Sulphurets 803858

GEOLOGICAL SURVEY OF CANADA
MINERAL RESOURCES DIVISION
ANALYTICAL CHEMISTRY SECTION
X-RAY FLUORESCENCE LABORATORY

R.V. KIRKHAM

REPORT OF XRF ANALYSIS

DATE: 08-FEB-88

REPORT NO.: 151-87 598 - 694

SUBMITTED BY: S.B. BALLANTYNE

PROJECT NO.: 790003

METHOD: XRF WAVELENGTH DISPERSIVE ANALYSIS ON FUSED DISKS.

ELEMENT	CALIBRATION RANGE (%)	ESTIMATE OF ERROR (ABSOLUTE + RELATIVE %)		DETERMINATION LIMIT (%)
SIO2	0 - 100	0.40	1	0.40
TIO2	0 - 3	0.02	1	0.02
AL2O3	0 - 60	0.40	1	0.40
CR2O3	0 - 4	0.02	1	0.02
FE2O3	0 - 90	0.10	1	0.10
FEO	0 - 30	0.20	2	0.20
MNO	0 - 1	0.01	2	0.01
MGO	0 - 50	0.10	1	0.10
CAO	0 - 35	0.10	1	0.10
NA2O	0 - 10	0.50	1	0.50
K2O	0 - 15	0.05	1	0.05
H2OT	0 - 5	0.10	5	0.10
CO2T	0 - 20	0.05	3	0.05
C				
P2O5	0 - 1	0.02	1	0.02
S	0 - 3	0.04	5	0.04
BA	0 - 0.3000	0.002	10	0.002
NB	0 - 0.0400	0.003	10	0.003
RB	0 - 0.0600	0.002	2	0.002
SR	0 - 0.2000	0.002	10	0.002
Y	0 - 0.0200	0.003	10	0.003
ZR	0 - 0.2000	0.002	10	0.002

ANALYST: ..... SUPERVISOR: .....

GEOLOGICAL SURVEY OF CANADA
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SUBMITTER'S NAME: S.B. BALLANTYNE PROJECT: 790008 REPORT: 151-87

LAB. NO.		1	2	3	4	5	6
SPL. NO.		104B 879 598	104B 879 599	104B 879 600	104B 879 601	104B 879 602	104B 879 603
SIO2	(%)	32.7	55.1	42.9	55.9	72.9	95.4
TIO2	(%)	0.23	0.90	0.69	0.52	0.39	0.05
AL203	(%)	6.0	17.9	14.0	16.2	11.9	2.2
CR203	(%)	0.00	0.00	0.00	0.00	0.00	0.00
FE203T	(%)	3.9	8.9	7.2	3.9	5.3	1.2
FE203	(%)	1.7	1.6	1.3	3.9	5.3	0.5
FEO	(%)	2.0	6.6	5.3			0.7
MNO	(%)	0.28	0.13	0.26	0.10	0.01	0.00
MGO	(%)	1.01	5.26	3.30	1.94	0.60	0.13
CAO	(%)	28.78	2.32	14.42	2.62	0.20	0.08
NA2O	(%)	1.0	4.4	3.1	2.1	0.0	0.0
K2O	(%)	0.50	0.49	0.74	4.92	4.05	0.63
H2OT	(%)	1.5	4.5	3.0			0.5
CO2T	(%)	23.9	0.8	10.4	1.9	0.1	0.0
P2O5	(%)	0.52	0.21	0.20	0.17	0.19	0.02
S	(%)	0.04	0.01	0.00	1.28	3.17	0.28
BA	(PPM)	425.	710.	657.	2781.	1482.	192.
NB	(PPM)	0.	0.	0.	0.	0.	0.
RB	(PPM)	7.	0.	19.	134.	122.	0.
SR	(PPM)	217.	508.	381.	229.	66.	28.
Y	(PPM)	0.	0.	0.	0.	0.	0.
ZR	(PPM)	30.	77.	73.	95.	87.	14.
TOTAL	(%)	100.3	100.2	99.8	91.9	99.0	100.5

COMMENTS:

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

* FE203 IS CALCULATED USING FE203 = FE203(XRF) - 1.11134*FEO(VOLUMETRIC).

GEOLOGICAL SURVEY OF CANADA
MINERAL RESOURCES DIVISION
ANALYTICAL CHEMISTRY SECTION REPORT OF XRF ANALYSIS DATE: 08-FEB-88
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SUBMITTER'S NAME: S.B. BALLANTYNE PROJECT: 750003 REPORT: 151-87

LAB. NO.		7	8	9	10	11	12
SPL. NO.		104B 879 604	104B 879 605	104B 879 606	104B 879 607	104B 879 608	104B 879 609
SIO2	(%)	57.6	64.0	57.6	59.1	59.0	58.6
TIO2	(%)	0.51	0.54	0.50	1.06	0.58	0.54
AL203	(%)	16.2	16.3	15.7	12.9	17.1	16.5
CR203	(%)	0.00	0.00	0.00	0.07	0.00	0.00
FE203T	(%)	4.2	5.3	4.7	7.6	5.2	5.2
FE203	(%)	4.2	5.3	4.7	4.1	0.3	1.2
FEO	(%)				3.2	4.4	3.6
MNO	(%)	0.12	0.01	0.18	0.14	0.16	0.15
MGO	(%)	1.92	0.85	2.05	6.12	2.18	1.89
CAO	(%)	3.00	0.32	5.87	4.17	4.01	5.21
NA2O	(%)	0.2	0.1	1.3	2.4	0.8	3.6
K2O	(%)	8.15	7.21	3.44	1.81	4.00	2.58
H2OT	(%)				3.1	3.4	2.6
CO2T	(%)	2.2	0.0	4.6	1.8	2.9	3.5
P2O5	(%)	0.18	0.19	0.17	0.25	0.19	0.18
S	(%)	2.80	3.59	1.35	0.00	0.27	0.10
BA	(PPM)	2859.	3018.	1749.	761.	2136.	3681.
NB	(PPM)	0.	0.	0.	11.	0.	0.
RB	(PPM)	282.	252.	99.	115.	111.	66.
SR	(PPM)	169.	67.	140.	435.	107.	417.
Y	(PPM)	0.	0.	0.	48.	0.	0.
ZR	(PPM)	93.	91.	86.	165.	94.	96.
TOTAL	(%)	97.4	98.8	97.6	100.3	99.4	100.6

COMMENTS:

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* FE2O3 IS CALCULATED USING FE2O3 = FE2O3(XRF) - 1.11134*FEO(VOLUMETRIC).

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LAB. NO.		13	14	15	16	17	18
SPL. NO.		104B 879 610	104B 879 612	104B 879 613	104B 879 614	104B 879 615	104B 879 616
SIO2	(%)	62.6	60.1	57.0	11.8	56.4	58.4
TIO2	(%)	0.49	0.55	0.53	0.02	0.52	0.53
AL2O3	(%)	16.0	17.1	16.2	0.2	16.1	16.6
CR2O3	(%)	0.00	0.00	0.00	0.00	0.00	0.00
FE2O3T	(%)	3.4	4.4	5.0	0.0	3.9	4.4
FE2O3	(%)	3.4	0.3	5.0		3.9	4.4
FEO	(%)		3.7		0.3		
MNO	(%)	0.10	0.15	0.07	0.93	0.10	0.14
MGO	(%)	1.61	1.94	1.79	0.17	1.93	1.49
CAO	(%)	4.00	2.95	5.08	47.39	2.62	3.55
NA2O	(%)	0.3	3.4	1.1	0.0	2.1	3.3
K2O	(%)	3.80	3.88	4.19	0.05	4.95	4.99
H2OT	(%)		2.4		0.2		
CO2T	(%)	3.0	3.1	3.6	38.5	1.9	2.0
P2O5	(%)	0.17	0.19	0.18	0.00	0.18	0.19
S	(%)	1.20	0.15	3.30	0.00	1.21	1.07
BA	(PPM)	2679.	2053.	1798.	86.	2754.	3374.
NB	(PPM)	0.	0.	0.	0.	0.	0.
RB	(PPM)	113.	122.	125.	0.	135.	110.
SR	(PPM)	129.	159.	126.	915.	226.	451.
Y	(PPM)	0.	0.	0.	0.	0.	1
ZR	(PPM)	92.	95.	89.	6.	92.	104
TOTAL	(%)	97.1	100.2	98.3	99.6	92.2	97.0

COMMENTS:

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SUBMITTER'S NAME: S.B. BALLANTYNE PROJECT: 790003 REPORT: 151-87

LAB. NO.		19	20	21	22	23	24
SPL. NO.		104B 879 617	104B 879 618	104B 879 619	104B 879 620	104B 879 621	104B 879 622
SIO2	(%)	59.2	59.8	55.4	56.9	78.2	57.4
TIO2	(%)	1.05	0.57	0.43	0.60	0.26	0.50
AL2O3	(%)	12.9	17.9	13.6	15.3	8.0	16.3
CR2O3	(%)	0.06	0.00	0.00	0.01	0.00	0.00
FE2O3T	(%)	7.7	4.0	5.2	5.8	4.0	7.1
FE2O3	(%)	4.1		0.9	1.0	4.0	0.8
FEO	(%)	3.2	3.8	3.9	4.3		5.7
MNO	(%)	0.14	0.13	0.12	0.11	0.01	0.07
MGO	(%)	6.13	1.64	2.72	2.78	0.47	2.06
CAO	(%)	4.15	2.97	8.19	5.82	0.26	3.70
NA2O	(%)	2.4	2.7	3.4	2.1	1.7	1.9
K2O	(%)	1.83	5.01	1.60	2.45	2.45	2.58
H2OT	(%)	3.2	2.5	2.8	3.5		3.6
CO2T	(%)	1.7	2.1	6.4	4.7	0.0	4.9
P2O5	(%)	0.25	0.20	0.14	0.22	0.16	0.53
S	(%)	0.00	0.51	0.00	0.00	2.82	0.02
BA	(PPM)	785.	2701.	566.	658.	1613.	2042.
NB	(PPM)	10.	0.	0.	0.	0.	0.
RB	(PPM)	115.	134.	34.	52.	91.	49.
SR	(PPM)	439.	181.	981.	582.	65.	233.
Y	(PPM)	61.	0.	0.	0.	0.	0.
ZR	(PPM)	166.	110.	88.	143.	31.	56.
TOTAL	(%)	100.5	100.1	99.8	99.9	99.5	100.3

COMMENTS:

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LAB. NO.		25	26	27	28	29	30
SPL. NO.		104B 879 623	104B 879 624	104B 879 625	104B 879 626	104B 879 627	104B 879 628
SIO2	(%)	56.1	53.7	58.5	57.9	58.6	78.4
TIO2	(%)	0.45	1.85	0.42	0.53	1.05	0.27
AL203	(%)	16.5	15.5	15.5	16.5	12.9	9.0
CR203	(%)	0.00	0.00	0.00	0.00	0.06	0.00
FE203T	(%)	4.7	8.2	4.1	5.7	7.7	4.1
FE203	(%)	0.7	3.0	0.5	0.8	4.1	4.1
FEO	(%)	3.6	4.7	3.2	4.4	3.2	
MNO	(%)	0.18	0.11	0.20	0.18	0.14	0.01
MGO	(%)	1.32	3.10	1.57	2.28	6.17	0.48
CAO	(%)	7.49	6.01	6.58	4.25	4.18	0.26
NA2O	(%)	0.1	4.1	0.1	1.4	2.4	1.7
K2O	(%)	4.17	1.82	4.28	3.98	1.83	2.48
H2OT	(%)	3.3	2.8	3.2	3.4	3.4	
CO2T	(%)	5.8	1.9	5.1	3.1	1.7	0.0
P2O5	(%)	0.20	0.73	0.19	0.22	0.25	0.17
S	(%)	0.01	0.06	0.14	0.25	0.00	2.60
BA	(PPM)	1858.	1692.	2108.	1966.	733.	1658.
NB	(PPM)	0.	0.	0.	0.	17.	0.
RB	(PPM)	111.	60.	127.	125.	110.	90.
SR	(PPM)	189.	1127.	221.	131.	435.	67.
Y	(PPM)	0.	0.	0.	0.	57.	0.
ZR	(PPM)	95.	239.	90.	82.	171.	29.
TOTAL	(%)	100.1	99.6	99.8	99.4	100.2	99.6

COMMENTS:

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* FE2O3 IS CALCULATED USING FE2O3 = FE2O3(XRF) - 1.11134*FEO(VOLUMETRIC).

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LAB. NO.		31	32	33	34	35	36
SPL. NO.		104B 879 629	104B 879 630	104B 879 632	104B 879 633	104B 879 634	104B 879 635
SIO2	(%)	64.5	71.1	74.9	93.3	71.0	57.8
TIO2	(%)	0.49	0.38	0.39	0.08	0.37	0.68
AL203	(%)	14.8	12.9	11.5	2.3	14.1	18.7
CR203	(%)	0.01	0.00	0.00	0.00	0.00	0.00
FE203T	(%)	4.6	3.0	3.4	1.1	1.3	5.7
FE203	(%)	1.1	3.0	3.4		0.0	0.7
FEO	(%)	3.2			2.0	1.4	4.5
MNO	(%)	0.11	0.00	0.01	0.00	0.00	0.16
MGO	(%)	2.57	0.24	0.61	0.09	0.21	1.96
CAO	(%)	2.43	0.00	0.11	0.00	0.20	3.46
NA2O	(%)	3.7	0.1	0.0	0.2	0.2	4.6
K2O	(%)	2.34	8.80	5.61	0.83	10.54	3.56
H2OT	(%)	2.5			0.5	0.9	2.1
CO2T	(%)	2.0	0.1	0.1	0.1	0.0	0.2
P2O5	(%)	0.12	0.23	0.15	0.06	0.17	0.28
S	(%)	0.03	2.37	2.13	0.78	0.56	0.99
BA	(PPM)	347.	3871.	2650.	411.	3998.	2475.
NB	(PPM)	0.	0.	0.	0.	0.	0.
RB	(PPM)	85.	215.	146.	22.	207.	71.
SR	(PPM)	206.	134.	76.	35.	187.	1050.
Y	(PPM)	0.	0.	0.	0.	0.	0.
ZR	(PPM)	94.	35.	57.	0.	58.	101.
TOTAL	(%)	99.9	99.7	99.2	100.2	100.1	100.1

COMMENTS:

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

* FE203 IS CALCULATED USING FE203 = FE203(XRF) - 1.11134*FEO(VOLUMETRIC).

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LAB. NO.		37	38	39	40	41	42
SPL. NO.		104B 879 636	104B 879 637	104B 879 638	104B 879 639	104B 879 640	104B 879 641
SIO2	(%)	72.5	59.0	68.2	54.4	66.1	54.4
TIO2	(%)	0.26	1.04	0.44	0.52	0.40	0.50
AL2O3	(%)	14.4	13.0	15.1	16.9	14.5	17.3
CR2O3	(%)	0.00	0.06	0.00	0.00	0.00	0.00
FE2O3T	(%)	1.9	7.7	3.1	7.1	2.1	7.4
FE2O3	(%)		4.0	0.1	1.2		1.4
FEO	(%)	2.8	3.3	2.7	5.3	2.3	5.2
MNO	(%)	0.04	0.14	0.06	0.12	0.05	0.18
MGO	(%)	0.91	6.13	1.12	3.09	0.96	3.44
CAO	(%)	0.97	4.15	1.30	3.56	3.93	3.56
NA2O	(%)	4.4	2.4	5.3	3.6	3.8	4.8
K2O	(%)	3.16	1.83	2.36	4.58	2.35	3.65
H2OT	(%)	1.2	3.0	1.5	2.9	1.7	2.8
CO2T	(%)	0.1	1.7	1.5	2.4	2.9	1.6
P2O5	(%)	0.08	0.25	0.15	0.45	0.09	0.38
S	(%)	0.80	0.00	0.10	0.47	0.77	0.41
BA	(PPM)	1420.	743.	1052.	3027.	876.	2991.
NB	(PPM)	0.	4.	0.	0.	0.	0.
RB	(PPM)	68.	106.	41.	80.	56.	54.
SR	(PPM)	434.	438.	278.	288.	369.	582.
Y	(PPM)	0.	69.	0.	0.	0.	0.
ZR	(PPM)	61.	166.	86.	29.	78.	36.
TOTAL	(%)	101.8	100.3	100.0	99.8	99.8	100.0

COMMENTS:

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

* FE2O3 IS CALCULATED USING FE2O3 = FE2O3(XRF) - 1.11134*FEO(VOLUMETRIC).

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LAB. NO.		43	44	45	46	47	48
SPL. NO.		104B 879 642	104B 879 643	104B 879 644	104B 879 645	104B 879 646	104B 879 747
SIO2	(%)	71.1	40.5	70.0	43.4	43.0	58.5
TIO2	(%)	0.25	0.37	0.34	0.01	0.59	1.06
AL203	(%)	13.9	10.1	12.2	0.5	11.5	12.8
CR203	(%)	0.00	0.00	0.00	0.00	0.03	0.06
FE203T	(%)	1.1	6.5	5.2	24.4	11.2	7.7
FE203	(%)	0.0	6.5	5.2	24.4	11.2	4.3
FEO	(%)	1.2					3.1
MNO	(%)	0.03	0.30	0.12	0.00	0.35	0.14
MGO	(%)	0.84	7.40	0.83	0.05	5.04	6.17
CAO	(%)	2.84	8.27	1.68	0.05	13.52	4.19
NA2O	(%)	2.6	0.1	1.4	0.0	0.9	2.4
K2O	(%)	3.01	2.60	6.61	0.14	4.35	1.84
H2OT	(%)	1.7					3.6
CO2T	(%)	2.2	11.4	0.1	0.0	3.3	1.7
P2O5	(%)	0.09	1.04	0.29	0.00	0.38	0.25
S	(%)	0.26	2.89	2.56	7.54	4.62	0.00
BA	(PPM)	917.	108.	2959.	112.	1410.	750.
NB	(PPM)	0.	0.	0.	0.	0.	14.
RB	(PPM)	81.	62.	151.	0.	84.	112.
SR	(PPM)	215.	152.	333.	0.	396.	428.
Y	(PPM)	0.	20.	0.	0.	0.	55.
ZR	(PPM)	62.	47.	24	0.	50.	166.
TOTAL	(%)	100.1	91.6	101.7	76.1	99.0	100.3

COMMENTS:

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* FE2O3 IS CALCULATED USING FE2O3 = FE2O3(XRF) - 1.11134*FEO(VOLUMETRIC).

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SUBMITTER'S NAME: S.B. BALLANTYNE PROJECT: 790003 REPORT: 151-87

LAB. NO.		49	50	51	52	53	54
SPL. NO.		104B 879 648	104B 879 649	104B 879 650	104B 879 652	104B 879 653	104B 879 654
SIO2	(%)	44.0	85.5	51.8	47.0	54.7	59.1
TIO2	(%)	0.59	0.05	0.77	0.80	0.49	0.53
AL2O3	(%)	13.6	1.2	15.1	16.0	17.2	16.3
CR2O3	(%)	0.00	0.00	0.01	0.00	0.00	0.00
FE2O3T	(%)	15.4	7.7	8.3	10.4	7.2	6.4
FE2O3	(%)	15.4	0.7	1.6	2.9	1.5	0.6
FEO	(%)			6.0	6.7	5.2	5.2
MNO	(%)	0.49	0.06	0.18	0.16	0.18	0.13
MGO	(%)	4.01	0.11	6.98	6.74	3.45	2.77
CAO	(%)	10.25	3.16	6.34	7.24	3.54	3.78
NA2O	(%)	1.1	0.8	3.2	1.9	4.8	5.1
K2O	(%)	3.95	0.31	3.50	4.07	3.66	2.23
H2OT	(%)			3.2	4.3	2.9	2.3
CO2T	(%)	0.1	2.7	1.1	0.8	1.6	0.8
P2O5	(%)	0.40	0.02	0.44	0.41	0.39	0.37
S	(%)	6.20	2.16	0.33	0.84	0.41	0.85
BA	(PPM)	1149.	66.	1918.	2895.	2990.	2326.
NB	(PPM)	0.	0.	0.	0.	0.	0.
RB	(PPM)	69.	0.	46.	62.	56.	52.
SR	(PPM)	729.	62.	228.	280.	575.	608.
Y	(PPM)	0.	0.	0.	0.	0.	0.
ZR	(PPM)	67.	18.	39.	31.	37.	38.
TOTAL	(%)	100.2	96.8	100.8	100.2	100.3	100.4

COMMENTS:

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

* FE2O3 IS CALCULATED USING FE2O3 = FE2O3(XRF) - 1.11134*FEO(VOLUMETRIC).

GEOLOGICAL SURVEY OF CANADA
MINERAL RESOURCES DIVISION
ANALYTICAL CHEMISTRY SECTION — REPORT OF XRF ANALYSIS — DATE: 08-FEB-88
X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S.B. BALLANTYNE — PROJECT: 790003 — REPORT: 151-87

LAB. NO.		55	56	57	58	59	60
SPL. NO.		104B 879 655	104B 879 656	104B 879 657	104B 879 658	104B 879 659	104B 879 660
SIO2	(%)	56.6	53.3	58.4	60.2	58.4	72.6
TIO2	(%)	0.52	0.50	1.05	0.60	0.64	0.25
AL203	(%)	16.8	15.4	12.8	17.1	16.9	13.5
CR203	(%)	0.00	0.00	0.06	0.00	0.00	0.00
FE203T	(%)	7.6	7.8	7.7	5.3	5.6	2.7
FE203	(%)	2.3	1.0	4.1	1.3	2.5	0.6
FEO	(%)	4.7	6.1	3.2	3.6	2.8	1.9
MNO	(%)	0.18	0.16	0.14	0.17	0.17	0.05
MGO	(%)	3.74	3.45	6.18	1.47	1.64	0.96
CAO	(%)	4.95	5.89	4.19	3.45	4.78	1.81
NA2O	(%)	3.0	2.1	2.4	4.2	4.6	2.5
K2O	(%)	2.96	3.58	1.84	4.18	2.92	2.38
H2OT	(%)	3.2	3.8	3.8	2.1	2.3	2.1
CO2T	(%)	0.7	3.9	1.7	1.2	2.3	1.4
P2O5	(%)	0.42	0.43	0.26	0.23	0.26	0.08
S	(%)	0.31	0.34	0.00	0.01	0.01	0.04
BA	(PPM)	2476.	2732.	736.	3125.	1977.	699.
NB	(PPM)	0.	0.	19.	0.	0.	0.
RB	(PPM)	42.	76.	115.	79.	56.	62.
SR	(PPM)	695.	241.	427.	586.	512.	191.
Y	(PPM)	0.	.	63.	16.	21.	0.
ZR	(PPM)	45.	29.	158.	122.	129.	57.
TOTAL	(%)	100.7	100.3	100.4	100.3	100.4	100.3

COMMENTS:

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

* FE203 IS CALCULATED USING FE203 = FE203(XRF) - 1.11134*FEO(VOLUMETRIC).

GEOLOGICAL SURVEY OF CANADA
MINERAL RESOURCES DIVISION
ANALYTICAL CHEMISTRY SECTION — REPORT OF XRF ANALYSIS — DATE: 08-FEB-88
X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S.B. BALLANTYNE — PROJECT: 790003 — REPORT: 151-87

LAB. NO.		61	62	63	64	65	66
SPL. NO.		104B 879 661	104B 879 662	104B 879 663	104B 879 664	104B 879 665	104B 879 666
SIO2	(%)	52.5	51.2	53.6	48.9	61.5	57.1
TIO2	(%)	0.70	0.79	2.02	0.75	0.56	0.52
AL2O3	(%)	15.9	15.7	13.5	13.2	15.1	13.1
CR2O3	(%)	0.01	0.00	0.00	0.00	0.00	0.01
FE2O3T	(%)	9.8	8.1	15.2	9.4	4.8	4.4
FE2O3	(%)	9.8	1.4	2.3	1.5	0.0	4.4
FEO	(%)		6.1	11.6	7.1	4.5	
MNO	(%)	0.13	0.30	0.22	0.21	0.07	0.11
MGO	(%)	3.66	3.65	3.58	4.89	2.46	3.08
CAO	(%)	5.05	6.80	2.51	8.33	3.41	7.23
NA2O	(%)	3.0	0.4	0.6	2.0	1.7	3.7
K2O	(%)	5.62	3.75	3.96	3.20	3.93	2.08
H2OT	(%)		4.2	4.2	3.9	3.0	2.3
CO2T	(%)	0.1	5.1	1.5	5.7	3.8	6.8
P2O5	(%)	0.53	0.38	0.42	0.42	0.28	0.34
S	(%)	2.83	0.96	0.33	0.16	0.27	0.37
BA	(PPM)	2549.	1075.	2548.	2159.	1219.	920.
NB	(PPM)	0.	0.	0.	0.	0.	0.
RB	(PPM)	119.	118.	56.	41.	94.	40.
SR	(PPM)	639.	154.	56.	542.	203.	669.
Y	(PPM)	0	12.	36.	0.	0.	0.
ZR	(PPM)	53	84.	128.	37.	72.	75.
TOTAL	(%)	99.5	100.8	100.7	100.5	100.8	100.3

COMMENTS:

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

* FE2O3 IS CALCULATED USING FE2O3 = FE2O3(XRF) - 1.11134*FEO(VOLUMETRIC).

GEOLOGICAL SURVEY OF CANADA
MINERAL RESOURCES DIVISION
ANALYTICAL CHEMISTRY SECTION REPORT OF XRF ANALYSIS DATE: 08-FEB-88
X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S.B. BALLANTYNE PROJECT: 790003 REPORT: 151-87

LAB. NO.		67	68	69	70	71	72
SPL. NO.		104B 879 667	104B 879 668	104B 879 669	104B 879 670	104B 879 672	104B 879 673
SIO2	(%)	59.4	55.1	56.9	57.2	58.7	52.3
TIO2	(%)	1.05	0.40	0.62	0.61	0.59	0.70
AL2O3	(%)	13.0	16.7	17.0	17.0	16.7	13.0
CR2O3	(%)	0.06	0.00	0.00	0.00	0.00	0.01
FE2O3T	(%)	7.7	6.7	6.3	6.6	5.9	9.0
FE2O3	(%)	4.0	1.2	1.6	1.3	1.3	9.0
FEO	(%)	3.3	4.9	4.2	4.8	4.2	
MNO	(%)	0.14	0.16	0.20	0.17	0.14	0.11
MGO	(%)	6.17	2.92	2.05	2.15	2.11	2.84
CAO	(%)	4.20	4.61	6.41	5.70	3.55	4.73
NA2O	(%)	2.4	2.8	3.6	3.6	4.4	4.6
K2O	(%)	1.82	3.85	3.31	3.89	3.48	2.94
H2OT	(%)	3.0	3.2	2.2	2.1	2.5	
CO2T	(%)	1.7	3.1	1.4	0.8	2.1	0.1
P2O5	(%)	0.25	0.26	0.30	0.29	0.26	0.41
S	(%)	0.00	0.14	0.16	0.19	0.14	1.90
BA	(PPM)	742.	3008.	2949.	3073.	3093.	1149.
NB	(PPM)	13.	0.	0.	0.	0.	0.
RB	(PPM)	112.	88.	49.	73.	66.	58.
SR	(PPM)	436.	406.	662.	696.	581.	730.
Y	(PPM)	58.	0.	0.	0.	0.	0.
ZR	(PPM)	160.	39.	97.	92.	105.	53.
TOTAL	(%)	100.7	99.8	100.3	100.1	100.5	98.8

COMMENTS:

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

* FE2O3 IS CALCULATED USING FE2O3 = FE2O3(XRF) - 1.11134*FEO(VOLUMETRIC).

GEOLOGICAL SURVEY OF CANADA
MINERAL RESOURCES DIVISION
ANALYTICAL CHEMISTRY SECTION — REPORT OF XRF ANALYSIS — DATE: 08-FEB-88
X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S.B. BALLANTYNE — PROJECT: 790003 — REPORT: 151-87

LAB. NO.		73	74	75	76	77	78
SPL. NO.		104B 879 674	104B 879 675	104B 879 676	104B 879 677	104B 879 768	104B 879 679
SIO2	(%)	52.6	54.9	59.0	58.6	63.4	63.2
TIO2	(%)	0.70	0.71	0.68	1.06	0.39	0.39
AL203	(%)	15.9	15.2	16.8	12.8	16.0	16.1
CR203	(%)	0.02	0.01	0.01	0.06	0.00	0.00
FE203T	(%)	9.7	6.7	4.2	7.7	3.7	4.1
FE203	(%)	9.7	6.7	0.1	4.2	0.5	0.5
FEO	(%)			3.7	3.2	2.9	3.2
MNO	(%)	0.13	0.14	0.08	0.14	0.06	0.07
MGO	(%)	3.67	3.91	2.73	6.17	1.27	1.14
CAO	(%)	5.08	5.55	4.12	4.18	2.21	2.61
NA2O	(%)	3.0	2.5	3.5	2.4	3.1	4.0
K2O	(%)	5.72	6.87	6.07	1.84	5.91	5.20
H2OT	(%)			1.9	3.4	1.6	1.4
CO2T	(%)	0.1	0.4	0.3	1.7	0.3	1.0
P2O5	(%)	0.53	0.40	0.32	0.26	0.15	0.15
S	(%)	2.82	1.06	0.49	0.00	0.35	0.61
BA	(PPM)	2563.	4044.	2650.	720.	3010.	2881.
NB	(PPM)	0.	0.	0.	1.	0.	0.
RB	(PPM)	119.	110.	102.	112.	139.	94.
SR	(PPM)	652.	1038.	467.	441.	603.	542.
Y	(PPM)	0.	0.	0.	73.	0.	0.
ZR	(PPM)	55.	71.	97.	161.	115.	111.
TOTAL	(%)	99.6	98.8	100.1	100.2	98.6	99.9

COMMENTS:

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

* FE203 IS CALCULATED USING FE203 = FE203(XRF) - 1.11134*FEO(VOLUMETRIC).

GEOLOGICAL SURVEY OF CANADA
MINERAL RESOURCES DIVISION
ANALYTICAL CHEMISTRY SECTION — REPORT OF XRF ANALYSIS — DATE: 08-FEB-88
X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S.B. BALLANTYNE — PROJECT: 790003 — REPORT: 151-87

LAB. NO.		79	80	81	82	83	84
SPL. NO.		104B 879 680	104B 879 681	104B 879 682	104B 879 683	104B 879 684	104B 879 685
SIO2	(%)	47.3	74.6	55.0	56.7	62.2	60.4
TIO2	(%)	0.70	0.59	0.59	0.55	0.41	0.52
AL203	(%)	15.7	10.9	16.8	13.9	17.2	15.4
CR203	(%)	0.00	0.00	0.01	0.01	0.00	0.00
FE203T	(%)	7.0	4.8	6.0	3.9	3.3	3.9
FE203	(%)	7.0	3.5	0.8	0.3	0.1	1.1
FEO	(%)		1.1	4.7	3.3	2.9	2.5
MNO	(%)	0.17	0.04	0.08	0.08	0.06	0.14
MGO	(%)	1.53	1.77	4.06	2.21	1.26	1.44
CAO	(%)	6.18	1.77	2.86	6.16	2.02	5.21
NA2O	(%)	1.3	2.6	3.4	2.7	3.9	3.4
K2O	(%)	8.37	0.67	5.90	6.19	6.52	3.70
H2OT	(%)		2.0	2.7	1.6	1.3	2.0
CO2T	(%)	4.3	0.2	1.4	4.1	0.1	3.5
P2O5	(%)	0.37	0.09	0.22	0.27	0.27	0.20
S	(%)	2.71	0.04	0.66	0.97	0.70	0.04
BA	(PPM)	2521.	2903.	2884.	1984.	3377.	2042.
NB	(PPM)	0.	0.	0.	0.	0.	0.
RB	(PPM)	168.	20.	86.	98.	99.	113.
SR	(PPM)	342.	332.	670.	360.	585.	393.
Y	(PPM)	0.	78.	0.	0.	0.	0.
ZR	(PPM)	52.	142.	108.	71.	69.	89.
TOTAL	(%)	95.9	100.3	99.7	99.1	99.4	99.9

COMMENTS:

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

* FE203 IS CALCULATED USING FE203 = FE203(XRF) - 1.11134*FEO(VOLUMETRIC).

GEOLOGICAL SURVEY OF CANADA
MINERAL RESOURCES DIVISION
ANALYTICAL CHEMISTRY SECTION REPORT OF XRF ANALYSIS DATE: 08-FEB-88
X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S.B. BALLANTYNE PROJECT: 790003 REPORT: 151-87

LAB. NO.		85	86	87	88	89	90
SPL. NO.		104B 879 686	104B 879 687	104B 879 688	104B 879 689	104B 879 690	104B 879 692
SIO2	(%)	54.9	58.9	56.2	71.5	37.6	41.3
TIO2	(%)	0.57	1.07	0.54	0.46	0.93	1.25
AL2O3	(%)	16.7	12.0	16.5	9.1	8.9	10.2
CR2O3	(%)	0.00	0.06	0.00	0.00	0.01	0.01
FE2O3T	(%)	6.9	7.8	6.1	4.0	7.2	12.5
FE2O3	(%)	6.9	4.2	1.1	4.0	7.2	12.5
FEO	(%)		3.2	4.5			
MNO	(%)	0.08	0.15	0.11	0.05	0.17	0.19
MGO	(%)	2.16	6.22	2.42	0.72	2.11	4.35
CAO	(%)	4.09	4.21	4.68	2.73	20.08	14.17
NA2O	(%)	1.7	2.5	3.0	2.9	0.1	0.1
K2O	(%)	5.51	1.84	4.14	0.77	1.56	0.65
H2OT	(%)		3.1	2.8			
CO2T	(%)	2.7	1.7	3.1	7.2	15.7	10.5
P2O5	(%)	0.34	0.26	0.32	0.09	0.18	0.23
S	(%)	2.77	0.00	0.49	2.44	3.14	1.08
BA	(PPM)	2283.	728.	1926.	690.	1261.	626.
NB	(PPM)	0.	3.	0.	0.	0.	0.
RB	(PPM)	141.	114.	96.	21.	52.	21.
SR	(PPM)	175.	438.	261.	227.	128.	116.
Y	(PPM)	2.	72.	0.	0.	0.	18.
ZR	(PPM)	72.	162.	80.	50.	51.	54.
TOTAL	(%)	98.7	100.3	100.1	102.1	97.8	96.6

COMMENTS:

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

* FE2O3 IS CALCULATED USING FE2O3 = FE2O3(XRF) - 1.11134*FEO(VOLUMETRIC).

GEOLOGICAL SURVEY OF CANADA
MINERAL RESOURCES DIVISION
ANALYTICAL CHEMISTRY SECTION — REPORT OF XRF ANALYSIS — DATE: 08-FEB-88
X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S.B. BALLANTYNE — PROJECT: 790003 — REPORT: 151-87

Internal

LAB. NO.		91	92	93	94	95	96
SPL. NO.		104B 879 693	104B 879 694	151-87-9 #Lab #5	151-87-9 #19	151-87-9 #43	151-87-9 #65
SIO2	(%)	53.6	41.2	73.1	58.7	71.3	61.2
TIO2	(%)	1.60	1.59	0.39	1.05	0.24	0.56
AL203	(%)	14.2	12.9	11.9	12.8	13.9	14.9
CR203	(%)	0.00	0.01	0.00	0.06	0.00	0.00
FE203T	(%)	14.2	11.3	5.5	7.7	1.0	4.9
FE203	(%)	14.2	1.9	5.5	4.2	0.0	0.0
FEO	(%)		8.5		3.2	1.2	4.5
MNO	(%)	0.09	0.18	0.01	0.14	0.03	0.07
MGO	(%)	4.33	3.29	0.62	6.19	0.85	2.47
CAO	(%)	2.52	12.37	0.20	4.18	2.84	3.35
NA2O	(%)	1.8	3.7	0.0	2.4	2.6	1.7
K2O	(%)	0.94	0.05	4.07	1.84	3.03	3.94
H2OT	(%)		3.7		3.3	1.6	3.1
CO2T	(%)	1.5	9.4	0.1	1.7	2.2	3.8
P2O5	(%)	0.41	0.25	0.19	0.26	0.09	0.27
S	(%)	1.20	0.36	3.31	0.00	0.27	0.26
BA	(PPM)	849.	257.	1467.	782.	933.	1232.
NB	(PPM)	0.	0.	0.	16.	0.	0.
RB	(PPM)	35.	0.	123.	109.	81.	96.
SR	(PPM)	151.	270.	63.	446.	217.	204.
Y	(PPM)	45.	7.	0.	75.	0.	0.
ZR	(PPM)	150.	94.	63.	167.	63.	74.
TOTAL	(%)	96.5	99.5	99.5	100.2	100.3	100.2

COMMENTS:

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

* FE2O3 IS CALCULATED USING FE2O3 = FE2O3(XRF) - 1.11134*FEO(VOLUMETRIC).

GEOLOGICAL SURVEY OF CANADA
MINERAL RESOURCES DIVISION
ANALYTICAL CHEMISTRY SECTION — REPORT OF XRF ANALYSIS — DATE: 08-FEB-88
X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S.B. BALLANTYNE — PROJECT: 790003 — REPORT: 151-87

LAB. NO.		97
SPL. NO.		151-87-9
		83
SIO2	(%)	62.1
TIO2	(%)	0.46
AL2O3	(%)	17.1
CR2O3	(%)	0.00
FE2O3T	(%)	3.3
FE2O3	(%)	0.3
FEO	(%)	2.7
MNO	(%)	0.06
MGO	(%)	1.28
CAO	(%)	1.99
NA2O	(%)	4.0
K2O	(%)	6.50
H2OT	(%)	1.3
CO2T	(%)	0.1
P2O5	(%)	0.26
S	(%)	0.68
BA	(PPM)	3297.
NB	(PPM)	0.
RB	(PPM)	94.
SR	(PPM)	568.
Y	(PPM)	0.
ZR	(PPM)	71.
TOTAL	(%)	99.2

COMMENTS:

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

* FE2O3 IS CALCULATED USING FE2O3 = FE2O3(XRF) - 1.11134*FEO(VOLUMETRIC).