UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
HOUSTON BRANCH
6608 HORNWOOD DRIVE
HOUSTON, TEXAS 77074

Ref. Case No. 8656

Site Name S. CAVALCADE

Date: 1-22-88

Subject: CLP Data Review

From: Michael L. Daggett, Chief, Organic Lab Section, 6E-HL

To: Jo Ann Miller, 6H-ES

A review of the laboratory raw data for the reference site has been completed by members of the Laboratory Section. Samples were:

INORGANIC: MFB571
MFB572

ORGANIC:

The data was found:

(✓) Acceptable

( ) Provisional; use of data requires caution. Problems are noted in Review Summa:

( ) Unacceptable; data should not be used. Problems are noted in Review Summary.

Questions regarding the review can be addressed to me.

Attachments

1012346

cc: David Stockton, 6E-HL
Duane Geuder, WH-548A

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
HOUSTON BRANCH
6608 HORNWOOD DRIVE
HOUSTON, TEXAS 77074

INORGANIC QC CHECKLIST

Site S. CAVALCADE
Case No. 8656
Reviewed by N. EL-FEKY
Date 1-21-88

Contract No. 68-01-7323
Contractor PBSJ
Matrix WATER [L]
Acct # _____ SF # _____

Sample No. MFB-571
MFB-572

COMMENTS (To be completed by EPA Personnel)

1. Data Completeness	✓ Acceptable	____ Provisional	____ Unacceptable
2. Instrument Calibration Tune	✓ Acceptable	____ Provisional	____ Unacceptable
3. Interference Check Sample	✓ Acceptable	____ Provisional	____ Unacceptable
4. Blank Analysis	✓ Acceptable	____ Provisional	____ Unacceptable
5. Matrix Spikes	✓ Acceptable	____ Provisional	____ Unacceptable
6. Duplicates	✓ Acceptable	____ Provisional	____ Unacceptable
7. Field Blanks	✓ Acceptable	____ Provisional	____ Unacceptable
8. Other	— Acceptable	____ Provisional	____ Unacceptable

ADDITIONAL COMMENTS

DATA PACKAGE IS ACCEPTABLE. TWO AQUEOUS SAMPLES ANALYZED AT LOW LEVEL FOR TOTAL METALS AND CN⁻
FINAL CONCENTRATION OF Mo, IN SAMPLE # MFB 572, IS REPORTED

Acceptable - All items delivered; all criteria met
Provisional - Data usable; some non-essential review items missing or criteria were not met
Unacceptable - Data unusable; essential review items missing or criteria not met

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INORGANIC QA CHECKLIST
CONTINUATION PAGE

CASE NO. 8656 SITE S. CAVALCADE

COMMENTS:

IN FORM I AS QC, IT SHOULD BE REPORTED AS (IDL U).
SPIKE RECOVERY AND RPD OF Al & Fe ARE OUTSIDE THE CONTRACT REQUIRED QC LIMITS. DATA ASSOCIATED WITH THESE TWO ELEMENTS IN BOTH SAMPLES SHOULD BE TREATED AS ESTIMATED.
AL, Ca, Fe, Mg, Mn + Na ARE REPORTED IN SAMPLE MFB571 AT CONCENTRATIONS ABOVE IDL. Cu IS THE ONLY TARGET ELEMENT REPORTED IN SAMPLE MFB571 AT A CONCENTRATION ABOVE IDL.

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U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

Date 1/13/88

COVER PAGE
INORGANIC ANALYSES DATA PACKAGE

Lab Name PBS&J

Case No. 8656

SOW No. 7/85

Q.C. Report No. 1

Sample Numbers

EPA No.	Lab ID No.	EPA No.	Lab ID No.
MFB 571	8712058-01		
MFB 572	8712058-02		

Comments:

ICP interelement and background corrections applied? Yes X No ____.

If yes, corrections applied before X or after ____ generation of raw data.

Footnotes:

NR - Not required by contract at this time

Form I:

Value - If the result is a value greater than or equal to the instrument detecion limit but less than the contract-required detection limit, report the value in brackets (i.e., [10]). Indicate the analytical method used with P (for ICP), A (for Flame AA) or F (for Furnace AA).

U - Indicates element was analyzed for but not detected. Report with the instrument detection limit value (e.g., 10U).

E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.

S - Indicates value determined by Method of Standard Addition.

N - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

+ - Indicates the correlation coefficient for method of standard addition is less than 0.995

- Indicates duplicate injection results exceeded control limits.

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Form 1 Sample MW-5-01

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MFB 571

Date 1/13/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME PBS&J

CASE NO. 8656

SOW NO. 7/85

Lab Receipt Date 12/10/87

LAB SAMPLE ID. NO. 8712058-01

QC REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	2160 N*	P	13.	Magnesium	26500	P
2.	Antimony	24 U	P	14.	Manganese	49	P
3.	Arsenic	10 U	F	15.	Mercury	0.2 U	CV
4.	Barium	[186]	P	16.	Nickel	9.2 U	P
5.	Beryllium	0.3 U	P	17.	Potassium	[3380]	A
6.	Cadmium	3.6 U	P	18.	Selenium	7.9 SN	F
7.	Calcium	81900	P	19.	Silver	10 U	F
8.	Chromium	4.4 U	P	20.	Sodium	81900	P
9.	Cobalt	9.3 U	P	21.	Thallium	10 U	F
10.	Copper	[9.0]	P	22.	Vanadium	25 U	P
11.	Iron	2190 N*	P	23.	Zinc	[18]	P
12.	Lead	5.0 U	F		Precent Solids (%)		
	Cyanide	~~0.5 U~~ 10 U					

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Colorless, cloudy

Lab Manager K. A. Kumehiro

IFB Amend. One

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Form 1

Blank

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MFB 572

Date 1/13/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME PBS&J

CASE NO. 8656

SOW NO. 7/85

Lab Receipt Date 12/12/87

LAB SAMPLE ID. NO. 8712058-02

QC REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	680 N*	P	13.	Magnesium	561 U	P
2.	Antimony	24 U	P	14.	Manganese	0.0 [illegible]	P
3.	Arsenic	10 U	F	15.	Mercury	0.3 U	CV
4.	Barium	25 U	P	16.	Nickel	9.2 U	P
5.	Beryllium	0.3 U	P	17.	Potassium	[1040]	A
6.	Cadmium	2.6 U	P	18.	Selenium	5.0 UN	F
7.	Calcium	657 U	P	19.	Silver	10 U	F
8.	Chromium	4.4 U	P	20.	Sodium	1300 U	P
9.	Cobalt	9.3 U	P	21.	Thallium	10 U	F
10.	Copper	51	P	22.	Vanadium	25 U	P
11.	Iron	25 U N*	P	23.	Zinc	12 U	P
12.	Lead	5.0 U	F		Precent Solids (%)		
	Cyanide	~~0.5 U~~ 10 U					

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Colorless, clear

Lab Manager [signature]

IFB Amend. One

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Form IIa

Q. C. Report No. 1

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME PBSSJ

CASE NO. 8656

SOW NO. 7/85

DATE 11/13/88

UNITS: ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum	1980	1980	100	25000	25500	102	25400	102	P
2. Antimony	1010	964	95	500	489	98	552	110	P
3. Arsenic	49.4	52.5	106	50	54	108			F
4. Barium	1980	2010	102	5000	5270	105	5290	106	P
5. Beryllium	481	476	99	500	488	98	506	101	P
6. Cadmium	489	460	94	500	478	96	482	96	P
7. Calcium	49800	47300	95	50000	51800	104	52400	105	P
8. Chromium	506	495	98	500	473	95	487	97	P
9. Cobalt	474	484	102	500	519	104	523	105	P
10. Copper	542	509	94	500	510	102	514	103	P
11. Iron	1990	1920	96	25000	24300	97	24200	97	P
12. Lead	4510	4480	99	500	510	102	499	100	P
13. Magnesium	25000	24800	99	50000	51200	102	52600	105	P
14. Manganese	513	479	93	2500	2450	98	2520	101	P
15. Mercury	~~3.0~~ 5.2	5.2	100	3.0	2.8	93	3.0	100	CV
16. Nickel	496	493	99	500	478	96	489	98	P
17. Potassium	50200	46500	93	7500	7230	96			A
18. Selenium	99.2	94	96	50	49	98	48	96	F
19. Silver	97.6	~~102~~ 101	103	25	27	108	27	108	F
20. Sodium	50700	47100	93	50000	52200	104	52900	106	P
21. Thallium	97.3	97	100	50	48	96	50	100	F
22. Vanadium	511	496	97	500	524	105	528	106	P
23. Zinc	3100	3230	104	500	452	90	478	96	P
Other:									
Cyanide	52	52	100	75	75	100	75	100	

1 Initial Calibration Source EMSL/LV ; 2 Continuing Calibration Source Lab prepared

3 Control Limits: Mercury and Tin 80-120; Other Metals 90-110; Cyanide 85-115

4 Indicate Analytical Method Used: P - ICP; A - Flame AA; F - Furnace AA

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Form II b

Q. C. Report No. 1

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME PBS&J

CASE NO. 8656

SOW NO. 7/85

DATE 1/13/88

UNITS: ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum				25000	25700	103	25500	102	P
2. Antimony				500	483	97	506	101	P
3. Arsenic									
4. Barium				5000	5330	107	5390	108	P
5. Beryllium				500	504	101	515	103	P
6. Cadmium				500	488	98	479	96	P
7. Calcium				50000	52900	106	52600	105	P
8. Chromium				500	491	98	492	98	P
9. Cobalt				500	526	105	538	108	P
10. Copper				500	517	103	514	103	P
11. Iron				25000	24600	98	24600	98	P
12. Lead				500	500	100	509	102	P
13. Magnesium				50000	52400	105	52500	105	P
14. Manganese				2500	2520	101	2560	102	P
15. Mercury				3.0	3.0	100	3.1	103	CV
16. Nickel				500	491	98	490	98	P
17. Potassium									
18. Selenium									
19. Silver									
20. Sodium				50000	52500	105	53800	108	P
21. Thallium									
22. Vanadium				500	626	105	528	106	P
23. Zinc				500	472	194	473	195	P
Other:									
Cyanide									

[1] Initial Calibration Source ~~EMSL/LV~~ 1/13/88 [2] Continuing Calibration Source Lab prepared

[3] Control Limits: Mercury and Tin 80-120; Other Metals 90-110; Cyanide 85-115

[4] Indicate Analytical Method Used: P - ICP; A - Flame AA; F - Furnace AA

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Form II C

Q. C. Report No. 1

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME PBS&J

CASE NO. 8456

SOW NO. 7/85

DATE 1/13/88

UNITS: ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method
1. Aluminum				25000	25300	101	25400	102	P
2. Antimony				500	514	103	472	94	P
3. Arsenic									
4. Barium				5000	5280	106	5240	107	P
5. Beryllium				500	513	103			P
6. Cadmium				500	478	96			P
7. Calcium				50000	52100	104	52400	105	P
8. Chromium				500	486	97			P
9. Cobalt				500	522	104	526	105	P
10. Copper				500	523	105	511	102	P
11. Iron				25000	24200	97	24300	97	P
12. Lead				500	503	101	509	102	P
13. Magnesium				50000	52500	105			P
14. Manganese				2500	2540	102			P
15. Mercury									
16. Nickel				500	483	97			P
17. Potassium									
18. Selenium									
19. Silver									
20. Sodium				50000	50600	101	48600	97	P
21. Thallium									
22. Vanadium				500	522	104	528	106	P
23. Zinc				500	463	93			P
Other:									
Cyanide									

[1] Initial Calibration Source _____ [2] Continuing Calibration Source Lab prepared

[3] Control Limits: Mercury and Tin 80-120; Other Metals 90-110; Cyanide 85-115

[4] Indicate Analytical Method Used: P - ICP; A - Flame AA; F - Furnace AA

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Form IId

Q. C. Report No. 1

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME PBS&J

CASE NO. 8656

SDG NO. 7/85

DATE 11/13/86

UNITS: ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium									
5. Beryllium									
6. Cadmium									
7. Calcium									
8. Chromium									
9. Cobalt									
10. Copper									
11. Iron									
12. Lead	97.9	90.6	93	50	48	96	48	96	F
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver									
20. Sodium									
21. Thallium									
22. Vanadium									
23. Zinc									
Other:									
Cyanide									

[1] Initial Calibration Source EMSLLW

[2] Continuing Calibration Source Lab prepared

[3] Control Limits: Mercury and Tin 80-120; Other Metals 90-110; Cyanide 85-115

[4] Indicate Analytical Method Used: P = ICP; A = Flame AA; F = Furnace AA

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Form IIe

Q. C. Report No. 1

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME PBS&J

CASE NO. 8656

SOW NO. 7/85

DATE 1/13/88

UNITS: ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium									
5. Beryllium									
6. Cadmium									
7. Calcium									
8. Chromium									
9. Cobalt									
10. Copper									
11. Iron									
12. Lead				50	49	98			F
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver									
20. Sodium									
21. Thallium									
22. Vanadium									
23. Zinc									
Other:									
Cyanide									

1 Initial Calibration Source _____

2 Continuing Calibration Source Lab prepared

3 Control Limits: Mercury and Tin 80-120; Other Metals 90-110; Cyanide 85-115

4 Indicate Analytical Method Used: P - ICP; A - Flame AA; F - Furnace AA

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Form III a

Q. C. Report No. 1

BLANKS

LAB NAME PBS&J

CASE NO. 8656

DATE 11/13/88

UNITS ug/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank Matrix: LA 1	Matrix: 2
Metals:							
1. Aluminum	68U	68U	68U	68U	68U	68U	
2. Antimony	24U	24U	[38]	[55]	24U	24U	
3. Arsenic	10U	10U				10U	
4. Barium	25U	25U	25U	25U	25U	25U	
5. Beryllium	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	
6. Cadmium	2.6U	2.6U	2.6U	2.6U	2.6U	2.6U	
7. Calcium	657U	657U	657U	657U	657U	657U	
8. Chromium	4.4U	4.4U	4.4U	4.4U	4.4U	4.4U	
9. Cobalt	9.3U	9.3U	9.3U	9.3U	9.3U	9.3U	
10. Copper	7.2U	7.2U	7.2U	7.2U	7.2U	7.2U	
11. Iron	25U	25U	25U	25U	25U	25U	
12. Lead	16U	16U	16U	16U	16U	16U	
13. Magnesium	561U	561U	561U	561U	561U	561U	
14. Manganese	0.0U	0.0U	0.0U	0.0U	0.0U	0.0U	
15. Mercury	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	
16. Nickel	9.2U	9.2U	9.2U	9.2U	9.2U	9.2U	
17. Potassium	[1040]	[1040]				[900]	
18. Selenium	3.7U	3.7U	3.7U			3.7U	
19. Silver	3.4U	3.4U	3.4U			3.4U	
20. Sodium	1300U	1300U	1300U	1300U	1300U	1300U	
21. Thallium	2.6U	2.6U	2.6U			2.6U	
22. Vanadium	25U	25U	25U	25U	25U	25U	
23. Zinc	12U	12U	12U	12U	12U	12U	
Other:							
Cyanide	10U	10U				10U	

Reporting Units: aqueous, ug/L; solid mg/kg

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Form III b

Q. C. Report No. 1

BLANKS

LAB NAME: PBS&J

DATE: 1/13/88

CASE NO. 8656

UNITS: ug/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank Matrix: 1	Matrix: 2
Metals:							
1. Aluminum		68U	68U				
2. Antimony		24U	24U				
3. Arsenic							
4. Barium		25U	25U				
5. Beryllium		0.3U					
6. Cadmium		2.6U					
7. Calcium		657U	657U				
8. Chromium		4.4U					
9. Cobalt		9.3U	9.3U				
10. Copper		7.2U	7.2U				
11. Iron		25U	25U				
12. Lead		16U	16U				
13. Magnesium		56.1U					
14. Manganese		0.0U					
15. Mercury							
16. Nickel		9.2U					
17. Potassium							
18. Selenium							
19. Silver							
20. Sodium		1300U	1300U				
21. Thallium							
22. Vanadium		25U	25U				
23. Zinc		12U					
Other:							
Cyanide							

Reporting Units: aqueous, ug/L; solid mg/kg

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Form III C

Q. C. Report No. 1

BLANKS

LAB NAME: PBS&J

DATE: 1/13/88

CASE NO. 8656

UNITS: ug/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank Matrix: LA 1	Matrix: 2
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium							
5. Beryllium							
6. Cadmium							
7. Calcium							
8. Chromium							
9. Cobalt							
10. Copper							
11. Iron							
12. Lead	1.2U	1.2U	1.2U	1.2U		1.2U	
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver							
20. Sodium							
21. Thallium							
22. Vanadium							
23. Zinc							
Other:							
Cyanide							

Reporting Units: aqueous, ug/L; solid ug/kg

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Form IV

Q. C. Report No. 1

ICP INTERFERENCE CHECK SAMPLE

LAB NAME PBS&J

CASE NO. 8656

Check Sample I.D. ICSAB(0387)

DATE 1/13/88

Check Sample Source EMSL/LV

Units: ug/L

Compound	Control Limits[1] Mean	Control Limits[1] Std. Dev.	True[2]	Initial Observed	% R	Final Observed	% R
Metals:							
1. Aluminum			508000	478000	94	477000	94
2. Antimony			—	24 u	—	[54]	—
3. Arsenic							
4. Barium			483	518	107	508	105
5. Beryllium			474	471	99	496	105
6. Cadmium			909	905	100	902	99
7. Calcium			516000	448000	87	484000	94
8. Chromium			513	539	105	488	95
9. Cobalt			478	492	103	495	104
10. Copper			534	510	96	509	95
11. Iron			203000	180000	89	184000	91
12. Lead			4850	5770	119	5690	117
13. Magnesium			509000	458000	90	472000	93
14. Manganese			531	482	91	475	89
15. Mercury							
16. Nickel			916	966	105	892	97
17. Potassium							
18. Selenium							
19. Silver							
20. Sodium			—	13000 u	—	13000 u	—
21. Thallium							
22. Vanadium			475	506	107	502	106
23. Zinc			973	829	85	1010	104
Other:							

1 Mean value based on n = _____.

2 True value of EPA ICP Interference Check Sample or contractor standard.

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Form V Q

Q. C. Report No. 1

SPIKE SAMPLE RECOVERY

LAB NAME PBSEJ

DATE 11/13/88

CASE NO. 8656

EPA Sample No. MFB 571

Lab Sample ID No. 8712058-01

Units ug/L

Matrix LA

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	%R[1]
Metals:					
1. Aluminum	75-125				
2. Antimony	"				
3. Arsenic	"				
4. Barium	"		186		
5. Beryllium	"				
6. Cadmium	"				
7. Calcium	"		NR		
8. Chromium	"				
9. Cobalt	"				
10. Copper	"				
11. Iron	"				
12. Lead	"	20	5.0	20	100 (furnace)
13. Magnesium	"		NR		
14. Manganese	"				
15. Mercury	"				
16. Nickel	"				
17. Potassium	"		NR		
18. Selenium	"				
19. Silver	"				
20. Sodium	"		NR		
21. Thallium	"				
22. Vanadium	"				
23. Zinc	"				
Other:					
Cyanide	"				

[1] %R = {(SSR - SR)/SA} x 100

"N" - out of control

"NR" - Not required

Comments:

005577

Form V b

Q. C. Report No. 1

SPIKE SAMPLE RECOVERY

LAB NAME PBS&J

DATE 1/13/88

CASE NO. 8656

EPA Sample No. MFB 571

Lab Sample ID No. 8712058-01

Units ug/L

Matrix LA

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	%R[1]
Metals:					
1. Aluminum	75-125	5350	2160N	2000	160N
2. Antimony	"	449	24u	500	90
3. Arsenic	"	20	10u	20	100
4. Barium	"	2210	[186]	2000	101
5. Beryllium	"	51	0.2u	50	102
6. Cadmium	"	46	2.6u	50	92
7. Calcium	"		NR		
8. Chromium	"	173	4.4u	200	86
9. Cobalt	"	482	9.3u	500	96
10. Copper	"	239	[9.0]	250	92
11. Iron	"	3860	2190N	1000	167N
12. Lead	"	492	16u	500	98
13. Magnesium	"		NR		
14. Manganese	"	238	49	200	94
15. Mercury	"	0.9	0.2u	1.0	90
16. Nickel	"	374	9.2u	400	94
17. Potassium	"		NR		
18. Selenium	"	7.8	7.9SN	10	-1.0N
19. Silver	"	9.4	10u	10	94
20. Sodium	"		NR		
21. Thallium	"	41	10u	50	82
22. Vanadium	"	491	25u	500	98
23. Zinc	"	168	[18]	200	75
Other:					
Cyanide	"	100	10u	100	100

[1] %R = [(SSR - SR)/SA] x 100

"N" - out of control

"NR" - Not required

Comments:

005578

Q. C. Report No. 1

DUPLICATES

LAB NAME PBS&J

DATE 1/13/88

CASE NO. 8656

EPA Sample No. MEB 571

Lab Sample ID No. 8712058-01

Units mg/kg.

Matrix LS

Compound	Control Limit[1]	Sample(S)	Duplicate(D)	RPD[2]
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium				
5. Beryllium				
6. Cadmium				
7. Calcium				
8. Chromium				
9. Cobalt				
10. Copper				
11. Iron				
12. Lead		5.0u	5.0u	N.C. (furnace)
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver				
20. Sodium				
21. Thallium				
22. Vanadium				
23. Zinc				
Other:				
Cyanide				

005579

* Out of Control

[1] To be added at a later date.

[2] RPD = [|S - D|/((S + D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

Q. C. Report No. 1

DUPLICATES

LAB NAME PRS&J

DATE 1/13/88

CASE NO. 8656
EPA Sample No. MEB 571
Lab Sample ID No. 8712058-01
Units ug/L

Matrix LA

Compound	Control Limit[1]	Sample(S)	Duplicate(D)	RPD[2]
Metals:				
1. Aluminum	∓20%	2160*	3150	37*
2. Antimony		24U	24U	N.C.
3. Arsenic		10U	10U	N.C.
4. Barium		[186]	[180]	N.C.
5. Beryllium		0.2U	0.2U	N.C.
6. Cadmium		2.6U	2.6U	N.C.
7. Calcium	∓20%	81900	82700	1.0
8. Chromium		4.4U	4.4U	N.C.
9. Cobalt		9.3U	9.3U	N.C.
10. Copper		[9.0]	[7.6]	N.C.
11. Iron	∓20%	2190*	2790	24*
12. Lead		16U	16U	N.C.
13. Magnesium	∓20%	26500	26900	1.5
14. Manganese	∓15	49	50	2.0
15. Mercury		0.2U	0.2U	N.C.
16. Nickel		9.2U	9.2U	N.C.
17. Potassium		[3380]	[3580]	N.C.
18. Selenium		7.9SN	5.0U	N.C.
19. Silver		10U	10U	N.C.
20. Sodium	∓20%	81900	82900	1.2
21. Thallium		10U	10U	N.C.
22. Vanadium		25U	25U	N.C.
23. Zinc		[18]	12U	N.C.
Other:				
Cyanide	∓10	10U	10U	N.C.

* Out of Control

1 To be added at a later date.

2 RPD = [|S - D|/((S + D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

005580

Q.C. Report No. 1

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME PBS&J CASE NO. 8656 DATE 1/13/88

LCS NO. 8656 IAI, IAF

Compound	Required Detection Limits (CRDL) ug/l	Instrument Detection Limits (IDL) ug/l ICP/AA ID/ 5000A TL200P	Furnace ID/ PE3030F	Lab Control Sample ug/l, mg/kg (circle one) True	Found	IR
Metals:						
1. Aluminum	200	68 P		1980	1900	96
2. Antimony	60	24 P		1010	974	96
3. Arsenic	10		10 F	49.4	52	105
4. Barium	200	25 P		1980	1960	99
5. Beryllium	5	0.2 P		481	483	100
6. Cadmium	5	2.6 P		489	442	90
7. Calcium	5000	657 P		49800	50600	102
8. Chromium	10	4.4 P		506	442	87
9. Cobalt	50	9.3 P		474	484	102
10. Copper	25	7.2 P		542	502	93
11. Iron	100	25 P		1990	1940	97
12. Lead	5	16 P		4510	4360	97
13. Magnesium	5000	561 P		25000	24200	97
14. Manganese	15	0.0 P		513	476	93
15. Mercury	0.2					
16. Nickel	40	9.2 P		496	455	92
17. Potassium	5000	222 A		25100	24100	96
18. Selenium	5		3.7 F	98.2	91.25	93
19. Silver	10					
20. Sodium	5000	1300 P		50700	51100	101
21. Thallium	10					
22. Vanadium	50	25 P		511	495	97
23. Zinc	20	12 P		3100	3130	101
Other:						
Cyanide	10	NR	NR	50	50	100

NR - Not required

005581

005581

Form VII b

Q.C. Report No. 1

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME PBSSJ CASE NO. 8656 DATE: 1/13/88

LCS NO. 8656 IAF

Compound	Required Detection Limits (CRDL)-ug/l	Instrument Detection Limits (IDL)-ug/l ICP/AA ID/ 11257A	Instrument Detection Limits (IDL)-ug/l Furnace ID/ FE5000F	Lab Control Sample ug/l, ug/kg (circle one) True	Found	IR
Metals:						
1. Aluminum	200					
2. Antimony	60					
3. Arsenic	10					
4. Barium	200					
5. Beryllium	5					
6. Cadmium	5					
7. Calcium	5000					
8. Chromium	10					
9. Cobalt	50					
10. Copper	25					
11. Iron	100					
12. Lead	5					
13. Magnesium	5000					
14. Manganese	15					
15. Mercury	0.2	0.2 CV		NR	NR	NR
16. Nickel	40					
17. Potassium	5000					
18. Selenium	5					
19. Silver	10		3.4 F	97.6	106	109
20. Sodium	5000					
21. Thallium	10		2.6 F	97.3	98 St	101
22. Vanadium	50					
23. Zinc	20					
Other:						
Cyanide	10	NR	NR			

NR - Not required

005582

Form VII C

Q.C. Report No. 1

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME PBS&J CASE NO. 8656 DATE 1/13/88

LCS NO. 8656 1AI, 1AF

Compound	Required Detection Limits (CRDL)-ug/l	Instrument Detection Limits (IDL)-ug/l ICP/AA ID# 5000A TL200P	Furnace ID# PE3030F	Lab Control Sample: ug/l, mg/kg (circle one) True	Found	%R
Metals:						
1. Aluminum	200					
2. Antimony	60					
3. Arsenic	10					
4. Barium	200					
5. Beryllium	5					
6. Cadmium	5					
7. Calcium	5000					
8. Chromium	10					
9. Cobalt	50					
10. Copper	25					
11. Iron	100					
12. Lead	5		1.2 F	97.9	79s	81
13. Magnesium	5000					
14. Manganese	15					
15. Mercury	0.2					
16. Nickel	40					
17. Potassium	5000					
18. Selenium	5					
19. Silver	10					
20. Sodium	5000					
21. Thallium	10					
22. Vanadium	50					
23. Zinc	20					
Other:						
Cyanide	10	NR	NR			

NR - Not required

1/13/88 NJ ~~furnace~~

005583

Form VIII

Q.C. Report No. 1

STANDARD ADDITION RESULTS

LAB NAME PBS&J

CASE NO. 8656

DATE 1/13/88

UNITS: ug/L

EPA Sample #	Element	Matrix	0 ADD ABS.	1 ADD CON.	1 ADD ABS.[2]	2 ADD CON.	2 ADD ABS.[2]	3 ADD CON.	3 ADD ABS.[2]	FINAL CON.[3]	r*
8656 IAF Ag LCS	Tl	LA	0.1458	10	0.2371	20	0.2900	30	0.3426	24 S+	0.989+
MEB 571	Se	LA	0.034	10	0.064	20	0.108	30	0.148	7.9 S	0.997
(1:2) 8650 IAF Ag LCS	Se	LA	0.164	5	0.218	10	0.282	15	0.334	46 S	0.997
(1:5) 8656 IAF Ag LCS	Pb	LA	0.126	5	0.159	10	0.189	15	0.222	79 S	0.999+

1 Matrix abbreviations: Low Solid, LS; Medium Solid, MS; Low Aqueous, LA; Medium Aqueous, MA.

2 Con is the concentration added, ABS. is the instrument readout in absorbance or concentration.

3 Concentration as determined by MSA

* "r" is the correlation coefficient.

+ - correlation coefficient is outside of control window of 0.995.

005584

005584

Q. C. Report No. 1

ICP SERIAL DILUTIONS

LAB NAME PBS&J

CASE NO. 8656

DATE 1/13/88

EPA Sample No. MFB 572

Lab Sample ID No. 8712058-2

Units: ug/L

Matrix LA

Compound	Initial Sample Concentration(I)	Serial Dilution[1] Result(S)	% Difference[2]
Metals:			
1. Aluminum	68U	68U	NR
2. Antimony	24U	24U	NR
3. Arsenic	NA		
4. Barium	25U	25U	NR
5. Beryllium	0.2U	0.2U	NR
6. Cadmium	2.6U	2.6U	NR
7. Calcium	657U	657U	NR
8. Chromium	4.4U	4.4U	NR
9. Cobalt	9.3U	9.3U	NR
10. Copper	51	44	NR
11. Iron	25U	25U	NR
12. Lead	16U	16U	NR
13. Magnesium	561U	561U	NR
14. Manganese	0.0	0.0U	NR
15. Nickel	9.2U	9.2U	NR
16. Potassium	NA		
17. Selenium	NA		
18. Silver	NA		
19. Sodium	1300U	1300U	NR
20. Thallium	NA		
21. Vanadium	25U	25U	NR
22. Zinc	12U	12U	NR
Other:			

1 Diluted sample concentration corrected for 1:4 dilution (see Exhibit D)

2 Percent Difference = $\frac{|I - S|}{I} \times 100$

NR - Not Required, initial sample concentration less than 10 times IDL

NA - Not Applicable, analyte not determined by ICP

005585

Form X

QC Report No. 1

HOLDING TIMES

LAB NAME PBS&J

DATE 1/13/88 CASE NO. 8656

EPA Sample No.	Matrix	Date Received	Mercury Prep Date	Mercury Holding Time[1] (Days)	CN Prep Date	CN Holding Time[1] (Days)
MFB 571	LA	12/10/87	1/7/88	28	12/18/87	8
MFB 572	LA	12/10/87	1/7/88	28	12/18/87	8

[1]holding time is defined as number of days between the date received and the sample preparation date.

IFB Amend One.

005586

005586

Ca, Na, Ba, Fe, Al, Cu, V, Co

Ca, Na

100 ppm	10 mls stock/100 mls
75	7.5
50	5.0
25	2.5
5	0.5

Ca, Fe, Al

50.0 ppm	5000 µl stock/100 mls
25.0	2500
1.0	100
0.5	50
0.1	10

Ba

10.0	1000 µl
5.0	500
1.0	100
0.5	50
0.1	10

P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
CAL	PLR	4	12:02	BA-CU-FE-V-CO-CA-N

CCVS

Ca, Na

50 ppm - 5 mls stock/100 mls

Fe, Al

25.0 ppm - 2500 µl stock/100 mls

Ba

5.0 ppm 500 µl stock/100 mls

2XCKDL

Cu - 50 ppb - 500 µl 10 ppm SS/100 mls

V, Co - 100 ppb - 1000 µl 10 ppm SS/100 mls

Lot #s

	Calib stds	CCVS
Ca	608614	5062
Na	N251	5291R
Ba	B262	62763
Fe	553604	4088
Al	607614	5364
Cu	607610	H512
V	19994 EM	5161
Co	611631	H509

99	-51	0.0000d	0.0000
1	9372	1.0000	0.9982
2	4922	0.5277	0.5009
3	622	0.0714	0.0643
4	280	0.0351	0.0315
5	88	0.0147	0.0131
118	-1171 x	1035 x2	

EL	NM	CH	SEC
CO	228.61	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	38	0.0000d	0.0000
1	8625	1.0000	0.9996
2	4385	0.5062	0.5002
3	884	0.0985	0.0964
4	457	0.0487	0.0475

005587

005587

[illegible] PPB [illegible]

EL	NM	CH	SEC
CA	317.93	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	[illegible]	0.00d	0.00
1	842818	100.00	99.68
2	617312	73.24	75.66
3	391817	46.42	49.65
4	186279	22.10	24.37
5	37904	4.49	5.05

14 1316 x -1362 x2

EL	NM	CH	SEC
NA	589.59	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	143	0.00d	0.00
1	103452	100.00	100.13
2	71138	68.71	73.73
3	47953	46.27	52.04
4	19761	18.98	22.53
5	4633	4.34	5.29

33 2280 x -2300 x2

EL	NM	CH	SEC
AL	308.22	A	5.0

B#	INTENSITY	RAW-CONC	CONC
99	267	0.00	0.00
1	114041	50.00	49.98
2	59135	25.87	24.97
3	2519	0.98	0.91
4	1377	0.48	0.44
5	442	0.07	0.06

4 -360 x 354 x2

EL	NM	CH	SEC
FE	259.94	A	3.0

B#	INTENSITY	RAW-CONC	CONC
[illegible]	[illegible]	[illegible]	[illegible]

005588

EL	NM	CH	SEC
FE	259.94	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	50	0.000d	0.00
1	903215	50.00	49.99
2	452910	25.01	24.99
3	19577	1.07	1.06
4	9392	0.51	0.50
5	1991	0.10	0.09

-2 0 x 1 x2

EL	NM	CH	SEC
BA	455.40	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	527	0.000	0.000
1	2071831	10.000	10.003
2	968051	4.670	4.980
3	205894	0.991	1.101
4	83552	0.400	0.447
5	21257	0.099	0.110

-12 1260 x -1245 x2

EL	NM	CH	SEC
CU	324.75	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	17	0.0000d	0.0000
1	9955	1.0000	0.9997
2	5062	0.5076	0.4989
3	1035	0.1024	0.0991
4	436	0.0421	0.0407
5	114	0.0097	0.0093

26 -367 x 338 x2

EL	NM	CH	SEC
V	292.40	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	-2	0.0000	0.0000
1	15145	1.0000	0.9987
2	7454	0.4922	0.4996
3	1058	0.0699	0.0718
4	510	0.0338	0.0347
5	118	0.0079	0.0080

EL	NM	CH	SEC
V	292.40	A	3.0

B#	INTENSITY	RAW-CONC	%CONC
99	-2	0.0000	0.0000
1	15145	1.0000	0.9987
2	7454	0.4922	0.4996
3	1058	0.0699	0.0718
4	510	0.0338	0.0347
5	118	0.0079	0.0080
105	208	-326	x2

EL	NM	C	INTENSITY	CONC
BA	455.40	A	376991	2.001
BA	455.40	A	380339	2.018
BA	455.40	A	378399	2.009
CO	228.61	A	4223	0.4873
CO	228.61	A	4194	0.4839
CO	228.61	A	4157	0.4796
FE	259.94	A	34760	1.91
FE	259.94	A	35146	1.93
FE	259.94	A	35143	1.93
V	292.40	A	7446	0.4991
V	292.40	A	7350	0.4926
V	292.40	A	7384	0.4950
NA	589.59	A	49504	47.77
NA	589.59	A	49599	47.87
NA	589.59	A	47290	45.63
AL	308.22	A	4758	1.97
AL	308.22	A	4827	2.00
AL	308.22	A	4766	1.97
CA	317.93	A	398701	47.30
CA	317.93	A	399659	47.41
CA	317.93	A	398844	47.32
CU	324.75	A	5201	0.5129
CU	324.75	A	5163	0.5091
CU	324.75	A	5119	0.5046

005590

ICVS

File	ppb
101	980 ppb
94	542
96	1990
97	511
102	474

P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
1	PLR	4	13:04	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	2.009	PPM	0.0085	0.42	3.0
CU	324.75	A	0.5088	PPM	0.00415	0.81	3.0
FE	259.94	A	1.92	PPM	0.012	0.62	3.0
V	292.40	A	0.4955	PPM	0.00328	0.66	3.0
CO	228.61	A	0.4836	PPM	0.00385	0.79	3.0
[illegible]	[illegible]	[illegible]	47.94	PPM	[illegible]	[illegible]	[illegible]

005590

CU	324.75	A	5201	0.5129
CU	324.75	A	5167	0.5091
CU	324.75	A	5119	0.5046

ICVS

	% Rec	conc
Ba	101	1980 ppb
Cu	94	542
Fe	96	1990
V	97	511
Co	102	474
Ca	95	49800
Na	93	50700
Al	100	1980

P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
1	PLR	4	13:04	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	2.009	PPM	0.0085	0.42	3.0
CU	324.75	A	0.5088	PPM	0.00415	0.81	3.0
FE	259.94	A	1.92	PPM	0.012	0.62	3.0
V	292.40	A	0.4955	PPM	0.00328	0.66	3.0
CO	228.61	A	0.4836	PPM	0.00385	0.79	3.0
CA	317.93	A	47.34	PPM	0.058	0.12	3.0
NA	589.59	A	47.09	PPM	1.265	2.68	3.0
AL	308.22	A	1.98	PPM	0.017	0.85	5.0

005591

EL	NM	C	INTENSITY	CONC
BA	455.40	A	427	-0.002
BA	455.40	A	479	-0.002
BA	455.40	A	635	0.000
CO	228.61	A	52	0.0016
CO	228.61	A	11	-0.0032
CO	228.61	A	14	-0.0028
FE	259.94	A	-20	-0.01
FE	259.94	A	11	-0.01
FE	259.94	A	-20	-0.01
V	292.40	A	9	0.0007
V	292.40	A	28	0.0019
V	292.40	A	-25	-0.0018
NA	589.59	A	-151	-0.29
NA	589.59	A	-163	-0.30
NA	589.59	A	-159	-0.30
AL	308.22	A	266	-0.01
AL	308.22	A	224	-0.02
AL	308.22	A	211	-0.03
CA	317.93	A	4	0.00
CA	317.93	A	9	0.00
CA	317.93	A	-53	-0.01
CU	324.75	A	-4	-0.0023
CU	324.75	A	15	-0.0004
CU	324.75	A	45	0.0026

TCB

ICB

P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
2	PLR	4	13:15	BA-CU-FE-V-CO-CA-N

Ba - <25ppb
Cu - <7.2
Fe - <25
V - <25
Co - <9.3
Ca - <657
Na - <1299
Al - <68

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	-0.002	PPM	0.0012	60.00	3.0
CU	324.75	A	-0.0001d	PPM	0.00247	2470.00	3.0
FE	259.94	A	-0.01d	PPM	0.000	0.00	3.0
V	292.40	A	0.0002d	PPM	0.00188	940.00	3.0
CO	228.61	A	-0.0015d	PPM	0.00266	177.33	3.0
CA	317.93	A	-0.01d	PPM	0.007	70.00	3.0
NA	589.59	A	-0.30	PPM	0.007	2.33	3.0
AL	308.22	A	-0.02	PPM	0.010	50.00	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	96603	0.517
BA	455.40	A	96443	0.516
BA	455.40	A	97303	0.522
CO	228.61	A	4280	0.4940
CO	228.61	A	4234	0.4886
CO	228.61	A	4281	0.4941
FE	259.94	A	3017567	166.68
FE	259.94	A	3019154	166.77
FE	259.94	A	3019846	166.81
V	292.40	A	7578	0.5078
V	292.40	A	7550	0.5059
V	292.40	A	7528	0.5045
NA	589.59	A	252	0.10
NA	589.59	A	270	0.12
NA	589.59	A	209	0.06
AL	308.22	A	1200564	527.50
AL	308.22	A	1205026	529.46
AL	308.22	A	1208714	531.08
CA	317.93	A	2997336	355.64
CA	317.93	A	2997516	355.66
CA	317.93	A	2997270	355.63
CU	324.75	A	5167	0.5095
CU	324.75	A	5222	0.5150
CU	324.75	A	5115	0.5042

ICS
AB 0387

P 200 123914-00 8 JAN 88

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	0.318	PPM	0.0032	0.61	6.0
CU	324.75	A	0.5095	PPM	0.00540	1.05	8.0
FE	259.94	A	OV FLOW	PPM	0.066	0.03	3.0
V	292.40	A	0.5060	PPM	0.00165	0.32	8.0
CO	228.61	A	0.4922	PPM	0.00314	0.63	43.0
CA	317.93	A	OV FLOW	PPM	0.015	0.00	3.0
NA	589.59	A	0.09	PPM	0.030	33.33	3.0
AL	308.22	A	OVRANGE	PPM	1.792	0.33	5.0

1:9

ICS
AB 0387

EL	NM	C	INTENSITY	CONC
FE	259.94	A	327216	18.07
FE	259.94	A	325985	18.00
FE	259.94	A	325489	17.97

Elec conc
Fe 89 203000 ppb

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
FE	259.94	A	18.01	PPM	0.051	0.28	3.0

1:9

ICS
AB 0387

EL	NM	C	INTENSITY	CONC
CA	317.93	A	368227	44.90
CA	317.93	A	366583	44.70
CA	317.93	A	367644	44.83

Elec conc
Ca 87 516000 ppb

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
CA	317.93	A	44.81	PPM	0.101	0.22	3.0

1:9

ICS
AB 0387

EL	NM	C	INTENSITY	CONC
AL	308.22	A	109554	48.02
AL	308.22	A	108815	47.70
AL	308.22	A	108506	47.56

Elec conc
Al 94 508000

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
AL	308.22	A	47.76	PPM	0.235	0.49	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	794	0.000
BA	455.40	A	523	-0.002
BA	455.40	A	545	0.000
CO	228.61	A	840	0.0933
CO	228.61	A	851	0.0946
CO	228.61	A	824	0.0915
FE	259.94	A	1460	0.02
FE	259.94	A	441	0.02
FE	259.94	A	414	0.01

005593

0.101 0.22 3.0

1:9

ICS
AB0387
Elec Conc
Al 94 508000

EL	NM	C	INTENSITY	CONC
AL	308.22	A	109554	48.02
AL	308.22	A	108815	47.70
AL	308.22	A	108506	47.56

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
AL	308.22	A	47.76	PPM	0.235	0.49	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	794	0.000
BA	455.40	A	523	-0.002
BA	455.40	A	545	0.000
CO	228.61	A	840	0.0933
CO	228.61	A	851	0.0946
CO	228.61	A	824	0.0915
FE	259.94	A	460	0.02
FE	259.94	A	441	0.02
FE	259.94	A	414	0.01
V	292.40	A	1451	0.0985
V	292.40	A	1428	0.0969
V	292.40	A	1430	0.0970
NA	589.59	A	-44	-0.19
NA	589.59	A	-19	-0.16
NA	589.59	A	-45	-0.19
AL	308.22	A	110	-0.08
AL	308.22	A	90	-0.08
AL	308.22	A	0	-0.12
CA	317.93	A	49	0.00
CA	317.93	A	-5	-0.01
CA	317.93	A	87	0.00
CU	324.75	A	451	0.0427
CU	324.75	A	476	0.0452
CU	324.75	A	435	0.0411

2XCRDL

P 200 123914-00 8 JAN 88

Elec Conc
Cu 86 50ppb
V 97 100
Co 93 100

SAMPLE	OPERATOR	PWR	TIME	NAME
4	PLR	4	13:35	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	-0.001	PPM	0.0012	120.00	3.0
CU	324.75	A	0.0430	PPM	0.00206	4.79	3.0
FE	259.94	A	0.01	PPM	0.007	70.00	3.0
V	292.40	A	0.0974	PPM	0.00089	0.91	3.0
CO	228.61	A	0.0931	PPM	0.00155	1.66	3.0
CA	317.93	A	-0.01d	PPM	0.007	70.00	3.0
NA	589.59	A	-0.18	PPM	0.017	9.44	3.0
AL	308.22	A	-0.10d	PPM	0.023	23.00	3.0

005594

005594

EL	NM	C	INTENSITY	CONC
BA	455.40	A	4216	0.018
BA	455.40	A	2334	0.008
BA	455.40	A	1416	0.003
CO	228.61	A	92	0.0062
CO	228.61	A	93	0.0064
CO	228.61	A	79	0.0047
FE	259.94	A	35	-0.01
FE	259.94	A	60	0.00
FE	259.94	A	90	0.00
V	292.40	A	24	0.0017
V	292.40	A	-58	-0.0039
V	292.40	A	-27	-0.0019
NA	589.59	A	114	-0.04
NA	589.59	A	119	-0.03
NA	589.59	A	125	-0.02
AL	308.22	A	302	0.01
AL	308.22	A	295	0.01
AL	308.22	A	281	0.00
CA	317.93	A	17	0.00
CA	317.93	A	-46	-0.01
CA	317.93	A	-6	-0.01
CU	324.75	A	-4	-0.0023
CU	324.75	A	25	0.0007
CU	324.75	A	4	-0.0015

005595

Cal blank
Ba - <25 ppb
Cd - <7.2
Fe - <25
V - <25
Co - <9.3
Cr - <6.57
Na - <1299
Al - <68

P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
9	PLR	4	14:07	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	0.009	PPM	0.0076	84.44	3.0
CU	324.75	A	-0.0011d	PPM	0.00155	140.90	3.0
FE	259.94	A	-0.01d	PPM	0.007	70.00	3.0
V	292.40	A	-0.0014d	PPM	0.00283	202.14	3.0
CO	228.61	A	0.0057d	PPM	0.00093	16.31	3.0
CA	317.93	A	-0.01	PPM	0.007	70.00	3.0
NA	589.59	A	-0.03d	PPM	0.010	33.33	3.0
AL	308.22	A	0.00	PPM	0.007	0.00	5.0

NA 589.59 A 46187 44.56

EL	NM	C	INTENSITY	CONC
BA	455.40	A	1024460	5.255
BA	455.40	A	1030975	5.286
BA	455.40	A	1029049	5.277
CO	228.61	A	4521	0.5220
CO	228.61	A	4473	0.5164
CO	228.61	A	4483	0.5176
FE	259.94	A	440285	24.31
FE	259.94	A	442032	24.41
FE	259.94	A	438313	24.20
V	292.40	A	7823	0.5240
V	292.40	A	7853	0.5258
V	292.40	A	7818	0.5236
NA	589.59	A	46216	51.76
NA	589.59	A	45730	51.21
NA	589.59	A	47786	53.52
AL	308.22	A	58366	25.53
AL	308.22	A	58189	25.45
AL	308.22	A	58102	25.41
CA	317.93	A	403740	51.75
CA	317.93	A	405463	51.97
CA	317.93	A	403381	51.71
CU	324.75	A	5105	0.5104
CU	324.75	A	5105	0.5104
CU	324.75	A	5086	0.5085

005596

CCVS

	% Rec	Conc
B	105	5000 ppb
Cu	102	500
Fe	97	25000
V	105	500
Co	104	500
Ca	104	50000
Na	104	50000
Al	102	25000

P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
10	PLR	4	14:22	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	5.272	PPM	0.0159	0.30	3.0
CU	324.75	A	0.5097	PPM	0.00109	0.21	3.0
FE	259.94	A	24.30	PPM	0.105	0.43	3.0
V	292.40	A	0.5244	PPM	0.00117	0.22	3.0
CO	228.61	A	0.5186	PPM	0.00294	0.56	3.0
CA	317.93	A	51.81	PPM	0.140	0.27	3.0
NA	589.59	A	52.16	PPM	1.206	2.31	3.0
AL	308.22	A	25.46	PPM	0.061	0.23	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	372	-0.002
BA	455.40	A	589	0.000
BA	455.40	A	408	-0.002
CO	228.61	A	23	-0.0018
CO	228.61	A	15	-0.0027
CO	228.61	A	12	-0.0031
FE	259.94	A	49	-0.01
FE	259.94	A	59	0.00
FE	259.94	A	19	-0.01
V	292.40	A	-19	-0.0014
V	292.40	A	-65	-0.0044
V	292.40	A	1	0.0001
NA	589.59	A	-179	-0.37
NA	589.59	A	-186	-0.38
NA	589.59	A	-173	-0.36
AL	308.22	A	218	-0.03
AL	308.22	A	260	-0.01
AL	308.22	A	306	0.01
CA	317.93	A	89	0.00
CA	317.93	A	11	0.00
CA	317.93	A	-56	-0.01
CU	324.75	A	23	0.0005
CU	324.75	A	0	-0.0019
CU	324.75	A	3	-0.0016

005597

Cal blank

Ba - <25ppb
Cu - <7.2
Fe - <25
V - <25
Co - <9.3
Ca - <657
Na - <1299
Al - <68

P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
21	PLR	4	15:24	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	-0.002	PPM	0.0012	60.00	3.0
CU	324.75	A	-0.0010d	PPM	0.00130	130.00	3.0
FE	259.94	A	-0.01d	PPM	0.007	70.00	3.0
V	292.40	A	-0.0019d	PPM	0.00229	120.52	3.0
CO	228.61	A	-0.0026d	PPM	0.00066	25.38	3.0
CA	317.93	A	-0.01d	PPM	0.007	70.00	3.0
NA	589.59	A	-0.37	PPM	0.010	2.70	3.0
AL	308.22	A	-0.01	PPM	0.020	200.00	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	1031470	5.289
BA	455.40	A	1028148	5.273
BA	455.40	A	1036553	5.312
CO	228.61	A	4547	0.5250
CO	228.61	A	4536	0.5238
CO	228.61	A	4496	0.5191
FE	259.94	A	440424	24.32
FE	259.94	A	438343	24.20
FE	259.94	A	438435	24.21
V	292.40	A	7861	0.5264
V	292.40	A	7901	0.5290
V	292.40	A	7878	0.5275
NA	589.59	A	45601	51.07
NA	589.59	A	47140	52.80
NA	589.59	A	48916	54.80
AL	308.22	A	58315	25.51
AL	308.22	A	58438	25.56
AL	308.22	A	57799	25.28
CA	317.93	A	409322	52.47
CA	317.93	A	408220	52.33
CA	317.93	A	409735	52.52
CU	324.75	A	5138	0.5138
CU	324.75	A	5168	0.5169
CU	324.75	A	5122	0.5122

005598

CCVS

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	#Rec	Conc
Ba	106	5000 ppb
Cu	103	500
Fe	97	25000
V	106	500
Co	104	500
Ca	105	50000

SAMPLE	OPERATOR	PWR	TIME	NAME
22	PLR	4	15:30	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	5.291	PPM	0.0196	0.37	3.0
CU	324.75	A	0.5143	PPM	0.00238	0.46	3.0
FE	259.94	A	24.24	PPM	0.066	0.27	3.0
V	292.40	A	0.5276	PPM	0.00130	0.24	3.0
CO	228.61	A	0.5226	PPM	0.00311	0.59	3.0
CA	317.93	A	52.44	PPM	0.098	0.18	3.0
NA	589.59	A	52.89	PPM	1.866	3.52	3.0

Na 106 50000
Al 102 25000

AL 308.22 A 25.45 PPM 0.149 0.58 5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	19931	0.103
BA	455.40	A	19869	0.103
BA	455.40	A	19687	0.102
CO	228.61	A	52	0.0016
CO	228.61	A	48	0.0011
CO	228.61	A	42	0.0004
FE	259.94	A	328763	18.15
FE	259.94	A	327398	18.08
FE	259.94	A	328372	18.13
V	292.40	A	75	0.0051
V	292.40	A	46	0.0031
V	292.40	A	85	0.0058
NA	589.59	A	337	0.21
NA	589.59	A	312	0.18
NA	589.59	A	321	0.19
AL	308.22	A	4394	1.81
AL	308.22	A	4442	1.83
AL	308.22	A	4508	1.86
CA	317.93	A	247279	31.70
CA	317.93	A	245484	31.47
CA	317.93	A	245582	31.48
CU	324.75	A	58	0.0039
CU	324.75	A	81	0.0062
CU	324.75	A	119	0.0100

005599

MEI 799
871207906

P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
23	PLR	4	15:36	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	0.102	PPM	0.0007	0.68	3.0
CU	324.75	A	0.0067d	PPM	0.00308	45.97	3.0
FE	259.94	A	18.12	PPM	0.036	0.19	3.0
V	292.40	A	0.0046d	PPM	0.00140	30.43	3.0
CO	228.61	A	0.0010d	PPM	0.00060	60.00	3.0
CA	317.93	A	31.55	PPM	0.130	0.41	3.0
NA	589.59	A	0.19	PPM	0.015	7.89	3.0
AL	308.22	A	1.83	PPM	0.025	1.36	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	405058	2.147
BA	455.40	A	412985	2.189
BA	455.40	A	411946	2.183
CO	228.61	A	4283	0.4943
CO	228.61	A	4252	0.4907

CO	228.61	A	88	0.0058
CO	228.61	A	59	0.0024
CO	228.61	A	83	0.0052
FE	259.94	A	264593	14.61
FE	259.94	A	264252	14.59
FE	259.94	A	263356	14.54
V	292.40	A	361	0.0245
V	292.40	A	328	0.0223
V	292.40	A	307	0.0210
NA	589.59	A	-421	-0.64
NA	589.59	A	-458	-0.68
NA	589.59	A	-444	-0.67
AL	308.22	A	34470	15.03
AL	308.22	A	34649	15.10
AL	308.22	A	34322	14.96
CA	317.93	A	87371	11.20
CA	317.93	A	87489	11.21
CA	317.93	A	87121	11.16
CU	324.75	A	116	0.0097
CU	324.75	A	64	0.0045
CU	324.75	A	71	0.0052

EK 421
108808

005600

P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
32	PLR	4	16:28	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	0.074	PPM	0.0000	0.00	3.0
CU	324.75	A	0.0064d	PPM	0.00282	44.06	3.0
FE	259.94	A	14.58	PPM	0.036	0.24	3.0
V	292.40	A	0.0226	PPM	0.00176	7.78	3.0
CO	228.61	A	0.0044d	PPM	0.00181	41.13	3.0
CA	317.93	A	11.19	PPM	0.026	0.23	3.0
NA	589.59	A	-0.67d	PPM	0.021	3.13	3.0
AL	308.22	A	15.03	PPM	0.070	0.46	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	676	0.000
BA	455.40	A	672	0.000
BA	455.40	A	630	0.000
CO	228.61	A	19	-0.0023
CO	228.61	A	18	-0.0024
CO	228.61	A	31	-0.0009
FE	259.94	A	158	0.00
FE	259.94	A	129	0.00
FE	259.94	A	120	0.00
V	292.40	A	-22	-0.0016
V	292.40	A	-64	-0.0043
V	292.40	A	-18	-0.0013

NA	589.59	A	51	-0.11
NA	589.59	A	21	-0.14
NA	589.59	A	65	-0.09
AL	308.22	A	326	0.02
AL	308.22	A	256	-0.01
AL	308.22	A	286	0.00
CA	317.93	A	9	0.00
CA	317.93	A	-15	-0.01
CA	317.93	A	10	0.00
CU	324.75	A	25	0.0007
CU	324.75	A	43	0.0025
CU	324.75	A	30	0.0012

Cal blank

Ba - <25 ppb
Cr - <7.2
Fe - <25
V - <25
Co - <9.3
Ca - <657
Na - <1299
Al - <68

P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
33	PLR	4	16:33	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	0.000	PPM	0.0000	0.00	3.0
CU	324.75	A	0.0014d	PPM	0.00093	66.42	3.0
FE	259.94	A	0.00d	PPM	0.000	0.00	3.0
V	292.40	A	-0.0024d	PPM	0.00165	68.75	3.0
CO	228.61	A	-0.0019d	PPM	0.00083	43.68	3.0
CA	317.93	A	-0.01	PPM	0.007	70.00	3.0
NA	589.59	A	-0.12d	PPM	0.025	20.83	3.0
AL	308.22	A	0.00	PPM	0.015	0.00	5.0

005601

EL	NM	C	INTENSITY	CONC
BA	455.40	A	1032999	5.296
BA	455.40	A	1038835	5.323
BA	455.40	A	1047344	5.364
CO	228.61	A	4546	0.5249
CO	228.61	A	4578	0.5287
CO	228.61	A	4544	0.5247
FE	259.94	A	443861	24.51
FE	259.94	A	447396	24.71
FE	259.94	A	445842	24.62
V	292.40	A	7847	0.5255
V	292.40	A	7885	0.5279
V	292.40	A	7834	0.5247
NA	589.59	A	45785	51.28
NA	589.59	A	46793	52.41
NA	589.59	A	47944	53.70
AL	308.22	A	58715	25.68
AL	308.22	A	58851	25.74
AL	308.22	A	58446	25.56
CA	317.93	A	414529	53.14
CA	317.93	A	410629	52.64
CA	317.93	A	412535	52.88
CU	324.75	A	5160	0.5160
CU	324.75	A	5165	0.5166
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

V <2.25
Co <29.3
Cu <1657
Na <1299
Al <168

V	292.40	A	-0.0024d	PPM	0.00165	68.75	3.0
CO	228.61	A	-0.0019d	PPM	0.00083	43.68	3.0
CA	317.93	A	-0.01	PPM	0.007	70.00	3.0
NA	589.59	A	-0.12d	PPM	0.025	20.83	3.0
AL	308.22	A	0.00	PPM	0.015	0.00	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	1032999	5.296
BA	455.40	A	1038835	5.323
BA	455.40	A	1047344	5.364
CO	228.61	A	4546	0.5249
CO	228.61	A	4578	0.5287
CO	228.61	A	4544	0.5247
FE	259.94	A	443861	24.51
FE	259.94	A	447396	24.71
FE	259.94	A	445842	24.62
V	292.40	A	7847	0.5255
V	292.40	A	7885	0.5279
V	292.40	A	7834	0.5247
NA	589.59	A	45785	51.28
NA	589.59	A	46793	52.41
NA	589.59	A	47944	53.70
AL	308.22	A	58715	25.68
AL	308.22	A	58851	25.74
AL	308.22	A	58446	25.56
CA	317.93	A	414529	53.14
CA	317.93	A	410629	52.64
CA	317.93	A	412535	52.88
CU	324.75	A	5160	0.5160
CU	324.75	A	5165	0.5166
CU	324.75	A	5180	0.5181

CCVS

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SAMPLE	OPERATOR	PWR	TIME	NAME
34	PLR	4	16:40	BA-CU-FE-V-CO-CA-N

	Sl Rec	conc
Ba	106	5000 ppb
Cu	103	500
Fe	98	25000
V	105	500
Co	105	500
Ca	106	56000
Na	105	50000
Al	103	23000

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	5.327	PPM	0.0342	0.64	3.0
CU	324.75	A	0.5169	PPM	0.00108	0.20	3.0
FE	259.94	A	24.61	PPM	0.100	0.40	3.0
V	292.40	A	0.5260	PPM	0.00166	0.31	3.0
CO	228.61	A	0.5261	PPM	0.00225	0.42	3.0
CA	317.93	A	52.88	PPM	0.250	0.47	3.0
NA	589.59	A	52.46	PPM	1.210	2.30	3.0
AL	308.22	A	25.66	PPM	0.091	0.35	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	18122	0.093
BA	455.40	A	11132	0.055

Ca - RPD = 4.35

Na - <10 x IDL

Al - RPD = 0.88

EL	NM	C	INTENSITY	CONC
BA	455.40	A	424	-0.002
BA	455.40	A	578	0.000
BA	455.40	A	326	-0.003
CO	228.61	A	26	-0.0014
CO	228.61	A	10	-0.0033
CO	228.61	A	15	-0.0027
FE	259.94	A	37	-0.01
FE	259.94	A	45	-0.01
FE	259.94	A	110	0.00
V	292.40	A	-20	-0.0014
V	292.40	A	-21	-0.0015
V	292.40	A	-48	-0.0033
NA	589.59	A	105	-0.05
NA	589.59	A	55	-0.10
NA	589.59	A	70	-0.09
AL	308.22	A	230	-0.02
AL	308.22	A	225	-0.02
AL	308.22	A	179	-0.04
CA	317.93	A	12	0.00
CA	317.93	A	-13	-0.01
CA	317.93	A	31	0.00
CU	324.75	A	-1	-0.0020
CU	324.75	A	63	0.0044
CU	324.75	A	-3	-0.0022

005603

Cal blank

Ba - <25 ppb

Cu - <7.2

Fe - <25

V - <25

Co - <9.3

Ca - <657

Na - <1299

Al - <168

P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
45	PLR	4	17:42	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	-0.002	PPM	0.0015	75.00	3.0
CU	324.75	A	0.0000d	PPM	0.00375	0.00	3.0
FE	259.94	A	-0.01d	PPM	0.007	70.00	3.0
V	292.40	A	-0.0021	PPM	0.00107	50.95	3.0
CO	228.61	A	-0.0025d	PPM	0.00097	38.80	3.0
CA	317.93	A	-0.01d	PPM	0.007	70.00	3.0
NA	589.59	A	-0.08d	PPM	0.026	32.50	3.0
AL	308.22	A	-0.03	PPM	0.012	40.00	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	1043428	5.345
BA	455.40	A	1056365	5.408
BA	455.40	A	1060779	5.429
CO	228.61	A	4668	0.5391
CO	228.61	A	4651	0.5372
CO	228.61	A	4658	0.5380
FE	259.94	A	446812	24.67
FE	259.94	A	445461	24.60
FE	259.94	A	446283	24.64

V	292.40	A	7892	0.5284
V	292.40	A	7828	0.5243
NA	589.59	A	47095	52.75
NA	589.59	A	48482	54.31
NA	589.59	A	48453	54.27
AL	308.22	A	58213	25.46
AL	308.22	A	58459	25.57
AL	308.22	A	58189	25.45
CA	317.93	A	409364	52.48
CA	317.93	A	410164	52.58
CA	317.93	A	411336	52.73
CU	324.75	A	5135	0.5135
CU	324.75	A	5149	0.5148
CU	324.75	A	5137	0.5137

005604

CCVS

	Tube	Conc
Ba	108	5000 ppb
Cu	103	500
Fe	98	25000
V	106	500
Co	108	500
Ca	105	50000
Na	108	50000
Al	102	25000

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SAMPLE	OPERATOR	PWR	TIME	NAME
46	PLR	4	17.48	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	5.394	PPM	0.0437	0.81	3.0
CU	324.75	A	0.5140	PPM	0.00070	0.13	3.0
FE	259.94	A	24.63	PPM	0.035	0.14	3.0
V	292.40	A	0.5282	PPM	0.00390	0.73	3.0
CO	228.61	A	0.5381	PPM	0.00095	0.17	3.0
CA	317.93	A	52.59	PPM	0.125	0.23	3.0
NA	589.59	A	53.77	PPM	0.889	1.65	3.0
AL	308.22	A	25.49	PPM	0.066	0.25	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	15567	0.080
BA	455.40	A	8203	0.039
BA	455.40	A	4771	0.021
CO	228.61	A	45	0.0008
CO	228.61	A	41	0.0003
CO	228.61	A	31	-0.0009
FE	259.94	A	15760	0.86
FE	259.94	A	15546	0.85
FE	259.94	A	15581	0.85
V	292.40	A	-42	-0.0029
V	292.40	A	22	0.0015
V	292.40	A	-13	-0.0010
NA	589.59	A	220	0.08
NA	589.59	A	173	0.03
NA	589.59	A	190	0.04
AL	308.22	A	282	0.00
AL	308.22	A	272	0.00
AL	308.22	A	296	0.01
CA	317.93	A	5910	0.75
CA	317.93	A	5955	0.76
CA	317.93	A	5921	0.75

EL	NM	C	INTENSITY	CONC
BA	455.40	A	350	-0.002
BA	455.40	A	489	-0.002
BA	455.40	A	587	0.000
CO	228.61	A	-1	-0.0046
CO	228.61	A	44	0.0006
CO	228.61	A	36	-0.0003
FE	259.94	A	8	-0.01
FE	259.94	A	40	-0.01
FE	259.94	A	13	-0.01
V	292.40	A	-64	-0.0043
V	292.40	A	-32	-0.0022
V	292.40	A	-66	-0.0045
NA	589.59	A	185	0.04
NA	589.59	A	194	0.05
NA	589.59	A	186	0.04
AL	308.22	A	187	-0.04
AL	308.22	A	195	-0.04
AL	308.22	A	205	-0.03
CA	317.93	A	67	0.00
CA	317.93	A	33	0.00
CA	317.93	A	77	0.00
CU	324.75	A	37	0.0019
CU	324.75	A	-20	-0.0038
CU	324.75	A	25	0.0007

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SAMPLE	OPERATOR	PWR	TIME	NAME
48	PLR	4	17:59	BA-CU-FE-V-CO-CA-N

Ba - <25 ppb
Cu - <7.2
Fe - <25
V - <25
Co - <9.3

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	-0.002	PPM	0.0012	60.00	3.0
CU	324.75	A	-0.0004d	PPM	0.00300	750.00	3.0
FE	259.94	A	-0.01d	PPM	0.000	0.00	3.0
V	292.40	A	-0.0037d	PPM	0.00127	34.32	3.0
CO	228.61	A	-0.0015d	PPM	0.00277	184.66	3.0
CA	317.93	A	0.00d	PPM	0.000	0.00	3.0
NA	589.59	A	0.04d	PPM	[illegible]	[illegible]	[illegible]

EL	NM	C	INTENSITY	CONC
BA	455.40	A	182742	0.978
BA	455.40	A	183582	0.982
BA	455.40	A	184261	0.985
CO	226.61	A	2116	0.2419
CO	228.61	A	2114	0.2417
CO	228.61	A	2125	0.2430
FE	259.94	A	17805	0.97
FE	259.94	A	17725	0.97
FE	259.94	A	17651	0.97
V	292.40	A	3648	0.2465
V	292.40	A	3659	0.2472
V	292.40	A	3685	0.2490
NA	589.59	A	22861	25.54
NA	589.59	A	22969	25.64
NA	589.59	A	22785	25.43
AL	308.22	A	2446	0.95
AL	308.22	A	2469	0.96
AL	308.22	A	2456	0.96
CA	317.93	A	197836	25.36
CA	317.93	A	196896	25.23
CA	317.93	A	197685	25.34
CU	324.75	A	2584	0.2551
CU	324.75	A	2519	0.2487
CU	324.75	A	2529	0.2496

005606

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SAMPLE	OPERATOR	PWR	TIME	NAME
49	PLR	4	18:05	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	0.981	PPM	0.0035	0.35	3.0
CU	324.75	A	0.2511	PPM	0.00346	1.37	3.0
FE	259.94	A	0.97	PPM	0.000	0.00	3.0
V	292.40	A	0.2475	PPM	0.00129	0.52	3.0
CO	226.61	A	0.2422	PPM	0.00070	0.28	3.0
CA	317.93	A	25.31	PPM	0.070	0.27	3.0
NA	589.59	A	25.53	PPM	0.105	0.41	3.0
AL	308.22	A	0.95	PPM	0.007	0.73	3.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	36134	0.191
BA	455.40	A	34913	0.184
BA	455.40	A	34676	0.183
CO	226.61	A	-6	-0.0052
CO	228.61	A	43	0.0005
CO	228.61	A	60	0.0025
FE	259.94	A	39673	0.18
FE	259.94	A	39753	0.19

V	292.40	A	82	0.0086
NA	589.59	A	72887	81.73
NA	589.59	A	72456	81.24
NA	589.59	A	73775	82.73
AL	308.22	A	5214	2.17
AL	308.22	A	5141	2.14
AL	308.22	A	5217	2.17
CA	317.93	A	641421	82.23
CA	317.93	A	639429	81.97
CA	317.93	A	635496	81.47
CU	324.75	A	116	0.0097
CU	324.75	A	106	0.0086
CU	324.75	A	107	0.0087

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SAMPLE	OPERATOR	PWR	TIME	NAME
50	PLR	4	16.11	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	0.186	PPM	0.0043	2.31	3.0
CU	324.75	A	0.00904	PPM	0.00060	6.66	3.0
FE	259.94	A	2.19	PPM	0.010	0.45	3.0
V	292.40	A	0.00716	PPM	0.00172	24.22	3.0
CO	228.61	A	-0.00384	PPM	0.00399	498.75	3.0
CA	317.93	A	81.89	PPM	0.386	0.47	3.0
NA	589.59	A	81.90	PPM	0.759	0.92	3.0
AL	308.22	A	2.16	PPM	0.017	0.78	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	34308	0.181
BA	455.40	A	34136	0.181
BA	455.40	A	34128	0.179
CO	228.61	A	28	-0.0012
CO	228.61	A	75	0.0043
CO	228.61	A	39	0.0001
FE	259.94	A	51057	2.81
FE	259.94	A	50314	2.77
FE	259.94	A	50668	2.79
V	292.40	A	157	0.0107
V	292.40	A	134	0.0090
V	292.40	A	133	0.0090
NA	589.59	A	73177	82.05
NA	589.59	A	74540	83.59
NA	589.59	A	74015	83.00
AL	308.22	A	7424	3.14
AL	308.22	A	7437	3.15
AL	308.22	A	7470	3.16
CA	317.93	A	645198	82.71
CA	317.93	A	645969	82.81
CA	317.93	A	645171	82.71
CU	324.75	A	115	0.0096
CU	324.75	A	116	0.0097
CU	324.75	A	55	0.0074

005607

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P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
51	PLR	4	18:16	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	0.180	PPM	0.0012	0.66	3.0
CU	324.75	A	0.0076d	PPM	0.00349	45.92	3.0
FE	259.94	A	2.79	PPM	0.020	0.71	3.0
V	292.40	A	0.0095	PPM	0.00098	10.31	3.0
CO	228.61	A	0.0010d	PPM	0.00287	287.00	3.0
CA	317.93	A	82.74	PPM	0.057	0.06	3.0
NA	589.59	A	82.88	PPM	0.776	0.93	3.0
AL	308.22	A	3.15	PPM	0.010	0.31	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	413339	2.190
BA	455.40	A	419180	2.221
BA	455.40	A	419955	2.225
CO	228.61	A	4189	0.4834
CO	228.61	A	4195	0.4841
CO	228.61	A	4153	0.4794
FE	259.94	A	70240	3.87
FE	259.94	A	69967	3.86
FE	259.94	A	70032	3.86
V	292.40	A	7391	0.4954
V	292.40	A	7259	0.4867
V	292.40	A	7305	0.4898
NA	589.59	A	69506	77.93
NA	589.59	A	74848	83.93
NA	589.59	A	69741	78.19
AL	308.22	A	12519	5.38
AL	308.22	A	12510	5.37
AL	308.22	A	12358	5.31
CA	317.93	A	652751	83.68
CA	317.93	A	647283	82.98
CA	317.93	A	648502	83.13
CU	324.75	A	2447	0.2414
CU	324.75	A	2443	0.2410
CU	324.75	A	2388	0.2355

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SAMPLE	OPERATOR	PWR	TIME	NAME
52	PLR	4	18:22	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	[illegible]	PPM	[illegible]	[illegible]	[illegible]

005608

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		V	292.40	A	0.4906	PPM	0.00440	0.89	3.0
		CO	228.61	A	0.4823	PPM	0.00253	0.52	3.0
		CA	317.93	A	83.26	PPM	0.368	0.44	3.0
		NA	589.59	A	80.01	PPM	3.391	4.23	3.0
		AL	308.22	A	5.35	PPM	0.038	0.71	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	7883	0.038
BA	455.40	A	4430	0.019
BA	455.40	A	2987	0.011
CO	228.61	A	28	-0.0012
CO	228.61	A	26	-0.0014
CO	228.61	A	17	-0.0025
FE	259.94	A	462	0.02
FE	259.94	A	449	0.02
FE	259.94	A	500	0.02
V	292.40	A	-21	-0.0015
V	292.40	A	-37	-0.0026
V	292.40	A	-50	-0.0034
NA	589.59	A	449	0.34
NA	589.59	A	410	0.29
NA	589.59	A	414	0.30
AL	308.22	A	311	0.01
AL	308.22	A	307	0.01
AL	308.22	A	218	-0.03
CA	317.93	A	2053	0.26
CA	317.93	A	2066	0.26
CA	317.93	A	2074	0.26
CU	324.75	A	561	0.0536
CU	324.75	A	519	0.0495
CU	324.75	A	531	0.0506

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SAMPLE	OPERATOR	PWR	TIME	NAME
53	PLR	4	18:28	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	0.022	PPM	0.0138	62.72	3.0
CU	324.75	A	0.0512	PPM	0.00212	4.14	3.0
FE	259.94	A	0.02	PPM	0.000	0.00	3.0
V	292.40	A	-0.0025d	PPM	0.00095	38.00	3.0
CO	228.61	A	-0.0017d	PPM	0.00070	41.17	3.0
CA	317.93	A	0.26	PPM	0.000	0.00	3.0
NA	589.59	A	0.31	PPM	0.026	8.38	3.0
AL	308.22	A	-0.01	PPM	0.023	230.00	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	787	0.000
BA	455.40	A	789	0.000
BA	455.40	A	521	-0.002

CO	228.61	A	11	-0.0032
CO	228.61	A	43	0.0005
FE	259.94	A	99	0.00
FE	259.94	A	114	0.00
FE	259.94	A	109	0.00
V	292.40	A	12	0.0009
V	292.40	A	-35	-0.0024
V	292.40	A	-91	-0.0062
NA	589.59	A	213	0.07
NA	589.59	A	226	0.08
NA	589.59	A	226	0.08
AL	308.22	A	248	-0.01
AL	308.22	A	277	0.00
AL	308.22	A	289	0.00
CA	317.93	A	466	0.05
CA	317.93	A	454	0.05
CA	317.93	A	464	0.05
CU	324.75	A	121	0.0102
CU	324.75	A	106	0.0086
CU	324.75	A	93	0.0074

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ME # 572 -1

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SAMPLE	OPERATOR	PWR	TIME	NAME
54	PLR	4	18:33	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	-0.001d	PPM	0.0012	120.00	3.0
CU	324.75	A	0.0087d	PPM	0.00140	16.09	3.0
FE	259.94	A	0.00d	PPM	0.000	0.00	3.0
V	292.40	A	-0.0026d	PPM	0.00355	136.53	3.0
CO	228.61	A	-0.0019d	PPM	0.00208	109.47	3.0
CA	317.93	A	0.05	PPM	0.000	0.00	3.0
NA	589.59	A	0.07d	PPM	0.007	10.00	3.0
AL	308.22	A	-0.01	PPM	0.007	70.00	5.0

Ba - <10 x 10L
Cu - <10 x 10L
Fe - <10 x 10L
V - <10 x 10L
Co - <10 x 10L
Ca - <10 x 10L
Na - <10 x 10L
Al - <10 x 10L

EL	NM	C	INTENSITY	CONC
BA	455.40	A	879	0.000
BA	455.40	A	586	0.000
BA	455.40	A	646	0.000
CO	228.61	A	63	0.0029
CO	228.61	A	43	0.0005
CO	228.61	A	39	0.0001
FE	259.94	A	111	0.00
FE	259.94	A	94	0.00
FE	259.94	A	8	-0.01
V	292.40	A	-36	-0.0025
V	292.40	A	-53	-0.0036
V	292.40	A	-48	-0.0033
NA	589.59	A	-48	-0.22
NA	589.59	A	25	-0.14
NA	589.59	A	58	-0.10
AL	308.22	A	261	-0.01
AL	308.22	A	265	-0.01

CA 317.93	A	27	0.00
CU 324.75	A	23	0.0005
CU 324.75	A	18	0.0000
CU 324.75	A	27	0.0009

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SAMPLE	OPERATOR	PWR	TIME	NAME
55	PLR	4	18:39	BA-CU-FE-V-CO-CA-N

B - <25ppb
Cu - <7.2
Fe - <25
V - <25
Co - <9.3
Ca - <0.57
Na - <12.7
Al - <1.5

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	0.000	PPM	0.0000	0.00	3.0
CU	324.75	A	0.0004d	PPM	0.00045	112.50	3.0
FE	259.94	A	-0.01d	PPM	0.007	70.00	3.0
V	292.40	A	-0.0032d	PPM	0.00057	17.81	3.0
CO	228.61	A	0.0011d	PPM	0.00151	137.27	3.0
CA	317.93	A	-0.01d	PPM	0.007	70.00	3.0
NA	589.59	A	-0.16d	PPM	0.061	38.12	3.0
AL	308.22	A	0.00	PPM	0.017	0.00	5.0

005611

EL	NM	C	INTENSITY	CONC
BA	455.40	A	1021980	5.243
BA	455.40	A	1034744	5.304
BA	455.40	A	1033754	5.300
CO	228.61	A	4537	0.5239
CO	228.61	A	4541	0.5243
CO	228.61	A	4497	0.5192
FE	259.94	A	438661	24.22
FE	259.94	A	438908	24.24
FE	259.94	A	439571	24.28
V	292.40	A	7785	0.5213
V	292.40	A	7805	0.5228
V	292.40	A	7805	0.5228
NA	589.59	A	45011	50.41
NA	589.59	A	45879	51.38
NA	589.59	A	44607	49.95
AL	308.22	A	57927	25.34
AL	308.22	A	57841	25.30
AL	308.22	A	57845	25.30
CA	317.93	A	409562	52.50
CA	317.93	A	404481	51.85
CA	317.93	A	406133	52.06
CU	324.75	A	5254	0.5256
CU	324.75	A	5229	0.5231
CU	324.75	A	5198	0.5199

SAMPLE	OPERATOR	PWR	TIME	NAME
56	PLR	4	18:45	BA-CU-FE-V-CO-CA-N

Rec	Conc
Ba 100	500 ppb
Cu 104	500
Fe 97	5000
V 104	500
Co 104	500
Ca 104	50000
Na 101	50000
Al 101	25000

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	5.282	PPM	-0.0341	0.64	3.0
CU	324.75	A	0.5228	PPM	0.00285	0.54	3.0
FE	259.94	A	24.24	PPM	0.030	0.12	3.0
V	292.40	A	0.5223	PPM	0.00086	0.16	3.0
CO	228.61	A	0.5224	PPM	0.00283	0.54	3.0
CA	317.93	A	52.13	PPM	0.331	0.63	3.0
NA	589.59	A	50.58	PPM	0.730	1.44	3.0
AL	308.22	A	25.31	PPM	0.023	0.09	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	871	0.000
BA	455.40	A	772	0.000
BA	455.40	A	936	0.000
CO	228.61	A	895	0.0998
CO	228.61	A	890	0.0992
CO	228.61	A	853	0.0949
FE	259.94	A	317	0.01
FE	259.94	A	377	0.01
FE	259.94	A	263	0.01
V	292.40	A	1481	0.1006
V	292.40	A	1462	0.0993
V	292.40	A	1491	0.1012
NA	589.59	A	-467	-0.69
NA	589.59	A	-478	-0.71
NA	589.59	A	-477	-0.70
AL	308.22	A	99	-0.08
AL	308.22	A	185	-0.04
AL	308.22	A	122	-0.07
CA	317.93	A	49	0.00
CA	317.93	A	9	0.00
CA	317.93	A	-22	-0.01
CU	324.75	A	414	0.0391
CU	324.75	A	465	0.0441
CU	324.75	A	460	0.0437

005612

2XRDL

P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
57	PLR	4	18:51	BA-CU-FE-V-CO-CA-N

Rec	Conc
85	5 ppb
00	100
98	100

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	0.000	PPM	0.0000	0.00	3.0
CU	324.75	A	0.0423	PPM	0.00277	6.54	3.0
FE	259.94	A	0.01	PPM	0.000	0.00	3.0
V	292.40	A	0.1003	PPM	0.00097	0.96	3.0
CO	228.61	A	0.0979	PPM	0.00267	2.72	3.0
CA	317.93	A	-0.01d	PPM	0.007	70.00	3.0
NA	589.59	A	-0.70d	PPM	0.010	1.42	3.0
AL	308.22	A	-0.07	PPM	0.021	30.00	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	95293	0.510
BA	455.40	A	94646	0.507
BA	455.40	A	94997	0.509
CO	228.61	A	4320	0.4986
CO	228.61	A	4310	0.4974
CO	228.61	A	4247	0.4901
FE	259.94	A	3019902	166.81
FE	259.94	A	3021545	166.90
FE	259.94	A	3021000	166.87
V	292.40	A	7500	0.5025
V	292.40	A	7486	0.5016
V	292.40	A	7479	0.5012
NA	589.59	A	211	0.07
NA	589.59	A	238	0.10
NA	589.59	A	203	0.06
AL	308.22	A	1200229	527.35
AL	308.22	A	1201029	527.70
AL	308.22	A	1198866	526.75
CA	317.93	A	2997218	384.25
CA	317.93	A	2997352	384.27
CA	317.93	A	2997286	384.26
CU	324.75	A	5109	0.5108
CU	324.75	A	5108	0.5107
CU	324.75	A	5065	0.5064

005613

ICS
AB 0357

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SAMPLE	OPERATOR	PWR	TIME	NAME
58	PLR	4	18:57	BA-CU-FE-V-CO-CA-N

		EL	NM	CH	CONC	UNIT	SD	RSD	SEC
		BA	455.40	A	0.508	PPM	0.0015	0.29	3.0
		CU	324.75	A	0.5093	PPM	0.00251	0.49	3.0
		FE	259.94	A	OV FLOW	PPM	0.045	0.02	3.0
		V	292.40	A	0.5017	PPM	0.00066	0.13	3.0
		CO	228.61	A	0.4953	PPM	0.00460	0.92	3.0
		CA	317.93	A	OV FLOW	PPM	0.010	0.00	3.0
		NA	589.59	A	0.07	PPM	0.021	30.00	3.0
		AL	308.22	A	OVRANGE	PPM	0.480	0.09	5.0

EL	NM	C	INTENSITY	CONC
FE	259.94	A	333378	18.41
FE	259.94	A	330615	18.25
FE	259.94	A	336125	18.56

ICS
AB 0387

	EL	NM	CH	CONC	UNIT	SD	RSD	SEC
	FE	259.94	A	18.40	PPM	0.155	0.84	3.0

ICS
AB 0387

EL	NM	C	INTENSITY	CONC
CA	317.93	A	378115	38.42

005613

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
CA	317.93	A	48.36	PPM	0.095	0.19	3.0

EL	NM	C	INTENSITY	CONC
AL	308.22	A	108517	47.57
AL	308.22	A	109032	47.79
AL	308.22	A	108733	47.66

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
AL	308.22	A	47.67	PPM	0.110	0.23	5.0

EL	NM	C	INTENSITY	CONC
BA	455.40	A	1039281	5.325
BA	455.40	A	1037819	5.318
BA	455.40	A	1050887	5.381
CO	228.61	A	4582	0.5291
CO	228.61	A	4556	0.5261
CO	228.61	A	4525	0.5225
FE	259.94	A	439153	24.25
FE	259.94	A	440386	24.32
FE	259.94	A	443004	24.46
V	292.40	A	7855	0.5260
V	292.40	A	7860	0.5263
V	292.40	A	7942	0.5318
NA	589.59	A	43365	48.56
NA	589.59	A	44430	49.75
NA	589.59	A	42523	47.62
AL	308.22	A	57772	25.27
AL	308.22	A	57889	25.32
AL	308.22	A	58279	25.49
CA	317.93	A	408203	52.33
CA	317.93	A	408619	52.38
CA	317.93	A	410371	52.61
CU	324.75	A	5141	0.5141
CU	324.75	A	5094	0.5093
CU	324.75	A	5101	0.5100

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SAMPLE	OPERATOR	PWR	TIME	NAME
59	PLR	4	19:09	BA-CU-FE-V-CO-CA-N

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	5.341	PPM	0.0345	0.64	3.0
CU	324.75	A	0.5111	PPM	0.00259	0.50	3.0
FE	259.94	A	24.34	PPM	0.107	0.43	3.0
V	292.40	A	0.5280	PPM	0.00326	0.61	3.0
CO	228.61	A	0.5259	PPM	0.00330	0.62	3.0
CA	317.93	A	52.44	PPM	0.149	0.28	3.0

005614

005614

Al 97 50000
Al 101 25000

EL	NM	C	INTENSITY	CONC
BA	455.40	A	1317	0.002
BA	455.40	A	1132	0.001
BA	455.40	A	967	0.000
CO	228.61	A	35	-0.0004
CO	228.61	A	11	-0.0032
CO	228.61	A	23	-0.0016
FE	259.94	A	86	0.00
FE	259.94	A	45	-0.01
FE	259.94	A	27	0.00
V	292.40	A	-24	-0.0017
V	292.40	A	-53	-0.0036
V	292.40	A	-25	-0.0020
NA	589.59	A	-289	-0.49
NA	589.59	A	-255	-0.45
NA	589.59	A	-294	-0.50
AL	308.22	A	319	0.02
AL	308.22	A	302	0.01
AL	308.22	A	267	0.00
CA	317.93	A	1	-0.01
CA	317.93	A	-31	-0.01
CA	317.93	A	-29	-0.01
CU	324.75	A	19	0.0001
CU	324.75	A	12	-0.0007
CU	324.75	A	24	0.0006

Cl Blank

P 200 123914-00 8 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
60	PLR	4	19:15	BA-CU-FE-V-CO-CA-N

Ba - <25 ppb
Cu - <7.2
Fe - <25
V - <25

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
BA	455.40	A	0.001	PPM	0.0010	100.00	3.0
CU	324.75	A	0.0000d	PPM	0.00065	0.00	3.0
FE	259.94	A	-0.01d	PPM	0.007	70.00	3.0
V	292.40	A	-0.0025d	PPM	0.00102	40.80	3.0
CO	228.61	A	-0.0018d	PPM	0.00140	77.77	3.0
CA	317.93	A	-0.01d	PPM	0.00[illegible]	[illegible]	[illegible]
NA	589.59	A	-0.48	PPM	[illegible]	[illegible]	[illegible]

-1299
-168

005616

Mn Be Cd Cr Ni Zn Mg

PR 1-7-88

Original data is with Case # 8708

CASE # 8656

Std Prep

Be Cd Cr Ni Zn

1.0 ppm	100 µl stock/100mls
0.5	50 µl Stock/100mls
0.1	1000 µl 10ppm SS/100mls
0.05	500
0.01	100

Mn

5.0 ppm	500 µl stock/100mls
2.5	250 µl Stock/100mls
0.1	1000 µl 10ppm SS/100mls
0.05	500
0.01	100

Mg

100 ppm	10mls Stock/100mls
75	7.5
50	5.0
25	2.5
5	0.5

2XCRDL

Mn - 30 ppb	300 µl	10ppm SS/100mls
Be - 10	100	
Cd - 10	100	
Cr - 40	400	
Ni - 20	200	
Zn - 80	800	

ICVS = ICV#1

CCVS

Be, Cd, Cr, Ni, Zn

0.5ppm - 50 µl stock/100mls

Mn

2.5ppm - 250 µl stock/100mls

Mg

50 ppm - 5mls Stock/100mls

Lot #s

	Calib Stds	CCVS
Mn	612626	51505/P
Be	607618	H505KTAZ
Cd	641617	H510KVCS
Cr	553605	H511KXCK
Ni	145235	H552KTTY
Zn	510141	H595KVCP
Mg	A20630	5090 S/P

005617

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
[illegible]		4	14:07	MN-BE-CD-ZN-CR-NI-

31

005617

MN 257.61 A 3.0

B#	INTENSITY	RAW-CONC	CONC
99	12	0.0000d	0.000
1	488658	5.000	4.998
2	249227	2.549	2.497
3	9415	0.096	0.092
4	4826	0.049	0.047
5	999	0.009	0.008

2 -204 x 200 x2

EL NM CH SEC
BE 313.04 A 3.0

B#	INTENSITY	RAW-CONC	CONC
99	1073	0.0000	0.0000
1	608715	1.0000	0.9993
2	305565	0.5011	0.4998
3	59746	0.0981	0.0976
4	30968	0.0490	0.0487
5	6536	0.0089	0.0088

11 -57 x 44 x2

EL NM CH SEC
CD 226.50 A 3.0

B#	INTENSITY	RAW-CONC	CONC
99	-24	0.0000d	0.0000
1	17401	1.0000	1.0001
2	8677	-0.4993	0.4988
3	1811	0.1053	0.1051
4	828	0.0488	0.0486
5	145	0.0093	0.0096

-7 -8 x 16 x2

EL NM CH SEC
ZN 213.06 A 3.0

B#	INTENSITY	RAW-CONC	CONC
99	187	0.0000d	0.0000
1	10443	1.0000	1.0013
2	5798	0.5470	0.5007
3	1637	0.1413	0.1184
4	1022	0.0814	0.0673
5	580	0.0393	0.0313

-143 -1735 x 1891 x2

005618

B#	INTENSITY	RAW-CONC	CONC
99	21	0.0000d	0.0000
1	14764	1.0000	0.9996
2	7505	0.5076	0.4997
3	1449	0.0968	0.0940
4	737	0.0485	0.0470
5	134	0.0076	0.0073

27 -332 x 301 x2

EL	NM	CH	SEC
NI	231.60	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	43	0.0000d	0.0000
1	9559	1.0000	0.9994
2	2829	0.5050	0.4996
3	572	0.0559	0.0940
4	236	0.0440	0.0430
5	91	0.0087	0.0084

33 -237 x 198 x2

EL	NM	CH	SEC
MG	279.08	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	12	0.00d	0.00
1	203382	100.00	100.04
2	150473	73.90	74.79
3	100027	49.12	50.26
4	48982	24.05	24.87
5	10046	4.93	5.13

-6 461 x -451 x2

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	27749	3.5481
ZN	213.86	A	27633	3.5274
ZN	213.86	A	27508	3.5054
CD	226.50	A	8172	0.4698
CD	226.50	A	8063	0.4636
CD	226.50	A	8053	0.4630
NI	231.60	A	2501	0.4403
NI	231.60	A	2506	0.4412
NI	231.60	A	2449	0.4309
MN	257.61	A	46278	0.455
MN	257.61	A	47033	0.463

005619

MN	257.61	A	46885	0.461
CR	267.71	A	6802	0.4521
CR	267.71	A	6775	0.4503
CR	267.71	A	6842	0.4548
MG	279.08	A	48117	24.44
MG	279.08	A	48317	24.53
MG	279.08	A	48195	24.47
BE	313.04	A	292646	0.4785
BE	313.04	A	290505	0.4750
BE	313.04	A	292218	0.4778

ICVS

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
1.744		4	14 13	MN-BE-CD-ZN-CR-NI-

	Rec	Conc
mn	86	581 ppb
Be	101	474
Cd		909
Zn		473
Cr		513
Ni		514
mg		50000

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	0.452	PPM	0.0041	0.89	3.0
BE	313.04	A	0.4771	PPM	0.00185	0.38	3.0
CD	226.50	A	0.4654	PPM	0.00376	0.80	3.0
ZN	213.86	A	OVRANGE	PPM	0.02135	0.60	3.0
CR	267.71	A	0.4524	PPM	0.00226	0.49	3.0
NI	221.60	A	0.4374	PPM	0.00570	1.30	3.0
MG	279.08	A	24.48	PPM	0.045	0.18	3.0

Zn - 3.5270

ICVS

P 200 123714-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
RECAL		4	14:36	MN-BE-CD-ZN-CR-NI-

	% Rec	Conc
mn	89	513 ppb
Be	99	481
Cd	95	489
Zn	114	3100
Cr	89	504
Ni	88	496
mg	98	25000

EL	NM	CH	SEC
MN	257.61	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	30	0.0006	0.000
1	476756	5.000	4.998

2 -204 1 200 12

EL	NM	CH	SEC
BE	313.04	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	1088	0.0000	0.0000
1	607679	1.0000	0.9998

005620

EL	NM	CH	SEC
CD	226.50	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	-8	0.0000d	0.0000
1	17689	1.0000	1.0001

-7 -8 x 46 x2

EL	NM	CH	SEC
ZN	213.86	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	125	0.0000d	0.0000
1	10194	1.0000	1.0013

-143 -1735 x 1891 x2

EL	NM	CH	SEC
CR	267.71	4	3.0

B#	INTENSITY	RAW-CONC	CONC
99	17	0.0000d	0.0000
1	14890	1.0000	0.9996

27 -332 x 301 x2

EL	NM	CH	SEC
NI	231.60	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	49	0.0000d	0.0000
1	5482	1.0000	0.9994

33 -237 x 198 x2

EL	NM	CH	SEC
MG	279.08	A	3.0

B#	INTENSITY	RAW-CONC	CONC
99	-10	0.00d	0.00
1	203703	100.00	100.04

005621

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	27834	3.2456
ZN	213.86	A	27841	3.2466
ZN	213.86	A	27617	3.2106
CD	226.50	A	8114	0.4584
CD	226.50	A	8142	0.4600
CD	226.50	A	8161	0.4611
NI	231.60	A	2501	0.4950
NI	231.60	A	2482	0.4911
NI	231.60	A	2498	0.4943
MN	257.61	A	46633	0.476
MN	257.61	A	47155	0.482
MN	257.61	A	47065	0.481
CR	267.71	A	6805	0.4949
CR	267.71	A	6811	0.4953
CR	267.71	A	6821	0.4961
MG	279.08	A	48624	24.69
[illegible]	[illegible]9.08	A	48894	24.82
[illegible]	279.08	A	48754	24.75
BE	313.04	A	292645	0.4793
BE	313.04	A	289438	0.4740
BE	313.04	A	289495	0.4741

005622

ICVS

P 200 122714-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
2		4	14.48	MN--BE--CD--ZN--CR--NI-

	% Rec	Conc
Mn	93	513
Be	99	481
Cd	94	489
Zn	104	3100
Cr	98	504
Ni	99	496
Mg	99	25000

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	0.479	PPM	0.0032	0.66	3.0
BE	313.04	A	0.4758	PPM	0.00303	0.63	3.0
CD	226.50	A	0.4598	PPM	0.00135	0.29	3.0
ZN	213.86	A	OVRANGE	PPM	0.02050	0.63	3.0
CR	267.71	A	0.4954	PPM	0.00061	0.12	3.0
NI	231.60	A	0.4934	PPM	0.00207	0.41	3.0
MG	279.08	A	24.75	PPM	0.065	0.26	3.0

Zn - 3.2343 ppm

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	108	-0.0014
ZN	213.86	A	101	-0.0019
ZN	213.86	A	106	-0.0015
CD	226.50	A	5	0.0005
CD	226.50	A	-17	-0.0006
CD	226.50	A	-21	-0.0008
NI	231.60	A	25	-0.0049
NI	231.60	A	29	-0.0042
NI	231.60	A	58	0.0017
MN	257.61	A	6	-0.002
MN	257.61	A	44	0.000
MN	257.61	A	32	0.000

ICVS

	% Rec	Conc
mn	93	513
Be	99	481
Cd	94	489
Zn	104	3100
Cr	98	506
Ni	99	494
mg	99	25000

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
2		4	14:48	MN--BE--CD--ZN--CR-NI-

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	0.479	PPM	0.0032	0.66	3.0
BE	313.04	A	0.4758	PPM	0.00303	0.63	3.0
CD	226.50	A	0.4598	PPM	0.00135	0.29	3.0
ZN	213.86	A	OVRANGE	PPM	0.02050	0.63	3.0
CR	267.71	A	0.4954	PPM	0.00061	0.12	3.0
NI	231.60	A	0.4934	PPM	0.00207	0.41	3.0
MG	279.08	A	24.75	PPM	0.065	0.26	3.0

Zn - 3.2343 ppm

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	108	-0.0014
ZN	213.86	A	101	-0.0019
ZN	213.86	A	106	-0.0015
CD	226.50	A	5	0.0005
CD	226.50	A	-17	-0.0006
CD	226.50	A	-21	-0.0008
NI	231.60	A	25	-0.0047
NI	231.60	A	29	-0.0042
NI	231.60	A	58	0.0017
MN	257.61	A	6	-0.002
MN	257.61	A	44	0.000
MN	257.61	A	32	0.000
CR	267.71	A	19	0.0000
CR	267.71	A	-6	-0.0019
CR	267.71	A	-13	-0.0024
MG	279.08	A	-35	-0.03
MG	279.08	A	35	0.00
MG	279.08	A	50	0.01
BE	313.04	A	1048	-0.0003
BE	313.04	A	1060	-0.0002
BE	313.04	A	1112	0.0000

005623

ICB

Mn - <0.0 ppb
Be - <0.2
Cd - <2.4
Zn - <12
Cr - <4.4
<9.2

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
3		4	14:55	MN-BE--CD-ZN--CR--NI-

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	-0.001d	PPM	0.0012	120.00	3.0
BE	313.04	A	--0.0002	PPM	0.00015	75.00	3.0
CD	226.50	A	-0.0003d	PPM	0.00070	233.33	3.0
ZN	213.86	A	--0.0016d	PPM	0.00026	16.25	3.0
CR	267.71	A	-0.0015d	PPM	0.00126	84.00	3.0
NI	231.60	A	--0.0025d	PPM	0.00362	144.80	3.0
MG	279.08	A	-0.01d	PPM	0.021	210.00	3.0

BE	313.04	A	1112	0.0000

P 200 123914--00 7 JAN 88

ICB

SAMPLE	OPERATOR	PWR	TIME	NAME
3		4	14:55	MN-BE--CD-ZN--CR--NI-

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	--0.001d	PPM	0.0012	120.00	3.0
BE	313.04	A	--0.0002	PPM	0.00015	75.00	3.0
CD	226.50	A	--0.0003d	PPM	0.00070	233.33	3.0
ZN	213.86	A	--0.0016d	PPM	0.00026	16.25	3.0
CR	267.71	A	--0.0015d	PPM	0.00126	84.00	3.0
NI	231.60	A	--0.0025d	PPM	0.00362	144.80	3.0
MG	279.08	A	--0.01d	PPM	0.021	210.00	3.0

Mn <0.0 ppb
Be <0.2
Cd <2.6
Zn <12
Cr <4.4
Ni <9.2
Mg <561

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	9491	0.8284
ZN	213.86	A	9512	0.8305
ZN	213.86	A	9475	0.8269
CD	226.50	A	15839	0.8952
CD	226.50	A	16136	0.9120
CD	226.50	A	16050	0.9071
NI	231.60	A	4760	0.9609
NI	231.60	A	4799	0.9679
NI	231.60	A	4800	0.9681
MN	257.61	A	47366	0.484
MN	257.61	A	47333	0.484
MN	257.61	A	46765	0.478
CR	267.71	A	7440	0.5420
CR	267.71	A	7425	0.5409
CR	267.71	A	7327	0.5335
MG	279.08	A	1027247	412.47
MG	279.08	A	1020489	410.51
MG	279.08	A	1026037	412.14
BE	313.04	A	288368	0.4722
BE	313.04	A	285958	0.4683
BE	313.04	A	288947	0.4732

005624

ICS
AB 0387

P 200 123914--00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
4		4	15:01	MN--BE-CD-ZN-CR-NI-

EL	NM	CH	CONC	UNIT	SD	RSD	SEC

Spikec Conc
Mn 91 531 ppb

Be	99	474	MN 257.61	A	0.482	PPM	0.0034	0.70	3.0
Cd	100	909	BE 313.04	A	0.4712	PPM	0.00258	0.54	3.0
Zn	95	973	CD 226.50	A	0.9047	PPM	0.00863	0.95	3.0
Cr	105	513	ZN 213.86	A	0.6286	PPM	0.00180	0.21	3.0
Ni	105	916	CR 267.71	A	0.5388	PPM	0.00462	0.85	3.0
			NI 231.60	A	0.9656	PPM	0.00410	0.42	3.0
			MG 279.08	A	OVRANGE	PPM	1.049	0.25	3.0

mg - 509000

EL	NM	C	INTENSITY	CONC
MG	279.08	A	91153	45.86
MG	279.08	A	90990	45.79
MG	279.08	A	91039	45.81

ICS 1:9
AB 0387

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MG	279.08	A	45.82	PPM	0.036	0.07	3.0

% Rec	Conc
mg 90	509000 ppb

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	484	0.0293
ZN	213.86	A	502	0.0308
ZN	213.86	A	505	0.0310
CD	226.50	A	182	0.0105
CD	226.50	A	192	0.0114
CD	226.50	A	186	0.0107
NI	231.60	A	517	0.0899
NI	231.60	A	515	0.0896
NI	231.60	A	491	0.0830
MN	257.61	A	3067	0.030
MN	257.61	A	3066	0.030
MN	257.61	A	3056	0.030
CR	267.71	A	251	0.0158
CR	267.71	A	318	0.0204
CR	267.71	A	280	0.0178
MG	279.08	A	23	0.00
MG	279.08	A	62	0.02
MG	279.08	A	31	0.00
BE	313.04	A	6629	0.0090
BE	313.04	A	6588	0.0089
BE	313.04	A	6630	0.0090

005625

P 200 123914--00 7 JAN 88

2XLRDL

SAMPLE	OPERATOR	PWR	TIME	NAME
5		4	15:10	MN-BE-CD-ZN--CR-NI--

	% Rec	conc
mn	100	30 ppb
Be	99	10
Cd	108	10
Zn	111	40

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	0.030	PPM	0.0000	0.00	3.0
BE	313.04	A	0.0089	PPM	0.00007	0.78	3.0
CD	226.50	A	0.0108d	PPM	0.00047	4.35	3.0
ZN	213.86	A	0.0303	PPM	0.00093	3.06	3.0
CR	267.71	A	0.0180	PPM	0.00230	12.77	3.0

	100	50 ppb	MN 257.61	A	0.030	PPM	0.0000	0.00	3.0
Be	89	10	BE 313.04	A	0.0089	PPM	0.00007	0.78	3.0
Cd	108	10	CD 226.50	A	0.0108d	PPM	0.00047	4.35	3.0
			ZN 213.86	A	0.0303	PPM	0.00093	3.06	3.0
Zn	76	40	CR 267.71	A	0.0180	PPM	0.00230	12.77	3.0
			NI 231.60	A	0.0875	PPM	0.00390	4.45	3.0
Cr	90	20	MG 279.08	A	0.00d	PPM	0.012	0.00	3.0
Ni	109	80							

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	70	-0.0046
ZN	213.86	A	96	-0.0024
ZN	213.86	A	[illegible]5	-0.0017
CD	226.50	A	-41	-0.0019
CD	226.50	A	5	0.0005
CD	226.50	A	-13	-0.0003
NI	231.60	A	27	-0.0044
NI	231.60	A	-12	-0.0119
NI	231.60	A	7	-0.0083
MN	257.61	A	17	-0.002
MN	257.61	A	37	0.000
MN	257.61	A	21	-0.002
CR	267.71	A	-5	-0.0017
CR	267.71	A	15	-0.0003
CR	267.71	A	22	0.0002
MG	279.08	A	-15	-0.02
MG	279.08	A	43	0.01
MG	279.08	A	26	0.00
BE	313.04	A	982	-0.0004
BE	313.04	A	1078	-0.0002
BE	313.04	A	1049	-0.0003

005626

8708 ISI
Prep Blank

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
6		4	15:16	MN-BE-CD-ZN-CR-NI-

Mn - <0.0 ppb
Be - < 0.2
Cd - < 2.6
Zn - < 12
Cr - < 4.4
Ni - < 9.2
Mg - < 561

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	-0.002d	PPM	0.0012	60.00	3.0
BE	313.04	A	-0.0003	PPM	0.00010	33.33	3.0
CD	226.50	A	-0.0006d	PPM	0.00122	203.33	3.0
ZN	213.86	A	-0.0029d	PPM	0.00151	52.06	3.0
CR	267.71	A	-0.0006d	PPM	0.00098	163.33	3.0
NI	231.60	A	-0.0082d	PPM	0.00375	45.73	3.0
MG	279.08	A	-0.01d	PPM	0.015	150.00	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	302	0.0143
ZN	213.86	A	244	0.0096
ZN	213.86	A	165	0.0032
CD	226.50	A	-11	-0.0002
CD	226.50	A	2	0.0003
CD	226.50	A	-22	-0.0008
NI	231.60	A	6	-0.0084
NI	231.60	A	21	-0.0055
NI	231.60	A	2	-0.0092
MN	257.61	A	60	0.000
MN	257.61	A	40	0.000
MN	257.61	A	11	-0.002
	267.71	A	24	0.0003
CR	267.71	A	13	-0.0004
CR	267.71	A	32	0.0009
MG	279.08	A	10	0.00
MG	279.08	A	56	0.02
MG	279.08	A	81	0.03
BE	313.04	A	1072	-0.0002
BE	313.04	A	1080	-0.0002
BE	313.04	A	1029	-0.0003

005627

Cal blank

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
10		4	15:39	MN--BE-CD--ZN-CR-NI-

mn - <0.0ppb
Be - <0.2
Cd - <2.6
Zn - <12
Cr - <4.4
Ni - <9.2
mg - <561

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	-0.001d	PPM	0.0012	120.00	3.0
BE	313.04	A	-0.0003	PPM	0.00007	23.33	3.0
CD	226.50	A	-0.0003d	PPM	0.00055	183.33	3.0
ZN	213.86	A	0.0090	PPM	0.00557	61.88	3.0
CR	267.71	A	0.0002d	PPM	0.00065	325.00	3.0
NI	231.60	A	-0.0077d	PPM	0.00194	25.19	3.0
MG	279.08	A	0.01d	PPM	0.015	150.00	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	4839	0.4495
ZN	213.86	A	4853	0.4508
ZN	213.86	A	4885	0.4543
CD	226.50	A	8541	0.4825
CD	226.50	A	8524	0.4816
CD	226.50	A	8342	0.4713
NI	231.60	A	2609	0.4776
NI	231.60	A	2633	0.4822
NI	231.60	A	2598	0.4755
MN	257.61	A	239729	2.471
MN	257.61	A	236527	2.436
MN	257.61	A	237602	2.449
CR	267.71	A	7219	0.4722
CR	267.71	A	7226	0.4727
CR	267.71	A	7249	0.4743
MG	279.08	A	101845	51.13
MG	279.08	A	101933	51.17
MG	279.08	A	101963	51.18
BE	313.04	A	295320	0.4827
BE	313.04	A	301031	0.4931
BE	313.04	A	276879	0.4863

005628

CVS P 200 123914-00 7 JAN 88

Rec	CxC	SAMPLE	OPERATOR	PWR	TIME	NAME
		11		4	15:49	MN-BE-CD-ZN-CR-NI-

98 2500 ppb
98 500
94 500
90 500
95 500
96 500
102 50000

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	2.452	PPM	0.0176	0.71	3.0
BE	313.04	A	0.4877	PPM	0.00485	0.99	3.0
CD	226.50	A	0.4784	PPM	0.00622	1.30	3.0
ZN	213.86	A	0.4515	PPM	0.00248	0.54	3.0
CR	267.71	A	0.4730	PPM	0.00109	0.23	3.0
NI	231.60	A	0.4784	PPM	0.00342	0.71	3.0
MG	279.08	A	51.16	PPM	0.026	0.05	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	472	0.0314
ZN	213.86	A	430	0.0276
ZN	213.86	A	426	0.0273
CD	226.50	A	418	0.0238
CD	226.50	A	391	0.0223
CD	226.50	A	403	0.0230
NI	231.60	A	73	0.0043
NI	231.60	A	79	0.0054
NI	231.60	A	41	-0.0017
MN	257.61	A	46599	0.471
MN	257.61	A	46653	0.471

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	79	-0.0043
ZN	213.86	A	72	-0.0049
ZN	213.86	A	60	-0.0060
CD	226.50	A	-4	0.0000
CD	226.50	A	-44	-0.0021
CD	226.50	A	-3	0.0000
NI	231.60	A	20	-0.0055
NI	231.60	A	19	-0.0057
NI	231.60	A	6	-0.0082
MN	257.61	A	6	-0.002
MN	257.61	A	34	0.000
MN	257.61	A	17	-0.002
CR	267.71	A	-1	-0.0013
CR	267.71	A	32	0.0009
CR	267.71	A	6	-0.0009
MG	279.08	A	-15	-0.02
MG	279.08	A	3	0.00
MG	279.08	A	-6	0.00
BE	313.04	A	1109	0.0000
BE	313.04	A	1062	-0.0002
BE	313.04	A	1006	-0.0003

005629

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
2E		4	16:47	MN-BE-CD-ZN-CR-NI-

Cal blank

Mn - <0.0 ppb
Be - <0.2
Cd - <2.6
Zn - <12
Cr - <4.4
Ni - <9.2
Mg - <561

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	-0.002d	PPM	0.0012	60.00	3.0
BE	313.04	A	-0.0002	PPM	0.00015	75.00	3.0
CD	226.50	A	-0.0007d	PPM	0.00121	172.85	3.0
ZN	213.86	A	-0.0051d	PPM	0.00086	16.86	3.0
CR	267.71	A	-0.0005d	PPM	0.00117	234.00	3.0
NI	231.60	A	-0.0065d	PPM	0.00150	23.07	3.0
MG	279.08	A	-0.01d	PPM	0.012	120.00	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	4832	0.4764
ZN	213.86	A	4849	0.4782
ZN	213.86	A	4854	0.4788
CD	226.50	A	8565	0.4839
CD	226.50	A	8545	0.4828
CD	226.50	A	8466	0.4783
NI	231.60	A	2705	0.4957
NI	231.60	A	2659	0.4871
NI	231.60	A	2647	0.4848
MN	257.61	A	242864	2.504
MN	257.61	A	245524	2.532
MN	257.61	A	245855	2.534

[illegible]	[illegible]	[illegible]	7520	0.4923
CR	267.71	A	7390	0.4837
CR	267.71	A	7430	0.4864
MG	279.08	A	105256	52.80
MG	279.08	A	104573	52.46
MG	279.08	A	104505	52.43
BE	313.04	A	307701	0.5041
BE	313.04	A	309987	0.5079
BE	313.04	A	308441	0.5053

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
23		4	16 53	MN-BE-CD-ZN-CR-NI-

CCVS

Rec	Conc
101	250 ppb
101	500
96	500
96	500
97	500
98	500
105	50000

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	2.524	PPM	0.0174	0.68	3.0
BE	313.04	A	0.5057	PPM	0.00194	0.38	3.0
CD	226.50	A	0.4816	PPM	0.00296	0.61	3.0
ZN	213.86	A	0.4778	PPM	0.00124	0.25	3.0
CR	267.71	A	0.4874	PPM	0.00439	0.90	3.0
NI	231.60	A	0.4892	PPM	0.00574	1.17	3.0
MG	279.08	A	52.56	PPM	0.205	0.39	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	848	0.0662
ZN	213.86	A	80[illegible]	0.0625
ZN	213.86	A	787	0.0606
CD	226.50	A	-4	0.0000
CD	226.50	A	26	0.0017
CD	226.50	A	-7	0.0000
NI	231.60	A	35	-0.0028
NI	231.60	A	25	-0.0046
NI	231.60	A	4	-0.0084
MN	257.61	A	64613	0.654
MN	257.61	A	63515	0.644
MN	257.61	A	63935	0.648
CR	267.71	A	67	0.0031
CR	267.71	A	31	0.0008
CR	267.71	A	70	0.0033
MG	279.08	A	13126	6.70
MG	279.08	A	13072	6.68
MG	279.08	A	13120	6.70
BE	313.04	A	1131	0.0000
BE	313.04	A	1130	0.0000
BE	313.04	A	1114	0.0000

005630

005630

BE	313.04	A	0.0000	PPM	0.00007	0.00	3.0
CD	226.50	A	0.0007d	PPM	0.00085	121.42	3.0
ZN	213.86	A	0.0295	PPM	0.00058	1.96	3.0
CR	267.71	A	0.0110d	PPM	0.00138	12.54	3.0
NI	231.60	A	0.0042d	PPM	0.00325	77.38	3.0
MG	279.08	A	5.89	PPM	0.047	0.79	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	49	-0.0070
ZN	213.86	A	61	-0.0059
ZN	213.86	A	62	-0.0057
CD	226.50	A	-24	-0.0010
CD	226.50	A	9	0.0007
CD	226.50	A	5	0.0005
NI	231.60	A	31	-0.0035
NI	231.60	A	32	-0.0034
NI	231.60	A	21	-0.0053
MN	257.61	A	30	0.000
MN	257.61	A	-14	-0.002
MN	257.61	A	35	0.000
CR	267.71	A	22	0.0002
CR	267.71	A	-7	-0.0017
CR	267.71	A	24	0.0003
MG	279.08	A	-1	0.00
MG	279.08	A	-31	-0.03
MG	279.08	A	-13	-0.02
BE	313.04	A	1047	-0.0003
BE	313.04	A	1067	-0.0002
BE	313.04	A	1080	-0.0002

005631

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
34		4	17:51	MN-BE-CD-ZN-CR-NI-

Cal blank
Mn - <0.0
Be - <0.2
Cd - <2.6
Zn - <12
Cr - <4.4
Ni - <9.2
Mg - <561

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	-0.001d	PPM	0.0012	120.00	3.0
BE	313.04	A	-0.0003	PPM	0.00007	23.33	3.0
CD	226.50	A	0.0000d	PPM	0.00093	0.00	3.0
ZN	213.86	A	-0.0062d	PPM	0.00070	11.29	3.0
CR	267.71	A	-0.0004d	PPM	0.00112	280.00	3.0
NI	231.60	A	-0.0041d	PPM	0.00107	26.09	3.0
MG	279.08	A	-0.02d	PPM	0.015	75.00	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	4770	0.4694
ZN	213.86	A	4784	0.4709
ZN	213.86	A	4816	0.4746
CD	226.50	A	8732	0.4933
CD	226.50	A	8628	0.4874
CD	226.50	A	8539	0.4824
NI	231.60	A	2673	0.4897
NI	231.60	A	2686	0.4921
NI	231.60	A	2679	0.4909
MN	257.61	A	242431	2.499
MN	257.61	A	245313	2.529
MN	257.61	A	245373	2.530
CR	267.71	A	7467	0.4888
CR	267.71	A	7508	0.4916
CR	267.71	A	7513	0.4919
MG	279.08	A	104278	52.32
MG	279.08	A	104415	52.39
MG	279.08	A	104437	52.39
BE	313.04	A	305019	0.4997
BE	313.04	A	308708	0.5058
BE	313.04	A	308724	0.5058

005632

CCVS

P 200 123914-00 7 JAN 86

SAMPLE	OPERATOR	PWR	TIME	NAME
35		4	17.56	MN-BE-CD--ZN-CR--NI--

	Erec	Qnc
Mn	101	1500
Be	101	500
Cd	98	500
Zn	94	500
Cr	98	500
Ni	98	500
Mg	105	50000

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	2.519	PPM	0.0176	0.69	3.0
BE	313.04	A	0.5037	PPM	0.00352	0.69	3.0
CD	226.50	A	0.4877	PPM	0.00545	1.11	3.0
ZN	213.86	A	0.4716	PPM	0.00267	0.56	3.0
CR	267.71	A	0.4907	PPM	0.00171	0.34	3.0
NI	231.60	A	0.4909	PPM	0.00120	0.24	3.0
MG	279.08	A	52.36	PPM	0.040	0.07	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	262	0.0123
ZN	213.86	A	209	0.0075
ZN	213.86	A	170	0.0040
CD	226.50	A	29	0.0018
CD	226.50	A	2	0.0003
CD	226.50	A	-7	0.0000
NI	231.60	A	51	0.0002
NI	231.60	A	26	-0.0044
NI	231.60	A	33	-0.0032
MN	257.61	A	8174	0.081
MN	257.61	A	8166	0.081
MN	257.61	A	8203	0.081

Zn - <10 x IDL
Cr - <10 x IDL
Ni - <10 x IDL
mg - <10 x IDL

		A	0.0082d	PPM	0.00112	13.65	3.0
CR	267.71	A	0.0022d	PPM	0.00085	38.63	3.0
NI	231.60	A	0.0001d	PPM	0.00405	4050.00	3.0
MG	279.08	A	3.93	PPM	0.012	0.30	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	51	-0.0068
ZN	213.86	A	43	-0.0075
ZN	213.86	A	40	-0.0078
CD	226.50	A	-15	-0.0004
CD	226.50	A	-23	-0.0009
CD	226.50	A	-23	-0.0009
NI	231.60	A	36	-0.0026
NI	231.60	A	10	-0.0074
NI	231.60	A	23	-0.0050
MN	257.61	A	18	-0.002
MN	257.61	A	47	0.000
MN	257.61	A	-4	-0.002
CR	267.71	A	40	0.0019
CR	267.71	A	7	-0.0006
CR	267.71	A	-6	-0.0017
MG	279.08	A	24	0.00
MG	279.08	A	-18	-0.02
MG	279.08	A	-9	0.00
BE	313.04	A	1043	-0.0003
BE	313.04	A	1037	-0.0002
BE	313.04	A	1086	-0.0002

005633

Cal blank

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PNR	TIME	NAME
4g		4	18:53	MN-BE-CD-ZN-CR-NI-

Mn - <0.0 µg
Be - <0.2
Cd - <2.6
Zn - <12
Cr - <4.4
Ni - <9.2
mg - <561

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	-0.002d	PPM	0.0012	60.00	3.0
BE	313.04	A	-0.0003	PPM	0.00007	23.33	3.0
CD	226.50	A	-0.0008d	PPM	0.00029	36.25	3.0
ZN	213.86	A	-0.0074d	PPM	0.00051	6.89	3.0
CR	267.71	A	-0.0002d	PPM	0.00187	935.00	3.0
NI	231.60	A	-0.0050d	PPM	0.00240	-48.00	3.0
MG	279.08	A	-0.01d	PPM	0.012	-120.00	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	4789	0.4715
ZN	213.86	A	4801	0.4728
ZN	213.86	A	4825	0.4756
CD	226.50	A	8592	0.4854
CD	226.50	A	8438	0.4767
CD	226.50	A	8405	0.4748
NI	231.60	A	2684	0.4917
NI	231.60	A	2688	0.4925
NI	231.60	A	2660	0.4873
MN	257.61	A	249104	2.569
MN	257.61	A	249148	2.570
MN	257.61	A	247388	2.551
CR	267.71	A	7605	0.4979
CR	267.71	A	7535	0.4933
CR	267.71	A	7415	0.4856
MG	279.08	A	104946	52.64
MG	279.08	A	104834	52.59
MG	279.08	A	104387	52.37
BE	313.04	A	314704	0.5156
BE	313.04	A	315626	0.5171
BE	313.04	A	313579	0.5137

005634

CCVS

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
47		4	18 58	MN-BE-CD-ZN-CR-NI-

Elec	conc
Mn 102	2500 ppb
Be 103	500
Cd 96	500
Zn 95	500
Cr 98	500
Ni 98	500
Mg 105	50000

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	2.563	PPM	0.0107	0.41	3.0
BE	313.04	A	0.5154	PPM	0.00170	0.32	3.0
CD	226.50	A	0.4789	PPM	0.00565	1.17	3.0
ZN	213.86	A	0.4733	PPM	0.00209	0.44	3.0
CR	267.71	A	0.4922	PPM	0.00621	1.26	3.0
NI	231.60	A	0.4905	PPM	0.00280	0.57	3.0
MG	279.08	A	52.53	PPM	0.143	0.27	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	312	0.0168
ZN	213.86	A	258	0.0118
ZN	213.86	A	218	0.0083
CD	226.50	A	63	0.0038
CD	226.50	A	41	0.0025
CD	226.50	A	17	0.0012
NI	231.60	A	53	0.0006
NI	231.60	A	54	0.0008

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	53	-0.0065
ZN	213.86	A	42	-0.0076
ZN	213.86	A	28	-0.0089
CD	226.50	A	-2	0.0001
CD	226.50	A	-7	0.0000
CD	226.50	A	-9	-0.0001
NI	231.60	A	15	-0.0065
NI	231.60	A	5	-0.0083
NI	231.60	A	41	-0.0017
MN	257.61	A	44	0.000
MN	257.61	A	5	-0.002
MN	257.61	A	7	-0.002
CR	267.71	A	-5	-0.0016
CR	267.71	A	-53	-0.0047
CR	267.71	A	32	0.0009
MG	279.08	A	11	0.00
MG	279.08	A	-14	-0.02
MG	279.08	A	-16	-0.02
BE	313.04	A	1097	0.0000
BE	313.04	A	1093	0.0000
BE	313.04	A	1059	-0.0002

005635

8656 IAI

Prep Blank

Mn - <0.0 ppb
Be - <0.2
Cd - <2.6
Zn - <12
Cr - <4.4
Ni - <9.2
Mg - <561

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
49		4	19:09	MN-BE-CD-ZN-CR-NI-

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	-0.002d	PPM	0.0012	60.00	3.0
BE	313.04	A	-0.0001	PPM	0.00012	120.00	3.0
CD	226.50	A	0.0000d	PPM	0.00010	0.00	3.0
ZN	213.86	A	-0.0077d	PPM	0.00120	15.58	3.0
CR	267.71	A	-0.0018d	PPM	0.00280	155.55	3.0
NI	231.60	A	-0.0055d	PPM	0.00341	62.00	3.0
MG	279.08	A	-0.02d	PPM	0.012	60.00	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	12967	1.5437
ZN	213.86	A	13154	1.5718
ZN	213.86	A	13235	1.5841
CD	226.50	A	3899	0.2203
CD	226.50	A	3916	0.2213
CD	226.50	A	3919	0.2215
NI	231.60	A	1257	0.2242
NI	231.60	A	1283	0.2290
NI	231.60	A	1287	0.2297
MN	257.61	A	23752	0.239
MN	257.61	A	23754	0.239
MN	257.61	A	23647	0.238
CR	267.71	A	3418	0.2213
CR	267.71	A	3418	0.2213
CR	267.71	A	3405	0.2204
MG	279.08	A	23731	12.11
MG	279.08	A	23793	12.14
MG	279.08	A	23677	12.08
BE	313.04	A	147939	0.2410
BE	313.04	A	148296	0.2416
BE	313.04	A	148712	0.2423

005636

8656 IAI

LCS

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
50		4	19:14	MN-BE-CD-ZN-CR-NI-

Spike	Conc
Mn 93	256.5 ppb
Be 100	240.5
Cd 90	244.5
Zn 101	1550
Cr 87	253
Ni 92	248
Mg 97	12500

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	0.238	PPM	0.0007	0.29	3.0
BE	313.04	A	0.2416	PPM	0.00065	0.26	3.0
CD	226.50	A	0.2210	PPM	0.00064	0.28	3.0
ZN	213.86	A	OVRANGE	PPM	0.02070	1.32	3.0
CR	267.71	A	0.2210	PPM	0.00051	0.23	3.0
NI	231.60	A	0.2276	PPM	0.00299	1.31	3.0
MG	279.08	A	12.11	PPM	0.030	0.24	3.0

Zn - 1.566 ppm

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	413	0.0261
ZN	213.86	A	312	0.0168
ZN	213.86	A	253	0.0114
CD	226.50	A	-5	-0.0001
CD	226.50	A	2	0.0003
CD	226.50	A	-18	-0.0006
NI	231.60	A	76	0.0048
NI	231.60	A	65	0.0029
NI	231.60	A	40	-0.0018
MN	257.61	A	5000	0.049
MN	257.61	A	4980	0.049
MN	257.61	A	4983	0.049
CR	267.71	A	55	0.0024
CR	267.71	A	102	0.0054
CR	267.71	A	14	-0.0003
MG	279.08	A	52409	26.59

BE	313.04	A	1148	0.0000
BE	313.04	A	1120	0.0000
BE	313.04	A	1133	0.0000

MFB 571

8 120 5801

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
51		4	19:20	MN-BE-CD-ZN-CR-NI-

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	0.049	PPM	0.0000	0.00	3.0
BE	313.04	A	0.0000	PPM	0.00000	0.00	3.0
CD	226.50	A	-0.0002d	PPM	0.00045	225.00	3.0
ZN	213.86	A	0.0181	PPM	0.00743	41.04	3.0
CR	267.71	A	0.0025d	PPM	0.00285	114.00	3.0
NI	231.60	A	0.0019d	PPM	0.00339	178.42	3.0
MG	279.08	A	26.47	PPM	0.104	0.39	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	174	0.0043
ZN	213.86	A	165	0.0035
ZN	213.86	A	161	0.0032
CD	226.50	A	5	0.0005
CD	226.50	A	6	0.0005
CD	226.50	A	0	0.0002
NI	231.60	A	10	-0.0074
NI	231.60	A	36	-0.0026
NI	231.60	A	76	0.0048
MN	257.61	A	5186	0.051
MN	257.61	A	5171	0.051
MN	257.61	A	5152	0.050
CR	267.71	A	73	0.0035
CR	267.71	A	68	0.0032
CR	267.71	A	58	0.0026
MG	279.08	A	52837	26.80
MG	279.08	A	53034	26.90
MG	279.08	A	53165	26.96
BE	313.04	A	1103	0.0000
BE	313.04	A	1098	0.0000
BE	313.04	A	1081	-0.0002

MFB 571

MD

P 200 123914-00 7 JAN 88

87120 5801

SAMPLE	OPERATOR	PWR	TIME	NAME
52		4	19:25	MN-BE-CD-ZN-CR-NI-

Mn $\bar{x}$ = 40.5 ppb

EL	NM	CH	CONC	UNIT	SD	RSD	SEC

005637

005637

CD	226.50	A	0.0004d	PPM	0.00017	42.50	3.0
ZN	213.86	A	0.0036d	PPM	0.00057	15.83	3.0
CR	267.71	A	0.0031d	PPM	0.00043	14.51	3.0
NI	231.60	A	-0.0018d	PPM	0.00614	341.11	3.0
MG	279.08	A	26.88	PPM	0.080	0.29	3.0

0 = 1.43
CPD = 2.02
RPD = NC
RPD = NC
RPD = NC
RPD = NC
RPD = NC
$\bar{y}$ = 26.675 PPD
410
0 = 1.09
RPD = 1.54

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	1924	0.1697
ZN	213.86	A	1909	0.1683
ZN	213.86	A	1900	0.1674
CD	226.50	A	835	0.0474
CD	226.50	A	811	0.0460
CD	226.50	A	796	0.0452
NI	231.60	A	2066	0.3755
NI	231.60	A	2043	0.3712
NI	231.60	A	2064	0.3751
MN	257.61	A	23822	0.240
MN	257.61	A	23570	0.237
MN	257.61	A	23545	0.237
CR	267.71	A	2714	0.1752
CR	267.71	A	2690	0.1736
CR	267.71	A	2624	0.1693
MG	279.08	A	52743	26.76
MG	279.08	A	52790	26.78
MG	279.08	A	52366	26.57
BE	313.04	A	32174	0.0509
BE	313.04	A	32253	0.0510
BE	313.04	A	32276	0.0510

005638

FB 571

~~8712058~~ MS

8120580 1-7-88

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
53		4	19:30	MN-BE-CD-ZN-CR-NI-

Sol.	Conc
94	200 ppb
102	50
92	50
84	200
86	200
93	400

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	0.238	PPM	0.0017	0.71	3.0
BE	313.04	A	0.0509	PPM	0.00007	0.13	3.0
CD	226.50	A	0.0462	PPM	0.00111	2.40	3.0
ZN	213.86	A	0.1684	PPM	0.00115	0.68	3.0
CR	267.71	A	0.1727	PPM	0.00305	1.76	3.0
NI	231.60	A	0.3739	PPM	0.00237	0.63	3.0
MG	279.08	A	26.70	PPM	0.115	0.43	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	150	0.0021
ZN	213.86	A	142	0.0013
ZN	213.86	A	145	0.0017
CD	226.50	A	-4	0.0000
CD	226.50	A	-5	-0.0001
CD	226.50	A	-1	0.0001
NI	231.60	A	[illegible]	[illegible]

MN 257.61	A	72	0.000
MN 257.61	A	82	0.000
MN 257.61	A	91	0.000
CR 267.71	A	-20	-0.0026
CR 267.71	A	18	0.0000
CR 267.71	A	-7	-0.0017
MG 279.08	A	4	0.00
MG 279.08	A	30	0.00
MG 279.08	A	19	0.00
BE 313.04	A	1015	-0.0003
BE 313.04	A	1109	0.0000
BE 313.04	A	1087	-0.0002

MFB 572 P 200 123914-00 7 JAN 88

87120 5802

SAMPLE	OPERATOR	PWR	TIME	NAME
54		4	19:35	MN-BE-CD-ZN-CR-NI-

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	0.000d	PPM	0.0000	0.00	3.0
BE	313.04	A	-0.0002	PPM	0.00015	75.00	3.0
CD	226.50	A	0.0000d	PPM	0.00010	0.00	3.0
ZN	213.86	A	0.0017d	PPM	0.00040	23.52	3.0
CR	267.71	A	-0.0015d	PPM	0.00132	88.00	3.0
NI	231.60	A	-0.0010d	PPM	0.00445	445.00	3.0
MG	279.08	A	0.00d	PPM	0.000	0.00	3.0

005639

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	72	-0.0049
ZN	213.86	A	72	-0.0049
ZN	213.86	A	69	-0.0052
CD	226.50	A	3	0.0004
CD	226.50	A	10	0.0008
CD	226.50	A	24	0.0016
NI	231.60	A	-4	-0.0099
NI	231.60	A	25	-0.0046
NI	231.60	A	40	-0.0018
MN	257.61	A	33	0.000
MN	257.61	A	19	-0.002
MN	257.61	A	60	0.000
CR	267.71	A	-35	-0.0035
CR	267.71	A	-22	-0.0027
CR	267.71	A	28	0.0006
MG	279.08	A	14	0.00
MG	279.08	A	34	0.00
MG	279.08	A	-18	-0.02
BE	313.04	A	1038	-0.0003
BE	313.04	A	1030	-0.0003
BE	313.04	A	1034	-0.0003

WFB 502 1:4
871205802

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
55		4	19:40	MN-BE-CD-ZN-CR-NI-

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	-0.001d	PPM	0.0012	120.00	3.0
BE	313.04	A	-0.0003	PPM	0.00000	0.00	3.0
CD	226.50	A	0.0009d	PPM	0.00061	67.77	3.0
ZN	213.86	A	-0.0050d	PPM	0.00017	3.40	3.0
CR	267.71	A	-0.0019d	PPM	0.00217	114.21	3.0
NI	231.60	A	-0.0055d	PPM	0.00411	74.72	3.0
MG	279.08	A	-0.01d	PPM	0.012	120.00	3.0

Mn -<10XIDL
Be -<10XIDL
Cd -<10XIDL
Zn -<10XIDL
Cr -<10XIDL
Ni -<10XIDL
Mg -<10XIDL

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	60	-0.0060
ZN	213.86	A	57	-0.0062
ZN	213.86	A	21	-0.0095
CD	226.50	A	-10	-0.0002
CD	226.50	A	1	0.0003
CD	226.50	A	-12	-0.0003
NI	231.60	A	24	-0.0048
NI	231.60	A	7	-0.0080
NI	231.60	A	-11	-0.0113
MN	257.61	A	9	-0.002
MN	257.61	A	7	-0.002
MN	257.61	A	-20	-0.002
CR	267.71	A	9	-0.0007
CR	267.71	A	-27	-0.0031
CR	267.71	A	-1	-0.0013
MG	279.08	A	9	0.00
MG	279.08	A	-14	-0.02
MG	279.08	A	-8	0.00
BE	313.04	A	1055	-0.0003
BE	313.04	A	1077	-0.0002
BE	313.04	A	1069	-0.0002

005640

Cal blank

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
56		4	19:45	MN-BE-CD-ZN-CR-NI-

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	-0.002d	PPM	0.0000	0.00	3.0
BE	313.04	A	-0.0003	PPM	0.00007	23.33	3.0
CD	226.50	A	-0.0001d	PPM	0.00032	320.00	3.0
ZN	213.86	A	-0.0073d	PPM	0.00196	26.84	3.0
CR	267.71	A	-0.0017d	PPM	0.00124	72.94	3.0
NI	231.60	A	-0.0081d	PPM	0.00325	40.12	3.0
MG	279.08	A	-0.01d	PPM	0.012	120.00	3.0

Mn -< 0.0 ppb
Be -< 0.2
Cd -< 2.6
Zn -< 12
Cr -< 4.4
Ni -< 9.2
Mg -< 361

ZN	213.86	A	4714	0.4631
ZN	213.86	A	4722	0.4639
CD	226.50	A	8520	0.4813
CD	226.50	A	8487	0.4795
CD	226.50	A	8397	0.4744
NI	231.60	A	2637	0.4830
NI	231.60	A	2619	0.4796
NI	231.60	A	2663	0.4878
MN	257.61	A	246410	2.541
MN	257.61	A	244651	2.522
MN	257.61	A	247001	2.547
CR	267.71	A	7431	0.4864
CR	267.71	A	7427	0.4862
CR	267.71	A	7400	0.4844
MG	279.08	A	104897	52.62
MG	279.08	A	104796	52.57
MG	279.08	A	104368	52.36
BE	313.04	A	313911	0.5142
BE	313.04	A	312883	0.5127
BE	313.04	A	312970	0.5128

005641

P 200 123914-00 7 JAN 88

CCVS

SAMPLE	OPERATOR	PWR	TIME	NAME
57		4	19:51	MN-BE-CD-ZN-CR-NI-

	Rec	Acc	EL	NM	CH	CONC	UNIT	SD	RSD	SEC
Mn	101	250 ppb	MN	257.61	A	2.536	PPM	0.0130	0.51	3.0
Be	103	500	BE	313.04	A	0.5132	PPM	0.00083	0.16	3.0
Cd	96	500	CD	226.50	A	0.4784	PPM	0.00337	0.74	3.0
Zn	93	500	ZN	213.86	A	0.4630	PPM	0.00095	0.20	3.0
Cr	97	500	CR	267.71	A	0.4856	PPM	0.00110	0.22	3.0
Ni	97	500	NI	231.60	A	0.4834	PPM	0.00412	0.85	3.0
Mg	105	50,000	MG	279.08	A	52.51	PPM	0.138	0.26	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	528	0.0366
ZN	213.86	A	539	0.0377
ZN	213.86	A	537	0.0374
CD	226.50	A	189	0.0109
CD	226.50	A	150	0.0087
CD	226.50	A	164	0.0095
NI	231.60	A	492	0.0818
NI	231.60	A	476	0.0789
NI	231.60	A	509	0.0849
MN	257.61	A	3139	0.030
MN	257.61	A	3116	0.030
MN	257.61	A	3116	0.030
CR	267.71	A	164	0.0094
CR	267.71	A	199	0.0117
CR	267.71	A	193	0.0113
MG	279.08	A	-15	-0.02
MG	279.08	A	-44	-0.03

BE 313.04 A	6887	0.0094
BE 313.04 A	6914	0.0095

2XCRDL

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
59		4	19:57	MN-BE-CD-ZN-CR-NI-

	SPIKE	CONC
MN	100	30 ppb
Be	94	1[illegible]
Cd	97	1[illegible]
Zn	93	4[illegible]
Cr	108	2[illegible]
Ni	102	8[illegible]

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	0.030	PPM	0.0000	0.00	3.0
BE	313.04	A	0.0094	PPM	0.00007	0.74	3.0
CD	226.50	A	0.0097d	PPM	0.00111	11.44	3.0
ZN	213.86	A	0.0372	PPM	0.00057	1.53	3.0
CR	267.71	A	0.0108d	PPM	0.00122	11.29	3.0
NI	231.60	A	0.0818	PPM	0.00300	3.66	3.0
MG	279.08	A	-0.02d	PPM	0.015	75.00	3.0

005642

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	9243	1.0168
ZN	213.86	A	9178	1.0080
ZN	213.86	A	9172	1.0073
CD	226.50	A	16047	0.9070
CD	226.50	A	15915	0.8995
CD	226.50	A	15915	0.8995
NI	231.60	A	4815	0.8967
NI	231.60	A	4783	0.8906
NI	231.60	A	4769	0.8879
MN	257.61	A	47918	0.485
MN	257.61	A	46905	0.474
MN	257.61	A	46103	0.466
CR	267.71	A	7505	0.4914
CR	267.71	A	7433	0.4866
CR	267.71	A	7437	0.4867
MG	279.08	A	1052719	419.81
MG	279.08	A	1055680	420.63
MG	279.08	A	1061807	422.39
BE	313.04	A	303769	0.4976
BE	313.04	A	304037	0.4981
BE	313.04	A	301156	0.4933

ICS
AB 0387

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
60		4	20:03	MN-BE-CD-ZN-CR-NI-

	SPIKE	CONC
[illegible]	89	531ppb
[illegible]	105	474

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	0.475	[illegible]	[illegible]	[illegible]	[illegible]

	ZN	213.86	A	1.0107	PPM	0.00529	0.32	3.0
	CR	267.71	A	0.4882	PPM	0.00274	0.56	3.0
	NI	231.60	A	0.8917	PPM	0.00450	0.50	3.0
	MG	279.08	A	OVRANGE	PPM	1.018	0.31	3.0

ICS
AB0387 mg

EL	NM	C	INTENSITY	CONC
MG	279.08	A	94116	47.33
MG	279.08	A	93539	47.04
MG	279.08	A	93749	47.15

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MG	279.08	A	47.17	PPM	0.146	0.30	3.0

005643

005643

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	4758	0.4680
ZN	213.86	A	4732	0.4650
ZN	213.86	A	4758	0.4680
CD	226.50	A	8670	0.4898
CD	226.50	A	8613	0.4866
CD	226.50	A	8566	0.4839
NI	231.60	A	2639	0.4833
NI	231.60	A	2650	0.4854
NI	231.60	A	2640	0.4835
MN	257.61	A	244986	2.526
MN	257.61	A	244259	2.518
MN	257.61	A	247009	2.547
CR	267.71	A	7445	0.4874
CR	267.71	A	7485	0.4899
CR	267.71	A	7501	0.4911
MG	279.08	A	105359	52.85
MG	279.08	A	105141	52.74
MG	279.08	A	106383	53.35
BE	313.04	A	311743	0.5108
BE	313.04	A	310972	0.5095
BE	313.04	A	313245	0.5131

005644

CCVS

F 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
6'		4	20:11	MN-BE-CD-ZN-CR-NI-

	% Rec	std
mn	101	2500 ppb
Be	102	500
Cd	97	500
Zn	93	500
Cr	98	500
Ni	97	500
mg	106	50000

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	2.530	PPM	0.0149	0.58	3.0
BE	313.04	A	0.5111	PPM	0.00182	0.35	3.0
CD	226.50	A	0.4867	PPM	0.00295	0.60	3.0
ZN	213.86	A	0.4670	PPM	0.00173	0.37	3.0
CR	267.71	A	0.4894	PPM	0.00188	0.38	3.0
NI	231.60	A	0.4840	PPM	0.00115	0.23	3.0
MG	279.08	A	52.98	PPM	0.325	0.61	3.0

EL	NM	C	INTENSITY	CONC
ZN	213.86	A	43	-0.0075
ZN	213.86	A	53	-0.0065
ZN	213.86	A	53	-0.0065
CD	226.50	A	-4	0.0000
CD	226.50	A	-24	-0.0010
CD	226.50	A	-13	-0.0003
NI	231.60	A	-9	-0.0076

MN	257.61	A	3[illegible]	0.000
MN	257.61	A	41	0.000
MN	257.61	A	72	0.000
CR	267.71	A	1	-0.0012
CR	267.71	A	26	0.0005
CR	267.71	A	30	0.0007
MG	279.08	A	28	0.00
MG	279.08	A	-4	0.00
MG	279.08	A	4	0.00
BE	313.04	A	1075	-0.0002
BE	313.04	A	1053	-0.0003
BE	313.04	A	1075	-0.0002

Cal blank

P 200 123914-00 7 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
62		4	20:18	MN-BE-CD-ZN-CR-NI-

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
MN	257.61	A	0.000d	PPM	0.0000	0.00	3.0
BE	313.04	A	-0.0003	PPM	0.00007	23.33	3.0
CD	226.50	A	-0.0005d	PPM	0.00051	102.00	3.0
ZN	213.86	A	-0.0069d	PPM	0.00057	8.26	3.0
CR	267.71	A	0.0000d	PPM	0.00104	0.00	3.0
NI	231.60	A	-0.0043d	PPM	0.00308	71.62	3.0
MG	279.08	A	0.00d	PPM	0.000	0.00	3.0

Mn - 0.0 ppb
Cd - <0.2
Cr - <2.4
Zn - <12
Cr - <4.4
Ni - <9.2
Mg - <561

Sb, Pb with CASE #8708 [illegible]

CASE #8656

prep

10 ppm - 100 µl stock/100 mls
0.5 — 50 µl
0.1 — 1000 10 ppm SS
0.05 — 500
0.01 — 100

CCVS

0.5 ppm - 50 µl stock/100 mls

2XCROL

Sb - 120 ppb 1200 µl 10 ppm SS /100 mls
Pb - 10 ppb 100 µl 10 ppm SS /100 mls

ICVS =
ICV#1 for pb
ICV#3 for Sb

Lot #s

	Calib stds	CCVS
Sb	1002 Em	A19607
Pb	426143	H544 KXB

P 200 123914--00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
CAL	PLR	3	10:52	SB-MG-TL

EL	NM	CH	SEC
SB	206.83	A	10.0

B#	INTENSITY	RAW-CONC	CONC
99	-35	0.000d	0.000
1	478	1.000	1.000
2	191	0.440	0.493
3	26	0.118	0.139
4	-14	0.040	0.047

-11 228 x -217 x2

EL	NM	CH	SEC
PB	220.35	A	10.0

B#	INTENSITY	RAW-CONC	CONC
99	71	0.0000d	0.0000
1	3664	1.0000	0.9993
2	1935	0.5187	0.5007
3	418	0.0965	0.0901
4	251	0.0500	0.0465
5	106	0.0097	0.0089

31 -741 x 703 x2

ICVS
ICV#3

EL	NM	C	INTENSITY	CONC
SB	206.83	A	453	0.959
SB	206.83	A	445	0.947
SB	206.83	A	471	0.988

Sb 1020 ppb

005646

EL	NM	C	INTENSITY	CONC
SB	206.83	A	453	0.959
SB	206.83	A	445	0.947
SB	206.83	A	471	0.988

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.964	PPM	0.0210	2.17	10.0

EL	NM	C	INTENSITY	CONC
PB	220.35	A	1766	0.4537
PB	220.35	A	1716	0.4399
PB	220.35	A	1755	0.4306

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
PB	220.35	A	0.4480	PPM	0.00724	1.61	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	-33	0.002
SB	206.83	A	-24	0.024
SB	206.83	A	-30	0.010
PB	220.35	A	62	-0.0026
PB	220.35	A	78	0.0017
PB	220.35	A	59	-0.0033

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
127	PLR	3	11:11	SB-MO-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.0128	PPM	0.0111	92.50	10.0
PB	220.35	A	-0.0014d	PPM	0.00270	192.85	10.0

EL	NM	C	INTENSITY	CONC

ICVS
ICV#1

EL	NM	C	INTENSITY	CONC
PB	220.35	A	1766	0.4537
PB	220.35	A	1716	0.4399
PB	220.35	A	1755	0.4506

Pb Rec Conc 11688
99 ~~4850~~ 4510 ppb

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
PB	220.35	A	0.4480	PPM	0.00724	1.61	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	-33	0.002
SB	206.83	A	-24	0.024
SB	206.83	A	-30	0.010
PB	220.35	A	62	-0.0026
PB	220.35	A	78	0.0017
PB	220.35	A	59	-0.0033

005648

ICB

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
127	PLR	3	11:11	SB-MG-TL

Sb -<24ppb
Pb -< 16

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.012d	PPM	0.0111	92.50	10.0
PB	220.35	A	-0.0014d	PPM	0.00270	192.85	10.0

EL	NM	C	INTENSITY	CONC

ICS
AB 0387

EL	NM	C	INTENSITY	CONC
SB	206.83	A	-27	-0.079
SB	206.83	A	-43	-0.117
SB	206.83	A	-19	-0.059

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	-0.085d	PPM	0.0294	34.58	10.0

ICS
AB 0387

EL	NM	C	INTENSITY	CONC
PB	220.35	A	2217	0.5797
PB	220.35	A	2218	0.5801
PB	220.35	A	2185	0.5708

Stree Conc
119 4850 ppb

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
PB	220.35	A	0.5768	PPM	0.00525	0.91	10.0

EL	NM	C	INTENSITY	CONC

EL	NM	C	INTENSITY	CONC
SB	206.83	A	8	0.099
SB	206.83	A	16	0.117
SB	206.83	A	26	0.139
PB	220.35	A	80	0.0205
PB	220.35	A	119	0.0308
PB	220.35	A	91	0.0234

2X CRDL

Stree Conc
Sb 98 120 ppb
pb 249 10

P 200 123914-00 6 JAN 88
SAMPLE OPERATOR PWR TIME NAME
128 PLR 3 11:51 SB-MG-TL

[redacted]

printer jammed

	Conc	SD	RSD
Sb	0.118 ppm	0.02	16.93
pb	0.0249	0.005	21.33

EL	NM	C	INTENSITY	CONC
SB	206.83	A	-3	0.074
SB	206.83	A	-23	0.027
SB	206.83	A	-47	-0.030
PB	220.35	A	75	0.0115
PB	220.35	A	36	0.0014
PB	220.35	A	91	0.0156

005649

EL	NM	C	INTENSITY	CONC
SB	206.83	A	229	0.567
SB	206.83	A	226	0.561
SB	206.83	A	215	0.540
PB	220.35	A	8086	2.4240
PB	220.35	A	8052	2.4122
PB	220.35	A	8106	2.4309

pb - 2,422

005650

LCS

P 200 123914-00 6 JAN 88

%Rec	Conc
107	2255

SAMPLE	OPERATOR	PWR	TIME	NAME
132	PLR	3	12:25	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.556d	PPM	0.0141	2.53	10.0
PB	220.35	A	OVRANGE	PPM	0.00945	0.39	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	-33	0.002
SB	206.83	A	-2	0.076
SB	206.83	A	-57	-0.054
PB	220.35	A	95	0.0076
PB	220.35	A	100	0.0089
PB	220.35	A	51	-0.0038

Cal blank

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
133	PLR	3	12:33	SB-MG-TL

Sb - <24ppb
Pb - <16

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.008d	PPM	0.0062	315.00	10.0
PB	220.35	A	0.0042d	PPM	0.00698	166.19	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	179	0.469
SB	206.83	A	184	0.478
SB	206.83	A	206	0.522
PB	220.35	A	1975	0.5135
PB	220.35	A	1952	0.5071
PB	220.35	A	1965	0.5108

CCVS

	%Rec	Conc
Sb	98	500 ppb
Pb	102	500

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
134	PLR	3	12:38	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.489d	PPM	0.0283	5.78	10.0
PB	220.35	A	0.5104	PPM	0.00321	0.62	10.0

005651

PB 220.35	A	47	-0.0049
PB 220.35	A	54	-0.0030

MEK 33D
871207905 mo

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
144	PLR	3	13:23	SB-MG-TL

Sb -RPD = NC
pb -RPD = NC

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.007d	PPM	0.0257	367.14	10.0
PB	220.35	A	-0.0044d	PPM	0.00115	26.13	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	5	0.092
SB	206.83	A	-25	0.022
SB	206.83	A	-35	0.000
PB	220.35	A	46	-0.0051
PB	220.35	A	83	0.0046
PB	220.35	A	106	0.0105

005652

Cal blank

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
145	PLR	3	13:28	SB-MG-TL

Sb - 38 ppb
pb - <16

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.038d	PPM	0.0480	126.31	10.0
PB	220.35	A	0.0033d	PPM	0.00787	238.48	10.0

EL	NM	C	INTENSITY	CONC

EL	NM	C	INTENSITY	CONC

EL	NM	C	INTENSITY	CONC
SB	206.83	A	216	0.557
SB	206.83	A	208	0.540

SB 206.83 A	[illegible]	[illegible]
PB 220.35 A	217	0.559
PB 220.35 A	1939	0.5035
PB 220.35 A	1887	0.4889
PB 220.35 A	1946	0.5055

P 200 123914-00 6 JAN 88

CCVS

SAMPLE	OPERATOR	PWR	TIME	NAME
146	PLR	3	13:38	SB-MG-TL

	% Rec	Conc
Sb	110	500 ppb
pb	100	500

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.552d	PPM	0.0104	1.88	10.0
PB	220.35	A	0.4993	PPM	0.00906	1.81	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	13	0.113
SB	206.83	A	-23	0.028
SB	206.83	A	-23	0.028
PB	220.35	A	78	0.0033
PB	220.35	A	136	0.0182
PB	220.35	A	61	-0.0013

005653

MEI 799
87120 7906

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
147	PLR	3	13:44	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.056d	PPM	0.0490	87.50	10.0
PB	220.35	A	0.0067d	PPM	0.01019	152.08	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	213	0.550
SB	206.83	A	236	0.597
SB	206.83	A	180	0.483
PB	220.35	A	1841	0.4762
PB	220.35	A	1901	0.4928
PB	220.35	A	1867	0.4834

MEI 799

EL	NM	C	INTENSITY	CONC
SB	206.83	A	-1	0.081
SB	206.83	A	-41	-0.016
SB	206.83	A	-62	-0.069
PB	220.35	A	154	0.0229
PB	220.35	A	114	0.0126
PB	220.35	A	127	0.0159

mEK 421

P 200 123914-00 6 JAN 88

871208808

SAMPLE	OPERATOR	PWR	TIME	NAME
156	PLR	3	14:22	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	-0.002d	PPM	0.0760	3800.00	10.0
PB	220.35	A	0.0171d	PPM	0.00525	30.70	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	-43	-0.021
SB	206.83	A	-8	0.064
SB	206.83	A	17	0.123
PB	220.35	A	89	0.0061
PB	220.35	A	49	-0.0043
PB	220.35	A	68	0.0007

005654

Cal blank

P 200 123914-00 6 JAN 88

sb- 55ppb.

pb- 216 ppb

SAMPLE	OPERATOR	PWR	TIME	NAME
157	PLR	3	14:26	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.055d	PPM	0.0723	131.45	10.0
PB	220.35	A	0.0008d	PPM	0.00520	650.00	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	155	0.431
SB	206.83	A	189	0.502
SB	206.83	A	197	0.518
PB	220.35	A	1953	0.5074
PB	220.35	A	1932	0.5016
PB	220.35	A	1895	0.4912

PB 220.35 A	1932	0.5016	
PB 220.35 A	1895	0.4912	

QCVS

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
158	PLR	3	14:30	SB-MG-TL

% rec	conc
SB 97	500 ppb
PB 100	500

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.483d	PPM	0.0463	9.58	10.0
PB	220.35	A	0.5000	PPM	0.00820	1.64	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	-2	0.079
SB	206.83	A	-18	0.040
SB	206.83	A	14	0.116
PB	220.35	A	108	0.0110
PB	220.35	A	89	0.0061
PB	220.35	A	133	0.0175

005655

MEK 422
87120 8809

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
159	PLR	3	14:35	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.078d	PPM	0.0380	48.71	10.0
PB	220.35	A	0.0115d	PPM	0.00571	49.65	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	172	0.466
SB	206.83	A	179	0.481
SB	206.83	A	198	0.519
PB	220.35	A	1871	0.4845
PB	220.35	A	1868	0.4837
PB	220.35	A	1872	0.4848

MEK 422

0.7342

Ser dil

EK 427 1:4

71208814

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
168	PLR	3	15:13	SB-MG-TL

Sb - <10 X IDL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.022d	PPM	0.0174	79.09	10.0
PB	220.35	A	0.7320	PPM	0.00343	0.46	10.0

Pb RPD = 9.11

EL	NM	C	INTENSITY	CONC
SB	206.83	A	-45	-0.026
SB	206.83	A	-18	0.040
SB	206.83	A	-15	0.047
PB	220.35	A	30	-0.0092
PB	220.35	A	110	0.0115
PB	220.35	A	61	-0.0013

005656

Cal blank

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
169	PLR	3	15:17	SB-MG-TL

Sb - < 24 ppb

Pb - < 16

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.020d	PPM	0.0402	201.00	10.0
PB	220.35	A	0.0003d	PPM	0.01044	3480.00	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	156	0.433
SB	206.83	A	209	0.542
SB	206.83	A	210	0.544
PB	220.35	A	1969	0.5119
PB	220.35	A	1951	0.5069
PB	220.35	A	1960	0.5094

P 200 123914-00 6 JAN 88

CCVS

SAMPLE	OPERATOR	PWR	TIME	NAME
170	PLR	3	15:22	SB-MG-TL

	% Rec	Conc.	EL	NM	CH	CONC	UNIT	SD	RSD	SEC
Sb	101	500	SB	206.83	A	0.506d	PPM	0.0635	12.54	10.0
pb	102	500	PB	220.35	A	0.5094	PPM	0.00250	0.49	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	-13	0.052
SB	206.83	A	6	0.098
SB	206.83	A	-21	0.033
PB	220.35	A	49	-0.0043
PB	220.35	A	74	0.0023
PB	220.35	A	51	-0.0038

MEK 428

ser dil

1:4 P 200 123914-00 6 JAN 88

871208815

SAMPLE	OPERATOR	PWR	TIME	NAME
171	PLR	3	15:26	SB-MG-TL

	EL	NM	CH	CONC	UNIT	SD	RSD	SEC
Sb - <10 X IDL	SB	206.83	A	0.061d	PPM	0.0334	54.75	10.0
pb - <10 X IDL	PB	220.35	A	-0.0020d	PPM	0.00367	183.50	10.0

005657

Continued from Sample 171 171

ME # 8656

EL	NM	C	INTENSITY	CONC
SB	206.83	A	107	0.033
SB	206.83	A	46	-0.033
SB	206.83	A	22	-0.060
PB	220.35	A	100	0.0089
PB	220.35	A	83	0.0041
PB	220.35	A	46	-0.0062

005658

SC 56
1A I
Prep Blank

F 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
172		3	15:32	SB-MG-TL

SB - <
PB - <

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	-0.0206	PPM	0.0478	239.00	10.0
PB	220.35	A	0.0022d	PPM	0.00771	350.45	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	550	0.518
SB	206.83	A	504	0.467
SB	206.83	A	513	0.477
PB	220.35	A	7857	2.1744
PB	220.35	A	7888	2.1831
PB	220.35	A	7896	2.1853

Pb 2.1859 ppm

SC 56
1A I

P 200 123914-00 6 JAN 88

005658

173			3	15:36	SB-MG-TL			

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.487	PPM	0.0270	5.54	10.0
PB	220.35	A	OVRANGE	PPM	0.00576	0.26	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	67	-0.010
SB	206.83	A	-1	-0.085
SB	206.83	A	17	-0.065
PB	220.35	A	106	0.0106
PB	220.35	A	115	0.0131
PB	220.35	A	118	0.0139

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
174		3	15:40	SB-MG-TL

EL	NM	C	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	-0.0511	PPM	0.0382	71.85	10.0
PB	220.35	A	0.01236	PPM	0.00172	13.76	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	10	-0.073
SB	206.83	A	4	-0.079
SB	206.83	A	31	-0.050
PB	220.35	A	72	0.0011
PB	220.35	A	128	0.0167
PB	220.35	A	127	0.0164

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
175		3	15:45	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	-0.0686	PPM	0.0153	22.50	10.0
PB	220.35	A	0.0114	PPM	0.00892	78.24	10.0

EL	NM	C	INTENSITY	CONC

005659

PB 220.35	A	1833	0.4927
PB 220.35	A	1871	0.5033
PB 220.35	A	1786	0.4796

MFB 571

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
176		3	15:49	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.449	PPM	0.0147	3.27	10.0
PB	220.35	A	0.4918	PPM	0.01187	2.41	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	-9	-0.093
SB	206.83	A	8	-0.075
SB	206.83	A	18	-0.064
PB	220.35	A	60	-0.0023
PB	220.35	A	64	0.0044
PB	220.35	A	139	0.0198

005660

MFB 572

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
177		3	15:53	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	-0.078d	PPM	0.0146	18.71	10.0
PB	220.35	A	0.0073d	PPM	0.01133	155.20	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	40	-0.040
SB	206.83	A	1	-0.082
SB	206.83	A	-2	-0.086
PB	220.35	A	49	-0.0054
PB	220.35	A	114	0.0128
PB	220.35	A	38	-0.0084

1,4 sor d.1

F 200 123914-00 6 JAN 89

SAMPLE	OPERATOR	PWR	TIME	NAME
178		3	15:57	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	-0.070d	PPM	0.0254	36.28	10.0
PB	220.35	A	-0.0004d	PPM	0.01147	2867.50	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	64	-0.014
SB	206.83	A	9	-0.074
SB	206.83	A	-8	-0.092
PB	220.35	A	66	-0.0006
PB	220.35	A	27	-0.0115
PB	220.35	A	39	-0.0081

005661

F 200 123914-00 6 JAN 89

SAMPLE	OPERATOR	PWR	TIME	NAME
175		3	16:00	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	-0.060d	PPM	0.0408	68.00	10.0
PB	220.35	A	-0.0068d	PPM	0.00557	81.91	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	507	0.558
SB	206.83	A	463	0.500
SB	206.83	A	452	0.485
PB	220.35	A	1952	0.5082
PB	220.35	A	1961	0.5107
PB	220.35	A	1891	0.4914

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
180		3	16:09	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.614	PPM	0.0385	7.49	10.0
PB	220.35	A	0.5034	PPM	0.01049	2.08	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	281	0.257
SB	206.83	A	221	0.177
SB	206.83	A	167	0.105
PB	220.35	A	156	0.0118
PB	220.35	A	86	-0.0075
PB	220.35	A	139	0.0071

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
181		3	16:14	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.179d	PPM	0.0760	42.45	10.0
PB	220.35	A	0.0038d	PPM	0.01006	264.73	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	181	0.124
SB	206.83	A	117	0.038
SB	206.83	A	88	0.000

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.054d	PPM	0.0635	117.59	10.0

EL	NM	C	INTENSITY	CONC
PB	220.35	A	2235	0.5746
PB	220.35	A	2212	0.5685
PB	220.35	A	2194	0.5637

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
PB	220.35	A	0.5489	PPM	0.00346	[illegible]	[illegible]

EL	NM	C	INTENSITY	CONC
SB	206.83	A	444	0.474
SB	206.83	A	441	0.470
SB	206.83	A	444	0.474
PB	220.35	A	1941	0.5169
PB	220.35	A	1894	0.5038
PB	220.35	A	1901	0.5058

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
163		3	16:31	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	0.472	PPM	0.0023	0.48	10.0
PB	220.35	A	0.5038	PPM	0.00705	1.38	10.0

EL	NM	C	INTENSITY	CONC
SB	206.83	A	73	-0.020
SB	206.83	A	33	-0.074
SB	206.83	A	24	-0.086
PB	220.35	A	111	0.0086
PB	220.35	A	131	0.0141
PB	220.35	A	94	0.0038

P 200 123914-00 6 JAN 88

SAMPLE	OPERATOR	PWR	TIME	NAME
184		3	16:36	SB-MG-TL

EL	NM	CH	CONC	UNIT	SD	RSD	SEC
SB	206.83	A	-0.060d	PPM	0.0331	58.50	10.0
PB	220.35	A	0.0088d	PPM	0.00515	58.52	10.0

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CONSULTING ENGINEERS and PLANNERS
869 NORTH ORANGE AVENUE ORLANDO, FLORIDA 32801-1088 • 305/423-7275 • TELEX 808435

Case 8656

ICVS = ICV# 1 (0487)
CCVS = 7.5ppm

METALS DATA SHEET

Parameter: K (FAAS-PE5000) Date: 1-10-88

Analyst: [illegible]

Standard (ug/ml)	Abs.
1.0	0.006
5.0	0.051
10.0	0.125
15.0	0.208

Correlation Coefficient 0.997 Y-Intercept -0.015
Slope 0.0145 MDC 5 ppm

Sample	Dilution Factor	Absorbance	Emission	Conc. (ug/ml)	Conc. (ug/g)	S.D. ( )	R.S.D. (%)
ICVS	10	0.052		46.17	%rec=	92	conc. SD.2
CB		0.000		1.04			
AgPB	86561AF 5	-0.002		0.90			
AgLCS	86561AF	0.055		24.12	%rec=	96	
8712055801	MFB571	0.034		3.38	X=3.48		
8712055801MD	MFB571	0.037		3.58	RPD=NC		
8712055802	MFB572	0.000		1.04			
CB		0.000		1.04			
CCVS		0.090		7.23	%rec=	96	

005664

005664

	0.001	
	0.000	
	0.000	
Az	0.000	A
	0.000	A
	0.006	
	0.006	
	0.006	
1 ppm	0.006	A
	0.052	
	0.051	
	0.051	
5 ppm	0.051	A
	0.126	
	0.123	
	0.124	
10 ppm	0.125	A
	0.207	
	0.210	
	0.208	
15 ppm	0.206	A
	0.053	
	0.052	
ICUS	0.052	
486(1:9)	0.052	A
	0.000	
	0.000	
CB	0.000	
0	0.000	A

005665

	-0.002	
	-0.002	
AgPB	-0.002	
0	-0.002	A
	0.054	
	0.054	
	0.055	
AgLCS	0.055	A
	0.034	
	0.035	
MFB511	0.035	
5801	0.034	A
	0.037	
	0.036	
MFB511	0.037	
5801	0.037	A
	0.061	
	0.000	
MFB512	0.000	
5802	0.000	A
	0.000	
	0.000	
CB	0.000	
0	0.000	A
	0.087	
	0.091	
CCUS	0.092	
75	0.090	A

005666

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Case 8656

ICUS= ICU~~X~~4

METALS DATA SHEET

Parameter: Ag (GFAAS-PE5000)

Date: 12-28-87

Analyst: [illegible]

Standard (~~ug/ml~~ ng/ml)	Abs.
10	0.1570
20	0.3034
30	0.4374
50	0.6876

Correlation Coefficient 0.9993

Slope 0.0132

Y-Intercept 0.0336

MDC 10 ppb

Sample	Dilution Factor	Absorbance	Emission	Conc. (~~ug/ml~~ ng/ml)	Conc. (ug/g)	Mean (~~S.D.~~) ( )	R.S.D. (%)
ICUS	4	0.3690		101.72		101.40	0.4%
Rep	(97.6ppb)	0.3689		101.08		%rec	104
CB		0.0009		-2.48		<3.4	ppb
Rep		0.0007		-2.50			
Ag PB	8656 1AF	0.0016		-2.43		0.0	
Rep		0.0010		-2.47			
Ag LCS	8656 1AF	0.3806	[illegible]	~~26.30~~ 105.24		105.66	0.6%
Rep		0.3834		106.08		%rec	108
Ag LCS+20	8656 1AF	0.6488		46.64		46.58	0.2%
Rep		0.6472		46.52		%rec	101
87120S801	MFBS71	~~0.64~~ 0.0067	[illegible]	-2.04		<10	ug/g
Rep		0.0036		-2.28			
S801+20	MFBS71	0.2393		15.59		15.88	2.6%
Rep		0.2471		16.18		%rec	79

005667

Sample	Factor	Absorbance	Emission	~~(ug/ml)~~	(ug/g)	( )	(%)
8112055801MD	MFB571	0.0058		-2.11	12-28-87	<10	ug/g
Rep		0.0045		-2.21			
5801MD+20	MFB571	0.1710		10.42		10.51	1.2%
Rep		0.1734		10.60		%rec=	53
8112055801MS	MFB571	0.1579		9.42		9.37	
Rep		0.1566		9.32		%rec=	94
8112055802	MFB572	0.0040		-2.25	12-28-87	<10	ug/g
12-28-87 Rep		0.0027		-2.34			
~~5802+~~ CB		-0.0000		-2.55		<3.4	ppb
Rep		-0.0005		-2.59			
CCVS		0.3915		27.13		27.41	1.4%
Rep		0.3988		27.69		%rec=	108
5802+20	MFB572	0.3103		20.98		21.04	0.4%
Rep		0.3119		21.10		%rec=	105
CB		0.0012		-2.46		<3.4	ppb
Rep		0.0000		-2.55			
CCVS		0.3889		26.94		27.02	0.4%
Rep		0.3912		27.11		%rec=	108

005668

Element: AG Analyst: LF Date: 12/28/87
Conditions: GFAAS: MP PROG: 850 CHAR: 1900 ATOM: 10 UL INJ VOL
Remarks:

No.	Peak Area	Peak Height	No.	Peak Area	Peak Height
1	0.0080 AZ	0.0180	2	0.0004	0.0053
3	0.0008 CB	0.0056	4	0.0007	0.0056
5	0.1555 10	0.2422	6	0.1585	0.2393
7	0.3042 20	0.4585	8	0.3027	0.4536
9	0.4359 30	0.6363	10	0.4388	0.6413
11	0.6887 50	0.9841	12	0.6885	0.9807

10 0.1570
20 0.3034
30 0.4374
50 0.6876

R: 0.9993
m: 0.0132
y-inter: 0.0336

005669

Element: AG Analyst: LF Date: 12/28/87
Conditions: GFAAS: MP PROG: 850 CHAR: 1900 ATOM: 10 UL INJ VOL
Remarks:

No.	Peak Area		Peak Height	No.	Peak Area	Peak Height
1	0.3890	ICVS	0.5385	2	0.3869	0.6006
3	0.0009	CB	0.0022	4	0.0007	0.0017
5	0.0016	S8014PB	0.0028	6	0.0010	0.0028
7	0.3806	LCS	0.5297	8	0.3834	0.5306
9	0.6488	LCS4	0.9175	10	0.6472	0.9064
11	0.0067	S801	0.0074	12	0.0036	0.0039
13	0.2393	S8014	0.6072	14	0.2471	0.6258
15	0.0058	S801MD	0.0070	16	0.0045	0.0044
17	0.1710	S801WDH	0.4263	18	0.1734	0.4340
19	0.1579	S801MS	0.3895	20	0.1566	0.3891
21	0.0040	S802	0.0067	22	0.0027	0.0036
23	-0.0000	CB	0.0012	24	-0.0005	0.0009
25	0.3915	CCVS	0.6171	26	0.3988	0.6093
27	0.3103	S802+	0.4523	28	0.3119	0.4546
29	0.0012	CB	0.0018	30	0.0000	0.0018
31	0.3889	CCVS	0.5901	32	0.3912	0.5564

12-28-87

005670

Case 8656

PROGRAMMING MODE INSTRUMENT USER METH # 2[illegible] - AS DATE: 88/01/03

ELEMENT: AS WAVELENGTH (NM): 193.7 SLIT (NM): 0.7
PYRO COATED TUBE WITH PLATFORM - MAX POWER HEATING - GAS STOP - MATRIX MOD.
PRETREAT TEMP: 1200 ATOMIZE TEMP: 2300 CHARACT. MASS (PG) 17.0

1. TECHNIQUE: ZEEMAN
2. SIGNAL PROCESSING: PEAK AREA
3. LAMP CURRENT (MA): 0
4. CALIBRATION: LINEAR
5. TIME (SECONDS): 4.2
6. READ DELAY (SECONDS): 0.0
7. SCREEN FORMAT: 1 & GRAPHICS
8. PRINTER: MAIN SUPPL
9. RECORDER SIGNAL: 0.2 CONT ABS
10. RECORDER EXP: 1000
11. STATISTICS: 2 [illegible]
12. NOMINAL WEIGHT 1.0
13. ROLLOVER ABS.: 1.0
14. BG SCALE: 0.5

15. S1: [illegible] 16. S2: 25.0 17. S3: 50.0
18. S4: [illegible] 19. S5: 20. S6:
21. S7: 22. S8: 23. PEAK:

005671

TIME: 08:38

	AA	ZAA	BC
PEAK HEIGHT ABSORBANCE	0.067	0.057	0.057
PEAK AREA ABS-SECONDS	0.070	0.027	0.043

PEAK: [illegible]

	AA	ZAA	BC
PEAK HEIGHT ABSORBANCE	0.065	0.058	0.037
PEAK AREA ABS-SECONDS	0.062	0.027	0.035

PEAK: [illegible]

PANE= [illegible] STD.DEV.= 0.000 COEF.VAR.= 2.99 %

0.000 ALTERED

	AA	ZAA	BC
PEAK HEIGHT ABSORBANCE	0.176	0.151	0.046
PEAK AREA ABS-SECONDS	0.117	0.069	0.049

PEAK: 0.042

	AA	ZAA	BC
PEAK HEIGHT ABSORBANCE	0.132	0.154	0.049
PEAK AREA ABS-SECONDS	0.126	0.067	0.059

PEAK: 0.040

PANE= 0.041 STD.DEV.= 0.001 COEF.VAR.= 3.18 %

10.0 STANDARD 1

005671

AS

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.375	0.338	0.054
PEAK AREA (ABS-SECONDS)	0.156	0.119	0.048

READ: 22.4

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.355	0.342	0.058
PEAK AREA (ABS-SECONDS)	0.172	0.118	0.054

READ: 22.5

MEAN= 22.4 STD.DEV.= 0.1 COEF.VAR.= 0.47 %

22.4

S-51: READING GREATER THAN HIGHEST STANDARD

34.5 STANDARD 2

AS

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.645	0.567	0.078
PEAK AREA (ABS-SECONDS)	0.281	0.214	0.054

READ: 51.2

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.784	0.703	0.081
PEAK AREA (ABS-SECONDS)	0.281	0.2[illegible]	0.055

READ: 47.6

MEAN= 48.9 STD.DEV.= 1.9 COEF.VAR.= 3.81 %

48.9

S-51: READING GREATER THAN HIGHEST STANDARD

49.5 STANDARD 3

AS

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	1.174	1.053	0.138
PEAK AREA (ABS-SECONDS)	0.435	0.354	0.081

READ: 85.1

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	1.293	1.156	0.137
PEAK AREA (ABS-SECONDS)	0.440	0.360	0.080

READ: 90.7

005672

005672

90.0

E-50: READING GREATER THAN HIGHEST STANDARD

97.2 STANDARD 4

005673

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.670	0.617	0.070
PEAK AREA (ABS-SECONDS)	0.278	0.209	0.069
READ: 99.8			

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.656	0.627	0.080
PEAK AREA (ABS-SECONDS)	0.266	0.203	0.065
READ: 91.9			

MEAN= 95.8 STD.DEV.= 1.4 COEF.VAR.= 2.74 %

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	[illegible]	0.067	0.035
PEAK AREA (ABS-SECONDS)	[illegible]	[illegible]	0.026
READ: 0.8			

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.065	0.073	0.046
PEAK AREA (ABS-SECONDS)	0.051	0.028	0.080
READ: -1.8			

MEAN= 0.8 STD.DEV.= 0.8 COEF.VAR.= 99.99 %

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.061	0.067	0.039
PEAK AREA (ABS-SECONDS)	[illegible]	[illegible]	0.035
READ: -1.9			

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.066	0.055	0.040
PEAK AREA (ABS-SECONDS)	0.076	0.027	0.049
READ: 0.0			

MEAN= -0.9 STD.DEV.= 1.9 COEF.VAR.= 99.99 %

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.306	0.270	0.057
PEAK AREA (ABS-SECONDS)	0.173	0.112	0.062
READ: 25.1			

[redacted] AREA- ABS-SECONDS)	0.186	0.119	0.077

PEAK: 27.0

MEAN= 26.0 STD.DEV.= 1.4 COEF.VAR.= 5.25 %

	AA	ZAA	BG
[redacted] HEIGHT (ABSORBANCE)	0.480	0.422	0.076
PEAK AREA (ABS-SECONDS)	0.279	0.194	0.085

PEAK: 45.3

	AA	ZAA	BG
[redacted] HEIGHT (ABSORBANCE	0.593	0.517	0.082
[redacted] AREA -BS-SECONDS	0.265	0.183	0.075

PEAK: 47.8

MEAN= 46.5 STD.DEV.= 0.9 COEF.VAR.= 1.95 %

	AA	ZAA	BG
PEAK HEIGHT ABSORBANCE	0.115	0.080	0.092
PEAK AREA ABS-SECONDS	0.141	0.033	0.107

PEAK: 1.6

	AA	ZAA	BG
[redacted] HEIGHT (ABSORBANCE	0.144	0.054	0.107
PEAK AREA (ABS-SECONDS)	0.155	0.025	0.131

PEAK: 40.6

MEAN= 1.7 STD.DEV.= 1.8 COEF.VAR.= 99.99 %

	AA	ZAA	BG
[redacted] HEIGHT (ABSORBANCE)	0.309	0.207	0.099
[redacted] AREA ABS-SECONDS)	0.244	0.111	0.133

PEAK: 24.7

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.233	0.189	0.114
[redacted] AREA (ABS-SECONDS)	0.249	0.113	0.186

PEAK: 25.4

MEAN= 25.0 STD.DEV.= 0.5 COEF.VAR.= 2.08 %

	AA	ZAA	BG
[redacted] HEIGHT (ABSORBANCE)	0.161	0.077	0.114
PEAK AREA (ABS-SECONDS)	0.188	[illegible]	[illegible]

005675

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.128	0.054	0.122
PEAK AREA (ABS-SECONDS)	0.124	0.014	0.170

READ: -3.6

MEAN= -2.5 STD.DEV.= 1.9 COEF.VAR.= 89.09 %

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.254	0.154	0.132
PEAK AREA (ABS-SECONDS)	0.257	0.098	0.153

READ: 30.3

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.260	0.162	0.129
PEAK AREA (ABS-SECONDS)	0.266	0.098	0.162

READ: 30.3

MEAN= 2.9 STD.DEV.= 1.0 COEF.VAR.= [illegible] %

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.266	0.170	0.117
PEAK AREA (ABS-SECONDS)	0.259	0.090	0.163

READ: 15.5

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.231	0.193	0.110
PEAK AREA (ABS-SECONDS)	0.251	[illegible]	0.154

READ: 20.3

MEAN= 18.6 STD.DEV.= 1.6 COEF.VAR.= 8.10 %

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.122	0.070	0.088
PEAK AREA (ABS-SECONDS)	0.139	0.026	0.114

READ: -0.5

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.156	0.079	0.087
PEAK AREA (ABS-SECONDS)	0.129	0.017	0.112

READ: -2.9

MEAN= -1.6 STD.DEV.= 1.9 COEF.VAR.= 89.99 %

005676

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.258	0.212	0.086
PEAK AREA (ABS-SECONDS)	0.201	0.108	0.099

READ: 24.0

MEAN= 23.5 STD.DEV.= 1.0 COEF.VAR.= 4.18 %

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	[illegible]	0.048	0.085
PEAK AREA (ABS-SECONDS)	0.106	0.022	0.084

READ: [illegible]

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.105	0.047	0.078
PEAK AREA (ABS-SECONDS)	0.099	0.008	0.090

READ: 45.8

MEAN= [illegible] STD.DEV.= 2.9 COEF.VAR.= 82.95 %

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.508	0.435	0.080
PEAK AREA (ABS-SECONDS)	0.330	0.217	0.113

READ: 51.1

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.532	0.478	0.074
PEAK AREA (ABS-SECONDS)	0.311	0.205	[illegible]

READ: 52.6

MEAN= 54.3 STD.DEV.= 2.4 COEF.VAR.= 4.42

005677

1-4-88

Case ~~8041~~ ~~8~~
8656 1-4-88

PROGRAMMING MODE INSTRUMENT USER METH # 34 - PB DATE: 88/01/04

ELEMENT: PB WAVELENGTH (NM): 283.3 SLIT (NM): 0.7
PYRO COATED TUBE WITH PLATFORM - MAX POWER HEATING - GAS STOP - MATRIX MOD.
PRETREAT TEMP: 900 ATOMIZE TEMP: 1800 CHARACT. MASS (PG) 12.0

1. TECHNIQUE: ZEEMAN
2. SIGNAL PROCESSING: PEAK AREA
3. LAMP CURRENT (MA): 0
4. CALIBRATION: LINEAR
5. TIME (SECONDS): 4.0
6. READ DELAY (SECONDS): 0.0
7. SCREEN FORMAT: 1.5 GRAPHICS
8. PRINTER: MAIN BUFFL
9. RECORDER SIGNAL: 1.0 CONT ABS
10. RECORDER EXP: 1000
11. STATISTICS: 3 REP. : SD - CV
12. NOMINAL WEIGHT 1.0
13. POLLUTANT LEVEL : 1.000
14. BG SCALE: 0.5

15. S1: 5.0
16. S2: 25.0
17. S3: 50.0
18. S4: 100.0
19. S5:
20. S6:
21. S7:
22. S8:
23. RELP:

005678

TIME: 04:39

005678

	AA	ZAA	BC
EAI HEIGHT ABSORBANCE	0.014	0.032	0.002
EAI AREA ABS-SECONDS	0.113	0.399	-0.030

EAI: -0.005

	AA	ZAA	BC
E HEIGHT ABSORBANCE	0.015	0.019	0.005
EAI AREA ABS-SECONDS	0.026	0.033	-0.006

E: -0.013

EAN= -0.005 STD.DEV.= 0.005 COEF.VAR.= 57.73

.001 AUTOZERO

	AA	ZAA	BC
E HEIGHT ABSORBANCE	0.064	0.175	0.016
EAI AREA ABS-SECONDS	0.083	1.483	1.103

E: 0.036

	AA	ZAA	BC
E HEIGHT ABSORBANCE	0.031	0.064	0.017
E AREA ABS-SECONDS	0.071	1.083	-0.009

E: 0.033

EAN= 0.034 STD.DEV.= 0.003 COEF.VAR.= 10.35

5.0 STANDARD

	AA	ZAA	BC
EAI HEIGHT ABSORBANCE	0.357	0.391	0.061
EAI AREA ABS-SECONDS	0.156	1.148	0.103

EAI: 23.0

	AA	ZAA	BC
E HEIGHT ABSORBANCE	0.375	0.306	0.072
EAI AREA ABS-SECONDS	0.170	0.155	0.015

E: 24.3

005679

E-51: READING GREATER THAN HIGHEST STANDARD

5.0 ETANDARD 3

	AA	ZAA	BG
HEIGHT ABSORBANCE	0.612	0.486	0.132
AREA ABS-SECONDS	0.264	0.230	0.034

AV 43.3

	AA	ZAA	BG
HEIGHT ABSORBANCE	0.680	0.535	0.146
AREA ABS-SECONDS	0.297	0.245	0.052

AV 45.3

AW= 44.0 STD.DEV.= 2.9 COEF.VAR.= 5.39 %

E-51: READING GREATER THAN HIGHEST STANDARD

33.5 STANDARD 3

	AA	ZAA	BG
HEIGHT ABSORBANCE	1.055	0.904	0.151
AREA ABS-SECONDS	0.452	0.364	0.134

EAV 78.3

	AA	ZAA	BG
HEIGHT ABSORBANCE	1.119	0.941	0.178
AREA ABS-SECONDS	0.504	0.401	0.103

EAV 87.3

EW= 83.4 STD.DEV.= 6.3 COEF.VAR.= 7.55 %

E-51: READING GREATER THAN HIGHEST STANDARD

84.3 STANDARD 4

005680

RB

(1)

	AA	BAA	BO
PEAK HEIGHT ABSORBANCE	0.530	0.415	0.106
PEAK AREA ABS-SECONDS	0.219	0.193	0.026

PEAK: 41.7

	AA	BAA	BO
PEAK HEIGHT ABSORBANCE	0.534	0.415	0.120
PEAK AREA ABS-SECONDS	0.254	0.219	0.035

PEAK: 49.1

(1.1)

IGUS(97.9ppb) %Rec: 93

MEAN= 45.3 STD.DEV.= 5.2 COEF.VAR.= 11.38

RB

(2)

	AA	BAA	BO
PEAK HEIGHT ABSORBANCE	0.049	0.041	0.017
PEAK AREA ABS-SECONDS	0.049	0.044	-0.001

PEAK: 1.3

	AA	BAA	BO
PEAK HEIGHT ABSORBANCE	0.019	0.022	0.004
PEAK AREA ABS-SECONDS	0.034	0.038	-0.005

PEAK: -0.8

CB

41.2ppb

MEAN= 1.7 STD.DEV.= 2.2 COEF.VAR.= 88.88

RB

(3)

	AA	BAA	BO
PEAK HEIGHT ABSORBANCE	0.017	0.021	0.005
PEAK AREA ABS-SECONDS	0.030	0.031	-0.001

PEAK: -1.4

	AA	BAA	BO
PEAK HEIGHT ABSORBANCE	0.014	0.021	0.005
PEAK AREA ABS-SECONDS	0.025	0.030	-0.002

8043-195

PEAK: -1.6

Ag PP,

MEAN= -1.5 STD.DEV.= 0.2 COEF.VAR.= 11.51

RB

(4)

	AA	BAA	BO
PEAK HEIGHT ABSORBANCE	0.250	0.183	0.067
PEAK AREA ABS-SECONDS	0.146	0.122	0.024

PEAK: 25.6

005681

[redacted] AREA ABS-SECONDS 0.14 0.122 0.025

(1.3)

PEAK: 23.5 AgUS(979ppb) %rec=96

MEAN= 23.5 STD.DEV.= 0.0 COEF.VAR.= 0.16 %

[redacted]

[redacted]

(5)

	AA	ZAA	BG
PEAK HEIGHT ABSORBANCE	0.422	0.337	0.085
PEAK AREA ABS-SECONDS	0.174	0.145	0.026

PEAK: 31.5

	AA	ZAA	BG
PEAK HEIGHT ABSORBANCE	0.505	0.402	0.106
PEAK AREA ABS-SECONDS 8LOWD1A.R	0.210	0.177	0.033

PEAK: 33.4 AgUS+10ppb %rec=109

MEAN= 34.5 STD.DEV.= 5.5 COEF.VAR.= 15.93 %

(6)

	AA	ZAA	BG
PEAK HEIGHT ABSORBANCE	0.073	0.061	0.012
PEAK AREA ABS-SECONDS	0.043	0.051	-0.001

PEAK: 4.1

	AA	ZAA	BG
PEAK HEIGHT ABSORBANCE	0.155	0.145	0.012
PEAK AREA ABS-SECONDS MAG644	0.047	0.045	0.002

PEAK: 1.8 8712D14D62 LSmg/l

MEAN= 2.9 STD.DEV.= 1.4 COEF.VAR.= 48.59 %

(7)

	AA	ZAA	BG
PEAK HEIGHT ABSORBANCE	0.157	0.127	0.031
PEAK AREA ABS-SECONDS	0.083	0.077	0.006

PEAK: 11.3

	AA	ZAA	BG
PEAK HEIGHT ABSORBANCE	0.168	0.133	0.035
PEAK AREA ABS-SECONDS MAG644	0.081	0.077	0.003

PEAK: 11.3 8712D14D+10ppb %rec=8.4

MEAN= 11.3 STD.DEV.= 0.1 COEF.VAR.= 0.45 %

(8)

	AA	ZAA	BG
PEAK HEIGHT ABSORBANCE	0.285	0.235	0.058

005682

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.357	0.317	0.053
PEAK AREA (ABS-SECONDS)	0.126	0.113	0.013

MAG644

PEAK: 31.1

87120140G.MS (+30ppb) % rec=95

MEAN= 31.5 STD.DEV.= 0.6 COEF.VAR.= 2.01 %

PE

(9)

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.052	0.044	0.010
PEAK AREA (ABS-SECONDS)	0.040	0.040	0.000

PEAK: 1.1

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.151	0.041	0.012
PEAK AREA (ABS-SECONDS)	0.044	0.041	0.002

MAG682

PEAK: 1.2

87120381S

MEAN= 1.2 STD.DEV.= 0.2 COEF.VAR.= 15.95 %

LSmg/L

PE

(10)

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.178	0.140	0.038
PEAK AREA (ABS-SECONDS)	0.083	0.072	0.011

PEAK: 9.8

005683

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.188	0.135	0.052
PEAK AREA (ABS-SECONDS)	0.074	0.068	0.006

MAG682

PEAK: 9.8

87120381S+10ppb % rec=93

MEAN= 9.7 STD.DEV.= 0.7 COEF.VAR.= 6.00 %

PE

(11)

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.045	0.035	0.008
PEAK AREA (ABS-SECONDS)	0.027	0.027	-0.010

PEAK: 0.1

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.043	0.032	0.012
PEAK AREA (ABS-SECONDS)	0.040	0.033	0.006

MAG682

PEAK: -0.7

87120381S MD

MEAN= -0.3 STD.DEV.= 0.6 COEF.VAR.= 99.98 %

LSmg/L

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE	0.177	0.141	0.036
PEAK AREA (ABS-SECONDS)	0.081	0.079	0.002

READ: 10.0

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE	0.170	0.135	0.035
PEAK AREA (ABS-SECONDS	0.076	0.071	0.005

MA(6)682

READ: 9.5

8712023815(MDT10)ppb Dec 98

MEAN= 9.8 STD.DEV.= 0.4 COEF.VAR.= 3.75 %

****

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE	0.014	0.017	0.004
PEAK AREA (ABS-SECONDS	0.033	0.029	-0.005

READ: -0.1

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE	0.015	0.015	0.006
PEAK AREA (ABS-SECONDS	0.021	0.023	-0.002

READ: -0.7

CB 41.2 ppb

MEAN= -0.4 STD.DEV.= 0.4 COEF.VAR.= 12.59 %

****

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE	0.610	0.482	0.128
PEAK AREA (ABS-SECONDS	0.242	0.390	0.242

READ: 44.3

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE	0.583	0.533	0.150
PEAK AREA (ABS-SECONDS)	0.280	0.224	0.056

READ: 51.4

CCVS(50ppb) Dec 96

MEAN= 48.1 STD.DEV.= 4.7 COEF.VAR.= 9.73 %

****

005684

005684

continued from sample #14

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.040	0.033	0.010
AREA (ABS-SECONDS)	0.037	0.037	0.000

EAD: 0.2

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.023	0.018	0.010
AREA (ABS-SECONDS)	0.027	0.023	0.004

EAD: -3.7

EAN= -1.7 STD.DEV.= 2.6 COEF.VAR.= 99.99 %

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.329	0.261	0.066
AREA (ABS-SECONDS)	0.139	0.114	0.025

EAD: 21.8

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.342	0.274	0.069
AREA (ABS-SECONDS)	0.141	0.120	0.022

EAD: 23.1

EAN= 22.2 STD.DEV.= 1.2 COEF.VAR.= 5.52 %

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.441	0.353	0.088
AREA (ABS-SECONDS)	0.154	0.124	0.030

EAD: 22.1

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.510	0.406	0.106
AREA (ABS-SECONDS)	0.210	0.171	0.039

EAD: 36.9

EAN= 34.5 STD.DEV.= 3.4 COEF.VAR.= 9.84 %

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.064	0.052	0.012
AREA (ABS-SECONDS)			

005685

1.2

	AA	ZAA	BG
HEIGHT (ABSORBANCE) MFD571	0.047	0.040	0.012
AREA (ABS-SECONDS) MA 1-5-88	0.050	0.036	0.010

EAD: 0.1 8711305801 LSingh

EAN= 0.6 STD.DEV = 0.8 COEF.VAR.= 99.99 %

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.138	0.112	0.028
AREA (ABS-SECONDS)	0.095	0.069	0.026

EAD: 9.1

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.157	0.126	0.032
AREA (ABS-SECONDS) MFD571	0.099	0.074	0.025

EAD: 1[illegible].9 8711305801MD1.prn Page 98

EAN= 9.5 STD.DEV. = 1.0 COEF.VAR.= 10.14 %

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.042	0.028	0.014
AREA (ABS-SECONDS)	0.055	0.032	0.023

EAD: [illegible]

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.046	0.034	0.012
AREA (ABS-SECONDS) MFD571	0.048	0.038	0.010

EAD: 9.6 8711305801MD1 LSingh

EAN= 9.2 STD.DEV. = 1.2 COEF.VAR.= 99.99 %

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.146	0.119	0.030
AREA (ABS-SECONDS)	0.096	0.075	0.021

EAD: 10.8

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.149	0.122	0.034
AREA (ABS-SECONDS) MFD571	0.091	0.069	0.022

EAD: 9.1 8711305801MD1.prn Page 99

EAN= 9.6 STD.DEV.= 1.1 COEF.VAR.= 10.84 %

005686

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.258	0.204	0.056
PEAK AREA (ABS-SECONDS)	0.151	0.111	0.040

READ: 20.5

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.257	0.206	0.056
PEAK AREA (ABS-SECONDS)	0.150	0.109	0.041

READ: 21.0

MEAN= 20.8 STD.DEV.= 0.3 COEF.VAR.= 1.72 %

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.031	0.031	0.005
PEAK AREA (ABS-SECONDS)	0.029	0.032	-0.003

READ: -1.1

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.031	0.026	0.007
PEAK AREA (ABS-SECONDS)	0.018	0.051	0.002

PEAK [illegible]

MEAN= [illegible] STD.DEV.= [illegible] COEF.VAR.= [illegible] %

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.166	0.140	0.027
PEAK AREA (ABS-SECONDS)	0.089	0.071	0.000

READ: 9.2

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.166	0.131	0.035
PEAK AREA (ABS-SECONDS)	0.079	0.068	0.011

READ: 8.8

MEAN= 8.0 STD.DEV.= 0.9 COEF.VAR.= 8.09 %

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.017	0.019	0.006
PEAK AREA (ABS-SECONDS)	0.021	0.025	-0.004

READ: -8.0

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.014	0.022	0.008
PEAK AREA (ABS-SECONDS)	0.018	0.023	-0.004

READ: -9.5

MEAN= -8.8 STD.DEV.= 0.4 COEF.VAR.= [illegible] %

005687

005687

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.496	0.446	0.057
PEAK AREA (ABS-SECONDS)	0.229	0.195	0.034

PEAK: 43.5

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.808	0.630	0.180
PEAK AREA (ABS-SECONDS)	0.326	0.264	0.062

PEAK: 82.4 CONSISTOR(1)

MEAN= 82.9 STD.DEV.= 19.4 COEF.VAR.= 25.23 % rerun

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.641	0.504	0.136
PEAK AREA (ABS-SECONDS)	0.268	0.211	0.057

PEAK: 47.6

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.643	0.502	0.141
PEAK AREA (ABS-SECONDS)	0.268	0.213	0.055

PEAK: 45.4 CONSISTOR(1) Rec 96

MEAN= 46.1 STD.DEV.= 1.4 COEF.VAR.= 3.0 %

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.365	0.293	0.072
PEAK AREA (ABS-SECONDS)	0.155	0.130	0.025

PEAK: 25.7

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.341	0.273	0.069
PEAK AREA (ABS-SECONDS)	0.139	0.122	0.017

PEAK: 23.9 CONS(1)(2)

MEAN= 24.7 STD.DEV.= 1.9 COEF.VAR.= 8.21 %

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.479	0.371	0.098
PEAK AREA (ABS-SECONDS)	0.189	0.155	0.034

PEAK: 92.5 CONS 81 Rec 81

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.483	0.380	0.103
PEAK AREA (ABS-SECONDS)	0.197	0.163	0.034

PEAK: 94.8 CONS(1)(2)(3)

MEAN= 93.0 STD.DEV.= 1.6 COEF.VAR.= 4.79 %

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.536	0.427	0.110

005688

005689

Case

PROGRAMMING MODE INSTRUMENT USER METH # 23 - SE DATE: 88/01/05

ELEMENT SE WAVELENGTH (NM): 196.0 SLIT (NM): 0.7
PYRO COATED TUBE WITH PLATFORM - MAX POWER HEATING - GAS STOP - MATRIX MOD.
REPEAT TEMP: 900 ATOMIZE TEMP: 2100 CHARACT. MASS (PG) 30.0

1. TECHNIQUE: ZEEMAN
2. LAMP CURRENT (MA): 0
3. SIGNAL PROCESSING: PEAK AREA
4. CALIBRATION: LINEAR
5. TIME (SECONDS): 4.0
6. READ DELAY (SECONDS): 0.0
7. DOPPLER FORMAT: 1 4 (PARAMIX)
8. PRINTER: MAIN SUPPL
9. PRIOPRIEP SIGNAL: [illegible]
10. PRIOPRIEP EXP: 1000
11. STATISTICS: [illegible]
12. NOMINAL WEIGHT 1.0
13. FOLLOWER ASS: [illegible]
14. BG SCALE: 0.5

5. S1: [illegible]
6. S2: 100[illegible]
7. S3: [illegible]
15. S4: 25[illegible]
16. S5: [illegible]
17. S6: 50.0
18. S7: [illegible]
19. S8: [illegible]
20. S9: [illegible]
21. FIELD: [illegible]

005690

TIME: 09:28

005690

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.060	0.055	0.050
PEAK AREA (ABS-SECONDS)	0.049	0.021	0.028

READ: -0.015

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.077	0.092	0.045
PEAK AREA (ABS-SECONDS)	0.047	-0.001	0.048

READ. -0.037

MEAN= -0.026 STD DEV.= 0.016 COEF.VAR.= 61.04 %

AUTOSEL

005691

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	[illegible]	[illegible]	[illegible]
PEAK AREA (ABS-SECONDS)	[illegible]	[illegible]	[illegible]

READ: [illegible]

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	[illegible]	[illegible]	[illegible]
PEAK AREA (ABS-SECONDS)	[illegible]	[illegible]	[illegible]

READ. [illegible]

MEAN= [illegible] STD DEV.= [illegible] COEF.VAR.= [illegible] %

[illegible] STANDARD [illegible]

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	[illegible]	0.026	0.111
PEAK AREA (ABS-SECONDS)	[illegible]	0.160	0.091

READ: [illegible]

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.422	0.320	0.190
PEAK AREA (ABS-SECONDS)	[illegible]	0.166	[illegible]

READ: [illegible]

MEAN= [illegible] STD.DEV.= 0.6 COEF.VAR.= 2.65 %

[illegible]

E-MSG: READING GREATER THAN HIGHEST STANDARD

24.9 STANDARD 2

AREA (ABS-SECONDS)

EAD: 50.5

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.954	0.760	0.202
APEA (ABS-SECONDS)	0.460	0.319	0.141

EAD: 50.3

MEAN= 50.4 STD.DEV.= 0.2 COEF.VAR.= 0.41 %

50.4

E-501 READING GREATER THAN HIGHEST STANDARD

5.1 STANDARD 3

005692

SE

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	1.445	1.116	0.301
PEAK AREA (ABS-SECONDS)	0.870	0.643	0.227

PEAK: 101.2

E-501 VALUE GREATER THAN FOLLOWER ABSORBANCE

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	1.878	1.531	0.347
PEAK AREA (ABS-SECONDS)	0.792	0.569	0.221

PEAK: 96.2

E-501 VALUE GREATER THAN FOLLOWER ABSORBANCE

MEAN= 96.7 STD.DEV.= 9.2 COEF.VAR.= 9.53 %

96.7

E-501 READING GREATER THAN HIGHEST STANDARD

5.2 STANDARD 4

005692

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.700	0.558	0.177
AREA (ABS-SECONDS)	0.415	0.902	0.113

[illegible]: 42.8

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.748	0.608	0.177
AREA (ABS-SECONDS)	0.409	0.286	0.129

[illegible]: 45.7

MEAN= 47.1 STD.DEV.= 1.6 COEF.VAR.= 2.91 %

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.083	0.064	0.059
AREA (ABS-SECONDS)	[illegible]	0.022	0.041

[illegible]: [illegible]

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	[illegible]	0.132	0.047
AREA (ABS-SECONDS)	[illegible]	0.022	0.029

[illegible]: [illegible]

MEAN= 1.8 STD.DEV.= 0.6 COEF.VAR.= 31.82 %

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	[illegible]	0.109	0.051
AREA (ABS-SECONDS)	[illegible]	[illegible]	0.031

[illegible]: [illegible]

(CONTINUED)

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.070	0.076	0.050
AREA (ABS-SECONDS)	0.056	0.016	0.040

[illegible]: 0.9

MEAN= 1.6 STD.DEV.= 1.9 COEF.VAR.= 69.79 %

	AA	ZAA	BG
HEIGHT (ABSORBANCE)	0.969	0.828	0.164
AREA (ABS-SECONDS)	0.448	0.322	0.126

005693

005693

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.723	0.574	[illegible]
PEAK AREA (ABS-SECONDS)	0.443	0.304	[illegible]

PEAK: 43.6

MEAN= 50.1 STD.DEV.= 2.2 COEF.VAR.= 4.30 %

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.731	0.595	0.160
PEAK AREA (ABS-SECONDS)	0.502	0.350	0.152

PEAK: 50.2

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.795	0.654	0.169
PEAK AREA (ABS-SECONDS)	0.516	0.352	0.164

PEAK: 50.6

MEAN= [illegible] STD.DEV.= [illegible] COEF.VAR.= 0.46 %

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	[illegible]	0.116	0.116
PEAK AREA (ABS-SECONDS)	0.225	[illegible]	0.173

PEAK: [illegible]

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	[illegible]	[illegible]	0.122
PEAK AREA (ABS-SECONDS)	[illegible]	[illegible]	0.162

PEAK: [illegible]

MEAN= [illegible] STD.DEV.= [illegible] COEF.VAR.= [illegible]

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.281	0.123	0.124
PEAK AREA (ABS-SECONDS)	0.247	0.066	0.181

PEAK: 9.0

(CONTINUED)

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.269	0.189	0.109
PEAK AREA (ABS-SECONDS)	0.234	0.093	0.141

PEAK: 11.6

MEAN= 11.4 STD.DEV.= 0.1 COEF.VAR.= 27.14 %

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.147	[illegible]	[illegible]

0056 4

005694

READ: 1.8

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.127	0.065	0.119
PEAK AREA (ABS-SECONDS)	0.171	0.020	0.151

MFL571

READ. 1.6

MEAN= 1.7 STD.DEV.= 0.1 COEF.VAR.= 7.13 %

Single

SE

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.258	0.171	0.120
PEAK AREA (ABS-SECONDS)	0.240	0.054	0.185

READ: 7.8

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.216	0.141	0.121
PEAK AREA (ABS-SECONDS)	0.249	0.068	0.177

READ: 8.9

MEAN= 8.4 STD.DEV.= 1.8 COEF.VAR.= 18.88 %

SE

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.241	0.124	0.131
PEAK AREA (ABS-SECONDS)	0.254	0.057	0.197

READ: 7.8

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.234	0.163	0.134
PEAK AREA (ABS-SECONDS)	0.233	0.057	0.177

READ: 7.7

MEAN= 7.8 STD.DEV.= 1.0 COEF.VAR.= 0.08 %

SE

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.106	0.072	0.078
PEAK AREA (ABS-SECONDS)	0.107	0.034	0.073

READ: 8.6

(CONTINUED

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.105	0.085	0.085
PEAK AREA (ABS-SECONDS)	0.103	0.025	0.078

MFL572

READ: 2.5

MEAN= 8.2 STD.DEV.= 1.1 COEF.VAR.= 92.84 %

Single

005695

PEAK AREA (ABS-SECONDS)	0.175	0.186	[illegible]
	0.154	0.088	[illegible]

READ: 12.9

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.184	0.154	0.062
PEAK AREA (ABS-SECONDS)	0.141	0.078	0.058

MF1552

READ: 10.4

MEAN= 11.7 STD.DEV.= 1.7 COEF.VAR.= 14.94 %

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.100	0.060	0.061
PEAK AREA (ABS-SECONDS)	0.061	0.016	0.046

READ: 0.5

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	[illegible]	0.061	0.062
PEAK AREA (ABS-SECONDS)	0.044	0.014	0.090

READ: [illegible]

MEAN= [illegible] STD.DEV.= [illegible] COEF.VAR.= 34.[illegible] %

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	[illegible]	0.551	0.155
PEAK AREA (ABS-SECONDS)	0.435	0.303	0.127

READ: 45.5

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.636	0.561	0.147
PEAK AREA (ABS-SECONDS)	0.436	0.301	0.135

READ: 45.1

MEAN= 46.7 STD.DEV.= 0.8 COEF.VAR.= 1.75 %

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.278	0.186	0.116
PEAK AREA (ABS-SECONDS)	0.204	0.084	0.120

READ: 12.2

(CONTINUED)

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.244	0.175	[illegible]
PEAK AREA (ABS-SECONDS)	0.200	[illegible]	[illegible]

MF1551

005696

MEAN= (11.5) STD.DEV.= 1.2 COEF.VAR.= 10.66 %

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.381	0.311	0.098
PEAK AREA (ABS-SECONDS)	0.252	0.174	0.078

READ: 27.1

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.463	0.356	0.121
PEAK AREA (ABS-SECONDS)	0.240	0.155	0.085

READ 28.9

MEAN= 28.5 STD.DEV.= 2.5 COEF.VAR.= 8.82 %

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.518	0.428	0.185
PEAK AREA (ABS-SECONDS)	0.304	0.227	0.097

READ: 28.5

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.429	0.391	0.131
PEAK AREA (ABS-SECONDS)	0.212	0.211	0.102

READ 30.1

MEAN= 29.5 STD.DEV.= 2.1 COEF.VAR.= 6.79

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.655	0.560	0.147
PEAK AREA (ABS-SECONDS)	0.334	0.233	0.111

READ: 45.2

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.885	0.535	0.166
PEAK AREA (ABS-SECONDS)	0.361	0.232	0.138

READ: 45.1

MEAN= 45.1 STD.DEV.= 0.1 COEF.VAR.= 0.22 %

	AA	ZAA	BG
PEAK HEIGHT (ABSORBANCE)	0.665	0.704	0.172
PEAK AREA (ABS-SECONDS)	0.447	0.323	0.124

READ: 51.8

(CONTINUED)

005697

005697

EAD: 52.1

EAD= 51.9 STD.DEV.= 0.2 COEF.VAR.= 0.35 %

	AA	ZAA	BC
HEIGHT (ABSORBANCE)	0.171	0.107	0.125
AREA (ABS-SECONDS)	0.178	0.045	0.134

EAD: 5.7

	AA	ZAA	BC
HEIGHT (ABSORBANCE)	0.139	0.055	0.118
AREA (ABS-SECONDS)	0.160	0.022	0.138

EAD: 2.0

EAD= 3.8 STD.DEV.= 3.6 COEF.VAR.= 67.63 %

	AA	ZAA	BC
HEIGHT (ABSORBANCE)	[illegible]	0.170	0.105
AREA (ABS-SECONDS)	[illegible]	0.172	0.155

EAD: 11.3

	AA	ZAA	BC
HEIGHT (ABSORBANCE)	0.313	0.146	0.122
AREA (ABS-SECONDS)	0.317	0.055	0.162

EAD: 7.4

EAD= 3.5 STD.DEV.= 2.0 COEF.VAR.= 22.64 %

	AA	ZAA	BC
HEIGHT (ABSORBANCE)	0.319	0.207	0.159
AREA (ABS-SECONDS)	0.290	0.104	0.188

EAD: 15.5

	AA	ZAA	BC
HEIGHT (ABSORBANCE)	0.304	0.210	0.141
AREA (ABS-SECONDS)	0.295	0.111	0.184

EAD: 16.7

EAD= 16.1 STD.DEV.= 0.8 COEF.VAR.= 5.10 %

	AA	ZAA	BC
HEIGHT (ABSORBANCE)	0.399	0.238	0.164
AREA (ABS-SECONDS)	0.337	0.145	0.193

EAD: 22.3

005698

(CONTINUED)

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.404	0.306	[illegible]
PEAK AREA (ABS-SECONDS)	0.337	0.150	0.188

PEAK: 23.1

MEAN= 23.7 STD.DEV.= 0.6 COEF.VAR.= 2.69 %

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.123	0.052	0.113
PEAK AREA (ABS-SECONDS)	0.070	0.013	0.051

PEAK: 1.4

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.093	0.090	0.069
PEAK AREA (ABS-SECONDS)	0.071	0.016	0.055

PEAK: 1.3

MEAN= 1.3 STD.DEV.= [illegible] COEF.VAR.= 25.4 %

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.564	0.440	0.140
PEAK AREA (ABS-SECONDS)	0.433	0.300	0.133

PEAK: 46.1

	AA	ZAA	BC
PEAK HEIGHT (ABSORBANCE)	0.618	0.485	0.142
PEAK AREA (ABS-SECONDS)	0.441	0.302	0.140

PEAK: 46.3

MEAN= 46.2 STD.DEV.= 0.2 COEF.VAR.= 0.38 %

005699

P B S J Post, Buckley, Schuh & Jernigan, Inc.
CONSULTING ENGINEERS and PLANNERS
889 NORTH ORANGE AVENUE ORLANDO, FLORIDA 32801-1088 • 305/423 7275 • TELEX 808435

Case 86556.

METALS DATA SHEET

Parameter: Tl (GFAAS-PE5000) Date: 12-31-87

Analyst: [illegible]

Standard ~~(ug/ml)~~ 10 ng/ml	Abs.
10	0.0367
25	0.1886
100	0.3519
50	0.5936

Correlation Coefficient 0.995 Y-Intercept 0.0386

Slope 0.0057 MDC 10 ppb

Sample	Dilution Factor	Absorbance	Emission	Conc. ~~(ug/ml)~~ ng/ml	Conc. (ug/g)	Mean ~~S.D.~~ ( )	R.S.D. (%)
ICVS	2	0.3116		47.94		48.52	1.7%
Rep	(97.3ppb)	0.3183		49.11		%rec=	100
CB		0.0333		-0.93		<26	ppb
Rep		-0.0071		-8.03			
dry fire		0.0151		-4.13			
AgPB	86101-AF	-0.0018		-7.10		0.0	
Rep		0.0016		-6.50			
AgLCS	86101AF	0.1839		25.51		26.04	2.9%
Rep		0.1899		26.56		%rec=	Run MSA
AgLCS+30	86101-1AF	0.3222		49.80		50.96	3.2%
Rep		0.3355		52.13		%rec=	125
571205801	MF85571	0.0112		-4.82		<10	ug/l
Rep		-0.0235		-10.91			

005700

Sample	Factor	Absorbance	Emission	(ug/ml)	(ug/g)	( )	R.S.D. (%)
5801 +20	MFBS571	0.1288		15.84		15.60	2.2%
Rep		0.1261		15.36		%rec=	78
205801 MD	MFBS571	-0.0205		-10.38		<10	ug/l
Rep		-0.0332		-12.61			
5801 MD+20	MFBS571	0.1186		14.04		14.46	4.1%
Rep		0.1233		14.87		%rec=	72
1205801 MS	MFBS571	0.2800		42.39		41.04	4.6%
Rep		0.2647		39.70		%rec=	82
1205802	MFBS572	-0.0240		-10.99		<10	ug/l
Rep		-0.0320		-13.10			
5802 +20	MFBS572	0.1284		15.77		15.70	0.7%
Rep		0.1276		15.62		%rec=	78
CB		-0.0174		-9.84		<2.6	ppb
Rep		-0.0186		-10.05			
CCVS		0.3129		48.16		47.88	0.8%
Rep		0.3097		47.60		%rec=	96
dry fire		0.0134					
Ag LCS	FLOWMAF	0.1458	R=	0.989			
+10		0.2371	m=	0.0016433			
+20		0.3900	y-inter=	0.1574			
+30		0.3426	conc	24.5	ug/l		
CB		0.0027		-6.31		<2.6	ppb
Rep		-0.0078		-8.15			
CCVS		0.3181		49.08		49.68	1.7%
Rep		0.3249		50.27		%rec=	100

Sample	Factor	Absorbance	Emission	Conc. (~~ug/ml~~)	Conc. (ug/g)	~~S.D.~~ ( )	R.S.D. (%)
~~drysfire~~		0.0240		-2.57			
AgICS	815 ~~1:1AF~~	0.1456	r:	0.992	flag		
+1D		0.2260	m:	0.00602	this		
+2D		0.2814	y-inter:	0.1549			
+3D		0.3278	conc:	25.7 ug/l		%rec:	106
CB		0.0064		-5.66		<2.6	ppb
Rep		-0.0009		-6.94			
CCVS		0.3179		49.04		50.5	4.3%
Rep		0.3352		52.08		%rec:	102

005702

Element: TL Analyst: LF Date: 12/31/87
Conditions: GFAAS: MP PROG: 600 CHAR: 1400 ATOM: 30 UL INJ VOL
Remarks:

No.	Peak Area	Peak Height	No.	Peak Area	Peak Height
1	0.1304 [illegible]	0.0635	2	-0.0050	0.0107
3	0.0004 [illegible]	0.0178	4	0.0010	0.0094
5	0.0744 [illegible]	0.1399	6	0.0760	0.[illegible]62
7	0.1778 [illegible]	0.3315	8	0.1874	0.3452
9	0.3472 [illegible]	0.5093	10	0.3626	0.5778
11	0.5796 [illegible]	0.8093	12	0.6086	0.8065

005703

ament: TL Analyst: [illegible] Date: 10/31/87

ditions: GFAAS: MP PROG: [illegible] CHAR: 1400 [illegible]

marks:

No.	Peak Area	Peak Height	No.	Peak Area	Peak Height
1	0.9116 FOUS	0.4050	3	0.9183	0.4080
2	0.0933 CB	0.0397	4	0.0071	0.0104

005704

(3)

Element: TL Analyst: LF Date: 12/31/87
Conditions: GFAAS: MP PROG: 600 CHAR: 1400 ATOM: 33 UL INJ VOL
Remarks:

No.	Peak Area	Peak Height	No.	Peak Area	Peak Height
1	0.0151 drysfire	0.0212	2	-0.0018	0.0111
3	0.0016 AgNO	0.0120	4	0.1839	0.2977
5	0.1899 LCS	0.3137	6	0.3222	-0.4794
7	0.3355 LCSA	0.4811	8	0.0112	0.0301
9	-0.0235 S801	0.0094	10	0.1288	0.1747
11	0.1261 S801A	0.1790	12	-0.0205	0.0094
13	-0.0332 S801MD	0.0063	14	0.1186	0.1758
15	0.1233 S801MDA	0.1793	16	0.2800	0.3931
17	0.2647 S801MS	0.3931	18	-0.0240	0.0096
19	-0.0360 S802	0.0054	20	0.1284	0.2111
21	0.1278 S802A	0.2085	22	-0.0174	0.0113
23	-0.0180 CS	0.0114	24	0.3129	0.4792
25	0.3097 CLUS	0.4853			

005705

(4)

Element: TL Analyst: LF Date: 12/31/87
Conditions: GFAAS: MP PROG: 600 CHAR: 1400 ATOM: 30 UL INJ VOL
Remarks:

No.	Peak Area	Peak Height	No.	Peak Area	Peak Height
1	0.0134 dry fire	0.0239	2	0.1416	0.2420
3	0.1500 LCS	0.2328	4	0.2361	0.3573
5	0.2381 LCS+10	0.3483	6	0.2846	-0.4173
7	0.2955 LCS+20	0.4312	8	0.3337	0.4065
9	0.3516 LCS+30	0.4787	10	0.0027	0.0167
11	-0.0078 CPS	0.0105	12	0.3181	0.4874
13	0.3249 CCVS	0.4549			

005706

Element: TL Analyst: LF Date: 12/31/87

Conditions: GFAAS: MP PROG: 600 CHAR: 1400 ATOM: 30 UL. INJ VOL

Remarks:

No.	Peak Area	Peak Height	No.	Peak Area	Peak Height
1	0.0240 drytwe	0.0419	2	0.1421	0.2216
3	0.1490 LCS	0.2347	4	0.2254	0.3249
5	0.2267 LCS+10	0.3306	6	0.2812	0.3995
7	0.2817 LCS+20	0.4012	8	0.3257	0.4503
9	0.3300 LCS+30	0.4537	10	0.0064	0.0207
11	-0.0009 CB	0.0099	12	0.3179	0.4806
13	0.3352 CCVS	0.4963			

005707

005707

Fost, Buckley, Schuh & Jernigan, Inc

CONSULTING ENGINEERS and PLANNERS

METALS DATA SHEET

Parameter: Hg (CVAS)

Date: 1-8-88

8656

8708

Analyst: T. Dyle

Standard ~~(ug/ml)~~ ug	Abs.
0.05	0.010
0.10	0.019
0.20	0.037
0.40	0.070
0.60	0.102

Correlation Coefficient 0.9997

Slope 0.16701

Y-Intercept 0.0025

MDC (0.20ug/L), (0.10ug/g)

Sample	Dilution Factor	Absorbance	~~Emission~~ ug	Conc. ~~(ug/ml)~~ (ug/L)	Conc. (ug/g)	S.D. ( )	R.S.D. (%)
ICV (0.26ug)	—	0.046	0.26	2.6	=	(100% RECOVERY)	
ICB	—	-0.000	<0.02	<0.2			
P.B	1A #8656	0.002	<0.02	<0.2			
MEB 571 87120580	—	0.002	<0.02	<0.2			
MEB 571 87120580 m.D.	—	0.002	<0.02	<0.2			
MEB 571 (0.10ug) 87120580 m.S.	—	0.018	0.09	0.9	=	(90% RECOVERY)	
MEB 572 87120580	—	0.001	<0.02	<0.2			
P.B	1S #8708	0.001	<0.02	<0.2			
MEB 677 87120780	—	0.003			<0.10		
MEB 996 87120780	—	0.002			<0.10		
MEB 998 87120780	—	0.004			<0.10		
MEB 999 87120780	—	0.002			<0.10		
CCV 0.30ug	—	0.050	0.28	2.8	=	(93% REC.)	

005708

Sample	Factor	Absorbance	~~Emission~~	(ug/mL)	(ug/g)	( )	R.S.D. (%)
CCB ①	—	0.002	<0.02	<0.2			
MEK 319 87120790 1	—	0.001			<0.10		
MEK 321 87120790 2	—	0.002			<0.10		
MEK 328 87120790 3	—	0.001			<0.10		
MEK 329 87120790 4	—	0.003			<0.10		
MEK 330 87120790 5	—	0.001			<0.10		
MEK 330 (0.10ug m.s.) 87120790 5	—	0.021	0.11		0.55	= (110% REC.)	
MEK 799 87120790 6	—	0.002			<0.10		
MEK 414 87120880 1	—	0.001			<0.10		
MEK 415 87120880 2	—	0.002			<0.10		
MEK 416 87120880 3	—	0.002			<0.10		
CCV ②	0.30ug	0.053	0.30	3.0		= (100% RECOVERY)	
CCB ②	—	0.002	<0.02	<0.2			
MEK 417 87120880 4	—	0.003			<0.10		
MEK 418 87120880 5	—	0.002			<0.10		
MEK 419 87120880 6	—	0.003			<0.10		
MEK 420 87120880 7	—	0.003			<0.10		
MEK 421 87120880 8	—	0.002			<0.10		
MEK 421 87120880 8 m.D.	—	0.002			<0.10		
MEK 422 87120880 9	—	0.017			0.43		
MEK 423 87120881 0	—	-0.001			<0.10		
MEK 424 87120881 1	—	0.002			<0.10		
MEK 425 87120881 2	—	0.003			<0.10		
CCV ③	0.30ug	0.052	0.30	3.0	=	(100% REC.)	
CCB ③	—	0.000	<0.02	<0.2			
MEK 425 87120881 2 m.D.	—	0.001			<0.10		
MEK 426 87120881 3	—	0.002			<0.10		
MEK 427 87120881 4	—	0.006			0.10		

005709

Sample	Factor	Absorbance	~~Emission~~	Conc. (ug/ml)	Conc. (ug/g)	S.D. ( )	R.S.D. (%)
MEK 4/28 871208[illegible]	—	0.000			<0.10		
MEK 4/28 871208815	(0.10ug) m.5 -	0.019	0.10		0.5		= (100% REC)
P.B ②	25 * 8708	0.002	<0.02	<0.20			
CCV ③	0.30ug —	0.054	0.31	3.1			= (103% REC)
CCB ④	—	0.000	<0.02	<0.20			

005710

E.P.A. 8656 + 8708 Hg> [illegible] 1-0-88

(ORIGINALS WITH #8708)

ENTER SAMPLE NO

(1) BLANK

SAMPLE NO = 000001

AUTO ZERO
000001 0.001
000002 0.000
000003 -0.000
000004 0.000
000005 0.000
000006 0.000
000007 -0.001

ENTER SAMPLE NO

(2) 0.05 ug STD

SAMPLE NO = 000050

AUTO ZERO
000050 0.000
000051 -0.001
000052 0.000
000053 0.000
000054 0.004
000055 0.010
000056 0.010
000057 0.008

ENTER SAMPLE NO

(3) 0.10 ug STD

SAMPLE NO = 000100

AUTO ZERO
000100 -0.000
000101 -0.000
000102 0.001
000103 0.002
000104 0.008
000105 0.012
000106 0.019
000107 0.018
000108 0.014

ENTER SAMPLE NO

(4) 0.20 ug STD

SAMPLE NO = 000200

AUTO ZERO
000200 0.002
000201 0.002
000202 0.002
000203 0.006
000204 0.020
000205 0.036
000206 0.037
000207 0.033
000208 0.029

ENTER SAMPLE NO

(5) 0.40 ug STD

SAMPLE NO = 000400

AUTO ZERO
000400 -0.001
000401 -0.001
000402 0.001
000403 0.009
000404 0.037
000405 0.068
000406 0.070
000407 0.061
000408 0.056

ENTER SAMPLE NO

(6) 0.80 ug STD

SAMPLE NO = 000800

AUTO ZERO
000800 -0.000
000801 -0.001
000802 0.004
000803 0.013
000804 0.056
000805 0.101
000806 0.102
000807 0.095

ENTER SAMPLE NO

ICV (2.6 ug)

SAMPLE NO = 000026

AUTO ZERO
000027 0.001
000028 0.001
000029 0.001
000030 0.008
000031 0.025
000032 0.043
000033 0.046
000034 0.044
000035 0.039

ENTER SAMPLE NO

(8) ICB

SAMPLE NO = 000001

AUTO ZERO
000001 -0.000
000002 -0.001
000003 -0.000
000004 -0.001
000005 -0.001
000006 -0.000
000007 -0.000
000008 -0.000

ENTER SAMPLE NO

(9) DI IA 8656

SAMPLE NO = 000001

AUTO ZERO
000001 0.000
000002 -0.000
000003 -0.000
000004 0.001
000005 -0.000
000006 0.001
000007 0.001
000008 0.002

005711

ENTER SAMPLE NO
(10) MEB 571
87120580 1
SAMPLE NO = 005801

AUTO ZERO
005801 -0.001
005802 -0.001
005803 -0.001
005804 -0.000
005805 -0.000
005806 0.002
005807 0.001
005808 0.001
005809 0.002

ENTER SAMPLE NO
(11) MEB 571
87120580 1 MD
SAMPLE NO = 005801

AUTO ZERO
005801 -0.001
005802 -0.001
005803 0.000
005804 -0.001
005805 0.001
005806 0.001
005807 0.002
005808 0.002
005809 0.002

ENTER SAMPLE NO
(12) MEB 571
87120580 1
M. Sok
SAMPLE NO = 005801
(0.10g)

AUTO ZERO
005801 -0.000
005802 -0.000
005803 0.000
005804 0.001
005805 0.007
005806 0.014
005807 0.018
005808 0.016
005809 0.014

ENTER SAMPLE NO
(13) MEB 572
87120580 2
SAMPLE NO = 005802

AUTO ZERO
005802 0.001
005803 -0.001
005804 0.000
005805 0.001
005806 0.001
005807 -0.000
005808 0.001
005809 0.001

005712

ENTER SAMPLE NO

(2) P.B .5# 8708

SAMPLE NO = 000001

AUTO ZERO

000001 -0.000
000002 0.001
000003 -0.001
000004 0.001
000005 -0.000
000006 0.001
000007 0.001
000008 -0.000
000009 -0.001

ENTER SAMPLE NO

(3) MEB 679 87120781

SAMPLE NO = 007801

AUTO ZERO

007801 0.001
007802 0.001
007803 0.000
007804 0.001
007805 0.000
007806 0.003
007807 0.002
007808 0.002

ENTER SAMPLE NO

(4) MEB 996 87120782

SAMPLE NO = 007802

AUTO ZERO

007802 0.000
007803 -0.001
007804 0.000
007805 -0.000
007806 -0.001
007807 0.000
007808 0.001
007809 0.002
007810 0.000
007811 0.001

ENTER SAMPLE NO

(7) MEB 998 87120783

SAMPLE NO = 000003

AUTO ZERO

000003 0.001
000004 0.001
000005 0.001
000006 0.000
000007 0.002
000008 0.003
000009 0.002
000010 0.004

ENTER SAMPLE NO

(8) MEB 997 87120784

SAMPLE NO = 000004

AUTO ZERO

000004 -0.000
000005 -0.000
000006 -0.001
000007 0.001
000008 0.001
000009 0.001
000010 0.002

ENTER SAMPLE NO

(9) CCV (1) 0.30ug

SAMPLE NO = 000300

AUTO ZERO

000300 0.001
000301 0.001
000302 0.001
000303 0.005
000304 0.026
000305 0.050
000306 0.043
000307 0.045

ENTER SAMPLE NO

(20) [illegible]

SAMPLE NO = 000001

AUTO ZERO

000001 -0.000
000002 -0.000
000003 -0.001
000004 0.001
000005 0.001
000006 -0.000
000007 -0.001
000008 0.001
000009 0.002

ENTER SAMPLE NO

(21) MEK 319 87120790 1

SAMPLE NO = 007801

AUTO ZERO

007001 -0.000
007002 -0.003
007003 -0.001
007004 -0.001
007005 -0.000
007006 -0.000
007007 0.001
007008 0.000

ENTER SAMPLE NO

(22) MEK [illegible] 87120790 2

SAMPLE NO = 000002

AUTO ZERO

000002 0.000
000003 -0.001
000004 -0.000
000005 0.001
000006 0.001
000007 0.002
000008 0.002
000009 0.002

005713

ENTER SAMPLE NO
(23) MEK 328
87120703
SAMPLE NO = 000003

AUTO ZERO
000003 -0.001
000004 -0.001
000005 -0.000
000006 -0.001
000007 0.001
000008 0.000
000009 0.001
000010 0.000
000011 0.000

ENTER SAMPLE NO
(24) MEK 329
87120704
SAMPLE NO = 000004

AUTO ZERO
000004 -0.001
000005 -0.001
000006 0.000
000007 -0.001
000008 0.002
000009 0.002
000010 0.002
000011 -0.002
000012 0.002

ENTER SAMPLE NO
(25) MEK 330
87120705
SAMPLE NO = 000005

AUTO ZERO
000005 -0.000
000006 0.001
000007 0.000
000008 -0.000
000009 -0.000
000010 0.000
000011 -0.001
000012 0.001

ENTER SAMPLE NO
(26) MEK 330
87120705
SAMPLE NO = 000005
M. Spk
(0.10g)

AUTO ZERO
000005 0.001
000006 0.001
000007 0.002
000008 0.004
000009 0.010
000010 0.020
000011 0.021
000012 0.019

ENTER SAMPLE NO
(27) MEK 799
87120706
SAMPLE NO = 000006

AUTO ZERO
000006 0.001
000007 0.001
000008 0.001
000009 0.000
000010 0.002
000011 0.002
000012 0.002
000013 0.002
000014 0.002

ENTER SAMPLE NO
(28) MEK [illegible]
87120[illegible]
SAMPLE NO = 000001

AUTO ZERO
000001 -0.000
000002 -0.001
000003 -0.003
000004 -0.001
000005 0.001
000006 0.001
000007 0.001
000008 0.001

ENTER SAMPLE NO
(1) MEK 415
87120707
SAMPLE NO = 000002

AUTO ZERO
000002 0.000
000003 -0.002
000004 0.001
000005 -0.000
000006 0.001
000007 0.002
000008 0.001
000009 0.002
000010 0.002

ENTER SAMPLE NO
(2) MEK 415
87120707
SAMPLE NO = 000003

AUTO ZERO
000003 0.000
000004 -0.000
000005 -0.000
000006 0.000
000007 0.000
000008 0.002
000009 0.002
000010 0.002
000011 0.001

ENTER SAMPLE NO
(3) CCV (2)
0.32g
SAMPLE NO = 000300

AUTO ZERO
000300 0.000
000301 -0.001
000302 0.001
000303 0.007
000304 0.027
000305 0.053
000306 0.053
000307 0.048

005714

ENTER SAMPLE NO
(32) CCB (2)

SAMPLE NO = 000001

AUTO ZERO
000001 0.001
000002 0.000
000003 0.001
000004 0.000
000005 0.001
000006 0.002
000007 0.000
000008 0.001
000009 -0.001

ENTER SAMPLE NO
(33) MEK 417
871208804

SAMPLE NO = 000004

AUTO ZERO
000004 0.000
000005 0.001
000006 0.001
000007 0.001
000008 0.001
000009 0.001
000010 0.002
000011 0.023

ENTER SAMPLE NO
(34) MEK 418
871208805

SAMPLE NO = 000005

AUTO ZERO
000005 0.001
000006 0.000
000007 0.000
000008 0.000
000009 0.002
000010 0.002
000011 0.002
000012 0.001

ENTER SAMPLE NO
(35) MEK 419
871208806

SAMPLE NO = 000006

AUTO ZERO
000006 -0.001
000007 -0.000
000008 0.001
000009 0.001
000010 0.001
000011 0.002
000012 0.003
000013 0.002

ENTER SAMPLE NO
(36) MEK 420
871208807

SAMPLE NO = 000007

AUTO ZERO
000007 0.002
000008 0.000
000009 0.001
000010 0.002
000011 0.002
000012 0.002
000013 0.003
000014 0.003

ENTER SAMPLE NO
(37) MEK 421
871208808

SAMPLE NO = 000008

AUTO ZERO
000008 -0.001
000009 0.000
000010 -0.002
000011 0.000
000012 0.001
000013 0.001
000014 0.002
000015 0.002

ENTER SAMPLE NO
(38) MEK 42
87.208808
M.D.

SAMPLE NO = 000008

AUTO ZERO
000008 0.000
000009 -0.001
000010 -0.000
000011 -0.000
000012 -0.001
000013 0.002
000014 0.001
000015 0.001

ENTER SAMPLE NO
(39) MEK 422
871208809

SAMPLE NO = 000009

AUTO ZERO
000009 0.001
000010 -0.001
000011 -0.000
000012 0.002
000013 0.012
000014 0.017
000015 0.017
000016 0.014
000017 0.014
000018 0.013

ENTER SAMPLE NO
(40) MEK 423
87.208810

SAMPLE NO = 000010

AUTO ZERO
000010 -0.000
000011 -0.000
000012 -0.001
000013 -0.002
000014 -0.001
000015 -0.031
000016 -0.002

005715

ENTER SAMPLE NO
(41) MEK 42[illegible]
87[illegible]88[illegible]

SAMPLE NO = 000011

AUTO ZERO
000011 -0.001
000012 -0.000
000013 -0.001
000014 0.000
000015 0.001
000016 0.001
000017 0.002
000018 0.002

ENTER SAMPLE NO
(42) MEK 4[illegible]
87 2088[illegible]

SAMPLE NO = 000012

AUTO ZERO
000012 -0.001
000013 -0.002
000014 -0.001
000015 0.001
000016 0.002
000017 0.002
000018 0.002
000019 0.002

ENTER SAMPLE NO
(43) CCU (3)
0.30g

SAMPLE NO = 000300

AUTO ZERO
000300 -0.001
000301 -0.002
000302 -0.001
000303 0.003
000304 0.017
000305 0.045
000306 0.052
000307 0.048
000308 0.042

ENTER SAMPLE NO
(44) CCB (3)

SAMPLE NO = 000001

AUTO ZERO
000001 -0.001
000002 0.001
000003 0.001
000004 0.000
000005 -0.001
000006 -0.001
000007 -0.001
000008 0.000

ENTER SAMPLE NO
(45) MEK 425
87120881 2
M.D.

SAMPLE NO = 000012

AUTO ZERO
000012 0.002
000013 0.001
000014 0.001
000015 0.001
000016 0.001
000017 0.001
000018 0.000
000019 -0.000

ENTER SAMPLE NO
(47) MEK 426
87120881 3

SAMPLE NO = 000013

AUTO ZERO
000013 0.000
000014 -0.000
000015 -0.000
000016 -0.001
000017 0.000
000018 0.001
000019 0.001
000020 0.002

ENTER SAMPLE NO
(47) MEK 427
87120881 4

SAMPLE NO = 000014

AUTO ZERO
000014 0.000
000015 -0.002
000016 0.000
000017 0.002
000018 0.004
000019 0.006
000020 0.006
000021 0.005

ENTER SAMPLE NO
(48) MEK 428
87120881 5

SAMPLE NO = 000015

AUTO ZERO
000015 -0.001
000016 -0.002
000017 0.000
000018 0.000
000019 0.000
000020 -0.000
000021 0.000
000022 0.000

ENTER SAMPLE NO
(49) MEK 428
87120881 5 M.S.

SAMPLE NO = 000015
(0.1g)

AUTO ZERO
000015 -0.001
000016 -0.000
000017 0.000
000018 0.002
000019 0.009
000020 0.018
000021 0.019
000022 0.018
000023 0.015

005716

ENTER SAMPLE NO

(S1) CCV (4)

(S1) 10 1-8 0.30ug

SAMPLE NO = 000300

AUTO ZERO

000300 0.001
000301 0.001
000302 0.001
000303 0.005
000304 0.011
000305 0.035
000306 0.054
000307 0.051
000308 0.048

ENTER SAMPLE NO

(S1) (S2) CCB (4)

10 1-8

SAMPLE NO = 000001

AUTO ZERO

000001 0.000
000002 0.001
000003 -0.000
000004 -0.001
000005 -0.000
000006 0.000
000007 -0.001

ENTER SAMPLE NO

(S1)

SAMPLE NO = 000001

AUTO ZERO

000001 01 0.001
000001 02 0.001
000001 03 0.001
000001 04 0.002
000001 05 -0.000
000001 06 0.002
000001 07 0.002
000001 08 0.001
000001 09 -0.000

005717

Case # 8656

Digestion Log

Date	Sample Nos.	Analyst	Digestion Type	Matrix Type	Samples Duped	Samples Spiked	Blank ID #	LCS ID #	Spike ID #	pH
1-7-88	MFB 571 871205801	T.D	Hg	L.A.	871205801	871205801	1A #8656			
"	MFB 572 871205802	"	"	"						

:aae

005718

005718

Case # 8708

Digestion Log

Date	Sample Nos.	Analyst	Digestion Type	Matrix Type	Samples Duped	Samples Spiked	Blank ID #	LCS ID #	Spike ID #	pH
1-7-88	MEB 679 87120780 1	T.D	Hg	L.S.			15 #8708			
	MEB 996 871207802						25 #8708			
	MEB 998 871207803									
	MEB 999 871207804									
	MEK 319 871207901									
	MEK 321 871207902									
	MEK 328 871207903									
	MEK 329 871207904									
	MEK 330 871207905					MEK 330 871207905				
	MEI 779 871207906									
	MEK 414 871208801									
	MEK 415 871208802									
	MEK 416 871208803									
	MEK 417 871208804									
	MEK 418 871208805									
	MEK 419 871208806									
	MEK 420 871208807									
	MEK 421 871208808				MEK 421 871208808					
	MEK 422 871208809									

Case # 8708

Digestion Log

Date	Sample Nos.	Analyst	Digestion Type	Matrix Type	Samples Duped	Samples Spiked	Blank ID #	LCS ID #	Spike ID #	pH
1-7-88	MEK 423 871208810	T.D	Hg	L.S.						
	MEK 424 871208811									
	MEK 425 871208812				MEK 425 871208812					
	MEK 426 871208813									
	MEK 427 871208814									
	MEK 428 871208815					MEK 428 871208815				

ac

005720

Case # 8708

Soil Weight Log *weigh to nearest 0.01 gram

Date	Sample No.	Analyst	Weigh Boat (g)	Weighboat + Soil (g)	Weight of Soil (g)	Final Volume (ml)		
1-6-88	MEB 679 871207801	T.D.	0.54	0.74	0.20			
	MEB 996 871207802		0.50	0.70	0.20			
	MEB 998 871207803		0.53	0.73	0.20			
	MEB 999 871207804		0.54	0.74	0.20			
	MEK 319 871207901		0.49	0.69	0.20			
	MEK 321 871207902		0.47	0.67	0.20			
	MEK 328 871207903		0.50	0.70	0.20			
	MEK 329 871207904		0.47	0.67	0.20			
	MEK 330 871207905		0.48	0.68	0.20			
	MEK 330 871207905 M.S.		0.47	0.67	0.20			
	MEI 799 871207906		0.54	0.74	0.20			
	MEK 414 871208801		0.39	0.59	0.20			
	MEK 415 871208802		0.42	0.62	0.20			
	MEK 416 871208803		0.45	0.65	~~0.20~~ 0.05721			
	MEK 417 871208804		0.45	0.65	0.20			

Case # 8708

Soil Weight Log *weigh to nearest 0.01 gram

Date	Sample No.	Analyst	Weigh Boat (g)	Weighboat + Soil (g)	Weight of Soil (g)	Final Volume (ml)		
1-6-88	MEK 418 871208805	T.D.	0.49	0.69	0.20			
	MEK 419 871208806		0.55	0.75	0.20			
	MEK 420 871208807		0.50	0.70	0.20			
	MEK 421 871208808		0.46	0.66	0.20			
	MEK 421 871208808	M.D.	0.41	0.61	0.20			
	MEK 422 871208809		0.43	0.63	0.20			
	MEK 423 871208810		0.44	0.64	0.20			
	MEK 424 871208811		0.48	0.68	0.20			
	MEK 425 871208812		0.50	0.70	0.20			
	MEK 425 871208812	M.D.	0.47	0.67	0.20			
	MEK 426 871208813		0.54	0.74	0.20			
	MEK 427 871208814		0.52	0.72	0.20			
	MEK 428 871208815		0.50	0.70	0.20			
	MEK 428 871208815	M.S.	0.47	0.67	0.20			

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Hg Digestion-Standard & Reagent Preparation

Ca[redacted]e = 8656, 8708

Analyst: T. Doyle

Date: 1-7-88

IC[redacted] = 0.5 mls [ICV(0487)] + 2ml Ultrex HNO_3 into 100 mls

Su[redacted] Std = CCV = 100 ul of conc. HNO_3 + 100 ul of 1000 ppm stock (Mailinckrodt Lot = H584KXA) into 100 mls.

CC[redacted] = 0.3 ug = 300 ul

Su[redacted] Std = for STD 100 ul of Conc. HNO_3 - 100 ul of 1000 ppm stock (Baker Lot = 065K615) into 100 mls.

0.[redacted]5 ug Std = 50 ul of Substd. (Baker)
0.10 ug Std = 100 ul of Substd. (Baker)
0.[redacted]0 ug Std = 200 ul of Substd. (Baker)
0.[redacted]0 ug Std = 400 ul of Substd. (Baker)
0.60 ug Std = 600 ul of Substd. (Baker)

St[redacted]nnous Chloride - 25 g stannous chl. + 250 mls of 0.5N HCL.

Sodium Chloride - Hydroxylamine Sulfate

24 g of sodium Chl. + 24 g Hydroxylamine Sulfate 200 mls DI

Pot[redacted]assium Permanganate - 10 g (in 200 ml DI = 5% solution

Potassium Persulfate - 10 g in 200 mls DI

A[redacted]aae

005723

P | B Posl, Buckley, Schuh & Jernigan, Inc.

S | J CONSULTING ENGINEERS and PLANNERS

[illegible] NORTH ORANGE AVENUE ORLANDO FLORIDA [illegible]

CASE 8656

1 of 1

Parameter: CYANIDE EPA 335.2 CLPM Date: 12/22/87

Analyst: KS

Standard ug/l	Chart Units	Calculated Value
0	0 - USED IN CURVE	2.01
5	8	5.95
10	15	9.39
20	34	18.74
50	92	47.27
100	202.5	101.63

005724

Correlation Coefficient 0.9988 Y-Intercept -4.10

Slope 2.03 MDC 10 ug/l

Sample	Chart Units	Chart Units-BLK	Dilution	Conc. (ug/l)
CCV56 (0987) 52.5 ug/l	102		—	52.19 99% REC.
CAL. BLANK	0		—	2.01
CCVS 75 ug/l	148		—	74.82 100% REC.
PREP BLANK	0		x0.5 KS 12/22/87	1.01
LCS 50 ppb	97		—	49.73 99% REC.
MFB 571 8712205801	3	250ml/250ml	—	3.49
MFB571 DUP 8712205801	1.5	250ml/250ml	—	2.75
MFB571 +100ppb 8712205801	198.5	250ml/250ml	—	99.66 100% REC.
MFB572 8712205802	0	250ml/250ml	—	2.01
CAL. BLANK	0		—	2.01
CCVS 75 ug/l	148		—	74.82 100% REC.

$\bar{x}$ < 10 ZRPD = NC

005724

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CYANIDE DISTILLATION LOG

Case # 8656

Sample #	Date	Weigh Boat (g)	Weigh Boat + Sample (g)	g Sample Dist. Sample Weight (g)	Mls Sample Dist.	Final (mls) Vol.	pH	Analyst Initials	Comments
PREP. BLANK	12/18/87	—	—	—	500	250	>12	KS	
MFB 571 871205801	12/18/87	—	—	—	250	250	>12	KS	
MFB 571 DUP 871205801	12/18/87	—	—	—	250	250	>12	KS	
MFB 571 +100ppb 871205801	12/18/87	—	—	—	250	250	>12	KS	
MFB 572 871205802	12/18/87	—	—	—	250	250	>12	KS	
LCS 50ppb	12/18/87	—	—	—	250	250	>12	KS	

005725

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Technicon Auto Analyzer II

Instrument Log

Case # 8656

Date	Sample Nos.	Element	Analyst	Filter Wavelength (nm)	Calibration Setting	Recorder Voltage	Recorder Chart Speed
12/22/87	8712058801-02	CN^-	KS	570	3.4	0.1V	30cm/HR

005726

8656

12/18/87 DISTILLATION REAGENTS:

1.) CONCENTRATED SULFURIC ACID

2.) MAGNESIUM CHLORIDE: 12/17/87 KS

510g $MgCl_2 \cdot 6H_2O$ (5958 KBNY) → 1000 mls

3.) 1.25N NaOH: 12/17/87 KS

50g NaOH (# 271284) → 1000 mls

1000 ppm STOCK: 8/24/87 KS

2.0g KOH (#070686) + 2.51g KCN (#628350) → 1000 mls

1000 ppb STOCK: 12/18/87 KS

0.5 ml 1000 ppm → 500 mls

LCS 50ppb: 12/18/87 KS

12.5 ml 1000 ppb → 250 ml FINAL VOL.

PREP. BLANK: 12/18/87 KS

500 ml DI H_2O DISTILLED TO 250 ml FINAL VOL.

871205801 +100ppb: 12/18/87 KS

25 ml 1000 ppm → 250 ml FINAL VOL.

12/22/87 TECHNICON REAGENTS:

1.) CHLORAMINE-T: 12/22/87 KS

0.40g CHLORAMINE-T (#536719) → 100 mls

2.) PHOSPHATE BUFFER: 12/22/87 KS

138g $NaH_2PO_4 \cdot H_2O$ (#032025T) → 1000 mls

3.) PYRADINE-BARBITURIC ACID: 12/14/87 KS

15g BARBITURIC ACID (#041979), 74 mls PYRADINE (#616620), + 15 mls CONCENTRATED HCl → 1000 mls

005727

8656

12/22/87 (CONT.) STANDARD PREP:

1000 ppm STOCK : SEE 12/18/87

1000 ppb STOCK : 12/22/87 KS

0.5 ml 1000 ppm → 500 mls

STANDARDS : 12/22/87 KS

1.) 5 ppb : 0.5 ml 1000 ppb → 100 mls

2.) 10 ppb : 1.0 ml 1000 ppb → 100 mls

3.) 20 ppb : 2.0 ml 1000 ppb → 100 mls

4.) 50 ppb : 5.0 ml 1000 ppb → 100 mls

5.) 100 ppb : 10.0 ml 1000 ppb → 100 mls

ICVS-6 (0987) : 12/18/87 KS

12.5 mls DISTILLED AND BROUGHT TO 250 ml FINAL VOLUME

TRUE VALUE = 52.5 µg/l

CCVS 75 µg/l : 12/18/87 KS

7.5 ml 1000 ppb → 100 mls

NOTE : 2.5 mls 10 N NaOH ADDED TO STANDARDS, CCVS

CALIBRATION BLANK : 12/18/87 KS

10 g NaOH → 1000 mls

LCS : SEE 12/18/87

PREP BLANK : SEE 12/18/87

005728

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TECHNICON
CHART NO. 011-0007-01

0
10
20
30
40
50
60
70
80
90
100
%
COPYRIGHT 1960 BY TECHNICON INSTRUMENTS CORPORATION TECHNICON CHART NO. 011-0001-01

005730

Case # 8656

Digestion Log BB 12-23-87

Blank, LCS ID's
1 = # of samples/20
A = Agueous
F = Furnace

Date	Sample Nos.	Analyst	Digestion Type	Matrix Type	Samples Duped	Samples Spiked	Blank ID #	LCS ID #	Spike ID #	pH
12-23-87	MFB 571 871205801	BB	AF	LA	MFB 571 871205801	MFB 571 871205801	1AF	1AF		<2.0
↓	MFB 572 871205802	BB	AF	LA						<2.0

A2:aae

005731

Case # 8656

Physical Description

BB 12-23-87

Date	Sample No.	Analyst	Matrix Type	Description: Coloration	Clarity	Texture	Artifacts	Other
12-23-87	MFB 571 871205801	BB	LA	colorless	cloudy			
↓	MFB 572 871205802	BB	LA	colorless	clear			

005732

BB 12-23-87

Aqueous Digestion Spikes

Furnace AA

Case # 8656

MFB 571

Sample # 871205801

Element	Spike Conc (ppb)	Subst* Conc (ppm)	Spike Vol (ul)	Final Vol (ml)	Lot #
As	20	100	20	100	547659
Pb	20	100	20	100	426143
Se	10	100	10	100	547661
Ag	10	100	10	100	426148
Tl	50	100	50	100	RRCA E021

*100 ppm substandard 1 ml 1000 ppm stock diluted to 10 mls

A2:aae

005733

BB 12-23-87

LCS Prep*

Case No.: 8656 LCS Identification: IAF Analyst: BB

Date: 12-23-87

Furnace 2.5 mls ICV #2 (1:2) / 100 mls
2.5 mls ICV #4 (1:4)/

Furnace Values

As = 24.7 ppb
Se = 49.1
Pb = 24.5
Ag = 24.4
Tl = 24.3

ICP 5.0 mls ICV #1 (1:2)\100 mls
5.0 mls ICV #3 (1:2)/

ICP Values

Al	990 ppb	Sb	505	Zn	1535
Ba	990	Cu	271		
Be	240.5	Fe	995		
Cd	244.5	Pb	2255		
Cr	253	Mg	12500		
Ca	24900	Mn	256.5		
Co	237	K	25100		
Na	25350	Ni	248		
V	255.5	Ag	254.5		

*This is a sample form; values may change as new LCS samples are prepared.

A2:aae

005734

Case # 8656

Digestion Log

BB 12-23-87

Blank, LCS ID's
1= # of samples/20
A= Aqueous
I= ICP

Date	Sample Nos.	Analyst	Digestion Type	Matrix Type	Samples Duped	Samples Spiked	Blank ID #	LCS ID #	Spike ID #	pH
12-23-87	MFB 571 871205801	BB	AI	LA	MFB 571 871205801	MFB 571 871205801	1AI	1AI		
↓	MFB 572 871205802	BB	AI	LA						

2:aae

005735

Case # 8656

Sample # MFB 671 8712058 01

BB 12-23-87

Analyst: BB

Date: 12-23-87

Aqueous Digestion Spikes

ICP/AA

Element	Spike Conc (ppb)	Stock Conc (ppm)	Spike Vol (ul)	ICP/AA Final Vol (ml)	Lot #
Al	2000	1000	200	100	607616
Ba	2000	1000	200	100	RICA 3262
Be	50	100*	50	100	607618
Cd	50	100*	50	100	641617
Cr	200	1000	20	100	607609
Co	500	1000	50	100	611631
Cu	250	1000	25	100	607610
Fe	1000	1000	100	100	553604
Pb	500	1000	50	100	426143
Mn	200	1000	20	100	612626
Ni	400	1000	40	100	145235
V	500	1000	50	100	Tritisol EM #19954
Zn	200	1000	20	100	510141
Sb	500	1000	50	100	A19617

*100 ppm substandard 1 ml 1000 ppm stock diluted to 10 mls

A2:aae

005736

005736

BB 12-23-87

LCS Prep*

Case No.: 8656 LCS Identification: 1AI Analyst: BB

Date: 12-23-87

Furnace 2.5 mls ICV #2 (1:2) / 100 mls
2.5 mls ICV #4 (1:4)/

Furnace Values

As = 24.7 ppb
Se = 49.1
Pb = 24.5
Ag = 24.4
Tl = 24.3

ICP 5.0 mls ICV #1 (1:2)\100 mls
5.0 mls ICV #3 (1:2)/

ICP Values

Al	990 ppb	Sb	505	Zn	1535
Ba	990	Cu	271		
Be	240.5	Fe	995		
Cd	244.5	Pb	2255		
Cr	253	Mg	12500		
Ca	24900	Mn	256.5		
Co	237	K	25100		
Na	25350	Ni	248		
V	255.5	Ag	254.5		

*This is a sample form; values may change as new LCS samples are prepared.

A2:aae

005737

Case # 8656

Instrument log - ICP

Date	Sample No.	Element	Analyst	MM	BC	Int Time	Wavelength	PWR	I/E Corr Factor	Interfering Element
1-6-88	8711205864-02	Sb	PLR	18	R	10.0	206.83	4		
1-6-88		Pb	PLR	18	L	10.0	220.35	4		
1-7-88		Mn	PLR	16	B	30	257.61	3		
		Be	PLR	12	L	30	313.04	3		
		Cd	PLR	16	R	30	226.50	5		
		Cr	PLR	16	B	30	267.72	5		
		Ni	PLR	16	L	50	231.60	5		
		Zn	PLR	16	L	30	213.86	5		
✓		Mg	PLR	16	R(3)	30	279.08	3		
1-8-88		Ca	PLR	16	L	30	317.93	3		
		Na	PLR	2	R	30	589.59	3		
		Ba	PLR	16	L	30	455.40	3		
		Fe	PLR	16	R(4)	30	259.94	3		
		Al	PLR	16	R(7)	30	308.22	3		
		Cu	PLR	16	R(8)	30	324.75	3		
		V	PLR	16	R(12)	30	292.40	3		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Date 1-6-88

Case # 8654 Part _____ Analyst PLR

Metal Sb, pb

Standard prep:

STD 1	10	ppm	100	ul of	stock	/ 100	mls
STD 2	0.5	ppm	50	ul of	stock	/ 100	mls
STD 3	0.1	ppm	1000	ul of	10 ppm SS	/ 100	mls
STD 4	0.05	ppm	500	ul of	↓	/ ↓	mls
STD 5	0.01	ppm	100	ul of	↓	/ ↓	mls

10 ppm SS = 100 ul stock / 10 mls

Lot Nos	Metal	Calibr. Stds	CCVS
	Sb	1002 EM	A1717
	pb	4H143	A544 KYBC(m)

Remarks

ICVS = ICV#1 for pb
ICV#3 for Sb

CCVS

0.5 ppm 50 ul stock / 100 mls

2XCRDL

Sb - 120 ppb 1200 ul 10 ppm SS / 100 mls
pb - 10 ppb 100 ul 10 ppm SS / 100 mls

005739

Date 1-8-88

Case # 8656 Page _____ Analyst [illegible]

Metal Cr, Mn, Ba, Fe, Al, Cu, V, Co

Standard prep Cr, V, Co

STD 1	10	ppm	100	ul of	stock	/ 100	mls
STD 2	1.5	ppb	50	ul of	stock	/	mls
STD 3	0.1	ppb	100	ul of	10 ppm SS	/	mls
STD 4	0.5	ppb	500	ul of		/	mls
STD 5	0.01	ppb	100	ul of		/	mls

10 ppm SS = 100 ul stock/10 mls

005740

Lot Nos

Metal	Calibr. Stds	CCVS	
Cr	608614	7062	
Mn	M251	5241K	
Ba	B262	627633	
Fe	553664	4188	
Al	607614	5364 S/P	ICPS=
Cu	607610	H512 KVNA	ICP1
V	19994 (EM)	5160	
Co	611631	H509 KTRK	

Remarks

std prep

Fe, Al

50.0 ppm 5 mls stock/100 mls

25.0	2.5 mls stock
1.0	100 ul
0.5	50 ul
std for 0.1	10 ul

Cr, Mn

100 ppm 10 mls stock/100 mls

75	7.5
50	5.0
25	2.5

CCVS

Cr, Mn

50 ppm 5 mls stock/100 mls

Ba

5.0 ppm 500 ul stock/100 mls

Fe, Al

25 ppm 2.500 ul stock/100 mls

Cu, V, Co

0.5 ppm 50 ul stock/100 mls

Std Prep

Ba

10.0 ppm 100 ul stock/1

5.0	500
1.0	100
0.5	50
0.1	10

2XCRDL

V, Co 100 ppb 100 ul 10 ppm SS/1

Cu 50 ppb 500 ul 10 ppm SS/1

005740

Case # 8656 Page _____ Date 1-7-88

Metal Mn, Be, Cd, Cr, Ni, Zn, Mg Analyst PAR

Standard prep Be, Cd, Cr, Ni, Zn

STD 1	1.0	ppm	100	ul of	Stock	/ 100	mls
STD 2	0.5	ppb	50	ul of	Stock	/ 100	mls
STD 3	0.1	ppb	100	ul of	10ppm SS	/ 100	mls
STD 4	0.05	ppb	50	ul of	↓	/ ↓	mls
STD 5	0.01	ppb	10	ul of	↓	/ ↓	mls

10 ppm SS = 100 ul stock/10 mls

005741

Lot Nos.	Metal	Calibr. Stds	CCVS
	Mn	612626	5150
	Be	617618	H565 KMZ
	Cd	641617	H516 KVCS
	Cr	553605	H511 KXCK
	Ni	452235	H552 KTIY
Remarks	Zn	516141	H595 KLCP
	Mg	A26630	5090

JC 1-5-88 CVH

Mn -
50 ppm - 50 ul stock/mls
25 | 250 ul stock/mls
0.1 | 100 ul 10ppm SS/mls
0.05 | 50 | | |
0.01 ↓ 10 ↓ ↓ ↓

Be -
100 ppm - 10 ml stock/100 mls
75 | 7.5
50 | 5.0 | |
25 | 2.5 | |
5 ↓ 0.5 ↓ ↓

CCVS
Be, Cd, Cr, Ni, Zn
0.5 ppm - 50 ul stock/mls
Mn
0.5 ppm - 250 ul stock/mls
Mg
~~25 ppm~~ - 25 ml 1-7-88
50 ppm - 5000 ul stock/mls

Std Prep 1-7
1 x CRDL
Cu - 50 ppb - 500 ul stock
Pb - 100 ppb - 1000 ul stock

005741

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IL 257

Instrument Log - CVAAS

Case # 8656

BC - Background Correction

Date	Sample Nos.	Element	Analyst	Wavelength	Bandwidth	Energy	Int. Time	BC
1-7-88	871205801-02	Hg	T.D.	253.7	1.0		4.0	

005742

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PE 3030

Instrument Log - GFAAS

Case # 8686

BC - Background Correction

Date	Sample Nos.	Element	Analyst	Wavelength	Slitwidth	Energy	Int. Time	BC
1-4-88	8712058801-02	As	[illegible]	193.7	0.7	44	4.0	Y
1-5-88	8712058801-02	Pb	[illegible]	283.3	0.7	56	4.0	Y
1-6-88	8712058801-02	Se	[illegible]	196.0	0.7	41	4.0	Y

005743

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PE 5000

Instrument Log - GFAAS & FAAS

Case # 8656

BC - Background Correction

Date	Sample Nos.	Element	Analyst	Wavelength	Slitwidth	Energy	Int. Time	BC	
12-28-87	8712058801-02	Ag	[illegible]	328.1	0.7	60	4.0	Y	GFAAS
12-31-87	8712058801-02	Tl	[illegible]	276.8	0.7	40	4.0	Y	GFAAS
1-10-88	8712058801-02	K	[illegible]	766.5	0.7	58	3.0	N	FAAS

005744

METALS LOGSHEET

Date 12-28-87

Case # 86556 Page _____ Analyst [illegible]

Metal Ag (PE5000)

Standard prep:

STD 1	10	ppb	100	ul of	10 ppm SS	/	100	mls
STD 2	20	ppb	200	ul of		/		mls
STD 3	30	ppb	300	ul of		/		mls
STD 4	50	ppb	500	ul of		/		mls
STD 5		ppb		ul of		/		mls

10 ppm SS = 100 ul stock/10 mls

Lot Nos.	Metal	Calibr. Stds.	CCVS
	Ag	4261148 (B)	DICI (Ricca)

Remarks:
ICUS = ICV#4 (0357) (1:3)
CCUS 25ppb 250 ul 10ppm SS/100 mls
Spikes 20ppb 10 ul 10ppm SS/5 mls

A2:aae

005745

METALS LOGSHEET

Date 12-31-87

Case # 86560 Page _____ Analyst [illegible]

Metal Tl (PES000)

Standard prep:

STD 1	10	ppb	100	ul of	10ppmSS	/	100	mls
STD 2	25	ppb	250	ul of		/		mls
STD 3	50	ppb	500	ul of		/		mls
STD 4	100	ppb	1000	ul of		/		mls
STD 5		ppb		ul of		/		mls

10 ppm SS = 100 ul stock/10 mls

Lot Nos.	Metal	Calibr. Stds.	CCVS
	Tl	E021 (Ricca)	03623MD (Aldrich)

Remarks:
ICVS=ICV#4 (0387) (1:1)
CCVS 50ppb 500ul 10ppmSS/100mls
spikes 20ppb 10ul 10ppmSS/5mls
matrix mod: H_2SO_4

A2:aae

005746

005746

METALS LOGSHEET

Case # 86560 Page _____ Analyst [illegible] Date 1-4-88

Metal As(PE3030)

Standard prep:

STD 1	10	ppb	100	ul of	10ppmSS	/	100	mls
STD 2	25	ppb	250	ul of		/		mls
STD 3	50	ppb	500	ul of		/		mls
STD 4	100	ppb	1000	ul of		/		mls
STD 5		ppb		ul of		/		mls

10 ppm SS = 100 ul stock/10 mls

Lot Nos.

Metal	Calibr. Stds.	CCVS
As	635605(B)	E230 (Ricca)

Remarks:

ICVS: ICV#2(1186)
CCVS 50ppb 500ul 10ppmSS/100mls
Spikes 20ppb 10ul 10ppmSS/5mls
matrix mod: $Ni(NO_3)_2$

A2:aae

005747

005747

METALS LOGSHEET

Date 1-5-88

Case # 86556 Page _____ Analyst [illegible]

Metal Pb (PE3030)

Standard prep:

STD 1	5	ppb	50	ul of	10ppmSS	/	100	mls
STD 2	25	ppb	250	ul of		/		mls
STD 3	50	ppb	500	ul of		/		mls
STD 4	100	ppb	1000	ul of		/		mls
STD 5		ppb		ul of		/		mls

10 ppm SS = 100 ul stock/10 mls
5 ppmSS = 50 " "

Lot Nos.	Metal	Calibr. Stds.	CCVS
	Pb	4360143 (B)	

Remarks:
ICUS: ICU#4 (1:1) (0387)
CCUS 50ppb 500ul 10ppmSS /100mls
Spikes 10ppb 10ul 5ppmSS /5mls

A2:aae

005748

METALS LOGSHEET

Date 1-6-88

Case # 86560 Page _____ Analyst [illegible]

Metal Se (PE3030)

Standard prep:

STD 1	5	ppb	50	ul of	10ppmSS	/	100	mls
STD 2	25	ppb	250	ul of		/		mls
STD 3	50	ppb	500	ul of		/		mls
STD 4	100	ppb	1000	ul of		/		mls
STD 5		ppb		ul of		/		mls

10 ppm SS = 100 ul stock/10 mls
5ppmSS: 50 " "

Lot Nos.	Metal	Calibr. Stds.	CCVS
	Se	547661(B)	

Remarks:
ICUS=ICU#2(1186)(1:1)
CCUS 50ppb 500 ul 10ppmSS/100mls
spikes 10ppb 10 ul 5ppmSS/5mls
matrix mod: $Ni(NO_3)_2$
A2:aae

005749

005749

METALS LOGSHEET

Date 1-10-88

Case # 86056 Page _____ Analyst [illegible]

Metal K (FAAS: PE5000)

Standard prep

STD 1	1000	ppb	100	ul of	stock	/	100	mls
STD 2	5000	ppb	500	ul of		/		mls
STD 3	10000	ppb	1000	ul of		/		mls
STD 4	15000	ppb	1500	ul of		/		mls
STD 5		ppb		ul of		/		mls

10 ppm SS = 100 ul stock/10 mls

Lot Nos.	Metal	Calibr. Stds.	CCVS
	K	426150 (B)	

Remarks:

ICUS: ICU#1 (0487) (1:9)
CCVS 7.5ppm 750 ul stock /100 mls

A2:aae

005750

SAMPLE CONTROL RECORD

Form 4A

CASE NUMBER: 8656

Original Date of entry into Secure Storage Area: 12/10/87

Sample Custodian's Signature: [illegible]

2 Waters metals CN 871205801-02

LABORATORY SAMPLE NUMBER	REMOVED BY	DATE AND TIME REMOVED		REASON	DATE AND TIME RETURNED	
871205801-02	KS	12/18/87	0825	DISTILL FOR CN⁻	12/18/87	1800
871205801-02	KS			INITIAL ENTRY OF DIST	12/18/87	1800
871205801-02	KS	12/22/87	0840	CN⁻ ANALYSIS	12/22/87	1600
871205801-02	BB	12/23/87	0830	To Digest for ICP + Furnace	12/23/87	1140
871205801-02	TD	1/6/88	13:40	TO DIGEST FOR Hg	1/6/88	14:45

005751

U S ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office

INORGANICS TRAFFIC REPORT

Sample Number MFB 571

(1) Case Number: 8656 FB12/10/87
Sample Site Name/Code:

(2) SAMPLE CONCENTRATION (Check One)
X Low Concentration
___ Medium Concentration

(3) SAMPLE MATRIX (Check One)
X Water
___ Soil/Sediment

(4) Ship To:
[illegible] Chem. Labs
6655 E. Colonial Dr.
Orlando, FL 32807
Attn: John Frech

Transfer Ship To:

(5) Sampling Office: [illegible]
Sampling Personnel
(Name) [illegible]
(Phone) [illegible]
Sampling Date
(Begin) [illegible] (End) [illegible]

(6) Shipping Information:
Name Of Carrier: Federal Express
Date Shipped [illegible]
Airbill Number [illegible]

(9) ANALYSIS LAB:
Recd by: Fern Boone
Date Recd. 12/10/87

(10) Sample Condition On Receipt:
(eg. broken, leakage, chain of custody, etc.)
OK
[illegible]

(7) Sample Description: (Check One)
___ Surface Water
___ Ground Water
___ Leachate
___ Mixed Media
___ Solids
___ Other ___ (specify)
MATCHES ORGANIC SAMPLE NO 7[illegible]

(8) Mark Volume Level On Sample Bottle
Check Analysis required
X Total Metals
X Cyanide

[illegible]

005752

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U S ENVIRONMENTAL PROTECTION AGENCY HWI Sample Management Office

INORGANICS TRAFFIC REPORT

Sample Number MFB 572

(1) Case Number: 8[illegible] FB10/11/87
Sample Site Name/Code:

(2) SAMPLE CONCENTRATION (Check One)
X Low Concentration
___ Medium Concentration

(3) SAMPLE MATRIX (Check One)
X Water
___ Soil/Sediment

(4) Ship To:
[illegible]
Attn: [illegible]

Transfer Ship To:

(5) Sampling Office: [illegible]
Sampling Personnel
(Name) [illegible]
(Phone) [illegible]
Sampling Date
(Begin) [illegible] (End) [illegible]

(6) Shipping Information:
Name Of Carrier: [illegible]
Date Shipped [illegible]
Airbill Number: [illegible]

(9) ANALYSIS LAB:
Recd by: Fern Boone
Date Recd: 12/10/87

(10) Sample Condition On Receipt:
(eg. broken, leakage, chain of custody, etc.)
OK

(7) Sample Description: (Check One)
___ Surface Water
___ Ground Water
___ Leachate
___ Mixed Media

(8) Mark Volume Level On Sample Bottle
Check Analysis required
X Total Metals
X Cyanide

005752