UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5
CHICAGO, ILLINOIS

DATE: MAR 10 1989

SUBJECT: Review of Region 5 data for PEKIN MUNICIPAL L.F

FROM: Curtis Ross, Director
Region 5 Central Regional Laboratory

To: Data User: FIT

Attached are the results for:

CRL Data Set Numbers: SF 5744
Sample Numbers: 89FS06S18-R01
Parameter(s): FURNACE METALS
Laboratory: CRL/ESAT

Results Status:

( ) DATA ACCEPTABLE FOR USE*
( ) DATA QUALIFIED AS TO USE
( ) DATA UNACCEPTABLE FOR USE

* For data acceptability requirements, refer to the method capability statement for the methods referenced.

Comments by the Quality Control Coordinator:

If there are any questions regarding the data, refer them to David Payne, the Quality Control Coordinator, at 353-3805.

Please sign and date this form below and return it with any comments to:

Sylvia Griffin
Data Management Coordinator
Region 5 Central Regional Laboratory
(5SCRL)

TRANSMITTED BY
Griffin
MAR 10 1989

U.S. EPA CENTRAL
REGIONAL LAB

RECEIVED BY/DATE: Mary Bryan 3/10/89
Comments:

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 5
230 South Dearborn Street
Chicago, Illinois 60604

CHAIN OF CUSTODY RECORD

PROJ. NO.: 89FS06
PROJECT NAME: CASE 10915 PEKIN MUNICIPAL LANDFILL
SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	METALS						REMARKS: Superfund 5744 CRL TAG #
S18	11/15/88	1600		✓	RW1	1	1						5-000718
S19	11/15/88	1345		✓	RW2-MSD	1	1						5-000719
R01	11/15/88	1045		✓	BLANK	1	1						5-000720

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) Sylvia Duffin	Date / Time 1/25/89 9:30AM	Remarks: SHIPPED TO CRL BY FEDERAL EXPRESS AIRBILL # 4591317533	

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

05- 01218

ENVIRONMENTAL PROTECTION AGENCY
FOR THE TEAM: METALS

DIVISION/BRANCH (SF) FIT SAMPLE DATE 11-30-88 LAB ARRIVAL DATE 1-25-89 DUE DATE 2-15-89

DU NUMBER Y905 DATA SET NUMBER 5744 STUDY PEKIN MUN. L.F. PRIORITY — CONTRACTOR CRL

CRL LOG NUMBER	SAMPLE DESCRIPTION TAG. NO.	TOTAL METALS WATER TOTAL ICAP UG/L MET111	TOTAL METALS WATER AS UG/L MET161	TOTAL METALS WATER PB UG/L MET1101	TOTAL METALS WATER SB UG/L MET1201	TOTAL METALS WATER SE UG/L MET1211	TOTAL METALS WATER TL UG/L MET1221
89FS06S18	5-000718	✓					
89FS06S19	5-000719	✓					
89FS06R01	5-000720	✓					

TMA
Thermo Analytical Inc.

Skinner And Sherman Laboratories
300 Second Avenue
Post Office Box 521
Waltham, MA 02254-0521
(617) 890-7200

Chain of Custody Record

SF 5744

DATE 1/24/89 PAGE 8 OF 9

CLIENT USEPA / CLP
ADDRESS Region V

PROJECT NO.
PROJECT NAME
SAMPLERS (SIGNATURE)

SAMPLE NO.	DATE	TIME	COMP	GRAB	LOCATION	Total Metals Raw								Iced	Filtered	Preservative HNO3	Sample Type	NUMBER OF CONTAINERS	Observations/ Comments
Meck 47						✓										Preserved by Samples	Water S		
Meck 48						✓													
Meck 49						✓													

RELINQUISHED BY	DATE	RECEIVED BY	DATE	RELINQUISHED BY	DATE	RECEIVED BY	DATE
Signature		Signature		Signature		Signature	
Printed Name	TIME	Printed Name	TIME	Printed Name	TIME	Printed Name	TIME
Company		Company		Company		Company	
RELINQUISHED BY	DATE	RECEIVED BY	DATE	RELINQUISHED BY	DATE	RECEIVED BY (Laboratory)	DATE
Signature		Signature		Signature Lori Cannon	1/24/89	Signature	
Printed Name	TIME	Printed Name	TIME	Printed Name Lori Cannon	TIME 10:00	Printed Name	TIME
Company		Company		Company Skinner + Sherman		Skinner & Sherman Labs	

TOTAL NUMBER OF CONTAINERS

METHOD OF SHIPMENT

SPECIAL SHIPMENT/HANDLING OR STORAGE REQUIREMENTS

USEPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA VA 22313
703 557-2490 FTS 557 2490

CASE NO: 10915 | SAS NO: 42315 (IF APPLICABLE)

INORGANIC TRAFFIC REPORT

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA (SI) ESI RIFS RD RA ER
NPLD O&M OTHER _____
NON-SUPERFUND— _____ PROGRAM

SITE NAME: PeKin Municipal LandFill
CITY, STATE: PeKin, IL
SITE SPILL ID:

REGION NO: V
SAMPLING COMPANY ②: FIT
SAMPLER: (NAME) Ronnie Galmore

SHIP TO: ③
Skinner + Sherman, Inc
300 Second Ave
Waltham, MA 02254
ATTN: Marily Fonseca

SAMPLING DATE: ④
BEGIN: 11-15-88 END: 11-15-88

DATE SHIPPED 11-15-88 CARRIER: ⑤
AIRBILL NO: 7298011324

SAMPLE DESCRIPTION ⑥
(ENTER IN BOX A)
1. SURFACE WATER
2. GROUND WATER
3. LEACHATE
4. SOIL
5. SEDIMENT
6. OIL (SAS)
7. WASTE (SAS)

DOUBLE VOLUME REQUIRED FOR MATRIX SPIKE/DUPLICATE AQUEOUS SAMPLE

SHIP MEDIUM AND HIGH CONCENTRATION SAMPLES IN PAINT CANS

SEE REVERSE FOR ADDITIONAL INSTRUCTIONS

Shipment is complete

CLP SAMPLE NUMBER (FROM LABELS)	Ⓐ SAMPLE DESCRIPTION (FROM BOX 1) 1 2 3 4 5 6 7	Ⓑ CONCENTRATION L - LOW M - MED H - HIGH (SAS)	Ⓒ RAS ANALYSIS: TOTAL METALS	CYANIDE	DISSOLVED METALS	HIGH ONLY (SAS): SULFIDE	pH	CONDUCTIVITY	OXIDANTS	Ⓓ SPECIAL HANDLING	Ⓔ STATION LOCATION
MECK 47	2	L	✓	✓							RW1
MECK 48	2	L	✓	✓							RW2
MECK 49	3	L	✓	✓						Blank	~~RW3~~ Blank

EPA Form 2075-6 (8-87)

WHITE — SMO COPY PINK — CLIENT COPY WHITE — LAB COPY FOR RETURN TO SMO YELLOW — LAB COPY

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5
CHICAGO, ILLINOIS

DATE: MAR 10 1989

SUBJECT: **Review of Region 5 data for** PEKIN MUNICIPAL L.F

FROM: **Curtis Ross, Director** Chi Tang for
Region 5 Central Regional Laboratory

To: **Data User:**

Attached are the results for:

CRL Data Set Numbers: SF 5744
Sample Numbers: 89FS06S18-R01
Parameter(s): FURNACE METALS
Laboratory: CRL/ESAT

Results Status:

(✓) **DATA ACCEPTABLE FOR USE***
( ) **DATA QUALIFIED AS TO USE**
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Comments by the Quality Control Coordinator:

If there are any questions regarding the data, refer them to David Payne, the Quality Control Coordinator, at 353-3805.

Please sign and date this form below and return it with any comments to:

Sylvia Griffin
Data Management Coordinator
Region 5 Central Regional Laboratory
(5SCRL)

SUBMITTED BY
S Griffin
MAR 10 1989

U.S. EPA CENTRAL
REGIONAL LAB

RECEIVED BY/DATE:
Comments:

DATA SET	SITE	DU/ACT.
SF5744	Pekin Municipal L.F. #1	Y905 / TFA302

SAMPLES	PARAMETER(S)
89FS06518, 519, R01	As, Cd, Pb, Se, Sb, Tl

SAMPLED	RECEIVED	DUE	LAB
15 Nov 88	24 Jan 89	28 Feb 89	CRL

SHIPPED	DATA RECEIVED	CONTRACT
NA	6 Mar 89	ESAT

Comments By Reviewer: Pb, Se lacking blank leading samples, after curve.

Since blanks were run at the end and in the middle of the wheel, and spiked recoveries of the samples showed acceptable results, the pb and se results are therefore acceptable for use

(X) REVIEWED ( ) UNREVIEWED TEAM LEADER/DATE 8 Mar 89

( ) REVIEWED (X) UNREVIEWED SECTION CHIEF/DATE 3/9/89

( ) REVIEWED ( ) UNREVIEWED QC COORDINATOR/DATE

REVIEWED BY CONTRACT COORDINATOR/DATE

RECEIVED 3/9/89 TRANSMITTED 3/10/89 DATA MANAGEMENT COORDINATOR

NM
8MWH

ENVIRONMENTAL PROTECTION AGENCY
FOR THE TEAM: METALS

DIVISION/BRANCH (SF) FIT SAMPLE DATE 88 LAB ARRIVAL DATE 1-25-89 DUE DATE 2-15-89

DU NUMBER Y905 DATA SET NUMBER 5744 STUDY PEKIN MUN. L.F. PRIORITY — CONTRACTOR CRL

CRL LOG NUMBER	SAMPLE DESCRIPTION TAG. NO.	TOTAL METALS WATER CD ~~TOTAL ICAP~~ UG/L MET111	TOTAL METALS WATER AS UG/L MET161	TOTAL METALS WATER PB UG/L MET1191	TOTAL METALS WATER SB UG/L MET1201	TOTAL METALS WATER SE UG/L MET1211	TOTAL METALS WATER TL UG/L MET1221
89FS06S18	5-000718-RW1	✓ 0.2u	✓ 4	✓ 1u	✓ 2 2/16/89	✓ 4u 2/28/89	✓ 26u 2/21/89
89FS06S19	5-000719-RW2+ MSD	✓ 0.2u	✓ 2u	✓ 1u	✓ 2u 2/14/89	✓ 2u 2/28/89 CR	✓ 2u
89FS06R01	5-000720 BLANK	✓ 0.2u	✓ 2u	✓ 1	✓ 2u	✓ 2u	✓ 2u
		John W. Young 2/13/89	2/13/89 John W. Young	Linda Rosobka 2/28/89			2/21/89 John W. Young

ESAT CONTRACT TID NO: 01-14
TASK NO: 2456

DATASET CUSTODY TRANSFER FORM

All analytical testing was completed on 2/28, 1989 for the dataset described below:

DATASET NO: 3744 SITE NAME: Pekin Mun. L.F.

PARAMETER: GFAA Metals SF DU/ACT NO: Y 905 /C

SAMPLE NUMBERS: 89FS06S18-19, 89FS06R01

ESAT APPROVALS:

(ANALYST 3/2/89 DATE) (TEAM LEADER 3/2/89 DATE)

(QC COORDINATOR 3/6/89 DATE) (ESAT TEAM MANAGER 3/6/89 DATE)

COMMENTS:

The subject dataset was transferred to the custody of the U.S. EPA Region V Central Regional Laboratory in its entirety on the date indicated below.

(DELIVERED BY DATE) (RECEIVED BY 6 Mar 89 DATE)

EPA APPROVALS:

(EPA TASK MONITOR 6 Mar 89 DATE)

[X] Reviewed
[X] Unreviewed
[ ] Accepted
[ ] Rejected
[ ] Returned/_____ (Date)

COMMENTS:

(SECTION CHIEF 3/9/89 DATE) [ ] Reviewed [✓] Unreviewed

(ESAT DPO 3/9/89 DATE) (DATA COORD'R REC'D / / TRANSMTD)

DOC.NO.: ESAT-05-0003-FORM
REVISION NO.: 04 (01/05/89) FILE LOCATION NUMBER: 5.6.1

* REGRESSION ANALYSIS * CSC VERSION 2.00 *

NAME OF ANALYST ---: GANZ
PARAMETER NAME ----: AS
DATE OF ANALYSIS --: 02-24-1989

DATA SET NUMBER ---:
DU NUMBER ---------: Y505

SF5744

J. Ganz
2/24/89

DEGREE OF FIT : 1

EQUATION : CONCENTRATION = -7.40852E-02
+5.56995E+01 * SIGNAL

COEFFICIENT OF DETERMINATION : .9998062

T-A-B-L-E O-F S-T-A-N-D-A-R-D-S

STANDARD	SIGNAL	CONCENTRATION	CALCULATED
1	+0.002	+0.000	+0.037
2	+0.183	+10.000	+10.118
3	+0.354	+20.000	+19.643
4	+0.544	+30.000	+30.226
5	+0.719	+40.000	+39.973

T-A-B-L-E O-F S-A-M-P-L-E-S

SAMPLE I.D.	SIGNAL	CONCENTRATION	
AQC TV=19.76	+0.334	+18.529	%R = 93.8 Limit = 100 ± 10%
BLANK	+0.005	+0.204	Limit = ± 2 ppb
89YL11R02 +0	+0.004	+0.148	> %R = 94.4
+20	+0.343	+19.030	
89YL11D01 +0	+0.006	+0.260	> %R = 85.8 Requires MSA
+20	+0.314	+17.415	
89YL11S39 +0	+0.006	+0.260	> %R = 83.5 Requires MSA
+20	+0.306	+16.969	
89YL11S40 +0	+0.019	+0.984	> %R = 89.1 Requires MSA
+20	+0.339	+18.808	
89YL11S41 +0	+0.017	+0.872	> %R = 85.5 Requires MSA
+20	+0.324	+17.972	
AQC TV=19.76	+0.335	+18.585	%R = ~~92.9~~ 94.1 Limit = 100 ± 10%
BLANK	+0.003	+0.093	Limit = ± 2 ppb
89YL11S42 +0	+0.072	+3.936	> %R = 81.3 Requires MSA
+20	+0.364	+20.200	
89YL11S43 +0	+0.002	+0.037	> %R = 86.3 Requires MSA
+20	+0.312	+17.304	
89FS06R05 +0	+0.004	+0.148	> %R = 93.0
+20	+0.338	+18.752	
89FS06S78 +0	+0.001	-0.019	> %R = 78.8 Requires MSA
+20	+0.284	+15.744	
89FS06D78 +0	+0.010	+0.482	> %R = 76.3 Requires MSA
+20	+0.284	+15.744	
AQC TV=19.76	+0.327	+18.139	%R = 91.8 Limit = 100 ± 10%
BLANK	-0.002	-0.186	Limit = ± 2 ppb
89FS06S79 +0	+0.012	+0.594	> %R = 74.4 Requires MSA
+20	+0.279	+15.466	
89FS06S80 +0	+0.002	+0.037	> %R = 84.1 Requires MSA
+20	+0.304	+16.858	
89FS06S81 +0	+0.035	+1.875	> %R = 78.0 Requires MSA

SF5714
SF5742

89FS06S75 +0	+0.012	+0.254	> %R = 74.4 Requires MSA	
+20	+0.279	+15.466		
89FS06S80 +0	+0.002	+0.037	> % R = 84.1 Requires MSA	
+20	+0.304	+16.858		
89FS06S81 +0	+0.035	+1.875	> %R = 78.0 Requires MSA	
+20	+0.315	+17.471		
89FS06S82 +0	+0.015	+0.761	> %R = 75.8 Requires MSA	
+20	+0.287	+15.911		
89FS06S83 +0	+0.007	+0.315	> %R = 72.4 Requires MSA	
+20	+0.267	+14.797		
AGC TV=19.76	+0.324	+17.972	%R = 91.0 Limit = 100 ± 10%	
BLANK	+0.000	-0.075	Limit = ± 2 ppb	SF5742
89FS06R01 +0	+0.003	+0.093	> %R = 81.9 Requires MSA	SF5744
+20	+0.297	+16.468		
89FS06S18 +0	+0.020	+1.039	> %R = 69.1 Requires MSA	
+20	+0.268	+14.853		
89FS06S19 +0	+0.004	+0.148	> %R = 75.5 Requires MSA	
+20	+0.275	+15.243		SF5744
89FS07R06 +0	-0.001	-0.130	> %R = 85.5 Requires MSA	SF5794
+20	+0.306	+16.969		
89FS07S41 +0	+0.059	+3.212	> %R = 80.2 Requires MSA	
+20	+0.347	+19.253		
AGC TV=19.76	+0.322	+17.861	%R = 90.4 Limit = 100 ± 10%	
BLANK	+0.007	+0.315	Limit = ± 2 ppb	
89FS07D41 +0	+0.056	+3.045	> %R = 78.8 Requires MSA	quite 2/24/89 SF5794 ~~SF5797~~
+20	+0.339	+18.808		
89FS07R04 +0	+0.003	+0.093	> %R = 83.5 Requires MSA	SF5795
+20	+0.303	+16.802		
89FS07S23 +0	+0.002	+0.037	> %R = 81.0 Requires MSA	
+20	+0.293	+16.245		
89FS07S24 +0	+0.005	+0.204	> %R = 75.8 Requires MSA	
+20	+0.277	+15.354		
AGC TV=19.76	+0.316	+17.526	%R = 88.7 Will rerun previous samples by MSA	
BLANK	-0.003	-0.242	Limit = ± 2 ppb	

SF5744

J Gary

2/24/89

0.004
0.330
0.022 Not used
0.361 JG 2/10/89
0.027
0.347
0.327

Begin Element - AS
0.002
0.000 AZ
0.002 Std 0 ppb
0.183 10 ppb
0.354 20 ppb
0.544 30 ppb
0.719 40 ppb
0.334 AQC TV= 19.76 ppb
0.005 Blank
0.004 89YL11R02 +0
0.343 +20
x 0.006 +0 89YL11D01
0.314 +20
x 0.006 +0 89YL11S39
0.306 +20
x 0.019 +0 89YL11S40
0.339 +20
x 0.017 +0 89YL11S41
0.324 +20
0.335 AQC TV=19.76
0.003 Blank
x 0.072 +0 89YL11S42
0.364 +20
x 0.002 +0 89YL11S43
0.312 +20 SF5714
0.004 +0 89F506R05 SF5742
0.338 +20
x 0.001 +0 89F506S78 2/6/89
0.284 +20
x 0.010 +0 89F506D78
0.284 +20
0.327 AQC TV=19.76
-0.002 Blank
x 0.012 89F506S79 +0
0.279 +20
x 0.002 +0 89F506S80
0.304 +20
x 0.035 +0 89F506S81
0.315 +20
x 0.015 +0 89F506S82
0.287 +20
x 0.007 +0 89F506S83 2/10/89
0.267 +20 SF5742
0.324 AQC TV=19.76 SF5744
-0.000 Blank
x 0.003 +0 89F506R01
0.297 +20
x 0.020 +0 89F506S18
0.268 +20
x 0.004 +0 89F506S19
0.275 +20 SF5744
x -0.001 +0 89F607R06 SF5794
0.306 +20

J Harry
2/10/89

SF5744

× 0.020	+0	89F506518	
0.268	+20		
× 0.004	+0	89F506519	
0.275	+20		SF5744
× -0.001	+0	89F607R06	SF5794
0.306	+20		
× 0.059	+0	89F607541	
0.347	+20		
0.322	AQC	TV=19.76 ppb	
× 0.007	Blank		
4 0.056	+0	89F607D41	
0.339	+20		SF5794
× 0.003	+0	89F507R04	SF5795
0.303	+20		
< 0.002	+0	89F507523	
0.293	+20		
× 0.005	+0	89F507524	
0.277	+20		
0.316	AQC	TV=19.76 ppb	
-0.003	Blank		
~~0.003~~	~~gwb~~ 2/10/89		
	No injection		

2

J Barry
2/10/89

SF5744

AAS Run Log

Element As

Date 2/10/89

J Barry

Initials JWG

Data Set SF5744

	ID	Spike	Comment
1	Std 0		
2	10		
3	20		
4	30		
5	40		
6	AQC TV = 19.76		
7	Blank		
8	89YL11R02	0	
9		20	
10	89YL11D01	0	
11		20	
12	89YL11S39	0	
13		20	
14	89YL11S40	0	
15		20	
16	89YL11S41	0	
17		20	
18	AQC		
19	Blank		
20	89YL11S42	0	
21		20	
22	89YL11S43	0	
23		20	
24	89FS06R05	0	
25		20	
26	~~gwk~~	2/10/89	

AAS Run Log

Element As

Date 2/10/89

J Gantz

Initials JWG

Data Set SF5744

	ID	Spike	Comment
27	89FS06S78	0	
28		20	
29	89FS06D78	0	
30		20	
31	AQC		
32	Blank		
33			
34			
35			
	Wheel 2		
1	89FS06S79	0	
2		20	
3	89FS06S80	0	
4		20	
5	89FS06S81	0	
6		20	
7	89FS06S82	0	
8		20	
9	89FS06S83	0	
10		20	
11	AQC		
12	Blank		
13	89FS06R01	0	
14		20	
15	89FS06S18	0	
16		20	

AAS Run Log

Element As

Date 2/10/89

J Kanz

Initials JWG

Data Set St5744

	ID	Spike	Comment
17	89FS06519	0	
18		20	
19	89F607R06	0	
20		20	
21	89F607541	0	
22		20	
23	AQC		
24	Blank		
25	89F607D41	0	
26		20	
27	89FS07R04	0	
28		20	
29	89FS07523	0	
30		20	
31	89FS07524	0	
32		20	
33	AQC		
34	Blank		
35			
	Wheel 3		
1			
2			
3			
4			
5			
6			

J Gang

SF5744

Element	Instrument	QC Source	
☐ Ag	☐ 5000	☐ WP 284 TM I #2	Analyst JWG
☒ As	☐ 4000	☐ WP 1183 TM II #1	Date 2/10/89
☐ Cd	☒ 5000 ZE	☐ WP 1183 TM II #2	Lamp # 8327
☐ Cr	☐ 5000 ZW	☒ ICV 2	Energy 61
☐ Pb	☐ 5100	☐ SPEX II	Expansion 5
☐ Sb	☐ Varian 30	☐ NBS SRM 1643b	Stock SPEX 1-92-MD
☐ Se		☐	☐ platform ☒ MSC
☐ Tl		☐	☒ wall ☐ MSA

Blank	Slope	AQC	Digestion QC
.037	55.7	18.53	
.204			
.093			
-.186			
-.075			
.315			
-.242			

Blank cup absorbance

J Ganz
2/24/89

* FLAMELESS * CSC VERSION 1.00 *

NAME OF ANALYST ---: GANZ
DATE OF ANALYSIS --: 02-24-1989
PARAMETER NAME ----: AS
DATA SET # --------: **SF5744**

SAMPLE NO.	CONC.	R VALUE	SLOPE	
BLANK	-.255814	.9998508	.0215	Limit = ±2 ppb
AQC TV=19.76	20.69927	.9994321	.01902	%R = 104.8 Limit = 100±10%
89FS06R01	.2713799	.9968368	.01953	
~~89FS06S18~~	~~10~~	~~.3333334~~	~~6.666666E-04~~	Not used - error in data entry
89FS06S18	4.028575	.9998532	.0175	
89FS06S19	1.120509	.9996589	.01419	SF5744
~~89FG07R06~~	~~9.999999~~	~~.3333332~~	~~3.333334E-05~~	Not used - error in data entry SF5744
~~89FG07R06~~	~~-1.869063~~	~~-.1613355~~	~~-5.325444~~	Not used - error in data entry
89FG07R06	.1273892	.9986607	.01727	
89FG07S41	.044352	.9999497	.02029	
AQC TV=19.76	21.02165	.9999034	1.986999E-02	%R = 106.4% Limit = 100±10%
89FG07D41	4.007047	.999935	.01702	SF5744
89FS07R04	-.1732673	.9993904	.0202	SF5745
89FS07S23	9.460281E-02	.9999806	.01797	
89FS07S24	-4.184174E-02	.9996131	.01673	
~~AQC TV=19.76~~	~~0~~	~~1~~	~~2.45058~~	Not used - error in data entry
AQC TV=19.76	20.58941	.9997189	.02002	%R = 104.2 Limit = 100±10%

BLANK

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-8.000001E-03	-.0055	2.500001E-03	-45.45455 %
10	.21	.2094999	-5.000532E-04	-.2386889 %
20	.431	.4244999	-6.500095E-03	-1.531236 %
30	.635	.6394998	4.499853E-03	.7036519 %

AQC TV=19.76

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.4	.3937001	-6.299943E-03	-1.600188 %
10	.579	.5839001	4.900038E-03	.8391913 %
20	.765	.7741	9.10002E-03	1.175561 %
30	.972	.9643	-7.700026E-03	-.7985095 %

89FS06R01

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.002	5.300049E-03	3.300049E-03	62.2645 %
10	.191	.2006	9.600028E-03	4.785657 %
20	.425	.3959	-.0291	-7.350341 %
30	.575	.5912	1.620001E-02	2.740191 %

89FS06S18

SPIKE	MEASURED	CALC.	ERROR	PER CENT

30	.575	.5912	1.620001E-02	2.740191 %

89FS06S18

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.02	6.666667E-03	-1.333333E-02	-200 %
10	0	9.313226E-10	9.313226E-10	100 %
0	0	6.666667E-03	6.666667E-03	100 %
0	0	6.666667E-03	6.666667E-03	100 %

89FS06S18

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.069	7.050006E-02	1.500063E-03	2.127747 %
10	.245	.2455001	5.000532E-04	.2036876 %
20	.426	.4205001	-5.499959E-03	-1.307957 %
30	.592	.5955001	3.500044E-03	.5877488 %

SF5744

J Gamy 2/24/89

89FS06S19

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.018	1.590002E-02	-2.099976E-03	-13.20738 %
10	.158	.1578	-1.999885E-04	-.1267354 %
20	.293	.2997	6.69998E-03	2.235562 %
30	.446	.4416	-4.400045E-03	-.996387 %

89FG07R06

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.001	-3.333333E-04	6.666667E-04	-200 %
10	0	5.820766E-11	5.820766E-11	100 %
0	0	-3.333333E-04	-3.333333E-04	99.99999 %
0	0	-3.333333E-04	-3.333333E-04	99.99999 %

89FG07R0~~2~~6 JWB 2/24/89

SPIKE	MEASURED	CALC.	ERROR	PER CENT
.002	10	17.41866	7.418658	42.5903 %
.167	20	15.8793	-4.1207	-25.95014 %
.364	30	14.0414	-15.9586	-113.6539 %
.5120001	0	12.66064	12.66064	100 %

89FG07R0~~2~~6 JWB 2/24/89

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.002	2.200012E-03	2.00012E-04	9.091404 %
10	.167	.1749	7.900015E-03	4.516875 %
20	.364	.3476	-1.639998E-02	-4.718061 %
30	.5120001	.5203001	8.300006E-03	1.595235 %

89FG07S41

SPIKE	MEASURED	CALC.	ERROR	PER CENT

0	.003	8.999023E-04	-2.100098E-03	-233.3695 %
10	.202	.2037999	1.799926E-03	.8831829 %
20	.404	.4067	2.699971E-03	.663873 %
30	.612	.6096	-2.399981E-03	-.3936977 %

AQC TV=19.76

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.419	.4177001	-1.299918E-03	-.3112084 %
10	.617	.6164	-5.999804E-04	-.0973362 %
20	.81	.8151	5.099952E-03	.6256843 %
30	1.017	1.0138	-3.200054E-03	-.3156495 %

89FG07D41

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.066	6.819995E-02	2.199948E-03	3.225732 %
10	.242	.2384	-3.600016E-03	-1.510074 %
20	.408	.4086	6.0004E-04	.1468526 %
30	.578	.5788	8.000136E-04	.1382193 %

J Banz 2/24/89 SF5744

89FS07R04

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.001	-.0035	-4.500001E-03	128.5714 %
10	.198	.1985	5.000085E-04	.2518934 %
20	.388	.4005	1.249999E-02	3.121056 %
30	.611	.6025	-8.500039E-03	-1.410795 %

89FS07S23

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.003	1.700012E-03	-1.299988E-03	-76.46931 %
10	.18	.1814	1.399979E-03	.7717636 %
20	.36	.3611	1.099944E-03	.3046093 %
30	.542	.5408	-1.20008E-03	-.2219083 %

89FS07S24

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.005	-7.000122E-04	-5.700012E-03	814.2733 %
10	.159	.1666	7.59998E-03	4.561814 %
20	.332	.3339	1.899958E-03	.5690201 %
30	.505	.5012	-3.800035E-03	-.7581873 %

AQC TV=19.76

SPIKE	MEASURED	CALC.	ERROR	PER CENT
.408	1	.9999999	-1.192093E-07	-1.192093E-05 %
0	0	0	0	1.701412E+38 %
0	0	0	0	1.701412E+38 %
0	0	0	0	1.701412E+38 %

20	.332	.3339	1.899958E-03	.5690201 %
30	.505	.5012	-3.800035E-03	-.7581873 %

AQC TV=19.76

SPIKE	MEASURED	CALC.	ERROR	PER CENT
.408	1	.9999999	-1.192093E-07	-1.192093E-05 %
0	0	0	0	1.701412E+38 %
0	0	0	0	1.701412E+38 %
0	0	0	0	1.701412E+38 %

AQC TV=19.76

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.408	.4122	4.199952E-03	1.018911 %
10	.615	.6124	-2.600074E-03	-.4245712 %
20	.82	.8125999	-7.400096E-03	-.910669 %
30	1.007	1.0128	5.79989E-03	.572559 %

SF5744

J Gang
2/29/89

Begin Element - AS
0.001
0.000 AZ
0.002
0.222
0.365
0.573
0.417
0.632
0.819
0.992

Not used
2/13/89

Begin Element - AS
-0.003
0.000 AZ
0.008
0.165
0.453
0.607

Begin Element - AS
0.007
0.000 AZ
-0.003
0.216
0.388
0.649
0.414

Begin Element - AS
-0.004
0.000 AZ
-0.000
0.214
0.408
0.589
0.411
0.570

J Hanz
2/13/89

SF5744

Begin Element - AS
0.003
0.000 AZ

-0.008	+0	
0.210	+10	Blank
0.431	+20	
0.635	+30	
0.400	+0	
0.579	+10	AQC TV = 19.76
0.765	+20	
0.972	+30	
0.002	+0	
0.191	+10	89FS06R01
0.425	+20	
0.575	+30	
0.069	+0	
0.245	+10	89FS06S18
0.426	+20	

0.425	+20		
0.575	+30		
0.069	+0		
0.245	+10	89FS06518	
0.426	+20		
0.592	+30		
0.018	+0		
0.158	+10	89FS06519	
0.293	+20		
0.446	+30		SF5744
0.002	+0		SF5794
0.167	+10	89FG07R06	
0.364	+20		
0.512	+30		
0.003	+0		
0.202	+10	89FG07S41	
0.404	+20		
0.612	+30		
0.419	+0		
0.617	+10	AQC TV= 19.76	
0.810	+20		
1.017	+30		
-0.003		Blank	
0.066	+0		
0.242	+10	89FG07D41	
0.408	+20		
0.578	+30		SF5794
0.001	+0		SF5795
0.198	+10	89FS07R04	
0.388	+20		
0.611	+30		
0.003	+0		
0.180	+10	89FS07S23	
0.360	+20		
0.542	+30		
0.005	+0		
0.159	+10	89FS07S24	
0.332	+20		
0.505	+30		
0.408	+0		
0.615	+10	AQC TV= 19.76	
0.820	+20		
1.007	+30		
-0.004		Blank	

J Dang
2/13/89

Sr5744

AAS Run Log

Element As

Date 2/13/89

J Gary

Initials JWG

Data Set SF5744

	ID	Spike	Comment
1	Blank		
2			
3			
4			
5	AQC TV= 19.76		
6			
7			
8			
9	89FS06 ~~58~~ 59 R01 2/13/89		
10			
11			
12			
13	89FS06S18		
14			
15			
16			
17	89FS06S19		
18			
19			
20			
21	89F607R06		
22			
23			
24			
25	89F607S41		
26			

AAS Run Log

Element As

Date 2/13/89

J Fang

Initials JWG

Data Set SF5744

	ID	Spike	Comment
27	89FG07541		
28			
29	AQC		
30			
31			
32			
33	Blank		
34			
35			
	Wheel 2		
1	89FG07D41		
2			
3			
4			
5	89F507R04		
6			
7			
8			
9	89F507523		
10			
11			
12			
13	89F507524		
14			
15			
16			

AAS Run Log

Element As

Date 2/13/89

J Gang

Initials JWG

Data Set SF5744

	ID	Spike	Comment
17	AQC TV= 19.76		
18			
19			
20			
21	Blank		
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
	Wheel 3		
1			
2			
3			
4			
5			
6			

Sr 5744 J Ferry

Element	Instrument	QC Source	
☐ Ag	☐ 5000	☐ WP 284 TM I #2	Analyst JWG
☒ As	☐ 4000	☐ WP 1183 TM II #1	Date 2/13/89
☐ Cd	☒ 5000 ZE	☐ WP 1183 TM II #2	Lamp # 8327
☐ Cr	☐ 5000 ZW	☒ ICV 2	Energy 58
☐ Pb	☐ 5100	☐ SPEX II	Expansion 5
☐ Sb	☐ Varian 30	☐ NBS SRM 1643b	Stock SPEX 1-92-MD
☐ Se		☐	☐ platform ☐ MSC
☐ Tl		☐	☒ wall ☒ MSA

Blank	Slope	AQC	Digestion QC
-.26	.0215	20.7 21.0 20.4	

Blank cup absorbance

-.003
-.004

* REGRESSION ANALYSIS * DSC VERSION 2.00 *

NAME OF ANALYST ---: GANZ
PARAMETER NAME ----: CD
DATE OF ANALYSIS --: 02-23-1989

DATA SET NUMBER ---:
DU NUMBER ---------: Y905

SF5744

John W. Ganz
2/23/89

DEGREE OF FIT : 1

EQUATION : CONCENTRATION = -8.09193E-04
+3.19339E+00 * SIGNAL

COEFFICIENT OF DETERMINATION : .9995323

T-A-B-L-E O-F S-T-A-N-D-A-R-D-S

STANDARD	SIGNAL	CONCENTRATION	CALCULATED
1	+0.005	+0.000	+0.015
2	+0.148	+0.500	+0.471
3	+0.317	+1.000	+1.011
4	+0.471	+1.500	+1.503
5	+0.626	+2.000	+1.998

* Analytical spike recoveries >110% are acceptable if the sample concentration is < IDL.

T-A-B-L-E O-F S-A-M-P-L-E-S

SAMPLE I.D.	SIGNAL	CONCENTRATION		
AQC TV=0.975	+0.324	+1.033	%R = 105.9 Limit = 100 ± 10%	
BLANK	-0.023	-0.075	Limit = ± 0.2 ppb	
89FS06R01 +0	-0.022	-0.072	%R = 115.3 *	
+1	+0.339	+1.081		
89FS06S18 +0	-0.037	-0.119	%R = 103.7	
+1	+0.282	+0.918		
89FS06S19 +0	-0.023	-0.075	%R = 111.2 *	
+1	+0.325	+1.037		SF5744
89FG07R06 +0	-0.031	-0.100	%R = 118.8 *	SF5794
+1	+0.341	+1.088		
89FG07S41 +0	+0.009	+0.027	%R = ~~103.2~~ 99.8 gwg 2/23/89	
+1	+0.315	+1.005		
AQC TV=0.975	+0.328	+1.046	%R = 107.3 Limit = 100 ± 10%	
BLANK	-0.015	-0.049	Limit = ± 0.2 ppb	
89FG07D41 +0	-0.005	-0.017	%R = 97.4	
+1	+0.300	+0.957		SF5794
89FS07R04 +0	+0.011	+0.034	%R = 95.8	SF5795
+1	+0.311	+0.992		
89FS07S23 +0	+0.046	+0.146	%R = 103.4	
+1	+0.370	+1.180		
89FS07S24 +0	-0.013	-0.043	%R = 106.4	
+1	+0.320	+1.021		SF5795
89YL11R02 +0	-0.024	-0.078	%R = 106.3	SF5714
+1	+0.309	+0.985		
AQC TV=0.975	+0.307	+0.979	%R = 100.4 Limit = 100 ± 10%	
BLANK	-0.015	-0.049	Limit = ± 0.2 ppb	

0.650

Begin Element - CD
-0.863
0.000 AZ
-0.018
0.155
0.286
0.451
0.632

JWB 2/13/89

SF5744

SF5744

Begin Element - CD
-0.862
0.000 AZ
0.005 0 ppb Std
0.148 0.5 ppb
0.317 1.0 ppb
0.471 1.5 ppb
0.626 2.0 ppb
0.324 AQC TV=0.975
-0.023 Blank
-0.022 +0 89F506R01
0.339 +1
-0.037 +0 89F506518
0.288 +1
-0.023 +0 89F506519
0.325 +1 SF5744

-0.031 +0 89F607R06 SF5794
0.341 +1
0.009 +0 89F607541
0.315 +1
0.328 AQC TV=0.975
-0.015 Blank
-0.005 +0 89F607D41
0.300 +1 SF5794

0.011 +0 89F507R04 SF5795
0.311 +1
0.046 +0 89F507523
0.370 +1
-0.013 +0 89F507524
0.320 +1

-0.024 +0 89YL11R02 SF5714
0.309 +1
0.307 AQC TV=0.975
-0.015 Blank

John W. Barry
2/13/89

AAS Run Log

Element Cd John W. Harry SF5744 Initials JWG

Date 2/13/89 Data Set SF5744

	ID	Spike	Comment
1	Std 0		
2	0.5		
3	1.0		
4	1.5		
5	2.0		
6	AQC TV=0.975		
7	Blank		
8	89FS06R01	0	
9		1	
10	89FS06S18	0	
11		1	
12	89FS06S19	0	
13		1	
14	89FG07R06	0	
15		1	
16	89FG07S41	0	
17		1	
18	AQC		
19	Blank		
20	89FG07D41	0	
21		1	
22	89FS07R04	0	
23		1	
24	89FS07S23	0	
25		1	
26	89FS07S24	0	

AAS Run Log

Element Cd

Date 2/13/89

John W. Gang

Initials JWG

Data Set SF5744

	ID	Spike	Comment
27	89FS07S24	1	
28	89YL11R02	0	
29		1	
30	AQC		
31	Blank		
32			
33			
34			
35			
	Wheel 2		
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

John W. Ganz

SF5744

Element	Instrument	QC Source	
☐ Ag	☐ 5000	☒ WP 284 TM I #2	Analyst JWG
☐ As	☐ 4000	☐ WP 1183 TM II #1	Date 2/13/89
☒ Cd	☒ 5000 ZE	☐ WP 1183 TM II #2	Lamp # WL-36016
☐ Cr	☐ 5000 ZW	☐ ICV 2	Energy 44
☐ Pb	☐ 5100	☐ SPEX II	Expansion 5
☐ Sb	☐ Varian 30	☐ NBS SRM 1643b	Stock JVM prepared 2/8/89
☐ Se		☐	☒ platform ☒ MSC
☐ Tl		☐	☐ wall ☐ MSA

Blank (conc)	Slope	AQC	Digestion QC
-.075	3.19339	1.033	
-.049		1.046	
-.049		0.979	
(int) .015			

Blank cup absorbance

SF5744

* REGRESSION ANALYSIS * CSC VERSION 2.00 *

NAME OF ANALYST ---: L KOROBKA
PARAMETER NAME ----: PB
DATE OF ANALYSIS --: 02-28-1989

DATA SET NUMBER ---: 5714 (5744)
DU NUMBER ---------: Y905

Linda Korobka
2/27/89

DEGREE OF FIT : 1

EQUATION : CONCENTRATION = +3.67993E+00
+8.41241E+01 * SIGNAL

COEFFICIENT OF DETERMINATION : .9993936

T-A-B-L-E O-F S-T-A-N-D-A-R-D-S

STANDARD	SIGNAL	CONCENTRATION	CALCULATED
1	-0.046	+0.000	-0.190
2	+0.073	+10.000	+9.820
3	+0.201	+20.000	+20.588
4	+0.315	+30.000	+30.179
5	+0.427	+40.000	+39.600

T-A-B-L-E O-F S-A-M-P-L-E-S

SAMPLE I.D.	SIGNAL		CONCENTRATION	
AQC N=22.4 LJK 3/6/89	+0.213		+21.598	96.4% Recovery Limit=±10%
+20	+0.455		+41.956	101.8% Recovery Limit=±10%
89YL11S39	-0.043		+0.062	
+20	+0.209		+21.261	106% Recovery
89YL11S40	-0.047	SF5714	-0.274	
+20	+0.197		+20.252	102.6% Recovery
89YL11S41	-0.048		-0.359	
+20	+0.199		+20.420	103.9% Recovery
89YL11S42	-0.046		-0.190	
+20	+0.201		+20.588	103.9% Recovery
89YL11S43	-0.045		-0.106	
+20	+0.207		+21.093	106% Recovery
89YL11D01	-0.044		-0.022	
+20	+0.211		+21.430	107.3% Recovery
89YL11R02	-0.023		+1.745	
+20	+0.231		+23.112	107% Recovery
89FS06S78	-0.046		-0.190	
+20	+0.206	SF 5742	+21.009	106% Recovery
89FS06D78	-0.043		+0.062	
+20	+0.214		+21.682	108% Recovery
89FS06S79	-0.039		+0.399	
+20	+0.205		+20.925	102.6% Recovery
89FS06S80	-0.040		+0.314	
+20	+0.213		+21.598	106.4% Recovery
89FS06S81	-0.010		+2.838	
+20	+0.244		+24.206	106.8% Recovery
AQC N=22.4 LJK 3/6/89	+0.210		+21.345	R=95.3%
+20	+0.450		+41.535	Spike Rec = 101%

89FS06S80		-0.040	+0.314	
+20		+0.213	+21.598	106.4% Recovery
89FS06S81	SF 5742	-0.010	+2.838	
+20		+0.244	+24.206	106.8% Recovery
AQC TV= 22.4 LJK 3/6/89		+0.210	+21.345	R:95.3%
+20		+0.450	+41.535	spike Rec = 101%
BLK		-0.044	-0.022	BLK
89FS06S82		-0.045	-0.106	SF5744
+20		+0.207	+21.093	R=106%
89FS06S83		-0.043	+0.062	
+20		+0.211	+21.430	106.8% Recovery
89FS06R05		-0.044	-0.022	
+20		+0.206	+21.009	105.2% Recovery
89FS07S23	SF 5795	-0.023	+1.745	
+20		+0.228	+22.860	105.6% Recovery
89FS07S24		-0.024	+1.660	
+20		+0.224	+22.523	104.3% Recovery
89FS07R04		-0.043	+0.062	
+20		+0.214	+21.682	108% Recovery
89GF07S41	SF 5794	-0.035	+0.735	
+20		+0.218	+22.018	106.4% Recovery
89GF07D41		-0.039	+0.399	
+20		+0.217	+21.934	107.7% Recovery
89FS07R06		-0.042	+0.146	
+20		+0.211	+21.430	106.4% Recovery
89FS07S23		-0.024	+1.660	
+20		+0.226	+22.691	105.2% Recovery
89FS07S24		-0.027	+1.408	
+20		+0.225	+22.607	106% Recovery
89FS07R04	SF 5795	-0.042	+0.146	operator error L Krobka 2/27/89
+20		+0.210	+21.345	106% Recovery
89FS06S19		-0.039	+0.399	
+20	SF 5744	+0.206	+21.009	103% Recovery
89FS06S18		-0.043	+0.062	
+20		+0.197	+20.252	101% Recovery
89FS06R01		-0.034	+0.819	
+20		+0.216	+21.850	105.2% Recovery
89FM07S30		-0.043	+0.062	
+20	SF 5792	+0.203	+20.757	103.5% Recovery
AQC		+0.214	+21.682	96.8% Recovery
+20		+0.458	+42.208	spike Rec = 102.6%
BLANK		-0.044	-0.022	BLK

Linda Krobka
3/7/89

Begin Element - PB

2/27/89

Linda Korobka

SF5744

-5.294		
0.000	AZ	
-0.046	0	
0.073	10	
0.201	20	
0.315	30	
0.427	40	
0.213	0	QC
0.455	+20	
-0.043	89YL11S29	SF 5714
0.209	+20	
-0.047	89YL11S40	
0.197		
-0.048	89YL11S41	
0.199		
-0.046	89YL11S42	
0.201		
-0.045	89YL11S43	
0.207		
-0.044	89YL11D01	
0.211		
-0.029	89YL11R02	
0.231		
-0.046	89FS06S78	SF 5742
0.206		
-0.043	89FS06D78	
0.214		
-0.039	89FS06S79	
0.205		
-0.040	89FS06S80	
0.213		
-0.010	89FS06S81	
0.244		
0.210	AQC TV=22.4	
0.450		
-0.044	BLK	
-0.045	89FS06S82	
0.207		
-0.043	89FS06S83	
0.211		
-0.044	89FS06R05	
0.206		
-0.023	89FS07S23	SF 5795
0.228		
-0.024	89FS07S24	
0.224		
-0.043	89FS07R04	
0.214		
-0.035	89FG07S41	SF 5794
0.218		
-0.039	89FG07D41	
0.217		
-0.042	89FG07R06	
0.211		
-0.024	~~89FS07S23~~	SF 5795
0.226		
-0.027	~~89FS07S24~~	operator error (analyzed twice)
0.225		
-0.042	~~89FS07R04~~	X Korobka 2/27/89
0.210		
-0.039	89FS06S19	SF 5744
0.206		

-0.039
0.206
-0.049

89FS06 S19

SF 5744

89FS06 S18

0.197
-0.034
0.216
-0.049
0.203
0.214
0.455
-0.044

89FS06 R01

89FM07 S30

QC TV=22.4

BLK

SF 5792

SF5744

Linda Krebbs
2/27/89

wheel #1 page 1 of 3

AAS Run Log

Element Pb Linda Kowobka Initials LJK

Date 2/27/89 2/27/89 Data Set 3F3744

	ID	Spike	Comment
1	0		
2	10		
3	20		
4	30		
5	40		
6	AQC IV = 22.4		
7	+20		
8	89YL11 S39		
9	(+20)		
10	89YL11 S40		
11	(+20)		
12	89YL11 S41		
13	(+20)		
14	89YL11 S42		
15	(+20)		
16	89YL11 S43		
17	(+20)		
18	89YL11 D01		
19	(+20)		
20	89YL11 R02		
21	(+20)		
22	89FS06 S78		
23	(+20)		
24	89FS06 D78		
25	(+20)		
26	89FS06 S79		

AAS Run Log

Element Pb

Linda Korobka 2/27/89

Initials LJK

Date 2/27/89

Data Set SFS744

	ID	Spike	Comment
27	89FS06 S79 (+20)		
28	89FS06 S80		
29	(+20)		
30	89FS06 S81		
31	(+20)		
32	AQC N=22.4		
33	(+20)		
34	BLANK		
35			
	Wheel 2		
1	89 FS06 S82		
2	(+20)		
3	89 FS06 S83		
4	(+20)		
5	89 FS06 R05		
6	(+20)		
7	89 FS07 S23		
8	(+20)		
9	89 FS07 S24		
10	(+20)		
11	89FS07 R04		
12	(+20)		
13	89FG07 S41		
14	(+20)		
15	89FG07 D41		
16	(+20)		

page 2 of 3
3 LK 2/28/89

wheel #2 ~~#3~~ LK 2/27/89

AAS Run Log

Element Pb

Linda Korobka 2/27/89

Initials LJK

Date 2/27/89

Data Set SF5744

	ID	Spike	Comment
17	89FG07 R06		
18	(+20)		
19	89FS07 S23		
20	(+20)		
21	89FS07 S24		
22	(+20)		
23	89FS07 R04		
24	(+20)		
25	89FS06 S19		
26	(+20)		
27	89FS06 S18		
28	(+20)		
29	89FS06 R01		
30	(+20)		
31	89FM07 S 30		
32	(+20)		
33	AQC N=22.4		
34	(+20)		
35	BLANK		
	Wheel 3		
1			
2			
3			
4			
5			
6			

SF5744

Element	Instrument	QC Source	
☐ Ag	☐ 5000	☑ WP 284 TM I #2	Analyst LJK
☐ As	☐ 4000	☐ WP 1183 TM II #1	Date 2/28/89
☐ Cd	☑ 5000 ZE	☐ WP 1183 TM II #2	Lamp # Serial # 4250 6/22/87
☐ Cr	☐ 5000 ZW	☐ ICV 2	Energy 58
☑ Pb	☐ 5100	☐ SPEX II	Expansion 5X
☐ Sb	☐ Varian 30	☐ NBS SRM 1643b	Stock Lot # 1-139-JA (Spex)
☐ Se		☐	☑ platform ☑ MSC
☐ Tl		☐	☐ wall ☐ MSA

Blank conc	Slope	AQC	Digestion QC
-.022 -.022	~~21.598~~ LL 2/28/89	21.598	
		21.682	
		21.345	

Blank cup absorbance
-.044 -.044

* REGRESSION ANALYSIS * CSC VERSION 2.00 *

D Kruse 2/14/89

NAME OF ANALYST ---: D KRUSE
PARAMETER NAME ----: SB
DATE OF ANALYSIS --: 02-14-1989

DATA SET NUMBER ---: SF 5744
DU NUMBER ---------: Y905

SF5744

DEGREE OF FIT : 1

D Kruse 2/14/89

EQUATION : CONCENTRATION = -6.88195E-01
+9.65259E+01 * SIGNAL

COEFFICIENT OF DETERMINATION : .9990422

T-A-B-L-E O-F S-T-A-N-D-A-R-D-S

STANDARD	SIGNAL	CONCENTRATION	CALCULATED
1	+0.006	+0.000	-0.310
2	+0.113	+10.000	+10.019
3	+0.220	+20.000	+20.347
4	+0.326	+30.000	+30.579
5	+0.417	+40.000	+39.363

T-A-B-L-E O-F S-A-M-P-L-E-S

SAMPLE I.D.		SIGNAL	CONCENTRATION	
BLANK		+0.010	+0.077	Limit = ± 2µg/l
AQC 20.3		+0.219	+20.250	R=99.8% ~~Limit = 90-110%~~
89FS07S23		+0.000	-0.889	2u
89FS07S23	20	+0.280	+26.139	R = 135.1%
89FS07S24		+0.007	-0.213	2u
89FS07S24	20	+0.324	+30.386	R= 153.0%
89FS07R04		+0.002	-0.696	2u
89FS07R04	20	+0.220	+20.347	R= 98.3%
89FS06R01		+0.000	-0.889	2u
89FS06R01	20	+0.197	+18.127	R= 95.1%
89FS06S18		+0.008	-0.116	
89FS06S18	20	+0.123	+10.984	R= 55.5% > run by MSA
89FG07S41		+0.007	-0.213	2u
89FG07S41	20	+0.245	+22.760	R= 114.9%
89FG07D41		+0.007	-0.213	2u
89FG07D41	20	+0.250	+23.243	R= 117.3%
89FS06S19		+0.005	-0.406	2u
89FS06S19	20	+0.243	+22.567	R= 114.9%
89FG07R06		+0.008	-0.116	2u
89FG07R06	20	+0.280	+26.139	R= ~~200%~~ 131.3%
89FS06S78		+0.007	-0.213	2u
89FS06S78	20	+0.247	+22.953	R= 115.8%
89FS06D78		+0.002	-0.696	2u
89FS06D78	20	+0.273	+25.463	R=130.8%
89FS06S79		+0.001	-0.792	2u
89FS06S79	20	+0.258	+24.015	R = 124.0%
89FS06S81		+0.013	+0.366	2u
89FS06S81	20	+0.273	+25.463	R= ~~124.1%~~ 125.5% 102.1%
AQC 20.3		+0.224	+20.733	R= ~~103.7%~~ Limit = 90-110%
BLANK		-0.001	-0.985	Limit = ± 2µg/l
89FS06R05		+0.004	-0.503	> use MSA

SF 5755

SF 5744

SF 5794

SF 5794

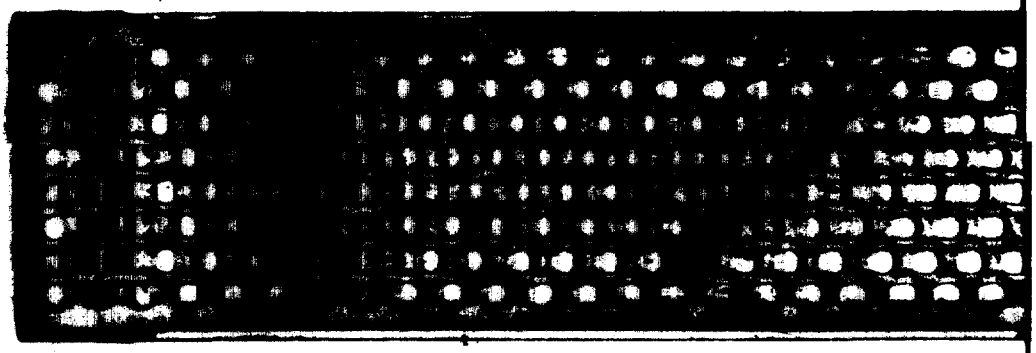
SF 5742

DK 2/16/89

AGC 20.3		+0.224	+20.733	R= 103.7% limit = 90-110%
BLANK		-0.001	-0.385	limit = ± 2µg/L
89FS06R05		+0.004	-0.503	
89FS06R05	20	+0.190	+17.451	R = 89.8% > use MSA
89FS06S80		-0.001	-0.385	2u
89FS06S80	20	+0.270	+25.173	R=130.8% SF5742
89FS06S82		-0.006	-1.468	2u
89FS06S82	20	+0.261	+24.305	128.9%
89FS06S83		+0.007	-0.213	2u
89FS06S83	20	+0.263	+24.498	R = ~~135.6%~~ 123.6 DKruse 3/6/89
89YL11R02		-0.002	-1.082	
89YL11R02	20	+0.184	+16.872	R= 89.8% > run by MSA
89YL11D01		+0.001	-0.792	2u SF5714
89YL11D01	20	+0.308	+28.841	R= 148.2%
89YL11S41		+0.009	-0.020	2u
89YL11S41	20	+0.296	+27.683	R= 138.5%
89YL11S42		+0.006	-0.310	2u
89YL11S42	20	+0.270	+25.173	R= 127.4%
89YL11S39		+0.005	-0.406	2u
89YL11S39	20	+0.292	+27.297	R= 138.5%
89YL11S40		+0.003	-0.599	2u
89YL11S40	20	+0.346	+32.509	R= 165.5%
89YL11S43		+0.003	-0.599	2u
89YL11S43	20	+0.224	+20.733	R= 106.7% ~~94.5%~~ DKruse 3/6/89
AGC 20.3		+0.208	+19.189	R= ~~95.9%~~ limit = 90-110%
BLANK		+0.011	+0.173	limit = ± 2µg/L

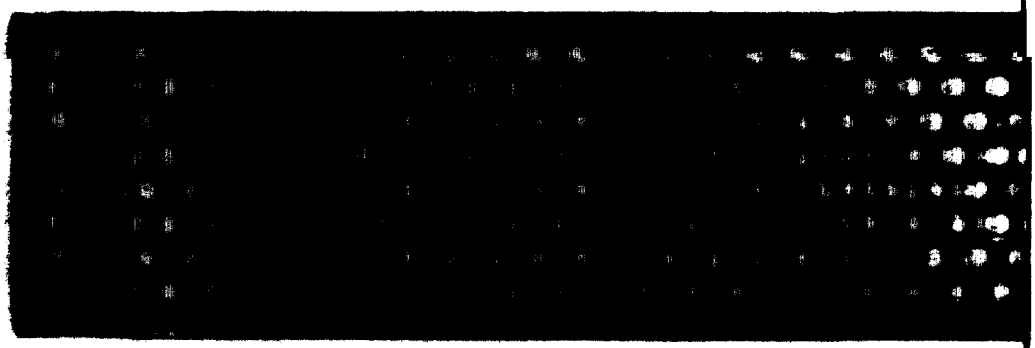
SF5744

DKruse
2/14/89



DKuse
2/14/89

SF5744



DKuse 86
2/13/89

	-0.009	
	0.000	AC
	0.005	0
Std	0.113	10
	0.220	20
	0.326	30
	0.417	40
	0.010	BK
	0.219	AQC
	-0.000	
89FS07S23	0.280	
	0.007	
S24	0.324	
	0.002	
R04	0.220	
	0.000	
89FS06R01	0.197	
	0.003	
S18	0.123	
	0.007	
89FG07S14	0.245	
	0.007	
D41	0.250	
	0.005	
89FS06S15	0.243	
	0.000	
89FG09R06	0.280	
	0.007	
89FS06S18	0.247	
	0.002	
D78	0.273	
	0.001	
S79	0.258	
	0.013	
S81	0.273	
AQC	0.224	
BIK	-0.001	
	0.004	
89FS06R05	0.190	
	-0.001	
S80	0.270	
	-0.006	
~~S82~~	0.261	
	0.007	S83
~~89FLHR02~~	0.263	
	-0.002	89FH1
~~DK D01~~	0.184	R02
	0.001	
~~S41~~	0.306	D01
	0.009	
~~S42~~	0.296	S41
	0.006	
~~S39~~	0.270	S42
	0.005	
~~S40~~	0.292	S39
	0.003	
~~S43~~	0.346	S40
	0.003	S43
	0.224	
	0.208	AQC
	0.011	BIK

AAS Run Log

Element Sb

Date 2/13/89

DKmce 2/14/85 SF5744

Initials DK

Data Set ~~SF5~~ 5714, 5744

Comment 5742, 5794, 5795

	ID	Spike	Comment
1	Blank		
2	10 µg/l Std		
3	20		
4	30		
5	40		
6	Blk		
7	AQC		20.3
8	89FS07S23	0	
9		20	
10	S24	0	
11		20	
12	R04	0	
13		20	
14	89FS06R01	0	
15		20	
16	S18	0	
17		20	
18	89FG07 S41	0	
19		20	
20	D41	0	
21		20	
22	89FS06 S19	0	
23		20	
24	89FG07 R06	0	
25		20	
26	89 FS06 S78	0	

AAS Run Log

Element Sb

Date 2/13/89

DKruse SF5744
2/14/89

Initials DKruse

Data Set 5717, 5742, 5744

Comment 5774, 5795

	ID	Spike	Comment
27	89FS06S78	20	
28	D78	0	
29		20	
30	S79	0	
31		20	
32	S81	0	
33		20	
34	AQC	0	20.3
35	blank	0	
	Wheel 2		
1	89FS06R05	0	
2		20	
3	S80	0	
4		20	
5	S82	0	
6		20	
7	S83	0	
8		20	
9	89YL11R02	0	
10		20	
11	D01	0	
12		20	
13	S41	0	
14		20	
15	S42	0	
16		20	

AAS Run Log

Element Sb

Date 2/13/89

D Kurse 2/14/89 SF5744

Initials DK

Data Set 5714, 5742, 5744

Comment 5794, 5795

	ID	Spike	
17	89YL11S39	0	
18		20	
19	S40	0	
20		20	
21	S43	0	
22		20	
23	AQC	0	
24	BLK Cup	0	
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
	Wheel 3		
1			
2			
3			
4			
5			
6			

SF5744

Element	Instrument	QC Source	
☐ Ag	☐ 5000	☐ WP 284 TM I #2	Analyst DK
☐ As	☒ 4000	☐ WP 1183 TM II #1	Date 2/13/89
☐ Cd	☐ 5000 ZE	☒ WP 1183 TM II #2	Lamp # 1113
☐ Cr	☐ 5000 ZW	☐ ICV 2	Energy 52
☐ Pb	☐ 5100	☐ SPEX II	Expansion 4
☒ Sb	☐ Varian 30	☐ NBS SRM 1643b	Stock 1-110-MD
☐ Se		☐	☐ platform ☒ MSC
☐ Tl		☐	☒ wall ☐ MSA

Blank	Slope	AQC	Digestion QC
.077	.0965	20.2	
-.985		20.7	DKruse
.173		19.2	2/14/89

Blank cup absorbance

* FLAMELESS * CSC VERSION 1.00 *

J Ganz

NAME OF ANALYST ---: GANZ
DATE OF ANALYSIS --: 02-24-1989 2/24/89
PARAMETER NAME ----: SB
DATA SET # --------: SF5744

SAMPLE NO.	CONC.	R VALUE	SLOPE	
BLANK	-.205834	.9996825	.01166	Limit = ±2 ppb
AQC TV=20.3	22.28308	.9997368	1.095001E-02	%R = 109.8 Limit = 100±10%
89FM07R05	.5829596	.9997466	.01115	
89FM07S30	.4669228	.9999209	.01542	
89FM07D30	.4362416	.9997974	.0149	
89FM07S31	.6952931	.9998964	.01467	SF5792
89YL11R02	-.2540824	.9985802	.01102	SF5714
AQC TV=20.3	21.18124	.9997505	.01109	%R = 104.3 Limit = 100 ± 10%
AQC TV=20.3	23.56254	.9992136	1.047001E-02	%R = 116 Restandardize SF5744
BLANK	-.3342118	.9996264	.01137	Limit = ±2 ppb SF5744
AQC TV=20.3	21.6022	.9988388	1.086001E-02	%R = 106.4 Limit = 100±10%
89FS06S18	2.230769	.9971485	.0065	SF5744
89FS06R05	-7.641053E-02	.9999243	.01047	SF5742
AQC TV=20.3	19.36007	.9995406	.01047	%R = 95.4 Limit = 100±10%

BLANK

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	0	-2.400024E-03	-2.400024E-03	100 %
10	.109	.1142	5.199984E-03	4.553402 %
20	.234	.2308	-3.20001E-03	-1.386486 %
30	.347	.3474	4.000068E-04	.115143 %

AQC TV=20.3

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.247	.2439998	-3.000185E-03	-1.229585 %
10	.35	.3534999	3.499866E-03	.9900613 %
20	.461	.4629999	1.999915E-03	.4319471 %
30	.575	.5725	-2.499998E-03	-.4366808 %

89FM07R05

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.005	.0065	.0015	23.07693 %
10	.118	.118	-7.450581E-09	-6.314052E-06 %
20	.234	.2295	-4.500002E-03	-1.960785 %
30	.338	.341	2.999991E-03	.8797628 %

89FM07S30

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	8.000001E-03	7.199951E-03	-8.000494E-04	-11.11187 %
10	.162	.1614	-6.000251E-04	-.3717628 %

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	8.000001E-03	7.199951E-03	-8.000494E-04	-11.11187 %
10	.162	.1614	-6.000251E-04	-.3717628 %
20	.312	.3156	3.599972E-03	1.140675 %
30	.472	.4698	-2.200008E-03	-.468286 %

89FM07D30

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.005	.0065	.0015	23.07693 %
10	.155	.1555	5.000234E-04	.3215584 %
20	.31	.3045001	-5.499959E-03	-1.806226 %
30	.45	.4535001	3.500074E-03	.7717913 %

SF5744 2/24/89 J Barry

89FM07S31

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.011	1.019995E-02	-8.00049E-04	-7.843655 %
10	.154	.1569	2.899975E-03	1.848295 %
20	.307	.3036	-3.399998E-03	-1.119894 %
30	.449	.4503001	1.300037E-03	.2887046 %

89YL11R02

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.002	-2.799988E-03	-7.999877E-04	28.57111 %
10	.101	.1074	6.400012E-03	5.959042 %
20	.228	.2176	-1.039998E-02	-4.779404 %
30	.323	.3278	4.799992E-03	1.464305 %

AQC TV=20.3

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.232	.2349	2.899975E-03	1.234557 %
10	.349	.3458	-3.200024E-03	-.9253975 %
20	.459	.4567	-2.300024E-03	-.5036182 %
30	.565	.5676	2.600014E-03	.4580716 %

AQC TV=20.3

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.248	.2466999	-1.300111E-03	-.5270012 %
10	.346	.3513999	5.399943E-03	1.536694 %
20	.463	.4561	-6.900013E-03	-1.512829 %
30	.558	.5608	2.799988E-03	.4992846 %

BLANK

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.002	-3.799988E-03	-1.799988E-03	47.36825 %
10	.11	.1099	-1.000017E-04	-9.099335E-02 %
20	.218	.2236	5.599991E-03	2.504468 %
30	.341	.3373	-3.700048E-03	-1.096961 %

AQC TV=20.3

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.248	.2466999	-1.300111E-03	-.5270012 %
10	.346	.3513999	5.399943E-03	1.536694 %
20	.463	.4561	-6.900013E-03	-1.512829 %
30	.558	.5608	2.799988E-03	.4992846 %

SF5744

BLANK

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.002	-3.799988E-03	-1.799988E-03	47.36825 %
10	.11	.1099	-1.000017E-04	-9.099335E-02 %
20	.218	.2236	5.599991E-03	2.504468 %
30	.341	.3373	-3.700048E-03	-1.096961 %

AQC TV=20.3

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.241	.2346	-6.400019E-03	-2.728056 %
10	.335	.3432	8.20002E-03	2.389283 %
20	.449	.4518001	2.800048E-03	.6197537 %
30	.565	.5604001	-4.59987E-03	-.8208188 %

89FS06S18

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.02	.0145	-.0055	-37.93104 %
10	.074	.0795	5.499996E-03	6.918234 %
20	.139	.1445	5.499989E-03	3.806221 %
30	.215	.2095	-5.499989E-03	-2.625293 %

89FS06R05

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.001	-8.000183E-04	1.999817E-04	-24.99715 %
10	.103	.1039	8.999929E-04	.8662107 %
20	.211	.2086	-2.399981E-03	-1.150518 %
30	.312	.3133	1.300007E-03	.41494 %

AQC TV=20.3

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.205	.2027	-2.300054E-03	-1.134709 %
10	.302	.3074	5.399972E-03	1.75666 %
20	.416	.4121	-3.900051E-03	-.9463848 %
30	.516	.5168	8.000136E-04	.1548014 %

J Ganz
2/24/89

2/16/89 J Ganz

Blank	0.001	
	0.000	AZ
	-0.000	+0
	0.109	+10
	0.234	+20
	0.347	+30
AQC TV=20.3	0.247	+0
	0.350	+10
	0.461	+20
	0.575	+30
89FM07R05	0.005	+0
	0.113	+10
	0.234	+20
	0.338	+30
89FM07S30	0.008	+0
	0.162	+10
	0.312	+20
	0.472	+30
89FM07D30	0.005	+0
	0.155	+10
	0.310	+20
	0.450	+30
89FM07S31	0.011	+0
	0.154	+10
	0.307	+20
SF5792 ↑	0.449	+30
89YL11R02 ↓	-0.002	+0
	0.101	+10
SF5714	0.228	+20
	0.323	+30
AQC TV=20.3	0.232	+0
	0.349	+10
	0.459	+20
	0.565	+30
Blank	0.002	

not used AQC out	0.017	+0
	0.077	+10
	0.155	+20
	0.222	+30
	-0.001	+0
	0.119	+10
	0.217	+20
	0.332	+30
AQC TV=20.3	0.248	+0
	0.346	+10
	0.463	+20
	0.558	+30

2/16/89 J Ganz SF5744

Blank	-0.001	
	0.000	AZ
	-0.002	+0
	0.110	+10
	0.218	+20
	0.341	+30
AQC TV=20.3	0.241	+0
	0.335	+10
	0.449	+20
	0.555	+30
89FS06S18	0.020	+0
	0.074	+10
SF5744	0.139	+20
	0.215	+30
89FS06R05	-0.001	+0
	0.103	+10
SF5742	0.211	+20
	0.312	+30
AQC TV=20.3	0.205	+0
	0.302	+10
	0.415	+20
	0.516	+30
Blank	-0.005	

AAS Run Log

Element Sb

Date 2/16/89

J Gary

Initials JWG

Data Set SF5744

	ID	Spike	Comment
1	Blank Standard	0	
2		10	
3		20	
4		30	
5	AQC TV = 20.3	0	
6		10	
7		20	
8		30	
9	89FS06S18	0	
10		10	
11		20	
12		30	
13	89FS06R05	0	
14		10	
15		20	
16		30	
17	AQC	0	
18		10	
19		20	
20		30	
21	Blank		
22			
23			
24			
25			
26			

J Harry

SF5744

Element	Instrument	QC Source	
☐ Ag	☐ 5000	☐ WP 284 TM I #2	Analyst JW6
☐ As	☒ 4000	☐ WP 1183 TM II #1	Date 2/16/89
☐ Cd	☐ 5000 ZE	☒ WP 1183 TM II #2	Lamp # 1113
☐ Cr	☐ 5000 ZW	☐ ICV 2	Energy 55
☐ Pb	☐ 5100	☐ SPEX II	Expansion 3
☒ Sb	☐ Varian 30	☐ NBS SRM 1643b	Stock SPEX 1-110-MD
☐ Se		☐	☐ platform ☐ MSC
☐ Tl		☐	☒ wall ☒ MSA

Blank	Slope	AQC	Digestion QC
-.21	.01166	22.2 21.2	
-.33	.01137	21.6 19.4	

Blank cup absorbance
.002
-.005

SPECIFY SELECTION BY FUNCTION KEY

* REGRESSION ANALYSIS * CSC VERSION 2.00 *

NAME OF ANALYST ---: L KOROBKA
PARAMETER NAME ----: SE
DATE OF ANALYSIS ---: 02-16-1989

DATA SET NUMBER ---: 5792
DU NUMBER ---------: Y905

DEGREE OF FIT : 1

SF5744

EQUATION : CONCENTRATION = -3.72448E-01
+9.63692E+01 * SIGNAL

COEFFICIENT OF DETERMINATION : .998385

Linda J. Korobka
2/16/89

T-A-B-L-E O-F S-T-A-N-D-A-R-D-S

STANDARD	SIGNAL	CONCENTRATION	CALCULATED
1	+0.009	+0.000	+0.494
2	+0.104	+10.000	+9.649
3	+0.212	+20.000	+20.057
4	+0.306	+30.000	+29.116
5	+0.426	+40.000	+40.680

T-A-B-L-E O-F S-A-M-P-L-E-S

SAMPLE I.D.	SIGNAL	CONCENTRATION	
AQC TN=9.8 LJK 3/6/89	+0.104	+9.649	98.4% Recovery Limit = ±10%
89FS06S82	+0.009	+0.494	
+20	+0.202	+19.094	93% Recovery Limit = ±10%
89FS06S83	-0.006	-0.951	
+20	+0.191	+18.034	94.9% Recovery
89FS06R01	+0.005	+0.109	
+20	+0.216	+20.443	101.7% Recovery
89FS06S19	+0.022	+1.747	
+20	+0.221	+20.925	95.9% Recovery
89FS06S18	+0.013	+0.880	
+20	+0.051	+4.542	18.3% Recovery ∴ MSA
89FS07R06	-0.001	-0.469	
+20	+0.233	+22.081	112.8% Recovery ∴ MSA
89FG07D41	+0.007	+0.302	
+20	+0.195	+18.419	90.6% Recovery
89FG07S41	+0.011	+0.687	
+20	+0.204	+19.286	~~92.~~ 93% Recovery
89FS07R04	+0.009	+0.494	
+20	+0.222	+21.021	102.6% Recovery
89FS07S23	+0.007	+0.302	
+20	+0.208	+19.672	96.9% Recovery
89FS07S24	+0.003	-0.084	
+20	+0.208	+19.672	98.8% Recovery
89FM07S30	+0.001	-0.277	
+20	+0.196	+18.515	94% Recovery
89FM07S31	+0.008	+0.398	
+20	+0.213	+20.154	98.8% Recovery
AQC TN=9.8 LJK 3/6/89	+0.103	+9.553	97.5% Recovery Limit = ±10%
BLANK	+0.002	-0.180	Limit = ± 2 µg/L

SF 5742

SF 5744

SF 5794

SF 5795

Begin Element - SE
-0.004
0.000 AZ
-0.008
0.102
0.254
0.361
0.483
0.127
0.003

SF5744

2/15/89

Linda Korobka
2/16/89

Begin Element - SE
-0.003
0.000 AZ
0.003 0
0.104 10 BLKS
0.212 20
0.306 30
0.426 40
0.104 AGC TV=9.8
0.009
0.202 89FS06S82
-0.005
0.191 89 FS06S83
0.005
0.216 89 FS06 R01
0.022
0.221 89 FS 06 S19
0.013
0.051 89FS 06 S18
-0.001
0.238 89 FG 07 R06
0.007
0.195 89 FG 07 D41
0.011
0.204 89 FG 07 S41

0.009
0.222 89 FS07 R04
0.007
0.208 89 FS 07 S23
0.003
0.208 89 FS 07 S 24
0.001
0.196 89 FM 07 S30
0.008
0.213 89 FM 07 S31
0.103 AGC TV=9.8
0.002 BLK

Linda Korobka
2/16/89

AAS Run Log

Element Se

SF5744

Initials LJK

Date 2/15/89

Data Set 5742, 5744, 5794, 5795, 5792

	ID	Spike	Comment
1	0		
2	10		
3	20		
4	30		
5	40		
6	AQC N=9.8		
7	89 FS06 S82		
8	+20		
9	89 FS 06 S83		Linda Korobka
10	+20		2/15/89
11	89FS 06 R01		
12	+20		
13	89 FS06 S19		
14	+20		
15	89 FS06 S18		
16	+20		
17	89 FG 07 R06		
18	+20		
19	89 FG 07 D41		
20	+20		
21	89 FG07 S41		
22	+20		
23	89 FS 07 R04		
24	+20		
25	89 FS 07 S23		
26	+20		

AAS Run Log

Element Se

SF5744

Initials LJK

Date 2/15/89

Data Set 5742, 5744, 5794, 5795, 5792

	ID	Spike	Comment
27	89 FS 07 S 24		
28	+20 (SF 5792)		
29	89 FM 07 S 30		
30	+20 (SF 5792)		
31	89 FM 07 S 31		
32	+20		
33	AQC TV=9.8		
34	BLK		
35			Linda Korobka 2/15/89

Wheel 2

1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Linda Korobka 2/15/89

SF5744

Element	Instrument	QC Source	
☐ Ag	☑ 5000 LK 2/15/89	☐ WP 284 TM I #2	Analyst L KOROBKA
☐ As	☐ 4000	☐ WP 1183 TM II #1	Date 2/15/89
☐ Cd	☑ 5000 ZE	☐ WP 1183 TM II #2	Lamp # 2131 (10/84)
☐ Cr	☐ 5000 ZW	☐ ICV 2	Energy 45
☐ Pb	☐ 5100	☐ SPEX II	Expansion 4X
☐ Sb	☐ Varian 30	☐ NBS SRM 1643b	Stock ICV 2(1186)
☑ Se		☑ ICV 2(1186)	☐ platform ☑ MSC
☐ Tl		☐	☑ wall ☐ MSA

Blank	Slope	AQC	Digestion QC
0.494 ug/L -0.180 ug/L		9.649 ug/L (TV = 9.8) 9.553 ug/L (TV = 9.8)	

Blank cup absorbance

SF5744

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* FLAMELESS * CSC VERSION 1.00 *

NAME OF ANALYST ---: LJK
DATE OF ANALYSIS --: 02-23-1989
PARAMETER NAME ----: SE
DATA SET # --------: 5742

2/23/89
Linda Korobka

SAMPLE NO.	CONC.	R VALUE	SLOPE	
BLANK	.2255634	.9986672	.01064	Limit = ± 2 µg/l
AQC:TV=9.8	9.191372	.9999491	.01113	% Recovery = 93.78% Limit = ±10%
89YL11S42	-9.829988E-02	.9998668	.01119	20 SF 5714
89YL11S43	-.2243232	.9993404	.01159	20
89FS06S78	.2061903	.9996371	.01164	20
89FS06S79	-9.443445E-03	.9999759	.01059	20
89FS06S81	-.9472776	.9975438	.01119	20
AQC:TV=9.8	9.555949	.9998642	.01126	%R = 97.5% SF 5742
89FS06D78	-7.887766E-02	.9993962	.01141	20
89FS06S18	5.3125	.9477579	.00192	operator error L. Korobka 2/23/89
89FS06S18	1.018763	.9931494	.00373	* Must rerun; correlation is out SF 5744
89FG07R06	-.2745439	.9995725	.01202	20 SF 5794
89FM07D30	.0579935	.999998	.01207	20
89FM07R05	-.2928505	.9998464	.01161	20 SF 5792
AQC:TV=9.8	9.105697	.9999074	.0123	%R = 92.9% Limit = ±10%

BLANK

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	8.999999E-03	2.399994E-03	-6.600006E-03	-275.001 %
10	.099	.1088	9.799987E-03	9.007342 %
20	.215	.2152	1.999736E-04	9.292454E-02 %
30	.325	.3216	-3.400028E-03	-1.057223 %

AQC:TV=9.8

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.101	.1023	1.299985E-03	1.270757 %
10	.215	.2136	-1.399994E-03	-.6554278 %
20	.326	.3249	-1.099974E-03	-.3385577 %
30	.435	.4362	1.20002E-03	.2751078 %

89YL11S42 SF 5714

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.001	-1.099976E-03	-9.99755E-05	9.088884 %
10	.109	.1108	1.800016E-03	1.624563 %
20	.226	.2227	-3.299996E-03	-1.481813 %
30	.333	.3346	1.599997E-03	.4781821 %

SPIKE	MEASURED	CALC.		
			[illegible]00245E-04	-15.3887 %

89YL11S43 SF 5714

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.003	-2.599976E-03	4.000245E-04	-15.3857 %
10	.11	.1133	3.300026E-03	2.912644 %
20	.237	.2292	-7.799968E-03	-3.403127 %
30	.341	.3451	4.100025E-03	1.188069 %

89FS06S78 SF 5742

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.001	2.400055E-03	1.400055E-03	58.33428 %
10	.118	.1188	8.000285E-04	.6734245 %
20	.241	.2352	-5.799994E-03	-2.465984 %
30	.348	.3516	3.599972E-03	1.023883 %

89FS06S79 SF 5742

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	0	-1.000061E-04	-1.000061E-04	99.99999 %
10	.105	.1058	8.000136E-04	.7561564 %
20	.213	.2117	-1.299977E-03	-.6140658 %
30	.317	.3176001	6.0004E-04	.1889294 %

89FS06S81 SF 5742

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.005	-1.060004E-02	-5.600037E-03	52.83036 %
10	.088	.1013	1.329997E-02	13.1293 %
20	.223	.2132	-9.800032E-03	-4.596638 %
30	.323	.3251	2.099991E-03	.6459523 %

AGC:TV=9.8

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.109	.1076	-1.400024E-03	-1.301138 %
10	.217	.2202	3.199965E-03	1.453209 %
20	.335	.3328	-2.200067E-03	-.661078 %
30	.445	.4453999	3.999174E-04	8.978838E-02 %

Linda Korobka
2/23/89

89FS06D78 SF 5742

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.001	-8.999939E-04	-1.899994E-03	211.1119 %
10	.114	.1132	-8.000136E-04	-.7067258 %
20	.22	.2273	7.29996E-03	3.211598 %
30	.346	.3414	-4.600048E-03	-1.347407 %

89FS06S18 SF 5744 operator error L. Korobka 2/23/89

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	8.000001E-03	.0102	2.199996E-03	21.5686 %

89FS06S18 SF 5244 operator error L. Korobka 2/23/89

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	8.000001E-03	.0102	2.199996E-03	21.5686 %
10	.038	2.939999E-02	-8.600008E-03	-29.25174 %
20	.038	4.859999E-02	1.059999E-02	21.81069 %
30	.072	6.779999E-02	-4.200012E-03	-6.194709 %

89FS06S18 SF 5744

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	8.000001E-03	3.799988E-03	-4.200013E-03	-110.527 %
10	.038	4.109999E-02	3.099986E-03	7.542547 %
20	.072	7.839999E-02	6.399989E-03	8.163253 %
30	.121	.1157	-5.300008E-03	-4.58082 %

89FG07R06 SF 5794

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.004	-3.300019E-03	6.999818E-04	-21.21145 %
10	.121	.1169	-4.099995E-03	-3.507267 %
20	.231	.2371	6.100029E-03	2.572766 %
30	.36	.3573001	-2.699971E-03	-.7556593 %

89FM07D30 SF 5792

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.001	6.999817E-04	-3.000184E-04	-42.86088 %
10	.121	.1214	3.999993E-04	.3294887 %
20	.242	.2421	1.000166E-04	.0413121 %
30	.363	.3628	-1.999736E-04	-5.511951E-02 %

89FM07R05 SF 5792

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.001	-3.399994E-03	-2.399994E-03	70.58818 %
10	.109	.1127	3.699988E-03	3.283042 %
20	.229	.2288	-2.000332E-04	-.0874271 %
30	.346	.3449	-1.100034E-03	-.3189428 %

QC:TV=9.8

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.111	.1120001	1.000062E-03	.8929117 %
10	.235	.2350001	5.960465E-08	2.536367E-05 %
20	.361	.3580001	-2.999962E-03	-.837978 %
30	.479	.4810001	2.000064E-03	.4158136 %

Linda Korobka
2/23/89

```
   0.006
   0.115
   0.222
   0.335
  -0.005
   0.115
   0.246
   0.332
   0.006
   0.117
   0.253
   0.351
  -0.002
   0.097
   0.217
   0.317
   0.005
   0.113
   0.224
   0.327
   0.103
   0.216
   0.340
   0.451
  -0.002
¿¿¿¿¿¿¿¿BEGIN DATA FILE:  SE2.DF

Begin Element - SE
  -0.000
   0.000 AZ
   0.009
   0.099  BLKS
   0.215
   0.325
   0.101
   0.215  QC
   0.326    TV=9.8
   0.435
  -0.001    89YL11S42
   0.109
   0.226
   0.333
  -0.003
   0.110  89YL11S43
   0.237
   0.341
   0.001
   0.118  89FS06S78
   0.241
   0.348
   0.000
   0.105  89FS06S79
   0.213
   0.317
  -0.005
   0.088
   0.223  89FS06S81
   0.323
   0.109
   0.217  AQC
   0.335    TV=9.8
   0.445
```

2/17/89

Linda Korobka
MSA's

0.000
0.105
0.213
0.317
-0.005
0.088
0.223
0.323
0.109
0.217
0.335
0.445

89FS06S79

89FS06S81

AGC
TV=9.8

0.003
0.001
0.114
0.220
0.346
0.008
0.038
0.072
0.121
-0.004
0.121
0.231
0.360
0.001
0.121
0.242
0.363
-0.001
0.109
0.229
0.346
0.111
0.235
0.361
0.479
0.001
-0.005
-0.001

BLK

89FS06D78

89FS06S18

89FG07R06

89FM07D30

89FM07 R05

GC; TV=9.8

BLK
BLK
BLK

Linda Korobka
2/23/89

AAS Run Log

Element Se

Linda Korobka 2/23/89

Initials LJK

Date 2/17/89

Data Set 5742; 5744; 5714; 5794; 5792

	ID		Spike	Comment
1	0			
2	10			
3	20	Blanks		
4	30			
5	AQC TV = 9.8	0		
6		10		
7		20		
8		30		
9	89YL11S42	0		
10		10		
11		20		
12		30		
13	89YL11S43	0		
14		10		
15		20		
16		30		
17	89FS06S78	0		
18		10		
19		20		
20		30		
21	89FS06S79	0		
22		10		
23		20		
24		30		
25	89FS06S81	0		
26		10		

AAS Run Log

Element Se

Date 2/17/89

Linda Korobka 2/23/89

Initials LJK

Data Set 5742; 5744; 5714; 5794; 5792

	ID		Spike	Comment
27	89FS06581 (cont)	20		
28		30		
29	AQC	0		
30		10		
31		20		
32		30		
33	BLK			
34				
35				
	Wheel 2			
1	89FS06 D78	0		
2		10		
3		20		
4		30		
5	89FS06 S18	0		
6		10		
7		20		
8		30		
9	89FG07 R06	0		
10		10		
11		20		
12		30		
13	89FM07 D30	0		
14		10		
15		20		
16		30		

AAS Run Log

Element Se

Linda Korobka 2/23/89

Initials LJK

Date 2/17/89

Data Set 5742; 5744; 5714; 5794; 5792

	ID	Spike	Comment
17	89FM07 R05 0		
18	10		
19	20		
20	30		
21	AGC TV=9.8 0		
22	10		
23	20		
24	30		
25	BLK		
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
	Wheel 3		
1			
2			
3			
4			
5			
6			

Linda Korobka
2/22/89

Element	Instrument	QC Source	
☐ Ag	☐ 5000	☐ WP 284 TM I #2	Analyst L. KOROBKA
☐ As	☐ 4000	☐ WP 1183 TM II #1	Date 2/17/89
☐ Cd	☑ 5000 ZE	☐ WP 1183 TM II #2	Lamp # 2131 (10/84)
☐ Cr	☐ 5000 ZW	☐ ICV 2	Energy 45
☐ Pb	☐ 5100	☐ SPEX II	Expansion 5X
☐ Sb	☐ Varian 30	☐ NBS SRM 1643b	Stock ICV 2 (1186)
☑ Se		☑ ICV 2 (1186)	☐ platform ☐ MSC
☐ Tl		☐	☑ wall ☑ MSA

Blank	Slope	AQC	Digestion QC
-.000		9.19	.011
.003		9.56	.011
.001		9.11	.012
-.005			
-.001			

Blank cup absorbance

---

* FLAMELESS * CSC VERSION 1.00 *

J Ganz

NAME OF ANALYST ---: GANZ
DATE OF ANALYSIS --: 03-01-1989
PARAMETER NAME ----: SE
DATA SET # --------: SF5744

3/1/89

SAMPLE NO.	CONC.	R VALUE	SLOPE	
BLANK	-.6866952	.9996061	.01165	Limit = ± 2 ppb
AQC TV=19.6	19.49914	.9995621	.01158	%R = 99.5 Limit = 100 ± 10%
89FS06S18 1/2	8.528328E-02	.9993324	4.690001E-03	
AQC TV=19.6	21.49146	.998567	.01227	%R = 108.8% Limit = 100 ± 10%

BLANK

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.004	-.008	-3.999999E-03	49.99999 %
10	.103	.1085	5.499996E-03	5.069121 %
20	.224	.225	9.999871E-04	.4444388 %
30	.344	.3415	-2.500028E-03	-.7320725 %

AQC TV=19.6

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.223	.2258	2.799988E-03	1.24003 %
10	.343	.3416	-1.400024E-03	-.409843 %
20	.463	.4574	-5.600035E-03	-1.224319 %
30	.569	.5732	4.199922E-03	.732715 %

89FS06S18 1/2

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.001	3.999786E-04	-6.000215E-04	-150.0134 %
10	.048	4.729998E-02	-7.000193E-04	-1.479957 %
20	.091	9.419999E-02	3.199987E-03	3.397015 %
30	.143	.1411	-1.900017E-03	-1.346575 %

AQC TV=19.6

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.26	.2637001	3.700078E-03	1.403139 %
10	.386	.3864001	4.000366E-04	.1035291 %
20	.5210001	.5091	-1.190007E-02	-2.337472 %
30	.624	.6318	7.799924E-03	1.234556 %

Begin Element - SE

-0.051		
0.000	AZ	
-0.004	+0	
0.103	+10	Blank
0.224	+20	
0.344	+30	
0.223	+0	
0.343	+10	AQC TV= 19.6
0.463	+20	
0.569	+30	
0.001	+0	
0.048	+10	89FS0651/8 1/2
0.091	+20	
0.143	+30	
0.260	+0	
0.386	+10	AQC TV=19.6
0.521	+20	
0.624	+30	
0.000		Blank

2/28/89

J Harry

SF5744

AAS Run Log

Element Se

J Gang

Initials JWG

Date 2/28/89

Data Set SF5744

	ID	Spike	Comment
1	Blank	0	
2		10	
3		20	
4		30	
5	AQC TV = 19.6	0	
6		10	
7		20	
8		30	
9	89F506518 1→2 dilution	0	
10		10	
11		20	
12		30	
13	AQC TV = 19.6	0	
14		10	
15		20	
16		30	
17	Blank		
18			
19			
20			
21			
22			
23			
24			
25			
26			

SF 5744 J Gary

Element	Instrument	QC Source	
☐ Ag	☐ 5000	☐ WP 284 TM I #2	Analyst JWG
☐ As	☐ 4000	☐ WP 1183 TM II #1	Date 2/28/89
☐ Cd	☒ 5000 ZE	☐ WP 1183 TM II #2	Lamp # 4416
☐ Cr	☐ 5000 ZW	☒ ICV 2	Energy 57
☐ Pb	☐ 5100	☐ SPEX II	Expansion 5
☐ Sb	☐ Varian 30	☐ NBS SRM 1643b	Stock SPEX 1-146-MD
☒ Se		☐	☐ platform ☐ MSC
☐ Tl		☐	☒ wall ☒ MSA

Blank	Slope	AQC	Digestion QC
-.69	.01165	19.5	
		21.5	

Blank cup absorbance

.000

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* FLAMELESS * CSC VERSION 1.00 *

NAME OF ANALYST ---: GANZ
DATE OF ANALYSIS --: 02-24-1989
PARAMETER NAME ----: TL
DATA SET # --------: SF5744

2/24/89 J Ganz

SAMPLE NO.	CONC.	R VALUE	SLOPE		
BLANK	-1.757398E-02	.9995876	.01707	Limit = ±2 ppb	
AQC TV=25.0	27.39692	.9983898	.01552	%R = 109.6 Limit = 100 ± 10%	
89FS06R01	.2068966	.9997432	.0145		
89FS06S18	8.583002	.9924961	.00247	Rerun	
89FS06S19	-.2189766	.9966602	.00411		SF5744
89FG07R06	-4.299829E-02	.9999781	.01628		SF5794
89FG07S41	-.5341255	.9994456	.00337		
AQC TV=25.0	-1.701412E+38	1.701412E+38	0	Not used - error in data input	
AQC TV=25.0	26.81759	.9997275	.01546	%R = 107.3 Limit = 100 ± 10%	
BLANK	3.334665E-04	1	1.999933	Not used - error in data input	
BLANK	.2862994	.9995156	.01467	Limit = ± 2 ppb	
AQC TV=25.0	26.96496	.9999197	.01341	%R = 107.9 Limit = 100 ± 10%	
89FG07D41	.3716185	.9995209	.00296		SF5794
89FS07R04	.2592547	.9992274	.0135		SF5795
89FS07S23	-.3580585	.9998235	3.910001E-03		
89FS07S24	2.829027E-02	.999874	.00707		SF5795
89FM07R05	.2616306	.9996454	.01376		SF5792
AQC TV=25.0	27.47786	.999733	1.356001E-02	%R = 109.9 Limit = 100 ± 10%	

BLANK

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.003	-2.999878E-04	2.700012E-03	-900.0407 %
10	.17	.1704	3.99977E-04	.2347283 %
20	.35	.3411	-8.900046E-03	-2.60922 %
30	.506	.5118	5.799949E-03	1.133245 %

AQC TV=25.0

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.418	.4252001	7.200063E-03	1.693335 %
10	.584	.5804001	-3.599942E-03	-.6202518 %
20	.75	.7356	-1.440001E-02	-1.957586 %
30	.88	.8908	.0108	1.212394 %

89FS06R01

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	0	.003	.003	100 %
10	.15	.148	-2.000004E-03	-1.351354 %
20	.298	.293	-5.000025E-03	-1.706493 %
30	.434	.438	4.000008E-03	.9132439 %

89FS06S18

20	.298	.293	-5.000025E-03	-1.706493 %
30	.434	.438	4.000008E-03	.9132439 %

89FS06S18

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.024	2.120001E-02	-2.799988E-03	-13.20748 %
10	.044	4.590001E-02	1.90001E-03	4.139454 %
20	.066	.0706	4.600004E-03	6.515585 %
30	.099	9.530001E-02	-3.699996E-03	-3.882472 %

J Harry 2/24/89

89FS06S19 SF5744

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	0	-8.999939E-04	-8.999939E-04	100 %
10	.042	.0402	-1.799997E-03	-4.477604 %
20	.075	.0813	6.299995E-03	7.749072 %
30	.126	.1224	-3.600009E-03	-2.941184 %

89FG07R06

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.002	-7.000122E-04	1.299988E-03	-185.7093 %
10	.164	.1621	-1.900002E-03	-1.172118 %
20	.325	.3249	-9.998679E-05	-3.077464E-02 %
30	.487	.4877	7.000268E-04	.1435364 %

89FG07S41

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.001	-1.800003E-03	-8.00003E-04	44.44454 %
10	.03	.0319	1.900001E-03	5.956115 %
20	.067	6.560001E-02	-1.399994E-03	-2.134137 %
30	.099	.0993	2.999976E-04	.3021124 %

AQC TV=25.0

SPIKE	MEASURED	CALC.	ERROR	PER CENT
.412	0	0	0	1.701412E+38 %
0	0	0	0	1.701412E+38 %
0	0	0	0	1.701412E+38 %
0	0	0	0	1.701412E+38 %

AQC TV=25.0

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.412	.4146	2.599985E-03	.6271068 %
10	.57	.5692	-8.000136E-04	-.1405505 %
20	.73	.7238	-6.200075E-03	-.8566006 %
30	.874	.8783999	4.399956E-03	.5009057 %

BLANK

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.412	.4146	2.599985E-03	.6271068 %
10	.57	.5692	-8.000136E-04	-.1405505 %
20	.73	.7238	-6.200075E-03	-.8566006 %
30	.874	.8783999	4.399956E-03	.5009057 %

BLANK

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.002	6.669108E-04	-1.333089E-03	-199.8902 %
10	20	20	0	0 %
0	0	6.669108E-04	6.669108E-04	100 %
0	0	6.669108E-04	6.669108E-04	100 %

Sr 5744 J Gary 2/24/89

BLANK

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.002	4.200013E-03	2.200012E-03	52.38109 %
10	.15	.1509	9.000301E-04	.5964413 %
20	.306	.2976001	-8.399934E-03	-2.822558 %
30	.439	.4443001	5.300075E-03	1.192904 %

AQC TV=25.0

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.361	.3616	5.999804E-04	.1659238 %
10	.495	.4957	6.999374E-04	.1412018 %
20	.633	.6297999	-3.200114E-03	-.508116 %
30	.762	.7638999	1.899839E-03	.2487026 %

89FG07D41

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.001	1.099991E-03	9.999075E-05	9.090144 %
10	.03	3.069999E-02	6.999914E-04	2.280103 %
20	.062	.0603	-1.700006E-03	-2.819248 %
30	.089	8.989999E-02	8.999854E-04	1.001096 %

89FS07R04

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.001	3.499939E-03	4.499939E-03	128.5719 %
10	.141	.1385	-2.500042E-03	-1.805085 %
20	.282	.2735	-8.500039E-03	-3.107876 %
30	.402	.4085	6.499976E-03	1.591181 %

89FS07S23

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.002	-1.400009E-03	5.99991E-04	-42.85622 %
10	.038	.0377	-2.999976E-04	-.7957497 %
20	.078	7.680001E-02	-1.199991E-03	-1.562487 %
30	.115	.1159	9.000152E-04	.7765445 %

0	-.002	-1.400009E-03	5.99991E-04	-42.85622 %
10	.038	.0377	-2.999976E-04	-.7957497 %
20	.078	7.680001E-02	-1.199991E-03	-1.562487 %
30	.115	.1159	9.000152E-04	.7765445 %

89FS07S24

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.001	2.000122E-04	-7.999878E-04	-399.9695 %
10	.069	7.090001E-02	1.90001E-03	2.679845 %
20	.143	.1416	-1.399994E-03	-.9886962 %
30	.212	.2123	3.0002E-04	.1413189 %

89FM07R05

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	0	3.600037E-03	3.600037E-03	100 %
10	.144	.1412	-2.799973E-03	-1.982983 %
20	.284	.2788	-5.199999E-03	-1.865136 %
30	.412	.4164	4.399985E-03	1.056673 %

AQC TV=25.0

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.369	.3726	3.599972E-03	.9661761 %
10	.5120001	.5082001	-3.799975E-03	-.7477321 %
20	.647	.6438001	-3.199935E-03	-.4970386 %
30	.776	.7794001	3.400087E-03	.4362442 %

SF5744

J Garry
2/24/89

		-0.001	
		0.000	AZ
		0.004	
not used —		0.148	
		0.307	
		0.432	
		0.365	
		0.499	
		0.626	
		0.762	
		0.001	

Sr5744

2/17/89 J Gary

		0.000	
		0.000	AZ
Blank	+0	0.002	
	+10	0.150	
	+20	0.306	
	+30	0.439	
AQC TV=25.0	+0	0.361	
	+10	0.495	
	+20	0.633	
	+30	0.762	
89FG07 D41	+0	0.001	
	+10	0.030	
	+20	0.062	
	+30	0.089	SF5794
89FS07 R04	+0	-0.001	SF5795
	+10	0.141	
	+20	0.282	
	+30	0.402	
89FS07 S23	+0	-0.002	
	+10	0.038	
	+20	0.078	
	+30	0.115	
89FS07 S24	+0	0.001	
	+10	0.069	
	+20	0.143	
	+30	0.212	SF5795
89FS07 R05	+0	-0.000	SF5792
	+10	0.144	
	+20	0.264	
	+30	0.412	
AQC TV=25.0	+0	0.369	
	+10	0.512	
	+20	0.647	
	+30	0.776	
Blank		0.003	

J Gary
2/17/89

		0.000	
		0.000	AZ
Blank	+0	-0.003	
	+10	0.170	
	+20	0.350	
	+30	0.505	
AQC TV=25.0	+0	0.418	
	+10	0.584	
	+20	0.750	
	+30	0.880	
89FS06 R01	+0	0.000	
	+10	0.150	
	+20	0.298	
	+30	0.434	
89FS06 S18	+0	0.024	
	+10	0.044	
	+20	0.065	
	+30	0.099	
89FS06 S19	+0	-0.000	
	+10	0.042	
	+20	0.075	
SF5744 ↑	+30	0.126	
89FG07 R06	+0	-0.002	↓SF5794
	+10	0.154	
	+20	0.325	
	+30	0.487	
89FG07 S41	+0	-0.001	
	+10	0.030	
	+20	0.067	
	+30	0.099	
AQC TV=25.0	+0	0.412	
	+10	0.570	
	+20	0.730	
	+30	0.874	
Blank		-0.002	

Sr5744

		-0.001	
		0.000	AZ
		-0.001	
not used —		0.177	
		0.348	
		0.502	
		0.419	
		0.580	
		0.730	
		0.876	

AAS Run Log

Element Tl

J Gang

Initials JWG

Date 2/17/89

Data Set ~~SF5744~~

	ID	Spike	Comment
1	Blank	0	
2		10	
3		20	
4		30	
5	AQC TV=25.0	0	
6		10	
7		20	
8		30	
9	89F506R01	0	
10		10	
11		20	
12		30	
13	89F506518	0	
14		10	
15		20	
16		30	
17	89F506519	0	
18		10	
19		20	
20		30	
21	89F607~~54~~R06 JWG 2/17/89	0	
22		10	
23		20	
24		30	
25	89F607541	0	
26		10	

AAS Run Log

Element Tl

Date 2/17/89

J Barry

Initials JWG

Data Set SF5744

	ID	Spike	Comment
27		20	
28		30	
29	AQC	0	
30		10	
31		20	
32		30	
33	Blank		
34			
35			
	Wheel 2		
1	Blank	0	
2		10	
3		20	
4		30	
5	AQC	0	
6		10	
7		20	
8		30	
9	89FG07D41	0	
10		10	
11		20	
12		30	
13	89F507R04	0	
14		10	
15		20	
16		30	

AAS Run Log

Element T1

Date 2/17/89

J Gary

Initials JWG

Data Set Sr5744

	ID	Spike	Comment
17	89FS07S23	0	
18		10	
19		20	
20		30	
21	89FS07S24	0	
22		10	
23		20	
24		30	
25	89FM07R05	0	
26		10	
27		20	
28		30	
29	AQC	0	
30		10	
31		20	
32		30	
33	Blank		
34			
35			
	Wheel 3		
1			
2			
3			
4			
5			
6			

J Ganz

St 5744

Element	Instrument	QC Source	
☐ Ag	☐ 5000	☐ WP 284 TM I #2	Analyst JWG
☐ As	☒ 4000	☒ WP 1183 TM II #1	Date 2/17/89
☐ Cd	☐ 5000 ZE	☐ WP 1183 TM II #2	Lamp # 2256
☐ Cr	☐ 5000 ZW	☐ ICV 2	Energy 60
☐ Pb	☐ 5100	☐ SPEX II	Expansion 3
☐ Sb	☐ Varian 30	☐ NBS SRM 1643b	Stock SPEX 1-128-EP
☐ Se		☐	☐ platform ☐ MSC
☒ Tl		☐	☒ wall ☒ MSA

Blank	Slope	AQC	Digestion QC
-.02	.01707	27.4	
.29	.01467	26.8	
		27.0	
		27.5	

Blank cup absorbance
-.002
.003

* FLAMELESS * CSC VERSION 1.00 *

NAME OF ANALYST ---: GANZ
DATE OF ANALYSIS --: 02-24-1989
PARAMETER NAME ----: TL Sr5/44
DATA SET # --------:

2/24/89
J Ganz

SAMPLE NO.	CONC.	R VALUE	SLOPE	
BLANK	9.404389E-02	.9998527	.01595	Limit = ± 2 ppb
AQC TV=25.0	25.19195	.9997459	.01537	%R = 100.8 Limit = 100 ± 10%
89FM07S30	1.751153E-02	.9988151	.00571	
89FM07D30	.2877709	.9997671	.00556	
89FM07S31	-.4612855	.9993951	6.070001E-03	SF5792
89FS06S83	-.6094801	.9971435	.00443	SF5744 gwb 2/24/89
89YL11S40	-.4859358	.9992682	7.820001E-03	SF5714
AQC TV=25.0	25.64417	.9979879	.01467	%R = 102.6 Limit = 100 ± 10%
AQC TV=25.0	28.84873	.9989886	1.329001E-02	%R = 115.4 Restandardize
BLANK	1.969716E-02	.9997659	.01523	Limit = ± 2 ppb
AQC TV=25.0	25.2965	.9987346	.01484	%R = 101.2 Limit = 100 ± 10%
89YL11S41	.7969633	.9944192	5.270001E-03	Rerun SF5714
89FS06S18	5.317223	.9911112	3.309999E-03	Dilute and rerun gwb 2/24/89 SF5792 44
89FS06S18 1/2	3.883791	.9835532	.00327	Dilute and rerun SF5792 44
89YL11S41	-.2661586	.9945796	5.259999E-03	Rerun SF5714
89YL11S41	-3.520805E-02	.9996655	.00568	
AQC TV=25.0	26.02562	.9996584	1.404001E-02	%R = 104.1 Limit = 100 ± 10%
BLANK	-.1721946	.9997651	.01568	Limit = ± 2 ppb SF5792
AQC TV=25.0	26.84066	.9993221	.01437	%R = 107.4 Limit = 100 ± 10% SF5744
89FS06S18 1/3	1.420913	.9965464	.00373	gwb 2/24/89
AQC TV=25.0	26.91596	.9996953	.01404	%R = 107.7 Limit = 100 ± 10%

BLANK

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.004	.0015	-.0025	-166.6667 %
10	.156	.161	4.999995E-03	3.105587 %
20	.323	.3205	-2.499998E-03	-.7800305 %
30	.48	.48	2.980232E-08	6.208817E-06 %

AQC TV=25.0

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.383	.3872002	4.200191E-03	1.084759 %
10	.546	.5409001	-5.099893E-03	-.9428529 %
20	.697	.6946001	-2.399922E-03	-.3455112 %
30	.845	.8483	3.299952E-03	.3890076 %

89FM07S30

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.003	9.999084E-05	-2.900009E-03	-2900.275 %
10	.052	5.719999E-02	5.199991E-03	9.090896 %
20	.116	.1143	-1.699999E-03	-1.487313 %
30	.172	.1714	-6.000102E-04	-.3500643 %

10	.052	5.719999E-02	5.199991E-03	9.090896 %
20	.116	.1143	-1.699999E-03	-1.487313 %
30	.172	.1714	-6.000102E-04	-.3500643 %

J Gary
2/24/89

89FM07D30

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.001	1.600006E-03	6.000061E-04	37.50024 %
10	.057	.0572	1.999997E-04	.3496498 %
20	.115	.1128	-2.200008E-03	-1.950361 %
30	.167	.1684	1.400009E-03	.8313591 %

SF5744

89FM07S31

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.002	-2.800003E-03	-8.000031E-04	28.57151 %
10	.055	5.790001E-02	2.900005E-03	5.008643 %
20	.122	.1186	-3.399991E-03	-2.866771 %
30	.178	.1793	1.300007E-03	.7250458 %

89FS06S83

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.001	-2.699997E-03	-3.699997E-03	137.0371 %
10	.038	4.160001E-02	3.600005E-03	8.653858 %
20	.082	8.590001E-02	3.900007E-03	4.54017 %
30	.134	.1302	-3.800005E-03	-2.918591 %

89YL11S40

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.003	-3.800018E-03	-8.000182E-04	21.05301 %
10	.076	.0744	-1.600005E-03	-2.150544 %
20	.147	.1526	5.600006E-03	3.669728 %
30	.234	.2308	-3.199995E-03	-1.386479 %

AQC TV=25.0

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.383	.3762	-6.800026E-03	-1.807556 %
10	.5070001	.5229	.0158999	3.040715 %
20	.681	.6695999	-.0114001	-1.702525 %
30	.814	.8163	2.299905E-03	.2817475 %

AQC TV=25.0

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.38	.3833999	3.399909E-03	.8867786 %
10	.516	.5163	2.999902E-04	5.810385E-02 %
20	.66	.6492001	-1.079995E-02	-1.663577 %
30	.775	.7821002	7.100225E-03	.9078408 %

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30	.775	.7821002	7.100225E-03	.9078408 %

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SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	0	2.999878E-04	2.999878E-04	100 %
10	.15	.1526	2.599999E-03	1.7038 %
20	.311	.3049	-6.099969E-03	-2.000646 %
30	.454	.4572001	3.200054E-03	.6999243 %

SF5744

J Gang 2/24/89

AQC TV=25.0

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.372	.3754	3.399998E-03	.9057 %
10	.522	.5238	1.799941E-03	.3436314 %
20	.686	.6722	-1.380003E-02	-2.052964 %
30	.812	.8206	8.599937E-03	1.048006 %

89YL11S41

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.002	4.199997E-03	2.199997E-03	52.38092 %
10	.055	.0569	1.900002E-03	3.339196 %
20	.12	.1096	-1.039999E-02	-9.489041 %
30	.156	.1623	6.300003E-03	3.881702 %

89FS06S18

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.023	1.760001E-02	-5.399995E-03	-30.68178 %
10	.044	.0507	6.700002E-03	13.21499 %
20	.081	.0838	2.799995E-03	3.341283 %
30	.121	.1169	-4.10001E-03	-3.50728 %

89FS06S18 1/2

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.02	.0127	-7.300003E-03	-57.48035 %
10	.035	.0454	1.039999E-02	22.90748 %
20	.077	.0781	1.099996E-03	1.408446 %
30	.115	.1108	-4.200004E-03	-3.790618 %

89YL11S41

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.004	-1.399994E-03	-5.399994E-03	385.7156 %
10	.047	.0512	4.199997E-03	8.20312 %
20	.096	.1038	7.799983E-03	7.514436 %
30	.163	.1564	-6.600023E-03	-4.219964 %

89YL11S41

SPIKE	MEASURED	CALC.	ERROR	PER CENT

20	.311	.3049	-6.099969E-03	-2.000646 %
30	.454	.4572001	3.200054E-03	.6999243 %

J Barry 2/24/89

AQC TV=25.0

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.372	.3754	3.399998E-03	.9057 %
10	.522	.5238	1.799941E-03	.3436314 %
20	.686	.6722	-1.380003E-02	-2.052964 %
30	.812	.8206	8.599937E-03	1.048006 %

Sr5744

89YL11S41

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.002	4.199997E-03	2.199997E-03	52.38092 %
10	.055	.0569	1.900002E-03	3.339196 %
20	.12	.1096	-1.039999E-02	-9.489041 %
30	.156	.1623	6.300003E-03	3.881702 %

89FS06S18

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.023	1.760001E-02	-5.399995E-03	-30.68178 %
10	.044	.0507	6.700002E-03	13.21499 %
20	.081	.0838	2.799995E-03	3.341283 %
30	.121	.1169	-4.10001E-03	-3.50728 %

89FS06S18 1/2

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.02	.0127	-7.300003E-03	-57.48035 %
10	.035	.0454	1.039999E-02	22.90748 %
20	.077	.0781	1.099996E-03	1.408446 %
30	.115	.1108	-4.200004E-03	-3.790618 %

89YL11S41

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.004	-1.399994E-03	-5.399994E-03	385.7156 %
10	.047	.0512	4.199997E-03	8.20312 %
20	.096	.1038	7.799983E-03	7.514436 %
30	.163	.1564	-6.600023E-03	-4.219964 %

89YL11S41

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.001	-1.999817E-04	-1.199982E-03	600.0458 %
10	.054	5.660001E-02	2.600011E-03	4.593658 %
20	.115	.1134	-1.599997E-03	-1.410932 %
30	.17	.1702	1.999885E-04	.1175021 %

AQC TV=25.0

20	.115	.1134	-1.599997E-03	-1.410932 %
30	.17	.1702	1.999885E-04	.1175021 %

AQC TV=25.0

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.365	.3653999	3.998876E-04	.1094383 %
10	.5030001	.5058	2.799988E-03	.5535761 %
20	.653	.6462001	-6.799937E-03	-1.052296 %
30	.783	.7866001	3.600121E-03	.4576812 %

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SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	-.001	-2.700012E-03	-1.700012E-03	62.96313 %
10	.149	.1541	5.099997E-03	3.309537 %
20	.316	.3109	-5.099982E-03	-1.640393 %
30	.466	.4677001	1.700074E-03	.3634965 %

AQC TV=25.0

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.384	.3857001	1.700074E-03	.440776 %
10	.527	.5294001	2.400041E-03	.453351 %
20	.683	.6731	-9.900034E-03	-1.470812 %
30	.811	.8168	5.799949E-03	.710082 %

89FS06S18 1/3

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	8.000001E-03	5.300003E-03	-2.699997E-03	-50.94332 %
10	.041	.0426	1.599997E-03	3.755862 %
20	.075	7.989999E-02	4.899986E-03	6.13265 %
30	.121	.1172	-3.800012E-03	-3.242332 %

AQC TV=25.0

SPIKE	MEASURED	CALC.	ERROR	PER CENT
0	.376	.3779	1.900047E-03	.502791 %
10	.518	.5183001	3.000498E-04	5.789114E-02 %
20	.665	.6587001	-6.299973E-03	-.9564251 %
30	.795	.7991001	4.100025E-03	.5130803 %

St 5744

J Gang

2/24/89

2/21/89 J Gang

SF5744

Blank	0.002	
	0.000	AZ
	-0.001	+0
	0.149	+10
	0.316	+20
	0.466	+30
AQC TV=25.0	0.384	+0
	0.527	+10
	0.683	+20
	0.811	+30
89FS06518 1/3 dilution	0.008	+0
	0.041	+10
	0.075	+20
	0.121	+30
AQC TV=25.0	0.376	+0
	0.518	+10
	0.665	+20
	0.795	+30
Blank	-0.000	

SF5744

2/21/89 J Gang

Blank	-0.000	
	0.000	AZ
	-0.000	+0
	0.150	+10
	0.311	+20
	0.454	+30
AQC TV=25.0	0.372	+0
	0.522	+10
	0.686	+20
	0.812	+30
89FS06 (QWA 2/21/89) 89YL11541	0.002	+0
	0.055	+10
	0.120	+20
SF5714	0.156	+30
89FS06518 SF5744	0.023	+0
	0.044	+10
	0.081	+20
	0.121	+30
89FS06518 1/2 dilution	0.020	+0
	0.035	+10
	0.077	+20
SF5744	0.115	+30
89YL11541 SF5714	0.004	+0
	0.047	+10
	0.096	+20
	0.163	+30
89YL11541	0.001	+0
	0.054	+10
	0.115	+20
	0.170	+30
AQC TV=25.0	0.365	+0
	0.503	+10
	0.653	+20
	0.783	+30
Blank	0.001	

SF5744

J Gang

2/21/89

Blank	-0.010	
	0.000	AZ
	0.004	+0
	0.156	+10
	0.323	+20
	0.480	+30
AQC TV=25.0	0.383	+0
	0.546	+10
	0.697	+20
	0.845	+30
89FM07S30	0.003	+0
	0.052	+10
	0.116	+20
	0.172	+30
89FM07D30	0.001	+0
	0.057	+10
	0.115	+20
	0.167	+30
89FM07S31	-0.002	+0
	0.055	+10
	0.122	+20
SF5742	0.178	+30
89FS06S83 SF5742	0.001	+0
	0.038	+10
	0.082	+20
SF5742	0.134	+30
89YL11540 SF5714	-0.003	+0
	0.073	+10
	0.147	+20
	0.234	+30
AQC TV=25.0	0.333	+0
	0.507	+10
	0.681	+20
	0.814	+30
Blank	-0.002	
not used	0.002	+0
	0.077	+10
	0.139	+20
	0.215	+30
AQC out	0.022	+0
	0.046	+10
	0.085	+20
	0.134	+30
SF5744	0.007	+0
	0.037	+10
	0.084	+20
	0.132	+30
	0.018	+0
	0.037	+10
	0.084	+20
	0.135	+30
AQC TV=25.0	0.380	+0
	0.516	+10
	0.660	+20
	0.773	+30

AAS Run Log

Element Fl

Date 2/21/89

J Gang

Initials JWG

Data Set SF5744

	ID	Spike	Comment
1	Blank	0	
2		10	
3		20	
4		30	
5	AQC TV=25.0	0	
6		10	
7		20	
8		30	
9	89FM07S30	0	
10		10	
11		20	
12		30	
13	89FM07D30	0	
14		10	
15		20	
16		30	
17	89FM07S31	0	
18		10	
19		20	
20		30	
21	89X FS06S83 (quote 2/21/89.)	0	
22		10	
23		20	
24		30	
25	89YL11S40	0	
26		10	

AAS Run Log

Element Tl

Date 2/21/89

J Harry

Initials JWG

Data Set SF5744

	ID	Spike	Comment
27	89YL11540	20	
28		30	
29	AQC TV=25.0	0	
30		10	
31		20	
32		30	
33	Blank		
34			
35			
	Wheel 2		
1	89YL11541	0	
2		10	
3		20	
4		30	
5	89FS06518	0	
6		10	
7		20	
8		30	
9	89FS06518 1/2	0	
10		10	
11		20	
12		30	
13	89FS06518 1/2	0	
14		10	
15		20	
16		30	

AQC out
2/21/89

AAS Run Log

Element Tl

J Harry

Initials JWG

Date 2/21/89

Data Set SF5744

	ID	Spike	Comment
17	AQC TV=25.0	0	
18		10	
19		20	
20		30	
21	Blank		
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
	Wheel 3		
1			
2			
3			
4			
5			
6			

gwt
2/21/89
AQC out

AAS Run Log

Element Tl

Date 2/21/89

J Gary

Initials JWG

Data Set St 5744

	ID	Spike	Comment
1	Blank	0	
2		10	
3		20	
4		30	
5	AQC TV=25.0	0	
6		10	
7		20	
8		30	
9	89YL11541	0	
10		10	
11		20	
12		30	
13	89FS06518	0	
14		10	
15		20	
16		30	
17	89FS06518 1/2	0	
18		10	
19		20	
20		30	
21	89YL11541	0	
22		10	
23		20	
24		30	
25	89YL11541	0	
26		10	

AAS Run Log

Element Tl

Date 2/21/89

J Gang

Initials JWG

Data Set St 5744

	ID	Spike	Comment
27		20	
28		30	
29	AQC	0	
30		10	
31		20	
32		30	
33	Blank		
34			
35			
	Wheel 2		
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

AAS Run Log

Element Tl

Date 2/21/89

J Gary

Initials JWG

Data Set St5744

	ID	Spike	Comment
1	Blank	0	
2		10	
3		20	
4		30	
5	AQC TV= 25.0	0	
6		10	
7		20	
8		30	
9	89FS06518 1/3	0	
10		10	
11		20	
12		30	
13	AQC	0	
14		10	
15		20	
16		30	
17	Blank		
18			
19			
20			
21			
22			
23			
24			
25			
26			

Sr 5744 J Gang J Gang

Element	Instrument	QC Source		
☐ Ag	☐ 5000	☐ WP 284 TM I #2		Analyst JWG
☐ As	☒ 4000	☒ WP 1183 TM II #1		Date 2/21/89
☐ Cd	☐ 5000 ZE	☐ WP 1183 TM II #2		Lamp # 2256
☐ Cr	☐ 5000 ZW	☐ ICV 2		Energy 60
☐ Pb	☐ 5100	☐ SPEX II		Expansion 3
☐ Sb	☐ Varian 30	☐ NBS SRM 1643b		Stock SPEX 1-128-EP
☐ Se		☐	☐ platform	☐ MSC
☒ Tl		☐	☒ wall	☒ MSA

Blank	Slope	AQC	Digestion QC
0.09	.01595	25.2	
0.02	.01523	25.6	
-0.17	.01568	25.3	
		26.0	
		26.8	
		26.9	

Blank cup absorbance
-.002
.001
.000