United States Department of the Interior
GEOLOGICAL SURVEY

Branch of Pacific Marine Geology
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June 12, 1995

Mr. Igor Levin
XRA: Laboratories
1885 Leslie Street
Toronto, Ontario
Canada M3B 3J4

Dear Mr. Levin

I enclose 21 samples of sediment from the Blanco Fracture Zone offshore of California. I request the MER package. The sediment samples are generally siliceous with variable amounts of iron and manganese--as you can see from the color variations. The sample numbers and weight of the sample are given below:

1. A87-1C (192-202 mm)	5.4 grams	11. A92-4C (102-107 mm)	5.4 grams
2. A87-17C (67-87 mm)	5.3 "	12. A92-6C (0-5 mm)	4.9 "
3. A87-18C	8.0 "	13. A92-6C (60 mm)	5.6 "
4. A89-3C (0-5 mm)	5.2 "	14. A92-6C (62 mm)	5.3 "
5. A89-4C (45-55 mm)	5.5 "	15. A92-6C (85-90 mm)	4.9 "
6. A90-2C (0-5 mm)	5.7 "	16. A92-6C (100 mm)	5.4 "
7. A90-3C (0-5 mm)	5.2 "	17. A92-6C (130-135 mm)	5.1 "
8. A90-7C	13.4 "	18. A92-12C (0-5 mm)	4.6 "
9. A92-4C (0-5 mm)	4.7 "	19. A92-12C (150-155 mm)	4.6 "
10. A92-4C (70 mm)	4.8 "	20. A92-15C (95 mm)	5.2 "

The requisitiion number is 9460-4440 (copy attached). A purchase order number will be phoned to you soon.
These samples have no economic value.
If you have questions, please call me at 415-354-3073.

Sincerely yours,

Randy Koski for JR

Jane A. Reid
Geologist

Form DI-1
(Rev. April 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR

REQUISITION

Requisition No. 5-9460- 4440

To: PURCHASING

Bureau/Office: USGS/OEMG/PMG

Date: 6/9/95

Appropriation/Allotment No.: 001- 5-9460-33521 0C26.9Z $2,800.00

Charge shipping costs to:

Vendor: XRAL LABORATORIES
1885 LESLIE STREET
TORONTO, ONTARIO M3B 3J4
1-800-387-0255

Deliver to: USGS, PMG
JIM HEIN
345 MIDDLEFIELD ROAD, MS 999
MENLO PARK, CA 94025

ITEM OR FORM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	MER PACKAGE	~~20~~ 21		140.00	$2800.00
	~~Agate mill~~ grinding + crushing	21		~~6.00~~	2940.0
	Si Sand Cleaner	21			138.0
		21			27.3
add	Inv Mn/Fe AZ, NV 5g				84.0
	CE: RANDOLPH KOSKI EXT. 3208				
	CPO: PETER BARNES				
	10%				3051.3
					3105.90
	TOTAL.....				$2,800.00

To Be Completed by Fiscal Authority Only

FUND CERTIFICATION: Funds in the amounts shown are available and chargeable to the cost authorities shown above.

Signature: R. A. Koski	Date: 6/9/95	Approved by (Signature): [illegible]	Date: 6/12/95
Title: R. Koski, Geologist		Title: ADMINISTRATIVE OFFICER, PMG	
Requisitioned by (Signature): [illegible]lein	Date:	Bureau Officer (Signature)	Date
Title: Geologist		Title	

XRAL Laboratories
A Division of SGS Canada Inc.

1885 Leslie Street
Don Mills, Ont.
Canada M3B 3J4
Telephone (416) 445-5755
Fax (416) 445-4152

PLEASE DELIVER THE FOLLOWING TO:

NAME: JANE A. REID

FIRM: U.S. GEOLOGICAL SURVEY

FAX NO. 14153543224

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DEPT.: DATACENTER

TOTAL NUMBER OF PAGES INCLUDING COVER LETTER: 5

PARTIAL REPORT: [ ] YES [X] NO

DATE: 24-Jul-95 PROJECT #: 9460-4440

WORKORDER #: 4192

IF YOU DO NOT RECEIVE ALL PAGES, PLEASE CALL (416) 445-5755

COMMENTS (IF ANY):

Chemical analysis of sedimentary cores, Blanco Fracture Zone

	A87-1C (192-202mm)	A87-17C (67-87mm)	A87-18C	A89-3C (0-5mm)	A89-4C (45-55mm)
weight percent					
SiO_2	53.9	32.8	46.	53.4	60.
Al_2O_3	15.2	9.96	13.	15.3	13.4
Fe_2O_3	7.87	6.22	9.71	7.38	6.19
MgO	5.4	3.42	6.91	3.92	2.95
CaO	2.11	22.5	6.85	3.73	4.97
Na_2O	1.53	0.91	2.11	1.61	2.1
K_2O	2.06	1.52	1.12	2.44	1.76
TiO_2	0.876	0.571	1.02	0.845	0.625
P_2O_5	0.2	0.18	0.17	0.3	0.16
MnO	0.15	0.11	0.71	0.18	0.1
S	0.052	0.039	0.053	0.027	0.015
LOI	9.08	20.2	8.46	7.08	4.15
SUM	98.5	98.5	96.2	96.3	96.5
parts per million					
Ag	0.7	0.2	1.4	0.7	0.4
As	2.1	3.2	4.5	5.8	10
Au (ppb)	11	5	3	<2	4
B	74	55	41	64	40
Ba	964	980	1190	603	546
Be	3	2	3	3	2
Br	31	7	9	19	6
Bi	2.4	1.4	1.6	1.3	1.2
Cd	0.7	0.4	0.5	0.5	0.4
Cl	<13	<13	<13	<13	<13
Co	21	18	41	18	12
Cr	170	100	180	110	91
Cs	6	4	2	5	3
Cu	90.1	53.8	118	44.7	34.2
Ga	19	13	18	20	16
Ge	<10	<10	<10	<10	<10
Hf	3	2.1	1.9	3.1	3.4
Hg (ppb)	238	67	30	95	63
In	<0.5	<0.5	<0.5	<0.5	<0.5
Li	65	47	47	50	33
Mo	3	2	2	2	<1
Nb	<10	<10	<10	<10	<10
Ni	146	91	124	72	49
Pb	8	5	6	2	3
Rb	146	157	112	153	161
Sb	1.5	0.7	1	0.6	0.5
Sc	20	13	25	16	12
Se	<1	<1	<1	<1	<1
Sn	<13	<13	<13	<13	<13
Sr	167	683	281	251	355
Ta	0.5	<0.5	<0.5	<0.5	<0.5
Th	5.5	4.6	3.5	6.2	4.2
Tl	0.9	0.2	0.2	0.4	0.3
U	3.8	1.1	0.9	1.6	1.7
V	177	101	200	149	102
W	3	<1	2	4	3
Y	23	20	29	25	20
Zn	188	100	159	114	83.9
Zr	116	74	92	124	106

Chemical analysis of sedimentary cores, Blanco Fracture Zone

	A87-1C (192-202mm)	A87-17C (67-87mm)	A87-18C	A89-3C (0-5mm)	A89-4C (45-55mm)
La	18.6	16.2	15.2	23.4	17.3
Ce	37.8	30.4	30.6	47.6	33.6
Pr	4.7	3.9	4	5.8	4.2
Nd	19.5	16.6	18.1	23.6	17.4
Sm	5	3.9	4.8	5.7	4.1
Eu	1.47	1.14	1.67	1.42	1.06
Gd	4.5	3.7	4.9	5	3.8
Tb	0.8	0.6	0.8	0.8	0.6
Dy	4.7	3.8	5.5	5.1	3.7
Ho	1	0.73	1.09	0.9	0.69
Er	3	2.2	3.1	2.7	2.1
Tm	0.5	0.3	0.5	0.4	0.2
Yb	2.9	2.1	3	2.6	2
Lu	0.45	0.28	0.39	0.34	0.25

Chemical analysis of sedimentary cores, Blanco Fracture Zone

	A90-2C (0-5mm)	A90-3C (0-5mm)	A90-7C	A92-4C (0-5mm)	A92-4C (70mm)
weight percent					
SiO_2	57.1	58.4	47.1	22.4	39.5
Al_2O_3	13.9	14.8	13.1	0.09	0.13
Fe_2O_3	7.1	6.06	11.4	42.4	39.4
MgO	4.09	3.15	9.07	0.43	0.3
CaO	4.58	4.48	6.19	0.9	0.75
Na_2O	2.13	2.08	2.51	0.72	0.56
K_2O	1.72	2.04	0.42	0.32	0.27
TiO_2	0.965	0.871	1.7	0.049	0.05
P_2O_5	0.26	0.22	0.19	0.96	1.18
MnO	0.17	0.13	0.22	2.8	0.09
S	0.054	0.016	0.497	0.02	0.015
LOI	4.77	3.85	4.46	29.5	18.3
SUM	96.9	96.2	96.4	100.6	100.6
parts per million					
Ag	0.6	0.3	0.4	3.6	0.7
As	5.9	2.9	-0.1	29	35
Au (ppb)	3	<2	<2	<2	<2
B	20	36	<10	132	116
Ba	511	452	278	292	293
Be	2	2	2	6	6
Br	10	3	1	4	6
Bi	0.9	1.2	1.3	0.8	1.1
Cd	0.4	0.4	0.5	0.6	0.5
Cl	<13	<13	<13	<13	<13
Co	16	14	32	6	2
Cr	100	78	160	4	5
Cs	3	3	1	<0.5	<0.5
Cu	34.8	35.8	125	8.8	10.9
Ga	14	19	17	2	<1
Ge	<10	<10	<10	<10	<10
Hf	3.2	3.8	2.9	<0.2	<0.2
Hg (ppb)	79	53	<5	5	8
In	<0.5	<0.5	<0.5	<0.5	<0.5
Li	33	38	13	1	<1
Mo	2	<1	<1	93	24
Nb	<10	<10	<10	<10	<10
Ni	50	44	57	28	<1
Pb	<2	<2	<2	11	34
Rb	149	167	84	<10	<10
Sb	0.5	0.5	<0.1	1.4	4
Sc	17	14	36	<1	<1
Se	<1	<1	<1	<1	<1
Sn	<13	<13	<13	<13	<13
Sr	268	316	85	174	187
Ta	0.5	0.6	<0.5	<0.5	<0.5
Th	4.8	6	<0.2	<0.2	<0.2
Tl	0.1	0.3	<0.1	<0.1	<0.1
U	1	1.7	0.2	0.2	1.5
V	129	139	314	35	37
W	<1	2	<1	2	1
Y	25	25	37	17	6
Zn	90.7	82.7	154	4.5	1.8
Zr	141	146	106	<10	<10

Chemical analysis of sedimentary cores, Blanco Fracture Zone

	A90-2C (0-5mm)	A90-3C (0-5mm)	A90-7C	A92-4C (0-5mm)	A92-4C (70mm)
La	18.5	25.6	4.4	1.8	2.3
Ce	35.6	52	13	3.8	4.5
Pr	4.5	6.3	2.1	0.6	0.8
Nd	18.9	25.1	11.9	2.8	3.9
Sm	4.9	5.5	4.7	0.9	1.4
Eu	1.19	1.34	1.49	0.2	0.19
Gd	4.3	5.1	4.6	0.8	1.1
Tb	0.7	0.8	1	0.2	0.2
Dy	4.6	5	6.6	1.3	1.5
Ho	0.91	0.9	1.35	0.23	0.26
Er	2.8	2.7	3.9	0.8	0.9
Tm	0.3	0.4	0.5	<0.1	<0.1
Yb	2.7	2.7	3.8	0.8	1.2
Lu	0.35	0.31	0.53	0.11	0.13

Chemical analysis of sedimentary cores, Blanco Fracture Zone

	A92-4C (102-107mm)	A92-6C (0-5mm)	A92-6C (60mm)	A92-6C (62mm)	A92-6C (85-90mm)
weight percent					
SiO_2	28	45.1	34.6	37.7	41
Al_2O_3	0.41	15.3	14.4	15.4	14.3
Fe_2O_3	36.6	7.4	7.52	7.27	8.51
MgO	0.57	6.67	17.7	19.1	17.8
CaO	1	2.67	0.78	0.65	0.78
Na_2O	1.03	0.84	0.57	0.52	0.58
K_2O	0.51	1.12	0.7	0.79	0.81
TiO_2	0.072	0.526	0.288	0.301	0.343
P_2O_5	1.14	0.25	0.16	0.13	0.19
MnO	11.2	2.58	3.3	0.64	0.17
S	0.007	0.477	1.38	1.97	0.999
LOI	20	15.2	13.8	12.6	11.7
SUM	100.6	98.4	94.4	95.6	96.5
parts per million					
Ag	12.7	3.7	5.9	3	2.1
As	30	60	84	73	81
Au (ppb)	3	49	82	87	89
B	96	47	34	10	28
Ba	406	6560	5350	4020	2960
Be	5	2	1	1	1
Br	6	33	6	7	14
Bi	2	2.4	2.6	2.3	2.3
Cd	2.1	1.5	1.6	1.1	1.1
Cl	<13	<13	<13	<13	<13
Co	62	26	61	18	11
Cr	5	140	100	130	80
Cs	<0.5	2	1	<0.5	1
Cu	156	507	1990	1090	588
Ga	6	21	23	23	24
Ge	<10	<10	<10	<10	<10
Hf	<0.2	1.2	0.3	0.3	0.5
Hg (ppb)	13	528	864	774	790
In	<0.5	<0.5	0.6	0.5	0.6
Li	2	23	18	17	16
Mo	372	32	38	16	7
Nb	<10	<10	<10	<10	<10
Ni	<1	213	198	70	53
Pb	16	109	156	99	209
Rb	<10	141	136	140	127
Sb	3.2	3.5	5.6	1.9	2
Sc	<1	15	11	12	11
Se	<1	<1	2	<1	3
Sn	<13	<13	<13	<13	<13
Sr	170	630	454	329	297
Ta	<0.5	<0.5	<0.5	<0.5	<0.5
Th	0.2	2.1	<0.2	0.4	0.7
Tl	0.6	2.1	2.6	3.7	2.1
U	0.6	11.4	21.2	19.9	17.4
V	51	185	167	166	185
W	3	2	3	<1	<1
Y	8	21	8	7	10
Zn	58.1	514	1270	702	1070
Zr	<10	38	13	19	27

Chemical analysis of sedimentary cores, Blanco Fracture Zone

	A92-4C (102-107mm)	A92-6C (0-5mm)	A92-6C (60mm)	A92-6C (62mm)	A92-6C (85-90mm)
La	4.2	15	2.9	2.6	5.5
Ce	6.8	19.9	3.6	3.8	8.3
Pr	1.2	3.5	0.9	0.9	1.6
Nd	5.5	15.2	3	3.1	6.3
Sm	1.5	4.6	1.5	1.4	2.1
Eu	0.35	2.43	3.46	2.64	2.14
Gd	1.4	4.6	1.4	1.4	2
Tb	0.2	0.8	0.4	0.4	0.5
Dy	1.7	4.4	1.6	1.5	2
Ho	0.32	0.93	0.55	0.45	0.6
Er	1.1	2.4	1.1	1	1.3
Tm	0.1	0.5	0.4	0.4	0.4
Yb	1.1	2.4	1.2	1.1	1.3
Lu	0.15	0.51	0.44	0.39	0.42

Chemical analysis of sedimentary cores, Blanco Fracture Zone

	A92-6C (100mm)	A92-6C (130-135mm)	A92-12C (0-5mm)	A92-12C (150-155mm)	A92-15C (95mm)
weight percent					
SiO_2	41.9	42.5	44.1	36.7	51.2
Al_2O_3	14.8	14.2	11.3	1.24	2.76
Fe_2O_3	7.25	7.09	9.85	36	24
MgO	14.2	9.76	3.88	0.81	1.29
CaO	0.94	1.21	3.66	1.29	1.54
Na_2O	0.58	0.61	1.2	0.8	0.69
K_2O	1.06	1.27	1.5	0.52	0.44
TiO_2	0.359	0.383	0.847	0.131	0.212
P_2O_5	0.14	0.2	0.32	0.6	0.54
MnO	0.12	0.16	3.38	0.41	0.62
S	2.4	0.518	0.136	0.029	0.186
LOI	12.8	17.8	19.5	22.2	16.8
SUM	94.8	95.9	99.8	100.8	100.2
parts per million					
Ag	9.2	0.5	4.3	1.3	1.4
As	62	79	18	20	28
Au (ppb)	93	66	15	4	11
B	11	26	64	130	68
Ba	5440	6360	1990	438	937
Be	2	1	2	5	4
Br	32	16	45	7	9
Bi	1.9	2	2.1	1.9	1.9
Cd	4	0.7	0.8	0.5	0.9
Cl	<13	<13	<13	<13	<13
Co	14	13	45	8	7
Cr	95	100	110	15	26
Cs	1	1	3	1	1
Cu	1450	331	186	24.8	56.7
Ga	22	20	19	2	4
Ge	<10	<10	<10	<10	<10
Hf	0.8	0.6	2.7	0.3	0.4
Hg (ppb)	1590	405	235	62	233
In	<0.5	<0.5	<0.5	<0.5	<0.5
Li	18	16	34	5	6
Mo	13	2	5	17	18
Nb	<10	<10	<10	<10	<10
Ni	66	61	269	26	34
Pb	156	176	31	6	18
Rb	145	145	115	<10	<10
Sb	2.1	1.9	3.9	1	1.8
Sc	13	13	17	<1	3
Se	7	<1	<1	<1	<1
Sn	<13	<13	<13	<13	<13
Sr	444	470	428	256	197
Ta	<0.5	<0.5	<0.5	<0.5	<0.5
Th	0.9	1.2	4.6	0.5	0.6
Tl	3.8	0.6	0.5	0.2	0.4
U	15.9	15.7	1.9	0.6	2.2
V	182	168	193	37	45
W	<1	3	4	3	<1
Y	11	14	39	7	7
Zn	1160	1260	235	27	93.1
Zr	22	23	106	16	22

Chemical analysis of sedimentary cores, Blanco Fracture Zone

	A92-6C (100mm)	A92-6C (130-135mm)	A92-12C (0-5mm)	A92-12C (150-155mm)	A92-15C (95mm)
La	6.2	8.5	32.2	4.6	4.2
Ce	9.6	11.5	43.8	6.3	6.4
Pr	1.6	2	7.5	1.1	0.9
Nd	7.3	9	32.1	4.6	4.4
Sm	2.2	2.8	8.2	1.4	1.3
Eu	3.32	3.46	2.57	0.36	0.41
Gd	2.3	2.8	8.2	1.4	1.1
Tb	0.3	0.4	1.2	0.3	0.1
Dy	2.2	2.7	7.8	1.3	1.3
Ho	0.45	0.51	1.5	0.28	0.18
Er	1.2	1.6	4.3	0.8	0.7
Tm	0.2	0.2	0.7	0.1	<0.1
Yb	1.3	1.5	4.1	0.9	0.7
Lu	0.2	0.25	0.61	0.18	<0.05

Chemical analysis of sedimentary cores, Blanco Fracture Zone

	382-27-1A	382-27-1A (A-labs)	A87-1C (192-202mm)	A92-6C (62mm)
weight percent				
SiO_2	53.5	53.2	54.2	37.5
Al_2O_3	10.3	10.1	15.3	15.3
Fe_2O_3	3.12	3.03	7.9	7.28
MgO	0.55	0.55	5.43	19
CaO	12.4	12.3	2.13	0.64
Na_2O	0.48	0.82	1.55	0.52
K_2O	6.86	7.16	2.06	0.78
TiO_2	0.533	0.47	0.884	0.309
P_2O_5	0.25	0.23	0.18	0.14
MnO	0.2	0.18	0.15	0.65
S	0.144	0.180	0.055	na
LOI	7.69	10.15*	8.92	12.6
SUM	96.1	98.4	98.8	95.2
parts per million				
Ag	0.6	<20	0.6	na
As	68	<80	1.8	na
Au (ppb)	3	<60	9	na
B	60	na	67	na
Ba	1730	3350	949	4120
Be	2	<8	2	na
Br	2	na	31	na
Bi	1.8	<80	2	na
Cd	0.7	<20	0.5	na
Cl	<13	na	<13	<13
Co	5	9	20	na
Cr	32	28	170	na
Cs	35	na	6	na
Cu	22.4	31	88.8	na
Ga	12	na	19	na
Ge	<10	na	<10	na
Hf	8.9	na	3	na
Hg (ppb)	65	na	237	na
In	<0.5	na	<0.5	na
Li	37	40	63	na
Mo	1	<20	<1	na
Nb	13	<30	<10	<10
Ni	11	<20	141	na
Pb	31	<100	7	na
Rb	282	<20	145	138
Sb	3.8	na	1.6	na
Sc	6	<30	19	na
Se	<1	na	<1	na
Sn	<13	<30	<13	<13
Sr	3020	3130	166	na
Ta	0.8	<300	0.7	na
Th	13	<30	5.7	na
Tl	1.5	na	0.5	na
U	3.4	<800	3.7	na
V	27	40	180	na
W	3	na	1	na
Y	28	<20	24	na
Zn	205	200	172	na
Zr	169	na	113	22

Chemical analysis of sedimentary cores, Blanco Fracture Zone

	382-27-1A	382-27-1A (A-labs)	A87-1C (192-202mm)	A92-6C (62mm)
La	37.9	40	18.7	na
Ce	70.6	60	37.1	na
Pr	8.7	na	4.5	na
Nd	33.3	<30	18.8	na
Sm	6.4	na	4.4	na
Eu	1.38	na	1.19	na
Gd	6	na	4.4	na
Tb	0.5	na	0.6	na
Dy	4.8	na	4.2	na
Ho	0.64	na	0.62	na
Er	2.5	na	2.3	na
Tm	<0.1	na	0.2	na
Yb	2.5	na	2.3	na
Lu	0.16	na	0.24	na

* LOI = $H_2O^+ + H_2O^- + CO_2$ + C (org)

SAMPLE	AU PPB NA 2	LI PPM ICP 1	BE PPM ICP 1	B PPM ICP 10	NA2O % XRF-F 0.01	MGO % XRF-F 0.01	AL2O3 % XRF-F 0.01	SIO2 % XRF-F 0.01	P2O5 % XRF-F 0.01
A87-1C (192-202MM)	11	65	3	74	1.53	5.40	15.2	53.9	0.20
A87-17C (67-87MM)	5	47	2	55	0.91	3.42	9.96	32.8	0.18
A87-18C	3	47	3	41	2.11	6.91	13.0	46.0	0.17
A89-3C (0-5MM)	<2	50	3	64	1.61	3.92	15.3	53.4	0.30
A89-4C (45-55MM)	4	33	2	40	2.10	2.95	13.4	60.0	0.16
A90-2C (0-5MM)	3	33	2	20	2.13	4.09	13.9	57.1	0.26
A90-3C (0-5MM)	<2	38	2	36	2.08	3.15	14.8	58.4	0.22
A90-7C	<2	13	2	<10	2.51	9.07	13.1	47.1	0.19
A92-4C (0-5MM)	<2	1	6	132	0.72	0.43	0.09	22.4	0.96
A92-4C (70MM)	<2	<1	6	116	0.56	0.30	0.13	39.5	1.18
A92-4C (102-107MM)	3	2	5	96	1.03	0.57	0.41	28.0	1.14
A92-6C (0-5MM)	49	23	2	47	0.84	6.67	15.3	45.1	0.25
A92-6C (60MM)	82	18	1	34	0.57	17.7	14.4	34.6	0.16
A92-6C (62MM)	87	17	1	10	0.52	19.1	15.4	37.7	0.13
A92-6C (85-90MM)	89	16	1	28	0.58	17.8	14.3	41.0	0.19
A92-6C (100MM)	93	18	2	11	0.58	14.2	14.8	41.9	0.14
A92-6C (130-135MM)	66	16	1	26	0.61	9.76	14.2	42.5	0.20
A92-12C (0-5MM)	15	34	2	64	1.20	3.88	11.3	44.1	0.32
A92-12C (150-155MM)	4	5	5	130	0.80	0.81	1.24	36.7	0.60
A92-15C (95MM)	11	6	4	68	0.69	1.29	2.76	51.2	0.54
382-27-1A	3	37	2	60	0.48	0.55	10.3	53.5	0.25
C XRA CONTROL	--	--	--	--	--	--	--	--	--
C XRA CONTROL	--	--	--	--	--	--	--	--	--
C SY-2	--	93	24	90	4.15	2.73	12.0	59.4	0.47
C SY-2	--	--	--	--	4.18	2.74	12.0	59.2	0.46
C WET LAB CONTROL	--	--	--	--	--	--	--	--	--
D A87-1C (192-202MM)	9	63	2	67	1.55	5.43	15.3	54.2	0.18
D A92-6C (60MM)	--	17	1	24	--	--	--	--	--
D A92-6C (62MM)	--	--	--	--	0.52	19.0	15.3	37.5	0.14

SAMPLE	S % LECO 0.005	CL PPM XRF 100	K2O % XRF-F 0.01	CAO % XRF-F 0.01	SC PPM ICP 1	TIO2 % XRF-F 0.001	V PPM ICP 2	CR PPM NA 2	MNO % XRF-F 0.01
A87-1C (192-202MM)	0.052	NSS	2.06	2.11	20	0.876	177	170	0.15
A87-17C (67-87MM)	0.039	NSS	1.52	22.5	13	0.571	101	100	0.11
A87-18C	0.053	NSS	1.12	6.85	25	1.02	200	180	0.71
A89-3C (0-5MM)	0.027	NSS	2.44	3.73	16	0.845	149	110	0.18
A89-4C (45-55MM)	0.015	NSS	1.76	4.97	12	0.625	102	91	0.10
A90-2C (0-5MM)	0.054	NSS	1.72	4.58	17	0.965	129	100	0.17
A90-3C (0-5MM)	0.016	NSS	2.04	4.48	14	0.871	139	78	0.13
A90-7C	0.497	NSS	0.42	6.19	36	1.70	314	160	0.22
A92-4C (0-5MM)	0.020	NSS	0.32	0.90	<1	0.049	35	4	2.80
A92-4C (70MM)	0.015	NSS	0.27	0.75	<1	0.050	37	5	0.09
A92-4C (102-107MM)	0.007	NSS	0.51	1.00	<1	0.072	51	5	11.2
A92-6C (0-5MM)	0.477	NSS	1.12	2.67	15	0.526	185	140	2.58
A92-6C (60MM)	1.38	NSS	0.70	0.78	11	0.288	167	100	3.30
A92-6C (62MM)	1.97	NSS	0.79	0.65	12	0.301	166	130	0.64
A92-6C (85-90MM)	0.999	NSS	0.81	0.78	11	0.343	185	80	0.17
A92-6C (100MM)	2.40	NSS	1.06	0.94	13	0.359	182	95	0.12
A92-6C (130-135MM)	0.518	NSS	1.27	1.21	13	0.383	168	100	0.16
A92-12C (0-5MM)	0.136	NSS	1.50	3.66	17	0.847	193	110	3.38
A92-12C (150-155MM)	0.029	NSS	0.52	1.29	<1	0.131	37	15	0.41
A92-15C (95MM)	0.186	NSS	0.44	1.54	3	0.212	45	26	0.62
382-27-1A	0.144	NSS	6.86	12.4	6	0.533	27	32	0.20
C XRA CONTROL	--	NSS	--	--	--	--	--	--	--
C XRA CONTROL	--	NSS	--	--	--	--	--	--	--
C SY-2	--	--	4.43	7.97	6	0.181	52	--	0.32
C SY-2	--	--	4.41	7.88	--	0.176	--	--	0.32
C WET LAB CONTROL	0.054	--	--	--	--	--	--	--	--
D A87-1C (192-202MM)	0.055	NSS	2.06	2.13	19	0.884	180	170	0.15
D A92-6C (60MM)	1.40	--	--	--	11	--	171	--	--
D A92-6C (62MM)	--	NSS	0.78	0.64	--	0.309	--	--	0.65

SAMPLE	FE2O3 % XRF-F 0.01	CO PPM ICP 1	NI PPM ICP 1	CU PPM ICP 0.5	ZN PPM ICP 0.5	GA PPM ICPMS 1	GE PPM ICP 10	AS PPM NA 0.1	SE PPM NA 1
A87-1C (192-202MM)	7.87	21	146	90.1	188	19	<10	2.1	<1
A87-17C (67-87MM)	6.22	18	91	53.8	100	13	<10	3.2	<1
A87-18C	9.71	41	124	118	159	18	<10	4.5	<1
A89-3C (0-5MM)	7.38	18	72	44.7	114	20	<10	5.8	<1
A89-4C (45-55MM)	6.19	12	49	34.2	83.9	16	<10	10.0	<1

SAMPLE	FE2O3 % XRF-F 0.01	CO PPM ICP 1	NI PPM ICP 1	CU PPM ICP 0.5	ZN PPM ICP 0.5	GA PPM ICPMS 1	GE PPM ICP 10	AS PPM NA 0.1	SE PPM NA 1
A90-2C (0-5MM)	7.10	16	50	34.8	90.7	14	<10	5.9	<1
A90-3C (0-5MM)	6.06	14	44	35.8	82.7	19	<10	2.9	<1
A90-7C	11.4	32	57	125	154	17	<10	<.1	<1
A92-4C (0-5MM)	42.4	6	28	8.8	4.5	2	<10	29.0	<1
A92-4C (70MM)	30.0	7	<1	10.0	1.8	<1	<10	35.0	<1
A92-4C (102-107MM)	36.6	62	<1	156	58.1	6	<10	30.0	<1
A92-6C (0-5MM)	7.40	26	213	507	514	21	<10	60.0	<1
A92-6C (60MM)	7.52	61	198	1990	1270	23	<10	84.0	2
A92-6C (62MM)	7.27	18	70	1090	702	23	<10	73.0	<1
A92-6C (85-90MM)	8.51	11	53	588	1070	24	<10	81.0	3
A92-6C (100MM)	7.25	14	66	1450	1160	22	<10	62.0	7
A92-6C (130-135MM)	7.09	13	61	331	1260	20	<10	79.0	<1
A92-12C (0-5MM)	9.85	45	269	186	235	19	<10	18.0	<1
A92-12C (150-155MM)	36.0	8	26	24.8	27.0	2	<10	20.0	<1
A92-15C (95MM)	24.0	7	34	56.7	93.1	4	<10	28.0	<1
382-27-1A	3.12	5	11	22.4	205	12	<10	68.0	<1
C XRA CONTROL	--	--	--	--	--	--	--	--	--
C XRA CONTROL	--	--	--	--	--	--	--	--	--
C SY-2	6.40	8	8	4.0	234	29	<10	--	--
C SY-2	6.39	--	--	--	--	--	--	--	--
C WET LAB CONTROL	--	--	--	--	--	--	--	--	--
D A87-1C (192-202MM)	7.90	20	141	88.8	172	19	<10	1.8	<1
D A92-6C (60MM)	--	55	178	1830	1150	22	<10	--	--
D A92-6C (62MM)	7.28	--	--	--	--	--	--	--	--

SAMPLE	BR PPM NA 1	RB PPM XRF-F 10	SR PPM ICP 1	Y PPM ICPMS 1	ZR PPM XRF-F 10	NB PPM XRF-F 10	MO PPM ICP 1	AG PPM ICP 0.1	CD PPM ICPMS 0.2
A87-1C (192-202MM)	31	146	167	23	116	<10	3	0.7	0.7
A87-17C (67-87MM)	7	157	683	20	74	<10	2	0.2	0.4
A87-18C	9	112	281	29	92	<10	2	1.4	0.5
A89-3C (0-5MM)	19	153	251	25	124	<10	2	0.7	0.5
A89-4C (45-55MM)	6	161	355	20	106	<10	<1	0.4	0.4
A90-2C (0-5MM)	10	149	268	25	141	<10	2	0.6	0.4
A90-3C (0-5MM)	3	167	316	25	146	<10	<1	0.3	0.4
A90-7C	1	84	85	37	106	<10	<1	0.4	0.5
A92-4C (0-5MM)	4	<10	174	17	<10	<10	93	3.6	0.6
A92-4C (70MM)	6	<10	187	6	<10	<10	24	0.7	0.5
A92-4C (102-107MM)	6	<10	170	8	<10	<10	372	12.7	2.1
A92-6C (0-5MM)	33	141	630	21	38	<10	32	3.7	1.5
A92-6C (60MM)	6	136	454	8	13	<10	38	5.9	1.6
A92-6C (62MM)	7	140	329	7	19	<10	16	3.0	1.1
A92-6C (85-90MM)	14	127	297	10	27	<10	7	2.1	1.1
A92-6C (100MM)	32	145	444	11	22	<10	13	9.2	4.0
A92-6C (130-135MM)	16	145	470	14	23	<10	2	0.5	0.7
A92-12C (0-5MM)	45	115	428	39	106	<10	5	4.3	0.8
A92-12C (150-155MM)	7	<10	256	7	16	<10	17	1.3	0.5
A92-15C (95MM)	9	<10	197	7	22	<10	18	1.4	0.9
382-27-1A	2	282	3020	28	169	13	1	0.6	0.7
C XRA CONTROL	--	--	--	--	--	--	--	--	--
C XRA CONTROL	--	--	--	--	--	--	--	--	--
C SY-2	--	214	277	132	274	26	2	0.4	0.4
C SY-2	--	215	--	--	282	25	--	--	--
C WET LAB CONTROL	--	--	--	--	--	--	--	--	--
D A87-1C (192-202MM)	31	145	166	24	113	<10	<1	0.6	0.5
D A92-6C (60MM)	--	--	424	7	--	--	35	5.8	0.8
D A92-6C (62MM)	--	138	--	--	22	<10	--	--	--

SAMPLE	IN PPM ICPMS 0.5	SN PPM XRF 2	SB PPM NA 0.1	CS PPM NA 0.5	BA PPM XRF-F 10	LA PPM ICPMS 0.1	CE PPM ICPMS 0.1	PR PPM ICPMS 0.1	ND PPM ICPMS 0.1
A87-1C (192-202MM)	<.5	NSS	1.5	6.0	964	18.6	37.8	4.7	19.5
A87-17C (67-87MM)	<.5	NSS	0.7	4.0	980	16.2	30.4	3.9	16.6
A87-18C	<.5	NSS	1.0	2.0	1190	15.2	30.6	4.0	18.1
A89-3C (0-5MM)	<.5	NSS	0.6	5.0	603	23.4	47.6	5.8	23.6
A89-4C (45-55MM)	<.5	NSS	0.5	3.0	546	17.3	33.6	4.2	17.4
A90-2C (0-5MM)	<.5	NSS	0.5	3.0	511	18.5	35.6	4.5	18.9
A90-3C (0-5MM)	<.5	NSS	0.5	3.0	452	25.6	52.0	6.3	25.1
A90-7C	<.5	NSS	<.1	1.0	278	4.4	13.0	2.1	11.9
A92-4C (0-5MM)	<.5	NSS	1.4	<.5	292	1.8	3.8	0.6	2.8
A92-4C (70MM)	<.5	NSS	4.0	<.5	293	2.3	4.5	0.8	3.9

	SAMPLE	IN PPM ICPMS 0.5	SN PPM XRF 2	SB PPM NA 0.1	CS PPM NA 0.5	BA PPM XRF-F 10	LA PPM ICPMS 0.1	CE PPM ICPMS 0.1	PR PPM ICPMS 0.1	ND PPM ICPMS 0.1
	A92-4C (102-107MM)	<.5	NSS	3.2	<.5	406	4.2	6.8	1.2	5.5
	A92-6C (0-5MM)	<.5	NSS	3.5	2.0	6560	15.0	19.9	3.5	15.2
	A92-6C (60MM)	0.6	NSS	5.6	1.0	5350	2.9	3.6	0.9	3.0
	A92-6C (62MM)	0.5	NSS	1.9	<.5	4020	2.6	3.8	0.9	3.1
	A92-6C (85-90MM)	0.6	NSS	2.0	1.0	2960	5.5	8.3	1.6	6.3
	A92-6C (100MM)	<.5	NSS	2.1	1.0	5440	6.2	9.6	1.6	7.3
	A92-6C (130-135MM)	<.5	NSS	1.9	1.0	6360	8.5	11.5	2.0	9.0
	A92-12C (0-5MM)	<.5	NSS	3.9	3.0	1990	32.2	43.8	7.5	32.1
	A92-12C (150-155MM)	<.5	NSS	1.0	1.0	438	4.6	6.3	1.1	4.6
	A92-15C (95MM)	<.5	NSS	1.8	1.0	937	4.2	6.4	0.9	4.4
	382-27-1A	<.5	NSS	3.8	35.0	1730	37.9	70.6	8.7	33.3
C	XRA CONTROL	--	NSS	--	--	--	--	--	--	--
C	XRA CONTROL	--	NSS	--	--	--	--	--	--	--
C	SY-2	<.5	--	--	--	339	71.3	168	20.1	78.6
C	SY-2	--	--	--	--	346	--	--	--	--
C	WET LAB CONTROL	--	--	--	--	--	--	--	--	--
D	A87-1C (192-202MM)	<.5	NSS	1.6	6.0	949	18.7	37.1	4.5	18.8
D	A92-6C (60MM)	<.5	--	--	--	--	2.5	3.1	0.4	2.5
D	A92-6C (62MM)	--	NSS	--	--	4120	--	--	--	--

	SAMPLE	SM PPM ICPMS 0.1	EU PPM ICPMS 0.05	GD PPM ICPMS 0.1	TB PPM ICPMS 0.1	DY PPM ICPMS 0.1	HO PPM ICPMS 0.05	ER PPM ICPMS 0.1	TM PPM ICPMS 0.1	YB PPM ICPMS 0.1
	A87-1C (192-202MM)	5.0	1.47	4.5	0.8	4.7	1.00	3.0	0.5	2.9
	A87-17C (67-87MM)	3.9	1.14	3.7	0.6	3.8	0.73	2.2	0.3	2.1
	A87-18C	4.8	1.67	4.9	0.8	5.5	1.09	3.1	0.5	3.0
	A89-3C (0-5MM)	5.7	1.42	5.0	0.8	5.1	0.90	2.7	0.4	2.6
	A89-4C (45-55MM)	4.1	1.06	3.8	0.6	3.7	0.69	2.1	0.2	2.0
	A90-2C (0-5MM)	4.9	1.19	4.3	0.7	4.6	0.91	2.8	0.3	2.7
	A90-3C (0-5MM)	5.5	1.34	5.1	0.8	5.0	0.90	2.7	0.4	2.7
	A90-7C	4.7	1.49	4.6	1.0	6.6	1.35	3.9	0.5	3.8
	A92-4C (0-5MM)	0.9	0.20	0.8	0.2	1.3	0.23	0.8	<.1	0.8
	A92-4C (70MM)	1.4	0.19	1.1	0.2	1.5	0.26	0.9	<.1	1.2
	A92-4C (102-107MM)	1.5	0.35	1.4	0.2	1.7	0.32	1.1	0.1	1.1
	A92-6C (0-5MM)	4.6	2.43	4.6	0.8	4.4	0.93	2.4	0.5	2.4
	A92-6C (60MM)	1.5	3.46	1.4	0.4	1.6	0.55	1.1	0.4	1.2
	A92-6C (62MM)	1.4	2.64	1.4	0.4	1.5	0.45	1.0	0.4	1.1
	A92-6C (85-90MM)	2.1	2.14	2.0	0.5	2.0	0.60	1.3	0.4	1.3
	A92-6C (100MM)	2.2	3.32	2.3	0.3	2.2	0.45	1.2	0.2	1.3
	A92-6C (130-135MM)	2.8	3.46	2.8	0.4	2.7	0.51	1.6	0.2	1.5
	A92-12C (0-5MM)	8.2	2.57	8.2	1.2	7.8	1.50	4.3	0.7	4.1
	A92-12C (150-155MM)	1.4	0.36	1.4	0.3	1.3	0.28	0.8	0.1	0.9
	A92-15C (95MM)	1.3	0.41	1.1	0.1	1.3	0.18	0.7	<.1	0.7
	382-27-1A	6.4	1.38	6.0	0.5	4.8	0.64	2.5	<.1	2.5
C	XRA CONTROL	--	--	--	--	--	--	--	--	--
C	XRA CONTROL	--	--	--	--	--	--	--	--	--
C	SY-2	17.6	2.41	18.9	2.9	20.6	4.36	15.1	2.1	17.4
C	SY-2	--	--	--	--	--	--	--	--	--
C	WET LAB CONTROL	--	--	--	--	--	--	--	--	--
D	A87-1C (192-202MM)	4.4	1.19	4.4	0.6	4.2	0.62	2.3	0.2	2.3
D	A92-6C (60MM)	0.8	2.36	1.0	<.1	1.0	<.05	0.6	<.1	0.6
D	A92-6C (62MM)	--	--	--	--	--	--	--	--	--

	SAMPLE	LU PPM ICPMS 0.05	HF PPM NA 0.2	TA PPM NA 0.5	W PPM NA 1	HG PPB WET 5	TL PPM ICPMS 0.1	PB PPM ICP 2	BI PPM ICPMS 0.5	TH PPM NA 0.2
	A87-1C (192-202MM)	0.45	3.0	0.5	3	238	0.9	8	2.4	5.5
	A87-17C (67-87MM)	0.28	2.1	<.5	<1	67	0.2	5	1.4	4.6
	A87-18C	0.39	1.9	<.5	2	30	0.2	6	1.6	3.5
	A89-4C (45-55MM)	0.25	3.4	<.5	3	63	0.3	3	1.2	4.2
	A90-2C (0-5MM)	0.35	3.2	0.5	<1	79	0.1	<2	0.9	4.8
	A90-3C (0-5MM)	0.31	3.8	0.6	2	53	0.3	<2	1.2	6.0
	A90-7C	0.53	2.9	<.5	<1	<5	<.1	<2	1.3	<.2
	A92-4C (0-5MM)	0.11	<.2	<.5	2	5	<.1	11	0.8	<.2
	A92-4C (70MM)	0.13	<.2	<.5	1	8	<.1	34	1.1	<.2
	A92-4C (102-107MM)	0.15	<.2	<.5	3	13	0.6	16	2.0	0.2
	A92-6C (0-5MM)	0.51	1.2	<.5	2	528	2.1	109	2.4	2.1
	A92-6C (60MM)	0.44	0.3	<.5	3	864	2.6	156	2.6	<.2
	A92-6C (62MM)	0.39	0.3	<.5	<1	774	3.7	99	2.3	0.4
	A92-6C (85-90MM)	0.42	0.5	<.5	<1	790	2.1	209	2.3	0.7

	SAMPLE	LU PPM ICPMS 0.05	HF PPM NA 0.2	TA PPM NA 0.5	W PPM NA 1	HG PPB WET 5	TL PPM ICPMS 0.1	PB PPM ICP 2	BI PPM ICPMS 0.5	TH PPM NA 0.2
	A92-6C(100MM)	0.20	0.8	<.5	<1	1590	3.8	156	1.9	0.9
	A92-6C(130-135MM)	0.25	0.6	<.5	3	405	0.6	176	2.0	1.2
	A92-12C(0-5MM)	0.61	2.7	<.5	4	235	0.5	31	2.1	4.6
	A92-12C(150-155MM)	0.18	0.3	<.5	3	62	0.2	6	1.9	0.5
	A92-15C(95MM)	<.05	0.4	<.5	<1	233	0.4	18	1.9	0.6
	382-27-1A	0.16	8.9	0.8	3	65	1.5	31	1.8	13.0
C	XRA CONTROL	--	--	--	--	--	--	--	--	--
C	XRA CONTROL	--	--	--	--	--	--	--	--	--
C	SY-2	2.60	--	--	--	--	1.0	80	4.4	--
C	SY-2	--	--	--	--	--	--	--	--	--
C	WET LAB CONTROL	--	--	--	--	75	--	--	--	--
D	A87-1C(192-202MM)	0.24	3.0	0.7	1	237	0.5	7	2.0	5.7
D	A92-6C(60MM)	<.05	--	--	--	873	2.3	145	1.6	--
D	A92-6C(62MM)	--	--	--	--	--	--	--	--	--

	SAMPLE	U PPM NA 0.1	LOI % XRF-F 0.01	SUM % XRF-F 0.1
	A87-1C(192-202MM)	3.8	9.08	98.5
	A87-17C(67-87MM)	1.1	20.2	98.5
	A87-18C	0.9	8.46	96.2
	A89-3C(0-5MM)	1.6	7.08	96.3
	A89-4C(45-55MM)	1.7	4.15	96.5
	A90-2C(0-5MM)	1.0	4.77	96.9
	A90-3C(0-5MM)	1.7	3.85	96.2
	A90-7C	0.2	4.46	96.4
	A92-4C(0-5MM)	0.2	29.5	100.6
	A92-4C(70MM)	1.5	18.3	100.6
	A92-4C(102-107MM)	0.6	20.0	100.6
	A92-6C(0-5MM)	11.4	15.2	98.4
	A92-6C(60MM)	21.2	13.8	94.4
	A92-6C(62MM)	19.9	12.6	95.6
	A92-6C(85-90MM)	17.4	11.7	96.5
	A92-6C(100MM)	15.9	12.8	94.8
	A92-6C(130-135MM)	15.7	17.8	95.9
	A92-12C(0-5MM)	1.9	19.5	99.8
	A92-12C(150-155MM)	0.6	22.2	100.8
	A92-15C(95MM)	2.2	16.8	100.2
	382-27-1A	3.4	7.69	96.1
C	XRA CONTROL	--	--	--
C	XRA CONTROL	--	--	--
C	SY-2	--	1.23	99.4
C	SY-2	--	1.23	99.1
C	WET LAB CONTROL	--	--	--
D	A87-1C(192-202MM)	3.7	8.92	98.8
D	A92-6C(60MM)	--	--	--
D	A92-6C(62MM)	--	12.6	95.2