS Loc.: 49 Date: 10/03/2001
Sample ID: 56730
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.012	0.012	0.0001	0.0002	03:08:46	Yes
2	0.013	0.013	0.0002	0.0002	03:09:19	Yes
3	0.007	0.007	0.0001	0.0002	03:09:52	Yes
Mean:	0.011	0.011	0.0001			
SD :	0.0034	0.0034	0.0000			
%RSD:	31.8	31.8	31.8352			

=====
Element: Hg Seq. No.: 57 AS Loc.: 50 Date: 10/03/2001
Sample ID: 56731
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.007	0.007	0.0001	0.0002	03:10:41	Yes
2	0.011	0.011	0.0001	0.0002	03:11:14	Yes
3	0.012	0.012	0.0001	0.0002	03:11:47	Yes
Mean:	0.010	0.010	0.0001			
SD :	0.0030	0.0030	0.0000			
%RSD:	29.6	29.6	29.6240			

=====
Element: Hg Seq. No.: 58 AS Loc.: 51 Date: 10/03/2001
Sample ID: 56733
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.032	0.032	0.0004	0.0005	03:12:35	Yes
2	0.040	0.040	0.0005	0.0006	03:13:08	Yes
3	0.031	0.031	0.0004	0.0005	03:13:41	Yes
Mean:	0.034	0.034	0.0004			
SD :	0.0047	0.0047	0.0001			
%RSD:	13.6	13.6	13.6264			

=====
Element: Hg Seq. No.: 59 AS Loc.: 52 Date: 10/03/2001
Sample ID: 56734
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	4.069	4.069	0.0495	0.0495	03:14:29	Yes
2	4.054	4.054	0.0493	0.0494	03:15:02	Yes
3	4.054	4.054	0.0493	0.0494	03:15:35	Yes
Mean:	4.059	4.059	0.0493			
SD :	0.0089	0.0089	0.0001			
%RSD:	0.2	0.2	0.2189			

=====
Element: Hg Seq. No.: 60 AS Loc.: 53 Date: 10/03/2001
Sample ID: 56739
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.011	0.011	0.0001	0.0002	03:16:52	Yes
2	0.008	0.008	0.0001	0.0002	03:17:25	Yes
3	0.009	0.009	0.0001	0.0002	03:17:58	Yes
Mean:	0.009	0.009	0.0001			
SD :	0.0016	0.0016	0.0000			

000061

%RSD: 17.7 17.7 17.6665

=====

Element: Hg Seq. No.: 61 AS Loc.: 54 Date: 10/03/2001
Sample ID: 56740

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.007	0.007	0.0001	0.0002	03:18:48	Yes
2	0.012	0.012	0.0001	0.0002	03:19:21	Yes
3	0.005	0.005	0.0001	0.0001	03:19:54	Yes
Mean:	0.008	0.008	0.0001			
SD :	0.0033	0.0033	0.0000			
%RSD:	41.7	41.7	41.6866			

=====

Element: Hg Seq. No.: 62 AS Loc.: 55 Date: 10/03/2001
Sample ID: 56741

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.035	0.035	0.0004	0.0005	03:20:46	Yes
2	0.040	0.040	0.0005	0.0006	03:21:19	Yes
3	0.034	0.034	0.0004	0.0005	03:21:52	Yes
Mean:	0.036	0.036	0.0004			
SD :	0.0031	0.0031	0.0000			
%RSD:	8.4	8.4	8.3885			

=====

Element: Hg Seq. No.: 63 AS Loc.: 56 Date: 10/03/2001
Sample ID: 56742

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.052	0.052	0.0006	0.0007	03:22:41	Yes
2	0.043	0.043	0.0005	0.0006	03:23:14	Yes
3	0.049	0.049	0.0006	0.0007	03:23:47	Yes
Mean:	0.048	0.048	0.0006			
SD :	0.0043	0.0043	0.0001			
%RSD:	9.0	9.0	8.9900			

=====

Element: Hg Seq. No.: 64 AS Loc.: 57 Date: 10/03/2001
Sample ID: 56743

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.043	0.043	0.0005	0.0006	03:24:36	Yes
2	0.045	0.045	0.0005	0.0006	03:25:09	Yes
3	0.043	0.043	0.0005	0.0006	03:25:42	Yes
Mean:	0.044	0.044	0.0005			
SD :	0.0011	0.0011	0.0000			
%RSD:	2.5	2.5	2.5065			

=====

Element: Hg Seq. No.: 65 AS Loc.: 7 Date: 10/03/2001
Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.021	1.021	0.0124	0.0125	03:26:34	Yes
2	1.014	1.014	0.0123	0.0124	03:27:07	Yes
3	1.015	1.015	0.0123	0.0124	03:27:40	Yes

Mean: 1.017 1.017 0.0124
SD : 0.0040 0.0040 0.0000
%RSD: 0.4 0.4 0.3907

=====

Element: Hg Seq. No.: 66 AS Loc.: 8 Date: 10/03/2001
Sample ID: CCB

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.005	0.005	0.0001	0.0001	03:28:30	Yes
2	0.001	0.001	0.0000	0.0001	03:29:03	Yes
3	0.001	0.001	0.0000	0.0001	03:29:35	Yes
Mean:	0.002	0.002	0.0000			
SD :	0.0021	0.0021	0.0000			
%RSD:	97.3	97.3	97.3013			

00063

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Revision 3
Effective 0010822

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG, DGHGLEACH, DG29*

Calibration Solutions:

#	I.D.	**Conc.	Spike	***Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	1.67	500 ul of 0.1 ppm working cal standard	2.5
4	Standard 3	3.33	1000 ul of 0.1 ppm working cal standard	5.0
5	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
6	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
7	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
8	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
9	Standard 5	6.67	2000 ul of 0.1 ppm working cal standard	10.0
10	Standard 6	8.33	2500 ul of 0.1 ppm working cal standard	12.5

Check List

- ☒ Digest Code/labels
- ☒ Samples poured out
- ☒ Acids added
- ☒ Reagents added
- ☒ Samples spiked
- ☒ Bath at 95 degrees C
- ☒ Samples digested
- ☒ Hydroxylamine HCl added
- ☒ Samples shaken and bulked
- ☒ Rack order checked

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
11	ICV (Int. Calib. Verif.)	7R3A	20 ml	30 ml	1 X	1.5 ppb = 600 ul of 0.05ppm Working Reference QC Std.
12	LLC (low level check)	"	"	"	"	0.25ppb = 50ul of 0.1 ppm Working Cal Std.
13	External Ref.	"	"	"	"	3.0ppb = 600ul of 0.1ppm Intermediate Spex Reference Std.
14	Organic Ref.	"	"	"	"	2.0ppb = 600ul of Intermediate Organic Reference Std.
15	BL 1003	"	"	"	"	(Processed Blank) 056738MB
16	BL S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
17	BL DS	"	"	"	"	(Duplicate Blank Spike)
18	56732	"	"	"	"	
19	D	"	"	"	"	(Duplicate sample)
20	S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
21	DS	"	"	"	"	(Duplicate Spiked sample)
22	56730	"	"	"	"	
23	31	"	"	"	"	
24	33	"	"	"	"	
25	34	"	"	"	"	
26	56739	"	"	"	"	
27	40	"	"	"	"	
28	41	"	"	"	"	
29	42	"	"	"	"	
30	43	"	"	"	"	
31	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
32	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
33	BL 1003	IRL1	20 ml	30 ml	"	(Processed Blank) 057725MB
34	BL S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
35	BL DS	"	"	"	"	(Duplicate Blank Spike)
36	58942	"	"	"	"	
37	D	"	"	"	"	(Duplicate sample)
38	S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
39	DS	"	"	"	"	(Duplicate Spiked sample)
40	58940	"	"	"	"	Sample and spike 058621MB
41	58559	"	"	"	"	
42	58933	"	"	"	"	
43	57567	"	"	"	"	
44	57727	"	"	"	"	
45	57799	"	"	"	"	
46	58623	"	"	"	"	
47		"	"	"	"	
48		"	"	"	"	
49	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
50	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Comments:** concentration based on 30 ml final volume, *** concentration based on 20 ml final volume

Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C

DG29HGI, DG29HGF, DG101AA1, DG101AA2

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
51	BL		"	"	"	(Processed Blank)
52	BL	S	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
53	BL	DS	"	"	"	(Duplicate Blank Spike)
1	54		"	"	"	
1	55	D	"	"	"	(Duplicate sample)
1	56	S	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
1	57	DS	"	"	"	(Duplicate Spiked sample)
2	58		"	"	"	
3	59		"	"	"	
4	60		"	"	"	
5	61		"	"	"	
6	62		"	"	"	
7	63		"	"	"	
8	64		"	"	"	
9	65		"	"	"	
10	66		"	"	"	
67	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
68	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Procedure/Methodology:

Note: Calibration Standards, ICVs, CCVs, CCBs and LCS are prepared the same as the samples but are not digested.

- 1 Prepare 25 ppm Intermediate Calibration Standard (if required) by pipetting 625 ul., of 1000 ppm Stock to 25 ml final volume of 2% HNO₃
- 2 Prepare 0.1 ppm Working calibration standard daily by pipetting 400 ul., of 25 ppm Intermediate to 100 ml final volume of 2% HNO₃
- 3 Prepare a 0.05 ppm Working Reference QC Standard daily by pipetting 50 ul of Stock Reference Standard to 100 ml final vol of 2% HNO₃
- 4 Using the LIMS Screen "SCNDIG" enter the required samples into LIMS
- 5 Using the labeling program, "DIGLBL", retrieve the "SCNDIG" list and create labels for the required samples.
- 6 Label the falcon tubes appropriately
- 7 Include one External Reference Material sample per run
- 8 Include one Organic Mercury Control Standard per run
- 9 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
- 10 Spike the tubes as indicated in the comment sector of the digestion sheet
- 11 Add 0.5 ml. of conc. Nitric Acid (HNO₃), and 1 ml. of conc. Sulphuric acid, (H₂SO₄), to each tube
- 12 Add 3 ml. Of 6% KMnO₄, purple colour must remain for the duration of digest.
- 13 Add 1.5 ml. of 5% potassium persulphate, (K₂S₂O₈), to each tube
- 14 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
- 15 Remove tubes and allow to cool to room temperature
- 16 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
- 17 Recap tubes and shake until KMnO₄ is destroyed and sample becomes colourless
Dilute the sample to a final volume of 30 ml.

Supplier/Lot Information	Supplier	Lot	Expiry Date
Stock Calibration Standard	AccuTrace	A9125032	Oct 02
Intermediate Cal Standard	Internal	A9125032	IR Jan 9/10/14
Stock Reference Standard	High Purity	33536	Jan 02
External Reference Material	SPEX	CL2-38HG	Apr. 15/02
Organic Mercury Control Standard	Aldrich	IR N/A	N/A
6% potassium permanganate	Internal	2218116C1	Nov 28/01
5% potassium persulphate	Internal	22829	Dec 01/01
20% hydroxylamine hydrochloride	Internal	00801C0	Nov 27/01
HNO ₃	Anachemia	1101010	Nov 5/01
H ₂ SO ₄	Anachemia	3100091	Nov 20/01
Bath Temps: 195 ± 2°C	Time ON: 9:50	Time OFF: 11:50	
Prepared By: IR	Date: Oct 3/01	Checked by: IR	

Zenon			Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
Number	Client	Client ID															
056729	CLEANAIR	MB R456	Mercury - P		-0.050	-99999.0	0.486	96.	0.488	97.	01/09/27	6M3B	01/09/28	HR21	16.	6.	
056730	CLEANAIR	M29-Reagent Blank	Mercury - P		-0.050						01/09/27	6M3B	01/09/28	HR21	16.	6.	
056731	CLEANAIR	M29-Field Blank	Mercury - P		-0.050						01/09/27	6M3B	01/09/28	HR21	16.	6.	
056732	CLEANAIR	M29-Unit 2 Outlet R1	Mercury - P		-0.050	-0.050	0.505	100.	0.506	100.	01/09/27	6M3B	01/09/28	HR21	16.	6.	
056733	CLEANAIR	M29-Unit 2 Outlet R2	Mercury - P		-0.050						01/09/27	6M3B	01/09/28	HR21	16.	6.	
056734	CLEANAIR	M29-Unit 2 Outlet R3	Mercury - P		-0.050						01/09/27	6M3B	01/09/28	HR21	16.	6.	
056738	CLEANAIR	MB R456	Mercury - P		-0.050						01/09/27	6M3B	01/09/28	HR21	14.	6.	
056739	CLEANAIR	M29-Reagent Blank	Mercury - P		-0.050						01/09/27	6M3B	01/09/28	HR21	14.	6.	
056740	CLEANAIR	M29-Field Blank	Mercury - P		-0.050						01/09/27	6M3B	01/09/28	HR21	14.	6.	
056742	CLEANAIR	M29-Unit 3 Outlet R2	Mercury - P		-0.050						01/09/27	6M3B	01/09/28	HR21	14.	6.	
BL0927	INTERNAL		Mercury - P		-0.050	-99999.0	0.486	96.	0.488	97.	01/09/27	6M3B	01/09/28	HR21	\$\$\$	\$\$\$	
056743	CLEANAIR	M29-Unit 3 Outlet R3	Mercury - P		-0.050						01/09/27	7M3B	01/09/28	HR21	14.	6.	
BL0927	INTERNAL		Mercury - P		-0.050	-99999.0	0.489	97.	0.491	98.	01/09/27	7M3B	01/09/28	HR21	\$\$\$	\$\$\$	

13 Tests for 29HG-3B with an MDL of 0.050 ug

Validated By M.A.Control Chart Updated ✓10 Requirements met ✓

000065

00066

Sample Information File C:\FIMS\AAUSER\SAMPINFO\010928F1.SIF

Description : EPA
 Batch ID : HR21
 Volume Units :
 Weight Units :
 Analyst : HR
 Sample Volume : 0.00

AS Sample ID	Sample Weight	Sample Units	User Dilution	Remarks
14 BL0927-1M3A				
15 BL0927S				
16 BL0927DS				
17 55963			10.0000	
18 55963D			10.0000	
19 55963S			10.0000	
20 55963DS			10.0000	
21 55962				
22 55964			10.0000	
23 BL0927-2M3A				
24 BL0927S				
25 BL0927DS				
26 55343			50.0000	
27 55343D			50.0000	
28 55343S PDS			50.0000	
29 55343DS PDS			50.0000	
30 55315				
31 55316			2.0000	
32 55317			5.0000	
33 55318			10.0000	
34 55344			50.0000	
35 55345			100.0000	
36 BL0927-3M3A				
37 BL0927S				
38 BL0927DS				
39 057015				
40 057015D				
41 057015S				
42 057015DS				
43 057014				
44 057016				
45 057017				
46 057018				
47 057019				
48 057020				
49 057021				
50 057022				
51 057023				
52 BL0927-4M3A				
53 BL0927S				
54 BL0927DS				
55 57024				
56 57024D				
57 57024S				
58 057024DS				
59 57025				
60 57026				
61 57015S PDS 3M3A				

00067

62	57015DS PDS	
63	56584-1G2B	10.0000
64	56587-1G2B	10.0000
65	BL0927-5M3C	
66	BL0927S	
67	BL0927DS	
68	55963	2.0000
69	55963D	2.0000
70	55963S	2.0000
71	55963DS	2.0000
72	55962	
73	55964	
74	55592	
75	54842	
76	BL0927-6M3B	
77	BL0927S	
78	BL0927DS	
79	56732	
80	56732D	
81	56732S	
82	56732DS	
83	56729	
84	56730	
85	56731	
86	56733	
87	56734	
88	56738	
89	56739	
90	56740	
91	56742	
92	BL0927-7M3B	
93	BL0927S	
94	BL0927DS	
95	56741 - redigent	
96	56741D	
97	56741S	
98	56741DS	
99	56743	
100	57013	
101	BL0927-8M1B	
102	BL0927S	
103	BL0927DS	
104	55963	2.0000
105	55963D	2.0000
106	55963S	2.0000
107	55963DS	2.0000
108	55962	
109	55964	20.0000
110	57024S POS	
111	570240S POS	
112	55963S POS	
113	559630S POS	

00068

29HG-3B

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL0927-6M3B	0.010	1	500	0.005	0.05	0.05		500
BL0927S	0.971	1	500	0.486	0.05	0.05	96	500
BL0927DS	0.976	1	500	0.488	0.05	0.05	97	500
56732	0.011	1	500	0.006	0.05	0.05		500
56732D	0.014	1	500	0.007	0.05	0.05		500
56732S	1.009	1	500	0.505	0.05	0.05	100	500
56732DS	1.012	1	500	0.506	0.05	0.05	100	500
56729	0.015	1	500	0.008	0.05	0.05		500
56730	0.011	1	500	0.006	0.05	0.05		500
56731	0.009	1	500	0.005	0.05	0.05		500
56733	0.013	1	500	0.007	0.05	0.05		500
56734	0.011	1	500	0.006	0.05	0.05		500
56738	0.005	1	500	0.003	0.05	0.05		500
56739	0.007	1	500	0.004	0.05	0.05		500
56740	0.005	1	500	0.003	0.05	0.05		500
56742	0.009	1	500	0.005	0.05	0.05		500

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL0927-7M3B	0.005	1	500	0.003	0.05	0.05		500
BL0927S	0.978	1	500	0.489	0.05	0.05	97	500
BL0927DS	0.982	1	500	0.491	0.05	0.05	98	500
56741	0.017	1	500	0.009	0.05	0.05		500
56741D	0.656	1	500	0.328	0.05	0.05		500
56741S	1.015	1	500	0.508	0.05	0.05	68	500
56741DS	1.024	1	500	0.512	0.05	0.05	69	500
56743	0.019	1	500	0.010	0.05	0.05		500
57013	0.006	1	500	0.003	0.05	0.05		500

000089

Method Name: EPA 7470
Method Description: EPA 7470
Element: Hg

Date: 09/28/2001
Technique: FI-MHS
Calibration Type:
Hg, Zero Intercept: Linear
Wavelength: 253.7 nm
Sample Info Name: 010928F1.SIF

Results Data Set Name: 010928F1

Element: Hg Seq. No.: 1 AS Loc.: 1 Date: 09/28/2001
Sample ID: Calib Blank

Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Height	Time	Peak Stored
1			0.0001	0.0001	08:09:44	Yes
2			0.0001	0.0001	08:10:17	Yes
3			0.0001	0.0001	08:10:50	Yes
Mean:			0.0001			
SD :			0.0000			
%RSD:			27.3888			

Auto-zero performed.

Element: Hg Seq. No.: 2 AS Loc.: 2 Date: 09/28/2001
Sample ID: STD1

Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Height	Time	Peak Stored
1			0.0286	0.0287	08:11:39	Yes
2			0.0285	0.0286	08:12:12	Yes
3			0.0287	0.0288	08:12:45	Yes
Mean:			0.0286			
SD :			0.0001			
%RSD:			0.2984			

[Hg] Standard number 1 applied. [2.500]
Correlation Coefficient: 1.00000 Slope: 0.01143

Element: Hg Seq. No.: 3 AS Loc.: 3 Date: 09/28/2001
Sample ID: STD2

Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Height	Time	Peak Stored
1			0.0581	0.0582	08:13:35	Yes
2			0.0583	0.0584	08:14:08	Yes
3			0.0581	0.0582	08:14:42	Yes
Mean:			0.0582			
SD :			0.0001			
%RSD:			0.1933			

[Hg] Standard number 2 applied. [5.000]
Correlation Coefficient: 0.99975 Slope: 0.01160

Element: Hg Seq. No.: 4 AS Loc.: 4 Date: 09/28/2001
Sample ID: STD3

Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Height	Time	Peak Stored
1			0.0861	0.0862	08:15:57	Yes

00070

2 0.0866 0.0867 08:16:29 Yes
 3 0.0866 0.0867 08:17:03 Yes
 Mean: 0.0865
 SD : 0.0003
 %RSD: 0.3089
 [Hg] Standard number 3 applied. [7.500]
 Correlation Coefficient: 0.99991 Slope: 0.01155

=====

Element: Hg Seq. No.: 5 AS Loc.: 5 Date: 09/28/2001
 Sample ID: STD4

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.1167	0.1168	08:18:19	Yes
2			0.1170	0.1171	08:18:52	Yes
3			0.1152	0.1153	08:19:25	Yes
Mean:			0.1163			
SD :			0.0010			
%RSD:			0.8191			

[Hg] Standard number 4 applied. [10.00]
 Correlation Coefficient: 0.99993 Slope: 0.01160

=====

Element: Hg Seq. No.: 6 AS Loc.: 6 Date: 09/28/2001
 Sample ID: STD5

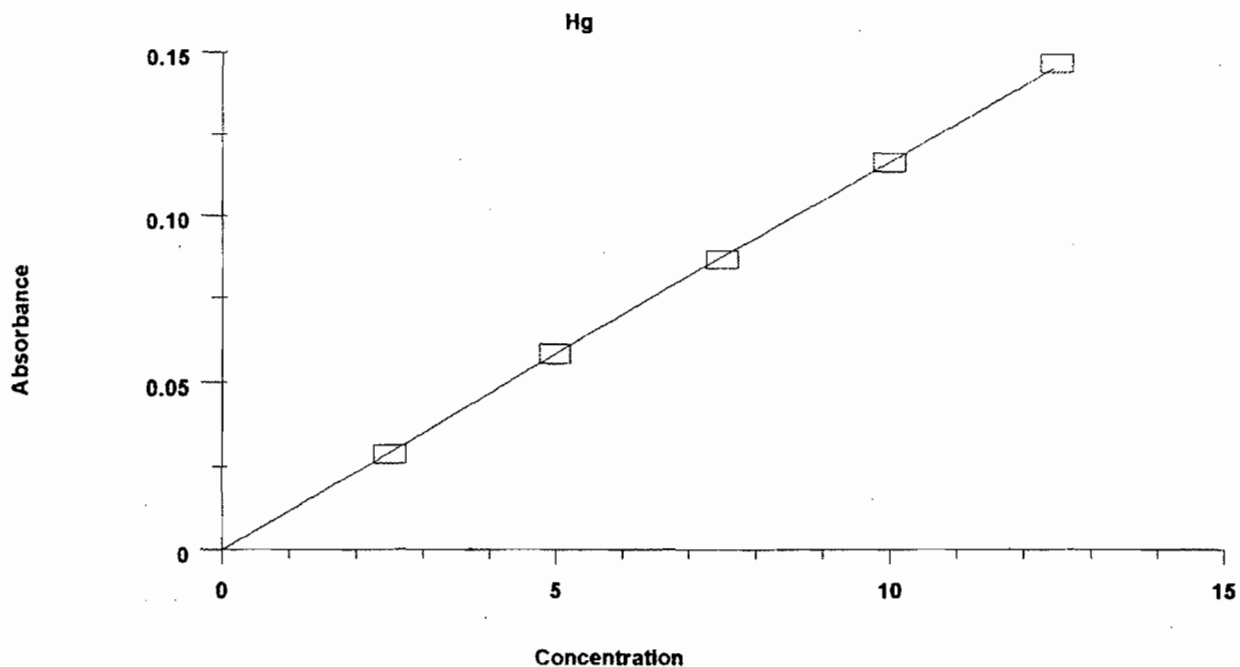
Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.1457	0.1458	08:20:41	Yes
2			0.1471	0.1472	08:21:14	Yes
3			0.1468	0.1469	08:21:47	Yes
Mean:			0.1465			
SD :			0.0008			
%RSD:			0.5330			

[Hg] Standard number 5 applied. [12.50]
 Correlation Coefficient: 0.99988 Slope: 0.01165

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	---	---	---
STD1	0.0286	2.500	2.452	0.0001	0.3
STD2	0.0582	5.000	4.993	0.0001	0.2
STD3	0.0865	7.500	7.418	0.0003	0.3
STD4	0.1163	10.000	9.982	0.0010	0.8
STD5	0.1465	12.500	12.57	0.0008	0.5
Calib Blank	0.0001	---	---	---	---
Correlation Coefficient: 0.99988		Slope:	0.01165	----	

00071



=====
 Element: Hg Seq. No.: 7 AS Loc.: 9 Date: 09/28/2001
 Sample ID: ICV

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.511	1.511	0.0176	0.0177	08:23:06	Yes
2	1.508	1.508	0.0176	0.0177	08:23:39	Yes
3	1.513	1.513	0.0176	0.0177	08:24:12	Yes
Mean:	1.511	1.511	0.0176			
SD :	0.0025	0.0025	0.0000			
%RSD:	0.2	0.2	0.1675			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 8 AS Loc.: 10 Date: 09/28/2001
 Sample ID: ICB

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.004	0.004	0.0000	0.0001	08:25:01	Yes
2	-0.006	-0.006	-0.0001	0.0000	08:25:34	Yes
3	-0.005	-0.005	-0.0001	0.0000	08:26:07	Yes
Mean:	-0.002	-0.002	0.0000			
SD :	0.0053	0.0053	0.0001			
%RSD:	221.8	221.8	221.7900			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 9 AS Loc.: 11 Date: 09/28/2001
 Sample ID: SPEX HG-STD

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored

00072

1	3.125	3.125	0.0364	0.0365	08:26:56	Yes
2	3.127	3.127	0.0364	0.0365	08:27:29	Yes
3	3.115	3.115	0.0363	0.0364	08:28:02	Yes
Mean:	3.122	3.122	0.0364			
SD :	0.0067	0.0067	0.0001			
%RSD:	0.2	0.2	0.2156			

QC value within specified limits.

=====

Element: Hg Seq. No.: 10 AS Loc.: 12 Date: 09/28/2001
Sample ID: LLC

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.242	0.242	0.0028	0.0029	08:28:52	Yes
2	0.238	0.238	0.0028	0.0029	08:29:25	Yes
3	0.243	0.243	0.0028	0.0029	08:29:58	Yes
Mean:	0.241	0.241	0.0028			
SD :	0.0026	0.0026	0.0000			
%RSD:	1.1	1.1	1.0745			

QC value within specified limits.

=====

Element: Hg Seq. No.: 11 AS Loc.: 13 Date: 09/28/2001
Sample ID: DIL. CHECK

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.003	0.003	0.0000	0.0001	08:30:46	Yes
2	0.006	0.006	0.0001	0.0002	08:31:19	Yes
3	0.005	0.005	0.0001	0.0002	08:31:52	Yes
Mean:	0.005	0.005	0.0001			
SD :	0.0014	0.0014	0.0000			
%RSD:	28.8	28.8	28.7929			

QC value within specified limits.

=====

Element: Hg Seq. No.: 12 AS Loc.: 14 Date: 09/28/2001
Sample ID: BL0927-1M3A

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.009	0.009	0.0001	0.0002	08:32:41	Yes
2	0.007	0.007	0.0001	0.0002	08:33:14	Yes
3	0.004	0.004	0.0000	0.0001	08:33:47	Yes
Mean:	0.007	0.007	0.0001			
SD :	0.0029	0.0029	0.0000			
%RSD:	42.2	42.2	42.2181			

=====

Element: Hg Seq. No.: 13 AS Loc.: 15 Date: 09/28/2001
Sample ID: BL0927S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.963	0.963	0.0112	0.0113	08:34:35	Yes
2	0.963	0.963	0.0112	0.0113	08:35:08	Yes
3	0.971	0.971	0.0113	0.0114	08:35:41	Yes
Mean:	0.966	0.966	0.0113			
SD :	0.0047	0.0047	0.0001			
%RSD:	0.5	0.5	0.4831			

=====

1	0.149	0.149	0.0018	0.0019	11:14:13 Yes
2	0.152	0.152	0.0018	0.0019	11:14:46 Yes
3	0.152	0.152	0.0018	0.0019	11:15:19 Yes
Mean:	0.151	0.151	0.0018		
SD :	0.0020	0.0020	0.0000		
%RSD:	1.3	1.3	1.2961		

=====

Element: Hg Seq. No.: 86 AS Loc.: 73 Date: 09/28/2001
Sample ID: 55964

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	5.846	5.846	0.0695	0.0696	11:16:08	Yes
2	5.879	5.879	0.0699	0.0700	11:16:41	Yes
3	5.880	5.880	0.0699	0.0700	11:17:14	Yes
Mean:	5.868	5.868	0.0697			
SD :	0.0196	0.0196	0.0002			
%RSD:	0.3	0.3	0.3344			

=====

Element: Hg Seq. No.: 87 AS Loc.: 7 Date: 09/28/2001
Sample ID: CCV

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.051	1.051	0.0125	0.0126	11:18:28	Yes
2	1.042	1.042	0.0124	0.0125	11:19:01	Yes
3	1.055	1.055	0.0125	0.0126	11:19:34	Yes
Mean:	1.049	1.049	0.0125			
SD :	0.0070	0.0070	0.0001			
%RSD:	0.7	0.7	0.6678			

QC value within specified limits.

=====

Element: Hg Seq. No.: 88 AS Loc.: 8 Date: 09/28/2001
Sample ID: CCB

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.004	-0.004	0.0000	0.0001	11:20:24	Yes
2	0.004	0.004	0.0001	0.0002	11:20:56	Yes
3	-0.001	-0.001	0.0000	0.0001	11:21:29	Yes
Mean:	0.000	0.000	0.0000			
SD :	0.0041	0.0041	0.0000			
%RSD:	12360	12360	12362.7887			

QC value within specified limits.

=====

Element: Hg Seq. No.: 89 AS Loc.: 74 Date: 09/28/2001
Sample ID: 55592

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	3.486	3.486	0.0414	0.0415	11:22:22	Yes
2	3.499	3.499	0.0416	0.0417	11:22:55	Yes
3	3.491	3.491	0.0415	0.0416	11:23:28	Yes
Mean:	3.492	3.492	0.0415			
SD :	0.0068	0.0068	0.0001			
%RSD:	0.2	0.2	0.1944			

=====

Element: Hg Seq. No.: 90 AS Loc.: 4 Date: 09/28/2001

00074

Sample ID: Reslope

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.0898	0.0899	11:24:19	Yes
2			0.0898	0.0899	11:24:52	Yes
3			0.0892	0.0893	11:25:25	Yes

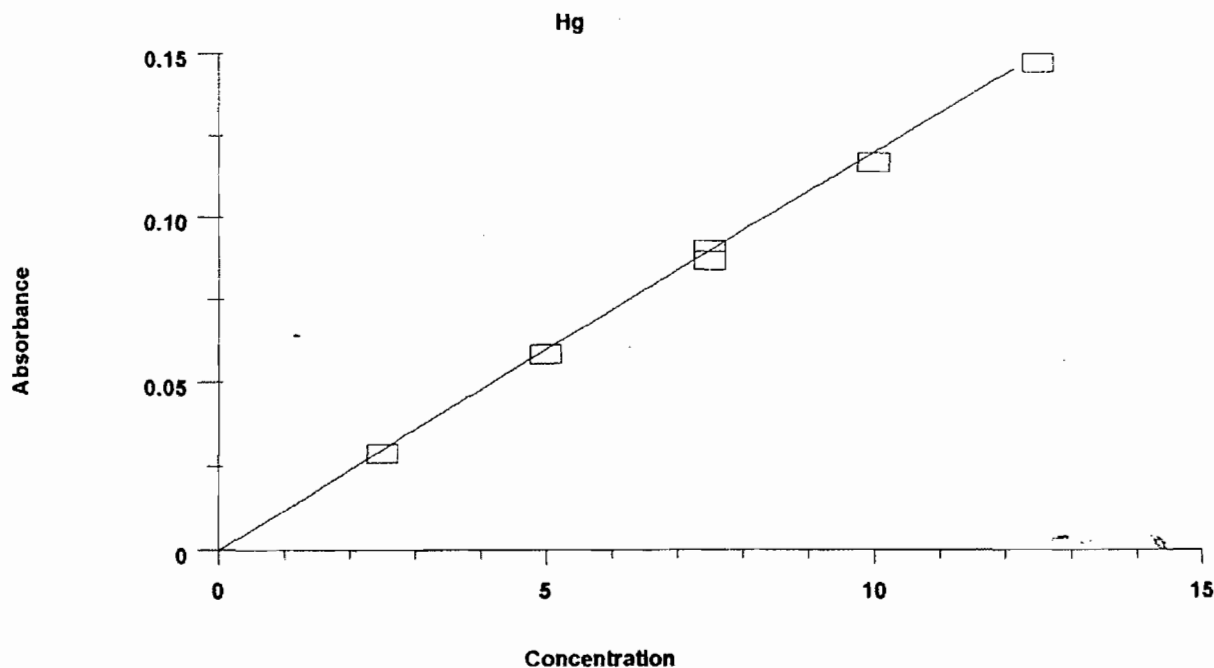
Mean: 0.0896
SD : 0.0003
%RSD: 0.3631
[Hg] Reslope standard applied. [7.500]
Correlation Coefficient: 0.99988

Slope: 0.01137

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.009	0.0000	27.4
STD1	0.0286	2.500	2.392	0.0001	0.3
STD2	0.0582	5.000	4.870	0.0001	0.2
STD3	0.0865	7.500	7.235	0.0003	0.3
STD4	0.1163	10.000	9.736	0.0010	0.8
STD5	0.1465	12.500	12.26	0.0008	0.5
Reslope	0.0896	7.500	7.500	0.0003	0.4
Calib Blank	0.0001	---	0.009	0.0000	27.4

Correlation Coefficient: 0.99988 Slope: 0.01137 ---



Element: Hg Seq. No.: 91 AS Loc.: 75 Date: 09/28/2001
Sample ID: 54842

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored

00073

1	0.546	0.546	0.0065	0.0066	11:26:42	Yes
2	0.538	0.538	0.0064	0.0065	11:27:15	Yes
3	0.544	0.544	0.0065	0.0066	11:27:48	Yes
Mean:	0.543	0.543	0.0065			
SD :	0.0043	0.0043	0.0001			
%RSD:	0.8	0.8	0.7960			

=====

Element: Hg Seq. No.: 92 AS Loc.: 76 Date: 09/28/2001

Sample ID: BL0927-6M3B

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.011	0.011	0.0001	0.0002	11:28:36	Yes
2	0.008	0.008	0.0001	0.0002	11:29:09	Yes
3	0.011	0.011	0.0001	0.0002	11:29:42	Yes
Mean:	0.010	0.010	0.0001			
SD :	0.0018	0.0018	0.0000			
%RSD:	18.9	18.9	18.9386			

=====

Element: Hg Seq. No.: 93 AS Loc.: 77 Date: 09/28/2001

Sample ID: BL0927S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.964	0.964	0.0115	0.0116	11:30:31	Yes
2	0.974	0.974	0.0116	0.0117	11:31:05	Yes
3	0.975	0.975	0.0116	0.0118	11:31:37	Yes
Mean:	0.971	0.971	0.0116			
SD :	0.0059	0.0059	0.0001			
%RSD:	0.6	0.6	0.6121			

=====

Element: Hg Seq. No.: 94 AS Loc.: 78 Date: 09/28/2001

Sample ID: BL0927DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.973	0.973	0.0116	0.0117	11:32:26	Yes
2	0.973	0.973	0.0116	0.0117	11:32:59	Yes
3	0.981	0.981	0.0117	0.0118	11:33:32	Yes
Mean:	0.976	0.976	0.0117			
SD :	0.0049	0.0049	0.0001			
%RSD:	0.5	0.5	0.5035			

=====

Element: Hg Seq. No.: 95 AS Loc.: 79 Date: 09/28/2001

Sample ID: 56732

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.014	0.014	0.0002	0.0003	11:34:21	Yes
2	0.008	0.008	0.0001	0.0002	11:34:54	Yes
3	0.010	0.010	0.0001	0.0002	11:35:27	Yes
Mean:	0.011	0.011	0.0001			
SD :	0.0033	0.0033	0.0000			
%RSD:	30.5	30.5	30.5400			

=====

Element: Hg Seq. No.: 96 AS Loc.: 80 Date: 09/28/2001

Sample ID: 56732D

00073

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.015	0.015	0.0002	0.0003	11:36:16	Yes
2	0.013	0.013	0.0002	0.0003	11:36:49	Yes
3	0.016	0.016	0.0002	0.0003	11:37:22	Yes
Mean:	0.014	0.014	0.0002			
SD :	0.0017	0.0017	0.0000			
%RSD:	11.7	11.7	11.6941			

=====

Element: Hg Seq. No.: 97 AS Loc.: 81 Date: 09/28/2001
Sample ID: 56732S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.007	1.007	0.0120	0.0121	11:38:11	Yes
2	1.013	1.013	0.0121	0.0122	11:38:44	Yes
3	1.007	1.007	0.0120	0.0121	11:39:17	Yes
Mean:	1.009	1.009	0.0121			
SD :	0.0038	0.0038	0.0000			
%RSD:	0.4	0.4	0.3759			

=====

Element: Hg Seq. No.: 98 AS Loc.: 82 Date: 09/28/2001
Sample ID: 56732DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.016	1.016	0.0121	0.0122	11:40:06	Yes
2	1.005	1.005	0.0120	0.0121	11:40:39	Yes
3	1.014	1.014	0.0121	0.0122	11:41:12	Yes
Mean:	1.012	1.012	0.0121			
SD :	0.0059	0.0059	0.0001			
%RSD:	0.6	0.6	0.5782			

=====

Element: Hg Seq. No.: 99 AS Loc.: 83 Date: 09/28/2001
Sample ID: 56729

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.013	0.013	0.0002	0.0003	11:42:01	Yes
2	0.018	0.018	0.0002	0.0003	11:42:34	Yes
3	0.015	0.015	0.0002	0.0003	11:43:07	Yes
Mean:	0.015	0.015	0.0002			
SD :	0.0028	0.0028	0.0000			
%RSD:	18.3	18.3	18.2914			

=====

Element: Hg Seq. No.: 100 AS Loc.: 7 Date: 09/28/2001
Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.038	1.038	0.0124	0.0125	11:43:57	Yes
2	1.048	1.048	0.0125	0.0126	11:44:30	Yes
3	1.042	1.042	0.0124	0.0125	11:45:04	Yes
Mean:	1.043	1.043	0.0125			
SD :	0.0054	0.0054	0.0001			
%RSD:	0.5	0.5	0.5170			

QC value within specified limits.

=====

00077

Element: Hg Seq. No.: 101 AS Loc.: 8 Date: 09/28/2001
 Sample ID: CCB

Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Height	Time	Peak Stored
1	0.000	0.000	0.0000	0.0001	11:45:53	Yes
2	0.000	0.000	0.0000	0.0001	11:46:26	Yes
3	0.000	0.000	0.0000	0.0001	11:46:59	Yes
Mean:	0.000	0.000	0.0000			
SD :	0.0004	0.0004	0.0000			
%RSD:	255.9	255.9	255.8571			

QC value within specified limits.

Element: Hg Seq. No.: 102 AS Loc.: 84 Date: 09/28/2001
 Sample ID: 56730

Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Height	Time	Peak Stored
1	0.007	0.007	0.0001	0.0002	11:47:49	Yes
2	0.012	0.012	0.0001	0.0002	11:48:22	Yes
3	0.013	0.013	0.0002	0.0003	11:48:55	Yes
Mean:	0.011	0.011	0.0001			
SD :	0.0029	0.0029	0.0000			
%RSD:	27.3	27.3	27.2933			

Element: Hg Seq. No.: 103 AS Loc.: 4 Date: 09/28/2001
 Sample ID: Reslope

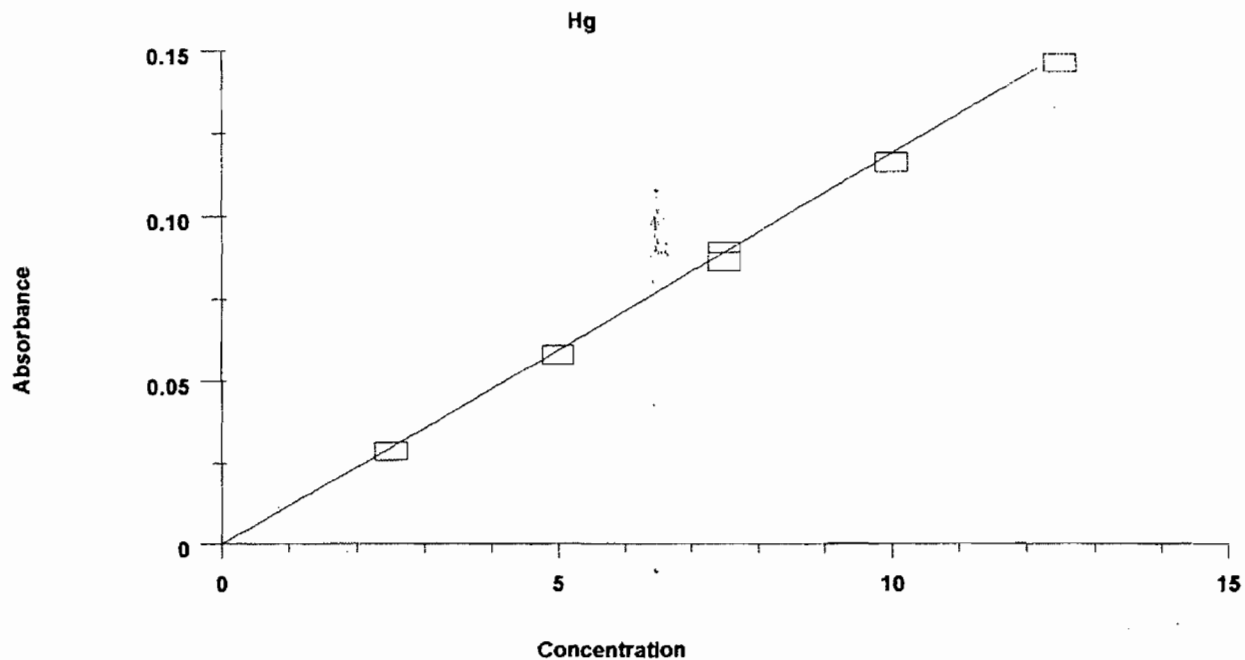
Repl #	Sample Conc µg/L	Std Conc µg/L	Blk Corr Signal	Peak Height	Time	Peak Stored
1			0.0895	0.0896	11:49:47	Yes
2			0.0891	0.0892	11:50:20	Yes
3			0.0895	0.0896	11:50:53	Yes
Mean:			0.0894			
SD :			0.0002			
%RSD:			0.2682			

[Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99988 Slope: 0.01140

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.009	0.0000	27.4
STD1	0.0286	2.500	2.398	0.0001	0.3
STD2	0.0582	5.000	4.883	0.0001	0.2
STD3	0.0865	7.500	7.255	0.0003	0.3
STD4	0.1163	10.000	9.762	0.0010	0.8
STD5	0.1465	12.500	12.30	0.0008	0.5
Reslope	0.0894	7.500	7.500	0.0002	0.3
Calib Blank	0.0001	---	0.009	0.0000	27.4
Correlation Coefficient:		0.99988	Slope:	0.01140	----

00078



Element: Hg Seq. No.: 104 AS Loc.: 85 Date: 09/28/2001
Sample ID: 56731

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Height	Time	Peak Stored
1	0.010	0.010	0.0001	0.0002	11:52:13	Yes
2	0.008	0.008	0.0001	0.0002	11:52:46	Yes
3	0.010	0.010	0.0001	0.0002	11:53:19	Yes
Mean:	0.009	0.009	0.0001			
SD :	0.0009	0.0009	0.0000			
%RSD:	9.7	9.7	9.7434			

Element: Hg Seq. No.: 105 AS Loc.: 86 Date: 09/28/2001
Sample ID: 56733

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Height	Time	Peak Stored
1	0.015	0.015	0.0002	0.0003	11:54:10	Yes
2	0.014	0.014	0.0002	0.0003	11:54:44	Yes
3	0.009	0.009	0.0001	0.0002	11:55:17	Yes
Mean:	0.013	0.013	0.0001			
SD :	0.0032	0.0032	0.0000			
%RSD:	25.7	25.7	25.7072			

Element: Hg Seq. No.: 106 AS Loc.: 87 Date: 09/28/2001
Sample ID: 56734

Repl #	SampleConc µg/L	StdndConc µg/L	BlndCorr Signal	Peak Height	Time	Peak Stored
1	0.008	0.008	0.0001	0.0002	11:56:06	Yes
2	0.005	0.005	0.0001	0.0002	11:56:39	Yes

00079

3	0.011	0.011	0.0001	0.0002	11:57:12	Yes
Mean:	0.008	0.008	0.0001			
SD :	0.0026	0.0026	0.0000			
%RSD:	32.4	32.4	32.4002			

=====

Element: Hg Seq. No.: 107 AS Loc.: 88 Date: 09/28/2001

Sample ID: 56738

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.007	0.007	0.0001	0.0002	11:58:00	Yes
2	0.003	0.003	0.0000	0.0001	11:58:33	Yes
3	0.005	0.005	0.0001	0.0002	11:59:06	Yes
Mean:	0.005	0.005	0.0001			
SD :	0.0019	0.0019	0.0000			
%RSD:	35.1	35.1	35.1026			

=====

Element: Hg Seq. No.: 108 AS Loc.: 89 Date: 09/28/2001

Sample ID: 56739

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.007	0.007	0.0001	0.0002	11:59:55	Yes
2	0.004	0.004	0.0000	0.0002	12:00:28	Yes
3	0.010	0.010	0.0001	0.0002	12:01:01	Yes
Mean:	0.007	0.007	0.0001			
SD :	0.0029	0.0029	0.0000			
%RSD:	42.1	42.1	42.1231			

=====

Element: Hg Seq. No.: 109 AS Loc.: 90 Date: 09/28/2001

Sample ID: 56740

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.004	0.004	0.0001	0.0002	12:01:50	Yes
2	0.005	0.005	0.0001	0.0002	12:02:23	Yes
3	0.007	0.007	0.0001	0.0002	12:02:56	Yes
Mean:	0.005	0.005	0.0001			
SD :	0.0013	0.0013	0.0000			
%RSD:	23.6	23.6	23.5855			

=====

Element: Hg Seq. No.: 110 AS Loc.: 91 Date: 09/28/2001

Sample ID: 56742

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.008	0.008	0.0001	0.0002	12:03:45	Yes
2	0.011	0.011	0.0001	0.0002	12:04:18	Yes
3	0.007	0.007	0.0001	0.0002	12:04:51	Yes
Mean:	0.009	0.009	0.0001			
SD :	0.0020	0.0020	0.0000			
%RSD:	22.2	22.2	22.2324			

=====

Element: Hg Seq. No.: 111 AS Loc.: 92 Date: 09/28/2001

Sample ID: BL0927-7M3B

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored

00080

1	0.006	0.006	0.0001	0.0002	12:05:39	Yes
2	0.004	0.004	0.0000	0.0002	12:06:13	Yes
3	0.006	0.006	0.0001	0.0002	12:06:45	Yes
Mean:	0.005	0.005	0.0001			
SD :	0.0010	0.0010	0.0000			
%RSD:	18.9	18.9	18.9270			

=====
Element: Hg Seq. No.: 112 AS Loc.: 93 Date: 09/28/2001
Sample ID: BL0927S
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.972	0.972	0.0116	0.0117	12:07:33	Yes
2	0.983	0.983	0.0117	0.0118	12:08:06	Yes
3	0.978	0.978	0.0116	0.0118	12:08:39	Yes
Mean:	0.978	0.978	0.0117			
SD :	0.0055	0.0055	0.0001			
%RSD:	0.6	0.6	0.5640			

=====
Element: Hg Seq. No.: 113 AS Loc.: 7 Date: 09/28/2001
Sample ID: CCV
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.032	1.032	0.0123	0.0124	12:09:30	Yes
2	1.028	1.028	0.0123	0.0124	12:10:03	Yes
3	1.033	1.033	0.0123	0.0124	12:10:36	Yes
Mean:	1.031	1.031	0.0123			
SD :	0.0022	0.0022	0.0000			
%RSD:	0.2	0.2	0.2092			

QC value within specified limits.

=====
Element: Hg Seq. No.: 114 AS Loc.: 8 Date: 09/28/2001
Sample ID: CCB
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.001	0.001	0.0000	0.0001	12:11:25	Yes
2	-0.002	-0.002	0.0000	0.0001	12:11:58	Yes
3	0.002	0.002	0.0000	0.0001	12:12:32	Yes
Mean:	0.000	0.000	0.0000			
SD :	0.0018	0.0018	0.0000			
%RSD:	1048	1048	1047.5858			

QC value within specified limits.

=====
Element: Hg Seq. No.: 115 AS Loc.: 94 Date: 09/28/2001
Sample ID: BL0927DS
=====

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.987	0.987	0.0118	0.0119	12:13:23	Yes
2	0.982	0.982	0.0117	0.0118	12:13:56	Yes
3	0.978	0.978	0.0117	0.0118	12:14:29	Yes
Mean:	0.982	0.982	0.0117			
SD :	0.0045	0.0045	0.0001			
%RSD:	0.5	0.5	0.4554			

=====
Element: Hg Seq. No.: 116 AS Loc.: 95 Date: 09/28/2001
=====

00081

Sample ID: 56741

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.018	0.018	0.0002	0.0003	12:16:23	Yes
2	0.015	0.015	0.0002	0.0003	12:16:56	Yes
3	0.018	0.018	0.0002	0.0003	12:17:29	Yes
Mean:	0.017	0.017	0.0002			
SD :	0.0020	0.0020	0.0000			
%RSD:	11.8	11.8	11.7842			

Element: Hg Seq. No.: 117 AS Loc.: 4 Date: 09/28/2001
Sample ID: Reslope

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0886	0.0887	12:18:21	Yes
2			0.0883	0.0884	12:18:54	Yes
3			0.0888	0.0889	12:19:27	Yes
Mean:			0.0886			
SD :			0.0002			
%RSD:			0.2631			

[Hg] Reslope standard applied. [7.500]

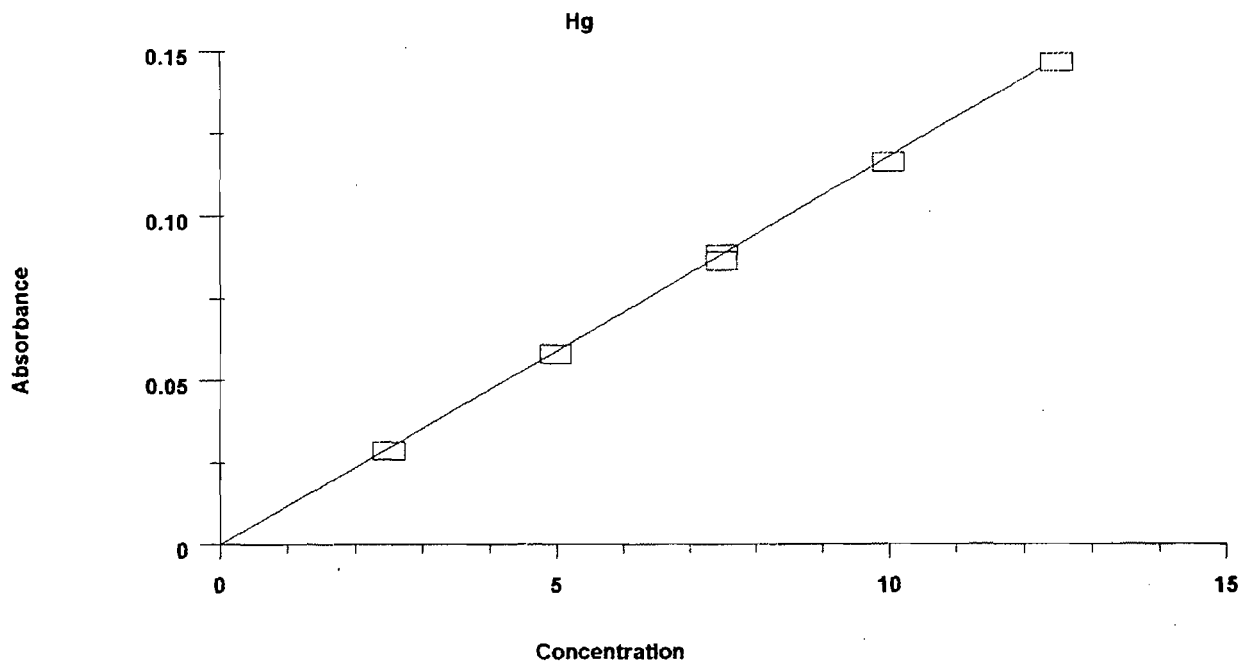
Correlation Coefficient: 0.99988

Slope: 0.01150

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.009	0.0000	27.4
STD1	0.0286	2.500	2.420	0.0001	0.3
STD2	0.0582	5.000	4.927	0.0001	0.2
STD3	0.0865	7.500	7.321	0.0003	0.3
STD4	0.1163	10.000	9.851	0.0010	0.8
STD5	0.1465	12.500	12.41	0.0008	0.5
Reslope	0.0886	7.500	7.500	0.0002	0.3
Calib Blank	0.0001	---	0.009	0.0000	27.4
Correlation Coefficient: 0.99988		Slope:	0.01150	----	

00082



Element: Hg Seq. No.: 118 AS Loc.: 96 Date: 09/28/2001
Sample ID: 56741D

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.651	0.651	0.0077	0.0078	12:20:46	Yes
2	0.654	0.654	0.0077	0.0078	12:21:19	Yes
3	0.664	0.664	0.0078	0.0079	12:21:52	Yes
Mean:	0.656	0.656	0.0077			
SD :	0.0066	0.0066	0.0001			
%RSD:	1.0	1.0	1.0050			

Element: Hg Seq. No.: 119 AS Loc.: 97 Date: 09/28/2001
Sample ID: 56741S

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.015	1.015	0.0120	0.0121	12:22:40	Yes
2	1.016	1.016	0.0120	0.0121	12:23:13	Yes
3	1.014	1.014	0.0120	0.0121	12:23:47	Yes
Mean:	1.015	1.015	0.0120			
SD :	0.0009	0.0009	0.0000			
%RSD:						

Element: Hg Seq. No.: 120 AS Loc.: 98 Date: 09/28/2001
Sample ID: 56741DS

Repl #	SampleConc µg/L	StndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.024	1.024	0.0121	0.0122	12:24:35	Yes
2	1.029	1.029	0.0121	0.0123	12:25:08	Yes

00083

3 1.017 1.017 0.0120 0.0121 12:25:41 Yes
 Mean: 1.024 1.024 0.0121
 SD : 0.0058 0.0058 0.0001
 %RSD: 0.6 0.6 0.5622

=====
 Element: Hg Seq. No.: 121 AS Loc.: 99 Date: 09/28/2001
 Sample ID: 56743

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.017	0.017	0.0002	0.0003	12:26:30	Yes
2	0.017	0.017	0.0002	0.0003	12:27:03	Yes
3	0.024	0.024	0.0003	0.0004	12:27:36	Yes
Mean:	0.019	0.019	0.0002			
SD :	0.0042	0.0042	0.0000			
%RSD:	21.7	21.7	21.7028			

=====
 Element: Hg Seq. No.: 122 AS Loc.: 100 Date: 09/28/2001
 Sample ID: 57013

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.003	0.003	0.0000	0.0001	12:28:26	Yes
2	0.006	0.006	0.0001	0.0002	12:28:58	Yes
3	0.008	0.008	0.0001	0.0002	12:29:31	Yes
Mean:	0.006	0.006	0.0001			
SD :	0.0024	0.0024	0.0000			
%RSD:	41.4	41.4	41.3820			

=====
 Element: Hg Seq. No.: 123 AS Loc.: 101 Date: 09/28/2001
 Sample ID: BL0927-8M1B

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.011	0.011	0.0001	0.0002	12:30:20	Yes
2	0.011	0.011	0.0001	0.0002	12:30:54	Yes
3	0.010	0.010	0.0001	0.0002	12:31:27	Yes
Mean:	0.011	0.011	0.0001			
SD :	0.0007	0.0007	0.0000			
%RSD:	6.2	6.2	6.1955			

=====
 Element: Hg Seq. No.: 124 AS Loc.: 102 Date: 09/28/2001
 Sample ID: BL0927S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.983	0.983	0.0116	0.0117	12:32:19	Yes
2	0.987	0.987	0.0117	0.0118	12:32:52	Yes
3	1.005	1.005	0.0119	0.0120	12:33:25	Yes
Mean:	0.991	0.991	0.0117			
SD :	0.0119	0.0119	0.0001			
%RSD:	1.2	1.2	1.2052			

=====
 Element: Hg Seq. No.: 125 AS Loc.: 103 Date: 09/28/2001
 Sample ID: BL0927DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored

00084

1	0.993	0.993	0.0117	0.0118	12:34:14	Yes
2	0.991	0.991	0.0117	0.0118	12:34:47	Yes
3	0.994	0.994	0.0117	0.0118	12:35:20	Yes
Mean:	0.992	0.992	0.0117			
SD :	0.0011	0.0011	0.0000			
%RSD:	0.1	0.1	0.1112			

=====
Element: Hg Seq. No.: 126 AS Loc.: 7 Date: 09/28/2001
Sample ID: CCV

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	1.036	1.036	0.0122	0.0123	12:36:13	Yes
2	1.051	1.051	0.0124	0.0125	12:36:46	Yes
3	1.043	1.043	0.0123	0.0124	12:37:19	Yes
Mean:	1.044	1.044	0.0123			
SD :	0.0074	0.0074	0.0001			
%RSD:	0.7	0.7	0.7064			

QC value within specified limits.

=====
Element: Hg Seq. No.: 127 AS Loc.: 8 Date: 09/28/2001
Sample ID: CCB

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.001	0.001	0.0000	0.0001	12:38:08	Yes
2	-0.001	-0.001	0.0000	0.0001	12:38:41	Yes
3	-0.002	-0.002	0.0000	0.0001	12:39:14	Yes
Mean:	-0.001	-0.001	0.0000			
SD :	0.0015	0.0015	0.0000			
%RSD:	270.6	270.6	270.5896			

QC value within specified limits.

=====
Element: Hg Seq. No.: 128 AS Loc.: 104 Date: 09/28/2001
Sample ID: 55963

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	12.77	6.383	0.0754	0.0755	12:40:07	Yes
2	12.73	6.366	0.0752	0.0753	12:40:40	Yes
3	12.73	6.366	0.0752	0.0753	12:41:13	Yes
Mean:	12.74	6.372	0.0752			
SD :	0.0195	0.0097	0.0001			
%RSD:	0.2	0.2	0.1528			

=====
Element: Hg Seq. No.: 129 AS Loc.: 105 Date: 09/28/2001
Sample ID: 55963D

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	12.91	6.456	0.0762	0.0763	12:42:23	Yes
2	12.84	6.420	0.0758	0.0759	12:42:56	Yes
3	12.86	6.430	0.0759	0.0760	12:43:29	Yes
Mean:	12.87	6.435	0.0760			
SD :	0.0365	0.0183	0.0002			
%RSD:	0.3	0.3	0.2836			

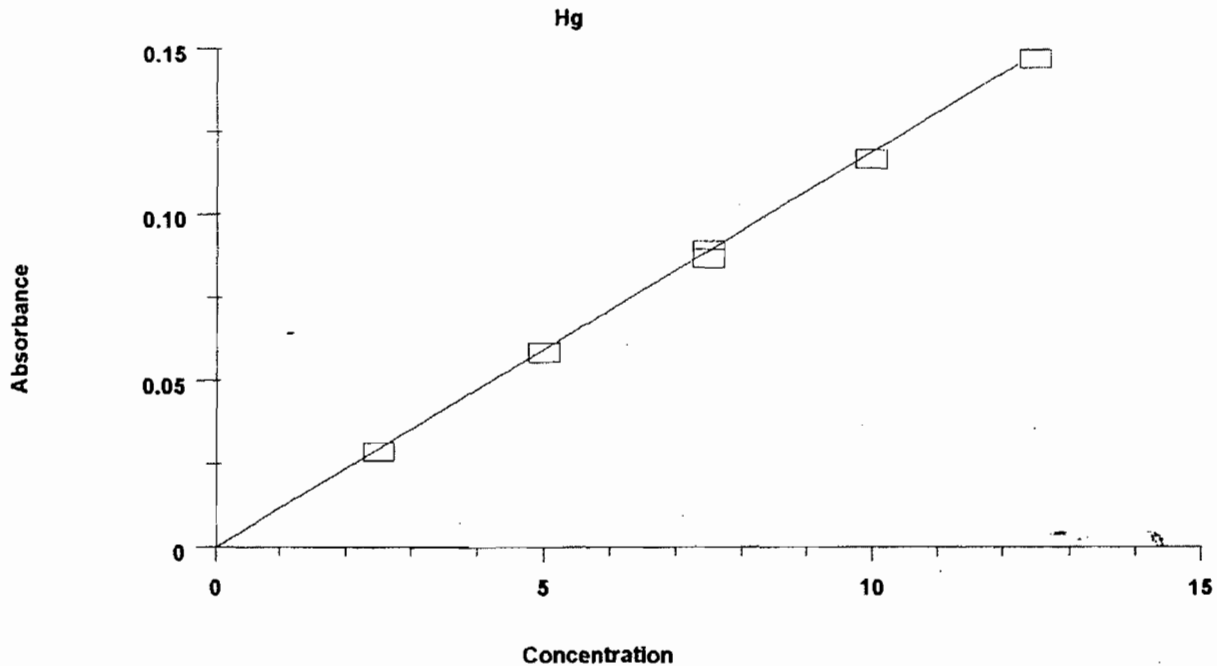
=====
Element: Hg Seq. No.: 130 AS Loc.: 4 Date: 09/28/2001

Sample ID: Reslope

Repl #	SampleConc $\mu\text{g/L}$	StdConc $\mu\text{g/L}$	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0892	0.0893	12:44:42	Yes
2			0.0887	0.0888	12:45:15	Yes
3			0.0888	0.0889	12:45:48	Yes
Mean:			0.0889			
SD :			0.0003			
%RSD:			0.3233			
[Hg] Reslope standard applied. [7.500]						
Correlation Coefficient:			0.99988	Slope: 0.01146		

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration ($\mu\text{g/L}$)	Calculated Concentration ($\mu\text{g/L}$)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.009	0.0000	27.4
STD1	0.0286	2.500	2.411	0.0001	0.3
STD2	0.0582	5.000	4.910	0.0001	0.2
STD3	0.0865	7.500	7.295	0.0003	0.3
STD4	0.1163	10.000	9.816	0.0010	0.8
STD5	0.1465	12.500	12.37	0.0008	0.5
Reslope	0.0889	7.500	7.500	0.0003	0.3
Calib Blank	0.0001	---	0.009	0.0000	27.4
Correlation Coefficient:		0.99988	Slope:	0.01146	----



=====
 Element: Hg Seq. No.: 131 AS Loc.: 106 Date: 09/28/2001
 Sample ID: 55963S
 =====

Repl #	SampleConc $\mu\text{g/L}$	StdConc $\mu\text{g/L}$	BlkCorr Signal	Peak Height	Time	Peak Stored

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
51	BL 0927	6438	"	"	"	(Processed Blank)
52	BL S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
53	BL DS	"	"	"	"	(Duplicate Blank Spike)
1 54	056732	"	"	"	"	
1 55	D	"	"	"	"	(Duplicate sample)
1 56	S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
1 57	DS	"	"	"	"	(Duplicate Spiked sample)
2 58	29	"	"	"	"	
3 59	30	"	"	"	"	
4 60	31	"	"	"	"	
5 61	33	"	"	"	"	
6 62	34	"	"	"	"	
7 63	38	"	"	"	"	
8 64	39	"	"	"	"	
9 65	40	"	"	"	"	
10 66	42	"	"	"	"	
67	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
68	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Procedure/Methodology:

Note: Calibration Standards, ICVs, CCVs, CCBs and LCS are prepared the same as the samples but are not digested.

- 1 Prepare 25 ppm Intermediate Calibration Standard (if required) by pipetting 625 ul. of 1000 ppm Stock to 25 ml final volume of 2% HNO₃
- 2 Prepare 0.1 ppm Working calibration standard daily by pipetting 400 ul. of 25 ppm Intermediate to 100 ml final volume of 2% HNO₃
- 3 Prepare a 0.05 ppm Working Reference QC Standard daily by pipetting 50 ul of Stock Reference Standard to 100 ml final vol of 2% HNO₃
- 4 Using the LIMS Screen "SCNDIG" enter the required samples into LIMS
- 5 Using the labeling program, "DIGLBL", retrieve the "SCNDIG" list and create labels for the required samples.
- 6 Label the falcon tubes appropriately
- 7 Include one External Reference Material sample per run
- 8 Include one Organic Mercury Control Standard per run
- 9 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
- 10 Spike the tubes as indicated in the comment sector of the digestion sheet
- 11 Add 0.5 ml. of conc. Nitric Acid (HNO₃), and 1 ml. of conc. Sulphuric acid, (H₂SO₄), to each tube
- 12 Add 3 ml. of 6% KMnO₄, purple colour must remain for the duration of digest.
- 13 Add 1.5 ml. of 5% potassium persulphate, (K₂S₂O₈), to each tube
- 14 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
- 15 Remove tubes and allow to cool to room temperature
- 16 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
- 17 Recap tubes and shake until KMnO₄ is destroyed and sample becomes colourless
Dilute the sample to a final volume of 30 ml.

Supplier/Lot Information	Supplier	Lot	Expiry Date
Stock Calibration Standard	AccuTrace	A9125032	02-02
Intermediate Cal Standard	Internal	0109/14	01/10/14
Stock Reference Standard	High Purity	0033536	7 JAN. 02
External Reference Material	SPEX-HG-SF	012-3846	APRIL, 2002
Organic Mercury Control Standard	Aldrich	N/A	N/A
6% potassium permanganate	Internal	0109/26	01/11/26
5% potassium persulphate	Internal	0409/17	01/11/17
20% hydroxylamine hydrochloride	Internal	0109/27	01/11/27
HNO ₃	Anachemia	1101040	01/11/26
H ₂ SO ₄	Anachemia	3100091	01/11/20
Bath Temps: 195 C	Time ON:	Time OFF:	
Prepared By: MB	Date: 10/15	Checked by: 12:15	

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG, DGHGLEACH, DG29*

Calibration Solutions:

#	I.D.	**Conc.	Spike	***Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	1.67	500 ul of 0.1 ppm working cal standard	2.5
4	Standard 3	3.33	1000 ul of 0.1 ppm working cal standard	5.0
5	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
6	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
7	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
8	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
9	Standard 5	6.67	2000 ul of 0.1 ppm working cal standard	10.0
10	Standard 6	8.33	2500 ul of 0.1 ppm working cal standard	12.5

Check List

- ☒ Digest Code/labels
- ☒ Samples poured out
- ☒ Acids added
- ☒ Reagents added
- ☒ Samples spiked
- ☒ Bath at 95 degrees C
- ☒ Samples digested
- ☒ Hydroxylamine HCl added
- ☒ Samples shaken and bulked
- ☒ Rack order checked

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
11	ICV (Int. Calib. Verif.)	443A	20 ml	30 ml	1 X	1.5 ppb = 600 ul of 0.05ppm Working Reference QC Std.
12	LLC (low level check)	"	"	"	"	0.25ppb = 50ul of 0.1 ppm Working Cal Std.
13	External Ref.	"	"	"	"	3.0ppb = 600ul of 0.1ppm Intermediate Spex Reference Std.
14	Organic Ref.	"	"	"	"	2.0ppb = 600ul of Intermediate Organic Reference Std.
15	BL 0922	"	"	"	"	(Processed Blank)
16	BL S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std. - - - -
17	BL DS	"	"	"	"	(Duplicate Blank Spike)
18	05224	"	"	"	"	
19	D	"	"	"	"	(Duplicate sample)
20	S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
21	DS	"	"	"	"	(Duplicate Spiked sample)
22	2526	"	"	"	"	
23	26	"	"	"	"	
24		"	"	"	"	
25		"	"	"	"	
26		"	"	"	"	
27		"	"	"	"	
28		"	"	"	"	
29		"	"	"	"	
30		"	"	"	"	
31	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
32	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
33	BL 0927	543C	20 ml	30 ml	"	(Processed Blank)
34	BL S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
35	BL DS	"	"	"	"	(Duplicate Blank Spike)
36	055963	"	"	"	"	
37	D	"	"	"	"	(Duplicate sample)
38	S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
39	DS	"	"	"	"	(Duplicate Spiked sample)
40	62	"	"	"	"	
41	04	"	"	"	"	
42	055192	"	"	"	"	
43	055842	"	"	"	"	
44		"	"	"	"	
45		"	"	"	"	
46		"	"	"	"	
47		"	"	"	"	
48		"	"	"	"	
49	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
50	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Comments: ** concentration based on 30 ml final volume, *** concentration based on 20 ml final volume

Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C

DG29HGI, DG29HGF, DG101AA1, DG101AA2

01/10/04 15:47:34

Printed by MGAS

LDCA

DATA TO BE VALIDATED (METVAL')

Analyzed by MGAS

Page 1 of 1

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
056729	CLEANAIR	MB R456	Mercury -	PV	-0.050	-99999.0	0.495	99.	493.000	98.	01/10/03	5R3C	01/10/04	MG11	22.	12.	
056730	CLEANAIR	M29-Reagent Blank	Mercury -	PV	-0.050						01/10/03	5R3C	01/10/04	MG11	22.	12.	
056731	CLEANAIR	M29-Field Blank	Mercury -	PV	5.930						01/10/03	5R3C	01/10/04	MG11	22.	12.	
056732	CLEANAIR	M29-Unit 2 Outlet R1	Mercury -	PV	1.213	1.190	1.626	85.	1.647	89.	01/10/03	5R3C	01/10/04	MG11	22.	12.	
056733	CLEANAIR	M29-Unit 2 Outlet R2	Mercury -	PV	1.529						01/10/03	5R3C	01/10/04	MG11	22.	12.	
056734	CLEANAIR	M29-Unit 2 Outlet R3	Mercury -	PV	1.204						01/10/03	5R3C	01/10/04	MG11	22.	12.	
056738	CLEANAIR	MB R456	Mercury -	PV	-0.050	-99999.0	0.495	99.	0.493	98.	01/10/03	5R3C	01/10/04	MG11	20.	12.	
056739	CLEANAIR	M29-Reagent Blank	Mercury -	PV	-0.050						01/10/03	5R3C	01/10/04	MG11	20.	12.	
056740	CLEANAIR	M29-Field Blank	Mercury -	PV	-0.050						01/10/03	5R3C	01/10/04	MG11	20.	12.	
056741	CLEANAIR	M29-Unit 3 Outlet R1	Mercury -	PV	0.605						01/10/03	5R3C	01/10/04	MG11	20.	12.	
056742	CLEANAIR	M29-Unit 3 Outlet R2	Mercury -	PV	0.743						01/10/03	5R3C	01/10/04	MG11	20.	12.	
056743	CLEANAIR	M29-Unit 3 Outlet R3	Mercury -	PV	0.616						01/10/03	5R3C	01/10/04	MG11	20.	12.	
BL1003	INTERNAL		Mercury -	PV	-0.050	-99999.0	0.495	99.	0.493	98.	01/10/03	5R3C	01/10/04	MG11	\$\$\$	\$\$\$	

13 Tests for 29HG-3C with an MDL of 0.050 ug

Validated By AK MBControl Chart Updated ✓IO Requirements met 2/3

00088

00089

29HG-3C

Sample #	Conc. ug/L	Dilution x	Final Vol ml	Result T ug	Mdl ug	Dil Mdl ug	%	MDL FV
BL1003-5R3C	0.001	1	500	0.001	0.05	0.05		500
BL1003S	0.990	1	500	0.495	0.05	0.05	99	500
BL1003DS	0.985	1	500	0.493	0.05	0.05	98	500
56732	2.425	1	500	1.213	0.05	0.05		500
56732D	2.380	1	500	1.190	0.05	0.05		500
56732S	3.252	1	500	1.626	0.05	0.05	85	500
56732DS	3.293	1	500	1.647	0.05	0.05	89	500
56729	0.000	1	500	0.000	0.05	0.05		500
56730	0.003	1	500	0.002	0.05	0.05		500
56731	11.860	1	500	5.930	0.05	0.05		500
56733	3.057	1	500	1.529	0.05	0.05		500
56734	2.407	1	500	1.204	0.05	0.05		500
56738	0.000	1	500	0.000	0.05	0.05		500
56739	0.007	1	500	0.004	0.05	0.05		500
56740	0.040	1	500	0.020	0.05	0.05		500
56741	1.209	1	500	0.605	0.05	0.05		500
56742	1.485	1	500	0.743	0.05	0.05		500
56743	1.232	1	500	0.616	0.05	0.05		500

Sample Information File C:\FIMS\AAUSER\SAMPINFO\011004F1.SIF

Description : TRAIN
Batch ID : MG11
Volume Units :
Weight Units :
Analyst : MGAS
Sample Volume : 0.00

AS Sample ID	Sample Sample	User	Remarks
Loc	Weight Units	Dilution	
14 BL1003-5R3C			
15 BL1003S			
16 BL1003DS			
17 56732			
18 56732D			
19 56732S			
20 56732DS			
21 56729			
22 56730			
23 56731			
24 56733			
25 56734			
26 56738			
27 56739			
28 56740			
29 56741			
30 56742			
31 56743			
32 BL1003-6R3C			
33 BL1003S			
34 BL1003DS			
35 57200			
36 57200D			
37 57200S			
38 57200DS			
39 57198			
40 57199			
41 57201			
42 57202			

Method Name: EPA 7470
 Method Description: EPA 7470
 Element: Hg

Date: 10/04/2001
 Technique: FI-MHS
 Calibration Type:
 Hg, Zero Intercept: Linear
 Wavelength: 253.7 nm
 Sample Info Name: 011004F1.SIF

Results Data Set Name: 011004F1

Element: Hg Seq. No.: 4 AS Loc.: 1 Date: 10/04/2001
 Sample ID: Calib Blank

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0001	0.0001	09:51:09	Yes
2			0.0001	0.0001	09:51:42	Yes
3			0.0001	0.0001	09:52:15	Yes
Mean:			0.0001			
SD :			0.0000			
%RSD:			9.7028			

Auto-zero performed.

Element: Hg Seq. No.: 5 AS Loc.: 2 Date: 10/04/2001
 Sample ID: STD1

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0289	0.0290	09:53:06	Yes
2			0.0290	0.0291	09:53:39	Yes
3			0.0290	0.0291	09:54:11	Yes
Mean:			0.0290			
SD :			0.0000			
%RSD:			0.1477			

[Hg] Standard number 1 applied. [2.500]
 Correlation Coefficient: 1.00000 Slope: 0.01158

Element: Hg Seq. No.: 6 AS Loc.: 3 Date: 10/04/2001
 Sample ID: STD2

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0584	0.0585	09:55:01	Yes
2			0.0584	0.0585	09:55:34	Yes
3			0.0585	0.0587	09:56:07	Yes
Mean:			0.0584			
SD :			0.0001			
%RSD:			0.1310			

[Hg] Standard number 2 applied. [5.000]
 Correlation Coefficient: 0.99994 Slope: 0.01167

Element: Hg Seq. No.: 7 AS Loc.: 4 Date: 10/04/2001
 Sample ID: STD3

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1			0.0866	0.0868	09:57:21	Yes
2			0.0862	0.0863	09:57:54	Yes
3			0.0863	0.0864	09:58:27	Yes
Mean:			0.0864			

SD : 0.0002
 %RSD: 0.2778
 [Hg] Standard number 3 applied. [7.500]
 Correlation Coefficient: 0.99985 Slope: 0.01157

=====

Element: Hg Seq. No.: 8 AS Loc.: 5 Date: 10/04/2001
 Sample ID: STD4

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.1181	0.1183	09:59:43	Yes
2			0.1182	0.1184	10:00:16	Yes
3			0.1180	0.1181	10:00:49	Yes
Mean:			0.1181			
SD :			0.0001			
%RSD:			0.1189			

[Hg] Standard number 4 applied. [10.00]
 Correlation Coefficient: 0.99962 Slope: 0.01170

=====

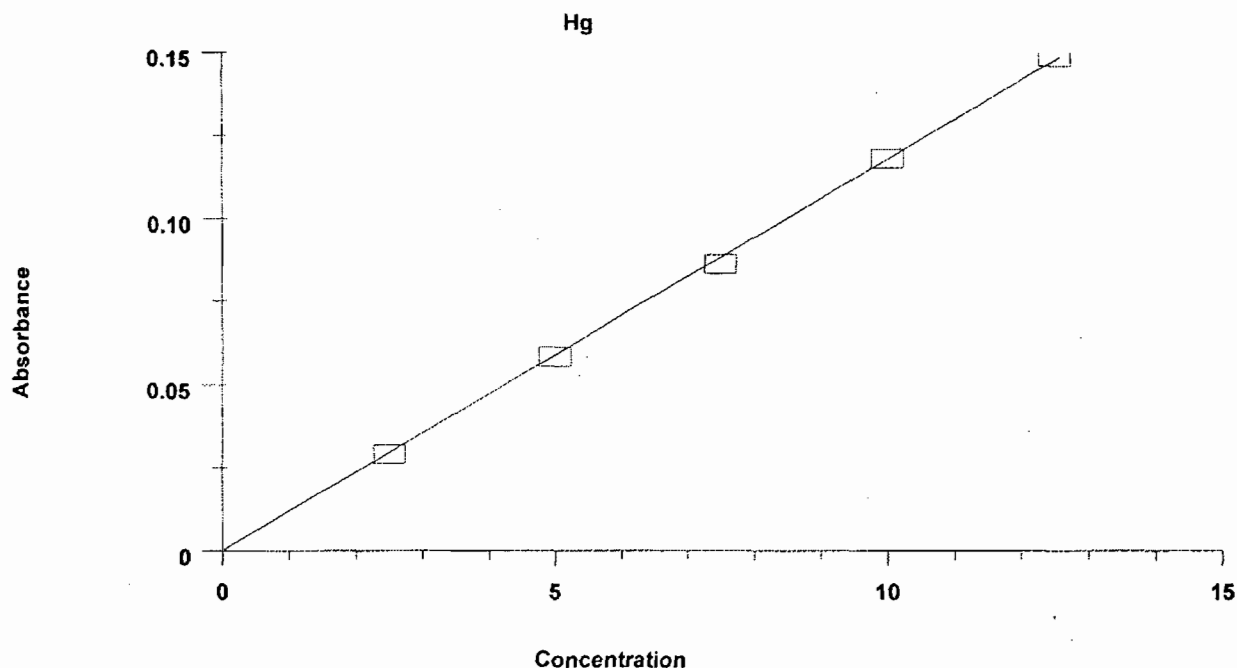
Element: Hg Seq. No.: 9 AS Loc.: 6 Date: 10/04/2001
 Sample ID: STD5

Repl #	SampleConc µg/L	StndConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1			0.1493	0.1494	10:02:05	Yes
2			0.1482	0.1483	10:02:38	Yes
3			0.1479	0.1480	10:03:11	Yes
Mean:			0.1484			
SD :			0.0007			
%RSD:			0.4926			

[Hg] Standard number 5 applied. [12.50]
 Correlation Coefficient: 0.99966 Slope: 0.01178

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	---	---	---
STD1	0.0290	2.500	2.458	0.0000	0.1
STD2	0.0584	5.000	4.960	0.0001	0.1
STD3	0.0864	7.500	7.332	0.0002	0.3
STD4	0.1181	10.000	10.03	0.0001	0.1
STD5	0.1484	12.500	12.60	0.0007	0.5
Correlation Coefficient: 0.99966		Slope:	0.01178	----	



=====
 Element: Hg Seq. No.: 10 AS Loc.: 9 Date: 10/04/2001
 Sample ID: ICV

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.542	1.542	0.0182	0.0183	10:04:31	Yes
2	1.531	1.531	0.0180	0.0182	10:05:03	Yes
3	1.544	1.544	0.0182	0.0183	10:05:36	Yes
Mean:	1.539	1.539	0.0181			
SD :	0.0069	0.0069	0.0001			
%RSD:	0.4	0.4	0.4481			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 11 AS Loc.: 10 Date: 10/04/2001
 Sample ID: ICB

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	-0.004	-0.004	0.0000	0.0001	10:06:25	Yes
2	-0.004	-0.004	0.0000	0.0001	10:06:58	Yes
3	-0.005	-0.005	-0.0001	0.0001	10:07:31	Yes
Mean:	-0.004	-0.004	0.0000			
SD :	0.0006	0.0006	0.0000			
%RSD:	14.8	14.8	14.7625			

QC value within specified limits.

=====
 Element: Hg Seq. No.: 12 AS Loc.: 11 Date: 10/04/2001
 Sample ID: SPEX HG-STD

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	3.087	3.087	0.0364	0.0365	10:08:20	Yes
2	3.102	3.102	0.0365	0.0367	10:08:53	Yes
3	3.102	3.102	0.0365	0.0367	10:09:26	Yes

00094

Mean: 3.097 3.097 0.0365
 SD : 0.0089 0.0089 0.0001
 %RSD: 0.3 0.3 0.2865
 QC value within specified limits.

=====

Element: Hg Seq. No.: 13 AS Loc.: 12 Date: 10/04/2001
 Sample ID: LLC

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.246	0.246	0.0029	0.0030	10:10:15	Yes
2	0.241	0.241	0.0028	0.0030	10:10:48	Yes
3	0.241	0.241	0.0028	0.0030	10:11:21	Yes
Mean:	0.243	0.243	0.0029			
SD :	0.0027	0.0027	0.0000			
%RSD:	1.1	1.1	1.1131			

QC value within specified limits.

=====

Element: Hg Seq. No.: 14 AS Loc.: 13 Date: 10/04/2001
 Sample ID: DIL.CHECK

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	-0.008	-0.008	-0.0001	0.0000	10:12:10	Yes
2	-0.006	-0.006	-0.0001	0.0001	10:12:43	Yes
3	-0.004	-0.004	-0.0001	0.0001	10:13:16	Yes
Mean:	-0.006	-0.006	-0.0001			
SD :	0.0017	0.0017	0.0000			
%RSD:	28.0	28.0	28.0371			

QC value within specified limits.

=====

Element: Hg Seq. No.: 15 AS Loc.: 14 Date: 10/04/2001
 Sample ID: BL1003-5R3C

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.002	0.002	0.0000	0.0002	10:14:04	Yes
2	0.000	0.000	0.0000	0.0001	10:14:37	Yes
3	0.001	0.001	0.0000	0.0001	10:15:10	Yes
Mean:	0.001	0.001	0.0000			
SD :	0.0014	0.0014	0.0000			
%RSD:	163.2	163.2	163.2278			

=====

Element: Hg Seq. No.: 16 AS Loc.: 15 Date: 10/04/2001
 Sample ID: BL1003S

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.995	0.995	0.0117	0.0119	10:16:00	Yes
2	0.987	0.987	0.0116	0.0118	10:16:33	Yes
3	0.988	0.988	0.0116	0.0118	10:17:05	Yes
Mean:	0.990	0.990	0.0117			
SD :	0.0046	0.0046	0.0001			
%RSD:	0.5	0.5	0.4662			

=====

Element: Hg Seq. No.: 17 AS Loc.: 16 Date: 10/04/2001
 Sample ID: BL1003DS

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.981	0.981	0.0116	0.0117	10:17:54	Yes

2	0.986	0.986	0.0116	0.0118	10:18:27	Yes
3	0.989	0.989	0.0117	0.0118	10:19:00	Yes
Mean:	0.985	0.985	0.0116			
SD :	0.0038	0.0038	0.0000			
%RSD:	0.4	0.4	0.3902			

=====

Element: Hg Seq. No.: 18 AS Loc.: 17 Date: 10/04/2001
Sample ID: 56732

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	2.433	2.433	0.0287	0.0288	10:19:49	Yes
2	2.417	2.417	0.0285	0.0286	10:20:22	Yes
3	2.426	2.426	0.0286	0.0287	10:20:55	Yes
Mean:	2.425	2.425	0.0286			
SD :	0.0078	0.0078	0.0001			
%RSD:	0.3	0.3	0.3218			

=====

Element: Hg Seq. No.: 19 AS Loc.: 18 Date: 10/04/2001
Sample ID: 56732D

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	2.385	2.385	0.0281	0.0282	10:21:44	Yes
2	2.379	2.379	0.0280	0.0282	10:22:17	Yes
3	2.375	2.375	0.0280	0.0281	10:22:50	Yes
Mean:	2.380	2.380	0.0280			
SD :	0.0052	0.0052	0.0001			
%RSD:	0.2	0.2	0.2199			

=====

Element: Hg Seq. No.: 20 AS Loc.: 19 Date: 10/04/2001
Sample ID: 56732S

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	3.263	3.263	0.0384	0.0386	10:23:39	Yes
2	3.241	3.241	0.0382	0.0383	10:24:12	Yes
3	3.252	3.252	0.0383	0.0384	10:24:45	Yes
Mean:	3.252	3.252	0.0383			
SD :	0.0109	0.0109	0.0001			
%RSD:	0.3	0.3	0.3343			

=====

Element: Hg Seq. No.: 21 AS Loc.: 20 Date: 10/04/2001
Sample ID: 56732DS

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	3.299	3.299	0.0389	0.0390	10:25:34	Yes
2	3.289	3.289	0.0387	0.0389	10:26:07	Yes
3	3.290	3.290	0.0388	0.0389	10:26:40	Yes
Mean:	3.293	3.293	0.0388			
SD :	0.0060	0.0060	0.0001			
%RSD:	0.2	0.2	0.1828			

=====

Element: Hg Seq. No.: 22 AS Loc.: 21 Date: 10/04/2001
Sample ID: 56729

Repl #	SampleConc µg/L	StdndConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	0.000	0.000	0.0000	0.0001	10:27:28	Yes
2	-0.003	-0.003	0.0000	0.0001	10:28:02	Yes

3 -0.001 -0.001 0.0000 0.0001 10:28:34 Yes
 Mean: -0.001 -0.001 0.0000
 SD : 0.0019 0.0019 0.0000
 %RSD: 151.1 151.1 151.0930

=====

Element: Hg Seq. No.: 23 AS Loc.: 22 Date: 10/04/2001
 Sample ID: 56730

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.002	0.002	0.0000	0.0002	10:29:23	Yes
2	0.003	0.003	0.0000	0.0002	10:29:55	Yes
3	0.002	0.002	0.0000	0.0002	10:30:29	Yes
Mean:	0.003	0.003	0.0000			
SD :	0.0006	0.0006	0.0000			
%RSD:	24.5	24.5	24.4510			

=====

Element: Hg Seq. No.: 24 AS Loc.: 23 Date: 10/04/2001
 Sample ID: 56731

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	11.93	11.93	0.1406	0.1407	10:31:18	Yes
2	11.76	11.76	0.1385	0.1387	10:31:51	Yes
3	11.90	11.90	0.1402	0.1403	10:32:24	Yes
Mean:	11.86	11.86	0.1398			
SD :	0.0913	0.0913	0.0011			
%RSD:	0.8	0.8	0.7694			

=====

Element: Hg Seq. No.: 25 AS Loc.: 7 Date: 10/04/2001
 Sample ID: CCV

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	1.031	1.031	0.0121	0.0123	10:33:42	Yes
2	1.009	1.009	0.0119	0.0120	10:34:15	Yes
3	1.019	1.019	0.0120	0.0121	10:34:48	Yes
Mean:	1.020	1.020	0.0120			
SD :	0.0112	0.0112	0.0001			
%RSD:	1.1	1.1	1.0938			

QC value within specified limits.

=====

Element: Hg Seq. No.: 26 AS Loc.: 8 Date: 10/04/2001
 Sample ID: CCB

Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.000	0.000	0.0000	0.0001	10:35:37	Yes
2	-0.001	-0.001	0.0000	0.0001	10:36:10	Yes
3	0.002	0.002	0.0000	0.0002	10:36:43	Yes
Mean:	0.000	0.000	0.0000			
SD :	0.0015	0.0015	0.0000			
%RSD:	678.2	678.2	678.1646			

QC value within specified limits.

=====

Element: Hg Seq. No.: 27 AS Loc.: 4 Date: 10/04/2001
 Sample ID: Reslope

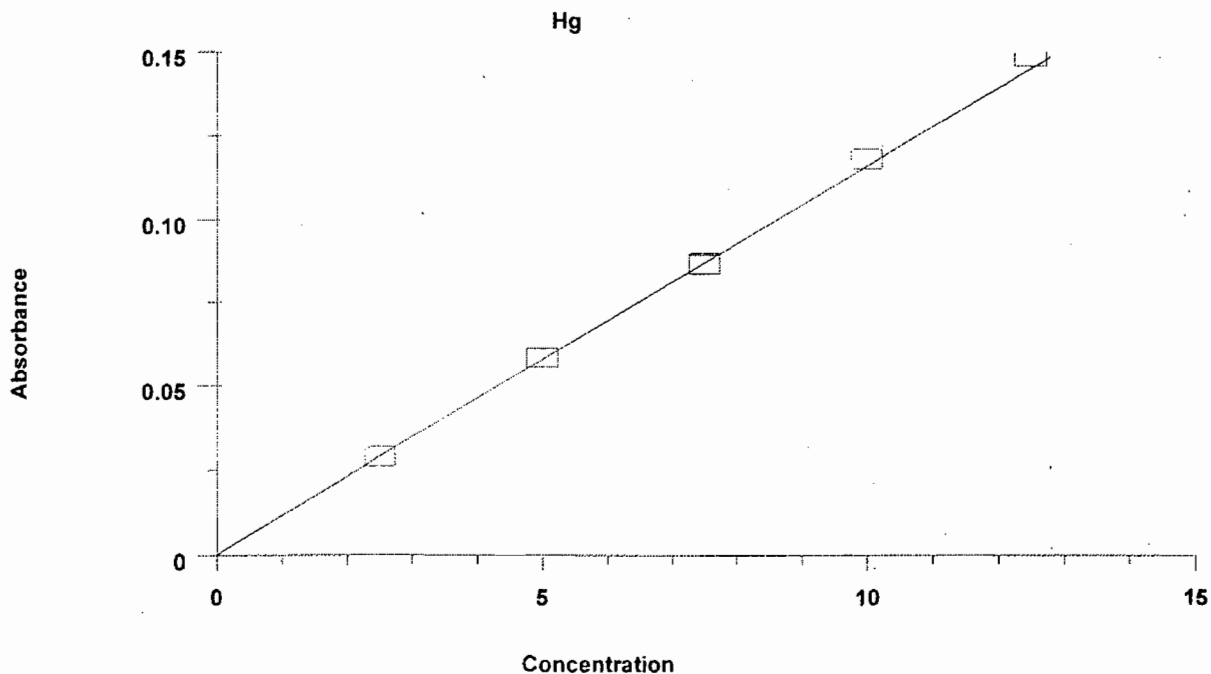
Repl #	SampleConc µg/L	StdConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.0868	0.0870	10:37:33	Yes

2 0.0870 0.0872 10:38:06 Yes
 3 0.0867 0.0869 10:38:39 Yes
 Mean: 0.0869
 SD : 0.0002
 %RSD: 0.1812
 [Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99966 Slope: 0.01198

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.011	0.0000	9.7
STD1	0.0290	2.500	2.500	0.0000	0.1
STD2	0.0584	5.000	5.046	0.0001	0.1
STD3	0.0864	7.500	7.458	0.0002	0.3
STD4	0.1181	10.000	10.20	0.0001	0.1
STD5	0.1484	12.500	12.82	0.0007	0.5
Reslope	0.0869	7.500	7.500	0.0002	0.2

Correlation Coefficient: 0.99966 Slope: 0.01198



Element: Hg Seq. No.: 28 AS Loc.: 24 Date: 10/04/2001
 Sample ID: 56733

Repl #	SampleConc µg/L	StdConc µg/L	BlkCorr Signal	Peak Height	Time	Peak Stored
1	3.067	3.067	0.0355	0.0357	10:39:57	Yes
2	3.053	3.053	0.0354	0.0355	10:40:30	Yes
3	3.052	3.052	0.0353	0.0355	10:41:04	Yes
Mean:	3.057	3.057	0.0354			
SD :	0.0087	0.0087	0.0001			
%RSD:	0.3	0.3	0.2843			

Element: Hg Seq. No.: 29 AS Loc.: 25 Date: 10/04/2001

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.488	1.488	0.0172	0.0174	10:51:28	Yes
2	1.480	1.480	0.0171	0.0173	10:52:00	Yes
3	1.488	1.488	0.0172	0.0174	10:52:34	Yes
Mean:	1.485	1.485	0.0172			
SD :	0.0048	0.0048	0.0001			
%RSD:	0.3	0.3	0.3262			

Element: Hg Seq. No.: 35 AS Loc.: 31 Date: 10/04/2001
Sample ID: 56743

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.232	1.232	0.0143	0.0144	10:53:22	Yes
2	1.225	1.225	0.0142	0.0143	10:53:55	Yes
3	1.240	1.240	0.0144	0.0145	10:54:28	Yes
Mean:	1.232	1.232	0.0143			
SD :	0.0075	0.0075	0.0001			
%RSD:	0.6	0.6	0.6077			

Element: Hg Seq. No.: 36 AS Loc.: 32 Date: 10/04/2001
Sample ID: BL1003-6R3C

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	0.004	0.004	0.0000	0.0002	10:55:16	Yes
2	0.001	0.001	0.0000	0.0001	10:55:49	Yes
3	0.003	0.003	0.0000	0.0002	10:56:22	Yes
Mean:	0.003	0.003	0.0000			
SD :	0.0013	0.0013	0.0000			
%RSD:	46.7	46.7	46.6570			

Element: Hg Seq. No.: 37 AS Loc.: 33 Date: 10/04/2001
Sample ID: BL1003S

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.004	1.004	0.0116	0.0118	10:57:11	Yes
2	1.001	1.001	0.0116	0.0117	10:57:44	Yes
3	0.996	0.996	0.0115	0.0117	10:58:17	Yes
Mean:	1.001	1.001	0.0116			
SD :	0.0041	0.0041	0.0000			
%RSD:	0.4	0.4	0.4055			

Element: Hg Seq. No.: 38 AS Loc.: 7 Date: 10/04/2001
Sample ID: CCV

Repl #	SampleConc µg/L	StdndConc µg/L	BlnkCorr Signal	Peak Height	Time	Peak Stored
1	1.031	1.031	0.0119	0.0121	10:59:07	Yes
2	1.034	1.034	0.0120	0.0121	10:59:40	Yes
3	1.033	1.033	0.0120	0.0121	11:00:13	Yes
Mean:	1.033	1.033	0.0120			
SD :	0.0013	0.0013	0.0000			
%RSD:	0.1	0.1	0.1215			

QC value within specified limits.

Element: Hg Seq. No.: 39 AS Loc.: 8 Date: 10/04/2001
Sample ID: CCB

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1	0.005	0.005	0.0001	0.0002	11:01:02	Yes
2	0.005	0.005	0.0001	0.0002	11:01:35	Yes
3	0.005	0.005	0.0001	0.0002	11:02:08	Yes
Mean:	0.005	0.005	0.0001			
SD :	0.0002	0.0002	0.0000			
%RSD:	3.8	3.8	3.7665			

QC value within specified limits.

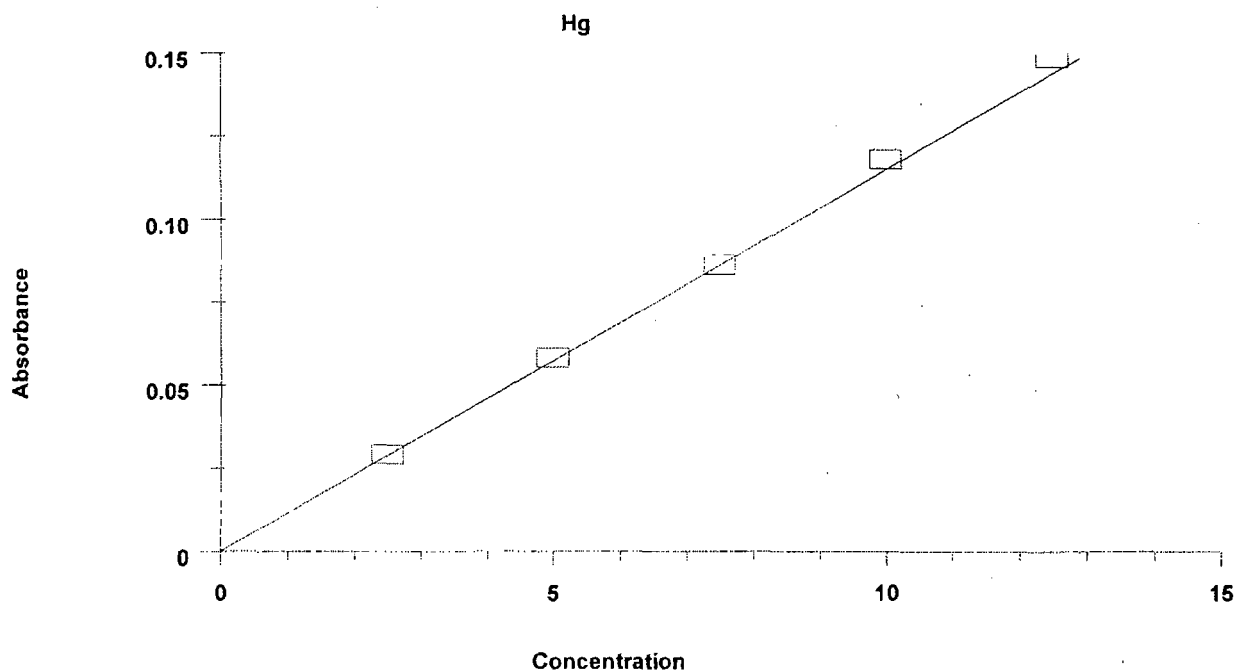
=====
 Element: Hg Seq. No.: 40 AS Loc.: 4 Date: 10/04/2001
 Sample ID: Reslope

Repl #	SampleConc µg/L	StndConc µg/L	BlncCorr Signal	Peak Height	Time	Peak Stored
1			0.0862	0.0863	11:02:58	Yes
2			0.0861	0.0862	11:03:32	Yes
3			0.0862	0.0863	11:04:05	Yes
Mean:			0.0862			
SD :			0.0000			
%RSD:						

[Hg] Reslope standard applied. [7.500]
 Correlation Coefficient: 0.99966 Slope: 0.01208

Calibration data for Hg

Standard ID	Mean Signal (Pk Height)	Entered Concentration (µg/L)	Calculated Concentration (µg/L)	Standard Deviation	%RSD
Calib Blank	0.0001	---	0.012	0.0000	9.7
STD1	0.0290	2.500	2.521	0.0000	0.1
STD2	0.0584	5.000	5.087	0.0001	0.1
STD3	0.0864	7.500	7.519	0.0002	0.3
STD4	0.1181	10.000	10.28	0.0001	0.1
STD5	0.1484	12.500	12.92	0.0007	0.5
Reslope	0.0862	7.500	7.500	0.0000	----
Correlation Coefficient:		0.99966	Slope:	0.01208	----



Element: Hg Seq. No.: 41 AS Loc.: 34 Date: 10/04/2001
Sample ID: BL1003DS

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	1.018	1.018	0.0117	0.0118	11:05:25	Yes
2	1.018	1.018	0.0117	0.0118	11:05:58	Yes
3	1.022	1.022	0.0117	0.0119	11:06:31	Yes
Mean:	1.019	1.019	0.0117			
SD :	0.0020	0.0020	0.0000			
%RSD:	0.2	0.2	0.1971			

Element: Hg Seq. No.: 42 AS Loc.: 35 Date: 10/04/2001
Sample ID: 57200

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	3.038	3.038	0.0349	0.0350	11:07:20	Yes
2	3.010	3.010	0.0346	0.0347	11:07:53	Yes
3	2.991	2.991	0.0344	0.0345	11:08:26	Yes
Mean:	3.013	3.013	0.0346			
SD :	0.0237	0.0237	0.0003			
%RSD:	0.8	0.8	0.7870			

Element: Hg Seq. No.: 43 AS Loc.: 36 Date: 10/04/2001
Sample ID: 57200D

Repl #	SampleConc µg/L	StdConc µg/L	Blncorr Signal	Peak Height	Time	Peak Stored
1	3.046	3.046	0.0350	0.0351	11:09:14	Yes
2	3.071	3.071	0.0353	0.0354	11:09:47	Yes
3	3.054	3.054	0.0351	0.0352	11:10:20	Yes
Mean:	3.057	3.057	0.0351			
SD :	0.0128	0.0128	0.0001			

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG, DGHGLEACH, DG29*

Calibration Solutions:

#	I.D.	**Conc.	Spike	***Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	1.67	500 ul of 0.1 ppm working cal standard	2.5
4	Standard 3	3.33	1000 ul of 0.1 ppm working cal standard	5.0
5	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
6	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
7	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
8	Standard 4	5.0	1500 ul of 0.1 ppm working cal standard	7.5
9	Standard 5	6.67	2000 ul of 0.1 ppm working cal standard	10.0
10	Standard 6	8.33	2500 ul of 0.1 ppm working cal standard	12.5

Check List

- ☒ Digest Code/labels
- ☒ Samples poured out
- ☒ Acids added
- ☒ Reagents added
- ☒ Samples spiked
- ☒ Bath at 95 degrees C
- ☒ Samples digested
- ☒ Hydroxylamine HCl added
- ☒ Samples shaken and bulked
- ☒ Rack order checked

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
11	ICV (Init. Calib. Verif.)	4R3C	20 ml	30 ml	1 X	1.5 ppb = 600 ul of 0.05ppm Working Reference QC Std.
12	LLC (low level check)	"	"	"	"	0.25ppb = 50ul of 0.1 ppm Working Cal Std.
13	External Ref.	"	"	"	"	3.0ppb = 600ul of 0.1ppm Intermediate Spex Reference Std.
14	Organic Ref.	"	"	"	"	2.0ppb = 600ul of Intermediate Organic Reference Std.
15	BL 1003	"	"	"	"	(Processed Blank)
16	BL S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
17	BL DS	"	"	"	"	(Duplicate Blank Spike)
18	56008	"	"	"	"	
19	D	"	"	"	"	(Duplicate sample)
20	S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
21	DS	"	"	"	"	(Duplicate Spiked sample)
22	56005	"	"	"	"	
23	06	"	"	"	"	
24	07	"	"	"	"	
25	09	"	"	"	"	
26	10	"	"	"	"	
27	11	"	"	"	"	
28	12	"	"	"	"	
29	13	"	"	"	"	
30	14	"	"	"	"	
31	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
32	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
33	BL 1003	5R3C	20 ml	30 ml	"	(Processed Blank)
34	BL S	"	"	"	"	1 ppt = 200 ul. of 0.1 ppm Working Cal Std.
35	BL DS	"	"	"	"	(Duplicate Blank Spike)
36	56732	"	"	"	"	
37	D	"	"	"	"	(Duplicate sample)
38	S	"	"	"	"	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
39	DS	"	"	"	"	(Duplicate Spiked sample)
40	56729	"	"	"	"	
41	30	"	"	"	"	
42	31	"	"	"	"	
43	33	"	"	"	"	
44	34	"	"	"	"	
45	56738	"	"	"	"	
46	39	"	"	"	"	
47	40	"	"	"	"	
48	41	"	"	"	"	
49	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
50	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Comments: ** concentration based on 30 ml final volume, *** concentration based on 20 ml final volume

Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C

DG29HGI, DG29HGF, DG101AA1, DG101AA2

#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
51	BL 1003	6R3C	-	-	-	(Processed Blank)
52	BL S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
53	BL DS	-	-	-	-	(Duplicate Blank Spike)
1 54	57200	-	-	-	-	
1 55	D	-	-	-	-	(Duplicate sample)
1 56	S	-	-	-	-	1 ppb = 200 ul. of 0.1 ppm Working Cal Std.
1 57	DS	-	-	-	-	(Duplicate Spiked sample)
2 58	57198	-	-	-	-	
3 59	99	-	-	-	-	
4 60	57201	-	-	-	-	
5 61	02	-	-	-	-	
6 62		-	-	-	-	
7 63		-	-	-	-	
8 64		-	-	-	-	
9 65		-	-	-	-	
10 66		-	-	-	-	
67	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.
68	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of 0.05ppm Working Reference QC Std.

Procedure/Methodology:

Note: Calibration Standards, ICVs, CCVs, CCBs and LCS are prepared the same as the samples but are not digested.

- 1 Prepare 25 ppm Intermediate Calibration Standard (if required) by pipetting 625 ul. of 1000 ppm Stock to 25 ml final volume of 2% HNO₃
- 2 Prepare 0.1 ppm Working calibration standard daily by pipetting 400 ul. of 25 ppm Intermediate to 100 ml final volume of 2% HNO₃
- 3 Prepare a 0.05 ppm Working Reference QC Standard daily by pipetting 50 ul of Stock Reference Standard to 100 ml final vol of 2% HNO₃
- 4 Using the LIMS Screen "SCNDIG" enter the required samples into LIMS
- 5 Using the labeling program, "DIGLBL", retrieve the "SCNDIG" list and create labels for the required samples.
- 6 Label the falcon tubes appropriately
- 7 Include one External Reference Material sample per run
- 8 Include one Organic Mercury Control Standard per run
- 9 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
- 10 Spike the tubes as indicated in the comment sector of the digestion sheet
- 11 Add 0.5 ml. of conc. Nitric Acid (HNO₃), and 1 ml. of conc. Sulphuric acid, (H₂SO₄), to each tube
- 12 Add 3 ml. Of 6% KMnO₄, purple colour must remain for the duration of digest.
- 13 Add 1.5 ml. of 5% potassium persulphate, (K₂S₂O₈), to each tube
- 14 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
- 15 Remove tubes and allow to cool to room temperature
- 16 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
- 17 Recap tubes and shake until KMnO₄ is destroyed and sample becomes colourless
Dilute the sample to a final volume of 30 ml.

Supplier/Lot Information	Supplier	Lot	Expiry Date
Stock Calibration Standard	AccuTrace	A9125032	Oct 02
Intermediate Cal Standard	Internal	A9125032	01/10/14
Stock Reference Standard	High Purity	33536	Jan 02
External Reference Material	SPEX	CL2-38HG	Apr. 15/02
Organic Mercury Control Standard	Aldrich	N/A	N/A
6% potassium permanganate	Internal	1811GCI	Nov 28/01
5% potassium persulphate	Internal	22829	Dec 01/01
20% hydroxylamine hydrochloride	Internal	00801C0	Nov 27/01
HNO ₃	Anachemia	1101010	Nov 5/01
H ₂ SO ₄	Anachemia	3100091	Nov 20/01
Bath Temps: 195/12°C	Time ON: 9:00	Time OFF: 11:00	
Prepared By: IR	Date: Oct 3/01	Checked by: IR	

4. SHIPPING AND RECEIVING DOCUMENTS

Airbills
Chain-of-Custody Records
Sample Log-In Sheets
Miscellaneous Shipping/Receiving Records

CHAIN OF CUSTODY FORM

200041

CLIENT <u>Wheelabrator</u>	PROJECT NO. <u>8969</u>	NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED				PAGE <u>1</u> OF <u>1</u>
PLANT <u>North Broward</u>	DEPT. <u>66</u>			<u>H₂ (mly)</u>				REVISION NO. _____
PROJECT MANAGER <u>Scott Brown</u>	RECOVERY PERSON: <u>P. Tinkham</u>							ADDITIONAL INFORMATION
JOB LEADER <u>Pete Tinkham</u>								

MB-516738-

CAE LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX						
~~76841~~	1	FF Outlet Unit #		Filter	1	NA	X			
56741				Front 1/2 .1N HNO ₃ Rinse	1	100	X			
				Imp 1,2,3 Catch + Rinse	1	822	X			
				Imp 4 .1N HNO ₃ Rinse	1	100	X			
				Imp 5,6 Catch + Rinse	1	409	X			
	↓	↓		Imp 5,6 8N HCl Rinse	1	232	X			
56742	2	FF Outlet Unit #		Filter	1	NA	X			
				Front 1/2 .1N HNO ₃ Rinse	1	100	X			
				Imp 1,2,3 Catch + Rinse	1	856	X			
				Imp 4 .1N HNO ₃ Rinse	1	101	X			
				Imp 5,6 Catch + Rinse	1	414	X			
	↓	↓		Imp 5,6 8N HCl Rinse	1	225	X			

Relinquished by: (Signature) <u>P. Tinkham</u>	Date/Time <u>9/14/01 6:00 AM</u>	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time
Courier:	Date/Time	Relinquished by: (Signature)	Date/Time	Rec'd for Analysis by: <u>[Signature]</u>	Date/Time <u>010922 12:30</u>

Special Handling Instructions	This form was completed by: <u>P. Tinkham</u>	completed shipment Clean Air Engineering 500 West Wood Street Palatine, IL 60067 800-627-0033 Fax (847) 991-3385
Forwarding Lab:	Signature <u>P. Tinkham</u> Date <u>9/11/01</u>	

CHAIN OF CUSTODY FORM

200042

CLIENT <u>Wheelabrator</u>	PROJECT NO. <u>8964</u>	NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED	PAGE <u>2</u> OF <u> </u>
PLANT <u>North Broward</u>	DEPT. <u>66</u>				REVISION NO. <u> </u>
PROJECT MANAGER <u>Scott Brown</u>	RECOVERY PERSON: <u>P. Tinkham</u>				ADDITIONAL INFORMATION
JOB LEADER <u>P. Tinkham</u>					

CAE LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX						
510743	3	PF Outlet Unit #		Filter	1	NA	X			
				Front 1/2 HNO ₃ Rinse	1	140	X			
				Imp. 1,2,3 Catch + Rinse	1	861	X			
				Imp 4 1N HNO ₃ Rinse	1	112	X			
				Imp 5,6 Catch + Rinse	1	406	X			
				Imp 5,6 3N HCl Rinse	1	250	X			
510740	FB	Field Blank		Filter	1	NA	X			
				Front 1/2 HNO ₃ Rinse	1	102	X			
				Imp 1,2,3 Catch + Rinse	1	316	X			
				Imp 4 1N HNO ₃ Rinse	1	105	X			
				Imp 5,6 Catch + Rinse	1	430	X			
				Imp 5,6 3N HCl Rinse	1	225	X			

Relinquished by: (Signature) <u>P. Tinkham</u>	Date/Time <u>9/14/01 6:00PM</u>	Received by: (Signature) <u>P. Tinkham</u>	Date/Time <u>9/14/01 6:00PM</u>	Relinquished by: (Signature) <u>P. Tinkham</u>	Date/Time <u>9/14/01 6:00PM</u>
Courier:	Date/Time	Relinquished by: (Signature)	Date/Time	Rec'd for Analysis by: <u>P. Tinkham</u>	Date/Time <u>010922 17:30</u>

Special Handling Instructions	This form was completed by: <u>P. Tinkham</u>	Clean Air Engineering 500 West Wood Street Palatine, IL 60067 800-627-0033 Fax (847) 991-3385 DS COC Palatine EXCL.R0-6/7/96
Forwarding Lab:	Signature <u>P. Tinkham</u> Date <u>9/14/01</u>	
PO Number:		

00106

Completed Shipment

CHAIN OF CUSTODY FORM

200094

CLIENT <u>Wheelabrator</u>	PROJECT NO. <u>8964</u>	NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED				PAGE <u>3</u> OF <u> </u>
PLANT <u>North Broward</u>	DEPT. <u>66</u>			<u>H₂ (only)</u>	<u>Archive</u>			REVISION NO. <u> </u>
PROJECT MANAGER <u>Scott Brown</u>	RECOVERY PERSON: <u>P. Tinkham</u>							ADDITIONAL INFORMATION
JOB LEADER <u>Pete Tinkham</u>								

CAE LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX						
50739	RB	Reagent Blank	9	Filter	1	NA	X			
				Front 1/2 HNO ₃ Rinse/Blank	1	201	X			
				5% 10% Blank		302	X			
				DI H ₂ O Blank		201	X			
				4% 10% Blank		303	X			
				3 N HCl / DI H ₂ O Blank		225	X			
50744	4	FF Outlet Unit #		Filter	1	NA		X		
				Front 1/2 1N HNO ₃ Rinse	1	109		X		
				5% 10% Imp 1,2,3 CTR		446		X		
				Imp 4 1N HNO ₃ Rinse		103		X		
				Imp 5,6 Catch + Rinse		374		X		
				Imp 5,6 3 N HCl Rinse		230		X		

Relinquished by: (Signature) <u>Pete Tinkham</u>	Date/Time <u>9/14/01 6:00 PM</u>	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time
Courier:	Date/Time	Relinquished by: (Signature)	Date/Time	Rec'd for Analysis by: <u>[Signature]</u>	Date/Time <u>010922 12:30</u>

Special Handling Instructions	This form was completed by: <u>P. Tinkham</u>	Clean Air Engineering 500 West Wood Street Palatine, IL 60067 800-627-0033 Fax (847) 991-3385
Forwarding Lab:	Signature <u>P. Tinkham</u> Date <u>9/14/01</u>	

CHAIN OF CUSTODY FORM

CLIENT <u>Wheelabrator</u>		PROJECT NO. <u>8964</u>		NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED				PAGE <u>4</u> OF <u> </u>	
PLANT <u>North Broward</u>		DEPT. <u>66</u>				Archive					REVISION NO. <u> </u>
PROJECT MANAGER <u>Scott Brown</u>		RECOVERY PERSON: <u>P. Trukhan</u>									ADDITIONAL INFORMATION
JOB LEADER <u>Pete Trukhan</u>											
CAE LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX							
~~510746~~	<u>5</u>	<u>FF Outlet Unit #</u>		<u>Filter</u>	<u>NA</u>	<u>X</u>					
				<u>Front 1/2 HNO₃ Rinse</u>	<u>99</u>	<u>X</u>					
				<u>Imp 1,2,3 Catch + Rinse</u>	<u>99</u>	<u>X</u>					
				<u>Imp 4 HNO₃ Rinse</u>	<u>109</u>	<u>X</u>					
				<u>Imp 5,6 Catch + Rinse</u>	<u>431</u>	<u>X</u>					
	<u>✓</u>	<u>✓</u>		<u>Imp 5,6 8N HCl Rinse</u>	<u>234</u>	<u>X</u>					
<u>510748</u>	<u>6</u>	<u>FF Outlet Unit #</u>		<u>Filter</u>	<u>NA</u>	<u>X</u>					
				<u>Front 1/2 HNO₃ Rinse</u>	<u>100</u>	<u>X</u>					
				<u>Imp 1,2,3 Catch + Rinse</u>	<u>460</u>	<u>X</u>					
				<u>Imp 4 HNO₃ Rinse</u>	<u>106</u>	<u>X</u>					
				<u>Imp 5,6 Catch + Rinse</u>	<u>401</u>	<u>X</u>					
	<u>✓</u>	<u>✓</u>		<u>Imp 5,6 8N HCl Rinse</u>	<u>235</u>	<u>X</u>					
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Date/Time		Relinquished by: (Signature)		Date/Time	
<u>Pete Trukhan</u>		<u>9/14/01 6:00PM</u>									
Courier:		Date/Time		Relinquished by: (Signature)		Date/Time		Rec'd for Analysis by:		Date/Time	
								<u>[Signature]</u>		<u>010022 12:30</u>	
Special Handling Instructions				This form was completed by:		 Clean Air Engineering 500 West Wood Street Palatine, IL 60067 (847) 991-3300 phone (847) 991-3385 fax DS COC Palatine EXCL.R0-6/7/96					
Forwarding Lab:				<u>P. Trukhan</u>							
PO Number:				Signature <u>Pete Trukhan</u> Date <u>9/11/01</u>							

00108

00109

NOTICE OF SAMPLE RECEIPT-PHILIP ANALYTICAL SERVICES

Attention: Scott Brown
Client: Clean Air Engineering
Re Client Project: 8964
FAX #: 847-991-3385
Phone #: 847-991-3300

Samples for: Hg Only.
were received in good condition unless
indicated below.

SAMPLE LISTING

Philip ID #	Sample ID	Date Sampled	Date Received
-----	-----	-----	-----
056739	M29-Reagent Blank	01/09/13	01/09/21
056740	M29-Field Blank	01/09/13	01/09/21
056741	M29-Unit 3 Outlet R1	01/09/13	01/09/21
056742	M29-Unit 3 Outlet R2	01/09/13	01/09/21
056743	M29-Unit 3 Outlet R3	01/09/13	01/09/21

Comments: _____

Date 01/09/25

METHOD 29 SUBMISSION STATUS

Client ID: Wheelabrator - North BrowardPASC Sample #: 056739-42

M29 Container #	Receipt Confirmation (P/A)	Volume Mark (P/A)	Volume as Marked*** (Y/N)	Comments
Reagent Blank				
Portions for all Metals				
12	Fillers (3 min.): # of filters = <u>1</u>	P/A		<u>250P</u>
7	Acetone (Req. 100 ml)	P/A	P/A Y/N	
8A	0.1 N Nitric Acid (Req. 300 ml)**	P/A	P/A Y/N	<u>250P</u>
9	Nitric/Peroxide (Req. 200 ml)	P/A	P/A Y/N	
Portions for Mercury only				
10	KMnO ₄ /H ₂ SO ₄ (Req. 100 ml)	P/A	P/A Y/N	<u>1 LAG</u>
8B	Water (Req. 100 ml)	P/A	P/A Y/N	<u>250P</u>
11	HCl (Req. 200 ml water + 25 ml 8N HCl)	P/A	P/A Y/N	<u>250AG</u>
Run # <u>Field Blank</u>				
Portions for all Metals				
1	Filter	P/A		<u>250P</u>
2	Acetone Rinse	P/A	P/A Y/N	
3	Nitric Probe Rinse	P/A	P/A Y/N	<u>250P</u>
4	Nitric/Peroxide and Rinses	P/A	P/A Y/N	
Portions for Mercury only				
5A	Impinger 4 and Rinses	P/A	P/A Y/N	<u>250P</u>
5B	Permanganate and Rinses	P/A	P/A Y/N	<u>1 LAG</u>
5C	HCl Rinse	P/A	P/A Y/N	<u>250AG</u>
Run # <u>2 Unit 3 Outlet</u>				
Portions for all Metals				
1	Filter	P/A		<u>250P</u>
2	Acetone Rinse	P/A	P/A Y/N	
3	Nitric Probe Rinse	P/A	P/A Y/N	<u>250P</u>
4	Nitric/Peroxide and Rinses	P/A	P/A Y/N	
Portions for Mercury only				
5A	Impinger 4 and Rinses	P/A	P/A Y/N	<u>250P</u>
5B	Permanganate and Rinses	P/A	P/A Y/N	<u>1 LAG</u>
5C	HCl Rinse	P/A	P/A Y/N	<u>250AG</u>

* 6 filters requested; 2 for laboratory method blanks, 2 for ICAP blank spikes & 2 for low level (ICP-MS/GFAA) blank spikes

** 200 ml required if Hg is not requested: 100 ml for FH rinse, 100 ml for peroxide rinses and 100 ml for Imp 4 rinses.

*** Estimated to be within 5% of the marked volume.

P = Present, A = Absent, Y = Yes, N = No.

Inspected By: _____

METHOD 29 SUBMISSION STATUS

Client ID: Wheelabrator - North Broward

PASC Sample #: 056743-45

M29 Container #	Receipt Confirmation (P/A)	Volume Mark (P/A)	Volume as Marked*** (Y/N)	Comments
Reagent Blank				
Portions for all Metals				
12	Filters (3 min.): # of filters =	P/A		
7	Acetone (Req. 100 ml)	P/A P/A Y/N		
8A	0.1 N Nitric Acid (Req. 300 ml**)	P/A P/A Y/N		
9	Nitric/Peroxide (Req. 200 ml)	P/A P/A Y/N		
Portions for Mercury only				
10	KMnO4/H2SO4 (Req. 100 ml)	P/A P/A Y/N		
8B	Water (Req. 100 ml)	P/A P/A Y/N		
11	HCl (Req. 200 ml water + 25 ml 8N HCl)	P/A P/A Y/N		
Run # 3 Unit 3 Outlet				
Portions for all Metals				
1	Filter	P/A		250f
2	Acetone Rinse	P/A P/A Y/N		
3	Nitric Probe Rinse	P/A P/A Y/N		250f
4	Nitric/Peroxide and Rinses	P/A P/A Y/N		
Portions for Mercury only				
5A	Impinger 4 and Rinses	P/A P/A Y/N		250f
5B	Permanganate and Rinses	P/A P/A Y/N		1 LAG
5C	HCl Rinse	P/A P/A Y/N		250AG
Run # 4 Unit 3 Outlet				
Portions for all Metals				
1	Filter	P/A		250f
2	Acetone Rinse	P/A P/A Y/N		
3	Nitric Probe Rinse	P/A P/A Y/N		250f
4	Nitric/Peroxide and Rinses	P/A P/A Y/N		
Portions for Mercury only				
5A	Impinger 4 and Rinses	P/A P/A Y/N		250f
5B	Permanganate and Rinses	P/A P/A Y/N		1 LAG
5C	HCl Rinse	P/A P/A Y/N		250AG
Run # 5 Unit 3 Outlet				
Portions for all Metals				
1	Filter	P/A		250f
2	Acetone Rinse	P/A P/A Y/N		
3	Nitric Probe Rinse	P/A P/A Y/N		250f
4	Nitric/Peroxide and Rinses	P/A P/A Y/N		
Portions for Mercury only				
5A	Impinger 4 and Rinses	P/A P/A Y/N		250f
5B	Permanganate and Rinses	P/A P/A Y/N		1 LAG
5C	HCl Rinse	P/A P/A Y/N		250AG

* 6 filters requested; 2 for laboratory method blanks, 2 for ICAP blank spikes & 2 for low level (ICP-MS/GFAA) blank spikes

** 200 ml required if Hg is not requested; 100 ml for FH rinse, 100 ml for peroxide rinses and 100 ml for Imp 4 rinses.

*** Estimated to be within 5% of the marked volume.

P = Present, A = Absent, Y = Yes, N = No.

Inspected By: _____

METHOD 20 SUBMISSION STATUS

Client ID: Wheelabrator - North BrowardPASC Sample #: 056746

M29 Container #	Receipt Confirmation (P/A)	Volume Mark (P/A)	Volume as Marked*** (Y/N)	Comments	M29 Container #	Receipt Confirmation (P/A)	Volume Mark (P/A)	Volume as Marked*** (Y/N)	Comments
Reagent Blank Portions for all Metals 12 Filters (3 min.): # of filters = <u> </u> P/A 7 Acetone (Req. 100 ml) P/A P/A Y/N 8A 0.1 N Nitric Acid (Req. 300 ml**) P/A P/A Y/N 9 Nitric/Peroxide (Req. 200 ml) P/A P/A Y/N Portions for Mercury only 10 KMnO4/H2SO4 (Req. 100 ml) P/A P/A Y/N 8B Water (Req. 100 ml) P/A P/A Y/N 11 HCl (Req. 200 ml water + 25 ml 8N HCl) P/A P/A Y/N					Run # Portions for all Metals 1 Filter P/A 2 Acetone Rinse P/A P/A Y/N 3 Nitric Probe Rinse P/A P/A Y/N 4 Nitric/Peroxide and Rinses P/A P/A Y/N Portions for Mercury only 5A Impinger 4 and Rinses P/A P/A Y/N 5B Permanganate and Rinses P/A P/A Y/N 5C HCl Rinse P/A P/A Y/N				
Run # 6 Unit 3 Outlet Portions for all Metals 1 Filter P/A <u>250P</u> 2 Acetone Rinse P/A P/A Y/N 3 Nitric Probe Rinse P/A P/A Y/N <u>250P</u> 4 Nitric/Peroxide and Rinses P/A P/A Y/N Portions for Mercury only 5A Impinger 4 and Rinses P/A P/A Y/N <u>250P</u> 5B Permanganate and Rinses P/A P/A Y/N <u>11AG</u> 5C HCl Rinse P/A P/A Y/N <u>250AG</u>					Run # Portions for all Metals 1 Filter P/A 2 Acetone Rinse P/A P/A Y/N 3 Nitric Probe Rinse P/A P/A Y/N 4 Nitric/Peroxide and Rinses P/A P/A Y/N Portions for Mercury only 5A Impinger 4 and Rinses P/A P/A Y/N 5B Permanganate and Rinses P/A P/A Y/N 5C HCl Rinse P/A P/A Y/N				

* 6 filters requested; 2 for laboratory method blanks, 2 for ICAP blank spikes & 2 for low level (ICP-MS/GFAA) blank spikes

** 200 ml required if Hg is not requested; 100 ml for FH rinse, 100 ml for peroxide rinses and 100 ml for Imp 4 rinses.

*** Estimated to be within 5% of the marked volume.

P = Present, A = Absent, Y = Yes, N = No.

Inspected By: _____

WHEELABRATOR NORTH BROWARD, INC.
POMPANO BEACH, FLORIDA

Client Reference No:
Clean Air Project No: 8964-2

OPERATING DATA

G

Wheelabrator
NORTH BROWARD
Emission Test Log

Date: 9/14/01
Start Time: 14:24:00
End Time: 16:37:00

SDA INLET TEMP	SDA OUTLET TEMP	TOTAL SLURRY FL	DIL WATER FLOW	LIME CONC	FF OUT TEMP	FF DP	ID INLET PRESS	STEAM FLOW

	DEG F	DEG F	GPM	GPM	%	DEG F	" H2O	" H2O	KLBs/hr
Unit 1	470.79	294.87	30.91	23.73	22.61	287.10	5.78	-7.90	125.13
Unit 2	453.40	294.64	26.60	19.70	26.17	273.14	6.71	-9.17	119.62
Unit 3	512.30	295.00	49.88	42.78	13.86	276.93	9.76	-13.93	176.44

FEED H2O FLOW	SH OUT STM PRESS	FINAL STM TEMP	TOT AIR FLOW	FURNACE DRAFT	ECONO OUT TEMP	SH ROLL AVG	SNCR CHEM FLOW

	KLBs/hr	DEG F	DEG F	KSCFM	" H2O	DEG F	DEG F	GPH
Unit 1	128.84	858.29	781.84	57.44	-0.15	255.41	1000.85	7.28
Unit 2	130.93	831.94	816.37	54.23	-0.14	252.99	1070.24	7.31
Unit 3	188.01	863.54	829.54	72.27	-0.08	258.65	1136.88	7.63

**Wheelabrator
NORTH BROWARD
Emission Test Log**

Date: 9/14/01
Start Time: 7:58:00
End Time: 9:15:00

SDA INLET TEMP	SDA OUTLET TEMP	TOTAL SLURRY FL	DIL WATER FLOW	LIME CONC	FF OUT TEMP	FF DP	ID INLET PRESS	STEAM FLOW

	DEG F	DEG F	GPM	GPM	%	DEG F	" H2O	" H2O	KLBS/hr
Unit 1	515.90	295.26	51.72	37.16	28.00	288.39	8.17	-12.05	179.00
Unit 2	503.08	295.13	46.40	33.36	28.00	276.74	9.52	-13.42	170.20
Unit 3	515.15	295.08	52.02	37.50	28.01	277.00	9.80	-14.12	181.64

FEED H2O FLOW	SH OUT STM PRESS	FINAL STM TEMP	TOT AIR FLOW	FURNACE DRAFT	ECONO OUT TEMP	SH ROLL AVG	SNCR CHEM FLOW

	KLBS/hr	DEG F	DEG F	KSCFM	" H2O	DEG F	DEG F	GPH
Unit 1	180.42	878.24	786.11	74.94	-0.14	268.54	1095.47	8.04
Unit 2	183.87	851.71	830.04	71.03	-0.09	262.79	1108.26	10.79
Unit 3	193.35	875.66	828.19	72.80	-0.10	272.04	1128.75	7.52

**Wheelabrator
NORTH BROWARD
Emission Test Log**

Date: 9/14/01
Start Time: 9:16:00
End Time: 9:45:00

SDA INLET TEMP	SDA OUTLET TEMP	TOTAL SLURRY FL	DIL WATER FLOW	LIME CONC	FF OUT TEMP	FF DP	ID INLET PRESS	STEAM FLOW

	DEG F	DEG F	GPM	GPM	%	DEG F	" H2O	" H2O	KLBs/hr
Unit 1	511.27	294.09	48.29	34.97	28.00	288.64	7.68	-11.06	161.41
Unit 2	501.41	294.33	45.70	32.99	28.00	275.16	9.26	-13.08	160.42
Unit 3	512.57	295.06	51.00	36.70	28.04	276.63	9.74	-14.04	175.07

FEED H2O FLOW	SH OUT STM PRESS	FINAL STM TEMP	TOT AIR FLOW	FURNACE DRAFT	ECONO OUT TEMP	SH ROLL AVG	SNCR CHEM FLOW

	KLBs/hr	DEG F	DEG F	KSCFM	" H2O	DEG F	DEG F	GPH
Unit 1	161.24	871.08	784.18	67.70	-0.15	266.23	1067.46	7.20
Unit 2	176.38	845.93	827.51	68.43	-0.08	260.53	1092.61	8.16
Unit 3	186.22	870.22	824.23	71.82	-0.05	269.81	1100.19	7.53

Wheelabrator
NORTH BROWARD
Emission Test Log

Date: 9/14/01
Start Time: 10:05:00
End Time: 10:33:00

SDA INLET TEMP	SDA OUTLET TEMP	TOTAL SLURRY FL	DIL WATER FLOW	LIME CONC	FF OUT TEMP	FF DP	ID INLET PRESS	STEAM FLOW

	DEG F	DEG F	GPM	GPM	%	DEG F	" H2O	" H2O	KLBS/hr
Unit 1	515.27	295.52	52.69	37.80	28.00	289.50	8.19	-12.12	171.82
Unit 2	492.19	294.85	41.28	29.69	28.00	274.54	8.92	-12.47	150.57
Unit 3	517.78	295.08	53.03	38.23	28.01	276.36	9.95	-14.38	182.35

FEED H2O FLOW	SH OUT STM PRESS	FINAL STM TEMP	TOT AIR FLOW	FURNACE DRAFT	ECONO OUT TEMP	SH ROLL AVG	SNGR CHEM FLOW

	KLBS/hr	DEG F	DEG F	KSCFM	" H2O	DEG F	DEG F	GPH
Unit 1	171.42	873.41	781.79	72.64	-0.15	265.33	1081.24	7.39
Unit 2	164.43	844.87	828.19	64.41	-0.12	261.29	1077.41	7.18
Unit 3	192.92	873.12	833.02	73.19	-0.06	268.74	1129.62	8.99

**Wheelabrator
NORTH BROWARD
Emission Test Log**

Date: 9/14/01
Start Time: 11:02:00
End Time: 11:30:00

SDA INLET TEMP	SDA OUTLET TEMP	TOTAL SLURRY FL	DIL WATER FLOW	LIME CONC	FF OUT TEMP	FF DP	ID INLET PRESS	STEAM FLOW

	DEG F	DEG F	GPM	GPM	%	DEG F	" H2O	" H2O	KLBs/hr
Unit 1	507.61	295.38	49.22	21.00	57.84	289.39	7.44	-10.82	173.85
Unit 2	509.57	294.69	50.19	35.59	29.53	276.73	9.72	-13.93	160.38
Unit 3	518.59	294.82	53.80	38.73	28.05	275.24	10.04	-14.56	175.76

FEED H2O FLOW	SH OUT STM PRESS	FINAL STM TEMP	TOT AIR FLOW	FURNACE DRAFT	ECONO OUT TEMP	SH ROLL AVG	SNCR CHEM FLOW

	KLBs/hr	DEG F	DEG F	KSCFM	" H2O	DEG F	DEG F	GPH
Unit 1	173.52	875.43	800.74	69.93	-0.17	265.77	1063.75	7.29
Unit 2	175.33	847.72	822.14	68.98	-0.08	262.26	1094.82	8.19
Unit 3	188.78	872.67	831.37	73.05	-0.13	269.16	1133.23	7.77

**Wheelabrator
NORTH BROWARD
Emission Test Log**

Date: 9/14/01
Start Time: 11:35:00
End Time: 12:00:00

SDA INLET TEMP	SDA OUTLET TEMP	TOTAL SLURRY FL	DIL WATER FLOW	LIME CONC	FF OUT TEMP	FF DP	ID INLET PRESS	STEAM FLOW

	DEG F	DEG F	GPM	GPM	%	DEG F	" H2O	" H2O	KLBS/hr
Unit 1	516.94	296.93	56.18	7.97	85.46	290.28	7.90	-11.91	178.01
Unit 2	503.69	292.68	46.29	32.06	30.25	276.00	8.99	-12.79	151.46
Unit 3	517.06	295.02	52.29	37.64	28.06	275.47	9.91	-14.32	177.34

FEED H2O FLOW	SH OUT STM PRESS	FINAL STM TEMP	TOT AIR FLOW	FURNACE DRAFT	ECONO OUT TEMP	SH ROLL AVG	SNCR CHEM FLOW

	KLBS/hr	DEG F	DEG F	KSCFM	" H2O	DEG F	DEG F	GPH
Unit 1	177.03	874.04	779.69	78.32	-0.15	266.59	1100.94	7.76
Unit 2	170.58	845.05	824.15	66.41	-0.15	263.48	1081.16	7.70
Unit 3	190.84	871.81	830.65	72.46	-0.11	270.11	1129.92	7.99

**Wheelabrator
NORTH BROWARD
Emission Test Log**

Date: 9/14/01
Start Time: 12:23:00
End Time: 13:10:00

SDA INLET TEMP	SDA OUTLET TEMP	TOTAL SLURRY FL	DIL WATER FLOW	LIME CONC	FF OUT TEMP	FF DP	ID INLET PRESS	STEAM FLOW

	DEG F	DEG F	GPM	GPM	%	DEG F	" H2O	" H2O	KLBs/hr
Unit 1	483.54	293.40	36.68	26.99	25.83	285.67	6.38	-9.06	114.19
Unit 2	467.29	294.97	32.80	23.61	28.00	272.72	7.74	-10.73	114.47
Unit 3	510.75	295.21	50.50	36.37	28.07	275.23	9.76	-14.10	171.28

FEED H2O FLOW	SH OUT STM PRESS	FINAL STM TEMP	TOT AIR FLOW	FURNACE DRAFT	ECONO OUT TEMP	SH ROLL AVG	SNCR CHEM FLOW

	KLBs/hr	DEG F	DEG F	KSCFM	" H2O	DEG F	DEG F	GPH
Unit 1	123.49	855.09	778.28	63.21	-0.15	253.09	992.78	7.91
Unit 2	121.29	828.40	798.10	62.14	-0.09	250.24	990.77	7.18
Unit 3	182.69	860.29	830.23	71.86	-0.09	256.65	1118.79	7.59

Clean Air Engineering Trademark Case Summary

Clean Air Engineering is currently involved in litigation over its "CAE" service mark. Clean Air Engineering applied for the use of 'CAE' as a service mark in November of 1991. During the opposition period, CAE, Inc. of Canada filed an opposition to our use of "CAE" in our "CAE Clean Air Engineering" logo. CAE, Inc. (the Canadian firm) lost its claim in the initial trademark judicial hearing. In 1997 CAE, Inc. filed suit in the US District Court for the Northeastern District of Illinois.

In January 2000, Judge Warren K. Urbom overturned the decision of the trademark board and awarded the mark to CAE, Inc. This decision would require Clean Air Engineering to alter or destroy of all marketing materials, products, signs, etc. displaying Clean Air Engineering's "CAE Clean Air Engineering" logo.

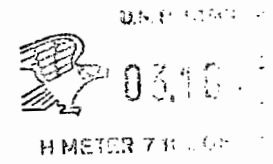
Clean Air Engineering filed a Motion with the trial Judge requesting reconsideration of his original decision. On August 4, 2000 Judge Urbom, though denying the Motion to Reconsider, agreed to stay a portion of his original decision which would allow Clean Air Engineering to continue using the "CAE Clean Air Engineering Logo" if our use of same is accompanied by the following statement: "CAE Clean Air Engineering, Inc. (or the appropriate division) is not affiliated with CAE, Inc." in conjunction with the distribution of all products, services and marketing materials which contain the current CAE Logo.

Clean Air Engineering has taken an appeal of Judge Urbom's rulings to the U.S. Court of Appeals for the Seventh Circuit. Clean Air Engineering is seeking to reverse the ruling of the Trial Court, and reinstatement of the original decision of the Trademark Board. Clean Air Engineering will ask the U.S. Court of Appeals for the Seventh Circuit to stay the use of any disclaimer as otherwise required by Judge Urbom's last order. It is possible that the Court of Appeals will not yet have acted on our request by the deadline date set by Judge Urbom, being October 11, 2000. If this is the case, all Clean Air Engineering products, services and marketing materials will be accompanied by the above disclaimer.

We ask for your patience and understanding during our ongoing litigation. Any questions or comments please contact Bill Walker or Frank Kilvinger.

Clean Air Engineering, Inc. has served the air quality management industry since 1972 - providing consulting, monitoring and testing services, instrumentation rental and equipment sales. Clean Air Engineering has a staff of over 80 environmental engineers, equipment specialists, manufacturing/electronics technicians, and regulatory analysts and support personnel. <http://www.cleanair.com>

**CAE Clean Air Engineering, Inc. is not
affiliated with CAE, Inc.**



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South Coast
AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Dr., Diamond Bar, CA 91765



MICHAEL P. HALPIN, PE
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MAILSTOP#5505
TALLAHASSEE FL 32399-2400

**San Joaquin Valley Unified Air Pollution Control District
Operating Permit**

ATTACHMENT B
DISTRICT OPERATING PERMITS

Applicable District Rules - continued

Rule 204 Permit Conditions

Rule 210 Applications

Rule 212 Standards for Approving Permits

Regulation IV - Prohibitions

Rule 401 Visible Emissions

Rule 402 Nuisance

Listing of Applicable District Rules

The following is a listing of the major district rules that govern permit modifications and control of emissions from municipal waste combustors. A complete list of all applicable rules as well as the rule language for each rule may be obtained by accessing the ARB's District Rule Database (DRDB) via ARB's Internet website (<http://www.arb.ca.gov/html/drdb.htm>). For specific conditions, please refer to the operating permits presented in Attachment B.

San Joaquin Valley Unified Air Pollution Control District

Regulation II - Permits

- Rule 2010 Permits Required
- Rule 2040 Applications
- Rule 2070 Standards for Granting Applications
- Rule 2080 Conditional Approval
- Rule 2092 Standards For Permits To Operate
- Rule 2210 New and Modified Stationary Source Review Rule

Regulation IV - Prohibitions

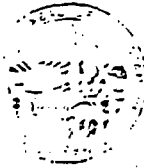
- Rule 4101 Visible Emissions
- Rule 4102 Nuisance
- Rule 4201 Particulate Matter Concentration
- Rule 4202 Particulate Matter - Emission Rate
- Rule 4301 Fuel Burning Equipment
- Rule 4801 Sulfur Compounds

South Coast Air Quality Management District

Regulation II - Permits

- Rule 203 Permit to Operate

Listing of Applicable District Rules



State of California
Office of the Attorney General
Daniel E. Lungren
Attorney General

November 12, 1993

The Honorable Carol Browner
Administrator
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

RE: California's Authority to Implement Title V
(Operating Permits) of the Clean Air Act

Dear Ms. Browner:

Pursuant to my authority as Attorney General and in accordance with Clean Air Act §502(d) (hereinafter, "CAA"), as amended, (42 U.S.C. §7401, et seq.), and 40 CFR §70.4(b)(3), it is my opinion that the laws of the State of California provide adequate authority to carry out all aspects of the program submitted by the Air Resources Board to the Environmental Protection Agency (EPA) for approval to administer and enforce the operating permits program under Title V of the CAA. The specific authorities provided, which are contained in statutes, regulations, or caselaw, and which shall be fully effective by the time the program is approved, include those identified below. All statutory references are to the California Health and Safety Code (HSC) unless otherwise indicated.

I. AUTHORITY TO ISSUE PERMITS

State law provides authority for California's 34 air pollution control and air quality management districts (hereinafter, "districts") to issue operating permits to all air pollution sources within the State that are required to have permits pursuant to CAA §502(a) and 40 CFR §70.3, and to incorporate into permits and assure compliance with each applicable requirement of the CAA and the requirements of 40 CFR part 70. State law also provides authority to issue operating permits for solid waste incineration units combusting municipal waste pursuant to CAA §129(e) that assure compliance with all,

applicable requirements of the CAA and the requirements of 40 CFR part 70.

Federal Authority: CAA §§129(e), 502(a)-(b), 503, 504(a), 42 U.S.C. §§7429(e), §§7661a(a)-(b), 7661b, 7661c(a); 40 CFR §§70.4(b)(3)(i), 70.4(b)(3)(iv), 70.4(b)(3)(v), 70.5(a), 70.6, 70.7(b).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §§39053.3 and 39053.5 (enacted by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994); HSC §42300 (enacted by Stats. 1975, Ch. 957, last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994); HSC §42301 (enacted by Stats. 1975, Ch. 957, last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994); HSC §42301.10 (enacted by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994); HSC §40752 (enacted by Stats. 1975, Ch. 957, last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994). For the South Coast Air Quality Management District, additional authority is found in HSC §40506 (enacted by Stats. 1976, Ch. 324, amended by Stats. 1987, Ch. 1301, Sec. 19). Additional authority of the districts to incorporate the applicable requirements of CAA §112, regarding hazardous air pollutants, into Title V permits is found in HSC §§39650-39675 (enacted by Stats. 1983, Ch. 1047, Sec. 1, as amended by Stats. 1992, Ch. 1161, Sec. 3, effective January 1, 1993), HSC §40001(b) (Stats. 1975, Ch. 957), HSC §41700 (Stats. 1975, Ch. 957), and Western Oil & Gas Ass'n. v. Monterey Bay Unified APCD (1989) 49 Cal.3d 408; 261 Cal.Rptr. 384.

Remarks of the Attorney General: While California has for many years had an operating permit program implemented by the districts, AB 2288 was enacted to authorize the districts to comply fully with all of the Title V requirements, excluding equipment used in agricultural operations. As §1 of AB 2288 indicates,

"it is the intent of the Legislature that this act provide authority in state law for the implementation of the operating permit program required by Title V of the Federal Clean Air Act (42 U.S.C. 7661 et seq.) without affecting the issuance of permits as required by any other provision of state law."

With regard to toxic air contaminants, recent legislation provides that

"it is the intent of the Legislature that the state board and the districts implement a program to regulate toxic air contaminants that will enable the state to receive approval to implement and enforce emission

standards and other requirements for air pollutants subject to §112 of the federal act (42 U.S.C. Sec. 7412). The state board and the districts may establish a program that is consistent with the requirements for state programs set forth in subsection (1) of section 112 and section 502 of the federal act (42 U.S.C. Secs. 7412(1) and 7661a)," HSC §39636.

The authority cited above applies to solid waste incineration units combusting municipal waste (as opposed to hazardous waste) in the same manner as to other Title V sources.

II. AUTHORITY TO ISSUE PERMITS TO NONCOMPLYING SOURCES

State law provides authority for the districts to issue permits to Title V sources that are not in compliance with applicable requirements, and to include compliance schedules in permits to bring sources into compliance, through the State's variance process.

Federal Authority: CAA §§502(b)(5)(A), 504(a), 42 U.S.C. §§7661a(b)(5)(A), 7661c(a); 40 CFR §§70.5(c)(8), 70.6(c)(3).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §42350 (enacted by Stats. 1975, Ch. 957, last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994) and HSC §42301(d) (added by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994).

Remarks of the Attorney General: While some districts allow sources with preconstruction permits to obtain variances from the requirement to obtain a permit to operate, AB 2288 prohibits Title V sources from obtaining such variances and further amends state law to allow a district's air pollution control officer to grant a Title V permit to a source operator who presents a valid variance and to incorporate the terms and conditions of the variance, imposed by the hearing board pursuant to HSC §§42353, 42354, and 42358, into the Title V permit as a compliance schedule. Previously, districts could not issue operating permits to noncomplying sources (see HSC §42301(b)).

Even though state law requires a noncomplying source to have a variance in order to obtain a permit to operate, any variance obtained by a source does not affect or modify permit terms or conditions unless and until the Title V permit is amended to incorporate the terms of the variance, nor does it preclude federal enforcement of permit terms and conditions. Variances may be granted by a hearing board only if the six findings specified in HSC §42352 can be made, and protect the source only from state enforcement actions. The variance process is not part

of the Title V permitting process and does not affect federal enforcement for violations of requirements set forth in a Title V permit. Should the District follow Title V permitting procedures to modify or issue a Title V operating permit which incorporates a compliance schedule from a variance, the compliance schedule would then be part of the federally enforceable permit terms and conditions.

III. PERMIT BOARD MEMBERSHIP AND CONFLICTS OF INTEREST

State law provides that no state or local government agency which issues or decides appeals regarding operating permits shall be constituted of less than a majority of members who represent the public interest and who do not derive a significant portion of their income from persons subject to operating permits. State law also provides that any potential conflicts of interest by members and employees of such state or local government agencies be adequately disclosed. State law also provides that no permit for a solid waste incinerator unit may be issued by an agency, instrumentality or person that is also responsible, in whole or part, for the design and construction or operation of the unit.

Federal Authority: CAA §§128(a)(1)-(2), 129(e), 42 U.S.C. §§7428(a)(1)-(2), 7429(e); 40 CFR §70.4(b)(3)(iv).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: Government Code §§87100, 87103, 87300, and 87302 (added by initiative measure adopted June 4, 1974; operative January 7, 1975, and last amended by Stats. 1985, Ch. 611, Sec. 1.5 [Gov't Code §87103] and Stats. 1992, Ch. 214 [Gov't Code §87302]). See also, definitions in Gov't Code §§82019, 82030, 82041, 82048, and 82049 and regulations set forth in 2 Cal. Code of Regs. §18700 et seq.

Remarks of the Attorney General: The Political Reform Act of 1974 was a sweeping initiative measure intended to assure, among other purposes, that state and local government officials serve the needs and respond to the wishes of all citizens equally, without regard to wealth; that public officials perform their duties in an impartial manner, free from bias caused by their own financial interests or those of persons who have supported them; and that assets and income of public officials which may be materially affected by their official actions are disclosed and such officials disqualified from acting in appropriate circumstances to avoid conflicts of interest. The Political Reform Act is vigorously enforced by the Fair Political Practices Commission.

Compliance with the Political Reform Act assures that the public officials who issue permits and review permit decisions

serve the public interest. District policy boards, which adopt the rules governing permits, are made up of elected officials (i.e., members of the County Board of Supervisors and City Councils) or a combination of elected officials and appointees (see HSC §40420 pertaining to the South Coast AQMD), and these boards appoint an air pollution control officer who issues operating permits in the first instance. The membership of district hearing boards, which are authorized to hear permit appeal consists of individuals with varied backgrounds, as provided in HSC §40801 (or HSC §40501.1 for the South Coast AQMD). Finally, the membership of the Air Resources Board, which does not issue permits or hear permit appeals but which has general oversight authority over the districts and their permit programs pursuant to HSC §§39002, 41500-41505, and 42362, is comprised of nine members with specified qualifications appointed by the Governor with the consent of the Senate "on the basis of their demonstrated interest and proven ability in the field of air pollution control and their understanding of the needs of the general public in connection with air pollution problems" (HSC §§39510 and 39511).

IV. PERMIT FEES

State law provides authority for the districts to assess and collect annual permit fees (or the equivalent amount of fees over some other period of time) from sources within the State which are subject to the requirements of Title V of the CAA and 40 CFR part 70, in an amount sufficient to cover all reasonable direct and indirect costs required to develop, administer, and enforce the State's Title V program.

Federal Authority: CAA §502(b)(3)(A), 42 U.S.C. §7661a(b)(3)(A); 40 CFR §§70.9(a)-(d).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §42311 (Stats. 1975, Ch. 957; amended by Stats. 1988, Ch. 1568, Sec. 29); HSC §§40506(b) (Stats. 1976, Ch. 324; amended by Stats. 1987, Ch. 1301, Sec. 19) and 40510 (enacted by Stats. 1976, Ch. 324; amended by Stats. 1988, Ch. 1568, Sec. 8.2) for the South Coast AQMD; HSC §41080 (Stats. 1988, Ch. 1541, Sec. 3) for the Sacramento Metropolitan AQMD; and San Diego Gas and Electric Co. v. San Diego County APCD (1988) 203 Cal.App.3d 1132.

V. PERMIT TERM

State law provides authority to issue operating permits for a fixed term not to exceed 5 years. State law provides a fixed term ~~not to exceed 12 years for solid waste incineration units combusting municipal waste pursuant to CAA §129(e) and a review~~

~~of such permits at least every 5 years.~~ State law provides authority to issue permits with acid rain provisions for a fixed term of 5 years.

Federal Authority: CAA §§129(e), 408(a), 502(b)(5)(B), 42 U.S.C. §§7429(e), 7651g(a), 7661a(b)(5)(B); 40 CFR §§70.4(b)(3)(iii)-(iv), 70.6(a)(2), 72.70(b), 72.72(a).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §42300 (Stats. 1975 Ch. 957; amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994) and HSC §40507 (Stats. 1976, Ch. 324; amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994) for the South Coast AQMD. Annual review of all permits provided by HSC §42301(e), formerly §42301(c) (Stats. 1975, Ch. 957, as amended by Stats. 1988, Ch. 1568, Sec. 27 and last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994).

Remarks of the Attorney General: HSC §42300(b) authorizes the districts to adopt regulations which provide that "a permit shall be valid only for a specified period." Therefore, the districts will be able to issue operating permits for a fixed term not to exceed five years, or, as the case may be for solid waste incineration units combusting municipal waste, for a fixed term not to exceed 12 years. While the statute somewhat contradictorily requires annual extension of the expiration date upon completion of the annual review to assure that the permit is up to date and upon payment of fees (unless action to revoke the permit has become final), §42300(c) specifies that this annual extension is for purposes of state law only and does not affect the renewal of the permit for Title V purposes. This point is further clarified by HSC §42301.11(d), added by AB 2288, which indicates the legislative intent that the districts encourage the issuance of Title V permits for five-year terms.

VI. MONITORING, RECORDKEEPING, AND REPORTING

State law provides authority to incorporate monitoring, recordkeeping, reporting, and compliance certification requirements into operating permits consistent with 40 CFR §70.6. State law provides authority to incorporate into the permit periodic monitoring or testing requirements where the existing State implementation plan or other applicable requirement does not contain such a requirement, consistent with 40 CFR §70.6(a)(3)(i)(B).

Federal Authority: CAA §§502(b)(2), 503(b)(2), 504(a)-(c), 42 U.S.C. §§7661a(b)(2), 7661c(a)-(c); 40 CFR §§70.4(b)(3)(ii), 70.6(a)(3), 70.6(c)(1), 70.6(c)(5).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §41511 (Stats. 1975, Ch. 957, amended by Stats. 1976, Ch. 1063), HSC §42301 (enacted by Stats. 1975, Ch. 957; last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994), HSC §42301.10 (enacted by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994), HSC §42303 (Stats. 1975, Ch. 957), HSC §§44300 et seq. regarding toxic air contaminants (Stats. 1987, Ch. 1252, Sec. 1), and HSC §§42700-42708 (Stats. 1975, Ch. 957).

VII. INSPECTION/ENTRY AUTHORITY

State law provides authority to incorporate into permits inspection and entry requirements consistent with 40 CFR §70.6(c)(2).

Federal Authority: CAA §504(c), 42 U.S.C. §7661c(c); 40 CFR §§70.6(c)(2).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §41510 (Stats. 1975, Ch. 957), HSC §42301 (Stats. 1975, Ch. 957, last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994 and HSC §42301.10 (Added by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994).

VIII. INCORPORATION OF ALL APPLICABLE REQUIREMENTS INTO PERMIT

State law provides authority to incorporate into an operating permit, upon issuance or renewal, all applicable requirements as defined in 40 CFR §70.2, and as provided generally in the CAA and 40 CFR part 70.

Federal Authority: CAA §§502(b)(5)(C), 504(a), 42 U.S.C. §§7661a(b)(5)(C), 7661c(a); 40 CFR §§70.4(b)(3)(v), 70.6(a).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §§42301(b) and (e) (Stats. 1975, Ch. 957; last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994), and HSC 42301.10 (added by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994)

IX. PERMIT REOPENING

State law provides authority to revise permits with remaining terms of 3 or more years to incorporate new applicable requirements which become effective after issuance of the permit. State law provides authority to reopen permits when additional acid rain requirements become applicable, regardless of the remaining permit term. State law provides authority to

terminate, modify, or revoke permits for cause at any time during the permit term consistent with 40 CFR §§70.7(f) and (g).

Federal Authority: CAA §§502(b)(5)(D), 502(b)(9), 42 U.S.C. §§661a(b)(5)(D), 7661a(b)(9); 40 CFR §§70.4(b)(3)(vi), 70.6(a)(6)(iii), 70.7(f)-(g).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §42301(e) [formerly 42301(c)] (enacted by Stats. 1975, Ch. 957; last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994), HSC §42301.10 (added by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994), and HSC §§42304, and 42307, 42309 (enacted by Stats. 1975, Ch. 957).

Remarks of the Attorney General: Section 42301(e) requires permits to be reviewed annually to ensure that the permit conditions continue to ensure compliance with, and the enforceability of, all district rules and regulations. The permit must be revised to specify appropriate permit conditions during this annual review. Since each district will have a Title V operating permit rule that will require the inclusion of and compliance with all applicable requirements, the permit may be updated annually to reflect new applicable requirements. Further, HSC §42301.10 authorizes the district to include all conditions necessary to ensure compliance with all applicable requirements.

In addition, permits may be terminated or revoked by the district hearing board upon application by the air pollution control officer if the permittee "is violating any applicable order, rule, or regulation of the district or any applicable provision of this division [26 of the HSC]", §42307. Since district Title V operating permit rules will provide that violation of any permit condition is violation of the rule, the hearing board would be able to revoke a permit for cause, as required.

Finally, with regard to acid rain requirements, operating permits are issued to subject sources by the districts (although construction permits are issued by the State Energy Resources Conservation and Development Commission ("Energy Commission" or "CEC"); see paragraph XXI, infra). The permits can be amended as described, although any provisions which conflict with CEC siting provisions would require coordination with the CEC, as explained in paragraph XXI, below.

X. OPERATIONAL FLEXIBILITY

State law provides authority to issue permits which allow

changes within a permitted facility without requiring a permit revision if the changes are not modifications under any provision of Title I of the CAA, and the changes do not exceed the emissions allowable under the permit, provided that the source provides at least 7 days' [or fewer days if the State requires less time in emergencies] written notice to the State and to the EPA. State law provides authority for permits to include terms and conditions for reasonably anticipated, alternative operating scenarios in permits.

Federal Authority: CAA §502(b)(10), 42 U.S.C. §7661a(b)(10); 40 CFR §§70.4(b)(12), 70.6(a)(9).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §§42300 and 42301 (Stats. 1975, Ch. 957; amended by AB 2288, Stats. 1993 Ch. 1166, effective January 1, 1994) and HSC §42301.12 (a)(11) (added by AB 2288, above).

Remarks of the Attorney General: The broad language of the legislation authorizing district permit programs does not pose an impediment to a district rule allowing the inclusion in a permit of alternative operating scenarios, as long as such scenarios comply with the statutory provisions and all applicable requirements. Similarly, the language is broad enough to allow changes within a facility without a permit revision as long as there is compliance with the "emissions allowable under the permit" (i.e., permit terms that establish an emissions limit pursuant to an "applicable requirement" of the Clean Air Act).

XI. PERMIT MODIFICATIONS

State law provides authority to process permit modifications in a manner that conforms to, or is substantially equivalent to, the procedures set forth under 40 CFR §70.7(e).

Federal Authority: CAA §502(b)(6), 42 U.S.C. §7661a(b)(6); 40 CFR §§70.4(b)(13), 70.7(e).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §42300 (enacted by Stats. 1975, Ch. 957), HSC §40702 (Stats. 1975, Ch. 957), and HSC 42320-42323 (added by Stats. 1992, Ch. 1096, Sec. 3, effective September 29, 1992).

Remarks of the Attorney General: Nothing in State law prohibits a district from adopting appropriate permit modification procedures into district rules and regulations.

XII. PUBLIC PARTICIPATION

State law provides authority for procedures to allow public participation in district actions to issue or deny an operating permit, to modify a permit [except as provided in 40 CFR §§70.7(e)(2) and (3)], or to renew a permit. Public participation under State law includes the opportunity for public comment and the opportunity for a hearing on draft permits in accordance with the requirements of the CAA and 40 CFR §70.7(h). State law provides for affected States to review permit applications in accordance with the CAA and 40 CFR §70.8(b).

Federal Authority: CAA §§502(b)(6), 505(a)(2), 42 U.S.C. §§661a(b)(6), 7661d(a)(2); 40 CFR §§70.7(h), 70.8(b).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §40702 (Stats. 1975, Ch. 957), HSC §42300 (Stats. 1975, Ch. 957), HSC §42301 (Stats. 1975, Ch. 957; last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994); and HSC §§42320-42323 (Stats. 1992, Ch. 1906, Sec. 3).

Remarks of the Attorney General: The districts are authorized by state law to incorporate appropriate notice and public review procedures into their permit programs. As a matter of practice, the districts currently allow public participation in the more significant permit actions. The process can be expanded as necessary to comply with federal law by amending district rules and regulations. Similarly, the district rules may provide for permit review and comment by effected states.

XIII. PUBLIC ACCESS TO PERMIT INFORMATION

State law provides authority to make available to the public any permit application, compliance plan, permit, and monitoring and compliance certification report, except for information entitled to confidential treatment. State law provides that the contents of an operating permit, except for trade secret information which is not emission data, shall not be entitled to confidential treatment.

Federal Authority: CAA §§114(c), 502(b)(8), 503(e), 42 U.S.C. §§7414(c), 7661a(b)(8), 7661b(e); 40 CFR §70.4(b)(3)(viii).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: Government Code §6250 et seq. (California Public Records Act, enacted by Stats. 1968, Ch. 39). See especially Gov't Code §6252 (added by Stats. 1968, Ch. 1473, Sec. 39; last amended by Stats. 1991, Ch. 181, Sec. 1); Gov't Code §6253 (added by Stats. 1968, Ch. 1473, Sec. 39; last amended by Stats. 1988, Ch. 409, Sec. 1); Gov't Code §6254 (added by

Stats. 1981, Ch. 684, Sec. 1.5; last amended by Stats. 1992, Ch. 1128, Sec. 2, operative July 1, 1993); Gov't Code §6254.7 (Added by stats. 1970, Ch. 1295, Sec. 2; last amended by Stats. 1992, Ch. 612, Sec. 1, effective January 1, 1993); and HSC §44346 (enacted by Stats. 1987, Ch. 1252, Sec. 1). See ARB regulations in Title 17, Cal. Code Regs. §§91000-91022 and Title 17, Cal. Code Regs. §§93321, 93322, and 93339.

XIV. ENFORCEMENT OF PERMITS PROGRAM REQUIREMENTS

State law provides civil and criminal enforcement authority consistent with 40 CFR §70.11, including authority to recover penalties and fines in a maximum amount of not less than \$10,000 per day per violation.

Federal Authority: CAA §502(b)(5)(E), 42 U.S.C. §7661a(b)(5)(E); 40 CFR §§70.4(b)(3)(vii), 70.11.

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §40752 (Stats. 1975, Ch. 957 last amended by AB 2288, Stats. 1993, Ch. 1166, effective Jan. 1, 1994); HSC §§39674 and 38675 (Stats. 1983, Ch. 1047, Sec. 1; amended by Stats. 1992, Ch. 1161, Sec. 12, effective January 1, 1993); HSC §42303 (Stats. 1975, Ch. 957); HSC §42303.5 (Stats. 1976, Ch. 1063); HSC §42304 (Stats. 1975, Ch. 957); HSC §§42300-42339 (Stats. 1991, Ch. 1209, Sec. 3); HSC §§42300-42339 (Stats. 1991, Ch. 1209, Sec. 3); HSC §42450-42454 (Added by Stats. 1975, Ch. 957, amended by Stats. 1988, Ch. 183, Sec. 1; HSC §40506.1 (Stats. 1992, Ch. 371, Sec. 8, effective Jan. 1, 1993); HSC §41510 (Stats. 1975, Ch. 957), HSC §41511 (Stats. 1976, Ch. 1063).

HSC §41700 (Stats. 1975, Ch. 957), HSC §41701 (Stats. 1975, Ch. 957), HSC §42400 (Stats. 1975, Ch. 957, last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994), HSC §42400.1 (Stats. 1986, Ch. 1453), HSC §42400.2 (Stats. 1986, Ch. 1453), HSC §42400.3 (Stats. 1992, Ch. 1252, last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994), HSC §42400.4 (Added by AB 2288, Stats 1993, Ch. 1166, effective January 1, 1994), HSC §42401 (Stats. 1975, Ch. 957), HSC §42402 (Stats 1975, Ch. 957, last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994), HSC §42402.1 (Stats. 1986, Ch. 1453), HSC §42402.2 (Stats. 1986, Ch. 1453), HSC §42402.3 (Stats. 1992, Ch. 1252, last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994), HSC §42402.5 (Stats. 1988, Ch. 1568), HSC §42403 (Stats. 1975, Ch. 957, HSC §42404 (Stats. 1975, Ch. 957), HSC §42404.5 (Stats. 1987, Ch. 260), Code of Civil Procedure §526 (enacted in 1872 based on the Practice Act §112, Stats. 1851, Ch. 5).

Remarks of the Attorney General: AB 2288 increased civil and criminal penalties from one thousand dollars (\$1,000) to ten thousand dollars (\$10,000) for those sources subject to the requirements of Title V of the federal Clean Air Act. Since the adoption of these amendments, a question of interpretation has arisen as to whether the newly added section 42400.4 would limit the extent to which penalties can be recovered. In the 1994 legislative session, it is expected that the section will be amended to eliminate the potential for questions of interpretation.

XV. AUTHORITY TO ENFORCE LAPSED PERMITS

State law provides authority to enforce the terms and conditions of a permit which has expired, if the source has filed a timely and complete application for renewal, so as to assure compliance with all applicable requirements.

Federal Authority: CAA §502(b)(5)(A), 42 U.S.C. §7661a(b)(5)(A); 40 CFR §70.4(b)(10).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §40702 (Stats. 1975, Ch. 857), HSC §42300(a) (Stats. 1975, Ch. 957), HSC §42301 (Stats. 1975, Ch. 957; last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994), HSC §42301.10 (added by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994) and HSC §42322 (added by Stats. 1992, Ch. 1096, Sec. 3, effective Sept. 29, 1992).

Remarks of the Attorney General: State law does not impede the permit program adopted by the districts from providing for the continued applicability of permit terms and conditions pending permit renewal. Such permit conditions would be enforced pursuant to the penalty provisions cited in paragraph XIV above. This conclusion is further supported by the uncodified intent language in §1 of AB 2288 that "[i]t is the intent of the Legislature that this act provide authority in state law for the implementation of the operating permit program required by Title V of the federal Clean Air Act...."

XVI. EPA PERMIT VETO

State law provides that an operating permit will not issue if the Administrator of EPA (or her designee) objects in a timely manner to its issuance pursuant to 40 CFR §70.8(c) and (d).

Federal Authority: CAA §§502(b)(5)(F), 505(b), 42 U.S.C. §§661a(b)(5)(F), 7661d(b); 40 CFR §§70.4(b)(3)(ix), 70.8(c)-(d).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §42301(c) (added by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994).

XVII. FINAL AGENCY ACTION ON PERMITS

State law provides that, solely for the purposes of obtaining judicial review in State court for failure of the air pollution control districts to take final action, "final permit action" shall include the failure of the districts to take final action on an application for a permit, permit renewal, or permit revision within the time required by Title V and the EPA regulations, as incorporated into district permit rules. [Note: If the State program allows sources to make changes using the minor permit modification process, the permitting authority's failure to take final action within 90 days of receipt of an application requesting a minor permit modification (or 180 days for minor modifications subject to group processing requirements) is subject to judicial review in State court.]

Federal Authority: CAA §502(b)(7), 42 U.S.C. §7661a(b)(7); 40 CFR §70.4(b)(3)(xi).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §40702 (Stats. 1975, Ch. 957), HSC §§42300 and 42301 (Stats. 1975, Ch. 957; last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994), HSC §42301.10 (added by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994), HSC §42322(a)(3) and (a)(7) (Enacted by Stats. 1992, Ch. 1096, Sec. 3), and Code of Civil Procedures §1085 (Enacted in 1872, based on (Stats. 1851, Ch. 5, Sec. 467) and last amended by Stats. 1951, Ch. 1737, Sec. 148).

Remarks of the Attorney General: Section 1085 of the Code of Civil Procedure can be used to compel performance of a mandatory duty by a public officer or to command the exercise of discretion. Thus, if the district rules require action on a permit application within a specified time period, traditional mandamus will lie to compel performance. Further, given the intent of the Legislature expressed in AB 2288 that state law provides authority for compliance with Title V, we believe the districts are authorized to include the required provision regarding "final action" in district rules and regulations. Finally, the Legislature has recently expressed its intent in the Air Pollution Permit Streamlining Act of 1992 that permits be acted upon expeditiously, that a permit action schedule with specific deadlines must be established, and that appeals of nonaction on a permit within the specified deadlines may be taken to the district policy board, in districts with a population of 250,000 or more, which is where most of the Title V sources are

located. The smaller districts are not prohibited from adopting similar provisions into their permit programs.

XVIII. DEFAULT PERMIT ISSUANCE

State law does not authorize the issuance, modification, or renewal of any permit based on the passage of a specified time period when the permit agency has failed to take action on the application, and does not include any other similar provision providing for default issuance of a permit unless EPA has specifically waived the right of review for itself and affected States.

Federal Authority: CAA §505(a)-(e), 42 U.S.C. §7661d(a)-(e); 40 CFR §70.8(e)

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: No state law authorizes default operating permit issuance. While a writ of mandate could be obtained to require the air pollution control officer to act on the permit application, the writ could not compel performance in a particular manner, such as default issuance. Finally, Title V sets forth procedures for review by any person, EPA, and any affected state prior to issuance of a permit to operate, which would preclude default issuance.

XIX. OPPORTUNITY FOR JUDICIAL REVIEW OF PERMIT ACTIONS

State law provides an opportunity for judicial review in State court of any final permit action by the applicant, any person who participated in the public-participation process provided pursuant to the CAA and 40 CFR §70.7(h), or any other person who could obtain judicial review of such actions under State laws, including the air pollution control officer. Any provisions of State law which limit access to judicial review do not exceed the corresponding limits on judicial review imposed by the standing requirements of Article III of the United States Constitution.

Federal Authority: CAA §502(b)(6), 42 U.S.C. §7661a(b)(6); 40 CFR §70.4(b)(3)(x).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §42302 (enacted by Stats. 1975, Ch. 957), HSC §42302.1 (added by Stats. 1988, Ch. 1568, Sec. 28.5), HSC §42308 (enacted by Stats. 1975, Ch. 957), HSC §§40864 and 40865 (added by Stats. 1975, Ch. 957; amended by Stats. 1976, Ch. 1113). See also, Code of Civil Procedure §1094.5 (enacted by Stats. 1945, Ch. 868, Sec. 1; last amended by Stats. 1992, Ch. 72, Sec. 1, effective May 28, 1992).

Remarks of the Attorney General: Appeal to the district hearing board of a permit decision made by the air pollution control officer appears to be an administrative remedy which must be exhausted prior to seeking judicial review. Both the permit applicant and "any aggrieved person who, in person or through a representative, appeared, submitted written testimony, or otherwise participated in the action before the district" may request a hearing on the issuance or denial of the permit, or by implication, of the terms and conditions of the permit. The hearing board must hold a hearing on the matter within 30 days, and the decision of the hearing board is subject to judicial review by writ of administrative mandamus in accordance with §1094.5 of the Code of Civil Procedure. The control officer, as the party defending the permit action before the hearing board, may also seek judicial review.

XX. LIMITATIONS ON JUDICIAL REVIEW

State law provides that the opportunity for judicial review of a final permit action in State court, as described in paragraph XIX of this opinion, shall be the exclusive means for obtaining judicial review of the terms and conditions of permits. State law provides that petitions for judicial review must be filed no later than 30 days after the final permit action (or 35 days, under specified circumstances). State law further provides that if the final permit action being challenged is the district's failure to take final action, a petition for judicial review may be filed at any time before the control officer denies the permit or issues the final permit.

Federal Authority: CAA §502(b)(6), 42 U.S.C. §7661a(b)(6); 40 CFR §70.4(b)(3)(xii).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §42302 (Stats. 1975, Ch. 957), HSC §42302.1 (Stats. 1988, Ch. 1568, Sec. 28.5), HSC §§40864(a) and (d) (Stats. 1975, Ch. 957; amended by Stats. 1976, Ch. 1113), Code of Civil Procedure §1094.5 (Stats. 1945, Ch. 868, Sec. 1; last amended by Stats. 1992, Ch. 72, Sec. 1), and Code of Civil Procedure §1085 (enacted 1872 based on Stats. 1851, Ch. 5, Sec. 467; last amended by Stats. 1951, Ch. 1737, Sec. 148) to compel performance of a mandatory duty by a public officer.

Remarks of the Attorney General: As previously stated, appeal of the control officer's decision on a permit to the hearing board appears to be an exhaustion requirement prior to seeking judicial review pursuant to CCP §1094.5. However, it should be noted that in its role of reviewing permit decisions initially made by the APCO, the hearing board is confined to examining whether the permit was properly issued or denied, i.e., whether the control

officer correctly applied the law and district rules to the facts presented by the particular source. We believe that this review function does not entail the exercise of independent judgment, as in a variance or abatement order proceeding, but rather involves a determination of whether the control officer acted reasonably and in accordance with the law. Thus, if the control officer has denied a permit due to an objection by the EPA Administrator, we do not believe the hearing board could countermand that decision on equity or other grounds, for the purposes of the federal aspects of the permit, since the statute (HSC §42301(c)) prohibits the issuance of a permit to a Title V source if the Administrator objects in a timely manner. We have addressed this issue here in order to respond to questions by EPA on the role of the hearing board and the scope of its review authority with regard to Title V permit actions.

XXI. COORDINATION WITH ACID RAIN PROGRAM REQUIREMENTS

State law is consistent with, and cannot be used to modify, the Acid Rain Program requirements of 40 CFR part 72.

Federal Authority: CAA §§408(a), 506(b), 42 U.S.C. §§7651g(a), 7661e(b); 40 CFR §§70.4(b)(3)(xiii), 72.70(b), 72.72(a).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §§42300 and 42301 (Enacted by Stats. 1975, Ch. 957; last amended by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994), and HSC §42301.10 (enacted by AB 2288, Stats. 1993, Ch. 1166, effective January 1, 1994).

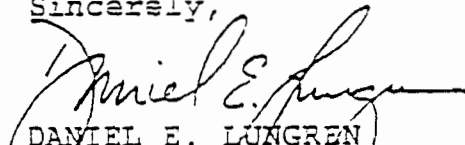
Remarks of the Attorney General: Power plants that significantly affect air quality will be subject to Title V, and these plants are "affected sources" pursuant to Title IV (Acid Deposition Control) and Title V of the federal Clean Air Act. The CEC is endowed with plenary authority to certify sites for power plant construction (see Public Resources Code §25500 et. seq. and 20 Cal.Code Regs. §1701 et. seq.).

In practice, power plant sitings follow a sequence of events in which the actions of the Energy Commission and the districts are coordinated. The authority to construct issued by the district is forwarded to the CEC and serves as the determination of compliance with applicable air quality standards required by 20 CCR §§1714.9 and 1744.5. The Commission adopts the conditions specified in the authority to construct in its final siting decision. The district then issues the facility a permit to operate. The CEC does not review permits to operate unless their conditions differ from those set forth in the authority to construct. A memorandum of understanding between the CEC and the ARB sets forth a timetable for these actions. The CEC has never

had occasion to exercise its power to override an air district's permit denial, although the CEC and the districts have negotiated changes in permit conditions. Public Resources Code §25525 expressly provides that "[i]n no event shall the commission make any findings in conflict with applicable federal law or regulations," including Title V requirements.

Thus, the CEC does not have authority to site a power plant that cannot obtain a Title V permit. The Supremacy Clause of Article VI of the federal Constitution and Public Resources Code §§25500 and 25525 prohibit the Commission from making a finding in conflict with federal law; such a conflict would exist were the CEC to certify and site a plant that required a Title V permit and did not possess it (Clean Air Act §502(a)), or if the CEC objected to permit conditions necessary to assure compliance with applicable requirements, as provided in Clean Air Act §504. Therefore, CEC certification cannot shield power plants from having to obtain Title V permits which meet the Acid Rain Program requirements of 40 CFR part 72.

Sincerely,


DANIEL E. LUNGREN
Attorney General



San Joaquin Valley
Unified Air Pollution Control District

Permit to Operate

FACILITY ID: N-2073

EXPIRATION DATE: 10/31/2001

LEGAL OWNER OR OPERATOR: OGDEN MARTIN SYSTEMS

MAILING ADDRESS: P.O. BOX 278
CROWS LANDING, CA 95313

FACILITY LOCATION: 4040 FINK RD, CROWS LANDING

FACILITY DESCRIPTION: MUNICIPAL SOLID WASTE COMBUSTOR

The facility's Permit to Operate may include facilitywide requirements as well as requirements that apply to specific permit units.

This Permit to Operate remains valid through the permit expiration date listed above, subject to payment of annual permit fees and compliance with permit conditions and all applicable local, state, and federal regulations. This permit is valid only at the location specified above, and becomes void upon any transfer of ownership or location. Any modification of the equipment or operation, as defined in District Rule 2201, will require prior District approval. This permit shall be posted as prescribed in District Rule 2010.

David L. Crow
Executive Director/APCO

Seyed Sadredin
Director of Permit Services

Northern Region * 4230 Kiernan Ave., Suite 130 * Modesto, CA 95356
(209) 545-7000 * FAX (209) 545-8652

San Joaquin Valley Unified Air Pollution Control District

PERMIT UNIT: N-2073-1-2

EXPIRATION DATE: 10/31/2001

EQUIPMENT DESCRIPTION:

POWER GENERATION SYSTEM: TWO 400 TON/DAY MUNICIPAL SOLID WASTE COMBUSTOR/BOILERS PRODUCING 21.5 MW OF ELECTRICITY. AIR POLLUTION CONTROL EQUIPMENT: DRY LIME SCRUBBERS; FLY ASH BAGHOUSE; THERMAL DE-NOX AMMONIA INJECTION SYSTEM; LIME SLURRY INJECTION

Permit Unit Requirements

1. Should any provision, clause, sentence, paragraph, section or part of these conditions for any reason be judged invalid, such judgment shall not affect or invalidate the remainder of these conditions. [District Rule 1130]
2. Particulate matter emissions from each combustion unit shall not exceed 0.0275 gr/dscf, corrected to 12% CO₂, as measured by EPA Methods 1-5, including the condensable portion in the "back-half". [District NSR Rule]
3. Particulate matter emissions from each combustion unit shall not exceed 0.011 gr/dscf, corrected to 12% CO₂, as measured by EPA Methods 1-5. [District NSR Rule & 40 CFR 60.33b]
4. Particulate matter emissions from each combustion unit shall not exceed 0.008 gr/dscf, corrected to 12% CO₂, for the fraction of particles less than 2u in diameter, as measured by Andersen Cascade Impactor, Flow Sensor Multiclone. [District NSR Rule]
5. The NO_x emissions from each combustion unit shall not exceed 200 ppmV, dry, corrected to 12% CO₂ as measured by EPA Methods 1-4 & 7E. Compliance with this limit shall be determined based on an eight rolling hour average. [District NSR Rule & 40 CFR 60.33b]
6. The THC emissions (as CH₄) from each combustion unit shall not exceed 70 ppmV, dry, corrected to 12% CO₂ as measured by EPA Methods 1-4 and 25A. [District NSR Rule]
7. The HF emissions shall not exceed 3 ppmV, dry, corrected to 12% CO₂. [District Rule 4102]
8. Either the SO₂ emissions from each combustion unit shall not exceed 30 ppmV, dry, corrected to 12% CO₂, based on an eight hour rolling average, or the SO₂ removal efficiency shall be at least 80% as measured by EPA Methods 1-4 & 6C. [District NSR Rule]
9. The SO₂ 80 percent removal efficiency shall be based on the measurement of the inlet and outlet SO₂ concentrations, corrected to 12% CO₂. [District NSR Rule]
10. Until 19 December 2000, the CO emissions from each combustion unit shall not exceed 400 ppmV, dry, corrected to 12% CO₂ as measured by EPA Methods 1-4 & 10. Compliance with this limit shall be determined based on an eight hour rolling average. [District NSR Rule]

Permit unit requirements continue on next page

These terms and conditions are part of the facilitywide Permit to Operate.

Permit unit requirements continued:

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11. After 19 December 2000, the CO emissions from each combustion unit shall not exceed 100 ppmV, dry, corrected to 12% CO₂ as measured by EPA Methods 1-4 & 10. Compliance with this limit shall be determined based on a four hour block arithmetic average as defined in 40 CFR 60.51b. [40 CFR 60.34b]
12. The cadmium emissions from each combustion unit shall not exceed 0.040 mg/dscm (18 gr/million dscf), corrected to 12% CO₂, as measured by EPA Methods 1, 3, and 29. [40 CFR 60.33b]
13. The lead emissions from each combustion unit shall not exceed 0.44 mg/dscm (200 gr/million dscf), corrected to 12% CO₂, as measured by EPA Methods 1, 3, and 29. [40 CFR 60.33b]
14. After 19 December 2000, the mercury emissions from each combustion unit shall not exceed 0.080 mg/dscm (35 gr/million dscf), corrected to 12% CO₂, or the mercury removal efficiency shall be at least 85% by weight, whichever is less stringent, as measured by EPA Methods 1, 3, and 29. [40 CFR 60.33b]
15. The SO₂ emissions from each combustion unit shall not exceed 29 ppmV, dry, corrected to 12% CO₂, or the SO₂ removal efficiency shall be at least 75% (by weight or volume), whichever is less stringent as measured by EPA Methods 1-4 & 6C. Compliance with this limit shall be determined based on a 24-hour daily geometric mean. EPA method 19 shall be used to calculate the daily geometric average sulfur dioxide emission concentration and removal efficiency. [40 CFR 60.33b]
16. The Hydrogen Chloride (HCl) emissions from each combustion unit shall not exceed 29 ppmV, corrected to 12% CO₂, or the HCl removal efficiency shall be at least 95% (by weight or volume), whichever is less stringent, as measured by EPA Method 26. [40 CFR 60.33b]
17. The Dioxin/Furan emissions from each combustion unit shall not exceed 30 ng/dscm (total mass), corrected to 12% CO₂, as measured by EPA Method 23. [40 CFR 60.33b]
18. The facility shall be exempt from all emission limitations specified in this permit for periods of start-up, shutdown, and malfunction, as defined in 40 CFR 60.58b(a). [District NSR Rule]
19. The CO emissions shall not exceed 800 pounds in any one day. [District NSR Rule]
20. The CO emissions shall not exceed 121.9 tons/yr. [District NSR Rule]
21. The NO_x emissions shall not exceed 2,260 pounds in any one day. [District NSR Rule]
22. The NO_x emissions shall not exceed 344.4 tons/year. [District NSR Rule]
23. The SO₂ emissions shall not exceed 800 pounds in any one day. [District NSR Rule]
24. The SO₂ emissions shall not exceed 121.9 tons/year. [District NSR Rule]
25. The PM emissions shall not exceed 475 pounds in any one day. [District NSR Rule]
26. The PM emissions shall not exceed 72.4 tons/year. [District NSR Rule]
27. The THC emissions shall not exceed 96 pounds in any one day. [District NSR Rule]
28. The THC emissions shall not exceed 14.6 tons/year. [District NSR Rule]

Permit unit requirements continue on next page

These terms and conditions are part of the facilitywide Permit to Operate.

Permit unit requirements continued:

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29. Until 19 December 2000, the Hg emissions shall not exceed 7.35 pounds in any one day as measured by EPA Method 101A. [District Rule 4102]
30. The mass emission rates shall be calculated from the hourly stack concentrations and the volumetric flow rate via the F-factor as determined in the most recent source test. [District NSR Rule]
31. Each combustion unit shall only be allowed to emit half of the total allowable emission rate for each pollutant. [District NSR Rule]
32. The total steam generated from each boiler shall not exceed 110% of the maximum demonstrated combustion unit load achieved in the most recent Dioxin/Furan performance test, as defined in section 40 CFR 60.51b. [40 CFR 60.34b]
33. The maximum flue gas temperature, measured at the particulate matter control device inlet from each boiler, shall not be higher than 17 deg. C (31 deg. F) above the maximum demonstrated particulate matter control device temperature as defined in section 40 CFR 60.51b. [40 CFR 60.34b]
34. The steam load and particulate matter control device inlet flue gas temperature limitations shall apply at all times except during the annual Dioxin/Furan performance test, the two weeks preceding the annual Dioxin/Furan performance test, and when the facility obtains a waiver in accordance with permission granted by the Administrator or the Air Pollution Control Officer. [40 CFR 60.53b]
35. A monthly report summarizing the quantity of pollutant emissions of SO₂, NO_x, and CO, based on data from the CEM system required by conditions 55, 56, & 57, shall be included in the information required by condition 78. Copies of the monthly reports prepared pursuant to this condition shall be sent to the district office by the 15th day of the following month. [District Rule 1070]
36. Ammonia (NH₃) breakthrough of the exhaust shall not exceed 50 ppmV. The facility shall be exempt from this condition for periods of start-up, shutdown, and malfunction as defined in 40 CFR 60.58b(a). [District Rule 4102]
37. Opacity exhibited by the gases discharged to the atmosphere from each combustion unit, other than water vapor, shall not exceed 10 percent based on a six minute average as measured by EPA Method 9. [40 CFR 60.33b]
38. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as or darker than Ringelmann 1 or equivalent to 20% opacity. [District Rule 4101]
39. Trace metals, PAH, PCB, Dioxin and Furan emissions shall not exceed the emission levels as listed in the most recent amended version of the "Stanislaus Waste-to-Energy Facility Health Risk Assessment", Radian Corporation, Sacramento, CA, 16 October 1986 (amended 9 March 1989) which has been approved by the Air Pollution Control Officer. [District Rule 4102]
40. The Dioxin and Furan emissions shall not exceed 610 ng/s, corrected to 12% CO₂, based on the Department of Health Services toxic equivalent calculation. [District Rule 4102]

Permit unit requirements continue on next page

These terms and conditions are part of the facilitywide Permit to Operate.

Permit unit requirements continued:

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41. During any period of time that MSW is burning on the grates, the combustion gas retention time shall be maintained at a minimum of one second, the combustion zone temperature shall be maintained at a minimum of 1800 deg. F, and the furnace roof temperature shall be maintained at an average (4 hour arithmetic block) of 1270 deg. F. [District NSR Rule]
42. OMSS shall immediately notify the District of any breakdown condition, as defined in District Rule 1100 - Equipment Breakdown. [District Rule 1100]
43. Fuel Oil #2, with a sulfur content not to exceed 0.25 % by weight, may be used as necessary to maintain the minimum combustion zone temperature requirements. [District NSR Rule]
44. A furnace roof temperature of 1270 degrees F shall be stabilized, as measured by multiple thermocouples, to ensure that a minimum temperature of 1800 degrees F is established above the grate prior to the ignition of MSW. [District NSR Rule]
45. The ammonia (NH₃) injection rate shall be measured and recorded continuously. [District NSR Rule]
46. The baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District NSR Rule]
47. The baghouse shall have a maximum effective air-to-cloth ratio of 4:1 and shall be equipped with an automatic cleaning mechanism. [District NSR Rule]
48. Replacement bags numbering at least 10% of the total number of bags in the largest individual combustion unit baghouse using each type of bag shall be maintained on the premises. [District NSR Rule]
49. Paved areas shall be kept free of visible dust at all times and shall be vacuum swept at least once every fourteen days. Records of vacuum sweeping shall be maintained and made available to the District upon request. [District Rule 4102]
50. The ash shall be handled in such a manner as to mitigate fugitive emissions to the maximum extent possible. [District NSR Rule]
51. Hazardous materials shall not be burned in this equipment. Hazardous materials are that portion of solid waste which, by reason of its composition or characteristics, is: (a) hazardous waste as defined in the Solid Waste Disposal Act, 42 USC section 6901 et. seq., and the regulations thereunder, the California Health & Safety Code, Div. 20, Chs. 6.5, 6.7, and 6.8 (section 25100 et. seq.), the California Administrative Code, Title 22, Div. 4, Ch. 30, and any similar or substituted legislation or regulations or amendments to the foregoing; (b) any other materials which any governmental agency or unit having appropriate jurisdiction shall determine from time to time is harmful, toxic, or dangerous, or otherwise ineligible for disposal through the facility; and (c) any material, other than residential or commercial solid waste of the type historically collected by the County and the City as acceptable for disposal into non-hazardous waste landfills, which would result in process residue being hazardous waste under (a) or (b) above. [District 4102]
52. There shall be no visible emissions from any location other than designated vents on refuse receiving, processing or storage buildings at any time. [District NSR Rule]

Permit unit requirements continue on next page

These terms and conditions are part of the facilitywide Permit to Operate.

53. The facility shall install, calibrate, maintain, and operate a carbon dioxide CEM at the economizer and stack locations of each combustion unit, in accordance with 40 CFR 60.58b(b) and Appendices B and F. [40 CFR 60.38b]
54. The facility shall install, calibrate, maintain, and operate a continuous opacity monitoring system in accordance with 40 CFR Subpart A, Section 60.13 and Appendix B. [40 CFR 60.38b]
55. The facility shall install, calibrate, maintain, and operate a sulfur dioxide CEM at the stack locations in accordance with 40 CFR 60.58b(e) and Appendices B and F. [40 CFR 60.38b]
56. The facility shall install, calibrate, maintain, and operate a nitrogen oxides CEM at the stack locations in accordance with 40 CFR 60.58b(h) and Appendices B and F. [40 CFR 60.38b]
57. The facility shall install, calibrate, maintain, and operate a carbon monoxide CEM at the stack locations in accordance with 40 CFR 60.58b(i) and Appendices B and F. [40 CFR 60.38b]
58. The facility shall install, calibrate, maintain, and operate a continuous steam flow monitoring and recording device and a device to measure temperature at the inlet of each particulate matter control device in accordance with 40 CFR 60.58b(i). [40 CFR 60.38b]
59. OMSS shall be responsible for providing the District access, via telemetry, to the stored computerized data associated with the continuous emission monitoring system. [District Rule 1080]
60. Continuous monitoring and recording equipment shall be provided for the following: (a) No. 2 fuel oil burning rate; (b) Temperature - sufficient monitors to demonstrate combustion unit temperature profile after secondary air injection. [District Rule 1080]
61. In the event that monitoring or test data shows that emissions from the facility exceed any emission limitation conditions of this Permit to Operate, OMSS shall take immediate corrective action to bring the plant's emissions within these limitations. [District NSR Rule]
62. Emissions in excess of those allowed by this permit shall be cause for the District to order an immediate reduction in fuel feed rate or to take other appropriate abatement action. [District Rule 2080]
63. OMSS shall notify the district of any emission violation by the next working day after such violation has occurred. [District Rule 2080]
64. Source testing to demonstrate compliance with permit conditions shall be conducted on an annual basis. [District Rule 1081]
65. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. [District Rule 1081]
66. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

Permit unit requirements continue on next page
These terms and conditions are part of the facilitywide Permit to Operate.

Permit unit requirements continued:

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67. Source tests shall include a test of both combustion unit exhausts following the baghouse for the following parameters, corrected to 12% CO₂ on a dry basis: (a) Oxides of nitrogen emissions; [District Rule 1081]

68. Source tests shall include a test of both combustion unit exhausts following the baghouse for the following parameters, corrected to 12% CO₂ on a dry basis: (b) Total hydrocarbons, as methane; (c) Carbon monoxide; [District Rule 1081]

69. Source tests shall include (d) Total Particulates and shall be conducted as specified in condition 2. If the measured Total Particulates are greater than 0.008 gr/dscf, corrected to 12% CO₂, testing shall be conducted to verify compliance with conditions 2, 3, & 4. [District Rule 1081]

70. Source tests shall include a test of both combustion unit exhausts following the baghouse for the following parameters, corrected to 12% CO₂ on a dry basis: (e) Sulfur dioxide; (f) Exhaust flow rate, wet and dry; [District Rule 1081]

71. Source tests shall include a test of both combustion unit exhausts following the baghouse for the following parameters, corrected to 12% CO₂ on a dry basis: (g) Polynuclear aromatic hydrocarbons (Benzo-A-Pyrene, Benzo-E-Pyrene, Benzo-A-Anthracene, and Coronene and PCB); (h) Dioxins and Furans. [District Rule 1081]

72. The following Dioxin isomers & homologues shall be measured in both the combustion unit exhausts: 2,3,7,8 tetra CDD; total tetra CDD; 1,2,3,7,8 penta CDD; total penta CDD; 1,2,3,4,7,8 hexa CDD; 1,2,3,6,7,8 hexa CDD; 1,2,3,7,8,9 hexa CDD; total hexa CDD; 1,2,3,4,6,7,8 hepta CDD; total hepta CDD; total octa CDD. [District Rule 1081]

73. The following Furan isomers & homologues shall be measured in both the combustion unit exhausts: 2,3,7,8 tetra CDF; total tetra CDF; 1,2,3,7,8 penta CDF; 2,3,4,7,8 penta CDF; total penta CDF; 1,2,3,4,7,8 hexa CDF; 1,2,3,6,7,8 hexa CDF; 1,2,3,7,8,9 hexa CDF; 2,3,4,6,7,8 hexa CDF; total hexa CDF; 1,2,3,4,6,7,8 hepta CDF; 1,2,3,4,7,8,9 hepta CDF; total hepta CDF; total octa CDF. [District Rule 1081]

74. Source tests of both combustion unit exhausts shall be performed for the following, corrected to 12% CO₂ on a dry basis: (i) Heavy metals as listed in the most recent amended version of the "Stanislaus Waste-to-Energy Facility Health Risk Assessment", Radian Corporation, Sacramento, CA, 16 October 1986 (amended 9 March 1989) which has been approved by the Air Pollution Control Officer; (j) HCl. [District Rule 1081]

75. Cooling tower drift shall not exceed 0.005 percent of the circulating water flow or a maximum annual drift emission rate of 1,090,000 kg/year. [District Rule 4102]

76. Soot blowers or super heater rappers shall be operated in a mode consistent with normal cleaning requirements of the system during the compliance tests. [District Rule 1081]

77. The thermal DeNO_x system shall be in full use whenever this equipment is fired with MSW. [District NSR Rule]

78. OMSS shall maintain a complete central file containing all measurements, records and other data that are required to be collected pursuant to the various provisions of this Permit to Operate. [District Rule 1070]

Permit unit requirements continue on next page

These terms and conditions are part of the facilitywide Permit to Operate.

79. This file shall include, but not be limited to: (a) Data collected from in-stack monitoring instruments; (b) Input rate records for all fuels burned; (c) Purchase records that indicate the sulfur content, by weight, of all fuel oil #2 purchased; (d) Results of all source tests; [District Rule 1070]

80. This file shall include, but not be limited to: (e) All other air pollution system performance evaluations & records of calibration checks, calibration gas cylinder changes, adjustments & maintenance performed on all equipment. [District Rule 1070]

81. Records shall be kept for each unit with the following: (a) Specific time of operation of each combustion unit; (b) Specific time of operation of the auxiliary burners; (c) Equipment breakdowns or malfunctions; (d) Exceedances of emission standards. [District Rule 1070]

82. OMSS shall follow all written maintenance procedures & schedules for the following: all emissions control equipment, combustion units, and monitoring equipment for measuring emission levels. [District Rule 1070]

83. Operating & maintenance manuals, subject to district review, shall be provided for the equipment covered by this permit. OMSS operators shall be trained in the operation & maintenance of both fuel burning & pollution control equipment. [District Rule 1070]

84. All equipment, facilities and systems installed or used to comply with the terms and conditions of this Permit to Operate shall be maintained in good working order and be operated as required to meet the conditions of this permit. [District Rule 2080]

85. The district reserves the right to require OMSS to re-evaluate the health risk assessment if there is a significant change in population locations as projected in the health risk assessment, or new health data becomes available. [District Rule 4102]

86. Chromium compounds shall not be used as an additive in the cooling tower water. [District Rule 4102]

87. By 15 May 1999 or 12 months after the California State 111(d) Plan is approved, whichever is later, the facility shall be in compliance with the requirements of operator training and certifications as specified under 40 CFR 60.54b(a) through (c). [40 CFR 60.35b]

88. All chief facility operators, shift supervisors, and control room operators shall complete the municipal waste combustion unit operator training course, unless the above persons have already obtained a provisional or full ASME certification on or before 15 May 1999 or the EPA approval date of the California State 111(d) Plan, whichever is later. [40 CFR 60.35b]

89. The facility shall develop and annually update a site-specific operating manual in accordance with 40 CFR 60.54b(c). [40 CFR 60.35b]

90. Each operator and all maintenance personnel shall receive initial and annual training on the site-specific operating manual in accordance with 40 CFR 60.54b(f). [40 CFR 60.35b]

91. The site-specific operating manual and operating manual training records shall be accessible to all operations and maintenance personnel and shall be made available to the enforcement agency upon request. [40 CFR 60.35b]

Permit unit requirements continue on next page

These terms and conditions are part of the facilitywide Permit to Operate.

Permit unit requirements continued:

N-2073-1-2

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92. The facility shall not cause visible emissions from ash conveying systems, including transfer points, in excess of 5% of the observation period, as determined by EPA Method 22. Fugitive ash emissions do not include emissions within a building, an enclosed ash conveyor, or during periods of maintenance and repair of the ash conveyor systems. [40 CFR 60.36b]

93. The facility may elect to alternate Dioxin/Furan testing on each stack, if the previous two years indicate Dioxin/Furan emissions levels less than or equal to 15 ng/dscm total mass, corrected to 12% CO₂. [40 CFR 60.38b]

94. The facility shall maintain all records required by this permit and records of the information as required in 40 CFR 60.59b for a period of at least five years. [40 CFR 60.39b]

95. The facility shall submit an annual report in accordance with 40 CFR 60.59b(g) by February 1 of each year following the calendar year in which the data was collected. [40 CFR 60.39b]

96. The facility shall submit semiannual reports within 31 days following the end of each 6 month period in accordance with 40 CFR 60.59b(h). [40 CFR 60.39b]

97. No later than 19 July 1999, OMSS shall submit to the District a final compliance plan and an application for an Authority to Construct for the installation of any control equipment necessary to comply with the mercury emissions limitation specified in condition 14. [40 CFR 60.39b]

98. No later than 19 January 2000, OMSS shall award contracts for the installation of any control equipment necessary to comply with the mercury emissions limitation specified in condition 14. [40 CFR 60.39b]

99. No later than 19 May 2000, OMSS shall initiate onsite construction of any control equipment necessary to comply with the mercury emissions limitation specified in condition 14. [40 CFR 60.39b]

100. No later than 19 November 2000, OMSS shall complete onsite construction of any control equipment necessary to comply with the mercury emissions limitation specified in condition 14. [40 CFR 60.39b]

101. No later than 19 December 2000, OMSS shall demonstrate final compliance with the mercury emissions limitation specified in condition 14. [40 CFR 60.39b]

102. No later than 12 months after the California State 111(d) Plan for implementing 40 CFR Subpart Cb is approved by EPA, the facility shall be in compliance with the conditions contained in this Permit to Operate that solely cite 40 CFR 60, Subpart Cb as being their statutory authority, with the exception of the conditions that specify explicit compliance dates. [40 CFR 60.39b]

103. Only those conditions contained in this Permit to Operate that cite 40 CFR 60, Subpart Cb as being their statutory authority are federally enforceable through the California State 111(d) Plan for implementing 40 CFR Subpart Cb.

These terms and conditions are part of the facilitywide Permit to Operate.

**South Coast Air Quality Management District
Operating Permits**



PERMIT TO OPERATE

This initial permit shall be renewed by **ANNUALLY** unless the equipment is moved, or changes ownership. ~~If the~~ billing for annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner
Or Operator:

LONG BEACH CITY, SERRF PROJECT
120 HENRY FORD AVE
LONG BEACH, CA 90802

ID 044577

Equipment

located at: 120 HENRY FORD AV, LONG BEACH, CA 90802-1039

Equipment Description:

AIR POLLUTION CONTROL SYSTEM NO. 1 CONSISTING OF:

1. ROTARY ATOMIZER NO. 1 WITH CYCLONE INLETS VENTING COMBUSTOR/BOILER NO. 1.
2. SPRAY DRYER TYPE REACTORS WITH CALCIUM HYDROXIDE INJECTION, EACH SERVING ROTARY ATOMIZER NO. 1.
3. BAGHOUSE NO. 1, WITH TEN COMPARTMENTS, CROSS-OVER DUCTING, REVERSE AIR CLEANING, 73,416 SQ. FT. OF FILTER AREA AND A MAXIMUM AIR-TO-CLOTH RATIO OF 2.0 TO 1.0.
4. INDUCED DRAFT FAN NO. 1 VENTING RESOURCE RECOVERY SYSTEM NO. 1.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION. BY DECEMBER 19, 1998, THE FACILITY SHALL BE IN COMPLIANCE WITH THE APPLICABLE OPERATOR REQUIREMENTS AS SPECIFIED UNDER 40 CFR PART 60.54b.
4. DUST OR FLYASH COLLECTED IN THE BAGHOUSE COMPARTMENT HOPPERS SHALL BE DISCHARGED ONLY INTO CLOSED CONVEYORS AND SHALL REMAIN IN CLOSED CONVEYORS UNTIL CONDITIONED IN THE ASH CONDITIONER, EXCEPT DURING MAINTENANCE AND REPAIR, DUST OR FLYASH COLLECTED IN THE SPRAY DRYER SHALL BE REMOVED IN AN ENCLOSED SYSTEM.
5. A GAUGE SHALL BE MAINTAINED TO INDICATE, IN INCHES OF WATER PRESSURE,

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CONTINUATION OF PERMIT TO OPERATE

THE STATIC PRESSURE DIFFERENTIAL ACROSS THE BAGS.

6. THE VOLUME OF LIME SLURRY SUPPLIED TO THE ATOMIZERS FOR SO₂ CONTROL SHALL BE CONTINUOUSLY MEASURED AND RECORDED.
7. A CONTINUOUS MONITORING SYSTEM TO MONITOR AND RECORD MASS EMISSIONS AND CONCENTRATIONS OF NITROGEN OXIDES (NO_x), OXIDES OF SULFUR (SO_x) AND CARBON MONOXIDE (CO) IN THE EXHAUST OF THE COMBUSTOR/BOILER STACK, SHALL BE MAINTAINED AND OPERATED IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b.
8. A CONTINUOUS OXYGEN MONITOR AND RECORDER, AS APPROVED BY THE AQMD, SHALL BE MAINTAINED AND OPERATED IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b TO MEASURE CONCENTRATIONS OF OXYGEN IN THE EXHAUST OF THE COMBUSTOR/BOILER STACK.
9. A SYSTEM, AS APPROVED BY THE AQMD, SHALL BE OPERATED TO CONVERT AND RECORD THE STACK NITROGEN OXIDES CONCENTRATIONS TO 3% OXYGEN ON A DRY BASIS AND REPORT THE RESULTS IN A MANNER WHICH DEMONSTRATES COMPLIANCE WITH RULE 476.
10. BY DECEMBER 19, 1998, THE OWNER OR OPERATOR SHALL INSTALL, MAINTAIN AND OPERATE A CONTINUOUS OPACITY MONITOR AND RECORDER IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b TO MEASURE OPACITY OF FLUE GAS IN THE EXHAUST OF THE COMBUSTOR/BOILER STACK. THE MEASURED OPACITY SHALL NOT EXCEED 10 PERCENT IN 6-MINUTE AVERAGE.
11. BY DECEMBER 19, 1998, THE OWNER OR OPERATOR SHALL INSTALL, MAINTAIN AND OPERATE A CONTINUOUS TEMPERATURE MONITOR IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b TO MONITOR THE TEMPERATURE OF THE FLUE GAS STREAM AT THE INLET TO EACH PARTICULATE MATTER CONTROL DEVICE FOR THE RESOURCE RECOVERY SYSTEM. THE MONITORED TEMPERATURE SHALL NOT EXCEED 17 DEGREES IN CELSIUS (4-HR BLOCK AVERAGE) ABOVE THE MAXIMUM DEMONSTRATED PARTICULATE MATTER CONTROL DEVICE TEMPERATURE AS DEFINED IN 40 CFR PART 60.51b EXCEPT AS SPECIFIED UNDER 40 CFR PART 60.53b(c).
12. ALL CONTINUOUS EMISSION MONITORS SHALL BE OPERATED IN ACCORDANCE WITH THE REQUIREMENTS AND OPERATING PROCEDURES AS APPROVED BY THE AQMD.
13. CONTROLLED EMISSIONS OF OXIDES OF NITROGEN (NO_x) IN THE AIR POLLUTION CONTROL SYSTEM EXHAUST FROM THIS SYSTEM SHALL NOT EXCEED 225 PPMV (15 MINUTES AVERAGE) AT 3% OXYGEN ON A DRY BASIS.
14. BY DECEMBER 19, 1998, CONTROLLED NO_x EMISSIONS IN THE EXHAUST FROM THE SYSTEM SHALL NOT EXCEED 205 PPMV CORRECTED TO 7% OXYGEN ON A DRY BASIS. WHEN AVERAGING EMISSIONS FROM ALL COMBUSTORS AS ALLOWED IN PART 60.33b(d) OF 40 CFR SUBPART Cb, THE AVERAGED NO_x EMISSIONS SHALL NOT

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CONTINUATION OF PERMIT TO OPERATE

EXCEED 180 PPMV CORRECTED TO 7% OXYGEN ON A DRY BASIS (24-HR DAILY ARITHMETIC AVERAGE).

15. CONTROLLED EMISSIONS OF OXIDES OF SULFUR (SOX) FROM THE COMBUSTOR/BOILER SHALL NOT EXCEED THE MORE STRINGENT OF 17 LB/HR OR 70 PPM, DRY COLLECTED TO 12% CO₂ (3 HOUR AVERAGE), AND THE MORE STRINGENT OF 12 LB/HR OR 26 PPM, DRY CORRECTED TO 12% CO₂ (8 HOUR AVERAGE).

16. BY DECEMBER 19, 1998, CONTROLLED EMISSIONS OF THE FOLLOWING POLLUTANTS IN THE EXHAUST FROM THE SYSTEM SHALL NOT EXCEED THE LIMITS SPECIFIED BELOW. THE FOLLOWING LIMITS ARE CORRECTED TO 7% OXYGEN ON A DRY BASIS UNLESS OTHERWISE INDICATED:

OXIDES OF SULFUR (SOX)	29 PPMV OR 75% WT. REDUCTION (24-HR DAILY GEOMETRIC MEAN)
PARTICULATE MATTERS (PM)	27 mg/DSCM
DIOXIN/FURAN	30 ng/DSCM
CADMIUM	0.04 mg/DSCM
LEAD	0.44 mg/DSCM
MERCURY	0.080 mg/DSCM OR 85% WT. REDUCTION
HYDROGEN CHLORIDE	29 PPMV OR 95% WT. REDUCTION

17. BY DECEMBER 19, 2000, CONTROLLED EMISSIONS OF CARBON MONOXIDE (CO) IN THE EXHAUST FROM THE SYSTEM SHALL NOT EXCEED 100 PPMV (4-HR ARITHMETIC AVERAGE) CORRECTED TO 7% OXYGEN ON A DRY BASIS. THE OWNER OR OPERATOR OF SERRF SHALL ADHERE TO THE MEASURABLE AND ENFORCEABLE INCREMENTAL STEPS OF PROGRESS, AS LISTED BELOW, TO ACHIEVE COMPLIANCE WITH THE CONCENTRATION LIMIT OF 100 PPMV:

INCREMENTAL STEPS	DEADLINE
1. Submit final control plan to SCAQMD	July 1998
2. Award contract for control system, or process modification, or orders for purchase of components	April 1999
3. Initiating of on-site construction or installation of the air pollution control devices or process changes	October 1999
4. Completing on-site construction or installation control device or process changes	April 2000
5. Final Compliance	Dec 19, 2000

18. THE CONTROLLED EMISSIONS IN THE EXHAUST FROM THIS SYSTEM SHALL NOT EXCEED THE FOLLOWING LIMITS:

CONTAMINANT	LB/DAY

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NITROGEN OXIDES	816
PM10	120
SULFUR OXIDES	288
CARBON MONOXIDE	792
REACTIVE ORGANIC GAS	72
HYDROGEN CHLORIDE	204

19. BY DECEMBER 19, 1998, VISIBLE FUGITIVE ASH EMISSIONS FROM AN ASH CONVEYING SYSTEM SHALL NOT EXCEED 5 PERCENT OF THE OBSERVATION PERIOD WHICH IS DEFINED IN 40 CFR PART 60.58b(k), EXCEPT DURING MAINTENANCE AND REPAIR OF ASH CONVEYING SYSTEMS.
20. THE AQMD APPROVED SAMPLING PORTS SHALL BE MAINTAINED IN THE FOLLOWING LOCATIONS:
- A. IN THE DUCT FOLLOWING THE COMBUSTOR/BOILER BUT PRECEDING THE SPRAY DRYER;
 - B. IN THE DUCT FOLLOWING THE SPRAY DRYER BUT PRECEDING THE BAGHOUSE;
 - C. IN THE EXHAUST STACK;
 - D. IN THE COMBUSTION AIR INLET DUCT BETWEEN THE INTAKE AND THE COMBUSTOR.
21. THE OWNER OR OPERATOR OF SOUTHEAST RESOURCE RECOVERY FACILITY (SERRF) SHALL CONDUCT PERFORMANCE TESTS ON AN ANNUAL BASIS IN ACCORDANCE WITH THE AQMD TEST PROCEDURES AND 40 CFR PART 60.58b. WRITTEN NOTICE OF SUCH PERFORMANCE TESTS SHALL BE PROVIDED TO THE AQMD SEVEN (7) DAYS PRIOR TO THE TEST SO THAT AN OBSERVER MAY BE PRESENT.

THE PERFORMANCE TESTS SHALL INCLUDE, BUT MAY NOT BE LIMITED TO, A TEST OF ONE OF THE THREE COMBUSTOR/BOILER EXHAUST STREAMS FOLLOWING THE BAGHOUSE UNLESS OTHERWISE REQUESTED BELOW FOR THE FOLLOWING POLLUTANTS:

- A. HYDROCARBONS
- B. PARTICULATE MATTER
- C. HYDROGEN CHLORIDE
- D. EXHAUST FLOW RATE, WET AND DRY
- E. POLYNUCLEAR AROMATIC HYDROCARBONS (BENZO-A-PYRENE, BENZO-E-PYRENE, BENZO-A-ANTHRACENE AND CORONENE).
- F. TETRA- THROUGH OCTA-CHLORINATED DIBENZO-P-DIOXINS AND DIBENZOFURANS
- G. HEAVY METALS (ARSENIC, BERYLLIUM, CADMIUM, CHROMIUM, COPPER, LEAD, MERCURY, NICKEL, AND ZINC)

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- H. OPACITY
- I. FLUE GAS TEMPERATURE AT THE INLET TO THE BAGHOUSE DURING DIOXIN/FURAN TEST
- J. LOAD LEVEL (STEAM FLOW OR FEEDWATER FLOW) DURING DIOXIN/FURAN TEST
- K. OXIDES OF NITROGEN (NOX)
- L. OXIDES OF SULFUR (SOX)
- M. CARBON MONOXIDE
- N. FUGITIVE ASH USING EPA METHOD 22

IF THE PERFORMANCE TESTS OF ALL THREE COMBUSTION UNITS DEMONSTRATE THAT DIOXIN/FURAN EMISSIONS ARE LESS THAN OR EQUAL TO 7 ng/DSCM (TOTAL MASS) FOR A 2-YEAR PERIOD, THE OWNER OR OPERATOR MAY ELECT TO CONDUCT ANNUAL PERFORMANCE TEST ON ONLY ONE OF THE THREE UNITS. UNDER THIS ALTERNATIVE TESTING SCHEDULE, A DIFFERENT UNIT SHALL BE TESTED IN SEQUENCE EACH YEAR. IF ANY ANNUAL TEST INDICATES DIOXIN/FURAN EMISSIONS EXCEED 7 ng/DSCM (TOTAL MASS), PERFORMANCE TESTS SHALL BE CONDUCTED ON ALL THREE COMBUSTION UNITS UNTIL SERRF CAN QUALIFY FOR THE ALTERNATIVE TESTING SCHEDULE.

- 22. THE OWNER OR OPERATOR OF SERRF SHALL SUBMIT WRITTEN RESULTS OF THE PERFORMANCE TESTS TO THE AQMD BY FEBRUARY 1 OF EACH YEAR FOLLOWING THE CALENDAR YEAR IN WHICH THE TESTS WERE CONDUCTED. THE REPORT SHALL ALSO INCLUDE THE INFORMATION SPECIFIED IN 40 CFR PART 60.59b, AS APPLICABLE.
- 23. ALL RECORDS REQUIRED BY THIS PERMIT OR 40 CFR PART 60.59b, AS APPLICABLE, SHALL BE MAINTAINED AND KEPT ON FILE FOR A PERIOD OF AT LEAST FIVE YEARS AND BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.
- 24. IN ACCORDANCE WITH AQMD RULE 218, THE SOUTHEAST RESOURCE RECOVERY FACILITY (SERRF) OPERATOR SHALL SUBMIT A MONTHLY SUMMARY OF THE CONCENTRATION AND EMISSION DATA FROM THE CEMS WITHIN 30 DAYS OF THE END OF THE MONTH BEING REPORTED.

This Permit to Operate No. R-D87608 supersedes Permit to Operate No. R-D87608 reissued on 5/19/98.

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CONTINUATION OF PERMIT TO OPERATE**NOTICE**

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

By Dorris M. Bailey/gl
5/29/98

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PERMIT TO OPERATE

This initial permit shall be renewed by **ANNUALLY** unless the equipment is moved, or changes ownership. If the billing for annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner

ID 044577

Or Operator:

LONG BEACH CITY, SERRF PROJECT
120 HENRY FORD AVE
LONG BEACH, CA 90802

Equipment

located at: 120 HENRY FORD AV, LONG BEACH, CA 90802-1039

Equipment Description:

AIR POLLUTION CONTROL SYSTEM NO. 2 CONSISTING OF:

1. ROTARY ATOMIZER NO. 2 WITH CYCLONE INLETS VENTING COMBUSTOR/BOILER NO. 2.
2. SPRAY DRYER TYPE REACTORS WITH CALCIUM HYDROXIDE INJECTION, EACH SERVING ROTARY ATOMIZER NO. 2.
3. BAGHOUSE NO. 2, WITH TEN COMPARTMENTS, CROSS-OVER DUCTING, REVERSE AIR CLEANING, 73,416 SQ. FT. OF FILTER AREA AND A MAXIMUM AIR-TO-CLOTH RATIO OF 2.0 TO 1.0.
4. INDUCED DRAFT FAN NO. 2 VENTING RESOURCE RECOVERY SYSTEM NO. 2.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION. BY DECEMBER 19, 1998, THE FACILITY SHALL BE IN COMPLIANCE WITH THE APPLICABLE OPERATOR REQUIREMENTS AS SPECIFIED UNDER 40 CFR PART 60.54b.
4. DUST OR FLYASH COLLECTED IN THE BAGHOUSE COMPARTMENT HOPPERS SHALL BE DISCHARGED ONLY INTO CLOSED CONVEYORS AND SHALL REMAIN IN CLOSED CONVEYORS UNTIL CONDITIONED IN THE ASH CONDITIONER, EXCEPT DURING MAINTENANCE AND REPAIR, DUST OR FLYASH COLLECTED IN THE SPRAY DRYER SHALL BE REMOVED IN AN ENCLOSED SYSTEM.
5. A GAUGE SHALL BE MAINTAINED TO INDICATE, IN INCHES OF WATER PRESSURE,

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CONTINUATION OF PERMIT TO OPERATE

THE STATIC PRESSURE DIFFERENTIAL ACROSS THE BAGS.

6. THE VOLUME OF LIME SLURRY SUPPLIED TO THE ATOMIZERS FOR SO₂ CONTROL SHALL BE CONTINUOUSLY MEASURED AND RECORDED.
7. A CONTINUOUS MONITORING SYSTEM TO MONITOR AND RECORD MASS EMISSIONS AND CONCENTRATIONS OF NITROGEN OXIDES (NO_x), OXIDES OF SULFUR (SO_x) AND CARBON MONOXIDE (CO) IN THE EXHAUST OF THE COMBUSTOR/BOILER STACK, SHALL BE MAINTAINED AND OPERATED IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b.
8. A CONTINUOUS OXYGEN MONITOR AND RECORDER, AS APPROVED BY THE AQMD, SHALL BE MAINTAINED AND OPERATED IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b TO MEASURE CONCENTRATIONS OF OXYGEN IN THE EXHAUST OF THE COMBUSTOR/BOILER STACK.
9. A SYSTEM, AS APPROVED BY THE AQMD, SHALL BE OPERATED TO CONVERT AND RECORD THE STACK NITROGEN OXIDES CONCENTRATIONS TO 3% OXYGEN ON A DRY BASIS AND REPORT THE RESULTS IN A MANNER WHICH DEMONSTRATES COMPLIANCE WITH RULE 476.
10. BY DECEMBER 19, 1998, THE OWNER OR OPERATOR SHALL INSTALL, MAINTAIN AND OPERATE A CONTINUOUS OPACITY MONITOR AND RECORDER IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b TO MEASURE OPACITY OF FLUE GAS IN THE EXHAUST OF THE COMBUSTOR/BOILER STACK. THE MEASURED OPACITY SHALL NOT EXCEED 10 PERCENT IN 6-MINUTE AVERAGE.
11. BY DECEMBER 19, 1998, THE OWNER OR OPERATOR SHALL INSTALL, MAINTAIN AND OPERATE A CONTINUOUS TEMPERATURE MONITOR IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b TO MONITOR THE TEMPERATURE OF THE FLUE GAS STREAM AT THE INLET TO EACH PARTICULATE MATTER CONTROL DEVICE FOR THE RESOURCE RECOVERY SYSTEM. THE MONITORED TEMPERATURE SHALL NOT EXCEED 17 DEGREES IN CELSIUS (4-HR BLOCK AVERAGE) ABOVE THE MAXIMUM DEMONSTRATED PARTICULATE MATTER CONTROL DEVICE TEMPERATURE AS DEFINED IN 40 CFR PART 60.51b EXCEPT AS SPECIFIED UNDER 40 CFR PART 60.53b(c).
12. ALL CONTINUOUS EMISSION MONITORS SHALL BE OPERATED IN ACCORDANCE WITH THE REQUIREMENTS AND OPERATING PROCEDURES AS APPROVED BY THE AQMD.
13. CONTROLLED EMISSIONS OF OXIDES OF NITROGEN (NO_x) IN THE AIR POLLUTION CONTROL SYSTEM EXHAUST FROM THIS SYSTEM SHALL NOT EXCEED 225 PPMV (15 MINUTES AVERAGE) AT 3% OXYGEN ON A DRY BASIS.
14. BY DECEMBER 19, 1998, CONTROLLED NO_x EMISSIONS IN THE EXHAUST FROM THE SYSTEM SHALL NOT EXCEED 205 PPMV CORRECTED TO 7% OXYGEN ON A DRY BASIS. WHEN AVERAGING EMISSIONS FROM ALL COMBUSTORS AS ALLOWED IN PART 60.33b(d) OF 40 CFR SUBPART Cb, THE AVERAGED NO_x EMISSIONS SHALL NOT

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CONTINUATION OF PERMIT TO OPERATE

EXCEED 180 PPMV CORRECTED TO 7% OXYGEN ON A DRY BASIS (24-HR DAILY ARITHMETIC AVERAGE).

15. CONTROLLED EMISSIONS OF OXIDES OF SULFUR (SOX) FROM THE COMBUSTOR/BOILER SHALL NOT EXCEED THE MORE STRINGENT OF 17 LB/HR OR 70 PPM, DRY COLLECTED TO 12% CO₂ (3 HOUR AVERAGE), AND THE MORE STRINGENT OF 12 LB/HR OR 26 PPM, DRY CORRECTED TO 12% CO₂ (8 HOUR AVERAGE).

16. BY DECEMBER 19, 1998, CONTROLLED EMISSIONS OF THE FOLLOWING POLLUTANTS IN THE EXHAUST FROM THE SYSTEM SHALL NOT EXCEED THE LIMITS SPECIFIED BELOW. THE FOLLOWING LIMITS ARE CORRECTED TO 7% OXYGEN ON A DRY BASIS UNLESS OTHERWISE INDICATED:

OXIDES OF SULFUR (SOX)	29 PPMV OR 75% WT. REDUCTION (24-HR DAILY GEOMETRIC MEAN)
PARTICULATE MATTERS (PM)	27 mg/DSCM
DIOXIN/FURAN	30 ng/DSCM
CADMIUM	0.04 mg/DSCM
LEAD	0.44 mg/DSCM
MERCURY	0.080 mg/DSCM OR 85% WT. REDUCTION
HYDROGEN CHLORIDE	29 PPMV OR 95% WT. REDUCTION

17. BY DECEMBER 19, 2000, CONTROLLED EMISSIONS OF CARBON MONOXIDE (CO) IN THE EXHAUST FROM THE SYSTEM SHALL NOT EXCEED 100 PPMV (4-HR ARITHMETIC AVERAGE) CORRECTED TO 7% OXYGEN ON A DRY BASIS. THE OWNER OR OPERATOR OF SERRF SHALL ADHERE TO THE MEASURABLE AND ENFORCEABLE INCREMENTAL STEPS OF PROGRESS, AS LISTED BELOW, TO ACHIEVE COMPLIANCE WITH THE CONCENTRATION LIMIT OF 100 PPMV:

INCREMENTAL STEPS	DEADLINE
1. Submit final control plan to SCAQMD	July 1998
2. Award contract for control system, or process modification, or orders for purchase of components	April 1999
3. Initiating of on-site construction or installation of the air pollution control devices or process changes	October 1999
4. Completing on-site construction or installation control device or process changes	April 2000
5. Final Compliance	Dec 19, 2000

18. THE CONTROLLED EMISSIONS IN THE EXHAUST FROM THIS SYSTEM SHALL NOT EXCEED THE FOLLOWING LIMITS:

CONTAMINANT	LB/DAY

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CONTINUATION OF PERMIT TO OPERATE

NITROGEN OXIDES	816
PM10	120
SULFUR OXIDES	288
CARBON MONOXIDE	792
REACTIVE ORGANIC GAS	72
HYDROGEN CHLORIDE	204

19. BY DECEMBER 19, 1998, VISIBLE FUGITIVE ASH EMISSIONS FROM AN ASH CONVEYING SYSTEM SHALL NOT EXCEED 5 PERCENT OF THE OBSERVATION PERIOD WHICH IS DEFINED IN 40 CFR PART 60.58b(k). EXCEPT DURING MAINTENANCE AND REPAIR OF ASH CONVEYING SYSTEMS.
20. THE AQMD APPROVED SAMPLING PORTS SHALL BE MAINTAINED IN THE FOLLOWING LOCATIONS:
- A. IN THE DUCT FOLLOWING THE COMBUSTOR/BOILER BUT PRECEDING THE SPRAY DRYER;
 - B. IN THE DUCT FOLLOWING THE SPRAY DRYER BUT PRECEDING THE BAGHOUSE;
 - C. IN THE EXHAUST STACK;
 - D. IN THE COMBUSTION AIR INLET DUCT BETWEEN THE INTAKE AND THE COMBUSTOR.
21. THE OWNER OR OPERATOR OF SOUTHEAST RESOURCE RECOVERY FACILITY (SERRF) SHALL CONDUCT PERFORMANCE TESTS ON AN ANNUAL BASIS IN ACCORDANCE WITH THE AQMD TEST PROCEDURES AND 40 CFR PART 60.58b. WRITTEN NOTICE OF SUCH PERFORMANCE TESTS SHALL BE PROVIDED TO THE AQMD SEVEN (7) DAYS PRIOR TO THE TEST SO THAT AN OBSERVER MAY BE PRESENT.

THE PERFORMANCE TESTS SHALL INCLUDE, BUT MAY NOT BE LIMITED TO, A TEST OF ONE OF THE THREE COMBUSTOR/BOILER EXHAUST STREAMS FOLLOWING THE BAGHOUSE UNLESS OTHERWISE REQUESTED BELOW FOR THE FOLLOWING POLLUTANTS:

- A. HYDROCARBONS
- B. PARTICULATE MATTER
- C. HYDROGEN CHLORIDE
- D. EXHAUST FLOW RATE, WET AND DRY
- E. POLYNUCLEAR AROMATIC HYDROCARBONS (BENZO-A-PYRENE, BENZO-E-PYRENE, BENZO-A-ANTHRACENE AND CORONENE).
- F. TETRA- THROUGH OCTA-CHLORINATED DIBENZO-P-DIOXINS AND DIBENZOFURANS
- G. HEAVY METALS (ARSENIC, BERYLLIUM, CADMIUM, CHROMIUM, COPPER, LEAD, MERCURY, NICKEL, AND ZINC)

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CONTINUATION OF PERMIT TO OPERATE

- H. OPACITY
- I. FLUE GAS TEMPERATURE AT THE INLET TO THE BAGHOUSE DURING DIOXIN/FURAN TEST
- J. LOAD LEVEL (STEAM FLOW OR FEEDWATER FLOW) DURING DIOXIN/FURAN TEST
- K. OXIDES OF NITROGEN (NOX)
- L. OXIDES OF SULFUR (SOX)
- M. CARBON MONOXIDE
- N. FUGITIVE ASH USING EPA METHOD 22

IF THE PERFORMANCE TESTS OF ALL THREE COMBUSTION UNITS DEMONSTRATE THAT DIOXIN/FURAN EMISSIONS ARE LESS THAN OR EQUAL TO 7 ng/DSCM (TOTAL MASS) FOR A 2-YEAR PERIOD, THE OWNER OR OPERATOR MAY ELECT TO CONDUCT ANNUAL PERFORMANCE TEST ON ONLY ONE OF THE THREE UNITS. UNDER THIS ALTERNATIVE TESTING SCHEDULE, A DIFFERENT UNIT SHALL BE TESTED IN SEQUENCE EACH YEAR. IF ANY ANNUAL TEST INDICATES DIOXIN/FURAN EMISSIONS EXCEED 7 ng/DSCM (TOTAL MASS), PERFORMANCE TESTS SHALL BE CONDUCTED ON ALL THREE COMBUSTION UNITS UNTIL SERRF CAN QUALIFY FOR THE ALTERNATIVE TESTING SCHEDULE.

- 22. THE OWNER OR OPERATOR OF SERRF SHALL SUBMIT WRITTEN RESULTS OF THE PERFORMANCE TESTS TO THE AQMD BY FEBRUARY 1 OF EACH YEAR FOLLOWING THE CALENDAR YEAR IN WHICH THE TESTS WERE CONDUCTED. THE REPORT SHALL ALSO INCLUDE THE INFORMATION SPECIFIED IN 40 CFR PART 60.59b, AS APPLICABLE.
- 23. ALL RECORDS REQUIRED BY THIS PERMIT OR 40 CFR PART 60.59b, AS APPLICABLE, SHALL BE MAINTAINED AND KEPT ON FILE FOR A PERIOD OF AT LEAST FIVE YEARS AND BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.
- 24. IN ACCORDANCE WITH AQMD RULE 218, THE SOUTHEAST RESOURCE RECOVERY FACILITY (SERRF) OPERATOR SHALL SUBMIT A MONTHLY SUMMARY OF THE CONCENTRATION AND EMISSION DATA FROM THE CEMS WITHIN 30 DAYS OF THE END OF THE MONTH BEING REPORTED.

This Permit to Operate No. R-D87609 supersedes Permit to Operate No. R-D87609 reissued on 5/19/95.

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A/N 214833
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CONTINUATION OF PERMIT TO OPERATE

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M. Bailey

By Dorris M. Bailey/gl
5/29/98

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This initial permit shall be renewed by ANNUALLY unless the equipment is moved, or changes ownership. If the billing for annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner

ID 044577

Or Operator:

LONG BEACH CITY, SERRF PROJECT
120 HENRY FORD AVE
LONG BEACH, CA 90802

Equipment

located at: 120 HENRY FORD AV, LONG BEACH, CA 90802-1039

Equipment Description:

AIR POLLUTION CONTROL SYSTEM NO. 3 CONSISTING OF:

1. ROTARY ATOMIZER NO. 3 WITH CYCLONE INLETS VENTING COMBUSTOR/BOILER NO. 3.
2. SPRAY DRYER TYPE REACTORS WITH CALCIUM HYDROXIDE INJECTION, EACH SERVING ROTARY ATOMIZER NO. 3.
3. BAGHOUSE NO. 3, WITH TEN COMPARTMENTS, CROSS-OVER DUCTING, REVERSE AIR CLEANING, 73,416 SQ. FT. OF FILTER AREA AND A MAXIMUM AIR-TO-CLOTH RATIO OF 2.0 TO 1.0.
4. INDUCED DRAFT FAN NO. 3 VENTING RESOURCE RECOVERY SYSTEM NO. 3.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION. BY DECEMBER 19, 1998, THE FACILITY SHALL BE IN COMPLIANCE WITH THE APPLICABLE OPERATOR REQUIREMENTS AS SPECIFIED UNDER 40 CFR PART 60.54b.
4. DUST OR FLYASH COLLECTED IN THE BAGHOUSE COMPARTMENT HOPPERS SHALL BE DISCHARGED ONLY INTO CLOSED CONVEYORS AND SHALL REMAIN IN CLOSED CONVEYORS UNTIL CONDITIONED IN THE ASH CONDITIONER, EXCEPT DURING MAINTENANCE AND REPAIR. DUST OR FLYASH COLLECTED IN THE SPRAY DRYER SHALL BE REMOVED IN AN ENCLOSED SYSTEM.
5. A GAUGE SHALL BE MAINTAINED TO INDICATE, IN INCHES OF WATER PRESSURE,

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CONTINUATION OF PERMIT TO OPERATE

THE STATIC PRESSURE DIFFERENTIAL ACROSS THE BAGS.

6. THE VOLUME OF LIME SLURRY SUPPLIED TO THE ATOMIZERS FOR SO₂ CONTROL SHALL BE CONTINUOUSLY MEASURED AND RECORDED.
7. A CONTINUOUS MONITORING SYSTEM TO MONITOR AND RECORD MASS EMISSIONS AND CONCENTRATIONS OF NITROGEN OXIDES (NO_x), OXIDES OF SULFUR (SO_x) AND CARBON MONOXIDE (CO) IN THE EXHAUST OF THE COMBUSTOR/BOILER STACK, SHALL BE MAINTAINED AND OPERATED IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b.
8. A CONTINUOUS OXYGEN MONITOR AND RECORDER, AS APPROVED BY THE AQMD, SHALL BE MAINTAINED AND OPERATED IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b TO MEASURE CONCENTRATIONS OF OXYGEN IN THE EXHAUST OF THE COMBUSTOR/BOILER STACK.
9. A SYSTEM, AS APPROVED BY THE AQMD, SHALL BE OPERATED TO CONVERT AND RECORD THE STACK NITROGEN OXIDES CONCENTRATIONS TO 3% OXYGEN ON A DRY BASIS AND REPORT THE RESULTS IN A MANNER WHICH DEMONSTRATES COMPLIANCE WITH RULE 476.
10. BY DECEMBER 19, 1998, THE OWNER OR OPERATOR SHALL INSTALL, MAINTAIN AND OPERATE A CONTINUOUS OPACITY MONITOR AND RECORDER IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b TO MEASURE OPACITY OF FLUE GAS IN THE EXHAUST OF THE COMBUSTOR/BOILER STACK. THE MEASURED OPACITY SHALL NOT EXCEED 10 PERCENT IN 6-MINUTE AVERAGE.
11. BY DECEMBER 19, 1998, THE OWNER OR OPERATOR SHALL INSTALL, MAINTAIN AND OPERATE A CONTINUOUS TEMPERATURE MONITOR IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b TO MONITOR THE TEMPERATURE OF THE FLUE GAS STREAM AT THE INLET TO EACH PARTICULATE MATTER CONTROL DEVICE FOR THE RESOURCE RECOVERY SYSTEM. THE MONITORED TEMPERATURE SHALL NOT EXCEED 17 DEGREES IN CELSIUS (4-HR BLOCK AVERAGE) ABOVE THE MAXIMUM DEMONSTRATED PARTICULATE MATTER CONTROL DEVICE TEMPERATURE AS DEFINED IN 40 CFR PART 60.51b EXCEPT AS SPECIFIED UNDER 40 CFR PART 60.53b(c).
12. ALL CONTINUOUS EMISSION MONITORS SHALL BE OPERATED IN ACCORDANCE WITH THE REQUIREMENTS AND OPERATING PROCEDURES AS APPROVED BY THE AQMD.
13. CONTROLLED EMISSIONS OF OXIDES OF NITROGEN (NO_x) IN THE AIR POLLUTION CONTROL SYSTEM EXHAUST FROM THIS SYSTEM SHALL NOT EXCEED 225 PPMV (15 MINUTES AVERAGE) AT 3% OXYGEN ON A DRY BASIS.
14. BY DECEMBER 19, 1998, CONTROLLED NO_x EMISSIONS IN THE EXHAUST FROM THE SYSTEM SHALL NOT EXCEED 205 PPMV CORRECTED TO 7% OXYGEN ON A DRY BASIS. WHEN AVERAGING EMISSIONS FROM ALL COMBUSTORS AS ALLOWED IN PART 60.33b(d) OF 40 CFR SUBPART Cb, THE AVERAGED NO_x EMISSIONS SHALL NOT

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EXCEED 180 PPMV CORRECTED TO 7% OXYGEN ON A DRY BASIS (24-HR DAILY ARITHMETIC AVERAGE).

15. CONTROLLED EMISSIONS OF OXIDES OF SULFUR (SOX) FROM THE COMBUSTOR/BOILER SHALL NOT EXCEED THE MORE STRINGENT OF 17 LB/HR OR 70 PPM, DRY COLLECTED TO 12% CO₂ (3 HOUR AVERAGE), AND THE MORE STRINGENT OF 12 LB/HR OR 26 PPM, DRY CORRECTED TO 12% CO₂ (8 HOUR AVERAGE).

16. BY DECEMBER 19, 1998, CONTROLLED EMISSIONS OF THE FOLLOWING POLLUTANTS IN THE EXHAUST FROM THE SYSTEM SHALL NOT EXCEED THE LIMITS SPECIFIED BELOW. THE FOLLOWING LIMITS ARE CORRECTED TO 7% OXYGEN ON A DRY BASIS UNLESS OTHERWISE INDICATED:

OXIDES OF SULFUR (SOX)	29 PPMV OR 75% WT. REDUCTION (24-HR DAILY GEOMETRIC MEAN)
PARTICULATE MATTERS (PM)	27 mg/DSCM
DIOXIN/FURAN	30 ng/DSCM
CADMIUM	0.04 mg/DSCM
LEAD	0.44 mg/DSCM
MERCURY	0.080 mg/DSCM OR 85% WT. REDUCTION
HYDROGEN CHLORIDE	29 PPMV OR 95% WT. REDUCTION

17. BY DECEMBER 19, 2000, CONTROLLED EMISSIONS OF CARBON MONOXIDE (CO) IN THE EXHAUST FROM THE SYSTEM SHALL NOT EXCEED 100 PPMV (4-HR ARITHMETIC AVERAGE) CORRECTED TO 7% OXYGEN ON A DRY BASIS. THE OWNER OR OPERATOR OF SERRF SHALL ADHERE TO THE MEASURABLE AND ENFORCEABLE INCREMENTAL STEPS OF PROGRESS, AS LISTED BELOW, TO ACHIEVE COMPLIANCE WITH THE CONCENTRATION LIMIT OF 100 PPMV:

INCREMENTAL STEPS	DEADLINE
1. Submit final control plan to SCAQMD	July 1998
2. Award contract for control system, or process modification, or orders for purchase of components	April 1999
3. Initiating of on-site construction or installation of the air pollution control devices or process changes	October 1999
4. Completing on-site construction or installation control device or process changes	April 2000
5. Final Compliance	Dec 19, 2000

18. THE CONTROLLED EMISSIONS IN THE EXHAUST FROM THIS SYSTEM SHALL NOT EXCEED THE FOLLOWING LIMITS:

CONTAMINANT	LB/DAY

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CONTINUATION OF PERMIT TO OPERATE

NITROGEN OXIDES	816
PM10	120
SULFUR OXIDES	288
CARBON MONOXIDE	792
REACTIVE ORGANIC GAS	72
HYDROGEN CHLORIDE	204

19. BY DECEMBER 19, 1998, VISIBLE FUGITIVE ASH EMISSIONS FROM AN ASH CONVEYING SYSTEM SHALL NOT EXCEED 5 PERCENT OF THE OBSERVATION PERIOD WHICH IS DEFINED IN 40 CFR PART 60.58b(k), EXCEPT DURING MAINTENANCE AND REPAIR OF ASH CONVEYING SYSTEMS.

20. THE AQMD APPROVED SAMPLING PORTS SHALL BE MAINTAINED IN THE FOLLOWING LOCATIONS:

- A. IN THE DUCT FOLLOWING THE COMBUSTOR/BOILER BUT PRECEDING THE SPRAY DRYER;
- B. IN THE DUCT FOLLOWING THE SPRAY DRYER BUT PRECEDING THE BAGHOUSE;
- C. IN THE EXHAUST STACK;
- D. IN THE COMBUSTION AIR INLET DUCT BETWEEN THE INTAKE AND THE COMBUSTOR.

21. THE OWNER OR OPERATOR OF SOUTHEAST RESOURCE RECOVERY FACILITY (SERRF) SHALL CONDUCT PERFORMANCE TESTS ON AN ANNUAL BASIS IN ACCORDANCE WITH THE AQMD TEST PROCEDURES AND 40 CFR PART 60.58b. WRITTEN NOTICE OF SUCH PERFORMANCE TESTS SHALL BE PROVIDED TO THE AQMD SEVEN (7) DAYS PRIOR TO THE TEST SO THAT AN OBSERVER MAY BE PRESENT.

THE PERFORMANCE TESTS SHALL INCLUDE, BUT MAY NOT BE LIMITED TO, A TEST OF ONE OF THE THREE COMBUSTOR/BOILER EXHAUST STREAMS FOLLOWING THE BAGHOUSE UNLESS OTHERWISE REQUESTED BELOW FOR THE FOLLOWING POLLUTANTS:

- A. HYDROCARBONS
- B. PARTICULATE MATTER
- C. HYDROGEN CHLORIDE
- D. EXHAUST FLOW RATE, WET AND DRY
- E. POLYNUCLEAR AROMATIC HYDROCARBONS (BENZO-A-PYRENE, BENZO-E-PYRENE, BENZO-A-ANTHRACENE AND CORONENE).
- F. TETRA- THROUGH OCTA-CHLORINATED DIBENZO-P-DIOXINS AND DIBENZOFURANS
- G. HEAVY METALS (ARSENIC, BERYLLIUM, CADMIUM, CHROMIUM, COPPER, LEAD, MERCURY, NICKEL, AND ZINC)

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CONTINUATION OF PERMIT TO OPERATE

- H. OPACITY
- I. FLUE GAS TEMPERATURE AT THE INLET TO THE BAGHOUSE DURING DIOXIN/FURAN TEST
- J. LOAD LEVEL (STEAM FLOW OR FEEDWATER FLOW) DURING DIOXIN/FURAN TEST
- K. OXIDES OF NITROGEN (NOX)
- L. OXIDES OF SULFUR (SOX)
- M. CARBON MONOXIDE
- N. FUGITIVE ASH USING EPA METHOD 22

IF THE PERFORMANCE TESTS OF ALL THREE COMBUSTION UNITS DEMONSTRATE THAT DIOXIN/FURAN EMISSIONS ARE LESS THAN OR EQUAL TO 7 ng/DSCM (TOTAL MASS) FOR A 2-YEAR PERIOD, THE OWNER OR OPERATOR MAY ELECT TO CONDUCT ANNUAL PERFORMANCE TEST ON ONLY ONE OF THE THREE UNITS. UNDER THIS ALTERNATIVE TESTING SCHEDULE, A DIFFERENT UNIT SHALL BE TESTED IN SEQUENCE EACH YEAR. IF ANY ANNUAL TEST INDICATES DIOXIN/FURAN EMISSIONS EXCEED 7 ng/DSCM (TOTAL MASS), PERFORMANCE TESTS SHALL BE CONDUCTED ON ALL THREE COMBUSTION UNITS UNTIL SERRF CAN QUALIFY FOR THE ALTERNATIVE TESTING SCHEDULE.

- 22. THE OWNER OR OPERATOR OF SERRF SHALL SUBMIT WRITTEN RESULTS OF THE PERFORMANCE TESTS TO THE AQMD BY FEBRUARY 1 OF EACH YEAR FOLLOWING THE CALENDAR YEAR IN WHICH THE TESTS WERE CONDUCTED. THE REPORT SHALL ALSO INCLUDE THE INFORMATION SPECIFIED IN 40 CFR PART 60.59b, AS APPLICABLE.
- 23. ALL RECORDS REQUIRED BY THIS PERMIT OR 40 CFR PART 60.59b, AS APPLICABLE, SHALL BE MAINTAINED AND KEPT ON FILE FOR A PERIOD OF AT LEAST FIVE YEARS AND BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.
- 24. IN ACCORDANCE WITH AQMD RULE 218, THE SOUTHEAST RESOURCE RECOVERY FACILITY (SERRF) OPERATOR SHALL SUBMIT A MONTHLY SUMMARY OF THE CONCENTRATION AND EMISSION DATA FROM THE CEMS WITHIN 30 DAYS OF THE END OF THE MONTH BEING REPORTED.

This Permit to Operate No. R-D87610 supersedes Permit to Operate No. R-D87610 reissued on 5/19/98.



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NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

By Dorris M. Bailey/gl
5/29/98

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This initial permit shall be renewed by **ANNUALLY** unless the equipment is moved, or changes ownership. If the billing for annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner

ID 037336

Or Operator:

COMMERCE REFUSE TO ENERGY FACILITY
P O BOX 4998
WHITTIER, CA 90607-4998

Equipment

located at: 5926 SHEILA ST, COMMERCE, CA 90040-2403.

Equipment Description:

AIR POLLUTION CONTROL SYSTEM CONSISTING OF:

1. ABSORBER, SPRAY DRYER TYPE, WITH CALCIUM HYDROXIDE OR SODIUM HYDROXIDE INJECTION.
2. BAGHOUSE, WITH A MAXIMUM AIR-TO-CLOTH RATIO OF 2.3 TO 1, REVERSE AIR CLEANING, TOTAL FILTER AREA OF 62,225 SQ. FT.
3. EXHAUST SYSTEM WITH AN INDUCED DRAFT FAN, 110,000 CFM CAPACITY, VENTING THE REFUSE COMBUSTION SYSTEM.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION. BY DECEMBER 19, 1998, THE FACILITY SHALL BE IN COMPLIANCE WITH THE APPLICABLE OPERATOR REQUIREMENTS AS SPECIFIED UNDER 40 CFR PART 60.54b.
4. DUST OR FLYASH COLLECTED IN THE BAGHOUSE COMPARTMENT HOPPERS AND THE SPRAY DRYER HOPPER SHALL BE DISCHARGED ONLY INTO CLOSED CONVEYORS AND/OR CONTAINERS EXCEPT DURING MAINTENANCE AND REPAIR OF ASH CONVEYING SYSTEMS.
5. A GAUGE SHALL BE MAINTAINED TO INDICATE, IN INCHES OF WATER COLUMN, THE STATIC PRESSURE DIFFERENTIAL ACROSS THE BAGS.

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6. THE VOLUME AND/OR MASS OF REAGENT INJECTED FOR SO₂ CONTROL SHALL BE CONTINUOUSLY MEASURED AND RECORDED.
7. A CONTINUOUS MONITORING SYSTEM TO MONITOR AND RECORD MASS EMISSIONS AND CONCENTRATIONS OF NITROGEN OXIDES (NO_x), OXIDES OF SULFUR (SO_x) AND CARBON MONOXIDE (CO) IN THE EXHAUST OF THE COMBUSTOR/BOILER STACK, SHALL BE MAINTAINED AND OPERATED IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b.
8. A CONTINUOUS OXYGEN MONITOR AND RECORDER, AS APPROVED BY THE AQMD, SHALL BE MAINTAINED AND OPERATED IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b TO MEASURE CONCENTRATIONS OF OXYGEN IN THE EXHAUST OF THE COMBUSTOR/BOILER STACK.
9. A SYSTEM, AS APPROVED BY THE AQMD, SHALL BE OPERATED TO CONVERT AND RECORD THE STACK NITROGEN OXIDES CONCENTRATIONS TO 3% OXYGEN ON A DRY BASIS AND REPORT THE RESULTS IN A MANNER WHICH DEMONSTRATES COMPLIANCE WITH RULE 476.
10. BY DECEMBER 19, 1998, THE OWNER OR OPERATOR SHALL INSTALL, MAINTAIN AND OPERATE A CONTINUOUS OPACITY MONITOR AND RECORDER IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b TO MEASURE OPACITY OF FLUE GAS IN THE EXHAUST OF THE COMBUSTOR/BOILER STACK. THE MEASURED OPACITY SHALL NOT EXCEED 10 PERCENT IN 6-MINUTE AVERAGE.
11. BY DECEMBER 19, 1998, THE OWNER OR OPERATOR SHALL INSTALL, MAINTAIN AND OPERATE A CONTINUOUS TEMPERATURE MONITOR IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b TO MONITOR THE TEMPERATURE OF THE FLUE GAS STREAM AT THE INLET TO EACH PARTICULATE MATTER CONTROL DEVICE FOR THE RESOURCE RECOVERY SYSTEM. THE MONITORED TEMPERATURE SHALL NOT EXCEED 17 DEGREES IN CELSIUS (4-HR BLOCK AVERAGE) ABOVE THE MAXIMUM DEMONSTRATED PARTICULATE MATTER CONTROL DEVICE TEMPERATURE AS DEFINED IN 40 CFR PART 60.51b EXCEPT AS SPECIFIED UNDER 40 CFR PART 60.53b(c).
12. ALL CONTINUOUS EMISSION MONITORS SHALL BE OPERATED IN ACCORDANCE WITH THE REQUIREMENTS AND OPERATING PROCEDURES AS APPROVED BY THE AQMD.
13. CONTROLLED EMISSIONS OF OXIDES OF NITROGEN (NO_x) IN THE AIR POLLUTION CONTROL SYSTEM EXHAUST FROM THIS SYSTEM SHALL NOT EXCEED 190 PPMV (HOURLY AVERAGE) AND 225 PPMV (15 MINUTES AVERAGE) AT 3% OXYGEN ON A DRY BASIS.
14. CONTROLLED EMISSIONS OF CARBON MONOXIDE (CO) IN THE AIR POLLUTION CONTROL SYSTEM EXHAUST FROM THIS SYSTEM SHALL NOT EXCEED 215 PPMV (HOURLY AVERAGE), AT 3 % OXYGEN ON A DRY BASIS.

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15. NOT LESS THAN 59 GALLONS PER HOUR OF 15 PERCENT CA(OH)_2 SLURRY SHALL BE INJECTED TO THE SPRAY DRYER, OR NOT LESS THAN 43 GALLONS PER HOUR OF 20 PERCENT NaOH SLURRY TO THE SPRAY DRYER, OR NOT LESS THAN 100 LB/HR OF DRY LIME SHALL BE INJECTED INTO THE FURNACE DURING ANY PERIOD THE SO_2 CEMS IS NOT PROPERLY OPERATING.

16. BY DECEMBER 19, 1998, CONTROLLED EMISSIONS OF THE FOLLOWING POLLUTANTS IN THE EXHAUST FROM THE SYSTEM SHALL NOT EXCEED THE LIMITS SPECIFIED BELOW. THE FOLLOWING LIMITS ARE CORRECTED TO 7% OXYGEN ON A DRY BASIS UNLESS OTHERWISE INDICATED:

OXIDES OF NITROGEN (NOX)	205 PPMV (24-HR DAILY ARITHMETIC AVERAGE)
OXIDES OF SULFUR (SOX)	29 PPMV OR 75% WT. REDUCTION (24-HR DAILY GEOMETRIC MEAN)
CARBON MONOXIDE (CO)	100 PPMV (4-HR ARITHMETIC AVERAGE)
PARTICULATE MATTER (PM)	27 mg/DSCM
DIOXIN/FURAN	30 ng/DSCM
CADMIUM	0.04 mg/DSCM
LEAD	0.44 mg/DSCM
MERCURY	0.080 mg/DSCM OR 85% WT. REDUCTION
HYDROGEN CHLORIDE	29 PPMV OR 95% WT. REDUCTION

17. THE TOTAL NON-METHANE HYDROCARBON EMISSIONS SHALL BE MEASURED BY USING AQMD METHOD 25.1 OR ANOTHER EQUIVALENT METHOD APPROVED BY THE AQMD. IF AN ALTERNATE METHOD IS ADOPTED WHICH IS SHOWN TO RESULT IN A HIGHER TOTAL HYDROCARBON EMISSION THAN THAT CONTAINED IN CONDITION NO. 18, THE FACILITY OPERATOR MAY REQUEST A CHANGE IN THE EMISSION LIMIT TO REFLECT THE HIGHER VALUE. THE REQUEST SHALL BE IN WRITING, AND SHALL BE FILED AFTER THE FIRST ANNUAL SOURCE TEST IS CONDUCTED USING THE ALTERNATIVE TEST METHOD.

18. THE CONTROLLED EMISSIONS IN THE EXHAUST FROM THIS SYSTEM SHALL NOT EXCEED THE FOLLOWING LIMITS:

CONTAMINANT	LB/DAY
NITROGEN OXIDES	825
PM10	123
SULFUR OXIDES	100
CARBON MONOXIDE	300
TOTAL HYDROCARBONS	58

19. BY DECEMBER 19, 1998, VISIBLE FUGITIVE ASH EMISSIONS FROM AN ASH CONVEYING SYSTEM SHALL NOT EXCEED 5 PERCENT OF THE OBSERVATION PERIOD WHICH IS DEFINED IN 40 CFR PART 60.58(b)(k), EXCEPT DURING MAINTENANCE AND REPAIR OF ASH CONVEYING SYSTEMS.

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CONTINUATION OF PERMIT TO OPERATE

20. THE AQMD APPROVED SAMPLING PORTS SHALL BE MAINTAINED IN THE FOLLOWING LOCATIONS:
- A. IN THE DUCT FOLLOWING THE COMBUSTOR/BOILER BUT PRECEDING THE SPRAY DRYER;
 - B. IN THE DUCT FOLLOWING THE SPRAY DRYER BUT PRECEDING THE BAGHOUSE;
 - C. IN THE EXHAUST STACK;
 - D. IN THE COMBUSTION AIR INLET DUCT BETWEEN THE INTAKE AND THE COMBUSTOR.

21. THE OWNER OR OPERATOR OF COMMERCE REFUSE TO ENERGY FACILITY SHALL CONDUCT PERFORMANCE WITH THE AQMD TEST PROCEDURES AND 40 CFR PART 60.58b. WRITTEN NOTICE OF SUCH PERFORMANCE TESTS SHALL BE PROVIDED TO THE AQMD SEVEN (7) DAYS PRIOR TO THE TEST SO THAT AN OBSERVER MAY BE PRESENT.

THE PERFORMANCE TESTS SHALL INCLUDE, BUT MAY NOT BE LIMITED TO, A TEST OF THE COMBUSTOR/BOILER EXHAUST STREAM FOLLOWING THE BAGHOUSE UNLESS OTHERWISE REQUESTED BELOW FOR THE FOLLOWING POLLUTANTS:

- A. HYDROCARBONS
 - B. PARTICULATE MATTER
 - C. HYDROGEN CHLORIDE
 - D. EXHAUST FLOW RATE, WET AND DRY
 - E. POLYNUCLEAR AROMATIC HYDROCARBONS (BENZO-A-PYRENE, BENZO-E-PYRENE, BENZO-A-ANTHRACENE, AND CORONENE.
 - F. TETRA- THROUGH OCTA-CHLORINATED DIBENZO-P-DIOXINS AND DIBENZOFURANS
 - G. HEAVY METALS (ARSENIC, BERYLLIUM, CADMIUM, CHROMIUM, COPPER, NICKEL, LEAD, MANGANESE, MERCURY, SELENIUM AND ZINC)
 - H. OPACITY
 - I. FLUE GAS TEMPERATURE AT THE INLET TO THE BAGHOUSE DURING DIOXIN/FURAN TEST
 - J. LOAD LEVEL (STEAM FLOW OR FEEDWATER FLOW) DURING DIOXIN/FURAN TEST
 - K. OXIDES OF NITROGEN WITH AMMONIA INJECTION (AS VOLUME PERCENT, AT 3% O₂ ON A DRY BASIS)
 - L. OXIDES OF SULFUR
 - M. CARBON MONOXIDE
 - N. FUGITIVE ASH USING EPA METHOD 22
22. THE OWNER OR OPERATOR OF COMMERCE REFUSE-TO-ENERGY FACILITY SHALL SUBMIT WRITTEN RESULTS OF THE PERFORMANCE TESTS TO THE AQMD BY FEBRUARY 1st OF EACH YEAR FOLLOWING THE CALENDAR YEAR IN WHICH THE

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TESTS WERE CONDUCTED. THE REPORT SHALL ALSO INCLUDE THE INFORMATION SPECIFIED IN 40 CFR PART 60.59b(g), AS APPLICABLE.

23. ALL RECORDS REQUIRED BY THIS PERMIT OR 40 CFR PART 60.59b, AS APPLICABLE, SHALL BE MAINTAINED AND KEPT ON FILE FOR A PERIOD OF AT LEAST 5 YEARS AND BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.
24. IN ACCORDANCE WITH AQMD RULE 218, THE COMMERCE REFUSE TO ENERGY FACILITY OPERATOR SHALL SUBMIT A MONTHLY SUMMARY OF THE CONCENTRATION AND EMISSION DATA FROM THE CEMS WITHIN 30 DAYS OF THE END OF THE MONTH BEING REPORTED.

This Permit to Operate No. R-D96066 supersedes Permit to Operate No. D96066 issued on 1/30/96.

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M. Bailey

By Dorris M. Bailey/gl
5/7/98

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This initial permit shall be renewed by ANNUALLY unless the equipment is moved, or changes ownership. If the billing for annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner
Or Operator:

ID 037336

COMMERCE REFUSE TO ENERGY FACILITY
P O BOX 4998
WHITTIER, CA 90607-4998

Equipment

located at: 5926 SHEILA ST, COMMERCE, CA 90040-2403.

Equipment Description:

RESOURCE RECOVERY SYSTEM CONSISTING OF:

1. REFUSE CHARGING HOPPER
2. COMBUSTOR, MUNICIPAL SOLID WASTE FIRED, FOSTER WHEELER, MODEL NO. C845-260, WATER WALL TYPE, WITH RECIPROCATING GRATES, A NATURAL GAS FIRED AUXILIARY BURNER RATED AT 145,000 SCF/HOUR, AND A MULTI-LEVEL AMMONIA INJECTION SYSTEM, VENTING THE ASH PLANT, WASTE RECEIVING AND STORAGE AREA VIA THE 55,000 CFM UNDERFIRE PRIMARY COMBUSTION AIR FAN AND THE 24,000 CFM OVERFIRE SECONDARY COMBUSTION AIR FAN.
3. UNDERFIRE COMBUSTION AIR PREHEATING SYSTEM, MULTI-JET THERMAL OXIDIZER, MODEL HFL 2000R, NATURAL GAS FIRED, 3.4 MMBTU/HR, DUCTWORK CONNECTION TO THE FIRST STAGE UNDERFIRE COMBUSTION AIR SUPPLY AND UNDERFIRE CONTROL EQUIPMENT.
4. BOILER SECTION, WATER TUBE TYPE, RATED AT 130,000 LB/HR OF STEAM AT 650 PSIG AND 750 DEGREES FAHRENHEIT, WITH A SUPERHEATER, ECONOMIZER, AND SOOT BLOWERS.
5. STEAM TURBINE, FUJI, MODEL NO. KQ69053G1, DRIVING A 12 MW GENERATOR.
6. DRY LIME INJECTION INTO THE FURNACE.
7. AMMONIA STORAGE TANK, 12,000 GALLON CAPACITY.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

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3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION. BY DECEMBER 19, 1998, THE FACILITY SHALL BE IN COMPLIANCE WITH THE APPLICABLE OPERATOR REQUIREMENTS AS SPECIFIED UNDER 40 CFR PART 60.54b.
4. THE COMBUSTOR/BOILER EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND HAS BEEN ISSUED A VALID PERMIT BY THE AQMD.
5. THE COMBUSTOR/BOILER EQUIPMENT SHALL NOT BE OPERATED UNLESS ALL OF ITS PRIMARY COMBUSTION AIR IS VENTED FROM THE ASH SYSTEM, TIPPING HALL AND THE REFUSE PIT OF THE REFUSE RECEIVING AND STORAGE SYSTEM.
6. THIS EQUIPMENT MAY ONLY BE USED TO BURN REFUSE COLLECTED FROM RESIDENTIAL SOURCES, COMMERCIAL SOURCES AND OTHER SOURCES AS APPROVED AND IN A MANNER PRESCRIBED IN WRITING BY THE AQMD. ANY MATERIAL SPECIFICALLY DESIGNATED AS HAZARDOUS MATERIAL OR HAZARDOUS WASTE SHALL NOT BE BURNED UNLESS OTHERWISE APPROVED AND IN A MANNER PRESCRIBED IN WRITING BY THE AQMD.
7. ALL MATERIALS THAT ARE LISTED AS HAZARDOUS BY A FEDERAL OR STATE AGENCY OR APPEAR ON A FEDERAL OR STATE CANDIDATE LIST SHALL BE CONSIDERED "HAZARDOUS MATERIAL" FOR THE PURPOSE OF THIS PERMIT.
8. NATURAL GAS SHALL BE FIRED IN THIS COMBUSTOR ONLY FOR THE SUPPORT OF GOOD COMBUSTION OF REFUSE AND FOR PERIODS OF WARM-UP, START-UP AND SHUTDOWN. NATURAL GAS SHALL NOT BE USED FOR THE SOLE PURPOSE OF GENERATING POWER. DAILY NATURAL GAS CONSUMPTION SHALL BE MEASURED AND RECORDED.
9. FOR THE PURPOSE OF THIS PERMIT, A WARM-UP SHALL BE DEFINED AS THE PERIOD OF TIME FROM WHICH THE NATURAL GAS BURNER IS INITIALLY FIRED TO THE TIME REFUSE IS FIRST INTRODUCED INTO THE FURNACE. REFUSE SHALL NOT BE INTRODUCED INTO THE FURNACE EXCEPT DURING PERIODS OF NATURAL GAS CURTAILMENT AND UNTIL THE UNIT IS ON-LINE SYNCHRONIZED. IN ADDITION, FIRING OF NATURAL GAS SHALL CONTINUE UNTIL A POWER GENERATION LEVEL OF 5 MW IS REACHED.
10. FOR THE PURPOSE OF THIS PERMIT, A START-UP SHALL BE DEFINED AS THE FIRST 3 HOURS AFTER THE COMBUSTOR BEGINS THE CONTINUOUS BURNING OF MUNICIPAL SOLID WASTE.

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CONTINUATION OF PERMIT TO OPERATE

11. FOR THE PURPOSE OF THIS PERMIT, A SHUTDOWN SHALL BE DEFINED AS THE PERIOD OF TIME STARTING FROM THE CESSATION OF REFUSE CHARGING INTO THE FURNACE UNTIL COMPLETE REFUSE BURNOUT. DURING SHUTDOWN, THE FURNACE SHALL BURN NATURAL GAS AND SHALL REMAIN ON-LINE UNTIL ALL REFUSE ON THE GRATES HAS BEEN COMBUSTED. THE DURATION OF A SHUTDOWN SHALL NOT EXCEED 3 HOURS PER OCCURRENCE.
12. EXCEPT AS PROVIDED BY PART 60.56b, THE APPLICABLE STANDARDS UNDER 40 CFR SUBPARTS Cb AND Eb, SHALL APPLY AT ALL TIMES EXCEPT DURING PERIODS OF WARM-UP, START-UP, SHUTDOWN, OR MALFUNCTION. FOR THE PURPOSE OF COMPLIANCE WITH THIS CONDITION A MALFUNCTION SHALL ALSO BE LIMITED TO 3 HOURS PER OCCURRENCE.
13. THE COMBUSTOR/BOILER EQUIPMENT SHALL NOT BE OPERATED UNLESS THE SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM IS IN OPERATION, EXCEPT DURING THE PERIODS OF WARM-UP OR SHUTDOWN.
14. RESIDUE FROM THE GRATES AND SIFTINGS FROM UNDER THE GRATES SHALL BE DISCHARGED ONLY INTO AN ASH QUENCH TANK.
15. BY DECEMBER 19, 1998, THE OWNER OR OPERATOR SHALL INSTALL, MAINTAIN AND OPERATE A CONTINUOUS LOAD MONITOR AND RECORDER IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b, TO MEASURE AND RECORD STEAM FLOW OR FEEDWATER FLOW RATE TO DETERMINE THAT THE RESOURCE RECOVERY SYSTEM IS NOT OPERATING AT A LOAD LEVEL GREATER THAN 110 PERCENT OF THE MAXIMUM DEMONSTRATED MUNICIPAL WASTE COMBUSTOR UNIT LOAD AS DEFINED IN 40 CFR PART 60.51b EXCEPT AS SPECIFIED UNDER 40 CFR PART 60.53b(b).
16. THE TOTAL ALLOWED SUPPLEMENTAL NATURAL GAS USAGE FOR THIS BOILER SHALL NOT EXCEED 1,300,000 STANDARD CUBIC FEET PER DAY.
17. NATURAL GAS CONSUMPTION FOR THE COMBUSTION AIR PREHEATER SHALL NOT EXCEED 76,800 STANDARD CUBIC FEET PER DAY.
18. BY DECEMBER 19, 1998, VISIBLE FUGITIVE ASH EMISSIONS FROM THE ASH CONVEYING SYSTEM SHALL NOT EXCEED 5 PERCENT OF THE OBSERVATION PERIOD WHICH IS DEFINED IN 40 CFR PART 60.58(b)(k), EXCEPT DURING MAINTENANCE AND REPAIR OF ASH CONVEYING SYSTEMS.
19. ALL RECORDS REQUIRED BY THIS PERMIT OR 40 CFR PART 60.59b, AS APPLICABLE, SHALL BE MAINTAINED AND KEPT ON FILE FOR A PERIOD OF AT LEAST 5 YEARS AND SHALL BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.

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This Permit to Operate No. R-D96114 supersedes Permit to Operate
No. D96114 issued on 1/31/96.

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED
ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF
THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF
CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT
CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES,
REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M. Bailey

By Dorris M. Bailey/gl
5/7/98

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This initial permit shall be renewed by ANNUALLY unless the equipment is moved, or changes ownership. If the billing for annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner
Or Operator:

LONG BEACH CITY, SERRF PROJECT
120 HENRY FORD AVE
LONG BEACH, CA 90802

ID 044577

Equipment

located at: 120 HENRY FORD AV, LONG BEACH, CA 90802-1039

Equipment Description:

RESOURCE RECOVERY SYSTEM NO. 1 CONSISTING OF:

1. REFUSE RECEIVING HOPPER, CHARGING MUNICIPAL SOLID WASTE FIRED BOILER NO. 1.
2. COMBUSTOR/BOILER NO. 1, MUNICIPAL SOLID WASTE FIRED, L.C. STEINNULLER, WATER WALL TYPE, WITH RECIPROCATING GRATES, TWO NATURAL GAS FIRED AUXILIARY BURNERS WITH A COMBINED RATING OF 2,200,000 SCF/DAY, A MULTI-LEVEL AMMONIA INJECTION SYSTEM, UNDER GRATE PRIMARY COMBUSTION AIR FAN THAT VENTS THE WASTE RECEIVING AND STORAGE SYSTEM, AND OVER FIRE SECONDARY COMBUSTION AIR FAN.
3. BOILER SECTION, WATER TUBE TYPE, CONSISTING OF A SUPERHEATER, ECONOMIZER, TUBULAR STEAM COIL AIR PREHEATER, WITH MECHANICAL AND PNEUMATIC RAPPERS, AND EACH WITH A CAPACITY OF 130,000 POUNDS PER HOUR DAILY AVERAGE OF STEAM AT 660 PSIA AND 752 DEGREES FAHRENHEIT.
4. STEAM TURBINE, IMO DELAVAL, MODEL MJ-MZ-SF, 37,504 KW (COMMON TO RESOURCE RECOVERY SYSTEMS NO. 2 AND 3).
5. GENERATOR, GEC ALSTHOM, MODEL T216-255 (COMMON TO RESOURCE RECOVERY SYSTEMS NO. 2 AND 3).
6. AQUEOUS AMMONIA STORAGE TANK, 24,000 GALLON CAPACITY (COMMON TO RESOURCE RECOVERY SYSTEMS NO. 2 AND 3).

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

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2000 East Goppley Drive, Station 88, CA 91765

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A/N 274836

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3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION. BY DECEMBER 19, 1998, THE FACILITY SHALL BE IN COMPLIANCE WITH THE APPLICABLE OPERATOR REQUIREMENTS AS SPECIFIED UNDER 40 CFR PART 60.54b.
4. THE COMBUSTOR/BOILER EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND HAS BEEN ISSUED A VALID PERMIT BY THE AQMD.
5. THE COMBUSTOR/BOILER EQUIPMENT SHALL NOT BE OPERATED UNLESS ALL OF ITS PRIMARY COMBUSTION AIR IS VENTED FROM THE TIPPING HALL AND THE REFUSE PIT OF THE REFUSE RECEIVING AND STORAGE SYSTEM.
6. THIS EQUIPMENT MAY ONLY BE USED TO BURN REFUSE COLLECTED FROM RESIDENTIAL SOURCES, COMMERCIAL SOURCES AND OTHER SOURCES AS APPROVED AND IN A MANNER PRESCRIBED IN WRITING BY THE AQMD. ANY MATERIAL SPECIFICALLY DESIGNATED AS HAZARDOUS MATERIAL OR HAZARDOUS WASTE SHALL NOT BE BURNED UNLESS OTHERWISE APPROVED AND IN A MANNER PRESCRIBED IN WRITING BY THE AQMD.
7. ALL MATERIALS THAT ARE LISTED AS HAZARDOUS BY A FEDERAL OR STATE AGENCY OR APPEAR ON A FEDERAL OR STATE CANDIDATE LIST SHALL BE CONSIDERED "HAZARDOUS MATERIAL" FOR THE PURPOSE OF THIS PERMIT.
8. NATURAL GAS SHALL BE FIRED IN THIS COMBUSTOR ONLY FOR THE SUPPORT OF GOOD COMBUSTION OF REFUSE AND FOR PERIODS OF WARM-UP, START-UP AND SHUTDOWN. NATURAL GAS SHALL NOT BE USED FOR THE SOLE PURPOSE OF GENERATING POWER. DAILY NATURAL GAS CONSUMPTION SHALL BE MEASURED AND RECORDED.
9. FOR THE PURPOSE OF THIS PERMIT, A WARM-UP SHALL BE DEFINED AS THE PERIOD OF TIME FROM WHICH THE NATURAL GAS BURNER IS INITIALLY FIRED TO THE TIME REFUSE IS FIRST INTRODUCED INTO THE FURNACE. NATURAL GAS FIRING MAY CONTINUE UNTIL THE STEAM TURBINE REACHES FULL LOAD.
10. FOR THE PURPOSE OF THIS PERMIT, A START-UP SHALL BE DEFINED AS THE FIRST 3 HOURS AFTER THE COMBUSTOR BEGINS THE CONTINUOUS BURNING OF MUNICIPAL SOLID WASTE.
11. FOR THE PURPOSE OF THIS PERMIT, A SHUTDOWN SHALL BE DEFINED AS THE PERIOD OF TIME STARTING FROM THE CESSATION OF REFUSE CHARGING INTO THE FURNACE UNTIL COMPLETE REFUSE BURNOUT. DURING SHUTDOWN, THE FURNACE SHALL BURN NATURAL GAS UNTIL ALL REFUSE ON THE GRATES HAS BEEN COMBUSTED. THE DURATION OF A SHUTDOWN SHALL NOT EXCEED 3 HOURS PER OCCURRENCE.

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12. EXCEPT AS PROVIDED BY PART 60.56b, THE APPLICABLE STANDARDS UNDER 40 CFR SUBPARTS Cb AND Eb, SHALL APPLY AT ALL TIMES EXCEPT DURING PERIODS OF WARM-UP, START-UP, SHUTDOWN, OR MALFUNCTION. FOR THE PURPOSE OF COMPLIANCE WITH THIS CONDITION, A MALFUNCTION SHALL ALSO BE LIMITED TO 3 HOURS PER OCCURRENCE.
13. THE COMBUSTOR/BOILER EQUIPMENT SHALL NOT BE OPERATED UNLESS THE SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM IS IN OPERATION, EXCEPT DURING THE PERIODS OF WARM-UP, SHUTDOWN OR WHEN THE FLUE GAS TEMPERATURE IS LESS THAN 1,200 DEGREES FAHRENHEIT.
14. RESIDUE FROM THE GRATES, BOILER HOPPERS, AND SIFTINGS FROM UNDER THE GRATES SHALL BE DISCHARGED ONLY INTO AN ASH QUENCH TANK.
15. BY DECEMBER 19, 1998, THE OWNER OR OPERATOR SHALL INSTALL, MAINTAIN AND OPERATE A CONTINUOUS LOAD MONITOR AND RECORDER IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b, TO MEASURE AND RECORD STEAM FLOW OR FEEDWATER FLOW RATE TO DETERMINE THAT THE RESOURCE RECOVERY SYSTEM IS NOT OPERATING AT A LOAD LEVEL GREATER THAN 110 PERCENT OF THE MAXIMUM DEMONSTRATED MUNICIPAL WASTE COMBUSTOR UNIT LOAD AS DEFINED IN 40 CFR PART 60.51b EXCEPT AS SPECIFIED UNDER 40 CFR PART 60.53b(b).
16. THE COMBUSTOR/BOILER SHALL BE OPERATED TO PROVIDE A MINIMUM GAS RETENTION TIME OF ONE SECOND AT A TEMPERATURE ABOVE 1,800 DEGREES FAHRENHEIT, AS SHOWN BY A MINIMUM ROOF TEMPERATURE READING OF 1,000 DEGREES FAHRENHEIT, EXCEPT DURING WARM-UP, START-UP AND SHUTDOWN.
17. THE OPERATOR SHALL TAKE STEPS TO MINIMIZE THE COMBUSTION OF TIRES AND OTHER SULFUR BEARING MATERIALS.
18. BY DECEMBER 19, 1998, VISIBLE FUGITIVE ASH EMISSIONS FROM AN ASH CONVEYING SYSTEM SHALL NOT EXCEED 5 PERCENT OF THE OBSERVATION PERIOD WHICH IS DEFINED IN 40 CFR PART 60.58b(k), EXCEPT DURING MAINTENANCE AND REPAIR OF ASH CONVEYING SYSTEMS.
19. ALL RECORDS REQUIRED BY THIS PERMIT OR 40 CFR PART 60.59b, AS APPLICABLE, SHALL BE MAINTAINED AND KEPT ON FILE FOR A PERIOD OF AT LEAST FIVE YEARS AND SHALL BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.

This Permit to Operate No. R-D87714 supersedes Permit to Operate No. D87714 issued on 1/20/95.

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NOTICE

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EXECUTIVE OFFICER

Dorris on Bailey

By Dorris M. Bailey/gl
5/19/98

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R-D87716
A/N 274837
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This initial permit shall be renewed by **ANNUALLY** unless the equipment is moved, or changes ownership. If the billing for annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner
Or Operator:

LONG BEACH CITY, SERRF PROJECT
120 HENRY FORD AVE
LONG BEACH, CA 90802

ID 044577

Equipment

located at: 120 HENRY FORD AV, LONG BEACH, CA 90802-1039

Equipment Description:

RESOURCE RECOVERY SYSTEM NO. 2 CONSISTING OF:

1. REFUSE RECEIVING HOPPER, CHARGING MUNICIPAL SOLID WASTE FIRED BOILER NO. 2.
2. COMBUSTOR/BOILER NO. 2, MUNICIPAL SOLID WASTE FIRED, L.C. STEINNULLER, WATER WALL TYPE, WITH RECIPROCATING GRATES, TWO NATURAL GAS FIRED AUXILIARY BURNERS WITH A COMBINED RATING OF 2,200,000 SCF/DAY, A MULTI-LEVEL AMMONIA INJECTION SYSTEM, UNDER GRATE PRIMARY COMBUSTION AIR FAN THAT VENTS THE WASTE RECEIVING AND STORAGE SYSTEM, AND OVER FIRE SECONDARY COMBUSTION AIR FAN.
3. BOILER SECTION, WATER TUBE TYPE, CONSISTING OF A SUPERHEATER, ECONOMIZER, TUBULAR STEAM COIL AIR PREHEATER, WITH MECHANICAL AND PNEUMATIC RAPPERS, AND EACH WITH A CAPACITY OF 130,000 POUNDS PER HOUR DAILY AVERAGE OF STEAM AT 660 PSIA AND 752 DEGREES FAHRENHEIT.
4. STEAM TURBINE, IMO DELAVAL, MODEL MJ-MZ-SF, 37,504 KW (COMMON TO RESOURCE RECOVERY SYSTEMS NO. 1 AND 3).
5. GENERATOR, GEC ALSTHOM, MODEL T216-255 (COMMON TO RESOURCE RECOVERY SYSTEMS NO. 1 AND 3).
6. AQUEOUS AMMONIA STORAGE TANK, 24,000 GALLON CAPACITY (COMMON TO RESOURCE RECOVERY SYSTEMS NO. 1 AND 3).

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

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3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION. BY DECEMBER 19, 1998, THE FACILITY SHALL BE IN COMPLIANCE WITH THE APPLICABLE OPERATOR REQUIREMENTS AS SPECIFIED UNDER 40 CFR PART 60.54b.
4. THE COMBUSTOR/BOILER EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND HAS BEEN ISSUED A VALID PERMIT BY THE AQMD.
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7. ALL MATERIALS THAT ARE LISTED AS HAZARDOUS BY A FEDERAL OR STATE AGENCY OR APPEAR ON A FEDERAL OR STATE CANDIDATE LIST SHALL BE CONSIDERED "HAZARDOUS MATERIAL" FOR THE PURPOSE OF THIS PERMIT.
8. NATURAL GAS SHALL BE FIRED IN THIS COMBUSTOR ONLY FOR THE SUPPORT OF GOOD COMBUSTION OF REFUSE AND FOR PERIODS OF WARM-UP, START-UP AND SHUTDOWN. NATURAL GAS SHALL NOT BE USED FOR THE SOLE PURPOSE OF GENERATING POWER. DAILY NATURAL GAS CONSUMPTION SHALL BE MEASURED AND RECORDED.
9. FOR THE PURPOSE OF THIS PERMIT, A WARM-UP SHALL BE DEFINED AS THE PERIOD OF TIME FROM WHICH THE NATURAL GAS BURNER IS INITIALLY FIRED TO THE TIME REFUSE IS FIRST INTRODUCED INTO THE FURNACE. NATURAL GAS FIRING MAY CONTINUE UNTIL THE STEAM TURBINE REACHES FULL LOAD.
10. FOR THE PURPOSE OF THIS PERMIT, A START-UP SHALL BE DEFINED AS THE FIRST 3 HOURS AFTER THE COMBUSTOR BEGINS THE CONTINUOUS BURNING OF MUNICIPAL SOLID WASTE.
11. FOR THE PURPOSE OF THIS PERMIT, A SHUTDOWN SHALL BE DEFINED AS THE PERIOD OF TIME STARTING FROM THE CESSATION OF REFUSE CHARGING INTO THE FURNACE UNTIL COMPLETE REFUSE BURNOUT. DURING SHUTDOWN, THE FURNACE SHALL BURN NATURAL GAS UNTIL ALL REFUSE ON THE GRATES HAS BEEN COMBUSTED. THE DURATION OF A SHUTDOWN SHALL NOT EXCEED 3 HOURS PER OCCURRENCE.

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12. EXCEPT AS PROVIDED BY PART 60.56b, THE APPLICABLE STANDARDS UNDER 40 CFR SUBPARTS Cb AND Eb, SHALL APPLY AT ALL TIMES EXCEPT DURING PERIODS OF WARM-UP, START-UP, SHUTDOWN, OR MALFUNCTION. FOR THE PURPOSE OF COMPLIANCE WITH THIS CONDITION, A MALFUNCTION SHALL ALSO BE LIMITED TO 3 HOURS PER OCCURRENCE.
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14. RESIDUE FROM THE GRATES, BOILER HOPPERS, AND SIFTINGS FROM UNDER THE GRATES SHALL BE DISCHARGED ONLY INTO AN ASH QUENCH TANK.
15. BY DECEMBER 19, 1998, THE OWNER OR OPERATOR SHALL INSTALL, MAINTAIN AND OPERATE A CONTINUOUS LOAD MONITOR AND RECORDER IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b, TO MEASURE AND RECORD STEAM FLOW OR FEEDWATER FLOW RATE TO DETERMINE THAT THE RESOURCE RECOVERY SYSTEM IS NOT OPERATING AT A LOAD LEVEL GREATER THAN 110 PERCENT OF THE MAXIMUM DEMONSTRATED MUNICIPAL WASTE COMBUSTOR UNIT LOAD AS DEFINED IN 40 CFR PART 60.51b EXCEPT AS SPECIFIED UNDER 40 CFR PART 60.53b(b).
16. THE COMBUSTOR/BOILER SHALL BE OPERATED TO PROVIDE A MINIMUM GAS RETENTION TIME OF ONE SECOND AT A TEMPERATURE ABOVE 1,800 DEGREES FAHRENHEIT, AS SHOWN BY A MINIMUM ROOF TEMPERATURE READING OF 1,000 DEGREES FAHRENHEIT, EXCEPT DURING WARM-UP, START-UP AND SHUTDOWN.
17. THE OPERATOR SHALL TAKE STEPS TO MINIMIZE THE COMBUSTION OF TIRES AND OTHER SULFUR BEARING MATERIALS.
18. BY DECEMBER 19, 1998, VISIBLE FUGITIVE ASH EMISSIONS FROM AN ASH CONVEYING SYSTEM SHALL NOT EXCEED 5 PERCENT OF THE OBSERVATION PERIOD WHICH IS DEFINED IN 40 CFR PART 60.58b(k), EXCEPT DURING MAINTENANCE AND REPAIR OF ASH CONVEYING SYSTEMS.
19. ALL RECORDS REQUIRED BY THIS PERMIT OR 40 CFR PART 60.59b, AS APPLICABLE, SHALL BE MAINTAINED AND KEPT ON FILE FOR A PERIOD OF AT LEAST FIVE YEARS AND SHALL BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.

This Permit to Operate No. R-D87716 supersedes Permit to Operate No. D87716 issued on 1/20/95.

FILE COPY

CONTINUATION OF PERMIT TO OPERATE

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M. Bailey

By Dorris M. Bailey/gl
5/19/98

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PERMIT TO OPERATE

This initial permit shall be renewed by **ANNUALLY** unless the equipment is moved, or changes ownership. If the billing for annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner

ID 044577

Or Operator:

LONG BEACH CITY, SERRF PROJECT
120 HENRY FORD AVE
LONG BEACH, CA 90802

Equipment

located at: 120 HENRY FORD AV, LONG BEACH, CA 90802-1039

Equipment Description:

RESOURCE RECOVERY SYSTEM NO. 3 CONSISTING OF:

1. REFUSE RECEIVING HOPPER, CHARGING MUNICIPAL SOLID WASTE FIRED BOILER NO. 3.
2. COMBUSTOR/BOILER NO. 3, MUNICIPAL SOLID WASTE FIRED, L.C. STEINNULLER, WATER WALL TYPE, WITH RECIPROCATING GRATES, TWO NATURAL GAS FIRED AUXILIARY BURNERS WITH A COMBINED RATING OF 2,200,000 SCF/DAY, A MULTI-LEVEL AMMONIA INJECTION SYSTEM, UNDER GRATE PRIMARY COMBUSTION AIR FAN THAT VENTS THE WASTE RECEIVING AND STORAGE SYSTEM, AND OVER FIRE SECONDARY COMBUSTION AIR FAN.
3. BOILER SECTION, WATER TUBE TYPE, CONSISTING OF A SUPERHEATER, ECONOMIZER, TUBULAR STEAM COIL AIR PREHEATER, WITH MECHANICAL AND PNEUMATIC RAPPERS, AND EACH WITH A CAPACITY OF 130,000 POUNDS PER HOUR DAILY AVERAGE OF STEAM AT 660 PSIA AND 752 DEGREES FAHRENHEIT.
4. STEAM TURBINE, IMO DELAVAL, MODEL MJ-MZ-SF, 37,504 KW (COMMON TO RESOURCE RECOVERY SYSTEMS NO. 1 AND 2).
5. GENERATOR, GEC ALSTHOM, MODEL T216-255 (COMMON TO RESOURCE RECOVERY SYSTEMS NO. 1 AND 2).
6. AQUEOUS AMMONIA STORAGE TANK, 24,000 GALLON CAPACITY (COMMON TO RESOURCE RECOVERY SYSTEMS NO. 1 AND 2).

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

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CONTINUATION OF PERMIT TO OPERATE

3. THIS EQUIPMENT SHALL BE OPERATED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION. BY DECEMBER 19, 1998, THE FACILITY SHALL BE IN COMPLIANCE WITH THE APPLICABLE OPERATOR REQUIREMENTS AS SPECIFIED UNDER 40 CFR PART 60.54b.
4. THE COMBUSTOR/BOILER EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND HAS BEEN ISSUED A VALID PERMIT BY THE AQMD.
5. THE COMBUSTOR/BOILER EQUIPMENT SHALL NOT BE OPERATED UNLESS ALL OF ITS PRIMARY COMBUSTION AIR IS VENTED FROM THE TIPPING HALL AND THE REFUSE PIT OF THE REFUSE RECEIVING AND STORAGE SYSTEM.
6. THIS EQUIPMENT MAY ONLY BE USED TO BURN REFUSE COLLECTED FROM RESIDENTIAL SOURCES, COMMERCIAL SOURCES AND OTHER SOURCES AS APPROVED AND IN A MANNER PRESCRIBED IN WRITING BY THE AQMD. ANY MATERIAL SPECIFICALLY DESIGNATED AS HAZARDOUS MATERIAL OR HAZARDOUS WASTE SHALL NOT BE BURNED UNLESS OTHERWISE APPROVED AND IN A MANNER PRESCRIBED IN WRITING BY THE AQMD.
7. ALL MATERIALS THAT ARE LISTED AS HAZARDOUS BY A FEDERAL OR STATE AGENCY OR APPEAR ON A FEDERAL OR STATE CANDIDATE LIST SHALL BE CONSIDERED "HAZARDOUS MATERIAL" FOR THE PURPOSE OF THIS PERMIT.
8. NATURAL GAS SHALL BE FIRED IN THIS COMBUSTOR ONLY FOR THE SUPPORT OF GOOD COMBUSTION OF REFUSE AND FOR PERIODS OF WARM-UP, START-UP AND SHUTDOWN. NATURAL GAS SHALL NOT BE USED FOR THE SOLE PURPOSE OF GENERATING POWER. DAILY NATURAL GAS CONSUMPTION SHALL BE MEASURED AND RECORDED.
9. FOR THE PURPOSE OF THIS PERMIT, A WARM-UP SHALL BE DEFINED AS THE PERIOD OF TIME FROM WHICH THE NATURAL GAS BURNER IS INITIALLY FIRED TO THE TIME REFUSE IS FIRST INTRODUCED INTO THE FURNACE. NATURAL GAS FIRING MAY CONTINUE UNTIL THE STEAM TURBINE REACHES FULL LOAD.
10. FOR THE PURPOSE OF THIS PERMIT, A START-UP SHALL BE DEFINED AS THE FIRST 3 HOURS AFTER THE COMBUSTOR BEGINS THE CONTINUOUS BURNING OF MUNICIPAL SOLID WASTE.
11. FOR THE PURPOSE OF THIS PERMIT, A SHUTDOWN SHALL BE DEFINED AS THE PERIOD OF TIME STARTING FROM THE CESSATION OF REFUSE CHARGING INTO THE FURNACE UNTIL COMPLETE REFUSE BURNOUT. DURING SHUTDOWN, THE FURNACE SHALL BURN NATURAL GAS UNTIL ALL REFUSE ON THE GRATES HAS BEEN COMBUSTED. THE DURATION OF A SHUTDOWN SHALL NOT EXCEED 3 HOURS PER OCCURRENCE.

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CONTINUATION OF PERMIT TO OPERATE

12. EXCEPT AS PROVIDED BY PART 60.56b, THE APPLICABLE STANDARDS UNDER 40 CFR SUBPARTS Cb AND Eb, SHALL APPLY AT ALL TIMES EXCEPT DURING PERIODS OF WARM-UP, START-UP, SHUTDOWN, OR MALFUNCTION. FOR THE PURPOSE OF COMPLIANCE WITH THIS CONDITION, A MALFUNCTION SHALL ALSO BE LIMITED TO 3 HOURS PER OCCURRENCE.
13. THE COMBUSTOR/BOILER EQUIPMENT SHALL NOT BE OPERATED UNLESS THE SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM IS IN OPERATION, EXCEPT DURING THE PERIODS OF WARM-UP, SHUTDOWN OR WHEN THE FLUE GAS TEMPERATURE IS LESS THAN 1,200 DEGREES FAHRENHEIT.
14. RESIDUE FROM THE GRATES, BOILER HOPPERS, AND SIFTINGS FROM UNDER THE GRATES SHALL BE DISCHARGED ONLY INTO AN ASH QUENCH TANK.
15. BY DECEMBER 19, 1998, THE OWNER OR OPERATOR SHALL INSTALL, MAINTAIN AND OPERATE A CONTINUOUS LOAD MONITOR AND RECORDER IN A MANNER PRESCRIBED IN 40 CFR PART 60.58b, TO MEASURE AND RECORD STEAM FLOW OR FEEDWATER FLOW RATE TO DETERMINE THAT THE RESOURCE RECOVERY SYSTEM IS NOT OPERATING AT A LOAD LEVEL GREATER THAN 110 PERCENT OF THE MAXIMUM DEMONSTRATED MUNICIPAL WASTE COMBUSTOR UNIT LOAD AS DEFINED IN 40 CFR PART 60.51b EXCEPT AS SPECIFIED UNDER 40 CFR PART 60.53b(b).
16. THE COMBUSTOR/BOILER SHALL BE OPERATED TO PROVIDE A MINIMUM GAS RETENTION TIME OF ONE SECOND AT A TEMPERATURE ABOVE 1,800 DEGREES FAHRENHEIT, AS SHOWN BY A MINIMUM ROOF TEMPERATURE READING OF 1,000 DEGREES FAHRENHEIT, EXCEPT DURING WARM-UP, START-UP AND SHUTDOWN.
17. THE OPERATOR SHALL TAKE STEPS TO MINIMIZE THE COMBUSTION OF TIRES AND OTHER SULFUR BEARING MATERIALS.
18. BY DECEMBER 19, 1998, VISIBLE FUGITIVE ASH EMISSIONS FROM AN ASH CONVEYING SYSTEM SHALL NOT EXCEED 5 PERCENT OF THE OBSERVATION PERIOD WHICH IS DEFINED IN 40 CFR PART 60.58b(k), EXCEPT DURING MAINTENANCE AND REPAIR OF ASH CONVEYING SYSTEMS.
19. ALL RECORDS REQUIRED BY THIS PERMIT OR 40 CFR PART 60.59b, AS APPLICABLE, SHALL BE MAINTAINED AND KEPT ON FILE FOR A PERIOD OF AT LEAST FIVE YEARS AND SHALL BE MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.

This Permit to Operate No. R-D87717 supersedes Permit to Operate No. D87717 issued on 1/20/95.

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PERMIT TO OPERATE
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CONTINUATION OF PERMIT TO OPERATE

NOTICE

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EXECUTIVE OFFICER

Dorris M. Bailey

By Dorris M. Bailey/gl
5/19/98

FILE COPY

ATTACHMENT C

**CALIFORNIA MUNICIPAL WASTE COMBUSTOR
FACILITY AND EMISSION INVENTORIES**

Table C-1. California MWC Facility Inventory

District	Facility Name	Facility Address	Control Equipment ^{1,2}	Permit Capacity	Startup Date
South Coast AQMD	<i>Southeast Resource Recovery Facility (SERRF)</i> owner: Joint Powers Authority ³ operator: Montenay Pacific Power Corporation	120 Henry Ford Avenue Long Beach, CA 90802 (Los Angeles County)	NH ₃ Injection Lime SD/FF	1380 tpd 3 units (460 tpd ea.)	1988
	<i>Commerce Refuse to Energy Authority (CREA)</i> owner: Los Angeles County Sanitation District (LACSD)/City of Commerce operator: LACSD	5926 Sheila Street Commerce, CA 90040 (Los Angeles County)	NH ₃ Injection Lime SD/FF	400 tpd 1 unit	1987
San Joaquin Valley Unified APCD	<i>Stanislaus County Resource Recovery Facility (Stanislaus)</i> owner: Ogden-Martin Systems (OMSS) operator: OMSS	4040 Fink Road PO Box 278 Crows Landing, CA 95313 (Stanislaus County)	NH ₃ Injection Lime SD/FF	800 tpd 2 units (400 tpd ea.)	1988

1. NH₃ means ammonia; SD/FF means spray dryer/fabric filter.

2. All units at each facility have the same type of air pollution control equipment.

3. The Joint Powers Authority consists of the Los Angeles County Sanitation District (LACSD) and the City of Long Beach

Table C-2. California MWC Emission Rates

Pollutant	Reporting Units ¹	SERRF ²			CREA ³	Stanislaus ⁴		USEPA EG
		Unit 1	Unit 2	Unit 3	Unit 1	Unit 1	Unit 2	Unit Limits
Nitrogen Oxides (NO _x)	ppmv	80	81	78	88	140	146	205
Carbon Monoxide (CO)	ppmv	76	55	93	65	12	18	100
Particulate Matter (PM)	grains/dscf	0.0036	0.0036	0.0036	0.011	0.0058	0.0068	0.012
Sulfur Dioxide (SO ₂)	ppmv	0.5	1.5	3.2	7.1	5	9	29
Hydrochloric Acid (HCl)	ppmv	2.4	2.4	2.4	13	2	2	29
Dioxins/Furans	ng/dscm	0.1	0.1	0.1	8.3	25	25	30
Lead (Pb)	mg/dscm	7.02E-05	3.7E-03	1.27E-03	2.1E-03	3.68E-05	3.68E-05	4.4E-01
Cadmium (Cd)	mg/dscm	<1.1E-04	<1.1E-04	<1.1E-04	<1.0E-04	4.46E-04	4.46E-04	4.0E-02
Mercury (Hg)	mg/dscm	7.1E-03	1.8E-02	6.0E-03	<1.7E-03	1.35E-01	1.66E-01	8.0E-02

1. Emissions corrected to 7% O₂ unless otherwise noted; ppmv means parts per million by volume; dscf means dry standard cubic feet; ng means nanogram; mg means milligram; dscm means dry standard cubic meter; all numbers have been rounded.

2. SERRF emissions from July 1997 source test (CEMS and stack sampling).

3. CREA emissions from November 1997 source test (CEMS and stack sampling)

4. Stanislaus emissions from May 1997 source test (CEMS and stack sampling). Emissions have been corrected to 12% CO₂.

Table C-3. California MWC Annual Emissions Inventory¹

Pollutant	SERRF [tons per year]				CREA [tons per year]		Stanislaus ³ [tons per year]		
	Unit 1	Unit 2	Unit 3	USEPA EG ²	Unit 1	USEPA EG ²	Unit 1	Unit 2	USEPA EG ²
Nitrogen Oxides (NO _x)	104	105	102	267	100	262	159	165	267
Carbon Monoxide (CO)	60	44	74	79	45	78	8.3	12	79
Particulate Matter (PM)	5.5	5.5	5.5	19	15	18	7.9	9.2	19
Sulfur Dioxide (SO ₂)	0.9	2.7	5.8	53	11	51	7.9	14	53
Hydrochloric Acid (HCl)	2.5	2.5	2.5	30	12	29	1.8	1.8	30
Dioxins/Furans	6.8E-08	6.8E-08	6.8E-08	2.0E-05	4.9E-06	2.0E-05	1.5E-05	1.5E-05	2.0E-05
Lead (Pb)	4.8E-05	2.5E-03	8.2E-04	3.0E-01	1.2E-03	2.9E-01	2.2E-03	2.2E-03	3.0E-01
Cadmium (Cd)	7.5E-05	7.5E-05	7.5E-05	2.7E-02	5.9E-05	2.7E-02	2.6E-04	2.6E-04	2.7E-02
Mercury (Hg)	4.7E-03	1.2E-02	4.1E-03	5.5E-02	1.0E-03	5.3E-02	8.0E-02	9.9E-02	5.5E-02

1. Data used to calculate annual emissions is taken from Table C-2. Annual emission calculations are based on the emission rates presented in Table C-1 and are a function of the total amount of MSW processed each year. For comparison purposes, it is assumed that each unit operates at its total physical capacity and for 365 days each year. All numbers have been rounded.

2. U.S. EPA guideline emissions based on source process rates for comparison purposes.

3. Data corrected to 12% CO₂ (per source test reports).

**Table C-4. Summary of Current Emissions from California MWCs
Compared to U.S. EPA Guideline Emissions¹**

Pollutant	California MWC Emissions		U.S. EPA Guideline Emissions	
	[tons/yr]	[Mg/yr]	[tons/yr]	[Mg/yr]
Nitrogen Oxides (NO _x)	735	668	1498	1362
Carbon Monoxide (CO)	243	221	445	404
Particulate Matter (PM)	48	44	105	96
Sulfur Dioxide (SO ₂)	43	39	295	268
Hydrochloric Acid (HCl)	23	21	168	153
Dioxins/Furans	3.5E-05	3.2E-05	1.15E-04	1.04E-04
Lead (Pb)	0.0089	0.0081	1.6823	1.5293
Cadmium (Cd)	8.1E-04	7.4E-04	1.534E-01	1.39E-01
Mercury (Hg)	0.20	0.18	0.31	0.28

1. Values are total maximum emissions from all affected facilities based on an 365 day per year operating schedule and have been rounded.

ATTACHMENT D
PUBLIC PARTICIPATION

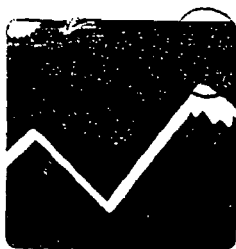
San Joaquin Valley Unified Air Pollution Control District

**NOTICE OF PUBLIC HEARING
ADOPTION OF A STATE PLAN
TO IMPLEMENT FEDERAL EMISSION
GUIDELINES FOR LARGE MUNICIPAL
WASTE COMBUSTORS.**

NOTICE IS HEREBY GIVEN that a public hearing will be held on April 16, 1998 at 10:00 am, or as soon thereafter as may be heard, at 1999 Tuolumne Street, Fresno, California. At said hearing, the Governing Board of the San Joaquin Valley Unified Air Pollution Control District will consider adoption of one part of a California State Plan to comply with the requirements of the Federal Emissions Guidelines for Large Municipal Waste Combustors.

The part of the State Plan to be considered at this hearing applies to the Ogden Martin Systems municipal waste combustion facility located at 4040 Fink Road in Crows Landing. The Permit to Operate for this facility will be submitted to implement the requirements of title 40, Code of Federal Regulations (CFR), Part 60, as amended, Subpart CB (Emissions Guidelines for Large Municipal Waste Combustion Units). The partial plan includes identification of legal authority, the Permit to Operate for the Ogden Martin Systems facility, an emission inventory, emission limits, compliance schedules, public hearing requirements, reporting and record keeping requirements, and requirements for annual progress reports. If adopted by the District governing Board, the partial plan will be transmitted to the California Air Resources Board, combined with other partial plans that apply to facilities in other California air districts, and submitted to the U.S. Environmental Protection Agency to satisfy the plan submittal requirements of the Federal Emission Guidelines.

NOTICE IS FURTHER GIVEN that interested persons desiring to be heard or present evidence on this matter may appear at said hearing. Interested persons may view the proposed rules at the District Northern Region office which is located at 4230 Kiernan Avenue, Suite 130, in Modesto, CA. Further information and copies of the partial plan may be obtained by contacting Chris Valverde at (209) 545-7000, or by FAXing a request to Mr. Valverde at (209) 545-8652. Written comments should be addressed to Seved Sadredin, SJVUAPCD, 1999 Tuolumne Street, Suite 200, Fresno, CA 93721.
March 16, 1998



COPY

San Joaquin Valley Unified Air Pollution Control District

Governing Board:

Tony Barba

Chair
Supervisor, Kings County

Kenni Friedman

Vice Chair
Councilmember, City of Modesto

Tom Perch

Supervisor, Fresno County

Barbara Patrick

Supervisor, Kern County

Gail Hanhart McIntyre

Supervisor, Madera County

Jerry O'Banion

Supervisor, Merced County

Robert J. Cabral

Supervisor, San Joaquin County

Dennis Lujan

Councilmember, City of Selma

Nick W. Blom

Supervisor, Stanislaus County

William Sanders

Supervisor, Tulare County

Claude Retherford

Mayor, City of Tulare

David L. Crow

**Executive Director/
Air Pollution**

Control Officer
1999 Tuolumne Street, Suite #200
Fresno, CA 93721
(209) 497-1000
Fax (209) 233-2057

Northern Region

4230 Kiernan Avenue, Suite #130
Modesto, CA 95356
(209) 545-7000
Fax (209) 545-8652

Central Region

1999 Tuolumne Street, Suite #200
Fresno, CA 93721
(209) 497-1000
Fax (209) 233-2057

Southern Region

2700 M Street, Suite #275
Bakersfield, CA 93301
(805) 862-5200
Fax (805) 862-5201

GOVERNING BOARD AGENDA

THURSDAY

April 16, 1998

10:00 A.M.

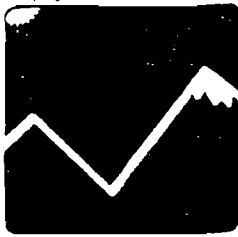
**Central Region Office
First Floor Meeting Room
1999 Tuolumne Street, Fresno**

- Notes: A. The meeting of the San Joaquin Valleywide Air Pollution Study Agency WILL NOT be held immediately prior to this meeting.
- B. Please provide 15 copies of any information intended for use at Governing Board Meetings to the Clerk to the Board prior to the meeting.
- C. The Governing Board relies on the credibility of witnesses and the veracity of testimony on matters brought before this Board for action.
- D. If you are providing testimony and/or attending the meeting please put your name on the Sign In Sheet located at the entrance door.
1. **CALL TO ORDER**
 2. **ROLL CALL**
 3. **APPROVAL OF CONSENT CALENDAR** Items Number (16-25).
(These matters are routine in nature and are usually approved by a single vote. Prior to action by the Board, the public will be given the opportunity to comment on any consent item.)
 4. **PUBLIC COMMENT** This time is made available for comments from the public on matters within the Board's jurisdiction that are not on the Agenda. It is requested that no comments be made during this period on items on the Agenda. The public may make comments on each Board Agenda Item during the time allowed for public comment. Attention is called to the fact that the Board is prohibited by law from taking any action on matters discussed that are not on the Agenda.
 5. **REPORT FROM CITIZENS ADVISORY COMMITTEE**

6. APPROVE RECOMMENDATION OF THE PHASE V - 1997 REMOVE PROGRAM EVALUATION COMMITTEE FOR MOTOR VEHICLE EMISSION REDUCTIONS TO FUND 44 PROJECTS FOR \$5,309,952
7. APPROVE BUDGET RESOLUTION WHICH ALLOCATES \$1,240,048 OF DMV SURCHARGE FEE REVENUE TO THE HEAVY-DUTY MOTOR VEHICLE EMISSION REDUCTION INCENTIVE PROGRAM
8. PUBLIC HEARING: ADOPT PROPOSED AMENDMENTS TO RULE 4354 (GLASS MELTING FURNACES) - Recommend adopting amendments to establish Best Available Retrofit Control Technology (BARCT) requirements for NOx emissions from flat glass, fiberglass and container glass melting furnaces, pursuant to the 1994 Ozone Attainment Demonstration Plan.
9. PUBLIC HEARING: ADOPT PROPOSED AMENDMENTS TO RULE 4642 (SOLID WASTE DISPOSAL SITES) - Recommend adopting amendments to exempt landfills subject to the federal Emission Guidelines for municipal solid waste landfills.
10. PUBLIC HEARING: APPROVE SUBMITTAL OF DISTRICT PERMIT TO OPERATE N-2073-1-2 (OGDEN MARTIN SYSTEMS FACILITY, STANISLAUS) TO THE CALIFORNIA AIR RESOURCES BOARD AS PART OF THE STATE PLAN TO IMPLEMENT 40 CFR 60, SUBPART CB
11. APPROVE PURCHASE OF VALLEY CHILDREN'S PROFESSIONAL CENTER TO HOUSE DISTRICT'S CENTRAL REGION OFFICE
12. VERBAL REPORT: CALIFORNIA AIR RESOURCES BOARD (CARB) BOARD MEETING - Report from Governing Board Member Supervisor Barbara Patrick regarding the March, 1998 CARB Board Meeting.
13. EXECUTIVE DIRECTOR/APCO COMMENTS
14. GOVERNING BOARD MEMBER COMMENTS
15. CLOSED SESSION - (NONE)

OTHER BUSINESS

ADJOURN



San Joaquin Valley Unified Air Pollution Control District

Governing Board:

Tony Barba

Chair
Supervisor, Kings County

Kenni Friedman

Vice Chair
Councilmember, City of Modesto

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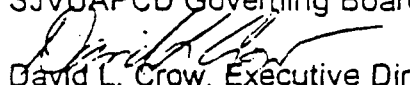
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Southern Region

2700 M Street, Suite #275
Bakersfield, CA 93301
(805) 862-5200
Fax: (805) 862-5201

DATE: April 16, 1998

TO: SJVUAPCD Governing Board

FROM: 
David L. Crow, Executive Director/APCO
Project Coordinator: Seyed Sadredin

RE: APPROVE SUBMITTAL OF DISTRICT PERMIT TO
OPERATE N-2073-1-2 TO THE CALIFORNIA AIR
RESOURCES BOARD AS PART OF THE STATE PLAN
TO IMPLEMENT 40 CFR 60, SUBPART CB

RECOMMENDATION:

Authorize the Executive Director/APCO to submit District Permit to Operate N-2073-1-2 for the Ogden Martin Systems facility to the California Air Resources Board for inclusion in the California State Plan to implement Title 40 Code of Federal Regulations (CFR), Part 60, Subpart Cb (Emission Guidelines and Compliance Schedules for Municipal Waste Combustors). See attached resolution.

BACKGROUND:

Sections 111(d) and 129 of the Federal Clean Air Act (FCAA), as amended in 1990, required the United States Environmental Protection Agency (U.S. EPA) to develop and adopt performance standards and emission guidelines for new and existing Municipal Waste Combustor (MWC) units. The FCAA requires that the emission standards be based upon the maximum achievable control technology (MACT) for the specified criteria air contaminants and hazardous air contaminants which are typically emitted from MWC units.

On December 19, 1995 the U.S. EPA promulgated regulations for large and small MWC units, thus implementing Sections 111(d) and 129 of the FCAA. The regulations included Emission Guidelines (Guidelines) which pertain to existing MWC units that were constructed on or before September 20, 1994 and combust more than 250 tons per day of

municipal solid waste. These Guidelines, however, are not self implementing and require each state to develop a mechanism for enforcing their requirements as a part of a "State Plan" to the U.S. EPA in accordance with 40 CFR 60, Subpart B (Adoption and Submittal of State Plans for Designated Facilities). The State Plan must identify how the affected facilities within the state will comply with the federal requirements outlined in the Guidelines. To obtain U.S. EPA approval, the State Plan must contain enforceable requirements that are deemed to be at least as protective as those specified in the Guidelines.

The Guidelines establish emission limitations for oxides of nitrogen, carbon monoxide, sulfur dioxide, particulate matter, dioxins and furans, cadmium, lead, mercury and hydrochloric acid. Requirements for stack opacity and fugitive emission control on ash handling are also included. There are requirements for operator training and certification. Shift supervisors and facility operators must be certified through the American Society of Mechanical Engineers (ASME) or an equivalent state program. In addition, there are enhanced monitoring and recordkeeping requirements, including submission of semi-annual and annual reports.

There are only three (3) active MWC facilities in the State of California which were constructed before September 20, 1994 and combust more than 250 tons of municipal solid waste per day. Two are located in the South Coast Air Quality Management District and the third is the Ogden Martin Systems (Ogden) facility located at 4040 Fink Road in Stanislaus County, approximately five miles south of the City of Patterson and one mile west of Interstate 5. Ogden Martin Systems operates two (2) parallel MWC units, each capable of combusting up to 400 tons per day of municipal solid waste. The Ogden facility is prohibited from combusting any type of hazardous material or hazardous waste.

Federal regulations require that the public be provided the opportunity to comment on any proposed State Plan. A notice advising the public of this hearing was placed in the Modesto Bee on March 16, 1998, thus commencing a 30 day period for review of the draft State Plan and solicitation of comments.

DISCUSSION:

Normally, the District adopts a rule meeting the federal requirements, as the enforcement vehicle for inclusion in a State Plan. However, in this case, the facility's Permit to Operate will be submitted in lieu of a rule for the following reasons:

- 1) There is only one facility that is affected by the federal regulation. Therefore, a lengthy and labor intensive rule making process is not warranted.

- 2) Using the facility's local permit allows for compliance with the federal requirements while offering the source maximum flexibility.
- 3) The facility already complies with most of the substantive requirements under the Federal Guidelines. Only minor amendments to the existing permit were necessary to comply with the Federal requirements as specified in the Guidelines.
- 4) The California State Attorney General has certified that the local districts have the authority to modify existing operating permits to incorporate the requirements set forth in the Guidelines.

The original Authority to Construct for Ogden facility was issued by the District in August 1986 and the facility began combusting municipal solid waste in September 1988. The initial permit application was subject to a comprehensive review, including compliance with the Best Available Control Technology (BACT) and offset requirements of the district's New Source Review Rule. Consequently, the facility was designed and built with several highly effective control technologies in order to satisfy BACT requirements. A thermal de-NOx system utilizing ammonia injection reduces oxides of nitrogen emissions by 80 percent. Dry lime scrubbers and lime slurry injection reduce sulfur dioxide emissions by 80 percent. A multi-compartment baghouse reduces particulate matter emissions by 99 percent. Additionally, the combustion zone was designed to maintain the combustion gases at a minimum of 1,800 degrees.F for at least one second, thus ensuring that volatile organic compound emissions are reduced by at least 98 percent. The high combustion zone temperature is also very effective in controlling the emissions of carbon monoxide and hazardous organic compounds such as dioxins and furans.

The original application review also included a comprehensive health risk assessment (HRA) to determine if there could be a significant health impact to any persons residing or working in the vicinity. The HRA addressed the potential health effects from exposure to conservatively estimated quantities of 14 heavy metals such as cadmium, chromium, lead and mercury, as well as hazardous organic compounds such as dioxins and furans, polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs). Based upon this analysis, the health impact over the 70-year life of a hypothetical maximally exposed individual was determined to be less than significant.

The local permits contain adequate provisions for compliance verification which meet or exceed Federal requirements. Continuous emission monitoring systems are used to demonstrate ongoing compliance with oxides of nitrogen, carbon monoxide, sulfur dioxide and opacity emission limitations. Annual source testing is required for volatile organic compounds, particulate matter, dioxins and furans, PAHs, PCBs and heavy metals. All source test results are compared to the maximum emission concentrations

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specified on the Permit to Operate and in the HRA to ensure that there is no increase in the calculated health risk.

Due to the use of highly effective control technologies which were approved as BACT in 1986, the current permitted emission limitations for the Ogden Martin Systems facility are already below all of the emission limitations specified in the Guidelines, with the exception of carbon monoxide and mercury. Although the current permit limitation for carbon monoxide is 400 parts per million by volume, the actual carbon monoxide emission rate at the facility is below the 100 parts per million by volume level specified in the Guidelines. The actual mercury emission rate exceeds the level specified in the Guidelines and thus the facility is required to retrofit with additional control equipment to reduce mercury emissions either to 0.080 milligrams per dry standard cubic meter or achieve a minimum removal efficiency of 85%, whichever is less stringent. The existing permit was modified to require compliance with the reduced mercury emission limitation on or before December 19, 2000. The local permit includes specific increments of progress for the design, approval and installation of any additional control equipment necessary to achieve compliance with all new emission limitations on the permit.

The U.S. EPA has six (6) months to review and approve or disapprove a State Plan. If the Federal Plan is promulgated prior to State Plan approval, the Ogden Martin Systems facility will be subject to compliance with the Federal Plan. However, this is considered to be an interim action because the Federal Plan contains provisions to exempt any MWC unit once it is covered by an approved State Plan.

FISCAL IMPACT

No fiscal impact to the District is expected as a result of this action.

Attachments:

- Adoption Resolution (3 pages)*
- Permit to Operate N-2073-1-2 issued to Ogden Martin Systems (9 pages)*
- Notice of Public Hearing (1 page)*
- California State Plan for Municipal Waste Combustors (DRAFT) (48 pages)*

BEFORE THE GOVERNING BOARD OF THE
SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL DISTRICT

IN THE MATTER OF:

RESOLUTION NO. 98-04-12

APPROVE SUBMITTAL OF DISTRICT
PERMIT TO OPERATE N-2073-1-2 TO
THE CALIFORNIA AIR RESOURCES
BOARD AS PART OF THE STATE PLAN
TO IMPLEMENT 40 CFR 60, SUBPART
CB

RECEIVED

APR 20 1998

SAN JOAQUIN VALLEY
UNIFIED A.P.C.D.
NO. REGION

WHEREAS, the San Joaquin Valley Unified Air Pollution Control District ("District") is a duly constituted unified air pollution control district, as provided in California Health and Safety Code sections 40150 to 40161;

WHEREAS, Sections 111(d) and 129 of the Federal Clean Air Act (FCAA), as amended in 1990, required the United States Environmental Protection Agency (U.S. EPA) to develop and adopt performance standards and emission guidelines for new and existing Municipal Waste Combustor (MWC) units;

WHEREAS, On December 19, 1995, the U.S. EPA as required by Sections 111(d) and 129 of the FCAA promulgated Emission Guidelines (Guidelines) which pertain to existing MWC units that were constructed on or before September 20, 1994 and combust more than 250 tons per day of municipal solid waste.

WHEREAS, the Guidelines are not self implementing and require each state to develop a mechanism for enforcing their requirements as a part of a "State Plan" to the U.S. EPA in accordance with 40 CFR 60, Subpart B (Adoption and Submittal of State Plans for Designated Facilities);

WHEREAS, the District is committed to comply with the requirements of the FCAAA;

WHEREAS, the District has the authority to modify existing operating permits to incorporate the requirements set forth in the Guidelines;

1 **WHEREAS**, the Ogden Martin Systems MWC facility located at 4040 Fink
2 Road in Stanislaus County is subject to the Guidelines;

3 **WHEREAS**, the Permit to Operate for Ogden Martin Systems MWC
4 facility contains adequate conditions to assure compliance with all applicable
5 requirements;

6 **WHEREAS**, the State Plan must be approved by the District and then
7 submitted to the Air Resources Board ("ARB") for subsequent state transmittal to the
8 USEPA; and

9 **WHEREAS**, a public hearing for the adoption of the Plan was duly
10 noticed and held on April 16, 1998;

11 **WHEREAS**, this Board concurs with the recommendations of its staff;

12 **NOW, THEREFORE**, be it resolved as follows:

13 1. The Governing Board hereby Authorizes the Executive
14 Director/APCO to submit District Permit to Operate N-2073-1-2 for the Ogden Martin
15 Systems facility to the California Air Resources Board for inclusion in the California
16 State Plan to implement Title 40 Code of Federal Regulations (CFR), Part 60,
17 Subpart Cb (Emission Guidelines and Compliance Schedules for Municipal Waste
18 Combustors). A copy of said Permit to Operate is attached hereto and incorporated
19 herein as Exhibit "A."

20 2. The Governing Board hereby finds, based on the evidence and
21 information presented at the hearing upon which its decision is based, all notices
22 required to be given by law have been duly given in accordance with Health and
23 Safety Code section 40725, and the Board has allowed public testimony in
24 accordance with Health and Safety Code section 40726.

25 3. The Governing Board of the District requests that the ARB
26 authorize its Executive Officer to District Permit to Operate N-2073-1-2, in the State
27 Plan for submittal to the USEPA.

28 //

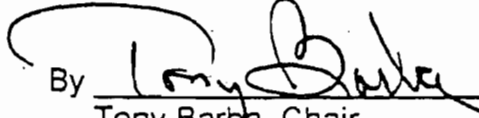
1 THE FOREGOING was passed and adopted by the following vote of the
2 Governing Board of the San Joaquin Valley Unified Air Pollution Control District this
3 16th day of April, 1998, to wit:

4 AYES: Boardmembers: Sanders, Lujan, Hanhart McIntyre,
5 O'Banion, Blom, Cabral, Friedman and Barba.

6 NOES: None.

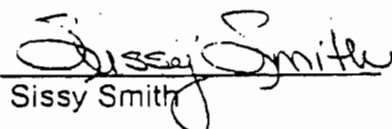
7
8 ABSENT: Boardmembers: Patrick, Retherford and Perch.

9
10 SAN JOAQUIN VALLEY UNIFIED
11 AIR POLLUTION CONTROL DISTRICT

12 By 

13 Tony Barba, Chair
Governing Board

14 ATTEST:
15 Clerk to the Governing Board

16
17 By 

18 Sissy Smith

19 reso.doc
20
21
22
23
24
25
26
27
28

South Coast Air Quality Management District



South Coast Air Quality Management District

21865 E. Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • <http://www.aqmd.gov>

April 10, 1998

Richard Boyd
Air Resources Engineer
California Air Resources Board
2020 L Street
Sacramento, CA 95812

Subject: Public Response Regarding the Proposed Public Hearing Notice for Adoption of a State Plan to Implement the Code of Federal Regulations Emission Guidelines for Large Municipal Waste Combustion Units

Dear Mr. Boyd:

On February 19, 1998 the AQMD noticed in five local newspapers throughout the District an opportunity to hold a public hearing on Thursday March 26, 1998 as part of a proposed State Plan to implement the Code of Federal Regulations Emissions Guidelines for large municipal waste combustion units, provided that there was public interest in holding a hearing.

Notice was given that anyone interested in attending this public hearing should provide a written request to the AQMD on or before Thursday March 19, 1998. Notice was also given that anyone interested in providing written comment should do so on or before Thursday March 19, 1998.

This letter is to inform you that the AQMD received no written requests indicating interest in attending a public hearing; the AQMD received no written comments regarding the proposed public hearing; and the AQMD received no comments, written or verbal, regarding the adoption of the State Plan to implement the Code of Federal Regulations Emission Guidelines for large municipal waste combustion units.

If you have any questions please call me at (909) 396-2684.

Sincerely,

Charles Tupac
Senior Air Quality Engineer
Public Facilities Unit

CDT:RL

\\MSW\\Letter\\rboyd



Air Resources Board



Peter M. Rooney
Secretary for
Environmental
Protection

John D. Dunlap, III, Chairman
P.O. Box 2815 · 2020 L Street · Sacramento, California 95812 · www.arb.ca.gov

Pete Wilson
Governor

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SEP 20 2001

September 23, 1998

98 SEP 29 AM 11:32

SCAQM
EXECUTIVE OFFICE

Ms. Felicia Marcus
BUREAU OF AIR REGULATION
Regional Administrator
United States Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

From: Office of the Executive Officer	Date: 9-29-98
To: Cary → Larry Bowen	5/14/99
Cy: yours now!	😊
For your action by:	For your info: ☒ handling ☒
Draft response for:	signature, etc.

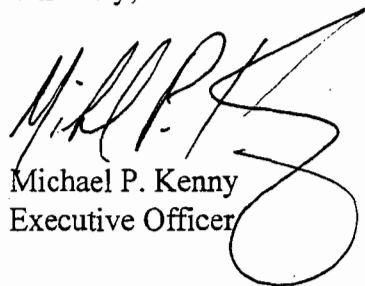
Dear Ms. Marcus:

Enclosed is California's submittal of the State Plan to implement the requirements of 40 CFR Part 60, Subpart Cb--Emission Guidelines and Compliance Times for Municipal Waste Combustors. We were required to develop the State Plan pursuant to sections 111(d) and 129 of the federal Clean Air Act.

This State Plan represents the combined efforts of the San Joaquin Valley Unified Air Pollution Control District, the South Coast Air Quality Management District, and the California Air Resources Board. We also worked very closely with Ms. Patricia Bowlin of your staff throughout the development of the State Plan and have found her assistance to be extremely valuable. We would also like to commend the efforts of Mr. Anthony Mendes of the San Joaquin Valley Unified Air Pollution Control District and Mr. Ronald Lem and Mr. Brian Choe of the South Coast Air Quality Management District for their work on this plan.

If you have any questions, please call me at (916) 445-4383, or you may have your staff contact Mr. Richard Boyd at (916) 327-5983.

Sincerely,


Michael P. Kenny
Executive Officer

Enclosure

cc: See next page.

Ms. Felicia Marcus
September 23, 1998
Page 2

cc: Mr. Richard Boyd
Air Resources Engineer
Stationary Source Division

Ms. Patricia Bowlin
Environmental Engineer
U.S. EPA, Region IX
Air Division (Air-4)
75 Hawthorne Street
San Francisco, California 94105

Mr. David L. Crow
Air Pollution Control Officer
San Joaquin Valley Unified Air Pollution Control District
1999 Tuolumne, Suite 200
Fresno, California 93721

Mr. Anthony Mendes
Permit Services Manager
San Joaquin Valley Unified Air Pollution Control District
4230 Kiernan Avenue, Suite 130
Modesto, California 95356

Barry Wallerstein, Ph.D.
Acting Executive Officer
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, California 91765

Mr. Ronald Lem
Air Quality Engineer
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, California 91765

Mr. Brian Choe
Air Quality Engineer
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, California 91765

California State Plan for Municipal Waste Combustors

**Stationary Source Division
Emissions Assessment Branch**

September 1998

**State of California
California Environmental Protection Agency**

**Air Resources Board
Stationary Source Division
P.O. Box 2815
Sacramento, California 95812-2815**

**California State Plan for
Municipal Waste Combustors**

September 1998

To obtain this document in an alternative format, please contact the Air Resources Board ADA Coordinator at (916) 322-4504, TDD (916) 324-9531, or (800) 700-8326 for TDD calls from outside the Sacramento area.

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ATTACHMENTS

Attachment A - California State Attorney General's Certification of Legal Authority

Attachment B - District Operating Permits

Attachment C - Municipal Waste Combustor Facility and Emission Inventories

Attachment D - Public Participation

Attachment E - Demonstration of Equivalency Between Standardization to 12% CO₂ vs 7% O₂

Attachment F - Justification of Alternate Increments of Progress

State of California
California Environmental Protection Agency
Air Resources Board

**California State Plan for
Municipal Waste Combustors**

EXECUTIVE SUMMARY

On December 19, 1995, the United States Environmental Protection Agency (U.S. EPA) promulgated regulations for Municipal Waste Combustors (MWC) implementing sections 111 and 129 of the federal Clean Air Act (FCAA). The regulation, entitled "Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Municipal Waste Combustors" includes New Source Performance Standards (NSPS) for new municipal waste combustors and Emission Guidelines (Guidelines) for existing municipal waste combustors. U.S. EPA issued a final rule amending the regulation on August 25, 1997. For existing MWC units (those constructed on or before September 20, 1994), the regulation requires that each state develop and submit a "State Plan" to the U.S. EPA which identifies how the federal requirements outlined in the Guidelines will be satisfied. This document, developed by the California Air Resources Board (ARB) in cooperation with the affected air pollution control and air quality management districts (districts), represents California's State Plan to implement the Emission Guidelines.

1. What do the federal regulations require?

The regulations (Title 40, Code of Federal Regulations, Part 60, Subpart Cb and Subpart Eb) affect new and existing MWC units with capacities to combust more than 250 tons of municipal solid waste (MSW) per day. Units with capacities less than 250 tons per day are not addressed by the regulations. It is important to understand that these regulations affect individual MWC units and not MWC facilities. MWC facilities with multiple units must ensure that each unit complies with the requirements independently of any other units.

The regulation establishes emission limits for particulate matter (PM), cadmium (Cd), lead (Pb), mercury (Hg), sulfur dioxide (SO₂), hydrochloric acid (HCl), dioxins and furans, carbon monoxide (CO), and oxides of nitrogen (NO_x), and includes requirements for opacity and ash handling. It also promotes good combustion practices, and includes requirements for testing, monitoring, recordkeeping and reporting, and operator training and certification.

2. Why were the federal regulations developed?

The U.S. EPA was required under sections 111 and 129 of the FCAA, as amended in 1990, to develop and adopt performance standards and Guidelines for MWC units based on maximum achievable control technology (MACT) to address public concerns about MWC's and other solid waste combustion units. According to U.S. EPA, much of the public concern from MWC emissions focused on the perceived level of dioxin and furan emissions as well as the tendency for many MWC units to be located in federal non-attainment areas. Emissions from MWC sources also contain other pollutants which can have adverse effects on the public health. U.S. EPA believes that the NSPS and Guidelines will significantly reduce emissions from MWCs nationwide.

3. How many MWC's in California will be affected by the Guidelines?

In California, there are three active MWC facilities that will be affected by the Guidelines. Combined, these facilities represent six MWC units, each of which has the capacity to combust greater than 250 tons of MSW per day. Two of the facilities are located in the South Coast Air Quality Management District (SCAQMD) and the third is located in the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD). These facilities are currently controlled employing state-of-the-art air pollution control technology and require only minor upgrades to their control systems in order to ensure continuous compliance with the new emission standards. Additionally, all three facilities will need to satisfy operator training and certification requirements and the recordkeeping and reporting requirements. The facilities have already begun to address these issues. None of the facilities will be affected by the NSPS; however, new MWC facilities that are constructed in California will be required to meet the requirements of the NSPS as well as other district requirements.

4. What is the purpose of the State Plan?

The purpose of the State Plan is to implement the requirements of the Guidelines for existing MWC units specified in 40 CFR Part 60 Subpart Cb (Emission Guidelines and Compliance Times for Existing MWCs that are Constructed on or Before September 20, 1994). Additionally, sections 111 and 129 of the FCAA and the Guidelines require the ARB to submit an approvable State Plan to the U.S. EPA Regional Administrator. A state plan is not required for new MWC facilities, or facilities constructed after September 20, 1994, because they are subject to the NSPS.

5. What is contained in the State Plan?

The major elements of the State Plan, as outlined in 40 CFR Part 60 Subpart B (Adoption and Submittal of State Plans for Designated Facilities), are:

- ▶ a demonstration of the state's legal authority to carry out the State Plan;
- ▶ identification of an enforceable mechanism for implementing the Guidelines;
- ▶ an inventory of applicable sources and emissions from those sources;
- ▶ emission standards that are at least as health protective as those in the Guidelines;
- ▶ compliance schedules;
- ▶ testing, monitoring, and recordkeeping and reporting requirements;
- ▶ opportunity for public participation on the State Plan; and,
- ▶ provisions for progress reports to U.S. EPA.

The key component of the State Plan is the enforceable mechanism which is developed by the districts to implement the State Plan. In California, the affected districts have decided to use operating permits that have been modified to reflect the requirements of the Guidelines as the enforceable mechanism. A more detailed discussion of each element is given in Section III.

I. INTRODUCTION

This document is California's "State Plan" for implementing and enforcing the requirements of the Emission Guidelines (Guidelines) for municipal waste combustors (MWCs) as required under the federal Clean Air Act (FCAA) as amended in 1990. The United States Environmental Protection Agency (U.S. EPA) was required under sections 111 and 129 of the FCAA to develop and adopt performance standards and emission guidelines for MWCs based on maximum achievable control technology (MACT). The performance standards and guidelines are intended to address public concerns about emissions from MWCs.

This regulation, entitled "Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Municipal Waste Combustors" codified in Title 40 Code Of Federal Regulations (CFR), Part 60, Subpart Cb and Subpart Eb, was promulgated by the U.S. EPA on December 19, 1995, and contains New Source Performance Standards (NSPS) for new MWC units and Emission Guidelines (Guidelines) for existing MWC units. The NSPS and Guidelines are based on the U.S. EPA Administrator's determination that MWCs cause or contribute significantly to air pollution that may be reasonably anticipated to endanger public health or welfare (60 Federal Register 65387, December 19, 1995). In addition to the requirements applicable to each MWC unit, the regulation also requires that each state develop and submit for U.S. EPA approval a section 111/129 State Plan to implement and enforce the requirements of the Guidelines for existing MWC units. Pursuant to section 129 and Title 40 CFR Part 60, Subpart B (Adoption and Submittal of State Plans for Designated Facilities), the plan is to include a listing of affected facilities, an emissions inventory, emission standards at least as health protective as those given in the Guidelines, compliance times, procedures used for determining compliance with the emissions standards, a demonstration of legal authority to carry out the state plan, a record of public participation, a legally enforceable mechanism for implementing the Guidelines, provisions for progress reports to U.S. EPA, and legally enforceable increments of progress towards compliance.

As a result of these regulations, the California Air Resources Board (ARB) is submitting this document as the State Plan for MWCs in California. This State Plan is organized to present an overview of the requirements of the Guidelines. It includes a discussion of how California has satisfied the required elements of the State Plan, and contains a series of attachments which present the documentation of those elements, where appropriate. The attachments are organized as follows:

Attachment A: This section contains the California State Attorney General's certification that the laws of the State of California provide adequate authority to implement and enforce the requirements of the Emission Guidelines. Additionally, a listing of district rules applicable to permitting from the affected districts is provided.

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- Attachment B: This section contains copies of the district operating permits for each MWC unit at each facility. The permits have been modified so that the facilities must comply with the requirements of the Emission Guidelines.
- Attachment C: This section presents an inventory of all the MWC facilities in California to which the Guidelines apply. It gives the physical location of each facility, summarizes the air pollution control equipment that is used, and gives the operational status. It also includes an inventory of emissions for the designated pollutants.
- Attachment D: This section documents the opportunities the public has had to provide comments.
- Attachment E: This section demonstrates the equivalency between standardizing emission rates to 12% CO₂ or 7% O₂.
- Attachment F: This section contains the justification for the alternate increments of progress used by one of the affected facilities.

II. OVERVIEW OF FEDERAL REQUIREMENTS

The NSPS and Guidelines apply to MWC units with capacities to combust more than 250 tons of municipal solid waste (MSW) per day. MWC units constructed after September 20, 1994, are considered new units and must satisfy the requirements of the NSPS. Units constructed on or before September 20, 1994, are considered existing units and must satisfy the requirements of the Guidelines which are covered by this State Plan.

The NSPS and Guidelines are similar in structure, but the NSPS contains stricter emission limits and includes siting requirements for new MWC's. Additionally, the NSPS establishes requirements for sources and can be adopted or referenced by each air pollution control or air quality management district (district). These districts, however, do not contain direct requirements for existing sources. Instead, sections 111 and 112 of the Guidelines require states, and in California, the ARB and affected districts, to submit a State Plan to the U.S. EPA Regional Administrator.

The Guidelines include emission limits for nine pollutants, as well as requirements for operator training and certification, recordkeeping, monitoring, and facility operation. Emission limits for particulate matter (PM), cadmium (Cd), lead (Pb), mercury (Hg), sulfur dioxide (SO₂), hydrochloric acid (HCl), dioxins and furans, carbon monoxide (CO), and oxides of nitrogen (NO_x) and requirements for stack opacity and ash handling are established. Total emissions at a facility are not aggregated to determine compliance with emission standards; therefore, if a

MWC facility has more than one MWC unit, each unit at the facility is required to satisfy the requirements of the Guidelines independently of any other units at the facility.

U.S. EPA has also included requirements for the training and certification of main facility operators and shift supervisors. Facility operators and shift supervisors must be certified as MWC operators through the American Society of Mechanical Engineers (ASME) or an equivalent state program which emphasizes the importance of good combustion practices. In California, one equivalent program is the ASME program, QRO-1-1994, "Standard for the Qualification of Resource Recovery Facility Operators" which the affected facilities will be using to satisfy the operator training and certification requirements.

The ARB has identified three operating MWC facilities which are affected by the Guidelines (ARB, 1991; IWSA, 1996). Two of the facilities are located in the South Coast Air Quality Management District (SCAQMD) and the third is located in the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD). The three facilities account for a total of six MWC units, each with a capacity greater than 250 tons per day.

III. STATE PLAN REQUIREMENTS

This section discusses the elements required in the State Plan pursuant to 40 CFR Part 60 Subpart B and Subpart Cb and shows how California has satisfied those requirements. Under each area, the appropriate references in Subpart B and Subpart Cb have been provided.

1. Demonstration of Legal Authority (Ref. 60.26(a) of Subpart B)

Each state is required to demonstrate that it has the necessary legislative framework in place that shows that the State and the districts have the authority to implement and enforce the requirements of the Guidelines. The California Legislature has already established this framework in the California Health and Safety Code (HSC). Pursuant to the HSC, the districts have the primary responsibility over stationary sources. The HSC gives them the authority to develop and implement rules or impose permit conditions to control emissions from stationary sources necessary to protect the public health.

Attachment A presents the letter of certification from the California State Attorney General certifying that the laws of the State of California and the districts provide adequate authority to carry out the Section 111/129 State Plan to implement and enforce the requirements of the Guidelines for municipal waste combustors. Additionally, a listing of the applicable rules for affected each district is provided.

2. Identification of Enforceable Mechanism
(Ref. 60.24(a) of Subpart B)

Having demonstrated adequate legal authority to carry out the State Plan, each district is required to identify the enforceable mechanism that will be used to implement the Guidelines. In California, the affected districts have four mechanisms that they can utilize: a U.S. EPA adopted federal plan, a district rule, a federal Title V operating permit, or a modified district operating permit.

a. Districts Allow U.S. EPA to Adopt a Federal Plan

Each district has the option of not taking any action to ensure compliance with the Guidelines. Under this scenario, the regulation requires U.S. EPA to adopt and implement a federal plan in lieu of a state plan. This federal plan would most likely be the same for all sources nationwide and would limit each district's ability to address source-specific needs. The affected districts did not select this option.

b. Adoption of a District Rule

The districts have the option of adopting a district rule that contains requirements at least as protective as those in the Guidelines. Unlike the NSPS, the Guidelines cannot be simply incorporated into the district's rulebooks. The districts are required to conduct their normal rulemaking process and incorporate the requirements into a rule format. Since the rulemaking process is resource intensive, the affected districts decided that the development of a rule for MWCs would not be an appropriate means to satisfy the requirements due to the small number of affected facilities.

c. Federal Title V Permits

Sources that are subject to section 111 of the FCAA are also subject to Part 70, which requires these sources to apply for a federal Title V permit within one year of approval of the State Plan. However, the U.S. EPA requires that the enforceable mechanism must be in effect at the time the State Plan is submitted for approval. Although the California State Attorney General has certified that the districts have the authority to issue Title V permits as the enforceable mechanism, both the SJVUAPCD and the SCAQMD have determined that Title V permits could not be finalized in timely manner. Each facility, however, is still required to submit its Title V application to the district within one year after U.S. EPA approval of the State Plan.

d. District Operating Permits

The MWCs in California are issued a district operating permit and the California State Attorney General has certified that the districts have the authority to modify these permits and incorporate the requirements presented in the Guidelines. Considering the number of MWC sources, this approach is the most expedient. The SJVUAPCD and the SCAQMD, with the

support of their respective facilities, decided to use the district facility operating permits as the enforceable mechanism. Using existing permitting and nuisance rules, the district operating permits have been modified to contain emission limits at least as protective as those stated in the Guidelines and the required elements for testing, monitoring, recordkeeping, reporting, compliance schedules and operator training and certification. Attachment B contains copies of the district operating permits as the enforceable mechanism for each of these facilities.

3. Facility and Emission Inventories
(Ref. 60.25(a) and 60.25(c) of Subpart B)

An inventory of the MWCs and their emissions of the designated pollutants is required for the State Plan. The ARB compiled a listing of the MWCs using information obtained from the districts, previous ARB surveys, and the 1996 Integrated Waste Services Association (IWSA) directory. This inventory listing, presented in Table C-1 of Attachment C, includes the location of each facility, the capacity of each MWC unit in tons per day (tpd), and a summary of the installed control equipment.

The ARB has also compiled a summary of emissions data from each facility based on the most recent source test reports on file at the districts. The summary, presented in Table C-2 of Attachment C, compares the emission rates from the source tests to the emission limits given in the Guidelines. Table C-3 presents the annual emission rate in tons per year. For each facility, the equivalent annual emissions based on the U.S. EPA emission limits were calculated and compared to the emissions each MWC unit emitted.

4. Emission Standards
(Ref. 60.24(b)(1) of Subpart B and 60.33b, 60.34b, 60.35b, 60.36b, and 60.37b of Subpart Cb)

The State Plan is required to include emission standards that are at least as protective as the Guidelines. This allows the districts to consider more stringent limits should they be determined to be necessary to protect the public health. In addition to the emission limits for the nine designated pollutants, the State Plan must include provisions for good combustion practices and the training and certification of MWC operators. The affected districts have complied with these requirements by incorporating the new emission standards and operation and training requirements as presented in the Guidelines into the operating permits for each MWC unit (see Attachment B).

5. Test Methods, Monitoring, Recordkeeping, and Reporting Requirements
(Ref. 60.24(b)(2) and 60.25 of Subpart B and 60.38b and 60.39b of Subpart Cb)

In addition to the emission standards, the SJVUAPCD and the SCAQMD have modified the operating permits of their MWCs to contain the required elements for testing, monitoring, recordkeeping, and reporting. Specifically, periodic performance tests (source tests) and continuous emissions monitoring systems (CEMS) are required and the sources must maintain

records for at least five years. The districts do have the option of selecting alternative test methods provided that the district demonstrates that they are equivalent to those specified in 40 CFR Part 60, Appendix A. At this time, neither of the affected districts is seeking the use of alternative test methods; however, SJVUAPCD is requiring the standardization of emission rates to 12% CO₂ (carbon dioxide) as opposed to 7% O₂ (oxygen). In accordance with section 60.58b of Subpart Eb, referenced by section 60.38b of Subpart Cb, the relationship between O₂ and CO₂ can be established during a performance test. This demonstration is provided in Attachment E.

Additionally, each state is required to submit annual reports to the U.S. EPA on each facility's progress of complying with the Guidelines. At a minimum, this annual report is to include the compliance status of a facility, a listing of any enforcement actions, the status of any applicable increments of progress, and any updated facility or emissions inventory information compiled from source tests. Each source must maintain each annual report for five years as a part of their overall recordkeeping and make them available to the district, ARB, and U.S. EPA representatives upon request. Because of the small number of affected facilities, it is reasonable to allow each facility to select a reporting format they feel is necessary to convey the required information (e.g. a letter or short report with supporting documentation). The ARB suggests that each source submit their annual reports to their district, ARB, and U.S. EPA Region IX simultaneously.

6. Compliance Schedules and Increments of Progress

(Ref. 60.21(h), 60.24(a), and 60.24(e)(1) of Subpart B and 60.39b of Subpart Cb)

Districts using a compliance schedule of more than one year for any provision contained in a MWC operating permit are required to have that provision satisfied by three years after U.S. EPA's approval of the State Plan or December 19, 2000, whichever is earlier. Facilities are also required to show measurable increments of progress towards compliance. Pursuant to Section 60.21(h) of Subpart B, those increments must include: a final control plan or description of the work to be done; dates for awarding contracts for any construction or related purchases; dates for initiating and completing the construction or installation of control equipment or process changes; and, a final demonstration of compliance. Two MWC facilities have identified the need to make process changes they feel are necessary to ensure continuous compliance with the emission standards. A compliance schedule with measurable increments of progress, as specified in Section 60.21(h) of Subpart B, has been included in the operating permits for these facilities. Additionally, since one of the facilities has requested a increments of progress significantly different than U.S. EPA's preferences, this facility has provided written justification for its alternate schedule. This justification is provided in Attachment F. Increments of progress are not required for schedules that require final compliance within one year of U.S. EPA approval of the State Plan.

7. Public Participation
(Ref. 60.23(f)(1) and 60.23(f)(2) of Subpart B)

Each state is required to present documentation that the public had an opportunity for public participation in developing the state plan. Public participation can be in the form of a public meeting or other alternative procedures approved by U.S. EPA. To satisfy the public participation requirements, the affected districts used their normal public notification procedures to inform the public of the State Plan. This included placing public notices in newspapers that serve residents around each facility to alert them of the State Plan, informing the public where a copy of the State Plan can be obtained, providing an address to forward comments, and the procedures for the public to request a hearing. A public hearing was not requested in the SCAQMD; however, the SJVUAPCD held a public meeting on this item in conjunction with their regular board meeting. No public testimony or comments were received by either district. Records of public participation are compiled in Attachment D.

IV. IMPLEMENTATION OF THE EMISSION GUIDELINES

The two affected districts will have the responsibility of implementing the State Plan. Activities that the districts must pursue to implement and enforce the Guidelines include: ensuring that the two sources that require extended compliance schedules complete each increment of progress by deadlines specified in the operating permits; ensuring that the sources complete the operating training and certification requirements, including preparation of the site-specific training manual; ensuring that there is an annual review of the site-specific training manual; ensuring that the sources remain in compliance with the emission standards and other requirements of the Guidelines; and, ensuring that any required reports are submitted to U.S. EPA by the appropriate deadlines.

REFERENCES

ARB, 1991. Air Pollution Control at Resource Recovery Facilities: 1991 Update, California Air Resources Board, 1991.

IWSA, 1996. "The 1996 IWSA Municipal Waste Combustion Directory of United States Facilities," Integrated Waste Services Association, May 1996.

ATTACHMENT A
DEMONSTRATION OF LEGAL AUTHORITY

**California State Attorney General's
Certification of Legal Authority**



Best Available Copy

State of California
Office of the Attorney General
Daniel E. Lungren
Attorney General

February 3, 1997

Ms. Felicia Marcus
Regional Administrator
Region IX, U.S. Environmental
Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Attention: David P. Howekamp

Dear Ms. Marcus and Mr. Howekamp:

You requested that the Office of the Attorney General of the State of California certify that state law contains certain necessary provisions under federal law. At my direction and under my control, this office has investigated those issues at the request of the California Integrated Waste Management Board.

I hereby certify pursuant to my authority as Attorney General of the State of California and in accordance with sections 111(d) and 129 of the Federal Clean Air Act, as amended November 15, 1990 (42 U.S.C. §§7401-7671q) (hereinafter "FCAA"), and Subpart B of Part 60, 40 Code of Federal Regulations (hereinafter "CFR"), that in my opinion the laws of California provide adequate authority to (1) establish enforceable permit conditions applicable to the designated facilities and pollutants identified under the Emission Guidelines for municipal waste combustors promulgated by the U.S. Environmental Protection Agency pursuant to sections 111(d) and 129 of the FCAA on December 19, 1995 (60 Fed. Reg. 65387), (2) adopt compliance schedules applicable to the designated facilities, and (3) implement and enforce the relevant laws, regulations, standards and compliance schedules. The specific authorities provided are contained in statutes and regulations which are or will be fully effective by the time the State plan is approved, and include those identified below and those incorporated by reference from the enclosed letter dated November 12, 1993, addressing California's authority to implement Title V (Operating Permits) of the FCAA. All statutory references are to the California Health and Safety Code (hereinafter, "HSC") unless otherwise indicated.

I. ESTABLISHMENT OF ENFORCEABLE PERMIT CONDITIONS.

State law provides authority for California's 34 air pollution control and air quality management districts (hereinafter, "districts") to issue operating permits to the designated facilities and to incorporate into permits and assure compliance with each applicable requirement of the FCAA. State law also provides for prohibition of permit issuance to facilities that do not comply with applicable requirements. **Applicable requirements include the requirements of emission guidelines promulgated under FCAA sections 111(d) and 129. Applicable requirements also include district prohibitions against discharge of air contaminants under Health and Safety Code section 41700.** These authorities are cited in the enclosed November 12, 1993 letter, pages 1-3, "Authority to Issue Permits," page 7, "Incorporation of All Applicable Requirements into Permit," and as additionally specified below.

Additional Federal Authority: FCAA §§111(b)(1)(A), 111(d), 129, 42 U.S.C. §§7411(b)(1)(A), 7411(d), 7429; 40 CFR §§60.33b, 60.34b, 60.35b, 60.36b, 60.37b, 70.2, 70.3(a), 70.3(b).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §40506.1 (Added by Stats. 1992, Ch. 371), HSC §40507 (Added by Stats. 1976, Ch. 324, amended by Stats. 1993, Ch. 1166 (AB 2288)), HSC §40702 (Stats. 1975, Ch. 957), HSC §41700 (Stats. 1975, Ch. 957), HSC §41701 (Stats. 1975, Ch. 957, amended by Stats. 1977, Ch. 644), HSC §42300.1 (Added by Stats. 1992, Ch. 1126 (AB 3790)), HSC §42301.1 (Added by Stats. 1988, Ch. 1568), HSC §42301.6 (Added by Stats. 1988, Ch. 1589, last amended by Stats. 1991, Ch. 1183 (AB 928)), HSC §42315 (Added by Stats. 1986, Ch. 1134, amended by Gov. Reorg. Plan No. 1 of 1991, §140, effective July 17, 1991), HSC §42350 (Stats. 1975, Ch. 957, last amended by Stats. 1993, Ch. 1166 (AB 2288)), HSC §42353 (Stats. 1975, Ch. 957), HSC §42358 (Stats. 1975, Ch. 957).

II. ADOPTION OF COMPLIANCE SCHEDULES.

State law provides authority for the districts to issue permits to sources that are not in compliance with applicable requirements, and to include compliance schedules in permits to bring sources into compliance through adoption of compliance schedules applicable to the designated facilities and pollutants. These authorities are cited in the enclosed November 12, 1993 letter, pages 3-4, "Authority to Issue Permits to Noncomplying Sources" and as additionally specified below.

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Additional Federal Authority: FCAA §§129(b)(2), 129(d)-(f), 42 U.S.C. §§7429(b)(2), 7429(d)-(f); 40 CFR §§60.35b, 60.38b, 60.39b.

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §40702 (Stats. 1975, Ch. 957), HSC §41702 (Stats. 1975, Ch. 957), HSC §41703 (Stats. 1975, Ch. 957, amended by Stats. 1979, Ch. 239, effective July 10, 1979), HSC §42301.1 (Added by Stats. 1988, Ch. 1568), HSC §42301.5 (Added by Stats. 1981, Ch. 147, amended by Stats. 1987, Ch. 602), HSC §42315 (Added by Stats. 1986, Ch. 1134, amended by Gov. Reorg. Plan No. 1 of 1991, §140, eff. July 17, 1991), HSC §42351.5 (Added by Stats. 1976, Ch. 1113, last amended by Stats. 1990, Ch. 150 (AB 3124)), HSC §42353 (Stats. 1975, Ch. 957), HSC §42357 (Stats. 1975, Ch. 957), HSC §42358 (Stats. 1975, Ch. 957).

III. ENFORCEMENT OF THE RELEVANT LAWS, REGULATIONS, STANDARDS, AND COMPLIANCE SCHEDULES.

State law provides civil and criminal enforcement authority, including authority to seek injunctive relief, as cited in the enclosed November 12, 1993 letter, page 11, "Enforcement of Permits Program Requirements" and as additionally specified below.

Additional Federal Authority: FCAA §§111(d), 129(b)(2), 129(e), 129(h), 42 U.S.C. 7411(d), 7429(b)(2), 7429(e), 7429(h); 40 CFR §60.39b.

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §39659 (Added by Stats. 1992, Ch. 1161 (AB 2728)), HSC §42300.1 (Added by Stats. 1992, Ch. 1126 (AB 3790)), HSC §42301 (Stats. 1975, Ch. 957, last amended by Stats. 1994, Ch. 727 (AB 3119)), HSC §42301.7 (Added by Stats. 1988, Ch. 1589), HSC §42356 (Stats. 1975, Ch. 957), HSC §42362 (Stats. 1975, Ch. 957).

IV. AUTHORITY TO OBTAIN INFORMATION.

State law provides authority to incorporate monitoring, recordkeeping, reporting, and compliance certification requirements into operating permits consistent with 40 CFR §70.6 and provides authority to request information from regulated sources regarding their compliance status as cited in the enclosed November 12, 1993 letter, page 6, "Monitoring, Recordkeeping, and Reporting," and as additionally specified below.

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Additional Federal Authority: FCAA §114, 129(c), 42 U.S.C. §7414, 7429(c); 40 CFR §60.39b.

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §39600 (Stats. 1975, Ch. 957), HSC §39605 (Stats. 1975, Ch. 957, last amended by Stats. 1981, Ch. 700, effective Sept. 23, 1981), HSC §39607 (Stats. 1975, Ch. 957, last amended by Stats. 1995, Ch. 713 (AB 1027)), HSC §39659 (Added by Stats. 1992, Ch. 1161 (AB 2728)), HSC §42301.3 (Added by Stats. 1993, Ch. 1180, amended by Stats. 1994, Ch. 720 (AB 2090)), HSC §42303.5 (Added by Stats. 1976, Ch. 1063, effective Sept. 21, 1976), HSC §42336 (Added by Stats. 1991, Ch. 1209 (AB 158)), HSC §44341 (Added by Stats. 1987, Ch. 1252, operative July 1, 1988), HSC §44344 (Added by Stats. 1987, Ch. 1252, operative July 1, 1988, amended by Stats. 1993, Ch. 1041 (AB 1060)), HSC §44344.5 (Added by Stats. 1993, Ch. 1037 (AB 956), amended by Stats. 1996, Ch. 602 (AB564)), HSC §44344.7 (Added by Stats. 1993, Ch. 1037 (AB 956), amended by Stats. 1996, Ch. 602 (AB564)).

V. AUTHORITY TO REQUIRE RECORDKEEPING, MAKE INSPECTIONS, AND CONDUCT TESTS.

State law provides authority to incorporate recordkeeping requirements into operating permits, provides authority to inspect sources and any records required to determine a source's compliance status, and provides authority to conduct tests as cited in the enclosed November 12, 1993 letter, pages 6-7, "Monitoring, Recordkeeping, and Reporting," page 7, "Inspection/Entry Authority," and as additionally specified below.

Additional Federal Authority: Recordkeeping: FCAA §114, 129(c), 42 U.S.C. §7414, 7429(c); 40 CFR §60.39b. Tests: FCAA §§ 129(c), 504, 42 U.S.C. 7429(c), 7661c; 40 CFR §§60.38b, 70.6(c)(1).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: Recordkeeping: HSC §40701 (Stats. 1975, Ch. 957, amended by Stats. 1990, Ch. 1034 (AB 4059)). Inspections: HSC §42707 (Stats. 1975, Ch. 957), HSC §44366 (Added by Stats. 1987, Ch. 1252, operative July 1, 1988). Tests: HSC §39607 (Stats. 1975, Ch. 957, last amended by Stats. 1995, Ch. 713 (AB 1027)), HSC §41511 (Stats. 1975, Ch. 957, amended by Stats. 1976, Ch. 1063, effective Sept. 21, 1976), HSC §42303 (Stats. 1975, Ch. 957), HSC §44340 (Added by Stats. 1987, Ch. 1252, operative July 1, 1988), HSC §44342 (Added by Stats. 1987, Ch. 1252, operative July 1, 1988).

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VI. AUTHORITY TO REQUIRE USE OF MONITORS AND REQUIRE EMISSION REPORTS.

State law provides authority to incorporate monitoring and reporting requirements into operating permits consistent with 40 CFR §70.6 as cited in the enclosed November 12, 1993 letter, pages 6-7, "Monitoring, Recordkeeping, and Reporting" and as additionally specified below.

Additional Federal Authority: Monitors: FCAA 129(b), 129(c), 42 U.S.C. 7429(b), 7429(c); 40 CFR §§60.38b, 70.6(c)(2). Reports: 40 CFR §§60.39b, 70.6(c)(4).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: Monitors: HSC §39659 (Added by Stats. 1992, Ch. 1161 (AB 2728)), HSC §42315 (Added by Stats. 1986, Ch. 1134, amended by Gov. Reorg. Plan No. 1 of 1991, §140, effective July 17, 1991). Reports: HSC §42303 (Stats. 1975, Ch. 957), HSC §44344.5 (Added by Stats. 1993, Ch. 1037 (AB 956), amended by Stats. 1996, Ch. 602 (AB564)), HSC §44344.7 (Added by Stats. 1993, Ch. 1037 (AB 956), amended by Stats. 1996, Ch. 602 (AB564)).

VII. AUTHORITY TO MAKE EMISSION DATA AVAILABLE TO THE PUBLIC.

State law provides authority to make available to the public any permit application, compliance plan, permit, and monitoring and compliance certification report, except for information entitled to confidential treatment as cited in the enclosed November 12, 1993 letter, pages 10-11, "Public Access to Permit Information" and as additionally specified below. State law also provides that the contents of an operating permit, except for trade secret information which is not emission data, shall not be entitled to confidential treatment as cited in the enclosed November 12, 1993, pages 10-11, "Public Access to Permit Information" and as additionally specified below.

Additional Federal Authority: FCAA §129(c), 42 U.S.C. 7429(c).

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §42301.6 (Added by Stats. 1988, Ch. 1589, last amended by Stats. 1991, Ch. 1183 (AB 928)), HSC §42337 (Added by Stats. 1991, Ch. 1209 (AB 158)); Title 17, California Code of Regulations, section 93300.5 (operative Sept. 21, 1996).

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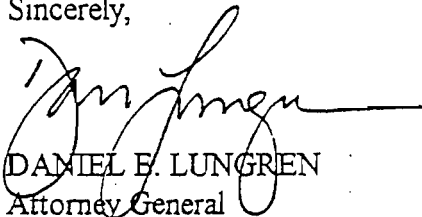
VIII. RETENTION OF DELEGATED ENFORCEMENT AUTHORITY.

State law provides authority for the State to retain enforcement authority even when such authority is delegated to the districts as cited in the enclosed November 12, 1993 letter on page 11, "Enforcement of Permits Program Requirements." Additional authorities for retention of delegated enforcement authority are specified below.

Citation of State Laws and Regulations; Date of Enactment or Adoption; Effective Date: HSC §39002 (Stats. 1975, Ch. 957), HSC §39003 (Stats. 1975, Ch. 957), HSC §39500 (Stats. 1975, Ch. 957), §39600 (Stats. 1975, Ch. 957), HSC §39602 (Stats. 1975, Ch. 957, last amended by Stats. 1979, Ch. 810, effective Sept. 19, 1979), HSC §39605 (Stats. 1975, Ch. 957, last amended by Stats. 1981, Ch. 700, effective Sept. 23, 1981), HSC §41500 (Stats. 1975, Ch. 957, last amended by Stats. 1992, Ch. 945 (AB 2783)), HSC §42362 (Stats. 1975, Ch. 957), HSC §44365 (Added by Stats. 1987, Ch. 1252, operative July 1, 1988).

I trust that these provisions of law and this certification are responsive to your request. If you need additional information or if I can be of further service, please feel free to contact me in care of Senior Assistant Attorney General Charles W. Getz, IV, at (415) 356-6348.

Sincerely,


DANIEL E. LUNGREN
Attorney General

Enclosure

cc: Charles W. Getz, IV
Kathryn Tobias