Mitchell-Sulphurets 104B/8,9
802707

Kirkhauls Regional Samples 1ST SET.

KQ-86 Samples
44A-97
(first batch)

GEOLOGICAL SURVEY OF CANADA
ECONOMIC GEOLOGY AND MINERALOGY DIVISION
ANALYTICAL CHEMISTRY SECTION
ICP - EMISSION SPECTROMETRY LABORATORY

****
* REPORT OF ANALYSIS *
****

DATE: 16 JUNE 87
REPORT NO. 7-87
SUBMITTED BY: BALLANTYNE S.
PROJECT NO. 790003
METHOD: ICP-MJ1 , ICP-TR1 , Ag & Pb BY AA.
FeO , H2O(t) , CO2 , C , S(t) AND LOI BY CHEMICAL METHODS.

ESTIMATE OF VALIDITY OF RESULTS

ELEMENT	+/-	(ABSOLUTE	+	RELATIVE)
SiO2	+/-	(0.4 %	+	2% OF CONC.)
TiO2		0.02	+	''
Al2O3		0.2	+	''
Fe2O3(t)		0.1	+	''
MnO		0.01	+	''
MgO		0.1	+	''
CaO		0.1	+	''
Na2O		0.1	+	''
K2O		0.1	+	''
FeO		0.2	+	5% OF CONC.
H2O(t)		0.1	+	5% OF CONC.
CO2		0.1	+	3% OF CONC.
C				
P2O5		0.02	+	1% OF CONC.
S(t)		0.04	+	5% OF CONC.
LOI				
Ba	+/-	(20 PPM	+	5% OF CONC.)
Be	+/-	(0.5 PPM	+	5% OF CONC.)
Co	+/-	(5 PPM	+	5% OF CONC.)
Cr	+/-	(10 PPM	+	5% OF CONC.)
Cu	+/-	(10 PPM	+	5% OF CONC.)
La	+/-	(10 PPM	+	5% OF CONC.)
Ni	+/-	(10 PPM	+	5% OF CONC.)
Pb	+/-	(20 PPM	+	10% OF CONC.)
V	+/-	(5 PPM	+	5% OF CONC.)
Yb	+/-	(0.5 PPM	+	5% OF CONC.)
Zn	+/-	(5 PPM	+	5% OF CONC.)

ml

ANALYTICAL CHEMISTRY SECTION
ICP-ES LABORATORY

DATE: 16 JUNE 87

REPORT OF ANALYSIS

NAME: BALLANTYNE S.

PROJECT: 790003

REQN. NO: 7-87

LAB. NO.	KQ-86-44A → 1	2	KQ-8644B 3	KQ-8644C 4	KQ-8644D 5	KQ-8645 6	7	KQ-86-46 8
SAMPLE NO:	104B-869 001	104B-869 002	104B-869 003	104B-869 004	104B-869 005	104B-869 006	104B-869 007	104B-869 008
SIO2 % :	84.3	52.3	55.4	54.2	61.0	58.9	59.4	59.9
TIO2 % :	0.19	0.49	0.48	0.52	0.37	0.63	1.02	0.64
AL2O3 % :	6.73	15.0	15.3	16.1	16.1	17.3	12.6	17.7
FE2O3T % :	1.94	8.63	5.40	8.96	4.20	5.90	7.50	5.70
FE2O3 % :		3.5	1.7	3.6	1.9	1.3	3.9	1.4
FEO % :		4.6	3.3	4.8	2.1	4.1	3.2	3.9
MNO % :	0.01	0.14	0.19	0.14	0.09	0.11	0.14	0.07
MGO % :	0.34	3.09	3.61	4.32	1.20	2.08	6.32	1.05
CAO % :	0.10	4.14	5.51	1.63	2.60	3.24	4.15	2.23
NA2O % :	0.04	3.13	5.70	4.01	3.30	3.10	2.50	5.40
K2O % :	2.16	5.01	1.99	4.46	8.10	5.84	1.87	4.76
H2OT % :		2.7	2.3	3.2	1.2	2.5	3.4	1.8
CO2T % :	0.0	3.2	4.0	1.0	1.8	0.7	1.4	0.8
P2O5 % :	0.08	0.36	0.36	0.33	0.21	0.22	0.25	0.21
S % :	1.33	0.46	0.15	0.99	0.06	0.04	0.01	0.02
BA ppm :	1500	2600	1200	4000	3600	2700	640	1800
BE ppm :	0.7	0.8	0.8	0.8	0.9	1.5	5.6	1.4
CO ppm :	5	25	18	26	10	16	36	14
CR ppm :	28	50	60	44	12	12	390	9
CU ppm :	18	5100	1400	7400	59	35	56	39
LA ppm :	5	16	18	14	13	22	29	20
NI ppm :	0	37	15	0	0	0	280	0
SR ppm :	14	210	240	250	470	360	410	230
V ppm :	45	200	150	200	120	150	120	130
YB ppm :	0.4	1.3	1.1	0.9	0.5	2.0	3.6	2.1
ZN ppm :	130	75	50	85	26	65	140	46
TOTALS	97.4	99.0	100.4	100.5	100.4	100.5	100.4	100.1

COMMENTS:

* ALL ANALYSIS BY ICP,EXCEPT FEO,H2OT,CO2T,CO2,C,S AND LOI BY CHEMICAL METHODS.
* FE2O3 IS CALCULATED USING FE2O3=FE2O3T(ICP)-1.11134*FEO(VOLUMETRIC).
* ICP-MJ1 DATA ARE OBTAINED ON 0.5 G OF SAMPLE FUSED WITH LITHIUM METABORATE, DISSOLVED IN 5% HNO3 AND DILUTED TO 250 ML.

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE) DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ANALYTICAL CHEMISTRY SECTION
ICP-ES LABORATORY

DATE: 16 JUNE 87

LAB. NO.	KQ-8648	KQ-8649	KQ-8650	KQ8651	KQ8652	KQ8653	KQ8653V ? ← not a KQ number
	KQ-8649 9	10	11	12	13	14	15	16
SAMPLE NO:	104B-869 009	104B-869 010	104B-869 011	104B-869 012	104B-869 013	104B-869 014	1-4B-869 015	104B-869 016
SIO2 % :	58.2	56.8	67.3	61.4	66.2	62.1	78.4	96.2
TIO2 % :	0.68	0.69	0.55	0.62	0.55	0.58	0.34	0.07
AL2O3 % :	16.7	18.0	15.1	16.1	13.8	15.8	13.4	2.50
FE2O3T % :	6.50	6.30	4.90	5.70	4.80	6.58	0.50	0.30
FE2O3 % :	3.3	1.6	4.2	5.1	3.5		0.5	0.3
FEO % :	2.9	4.2	0.6	0.5	1.2		0.0	0.0
MNO % :	0.12	0.10	0.05	0.15	0.12	0.07	0.00	0.00
MGO % :	2.35	1.02	0.49	1.75	0.99	1.36	0.56	0.08
CAO % :	5.40	2.90	0.62	3.20	3.65	2.28	0.0	0.0
NA2O % :	3.30	4.00	0.60	5.30	1.60	0.71	0.20	0.10
K2O % :	4.29	6.68	8.16	2.41	2.67	3.01	3.92	0.64
H2OT % :	2.3	2.0	1.7	1.9	2.3		2.2	0.6
CO2T % :	0.4	1.3	0.0	2.0	2.7	1.5	0.2	0.1
P2O5 % :	0.22	0.23	0.23	0.24	0.21	0.22	0.09	0.02
S % :	0.01	0.01	0.02	0.03	0.02	4.60	0.06	0.06
BA ppm :	2000	2300	3600	1100	1700	2200	1100	1300
BE ppm :	1.6	1.5	1.0	1.2	1.0	1.1	1.2	0.2
CO ppm :	17	12	11	12	10	13	2	2
CR ppm :	12	11	23	49	9	14	26	7
CU ppm :	39	61	11	7	12	21	2	3
LA ppm :	21	21	14	15	11	6	6	2
NI ppm :	0	0	0	13	0	0	0	0
SR ppm :	450	320	83	400	210	130	12	39
V ppm :	150	120	77	58	96	120	67	12
YB ppm :	1.8	2.3	1.6	1.7	1.5	1.1	0.4	0.1
ZN ppm :	69	69	81	68	55	70	14	16
TOTALS	100.4	99.9	100.1	100.9	99.7	99.1	100.0	100.8

COMMENTS:

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ANALYTICAL CHEMISTRY SECTION
ICP-ES LABORATORY

DATE: 16 JUNE 87

LAB. NO.		17 KQ86-54	18	19 KQ-86-54A	20 KQ86-55	21	22 KQ86-56 (maroon lapilli tuff)	23 KQ86-57 (welded ash flow rhyolite)	24 KQ86-58 (rhyolite)
SAMPLE NO:		104B-869 017	104B-869 018	104B-869 019	104B-869 020	104B-869 021	104B-869 022	104B-869 023	104B-869 024
SIO2	% :	59.4	84.4	83.7	62.8	65.0	57.4	72.8	76.4
TIO2	% :	1.03	0.20	0.07	0.73	0.28	1.17	0.25	0.26
AL2O3	% :	12.6	6.67	2.68	18.0	11.9	15.6	13.9	12.6
FE2O3T	% :	7.50	2.07	1.21	5.90	5.10	14.0	2.60	3.20
FE2O3	% :	4.1			4.9		10.1	0.7	0.6
FEO	% :	3.1			0.9		3.5	1.7	2.3
MNO	% :	0.13	0.01	0.01	0.03	0.02	0.09	0.05	0.06
MGO	% :	6.33	0.34	0.13	1.06	0.28	2.50	0.46	0.82
CAO	% :	4.14	0.11	0.05	1.24	0.19	1.21	0.79	0.67
NA2O	% :	2.50	0.02	0.00	3.80	0.13	3.10	3.90	1.10
K2O	% :	1.87	1.97	0.64	3.68	7.43	2.29	1.73	2.52
H2OT	% :	3.4			2.4		3.2	2.0	2.5
CO2T	% :	1.3	0.0	0.1	0.5	0.0	0.3	2.0	0.7
P2O5	% :	0.25	0.08	0.07	0.07	0.17	0.22	0.03	0.02
S	% :	0.02	1.35	2.21	0.00	3.11	0.01	0.02	0.03
BA	ppm :	650	1500	22000	1600	28000	960	500	670
BE	ppm :	5.8	0.7	0.3	1.8	0.9	1.9	1.9	2.0
CO	ppm :	36	5	4	16	6	21	3	3
CR	ppm :	370	28	7	14	8	45	7	7
CU	ppm :	57	18	290	12	44	20	5	5
LA	ppm :	29	5	2	28	6	28	20	19
NI	ppm :	290	0	0	5	0	18	3	3
SR	ppm :	410	14	280	320	140	170	140	62
V	ppm :	120	47	21	51	100	150	15	19
YB	ppm :	3.6	0.4	0.1	2.7	0.7	4.7	4.4	6.6
ZN	ppm :	140	120	3900	60	140	140	51	51
TOTALS		100.4	97.4	93.5	100.3	96.4	100.9	100.4	100.7

COMMENTS:

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* ICP-MJ1 DATA ARE OBTAINED ON 0.5 G OF SAMPLE FUSED WITH LITHIUM METABORATE, DISSOLVED IN 5% HNO3 AND DILUTED TO 250 ML.

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ANALYTICAL CHEMISTRY SECTION
ICP-ES LABORATORY

DATE: 16 JUNE 87

LAB. NO.	KQ-8660	KQ-8661		KQ-8662	KQ-8663	KQ-8664	KQ-8664A	KQ-8665
	25	26	27	28	29	30	31	32
SAMPLE NO:	104B-869 025	104B-869 026	104B-869 027	104B-869 028	104B-869 029	104B-869 030	104B-869 031	104B-869 032
SIO2 % :	59.1	65.0	59.1	62.3	85.1	52.2	59.1	66.4
TIO2 % :	0.79	0.28	1.02	0.42	0.17	0.72	0.44	0.55
AL2O3 % :	20.9	12.1	12.5	16.8	3.77	20.6	17.7	14.9
FE2O3T % :	5.03	5.17	7.50	3.34	5.07	8.23	6.18	2.69
FE2O3 % :			4.1	2.8				
FEO % :			3.1	0.5				
MNO % :	0.02	0.02	0.13	0.01	0.02	0.04	0.07	0.01
MGO % :	1.33	0.28	6.20	0.33	0.26	2.06	1.36	0.42
CAO % :	0.16	0.19	4.12	0.05	0.05	0.51	1.39	0.22
NA2O % :	1.47	0.14	2.50	0.20	0.03	2.02	4.81	0.21
K2O % :	4.04	7.67	1.84	12.2	1.50	6.78	4.12	11.7
H2OT % :			3.4	1.7				
CO2T % :	0.0	0.1	1.4	0.7	0.1	0.3	0.8	0.0
P2O5 % :	0.23	0.19	0.25	0.22	0.02	0.19	0.29	0.32
S % :	1.50	3.24	0.03	0.91	3.53	6.04	4.38	1.86
BA ppm :	6100	38000	670	10000	1300	1200	1100	2200
BE ppm :	1.8	0.9	5.6	0.7	0.9	3.0	2.0	1.1
CO ppm :	8	6	36	4	6	63	21	5
CR ppm :	6	8	370	11	11	29	21	62
CU ppm :	14	46	60	11	270	3400	380	44
LA ppm :	12	7	29	19	7	27	17	23
NI ppm :	0	0	290	0	0	17	0	0
SR ppm :	200	140	420	140	28	67	130	180
V ppm :	130	97	120	160	250	150	260	75
YB ppm :	2.3	0.7	3.7	0.7	0.3	2.5	1.2	1.3
ZN ppm :	39	130	140	6	88	170	75	6
TOTALS	95.2	98.1	99.9	100.1	99.8	100.2	100.9	99.5

COMMENTS:

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ANALYTICAL CHEMISTRY SECTION
ICP-ES LABORATORY

DATE: 16 JUNE 87

LAB. NO.	KQ-8666 33	34	KQ-8667 35	KQ-8668 36	37	KQ-8669A 38	KQ-8669B 39	KQ-8669C 40
SAMPLE NO:	104B-869 033	104B-869 034	104B-869 035	104B-869 036	104B-869 037	104B-869 038	104B-869 039	104B-869 040
SIO2 % :	76.7		68.2	84.6	59.3	55.4	58.0	50.6
TIO2 % :	0.24		0.31	0.14	1.02	0.52	0.43	0.54
AL2O3 % :	6.87		14.6	5.66	12.5	18.0	15.7	17.5
FE2O3T % :	6.31		2.53	2.54	7.50	8.13	6.17	6.32
FE2O3 % :					3.9		2.2	
FEO % :					3.2		3.6	
MNO % :	0.01		0.02	0.04	0.13	0.21	0.39	0.29
MGO % :	0.40		0.67	0.32	6.28	2.95	2.83	2.08
CAO % :	0.05		0.15	1.49	4.13	3.34	6.17	5.68
NA2O % :	0.08		0.19	0.08	2.50	4.73	2.82	4.88
K2O % :	4.51		9.47	1.36	1.84	2.40	2.15	2.78
H2OT % :					3.4		2.8	
CO2T % :	0.1		0.4	1.1	1.4	0.3	2.1	3.7
P2O5 % :	0.08		0.23	0.27	0.25	0.39	0.32	0.34
S % :	4.68		1.32	1.58	0.03	2.14	1.00	1.25
BA ppm :	720		3600	1100	670	4800	4700	4200
BE ppm :	0.7		1.6	0.7	5.9	1.1	1.1	1.3
CO ppm :	6		7	8	37	11	13	13
CR ppm :	23		48	9	380	18	21	17
CU ppm :	900		64	420	58	42	160	22
LA ppm :	6		10	6	30	12	14	15
NI ppm :	5		0	0	290	0	0	0
SR ppm :	52		180	32	430	480	690	360
V ppm :	69		74	260	120	220	190	180
YB ppm :	0.2		0.9	1.3	3.8	1.1	1.2	1.5
ZN ppm :	530		19	130	150	130	160	140
TOTALS	100.3		98.5	99.4	100.2	99.1	101.1	96.5

COMMENTS:

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* FE2O3 IS CALCULATED USING FE2O3=FE2O3T(ICP)-1.11134*FEO(VOLUMETRIC).
* ICP-MJ1 DATA ARE OBTAINED ON 0.5 G OF SAMPLE FUSED WITH LITHIUM METABORATE, DISSOLVED IN 5% HNO3 AND DILUTED TO 250 ML.

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ANALYTICAL CHEMISTRY SECTION
ICP-ES LABORATORY

DATE: 16 JUNE 87

LAB. NO.		41	42	43	44	45	46	47	48
		KQ8670A	KQ8670B	KQ8670C	KQ8671	KQ8672A			KQ8672B
SAMPLE NO:		104B-869 041	104B-869 042	104B-869 043	104B-869 044	104B-869 045	104B-869 046	104B-869 047	104B-869 048
SIO2	% :	59.8	62.1	68.7	68.8	66.4	44.8	59.3	50.6
TIO2	% :	0.65	0.45	0.28	0.28	0.53	0.07	1.03	0.35
AL2O3	% :	17.2	12.8	12.6	13.2	14.8	2.56	12.7	14.0
FE2O3T	% :	6.84	4.56	4.65	3.98	3.53	32.0	7.50	5.65
FE2O3	% :		0.5					3.9	
FEO	% :		3.7					3.2	
MNO	% :	0.02	0.13	0.02	0.05	0.02	0.03	0.13	0.32
MGO	% :	1.65	1.00	0.45	0.28	0.58	0.18	6.27	1.81
CAO	% :	0.12	5.86	0.13	0.55	0.11	0.35	4.13	9.50
NA2O	% :	0.50	3.39	0.25	5.10	2.47	0.02	2.50	2.14
K2O	% :	4.13	2.16	8.61	3.11	7.73	0.91	1.84	3.96
H2OT	% :		2.0					3.3	
CO2T	% :	0.3	4.3	0.0	0.5	1.0	0.3	1.4	7.3
P2O5	% :	0.11	0.12	0.11	0.09	0.05	0.10	0.25	0.25
S	% :	5.14	0.71	2.68	2.42	1.12	25.3	0.08	2.10
BA	ppm :	1800	1000	3400	1200	4500	470	660	6700
BE	ppm :	1.6	1.0	0.8	1.1	1.2	0.3	6.1	1.2
CO	ppm :	16	15	7	9	7	16	39	14
CR	ppm :	54	86	23	28	27	0	430	19
CU	ppm :	77	32	11	17	17	3400	58	19
LA	ppm :	12	10	5	7	9	6	31	13
NI	ppm :	0	30	0	0	0	1	360	0
SR	ppm :	57	520	99	200	190	12	430	300
V	ppm :	110	110	91	110	120	62	120	150
YB	ppm :	0.9	0.8	0.3	0.3	0.7	0.2	3.8	1.3
ZN	ppm :	72	60	24	23	22	5800	150	85
TOTALS		96.7	99.4	98.8	98.5	98.8	107.6	100.3	98.7

COMMENTS:

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ANALYTICAL CHEMISTRY SECTION
ICP-ES LABORATORY

DATE: 16 JUNE 87

LAB. NO.	KQ86-73 49	KQ86-74 50	KQ-86-75 51	KQ86-75A 52	KQ87-75B 53	KQ-86-76 54	KQ86-76A 55	KQ86-76B 56
SAMPLE NO:	104B-869 049	104B-869 050	104B-869 051	104B-869 052	104B-869 053	104B-869 054	104B-869 055	104B-869 056
SIO2 % :	49.1	62.5	74.3	62.0	71.8	71.1	81.6	71.4
TIO2 % :	0.42	0.53	0.48	0.67	0.21	0.47	0.26	0.40
AL2O3 % :	13.7	15.4	11.4	17.5	7.64	13.0	12.1	13.4
FE2O3T % :	6.53	6.18	4.18	7.19	10.5	4.56	0.40	5.72
FE2O3 % :							0.0	
FEO % :							1.1	
MNO % :	0.55	0.05	0.01	0.02	0.01	0.01	0.00	0.01
MGO % :	2.27	2.50	0.41	1.69	0.47	0.53	0.09	0.46
CAO % :	7.17	0.17	0.05	0.11	0.10	0.33	0.22	0.14
NA2O % :	0.05	0.22	0.23	0.49	0.10	0.25	0.40	0.28
K2O % :	4.56	3.63	3.14	4.26	2.14	3.29	2.27	3.27
H2OT % :							2.0	
CO2T % :	5.6	0.1	0.1	0.3	0.0	0.0	0.1	0.1
P2O5 % :	0.30	0.13	0.11	0.10	0.06	0.25	0.18	0.12
S % :	4.46	4.52	3.02	5.24	7.94	3.36	0.26	4.36
BA ppm :	15000	1600	1200	1900	500	1200	1000	1400
BE ppm :	1.5	1.5	1.1	1.7	0.6	0.9	0.5	0.9
CO ppm :	16	16	13	18	12	15	3	14
CR ppm :	22	52	43	60	42	38	21	26
CU ppm :	29	120	45	77	200	240	82	85
LA ppm :	4	13	24	16	4	20	8	7
NI ppm :	0	0	0	0	11	0	1	0
SR ppm :	770	27	35	61	10	63	92	45
V ppm :	170	110	120	110	55	97	50	110
YB ppm :	1.1	1.2	1.9	1.3	0.6	1.8	0.2	0.8
ZN ppm :	900	1300	28	75	360	310	17	110
TOTALS	96.4	96.3	97.6	99.8	101.1	97.4	99.9	99.8

COMMENTS:

* ALL ANALYSIS BY ICP,EXCEPT FEO,H2OT,CO2T,CO2,C,S AND LOI BY CHEMICAL METHODS.
* FE2O3 IS CALCULATED USING FE2O3=FE2O3T(ICP)-1.11134*FEO(VOLUMETRIC).
* ICP-MJ1 DATA ARE OBTAINED ON 0.5 G OF SAMPLE FUSED WITH LITHIUM METABORATE, DISSOLVED IN 5% HNO3 AND DILUTED TO 250 ML.

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE) DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ANALYTICAL CHEMISTRY SECTION DATE: 16 JUNE 87
ICP-ES LABORATORY

LAB. NO.	57	58	59	60	61	62	63	64
	KQ-8677	KQ-8678	KQ8678A		KQ8679		KQ8680	KQ-86-81
SAMPLE NO:	104B-869 057	104B-869 058	104B-869 059	104B-869 060	104B-869 061	104B-869 062	104B-869 063	104B-869 064
SIO2 % :	59.6	55.6	57.2	66.7	70.5	60.7	71.6	73.4
TIO2 % :	1.02	0.49	0.26	0.29	0.33	0.48	0.33	0.39
AL2O3 % :	12.5	16.9	17.7	17.7	13.5	15.2	13.9	13.1
FE2O3T % :	7.50	7.50	3.70	4.12	5.00	8.19	4.95	4.09
FE2O3 % :	4.1							
FEO % :	3.1							
MNO % :	0.13	0.46	0.38	0.12	0.02	0.41	0.02	0.04
MGO % :	6.21	2.91	0.96	1.00	0.62	2.96	0.66	0.76
CAO % :	4.10	4.44	4.92	1.17	0.18	1.20	0.21	0.52
NA2O % :	2.60	0.22	0.47	0.70	0.25	3.50	0.27	0.21
K2O % :	1.86	3.46	4.71	4.48	3.49	1.96	3.61	4.15
H2OT % :	3.6							
CO2T % :	1.4	3.4	3.9	0.5	0.0	0.8	0.0	0.2
P2O5 % :	0.24	0.43	0.23	0.26	0.18	0.37	0.17	0.12
S % :	0.00	2.21	2.63	2.72	3.27	2.45	3.06	2.84
BA ppm :	680	2500	2600	2600	5300	1500	5400	1800
BE ppm :	5.9	1.4	1.4	1.3	0.9	0.8	1.1	1.1
CO ppm :	39	16	7	9	11	12	10	13
CR ppm :	450	23	15	8	20	28	21	33
CU ppm :	58	500	100	180	180	110	190	270
LA ppm :	31	12	22	25	8	14	8	8
NI ppm :	290	0	0	0	0	0	0	0
SR ppm :	420	82	110	71	150	120	140	54
V ppm :	120	200	86	70	180	200	170	74
YB ppm :	3.8	1.2	2.5	2.9	1.3	0.8	1.2	0.6
ZN ppm :	150	680	1300	850	120	650	130	86
TOTALS	100.7	98.4	97.5	100.2	97.9	98.5	99.4	100.1

COMMENTS:

* ALL ANALYSIS BY ICP,EXCEPT FEO,H2OT,CO2T,CO2,C,S AND LOI BY CHEMICAL METHODS.
* FE2O3 IS CALCULATED USING FE2O3=FE2O3T(ICP)-1.11134*FEO(VOLUMETRIC).
* ICP-MJ1 DATA ARE OBTAINED ON 0.5 G OF SAMPLE FUSED WITH LITHIUM METABORATE, DISSOLVED IN 5% HNO3 AND DILUTED TO 250 ML.

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE) DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ANALYTICAL CHEMISTRY SECTION DATE: 16 JUNE 87
ICP-ES LABORATORY

LAB. NO.	KQ-86-82 65	KQ-86-82A 66	67	KQ-86-82B 68	KQ-86-83 69	KQ-86-84 70	KQ-86-85 71	KQ-86-86 72
SAMPLE NO:	104B-869 065	104B-869 066	104B-869 067	104B-869 068	104B-869 069	104B-869 070	104B-869 071	104B-869 072
SIO2 % :	76.5	70.9	59.3	67.0	75.2	79.9	79.9	57.2
TIO2 % :	0.32	0.31	1.02	0.42	0.32	0.21	0.17	0.66
AL2O3 % :	12.0	13.2	12.5	17.3	10.5	10.4	6.72	18.8
FE2O3T % :	2.99	6.16	7.50	5.13	5.12	2.28	6.28	9.90
FE2O3 % :			3.9			0.0		2.9
FEO % :			3.2			2.5		6.3
MNO % :	0.01	0.01	0.13	0.01	0.01	0.01	0.01	0.15
MGO % :	0.34	0.63	6.30	0.39	0.50	0.31	0.16	2.04
CAO % :	0.05	0.04	4.14	0.05	0.12	0.05	0.04	0.58
NA2O % :	0.20	0.23	2.50	0.32	0.15	0.21	0.13	0.30
K2O % :	3.22	3.08	1.85	4.26	3.13	2.41	1.80	3.70
H2OT % :			3.6			2.3		4.3
CO2T % :	0.0	0.0	1.3	0.0	0.0	0.1	0.2	0.4
P2O5 % :	0.10	0.05	0.25	0.09	0.08	0.11	0.08	0.46
S % :	1.96	4.40	0.03	3.75	3.81	0.67	3.07	0.42
BA ppm :	3200	780	630	1400	1000	2400	2100	3500
BE ppm :	0.6	0.7	6.2	0.6	0.9	0.9	0.5	1.8
CD ppm :	5	17	38	9	9	4	8	10
CR ppm :	26	30	430	8	24	21	22	20
CU ppm :	79	540	56	430	680	130	130	940
LA ppm :	5	9	30	10	4	7	5	8
NI ppm :	0	2	270	0	0	0	0	0
SR ppm :	220	45	400	96	27	68	45	76
V ppm :	110	83	120	140	75	46	73	300
YB ppm :	0.5	0.7	3.6	0.6	0.8	0.4	0.1	0.7
ZN ppm :	54	350	140	100	280	68	180	620
TOTALS	98.1	99.2	100.3	98.9	99.2	99.0	98.8	98.8

COMMENTS:

* ALL ANALYSIS BY ICP,EXCEPT FEO,H2OT,CO2T,CO2,C,S AND LOI BY CHEMICAL METHODS.
* FE2O3 IS CALCULATED USING FE2O3=FE2O3T(ICP)-1.11134*FEO(VOLUMETRIC).
* ICP-MJ1 DATA ARE OBTAINED ON 0.5 G OF SAMPLE FUSED WITH LITHIUM METABORATE, DISSOLVED IN 5% HNO3 AND DILUTED TO 250 ML.

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE) DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ANALYTICAL CHEMISTRY SECTION
ICP-ES LABORATORY

DATE: 16 JUNE 87

LAB. NO. KQ-8687	73	74 (KQ-86-88A)	75 (KQ-86-88B)	76 (KQ-86-89)	77	78 (f.g. maroon granite KQ-86-89A)	79 (vert chloritic zenolith KQ-86-89B)	80 (KQ-86-89C)
SAMPLE NO:	104B-869 073	104B-869 074	104B-869 075	104B-869 076	104B-869 077	104B-869 078	104B-869 079	104B-869 080
SIO2 % :	67.3	57.1	55.1	77.9	58.2	72.0	71.2	71.1
TIO2 % :	0.32	0.75	0.44	0.04	1.01	0.12	0.31	0.06
AL2O3 % :	9.33	16.2	14.7	10.4	10.4	12.4	9.00	13.4
FE2O3T % :	11.9	6.17	6.21	0.90	7.50	1.90	3.60	1.20
FE2O3 % :				0.6	4.1	1.3	2.0	0.6
FEO % :				0.3	3.1	0.5	1.4	0.5
MNO % :	0.02	0.07	0.16	0.03	0.14	0.05	0.12	0.05
MGO % :	0.83	1.56	1.39	0.19	6.14	0.20	1.18	0.50
CAO % :	0.08	1.74	3.93	0.78	4.10	1.52	3.49	1.08
NA2O % :	0.31	3.56	0.27	1.10	2.50	2.30	1.40	1.90
K2O % :	1.82	8.93	11.7	7.51	1.83	7.64	4.72	8.98
H2OT % :				0.4	3.4	0.4	1.0	0.5
CO2T % :	0.0	0.9	2.4	0.8	1.3	1.3	2.8	1.3
P2O5 % :	0.07	0.33	0.43	0.00	0.24	0.04	0.25	0.00
S % :	8.55	1.27	4.20	0.26	0.05	0.05	0.37	0.10
BA ppm :	3400	6000	4400	200	690	350	2400	400
BE ppm :	1.3	1.9	1.3	3.0	5.7	3.0	1.9	4.0
CO ppm :	4	22	4	2	35	4	14	4
CR ppm :	8	66	30	5	390	11	18	8
CU ppm :	260	2700	250	3200	57	700	2600	620
LA ppm :	5	12	3	2	28	4	8	2
NI ppm :	0	0	0	5	280	6	0	7
SR ppm :	68	280	65	31	410	59	160	51
V ppm :	65	420	65	110	120	430	640	270
YB ppm :	0.7	1.4	1.2	0.2	3.5	0.1	0.2	0.1
ZN ppm :	540	110	530	43	140	30	120	49
TOTALS	101.0	99.5	101.5	100.6	96.7	100.0	99.9	100.3

COMMENTS:

* ALL ANALYSIS BY ICP,EXCEPT FEO,H2OT,CO2T,CO2,C,S AND LOI BY CHEMICAL METHODS.
* FE2O3 IS CALCULATED USING FE2O3=FE2O3T(ICP)-1.11134*FEO(VOLUMETRIC).
* ICP-MJ1 DATA ARE OBTAINED ON 0.5 G OF SAMPLE FUSED WITH LITHIUM METABORATE, DISSOLVED IN 5% HNO3 AND DILUTED TO 250 ML.

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE) DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ANALYTICAL CHEMISTRY SECTION
ICP-ES LABORATORY

DATE: 16 JUNE 87

		trachytoid qz syenite		trach. qz syenite				KQ-86-91A
		KQ-86-90A	KQ-86-90B	KQ-86-90C	KQ-86-90D	KQ-86-91		
LAB. NO.		81	82	83	84	85	86	87	88
SAMPLE NO:		104B-869 081	104B-869 082	104B-869 083	104B-869 084	104B-869 085	104B-869 086	104B-869 087	104B-869 088
SIO2	% :	55.3	72.2	75.7	62.4	66.4	62.6	59.3	54.8
TIO2	% :	0.07	0.15	0.10	0.17	0.11	0.12	1.03	0.07
AL2O3	% :	14.0	13.2	12.2	18.1	17.1	18.4	12.5	13.9
FE2O3T	% :	7.77	1.86	0.90	2.30	1.87	1.50	7.50	7.80
FE2O3	% :		0.5	0.7	1.3	0.1	0.6	4.1	
FEO	% :		1.2	0.2	0.9	1.6	0.8	3.1	
MNO	% :	0.06	0.01	0.03	0.04	0.03	0.04	0.14	0.05
MGO	% :	0.65	0.17	0.11	0.42	0.30	0.40	6.32	0.66
CAO	% :	1.69	0.13	0.15	0.94	0.20	1.11	4.16	1.70
NA2O	% :	3.01	4.35	1.50	4.60	3.90	3.70	2.50	2.96
K2O	% :	8.01	5.29	8.66	8.68	9.70	10.1	1.86	7.91
H2OT	% :		0.6	0.5	0.9	0.8	0.8	3.4	
CO2T	% :	1.1	0.2	0.1	1.0	0.1	1.0	1.4	1.2
P2O5	% :	0.10	0.02	0.03	0.07	0.07	0.04	0.25	0.11
S	% :	5.40	0.83	0.04	0.16	0.47	0.42	0.04	5.24
BA	ppm :	1900	1600	460	3700	2500	4200	680	1900
BE	ppm :	2.7	4.0	4.9	2.5	2.0	2.3	5.9	2.7
CO	ppm :	14	5	2	8	7	7	35	13
CR	ppm :	11	4	6	7	7	6	420	10
CU	ppm :	44000	180	320	270	610	3200	59	48000
LA	ppm :	8	7	3	9	4	8	28	7
NI	ppm :	0	0	3	0	5	0	280	0
SR	ppm :	250	210	61	650	250	570	420	260
V	ppm :	550	180	420	250	180	230	120	590
YB	ppm :	0.4	0.4	0.0	0.2	0.1	0.2	3.7	0.4
ZN	ppm :	190	26	24	33	28	34	150	190
TOTALS		101.9	99.1	100.1	100.2	101.2	101.0	100.3	101.5

COMMENTS:

* ALL ANALYSIS BY ICP,EXCEPT FEO,H2OT,CO2T,CO2,C,S AND LOI BY CHEMICAL METHODS.
* FE2O3 IS CALCULATED USING FE2O3=FE2O3T(ICP)-1.11134*FEO(VOLUMETRIC).
* ICP-MJ1 DATA ARE OBTAINED ON 0.5 G OF SAMPLE FUSED WITH LITHIUM METABORATE, DISSOLVED IN 5% HNO3 AND DILUTED TO 250 ML.

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE) DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ANALYTICAL CHEMISTRY SECTION
ICP-ES LABORATORY

DATE: 16 JUNE 87

			dark zenolith	trachy foid syenite					mylonite?
LAB. NO.		KQ-86-91B 89	KQ-86-92A 90	KQ-86-92B 91	KQ-86-92C 92	KQ-86-92D 93	KQ-86-92E 94	KQ-86-92F 95	KQ-86-92G 96
SAMPLE NO:		104B-869 089	104B-869 090	104B-869 091	104B-869 092	104B-869 093	104B-869 094	104B-869 095	104B-869 096
SIO2	% :	64.9	58.1	63.4	74.1	60.7	63.2	82.0	74.2
TIO2	% :	0.12	0.65	0.13	0.10	0.34	0.14	0.05	0.11
AL2O3	% :	18.0	12.3	19.0	11.5	17.5	16.1	7.90	11.9
FE2O3T	% :	1.30	8.35	1.40	0.90	4.00	3.92	1.24	1.60
FE2O3	% :	0.9		0.7	0.1	2.4		0.0	0.7
FEO	% :	0.4		0.6	0.7	1.4		8.1	0.8
MNO	% :	0.02	0.10	0.02	0.06	0.07	0.05	0.03	0.05
MGO	% :	0.15	3.44	0.25	0.19	1.15	1.10	0.19	0.36
CAO	% :	0.63	2.88	0.61	1.74	2.83	0.68	0.85	1.58
NA2O	% :	4.20	3.00	5.20	1.10	4.50	2.58	0.51	3.80
K2O	% :	9.22	6.40	8.18	8.36	7.60	9.80	6.25	4.58
H2OT	% :	0.6		0.8	0.5	0.6		0.4	0.5
CO2T	% :	0.6	2.0	0.5	1.5	0.2	0.2	0.5	1.2
P2O5	% :	0.03	0.31	0.04	0.01	0.22	0.11	0.04	0.04
S	% :	0.17	1.44	0.14	0.31	0.03	1.44	0.63	0.37
BA	ppm :	3800	1900	3900	760	4500	2200	830	740
BE	ppm :	2.1	1.9	2.1	1.4	1.2	3.7	0.6	3.6
CO	ppm :	6	23	7	3	12	9	4	4
CR	ppm :	7	99	7	11	10	11	7	8
CU	ppm :	1100	1000	420	2000	39	1200	1200	580
LA	ppm :	5	4	5	2	13	4	3	3
NI	ppm :	0	25	0	4	0	0	2	4
SR	ppm :	540	220	530	140	1100	230	69	86
V	ppm :	220	610	200	120	130	670	85	160
YB	ppm :	0.1	0.4	0.2	0.1	1.1	0.0	0.1	0.3
ZN	ppm :	26	69	33	15	32	98	59	25
TOTALS		100.5	99.4	100.1	100.6	100.2	99.8	99.9	100.4

COMMENTS:

* ALL ANALYSIS BY ICP,EXCEPT FEO,H2OT,CO2T,CO2,C,S AND LOI BY CHEMICAL METHODS.
* FE2O3 IS CALCULATED USING FE2O3=FE2O3T(ICP)-1.11134*FEO(VOLUMETRIC).
* ICP-MJ1 DATA ARE OBTAINED ON 0.5 G OF SAMPLE FUSED WITH LITHIUM METABORATE, DISSOLVED IN 5% HNO3 AND DILUTED TO 250 ML.

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE) DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ANALYTICAL CHEMISTRY SECTION
ICP-ES LABORATORY

DATE: 16 JUNE 87

LAB. NO.	97	98	99	100	101	102	103	104
		mylonite?	mylonite?	mylonite?		schist	schist	schist(chl)
		KQ-86-92H	KQ-86-93A	KQ-86-93B		KQ-86-93C	KQ-86-93D	KQ-86-93E
SAMPLE NO:	104B-869 097	104B-869 098	104B-869 099	104B-869 100	104B-869 101	104B-869 102	104B-869 103	104B-869 104
SIO2 % :	59.3	60.2	69.3	51.7	55.9	67.7	77.4	56.3
TIO2 % :	1.03	0.60	0.25	0.60	0.51	0.40	0.16	0.51
AL2O3 % :	12.7	15.2	12.2	14.8	16.8	13.3	5.45	17.0
FE2O3T % :	7.40	3.21	3.45	6.84	8.23	5.40	4.00	8.05
FE2O3 % :	4.0							
FEO % :	3.1							
MNO % :	0.13	0.13	0.02	0.18	0.12	0.04	0.10	0.12
MGO % :	6.25	0.92	0.87	1.69	3.23	1.25	1.11	3.16
CAO % :	4.13	3.45	0.18	5.94	1.66	1.01	1.84	1.57
NA2O % :	2.50	1.01	0.15	3.32	0.17	0.12	0.08	0.19
K2O % :	1.86	11.6	7.91	4.13	4.97	4.71	2.00	5.08
H2OT % :	3.4							
CO2T % :	1.4	2.3	0.0	4.3	1.5	0.7	2.4	1.4
P2O5 % :	0.26	0.32	0.09	0.30	0.35	0.31	0.13	0.38
S % :	0.04	1.42	2.66	5.12	3.84	3.80	2.93	3.89
BA ppm :	650	3300	1800	1300	4200	2800	6700	3700
BE ppm :	5.7	1.4	1.4	1.8	1.4	1.3	0.6	1.4
CO ppm :	35	14	9	12	21	13	6	21
CR ppm :	410	56	24	45	10	9	9	12
CU ppm :	57	3000	85	190	620	350	450	590
LA ppm :	28	16	12	22	7	12	5	7
NI ppm :	280	0	0	0	0	0	0	0
SR ppm :	410	140	37	280	120	31	130	100
V ppm :	120	420	52	180	150	150	73	160
YB ppm :	3.6	1.2	0.3	1.6	1.0	0.7	0.6	1.1
ZN ppm :	150	390	47	210	65	170	91	61
TOTALS	100.3	101.1	97.3	99.2	97.8	99.1	98.3	98.1

COMMENTS:

* ALL ANALYSIS BY ICP,EXCEPT FEO,H2OT,CO2T,CO2,C,S AND LOI BY CHEMICAL METHODS.
* FE2O3 IS CALCULATED USING FE2O3=FE2O3T(ICP)-1.11134*FEO(VOLUMETRIC).
* ICP-MJ1 DATA ARE OBTAINED ON 0.5 G OF SAMPLE FUSED WITH LITHIUM METABORATE, DISSOLVED IN 5% HNO3 AND DILUTED TO 250 ML.

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE) DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ANALYTICAL CHEMISTRY SECTION
ICP-ES LABORATORY

duplicate runs

DATE: 16 JUNE 87

LAB. NO.	KQ-86-94 105	KQ-86-95 106	107	~~KQ-86-96~~ 108	~~KQ-86-96A~~ 109	~~KQ-86-96B~~ 110	~~KQ-86-96C~~ 111	~~KQ-86-97~~ 112
SAMPLE NO:	104B-869 105	104B-869 106	104B-869 107	7-87-108	7-87-109	7-87-110	7-87-111	7-87-112
SIO2 % :	56.6	59.8	60.0	85.8	84.1	57.2	71.2	74.4
TIO2 % :	0.52	0.45	1.02	0.20	0.14	0.26	0.08	0.11
AL2O3 % :	17.4	14.6	12.6	6.70	5.58	17.7	13.3	11.9
FE2O3T % :	7.56	6.06	7.50	2.06	2.58	3.70	1.20	1.60
FE2O3 % :			4.1				0.6	0.7
FEO % :			3.1				0.5	0.8
MNO % :	0.10	0.14	0.14	0.01	0.04	0.38	0.05	0.05
MGO % :	3.03	2.43	6.31	0.33	0.30	0.96	0.50	0.36
CAO % :	2.30	2.99	4.13	0.10	1.49	4.92	1.06	1.58
NA2O % :	0.53	4.80	2.50	0.08	0.13	0.47	1.80	3.80
K2O % :	5.80	2.89	1.85	2.25	1.66	4.71	8.91	4.62
H2OT % :			3.2				0.6	0.4
CO2T % :	1.3	1.8	1.4	0.0	1.1	3.8	1.3	1.3
P2O5 % :	0.39	0.32	0.25	0.08	0.29	0.23	0.00	0.04
S % :	1.92	1.15	0.03	1.41	1.62	2.61	0.11	0.32
BA ppm :	890	11000	670	1500	1000	2500	440	730
BE ppm :	1.6	0.9	5.6	0.7	0.8	1.3	3.6	3.6
CO ppm :	13	16	34	5	6	6	3	4
CR ppm :	9	12	400	28	7	14	11	9
CU ppm :	730	870	57	19	410	100	620	590
LA ppm :	13	11	28	5	5	23	1	3
NI ppm :	3	0	280	0	0	0	5	4
SR ppm :	33	690	410	14	31	110	50	110
V ppm :	160	140	120	48	260	83	270	190
YB ppm :	1.1	1.3	3.5	0.4	1.2	2.4	0.1	0.4
ZN ppm :	140	140	140	100	120	1300	45	20
TOTALS	97.7	98.7	100.8	99.2	99.2	97.4	100.2	100.6

COMMENTS:

* ALL ANALYSIS BY ICP,EXCEPT FEO,H2OT,CO2T,CO2,C,S AND LOI BY CHEMICAL METHODS.
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