United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park, NC 27711

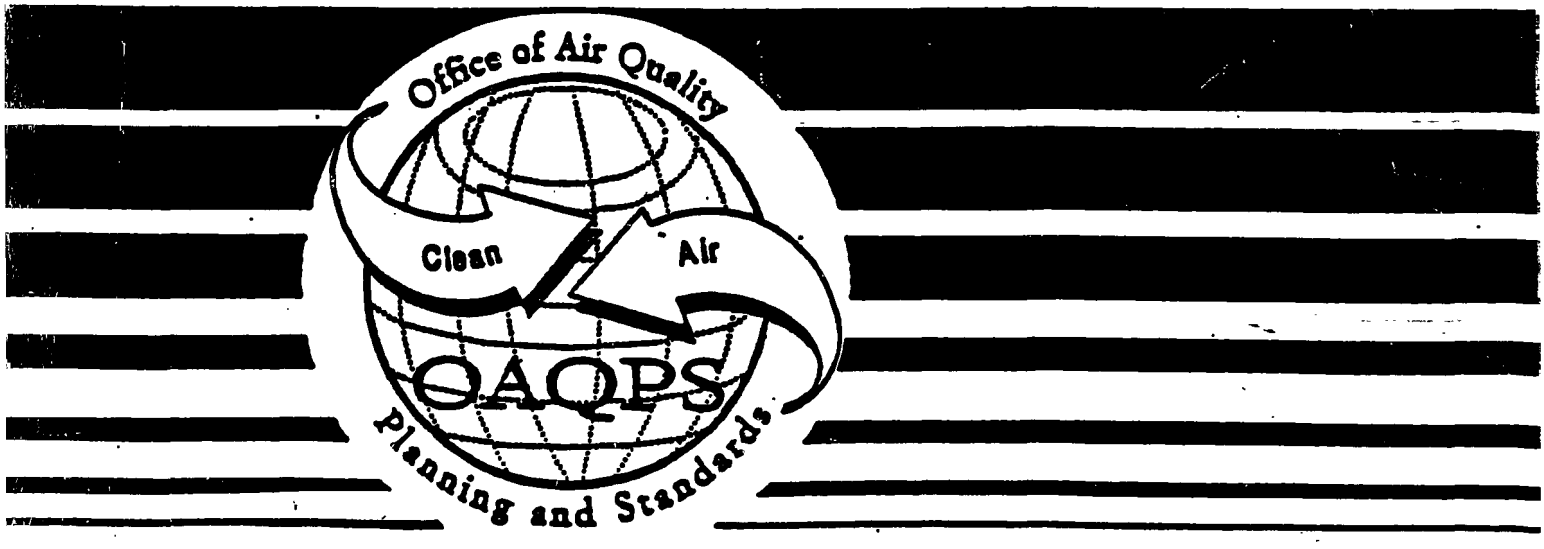
EPA-454/R-99-025B
July 1999

AIR

EPA

Final Report - Volume II of II

Iron and Steel Foundries
Manual Emissions Testing
Cupola Wet Scrubber
General Motors Corp.
Saginaw, Michigan



FINAL REPORT

IRON AND STEEL FOUNDRIES
MANUAL EMISSIONS TESTING
CUPOLA WET SCRUBBER
GENERAL MOTORS CORP., SAGINAW, MICHIGAN

VOLUME II OF II
APPENDICES C through F

EPA Contract No. 68D70069
Work Assignment No. 2-08

Prepared for:

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July 1999
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APPENDIX C

ANALYTICAL DATA

PARTICULATE MATTER AND METALS

Appendix C.1

Analytical Data

Method 5 Particulate Matter

Facsimile Transmission

From: Barbara DeWees

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Cary, NC 27519
Phone: (919) 250-0285
Fax: (919) 250-1835

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3404 Lake Woodard Dr.
Raleigh, NC 27604

TO: Frank

DATE: 10/30/97 TIME: 5:15 AM/PM

Receiver's Fax Number: 941-0234

Receiver's Phone Number:

Number of Pages (include cover sheet) 6

Comments: Copy of filter logs for Waupaca and GM Saginaw. other information will follow tomorrow.

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DEECO is ready

when you are!

FILTER WEIGHT LOG SIZE 110 mm

Filter No.	Weight g.	Date/Time m/d/24hr	Intls	Weight g.	Date/Time m/d/24hr	Intls	Weight g.	Date/Time m/d/24hr	Intls	Average
1023	0.6105	9/19 1252	BAD	0.6105	9/19 0009	BAD				0.6105
1024	0.6126	9/19 1253	BAD	0.6125	9/19 ~~1205 AM~~ 0003	BAD				0.6126
1025	0.6098	9/19 1255	BAD	0.6097	9/19 ~~1204~~ 0004	BAD				0.6098
1026	0.6236	9/19 1256	BAD	0.6234	9/19 ~~1205~~ 0002	BAD				0.6235
1027	0.6238	9/19 1257	BAD	0.6237	9/19 ~~1157~~ 2357	BAD				0.6238
1028	0.6223	9/19 1258	BAD	0.6221	9/19 ~~1200~~ 0000	BAD				0.6222
1029	0.6259	9/19 1259	BAD	0.6259	9/19 ~~1159~~ 2359	BAD				0.6259
1030	0.6220	9/19 1301	BAD	0.6219	9/19 ~~1155~~ 2355	BAD				0.6220
1031	0.6190	9/19 1302	BAD	0.6190	9/19 ~~1155~~ 2355	BAD				0.6190
10										

10-30-1997 6:18PM FROM 9192501835 2

FILTER WEIGHT LOG SIZE 110 mm

Filter No.	Weight g.	Date/Time m/d/24hr	Intls	Weight g.	Date/Time m/d/24hr	Intls	Weight g.	Date/Time m/d/24hr	Intls	Average	
1012	0.6250	8/27 1942	BAD	0.6249	8/28 0001	BAD	0.6246	9/4 2105	BAD	~~0.6250~~	0.6248
1013	0.6110	8/27 1943	BAD	0.6109	8/28 0059	BAD	0.6108	9/4 2109	BAD	~~0.6110~~	0.6109
1014	0.6144	8/27 1944	BAD	0.6142	8/28 0067	BAD	0.6141	9/4 2058	BAD	~~0.6143~~	0.6142
1015	0.6116	8/27 1945	BAD	0.6115	8/28 0058	BAD	0.6113	9/4 2059	BAD	~~0.6116~~	0.6115
1016	0.6191	8/27 1946	BAD	0.6189	8/28 0054	BAD	0.6188	9/4 2055	BAD	~~0.6190~~	0.6189
1017	0.6160	8/27 1947	BAD	0.6159	8/28 0055	BAD	0.6157	9/4 2110	BAD	0.6159	
1018	0.6166	8/27 1949	BAD	0.6163	8/28 0053	BAD	~~0.6159~~ 0.6164	9/4 2052	BAD	~~0.6165~~	0.6164
1019	0.6165	8/27 1950	BAD	0.6164	8/28 0051	BAD	0.6162	9/4 2113	BAD	~~0.6165~~	0.6164
1020	0.6200	8/27 1951	BAD	0.6199	8/28 0049	BAD	0.6196	9/4 2056	BAD	~~0.6200~~ 0.6198	
1021	0.6109	9/19 1249	BAD	0.6109	9/19 0008	BAD				0.6109	
1022	0.6181	9/19 1250	BAD	0.6181	9/19 0005	BAD				0.6181	

10-30-1997 01:19PM FROM 9192501835

FILTER WEIGHT LOG SIZE 110 cmc

Filter No.	Weight g.	Date/Time m/d/24hr	Intls	Weight g.	Date/Time m/d/24hr	Intls	Weight g.	Date/Time m/d/24hr	Intls	Average
1001	0.6233	8/27 1920	BAD	0.6231	8/24 0116	BAD				0.6232
1002	0.6263	8/27 1923	BAD	0.6262	8/28 0113	BAD				0.6263
1003	0.62230	8/27 1929	BAD	0.6228	8/28 011	BAD				0.6226
1004	0.6099	8/27 1930	BAD	0.6098	8/28 0112	BAD				0.6099
1005	0.6106	8/27 1932	BAD	0.6104	8/28 0111	BAD				0.6105
1006	0.6101	8/27 1934	BAD	0.6100	8/28 0109	BAD				0.6101
1007	0.6095	8/27 1935	BAD	0.6093	8/28 0108	BAD				0.6094
1008	0.6112	8/27 1937	BAD	0.6111	8/28 0107	BAD				0.6112
1009	0.6119	8/27 1938	BAD	0.6118	8/28 0105	BAD				0.6119
1010	0.6106	8/27 1939	BAD	0.6105	8/28 0104	BAD	0.6104	9/4 2107	BAD	~~0.6106~~ 0.6105 cmc
1011	~~0.60~~ 0.6100	8/27 1940	BAD	0.6098	8/28 0103	BAD	0.6096	9/4 2112	BAD	~~0.6099~~ 0.6098 cmc

10-30-1997 6:19PM FROM 9192501835

FILTER WEIGHT LOG SIZE_____

Filter No.	Weight g.	Date/Time m/d/24hr	Intls	Weight g.	Date/Time m/d/24hr	Intls	Weight g.	Date/Time m/d/24hr	Intls	Average
2473	0.3607	9/5 2351	BAD	0.3605	9/6 1542	BAD				0.3606
2474	0.3860	9/5 2352	BAD	0.3854	9/6 1546	BAD				0.3860
2475	0.3857	9/5 2353	BAD	0.3856	9/6 1547	BAD				0.3857
2476	~~0.3737~~ 0.3730	9/5 2354	BAD	0.3729	9/6 1548	BAD				0.3730
2477	0.3865	9/6 1632	BAD	0.3862	9/7 1541	BAD				0.3864
2478	0.3844	9/5 1626	BAD	0.3844	9/7 1550	BAD				0.3844
2479	0.3933	9/5 1627	BAD	0.3933	9/7 1548	BAD				0.3933
2480	0.3864	9/5 1631	BAD	0.3863	9/7 1542	BAD				0.3864
2481	0.3792	9/5 1628	BAD	0.3792	9/7 1547	BAD				0.3792
2482	0.4027	9/5 2343	BAD	0.4027	9/6 1535	BAD				0.4027
2483	0.3841	~~9/5 23~~ 9/6 1629	BAD	0.3841	9/7 1546	BAD				0.3841

FROM 9192501835

FILTER WEIGHT LOG SIZE_____

Filter No.	Weight g.	Date/Time m/d/24hr	Intls	Weight g.	Date/Time m/d/24hr	Intls	Weight g.	Date/Time m/d/24hr	Intls	Average
2484	0.3903	9/5 1630	BAD	0.3902	9/6 1543	BAD				0.3903
2485	0.3970	9/5 2342	BAD	0.3970	9/6 1541	BAD				0.3970
2486	0.3817	9/5 2344	BAD	0.3816	9/6 1534	BAD				0.3817
2487	0.3809	9/6 1630	BAD	0.3809	9/6 1545	BAD				0.3809
2488	0.3758	9/5 2345	BAD	0.3757	9/6 1539	BAD				0.3758
2489	~~2.3~~ 0.4060	9/5 2350	BAD	0.4059	9/6 1527	BAD				0.4060
2490	0.3854	9/5 2349	BAD	0.3854	9/6 1531	BAD				0.3854
2491	0.3768	9/5 2340	BAD	0.3769	9/6 1533	BAD				0.3769
2492	0.3777	9/5 2339	BAD	0.3778	9/6 1538	BAD				0.3778
2493	0.3959	9/5 2341	BAD	0.3960	9/6 1529	BAD				0.3960
2494	0.3717	9/5 2347	BAD	0.3716	9/6 1525	BAD				0.3717

10-30-1997 6:20PM FROM 9192501835

PACIFIC ENVIRONMENTAL SERVICES, INC.

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Durham, North Carolina 27707
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Fax: (919) 493-7779

SAMPLE ANALYTICAL DATA FORM

Plant GM - SAGINAW Run number I-M29-1

Sample location INLET

Relative humidity _____

Density of acetone (ρ_a) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse	BEAKER M-26	
filter(s)	BEAKER M-25	

Acetone rinse container number BEAKER M-26

Acetone rinse volume (V_{aw}) ~~147.7~~ 147.7 ml

Acetone blank residue concentration (C_a) 0.0000 mg/g

$W_a = C_a V_{aw} \rho_a$ = (0.0000) (147.7) (0.7899) = 0.0000 mg

Date and time of wt 10/21/97 0900 Gross wt 105.0104 mg

Date and time of wt 10/21/97 1530 Gross wt 105.0108 mg

Average gross wt 105.0106 mg

Tare wt 104.9722 mg

Less acetone blank wt (W_a) 0.0000 mg

Weight of particulate in acetone rinse (m_a) 0.0384 mg

Filter(s) container number BEAKER M-25 Filter No. 1013

Date and time of wt 10/21/97 0900 Gross wt 114.1459 mg

Date and time of wt 10/21/97 1530 Gross wt 114.1464 mg

Average gross wt 114.1462 mg

Beaker M-25 Tare wt.: 113.5387 Tare wt 0.6109 mg

Weight of particulate on filter(s) (m_f) 0.9966 mg

Weight of particulate in acetone rinse 0.0384 mg

Total weight of particulate (m_n) 1.0350 mg

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks _____

Signature of analyst _____

Signature of reviewer _____

PACIFIC ENVIRONMENTAL SERVICES, INC.

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SAMPLE ANALYTICAL DATA FORM

Plant GM - SAGINAW Run number I-M29-2

Sample location INLET

Relative humidity _____

Density of acetone (ρ_a) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse	Beaker M-28	
filter(s)	Beaker M-27	

Acetone rinse container number Beaker M-28

Acetone rinse volume (V_{aw}) 404.8 ml

Acetone blank residue concentration (C_a) 0.0000 mg/g

$W_a = C_a V_{aw} \rho_a$ = (0.0000) (404.8) (0.7899) = 0.0000 mg

Date and time of wt ~~10/21/97 0900~~ 10/22/97 0840 CMC Gross wt ~~111.5755~~ 111.9129g CMC mg

Date and time of wt ~~10/21/97 1530~~ Gross wt ~~111.5760~~ CMC 111.9133g mg

CMC 10/22/97 Average gross wt ~~111.5758~~ CMC 111.9131g mg

Tare wt ~~108.6779~~ CMC 110.6216g mg

Less acetone blank wt (W_a) 0.0000 mg

Weight of particulate in acetone rinse (m_a) ~~2.8979~~ ~~2.8974~~ CMC 1.2915g mg

Filter(s) container number Beaker No M-27 Filter 1016

Date and time of wt 10/21/97 0900 Gross wt 115.4271 mg

Date and time of wt 10/21/97 1530 Gross wt 115.4269 mg

Average gross wt 115.4270 mg

BEAKER Tare wt = 113.4454 CMC mg + FILTER TARE 0.6189 → 114.064

Weight of particulate on filter(s) (m_f) ~~1.9816~~ CMC mg → 1.3627

Weight of particulate in acetone rinse ~~2.8979~~ CMC mg → 1.2915

Total weight of particulate (m_n) ~~4.8795~~ mg → 2.654 CMC

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks _____

Signature of analyst _____

Signature of reviewer _____

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SAMPLE ANALYTICAL DATA FORM

Plant GM - SAGINAW Run number I-M29-3

Sample location INLET

Relative humidity _____

Density of acetone (ρ_a) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse	BEAKER M-30	
filter(s)	BEAKER M-29	

Acetone rinse container number BEAKER M-30

Acetone rinse volume (V_{aw}) 393.2 ml

Acetone blank residue concentration (C_a) 0.0000 mg/g

$W_a = C_a V_{aw} \rho_a$ = (0.0000) (393.2) (0.7899) = 0.0000 mg

Date and time of wt 10/22/97 0840 Gross wt 110.7257 mg

Date and time of wt 10/22/97 1500 Gross wt 110.7253 mg

Average gross wt 110.7255 mg

Tare wt 109.7438 mg

Less acetone blank wt (W_a) 0.0000 mg

Weight of particulate in acetone rinse (m_a) 0.9817 mg

Filter(s) container number BEAKER M-29 FILTERS 1022 & 1023

Date and time of wt 10/21/97 0900 Gross wt 111.5755 mg

Date and time of wt 10/21/97 1530 Gross wt 111.5760 mg

Average gross wt 111.5758 mg

108.6779 + Tare wt 0.6181 + 0.6105 mg

Weight of particulate on filter(s) (m_f) 1.6693 mg

Weight of particulate in acetone rinse 0.9817 mg

Total weight of particulate (m_n) 2.6510 mg

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks _____

Signature of analyst _____

Signature of reviewer CMC

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SAMPLE ANALYTICAL DATA FORM

Plant GM - SAGINAW Run number I-M29-~~4~~

Sample location INLET

Relative humidity _____

Density of acetone (ρ_a) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse	Becker M-32	
filter(s).	Becker M-31	

Acetone rinse container number Beaker M-32

Acetone rinse volume (V_{aw}) 382.3 ml

Acetone blank residue concentration (C_a) 0.0000 mg/g

$W_a = C_a V_{aw} \rho_a$ = (0.0000) (382.3) (0.7899) = 0.0000 mg

CMC 10/22/97 ~~10/21/97~~ 0840

Date and time of wt ~~10/20/97 1330~~ Gross wt 111.0040 mg

Date and time of wt ~~10/21/97~~ 1500 Gross wt 111.0036 mg

CMC 10/22/97 Average gross wt 111.0038 mg

Tare wt 109.9526 mg

Less acetone blank wt (W_a) 0.0000 mg

Weight of particulate in acetone rinse (m_a) 1.0512 mg

Filter(s) container number Beaker M-31 Filters 1018 & 1019

Date and time of wt 10/20/97 1330 Gross wt 105.2767 mg

Date and time of wt 10/21/97 0900 Gross wt 105.2763 mg

CMC 105.2765

Average gross wt ~~105.2764~~ mg

Becker M-31 Tare = 102.0280 Tare wt ~~0.6165~~ 0.6164 ~~0.6159~~ 0.6164 mg TOTAL TARE = ~~103.2603~~ 103.2

Weight of particulate on filter(s) (m_f) ~~2.0161~~ mg CMC 2.0157 g

Weight of particulate in acetone rinse 1.0512 mg

Total weight of particulate (m_n) ~~3.0673~~ mg 3.0669 g

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks _____

Signature of analyst _____

Signature of reviewer _____

PACIFIC ENVIRONMENTAL SERVICES, INC.

3708 Mayfair Street, Suite 202
Durham, North Carolina 27707
(919) 493-3536
Fax: (919) 493-7779

SAMPLE ANALYTICAL DATA FORM

Plant GM - SAGINAW Run number ① - M29-L

Sample location OUTLET.

Relative humidity _____

Density of acetone (ρ_a) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse	M-34	
filter(s)	M-33	

Acetone rinse container number Beaker M-34

Acetone rinse volume (V_{aw}) 151.0 ml

Acetone blank residue concentration (C_a) 0.0000 mg/g

$W_a = C_a V_{aw} \rho_a$ = (0.0000) (151.0) (0.7899) = 0.0000 mg

Date and time of wt 10/22/97 0840 Gross wt 100.6096 mg

Date and time of wt 10/22/97 1500 Gross wt 100.6093 mg

Average gross wt 100.6095 mg

Tare wt 100.5999 mg

Less acetone blank wt (W_a) 0.0000 mg

Weight of particulate in acetone rinse (m_a) 0.0096 mg

Filter(s) container number Beaker M-33 Filter 2485

Date and time of wt 10/20/97 1330 Gross wt 108.1023 mg

Date and time of wt 10/21/97 0900 Gross wt 108.1021 mg

Average gross wt 108.1022 mg

Filter + Beaker Tare wt 108.0377 mg

Weight of particulate on filter(s) (m_f) 0.0645 mg

Weight of particulate in acetone rinse 0.0096 mg

Total weight of particulate (m_n) 0.0741 mg

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks _____

Signature of analyst _____

Signature of reviewer CMC

PACIFIC ENVIRONMENTAL SERVICES, INC.

3708 Mayfair Street, Suite 202
Durham, North Carolina 27707
(919) 493-3536
Fax: (919) 493-7779

SAMPLE ANALYTICAL DATA FORM

Plant GM - SAGINAW Run number O M29-2

Sample location OUTLET

Relative humidity

Density of acetone (ρ_a) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse	M-35	
filter(s)	M-36	

Acetone rinse container number Beaker M-36

Acetone rinse volume (V_{aw}) 156.7 ml

Acetone blank residue concentration (C_a) 0.0000 ~~mg~~/g

$W_a = C_a V_{aw} \rho_a$ = (0.0000) (156.7) (0.7899) = 0.0000 ~~mg~~

Date and time of wt 10/22/97 0840 Gross wt 108.3128 ~~mg~~

Date and time of wt 10/22/97 1500 Gross wt 108.3125 ~~mg~~

Average gross wt 108.3127 ~~mg~~

Tare wt 108.2852 mg

Less acetone blank wt (W_a) ~~0.0275~~ ~~mg~~ 0.0000

Weight of particulate in acetone rinse (m_a) 0.0275 ~~mg~~

Filter(s) container number Beaker M-35 Filter No 2486

Date and time of wt 10/20/97 1330 Gross wt 115.6563 ~~mg~~

Date and time of wt 10/21/97 0900 Gross wt 115.6561 mg

Average gross wt 115.6562 ~~mg~~

Tare wt ~~0.3014~~ + 115.1436 ~~mg~~

Weight of particulate on filter(s) (m_f) CMC 0.3817 ~~0.1312~~ CMC ~~mg~~ 0.1309 g.

Weight of particulate in acetone rinse 0.0275 mg

Total weight of particulate (m_n) ~~0.1587~~ mg CMC 0.1584 g.

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks

Signature of analyst [signature]

Signature of reviewer

PACIFIC ENVIRONMENTAL SERVICES, INC.

3708 Mayfair Street, Suite 20
Durham, North Carolina 2770
(919) 493-353
Fax: (919) 493-777

SAMPLE ANALYTICAL DATA FORM

Plant GM - SAGINAW Run number O-M29-3

Sample location OUTLET

Relative humidity _____

Density of acetone (ρ_a) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse	M-38	
filter(s)	M-37	

Acetone rinse container number ~~FILTER~~ M-38 (Beaker)

Acetone rinse volume (V_{aw}) 150.6 ml

Acetone blank residue concentration (C_a) 0.0000 mg/g

$W_a = C_a V_{aw} \rho_a$ = (0.0000) (150.6) (0.7899) = 0.0000 mg

Date and time of wt 10/20/97 ~~1330~~ 0900 Gross wt 109.0821 mg

Date and time of wt 10/21/97 ~~0900~~ 1330 1530 CMC Gross wt 109.0824 mg

Average gross wt 109.0823 mg

Tare wt 109.0756 mg

Less acetone blank wt (W_a) 0.0000 mg

Weight of particulate in acetone rinse (m_a) 0.0067 mg

Filter(s) container number FILTER M-37 Filter 2490

Date and time of wt 10/20/97 1330 Gross wt 105.5017 mg

Date and time of wt 10/21/97 0900 Gross wt 105.5015 mg

Average gross wt 105.5016 mg

Tare wt 0.3854+105.0970 mg

Weight of particulate on filter(s) (m_f) 0.0192 mg

Weight of particulate in acetone rinse 0.0067 mg

Total weight of particulate (m_n) 0.0259 mg

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks _____

Signature of analyst _____

Signature of reviewer _____

PACIFIC ENVIRONMENTAL SERVICES, INC.

3708 Mayfair Street, Suite 202
Durham, North Carolina 27707
(919) 493-3536
Fax: (919) 493-7779

SAMPLE ANALYTICAL DATA FORM

Plant GM - SAGINAW Run number O-M29-4

Sample location Outlet

Relative humidity _____

Density of acetone (ρ_a) 0.7899 g/ml

Sample type	Sample identifiable	Liquid level marked and/or container sealed
Acetone rinse	M-40	
filter(s)	M39	

Acetone rinse container number Beaker No. M-40

Acetone rinse volume (V_{aw}) 153.3 ml

Acetone blank residue concentration (C_a) 0.0000 mg/g

$W_a = C_a V_{aw} \rho_a$ = (0.0000) (153.3) (0.7899) = 0.0000 mg

Date and time of wt 10/21/97 0900 Gross wt 110.1182 mg

Date and time of wt 10/21/97 1530 Gross wt 110.1181 mg

Average gross wt 110.1182 mg

Tare wt 110.1070 mg

Less acetone blank wt (W_a) 0.0000 mg

Weight of particulate in acetone rinse (m_a) 0.0112 mg

Filter(s) container number Beaker No M-39 Filter 2491

Date and time of wt 10/21/97 0900 Gross wt 111.6918 mg

Date and time of wt 10/21/97 1530 Gross wt 111.6916 mg

Average gross wt 111.6917 mg

Beaker No M-39 111.3006 Tare wt 0.3769 mg

Weight of particulate on filter(s) (m_f) 0.0142 mg

Weight of particulate in acetone rinse 0.0112 mg

Total weight of particulate (m_n) 0.0254 mg

Note: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

Remarks _____

Signature of analyst _____

Signature of reviewer _____

PACIFIC ENVIRONMENTAL SERVICES, INC.

3708 Mayfair Street, Suite 202
Durham, North Carolina 27707
(919) 493-3536
Fax: (919) 493-7779

BLANK ANALYTICAL DATA FORM

Plant GM - SAGINAW O-M29-BLK (Field Blank)

~~Sample location~~ Beaker No. M-42

Relative humidity _____

Liquid level marked and container sealed _____

Density of acetone (ρ_a) 0.7899 g/ml

Blank volume (V_a) 116.2 ml

Date and time of wt 10/21/97 0900 Gross wt 102.0474 mg

Date and time of wt 10/21/97 1530 Gross wt 102.0470 mg

Average gross wt 102.0472 mg

Tare wt 102.0474 mg

Weight of blank (m_{ab}) (0.0002) 0.00 mg

$$C_a = \frac{m_{ab}}{V_a \rho_a} = \frac{(\quad)}{(\quad)(\quad)} = 0.0000 \text{ mg/g}$$

Note: In no case should a blank residue greater than 0.01 mg/g (or 0.001% of the blank weight) be subtracted from the sample weight.

Filters Beaker No. M-41 Filter number 2476

Date and time of wt 10/21/97 0900 Gross wt 108.3722 mg

Date and time of wt 10/21/97 1530 Gross wt 108.3723 mg

Average gross wt 108.3723 mg

Tare wt 0.3730 + 107.9997 mg

Difference wt - 0.0004 mg

Note: Average difference must be less than ±5 mg or 2% of total sample weight whichever is greater.

Remarks _____

Signature of analyst _____

Signature of reviewer _____

PACIFIC ENVIRONMENTAL SERVICES, INC.

3708 Mayfair Street, Suite 202
Durham, North Carolina 27707
(919) 493-3536
Fax: (919) 493-7779

BLANK ANALYTICAL DATA FORM

Plant GM Saginaw Reagent Blank (Page 1/2)

~~Sample location~~ Becker No M-45

Relative humidity _____

Liquid level marked and container sealed _____

Density of acetone (ρ_a) 0.7899 g/ml

Blank volume (V_a) 126.7 ml

Date and time of wt 10/21/97 0900 Gross wt 115.0887 mg

Date and time of wt 10/21/97 1530 Gross wt 115.0886 mg

Average gross wt 115.0887 mg

Tare wt 115.0888 mg

Weight of blank (m_{ab}) -0.0001 mg

$$C_a = \frac{m_{ab}}{V_a \rho_a} = \frac{(\quad)}{(\quad)(\quad)} = 0.0000 \text{ mg/g}$$

Note: In no case should a blank residue greater than 0.01 mg/g (or 0.001% of the blank weight) be subtracted from the sample weight.

Filters (3") Filter number 2482

Date and time of wt 10/20/97 1330 Gross wt 105.5488 mg

Date and time of wt 10/21/97 0900 Gross wt 105.5486 mg

Average gross wt 105.5487 mg

Becker M-43 & Filter Tare wt 105.1456+0.4027 mg

Difference wt 0.0004 mg

Note: Average difference must be less than ±5 mg or 2% of total sample weight whichever is greater.

Remarks _____

Signature of analyst _____

Signature of reviewer _____

PACIFIC ENVIRONMENTAL SERVICES, INC.

3708 Mayfair Street, Suite 202
Durham, North Carolina 27707
(919) 493-3536
Fax: (919) 493-7779

BLANK ANALYTICAL DATA FORM

Plant GM SAGINAW REAGENT BLANK (PAGE 2/2)

Sample location _____

Relative humidity _____

Liquid level marked and container sealed _____

Density of acetone (ρ_a) _____ g/ml

Blank volume (V_a) _____ ml

Date and time of wt _____ Gross wt _____ mg

Date and time of wt _____ Gross wt _____ mg

Average gross wt _____ mg

Tare wt _____ mg

Weight of blank (m_{ab}) _____ mg

$$C_a = \frac{m_{ab}}{V_a \rho_a} = \frac{(\quad)}{(\quad)(\quad)} = \_\_\_\_\_ \text{ mg/g}$$

Note: In no case should a blank residue greater than 0.01 mg/g (or 0.001% of the blank weight) be subtracted from the sample weight.

Filters (4") Filter number 1010

Date and time of wt 10/20/97 1330 Gross wt 108.3771 ~~mg~~

Date and time of wt 10/21/97 0900 Gross wt 108.3767 ~~mg~~

Average gross wt 108.3769 ~~mg~~

Becker M-44 # Filter Tare wt 107.7662 + ~~0.6106~~ 0.61059 ~~mg~~

Difference wt ~~0.0001~~ 0.00029 mg

Note: Average difference must be less than ±5 mg or 2% of total sample weight whichever is greater.

Remarks _____

Signature of analyst _____

Signature of reviewer _____

METHOD 5
FINAL WEIGHT

Project Number: 5414-004 / 2005-006 **Item Weighed:** Beakers w/Filters & Beakers

		1330	0900	1530	0840	1500			
Date		10/20/97	10/21/97	10/21/97	10/22/97	10/22/97			
R.H. (%)		52	48	50	52	46			
Temp. (°F)		68.9	69.4	68.2	69.4	68.5			
Std. Wt.		99.9995	99.9996	99.9997	99.9998	99.9997			
Analyst		MDM	MDM	MDM	MDM	MDM			
ID Number	**Field Sample Number**	**1st**	**2nd**	**3rd**	**4th**	**5th**	**Final Wt. (g)**	**Tare Wt. (g)**	**Difference (mg)**
M-25	I-M29-1-Filter	114.1465	114.1459	114.1464			114.1462		
M-26	I-M29-1-FH		105.0104	105.0108			105.0106		
M-27	I-M29-2-Filter	115.4281	115.4271	115.4269			115.4270		
M-28	I-M29-2-FHA				111.9129	111.9133	111.9131		
M-29	I-M29-3-Filter	111.5763	111.5755	111.5760			111.5758		
M-30	I-M29-3-FHA				110.7257	110.7253	110.7255		
M-31	I-M29-4-Filter	105.2767	105.2763				105.2765		
M-32	I-M29-4-FHA				111.0040	111.0036	111.0038		
M-33	O-M29 1-Filter	108.1023	108.1021				108.1022		
M-34	O-M29 1-FHA				100.6096	100.6093	100.6095		
M-35	O-M29-2-Filter	115.6563	115.6561				115.6562		
M-36	O-M29-2-FHA				108.3128	108.3125	108.3127		
M-37	O-M29-3-Filter	105.5017	105.505				105.5016		
M-38	O-M29-3-FHA		109.0821	109.0824			109.0823		
M-39	O-M29-4-Filter	111.6921	111.6918	111.6916			111.6917		
M-40	O-M29-4-FHA		110.1182	110.1181			110.1182		
M-41	O-M29-BLK-Filter	108.3731	108.3722	108.3723			108.3723		
M-42	O-M29-BLK-FHA		102.0474	102.0470			104.0472		
M-43	O-M29-RB-3-Filter	105.5488	105.5486				105.5487		
M-44	O-M29-RB-4-Filter	108.3771	108.3767				108.3769		
M-45	O-M29-RB-Acetone		115.0887	115.0886			115.0887		

PACIFIC ENVIRONMENTAL SERVICES, INC.

METHOD 5
TARE WEIGHT

Project Number: 5414-004/0005-006 **Item Weighed:** Beakers

		1005	955	1640	910				
Date		~~10/6/97~~	10/13/97	10/13/97	10/14/97				
R.H. (%)		~~58~~	56	58	54				
Temp. (°F)		~~68.3~~	68.8	68.4	70.3				
Std. Wt.		~~100.0008~~	99.9997	100.0000	100.0001				
Analyst		~~MDM~~	MDM						
ID Number	**Field Sample Number**	**1st**	**2nd**	**3rd**	**4th**	**5th**	**Final Wt. (g)**	**Tare Wt. (g)**	**Difference (mg)**
M-25			112.5389	112.5385				112.5387	
M-26			104.9722	104.9721				104.9722	
M-27			113.4454	113.4453				113.4454	
M-28			110.6216	110.6215				110.6216	
M-29			108.6779	108.6779				108.6779	
M-30			109.7435	109.7440				109.7438	
M-31			102.0281	102.0278				~~107.0279~~ 102.0280	INC.
M-32			109.9577	109.9525				109.9526	
M-33			107.6406	107.6407				107.6407	
M-34			100.6000	100.5997				100.5999	
M-35			115.1434	115.1437				115.1436	
M-36			108.2853	108.2851				108.2852	
M-37			109.0971	105.0971	105.0968			105.0970	
M-38			109.0755	109.0756				109.0756	
M-39			111.3004	111.3007				111.3006	
M-40			110.1071	110.1069				110.1070	
M-41			107.9996	107.9997				107.9997	
M-42			102.0476	102.0471				102.0474	
M-43			105.1461	105.1455	105.1456			105.1456	
M-44			107.7664	107.7660				107.7662	
M-45			115.0890	115.0886				115.0888	
M-46			106.0670	106.0664	106.0663			106.0664	
M-47			108.8230	108.8229				108.8230	
M-49			106.7709	106.7703	106.7702			106.7703	

PACIFIC ENVIRONMENTAL SERVICES, INC.

METHOD 5
TARE WEIGHT

Project Number: _____ **Item Weighed:** _____

			0955	1640					
Date			10/13/97	10/13/97					
R.H. (%)			56	58					
Temp. (°F)			68.8	68.4					
Std. Wt.			99.9997	100.0000					
Analyst			MM/M	OH					
ID Number	**Field Sample Number**	**1st**	**2nd**	**3rd**	**4th**	**5th**	**Final Wt. (g)**	**Tare Wt. (g)**	**Difference (mg)**
M-49			99.9648	99.9650				99.9649	
M-50			113.7272	113.7265	113.7264			113.7265	
M-51			103.0044	103.0040				103.0042	
M-52			105.0864	105.0866				105.0865	
M-53			102.2448	102.2444				102.2446	
M-54			101.4530	101.4533				101.4536	
M-55			106.8088	106.8085				106.8087	
M-56			106.9771	106.9766				106.9769	
M-57			114.4276	114.4271				114.4274	
M-58			100.8293	100.8287	100.8287			100.8287	
M-59			92.8280	92.8279				92.8280	
M-60			107.3823	107.3822				107.3823	

PACIFIC ENVIRONMENTAL SERVICES, INC.

Appendix C.2

Analytical Data

Method 29 Metals

PACIFIC ENVIRONMENTAL SERVICES, INC.

~~Central Park West~~
5001 South Miami Boulevard, P.O. Box 12077
Research Triangle Park, North Carolina 27709-2077
(919) 941-0333 FAX: (919) 941-0234

Chain of Custody Record

Project Numb 5411.003 ~~5413-004~~	Project Name US EPA EMC ~~Asphalt Cement, REA Construction~~ SAGINAW	Analysis Requested							Remarks
Samplers: Dickerson, McDonald, Thompson, Dougherty, Hamilton									
Date	Time	Field Sample ID	Sample Description	MM	Hg						
			I-M29-1-Filter	•	•						Beaker No. M25
			I-M29-1-Front Half Rinse	•	•						Beaker No. M26
			I-M29-2-Filter	•	•						Beaker No. M27
			I-M29-2-Front Half Rinse	•	•						Beaker No. M28
			I-M29-3-Filter	•	•						Beaker No. M29
			I-M29-3-Front Half Rinse	•	•						Beaker No. M30
			I-M29-4-Filter	•	•						Beaker No. M31
			I-M29-4-Front Half Rinse	•	•						Beaker No. M32
			O-M29-1-Filter	•	•						Beaker No. M33
			O-M29-1-Front Half Rinse	•	•						Beaker No. M34
			O-M29-2-Filter	•	•						Beaker No. M35
			O-M29-2-Front Half Rinse	•	•						Beaker No. M36
			O-M29-3-Filter	•	•						Beaker No. M37
			O-M29-3-Front Half Rinse	•	•						Beaker No. M38
			O-M29-4-Filter		•						Beaker No. M39
			O-M29-4-Front Half Rinse		•						Beaker No. M40
			O-M29-BLK-Filter	•	•						Beaker No. M41
			O-M29-BLK-Front Half Rinse	•	•						Beaker No. M42
			O-M29-RB-3 Filter	•	•						Beaker No. M43
			O-M29-RB-4-Filter	•	•						Beaker No. M44
			O-M29-RB-Acetone	•	•						Beaker No. M45

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	10/27/97 2:30 P	[signature]			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for lab by: (Signature)	REMARKS		
					Page:____ of ____

TRIANGLE LABS

CASE NARRATIVE

Analysis of Samples for the Presence of Trace Metals

Method 29 April 1996 Rev.

Client:	PES, Inc.
TLI Project Number:	43452
Date:	November 20, 1997

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Triangle Laboratories, Inc.

Rev. 07-May-97

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Durham, NC 27713-4411
919-544-5729
P.O. Box 13485
Research Triangle Park, NC 27709-348
Fax # 919-544-5491

Overview

Eight train samples, two blank train samples and a DI water sample were analyzed for silver (Ag), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), cobalt (Co), chromium (Cr), manganese (Mn), nickel (Ni), phosphorus (P), lead (Pb), antimony (Sb), selenium (Se), thallium (Tl), zinc (Zn), and mercury (Hg). For all analyses, the samples and associated QC samples were prepared and analyzed following the guidelines of Method 29 April 1996 Rev. Results reported relate only to the items tested.

QC Remarks

The release of this set of data by Triangle Laboratories, Inc. was authorized by the Quality Control Chemist who has reviewed each sample data package individually following a series of inspections/reviews. When applicable, general deviations from acceptable QC requirements are identified below and comments are made on the effects of these deviations upon the validity and reliability of the results. Specific QC issues associated with this particular project are:

Sample Receipt:

Eight train samples, two blank train samples and a reagent blank were received without coolant (thus causing the high temperature of 26 ^{0}C) on September 30, 1997 in good condition under project # 43452. The filter and acetone rinse samples were processed for gravimetrics and were re-received under project # 43775 on October 28, 1997. All components were processed under project # 43452.

The first page of the client's chain- of- custody (COC) was faxed from DEECO. The rest of the pages of the COC were received with the samples.

Sample I-M29-2-H202 2 was not analyzed. It was archived.

Sample Preparation:

Laboratory documentation of the sample preparation is included in the data package.

Instrumentation:

Silver (Ag), barium (Ba), beryllium (Be), cadmium (Cd), cobalt (Co), chromium (Cr), manganese (Mn), nickel (Ni), phosphorus (P), lead (Pb), antimony (Sb), selenium (Se), thallium (Tl), (front half samples) and zinc (Zn) concentrations were determined by Inductively Coupled Plasma Emission Spectroscopy (ICP).

Arsenic (As) and cobalt (Co) concentrations were analyzed by Graphite Furnace Atomic Absorption (GFAA). Thallium (Tl) concentrations for all the back half samples and front half samples Beaker No.M37,M38,O-M29-3-FHAR FH, Beaker No.M41,M42,O-M29-

BLK-FHAR FH, Beaker No.M43,M44,m45,O-M29-RB-0.1N HNO3 FH, M29-RB-DI H2O FH, and Beaker No.M39,M40,O-M29-4-FHAR FH were analyzed by GFAA.

These elements demonstrated some insignificant negative interference as seen by the negative concentration values. Please note that all quality control checks and the other elements were within criteria for these elements, therefore they were not analyzed by GFAA.

Mercury (Hg) concentrations were determined by Cold Vapor Atomic Absorption (CVAA).

The linear range for the instrument TJA 61E Trace Analyzer was based on four standards and a blank, which established a correlation coefficient value greater than or equal to 0.995. A calibration curve, based on a blank and one standard, is established for each analytical run, followed by a check high standard and an initial calibration verification (ICV). The check high standard does not deviate from the calibration curve by more than 5%. In addition, continuing calibration verifications (CCVs) are performed throughout the analytical run.

A Reporting Detection Limit (RDL) is used instead of an Instrument Detection Limit (IDL). The spectrometer and atomic absorption instruments can achieve low detection limits between 0.2-8 ppb levels for many analytes. Triangle Labs is using RDL values of 1-10 times the IDL as detection limits for reporting purposes.

Data Review:

All analytes found in the method blank (MB) are detected at a level equal to or less than the respective Reporting Detection Limits (RDLs).

The laboratory control spike for As demonstrated a percent recovery slightly outside the QC criteria. Please note that this analyte was found in the MB at a level equal to or less than the respective Reporting Detection Limits (RDLs).

The front half serial dilution results for Cd, Co, Ni and Tl for the sample Beaker No.M25,M26,I-M29-1-FHAR FH demonstrated RPDs outside the QC control criteria of 10.0 percent, which indicates the presence of a significant amount of interferents specific to these analytes in the native sample matrix. The results for Cd, Co, Ni and Tl in this sample should be considered biased low due to matrix interferences.

The front half serial dilution results for Ag, Cr, P, and Sb for the sample Beaker No.M25,M26,I-M29-1-FHAR FH demonstrated RPDs slightly outside the QC control criteria of 10.0 percent, which does not indicate the presence of a significant amount of interferents specific to these analytes in the native sample matrix.

Beryllium (Be) concentrations were initially analyzed by Graphite Furnace Atomic Absorption (GFAA). The post-digestion spike (PDS) failed for both the front half and back half samples in the original GFAA analyses. The MSAs were run twice for the front half samples and the correlation coefficients were below 0.995, therefore the ICP results were reported for this element for all front half samples in this data package. The back half samples displayed some interference problems when analyzed by GFAA, therefore the ICP data was reported for the back half samples.

The front half post-digestion spike (PDS) for Be for the sample Beaker No.M25,M26,I-M29-1-FHAR FH demonstrated a percent recovery outside the QC criteria, which may indicate significant matrix effects specific to these analytes in the native sample matrix. Please note that the results for Be in the front half samples should be considered biased low due to matrix interferences.

The back half post-digestion spike (PDS) for Se for the sample I-M29-1-H2O2 BH demonstrated a percent recovery slightly outside the QC criteria, but does not indicate significant matrix effects specific to these analytes in the native sample matrix. Please note that the results for Se in the back half samples should be considered biased low due to matrix interferences.

The recoveries for the front half post-digestion spike (PDS) are not reported for Ba, Cd, Co, Cr, Mn, Ni, Pb, Sb, Se, Tl, and Zn for sample Beaker No.M25,M26,I-M29-1-FHAR FH. The spike concentrations added were insignificant in comparison to the levels of these analytes present in the native sample.

A duplicate analysis is not reported for elements analyzed by GFAA. The GFAA instrument analyzes two separate aliquots of the sample and averages the values for a final result. These two analyses agree within a RPD of 20% or a second run is done for that sample. The ICP instrument analyzes one continuous aliquot three times and averages the values for a final result. The ICP does not take two separate aliquots, therefore a DA is performed.

The post-digestion spike (PDS) for Co for sample I-M29-1-H2O2 BH demonstrated percent recoveries outside the QC criteria of 80-120 percent, which indicates significant matrix effects specific to these analytes in the native sample matrix. The interference QC analysis is not reported (i.e. PDS and duplicate) for this analyte since the Method of Standard Additions (MSA) was performed. The MSA results are reported if the correlation coefficient value is at least 0.995. All samples results are reported from the MSA analysis for Co, for the back half samples.

Because client paperwork did not include sampling date information, the expiration of the sampling to analysis holding times could not be determined. All samples were analyzed within 50 days of receipt.

QC requirements:

The duplicate analyses for analytes analyzed by GFAA cannot be considered valid qualifiers if the concentrations of the analytes in the original and/or duplicate sample are not at least five times the respective RDL. The RPDs for these analyses are indicated by "<RDL" in the Analyte Summary Reports.

The duplicate analyses for analytes analyzed by ICP cannot be considered valid qualifiers if the concentrations of the analytes in the original and/or duplicate sample are not at least ten times the respective RDLs. The RPDs for these analyses are indicated by or "<RDL" in the Analyte Summary Reports.

For duplicate analyses which are valid qualifiers, the quality control RPD is ± 20.0 percent. If RPDs are outside this range, interferences are suspected.

The serial dilution analyses for analytes analyzed by GFAA cannot be considered valid qualifiers if the concentrations of the analytes in the serial dilution sample are not at least five times the respective RDLs. The serial dilution RPDs for these analyses are indicated by "<RDL" in the Analyte Summary Reports.

The serial dilution analyses for analytes analyzed by ICP cannot be considered valid qualifiers if the concentrations of the analytes in the serial dilution sample are less than ten times the respective RDLs. The serial dilution RPDs for these analyses are indicated by "<RDL" in the Analyte Summary Reports.

For serial dilution analyses which are valid qualifiers, the quality control RPD is ± 10.0 percent. If RPDs are outside this range, interferences are suspected.

The quality control range for percent recoveries of laboratory control spiked samples is 80-120.

The quality control range for percent recoveries of spiked samples is 75-125. If recoveries are outside this range, a matrix effect is suspected.

If the analyte concentrations analyzed by GFAA in the native samples are less than five times the respective RDLs, or if valid serial dilution analyses demonstrate RPDs outside the ten percent quality control range, the percent recoveries of post-digestion spiked samples is 75-125. If recoveries are outside this range, all matrix-related samples are analyzed by the Method of Standard Additions (MSA). The MSA analysis for each sample is reported only if the correlation coefficient value is at least 0.995.

By our interpretation, the analytical data in this project are valid based on the guidelines of Method 29 April 1996 Rev. Any specific QC concerns or problems have been discussed in the QC REMARKS section with emphasis on their effect on the data. Should PES, Inc. have any questions or comments regarding this data package, please feel free to contact Project Scientist, Amy J. Boehm, at (919) 544-5729 ext.268.

For Triangle Laboratories, Inc.,

Report Preparation

Brenda H. Bell
Report Preparation Chemist

Quality Control

Linda F. Jones
Report Preparation Chemist

The total number of pages in this data package is: 352.

TRIANGLE LABS

TRIANGLE LABORATORIES, INC.

LIST OF CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

American Association for Laboratory Accreditation. Accredidation pending. Certificate Number 0226-01. Accreditation for technical competence in Environmental Testing.(Including Waste Water, Sol/Haz Waste, Pulp/Paper, and Air Matrices) Parameters are AOX/TOX, and Dioxin/Furan. Method 1613 for Drinking Water.

State of Alabama, Department of Environmental Management. Expires December 31, 1997. Laboratory I.D. # 40950. Dioxin in drinking water.

State of Alaska, Department of Environmental Conservation. Expires December 21, 1997. Certificate number OS-00397. Dioxin in drinking water.

State of Arizona, Department of Health Services. Expires May 26, 1998. Certificate #AZ0423. Drinking Water for Dioxin, Dioxin in WW and S/H Waste.

State of Arkansas, Department of Pollution Control and Ecology. Expires February 18, 1998. Pulp/paper, soil, water, and Hazardous Waste for Dioxin/Furan; AOX/TOX.

State of California, Department of Health Services. Expires August 31, 1999. Certificate #1922. Selected Metals in Waste Water; Volatiles, Semi-volatiles, and Dioxin/furan in WW and Sol/Haz Waste. Dioxin in drinking water.

State of Connecticut, Department of Health Services. Recertification pending. Registration # PH-0117. Dioxin in drinking water.

Delaware Health and Social Services. Expires December 31, 1997. Certificate #NC 140. Dioxin in drinking water.

Florida Department of Health and Rehabilitative Services. Expires June 30, 1998.Dioxin in DW. Drinking Water ID HRS# 87424. Metals, Extractable Organics (GC/MS), Pesticides/PCB's (GC) and Volatiles (GC/MS) in Environmental Samples. Environmental water ID HRS# E87411.

Hawaii Department of Health. Expires March 1, 1998. Dioxin in drinking water. "Accepted" status for regulatory purposes .

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Idaho Department of Health and Welfare. Expires November 30, 1997. Dioxin in drinking water.

State of Kansas, Department of Health and Environment. Expires January 31, 1998. Environmental Analyses/Non potable Water and Solid and Hazardous Waste. Method 1613 for drinking water. ID #'s - Drinking water and/or pollution control - E-215. Solid or Hazardous Waste - E-1209.

Commonwealth of Kentucky, Department for Environmental Protection. Expires December 31, 1997. ID#90060. Dioxin in drinking water.

Maryland Department of Health and Mental Hygiene. Expires September 30, 1998. Certification #235. Drinking water by Method 1613A.

State of Michigan, Department of Public Health. Expires June 3, 1998. Drinking water by Method 1613.

Mississippi State Department of Health. No expiration date.. Dioxin in drinking water.

Montana Department of Health and Environmental Services. Expires December 31, 1997. Dioxin in drinking water.

State of New Jersey, Department of Environmental Protection and Energy. Extended by state. Temporary certificate until December 31, 1997. ID #67851. BNAs and Volatiles. Dioxin in drinking water.

State of New Mexico, Environment Department. Recertification pending. Dioxin in drinking water.

New York State Department of Health. Expires April 1, 1998. ID #11026. Environmental Analyses of non-potable Water, Solid and Hazardous Waste. Method 1613 in DW.

State of North Carolina, Department of Environment Health and Natural Resources Expires August 31, 1999. Certificate # 37751. Dioxin in drinking water.

State of North Carolina, Department of Environment, Health, and Natural Resources, Division of Environmental Management. Expires December 31, 1997. Certificate # 485. Metals, pesticides & PCBs, semi-volatiles and volatiles; TCLP.

North Dakota State Department of Health and Consolidated Laboratories. Expires December 31, 1997. Certificate # R-076. Effective October 4, 1993. Dioxin in drinking water.

Oklahoma Department of Environmental Quality. Expires August 31, 1998. Laboratory #9612. Dioxin by 1613A, 8290 and 8280.

State of South Carolina, Department of Health and Environmental Control. Expires April 1, 1998. Certificate number #99040001 (drinking water). Expires August 31, 1999. Certificate number #99040002 (other parameters). Dioxin/Furans, BNA, Volatiles, and PCBs/pesticides under Clean Water Act, 2,3,7,8-TCDD for Drinking Water, and Organic extractables for Solid and Hazardous Waste.

State of Tennessee. Department of Environment and Conservation. Expires February 5, 1999. ID #02992. Method 1613 Drinking water only.

U.S. Department of Agriculture Soil Permit. Expires September 30, 2001. Permit No. S-3790. Under the authority of the Federal Plant Pest Act, permission is granted to receive foreign soil samples for use in laboratory analysis.

U.S. Army Corps of Engineers. Expires November 30, 1997. Validated to perform methods 8280 & 8290 for Lockbourne Landfill Site Investigation, Defense Distribution Depot Projects, and assorted projects for the USACE North Pacific Division Laboratory.

U.S. EPA Region V. Expires November 14, 1999. Dioxin in drinking water.

U.S. EPA Region VIII, for the State of Wyoming. Expires November 13, 1997. Dioxin in drinking water.

State of Utah, Department of Health. Expires December 31, 1997. Certificate Number E-166. Certification for the following parameters: Semi-Volatiles and Volatiles under RCRA; Volatiles under Clean Water Act; Dioxin/furans by Method 8280; Drinking water for Dioxin by Method 1613; Metals including Mercury and Microwave Digestion.

Commonwealth of Virginia, Department of General Services, Division of Consolidated Laboratory Services. Expires June 30, 1998. ID # 00341. Dioxin in drinking water.

State of Washington, Department of Ecology. Expires September 11, 1998. Lab Accreditation Number C067. Scope of Accreditation applies to water analyses for Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans, BNA Extr (Semivolatile) Organics and Purgeable (Volatile) Organics.

State of Washington, Department of Health. Expires April 30, 1998. Dioxin in drinking water. Lab I.D. 129

State of West Virginia, Department of Health. Expires December 31, 1997. Certificate No. 9923(C). Dioxin in drinking water.

State of Wisconsin, Department of Natural Resources. Expires August 31, 1998. Laboratory ID Number 999869530. Certification for the following categories of Organics: Purgeable, Base/Neutral, Acid, PCBs, and Dioxin. Expires November 14, 1999. Laboratory ID 999869530. Dioxin in drinking water.

PHARMACEUTICAL

Drug Enforcement Agency (DEA). Expires November 30, 1997. Registration number RT01195835. Controlled substance registration for schedules 1,2,3,3N,4,5.

N.C. Department of Human Resources. Expires October 31, 1998. Registration number NC-PT 0000 0031. North Carolina controlled substances registration. Application submitted for renewal.

Food & Drug Administration (FDA) Registration. Expires June 1998. ID #'s 001500 1053481. Annual registration of drug establishment. Annual registration of drug establishment.

OTHER

Clinical Laboratory Improvement Amendments (CLIA) Registration. Expires May 30, 1999. ID # 34D0705123. Department of Health & Human Services, Health Care Financing Administration.

U.S. EPA Large Quantity Hazardous Waste Generator. No expiration date. EPA ID #NCD982156879. Permit indicates that the laboratory is a large generator of hazardous waste.

North Carolina Radioactive Materials License. Expires April 30 1998. License No. 032-0954-1. License authorizes the licensee to receive, acquire, own, possess, transfer, import and use such radioactive materials as designated.

North Carolina General License for Radiation Protection. No. expiration date. License No. 032-875-OG. The general license applies only to radioactive material contained in devices which have been manufactured and labeled in accordance with specific requirements.

ABBREVIATIONS

BH = Back Half
CCB = Continuing Calibration Blank
CCV = Continuing Calibration Verification
CHECK HS = Check High Standard
D = DUP = Analytical Duplicate (Prepared Duplicate)
DA = Duplicate Analysis
FH = Front Half
FV = Final Digestate Volume
ICB = Initial Calibration Blank
ICV = Initial Calibration Verification
ICSAB = Interference Check Solution (Solution AB)
I = Initial
F = Final
Solution AB contains common interferents in addition to the analyte of interest.
IDL = Instrument Detection Limit
L = Serial Dilution
LCS = Laboratory Control Spike Sample
MB = Method Blank
MPV = Mercury Preparation Volume
MS = Pre-digestion Spike
MSD = Pre-digestion Spike Duplicate
N/A = Not Applicable
N/Av = Not Available
N/V = Not Valid
PDS = Post-digestion Spike
%REC = Percent Recovery
RDL = Reporting Detection Limit
RPD = Relative Percent Difference
T = Analytical Triplicate (Prepared Triplicate; for Hg analysis by Method 7471 only)
TV = Total Sample Volume
< = Analyte concentration in the sample is less than the respective RDL

STANDARD CONCENTRATIONS
for the TJA 61E TRACE ANALYZER

Analyte	Units	High Std	ICV/CCV	ICSAB	RDL	Wavelength
Ag	ppb	1000	500	500	1	3280
As	ppb	1000	500	500	5	1890
Al	ppb	1000	500	500000	50	3082
B	ppb	1000	500	500	7	2496
Ba	ppb	1000	500	500	2	4934
Be	ppb	1000	500	500	1	3130
Ca	ppb	1000	500	500000	60	3179
Cd	ppb	1000	500	500	1	2265
Ce	ppb	1000	500	500	3	4186
Co	ppb	1000	500	500	1	2286
Cr	ppb	1000	500	500	2	2677
Cu	ppb	1000	500	500	2	3247
Fe	ppb	1000	500	200000	40	2714
K	ppb	10000	5000	19000	220	7664
Li	ppb	1000	500	500	1	6706
Mg	ppb	1000	500	500000	30	2790
Mn	ppb	1000	500	500	2	2576
Mo	ppb	1000	500	500	2	2020
Na	ppb	10000	5000	5000	300	3302
Ni	ppb	1000	500	500	3	2316
P	ppb	1000	500	500	30	2149
Pb	ppb	1000	500	500	2	2203
Sb	ppb	1000	500	500	4	2068
Se	ppb	1000	500	500	3	1960
Sn	ppb	1000	500	500	13	1899
Sr	ppb	1000	500	650	1	4215
Ti	ppb	1000	500	500	8	3349
Tl	ppb	1000	500	500	5	1908
V	ppb	1000	500	500	2	2924
Zn	ppb	1000	500	500	12	2062

Note: Use this reference page to review the raw data from the TJA 61E Trace Analyzer.

This page includes the standard concentrations for the check high standard, initial calibration verification (ICV), continuing calibration verification (CCV), and the interference check solution (ICSAB). In addition the reporting detection limit (RDL) and wavelength are reported for each analyte.

Revision Date: 15-Jul-96

CALCULATIONS FOR AIR SAMPLES

RESULTS FOR TRACE METALS (except mercury):

$$\text{RESULT in } \mu g \text{ (Front Half)} = \frac{\mu g/L * FV\ (mL) * DF}{1000\ mL/L}$$

$$\text{RESULT in } \mu g \text{ (Back Half \& Impingers)} = \frac{\mu g/L * TV\ (mL) * FV\ (mL) * DF}{mL\ used * 1000\ mL/L}$$

FV = final volume in mL
TV = total volume in mL
DF = Dilution Factor

The RESULTS for combined Front Half & Back Half samples use the same calculation as the Back Half & impinger samples.

RESULTS FOR MERCURY (Hg):

RESULT in µg (Front Half) = µg/L * (mL FV/mL aliquot) * MPV * DF

RESULT in µg (Back Half & Impingers) = µg/L * (mL TV/mL aliquot) * MPV * DF

MPV = mercury preparation volume = 0.1 L

%REC (Percent Recovery) for MS/MSD Hg spikes:

$$\%REC = \frac{\text{spike sample results - original sample results}}{\text{true spike sample results}} * 100$$

NOTE: Original sample results less than the RDL are not used in calulations.

%REC (Percent Recovery) for PDS:

$$\%REC = \frac{\text{Spike sample µg/L conc. - original sample µg/L conc.}}{\text{spike conc. (µg/L)}} * 100$$

%REC (Percent Recovery) for LCS/LCSD:

$$\%REC = \frac{\text{Spike sample µg/L conc.}}{\text{spike conc. (µg/L)}} * 100$$

RPDs:

$$RPD = \frac{|\ \text{Result 2 - Result 1}\ |}{(\text{Result 2} + \text{Result 1})/2} * 100$$

Rev. 2-Oct-96

Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	Beaker No. M25,M26,I-M29-1-FHAR FH
TLI Sample ID:	188-52-1,2,185-26-1C FH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	108.353	N/A	N/A	100	1	10.8
As	56.3	N/A	N/A	100	5	28.2
Ba	4060.503	N/A	N/A	100	1	406
Be	-7.919	N/A	N/A	100	1	< 0.100
Cd	828.458	N/A	N/A	100	1	82.8
Co	62.6	N/A	N/A	100	5	31.3
Cr	5019.044	N/A	N/A	100	1	502
Mn	6126.112	N/A	N/A	100	100	61300
Ni	375.269	N/A	N/A	100	1	37.5
P	4764.237	N/A	N/A	100	1	476
Pb	955.950	N/A	N/A	100	100	9560
Sb	665.061	N/A	N/A	100	1	66.5
Se	250.750	N/A	N/A	100	1	25.1
Tl	307.846	N/A	N/A	100	1	30.8
Zn	7722.537	N/A	N/A	100	100	77200

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Printed: 20-Nov-97 at 04:28 PM

Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	Beaker No. M25,M26,I-M29-1-FHAR FH L
TLI Sample ID:	188-52-1,2,185-26-1C FH L
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	24.699	N/A	N/A	100	5	12.3
As	54.6	N/A	N/A	100	5	27.3
Ba	847.781	N/A	N/A	100	5	424
Be	-1.217	N/A	N/A	100	5	< 0.500
Cd	193.935	N/A	N/A	100	5	97.0
Co	81.4	N/A	N/A	100	5	40.7
Cr	1147.985	N/A	N/A	100	5	574
Mn	1247.558	N/A	N/A	100	500	62400
Ni	89.861	N/A	N/A	100	5	44.9
P	1060.123	N/A	N/A	100	5	530
Pb	192.128	N/A	N/A	100	500	9610
Sb	148.802	N/A	N/A	100	5	74.4
Se	46.977	N/A	N/A	100	5	23.5
Tl	78.983	N/A	N/A	100	5	39.5
Zn	1564.468	N/A	N/A	100	500	78200

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	I-M29-1-H2O2 BH
TLI Sample ID:	185-26-1D BH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	2.038	600	500	100	1	0.245
As	3.3	600	500	100	1	< 0.900
Ba	5.604	600	500	100	1	0.672
Be	-0.075	600	500	100	1	< 0.120
Cd	2.715	600	500	100	1	0.326
Co	2.2	600	500	100	1	0.264
Cr	15.011	600	500	100	1	1.80
Mn	96.612	600	500	100	1	11.6
Ni	7.191	600	500	100	1	0.863
P	92.266	600	500	100	1	11.1
Pb	96.694	600	500	100	1	11.6
Sb	7.416	600	500	100	1	0.890
Se	3.555	600	500	100	1	0.427
Tl	0.4	600	500	100	1	< 0.240
Zn	522.834	600	500	100	1	62.7

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	I-M29-1-H2O2 BH L
TLI Sample ID:	185-26-1D BH L
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	0.775	600	500	100	5	< 0.600
As	-1.2	600	500	100	5	< 4.50
Ba	1.016	600	500	100	5	< 1.20
Be	-0.141	600	500	100	5	< 0.600
Cd	0.317	600	500	100	5	< 0.600
Co	-0.000	600	500	100	5	0.900
Cr	1.991	600	500	100	5	< 1.20
Mn	20.497	600	500	100	5	12.3
Ni	0.713	600	500	100	5	< 1.80
P	11.532	600	500	100	5	< 18.0
Pb	20.616	600	500	100	5	12.4
Sb	-0.313	600	500	100	5	< 2.40
Se	-0.905	600	500	100	5	< 1.80
Tl	0.7	600	500	100	5	< 1.20
Zn	117.430	600	500	100	5	70.5

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	Beaker No. M27,M28,I-M29-2-FHAR FH
TLI Sample ID:	188-52-3,4,185-26-2C FH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	251.685	N/A	N/A	100	1	25.2
As	82.4	N/A	N/A	100	10	82.4
Ba	11740.365	N/A	N/A	100	1	1170
Be	23.654	N/A	N/A	100	1	2.37
Cd	2313.309	N/A	N/A	100	1	231
Co	93.4	N/A	N/A	100	5	46.7
Cr	10238.519	N/A	N/A	100	1	1020
Mn	14077.762	N/A	N/A	100	100	140800
Ni	556.573	N/A	N/A	100	1	55.7
P	55553.270	N/A	N/A	100	1	5560
Pb	2225.871	N/A	N/A	100	100	22300
Sb	543.854	N/A	N/A	100	1	54.4
Se	600.472	N/A	N/A	100	1	60.0
Tl	636.570	N/A	N/A	100	1	63.7
Zn	16070.912	N/A	N/A	100	100	160700

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	Beaker No. M27,M28,I-M29-2-FHAR FH DA
TLI Sample ID:	188-52-3,4,185-26-2C FH DA
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	246.918	N/A	N/A	100	1	24.7
As	N/A	N/A	N/A	N/A	N/A	N/A
Ba	11855.433	N/A	N/A	100	1	1190
Be	23.371	N/A	N/A	100	1	2.34
Cd	2270.033	N/A	N/A	100	1	227
Co	N/A	N/A	N/A	N/A	N/A	N/A
Cr	10054.249	N/A	N/A	100	1	1010
Mn	14953.808	N/A	N/A	100	100	149500
Ni	552.032	N/A	N/A	100	1	55.2
P	55487.777	N/A	N/A	100	1	5550
Pb	2384.730	N/A	N/A	100	100	23800
Sb	590.575	N/A	N/A	100	1	59.1
Se	587.472	N/A	N/A	100	1	58.7
Tl	632.233	N/A	N/A	100	1	63.2
Zn	17206.398	N/A	N/A	100	100	172100

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	I-M29-2-H2O2 1 OF 2,2 OF 2 BH
TLI Sample ID:	185-26-2D,12 BH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	21.359	1260	1160	100	1	2.32
As	17.5	1260	1160	100	1	1.90
Ba	294.765	1260	1160	100	1	32.0
Be	1.890	1260	1160	100	1	0.205
Cd	98.350	1260	1160	100	1	10.7
Co	37.9	1260	1160	100	1	4.12
Cr	256.897	1260	1160	100	1	27.9
Mn	30967.557	1260	1160	100	1	3360
Ni	18.969	1260	1160	100	1	2.06
P	912.030	1260	1160	100	1	99.1
Pb	4575.688	1260	1160	100	1	497
Sb	35.767	1260	1160	100	1	3.89
Se	14.641	1260	1160	100	1	1.59
Tl	0.7	1260	1160	100	1	< 0.217
Zn	37672.477	1260	1160	100	1	4090

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	I-M29-2-H2O2 1 OF 2,2 OF 2 BH DA
TLI Sample ID:	185-26-2D,12 BH DA
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	22.434	1260	1160	100	1	2.44
As	N/A	N/A	N/A	N/A	N/A	N/A
Ba	293.313	1260	1160	100	1	31.9
Be	1.894	1260	1160	100	1	0.206
Cd	99.234	1260	1160	100	1	10.8
Co	N/A	N/A	N/A	N/A	N/A	N/A
Cr	259.333	1260	1160	100	1	28.2
Mn	354.705	1260	1160	100	100	3850
Ni	20.029	1260	1160	100	1	2.18
P	919.878	1260	1160	100	1	99.9
Pb	4613.094	1260	1160	100	1	501
Sb	39.051	1260	1160	100	1	4.24
Se	14.208	1260	1160	100	1	1.54
Tl	N/A	N/A	N/A	N/A	N/A	N/A
Zn	38076.535	1260	1160	100	1	4140

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	Beaker No. M29,M30,I-M29-3-FHAR FH
TLI Sample ID:	188-52-5,6,185-26-3C FH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	299.016	N/A	N/A	100	1	29.9
As	66.3	N/A	N/A	100	10	66.3
Ba	8355.201	N/A	N/A	100	1	836
Be	-11.394	N/A	N/A	100	1	< 0.100
Cd	2308.063	N/A	N/A	100	1	231
Co	82.1	N/A	N/A	100	5	41.1
Cr	7981.024	N/A	N/A	100	1	798
Mn	10702.499	N/A	N/A	100	100	107000
Ni	539.854	N/A	N/A	100	1	54.0
P	34047.375	N/A	N/A	100	1	3400
Pb	2464.629	N/A	N/A	100	100	24600
Sb	2151.186	N/A	N/A	100	1	215
Se	412.601	N/A	N/A	100	1	41.3
Tl	486.711	N/A	N/A	100	1	48.7
Zn	19227.254	N/A	N/A	100	100	192300

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	I-M29-3-H2O2 BH
TLI Sample ID:	185-26-3D BH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	8.861	1000	900	100	1	0.985
As	4.2	1000	900	100	1	< 0.833
Ba	61.495	1000	900	100	1	6.83
Be	0.194	1000	900	100	1	< 0.111
Cd	26.755	1000	900	100	1	2.97
Co	4.3	1000	900	100	1	0.478
Cr	78.615	1000	900	100	1	8.73
Mn	5828.679	1000	900	100	1	648
Ni	34.552	1000	900	100	1	3.84
P	110.770	1000	900	100	1	12.3
Pb	1501.071	1000	900	100	1	167
Sb	9.779	1000	900	100	1	1.09
Se	8.043	1000	900	100	1	0.894
Tl	0.9	1000	900	100	1	< 0.222
Zn	9978.375	1000	900	100	1	1110

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	Beaker No. M33,M34,O-M29-1-FHAR FH
TLI Sample ID:	188-52-9,10,185-26-4C FH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	49.120	N/A	N/A	100	1	4.91
As	49.4	N/A	N/A	100	1	4.94
Ba	525.725	N/A	N/A	100	1	52.6
Be	2.167	N/A	N/A	100	1	0.217
Cd	86.064	N/A	N/A	100	1	8.61
Co	40.9	N/A	N/A	100	1	4.09
Cr	617.358	N/A	N/A	100	1	61.7
Mn	643.586	N/A	N/A	100	100	6440
Ni	91.412	N/A	N/A	100	1	9.14
P	3061.411	N/A	N/A	100	1	306
Pb	8243.760	N/A	N/A	100	1	824
Sb	105.580	N/A	N/A	100	1	10.6
Se	58.554	N/A	N/A	100	1	5.86
Tl	40.443	N/A	N/A	100	1	4.04
Zn	66464.688	N/A	N/A	100	1	6650

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	O-M29-1-H2O2 BH
TLI Sample ID:	185-26-4D BH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	1.115	540	440	100	1	0.137
As	0.6	540	440	100	1	< 0.920
Ba	4.164	540	440	100	1	0.511
Be	-0.067	540	440	100	1	< 0.123
Cd	0.388	540	440	100	1	< 0.123
Co	1.0	540	440	100	1	< 0.184
Cr	11.139	540	440	100	1	1.37
Mn	12.844	540	440	100	1	1.58
Ni	5.895	540	440	100	1	0.723
P	75.216	540	440	100	1	9.23
Pb	13.193	540	440	100	1	1.62
Sb	4.896	540	440	100	1	0.601
Se	1.330	540	440	100	1	< 0.368
Tl	0.1	540	440	100	1	< 0.245
Zn	86.853	540	440	100	1	10.7

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Project Number: 43452

Sample Report

Client Sample ID:	Beaker No.M35,M36,O-M29-2-FHAR FH
TLI Sample ID:	188-52-11,12,185-26-5C FH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	76.664	N/A	N/A	100	1	7.67
As	60.6	N/A	N/A	100	1	6.06
Ba	1026.195	N/A	N/A	100	1	103
Be	5.073	N/A	N/A	100	1	0.507
Cd	217.630	N/A	N/A	100	1	21.8
Co	43.9	N/A	N/A	100	1	4.39
Cr	1013.231	N/A	N/A	100	1	101
Mn	1082.762	N/A	N/A	100	100	10800
Ni	97.079	N/A	N/A	100	1	9.71
P	508.692	N/A	N/A	100	1	50.9
Pb	15648.782	N/A	N/A	100	1	1560
Sb	139.702	N/A	N/A	100	1	14.0
Se	78.002	N/A	N/A	100	1	7.80
Tl	49.218	N/A	N/A	100	1	4.92
Zn	1265.164	N/A	N/A	100	100	12700

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	O-M29-2-H2O2 BH
TLI Sample ID:	185-26-5D BH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	1.856	850	750	100	1	0.210
As	0.90	850	750	100	1	< 0.85
Ba	7.619	850	750	100	1	0.863
Be	-0.059	850	750	100	1	< 0.113
Cd	13.351	850	750	100	1	1.51
Co	11.9	850	750	100	1	1.35
Cr	13.390	850	750	100	1	1.52
Mn	23.408	850	750	100	1	2.65
Ni	20.752	850	750	100	1	2.35
P	120.396	850	750	100	1	13.6
Pb	131.061	850	750	100	1	14.9
Sb	8.067	850	750	100	1	0.914
Se	12.750	850	750	100	1	1.44
Tl	1.3	850	750	100	1	< 0.227
Zn	156.465	850	750	100	1	17.7

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	Beaker No.M37,M38,O-M29-3-FHAR FH
TLI Sample ID:	188-52-13,14,185-26-6C FH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	19.956	N/A	N/A	100	1	2.00
As	20.3	N/A	N/A	100	1	2.03
Ba	364.474	N/A	N/A	100	1	36.4
Be	0.739	N/A	N/A	100	1	< 0.100
Cd	40.157	N/A	N/A	100	1	4.02
Co	19.7	N/A	N/A	100	1	1.97
Cr	260.967	N/A	N/A	100	1	26.1
Mn	15267.756	N/A	N/A	100	1	1530
Ni	57.392	N/A	N/A	100	1	5.74
P	881.175	N/A	N/A	100	1	88.1
Pb	4525.863	N/A	N/A	100	1	453
Sb	87.368	N/A	N/A	100	1	8.74
Se	46.901	N/A	N/A	100	1	4.69
Tl	9.7	N/A	N/A	100	1	0.970
Zn	27701.213	N/A	N/A	100	1	2770

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	O-M29-3-H2O2 BH
TLI Sample ID:	185-26-6D BH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	0.496	510	410	100	1	< 0.124
As	-0.3	510	410	100	1	< 0.933
Ba	4.640	510	410	100	1	0.577
Be	-0.142	510	410	100	1	< 0.124
Cd	0.400	510	410	100	1	< 0.124
Co	0.0	510	410	100	1	0.187
Cr	9.143	510	410	100	1	1.14
Mn	27.304	510	410	100	1	3.40
Ni	5.253	510	410	100	1	0.653
P	69.649	510	410	100	1	8.66
Pb	14.850	510	410	100	1	1.85
Sb	2.873	510	410	100	1	< 0.498
Se	0.917	510	410	100	1	< 0.373
Tl	1.1	510	410	100	1	< 0.249
Zn	105.025	510	410	100	1	13.1

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	Beaker No.M41,M42,O-M29-BLK-FHAR FH
TLI Sample ID:	188-52-17,18,185-26-7C FH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	1.286	N/A	N/A	100	1	0.129
As	3.3	N/A	N/A	100	1	< 0.750
Ba	129.797	N/A	N/A	100	1	13.0
Be	-0.018	N/A	N/A	100	1	< 0.100
Cd	-1.160	N/A	N/A	100	1	< 0.100
Co	6.4	N/A	N/A	100	1	0.640
Cr	70.559	N/A	N/A	100	1	7.06
Mn	15.439	N/A	N/A	100	1	1.54
Ni	40.309	N/A	N/A	100	1	4.03
P	51.869	N/A	N/A	100	1	5.19
Pb	2.369	N/A	N/A	100	1	0.237
Sb	38.886	N/A	N/A	100	1	3.89
Se	40.653	N/A	N/A	100	1	4.07
Tl	7.2	N/A	N/A	100	1	0.720
Zn	102.083	N/A	N/A	100	1	10.2

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	O-M29-BLK-FHAR-H2O2 BH
TLI Sample ID:	185-26-7CD BH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	1.279	150	150	100	1	0.128
As	0.6	150	150	100	1	< 0.750
Ba	3.665	150	150	100	1	0.366
Be	-0.053	150	150	100	1	< 0.100
Cd	0.684	150	150	100	1	< 0.100
Co	0.4	150	150	100	1	< 0.150
Cr	7.373	150	150	100	1	0.737
Mn	46.947	150	150	100	1	4.69
Ni	-0.385	150	150	100	1	< 0.300
P	43.515	150	150	100	1	4.35
Pb	10.807	150	150	100	1	1.08
Sb	5.495	150	150	100	1	0.550
Se	0.439	150	150	100	1	< 0.300
Tl	6.1	150	150	100	1	0.610
Zn	67.789	150	150	100	1	6.78

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	Beaker No.M43,M44,M45,O-M29-RB-0.1N HNO3 FH
TLI Sample ID:	188-52-19,20,21,185-26-8E FH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	2.568	N/A	N/A	100	1	0.257
As	21	N/A	N/A	100	1	2.10
Ba	991.093	N/A	N/A	100	1	99.1
Be	-40.530	N/A	N/A	100	1	< 0.100
Cd	-3.530	N/A	N/A	100	1	< 0.100
Co	97.5	N/A	N/A	100	1	9.75
Cr	304.915	N/A	N/A	100	1	30.5
Mn	183.382	N/A	N/A	100	1	18.3
Ni	119.127	N/A	N/A	100	1	11.9
P	747.386	N/A	N/A	100	1	74.7
Pb	44.093	N/A	N/A	100	1	4.41
Sb	44.077	N/A	N/A	100	1	4.41
Se	45.659	N/A	N/A	100	1	4.57
Tl	-0.0	N/A	N/A	100	1	0.200
Zn	491.286	N/A	N/A	100	1	49.1

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	M29-RB-DI H2O FH
TLI Sample ID:	185-26-8H FH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04 & 05, 1997
Date Analyzed:	November 6-11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	0.411	44	44	100	1	< 0.100
As	0.6	44	44	100	1	< 0.750
Ba	4.569	44	44	100	1	0.457
Be	-0.150	44	44	100	1	< 0.100
Cd	-0.471	44	44	100	1	< 0.100
Co	4.4	44	44	100	1	0.440
Cr	7.673	44	44	100	1	0.767
Mn	3.502	44	44	100	1	0.350
Ni	3.484	44	44	100	1	0.348
P	0.817	44	44	100	1	< 3.00
Pb	1.185	44	44	100	1	< 0.200
Sb	4.794	44	44	100	1	0.479
Se	2.428	44	44	100	1	< 0.300
Tl	2.5	44	44	100	1	0.250
Zn	14.394	44	44	100	1	1.44

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	O-M29-RB-HNO3/H2O2,0.1N HNO3 BH
TLI Sample ID:	185-26-8DE BH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	0.560	150	150	100	1	< 0.100
As	-1.2	150	150	100	1	< 0.750
Ba	2.298	150	150	100	1	0.230
Be	-0.107	150	150	100	1	< 0.100
Cd	-0.014	150	150	100	1	< 0.100
Co	0.1	150	150	100	1	< 0.150
Cr	5.178	150	150	100	1	0.518
Mn	2.714	150	150	100	1	0.271
Ni	-1.556	150	150	100	1	< 0.300
P	32.808	150	150	100	1	3.28
Pb	5.703	150	150	100	1	0.570
Sb	3.737	150	150	100	1	< 0.400
Se	-0.536	150	150	100	1	< 0.300
Tl	2.2	150	150	100	1	0.220
Zn	46.883	150	150	100	1	4.69

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	Beaker No.M31,M32,I-M29-4-FHAR FH
TLI Sample ID:	188-52-7,8,185-26-9C FH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04 & 05, 1997
Date Analyzed:	November 6-11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	181.759	N/A	N/A	100	1	18.2
As	84.5	N/A	N/A	100	10	84.5
Ba	10862.378	N/A	N/A	100	1	1090
Be	-2.354	N/A	N/A	100	1	< 0.100
Cd	1839.752	N/A	N/A	100	1	184
Co	85.0	N/A	N/A	100	5	42.5
Cr	7506.006	N/A	N/A	100	1	751
Mn	11515.893	N/A	N/A	100	100	115200
Ni	456.268	N/A	N/A	100	1	45.6
P	33490.906	N/A	N/A	100	1	3350
Pb	2559.745	N/A	N/A	100	100	25600
Sb	2528.033	N/A	N/A	100	1	253
Se	446.947	N/A	N/A	100	1	44.7
Tl	520.430	N/A	N/A	100	1	52.0
Zn	24973.715	N/A	N/A	100	100	249700

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	I-M29-4-H2O 1 OF 2,2 OF 2 BH
TLI Sample ID:	185-26-9D,11 BH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04 & 05, 1997
Date Analyzed:	November 6-11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	1.326	1098	998	100	1	0.146
As	-0.8	1098	998	100	1	< 0.825
Ba	7.231	1098	998	100	1	0.796
Be	-0.068	1098	998	100	1	< 0.110
Cd	1.588	1098	998	100	1	0.175
Co	1.5	1098	998	100	1	0.165
Cr	10.776	1098	998	100	1	1.19
Mn	413.740	1098	998	100	1	45.5
Ni	1.896	1098	998	100	1	< 0.330
P	78.195	1098	998	100	1	8.60
Pb	59.330	1098	998	100	1	6.53
Sb	5.136	1098	998	100	1	0.565
Se	0.750	1098	998	100	1	< 0.330
Tl	0.5	1098	998	100	1	< 0.220
Zn	558.737	1098	998	100	1	61.5

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	Beaker No.M39,M40,O-M29-4-FHAR FH
TLI Sample ID:	188-52-15,16,185-26-10C FH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04 & 05, 1997
Date Analyzed:	November 6-11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	16.375	N/A	N/A	100	1	1.64
As	15.8	N/A	N/A	100	1	1.58
Ba	235.914	N/A	N/A	100	1	23.6
Be	0.462	N/A	N/A	100	1	< 0.100
Cd	20.706	N/A	N/A	100	1	2.07
Co	19.0	N/A	N/A	100	1	1.90
Cr	181.609	N/A	N/A	100	1	18.2
Mn	10393.382	N/A	N/A	100	1	1040
Ni	55.149	N/A	N/A	100	1	5.51
P	519.517	N/A	N/A	100	1	52.0
Pb	2248.414	N/A	N/A	100	1	225
Sb	78.829	N/A	N/A	100	1	7.88
Se	40.770	N/A	N/A	100	1	4.08
Tl	12.3	N/A	N/A	100	1	1.230
Zn	25008.109	N/A	N/A	100	1	2500

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Client: PES, Inc.
Project Number: 43452

Sample Report

Client Sample ID:	O-M29-4-H2O2 BH
TLI Sample ID:	185-26-10D BH
Date Received:	Sept. 30 & Oct. 28, 1997
Date Prepared:	Oct. 31 - Nov. 04 & 05, 1997
Date Analyzed:	November 6-11 & 19, 1997
Matrix:	Air

Analyte	Conc. (ug/L)	mL Total Vol.	mL Used	mL Final Vol.	Dilution Factor	Total ug Result
Ag	1.322	535	435	100	1	0.163
As	-0.4	535	435	100	1	< 0.922
Ba	4.148	535	435	100	1	0.510
Be	-0.152	535	435	100	1	< 0.123
Cd	1.988	535	435	100	1	0.244
Co	1.1	535	435	100	1	< 0.184
Cr	9.103	535	435	100	1	1.12
Mn	31.147	535	435	100	1	3.83
Ni	0.737	535	435	100	1	< 0.369
P	60.269	535	435	100	1	7.41
Pb	42.467	535	435	100	1	5.22
Sb	-0.819	535	435	100	1	< 0.492
Se	8.306	535	435	100	1	1.02
Tl	1.6	535	435	100	1	< 0.246
Zn	125.499	535	435	100	1	15.4

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Client: PES, Inc.
Project Number: 43452

QA: Serial Dilution

Client Sample ID:	Beaker No. M25,M26,I-M29-1-FHAR FH	Beaker No. M25,M26,I-M29-1-FHAR FH L
TLI Sample ID:	188-52-1,2,185-26-1C FH	188-52-1,2,185-26-1C FH L
Date Prepared:	Oct. 31 - Nov. 04, 1997	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997	November 06 - 11 & 19, 1997
Matrix:	Air	Air

	Native Sample		Serial Dilution		
Analyte	Total ug Result	ug/L Conc.	Total ug Result	ug/L Conc.	RPD
Ag	10.8	108.353	12.3	24.699	13.0%
As	28.2	56.300	27.3	54.600	<RDL
Ba	406	4060.503	424	847.781	4.34%
Be	< 0.100	-7.919	< 0.500	-1.217	<RDL
Cd	82.8	828.458	97.0	193.935	15.8%
Co	31.3	62.600	40.7	81.400	26.1%
Cr	502	5019.044	574	1147.985	13.4%
Mn	61300	6126.112	62400	1247.558	1.78%
Ni	37.5	375.269	44.9	89.861	18.0%
P	476	4764.237	530	1060.123	10.7%
Pb	9560	955.950	9610	192.128	0.522%
Sb	66.5	665.061	74.4	148.802	11.2%
Se	25.1	250.750	23.5	46.977	6.58%
Tl	30.8	307.846	39.5	78.983	24.8%
Zn	77200	7722.537	78200	1564.468	1.29%

Client: PES, Inc.
Project Number: 43452

QA: Serial Dilution

Client Sample ID:	I-M29-1-H2O2 BH	I-M29-1-H2O2 BH L
TLI Sample ID:	185-26-1D BH	185-26-1D BH L
Date Prepared:	Oct. 31 - Nov. 04, 1997	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997	November 06 - 11 & 19, 1997
Matrix:	Air	Air

	Native Sample		Serial Dilution		
Analyte	Total ug Result	ug/L Conc.	Total ug Result	ug/L Conc.	RPD
Ag	0.245	2.038	< 0.600	0.775	<RDL
As	< 0.900	3.300	< 4.50	-1.200	<RDL
Ba	0.672	5.604	< 1.20	1.016	<RDL
Be	< 0.120	-0.075	< 0.600	-0.141	<RDL
Cd	0.326	2.715	< 0.600	0.317	<RDL
Co	0.264	2.200	0.900	-0.000	<RDL
Cr	1.80	15.011	< 1.20	1.991	<RDL
Mn	11.6	96.612	12.3	20.497	5.86%
Ni	0.863	7.191	< 1.80	0.713	<RDL
P	11.1	92.266	< 18.0	11.532	<RDL
Pb	11.6	96.694	12.4	20.616	6.67%
Sb	0.890	7.416	< 2.40	-0.313	<RDL
Se	0.427	3.555	< 1.80	-0.905	<RDL
Tl	< 0.240	0.4	< 1.20	0.7	<RDL
Zn	62.7	522.834	70.5	117.430	<RDL

Client: PES, Inc.
Project Number: 43452

QA: Duplicate

Client Sample ID:	Beaker No. M27,M28,I-M29-2-FHAR FH	Beaker No. M27,M28,I-M29-2-FHAR FH DA
TLI Sample ID:	188-52-3,4,185-26-2C FH	188-52-3,4,185-26-2C FH DA
Date Prepared:	Oct. 31 - Nov. 04, 1997	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997	November 06 - 11 & 19, 1997
Matrix:	Air	Air

	Sample		Duplicate		
Analyte	Total ug Result	ug/L Conc.	Total ug Result	ug/L Conc.	RPD
Ag	25.2	251.685	24.7	246.918	2.00%
As	82.4	82.4	N/A	N/A	N/A
Ba	1170	11740.365	1190	11855.433	1.69%
Be	2.37	23.654	2.34	23.371	1.27%
Cd	231	2313.309	227	2270.033	1.75%
Co	46.7	93.4	N/A	N/A	N/A
Cr	1020	10238.519	1010	10054.249	0.985%
Mn	140800	14077.762	149500	14953.808	5.99%
Ni	55.7	556.573	55.2	552.032	0.902%
P	5560	55553.270	5550	55487.777	0.180%
Pb	22300	2225.871	23800	2384.730	6.51%
Sb	54.4	543.854	59.1	590.575	8.28%
Se	60.0	600.472	58.7	587.472	2.19%
Tl	63.7	636.570	63.2	632.233	0.788%
Zn	160700	16070.912	172100	17206.398	6.85%

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Client: PES, Inc.
Project Number: 43452

QA: Duplicate

Client Sample ID:	I-M29-2-H2O2 1 OF 2,2 OF 2 BH	I-M29-2-H2O2 1 OF 2,2 OF 2 BH DA
TLI Sample ID:	185-26-2D,12 BH	185-26-2D,12 BH DA
Date Prepared:	Oct. 31 - Nov. 04, 1997	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997	November 06 - 11 & 19, 1997
Matrix:	Air	Air

	Sample		Duplicate		
Analyte	Total ug Result	ug/L Conc.	Total ug Result	ug/L Conc.	RPD
Ag	2.32	21.359	2.44	22.434	5.04%
As	1.90	17.5	N/A	N/A	N/A
Ba	32.0	294.765	31.9	293.313	0.313%
Be	0.205	1.890	0.206	1.894	<RDL
Cd	10.7	98.350	10.8	99.234	0.930%
Co	4.12	37.9	N/A	N/A	N/A
Cr	27.9	256.897	28.2	259.333	1.07%
Mn	3360	30967.557	3850	354.705	13.6%
Ni	2.06	18.969	2.18	20.029	<RDL
P	99.1	912.030	99.9	919.878	0.804%
Pb	497	4575.688	501	4613.094	0.802%
Sb	3.89	35.767	4.24	39.051	<RDL
Se	1.59	14.641	1.54	14.208	<RDL
Tl	< 0.217	0.7	N/A	N/A	N/A
Zn	4090	37672.477	4140	38076.535	1.22%

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Client: PES, Inc.
Project Number: 43452

QA: Matrix Spikes (Post-Digestion)

Client Sample ID:	Beaker No. M25,M26,I-M29-1-FHAR FH PDS	
TLI Sample ID:	188-52-1,2,185-26-1C FH PDS	
Date Prepared:	Oct. 31 - Nov. 04, 1997	
Date Analyzed:	November 06 - 11 & 19, 1997	
Matrix:	Air	

	Post-Digestion Spike			Post-Digestion Spike Duplicate			
Analyte	Recovered Amount (ug/L)	Spike Amount (ug/L)	% Recovery	Recovered Amount (ug/L)	Spike Amount (ug/L)	% Recovery	RPD
Ag	151.75	50	87%				---
As	97.4	50	82%				---
Ba	3994.51	50	Spike Low				---
Be	32.58	50	65%				---
Cd	871.87	50	Spike Low				---
Co	85.7	25	92%				---
Cr	5057.21	50	Spike Low				---
Mn	6106.34	50	Spike Low				---
Ni	416.45	50	Spike Low				---
P	5593.92	1000	83%				---
Pb	1001.89	50	Spike Low				---
Sb	696.81	50	Spike Low				---
Se	295.75	50	Spike Low				---
Tl	368.99	50	Spike Low				---
Zn	7879.28	200	Spike Low				---

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Client: PES, Inc.
Project Number: 43452

QA: Matrix Spikes (Post-Digestion)

Client Sample ID:	I-M29-1-H2O2 BH PDS	
TLI Sample ID:	185-26-1D BH PDS	
Date Prepared:	Oct. 31 - Nov. 04, 1997	
Date Analyzed:	November 06 - 11 & 19, 1997	
Matrix:	Air	

	Post-Digestion Spike			Post-Digestion Spike Duplicate			
Analyte	Recovered Amount (ug/L)	Spike Amount (ug/L)	% Recovery	Recovered Amount (ug/L)	Spike Amount (ug/L)	% Recovery	RPD
Ag	40.27	50	76%				---
As	52.1	50	104%				---
Ba	53.78	50	96%				---
Be	46.36	50	93%				---
Cd	51.32	50	97%				---
Co	N/A	N/A	N/A				---
Cr	61.84	50	94%				---
Mn	143.39	50	94%				---
Ni	54.76	50	95%				---
P	953.49	1000	86%				---
Pb	143.09	50	93%				---
Sb	52.50	50	90%				---
Se	39.58	50	72%				---
Tl	23.2	25	93%				---
Zn	703.35	200	90%				---

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Client: PES, Inc.
Project Number: 43452

QA: Method Blank

TLI Sample ID:	43452 MB
Date Prepared:	Oct. 31 - Nov. 04, 1997
Date Analyzed:	November 06 - 11 & 19, 1997
Matrix:	N/A

	Method Blank		
Analyte	Recovered Amount (ug/L)	Detection Limit (ug/L)	Pass or Fail
Ag	-0.47	1	Pass
As	-0.30	7.5	Pass
Ba	-0.05	2	Pass
Be	0.01	1	Pass
Cd	-0.37	1	Pass
Co	0.70	1.5	Pass
Cr	-0.92	2	Pass
Mn	0.12	2	Pass
Ni	-1.13	3	Pass
P	-12.45	30	Pass
Pb	0.20	2	Pass
Sb	-1.43	4	Pass
Se	0.08	3	Pass
Tl	-2.46	5	Pass
Zn	5.47	12	Pass
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Client: PES, Inc.
Project Number: 43452

QA: GFAA Method Blank

TLI Sample ID:	43452 MB
Date Prepared:	Oct. 31 - Nov. 04 & 05, 1997
Date Analyzed:	November 6-11 & 19, 1997
Matrix:	N/A

	Method Blank		
Analyte	Recovered Amount (ug/L)	Detection Limit (ug/L)	Pass or Fail
Tl	1.20	2	Pass
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Client: PES, Inc.
Project Number: 43452

QA: Lab Control Spikes

TLI Sample ID:	43452 LCS	
Date Prepared:	Oct. 31 - Nov. 04, 1997	
Date Analyzed:	November 06 - 11 & 19, 1997	
Matrix:	N/A	

	Lab Control Spike			Lab Control Spike Duplicate			RPD
Analyte	Recovered Amount (ug/L)	Spike Amount (ug/L)	% Recovery	Recovered Amount (ug/L)	Spike Amount (ug/L)	% Recovery	
Ag	43.98	50	88%				---
As	39.5	50	79%				---
Ba	45.60	50	91%				---
Be	43.77	50	88%				---
Cd	45.56	50	91%				---
Co	47.1	50	94%				---
Cr	45.70	50	91%				---
Mn	45.95	50	92%				---
Ni	45.14	50	90%				---
P	907.72	1000	91%				---
Pb	45.36	50	91%				---
Sb	46.09	50	92%				---
Se	45.35	50	91%				---
Tl	45.73	50	91%				---
Zn	184.30	200	92%				---

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Client: PES, Inc.
Project Number: 43452

QA: GFAA Lab Control Spikes

TLI Sample ID:	43452 LCS	
Date Prepared:	Oct. 31 - Nov. 04 & 05, 1997	
Date Analyzed:	November 6-11 & 19, 1997	
Matrix:	N/A	

	Lab Control Spike			Lab Control Spike Duplicate			
Analyte	Recovered Amount (ug/L)	Spike Amount (ug/L)	% Recovery	Recovered Amount (ug/L)	Spike Amount (ug/L)	% Recovery	RPD
Tl	40.20	50	80%				---

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Client: PES, Inc.
Project Number: 43452

Sample Report

Date Received:	Sept. 30 & Oct 28, 1997
Date Prepared:	Oct. 31 - Nov. 6, 1997
Date Analyzed:	November 06, 1997
DATA FILE:	AB833
Matrix	Air

ANALYTE: Hg	
ug/L RDL:	0.2
Analysis Method:	29
Instrument: P E Zeeman 5100	
Spike Conc. (ug/L)	5

CVAA ANALYTE SUMMARY REPORT

Client Sample ID	TLI SAMPID	ug/L CONC	ml TV	ml FV	ml Aliquot	DIL FACTOR	Total ug RESULT	Avg. RESULT	RPD	%REC
Beaker No.M25,M26,I-M29-1-FHAR FH	188-52-1,2,185-26-1C	0.122	N/A	100	5	1	< 0.400	–	–	–
Beaker No.M25,M26,I-M29-1-FHAR FH D	188-52-1,2,185-26-1C D	0.096	N/A	100	5	1	< 0.400	< 0.400		–
I-M29-H2O2 BH	185-26-1D	0.039	600	N/A	5	1	< 2.40	–	–	–
I-M29-H2O2 BH D	185-26-1D D	0.042	600	N/A	5	1	< 2.40	< 2.40	–	–
I-M29-1-BHAR HNO3	185-26-1E	0.013	104	N/A	5	1	< 0.416	–	–	
I-M29-1-BHAR HNO3 D	185-26-1E D	0.005	104	N/A	5	1	< 0.416	< 0.416	–	
I-M29-1-KMNO4 KMnO4	185-26-1F	0.478	390	N/A	5	1	3.73	–	–	
I-M29-1-KMNO4 KMnO4 D	185-26-1F D	0.507	390	N/A	5	1	3.95	3.84	–	–
I-M29-1-HCL HCl	185-26-1G	0.026	235	N/A	5	1	< 0.940	–	–	
I-M29-1-HCL HCl D	185-26-1G D	0.021	235	N/A	5	1	< 0.940	< 0.940	–	–
Beaker No.M27,M28,I-M29-2-FHAR FH	188-52-3,4,185-26-2C	0.130	N/A	100	5	1	< 0.400	–	–	
Beaker No.M27,M28,I-M29-2-FHAR FH D	188-52-3,4,185-26-2C D	0.125	N/A	100	5	1	< 0.400	< 0.400	–	–
I-M29-2-H2O2 1 OF 2,2 OF 2 BH	185-26-2D,12	0.410	1260	N/A	5	1	10.3	–	–	–
I-M29-2-H2O2 1 OF 2,2 OF 2 BH D	185-26-2D,12 D	0.442	1260	N/A	5	1	11.1	10.7	–	–
Beaker No.M29,M30,I-M29-3-FHAR FH	188-52-5,6,185-26-3C	1.546	N/A	100	5	1	3.09	–		–
Beaker No.M29,M30,I-M29-3-FHAR FH D	188-52-5,6,185-26-3C D	1.476	N/A	100	5	1	2.95	3.02		–
I-M29-3-H2O2 BH	185-26-3D	0.803	1000	N/A	5	1	16.1	–	–	–
I-M29-3-H2O2 BH D	185-26-3D D	0.790	1000	N/A	5	1	15.8	15.9	–	–
I-M29-3-BHAR HNO3	185-26-3E	0.096	122	N/A	5	1	< 0.488	–		–
I-M29-3-BHAR HNO3 D	185-26-3E D	0.096	122	N/A	5	1	< 0.488	< 0.488		–
I-M29-3-KMNO4 KMnO4	185-26-3F DX2	4.923	400	N/A	5	2	78.8	–	–	–
I-M29-3-KMNO4 KMnO4 D	185-26-3F DX2 D	5.305	400	N/A	5	2	84.9	81.8		–
Beaker No.M33,M34,O-M29-1-FHAR FH	188-52-9,10,185-26-4C	0.049	N/A	100	5	1	< 0.400		–	–
Beaker No.M33,M34,O-M29-1-FHAR FH D	188-52-9,10,185-26-4C D	0.023	N/A	100	5	1	< 0.400	< 0.400	–	–
O-M29-1-H2O2 BH	185-26-4D	0.010	540	N/A	5	1	< 2.16	–		–
O-M29-1-H2O2 BH D	185-26-4D D	0.010	540	N/A	5	1	< 2.16	< 2.16	–	–
O-M29-1-BHAR HNO3	185-26-4E	0.029	104	N/A	5	1	< 0.416	–	–	–
O-M29-1-BHAR HNO3 D	185-26-4E D	0.021	104	N/A	5	1	< 0.416	< 0.416	–	
O-M29-1-KMNO4 KMnO4	185-26-4F	0.894	400	N/A	5	1	7.15	–	–	–
O-M29-1-KMNO4 KMnO4 D	185-26-4F D	0.956	400	N/A	5	1	7.65	7.40	–	–
Beaker No.M35,M36,O-M29-2-FHAR FH	188-52-11,12,185-26-5C	0.031	N/A	100	5	1	< 0.400	–	–	
Beaker No.M35,M36,O-M29-2-FHAR FH D	188-52-11,12,185-26-5C D	0.016	N/A	100	5	1	< 0.400	< 0.400	–	–
O-M29-2-H2O2 BH	185-26-5D	0.036	850	N/A	5	1	< 3.40	–	–	
O-M29-2-H2O2 BH D	185-26-5D D	0.029	850	N/A	5	1	< 3.40	< 3.40	–	
O-M29-2-BHAR HNO3	185-26-5E	0.018	135	N/A	5	1	< 0.540	–	–	
O-M29-2-BHAR HNO3 D	185-26-5E D	0.023	135	N/A	5	1	< 0.540	< 0.540	–	
O-M29-2-KMNO4 KMnO4	185-26-5F	1.922	395	N/A	5	1	15.2	–	–	
O-M29-2-KMNO4 KMnO4 D	185-26-5F D	2.172	395	N/A	5	1	17.2	16.2	–	
O-M29-2-HCL HCl	185-26-5G	0.047	222	N/A	5	1	< 0.888	–	–	
O-M29-2-HCL HCl D	185-26-5G D	0.039	222	N/A	5	1	< 0.888	< 0.888	–	–
Beaker No.M37,M38,O-M29-3-FHAR FH	188-52-13,14,185-26-6C	0.018	N/A	100	5	1	< 0.400	–		–
Beaker No.M37,M38,O-M29-3-FHAR FH D	188-52-13,14,185-26-6C D	0.023	N/A	100	5	1	< 0.400	< 0.400	–	–
O-M29-3-H2O2 BH	185-26-6D	0.055	510	N/A	5	1	< 2.04	–	–	–
O-M29-3-H2O2 BH D	185-26-6D D	0.057	510	N/A	5	1	< 2.04	< 2.04		–
O-M29-3-BHAR HNO3	185-26-6E	0.010	114	N/A	5	1	< 0.456	–		–
O-M29-3-BHAR HNO3 D	185-26-6E D	0.005	114	N/A	5	1	< 0.456	< 0.456		–
O-M29-3-KMNO4 KMnO4	185-26-6F	8.051	305	N/A	5	1	49.1	–		–
O-M29-3-KMNO4 KMnO4 D	185-26-6F D	8.695	305	N/A	5	1	53.0	51.1	–	–
O-M29-3-HCL HCl	185-26-6G	0.166	210	N/A	5	1	< 0.840	–	–	–
O-M29-3-HCL HCl D	185-26-6G D	0.174	210	N/A	5	1	< 0.840	< 0.840		–

Triangle Laboratories, Inc.
801 Capitola Drive * Durham, North Carolina 27713
Tele: (919) 544-5729 * Fax: (919) 544-5491

Printed: 20-Nov-97 at 12:53 PM

Client: PES, Inc.
Project Number: 43452

ample Report

Date Received:	Sept. 30 & Oct 28, 1997
Date Prepared:	Oct. 31 - Nov. 6, 1997
Date Analyzed:	November 06, 1997
TA FILE	AB833
trix:	Air

ANALYTE: Hg	
ug/L RDL:	0.2
Analysis Method:	29
Instrument: P E Zeeman 5100	
Spike Conc. (ug/L)	5

CVAA ANALYTE SUMMARY REPORT

ent Sample ID	TEI SAMPID	ug/L CONC	ml TV	ml FV	ml Aliquot	DIL FACTOR	Total ug RESULT	Avg. RESULT	RPD	%REC
Beaker No.M41,M42,O-M29-BLK-FHAR FH	188-52-17,18,185-26-7C	0.013	N/A	100	5	1	< 0.400		–	
Beaker No.M41,M42,O-M29-BLK-FHAR FH D	188-52-17,18,185-26-7C D	0.010	N/A	100	5	1	< 0.400	< 0.400	–	–
M29-BLK-FHAR,H2O2 BH	185-26-7CD	-0.003	150	N/A	5	1	< 0.600	–	–	–
M29-BLK-FHAR,H2O2 BH D	185-26-7CD D	0.008	150	N/A	5	1	< 0.600	< 0.600	–	
O-M29-BLK-BHAR HNO3	185-26-7E	0.000	100	N/A	5	1	< 0.400		–	
O-M29-BLK-BHAR HNO3 D	185-26-7E D	0.013	100	N/A	5	1	< 0.400	< 0.400	–	–
M29-BLK-KMNO4,RB-DI H20 KMnO4	185-26-7F8H	0.008	400	N/A	5	1	< 1.60	–	–	
M29-BLK-KMNO4,RB-DI H20 KMnO4 D	185-26-7F8H D	0.018	400	N/A	5	1	< 1.60	< 1.60		
O-M29-BLK-KMNO4,HCL,RB-DI H20 HCl	185-26-7FG8H	0.075	220	N/A	5	1	< 0.880	–	–	
O-M29-BLK-KMNO4,HCL,RB-DI H20 HCl D	185-26-7FG8H D	0.065	220	N/A	5	1	< 0.880	< 0.880		–
eaker No.M43,M44,M45,M29-RB-0.1N HNO3 FH	188-52-19,20,21,185-26-8E	0.016	N/A	100	5	1	< 0.400	–		
eaker No.M43,M44,M45,M29-RB-0.1N HNO3 FH D	188-52-19,20,21,185-26-8E D	0.016	N/A	100	5	1	< 0.400	< 0.400		
M29-RB-HNO3/H2O2,0.1N HNO3 BH	185-26-8DE	0.005	150	N/A	5	1	< 0.600	–	–	–
M29-RB-HNO3/H2O2,0.1N HNO3 BH D	185-26-8DE D	0.013	150	N/A	5	1	< 0.600	< 0.600	–	
29-RB-0.1N HNO3 HNO3	185-26-8E	0.016	29	N/A	5	1	< 0.116		–	
29-RB-0.1N HNO3 HNO3 D	185-26-8E D	0.008	29	N/A	5	1	< 0.116	< 0.116	–	
M29-RB-KMNO4/H2SO4,DI H20 KMnO4	185-26-8FH	0.005	400	N/A	5	1	< 1.60	–	–	
M29-RB-KMNO4/H2SO4,DI H20 KMnO4 D	185-26-8FH D	0.018	400	N/A	5	1	< 1.60	< 1.60	–	–
29-RB-KMNO4/H2SO4,8N HCL,DI H20 HCl	185-26-8FGH	0.068	230	N/A	5	1	< 0.920	–	–	–
29-RB-KMNO4/H2SO4,8N HCL,DI H20 HCl D	185-26-8FGH D	0.055	230	N/A	5	1	< 0.920	< 0.920	–	–
M29-RB-DI H20	185-26-8H	0.005	44	N/A	5	1	< 0.176	–	–	–
M29-RB-DI H20 D	185-26-8H D	0.013	44	N/A	5	1	< 0.176	< 0.176	–	–
eaker No.M31,M32,I-M29-4-FHAR FH	188-52-7,8,185-26-9C	0.145	N/A	100	5	1	< 0.400	–	–	–
Beaker No.M31,M32,I-M29-4-FHAR FH D	188-52-7,8,185-26-9C D	0.148	N/A	100	5	1	< 0.400	< 0.400	–	–
I-M29-4-H2O2 1 OF 2,2 OF 2 BH	185-26-9D11	0.499	1098	N/A	5	1	11.0	–	–	
M29-4-H2O2 1 OF 2,2 OF 2 BH D	185-26-9D11 D	0.452	1098	N/A	5	1	9.93	10.4	–	
M29-4-BHAR HNO3	185-26-9E	0.210	128	N/A	5	1	0.538	–	–	–
I-M29-4-BHAR HNO3 D	185-26-9E D	0.234	128	N/A	5	1	0.599	0.568	–	–
I-M29-4-KMNO4 KMnO4	185-26-9F	0.785	383	N/A	5	1	6.01		–	
M29-4-KMNO4 KMnO4 D	185-26-9F D	0.790	383	N/A	5	1	6.05	6.03	–	–
eaker No.M39,M40,O-M29-4-FHAR FH	188-52-15,16,185-26-10C	0.031	N/A	100	5	1	< 0.400		–	–
Beaker No.M39,M40,O-M29-4-FHAR FH D	188-52-15,16,185-26-10C D	0.034	N/A	100	5	1	< 0.400	< 0.400	–	–
O-M29-4-H2O2 BH	185-26-10D	0.057	535	N/A	5	1	< 2.14	–	–	–
M29-4-H2O2 BH D	185-26-10D D	0.062	535	N/A	5	1	< 2.14	< 2.14	–	
O-M29-4-BHAR HNO3	185-26-10E	0.031	108	N/A	5	1	< 0.432	-	–	–
O-M29-4-BHAR HNO3 D	185-26-10E D	0.021	108	N/A	5	1	< 0.432	< 0.432	–	
O-M29-4-KMNO4 KMnO4	185-26-10F	1.746	400	N/A	5	1	14.0	–	–	–
O-M29-4-KMNO4 KMnO4 D	185-26-10F D	1.998	400	N/A	5	1	16.0	15.0	–	–

Triangle Laboratories, Inc.
901 Capitola Drive * Durham, North Carolina 27713
ne: (919) 544-5729 * Fax: (919) 544-5491

Printed: 20-Nov-97 at 12:53 PM

Client: PES, Inc.
Project Number: 43452

Sample Report

Date Received:	Sept. 30 & Oct 28, 1997
Date Prepared:	Oct. 31 - Nov. 6, 1997
Date Analyzed:	November 06, 1997
DATA FILE:	AB833
Matrix:	Air

ANALYTE: Hg	
ug/L RDL:	0.2
Analysis Method:	29
Instrument: P E Zeeman 5100	
Spike Conc. (ug/L)	5

CVAA ANALYTE SUMMARY REPORT

Client Sample ID	TLI SAMPID	ug/L CONC	ml TV	ml FV	ml Aliquot	Dil. FACTOR	Total ug RESULT	Avg. RESULT	RPD	%REC
I-M29-H2O2 BH MS	185-26-1D MS	4.874	600	N/A	5	1	58.5	--	--	97%
I-M29-H2O2 BH MSD	185-26-1D MSD	5.009	600	N/A	5	1	60.1	59.3	2.73%	100%
O-M29-1-H2O2 BH MS	185-26-4D MS	4.027	540	N/A	5	1	43.5	--	--	81%
O-M29-1-H2O2 BH MSD	185-26-4D MSD	4.159	540	N/A	5	1	44.9	44.2	3.23%	83%
O-M29-2-H2O2 BH MS	185-26-5D MS	5.204	850	N/A	5	1	88.5	--	--	104%
O-M29-2-H2O2 BH MSD	185-26-5D MSD	5.562	850	N/A	5	1	94.6	91.5	6.65%	111%
O-M29-4-H2O2 BH MS	185-26-10D MS	5.404	535	N/A	5	1	57.8	--	--	108%
O-M29-4-H2O2 BH MSD	185-26-10D MSD	5.674	535	N/A	5	1	60.7	59.3	4.87%	113%
I-M29-H2O2 BH MS	True Spike MS	5	600	N/A	5	1	60.0	--	--	--
I-M29-H2O2 BH MSD	True Spike MSD	5	600	N/A	5	1	60.0	--		--
O-M29-1-H2O2 BH MS	True Spike MS	5	540	N/A	5	1	54.0			--
O-M29-1-H2O2 BH MSD	True Spike MSD	5	540	N/A	5	1	54.0			--
O-M29-2-H2O2 BH MS	True Spike MS	5	850	N/A	5	1	85.0	--	--	--
O-M29-2-H2O2 BH MSD	True Spike MSD	5	850	N/A	5	1	85.0	--	--	--
O-M29-4-H2O2 BH MS	True Spike MS	5	535	N/A	5	1	53.5		--	--
O-M29-4-H2O2 BH MSD	True Spike MSD	5	535	N/A	5	1	53.5	--		--
Method Blank	43452 MB1	0.023				--		--	--	
Method Blank D	43452 MB1 D	0.005		--	--	--		--	--	
LCS	43452 LCS1	4.744		--		--	--	--	--	95%
LCSD	43452 LCS1 D	4.824	--	--	--	--		--	--	96%
Method Blank	43452 MB2	0.018		--	--	--	--	--	--	--
Method Blank D	43452 MB2 D	0.010	--	--	--	--		--	--	--
LCS	43452 LCS2	5.157	--	--		--	--	--	--	103%
LCSD	43452 LCS2 D	5.180		--	--			--		104%

Triangle Laboratories, Inc.
801 Capitola Drive * Durham, North Carolina 27713
Tele: (919) 544-5729 * Fax (919) 544-5491

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PACIFIC ENVIRONMENTAL SERVICES, INC.

Central Park West
5001 South Miami Boulevard, P.O. Box 12077
Research Triangle Park, North Carolina 27709-2077
(919) 941-0333 FAX: (919) 941-0234

SV 10/28/97

COPY

Chain of Custody Record

Project Numb 5414.003 ~~-0413-004~~	Project Name GM SAGINAW US EPA EMC ~~Asphalt Cement, REA Construction~~	Analysis Requested							Remarks
Samplers: Dickerson, McDonald, Thompson, Dougherty, Hamilton									
Date	Time	Field Sample ID	Sample Description	MM	Hg						
			I-M29-1-Filter	•	•						Beaker No. M25
			I-M29-1-Front Half Rinse	•	•						Beaker No. M26
			I-M29-2-Filter	•	•						Beaker No. M27
			I-M29-2-Front Half Rinse	•	•						Beaker No. M28
			I-M29-3-Filter	•	•						Beaker No. M29
			I-M29-3-Front Half Rinse	•	•						Beaker No. M30
			I-M29-4-Filter	•	•						Beaker No. M31
			I-M29-4-Front Half Rinse	•	•						Beaker No. M32
			O-M29-1-Filter	•	•						Beaker No. M33
			O-M29-1-Front Half Rinse	•	•						Beaker No. M34
			O-M29-2-Filter	•	•						Beaker No. M35
			O-M29-2-Front Half Rinse	•	•						Beaker No. M36
			O-M29-3-Filter	•	•						Beaker No. M37
			O-M29-3-Front Half Rinse	•	•						Beaker No. M38
			O-M29-4-Filter		•						Beaker No. M39
			O-M29-4-Front Half Rinse		•						Beaker No. M40
			O-M29-BLK-Filter	•	•						Beaker No. M41
			O-M29-BLK-Front Half Rinse	•	•						Beaker No. M42
			O-M29-RB-3 Filter	•	•						Beaker No. M43
			O-M29-RB-4-Filter	•	•						Beaker No. M44
			O-M29-RB-Acetone	•	•						Beaker No. M45

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	10/27/97 2:30 P	[signature]			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
		[signature]			
Relinquished by: (Signature)	Date/Time	Received for lab by: (Signature)	REMARKS		
	10/28/97	[signature]			

Page:____ of ____

KML 9/30/97 COPY FAXED FROM DEECO 9/30/97 1ST SHEET ONLY

PES, Inc
4700 Duke Dr., Suite 150
Mason, OH 45040
513-398-2556

Date:	9/__/97
Lab:	TLI
Train:	M29

Plant Name: PES | Plant Location: Saginaw, MI facility | Project Name: EPA Job No. 414.003

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Michael J Fallowme	11:00 am 9-30-97		11:00 9-30-97	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
		Kathi M. Lynch	9/30/97 1357	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments

Field Sample No.	Date	Composite or Grab	Analysis Required	Sampling Train	Sample Description	Special Notes	Lab
I-M29-1-Filter	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMts	4" Quartz Filter	M 29 Container #1	PES/TLI
I-M29-1-FHAce	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMts	Front Half Acetone Rinse	M 29 Container #2	PES/TLI
I-M29-1-FHAR	9/__/97	Composite	EPA Method 29	MMts	Front Half Acid Rinse 0.1N HNO3	M 29 Container #3	TLI
I-M29-1-H2O2	9/__/97	Composite	EPA Method 29	MMts	5% HNO3 / 10% H2O2 Impinger+Rinse	M 29 Container #4	TLI
I-M29-1-BHAR	9/__/97	Composite	EPA Method 29	MMts	Blank Imp. Acid Rinse 0.1N HNO3	M 29 Container #5A	TLI
I-M29-1-KMNO4	9/__/97	Composite	EPA Method 29	MMts	4% KMnO4/10% H2S Impinger+Rinse	M 29 Container #5B	TLI
I-M29-1-HCL	9/__/97	Composite	EPA Method 29	MMts	8N HCl	M 29 Container #5C	TLI
I-M29-2-Filter	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMts	4" Quartz Filter	M 29 Container #1	PES/TLI

9-30-1997 3:08PM FROM 9192501835 P.2

COPY 9/30/97

Contact Frank Meadows at P.E.S. for purchase order number

PES, Inc
4700 Duke Dr., Suite 150
Mason, OH 45040
513-398-2556

Date:	9/__/97
Lab:	TLI
Train:	M29

Plant Name: PES **Plant Location:** Saginaw, MI **Project Name:** EPA Job No. 414.003

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Michael J Mellbourne	11:00 am 9-30-97	A. Thomas Donald	11:00 am 9-30-97	Transfer samples from Dueco to PES to Triangle Lab
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
		Kevin M. Lynch	9/30/97 1357	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments

Field Sample No.	Date	Composite or Grab	Analysis Required	Sampling Train	Sample Description	Special Notes	Lab
I-M29-2-FHAce	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls	Front Half Acetone Rinse	M 29 Container #2	PES/TLI
I-M29-2-FHAR	9/__/97	Composite	EPA Method 29	MMtls	Front Half Acid Rinse 0.1N HNO3	M 29 Container #3	TLI
I-M29-2-H2O2 1 of 2	9/__/97	Composite	EPA Method 29	MMtls	5% HNO3 / 10% H2O2 Impinger+Rinse	M 29 Container #4	TLI
~~I-M29-2-BHAR~~	~~9/__/97~~	~~Composite~~	~~EPA Method 29~~	~~MMtls~~	~~Blank Imp. Acid Rinse 0.1N HNO3~~	~~M 29 Container #5A~~	~~TLI~~
~~I-M29-2-KMNO4~~	~~9/__/97~~	~~Composite~~	~~EPA Method 29~~	~~MMtls~~	~~4% KMnO4/10% H2S Impinger+Rinse~~	~~M 29 Container #5B~~	~~TLI~~
~~I-M29-2-HCL~~	~~9/__/97~~	~~Composite~~	~~EPA Method 29~~	~~MMtls~~	~~8N HCl~~	~~M 29 Container #5C~~	~~TLI~~
I-M29-3-Filter	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls	4" Quartz Filter	M 29 Container #1	PES/TLI
I-M29-3-FHAce	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls	Front Half Acetone Rinse	M 29 Container #2	PES/TLI

PES, Inc

4700 Duke Dr., Suite 150
Mason, OH 45040
513-398-2556

Date:	9/__/97
Lab:	TLI
Train:	M29

Plant Name: PES | Plant Location: Saginaw, MI | Project Name: EPA Job No. 414.003

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Michael J Williams	11:00am 9-30-97	A. Thomas Rinaldi	11:00 9-30-97	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
		Kelin M. Lynch	9/30/97 1357	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments

Field Sample No.	Date	Composite or Grab	Analysis Required	Sampling Train	Sample Description	Special Notes	Lab
I-M29-3-FHAR	9/__/97	Composite	EPA Method 29	MMtls	Front Half Acid Rinse 0.1N HNO3	M 29 Container #3	TLI
I-M29-3-H2O2	9/__/97	Composite	EPA Method 29	MMtls	5% HNO3 / 10% H2O2 Impinger+Rinse	M 29 Container #4	TLI
I-M29-3-BHAR	9/__/97	Composite	EPA Method 29	MMtls	Blank Imp. Acid Rinse 0.1N HNO3	M 29 Container #5A	TLI
I-M29-3-KMnO4	9/__/97	Composite	EPA Method 29	MMtls	4% KMnO4/10% H2S Impinger+Rinse	M 29 Container #5B	TLI
~~I-M29-3-HCL~~	~~9/__/97~~	~~Composite~~	~~EPA Method 29~~	~~MMtls~~	~~8N HCl~~	~~M 29 Container #5C~~	TLI
~~FM29-BLK-Filter~~	~~9/__/97~~	~~Composite~~	~~EPA Method 5/ EPA Method 29~~	~~Particulate/MMtls Field Blank~~	~~4" Quartz Filter~~	~~M 29 Container #1~~	PES/TLI
~~FM29-BLK-FHAcet~~	~~9/__/97~~	~~Composite~~	~~EPA Method 5/ EPA Method 29~~	~~Particulate/MMtls Field Blank~~	~~Front Half Acetone Rinse~~	~~M 29 Container #2~~	PES/TLI
~~I-M29-BLK-FHAR~~	~~9/__/97~~	~~Composite~~	~~EPA Method 29~~	~~MMtls Field Blank~~	~~Front Half Acid Rinse 0.1N HNO3~~	~~M 29 Container #3~~	TLI

PES, Inc

4700 Duke Dr., Suite 150
Mason, OH 45040
513-398-2556

Date:	9/30/97
Lab:	TLI
Train:	M29

Plant Name: PES | Plant Location: Saginaw, MI | Project Name: EPA Job No. 414.003

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Michael J Milbourne	11:00am 9-30-97	A. Thomas Donald	11:00 9-30-97	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
		Kevin M. Lynch	9/30/97 1357	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments

Field Sample No.	Date	Composite or Grab	Analysis Required	Sampling Train	Sample Description	Special Notes	Lab
~~LM29-BLK-H2O2~~	~~9/__/97~~	~~Composite~~	~~EPA Method 29~~	~~MMtls~~	~~5% HNO3 / 10% H2O2~~	~~M 29 Container #4~~	TLI
				~~Field Blank~~	~~Impinger+Rinse~~		
~~LM29-BLK-BHAR~~	~~9/__/97~~	~~Composite~~	~~EPA Method 29~~	~~MMtls~~	~~Blank Imp. Acid Rinse~~	~~M 29 Container #5A~~	TLI
				~~Field Blank~~	~~0.1N HNO3~~		
~~LM29-BLK-KMnO4~~	~~9/__/97~~	~~Composite~~	~~EPA Method 29~~	~~MMtls~~	~~4% KMnO4/10% H2S~~	~~M 29 Container #5B~~	TLI
				~~Field Blank~~	~~Impinger+Rinse~~		
~~LM29-BLK-HCL~~	~~9/__/97~~	~~Composite~~	~~EPA Method 29~~	~~MMtls~~	~~8N HCl~~	~~M 29 Container #5C~~	TLI
				~~Field Blank~~			

PES, Inc

4700 Duke Dr., Suite 150
Mason, OH 45040
513-398-2556

Date:	9/___/97
Lab:	TLI
Train:	M29

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Plant Name: PES | Plant Location: Saginaw, MI | Project Name: EPA Job No. 414.003

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Michael J Millbrand	11:00 am 9-30-97	A. Thomas [illegible]	11:00 9-30-97	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
		Kevin M. Lynch	9/30/97 1357	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments

Field Sample No.	Date	Composite or Grab	Analysis Required	Sampling Train	Sample Description	Special Notes	Lab
O-M29-1-Filter	9/___/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls	3" Quartz Filter	M 29 Container #1	PES/TLI
O-M29-1-FHAce	9/___/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls	Front Half Acetone Rinse	M 29 Container #2	PES/TLI
O-M29-1-FHAR	9/___/97	Composite	EPA Method 29	MMtls	Front Half Acid Rinse 0.1N HNO3	M 29 Container #3	TLI
O-M29-1-H2O2	9/___/97	Composite	EPA Method 29	MMtls	5% HNO3 / 10% H2O2 Impinger+Rinse	M 29 Container #4	TLI
O-M29-1-BHAR	9/___/97	Composite	EPA Method 29	MMtls	Blank Imp. Acid Rinse 0.1N HNO3	M 29 Container #5A	TLI
O-M29-1-KMNO4	9/___/97	Composite	EPA Method 29	MMtls	4% KMnO4/10% H2S Impinger+Rinse	M 29 Container #5B	TLI
~~O-M29-1-HCL~~	~~9/___/97~~	~~Composite~~	~~EPA Method 29~~	~~MMtls~~	~~8N HCl~~	~~M 29 Container #5C~~	TLI
O-M29-2-Filter	9/___/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls	3" Quartz Filter	M 29 Container #1	PES/TLI

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Mason, OH 45040
513-398-2556

Date:	9/__/97
Lab:	TLI
Train:	M29

Plant Name: PES Plant Location: Saginaw, MI Project Name: EPA Job No. 414.003

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Michael J Milborne	11:00 am 9-30-97	A. Thomas Mc Donald	11:00 9-30-97	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
		Robin M. Lynch	9/30/97 1357	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments

Field Sample No.	Date	Composite or Grab	Analysis Required	Sampling Train	Sample Description	Special Notes	Lab
O-M29-2-FHAce	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls	Front Half Acetone Rinse	M 29 Container #2	PES/TLI
O-M29-2-FHAR	9/__/97	Composite	EPA Method 29	MMtls	Front Half Acid Rinse 0.1N HNO3	M 29 Container #3	TLI
O-M29-2-H2O2	9/__/97	Composite	EPA Method 29	MMtls	5% HNO3 / 10% H2O2 Impinger+Rinse	M 29 Container #4	TLI
O-M29-2-BHAR	9/__/97	Composite	EPA Method 29	MMtls	Blank Imp. Acid Rinse 0.1N HNO3	M 29 Container #5A	TLI
O-M29-2-KMNO4	9/__/97	Composite	EPA Method 29	MMtls	4% KMnO4/10% H2S Impinger+Rinse	M 29 Container #5B	TLI
O-M29-2-HCL	9/__/97	Composite	EPA Method 29	MMtls	8N HCl	M 29 Container #5C	TLI
O-M29-3-Filter	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls	3" Quartz Filter	M 29 Container #1	PES/TLI
O-M29-3-FHAce	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls	Front Half Acetone Rinse	M 29 Container #2	PES/TLI

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Mason, OH 45040
513-398-2556

Date:	9/__/97
Lab:	TLI
Train:	M29

Plant Name: PES Plant Location: Saginaw, MI Project Name: EPA Job No. 414.003

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Michael J Milbourne	11:00 am 9-30-97	A. Thomas Ronald	11:00 9-30-97	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
		Kelli M. Lynch	9/30/97 1357	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments

Field Sample No.	Date	Composite or Grab	Analysis Required	Sampling Train	Sample Description	Special Notes	Lab
O-M29-3-FHAR	9/__/97	Composite	EPA Method 29	MMtls	Front Half Acid Rinse 0.1N HNO3	M 29 Container #3	TLI
O-M29-3-H2O2	9/__/97	Composite	EPA Method 29	MMtls	5% HNO3 / 10% H2O2 Impinger+Rinse	M 29 Container #4	TLI
O-M29-3-BHAR	9/__/97	Composite	EPA Method 29	MMtls	Blank Imp. Acid Rinse 0.1N HNO3	M 29 Container #5A	TLI
O-M29-3-KMnO4	9/__/97	Composite	EPA Method 29	MMtls	4% KMnO4/10% H2S Impinger+Rinse	M 29 Container #5B	TLI
O-M29-3-HCL	9/__/97	Composite	EPA Method 29	MMtls	8N HCl	M 29 Container #5C	TLI
O-M29-BLK-Filter	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls Field Blank	3" Quartz Filter	M 29 Container #1	PES/TLI
O-M29-BLK-FHAce	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls Field Blank	Front Half Acetone Rinse	M 29 Container #2	PES/TLI
O-M29-BLK-FHAR	9/__/97	Composite	EPA Method 29	MMtls Field Blank	Front Half Acid Rinse 0.1N HNO3	M 29 Container #3	TLI

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4700 Duke Dr., Suite 150
Mason, OH 45040
513-398-2556

Date:	9/___/97
Lab:	TLI
Train:	M29

Plant Name: PES Plant Location: Saginaw, MI Project Name: EPA Job No. 414.003

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Michael J Milbourne	11:00 am 9-30-97	A. Thomas Donald	1100 9-30-97	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
		Kevin M. Lynch	9/30/97 1357	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments

Field Sample No.	Date	Composite or Grab	Analysis Required	Sampling Train	Sample Description	Special Notes	Lab
O-M29-BLK-H2O2	9/___/97	Composite	EPA Method 29	MMtls Field Blank	5% HNO3 / 10% H2O2 Impinger+Rinse	M 29 Container #4	TLI
O-M29-BLK-BHAR	9/___/97	Composite	EPA Method 29	MMtls Field Blank	Blank Imp. Acid Rinse 0.1N HNO3	M 29 Container #5A	TLI
O-M29-BLK-KMnO4	9/___/97	Composite	EPA Method 29	MMtls Field Blank	4% KMnO4/10% H2S Impinger+Rinse	M 29 Container #5B	TLI
O-M29-BLK-HCL	9/___/97	Composite	EPA Method 29	MMtls Field Blank	8N HCl	M 29 Container #5C	TLI

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Mason, OH 45040
513-398-2556

Date:	9/___/97
Lab:	TLI
Train:	M29

Plant Name: PES | Plant Location: Saginaw, MI | Project Name: EPA Job No. 414.003

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Michael J Williams	11:00am 9-30-97	A. Thomas Darnell	11:00 9-30-97	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
		Kristi M. Lynch	9/30/97 1357	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments

Field Sample No.	Date	Composite or Grab	Analysis Required	Sampling Train	Sample Description	Special Notes	Lab
M29-Reagent Blank-4" Filter	9/___/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls Reagent Blank	4" Quartz Filter		PES/TLI
M29-Reagent Blank-3" Filter	9/___/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls Reagent Blank	3" Quartz Filter		PES/TLI
M29-Reagent Blank-Acetone	9/___/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls Reagent Blank	___ ml Acetone		PES/TLI
M29-Reagent Blank-HNO3/H2O2	9/___/97	Composite	EPA Method 29	MMTL Reagent Blank	___ ml 5% HNO 10% H2O2		TLI
M29-Reagent Blank-0.1N HNO3	9/___/97	Composite	EPA Method 29	MMTL Reagent Blank	___ ml 0.1N HNO3		TLI
M29-Reagent Blank-KMnO4/H2SO4	9/___/97	Composite	EPA Method 29	MMTL Reagent Blank	___ ml 4% KMnO 10% H2SO4		TLI
M29-Reagent Blank-8N HCL	9/___/97	Composite	EPA Method 29	MMTL Reagent Blank	___ ml 8N HCl		TLI
M29-Reagent Blank-DI H2O	9/___/97	Composite	EPA Method 29	MMTL Reagent Blank	___ ml DI Water		TLI

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4700 Duke Dr., Suite 150
Mason, OH 45040
513-398-2556

Date:	9/__/97
Lab:	TLI
Train:	M29

Plant Name: PES Plant Location: Saginaw, MI Project Name: EPA Job No. 414.003

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Michael J Milbourne	11:00 am 9-30-97	A. Thomas Donald	11:00 9-30-97	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
		Kelli M. Lynch	9/30/97 1357	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments

Field Sample No.	Date	Composite or Grab	Analysis Required	Sampling Train	Sample Description	Special Notes	Lab
I-M29-4-Filter	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls	4" Quartz Filter	M 29 Container #1	PES/TLI
I-M29-4-FHAce	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls	Front Half Acetone Rinse	M 29 Container #2	PES/TLI
I-M29-4-FHAR	9/__/97	Composite	EPA Method 29	MMtls	Front Half Acid Rinse 0.1N HNO3	M 29 Container #3	TLI
I-M29-4-H2O2 1 OF 2	9/__/97	Composite	EPA Method 29	MMtls	5% HNO3 / 10% H2O2 Impinger+Rinse	M 29 Container #4	TLI
I-M29-4-BHAR	9/__/97	Composite	EPA Method 29	MMtls	Blank Imp. Acid Rinse 0.1N HNO3	M 29 Container #5A	TLI
I-M29-4-KMNO4	9/__/97	Composite	EPA Method 29	MMtls	4% KMnO4/10% H2S Impinger+Rinse	M 29 Container #5B	TLI
~~I-M29-4-HCL~~	~~9/__/97~~	~~Composite~~	~~EPA Method 29~~	~~MMtls~~	~~8N HCl~~	~~M 29 Container #5C~~	TLI
O-M29-4-Filter	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls	3" Quartz Filter	M 29 Container #1	PES/TLI

PES, Inc
4700 Duke Dr., Suite 150
Mason, OH 45040
513-398-2556

Date:	9/__/97
Lab:	TLI
Train:	M29

63

Plant Name: PES **Plant Location: Saginaw, MI** **Project Name: EPA Job No. 414.003**

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Michael J Williams	11:00 am 9-30-97	A. Thomas McDonald	11:00 9-30-97	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
		Kaelin M. Lynch	9/30/97 1357	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Comments

Field Sample No.	Date	Composite or Grab	Analysis Required	Sampling Train	Sample Description	Special Notes	Lab
O-M29-4-FHAce	9/__/97	Composite	EPA Method 5/ EPA Method 29	Particulate/MMtls	Front Half Acetone Rinse	M 29 Container #2	PES/TLI
O-M29-4-FHAR	9/__/97	Composite	EPA Method 29	MMtls	Front Half Acid Rinse 0.1N HNO3	M 29 Container #3	TLI
O-M29-4-H2O2	9/__/97	Composite	EPA Method 29	MMtls	5% HNO3 / 10% H2O2 Impinger+Rinse	M 29 Container #4	TLI
O-M29-4-BHAR	9/__/97	Composite	EPA Method 29	MMtls	Blank Imp. Acid Rinse 0.1N HNO3	M 29 Container #5A	TLI
O-M29-4-KMNO4	9/__/97	Composite	EPA Method 29	MMtls	4% KMnO4/10% H2S Impinger+Rinse	M 29 Container #5B	TLI
~~O-M29-4-HCL~~	~~9/__/97~~	~~Composite~~	~~EPA Method 29~~	~~MMtls~~	~~5N HCl~~	~~M 29 Container #5C~~	TLI
I-M29-4-H_2O_2 2of2							
I-M29-2-H_2O_2 2of2			Archive: Do	Not Analyze			

COPY RMC 9/30/97

TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY

Custody Seal : Absent | Sample Seals: Absent
Chain of Custody : Present | Container...: Intact
Sample Tags : Absent
Sample Tag Numbers: Not Listed on Chain of Custody
SMO Forms : N/A

TLI Project Number 43452
Client: PSC01 - PES, Inc.

Book 185

Date Received 09/30/97 By Karin M. Lynch

Page 26

Box NO COOLANT Temp 26.0 C

Carrier and Number TOM MCSONALD

64

TLI Number.. ....Client Sample ID..... .....Matrix mR/H:CPM. .....Client COC ID.....* Location.....	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	DISPOSED Date/Init
185-26-1A I-M29-1-FILTER FILTER I-M29-1-FILTER METALS LAB									
185-26-1B I-M29-1-FHACE FH ACETONE RNS I-M29-1-FHACE METALS LAB									
185-26-1C I-M29-1-FHAR FH .1N HNO3 I-M29-1-FHAR METALS LAB									
185-26-1D I-M29-1-H2O2 HNO3/H2O2 I-M29-1-H2O2 METALS LAB									
185-26-1E I-M29-1-BHAR BH HNO3 I-M29-1-BHAR METALS LAB									
185-26-1F I-M29-1-KMNO4 KMnO4 I-M29-1-KMNO4 METALS LAB									
185-26-1G I-M29-1-HCL HCl I-M29-1-HCL METALS LAB									
185-26-2A I-M29-2-FILTER FILTER I-M29-2-FILTER METALS LAB									
185-26-2B I-M29-2-FHACE FH ACETONE RNS I-M29-2-FHACE METALS LAB									
185-26-2C I-M29-2-FHAR FH .1N HNO3 I-M29-2-FHAR METALS LAB									
185-26-2D I-M29-2-H2O2 1 OF 2 HNO3/H2O2 I-M29-2-H2O2 1 OF 2 METALS LAB									
185-26-3A I-M29-3-FILTER FILTER I-M29-3-FILTER METALS LAB									
185-26-3B I-M29-3-FHACE FH ACETONE RNS I-M29-3-FHACE METALS LAB									
185-26-3C I-M29-3-FHAR FH .1N HNO3 I-M29-3-FHAR METALS LAB									

Receiving Remarks: NO COOLANT WITH SAMPLES, THUS THE HIGH TEMPERATURE. FIRST PAGE OF COC WAS FAXED FROM DEECO. THE REST OF COC WAS RECEIVED WITH SAMPLES. SAMPLE I-M29-2-H2O2 2, ARCHIVE: DO NOT ANALYZE.

Archive Remarks:

TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY

Custody Seal : Absent	Sample Seals: Absent	TLI Project Number 43452	Book
Chain of Custody : Present	Container...: Intact	Client: PSC01 - PES, Inc.	185
Sample Tags : Absent			
Sample Tag Numbers: Not Listed on Chain of Custody		Date Received 09/30/97 By Karla M. Lynch	Page
SMO Forms : N/A			
Box NO COOLANT Temp 26.0 C		Carrier and Number TOM MCSONALD	26

TLI Number.. ....Client Sample ID..... .....Matrix mR/H:CPM. .....Client COC ID.....* Location.....	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	DISPOSED Date/Init
185-26-3D I-M29-3-H2O2 HNO3/H2O2 I-M29-3-H2O2 METALS LAB									
185-26-3E I-M29-3-BHAR BH HNO3 I-M29-3-BHAR METALS LAB									
185-26-3F I-M29-3-KMNO4 KMnO4 I-M29-3-KMNO4 METALS LAB									
185-26-4A O-M29-1-FILTER FILTER O-M29-1-FILTER METALS LAB									
185-26-4B O-M29-1-FHACE FH ACETONE RNS O-M29-1-FHACE METALS LAB									
185-26-4C O-M29-1-FHAR FH .1N HNO3 O-M29-1-FHAR METALS LAB									
185-26-4D O-M29-1-H2O2 HNO3/H2O2 O-M29-1-H2O2 METALS LAB									
185-26-4E O-M29-1-BHAR BH HNO3 O-M29-1-BHAR METALS LAB									
185-26-4F O-M29-1-KMNO4 KMnO4 O-M29-1-KMNO4 METALS LAB									
185-26-5A O-M29-2-FILTER FILTER O-M29-2-FILTER METALS LAB									
185-26-5B O-M29-2-FHACE FH ACETONE RNS O-M29-2-FHACE METALS LAB									
185-26-5C O-M29-2-FHAR FH .1N HNO3 O-M29-2-FHAR METALS LAB									
185-26-5D O-M29-2-H2O2 HNO3/H2O2 O-M29-2-H2O2 METALS LAB									
185-26-5E O-M29-2-BHAR BH HNO3 O-M29-2-BHAR METALS LAB									

Receiving Remarks: NO COOLANT WITH SAMPLES, THUS THE HIGH TEMPERATURE. FIRST PAGE OF COC WAS FAXED FROM DEECO. THE REST OF COC WAS RECEIVED WITH SAMPLES. SAMPLE I-M29-2-H202 2, ARCHIVE: DO NOT ANALYZE.

Archive Remarks:

TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY

Custody Seal : Absent | Sample Seals: Absent
Chain of Custody : Present | Container...: Intact
Sample Tags : Absent
Sample Tag Numbers: Not Listed on Chain of Custody
SMO Forms : N/A

TLI Project Number 43452
Client: PSC01 - PES, Inc.

Book 185

Date Received 09/30/97 By Kelvin M. Lynch

Page 26

Box NO COOLANT Temp 26.0 C

Carrier and Number TOM MCSONALD

TLI Number.. mR/H:CPM.	Client Sample ID..... Client COC ID.....*	Matrix Location.....	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	DISPOSED Date/Init
185-26-5F	O-M29-2-KMNO4	KMnO4									
	O-M29-2-KMNO4	METALS LAB									
185-26-5G	O-M29-2-HCL	8N HCl									
	O-M29-2-HCL	METALS LAB									
185-26-6A	O-M29-3-FILTER	FILTER									
	O-M29-3-FILTER	METALS LAB									
185-26-6B	O-M29-3-FHACE	FH ACETONE RNS									
	O-M29-3-FHACE	METALS LAB									
185-26-6C	O-M29-3-FHAR	FH .1N HNO3									
	O-M29-3-FHAR	METALS LAB									
185-26-6D	O-M29-3-H2O2	HNO3/H2O2									
	O-M29-3-H2O2	METALS LAB									
185-26-6E	O-M29-3-BHAR	BH HNO3									
	O-M29-3-BHAR	METALS LAB									
185-26-6F	O-M29-3-KMNO4	KMnO4									
	O-M29-3-KMNO4	METALS LAB									
185-26-6G	O-M29-3-HCL	8N HCl									
	O-M29-3-HCL	METALS LAB									
185-26-7A	O-M29-BLK-FILTER	FILTER									
	O-M29-BLK-FILTER	METALS LAB									
185-26-7B	O-M29-BLK-FHACE	FH ACETONE RNS									
	O-M29-BLK-FHACE	METALS LAB									
185-26-7C	O-M29-BLK-FHAR	FH .1N HNO3									
	O-M29-BLK-FHAR	METALS LAB									
185-26-7D	O-M29-BLK-H2O2	HNO3/H2O2									
	O-M29-BLK-H2O2	METALS LAB									
185-26-7E	O-M29-BLK-BHAR	BH HNO3									
	O-M29-BLK-BHAR	METALS LAB									

Receiving Remarks: NO COOLANT WITH SAMPLES, THUS THE HIGH TEMPERATURE. FIRST PAGE OF COC WAS FAXED FROM DEECO. THE REST OF COC WAS RECEIVED WITH SAMPLES. SAMPLE I-M29-2-H202 2, ARCHIVE: DO NOT ANALYZE.

Archive Remarks:

Custody Seal : Absent	Sample Seals: Absent	TLI Project Number 43452	Book
Chain of Custody : Present	Container...: Intact	Client: PSC01 - PES, Inc.	
Sample Tags : Absent			185
Sample Tag Numbers: Not Listed on Chain of Custody		Date Received 09/30/97 By Kevin M. Lyttle	Page
SMO Forms : N/A			
Box NO COOLANT Temp 26.0 C		Carrier and Number TOM MCSONALD	26

TLI Number.. mR/H:CPM.	....Client Sample ID..... .....Client COC ID.....*	.....Matrix Location.....	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	DISPOSED Date/Init
185-26-7F	O-M29-BLK-KMNO4 O-M29-BLK-KMNO4	KMnO4 METALS LAB									
185-26-7G	O-M29-BLK-HCL O-M29-BLK-HCL	8N HCl METALS LAB									
185-26-8A	M29-RB-4"FILTER M29-RB-4"FILTER	4" FILTER METALS LAB									
185-26-8B	M29-RB-3"FILTER M29-RB-3"FILTER	3" FILTER METALS LAB									
185-26-8C	M29-RB-ACETONE M29-RB-ACETONE	Acetone METALS LAB									
185-26-8D	M29-RB-HNO3/H2O2 M29-RB-HNO3/H2O2	5%HNO/10%H2O2 METALS LAB									
185-26-8E	M29-RB-0.1N HNO3 M29-RB-0.1N HNO3	0.1N HNO3 METALS LAB									
185-26-8F	M29-RB-KMNO4/H2SO4 M29-RB-KMNO4/H2SO4	4%KMNO4/10%H2SO4 METALS LAB									
185-26-8G	M29-RB-8N HCL M29-RB-8N HCL	8N HCL METALS LAB									
185-26-8H	M29-RB-DI H20 M29-RB-DI H20	DI WATER METALS LAB									
185-26-9A	I-M29-4-FILTER I-M29-4-FILTER	FILTER METALS LAB									
185-26-9B	I-M29-4-FHACE I-M29-4-FHACE	FH ACETONE RNS METALS LAB									
185-26-9C	I-M29-4-FHAR I-M29-4-FHAR	FH .1N HNO3 METALS LAB									
185-26-9D	I-M29-4-H2O2 1 OF 2 I-M29-4-H2O2 1 OF 2	HNO3/H2O2 METALS LAB									

Receiving Remarks: NO COOLANT WITH SAMPLES, THUS THE HIGH TEMPERATURE. FIRST PAGE OF COC WAS FAXED FROM DEECO. THE REST OF COC WAS RECEIVED WITH SAMPLES. SAMPLE I-M29-2-H202 2, ARCHIVE: DO NOT ANALYZE.

Archive Remarks:

TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY

Custody Seal : Absent	Sample Seals: Absent	TLI Project Number 43452	Book
Chain of Custody : Present	Container...: Intact	Client: PSC01 - PES, Inc.	185
Sample Tags : Absent			
Sample Tag Numbers: Not Listed on Chain of Custody		Date Received 09/30/97 By [signature]	Page
SMO Forms : N/A			
Box NO COOLANT Temp 26.0 C		Carrier and Number TOM MCSONALD	26

TLI Number.. mR/H:CPM.	....Client Sample ID..... .....Client COC ID.....*	.....Matrix Location.....	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	DISPOSED Date/Init
185-26-9E	I-M29-4-BHAR I-M29-4-BHAR	BH HNO3 METALS LAB									
185-26-9F	I-M29-4-KMNO4 I-M29-4-KMNO4	KMNO4 METALS LAB									
185-26-10A	O-M29-4-FILTER O-M29-4-FILTER	FILTER METALS LAB									
185-26-10B	O-M29-4-FHACE O-M29-4-FHACE	FH ACETONE RNS METALS LAB									
185-26-10C	O-M29-4-FHAR O-M29-4-FHAR	FH .1N HNO3 METALS LAB									
185-26-10D	O-M29-4-H2O2 O-M29-4-H2O2	HNO3/H2O2 METALS LAB									
185-26-10E	O-M29-4-BHAR O-M29-4-BHAR	BH HNO3 METALS LAB									
185-26-10F	O-M29-4-KMNO4 O-M29-4-KMNO4	KMNO4 METALS LAB									
185-26-11	I-M29-4-H2O2 2 OF 2 I-M29-4-H2O2 2 OF 2	IMPINGER METALS LAB									
185-26-12	I-M29-2-H2O2 2 OF 2 I-M29-2-H2O2 2 OF 2	IMPINGER METALS LAB									

Receiving Remarks: NO COOLANT WITH SAMPLES, THUS THE HIGH TEMPERATURE. FIRST PAGE OF COC WAS FAXED FROM DEECO. THE REST OF COC WAS RECEIVED WITH SAMPLES. SAMPLE I-M29-2-H202 2, ARCHIVE: DO NOT ANALYZE.

Archive Remarks:

COPY 64 10/28/97

TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY

Custody Seal : Absent
Chain of Custody : Present
Sample Tags : Absent
Sample Tag Numbers: Not Listed on Chain of Custody
SMO Forms : N/A

Sample Seals: Absent
Container...: Intact

TLI Project Number 43775
Client: PES03 - Pacific Environmental Services

Book 188

Date Received 10/28/97 By

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NO COOLANT

Carrier and Number WRIGHT

TLI Number.. ....Client Sample ID..... .....Matrix mR/H:CPM. .....Client COC ID.....* Location.....	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	DISPOSED Date/Init
188-52-1 Beaker No.M25 FILTER Beaker No.M25 METALS LAB									
188-52-2 Beaker No.M26 F/H RINSE Beaker No.M26 METALS LAB									
188-52-3 Beaker No.M27 FILTER Beaker No.M27 METALS LAB									
188-52-4 Beaker No.M28 F/H RINSE Beaker No.M28 METALS LAB									
188-52-5 Beaker No.M29 FILTER Beaker No.M29 METALS LAB									
188-52-6 Beaker No.M30 F/H RINSE Beaker No.M30 METALS LAB									
188-52-7 Beaker No.M31 FILTER Beaker No.M31 METALS LAB									
188-52-8 Beaker No.M32 F/H RINSE Beaker No.M32 METALS LAB									
188-52-9 Beaker No.M33 FILTER Beaker No.M33 METALS LAB									
188-52-10 Beaker No.M34 F/H RINSE Beaker No.M34 METALS LAB									
188-52-11 Beaker No.M35 FILTER Beaker No.M35 METALS LAB									
188-52-12 Beaker No.M36 F/H RINSE Beaker No.M36 METALS LAB									
188-52-13 Beaker No.M37 FILTER Beaker No.M37 METALS LAB									
188-52-14 Beaker No.M38 F/H RINSE Beaker No.M38 METALS LAB									

Receiving Remarks:

Archive Remarks:

TRIANGLE LABORATORIES, INC. -- LOG IN RECORD/CHAIN OF CUSTODY

Custody Seal : Absent | Sample Seals: Absent
Chain of Custody : Present | Container...: Intact
Sample Tags : Absent
Sample Tag Numbers: Not Listed on Chain of Custody
SMO Forms : N/A

TLI Project Number 43775
Client: PES03 - Pacific Environmental Services

Book 188

Date Received 10/28/97 By

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NO COOLANT

Carrier and Number WRIGHT

TLI Number.. / mR/H:CPM.	Client Sample ID..... / Client COC ID.....*	Matrix / Location.....	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init	DISPOSED Date/Init
188-52-15	Beaker No.M39	FILTER									
	Beaker No.M39	METALS LAB									
188-52-16	Beaker No.M40	F/H RINSE									
	Beaker No.M40	METALS LAB									
188-52-17	Beaker No.M41	FILTER									
	Beaker No.M41	METALS LAB									
188-52-18	Beaker No.M42	F/H RINSE									
	Beaker No.M42	METALS LAB									
188-52-19	Beaker No.M43	FILTER									
	Beaker No.M43	METALS LAB									
188-52-20	Beaker No.M44	FILTER									
	Beaker No.M44	METALS LAB									
188-52-21	Beaker No.M45	ACETONE									
	Beaker No.M45	METALS LAB									

Receiving Remarks:

Archive Remarks:

ject # 43452
ent: PES, Inc. (PSCOI)
te/Int.: 10/30/97 DSE
ent Run# I-M29-1

Triangle Laboratories of RTP
(919) 544-5729

Analytes

ICP	GFAA	FLAA	CVAA
Ag	As Sc		Hg
Ba	Be Tl		
Mn	Cd		
Ni	Co		
P	Cr		
Zn	Pb		
	Sb		

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CONT # 1
Filter type: G or Q
label 188-52-1

CONT # 2
Acetone Rinse
label 188-52-2
Volume DRY

~~Dessicate to dryness and~~ redissolve in 10ml con HNO3 — Int DSE — Date 11/4/97

CONT # 3
HNO3 Rinse
label 185-26-1C
Volume 116

Reduce volume to 20 ml on hotplate — Int DSE — Date 10/31/97

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97
label 188-52-1,2,1C

rowave dig h conc. HF conc. HNO3 — Int DSE — Date 11/4/97

Combine digestates

Front Half Digestate

~~Add 500 uL Sc~~

Dilute to 100 mls — Int DSE — Date 11/4/97
label 188-52-1,2,1C
Volume 100 ML

For Metal
label 188-52-1,2,1C — Int DSE
Volume 100 — Date 11/4/97
(post digest spike on FH for GFAA))

For Hg
label 188-52-1-2 185-26-1C — Int me
Volume 100 ml — Date 11/5/97

& BH Post dig. spk.
_____ ppb (instrument spiked)

Aliquot A: 5 mL
(No spike required)
Aliquot B: 5 mL

CONT # 4
Back Half Impinger
label 185-26-1D
Volume 600

For Metals
label 185-26-1D
Volume 500

For Hg
label 185-26-1D
Volume 100

Reduce Volume to 20 mL on Hotplate — Int. DSE — Date 10/31/97

Hotplate dig with HNO3 and H202 — Int. SRB — Date 11/5/97

~~Add 500 uL Sc~~ — Int. — Date

Dilute to 100 mls — Int. SRB — Date 11/5/97

label 185-26-1D — Int SRB
Volume 100 — Date 11/5/97
(One post digestion spk on BH for GFAA)

Hg Impingers

CONT # 5A
HNO3
label 185-26-1E
Volume 104 ml
Aliquot A 5
Aliquot B 5
Int MR
Date 11/5/97

CONT # 5B
KMNO4
label 185-26-1F
Volume 390 ml
Aliquot A 5
Aliquot B 5
Int MR
Date 11/5/97

CONT # 5C
HCl
label 185-26-1G
Volume 235 ml
Aliquot A 5
Aliquot B 5
Int MR
Date 11/5/97

(Duplicate Analysis of Each

Sample
label 185-26-1D — Int MR
Volume 100 — Date 11/5/97
Aliquot A: 5
Aliquot B: 5

Spike
(1 BH Hg Spike required)
label 185-26-1D — Int MR
Volume 100 — Date 11/5/97
Aliquot A: 5
Aliquot B: 5

spk 5 ml of 100 ppb — Int MR
final spk conc. added 5 ppb — Date 11/5/97

FH & BH Serial dilution performed
____ ml to ____ ml FV + ____ uL Sc
Initials: _____

Project # 43452

Client:

Date/Int.:

Client Run# I-M29-2

Triangle Laboratories of RTP

(919) 544-5729

Analytes: ICP | GFAA | FLAA | CVAA

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CONT # 1 — Filter type: G or Q — label 188-52-3

CONT # 2 — Acetone Rinse — label DRY — Volume 188-52-4

CONT # 3 — HNO3 Rinse — label 185-26-2C — Volume 250

CONT # 4 — Back Half Impinger — label 185-26-2D = 960ml TV — Volume 960 1260ml = TV

Hg Impingers

CONT # 5A — HNO3 — label ___ Volume ___ ml Aliquot A ___ Aliquot B ___ Int ___ Date ___

CONT # 5B — KMNO4 — label ___ Volume ___ ml Aliquot A ___ Aliquot B ___ Int ___ Date ___

CONT # 5C — HCl — label ___ Volume ___ ml Aliquot A ___ Aliquot B ___ Int ___ Date ___

(Duplicate Analysis of Eact

Dessicate to dryness and redissolve in 10ml con HNO3 — Int DSE — Date 11/4/97

Reduce volume to 20 ml on hotplate — Int DSE — Date 10/31/97

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97 — label 188-52-3,4,2C

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97

Combine digestates

Front Half Digestate

~~Add 500 uL Sc~~

Dilute to 100 mls — Int DSE — Date 11/4/97 — label 188-52-3,4,2C — Volume 100 ML

For Metal — label 188-52-3,4,2C — Int DSE — Volume 100 — Date 11/4/97

(Post digest spike on FH for GFAA))

For Hg — label 188-52-3,4 185-26-2C — Int MR — Volume 100 ml — Date 11/5/97

Aliquot A: 5 mL

(No spike required)

Aliquot B: ___

For Metals — label 185-26-2D,12 — Volume 960 — DSE 10/31/97

For Hg — label 185-26-12 185-26-2D — Volume 100

Reduce Volume to 20 mL on Hotplate — Int. DSE — Date 10/31/97

Hotplate dig with HNO3 and H202 — Int. SRB — Date 11/5/97

~~Add 500 uL Sc~~ — Int. ___ — Date ___

Dilute to 100 mls — Int. SRB — Date 11/5/97

label 185-26-2D,12 — Int SRB — Volume 100 — Date 11/5/97

(One post digestion spk on BH for GFAA)

Sample

Spike (1 BH Hg Spike required)

label 185-26-12-2D — Int MR — Volume 100 — Date 11/5/97

Aliquot A: 5

Aliquot B: 5

label ___ Int ___ Volume ___ Date ___

Aliquot A: ___

Aliquot B: ___

spk ___ ml of ___ ppb — Int ___

final spk conc. added ___ ppb — Date ___

FH & BH Serial dilution performed

___ ml to ___ ml FV + ___ uL Sc

Initials: ___

FH & BH Post dig. spk.

___ ppb [redacted] trur [redacted] spi [redacted]

Project # 43452

Client: _____

Site/Int.: _____

Sent Run# 2-M29-3

Triangle Laboratories of RTP
(919) 544-5729

Analytes: ICP · GFAA · FLAA · CVAA

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CONT # 1
Filter
Type: G or Q
label 18852-5

CONT # 2
Acetone Rinse
label 188-52-6
Volume DRY
Desiccate to dryness and redissolve in 10ml con HNO3 Int DSE Date 11/4/97

CONT # 3
HNO3 Rinse
label 185-26-3C
Volume 117
Reduce volume to 20 ml on hotplate Int DSE Date 10/31/97

CONT # 4
Back Half Impinger
label 185-26-3D
Volume 1000

For Metals: label 185-26-3D Volume 900
For Hg: label 185-26-3D Volume 100

Hg Impingers

CONT # 5A
HNO3
label 185-26-3E
Volume 122 ml
Aliquot A 5
Aliquot B 5
Int ME
Date 11/5/97

CONT # 5B
KMNO4
label 185-26-3F
Volume 400 ml
Aliquot A 5
Aliquot B 5
Int ME
Date 11/5/97

CONT # 5C
HCl
label _____
Volume ____ ml
Aliquot A ____
Aliquot B ____
Int _____
Date _____

(Duplicate Analysis of Each)

Microwave dig Int DSE
with conc. HF
conc. HNO3 Date 11/4/97

Microwave dig Int DSE
with conc. HF
and conc. HNO3 Date 11/4/97
label 188-52-5,6,3C

Combine digestates

Front Half Digestate

~~Add 500 uL Sc~~ Int DSE
Dilute to 100 mls Date 11/4/97
label 188-52-5,6,3C
Volume 100 ML

For Metal: label 188-52-5,6,3C Int DSE Volume 100 Date 11/4/97
post digest spike on FH (for GFAA))

For Hg: label 185-26-3C Int ME Volume 100 ml Date 11/5/97
Aliquot A: 5 ml
(No spike required)
Aliquot B: 5 ml

FH & BH Post dig. spk.
_____ ppb (Instrument spiked)

Reduce Volume to 20 mL on Hotplate Int. DSE Date 10/31/97

Hotplate dig with HNO3 and H202 Int. SRB Date 11/5/97

~~Add 500 uL Sc~~ Int. _____ Date _____

Dilute to 100 mls Int. SRB Date 11/5/97

label 185-26-3D Int SRB Volume 100 Date 11/5/97
(One post digestion spk on BH for GFAA)

Sample
label 185-26-3D Int ME
Volume 100 Date 11/5/97
Aliquot A: 5
Aliquot B: 5

Spike
(1 DI Hg Spike required)
label _____ Int _____
Volume ____ Date _____
Aliquot A: _____
Aliquot B: _____
spk ____ ml of ____ ppb Int _____
final spk conc. added ____ ppb Date _____

FH & BH Serial dilution performed
____ ml to ____ ml FV H ____ uL Sc
Initials: _____
Date: _____

Project # 43452

Client:

Date/Int.:

Client Run# 0-M29-1

Triangle Laboratories of RTP
(919) 544-5729

Analytes: ICP | GFAA | FLAA | CVAA

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CONT # 1
Filter
Type: G or Q
label 188-52-9

CONT # 2
Acetone Rinse
label 188-52-10
Volume DRY
Dessicate to dryness and redissolve in 10ml con HNO3 Int DSE Date 11/4/97
Microwave dig with conc. HF and conc. HNO3 Int DSE Date 11/4/97
Microwave dig with conc. HF and conc. HNO3 Int DSE Date 11/4/97
label 188-52-9,10,4C 185-26 DSE 11/4/97
Combine digestates
Front Half Digestate
~~Add 500 uL Sc~~
Dilute to 100 mls Int DSE Date 11/4/97
label 188-52-9,10 4C 185-26 DSE 11/4/97
Volume 100 ML
For Metal
label 188-52-9,10,4C 185-26 DSE 11/4/97
Int DSE
Volume 100 Date 11/4/97
(Post digest spike on FH for GFAA))
For Hg
label 188-52-9-10 185-26-4C D Int MR
Volume 100 ml Date 11/5/97
Aliquot A: 5 mL
(No spike required)

CONT # 3
HNO3 Rinse
label 185-26-4C
Volume 92
Reduce volume to 20 ml on hotplate Int DSE Date 10/31/97
Reduce Volume to 20 ml. on Hotplate Int. DSE Date 10/31/97
Hotplate dig with HNO3 and H202 Int. SRB Date 11/5/97
Add 500 uL Sc Int. Date
Dilute to 100 mls Int. SRB Date 11/5/97
label 185-26-4D Int SRB
Volume 100 Date 11/5/97
(One post digestion spk on BH for GFAA)

CONT # 4
Back Half Impinger
label 185-26-4D
Volume 540
For Metals
label 185-26-4D
Volume 440
For Hg
label 185-26-4D
Volume 100
Sample
label 185-26-4D Int MR
Volume 100 Date 11/5/97
Aliquot A: 5
Aliquot B: 5
Spike
(1 BH Hg Spike required)
label 185-26-4D Int MR
Volume 100 Date 11/5/97
Aliquot A: 5
Aliquot B: 5
spk 5 ml of 100 ppb Int MK
final spk conc. added 5 ppb Date 11/5/97

Hg Impingers

CONT # 5A
HNO3
label 185-26-4E
Volume 104 ml
Aliquot A 5
Aliquot B 5
Int MR
Date 11/5/97

CONT # 5B
KMNO4
label 185-26-4F
Volume 400 ml
Aliquot A 5
Aliquot B 5
Int MR
Date 11/5/97

CONT # 5C
HCl
label 4
Volume ml
Aliquot A
Aliquot B
Int
Date

(Duplicate Analysis of Eac

FH & BH Serial dilution performed
___ ml to ___ ml FV + ___ uL Sc
Initials:

FH & BH Post dig. spk.
[redacted]

Project # 43452

Client:

Site/Int.:

Sent Run # 0-M29-2

Triangle Laboratories of RTP
(919) 544-5729

Analytes: ICP | GFAA | FLAA | CVAA

75

CONT # 1 — Filter
Type: G or Q
label 188-52-11

Dessicate to dryness and redissolve in 10ml con HNO3 — Int DSE — Date 11/4/97

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97

Combine digestates

Front Half Digestate

~~Add 500 uL Sc~~

Dilute to 100 mls — Int DSE — Date 11/4/97

label 188-52-11,12,5C

Volume 100 ML

For Metal — label ____ Int DSE — Volume 100 Date 11/4/97

(1 post digest spike on FH for GFAA))

FH & BH Post dig. spk.
_____ ppb (Instrument spiked)

For Hg — label 185-26-5C Int ME — Volume 100 ml Date 11/5/97

Aliquot A: 5 ml
(No spike required)
Aliquot B: 5 mL

CONT # 2 — Acetone Rinse
label 188-52-12
Volume DRY

CONT # 3 — HNO3 Rinse
label 185-26-5C
Volume 94

Reduce volume to 20 ml on hotplate — Int DSE — Date 10/31/97

Reduce Volume to 20 mL on Hotplate — Int. DSE — Date 10/31/97

Hotplate dig with HNO3 and H202 — Int. SRB — Date 11/5/97

~~Add 500 uL Sc~~ — Int. ____ — Date ____

Dilute to 100 mls — Int. SRB — Date 11/5/97

label 185-26-5D Int SRB
Volume 10 Date 11/5/97

(One post digestion spk on BH for GFAA)

CONT # 4 — Back Half Impinger
label 185-26-5D
Volume 850

For Metals — label 185-26-5D — Volume 750

For Hg — label 185-26-5D — Volume 100

Sample — label 185-26-5D Int ME — Volume 100 Date 11/6/97 — Aliquot A: 5 — Aliquot B: 5

Spike (1 BH Hg Spike required) — label 185-26-5D Int ME — Volume 100 Date 11/6/97 — Aliquot A: 5 — Aliquot B: 5

spk 5 ml of 100 ppb — Int ME
final spk conc. added 5 ppb — Date 11/6/97

Hg Impingers

CONT # 5A — HNO3
label 185-26-5C
Volume 135 ml
Aliquot A 5
Aliquot B 5
Int ME
Date 11/5/97

CONT # 5B — KMNO4
label 185-26-5C
Volume 395 ml
Aliquot A 5
Aliquot B 5
Int ME
Date 11/5/97

CONT # 5C — HCl
label 185-26-5C
Volume 223 ml
Aliquot A 5
Aliquot B 5
Int ME
Date 11/6/97

(Duplicate Analysis of Eac

FH & BH Serial dilution performed
____ ml to ____ ml FV + ____ uL Sc
Initials: _____
Date:

roject # 43452

Client:

ate/Int.:

llent Run# O-M29-3

Triangle Laboratories of RTP

(919) 544-5729

Analytes: ICP | GFAA | FLAA | CVAA

CONT # 1 — Filter type: G or Q

label 188-52-13

Dessicate to dryness and redissolve in 10ml con HNO3 — Int DSE — Date 11/4/97

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97

CONT # 2 — Acetone Rinse

label 188-52-14

Volume DRY

CONT # 3 — HNO3 Rinse

label 185-26-6C

Volume 94

Reduce volume to 20 ml on hotplate — Int DSE — Date 10/31/97

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97

label 188-52-13,14,6C

Combine digestates

Front Half Digestate

~~Add 500 uL Sc~~

Dilute to 100 mls — Int DSE — Date 11/4/97

label 188-52-13,14,6C

Volume 100 ML

For Metal

label 188-52-13,14,6C — Int DSE

Volume 100 — Date 11/4/97

(Post digest spike on FH for GFAA))

For Hg

label 188-52-13-14 185-26-6C — Int MR

Volume 100 ml — Date 11/5/97

Aliquot A: 5 mL

(No spike required)

CONT # 4 — Back Half Impinger

label 185-26-6D

Volume 510

For Metals

label 185-26-6D

Volume 410

Reduce Volume to 20 mL on Hotplate — Int. DSE — Date 10/31/97

Hotplate dig with HNO3 and H202 — Int. SRB — Date 11/5/97

~~Add 500 uL Sc~~ — Int. — Date

Dilute to 100 mls — Int. SRB — Date 11/5/97

label 185-26-6D — Int SRB

Volume 100 — Date 11/5/97

(One post digestion spk on BH for GFAA)

For Hg

label 185-26-6D

Volume 100

Sample

label 185-26-6D — Int MR

Volume 100 — Date 11/5/97

Aliquot A: 5

Aliquot B: 5

Spike (1 BH Hg Spike required)

label ____ Int ____

Volume ____ Date ____

Aliquot A: ____

Aliquot B: ____

spk ____ ml of ____ ppb — Int ____

final spk conc. added ____ ppb — Date ____

Hg Impingers

CONT # 5A — HNO3

label 185-26-6E

Volume 114 ml

Aliquot A 5

Aliquot B 5

Int MR

Date 11/5/97

CONT # 5B — KMNO4

label 185-26-6F

Volume 305 ml

Aliquot A 5

Aliquot B 5

Int MR

Date 11/5/97

CONT # 5C — HCl

label 185-26-6G

Volume 210 ml

Aliquot A 5

Aliquot B 5

Int MR

Date 11/5/97

(Duplicate Analysis of Each

FH & BH Serial dilution performed

____ ml to ____ ml FV + ____ uL Sc

Initials: ____

& BH Post dig. spk.

Project # 43452

ent: _____

te/Int.: _____

ent Run# O-M29-Blank

Triangle Laboratories of RTP

(919) 544-5729

Analytes: ICP | GFAA | FLAA | CVAA

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CONT # 1 — Filter type: G or Q — label 188-52-17

CONT # 2 — Acetone Rinse — label 188-52-18 — Volume DRY

CONT # 3 — HNO3 Rinse — label 185-26-7C — Volume 100 = Total volume — used: 50 mls

CONT # 4 — Back Half Impinger — label 185-26-7D — Volume 300 = Total volume — used: 7C = 50 mls, 7D = 100 mls

Hg Impingers — 185-26-7GF 8H

CONT # 5A — HNO3 — label 185-26-7E — Volume 100 ml — Aliquot A 5 — Aliquot B 5 — Int MR — Date 11/6/97

CONT # 5B — KMNO4 — label 185-26-7F 8H — Volume 370 ml — Aliquot A 5 — Aliquot B 5 — Int MR — Date 11/6/97

CONT # 5C — HCl — label 185-26-7G — Volume 220 ml — Aliquot A 5 — Aliquot B 5 — Int MR — Date 11/6/97

(Duplicate Analysis of Each

Dessicate to dryness and redissolve in 10ml con HNO3 — Int DSE — Date 11/4/97

Reduce volume to 20 ml on hotplate — Int DSE — Date 10/31/97

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97 — label 188-52-17,18,7C

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97

Combine digestates

Front Half Digestate

~~Add 500 uL Sc~~

Dilute to 100 mls — Int DSE — Date 11/4/97 — label 188-52-17,18,7C — Volume 100 ML

For Metal — label 188-52-17,18,7C — Int DSE — Volume 100 — Date 11/4/97 — (post digest spike on FH for GFAA))

For Hg — label _____ — Int _____ — Volume _____ ml — Date _____

& BH Post dig. spk. _____ ppb (Instrument spiked)

Aliquot A: _____ mL (No spike required)

Aliquot B: _____ mL

For Metals — label 185-26-7CD — Volume 150

For Hg — label _____ — Volume _____

Reduce Volume to 20 mL on Hotplate — Int. DSE — Date 10/31/97

Hotplate dig with HNO3 and H202 — Int. SRB — Date 11/5/97

~~Add 500 uL Sc~~ — Int _____ — Date _____

Dilute to 100 mls — Int. SRB — Date 11/5/97

label 185-26-7CD — Int SRB — Volume 100 — Date 11/5/97

(One post digestion spk on BH for GFAA)

Sample — label 185-26-7CD — Int MR — Volume 100 — Date 11/6/97 — Aliquot A: 5 — Aliquot B: 5

Spike (1 BH Hg Spike required) — label _____ — Int _____ — Volume _____ — Date _____ — Aliquot A: _____ — Aliquot B: _____

spk _____ ml of _____ ppb — Int _____

final spk conc. added _____ ppb — Date _____

FH & BH Serial dilution performed

_____ ml to _____ ml FV + _____ uL Sc

Initials: _____

Date:

Project # 23452

Client:

Date/Int.:

Client Run# M29-R Blank

Triangle Laboratories of RTP
(919) 544-5729

Analytes: ICP · GFAA · FLAA · CVAA

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CONT # 1
Filter
ype: G or Q
188-52-19
label 188-52-20

CONT # 2
Acetone Rinse
label 188-52-21
Volume DRY

Dessicate to dryness and redissolve in 10ml con HNO3 — Init DSE, Date 11/4/97

Microwave dig with conc. HF and conc. HNO3 — Init DSE, Date 11/4/97
label 188-52-19,20,21,SE

Microwave dig
ith conc. HF
conc. HNO3 — Init DSE, Date 11/4/97

Combine digestates

Front Half Digestate

~~Add 500 uL SC~~

Dilute to 100 mls — Init DSE, Date 11/4/97
label 188-52-19,20,21,SE
Volume 100 ML

For Metal
label ____ Init DSE
olume 100 Date 11/4/97
ost digest spike on FH for GFAA))

For Hg
label 188-52-FH-26-21 / 185-26-8E Init MR
Volume 100 ml Date 11/6/97

I & BH Post dig. spk.
____ ppb ____ spiked

Aliquot A: ____ mL
(No spike required)

CONT # 3
HNO3 Rinse
label 185-26-8E
Volume 108 = Total Volume
used 29 mls

Reduce volume to 20 ml on hotplate — Init DSE, Date 10/3/97

Reduce Volume to 20 mL on Hotplate — Init DSE, Date 10/3/97

Hotplate dig with HNO3 and H202 — Init SRB, Date 11/5/97

~~Add 500 uL Sc~~ — Init ____, Date ____

Dilute to 100 mls — Init SRB, Date 11/5/97

CONT # 4
Back Half Impinger
label 185-26-8D
Volume 100 = TV
used IF=50 mls SD=100 mls

For Metals
label 185-26-8DE
Volume 150

For Hg
label ____
Volume ____

label 185-26-8DE Init SRB
Volume 100 Date 11/5/97
(One post digestion spk on BH for GFAA)

Hg Impingers 185-26-8FGH1

CONT # 5A — HNO3
used 29 mls
label 185-26-8E
Volume 29 ml
Aliquot A 5
Aliquot B 5
Init MR
Date 11/6/97

CONT # 5B — KMNO4 (use 33ml 185-26-8H)
label 185-26-8FH
Volume 98 ml
Aliquot A 5
Aliquot B 5
Init MR
Date 11/6/97

CONT # 5C — HCl
label 185-26-8G
Volume 23 ml
Aliquot A 5
Aliquot B 5
Init MR
Date 11/6/97

(Duplicate Analysis of Each)

Sample
label 185-26-8DE Init MR
Volume 100 Date 11/6/97
Aliquot A: 5
Aliquot B: 5

Spike
(1 BH Hg Spike required)
label ____ Init ____
Volume ____ Date ____
Aliquot A: ____
Aliquot B: ____
spk ____ ml of ____ ppb Init ____
final spk conc. added ____ ppb Date ____

FH & BH Serial dilution performed
____ ml to ____ ml FV + ____ uL Sc
Initials: ____

Project # 43452

llent: _____

ate/Int.: _____

llent Run# M29-RB-D.I. H_2O

Triangle Laboratories of RTP

(919) 544-5729

Analytes: ICP | GFAA | FLAA | CVAA

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CONT # 1 — Filter type: G or Q — label ____

CONT # 2 — Acetone Rinse — label ____ Volume ____

CONT # 3 — ~~HNO3 Rinse~~ used 44 mls DeI H_2O — label 185-26-8H — Volume 110 = TV

CONT # 4 — Back-Half Impinger — label ____ Volume ____

Hg Impingers

CONT # 5A — HNO3 — label ____ Volume ____ ml — Aliquot A ____ — Aliquot B ____ — Int ____ — Date ____

CONT # 5B — KMNO4 — label ____ Volume ____ ml — Aliquot A ____ — Aliquot B ____ — Int ____ — Date ____

CONT # 5C — HCl — label ____ Volume ____ ml — Aliquot A ____ — Aliquot B ____ — Int ____ — Date ____

(Duplicate Analysis of Ea

Dessicate to dryness and redissolve in 10ml con HNO3 — Int ____ — Date ____

Reduce volume to 20 ml on hotplate — Int DSE — Date 10/31/97

Microwave dig with conc. HF and conc. HNO3 — Int ____ — Date ____

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97 — label ~~188-8~~ 185-26-8H 11/4/97

Combine digestates

Front Half Digestate

~~Add 500 uL Sc~~

Dilute to 100 mls — Int DSE — Date 11/4/97 — label 185-26-8H — Volume 100 ML

For Metal — label 185-26-8H — Int DSE — Volume 100 — Date 11/4/97 — (post digest spike on FH for GFAA))

For Hg — label 185-26-8H — Int MR — Volume 100 ml — Date 11/6/97

FH & BH Post dig. spk. ____ ppb (Instrument spiked)

Aliquot A: ____ mL (No spike required)

Aliquot B: ____ mL

For Metals — label ____ Volume ____

For Hg — label ____ Volume ____

Reduce Volume to 20 mL on Hotplate — Int. ____ — Date ____

Hotplate dig with HNO3 and H202 — Int. ____ — Date ____

Add 500 uL Sc — Int. ____ — Date ____

Dilute to 100 mls — Int. ____ — Date ____

label ____ Int ____ Volume ____ Date ____

(One post digestion spk on BH for GFAA)

Sample — label ____ Int ____ Volume ____ Date ____ — Aliquot A: ____ — Aliquot B: ____

Spike (1 BH Hg Spike required) — label ____ Int ____ Volume ____ Date ____ — Aliquot A: ____ — Aliquot B: ____

spk ____ ml of ____ ppb — Int ____ — final spk conc. added ____ ppb — Date ____

FH & BH Serial dilution performed

____ ml to ____ ml FV + ____ uL Sc

Initials: _____

Date:

Project # 43452

Client:

Date/Int.:

Client Run# I-M29-4

Triangle Laboratories of RTP

(919) 544-5729

Analytes: ICP | GFAA | FLAA | CVAA

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CONT # 1 — Filter type: G or Q
label 188-52-7

CONT # 2 — Acetone Rinse
label 188-52-8
Volume DRY

CONT # 3 — HNO3 Rinse
label 185-26-9C
Volume 98

CONT # 4 — Back Half Impinger
11 = 98 ml = TV
9D = 1000 ml = TV
label 185-26-9D
185-26-11
Volume 1098 = TV

Hg Impingers

CONT # 5A — HNO3
label 185-26-9E
Volume 128 ml
Aliquot A 5
Aliquot B 5
Int MR
Date 11/6/97

CONT # 5B — KMNO4
label 185-26-9F
Volume 383 ml
Aliquot A 5
Aliquot B 5
Int MR
Date 11/6/97

CONT # 5C — HCl
~~label ____~~
~~Volume ____ ml~~
~~Aliquot A ____~~
~~Aliquot B ____~~
~~Int ____~~
~~Date ____~~

(Duplicate Analysis of Each

Dessicate to dryness and redissolve in 10ml con HNO3 — Int DSE — Date 11/4/97

Reduce volume to 20 ml on hotplate — Int DSE — Date 10/31/97

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97
label 188-52-7,8 - 185-26-9C

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97

Combine digestates

Front Half Digestate

~~Add 500 uL Sc~~

Dilute to 100 mls — Int DSE — Date 11/4/97
label 188-52-7,8, 185-26-9C
Volume 100 ML

For Metal
label 188-52-7,8 185-26-9C — Int DSE
Volume 100 — Date 11/4/97
(Post digest spike on FH for GFAA))

For Hg
label 188-52-7,8/185-26-9C — Int MR
Volume 100 ml — Date 11/6/97

Aliquot A: ____ ml
(No spike required)

For Metals
label 185-26-9D,11
Volume 998

For Hg
label 185-26-9D,11
Volume 100

Reduce Volume to 20 ml. on Hotplate — Int. DSE — Date 10/31/97

Hotplate dig with HNO3 and H2O2 — Int. SRB — Date 11/5/97

~~Add 500 uL Sc — Int. ____ — Date ____~~

Dilute to 100 mls — Int. SRB — Date 11/5/97

label 185-26-9D,11 — Int SRB
Volume 100 — Date 11/5/97
(One post digestion spk on BH for GFAA)

Sample
label 185-26-9D-11 — Int MR
Volume 100 — Date 11/6/97
Aliquot A: 5
Aliquot B: 5

Spike
(1 BH Hg Spike required)
label ____ — Int ____
Volume ____ — Date ____
Aliquot A: ____
Aliquot B: ____

spk ____ ml of ____ ppb — Int ____
final spk conc. added ____ ppb — Date ____

FH & BH Serial dilution performed
____ ml to ____ ml FV + ____ uL Sc
Initials: ____

FH & BH Post dig. spk.
____ ppb (instrument spiked)

Project # 43452

llent: _____

ate/Int.: _____

llent Run# O-M29-4

Triangle Laboratories of RTP

(919) 544-5729

Analytes: ICP | GFAA | FLAA | CVAA

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CONT # 1 — Filter type: G or Q — label 188-52-15

CONT # 2 — Acetone Rinse — label 188-52-16 — Volume DRY

CONT # 3 — HNO3 Rinse — label 185-26-10C — Volume 98

CONT # 4 — Back Half Impinger — label 185-26-10D — Volume 535

Hg Impingers

CONT # 5A — HNO3 — label 185-26-10E — Volume 108 ml — Aliquot A 5 — Aliquot B 5 — Int MC — Date 11/6/97

CONT # 5B — KMNO4 — label 185-26-10F — Volume 400 ml — Aliquot A 5 — Aliquot B 5 — Int MC — Date 11/6/97

CONT # 5C — HCl — ~~label ___ Volume ___ ml Aliquot A ___ Aliquot B ___ Int ___ Date ___~~

(Duplicate Analysis of Each

Dessicate to dryness and redissolve in 10ml con HNO3 — Int DSE — Date 11/4/97

Reduce volume to 20 ml on hotplate — Int DSE — Date 10/31/97

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97

Microwave dig with conc. HF and conc. HNO3 — Int DSE — Date 11/4/97 — label 188-52-15,16, 185-26-10C

Combine digestates

Front Half Digestate

~~Add 500 uL Sc~~

Dilute to 100 mls — Int DSE — Date 11/4/97

label 188-52-15,16, 185-26-10C — Volume 100 ML

For Metal — label 188-52-15,16, 185-26-10C — Int DSE — Volume 100 — Date 11/4/97

For Hg — label 188-52-15-16, 185-26-10C — Int MC — Volume 100 ml — Date 11/6/97

(One post digest spike on FH for GFAA))

FH & BH Post dig. spk. _____ ppb (Instrument spiked)

Aliquot A: 5 mL (No spike required)

Aliquot B: 5 mL

For Metals — label 185-26-10D — Volume 435

For Hg — label 185-26-10D — Volume 100

Reduce Volume to 20 mL on Hotplate — Int. DSE — Date 10/31/97

Hotplate dig with HNO3 and H202 — Int. SRB — Date 11/5/97

~~Add 500 uL Sc — Int. ___ Date ___~~

Dilute to 100 mls — Int. SRB — Date 11/5/97

label 185-26-10D — Int SRB — Volume 100 — Date 11/5/97

(One post digestion spk on BH for GFAA)

Sample — label 185-26-10D — Int MC — Volume 100 — Date 11/6/97

Aliquot A: 5

Aliquot B: 5

Spike (1 BH Hg Spike required) — label 185-26-10D — Int MC — Volume 100 — Date 11/6/97

Aliquot A: 5

Aliquot B: 5

spk 5 ml of 100 ppb — Int MC

final spk conc. added 5 ppb — Date 11/6/97

FH & BH Serial dilution performed

___ ml to ___ ml FV + ___ uL Sc

Initials: _____

Date:

INORGANICS SPIKE LOG

DATE	PROJECT # SAMPLE IDs	ANALYTE	ORIGINAL STANDARD #	ORIGINAL STANDARD CONC. (PPM)	SPIKE SAMPLE (µL) / FINAL VOLUME (mL)	SPIKE SAMPLE (PPB)	INITIALS	WITNESS
11/4/97	43452 - LCS	*	3-013-4	*	1000/100	*	DSE	SRG
		P	2-120-2	1000	100/100		↓	↓

43452

*** SEE SPIKE LOG**

EXP date	Element	Standard ID	Orig. Std. (ppm)	Spiking Standard Preparation: Spike(uL) Fvol(100mL)	Spiking Standard Preparation: conc (ppm)	SPIKING from Spiking Standard: Spike(uL) Fvol(100ml)	SPIKING from Spiking Standard: conc (ppb)	combined total
2/1/98	Ag	2-115-4	100	5000	5	1000	50	
9/1/98	As	3-010-10	100	5000	5	1000	50	
2/1/98	Al	2-115-4	100	5000	5	1000	50	
9/1/98	Al	3-010-7	10000	950	95	1000	950	1000
2/1/98	B	2-115-4	100	5000	5	1000	50	
2/1/98	Ba	2-115-4	100	5000	5	1000	50	
9/1/98	Be	3-010-10	100	5000	5	1000	50	
9/1/98	Ca	3-010-10	100	5000	5	1000	50	
9/1/98	Ca	3-012-7	10000	950	95	1000	950	1000
9/1/98	Cd	3-010-10	100	5000	5	1000	50	
9/1/98	Co	3-010-10	100	5000	5	1000	50	
9/1/98	Cr	3-010-10	100	5000	5	1000	50	
9/1/98	Cu	3-010-10	100	5000	5	1000	50	
9/1/98	Fe	3-010-10	100	5000	5	1000	50	
9/1/98	Fe	3-012-6	10000	950	95	1000	950	1000
2/1/98	K	2-115-4	1000	5000	50	1000	500	
9/1/98	K	3-012-5	10000	1500	150	1000	1500	2000
9/1/98	Mg	3-010-10	100	5000	5	1000	50	
8/1/98	Mg	3-010-8	10000	950	95	1000	950	1000
9/1/98	Mn	3-010-10	100	5000	5	1000	50	
9/1/98	Mo	3-010-10	100	5000	5	1000	50	
2/1/98	Na	2-115-4	100	5000	5	1000	50	
8/1/98	Na	3-010-9	10000	1950	195	1000	1950	2000
9/1/98	Ni	3-010-10	100	5000	5	1000	50	
9/1/98	Pb	3-010-10	100	5000	5	1000	50	
9/1/98	Sb	3-010-10	100	5000	5	1000	50	
9/1/98	Se	3-010-10	100	5000	5	1000	50	
9/1/98	Tl	3-010-10	100	5000	5	1000	50	
9/1/98	Tl	3-010-10	100	5000	5	1000	50	
9/1/98	V	3-010-10	100	5000	5	1000	50	
9/1/98	Zn	3-010-10	100	5000	5	1000	50	
8/1/98	Zn	3-010-8	1000	1500	15	1000	150	200

1000uL of the Spiking Standard gives the listed conc. of the above elements.

****Spike seperately**

Element	Orig Std (ppm)	Spike(uL) Fvol(100m	conc (ppb)
Au	1000	140	1400
Ca	1000	30	300
Li	1000	70	700
P	1000	100	1000
Pd	1000	160	1600
Pt	1000	300	3000
S	1000	350	3500
Si	10000	350	35000
Sn	1000	20	200
Sr	1000	5	50

Spiking Standard 3-013-4
EXP: 11/26/97

Spiked by:
Predigestion- D. Streeter-Edwards 11/4/97

Postdigestion-

TRIANGLE LABORATORIES, INC.
Transfer Chain-of-Custody Form
Project 43452

Transfer From: IR To: IA I

	Initials..	Date.....	Time...
Released by:	SKB	11/5/97	13:41 pm
Accepted by:	DKH	11/6/97	1:25

MILES.ID.....		TLI_No.....	Cust.Id.....
43452-	-000	TLI Blank	TLI Method Blank
43452-	-001	185-26-1C	I-M29-1-FHAR
43452-	-002	185-26-1D	I-M29-1-H2O2
43452-	-003	185-26-1E	I-M29-1-BHAR
43452-	-004	185-26-1F	I-M29-1-KMNO4
43452-	-005	185-26-1G	I-M29-1-HCL
43452-	-006	188-52-1	Beaker No.M25
43452-	-007	188-52-2	Beaker No.M26
43452-	-008	185-26-2C	I-M29-2-FHAR
43452-	-009	185-26-2D	I-M29-2-H2O2 1 OF 2
43452-	-010	185-26-12	I-M29-2-H2O2 2 OF 2
43452-	-011	188-52-3	Beaker No.M27
43452-	-012	188-52-4	Beaker No.M28
43452-	-013	185-26-3C	I-M29-3-FHAR
43452-	-014	185-26-3D	I-M29-3-H2O2
43452-	-015	185-26-3E	I-M29-3-BHAR
43452-	-016	185-26-3F	I-M29-3-KMNO4
43452-	-017	188-52-5	Beaker No.M29
43452-	-018	188-52-6	Beaker No.M30
43452-	-019	185-26-4C	O-M29-1-FHAR
43452-	-020	185-26-4D	O-M29-1-H2O2
43452-	-021	185-26-4E	O-M29-1-BHAR
43452-	-022	185-26-4F	O-M29-1-KMNO4
43452-	-023	188-52-9	Beaker No.M33
43452-	-024	188-52-10	Beaker No.M34
43452-	-025	185-26-5C	O-M29-2-FHAR
43452-	-026	185-26-5D	O-M29-2-H2O2
43452-	-027	185-26-5E	O-M29-2-BHAR
43452-	-028	185-26-5F	O-M29-2-KMNO4
43452-	-029	185-26-5G	O-M29-2-HCL

XfrCOC (Rev 11/01/94)

Additional comments or instructions:

TRIANGLE LABORATORIES, INC.
Transfer Chain-of-Custody Form
Project 43452

Transfer From: IR To: IA I

	Initials..	Date.....	Time...
Released by:	SRB	11/5/97	13:41 PM
Accepted by:	MKA	11/6/97	1:25

MILES.ID.....		TLI_No.....	Cust.Id.....
43452-	-030	188-52-11	Beaker No.M35
43452-	-031	188-52-12	Beaker No.M36
43452-	-032	185-26-6C	O-M29-3-FHAR
43452-	-033	185-26-6D	O-M29-3-H2O2
43452-	-034	185-26-6E	O-M29-3-BHAR
43452-	-035	185-26-6F	O-M29-3-KMNO4
43452-	-036	185-26-6G	O-M29-3-HCL
43452-	-037	188-52-13	Beaker No.M37
43452-	-038	188-52-14	Beaker No.M38
43452-	-039	185-26-7C	O-M29-BLK-FHAR
43452-	-040	185-26-7D	O-M29-BLK-H2O2
43452-	-041	185-26-7E	O-M29-BLK-BHAR
43452-	-042	185-26-7F	O-M29-BLK-KMNO4
43452-	-043	185-26-7G	O-M29-BLK-HCL
43452-	-044	188-52-17	Beaker No.M41
43452-	-045	188-52-18	Beaker No.M42
43452-	-047	185-26-8D	M29-RB-HNO3/H2O2
43452-	-048	185-26-8E	M29-RB-0.1N HNO3
43452-	-049	185-26-8F	M29-RB-KMNO4/H2SO4
43452-	-050	185-26-8G	M29-RB-8N HCL
43452-	-051	185-26-8H	M29-RB-DI H20
43452-	-052	188-52-19	Beaker No.M43
43452-	-053	188-52-20	Beaker No.M44
43452-	-054	188-52-21	Beaker No.M45
43452-	-055	185-26-9C	I-M29-4-FHAR
43452-	-056	185-26-9D	I-M29-4-H2O2 1 OF 2
43452-	-057	185-26-9E	I-M29-4-BHAR
43452-	-058	185-26-9F	I-M29-4-KMNO4
43452-	-059	185-26-11	I-M29-4-H2O2 2 OF 2
43452-	-060	188-52-7	Beaker No.M31

XfrCOC (Rev 11/01/94)

Additional comments or instructions:

TRIANGLE LABORATORIES, INC.
Transfer Chain-of-Custody Form
Project 43452

Transfer From: IR To: IA I

	Initials..	Date.....	Time...
Released by:	SRB	11/5/97	13:41PM
Accepted by:	mkt	11/6/97	1:25

MILES.ID.....		TLI_No.....	Cust.Id.....
43452-	-061	188-52-8	Beaker No.M32
43452-	-062	185-26-10C	O-M29-4-FHAR
43452-	-063	185-26-10D	O-M29-4-H2O2
43452-	-064	185-26-10E	O-M29-4-BHAR
43452-	-065	185-26-10F	O-M29-4-KMNO4
43452-	-066	188-52-15	Beaker No.M39
43452-	-067	188-52-16	Beaker No.M40
43452-	-068	LCS	Lab Control Spike

XfrCOC (Rev 11/01/94)

dditional comments or instructions:

Date	Project # Sample IDs	Analyte	Std ID	Std conc (ppm)	Spike vol / sample vol (mL/mL)	Spike conc (ppb)	Initials	Witness
11/3/97	43697	"	3-013-3	"	100/10	"	MKH	MKH
	187-73-2 PDS	↓	↓	↓	↓	↓	↓	↓
	43772A	"	3-013-3	"	100/10	"	MKH	MKH
	188-49-2 PDS	↓	↓	↓	↓	↓	↓	↓
11/6/97	43452	"	3-025-3	"	100/10	"	SRB	SRB
	185-26-1C PDS	↓	↓	↓	↓	↓	↓	↓
	185-26-1D PDS	↓	↓	↓	↓	↓	↓	↓
11/7/97	43452	"	3-025-3	"	100/10	"	SRB	SRB
	185-26-1C x100 PDS	↓	↓	↓	↓	↓	↓	↓
11/10/97	91523	"	3-025-3	"	100/10	"	MKH	MKH
	188-30-2 PDS	↓	↓	↓	↓	↓	↓	↓
11/10/97	43866	"	3-025-3	"	100/10	"	MKH	MKH
	184-44-1 PDS	↓	↓	↓	↓	↓	↓	↓
	184-44-5.8 PDS	↓	↓	↓	↓	↓	↓	↓
11/11/97	43796A	"	3-025-3	"	100/10	"	SRB	SRB
	188-73-2A PDS	↓	↓	↓	↓	↓	↓	↓

TLI # 43452

*** SEE SPIKE LOG**

	Spiking Standard Preparation					SPIKING *from Spiking Standard*		
EXP date	Element	Standard ID	Orig. Std. (ppm)	Spike(uL) FVol(100mL)	conc (ppm)	Spike(uL) FVol(100ml)	conc (ppb)	combined total
2/1/98	Ag	2-115-4	100	5000	5	1000	50	
9/1/98	As	3-010-10	100	5000	5	1000	50	
2/1/98	Al	2-115-4	100	5000	5	1000	50	
9/1/98	Al	3-010-7	10000	950	95	1000	950	1000
2/1/98	B	2-115-4	100	5000	5	1000	50	
2/1/98	Ba	2-115-4	100	5000	5	1000	50	
9/1/98	Be	3-010-10	100	5000	5	1000	50	
9/1/98	Ca	3-010-10	100	5000	5	1000	50	
9/1/98	Ca	3-012-7	10000	950	95	1000	950	1000
9/1/98	Cd	3-010-10	100	5000	5	1000	50	
9/1/98	Co	3-010-10	100	5000	5	1000	50	
9/1/98	Cr	3-010-10	100	5000	5	1000	50	
9/1/98	Cu	3-010-10	100	5000	5	1000	50	
9/1/98	Fe	3-010-10	100	5000	5	1000	50	
9/1/98	Fe	3-012-6	10000	950	95	1000	950	1000
2/1/98	K	2-115-4	1000	5000	50	1000	500	
9/1/98	K	3-012-5	10000	1500	150	1000	1500	2000
9/1/98	Mg	3-010-10	100	5000	5	1000	50	
8/1/98	Mg	3-010-8	10000	950	95	1000	950	1000
9/1/98	Mn	3-010-10	100	5000	5	1000	50	
9/1/98	Mo	3-010-10	100	5000	5	1000	50	
2/1/98	Na	2-115-4	100	5000	5	1000	50	
8/1/98	Na	3-010-9	10000	1950	195	1000	1950	2000
9/1/98	Ni	3-010-10	100	5000	5	1000	50	
9/1/98	Pb	3-010-10	100	5000	5	1000	50	
9/1/98	Sb	3-010-10	100	5000	5	1000	50	
9/1/98	Se	3-010-10	100	5000	5	1000	50	
9/1/98	Ti	3-010-10	100	5000	5	1000	50	
9/1/98	Tl	3-010-10	100	5000	5	1000	50	
9/1/98	V	3-010-10	100	5000	5	1000	50	
9/1/98	Zn	3-010-10	100	5000	5	1000	50	
8/1/98	Zn	3-010-6	1000	1500	15	1000	150	200

1000uL of the Spiking Standard gives the listed conc. of the above elements.

****Spike seperately**

Element	Orig Std (ppm)	Spike(uL) FVol(100m	conc (ppb)
Au	1000	140	1400
Ce	1000	30	300
Li	1000	70	700
P	1000	100	1000
Pd	1000	160	1600
Pt	1000	300	3000
S	1000	350	3500
Si	10000	350	35000
Sn	1000	20	200
Sr	1000	5	50

Spiking Standard 3-025-3
EXP: 1/31/98

Spiked by:

Predigestion-

Postdigestion- SRB 11/6/97 & 11/7/97

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICB/CCB	110697	TRIANGL2	11/06/97	18:06	DKH	Q	CONC
2	STD1-BLANK	110697	TRIANGL2	11/06/97	18:12		X	IR
3	STD3	110697	TRIANGL2	11/06/97	18:17		X	IR
4	STD3	110697	TRIANGL2	11/06/97	18:22	DKH	Q	CONC
5	CHECK LO	110697	TRIANGL2	11/06/97	18:26	DKH	Q	CONC
6	ICV/CCV	110697	TRIANGL2	11/06/97	18:31	DKH	Q	CONC
* 7	~~ICB/CCB~~	~~110697~~	~~TRIANGL2~~	~~11/06/97~~	~~18:36~~	~~DKH~~	~~Q~~	~~CONC~~
8	ICB/CCB	110697	TRIANGL2	11/06/97	18:42	DKH	Q	CONC
9	ICSAB	110697	TRIANGL2	11/06/97	18:52	DKH	Q	CONC
10	43452 MB	110697	TRIANGL2	11/06/97	19:11	DKH	S	CONC
11	43452 LCS	110697	TRIANGL2	11/06/97	19:16	DKH	S	CONC
~~55 52 12~~	185-26-1C	110697	TRIANGL2	11/06/97	19:21	DKH	S	CONC
13	185-26-1C PDS	110697	TRIANGL2	11/06/97	19:26	DKH	S	CONC
14	185-26-1C L	110697	TRIANGL2	11/06/97	19:31	DKH	S	CONC
15	185-26-2C	110697	TRIANGL2	11/06/97	19:36	DKH	S	CONC
16	185-26-2C DA	110697	TRIANGL2	11/06/97	19:41	DKH	S	CONC
17	185-26-3C	110697	TRIANGL2	11/06/97	19:46	DKH	S	CONC
18	185-26-4C	110697	TRIANGL2	11/06/97	19:52	DKH	S	CONC
19	185-26-5C	110697	TRIANGL2	11/06/97	19:57	DKH	S	CONC
20	ICV/CCV	110697	TRIANGL2	11/06/97	20:02	DKH	Q	CONC
21	ICB/CCB	110697	TRIANGL2	11/06/97	20:08	DKH	Q	CONC
22	185-26-6C	110697	TRIANGL2	11/06/97	20:17	DKH	S	CONC
23	185-26-7C	110697	TRIANGL2	11/06/97	20:22	DKH	S	CONC
24	185-26-8E	110697	TRIANGL2	11/06/97	20:27	DKH	S	CONC
25	185-26-8H	110697	TRIANGL2	11/06/97	20:32	DKH	S	CONC
26	185-26-9C	110697	TRIANGL2	11/06/97	20:37	DKH	S	CONC
27	185-26-10C	110697	TRIANGL2	11/06/97	20:42	DKH	S	CONC
28	185-26-1D	110697	TRIANGL2	11/06/97	20:47	DKH	S	CONC
29	185-26-1D PDS	110697	TRIANGL2	11/06/97	20:52	DKH	S	CONC
30	185-26-1D L	110697	TRIANGL2	11/06/97	20:58	DKH	S	CONC
31	ICV/CCV	110697	TRIANGL2	11/06/97	21:03	DKH	Q	CONC
32	ICB/CCB	110697	TRIANGL2	11/06/97	21:18	DKH	Q	CONC
33	185-26-2D	110697	TRIANGL2	11/06/97	21:26	DKH	S	CONC
34	185-26-2D DA	110697	TRIANGL2	11/06/97	21:31	DKH	S	CONC
35	185-26-3D	110697	TRIANGL2	11/06/97	21:36	DKH	S	CONC
36	185-26-4D	110697	TRIANGL2	11/06/97	21:41	DKH	S	CONC
37	185-26-5D	110697	TRIANGL2	11/06/97	21:46	DKH	S	CONC
38	185-26-6D	110697	TRIANGL2	11/06/97	21:51	DKH	S	CONC
39	185-26-7CD	110697	TRIANGL2	11/06/97	21:56	DKH	S	CONC
40	185-26-8DE	110697	TRIANGL2	11/06/97	22:02	DKH	S	CONC
41	185-26-9D	110697	TRIANGL2	11/06/97	22:07	DKH	S	CONC
42	185-26-10D	110697	TRIANGL2	11/06/97	22:12	DKH	S	CONC
43	ICV/CCV	110697	TRIANGL2	11/06/97	22:17	DKH	Q	CONC
* 44	~~ICB/CCB~~	~~110697~~	~~TRIANGL2~~	~~11/06/97~~	~~22:22~~	~~DKH~~	~~Q~~	~~CONC~~
45	ICB/CCB	110697	TRIANGL2	11/06/97	22:41	DKH	Q	CONC
46	ICSAB	110697	TRIANGL2	11/06/97	22:56	DKH	Q	CONC

TLI ID Corrections 11/12/97

188-52-1,2, 185-26-1C

~~188-52-2,8~~, 185-26-~~2~~C PDS > 11/12/97

188-52-~~2,8~~, 185-26-1CL

188-52-3,4, 185-26-2C

188-52-3,4, 185-26-2C DA

188-52-5,6, 185-26-3C

188-52-9,10, ~~11~~, 185-26-4C

188-52-11,12, 185-26-5C

188-52-13,14, 185-26-6C

188-52-17,18, ~~18~~ 185-26-7C 11/12/97

188-52-19,20,21, 185-26-8E

188-52-7,8, 185-26-9C

188-52-15,16, 185-26-10C

* Reanalyzed. Baseline Failure DKH 11/6/97

CC Buf 11/12/97

TLI ID Corrections

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode	
108	185-26-1C X100	110697	TRIANGL2	11/07/97	09:02	SRB	S	CONC	188-52-1,2, 185-26-1C X100
109	185-26-1C X100 PDS	110697	TRIANGL2	11/07/97	09:07	SRB	S	CONC	185-52-1,2, 185-26-1C X100 PDS
110	185-26-1C X100 L	110697	TRIANGL2	11/07/97	09:12	SRB	S	CONC	188-52-1,2, 185-26-1C X100 L
111	185-26-2C X100	110697	TRIANGL2	11/07/97	09:17	SRB	S	CONC	188-52-3,4, 185-26-2C X100
112	185-26-2C X100 DA	110697	TRIANGL2	11/07/97	09:22	SRB	S	CONC	188-52-3,4, 185-26-2C X100 DA
113	185-26-3C X100	110697	TRIANGL2	11/07/97	09:27	SRB	S	CONC	188-52-5,6, 185-26-3C X100
114	185-26-4C X100	110697	TRIANGL2	11/07/97	09:32	SRB	S	CONC	188-52-9,10, 185-26-4C X100
115	185-26-5C X100	110697	TRIANGL2	11/07/97	09:37	SRB	S	CONC	185-52-11,12, 185-26-5C X100
116	185-26-9C X100	110697	TRIANGL2	11/07/97	09:42	SRB	S	CONC	188-52-7,8, 185-26-9C X100
117	185-26-2D X100	110697	TRIANGL2	11/07/97	09:47	SRB	S	CONC	
118	ICV/CCV	110697	TRIANGL2	11/07/97	09:52	SRB	Q	CONC	
119	ICB/CCB	110697	TRIANGL2	11/07/97	09:57	SRB	Q	CONC	
120	185-26-2D X100 DA	110697	TRIANGL2	11/07/97	10:03	SRB	S	CONC	
121	ICV/CCV	110697	TRIANGL2	11/07/97	10:08	SRB	Q	CONC	
122	ICB/CCB	110697	TRIANGL2	11/07/97	10:15	SRB	Q	CONC	
123	ICSAB	110697	TRIANGL2	11/07/97	10:21	SRB	Q	CONC	

TRIANGLE LABORATORIES, INC.

Sample Preparation Tracking & Management Form

Project: 43452 Client: PES, Inc. (PSC01)

Method: 7470 Extraction Date: 11/6/97

Solvent/Acids(): HNO3/H2SO4 Lot: 17050 | 317020

Sample Information

t/g

Sample #	crd	TLI / SAMPLE ID / CLIENT SAMPLE ID	Wgt / Vol g / ml	Final Volume ml	11/6/97 MR Digestion Date						
000		TLI Blank / MBLD / TLI Method Blank		100	11/5/97 MR						
001		185-26-1C / I-M29-1-FHAR									
002		185-26-1D / 185-26-1D D / I-M29-1-H2O2	5 / 5		11/5/97 MR						
003		185-26-1E / 185-26-1E D / I-M29-1-BHAR	5 / 5		11/5/97 MR						
004		185-26-1F / 185-26-1F D / I-M29-1-KMNO4	5 / 5		11/5/97 MR						
005		185-26-1G / 185-26-1G D / I-M29-1-HCL	5 / 5		11/5/97 MR						
006		188-52-1-2-185-26-1C / 188-52-1-2/185-26-1C D / Beaker No.M25	5 / 5		11/5/97 MR						
007		188-52-2 / Beaker No.M26									
008		185-26-2C / I-M29-2-FHAR									
009		~~185-26-2D / 185-26-2D D~~ / I-M29-2-H2O2 1 OF 2	5 / 5		~~11/5/97 MR~~						
010		185-26-12-2D / 185-26-12-2D D / I-M29-2-H2O2 2 OF 2	5 / 5		11/5/97 MR						
011		188-52-3-4/185-26-2C / 188-52-3-4/185-26-2C / Beaker No.M27	5 / 5		11/5/97 MR						
012		188-52-4 / Beaker No.M28									

Comments: See HGSL-1 P. 70

Use SOP # IND [0] Version 5 11/6/97 MR.

TRIANGLE LABORATORIES, INC.

Sample Preparation Tracking & Management Form

Project: 43452 Client: PES, Inc. (PSC01)

Sample Information

Method: 7470 Extraction Date: 11/6/97

Solvent/Acids(): HNO_3/H_2SO_4 Lot: 117050/317020

flg

Sample crd	TLI / SAMPLE ID / CLIENT SAMPLE ID	Wgt / Vol g / ml	Final Volume ml	11/6/97 mL Digestion Date						
13	185-26-3C I-M29-3-FHAR									
14	185-26-3D 185-26-3D D I-M29-3-H2O2	5/5		11/5/97 mL						
15	185-26-3E 185-26-3E D I-M29-3-BHAR	5/5		11/5/97 mL						
016	185-26-3F 185-26-3F D I-M29-3-KMNO4	5/5		11/5/97 mL						
017	188-52-5-6-185/26-3C Beaker No.M29 188-52-5-6-185/26-3C D	5/5		11/5/97 mL						
018	188-52-6 Beaker No.M30									
019	185-26-4C O-M29-1-FHAR									
20	185-26-4D 185-26-4D D O-M29-1-H2O2	5/5		11/5/97 mL						
21	185-26-4E 185-26-4E D O-M29-1-BHAR	5/5		11/5/97 mL						
22	185-26-4F 185-26-4F D O-M29-1-KMNO4	5/5		11/5/97 mL						
23	188-52-9-10/185-26-4C Beaker No.M33 188-52-9-10/185-26-4C D	5/5		11/5/97 mL						
24	188-52-10 Beaker No.M34									
025	185-26-5C O-M29-2-FHAR									

Comments: See p. 1

REV 07/26/93 (PSTMF 7)

TRIANGLE LABORATORIES, INC.

Sample Preparation Tracking & Management Form

Project: 43452 Client: PES, Inc. (PSC01)

Sample Information

Method: 7470 Extraction Date: 11/6/97

Solvent/Acids(): HNO_3 / H_2SO_4 Lot: 117050 / 317020

flg

Sample #	crd	TLI SAMPLE ID / CLIENT SAMPLE ID	Wgt / Vol g / ml	Final Volume ml	11/6/97 MR	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___
026		185-26-5D / O-M29-2-H2O2	5/5	11/6/97 MR							
		185-26-5D D									
027		185-26-5E / O-M29-2-BHAR	5/5	11/5/97 MR							
		185-26-5E D									
028		185-26-5F / O-M29-2-KMNO4	5/5	11/5/97 MR							
		185-26-5F D									
029		185-26-5G / O-M29-2-HCL	5/5	11/5/97 MR							
		185-26-5G D									
030		188-52-11-12/185-26-5C / Beaker No.M35	5/5	11/5/97 MR							
		188-52-11-12/185-26-5C D									
031		188-52-12 / Beaker No.M36									
032		185-26-6C / O-M29-3-FHAR									
033		185-26-6D / O-M29-3-H2O2	5/5	11/5/97 MR							
		185-26-6D D									
034		185-26-6E / O-M29-3-BHAR	5/5	11/5/97 MR							
		185-26-6E D									
035		185-26-6F / O-M29-3-KMNO4	5/5	11/5/97 MR							
		185-26-6F D									
036		185-26-6G / O-M29-3-HCL	5/5	11/5/97 MR							
		185-26-6G D									
037		188-52-13-14/185-26-6C / Beaker No.M37	5/5	11/5/97 MR							
		188-52-13-14/185-26-6C D									
038		188-52-14 / Beaker No.M38									

Comments: See P. 1

REV 07/26/93 (PSTMF 7)

TRIANGLE LABORATORIES, INC.

Sample Preparation Tracking & Management Form

Project: 43452 Client: PES, Inc. (PSC01)

Sample Information

Method: 7470 Extraction Date: 11/6/97 MR

Solvent/Acids(): HNO_3/H_2SO_4 Lot: 117050 / 317020

Hg

mple crd	TLI / SAMPLE ID / CLIENT SAMPLE ID	Sample Wgt / Vol g / ml	Final Volume ml	11/6/97 MR Digestion Date						
	185-26-7C D									
39	185-26-7CD D O-M29-BLK-FHAR	5/5		11/6/97 MR						
	185-26-7D									
40	185-26-7D D O-M29-BLK-H2O2	5/5		11/6/97 MR						
	185-26-7E									
41	185-26-7E D O-M29-BLK-BHAR	5/5		11/6/97 MR						
	185-26-7F 8H									
042	185-26-7F8H D O-M29-BLK-KMNO4	5/5		11/6/97 MR						
	185-26-7GF 8H									
043	185-26-7GF8H D O-M29-BLK-HCL	5/5		11/6/97 MR						
	188-52-17-18/185-26-7C									
044	188-52-17-18/185-26-7C D Beaker No.M41	5/5		11/6/97 MR						
	188-52-18									
045	Beaker No.M42									
	185-26-8DE									
47	185-26-8DE D M29-RB-HNO3/H2O2	5/5		11/6/97 MR						
	185-26-8E									
48	185-26-8E D M29-RB-0.1N HNO3	5/5		11/6/97 MR						
	185-26-8FH									
49	185-26-8FH D M29-RB-KMNO4/H2SO4	5/5		11/6/97 MR						
	185-26-8GH									
50	185-26-8FGH D M29-RB-8N HCL	5/5		11/6/97 MR						
	185-26-8H									
51	185-26-8H D M29-RB-DI H20	5/5		11/6/97 MR						
	188-52-19-20-21/185-26-8E									
52	188-52-19-20-21/185-26-8E D Beaker No.M43	5/5		11/6/97 MR						

Comments: See P-1

REV 07/26/93 (PSTMF 7)

TRIANGLE LABORATORIES, INC.

Sample Preparation Tracking & Management Form

Project: 43452 • Client: PES, Inc. (PSC01)

Sample Information

Method: 7470 Extraction Date: 11/6/97

Solvent/Acids(): HNO_3, H_2SO_4 Lot: 117050/517020

Hg

Sample # crd	TLI / SAMPLE ID / CLIENT SAMPLE ID	Sample Wgt / Vol g / ml	Final Volume ml	11/6/97 Digestion Date					
053	188-52-20 Beaker No.M44								
054	188-52-21 Beaker No.M45								
055	185-26-9C I-M29-4-FHAR								
056	185-26-9D-11 I-M29-4-H2O2 1 OF 2 (185-26-9D-11 D)	5/5		11/6/97 MC					
057	185-26-9E I-M29-4-BHAR (185-26-9E D)	5/5		11/6/97 MC					
058	185-26-9F I-M29-4-KMNO4 (185-26-9F D)	5/5		11/6/97 MC					
059	185-26-11 I-M29-4-H2O2 2 OF 2								
060	188-52-7-8/185-26-9C Beaker No.M31 (188-52-7-8/185-26-9C D)	5/5		11/6/97 MC					
061	188-52-8 Beaker No.M32								
062	185-26-10C O-M29-4-FHAR								
063	185-26-10D O-M29-4-H2O2 (185-26-10D D)	5/5		11/6/97 MC					
064	185-26-10E O-M29-4-BHAR (185-26-10E D)	5/5		11/6/97 MC					
065	185-26-10F O-M29-4-KMNO4 (185-26-10F D)	5/5		11/6/97 MC					

Comments: See P. 1

REV 07/26/93 (PSTMF 7)

TRIANGLE LABORATORIES, INC.

Sample Preparation Tracking & Management Form

Project: 43452 Client: PES, Inc. (PSC01)

Method: 7470 Extraction Date: 11/6/97

Solvent/Acids(): HNO3/H2SO4 Lot: 117050 / 517020

Hg

Sample Information

Sample crd	TLI SAMPLE ID / CLIENT SAMPLE ID	Wgt g / Vol ml	Final Volume ml	11/6/97 M2 Digestion Date
66	188-52-15-16 / 185-26-10C 188-52-15-16 / 185-26-10C D Beaker No.M39	5/5		11/6/97 ME
67	188-52-16 Beaker No.M40			
68	LCS1 LCS1D Lab Control Spike	5/5		11/5/97
	185-26-1D MS 185-26-1D MS D	5/5		11/5/97
	185-26-4D MS 185-26-4D MS D	5/5		11/5/97
	185-26-5D MS 185-26-5D MS D	5/5		11/6/97
	185-26-10D MS 185-26-10D MS D	5/5		11/6/97
	LCS2 LCS2D	5/5		11/6/97
	MB2 MB2D			11/6/97

Comments: See p. 1

REV 07/26/93 (PSTMF 7)

MERCURY SPIKE LOG

DATE	PROJECT # SAMPLE IDs	ORIGINAL SPIKE CONC. (Hg)	STANDARD # WORKING STANDARD PREPARED FROM	SPIKE AMOUNT (mL)	SPIKE SAMPLE (PPB)	INITIALS	WITNESS
11/5/97	43452 LCS1 LCS1D	0.1ppm	3-026-4	5	5	MR	DSE
	185-26-1D MS 185-26-1D MSD	↓	↓	↓	↓	↓	↓
	185-26-4D MS 185-26-4D MSD	↓	↓	↓	↓	↓	↓
11/16/97	43452 LCS2 LCS2D	↓	↓	↓	↓	↓	↓
11/6/97	185-26-5D MS	↓	↓	↓	↓	↓	↓
	185-26-5D MSD	↓	↓	↓	↓	↓	↓
↓	185-26-10D MS 185-26-10D MSD	↓	↓	↓	↓	↓	↓

Table Name: HA474 Autosampler Type: TYPE TJA
Sample Positions: 163/192 QC Positions: 13/19 # Sets: 1
Rinse Station location is rack -1, pos. -1.

--- Racks ---

Rack #	Type	Usage	#Pos Left	Analyses/Pos
1	Aux. (L) Rack	STD/QC/BLANK	13	10
2	Sample (16mm)	Samples	19	1
3	Sample (16mm)	Samples	48	1
4	Sample (16mm)	Samples	48	1
5	Sample (16mm)	Samples	48	1

--- Sample Sets ---

Set#	Type	Prepare?	Description	Method	#Pos	Rack#	StartPos
1	Normal	No	43452	TRIANGL2	29	2	1

--- Preparation Info ---

Set#	Uptake	Uptake#2	Final	Dil.Factor

No Samples Prepared.

Rack #1

Pos	Row	Col	Sample Name	Set #	#Used	Type
1	1	1	STD3	-NA-	2	Standard
2	1	2	STD1-BLANK	-NA-	1	Standard
3	1	3	ICSAB	-NA-	2	QC Standard
4	1	4	CHECK LO	-NA-	1	QC Standard
5	1	5	ICV/CCV	-NA-	4	QC Standard
6	1	6	ICB/CCB	-NA-	4	QC Standard

(7...19 Not Used)

1-63-7P
1-63-9P
1-63-8P
mcl 11/6/97

Rack #2

Pos	Row	Col	Sample Name	Set #	#Used	Type
1	1	1	43452 MB	1	-NA-	Sample
2	1	2	43452 LCS	1	-NA-	Sample
3	1	3	185-26-1C	1	-NA-	Sample
4	1	4	185-26-1C PDS	1	-NA-	Sample
5	1	5	185-26-1C L	1	-NA-	Sample
6	1	6	185-26-2C	1	-NA-	Sample
7	1	7	185-26-2C DA	1	-NA-	Sample
8	1	8	185-26-3C	1	-NA-	Sample
9	1	9	185-26-4C	1	-NA-	Sample
10	1	10	185-26-5C	1	-NA-	Sample
11	1	11	185-26-6C	1	-NA-	Sample
12	1	12	185-26-7C	1	-NA-	Sample
13	2	1	185-26-8E	1	-NA-	Sample
14	2	2	185-26-8H	1	-NA-	Sample
15	2	3	185-26-9C	1	-NA-	Sample

See individual Runs For complete ID
=> 11-19-97

Rack #2

Pos	Row	Col	Sample Name	Set #	#Used	Type
16	2	4	185-26-10C	1	-NA-	Sample
17	2	5	185-26-1D	1	-NA-	Sample
18	2	6	185-26-1D PDS	1	-NA-	Sample
19	2	7	185-26-1D L	1	-NA-	Sample
20	2	8	185-26-2D,12	1	-NA-	Sample
21	2	9	185-26-2D,9DA	1	-NA-	Sample
22	2	10	185-26-3D	1	-NA-	Sample
23	2	11	185-26-4D	1	-NA-	Sample
24	2	12	185-26-5D	1	-NA-	Sample
25	3	1	185-26-6D	1	-NA-	Sample
26	3	2	185-26-7CD	1	-NA-	Sample
27	3	3	185-26-8DE	1	-NA-	Sample
28	3	4	185-26-9D	1	-NA-	Sample
29	3	5	185-26-10D	1	-NA-	Sample
(30...48	Not Used)					

Rack #3

Pos	Row	Col	Sample Name	Set #	#Used	Type
(1...48	Not Used)					

Rack #4

Pos	Row	Col	Sample Name	Set #	#Used	Type
(1...48	Not Used)					

Rack #5

Pos	Row	Col	Sample Name	Set #	#Used	Type
(1...48	Not Used)					

AutoSampler Report Table: HA475 Fri 11-07-97 08:46:46 AM page 1

SRB 11/7/97

Table Name: HA475 Autosampler Type: TYPE TJA
Sample Positions: 181/192 QC Positions: 16/19 # Sets: 1
Rinse Station location is rack -1, pos. -1.

--- Racks ---

Rack #	Type	Usage	#Pos Left	Analyses/Pos
1	Aux. (L) Rack	STD/QC/BLANK	16	10
2	Sample (16mm)	Samples	37	1
3	Sample (16mm)	Samples	48	1
4	Sample (16mm)	Samples	48	1
5	Sample (16mm)	Samples	48	1

--- Sample Sets ---

Set#	Type	Prepare?	Description	Method	#Pos	Rack#	StartPos
1	Normal	No	43452	TRIANGL2	11	2	1

--- Preparation Info ---

Set#	Uptake	Uptake#2	Final	Dil.Factor

No Samples Prepared.

Rack #1

Pos	Row	Col	Sample Name	Set #	#Used	Type
(1...2 Not Used)						
3	1	3	ICSAB	-NA-	1	QC Standard
(4...4 Not Used)						
5	1	5	ICV/CCV	-NA-	2	QC Standard
6	1	6	ICB/CCB	-NA-	2	QC Standard
(7...19 Not Used)						

1-63-9P
1-63-8P
SRB 11/7/97

Rack #2

Pos	Row	Col	Sample Name	Set #	#Used	Type
1	1	1	185-26-1C X100	1	-NA-	Sample
2	1	2	185-26-1C X100 PDS	1	-NA-	Sample
3	1	3	185-26-1C X100 L	1	-NA-	Sample
4	1	4	185-26-2C X100	1	-NA-	Sample
5	1	5	185-26-2C X100 DA	1	-NA-	Sample
6	1	6	185-26-3C X100	1	-NA-	Sample
7	1	7	185-26-4C X100	1	-NA-	Sample
8	1	8	185-26-5C X100	1	-NA-	Sample
9	1	9	185-26-9C X100	1	-NA-	Sample
10	1	10	185-26-2D X100	1	-NA-	Sample
11	1	11	185-26-2D X100 DA	1	-NA-	Sample
(12...48 Not Used)						

Use Mn, Pb, & Zn
Use Mn only
Use Mn & Zn
Use Mn, Pb, & Zn
Use Mn only
SRB 11/7/97

See individual run For complete ID SRB 11-19-97

Rack #3

Pos	Row	Col	Sample Name	Set #	#Used	Type
(1...48	Not Used)					

Rack #4

Pos	Row	Col	Sample Name	Set #	#Used	Type
(1...48	Not Used)					

Rack #5

Pos	Row	Col	Sample Name	Set #	#Used	Type
(1...48	Not Used)					

Method: TRIANGL2 Sample Name: STD1-BLANK Operator:
Run Time: 11/06/97 18:12 Filename: 110697
Mode: IR Type: X Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.:

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	count	count	count	count	count	count
Avge	-.00017	.00378	-.00017	.0009	.00009	.00039
SDev	.0002	.00014	.00003	.00018	.00005	.00001
%RSD	120.154	3.82867	21.8552	20.854	64.3538	4.3798

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	count	count	count	count	count	count
Avge	.0005	-.00005	.00033	-.00006	-.00003	.00238
SDev	.00004	.00033	.00014	.00009	.00017	.00017
%RSD	9.08573	595.828	43.6894	143.351	438.601	7.54101

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	count	count	count	count	count	count
Avge	.00009	5.15142	.10991	.0003	.00003	.00005
SDev	.00008	.10679	.00213	.00021	.00002	.00005
%RSD	87.6664	2.07308	1.94127	72.4949	61.6871	98.36

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	count	count	count	count	count	count
Avge	-.00022	-.00104	-.0006	.00024	.00011	.00029
SDev	.00345	.00037	.00019	.00029	.00002	.00025
%RSD	1555.76	35.4258	31.7646	120.751	22.441	85.0391

Elems	1960-1	1960-2	Sn1899	Sr4215	Ti3349	Tl1908
Units	count	count	count	count	count	count
Avge	-.00513	.00187	-.00023	.00016	.00044	-.00025
SDev	.00016	.00017	.00009	.00008	.00056	.00002
%RSD	3.1328	9.49874	39.1099	51.3481	125.803	10.4495

Elems	V_2924	Zn2062	Si2881
Units	count	count	count
Avge	-.0003	.00023	.02123
SDev	.00003	.00008	.00048
%RSD	12.7622	36.7921	2.26301

Method: TRIANGL2 Sample Name: STD3 Operator:
Run Time: 11/06/97 18:17 Filename: 110697
Mode: IR Type: X Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: * Cust. ID.:

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	count	count	count	count	count	count
Avge	.38907	.01794	.04758	.15781	.29767	.2525
SDev	.00219	.00038	.00003	.00033	.00089	.00101
%RSD	.56367	2.15727	.07089	.20964	.30217	.40147

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	count	count	count	count	count	count
Avge	.02181	.872	.11287	.09621	.13801	.17647
SDev	.00015	.00368	.00146	.00039	.00056	.00098
%RSD	.69882	.42216	1.29929	.40763	.40725	.55594

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	count	count	count	count	count	count
Avge	.00393	27.1069	19.316	.01943	.12056	.07057
SDev	.00012	.37331	.33256	.00032	.00034	.00018
%RSD	3.25399	1.37719	1.72168	1.68395	.2872	.26116

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	count	count	count	count	count	count
Avge	.23671	.32849	.02073	.15986	.08306	.10583
SDev	.00412	.00087	.00021	.00175	.00054	.00067
%RSD	1.74076	.26679	1.021	1.09859	.65734	.63938

Elems	1960-1	1960-2	Sn1899	Sr4215	Ti3349	Tl1908
Units	count	count	count	count	count	count
Avge	.24707	.14988	.10029	.86376	1.09101	.02749
SDev	.0037	.00193	.00041	.00215	.00154	.0001
%RSD	1.49779	1.29277	.40973	.24922	.14137	.37615

Elems	V_2924	Zn2062	Si2881	Pb2203	Se1960
Units	count	count	count		
Avge	.03694	.08433	.44196		
SDev	.00004	.00057	.00342		
%RSD	.12044	.68183	.77561		

Method: TRIANGL2 Sample Name: STDJ Operator: DKH
Run Time: 11/06/97 18:22 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1010.	1007.	1015.	1011.	998.8	1017.
SDev	18.98	31	18.84	18.1	10.24	22.34
%RSD	1.879	3.078	1.857	1.791	1.026	2.198

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1033.	1026.	1009.	1023.	1024.	997.7
SDev	34.99	28.04	30.23	26.65	28.02	12.49
%RSD	3.388	2.734	2.997	2.605	2.738	1.252

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	1025.	9.762	974.0	1021.	1020.	1018.
SDev	74.63	.1873	21	42.48	23.8	21.02
%RSD	7.281	1.918	2.156	4.163	2.332	2.065

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	9.910	1023.	1020.	1013.	1028.	1018.
SDev	.2489	26.33	33.03	36.27	27.48	16.78
%RSD	2.512	2.574	3.24	3.581	2.672	1.648

Elems	1960-1	1960-2	Sn1899	Sr4215	Ti3349	Tl1908
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	995.5	1010.	1026.	997.2	1009.	1024.
SDev	46.06	19.8	28.82	11.9	17.88	17.8
%RSD	4.627	1.96	2.809	1.193	1.772	1.738

Elems	V_2924	Zn2062	Si2881	Pb2203	Se1960
Units	ppb	ppb	ppb	ppb	ppb
Avge	1015.	1041.	10170.	1023.	1005.
SDev	21.92	38.47	202.1	30.33	28.25
%RSD	2.16	3.698	1.988	2.965	2.811

Method: TRIANGL2 Sample Name: ICV/CCV Operator: DKH
Run Time: 11/06/97 18:31 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: . Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	497.9	500.4	503.0	495.8	497.2	498.0
SDev	2.002	5.963	2.52	1.269	3.66	4.696
%RSD	.402	1.192	.5009	.2561	.7362	.9428

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	510.6	502.1	498.3	501.8	502.7	499.5
SDev	7.596	5.602	5.718	4.186	4.618	4.621
%RSD	1.488	1.116	1.147	.8342	.9187	.9252

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	514.7	4.825	476.9	503.7	503.7	497.5
SDev	23.09	.0996	11.75	10.22	3.083	3.456
%RSD	4.486	2.065	2.463	2.028	.612	.6946

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	5.170	514.3	498.9	503.0	503.9	512.4
SDev	.3603	6.896	6.357	7.564	7.029	2.954
%RSD	6.97	1.341	1.274	1.504	1.395	.5765

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	494.0	498.6	503.6	497.1	496.5	492.2
SDev	4.281	12.18	6.823	9.508	5.141	2.516
%RSD	.8666	2.442	1.355	1.913	1.035	.5111

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	496.2	495.5	498.9	508.2	5098.
SDev	.5142	2.608	2.254	10.31	18.47
%RSD	.1036	.5264	.4518	2.028	.3623

Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH
Run Time: 11/06/97 18:36 Filename: 1i0697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	.7671	2.167	-.8604	.2490	-.0191	.0238
SDev	1.128	7.681	1.191	1.904	.2287	.0724
%RSD	147	354.5	138.5	764.7	1199	304.4

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.340	-.0590	-.1214	.0140	.3764	-.0294
SDev	2.131	.3241	7.177	1.419	1.456	1.142
%RSD	159.1	549.4	5913	10120	386.8	3884

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	-2.695	.0079	.0174	-1.390	.2003	.3767
SDev	27.39	.0611	.1614	14.39	.2027	.9606
%RSD	1016	770.6	929.8	1035	101.2	255

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	.2392	.2186	-5.663	2.537	-1.624	3.793
SDev	.2936	.9817	9.844	3.237	1.38	4.382
%RSD	122.7	449.1	173.8	127.6	84.95	115.5

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	3.005	-.8082	-.2383	.4617	-1.456	.0219
SDev	3	2.223	.4819	1.051	2.188	.1173
%RSD	99.83	275.1	202.2	227.7	150.2	535.5

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	-.1472	Q5.497	-.5270	-.4737	60.36
SDev	.5155	.9422	.8735	.8701	18.07
%RSD	350.1	17.14	165.7	183.7	29.94

Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH
Run Time: 11/06/97 18:42 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: • Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	-.0937	-3.137	-1.749	-2.381	-.1670	-.0497
SDev	.5463	10.26	2.741	1.008	.1863	.0635
%RSD	582.9	327	156.7	42.32	111.5	127.9

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	-1.596	-.3408	Q-6.639	-.9695	-.7598	-.7959
SDev	1.92	.185	1.157	1.108	1.001	1.011
%RSD	120.3	54.27	17.43	114.3	131.8	127.1

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	-20.96	.0032	-.0382	-9.804	-.1461	-.8411
SDev	30.32	.063	.1427	11.68	.1571	.7247
%RSD	144.6	1987	373.7	119.1	107.5	86.16

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	-.0497	-.6086	-5.586	2.941	-2.020	.9103
SDev	.1646	.5676	8.942	.9617	1.62	2.965
%RSD	331.2	93.28	160.1	32.71	80.23	325.7

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	3.365	-2.155	-.3679	-.3169	-1.832	-.0609
SDev	2.266	.4989	.8735	.4709	1.25	.0801
%RSD	67.34	23.15	237.4	148.6	68.22	131.5

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	-.4149	-2.530	-.8426	-1.357	41.61
SDev	.4667	3.285	1.022	.9692	17.72
%RSD	112.5	129.8	121.3	71.41	42.6

Method: TRIANGL2 Sample Name: ICSAB Operator: DKH
Run Time: 11/06/97 18:52 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	551.1	527100.	529.6	534.2	525.5	490.0
SDev	2.889	3977	6.489	2.911	3.97	2.461
%RSD	.5242	.7546	1.225	.5449	.7554	.5024

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	450500.	476.3	506.1	477.4	483.8	560.1
SDev	5958	3.757	4.322	3.294	4.301	7.038
%RSD	1.323	.7887	.854	.69	.889	1.257

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	180300.	Q26.29	632.3	536300.	464.2	500.6
SDev	1357	.766	19.58	4262	2.954	.6101
%RSD	.7525	2.914	3.096	.7946	.6364	.1219

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	5.876	459.7	548.2	511.7	484.4	536.2
SDev	.2415	3.425	5.902	19.52	11.21	6.814
%RSD	4.111	.745	1.077	3.814	2.313	1.271

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	549.9	528.5	493.5	535.6	515.6	515.3
SDev	3.228	4.19	5.387	2.505	2.045	2.976
%RSD	.587	.7928	1.092	.4677	.3966	.5774

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	504.0	513.4	499.4	451.1	5606.
SDev	1.891	14.77	2.089	5.509	45.02
%RSD	.3752	2.876	.4184	1.221	.803

Method: TRIANGL2 Sample Name: 43452 MB Operator: DKH
Run Time: 11/06/97 19:11 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: - Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L-.4698	L-2.617	L-.0474	L.0062	L-.3678	L-1.092
SDev	.8497	1.569	.184	.053	.271	1.078
%RSD	180.9	59.95	388.2	852.6	73.69	98.78

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L-.9207	L.1175	L-1.133	L-12.45	L.2029	L-1.432
SDev	1.068	.1409	1.597	8.391	.4342	3.215
%RSD	116	119.9	140.9	67.4	214	224.5

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	L.0739	L-2.463	5.466
SDev	1.169	1.547	1.007
%RSD	1462	62.81	18.42

Method: TRIANGL2 Sample Name: 43452 LCS Operator: DKH
Run Time: 11/06/97 19:16 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	43.98	43.46	45.60	43.77	45.56	45.64
SDev	.169	1.864	.2142	.2828	.2249	.9028
%RSD	.3843	4.288	.4698	.6462	.4937	1.978

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	45.70	45.95	45.14	907.7	45.36	46.09
SDev	.8015	.3279	.7218	6.692	1.089	2.962
%RSD	1.754	.7136	1.599	.7372	2.402	6.427

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	45.35	45.73	184.3
SDev	.7495	1.97	2.741
%RSD	1.653	4.307	1.487

185-52-1,2, # 11-19-97 EC

Method: TRIANGL2 Sample Name: 185-26-1C Operator: DKH
Run Time: 11/06/97 19:21 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: - Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	108.4	265.7	4061.	L-7.919	828.5	36.53
SDev	1.534	4.627	13.68	.3354	9.458	3.087
%RSD	1.415	1.742	.3368	4.235	1.142	8.451

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	5019.	H113500.	375.3	4764.	H76140.	665.1
SDev	46.36	3009	4.66	27.84	998.8	3.122
%RSD	.9236	2.652	1.242	.5843	1.312	.4695

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	250.8	307.8	H256700.
SDev	8.13	19.55	6740
%RSD	3.242	6.352	2.626

188-52-1,2 ~ 11-14-97 ec

Method: TRIANGL2 Sample Name: 185-26-1C PDS Operator: DKH
Run Time: 11/06/97 19:26 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	151.8	299.6	3995.	32.58	871.9	82.47
SDev	3.83	3.552	28.66	.2621	7.232	.9588
%RSD	2.524	1.186	.7175	.8045	.8295	1.163

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	5057.	H118800.	416.4	5594.	H76890.	696.8
SDev	41.12	4494	3.24	15.22	809	8.477
%RSD	.8132	3.782	.7781	.2721	1.052	1.217

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	295.7	369.0	H269000.
SDev	8.575	9.435	9552
%RSD	2.899	2.557	3.551

183-52-1,2

Method: TRIANGL2 Sample Name: 185-26-1C L Operator: DKH
Run Time: 11/06/97 19:31 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	24.70	57.34	847.8	L-1.217	193.9	10.44
SDev	1.082	1.242	3.696	.0397	1.118	.5057
%RSD	4.381	2.167	.4359	3.264	.5765	4.843

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1148.	H82150.	89.86	1060.	18460.	148.8
SDev	5.587	614.6	.8111	9.581	125.2	2.004
%RSD	.4867	.7482	.9026	.9037	.678	1.347

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	46.98	78.98	H126800.
SDev	.6755	2.577	1384
%RSD	1.438	3.263	1.091

183-62-3,4, 11-14-97 ee

Method: TRIANGL2 Sample Name: 185-26-2C Operator: DKH
Run Time: 11/06/97 19:36 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	251.7	769.3	11740.	23.65	2313.	36.91
SDev	2.848	21.59	68.91	1.051	30.25	6.011
%RSD	1.132	2.806	.5869	4.444	1.307	16.29

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	10240.	H92920.	556.6	55550.	H163600.	543.9
SDev	118.5	3948	5.772	157	1777	46.77
%RSD	1.157	4.248	1.037	.2826	1.086	8.6

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	600.5	636.6	H291600.
SDev	6.839	55.62	10100
%RSD	1.139	8.738	3.465

183-52-3,4, 24 11-19-97 EE

Method: TRIANGL2 Sample Name: 185-26-2C DA Operator: DKH
Run Time: 11/06/97 19:41 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: • Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	246.9	787.5	11860.	23.37	2270.	39.07
SDev	4.076	7.651	76.12	.5075	36.59	2.721
%RSD	1.651	.9716	.6421	2.171	1.612	6.965

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	10050.	H84390.	552.0	55490.	H159100.	590.6
SDev	143.3	5223	6.926	229.7	2544	30.09
%RSD	1.425	6.188	1.255	.4139	1.599	5.095

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	587.5	632.2	H269800.
SDev	11.9	32.91	13710
%RSD	2.025	5.205	5.081

Method: TRIANGL2 Sample Name: 185-26-3C Operator: DKH
Run Time: 11/06/97 19:46 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	299.0	614.0	8355.	L-11.39	2308.	46.65
SDev	4.414	3.877	81.61	.7574	53.39	2.18
%RSD	1.476	.6315	.9767	6.647	2.313	4.673

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	7981.	H89550.	539.9	34050.	H165300.	2151.
SDev	166.8	6003	9.577	170.8	4853	12.7
%RSD	2.09	6.703	1.774	.5018	2.937	.5905

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	412.6	486.7	H275800.
SDev	16.66	35.96	16470
%RSD	4.037	7.388	5.972

2
183-54-9,10, 9/11/97 ee

Method: TRIANGL2 Sample Name: 185-26-4C Operator: DKH
Run Time: 11/06/97 19:52 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: . Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	49.12	45.88	525.7	2.167	86.06	L-13.97
SDev	1.669	3.37	5.639	.0731	.2847	.5719
%RSD	3.399	7.346	1.073	3.375	.3308	4.093

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	617.4	H48260.	91.41	3061.	8244.	105.6
SDev	6.832	532.5	.5792	18.6	90.24	4.404
%RSD	1.107	1.103	.6337	.6075	1.095	4.171

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	58.55	40.44	66460.
SDev	2.916	4.391	1288
%RSD	4.98	10.86	1.938

158-52-11,12, → 11-14-97 cc

Method: TRIANGL2 Sample Name: 185-26-5C Operator: DKH
Run Time: 11/06/97 19:57 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	76.66	57.15	1026.	5.073	217.6	L-16.94
SDev	.4606	4.442	5.382	.0452	1.639	.8757
%RSD	.6008	7.774	.5245	.8905	.7531	5.169

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1013.	H73510.	97.08	508.7	15650.	139.7
SDev	7.684	1225	1.151	11.27	171.8	4.034
%RSD	.7584	1.667	1.185	2.216	1.098	2.887

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	78.00	49.22	H101800.
SDev	1.089	3.665	2138
%RSD	1.397	7.446	2.1

Method: TRIANGL2 Sample Name: ICV/CCV Operator: DKH
Run Time: 11/06/97 20:02 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	498.6	469.2	505.4	537.6	496.8	500.4
SDev	6.808	11.97	1.012	7.836	.758	1.828
%RSD	1.365	2.55	.2002	1.458	.1526	.3653

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	505.5	506.1	495.0	503.4	503.7	490.3
SDev	1.74	1.184	7.13	1.674	1.557	2.538
%RSD	.3443	.234	1.44	.3325	.309	.5177

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	499.9	4.800	474.9	492.6	493.1	502.4
SDev	29.34	.0087	2.996	14.46	1.299	1.431
%RSD	5.87	.1812	.6308	2.936	.2636	.285

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	4.705	513.5	499.1	499.7	504.7	504.6
SDev	.292	1.628	7.036	16.66	6.305	2.669
%RSD	6.207	.3171	1.41	3.334	1.249	.5289

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	490.9	484.9	503.0	486.9	497.1	486.6
SDev	3.045	4.483	2.016	2.023	3.137	.6404
%RSD	.6203	.9245	.4008	.4155	.6311	.1316

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	488.8	487.5	499.8	515.0	Q27730.
SDev	.6043	4.541	1.603	1.008	406.6
%RSD	.1236	.9316	.3208	.1958	1.466

Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH
Run Time: 11/06/97 20:08 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	.5831	-5.757	-1.920	64.29	-.0045	-.0403
SDev	1.255	6.686	.481	3.363	.0444	.0407
%RSD	215.2	116.1	25.05	5.232	983.8	100.9

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	.2939	.0179	-1.713	-.0268	.8673	-.5120
SDev	.395	.0753	3.051	.4619	.4644	.5161
%RSD	134.4	420.2	178.1	1725	53.54	100.8

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	-3.068	.0570	.1192	1.046	.0689	-.1225
SDev	7.592	.0247	.0524	4.137	.0622	.5282
%RSD	247.4	43.35	43.98	395.4	90.27	431

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	.1257	.2245	.4887	1.371	-.7579	1.343
SDev	.318	.5409	4.141	6.605	3.949	1.08
%RSD	253	240.9	847.3	481.8	521	80.42

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	3.621	-1.645	-.0490	.1086	-.7881	.0072
SDev	3.707	4.039	.4499	1.738	.5904	.0212
%RSD	102.4	245.5	917.7	1600	74.91	295

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	-.0884	3.404	.4462	4.527	Q11970.
SDev	.1043	2.492	.229	1.003	1128
%RSD	118	73.2	51.31	22.16	9.421

133-52-3,14, 11-19-97 EE

Method: TRIANGL2 Sample Name: 185-26-6C Operator: DKH
Run Time: 11/06/97 20:17 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: • Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	19.96	19.72	364.5	L.7395	40.16	L-19.18
SDev	2.142	2.674	1.627	.0985	.8972	.6045
%RSD	10.74	13.56	.4464	13.32	2.234	3.152

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	261.0	15270.	57.39	881.2	4526.	87.37
SDev	3.943	213.1	.4527	17.92	79.51	1.767
%RSD	1.511	1.396	.7888	2.034	1.757	2.023

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	46.90	L-12.55	27700.
SDev	2.015	.9297	750.9
%RSD	4.296	7.41	2.711

Method: TRIANGL2 Sample Name: 185-26-7C Operator: DKH
Run Time: 11/06/97 20:22 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.286	L3.338	129.8	L-.0184	L-1.160	L-14.00
SDev	.4907	1.957	.5357	.0732	.4438	1.294
%RSD	38.17	58.62	.4127	398.5	38.24	9.246

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	70.56	15.44	40.31	51.87	2.369	38.89
SDev	.3053	.9564	.9308	10.65	1.313	2.189
%RSD	.4326	6.195	2.309	20.53	55.42	5.629

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	40.65	L-20.88	102.1
SDev	1.309	3.205	3.199
%RSD	3.22	15.35	3.133

185-52-19,20, ok 11-19-97 cc

Method: TRIANGL2 Sample Name: 185-26-8E Operator: DKH
Run Time: 11/06/97 20:27 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: - Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	2.568	26.68	991.1	L-40.53	L-3.530	24.33
SDev	.3084	3.686	7.606	.4013	.4551	.7949
%RSD	12.01	13.81	.7674	.9902	12.89	3.268

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	304.9	183.4	119.1	747.4	44.09	44.08
SDev	1.235	1.097	.3963	11.04	4.328	5.789
%RSD	.4049	.5981	.3327	1.477	9.816	13.13

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	45.66	L-3.325	491.3
SDev	2.345	5.244	10.28
%RSD	5.136	157.7	2.092

Method: TRIANGL2 Sample Name: 185-26-8H Operator: DKH
Run Time: 11/06/97 20:32 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L.4109	L-1.545	4.569	L-.1502	L-.4708	L-1.944
SDev	.8115	1.516	.0942	.0163	.2759	.58
%RSD	197.5	98.13	2.061	10.85	58.6	29.84

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	7.673	3.502	3.484	L.8169	L1.185	4.794
SDev	.661	.0727	.2227	2.613	.4166	2.666
%RSD	8.614	2.075	6.392	319.9	35.16	55.61

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	L2.428	L-5.021	14.39
SDev	1.416	1.531	.7053
%RSD	58.34	30.5	4.9

183-52-7,8, 11-8-97 cc

Method: TRIANGL2 Sample Name: 185-26-9C Operator: DKH
Run Time: 11/06/97 20:37 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: . Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	181.8	803.7	10860.	L-2.354	1840.	39.29
SDev	1.02	20.13	92.83	.6654	29.56	4.621
%RSD	.5613	2.505	.8546	28.26	1.607	11.76

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	7506.	H93530.	456.3	33490.	H173400.	2528.
SDev	84.15	8208	4.657	153	2890	58.43
%RSD	1.121	8.776	1.021	.4568	1.667	2.311

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	446.9	520.4	H309700.
SDev	8.049	19.41	18120
%RSD	1.801	3.73	5.849

193-52-15,16

Method: TRIANGL2 Sample Name: 185-26-10C Operator: DKH
Run Time: 11/06/97 20:42 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	16.38	17.04	235.9	L.4616	20.71	L-16.21
SDev	.8942	1.785	1.188	.0244	.2969	.2335
%RSD	5.46	10.48	.5034	5.28	1.434	1.44

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	181.6	10390.	55.15	519.5	2248.	78.83
SDev	.541	43.33	.6768	6.07	18.67	2.485
%RSD	.2979	.4169	1.227	1.168	.8304	3.152

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	40.77	L-16.18	25010.
SDev	1.032	6.009	55.08
%RSD	2.532	37.14	.2202

Method: TRIANGL2 Sample Name: 185-26-1D Operator: DKH
Run Time: 11/06/97 20:47 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	2.038	L-3.443	5.604	L-.0754	2.715	L-2.204
SDev	.4145	1.976	.051	.0651	.0369	.3318
%RSD	20.34	57.38	.9108	86.41	1.36	15.05

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	15.01	96.61	7.191	92.27	96.69	7.416
SDev	.4245	.7874	.644	3.219	1.075	1.982
%RSD	2.828	.815	8.956	3.488	1.112	26.72

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	3.555	L-10.27	522.8
SDev	1.011	3.677	1.65
%RSD	28.44	35.79	.3156

Method: TRIANGL2 Sample Name: 185-26-1D PDS Operator: DKH
Run Time: 11/06/97 20:52 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	40.27	35.67	53.78	46.36	51.32	47.08
SDev	1.411	1.553	.1687	.3169	.458	.3844
%RSD	3.503	4.354	.3136	.6836	.8923	.8163

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	61.84	143.4	54.76	953.5	143.1	52.50
SDev	.5063	.8702	.6172	4.843	2.379	.2548
%RSD	.8187	.6069	1.127	.5079	1.662	.4853

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	39.58	37.32	703.4
SDev	.5201	4.273	10.15
%RSD	1.314	11.45	1.443

Method: TRIANGL2 Sample Name: 185-26-1D L Operator: DKH
Run Time: 11/06/97 20:58 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L.7747	L-3.615	L1.016	L-.1415	L.3167	L-1.447
SDev	1.188	1.652	.207	.0876	.277	1.207
%RSD	153.4	45.69	20.38	61.95	87.46	83.46

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L1.991	20.50	L.7126	L11.53	20.62	L-.3129
SDev	1.492	.5072	1.563	11	1.817	3.041
%RSD	74.93	2.474	219.3	95.42	8.814	971.8

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	L-.9052	L-5.855	117.4
SDev	1.122	1.842	5.892
%RSD	124	31.46	5.018

Method: TRIANGL2 Sample Name: ICV/CCV Operator: DKH
Run Time: 11/06/97 21:03 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	493.5	460.6	504.1	589.1	492.2	509.3
SDev	7.476	14.81	2.162	8.04	3.915	5.224
%RSD	1.515	3.215	.429	1.365	.7954	1.025

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	523.7	512.7	488.5	508.3	509.1	482.8
SDev	12.96	8.474	6.734	7.936	8.169	1.972
%RSD	2.476	1.653	1.378	1.561	1.605	.4085

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	499.3	4.603	451.0	492.0	510.7	501.8
SDev	39.91	.201	22.39	14.16	5.929	3.096
%RSD	7.993	4.367	4.965	2.877	1.161	.617

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	Q3.906	516.6	488.0	495.0	510.8	501.0
SDev	1.027	6.766	6.971	29.32	10.13	6.663
%RSD	26.28	1.31	1.428	5.923	1.982	1.33

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	475.8	469.0	505.5	471.3	502.5	484.8
SDev	12.61	11.8	12.3	11.01	5.778	2.182
%RSD	2.65	2.515	2.434	2.335	1.15	.4501

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	489.0	488.1	501.3	532.9	Q11180.
SDev	1.754	4.628	3.804	16.69	490.6
%RSD	.3588	.9483	.7587	3.132	4.386

Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH
Run Time: 11/06/97 21:13 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: * Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	.7262	-3.844	-2.416	148.5	-.0606	-.0324
SDev	.7451	6.33	2.714	15.26	.1613	.0448
%RSD	102.6	164.7	112.4	10.27	266.2	138.1

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	.6787	-.1799	Q-6.308	-.4820	-.3557	-.7340
SDev	2.203	.2884	3.24	1.022	1.053	.9151
%RSD	324.6	160.3	51.36	212.1	296	124.7

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	-13.49	-.0352	-.1782	-3.931	.8954	-.2543
SDev	21.41	.0348	.0695	9.619	.2923	.233
%RSD	158.7	98.83	39.03	244.7	32.65	91.64

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	.1988	-.3294	-6.059	6.956	-3.321	.6791
SDev	.1927	.8636	7.59	5.774	4.418	1.51
%RSD	96.91	376.5	125.3	83.01	133	222.3

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	5.257	-3.187	.1015	-.3752	-.9658	-.0235
SDev	4.714	2.694	1.236	.8109	.6967	.0799
%RSD	89.66	84.53	1218	216.1	72.13	339.6

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	-.2906	-.5281	-.8122	2.924	Q2623.
SDev	.383	.5065	1.003	1.039	443.3
%RSD	131.8	94.77	123.4	35.54	16.9

Method: TRIANGL2 Sample Name: 185-26-2B\2 Operator: DKH
Run Time: 11/06/97 21:26 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	21.36	10.11	294.8	1.890	98.35	L-1.458
SDev	2.289	.3944	1.263	.0227	1.842	.9631
%RSD	10.72	3.903	.4285	1.202	1.873	66.06

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	256.9	H30970.	18.97	912.0	4576.	35.77
SDev	4.952	390.5	.9461	15.41	86.98	4.304
%RSD	1.928	1.261	4.988	1.69	1.901	12.03

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	14.64	11.49	37670.
SDev	1.994	5.893	1010
%RSD	13.62	51.28	2.681

Method: TRIANGL2 Sample Name: 185-26-2D,2DA Operator: DKH
Run Time: 11/06/97 21:31 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: • Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	22.43	10.28	293.3	1.894	99.23	L-.5537
SDev	1.042	1.254	3.73	.0349	1.861	.8046
%RSD	4.647	12.2	1.272	1.843	1.875	145.3

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	259.3	H31040.	20.03	919.9	4613.	39.05
SDev	3.902	453.4	1.345	14.15	98.59	1.971
%RSD	1.505	1.461	6.717	1.539	2.137	5.047

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	14.21	15.32	38080.
SDev	.6966	3.779	1258
%RSD	4.903	24.67	3.305

Method: TRIANGL2 Sample Name: 185-26-3D Operator: DKH
Run Time: 11/06/97 21:36 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	8.861	L.5774	61.49	L.1938	26.76	L-.6942
SDev	1.135	1.011	.438	.0754	.6657	1.242
%RSD	12.81	175.1	.7123	38.91	2.488	179

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	78.61	5829.	34.55	110.8	1501.	9.779
SDev	2.475	53.96	1.217	13.29	19.48	3.937
%RSD	3.148	.9257	3.521	12	1.298	40.26

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	8.043	L.4333	9978.
SDev	1.024	1.457	253.4
%RSD	12.74	336.3	2.54

Method: TRIANGL2 Sample Name: 185-26-4D Operator: DKH
Run Time: 11/06/97 21:41 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.115	L-6.435	4.164	L-.0672	L.3876	L-.9298
SDev	.3508	.8786	.0841	.0623	.2766	.7895
%RSD	31.46	13.65	2.021	92.64	71.38	84.91

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	11.14	12.84	5.895	75.22	13.19	4.896
SDev	.6877	.2189	.2578	5.274	1.608	1.422
%RSD	6.174	1.705	4.373	7.012	12.19	29.05

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	L1.330	L-10.05	86.85
SDev	1.411	1.801	2.165
%RSD	106.1	17.92	2.493

Method: TRIANGL2 Sample Name: 185-26-5D Operator: DKH
Run Time: 11/06/97 21:46 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Tl1908	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.856	L-7.652	7.619	L-.0592	13.35	17.25
SDev	1.058	2.336	.3104	.0532	.6561	1.759
%RSD	56.98	30.52	4.075	89.82	4.914	10.19

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	13.39	23.41	20.75	120.4	131.1	8.067
SDev	1.856	.3611	1.295	10.52	1.662	4.027
%RSD	13.86	1.543	6.242	8.74	1.268	49.92

Elems	Se1960	As1890	Zn2062
Units	ppb	ppb	ppb
Avge	12.75	L-5.551	156.5
SDev	1.656	1.23	2.326
%RSD	12.99	22.15	1.487

Method: TRIANGL2 Sample Name: 185-26-6D Operator: DKH
Run Time: 11/06/97 21:51 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Tl1908	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L.4960	L-9.534	4.640	L-.1418	L.3996	L-1.468
SDev	2.096	2.637	.1362	.0602	.2609	.7113
%RSD	422.6	27.66	2.936	42.5	65.29	48.44

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	9.143	27.30	5.253	69.65	14.85	L2.873
SDev	.7417	.0776	.2075	5.022	.7636	1.676
%RSD	8.112	.2843	3.95	7.21	5.142	58.36

Elems	Se1960	As1890	Zn2062
Units	ppb	ppb	ppb
Avge	L.9166	L-6.845	105.0
SDev	1.542	1.572	.6393
%RSD	168.2	22.97	.6087

Method: TRIANGL2 Sample Name: 185-26-7CD Operator: DKH
Run Time: 11/06/97 21:56 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Tl1908	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.279	L.2338	3.665	L-.0532	L.6835	L-.7493
SDev	.6268	1.131	.1213	.0488	.2874	.7189
%RSD	49.02	483.6	3.31	91.58	42.04	95.94

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	7.373	46.95	L-.3851	43.51	10.81	5.495
SDev	.9771	.479	.5051	7.204	.8513	2.45
%RSD	13.25	1.02	131.2	16.55	7.877	44.59

Elems	Se1960	As1890	Zn2062
Units	ppb	ppb	ppb
Avge	L.4394	L-4.468	67.79
SDev	.9151	.5683	1.489
%RSD	208.3	12.72	2.196

Method: TRIANGL2 Sample Name: 185-26-8DE Operator: DKH
Run Time: 11/06/97 22:02 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	L.5599	L-7.723	2.298	L-.1071	L-.0145	L-1.470
SDev	.6308	.9629	.1794	.0325	.2568	.9884
%RSD	112.7	12.47	7.81	30.39	1773	67.24

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	5.178	2.714	L-1.556	32.81	5.703	L3.737
SDev	.9602	.1044	.7623	4.952	.3512	3.539
%RSD	18.54	3.849	48.99	15.09	6.158	94.7

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	L-.5361	L-8.718	46.88
SDev	1.545	1.195	.0907
%RSD	288.3	13.71	.1935

Method: TRIANGL2 Sample Name: 185-26-9D Operator: DKH
Run Time: 11/06/97 22:07 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.326	L-3.682	7.231	L-.0682	1.588	L-.7454
SDev	.5055	1.56	.1272	.0778	.3049	.8324
%RSD	38.11	42.37	1.759	114	19.21	111.7

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	10.78	413.7	L1.896	78.19	59.33	5.136
SDev	.9432	3.019	.4973	7.243	1.721	2.36
%RSD	8.753	.7298	26.23	9.262	2.901	45.94

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	L.7496	L-6.742	558.7
SDev	2.547	2.384	10.43
%RSD	339.8	35.36	1.866

Method: TRIANGL2 Sample Name: 185-26-10D Operator: DKH
Run Time: 11/06/97 22:12 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	As1890	Ba4934	Be3130	Cd2265	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.322	L-9.582	4.148	L-.1521	1.988	L-1.199
SDev	.9591	.4598	.0873	.0702	.1778	.4785
%RSD	72.57	4.799	2.104	46.15	8.945	39.9

Elems	Cr2677	Mn2576	Ni2316	P_2149	Pb2203	Sb2068
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	9.103	31.15	L.7368	60.27	42.47	L-.8190
SDev	.7205	.1874	1.047	5.237	1.023	.8659
%RSD	7.915	.6018	142.1	8.69	2.408	105.7

Elems	Se1960	Tl1908	Zn2062
Units	ppb	ppb	ppb
Avge	8.306	L-13.35	125.5
SDev	1.278	2.143	1.308
%RSD	15.39	16.05	1.042

Method: TRIANGL2 Sample Name: ICV/CCV Operator: DKH
Run Time: 11/06/97 22:17 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	501.8	460.1	507.5	523.7	492.2	519.4
SDev	4.737	12.06	1.824	2.86	.6035	1.342
%RSD	.944	2.62	.3594	.5462	.1226	.2583

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	532.0	525.7	496.9	520.6	522.5	483.4
SDev	6.311	3.332	7.155	4.048	4.497	2.26
%RSD	1.186	.6339	1.44	.7775	.8608	.4676

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	525.9	4.711	457.9	509.7	514.7	510.0
SDev	28.26	.0739	6.422	14.2	2.454	.5833
%RSD	5.373	1.569	1.402	2.786	.4767	.1144

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	4.758	523.5	503.6	520.1	523.3	507.3
SDev	.3405	3.267	11.08	8.311	3.212	3.83
%RSD	7.156	.6241	2.2	1.598	.6138	.7549

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	489.4	487.7	522.2	488.3	513.3	490.1
SDev	5.912	3.125	4.265	4.046	2.059	1.071
%RSD	1.208	.6406	.8167	.8285	.4011	.2185

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	498.8	501.4	510.7	539.0	5311.
SDev	2.051	2.617	2.917	6.165	66.46
%RSD	.4112	.5218	.5711	1.144	1.251

Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH
Run Time: 11/06/97 22:22 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	Q1.370	-7.820	-.3935	29.29	.1459	.0202
SDev	1.032	6.178	1.8	1.219	.2206	.1664
%RSD	75.35	79	457.4	4.162	151.3	825.1

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	2.961	.2290	Q3.660	.4016	.6518	-.3766
SDev	2.499	.1804	6.695	1.104	1.279	1.109
%RSD	84.41	78.79	182.9	274.9	196.2	294.4

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	5.727	.1998	.4200	4.852	.5819	.7872
SDev	29.18	.0111	.1076	13.16	.1886	.8789
%RSD	509.5	5.572	25.62	271.2	32.41	111.6

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb			
Avge	.2654	.0680	2.110	1.284	.0694	Q4.442
SDev	.242	1.242	14.2	8.595	4.825	2.992
%RSD	91.17	1828	673.1	669.5	6950	67.36

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	2.039	-1.136	.4738	-.0790	.0899	.1340
SDev	7.275	4.556	.4393	.7034	1.27	.1453
%RSD	356.9	401	92.71	890.5	1413	108.4

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	.1792	4.084	.8287	.2496	Q267.4
SDev	.4377	1.953	1.376	.811	10.82
%RSD	244.2	47.82	166	325	4.048

Method: TRIANGL2 Sample Name: ICB/CCB Operator: DKH
Run Time: 11/06/97 22:41 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	.5688	-13.47	-1.224	18.06	-.1674	-.1251
SDev	1.516	8.282	.2506	1.562	.1348	.0539
%RSD	266.6	61.48	20.47	8.652	80.54	43.1

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	-1.439	-.0925	Q-8.714	-.9489	-.9021	-1.196
SDev	1.207	.221	5.72	.9597	.9304	.7679
%RSD	83.84	239	65.64	101.1	103.1	64.23

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	-20.94	.0199	-.0683	-9.726	-.1179	-.6455
SDev	17.78	.0499	.1309	9.064	.1015	.1688
%RSD	84.91	250.3	191.8	93.2	86.1	26.15

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	.1397	-.9610	-8.305	8.419	-4.632	-1.182
SDev	.3934	.3364	5.573	8.967	5.517	3.323
%RSD	281.5	35.01	67.1	106.5	119.1	281.3

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	3.035	-4.628	-.2863	-2.076	-2.738	-.0722
SDev	6.249	3.036	.7024	.4791	1.547	.0655
%RSD	205.9	65.61	245.3	23.08	56.5	90.69

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	-.4506	-3.300	-.7315	-1.213	115.1
SDev	.3357	1.074	.7156	.8563	17.52
%RSD	74.51	32.54	97.82	70.6	15.22

Method: TRIANGL2 Sample Name: ICSAB Operator: DKH
Run Time: 11/06/97 22:56 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	550.8	517300.	533.3	555.5	518.4	506.1
SDev	1.384	2154	1.351	1.822	1.964	2.797
%RSD	.2512	.4164	.2532	.328	.3789	.5526

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	468900.	490.7	504.5	490.0	497.1	540.7
SDev	2297	1.973	3.95	2.72	2.277	2.159
%RSD	.4899	.4022	.783	.5551	.458	.3993

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	184400.	Q24.10	581.6	546500.	471.9	509.4
SDev	671.6	.0248	.2748	1832	1.868	2.862
%RSD	.3642	.1029	.0473	.3353	.3959	.5619

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	5.380	471.6	543.9	532.4	495.9	533.7
SDev	.0213	3.535	8.211	2.193	9.515	5.471
%RSD	.396	.7496	1.51	.4118	1.919	1.025

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	542.6	528.9	508.1	533.5	526.1	509.7
SDev	5.121	6.38	5.691	4.198	4.636	1.741
%RSD	.9438	1.206	1.12	.7868	.8814	.3415

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	502.8	516.1	506.4	471.7	5664.
SDev	1.964	12.3	2.538	2.934	16.39
%RSD	.3907	2.383	.5013	.622	.2894

Method: TRIANGL2 Sample Name: 185-26-1C X100 Operator: SRB
Run Time: 11/07/97 09:02 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Mn2576	Pb2203	Zn2062
Units	ppb	ppb	ppb
Avge	6126.	956.0	7723.
SDev	22.99	4.613	47.87
%RSD	.3753	.4825	.6199

183-52-1,2, 11-14-97 cc

Method: TRIANGL2 Sample Name: 185-26-1C X100 PDS Operator: SRB
Run Time: 11/07/97 09:07 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Mn2576	Pb2203	Zn2062
Units	ppb	ppb	ppb
Avge	6106.	1002.	7879.
SDev	50.96	9.61	94.73
%RSD	.8346	.9592	1.202

133-52-1,2 11-15-97 EE

Method: TRIANGL2 Sample Name: 185-26-1C X100 L Operator: SRB
Run Time: 11/07/97 09:12 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Mn2576	Pb2203	Zn2062
Units	ppb	ppb	ppb
Avge	1248.	192.1	1564.
SDev	1.736	1.087	2.219
%RSD	.1391	.5658	.1419

183-52-3,A, 11-8-97 EE

Method: TRIANGL2 Sample Name: 185-2@-2C X100 Operator: SRB
Run Time: 11/07/97 09:17 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Mn2576	Pb2203	Zn2062
Units	ppb	ppb	ppb
Avge	14080.	2226.	16070.
SDev	129.6	25.68	329.1
%RSD	.9205	1.154	2.048

188-52-3,A, 11-19-97 EE

Method: TRIANGL2 Sample Name: 185-26-2C X100 DA Operator: SRB
Run Time: 11/07/97 09:22 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Mn2576	Pb2203	Zn2062
Units	ppb	ppb	ppb
Avge	14950.	2385.	17210.
SDev	16.75	4.149	i32.3
%RSD	.112	.174	.7691

138-52-5/6, 98-11-14-97 EC

Method: TRIANGL2 Sample Name: 185-26-9C X100 Operator: SRB
Run Time: 11/07/97 09:27 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Mn2576	Pb2203	Zn2062
Units	ppb	ppb	ppb
Avge	10700.	2465.	19230.
SDev	129.2	32.19	510.7
%RSD	1.207	1.306	2.656

183-52-9,10 ss 11-19-97 cc

Method: TRIANGL2 Sample Name: 185-26-4C X100 Operator: SRB
Run Time: 11/07/97 09:32 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Mn only ss 11-19-97

Elems	Mn2576	Pb2203	Zn2062
Units	ppb	ppb	ppb
Avge	643.6	96.00	806.1
SDev	4.304	1.444	16.11
%RSD	.6688	1.504	1.998

193-52-11,12 cc 11-19-97 cc

Method: TRIANGL2 Sample Name: 185-26-5C X100 Operator: SRB
Run Time: 11/07/97 09:37 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Mn2576	Pb2203	Zn2062
Units	ppb	ppb	ppb
Avge	1083.	177.5	1265.
SDev	6.914	1.069	15.56
%RSD	.6385	.6024	1.23

Mn + Zn Only cc 11-19-97

183-52-7,8 , 11-19-97 cc

Method: TRIANGL2 Sample Name: 185-26-9C X100 Operator: SRB
Run Time: 11/07/97 09:42 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Mn2576	Pb2203	Zn2062
Units	ppb	ppb	ppb
Avge	11520.	2560.	24970.
SDev	25.66	3.045	144.7
%RSD	.2228	.119	.5796

Method: TRIANGL2 Sample Name: 185-26-2D%100 11-19-97 ec Operator: SRB
Run Time: 11/07/97 09:47 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Mn Only 11-19-97

Elems	Mn2576	Pb2203	Zn2062
Units	ppb	ppb	ppb
Avge	358.0	48.37	416.7
SDev	2.788	.0398	6.944
%RSD	.7787	.0822	1.667

Method: TRIANGL2 Sample Name: ICV/CCV Operator: SRB
Run Time: 11/07/97 09:52 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	512.0	481.9	508.7	509.3	518.4	520.5
SDev	3.436	3.899	6.622	2.039	3.145	8.744
%RSD	.6711	.809	1.302	.4003	.6066	1.68

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	512.5	504.5	513.5	513.9	509.5	519.8
SDev	12.86	9.403	1.537	8.305	8.223	4.947
%RSD	2.51	1.864	.2994	1.616	1.614	.9518

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	524.9	4.898	490.0	521.4	509.1	506.2
SDev	28.41	.1212	13.85	15.3	6.599	3.853
%RSD	5.412	2.475	2.826	2.934	1.296	.7611

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	5.039	507.9	502.6	522.2	506.3	525.3
SDev	.2426	10.29	7.918	15.32	5.284	4.033
%RSD	4.815	2.026	1.575	2.933	1.044	.7678

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	514.6	500.2	511.6	505.0	514.5	512.0
SDev	9.143	6.906	8.199	7.39	10.74	1.158
%RSD	1.777	1.381	1.602	1.463	2.087	.2262

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	509.3	497.7	513.4	506.9	5179.
SDev	3.006	7.256	5.484	15.99	21.91
%RSD	.5902	1.458	1.068	3.155	.423

Method: TRIANGL2 Sample Name: ICB/CCB Operator: SRB
Run Time: 11/07/97 09:57 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	.8005	-41.54	-2.863	2.283	-.0508	-.3900
SDev	.4031	1.651	1.477	.84	.0448	.0244
%RSD	50.36	3.974	51.57	36.79	88.37	6.257

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	2.703	-.0682	Q-9.725	-.2663	-.4495	1.467
SDev	.3394	.125	6.453	.4003	.4269	.438
%RSD	12.56	183.4	66.36	150.3	94.96	29.86

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	-8.231	-.0840	-.3379	-5.324	-.0250	-.0283
SDev	3.105	.0233	.0488	2.49	.0579	.7822
%RSD	37.72	27.75	14.43	46.77	231.8	2765

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	.2448	-.9935	-7.597	9.052	-5.293	-.5498
SDev	.05	.389	2.046	6.064	2.224	.8877
%RSD	20.44	39.16	26.93	66.99	42.02	161.5

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	6.414	-5.182	-.5159	-1.321	-1.939	-.0114
SDev	5.098	2.706	.572	.5374	.3087	.0335
%RSD	79.48	52.22	110.9	40.69	15.93	294.3

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	-.2056	.2386	Q-2.301	-1.226	27.47
SDev	.1158	2.915	.0578	.2878	14.29
%RSD	56.31	1222	2.511	23.49	52.03

Method: TRIANGL2 Sample Name: 185-26-2D X100 DA Operator: SRB
Run Time: 11/07/97 10:03 Filename: 110697
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Mn2576	Pb2203	Zn2062
Units	ppb	ppb	ppb
Avge	354.7	47.31	404.8
SDev	2.07	.3937	6.061
%RSD	.5837	.8322	1.497

Mn Only 12-19-97

Method: TRIANGL2 Sample Name: ICV/CCV Operator: SRB
Run Time: 11/07/97 10:08 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	512.1	487.6	503.9	506.7	516.4	515.2
SDev	7.463	10.4	6.873	3.01	4.371	10.08
%RSD	1.457	2.133	1.364	.5941	.8464	1.956

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	511.4	501.7	514.3	511.9	507.8	519.5
SDev	20.25	13.5	13.6	13.2	13.62	5.169
%RSD	3.959	2.69	2.645	2.579	2.682	.995

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	533.9	4.912	487.8	523.3	507.9	502.6
SDev	52.87	.1408	21.65	30.12	9.78	6.977
%RSD	9.903	2.866	4.439	5.756	1.925	1.388

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	Q5.648	505.3	502.3	530.4	503.0	523.8
SDev	.6675	13.79	19.37	19.1	9.244	9.367
%RSD	11.82	2.73	3.856	3.6	1.838	1.788

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	517.1	505.2	512.1	509.1	510.0	509.7
SDev	14.97	13.17	12.4	13.77	12.52	2.521
%RSD	2.894	2.607	2.421	2.704	2.455	.4947

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	507.4	502.7	511.6	503.8	5128.
SDev	4.399	1.816	7.536	22.99	66.32
%RSD	.867	.3612	1.473	4.563	1.293

Method: TRIANGL2 Sample Name: ICB/CCB Operator: SRB
Run Time: 11/07/97 10:15 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	.1580	-42.57	-1.990	-1.313	-.1866	-.3757
SDev	.64	9.814	.3305	1.442	.1973	.0716
%RSD	405	23.06	16.61	109.8	105.8	19.05

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	-.2891	-.3523	Q-3.444	Q-1.212	-1.692	.9688
SDev	1.732	.2483	1.224	1.327	1.174	1.146
%RSD	598.9	70.49	35.53	109.4	69.36	118.3

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	-31.97	-.2328	-.6341	-13.41	-.1681	-.5215
SDev	25.41	.0417	.0818	11.58	.1649	.5275
%RSD	79.48	17.91	12.91	86.33	98.12	101.1

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	.0356	-1.205	-12.49	.1911	-.5505	-3.604
SDev	.1696	1.202	7.853	3.683	4.341	3.41
%RSD	475.9	99.77	62.9	1927	788.5	94.61

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.701	.2326	-.3035	.7215	-2.748	-.0910
SDev	2.58	2.636	1.72	1.546	.9602	.0812
%RSD	151.7	1133	566.5	214.3	34.95	89.26

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	-.5628	-.4746	Q-3.342	-2.130	-44.60
SDev	.4387	3.686	1.127	.6137	1.913
%RSD	77.95	776.7	33.71	28.81	4.288

Method: TRIANGL2 Sample Name: ICSAB Operator: SRB
Run Time: 11/07/97 10:21 Filename: 110697
Mode: CONC Type: Q Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.: 43452

Elems	Ag3280	Al3082	As1890	B_2496	Ba4934	Be3130
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	561.1	538700.	530.3	541.0	537.9	505.7
SDev	1.819	2263	3.705	1.654	.8804	3.938
%RSD	.3242	.42	.6987	.3058	.1637	.7786

Elems	Ca3179	Cd2265	Ce4186	Co2286	Cr2677	Cu3247
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	450800.	477.5	519.3	486.2	486.3	572.4
SDev	5181	4.237	5.638	5.023	5.431	1.833
%RSD	1.149	.8874	1.086	1.033	1.117	.3203

Elems	Fe2714	K_7664	Li6707	Mg2790	Mn2576	Mo2020
Units	ppb	ppm	ppb	ppb	ppb	ppb
Avge	181400.	Q26.78	644.3	541400.	468.1	506.0
SDev	1586	.6052	13.66	4983	3.359	1.417
%RSD	.8745	2.259	2.12	.9204	.7177	.2799

Elems	Na3302	Ni2316	P_2149	2203-1	2203-2	Sb2068
Units	ppm	ppb	ppb	ppb	ppb	ppb
Avge	Q6.063	460.7	578.1	515.0	495.6	545.3
SDev	.2369	6.484	35.12	8.908	10.63	2.6
%RSD	3.908	1.407	6.074	1.73	2.145	.4768

Elems	1960-1	1960-2	Pb2203	Se1960	Sn1899	Sr4215
Units	ppb	ppb	ppb	ppb	ppb	ppb
Avge	564.7	534.3	502.1	544.4	530.4	526.1
SDev	19.67	7.748	6.174	6.614	1.939	.9573
%RSD	3.483	1.45	1.23	1.215	.3655	.182

Elems	Ti3349	Tl1908	V_2924	Zn2062	Si2881
Units	ppb	ppb	ppb	ppb	ppb
Avge	510.4	521.9	508.4	453.1	5576.
SDev	2.694	7.119	4.5	5.194	40.85
%RSD	.5279	1.364	.8851	1.146	.7327

Aut ... Loading Map

Element File: AS.GEL ID/Weight File: EB178.IDW

Loc.	Concentration	Solutions
0		Calib. Blank / Diluent / ICB / CCB
1	50.0 ug/L	Stock 1-64-1P
2	100.0 ug/L	Stock / Recovery Stock 1-64-2P
4		ICV=30 ug/L 1-64-3P
5		CCV=60 ug/L 1-64-4P
6		CHECK LO
7		43452 MB
8		43452 LCS
9		185-26-1C FH
10		185-26-1C ~~FE~~ FH L
11		185-26-2C FH
12		185-26-3C FH
13		185-26-4C FH damaged
14		185-26-5C FH X 5
15		185-26-6C FH
16		185-26-7C FH
17		185-26-8E FH
18		185-26-8H FH
19		185-26-9C FH X 10
20		185-26-10C FH
21		185-26-1D ~~FH~~ BH
22		185-26-1D ~~FE~~ BH L
23		185-26-2D ~~FH~~ BH
24		185-26-3D ~~FH~~ BH
25		185-26-4D BH
26		185-26-5D BH
27		185-26-6D BH
28		185-26-7CD BH
29		185-26-8DE BH
30		185-26-9D BH
31		185-26-10D BH
39		Modifier 1

SRB 11/6/97

BH 11/13/97 EE

188-52-1,2,
188-52-1,2,
188-52-3,4,
188-52-5,6
188-52-9,10,
188-52-11,12,
188-52-13,14,
188-52-17,18,
188-52-19,20,
188-52-7,8
188-52-15,16,

BH 11/13/97

Element File: AS.ELE

Element: As
Analyst: BENNETT
Print Data: Main+Suppl.
Peak Storage: 1 Repl./Sample
Print: Calib. Curve

INSTRUMENT: 4100 ZL
Technique: HGA
Version: 7.30
Wavelength: 193.7 Peak
Slit: 0.70 Low
Signal Type: Zeeman AA
Signal Measurement: Peak Area
Read Time: 5.0
Read Delay: 0.0
BOC Time: 2
Sample Replicates: 2
Standard Replicates: 2
Spike Replicates: Same as Sample

CALIBRATION:

Solutions	ID	Conc	Location	Volume	Diluent Volume	Modifier #1	Modifier #2
Calib. Blank	STD BLK	----------	0	10	5	5	
Standard 1	STD 1 = 25 ug/L	25.0	1	5	10	5	
Standard 2	STD 2 = 50 ug/L	50.0	1	10	5	5	
Standard 3	STD 3 =100 ug/L	100.0	2	10	5	5	
Reslope Std.	50 ug/L	50.0	1	10	5	5	
Samples	----------	----------	--------	10	5	5	

Diluent Location: 0
Modifier #1 Location: 39
Modifier #2 Location:
Calibration Units: ug/L
Sample Units: ug/L
Calibration Type: Nonlinear

Furnace Time/Temperature Program:

Step	Temp	Ramp	Hold	Gas Flow	Read	Gas Type
1	110	5	35	250		Norm
2	130	1	35	250		Norm
3	1200	5	30	250		Norm
4	2100	0	5	0	*	Norm
5	2500	1	5	250		Norm

Injection Temp: 20
Pipette Speed: 85%
Extraction System: On

SEQUENCE:

Step	Action and Parameters
1	Pipet diluent + modifier 1 + spike + sample/std
2	Run HGA steps 1 to End

CHECKS:
Recalibration Type: Reslope
Locations: None

Conc. Above Calibration Action: Dilute & Reanalyze After 1 Rep
Alternate Sample Volumes (uL): 5,2,1
Run Alternate Volume Blanks: Yes

If %RSD > 20.0 and Concentration > 3.3 then Retry 1 times
Check %RSD on: Samples + Standards + Spikes + QC Samples

Recovery Measurements:
5 uL of 100 ug/L Standard at Location 2 Gives 50.0 ug/L
Measure Recovery on Samples: 9,10,21,22
Add to QC Samples: Yes
% Recovery Limits: 85 to 115

QC:

#	A/S Loc.	QC Sample ID	Conc. Limits Lower	Conc. Limits Upper	After Calib	Periodic Check	At End	Count As Sample
1	4	ICV=30 ug/L	27.0	33.0				
2	0	ICB	-3.3	3.3				
3	5	CCV=60 ug/L	48.0	72.0				
4	0	CCB	-3.3	3.3	X		X	

Run Periodic QC Samples: Every 10
Out of Limit Action: Reslope and Rerun Samples

Matrix Check Calculations:
% Difference for Dupls: No Locations:
% Recovery for Spike: No Locations: Conc:

As ID: STD BLK Seq. No.: 00001 A/S Pos.: 0 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate 1 Time: 09:36
Peak Area (A-s): 0.004 Peak Height (A): 0.012
Background Pk Area (A-s): 0.033 Background Pk Height (A): 0.058
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 4.4

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate 2 (Peak Stored) Time: 09:39
Peak Area (A-s): 0.000 Peak Height (A): 0.011
Background Pk Area (A-s): 0.027 Background Pk Height (A): 0.060
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.7

Mean Conc (ug/L): 3.0 SD: 1.90 RSD(%): 62.62

Auto-zero performed.

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As ID: STD 1 = 25 ug/L Seq. No.: 00002 A/S Pos.: 1 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 39, 5 from 1
Replicate 1 Time: 09:42
Peak Area (A-s): 0.023 Peak Height (A): 0.074
Background Pk Area (A-s): 0.031 Background Pk Height (A): 0.062
Blank Corrected Pk Area (A-s): 0.021
Concentration (ug/L): 15.6

uL dispensed: 10 from 0, 5 from 39, 5 from 1
Replicate 2 (Peak Stored) Time: 09:46
Peak Area (A-s): 0.030 Peak Height (A): 0.086
Background Pk Area (A-s): 0.035 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.028
Concentration (ug/L): 21.6

Mean Conc (ug/L): 18.6 SD: 4.19 RSD(%): 22.55

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As ID: STD 1 = 25 ug/L Seq. No.: 00003 A/S Pos.: 1 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 39, 5 from 1
Replicate 1 Time: 09:49
Peak Area (A-s): 0.031 Peak Height (A): 0.085
Background Pk Area (A-s): 0.029 Background Pk Height (A): 0.062
Blank Corrected Pk Area (A-s): 0.029
Concentration (ug/L): 22.5

uL dispensed: 10 from 0, 5 from 39, 5 from 1
Replicate 2 (Peak Stored) Time: 09:52
Peak Area (A-s): 0.030 Peak Height (A): 0.087
Background Pk Area (A-s): 0.032 Background Pk Height (A): 0.067
Blank Corrected Pk Area (A-s): 0.028
Concentration (ug/L): 21.6

Mean Conc (ug/L): 22.0 SD: 0.63 RSD(%): 2.84

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Sta                    1 applied.  [25.0]
Correlation coefficient: 1.00000        Slope: 0.0011

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As     ID: STD 2 = 50 ug/L    Seq. No.: 00004    A/S Pos.: 1      Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 1
Replicate  1                           Time: 09:55
Peak Area (A-s): 0.059                 Peak Height (A): 0.166
Background Pk Area (A-s): 0.032        Background Pk Height (A): 0.062
Blank Corrected Pk Area (A-s): 0.057
Concentration (ug/L  ): 49.6

uL dispensed: 5 from 0, 5 from 39, 10 from 1
Replicate  2 (Peak Stored)             Time: 09:59
Peak Area (A-s): 0.056                 Peak Height (A): 0.154
Background Pk Area (A-s): 0.033        Background Pk Height (A): 0.063
Blank Corrected Pk Area (A-s): 0.054
Concentration (ug/L  ): 47.4

Mean Conc  (ug/L  ):       48.5        SD: 1.56                RSD(%): 3.21

Standard number 2 applied.  [50.0]
Correlation coefficient: 1.00000        Slope: 0.0012

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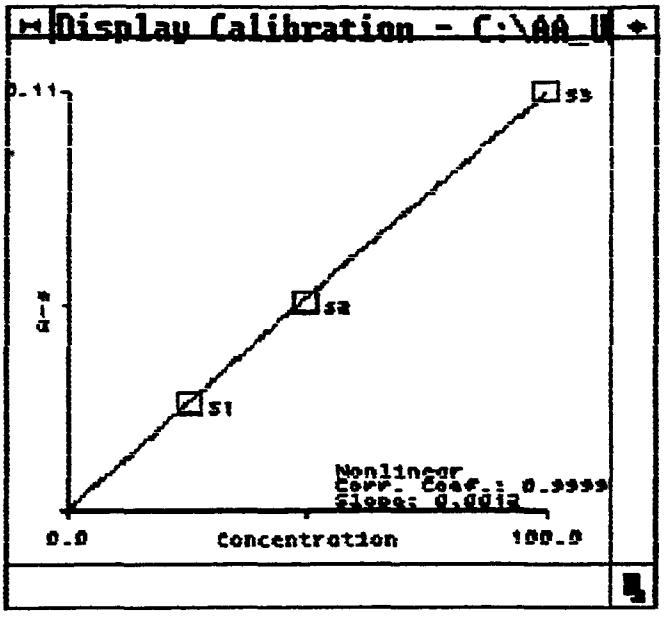
As     ID: STD 3 =100 ug/L    Seq. No.: 00005    A/S Pos.: 2      Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 2
Replicate  1                           Time: 10:02
Peak Area (A-s): 0.113                 Peak Height (A): 0.328
Background Pk Area (A-s): 0.033        Background Pk Height (A): 0.065
Blank Corrected Pk Area (A-s): 0.111
Concentration (ug/L  ): 106.2

uL dispensed: 5 from 0, 5 from 39, 10 from 2
Replicate  2 (Peak Stored)             Time: 10:05
Peak Area (A-s): 0.113                 Peak Height (A): 0.344
Background Pk Area (A-s): 0.032        Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): 0.111
Concentration (ug/L  ): 106.3

Mean Conc  (ug/L  ):      106.3        SD: 0.10                RSD(%): 0.09

S-shaped calibration curve detected. 2-coef. equation used.
Standard number 3 applied.  [100.0]
Correlation coefficient: 0.99990        Slope: 0.0012
```



As ID: ICV=30 ug/L Seq. No.: 00006 A/S Pos.: 4 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 4
Replicate 1 Time: 10:14
Peak Area (A-s): 0.034 Peak Height (A): 0.108
Background Pk Area (A-s): 0.031 Background Pk Height (A): 0.064
Blank Corrected Pk Area (A-s): 0.032
Concentration (ug/L): 27.8

uL dispensed: 5 from 0, 5 from 39, 10 from 4
Replicate 2 (Peak Stored) Time: 10:18
Peak Area (A-s): 0.032 Peak Height (A): 0.103
Background Pk Area (A-s): 0.031 Background Pk Height (A): 0.060
Blank Corrected Pk Area (A-s): 0.030
Concentration (ug/L): 26.5

Mean Conc (ug/L): 27.2 SD: 0.95 RSD(%): 3.49

QC sample is within range 27.0 - 33.0

As ID: ICB Seq. No.: 00007 A/S Pos.: 0 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate 1 Time: 10:21
Peak Area (A-s): -0.000 Peak Height (A): 0.014
Background Pk Area (A-s): 0.035 Background Pk Height (A): 0.070
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -1.9

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate 2 (Peak Stored) Time: 10:24
Peak Area (A-s): 0.001 Peak Height (A): 0.011
Background Pk Area (A-s): 0.034 Background Pk Height (A): 0.064
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.6

Mea [redacted] -1.2 SD: 0.90 RSD(%): 74.23

QC sample is within range -3.3 - 3.3

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As ID: CHECK LO Seq. No.: 00008 A/S Pos.: 6 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 6
Replicate 1 Time: 10:27
Peak Area (A-s): 0.004 Peak Height (A): 0.018
Background Pk Area (A-s): 0.034 Background Pk Height (A): 0.066
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.8

uL dispensed: 5 from 0, 5 from 39, 10 from 6
Replicate 2 (Peak Stored) Time: 10:30
Peak Area (A-s): 0.008 Peak Height (A): 0.019
Background Pk Area (A-s): 0.032 Background Pk Height (A): 0.061
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 4.8

Mean Conc (ug/L): 3.3 SD: 2.13 RSD(%): 64.18

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As ID: CHECK LO Seq. No.: 00009 A/S Pos.: 6 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 6
Replicate 1 Time: 10:34
Peak Area (A-s): 0.007 Peak Height (A): 0.021
Background Pk Area (A-s): 0.030 Background Pk Height (A): 0.063
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 4.1

uL dispensed: 5 from 0, 5 from 39, 10 from 6
Replicate 2 (Peak Stored) Time: 10:37
Peak Area (A-s): 0.002 Peak Height (A): 0.018
Background Pk Area (A-s): 0.033 Background Pk Height (A): 0.064
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.2

Mean Conc (ug/L): 2.2 SD: 2.75 RSD(%): 126.62

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As ID: 43452 MB Seq. No.: 00010 A/S Pos.: 7 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 7
Replicate 1 Time: 10:40
Peak Area (A-s): 0.001 Peak Height (A): 0.010
Background Pk Area (A-s): 0.033 Background Pk Height (A): 0.061
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -1.1

uL dispensed: 5 from 0, 5 from 39, 10 from 7
Replicate 2 (Peak Stored) Time: 10:43
Peak Area (A-s): 0.003 Peak Height (A): 0.010
Background Pk Area (A-s): 0.031 Background Pk Height (A): 0.062
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.6
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Mean Conc (ug/L): -0.3 SD: 1.19 61.1

As ID: 43452 LCS Seq. No.: 00011 A/S Pos.: 8 Date: 11/06/9

uL dispensed: 5 from 0, 5 from 39, 10 from 8
Replicate 1 Time: 10:46
Peak Area (A-s): 0.044 Peak Height (A): 0.161
Background Pk Area (A-s): 0.037 Background Pk Height (A): 0.063
Blank Corrected Pk Area (A-s): 0.042
Concentration (ug/L): 37.1

uL dispensed: 5 from 0, 5 from 39, 10 from 8
Replicate 2 (Peak Stored) Time: 10:50
Peak Area (A-s): 0.049 Peak Height (A): 0.160
Background Pk Area (A-s): 0.036 Background Pk Height (A): 0.060
Blank Corrected Pk Area (A-s): 0.047
Concentration (ug/L): 41.8

Mean Conc (ug/L): 39.5 SD: 3.28 RSD(%): 8.32

As ID: 188-52-1,2, 185-26-1C 11-19-99 cc Seq. No.: 00012 A/S Pos.: 9 Date: 11/06/9

uL dispensed: 5 from 0, 5 from 39, 10 from 9
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 10:53
Peak Area (A-s): 0.292 Peak Height (A): 0.346
Background Pk Area (A-s): 0.483 Background Pk Height (A): 0.484
Blank Corrected Pk Area (A-s): 0.290
Concentration (ug/L): 283.9

not used BCL 11/13/97

As ID: 188-52-1,2, 185-26-1C 11-19-99 cc Seq. No.: 00013 A/S Pos.: 9 Date: 11/06/9

uL dispensed: 10 from 0, 5 from 39, 5 from 9
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 10:56
Peak Area (A-s): 0.174 Peak Height (A): 0.167
Background Pk Area (A-s): 0.418 Background Pk Height (A): 0.366
Blank Corrected Pk Area (A-s): 0.172
Concentration (ug/L): 160.2 Corrected Conc (ug/L): 320.4

not used BCL 11/13/97

As ID: 188-52-1,2, 185-26-1C FH X5 11-19-99 cc Seq. No.: 00014 A/S Pos.: 9 Date: 11/06/97

uL dispensed: 13 from 0, 5 from 39, 2 from 9
Replicate 1 Time: 10:59
Peak Area (A-s): 0.066 Peak Height (A): 0.086
Background Pk Area (A-s): 0.308 Background Pk Height (A): 0.244
Blank Corrected Pk Area (A-s): 0.064
Concentration (ug/L): 57.0 Corrected Conc (ug/L): 285.

BCL 11/13/97

uL dispensed: 13 from 0, 5 from 39, 2 from 9
Replicate 2 (Peak Stored) Time: 11:02
Peak Area (A-s): 0.065 Peak Height (A): 0.081
Background Pk Area (A-s): 0.298 Background Pk Height (A): 0.243
Blank Corrected Pk Area (A-s): 0.062
Concentration (ug/L): 55.6 Corrected Conc (ug/L): 278.

Corrected Conc (ug/L): 281.

As ID: 185-26-1CFHDS 188-52-1,2, CE Seq. No.: 00015 A/S Pos.: 9 Date: 11/06/97
188-52-1,2 Bal 11/13/97
uL dispensed: 8 from 0, 5 from 39, 5 from 2, 2 from 9
Replicate 1 Time: 11:06
Peak Area (A-s): 0.118 Peak Height (A): 0.142
Background Pk Area (A-s): 0.300 Background Pk Height (A): 0.238
Blank Corrected Pk Area (A-s): 0.116
Concentration (ug/L): 105.7 Corrected Conc (ug/L): 528.

uL dispensed: 8 from 0, 5 from 39, 5 from 2, 2 from 9
Replicate 2 (Peak Stored) Time: 11:09
Peak Area (A-s): 0.101 Peak Height (A): 0.124
Background Pk Area (A-s): 0.277 Background Pk Height (A): 0.213
Blank Corrected Pk Area (A-s): 0.099
Concentration (ug/L): 89.3 Corrected Conc (ug/L): 446.

Mean Conc (ug/L): 97.4 SD: 11.62 RSD(%): 11.92
Corrected Conc (ug/L): 487.
Recovery is ~~82.3%~~ 82.2 % Bal 11/13/97 CE (outside of specified limits)

As ID: 185-26-1CAL 188-52-1,2, FH Bal 11/13/97 EE Seq. No.: 00016 A/S Pos.: 10 Date: 11/06/97
uL dispensed: 5 from 0, 5 from 39, 10 from 10
Replicate 1 Time: 11:12
Peak Area (A-s): 0.062 Peak Height (A): 0.088
Background Pk Area (A-s): 0.296 Background Pk Height (A): 0.221
Blank Corrected Pk Area (A-s): 0.060
Concentration (ug/L): 53.4

uL dispensed: 5 from 0, 5 from 39, 10 from 10
Replicate 2 (Peak Stored) Time: 11:15
Peak Area (A-s): 0.065 Peak Height (A): 0.085
Background Pk Area (A-s): 0.297 Background Pk Height (A): 0.238
Blank Corrected Pk Area (A-s): 0.063
Concentration (ug/L): 55.8

Mean Conc (ug/L): 54.6 SD: 1.71 RSD(%): 3.13

As ID: 185-26-1CFHL 188-52-1,2, AJ Bal 11/13/97 Seq. No.: 00017 A/S Pos.: 10 Date: 11/06/97
Not used
uL dispensed: 5 from 39, 5 from 2, 10 from 10
Replicate 1 Time: 11:19
Peak Area (A-s): 0.121 Peak Height (A): 0.172
Background Pk Area (A-s): 0.293 Background Pk Height (A): 0.212
Blank Corrected Pk Area (A-s): 0.119
Concentration (ug/L): 108.5

uL dispensed: 5 from 39, 5 from 2, 10 from 10
Replicate 2 (Peak Stored) Time: 11:22
Peak Area (A-s): 0.123 Peak Height (A): 0.161
Background Pk Area (A-s): 0.275 Background Pk Height (A): 0.230
Blank Corrected Pk Area (A-s): 0.121

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Concentration (ug/L  ): 110.4

Mean Conc  (ug/L  ):      109.4        SD: 1.31                RSD(%): 1.20

Recovery is 109.6%

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As    ID: CCV=60 ug/L *      Seq. No.: 00018    A/S Pos.: 5     Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 5
Replicate  1                          Time: 11:25
Peak Area (A-s): 0.067                Peak Height (A): 0.192
Background Pk Area (A-s): 0.034       Background Pk Height (A): 0.061
Blank Corrected Pk Area (A-s): 0.065
Concentration (ug/L  ): 58.1

uL dispensed: 5 from 0, 5 from 39, 10 from 5
Replicate  2 (Peak Stored)            Time: 11:28
Peak Area (A-s): 0.068                Peak Height (A): 0.203
Background Pk Area (A-s): 0.035       Background Pk Height (A): 0.064
Blank Corrected Pk Area (A-s): 0.066
Concentration (ug/L  ): 58.4

Mean Conc  (ug/L  ):       58.2       SD: 0.25                RSD(%): 0.44

QC sample is within range 48.0 - 72.0

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As    ID: CCB                Seq. No.: 00019    A/S Pos.: 0     Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate  1                          Time: 11:32
Peak Area (A-s): 0.003                Peak Height (A): 0.009
Background Pk Area (A-s): 0.028       Background Pk Height (A): 0.066
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L  ): 0.5

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate  2 (Peak Stored)            Time: 11:35
Peak Area (A-s): 0.000                Peak Height (A): 0.010
Background Pk Area (A-s): 0.031       Background Pk Height (A): 0.066
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L  ): -1.6

Mean Conc  (ug/L  ):       -0.5       SD: 1.48                RSD(%): 270.98

QC sample is within range -3.3 - 3.3

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As    ID: 185-26-2C Flt      Seq. No.: 00020    A/S Pos.: 11    Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 11
Sample abs. is greater than that of the largest standard.
Replicate  1                          Time: 11:38
Peak Area (A-s): 0.848                Peak Height (A): 2.513
Background Pk Area (A-s): 0.871       Background Pk Height (A): 0.809
Blank Corrected Pk Area (A-s): 0.846
Concentration (ug/L  ): 1099.0
```

As ID: 185-26-2C Seq. No.: 00021 A/S Pos.: 11 Date: 11/06/97

not used BM 11/13/97

uL dispensed: 10 from 0, 5 from 39, 5 from 11
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 11:41
Peak Area (A-s): 0.455 Peak Height (A): 0.779
Background Pk Area (A-s): 0.616 Background Pk Height (A): 0.539
Blank Corrected Pk Area (A-s): 0.453
Concentration (ug/L): 478.9 Corrected Conc (ug/L): 957.7

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As ID: 185-26-2C X5 Seq. No.: 00022 A/S Pos.: 11 Date: 11/06/97

~~188-52-13~~ BM 11/12/97 not used

uL dispensed: 13 from 0, 5 from 39, 2 from 11
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 11:44
Peak Area (A-s): 0.215 Peak Height (A): 0.379
Background Pk Area (A-s): 0.528 Background Pk Height (A): 0.500
Blank Corrected Pk Area (A-s): 0.213
Concentration (ug/L): 201.6 Corrected Conc (ug/L): 1008.

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As ID: 185-26-2CRX 10 Seq. No.: 00023 A/S Pos.: 11 Date: 11/06/97

~~188-52-13~~ 3,4

uL dispensed: 14 from 0, 5 from 39, 1 from 11
Replicate 1 Time: 11:47
Peak Area (A-s): 0.089 Peak Height (A): 0.111
Background Pk Area (A-s): 0.381 Background Pk Height (A): 0.301
Blank Corrected Pk Area (A-s): 0.087
Concentration (ug/L): 78.4 Corrected Conc (ug/L): 784.

uL dispensed: 14 from 0, 5 from 39, 1 from 11
Replicate 2 (Peak Stored) Time: 11:50
Peak Area (A-s): 0.098 Peak Height (A): 0.119
Background Pk Area (A-s): 0.408 Background Pk Height (A): 0.314
Blank Corrected Pk Area (A-s): 0.096
Concentration (ug/L): 86.5 Corrected Conc (ug/L): 865.

Mean Conc (ug/L): 82.4 SD: 5.78 RSD(%): 7.01
Corrected Conc (ug/L): 824.

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As ID: 185-26-3C Seq. No.: 00024 A/S Pos.: 12 Date: 11/06/97

not used BM 11/13/97

uL dispensed: 5 from 0, 5 from 39, 10 from 12
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 11:53
Peak Area (A-s): 0.625 Peak Height (A): 1.237
Background Pk Area (A-s): 0.735 Background Pk Height (A): 0.697
Blank Corrected Pk Area (A-s): 0.623
Concentration (ug/L): 715.8

~~~~~~

As ID: 185-26-3C Seq. No.: 00025 A/S Pos.: 12 Date: 11/06/97

not used BM 11/13/97

uL dispensed: 10 from 0, 5 from 39, 5 from 12
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 11:56

Peak Area (A-s): 0.364 Peak Height (A)
Background Pk Area (A-s): 0.529 Background Pk Height (A): 0.542
Blank Corrected Pk Area (A-s): 0.362
Concentration (ug/L): 366.9 Corrected Conc (ug/L): 733.8

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As ID: 185-26-3C Seq. No.: 00026 A/S Pos.: 12 Date: 11/06/97

uL dispensed: 13 from 0, 5 from 39, 2 from 12 Not used
Sample abs. is greater than that of the largest standard. mrl 11/13/97
Replicate 1 Time: 12:00
Peak Area (A-s): 0.143 Peak Height (A): 0.180
Background Pk Area (A-s): 0.416 Background Pk Height (A): 0.383
Blank Corrected Pk Area (A-s): 0.141
Concentration (ug/L): 129.5 Corrected Conc (ug/L): 648.

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As ID: 185-26-3C FHX 10 Seq. No.: 00027 A/S Pos.: 12 Date: 11/06/97
188-52-5,6, EE bml 11/13/97
uL dispensed: 14 from 0, 5 from 39, 1 from 12
Replicate 1 Time: 12:03
Peak Area (A-s): 0.076 Peak Height (A): 0.081
Background Pk Area (A-s): 0.338 Background Pk Height (A): 0.274
Blank Corrected Pk Area (A-s): 0.074
Concentration (ug/L): 66.1 Corrected Conc (ug/L): 661.

uL dispensed: 14 from 0, 5 from 39, 1 from 12
Replicate 2 (Peak Stored) Time: 12:06
Peak Area (A-s): 0.076 Peak Height (A): 0.106
Background Pk Area (A-s): 0.371 Background Pk Height (A): 0.278
Blank Corrected Pk Area (A-s): 0.074
Concentration (ug/L): 66.6 Corrected Conc (ug/L): 666.

Mean Conc (ug/L): 66.3 SD: 0.37 RSD(%): 0.56
Corrected Conc (ug/L): 663.

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As ID: 185-26-4C Seq. No.: 00028 A/S Pos.: 13 Date: 11/06/97
188-52-9,10, EE bml 11/13/97
uL dispensed: 5 from 0, 5 from 39, 10 from 13
Replicate 1 Time: 12:09
Peak Area (A-s): 0.056 Peak Height (A): 0.088
Background Pk Area (A-s): 0.147 Background Pk Height (A): 0.139
Blank Corrected Pk Area (A-s): 0.054
Concentration (ug/L): 48.2

uL dispensed: 5 from 0, 5 from 39, 10 from 13
Replicate 2 (Peak Stored) Time: 12:12
Peak Area (A-s): 0.059 Peak Height (A): 0.089
Background Pk Area (A-s): 0.147 Background Pk Height (A): 0.127
Blank Corrected Pk Area (A-s): 0.057
Concentration (ug/L): 50.6

Mean Conc (ug/L): 49.4 SD: 1.73 RSD(%): 3.50

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As ID: 185-26-5C Seq. No.: 00029 A/S Pos.: 14 Date: 11/06/97
188-52-11,12, EE bml 11/13/97
uL dispensed: 5 from 0, 5 from 39, 10 from 14

Rep. Time: 12:15
Peak Area (A-s): 0.068 Peak Height (A): 0.093
Background Pk Area (A-s): 0.187 Background Pk Height (A): 0.182
Blank Corrected Pk Area (A-s): 0.066
Concentration (ug/L): 59.2

uL dispensed: 5 from 0, 5 from 39, 10 from 14
Replicate 2 (Peak Stored) Time: 12:18
Peak Area (A-s): 0.071 Peak Height (A): 0.090
Background Pk Area (A-s): 0.188 Background Pk Height (A): 0.192
Blank Corrected Pk Area (A-s): 0.069
Concentration (ug/L): 61.9

Mean Conc (ug/L): 60.6 SD: 1.91 RSD(%): 3.16

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As ID: CCV=60 ug/L Seq. No.: 00030 A/S Pos.: 5 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 5
Replicate 1 Time: 12:21
Peak Area (A-s): 0.070 Peak Height (A): 0.183
Background Pk Area (A-s): 0.033 Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): 0.068
Concentration (ug/L): 60.8

uL dispensed: 5 from 0, 5 from 39, 10 from 5
Replicate 2 (Peak Stored) Time: 12:25
Peak Area (A-s): 0.069 Peak Height (A): 0.194
Background Pk Area (A-s): 0.030 Background Pk Height (A): 0.067
Blank Corrected Pk Area (A-s): 0.067
Concentration (ug/L): 60.0

Mean Conc (ug/L): 60.4 SD: 0.56 RSD(%): 0.93

QC sample is within range 48.0 - 72.0

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As ID: CCB Seq. No.: 00031 A/S Pos.: 0 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate 1 Time: 12:28
Peak Area (A-s): -0.001 Peak Height (A): 0.009
Background Pk Area (A-s): 0.035 Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -2.3

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate 2 (Peak Stored) Time: 12:31
Peak Area (A-s): 0.001 Peak Height (A): 0.010
Background Pk Area (A-s): 0.037 Background Pk Height (A): 0.067
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.9

Mean Conc (ug/L): -1.6 SD: 0.97 RSD(%): 61.07

QC sample is within range -3.3 - 3.3

As ID: 185-26-6C FH Seq. No.: 00032 A/S Pos.: 15 Date: 11/06/9
188-53-13, 14) EE Rec'd 11/13/97
uL dispensed: 5 from 0, 5 from 39, 10 from 15
Replicate 1 Time: 12:34
Peak Area (A-s): 0.023 Peak Height (A): 0.049
Background Pk Area (A-s): 0.079 Background Pk Height (A): 0.085
Blank Corrected Pk Area (A-s): 0.021
Concentration (ug/L): 18.1

uL dispensed: 5 from 0, 5 from 39, 10 from 15
Replicate 2 (Peak Stored) Time: 12:37
Peak Area (A-s): 0.028 Peak Height (A): 0.054
Background Pk Area (A-s): 0.080 Background Pk Height (A): 0.084
Blank Corrected Pk Area (A-s): 0.026
Concentration (ug/L): 22.5

Mean Conc (ug/L): 20.3 SD: 3.12 RSD(%): 15.34

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As ID: 185-26-7C FH Seq. No.: 00033 A/S Pos.: 16 Date: 11/06/9
188-52-17, 18) EE Rec'd 11/13/97
uL dispensed: 5 from 0, 5 from 39, 10 from 16
Replicate 1 Time: 12:40
Peak Area (A-s): 0.005 Peak Height (A): 0.018
Background Pk Area (A-s): 0.039 Background Pk Height (A): 0.057
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 2.7

uL dispensed: 5 from 0, 5 from 39, 10 from 16
Replicate 2 (Peak Stored) Time: 12:43
Peak Area (A-s): 0.007 Peak Height (A): 0.016
Background Pk Area (A-s): 0.039 Background Pk Height (A): 0.054
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 3.9

Mean Conc (ug/L): 3.3 SD: 0.84 RSD(%): 25.76

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As ID: 185-26-8E FH Seq. No.: 00034 A/S Pos.: 17 Date: 11/06/9
186-52-19, 12) EE Rec'd 11/13/97
uL dispensed: 5 from 0, 5 from 39, 10 from 17
Replicate 1 Time: 12:47
Peak Area (A-s): 0.028 Peak Height (A): 0.064
Background Pk Area (A-s): 0.509 Background Pk Height (A): 0.408
Blank Corrected Pk Area (A-s): 0.026
Concentration (ug/L): 22.9

uL dispensed: 5 from 0, 5 from 39, 10 from 17
Replicate 2 (Peak Stored) Time: 12:50
Peak Area (A-s): 0.024 Peak Height (A): 0.052
Background Pk Area (A-s): 0.482 Background Pk Height (A): 0.444
Blank Corrected Pk Area (A-s): 0.022
Concentration (ug/L): 19.1

Mean Conc (ug/L): 21.0 SD: 2.70 RSD(%): 12.86

As ID: 185-26-8H FH ok MM 11/13/97 Seq. No.: 00035 A/S Pos.: 18 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 18
Replicate 1 Time: 12:53
Peak Area (A-s): 0.004 Peak Height (A): 0.012
Background Pk Area (A-s): 0.040 Background Pk Height (A): 0.052
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.8

uL dispensed: 5 from 0, 5 from 39, 10 from 18
Replicate 2 (Peak Stored) Time: 12:56
Peak Area (A-s): 0.001 Peak Height (A): 0.009
Background Pk Area (A-s): 0.041 Background Pk Height (A): 0.058
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.6

Mean Conc (ug/L): 0.6 SD: 1.68 RSD(%): 287.07

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As ID: 185-26-9C Seq. No.: 00036 A/S Pos.: 19 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 19
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 12:59
Peak Area (A-s): 0.858 Peak Height (A): 1.787
Background Pk Area (A-s): 0.744 Background Pk Height (A): 0.618
Blank Corrected Pk Area (A-s): 0.856
Concentration (ug/L): 1117.8 not used BM 11/13/97

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As ID: 185-26-9C Seq. No.: 00037 A/S Pos.: 19 Date: 11/06/97

not used BM 11/13/97

uL dispensed: 10 from 0, 5 from 39, 5 from 19
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 13:03
Peak Area (A-s): 0.469 Peak Height (A): 0.758
Background Pk Area (A-s): 0.568 Background Pk Height (A): 0.465
Blank Corrected Pk Area (A-s): 0.467
Concentration (ug/L): 496.3 Corrected Conc (ug/L): 992.7

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As ID: 185-26-9C Seq. No.: 00038 A/S Pos.: 19 Date: 11/06/97

uL dispensed: 13 from 0, 5 from 39, 2 from 19
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 13:06
Peak Area (A-s): 0.209 Peak Height (A): 0.295
Background Pk Area (A-s): 0.482 Background Pk Height (A): 0.396
Blank Corrected Pk Area (A-s): 0.207
Concentration (ug/L): 195.9 Corrected Conc (ug/L): 979.

not used BM 11/13/97

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As ID: 185-26-9C FH X10 Seq. No.: 00039 A/S Pos.: 19 Date: 11/06/97
185-5 2-1,8, CZ BM 11/13/97
uL dispensed: 14 from 0, 5 from 39, 1 from 19
Replicate 1 Time: 13:09
Peak Area (A-s): 0.092 Peak Height (A): 0.132
Background Pk Area (A-s): 0.372 Background Pk Height (A): 0.303

Blank Corrected Pk Area (A-s): 0.090
Concentration (ug/L): 81.0 Corrected Conc (ug/L): 810.

uL dispensed: 14 from 0, 5 from 39, 1 from 19
Replicate 2 (Peak Stored) Time: 13:12
Peak Area (A-s): 0.100 Peak Height (A): 0.138
Background Pk Area (A-s): 0.379 Background Pk Height (A): 0.287
Blank Corrected Pk Area (A-s): 0.097
Concentration (ug/L): 88.0 Corrected Conc (ug/L): 880.

Mean Conc (ug/L): 84.5 SD: 5.01 RSD(%): 5.93
Corrected Conc (ug/L): 845.

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As ID: 185-26-10C FH Seq. No.: 00040 A/S Pos.: 20 Date: 11/06/97
188-52-15,16, cc Bml 11/13/97
uL dispensed: 5 from 0, 5 from 39, 10 from 20
Replicate 1 Time: 13:16
Peak Area (A-s): 0.021 Peak Height (A): 0.046
Background Pk Area (A-s): 0.079 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): 0.019
Concentration (ug/L): 16.3

uL dispensed: 5 from 0, 5 from 39, 10 from 20
Replicate 2 (Peak Stored) Time: 13:19
Peak Area (A-s): 0.020 Peak Height (A): 0.046
Background Pk Area (A-s): 0.077 Background Pk Height (A): 0.072
Blank Corrected Pk Area (A-s): 0.017
Concentration (ug/L): 15.3

Mean Conc (ug/L): 15.8 SD: 0.73 RSD(%): 4.61

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As ID: 185-26-1D BH Seq. No.: 00041 A/S Pos.: 21 Date: 11/06/97
BS Bml 11/13/97
uL dispensed: 5 from 0, 5 from 39, 10 from 21
Replicate 1 Time: 13:22
Peak Area (A-s): 0.002 Peak Height (A): 0.012
Background Pk Area (A-s): 0.037 Background Pk Height (A): 0.055
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L): -0.1

uL dispensed: 5 from 0, 5 from 39, 10 from 21
Replicate 2 (Peak Stored) Time: 13:25
Peak Area (A-s): 0.010 Peak Height (A): 0.037
Background Pk Area (A-s): 0.039 Background Pk Height (A): 0.058
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 6.7

Mean Conc (ug/L): 3.3 SD: 4.81 RSD(%): 147.59

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As ID: 185-26-1D BH RDS Seq. No.: 00042 A/S Pos.: 21 Date: 11/06/97
Bml 11/13/97 BS
uL dispensed: 5 from 39, 5 from 2, 10 from 21
Replicate 1 Time: 13:29
Peak Area (A-s): 0.066 Peak Height (A): 0.228
Background Pk Area (A-s): 0.034 Background Pk Height (A): 0.048
Blank Corrected Pk Area (A-s): 0.064

PDS Bml 11/13/97
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Con ... ug/L): 56.8

uL dispensed: 5 from 39, 5 from 2, 10 from 21
Replicate 2 (Peak Stored) Time: 13:32
Peak Area (A-s): 0.056 Peak Height (A): 0.206
Background Pk Area (A-s): 0.032 Background Pk Height (A): 0.049
Blank Corrected Pk Area (A-s): 0.053
Concentration (ug/L): 47.5

Mean Conc (ug/L): 52.1 SD: 6.60 RSD(%): 12.67

Recovery is ~~97.8%~~ 104.2% 11-19-97 CE

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As ID: CCV=60 ug/L Seq. No.: 00043 A/S Pos.: 5 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 5
Replicate 1 Time: 13:35
Peak Area (A-s): 0.067 Peak Height (A): 0.199
Background Pk Area (A-s): 0.037 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): 0.065
Concentration (ug/L): 57.9

uL dispensed: 5 from 0, 5 from 39, 10 from 5
Replicate 2 (Peak Stored) Time: 13:38
Peak Area (A-s): 0.063 Peak Height (A): 0.205
Background Pk Area (A-s): 0.039 Background Pk Height (A): 0.072
Blank Corrected Pk Area (A-s): 0.061
Concentration (ug/L): 54.5

Mean Conc (ug/L): 56.2 SD: 2.45 RSD(%): 4.36

QC sample is within range 48.0 - 72.0

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As ID: CCB Seq. No.: 00044 A/S Pos.: 0 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate 1 Time: 13:42
Peak Area (A-s): 0.002 Peak Height (A): 0.010
Background Pk Area (A-s): 0.034 Background Pk Height (A): 0.070
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.2

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate 2 (Peak Stored) Time: 13:45
Peak Area (A-s): 0.001 Peak Height (A): 0.010
Background Pk Area (A-s): 0.039 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -1.2

Mean Conc (ug/L): -0.5 SD: 0.97 RSD(%): 199.86

QC sample is within range -3.3 - 3.3

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As ID: 185-26-1D L Seq. No.: 00045 A/S Pos.: 22 Date: 11/06/97
DH

uL dispensed: 5 from 0, 5 from 39, 10 from 22
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Replicate 1 Time: 13:48
Peak Area (A-s): -0.001 Peak Height (A): 0.007
Background Pk Area (A-s): 0.036 Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -2.5

uL dispensed: 5 from 0, 5 from 39, 10 from 22
Replicate 2 (Peak Stored) Time: 13:51
Peak Area (A-s): 0.002 Peak Height (A): 0.009
Background Pk Area (A-s): 0.038 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.0

Mean Conc (ug/L): -1.2 SD: 1.74 RSD(%): 142.63

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As ID: 185-26-1D L Seq. No.: 00046 A/S Pos.: 22 Date: 11/06/97

uL dispensed: 5 from 39, 5 from 2, 10 from 22
Replicate 1 Time: 13:55
Peak Area (A-s): 0.048 Peak Height (A): 0.174
Background Pk Area (A-s): 0.037 Background Pk Height (A): 0.061
Blank Corrected Pk Area (A-s): 0.046
Concentration (ug/L): 41.0 not used BAL 11/13/97

uL dispensed: 5 from 39, 5 from 2, 10 from 22
Replicate 2 (Peak Stored) Time: 13:58
Peak Area (A-s): 0.054 Peak Height (A): 0.184
Background Pk Area (A-s): 0.031 Background Pk Height (A): 0.065
Blank Corrected Pk Area (A-s): 0.052
Concentration (ug/L): 46.4

Mean Conc (ug/L): 43.7 SD: 3.80 RSD(%): 8.70

Recovery is 89.9%

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As ID: 185-26-2D, 2B H BAL 11/13/97 Seq. No.: 00047 A/S Pos.: 23 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 23
Replicate 1 Time: 14:01
Peak Area (A-s): 0.024 Peak Height (A): 0.052
Background Pk Area (A-s): 0.178 Background Pk Height (A): 0.132
Blank Corrected Pk Area (A-s): 0.022
Concentration (ug/L): 19.4

uL dispensed: 5 from 0, 5 from 39, 10 from 23
Replicate 2 (Peak Stored) Time: 14:04
Peak Area (A-s): 0.020 Peak Height (A): 0.051
Background Pk Area (A-s): 0.182 Background Pk Height (A): 0.132
Blank Corrected Pk Area (A-s): 0.018
Concentration (ug/L): 15.7

Mean Conc (ug/L): 17.5 SD: 2.63 RSD(%): 15.01

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As ID: 185-26-3D Seq. No.: 00048 A/S Pos.: 24 Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 24

not used
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Rep                                          Time: 14:08
Peak Area (A-s): 0.010                       Peak Height (A): 0.026
Background Pk Area (A-s): 0.047              Background Pk Height (A): 0.061
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L  ): 7.2

uL dispensed: 5 from 0, 5 from 39, 10 from 24
Replicate  2 (Peak Stored)                   Time: 14:11
Peak Area (A-s): 0.006                       Peak Height (A): 0.022
Background Pk Area (A-s): 0.045              Background Pk Height (A): 0.057
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L  ): 3.2                  Not used

Mean Conc  (ug/L  ):        5.2        SD: 2.83              RSD(%): 54.71

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As    ID: 185-26-3D BH  rcl 11/13/97 dlr   Seq. No.: 00049    A/S Pos.: 24    Date: 11/06/97
uL dispensed: 5 from 0, 5 from 39, 10 from 24
Replicate  1                                 Time: 14:14
Peak Area (A-s): 0.008                       Peak Height (A): 0.026
Background Pk Area (A-s): 0.046              Background Pk Height (A): 0.057
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L  ): 5.1

uL dispensed: 5 from 0, 5 from 39, 10 from 24
Replicate  2 (Peak Stored)                   Time: 14:17
Peak Area (A-s): 0.006                       Peak Height (A): 0.019
Background Pk Area (A-s): 0.051              Background Pk Height (A): 0.060
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L  ): 3.4

Mean Conc  (ug/L  ):        4.2        SD: 1.18              RSD(%): 27.89

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As    ID: 185-26-4D BH  rcl 11/13/97       Seq. No.: 00050    A/S Pos.: 25    Date: 11/06/97
uL dispensed: 5 from 0, 5 from 39, 10 from 25
Replicate  1                                 Time: 14:21
Peak Area (A-s): 0.002                       Peak Height (A): 0.009
Background Pk Area (A-s): 0.037              Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L  ): -0.2

uL dispensed: 5 from 0, 5 from 39, 10 from 25
Replicate  2 (Peak Stored)                   Time: 14:24
Peak Area (A-s): 0.004                       Peak Height (A): 0.011
Background Pk Area (A-s): 0.034              Background Pk Height (A): 0.066
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L  ): 1.4

Mean Conc  (ug/L  ):        0.6        SD: 1.16              RSD(%): 194.48

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As    ID: 185-26-5D BH  rcl 11/13/97       Seq. No.: 00051    A/S Pos.: 26    Date: 11/06/97
uL dispensed: 5 from 0, 5 from 39, 10 from 26
Replicate  1                                 Time: 14:27
Peak Area (A-s): 0.002                       Peak Height (A): 0.009
```

Background Pk Area (A-s): 0.034 Background Pk Height [illegible]
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.0

uL dispensed: 5 from 0, 5 from 39, 10 from 26
Replicate 2 (Peak Stored) Time: 14:30
Peak Area (A-s): 0.004 Peak Height (A): 0.012
Background Pk Area (A-s): 0.041 Background Pk Height (A): 0.063
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.7

Mean Conc (ug/L): 0.9 SD: 1.21 RSD(%): 137.16

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As ID: 185-26-6D BH Seq. No.: 00052 A/S Pos.: 27 Date: 11/06/97
11/13/97

uL dispensed: 5 from 0, 5 from 39, 10 from 27
Replicate 1 Time: 14:33
Peak Area (A-s): 0.001 Peak Height (A): 0.009
Background Pk Area (A-s): 0.038 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -1.4

uL dispensed: 5 from 0, 5 from 39, 10 from 27
Replicate 2 (Peak Stored) Time: 14:37
Peak Area (A-s): 0.003 Peak Height (A): 0.012
Background Pk Area (A-s): 0.037 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.8

Mean Conc (ug/L): -0.3 SD: 1.50 RSD(%): 498.19

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As ID: 185-26-7CD BH Seq. No.: 00053 A/S Pos.: 28 Date: 11/06/97
11/13/97

uL dispensed: 5 from 0, 5 from 39, 10 from 28
Replicate 1 Time: 14:40
Peak Area (A-s): 0.003 Peak Height (A): 0.012
Background Pk Area (A-s): 0.035 Background Pk Height (A): 0.065
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.9

uL dispensed: 5 from 0, 5 from 39, 10 from 28
Replicate 2 (Peak Stored) Time: 14:43
Peak Area (A-s): 0.002 Peak Height (A): 0.015
Background Pk Area (A-s): 0.035 Background Pk Height (A): 0.065
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.2

Mean Conc (ug/L): 0.6 SD: 0.54 RSD(%): 96.04

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As ID: 185-26-8DE BH Seq. No.: 00054 A/S Pos.: 29 Date: 11/06/97
11/13/97

uL dispensed: 5 from 0, 5 from 39, 10 from 29
Replicate 1 Time: 14:46
Peak Area (A-s): -0.003 Peak Height (A): 0.009
Background Pk Area (A-s): 0.039 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): -0.005
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uL dispensed: 5 from 0, 5 from 39, 10 from 29
Replicate 2 (Peak Stored)   Time: 14:49
Peak Area (A-s): 0.004   Peak Height (A): 0.014
Background Pk Area (A-s): 0.036   Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.9

Mean Conc (ug/L): -1.2   SD: 4.34   RSD(%): 360.16

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As   ID: CCV=60 ug/L   Seq. No.: 00055   A/S Pos.: 5   Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 5
Replicate 1   Time: 14:52
Peak Area (A-s): 0.060   Peak Height (A): 0.188
Background Pk Area (A-s): 0.040   Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): 0.057
Concentration (ug/L): 51.0

uL dispensed: 5 from 0, 5 from 39, 10 from 5
Replicate 2 (Peak Stored)   Time: 14:55
Peak Area (A-s): 0.066   Peak Height (A): 0.193
Background Pk Area (A-s): 0.036   Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): 0.064
Concentration (ug/L): 56.7

Mean Conc (ug/L): 53.9   SD: 4.02   RSD(%): 7.46

QC sample is within range 48.0 - 72.0

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As   ID: CCB   Seq. No.: 00056   A/S Pos.: 0   Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate 1   Time: 14:59
Peak Area (A-s): 0.000   Peak Height (A): 0.008
Background Pk Area (A-s): 0.036   Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -1.7

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate 2 (Peak Stored)   Time: 15:02
Peak Area (A-s): -0.000   Peak Height (A): 0.012
Background Pk Area (A-s): 0.040   Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -2.1

Mean Conc (ug/L): -1.9   SD: 0.23   RSD(%): 12.41

QC sample is within range -3.3 - 3.3

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As   ID: 185-26-9D||D#   11/13/97   Seq. No.: 00057   A/S Pos.: 30   Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 30
Replicate 1   Time: 15:05
Peak Area (A-s): 0.001   Peak Height (A): 0.009
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Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L  ): -0.6

uL dispensed: 5 from 0, 5 from 39, 10 from 30
Replicate  2 (Peak Stored)              Time: 15:08
Peak Area (A-s): 0.001                  Peak Height (A): 0.008
Background Pk Area (A-s): 0.032         Background Pk Height (A): 0.053
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L  ): -1.0

Mean Conc  (ug/L  ):       -0.8         SD: 0.25                RSD(%): 32.28

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As    ID: 185-26-10D BH 11/3/97  Seq. No.: 00058    A/S Pos.: 31    Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 31
Replicate  1                            Time: 15:11
Peak Area (A-s): 0.003                  Peak Height (A): 0.013
Background Pk Area (A-s): 0.027         Background Pk Height (A): 0.058
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L  ): 0.6

uL dispensed: 5 from 0, 5 from 39, 10 from 31
Replicate  2 (Peak Stored)              Time: 15:14
Peak Area (A-s): 0.000                  Peak Height (A): 0.014
Background Pk Area (A-s): 0.022         Background Pk Height (A): 0.048
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L  ): -1.4

Mean Conc  (ug/L  ):       -0.4         SD: 1.42                RSD(%): 326.35

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As    ID: CCV=60 ug/L       Seq. No.: 00059    A/S Pos.: 5     Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 5
Replicate  1                            Time: 15:17
Peak Area (A-s): 0.059                  Peak Height (A): 0.191
Background Pk Area (A-s): 0.023         Background Pk Height (A): 0.042
Blank Corrected Pk Area (A-s): 0.057
Concentration (ug/L  ): 50.3

uL dispensed: 5 from 0, 5 from 39, 10 from 5
Replicate  2 (Peak Stored)              Time: 15:21
Peak Area (A-s): 0.063                  Peak Height (A): 0.197
Background Pk Area (A-s): 0.025         Background Pk Height (A): 0.052
Blank Corrected Pk Area (A-s): 0.061
Concentration (ug/L  ): 53.8

Mean Conc  (ug/L  ):       52.1         SD: 2.51                RSD(%): 4.81

QC sample is within range 48.0 - 72.0

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As    ID: CCB               Seq. No.: 00060    A/S Pos.: 0     Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate  1                            Time: 15:24
Peak Area (A-s): -0.000                 Peak Height (A): 0.013
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```
Ba[illegible] Area (A-s): 0.024          Background Pk Height (A): 0.044
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L  ): -2.1

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate  2 (Peak Stored)               Time: 15:27
Peak Area (A-s): -0.003                  Peak Height (A): 0.008
Background Pk Area (A-s): 0.018          Background Pk Height (A): 0.036
Blank Corrected Pk Area (A-s): -0.005
Concentration (ug/L  ): -4.7

Mean Conc  (ug/L  ):       -3.4          SD: 1.87                  RSD(%): 55.25

QC sample is out of range -3.3 - 3.3
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As     ID: STD BLK               Seq. No.: 00061    A/S Pos.: 0     Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 0
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As     ID: STD BLK               Seq. No.: 00062    A/S Pos.: 0     Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 0
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As     ID: STD BLK               Seq. No.: 00063    A/S Pos.: 0     Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 0
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As     ID: CHECK LO              Seq. No.: 00064    A/S Pos.: 6     Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 6
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As     ID: AS Position 000       Seq. No.: 00065    A/S Pos.: 0     Date: 11/06/97

uL dispensed: 5 from 0, 5 from 39, 10 from 0
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don't use

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As     ID: CCB                   Seq. No.: 00066    A/S Pos.: 0     Date: 11/06/97
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05/14/97 L

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uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate  1                             Time: 15:52
Peak Area (A-s): 0.002                   Peak Height (A): 0.008
Background Pk Area (A-s): 0.010          Background Pk Height (A): 0.026
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L  ): -0.4

uL dispensed: 5 from 0, 5 from 39, 10 from 0
Replicate  2 (Peak Stored)               Time: 15:55
Peak Area (A-s): -0.001                  Peak Height (A): 0.008
Background Pk Area (A-s): 0.008          Background Pk Height (A): 0.017
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L  ): -2.4

Mean Conc  (ug/L  ):       -1.4          SD: 1.42                  RSD(%): 98.77

QC sample is within range -3.3 - 3.3
```

Autosampler Loading Map
Element File: COMSA.GEL ID/Weight File: EB179.IDW

Loc.	Concentration	Solutions
0		Calib. Blank / Diluent
1	25.0 ug/L	Stock
2	50.0 ug/L	Stock
6		CHECK LO
7		43452 MB
8		43452 LCS
9		188-52-1, 2, 185-26-1C
10		188-52-1, 2, 185-26-1C L
11		188-52-3, 4, 185-26-2C
12		188-52-5, 6, 185-26-3C
13		188-52-9, 10, 185-26-4C
14		188-52-11, 12, 185-26-5C
15		188-52-13, 14, 185-26-6C
16		188-52-17, 18, 185-26-7C
17		188-52-19, 20, 185-26-8E
18		~~188-52-~~ 185-26-8H
19		188-52-7, 8, 185-26-9C
20		188-52-15, 16, 185-26-10C
21		185-26-1D BH
22		185-26-1D ~~BH~~ L BH L
23		185-26-2D, 12 BH
24		185-26-3D BH
25		185-26-4D BH
26		185-26-5D BH
27		185-26-6D BH
28		185-26-7CD BH
29		185-26-8DE BH
30		185-26-9D, 11 BH
31		185-26-10D BH
40		Modifier 1

MR 11/20/97 EE

MR 11/13/97

MSAs only needed on these samples SRG 11/20/97

Element: Co
Print Data: Main+Suppl.
Print: Calib. Curve+Elem. Params.
Analyst: Bennett
Peak Storage: 1 Repl./Sample
Remarks:
CALIBRATION STDS PREPPED FROM 2-100-4
CHECK STDS PREPPED FROM 2-88-3

INSTRUMENT: 4100 ZL
Technique: HGA
Version: 7.30
Wavelength: 240.7 Peak
Slit: 0.20 Low
Signal Type: Single Beam
Signal Measurement: Peak Area
Read Time: 3.0
Read Delay: 0.0
BOC Time: 2
Sample Replicates: 2
Standard Replicates: 2
Spike Replicates: Same as Sample

CALIBRATION:

Solutions	ID	Conc	Location	Volume	Diluent Volume	Modifier #1	Modifier #2
Calib. Blank	STD BLANK		0	10	10	5	
Standard 1	ADD1=25PPB	25.0	1	10		5	
Standard 2	ADD2=50PPB	50.0	2	10		5	
Samples				10	10	5	

Diluent Location: 0
Modifier #1 Location: 40
Modifier #2 Location:
Calibration Units: ug/L
Sample Units: ug/L
Calibration Type: Method of Add.

Furnace Time/Temperature Program:

Step	Temp	Ramp	Hold	Gas Flow	Read	Gas Type
1	110	1	20	250		Norm
2	130	1	25	250		Norm
3	1400	5	20	250		Norm
4	2400	0	4	0	*	Norm
5	2500	1	5	250		Norm

Injection Temp: 20
Pipette Speed: 100%
Extraction System: On

SEQUENCE:

Step	Action and Parameters
1	Pipet diluent + modifier 1 + spike + sample/std
2	Run HGA steps 1 to End

CHECKS:
Additions Preparation: Automated
Periodic Autozero Locations: All Samples

QC:
Matrix Check Calculations:
% Difference for Dupls: No
Locations:
% Recovery for Spike: No
Locations:
Conc:

Element File: COMSA.GEL Element: Co Wavelength: 240.7
Date: 11/07/97 Time: 13:35 Slit: 0.20 L
Data File: EB179.DAT ID/Wt File: EB179.IDW Lamp Current: 30
Technique: HGA Calib. Type: Method of Add. Energy: 49
Remark 1: CALIBRATION STDS PREPPED FROM 2-100-4
Remark 2: CHECK STDS PREPPED FROM 2-88-3

Co ID: STD BLANK Seq. No.: 00078 A/S Pos.: 0 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 13:37
Peak Area (A-s): 0.011 Peak Height (A): 0.030
Blank Corrected Pk Area (A-s): 0.004

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 13:40
Peak Area (A-s): 0.010 Peak Height (A): 0.025
Blank Corrected Pk Area (A-s): 0.003

Mean Pk Area (A-s): 0.004 SD: 0.0006 RSD(%): 16.56

Auto-zero performed.

Co ID: 185-26-1D BH et ml 11/13/97 Seq. No.: 00079 A/S Pos.: 21 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 21
Replicate 1 Time: 13:42
Peak Area (A-s): 0.019 Peak Height (A): 0.041
Blank Corrected Pk Area (A-s): 0.008

uL dispensed: 10 from 0, 5 from 40, 10 from 21
Replicate 2 (Peak Stored) Time: 13:45
Peak Area (A-s): 0.020 Peak Height (A): 0.041
Blank Corrected Pk Area (A-s): 0.009

Mean Pk Area (A-s): 0.008 SD: 0.0011 RSD(%): 12.85

Co ID: ADD1=25PPB Seq. No.: 00080 A/S Pos.: 21 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 1, 10 from 21
Replicate 1 Time: 13:47
Peak Area (A-s): 0.118 Peak Height (A): 0.126
Blank Corrected Pk Area (A-s): 0.108

uL dispensed: 5 from 40, 10 from 1, 10 from 21
Replicate 2 (Peak Stored) Time: 13:50
Peak Area (A-s): 0.116 Peak Height (A): 0.127
Blank Corrected Pk Area (A-s): 0.106

Mean Pk Area (A-s): 0.107 SD: 0.0015 RSD(%): 1.37

Co ID: ADD2=50PPB Seq. No.: 00081 A/S Pos.: 21 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 2, 10 from 21
Replicate 1 Time: 13:52
Peak Area (A-s): 0.207 Peak Height (A): 0.208

Bla ... ea (A-s): 0.196

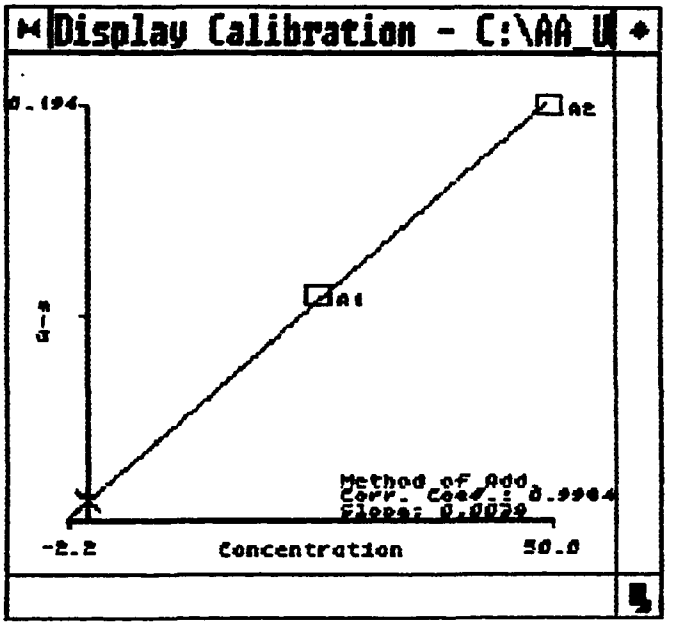
uL dispensed: 5 from 40, 10 from 2, 10 from 21
Replicate 2 (Peak Stored) Time: 13:55
Peak Area (A-s): 0.207 Peak Height (A): 0.212
Blank Corrected Pk Area (A-s): 0.196

Mean Pk Area (A-s): 0.196 SD: 0.0001 RSD(%): 0.04

Co ID: 185-26-1D Seq. No.: 00079 A/S Pos.: 21 Date: 11/07/97

Concentration (ug/L): 2.2

Correlation coefficient: 0.99848 Slope: 0.0038



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Co ID: STD BLANK Seq. No.: 00082 A/S Pos.: 0 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 13:58
Peak Area (A-s): 0.014 Peak Height (A): 0.026
Blank Corrected Pk Area (A-s): 0.003

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 14:00
Peak Area (A-s): 0.014 Peak Height (A): 0.028
Blank Corrected Pk Area (A-s): 0.004

Mean Pk Area (A-s): 0.004 SD: 0.0002 RSD(%): 5.97

Auto-zero performed.

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Co ID: 185-26-1D Seq. No.: 00083 A/S Pos.: 22 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 22
Replicate 1 Time: 14:02

Peak Area (A-s): 0.014 Peak Height (A
Blank Corrected Pk Area (A-s): -0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 22
Replicate 2 (Peak Stored) Time: 14:05
Peak Area (A-s): 0.015 Peak Height (A): 0.030
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): -0.000 SD: 0.0008 RSD(%): 527.27

Co ID: ADD1=25PPB Seq. No.: 00084 A/S Pos.: 22 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 1, 10 from 22
Replicate 1 Time: 14:07
Peak Area (A-s): 0.109 Peak Height (A): 0.116
Blank Corrected Pk Area (A-s): 0.094

uL dispensed: 5 from 40, 10 from 1, 10 from 22
Replicate 2 (Peak Stored) Time: 14:10
Peak Area (A-s): 0.111 Peak Height (A): 0.115
Blank Corrected Pk Area (A-s): 0.097

Mean Pk Area (A-s): 0.096 SD: 0.0019 RSD(%): 1.97

Co ID: ADD2=50PPB Seq. No.: 00085 A/S Pos.: 22 Date: 11/07/97

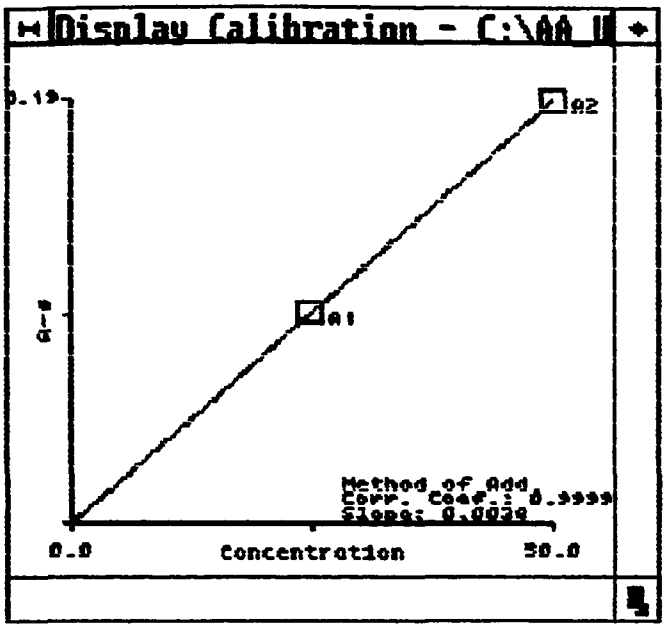
uL dispensed: 5 from 40, 10 from 2, 10 from 22
Replicate 1 Time: 14:13
Peak Area (A-s): 0.206 Peak Height (A): 0.205
Blank Corrected Pk Area (A-s): 0.191

uL dispensed: 5 from 40, 10 from 2, 10 from 22
Replicate 2 (Peak Stored) Time: 14:15
Peak Area (A-s): 0.204 Peak Height (A): 0.201
Blank Corrected Pk Area (A-s): 0.190

Mean Pk Area (A-s): 0.191 SD: 0.0009 RSD(%): 0.45

Co ID: 185-26-1D L Seq. No.: 00083 A/S Pos.: 22 Date: 11/07/97
BH EE 11/13/97
Concentration (ug/L): -0.0

Correlation coefficient: 0.99999 Slope: 0.0038



Co ID: STD BLANK Seq. No.: 00086 A/S Pos.: 0 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 14:18
Peak Area (A-s): 0.015 Peak Height (A): 0.026
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 14:20
Peak Area (A-s): 0.012 Peak Height (A): 0.024
Blank Corrected Pk Area (A-s): -0.003

Mean Pk Area (A-s): -0.001 SD: 0.0026 RSD(%): 299.87

Auto-zero performed.

Co ID: 185-26-2D[12] BH Seq. No.: 00087 A/S Pos.: 23 Date: 11/07/97
ml 11/10/97
ee ml 11/13/97

uL dispensed: 10 from 0, 5 from 40, 10 from 23
Replicate 1 Time: 14:23
Peak Area (A-s): 0.134 Peak Height (A): 0.256
Blank Corrected Pk Area (A-s): 0.121

uL dispensed: 10 from 0, 5 from 40, 10 from 23
Replicate 2 (Peak Stored) Time: 14:25
Peak Area (A-s): 0.136 Peak Height (A): 0.255
Blank Corrected Pk Area (A-s): 0.122

Mean Pk Area (A-s): 0.122 SD: 0.0009 RSD(%): 0.75

Co ID: ADD1=25PPB Seq. No.: 00088 A/S Pos.: 23 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 1, 10 from 23
Replicate 1 Time: 14:28
Peak Area (A-s): 0.215 Peak Height (A): 0.269

Blank Corrected Pk Area (A-s): 0.202

uL dispensed: 5 from 40, 10 from 1, 10 from 23
Replicate 2 (Peak Stored) Time: 14:30
Peak Area (A-s): 0.222 Peak Height (A): 0.291
Blank Corrected Pk Area (A-s): 0.208

Mean Pk Area (A-s): 0.205 SD: 0.0046 RSD(%): 2.27

Co ID: ADD2=50PPB Seq. No.: 00089 A/S Pos.: 23 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 2, 10 from 23
Replicate 1 Time: 14:33
Peak Area (A-s): 0.292 Peak Height (A): 0.332
Blank Corrected Pk Area (A-s): 0.278

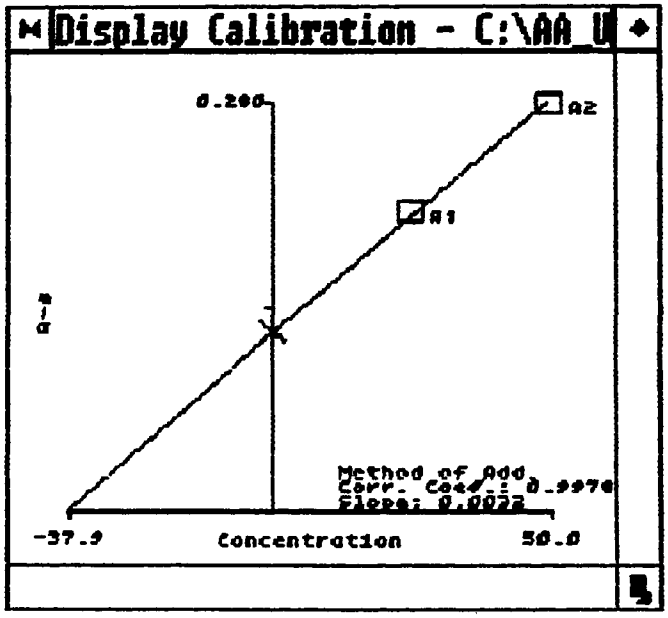
uL dispensed: 5 from 40, 10 from 2, 10 from 23
Replicate 2 (Peak Stored) Time: 14:35
Peak Area (A-s): 0.295 Peak Height (A): 0.337
Blank Corrected Pk Area (A-s): 0.282

Mean Pk Area (A-s): 0.280 SD: 0.0023 RSD(%): 0.81

Co ID: 185-26-2D BH cb 11/13/97 Seq. No.: 00087 A/S Pos.: 23 Date: 11/07/97

Concentration (ug/L): 37.9

Correlation coefficient: 0.99781 Slope: 0.0032



Co ID: STD BLANK Seq. No.: 00090 A/S Pos.: 0 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 14:38
Peak Area (A-s): 0.119 Peak Height (A): 0.221
Blank Corrected Pk Area (A-s): 0.106

uL [illegible] 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 14:41
Peak Area (A-s): 0.060 Peak Height (A): 0.079
Blank Corrected Pk Area (A-s): 0.046

Mean Pk Area (A-s): 0.076 SD: 0.0420 RSD(%): 55.41

Auto-zero performed.

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Co ID: 185-26-3D Seq. No.: 00091 A/S Pos.: 24 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 24
Replicate 1 Time: 14:43
Peak Area (A-s): 0.093 Peak Height (A): 0.106
Blank Corrected Pk Area (A-s): 0.004

Not used
[illegible]
11/13/97

uL dispensed: 10 from 0, 5 from 40, 10 from 24
Replicate 2 (Peak Stored) Time: 14:46
Peak Area (A-s): 0.086 Peak Height (A): 0.104
Blank Corrected Pk Area (A-s): -0.003

Mean Pk Area (A-s): 0.000 SD: 0.0053 RSD(%): 1958.52

Co ID: ADD1=25PPB Seq. No.: 00092 A/S Pos.: 24 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 1, 10 from 24
Replicate 1 Time: 14:48
Peak Area (A-s): 0.141 Peak Height (A): 0.139
Blank Corrected Pk Area (A-s): 0.052

uL dispensed: 5 from 40, 10 from 1, 10 from 24
Replicate 2 (Peak Stored) Time: 14:51
Peak Area (A-s): 0.128 Peak Height (A): 0.137
Blank Corrected Pk Area (A-s): 0.039

Mean Pk Area (A-s): 0.045 SD: 0.0090 RSD(%): 19.78

Co ID: ADD2=50PPB Seq. No.: 00093 A/S Pos.: 24 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 2, 10 from 24
Replicate 1 Time: 14:53
Peak Area (A-s): 0.199 Peak Height (A): 0.198
Blank Corrected Pk Area (A-s): 0.110

uL dispensed: 5 from 40, 10 from 2, 10 from 24
Replicate 2 (Peak Stored) Time: 14:56
Peak Area (A-s): 0.201 Peak Height (A): 0.210
Blank Corrected Pk Area (A-s): 0.112

Mean Pk Area (A-s): 0.111 SD: 0.0012 RSD(%): 1.09

The standard additions calibration curve may not be linear.
Co ID: 185-26-3D Seq. No.: 00091 A/S Pos.: 24 Date: 11/07/97

Concentration (ug/L): 0.1

Correlation coefficient: 0.97141 Slope: 0.0021
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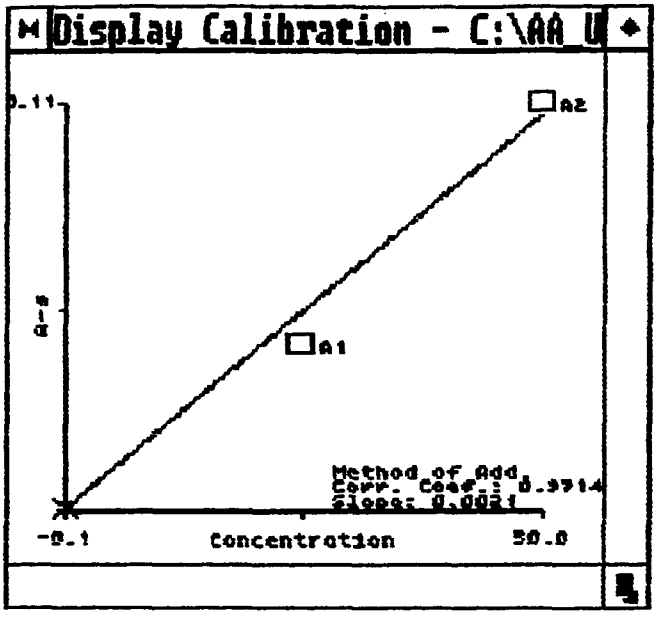


Co ID: STD BLANK Seq. No.: 00094 A/S Pos.: 0 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 14:59
Peak Area (A-s): 0.013 Peak Height (A): 0.023
Blank Corrected Pk Area (A-s): -0.076

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 15:01
Peak Area (A-s): 0.012 Peak Height (A): 0.020
Blank Corrected Pk Area (A-s): -0.077

Mean Pk Area (A-s): -0.077 SD: 0.0010 RSD(%): 1.36

Auto-zero performed.

Co ID: 185-26-4D B4 Seq. No.: 00095 A/S Pos.: 25 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 25
Replicate 1 Time: 15:04
Peak Area (A-s): 0.017 Peak Height (A): 0.032
Blank Corrected Pk Area (A-s): 0.004

EV
11/13/97

uL dispensed: 10 from 0, 5 from 40, 10 from 25
Replicate 2 (Peak Stored) Time: 15:06
Peak Area (A-s): 0.016 Peak Height (A): 0.031
Blank Corrected Pk Area (A-s): 0.004

Mean Pk Area (A-s): 0.004 SD: 0.0003 RSD(%): 8.32

Co ID: ADD1=25PPB Seq. No.: 00096 A/S Pos.: 25 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 1, 10 from 25
Replicate 1 Time: 15:09
Peak Area (A-s): 0.112 Peak Height (A): 0.115

Blar (A-s): 0.099

uL dispensed: 5 from 40, 10 from 1, 10 from 25
Replicate 2 (Peak Stored) Time: 15:12
Peak Area (A-s): 0.113 Peak Height (A): 0.115
Blank Corrected Pk Area (A-s): 0.101

Mean Pk Area (A-s): 0.100 SD: 0.0011 RSD(%): 1.06

Co ID: ADD2=50PPB Seq. No.: 00097 A/S Pos.: 25 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 2, 10 from 25
Replicate 1 Time: 15:14
Peak Area (A-s): 0.204 Peak Height (A): 0.202
Blank Corrected Pk Area (A-s): 0.192

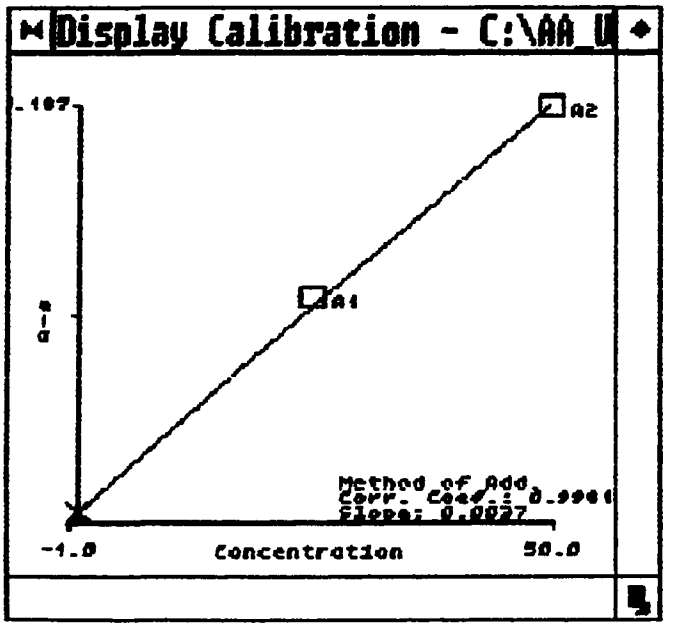
uL dispensed: 5 from 40, 10 from 2, 10 from 25
Replicate 2 (Peak Stored) Time: 15:17
Peak Area (A-s): 0.196 Peak Height (A): 0.194
Blank Corrected Pk Area (A-s): 0.183

Mean Pk Area (A-s): 0.187 SD: 0.0062 RSD(%): 3.31

Co ID: 185-26-4D BH Seq. No.: 00095 A/S Pos.: 25 Date: 11/07/97
11/13/97

Concentration (ug/L): 1.0

Correlation coefficient: 0.99816 Slope: 0.0037



Co ID: STD BLANK Seq. No.: 00098 A/S Pos.: 0 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 15:20
Peak Area (A-s): 0.011 Peak Height (A): 0.023
Blank Corrected Pk Area (A-s): -0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 15:22
Peak Area (A-s): 0.012 Peak Height (A): 0.022
Blank Corrected Pk Area (A-s): -0.001

Mean Pk Area (A-s): -0.001 SD: 0.0004 RSD(%): 36.71

Auto-zero performed.

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Co ID: 185-26-5D BH Seq. No.: 00099 A/S Pos.: 26 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 26
Replicate 1 Time: 15:25
Peak Area (A-s): 0.056 Peak Height (A): 0.066
Blank Corrected Pk Area (A-s): 0.044

uL dispensed: 10 from 0, 5 from 40, 10 from 26
Replicate 2 (Peak Stored) Time: 15:27
Peak Area (A-s): 0.053 Peak Height (A): 0.064
Blank Corrected Pk Area (A-s): 0.042

Mean Pk Area (A-s): 0.043 SD: 0.0015 RSD(%): 3.55

Co ID: ADD1=25PPB Seq. No.: 00100 A/S Pos.: 26 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 1, 10 from 26
Replicate 1 Time: 15:30
Peak Area (A-s): 0.148 Peak Height (A): 0.155
Blank Corrected Pk Area (A-s): 0.136

uL dispensed: 5 from 40, 10 from 1, 10 from 26
Replicate 2 (Peak Stored) Time: 15:32
Peak Area (A-s): 0.148 Peak Height (A): 0.151
Blank Corrected Pk Area (A-s): 0.136

Mean Pk Area (A-s): 0.136 SD: 0.0001 RSD(%): 0.11

Co ID: ADD2=50PPB Seq. No.: 00101 A/S Pos.: 26 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 2, 10 from 26
Replicate 1 Time: 15:35
Peak Area (A-s): 0.232 Peak Height (A): 0.226
Blank Corrected Pk Area (A-s): 0.220

uL dispensed: 5 from 40, 10 from 2, 10 from 26
Replicate 2 (Peak Stored) Time: 15:38
Peak Area (A-s): 0.234 Peak Height (A): 0.233
Blank Corrected Pk Area (A-s): 0.222

Mean Pk Area (A-s): 0.221 SD: 0.0016 RSD(%): 0.71

Co ID: 185-26-5D BH Seq. No.: 00099 A/S Pos.: 26 Date: 11/07/97

Concentration (ug/L): 11.9

Correlation coefficient: 0.99834 Slope: 0.0036
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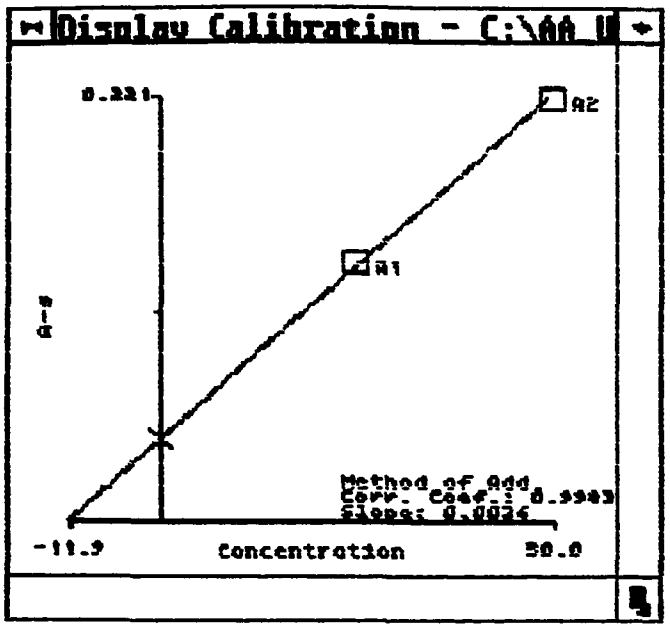


Co ID: STD BLANK Seq. No.: 00102 A/S Pos.: 0 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 15:40
Peak Area (A-s): 0.017 Peak Height (A): 0.028
Blank Corrected Pk Area (A-s): 0.005

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 15:43
Peak Area (A-s): 0.012 Peak Height (A): 0.018
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): 0.003 SD: 0.0036 RSD(%): 144.76

Auto-zero performed.

Co ID: 185-26-6D BH EE ml 11/13/97 Seq. No.: 00103 A/S Pos.: 27 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 27
Replicate 1 Time: 15:45
Peak Area (A-s): 0.016 Peak Height (A): 0.028
Blank Corrected Pk Area (A-s): 0.002

uL dispensed: 10 from 0, 5 from 40, 10 from 27
Replicate 2 (Peak Stored) Time: 15:48
Peak Area (A-s): 0.013 Peak Height (A): 0.032
Blank Corrected Pk Area (A-s): -0.002

Mean Pk Area (A-s): 0.000 SD: 0.0023 RSD(%): 2405.54

Co ID: ADD1=25PPB Seq. No.: 00104 A/S Pos.: 27 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 1, 10 from 27
Replicate 1 Time: 15:50
Peak Area (A-s): 0.111 Peak Height (A): 0.115

Blank Corrected Pk Area (A-s): 0.095

uL dispensed: 5 from 40, 10 from 1, 10 from 27
Replicate 2 (Peak Stored) Time: 15:53
Peak Area (A-s): 0.109 Peak Height (A): 0.115
Blank Corrected Pk Area (A-s): 0.095

Mean Pk Area (A-s): 0.096 SD: 0.0009 RSD(%): 0.99

Co ID: ADD2=50PPB Seq. No.: 00105 A/S Pos.: 27 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 2, 10 from 27
Replicate 1 Time: 15:56
Peak Area (A-s): 0.199 Peak Height (A): 0.200
Blank Corrected Pk Area (A-s): 0.185

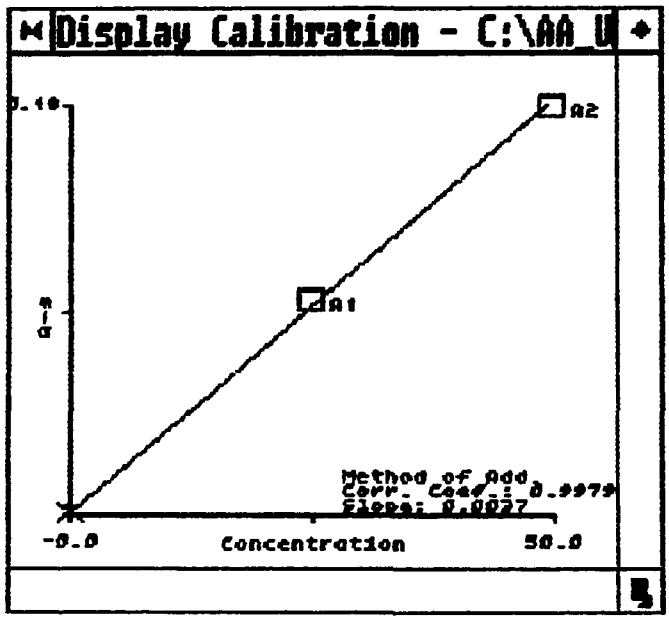
uL dispensed: 5 from 40, 10 from 2, 10 from 27
Replicate 2 (Peak Stored) Time: 15:58
Peak Area (A-s): 0.193 Peak Height (A): 0.191
Blank Corrected Pk Area (A-s): 0.179

Mean Pk Area (A-s): 0.182 SD: 0.0043 RSD(%): 2.34

Co ID: 185-26-6D BH EB 11/13/97 Seq. No.: 00103 A/S Pos.: 27 Date: 11/07/97

Concentration (ug/L): 0.0

Correlation coefficient: 0.99795 Slope: 0.0037



Co ID: STD BLANK Seq. No.: 00106 A/S Pos.: 0 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 16:01
Peak Area (A-s): 0.012 Peak Height (A): 0.018
Blank Corrected Pk Area (A-s): -0.002

uL d[illegible] from 40, 10 from 0

Replicate 2 (Peak Stored) Time: 16:03
Peak Area (A-s): 0.011 Peak Height (A): 0.018
Blank Corrected Pk Area (A-s): -0.004

Mean Pk Area (A-s): -0.003 SD: 0.0012 RSD(%): 44.19

Auto-zero performed.

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Co ID: 185-26-7CD BH Seq. No.: 00107 A/S Pos.: 28 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 28
Replicate 1 Time: 16:06
Peak Area (A-s): 0.015 Peak Height (A): 0.024
Blank Corrected Pk Area (A-s): 0.003

uL dispensed: 10 from 0, 5 from 40, 10 from 28
Replicate 2 (Peak Stored) Time: 16:08
Peak Area (A-s): 0.011 Peak Height (A): 0.026
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): 0.002 SD: 0.0022 RSD(%): 140.83

Co ID: ADD1=25PPB Seq. No.: 00108 A/S Pos.: 28 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 1, 10 from 28
Replicate 1 Time: 16:11
Peak Area (A-s): 0.108 Peak Height (A): 0.113
Blank Corrected Pk Area (A-s): 0.097

uL dispensed: 5 from 40, 10 from 1, 10 from 28
Replicate 2 (Peak Stored) Time: 16:14
Peak Area (A-s): 0.108 Peak Height (A): 0.113
Blank Corrected Pk Area (A-s): 0.097

Mean Pk Area (A-s): 0.097 SD: 0.0000 RSD(%): 0.05

Co ID: ADD2=50PPB Seq. No.: 00109 A/S Pos.: 28 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 2, 10 from 28
Replicate 1 Time: 16:16
Peak Area (A-s): 0.201 Peak Height (A): 0.205
Blank Corrected Pk Area (A-s): 0.190

uL dispensed: 5 from 40, 10 from 2, 10 from 28
Replicate 2 (Peak Stored) Time: 16:19
Peak Area (A-s): 0.205 Peak Height (A): 0.199
Blank Corrected Pk Area (A-s): 0.193

Mean Pk Area (A-s): 0.192 SD: 0.0024 RSD(%): 1.27

Co ID: 185-26-7CD BH Seq. No.: 00107 A/S Pos.: 28 Date: 11/07/97

Concentration (ug/L): 0.4

Correlation coefficient: 0.99999 Slope: 0.0038
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Co ID: STD BLANK Seq. No.: 00110 A/S Pos.: 0 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 16:22
Peak Area (A-s): 0.014 Peak Height (A): 0.022
Blank Corrected Pk Area (A-s): 0.002

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 16:24
Peak Area (A-s): 0.012 Peak Height (A): 0.020
Blank Corrected Pk Area (A-s): 0.001

Mean Pk Area (A-s): 0.002 SD: 0.0008 RSD(%): 51.67

Auto-zero performed.

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Co ID: 185-26-8DE BH Seq. No.: 00111 A/S Pos.: 29 Date: 11/07/97
BB 11/13/97

uL dispensed: 10 from 0, 5 from 40, 10 from 29
Replicate 1 Time: 16:26
Peak Area (A-s): 0.013 Peak Height (A): 0.027
Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 29
Replicate 2 (Peak Stored) Time: 16:29
Peak Area (A-s): 0.013 Peak Height (A): 0.026
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): 0.000 SD: 0.0002 RSD(%): 79.71

Co ID: ADD1=25PPB Seq. No.: 00112 A/S Pos.: 29 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 1, 10 from 29
Replicate 1 Time: 16:32
Peak Area (A-s): 0.106 Peak Height (A): 0.112

Blan (A-s): 0.073

uL dispensed: 5 from 40, 10 from 1, 10 from 29
Replicate 2 (Peak Stored) Time: 16:34
Peak Area (A-s): 0.111 Peak Height (A): 0.113
Blank Corrected Pk Area (A-s): 0.098

Mean Pk Area (A-s): 0.096 SD: 0.0037 RSD(%): 3.84

Co ID: ADD2=50PPB Seq. No.: 00113 A/S Pos.: 29 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 2, 10 from 29
Replicate 1 Time: 16:37
Peak Area (A-s): 0.194 Peak Height (A): 0.200
Blank Corrected Pk Area (A-s): 0.181

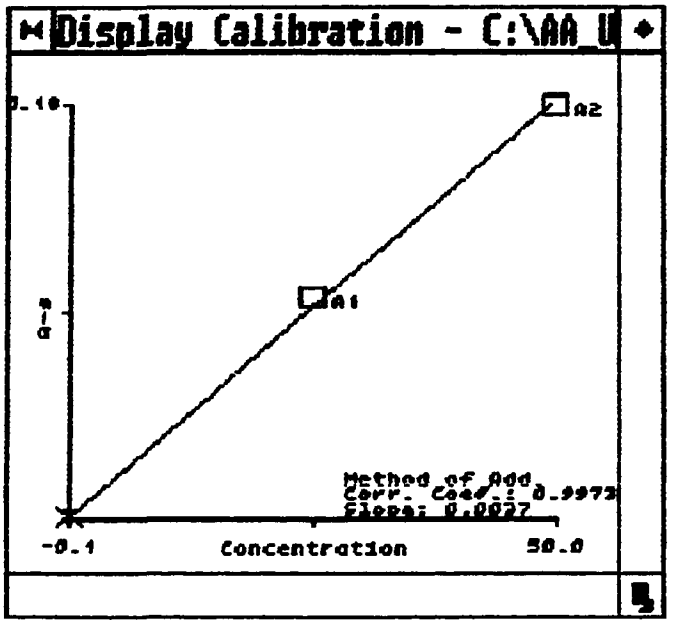
uL dispensed: 5 from 40, 10 from 2, 10 from 29
Replicate 2 (Peak Stored) Time: 16:39
Peak Area (A-s): 0.194 Peak Height (A): 0.192
Blank Corrected Pk Area (A-s): 0.181

Mean Pk Area (A-s): 0.181 SD: 0.0003 RSD(%): 0.16

Co ID: 185-26-8DE BH CE Seq. No.: 00111 A/S Pos.: 29 Date: 11/07/97
11/13/97

Concentration (ug/L): 0.1

Correlation coefficient: 0.99732 Slope: 0.0037



Co ID: STD BLANK Seq. No.: 00114 A/S Pos.: 0 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 16:42
Peak Area (A-s): 0.015 Peak Height (A): 0.026
Blank Corrected Pk Area (A-s): 0.002

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 16:45
Peak Area (A-s): 0.011 Peak Height (A): 0.020
Blank Corrected Pk Area (A-s): -0.002

Mean Pk Area (A-s): -0.000 SD: 0.0025 RSD(%): 1952.86

Auto-zero performed.

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Co ID: 185-26-9D1\BH ee pd 11/13/97 Seq. No.: 00115 A/S Pos.: 30 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 30
Replicate 1 Time: 16:47
Peak Area (A-s): 0.018 Peak Height (A): 0.034
Blank Corrected Pk Area (A-s): 0.005

uL dispensed: 10 from 0, 5 from 40, 10 from 30
Replicate 2 (Peak Stored) Time: 16:49
Peak Area (A-s): 0.018 Peak Height (A): 0.032
Blank Corrected Pk Area (A-s): 0.006

Mean Pk Area (A-s): 0.005 SD: 0.0002 RSD(%): 3.77

Co ID: ADD1=25PPB Seq. No.: 00116 A/S Pos.: 30 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 1, 10 from 30
Replicate 1 Time: 16:52
Peak Area (A-s): 0.114 Peak Height (A): 0.123
Blank Corrected Pk Area (A-s): 0.102

uL dispensed: 5 from 40, 10 from 1, 10 from 30
Replicate 2 (Peak Stored) Time: 16:55
Peak Area (A-s): 0.113 Peak Height (A): 0.123
Blank Corrected Pk Area (A-s): 0.100

Mean Pk Area (A-s): 0.101 SD: 0.0009 RSD(%): 0.88

Co ID: ADD2=50PPB Seq. No.: 00117 A/S Pos.: 30 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 2, 10 from 30
Replicate 1 Time: 16:57
Peak Area (A-s): 0.200 Peak Height (A): 0.201
Blank Corrected Pk Area (A-s): 0.187

uL dispensed: 5 from 40, 10 from 2, 10 from 30
Replicate 2 (Peak Stored) Time: 17:00
Peak Area (A-s): 0.200 Peak Height (A): 0.198
Blank Corrected Pk Area (A-s): 0.187

Mean Pk Area (A-s): 0.187 SD: 0.0002 RSD(%): 0.08

Co ID: 185-26-9D1\BH ee pd 11/13/97 Seq. No.: 00115 A/S Pos.: 30 Date: 11/07/97
Concentration (ug/L): 1.5

Correlation coefficient: 0.99780 Slope: 0.0037
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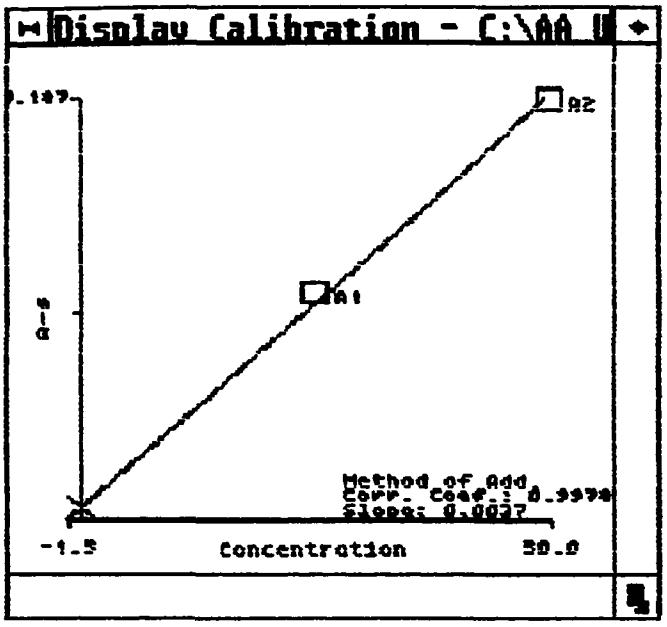


Co ID: STD BLANK Seq. No.: 00118 A/S Pos.: 0 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 17:03
Peak Area (A-s): 0.011 Peak Height (A): 0.023
Blank Corrected Pk Area (A-s): -0.002

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 17:05
Peak Area (A-s): 0.013 Peak Height (A): 0.018
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): -0.001 SD: 0.0013 RSD(%): 133.42

Auto-zero performed.

Co ID: 185-26-10D BH Seq. No.: 00119 A/S Pos.: 31 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 31
Replicate 1 Time: 17:07
Peak Area (A-s): 0.016 Peak Height (A): 0.025
Blank Corrected Pk Area (A-s): 0.004

uL dispensed: 10 from 0, 5 from 40, 10 from 31
Replicate 2 (Peak Stored) Time: 17:10
Peak Area (A-s): 0.016 Peak Height (A): 0.026
Blank Corrected Pk Area (A-s): 0.004

Mean Pk Area (A-s): 0.004 SD: 0.0003 RSD(%): 6.62

Co ID: ADD1=25PPB Seq. No.: 00120 A/S Pos.: 31 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 1, 10 from 31
Replicate 1 Time: 17:12
Peak Area (A-s): 0.116 Peak Height (A): 0.124

Blank Corrected Pk Area (A-s): 0.104

uL dispensed: 5 from 40, 10 from 1, 10 from 31
Replicate 2 (Peak Stored) Time: 17:15
Peak Area (A-s): 0.115 Peak Height (A): 0.120
Blank Corrected Pk Area (A-s): 0.103

Mean Pk Area (A-s): 0.104 SD: 0.0003 RSD(%): 0.28

Co ID: ADD2=50PPB Seq. No.: 00121 A/S Pos.: 31 Date: 11/07/97

uL dispensed: 5 from 40, 10 from 2, 10 from 31
Replicate 1 Time: 17:17
Peak Area (A-s): 0.198 Peak Height (A): 0.198
Blank Corrected Pk Area (A-s): 0.186

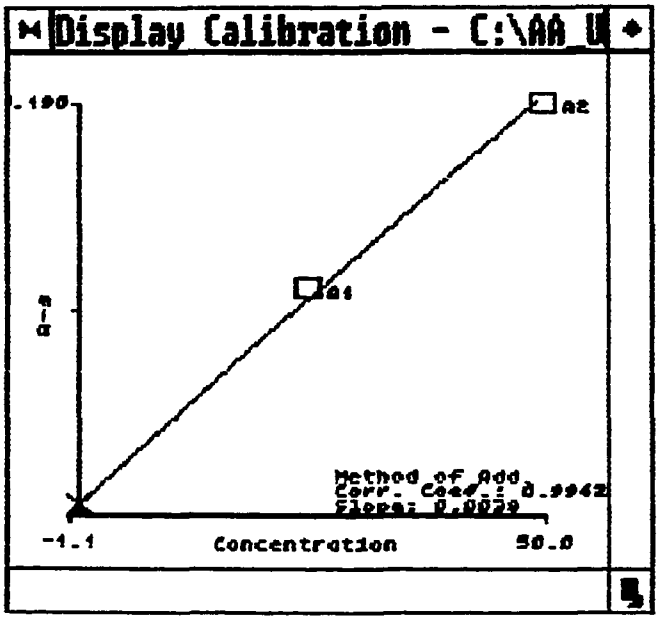
uL dispensed: 5 from 40, 10 from 2, 10 from 31
Replicate 2 (Peak Stored) Time: 17:20
Peak Area (A-s): 0.206 Peak Height (A): 0.204
Blank Corrected Pk Area (A-s): 0.194

Mean Pk Area (A-s): 0.190 SD: 0.0058 RSD(%): 3.04

Co ID: 185-26-10D BH Seq. No.: 00119 A/S Pos.: 31 Date: 11/07/97
11/13/97

Concentration (ug/L): 1.1

Correlation coefficient: 0.99629 Slope: 0.0038



Co ID: STD BLANK Seq. No.: 00122 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 09:28
Peak Area (A-s): 0.011 Peak Height (A): 0.012
Blank Corrected Pk Area (A-s): -0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 09:30
Peak Area (A-s): 0.008 Peak Height (A): 0.014
Blank Corrected Pk Area (A-s): -0.004

Mean Pk Area (A-s): -0.003 SD: 0.0021 RSD(%): 76.98

Auto-zero performed.

Co ID: 185-26-3D BH Seq. No.: 00123 A/S Pos.: 24 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 24
Replicate 1 Time: 09:33
Peak Area (A-s): 0.022 Peak Height (A): 0.056
Blank Corrected Pk Area (A-s): 0.013

uL dispensed: 10 from 0, 5 from 40, 10 from 24
Replicate 2 (Peak Stored) Time: 09:35
Peak Area (A-s): 0.022 Peak Height (A): 0.054
Blank Corrected Pk Area (A-s): 0.013

Mean Pk Area (A-s): 0.013 SD: 0.0003 RSD(%): 2.04

Co ID: ADD1=25PPB Seq. No.: 00124 A/S Pos.: 24 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 1, 10 from 24
Replicate 1 Time: 09:38
Peak Area (A-s): 0.098 Peak Height (A): 0.102
Blank Corrected Pk Area (A-s): 0.089

uL dispensed: 5 from 40, 10 from 1, 10 from 24
Replicate 2 (Peak Stored) Time: 09:41
Peak Area (A-s): 0.103 Peak Height (A): 0.109
Blank Corrected Pk Area (A-s): 0.093

Mean Pk Area (A-s): 0.091 SD: 0.0033 RSD(%): 3.62

Co ID: ADD2=50PPB Seq. No.: 00125 A/S Pos.: 24 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 2, 10 from 24
Replicate 1 Time: 09:43
Peak Area (A-s): 0.174 Peak Height (A): 0.179
Blank Corrected Pk Area (A-s): 0.165

uL dispensed: 5 from 40, 10 from 2, 10 from 24
Replicate 2 (Peak Stored) Time: 09:46
Peak Area (A-s): 0.173 Peak Height (A): 0.172
Blank Corrected Pk Area (A-s): 0.164

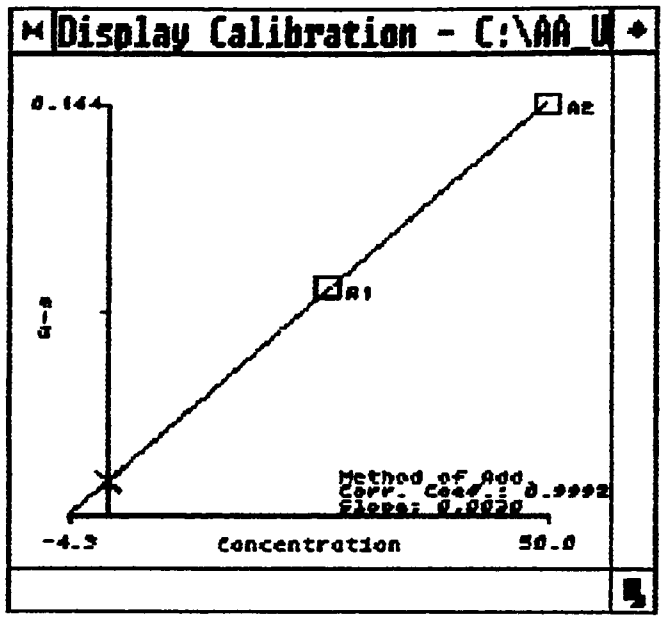
Mean Pk Area (A-s): 0.164 SD: 0.0010 RSD(%): 0.64

Co ID: 185-26-3D BH Seq. No.: 00123 A/S [redacted] 1/10/9

11/13/97

Concentration (ug/L): 4.3

Correlation coefficient: 0.99920 Slope: 0.0030



Auto... Loading Map

Element File: CO.GEL ID/Weight File: EB179.IDW

Loc.	Concentration	Solutions
0		Calib. Blank / Diluent / ICB / CCB
1	50.0 ug/L	Stock / Recovery Stock 1-64-1P
2	100.0 ug/L	Stock 1-64-2P
4		ICV=30ug/L 1-64-3P
5		CCV=60ug/L 1-64-4P
6		CHECK LO
7		43452 MB
8		43452 LCS
9	188-52-1, 2,	185-26-1C FH
10	188-52-1, 2,	185-26-1C AL
11	188-52-3, 4,	185-26-2C FH
12	188-52-5, 6,	185-26-3C FH
13	188-52-9, 10,	185-26-4C FH
14	188-52-11, 12,	185-26-5C FH
15	188-52, 13, 14,	185-26-6C FH
16	188-52-17, 18,	185-26-7C FH
17	188-52-MS, 20	185-26-8E FH
18		185-26-8H FH
19	188-52-7, 8,	185-26-9C FH
20	188-52-15, 16,	185-26-10C FH see 11-19-97 LL
21		185-26-1D
22		185-26-1D L
23		185-26-2D, 12 see 11-19-97 LL
24		185-26-3D
25		185-26-4D
26		185-26-5D
27		185-26-6D
28		185-26-7CD
29		185-26-8DE
30		185-26-9D
31		185-26-10D
40		Modifier 1

SRB 11/6/97

11/13/97

see MSA

11/13/97

Element File: CO.GEL
Element: Co
Analyst: HOLSTE
Print Data: Main+Suppl.
Peak Storage: 1 Repl./Sample
Print: Calib. Curve+Elem. Params.

INSTRUMENT: 4100 ZL
Technique: HGA
Version: 7.30
Wavelength: 240.7 Peak
Slit: 0.20 Low
Signal Type: Single Beam
Signal Measurement: Peak Area
Read Time: 3.0
Read Delay: 0.0
BOC Time: 2
Sample Replicates: 2
Standard Replicates: 2
Spike Replicates: Same as Sample

CALIBRATION:

Solutions	ID	Conc	Location	Volume	Diluent Volume	Modifier #1	Modifier #2
Calib. Blank	STD BLANK		0	10	10	5	
Standard 1	STD 1=25ug/L	25.0	1	5	15	5	
Standard 2	STD 2=50ug/L	50.0	1	10	10	5	
Standard 3	STD 3=100ug/L	100.0	2	10	10	5	
Reslope Std.	Reslope 50ug/L	50.0	1	10	10	5	
Samples				10	10	5	

Diluent Location: 0
Modifier #1 Location: 40
Modifier #2 Location:
Calibration Units: ug/L
Sample Units: ug/L
Calibration Type: Nonlinear

Furnace Time/Temperature Program:

Step	Temp	Ramp	Hold	Gas Flow	Read	Gas Type
1	110	1	20	250		Norm
2	130	1	25	250		Norm
3	1400	5	20	250		Norm
4	2400	0	4	0	*	Norm
5	2500	1	5	250		Norm

Injection Temp: 20
Pipette Speed: 100%
Extraction System: On

SEQUENCE:

Step	Action and Parameters
1	Pipet diluent + modifier 1 + spike + sample/std
2	Run HGA steps 1 to End

CHECKS:
Recalibration Type: Autozero Only
Locations: None

Conc. Above Calibration Action: Dilute & Reanalyze After 1 Rep
Alternate Sample Volumes (uL): 5,2,1
Run Alternate Volume Blanks: No

If %RSD > 20.0 and Concentration > 5 then Retry 1 times
Check %RSD on: Samples + Standards + Spikes + QC Samples

Recovery Measurements:
5 uL of 50 ug/L Standard at Location 1 Gives 25.0 ug/L
Measure Recovery on Samples: None
Add to QC Samples: Yes
% Recovery Limits: 75 to 125

QC:

#I	A/S Loc.	QC Sample ID	Conc. Limits Lower	Upper	After Calib	Periodic Check	At End	Count As Sample
1	4	ICV=30ug/L	27.0	33.0	X			
2	0	ICB	-2.0	2.0	X			
3	5	CCV=60ug/L	48.0	72.0		X	X	
4	0	CCB	-2.0	2.0		X	X	

Run Periodic QC Samples: Every 10
Out of Limit Action: Print Message Only

Matrix Check Calculations:
% Difference for Dupls: No Locations:
% Recovery for Spike: No Locations: Conc:

```
Element File: CO.GEL          Element: Co                    Wavelength: 240.7
Date: 11/06/97                Time: 19:34                    Slit: 0.20 L
Data File: EB179.DAT          ID/Wt File: EB179.IDW          Lamp Current: 30
Technique: HGA                Calib. Type: Nonlinear         Energy: 49
```

Co ID: STD BLANK Seq. No.: 00001 A/S Pos.: 0 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 19:36
Peak Area (A-s): 0.018 Peak Height (A): 0.044
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 3.0

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 19:39
Peak Area (A-s): 0.017 Peak Height (A): 0.041
Blank Corrected Pk Area (A-s): 0.007
Concentration (ug/L): 2.5

Mean Conc (ug/L): 2.8 SD: 0.35 RSD(%): 12.59

Auto-zero performed.

Co ID: STD 1=25ug/L Seq. No.: 00002 A/S Pos.: 1 Date: 11/06/97

uL dispensed: 15 from 0, 5 from 40, 5 from 1
Replicate 1 Time: 19:41
Peak Area (A-s): 0.082 Peak Height (A): 0.099
Blank Corrected Pk Area (A-s): 0.065
Concentration (ug/L): 23.1

uL dispensed: 15 from 0, 5 from 40, 5 from 1

Co ID: Seq. 00003 Seq. No.: 00003 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 19:46
Peak Area (A-s): 0.005 Peak Height (A): 0.012
Blank Corrected Pk Area (A-s): -0.012
Concentration (ug/L): -4.4

```
Co    ID: STD BLANK          Seq. No.: 00004    A/S Pos.: 0     Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  1                              Time: 19:55
Peak Area (A-s): 0.014                    Peak Height (A): 0.033
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L  ): -1.2

uL dispensed: 10 from 0, 5 from 40, 10 from 0
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Co    ID: STD BLANK          Seq. No.: 00005    A/S Pos.: 0     Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  1                              Time: 19:59
Peak Area (A-s): 0.017                    Peak Height (A): 0.036
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L  ): -0.2

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Co    ID: Seq. 00006         Seq. No.: 00006    A/S Pos.: --    Date: 11/06/97

Replicate  1                              Time: 20:01
Peak Area (A-s): 0.005                    Peak Height (A): 0.013
Blank Corrected Pk Area (A-s): -0.012
Concentration (ug/L  ): -4.3

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Co    ID: STD BLANK          Seq. No.: 00007    A/S Pos.: 0     Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  1                              Time: 20:06
Peak Area (A-s): 0.014                    Peak Height (A): 0.034
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L  ): -1.2

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  2 (Peak Stored)                Time: 20:09
Peak Area (A-s): 0.014                    Peak Height (A): 0.033
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L  ): -1.0

Mean Conc  (ug/L  ):      -1.1        SD: 0.10              RSD(%): 9.07

Auto-zero performed.

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Co    ID: STD 1=25ug/L       Seq. No.: 00008    A/S Pos.: 1     Date: 11/06/97

uL dispensed: 15 from 0, 5 from 40, 5 from 1
Replicate  1                              Time: 20:11
Peak Area (A-s): 0.078                    Peak Height (A): 0.102
Blank Corrected Pk Area (A-s): 0.064
Concentration (ug/L  ): 22.6

uL dispensed: 15 from 0, 5 from 40, 5 from 1
Replicate  2 (Peak Stored)                Time: 20:14
Peak Area (A-s): 0.082                    Peak Height (A): 0.109
Blank Corrected Pk Area (A-s): 0.068
```

Concentration (ug/L): 24.0

Mean Conc (ug/L): 23.3 SD: 0.97 RSD(%): 4.15

Standard number 1 applied. [25.0]
Correlation coefficient: 1.00000 Slope: 0.0026

Co ID: STD 2=50ug/L Seq. No.: 00009 A/S Pos.: 1 Date: 11/06/9

uL dispensed: 10 from 0, 5 from 40, 10 from 1
Replicate 1 Time: 20:16
Peak Area (A-s): 0.159 Peak Height (A): 0.192
Blank Corrected Pk Area (A-s): 0.145
Concentration (ug/L): 55.0

uL dispensed: 10 from 0, 5 from 40, 10 from 1
Replicate 2 (Peak Stored) Time: 20:19
Peak Area (A-s): 0.157 Peak Height (A): 0.184
Blank Corrected Pk Area (A-s): 0.142
Concentration (ug/L): 54.2

Mean Conc (ug/L): 54.6 SD: 0.57 RSD(%): 1.04

Standard number 2 applied. [50.0]
Correlation coefficient: 1.00000 Slope: 0.0024

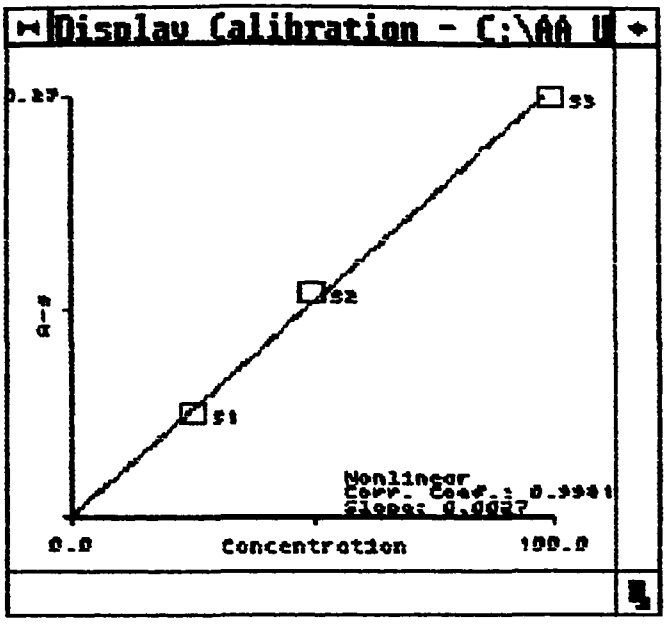
Co ID: STD 3=100ug/L Seq. No.: 00010 A/S Pos.: 2 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 2
Replicate 1 Time: 20:21
Peak Area (A-s): 0.283 Peak Height (A): 0.323
Blank Corrected Pk Area (A-s): 0.269
Concentration (ug/L): 82.4

uL dispensed: 10 from 0, 5 from 40, 10 from 2
Replicate 2 (Peak Stored) Time: 20:24
Peak Area (A-s): 0.283 Peak Height (A): 0.322
Blank Corrected Pk Area (A-s): 0.269
Concentration (ug/L): 82.4

Mean Conc (ug/L): 82.4 SD: 0.03 RSD(%): 0.03

S-shaped calibration curve detected. 2-coef. equation used.
Standard number 3 applied. [100.0]
Correlation coefficient: 0.99819 Slope: 0.0027


Display Calibration - C:\AA
S3
S2
S1
Nonlinear
Concentration
0.0
100.0

Element File: CO.GEL | Element: Co | Wavelength: 240.7
Date: 11/06/97 | Time: 20:34 | Slit: 0.20 L
Data File: EB179.DAT | ID/Wt File: EB179.IDW | Lamp Current: 30
Technique: HGA | Calib. Type: Nonlinear | Energy: 49

Co ID: ICV=30ug/L Seq. No.: 00011 A/S Pos.: 4 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 4
Replicate 1 Time: 20:37
Peak Area (A-s): 0.099 Peak Height (A): 0.117
Blank Corrected Pk Area (A-s): 0.085
Concentration (ug/L): 31.2

uL dispensed: 10 from 0, 5 from 40, 10 from 4
Replicate 2 (Peak Stored) Time: 20:39
Peak Area (A-s): 0.101 Peak Height (A): 0.126
Blank Corrected Pk Area (A-s): 0.087
Concentration (ug/L): 31.8

Mean Conc (ug/L): 31.5 SD: 0.43 RSD(%): 1.36

QC sample is within range 27.0 - 33.0

Co ID: ICB Seq. No.: 00012 A/S Pos.: 0 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 20:42
Peak Area (A-s): 0.017 Peak Height (A): 0.034
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 1.0

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 20:44
Peak Area (A-s): 0.018 Peak Height (A): 0.041
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 1.2

Mean Conc (ug/L): 1.1 SD: 0.13 RSD(%): 11.46

QC sample is within range -2.0 - 2.0

Co ID: CHECK LO Seq. No.: 00013 A/S Pos.: 6 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 6
Replicate 1 Time: 20:47
Peak Area (A-s): 0.032 Peak Height (A): 0.052
Blank Corrected Pk Area (A-s): 0.018
Concentration (ug/L): 6.6

uL dispensed: 10 from 0, 5 from 40, 10 from 6
Replicate 2 (Peak Stored) Time: 20:49
Peak Area (A-s): 0.030 Peak Height (A): 0.052
Blank Corrected Pk Area (A-s): 0.016
Concentration (ug/L): 5.8

Mean [illegible] (ug/L): 6.2 SD: 0.58 RSD(%): 9.29

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Co ID: 43452 MB Seq. No.: 00014 A/S Pos.: 7 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 7
Replicate 1 Time: 20:52
Peak Area (A-s): 0.017 Peak Height (A): 0.041
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 1.0

uL dispensed: 10 from 0, 5 from 40, 10 from 7
Replicate 2 (Peak Stored) Time: 20:54
Peak Area (A-s): 0.015 Peak Height (A): 0.034
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.4

Mean Conc (ug/L): 0.7 SD: 0.42 RSD(%): 56.22

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Co ID: 43452 LCS Seq. No.: 00015 A/S Pos.: 8 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 8
Replicate 1 Time: 20:57
Peak Area (A-s): 0.144 Peak Height (A): 0.169
Blank Corrected Pk Area (A-s): 0.130
Concentration (ug/L): 47.7

uL dispensed: 10 from 0, 5 from 40, 10 from 8
Replicate 2 (Peak Stored) Time: 20:59
Peak Area (A-s): 0.141 Peak Height (A): 0.174
Blank Corrected Pk Area (A-s): 0.127
Concentration (ug/L): 46.6

Mean Conc (ug/L): 47.1 SD: 0.77 RSD(%): 1.63

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Co ID: 185-26-1C Seq. No.: 00016 A/S Pos.: 9 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 9 not used BMD 11/13/97
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 21:02
Peak Area (A-s): 0.535 Peak Height (A): 0.628
Blank Corrected Pk Area (A-s): 0.521
Concentration (ug/L): 189.1

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Co ID: 185-26-1C Seq. No.: 00017 A/S Pos.: 9 Date: 11/06/97

uL dispensed: 15 from 0, 5 from 40, 5 from 9 not used BMD 11/13/97
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 21:05
Peak Area (A-s): 0.317 Peak Height (A): 0.425
Blank Corrected Pk Area (A-s): 0.302
Concentration (ug/L): 110.4 Corrected Conc (ug/L): 220.8

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Co ID: 185-26-1C X Seq. No.: 00018 A/S Pos.: 9 Date: 11/06/97
188-52-62,
BMD 11/13/97

not used
MD 11/13/97
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uL dispensed: 18 from 0, 5 from 40, 2 from 9
Replicate 1 Time: 21:07
Peak Area (A-s): 0.161 Peak Height (A): 0.210
Blank Corrected Pk Area (A-s): 0.147
Concentration (ug/L): 53.7 Corrected Conc (ug/L): 268.

uL dispensed: 18 from 0, 5 from 40, 2 from 9
Replicate 2 (Peak Stored) Time: 21:10
Peak Area (A-s): 0.156 Peak Height (A): 0.198
Blank Corrected Pk Area (A-s): 0.142
Concentration (ug/L): 52.0 Corrected Conc (ug/L): 260.

Mean Conc (ug/L): 52.9 SD: 1.17 RSD(%): 2.22
Corrected Conc (ug/L): 264.

not used BM 11/13/97

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Co ID: 185-26-1C L EH Seq. No.: 00019 A/S Pos.: 10 Date: 11/06/97
188-52-1,2, CC BM 11/13/97
uL dispensed: 10 from 0, 5 from 40, 10 from 10
Replicate 1 Time: 21:12
Peak Area (A-s): 0.188 Peak Height (A): 0.251
Blank Corrected Pk Area (A-s): 0.173
Concentration (ug/L): 63.5

not used BM 11/13/97

uL dispensed: 10 from 0, 5 from 40, 10 from 10
Replicate 2 (Peak Stored) Time: 21:15
Peak Area (A-s): 0.177 Peak Height (A): 0.223
Blank Corrected Pk Area (A-s): 0.163
Concentration (ug/L): 59.7

Mean Conc (ug/L): 61.6 SD: 2.62 RSD(%): 4.25

~~~~~~

Co ID: 185-26-2C Seq. No.: 00020 A/S Pos.: 11 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 11
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 21:17
Peak Area (A-s): 0.717 Peak Height (A): 0.776
Blank Corrected Pk Area (A-s): 0.702
Concentration (ug/L): 254.2

not used BM 11/13/97

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Co ID: 185-26-2C Seq. No.: 00021 A/S Pos.: 11 Date: 11/06/97

uL dispensed: 15 from 0, 5 from 40, 5 from 11
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 21:20
Peak Area (A-s): 0.419 Peak Height (A): 0.481
Blank Corrected Pk Area (A-s): 0.405
Concentration (ug/L): 147.3 Corrected Conc (ug/L): 294.7

not used BM 11/13/97

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Co ID: 185-26-2C FH X5 Seq. No.: 00022 A/S Pos.: 11 Date: 11/06/97
188-52-3,4, FH CC BM 11/13/97
uL dispensed: 18 from 0, 5 from 40, 2 from 11
Replicate 1 Time: 21:22
Peak Area (A-s): 0.252 Peak Height (A): 0.328
Blank Corrected Pk Area (A-s): 0.238

uL dispensed: 18 from 0, 5 from 40, 2 from 11
Replicate 2 (Peak Stored) Time: 21:25
Peak Area (A-s): 0.287 Peak Height (A): 0.339
Blank Corrected Pk Area (A-s): 0.273
Concentration (ug/L): 99.7 Corrected Conc (ug/L): 499.

Mean Conc (ug/L): 93.4 SD: 9.01 RSD(%): 9.65
Corrected Conc (ug/L): 467.

Co ID: CCV=60ug/L Seq. No.: 00023 A/S Pos.: 5 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 5
Replicate 1 Time: 21:27
Peak Area (A-s): 0.173 Peak Height (A): 0.203
Blank Corrected Pk Area (A-s): 0.159
Concentration (ug/L): 58.3

uL dispensed: 10 from 0, 5 from 40, 10 from 5
Replicate 2 (Peak Stored) Time: 21:30
Peak Area (A-s): 0.177 Peak Height (A): 0.209
Blank Corrected Pk Area (A-s): 0.163
Concentration (ug/L): 59.6

Mean Conc (ug/L): 58.9 SD: 0.95 RSD(%): 1.61

QC sample is within range 48.0 - 72.0

Co ID: CCB Seq. No.: 00024 A/S Pos.: 0 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 21:32
Peak Area (A-s): 0.020 Peak Height (A): 0.038
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 2.2

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 21:35
Peak Area (A-s): 0.017 Peak Height (A): 0.035
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 1.1

Mean Conc (ug/L): 1.7 SD: 0.75 RSD(%): 45.20

QC sample is within range -2.0 - 2.0

Co ID: 185-26-3C Seq. No.: 00025 A/S Pos.: 12 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 12
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 21:37
Peak Area (A-s): 0.627 Peak Height (A): 0.738
Blank Corrected Pk Area (A-s): 0.612
Concentration (ug/L): 222.1

Just used
and
11/13/97

Co ID: 185-26-3C X Seq. No.: 00026 A/S Pos.: 12 Date: 11/06/97
188-52-5,6,
uL dispensed: 15 from 0, 5 from 40, 5 from 12 Not used
Sample abs. is greater than that of the largest standard. 11/13/97
Replicate 1 Time: 21:40
Peak Area (A-s): 0.390 Peak Height (A): 0.483
Blank Corrected Pk Area (A-s): 0.376
Concentration (ug/L): 136.9 Corrected Conc (ug/L): 273.8

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Co ID: 185-26-3C FH X 5 Seq. No.: 00027 A/S Pos.: 12 Date: 11/06/97
188-52-5,6, ∞ 11-19-97 cc
uL dispensed: 18 from 0, 5 from 40, 2 from 12
Replicate 1 Time: 21:42
Peak Area (A-s): 0.239 Peak Height (A): 0.295
Blank Corrected Pk Area (A-s): 0.224
Concentration (ug/L): 82.1 Corrected Conc (ug/L): 410.

uL dispensed: 18 from 0, 5 from 40, 2 from 12
Replicate 2 (Peak Stored) Time: 21:45
Peak Area (A-s): 0.239 Peak Height (A): 0.296
Blank Corrected Pk Area (A-s): 0.225
Concentration (ug/L): 82.2 Corrected Conc (ug/L): 411.

Mean Conc (ug/L): 82.1 SD: 0.08 RSD(%): 0.10
Corrected Conc (ug/L): 411.

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Co ID: 185-26-4C FH Seq. No.: 00028 A/S Pos.: 13 Date: 11/06/97
188-52-9,10, EE Bal 11/13/97
uL dispensed: 10 from 0, 5 from 40, 10 from 13
Replicate 1 Time: 21:47
Peak Area (A-s): 0.125 Peak Height (A): 0.219
Blank Corrected Pk Area (A-s): 0.111
Concentration (ug/L): 40.6

uL dispensed: 10 from 0, 5 from 40, 10 from 13
Replicate 2 (Peak Stored) Time: 21:50
Peak Area (A-s): 0.127 Peak Height (A): 0.217
Blank Corrected Pk Area (A-s): 0.113
Concentration (ug/L): 41.3

Mean Conc (ug/L): 40.9 SD: 0.55 RSD(%): 1.34

~~~~~~

Co ID: 185-26-5C FH Seq. No.: 00029 A/S Pos.: 14 Date: 11/06/97
188-52-11,12, EE Bal 11/13/97
uL dispensed: 10 from 0, 5 from 40, 10 from 14
Replicate 1 Time: 21:52
Peak Area (A-s): 0.134 Peak Height (A): 0.198
Blank Corrected Pk Area (A-s): 0.120
Concentration (ug/L): 44.0

uL dispensed: 10 from 0, 5 from 40, 10 from 14
Replicate 2 (Peak Stored) Time: 21:54
Peak Area (A-s): 0.134 Peak Height (A): 0.177
Blank Corrected Pk Area (A-s): 0.120
Concentration (ug/L): 43.8
~~~~~~

Mean 43.9 SD: 0.16 RSD(%): 0.35

Co ID: 185-26-6C FH 185-52-13,14; EB 11/13/97 Seq. No.: 00030 A/S Pos.: 15 Date: 11/06/9

uL dispensed: 10 from 0, 5 from 40, 10 from 15
Replicate 1 Time: 21:57
Peak Area (A-s): 0.069 Peak Height (A): 0.138
Blank Corrected Pk Area (A-s): 0.054
Concentration (ug/L): 20.0

uL dispensed: 10 from 0, 5 from 40, 10 from 15
Replicate 2 (Peak Stored) Time: 21:59
Peak Area (A-s): 0.067 Peak Height (A): 0.128
Blank Corrected Pk Area (A-s): 0.053
Concentration (ug/L): 19.5

Mean Conc (ug/L): 19.7 SD: 0.35 RSD(%): 1.78

Co ID: 185-26-7C FH EB 185-52-17,18; 11/13/97 Seq. No.: 00031 A/S Pos.: 16 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 16
Replicate 1 Time: 22:02
Peak Area (A-s): 0.030 Peak Height (A): 0.045
Blank Corrected Pk Area (A-s): 0.016
Concentration (ug/L): 5.8

uL dispensed: 10 from 0, 5 from 40, 10 from 16
Replicate 2 (Peak Stored) Time: 22:04
Peak Area (A-s): 0.033 Peak Height (A): 0.052
Blank Corrected Pk Area (A-s): 0.019
Concentration (ug/L): 7.0

Mean Conc (ug/L): 6.4 SD: 0.85 RSD(%): 13.36

Co ID: 185-26-8E FH 185-52-19,20; EB 11/13/97 Seq. No.: 00032 A/S Pos.: 17 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 17
Replicate 1 Time: 22:07
Peak Area (A-s): 0.250 Peak Height (A): 0.310
Blank Corrected Pk Area (A-s): 0.236
Concentration (ug/L): 86.2

uL dispensed: 10 from 0, 5 from 40, 10 from 17
Sample abs. is greater than that of the largest standard.
Replicate 2 (Peak Stored) Time: 22:09
Peak Area (A-s): 0.312 Peak Height (A): 0.409
Blank Corrected Pk Area (A-s): 0.298
Concentration (ug/L): 108.7

Mean Conc (ug/L): 97.5 SD: 15.86 RSD(%): 16.27

Co ID: 185-26-8H FH Seq. No.: 00033 A/S Pos.: 18 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 18
Replicate 1 Time: 22:11

EB 11/13/97

Peak Area (A-s): 0.027 Peak Height (A): [illegible]
Blank Corrected Pk Area (A-s): 0.013
Concentration (ug/L): 4.6

uL dispensed: 10 from 0, 5 from 40, 10 from 18
Replicate 2 (Peak Stored) Time: 22:14
Peak Area (A-s): 0.026 Peak Height (A): 0.049
Blank Corrected Pk Area (A-s): 0.012
Concentration (ug/L): 4.2

Mean Conc (ug/L): 4.4 SD: 0.28 RSD(%): 6.29

~~~~~~

Co ID: 185-26-9C Seq. No.: 00034 A/S Pos.: 19 Date: 11/06/97
188-52-7,8, EE 11/13/97 Not used
uL dispensed: 10 from 0, 5 from 40, 10 from 19
Sample abs. is greater than that of the largest standard. 11/13/97
Replicate 1 Time: 22:16
Peak Area (A-s): 0.590 Peak Height (A): 0.681
Blank Corrected Pk Area (A-s): 0.576
Concentration (ug/L): 208.9

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Co ID: 185-26-9C Seq. No.: 00035 A/S Pos.: 19 Date: 11/06/97
not used
uL dispensed: 15 from 0, 5 from 40, 5 from 19
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 22:19
Peak Area (A-s): 0.404 Peak Height (A): 0.440
Blank Corrected Pk Area (A-s): 0.390
Concentration (ug/L): 141.9 Corrected Conc (ug/L): 283.9

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Co ID: 185-26-9C~~RE~~ Seq. No.: 00036 A/S Pos.: 19 Date: 11/06/97
188-52-7,8, EE 11/13/97 188-52-7,8, 185-26-9C 1:4 X5
uL dispensed: 18 from 0, 5 from 40, 2 from 19
Replicate 1 Time: 22:21
Peak Area (A-s): 0.239 Peak Height (A): 0.279
Blank Corrected Pk Area (A-s): 0.225
Concentration (ug/L): 82.3 Corrected Conc (ug/L): 412.

EE 11/13/97

uL dispensed: 18 from 0, 5 from 40, 2 from 19
Replicate 2 (Peak Stored) Time: 22:24
Peak Area (A-s): 0.254 Peak Height (A): 0.355
Blank Corrected Pk Area (A-s): 0.240
Concentration (ug/L): 87.6 Corrected Conc (ug/L): 438.

Mean Conc (ug/L): 85.0 SD: 3.75 RSD(%): 4.41
Corrected Conc (ug/L): 425.

~~~~~~

Co ID: CCV=60ug/L Seq. No.: 00037 A/S Pos.: 5 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 5
Replicate 1 Time: 22:26
Peak Area (A-s): 0.173 Peak Height (A): 0.201
Blank Corrected Pk Area (A-s): 0.158
Concentration (ug/L): 57.9

uL [illegible] 5 from 40, 10 from 5
Replicate 2 (Peak Stored) Time: 22:29
Peak Area (A-s): 0.174 Peak Height (A): 0.201
Blank Corrected Pk Area (A-s): 0.160
Concentration (ug/L): 58.4

Mean Conc (ug/L): 58.2 SD: 0.35 RSD(%): 0.60

QC sample is within range 48.0 - 72.0

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Co ID: CCB Seq. No.: 00038 A/S Pos.: 0 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 22:31
Peak Area (A-s): 0.019 Peak Height (A): 0.037
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 1.6

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 22:33
Peak Area (A-s): 0.018 Peak Height (A): 0.034
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 1.5

Mean Conc (ug/L): 1.5 SD: 0.08 RSD(%): 5.46

QC sample is within range -2.0 - 2.0

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Co ID: 185-26-10C FH Seq. No.: 00039 A/S Pos.: 20 Date: 11/06/97
185-52-15,16, EE pd 11/13/97
uL dispensed: 10 from 0, 5 from 40, 10 from 20
Replicate 1 Time: 22:36
Peak Area (A-s): 0.068 Peak Height (A): 0.151
Blank Corrected Pk Area (A-s): 0.053
Concentration (ug/L): 19.6

uL dispensed: 10 from 0, 5 from 40, 10 from 20
Replicate 2 (Peak Stored) Time: 22:38
Peak Area (A-s): 0.064 Peak Height (A): 0.131
Blank Corrected Pk Area (A-s): 0.050
Concentration (ug/L): 18.4

Mean Conc (ug/L): 19.0 SD: 0.87 RSD(%): 4.60

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Co ID: 185-26-1D Seq. No.: 00040 A/S Pos.: 21 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 21
Replicate 1 Time: 22:41
Peak Area (A-s): 0.031 Peak Height (A): 0.060
Blank Corrected Pk Area (A-s): 0.017
Concentration (ug/L): 6.3

uL dispensed: 10 from 0, 5 from 40, 10 from 21
Replicate 2 (Peak Stored) Time: 22:43
Peak Area (A-s): 0.027 Peak Height (A): 0.054
Blank Corrected Pk Area (A-s): 0.012
~~~~~~

Concentration (ug/L): 4.5

Mean Conc (ug/L): 5.4 SD: 1.28 RSD(%): 23.61

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Co ID: 185-26-1D Seq. No.: 00041 A/S Pos.: 21 Date: 11/06/9

uL dispensed: 10 from 0, 5 from 40, 10 from 21
Replicate 1 Time: 22:46
Peak Area (A-s): 0.028 Peak Height (A): 0.058
Blank Corrected Pk Area (A-s): 0.014
Concentration (ug/L): 5.1

uL dispensed: 10 from 0, 5 from 40, 10 from 21
Replicate 2 (Peak Stored) Time: 22:48
Peak Area (A-s): 0.028 Peak Height (A): 0.058
Blank Corrected Pk Area (A-s): 0.014
Concentration (ug/L): 5.1

Mean Conc (ug/L): 5.1 SD: 0.02 RSD(%): 0.42

~~~~~~

Co ID: 185-26-1D L Seq. No.: 00042 A/S Pos.: 22 Date: 11/06/9

uL dispensed: 10 from 0, 5 from 40, 10 from 22
Replicate 1 Time: 22:51
Peak Area (A-s): 0.023 Peak Height (A): 0.048
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 3.4

uL dispensed: 10 from 0, 5 from 40, 10 from 22
Replicate 2 (Peak Stored) Time: 22:53
Peak Area (A-s): 0.020 Peak Height (A): 0.043
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 2.1

Mean Conc (ug/L): 2.7 SD: 0.93 RSD(%): 34.18

~~~~~~

Co ID: 185-26-2D,\2 Seq. No.: 00043 A/S Pos.: 23 Date: 11/06/9

uL dispensed: 10 from 0, 5 from 40, 10 from 23
Replicate 1 Time: 22:56
Peak Area (A-s): 0.112 Peak Height (A): 0.200
Blank Corrected Pk Area (A-s): 0.097
Concentration (ug/L): 35.7

uL dispensed: 10 from 0, 5 from 40, 10 from 23
Replicate 2 (Peak Stored) Time: 22:58
Peak Area (A-s): 0.102 Peak Height (A): 0.158
Blank Corrected Pk Area (A-s): 0.087
Concentration (ug/L): 32.1

Mean Conc (ug/L): 33.9 SD: 2.58 RSD(%): 7.62

~~~~~~

Co ID: 185-26-3D Seq. No.: 00044 A/S Pos.: 24 Date: 11/06/9

uL dispensed: 10 from 0, 5 from 40, 10 from 24

Peak Area (A-s): 0.044 Peak Height (A): 0.088
Blank Corrected Pk Area (A-s): 0.030
Concentration (ug/L): 11.1

uL dispensed: 10 from 0, 5 from 40, 10 from 24
Replicate 2 (Peak Stored) Time: 23:04
Peak Area (A-s): 0.040 Peak Height (A): 0.083
Blank Corrected Pk Area (A-s): 0.026
Concentration (ug/L): 9.4

Mean Conc (ug/L): 10.2 SD: 1.17 RSD(%): 11.41

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Co ID: 185-26-4D Seq. No.: 00045 A/S Pos.: 25 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 25
Replicate 1 Time: 23:06
Peak Area (A-s): 0.023 Peak Height (A): 0.044
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 3.3

uL dispensed: 10 from 0, 5 from 40, 10 from 25
Replicate 2 (Peak Stored) Time: 23:09
Peak Area (A-s): 0.023 Peak Height (A): 0.046
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 3.3

Mean Conc (ug/L): 3.3 SD: 0.01 RSD(%): 0.30

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Co ID: 185-26-5D Seq. No.: 00046 A/S Pos.: 26 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 26
Replicate 1 Time: 23:11
Peak Area (A-s): 0.066 Peak Height (A): 0.089
Blank Corrected Pk Area (A-s): 0.051
Concentration (ug/L): 18.8

uL dispensed: 10 from 0, 5 from 40, 10 from 26
Replicate 2 (Peak Stored) Time: 23:14
Peak Area (A-s): 0.067 Peak Height (A): 0.090
Blank Corrected Pk Area (A-s): 0.053
Concentration (ug/L): 19.5

Mean Conc (ug/L): 19.1 SD: 0.43 RSD(%): 2.22

~~~~~~

Co ID: 185-26-6D Seq. No.: 00047 A/S Pos.: 27 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 27
Replicate 1 Time: 23:16
Peak Area (A-s): 0.025 Peak Height (A): 0.044
Blank Corrected Pk Area (A-s): 0.011
Concentration (ug/L): 4.0

uL dispensed: 10 from 0, 5 from 40, 10 from 27
Replicate 2 (Peak Stored) Time: 23:19
Peak Area (A-s): 0.025 Peak Height (A): 0.050
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Blank Corrected Pk Area (A-s): 0.011
Concentration (ug/L): 3.9

Mean Conc (ug/L): 4.0 SD: 0.08 RSD(%): 2.03

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Co ID: 185-26-7CD Seq. No.: 00048 A/S Pos.: 28 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 28
Replicate 1 Time: 23:21
Peak Area (A-s): 0.023 Peak Height (A): 0.049
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 3.4

uL dispensed: 10 from 0, 5 from 40, 10 from 28
Replicate 2 (Peak Stored) Time: 23:24
Peak Area (A-s): 0.023 Peak Height (A): 0.048
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 3.3

Mean Conc (ug/L): 3.3 SD: 0.04 RSD(%): 1.20

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Co ID: CCV=60ug/L Seq. No.: 00049 A/S Pos.: 5 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 5
Replicate 1 Time: 23:27
Peak Area (A-s): 0.173 Peak Height (A): 0.199
Blank Corrected Pk Area (A-s): 0.159
Concentration (ug/L): 58.3

uL dispensed: 10 from 0, 5 from 40, 10 from 5
Replicate 2 (Peak Stored) Time: 23:29
Peak Area (A-s): 0.181 Peak Height (A): 0.206
Blank Corrected Pk Area (A-s): 0.167
Concentration (ug/L): 61.0

Mean Conc (ug/L): 59.7 SD: 1.96 RSD(%): 3.29

QC sample is within range 48.0 - 72.0

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Co ID: CCB Seq. No.: 00050 A/S Pos.: 0 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 23:32
Peak Area (A-s): 0.019 Peak Height (A): 0.042
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 1.8

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 23:34
Peak Area (A-s): 0.019 Peak Height (A): 0.042
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 1.6

Mean Conc (ug/L): 1.7 SD: 0.12 RSD(%): 7.21

QC sample is within range -2.0 - 2.0
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Co    ID: 185-26-8D          Seq. No.: 00051    A/S Pos.: 29    Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 29
Replicate  1                              Time: 23:36
Peak Area (A-s): 0.021                    Peak Height (A): 0.045
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L  ): 2.3

uL dispensed: 10 from 0, 5 from 40, 10 from 29
Replicate  2 (Peak Stored)                Time: 23:39
Peak Area (A-s): 0.019                    Peak Height (A): 0.041
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L  ): 1.8

Mean Conc  (ug/L  ):        2.1         SD: 0.36                RSD(%): 17.18

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Co    ID: 185-26-9D          Seq. No.: 00052    A/S Pos.: 30    Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 30
Replicate  1                              Time: 23:41
Peak Area (A-s): 0.028                    Peak Height (A): 0.051
Blank Corrected Pk Area (A-s): 0.014
Concentration (ug/L  ): 5.0

uL dispensed: 10 from 0, 5 from 40, 10 from 30
Replicate  2 (Peak Stored)                Time: 23:44
Peak Area (A-s): 0.025                    Peak Height (A): 0.055
Blank Corrected Pk Area (A-s): 0.011
Concentration (ug/L  ): 4.0

Mean Conc  (ug/L  ):        4.5         SD: 0.71                RSD(%): 15.80

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Co    ID: 185-26-10D         Seq. No.: 00053    A/S Pos.: 31    Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 31
Replicate  1                              Time: 23:46
Peak Area (A-s): 0.033                    Peak Height (A): 0.064
Blank Corrected Pk Area (A-s): 0.019
Concentration (ug/L  ): 6.8

uL dispensed: 10 from 0, 5 from 40, 10 from 31
Replicate  2 (Peak Stored)                Time: 23:49
Peak Area (A-s): 0.032                    Peak Height (A): 0.066
Blank Corrected Pk Area (A-s): 0.018
Concentration (ug/L  ): 6.6

Mean Conc  (ug/L  ):        6.7         SD: 0.19                RSD(%): 2.81

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Co    ID: CCV=60ug/L         Seq. No.: 00054    A/S Pos.: 5     Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 5
Replicate  1                              Time: 23:51
Peak Area (A-s): 0.181                    Peak Height (A): 0.199
Blank Corrected Pk Area (A-s): 0.167
Concentration (ug/L  ): 61.2
```

uL dispensed: 10 from 0, 5 from 40, 10 from 5
Replicate 2 (Peak Stored) Time: 23:54
Peak Area (A-s): 0.179 Peak Height (A): 0.192
Blank Corrected Pk Area (A-s): 0.164
Concentration (ug/L): 60.1

Mean Conc (ug/L): 60.6 SD: 0.72 RSD(%): 1.19

QC sample is within range 48.0 - 72.0

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Co ID: CCB Seq. No.: 00055 A/S Pos.: 0 Date: 11/06/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 23:56
Peak Area (A-s): 0.023 Peak Height (A): 0.057
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 3.1

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 23:59
Peak Area (A-s): 0.022 Peak Height (A): 0.058
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 2.8

Mean Conc (ug/L): 2.9 SD: 0.17 RSD(%): 5.78

QC sample is out of range -2.0 - 2.0

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Co ID: CCB Seq. No.: 00056 A/S Pos.: 0 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 07:35
Peak Area (A-s): 0.011 Peak Height (A): 0.037
Blank Corrected Pk Area (A-s): -0.004
Concentration (ug/L): -1.4

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 07:38
Peak Area (A-s): 0.011 Peak Height (A): 0.035
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -1.2

Mean Conc (ug/L): -1.3 SD: 0.12 RSD(%): 9.22

QC sample is within range -2.0 - 2.0

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Co ID: CHECK LO Seq. No.: 00057 A/S Pos.: 6 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 6
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Element: Co
Analyst: HOLSTE
Print Data: Main+Suppl.
Peak Storage: 1 Repl./Sample
Print: Calib. Curve+Elem. Params.

INSTRUMENT: 4100 ZL
Technique: HGA
Version: 7.30
Wavelength: 240.7 Peak
Slit: 0.20 Low
Signal Type: Single Beam
Signal Measurement: Peak Area
Read Time: 3.0
Read Delay: 0.0
BOC Time: 2
Sample Replicates: 2
Standard Replicates: 2
Spike Replicates: Same as Sample

CALIBRATION:

Solutions	ID	Conc	Location	Volume	Diluent Volume	Modifier #1	Modifier #2
Calib. Blank	STD BLANK		0	10	10	5	
Standard 1	STD 1=25ug/L	25.0	1	5	15	5	
Standard 2	STD 2=50ug/L	50.0	1	10	10	5	
Standard 3	STD 3=100ug/L	100.0	2	10	10	5	
Reslope Std.	Reslope 50ug/L	50.0	1	10	10	5	
Samples				10	10	5	

Diluent Location: 0
Modifier #1 Location: 40
Modifier #2 Location:
Calibration Units: ug/L
Sample Units: ug/L
Calibration Type: Nonlinear

Furnace Time/Temperature Program:

Step	Temp	Ramp	Hold	Gas Flow	Read	Gas Type
1	110	1	20	250		Norm
2	130	1	25	250		Norm
3	1400	5	20	250		Norm
4	2400	0	4	0	*	Norm
5	2500	1	5	250		Norm

Injection Temp: 20
Pipette Speed: 100%
Extraction System: On

SEQUENCE:

Step	Action and Parameters
1	Pipet diluent + modifier 1 + spike + sample/std
2	Run HGA steps 1 to End

CHECKS:
Recalibration Type: Autozero Only
Locations: None

Conc. Above Calibration Action: Dilute & Reanalyze After 1 Rep
Alternate Sample Volumes (uL): 5,2,1
Run Alternate Volume Blanks: No

If %RSD > 20.0 and Concentration > 5 then Retry 1 times
Check %RSD on: Samples + Standards + Spikes + QC Samples

Recovery Measurements:
5 uL of 50 ug/L Standard at Location 1 Gives 25.0 ug/L
Measure Recovery on Samples: 9,10,21,22
Add to QC Samples: Yes
% Recovery Limits: 75 to 125

QC:

#	A/S Loc.	QC Sample ID	Conc. Limits Lower	Upper	After Calib	Periodic Check	At End	Count As Sample
1	4	ICV=30ug/L	27.0	33.0				
2	0	ICB	-2.0	2.0				
3	5	CCV=60ug/L	48.0	72.0		X	X	
4	0	CCB	-2.0	2.0		X	X	

Run Periodic QC Samples: Every 10
Out of Limit Action: Print Message Only

Matrix Check Calculations:
% Difference for Dupls: No Locations:
% Recovery for Spike: No Locations: Conc:

Element File: CO.GEL | Element: Co | Wavelength: 240.7
Date: 11/07/97 | Time: 11:08 | Slit: 0.20 L
Data File: EB179.DAT | ID/Wt File: EB179.IDW | Lamp Current: 30
Technique: HGA | Calib. Type: Nonlinear | Energy: 49

Co ID: 185-26-1C FH Seq. No.: 00057 A/S Pos.: 9 Date: 11/07/97
188-52-1,2, EC 11/13/97
uL dispensed: 10 from 0, 5 from 40, 10 from 9
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 11:10
Peak Area (A-s): 0.476 Peak Height (A): 0.523
Blank Corrected Pk Area (A-s): 0.467
Concentration (ug/L): 166.9

not used
11/13 SS

Co ID: 185-26-1C Seq. No.: 00058 A/S Pos.: 9 Date: 11/07/97

uL dispensed: 15 from 0, 5 from 40, 5 from 9
Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 11:13
Peak Area (A-s): 0.333 Peak Height (A): 0.390
Blank Corrected Pk Area (A-s): 0.324
Concentration (ug/L): 115.4 Corrected Conc (ug/L): 230.8

not used
11/13/97

Co ID: 185-26-1C FH X 5 Seq. No.: 00059 A/S Pos.: 9 Date: 11/07/97
188-52-1,2, 11-19-97
uL dispensed: 18 from 0, 5 from 40, 2 from 9
Replicate 1 Time: 11:16
Peak Area (A-s): 0.195 Peak Height (A): 0.252
Blank Corrected Pk Area (A-s): 0.185
Concentration (ug/L): 65.9 Corrected Conc (ug/L): 329.

uL dispensed: 18 from 0, 5 from 40, 2 from 9
Replicate 2 (Peak Stored) Time: 11:18
Peak Area (A-s): 0.177 Peak Height (A): 0.227
Blank Corrected Pk Area (A-s): 0.167
Concentration (ug/L): 59.4 Corrected Conc (ug/L): 297.

Mean Conc (ug/L): 62.6 SD: 4.57 RSD(%): 7.30
Corrected Conc (ug/L): 313.

Co ID: 185-26-1C FH PDS Seq. No.: 00060 A/S Pos.: 9 Date: 11/07/97
188-52-1,2, EC 11/13/97
uL dispensed: 13 from 0, 5 from 40, 5 from 1, 2 from 9
Replicate 1 Time: 11:21
Peak Area (A-s): 0.240 Peak Height (A): 0.263
Blank Corrected Pk Area (A-s): 0.231
Concentration (ug/L): 82.1 Corrected Conc (ug/L): 410.

uL dispensed: 13 from 0, 5 from 40, 5 from 1, 2 from 9
Replicate 2 (Peak Stored) Time: 11:24
Peak Area (A-s): 0.261 Peak Height (A): 0.288
Blank Corrected Pk Area (A-s): 0.251
Concentration (ug/L): 89.3 Corrected Conc (ug/L): 447.

Mean Conc (ug/L): 85.7 SD: 5.13 5.99
Corrected Conc (ug/L): 428.

Recovery is 92.4% 96-1111-9166

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Co ID: 185-26-1C L Seq. No.: 00061 A/S Pos.: 10 Date: 11/07/97
188-52-62,

uL dispensed: 10 from 0, 5 from 40, 10 from 10
Replicate 1 Time: 11:26
Peak Area (A-s): 0.226 Peak Height (A): 0.275
Blank Corrected Pk Area (A-s): 0.217
Concentration (ug/L): 77.1

not used

uL dispensed: 10 from 0, 5 from 40, 10 from 10
Replicate 2 (Peak Stored) Time: 11:29
Peak Area (A-s): 0.229 Peak Height (A): 0.280
Blank Corrected Pk Area (A-s): 0.220
Concentration (ug/L): 78.1

Mean Conc (ug/L): 77.6 SD: 0.73 RSD(%): 0.94

~~~~~~

Co ID: 185-26-1C L Seq. No.: 00062 A/S Pos.: 10 Date: 11/07/97

uL dispensed: 5 from 0, 5 from 40, 5 from 1, 10 from 10
Replicate 1 Time: 11:31
Peak Area (A-s): 0.251 Peak Height (A): 0.275
Blank Corrected Pk Area (A-s): 0.242
Concentration (ug/L): 86.0

Not Used
11/13/97

uL dispensed: 5 from 0, 5 from 40, 5 from 1, 10 from 10
Replicate 2 (Peak Stored) Time: 11:34
Peak Area (A-s): 0.269 Peak Height (A): 0.289
Blank Corrected Pk Area (A-s): 0.260
Concentration (ug/L): 92.5

Mean Conc (ug/L): 89.3 SD: 4.56 RSD(%): 5.11

Recovery is 46.6% (outside of specified limits)

~~~~~~

Co ID: 185-26-1D Seq. No.: 00063 A/S Pos.: 21 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 21
Replicate 1 Time: 11:37
Peak Area (A-s): 0.025 Peak Height (A): 0.045
Blank Corrected Pk Area (A-s): 0.015
Concentration (ug/L): 5.4

not used

uL dispensed: 10 from 0, 5 from 40, 10 from 21
Replicate 2 (Peak Stored) Time: 11:39
Peak Area (A-s): 0.024 Peak Height (A): 0.041
Blank Corrected Pk Area (A-s): 0.014
Concentration (ug/L): 5.0

Mean Conc (ug/L): 5.2 SD: 0.29 RSD(%): 5.66
~~~~~~

Co ID: 185-26-1D Seq. No.: 00064 A/S Pos.: 21 Date: 11/07/9

uL dispensed: 5 from 0, 5 from 40, 5 from 1, 10 from 21 N/A 11-19-97
Replicate 1 Time: 11:42
Peak Area (A-s): 0.069 Peak Height (A): 0.085
Blank Corrected Pk Area (A-s): 0.060
Concentration (ug/L): 21.1

uL dispensed: 5 from 0, 5 from 40, 5 from 1, 10 from 21
Replicate 2 (Peak Stored) Time: 11:44
Peak Area (A-s): 0.072 Peak Height (A): 0.087
Blank Corrected Pk Area (A-s): 0.062
Concentration (ug/L): 22.0

Mean Conc (ug/L): 21.6 SD: 0.60 RSD(%): 2.79

Recovery is 65.4% (outside of specified limits)

Co ID: 185-26-1D L Seq. No.: 00065 A/S Pos.: 22 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 22 N/A 11-19-97
Replicate 1 Time: 11:47
Peak Area (A-s): 0.015 Peak Height (A): 0.032
Blank Corrected Pk Area (A-s): 0.005
Concentration (ug/L): 1.9

uL dispensed: 10 from 0, 5 from 40, 10 from 22
Replicate 2 (Peak Stored) Time: 11:49
Peak Area (A-s): 0.016 Peak Height (A): 0.031
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 2.3

Mean Conc (ug/L): 2.1 SD: 0.26 RSD(%): 12.34

Co ID: 185-26-1D L Seq. No.: 00066 A/S Pos.: 22 Date: 11/07/97

uL dispensed: 5 from 0, 5 from 40, 5 from 1, 10 from 22 Not used
Replicate 1 Time: 11:52
Peak Area (A-s): 0.063 Peak Height (A): 0.074 11-19-97 EE
Blank Corrected Pk Area (A-s): 0.054
Concentration (ug/L): 19.1

uL dispensed: 5 from 0, 5 from 40, 5 from 1, 10 from 22
Replicate 2 (Peak Stored) Time: 11:55
Peak Area (A-s): 0.060 Peak Height (A): 0.068
Blank Corrected Pk Area (A-s): 0.050
Concentration (ug/L): 17.9

Mean Conc (ug/L): 18.5 SD: 0.84 RSD(%): 4.56

Recovery is 65.5% (outside of specified limits)

Co ID: CCV=60ug/L Seq. No.: 00067 A/S Pos.: 5 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 5

Replicate 1 Time: 11:57
Peak Area (A-s): 0.160 Peak Height (A): 0.158
Blank Corrected Pk Area (A-s): 0.150
Concentration (ug/L): 53.3

uL dispensed: 10 from 0, 5 from 40, 10 from 5
Replicate 2 (Peak Stored) Time: 12:00
Peak Area (A-s): 0.160 Peak Height (A): 0.157
Blank Corrected Pk Area (A-s): 0.151
Concentration (ug/L): 53.6

Mean Conc (ug/L): 53.4 SD: 0.20 RSD(%): 0.37

QC sample is within range 48.0 - 72.0

~~~~~~

Co ID: CCB Seq. No.: 00068 A/S Pos.: 0 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 12:02
Peak Area (A-s): 0.013 Peak Height (A): 0.031
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 1.3

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 12:05
Peak Area (A-s): 0.013 Peak Height (A): 0.026
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 1.3

Mean Conc (ug/L): 1.3 SD: 0.01 RSD(%): 0.77

QC sample is within range -2.0 - 2.0

~~~~~~

Co ID: 185-26-1C L Seq. No.: 00069 A/S Pos.: 10 Date: 11/07/97

188-52-1,2, FH cc 11/13/97

uL dispensed: 10 from 0, 5 from 40, 10 from 10
Replicate 1 Time: 12:14
Peak Area (A-s): 0.241 Peak Height (A): 0.285
Blank Corrected Pk Area (A-s): 0.231
Concentration (ug/L): 82.2

uL dispensed: 10 from 0, 5 from 40, 10 from 10
Replicate 2 (Peak Stored) Time: 12:17
Peak Area (A-s): 0.236 Peak Height (A): 0.276
Blank Corrected Pk Area (A-s): 0.227
Concentration (ug/L): 80.6

Mean Conc (ug/L): 81.4 SD: 1.10 RSD(%): 1.35

~~~~~~

Co ID: 185-26-1C L Seq. No.: 00070 A/S Pos.: 10 Date: 11/07/97

uL dispensed: 5 from 0, 5 from 40, 5 from 1, 10 from 10
Replicate 1 Time: 12:19
Peak Area (A-s): 0.257 Peak Height (A): 0.273
Blank Corrected Pk Area (A-s): 0.248
Concentration (ug/L): 88.2

Not used
~~~~~~

uL 5 from 40, 5 from 1, 10 from 10
Replicate 2 (Peak Stored) Time: 12:22
Peak Area (A-s): 0.279 Peak Height (A): 0.292
Blank Corrected Pk Area (A-s): 0.269
Concentration (ug/L): 95.8

Mean Conc (ug/L): 92.0 SD: 5.40 RSD(%): 5.86

not used 11-19-97

Recovery is 42.4% (outside of specified limits)

~~~~~~

Co ID: 185-26-1D Seq. No.: 00071 A/S Pos.: 21 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 21
Replicate 1 Time: 12:25
Peak Area (A-s): 0.027 Peak Height (A): 0.042
Blank Corrected Pk Area (A-s): 0.018
Concentration (ug/L): 6.2

N/A 11-19-97

uL dispensed: 10 from 0, 5 from 40, 10 from 21
Replicate 2 (Peak Stored) Time: 12:27
Peak Area (A-s): 0.100 Peak Height (A): 0.086
Blank Corrected Pk Area (A-s): 0.090
Concentration (ug/L): 32.0

Mean Conc (ug/L): 19.1 SD: 18.23 RSD(%): 95.35

~~~~~~

Co ID: 185-26-1D Seq. No.: 00072 A/S Pos.: 21 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 21
Replicate 1 Time: 12:30
Peak Area (A-s): 0.027 Peak Height (A): 0.046
Blank Corrected Pk Area (A-s): 0.017
Concentration (ug/L): 6.1

N/A 11-19-97

uL dispensed: 10 from 0, 5 from 40, 10 from 21
Replicate 2 (Peak Stored) Time: 12:32
Peak Area (A-s): 0.023 Peak Height (A): 0.040
Blank Corrected Pk Area (A-s): 0.014
Concentration (ug/L): 4.9

Mean Conc (ug/L): 5.5 SD: 0.83 RSD(%): 15.12

~~~~~~

Co ID: 185-26-1D Seq. No.: 00073 A/S Pos.: 21 Date: 11/07/97

uL dispensed: 5 from 0, 5 from 40, 5 from 1, 10 from 21
Replicate 1 Time: 12:35
Peak Area (A-s): 0.070 Peak Height (A): 0.087
Blank Corrected Pk Area (A-s): 0.060
Concentration (ug/L): 21.3

N/A 11-19-97

uL dispensed: 5 from 0, 5 from 40, 5 from 1, 10 from 21
Replicate 2 (Peak Stored) Time: 12:37
Peak Area (A-s): 0.072 Peak Height (A): 0.085
Blank Corrected Pk Area (A-s): 0.063
Concentration (ug/L): 22.2
~~~~~~

Mean Conc (ug/L): 21.8 SD: 0.64 2.92

Recovery is 65.1% (outside of specified limits)

~~~~~~

Co ID: 185-26-1D L Seq. No.: 00074 A/S Pos.: 22 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 22
Replicate 1 Time: 12:40
Peak Area (A-s): 0.015 Peak Height (A): 0.030
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 2.0

N/A 11-19-97

uL dispensed: 10 from 0, 5 from 40, 10 from 22
Replicate 2 (Peak Stored) Time: 12:42
Peak Area (A-s): 0.016 Peak Height (A): 0.033
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 2.2

Mean Conc (ug/L): 2.1 SD: 0.15 RSD(%): 7.11

~~~~~~

Co ID: 185-26-1D L Seq. No.: 00075 A/S Pos.: 22 Date: 11/07/97

uL dispensed: 5 from 0, 5 from 40, 5 from 1, 10 from 22
Replicate 1 Time: 12:45
Peak Area (A-s): 0.064 Peak Height (A): 0.076
Blank Corrected Pk Area (A-s): 0.054
Concentration (ug/L): 19.3

N/A 11-19-97

uL dispensed: 5 from 0, 5 from 40, 5 from 1, 10 from 22
Replicate 2 (Peak Stored) Time: 12:48
Peak Area (A-s): 0.066 Peak Height (A): 0.076
Blank Corrected Pk Area (A-s): 0.056
Concentration (ug/L): 19.9

Mean Conc (ug/L): 19.6 SD: 0.43 RSD(%): 2.20

Recovery is 69.8% (outside of specified limits)

~~~~~~

Co ID: CCV=60ug/L Seq. No.: 00076 A/S Pos.: 5 Date: 11/07/97

uL dispensed: 10 from 0, 5 from 40, 10 from 5
Replicate 1 Time: 12:50
Peak Area (A-s): 0.162 Peak Height (A): 0.158
Blank Corrected Pk Area (A-s): 0.152
Concentration (ug/L): 54.2

uL dispensed: 10 from 0, 5 from 40, 10 from 5
Replicate 2 (Peak Stored) Time: 12:53
Peak Area (A-s): 0.160 Peak Height (A): 0.152
Blank Corrected Pk Area (A-s): 0.151
Concentration (ug/L): 53.6

Mean Conc (ug/L): 53.9 SD: 0.41 RSD(%): 0.76

QC sample is within range 48.0 - 72.0
~~~~~~

Co[illegible] ID: CCB Seq. No.: 00077 A/S Pos.: 0 Date: 11/07/9[illegible]

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 12:55
Peak Area (A-s): 0.016 Peak Height (A): 0.029
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 2.3

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 12:58
Peak Area (A-s): 0.009 Peak Height (A): 0.022
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L): -0.1

Mean Conc (ug/L): 1.1 SD: 1.68 RSD(%): 151.22

QC sample is within range -2.0 - 2.0

Element File: BE.GEL ID/Weight File: EB[illegible]

SRB 11/11/97

Loc.	Concentration	Solutions
0		Calib. Blank / Diluent / ICB / CCB
1	50.0 ug/L	Stock / Recovery Stock 1-64-2P
4		ICV=15.0ug/L 1-64-3P
5		CCV=30.0ug/L 1-64-4P
6		CHECK LO
7		43452 MB
8		43452 LCS
9		188-52-1, 2, 185-26-1C
10		188-52-1, 2, 185-26-1C L
11		188-52-3, 4, 185-26-2C
12		188-52-5, 6, 185-26-3C
13		188-52-9, 10, 185-26-4C
14		188-52-11, 12, 185-26-5C
15		188-52-13, 14, 185-26-6C
16		188-52-17, 18, 185-26-7C
17		188-52-19, 20, 185-26-8E
18		185-26-8H
19		188-52-7, 8, 185-26-9C
20		188-52-15, 16, 185-26-10C
21		185-26-1D
22		185-26-1D L
23		185-26-2D, 12
24		185-26-3D
25		185-26-4D
26		185-26-5D
27		185-26-6D
28		185-26-7CD
29		185-26-8DE
30		185-26-9D
31		185-26-10D
40		Modifier 1

11/20/97 mr

SRB 11/10/97

Ele
Element: Be
Print Data: Main+Suppl.
Print: Calib. Curve

Analyst: BENNETT
Peak Storage: 1 Repl./Sample

INSTRUMENT: 4100 ZL
Technique: HGA
Version: 7.30
Wavelength: 234.9 Peak
Slit: 0.7 Low
Signal Type: Zeeman AA
Signal Measurement: Peak Area
Read Time: 3.0
Read Delay: 0.0
BOC Time: 2
Sample Replicates: 2
Standard Replicates: 2
Spike Replicates: Same as Sample

CALIBRATION:

Solutions	ID	Conc	Location	Volume	Diluent Volume	Modifier #1	Modifier #2
Calib. Blank	STD BLANK		0	10	5	5	
Standard 1	STD1= 10ug/L	10.0	1	2	13	5	
Standard 2	STD2= 25ug/L	25.0	1	5	10	5	
Standard 3	STD3= 50ug/L	50.0	1	10	5	5	
Reslope Std.	25ug/L	25.0	1	5	10	5	
Samples				10	5	5	

Diluent Location: 0
Modifier #1 Location: 40
Modifier #2 Location:
Calibration Units: ug/L
Sample Units: ug/L
Calibration Type: Linear

Furnace Time/Temperature Program:

Step	Temp	Ramp	Hold	Gas Flow	Read	Gas Type
1	110	1	25	250		Norm
2	130	1	20	250		Norm
3	1500	5	15	250		Norm
4	2300	0	3	0	*	Norm
5	2500	1	5	250		Norm

Injection Temp: 20
Pipette Speed: 85%
Extraction System: On

SEQUENCE:

Step	Action and Parameters
1	Pipet diluent + modifier 1 + spike + sample/std
2	Run HGA steps 1 to End

CHECKS:
Recalibration Type: Reslope
Locations: None

Conc. Above Calibration Action: Dilute & Reanalyze After 1 Rep
Alternate Sample Volumes (uL): 5,2,1
Run Alternate Volume Blanks: No

If %RSD > 20.0 and Concentration > 0.2 then Retry 1 times
Check %RSD on: Samples + Standards + Spikes + QC Samples

Recovery Measurements:
5 uL of 50 ug/L Standard at Location 1 Gives 25.0 ug/L
Measure Recovery on Samples: 9,10,21,22
Add to QC Samples: Yes
% Recovery Limits: 85 to 115

QC:

#| A/S Loc.	QC Sample ID	Conc. Limits Lower	Upper	After Calib	Periodic Check	At End	Count As Sample
1	4	ICV=15.0ug/L	13.5	16.5	X			
2	0	ICB	-1.0	1.0	X			
3	5	CCV=30.0ug/L	24.0	36.0		X	X	
4	0	CCB	-1.0	1.0		X	X	

Run Periodic QC Samples: Every 10
Out of Limit Action: Reslope and Rerun Samples

Matrix Check Calculations:
% Difference for Dupls: No Locations:
% Recovery for Spike: No Locations: Conc:

```
Element File: BE.GEL          Element: Be              Wavelength: 234.9
Date: 11/10/97                Time: 10:54              Slit: 0.7 L
Data File: EB180.DAT          ID/Wt File: EB180.IDW    Lamp Current: 30
Technique: HGA                Calib. Type: Linear      Energy: 66
```

Be ID: STD BLANK Seq. No.: 00001 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 0

Replicate 1 Time: 10:57
Peak Area (A-s): 0.004 Peak Height (A): 0.004
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.014
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.4

uL dispensed: 5 from 0, 5 from 40, 10 from 0

Be ID: STD BLANK Seq. No.: 00002 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 11:01
Peak Area (A-s): 0.002 Peak Height (A): 0.005
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.013
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.1

uL dispensed: 5 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 11:03
Peak Area (A-s): 0.002 Peak Height (A): 0.003
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.013
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.2

Mean Conc (ug/L): 0.2 SD: 0.02 RSD(%): 10.60

Auto-zero performed.

Be ID: STD1= 10ug/L Seq. No.: 00003 A/S Pos.: 1 Date: 11/10/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1
Replicate 1 Time: 11:05
Peak Area (A-s): 0.068 Peak Height (A): 0.193
Background Pk Area (A-s): 0.132 Background Pk Height (A): 0.310
Blank Corrected Pk Area (A-s): 0.066
Concentration (ug/L): 12.4

uL dispensed: 13 from 0, 5 from 40, 2 from 1
Replicate 2 (Peak Stored) Time: 11:08
Peak Area (A-s): 0.065 Peak Height (A): 0.165
Background Pk Area (A-s): 0.129 Background Pk Height (A): 0.284
Blank Corrected Pk Area (A-s): 0.063
Concentration (ug/L): 11.9

Mean Conc (ug/L): 12.2 SD: 0.38 RSD(%): 3.10

Standard number 1 applied. [10.0]
Correlation coefficient: 1.00000 Slope: 0.0064

Be ID: STD2= 25ug/L Seq. No.: 00004 A/S Pos.: 1 Date: 11/10/9

uL dispensed: 10 from 0, 5 from 40, 5 from 1
Replicate 1 Time: 11:10
Peak Area (A-s): 0.181 Peak Height (A): 0.436
Background Pk Area (A-s): 0.286 Background Pk Height (A): 0.552
Blank Corrected Pk Area (A-s): 0.179
Concentration (ug/L): 27.8

uL dispensed: 10 from 0, 5 from 40, 5 from 1
Replicate 2 (Peak Stored) Time: 11:12
Peak Area (A-s): 0.181 Peak Height (A): 0.490
Background Pk Area (A-s): 0.286 Background Pk Height (A): 0.576
Blank Corrected Pk Area (A-s): 0.179
Concentration (ug/L): 27.8

Mean Conc (ug/L): 27.8 SD: 0.02 RSD(%): 0.08

Standard number 2 applied. [25.0]
Correlation coefficient: 0.99597 Slope: 0.0071

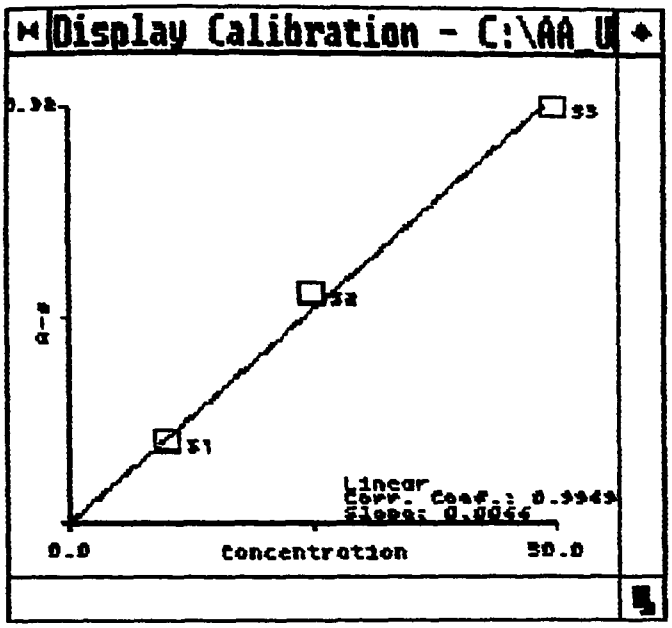
Be ID: STD3= 50ug/L Seq. No.: 00005 A/S Pos.: 1 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 1
Replicate 1 Time: 11:15
Peak Area (A-s): 0.329 Peak Height (A): 0.630
Background Pk Area (A-s): 0.473 Background Pk Height (A): 0.780
Blank Corrected Pk Area (A-s): 0.327
Concentration (ug/L): 46.4

uL dispensed: 5 from 0, 5 from 40, 10 from 1
Replicate 2 (Peak Stored) Time: 11:17
Peak Area (A-s): 0.324 Peak Height (A): 0.628
Background Pk Area (A-s): 0.467 Background Pk Height (A): 0.753
Blank Corrected Pk Area (A-s): 0.322
Concentration (ug/L): 45.6

Mean Conc (ug/L): 46.0 SD: 0.53 RSD(%): 1.15

Standard number 3 applied. [50.0]
Correlation coefficient: 0.99693 Slope: 0.0066



Be ID: STD1= 10ug/L Seq. No.: 00006 A/S Pos.: 1 Date: 11/10/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1
Replicate 1 Time: 11:26
Peak Area (A-s): 0.064 Peak Height (A): 0.186
Background Pk Area (A-s): 0.140 Background Pk Height (A): 0.309
Blank Corrected Pk Area (A-s): 0.062
Concentration (ug/L): 9.3

uL dispensed: 13 from 0, 5 from 40, 2 from 1
Replicate 2 (Peak Stored) Time: 11:29
Peak Area (A-s): 0.080 Peak Height (A): 0.241
Background Pk Area (A-s): 0.157 Background Pk Height (A): 0.364
Blank Corrected Pk Area (A-s): 0.077
Concentration (ug/L): 11.7

Mean Conc (ug/L): 10.5 SD: 1.68 RSD(%): 15.94

Standard number 1 applied. [10.0]
Correlation coefficient: 0.99684 Slope: 0.0066

Be ID: STD2= 25ug/L Seq. No.: 00007 A/S Pos.: 1 Date: 11/10/97

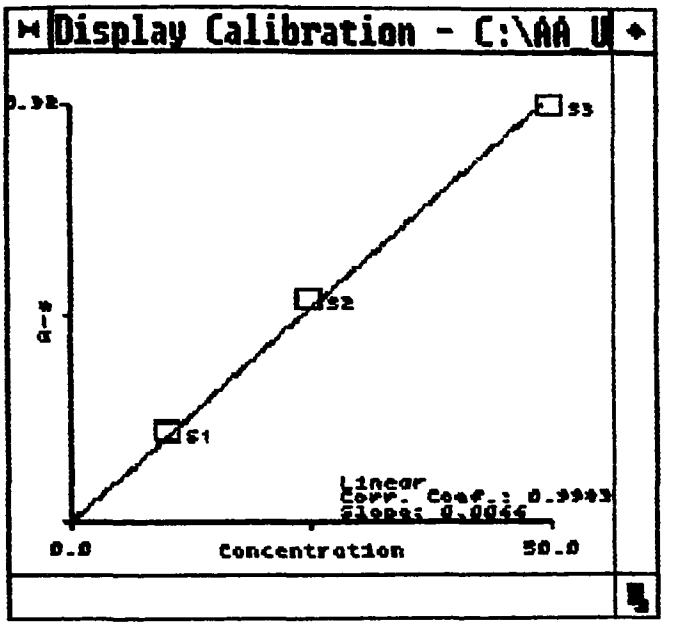
uL dispensed: 10 from 0, 5 from 40, 5 from 1
Replicate 1 Time: 11:44
Peak Area (A-s): 0.173 Peak Height (A): 0.425
Background Pk Area (A-s): 0.283 Background Pk Height (A): 0.567
Blank Corrected Pk Area (A-s): 0.171
Concentration (ug/L): 25.8

uL dispensed: 10 from 0, 5 from 40, 5 from 1
Replicate 2 (Peak Stored) Time: 11:46
Peak Area (A-s): 0.179 Peak Height (A): 0.420
Background Pk Area (A-s): 0.288 Background Pk Height (A): 0.519
Blank Corrected Pk Area (A-s): 0.176

Concentration (ug/L): 26.5

Mean Conc (ug/L): 26.2 SD: 0.56 RSD(%): 2.15

Standard number 2 applied. [25.0]
Correlation coefficient: 0.99832 Slope: 0.0066


Display Calibration - C:\AA
S3
S2
S1
Linear
Concentration
0.0
50.0

Element File: BE.GEL Element: Be 234.9
Date: 11/10/97 Time: 11:48 Slit: 0.7 L
Data File: EB180.DAT ID/Wt File: EB180.IDW Lamp Current: 30
Technique: HGA Calib. Type: Linear Energy: 66

Be ID: STD BLANK Seq. No.: 00008 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 0

Be ID: STD BLANK Seq. No.: 00009 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 0

Be ID: STD BLANK Seq. No.: 00010 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 0

Be ID: ICV=15.0ug/L Seq. No.: 00011 A/S Pos.: 4 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 4
Replicate 1 Time: 11:56
Peak Area (A-s): 0.105 Peak Height (A): 0.271
Background Pk Area (A-s): 0.189 Background Pk Height (A): 0.374
Blank Corrected Pk Area (A-s): 0.103
Concentration (ug/L): 15.6

uL dispensed: 5 from 0, 5 from 40, 10 from 4
Replicate 2 (Peak Stored) Time: 11:58
Peak Area (A-s): 0.099 Peak Height (A): 0.254
Background Pk Area (A-s): 0.182 Background Pk Height (A): 0.366
Blank Corrected Pk Area (A-s): 0.097
Concentration (ug/L): 14.6

Mean Conc (ug/L): 15.1 SD: 0.68 RSD(%): 4.48

QC sample is within range 13.5 - 16.5

Be ID: ICB Seq. No.: 00012 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 12:01
Peak Area (A-s): 0.001 Peak Height (A): 0.003
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.016
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

uL dispensed: 5 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 12:03
Peak Area (A-s): 0.001 Peak Height (A): 0.003
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.015
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.2

Mean Conc (ug/L): -0.2 SD: 0.02 RSD(%): 8.89

QC sample is within range -1.0 - 1.0

Be -- Seq. No.: 00013 A/S Pos.: 6 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 6
Replicate 1 Time: 12:17
Peak Area (A-s): 0.001 Peak Height (A): 0.003
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.015
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

uL dispensed: 5 from 0, 5 from 40, 10 from 6
Replicate 2 (Peak Stored) Time: 12:20
Peak Area (A-s): 0.001 Peak Height (A): 0.003
Background Pk Area (A-s): 0.007 Background Pk Height (A): 0.015
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

Mean Conc (ug/L): -0.2 SD: 0.01 RSD(%): 5.29

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Be ID: 43452 MB Seq. No.: 00014 A/S Pos.: 7 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 7
Replicate 1 Time: 12:22
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.015
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

uL dispensed: 5 from 0, 5 from 40, 10 from 7
Replicate 2 (Peak Stored) Time: 12:25
Peak Area (A-s): 0.001 Peak Height (A): 0.003
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.016
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

Mean Conc (ug/L): -0.2 SD: 0.03 RSD(%): 13.18

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Be ID: 43452 LCS Seq. No.: 00015 A/S Pos.: 8 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 8
Replicate 1 Time: 12:27
Peak Area (A-s): 0.294 Peak Height (A): 0.584
Background Pk Area (A-s): 0.428 Background Pk Height (A): 0.690
Blank Corrected Pk Area (A-s): 0.292
Concentration (ug/L): 44.3

uL dispensed: 5 from 0, 5 from 40, 10 from 8
Replicate 2 (Peak Stored) Time: 12:30
Peak Area (A-s): 0.305 Peak Height (A): 0.596
Background Pk Area (A-s): 0.443 Background Pk Height (A): 0.697
Blank Corrected Pk Area (A-s): 0.303
Concentration (ug/L): 45.9

Mean Conc (ug/L): 45.1 SD: 1.14 RSD(%): 2.52

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Be    ID: 185-26-1C          Seq. No.: 00016    A/S Pos.: 7      Date: 11/10/9

uL dispensed: 5 from 0, 5 from 40, 10 from 9
The background signal is changing during BOC measurement.
Replicate  1                              Time: 12:32
Peak Area (A-s): 0.017                    Peak Height (A): 0.042
Background Pk Area (A-s): 0.119           Background Pk Height (A): 0.213
Blank Corrected Pk Area (A-s): 0.015
Concentration (ug/L  ): 2.2

uL dispensed: 5 from 0, 5 from 40, 10 from 9
Replicate  2 (Peak Stored)                Time: 12:34
Peak Area (A-s): 0.006                    Peak Height (A): 0.021
Background Pk Area (A-s): 0.099           Background Pk Height (A): 0.226
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L  ): 0.6

Mean Conc  (ug/L  ):        1.4           SD: 1.15              RSD(%): 82.00

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188-52-1,2, 11/20/97 NC
Be    ID: 185-26-1C          Seq. No.: 00017    A/S Pos.: 9      Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 9
Replicate  1                              Time: 12:37
Peak Area (A-s): 0.005                    Peak Height (A): 0.026
Background Pk Area (A-s): 0.103           Background Pk Height (A): 0.268
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L  ): 0.4

uL dispensed: 5 from 0, 5 from 40, 10 from 9
Replicate  2 (Peak Stored)                Time: 12:39
Peak Area (A-s): 0.004                    Peak Height (A): 0.022
Background Pk Area (A-s): 0.105           Background Pk Height (A): 0.192
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L  ): 0.3

Mean Conc  (ug/L  ):        0.3           SD: 0.10              RSD(%): 30.34

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188-52-1,2, 11/20/97 NC
Be    ID: 185-26-1C PDS      Seq. No.: 00018    A/S Pos.: 9      Date: 11/10/97

uL dispensed: 5 from 40, 5 from 2, 10 from 9
Replicate  1                              Time: 12:42
Peak Area (A-s): 0.004                    Peak Height (A): 0.021
Background Pk Area (A-s): 0.108           Background Pk Height (A): 0.226
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L  ): 0.3

uL dispensed: 5 from 40, 5 from 2, 10 from 9
Replicate  2 (Peak Stored)                Time: 12:44
Peak Area (A-s): 0.004                    Peak Height (A): 0.031
Background Pk Area (A-s): 0.110           Background Pk Height (A): 0.249
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L  ): 0.2

Mean Conc  (ug/L  ):        0.2           SD: 0.06              RSD(%): 24.84

Recovery is -1.6%   (outside of specified limits)
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Be ID: 185-26-1C F P> Seq. No.: 00019 A/S Pos.: 9 Date: 11/10/97

uL dispensed: 5 from 40, 5 from 2, 10 from 9
Replicate 1 Time: 12:47
Peak Area (A-s): 0.004 Peak Height (A): 0.031
Background Pk Area (A-s): 0.109 Background Pk Height (A): 0.245
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.2

uL dispensed: 5 from 40, 5 from 2, 10 from 9
Replicate 2 (Peak Stored) Time: 12:49
Peak Area (A-s): 0.004 Peak Height (A): 0.025
Background Pk Area (A-s): 0.108 Background Pk Height (A): 0.246
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.2

Mean Conc (ug/L): 0.2 SD: 0.05 RSD(%): 21.72

Recovery is -2.2% (outside of specified limits)

188-52-1,2 11/13/97 ne

Be ID: 185-26-1C L Seq. No.: 00020 A/S Pos.: 10 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 10
Replicate 1 Time: 12:52
Peak Area (A-s): 0.001 Peak Height (A): 0.022
Background Pk Area (A-s): 0.084 Background Pk Height (A): 0.161
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

uL dispensed: 5 from 0, 5 from 40, 10 from 10
Replicate 2 (Peak Stored) Time: 12:54
Peak Area (A-s): 0.000 Peak Height (A): 0.022
Background Pk Area (A-s): 0.078 Background Pk Height (A): 0.149
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

Mean Conc (ug/L): -0.2 SD: 0.07 RSD(%): 31.79

188-52-1,2 11/13/97 ne

Be ID: 185-26-1C L Seq. No.: 00021 A/S Pos.: 10 Date: 11/10/97

uL dispensed: 5 from 40, 5 from 2, 10 from 10
Replicate 1 Time: 12:57
Peak Area (A-s): 0.003 Peak Height (A): 0.023
Background Pk Area (A-s): 0.082 Background Pk Height (A): 0.144
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.0

uL dispensed: 5 from 40, 5 from 2, 10 from 10
Replicate 2 (Peak Stored) Time: 12:59
Peak Area (A-s): 0.003 Peak Height (A): 0.027
Background Pk Area (A-s): 0.082 Background Pk Height (A): 0.146
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.1

Mean Conc (ug/L): 0.1 SD: 0.08 RSD(%): 89.22

Recovery is 6.5% (outside of specified limits)

Be ID: 185-26-2C 11/14/97 Seq. No.: 00022 A/S Pos.: 11 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 11
Replicate 1 Time: 13:02
Peak Area (A-s): -0.008 Peak Height (A): 0.042
Background Pk Area (A-s): 0.134 Background Pk Height (A): 0.242
Blank Corrected Pk Area (A-s): -0.006
Concentration (ug/L): -0.9

uL dispensed: 5 from 0, 5 from 40, 10 from 11
Replicate 2 (Peak Stored) Time: 13:04
Peak Area (A-s): -0.005 Peak Height (A): 0.046
Background Pk Area (A-s): 0.140 Background Pk Height (A): 0.227
Blank Corrected Pk Area (A-s): -0.008
Concentration (ug/L): -1.1

Mean Conc (ug/L): -1.0 SD: 0.20 RSD(%): 20.04

Be ID: CCV=30.0ug/L Seq. No.: 00023 A/S Pos.: 5 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 5
Replicate 1 Time: 13:06
Peak Area (A-s): 0.234 Peak Height (A): 0.512
Background Pk Area (A-s): 0.356 Background Pk Height (A): 0.620
Blank Corrected Pk Area (A-s): 0.232
Concentration (ug/L): 35.1

uL dispensed: 5 from 0, 5 from 40, 10 from 5
Replicate 2 (Peak Stored) Time: 13:09
Peak Area (A-s): 0.226 Peak Height (A): 0.510
Background Pk Area (A-s): 0.345 Background Pk Height (A): 0.603
Blank Corrected Pk Area (A-s): 0.223
Concentration (ug/L): 33.9

Mean Conc (ug/L): 34.5 SD: 0.90 RSD(%): 2.62

QC sample is within range 24.0 - 36.0

Be ID: CCB Seq. No.: 00024 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 13:11
Peak Area (A-s): 0.002 Peak Height (A): 0.004
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.024
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.1

uL dispensed: 5 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 13:14
Peak Area (A-s): 0.001 Peak Height (A): 0.003
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.022
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

QC sample is within range -1.0 - 1.0

188-52-5,6, 11/20/97 RE

Be ID: 185-26-3C Seq. No.: 00025 A/S Pos.: 12 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 12
Replicate 1 Time: 13:16
Peak Area (A-s): -0.006 Peak Height (A): 0.041
Background Pk Area (A-s): 0.103 Background Pk Height (A): 0.187
Blank Corrected Pk Area (A-s): -0.008
Concentration (ug/L): -1.2

uL dispensed: 5 from 0, 5 from 40, 10 from 12
Replicate 2 (Peak Stored) Time: 13:18
Peak Area (A-s): -0.007 Peak Height (A): 0.029
Background Pk Area (A-s): 0.099 Background Pk Height (A): 0.186
Blank Corrected Pk Area (A-s): -0.009
Concentration (ug/L): -1.4

Mean Conc (ug/L): -1.3 SD: 0.15 RSD(%): 11.12

188-52-9,10, 11/20/97 RE

Be ID: 185-26-4C Seq. No.: 00026 A/S Pos.: 13 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 13
Replicate 1 Time: 13:21
Peak Area (A-s): -0.000 Peak Height (A): 0.007
Background Pk Area (A-s): 0.064 Background Pk Height (A): 0.145
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.4

uL dispensed: 5 from 0, 5 from 40, 10 from 13
Replicate 2 (Peak Stored) Time: 13:23
Peak Area (A-s): 0.000 Peak Height (A): 0.007
Background Pk Area (A-s): 0.057 Background Pk Height (A): 0.131
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.4

Mean Conc (ug/L): -0.4 SD: 0.01 RSD(%): 3.25

188-52-11,12, 11/20/97 RE

Be ID: 185-26-5C Seq. No.: 00027 A/S Pos.: 14 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 14
Replicate 1 Time: 13:25
Peak Area (A-s): -0.000 Peak Height (A): 0.011
Background Pk Area (A-s): 0.071 Background Pk Height (A): 0.142
Blank Corrected Pk Area (A-s): -0.003
Concentration (ug/L): -0.4

uL dispensed: 5 from 0, 5 from 40, 10 from 14
Replicate 2 (Peak Stored) Time: 13:28
Peak Area (A-s): 0.000 Peak Height (A): 0.012
Background Pk Area (A-s): 0.065 Background Pk Height (A): 0.131
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

Mean Conc (ug/L): -0.4 SD: 0.06

Be ID: 185-26-6C Seq. No.: 00028 A/S Pos.: 15 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 15
Replicate 1 Time: 13:30
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.035 Background Pk Height (A): 0.080
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

uL dispensed: 5 from 0, 5 from 40, 10 from 15
Replicate 2 (Peak Stored) Time: 13:32
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.030 Background Pk Height (A): 0.063
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

Mean Conc (ug/L): -0.2 SD: 0.03 RSD(%): 14.97

Be ID: 185-26-7C Seq. No.: 00029 A/S Pos.: 16 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 16
Replicate 1 Time: 13:35
Peak Area (A-s): 0.000 Peak Height (A): 0.003
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.025
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

uL dispensed: 5 from 0, 5 from 40, 10 from 16
Replicate 2 (Peak Stored) Time: 13:37
Peak Area (A-s): 0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.024
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

Mean Conc (ug/L): -0.3 SD: 0.01 RSD(%): 3.87

Be ID: 185-26-8E Seq. No.: 00030 A/S Pos.: 17 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 17
Replicate 1 Time: 13:39
Peak Area (A-s): 0.002 Peak Height (A): 0.014
Background Pk Area (A-s): 0.119 Background Pk Height (A): 0.181
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.0

uL dispensed: 5 from 0, 5 from 40, 10 from 17
Replicate 2 (Peak Stored) Time: 13:42
Peak Area (A-s): 0.003 Peak Height (A): 0.015
Background Pk Area (A-s): 0.126 Background Pk Height (A): 0.169
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.1

Mean Conc (ug/L): 0.1 SD: 0.06 RSD(%): 97.13

Be ID: 185-26-8H Seq. No.: 00031 A/S Pos.: 18 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 18
Replicate 1 Time: 13:44
Peak Area (A-s): 0.000 Peak Height (A): 0.003
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.037
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

uL dispensed: 5 from 0, 5 from 40, 10 from 18
Replicate 2 (Peak Stored) Time: 13:46
Peak Area (A-s): 0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.023
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

Mean Conc (ug/L): -0.3 SD: 0.01 RSD(%): 4.62

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188-52-7,8, 11/10/97

Be ID: 185-26-9C Seq. No.: 00032 A/S Pos.: 19 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 19
The background signal is changing during BOC measurement.
Replicate 1 Time: 13:49
Peak Area (A-s): -0.009 Peak Height (A): 0.035
Background Pk Area (A-s): 0.107 Background Pk Height (A): 0.214
Blank Corrected Pk Area (A-s): -0.011
Concentration (ug/L): -1.7

uL dispensed: 5 from 0, 5 from 40, 10 from 19
Replicate 2 (Peak Stored) Time: 13:51
Peak Area (A-s): -0.011 Peak Height (A): 0.033
Background Pk Area (A-s): 0.124 Background Pk Height (A): 0.224
Blank Corrected Pk Area (A-s): -0.013
Concentration (ug/L): -2.0

Mean Conc (ug/L): -1.8 SD: 0.19 RSD(%): 10.40

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188-52-15,16, 11/10/97

Be ID: 185-26-10C Seq. No.: 00033 A/S Pos.: 20 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 20
Replicate 1 Time: 13:53
Peak Area (A-s): 0.000 Peak Height (A): 0.005
Background Pk Area (A-s): 0.049 Background Pk Height (A): 0.103
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

uL dispensed: 5 from 0, 5 from 40, 10 from 20
Replicate 2 (Peak Stored) Time: 13:56
Peak Area (A-s): 0.001 Peak Height (A): 0.010
Background Pk Area (A-s): 0.037 Background Pk Height (A): 0.079
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

Mean Conc (ug/L): -0.3 SD: 0.04 RSD(%): 15.61

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Be    ID: 185-26-1D          Seq. No.: 00034    A/S Pos.: 21    Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 21
Replicate  1                              Time: 13:58
Peak Area (A-s): 0.001                    Peak Height (A): 0.011
Background Pk Area (A-s): 0.022           Background Pk Height (A): 0.054
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L  ): -0.2

uL dispensed: 5 from 0, 5 from 40, 10 from 21
Replicate  2 (Peak Stored)                Time: 14:00
Peak Area (A-s): 0.001                    Peak Height (A): 0.005
Background Pk Area (A-s): 0.020           Background Pk Height (A): 0.050
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L  ): -0.2

Mean Conc  (ug/L  ):       -0.2          SD: 0.02                RSD(%): 9.81

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Be    ID: 185-26-1D          Seq. No.: 00035    A/S Pos.: 21    Date: 11/10/97

uL dispensed: 5 from 40, 5 from 2, 10 from 21
Replicate  1                              Time: 14:03
Peak Area (A-s): 0.305                    Peak Height (A): 0.572
Background Pk Area (A-s): 0.451           Background Pk Height (A): 0.701
Blank Corrected Pk Area (A-s): 0.303
Concentration (ug/L  ): 45.9

uL dispensed: 5 from 40, 5 from 2, 10 from 21
Replicate  2 (Peak Stored)                Time: 14:05
Peak Area (A-s): 0.312                    Peak Height (A): 0.603
Background Pk Area (A-s): 0.460           Background Pk Height (A): 0.698
Blank Corrected Pk Area (A-s): 0.310
Concentration (ug/L  ): 47.0

Mean Conc  (ug/L  ):       46.5          SD: 0.76                RSD(%): 1.64

Recovery is 933.4%  (outside of specified limits)

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Be    ID: CCV=30.0ug/L       Seq. No.: 00036    A/S Pos.: 5     Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 5
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Be    ID: CCV=30.0ug/L       Seq. No.: 00037    A/S Pos.: 5     Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 5
Replicate  1                              Time: 14:10
Peak Area (A-s): 0.226                    Peak Height (A): 0.529
Background Pk Area (A-s): 0.348           Background Pk Height (A): 0.624
Blank Corrected Pk Area (A-s): 0.224
Concentration (ug/L  ): 34.0

uL dispensed: 5 from 0, 5 from 40, 10 from 5
Replicate  2 (Peak Stored)                Time: 14:12
Peak Area (A-s): 0.220                    Peak Height (A): 0.514
Background Pk Area (A-s): 0.342           Background Pk Height (A): 0.598
Blank Corrected Pk Area (A-s): 0.217
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Conc

Mean Conc (ug/L): 33.4 SD: 0.73 RSD(%): 2.18

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Be ID: CCB Seq. No.: 00038 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 14:15
Peak Area (A-s): 0.002 Peak Height (A): 0.004
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.026
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L): -0.1

uL dispensed: 5 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 14:17
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.026
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.1

Mean Conc (ug/L): -0.1 SD: 0.05 RSD(%): 53.84

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Be ID: 185-26-1D L Seq. No.: 00039 A/S Pos.: 22 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 22
Replicate 1 Time: 14:19
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.035
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

uL dispensed: 5 from 0, 5 from 40, 10 from 22
Replicate 2 (Peak Stored) Time: 14:22
Peak Area (A-s): 0.002 Peak Height (A): 0.005
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.033
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.1

Mean Conc (ug/L): -0.2 SD: 0.07 RSD(%): 43.10

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Be ID: 185-26-1D L Seq. No.: 00040 A/S Pos.: 22 Date: 11/10/97

uL dispensed: 5 from 40, 5 from 1, 10 from 22
Replicate 1 Time: 14:24
Peak Area (A-s): 0.170 Peak Height (A): 0.409
Background Pk Area (A-s): 0.283 Background Pk Height (A): 0.521
Blank Corrected Pk Area (A-s): 0.168
Concentration (ug/L): 25.4

uL dispensed: 5 from 40, 5 from 1, 10 from 22
Replicate 2 (Peak Stored) Time: 14:27
Peak Area (A-s): 0.174 Peak Height (A): 0.391
Background Pk Area (A-s): 0.288 Background Pk Height (A): 0.507
Blank Corrected Pk Area (A-s): 0.172
Concentration (ug/L): 26.1
~~~~~~

Mean Conc (ug/L): [illegible] SD: [illegible]

Recovery is 103.7%

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Be ID: 185-26-2D/12 04/11-11-97 Seq. No.: 00041 A/S Pos.: 23 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 23
Replicate 1 Time: 14:29
Peak Area (A-s): 0.026 Peak Height (A): 0.063
Background Pk Area (A-s): 0.114 Background Pk Height (A): 0.151
Blank Corrected Pk Area (A-s): 0.024
Concentration (ug/L): 3.6

uL dispensed: 5 from 0, 5 from 40, 10 from 23
Replicate 2 (Peak Stored) Time: 14:32
Peak Area (A-s): 0.024 Peak Height (A): 0.060
Background Pk Area (A-s): 0.119 Background Pk Height (A): 0.166
Blank Corrected Pk Area (A-s): 0.022
Concentration (ug/L): 3.3

Mean Conc (ug/L): 3.5 SD: 0.18 RSD(%): 5.18

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Be ID: 185-26-3D Seq. No.: 00042 A/S Pos.: 24 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 24
Replicate 1 Time: 14:34
Peak Area (A-s): 0.004 Peak Height (A): 0.008
Background Pk Area (A-s): 0.037 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.3

uL dispensed: 5 from 0, 5 from 40, 10 from 24
Replicate 2 (Peak Stored) Time: 14:37
Peak Area (A-s): 0.004 Peak Height (A): 0.010
Background Pk Area (A-s): 0.035 Background Pk Height (A): 0.070
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.3

Mean Conc (ug/L): 0.3 SD: 0.02 RSD(%): 7.14

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Be ID: 185-26-4D Seq. No.: 00043 A/S Pos.: 25 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 25
Replicate 1 Time: 14:39
Peak Area (A-s): 0.000 Peak Height (A): 0.005
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.031
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

uL dispensed: 5 from 0, 5 from 40, 10 from 25
Replicate 2 (Peak Stored) Time: 14:42
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.033
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2
~~~~~~

Mean -0.2 SD: 0.05 RSD(%): 19.96

Be ID: 185-26-5D Seq. No.: 00044 A/S Pos.: 26 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 26
Replicate 1 Time: 14:44
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.033
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

uL dispensed: 5 from 0, 5 from 40, 10 from 26
Replicate 2 (Peak Stored) Time: 14:47
Peak Area (A-s): 0.000 Peak Height (A): 0.005
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.035
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

Mean Conc (ug/L): -0.3 SD: 0.03 RSD(%): 10.32

Be ID: 185-26-6D Seq. No.: 00045 A/S Pos.: 27 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 27
Replicate 1 Time: 14:49
Peak Area (A-s): 0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.030
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

uL dispensed: 5 from 0, 5 from 40, 10 from 27
Replicate 2 (Peak Stored) Time: 14:51
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.030
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

Mean Conc (ug/L): -0.3 SD: 0.04 RSD(%): 13.62

Be ID: 185-26-7CD Seq. No.: 00046 A/S Pos.: 28 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 28
Replicate 1 Time: 14:54
Peak Area (A-s): 0.002 Peak Height (A): 0.005
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.028
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.1

uL dispensed: 5 from 0, 5 from 40, 10 from 28
Replicate 2 (Peak Stored) Time: 14:56
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.027
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.2

Mean Conc (ug/L): -0.2 SD: 0.09 RSD(%): 53.31

Be ID: CCV=30.0ug/L Seq. No.: 00047 A/S Pos.: 5 Date: 11/10/9

uL dispensed: 5 from 0, 5 from 40, 10 from 5
Replicate 1 Time: 14:59
Peak Area (A-s): 0.216 Peak Height (A): 0.509
Background Pk Area (A-s): 0.338 Background Pk Height (A): 0.595
Blank Corrected Pk Area (A-s): 0.214
Concentration (ug/L): 32.4

uL dispensed: 5 from 0, 5 from 40, 10 from 5
Replicate 2 (Peak Stored) Time: 15:01
Peak Area (A-s): 0.217 Peak Height (A): 0.511
Background Pk Area (A-s): 0.340 Background Pk Height (A): 0.598
Blank Corrected Pk Area (A-s): 0.214
Concentration (ug/L): 32.5

Mean Conc (ug/L): 32.5 SD: 0.03 RSD(%): 0.10

QC sample is within range 24.0 - 36.0

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Be ID: CCB Seq. No.: 00048 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 15:04
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.025
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

uL dispensed: 5 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 15:06
Peak Area (A-s): 0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.025
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

Mean Conc (ug/L): -0.2 SD: 0.00 RSD(%): 1.62

QC sample is within range -1.0 - 1.0

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Be ID: 185-26-8DE Seq. No.: 00049 A/S Pos.: 29 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 29
Replicate 1 Time: 15:08
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.022 Background Pk Height (A): 0.049
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

uL dispensed: 5 from 0, 5 from 40, 10 from 29
Replicate 2 (Peak Stored) Time: 15:11
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.022 Background Pk Height (A): 0.046
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

Mean -0.2 SD: 0.03 RSD(%): 10.66

Be ID: 185-26-9D Seq. No.: 00050 A/S Pos.: 30 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 30
Replicate 1 Time: 15:13
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.029
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

uL dispensed: 5 from 0, 5 from 40, 10 from 30
Replicate 2 (Peak Stored) Time: 15:15
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.030
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.2

Mean Conc (ug/L): -0.3 SD: 0.02 RSD(%): 7.88

Be ID: 185-26-10D Seq. No.: 00051 A/S Pos.: 31 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 31
Replicate 1 Time: 15:18
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.028
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

uL dispensed: 5 from 0, 5 from 40, 10 from 31
Replicate 2 (Peak Stored) Time: 15:20
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.031
Blank Corrected Pk Area (A-s): -0.002
Concentration (ug/L): -0.3

Mean Conc (ug/L): -0.2 SD: 0.03 RSD(%): 13.77

Be ID: CCV=30.0ug/L Seq. No.: 00052 A/S Pos.: 5 Date: 11/10/97

uL dispensed: 5 from 0, 5 from 40, 10 from 5
Replicate 1 Time: 15:22
Peak Area (A-s): 0.224 Peak Height (A): 0.501
Background Pk Area (A-s): 0.348 Background Pk Height (A): 0.621
Blank Corrected Pk Area (A-s): 0.222
Concentration (ug/L): 33.6

uL dispensed: 5 from 0, 5 from 40, 10 from 5
Replicate 2 (Peak Stored) Time: 15:25
Peak Area (A-s): 0.215 Peak Height (A): 0.484
Background Pk Area (A-s): 0.338 Background Pk Height (A): 0.581
Blank Corrected Pk Area (A-s): 0.213
Concentration (ug/L): 32.2

Mean Conc (ug/L): 32.9 SD: 1.00 RSD(%): 3.05

QC sample is within range 24.0 - 36.0

Be ID: CCB Seq. No.: 00053 A/S Pos.: 0 Date: 11/10/

uL dispensed: 5 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 15:27
Peak Area (A-s): 0.002 Peak Height (A): 0.005
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.024
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.1

uL dispensed: 5 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 15:30
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.025
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.2

Mean Conc (ug/L): -0.1 SD: 0.04 RSD(%): 31.31

QC sample is within range -1.0 - 1.0

Element File: BEMSA.GEL ID/Weight File: EB180.IDW

SRB 11/10/97

Loc.	Concentration		Solutions
0			Calib. Blank / Diluent
1	50.0 ug/L		Stock 1-64-2P SRB 11/10/97
6			CHECK LO
7			43452 MB
8			43452 LCS
9		188-52-1, 2,	185-26-1C
10		188-52-1, 2,	185-26-1C L
11		188-52-3, 4,	185-26-2C
12		188-52-5, 6,	185-26-3C
13		188-52-9, 10,	185-26-4C
14		188-52-11, 12,	185-26-5C
15		188-52-13, 14,	185-26-6C
16		188-52-17, 18,	185-26-7C
17		188-52-19, 20,	185-26-8E
18			185-26-8H
19		188-52-7, 8,	185-26-9C
20		188-52-15, 16,	185-26-10C
21			185-26-1D
22			185-26-1D L
23			185-26-2D, 12 ~~11/19/97~~ EE
24			185-26-3D
25			185-26-4D
26			185-26-5D
27			185-26-6D
28			185-26-7CD
29			185-26-8DE
30			185-26-9D
31			185-26-10D
40			Modifier 1

M2 11/14/97

EE

MSAs only on these samples SRB 11/10/97

Element File: BEMSA.GEL
Element: Be — Analyst: BENNETT
Print Data: Main+Suppl. — Peak Storage: 1 Repl./Sample
Print: Calib. Curve

INSTRUMENT: 4100 ZL — Technique: HGA — Version: 7.30
Wavelength: 234.9 Peak — Slit: 0.7 Low
Signal Type: Zeeman AA — Signal Measurement: Peak Area
Read Time: 3.0 — Read Delay: 0.0 — BOC Time: 2
Sample Replicates: 2
Standard Replicates: 2 — Spike Replicates: Same as Sample

CALIBRATION:

Solutions	ID	Conc	Location	Volume	Diluent Volume	Modifier #1	Modifier #2
Calib. Blank	STD BLANK		0	10	10	5	
Standard 1	STD1= 10 ug/L	10.0	1	2	13	5	
Standard 2	STD2= 25 ug/L	25.0	1	5	10	5	
Samples				10	10	5	

Diluent Location: 0
Modifier #1 Location: 40 — Modifier #2 Location:
Calibration Units: ug/L — Sample Units: ug/L
Calibration Type: Method of Add.

Furnace Time/Temperature Program:

Step	Temp	Ramp	Hold	Gas Flow	Read	Gas Type
1	110	1	25	250		Norm
2	130	1	20	250		Norm
3	1500	5	15	250		Norm
4	2300	0	3	0	*	Norm
5	2500	1	5	250		Norm

Injection Temp: 20 — Pipette Speed: 85% — Extraction System: Off

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SEQUENCE:

Step	Action and Parameters
1	Pipet diluent + modifier 1 + spike + sample/std
2	Run HGA steps 1 to End
3	Extra washes: 1

CHECKS:
Additions Preparation: Automated
Periodic Autozero Locations: All Samples

If %RSD > 20.0 and Peak Area > .005 then Retry 1 times
Check %RSD on: Samples + Additions

QC:
Matrix Check Calculations:
% Difference for Dupls: No Locations:
% Recovery for Spike: No Locations: Conc:

Element File: BEMSA.GEL | Element: Be | Wavelength: 234.9
Date: 11/10/97 | Time: 15:31 | Slit: 0.7 L
Data File: EB180.DAT | ID/Wt File: EB180.IDW | Lamp Current: 30
Technique: HGA | Calib. Type: Method of Add. | Energy: 66

Be ID: STD BLANK Seq. No.: 00054 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 15:33
Peak Area (A-s): 0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.027
Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 15:36
Peak Area (A-s): 0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.027
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): 0.000 SD: 0.0001 RSD(%): 41.90

Auto-zero performed.

188-32-1,2 11/12/97 ML

Be ID: 185-26-1C Seq. No.: 00055 A/S Pos.: 9 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 9
Replicate 1 Time: 15:38
Peak Area (A-s): 0.008 Peak Height (A): 0.044
Background Pk Area (A-s): 0.208 Background Pk Height (A): 0.372
Blank Corrected Pk Area (A-s): 0.008

uL dispensed: 10 from 0, 5 from 40, 10 from 9
Replicate 2 (Peak Stored) Time: 15:41
Peak Area (A-s): 0.008 Peak Height (A): 0.067
Background Pk Area (A-s): 0.198 Background Pk Height (A): 0.345
Blank Corrected Pk Area (A-s): 0.007

Mean Pk Area (A-s): 0.007 SD: 0.0005 RSD(%): 6.22

Be ID: STD1= 5 ug/L Seq. No.: 00056 A/S Pos.: 9 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 1, 10 from 9
Replicate 1 Time: 15:44
Peak Area (A-s): 0.005 Peak Height (A): 0.092
Background Pk Area (A-s): 0.193 Background Pk Height (A): 0.341
Blank Corrected Pk Area (A-s): 0.005

uL dispensed: 5 from 40, 10 from 1, 10 from 9
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 15:47
Peak Area (A-s): 0.006 Peak Height (A): 0.072
Background Pk Area (A-s): 0.183 Background Pk Height (A): 0.333
Blank Corrected Pk Area (A-s): 0.005

Mean Pk Area (A-s): 0.005 SD: 0.0004 RSD(%): 7.65

uL dispensed: 5 from 40, 10 from 2, 10 from 9
The background signal is changing during BOC measurement.
Replicate 1 Time: 15:49
Peak Area (A-s): 0.006 Peak Height (A): 0.052
Background Pk Area (A-s): 0.184 Background Pk Height (A): 0.327
Blank Corrected Pk Area (A-s): 0.005

uL dispensed: 5 from 40, 10 from 2, 10 from 9
Replicate 2 (Peak Stored) Time: 15:52
Peak Area (A-s): 0.006 Peak Height (A): 0.057
Background Pk Area (A-s): 0.191 Background Pk Height (A): 0.393
Blank Corrected Pk Area (A-s): 0.006

Mean Pk Area (A-s): 0.005 SD: 0.0003 RSD(%): 5.48

Standard abs. & conc. values are not in the same order.
Be ID: 185-26-1C Seq. No.: 00055 A/S Pos.: 9 Date: 11/10/9

Concentration (ug/L): --------

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Be ID: STD BLANK Seq. No.: 00058 A/S Pos.: 0 Date: 11/10/9

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 15:55
Peak Area (A-s): -0.000 Peak Height (A): 0.005
Background Pk Area (A-s): 0.020 Background Pk Height (A): 0.040
Blank Corrected Pk Area (A-s): -0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 15:57
Peak Area (A-s): 0.000 Peak Height (A): 0.005
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.029
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): -0.000 SD: 0.0003 RSD(%): 86.13

Auto-zero performed.

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188-52-1,2, 11/20/97 ne

Be ID: 185-26-1C L Seq. No.: 00059 A/S Pos.: 10 Date: 11/10/9

uL dispensed: 10 from 0, 5 from 40, 10 from 10
Replicate 1 Time: 16:00
Peak Area (A-s): 0.004 Peak Height (A): 0.038
Background Pk Area (A-s): 0.136 Background Pk Height (A): 0.247
Blank Corrected Pk Area (A-s): 0.004

uL dispensed: 10 from 0, 5 from 40, 10 from 10
Replicate 2 (Peak Stored) Time: 16:03
Peak Area (A-s): 0.005 Peak Height (A): 0.047
Background Pk Area (A-s): 0.138 Background Pk Height (A): 0.256
Blank Corrected Pk Area (A-s): 0.004

Mean Pk Area (A-s): 0.004 SD: 0.0005 RSD(%): 11.16

Be ID: STD1= 5 ug/L Seq. No.: 00060 A/S Pos.: 10 Date: 11/10/9

uL dispensed: [illegible], 10 from 1, 10 from 10
Replicate 1 Time: 16:06
Peak Area (A-s): 0.042 Peak Height (A): 0.132
Background Pk Area (A-s): 0.198 Background Pk Height (A): 0.335
Blank Corrected Pk Area (A-s): 0.042

uL dispensed: 5 from 40, 10 from 1, 10 from 10
Replicate 2 (Peak Stored) Time: 16:08
Peak Area (A-s): 0.045 Peak Height (A): 0.119
Background Pk Area (A-s): 0.205 Background Pk Height (A): 0.353
Blank Corrected Pk Area (A-s): 0.045

Mean Pk Area (A-s): 0.044 SD: 0.0021 RSD(%): 4.86

Be ID: STD2= 10 ug/L Seq. No.: 00061 A/S Pos.: 10 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 2, 10 from 10
Replicate 1 Time: 16:11
Peak Area (A-s): 0.088 Peak Height (A): 0.236
Background Pk Area (A-s): 0.266 Background Pk Height (A): 0.473
Blank Corrected Pk Area (A-s): 0.087

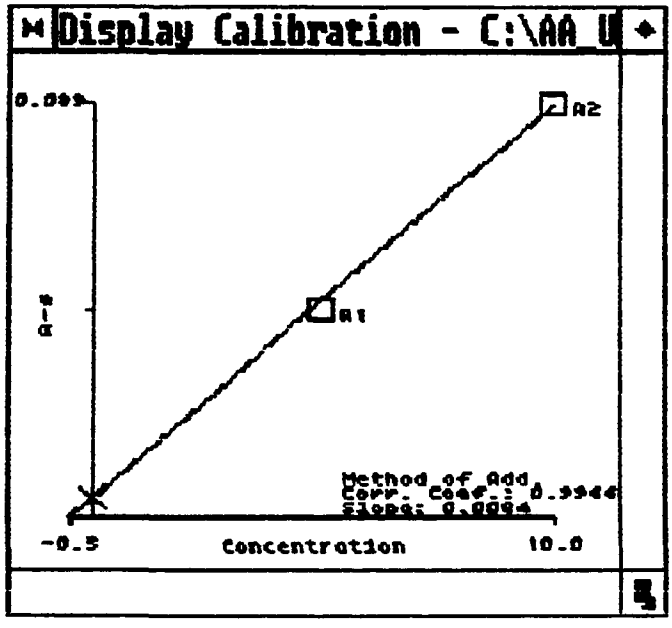
uL dispensed: 5 from 40, 10 from 2, 10 from 10
Replicate 2 (Peak Stored) Time: 16:14
Peak Area (A-s): 0.090 Peak Height (A): 0.252
Background Pk Area (A-s): 0.271 Background Pk Height (A): 0.435
Blank Corrected Pk Area (A-s): 0.090

Mean Pk Area (A-s): 0.089 SD: 0.0018 RSD(%): 2.06

Be ID: 185-26-1C L Seq. No.: 00059 A/S Pos.: 10 Date: 11/10/97

Concentration (ug/L): 0.5

Correlation coefficient: 0.99668 Slope: 0.0084



Be ID: STD BLANK Seq. No.: 00062 A/S Pos.: 0 Date: 11/10/9

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 16:17
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.032
Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 16:19
Peak Area (A-s): -0.000 Peak Height (A): 0.005
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.030
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): 0.000 SD: 0.0004 RSD(%): 435.73

Auto-zero performed.

188-52-3,4 11/10/97 nR

Be ID: 185-26-2C Seq. No.: 00063 A/S Pos.: 11 Date: 11/10/9

uL dispensed: 10 from 0, 5 from 40, 10 from 11
Replicate 1 Time: 16:22
Peak Area (A-s): -0.008 Peak Height (A): 0.117
Background Pk Area (A-s): 0.191 Background Pk Height (A): 0.397
Blank Corrected Pk Area (A-s): -0.008

uL dispensed: 10 from 0, 5 from 40, 10 from 11
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 16:25
Peak Area (A-s): -0.006 Peak Height (A): 0.141
Background Pk Area (A-s): 0.213 Background Pk Height (A): 0.433
Blank Corrected Pk Area (A-s): -0.006

Mean Pk Area (A-s): -0.007 SD: 0.0015 RSD(%): 21.23

Be ID: STD1= 5 ug/L Seq. No.: 00064 A/S Pos.: 11 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 1, 10 from 11
Replicate 1 Time: 16:28
Peak Area (A-s): -0.007 Peak Height (A): 0.082
Background Pk Area (A-s): 0.205 Background Pk Height (A): 0.438
Blank Corrected Pk Area (A-s): -0.007

uL dispensed: 5 from 40, 10 from 1, 10 from 11
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 16:30
Peak Area (A-s): -0.006 Peak Height (A): 0.173
Background Pk Area (A-s): 0.201 Background Pk Height (A): 0.469
Blank Corrected Pk Area (A-s): -0.006

Mean Pk Area (A-s): -0.007 SD: 0.0007 RSD(%): 10.24

Be ID: STD2= 10 ug/L Seq. No.: 00065 A/S Pos.: 11 Date: 11/10/9

uL dispensed: 5 from 40, 10 from 2, 10 from 11
The background signal is changing during BOC measurement.
Replicate 1 Time: 16:33

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Peak Area (A-s): -0.002                    Peak Height (A): 0.092
Background Pk Area (A-s): 0.192            Background Pk Height (A): 0.461
Blank Corrected Pk Area (A-s): -0.002

uL dispensed: 5 from 40, 10 from 2, 10 from 11
The background signal is changing during BOC measurement.
Replicate  2 (Peak Stored)                 Time: 16:36
Peak Area (A-s): -0.005                    Peak Height (A): 0.088
Background Pk Area (A-s): 0.205            Background Pk Height (A): 0.456
Blank Corrected Pk Area (A-s): -0.005

Mean Pk Area (A-s):      -0.004            SD: 0.0019                 RSD(%): 50.62

Standard abs. & conc. values are not in the same order.
Be    ID: 185-26-2C              Seq. No.: 00063    A/S Pos.: 11    Date: 11/10/97

Concentration (ug/L  ): --------

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Be    ID: STD BLANK              Seq. No.: 00066    A/S Pos.: 0     Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  1                               Time: 16:39
Peak Area (A-s): 0.001                     Peak Height (A): 0.005
Background Pk Area (A-s): 0.031            Background Pk Height (A): 0.072
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  2 (Peak Stored)                 Time: 16:41
Peak Area (A-s): 0.001                     Peak Height (A): 0.006
Background Pk Area (A-s): 0.022            Background Pk Height (A): 0.046
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s):       0.000            SD: 0.0002                 RSD(%): 37.18

Auto-zero performed.

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Be    ID: 185-26-3C              Seq. No.: 00067    A/S Pos.: 12    Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 12
The background signal is changing during BOC measurement.
Replicate  1                               Time: 16:44
Peak Area (A-s): -0.007                    Peak Height (A): 0.135
Background Pk Area (A-s): 0.191            Background Pk Height (A): 0.476
Blank Corrected Pk Area (A-s): -0.007

uL dispensed: 10 from 0, 5 from 40, 10 from 12
The background signal is changing during BOC measurement.
Replicate  2 (Peak Stored)                 Time: 16:46
Peak Area (A-s): -0.005                    Peak Height (A): 0.116
Background Pk Area (A-s): 0.192            Background Pk Height (A): 0.485
Blank Corrected Pk Area (A-s): -0.005

Mean Pk Area (A-s):      -0.006            SD: 0.0015                 RSD(%): 24.39

Be    ID: STD1= 5 ug/L           Seq. No.: 00068    A/S Pos.: 12    Date: 11/10/97

uL dispensed: 5 from 40, 10 from 1, 10 from 12
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188-52-S, 6 11/20/97 MC

The background signal is changing during BOC measurement.
Replicate 1 Time: 16:49
Peak Area (A-s): -0.005 Peak Height (A): 0.111
Background Pk Area (A-s): 0.193 Background Pk Height (A): 0.443
Blank Corrected Pk Area (A-s): -0.005

uL dispensed: 5 from 40, 10 from 1, 10 from 12
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 16:52
Peak Area (A-s): -0.004 Peak Height (A): 0.089
Background Pk Area (A-s): 0.197 Background Pk Height (A): 0.468
Blank Corrected Pk Area (A-s): -0.005

Mean Pk Area (A-s): -0.005 SD: 0.0002 RSD(%): 3.97

Be ID: STD2= 10 ug/L Seq. No.: 00069 A/S Pos.: 12 Date: 11/10/9

uL dispensed: 5 from 40, 10 from 2, 10 from 12
The background signal is changing during BOC measurement.
Replicate 1 Time: 16:55
Peak Area (A-s): -0.004 Peak Height (A): 0.119
Background Pk Area (A-s): 0.206 Background Pk Height (A): 0.518
Blank Corrected Pk Area (A-s): -0.005

uL dispensed: 5 from 40, 10 from 2, 10 from 12
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 16:58
Peak Area (A-s): -0.003 Peak Height (A): 0.102
Background Pk Area (A-s): 0.208 Background Pk Height (A): 0.512
Blank Corrected Pk Area (A-s): -0.004

Mean Pk Area (A-s): -0.004 SD: 0.0006 RSD(%): 13.69

Standard abs. & conc. values are not in the same order.
Be ID: 185-26-3C Seq. No.: 00067 A/S Pos.: 12 Date: 11/10/9

Concentration (ug/L): --------

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Be ID: STD BLANK Seq. No.: 00070 A/S Pos.: 0 Date: 11/10/9

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 17:00
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.030 Background Pk Height (A): 0.061
Blank Corrected Pk Area (A-s): -0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 17:03
Peak Area (A-s): 0.000 Peak Height (A): 0.005
Background Pk Area (A-s): 0.020 Background Pk Height (A): 0.039
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): -0.000 SD: 0.0001 RSD(%): 46.04

Auto-zero performed.
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Be ID: 185-26-4C Seq. No.: 00071 A/S Pos.: 13 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 13
Replicate 1 Time: 17:05
Peak Area (A-s): 0.002 Peak Height (A): 0.009
Background Pk Area (A-s): 0.070 Background Pk Height (A): 0.146
Blank Corrected Pk Area (A-s): 0.002

uL dispensed: 10 from 0, 5 from 40, 10 from 13
Replicate 2 (Peak Stored) Time: 17:08
Peak Area (A-s): 0.002 Peak Height (A): 0.009
Background Pk Area (A-s): 0.065 Background Pk Height (A): 0.145
Blank Corrected Pk Area (A-s): 0.001

Mean Pk Area (A-s): 0.001 SD: 0.0003 RSD(%): 25.21

Be ID: STD1= 5 ug/L Seq. No.: 00072 A/S Pos.: 13 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 1, 10 from 13
Replicate 1 Time: 17:11
Peak Area (A-s): 0.018 Peak Height (A): 0.077
Background Pk Area (A-s): 0.090 Background Pk Height (A): 0.143
Blank Corrected Pk Area (A-s): 0.017

uL dispensed: 5 from 40, 10 from 1, 10 from 13
Replicate 2 (Peak Stored) Time: 17:13
Peak Area (A-s): 0.014 Peak Height (A): 0.057
Background Pk Area (A-s): 0.080 Background Pk Height (A): 0.138
Blank Corrected Pk Area (A-s): 0.013

Mean Pk Area (A-s): 0.015 SD: 0.0029 RSD(%): 18.73

Be ID: STD2= 10 ug/L Seq. No.: 00073 A/S Pos.: 13 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 2, 10 from 13
Replicate 1 Time: 17:16
Peak Area (A-s): 0.023 Peak Height (A): 0.072
Background Pk Area (A-s): 0.089 Background Pk Height (A): 0.154
Blank Corrected Pk Area (A-s): 0.023

uL dispensed: 5 from 40, 10 from 2, 10 from 13
Replicate 2 (Peak Stored) Time: 17:19
Peak Area (A-s): 0.017 Peak Height (A): 0.059
Background Pk Area (A-s): 0.077 Background Pk Height (A): 0.132
Blank Corrected Pk Area (A-s): 0.017

Mean Pk Area (A-s): 0.020 SD: 0.0041 RSD(%): 20.99

Be ID: STD2= 10 ug/L Seq. No.: 00074 A/S Pos.: 13 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 2, 10 from 13
Replicate 1 Time: 17:22
Peak Area (A-s): 0.015 Peak Height (A): 0.053
Background Pk Area (A-s): 0.077 Background Pk Height (A): 0.125
Blank Corrected Pk Area (A-s): 0.015

uL dispensed: 5 from 40, 10 from 2, 10 from 13
Replicate 2 (Peak Stored) Time: 17:24

Peak Area (A-s): 0.012 Peak Height (A): [illegible]
Background Pk Area (A-s): 0.062 Background Pk Height (A): 0.107
Blank Corrected Pk Area (A-s): 0.012

Mean Pk Area (A-s): 0.013 SD: 0.0021 RSD(%): 15.87

Standard abs. & conc. values are not in the same order.
Be ID: 185-26-4C Seq. No.: 00071 A/S Pos.: 13 Date: 11/10/97

Concentration (ug/L): --------

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Be ID: STD BLANK Seq. No.: 00075 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 17:27
Peak Area (A-s): 0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.022
Blank Corrected Pk Area (A-s): -0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 17:30
Peak Area (A-s): 0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.017
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): -0.000 SD: 0.0002 RSD(%): 74.82

Auto-zero performed.

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188-52-11,12, 11/22/97 MR

Be ID: 185-26-5C Seq. No.: 00076 A/S Pos.: 14 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 14
Replicate 1 Time: 17:32
Peak Area (A-s): 0.003 Peak Height (A): 0.012
Background Pk Area (A-s): 0.051 Background Pk Height (A): 0.083
Blank Corrected Pk Area (A-s): 0.003

uL dispensed: 10 from 0, 5 from 40, 10 from 14
Replicate 2 (Peak Stored) Time: 17:35
Peak Area (A-s): 0.000 Peak Height (A): 0.015
Background Pk Area (A-s): 0.046 Background Pk Height (A): 0.084
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): 0.002 SD: 0.0019 RSD(%): 116.28

Be ID: STD1= 5 ug/L Seq. No.: 00077 A/S Pos.: 14 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 1, 10 from 14
Replicate 1 Time: 17:38
Peak Area (A-s): 0.004 Peak Height (A): 0.019
Background Pk Area (A-s): 0.048 Background Pk Height (A): 0.091
Blank Corrected Pk Area (A-s): 0.004

uL dispensed: 5 from 40, 10 from 1, 10 from 14
Replicate 2 (Peak Stored) Time: 17:40
Peak Area (A-s): 0.004 Peak Height (A): 0.018
Background Pk Area (A-s): 0.044 Background Pk Height (A): 0.087

Blank __ (A-s): 0.004

Mean Pk Area (A-s): 0.004 SD: 0.0002 RSD(%): 4.74

Be ID: STD2= 10 ug/L Seq. No.: 00078 A/S Pos.: 14 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 2, 10 from 14
Replicate 1 Time: 17:43
Peak Area (A-s): 0.006 Peak Height (A): 0.028
Background Pk Area (A-s): 0.047 Background Pk Height (A): 0.095
Blank Corrected Pk Area (A-s): 0.005

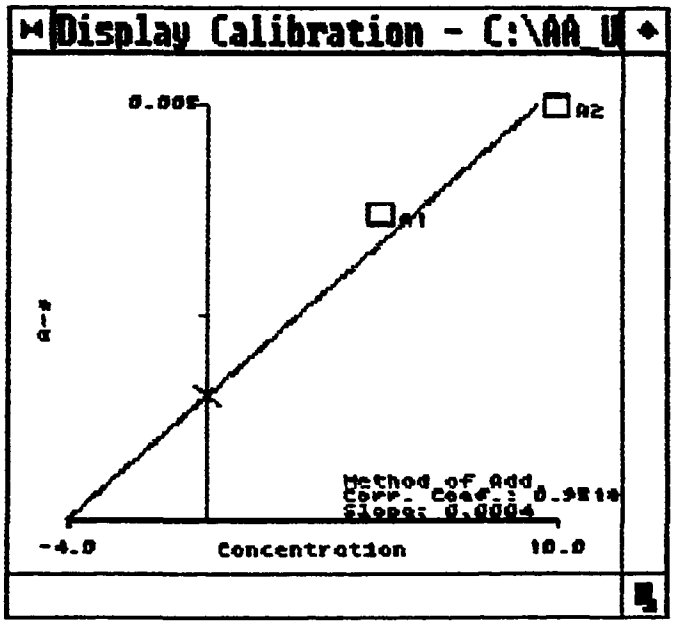
uL dispensed: 5 from 40, 10 from 2, 10 from 14
Replicate 2 (Peak Stored) Time: 17:46
Peak Area (A-s): 0.006 Peak Height (A): 0.022
Background Pk Area (A-s): 0.045 Background Pk Height (A): 0.086
Blank Corrected Pk Area (A-s): 0.005

Mean Pk Area (A-s): 0.005 SD: 0.0000 RSD(%): 0.14

The standard additions calibration curve may not be linear.
Be ID: 185-26-5C Seq. No.: 00076 A/S Pos.: 14 Date: 11/10/97

Concentration (ug/L): 4.0

Correlation coefficient: 0.95181 Slope: 0.0004



Be ID: STD BLANK Seq. No.: 00079 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 17:49
Peak Area (A-s): 0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.021
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 0

Replicate 2 (Peak Stored) Time: 17:51
Peak Area (A-s): 0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.018
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): 0.000 SD: 0.0005 RSD(%): 183.10

Auto-zero performed.

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188-32-13,14 11/20/97

Be ID: 185-26-6C Seq. No.: 00080 A/S Pos.: 15 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 15
Replicate 1 Time: 17:54
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.026
Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 15
Replicate 2 (Peak Stored) Time: 17:57
Peak Area (A-s): 0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.023
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): 0.000 SD: 0.0001 RSD(%): 124.92

Be ID: STD1= 5 ug/L Seq. No.: 00081 A/S Pos.: 15 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 1, 10 from 15
Replicate 1 Time: 17:59
Peak Area (A-s): 0.004 Peak Height (A): 0.011
Background Pk Area (A-s): 0.020 Background Pk Height (A): 0.037
Blank Corrected Pk Area (A-s): 0.003

uL dispensed: 5 from 40, 10 from 1, 10 from 15
Replicate 2 (Peak Stored) Time: 18:02
Peak Area (A-s): 0.003 Peak Height (A): 0.010
Background Pk Area (A-s): 0.020 Background Pk Height (A): 0.034
Blank Corrected Pk Area (A-s): 0.003

Mean Pk Area (A-s): 0.003 SD: 0.0004 RSD(%): 13.19

Be ID: STD2= 10 ug/L Seq. No.: 00082 A/S Pos.: 15 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 2, 10 from 15
Replicate 1 Time: 18:05
Peak Area (A-s): 0.005 Peak Height (A): 0.014
Background Pk Area (A-s): 0.024 Background Pk Height (A): 0.041
Blank Corrected Pk Area (A-s): 0.005

uL dispensed: 5 from 40, 10 from 2, 10 from 15
Replicate 2 (Peak Stored) Time: 18:07
Peak Area (A-s): 0.006 Peak Height (A): 0.014
Background Pk Area (A-s): 0.023 Background Pk Height (A): 0.041
Blank Corrected Pk Area (A-s): 0.006

Mean Pk Area (A-s): 0.005 SD: 0.0007 RSD(%): 13.80

Be ID: 185-26-6C Seq. No.: 00080 A/S Pos.: 15 Date: 11/10/97
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Conce...... (ug/L): 0.1

Correlation coefficient: 0.99173 Slope: 0.0005

Be ID: STD BLANK Seq. No.: 00083 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 18:10
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.019
Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 18:13
Peak Area (A-s): 0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.017
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): -0.000 SD: 0.0004 RSD(%): 214.00

Auto-zero performed.

Be ID: 185-26-7C Seq. No.: 00084 A/S Pos.: 16 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 16
Replicate 1 Time: 18:15
Peak Area (A-s): 0.003 Peak Height (A): 0.025
Background Pk Area (A-s): 0.081 Background Pk Height (A): 0.129
Blank Corrected Pk Area (A-s): 0.003

uL dispensed: 10 from 0, 5 from 40, 10 from 16
Replicate 2 (Peak Stored) Time: 18:18
Peak Area (A-s): -0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.018
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): 0.001 SD: 0.0025 185.

Be ID: STD1= 5 ug/L Seq. No.: 00085 A/S Pos.: 16 Date: 11/10/

uL dispensed: 5 from 40, 10 from 1, 10 from 16
Replicate 1 Time: 18:21
Peak Area (A-s): 0.003 Peak Height (A): 0.009
Background Pk Area (A-s): 0.019 Background Pk Height (A): 0.030
Blank Corrected Pk Area (A-s): 0.003

uL dispensed: 5 from 40, 10 from 1, 10 from 16
Replicate 2 (Peak Stored) Time: 18:23
Peak Area (A-s): 0.003 Peak Height (A): 0.009
Background Pk Area (A-s): 0.020 Background Pk Height (A): 0.031
Blank Corrected Pk Area (A-s): 0.003

Mean Pk Area (A-s): 0.003 SD: 0.0001 RSD(%): 4.36

Be ID: STD2= 10 ug/L Seq. No.: 00086 A/S Pos.: 16 Date: 11/10/

uL dispensed: 5 from 40, 10 from 2, 10 from 16
Replicate 1 Time: 18:26
Peak Area (A-s): 0.006 Peak Height (A): 0.013
Background Pk Area (A-s): 0.025 Background Pk Height (A): 0.037
Blank Corrected Pk Area (A-s): 0.006

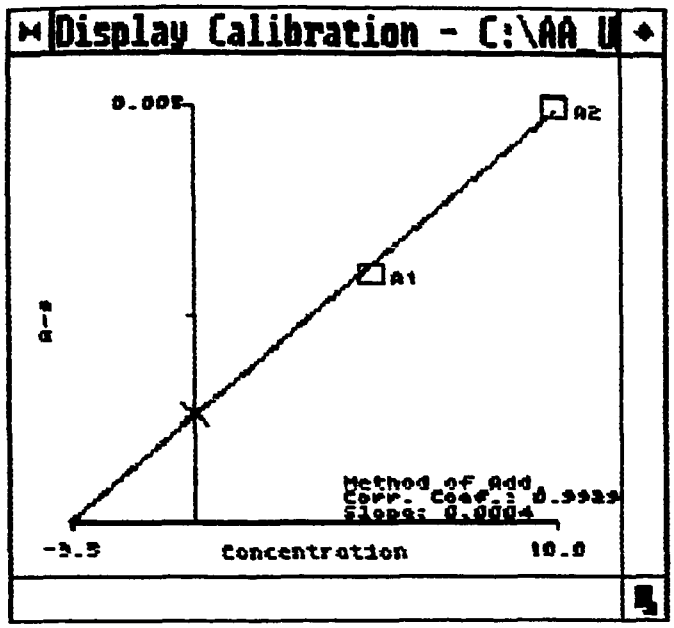
uL dispensed: 5 from 40, 10 from 2, 10 from 16
Replicate 2 (Peak Stored) Time: 18:29
Peak Area (A-s): 0.005 Peak Height (A): 0.011
Background Pk Area (A-s): 0.024 Background Pk Height (A): 0.035
Blank Corrected Pk Area (A-s): 0.005

Mean Pk Area (A-s): 0.005 SD: 0.0008 RSD(%): 16.37

Be ID: 185-26-7C Seq. No.: 00084 A/S Pos.: 16 Date: 11/10/9

Concentration (ug/L): 3.5

Correlation coefficient: 0.99298 Slope: 0.0004



Be ID: STD BLANK Seq. No.: 00087 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 18:32
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.018
Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 18:34
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.018
Blank Corrected Pk Area (A-s): 0.001

Mean Pk Area (A-s): 0.001 SD: 0.0003 RSD(%): 43.51

Auto-zero performed.

188-52-19,20 11/10/97 nz

Be ID: 185-26-8E Seq. No.: 00088 A/S Pos.: 17 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 17
Replicate 1 Time: 18:37
Peak Area (A-s): 0.011 Peak Height (A): 0.030
Background Pk Area (A-s): 0.168 Background Pk Height (A): 0.268
Blank Corrected Pk Area (A-s): 0.010

uL dispensed: 10 from 0, 5 from 40, 10 from 17
Replicate 2 (Peak Stored) Time: 18:39
Peak Area (A-s): 0.008 Peak Height (A): 0.022
Background Pk Area (A-s): 0.160 Background Pk Height (A): 0.271
Blank Corrected Pk Area (A-s): 0.007

Mean Pk Area (A-s): 0.008 SD: 0.0022 RSD(%): 26.27

Be ID: 185-26-8E Seq. No.: 00089 A/S Pos.: 17 Date: 11/10/9

uL dispensed: 10 from 0, 5 from 40, 10 from 17
The background signal is changing during BOC measurement.
Replicate 1 Time: 18:42
Peak Area (A-s): 0.005 Peak Height (A): 0.020
Background Pk Area (A-s): 0.152 Background Pk Height (A): 0.274
Blank Corrected Pk Area (A-s): 0.005

uL dispensed: 10 from 0, 5 from 40, 10 from 17
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 18:45
Peak Area (A-s): 0.005 Peak Height (A): 0.023
Background Pk Area (A-s): 0.153 Background Pk Height (A): 0.269
Blank Corrected Pk Area (A-s): 0.004

Mean Pk Area (A-s): 0.004 SD: 0.0003 RSD(%): 5.95

Be ID: STD1= 5 ug/L Seq. No.: 00090 A/S Pos.: 17 Date: 11/10/9

uL dispensed: 5 from 40, 10 from 1, 10 from 17
The background signal is changing during BOC measurement.
Replicate 1 Time: 18:47
Peak Area (A-s): 0.049 Peak Height (A): 0.192
Background Pk Area (A-s): 0.226 Background Pk Height (A): 0.439
Blank Corrected Pk Area (A-s): 0.048

uL dispensed: 5 from 40, 10 from 1, 10 from 17
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 18:50
Peak Area (A-s): 0.050 Peak Height (A): 0.182
Background Pk Area (A-s): 0.231 Background Pk Height (A): 0.417
Blank Corrected Pk Area (A-s): 0.049

Mean Pk Area (A-s): 0.049 SD: 0.0008 RSD(%): 1.73

Be ID: STD2= 10 ug/L Seq. No.: 00091 A/S Pos.: 17 Date: 11/10/9

uL dispensed: 5 from 40, 10 from 2, 10 from 17
The background signal is changing during BOC measurement.
Replicate 1 Time: 18:53
Peak Area (A-s): 0.088 Peak Height (A): 0.359
Background Pk Area (A-s): 0.277 Background Pk Height (A): 0.605
Blank Corrected Pk Area (A-s): 0.087

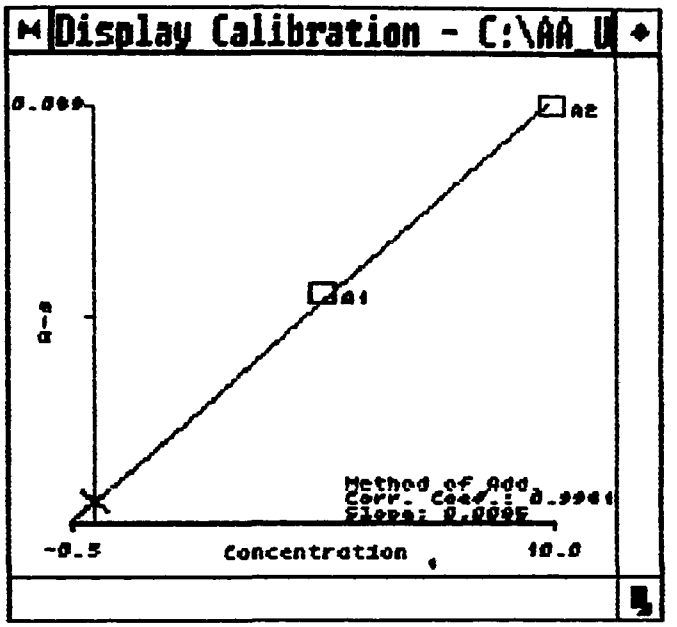
uL dispensed: 5 from 40, 10 from 2, 10 from 17
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 18:55
Peak Area (A-s): 0.092 Peak Height (A): 0.330
Background Pk Area (A-s): 0.284 Background Pk Height (A): 0.542
Blank Corrected Pk Area (A-s): 0.091

Mean Pk Area (A-s): 0.089 SD: 0.0029 RSD(%): 3.22

Be ID: 185-26-8E Seq. No.: 00089 A/S Pos.: 17 Date: 11/10/9

Concentration (ug/L): 0.5

Correlation coefficient: 0.99817 Slope: 0.0085



Be ID: STD BLANK Seq. No.: 00092 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 18:58
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.017
Blank Corrected Pk Area (A-s): -0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 19:01
Peak Area (A-s): -0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.018
Blank Corrected Pk Area (A-s): -0.001

Mean Pk Area (A-s): -0.001 SD: 0.0005 RSD(%): 69.30

Auto-zero performed.

Be ID: 185-26-8H Seq. No.: 00093 A/S Pos.: 18 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 18
Replicate 1 Time: 19:03
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.017
Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 18
Replicate 2 (Peak Stored) Time: 19:06
Peak Area (A-s): -0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.017
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): 0.000 SD: 0.0005 RSD(%): 1701.22

Be ID: STD1= 5 ug/L Seq. No.: 00094 A/S Pos.: 18 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 1, 10 from 18
Replicate 1 Time: 19:09
Peak Area (A-s): 0.002 Peak Height (A): 0.006
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.023
Blank Corrected Pk Area (A-s): 0.002

uL dispensed: 5 from 40, 10 from 1, 10 from 18
Replicate 2 (Peak Stored) Time: 19:11
Peak Area (A-s): 0.003 Peak Height (A): 0.007
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.025
Blank Corrected Pk Area (A-s): 0.003

Mean Pk Area (A-s): 0.002 SD: 0.0002 RSD(%): 8.68

Be ID: STD2= 10 ug/L Seq. No.: 00095 A/S Pos.: 18 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 2, 10 from 18
Replicate 1 Time: 19:14
Peak Area (A-s): 0.005 Peak Height (A): 0.011
Background Pk Area (A-s): 0.020 Background Pk Height (A): 0.030
Blank Corrected Pk Area (A-s): 0.005

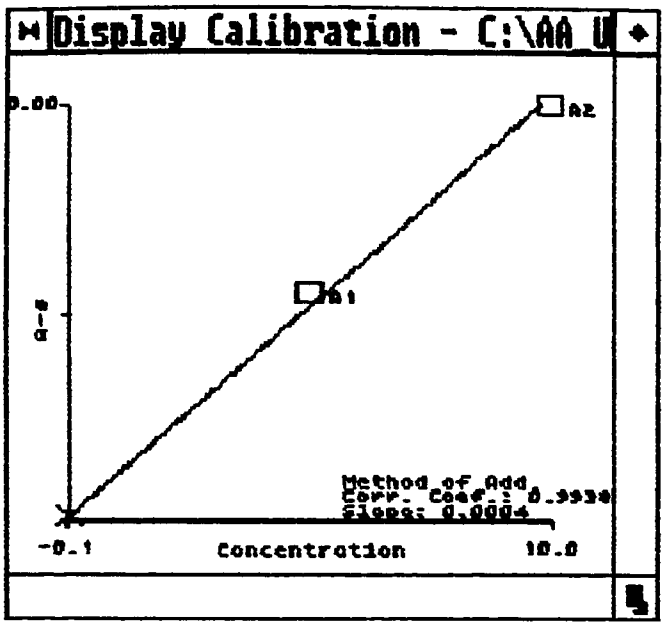
uL dispensed: 5 from 40, 10 from 2, 10 from 18
Replicate 2 (Peak Stored) Time: 19:17
Peak Area (A-s): 0.004 Peak Height (A): 0.009
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.029
Blank Corrected Pk Area (A-s): 0.004

Mean Pk Area (A-s): 0.004 SD: 0.0003 RSD(%): 8.02

Be ID: 185-26-8H Seq. No.: 00093 A/S Pos.: 18 Date: 11/10/97

Concentration (ug/L): 0.1

Correlation coefficient: 0.99389 Slope: 0.0004



Be ID: STD BLANK Seq. No.: 00096 A/S Pos.: 0 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 19:20
Peak Area (A-s): 0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.018
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 19:22
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.017
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): 0.000 SD: 0.0001 RSD(%): 13.40

Auto-zero performed.

188-32-7,8 11/10/97 m2

Be ID: 185-26-9C Seq. No.: 00097 A/S Pos.: 19 Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 19
Replicate 1 Time: 19:25
Peak Area (A-s): -0.012 Peak Height (A): 0.101
Background Pk Area (A-s): 0.227 Background Pk Height (A): 0.457
Blank Corrected Pk Area (A-s): -0.013

uL dispensed: 10 from 0, 5 from 40, 10 from 19
Replicate 2 (Peak Stored) Time: 19:27
Peak Area (A-s): -0.011 Peak Height (A): 0.091
Background Pk Area (A-s): 0.227 Background Pk Height (A): 0.442
Blank Corrected Pk Area (A-s): -0.011

Mean Pk Area (A-s): -0.012 SD: 0.0011 RSD(%): 9.12

Be ID: STD1= 5 ug/L Seq. No.: 00098 A/S Pos.: 19 Date: 11/10/97

```
uL dispensed: 5 from 40, 10 from 1, 10 from 19
Replicate  1                                  Time: 19:30
Peak Area (A-s): -0.015                       Peak Height (A): 0.092
Background Pk Area (A-s): 0.208               Background Pk Height (A): 0.363
Blank Corrected Pk Area (A-s): -0.016

uL dispensed: 5 from 40, 10 from 1, 10 from 19
Replicate  2 (Peak Stored)                    Time: 19:33
Peak Area (A-s): -0.012                       Peak Height (A): 0.094
Background Pk Area (A-s): 0.216               Background Pk Height (A): 0.402
Blank Corrected Pk Area (A-s): -0.012

Mean Pk Area (A-s):      -0.014               SD: 0.0026                RSD(%): 18.12

Be    ID: STD2= 10 ug/L       Seq. No.: 00099    A/S Pos.: 19    Date: 11/10/97

uL dispensed: 5 from 40, 10 from 2, 10 from 19
Replicate  1                                  Time: 19:35
Peak Area (A-s): -0.014                       Peak Height (A): 0.093
Background Pk Area (A-s): 0.216               Background Pk Height (A): 0.379
Blank Corrected Pk Area (A-s): -0.014

uL dispensed: 5 from 40, 10 from 2, 10 from 19
Replicate  2 (Peak Stored)                    Time: 19:38
Peak Area (A-s): -0.010                       Peak Height (A): 0.080
Background Pk Area (A-s): 0.193               Background Pk Height (A): 0.362
Blank Corrected Pk Area (A-s): -0.010

Mean Pk Area (A-s):      -0.012               SD: 0.0028                RSD(%): 22.25

Standard abs. & conc. values are not in the same order.
Be    ID: 185-26-9C           Seq. No.: 00097    A/S Pos.: 19    Date: 11/10/97

Concentration (ug/L  ): --------

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Be    ID: STD BLANK           Seq. No.: 00100    A/S Pos.: 0     Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  1                                  Time: 19:41
Peak Area (A-s): 0.001                        Peak Height (A): 0.005
Background Pk Area (A-s): 0.014               Background Pk Height (A): 0.016
Blank Corrected Pk Area (A-s): -0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  2 (Peak Stored)                    Time: 19:43
Peak Area (A-s): -0.000                       Peak Height (A): 0.004
Background Pk Area (A-s): 0.013               Background Pk Height (A): 0.017
Blank Corrected Pk Area (A-s): -0.001

Mean Pk Area (A-s):      -0.000               SD: 0.0005                RSD(%): 135.43

Auto-zero performed.

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Be    ID: 185-26-10C          Seq. No.: 00101    A/S Pos.: 20    Date: 11/10/97

uL dispensed: 10 from 0, 5 from 40, 10 from 20
Replicate  1                                  Time: 19:46
```

Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.025
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 20
Replicate 2 (Peak Stored) Time: 19:49
Peak Area (A-s): 0.000 Peak Height (A): 0.003
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.021
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): 0.000 SD: 0.0005 RSD(%): 120.95

Be ID: STD1= 5 ug/L Seq. No.: 00102 A/S Pos.: 20 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 1, 10 from 20
Replicate 1 Time: 19:51
Peak Area (A-s): 0.011 Peak Height (A): 0.030
Background Pk Area (A-s): 0.035 Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): 0.011

uL dispensed: 5 from 40, 10 from 1, 10 from 20
Replicate 2 (Peak Stored) Time: 19:54
Peak Area (A-s): 0.010 Peak Height (A): 0.030
Background Pk Area (A-s): 0.033 Background Pk Height (A): 0.062
Blank Corrected Pk Area (A-s): 0.010

Mean Pk Area (A-s): 0.010 SD: 0.0004 RSD(%): 3.72

Be ID: STD2= 10 ug/L Seq. No.: 00103 A/S Pos.: 20 Date: 11/10/97

uL dispensed: 5 from 40, 10 from 2, 10 from 20
Replicate 1 Time: 19:57
Peak Area (A-s): 0.022 Peak Height (A): 0.060
Background Pk Area (A-s): 0.053 Background Pk Height (A): 0.105
Blank Corrected Pk Area (A-s): 0.021

uL dispensed: 5 from 40, 10 from 2, 10 from 20
Replicate 2 (Peak Stored) Time: 19:59
Peak Area (A-s): 0.019 Peak Height (A): 0.049
Background Pk Area (A-s): 0.048 Background Pk Height (A): 0.091
Blank Corrected Pk Area (A-s): 0.019

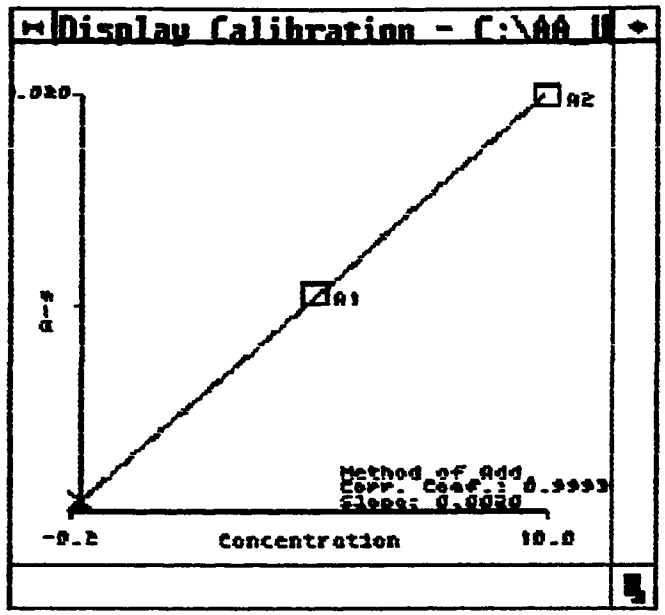
Mean Pk Area (A-s): 0.020 SD: 0.0021 RSD(%): 10.39

188-52-15,16 11/12/97 mc

Be ID: 185-26-10C Seq. No.: 00101 A/S Pos.: 20 Date: 11/10/97

Concentration (ug/L): 0.2

Correlation coefficient: 0.99933 Slope: 0.0020


Display Calibration - C:\AA
.020
A2
A1
Abs
Method of Add
Corr. Coef.: 0.9993
Slope: 0.0020
-0.2
Concentration
10.0

Auto

Element File: BEMSA.GEL ID/Weight File: EB180.IDW

SRB 11/11/97

Loc.	Concentration		Solutions
0			Calib. Blank / Diluent
1	50.0 ug/L		Stock 1-64-2D SRB 11/11/97
6			CHECK LO
7			43452 MB
8			43452 LCS
9		(58-52-1,2)	185-26-1C
10		(183-52-1,2)	185-26-1C L
11		(188-52-3,4)	185-26-2C
12		(188-52-5,6)	185-26-3C
13		(188-52-9,10)	185-26-4C
14		(188-52-11,12)	185-26-5C
15		(188-52-13,14)	185-26-6C
16		(188-52-17,18)	185-26-7C
17		(188-52-19,20)	185-26-8E
18			185-26-8H
19		(188-52,7,8	185-26-9C
20		(188-52-15,16)	185-26-10C
21			185-26-1D
22			185-26-1D L
23			185-26-2D
24			185-26-3D
25			185-26-4D
26			185-26-5D
27			185-26-6D
28			185-26-7CD
29			185-26-8DE
30			185-26-9D
31			185-26-10D
40			Modifier 1

NR 11/20/97

EC

MSAs only on these samples SRB 11/11/97

Element File: DEMOM.GEL

Element: Be
Print Data: Main+Suppl.
Print: Calib. Curve

Analyst: BENNETT
Peak Storage: 1 Repl./Sample

INSTRUMENT: 4100 ZL
Wavelength: 234.9 Peak
Signal Type: Zeeman AA
Read Time: 3.0
Sample Replicates: 2
Standard Replicates: 2

Technique: HGA
Slit: 0.7 Low
Signal Measurement: Peak Area
Read Delay: 0.0
Spike Replicates: Same as Sample

Version: 7.30
BOC Time: 2

CALIBRATION:

Solutions	ID	Conc	Location	Volume	Diluent Volume	Modifier #1	Modifier #2
Calib. Blank	STD BLANK		0	10	10	5	
Standard 1	STD1= 10 ug/L	10.0	1	2	13	5	
Standard 2	STD2= 25 ug/L	25.0	1	5	10	5	
Samples				10	10	5	

Diluent Location: 0
Modifier #1 Location: 40
Modifier #2 Location:
Calibration Units: ug/L
Sample Units: ug/L
Calibration Type: Method of Add.

Furnace Time/Temperature Program:

Step	Temp	Ramp	Hold	Gas Flow	Read	Gas Type
1	110	1	25	250		Norm
2	130	1	20	250		Norm
3	1500	5	15	250		Norm
4	2300	0	3	0	*	Norm
5	2500	1	5	250		Norm

Injection Temp: 20 Pipette Speed: 85% Extraction System: Off

SEQUENCE:

Step	Action and Parameters
1	Pipet diluent + modifier 1 + spike + sample/std
2	Run HGA steps 1 to End
3	Extra washes: 1

CHECKS:
Additions Preparation: Automated
Periodic Autozero Locations: All Samples

If %RSD > 20.0 and Peak Area > .005 then Retry 1 times
Check %RSD on: Samples + Additions

QC:
Matrix Check Calculations:
% Difference for Dupls: No Locations:
% Recovery for Spike: No Locations: Conc:

Element File: BEMSA.GEL Element: Be Wavelength: 234.9
Date: 11/11/97 Time: 10:40 Slit: 0.7 L
Data File: EB180.DAT ID/Wt File: EB180.IDW Lamp Current: 30
Technique: HGA Calib. Type: Method of Add. Energy: 66

Be ID: STD BLANK Seq. No.: 00126 A/S Pos.: 0 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 10:42
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.025
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 10:45
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.032
Blank Corrected Pk Area (A-s): 0.001

Mean Pk Area (A-s): 0.001 SD: 0.0000 RSD(%): 3.62

Auto-zero performed.

Be ID: 185-26-1C Seq. No.: 00127 A/S Pos.: 9 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 9
The background signal is changing during BOC measurement.
Replicate 1 Time: 10:48
Peak Area (A-s): 0.001 Peak Height (A): 0.018
Background Pk Area (A-s): 0.139 Background Pk Height (A): 0.394
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 9
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 10:50
Peak Area (A-s): 0.002 Peak Height (A): 0.021
Background Pk Area (A-s): 0.142 Background Pk Height (A): 0.451
Blank Corrected Pk Area (A-s): 0.002

Mean Pk Area (A-s): 0.001 SD: 0.0006 RSD(%): 43.84

Be ID: STD1= 10 ug/L Seq. No.: 00128 A/S Pos.: 9 Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 9
The background signal is changing during BOC measurement.
Replicate 1 Time: 10:53
Peak Area (A-s): -0.000 Peak Height (A): 0.023
Background Pk Area (A-s): 0.141 Background Pk Height (A): 0.480
Blank Corrected Pk Area (A-s): -0.001

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 9
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 10:56
Peak Area (A-s): -0.002 Peak Height (A): 0.018
Background Pk Area (A-s): 0.137 Background Pk Height (A): 0.434
Blank Corrected Pk Area (A-s): -0.002

Mean Pk Area (A-s): -0.002 SD: 0.0012 76.24

Be ID: STD2= 25 ug/L Seq. No.: 00129 A/S Pos.: 9 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 9
The background signal is changing during BOC measurement.
Replicate 1 Time: 10:59
Peak Area (A-s): 0.000 Peak Height (A): 0.043
Background Pk Area (A-s): 0.143 Background Pk Height (A): 0.512
Blank Corrected Pk Area (A-s): -0.000

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 9
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 11:02
Peak Area (A-s): -0.000 Peak Height (A): 0.032
Background Pk Area (A-s): 0.142 Background Pk Height (A): 0.510
Blank Corrected Pk Area (A-s): -0.001

Mean Pk Area (A-s): -0.001 SD: 0.0001 RSD(%): 17.39

Standard abs. & conc. values are not in the same order.
Be ID: 185-26-1C Seq. No.: 00127 A/S Pos.: 9 Date: 11/11/97

Concentration (ug/L): --------

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Be ID: STD BLANK Seq. No.: 00130 A/S Pos.: 0 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 11:05
Peak Area (A-s): 0.000 Peak Height (A): 0.003
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.029
Blank Corrected Pk Area (A-s): -0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 11:07
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.032
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): -0.000 SD: 0.0003 RSD(%): 2103.64

Auto-zero performed.

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188-26-1,2 11/10/97 ml

Be ID: 185-26-1C L Seq. No.: 00131 A/S Pos.: 10 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 10
Replicate 1 Time: 11:10
Peak Area (A-s): 0.000 Peak Height (A): 0.008
Background Pk Area (A-s): 0.090 Background Pk Height (A): 0.171
Blank Corrected Pk Area (A-s): -0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 10
Replicate 2 (Peak Stored) Time: 11:12
Peak Area (A-s): 0.000 Peak Height (A): 0.005
Background Pk Area (A-s): 0.097 Background Pk Height (A): 0.173
Blank Corrected Pk Area (A-s): -0.000

```
Mean Pk Area (A-s):      -0.000          SD: 0.0001                RSD(%): 27.68

Be    ID: STD1= 10 ug/L       Seq. No.: 00132    A/S Pos.: 10    Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 10
Replicate  1                              Time: 11:15
Peak Area (A-s): 0.001                    Peak Height (A): 0.005
Background Pk Area (A-s): 0.127           Background Pk Height (A): 0.212
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 10
Replicate  2 (Peak Stored)                Time: 11:18
Peak Area (A-s): 0.000                    Peak Height (A): 0.005
Background Pk Area (A-s): 0.117           Background Pk Height (A): 0.196
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s):      0.000          SD: 0.0005                RSD(%): 236.49

Be    ID: STD2= 25 ug/L       Seq. No.: 00133    A/S Pos.: 10    Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 10
Replicate  1                              Time: 11:21
Peak Area (A-s): 0.001                    Peak Height (A): 0.006
Background Pk Area (A-s): 0.127           Background Pk Height (A): 0.207
Blank Corrected Pk Area (A-s): -0.000

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 10
Replicate  2 (Peak Stored)                Time: 11:24
Peak Area (A-s): 0.000                    Peak Height (A): 0.006
Background Pk Area (A-s): 0.126           Background Pk Height (A): 0.200
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s):      -0.000          SD: 0.0001                RSD(%): 99.64

Standard abs. & conc. values are not in the same order.
Be    ID: 185-26-1C L         Seq. No.: 00131    A/S Pos.: 10    Date: 11/11/97

Concentration (ug/L  ): --------

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Be    ID: STD BLANK           Seq. No.: 00134    A/S Pos.: 0     Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  1                              Time: 11:27
Peak Area (A-s): 0.000                    Peak Height (A): 0.003
Background Pk Area (A-s): 0.011           Background Pk Height (A): 0.029
Blank Corrected Pk Area (A-s): -0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  2 (Peak Stored)                Time: 11:29
Peak Area (A-s): 0.001                    Peak Height (A): 0.003
Background Pk Area (A-s): 0.011           Background Pk Height (A): 0.031
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s):      -0.000          SD: 0.0003                RSD(%): 149.21

Auto-zero performed.
```

Be ID: 185-26-2C Seq. No.: 00135 A/S Pos.: 11 Date: 11/11/9

uL dispensed: 10 from 0, 5 from 40, 10 from 11
The background signal is changing during BOC measurement.
Replicate 1 Time: 11:32
Peak Area (A-s): 0.008 Peak Height (A): 0.059
Background Pk Area (A-s): 0.203 Background Pk Height (A): 0.366
Blank Corrected Pk Area (A-s): 0.007

uL dispensed: 10 from 0, 5 from 40, 10 from 11
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 11:35
Peak Area (A-s): 0.011 Peak Height (A): 0.044
Background Pk Area (A-s): 0.233 Background Pk Height (A): 0.521
Blank Corrected Pk Area (A-s): 0.010

Mean Pk Area (A-s): 0.009 SD: 0.0022 RSD(%): 25.21

Be ID: 185-26-2C Seq. No.: 00136 A/S Pos.: 11 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 11
The background signal is changing during BOC measurement.
Replicate 1 Time: 11:37
Peak Area (A-s): 0.014 Peak Height (A): 0.079
Background Pk Area (A-s): 0.225 Background Pk Height (A): 0.439
Blank Corrected Pk Area (A-s): 0.013

uL dispensed: 10 from 0, 5 from 40, 10 from 11
Replicate 2 (Peak Stored) Time: 11:40
Peak Area (A-s): 0.010 Peak Height (A): 0.060
Background Pk Area (A-s): 0.228 Background Pk Height (A): 0.434
Blank Corrected Pk Area (A-s): 0.010

Mean Pk Area (A-s): 0.012 SD: 0.0025 RSD(%): 21.90

Be ID: STD1= 10 ug/L Seq. No.: 00137 A/S Pos.: 11 Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 11
Replicate 1 Time: 11:43
Peak Area (A-s): 0.012 Peak Height (A): 0.108
Background Pk Area (A-s): 0.244 Background Pk Height (A): 0.717
Blank Corrected Pk Area (A-s): 0.012

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 11
Replicate 2 (Peak Stored) Time: 11:46
Peak Area (A-s): 0.011 Peak Height (A): 0.120
Background Pk Area (A-s): 0.334 Background Pk Height (A): 1.010
Blank Corrected Pk Area (A-s): 0.011

Mean Pk Area (A-s): 0.011 SD: 0.0007 RSD(%): 6.38

Be ID: STD2= 25 ug/L Seq. No.: 00138 A/S Pos.: 11 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 11
Replicate 1 Time: 11:49
Peak Area (A-s): 0.013 Peak Height (A): 0.108
Background Pk Area (A-s): 0.269 Background Pk Height (A): 1.041

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Blan                    (A-s): 0.012

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 11
Replicate  2 (Peak Stored)              Time: 11:52
Peak Area (A-s): 0.011                  Peak Height (A): 0.119
Background Pk Area (A-s): 0.275         Background Pk Height (A): 1.027
Blank Corrected Pk Area (A-s): 0.011

Mean Pk Area (A-s):      0.012          SD: 0.0010              RSD(%): 8.25

Standard abs. & conc. values are not in the same order.
Be    ID: 185-26-2C          Seq. No.: 00136    A/S Pos.: 11    Date: 11/11/97

Concentration (ug/L  ): --------

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Be    ID: STD BLANK          Seq. No.: 00139    A/S Pos.: 0     Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  1                            Time: 11:54
Peak Area (A-s): 0.001                  Peak Height (A): 0.005
Background Pk Area (A-s): 0.017         Background Pk Height (A): 0.044
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  2 (Peak Stored)              Time: 11:57
Peak Area (A-s): 0.000                  Peak Height (A): 0.005
Background Pk Area (A-s): 0.019         Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s):      0.000          SD: 0.0005              RSD(%): 116.13

Auto-zero performed.

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Be    ID: 185-26-3C          Seq. No.: 00140    A/S Pos.: 12    Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 12
Replicate  1                            Time: 11:59
Peak Area (A-s): 0.008                  Peak Height (A): 0.037
Background Pk Area (A-s): 0.178         Background Pk Height (A): 0.359
Blank Corrected Pk Area (A-s): 0.007

uL dispensed: 10 from 0, 5 from 40, 10 from 12
Replicate  2 (Peak Stored)              Time: 12:02
Peak Area (A-s): 0.010                  Peak Height (A): 0.039
Background Pk Area (A-s): 0.182         Background Pk Height (A): 0.350
Blank Corrected Pk Area (A-s): 0.009

Mean Pk Area (A-s):      0.008          SD: 0.0015              RSD(%): 18.48

Be    ID: STD1= 10 ug/L      Seq. No.: 00141    A/S Pos.: 12    Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 12
Replicate  1                            Time: 12:05
Peak Area (A-s): 0.003                  Peak Height (A): 0.081
Background Pk Area (A-s): 0.280         Background Pk Height (A): 1.144
Blank Corrected Pk Area (A-s): 0.002
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88-32-5,6 11/10/97 MC

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from
Replicate 2 (Peak Stored) Time: 12:08
Peak Area (A-s): 0.008 Peak Height (A): 0.115
Background Pk Area (A-s): 0.252 Background Pk Height (A): 0.695
Blank Corrected Pk Area (A-s): 0.007

Mean Pk Area (A-s): 0.005 SD: 0.0032 RSD(%): 68.84

Be ID: STD1= 10 ug/L Seq. No.: 00142 A/S Pos.: 12 Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 12
The background signal is changing during BOC measurement.
Replicate 1 Time: 12:11
Peak Area (A-s): 0.008 Peak Height (A): 0.110
Background Pk Area (A-s): 0.237 Background Pk Height (A): 0.646
Blank Corrected Pk Area (A-s): 0.007

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 12
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 12:14
Peak Area (A-s): 0.009 Peak Height (A): 0.077
Background Pk Area (A-s): 0.213 Background Pk Height (A): 0.717
Blank Corrected Pk Area (A-s): 0.009

Mean Pk Area (A-s): 0.008 SD: 0.0010 RSD(%): 13.25

Be ID: STD2= 25 ug/L Seq. No.: 00143 A/S Pos.: 12 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 12
The background signal is changing during BOC measurement.
Replicate 1 Time: 12:16
Peak Area (A-s): 0.007 Peak Height (A): 0.099
Background Pk Area (A-s): 0.219 Background Pk Height (A): 0.653
Blank Corrected Pk Area (A-s): 0.007

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 12
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 12:19
Peak Area (A-s): 0.007 Peak Height (A): 0.110
Background Pk Area (A-s): 0.233 Background Pk Height (A): 0.641
Blank Corrected Pk Area (A-s): 0.006

Mean Pk Area (A-s): 0.006 SD: 0.0002 RSD(%): 2.94

Standard abs. & conc. values are not in the same order.
Be ID: 185-26-3C Seq. No.: 00140 A/S Pos.: 12 Date: 11/11/97

Concentration (ug/L): --------

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Be ID: STD BLANK Seq. No.: 00144 A/S Pos.: 0 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 12:22
Peak Area (A-s): 0.000 Peak Height (A): 0.004
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.037
Blank Corrected Pk Area (A-s): -0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
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Repl   ed)   Time: 12:25
Peak Area (A-s): 0.000   Peak Height (A): 0.004
Background Pk Area (A-s): 0.016   Background Pk Height (A): 0.039
Blank Corrected Pk Area (A-s): -0.001

Mean Pk Area (A-s):   -0.000   SD: 0.0003   RSD(%): 59.93

Auto-zero performed.

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185-52-9,10   11/10/97 ML

Be   ID: 185-26-4C   Seq. No.: 00145   A/S Pos.: 13   Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 13
Replicate 1   Time: 12:27
Peak Area (A-s): 0.001   Peak Height (A): 0.005
Background Pk Area (A-s): 0.038   Background Pk Height (A): 0.082
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 13
Replicate 2 (Peak Stored)   Time: 12:30
Peak Area (A-s): 0.001   Peak Height (A): 0.005
Background Pk Area (A-s): 0.039   Background Pk Height (A): 0.087
Blank Corrected Pk Area (A-s): 0.001

Mean Pk Area (A-s):   0.001   SD: 0.0000   RSD(%): 4.55

Be   ID: STD1= 10 ug/L   Seq. No.: 00146   A/S Pos.: 13   Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 13
Replicate 1   Time: 12:33
Peak Area (A-s): 0.009   Peak Height (A): 0.024
Background Pk Area (A-s): 0.104   Background Pk Height (A): 0.232
Blank Corrected Pk Area (A-s): 0.009

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 13
Replicate 2 (Peak Stored)   Time: 12:36
Peak Area (A-s): 0.007   Peak Height (A): 0.021
Background Pk Area (A-s): 0.101   Background Pk Height (A): 0.214
Blank Corrected Pk Area (A-s): 0.007

Mean Pk Area (A-s):   0.008   SD: 0.0011   RSD(%): 13.97

Be   ID: STD2= 25 ug/L   Seq. No.: 00147   A/S Pos.: 13   Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 13
Replicate 1   Time: 12:38
Peak Area (A-s): 0.009   Peak Height (A): 0.028
Background Pk Area (A-s): 0.092   Background Pk Height (A): 0.177
Blank Corrected Pk Area (A-s): 0.008

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 13
Replicate 2 (Peak Stored)   Time: 12:41
Peak Area (A-s): 0.006   Peak Height (A): 0.017
Background Pk Area (A-s): 0.131   Background Pk Height (A): 0.236
Blank Corrected Pk Area (A-s): 0.006

Mean Pk Area (A-s):   0.007   SD: 0.0018   RSD(%): 25.40

Be   ID: STD2= 25 ug/L   Seq. No.: 00148   A/S Pos.: 13   Date: 11/11/97
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uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from
Replicate 1 Time: 12:44
Peak Area (A-s): 0.009 Peak Height (A): 0.026
Background Pk Area (A-s): 0.103 Background Pk Height (A): 0.208
Blank Corrected Pk Area (A-s): 0.008

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 13
Replicate 2 (Peak Stored) Time: 12:47
Peak Area (A-s): 0.007 Peak Height (A): 0.023
Background Pk Area (A-s): 0.101 Background Pk Height (A): 0.202
Blank Corrected Pk Area (A-s): 0.007

Mean Pk Area (A-s): 0.008 SD: 0.0010 RSD(%): 12.75

Standard abs. & conc. values are not in the same order.
Be ID: 185-26-4C Seq. No.: 00145 A/S Pos.: 13 Date: 11/11/97

Concentration (ug/L): --------

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Be ID: STD BLANK Seq. No.: 00149 A/S Pos.: 0 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 12:50
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.033
Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 12:52
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.034
Blank Corrected Pk Area (A-s): 0.001

Mean Pk Area (A-s): 0.000 SD: 0.0001 RSD(%): 17.61

Auto-zero performed.

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Be ID: 185-26-5C Seq. No.: 00150 A/S Pos.: 14 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 14
Replicate 1 Time: 12:55
Peak Area (A-s): 0.001 Peak Height (A): 0.007
Background Pk Area (A-s): 0.065 Background Pk Height (A): 0.133
Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 14
Replicate 2 (Peak Stored) Time: 12:57
Peak Area (A-s): 0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.064 Background Pk Height (A): 0.130
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): 0.000 SD: 0.0002 RSD(%): 57.65

Be ID: STD1= 10 ug/L Seq. No.: 00151 A/S Pos.: 14 Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 14
Replicate 1 Time: 13:00

Peak Area (A-s): 0.004 Peak Height (A): 0.012
Background Pk Area (A-s): 0.107 Background Pk Height (A): 0.195
Blank Corrected Pk Area (A-s): 0.003

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 14
Replicate 2 (Peak Stored) Time: 13:03
Peak Area (A-s): 0.003 Peak Height (A): 0.008
Background Pk Area (A-s): 0.094 Background Pk Height (A): 0.182
Blank Corrected Pk Area (A-s): 0.002

Mean Pk Area (A-s): 0.003 SD: 0.0007 RSD(%): 26.20

Be ID: STD2= 25 ug/L Seq. No.: 00152 A/S Pos.: 14 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 14
Replicate 1 Time: 13:06
Peak Area (A-s): 0.001 Peak Height (A): 0.007
Background Pk Area (A-s): 0.087 Background Pk Height (A): 0.162
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 14
Replicate 2 (Peak Stored) Time: 13:09
Peak Area (A-s): 0.004 Peak Height (A): 0.011
Background Pk Area (A-s): 0.102 Background Pk Height (A): 0.196
Blank Corrected Pk Area (A-s): 0.003

Mean Pk Area (A-s): 0.002 SD: 0.0018 RSD(%): 99.73

Standard abs. & conc. values are not in the same order.
Be ID: 185-26-5C Seq. No.: 00150 A/S Pos.: 14 Date: 11/11/97

Concentration (ug/L): --------

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Be ID: STD BLANK Seq. No.: 00153 A/S Pos.: 0 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 13:11
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.034
Blank Corrected Pk Area (A-s): -0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 13:14
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.035
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): 0.000 SD: 0.0004 RSD(%): 930.12

Auto-zero performed.

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Be ID: 185-26-6C Seq. No.: 00154 A/S Pos.: 15 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 15
Replicate 1 Time: 13:16
Peak Area (A-s): 0.002 Peak Height (A): 0.006
Background Pk Area (A-s): 0.039 Background Pk Height (A): 0.080

Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 15
Replicate 2 (Peak Stored) Time: 13:19
Peak Area (A-s): 0.002 Peak Height (A): 0.007
Background Pk Area (A-s): 0.040 Background Pk Height (A): 0.081
Blank Corrected Pk Area (A-s): 0.001

Mean Pk Area (A-s): 0.001 SD: 0.0002 RSD(%): 23.51

Be ID: STD1= 10 ug/L Seq. No.: 00155 A/S Pos.: 15 Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 15
Replicate 1 Time: 13:22
Peak Area (A-s): 0.004 Peak Height (A): 0.010
Background Pk Area (A-s): 0.053 Background Pk Height (A): 0.096
Blank Corrected Pk Area (A-s): 0.003

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 15
Replicate 2 (Peak Stored) Time: 13:25
Peak Area (A-s): 0.003 Peak Height (A): 0.009
Background Pk Area (A-s): 0.053 Background Pk Height (A): 0.099
Blank Corrected Pk Area (A-s): 0.002

Mean Pk Area (A-s): 0.003 SD: 0.0007 RSD(%): 28.40

Be ID: STD2= 25 ug/L Seq. No.: 00156 A/S Pos.: 15 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 15
Replicate 1 Time: 13:27
Peak Area (A-s): 0.007 Peak Height (A): 0.016
Background Pk Area (A-s): 0.061 Background Pk Height (A): 0.102
Blank Corrected Pk Area (A-s): 0.006

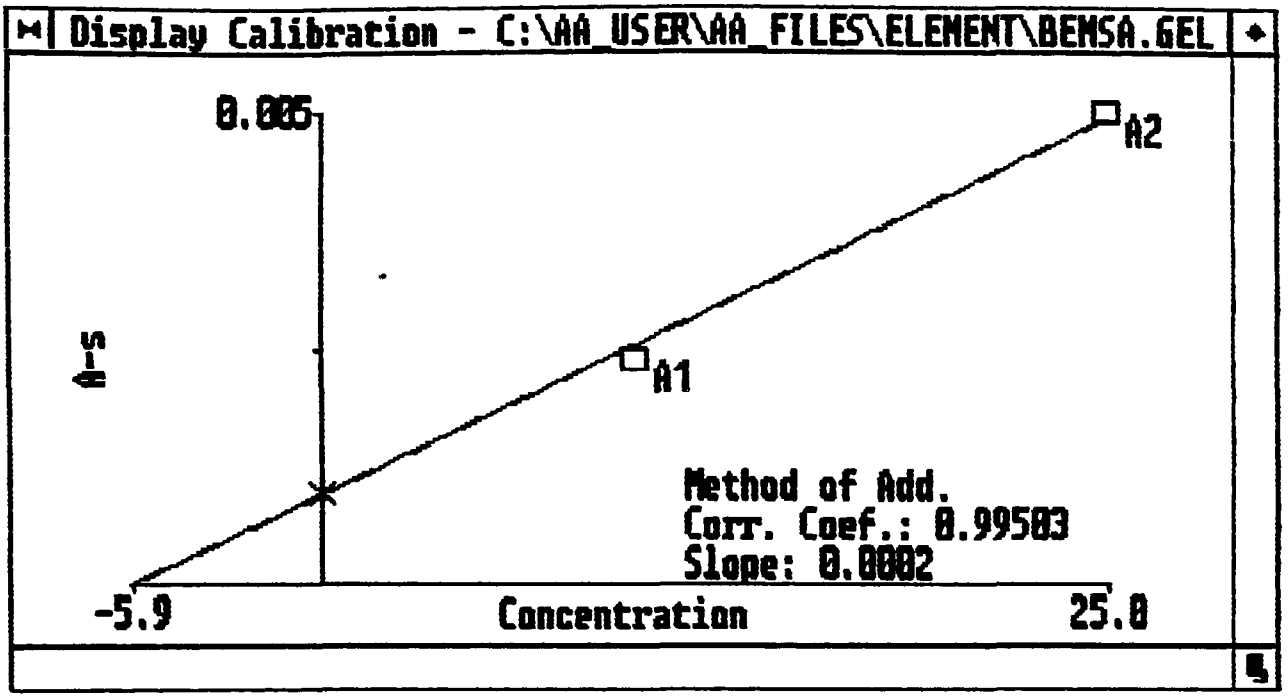
uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 15
Replicate 2 (Peak Stored) Time: 13:30
Peak Area (A-s): 0.006 Peak Height (A): 0.013
Background Pk Area (A-s): 0.058 Background Pk Height (A): 0.102
Blank Corrected Pk Area (A-s): 0.005

Mean Pk Area (A-s): 0.005 SD: 0.0005 RSD(%): 9.75

Be ID: 185-26-6C Seq. No.: 00154 A/S Pos.: 15 Date: 11/11/97

Concentration (ug/L): 5.9

Correlation coefficient: 0.99503 Slope: 0.0002



Be ID: STD BLANK Seq. No.: 00157 A/S Pos.: 0 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 13:33
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.034
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 13:36
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.041
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): 0.000 SD: 0.0005 RSD(%): 209.53

Auto-zero performed.

188-32-17/18 11/10/97 mL

Be ID: 185-26-7C Seq. No.: 00158 A/S Pos.: 16 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 16
Replicate 1 Time: 13:39
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.030
Blank Corrected Pk Area (A-s): -0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 16
Replicate 2 (Peak Stored) Time: 13:41
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.036
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): -0.000 SD: 0.0004 177.2

Be ID: STD1= 10 ug/L Seq. No.: 00159 A/S Pos.: 16 Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 16
Replicate 1 Time: 13:44
Peak Area (A-s): 0.002 Peak Height (A): 0.006
Background Pk Area (A-s): 0.020 Background Pk Height (A): 0.040
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 16
Replicate 2 (Peak Stored) Time: 13:47
Peak Area (A-s): 0.003 Peak Height (A): 0.008
Background Pk Area (A-s): 0.024 Background Pk Height (A): 0.055
Blank Corrected Pk Area (A-s): 0.002

Mean Pk Area (A-s): 0.001 SD: 0.0003 RSD(%): 24.59

Be ID: STD2= 25 ug/L Seq. No.: 00160 A/S Pos.: 16 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 16
Replicate 1 Time: 13:50
Peak Area (A-s): 0.003 Peak Height (A): 0.008
Background Pk Area (A-s): 0.019 Background Pk Height (A): 0.036
Blank Corrected Pk Area (A-s): 0.002

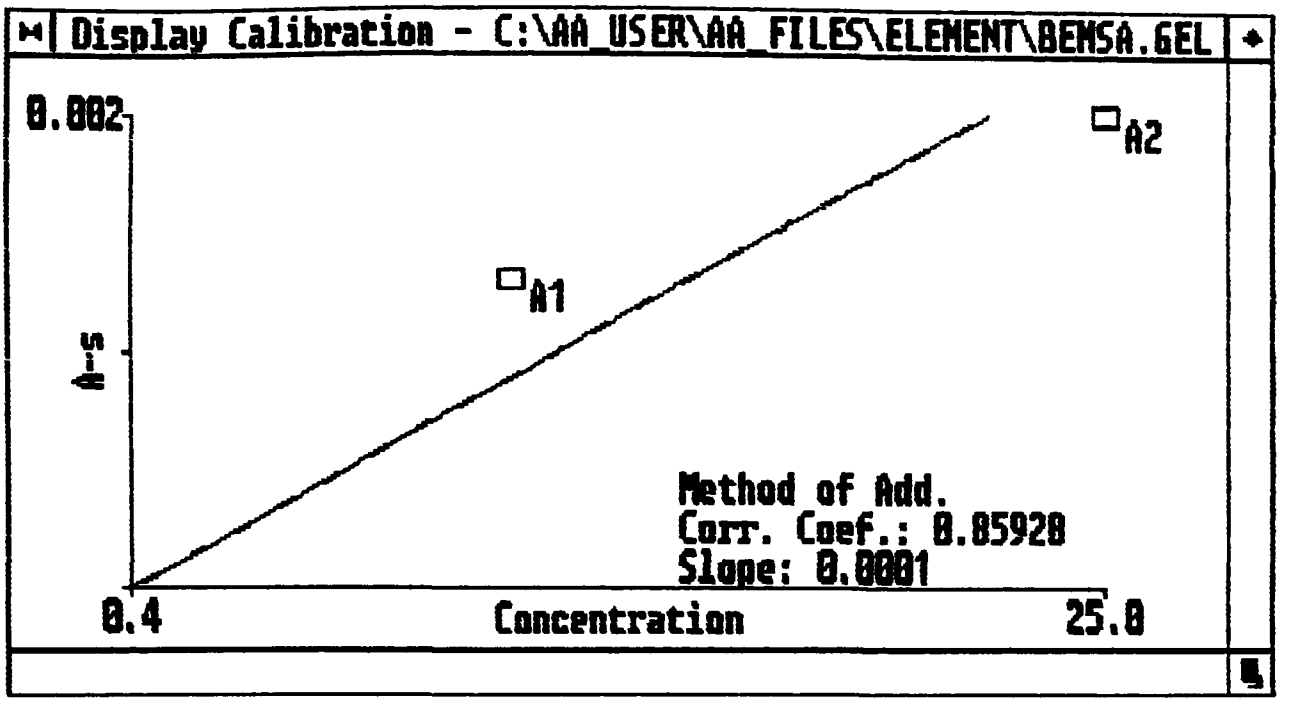
uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 16
Replicate 2 (Peak Stored) Time: 13:52
Peak Area (A-s): 0.003 Peak Height (A): 0.010
Background Pk Area (A-s): 0.022 Background Pk Height (A): 0.047
Blank Corrected Pk Area (A-s): 0.002

Mean Pk Area (A-s): 0.002 SD: 0.0001 RSD(%): 4.00

The standard additions calibration curve may not be linear.
Be ID: 185-26-7C Seq. No.: 00158 A/S Pos.: 16 Date: 11/11/97

Concentration (ug/L): -0.4

Correlation coefficient: 0.85928 Slope: 0.0001



Be ID: STD BLANK Seq. No.: 00161 A/S Pos.: 0 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 13:55
Peak Area (A-s): 0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.034
Blank Corrected Pk Area (A-s): -0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 13:58
Peak Area (A-s): 0.001 Peak Height (A): 0.004
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.034
Blank Corrected Pk Area (A-s): -0.001

Mean Pk Area (A-s): -0.000 SD: 0.0000 RSD(%): 7.06

Auto-zero performed.

Be ID: 185-26-8E Seq. No.: 00162 A/S Pos.: 17 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 17
Replicate 1 Time: 14:01
Peak Area (A-s): 0.003 Peak Height (A): 0.032
Background Pk Area (A-s): 0.318 Background Pk Height (A): 0.520
Blank Corrected Pk Area (A-s): 0.002

uL dispensed: 10 from 0, 5 from 40, 10 from 17
Replicate 2 (Peak Stored) Time: 14:03
Peak Area (A-s): 0.003 Peak Height (A): 0.037
Background Pk Area (A-s): 0.380 Background Pk Height (A): 0.593
Blank Corrected Pk Area (A-s): 0.002

Mean Pk Area (A-s): 0.002 SD: 0.0000 .39

Be ID: STD1= 10 ug/L Seq. No.: 00163 A/S Pos.: 17 Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 17
Replicate 1 Time: 14:06
Peak Area (A-s): 0.012 Peak Height (A): 0.072
Background Pk Area (A-s): 0.430 Background Pk Height (A): 0.632
Blank Corrected Pk Area (A-s): 0.011

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 17
Replicate 2 (Peak Stored) Time: 14:09
Peak Area (A-s): 0.010 Peak Height (A): 0.049
Background Pk Area (A-s): 0.424 Background Pk Height (A): 0.601
Blank Corrected Pk Area (A-s): 0.010

Mean Pk Area (A-s): 0.010 SD: 0.0010 RSD(%): 9.97

Be ID: STD2= 25 ug/L Seq. No.: 00164 A/S Pos.: 17 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 17
Replicate 1 Time: 14:11
Peak Area (A-s): 0.013 Peak Height (A): 0.066
Background Pk Area (A-s): 0.355 Background Pk Height (A): 0.486
Blank Corrected Pk Area (A-s): 0.013

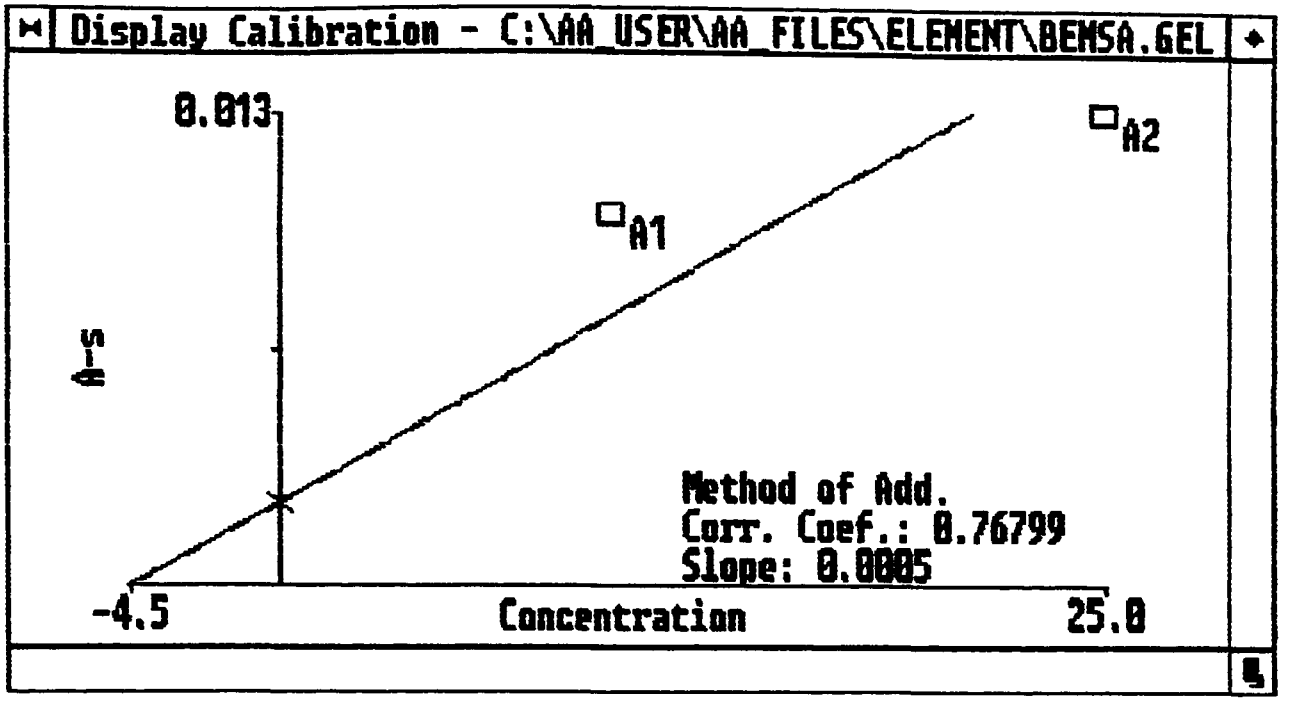
uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 17
Replicate 2 (Peak Stored) Time: 14:14
Peak Area (A-s): 0.014 Peak Height (A): 0.055
Background Pk Area (A-s): 0.357 Background Pk Height (A): 0.539
Blank Corrected Pk Area (A-s): 0.014

Mean Pk Area (A-s): 0.013 SD: 0.0007 RSD(%): 5.04

The standard additions calibration curve may not be linear.
Be ID: 185-26-8E Seq. No.: 00162 A/S Pos.: 17 Date: 11/11/97

Concentration (ug/L): 4.5

Correlation coefficient: 0.76799 Slope: 0.0005



Be ID: STD BLANK Seq. No.: 00165 A/S Pos.: 0 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 14:17
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.031
Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 14:20
Peak Area (A-s): 0.000 Peak Height (A): 0.006
Background Pk Area (A-s): 0.017 Background Pk Height (A): 0.036
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): -0.000 SD: 0.0002 RSD(%): 194.87

Auto-zero performed.

Be ID: 185-26-8H Seq. No.: 00166 A/S Pos.: 18 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 18
Replicate 1 Time: 14:22
Peak Area (A-s): 0.001 Peak Height (A): 0.007
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.032
Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 18
Replicate 2 (Peak Stored) Time: 14:25
Peak Area (A-s): 0.000 Peak Height (A): 0.005
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.032
Blank Corrected Pk Area (A-s): 0.000

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Mean Pk Area (A-s):       0.000          SD: 0.0001                          10.49

Be     ID: STD1= 10 ug/L       Seq. No.: 00167    A/S Pos.: 18     Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 18
Replicate  1                              Time: 14:28
Peak Area (A-s): 0.007                    Peak Height (A): 0.019
Background Pk Area (A-s): 0.043           Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.006

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 18
Replicate  2 (Peak Stored)                Time: 14:31
Peak Area (A-s): 0.002                    Peak Height (A): 0.006
Background Pk Area (A-s): 0.030           Background Pk Height (A): 0.049
Blank Corrected Pk Area (A-s): 0.002

Mean Pk Area (A-s):       0.004          SD: 0.0029                RSD(%): 72.06

Be     ID: STD2= 25 ug/L       Seq. No.: 00168    A/S Pos.: 18     Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 18
Replicate  1                              Time: 14:33
Peak Area (A-s): 0.002                    Peak Height (A): 0.006
Background Pk Area (A-s): 0.018           Background Pk Height (A): 0.037
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 18
Replicate  2 (Peak Stored)                Time: 14:36
Peak Area (A-s): 0.001                    Peak Height (A): 0.005
Background Pk Area (A-s): 0.016           Background Pk Height (A): 0.034
Blank Corrected Pk Area (A-s): 0.001

Mean Pk Area (A-s):       0.001          SD: 0.0001                RSD(%): 13.13

Standard abs. & conc. values are not in the same order.
Be     ID: 185-26-8H           Seq. No.: 00166    A/S Pos.: 18     Date: 11/11/97

Concentration (ug/L  ): --------

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Be     ID: STD BLANK           Seq. No.: 00169    A/S Pos.: 0      Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  1                              Time: 14:39
Peak Area (A-s): 0.001                    Peak Height (A): 0.005
Background Pk Area (A-s): 0.018           Background Pk Height (A): 0.035
Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate  2 (Peak Stored)                Time: 14:41
Peak Area (A-s): 0.002                    Peak Height (A): 0.005
Background Pk Area (A-s): 0.019           Background Pk Height (A): 0.038
Blank Corrected Pk Area (A-s): 0.001

Mean Pk Area (A-s):       0.001          SD: 0.0009                RSD(%): 118.27

Auto-zero performed.
```

Be ID: 185-26-9C Seq. No.: 00170 A/S Pos.: 19 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 19
The background signal is changing during BOC measurement.
Replicate 1 Time: 14:44
Peak Area (A-s): 0.007 Peak Height (A): 0.050
Background Pk Area (A-s): 0.282 Background Pk Height (A): 0.788
Blank Corrected Pk Area (A-s): 0.006

uL dispensed: 10 from 0, 5 from 40, 10 from 19
Replicate 2 (Peak Stored) Time: 14:47
Peak Area (A-s): 0.008 Peak Height (A): 0.048
Background Pk Area (A-s): 0.264 Background Pk Height (A): 0.694
Blank Corrected Pk Area (A-s): 0.007

Mean Pk Area (A-s): 0.007 SD: 0.0006 RSD(%): 9.42

Be ID: STD1= 10 ug/L Seq. No.: 00171 A/S Pos.: 19 Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 19
Replicate 1 Time: 14:49
Peak Area (A-s): 0.007 Peak Height (A): 0.151
Background Pk Area (A-s): 0.350 Background Pk Height (A): 1.132
Blank Corrected Pk Area (A-s): 0.006

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 19
Replicate 2 (Peak Stored) Time: 14:52
Peak Area (A-s): 0.009 Peak Height (A): 0.174
Background Pk Area (A-s): 0.318 Background Pk Height (A): 0.881
Blank Corrected Pk Area (A-s): 0.007

Mean Pk Area (A-s): 0.006 SD: 0.0013 RSD(%): 20.61

Be ID: STD1= 10 ug/L Seq. No.: 00172 A/S Pos.: 19 Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 19
The background signal is changing during BOC measurement.
Replicate 1 Time: 14:55
Peak Area (A-s): 0.010 Peak Height (A): 0.121
Background Pk Area (A-s): 0.313 Background Pk Height (A): 0.830
Blank Corrected Pk Area (A-s): 0.008

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 19
Replicate 2 (Peak Stored) Time: 14:58
Peak Area (A-s): 0.009 Peak Height (A): 0.142
Background Pk Area (A-s): 0.323 Background Pk Height (A): 0.964
Blank Corrected Pk Area (A-s): 0.008

Mean Pk Area (A-s): 0.008 SD: 0.0003 RSD(%): 3.49

Be ID: STD2= 25 ug/L Seq. No.: 00173 A/S Pos.: 19 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 19
Replicate 1 Time: 15:01
Peak Area (A-s): 0.005 Peak Height (A): 0.093
Background Pk Area (A-s): 0.384 Background Pk Height (A): 1.405
Blank Corrected Pk Area (A-s): 0.004

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from
The background signal is changing during BOC measurement.
Replicate 2 (Peak Stored) Time: 15:03
Peak Area (A-s): 0.006 Peak Height (A): 0.101
Background Pk Area (A-s): 0.337 Background Pk Height (A): 0.965
Blank Corrected Pk Area (A-s): 0.005

Mean Pk Area (A-s): 0.004 SD: 0.0007 RSD(%): 15.30

Standard abs. & conc. values are not in the same order.
Be ID: 185-26-9C Seq. No.: 00170 A/S Pos.: 19 Date: 11/11/97

Concentration (ug/L): --------

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Be ID: STD BLANK Seq. No.: 00174 A/S Pos.: 0 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 1 Time: 15:06
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.020 Background Pk Height (A): 0.045
Blank Corrected Pk Area (A-s): -0.000

uL dispensed: 10 from 0, 5 from 40, 10 from 0
Replicate 2 (Peak Stored) Time: 15:09
Peak Area (A-s): 0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.018 Background Pk Height (A): 0.048
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): -0.000 SD: 0.0000 RSD(%): 5.22

Auto-zero performed.

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Be ID: 185-26-10C Seq. No.: 00175 A/S Pos.: 20 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 10 from 20
Replicate 1 Time: 15:11
Peak Area (A-s): 0.002 Peak Height (A): 0.007
Background Pk Area (A-s): 0.037 Background Pk Height (A): 0.078
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 40, 10 from 20
Replicate 2 (Peak Stored) Time: 15:14
Peak Area (A-s): 0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.040 Background Pk Height (A): 0.081
Blank Corrected Pk Area (A-s): 0.000

Mean Pk Area (A-s): 0.000 SD: 0.0002 RSD(%): 42.06

Be ID: STD1= 10 ug/L Seq. No.: 00176 A/S Pos.: 20 Date: 11/11/97

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 20
Replicate 1 Time: 15:17
Peak Area (A-s): 0.006 Peak Height (A): 0.016
Background Pk Area (A-s): 0.063 Background Pk Height (A): 0.127
Blank Corrected Pk Area (A-s): 0.005

uL dispensed: 13 from 0, 5 from 40, 2 from 1, 10 from 20

Peak Area (A-s): 0.004 Peak Height (A): 0.011
Background Pk Area (A-s): 0.058 Background Pk Height (A): 0.116
Blank Corrected Pk Area (A-s): 0.003

Mean Pk Area (A-s): 0.004 SD: 0.0009 RSD(%): 23.65

Be ID: STD2= 25 ug/L Seq. No.: 00177 A/S Pos.: 20 Date: 11/11/97

uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 20
Replicate 1 Time: 15:22
Peak Area (A-s): 0.007 Peak Height (A): 0.019
Background Pk Area (A-s): 0.072 Background Pk Height (A): 0.143
Blank Corrected Pk Area (A-s): 0.006

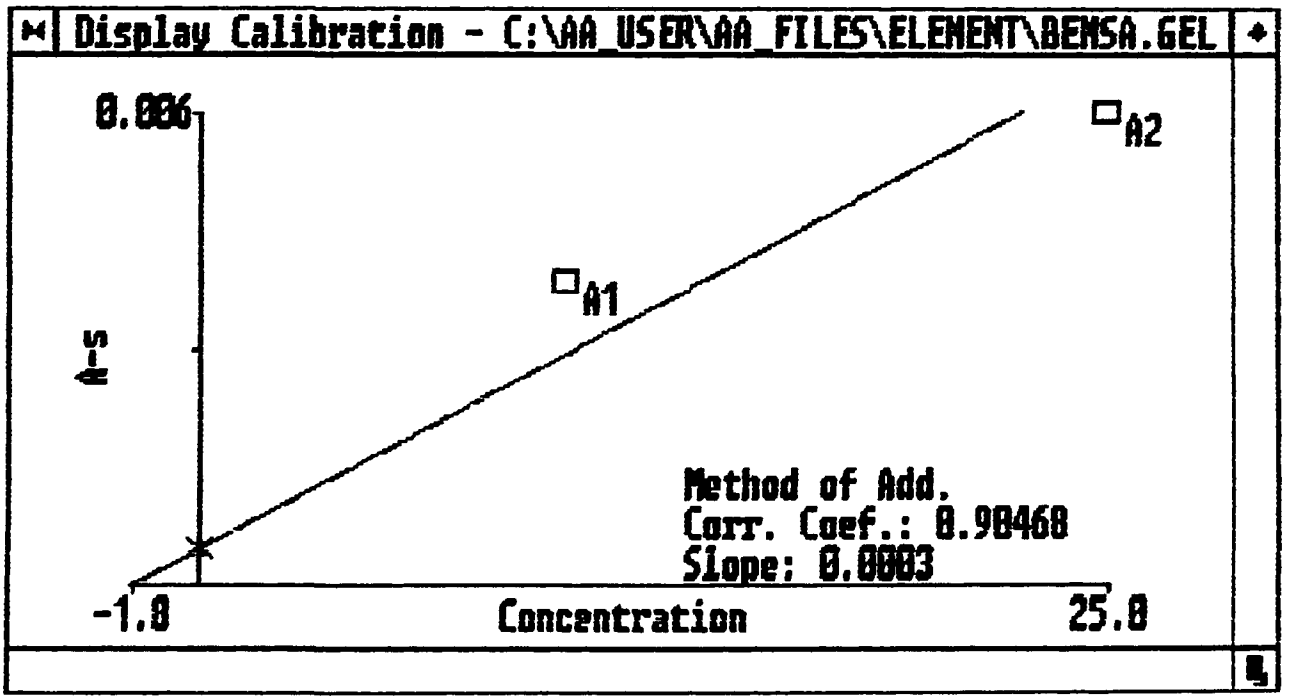
uL dispensed: 10 from 0, 5 from 40, 5 from 1, 10 from 20
Replicate 2 (Peak Stored) Time: 15:25
Peak Area (A-s): 0.007 Peak Height (A): 0.020
Background Pk Area (A-s): 0.065 Background Pk Height (A): 0.131
Blank Corrected Pk Area (A-s): 0.006

Mean Pk Area (A-s): 0.006 SD: 0.0002 RSD(%): 2.72

The standard additions calibration curve may not be linear.
Be ID: 185-26-10C Seq. No.: 00175 A/S Pos.: 20 Date: 11/11/97

Concentration (ug/L): 1.8

Correlation coefficient: 0.90468 Slope: 0.0003



Autosampler Loading Map
Element File: TL.GEL ID/Weight File: EB1[illegible]

1X
43452

Loc.	Concentration	Solutions
0		Calib. Blank / Diluent / ICB / CCB
1	50.0 ug/L	Stock 1-64-1P
2	100.0 ug/L	Stock / Recovery Stock 1-64-2P
4		ICV=30ug/L 1-64-3P
5		CCV=60ug/L 1-64-4P
6		CHECK LO
7		43452 MB
8		43452 LCS
9		185-26-6C
10		~~185-26-6C~~ L
11		185-26-7C
12		185-26-8E
13		185-26-8H
14		185-26-10C
15		185-26-1D BH
16		185-26-1D ~~L~~ BH L
17		185-26-2D ~~BH~~, 12 BH
18		185-26-3D BH
19		185-26-4D BH
20		185-26-5D BH
21		185-26-6D BH
22		185-26-7CD BH
23		185-26-8DE BH
24		185-26-9D, 11 BH
25		185-26-10D BH
39		Modifier 1

DKA 11/18/97

188-52-13,14, 188-52-13,14 11/20/97 188-52-17,18, 188-52-19,20

MSAs analyzed. All passing DKA 11/19/97

11/19/97 CC

11/20/97

```
Element File: TL.GEL          Element: Tl              Wavelength: 276.8
Date: 11/18/97                Time: 12:30              Slit: 0.70 L
Data File: EB184.DAT          ID/Wt File: UNTITLED     Lamp Current: 0
Technique: HGA                Calib. Type: Nonlinear   Energy: 53
```

Tl ID: STD BLK Seq. No.: 00001 A/S Pos.: 0 Date: 11/18/9

uL dispensed: 5 from 0, 5 from 39, 20 from 0
Replicate 1 Time: 12:32
Peak Area (A-s): -0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.4

uL dispensed: 5 from 0, 5 from 39, 20 from 0
Replicate 2 (Peak Stored) Time: 12:35
Peak Area (A-s): -0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.2

Mean Conc (ug/L): 0.3 SD: 0.14 RSD(%): 43.40

Auto-zero performed.

Tl ID: STD1=25ug/L Seq. No.: 00002 A/S Pos.: 1 Date: 11/18/97

uL dispensed: 15 from 0, 5 from 39, 10 from 1
Replicate 1 Time: 12:38
Peak Area (A-s): 0.037 Peak Height (A): 0.052
Background Pk Area (A-s): 0.027 Background Pk Height (A): 0.030
Blank Corrected Pk Area (A-s): 0.038
Concentration (ug/L): 19.3

uL dispensed: 15 from 0, 5 from 39, 10 from 1
Replicate 2 (Peak Stored) Time: 12:41
Peak Area (A-s): 0.040 Peak Height (A): 0.054
Background Pk Area (A-s): 0.026 Background Pk Height (A): 0.032
Blank Corrected Pk Area (A-s): 0.042
Concentration (ug/L): 21.3

Mean Conc (ug/L): 20.3 SD: 1.41 RSD(%): 6.94

Standard number 1 applied. [25.0]
Correlation coefficient: 1.00000 Slope: 0.0016

Tl ID: STD2=50ug/L Seq. No.: 00003 A/S Pos.: 1 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 1
Replicate 1 Time: 12:44
Peak Area (A-s): 0.079 Peak Height (A): 0.103
Background Pk Area (A-s): 0.049 Background Pk Height (A): 0.058
Blank Corrected Pk Area (A-s): 0.080
Concentration (ug/L): 50.7

uL dispensed: 5 from 0, 5 from 39, 20 from 1
Replicate 2 (Peak Stored) Time: 12:47
Peak Area (A-s): 0.081 Peak Height (A): 0.101
Background Pk Area (A-s): 0.048 Background Pk Height (A): 0.060
Blank Corrected Pk Area (A-s): 0.082
Concentration (ug/L): 51.6

Mean Conc (ug/L): 51.1 SD: 0.64 RSD(%): 1.25

Standard number 2 applied. [50.0]
Correlation coefficient: 1.00000 Slope: 0.0016

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T1 ID: STD3=100ug/L Seq. No.: 00004 A/S Pos.: 2 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 2
Replicate 1 Time: 12:50
Peak Area (A-s): 0.149 Peak Height (A): 0.192
Background Pk Area (A-s): 0.093 Background Pk Height (A): 0.112
Blank Corrected Pk Area (A-s): 0.150
Concentration (ug/L): 89.2

uL dispensed: 5 from 0, 5 from 39, 20 from 2
Replicate 2 (Peak Stored) Time: 12:53
Peak Area (A-s): 0.150 Peak Height (A): 0.193
Background Pk Area (A-s): 0.093 Background Pk Height (A): 0.114
Blank Corrected Pk Area (A-s): 0.151
Concentration (ug/L): 89.7

Mean Conc (ug/L): 89.5 SD: 0.36 RSD(%): 0.40

S-shaped calibration curve detected. 2-coef. equation used.
Standard number 3 applied. [100.0]
Correlation coefficient: 0.99948 Slope: 0.0017

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T1 ID: ICV=30ug/L Seq. No.: 00005 A/S Pos.: 4 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 4
Replicate 1 Time: 13:20
Peak Area (A-s): 0.047 Peak Height (A): 0.063
Background Pk Area (A-s): 0.033 Background Pk Height (A): 0.038
Blank Corrected Pk Area (A-s): 0.048
Concentration (ug/L): 29.9

uL dispensed: 5 from 0, 5 from 39, 20 from 4
Replicate 2 (Peak Stored) Time: 13:23
Peak Area (A-s): 0.048 Peak Height (A): 0.059
Background Pk Area (A-s): 0.031 Background Pk Height (A): 0.036
Blank Corrected Pk Area (A-s): 0.049
Concentration (ug/L): 30.5

Mean Conc (ug/L): 30.2 SD: 0.47 RSD(%): 1.57

QC sample is within range 27.0 - 33.0

T1 ID: ICB Seq. No.: 00006 A/S Pos.: 0 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 0
Replicate 1 Time: 13:26
Peak Area (A-s): 0.000 Peak Height (A): 0.006
Background Pk Area (A-s): 0.002 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.0

uL dispensed: 5 from 0, 5 from 39, 20 from 0
Replicate 2 (Peak Stored) Time: 13:29
Peak Area (A-s): 0.000 Peak Height (A): 0.006
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.8

Mean Conc (ug/L): 0.9 SD: 0.16 RSD(%): 16.79

QC sample is within range -2.0 - 2.0

T1 ID: CHECK LO Seq. No.: 00007 A/S Pos.: 6 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 6
Replicate 1 Time: 13:32
Peak Area (A-s): 0.010 Peak Height (A): 0.015
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.011
Concentration (ug/L): 6.6

uL dispensed: 5 from 0, 5 from 39, 20 from 6
Replicate 2 (Peak Stored) Time: 13:35
Peak Area (A-s): 0.007 Peak Height (A): 0.013
Background Pk Area (A-s): 0.010 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 5.1

Mean Conc (ug/L): 0.9 SD: 1.03

T1 ID: 43452 MB Seq. No.: 00008 A/S Pos.: 7 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 7
Replicate 1 Time: 13:38
Peak Area (A-s): -0.000 Peak Height (A): 0.006
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.6

uL dispensed: 5 from 0, 5 from 39, 20 from 7
Replicate 2 (Peak Stored) Time: 13:41
Peak Area (A-s): 0.002 Peak Height (A): 0.006
Background Pk Area (A-s): 0.002 Background Pk Height (A): 0.005
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 1.8

Mean Conc (ug/L): 1.2 SD: 0.87 RSD(%): 73.31

T1 ID: 43452 LCS Seq. No.: 00009 A/S Pos.: 8 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 8
Replicate 1 Time: 13:44
Peak Area (A-s): 0.061 Peak Height (A): 0.075
Background Pk Area (A-s): 0.035 Background Pk Height (A): 0.042
Blank Corrected Pk Area (A-s): 0.062
Concentration (ug/L): 38.9

uL dispensed: 5 from 0, 5 from 39, 20 from 8
Replicate 2 (Peak Stored) Time: 13:47
Peak Area (A-s): 0.061 Peak Height (A): 0.079
Background Pk Area (A-s): 0.038 Background Pk Height (A): 0.049
Blank Corrected Pk Area (A-s): 0.063
Concentration (ug/L): 39.2

T.p adjusted. Reanalyzed. DKH 11/19/97

Mean Conc (ug/L): 39.1 SD: 0.18 RSD(%): 0.45

T1 ID: 185-26-6C Seq. No.: 00010 A/S Pos.: 9 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 9

T1 ID: 43452 LCS Seq. No.: 00011 A/S Pos.: 8 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 8
Replicate 1 Time: 13:50
Peak Area (A-s): 0.064 Peak Height (A): 0.076
Background Pk Area (A-s): 0.036 Background Pk Height (A): 0.047
Blank Corrected Pk Area (A-s): 0.065
Concentration (ug/L): 40.8

uL dispensed: 5 from 0, 5 from 39, 20 from 8
Replicate 2 (Peak Stored) Time: 13:53
Peak Area (A-s): 0.062 Peak Height (A): 0.074
Background Pk Area (A-s): 0.039 Background Pk Height (A): 0.047
Blank Corrected Pk Area (A-s): 0.063

Mean Conc (ug/L): 40.2 SD: 0.90 RSD(%): 2.23

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T1 ID: 185-26-6C Seq. No.: 00012 A/S Pos.: 9 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 9
Replicate 1 Time: 13:56
Peak Area (A-s): 0.012 Peak Height (A): 0.020
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.015
Blank Corrected Pk Area (A-s): 0.013
Concentration (ug/L): 8.1

not used
MH 11/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 9
Replicate 2 (Peak Stored) Time: 13:59
Peak Area (A-s): 0.012 Peak Height (A): 0.020
Background Pk Area (A-s): 0.013 Background Pk Height (A): 0.014
Blank Corrected Pk Area (A-s): 0.013
Concentration (ug/L): 7.8

Mean Conc (ug/L): 7.9 SD: 0.15 RSD(%): 1.90

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T1 ID: 185-26-6C Seq. No.: 00013 A/S Pos.: 9 Date: 11/18/97

uL dispensed: 5 from 39, 5 from 2, 20 from 9
Replicate 1 Time: 14:02
Peak Area (A-s): 0.036 Peak Height (A): 0.063
Background Pk Area (A-s): 0.029 Background Pk Height (A): 0.042
Blank Corrected Pk Area (A-s): 0.037
Concentration (ug/L): 22.7

not used
MH 11/20/97

uL dispensed: 5 from 39, 5 from 2, 20 from 9
Replicate 2 (Peak Stored) Time: 14:05
Peak Area (A-s): 0.035 Peak Height (A): 0.061
Background Pk Area (A-s): 0.029 Background Pk Height (A): 0.044
Blank Corrected Pk Area (A-s): 0.037
Concentration (ug/L): 22.6

Mean Conc (ug/L): 22.6 SD: 0.08 RSD(%): 0.36

Recovery is 58.8% (outside of specified limits)

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T1 ID: 185-26-6C-L Seq. No.: 00014 A/S Pos.: 10 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 10
Replicate 1 Time: 14:08
Peak Area (A-s): 0.001 Peak Height (A): 0.008
Background Pk Area (A-s): 0.007 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.2

uL dispensed: 5 from 0, 5 from 39, 20 from 10
Replicate 2 (Peak Stored) Time: 14:11
Peak Area (A-s): 0.003 Peak Height (A): 0.009
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.005

DIV. Reanalyzed.

306
DKH 11/18/97
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Concentration (ug/L): 2.8

Mean Conc (ug/L): 2.0 SD: 1.16 RSD(%): 58.57

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T1 ID: 185-26-6C L Seq. No.: 00015 A/S Pos.: 10 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 10
Replicate 1 Time: 14:13
Peak Area (A-s): 0.004 Peak Height (A): 0.008
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 3.4

not used pvl 11/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 10
Replicate 2 (Peak Stored) Time: 14:16
Peak Area (A-s): 0.005 Peak Height (A): 0.008
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.006
Concentration (ug/L): 3.6

Mean Conc (ug/L): 3.5 SD: 0.17 RSD(%): 4.92

~~~~~~

T1 ID: 185-26-6C L Seq. No.: 00016 A/S Pos.: 10 Date: 11/18/97

uL dispensed: 5 from 39, 5 from 2, 20 from 10
Replicate 1 Time: 14:19
Peak Area (A-s): 0.033 Peak Height (A): 0.056
Background Pk Area (A-s): 0.021 Background Pk Height (A): 0.034
Blank Corrected Pk Area (A-s): 0.034
Concentration (ug/L): 20.9

not used pvl 11/20/97

uL dispensed: 5 from 39, 5 from 2, 20 from 10
Replicate 2 (Peak Stored) Time: 14:22
Peak Area (A-s): 0.033 Peak Height (A): 0.055
Background Pk Area (A-s): 0.022 Background Pk Height (A): 0.033
Blank Corrected Pk Area (A-s): 0.034
Concentration (ug/L): 20.9

Mean Conc (ug/L): 20.9 SD: 0.02 RSD(%): 0.12

Recovery is 69.8% (outside of specified limits)

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T1 ID: 185-26-7C Seq. No.: 00017 A/S Pos.: 11 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 11
Replicate 1 Time: 14:25
Peak Area (A-s): 0.013 Peak Height (A): 0.021
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.013
Blank Corrected Pk Area (A-s): 0.014
Concentration (ug/L): 8.6

Not used pvl 11/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 11
Replicate 2 (Peak Stored) Time: 14:28
Peak Area (A-s): 0.016 Peak Height (A): 0.023
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.013
Blank Corrected Pk Area (A-s): 0.018
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Cor : 10.8

Mean Conc (ug/L): 9.7 SD: 1.59 RSD(%): 16.44

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Tl ID: 185-26-8E Seq. No.: 00018 A/S Pos.: 12 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 12
Replicate 1 Time: 14:31
Peak Area (A-s): 0.001 Peak Height (A): 0.007
Background Pk Area (A-s): 0.105 Background Pk Height (A): 0.052
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 1.6

not used BW 11/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 12
Replicate 2 (Peak Stored) Time: 14:34
Peak Area (A-s): 0.002 Peak Height (A): 0.007
Background Pk Area (A-s): 0.185 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 1.9

Mean Conc (ug/L): 1.7 SD: 0.17 RSD(%): 10.03

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Tl ID: 185-26-8H Seq. No.: 00019 A/S Pos.: 13 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 13
Replicate 1 Time: 14:37
Peak Area (A-s): -0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.001 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L): -0.0

not used BW 11/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 13
Replicate 2 (Peak Stored) Time: 14:39
Peak Area (A-s): -0.001 Peak Height (A): 0.007
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L): -0.1

Mean Conc (ug/L): -0.0 SD: 0.05 RSD(%): 95.38

~~~~~~

Tl ID: CCV=60ug/L Seq. No.: 00020 A/S Pos.: 5 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 5
Replicate 1 Time: 14:42
Peak Area (A-s): 0.096 Peak Height (A): 0.127
Background Pk Area (A-s): 0.061 Background Pk Height (A): 0.074
Blank Corrected Pk Area (A-s): 0.097
Concentration (ug/L): 62.0

uL dispensed: 5 from 0, 5 from 39, 20 from 5
Replicate 2 (Peak Stored) Time: 14:45
Peak Area (A-s): 0.094 Peak Height (A): 0.126
Background Pk Area (A-s): 0.063 Background Pk Height (A): 0.072
Blank Corrected Pk Area (A-s): 0.096
Concentration (ug/L): 61.0
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Mean Conc (ug/L): 61.5 SD: 0.66 08

QC sample is within range 48.0 - 72.0

~~~~~~

T1 ID: CCB Seq. No.: 00021 A/S Pos.: 0 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 0
Replicate 1 Time: 14:48
Peak Area (A-s): -0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.3

uL dispensed: 5 from 0, 5 from 39, 20 from 0
Replicate 2 (Peak Stored) Time: 14:51
Peak Area (A-s): 0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 1.6

Mean Conc (ug/L): 0.9 SD: 0.86 RSD(%): 91.30

QC sample is within range -2.0 - 2.0

~~~~~~

T1 ID: 185-26-10C Seq. No.: 00022 A/S Pos.: 14 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 14
Replicate 1 Time: 15:01
Peak Area (A-s): 0.006 Peak Height (A): 0.014
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.014
Blank Corrected Pk Area (A-s): 0.007
Concentration (ug/L): 4.8

uL dispensed: 5 from 0, 5 from 39, 20 from 14
Replicate 2 (Peak Stored) Time: 15:04
Peak Area (A-s): 0.010 Peak Height (A): 0.015
Background Pk Area (A-s): 0.015 Background Pk Height (A): 0.013
Blank Corrected Pk Area (A-s): 0.011
Concentration (ug/L): 6.6

NIV. MAT 11/19/97

Mean Conc (ug/L): 5.6 SD: 1.45 RSD(%): 26.11

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T1 ID: 185-26-10C Seq. No.: 00023 A/S Pos.: 14 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 14
Replicate 1 Time: 15:06
Peak Area (A-s): 0.008 Peak Height (A): 0.014
Background Pk Area (A-s): 0.014 Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 5.6

not used
A.M. 11/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 14
Replicate 2 (Peak Stored) Time: 15:09
Peak Area (A-s): 0.007 Peak Height (A): 0.014
Background Pk Area (A-s): 0.016 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.008
~~~~~~

Co : 4.8

Mean Conc (ug/L): 5.2 SD: 0.58 RSD(%): 10.99

~~~~~~

T1 ID: 185-26-1D BH Seq. No.: 00024 A/S Pos.: 15 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 15
Replicate 1 Time: 15:12
Peak Area (A-s): -0.000 Peak Height (A): 0.006
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.6

uL dispensed: 5 from 0, 5 from 39, 20 from 15
Replicate 2 (Peak Stored) Time: 15:15
Peak Area (A-s): -0.001 Peak Height (A): 0.007
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.3

Mean Conc (ug/L): 0.4 SD: 0.22 RSD(%): 53.14

~~~~~~

T1 ID: 185-26-1D BH PDS Seq. No.: 00025 A/S Pos.: 15 Date: 11/18/97

uL dispensed: 5 from 39, 5 from 2, 20 from 15
Replicate 1 Time: 15:18
Peak Area (A-s): 0.037 Peak Height (A): 0.057
Background Pk Area (A-s): 0.026 Background Pk Height (A): 0.038
Blank Corrected Pk Area (A-s): 0.038
Concentration (ug/L): 23.5

uL dispensed: 5 from 39, 5 from 2, 20 from 15
Replicate 2 (Peak Stored) Time: 15:21
Peak Area (A-s): 0.036 Peak Height (A): 0.058
Background Pk Area (A-s): 0.026 Background Pk Height (A): 0.033
Blank Corrected Pk Area (A-s): 0.037
Concentration (ug/L): 22.9

Mean Conc (ug/L): 23.2 SD: 0.43 RSD(%): 1.84

Recovery is ~~91.0%~~ 92.3 %

~~~~~~

T1 ID: 185-26-1D$_1$L BH Seq. No.: 00026 A/S Pos.: 16 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 16
Replicate 1 Time: 15:24
Peak Area (A-s): -0.002 Peak Height (A): 0.005
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.4

uL dispensed: 5 from 0, 5 from 39, 20 from 16
Replicate 2 (Peak Stored) Time: 15:27
Peak Area (A-s): 0.002 Peak Height (A): 0.006
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.003
~~~~~~

Concentration (ug/L): 1.7

Mean Conc (ug/L): 0.7 SD: 1.51 RSD(%): 228.22

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T1 ID: 185-26-1D L Seq. No.: 00027 A/S Pos.: 16 Date: 11/18/97

uL dispensed: 5 from 39, 5 from 2, 20 from 16
Replicate 1 Time: 15:30
Peak Area (A-s): 0.035 Peak Height (A): 0.047
Background Pk Area (A-s): 0.025 Background Pk Height (A): 0.028
Blank Corrected Pk Area (A-s): 0.037
Concentration (ug/L): 22.6

not used
KM 11/20/97

uL dispensed: 5 from 39, 5 from 2, 20 from 16
Replicate 2 (Peak Stored) Time: 15:33
Peak Area (A-s): 0.034 Peak Height (A): 0.047
Background Pk Area (A-s): 0.025 Background Pk Height (A): 0.028
Blank Corrected Pk Area (A-s): 0.035
Concentration (ug/L): 21.8

Mean Conc (ug/L): 22.2 SD: 0.56 RSD(%): 2.51

Recovery is 86.3%

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T1 ID: 185-26-2D Seq. No.: 00028 A/S Pos.: 17 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 17
Replicate 1 Time: 15:36
Peak Area (A-s): 0.001 Peak Height (A): 0.008
Background Pk Area (A-s): 0.020 Background Pk Height (A): 0.016
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 1.6

not used
KM 11/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 17
Replicate 2 (Peak Stored) Time: 15:39
Peak Area (A-s): 0.002 Peak Height (A): 0.011
Background Pk Area (A-s): 0.019 Background Pk Height (A): 0.014
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 2.2

Mean Conc (ug/L): 1.9 SD: 0.42 RSD(%): 22.65

~~~~~~

T1 ID: 185-26-2D,12 Seq. No.: 00029 A/S Pos.: 17 Date: 11/18/97
KM 11/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 17
Replicate 1 Time: 15:42
Peak Area (A-s): 0.000 Peak Height (A): 0.008
Background Pk Area (A-s): 0.020 Background Pk Height (A): 0.015
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.0

uL dispensed: 5 from 0, 5 from 39, 20 from 17
Replicate 2 (Peak Stored) Time: 15:45
Peak Area (A-s): -0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.020 Background Pk Height (A): 0.017
Blank Corrected Pk Area (A-s): 0.001
~~~~~~

Mean Conc (ug/L): 0.7 SD: 0.47 RSD(%): 72.44

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Tl ID: 185-26-3D BH 88 µl 11/20/97 Seq. No.: 00030 A/S Pos.: 18 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 18
Replicate 1 Time: 15:48
Peak Area (A-s): -0.000 Peak Height (A): 0.006
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.7

uL dispensed: 5 from 0, 5 from 39, 20 from 18
Replicate 2 (Peak Stored) Time: 15:51
Peak Area (A-s): 0.001 Peak Height (A): 0.008
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.1

Mean Conc (ug/L): 0.9 SD: 0.27 RSD(%): 31.25

~~~~~~

Tl ID: 185-26-4D BH 82 µl 11/20/97 Seq. No.: 00031 A/S Pos.: 19 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 19
Replicate 1 Time: 15:53
Peak Area (A-s): -0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.008 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): -0.000
Concentration (ug/L): -0.1

uL dispensed: 5 from 0, 5 from 39, 20 from 19
Replicate 2 (Peak Stored) Time: 15:56
Peak Area (A-s): -0.001 Peak Height (A): 0.006
Background Pk Area (A-s): 0.007 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.000
Concentration (ug/L): 0.2

Mean Conc (ug/L): 0.1 SD: 0.21 RSD(%): 302.98

~~~~~~

Tl ID: CCV=60ug/L Seq. No.: 00032 A/S Pos.: 5 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 5
Replicate 1 Time: 15:59
Peak Area (A-s): 0.093 Peak Height (A): 0.127
Background Pk Area (A-s): 0.063 Background Pk Height (A): 0.074
Blank Corrected Pk Area (A-s): 0.094
Concentration (ug/L): 60.1

uL dispensed: 5 from 0, 5 from 39, 20 from 5
Replicate 2 (Peak Stored) Time: 16:02
Peak Area (A-s): 0.093 Peak Height (A): 0.123
Background Pk Area (A-s): 0.063 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): 0.094
Concentration (ug/L): 60.2
~~~~~~

Mean Conc (ug/L): 0.1 SD: 0.03

QC sample is within range 48.0 - 72.0

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T1 ID: CCB Seq. No.: 00033 A/S Pos.: 0 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 0
Replicate 1 Time: 16:05
Peak Area (A-s): -0.002 Peak Height (A): 0.007
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.6

uL dispensed: 5 from 0, 5 from 39, 20 from 0
Replicate 2 (Peak Stored) Time: 16:08
Peak Area (A-s): 0.001 Peak Height (A): 0.007
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.2

Mean Conc (ug/L): 0.3 SD: 1.25 RSD(%): 436.68

QC sample is within range -2.0 - 2.0

~~~~~~

T1 ID: 185-26-5D BH Seq. No.: 00034 A/S Pos.: 20 Date: 11/18/97
05 µl 11/20/97
uL dispensed: 5 from 0, 5 from 39, 20 from 20
Replicate 1 Time: 16:11
Peak Area (A-s): 0.002 Peak Height (A): 0.007
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 1.9

uL dispensed: 5 from 0, 5 from 39, 20 from 20
Replicate 2 (Peak Stored) Time: 16:14
Peak Area (A-s): -0.000 Peak Height (A): 0.006
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.7

Mean Conc (ug/L): 1.3 SD: 0.87 RSD(%): 66.31

~~~~~~

T1 ID: 185-26-6D BH Seq. No.: 00035 A/S Pos.: 21 Date: 11/18/97
05 µl 11/20/97
uL dispensed: 5 from 0, 5 from 39, 20 from 21
Replicate 1 Time: 16:17
Peak Area (A-s): -0.000 Peak Height (A): 0.007
Background Pk Area (A-s): 0.007 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.6

uL dispensed: 5 from 0, 5 from 39, 20 from 21
Replicate 2 (Peak Stored) Time: 16:20
Peak Area (A-s): 0.002 Peak Height (A): 0.008
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.003
~~~~~~

Mean Conc (ug/L): 1.1 SD: 0.77 RSD(%): 68.62

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T1 ID: 185-26-7CD Seq. No.: 00036 A/S Pos.: 22 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 22
Replicate 1 Time: 16:23
Peak Area (A-s): 0.009 Peak Height (A): 0.016
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): 0.011
Concentration (ug/L): 6.4

uL dispensed: 5 from 0, 5 from 39, 20 from 22
Replicate 2 (Peak Stored) Time: 16:26
Peak Area (A-s): 0.006 Peak Height (A): 0.017
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 4.7

N/V. Reanalyzed MKH 11/19/97

Mean Conc (ug/L): 5.6 SD: 1.23 RSD(%): 22.12

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T1 ID: 185-26-7CD 6H Seq. No.: 00037 A/S Pos.: 22 Date: 11/18/97

6 µl 11/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 22
Replicate 1 Time: 16:29
Peak Area (A-s): 0.009 Peak Height (A): 0.016
Background Pk Area (A-s): 0.012 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.010
Concentration (ug/L): 5.9

uL dispensed: 5 from 0, 5 from 39, 20 from 22
Replicate 2 (Peak Stored) Time: 16:32
Peak Area (A-s): 0.009 Peak Height (A): 0.016
Background Pk Area (A-s): 0.011 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.010
Concentration (ug/L): 6.2

Mean Conc (ug/L): 6.1 SD: 0.20 RSD(%): 3.27

~~~~~~

T1 ID: 185-26-8DE BH Seq. No.: 00038 A/S Pos.: 23 Date: 11/18/97

05 µl 11/20/97

uL dispensed: 5 from 0, 5 from 39, 20 from 23
Replicate 1 Time: 16:35
Peak Area (A-s): 0.002 Peak Height (A): 0.008
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 2.1

uL dispensed: 5 from 0, 5 from 39, 20 from 23
Replicate 2 (Peak Stored) Time: 16:38
Peak Area (A-s): 0.003 Peak Height (A): 0.009
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 2.3
~~~~~~

Mean Conc (ug/L): ... SD: ... RSD(%): ...

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T1 ID: 185-26-9D, 1BH 60 µl 11/20/97 Seq. No.: 00039 A/S Pos.: 24 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 24
Replicate 1 Time: 16:41
Peak Area (A-s): 0.002. Peak Height (A): 0.006
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 1.7

uL dispensed: 5 from 0, 5 from 39, 20 from 24
Replicate 2 (Peak Stored) Time: 16:44
Peak Area (A-s): -0.002 Peak Height (A): 0.006
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.6

Mean Conc (ug/L): 0.5 SD: 1.62 RSD(%): 306.29

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T1 ID: 185-26-10D BH 60 µl 11/20/97 Seq. No.: 00040 A/S Pos.: 25 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 25
Replicate 1 Time: 16:47
Peak Area (A-s): 0.000 Peak Height (A): 0.006
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.006
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.0

uL dispensed: 5 from 0, 5 from 39, 20 from 25
Replicate 2 (Peak Stored) Time: 16:50
Peak Area (A-s): 0.002 Peak Height (A): 0.007
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 2.2

Mean Conc (ug/L): 1.6 SD: 0.82 RSD(%): 51.58

~~~~~~

T1 ID: CCV=60ug/L Seq. No.: 00041 A/S Pos.: 5 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 5
Replicate 1 Time: 16:53
Peak Area (A-s): 0.084 Peak Height (A): 0.111
Background Pk Area (A-s): 0.054 Background Pk Height (A): 0.067
Blank Corrected Pk Area (A-s): 0.085
Concentration (ug/L): 54.1

uL dispensed: 5 from 0, 5 from 39, 20 from 5
Replicate 2 (Peak Stored) Time: 16:56
Peak Area (A-s): 0.085 Peak Height (A): 0.113
Background Pk Area (A-s): 0.052 Background Pk Height (A): 0.063
Blank Corrected Pk Area (A-s): 0.086
Concentration (ug/L): 54.8

Mean Conc (ug/L): 54.5 SD: 0.48 RSD(%): 0.88
~~~~~~

QC :

T1 ID: CCB Seq. No.: 00042 A/S Pos.: 0 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 0
Replicate 1 Time: 16:59
Peak Area (A-s): 0.002 Peak Height (A): 0.007
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.003
Concentration (ug/L): 2.1

uL dispensed: 5 from 0, 5 from 39, 20 from 0
Replicate 2 (Peak Stored) Time: 17:02
Peak Area (A-s): 0.001 Peak Height (A): 0.007
Background Pk Area (A-s): 0.007 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 1.4

Mean Conc (ug/L): 1.8 SD: 0.45 RSD(%): 25.35

T1 ID: CCB Seq. No.: 00043 A/S Pos.: 0 Date: 11/18/97

uL dispensed: 5 from 0, 5 from 39, 20 from 0
Replicate 1 Time: 17:05
Peak Area (A-s): 0.003 Peak Height (A): 0.008
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.007
Blank Corrected Pk Area (A-s): 0.004
Concentration (ug/L): 2.5

uL dispensed: 5 from 0, 5 from 39, 20 from 0
Replicate 2 (Peak Stored) Time: 17:08
Peak Area (A-s): -0.002 Peak Height (A): 0.007
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): -0.001
Concentration (ug/L): -0.3

Mean Conc (ug/L): 1.1 SD: 2.02 RSD(%): 184.26

QC sample is within range -2.0 - 2.0

Element: T1 Analyst: HOLSTE
Print Data: Main+Suppl. Peak Storage: 1 Repl./Sample
Print: Calib. Curve

INSTRUMENT: 4100 ZL Technique: HGA Version: 7.30
Wavelength: 276.8 Peak Slit: 0.70 Low
Signal Type: Zeeman AA Signal Measurement: Peak Area
Read Time: 4.0 Read Delay: 0.0 BOC Time: 2
Sample Replicates: 2
Standard Replicates: 2 Spike Replicates: Same as Sample

CALIBRATION:

Solutions	ID	Conc	Location	Volume	Diluent Volume	Modifier #1	Modifier #2
Calib. Blank	AUTO ZERO		0	10	10	5	
Standard 1	ADD 1 50 ug/L	50.0	1	10		5	
Standard 2	ADD 2 100ug/L	100.0	2	10		5	
Samples				10	10	5	

Diluent Location: 0
Modifier #1 Location: 39 Modifier #2 Location:
Calibration Units: ug/L Sample Units: ug/L
Calibration Type: Meth. of Add.

Furnace Time/Temperature Program:

Step	Temp	Ramp	Hold	Gas Flow	Read	Gas Type
1	110	5	30	250		Norm
2	130	1	35	250		Norm
3	700	5	20	250		Norm
4	1600	0	5	0	*	Norm
5	2500	1	5	250		Norm

Injection Temp: 20 Pipette Speed: 80% Extraction System: On

SEQUENCE:

Step	Action and Parameters
1	Pipet diluent + modifier 1 + spike + sample/std
2	Run HGA steps 1 to End

CHECKS:
Additions Preparation: Automated
Periodic Autozero Locations: All Samples

If %RSD > 20.0 and Concentration > 1.7 then Retry 1 times
Check %RSD on: Samples

QC:
Matrix Check Calculations:
% Difference for Dupls: No Locations:
% Recovery for Spike: No Locations: Conc:

Element File: TL_MSA.GEL Element: Tl Wavelength: 276.8
Date: 11/19/97 Time: 08:25 Slit: 0.70 L
Data File: EB184.DAT ID/Wt File: EB184.IDW Lamp Current: 0
Technique: HGA Calib. Type: Meth. of Add. Energy: 45

Tl ID: AUTO ZERO Seq. No.: 00044 A/S Pos.: 0 Date: 11/19/97

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate 1 Time: 08:28
Peak Area (A-s): 0.002 Peak Height (A): 0.012
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.013
Blank Corrected Pk Area (A-s): 0.003

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate 2 (Peak Stored) Time: 08:30
Peak Area (A-s): 0.001 Peak Height (A): 0.011
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.008
Blank Corrected Pk Area (A-s): 0.001

Mean Pk Area (A-s): 0.002 SD: 0.0010 RSD(%): 49.75

Auto-zero performed.

Tl ID: 185-26-6C FH Seq. No.: 00045 A/S Pos.: 9 Date: 11/19/97
t 138-52-13,14, BM 11/20/97

uL dispensed: 10 from 0, 5 from 39, 10 from 9
Replicate 1 Time: 08:33
Peak Area (A-s): 0.007 Peak Height (A): 0.017
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.005

uL dispensed: 10 from 0, 5 from 39, 10 from 9
Replicate 2 (Peak Stored) Time: 08:36
Peak Area (A-s): 0.008 Peak Height (A): 0.020
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.014
Blank Corrected Pk Area (A-s): 0.006

Mean Pk Area (A-s): 0.006 SD: 0.0008 RSD(%): 12.88

Tl ID: ADD 1 50 ug/L Seq. No.: 00046 A/S Pos.: 9 Date: 11/19/97

uL dispensed: 5 from 39, 10 from 1, 10 from 9
Replicate 1 Time: 08:39
Peak Area (A-s): 0.038 Peak Height (A): 0.070
Background Pk Area (A-s): 0.025 Background Pk Height (A): 0.044
Blank Corrected Pk Area (A-s): 0.037

uL dispensed: 5 from 39, 10 from 1, 10 from 9
Replicate 2 (Peak Stored) Time: 08:42
Peak Area (A-s): 0.040 Peak Height (A): 0.069
Background Pk Area (A-s): 0.023 Background Pk Height (A): 0.043
Blank Corrected Pk Area (A-s): 0.039

Mean Pk Area (A-s): 0.038 SD: 0.0011 RSD(%): 2.81

Tl ID: ADD 2 100ug/L Seq. No.: 00047 A/S Pos.: 9 Date: 11/19/97

uL dispensed: 5 from 39, 10 from 2, 10 from 9
Replicate 1 Time: 08:45
Peak Area (A-s): 0.067 Peak Height (A): 0.123
Background Pk Area (A-s): 0.043 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.065

uL dispensed: 5 from 39, 10 from 2, 10 from 9
Replicate 2 (Peak Stored) Time: 08:48
Peak Area (A-s): 0.067 Peak Height (A): 0.113
Background Pk Area (A-s): 0.044 Background Pk Height (A): 0.074
Blank Corrected Pk Area (A-s): 0.066

Mean Pk Area (A-s): 0.066 SD: 0.0003 RSD(%): 0.44

Tl ID: 185-26-6C FH Seq. No.: 00045 A/S Pos.: 9 Date: 11/19/97
185-52-13
Concentration (ug/L): 9.7

Correlation coefficient: 0.99564 Slope: 0.0006

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Tl ID: AUTO ZERO Seq. No.: 00048 A/S Pos.: 0 Date: 11/19/97

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate 1 Time: 08:51
Peak Area (A-s): 0.004 Peak Height (A): 0.013
Background Pk Area (A-s): 0.003 Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): 0.003

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate 2 (Peak Stored) Time: 08:54
Peak Area (A-s): -0.001 Peak Height (A): 0.014
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): -0.002

Mean Pk Area (A-s): 0.000 SD: 0.0035 RSD(%): 824.04
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Tl ID: 185-26-7C FH Seq. No.: 00049 A/S Pos.: 11 Date: 11/19/97
188-52-17,18, GC [illegible] 11/20/97

uL dispensed: 10 from 0, 5 from 39, 10 from 11
Replicate 1 Time: 08:57
Peak Area (A-s): 0.006 Peak Height (A): 0.018
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): 0.005

uL dispensed: 10 from 0, 5 from 39, 10 from 11
Replicate 2 (Peak Stored) Time: 09:00
Peak Area (A-s): 0.007 Peak Height (A): 0.017
Background Pk Area (A-s): 0.006 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.005

Mean Pk Area (A-s): 0.005 SD: 0.0005 RSD(%): 9.11

Tl ID: ADD 1 50 ug/L Seq. No.: 00050 A/S Pos.: 11 Date: 11/19/97

uL dispensed: 5 from 39, 10 from 1, 10 from 11
Replicate 1 Time: 09:03
Peak Area (A-s): 0.041 Peak Height (A): 0.068
Background Pk Area (A-s): 0.026 Background Pk Height (A): 0.037
Blank Corrected Pk Area (A-s): 0.039

uL dispensed: 5 from 39, 10 from 1, 10 from 11
Replicate 2 (Peak Stored) Time: 09:06
Peak Area (A-s): 0.043 Peak Height (A): 0.064
Background Pk Area (A-s): 0.027 Background Pk Height (A): 0.037
Blank Corrected Pk Area (A-s): 0.042

Mean Pk Area (A-s): 0.040 SD: 0.0018 RSD(%): 4.38

Tl ID: ADD 2 100ug/L Seq. No.: 00051 A/S Pos.: 11 Date: 11/19/97

uL dispensed: 5 from 39, 10 from 2, 10 from 11
Replicate 1 Time: 09:09
Peak Area (A-s): 0.081 Peak Height (A): 0.123
Background Pk Area (A-s): 0.046 Background Pk Height (A): 0.066
Blank Corrected Pk Area (A-s): 0.079

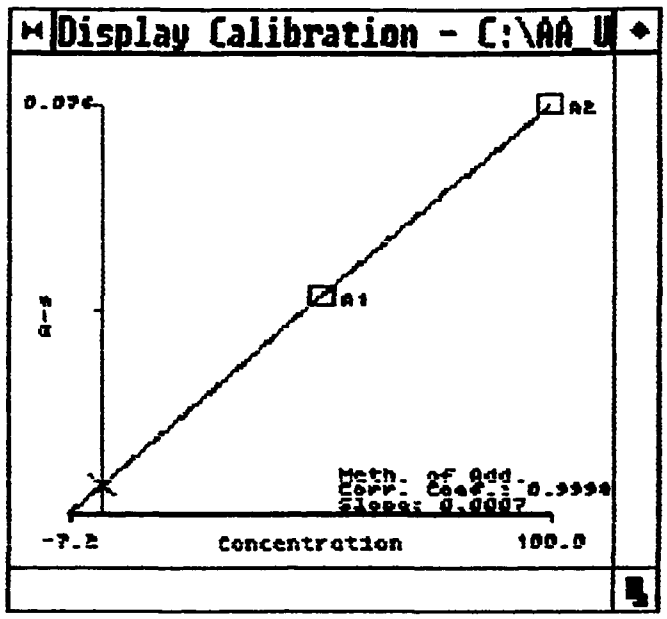
uL dispensed: 5 from 39, 10 from 2, 10 from 11
Replicate 2 (Peak Stored) Time: 09:12
Peak Area (A-s): 0.075 Peak Height (A): 0.110
Background Pk Area (A-s): 0.047 Background Pk Height (A): 0.065
Blank Corrected Pk Area (A-s): 0.073

Mean Pk Area (A-s): 0.076 SD: 0.0040 RSD(%): 5.28

Tl ID: 185-26-7C FH Seq. No.: 00049 A/S Pos.: 11 Date: 11/19/97
188-52-17,18, GC [illegible] 11/20/97

Concentration (ug/L): 7.2

Correlation coefficient: 0.99987 Slope: 0.0007



T1 ID: AUTO ZERO Seq. No.: 00052 A/S Pos.: 0 Date: 11/19/97

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate 1 Time: 09:15
Peak Area (A-s): 0.003 Peak Height (A): 0.013
Background Pk Area (A-s): -0.000 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.002

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate 2 (Peak Stored) Time: 09:18
Peak Area (A-s): -0.003 Peak Height (A): 0.010
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): -0.004

Mean Pk Area (A-s): -0.001 SD: 0.0043 RSD(%): 305.47

Auto-zero performed.

T1 ID: 185-26-8E Seq. No.: 00053 A/S Pos.: 12 Date: 11/19/97

uL dispensed: 10 from 0, 5 from 39, 10 from 12
Replicate 1 Time: 09:21
Peak Area (A-s): 0.001 Peak Height (A): 0.012
Background Pk Area (A-s): 0.073 Background Pk Height (A): 0.052
Blank Corrected Pk Area (A-s): 0.001

uL dispensed: 10 from 0, 5 from 39, 10 from 12
Replicate 2 (Peak Stored) Time: 09:24
Peak Area (A-s): -0.006 Peak Height (A): 0.010
Background Pk Area (A-s): 0.096 Background Pk Height (A): 0.065
Blank Corrected Pk Area (A-s): -0.006

Mean Pk Area (A-s): -0.003 SD: 0.0048 RSD(%): 170.48

T1 ID: ADD 1 50 ug/L Seq. No.: 00054 A/S Pos.: 12 Date: 11/19/97

MV Reviewed MKH 11/19/97

uL dispensed: 5 from 39, 10 from 1, 10 from 12
Replicate 1 Time: 09:27
Peak Area (A-s): 0.029 Peak Height (A): 0.064
Background Pk Area (A-s): 0.093 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.029

uL dispensed: 5 from 39, 10 from 1, 10 from 12
Replicate 2 (Peak Stored) Time: 09:30
Peak Area (A-s): 0.032 Peak Height (A): 0.064
Background Pk Area (A-s): 0.082 Background Pk Height (A): 0.054
Blank Corrected Pk Area (A-s): 0.032

Mean Pk Area (A-s): 0.030 SD: 0.0025 RSD(%): 8.24

T1 ID: ADD 2 100ug/L Seq. No.: 00055 A/S Pos.: 12 Date: 11/19/97

uL dispensed: 5 from 39, 10 from 2, 10 from 12
Replicate 1 Time: 09:33
Peak Area (A-s): 0.059 Peak Height (A): 0.133
Background Pk Area (A-s): 0.118 Background Pk Height (A): 0.075
Blank Corrected Pk Area (A-s): 0.059

uL dispensed: 5 from 39, 10 from 2, 10 from 12
Replicate 2 (Peak Stored) Time: 09:36
Peak Area (A-s): 0.056 Peak Height (A): 0.121
Background Pk Area (A-s): 0.103 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): 0.056

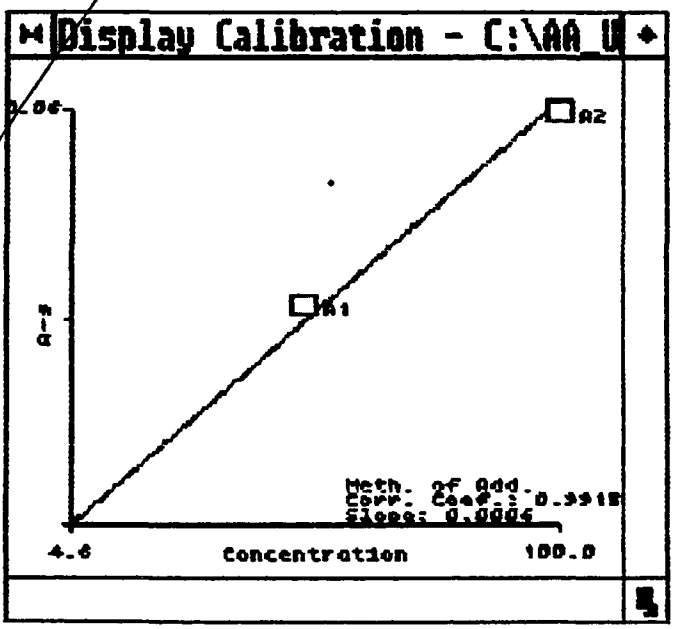
Mean Pk Area (A-s): 0.057 SD: 0.0023 RSD(%): 4.03

T1 ID: 185-26-8E Seq. No.: 00053 A/S Pos.: 12 Date: 11/19/97

Concentration (ug/L): -4.6

Correlation coefficient: 0.99153 Slope: 0.0006

< .995



NN. Reanalyzed
MKH 11/19/97

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T1    ID: AUTO ZERO          Seq. No.: 00056    A/S Pos.: 0     Date: 11/19/97

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate  1                              Time: 09:39
Peak Area (A-s): -0.001                   Peak Height (A): 0.009
Background Pk Area (A-s): 0.007           Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): -0.001

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate  2 (Peak Stored)                Time: 09:42
Peak Area (A-s): -0.001                   Peak Height (A): 0.013
Background Pk Area (A-s): 0.005           Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): -0.002

Mean Pk Area (A-s):     -0.001            SD: 0.0005              RSD(%): 37.60

Auto-zero performed.
```

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T1    ID: 185-26-8H FH  KW 11/20/97  Seq. No.: 00057    A/S Pos.: 13    Date: 11/19/97

uL dispensed: 10 from 0, 5 from 39, 10 from 13
Replicate  1                              Time: 09:45
Peak Area (A-s): 0.002                    Peak Height (A): 0.016
Background Pk Area (A-s): 0.002           Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): 0.003

uL dispensed: 10 from 0, 5 from 39, 10 from 13
Replicate  2 (Peak Stored)                Time: 09:47
Peak Area (A-s): -0.000                   Peak Height (A): 0.011
Background Pk Area (A-s): 0.003           Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): 0.001

Mean Pk Area (A-s):      0.002            SD: 0.0018              RSD(%): 100.34

T1    ID: ADD 1 50 ug/L      Seq. No.: 00058    A/S Pos.: 13    Date: 11/19/97

uL dispensed: 5 from 39, 10 from 1, 10 from 13
Replicate  1                              Time: 09:50
Peak Area (A-s): 0.039                    Peak Height (A): 0.056
Background Pk Area (A-s): 0.022           Background Pk Height (A): 0.036
Blank Corrected Pk Area (A-s): 0.040

uL dispensed: 5 from 39, 10 from 1, 10 from 13
Replicate  2 (Peak Stored)                Time: 09:53
Peak Area (A-s): 0.040                    Peak Height (A): 0.055
Background Pk Area (A-s): 0.021           Background Pk Height (A): 0.035
Blank Corrected Pk Area (A-s): 0.041

Mean Pk Area (A-s):      0.041            SD: 0.0006              RSD(%): 1.45

T1    ID: ADD 2 100ug/L      Seq. No.: 00059    A/S Pos.: 13    Date: 11/19/97

uL dispensed: 5 from 39, 10 from 2, 10 from 13
Replicate  1                              Time: 09:56
Peak Area (A-s): 0.075                    Peak Height (A): 0.101
Background Pk Area (A-s): 0.045           Background Pk Height (A): 0.061
Blank Corrected Pk Area (A-s): 0.076
```

uL [illegible]

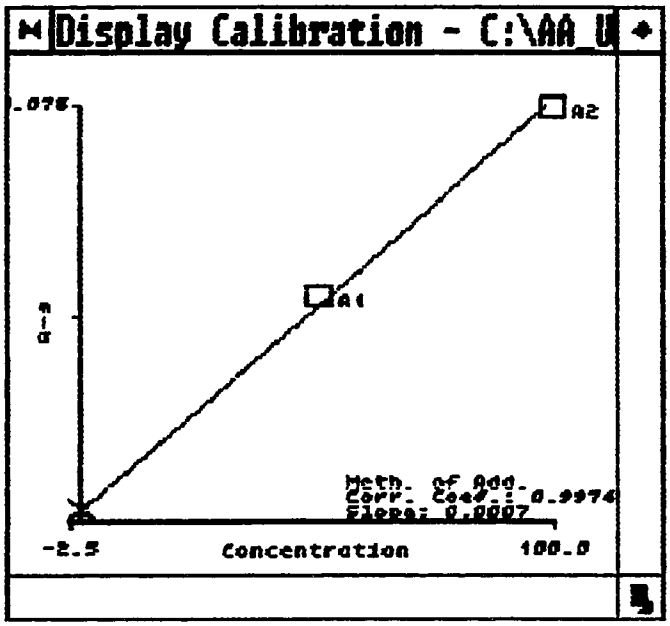
Replicate 2 (Peak Stored) Time: 09:59
Peak Area (A-s): 0.074 Peak Height (A): 0.103
Background Pk Area (A-s): 0.041 Background Pk Height (A): 0.053
Blank Corrected Pk Area (A-s): 0.075

Mean Pk Area (A-s): 0.075 SD: 0.0011 RSD(%): 1.51

T1 ID: 185-26-8H Fit Of Avl 11/20/97 Seq. No.: 00057 A/S Pos.: 13 Date: 11/19/97

Concentration (ug/L): 2.5

Correlation coefficient: 0.99766 Slope: 0.0007



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T1 ID: AUTO ZERO Seq. No.: 00060 A/S Pos.: 0 Date: 11/19/97

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate 1 Time: 10:03
Peak Area (A-s): -0.003 Peak Height (A): 0.010
Background Pk Area (A-s): 0.005 Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): -0.002

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate 2 (Peak Stored) Time: 10:05
Peak Area (A-s): -0.000 Peak Height (A): 0.010
Background Pk Area (A-s): -0.000 Background Pk Height (A): 0.009
Blank Corrected Pk Area (A-s): 0.001

Mean Pk Area (A-s): -0.000 SD: 0.0018 RSD(%): 429.83

Auto-zero performed.

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T1 ID: 185-26-10C FH 185-52-15,16, Of Avl 11/20/97 Seq. No.: 00061 A/S Pos.: 14 Date: 11/19/97
uL dispensed: 10 from 0, 5 from 39, 10 from 14

Replicate 1 Time: 10:08
Peak Area (A-s): 0.004 Peak Height (A): 0.015
Background Pk Area (A-s): 0.009 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.005

uL dispensed: 10 from 0, 5 from 39, 10 from 14
Replicate 2 (Peak Stored) Time: 10:11
Peak Area (A-s): 0.007 Peak Height (A): 0.020
Background Pk Area (A-s): 0.007 Background Pk Height (A): 0.011
Blank Corrected Pk Area (A-s): 0.008

Mean Pk Area (A-s): 0.007 SD: 0.0019 RSD(%): 27.98

Tl ID: ADD 1 50 ug/L Seq. No.: 00062 A/S Pos.: 14 Date: 11/19/9

uL dispensed: 5 from 39, 10 from 1, 10 from 14
Replicate 1 Time: 10:14
Peak Area (A-s): 0.033 Peak Height (A): 0.065
Background Pk Area (A-s): 0.023 Background Pk Height (A): 0.041
Blank Corrected Pk Area (A-s): 0.034

uL dispensed: 5 from 39, 10 from 1, 10 from 14
Replicate 2 (Peak Stored) Time: 10:17
Peak Area (A-s): 0.033 Peak Height (A): 0.072
Background Pk Area (A-s): 0.024 Background Pk Height (A): 0.040
Blank Corrected Pk Area (A-s): 0.034

Mean Pk Area (A-s): 0.034 SD: 0.0001 RSD(%): 0.23

Tl ID: ADD 2 100ug/L Seq. No.: 00063 A/S Pos.: 14 Date: 11/19/97

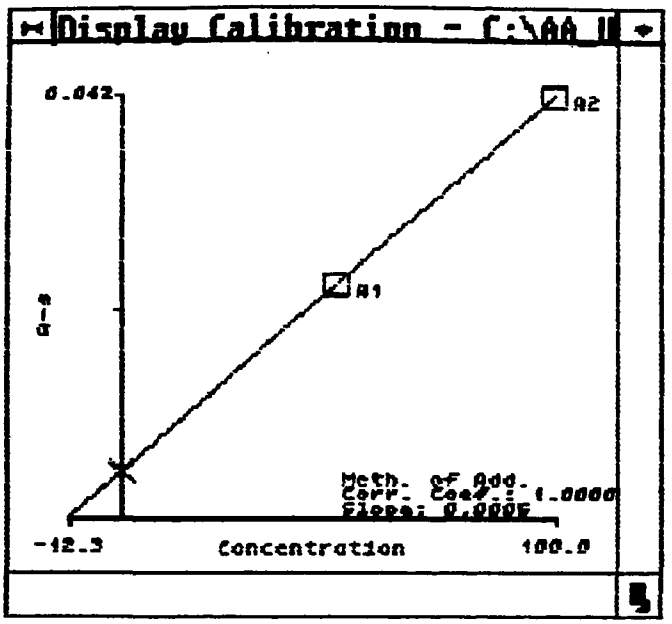
uL dispensed: 5 from 39, 10 from 2, 10 from 14
Replicate 1 Time: 10:20
Peak Area (A-s): 0.059 Peak Height (A): 0.115
Background Pk Area (A-s): 0.042 Background Pk Height (A): 0.068
Blank Corrected Pk Area (A-s): 0.061

uL dispensed: 5 from 39, 10 from 2, 10 from 14
Replicate 2 (Peak Stored) Time: 10:23
Peak Area (A-s): 0.061 Peak Height (A): 0.117
Background Pk Area (A-s): 0.044 Background Pk Height (A): 0.078
Blank Corrected Pk Area (A-s): 0.063

Mean Pk Area (A-s): 0.062 SD: 0.0012 RSD(%): 2.00

Tl ID: 185-26-10C *F/t* Seq. No.: 00061 A/S Pos.: 14 Date: 11/19/97
185-52-15,16, *CC ml 11/20/97*
Concentration (ug/L): 12.3

Correlation coefficient: 1.00000 Slope: 0.0005



T1 ID: AUTO ZERO Seq. No.: 00064 A/S Pos.: 0 Date: 11/19/97

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate 1 Time: 10:33
Peak Area (A-s): 0.001 Peak Height (A): 0.012
Background Pk Area (A-s): 0.004 Background Pk Height (A): 0.010
Blank Corrected Pk Area (A-s): 0.002

uL dispensed: 10 from 0, 5 from 39, 10 from 0
Replicate 2 (Peak Stored) Time: 10:36
Peak Area (A-s): 0.003 Peak Height (A): 0.010
Background Pk Area (A-s): 0.000 Background Pk Height (A): 0.012
Blank Corrected Pk Area (A-s): 0.005

Mean Pk Area (A-s): 0.003 SD: 0.0016 RSD(%): 45.48

Auto-zero performed.

T1 ID: 185-26-8E P/F Seq. No.: 00065 A/S Pos.: 12 Date: 11/19/97
185-52-19, 20, 21 Ad 11/20/97 CB

uL dispensed: 10 from 0, 5 from 39, 10 from 12
Replicate 1 Time: 10:39
Peak Area (A-s): 0.002 Peak Height (A): 0.010
Background Pk Area (A-s): 0.121 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): 0.000

uL dispensed: 10 from 0, 5 from 39, 10 from 12
Replicate 2 (Peak Stored) Time: 10:42
Peak Area (A-s): 0.002 Peak Height (A): 0.013
Background Pk Area (A-s): 0.118 Background Pk Height (A): 0.074
Blank Corrected Pk Area (A-s): -0.000

Mean Pk Area (A-s): -0.000 SD: 0.0000 RSD(%): 1626.35

T1 ID: ADD 1 50 ug/L Seq. No.: 00066 A/S Pos.: 12 Date: 11/19/97

uL dispensed: 5 from 39, 10 from 1, 10 from 12
Replicate 1 Time: 10:45
Peak Area (A-s): 0.029 Peak Height (A): 0.062
Background Pk Area (A-s): 0.140 Background Pk Height (A): 0.071
Blank Corrected Pk Area (A-s): 0.027

uL dispensed: 5 from 39, 10 from 1, 10 from 12
Replicate 2 (Peak Stored) Time: 10:48
Peak Area (A-s): 0.029 Peak Height (A): 0.067
Background Pk Area (A-s): 0.123 Background Pk Height (A): 0.065
Blank Corrected Pk Area (A-s): 0.027

Mean Pk Area (A-s): 0.027 SD: 0.0003 RSD(%): 0.99

T1 ID: ADD 2 100ug/L Seq. No.: 00067 A/S Pos.: 12 Date: 11/19/97

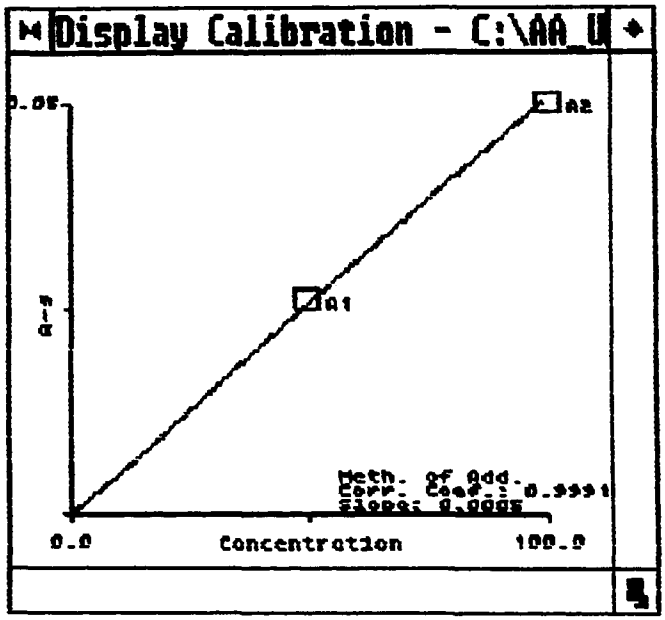
uL dispensed: 5 from 39, 10 from 2, 10 from 12
Replicate 1 Time: 10:51
Peak Area (A-s): 0.054 Peak Height (A): 0.123
Background Pk Area (A-s): 0.150 Background Pk Height (A): 0.069
Blank Corrected Pk Area (A-s): 0.052

uL dispensed: 5 from 39, 10 from 2, 10 from 12
Replicate 2 (Peak Stored) Time: 10:54
Peak Area (A-s): 0.054 Peak Height (A): 0.129
Background Pk Area (A-s): 0.143 Background Pk Height (A): 0.073
Blank Corrected Pk Area (A-s): 0.052

Mean Pk Area (A-s): 0.052 SD: 0.0002 RSD(%): 0.44

T1 ID: 185-26-8E F/t Seq. No.: 00065 A/S Pos.: 12 Date: 11/19/97
188-52-~~18,19~~ 19,20,21, AJ 11/20/97
Concentration (ug/L): -0.0

Correlation coefficient: 0.99916 Slope: 0.0005



Weigh File: AB633.IDW Analyst: RICHARDS
Sample Volume: 100 ml Nominal Weight: 1.0 g

Hg

Loc.	Sample ID	Weight	Dilution
0	STD BLK		
1	0.2ug/L		
2	0.5ug/L		
3	1.0ug/L	3-026-3	11/6/97 MR
4	2.0ug/L		
5	5.0ug/L		
6	10.0ug/L		
7	ICV=4.0ug/L	3-026-4	11/6/97 MR
8	ICB		
9	CHECK LO		
10	43452 MB1		
11	43452 MB1		
12	43452 LCS1		
13	43452 LCS1 D		
14	188-52-1-2/185-26-1C		
15	188-52-1-2/185-26-1C D		
16	185-26-1D		
17	185-26-1D D		
18	185-26-1D MS		
19	185-26-1D MSD		
20	CCV1=6.0ug/L	3-026-4	11/6/97 MR
21	CCB1		
22	185-26-1E		
23	185-26-1E D		
24	185-26-1F		
25	185-26-1F D		
26	185-26-1G		
27	185-26-1G D		
28	188-52-3-4/185-26-2C		
29	188-52-3-4/185-26-2C D		
30	185-26-12-2D		
31	185-26-12-2D D		
32	CCV2=6.0ug/L	3-026-4	11/6/97 MR
33	CCB2		
34	188-52-5-6/185-26-3C		
35	188-52-5-6/185-26-3C D		
36	185-26-3D		
37	185-26-3D D		
38	185-26-3E		
39	185-26-3E D		
40	185-26-3F		
41	185-26-3F DX2		
42	185-26-3F DDX2		
43	188-52-9-10/185-26-4C		
44	188-52-9-10/185-26-4C D		
45	CCV3=6.0ug/L	3-026-4	11/6/97 MR
46	CCB3		
47	185-26-4D		
48	185-26-4D D		
49	185-26-4D MS		
50	185-26-4D MSD		
51	185-26-4E		
52	185-26-4E D		
53	185-26-4F		

Loc.	Sample ID	Weight	Dilution	
54	185-26-4F D			
55	188-52-11-12/185-26-5C			
56	188-52-11 12/185-26-5C D			
57	CCV4=6.0ug/L	3-026-4	11/6/97	ne
58	CCB4			
59	185-26-5E			
60	185-26-5E D			
61	185-26-5F			
62	185-26-5F D			
63	185-26-5G			
64	185-26-5G D			
65	188-52-13-14/185-26-6C			
66	188-52-13-14/185-26-6C D			
67	185-26-6D			
68	185-26-6D D			
69	185-26-6E			
70	185-26-6E D			
71	CCV5=6.0ug/L	3-026-4	11/6/97	ne
72	CCB5			
73	185-26-6F			
74	185-26-6F D			
75	185-26-6G			
76	185-26-6G D			
77	CCV6=6.0ug/L	3-026-4	11/6/97	ne
78	CCB6			
79	43452 MB2			
80	43452 MB2 D			
81	43452 LCS			
82	43452 LCS D			
83	185-26-5D			
84	185-26-5D D			
85	185-26-5D MS			
86	185-26-5D MSD			
87	188-52-17-18/185-26-7C			
88	188-52-17-18/185-26-7C D			
89	CCV1=6.0ug/L	3-026-4	11/6/97	ne
90	CCB1			
91	185-26-7D			
92	185-26-7D D			
93	185-26-7E			
94	185-26-7E D			
95	185-26-7F-8H			
96	185-26-7F-8H D			
97	185-26-7GF8H			
98	185-26-7GF8H D			
99	185-26-7CD			
100	185-26-7CD D			
101	CCV2=6.0ug/L	3-026-4	11/6/97	ne
102	CCB2			
103	188-52-19-20-21/185-26-8E			
104	188-52-19-20-21/185-26-8E D			
105	185-26-8DE			
106	185-26-8DE D			
107	185-26-8E			
108	185-26-8E D			
109	185-26-8FH			

Loc.	Sample ID	Weight	Dilution	
110	185-26-8FH D			
111	185-26-8FGH			
112	185-26-8FGH D			
113	CCV3=6.0ug/L	3-026-4	11/6/97	MR
114	CCB3			
115	185-26-8H			
116	185-26-8H D			
117	188-52-7-8/185-26-9C			
118	188-52-7-8/185-26-9C D			
119	185-26-9D-11			
120	185-26-9D-11 D			
121	185-26-9E			
122	185-26-9E D			
123	185-26-9F			
124	185-26-9F D			
125	CCV4=6.0ug/L	3-026-4	11/6/97	MR
126	CCB4			
127	188-52-15-16/185-26-10C			
128	188-52-15-16/185-26-10C D			
129	185-26-10D			
130	185-26-10D D			
131	185-26-10D MS			
132	185-26-10D MSD			
133	185-26-10E			
134	185-26-10E D			
135	185-26-10F			
136	185-26-10F D			
137	CCV5=6.0ug/L	3-026-4	11/6/97	MR
138	CCB5			

Element File: HG .MET
Element: Hg2 Analyst: M RICHARDS
Print Data: Main+Supel. Peak Storage: None
Print: Calib Curve
Remarks:
STANDARDS= 3-026-3
QC= 3-026-4

INSTRUMENT: 5100 Technique: MHS Version: 7 0.
Wavelength: 253.7 Peak Slit: 0 7 Low
Signal Type: AA Signal Measurement: Peak Height: (5
Read Time: 30.0 Read Delay: 1.0 BOC Time: 2
Sample Replicates: 1
Standard Replicates: 1

FLAME:
Flame Type: Air Flame Sensor: On
Oxidant Flow: 10.0 L/min Fuel Flow: 2.0 L/min

CALIBRATION:

Solutions	ID	Conc
Calib. Blank	STD BLK	
Standard 1	STD 1	0.200
Standard 2	STD 2	0.500
Standard 3	STD 3	1.000
Standard 4	STD 4	2.000
Standard 5	STD 5	5.000
Standard 6	STD 6	10.000

Calibration Units: ug/L Sample Units: ug/L
Calibration Type: Linear

QC:
Matrix Check Calculations:
% Difference for Dupls: No Locations:
% Recovery for Spike: No Locations: Conc:

11/6/97 mz

Element File: HG_.MEL Element: Hg2 Wavelength: 253
Date: 11/06/97 Time: 10:13 Slit: 0.7 L
Data File: AB833.DAT ID/Wt File: AB833.IDW Lamp Current: 0
Technique: MHS Calib. Type: Linea Energy: 72
Remark 1: STANDARDS= 3-026-3
Remark 2: QC= 3-026-4

Hg2 ID: STD BLK Seq. No.: 00003 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 10:14
Peak Area (A-s): -0.005 Peak Height (A): -0.000
Blank Corrected Pk Height (A): -0.000
Concentration (ug/L): -0.008

Auto-zero performed.

Hg2 ID: 0.2ug/L Seq. No.: 00004 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 10:19
Peak Area (A-s): 0.171 Peak Height (A): 0.007
Blank Corrected Pk Height (A): 0.007
Concentration (ug/L): 0.200

Standard number 1 applied. [0.200]
Correlation coefficient: 1.00000 Slope: 0.0356

Hg2 ID: 0.5ug/L Seq. No.: 00005 A/S Pos.: -- Date: 11/06/97

Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 10:21
Peak Area (A-s): 0.446 Peak Height (A): 0.019
Blank Corrected Pk Height (A): 0.019
Concentration (ug/L): 0.541

Standard number 2 applied. [0.500]
Correlation coefficient: 0.99777 Slope: 0.0381

Hg2 ID: 1.0~~1~~ug/L Seq. No.: 00006 A/S Pos.: -- Date: 11/06/97

Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 10:22
Peak Area (A-s): 0.887 Peak Height (A): 0.038
Blank Corrected Pk Height (A): 0.038
Concentration (ug/L): 1.002

Standard number 3 applied. [1.000]
Correlation coefficient: 0.99969 Slope: 0.0382

Hg2 ID: 2.0ug/L Seq. No.: 00007 A/S Pos.: -- Date: 11/06/97

Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 10:23
Peak Area (A-s): 1.831 Peak Height (A): 0.079

Blank Corrected Pk Height (A): 0.[illegible]
Concentration (ug/L): 2.030

Standard number 4 applied. [2.000]
Correlation coefficient: 0.99956 Slope: 0.0394

HgI ID: 5.0ug/L Seq. No.: 00008 A/S Pos.: -- Date: 11/06/9[illegible]

Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 10:24
Peak Area (A-s): 4.060 Peak Height (A): 0.203
Blank Corrected Pk Height (A): 0.203
Concentration (ug/L): 5.145

Standard number 5 applied. [5.000]
Correlation coefficient: 0.99983 Slope: 0.0403

HgI ID: 10.0ug/L Seq. No.: 00009 A/S Pos.: -- Date: 11/06/97

Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 10:25
Peak Area (A-s): 8.898 Peak Height (A): 0.381
Blank Corrected Pk Height (A): 0.381
Concentration (ug/L): 9.444

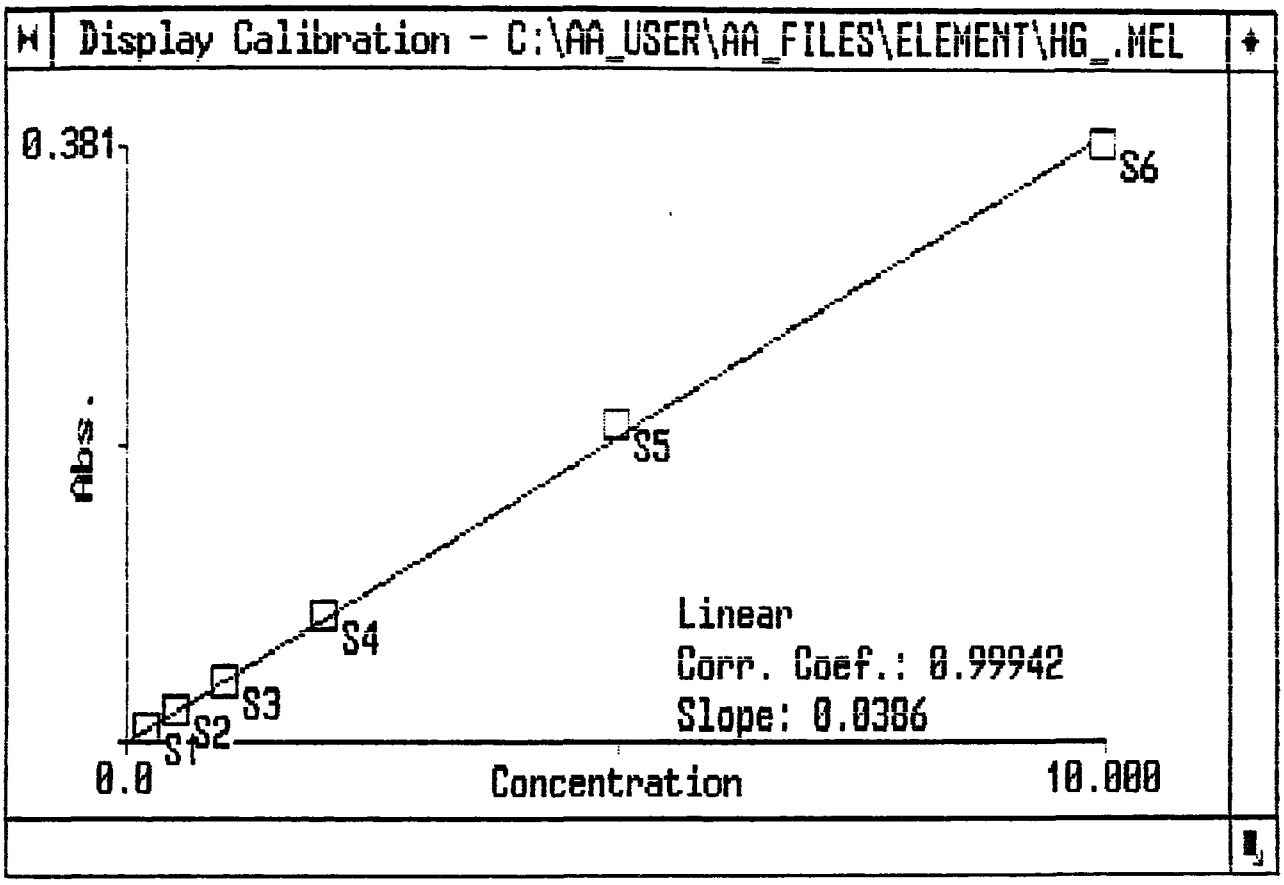
Standard number 6 applied. [10.000]
Correlation coefficient: 0.99942 Slope: 0.0386

11/6/97 MR

Element File: HG_.MEL
Date: 11/06/97
Data File: AB833.DAT
Technique: MHS
Remark 1: STANDARDS= 3-026-3
Remark 2: QC= 3-016-4

Element: Hg2
Time: 10:2:
ID/Wt File: AB833.IDW
Calib. Type: Linear

Wavelength: 253.7
Slit: 0.7 L
Lamp Current: 7
Energy: 72



Hg2 ID: IC 4.0ug/L Seq. No.: 00010 A/S Pos.: -- Date: 11/06

Replicate 1 Time: 10:28
Peak Area (A-s): 3.318 Peak Height (A): 0.154
Blank Corrected Pk height (A): 0.154
Concentration (ug/L): 3.977

Hg2 ID: ICB Seq. No.: 00011 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 10:29
Peak Area (A-s): 0.018 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.008

Hg2 ID: CHECK LO Seq. No.: 00012 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 10:31
Peak Area (A-s): 0.184 Peak Height (A): 0.008
Blank Corrected Pk Height (A): 0.008
Concentration (ug/L): 0.203

Hg2 ID: 43452 MB1 Seq. No.: 00013 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 10:32
Peak Area (A-s): 0.014 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.023

Hg2 ID: 43452 MB1 Seq. No.: 00014 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 10:33
Peak Area (A-s): 0.008 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.005

Hg2 ID: 43452 LCS1 Seq. No.: 00015 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 10:34
Peak Area (A-s): 4.249 Peak Height (A): 0.183
Blank Corrected Pk Height (A): 0.183
Concentration (ug/L): 4.744

Hg2 ID: 43452 LCS1 D Seq. No.: 00016 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 10:35
Peak Area (A-s): 4.350 Peak Height (A): 0.186
Blank Corrected Pk Height (A): 0.186
Concentration (ug/L): 4.824

Hg2 ID: 188-52-1-2/185-26-1C Seq. No.: 00017 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 10:36
Peak Area (A-s): 0.129 Peak Height (A): 0.005
Blank Corrected Pk Height (A): 0.005
Concentration (ug/L): 0.122

Hg2 ID: 188-52-1-2 185-26-1C Seq. No.: 00018 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 10:39
Peak Area (A-s): 0.093 Peak Height (A): 0.004
Blank Corrected Pk Height (A): 0.004
Concentration (ug/L): 0.096

Hg2 ID: 185-26-1D Seq. No.: 00019 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 10:42
Peak Area (A-s): 0.042 Peak Height (A): 0.002
Blank Corrected Pk Height (A): 0.002
Concentration (ug/L): 0.039

Hg2 ID: 185-26-1D D Seq. No.: 00020 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 10:43
Peak Area (A-s): 0.046 Peak Height (A): 0.002
Blank Corrected Pk Height (A): 0.002
Concentration (ug/L): 0.042

Hg2 ID: 185-26-1D MS Seq. No.: 00021 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 10:44
Peak Area (A-s): 4.275 Peak Height (A): 0.188
Blank Corrected Pk Height (A): 0.188
Concentration (ug/L): 4.874

Hg2 ID: 185-26-1D MSD Seq. No.: 00022 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 10:49
Peak Area (A-s): 4.453 Peak Height (A): 0.193
Blank Corrected Pk Height (A): 0.193
Concentration (ug/L): 5.009

Hg2 ID: CCV1=6.0ug/L Seq. No.: 00023 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 10:52
Peak Area (A-s): 5.181 Peak Height (A): 0.224
Blank Corrected Pk Height (A): 0.224
Concentration (ug/L): 5.804

Hg2 ID: CCB1 Seq. No.: 00024 A/S Pos. -- Date: 11/06/97

Replicate 1 Time: 10:53
Peak Area (A-s): 0.007 Peak Height (A): 0.000
Blank Corrected Pk Height (A): -0.000

Concentration (ug/L): -0.002

Hg2 ID: 185-26-1E Seq. No.: 00025 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 10:55
Peak Area (A-s): 0.014 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.013

Hg2 ID: 185-26-1E D Seq. No.: 00026 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 10:57
Peak Area (A-s): 0.009 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.005

Hg2 ID: 185-26-1F Seq. No.: 00027 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 10:58
Peak Area (A-s): 0.435 Peak Height (A): 0.018
Blank Corrected Pk Height (A): 0.018
Concentration (ug/L): 0.478

Hg2 ID: 185-26-1F D Seq. No.: 00028 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 11:00
Peak Area (A-s): 0.458 Peak Height (A): 0.020
Blank Corrected Pk Height (A): 0.020
Concentration (ug/L): 0.507

Hg2 ID: 185-26-1G Seq. No.: 00029 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 11:01
Peak Area (A-s): 0.027 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.026

Hg2 ID: 185-26-1G D Seq. No.: 00030 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 11:02
Peak Area (A-s): 0.023 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.021

Hg2 ID: 188-5[illegible] 3-4/185-26-2C Seq. No.: 00031 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 11:05
Peak Area (A-s): 0.123 Peak Height (A): [illegible]
Blank Corrected Pk Height (A): 0.005
Concentration (ug/L): 0.130

Hg2 ID: [illegible] Seq. No.: [illegible] A/S Pos.: [illegible] Date: [illegible]

Replicate 1
Peak Area (A-s): [illegible] Time: [illegible]
Blank Corrected Pk Height (A): [illegible] Peak Height (A): [illegible]
Concentration (ug/L): [illegible]

Hg2 ID: [illegible] Seq. No.: [illegible] A/S Pos.: -- Date: [illegible]

Replicate 1
Peak Area (A-s): [illegible] Time: [illegible]
Blank Corrected Pk Height (A): [illegible] Peak Height (A): [illegible]
Concentration (ug/L): [illegible]

Hg2 ID: 188-52-5-6/185-26-2D Seq. No.: 00034 A/S Pos.: -- Date: 11/0[illegible]

Replicate 1 Time: 11:09
Peak Area (A-s): 0.381 Peak Height (A): 0.017
Blank Corrected Pk Height (A): 0.017
Concentration (ug/L): 0.442

Hg2 ID: CCV2=5.0ug/L Seq. No.: 00035 A/S Pos.: -- Date: 11/0[illegible]

Replicate 1 Time: 11:10
Peak Area (A-s): 5.087 Peak Height (A): 0.225
Blank Corrected Pk Height (A): 0.225
Concentration (ug/L): 5.827

Hg2 ID: CCB2 Seq. No.: 00036 A/S Pos.: -- Date: 11/0[illegible]

Replicate 1 Time: 11:11
Peak Area (A-s): 0.016 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.010

Hg2 ID: 188-52-5-6/185-26-3C Seq. No.: 00037 A/S Pos.: -- Date: 11/0[illegible]

Replicate 1 Time: 11:12
Peak Area (A-s): 1.355 Peak Height (A): 0.060
Blank Corrected Pk Height (A): 0.060
Concentration (ug/L): 1.546

Hg2 ID: 188-52-5-6/185-26-3D Seq. No.: 00038 A/S Pos.: -- Date: 11/0[illegible]

Replicate 1 Time: 11:13
Peak Area (A-s): 1.326 Peak Height (A): 0.057
Blank Corrected Pk Height (A): 0.057
Concentration (ug/L): 1.476

Hg2 ID: 188-5[illegible] Seq. No.: 00039 A/S Pos.: -- Date: 1[illegible]

Replicate 2 Time: 11:45
Peak Area (A-s): 0.719 Peak Height (A): 0.031
Blank Corrected Pk Height (A): 0.031
Concentration (ug/L): 0.803

Hg2 ID: 185-26-3D D Seq. No.: 00040 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 11:47
Peak Area (A-s): 0.722 Peak Height (A): 0.030
Blank Corrected Pk Height (A): 0.030
Concentration (ug/L): 0.790

Hg2 ID: 185-26-3E Seq. No.: 00041 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 11:49
Peak Area (A-s): 0.092 Peak Height (A): 0.004
Blank Corrected Pk Height (A): 0.004
Concentration (ug/L): 0.096

Hg2 ID: 185-26-3E D Seq. No.: 00042 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 11:50
Peak Area (A-s): 0.091 Peak Height (A): 0.004
Blank Corrected Pk Height (A): 0.004
Concentration (ug/L): 0.096

Hg2 ID: 185-26-3F Seq. No.: 00043 A/S Pos.: -- Date: 11/06/9

Sample abs. is greater than that of the largest standard.
Replicate 1 Time: 11:51
Peak Area (A-s): 12.563 Peak Height (A): 0.542
Blank Corrected Pk Height (A): 0.542
Concentration (ug/L): 14.031

Hg2 ID: 185-26-3F DX2 Seq. No.: 00044 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 11:59
Peak Area (A-s): 4.130 Peak Height (A): 0.190
Blank Corrected Pk Height (A): 0.190
Concentration (ug/L): 4.923

Hg2 ID: 185-26-3F DDX2 Seq. No.: 00045 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 12:01
Peak Area (A-s): 4.437 Peak Height (A): 0.205
Blank Corrected Pk Height (A): 0.205
Concentration (ug/L): 5.305

Hg2 ID: 185-50-9-10/185-26-4C Seq. No.: 00046 A/S Pos.: -- Date: 11/06/9

Replicate Time: 12:02
Peak Area (A-s): 0.054 Peak Height (A): 0.002

Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.009

Hg2 ID: 188-52-9-10/183-264D Seq. No.: 00047 A/S Pos.: -- Date: 11/06

Replicate 1 Time: 12:03
Peak Area (A-s): 0.033 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.023

Hg2 ID: CCV3=5.0ug/L Seq. No.: 00048 A/S Pos.: -- Date: 11/06

Replicate 1 Time: 12:04
Peak Area (A-s): 5.272 Peak Height (A): 0.224
Blank Corrected Pk Height (A): 0.224
Concentration (ug/L): 5.793

Hg2 ID: CCB3 Seq. No : 00049 A/S Pos.: -- Date: 11/06

Replicate 1 Time: 12:05
Peak Area (A-s): 0.020 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.018

Hg2 ID: 185-2e-4D Seq. No.: 00050 A/S Pos.: -- Date: 11/06

Replicate 1 Time: 12:06
Peak Area (A-s): 0.018 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.010

Hg2 ID: 185-2e-4D D Seq. No.: 00051 A/S Pos.: -- Date: 11/06

Replicate 1 Time: 12:07
Peak Area (A-s): 0.016 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.010

Hg2 ID: 185-2e-4D MS Seq. No.: 00052 A/S Pos.: -- Date: 11/06

Replicate 1 Time: 12:08
Peak Area (A-s): 3.543 Peak Height (A): 0.155
Blank Corrected Pk Height (A): 0.155
Concentration (ug/L): 4.027

Hg2 ID: 185-2e-4D MSD Seq. No.: 00053 A/S Pos.: -- Date: 11/06

Replicate 1 Time: 12:10
Peak Area (A-s): 3.611 Peak Height (A): 0.161
Blank Corrected Pk Height (A): 0.161
Concentration (ug/L): 4.159

Hg2 ID: 185-2e-4E Seq. No.: 00054 A/S Pos.: -- Date: 11/06

Replicate 1 Time: 12:11
Peak Area (A-s): 0.02[illegible] Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.029

Hg2 ID: 185-2e-4E D Seq. No.: 00055 A/S Pos.: -- Date: 11/06/9[illegible]

Replicate 1 Time: 12:12
Peak Area (A-s): 0.01[illegible] Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.021

Hg2 ID: 185-2e-4F Seq. No.: 00056 A/S Pos.: -- Date: 11/06/9[illegible]

Replicate 1 Time: 12:13
Peak Area (A-s): 0.808 Peak Height (A): 0.035
Blank Corrected Pk Height (A): 0.035
Concentration (ug/L): 0.894

Hg2 ID: 185-2e-4F D Seq. No.: 00057 A/S Pos.: -- Date: 11/06/9[illegible]

Replicate 1 Time: 12:14
Peak Area (A-s): 0.874 Peak Height (A): 0.037
Blank Corrected Pk Height (A): 0.037
Concentration (ug/L): 0.956

Hg2 ID: 188-52-11-12/185-26-5C Seq. No.: 00058 A/S Pos.: -- Date: 11/06/9[illegible]

Replicate 1 Time: 12:15
Peak Area (A-s): 0.021 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.031

Hg2 ID: 188-52-11-12/185-26-5C) Seq. No.: 00059 A/S Pos.: -- Date: 11/06/9[illegible]

Replicate 1 Time: 12:16
Peak Area (A-s): 0.017 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.016

Hg2 ID: CCV4=6.0ug/L Seq. No.: 00060 A/S Pos.: -- Date: 11/06/9[illegible]

Replicate 1 Time: 12:17
Peak Area (A-s): 4.68[illegible] Peak Height (A): 0.200
Blank Corrected Pk Height (A): 0.200
Concentration (ug/L): 5.180

Hg2 ID: CCB4 Seq. No.: 00061 A/S Pos.: -- Date: 11/06/9[illegible]

Replicate 1 Time: 12:18
Peak Area (A-s): 0.020 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.010

Hg2 ID: 185-26-5E Seq. No.: 00062 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:20
Peak Area (A-s): 0.022 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.018

Hg2 ID: 185-26-5E D Seq. No.: 00063 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:21
Peak Area (A-s): 0.023 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.023

Hg2 ID: 185-26-5F Seq. No.: 00064 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:22
Peak Area (A-s): 1.707 Peak Height (A): 0.074
Blank Corrected Pk Height (A): 0.074
Concentration (ug/L): 1.922

Hg2 ID: 185-26-5F D Seq. No.: 00065 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:23
Peak Area (A-s): 1.934 Peak Height (A): 0.084
Blank Corrected Pk Height (A): 0.084
Concentration (ug/L): 2.172

Hg2 ID: 185-26-5G Seq. No.: 00066 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:24
Peak Area (A-s): 0.048 Peak Height (A): 0.002
Blank Corrected Pk Height (A): 0.002
Concentration (ug/L): 0.047

Hg2 ID: 185-26-5G D Seq. No.: 00067 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:25
Peak Area (A-s): 0.043 Peak Height (A): 0.002
Blank Corrected Pk Height (A): 0.002
Concentration (ug/L): 0.039

Hg2 ID: 188-52-13-14/185-266C Seq. No.: 00068 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:26
Peak Area (A-s): 0.033 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001

Concentration (ug/L): 0.016

Hg2 ID: 188-52-13-14(185-26-6C) Seq. No.: 00069 A/S Pos.: - Date: 11/06/97

Replicate 1 Time: 12:27
Peak Area (A-s): 0.023 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.023

Hg2 ID: 185-26-6D Seq. No.: 00070 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:29
Peak Area (A-s): 0.054 Peak Height (A): 0.002
Blank Corrected Pk Height (A): 0.002
Concentration (ug/L): 0.055

Hg2 ID: 185-26-6D D Seq. No.: 00071 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:30
Peak Area (A-s): 0.057 Peak Height (A): 0.002
Blank Corrected Pk Height (A): 0.002
Concentration (ug/L): 0.057

Hg2 ID: 185-26-6E Seq. No.: 00072 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:31
Peak Area (A-s): 0.009 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.010

Hg2 ID: 185-26-6E D Seq. No.: 00073 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:32
Peak Area (A-s): 0.009 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.005

Hg2 ID: CCV5=6.0ug/L Seq. No.: 00074 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:36
Peak Area (A-s): 4.858 Peak Height (A): 0.212
Blank Corrected Pk Height (A): 0.212
Concentration (ug/L): 5.482

Hg2 ID: CCB5 Seq. No.: 00075 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:37
Peak Area (A-s): 0.021 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.016

HgI ID: 185-26-6F Seq. No. 00076 A/S Pos. Date: 11/06

Replicate 1 Time: 12:38
Peak Area (A-s): 7.225 Peak Height (A): 0.311
Blank Corrected Pk Height (A): 0.311
Concentration (ug/L): 8.051

HgI ID: 185-26-6F D Seq. No.: 00077 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:39
Peak Area (A-s): 7.511 Peak Height (A): 0.336
Blank Corrected Pk Height (A): 0.336
Concentration (ug/L): 8.695

HgI ID: 185-26-6G Seq. No.: 00078 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:39
Peak Area (A-s): 0.160 Peak Height (A): 0.006
Blank Corrected Pk Height (A): 0.006
Concentration (ug/L): 0.166

HgI ID: 185-26-6G D Seq. No.: 00079 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:40
Peak Area (A-s): 0.171 Peak Height (A): 0.007
Blank Corrected Pk Height (A): 0.007
Concentration (ug/L): 0.174

HgI ID: CCV6=6.0ug/L Seq. No.: 00080 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:41
Peak Area (A-s): 4.969 Peak Height (A): 0.226
Blank Corrected Pk Height (A): 0.226
Concentration (ug/L): 5.856

HgI ID: CCB6 Seq. No.: 00081 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 12:42
Peak Area (A-s): 0.030 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.023

HgI ID: 43452 MB2 Seq. No.: 00082 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:11
Peak Area (A-s): 0.018 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.018

HgI ID: 43452 MB2 D Seq. No.: 00083 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:12
Peak Area (A-s): 0.014 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.010

Hg2 ID: 43452 LCS Seq. No.: 00084 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:13
Peak Area (A-s): 4.442 Peak Height (A): 0.199
Blank Corrected Pk Height (A): 0.199
Concentration (ug/L): 5.157

Hg2 ID: 43452 LCS D Seq. No.: 00085 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:14
Peak Area (A-s): 4.509 Peak Height (A): 0.200
Blank Corrected Pk Height (A): 0.200
Concentration (ug/L): 5.180

Hg2 ID: 185-26-5D Seq. No.: 00086 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:15
Peak Area (A-s): 0.046 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.036

Hg2 ID: 185-26-5D D Seq. No.: 00087 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:16
Peak Area (A-s): 0.028 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.029

Hg2 ID: 185-26-5D MS Seq. No.: 00088 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:18
Peak Area (A-s): 4.459 Peak Height (A): 0.201
Blank Corrected Pk Height (A): 0.201
Concentration (ug/L): 5.204

Hg2 ID: 185-26-5D MSD Seq. No.: 00089 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:21
Peak Area (A-s): 4.716 Peak Height (A): 0.215
Blank Corrected Pk Height (A): 0.215
Concentration (ug/L): 5.562

Hg2 ID: 188-52-17-18/185-26-7C Seq. No.: 00090 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:24
Peak Area (A-s): 0.015 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001

Concentration (ug/L): 0.010

Hg2 ID: 188-SL-17-18/185-2670 Seq. No.: 00091 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:26
Peak Area (A-s): 0.012 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.010

Hg2 ID: CCV1=5.0ug/L Seq. No.: 00092 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:27
Peak Area (A-s): 5.150 Peak Height (A): 0.224
Blank Corrected Pk Height (A): 0.224
Concentration (ug/L): 5.811

Hg2 ID: CCB1 Seq. No.: 00093 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:28
Peak Area (A-s): 0.022 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.013

Hg2 ID: 185-26-7D Seq. No.: 00094 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:29
Peak Area (A-s): 0.028 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.026

Hg2 ID: 185-26-7D D Seq. No.: 00095 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:30
Peak Area (A-s): 0.022 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.036

Hg2 ID: 185-26-7E Seq. No.: 00096 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:31
Peak Area (A-s): 0.008 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.000

Hg2 ID: 185-26-7E D Seq. No.: 00097 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:32
Peak Area (A-s): 0.008 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.013

Hg2 ID: 185-26-7F-8H Seq. No.: 00098 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:33
Peak Area (A-s): 0.021 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.008

Hg2 ID: 185-26-7F-8H D Seq. No.: 00099 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:34
Peak Area (A-s): 0.017 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.018

Hg2 ID: 185-26-7GF8H Seq. No.: 00100 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:35
Peak Area (A-s): 0.068 Peak Height (A): 0.003
Blank Corrected Pk Height (A): 0.003
Concentration (ug/L): 0.075

Hg2 ID: 185-26-7GF8H D Seq. No.: 00101 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:36
Peak Area (A-s): 0.067 Peak Height (A): 0.003
Blank Corrected Pk Height (A): 0.003
Concentration (ug/L): 0.065

Hg2 ID: 185-26-7CD Seq. No.: 00102 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:37
Peak Area (A-s): 0.007 Peak Height (A): -0.000
Blank Corrected Pk Height (A): -0.000
Concentration (ug/L): -0.003

Hg2 ID: 185-26-7CD D Seq. No.: 00103 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:38
Peak Area (A-s): 0.005 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.008

Hg2 ID: CCV2=6.0ug/L Seq. No.: 00104 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:39
Peak Area (A-s): 3.224 Peak Height (A): 0.232
Blank Corrected Pk Height (A): 0.232
Concentration (ug/L): 6.006

Hg2 ID: CCB Seq. No.: 00105 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: [illegible]
Peak Area (A-s): 0.023 Peak Height (A): [illegible]
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.008

Hg2 ID: 198-52-19-20-21/ Seq. No.: 00106 A/S Pos.: -- Date: 11/06/97
185-26-8E

Replicate 1 Time: 13:41
Peak Area (A-s): 0.019 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.[illegible]

Hg2 ID: 198-52-19-20-21/ Seq. No.: 00107 A/S Pos.: -- Date: 11/06/97
185-26-8E D

Replicate 1 Time: 13:42
Peak Area (A-s): 0.018 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.016

Hg2 ID: 185-26-8DE Seq. No.: 00108 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:43
Peak Area (A-s): 0.012 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.005

Hg2 ID: 185-26-8DE D Seq. No.: 00109 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:45
Peak Area (A-s): 0.012 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.013

Hg2 ID: 185-26-8E Seq. No.: 00110 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:46
Peak Area (A-s): 0.013 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.016

Hg2 ID: 185-26-8E D Seq. No.: 00111 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:47
Peak Area (A-s): 0.010 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.008

Hg2 ID: 185-26-8FH Seq. No.: 00112 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:48
Peak Area (A-s): 0.012 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000

Concentration (ug/L): 0.003

Hg2 ID: 185-26-8FH Seq. No.: 00113 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 13:49
Peak Area (A-s): 0.011 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.018

Hg2 ID: 185-26-8FGH Seq. No.: 00114 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 13:50
Peak Area (A-s): 0.061 Peak Height (A): 0.003
Blank Corrected Pk Height (A): 0.003
Concentration (ug/L): 0.068

Hg2 ID: 185-26-8FGH D Seq. No.: 00115 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 13:51
Peak Area (A-s): 0.060 Peak Height (A): 0.002
Blank Corrected Pk Height (A): 0.002
Concentration (ug/L): 0.055

Hg2 ID: CCV3=6.0ug/L Seq. No.: 00116 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 13:52
Peak Area (A-s): 5.280 Peak Height (A): 0.237
Blank Corrected Pk Height (A): 0.237
Concentration (ug/L): 6.126

Hg2 ID: CCB3 Seq. No.: 00117 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 13:53
Peak Area (A-s): 0.022 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.016

Hg2 ID: 185-26-8H Seq. No.: 00118 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 13:55
Peak Area (A-s): 0.017 Peak Height (A): 0.000
Blank Corrected Pk Height (A): 0.000
Concentration (ug/L): 0.005

Hg2 ID: 185-26-8H D Seq. No.: 00119 A/S Pos.: -- Date: 11/06/9

Replicate 1 Time: 13:55
Peak Area (A-s): 0.018 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.013

Hg2 ID: 188-52-7-B/185-26-9C Seq. No.: 00127 A/S Pos.: -- Date: 11

Replicate 1 Time: 13:56
Peak Area (A-s): 0.144 Peak Height (A): 0.006
Blank Corrected Pk Height (A): 0.006
Concentration (ug/L): 0.145

Hg2 ID: 188-52-7-B/185-26-9C) Seq. No.: 00128 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:57
Peak Area (A-s): 0.140 Peak Height (A): 0.006
Blank Corrected Pk Height (A): 0.006
Concentration (ug/L): 0.148

Hg2 ID: 185-26-9D-11 Seq. No.: 00129 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 13:59
Peak Area (A-s): 0.429 Peak Height (A): 0.019
Blank Corrected Pk Height (A): 0.019
Concentration (ug/L): 0.499

Hg2 ID: 185-26-9D-11 D Seq. No.: 00130 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:00
Peak Area (A-s): 0.392 Peak Height (A): 0.017
Blank Corrected Pk Height (A): 0.017
Concentration (ug/L): 0.452

Hg2 ID: 185-26-9E Seq. No.: 00131 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:01
Peak Area (A-s): 0.200 Peak Height (A): 0.008
Blank Corrected Pk Height (A): 0.008
Concentration (ug/L): 0.210

Hg2 ID: 185-26-9E D Seq. No.: 00132 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:02
Peak Area (A-s): 0.202 Peak Height (A): 0.009
Blank Corrected Pk Height (A): 0.009
Concentration (ug/L): 0.234

Hg2 ID: 185-26-9F Seq. No.: 00133 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:03
Peak Area (A-s): 0.695 Peak Height (A): 0.030
Blank Corrected Pk Height (A): 0.030
Concentration (ug/L): 0.785

Hg2 ID: 185-26-9F D Seq. No.: 00134 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:04
Peak Area (A-s): 0.702 Peak Height (A): 0.030
Blank Corrected Pk Height (A): 0.030
Concentration (ug/L): 0.790

Hg2 ID: CCV4=6.0ug/L Seq. No : 00128 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:05
Peak Area (A-s): 5.274 Peak Height (A): 0.230
Blank Corrected Pk Height (A): 0.230
Concentration (ug/L): 5.967

Hg2 ID: CCB4 Seq. No.: 00129 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:06
Peak Area (A-s): 0.027 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.023

Hg2 ID: 188-52-15-16/185-26-10C Seq. No.: 00130 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:08
Peak Area (A-s): 0.037 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.031

Hg2 ID: 188-52-15-16/185-26-10C Seq. No.: 00131 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:09
Peak Area (A-s): 0.030 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.034

Hg2 ID: 185-26-10D Seq. No : 00132 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:10
Peak Area (A-s): 0.060 Peak Height (A): 0.002
Blank Corrected Pk Height (A): 0.002
Concentration (ug/L): 0.057

Hg2 ID: 185-26-10D D Seq. No.: 00133 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:11
Peak Area (A-s): 0.060 Peak Height (A): 0.002
Blank Corrected Pk Height (A): 0.002
Concentration (ug/L): 0.062

Hg2 ID: 185-26-10D MS Seq. No.: 00134 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:12
Peak Area (A-s): 4.577 Peak Height (A): 0.209
Blank Corrected Pk Height (A): 0.209

Concentration (ug/L): 5.404

Hg2 ID: 185-26-10D MSD Seq. No.: 00135 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:13
Peak Area (A-s): 4.706 Peak Height (A): 0.219
Blank Corrected Pk Height (A): 0.219
Concentration (ug/L): 5.674

Hg2 ID: 185-26-10E Seq. No.: 00136 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:14
Peak Area (A-s): 0.038 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.031

Hg2 ID: 185-26-10E D Seq. No.: 00137 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:15
Peak Area (A-s): 0.032 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.021

Hg2 ID: 185-26-10F Seq. No.: 00138 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:16
Peak Area (A-s): 1.545 Peak Height (A): 0.067
Blank Corrected Pk Height (A): 0.067
Concentration (ug/L): 1.746

Hg2 ID: 185-26-10F D Seq. No.: 00139 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:17
Peak Area (A-s): 1.691 Peak Height (A): 0.077
Blank Corrected Pk Height (A): 0.077
Concentration (ug/L): 1.998

Hg2 ID: CCV5=6.0ug/L Seq. No.: 00140 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:18
Peak Area (A-s): 5.227 Peak Height (A): 0.225
Blank Corrected Pk Height (A): 0.225
Concentration (ug/L): 5.814

Hg2 ID: CCB5 Seq. No.: 00141 A/S Pos.: -- Date: 11/06/97

Replicate 1 Time: 14:19
Peak Area (A-s): 0.028 Peak Height (A): 0.001
Blank Corrected Pk Height (A): 0.001
Concentration (ug/L): 0.021

APPENDIX D

CALCULATIONS

Example Calculations for Pollutant Emissions

1. **Volume of dry gas sampled corrected to standard conditions, ft3.**
   Note: Vm must be corrected for leakage if any leakage rates exceed La.

$$Vmstd = 17.647 * Vm * \gamma * \frac{Pbar + \frac{\Delta H}{13.6}}{Tm,\ °R}$$

2. **Volume of water vapor at standard conditions, ft^3.**

$$Vmstd = 0.04707 * Vlc + 0.04715 * Vsg$$

3. **Moisture content in stack gas, dimension less.**

$$Bws = \frac{Vwstd}{Vwstd + Vmstd}$$

4. **Dry molecular weight of stack gas, lb/lb -mole.**

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

5. **Molecular weight of stack gas, lb/lb-mole.**

$$Ms = Md\ (1\text{-}Bws) + 18 * BWS$$

6. **Stack velocity at stack conditions, f/s.**

$$Vs = 85.49 * Cp * ave\sqrt{\Delta P} * \sqrt{\frac{Ts,\ °R}{Ps * Ms}}$$

7. **Stack gas volumetric flow rate at stack conditions, cfm.**

$$Qs = 60 * Vs * As$$

8. **Dry stack gas volumetric flow rate at standard conditions, cfm.**

$$Qsstd = 17.647 * Qs * \frac{Ps}{Ts,\ °R} * (1 - Bws)$$

9. **Concentration in gr/dscf.**

$$Cs = (0.01543)\left(\frac{Mn}{Vmstd}\right)$$

10. **Pollutant mass emission rate, lb/h.**

$$pmr,\ lb/hr = \left(\frac{Cs}{7000}\right) x\ Qsstd\ x\ 60$$

11. **Pollutant mass emission rate, lb/mmbtu**

$$pmr,\ lb/mmbtu = \frac{(pmr, lb/hr)}{(mmbtu/hr)}$$

12. **F-factor (Fd)**

$$Fd = \frac{10^6(3.64x\%H) + (1.53x\%C) + (0.57x\%S) + (0.14x\%N) - (0.46x\%O_2)}{GCV(btu/lb)}$$

13. **F-factor, pollutant mass emission rate, lb/mmbtu**

$$= \frac{lb/dscf\ x\ F\ x\ 20.9}{(20.9 - \%\ O_2)}$$

14. **Heat input, mmbtu/hr fuel**

$$= \frac{GVC\ (btu/lb) * Feed\ Rate\ (lb/hr)}{10^6}$$

15. **Heat input, mmbtu/hr, F-factor.**

$$= \frac{Qsstd}{Fd}\ x\ ((20.9 - \%O_2) + 20.9)\ x\ 60$$

EXAMPLE CALCULATIONS FOR POLLUTANT EMISSIONS

GASEOUS POLLUTANTS MEASURED BY CONTINUOUS EMISSIONS MONITORS (CEMs)

1) Concentration, part per million, dry basis:

$$ppm,\ dry = ppm,\ wet\ basis \div \left(1 - \frac{BWS,\ \%}{100}\right)$$

2) Pollutant Mass Emission Rate, pound per hour.

$$PMR,\ lb/hr = \frac{ppm,\ dry \times Compound\ Molecular\ Weight}{(385.3 \times 10^{6})} \times dscfm \times 60$$

Molecular Weights of Target Compounds

TGO	=	Total Gaseous Organics	44.09
SO_2	=	Sulfur Dioxide	64.05
NO_2	=	Nitrogen Oxides	46.00
CO	=	Carbon Monoxide	28.01
BWS	=	Proportion by Volume of Water Vapor in the Gas Stream	
PMR	=	Pollutant Mass Emission Rate, Pound Per Hour	

Nomenclature and Dimensions

An	=	Cross-sectional area of sampling nozzle, ft^2
As	=	Cross-sectional area of stack, ft^2
Bws	=	Proportion by volume of water vapor in the gas stream, dimension less
Cp	=	Pitot tube coefficient, dimension less
Cs	=	Concentration of pollutant matter in stack gas-dry basis, grains per dry standard cubic foot (gr/dscf)
%CO	=	Percent of carbon monoxide by volume, dry basis
$\%CO_2$	=	Percent of carbon dioxide by volume, dry basis
ΔH	=	Average pressure drop axross the sampling meter flow ofifice, inches of water (in. H_2O)
GCV	=	Gross calorific value, Btu/lb
I	=	Percent of isokinetic sampling
La	=	Maximum acceptable leakage rate for either a pretest leak check or for a leak check following a component change/ equal to 0.020 cubic foot per minute or 4% of the average sampling rate, whichever is less
Md	=	Dry molecular weight, lb/lb-mole
Mn	=	Total amount of pollutant matter collected, milligrams (mg)
Ms	=	Molecular weight of stack gas (wet basis), lb/lb-mole
$\%N_2$	=	Percent of nitrogen by volume, dry basis
$\%O_2$	=	Percent of oxygen by volume, dry basis
ΔP	=	Velocity head of stack gas, inches of water (in. H_2O)
Pbar	=	Barometric pressure, inches of mercury (in. Hg)
Ps	=	Absolute stack gas pressure, inches of mercury (in. Hg)

Pstd = **Gas pressure at standard conditions, inches of mercury (29.92 in. Hg)**

pmr = **Pollutant matter emission rate, pounds per hour (lb/hr)**

Qs = **Volumetric flow rate - wet basis at stack conditions, actual cubic feet per minute (acfm)**

Qsstd = **Volumetric flow rate - dry basis at stack conditions, actual cubic feet per minute (dscfm)**

Tm = **Average temperature of dry gas meter, °R**

Ts = **Average temperature of stack gas, °R**

Tstd = **Temperature at standard conditions, 528°R**

Vlc = **Total volume of liquid collected in impingers, ml**

Vsg = **Volume of moisture collected in silica gel, grams**

Vm = **Volume of dry gas sampled at meter conditions, ft^3**

Vmstd= **Volume of dry gas sampled at standard conditions, ft^3**

Vs = **Average stack gas velocity at stack conditions, ft/s**

Vwstd = **Volume of water vapor at standard conditions, scf**

γ = **Dry gas meter calibration factor, dimensionless**

Θ = **Total sampling time, minutes**

NOTE: Standard conditions = 68°F and 29.92 in. Hg

Appendix D.1

Calculations

Wet Scrubber Inlet

Summary of Stack Gas Parameters and Test Results
Iron and Steel Foundries Manual Emission Test
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 29 - Multiple Metals
Cupola Wet Scrubber Inlet

	RUN NUMBER	*I-M29-1*	*I-M29-2*	*I-M29-3*	*I-M29-4*	
	RUN DATE	*9/23/97*	*9/24/97*	*9/25/97*	*9/25/97*	*Average*
	RUN TIME	*1410-1841*	*0934-1343*	*0838-1149*	*1512-1845*	
	MEASURED DATA					
P_{static}	Stack Static Pressure, inches H_2O	-19.75	-19.75	-19.75	-19.75	-19.75
γ	Meter Box Correction Factor	1.024	1.024	1.024	1.024	1.02
P_{bar}	Barometric Pressure, inches Hg	29.74	29.85	29.10	29.10	29.45
V_m	Sample Volume, ft^3	60.951	120.696	107.091	109.178	99.48
$\Delta p^{1/2}$	Average Square Root Δp, (in. H_2O)$^{1/}$	0.9292	0.9177	0.9170	0.9172	0.92
ΔH	Avg Meter Orifice Pressure, in. H_2O	0.96	0.90	2.77	2.75	1.85
T_m	Average Meter Temperature, °F	92.0	74	76	101	85.75
T_s	Average Stack Temperature, °F	125	128	133	137	130.75
V_{lc}	Condensate Collected, ml	316.3	1112.6	914.0	950.9	823.45
CO_2	Carbon Dioxide content, % by volum	8.90	9.40	10.00	11.00	9.83
O_2	Oxygen content, % by volume	12.30	12.70	12.20	11.90	12.28
N_2	Nitrogen content, % by volume	78.8	77.9	77.8	77.1	77.90
C_p	Pitot Tube Coefficient	0.84	0.84	0.84	0.84	0.84
Θ	Sample Run Duration, minutes	115.0	237	120	120	148.08
D_n	Nozzle Diameter, inches	0.192	0.192	0.260	0.256	0.23
	CALCULATED DATA					
A_n	Nozzle Area, ft^2	0.000201	0.000201	0.000369	0.000357	0.00
$V_{m(std)}$	Standard Meter Volume, ft^3	59.458	122.140	105.757	103.008	97.59
$V_{m(std)}$	Standard Meter Volume, m^3	1.684	3.459	2.995	2.917	2.76
Q_m	Average Sampling Rate, dscfm	0.517	0.515	0.881	0.858	0.69
P_s	Stack Pressure, inches Hg	28.29	28.40	27.65	27.65	28.00
B_{ws}	Moisture, % by volume	20.0	30.0	28.9	30.3	27.31
$B_{ws(sat)}$	Moisture (at saturation), % by volum	14.0	15.1	17.7	19.6	16.59
V_{wstd}	Standard Water Vapor Volume, ft^3	14.888	52.370	43.022	44.759	38.76
$1-B_{ws}$	Dry Mole Fraction	0.860	0.849	0.823	0.804	0.83
M_d	Molecular Weight (d.b.), lb/lb•mole	29.92	30.01	30.09	30.24	30.06
M_s	Molecular Weight (w.b.), lb/lb•mole	28.25	28.20	27.95	27.83	28.06
V_s	Stack Gas Velocity, ft/s	57.1	56.5	57.7	58.0	57.31
A	Stack Area, ft^2	23.94	23.94	23.94	23.94	23.94
Q_a	Stack Gas Volumetric flow, acfm	81,999	81,108	82,857	83,329	82323.35
Q_s	Stack Gas Volumetric flow, dscfm	60,183	58,682	56,090	54,702	57414.26
Q_s	Stack Gas Volumetric flow, dscmm	1,704	1,662	1,588	1,549	1625.79
I	Isokinetic Sampling Ratio, %	102.3	104.5	102.0	105.1	103.48

Summary of Stack Gas Parameters and Test Results
Iron and Steel Foundries Manual Emission Test
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 29 - Multiple Metals
Cupola Wet Scrubber Inlet

	RUN NUMBER	*I-M29-1*	*I-M29-2*	*I-M29-3*	*I-M29-4*	
	RUN DATE	*9/23/97*	*9/24/97*	*9/25/97*	*9/25/97*	*Average*
	RUN TIME	*1410-1841*	*0934-1343*	*0838-1149*	*1512-1845*	
	EMISSIONS DATA					
	Particulate Matter					
PM	Filter Weight Gain, mg	996.6	1362.7	1669.3	2015.7	1511.08
PM	Beaker Weight Gain, mg	38.4	1291.5	981.7	1051.2	840.70
PM	Total Catch, g	1.0350	2.6542	2.6510	3.0669	2.35
C_{PM} @ 7% O_2	Concentration, gr/dscf @ 7% O_2	0.434	0.57	0.62	0.71	0.58
C_{PM}	Concentration, g/dscm	0.61	0.77	0.89	1.05	0.83
C_{PM} @ 7% O_2	Concentration, g/dscm @ 7% O_2	0.99	1.30	1.41	1.62	1.33
E_{PM}	Emission Rate, kg/hr	62.9	77	84	98	80.36
C_{PM}	Concentration, gr/dscf	0.269	0.34	0.39	0.46	0.36
E_{PM}	Emission Rate, lb/hr	138.6	168.7	186.0	215.4	177.17
	Antimony (Sb)					
Sb	Target Catch, µg	63	53	211	249	144.04
C_{Sb}	Concentration, µg/dscm	37	15	71	85	52.12
C_{Sb} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	60	26	113	132	82.69
E_{Sb}	Emission Rate, lb/hr	0.0084	0.0034	0.0148	0.0175	0.01
	Arsenic (As)					
Ar	Target Catch, µg	26.3	81.5	64.3	82.5	63.63
C_{Ar}	Concentration, µg/dscm	15.6	23.6	21.5	28.3	22.22
C_{Ar} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	25	39.9	34	44	35.78
E_{Ar}	Emission Rate, lb/hr	0.00351	0.0052	0.0045	0.0058	0.00
	Barium (Ba)					
Ba	Target Catch, µg	307.3	1,103.0	743.5	991.5	786.34
C_{Ba}	Concentration, µg/dscm	183	319	248	340	272.41
C_{Ba} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	295	541	397	525	439.32
E_{Ba}	Emission Rate, lb/hr	0.0411	0.070	0.052	0.070	0.06
	Beryllium (Be)					
Be	Target Catch, µg	0.00	2.4	0.00	0.00	0.60
C_{Be}	Concentration, µg/dscm	0.00	0.69	0.00	0.00	0.17
C_{Be} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	0.00	1.17	0.00	0.00	0.29
E_{Be}	Emission Rate, lb/hr	0.000000	0.000151	0.000000	0.000000	0.00
	Cadmium (Cd)					
Cd	Target Catch, µg	82.9	241.5	233.8	184.0	185.55
C_{Cd}	Concentration, µg/dscm	49	70	78	63	65.05
C_{Cd} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	80	118	125	97	105.03
E_{Cd}	Emission Rate, lb/hr	0.0111	0.015	0.016	0.013	0.01

Note - No front half reagent blank correction was made.

Summary of Stack Gas Parameters and Test Results
Iron and Steel Foundries Manual Emission Test
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 29 - Multiple Metals
Cupola Wet Scrubber Inlet

	RUN NUMBER	*I-M29-1*	*I-M29-2*	*I-M29-3*	*I-M29-4*	
	RUN DATE	*9/23/97*	*9/24/97*	*9/25/97*	*9/25/97*	*Average*
	RUN TIME	*1410-1841*	*0934-1343*	*0838-1149*	*1512-1845*	
	EMISSIONS DATA - Continued					
	Chromium (Cr)					
Cr	Target Catch, µg	472.8	1,016.9	775.7	721.2	746.65
C_{Cr}	Concentration, µg/dscm	281	294	259	247	270.28
C_{Cr} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	454	498	414	382	437.00
E_{Cr}	Emission Rate, lb/hr	0.0633	0.065	0.0544	0.0507	0.06
	Cobalt (Co)					
Co	Target Catch, µg	21.7	40.9	31.7	32.8	31.76
C_{Co}	Concentration, µg/dscm	12.9	11.8	10.6	11.2	11.63
C_{Co} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	20.8	20.0	16.9	17.4	18.78
E_{Co}	Emission Rate, lb/hr	0.00291	0.00260	0.00222	0.00230	0.00
	Lead (Pb)					
Pb	Target Catch, µg	9,567	13,225	24,762	25,602	18288.91
C_{Pb}	Concentration, µg/dscm	5,682	3,824	8,269	8,777	6637.91
C_{Pb} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	9,184	6,482	13,211	13,556	10608.06
E_{Pb}	Emission Rate, lb/hr	1.28	0.84	1.74	1.80	1.41
	Manganese (Mn)					
Mn	Target Catch, µg	61,293	144,141	107,629	115,227	107072.71
C_{Mn}	Concentration, µg/dscm	36,405	41,676	35,940	39,504	38381.09
C_{Mn} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	58,840	70,646	57,421	61,011	61979.66
E_{Mn}	Emission Rate, lb/hr	8.21	9.16	7.55	8.09	8.25
	Mercury (Hg)					
Hg	Target Catch, µg	8.00	11.10	101.21	17.40	34.43
C_{Hg}	Concentration, µg/dscm	4.7	3.2	33.8	6.0	11.93
C_{Hg} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	7.7	5.4	54.0	9.2	19.08
E_{Hg}	Emission Rate, lb/hr	0.00107	0.00071	0.00710	0.00122	0.00
	Nickel (Ni)					
Ni	Target Catch, µg	26.2	45.6	45.6	33.7	37.77
C_{Ni}	Concentration, µg/dscm	16	13	15	12	13.88
C_{Ni} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	25	22	24	18	22.41
E_{Ni}	Emission Rate, lb/hr	0.0035	0.0029	0.0032	0.0024	0.00

Note - No front half reagent blank correction was made.

Summary of Stack Gas Parameters and Test Results
Iron and Steel Foundries Manual Emission Test
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 29 - Multiple Metals
Cupola Wet Scrubber Inlet

	RUN NUMBER	***I-M29-1***	***I-M29-2***	***I-M29-3***	***I-M29-4***	
	RUN DATE	***9/23/97***	***9/24/97***	***9/25/97***	***9/25/97***	***Average***
	RUN TIME	***1410-1841***	***0934-1343***	***0838-1149***	***1512-1845***	
	EMISSIONS DATA - Continued					
	Phosphorus (P)					
P	Target Catch, µg	409.1	5,581.1	3,334.0	3,280.6	3151.21
C_P	Concentration, µg/dscm	243	1,614	1,113	1,125	1023.67
C_P @ 7% O_2	Concentration, µg/dscm @ 7% O_2	393	2,735	1,779	1,737	1660.97
E_P	Emission Rate, lb/hr	0.0548	0.355	0.23	0.23	0.22
	Selenium (Se)					
Se	Target Catch, µg	20.70	56.7	37.3	40.2	38.72
C_{Se}	Concentration, µg/dscm	12.3	16.4	12.5	13.8	13.73
C_{Se} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	19.9	27.8	19.9	21.3	22.21
E_{Se}	Emission Rate, lb/hr	0.00277	0.00360	0.00262	0.00282	0.00
	Silver (Ag)					
Ag	Target Catch, µg	10.69	27.16	30.53	17.99	21.59
C_{Ag}	Concentration, µg/dscm	6.35	7.9	10.19	6.17	7.64
C_{Ag} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	10.26	13.3	16.29	9.53	12.35
E_{Ag}	Emission Rate, lb/hr	0.001431	0.00173	0.002142	0.001264	0.00
	Thallium (Tl)					
Tl	Target Catch, µg	30.6	63.5	48.5	51.8	48.61
C_{Tl}	Concentration, µg/dscm	18.2	18.4	16.2	17.8	17.62
C_{Tl} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	29.4	31.1	25.9	27.4	28.45
E_{Tl}	Emission Rate, lb/hr	0.00410	0.00404	0.00340	0.00364	0.00
	Zinc (Zn)					
Zn	Target Catch, µg	77,209	164,736	193,356	249,708	171252.30
C_{Zn}	Concentration, µg/dscm	45,858	47,631	64,566	85,608	60915.73
C_{Zn} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	74,119	80,740	103,157	132,217	97558.37
E_{Zn}	Emission Rate, lb/hr	10.3	10.5	13.6	17.5	12.98

Note - No front half reagent blank correction was made.

Cupola Wet Scrubber Inlet

Run 2 NEED To USE Avg (Duptorig)

See new Page

Filter Diameter, inches: 4

"A" (1.4xAreaFilter), ug: 17.59

	Front H RBlank Mfhb	Back H RBlank Mbhb	Front H I-M29-1 Mfh	Back H I-M29-1 Mbh	Blank Adjusted Front H	Blank Adjusted Back H	I-M29-1 Adjusted Mt	Front H I-M29-2 Mfh	Back H I-M29-2 Mbh	Blank Adjusted Front H	Blank Adjusted Back H	I-M29-2 Adjusted Mt	Front H I-M29-3 Mfh	Back H I-M29-3 Mbh	Blank Adjusted Front H	Blank Adjusted Back H	I-M29-3 Adjusted Mt	Front H I-M29-4 Mfh	Back H I-M29-4 Mbh	Blank Adjusted Front H	Blank Adjusted Back H	I-M29-4 Adjusted Mt
Antimony (Sb)	4.41	< 0.40	66.5	0.89	62	0.890	**62.59**	54.4	3.89	50	3.890	**53.48**	215	1.09	211	1.090	**211.3**	253	0.565	249	(0.435)	**248.8**
Arsenic (As)	2.1	< 0.75	28.2	< 0.90	26	0.000	**26.25**	82.4	1.9	80	1.900	**81.5**	66.3	< 0.833	64	0.000	**64.28**	85	< 0.825	82	< 0.825	**82.48**
Barium (Ba)	99.1	0.23	406	0.672	386	0.442	**307.34**	1,170	32	1,112	31.770	**1,103**	836	6.83	794	6.600	**743.5**	1,090	0.796	1,036	(0.204)	**991.5**
Beryllium (Be)	< 0.10	< 0.10	< 0.1	< 0.12	0.00	0.000	**0.00**	2.37	0.205	2.4	0.205	**2.38**	< 0.10	< 0.111	0.00	0.000	**0.00**	< 0.10	< 0.11	< 0.10	< 0.11	**0.00**
Cadmium (Cd)	< 0.10	< 0.10	82.8	0.326	82.8	0.326	**82.9**	231	10.7	231	10.700	**241.5**	231	2.97	231	2.970	**233.8**	184	0.175	184	(0.825)	**184**
Chromium (Cr)	30.5	0.518	502	1.8	477	1.282	**472.8**	1,020	27.9	990	27.382	**1,017**	798	8.73	768	8.212	**775.7**	751	1.19	721	0.190	**721.2**
Colbalt (Co)	9.75	< 0.15	31.3	0.264	21.6	0.264	**21.7**	46.7	4.12	37.0	4.120	**40.9**	41.1	0.478	31.4	0.478	**31.68**	43	0.165	33	(0.835)	**32.77**
Lead (Pb)	4.41	0.57	9,560	11.6	9,556	11.030	**9,567**	22,300	497	22,296	496.430	**13,225**	24,600	167	24,596	166.430	**24,762**	25,600	6.53	25,596	5.530	**25,602**
Manganese (Mn)	18.3	0.271	61,300	11.6	61,282	11.329	**61,293**	140,800	3360	140,782	3359.7	**144,141**	107,000	648	106,982	647.729	**107,629**	115,200	45.5	115,182	44.500	**115,227**
Mercury (Hg)	< 0.4	< 3.412	< 0.4	3.84			**7.996**	< 0.4	10.7			**11.10**	3.0	97.7			**101.21**	< 0.4	16.998			**17.40**
Nickel (Ni)	11.9	< 0.30	37.5	0.863	26	0.863	**26.16**	55.6	2.06	44	2.060	**45.56**	54.0	3.84	42	3.840	**45.64**	46	< 0.330	34	< 0.330	**33.73**
Phosphorus (P)	74.7	3.28	476	11.1	452	10.10	**409.1**	5,560	99.1	5,485	95.820	**5,581**	3,400	12.3	3,325	11.300	**3,334**	3,350	8.6	3,275	7.600	**3,280.6**
Selenium (Se)	4.57	< 0.30	25.1	0.427	20.5	0.427	**20.7**	60	1.59	55	1.590	**56.72**	41.3	0.894	37	0.894	**37.3**	45	< 0.33	40	< 0.33	**40.16**
Silver (Ag)	0.257	< 0.10	10.8	0.245	10.5	0.245	**10.69**	25.2	2.32	24.9	2.320	**27.16**	29.9	0.985	29.6	0.985	**30.53**	18	0.146	18	(0.854)	**17.99**
Thallium (Tl)	0.2	0.22	30.8	0.240	30.6	(0.22)	**30.6**	63.764	< 0.217	64	(0.220)	**63.52**	48.7 49	0.222	49	(0.220)	**48.5**	52	< 0.22	52	(0.220)	**51.8**
Zinc (Zn)	49.1	4.69	77,200	62.7	77,151	59.57	**77,209**	160,700	4090	160,651	4085.31	**164,736**	192,300	1110	192,251	1105.310	**193,356**	249,700	61.5	249,651	58.425	**249,708**

Front Half Blank to be used:
If Mfhb < A, use Mfhb = Mfhb
If Mfhb > A, use Mfhb = A if A is > the lesser of Mfhb or 5% of Mfh
If A is not (is <), use Mfhb = the lesser of Mfhb or 5% of Mfh

Back Half Blank to be used:
If Mbhb < 1, use Mbhb = Mbhb
If Mbhb > 1, use Mfhb = 1 if 1 is > the lesser of Mbhb or 5% of Mbh
If 1 is not (is <), use Mbhb = the lesser of Mbhb or 5% of Mbh

Total Catch = Mt = (Mfh - Mfhb) + (Mbh - Mbhb)

Mercury:
If (Hgfhb + Hgbhb) <= 0.6, use (Hgfhb + Hgbhb)
If (Hgfhb + Hgbhb) > 0.6, use (Hgfhb + Hgbhb) = 0.6 if 0.6 is > the lesser of (Hgfhb+Hgbhb) or 5% of (Hgfh+Hgbh)
If 0.6 is not (is <), use (Hgfhb+Hgbhb) = the lesser of (Hgfhb+Hgbhb) or 5% of (Hgfh+Hgbh)

Total Hg Catch = Hgt = (Hgfh - Hgfhb) + (Hgbh - Hgbhb)

	FH-2	BH-2
	54.4 59.1	3.89 4.24
	82.4 na	1.90 na
	1170 1190	32.0 31.9
	2.37 2.34	0.205 0.206
	231 227	10.7 [illegible]
	1020 1010	27.9 28.2
	46.7 na	4.12 na
	22300 23800	497 501
	140800 149500	3360 3810
	55.7 55.2	2.06 2.18
	5560 5550	99.1 99.9
	60.0 58.7	1.59 1.54
	25.2 24.7	2.32 2.44
	63.7 63.2	< 0.217 na
	160700 172100	4090 4140

Method 29 Analytical Results (ug) and Blank Corrections

GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN

Cupola Wet Scrubber Inlet

Filter Diameter, in: 4

	Front H RBlank Mfhb	Back H RBlank Mbhb	Front H I-M29-1 Mfh	Back H I-M29-1 Mbh	Front H I-M29-2 Mfh	Back H I-M29-2 Mbh	Front H I-M29-3 Mfh	Back H I-M29-3 Mbh	Front H I-M29-4 Mfh	Back H I-M29-4 Mbh
Antimony	4.41	< 0.40	66.5	0.89	54.4	3.89	215	1.09	253	0.565
Arsenic	2.1	< 0.75	28.2	< 0.90	82.4	1.9	66.3	< 0.833	84.5	< 0.825
Barium	99.1	0.23	406	0.672	1170	32	836	6.83	1090	0.796
Beryllium	< 0.10	< 0.10	< 0.1	< 0.12	2.37	0.205	< 0.10	< 0.111	< 0.10	< 0.11
Cadmium	< 0.10	< 0.10	82.8	0.326	231	10.7	231	2.97	184	0.175
Chromium	30.5	0.518	502	1.8	1020	27.9	798	8.73	751	1.19
Colbalt	9.75	< 0.15	31.3	0.264	46.7	4.12	41.1	0.478	42.5	0.165
Lead	4.41	0.57	9560	11.6	22300	497	24600	167	25600	6.53
Manganese	18.3	0.271	61300	11.6	140800	3360	107000	648	115200	45.5
Mercury	< 0.4	< 3.412	< 0.4	3.84	< 0.4	10.7	3.02	97.7	< 0.4	16.998
Nickel	11.9	< 0.30	37.5	0.863	55.7	2.06	54	3.84	45.6	< 0.330
Phosphorus	74.7	3.28	476	11.1	5560	99.1	3400	12.3	3350	8.6
Selenium	4.57	< 0.30	25.1	0.427	60	1.59	41.3	0.894	44.7	< 0.33
Silver	0.257	< 0.10	10.8	0.245	25.2	2.32	29.9	0.985	18.2	0.146
Thallium	0.2	0.22	30.8	< 0.240	63.7	< 0.217	48.7	< 0.222	52	< 0.22
Zinc	49.1	4.69	77200	62.7	160700	4090	192300	1110	249700	61.5

15.9
81.8
97.7

12.4
3.568
6.03

Isokinetic Calculation Sheet

Plant: GM – SAGINAW

Site: B Cupola Scrubber Inlet SO-MM5-3

		Run #2	Run 2	Run 3
Volume of dry gas sampled corrected to standard conditions. *note: Vm must be corrected for any leakage rates that exceed La.* $Vm_{std} = 17.65 \times Vm \times Y \times \frac{P_{bar} + \left(\frac{\Delta H}{13.6}\right)}{Tm}$	Vm, ft3	120.696	227.729	
	Y	1.024	0.966	
	Pbar, in. Hg	29.85	29.60	
	ΔH, in. H2O	0.90	2.89	
	Vm std, dscf	122.232	211.513	
Volume of water vapor at standard conditions, ft3 $V_{wstd} = 0.04707 \times V_{lc}$	V_{lc}		4593	
	V_{wstd}		21.619	
Moisture Content in stack gas. $Bws = \frac{Vw_{std}}{\left(Vw_{std} + Vm_{std}\right)}$	Bws		0.093	
	1-Bws		0.907	
Dry Molecular weight of stack gas, lb/lb-mole Md=.440 x (%CO2)+.320 x (%O2)+ .280 x (%N2+CO)	%CO2			
	%O2			
	%N2+CO			
	Md, lb/lb-mole	30.02	30.05	
Molecular Weight of Stack Gas Ms= Md x (1-Bws) + 18 x (Bws)	Ms, lb/lb-mole		28.93	
Stack gas velocity at stack conditions, feet per second. $Vs = 85.49 \times C_p \times \sqrt{\Delta P} \times \sqrt{\frac{T_s}{\left(P_s \times M_s\right)}}$	Pstatic, in. Hg	-19.75	+.72	
	Ps, in. Hg	28.40	29.15	
	Ts, °R	588	111 F / 571 R	
	$\sqrt{\Delta P}$	0.918	.5923	
	Cp	0.84	0.84	
	Vs, feet per sec.		35.00	
Isokinetic Variation $\%I = \frac{Vmstd \times Ts \times 17.32}{Vs \times Dn^2 \times \theta \times Ps \times (1-Bws)}$	Dn, in.	0.192	0.305	
	θ, min.	237.3	240	
	%I		101.3	

Appendix D.2

Calculations

Wet Scrubber Outlet

Summary of Stack Gas Parameters and Test Results
Iron and Steel Foundries Manual Emission Test
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 29 - Multiple Metals
Cupola Wet Scrubber Outlet

	RUN NUMBER	*O-M29-1*	*O-M29-2*	*O-M29-3*	*O-M29-4*	*4-Run*
	RUN DATE	*9/23/97*	*9/24/97*	*9/25/97*	*9/25/97*	*Average*
	RUN TIME	*1412-1846*	*0938-1347*	*0845-1145*	*1523-1843*	
	MEASURED DATA					
P_{static}	Stack Static Pressure, inches H_2O	1.10	1.10	0.35	0.35	0.73
γ	Meter Box Correction Factor	0.999	0.999	0.999	0.999	0.999
P_{bar}	Barometric Pressure, inches Hg	29.74	29.85	29.10	29.10	29.45
V_m	Sample Volume, ft^3	79.040	156.915	120.204	121.525	119.42
$\Delta p^{1/2}$	Average Square Root Δp, $(in. H_2O)^{1/2}$	0.7231	0.6680	0.6330	0.6440	0.6670
ΔH	Avg Meter Orifice Pressure, in. H_2O	1.57	1.23	2.81	2.93	2.14
T_m	Average Meter Temperature, °F	86	85	87	95	88.3
T_s	Average Stack Temperature, °F	125	133	109	109	119.0
V_{lc}	Condensate Collected, ml	242.0	635.1	243.4	254.4	343.73
CO_2	Carbon Dioxide content, % by volume	4.00	10.60	9.70	10.30	8.65
O_2	Oxygen content, % by volume	16.70	11.80	12.50	12.40	13.35
N_2	Nitrogen content, % by volume	79.3	77.6	77.8	77.3	78.0
C_p	Pitot Tube Coefficient	0.84	0.84	0.84	0.84	0.84
Θ	Sample Run Duration, minutes	110	240	120	120	147.5
D_n	Nozzle Diameter, inches	0.255	0.255	0.310	0.310	0.283
	CALCULATED DATA					
A_n	Nozzle Area, ft^2	0.000355	0.000355	0.000524	0.000524	0.000439
$V_{m(std)}$	Standard Meter Volume, ft^3	76.163	151.911	113.491	113.118	113.671
$V_{m(std)}$	Standard Meter Volume, m^3	2.157	4.302	3.214	3.203	3.219
Q_m	Average Sampling Rate, dscfm	0.692	0.633	0.946	0.943	0.803
P_s	Stack Pressure, inches Hg	29.82	29.93	29.13	29.13	29.50
B_{ws}	Moisture, % by volume	13.0	16.4	9.2	9.6	12.05
$B_{ws(sat)}$	Moisture (at saturation), % by volume	13.2	16.3	8.6	8.6	11.72
V_{wstd}	Standard Water Vapor Volume, ft^3	11.391	29.894	11.457	11.975	16.18
$1-B_{ws}$	Dry Mole Fraction	0.870	0.837	0.914	0.914	0.883
M_d	Molecular Weight (d.b.), lb/lb•mole	29.31	30.17	30.05	30.14	29.92
M_s	Molecular Weight (w.b.), lb/lb•mole	27.84	28.18	29.01	29.09	28.53
V_s	Stack Gas Velocity, ft/s	43.6	40.2	37.3	37.9	39.75
A	Stack Area, ft^2	30.68	30.68	30.68	30.68	30.68
Q_a	Stack Gas Volumetric flow, acfm	80,243	74,042	68,668	69,760	73,178
Q_s	Stack Gas Volumetric flow, dscfm	62,768	55,151	56,641	57,542	58,025
Q_s	Stack Gas Volumetric flow, dscmm	1,777	1,562	1,604	1,629	1,643
I	Isokinetic Sampling Ratio, %	95.4	99.3	97.8	95.9	97.1

Summary of Stack Gas Parameters and Test Results
Iron and Steel Foundries Manual Emission Test
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 29 - Multiple Metals
Cupola Wet Scrubber Outlet

	RUN NUMBER	*O-M29-1*	*O-M29-2*	*O-M29-3*	*O-M29-4*	*4-Run*
	RUN DATE	*9/23/97*	*9/24/97*	*9/25/97*	*9/25/97*	*Average*
	RUN TIME	*1412-1846*	*0938-1347*	*0845-1145*	*1523-1843*	
	EMISSIONS DATA					
	Particulate Matter					
PM	Filter Weight Gain, mg	64.5	130.9	19.2	14.2	57.20
PM	Beaker Weight Gain, mg	9.6	27.5	6.7	11.2	13.75
PM	Total Catch, g	0.0741	0.1584	0.0259	0.0254	0.0710
C_{PM} @ 7% O_2	Concentration, gr/dscf @ 7% O_2	0.0497	0.0246	0.00583	0.00567	0.0214
C_{PM}	Concentration, g/dscm	0.0344	0.0368	0.00806	0.00793	0.0218
C_{PM} @ 7% O_2	Concentration, g/dscm @ 7% O_2	0.114	0.0562	0.0133	0.0130	0.0491
E_{PM}	Emission Rate, kg/hr	3.66	3.45	0.776	0.775	2.17
C_{PM}	Concentration, gr/dscf	0.0150	0.0161	0.00352	0.00347	0.00952
E_{PM}	Emission Rate, lb/hr	8.08	7.61	1.71	1.71	4.78
	Antimony (Sb)					
Sb	Target Catch, µg	6.76	10.47	4.85	3.99	6.52
C_{Sb}	Concentration, µg/dscm	3.13	2.43	1.51	1.25	2.08
C_{Sb} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	10.4	3.72	2.50	2.04	4.66
E_{Sb}	Emission Rate, lb/hr	0.000737	0.000503	0.000320	0.000268	0.000457
	Arsenic (As)					
Ar	Target Catch, µg	4.94	6.06	2.03	1.58	3.65
C_{Ar}	Concentration, µg/dscm	2.29	1.41	0.632	0.493	1.21
C_{Ar} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	7.58	2.15	1.05	0.807	2.90
E_{Ar}	Emission Rate, lb/hr	0.000539	0.000291	0.000134	0.000106	0.000267
	Barium (Ba)					
Ba	Target Catch, µg	42.8	93.6	26.7	13.7	44.22
C_{Ba}	Concentration, µg/dscm	19.9	21.8	8.31	4.28	13.55
C_{Ba} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	65.8	33.2	13.8	7.00	29.94
E_{Ba}	Emission Rate, lb/hr	0.00467	0.00450	0.00176	0.000922	0.00296
	Beryllium (Be)					
Be	Target Catch, µg	0.217	0.507	ND	ND	0.181
C_{Be}	Concentration, µg/dscm	0.101	0.118	ND	ND	0.0546
C_{Be} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	0.333	0.180	ND	ND	0.128
E_{Be}	Emission Rate, lb/hr	0.0000237	0.0000243	ND	ND	0.0000120
	Cadmium (Cd)					
Cd	Target Catch, µg	8.61	23.31	4.02	2.07	9.50
C_{Cd}	Concentration, µg/dscm	3.99	5.42	1.25	0.646	2.83
C_{Cd} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	13.2	8.28	2.07	1.06	6.15
E_{Cd}	Emission Rate, lb/hr	0.000939	0.00112	0.000265	0.000139	0.000616

Note - Blank corrections were made using the Outlet Field Blank results.

Summary of Stack Gas Parameters and Test Results
Iron and Steel Foundries Manual Emission Test
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 29 - Multiple Metals
Cupola Wet Scrubber Outlet

	RUN NUMBER	*O-M29-1*	*O-M29-2*	*O-M29-3*	*O-M29-4*	*4-Run*
	RUN DATE	*9/23/97*	*9/24/97*	*9/25/97*	*9/25/97*	*Average*
	RUN TIME	*1412-1846*	*0938-1347*	*0845-1145*	*1523-1843*	
	EMISSIONS DATA - Continued					
	Chromium (Cr)					
Cr	Target Catch, µg	55.3	94.7	19.4	11.3	45.17
C_{Cr}	Concentration, µg/dscm	25.6	22.0	6.05	3.52	14.30
C_{Cr} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	84.8	33.6	10.0	5.75	33.55
E_{Cr}	Emission Rate, lb/hr	0.00603	0.00455	0.00128	0.000758	0.00315
	Colbalt (Co)					
Co	Target Catch, µg	3.45	5.10	1.52	1.26	2.83
C_{Co}	Concentration, µg/dscm	1.60	1.19	0.472	0.393	0.913
C_{Co} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	5.29	1.81	0.781	0.643	2.13
E_{Co}	Emission Rate, lb/hr	0.000376	0.000245	0.000100	0.0000848	0.000201
	Lead (Pb)					
Pb	Target Catch, µg	824	1,574	454	229	770.16
C_{Pb}	Concentration, µg/dscm	382	366	141	71	240
C_{Pb} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	1,265	559	234	117	544
E_{Pb}	Emission Rate, lb/hr	0.0899	0.0756	0.0299	0.0154	0.0527
	Manganese (Mn)					
Mn	Target Catch, µg	6,439	10,800	1,531	1,041	4952.83
C_{Mn}	Concentration, µg/dscm	2,986	2,511	476	325	1,574
C_{Mn} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	9,881	3,835	788	532	3,759
E_{Mn}	Emission Rate, lb/hr	0.702	0.519	0.101	0.0701	0.348
	Mercury (Hg)					
Hg	Target Catch, µg	7.40	16.20	51.10	15.00	22.43
C_{Hg}	Concentration, µg/dscm	3.43	3.77	15.9	4.68	6.95
C_{Hg} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	11.4	5.75	26.3	7.66	12.8
E_{Hg}	Emission Rate, lb/hr	0.000807	0.000778	0.00337	0.00101	0.00149
	Nickel (Ni)					
Ni	Target Catch, µg	5.83	8.03	2.36	1.48	4.43
C_{Ni}	Concentration, µg/dscm	2.70	1.87	0.735	0.462	1.44
C_{Ni} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	8.95	2.85	1.22	0.756	3.44
E_{Ni}	Emission Rate, lb/hr	0.000636	0.000386	0.000156	0.000100	0.000319

Note - Blank corrections were made using the Outlet Field Blank results.

Summary of Stack Gas Parameters and Test Results
Iron and Steel Foundries Manual Emission Test
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 29 - Multiple Metals
Cupola Wet Scrubber Outlet

	RUN NUMBER	*O-M29-1*	*O-M29-2*	*O-M29-3*	*O-M29-4*	*4-Run*
	RUN DATE	*9/23/97*	*9/24/97*	*9/25/97*	*9/25/97*	*Average*
	RUN TIME	*1412-1846*	*0938-1347*	*0845-1145*	*1523-1843*	
	EMISSIONS DATA - Continued					
	Phosphorus (P)					
P	Target Catch, µg	309.0	58.3	90.6	53.2	127.79
C_P	Concentration, µg/dscm	143	13.6	28.2	16.6	50.4
C_P @ 7% O_2	Concentration, µg/dscm @ 7% O_2	474	20.7	46.6	27.2	142.2
E_P	Emission Rate, lb/hr	0.0337	0.00280	0.00598	0.00358	0.0115
	Selenium (Se)					
Se	Target Catch, µg	1.79	5.2	0.6	1.0	2.15
C_{Se}	Concentration, µg/dscm	0.830	1.20	0.193	0.322	0.637
C_{Se} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	2.75	1.84	0.319	0.526	1.36
E_{Se}	Emission Rate, lb/hr	0.000195	0.000248	0.0000409	0.0000693	0.000138
	Silver (Ag)					
Ag	Target Catch, µg	4.79	7.62	1.87	1.51	3.95
C_{Ag}	Concentration, µg/dscm	2.22	1.77	0.582	0.472	1.26
C_{Ag} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	7.35	2.71	0.963	0.771	2.95
E_{Ag}	Emission Rate, lb/hr	0.000522	0.000366	0.000124	0.000102	0.000278
	Thallium (Tl)					
Tl	Target Catch, µg	3.32	4.20	0.250	0.510	2.07
C_{Tl}	Concentration, µg/dscm	1.54	0.976	0.0778	0.159	0.688
C_{Tl} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	5.09	1.49	0.129	0.260	1.74
E_{Tl}	Emission Rate, lb/hr	0.000362	0.000202	0.0000165	0.0000343	0.000154
	Zinc (Zn)					
Zn	Target Catch, µg	6,650	12,707	2,772	2,504	6,158
C_{Zn}	Concentration, µg/dscm	3,083	2,954	863	782	1,920
C_{Zn} @ 7% O_2	Concentration, µg/dscm @ 7% O_2	10,204	4,512	1,427	1,278	4,355
E_{Zn}	Emission Rate, lb/hr	0.725	0.610	0.183	0.169	0.422

Note - Blank corrections were made using the Outlet Field Blank results.

Method 29 Analytical Results (ug) and Blank Corrections

GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN

Cupola Wet Scrubber Outlet

Filter Diameter, in: 4 3

	Front H RBlank Mfhb	Back H RBlank Mbhb	Front H O-M29-1 Mfh	Back H O-M29-1 Mbh	Catch Values Used Front H	Catch Values Used Back H	Front H O-M29-2 Mfh	Back H O-M29-2 Mbh	Catch Values Used Front H	Catch Values Used Back H	Front H O-M29-3 Mfh	Back H O-M29-3 Mbh	Catch Values Used Front H	Catch Values Used Back H	Front H O-M29-4 Mfh	Back H O-M29-4 Mbh
Antimony	4.41	< 0.40	10.6	0.601	10.6	0.601	14	0.914	14	0.914	8.74	< 0.498	8.74	0	7.88	< 0.492
Arsenic	2.1	< 0.75	4.94	< 0.92	4.94	0	6.06	< 0.85	6.06	0	2.03	< 0.933	2.03	0	1.58	< 0.922
Barium	99.1	0.23	52.6	0.511	52.6	0.511	103	0.863	103	0.863	36.4	0.577	36.4	0.577	23.6	0.51
Beryllium	< 0.10	< 0.10	0.217	< 0.123	0.217	0	0.507	< 0.113	0.507	0	< 0.10	< 0.124	0	0	< 0.10	< 0.123
Cadmium	< 0.10	< 0.10	8.61	< 0.123	8.61	0	21.8	1.51	21.8	1.51	4.02	< 0.124	4.02	0	2.07	0.244
Chromium	30.5	0.518	61.7	1.37	61.7	1.37	101	1.52	101	1.52	26.1	1.14	26.1	1.14	18.2	1.12
Colbalt	9.75	< 0.15	4.09	< 0.184	4.09	0	4.39	1.35	4.39	1.35	1.97	0.187	1.97	0.187	1.9	< 0.184
Lead	4.41	0.57	824	1.62	824	1.62	1560	14.9	1560	14.9	453	1.85	453	1.85	225	5.22
Manganese	18.3	0.271	6440	1.58	6440	1.58	10800	2.65	10800	2.65	1530	3.4	1530	3.4	1040	3.83
Mercury	< 0.4	< 3.412	< 0.4	7.4	0	7.4	< 0.4	16.2	0	16.2	< 0.4	51.1	0	51.1 #	< 0.4	15
Nickel	11.9	< 0.30	9.14	0.723	9.14	0.723	9.71	2.35	9.71	2.35	5.74	0.653	5.74	0.653	5.51	< 0.369
Phosphorus	74.7	3.28	306	9.23	306	9.23	50.9	13.6	50.9	13.6	88.1	8.66	88.1	8.66	52	7.41
Selenium	4.57	< 0.30	5.86	< 0.368	5.86	0	7.8	1.44	7.8	1.44	4.69	< 0.373	4.69	0	4.08	1.02
Silver	0.257	< 0.10	4.91	0.137	4.91	0.137	7.67	0.21	7.67	0.21	2	< 0.124	2	0	1.64	0.163
Thallium	0.2	0.22	4.04	< 0.245	4.04	0	4.92	< 0.227	4.92	0	0.97	< 0.249	0.97	0	1.23	< 0.246
Zinc	49.1	4.69	6650	10.7	6650	10.7	12700	17.7	12700	17.7	2770	13.1	2770	13.1	2500	15.4

use p30 & 31 in TLI lab report

Method 29 Analytical Results (ug) and Blank Corrections
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
Cupola Wet Scrubber Outlet

Filter Diameter, inches: ~~X~~ 3

"A" (1.4xAreaFilter), ug: 17.59

	Front H RBlank Mfhb	Back H RBlank Mbhb	Front H O-M29-Mfh	Back H O-M29-Mbh	Blank Adjusted Front H	Blank Adjusted Back H	O-M29-1 Adjusted Mt	Front H O-M29-2 Mfh	Back H O-M29-2 Mbh	Blank Adjusted Front H	Blank Adjusted Back H	O-M29-2 Adjusted Mt	Front H O-M29-3 Mfh	Back H O-M29-3 Mbh	Blank Adjusted Front H	Blank Adjusted Back H	O-M29-3 Adjusted Mt	Front H O-M29-4 Mfh	Back H O-M29-4 Mbh	Blank Adjusted Front H	Blank Adjusted Back H	O-M29-4 Adjusted Mt
Antimony (Sb)	4.41	< 0.40	10.60	0.601	6.19	0.601	11.20	14.00	0.914	9.59	0.914	14.91	8.74	< 0.498	4.33	0.000	9.24	7.88	< 0.492	3.47	0.000	8.37
Arsenic (As)	2.1	< 0.75	4.94	< 0.92	2.84	0.000	5.46	6.06	< 0.85	3.96	0.000	6.91	2.03	< 0.933	-0.07	0.000	2.96	1.58	< 0.922	-0.52	< 0.922	2.50
Barium (Ba)	99.1	0.23	52.60	0.511	35.01	0.281	53.11	103.00	0.863	85.41	0.633	103.86	36.40	0.577	18.81	0.347	36.98	23.60	0.51	6.01	(0.490)	24.10
Beryllium (Be)	< 0.10	< 0.10	0.22	< 0.123	0.22	0.000	0.44	0.51	< 0.113	0.51	0.000	0.62	< 0.10	< 0.124	0.00	0.000	0.00	< 0.10	< 0.123	< 0.10	< 0.123	0.00
Cadmium (Cd)	< 0.10	< 0.10	8.61	< 0.123	8.61	0.000	8.53	21.80	1.51	21.80	1.510	23.11	4.02	< 0.124	4.02	0.000	3.94	2.07	0.244	2.07	(0.756)	2.11
Chromium (Cr)	30.5	0.518	61.70	1.37	44.11	0.852	63.1	101.00	1.52	83.41	1.002	102.5	26.10	1.14	8.51	0.622	27.20	18.20	1.12	0.61	0.120	19.30
Colbalt (Co)	9.75	< 0.15	4.09	< 0.184	-5.66	0.000	4.27	4.39	1.35	-5.36	1.350	5.74	1.97	0.187	-7.78	0.187	2.16	1.90	< 0.184	-7.85	0.000	2.08
Lead (Pb)	4.41	0.57	824	1.62	820	1.050	824.3	1,560	14.9	1,556	14.330	1,574	453	1.85	449	1.280	453.6	225	5.22	221	4.220	228.9
Manganese (Mn)	18.3	0.271	6,440	1.58	6,422	1.309	6,435.4	10,800	2.65	10,782	2.4	10,796	1,530	3.4	1,512	3.129	1,527	1,040	3.83	1,022	2.830	1,037.6
Mercury (Hg)	< 0.4	< 3.412	< 0.4	7.4			10.38	< 0.4	16.2			21.43	< 0.4	51.1			54.84	< 0.4	15			17.97
Nickel (Ni)	11.9	< 0.30	9.14	0.723	-2.76	0.723	9.86	9.71	2.35	-2.19	2.350	12.06	5.74	0.653	-6.16	0.653	6.39	5.51	< 0.369	-6.39	< 0.369	5.88
Phosphorus (P)	74.7	3.28	306.00	9.23	288.41	8.23	315.2	50.90	13.6	33.31	12.600	64.5	88.10	8.66	70.51	7.660	96.76	52.00	7.41	34.41	6.410	59.40
Selenium (Se)	4.57	< 0.30	5.86	< 0.368	1.29	0.000	6.23	7.80	1.44	3.23	1.440	9.24	4.69	< 0.373	0.12	0.000	5.06	4.08	1.02	-0.49	1.020	5.10
Silver (Ag)	0.257	< 0.10	4.91	0.137	4.65	0.137	5.05	7.67	0.21	7.41	0.210	7.88	2.00	< 0.124	1.74	0.000	2.12	1.64	0.163	1.38	(0.837)	1.80
Thallium (Tl)	0.2	0.22	4.04	< 0.245	3.84	(0.22)	4.29	4.92	< 0.227	4.72	(0.220)	5.15	0.97	< 0.249	0.77	(0.220)	1.22	1.23	< 0.246	1.03	(0.220)	1.48
Zinc (Zn)	49.1	4.69	6,650	10.7	6,601	9.70	6,646.7	12,700	17.7	12,651	16.70	12,704	2,770	13.1	2,721	12.100	2,769	2,500	15.4	2,451	14.400	2,501

Front Half Blank to be used:
If Mfhb < A, use Mfhb = Mfhb
If Mfhb > A, use Mfhb = A if A is > the lesser of Mfhb or 5% of Mfh
If A is not (is <), use Mfhb = the lesser of Mfhb or 5% of Mfh

Back Half Blank to be used:
If Mbhb < 1, use Mbhb = Mbhb
If Mbhb > 1, use Mfhb = 1 if 1 is > the lesser of Mbhb or 5% of Mbh
If 1 is not (is <), use Mbhb = the lesser of Mbhb or 5% of Mbh

Total Catch = Mt = (Mfh - Mfhb) + (Mbh - Mbhb)

Mercury:
If (Hgfhb + Hgbhb) <= 0.6, use (Hgfhb + Hgbhb)
If (Hgfhb + Hgbhb) > 0.6, use (Hgfhb + Hgbhb) = 0.6 if 0.6 is > the lesser of (Hgfhb+Hgbhb) or 5% of (Hgfh+Hgbh)
If 0.6 is not (is <), use (Hgfhb+Hgbhb) = the lesser of (Hgfhb+Hgbhb) or 5% of (Hgfh+Hgbh)

Total Hg Catch = Hgt = (Hgfh - Hgfhb) + (Hgbh - Hgbhb)

Summary of Stack Gas Parameters and Test Results
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 23 - PCDDs / PCDFs
Cupola Wet Scrubber Outlet

	RUN NUMBER	*O-23-1*	*O-23-2*	*O-23-3*	*O-23-4*	
	RUN DATE	*9/23/97*	*9/24/97*	*9/25/97*	*9/25/97*	*Average*
	RUN TIME	*1415-1846*	*0851-1347*	*0844-1321*	*1443-1918*	
	MEASURED DATA					
γ	Meter Box Correction Factor	1.010	1.010	1.010	1.010	1.010
ΔH	Avg. Meter Orifice Pressure, in. H_2O	0.88	1.37	2.94	3.08	2.07
P_{bar}	Barometric Pressure, inches Hg	29.74	29.85	29.10	29.10	29.45
V_m	Sample Volume, ft^3	55.721	152.565	223.582	232.814	166.171
T_m	Average Meter Temperature, °F	79	79	78	88	81
P_{static}	Stack Static Pressure, inches H_2O	1.00	1.10	1.10	0.82	1.01
T_s	Average Stack Temperature, °F	125	133	110	108	119
V_{lc}	Condensate Collected, ml	161.9	622.2	440.9	436.8	415.450
CO_2	Carbon Dioxide content, % by volume	4.00	10.60	9.70	10.30	8.65
O_2	Oxygen content, % by volume	16.70	11.8	12.50	12.40	13.35
N_2	Nitrogen content, % by volume	79.30	77.60	77.80	77.30	78.00
C_p	Pitot Tube Coefficient	0.84	0.84	0.84	0.84	0.84
$\Delta p^{1/2}$	Average Square Root Dp, $(in. H_2O)^{1/2}$	0.5895	0.6646	0.5953	0.6153	0.6162
Θ	Sample Run Duration, minutes	110.00	240.00	240.00	240.00	207.50
D_n	Nozzle Diameter, inches	0.242	0.252	0.304	0.304	0.276
	CALCULATED DATA					
A_n	Nozzle Area, ft^2	0.000319	0.000346	0.000504	0.000504	0.000418
$V_{m(std)}$	Standard Meter Volume, dscf	54.895	151.041	217.061	221.977	161.244
$V_{m(std)}$	Standard Meter Volume, dscm	1.554	4.277	6.146	6.286	4.566
P_s	Stack Pressure, inches Hg	29.81	29.93	29.18	29.16	29.52
B_{ws}	Moisture, % by volume	12.2	16.2	8.7	8.5	11.4
V_{wstd}	Standard Water Vapor Volume, ft^3	7.621	29.287	20.753	20.560	19.555
$1-B_{ws}$	Dry Mole Fraction	0.878	0.838	0.913	0.916	0.886
M_d	Molecular Weight (d.b.), lb/lb•mole	29.31	30.17	30.05	30.14	29.92
M_s	Molecular Weight (w.b.), lb/lb•mole	27.93	28.19	29.00	29.12	28.56
V_s	Stack Gas Velocity, ft/s	35.5	40.0	35.1	36.1	36.7
A	Stack Area, ft^2	30.68	30.68	30.68	30.68	30.68
Q_a	Stack Gas Volumetric flow, acfm	65,317	73,649	64,584	66,517	67,517
Q_s	Stack Gas Volumetric flow, dscfm	51,561	54,924	53,234	55,184	53,726
$Q_{s(cmm)}$	Stack Gas Volumetric flow, dscmm	1,460	1,555	1,507	1,563	1,521
I	Isokinetic Sampling Ratio, %	93.0	101.5	103.4	102.0	100.0

Summary of Stack Gas Parameters and Test Results
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 23 - PCDDs / PCDFs
Cupola Wet Scrubber Outlet

	RUN NUMBER	BO-23-1	BO-23-2	BO-23-3	BO-23-4	
	RUN DATE	9/23/97	9/24/97	9/25/97	9/25/97	Average
	RUN TIME	1415-1846	0851-1347	0844-1321	1443-1918	
	EMISSIONS DATA					
	DIOXINS:					
	2378 TCDD					
ng	Catch, ng	{0.050}	0.21	0.13	0.12	{0.13}
ng/dscm	Concentration, ng/dscm, as measured	{0.0322}	0.049	0.021	0.019	{0.03}
µg/hr	Emission Rate, µg/hr	{2.82}	4.58	1.91	1.79	{2.78}
	Total TCDD					
ng	Catch, ng	2.7	6.6	4.1	4.6	4.50
ng/dscm	Concentration, ng/dscm, as measured	1.74	1.54	0.67	0.732	1.17
µg/hr	Emission Rate, µg/hr	152.2	144.0	60.3	68.6	106.28
	12378 PeCDD					
ng	Catch, ng	0.07	0.23	0.10	0.10	0.13
ng/dscm	Concentration, ng/dscm, as measured	0.045	0.054	0.016	0.016	0.03
µg/hr	Emission Rate, µg/hr	3.94	5.02	1.47	1.49	2.98
	Total PeCDD					
ng	Catch, ng	0.84	2.4	0.74	1.30	1.32
ng/dscm	Concentration, ng/dscm, as measured	0.54	0.56	0.12	0.207	0.36
µg/hr	Emission Rate, µg/hr	47.34	52.36	10.89	19.39	32.50
	123478 HxCDD					
ng	Catch, ng	0.02	0.07	ND	{0.02}	{0.04}
ng/dscm	Concentration, ng/dscm, as measured	0.013	0.016	(ND)	{0.003}	{0.01}
µg/hr	Emission Rate, µg/hr	1.13	1.53	(ND)	{0.30}	{0.98}
	123678 HxCDD					
ng	Catch, ng	{0.02}	0.080	ND	0.030	{0.04}
ng/dscm	Concentration, ng/dscm, as measured	{0.013}	0.019	(ND)	0.005	{0.01}
µg/hr	Emission Rate, µg/hr	{1.13}	1.7	(ND)	0.4	{1.11}

{ } Estimated Maximum Possible Concentration. EMPC values are included in totals and averages, which are also in brackets.

Summary of Stack Gas Parameters and Test Results
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 23 - PCDDs / PCDFs
Cupola Wet Scrubber Outlet

	RUN NUMBER	*BO-23-1*	*BO-23-2*	*BO-23-3*	*BO-23-4*	
	RUN DATE	*9/23/97*	*9/24/97*	*9/25/97*	*9/25/97*	*Average*
	RUN TIME	*1415-1846*	*0851-1347*	*0844-1321*	*1443-1918*	
	EMISSIONS DATA -Continued					
	DIOXINS - Continued					
	123789 HxCDD					
ng	Catch, ng	0.03	0.11	ND	0.04	0.06
ng/dscm	Concentration, ng/dscm, as measured	0.0193	0.026	(ND)	0.006	0.017
µg/hr	Emission Rate, µg/hr	1.69	2.4	(ND)	0.6	1.56
	Total HxCDD					
ng	Catch, ng	0.19	1.1	0.24	0.41	0.49
ng/dscm	Concentration, ng/dscm, as measured	0.122	0.257	0.039	0.065	0.121
µg/hr	Emission Rate, µg/hr	10.7	24.0	3.5	6.1	11.09
	1234678 HpCDD					
ng	Catch, ng	0.02	{0.12}	ND	{0.03}	{0.06}
ng/dscm	Concentration, ng/dscm, as measured	0.013	{0.028}	(ND)	{0.005}	{0.02}
µg/hr	Emission Rate, µg/hr	1.13	{2.62}	(ND)	{0.45}	{1.40}
	Total HpCDD					
ng	Catch, ng	0.02	0.14	ND	0.03	0.06
ng/dscm	Concentration, ng/dscm, as measured	0.013	0.033	(ND)	0.005	0.017
µg/hr	Emission Rate, µg/hr	1.1	3.1	(ND)	0.4	1.54
	12346789 OCDD					
ng	Catch, ng	0.03	{0.09}	{0.04}	0.08	{0.06}
ng/dscm	Concentration, ng/dscm, as measured	0.019	{0.021}	{0.007}	0.013	{0.01}
µg/hr	Emission Rate, µg/hr	1.69	{1.96}	{0.6}	1.2	{1.36}
	Total PCDDs					
ng	Catch, ng	{3.78}	{10.33}	{5.12}	{6.42}	{6.41}
ng/dscm	Concentration, ng/dscm, as measured	{2.43}	2.4	{0.8}	{1.02}	{1.68}
µg/hr	Emission Rate, µg/hr	{213}	225	{0,075}	{95.76}	{152.38}

{ } Estimated Maximum Possible Concentration. EMPC values are included in totals and averages, which are also in brackets.

Summary of Stack Gas Parameters and Test Results
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 23 - PCDDs / PCDFs
Cupola Wet Scrubber Outlet

	RUN NUMBER	*BO-23-1*	*BO-23-2*	*BO-23-3*	*BO-23-4*	
	RUN DATE	*9/23/97*	*9/24/97*	*9/25/97*	*9/25/97*	*Average*
	RUN TIME	*1415-1846*	*0851-1347*	*0844-1321*	*1443-1918*	
	EMISSIONS DATA - Continued					
	FURANS					
	2378 TCDF					
ng	Catch, ng	0.7	2.3	1.8	1.30	1.53
ng/dscm	Concentration, ng/dscm, as measured	0.46	0.54	0.29	0.207	0.38
µg/hr	Emission Rate, µg/hr	40.6	50.2	26.5	19.4	34.16
	Total TCDF					
ng	Catch, ng	19.1	60.0	51.2	43.0	43.33
ng/dscm	Concentration, ng/dscm, as measured	12.29	14.03	8.33	6.841	10.37
µg/hr	Emission Rate, µg/hr	1,076	1,309	753	641.4	945.07
	12378 PeCDF					
ng	Catch, ng	0.36	1.4	0.65	0.61	0.76
ng/dscm	Concentration, ng/dscm, as measured	0.232	0.33	0.106	0.097	0.190
µg/hr	Emission Rate, µg/hr	20.3	30.5	9.6	9.1	17.37
	23478 PeCDF					
ng	Catch, ng	0.38	1.4	0.47	0.52	0.69
ng/dscm	Concentration, ng/dscm, as measured	0.244	0.327	0.076	0.083	0.183
µg/hr	Emission Rate, µg/hr	21.4	30.5	6.9	7.8	16.66
	Total PeCDF					
ng	Catch, ng	6.1	24.2	10.7	11.30	13.08
ng/dscm	Concentration, ng/dscm, as measured	3.92	5.66	1.74	1.798	3.28
µg/hr	Emission Rate, µg/hr	343.8	528.0	157.5	168.6	299.44
	123478 HxCDF					
ng	Catch, ng	0.16	0.91	0.18	0.26	0.38
ng/dscm	Concentration, ng/dscm, as measured	0.103	0.213	0.029	0.041	0.097
µg/hr	Emission Rate, µg/hr	9.0	19.9	2.6	3.9	8.85

{ } Estimated Maximum Possible Concentration. EMPC values are included in totals and averages, which are also in brackets.

Summary of Stack Gas Parameters and Test Results
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 23 - PCDDs / PCDFs
Cupola Wet Scrubber Outlet

	RUN NUMBER	*BO-23-1*	*BO-23-2*	*BO-23-3*	*BO-23-4*	
	RUN DATE	*9/23/97*	*9/24/97*	*9/25/97*	*9/25/97*	*Average*
	RUN TIME	*1415-1846*	*0851-1347*	*0844-1321*	*1443-1918*	
	EMISSIONS DATA - Continued					
	Furans - Continued					
	123678 HxCDF					
ng	Catch, ng	0.07	0.46	0.09	0.11	0.18
ng/dscm	Concentration, ng/dscm, as measured	0.045	0.108	0.015	0.018	0.046
µg/hr	Emission Rate, µg/hr	3.9	10.0	1.3	1.6	4.24
	234678 HxCDF					
ng	Catch, ng	0.05	0.26	0.05	0.06	0.11
ng/dscm	Concentration, ng/dscm, as measured	0.032	0.061	0.008	0.010	0.028
µg/hr	Emission Rate, µg/hr	2.8	5.7	0.7	0.9	2.53
	123789 HxCDF					
ng	Catch, ng	ND	{0.04}	ND	ND	{0.04}
ng/dscm	Concentration, ng/dscm, as measured	(ND)	{0.009}	(ND)	(ND)	{0.01}
µg/hr	Emission Rate, µg/hr	(ND)	{0.9}	(ND)	(ND)	{0.87}
	Total HxCDF					
ng	Catch, ng	0.69	4.7	0.92	1.2	1.88
ng/dscm	Concentration, ng/dscm, as measured	0.444	1.10	0.150	0.191	0.471
µg/hr	Emission Rate, µg/hr	38.9	102.5	13.5	17.9	43.22
	1234678 HpCDF					
ng	Catch, ng	{0.07}	{0.30}	0.04	0.07	0.12
ng/dscm	Concentration, ng/dscm, as measured	{0.045}	{0.070}	0.007	0.011	0.033
µg/hr	Emission Rate, µg/hr	{3.94}	{6.55}	0.6	1.0	3.03
	1234789 HpCDF					
ng	Catch, ng	ND	{0.050}	ND	ND	{0.05}
ng/dscm	Concentration, ng/dscm, as measured	(ND)	{0.012}	(ND)	(ND)	{0.01}
µg/hr	Emission Rate, µg/hr	(ND)	{1.091}	(ND)	(ND)	{1.09}

{ } Estimated Maximum Possible Concentration. EMPC values are included in totals and averages, which are also in brackets.

Summary of Stack Gas Parameters and Test Results
GENERAL MOTORS CORPORATION - SAGINAW, MICHIGAN
US EPA Test Method 23 - PCDDs / PCDFs
Cupola Wet Scrubber Outlet

	RUN NUMBER	*BO-23-1*	*BO-23-2*	*BO-23-3*	*BO-23-4*	
	RUN DATE	*9/23/97*	*9/24/97*	*9/25/97*	*9/25/97*	*Average*
	RUN TIME	*1415-1846*	*0851-1347*	*0844-1321*	*1443-1918*	
	EMISSIONS DATA - Continued					
	Furans - Continued					
	Total HpCDF					
ng	Catch, ng	0.04	0.10	0.04	0.07	0.06
ng/dscm	Concentration, ng/dscm, as measured	0.026	0.023	0.007	0.011	0.017
µg/hr	Emission Rate, µg/hr	2.3	2.2	0.6	1.0	1.52
	12346789 OCDF					
ng	Catch, ng	{0.010}	0.04	{0.030}	{0.010}	{0.02}
ng/dscm	Concentration, ng/dscm, as measured	{0.0064}	0.0094	{0.0049}	{0.0016}	{0.01}
µg/hr	Emission Rate, µg/hr	{0.56}	0.87	{0.441}	{0.149}	{0.51}
	Total PCDFs					
ng	Catch, ng	{25.94}	89.04	62.89	55.58	{58.4}
ng/dscm	Concentration, ng/dscm, as measured	{16.7}	21	10	8.842	{14.1}
µg/hr	Emission Rate, µg/hr	{1,462}	1,943	925	829.0	{1289.8}
	Total PCDDs + PCDFs					
ng	Catch, ng	{29.72}	99.37	{68.01}	{62.00}	{64.8}
ng/dscm	Concentration, ng/dscm, as measured	{19.1}	23	{11}	9.864	{15.8}
µg/hr	Emission Rate, µg/hr	{1,675}	2,168	{1,001}	924.8	{1442.1}

{ } Estimated Maximum Possible Concentration. EMPC values are included in totals and averages, which are also in brackets.

ND Represents a non-detect value, and zero is used in average in place of ND value.

Summary of Stack Gas Parameters and Test Results
Iron and Steel Foundries Manual Emission Test
GENERAL MOTORS CORPORATION - Saginaw, Michigan
SW-846 Method 0010 - Modified Method 5 - Semivolatile Organics
Cupola Wet Scrubber Outlet

	RUN NUMBER	*O-0010-1*	*O-0010-2*	*O-0010-3*	*O-0010-4*	
	RUN DATE	*9/23/97*	*9/24/97*	*9/25/97*	*9/25/97*	*Average*
	RUN TIME	*1415-1847*	*0851-1400*	*0844-1321*	*1443-1919*	
	MEASURED DATA					
γ	Meter Box Correction Factor	0.966	0.966	0.966	0.966	0.966
ΔH	Avg Meter Orifice Pressure, in. H_2O	1.40	1.44	2.89	3.04	2.19
P_{bar}	Barometric Pressure, inches Hg	29.74	29.85	29.10	29.10	29.45
V_m	Sample Volume, ft^3	73.972	161.167	227.729	234.250	174.280
T_m	Average Meter Temperature, °F	74	79	78	85	79
P_{static}	Stack Static Pressure, inches H_2O	1.10	1.10	0.72	0.85	0.94
T_s	Average Stack Temperature, °F	125	135	111	111	121
V_{lc}	Condensate Collected, ml	217.3	646.2	459.3	463.8	446.7
CO_2	Carbon Dioxide content, % by volume	4.00	10.60	9.70	10.30	8.65
O_2	Oxygen content, % by volume	16.70	11.8	12.50	12.40	13.35
N_2	Nitrogen content, % by volume	79.30	77.60	77.80	77.30	78.00
C_p	Pitot Tube Coefficient	0.84	0.84	0.84	0.84	0.84
$\Delta p^{1/2}$	Average Square Root Δp, $(in. H_2O)^{1/2}$	0.6726	0.6881	0.5923	0.6041	0.6393
Θ	Sample Run Duration, minutes	110	240	240	240	208
D_n	Nozzle Diameter, inches	0.250	0.250	0.305	0.305	0.278
	CALCULATED DATA					
A_n	Nozzle Area, ft^2	0.000341	0.000341	0.000507	0.000507	0.000424
$V_{m(std)}$	Standard Meter Volume, dscf	70.444	152.632	211.429	214.771	162.319
$V_{m(std)}$	Standard Meter Volume, dscm	1.995	4.322	5.987	6.082	4.60
P_s	Stack Pressure, inches Hg	29.82	29.93	29.15	29.16	29.52
B_{ws}	Moisture, % by volume	12.7	16.6	9.3	9.2	11.9
$B_{ws(sat)}$	Moisture (at saturation), % by volume	13.2	17.2	9.2	9.2	12.19
V_{wstd}	Standard Water Vapor Volume, ft^3	10.228	30.417	21.619	21.831	21.024
$1-B_{ws}$	Dry Mole Fraction	0.873	0.834	0.908	0.908	0.881
M_d	Molecular Weight (d.b.), lb/lb•mole	29.31	30.17	30.05	30.14	29.92
M_s	Molecular Weight (w.b.), lb/lb•mole	27.87	28.15	28.95	29.03	28.50
V_s	Stack Gas Velocity, ft/s	40.5	41.5	35.0	35.6	38.2
A	Stack Area, ft^2	30.68	30.68	30.68	30.68	30.68
Q_a	Stack Gas Volumetric flow, acfm	74,589	76,444	64,403	65,580	70,254
Q_s	Stack Gas Volumetric flow, dscfm	58,567	56,562	52,693	53,676	55,375
$Q_{s(cmm)}$	Stack Gas Volumetric flow, dscmm	1,658	1,602	1,492	1,520	1,568
I	Isokinetic Sampling Ratio, %	98.4	101.2	101.1	100.8	100.4

	O-0010-1	O-0010-2	O-0010-3	O-0010-4	Average
Acenaphthene					
Molecular Weight, g/g-mole	154.21	154.21	154.21	154.21	
Target Catch, µg	{0.28}	ND	{0.94}	{0.62}	(0.46)
Concentration, mg/dscm [a]	{1.40 E-04}	ND	{1.57 E-04}	{1.02 E-04}	(9.98 E-05)
Concentration, ppbvd [b]	{2.19 E-02}	ND	{2.45 E-02}	{1.59 E-02}	(1.56 E-02)
Emission Rate, lb/hr [c]	{3.08 E-05}	ND	{3.10 E-05}	{2.05 E-05}	(2.06 E-05)
Acenaphthylene					
Molecular Weight, g/g-mole	154.21	154.21	154.21	154.21	
Target Catch, µg	{0.81}	{0.64}	{2.14}	{1.10}	{1.17}
Concentration, mg/dscm [a]	{4.06 E-04}	{1.48 E-04}	{3.57 E-04}	{1.81 E-04}	{2.73 E-04}
Concentration, ppbvd [b]	{6.33 E-02}	{2.31 E-02}	{5.58 E-02}	{2.82 E-02}	{4.26 E-02}
Emission Rate, lb/hr [c]	{8.91 E-05}	{3.14 E-05}	{7.05 E-05}	{3.64 E-05}	{5.68 E-05}
Acetophenone					
Molecular Weight, g/g-mole	120.15	120.15	120.15	120.15	
Target Catch, µg	{8.19}	{8.93}	13.55	{8.68}	{9.84}
Concentration, mg/dscm [a]	{4.11 E-03}	{2.07 E-03}	2.26 E-03	{1.43 E-03}	{2.47 E-03}
Concentration, ppbvd [b]	{8.22 E-01}	{4.14 E-01}	4.53 E-01	{2.86 E-01}	{4.94 E-01}
Emission Rate, lb/hr [c]	{9.01 E-04}	{4.38 E-04}	4.47 E-04	{2.87 E-04}	{5.18 E-04}
4-Aminobiphenyl					
Molecular Weight, g/g-mole	169.22	169.22	169.22	169.22	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Aniline					
Molecular Weight, g/g-mole	93.12	93.12	93.12	93.12	
Target Catch, µg	ND	ND	{0.32}	ND	(0.08)
Concentration, mg/dscm [a]	ND	ND	{5.34 E-05}	ND	(1.34 E-05)
Concentration, ppbvd [b]	ND	ND	{1.38 E-02}	ND	(3.45 E-03)
Emission Rate, lb/hr [c]	ND	ND	{1.05 E-05}	ND	(2.64 E-06)
o-Anisidine					
Molecular Weight, g/g-mole	123.15	123.15	123.15	123.15	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND

[a] Milligrams per dry standard cubic meter at 68° F (20° C) and 1 atm.

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	O-0010-1	O-0010-2	O-0010-3	O-0010-4	Average
Anthracene					
Molecular Weight, g/g-mole	178.22	178.22	178.22	178.22	
Target Catch, µg	{0.26}	ND	{0.34}	{0.28}	(0.22)
Concentration, mg/dscm [a]	{1.30 E-04}	ND	{5.68 E-05}	{4.60 E-05}	(5.83 E-05)
Concentration, ppbvd [b]	{1.76 E-02}	ND	{7.66 E-03}	{6.21 E-03}	(7.87 E-03)
Emission Rate, lb/hr [c]	{2.86 E-05}	ND	{1.12 E-05}	{9.26 E-06}	(1.23 E-05)
Benzidine					
Molecular Weight, g/g-mole	184.23	184.23	184.23	184.23	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Benzo(a)anthracene					
Molecular Weight, g/g-mole	228.29	228.29	228.29	228.29	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Benzo(b)fluoranthene					
Molecular Weight, g/g-mole	252.32	252.32	252.32	252.32	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Benzo(k)fluoranthene					
Molecular Weight, g/g-mole	252.32	252.32	252.32	252.32	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Benzo(ghi)perylene					
Molecular Weight, g/g-mole	276.34	276.34	276.34	276.34	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND

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	O-0010-1	O-0010-2	O-0010-3	O-0010-4	Average
Benzo(a)pyrene					
Molecular Weight, g/g-mole	252.30	252.30	252.30	252.30	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Benzo(e)pyrene					
Molecular Weight, g/g-mole	252.30	252.30	252.30	252.30	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Benzyl Chloride					
Molecular Weight, g/g-mole	126.58	126.58	126.58	126.58	
Target Catch, µg	ND	ND	{2.27}	ND	(0.57)
Concentration, mg/dscm [a]	ND	ND	{3.79 E-04}	ND	(9.48 E-05)
Concentration, ppbvd [b]	ND	ND	{7.20 E-02}	ND	(1.80 E-02)
Emission Rate, lb/hr [c]	ND	ND	{7.48 E-05}	ND	(1.87 E-05)
Biphenyl					
Molecular Weight, g/g-mole	154.20	154.20	154.20	154.20	
Target Catch, µg	{2.13}	{1.22}	{5.10}	{2.50}	{2.39}
Concentration, mg/dscm [a]	{1.07 E-03}	{2.82 E-04}	{8.52 E-04}	{4.11 E-04}	{6.53 E-04}
Concentration, ppbvd [b]	{1.67 E-01}	{4.40 E-02}	{1.33 E-01}	{6.41 E-02}	{1.02 E-01}
Emission Rate, lb/hr [c]	{2.34 E-04}	{5.98 E-05}	{1.68 E-04}	{8.26 E-05}	{1.36 E-04}
2-Chloroacetophenone					
Molecular Weight, g/g-mole	154.59	154.59	154.59	154.59	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
bis-(2-Chloroethyl)ether					
Molecular Weight, g/g-mole	143.02	143.02	143.02	143.02	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND

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	O-0010-1	O-0010-2	O-0010-3	O-0010-4	Average
2-Chloronaphthalene					
Molecular Weight, g/g-mole	162.61	162.61	162.61	162.61	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Chrysene					
Molecular Weight, g/g-mole	228.28	228.28	228.28	228.28	
Target Catch, µg	{0.22}	ND	ND	ND	(0.06)
Concentration, mg/dscm [a]	{1.10 E-04}	ND	ND	ND	(2.76 E-05)
Concentration, ppbvd [b]	{1.16 E-02}	ND	ND	ND	(2.91 E-03)
Emission Rate, lb/hr [c]	{2.42 E-05}	ND	ND	ND	(6.05 E-06)
Cumene					
Molecular Weight, g/g-mole	120.19	120.19	120.19	120.19	
Target Catch, µg	ND	{0.56}	{1.56}	{0.45}	(0.64)
Concentration, mg/dscm [a]	ND	{1.30 E-04}	{2.61 E-04}	{7.40 E-05}	(1.16 E-04)
Concentration, ppbvd [b]	ND	{2.59 E-02}	{5.21 E-02}	{1.48 E-02}	(2.32 E-02)
Emission Rate, lb/hr [c]	ND	{2.75 E-05}	{5.14 E-05}	{1.49 E-05}	(2.34 E-05)
Dibenz(a,h)anthracene					
Molecular Weight, g/g-mole	278.33	278.33	278.33	278.33	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Dibenzofuran					
Molecular Weight, g/g-mole	168.20	168.20	168.20	168.20	
Target Catch, µg	ND	ND	{2.49}	{1.25}	(0.94)
Concentration, mg/dscm [a]	ND	ND	{4.16 E-04}	{2.06 E-04}	(1.55 E-04)
Concentration, ppbvd [b]	ND	ND	{5.95 E-02}	{2.94 E-02}	(2.22 E-02)
Emission Rate, lb/hr [c]	ND	ND	{8.21 E-05}	{4.13 E-05}	(3.09 E-05)
1,2-Dibromo-3-chloropropane					
Molecular Weight, g/g-mole	236.36	236.36	236.36	236.36	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND

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Di-n-butylphthalate					
Molecular Weight, g/g-mole	278.34	278.34	278.34	278.34	
Target Catch, µg	{9.59}	{8.83}	{8.67}	{5.85}	{8.24}
Concentration, mg/dscm [a]	{4.81 E-03}	{2.04 E-03}	{1.45 E-03}	{9.62 E-04}	{2.31 E-03}
Concentration, ppbvd [b]	{4.15 E-01}	{1.77 E-01}	{1.25 E-01}	{8.31 E-02}	{2.00 E-01}
Emission Rate, lb/hr [c]	{1.05 E-03}	{4.33 E-04}	{2.86 E-04}	{1.93 E-04}	{4.92 E-04}
1,4-Dichlorobenzene					
Molecular Weight, g/g-mole	147.01	147.01	147.01	147.01	
Target Catch, µg	{0.73}	{0.82}	{1.28}	{1.30}	{1.03}
Concentration, mg/dscm [a]	{3.66 E-04}	{1.90 E-04}	{2.14 E-04}	{2.14 E-04}	{2.46 E-04}
Concentration, ppbvd [b]	{5.99 E-02}	{3.10 E-02}	{3.50 E-02}	{3.50 E-02}	{4.02 E-02}
Emission Rate, lb/hr [c]	{8.03 E-05}	{4.02 E-05}	{4.22 E-05}	{4.30 E-05}	{5.14 E-05}
3,3'-Dichlorobenzidine					
Molecular Weight, g/g-mole	253.13	253.13	253.13	253.13	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
N,N-Diethylaniline					
Molecular Weight, g/g-mole	149.23	149.23	149.23	149.23	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
3,3'-Dimethoxybenzidine					
Molecular Weight, g/g-mole	244.28	244.28	244.28	244.28	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Dimethylaminoazobenzene					
Molecular Weight, g/g-mole	225.28	225.28	225.28	225.28	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND

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N,N-Dimethylaniline					
Molecular Weight, g/g-mole	121.18	121.18	121.18	121.18	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
3,3'-Dimethylbenzidine					
Molecular Weight, g/g-mole	212.28	212.28	212.28	212.28	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Dimethylphthalate					
Molecular Weight, g/g-mole	194.19	194.19	194.19	194.19	
Target Catch, µg	{2.49}	{1.89}	{2.23}	{1.43}	{2.01}
Concentration, mg/dscm [a]	{1.25 E-03}	{4.37 E-04}	{3.72 E-04}	{2.35 E-04}	{5.73 E-04}
Concentration, ppbvd [b]	{1.55 E-01}	{5.42 E-02}	{4.61 E-02}	{2.91 E-02}	{7.10 E-02}
Emission Rate, lb/hr [c]	{2.74 E-04}	{9.26 E-05}	{7.35 E-05}	{4.73 E-05}	{1.22 E-04}
4,6-Dinitro-2-methylphenol					
Molecular Weight, g/g-mole	198.13	198.13	198.13	198.13	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
2,4-Dinitrophenol					
Molecular Weight, g/g-mole	184.11	184.11	184.11	184.11	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
2,4-Dinitrotoluene					
Molecular Weight, g/g-mole	182.14	182.14	182.14	182.14	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND

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bis(2-Ethylhexyl)phthalate					
Molecular Weight, g/g-mole	390.54	390.54	390.54	390.54	
Target Catch, µg	11.05	20.27	21.21	{9.14}	{15.42}
Concentration, mg/dscm [a]	5.54 E-03	4.69 E-03	3.54 E-03	{1.50 E-03}	{3.82 E-03}
Concentration, ppbvd [b]	3.41 E-01	2.89 E-01	2.18 E-01	{9.26 E-02}	{2.35 E-01}
Emission Rate, lb/hr [c]	1.22 E-03	9.94 E-04	6.99 E-04	{3.02 E-04}	{8.03 E-04}
Fluoranthene					
Molecular Weight, g/g-mole	202.26	202.26	202.26	202.26	
Target Catch, µg	{0.96}	{1.37}	{0.86}	{0.91}	{1.03}
Concentration, mg/dscm [a]	{4.81 E-04}	{3.17 E-04}	{1.44 E-04}	{1.50 E-04}	{2.73 E-04}
Concentration, ppbvd [b]	{5.72 E-02}	{3.77 E-02}	{1.71 E-02}	{1.78 E-02}	{3.25 E-02}
Emission Rate, lb/hr [c]	{1.06 E-04}	{6.72 E-05}	{2.84 E-05}	{3.01 E-05}	{5.78 E-05}
Fluorene					
Molecular Weight, g/g-mole	166.21	166.21	166.21	166.21	
Target Catch, µg	{0.94}	{0.61}	{1.33}	{0.77}	{0.91}
Concentration, mg/dscm [a]	{4.71 E-04}	{1.41 E-04}	{2.22 E-04}	{1.27 E-04}	{2.40 E-04}
Concentration, ppbvd [b]	{6.82 E-02}	{2.04 E-02}	{3.21 E-02}	{1.83 E-02}	{3.48 E-02}
Emission Rate, lb/hr [c]	{1.03 E-04}	{2.99 E-05}	{4.38 E-05}	{2.55 E-05}	{5.06 E-05}
Hexachlorobenzene					
Molecular Weight, g/g-mole	284.80	284.80	284.80	284.80	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Hexachlorobutadiene					
Molecular Weight, g/g-mole	260.76	260.76	260.76	260.76	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene					
Molecular Weight, g/g-mole	272.77	272.77	272.77	272.77	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND

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Hexachloroethane					
Molecular Weight, g/g-mole	236.74	236.74	236.74	236.74	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Hydroquinone					
Molecular Weight, g/g-mole	110.11	110.11	110.11	110.11	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene					
Molecular Weight, g/g-mole	290.34	290.34	290.34	290.34	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Isophorone					
Molecular Weight, g/g-mole	138.20	138.20	138.20	138.20	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Methylene bis-chloroaniline					
Molecular Weight, g/g-mole	267.15	267.15	267.15	267.15	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
4,4'-Methylenedianiline					
Molecular Weight, g/g-mole	198.26	198.26	198.26	198.26	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND

[a] Milligrams per dry standard cubic meter at 68° F (20° C) and 1 atm.

[b] Parts per billion by volume.

[c] Pounds per hour.

ND Not Detectable - Results are below target analyte detection limit. Values are counted as zero (0) in averages.

{ } Estimate - Analyte results are below the quantitation limit and above the detection limit. Values are counted in the averages.

	O-0010-1	O-0010-2	O-0010-3	O-0010-4	Average
2-Methylnaphthalene					
Molecular Weight, g/g-mole	142.20	142.20	142.20	142.20	
Target Catch, µg	25.56	22.37	136.69	58.46	60.77
Concentration, mg/dscm [a]	1.28 E-02	5.18 E-03	2.28 E-02	9.61 E-03	1.26 E-02
Concentration, ppbvd [b]	2.17 E+00	8.75 E-01	3.86 E+00	1.63 E+00	2.13 E+00
Emission Rate, lb/hr [c]	2.81 E-03	1.10 E-03	4.51 E-03	1.93 E-03	2.59 E-03
2-Methylphenol					
Molecular Weight, g/g-mole	108.13	108.13	108.13	108.13	
Target Catch, µg	ND	ND	{2.16}	{0.70}	(0.72)
Concentration, mg/dscm [a]	ND	ND	{3.61 E-04}	{1.15 E-04}	(1.19 E-04)
Concentration, ppbvd [b]	ND	ND	{8.03 E-02}	{2.56 E-02}	(2.65 E-02)
Emission Rate, lb/hr [c]	ND	ND	{7.12 E-05}	{2.31 E-05}	(2.36 E-05)
3/4-Methylphenol					
Molecular Weight, g/g-mole	108.13	108.13	108.13	108.13	
Target Catch, µg	ND	ND	ND	{0.99}	(0.25)
Concentration, mg/dscm [a]	ND	ND	ND	{1.63 E-04}	(4.07 E-05)
Concentration, ppbvd [b]	ND	ND	ND	{3.62 E-02}	(9.05 E-03)
Emission Rate, lb/hr [c]	ND	ND	ND	{3.27 E-05}	(8.18 E-06)
Naphthalene					
Molecular Weight, g/g-mole	128.16	128.16	128.16	128.16	
Target Catch, µg	24.93	28.20	92.27	45.94	39.60
Concentration, mg/dscm [a]	1.25 E-02	6.52 E-03	1.54 E-02	7.55 E-03	1.05 E-02
Concentration, ppbvd [b]	2.35 E+00	1.22 E+00	2.89 E+00	1.42 E+00	1.97 E+00
Emission Rate, lb/hr [c]	2.74 E-03	1.38 E-03	3.04 E-03	1.52 E-03	2.17 E-03
Nitrobenzene					
Molecular Weight, g/g-mole	123.11	123.11	123.11	123.11	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
4-Nitrobiphenyl					
Molecular Weight, g/g-mole	199.20	154.21	154.21	154.21	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND

[a] Milligrams per dry standard cubic meter at 68° F (20° C) and 1 atm.

[b] Parts per billion by volume.

[c] Pounds per hour.

ND Not Detectable - Results are below target analyte detection limit. Values are counted as zero (0) in averages.

{ } Estimate - Analyte results are below the quantitation limit and above the detection limit. Values are counted in the averages.

	O-0010-1	O-0010-2	O-0010-3	O-0010-4	Average
4-Nitrophenol					
Molecular Weight, g/g-mole	139.11	139.11	139.11	139.11	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
n-Nitrosodimethylamine					
Molecular Weight, g/g-mole	74.08	74.08	74.08	74.08	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
n-Nitrosomorpholine					
Molecular Weight, g/g-mole	116.11	116.11	116.11	116.11	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Pentachloronitrobenzene					
Molecular Weight, g/g-mole	295.30	295.30	295.30	295.30	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Pentachlorophenol					
Molecular Weight, g/g-mole	266.35	266.35	266.35	266.35	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Perylene					
Molecular Weight, g/g-mole	252.30	252.30	252.30	252.30	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND

[a] Milligrams per dry standard cubic meter at 68° F (20° C) and 1 atm.

[b] Parts per billion by volume.

[c] Pounds per hour.

ND Not Detectable - Results are below target analyte detection limit. Values are counted as zero (0) in averages.

{ } Estimate - Analyte results are below the quantitation limit and above the detection limit. Values are counted in the averages.

	O-0010-1	O-0010-2	O-0010-3	O-0010-4	Average
Phenanthrene					
Molecular Weight, g/g-mole	178.22	178.22	178.22	178.22	
Target Catch, µg	{2.07}	{1.16}	{1.77}	{1.17}	{1.54}
Concentration, mg/dscm [a]	{1.04 E-03}	{2.68 E-04}	{2.96 E-04}	{1.92 E-04}	{4.48 E-04}
Concentration, ppbvd [b]	{1.40 E-01}	{3.62 E-02}	{3.99 E-02}	{2.60 E-02}	{6.05 E-02}
Emission Rate, lb/hr [c]	{2.28 E-04}	{5.69 E-05}	{5.84 E-05}	{3.87 E-05}	{9.54 E-05}
Phenol					
Molecular Weight, g/g-mole	94.11	94.11	94.11	94.11	
Target Catch, µg	{6.57}	35.15	11.09	19.44	{18.06}
Concentration, mg/dscm [a]	{3.29 E-03}	8.13 E-03	1.85 E-03	3.20E-03	{4.12 E-03}
Concentration, ppbvd [b]	{8.42 E-01}	2.08 E+00	4.73 E-01	8.17E-01	{1.05 E+00}
Emission Rate, lb/hr [c]	{7.23 E-04}	1.72 E-03	3.66 E-04	6.43E-04	{8.63 E-04}
1,4-Phenylenediamine					
Molecular Weight, g/g-mole	108.14	108.14	108.14	108.14	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Pyrene					
Molecular Weight, g/g-mole	202.24	202.24	202.24	202.24	
Target Catch, µg	{1.18}	{1.66}	{1.05}	{0.98}	{1.22}
Concentration, mg/dscm [a]	{5.91 E-04}	{3.84 E-04}	{1.75 E-04}	{1.61 E-04}	{3.28 E-04}
Concentration, ppbvd [b]	{7.04 E-02}	{4.57 E-02}	{2.09 E-02}	{1.92 E-02}	{3.90 E-02}
Emission Rate, lb/hr [c]	{1.30 E-04}	{8.14 E-05}	{3.46 E-05}	{3.24 E-05}	{6.95 E-05}
o-Toluidine					
Molecular Weight, g/g-mole	107.15	107.15	107.15	107.15	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene					
Molecular Weight, g/g-mole	181.46	181.46	181.46	181.46	
Target Catch, µg	ND	ND	ND	{1.29}	(0.32)
Concentration, mg/dscm [a]	ND	ND	ND	{2.12 E-04}	(5.30 E-05)
Concentration, ppbvd [b]	ND	ND	ND	{2.81 E-02}	(7.03 E-03)
Emission Rate, lb/hr [c]	ND	ND	ND	{4.26 E-05}	(1.07 E-05)

[a] Milligrams per dry standard cubic meter at 68° F (20° C) and 1 atm.

[b] Parts per billion by volume.

[c] Pounds per hour.

ND Not Detectable - Results are below target analyte detection limit. Values are counted as zero (0) in averages.

{ } Estimate - Analyte results are below the quantitation limit and above the detection limit. Values are counted in the averages.

	O-0010-1	O-0010-2	O-0010-3	O-0010-4	Average
2,4,5-Trichlorophenol					
Molecular Weight, g/g-mole	197.46	197.46	197.46	197.46	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol					
Molecular Weight, g/g-mole	197.46	197.46	197.46	197.46	
Target Catch, µg	ND	{0.39}	ND	ND	(0.10)
Concentration, mg/dscm [a]	ND	{9.02 E-05}	ND	ND	(2.26 E-05)
Concentration, ppbvd [b]	ND	{1.10 E-02}	ND	ND	(2.75 E-03)
Emission Rate, lb/hr [c]	ND	{1.91 E-05}	ND	ND	(4.78 E-06)
a,a,a-Trichlorotoluene					
Molecular Weight, g/g-mole	195.48	195.48	195.48	195.48	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND
Trifluralin					
Molecular Weight, g/g-mole	335.29	335.29	335.29	335.29	
Target Catch, µg	ND	ND	ND	ND	ND
Concentration, mg/dscm [a]	ND	ND	ND	ND	ND
Concentration, ppbvd [b]	ND	ND	ND	ND	ND
Emission Rate, lb/hr [c]	ND	ND	ND	ND	ND

[a] Milligrams per dry standard cubic meter at 68° F (20° C) and 1 atm.

[b] Parts per billion by volume.

[c] Pounds per hour.

ND Not Detectable - Results are below target analyte detection limit. Values are counted as zero (0) in averages.

{ } Estimate - Analyte results are below the quantitation limit and above the detection limit. Values are counted in the averages.

Isokinetic Calculation Sheet

Plant: GM- Saginaw

Site: Scalber Outlet

		M29-O-2 Run 1	SO-MMS-2 Run 2	SO-23-2 Run 3
Volume of dry gas sampled corrected to standard conditions. *note: Vm must be corrected for any leakage rates that exceed La.* $Vm_{std} = 17.65 \times Vm \times Y \times \frac{P_{bar} + \left(\frac{\Delta H}{13.6}\right)}{Tm}$ 85°F	Vm, ft3	156.915	161.167	152.565
	Y	0.999	0.966	1.010
	Pbar, in. Hg	29.85	29.85	29.85
	ΔH, in. H2O	1.234	1.44	1.37
	Vm std, dscf	151.973	152.721	151.100
Volume of water vapor at standard conditions, ft3 $V_{wstd} = 0.04707 \times V_{lc}$	V_{lc}	631.5	646.2	622.2
	V_{wstd}	29.725	30.417	29.287
Moisture Content in stack gas. $Bws = \frac{Vw_{std}}{(Vw_{std} + Vm_{std})}$	Bws	0.164	0.166	0.162
	1-Bws	0.836	0.834	0.838
Dry Molecular weight of stack gas, lb/lb-mole Md=.440 x (%CO2)+.320 x (%O2)+ .280 x (%N2+CO)	%CO2			
	%O2			
	%N2+CO			
	Md, lb/lb-mole	30.17	30.17	30.17
Molecular Weight of Stack Gas Ms= Md x (1-Bws) + 18 x (Bws)	Ms, lb/lb-mole	28.17	28.15	28.20
Stack gas velocity at stack conditions, feet per second. $Vs = 85.49 \times C_p \times \sqrt{\Delta p} \times \sqrt{\frac{T_s}{(P_s \times M_s)}}$	Pstatic, in. Hg	1.10	1.10	1.10
	Ps, in. Hg	29.93	29.93	29.93
	Ts, °R	592	595	593
	$\sqrt{\Delta p}$	0.668	0.6881	0.665
	Cp	0.84	0.84	0.84
	Vs, feet per sec.	40.20	41.53	40.03
Isokinetic Variation $\%I = \frac{Vmstd \times Ts \times 17.32}{Vs \times Dn^2 \times \theta \times Ps \times (1-Bws)}$	Dn, in.	0.255	0.250	0.252
	θ, min.	240	240	240
	%I	99.3	101.2	101.4

Isokinetic Calculation Sheet

Plant: GM - SAGINAW M23 Site: B Cupola Scrubber Outlet

		Run # 3	Run 2	Run 3
Volume of dry gas sampled corrected to standard conditions. *note: Vm must be corrected for any leakage rates that exceed La.* $Vm_{std} = 17.65 \times Vm \times Y \times \frac{P_{bar} + \left(\frac{\Delta H}{13.6}\right)}{Tm}$	Vm, ft3	223.582		
	Y	1.010		
	Pbar, in. Hg	29.10		
	ΔH, in. H2O	2.94		
	Vm std, dscf	217.184		
Volume of water vapor at standard conditions, ft3 $V_{wstd} = 0.04707 \times V_{lc}$	V_{lc}	440.9		
	V_{wstd}	20.75		
Moisture Content in stack gas. $Bws = \frac{Vw_{std}}{\left(Vw_{std} + Vm_{std}\right)}$	Bws	.087		
	1-Bws	0.913		
Dry Molecular weight of stack gas, lb/lb-mole Md=.440 x (%CO2)+.320 x (%O2)+ .280 x (%N2+CO)	%CO2			
	%O2			
	%N2+CO			
	Md, lb/lb-mole	30.05		
Molecular Weight of Stack Gas Ms= Md x (1-Bws) + 18 x (Bws)	Ms, lb/lb-mole	29.00		
Stack gas velocity at stack conditions, feet per second. $Vs = 85.49 \times C_p \times \sqrt{\Delta p} \times \sqrt{\frac{T_s}{\left(P_s \times M_s\right)}}$	Pstatic, in. Hg	.72		
	Ps, in. Hg	29.15		
	Ts, °R	570		
	$\sqrt{\Delta p}$	0.5953		
	Cp	0.84		
	Vs, feet per sec.	35.10		
Isokinetic Variation $\%I = \frac{Vmstd \times Ts \times 17.32}{Vs \times Dn^2 \times \theta \times Ps \times (1-Bws)}$	Dn, in.	.304		
	θ, min.	240		
	%I	103.5		

APPENDIX E

QA/QC DATA

Table 1. GCMS Original Calibration and Continuing Calibration Results					
	Three-Point Calibration	Estimated Detection Limit**	Continuing Calibration***	Continuing Calibration***	Continuing Calibration***
COMPOUND	15-97 %RSD	Parts per Billion (PPB)	9/23/97	9/24/97	9/25/97
Chloromethane	13.60%	50	Pass	Pass	Pass
Chloroethane	13.30%	50	Pass	Pass	Pass
Methylene Chloride	15.70%	10	Pass	Pass	Pass
1,1-dichloroethane	9.50%	25	Pass	Pass	Pass
c-1,2-dichloroethene	11.50%	25	Pass	Pass	Pass
1,1,1-trichloroethane	10.50%	25	Pass	Pass	Pass
1,2-dichloropropane	9.24%	25	Pass	Pass	Pass
1,1,2-trichloroethane	10.70%	25	Pass	Pass	Pass
dibromochloromethane	8.90%	25	Pass	Pass	Pass
ethylbenzene	10.70%	10	Pass	Pass	Pass
p-xylene	13.03%	30	Pass	Pass	Pass
1,1,2,2-tetrachloroethan	17.30%	10	Pass	Pass	Pass
Bromomethane	13.40%	50	Pass	Pass	Pass
1,1-dichloroethene	10.30%	25	Pass	Pass	Pass
t-1,2-dichloroethane	11.08%	25	Pass	Pass	Pass
Methyl Ethyl Ketone	**31.60%**	500			
1,2-dichloroethane	11.14%	50	Pass	Pass	Pass
carbon tetrachloride	9.40%	10	Pass	Pass	Pass
trichloroethene	9.30%	25	Pass	Pass	Pass
c-1,2-dichloropropene	8.50%	25	Pass	Pass	Pass
t-1,2-dichloropropene	10.70%	25	Pass	Pass	Pass
2-hexanone	13.50%	500	**Fail**	Pass	Pass
chlorobenzene	10.50%	10	Pass	Pass	Pass
m-xylene	11.20%	30	Pass	Pass	Pass
p-xylene	9.90%	30	Pass	Pass	Pass
vinyl chloride	8.60%	250	Pass	Pass	Pass
carbon disulfide	8.70%	10	Pass	Pass	Pass
vinyl acetate	15.60%	250	**Fail**	Pass	Pass
chloroform	10.50%	10	Pass	Pass	Pass
benzene	8.20%	10	Pass	Pass	Pass
bromodichloromethane	12.00%	10	Pass	Pass	Pass
Methyl iso-Butyl Ketone	16.80%	1000	**Fail**	Pass	Pass
Toluene	7.50%	10	Pass	Pass	Pass
Tetrachloroethylene	12.80%	10	Pass	Pass	Pass
bromoform	5.20%	50	Pass	Pass	Pass
styrene	5.90%	30	Pass	Pass	Pass

Bold indicates failure of three-point calibration, and precludes collection of valid data for that compound for all test days.

Bold indicates failure of Continuing Calibration and precludes collection of valid data for that compound for that day.

* Criteria for Valid Three point Calibration = 20% RSD

** Estimated Detection Limit = Approximatley 5 times signal to noise

*** Criteria for Valid Continuing Calibration = Within 20% of Certified Cylinder Value

Table 2. General Motors Additional QA/QC Analyte Spiking Data from GCMS

Sample Name	GMSO923B - 1ppm			GMSO924D - 100 ppb			GMSO924E - 50 ppb			GMSO924F - 25 ppb			GMSO924G - 25 ppb		
		Spike 1	Spike 1		Spike 2	Spike 2		Spike 3	Spike 3		Spike 4	Spike 4		Spike 5	Spike 5
	Expected	actual (PPM)	percent	Expected	actual (PPM)	percent	Expected	actual (PPM)	percent	Expected	actual (PPM)	percent	Expected	actual (PPM)	percent
Compound	conc. (PPM)	response	recovery	conc. (PPM	response	recovery	conc. (PPM)	response	recovery	conc. (PPM)	response	recovery	conc. (PPM	response	recover
vinyl chloride	1.00	1.02	102%	0.10	nd	na	0.05	nd	na	0.025	nd	na	0.025	nd	na
carbon disulfide	1.00	0.77	77%	0.09	0.08	87%	0.05	0.04	87%	0.023	0.02	87%	0.023	0.02	87%
vinyl acetate	1.00	0.7	70%	0.09	nd	na	0.05	nd	na	0.023	nd	na	0.023	nd	na
chloroform	1.00	1.02	102%	0.11	0.09	84%	0.05	0.04	75%	0.027	0.02	75%	0.027	0.02	75%
benzene	1.00	0.85	85%	0.10	0.09	87%	0.05	0.04	77%	0.026	0.02	77%	0.026	0.02	77%
bromodichloromethane	1.00	0.98	98%	0.10	0.10	99%	0.05	0.06	119%	0.025	0.03	119%	0.025	0.03	119%
MIBK	1.00	0.49	49%	0.10	nd	na	0.05	nd	na	0.025	nd	na	0.025	nd	na
Toluene	1.00	0.95	95%	0.11	0.12	114%	0.05	0.06	114%	0.026	0.03	114%	0.026	0.03	114%
TCE	1.02	0.85	83%	0.10	0.14	135%	0.05	0.07	135%	0.026	0.04	154%	0.026	0.03	115%
bromoform	0.50	0.42	84%	0.10	0.10	101%	0.05	0.02	40%	0.025	nd	na	0.025	nd	na
styrene	1.00	0.94	94%	0.11	0.12	113%	0.05	0.02	38%	0.027	0.01	38%	0.027	0.01	38%

PACIFIC ENVIRONMENTAL SERVICES, INC.

CALIBRATION PROCEDURES AND RESULTS

All of the equipment used is calibrated in accordance with the procedures outlined in the Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III.* The following pages describe these procedures and include the data sheets.

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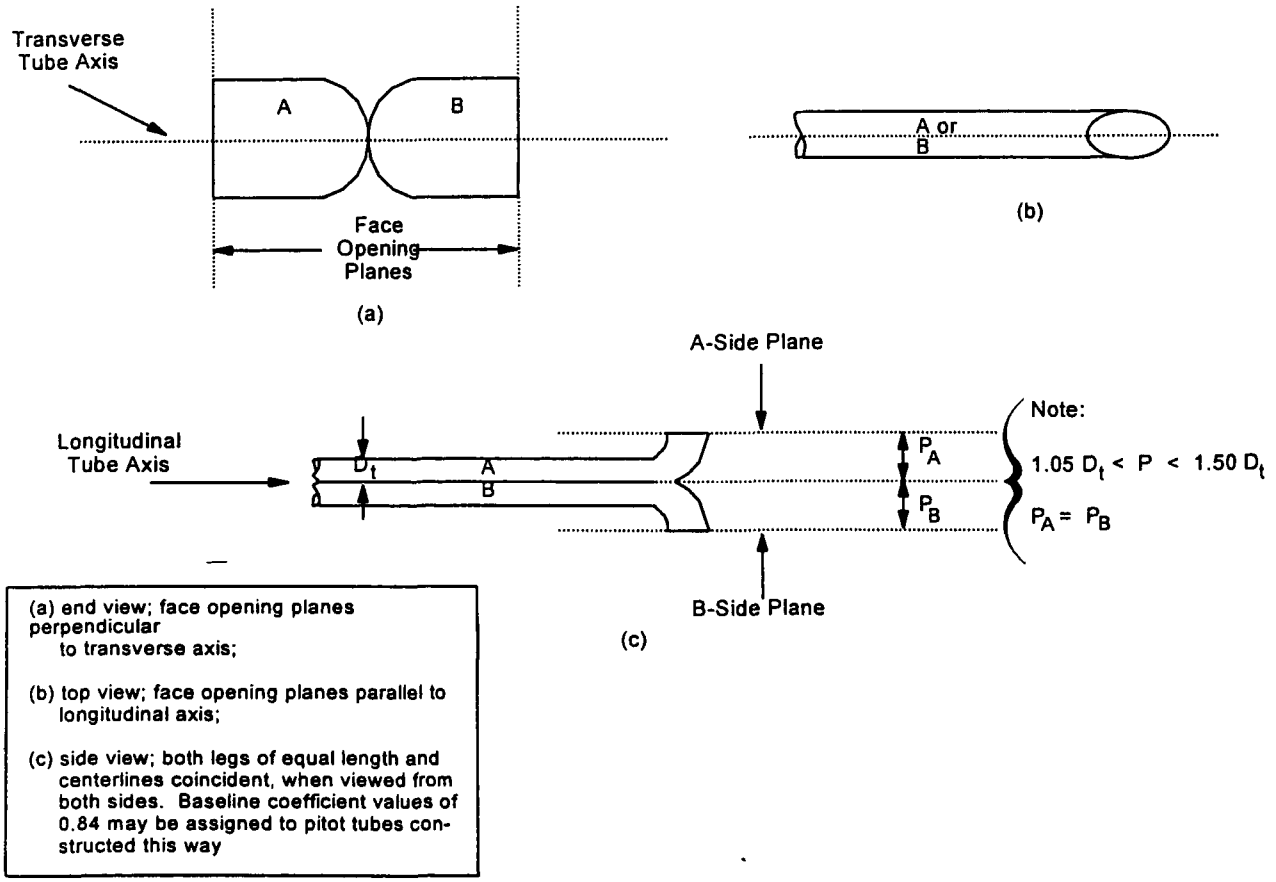
*EPA 600/4-77-027b

PACIFIC ENVIRONMENTAL SERVICES, INC.

Pitot Tube Calibration

Each pitot tube used in sampling meets all requirements of EPA Method 2, Section 4.1. Therefore, a baseline coefficient of 0.84 is assigned to each pitot tube. The following pages show the alignment requirements of Method 2 and the Pitot Tube Inspection Data Sheet(s) for each pitot tube used during the test program.**



(a) end view; face opening planes perpendicular to transverse axis;

(b) top view; face opening planes parallel to longitudinal axis;

(c) side view; both legs of equal length and centerlines coincident, when viewed from both sides. Baseline coefficient values of 0.84 may be assigned to pitot tubes constructed this way

**40 CFR 60, Appendix A, July 1995

Pitot Tube Calibration Sheet

Calibrated By: B.FISHER Date: 12DEC96

Pitot Tube Number 6C

Effective Length: 6'

Pitot Tube Openings Damaged? YES [NO]

Pitot Tube Assembly Level? [YES] NO

α_1 = 3 °(< 10°) α_2 = 3 °(< 10°)

β_1 = 3 °(< 5°) β_2 = 1 °(< 5°)

Y= 0 θ = 0 A = 1.031

z = A sin γ 0 cm (in.) 0.32 cm (< 1/8 in.)

w = A sin θ 0 cm (in.) 0.08 cm (< 1/32 in.)

P_A = 0.515 cm (in.)

P_β = 0.516 cm (in.)

D_t = 0.375 cm (in.)

Pitot Tube Calibration Sheet

Calibrated By: B.FISHER Date: 12DEC96

Pitot Tube Number 7C

Effective Length: 7'

Pitot Tube Openings Damaged? YES [NO]

Pitot Tube Assembly Level? [YES] NO

α_1 = 0 °(< 10°) α_2 = 1 °(< 10°)

β_1 = 0 °(< 5°) β_2 = 1 °(< 5°)

Y= 2 θ = 1 A = 0.98

z = A sin γ 0.03 cm (in.) 0.32 cm (< 1/8 in.)

w = A sin θ 0.017 cm (in.) 0.08 cm (< 1/32 in.)

P_A = 0.498 cm (in.)

P_β = 0.482 cm (in.)

D_t = 0.375 cm (in.)

Pitot Tube Calibration Sheet

Calibrated By: B.FISHER Date: 12DEC96

Pitot Tube Number 8C

Effective Length: 8'

Pitot Tube Openings Damaged? YES [NO]

Pitot Tube Assembly Level? [YES] NO

α_1 = 0 °(< 10°) α_2 = 1 °(< 10°)

β_1 = 1 °(< 5°) β_2 = 0 °(< 5°)

Y= 0 θ = 1 A = 0.914

z = A sin γ 0 cm (in.) 0.32 cm (< 1/8 in.)

w = A sin θ 0.016 cm (in.) 0.08 cm (< 1/32 in.)

P_A = 0.478 cm (in.)

P_β = 0.435 cm (in.)

D_t = 0.375 cm (in.)

Pitot Tube Calibration Sheet

Calibrated By: B.FISHER Date: 12DEC96

Pitot Tube Number 7B

Effective Length: 7'

Pitot Tube Openings Damaged? YES [NO]

Pitot Tube Assembly Level? [YES] NO

α_1 = 1 °(< 10°) α_2 = 0 °(< 10°)

β_1 = 1 °(< 5°) β_2 = 0 °(< 5°)

Y= 0 θ = 1 A = 0.947

z = A sin γ 0 cm (in.) 0.32 cm (< 1/8 in.)

w = A sin θ 0.165 cm (in.) 0.08 cm (< 1/32 in.)

P_A = 0.473 cm (in.)

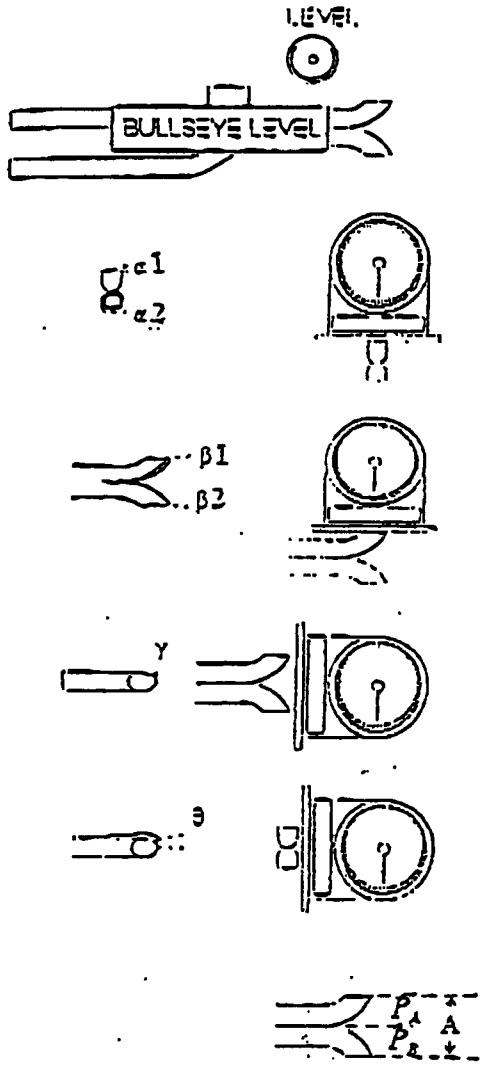
P_β = 0.474 cm (in.)

D_t = 0.375 cm (in.)

DEECO

Probe or Pitot No. DEECO - 6D

Pitot Tube Inspection



Date	6-10-97
Tube Assembly Level?	Yes
Ports Damaged?	no
$-10° < \alpha 1 < +10°$	4°
$-10° < \alpha 2 < +10°$	2°
$-5° < \beta 1 < +5°$	3°
$-5° < \beta 2 < +5°$	2°
γ	3°
θ	1°
A	.993
$Z = A \sin\gamma \leq 0.125"$	0.052
$W = A \sin\theta \leq 0.031"$	0.0803
$P_A =$	0.496
$P_B =$	0.496
Tube Diameter (D_T) =	0.376
$P_A = P_B \pm (0.063)$	$P_a = P_b \pm 0.0$
$1.05 \times D_T \leq P \leq 1.50 \times D_T$	$0.395 \leq .496 \leq .564$

Thermocouple Calibration

Type of Reference Thermometer Mercury in glass Date 06-10-97

Barometric Pressure 30.07 inHg Ambient Temperature 75° °F

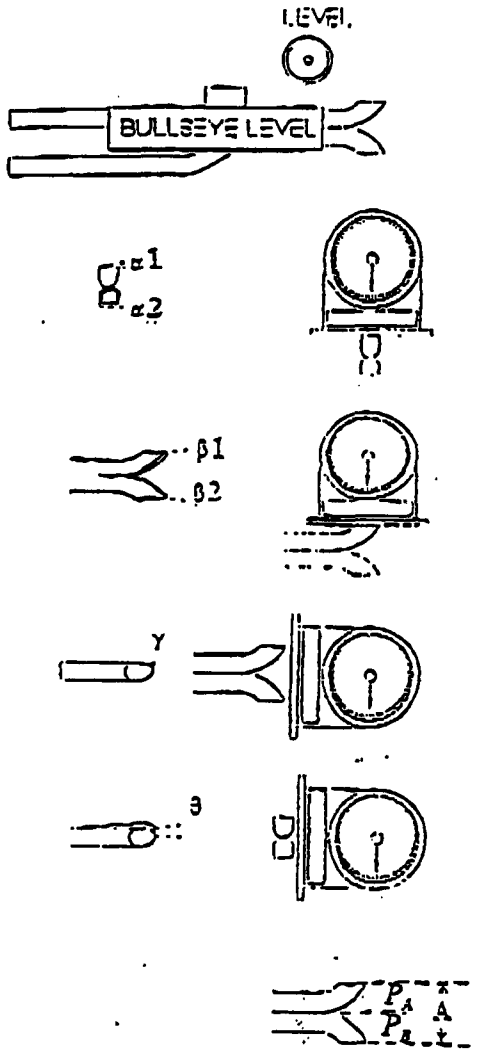
Source	Reference Temperature	Thermocouple Temperature	Absolute Temperature Difference[1]
ambient water	72°F (532°)	71°F (531°)	0.002
hot water	181°F (649)	182°F (642)	-0.002
cold water	47°F (507)	46°F (506°)	0.002

[1] (ReferenceTemp., °F - 460) - (ThermocoupleTemp., °F - 460)

DEECO

Probe or Pitot No. Deeco 5C

Pitot Tube Inspection



Date	8/16/97
Tube Assembly Level?	Yes
Ports Damaged?	No
$-10° < \alpha 1 < +10°$	2½ °
$-10° < \alpha 2 < +10°$	-2½ °
$-5° < \beta 1 < +5°$	1°
$-5° < \beta 2 < +5°$	-1°
Y	2½ °
θ	0°
A	1.013
$Z = A \sin \gamma \leq 0.125"$	.044
$W = A \sin\theta \leq 0.031"$	0
$P_A =$	.55
$P_B =$	.58
Tube Diameter (D_T) =	.370
$P_A = P_B \pm (0.063)$	.55+.02=.58
$1.05 \times D_T \leq P \leq 1.50 \times D_T$	.365 ≤ .55 ≤ .555

Thermocouple Calibration

Type of Reference Thermometer Mercury in Glass Date 8/16/97

Barometric Pressure 29.84 inHg Ambient Temperature 102 °F

Source	Reference Temperature	Thermocouple Temperature	Absolute Temperature Difference[1]
Hot Wtr	168	169	-.002
Ambient	102	101	.002
Ice Wtr	38	38	0

[1] (Ref. Temp °F + 460) - (ThermocoupleTemp °F + 460)

PACIFIC ENVIRONMENTAL SERVICES, INC.

Dry Gas Meter and Orifice Meter

Dry gas meters and orifices are calibrated in accordance with Section 3.3.2 of the QA Handbook. This procedure involves direct comparison of the dry gas meter to a reference dry test meter. The reference dry test meter is routinely calibrated using a liquid displacement technique. Before its initial use in the field, the metering system is calibrated over the entire range of operation. After each field use, the metering system is calibrated at a single intermediate setting based on the previous field test. Acceptable tolerances for the initial and final dry gas meter factors and orifice calibration factors are ± 0.02 and ± 0.20 from average, respectively.

DRY GAS AND ORFICE CALIBRATION

CONTROL BOX N MB-14 BAROMETRIC PRESS 29.43

DATE: 26DEC96 PERFORMED BY : B.FISHER

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5	RUN 6
Hd ("H2O)	0.50	0.75	1.00	1.50	2.00	4.00
VACUUM ("HG)	10	10	10	10	10	10
INITIAL WTM	421.973	434.239	446.842	458.765	470.449	483.036
FINAL WTM	433.978	445.767	458.269	470.085	481.847	494.839
INITIAL DGM	440.708	453.623	466.990	479.502	491.855	505.180
FINAL DGM	453.247	465.763	479.076	491.468	503.912	517.635
TEMP. WTM (F)	69.0	68.0	68.0	69.0	69.0	69.0
TEMP. DGM (F)	76.0	78.0	81.0	82.0	83.0	85.0
TEST TIME (MIN.)	30.0	24.0	21.0	17.0	15.0	11.0
NET VOLUME WT	12.005	11.528	11.427	11.320	11.398	11.803
NET VOLUME DG	12.539	12.140	12.086	11.966	12.057	12.455
Y	0.969	0.966	0.966	0.966	0.966	0.967
H@	1.756	1.814	1.875	1.881	1.923	1.922

AVERAGE Y = 0.966

ACCEPTABLE Y RANGE = 0.946 TO 0.986

AVERAGE H@ = 1.862

ACCEPTABLE dH@ RANGE = 1.662 TO 2.062

$Y = (Vw \times Pb \times (Td + 460)) / (Vd (Pb + (dHd / 13.6)) \times (Tw + 460))$

$H@ = 0.0317 \times Hd / (Pb (Td + 460)) \times (((Tw + 460) \times time) / Vw)^2$

POSTTEST DRY GAS METER CALIBRATION

MB #:	14	BAROMETRIC PRE	28.83	(in. hg.)
DATE:	.9-29-97	PERFORMED BY:	S SIMON	
PLANT:	GM-SAGINAW	PRETEST Y :	0.966	
		PRETEST H@:	1.862	

	RUN 1	RUN 2	RUN 3
VACUUM ("Hg)	11.00	11.00	11.00
H ("H2O)	3.00	3.00	3.00
INITIAL RTM	210.419	224.904	239.360
FINAL RTM	224.904	239.360	253.780
INITIAL DGM	737.478	752.246	767.028
FINAL DGM	752.246	767.028	781.852
TEMP. RTM (F)	75.0	74.0	74.0
TEMP. DGM (F)	81.0	81.0	82.0
TEST TIME (MIN.)	15.0	15.0	15.0
NET VOLUME RT	14.485	14.456	14.420
NET VOLUME DG	14.768	14.782	14.824
Y	0.984	0.983	0.980
H@	1.872	1.872	1.878

PRIOR Y =	0.966
RECHECK Y =	0.982
% DIFFERENCE =	1.704
AVERAGE H@ =	1.874

$Y = (Vw \times Pb \times (Td + 460)) / (Vd (Pb + (dHd / 13.6)) \times (Tw + 460)$

$H@ = 0.0317 \times H / (Pb (Td + 460)) \times ((Tw + 460) \times time) / Vw)^2$

DRY GAS AND ORFICE CALIBRATION

CONTROL BOX N RMB-13 BAROMETRIC PRESS 29.35 IN.HG.

DATE : 30May97 PERFORMED BY : R.Kolde

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5	RUN 6
dHd ("H2O)	0.50	0.75	1.00	1.50	2.00	4.00
VACUUM ("HG)	10	10	10	10	10	10
INITIAL WTM	874.488	885.102	896.200	904.898	915.154	925.719
FINAL WTM	884.476	895.866	904.595	915.004	925.266	936.622
INITIAL DGM	977.800	988.200	999.200	1007.900	1018.200	1028.800
FINAL DGM	987.585	998.870	1007.595	1018.047	1028.363	1039.750
TEMP. WTM (F)	76.000	77.000	78.000	78.000	78.000	78.000
TEMP. DGM (F)	78.500	82.000	83.500	85.000	85.500	86.500
TEST TIME (MIN.)	25.000	22.000	15.0	15.0	13.0	10.0
NET VOLUME WT	9.988	10.764	8.395	10.106	10.112	10.903
NET VOLUME DG	9.785	10.670	8.395	10.147	10.163	10.950
Y	1.024	1.016	1.008	1.005	1.004	1.001
dH@	1.805	1.800	1.836	1.896	1.894	1.925

AVERAGE Y = 1.010

ACCEPTABLE Y RANGE = 0.990 TO 1.030

AVERAGE dH@ = 1.859

ACCRPTABLE dH@ RANGE = 1.659 TO 2.059

Y = (Vw * Pb * (Td + 460)) / (Vd * (Pb + (dHd / 13.6)) * (Tw +460))

dH@ = 0.0317 * dHd / (Pb (Td + 460)) * (((Tw +460) * time) / Vw)^2

POSTTEST DRY GAS METER CALIBRATION

MB #:	RMB-13	BAROMETRIC PRE	28.83	(in. hg.)
DATE:	.9-29-97	PERFORMED BY:	S SIMON	
PLANT:	GM-SAGINAW	PRETEST Y :	1.010	
		PRETEST H@:	1.859	

	RUN 1	RUN 2	RUN 3
VACUUM ("Hg)	15.00	15.00	15.00
H ("H2O)	3.00	3.00	3.00
INITIAL RTM	165.558	180.028	194.506
FINAL RTM	180.028	194.506	208.994
INITIAL DGM	770.713	785.339	800.104
FINAL DGM	785.339	800.104	814.913
TEMP. RTM (F)	72.0	73.0	73.0
TEMP. DGM (F)	78.0	81.0	83.0
TEST TIME (MIN.)	15.0	15.0	15.0
NET VOLUME RT	14.470	14.478	14.488
NET VOLUME DG	14.626	14.765	14.809
Y	0.993	0.988	0.989
H@	1.865	1.859	1.850

PRIOR Y =	1.010
RECHECK Y =	0.990
% DIFFERENCE =	-1.989

AVERAGE H@ = 1.858

Y = (Vw x Pb x (Td + 460)) / (Vd (Pb + (dHd / 13.6))x(Tw + 460)

H@ = 0.0317 x H / (Pb (Td + 460)) x ((Tw + 460) x time) / Vw)^2

Date	10/25/97	Meter Box Number	MS-3
Calibrated By	M MILBOURNE	Initials	
Number of Runs	5		

REFERENCE TEST METER

Meter Y 1.021

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5
Vw, init	541.179	549.162	556.241	566.889	574.244
Vw, fin	549.162	556.241	566.889	574.244	581.298
Vw, total	7.983	7.079	10.648	7.355	7.054
Pb	29.80	29.80	29.80	29.80	29.80
tw	77.5	77	77	77	77
Tw+460	537.5	537	537	537	537

DRY GAS METER

Previous Y 1.028

Vm, init	586.358	594.101	600.988	611.417	618.623
Vm, fin	594.101	600.988	611.417	618.623	625.557
Vm, total	7.743	6.887	10.429	7.206	6.934
Tdil	80	88	93	92	96
Tdif	89	94	95	98	102
Tdol	75	79	82	83	84
Tdof	79	81	83	84	85
Td,avg	80.75	85.5	88.25	89.25	91.75
Td+460	540.75	545.5	548.25	549.25	551.75
Time, min	19	12	15	9	7
Time, sec	0	0	0	0	0
Time Total	19.00	12.00	15.00	9.00	7.00
dH	0.50	1.00	1.50	2.00	3.00

CALIBRATION RESULTS

Y	1.058	1.063	1.060	1.061	1.059
dH@	1.555	1.566	1.615	1.621	1.597
Y tolerance from avg *	0.00	-0.00	-0.00	-0.00	0.00
dH@ tol. from avg **	0.04	0.02	-0.02	-0.03	-0.01

AVERAGE Y 1.060
AVERAGE dH@ 1.591

Y error (vs prior Y) *** 3.1%

* must be no greater than +/- 0.02
** must be no greater than +/- 0.20
*** must be no greater than +/- 5%

Orifice:
front leak check Y
back leak check Y

Date	19-Aug-97	Meter Box Number	M5-3
Calibrated By	M MILBOURNE	Initials	MJM
Number of Runs	3		

REFERENCE TEST METER

Meter Y 1.016

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5
Vw, init	139.412	144.623	151.744	0	0
Vw, fin	144.623	151.744	156.918	0	0
Vw, total	5.211	7.121	5.174	0	0
Pb	29.99	29.99	29.99	29.99	29.99
tw	83	83	83	0	0
Tw+460	543	543	543	460	460

DRY GAS METER

Previous Y 1.028

Vm, init	852.823	857.998	865.078	0	0
Vm, fin	857.998	865.078	870.234	0	0
Vm, total	5.175	7.08	5.156	0	0
Tdi	89	93	92	0	0
Tdif	99	100	100	0	0
Tdoi	84	86	87	0	0
Tdof	86	87	88	0	0
Td,avg	89.5	91.5	91.75	0	0
Td+460	549.5	551.5	551.75	460	460
Time, min	7	9	7	0	0
Time, sec	2	36	0	0	0
Time Total	7.03	9.60	7.00	0.00	0.00
dH	1.80	1.80	1.80	2.00	3.00

CALIBRATION RESULTS

Y	1.031	1.033	1.031	0.000	0.000
dH@	1.817	1.807	1.817	0.000	0.000
Y tolerance from avg *	0.00	-0.00	0.00	1.03	1.03
dH@ tol. from avg **	-0.00	0.01	-0.00	1.81	1.81

AVERAGE Y 1.032
AVERAGE dH@ 1.814

Y error (vs prior Y) *** 0.4%

* must be no greater than +/- 0.02
** must be no greater than +/- 0.20
*** must be no greater than +/- 5%

Orifice:
front leak check Y
back leak check Y

Date	05-Aug-97	Meter Box Number	M5-4
Calibrated By	B Palm	Initials	BPh
Number of Runs	5		

REFERENCE TEST METER

Meter Y 1.016

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5	RUN 6
Vw, init	907.127	912.875	918.894	924.597	930.307	0
Vw, fin	912.513	918.262	924.06	929.999	936.958	0
Vw, total	5.386	5.387	5.366	5.402	6.651	0
Pb	29.80	29.80	29.80	29.80	29.80	29.80
tw	84	84	84	84	85	0
Tw+460	544	544	544	544	545	460

DRY GAS METER

Previous Y 1.024

Vm, init	653.019	658.758	664.577	670.486	676.205	0
Vm, fin	658.402	664.147	669.948	675.901	682.864	0
Vm, total	5.383	5.389	5.371	5.415	6.659	0
Tdii	85	88	89	92	93	0
Tdif	89	93	97	100	104	0
Tdoi	82	84	86	88	88	0
Tdof	84	86	87	88	89	0
Td,avg	85	87.75	89.75	92	93.5	0
Td+460	545	547.75	549.75	552	553.5	460
Time, min	13	9	8	7	7	0
Time, sec	30	30	0	0	0	0
Time Total	13.50	9.50	8.00	7.00	7.00	0.00
dH	0.50	1.00	1.50	2.00	3.00	4.00

CALIBRATION RESULTS

Y	1.017	1.020	1.022	1.023	1.023	0.000
dH@	1.764	1.740	1.861	1.869	1.854	0.000
Y tolerence from avg *	0.00	0.00	-0.00	-0.00	-0.00	1.02
dH@ tol. from avg **	0.05	0.08	-0.04	-0.05	-0.04	1.82
AVERAGE Y	1.021					
AVERAGE dH@	1.818					
Y error (vs prior Y) ***	-0.3%					

* must be no greater than +/- 0.02
** must be no greater than +/- 0.20
*** must be no greater than +/- 5%

Date	31-Oct-97	Meter Box Number	M5-4
Calibrated By	Richard	Initials	RWH
Number of Runs	3		

REFERENCE TEST METER

Meter Y 1.016

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5
Vw, init	643.779	652.614	662.945	0	0
Vw, fin	652.1	662.322	670.381	0	0
Vw, total	8.321	9.708	7.436	0	0
Pb	29.87	29.87	29.87	29.87	29.87
tw	61	62	62	0	0
Tw+460	521	522	522	460	460

DRY GAS METER

Previous Y 1.021

Vm, init	790.367	799.004	809.171	0	0
Vm, fin	798.501	808.556	816.506	0	0
Vm, total	8.134	9.552	7.335	0	0
Tdi	63	70	75	0	0
Tdf	78	84	85	0	0
Tdoi	61	64	67	0	0
Tdof	64	67	69	0	0
Td,avg	66	71.25	74	0	0
Td+460	526	531.25	534	460	460
Time, min	12	12	8	0	0
Time, sec	20	7	31	0	0
Time Total	12.33	12.12	8.52	0.00	0.00
dH	1.50	2.00	2.50	2.00	3.00

CALIBRATION RESULTS

Y	1.045	1.046	1.047	0.000	0.000
dH@	1.760	1.661	1.740	0.000	0.000
Y tolerence from avg *	0.00	0.00	-0.00	1.05	1.05
dH@ tol. from avg **	-0.04	0.06	-0.02	1.72	1.72
AVERAGE Y	1.046				
AVERAGE dH@	1.720				
Y error (vs prior Y) ***	2.5%				

* must be no greater than +/- 0.02
** must be no greater than +/- 0.20
*** must be no greater than +/- 5%

Orifice:

front leak check	Y
back leak check	Y

Date	15-Sep-97	Meter Box Number	M5-10
Calibrated By	R DURHAM	Initials	RWD 2
Number of Runs	5		

REFERENCE TEST METER

Meter Y 1.016

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5
Vw, init	524.909	530.634	537.665	544.465	550.504
Vw, fin	530.031	536.127	543.792	550.119	555.789
Vw, total	5.122	5.493	6.127	5.654	5.285
Pb	29.92	29.92	29.92	29.92	29.92
tw	81.5	83	84	84	84
Tw+460	541.5	543	544	544	544

DRY GAS METER

Previous Y 0.992

Vm, init	74.094	80.029	87.28	94.302	100.535
Vm, fin	79.4	85.709	93.609	100.14	105.97
Vm, total	5.306	5.68	6.329	5.838	5.435
Tdil	88	92	97	96	96
Tdif	101	103	106	103	106
Tdol	86	88	89	90	90
Tdof	87	89	90	90	92
Td,avg	90.5	93	95.5	94.75	96
Td+460	550.5	553	555.5	554.75	556
Time, min	12	9	8	6	5
Time, sec	5	21	37	49	10
Time Total	12.08	9.35	8.62	6.82	5.17
dH	0.50	1.00	1.50	2.00	3.00

CALIBRATION RESULTS

Y	0.996	0.998	1.001	0.999	1.002
dH@	1.532	1.599	1.640	1.605	1.581
Y tolerence from avg *	0.00	0.00	-0.00	0.00	-0.00
dH@ tol. from avg **	0.06	-0.01	-0.05	-0.01	0.01
AVERAGE Y	0.999				
AVERAGE dH@	1.591				
Y error (vs prior Y) ***	0.7%				

* must be no greater than +/- 0.02
** must be no greater than +/- 0.20
*** must be no greater than +/- 5%

Orifice:
front leak check Y
back leak check Y

Date	28-Sep-97	Meter Box Number	M5-10
Calibrated By	RICHARD	Initials	RWD
Number of Runs	3		

REFERENCE TEST METER

Meter Y 1.016

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5	RUN 6
Vw, init	779.626	785.843	808.645	0	0	0
Vw, fin	785.843	808.645	827.617	0	0	0
Vw, total	6.217	22.802	18.972	0	0	0
Pb	29.65	29.65	29.65	29.65	29.65	29.65
tw	75	75	75	0	0	0
Tw+460	535	535	535	460	460	460

DRY GAS METER

Previous Y 0.999

Vm, init	753.029	759.31	782.45	0	0	0
Vm, fin	759.31	782.45	801.767	0	0	0
Vm, total	6.281	23.14	19.317	0	0	0
Tdi	84	85	89	0	0	0
Tdf	91	96	98	0	0	0
Tdei	76	78	82	0	0	0
Tdef	78	82	84	0	0	0
Td,avg	82.25	85.25	88.25	0	0	0
Td+460	542.25	545.25	548.25	460	460	460
Time, min	7	27	22	0	0	0
Time, sec	24	15	42	0	0	0
Time Total	7.40	27.25	22.70	0.00	0.00	0.00
dH	2.00	2.00	2.00	2.00	3.00	4.00

CALIBRATION RESULTS

Y	1.014	1.015	1.018	0.000	0.000	0.000
dH@	1.564	1.568	1.563	0.000	0.000	0.000
Y tolerence from avg *	0.00	0.00	-0.00	1.02	1.02	1.02
dH@ tol. from avg **	0.00	-0.00	0.00	1.57	1.57	1.57

AVERAGE Y 1.016
AVERAGE dH@ 1.565

Y error (vs prior Y) *** 1.7%

* must be no greater than +/- 0.02
** must be no greater than +/- 0.20
*** must be no greater than +/- 5%

Orifice:
front leak check Y
back leak check Y

Date	28-Sep-97	Meter Box Number	M5-11
Calibrated By	RICHARD	Initials	RWJ
Number of Runs	3		

REFERENCE TEST METER

Meter Y 1.016

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5
Vw, init	736.069	741.93	756.95	0	0
Vw, fin	741.93	752.105	770.37	0	0
Vw, total	5.861	10.175	13.42	0	0
Pb	29.65	29.65	29.65	29.65	29.65
tw	74	75	75	0	0
Tw+460	534	535	535	460	460

DRY GAS METER

Previous Y 1.024

Vm, init	819.432	825.316	840.463	0	0
Vm, fin	825.316	835.569	854.006	0	0
Vm, total	5.884	10.253	13.543	0	0
Tdii	82	88	89	0	0
Tdif	94	97	97	0	0
Tdoi	76	78	81	0	0
Tdof	78	81	83	0	0
Td,avg	82.5	86	87.5	0	0
Td+460	542.5	546	547.5	460	460
Time, min	10	19	25	0	0
Time, sec	56	2	4	0	0
Time Total	10.93	19.03	25.07	0.00	0.00
dH	0.95	0.95	0.95	2.00	3.00

CALIBRATION RESULTS

Y	1.026	1.027	1.028	0.000	0.000
dH@	1.816	1.827	1.813	0.000	0.000
Y tolerence from avg *	0.00	0.00	-0.00	1.03	1.03
dH@ tol. from avg **	0.00	-0.01	0.01	1.82	1.82
AVERAGE Y	1.027				
AVERAGE dH@	1.819				
Y error (vs prior Y) ***	0.3%				

* must be no greater than +/- 0.02
** must be no greater than +/- 0.20
*** must be no greater than +/- 5%

Orifice:

front leak check	Y
back leak check	Y

Date	05-Sep-97	Meter Box Number	M5-11
Calibrated By	David Goshaw	Initials	DAG
Number of Runs	5		

REFERENCE TEST METER

Meter Y 1.016

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5
Vw, init	450.702	459.505	465.504	474.26	487.068
Vw, fin	458.184	465.256	473.702	486.89	493.788
Vw, total	7.482	5.751	8.198	12.63	6.72
Pb	29.25	29.25	29.25	29.25	29.25
tw	79	79	79	79	79
Tw+460	539	539	539	539	539

DRY GAS METER

Previous Y 0.997

Vm, init	357.35	366.294	372.376	381.239	394.188
Vm, fin	364.951	372.125	380.676	394.01	401.066
Vm, total	7.601	5.831	8.3	12.771	6.878
Tdii	94	96	94	101	102
Tdif	99	87	105	107	109
Tdoi	87	97	80	87	89
Tdof	87	87	87	89	89
Td,avg	91.75	91.75	91.5	96	97.25
Td+460	551.75	551.75	551.5	556	557.25
Time, min	19	10	12	16	7
Time, sec	0	30	24	27	5
Time Total	19.00	10.50	12.40	16.45	7.08
dH	0.50	1.00	1.50	2.00	3.00

CALIBRATION RESULTS

Y	1.022	1.023	1.023	1.031	1.019
dH@	1.798	1.842	1.926	1.888	1.852
Y tolerence from avg *	0.00	0.00	0.00	-0.01	0.01
dH@ tol. from avg **	0.06	0.02	-0.06	-0.03	0.01

AVERAGE Y 1.024
AVERAGE dH@ 1.861

Y error (vs prior Y) *** 2.7%

* must be no greater than +/- 0.02
** must be no greater than +/- 0.20
*** must be no greater than +/- 5%

METHOD 5 CALIBRATION FORM

Date	Meter #	Bar. Pressure	$\Delta H_@$	REFERENCE METER				DRY GAS METER						Time	Prev Y
				Initial Vol	Final Vol	Temp		Initial Vol	Final Vol	Inlet Temp		Outlet Temp			
9/5	M5-3	30.09	2.3	392.878	398.106	75	75	234.732	239.872	79	87	74	75	6:00	1.028
				398.106	403.311	75	75	239.872	245.014	81	90	76	77	6:00	
				403.311	408.540	75	75	245.014	250.172	85	93	77	79	6:00	
	M5A11	29.25	0.5	450.702	458.184	79	79	357.350	364.951	94	99	87	87	19:00	0997
9/5			1.0	459.505	465.256	79	79	366.294	372.125	95	97	87	87	10:30	
			1.5	465.504	473.702	79	79	372.376	380.676	94	100	89	87	12:24	
			2.0	474.280	486.890	79	79	381.239	394.010	101	97	87	89	16:27	
			3.0	487.068	493.798	79	79	394.188	401.066	99	109	89	89	7:05	
9/15	M5-10	29.92	1.9	507.472	513.199	79	80	56.271	62.110	88	99	81	83	7:06	
			1.9	513.199	518.860	80	80	62.110	67.900	87	102	83	84	7:00	
			1.9	518.860	524.499	81	81	67.900	73.673	95	104	85	86	7:00	
9/15		29.92	.5	524.909	530.031	81	82	74.094	79.400	99	101	86	87	12:05	
			1.0	530.634	536.127	83	83	80.029	85.709	72	103	88	89	9:21	
			1.5	536.643	543.792	84	84	86.788	93.609	97	106	89	90	8:37	
			2.0	543.792	550.119	84	84	93.774	100.140	96	103	90	90	6:49	
			3.0	550.504	555.789	84	84	100.535	105.970	99	106	90	92	5:10	
				544.465		84		94.302		96		90			

1.016

1.029 avg

M5-10

M5-10

*Reference Meter Y=~~0.995~~ 1.016

**Form for computer entry

10-30-1997 6:52PM FROM 9192501835

METHOD 5 DGM CALIBRATION USING CRITICAL ORIFICES — RECORDING LOG

DATE: 9-22-97 | DGM SERIAL NUMBER: MS-10 | BAROMETRIC PRESSURE (In Hg): INITIAL 29.54, FINAL 29.54, AVG (P_{bar})

GAS METER P/N: | CRITICAL ORIFICE SET SERIAL NUMBER: SN-1327S

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (In Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (In H_2O)
* 26	1	.5574	20"	247.728	259.283	11.555	71	71	75	71	72	72	15	1.7
	2													
	3													
	1													
	2													
	3													
	1													
	2													
	3													

NOTE: AFTER PERFORMING CALIBRATION RUNS, RECORD DATA IN SPREADSHEET INCLUDED ON DISKETTE. PRINT OUT A CALIBRATION REPORT.

$V_{m\,std}$ = 11.318 — 11.370 ph

$V_{cr\,std}$ = 10.718 — 0.943 ph

Y = 0.947

CALIBLOG XLS

MB14 - Y = .966

METHOD 5 DGM CALIBRATION USING CRITICAL ORIFICES

RECORDING LOG

DATE: 1-21-97

GAS METER P/N: mB-14

DGM SERIAL NUMBER:

CRITICAL ORIFICE SET SERIAL NUMBER:

BAROMETRIC PRESSURE (In Hg): INITIAL 29.82 FINAL 29.82 AVG (P_{bar}) 29.82

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (In Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	TEMPERATURES °F DGM INLET INITIAL	TEMPERATURES °F DGM INLET FINAL	TEMPERATURES °F DGM OUTLET INITIAL	TEMPERATURES °F DGM OUTLET FINAL	TEMPERATURES °F DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (In H_2O)
3(	1	.8344	12	1.549	21.913	20.364	65	70	73	60	66	68	18	4.1
	2													
	3													
	1													
	2													
	3													
	1													
	2													
	3													

NOTE: AFTER PERFORMING CALIBRATION RUNS, RECORD DATA IN SPREADSHEET INCLUDED ON DISKETTE. PRINT OUT A CALIBRATION REPORT.

$V_{m\,std}$ = 20.288 20.501 -ph

$V_{cr\,std}$ = 19.547

Y = 0.963 0.953

METHOD 5 DGM CALIBRATION USING CRITICAL ORIFICES

$\gamma = 1.010$

RECORDING LOG

DATE: 9-21-97

GAS METER P/N: RM8-13

DGM SERIAL NUMBER:

CRITICAL ORIFICE SET SERIAL NUMBER: #23

BAROMETRIC PRESSURE (In Hg): INITIAL 29.82 | FINAL 29.82 | AVG (P_{bar}) 29.82

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (In Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (In H_2O)
#23	1	.6081	18	77.405	94.205	16.800	65	71	78	71	75	74	21	2.4
	2													
	3													
	1													
	2													
	3													
	1													
	2													
	3													

NOTE: AFTER PERFORMING CALIBRATION RUNS, RECORD DATA IN SPREADSHEET INCLUDED ON DISKETTE. PRINT OUT A CALIBRATION REPORT.

$V_{m\,std}$ 16.518 16.654 ph

$V_{cr\,std}$ 16.619

$\gamma = 1.006$ 0.998 ph

PACIFIC ENVIRONMENTAL SERVICES, INC.

Stack Thermocouples

Each thermocouple is calibrated by comparing it with an ASTM-3F thermometer at approximately 32°F, ambient temperature, 100°F, and 500°F. The thermocouple reads within 1.5 percent (%) of the reference thermometer throughout the entire range when expressed in degrees Rankine. The thermocouples may be checked at ambient temperature at the test site to verify the calibration. Calibration data are included in the following Thermocouple Calibration Data Sheet(s).

PACIFIC ENVIRONMENTAL SERVICES,INC.

TEMPERATURE SENSOR CALIBRATION DATA FORM FOR STACK THERMOCOUPLES

DATE: 10-Dec-96

THERMOCOUPLE NUMBER: T6C

AMBIENT TEMPERATURE: 70

BAROMETRIC PRES.(In.Hg): 29.09

CALIBRATOR: B.FISHER

REFERENCE:
Mercury-in-glass: ASTM 3F

Other:

Reference point number	Source[a] (Specify)	Reference Thermometer Temperature,°F	Thermocouple Potentiometer Temperature,°F	Temperature Difference,[b] %
1	Ambient Air	69	70	-0.19
2	Cold Bath	32	31	0.20
3	Hot Bath	200	203	-0.45
4	Hot Oil	378	375	0.36

[a]Type of calibration used.

[b]$\frac{\text{(ref. temp,°F+460)-(test thermometer temp,°F+460)}}{\text{ref temp,°F+460}}$ X100 $\leq 1.5\%$

Comments:

PACIFIC ENVIRONMENTAL SERVICES,INC.

TEMPERATURE SENSOR CALIBRATION DATA FORM FOR STACK THERMOCOUPLES

DATE: 10-Dec-96

THERMOCOUPLE NUMBER: 7C

AMBIENT TEMPERATURE: 70

BAROMETRIC PRES.(In.Hg): 29.09

CALIBRATOR: B.FISHER

REFERENCE:
Mercury-in-glass: ASTM 3F

Other:

Reference point number	Source[a] (Specify)	Reference Thermometer Temperature,°F	Thermocouple Potentiometer Temperature,°F	Temperature Difference,[b] %
1	Ambient Air	70	71	-0.19
2	Cold Bath	32	33	-0.20
3	Hot Bath	204	202	0.30
4	Hot Oil	440	437	0.33

[a]Type of calibration used.

[b]$\frac{(\text{ref. temp.,°F}+460)-(\text{test thermometer temp.,°F}+460)}{\text{ref temp,°F}+460} \times 100$ $100 \leq 1.5\%$

Comments:

PACIFIC ENVIRONMENTAL SERVICES,INC.

TEMPERATURE SENSOR CALIBRATION DATA FORM FOR STACK THERMOCOUPLES

DATE: 10-Dec-96

THERMOCOUPLE NUMBER: 8C

AMBIENT TEMPERATURE: 70

BAROMETRIC PRES.(In.Hg): 29.09

CALIBRATOR: B.FISHER

REFERENCE:
Mercury-in-glass: ASTM 3F

Other:

Reference point number	Source[a] (Specify)	Reference Thermometer Temperature,°F	Thermocouple Potentiometer Temperature,°F	Temperature Difference,[b] %
1	Ambient Air	70	70	0.00
2	Cold Bath	33	33	0.00
3	Hot Bath	190	188	0.31
4	Hot Oil	396	395	0.12

[a]Type of calibration used.

[b]$\frac{\text{(ref. temp.,°F+460)-(test thermometer temp.,°F+460)}}{\text{ref temp,°F+460}}$ X100 $\leq$ 1.5%

Comments:

PACIFIC ENVIRONMENTAL SERVICES,INC.

TEMPERATURE SENSOR CALIBRATION DATA FORM FOR STACK THERMOCOUPLES

DATE: 10-Dec-96

THERMOCOUPLE NUMBER: 7B

AMBIENT TEMPERATURE: 70

BAROMETRIC PRES.(In.Hg): 29.09

CALIBRATOR: B.FISHER

REFERENCE:
Mercury-in-glass: ASTM 3F

Other:

Reference point number	Source[a] (Specify)	Reference Thermometer Temperature,°F	Thermocouple Potentiometer Temperature,°F	Temperature Difference,[b] %
1	Ambient Air	72	73	-0.19
2	Cold Bath	34	35	-0.20
3	Hot Bath	204	201	0.45
4	Hot Oil	394	391	0.35

[a]Type of calibration used.

[b]$\frac{\text{(ref. temp.,°F+460)-(test thermometer temp.,°F+460)}}{\text{ref temp,°F+460}}$ X100 $\leq$ 1.5%

Comments:

PACIFIC ENVIRONMENTAL SERVICES, INC.

Digital Indicators for Thermocouple Readout

A digital indicator is calibrated by feeding a series of millivolt signals to the input and comparing the indicator reading with the reading the signal should have generated. Errors did not exceed 0.5 percent (%) when the temperatures were expressed in degrees Rankine. Calibration data are included in the following Thermocouple Digital Indicator Calibration Data Sheet(s).

PACIFIC ENVIRONMENTAL SERVICES, INC.

THERMOCOUPLE DIGITAL INDICATOR CALIBRATION DATA SHEET

DATE: 6-1-97 INDICATOR NO.: RMB-13

OPERATOR: R.Kolde SERIAL NO.: 207

CALIBRATION DEVICE Digital Indicator MANUFACTURER: OMEGA

TEST POINT NO.	MILLIVOLT SIGINAL	EQUIVALENT TEMP °F	DIGITAL INDICATOR TEMP READING °F	DIFFERENCE %
1	-0.692	0	0	0
2	1.520	100	99	0.18
3	3.819	200	201	-0.15
4	6.092	300	301	-0.13
5	8.314	400	398	0.23
6	10.560	500	499	0.10
7	22.251	1000	1001	-0.07
8	29.315	1300	1300	0.00
9	36.166	1600	1600	0.00
10	42.732	1900	1901	-0.04

Percent difference must be less than or equal to 0.5 %

Percent difference: $\frac{\text{(Equivalent temp,.°R - Digital indicator tem, °R) * (100\%)}}{\text{(Equivalent temp, °R)}}$

Where °R = °F + 460

PACIFIC ENVIRONMENTAL SERVICES, INC.

THERMOCOUPLE DIGITAL INDICATOR
CALIBRATION DATA SHEET

DATE: 27-Dec-96 INDICATOR NO.: MB-14

OPERATOR: B.FISHER SERIAL NO.:

CALIBRATION DEVICE: MANUFACTURER:

TEST POINT NO.	MILLIVOLT SIGINAL	EQUIVALENT TEMP °F	DIGITAL INDICATOR TEMP READING °F	DIFFERENCE %
1	-0.692	0	0	0
2	1.520	100	101	-0.18
3	3.819	200	203	-0.45
4	6.092	300	302	-0.26
5	8.314	400	399	0.12
6	10.560	500	499	0.10
7	22.251	1000	999	0.07
8	29.315	1300	1296	0.23
9	36.166	1600	1596	0.19
10	42.732	1900	1894	0.25

Percent difference must be less than or equal to 0.5 %

Percent difference: $\frac{(\text{Equivalent temp,.}^{\circ}\text{R} - \text{Digital indicator tem, }^{\circ}\text{R}) * (100\%)}{(\text{Equivalent temp, }^{\circ}\text{R})}$

Where $^{\circ}\text{R} = {}^{\circ}\text{F} + 460$

DIGITAL INDICATOR

PACIFIC ENVIRONMENTAL SERVICES, INC.

Dry Gas Thermocouples and Impinger Thermocouples

The dry gas thermocouples are calibrated by comparing them with an ASTM-3 thermometer at approximately 32°F, ambient temperature, and a higher temperature between approximately 100°F and 200°F. The thermocouples agreed within 5°F of the reference thermometer. The impinger thermocouples are checked in a similar manner at approximately 32°F and ambient temperature, and they agreed within 2°F. The thermocouples may be checked at ambient temperature prior to the test series to verify calibration. Calibration data are included in the following Dry Gas Thermometer and Impinger Thermocouple Calibration Data Sheet(s).

PACIFIC ENVIRONMENTAL SERVICES,INC.

TEMPERATURE SENSOR CALIBRATION DATA FORM FOR METER BOX

DATE: 27-Dec-96

THERMOCOUPLE NUMBER: MB-14

AMBIENT TEMPERATURE: 70 °F

BAROMETRIC PRES.(In.Hg): 29.4

CALIBRATOR: B.FISHER

REFERENCE:

Mercury-in-glass: ASTM 3F

Other:

Reference point number	Source[a] (Specify)	Reference Thermometer Temperature,°F	Thermocouple Potentiometer Temperature,°F	Temperature Difference,[b] °F
INLET				
1	Ambient Air	74	75	1
2	Cold Bath	33	34	1
3	Hot Bath	128	129	1
OUTLET				
1	Ambient Air	70	71	1
2	Cold Bath	33	34	1
3	Hot Bath	149	150	1

[a]Type of calibration used.

[b]Allowable tolerance ±5°F

Comments:

PACIFIC ENVIRONMENTAL SERVICES, INC.

TEMPERATURE SENSOR CALIBRATION DATA FORM FOR METER BOX

DATE: 30May97

AMBIENT TEMPERATURE: 76 °F

CALIBRATOR: R.Kolde

THERMOCOUPLE NUMBER: RMB-13

BAROMETRIC PRES.(In.Hg): 29.35

REFERENCE:

Mercury-in-glass: ASTM_3F

Other:

Reference point number	Source[a] (Specify)	Reference Thermometer Temperature,°F	Thermocouple Potentiometer Temperature,°F	Temperature Difference,[b] °F
INLET				
1	Ambient Air	76	76	0
2	Cold Bath	34	35	1
3	Hot Bath	150	149	1
OUTLET				
1	Ambient Air	76	75	1
2	Cold Bath	34	35	1
3	Hot Bath	150	151	1

[a]Type of calibration used.

[b]Allowable tolerance ±5°F

Comments:

Date 10/25/97 Metering System ID No. MS-3

Barometric pressure, P_b = 29.8

$Y = 1.028$

Orifice manometer setting ΔH in ~~H_2O~~	~~Reference Meter~~ ~~Spirometer~~ (wet-test) gas volume (Vw) ft3	Dry gas meter volume (Vm) ft3	Temperatures ~~Reference Meter~~ ~~Spirometer~~ ~~(wet meter)~~ (tw) °F	Temperatures Dry Gas Meter Inlet (ti) °F	Temperatures Dry Gas Meter Outlet (to) °F	Temperatures Dry Gas Meter Avg (tm) °F	Time (Θ) min
.5	541.179 / 549.162	586.358 / 594.101	78/77	80/89	75/79		19:10
1.0	549.162 / 556.241	594.101 / 600.988	77/77	88/94	79/81		12:00
1.5	556.241 / 566.889	600.988 / 611.417	77/77	93/97	82/83		15:00
2.0	566.889 / 574.244	611.417 / 618.623	77/77	92/98	83/84		9:00
3.0	574.244 / 581.298	618623 / 625.357	77/77	96/102	84/85		7:00

Y = Reference Meter Gamma

Calculations

ΔH in H20	Yi	ΔH@i
	$\frac{Y V_w P_b (t_m + 460)}{V_m [P_b + \frac{\Delta H}{13.6}] (t_w + 460)}$	$\frac{0.0317 \Delta H}{P_b (t_m + 460)} [\frac{(t_w + 460)\Theta}{Y V_w}]^2$
Average		

Y = Ratio of reading of wet-test meter to dry gas meter; tolerance for individual values ±0.02 from average.

ΔH@ = Orifice pressure differential that equates to 0.75 cfm of air @ 68 °F and 29.92 in of Hg, in H_2O; tolerance for individual values ±0.20 for average.

PACIFIC ENVIRONMENTAL SERVICES,INC.

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Suite 150
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Phone: (513) 398-2556
Fax: (513) 398-3342
www.pes.com

TEMPERATURE SENSOR CALIBRATION DATA FORM FOR SAMPLE HEAD

DATE: 12/19/96

THERMOCOUPLE NUMBER: SH-2

AMBIENT TEMPERATURE(°F): 77

BAROMETRIC PRES.(In.Hg): 29.33

CALIBRATOR: S.Simon

REFERENCE:
Mercury-in-glass: ASTM-3

Other:

Reference point number	Source[a] (Specify)	Reference Thermometer Temperature, °F	Thermocouple Potentiometer Temperature, °F	Temperature Difference,[b] °F
1	Ambient Air	77	76.6	0.4
2	Cold Bath	40	40.6	0.6

[a]Type of calibration used.

[b]Allowable tolerance ±2°F

Comments:

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TEMPERATURE SENSOR CALIBRATION DATA FORM FOR SAMPLE HEAD

DATE: 12/19/96

THERMOCOUPLE NUMBER: SH-4

AMBIENT TEMPERATURE(°F): 76

BAROMETRIC PRES.(In.Hg): 29.33

CALIBRATOR: S.Simon

REFERENCE:
Mercury-in-glass: ASTM-3

Other:

Reference point number	Source[a] (Specify)	Reference Thermometer Temperature,°F	Thermocouple Potentiometer Temperature,°F	Temperature Difference,[b] °F
1	Ambient Air	76	76	0
2	Cold Bath	39	39.2	0.2

[a]Type of calibration used.

[b]Allowable tolerance ±2°F

Comments:

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TEMPERATURE SENSOR CALIBRATION DATA FORM FOR SAMPLE HEAD

DATE: 12/19/96

THERMOCOUPLE NUMBER: SH-5

AMBIENT TEMPERATURE(°F): 76

BAROMETRIC PRES.(In.Hg): 29.33

CALIBRATOR: S.Simon

REFERENCE:
Mercury-in-glass: ASTM-3

Other:

Reference point number	Source[a] (Specify)	Reference Thermometer Temperature, °F	Thermocouple Potentiometer Temperature, °F	Temperature Difference,[b] °F
1	Ambient Air	76	76	0
2	Cold Bath	40	40.8	0.8

[a]Type of calibration used.

[b]Allowable tolerance ±2°F

Comments:

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TEMPERATURE SENSOR CALIBRATION DATA FORM FOR SAMPLE HEAD

DATE: 12/19/96

THERMOCOUPLE NUMBER: SH-6

AMBIENT TEMPERATURE(°F): 77

BAROMETRIC PRES.(In.Hg): 29.33

CALIBRATOR: S.Simon

REFERENCE:
Mercury-in-glass: ASTM-3

Other:

Reference point number	Source[a] (Specify)	Reference Thermometer Temperature, °F	Thermocouple Potentiometer Temperature, °F	Temperature Difference,[b] °F
1	Ambient Air	77	77.4	0.4
2	Cold Bath	40	40.8	0.8

[a]Type of calibration used.

[b]Allowable tolerance ±2°F

Comments:

APPENDIX F

PARTICIPANTS

PROJECT PARTICIPANTS

Name	Affiliation	Responsibility
Michael Ciolek	USEPA, Emission Measurement Center	Work Assignment Manager
John Chehaske	Pacific Environmental Services, Inc.	Program Manager
Franklin Meadows	Pacific Environmental Services, Inc.	Project Manager
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TECHNICAL REPORT DATA

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1. REPORT NO. EPA-454/R-99-026	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Final Report - Volume II of II, Iron and Steel Foundries Manual Emissions Testing, Cupola Wet Scrubber - General Motors Corp., Saginaw, Michigan		5. REPORT DATE July 1999 6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) [redacted] EMAD		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Pacific Environmental Services, Inc. Post Office Box 12077 Research Triangle Park, North Carolina 27709-2077		10. PROGRAM ELEMENT NO. 11. CONTRACT/GRANT NO. 68-D-70069
12. SPONSORING AGENCY NAME AND ADDRESS U.S. Environmental Protection Agency Office of Air Quality Planning and Standards Emissions, Monitoring and Analysis Division Research Triangle Park, North Carolina 27711		13. TYPE OF REPORT AND PERIOD COVERED Final 14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

16. ABSTRACT

The United States Environmental Protection Agency (EPA) is investigating iron and steel foundries to identify and quantify hazardous air pollutants (HAPs) emitted from cupolas; electric arc furnaces; and pouring, cooling and shakedown operations of sand mold casting processes. General Motors Corporation, Saginaw Casting Operations (GMC), Saginaw, Michigan was selected by the EPA as the host facility at which to 1) characterize HAP emissions from cupolas that are controlled by wet scrubbers, and 2) assess wet scrubber performance in controlling HAP emissions from cupolas. GMC was selected because EPA deemed this facility to be representative of a large segment of the sand casting foundry industry and GMC operates a relatively large cupola that is controlled by a wet scrubber.

This report presents the results of a manual emissions testing program to characterize emissions from a cupola and assess the performance of the wet scrubber in controlling HAP emissions. Testing was conducted at the cupola wet scrubber inlet and outlet to determine air emissions of particulate matter (PM) and metal HAPs; and at the cupola wet scrubber outlet to determine organic HAPs consisting of dibenzo-*p*-dioxins and polychlorinated dibenzodurans (PCDDs/PCDFs) and semi-volatile organic hazardous air pollutnats (SVOHAPs), and volatile organic hazardous air pollutants (VOHAPs) The data may be used by the EPA as potential Maximum Achievable Control Technology (MACT) floor technology for cupolas.

During the testing program, Research Triangle Institute (RTI), another EPA contractor, monitored and recorded process and emission control system operating parameters, and prepared Section 3.0, Process and Control Equipment operation, of this report.

This volume (Volume II) is comprised of 471 pages and consists of Appendices: C (Analytical Data - Particulate Matter and Metals), D (Calculations), E (QA/QC Data), and F (Participants).

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTIONS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COASTI Field/Group
Cupola Dioxins/Furans Emission Measurements Hazardous Air Pollutants Metals Particulate Matter Semi-Volatile Organic Hazardous Air Pollutants Volatile Organic Hazardous Air Pollutants Wet Scrubber		

18. DISTRIBUTION STATEMENT Unlimited	19. SECURITY CLASS *(This Report)* Unclassified	21. NO. OF PAGES 1,159
	20. SECURITY CLASS *(This page)* Unclassified	22. PRICE