APPENDIX A

BACKUP DATA FOR SCAQS SAMPLER ION CHEMISTRY AUDITS

CSI REPORT

R & E Internal Report No. 530

PREPARATION OF QUALITY ASSURANCE STANDARD REFERENCE FILTERS

May 29, 1987

Submitted to

Sonoma Technology, Inc.
3402 Mendocino Ave.
Santa Rosa, CA 95401

Prepared by:

S. Piorek, Ph.D.
Manager, X-ray
Application Lab

Laboratory Report on Preparation of Quality Assurance Standard Reference Filters

Standard Reference Filters containing nitrate, sulfate, chloride and ammonium ions were prepared by deposition of aliquots of calibrated solutions on 47mm diameter, Teflon and Nylasorb membranes*).

Calibrated stock solutions were prepared by dissolving in deionized water accurately weighed quantities of KNO_3, $(NH_4)_2SO_4$, NH_4NO_3, and NaCl, all "Baker Reagent" grade. Prior to being weighed the salts were dried for a day in air at 105°C, and cooled to room temperature in a dessicator. An analytical balance was used for weighing the reagents with a relative error of not greater than ±.02% for the smallest amount weighed. Solutions were prepared in volumetric flasks, Class A.

A microsyringe was used to deposit aliquots of the solutions onto the membranes. The microsyringe was calibrated with deionized water and its calibration was checked before the deposition of each solution by measuring the density of the solution dispensed and by weighing aliquots of the solution delivered into preweighed dishes furnished with covers to prevent evaporation. Repeatability of the microsyringe, defined as one standard deviation of the weights of the abovementioned aliquots, was equal to 0.34% of the amount present.

After deposition of the calibrated aliquots on the membranes the latter were placed in an oven to dry at 105°C.

Water soluble polyvinylpyrrolidone (PVP)[a)] was added to each solution in order to prevent the dried deposit from peeling off the membrane surface. Each dried sample contains 0.15mg of PVP.

A surfactant[b)] was added to the solutions in order to improve the wettability of the membranes. The concentration of the surfactant solution in each calibrated solution was 0.1%, which translates into 0.2 microliter of the surfactant solution per sample (before drying).

PVP and Photo-Flo 200 were also added to pure deionized water used to make blank samples (no ions present).

After drying, each single standard was carefully packaged in a "plastine"[c)] envelope marked with an appropriate identification label.

During the whole production process each standard was handled with stainless steel forceps and placed on a clean, Teflon-coated surface in order to prevent contamination.

Actual quantities of ions on the filters are listed in Table 1 along with other relevant information.

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*) Teflon and Nylasorb substrates supplied by Sonoma Technology.

a) Aldrich Chemical Co.

b) Photo-Flo 200 solution, Kodak, Cat. No. 146 4502.

c) Available from photographic stores.

SAMPLE NUMBERS	QUANTITIES DEPOSITED (μg/filter)								NOTES
	$SO_4^{=}$		NO_3^-		NH_4^+		Cl^-		
	NOMINAL[a]	ACTUAL	NOMINAL	ACTUAL	NOMINAL	ACTUAL	NOMINAL	ACTUAL	
100 to 121	0	0	0	0	0	0	0	0	TEFLON
125 to 146	8	7.96 ± 0.03[b]	10	9.52 ± 0.03	6	5.75 ± 0.02	2	1.90 ± 0.01	-"-
150 to 171	40	39.6 ± 0.1	40	40.4 ± 0.1	27	26.7 ± 0.1	8	8.09 ± 0.03	-"-
175 to 196	200	198.2 ± 0.7	240	237.9 ± 0.8	145	143.7 ± 0.5	48	47.6 ± 0.2	-"-
200 to 221	0	0	0	0	0	0	0	0	NYLASORB
225 to 246	0	0	4	3.96 ± 0.01	0	0	0	0	"
250 to 271	0	0	15	15.9 ± 0.1	0	0	0	0	"
275 to 296	0	0	80	79.3 ± 0.3	0	0	0	0	"

a). AS SPECIFIED IN THE ORDER

b). ONE STANDARD DEVIATION OF ALIQUOTES WEIGHED DURING CALIBRATION AND DEPOSITION

NOTE: – EACH STANDARD CONTAINS 0.15 mg PVP AND THE DRY RESIDUE OF 0.2 MICROLITER OF PHOTO-FLO 200 SOLUTION.

– STANDARDS OF THE "200" SERIES MADE WITH KNO_3 SOLUTION.

– ENCLOSED SHEET REPORTS PURITY DATA ON TRITON X-100 WHICH IS MAIN COMPONENT OF PHOTO-FLO 200 SOLUTION.

ROHM AND HAAS COMPANY
INDEPENDENCE MALL WEST
PHILADELPHIA, PENNSYLVANIA 19105

HEAVY METAL CONTENT

PRODUCT: TRITON X-100

Aluminum	0.0X ppm	Germanium	N.F.	Rubidium	
Antimony	N.F.	Gold	N.F.	Silicon	0.X ppm
Arsenic	N.F.	Iron	0.X ppm	Silver	N.F.
Barium	N.F.	Lead	0.0X ppm	Sodium	300 ppm
Beryllium	N.F.	Lithium		Strontium	N.F.
Bismuth	N.F.	Magnesium	0.0X ppm	Tellurium	N.F.
Boron	N.F.	Manganese	N.F.	Thallium	
Cadmium	N.F.	Mercury		Tin	0.0X ppm
Calcium	0.X ppm	Molybdenum	N.F.	Titanium	N.F.
Chromium	0.0X ppm	Nickel	0.X ppm	Tungsten	N.F.
Cobalt	N.F.	Phosphorus	XXX.0 ppm	Vanadium	N.F.
Columbium	N.F.	Platinum	N.F.	Zinc	N.F.
Copper	0.X ppm	Potassium	N.F.	Zirconium	N.F.
Gallium	N.F.				

Key to Spectrographic Analysis

XXXX.0 = 1000.0 to 9999.0 ppm
XXX.0 = 100 to 999 ppm
X.0 = 1 to 9 ppm
0.X = 0.1 to 0.9 ppm
0.0X = 0.01 to 0.09 ppm
N.F. = Not found

ppm = Parts per million

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use of our products are beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale.

Suggestions for use of our products or the existence of descriptive material from patents and the citation of specific patents in this publication should not be construed as recommending the use of our products in violation of any patent or as permission or license to use any patent of the Rohm and Haas Company.

Form 2880

R & E Internal Report No. 531

PREPARATION OF QUALITY ASSURANCE STANDARD REFERENCE FILTERS

June 29, 1987

Submitted to:

Sonoma Technology, Inc.
3402 Mendocino Ave.
Santa Rosa, CA 95401

Purchase Order No. 425

Prepared by:

Stanislaw Piorek, Ph.D.
Manager, X-ray App. Lab

Laboratory Report on Preparation of Quality Assurance Standard Reference Filters

Standard Reference Filters containing sulfate and ammonium ions were prepared by deposition of calibrated solutions on 47mm diameter Whatman and quartz filters, respectively.

Calibrated solutions were prepared by dissolving in deionized water accurately weighed quantities of Na_2SO_4 and $(NH_4)_2HC_6H_5O_7$, both "Baker Reagent" grade. Prior to being weighed the salts were dried for a day in air at 105°C, and cooled to room temperature in a dessicator. An analytical balance was used for weighing the reagents with a relative error of not greater than ± .02% for the smallest amount weighed. Solutions were prepared in volumetric flasks, Class A.

A microsyringe was used to deposit aliquots of the solutions onto the filter substrates, supplied by the customer. The microsyringe was calibrated with deionized water. Repeatability of the microsyringe was determined to be not worse than 0.34% of the amount of solution delivered on a single filter.

Calibrated solutions of sodium sulfate (Na_2SO_4) were used to spike Whatman filters impregnated previously by the customer with sodium carbonate. After deposition the filters were placed in an oven to dry at 105°C. For the record let us note that Whatman filters impregnated with carbonate were quite moist even before sulfate solution deposition; obviously the result of carbonate hygroscopicity.

Quartz filters, spiked by the customer with oxalic acid, were placed for spiking with ammonium citrate solution on a flat Teflon tray cooled to about -20°C.

After deposition the tray with spiked filters was placed in a cooled, glass dessicator from which air was removed with a pump. Filters were kept under the vacuum in a cooled dessicator until spiking solution dried out. Next the filters were removed and placed immediately in labeled plastic petri dishes, each sealed with parafilm. Sealed petri dishes were packed in plastic bags and placed in a freezer. For transport the quartz filters were placed in a plastic cooler filled with frozen bags of blue ice. The cooler was sent by Federal Express-next day to the address indicated by the customer.

During the whole production process each standard was handled with stainless steel forceps on a clean, Teflon coated flat surface. Quartz filters impregnated with oxalic acid were never exposed to the room atmosphere for more than 2 minutes.

Actual quantities of ions deposited on the filters are listed in Table 1.

TABLE 1

Filter Numbers	Quantities of ions deposited (ug/filter)			
	NH_4^+		$SO_4^=$	
	Nominal [a]	Actual	Nominal [a]	Actual
301-316	0	0 [d]	-	N.D. [c]
331-346	2	1.99 ± .01 [b]	-	N.D.
351-366	6	5.98 ± .02	-	N.D.
381-396	20	19.95 ± .07	-	N.D.
401-416	-	N.D. [c]	0	0 [d]
431-448	-	N.D.	4	4.04 ± .01 [b]
451-468	-	N.D.	10	10.11 ± .03
481-498	-	N.D.	50	50.55 ± .17

Notes:
a) As specified in the order.
b) Error due to repeatability of the syringe (not worse than 0.34% relative of the amount present).
c) Not deposited.
d) These filters spiked with deionized water only.

Series 300 filters are quartz filters impregnated with oxalic acid. Series 400 filters are Whatman cellulose filters impregnated with sodium carbonate.

"Columbia Scientific Industries makes a reasonable effort to supply complete and accurate analytical data but does not assume responsibility for actions (loss or damages) arising from the results of analyses, nor liability for errors or omissions."

C-E's ION CHEMISTRY COMPARISON FOR SCAQS SIDE-BY-SIDE TESTING

Results of Run I Side by Side for SCAQS Sampler

Comparison between ERT and EMSI on Run I, Concentrations in µg/m3

		NH4		NO3		SO4		NH4 Ratio	NO3 Ratio	SO4 Ratio
Size	Smplr	EMSI	ERT	EMSI	ERT	EMSI	ERT	EMSI/ERT	EMSI/ERT	EMSI/ERT
< 2.5	1	3.1	3.1	4.2	4.2	4.9	5.2	0.99	1.00	0.93
< 2.5	2	3.0	2.8	4.1	4.0	4.9	5.0	1.09	1.03	0.99
< 2.5	3									
< 2.5	4	3.3	3.6	4.8	5.0	4.9	5.4	0.90	0.96	0.91
< 2.5	5	2.5	2.9	2.4	2.6	4.9	5.7	0.87	0.94	0.86
< 2.5	6	3.2	3.3	4.4	4.7	4.9	5.3	0.98	0.93	0.92
< 2.5	7	2.6	2.7	2.4	2.5	4.8	5.0	0.96	0.96	0.96
< 2.5	8	2.8	3.0	3.2	3.5	5.0	5.3	0.93	0.94	0.96
< 2.5	9	3.2	3.2	4.7	4.8	4.7	5.1	1.00	0.98	0.93
< 2.5	10	3.3	3.1	4.5	4.6	5.0	5.3	1.04	0.98	0.95
< 10	1	3.8	3.7	5.9	5.8	5.7	5.9	1.01	1.03	0.96
< 10	2	3.6	3.5	5.1	5.5	5.7	6.4	1.03	0.94	0.90
< 10	3	4.5	4.2	7.9	7.7	6.3	6.6	1.09	1.03	0.95
< 10	4	3.6	3.4	5.8	5.7	5.6	5.8	1.07	1.02	0.96
< 10	5	3.0	3.0	3.8	3.7	5.7	6.1	1.01	1.03	0.94
< 10	6									
< 10	7	2.9	2.9	3.5	3.3	5.6	5.7	1.01	1.03	0.99
< 10	8	3.3	3.4	4.5	4.7	5.8	6.0	0.96	0.96	0.96
< 10	9	3.9	4.2	6.4	6.5	5.7	6.1	0.94	0.98	0.93
< 10	10	3.7	3.5	5.6	5.5	5.9	6.4	1.08	1.02	0.92
						ΣEMSI/ΣERT	< 2.5	0.97	0.97	0.93
						ΣEMSI/ΣERT	< 10	1.02	1.00	0.95

APPENDIX B

ARB QUALITY ASSURANCE SECTION:
AIR QUALITY AND METEOROLOGICAL AUDIT REPORT

State of California

M E M O R A N D U M

To : Frank DiGenova, Chief
Research and Economic Studies Branch

Date : October 8, 1987

Subject : Results of June 1987 SCAQS Audit

From : Bob Effa, Manager
Quality Assurance Section
Air Resources Board

Attached is a summary report of the June 1987 audit of SCAQS instruments conducted by the Quality Assurance Section. If you have any questions or would like a copy of the full report, please give me a call at 2-3726.

Attachment

cc: Wayne Rodgers
Kevin Kalthoff

Audit of Monitoring Sites for
South Coast Air Quality Study
During June 1987
Summary Report

Introduction

During June 1987, the Air Resources Board (ARB) Quality Assurance (QA) Section staff conducted performance audits of monitoring sites/airplanes that were part of the South Coast Air Quality Study (SCAQS). Gaseous and flow audits were conducted at Long Beach City College, Los Angeles-North Main, Claremont McKenna, Sonoma Technology airplane N6670V, and University of Washington airplane N327UW. In addition, meteorologic checks of wind direction, wind speed, temperature, and percent humidity/dew point were conducted at the ~~above sites if applicable and at~~ Anaheim, Burbank, Azusa, Hawthorne and Rubidoux.

Discussion

Shown in Table 1 are the average gaseous analyzer and particulate sampler accuracy results by site and pollutant. Table 2 depicts the results of the meteorologic checks.

The performance audits found a wide range of analyzer accuracy in the SCAQS sites/airplanes audited as can be seen in Table 1. Of the five sites/airplanes audited, only SCAQM's Los Angeles - North Main site and Sonoma Technology N6670Y airplane had all analyzers within ARB's +/-15% acceptable range of error. The Long Beach City college site results were acceptable except for sulfur dioxide. For Claremont-McKenna only ozone and PM10 were within the +/-15% range. Total hydrocarbon results(+33.2%) at Claremont-McKenna should also be considered acceptable because the calibration gas was a methane/propane blend while the audit gas was methane only; thus, the results are close to that expected. For the University of Washington N327UW airplane, only carbon monoxide results were in the acceptable range. The Claremont-McKenna site and the University of Washington airplane were re-audited to determine if the problems were with the calibration rather than instrument instability. The repeat

audits indicated calibration problems except for the ozone analyzer in the UW airplane which was apparently unstable.

Overall, for the five sites/airplanes audited: 1 of 5 ozone analyzers failed, 1 of 4 carbon monoxide analyzers failed, 2 of 5 nitrogen oxide analyzers failed, and 3 of 5 sulfur dioxide analyzers failed. All particiate sampler flows were within +/- 15% of true. For similiar instruments in the State and local air monitoring network, ARB recommends that all instruments that fall outside the +/-15% range of error be investigated and that the data be either corrected or deleted from the data base.

The meteorologic checks reported in Table 2 should be viewed as a coarse check of the data reported. The methods available to check the meteorologic systems were not precise enough to provide quantatative evaluation with any certainty.

Procedures and Standards

The gaseous and particulate performance audit procedures conform to EPA requirements in 40 CFR Part 58, Appendix A. The performance audits are conducted by challenging a gaseous pollutant analyzer with pollutant-free zero air and with known concentrations of the respective pollutants through the site's intake probe. The TSP and PM10 samplers are audited for flow accuracy using a certfied BGI variable orifice and a differential pressure guage. All gaseous and flow standards are traceable to the National Bureau of Standards.

Standards

All gaseous and flow standards are traceable to NBS. Ozone is traceable to an NBS photometer and all other gases to NBS compressed gas Standard Reference Materials. The BGI orifice is certified against an NBS traceable Roots Meter.

Report Date 10/8/87

Table I

AUDIT RESULTS BY SITE
AVERAGE PERCENT DIFFERENCE FROM TRUE
SOUTH COAST AIR QUALITY STUDY

SITE	DATE	POLLUTANT							
		O3	CO	NO2	SO2	CH4	THC	TSP	PM10
Los Angeles - North Main	6/16/87	-3.7	4.5	-6.2	0.2	3.0	-4.7	1.3 -2.6 -4.0	-1.6 -3.9
Long Beach City College	6/17/87	-4.6	-5.9	-6.5	28.8				
Claremont McKenna	6/18/87 6/27/87	-4.5 NN	NR -56.1	-34.0 -25.2	-20.8 -22.2		33.2		-1.9
Sonoma Technology N6670Y	6/22/87	-3.5		-12.1	2.8				
University of Washington N327UW	6/22/87 6/26/87	39.9 88.5	-2.8 NN	96.1 84.4	46.5 50.9				

KLK9/17/87

NR - Not ready for audit
NN - Not Necessary, previous audit results satisfactory
Blanks indicate no instrument at site

Table 2

METEOLOGIC CHECKS BY SITE
SOUTH COAST AIR QUALITY STUDY

SITE	DATE	WIND DIRECTION DEGREES		WIND SPEED KNOTS		TEMPERATURE DEGREES CELSIUS		HUMIDITY/DEW POINT % / DEG. F	
		SITE RESPONSE	CHECK DEVICE	SITE RESPONSE	CHECK DEVICE	SITE RESPONSE	CHECK DEVICE	SITE RESPONSE	CHECK DEVICE
CLAREMONT MCKENNA	6/18/87	270	280	6.2	7.5	25.2	25.6	30%	29%
ANAHEIM	6/19/87	0	10	3.5	4.0	16.7	18.5	52	56
BURBANK	6/19/87	0	5	5.2	5.5	25.0	27.2	52	52
AZUSA	6/19/87	0	12	5.6	6.0	25.3	29.4	53.5	53
HAWTHORNE	6/19/87	0	<5	3.5	4.5	20.2	21.1	54.8	57
SONOMA TECHNOLOGY N6670Y	6/22/87					31.6	31.5		
RUBIDOUX	6/24/87	0	15	2.6	4.0	16.8	18.0	57.1	58.4

KLK 9/17/87

Blanks indicate no instrument

tate of California

M E M O R A N D U M

To : Frank DiGenova, Chief
Research and Economic Studies Branch

Date : March 8, 1988

Subject : Results of November 1987 SCAQS Audit

From : Bob Effa, Manager
Quality Assurance Section
Air Resources Board

Attached is a summary report of the November 1987 performance audits of SCAQS analyzers by the Quality Assurance Section. If you have any questions or would like a copy of the full report, please give me a call at 2-3726.

Attachment

cc: Ron Lewis

Audit of Monitoring Sites for
South Coast Air Quality Study
During November 1987
Summary Report

Introduction

During November 1987, the Air Resources Board (ARB) Quality Assurance (QA) Section staff conducted performance audits of monitoring sites/airplanes that were part of the South Coast Air Quality Study (SCAQS). Gaseous audits were conducted at Long Beach City College, Los Angeles-North Main, and Sonoma Technology airplane N6670Y.

Discussion

Shown in Table 1 are the average gaseous analyzer accuracy results by site and pollutant.

All analyzers checked were within ARB's +/- 15% limit, with the exception of the SO2 analyzer at Long Beach - ARB. The SO2 analyzer was found + 28% high and was recalibrated at the close of the project. The SO2 ambient data for the Long Beach - ARB site will be adjusted based upon the as is post calibration results.

Flow Audits of the PM10 samplers were conducted at Los Angeles-North Main, but due to a mixup in ID numbers, the correct identity was not able to be established for the samplers. The audits were, therefore, deleted.

Procedures and Standards

The gaseous performance audit procedures conform to EPA requirements in 40 CFR Part 58, Appendix A. The performance audits are conducted by challenging a gaseous pollutant analyzer with pollutant-free zero air and with known concentrations of the respective pollutants through the site's intake probe. The TSP and PM10 samplers are audited for flow accuracy using a certified BGI variable orifice and a differential pressure gauge.

Standards

All gaseous and flow standards are traceable to the National Bureau of Standards (NBS). Ozone is traceable to an NBS photometer and all other gases to NBS compressed gas Standard Reference Materials. The BGI orifice is certified against an NBS traceable Roots Meter.

Report Date 1/27/88

RON LEWIS

Table I

Performance Audit Results in Average Percent Difference

Site	Audit Date	O3	CO	NO2	SO2	CH4	THC
Long Beach - GM Van	11/17/87	--	-1.4	-0.4	--	--	--
Long Beach - ARB	11/17/87	-1.0	-2.1	+10.9	+28.0	--	--
Airplane - N6670Y - Sonoma Tech.	11/18/87	+12.7	--	+10.0	--	--	--
LA - No. Main (SCAQMD)	11/19/87	-9.9	+5.0	+2.5	+3.0	+4.1	+5.8

MLD/QA
1/27/88

APPENDIX C

DATA FROM INTERCOMPARISON OF SCAQS FILTER ELEMENTAL ANALYSIS

ARB XRF DATA

ARB LOW VOL XRF: 51788. TUBE CURRENT (MA.): .24

DATE	LOCATION	FILTER #	VOLUME	FILTER AREA (CM2)
51788.	CARB	MK 943. #18	1.	1.

ELEMENT	STRIP#	NET COUNT	NG/CM2
PB2	18.	2557.	79.
PB	17.	3676.	73.
SR	16.	0.	0.
BR	15.	1222.	10.0
SE	14.	19.	0.
NI	13.	627.	5.
CU	12.	3320.	15.
ZN	11.	3853.	24.
TI	10.	4628.	39.
V	9.	203.	2.
CR	8.	0.	0.
MN	7.	1394.	9.
FE	6.	42906.	252.
K	5.	6652.	92.
CA	4.	15377.	154.
SI	3.	3860.	658.
CL	2.	147.	4.
SO4	1.	11158.	1327.

TIME 500. S
RATIO .8481354566 CALIBRATION FACTOR 1.

ARB LOW VOL XRF: 51788. TUBE CURRENT (MA.): .24

DATE	LOCATION	FILTER #	VOLUME	FILTER AREA (CM2)
51788.	CARB	MK 944. #22	1.	1.

ELEMENT	STRIP#	NET COUNT	NG/CM2
PB2	18.	3403.	105.
PB	17.	5339.	105.
SR	16.	422.	5.
BR	15.	1572.	13.
SE	14.	516.	4.
NI	13.	895.	7.
CU	12.	2342.	10.0
ZN	11.	5812.	36.
TI	10.	13069.	109.
V	9.	506.	5.
CR	8.	239.	2.
MN	7.	2780.	19.
FE	6.	140180.	825.
K	5.	18486.	256.
CA	4.	52471.	525.
SI	3.	13051.	2223.
CL	2.	7655.	206.
SO4	1..	15064.	1792.

TIME 500. S
RATIO 1.098188652 CALIBRATION FACTOR 1.

ARB LOW VOL XRF: 51788. TUBE CURRENT (MA.): .24

DATE	LOCATION	FILTER #	VOLUME	FILTER AREA (CM2)
51788.	CARB	MK 945. #31	1.	1.

ELEMENT	STRIP#	NET COUNT	NG/CM2
PB2	18.	5314.	164.
PB	17.	8821.	174.
SR	16.	328.	4.
BR	15.	3173.	26.
SE	14.	102.	1.
NI	13.	959.	7.
CU	12.	6096.	27.
ZN	11.	16757.	103.
TI	10.	7616.	63.
V	9.	1207.	11.
CR	8.	442.	3.
MN	7.	4937.	33.
FE	6.	75423.	444.
K	5.	16692.	232.
CA	4.	28403.	284.
SI	3.	7337.	1250.0
CL	2.	2590.	70.0
SO4	1.	33481.	3982.

TIME 500. S
RATIO .9818931797 CALIBRATION FACTOR 1.

ARB LOW VOL XRF: 51788. TUBE CURRENT (MA.): .24

DATE	LOCATION	FILTER #	VOLUME	FILTER AREA (CM2)
51788.	CARB	MK 946. #35	1.	1.

ELEMENT	STRIP#	NET COUNT	NG/CM2
PB2	18.	9918.	305.
PB	17.	15008.	296.
SR	16.	1893.	22.
BR	15.	5146.	43.
SE	14.	563.	5.
NI	13.	1883.	14.
CU	12.	7149.	32.
ZN	11.	26520.	162.
TI	10.	25354.	211.
V	9.	1968.	18.
CR	8.	741.	5.
MN	7.	9589.	65.
FE	6.	376045.	2213.
K	5.	59680.	828.
CA	4.	158307.	1584.
SI	3.	41457.	7063.
CL	2.	25755.	693.
SO4	1..	44500.	5293.

TIME 500. S
RATIO 1.009549403 CALIBRATION FACTOR 1.

ARB LOW VOL XRF: 51788. TUBE CURRENT (MA.): .24

DATE	LOCATION	FILTER #	VOLUME	FILTER AREA (CM2)
51788.	CARB	MK 947. #54	1.	1.

ELEMENT	STRIP#	NET COUNT	NG/CM2
PB2	18.	2033.	63.
PB	17.	3212.	63.
SR	16.	257.	3.
BR	15.	1256.	10.0
SE	14.	11.	0.
NI	13.	216.	2.
CU	12.	8237.	37.
ZN	11.	9767.	60.0
TI	10.	4685.	39.
V	9.	715.	7.
CR	8.	518.	3.
MN	7.	1817.	12.
FE	6.	57349.	337.
K	5.	8893.	123.
CA	4.	23344.	234.
SI	3.	6328.	1078.
CL	2.	566.	15.
SO4	1.	30638.	3644.

TIME 500. S
RATIO .8998289136 CALIBRATION FACTOR 1.

ARB LOW VOL XRF: 51788. TUBE CURRENT (MA.): .24

DATE	LOCATION	FILTER #	VOLUME	FILTER AREA (CM2)
51788.	CARB	MK 948. #58	1.	1.

ELEMENT	STRIP#	NET COUNT	NG/CM2
PB2	18.	3278.	101.
PB	17.	4686.	93.
SR	16.	718.	8.
BR	15.	1763.	15.
SE	14.	323.	3.
NI	13.	543.	4.
CU	12.	5486.	25.
ZN	11.	11535.	71.
TI	10.	18979.	158.
V	9.	1082.	10.0
CR	8.	1833.	12.
MN	7.	3837.	26.
FE	6.	196401.	1156.
K	5.	28540.	396.
CA	4.	89018.	891.
SI	3.	23124.	3939.
CL	2.	3674.	99.
SO4	1.	36374.	4326.

TIME 500. S
RATIO 1.024694365 CALIBRATION FACTOR 1.

ARB-NEA-STI XRF: 110587. TUBE CURRENT (MA.): .24

FILTER # ML300
19.

ELEMENT	STRIP#	NET COUNT	NG/CM2
~~PB2~~	18.	2523.	~~79.~~7
PB	17.	3426.	69.5
SR	16.	500.	5.9
BR	15.	1229.	10.5
SE	14.	18.	.2
NI	13.	339.	2.6
CU	12.	466.	2.1
ZN	11.	3860.	24.3
TI	10.	3749.	32.1
V	9.	423.	4.0
CR	8.	550.	3.7
MN	7.	1421.	9.9
FE	6.	41522.	250.9
K	5.	6561.	93.5
CA	4.	15440.	158.7
SI	3.	3847.	673.2
CL	2.	121.	3.3
SO4	1.	10391.	1269.4

TIME 500. S
RATIO 1.050167224

ARB-NEA-STI XRF: 110587. TUBE CURRENT (MA.): .24

FILTER # ML301
23.

ELEMENT	STRIP#	NET COUNT	NG/CM2
~~PB2~~	18.	3316.	~~107.7~~
PB	17.	4547.	94.8
SR	16.	279.	3.4
BR	15.	1168.	10.2
SE	14.	0.	0.
NI	13.	514.	4.1
CU	12.	2012.	9.5
ZN	11.	4718.	30.5
TI	10.	11408.	100.4
V	9.	449.	4.4
CR	8.	484.	3.3
MN	7.	2792.	20.00
FE	6.	124061.	770.5
K	5.	15099.	221.1
CA	4.	44541.	470.4
SI	3.	11270.	2026.7
CL	2.	7958.	226.1
SO4	1.	12916.	1621.6

TIME 500. S
RATIO 1.094019761

ARB-NEA-STI XRF: 110587. TUBE CURRENT (MA.): .24

FILTER # ML 302 ripped
33.

ELEMENT	STRIP#	NET COUNT	NG/CM2
PB2	18.	5707.	195.1
PB	17.	8507.	186.6
SR	16.	663.	8.5
BR	15.	3056.	28.2
SE	14.	246.	2.3
NI	13.	656.	5.5
CU	12.	1474.	7.3
ZN	11.	14839.	101.0
TI	10.	7744.	71.7
V	9.	1380.	14.2
CR	8.	120.	.9
MN	7.	4938.	37.2
FE	6.	78372.	512.4
K	5.	16028.	247.0
CA	4.	27203.	302.4
SI	3.	7082.	1340.6
CL	2.	7963.	238.2
SO4	1.	30865.	4079.1

TIME 500. S
RATIO 1.14492517

ARB-NEA-STI XRF: 110587. TUBE CURRENT (MA.): .24

FILTER # ML 303 ripped
37.

ELEMENT	STRIP#	NET COUNT	NG/CM2
PB2	18.	9458.	319.6
PB	17.	14659.	317.9
SR	16.	1597.	20.3
BR	15.	5214.	47.5
SE	14.	546.	5.1
NI	13.	1277.	10.5
CU	12.	7389.	36.3
ZN	11.	25445.	171.1
TI	10.	23734.	217.3
V	9.	1517.	15.4
CR	8.	676.	4.9
MN	7.	8709.	64.8
FE	6.	348120.	2249.7
K	5.	52816.	804.5
CA	4.	143438.	1576.1
SI	3.	37127.	6946.5
CL	2.	48526.	1434.6
SO4	1.	37219.	4861.9

TIME 500. S
RATIO 1.016034

ARB-NEA-STI XRF: 110587. TUBE CURRENT (MA.): .24

FILTER # ML304
48.

ELEMENT	STRIP#	NET COUNT	NG/CM2
PB2	18.	396.	13.2
PB	17.	19.	.4
SR	16.	29.	.4
BR	15.	0.	0.
SE	14.	0.	0.
NI	13.	0.	0.
CU	12.	2057.	10.00
ZN	11.	308.	2.1
TI	10.	106.	1.0
V	9.	279.	2.8
CR	8.	0.	0.
MN	7.	0.	0.
FE	6.	13711.	87.7
K	5.	1042.	15.7
CA	4.	4431.	48.2
SI	3.	461.	85.5
CL	2.	0.	0.
SO4	1.	471.	60.9

TIME 500. S
RATIO .8306878307

ARB-NEA-STI XRF: 110587. TUBE CURRENT (MA.): .24

FILTER # ML305
55.

ELEMENT	STRIP#	NET COUNT	NG/CM2
PB2	18.	1588.	51.6
PB	17.	2762.	57.6
SR	16.	65.	.8
BR	15.	1423.	12.5
SE	14.	239.	2.2
NI	13.	800.	6.3
CU	12.	8432.	39.8
ZN	11.	11690.	75.6
TI	10.	4436.	39.0
V	9.	263.	2.6
CR	8.	886.	6.1
MN	7.	1714.	12.3
FE	6.	54371.	337.7
K	5.	8484.	124.2
CA	4.	20665.	218.2
SI	3.	5949.	1069.9
CL	2.	2110.	60.00
SO4	1.	29512.	3705.3

TIME 500. S
RATIO 1.421102405

ARB-NEA-STI XRF: 110587. TUBE CURRENT (MA.): .24

FILTER # ML 306 ripped
60.

ELEMENT	STRIP#	NET COUNT	NG/CM2
PB2	18.	3489.	115.2
PB	17.	5313.	112.6
SR	16.	991.	12.3
BR	15.	2062.	18.3
SE	14.	275.	2.5
NI	13.	657.	5.3
CU	12.	6312.	30.3
ZN	11.	13518.	88.9
TI	10.	19040.	170.4
V	9.	677.	6.7
CR	8.	1918.	13.5
MN	7.	3563.	25.9
FE	6.	201606.	1273.4
K	5.	29501.	439.2
CA	4.	91234.	979.8
SI	3.	23373.	4274.3
CL	2.	8954.	258.8
SO4	1.	37174.	4746.3

TIME 500. S
RATIO 1.247509488

ARB-NEA-STI XRF: 110587. TUBE CURRENT (MA.): .24

FILTER # ML 307 blank
94.

ELEMENT	STRIP#	NET COUNT	NG/CM2
PB2	18.	0.	0.
PB	17.	0.	0.
SR	16.	0.	0.
BR	15.	77.	.7
SE	14.	0.	0.
NI	13.	0.	0.
CU	12.	1520.	7.3
ZN	11.	2121.	13.9
TI	10.	0.	0.
V	9.	335.	3.3
CR	8.	175.	1.2
MN	7.	163.	1.2
FE	6.	794.	5.0
K	5.	0.	0.
CA	4.	1175.	12.5
SI	3.	0.	0.
CL	2.	0.	0.
SO4	1.	26.	3.4

— probably artifact (artifact)

— maybe from

TIME 500. S
RATIO 1.318170426

EPA NSI XRVF DATA

AN 'X' ASSOCIATED WITH THE ELEMENT LISTED MEANS THAT ITS CONCENTRATION IS LESS THAN THE DETECTION LIMIT. A 'D' MEANS THAT THE ELEMENT WAS DETECTED BUT WAS BELOW THE LIMIT OF QUANTITATION. THE 2-SIGMA COLUMN INCLUDES ERRORS DUE TO COUNTING STATISTICS, SHORT TERM INSTRUMENT DRIFT AND UNCERTAINTY IN THE CALIBRATION STANDARDS. A '?' INDICATES THAT UNCORRECTABLE SYSTEMATIC BIASES ARE SUSPECTED.

RUN DESCRIPTION: SCAQS2 - INTERCOMPARISON STUDY
DATE OF XRAY ANALYSIS: 06/23/87
SAMPLE TYPE: FILTER
SITE ID: N/A
MISCELLANEOUS INFO: NONE
SAMPLE SEQUENCE NO.: 1
SAMPLE VOLUME (M3): 0
SAMPLE LOADING (UG/CM2): 28.6869
SAMPLE DATE (JULIAN): N/A
SAMPLE ID: 18

ELEMENT		DETN LIM	UG/CM2		2-SIGMA	
NA	D	.082254	.106724	+-	.641566E-01	.905765
MG		.694469E-02	.478124E-01	+-	.691736E-02	.954816
AL		.176332E-01	.939386E-01	+-	.826717E-02	.969017
SI		.469375E-01	.226125	+-	.166136E-01	.97889
P		.44222E-02	.013559	+-	.550159E-02	.985057
S		.234352E-01	.40072	+-	.217037E-01	.986076
CL	D	.100575E-01	.231404E-01	+-	.335607E-02	.989224
K		.104798E-01	.834058E-01	+-	.485974E-02	.995157
CA		.240461E-02	.16221	+-	.105903E-01	.996131
TI		.254687E-02	.264174E-01	+-	.375206E-02	.99728
V	X	.990689E-02	.676677E-02	+-	.009668	.99794
CR	D	.346263E-01	.392775E-01	+-	.038527	.998873
MN	D	.203467E-01	.253738E-01	+-	.242172E-01	.999117
FE		.118266E-01	.238604	+-	.255086E-01	.999111
CO	X	.977348E-02	.443792E-02	+-	.951516E-02	.999322
NI	D	.986186E-02	.272163E-01	+-	.108001E-01	.999381
CU	D	.111698E-01	.01686	+-	.113349E-01	.999526
ZN	D	.123695E-01	.206832E-01	+-	.125329E-01	.999593
AS	X	.151894E-01	-.024625	+-	.013379	.999758
SE	X	.179587E-01	.690406E-02	+-	.171944E-01	.999804
BR	X	.444449E-01	.356039E-01	+-	.562948E-02	.999764
SR	X	.666543E-01	.298217E-01	+-	.149288E-01	.999836
MO	X	.219174	.128191	+-	.240893E-01	.999904
CD	X	.152547E-02	.730301E-03	+-	.202276E-02	.993001
SN	X	.144947E-01	-.369607E-02	+-	.013452	.996081
SB	X	.636491E-02	.570424E-02	+-	.63509E-02	.996093
CS	X	.804575E-02	.120682E-02	+-	.765043E-02	.997041
BA	D	.84882E-02	.205287E-01	+-	.906713E-02	.997259
PT	X	.412202E-01	.724933E-02	+-	.391679E-01	.999709
HG	X	.430164E-01	-.261197E-01	+-	.395077E-01	.999744
PB	D	.141043	.144123	+-	.267965E-01	.999786

TOTAL DETECTED BY XRF = 1.71672

AN 'X' ASSOCIATED WITH THE ELEMENT LISTED MEANS THAT ITS CONCENTRATION IS LESS THAN THE DETECTION LIMIT. A 'D' MEANS THAT THE ELEMENT WAS DETECTED BUT WAS BELOW THE LIMIT OF QUANTITATION. THE 2-SIGMA COLUMN INCLUDES ERRORS DUE TO COUNTING STATISTICS, SHORT TERM INSTRUMENT DRIFT AND UNCERTAINTY IN THE CALIBRATION STANDARDS. A '?' INDICATES THAT UNCORRECTABLE SYSTEMATIC BIASES ARE SUSPECTED.

RUN DESCRIPTION: SCA0S1 - INTERCOMPARISON STUDY
DATE OF XRAY ANALYSIS: 06/11/87
SAMPLE TYPE: FILTER
SITE ID: N/A
MISCELLANEOUS INFO: NONE
SAMPLE SEQUENCE NO.: 1
SAMPLE VOLUME (M3): 0
SAMPLE LOADING (UG/CM2): 29.5184
SAMPLE DATE (JULIAN): N/A
SAMPLE ID: 19 (FINE)

Correction

ELEMENT		DETN LIM	UG/CM2		2-SIGMA	
NA	D	.823977E-01	.193389	+-	.707174E-01	.904186
MG		.695191E-02	.580068E-01	+-	.007917	.953824
AL		.176475E-01	.105138	+-	.863701E-02	.968232
SI		.469638E-01	.248837	+-	.170145E-01	.978343
P	D	.442396E-02	.131054E-01	+-	.554057E-02	.984664
S		.234437E-01	.409791	+-	.221503E-01	.98572
CL		.100575E-01	.419421E-01	+-	.384439E-02	.989224
K		.104794E-01	.915451E-01	+-	.525075E-02	.995193
CA		.238925E-02	.165954	+-	.107755E-01	.99617
TI		.206196E-02	.380515E-01	+-	.410593E-02	.997323
V	X	.89454E-02	.365171E-02	+-	.862913E-02	.997977
CR	X	.359057E-01	.249174E-01	+-	.375581E-01	.998897
MN	D	.192705E-01	.031972	+-	.246153E-01	.999139
FE		.112779E-01	.237667	+-	.252346E-01	.999147
CO	X	.104606E-01	-.613452E-02	+-	.946804E-02	.999352
NI	X	.96894E-02	-.440855E-02	+-	.888318E-02	.999408
CU	X	.110452E-01	.475377E-02	+-	.106659E-01	.999548
ZN	D	.113848E-01	.243048E-01	+-	.118402E-01	.999618
AS	D	.139637E-01	.347611E-01	+-	.146731E-01	.999776
SE	X	.168452E-01	-.454114E-03	+-	.158634E-01	.999822
BR	X	.444442E-01	-.200915E-02	+-	.529027E-02	.999779
SR	X	.666527E-01	-.106353E-01	+-	.148779E-01	.99986
MO	X	.219169	-.256312E-01	+-	.232241E-01	.999926
CD	X	.152541E-02	.116136E-02	+-	.224345E-02	.993041
SN	X	.147756E-01	-.450047E-02	+-	.136753E-01	.996126
SB	X	.760257E-02	-.714045E-02	+-	.675743E-02	.99614
CS	X	.82918E-02	.758898E-05	+-	.781801E-02	.997085
BA		.722362E-02	.222503E-01	+-	.813451E-02	.997301
PT	X	.360201E-01	.224204E-01	+-	.03504	.999732
HG	X	.473666E-01	.746795E-02	+-	.449935E-01	.999764
PB	X	.141041	.317495E-01	+-	.258509E-01	.999799

TOTAL DETECTED BY XRF = 1.71672

RUN DESCRIPTION: SCAQS2 - INTERCOMPARISON STUDY
DATE OF XRAY ANALYSIS: 06/23/87
SAMPLE TYPE: FILTER
SITE ID: N/A
MISCELLANEOUS INFO: NONE
SAMPLE SEQUENCE NO.: 4
SAMPLE VOLUME (M3): 0
SAMPLE LOADING (UG/CM2): 31.805
SAMPLE DATE (JULIAN): N/A
SAMPLE ID: 22

ELEMENT		DETN LIM	UG/CM2		2-SIGMA	
NA		.831535E-01	.466569	+-	.780879E-01	.895967
MG		.698923E-02	.16724	+-	.132256E-01	.94873
AL		.177184E-01	.31552	+-	.193567E-01	.964359
SI		.471157E-01	.846191	+-	.467416E-01	.975189
P		.443935E-02	.319308E-01	+-	.633152E-02	.981252
S		.235214E-01	.534935	+-	.283307E-01	.982463
CL		.100843E-01	.279255	+-	.151268E-01	.986594
K		.104953E-01	.226605	+-	.117877E-01	.993687
CA		.220418E-02	.557212	+-	.303721E-01	.994807
TI		.24056E-02	.110486	+-	.79477E-02	.996097
V	X	.923271E-02	.316557E-02	+-	.886902E-02	.997027
CR	X	.381631E-01	-.316927E-02	+-	.355125E-01	.998328
MN	D	.204305E-01	.424372E-01	+-	.271737E-01	.99868
FE		.106994E-01	.794898	+-	.544205E-01	.998655
CO	X	.991387E-02	-.776553E-03	+-	.929455E-02	.998975
NI	D	.930347E-02	.115137E-01	+-	.944791E-02	.998965
CU	D	.88553E-02	.227218E-01	+-	.968165E-02	.999204
ZN		.112602E-01	.495838E-01	+-	.129155E-01	.999322
AS	D	.134383E-01	.357384E-01	+-	.142751E-01	.999596
SE	X	.015894	-.275583E-02	+-	.148674E-01	.999677
BR	X	.044452	.634566E-02	+-	.519774E-02	.999604
SR	X	.666602E-01	-.766329E-02	+-	.145932E-01	.999748
MO	X	.219182	-.216225E-01	+-	.225506E-01	.999867
CD		.152863E-02	.656511E-02	+-	.236803E-02	.990948
SN	X	.135278E-01	.401919E-02	+-	.130021E-01	.994848
SB	D	.621778E-02	.75685E-02	+-	.63359E-02	.994859
CS	X	.832609E-02	-.242374E-02	+-	.772378E-02	.995757
BA		.81353E-02	.509161E-01	+-	.103833E-01	.996064
PT	X	.364364E-01	.106577E-01	+-	.03486	.999519
HG	X	.380428E-01	.261259E-01	+-	.370655E-01	.999574
PB	X	.141064	.690725E-01	+-	.257095E-01	.99964

TOTAL DETECTED BY XRF = 4.55789

RUN DESCRIPTION: SCA091 - INTERCOMPARISON STUDY
DATE OF XRAY ANALYSIS: 06/11/87
SAMPLE TYPE: FILTER
SITE ID: N/A
MISCELLANEOUS INFO: NONE
SAMPLE SEQUENCE NO.: 4
SAMPLE VOLUME (M3): 0
SAMPLE LOADING (UG/CM2): 30.5577
SAMPLE DATE (JULIAN): N/A
SAMPLE ID: 23 (PM-10)

ELEMENT		DETN LIM	UG/CM2		2-SIGMA	
NA		.827524E-01	.449048	+-	.801674E-01	.90031
MG		.697263E-02	.159277	+-	.130681E-01	.950989
AL		.176892E-01	.286545	+-	.178079E-01	.965953
SI		.470606E-01	.800135	+-	.442017E-01	.97633
P		.443539E-02	.175361E-01	+-	.574389E-02	.982128
S		.023503	.505492	+-	.268733E-01	.983232
CL		.100783E-01	.352935	+-	.187304E-01	.98719
K		.104931E-01	.197502	+-	.103613E-01	.993887
CA		.226328E-02	.466961	+-	.258571E-01	.995002
TI		.234499E-02	.089025	+-	.684528E-02	.996299
V	X	.903671E-02	.151348E-02	+-	.860017E-02	.997183
CR	D	.299798E-01	.414078E-01	+-	.352223E-01	.998425
MN	X	.257697E-01	.123928E-01	+-	.263939E-01	.998757
FE		.103308E-01	.721291	+-	.505672E-01	.998723
CO	X	.871425E-02	.506014E-02	+-	.859828E-02	.999038
NI	X	.870971E-02	.617523E-02	+-	.859989E-02	.999035
CU	X	.113585E-01	.246927E-02	+-	.108366E-01	.999258
ZN	D	.108356E-01	.313279E-01	+-	.117098E-01	.99937
AS	D	.141319E-01	.294621E-01	+-	.145848E-01	.999627
SE	X	.017053	-.986931E-02	+-	.156873E-01	.999701
BR	X	.444508E-01	-.130933E-01	+-	.527977E-02	.99963
SR	X	.666594E-01	-.028793	+-	.148236E-01	.99976
MO	X	.219181	-.883638E-01	+-	.233326E-01	.999873
CD	X	.152819E-02	.298329E-04	+-	.218576E-02	.99123
SN	X	.141697E-01	-.753664E-02	+-	.129118E-01	.995022
SB	X	.748873E-02	.247214E-02	+-	.720345E-02	.995034
CS	X	.781379E-02	.704971E-02	+-	.778612E-02	.995976
BA		.775972E-02	.440555E-01	+-	.97541E-02	.996268
PT	D	.364236E-01	.527145E-01	+-	.368575E-01	.999554
HG	X	.479204E-01	-.314758E-01	+-	.437873E-01	.999607
PB	X	.141061	.107023E-01	+-	.257374E-01	.999663

TOTAL DETECTED BY XRF = 4.24471

RUN DESCRIPTION: SCA082 - INTERCOMPARISON STUDY
DATE OF XRAY ANALYSIS: 06/23/87
SAMPLE TYPE: FILTER
SITE ID: N/A
MISCELLANEOUS INFO: NONE
SAMPLE SEQUENCE NO.: 2
SAMPLE VOLUME (M3): 0
SAMPLE LOADING (UG/CM2): 47.1878
SAMPLE DATE (JULIAN): N/A
SAMPLE ID: 31

ELEMENT		DETN LIM	UG/CM2		2-SIGMA	
NA		.874248E-01	.504652	+-	.826578E-01	.852193
MG		.715922E-02	.105811	+-	.101516E-01	.926204
AL		.180075E-01	.173931	+-	.123386E-01	.948878
SI		.047619	.497518	+-	.296422E-01	.964881
P		.446893E-02	.313195E-01	+-	.63367E-02	.974756
S		.023667	1.30885	+-	.668685E-01	.976418
CL		.101458E-01	.147412	+-	.872126E-02	.98062
K		.105223E-01	.20628	+-	.107876E-01	.991131
CA		.203572E-02	.310935	+-	.180197E-01	.992837
TI		.247343E-02	.378411E-01	+-	.429511E-02	.994915
V	X	.99959E-02	-.515695E-03	+-	.939946E-02	.996132
CR	X	.359427E-01	.170163E-01	+-	.364542E-01	.997868
MN	D	.254229E-01	.498216E-01	+-	.317316E-01	.998312
FE		.116513E-01	.47276	+-	.379603E-01	.998316
CO	X	.101304E-01	.118745E-02	+-	.962918E-02	.998714
NI	D	.100659E-01	.245018E-01	+-	.010821	.998819
CU	D	.105044E-01	.118079E-01	+-	.0105	.999092
ZN		.114708E-01	.123153	+-	.165532E-01	.999225
AS	X	.144928E-01	-.122327E-01	+-	.131668E-01	.999529
SE	X	.172155E-01	-.75248E-02	+-	.159356E-01	.999619
BR	X	.444547E-01	.418607E-01	+-	.581402E-02	.999542
SR	X	.666642E-01	.897835E-02	+-	.148109E-01	.999688
MO	X	.219192	.810192E-01	+-	.235148E-01	.999821
CD		.153439E-02	.960327E-02	+-	.254834E-02	.987227
SN	D	.124956E-01	.230206E-01	+-	.132871E-01	.992792
SB	D	.574391E-02	.951976E-02	+-	.605442E-02	.992813
CS	X	.79211E-02	.124733E-02	+-	.75363E-02	.994479
BA		.815111E-02	.132695	+-	.146281E-01	.994875
PT	X	.388908E-01	.112776E-01	+-	.371701E-01	.99945
HG	X	.408433E-01	.896264E-02	+-	.388898E-01	.999503
PB	D	.141072	.211931	+-	.283268E-01	.999584

TOTAL DETECTED BY XRF = 4.39336

RUN DESCRIPTION: SCAG61 - INTERCOMPARISON STUDY
DATE OF XRAY ANALYSIS: 06/11/87
SAMPLE TYPE: FILTER
SITE ID: N/A
MISCELLANEOUS INFO: NONE
SAMPLE SEQUENCE NO.: 2
SAMPLE VOLUME (M3): 0
SAMPLE LOADING (UG/CM2): 49.9941
SAMPLE DATE (JULIAN): N/A
SAMPLE ID: 33 (FINE)

ELEMENT		DETN LIM	UG/CM2		2-SIGMA	
NA		.880854E-01	.510497	+-	.865698E-01	.845802
MG		.718407E-02	.104969	+-	.104741E-01	.923
AL		.180527E-01	.174824	+-	.122497E-01	.946499
SI		.477005E-01	.466514	+-	.277267E-01	.963233
P		.447385E-02	.02728	+-	.621309E-02	.973685
S		.236908E-01	1.29048	+-	.659528E-01	.975436
CL		.101488E-01	.67615	+-	.348301E-01	.980326
K		.105276E-01	.207331	+-	.108465E-01	.990634
CA		.243444E-02	.274762	+-	.162518E-01	.992487
TI		.24256E-02	.032612	+-	.40021E-02	.994761
V	D	.877568E-02	.014011	+-	.903501E-02	.996024
CR	X	.311489E-01	.027488	+-	.339834E-01	.997825
MN	D	.248791E-01	.277224E-01	+-	.280938E-01	.998277
FE		.105814E-01	.448326	+-	.03639	.99829
CO	X	.991389E-02	-.320738E-02	+-	.912985E-02	.998706
NI	X	.863102E-02	.312586E-02	+-	.833658E-02	.998821
CU	D	.996234E-02	.010878	+-	.100284E-01	.999097
ZN		.110836E-01	.896213E-01	+-	.146959E-01	.999235
AS		.137654E-01	.543629E-01	+-	.153871E-01	.999545
SE	X	.160098E-01	.135869E-01	+-	.156749E-01	.999637
BR	X	.444543E-01	.139349E-01	+-	.546984E-02	.999553
SR	X	.666623E-01	-.281736E-01	+-	.149117E-01	.999716
MO	X	.219186	-.101285	+-	.023556	.99985
CD	D	.153556E-02	.170868E-02	+-	.228771E-02	.986471
SN	X	.151308E-01	.146445E-01	+-	.015074	.992427
SB	X	.787202E-02	-.28785E-02	+-	.726226E-02	.99245
CS	X	.851838E-02	.721866E-03	+-	.807095E-02	.9943
BA		.79074E-02	.126501	+-	.014189	.994717
PT	X	.387464E-01	.442215E-02	+-	.367283E-01	.999462
HG	X	.048502	-.275444E-01	+-	.445238E-01	.999519
PB	X	.14107	.979138E-01	+-	.267111E-01	.999593

TOTAL DETECTED BY XRF = 4.53855

RUN DESCRIPTION: SCAQS2 - INTERCOMPARISON STUDY
DATE OF XRAY ANALYSIS: 06/23/87
SAMPLE TYPE: FILTER
SITE ID: N/A
MISCELLANEOUS INFO: NONE
SAMPLE SEQUENCE NO.: 5
SAMPLE VOLUME (M3): 0
SAMPLE LOADING (UG/CM2): 86.0606
SAMPLE DATE (JULIAN): N/A
SAMPLE ID: 35

ELEMENT		DETN LIM	UG/CM2		2-SIGMA	
NA		.988568E-01	1.6914	+-	.142079	.753644
MG		.76246E-02	.487846	+-	.299046E-01	.869672
AL		.188253E-01	1.0448	+-	.560437E-01	.907658
SI		.049171	2.88372	+-	.14849	.934428
P		.45906E-02	.885791E-01	+-	.912574E-02	.948922
S		.242715E-01	1.63543	+-	.832121E-01	.952101
CL		.103371E-01	1.34154	+-	.680915E-01	.962474
K		.106244E-01	.703007	+-	.355109E-01	.981612
CA		.230756E-02	1.49212	+-	.771707E-01	.984814
TI		.31645E-02	.153553	+-	.103133E-01	.988657
V	D	.852736E-02	.114335E-01	+-	.868121E-02	.991351
CR	X	.419376E-01	-.158116E-01	+-	.373684E-01	.995187
MN		.201795E-01	.624679E-01	+-	.301201E-01	.996189
FE		.113155E-01	1.92775	+-	.111883	.996145
CO	X	.970117E-02	-.818266E-03	+-	.908988E-02	.997073
NI	D	.934588E-02	.202059E-01	+-	.998746E-02	.997122
CU		.971068E-02	.383604E-01	+-	.112225E-01	.997786
ZN		.112131E-01	.168217	+-	.185853E-01	.998116
AS	D	.128484E-01	.381516E-01	+-	.138988E-01	.998873
SE	X	.147423E-01	.582929E-02	+-	.141685E-01	.999095
BR	X	.444831E-01	.352325E-01	+-	.576564E-02	.998904
SR	X	.666914E-01	-.20274E-02	+-	.149403E-01	.99928
MO	X	.219239	-.474404E-01	+-	.230262E-01	.999606
CD		.155566E-02	.594481E-02	+-	.236758E-02	.973731
SN	X	.142173E-01	.797653E-02	+-	.138764E-01	.984964
SB	D	.659572E-02	.856497E-02	+-	.67301E-02	.984995
CS	X	.762981E-02	.725671E-02	+-	.760598E-02	.987675
BA		.955024E-02	.174032	+-	.174119E-01	.988562
PT	X	.037167	.335505E-01	+-	.366121E-01	.998664
HG	X	.374578E-01	.204304E-01	+-	.036267	.998811
PB	D	.141154	.233688	+-	.291122E-01	.999003

TOTAL DETECTED BY XRF = 14.2108

RUN DESCRIPTION: SCA881 - INTERCOMPARISON STUDY
DATE OF XRAY ANALYSIS: 06/11/87
SAMPLE TYPE: FILTER
SITE ID: N/A
MISCELLANEOUS INFO: NONE
SAMPLE SEQUENCE NO.: 5
SAMPLE VOLUME (M3): 0
SAMPLE LOADING (UG/CM2): 84.1897
SAMPLE DATE (JULIAN): N/A
SAMPLE ID: 37 (PM-10)

ELEMENT		DETN LIM	UG/CM2		2-SIGMA	
NA		.982815E-01	1.67136	+-	.143174	.758055
MG		.760382E-02	.496901	+-	.304787E-01	.872049
AL		.187927E-01	1.12117	+-	.598241E-01	.90923
SI		.491262E-01	2.90575	+-	.149503	.93528
P		.458843E-02	.748389E-01	+-	.851351E-02	.94937
S		.024261	1.66116	+-	.844963E-01	.952511
CL		.103349E-01	2.30127	+-	.116054	.962679
K		.106327E-01	.698547	+-	.352907E-01	.980845
CA		.224075E-02	1.60874	+-	.830035E-01	.984189
TI		.264671E-02	.16875	+-	.109439E-01	.988135
V	D	.900952E-02	.161677E-01	+-	.935514E-02	.990945
CR	D	.244262E-01	.248546E-01	+-	.028202	.994951
MN	D	.214353E-01	.05971	+-	.304842E-01	.995998
FE		.109948E-01	2.06906	+-	.118964	.995937
CO	X	.100576E-01	-.105303E-02	+-	.941232E-02	.996916
NI	D	.966716E-02	.150108E-01	+-	.996506E-02	.996958
CU		.116485E-01	.571616E-01	+-	.138638E-01	.99766
ZN		.011816	.159239	+-	.184859E-01	.99801
AS	D	.142617E-01	.421962E-01	+-	.152508E-01	.99881
SE	X	.168818E-01	-.568626E-02	+-	.156883E-01	.999045
BR	X	.444858E-01	.277811E-01	+-	.576834E-02	.998844
SR	X	.666938E-01	-.828393E-02	+-	.152157E-01	.999245
MO	X	.219243	-.657855E-01	+-	.023741	.99959
CD	D	.15574E-02	.294167E-02	+-	.238572E-02	.97264
SN	D	.139398E-01	.196716E-01	+-	.143211E-01	.984319
SB	X	.726991E-02	.67075E-02	+-	.725567E-02	.984344
CS	X	.869454E-02	-.181583E-02	+-	.809847E-02	.987111
BA		.875115E-02	.183646	+-	.175198E-01	.988035
PT	X	.385849E-01	.032346	+-	.378391E-01	.998587
HG	X	.493678E-01	.193205E-01	+-	.473809E-01	.998745
PB	D	.141162	.201576	+-	.028847	.998947

TOTAL DETECTED BY XRF = 15.5597

RUN DESCRIPTION: SCAQS2 - INTERCOMPARISON STUDY
DATE OF XRAY ANALYSIS: 06/23/87
SAMPLE TYPE: FILTER
SITE ID: N/A
MISCELLANEOUS INFO: NONE
SAMPLE SEQUENCE NO.: 3
SAMPLE VOLUME (M3): 0
SAMPLE LOADING (UG/CM2): 39.4964
SAMPLE DATE (JULIAN): N/A
SAMPLE ID: S4

ELEMENT		DETN LIM	UG/CM2		2-SIGMA	
NA	D	.852053E-01	.171481	+-	.685507E-01	.874392
MG		.706288E-02	.076639	+-	.854825E-02	.938837
AL		.178405E-01	.133546	+-	.102871E-01	.957759
SI		.473142E-01	.35125	+-	.02254	.971097
P		.444769E-02	.168157E-01	+-	.567125E-02	.979412
S		.235611E-01	1.1647	+-	.596683E-01	.980809
CL		.101068E-01	.407241E-01	+-	.397485E-02	.984402
K		.105021E-01	.102176	+-	.573708E-02	.993038
CA		.202471E-02	.258854	+-	.153975E-01	.994463
TI		.221024E-02	.404145E-01	+-	.429943E-02	.996095
V	X	.998588E-02	-.406235E-02	+-	.921983E-02	.997044
CR		.365477E-01	.14187	+-	.523097E-01	.998385
MN	X	.240583E-01	.144103E-01	+-	.252631E-01	.998738
FE		.111675E-01	.337516	+-	.030645	.998702
CO	X	.102334E-01	-.562629E-03	+-	.961146E-02	.999022
NI	D	.961136E-02	.013964	+-	.985628E-02	.999109
CU	D	.111666E-01	.179187E-01	+-	.011383	.999318
ZN		.115616E-01	.676845E-01	+-	.139904E-01	.99942
AS	D	.138922E-01	.366945E-01	+-	.146986E-01	.999654
SE	X	.162883E-01	.820816E-02	+-	.157007E-01	.999724
BR	X	.444495E-01	.296101E-01	+-	.552962E-02	.999661
SR	X	.666578E-01	.268309E-01	+-	.149349E-01	.999785
MO	X	.219178	.918737E-01	+-	.235832E-01	.999886
CD	D	.15302E-02	.237249E-02	+-	.212642E-02	.989928
SN	D	.123635E-01	.214195E-01	+-	.130715E-01	.994373
SB	X	.561181E-02	.304231E-02	+-	.550297E-02	.994392
CS	X	.78645E-02	.409405E-02	+-	.763955E-02	.995753
BA	D	.759468E-02	.196055E-01	+-	.82823E-02	.996063
PT	X	.384264E-01	.036654	+-	.03789	.999591
HG	X	.396774E-01	.113468E-01	+-	.379065E-01	.999635
PB	X	.141056	.110465	+-	.262961E-01	.999692

TOTAL DETECTED BY XRF = 3.01565

RUN DESCRIPTION: SCA081 - INTERCOMPARISON STUDY
DATE OF XRAY ANALYSIS: 06/11/87
SAMPLE TYPE: FILTER
SITE ID: N/A
MISCELLANEOUS INFO: NONE
SAMPLE SEQUENCE NO.: 3
SAMPLE VOLUME (M3): 0
SAMPLE LOADING (UG/CM2): 37.2098
SAMPLE DATE (JULIAN): N/A
SAMPLE ID: 55 (FINE)

ELEMENT		DETN LIM	UG/CM2		2-SIGMA	
NA	D	.845233E-01	.165234	+-	.714348E-01	.881447
MG		.703646E-02	.751674E-01	+-	.885358E-02	.942364
AL		.177943E-01	.136071	+-	.102385E-01	.960247
SI		.472319E-01	.353317	+-	.221187E-01	.972789
P		.444243E-02	.216605E-01	+-	.593102E-02	.980571
S		.235355E-01	1.17563	+-	.602118E-01	.981876
CL		.100993E-01	.769103E-01	+-	.533885E-02	.985132
K		.010499	.110304	+-	.613378E-02	.993336
CA		.216393E-02	.219125	+-	.134161E-01	.994693
TI		.224639E-02	.322894E-01	+-	.38894E-02	.996292
V	X	.857889E-02	.271587E-02	+-	.82398E-02	.997195
CR	D	.267947E-01	.463703E-01	+-	.336654E-01	.998472
MN	D	.021375	.274201E-01	+-	.253464E-01	.998807
FE		.113372E-01	.313073	+-	.293827E-01	.998805
CO	X	.009544	-.513607E-02	+-	.863551E-02	.999093
NI	X	.865733E-02	-.750717E-02	+-	.767748E-02	.999174
CU		.979565E-02	.609126E-01	+-	.127296E-01	.999367
ZN		.010045	.653276E-01	+-	.127882E-01	.999464
AS	D	.129667E-01	.218863E-01	+-	.132357E-01	.999675
SE	X	.015488	-.108375E-01	+-	.141293E-01	.999741
BR	X	.444485E-01	-.276995E-01	+-	.535074E-02	.999684
SR	X	.666568E-01	-.551081E-01	+-	.148321E-01	.999799
MO	X	.219176	-.184382	+-	.243027E-01	.999894
CD		.152954E-02	.612115E-02	+-	.251689E-02	.990355
SN	X	.132168E-01	.360097E-02	+-	.126885E-01	.994617
SB	X	.660423E-02	.459314E-02	+-	.652577E-02	.994636
CS	X	.81198E-02	.393503E-02	+-	.788166E-02	.995964
BA	D	.772474E-02	.138084E-01	+-	.806486E-02	.996262
PT	X	.343249E-01	.12974E-02	+-	.324273E-01	.999616
HG	X	.444656E-01	-.033235	+-	.403341E-01	.999657
PB	X	.141054	-.767773E-01	+-	.256276E-01	.999713

TOTAL DETECTED BY XRF = 2.92063

RUN DESCRIPTION: SCA032 - INTERCOMPARISON STUDY
DATE OF XRAY ANALYSIS: 06/23/87
SAMPLE TYPE: FILTER
SITE ID: N/A
MISCELLANEOUS INFO: NONE
SAMPLE SEQUENCE NO.: 6
SAMPLE VOLUME (M3): 0
SAMPLE LOADING (UG/CM2): 56.2304
SAMPLE DATE (JULIAN): N/A
SAMPLE ID: 58

ELEMENT		DETN LIM	UG/CM2		2-SIGMA	
NA		.900133E-01	.750062	+-	.945072E-01	.827687
MG		.72631E-02	.26959	+-	.186324E-01	.912957
AL		.181942E-01	.547481	+-	.310498E-01	.939139
SI		.479908E-01	1.53908	+-	.812718E-01	.957406
P		.450203E-02	.499217E-01	+-	.721939E-02	.967591
S		.238315E-01	1.43659	+-	.732553E-01	.969678
CL		.101946E-01	.143387	+-	.853802E-02	.975922
K		.105453E-01	.361614	+-	.184845E-01	.988967
CA		.231415E-02	1.00363	+-	.527235E-01	.990961
TI		.234384E-02	.169606	+-	.109154E-01	.993203
V	X	.94194E-02	-.250803E-02	+-	.875266E-02	.994833
CR	D	.527633E-01	.945585E-01	+-	.591366E-01	.997122
MN	X	.256174E-01	.845519E-02	+-	.256101E-01	.997741
FE		.011298	1.13951	+-	.072089	.99769
CO	X	.972442E-02	.367156E-02	+-	.941878E-02	.998259
NI	D	.96365E-02	.208702E-01	+-	.102659E-01	.998292
CU		.98038E-02	.334382E-01	+-	.110324E-01	.998689
ZN		.112428E-01	.080318	+-	.143599E-01	.998885
AS	D	.144011E-01	.332903E-01	+-	.149815E-01	.999338
SE	X	.167764E-01	.81058E-02	+-	.016147	.999471
BR	X	.044463	.156583E-01	+-	.53551E-02	.999357
SR	X	.666706E-01	.278547E-02	+-	.147909E-01	.999592
MO	X	.2192	.209991E-01	+-	.229707E-01	.999785
CD	D	.153913E-02	.312483E-02	+-	.218226E-02	.984186
SN	X	.144062E-01	.114533E-01	+-	.142465E-01	.991
SB	X	.683771E-02	-.169518E-02	+-	.634819E-02	.991023
CS	X	.791248E-02	-.120988E-02	+-	.73935E-02	.992607
BA		.78709E-02	.351586E-01	+-	.935907E-02	.993145
PT	X	.403949E-01	-.114363E-01	+-	.037595	.999211
HG	X	.413909E-01	-.229094E-01	+-	.380656E-01	.999302
PB	X	.141096	.101174	+-	.262888E-01	.999415

TOTAL DETECTED BY XRF = 7.71123

RUN DESCRIPTION: SCAQS1 - INTERCOMPARISON STUDY
DATE OF XRAY ANALYSIS: 06/11/87
SAMPLE TYPE: FILTER
SITE ID: N/A
MISCELLANEOUS INFO: NONE
SAMPLE SEQUENCE NO.: 6
SAMPLE VOLUME (M3): 0
SAMPLE LOADING (UG/CM2): 51.969
SAMPLE DATE (JULIAN): N/A
SAMPLE ID: 60 (PM-10)

ELEMENT		DETN LIM	UG/CM2		2-SIGMA	
NA		.887698E-01	.75301	+-	.966652E-01	.839281
MG		.72159E-02	.277423	+-	.191886E-01	.918929
AL		.181141E-01	.591015	+-	.331569E-01	.94329
SI		.478538E-01	1.66241	+-	.872724E-01	.960147
P		.449438E-02	.400457E-01	+-	.680649E-02	.969237
S		.237937E-01	1.38646	+-	.707506E-01	.971219
CL		.101826E-01	.323879	+-	.173031E-01	.977075
K		.105416E-01	.355863	+-	.182024E-01	.989314
CA		.218114E-02	.995693	+-	.523209E-01	.991232
TI		.248092E-02	.160355	+-	.104779E-01	.993382
V	D	.829713E-02	.103041E-01	+-	.841413E-02	.994964
CR	D	.284677E-01	.476049E-01	+-	.350644E-01	.997191
MN	D	.182397E-01	.403622E-01	+-	.254015E-01	.997787
FE		.968216E-02	1.20079	+-	.749925E-01	.997747
CO	X	.882833E-02	.123171E-02	+-	.841629E-02	.998291
NI	D	.810443E-02	.900262E-02	+-	.824445E-02	.998304
CU		.100139E-01	.426458E-01	+-	.118723E-01	.998697
ZN		.101048E-01	.091959	+-	.141735E-01	.998892
AS	D	.136048E-01	.311972E-01	+-	.142105E-01	.999339
SE	X	.016268	-.129785E-01	+-	.147997E-01	.999472
BR	X	.444629E-01	-.157291E-01	+-	.533455E-02	.999359
SR	X	.666706E-01	-.447067E-01	+-	.149116E-01	.999592
MO	X	.2192	-.182218	+-	.244076E-01	.999785
CD	X	.153834E-02	.147152E-02	+-	.22788E-02	.98469
SN	X	.132623E-01	.13896E-02	+-	.125918E-01	.991276
SB	D	.655524E-02	.840121E-02	+-	.672901E-02	.991296
CS	X	.887709E-02	-.273982E-02	+-	.82242E-02	.992805
BA		.860196E-02	.282075E-01	+-	.955887E-02	.993326
PT	X	.359105E-01	-.513425E-02	+-	.336089E-01	.999215
HG	X	.465961E-01	-.134007E-01	+-	.433195E-01	.999303
PB	X	.141095	-.362585E-01	+-	.257221E-01	.999416

TOTAL DETECTED BY XRF = 8.05663

NEA XRF DATA

261/05-5 PROTOCOL: 5

SAMPLE ID: ML304
PARTICLE SIZE: N
ANALYSIS ID: ML304
FIELD BLANK
EXPOSED AREA: 9.62 SQUARE CM

ELEMENT	UG/CM2		UG/FILTER	
AL	0.0806+-	0.0098	0.775+-	0.094
SI	0.2660+-	0.0157	2.559+-	0.151
P	0.0017+-	0.0019	0.016+-	0.018
S	0.0223+-	0.0140	0.215+-	0.135
CL	0.0066+-	0.0063	0.063+-	0.061
K	0.0230+-	0.0034	0.221+-	0.033
CA	0.0485+-	0.0038	0.467+-	0.037
TI	0.0064+-	0.0012	0.062+-	0.012
V	0.0018+-	0.0008	0.017+-	0.008
CR	0.0017+-	0.0008	0.016+-	0.008
MN	0.0027+-	0.0010	0.026+-	0.010
FE	0.1067+-	0.0064	1.026+-	0.062
NI	0.0005+-	0.0008	0.005+-	0.008
CU	0.0035+-	0.0010	0.034+-	0.010
ZN	0.0053+-	0.0008	0.051+-	0.008
GA	0.0002+-	0.0006	0.002+-	0.006
AS	0.0000+-	0.0022	0.000+-	0.021
SE	0.0010+-	0.0007	0.010+-	0.007
BR	0.0023+-	0.0013	0.022+-	0.013
RB	0.0000+-	0.0012	0.000+-	0.012
SR	0.0000+-	0.0015	0.000+-	0.014
Y	0.0000+-	0.0019	0.000+-	0.018
ZR	0.0000+-	0.0079	0.000+-	0.076
MO	0.0000+-	0.0054	0.000+-	0.052
PD	0.0000+-	0.0052	0.000+-	0.050
AG	0.0000+-	0.0068	0.000+-	0.065
CD	0.0000+-	0.0087	0.000+-	0.084
IN	0.0000+-	0.0110	0.000+-	0.106
SN	0.0000+-	0.0134	0.000+-	0.129
SB	0.0000+-	0.0301	0.000+-	0.290
BA	0.0000+-	0.0566	0.000+-	0.544
LA	0.0000+-	0.1017	0.000+-	0.978
HG	0.0000+-	0.0011	0.000+-	0.011
PB	0.0068+-	0.0035	0.065+-	0.034

261/05-5 PROTOCOL: 5

SAMPLE ID: ML307
PARTICLE SIZE: N
ANALYSIS ID: ML307
FIELD BLANK
EXPOSED AREA: 9.62 SQUARE CM

ELEMENT	UG/CM2		UG/FILTER	
AL	0.0000+-	0.0060	0.000+-	0.058
SI	0.0091+-	0.0046	0.088+-	0.044
P	0.0004+-	0.0012	0.004+-	0.012
S	0.0000+-	0.0103	0.000+-	0.099
CL	0.0139+-	0.0052	0.134+-	0.050
K	0.0014+-	0.0020	0.013+-	0.019
CA	0.0018+-	0.0014	0.017+-	0.013
TI	0.0000+-	0.0007	0.000+-	0.007
V	0.0004+-	0.0006	0.004+-	0.006
CR	0.0004+-	0.0006	0.004+-	0.006
MN	0.0005+-	0.0008	0.005+-	0.008
FE	0.0051+-	0.0017	0.049+-	0.016
NI	0.0009+-	0.0006	0.009+-	0.006
CU	0.0657+-	0.0038	0.632+-	0.037
ZN	0.0388+-	0.0024	0.373+-	0.023
GA	0.0000+-	0.0005	0.000+-	0.005
AS	0.0000+-	0.0016	0.000+-	0.015
SE	0.0004+-	0.0006	0.004+-	0.006
BR	0.0011+-	0.0008	0.011+-	0.008
RB	0.0000+-	0.0010	0.000+-	0.010
SR	0.0000+-	0.0012	0.000+-	0.012
Y	0.0000+-	0.0015	0.000+-	0.014
ZR	0.0000+-	0.0063	0.000+-	0.061
MO	0.0000+-	0.0040	0.000+-	0.038
PD	0.0000+-	0.0042	0.000+-	0.040
AG	0.0000+-	0.0054	0.000+-	0.052
CD	0.0000+-	0.0069	0.000+-	0.066
IN	0.0000+-	0.0085	0.000+-	0.082
SN	0.0000+-	0.0105	0.000+-	0.101
SB	0.0000+-	0.0238	0.000+-	0.229
BA	0.0000+-	0.0439	0.000+-	0.422
LA	0.0000+-	0.0792	0.000+-	0.762
HG	0.0000+-	0.0008	0.000+-	0.008
PB	0.0071+-	0.0027	0.068+-	0.026

261/05 -1 PROTOCOL: 5

SAMPLE ID: MK949
PARTICLE SIZE: N
ANALYSIS ID: MK949
FIELD BLANK
EXPOSED AREA: 9.62 SQUARE CM

ELEMENT	UG/CM2		UG/FILTER	
AL	0.1115+-	0.0098	1.073+-	0.094
SI	0.3061+-	0.0173	2.945+-	0.166
P	0.0017+-	0.0017	0.016+-	0.016
S	0.0520+-	0.0123	0.500+-	0.118
CL	0.0210+-	0.0057	0.202+-	0.055
K	0.0243+-	0.0031	0.234+-	0.030
CA	0.0514+-	0.0038	0.494+-	0.037
TI	0.0070+-	0.0011	0.067+-	0.011
V	0.0006+-	0.0007	0.006+-	0.007
CR	0.0020+-	0.0007	0.019+-	0.007
MN	0.0030+-	0.0009	0.029+-	0.009
FE	0.1279+-	0.0073	1.230+-	0.070
NI	0.0005+-	0.0006	0.005+-	0.006
CU	0.0530+-	0.0031	0.510+-	0.030
ZN	0.0357+-	0.0023	0.343+-	0.022
GA	0.0000+-	0.0005	0.000+-	0.005
AS	0.0000+-	0.0018	0.000+-	0.017
SE	0.0000+-	0.0006	0.000+-	0.006
BR	0.0000+-	0.0008	0.000+-	0.008
RB	0.0000+-	0.0010	0.000+-	0.010
SR	0.0000+-	0.0012	0.000+-	0.012
Y	0.0000+-	0.0015	0.000+-	0.014
ZR	0.0000+-	0.0067	0.000+-	0.064
MO	0.0000+-	0.0042	0.000+-	0.040
PD	0.0000+-	0.0043	0.000+-	0.041
AG	0.0000+-	0.0055	0.000+-	0.053
CD	0.0000+-	0.0074	0.000+-	0.071
IN	0.0000+-	0.0092	0.000+-	0.089
SN	0.0000+-	0.0112	0.000+-	0.108
SB	0.0000+-	0.0247	0.000+-	0.238
BA	0.0000+-	0.0458	0.000+-	0.441
LA	0.0000+-	0.0827	0.000+-	0.796
HG	0.0000+-	0.0008	0.000+-	0.008
PB	0.0129+-	0.0029	0.124+-	0.028

261/05 -1 PROTOCOL: 5

SAMPLE ID: MK950
PARTICLE SIZE: N
ANALYSIS ID: MK950
FIELD BLANK
EXPOSED AREA: 9.62 SQUARE CM

ELEMENT	UG/CM2		UG/FILTER	
AL	0.0363+-	0.0067	0.349+-	0.064
SI	0.0351+-	0.0051	0.338+-	0.049
P	0.0014+-	0.0014	0.013+-	0.013
S	0.0140+-	0.0101	0.135+-	0.097
CL	0.0027+-	0.0046	0.026+-	0.044
K	0.0047+-	0.0021	0.045+-	0.020
CA	0.0102+-	0.0018	0.098+-	0.017
TI	0.0018+-	0.0008	0.017+-	0.008
V	0.0000+-	0.0006	0.000+-	0.006
CR	0.0009+-	0.0006	0.009+-	0.006
MN	0.0005+-	0.0007	0.005+-	0.007
FE	0.0177+-	0.0021	0.170+-	0.020
NI	0.0006+-	0.0006	0.006+-	0.006
CU	0.0021+-	0.0008	0.020+-	0.008
ZN	0.0010+-	0.0005	0.010+-	0.005
GA	0.0011+-	0.0005	0.011+-	0.005
AS	0.0000+-	0.0014	0.000+-	0.013
SE	0.0000+-	0.0005	0.000+-	0.005
BR	0.0000+-	0.0007	0.000+-	0.007
RB	0.0000+-	0.0009	0.000+-	0.009
SR	0.0000+-	0.0011	0.000+-	0.011
Y	0.0000+-	0.0014	0.000+-	0.013
ZR	0.0000+-	0.0063	0.000+-	0.061
MO	0.0000+-	0.0038	0.000+-	0.037
PD	0.0000+-	0.0041	0.000+-	0.039
AG	0.0000+-	0.0051	0.000+-	0.049
CD	0.0000+-	0.0066	0.000+-	0.063
IN	0.0000+-	0.0085	0.000+-	0.082
SN	0.0000+-	0.0099	0.000+-	0.095
SB	0.0000+-	0.0229	0.000+-	0.220
BA	0.0000+-	0.0428	0.000+-	0.412
LA	0.0000+-	0.0779	0.000+-	0.749
HG	0.0000+-	0.0008	0.000+-	0.008
PB	0.0000+-	0.0024	0.000+-	0.023

261/06 PROTOCOL: 6

SAMPLE ID: 18
PARTICLE SIZE: F
ANALYSIS ID: MK943

EXPOSED AREA: 9.62 SQUARE CM
MASS OF DEPOSIT: 276+- 10 MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	0.1673+-	0.0251	1.609+-	0.241	0.583+-	0.090
SI	0.4964+-	0.0745	4.775+-	0.717	1.730+-	0.267
P	0.0122+-	0.0061	0.117+-	0.059	0.043+-	0.021
S	0.4161+-	0.0299	4.003+-	0.288	1.450+-	0.117
CL	0.0300+-	0.0070	0.289+-	0.067	0.105+-	0.025
K	0.1224+-	0.0075	1.177+-	0.072	0.427+-	0.030
CA	0.2125+-	0.0116	2.044+-	0.112	0.741+-	0.049
TI	0.0459+-	0.0029	0.442+-	0.028	0.160+-	0.012
V	0.0050+-	0.0011	0.048+-	0.011	0.017+-	0.004
CR	0.0036+-	0.0008	0.035+-	0.008	0.013+-	0.003
MN	0.0157+-	0.0014	0.151+-	0.013	0.055+-	0.005
FE	0.2963+-	0.0155	2.850+-	0.149	1.033+-	0.066
NI	0.0050+-	0.0008	0.048+-	0.008	0.017+-	0.003
CU	0.0167+-	0.0013	0.161+-	0.013	0.058+-	0.005
ZN	0.0278+-	0.0018	0.267+-	0.017	0.097+-	0.007
GA	0.0000+-	0.0006	0.000+-	0.006	0.000+-	0.002
AS	0.0000+-	0.0048	0.000+-	0.046	0.000+-	0.017
SE	0.0014+-	0.0006	0.013+-	0.006	0.005+-	0.002
BR	0.0128+-	0.0012	0.123+-	0.012	0.045+-	0.004
RB	0.0026+-	0.0011	0.025+-	0.011	0.009+-	0.004
SR	0.0059+-	0.0014	0.057+-	0.013	0.021+-	0.005
Y	0.0000+-	0.0017	0.000+-	0.016	0.000+-	0.006
ZR	0.0000+-	0.0071	0.000+-	0.068	0.000+-	0.025
MO	0.0000+-	0.0047	0.000+-	0.045	0.000+-	0.016
PD	0.0000+-	0.0047	0.000+-	0.045	0.000+-	0.016
AG	0.0000+-	0.0060	0.000+-	0.058	0.000+-	0.021
CD	0.0000+-	0.0079	0.000+-	0.076	0.000+-	0.028
IN	0.0000+-	0.0098	0.000+-	0.094	0.000+-	0.034
SN	0.0000+-	0.0121	0.000+-	0.116	0.000+-	0.042
SB	0.0000+-	0.0268	0.000+-	0.258	0.000+-	0.093
BA	0.0000+-	0.0502	0.000+-	0.483	0.000+-	0.175
LA	0.0000+-	0.0903	0.000+-	0.869	0.000+-	0.315
HG	0.0002+-	0.0009	0.002+-	0.009	0.001+-	0.003
PB	0.0799+-	0.0053	0.769+-	0.051	0.278+-	0.021

261/05 PROTOCOL: 6

SAMPLE ID: 19
PARTICLE SIZE: F
ANALYSIS ID: ML300

EXPOSED AREA: 9.62 SQUARE CM
MASS OF DEPOSIT: 284+- 10 MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	0.1498+-	0.0225	1.441+-	0.216	0.507+-	0.078
SI	0.4513+-	0.0677	4.342+-	0.651	1.529+-	0.236
P	0.0097+-	0.0061	0.093+-	0.059	0.033+-	0.021
S	0.4608+-	0.0299	4.433+-	0.288	1.561+-	0.115
CL	0.0415+-	0.0064	0.399+-	0.062	0.141+-	0.022
K	0.1189+-	0.0073	1.144+-	0.070	0.403+-	0.029
CA	0.2021+-	0.0110	1.944+-	0.106	0.685+-	0.044
TI	0.0453+-	0.0028	0.436+-	0.027	0.153+-	0.011
V	0.0061+-	0.0010	0.059+-	0.010	0.021+-	0.003
CR	0.0034+-	0.0012	0.033+-	0.012	0.012+-	0.004
MN	0.0153+-	0.0012	0.147+-	0.012	0.052+-	0.004
FE	0.2886+-	0.0151	2.776+-	0.145	0.978+-	0.062
NI	0.0037+-	0.0007	0.036+-	0.007	0.013+-	0.002
CU	0.0096+-	0.0010	0.092+-	0.010	0.033+-	0.004
ZN	0.0230+-	0.0015	0.221+-	0.014	0.078+-	0.006
GA	0.0004+-	0.0006	0.004+-	0.006	0.001+-	0.002
AS	0.0008+-	0.0046	0.008+-	0.044	0.003+-	0.016
SE	0.0010+-	0.0006	0.010+-	0.006	0.003+-	0.002
BR	0.0124+-	0.0011	0.119+-	0.011	0.042+-	0.004
RB	0.0020+-	0.0010	0.019+-	0.010	0.007+-	0.003
SR	0.0045+-	0.0012	0.043+-	0.012	0.015+-	0.004
Y	0.0000+-	0.0015	0.000+-	0.014	0.000+-	0.005
ZR	0.0000+-	0.0061	0.000+-	0.059	0.000+-	0.021
MO	0.0000+-	0.0041	0.000+-	0.039	0.000+-	0.014
PD	0.0000+-	0.0041	0.000+-	0.039	0.000+-	0.014
AG	0.0000+-	0.0052	0.000+-	0.050	0.000+-	0.018
CD	0.0000+-	0.0069	0.000+-	0.066	0.000+-	0.023
IN	0.0000+-	0.0086	0.000+-	0.083	0.000+-	0.029
SN	0.0000+-	0.0104	0.000+-	0.100	0.000+-	0.035
SB	0.0000+-	0.0233	0.000+-	0.224	0.000+-	0.079
BA	0.0000+-	0.0439	0.000+-	0.422	0.000+-	0.149
LA	0.0000+-	0.0781	0.000+-	0.751	0.000+-	0.265
HG	0.0005+-	0.0008	0.005+-	0.008	0.002+-	0.003
PB	0.0782+-	0.0051	0.752+-	0.049	0.265+-	0.020

261/05 PROTOCOL: 6

SAMPLE ID: 23
PARTICLE SIZE: T
ANALYSIS ID: ML301

EXPOSED AREA: 9.62 SQUARE CM
MASS OF DEPOSIT: 294+- 10 MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	0.5007+-	0.0751	4.817+-	0.722	1.638+-	0.252
SI	1.6384+-	0.2458	15.761+-	2.365	5.361+-	0.825
P	0.0163+-	0.0111	0.157+-	0.107	0.053+-	0.036
S	0.5017+-	0.0375	4.826+-	0.361	1.642+-	0.135
CL	0.3868+-	0.0245	3.721+-	0.236	1.266+-	0.091
K	0.2688+-	0.0153	2.586+-	0.147	0.880+-	0.058
CA	0.6269+-	0.0325	6.031+-	0.313	2.051+-	0.127
TI	0.1395+-	0.0075	1.342+-	0.072	0.456+-	0.029
V	0.0087+-	0.0019	0.084+-	0.018	0.028+-	0.006
CR	0.0055+-	0.0009	0.053+-	0.009	0.018+-	0.003
MN	0.0241+-	0.0017	0.232+-	0.016	0.079+-	0.006
FE	0.9055+-	0.0461	8.711+-	0.443	2.963+-	0.181
NI	0.0055+-	0.0008	0.053+-	0.008	0.018+-	0.003
CU	0.0223+-	0.0015	0.215+-	0.014	0.073+-	0.005
ZN	0.0461+-	0.0026	0.443+-	0.025	0.151+-	0.010
GA	0.0004+-	0.0006	0.004+-	0.006	0.001+-	0.002
AS	0.0000+-	0.0059	0.000+-	0.057	0.000+-	0.019
SE	0.0014+-	0.0005	0.013+-	0.005	0.005+-	0.002
BR	0.0153+-	0.0012	0.147+-	0.012	0.050+-	0.004
RB	0.0024+-	0.0010	0.023+-	0.010	0.008+-	0.003
SR	0.0084+-	0.0013	0.081+-	0.013	0.027+-	0.004
Y	0.0001+-	0.0015	0.001+-	0.014	0.000+-	0.005
ZR	0.0000+-	0.0059	0.000+-	0.057	0.000+-	0.019
MO	0.0006+-	0.0039	0.006+-	0.038	0.002+-	0.013
PD	0.0000+-	0.0039	0.000+-	0.038	0.000+-	0.013
AG	0.0000+-	0.0066	0.000+-	0.063	0.000+-	0.022
CD	0.0000+-	0.0066	0.000+-	0.063	0.000+-	0.022
IN	0.0000+-	0.0082	0.000+-	0.079	0.000+-	0.027
SN	0.0000+-	0.0101	0.000+-	0.097	0.000+-	0.033
SB	0.0000+-	0.0225	0.000+-	0.216	0.000+-	0.074
BA	0.0000+-	0.0430	0.000+-	0.414	0.000+-	0.141
LA	0.0000+-	0.0756	0.000+-	0.727	0.000+-	0.247
HG	0.0009+-	0.0008	0.009+-	0.008	0.003+-	0.003
PB	0.1023+-	0.0061	0.984+-	0.059	0.335+-	0.023

261/06 PROTOCOL: 6

SAMPLE ID: 22
PARTICLE SIZE: T
ANALYSIS ID: MK944

EXPOSED AREA: 9.62 SQUARE CM
MASS OF DEPOSIT: 306+- 10 MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	0.5601+-	0.0840	5.388+-	0.808	1.761+-	0.270
SI	1.9501+-	0.2925	18.760+-	2.814	6.131+-	0.941
P	0.0128+-	0.0125	0.123+-	0.120	0.040+-	0.039
S	0.5845+-	0.0428	5.623+-	0.412	1.838+-	0.147
CL	0.4839+-	0.0297	4.655+-	0.286	1.521+-	0.106
K	0.3122+-	0.0174	3.003+-	0.167	0.981+-	0.063
CA	0.7110+-	0.0367	6.840+-	0.353	2.235+-	0.137
TI	0.1686+-	0.0090	1.622+-	0.087	0.530+-	0.033
V	0.0075+-	0.0021	0.072+-	0.020	0.024+-	0.007
CR	0.0049+-	0.0009	0.047+-	0.009	0.015+-	0.003
MN	0.0260+-	0.0019	0.250+-	0.018	0.082+-	0.007
FE	1.0468+-	0.0532	10.070+-	0.512	3.291+-	0.199
NI	0.0082+-	0.0009	0.079+-	0.009	0.026+-	0.003
CU	0.0252+-	0.0016	0.242+-	0.015	0.079+-	0.006
ZN	0.0538+-	0.0030	0.518+-	0.029	0.169+-	0.011
GA	0.0005+-	0.0006	0.005+-	0.006	0.002+-	0.002
AS	0.0005+-	0.0066	0.005+-	0.063	0.002+-	0.021
SE	0.0007+-	0.0005	0.007+-	0.005	0.002+-	0.002
BR	0.0176+-	0.0012	0.169+-	0.012	0.055+-	0.004
RB	0.0030+-	0.0010	0.029+-	0.010	0.009+-	0.003
SR	0.0101+-	0.0013	0.097+-	0.013	0.032+-	0.004
Y	0.0000+-	0.0015	0.000+-	0.014	0.000+-	0.005
ZR	0.0000+-	0.0060	0.000+-	0.058	0.000+-	0.019
MO	0.0000+-	0.0039	0.000+-	0.038	0.000+-	0.012
PD	0.0000+-	0.0039	0.000+-	0.038	0.000+-	0.012
AG	0.0000+-	0.0050	0.000+-	0.048	0.000+-	0.016
CD	0.0814+-	0.0086	0.783+-	0.083	0.256+-	0.028
IN	0.0000+-	0.0080	0.000+-	0.077	0.000+-	0.025
SN	0.0057+-	0.0125	0.055+-	0.120	0.018+-	0.039
SB	0.0115+-	0.0222	0.111+-	0.214	0.036+-	0.070
BA	0.0000+-	0.0422	0.000+-	0.406	0.000+-	0.133
LA	0.0000+-	0.0744	0.000+-	0.716	0.000+-	0.234
HG	0.0005+-	0.0007	0.005+-	0.007	0.002+-	0.002
PB	0.1169+-	0.0067	1.125+-	0.064	0.368+-	0.024

261/06 PROTOCOL: 6

SAMPLE ID: 31
PARTICLE SIZE: F
ANALYSIS ID: MK945

EXPOSED AREA: 9.62 SQUARE CM
MASS OF DEPOSIT: 454+- 10 MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	0.2652+-	0.0398	2.551+-	0.383	0.562+-	0.085
SI	0.7312+-	0.1097	7.034+-	1.055	1.549+-	0.235
P	0.0091+-	0.0145	0.088+-	0.139	0.019+-	0.031
S	1.3253+-	0.0811	12.749+-	0.780	2.808+-	0.183
CL	0.3881+-	0.0259	3.734+-	0.249	0.822+-	0.058
K	0.2282+-	0.0135	2.195+-	0.130	0.484+-	0.031
CA	0.3823+-	0.0202	3.678+-	0.194	0.810+-	0.046
TI	0.0750+-	0.0057	0.722+-	0.055	0.159+-	0.013
V	0.0129+-	0.0020	0.124+-	0.019	0.027+-	0.004
CR	0.0054+-	0.0010	0.052+-	0.010	0.011+-	0.002
MN	0.0412+-	0.0025	0.396+-	0.024	0.087+-	0.006
FE	0.5556+-	0.0285	5.345+-	0.274	1.177+-	0.066
NI	0.0125+-	0.0011	0.120+-	0.011	0.026+-	0.002
CU	0.0653+-	0.0034	0.628+-	0.033	0.138+-	0.008
ZN	0.1454+-	0.0076	1.399+-	0.073	0.308+-	0.017
GA	0.0005+-	0.0009	0.005+-	0.009	0.001+-	0.002
AS	0.0011+-	0.0108	0.011+-	0.104	0.002+-	0.023
SE	0.0042+-	0.0007	0.040+-	0.007	0.009+-	0.001
BR	0.0431+-	0.0024	0.415+-	0.023	0.091+-	0.005
RB	0.0026+-	0.0012	0.025+-	0.012	0.006+-	0.003
SR	0.0087+-	0.0014	0.084+-	0.013	0.018+-	0.003
Y	0.0011+-	0.0017	0.011+-	0.016	0.002+-	0.004
ZR	0.0067+-	0.0066	0.064+-	0.063	0.014+-	0.014
MO	0.0000+-	0.0043	0.000+-	0.041	0.000+-	0.009
PD	0.0020+-	0.0044	0.019+-	0.042	0.004+-	0.009
AG	0.0000+-	0.0056	0.000+-	0.054	0.000+-	0.012
CD	0.2183+-	0.0147	2.100+-	0.141	0.463+-	0.033
IN	0.0000+-	0.0090	0.000+-	0.087	0.000+-	0.019
SN	0.0079+-	0.0155	0.076+-	0.149	0.017+-	0.033
SB	0.0000+-	0.0286	0.000+-	0.275	0.000+-	0.061
BA	0.1572+-	0.0477	1.512+-	0.459	0.333+-	0.101
LA	0.0000+-	0.0825	0.000+-	0.794	0.000+-	0.175
HG	0.0000+-	0.0008	0.000+-	0.008	0.000+-	0.002
PB	0.1949+-	0.0106	1.875+-	0.102	0.413+-	0.024

261/05 PROTOCOL: 6

SAMPLE ID: 33
PARTICLE SIZE: F
ANALYSIS ID: ML302

EXPOSED AREA: 9.62 SQUARE CM
MASS OF DEPOSIT: 481+- 10 MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	0.2470+-	0.0371	2.376+-	0.357	0.494+-	0.075
SI	0.7517+-	0.1128	7.231+-	1.085	1.503+-	0.228
P	0.0175+-	0.0143	0.168+-	0.138	0.035+-	0.029
S	1.3876+-	0.0781	13.349+-	0.751	2.775+-	0.167
CL	0.4833+-	0.0284	4.649+-	0.273	0.967+-	0.060
K	0.2570+-	0.0141	2.472+-	0.136	0.514+-	0.030
CA	0.3481+-	0.0184	3.349+-	0.177	0.696+-	0.040
TI	0.0749+-	0.0092	0.721+-	0.089	0.150+-	0.019
V	0.0167+-	0.0036	0.161+-	0.035	0.033+-	0.007
CR	0.0050+-	0.0010	0.048+-	0.010	0.010+-	0.002
MN	0.0382+-	0.0032	0.367+-	0.031	0.076+-	0.007
FE	0.5841+-	0.0299	5.619+-	0.288	1.168+-	0.065
NI	0.0090+-	0.0009	0.087+-	0.009	0.018+-	0.002
CU	0.0232+-	0.0015	0.223+-	0.014	0.046+-	0.003
ZN	0.1128+-	0.0060	1.085+-	0.058	0.226+-	0.013
GA	0.0003+-	0.0008	0.003+-	0.008	0.001+-	0.002
AS	0.0014+-	0.0103	0.013+-	0.099	0.003+-	0.021
SE	0.0039+-	0.0006	0.038+-	0.006	0.008+-	0.001
BR	0.0394+-	0.0023	0.379+-	0.022	0.079+-	0.005
RB	0.0015+-	0.0011	0.014+-	0.011	0.003+-	0.002
SR	0.0075+-	0.0012	0.072+-	0.012	0.015+-	0.002
Y	0.0003+-	0.0015	0.003+-	0.014	0.001+-	0.003
ZR	0.0000+-	0.0058	0.000+-	0.056	0.000+-	0.012
MO	0.0029+-	0.0056	0.028+-	0.054	0.006+-	0.011
PD	0.0000+-	0.0039	0.000+-	0.038	0.000+-	0.008
AG	0.0000+-	0.0050	0.000+-	0.048	0.000+-	0.010
CD	0.0000+-	0.0065	0.000+-	0.063	0.000+-	0.013
IN	0.0000+-	0.0081	0.000+-	0.078	0.000+-	0.016
SN	0.0056+-	0.0101	0.054+-	0.097	0.011+-	0.020
SB	0.0000+-	0.0222	0.000+-	0.214	0.000+-	0.044
BA	0.0873+-	0.0486	0.840+-	0.468	0.175+-	0.097
LA	0.0000+-	0.0748	0.000+-	0.720	0.000+-	0.150
HG	0.0000+-	0.0007	0.000+-	0.007	0.000+-	0.001
PB	0.1858+-	0.0101	1.787+-	0.097	0.372+-	0.022

261/06 PROTOCOL: 6

SAMPLE ID: 35
PARTICLE SIZE: T
ANALYSIS ID: MK946

EXPOSED AREA: 9.62 SQUARE CM
MASS OF DEPOSIT: 828+- 10 MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	1.7395+-	0.2609	16.734+-	2.510	2.021+-	0.304
SI	5.5543+-	0.8331	53.432+-	8.014	6.453+-	0.971
P	0.0151+-	0.0313	0.145+-	0.301	0.018+-	0.036
S	1.6458+-	0.1090	15.833+-	1.049	1.912+-	0.129
CL	2.4279+-	0.1274	23.356+-	1.226	2.821+-	0.152
K	0.9444+-	0.0487	9.085+-	0.468	1.097+-	0.058
CA	1.9308+-	0.0984	18.574+-	0.947	2.243+-	0.117
TI	0.2561+-	0.0182	2.464+-	0.175	0.298+-	0.021
V	0.0163+-	0.0057	0.157+-	0.055	0.019+-	0.007
CR	0.0158+-	0.0018	0.152+-	0.017	0.018+-	0.002
MN	0.0770+-	0.0045	0.741+-	0.043	0.089+-	0.005
FE	2.5986+-	0.1312	24.999+-	1.262	3.019+-	0.157
NI	0.0193+-	0.0014	0.186+-	0.013	0.022+-	0.002
CU	0.0497+-	0.0027	0.478+-	0.026	0.058+-	0.003
ZN	0.2010+-	0.0104	1.934+-	0.100	0.234+-	0.012
GA	0.0010+-	0.0013	0.010+-	0.013	0.001+-	0.002
AS	0.0038+-	0.0180	0.037+-	0.173	0.004+-	0.021
SE	0.0043+-	0.0007	0.041+-	0.007	0.005+-	0.001
BR	0.0593+-	0.0032	0.570+-	0.031	0.069+-	0.004
RB	0.0050+-	0.0013	0.048+-	0.013	0.006+-	0.002
SR	0.0267+-	0.0019	0.257+-	0.018	0.031+-	0.002
Y	0.0000+-	0.0018	0.000+-	0.017	0.000+-	0.002
ZR	0.0065+-	0.0107	0.063+-	0.103	0.008+-	0.012
MO	0.0013+-	0.0041	0.013+-	0.039	0.002+-	0.005
PD	0.0000+-	0.0041	0.000+-	0.039	0.000+-	0.005
AG	0.0000+-	0.0053	0.000+-	0.051	0.000+-	0.006
CD	0.0000+-	0.0108	0.000+-	0.104	0.000+-	0.013
IN	0.0000+-	0.0086	0.000+-	0.083	0.000+-	0.010
SN	0.0114+-	0.0187	0.110+-	0.180	0.013+-	0.022
SB	0.0065+-	0.0234	0.063+-	0.225	0.008+-	0.027
BA	0.2242+-	0.0467	2.157+-	0.449	0.260+-	0.054
LA	0.0000+-	0.1091	0.000+-	1.050	0.000+-	0.127
HG	0.0023+-	0.0009	0.022+-	0.009	0.003+-	0.001
PB	0.3304+-	0.0172	3.178+-	0.165	0.384+-	0.021

261/05 PROTOCOL: 6

SAMPLE ID: 37
PARTICLE SIZE: T
ANALYSIS ID: ML303

EXPOSED AREA: 9.62 SQUARE CM
MASS OF DEPOSIT: 810+- 10 MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	1.6907+-	0.2536	16.265+-	2.440	2.008+-	0.302
SI	5.1712+-	0.7757	49.747+-	7.462	6.142+-	0.924
P	0.0193+-	0.0315	0.186+-	0.303	0.023+-	0.037
S	1.7011+-	0.1096	16.365+-	1.054	2.020+-	0.133
CL	2.1782+-	0.1181	20.954+-	1.136	2.587+-	0.144
K	0.9344+-	0.0482	8.989+-	0.464	1.110+-	0.059
CA	1.9535+-	0.0995	18.793+-	0.957	2.320+-	0.122
TI	0.2591+-	0.0187	2.493+-	0.180	0.308+-	0.023
V	0.0174+-	0.0059	0.167+-	0.057	0.021+-	0.007
CR	0.0143+-	0.0018	0.138+-	0.017	0.017+-	0.002
MN	0.0731+-	0.0047	0.703+-	0.045	0.087+-	0.006
FE	2.6380+-	0.1331	25.378+-	1.280	3.133+-	0.163
NI	0.0171+-	0.0013	0.165+-	0.013	0.020+-	0.002
CU	0.0962+-	0.0048	0.925+-	0.046	0.114+-	0.006
ZN	0.2293+-	0.0118	2.206+-	0.114	0.272+-	0.014
GA	0.0000+-	0.0013	0.000+-	0.013	0.000+-	0.002
AS	0.0029+-	0.0184	0.028+-	0.177	0.003+-	0.022
SE	0.0049+-	0.0007	0.047+-	0.007	0.006+-	0.001
BR	0.0569+-	0.0031	0.547+-	0.030	0.068+-	0.004
RB	0.0047+-	0.0013	0.045+-	0.013	0.006+-	0.002
SR	0.0263+-	0.0019	0.253+-	0.018	0.031+-	0.002
Y	0.0000+-	0.0019	0.000+-	0.018	0.000+-	0.002
ZR	0.0000+-	0.0122	0.000+-	0.117	0.000+-	0.014
MO	0.0065+-	0.0092	0.063+-	0.089	0.008+-	0.011
PD	0.0000+-	0.0043	0.000+-	0.041	0.000+-	0.005
AG	0.0000+-	0.0056	0.000+-	0.054	0.000+-	0.007
CD	0.0000+-	0.0073	0.000+-	0.070	0.000+-	0.009
IN	0.0000+-	0.0089	0.000+-	0.086	0.000+-	0.011
SN	0.0276+-	0.0187	0.266+-	0.180	0.033+-	0.022
SB	0.0000+-	0.0247	0.000+-	0.238	0.000+-	0.029
BA	0.1914+-	0.0485	1.841+-	0.467	0.227+-	0.058
LA	0.0000+-	0.0819	0.000+-	0.788	0.000+-	0.097
HG	0.0024+-	0.0010	0.023+-	0.010	0.003+-	0.001
PB	0.3374+-	0.0176	3.246+-	0.169	0.401+-	0.021

261/06 PROTOCOL: 6

SAMPLE ID: 54
PARTICLE SIZE: F
ANALYSIS ID: MK947

EXPOSED AREA: 9.62 SQUARE CM
MASS OF DEPOSIT: 380+- 10 MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	0.2236+-	0.0335	2.151+-	0.322	0.566+-	0.086
SI	0.7115+-	0.1067	6.845+-	1.026	1.801+-	0.274
P	0.0025+-	0.0103	0.024+-	0.099	0.006+-	0.026
S	1.2660+-	0.0691	12.179+-	0.665	3.205+-	0.194
CL	0.0622+-	0.0085	0.598+-	0.082	0.157+-	0.022
K	0.1537+-	0.0090	1.479+-	0.087	0.389+-	0.025
CA	0.3274+-	0.0174	3.150+-	0.167	0.829+-	0.049
TI	0.0572+-	0.0034	0.550+-	0.033	0.145+-	0.009
V	0.0048+-	0.0011	0.046+-	0.011	0.012+-	0.003
CR	0.0059+-	0.0009	0.057+-	0.009	0.015+-	0.002
MN	0.0163+-	0.0014	0.157+-	0.013	0.041+-	0.004
FE	0.4269+-	0.0221	4.107+-	0.213	1.081+-	0.063
NI	0.0036+-	0.0008	0.035+-	0.008	0.009+-	0.002
CU	0.0696+-	0.0036	0.670+-	0.035	0.176+-	0.010
ZN	0.0943+-	0.0051	0.907+-	0.049	0.239+-	0.014
GA	0.0000+-	0.0006	0.000+-	0.006	0.000+-	0.002
AS	0.0000+-	0.0045	0.000+-	0.043	0.000+-	0.011
SE	0.0023+-	0.0006	0.022+-	0.006	0.006+-	0.002
BR	0.0170+-	0.0013	0.164+-	0.013	0.043+-	0.003
RB	0.0021+-	0.0011	0.020+-	0.011	0.005+-	0.003
SR	0.0061+-	0.0014	0.059+-	0.013	0.015+-	0.004
Y	0.0000+-	0.0017	0.000+-	0.016	0.000+-	0.004
ZR	0.0000+-	0.0069	0.000+-	0.066	0.000+-	0.017
MO	0.0044+-	0.0070	0.042+-	0.067	0.011+-	0.018
PD	0.0000+-	0.0045	0.000+-	0.043	0.000+-	0.011
AG	0.0000+-	0.0058	0.000+-	0.056	0.000+-	0.015
CD	0.0000+-	0.0077	0.000+-	0.074	0.000+-	0.019
IN	0.0000+-	0.0096	0.000+-	0.092	0.000+-	0.024
SN	0.0000+-	0.0117	0.000+-	0.113	0.000+-	0.030
SB	0.0000+-	0.0258	0.000+-	0.248	0.000+-	0.065
BA	0.0000+-	0.0484	0.000+-	0.466	0.000+-	0.123
LA	0.0000+-	0.0874	0.000+-	0.841	0.000+-	0.221
HG	0.0007+-	0.0009	0.007+-	0.009	0.002+-	0.002
PB	0.0747+-	0.0050	0.719+-	0.048	0.189+-	0.014

261/05 PROTOCOL: 6

SAMPLE ID: 55
PARTICLE SIZE: F
ANALYSIS ID: ML305

EXPOSED AREA: 9.62 SQUARE CM
MASS OF DEPOSIT: 358+- 10 MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	0.2146+-	0.0322	2.064+-	0.310	0.577+-	0.088
SI	0.6508+-	0.0976	6.261+-	0.939	1.749+-	0.267
P	0.0111+-	0.0100	0.107+-	0.096	0.030+-	0.027
S	1.2309+-	0.0669	11.841+-	0.644	3.308+-	0.202
CL	0.0632+-	0.0077	0.608+-	0.074	0.170+-	0.021
K	0.1492+-	0.0088	1.435+-	0.085	0.401+-	0.026
CA	0.2868+-	0.0153	2.759+-	0.147	0.771+-	0.046
TI	0.0559+-	0.0034	0.538+-	0.033	0.150+-	0.010
V	0.0034+-	0.0010	0.033+-	0.010	0.009+-	0.003
CR	0.0061+-	0.0007	0.059+-	0.007	0.016+-	0.002
MN	0.0159+-	0.0012	0.153+-	0.012	0.043+-	0.003
FE	0.4015+-	0.0208	3.862+-	0.200	1.079+-	0.063
NI	0.0095+-	0.0009	0.091+-	0.009	0.026+-	0.003
CU	0.1369+-	0.0067	1.317+-	0.064	0.368+-	0.021
ZN	0.1281+-	0.0068	1.232+-	0.065	0.344+-	0.021
GA	0.0003+-	0.0005	0.003+-	0.005	0.001+-	0.001
AS	0.0008+-	0.0040	0.008+-	0.038	0.002+-	0.011
SE	0.0023+-	0.0005	0.022+-	0.005	0.006+-	0.001
BR	0.0154+-	0.0011	0.148+-	0.011	0.041+-	0.003
RB	0.0017+-	0.0008	0.016+-	0.008	0.005+-	0.002
SR	0.0052+-	0.0010	0.050+-	0.010	0.014+-	0.003
Y	0.0000+-	0.0012	0.000+-	0.012	0.000+-	0.003
ZR	0.0000+-	0.0050	0.000+-	0.048	0.000+-	0.013
MO	0.0000+-	0.0033	0.000+-	0.032	0.000+-	0.009
PD	0.0000+-	0.0034	0.000+-	0.033	0.000+-	0.009
AG	0.0000+-	0.0042	0.000+-	0.040	0.000+-	0.011
CD	0.0225+-	0.0063	0.216+-	0.061	0.060+-	0.017
IN	0.0000+-	0.0070	0.000+-	0.067	0.000+-	0.019
SN	0.0046+-	0.0128	0.044+-	0.123	0.012+-	0.034
SB	0.0000+-	0.0191	0.000+-	0.184	0.000+-	0.051
BA	0.0000+-	0.0358	0.000+-	0.344	0.000+-	0.096
LA	0.0000+-	0.0646	0.000+-	0.621	0.000+-	0.174
HG	0.0004+-	0.0006	0.004+-	0.006	0.001+-	0.002
PB	0.0663+-	0.0042	0.638+-	0.040	0.178+-	0.012

261/06 PROTOCOL: 6

SAMPLE ID: 58
PARTICLE SIZE: T
ANALYSIS ID: MK948

EXPOSED AREA: 9.62 SQUARE CM
MASS OF DEPOSIT: 541+- 10 MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	0.9944+-	0.1492	9.566+-	1.435	1.768+-	0.267
SI	3.3220+-	0.4983	31.958+-	4.794	5.907+-	0.893
P	0.0083+-	0.0189	0.080+-	0.182	0.015+-	0.034
S	1.4660+-	0.0894	14.103+-	0.860	2.607+-	0.166
CL	0.2317+-	0.0189	2.229+-	0.182	0.412+-	0.034
K	0.5061+-	0.0267	4.869+-	0.257	0.900+-	0.050
CA	1.2293+-	0.0629	11.826+-	0.605	2.186+-	0.119
TI	0.2289+-	0.0120	2.202+-	0.115	0.407+-	0.023
V	0.0076+-	0.0026	0.073+-	0.025	0.014+-	0.005
CR	0.0165+-	0.0015	0.159+-	0.014	0.029+-	0.003
MN	0.0343+-	0.0024	0.330+-	0.023	0.061+-	0.004
FE	1.4926+-	0.0756	14.359+-	0.727	2.654+-	0.143
NI	0.0087+-	0.0009	0.084+-	0.009	0.015+-	0.002
CU	0.0441+-	0.0024	0.424+-	0.023	0.078+-	0.005
ZN	0.1015+-	0.0054	0.976+-	0.052	0.180+-	0.010
GA	0.0010+-	0.0007	0.010+-	0.007	0.002+-	0.001
AS	0.0004+-	0.0069	0.004+-	0.066	0.001+-	0.012
SE	0.0025+-	0.0006	0.024+-	0.006	0.004+-	0.001
BR	0.0253+-	0.0016	0.243+-	0.015	0.045+-	0.003
RB	0.0027+-	0.0011	0.026+-	0.011	0.005+-	0.002
SR	0.0151+-	0.0015	0.145+-	0.014	0.027+-	0.003
Y	0.0017+-	0.0016	0.016+-	0.015	0.003+-	0.003
ZR	0.0000+-	0.0067	0.000+-	0.064	0.000+-	0.012
MO	0.0000+-	0.0049	0.000+-	0.047	0.000+-	0.009
PD	0.0000+-	0.0042	0.000+-	0.040	0.000+-	0.007
AG	0.0000+-	0.0054	0.000+-	0.052	0.000+-	0.010
CD	0.0000+-	0.0072	0.000+-	0.069	0.000+-	0.013
IN	0.0000+-	0.0088	0.000+-	0.085	0.000+-	0.016
SN	0.0066+-	0.0109	0.063+-	0.105	0.012+-	0.019
SB	0.0000+-	0.0242	0.000+-	0.233	0.000+-	0.043
BA	0.0222+-	0.0533	0.214+-	0.513	0.039+-	0.095
LA	0.0000+-	0.0808	0.000+-	0.777	0.000+-	0.144
HG	0.0016+-	0.0008	0.015+-	0.008	0.003+-	0.001
PB	0.1216+-	0.0071	1.170+-	0.068	0.216+-	0.013

261/05 PROTOCOL: 6

SAMPLE ID: 60
PARTICLE SIZE: T
ANALYSIS ID: ML306

EXPOSED AREA: 9.62 SQUARE CM
MASS OF DEPOSIT: 500+- 10 MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	0.9205+-	0.1381	8.855+-	1.329	1.771+-	0.268
SI	3.0610+-	0.4592	29.447+-	4.418	5.889+-	0.891
P	0.0134+-	0.0185	0.129+-	0.178	0.026+-	0.036
S	1.4022+-	0.0864	13.489+-	0.831	2.698+-	0.175
CL	0.2936+-	0.0217	2.824+-	0.209	0.565+-	0.043
K	0.4863+-	0.0257	4.678+-	0.247	0.936+-	0.053
CA	1.2087+-	0.0618	11.628+-	0.595	2.326+-	0.128
TI	0.2292+-	0.0120	2.205+-	0.115	0.441+-	0.025
V	0.0080+-	0.0027	0.077+-	0.026	0.015+-	0.005
CR	0.0166+-	0.0014	0.160+-	0.013	0.032+-	0.003
MN	0.0315+-	0.0023	0.303+-	0.022	0.061+-	0.005
FE	1.5072+-	0.0763	14.499+-	0.734	2.900+-	0.158
NI	0.0085+-	0.0008	0.082+-	0.008	0.016+-	0.002
CU	0.0468+-	0.0025	0.450+-	0.024	0.090+-	0.005
ZN	0.1037+-	0.0055	0.998+-	0.053	0.200+-	0.011
GA	0.0008+-	0.0007	0.008+-	0.007	0.002+-	0.001
AS	0.0012+-	0.0068	0.012+-	0.065	0.002+-	0.013
SE	0.0025+-	0.0005	0.024+-	0.005	0.005+-	0.001
BR	0.0237+-	0.0015	0.228+-	0.014	0.046+-	0.003
RB	0.0031+-	0.0009	0.030+-	0.009	0.006+-	0.002
SR	0.0152+-	0.0014	0.146+-	0.013	0.029+-	0.003
Y	0.0000+-	0.0014	0.000+-	0.013	0.000+-	0.003
ZR	0.0000+-	0.0055	0.000+-	0.053	0.000+-	0.011
MO	0.0000+-	0.0035	0.000+-	0.034	0.000+-	0.007
PD	0.0000+-	0.0035	0.000+-	0.034	0.000+-	0.007
AG	0.0000+-	0.0046	0.000+-	0.044	0.000+-	0.009
CD	0.0000+-	0.0060	0.000+-	0.058	0.000+-	0.012
IN	0.0000+-	0.0073	0.000+-	0.070	0.000+-	0.014
SN	0.0052+-	0.0090	0.050+-	0.087	0.010+-	0.017
SB	0.0000+-	0.0200	0.000+-	0.192	0.000+-	0.038
BA	0.0000+-	0.0382	0.000+-	0.367	0.000+-	0.073
LA	0.0000+-	0.0675	0.000+-	0.649	0.000+-	0.130
HG	0.0013+-	0.0007	0.013+-	0.007	0.003+-	0.001
PB	0.1205+-	0.0068	1.159+-	0.065	0.232+-	0.014

DRI XRF DATA

DESERT RESEARCH INSTITUTE
University of Nevada System

Energy and Environmental Engineering Center

5625 Fox Avenue
P.O. Box 60220
Reno, Nevada 89506
(702) 677-3108

January 27, 1989

Mr. Eric Fujita
California Air Resources Board
Research Division
P.O. Box 2815
Sacramento, CA 95812

Dear Eric:

Enclosed are the results of DRI's x-ray fluorescence (XRF) analysis of the SCAQS intercomparison study samples. I have also enclosed the results of the thin film standards analyzed by XRF as part of the Denver Brown Cloud laboratory audit. A total of nine SCAQS ambient samples, including three field blanks, and ten thin film standards were analyzed.

Elemental concentrations in $\mu g/cm^2$ for the SCAQS samples are listed in Table 1. Three of the samples are field blanks as indicated by the 'bl' flag on the data printout. We originally intended to use these field blanks for background subtraction but their elemental concentrations were too high. We found visible brass shavings on filters taken with the SCAQS sampler in the San Joaquin Valley study. AeroVironment traced these to a brass fitting. The copper, iron, and zinc concentrations on the blanks may be due to the filter holder system. A set of Teflon laboratory blanks was used for blank subtraction instead, and results are reported for the field blanks as well as the three $PM_{2.5}$ and three PM_{10} samples. Note that all of the $PM_{2.5}$ and PM_{10} samples have an 'il' flag, which indicates the deposit is not uniform. The enclosed disk contains file SQCON.WK1, which is a Lotus 1-2-3 file of the XRF results for the SCAQS samples.

Al, Si, P, Cl, K and Ca values for PM_{10} samples have been adjusted for large particle self-absorption using the theoretical formulation of Tom Dzubay. This adjustment is a function of particle size distribution and composition. Since the actual particle size distribution and composition is unknown, the uncertainty of this adjustment is on the order of +- 25%. The large particle absorption coefficients used are listed in Table 2. The correction is made by:

$$\text{True Conc.} = \text{Measured Conc.} / A$$

where True Conc. is the value reported and A is the large particle absorption coefficient.

XRF analysis results of the Denver thin film standards are given in Table 3. Absorption corrections are required and have been made for these thin film samples and are listed in the table along with the corrected concentrations in $\mu g/cm^2$.

Please call me at (702)677-3181 if you have any questions about the results.

Sincerely,

Clifton A. Frazier
Assistant Research Chemist

cc: J. Chow
J. Watson

file: 8909/XRF

Table 1

ARB SCAQS XRF Intercomparison Sample Data Summary

Sample ID: ML304 Size: N/A Flag: b1

Species	ug/cm2 Conc.	+- Unc.
Al	0.0269	0.0060
Si	0.1070	0.0040
P	0.0000	0.0046
S	0.0323	0.0017
Cl	0.0179	0.0031
K	0.0173	0.0021
Ca	0.0342	0.0021
Ti	0.0060	0.0238
V	0.0009	0.0097
Cr	0.0000	0.0023
Mn	0.0010	0.0018
Fe	0.0856	0.0013
Co	0.0004	0.0017
Ni	0.0007	0.0009
Cu	0.0023	0.0005
Zn	0.0040	0.0005
Ga	0.0000	0.0030
As	0.0001	0.0030
Se	0.0000	0.0016
Br	0.0000	0.0013
Rb	0.0000	0.0015
Sr	0.0000	0.0018
Y	0.0000	0.0022
Zr	0.0000	0.0028
Mo	0.0000	0.0049
Pd	0.0000	0.0091
Ag	0.0026	0.0109
Cd	0.0000	0.0114
In	0.0000	0.0136
Sn	0.0000	0.0183
Sb	0.0034	0.0213
Ba	0.0074	0.0728
La	0.0000	0.0843
Hg	0.0000	0.0056
Pb	0.0000	0.0046

Table 1 (continued)

ARB SCAQS XRF Intercomparison Sample Data Summary

Sample ID: ML307 Size: N/A Flag: b1

Species	ug/cm2 Conc.	+- Unc.
Al	0.0071	0.0131
Si	0.0000	0.0066
P	0.0019	0.0036
S	0.0000	0.0034
Cl	0.0077	0.0024
K	0.0033	0.0046
Ca	0.0000	0.0039
Ti	0.0022	0.0204
V	0.0007	0.0083
Cr	0.0011	0.0020
Mn	0.0014	0.0015
Fe	0.0024	0.0005
Co	0.0000	0.0009
Ni	0.0006	0.0007
Cu	0.0174	0.0006
Zn	0.0106	0.0005
Ga	0.0000	0.0026
As	0.0002	0.0024
Se	0.0004	0.0013
Br	0.0004	0.0010
Rb	0.0000	0.0012
Sr	0.0003	0.0014
Y	0.0000	0.0017
Zr	0.0000	0.0023
Mo	0.0000	0.0039
Pd	0.0003	0.0078
Ag	0.0035	0.0093
Cd	0.0000	0.0093
In	0.0002	0.0118
Sn	0.0000	0.0155
Sb	0.0000	0.0179
Ba	0.0000	0.0627
La	0.0036	0.0740
Hg	0.0026	0.0045
Pb	0.0000	0.0037

Table 1 (continued)

ARB SCAQS XRF Intercomparison Sample Data Summary

Sample ID: MK950 Size: N/A Flag: b1

Species	ug/cm2 Conc.	+- Unc.
Al	0.0069	0.0136
Si	0.0012	0.0070
P	0.0015	0.0035
S	0.0021	0.0033
Cl	0.0070	0.0073
K	0.0029	0.0046
Ca	0.0049	0.0014
Ti	0.0020	0.0203
V	0.0004	0.0083
Cr	0.0019	0.0020
Mn	0.0014	0.0015
Fe	0.0081	0.0005
Co	0.0006	0.0008
Ni	0.0007	0.0002
Cu	0.0013	0.0004
Zn	0.0006	0.0011
Ga	0.0000	0.0026
As	0.0002	0.0024
Se	0.0004	0.0012
Br	0.0001	0.0010
Rb	0.0010	0.0012
Sr	0.0001	0.0014
Y	0.0004	0.0017
Zr	0.0005	0.0022
Mo	0.0012	0.0038
Pd	0.0004	0.0076
Ag	0.0042	0.0092
Cd	0.0018	0.0097
In	0.0005	0.0116
Sn	0.0000	0.0153
Sb	0.0000	0.0178
Ba	0.0000	0.0623
La	0.0021	0.0733
Hg	0.0023	0.0044
Pb	0.0000	0.0036

Table 1 (continued)

ARB SCAQS XRF Intercomparison Sample Data Summary

Sample ID: ML300 Size: PM 2.5 Flag: i1

Species	ug/cm2 Conc.	+- Unc.
Al	0.1192	0.0081
Si	0.4267	0.0062
P	0.0065	0.0182
S	0.4273	0.0045
Cl	0.0500	0.0037
K	0.0971	0.0031
Ca	0.1708	0.0034
Ti	0.0431	0.0075
V	0.0061	0.0093
Cr	0.0027	0.0008
Mn	0.0129	0.0008
Fe	0.2490	0.0021
Co	0.0002	0.0039
Ni	0.0037	0.0003
Cu	0.0079	0.0005
Zn	0.0210	0.0006
Ga	0.0000	0.0030
As	0.0001	0.0135
Se	0.0007	0.0014
Br	0.0104	0.0005
Rb	0.0000	0.0015
Sr	0.0029	0.0006
Y	0.0004	0.0021
Zr	0.0021	0.0026
Mo	0.0000	0.0043
Pd	0.0004	0.0084
Ag	0.0034	0.0100
Cd	0.0011	0.0105
In	0.0039	0.0128
Sn	0.0010	0.0169
Sb	0.0000	0.0193
Ba	0.0165	0.0678
La	0.0000	0.0781
Hg	0.0000	0.0049
Pb	0.0824	0.0021

Table 1 (continued)

ARB SCAQS XRF Intercomparison Sample Data Summary

Sample ID: ML301 Size: PM 10 Flag: i1

Species	ug/cm2 Conc.	+- Unc.
Al	0.8846	0.2611
Si	2.7660	0.8647
P	0.0000	0.0379
S	0.5130	0.0054
Cl	0.3313	0.0951
K	0.2864	0.0554
Ca	0.6467	0.1040
Ti	0.1062	0.0077
V	0.0077	0.0100
Cr	0.0064	0.0008
Mn	0.0227	0.0011
Fe	0.7511	0.0036
Co	0.0003	0.0111
Ni	0.0053	0.0004
Cu	0.0184	0.0006
Zn	0.0375	0.0007
Ga	0.0000	0.0031
As	0.0007	0.0173
Se	0.0001	0.0014
Br	0.0133	0.0006
Rb	0.0007	0.0015
Sr	0.0062	0.0006
Y	0.0000	0.0021
Zr	0.0022	0.0025
Mo	0.0008	0.0041
Pd	0.0021	0.0082
Ag	0.0000	0.0095
Cd	0.0023	0.0104
In	0.0002	0.0123
Sn	0.0022	0.0164
Sb	0.0109	0.0193
Ba	0.0420	0.0664
La	0.0000	0.0761
Hg	0.0016	0.0048
Pb	0.1073	0.0022

Table 1 (continued)

ARB SCAQS XRF Intercomparison Sample Data Summary

Sample ID: MK945 Size: PM 2.5 Flag: i1

Species	ug/cm2 Conc.	+- Unc.
Al	0.1798	0.0109
Si	0.7400	0.0084
P	0.0004	0.0544
S	1.3382	0.0088
Cl	0.1114	0.0050
K	0.1810	0.0064
Ca	0.3174	0.0046
Ti	0.0443	0.0096
V	0.0117	0.0120
Cr	0.0069	0.0009
Mn	0.0388	0.0012
Fe	0.4618	0.0029
Co	0.0006	0.0069
Ni	0.0102	0.0004
Cu	0.0556	0.0008
Zn	0.1276	0.0011
Ga	0.0000	0.0037
As	0.0069	0.0321
Se	0.0023	0.0005
Br	0.0335	0.0009
Rb	0.0008	0.0020
Sr	0.0078	0.0006
Y	0.0003	0.0027
Zr	0.0001	0.0027
Mo	0.0017	0.0044
Pd	0.0032	0.0087
Ag	0.0032	0.0102
Cd	0.1997	0.0059
In	0.0000	0.0128
Sn	0.0250	0.0060
Sb	0.0016	0.0231
Ba	0.1614	0.0237
La	0.0148	0.0798
Hg	0.0000	0.0051
Pb	0.2019	0.0028

Table 1 (continued)

ARB SCAQS XRF Intercomparison Sample Data Summary

Sample ID: MK946 Size: PM 10 Flag: i1

Species	ug/cm2 Conc.	+- Unc.
Al	2.9961	0.8801
Si	8.1848	2.5580
P	0.0359	0.1067
S	1.4992	0.0125
Cl	0.6483	0.1857
K	0.9850	0.1898
Ca	2.0488	0.3291
Ti	0.2044	0.0113
V	0.0229	0.0051
Cr	0.0175	0.0012
Mn	0.0719	0.0023
Fe	2.2412	0.0062
Co	0.0000	0.0326
Ni	0.0159	0.0006
Cu	0.0457	0.0008
Zn	0.1749	0.0013
Ga	0.0000	0.0047
As	0.0019	0.0539
Se	0.0036	0.0006
Br	0.0491	0.0011
Rb	0.0037	0.0008
Sr	0.0252	0.0007
Y	0.0007	0.0036
Zr	0.0045	0.0010
Mo	0.0042	0.0042
Pd	0.0039	0.0087
Ag	0.0060	0.0102
Cd	0.0078	0.0110
In	0.0000	0.0125
Sn	0.0187	0.0059
Sb	0.0138	0.0201
Ba	0.2300	0.0238
La	0.0000	0.0781
Hg	0.0045	0.0053
Pb	0.3426	0.0034

Table 1 (continued)

ARB SCAQS XRF Intercomparison Sample Data Summary

Sample ID: MK947 Size: PM 2.5 Flag: i1

Species	ug/cm2 Conc.	+- Unc.
Al	0.2294	0.0103
Si	0.7332	0.0079
P	0.0104	0.0497
S	1.2223	0.0062
Cl	0.0464	0.0038
K	0.1246	0.0036
Ca	0.2573	0.0041
Ti	0.0503	0.0077
V	0.0052	0.0096
Cr	0.0059	0.0008
Mn	0.0146	0.0009
Fe	0.3589	0.0025
Co	0.0007	0.0055
Ni	0.0036	0.0003
Cu	0.0577	0.0009
Zn	0.0799	0.0009
Ga	0.0000	0.0031
As	0.0019	0.0109
Se	0.0010	0.0015
Br	0.0128	0.0006
Rb	0.0004	0.0016
Sr	0.0033	0.0006
Y	0.0000	0.0021
Zr	0.0008	0.0027
Mo	0.0000	0.0045
Pd	0.0003	0.0086
Ag	0.0027	0.0102
Cd	0.0026	0.0109
In	0.0000	0.0127
Sn	0.0000	0.0172
Sb	0.0046	0.0201
Ba	0.0228	0.0694
La	0.0275	0.0808
Hg	0.0009	0.0052
Pb	0.0650	0.0020

Table 1 (continued)

ARB SCAQS XRF Intercomparison Sample Data Summary

Sample ID: MK948 Size: PM 10 Flag: i1

Species	ug/cm2 Conc.	+- Unc.
Al	1.8924	0.5564
Si	5.3481	1.6715
P	0.0329	0.1006
S	1.4213	0.0076
Cl	0.1556	0.0450
K	0.4644	0.0897
Ca	1.1664	0.1874
Ti	0.1604	0.0081
V	0.0084	0.0111
Cr	0.0146	0.0010
Mn	0.0316	0.0014
Fe	1.1496	0.0044
Co	0.0013	0.0169
Ni	0.0067	0.0004
Cu	0.0359	0.0007
Zn	0.0819	0.0009
Ga	0.0000	0.0033
As	0.0000	0.0211
Se	0.0019	0.0005
Br	0.0208	0.0007
Rb	0.0022	0.0006
Sr	0.0131	0.0006
Y	0.0000	0.0023
Zr	0.0064	0.0009
Mo	0.0000	0.0043
Pd	0.0000	0.0082
Ag	0.0000	0.0097
Cd	0.0050	0.0106
In	0.0010	0.0125
Sn	0.0096	0.0169
Sb	0.0000	0.0192
Ba	0.0598	0.0677
La	0.0239	0.0779
Hg	0.0030	0.0051
Pb	0.1315	0.0024

Table 2

Coarse Particle XRF Absorption Coefficients

Element	Absorption Coefficient
Al	0.41 +- 0.12
Si	0.48 +- 0.15
P	0.58 +- 0.24
Cl	0.70 +- 0.20
K	0.78 +- 0.15
Ca	0.81 +- 0.13

Table 3

Denver XRF Intercomparison Sample Data Summary
for Thin Film Standards

(Concentrations in ug/cm^2)

Standard and Element	Surface Equiv. Conc.[a]	Absorption Coefficient	Corrected Concentration[b] Conc.	+- Unc.
NBS 1832-1417				
Al	10.80	0.769	14.04	0.18
Si	26.07	0.788	33.08	0.06
Ca	19.20	0.944	20.34	0.04
V	4.99	0.975	5.12	0.02
Mn	4.83	0.981	4.92	0.02
Co	1.01	0.985	1.03	0.01
Cu	2.59	0.988	2.62	0.01
NBS 1833-977				
Si	25.11	0.792	31.70	0.06
K	14.92	0.920	16.22	0.04
Ti	13.13	0.961	13.66	0.04
Fe	14.00	0.977	14.33	0.02
Zn	3.86	0.984	3.92	0.01
Pb	16.95	0.992	17.09	0.03
MicroMatter				
2928 Al	16.26	0.977	16.64	0.07
2929 Si	8.88	0.979	9.07	0.04
2932 K	2.42	0.994	2.43	0.02
2931 Ca	11.70	1.000	11.70	0.04
2933 V	14.39	1.000	14.39	0.03
2934 Fe	12.75	1.000	12.75	0.02
2930 Cu	36.26	1.000	36.26	0.03
2935 Pb	8.95	1.000	8.95	0.02

a) Raw measured concentration.
b) Concentration corrected for x-ray absorption within the thin film standard.

UM INAA DATA

Table 1. Masses of Elements on CARB Samples (ng)

Element	ML-300	ML-301	ML-304	ML-307	MK-945
Na	2830 ± 150	7600 ± 400	1100 ± 60	360 ± 20	6100 ± 300
Mg		2400 ± 450			
Al	1500 ± 250	4500 ± 450	1100 ± 110	290 ± 30	2150 ± 220
Cl	890 ± 130	2400 ± 300	985 ± 180	520 ± 85	1960 ± 240
K		2120 ± 210	600 ± 100		2300 ± 225
Ca		2300 ± 600			
Sc	0.41 ± 0.03	0.93 ± 0.05	0.28 ± 0.03	0.22 ± 0.03	0.43 ± 0.03
Ti	310 ± 165	840 ± 145			200 ± 100
V	23.1 ± 1.8	28.7 ± 1.8	5.35 ± 0.55	2.42 ± 0.27	69 ± 4
Cr	33 ± 4	50 ± 5	12.7 ± 3.5		56 ± 5
Mn	139 ± 7.5	194 ± 11	19.7 ± 2.2	5.9 ± 1.4	33.5 ± 1.8
Fe	2950 ± 280	6700 ± 450	1800 ± 250	810 ± 215	4350 ± 350
Co	18.9 ± 1.0	19.8 ± 1.1	16.4 ± 0.9	15.1 ± 0.8	16.4 ± 0.9
Cu		330 ± 140		139 ± 26	450 ± 70
Zn		520 ± 30	300 ± 20	205 ± 25	900 ± 50
As	4.7 ± 0.6	6.0 ± 0.6	1.0 ± 0.17		26.5 ± 1.9
Se					21.7 ± 2.8
Br	76 ± 8	104 ± 10	10 ± 1	3.4 ± 0.5	255 ± 25
Sb	21.2 ± 1.1	31.5 ± 1.6	1.71 ± 0.15	0.40 ± 0.07	51 ± 3
La	2.7 ± 0.2	4.7 ± 0.3	0.68 ± 0.08	0.19 ± 0.04	6.3 ± 0.4
Sm	0.22 ± 0.03	0.40 ± 0.03	0.081 ± 0.018		0.31 ± 0.03

	MK-946	MK-947	MK-948	MK-950	LABBLK
Na	20300 ± 1035	3200 ± 200	10000 ± 500	385 ± 20	400 ± 20
Mg	7500 ± 1100		2950 ± 1250		
Al	10000 ± 1000	2700 ± 300	6800 ± 700	415 ± 45	4600 ± 500
Cl	4400 ± 500	1030 ± 150	1500 ± 250	710 ± 100	692 ± 103
K	5100 ± 500	1500 ± 210	3000 ± 400		
Ca	10000 ± 1500	1330 ± 470	5900 ± 1000		
Sc	2.02 ± 0.11	0.54 ± 0.04	1.41 ± 0.08	0.209 ± 0.023	0.171 ± 0.025
Ti	690 ± 190	410 ± 100	1000 ± 165		200 ± 100
V	88 ± 5	19.5 ± 1.2	31.7 ± 2.0	2.9 ± 0.3	2.3 ± 0.3
Cr	78 ± 6	44 ± 4	85 ± 6	15.9 ± 3.7	6.4 ± 4.2
Mn	520 ± 25	132 ± 8	210 ± 12	6.2 ± 1.2	10.4 ± 1.4
Fe	14000 ± 750	3520 ± 330	8700 ± 600		1130 ± 230
Co	19 ± 1	16.9 ± 0.9	20.2 ± 1.1	13.9 ± 0.7	14.3 ± 0.8
Cu	770 ± 120	1220 ± 140	380 ± 80		
Zn	1170 ± 60	795 ± 45	400 ± 90	141 ± 24	160 ± 24
As	42 ± 3	5.5 ± 0.5	8.5 ± 0.7		
Se	29 ± 4	14.2 ± 4.0	20 ± 4		
Br	380 ± 40	107 ± 11	140 ± 15	4.0 ± 0.5	3.8 ± 0.5
Sb	86 ± 4	10.9 ± 0.6	19.6 ± 1.1	8.8 ± 1.5	0.22 ± 0.08
La	20 ± 1	5.6 ± 0.3	11.1 ± 0.6	0.16 ± 0.04	0.44 ± 0.09
Sm	0.95 ± 0.06	0.42 ± 0.03	0.85 ± 0.05		

APPENDIX D

DATA FROM INTERCOMPARISON OF SCAQS FILTER ELEMENTAL ANALYSIS

CANISTER SAMPLE 108

Canister 2G108

Type	Component (ppbc)	RR adj.	RP	LS	BL	HW	Mean	RR 5/5/87	RR 6/10/87	RR 7/2/87	RR 8/31/87	RR 9/2/87	RR 10/29/87
1i	Propane	34.6	39.2	29.0	36.0	34.2	34.6	35.1	34.8	31.0	34.3	35.4	37.0
1p	Ethane	20.8	23.6		29.5	36.6	29.9	20.8	20.2	21.5	20.1	21.0	21.3
1o	Ethylene	20.2	22.8	21.1	24.7	21.7	22.6	20.1	19.9	20.6	19.9	20.3	20.1
1o	Acetylene	12.5	14.1	15.4	16.5	11.7	14.4	12.7	12.5	10.3	10.4	13.1	13.4
1o	Propene	6.8	7.7	5.9	5.8	8.7	7.0	6.7	6.8	6.4	7.0	6.9	7.1
x	Acetone			32.6									
x	CH2Cl2			.9									
x	111TCl-Ethane			3.6									
x	Freon 113			1.1									
x	C2Cl4			.7									
p	i-Pentane	43.9	49.7	46.2	54.4	55.0	51.3	42.6	44.0	44.1	43.8	43.5	45.1
p	n-Butane	32.1	36.3	35.1	41.9	42.3	38.9	31.9	32.9	27.0	33.5	33.2	33.9
p	n-Pentane	17.0	19.2	18.6	18.9	26.2	20.7	15.9	17.1	17.5	16.9	17.3	17.1
p	i-Butane	17.3	19.6	15.5	19.0	18.1	18.1	17.3	17.7	14.9	15.0	17.7	18.0
p	2MPentane	13.1	14.9	14.6	16.0	15.1	15.1	13.1	12.8	13.1	13.1	13.1	13.5
p	2M-Hexane			5.7	13.0	12.7	10.5						
p	3MPentane	10.0	11.3	9.9	11.9	16.1	12.3	10.3	9.4	9.4	10.3	10.0	10.5
p	MCyclopentane	8.8	10.0	9.4	11.0	11.1	10.3	9.1	8.7	8.7	8.7	8.8	8.8
p	2,3DM-Pentane	10.0	11.4	5.2		8.2	8.3	10.4	10.2	10.5	8.7	10.2	10.1
p	DM-cycPentanes					9.4	9.4						
p	n-Hexane	8.3	9.4	9.2	10.7	8.2	9.4	8.5	8.2	8.3	8.2	8.4	8.1
p	2,2,4TM-Pentane			8.6	10.1	5.5	8.1						
p	3M-Hexane	5.4	6.2	8.0	8.6	9.6	8.1	5.7	5.3	5.7	5.2	5.4	5.3
p	MCyclohexane	4.9	5.5	5.5	6.2		5.7	4.8	4.8	5.2	4.8	4.9	4.8
p	n-Heptane	4.6	5.2	5.4	7.0	2.6	5.0	4.9	4.3	4.5	4.6	4.5	4.6
p	2,3DM-Butane	3.7	4.2	4.0	4.9	6.2	4.8	3.6	3.7	3.7	3.7	3.7	3.8
p	2M-Heptane	2.1	2.3		5.3	3.8	3.8	2.3	2.0	1.9	2.0	1.9	2.2
p	2,2,5TM-Hexane				3.7		3.7						
p	n-Octane	2.7	3.0	2.5	4.4	3.8	3.4	3.1	2.2	2.7	2.8	2.2	3.1
p	4M-Octane			1.3	3.4		2.3						
p	2,4DM-Pentane	3.5	3.9	3.3	3.5		3.6	3.6	3.3	3.6	3.3	3.5	3.6
p	3M-Heptane				4.1	2.6	3.3						
p	2,3,4TM-Pentane	.7	.8	2.6	3.6	5.8	3.2					.9	.5
p	Cyclohexane	2.1	2.4	2.4	3.1	3.8	2.9	2.3	2.1	2.1	2.0	2.1	2.1
p	Cyclopentane	2.2	2.5	2.3	2.9	3.8	2.9	2.2	2.2	2.2	2.2	2.2	2.3
p	3M-Octane			1.1	2.6		1.8						
p	n-Nonane	1.8	2.1	1.4	2.5	1.9	2.0	1.9	1.5	1.8	1.8	1.8	2.2
p	2,4DM-Hexane	.9	1.0		2.5		1.7					.9	.8
p	3Et-Hexane	1.9	2.2		.0		1.1	2.5	1.9	1.6	1.7	1.7	2.0
p	2,3DM-Hexane	1.2	1.3		.0	1.9	1.1	1.1	1.1	1.3	1.2	1.2	1.2
p	3,3DM-Pentane			.5	1.4		.9						
p	Et-Cyclohexane				.9		.9						
p	2,5DM-Hexane				.8		.8						
p	2,2DM-Butane	.9	1.1		.5		.8	1.0	.9	.9	.9	.9	1.0
p	2,4DM-Heptane				.7		.7						
p	2,2,3TM-Pentane				.0		.0						
o	2,2,3TM-1-Butene				4.3		4.3						
o	i-Butene	2.6	2.9				2.9	2.6	2.6	2.5	2.6	2.5	2.6
o	1-Butene				4.1	.7	2.4						

Canister 2010B Type	Component (ppbC)	RR	RR adj. RR	LB	BL	HR	Mean	RR 5/5/87	RR 6/10/87	RR 7/2/87	RR 8/31/87	RR 9/2/87	RR 10/29/87
o	Isoprene	2.2	2.4	2.6	2.1	2.2	2.3	2.0	2.2	2.2	2.1	2.2	2.2
o	t-2-Pentene	1.2	1.4	1.4	4.0	.7	1.9	1.2	1.2	1.3	1.2	1.2	1.2
o	1-Pentene	1.7	2.0	1.8	.6		1.4	1.8	1.4	1.9	1.9	1.8	1.6
o	2M-1-Butene	1.7	1.9	1.3	.7	.5	1.2	1.6	1.7	1.9	1.5	1.9	1.5
o	3M-1-Butene	.6	.7	.7	.7	1.7	.9	.5	.6	.6	.6	.6	.8
o	1-Hexene	.6	.7		1.3		1.0		.6		.6	.6	.6
o	2M-2-Butene	1.3	1.5		.3		.9	1.3	1.4	1.5	1.3	.9	
o	4M-1-Pentene	.8	.9		.8		.9	.8	.6	.8	.8	1.0	.8
o	1,3-Butadiene			1.2	.4		.8						
o	1-Octene				.8		.8						
o	t-2-Butene	.9	1.0	.6	.6	.7	.7	.9	.8	.7	.8	1.1	.8
o	c-2-Butene	.7	.8	.8	.6	.7	.7	.6	.7	.7	.7	.7	.7
o	c-2-Pentene	.7	.8	1.0		.5	.7	.7	.7	.7	.7	.6	
o	2M-1-Pentene	.4	.5				.5	1.0	.3		.3	.3	.3
o	2M-2-Pentene				.6		.6						
o	t-2-Hexene				.6		.6						
o	Cyclopentene	.5	.6				.6	.7	.8	.5	.3		.3
o	c-2-Hexene	.2	.2		.6		.4			.2			
o	c-2-Octene				.2		.2						
o	t-3M-2-Pentene				.2		.2						
a	Toluene	37.9	43.0	44.9	52.8	42.1	45.7	41.0	36.8	37.5	37.3	38.1	36.9
a	p- & m-Xylene	23.1	26.1	25.1	31.4	27.6	27.6	25.0	22.6	22.6	22.4	22.7	23.1
a	Benzene	14.3	16.2	15.6	15.6	14.4	15.5	15.0	14.0	14.3	14.1	14.3	14.1
a	o-Xylene	8.7	9.9	9.5	13.9	9.4	10.7	9.2	8.4	8.4	8.6	8.6	9.0
a	1,2,4TM-Benzene &			7.9	13.8	6.2	9.3						
a	Et-Benzene	6.6	7.4	7.2	10.0	7.7	8.1	7.4	6.3	6.3	6.3	6.8	6.3
a	pEt-Toluene	5.7	6.4	3.0	4.8	5.3	4.9	5.7	5.6	5.3	5.6	5.7	6.1
a	mEt-Toluene	2.5	2.9	5.7	7.5	2.6	4.7	2.1	2.5	2.5	2.6	2.7	2.8
a	1,2,3TM-Benzene				4.0		4.0						
a	oEt-Toluene	2.1	2.4	2.5	3.7	2.2	2.7		2.0	2.0	2.1	2.3	2.3
a	nPr-Benzene	1.8	2.1	1.6	3.2	1.4	2.1	2.1	2.0	1.3	1.4	2.0	2.1
a	1,3,5TM-Benzene	2.1	2.4		.0	2.2	1.5	1.8	2.6	1.8	1.6	2.1	2.7
a	Styrene			.9	.0	1.4	.8						
a	iPr-Benzene				.8		.8						
	C2-C3 Hydrocarbons												
	identified	94.9	105.6	71.3	112.6	112.9	100.6	95.4	94.2	90.3	93.7	96.7	98.9
	total	94.9	105.6	83.8	112.6	112.9	103.7	95.4	94.2	90.3	93.7	96.7	98.9
	% identified	100.0%	100.0%	85.1%	100.0%	100.0%	96.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	C4-C9 Hydrocarbons												
	paraffins	197.9	220.3	217.9	279.0	273.7	247.7	198.1	196.3	190.7	197.4	200.0	204.6
	olefins	15.2	16.9	11.6	19.1	7.7	13.8	15.7	15.6	15.5	15.4	15.4	13.4
	aromatics	104.5	116.3	123.7	161.6	122.5	131.0	109.3	102.8	102.0	102.2	105.3	105.4
	identified HC	317.5	353.5	353.2	459.7	403.9	392.6	323.1	314.7	308.2	315.0	320.7	323.4
	total HC	371.5	413.6	437.0	529.8	438.8	454.8	378.9	376.8	367.7	359.0	372.9	373.6
	% identified	85.5%	85.5%	80.8%	86.8%	92.0%	86.3%	85.3%	83.5%	83.8%	87.7%	86.0%	86.6%
	id as others			38.9									

Canister CQ108

Type Component (ppbc)	RR	RR adj.	LS	BL	HW	Mean	RR 5/5/87	RR 6/10/87	RR 7/2/87	RR 8/31/87	RR 9/10/87	RR 10/29/87
C2-C9 Hydrocarbons												
identified HC	412.4	459.1	424.4	572.0	516.5	493.2	418.5	405.9	396.5	408.7	417.4	422.3
total HC	466.4	519.2	520.7	642.4	551.7	586.5	474.3	471.0	458.0	452.7	469.6	472.5
% identified	88.4%	88.4%	81.5%	89.1%	93.7%	88.2%	88.2%	86.8%	87.0%	90.3%	88.9%	89.4%
> C9 Hydrocarbons												
identified			2.2	16.4		9.3	.0	.0	.0	.0	.0	.0
total			50.9	35.9		43.4	.0	.0	.0	.0	.0	.0
% identified			4.3%	45.7%		25.0%						
Total Reported	466.4	519.2	610.4	678.3	551.7	589.9	474.3	471.0	458.0	452.7	469.6	472.5

Canister	Component (ppmC)	SB SD	SB SD/Mean	LB A 7/18	LB A 9/6	Mean	BL 5/10/87	BL 7/27/87	BL 9/23/87	Mean	BL Std	BL CV
Ic	Propane	1.2	5.2%	28.1	29.8	29.0	36.7	33.3	37.9	36.0	1.9	5.4%
Ic	Ethane	.5	2.5%				31.6	27.3	29.8	29.5	1.8	6.0%
Ic	Ethylene	.2	1.2%	9.3	32.9	21.1	26.0	21.7	26.4	24.7	2.1	8.6%
Ic	Acetylene	.8	6.6%	30.7	.0	15.4	17.1	14.7	17.8	16.5	1.3	8.1%
Ic	Propene	.2	3.3%	6.0	5.7	5.9	6.6	5.0	5.3	5.8	.7	11.2%
c	Acetone			42.3	22.8	32.6						
c	CH2Cl2			.8	1.0	.9						
c	111TCl-Ethane			3.5	3.7	3.6						
c	Freon 113			1.2	1.0	1.1						
c	CCl4			.7	.7	.7						
p	i-Pentane	.7	1.7%	45.9	46.5	46.2	56.9	49.8	56.5	54.4	3.3	6.0%
p	n-Butane	2.3	7.3%	34.3	35.8	35.1	43.1	38.5	44.1	41.9	2.5	5.9%
p	n-Pentane	.5	3.0%	18.2	18.9	18.6	19.9	17.8	19.1	18.9	.9	4.6%
p	i-Butane	1.1	5.3%	15.2	15.8	15.5	19.7	17.5	20.0	19.0	1.1	5.8%
p	2MPentane	.2	1.6%	14.4	14.8	14.6	17.0	14.0	17.0	16.0	1.4	8.9%
p	2M-Hexane			5.7	5.7	5.7	14.2	11.5	13.2	13.0	1.1	8.6%
p	3MPentane	.4	4.4%	9.9	9.8	9.9	11.9	9.8	13.9	11.9	1.7	14.1%
p	MCyclopentane	.1	1.6%	9.5	9.2	9.4	11.8	9.5	11.6	11.0	1.0	9.5%
p	2,3DM-Pentane	.6	6.0%	5.3	5.1	5.2						
p	DM-cycPentanes											
p	n-Hexane	.1	1.6%	8.9	9.5	9.2	14.0	8.3	9.9	10.7	2.4	22.1%
p	2,2,4TM-Pentane			7.5	9.7	8.6	10.1	9.6	10.8	10.1	.5	4.9%
p	3M-Hexane	.2	3.6%	8.0	7.9	8.0	10.6	7.5	7.7	8.6	1.4	16.3%
p	MCyclohexane	.1	3.0%	5.6	5.4	5.5	6.6	5.4	6.5	6.2	.6	9.0%
p	n-Heptane	.2	3.9%	5.4	5.4	5.4	7.3	6.7	7.1	7.0	.2	3.5%
p	2,3DM-Butane	.1	1.6%	3.8	4.1	4.0	5.3	4.5	5.0	4.9	.3	6.3%
p	2M-Heptane	.2	7.3%				5.6	5.2	5.3	5.3	.2	3.2%
p	2,2,5TM-Hexane						4.0	3.6	3.8	3.7	.2	5.7%
p	n-Octane	.4	13.8%	2.5	2.5	2.5	4.1	4.5	4.5	4.4	.2	4.1%
p	44-Octane			1.5	1.1	1.3	3.2	3.3	3.6	3.4	.2	5.4%
p	2,4DM-Pentane	.1	3.9%	3.5	3.1	3.3	3.9	3.0	3.7	3.5	.4	10.3%
p	3M-Heptane						4.3	4.0	3.9	4.1	.2	3.7%
p	2,3,4TM-Pentane	.2	28.6%	2.5	2.7	2.6	3.7	3.5	3.7	3.6	.1	2.6%
p	Cyclohexane	.1	4.2%	2.3	2.5	2.4	3.0	3.0	3.4	3.1	.2	6.0%
p	Cyclopentane	.0	1.7%	2.2	2.3	2.3	3.3	2.9	2.5	2.9	.3	11.9%
p	3M-Octane			1.1	1.1	1.1	2.5	2.5	2.7	2.6	.1	3.2%
p	n-Nonane	.2	11.2%	1.5	1.3	1.4	2.4	2.3	2.9	2.5	.3	11.7%
p	2,4DM-Hexane	.1	5.9%				2.4	2.6	2.5	2.5	.1	2.8%
p	3Et-Hexane	.3	15.8%									
p	2,3DM-Hexane	.1	5.8%									
p	3,3DM-Pentane			.5	.4	.5	1.6		1.1	1.4	.3	21.0%
p	Et-Cyclohexane						.9	.9	.9	.9	.1	8.0%
p	2,5DM-Hexane						2.0	.3	.2	.8	.8	103.3%
p	2,2DM-Butane	.0	5.1%				.8	.7	.2	.5	.3	48.6%
p	2,4DM-Heptane						1.0	.5	.5	.7	.2	38.1%
p	2,2,3TM-Pentane											
o	2,2,3TM-i-Butene						4.6	3.7	4.6	4.3	.4	9.5%
o	i-Butene	.0	1.8%									
o	1-Butene						4.3	3.6	4.4	4.1	.4	8.9%

Canister 08108 Type	Component (ppbc)	9R SD	9R SD/M(%)	13 A 7/16	13 A 9/8	Mean	BL 5/10/87	BL 7/27/87	BL 9/23/87	BL Mean	BL Std	BL CV
o	Isoprene	.1	3.5%	2.5	2.6	2.6	2.1			2.1	.0	.0%
o	t-2-Pentene	.0	3.1%	1.3	1.5	1.4	.1	5.1	6.9	4.0	2.9	72.2%
o	1-Pentene	.2	10.4%	1.9	1.6	1.8		.5	.7	.6	.1	12.1%
o	2M-1-Butene	.2	10.0%	1.7	1.8	1.3	1.5	.3	.4	.7	.5	70.5%
o	3M-1-Butene	.1	14.6%	.7	.6	.7	.7	.6	.7	.7	.1	8.8%
o	1-Hexene	.0	.0%				1.3			1.3	.0	.0%
o	2M-2-Butene	.2	15.9%				.4	.3		.3	.0	9.1%
o	4M-1-Pentene	.1	14.4%				1.1	1.1	.4	.8	.3	41.3%
o	1,3-Butadiene			1.3	1.1	1.2	.4			.4	.0	.0%
o	1-Octene						.8	.8	.7	.8	.1	8.4%
o	t-2-Butene	.1	14.8%	.6	.5	.6	.7	.5	.6	.6	.1	12.0%
o	c-2-Butene	.0	5.5%	.8	.8	.8		.5	.6	.6	.1	11.5%
o	c-2-Pentene	.0	5.9%	1.1	.8	1.0						
o	2M-1-Pentene	.3	63.6%									
o	2M-2-Pentene							.6		.6	.0	.0%
o	t-2-Hexene								.6	.6	.0	.0%
o	Cyclopentene	.2	39.2%									
o	c-2-Hexene								.6	.6	.0	.0%
o	c-2-Octene							.2	.3	.2	.0	14.3%
o	t-3M-2-Pentene								.2	.2	.0	.0%
a	Toluene	1.4	3.8%	44.0	45.8	44.9	53.6	53.0	51.9	52.8	.7	1.4%
a	p- & m-Xylene	.9	3.9%	24.6	25.5	25.1	30.7	31.9	31.7	31.4	.5	1.7%
a	Benzene	.3	2.3%	15.2	16.0	15.6	18.3	12.6	16.0	15.6	2.4	15.1%
a	o-Xylene	.3	3.4%	9.4	9.5	9.5	12.5	14.7	14.6	13.9	1.0	7.4%
a	1,2,4TM-Benzene &			8.9	6.8	7.9	10.9	15.9	14.8	13.8	2.1	15.2%
a	Et-Benzene	.4	6.3%	7.0	7.3	7.2	9.7	10.0	10.3	10.0	.2	2.4%
a	pEt-Toluene	.2	4.2%	3.2	2.8	3.0	4.7	4.8	4.9	4.8	.1	2.0%
a	mEt-Toluene	.2	8.7%	5.9	5.5	5.7	7.4	7.6	7.6	7.5	.1	1.3%
a	1,2,3TM-Benzene						3.7	4.1	4.3	4.0	.2	5.9%
a	oEt-Toluene	.1	6.3%	2.6	2.4	2.5	3.4	3.6	3.9	3.7	.2	6.2%
a	nPr-Benzene	.3	18.4%	1.5	1.6	1.6	3.6	3.3	2.8	3.2	.3	9.8%
a	1,3,5TM-Benzene	.4	17.9%									
a	Styrene			.9	.9	.9						
a	iPr-Benzene						1.0	.6	.7	.8	.1	19.6%
	C2-C3 Hydrocarbons											
	identified	2.7	2.8%	74.1	68.4	71.3	118.0	102.0	117.7	112.6	7.5	6.6%
	total	2.7	2.8%	86.6	80.9	83.8	118.0	102.0	117.7	112.6	7.5	6.6%
	% identified	.0%	.0%	85.6%	84.5%	85.1%	100.0%	100.0%	100.0%	100.0%	.0%	.0%
	C4-C9 Hydrocarbons											
	paraffins	4.2	2.1%	215.2	220.6	217.9	296.8	252.8	287.5	279.0	18.9	6.8%
	olefins	.8	5.3%	11.9	11.3	11.6	17.9	17.9	21.5	19.1	1.7	8.9%
	aromatics	2.5	2.4%	123.2	124.1	123.7	159.4	162.0	163.4	161.6	1.6	1.0%
	identified HC	5.4	1.7%	350.3	356.0	353.2	474.1	432.7	472.4	459.7	19.1	4.2%
	total HC	6.6	1.8%	434.5	439.4	437.0	552.7	492.8	543.9	529.8	26.4	5.0%
	% identified	1.5%	1.7%	80.6%	81.0%	80.8%	85.8%	87.8%	86.8%	86.8%	.8%	.9%
	id as others			48.5	29.2	38.9	.0	.0	.0	.0	.0	

Canister	2Q108	AR	AR	LS	LS		BL	BL	BL	BL	BL	BL
Type	Component (ppbc)	SD	SD/Mi(%)	A 7/18	A 9/8	Mean	5/10/87	7/27/87	9/23/87	Mean	Std	CV
	C2-C9 Hydrocarbons											
	Identified HC	8.8	1.9%	424.4	424.4	424.4	592.1	534.7	590.6	572.3	26.6	4.6%
	total HC	8.1	1.7%	521.1	520.3	520.7	670.7	594.8	661.6	642.4	33.8	5.3%
	% identified	1.2%	1.4%	81.4%	81.6%	81.5%	88.3%	89.9%	89.2%	89.1%	.7%	.7%
	C10 Hydrocarbons											
	identified			3.0	1.3	2.2	15.2	17.6	16.4	16.4	1.0	.1
	total			49.3	52.4	50.9	37.7	35.8	34.3	35.9	1.4	.0
	% identified			6.1%	2.5%	4.3%	40.3%	49.2%	47.7%	45.7%	3.9%	8.5%
	Total Reported	8.1	1.7%	618.9	601.9	610.4	708.4	630.6	695.9	678.3	34.1	5.0%

CANISTER SAMPLE 109

Canister 19109 Component	RR	adj. RR	LS	SL	n4	Mean	RR 5/5/87	RR 6/12/87	RR 7/2/87	RR 8/31/87	RR 9/2/87	RR 10/29/87	Mea
Propane	38.5	42.8	31.2	37.8	37.4	37.3	37.5	37.8	37.3	39.4	39.4	39.4	38.
Ethane	7.6	8.4		10.3	14.9	11.2	7.2	7.4	7.5	7.9	7.3	8.1	7.
Ethylene	6.2	6.7	37.1	8.4	7.6	15.6	5.9	6.6	5.9	6.2	7.1	6.1	6.
Acetylene	3.9	4.3		4.3	4.0	4.2	3.7	3.8	3.8	4.1	3.9	4.1	3.
Propene	2.5	2.7	1.7	2.0	2.6	2.3	2.4	2.4	2.5	2.5	2.4	2.5	2.
Acetone			306.3										
111TCl-Ethane			67.4										
Freon 113			10.9										
CH2Cl2			2.9										
unknown				204.4									
2,2,3TM-1-Butene?				135.9									
n-Butane	35.0	39.0	37.0	43.9	45.5	41.3	34.6	34.8	34.6	35.5	34.9	35.6	35.
i-Butane	31.4	34.9	27.5	33.3	33.1	32.4	31.2	31.2	31.1	31.8	31.4	31.6	31.
i-Pentane	15.6	17.4	17.4	25.8	20.2	20.2	16.0	16.2	16.1	14.9	15.5	15.0	15.
n-decane			13.3	15.0		14.2							
n-Nonane	10.1	11.2	10.4	13.8	11.8	11.8	10.3	8.9	9.5	9.4	11.8	10.6	10.
n-Pentane	8.3	9.2	9.0	10.5	12.7	10.3	8.6	9.0	8.8	7.8	7.8	7.5	8.
2M-Pentane	4.3	4.8	4.6	5.1	6.0	5.1	4.2	4.3	4.3	4.2	4.3	4.5	4.
3M-Pentane	3.3	3.7	3.9	5.0	7.0	4.9	3.7	3.5	3.4	3.1	3.3	3.0	3.
4M-Octane			1.3	7.3		4.3							
3M-Hexane	2.7	3.0	3.2	7.7	3.4	4.3	2.6	2.6	2.6	2.6	2.8	2.7	2.
n-Octane	3.1	3.5	3.7	5.4	4.1	4.2	3.5	3.4	3.5	6.0	1.5	.8	3.
n-Hexane	3.4	3.8	3.7	4.2	4.8	4.1	3.4	3.5	3.4	3.4	3.5	3.4	3.
2,5DM-Hexane				3.2		3.2							
2M-Hexane			2.3	3.8		3.1							
n-Heptane	2.2	2.5	2.6	3.2	3.4	2.9	2.3	2.1	2.2	2.2	2.3	2.2	2.
3M-Octane			1.7	4.0		2.8							
2,3DM-Pentane	3.5	3.9	1.7			2.8	3.9	3.1	3.1	3.3	3.7	4.0	3.
2M-Heptane	1.1	1.2		1.7	4.8	2.6	1.0	1.0	1.0	1.1	1.1	1.2	1.
Mcyclohexane	2.0	2.2	3.6	2.5	1.4	2.4	2.0	2.0	2.0	1.7	2.1	2.1	2.
Ecyc-Hexane				2.4		2.4							
2,2,4TM-Pentane			2.0	2.5	2.4	2.3							
McycPentane	1.5	1.6	2.1	1.9	2.2	1.9	1.5	1.4	1.6	1.2	1.6	1.5	1.
3E-Hexane	1.3	1.4				1.4	1.4	1.3	1.4	1.2	1.1		1.
2,3DM-Hexane	.6	.6			2.2	1.4	.4	.4	.5			1.0	.
3M-Heptane				1.4	1.0	1.2							
2,3DM-butane	.9	1.0	1.1	1.2	1.4	1.2	1.0	.9	.9	.9	.9	.9	.
Cyclopentane	.7	.7	.8	1.1	1.0	.9	.7	.7	.7	.6	.7	.6	.
Cyclohexane	.6	.6	.9	.8	1.0	.8	.5	.5		.6	.6	.6	.
2,2,5TM-Hexane				.8		.8							
2,4DM-Hexane	.6	.7		.7		.7						.6	.
2,4DM-Pentane			.9	.4		.6							
2,3,4TM-Pentane	.4	.4	.7	.6	.5	.5						.4	.
3,3DM-Pentane			.4	.5		.4							
2,4DM-Heptane				.3		.3							
2,2DM-Butane				.2		.2							
2,2DM-Propane													
2,2,3TM-Pentane													
1-Butene				3.1	4.8	4.0							

Canister CQ109 Component	RM	adj. RR	LS	SL	HW	Mean	RR 7/5/87	RR 6/10/87	RR 7/2/87	RR 9/31/87	RR 3/2/87	RR 10/29/87	RR Mean
1-Butene	2.5	2.7				2.7	2.2	2.3	3.4	2.3	2.3	2.2	2.5
2M-2-Butene	2.0	2.2		2.7		2.5	2.7		1.5	1.5	2.7	1.5	2.0
2M-1-Pentene	.6	.6		3.5		2.1	.2			.6	.6	.8	.6
1,3-Butadiene			.2	3.9		2.1							
t-2-Butene	1.8	2.0	1.9	1.8	2.2	2.0	1.7	1.7	1.6	1.8	1.8	2.0	1.8
c-2-Butene	1.5	1.7	1.3	1.6	1.9	1.6	1.4	1.4	1.5	1.6	1.8	1.5	1.5
Isoprene	.8	.9	1.0	1.9	1.4	1.3	.8	.8	.9	.7	.8		.8
t-2-Pentene	1.1	1.2	1.3	.8	1.7	1.3	1.1	1.2	1.2	1.0	1.1		1.1
2M-1-Butene	1.2	1.3	1.2	.9		1.1	1.2	1.3	1.2	1.1	1.1	1.1	1.2
c-2-Pentene	.8	.9	.8	1.8	.7	1.1	.6	.6	.8	1.3	.9	.8	.8
Cyclopentene				1.0		1.0							
1-Pentene	.7	.8	.7		1.2	.9	.7	.7	.7	.7	.8	.6	.7
3M-1-Butene	.4	.4	.4	.4	1.4	.6	.4	.4	.3	.4	.3	.3	.4
2M-2-Pentene				.3		.3							
4M-1-Pentene				.2		.2							
c-2-Octene				.2		.2							
t-3M-2-Pentene				.2		.2							
1-Hexene													
t-2-Hexene													
c-2-Hexene													
1-Octene													
a-pinene													
b-pinene													
p- & m-Xylene	229.4	255.3	282.5	296.6	249.5	271.0	227.1	195.8	233.0	218.9	261.9	239.4	229.4
Toluene	134.5	149.7	155.4	159.4	169.4	158.5	129.6	128.3	131.5	135.9	144.2	137.5	134.5
E-Benzene	81.8	91.1	96.8	107.1	90.1	96.3	79.5	70.3	81.3	79.4	94.1	86.3	81.8
o-Xylene	29.1	32.4	36.0	42.5	34.1	36.3	28.5	24.2	29.7	27.5	34.2	30.6	29.1
1,2,4TM-Benzene			8.3	10.5	3.6	7.5							
Benzene	4.0	4.5	4.2	5.3	5.5	4.9	4.0	4.2	4.0	3.9	4.0	4.0	4.0
oE-Toluene			4.2	4.4	1.0	3.2							
pE-Toluene	2.5	2.8	3.3	4.2	1.9	3.0	3.2	2.0	2.6	2.0		2.9	2.5
1,3,5TM-Benzene	3.1	3.5			2.6	3.0	4.3	2.0	3.0				3.1
mE-Toluene	1.3	1.5	3.7	3.6	1.7	2.6	1.9	1.1	1.6	.8		1.3	1.3
Styrene			2.0		2.9	2.4							
nP-Benzene	2.7	3.0	2.1	2.7	1.0	2.2	3.2	1.8	3.0	2.1		3.5	2.7
iP-Benzene				1.6		1.6							
C2-C3 Hydrocarbons													
identified	58.6	65.2	70.0	62.2	66.5	66.0	56.7	57.4	57.0	60.1	60.1	60.2	58.6
total	58.6	65.2	75.1	62.9	66.5	67.4	56.7	57.4	57.0	60.1	60.1	60.2	58.6
% identified	100.0%	100.0%	94.3%	98.9%	100.0%	98.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
C4-C9 Hydrocarbons													
paraffins	131.1	145.9	155.5	204.7	170.6	169.2	132.8	130.8	130.7	131.3	130.9	129.8	131.1
olefins	12.4	13.8	8.6	16.8	15.3	13.6	13.0	10.4	13.1	13.0	14.2	10.8	12.4
aromatics	485.9	540.9	598.4	628.8	563.3	582.8	481.3	429.7	489.7	470.5	538.4	505.5	485.9
identified	629.3	700.6	762.4	850.3		771.1	627.1	570.9	633.5	614.8	683.5	646.1	629.3
total	700.4	779.8	850.2	949.5		859.8	698.9	629.6	691.7	693.8	780.4	708.0	700.4
% identified	89.9%	89.9%	89.7%	89.6%		89.7%	89.7%	90.7%	91.6%	88.6%	87.6%	91.3%	89.9%

109LISTR.cal 109	FR	FR adj. FR	IS	BL	HW	Mean	RR 5/5/87	RR 6/10/87	RR 7/2/87	RR 8/31/87	RR 9/2/87	RR 10/29/87	Mea
11 as others			407.4	340.3									
22-09 Hydrocarbons													
identified	687.9	765.9	832.4	912.4		836.9	683.8	628.3	690.5	674.9	743.6	706.3	687.
total	759.0	845.0	925.3	1012.3		927.5	755.6	687.0	748.7	753.9	840.5	768.2	759.
% identified	90.7%	90.6%	90.0%	90.1%		90.2%	90.5%	91.5%	92.2%	89.5%	88.5%	91.9%	90.7
109 Hydrocarbons													
identified			17.3	16.6			.0	.0	.0	.0	.0	.0	
total			65.0	33.7			.0	.0	.0	.0	.0	.0	
% identified			20.4%	42.1%									
Total Reported	759.0	845.0	1397.7	1386.3	1053.0	1170.5	755.6	687.0	748.7	753.9	840.5	768.2	759.

Corrected several numbers for RR's 10/29/87 sample from file
109LISTR.cal. Mostly for light HCs
File contains revised data submitted by Len Stockberger
Data entry has not been completely checked.

Filename: A:\109LISTT.cal Revised 1/13/1989

Canister C2109 Component	Std Dev	SD/M(%)	LS 7/17 A	LS 7/8 A	LS Mean	BL 5/10/87	BL 7/27/87	BL 9/23/87	BL Mean	BL SD	BL SD/Mean
Propane	.5	2.5%	35.5	22.9	31.2	37.7	38.3	37.5	37.8	.3	.9%
Ethane	.3	4.3%				11.6	9.7	9.7	10.3	.9	8.7%
Ethylene	.4	6.7%	49.1	25.1	37.1	8.2	7.2	9.2	8.4	.6	6.8%
Acetylene	.2	3.3%				4.7	3.7	4.4	4.3	.4	10.3%
Propene	.1	2.0%	1.4	2.0	1.7	2.5		1.5	2.0	.5	25.1%
Acetone			334.4	278.1	306.3						
111TCl-Ethane			86.0	88.7	87.4						
Freon 113			11.6	10.2	10.9						
CH2Cl2			3.0	2.8	2.9						
unknown						190.0	132.2	291.0	204.4	65.6	32.1%
2,2,3TM-1-Butene?						148.1	121.4	138.2	135.9	11.0	8.1%
n-Butane	.4	1.2%	37.3	36.7	37.0	45.1	43.0	43.4	43.9	.9	2.1%
i-Butane	.2	.6%	26.9	28.0	27.5	34.1	32.6	33.3	33.3	.6	1.9%
i-Pentane	.5	3.3%	16.7	18.1	17.4	29.4	28.1	20.0	25.8	4.1	16.0%
n-decane			15.4	11.2	13.3		11.2	18.9	15.0	3.9	25.7%
n-Nonane	1.0	9.5%	11.6	9.2	10.4	13.0	13.0	15.4	13.8	1.1	8.1%
n-Pentane	.6	6.9%	9.1	8.9	9.0	10.6	9.5	11.3	10.5	.8	7.3%
2M-Pentane	.1	2.3%	4.4	4.8	4.6	5.5	4.9	4.9	5.1	.3	5.9%
3M-Pentane	.2	7.1%	3.6	4.1	3.9	6.7	4.8	3.5	5.0	1.3	26.4%
4M-Octane			1.6	1.0	1.3	7.5	8.4	6.1	7.3	1.0	13.0%
3M-Hexane	.1	2.9%	2.9	3.4	3.2	11.8	8.3	3.0	7.7	3.6	47.4%
n-Octane	1.7	53.5%	3.8	3.6	3.7	7.4	4.5	4.3	5.4	1.4	26.2%
n-Hexane	.0	1.4%	3.6	3.8	3.7	5.4	3.2	4.0	4.2	.9	22.0%
2,5DM-Hexane						3.1	2.3	4.4	3.2	.9	26.4%
2M-Hexane			2.5	2.1	2.3	4.3	3.5	3.7	3.8	.4	9.3%
n-Heptane	.1	3.1%	2.5	2.6	2.6	3.7	3.1	2.8	3.2	.4	11.8%
3M-Octane			2.1	1.3	1.7	4.1	4.5	3.3	4.0	.5	12.7%
2,3DM-Pentane	.4	10.4%	1.6	1.8	1.7						
2M-Heptane	.1	7.0%				2.8	1.4	1.0	1.7	.8	45.1%
Mcyclohexane	.1	6.8%	4.6	2.5	3.6	2.6	2.3	2.6	2.5	.2	6.2%
Ecyc-Hexane						2.4	2.2	2.5	2.4	.1	5.3%
2,2,4TM-Pentane			2.0	2.0	2.0	2.7	2.3	2.4	2.5	.2	7.0%
McycPentane	.1	9.4%	2.2	2.0	2.1	2.0	1.8	1.7	1.9	.1	6.2%
3E-Hexane	.1	9.1%									
2,3DM-Hexane	.2	43.3%									
3M-Heptane						1.5	1.2	1.6	1.4	.2	11.5%
2,3DM-butane	.0	4.1%	1.1	1.1	1.1	1.4	1.2	1.1	1.2	.1	8.2%
Cyclopentane	.0	7.1%	.8	.8	.8	1.5	.9	1.0	1.1	.3	22.4%
Cyclohexane	.0	8.7%	.7	1.1	.9	.9	.9	.7	.8	.1	10.7%
2,2,3TM-Hexane						.8	.8	.9	.8	.1	7.1%
2,4DM-Hexane	.0	.0%				.9	.7	.7	.7	.1	12.3%
2,4DM-Pentane			1.2	.5	.9		.4		.4	.0	.0%
2,3,4TM-Pentane	.0	.0%	.6	.7	.7	.6	.6	.6	.6	.0	5.5%
3,3DM-Pentane			.3	.5	.4		.7	.2	.5	.2	47.8%
2,4DM-Heptane							.3	.3	.3	.0	12.3%
2,2DM-Butane								.2	.2	.0	.0%
2,2DM-Propane											
2,2,3TM-Pentane											
1-Butene						4.9	.4	4.1	3.1	2.0	62.9%

Canister 13109 Component	Std Dev	SD/M(%)	13 7/17 A	13 7/8 A	13 Mean	BL 5/10/87	BL 7/27/87	BL 9/23/87	BL Mean	BL SD	BL SD/Mean
1-Butene	.4	17.4%									
1M-2-Butene	.6	29.7%				5.1		.3	2.7	3.4	88.5%
2M-1-Pentene	.2	39.6%						3.5	3.5	.0	.0%
1,3-Butadiene			.0	.4	.2		3.9		3.9	.0	.0%
t-2-Butene	.1	7.1%	1.8	2.0	1.9	2.4	1.5	1.5	1.8	.4	21.3%
c-2-Butene	.1	9.0%	1.3	1.3	1.3	1.8	1.5	1.5	1.6	.2	10.0%
Isoprene	.1	7.9%	1.0	.9	1.0	2.6	2.7	.5	1.9	1.0	51.0%
t-2-Pentene	.1	6.7%	1.3	1.2	1.3	1.2	.3	1.0	.8	.4	44.6%
2M-1-Butene	.1	6.4%	1.2	1.1	1.2	1.2	.9	.8	.9	.2	20.7%
c-2-Pentene	.2	28.3%	.9	.6	.8		3.3	.4	1.3	1.4	76.6%
Cyclopentene								1.0	1.0	.0	.0%
1-Pentene	.1	8.2%	.6	.8	.7						
3M-1-Butene	.1	14.3%	.3	.4	.4	.4	.4		.4	.0	3.6%
1M-2-Pentene							.3	.4	.3	.0	8.0%
4M-1-Pentene								.2	.2	.0	.0%
c-2-Octene								.2	.2	.0	.0%
t-3M-2-Pentene							.2	.2	.2	.0	14.3%
1-Hexene											
t-2-Hexene											
c-2-Hexene											
1-Octene											
a-pinene											
b-pinene											
p- & m-Xylene	20.1	8.7%	274.3	290.7	282.5	282.4	286.3	321.2	296.6	17.4	5.9%
Toluene	5.4	4.0%	151.1	159.7	155.4	168.3	143.8	165.9	159.4	11.0	6.9%
E-Benzene	7.2	8.9%	93.4	100.2	96.8	104.3	100.5	116.4	107.1	6.8	6.3%
o-Xylene	3.0	10.5%	34.9	37.0	36.0	40.8	41.7	45.2	42.5	1.9	4.5%
1,2,4TM-Benzene			10.0	6.6	8.3			10.5	10.5	.0	.0%
Benzene	.1	2.2%	4.1	4.3	4.2	6.4	5.3	4.3	5.3	.8	15.9%
oE-Toluene			4.5	3.9	4.2	4.3	3.5	5.5	4.4	.8	18.2%
pE-Toluene	.5	18.9%	3.5	3.0	3.3	3.2	3.7	5.6	4.2	1.0	24.2%
1,3,5TM-Benzene	.9	30.4%									
mE-Toluene	.4	28.6%	3.8	3.6	3.7		2.8	4.5	3.6	.8	23.2%
Styrene			1.4	2.5	2.0						
nP-Benzene	.7	24.1%	2.1	2.1	2.1		2.7	2.7	2.7	.0	.7%
iP-Benzene						1.6	2.3	.8	1.6	.6	39.8%
C2-C3 Hydrocarbons											
identified	1.6	2.7%	80.0	60.0	70.0	64.8	59.5	62.3	62.2	2.1	3.4%
total	1.6	2.7%	90.0	60.2	75.1	64.7	61.5	62.3	62.9	1.4	2.2%
% identified	.0%	.0%	88.9%	99.7%	94.3%	100.0%	96.7%	100.0%	98.9%	1.6%	1.6%
C4-C9 Hydrocarbons											
paraffins	.9	.7%	159.1	151.8	155.5	211.9	202.3	199.8	204.7	5.2	2.5%
olefins	1.4	10.9%	8.4	8.7	8.6	19.5	15.3	15.6	16.8	1.9	11.3%
aromatics	33.1	6.8%	583.1	613.6	598.4	611.3	592.6	682.5	628.8	38.7	6.2%
identified	33.8	5.4%	750.6	774.1	762.4	842.7	810.2	897.9	850.3	36.2	4.3%
total	44.0	6.3%	850.6	849.8	850.2	973.1	897.4	977.9	949.5	36.9	3.9%
% identified	1.4%	1.6%	88.2%	91.1%	89.7%	86.6%	90.3%	91.8%	89.6%	2.2%	2.4%

Canister SG109 Component	Std Dev	SD/M(%)	LS 7/17 A	LS 9/8 A	LS Mean	BL 5/10/87	BL 7/27/87	BL 9/23/87	BL Mean	BL SD	BL SD/Mean
11 as others			435.0	379.3	407.4	338.1	253.6	429.2	340.3	71.7	21.1%
C2-C9 Hydrocarbons											
identified	34.6	5.0%	830.6	834.1	832.4	907.5	869.7	960.2	912.4	37.1	4.1%
total	44.8	5.9%	940.6	910.0	925.3	1037.8	958.9	1040.2	1012.3	37.8	3.7%
% identified	1.3%	1.5%	88.3%	91.7%	90.0%	87.4%	90.7%	92.3%	90.1%	2.0%	2.2%
>C9 Hydrocarbons											
identified			15.4	11.2	13.3	2.1	16.9	30.8	16.6	11.8	70.9%
total			74.5	55.5	65.0	13.0	28.9	59.1	33.7	19.1	56.8%
% identified			20.7%	20.2%	20.4%	15.7%	58.3%	52.2%	42.1%	18.8%	44.6%
Total Reported	44.8	5.9%	1450.1	1345.3	1397.7	1388.9	1241.4	1528.5	1386.3		

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CANISTER SAMPLE 146

Canister C2146 Component	Mean RR	Mean RR adj. RR	Mean LS	Mean BL	Mean HW	Overall Mean	5/5/87	6/10/87	7/2/87	8/31/87	9/2/87	10/23/87	Mean
Ethane	27.2	30.5		42.0	75.3	49.2	27.2	28.5	23.0	27.6	29.1	28.0	27.2
Propane	38.7	43.0	34.1	40.5	41.5	40.0	-0.5	40.3	30.8	39.7	41.0	39.1	38.7
Ethylene	24.8	27.6	17.6	30.4	28.0	25.9	25.2	25.9	21.0	25.6	25.9	25.2	24.8
Acetylene	15.1	16.8	58.8	20.4	15.3	27.8	14.7	15.6	13.6	14.7	16.3	15.9	15.1
Propene	8.3	9.9	6.4	9.0	12.0	9.3	8.8	9.9	8.2	9.1	9.1	9.2	8.3
Acetone			49.8										
111TCl-Ethane			6.6										
Freon 113			2.2										
CH2Cl2			1.4										
CCl4			1.0										
i-Pentane	48.5	54.0	50.3	59.6	60.6	56.1	48.9	48.6	47.0	46.5	49.4	50.4	48.5
i-Butane	35.2	39.2	37.4	45.3	48.6	42.6	35.9	36.3	30.4	35.9	35.9	36.7	35.2
n-Pentane	20.0	22.2	21.6	23.3	31.2	24.7	20.5	20.4	18.4	19.0	20.7	20.8	20.0
i-Butane	18.0	20.0	15.9	19.5	20.1	18.9	18.4	18.5	16.0	18.4	18.3	18.4	18.0
2M-Pentane	15.3	17.1	16.8	18.9	17.5	17.6	15.1	15.3	15.0	15.0	15.7	15.9	15.3
3M-Pentane	11.2	12.5	13.1	13.8	13.2	14.6	11.3	11.0	11.5	10.5	11.8	11.2	11.2
Mcyc-Pentane	10.9	12.1	13.5	13.6	13.2	13.1	10.8	10.8	11.2	10.5	11.0	11.0	10.9
2M-Hexane			6.9	12.4	18.0	12.4							
n-Hexane	10.7	11.9	11.6	11.5	8.4	10.8	10.5	10.7	10.7	10.3	10.7	11.0	10.7
DM-cyclopentanes					10.3	10.3							
2,3DM-Pentane	12.8	14.3	6.4	5.9		8.9	11.4	12.3	13.5	13.9	12.8	12.9	12.8
2,2,4TM-Pentane			11.3	10.6	8.2	10.0							
Mcyc-Hexane	7.1	7.8	9.5	8.6	8.4	8.6	7.0	6.8	7.4	7.1	7.0	7.0	7.1
3M-Hexane	7.2	8.0	8.7	8.8	6.7	8.0	6.7	6.7	9.2	6.8	6.8	6.7	7.2
n-Heptane	6.0	6.6	7.2	8.9	5.3	7.0	5.8	5.6	6.7	6.0	5.8	5.8	6.0
2,3DM-Butane	4.4	4.9	4.7	5.6	5.8	5.3	4.4	4.4	4.4	4.3	4.5	4.5	4.4
2,4DM-Pentane	6.3	7.0	4.3	4.0		5.1	6.0		6.5	6.3	6.1	6.6	6.3
n-Octane	3.5	3.9	3.5	6.1	4.3	4.4	2.9	2.9	4.2	5.0	2.9	3.0	3.5
2M-Heptane	2.8	3.1		5.2	3.6	4.3	2.7	2.6	3.1	3.2	2.6	2.7	2.8
2,2,5TM-Hexane				3.9		3.9							
Cyclohexane	3.0	3.4	3.3	3.9	4.3	3.7	2.8	2.9	3.3	3.3	2.9	3.0	3.0
4M-Octane			1.4	3.7		2.6							
3E-Hexane	2.8	3.2				3.2	2.5	2.6	3.3	3.4	2.7	2.5	2.8
Cyclopentane	2.6	2.9	2.7	3.4	4.3	3.3	2.6	2.6	2.5	2.5	2.6	2.7	2.6
2,5DM-Hexane				3.2		3.2							
3M-Heptane				4.8	1.4	3.1							
3M-Octane			1.6	2.9		2.2							
2,3,4TM-Pentane	1.2	1.3	3.1	4.2	2.9	2.9					1.2	1.2	1.2
n-Nonane	2.3	2.5	2.4	3.0	2.4	2.6	2.2	2.3	2.5	2.4	2.1	2.2	2.3
2,3DM-Hexane	1.5	1.7			3.1	2.4	1.4	1.5	1.8	1.5	1.5	1.5	1.5
2,4DM-Hexane	1.2	1.3		3.0		2.2					1.2	1.2	1.2
Ecyc-Hexane				1.1		1.1							
2,2DM-Butane	.8	.9		.6		.8	1.1	1.1		.6	.2	1.2	.8
2,2DM-Propane	.7	.8				.8	.9	.9	.5	.4		.9	.7
2,4DM-Heptane				.7		.7							
3,3DM-Pentane			.7	.6		.6							
2,2,3TM-1-Butene				7.6		7.6							
1-Butene	2.9	3.3				3.3	2.6	2.8	3.6	3.0	2.8	2.8	2.9
1-Butene	2.0	2.2		5.2	.5	2.6			2.0				2.0
2M-1-Butene	2.2	2.4	2.4	2.0		2.3	2.2	2.2	2.1	2.1	2.2	2.2	2.2
2M-2-Butene	1.8	2.0				2.0	2.2	2.1	2.0	2.0	1.3	1.3	1.8
t-2-Pentene	1.9	2.1	1.8	2.9	.7	1.9	2.0	2.0	1.9	1.7	2.0		1.9

Canister CB14s Component	Mean RR	Mean adj. RR	Mean LS	Mean BL	Mean HW	Overall Mean	RR 5/5/87	RR 6/10/87	RR 7/2/87	RR 8/31/87	RR 9/2/87	RR 10/29/87	RR Mean
1-Pentene	1.9	2.2	1.8	1.6		1.8	1.9	1.9	1.7	1.7	1.4	1.[illegible]	1.7
c-2-Pentene	1.3	1.5	1.6	1.3	.5	1.7	1.1		1.4	1.9	1.1	1.1	1.1
1,3-Butadiene			.9	1.1		1.0							
t-2-Butene	1.3	1.4	1.5	1.3	1.2	1.4	1.1	1.1	1.5	1.6	1.2	1.2	1.[illegible]
3M-1-Butene	.8	.8	.9	.8	1.3	1.1	.8	.7	.8	.8	.7	.7	.8
c-2-Butene	1.1	1.2	1.2	1.1	1.0	1.1	1.0	1.0	1.1	1.4	1.1	1.1	1.1
1-Butene				1.0		1.0							
4M-1-Pentene	.9	1.0		1.0		1.0	.9	.9	1.0	.7	.8	1.0	.9
1-Hexene	.8	.9				.9	.8	.8	.9	.8	.8	.8	.8
Isoprene	.7	.7	.9	1.6	.5	.9	.7	.7	.5	.6	.7	.7	.7
2M-2-Pentene				.9		.9							
Cyclopentene	.5	.5				.5	.4	.5	.4	.5	.5	.5	.5
c-2-Hexene	.4	.4		.8		.6	.4	.4		.4		.4	.4
2M-1-Pentene	.5	.5				.5	.5	.5	.5	.4	.5	.5	.5
t-3M-2-Pentene				.4		.4							
Toluene	47.9	53.3	56.9	65.1	51.0	56.6	47.6	47.6	52.9	42.8	48.3	49.3	47.9
p- & m-Xylene	31.2	34.7	34.6	41.4	34.6	35.3	29.5	31.1	33.0	34.8	29.4	29.3	31.1
Benzene	16.5	18.4	17.8	17.1	14.7	17.0	16.2	16.3	17.3	16.1	16.5	16.8	16.5
o-Xylene	11.2	12.5	12.2	16.0	11.5	13.0	10.4	10.8	11.8	12.5	10.8	10.8	11.2
1,2,4TM-Benzene			11.0	18.1	6.7	11.9							
E-Benzene	8.8	9.8	9.3	11.4	9.1	9.9	8.4	8.9	9.3	9.8	8.3	8.3	8.6
3E-Toluene	7.3	8.1	4.1	6.0	6.0	6.0	7.0	6.8	7.9	7.8	7.1	7.3	7.3
2E-Toluene	3.2	3.5	7.7	10.1	2.9	6.1	3.3	2.8	3.4	2.9	3.3	3.4	3.2
oE-Toluene	2.5	2.7	3.5	5.0	2.4	3.4	2.6	2.4	2.8	3.1	1.4	2.5	2.5
1,3,5TM-Benzene	3.2	3.5			1.9	2.7	3.0	2.5	3.8	3.5	3.3	3.0	3.2
nP-Benzene	2.2	2.5	1.9	3.5	1.7	2.4	2.4	2.5	1.8	1.8	2.4	2.5	2.2
iP-Benzene				2.1		2.1							
Styrene			2.4		1.9	2.2							
C2-C3 Hydrocarbons													
identified	114.8	127.8	117.5	142.4	172.1	139.9	116.5	119.8	96.6	116.7	121.4	117.5	114.8
total	114.8	127.8	136.7	142.7	172.1	144.8	116.5	119.8	96.6	116.7	121.4	117.5	114.8
% identified	100.0%	100.0%	84.8%	99.8%	100.0%	96.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
C4-C9 Hydrocarbons													
paraffins	233.0	259.4	257.4	318.1	307.8	285.7	231.8	226.8	229.1	232.8	236.4	241.0	233.0
olefins	18.6	20.7	12.7	29.7	6.3	17.4	18.6	17.6	21.4	19.8	18.1	16.3	18.8
aromatics	134.0	149.2	161.1	195.8	144.4	162.6	130.4	131.7	144.0	135.1	130.8	132.2	134.0
identified	385.6	429.3	431.2	543.6	458.5	465.7	380.8	376.1	394.5	387.5	385.3	389.5	385.8
total all	467.8	520.8	540.9	628.9	493.4	546.0	457.3	460.9	485.4	477.2	461.1	464.8	467.8
% identified	82.5%	82.4%	79.7%	86.5%	92.9%	85.4%	83.3%	81.6%	81.3%	81.2%	83.6%	83.8%	82.5%
id as others			60.9				.0	.0	.0	.0	.0	.0	
C2-C9 Hydrocarbons													
identified	500.4	557.1	548.7	686.0	630.6	605.6	497.3	495.9	491.1	504.2	506.7	507.0	500.4
total all	582.5	648.6	677.6	771.7	665.5	690.8	573.8	580.7	582.0	593.9	582.5	582.3	582.5
% identified	85.9%	85.9%	80.9%	89.0%	94.8%	87.6%	86.7%	85.4%	84.4%	84.9%	87.0%	87.1%	85.9%
>C9 Hydrocarbons													
identified			4.6	23.3									
total all			56.1	55.2									
% identified			8.3%	42.7%									

Canister CG146 Component	Mean RR	Mean RR adj. RR	Mean LS	Mean BL	Mean HW	Overall Mean	GR 5/5/87	RR 6/10/87	RR 7/2/87	RR 8/31/87	GR 9/2/87	RR 10/29/87	RR Mean
Total Reported	582.5	648.6	794.6	826.3	665.5	733.9	573.8	580.7	582.0	593.9	582.5	582.3	582.5

Canister CQ146 Component	RR Std Dev	RR SD/M(%)	LS 7/17 A	LS 9/8 A	LS Mean	BL 5/10/87	BL 7/27/87	BL 9/23/87	BL Mean	BL SD	BL SD/M
Ethane	2.0	7.3%				42.8	38.8	44.5	42.0	2.4	5.7%
Propane	3.6	9.2%	33.6	35.9	34.8	41.6	38.4	41.9	40.6	1.6	4.0%
Ethylene	1.7	7.0%	28.5	6.7	17.6	34.3	27.5	29.3	30.4	2.9	9.5%
Acetylene	.9	6.0%	79.6	38.0	58.8	22.9	18.6	19.8	20.4	1.8	8.7%
Propene	.3	3.8%	6.8	5.9	6.4	12.0	7.1	7.9	9.0	2.2	24.0%
Acetone			38.6	60.9	49.8						
111TCl-Ethane			6.7	6.5	6.6						
Freon 113			2.8	1.5	2.2						
CH2Cl2			1.5	1.2	1.4						
C2Cl4			1.0	1.0	1.0						
i-Pentane	1.3	2.8%	50.2	50.4	50.3	63.0	55.6	60.2	59.6	3.0	5.1%
n-Butane	2.2	6.1%	37.3	37.5	37.4	48.0	42.3	45.7	45.3	2.3	5.2%
n-Pentane	.9	4.6%	21.7	21.4	21.6	28.7	21.6	21.1	23.8	3.5	14.5%
i-Butane	.9	5.0%	15.5	16.3	15.9	20.7	18.2	19.7	19.5	1.0	5.3%
2M-Pentane	.3	2.3%	16.2	17.3	16.8	21.3	16.7	18.8	18.9	1.9	10.0%
3M-Pentane	.4	3.6%	12.8	13.3	13.1	15.1	11.8	14.5	13.8	1.4	10.5%
Mcyc-Pentane	.2	2.0%	12.8	14.2	13.5	14.8	12.1	13.7	13.6	1.1	8.2%
2M-Hexane			7.2	6.6	6.9	16.9	6.3	14.0	12.4	4.5	36.1%
n-Hexane	.2	2.0%	11.8	11.3	11.6	16.2	9.2	9.1	11.5	3.3	29.0%
DM-cyclopentanes											
2,3DM-Pentane	.8	6.3%	6.7	6.1	6.4		5.9		5.9	.0	.0%
2,2,4TM-Pentane			11.2	11.3	11.3	11.8	9.3	10.8	10.6	1.0	9.5%
Mcyc-Hexane	.2	2.6%	8.2	10.8	9.5	9.4	7.5	8.8	8.6	.8	9.3%
3M-Hexane	.9	12.8%	9.1	8.3	8.7	10.5	7.1	8.7	8.8	1.4	15.6%
n-Heptane	.4	6.0%	7.2	7.2	7.2	10.0	8.3	8.3	8.9	.8	9.0%
2,3DM-Butane	.1	1.6%	4.6	4.7	4.7	6.5	4.7	5.7	5.6	.7	12.7%
2,4DM-Pentane	.2	3.6%	4.8	3.7	4.3	4.5	3.5	4.1	4.0	.4	9.5%
n-Octane	.8	23.6%	3.4	3.5	3.5	6.1	5.9	6.4	6.1	.2	3.8%
2M-Heptane	.2	8.6%				6.9	5.5	6.1	6.2	.6	9.2%
2,2,5TM-Hexane						4.4	3.4	3.8	3.9	.4	10.6%
Cyclohexane	.2	6.5%	3.3	3.3	3.3	4.0	3.4	4.3	3.9	.4	9.2%
4M-Octane			1.6	1.2	1.4	4.2	2.7	4.3	3.7	.7	19.9%
3E-Hexane	.4	13.2%									
Cyclopentane	.1	2.7%	2.7	2.7	2.7	4.0	2.8	3.3	3.4	.5	14.9%
2,5DM-Hexane						2.3	3.7	3.6	3.2	.6	20.2%
3M-Heptane						5.1	4.3	4.9	4.8	.3	7.2%
3M-Octane			1.8	1.3	1.6	3.4	2.4	3.1	2.9	.4	13.6%
2,3,4TM-Pentane	.0	.0%	3.0	3.2	3.1	4.4	4.0	4.3	4.2	.2	3.6%
n-Nonane	.1	5.9%	2.6	2.2	2.4	3.1	2.8	3.2	3.0	.2	5.1%
2,3DM-Hexane	.1	8.1%									
2,4DM-Hexane	.0	.0%				3.2	2.9	2.9	3.0	.1	4.6%
Ecyc-Hexane						1.2	.9	1.2	1.1	.2	13.7%
2,2DM-Butane	.4	45.6%					.9	.3	.6	.3	48.3%
2,2DM-Propane	.2	30.9%									
2,4DM-Heptane						.9	.6	.7	.7	.1	17.5%
3,3DM-Pentane			.7	.6	.7	.5	.2	1.2	.6	.5	75.0%
2,2,3TM-1-Butene						8.3	6.7	7.8	7.6	.7	8.7%
i-Butene	.3	10.9%									
1-Butene	.0	.0%				6.0	4.4	5.1	5.2	.6	12.5%
2M-1-Butene	.0	2.2%	2.4	2.3	2.4	3.6	1.7	.8	2.0	1.2	56.7%
2M-2-Butene	.4	20.5%									
t-2-Pentene	.1	6.1%	2.1	1.5	1.8	5.2	.7		2.9	2.2	76.2%

Canister 20146	RR	RR	LB	LB	LB	BL	BL	BL	BL	BL	BL
Component	Std Dev	SD/M(%)	7/17 A	7/8 A	Mean	5/10/87	7/27/87	9/23/87	Mean	SD	SD/M
1-Pentene	.2	12.2%	1.7	1.8	1.8	2.5	1.5	.9	1.8	.7	40.7%
c-2-Pentene	.3	23.7%	2.0	1.2	1.6	4.2	2.4		3.3	.9	27.9%
1,3-Butadiene			1.1	.6	.9	2.2	.4	.6	1.1	.8	75.3%
t-2-Butene	.2	15.2%	1.5	1.5	1.5	2.0	.8	1.0	1.3	.5	39.9%
3M-1-Butene	.1	6.7%	.8	.9	.9	1.0	.7	.8	.8	.1	12.5%
c-2-Butene	.1	12.0%	1.2	1.1	1.2	1.4	.7	1.1	1.1	.3	27.9%
1-Octene						1.1	.9	1.0	1.0	.1	8.9%
4M-1-Pentene	.1	12.1%					1.1	.8	1.0	.1	14.9%
1-Hexene	.0	4.6%									
Isoprene	.1	11.8%	1.1	.6	.9	.6	3.1	1.0	1.6	1.1	71.2%
2M-2-Pentene						1.3	.5		.9	.4	40.0%
Cyclopentene	.0	10.1%									
c-2-Hexene						1.0	.4	.9	.8	.3	34.8%
2M-1-Pentene	.0	7.7%									
t-3M-2-Pentene						.5	.3	.3	.4	.1	21.1%
Toluene	2.9	6.1%	56.2	57.5	56.9	68.7	64.5	61.9	65.1	2.8	4.3%
p- & m-Xylene	2.1	6.7%	33.7	35.5	34.6	42.3	41.1	40.8	41.4	.6	1.5%
Benzene	.4	2.5%	17.6	18.0	17.8	20.9	13.6	16.8	17.1	3.0	17.4%
o-Xylene	.7	6.5%	12.1	12.2	12.2	16.8	14.6	16.7	16.0	1.0	6.2%
1,2,4TM-Benzene			13.7	8.3	11.0	16.6	19.1	18.6	18.1	1.1	6.0%
E-Benzene	.6	6.4%	9.0	9.5	9.3	11.8	11.3	11.2	11.4	.3	2.2%
3E-Toluene	.4	5.5%	4.6	3.5	4.1	6.5	5.6	5.9	6.0	.4	6.6%
2E-Toluene	.2	7.6%	8.4	7.0	7.7	10.9	9.7	9.6	10.1	.6	5.9%
oE-Toluene	.5	21.4%	3.9	3.0	3.5	5.4	4.7	5.0	5.0	.3	6.1%
1,3,5TM-Benzene	.4	13.0%									
nP-Benzene	.3	13.8%	1.9	1.8	1.9	4.3	2.7	3.5	3.5	.7	19.2%
iP-Benzene						4.9	.5	.8	2.1	2.0	98.1%
Styrene			2.5	2.3	2.4						
C2-C3 Hydrocarbons											
identified	8.3	7.2%	148.5	86.5	117.5	153.5	130.3	143.3	142.4	5.9	4.2%
total	8.3	7.2%	164.4	109.0	136.7	153.9	130.6	143.7	142.7	6.0	4.2%
% identified			90.3%	79.4%	84.8%	99.7%	99.8%	99.7%	99.8%	.0%	.0%
C4-C9 Hydrocarbons											
paraffins	4.7	2.0%	256.4	258.4	257.4	351.0	286.6	316.8	318.1	14.6	4.6%
olefins	1.6	8.6%	13.9	11.5	12.7	40.6	26.4	22.2	29.7	3.1	10.4%
aromatics	4.7	3.5%	163.6	158.6	161.1	209.2	187.3	190.8	195.8	3.5	1.8%
identified	5.9	1.5%	433.9	428.5	431.2	600.7	500.3	529.8	543.6	18.1	3.3%
total all	10.1	2.2%	549.9	531.9	540.9	706.2	566.9	613.7	628.9	26.4	4.2%
% identified	1.1%	1.3%	78.9%	80.6%	79.7%	85.1%	88.3%	86.3%	86.5%	.9%	1.0%
id as others			50.6	71.1	60.9	.0	.0	.0	.0		
C2-C9 Hydrocarbons											
identified	6.0	1.2%	582.4	515.0	548.7	754.3	630.6	673.1	686.0	23.7	3.4%
total all	5.9	1.0%	714.3	640.9	677.6	860.1	697.5	757.4	771.7	32.2	4.2%
% identified	1.1%	1.2%	81.5%	80.4%	80.9%	87.7%	90.4%	88.9%	89.0%	.7%	.8%
>C9 Hydrocarbons											
identified			5.2	3.9	4.6	20.8	25.4	23.7	23.3	.9	3.9%
total all			68.9	43.3	56.1	56.2	49.4	59.9	55.2	4.3	7.8%
% identified			7.5%	9.0%	8.3%	37.1%	51.4%	39.6%	42.7%	5.0%	11.7%

File: A:146LISTT.cal

Canister CQ146 Component	FR Std Dev	FR SD/M(%)	LS 7/17 A	LS 9/8 A	LS Mean	BL 5/10/87	BL 7/27/87	BL 9/23/87	BL Mean	BL SD	BL SD/M
Total Reported	5.9	1.0%	833.8	755.3	794.6	916.3	746.9	817.3	826.8	35.7	4.3%

APPENDIX E

DATA FROM INTERCOMPARISON OF PAN ANALYSIS

EPA DATA

PAN CONCENTRATIONS ppb CLAREMONT,CA. TIME,PDT

TIME	AUG25	AUG26	AUG27	AUG28	AUG29	AUG30	AUG31
0000	0.25	0.74	1.13	0.49	1.86	2.84	2.94
0015	0.05	0.74	1.27	0.49	2.06	2.84	2.65
0030	0.05	0.74	1.08	0.54	1.86	2.65	2.45
0045	0.05	0.74	0.88	0.49	1.62	2.40	2.25
0100	0.05	0.98	1.13	0.74	1.37	2.11	2.45
0115	0.05	0.98	1.27	0.69	1.27	2.01	2.65
0130	0.25	1.23	1.08	0.69	1.23	1.86	1.67
0145	0.25	1.32	1.37	0.74	1.13	1.72	1.67
0200	0.05	1.13	1.52	0.83	1.08	1.96	2.16
0215	0.25	1.13	1.62	0.69	2.30	1.81	2.94
0230	0.25	0.98	1.47	0.98	2.79	1.96	3.14
0245	0.25	1.13	1.37	1.23	4.17	1.86	3.24
0300	0.05	0.98	2.21	1.32	4.80	1.62	2.16
0315	0.25	0.98	1.96	2.35	5.05	1.86	2.65
0330	0.25	1.23	2.11	1.72	4.56	1.96	2.25
0345	0.25	1.23	2.06	1.62	5.29	2.45	1.96
0400	0.25	1.13	2.06	1.47	5.29	2.94	1.96
0415	0.25	0.98	2.35	2.84	6.37	2.94	2.65
0430	0.25	0.98	2.35	3.43	5.49	2.84	3.14
0445	0.25	0.74	2.21	3.58	3.77	2.84	3.14
0500	0.25	0.74	2.11	3.43	1.81	4.22	2.75
0515	0.39	0.59	1.86	3.68	1.37	4.17	2.94
0530	0.25	0.74	1.81	3.58	0.98	2.94	2.45
0545	0.25	0.88	1.62	3.58	1.13	1.96	2.45
0600	0.39	0.88	2.06	3.43	1.13	1.72	2.75
0615	0.25	0.74	2.11	3.09	1.62	1.52	2.65
0630	0.25	0.74	1.72	3.09	2.70	1.32	2.25
0645	0.25	0.88	1.62	2.25	2.11	2.25	1.76
0700	0.25	1.13	2.06	1.72	2.11	2.94	1.76
0715	0.25	1.13	1.96	1.08	2.06	3.43	2.35
0730	0.25	1.13	2.21	1.13	2.70	3.28	2.65
0745	0.49	1.13	3.04	1.23	4.12	2.84	2.45
0800	0.49	1.18	3.33	1.23	3.68	2.60	2.45
0815	0.49	1.13	3.19	1.57	2.21	2.25	2.75
0830	0.49	1.47	3.33	2.30	1.86	2.65	1.76
0845	0.69	1.62	2.70	3.33	1.96	3.19	1.96
0900	0.74	1.72	2.70	4.26	1.67	3.82	3.14
0915	0.74	1.91	3.09	4.07	2.16	4.90	3.43
0930	0.74	1.96	3.77	4.75	2.35	5.29	4.41
0945	0.83	2.35	3.73	4.02	2.45	5.25	5.39
1000	0.88	3.19	4.66	4.80	2.70	6.76	5.10
1015	0.83	3.53	5.05	3.77	2.70	5.29	6.37
1030	1.13	3.82	4.75	4.75	3.09	7.70	5.69
1045	1.23	4.17	7.01	4.26	1.32	6.37	7.35
1100	1.67	3.77	7.11	3.82	4.41	9.31	5.88
1115	1.72	4.66	7.70	4.80	5.29	9.22	5.39
1130	2.21	4.56	7.11	5.00	5.64	8.68	5.39
1145	2.21	5.88	5.29	5.54	6.62	9.66	3.73
1200	1.96	6.62	5.98	6.72	7.01	10.34	7.84

PAN CONCENTRATIONS ppb CLAREMONT.CA. TIME.PDT

TIME	AUG25	AUG26	AUG27	AUG28	AUG29	AUG30	AUG31
1215	2.01	6.13	5.78	6.37	8.48	8.48	6.57
1230	2.30	7.45	7.89	9.90	10.29	12.84	6.86
1245	2.84	7.60	7.99	9.71	10.25	12.01	7.55
1300	2.84	8.68	7.50	9.66	13.09	11.27	7.84
1315	4.17	7.99	10.69	12.01	12.50	14.80	8.33
1330	3.77	9.80	10.20	11.91	15.05	15.20	10.49
1345	4.75	9.31	9.41	13.33	16.42	12.06	10.78
1400	3.68	10.34	11.67	15.00	15.29	15.88	11.27
1415	4.56	9.26	13.87	17.65	17.01	14.71	11.76
1430	3.73	10.20	13.38	15.64	19.26	14.51	10.29
1445	5.20	9.31	14.22	17.16	16.52	17.75	13.43
1500	4.41	8.43	15.54	20.44	20.59	15.78	15.10
1515	5.39	9.56	13.58	18.53	22.06	17.65	12.25
1530	4.71	7.89	11.42	19.12	21.57	16.96	18.14
1545	5.15	9.56	14.36	19.02	17.79	12.25	14.71
1600	5.05	7.65	12.35	23.92	22.01	15.20	13.24
1615	4.66	9.71	10.15	20.10	19.61	12.25	14.02
1630	5.88	8.04	11.03	16.91	19.95	12.75	13.24
1645	4.85	9.12	9.71	16.42	21.47	11.57	10.78
1700	5.39	8.19	11.27	14.51	20.25	9.31	13.53
1715	4.66	7.16	9.71	12.25	22.79	9.12	10.29
1730	4.31	7.11	9.66	12.89	20.25	6.37	8.04
1745	4.17	6.42	8.48	10.25	23.14	7.65	6.37
1800	3.68	5.20	7.11	10.54	18.77	5.88	4.61
1815	2.70	4.75	7.84	9.56	20.10	6.08	4.41
1830	2.84	3.68	4.75	7.75	16.67	4.71	3.63
1845	2.30	3.53	3.00	8.09	16.52	4.41	4.41
1900	1.81	3.14	3.87	6.91	15.29	4.22	2.75
1915	1.62	2.84	3.33	6.03	15.05	3.73	3.14
1930	1.47	2.60	2.11	5.78	15.34	3.24	3.43
1945	1.32	1.86	2.21	4.90	14.61	2.75	2.94
2000	1.23	1.62	2.35	4.41	13.38	1.76	2.75
2015	1.13	1.37	1.96	4.07	8.48	1.96	3.24
2030	1.08	1.37	1.91	3.19	8.33	1.76	3.43
2045	0.93	1.13	2.11	2.55	7.75	1.76	3.43
2100	0.88	1.13	1.86	2.60	8.09	1.67	3.24
2115	0.98	1.13	1.47	2.79	7.60	1.76	2.75
2130	1.13	1.03	1.37	2.60	7.30	1.67	2.45
2145	1.13	1.18	1.47	2.65	6.52	1.76	2.45
2200	1.08	1.18	1.32	2.70	5.64	1.76	2.25
2215	0.88	1.13	1.23	2.55	4.75	1.76	2.16
2230	0.83	1.13	1.27	2.70	4.17	1.47	2.06
2245	0.78	1.08	1.13	2.50	3.68	1.27	1.76
2300	0.64	1.13	0.98	2.55	3.58	1.47	1.47
2315	0.64	0.98	0.88	2.30	2.94	1.96	1.37
2330	0.74	1.03	0.69	2.06	2.79	2.65	0.98
2345	0.74	0.88	0.74	2.21	2.60	2.94	1.37
2400	0.74	1.13	0.49	1.86	2.84	2.94	1.47

DGA DATA

CLAREMONT PAN DATA		
Date	Time /PST	PAN /ppbv
7/14/87	13:13	4
7/14/87	14:13	9
7/14/87	15:13	11
7/14/87	16:13	8
7/14/87	17:13	5
7/14/87	18:13	≤5
7/14/87	19:56	≤5
7/14/87	20:56	≤3
7/14/87	21:56	2
7/14/87	22:56	≤1
7/14/87	23:56	ND
7/15/87	0:56	ND
7/15/87	1:56	0
7/15/87	2:57	≤5
7/15/87	3:57	≤5
7/15/87	4:57	≤3
7/15/87	5:57	≤3
7/15/87	6:57	0
7/15/87	7:57	2
7/15/87	8:57	3
7/15/87	9:57	4
7/15/87	10:57	4
7/15/87	11:57	4
7/15/87	12:57	8
7/15/87	13:57	9
7/15/87	14:57	8
7/15/87	15:57	6
7/15/87	16:57	7
7/15/87	17:57	6
7/15/87	18:57	4
7/15/87	19:57	≤3
7/15/87	20:57	0
7/15/87	21:57	0
7/15/87	22:57	0
8/26/87	23:03	2
8/27/87	1:30	3
8/27/87	2:30	4
8/27/87	3:30	4
8/27/87	4:30	5
8/27/87	5:30	4
8/27/87	6:30	4
8/27/87	7:30	6
8/27/87	8:30	5
8/27/87	9:30	9
8/27/87	11:01	10

CLAREMONT PAN DATA		
Date	Time /PST	PAN /ppbv
8/27/87	12:37	15
8/27/87	13:37	22
8/27/87	14:24	19
8/27/87	15:08	17
8/27/87	16:06	15
8/27/87	16:46	12
8/27/87	19:16	3
8/27/87	20:05	3
8/27/87	20:49	2
8/27/87	21:49	2
8/27/87	22:49	2
8/27/87	23:49	1
8/28/87	0:49	2
8/28/87	1:49	2
8/28/87	2:49	2
8/28/87	3:49	5
8/28/87	4:49	6
8/28/87	5:49	4
8/28/87	9:36	6
8/28/87	10:36	7
8/28/87	11:36	13
8/28/87	12:21	16
8/28/87	13:07	22
8/28/87	14:07	26
8/28/87	15:07	30
8/28/87	16:07	19
8/28/87	16:54	13
8/28/87	17:45	11
8/28/87	20:05	4
8/28/87	21:05	4
8/28/87	22:05	3
8/28/87	23:05	3
8/29/87	0:05	2
8/29/87	1:05	1
8/29/87	2:05	7
8/29/87	3:05	8
8/29/87	4:05	2
8/29/87	5:05	3
8/29/87	6:05	3
8/29/87	7:05	5
8/29/87	8:05	3
8/29/87	9:05	5
8/29/87	10:05	7
8/29/87	11:05	11
8/29/87	12:05	18

CLAREMONT PAN DATA		
Date	Time /PST	PAN /ppbv
8/29/87	13:05	22
8/29/87	14:05	25
8/29/87	15:06	25
8/29/87	16:06	27
8/29/87	17:06	26
8/29/87	18:06	19
8/29/87	19:06	15
8/29/87	20:06	10
8/29/87	21:06	7
8/29/87	22:06	4
8/29/87	23:06	4
Moved to Seaver Hall		
9/1/87	23:47	0
9/2/87	0:47	0
9/2/87	1:47	1
9/2/87	2:47	1
9/2/87	3:47	1
9/2/87	4:48	1
9/2/87	5:48	0
9/2/87	6:48	2
9/2/87	7:48	0
9/2/87	8:48	0
9/2/87	9:48	1
9/2/87	10:48	1
9/2/87	11:48	2
9/2/87	12:48	0
9/2/87	13:48	1
9/2/87	14:43	8
9/2/87	15:43	9
9/2/87	16:43	10
9/2/87	17:43	5
9/2/87	18:43	5
9/2/87	19:43	3
9/2/87	20:43	2
9/2/87	21:43	2
9/2/87	22:43	2
9/2/87	23:43	1
9/3/87	0:43	1
9/3/87	1:43	0
9/3/87	2:43	0
9/3/87	3:43	3
9/3/87	4:43	3
9/3/87	5:43	3
9/3/87	6:43	2

CLAREMONT PAN DATA		
Date	Time /PST	PAN /ppbv
9/3/87	7:43	3
9/3/87	8:43	4
9/3/87	9:43	8
9/3/87	10:43	7
9/3/87	11:43	8
9/3/87	12:43	10
9/3/87	13:43	5
9/3/87	14:43	4
9/3/87	15:43	4
9/3/87	16:43	3
9/3/87	17:43	2
9/3/87	18:43	1
9/3/87	19:43	0
9/3/87	20:43	0
9/3/87	21:43	0
9/3/87	22:43	0
9/3/87	23:43	0

APPENDIX F

DATA FROM COMPARISON OF B-ABS WITH FINE MASS

Radiance Research

12202 Ninth Avenue N.W., Seattle, Washington 98177
(206) 363-6610

December 17, 1988

Eric Fujita
Air Resources Board
1102 Q Street
P.O. Box 2815
Sacramento, CA 95812

Dear Eric,

Enclosed are the results of my analysis for absorption on the 40 Nuclepore filters chosen for intercomparison. I didn't include any uncertainties because I haven't received the flow uncertainties yet. I do have the measurement standard error, however. Based on replicate analysis of these 40 samples, the measurement standard error was 0.29 percent.

If you have any questions, let me know.

Sincerely,

Ray E. Weiss

SCAQS B-ABSORPTION INTERCOMPARISON
47 mm NUCLEPORE POLYCARBONATE
R.E. WEISS

Filter Number	bap ($10^{-6}m^{-1}$)	bap/ρ (m^2/g)	ρ (ug/m^3)
228	43.8	0.78	56.4
271	24.9	0.37	67.6
278	24.6	0.35	70.9
338	173.8	1.32	131.3
340	206.6	0.88	236.0
403	51.5	0.67	77.3
405	39.7	0.50	79.7
406	39.2	0.66	59.0
409	58.0	0.47	124.3
412	55.4	0.56	98.2
416	26.0	0.41	63.6
485	166.6	1.42	117.2
498	139.7	1.21	115.6
517	118.6	0.91	130.4
550	87.4	0.85	102.3
582	85.4	0.56	153.7
588	46.9	0.59	79.2
594	161.1	0.50	323.9
612	133.3	1.45	92.4
628	39.0	0.56	69.4
634	76.4	0.37	206.5
635	169.6	0.79	215.6
638	76.6	0.56	137.5
645	118.0	1.49	79.4
648	95.9	0.95	100.8
649	141.8	1.11	127.3
658	110.2	0.94	116.7
665	30.2	0.72	42.1
669	112.6	0.71	158.2
670	131.4	0.99	133.4
691	88.8	1.37	65.0
694	97.3	0.78	125.7
695	100.4	0.69	146.3
703	106.8	0.68	156.3
714	82.9	0.48	173.5
724	110.1	0.77	143.6
727	46.1	0.64	71.9
729	47.3	0.60	79.4
733	132.9	1.03	129.5
734	213.4	0.92	232.1

Notes:

bap - Optical absorption coefficient
ρ - Fine mass concentration
No correction made due to method bias.