Sulphurets 803861

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

B.V. KIRKHAM

REPORT OF XRF ANALYSIS

695 - 790

DATE: 10-FEB-88

REPORT NO.: 152-87

SUBMITTED BY: S. 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. BALLANTYNE PROJECT: 790003 REPORT: 152-87

LAB. NO.		1	2	3	4	5	6
SPL. NO.		104B-879 695	104B-879 696	104B-879 697	104B-879 698	104B-879 699	104B-879 700
SIO2	(%)	71.0	81.1	59.0	82.7	74.2	62.3
TIO2	(%)	0.76	0.18	1.04	0.10	0.59	0.49
AL203	(%)	12.7	8.5	12.8	8.5	10.8	15.8
CR203	(%)	0.00	0.00	0.06	0.00	0.00	0.00
FE203T	(%)	5.3	3.8	7.6	1.7	4.[illegible]	5.6
FE203	(%)	1.0	0.5	4.2	0.6	3.6	0.4
FEO	(%)	3.9	3.0	3.1	1.0	1.1	4.7
MNO	(%)	0.06	0.04	0.14	0.02	0.04	0.07
MGO	(%)	0.39	1.68	6.13	2.32	1.75	2.91
CAO	(%)	1.72	0.42	4.16	0.51	1.78	1.31
NA2O	(%)	4.8	2.5	2.4	0.6	2.6	0.8
K2O	(%)	0.77	0.36	1.84	0.41	0.67	3.85
H2OT	(%)	1.7	1.7	3.1	2.6	1.9	3.1
CO2T	(%)	0.9	0.0	1.8	0.1	0.2	[illegible].1
P2O5	(%)	0.29	0.00	0.25	0.00	0.09	0.16
S	(%)	0.01	0.14	0.00	0.01	0.04	0.08
BA	(PPM)	679.	487.	753.	1674.	2902.	1259.
NB	(PPM)	0.	0.	10.	0.	0.	0.
RB	(PPM)	0.	0.	111.	0.	26.	82.
SR	(PPM)	144.	170.	446.	167.	330.	132.
Y	(PPM)	42.	74.	71.	36.	83.	45.
ZR	(PPM)	135.	296.	169.	109.	150.	144.
TOTAL	(%)	100.1	100.2	100.2	99.6	99.8	100.2

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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SUBMITTER'S NAME: S. BALLANTYNE PROJECT: 790003 REPORT: 152-87

LAB. NO.		7	8	9	10	11	12
SPL. NO.		104B-879 701	104B-879 702	104B-879 703	104B-879 704	104B-879 705	104B-989 706
SIO2	(%)	40.5	49.5	44.4	54.3	51.9	48.6
TIO2	(%)	0.31	0.88	0.70	0.86	0.82	0.90
AL2O3	(%)	11.4	19.7	15.3	16.6	17.1	16.0
CR2O3	(%)	0.01	0.01	0.01	0.01	0.02	0.02
FE2O3T	(%)	1.8	7.9	6.7	5.5	7.6	8.1
FE2O3	(%)	-	5.4	1.7	1.5	2.4	1.6
FEO	(%)	2.6	2.2	4.5	3.6	4.7	5.9
MNO	(%)	0.12	0.12	0.12	0.11	0.14	0.13
MGO	(%)	0.89	3.51	3.91	3.17	3.73	4.05
CAO	(%)	20.79	6.86	14.18	6.76	7.57	9.55
NA2O	(%)	2.0	4.2	4.4	5.7	5.3	4.8
K2O	(%)	1.80	2.47	0.73	3.50	1.44	0.94
H2OT	(%)	1.9	4.1	3.3	2.3	3.2	3.4
CO2T	(%)	17.7	0.1	5.9	1.7	1.3	4.0
P2O5	(%)	0.08	0.41	0.29	0.42	0.39	0.42
S	(%)	0.27	0.46	0.04	0.04	0.05	0.02
BA	(PPM)	646.	1747.	467.	1882.	884.	531.
NB	(PPM)	0.	0.	0.	0.	0.	0.
RB	(PPM)	78.	92.	0.	49.	8.	0.
SR	(PPM)	344.	751.	697.	759.	633.	637.
Y	(PPM)	0.	0.	0.	0.	0	0.
ZR	(PPM)	82.	91.	76.	102.	98.	98.
TOTAL	(%)	100.5	100.2	99.6	99.8	100.3	100.4

COMMENTS:

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

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SUBMITTER'S NAME: S. BALLANTYNE — PROJECT: 790003 — REPORT: 152-87

LAB. NO.		13	14	15	16	17	18
SPL. NO.		104B-879 707	104B-879 708	104B-879 709	104B-879 710	104B-879 712	104B-879 713
SIO2	(%)	59.1	46.7	42.8	40.2	53.9	39.0
TIO2	(%)	1.03	0.97	1.03	0.32	0.63	0.47
AL203	(%)	12.9	17.0	17.4	11.3	16.4	10.4
CR203	(%)	0.06	0.03	0.03	0.01	0.00	0.00
FE203T	(%)	7.7	9.0	9.6	1.8	6.7	1.5
FE203	(%)	4.4	1.9	2.0		6.7	
FEO	(%)	3.0	6.4	6.8	2.3		1.7
MNO	(%)	0.14	0.16	0.17	0.12	0.04	0.06
MGO	(%)	6.14	7.64	8.37	0.87	1.86	0.48
CAO	(%)	4.16	7.73	8.57	20.67	5.19	23.17
NA2O	(%)	2.4	3.1	3.2	1.9	1.1	3.2
K2O	(%)	1.85	1.62	0.14	1.79	3.23	1.28
H2OT	(%)	3.2	4.4	6.0	1.8		1.1
CO2T	(%)	1.7	1.5	2.5	17.9	7.0	18.5
P2O5	(%)	0.24	0.53	0.56	0.08	0.18	0.30
S	(%)	0.00	0.00	0.00	0.30	1.52	0.07
BA	(PPM)	710.	1224.	81.	645.	1135.	581.
NB	(PPM)	2.	0.	0.	0.	0.	0.
RB	(PPM)	108.	22.	0.	85.	71.	52.
SR	(PPM)	445.	695.	307.	354.	218.	558.
Y	(PPM)	58.	0.	0.	0.	8.	4.
ZR	(PPM)	160.	88.	61.	80.	109.	121.
TOTAL	(%)	100.5	99.8	99.6	99.7	97.8	99.9

COMMENTS:

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SUBMITTER'S NAME: S. BALLANTYNE — PROJECT: 790003 — REPORT: 152-87

LAB. NO.		19	20	21	22	23	24
SPL. NO.		104B-879 714	104B-879 715	104B-879 716	104B-879 717	104B-879 718	104B-879 719
SIO2	(%)	63.1	60.3	55.7	59.2	55.5	63.4
TIO2	(%)	0.41	0.65	0.71	1.05	0.80	0.52
AL2O3	(%)	17.7	15.5	17.0	12.9	17.1	15.8
CR2O3	(%)	0.00	0.00	0.00	0.06	0.00	0.00
FE2O3T	(%)	4.3	7.7	6.7	7.7	9.6	4.5
FE2O3	(%)	0.9	1.5	2.2	4.4	1.2	4.5
FEO	(%)	3.1	5.6	4.1	3.0	7.6	
MNO	(%)	0.06	0.15	0.14	0.14	0.17	0.07
MGO	(%)	2.02	2.31	2.30	6.18	4.41	2.17
CAO	(%)	2.20	3.70	5.61	4.15	1.22	1.84
NA2O	(%)	3.2	3.6	2.6	2.5	0.4	4.7
K2O	(%)	2.93	1.15	4.91	1.83	5.16	2.81
H2OT	(%)	2.9	3.3	2.5	3.)	4.7	
CO2T	(%)	0.6	1.7	0.2	1.7	1.4	1.3
P2O5	(%)	0.17	0.22	0.27	0.26	0.18	0.12
S	(%)	0.01	0.07	0.00	0.00	0.05	1.72
BA	(PPM)	1553.	753.	2723.	734.	2412.	830.
NB	(PPM)	0.	0.	0.	0.	0.	0.
RB	(PPM)	74.	47.	105.	110.	102.	89.
SR	(PPM)	579.	479.	1178.	438.	129.	184.
Y	(PPM)	0.	2.	0.	24.	0.	0.
ZR	(PPM)	184.	125.	127.	134.	77.	104.
TOTAL	(%)	99.5	99.9	99.5	100.5	100.1	98.5

COMMENTS:

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SUBMITTER'S NAME: S. BALLANTYNE — PROJECT: 790003 — REPORT: 152-87

LAB. NO.		25	26	27	28	29	30
SPL. NO.		104B-879 720	104B-879 721	104B-879 722	104B-879 723	104B-879 724	104B-879 725
SIO2	(%)	76.8	71.6	61.7	66.9	65.8	70.8
TIO2	(%)	0.23	0.50	0.39	0.46	0.56	0.55
AL203	(%)	11.7	16.1	16.9	15.4	16.0	17.3
CR203	(%)	0.00	0.01	0.00	0.00	0.00	0.00
FE203T	(%)	4.1	1.9	5.0	5.9	6.1	0.8
FE203	(%)	4.1	1.9	5.0	5.9	6.1	0.7
FEO	(%)						0.1
MNO	(%)	0.00	0.00	0.09	0.00	0.00	0.00
MGO	(%)	0.51	1.03	2.39	0.95	0.69	0.73
CAO	(%)	0.10	0.14	1.69	0.10	0.21	0.00
NA2O	(%)	0.1	4.5	4.9	0.3	0.4	0.2
K2O	(%)	3.53	2.46	2.31	4.70	4.32	5.30
H2OT	(%)						3.0
CO2T	(%)	0.1	0.0	1.1	0.0	0.0	0.0
P2O5	(%)	0.07	0.04	0.27	0.02	0.00	0.23
S	(%)	2.82	1.26	1.17	4.42	4.80	0.18
BA	(PPM)	2604.	1251.	2219.	2155.	2336.	2040.
NB	(PPM)	0.	0.	0.	0.	0.	0.
RB	(PPM)	109.	62.	69.	134.	103.	126.
SR	(PPM)	76.	184.	220.	30.	52.	56.
Y	(PPM)	0.	0.	0.	0.	0.	0.
ZR	(PPM)	48.	87.	49.	41.	77.	52.
TOTAL	(%)	100.4	99.7	98.2	99.3	99.2	99.2

COMMENTS:

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SUBMITTER'S NAME: S. BALLANTYNE — PROJECT: 790003 — REPORT: 152-87

LAB. NO.		31	32	33	34	35	36
SPL. NO.		104B-879 726	104B-879 727	104B-879 728	104B-879 729	104B-879 730	104B-879 732
SIO2	(%)	58.6	59.0	70.9	68.0	63.7	53.3
TIO2	(%)	0.39	1.06	0.49	0.44	0.57	0.29
AL203	(%)	17.4	13.9	16.0	15.8	16.2	13.3
CR203	(%)	0.00	0.06	0.01	0.00	0.00	0.00
FE203T	(%)	5.1	7.7	2.0	1.7	4.2	6.7
FE203	(%)	1.7	4.1	2.0	1.7	4.2	6.7
FEO	(%)	3.1	3.2				
MNO	(%)	0.15	0.14	0.00	0.03	0.05	0.33
MGO	(%)	3.17	6.13	1.00	1.18	2.02	1.90
CAO	(%)	3.75	4.18	0.14	1.93	1.88	9.10
NA2O	(%)	4.8	2.4	4.4	3.6	4.0	4.4
K2O	(%)	2.64	1.84	2.40	3.14	4.32	0.85
H2OT	(%)	2.3	2.9				
CO2T	(%)	1.3	1.7	0.)	1.3	0.0	5.2
P2O5	(%)	0.26	0.25	0.04	0.10	0.11	0.10
S	(%)	0.69	0.00	1.44	1.27	1.84	2.77
BA	(PPM)	2853.	746.	1168.	2771.	2414.	1084.
NB	(PPM)	0.	10.	0.	0.	0.	0.
RB	(PPM)	53.	107.	65.	94.	93.	17.
SR	(PPM)	451.	449.	191.	271.	483.	626.
Y	(PPM)	0.	72.	^.	0.	0.	0.
ZR	(PPM)	52.	165.	93.	84.	126.	55.
TOTAL	(%)	99.6	100.1	98.9	98.8	99.1	98.4

COMMENTS:

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LAB. NO.		37	38	39	40	41	42
SPL. NO.		104B-879 733	104B-879 734	104B-879 735	104B-879 736	104B-879 737	104B-879 738
SIO2	(%)	47.7	57.4	68.2	59.0	59.2	56.4
TIO2	(%)	1.09	0.66	0.69	0.65	1.06	0.59
AL2O3	(%)	15.3	17.8	17.7	16.0	12.9	14.4
CR2O3	(%)	0.05	0.00	0.01	0.01	0.06	0.01
FE2O3T	(%)	10.8	6.7	1.1	7.3	7.7	4.9
FE2O3	(%)	3.5	3.3	0.2	7.3	4.1	4.9
FEO	(%)	6.6	3.1	0.8		3.2	
MNO	(%)	0.24	0.32	0.09	0.08	0.14	0.15
MGO	(%)	8.51	2.17	0.93	1.31	6.16	1.42
CAO	(%)	7.15	5.60	1.23	2.60	4.17	6.59
NA2O	(%)	3.7	3.8	1.4	0.1	2.4	4.3
K2O	(%)	1.66	2.87	5.15	5.67	1.83	3.15
H2OT	(%)	3.2	2.6	2.5		3.2	
CO2T	(%)	0.3	0.0	0.8	1.7	1.7	4.7
P2O5	(%)	0.37	0.30	0.16	0.22	0.26	0.14
S	(%)	0.09	0.09	0.05	5.05	0.00	2.66
BA	(PPM)	558.	2262.	1362.	1315.	738.	1474.
NB	(PPM)	0.	0.	0.	0.	10.	0.
RB	(PPM)	26.	40.	158.	206.	112.	60.
SR	(PPM)	454.	1114.	156.	68.	439.	368.
Y	(PPM)	0.	0.	0.	0.	67.	0.
ZR	(PPM)	99.	88	145.	111.	164.	156.
TOTAL	(%)	99.6	100.4	100.1	99.8	100.6	99.5

COMMENTS:

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* 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-879 739	104B-879 740	104B-879 741	104B-879 742	104B-879 743	104B-879 744
SIO2	(%)	92.7	39.6	53.3	50.7	58.2	53.3
TIO2	(%)	0.02	0.12	0.88	0.10	0.50	0.87
AL2O3	(%)	1.2	2.4	17.0	3.2	17.5	17.1
CR2O3	(%)	0.00	0.00	0.00	0.00	0.00	0.01
FE2O3T	(%)	0.1	5.9	8.5	17.5	5.9	8.4
FE2O3	(%)	0.1	5.9	3.7	17.5	0.7	6.7
FEO	(%)			4.3		4.7	1.5
MNO	(%)	0.08	0.14	0.21	0.18	0.10	0.21
MGO	(%)	0.01	0.51	3.09	0.72	2.34	3.07
CAO	(%)	2.19	24.88	6.09	4.59	3.25	6.09
NA2O	(%)	0.2	0.3	4.6	0.8	7.6	4.6
K2O	(%)	0.13	0.46	2.44	0.94	0.70	2.44
H2OT	(%)	0.2		2.7		2.1	2.7
CO2T	(%)	1.8	26.0	0.9	3.8	1.8	0.9
P2O5	(%)	0.00	0.06	0.38	0.06	0.26	0.38
S	(%)	0.33	4.24	0.44	15.61	0.43	0.49
BA	(PPM)	1047.	574.	1489.	271.	890.	1484.
NB	(PPM)	0.	0.	0.	0.	0.	0.
RB	(PPM)	0.	0.	51.	0.	0.	50.
SR	(PPM)	76.	421.	1081.	0.	523.	1109.
Y	(PPM)	0.	0.	6.	21.	0.	0.
ZR	(PPM)	20.	18.	78.	35.	73.	79.
TOTAL	(%)	99.0	98.7	100.3	98.3	100.2	100.5

COMMENTS:

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

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X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S. BALLANTYNE PROJECT: 790003 REPORT: 152-87

LAB. NO.		49	50	51	52	53	54
SPL. NO.		104B-879 745	104B-879 746	104B-879 747	104B-879 748	104B-879 749	104B-879 750
SIO2	(%)	56.6	55.2	59.3	48.3	50.8	48.9
TIO2	(%)	0.44	0.50	1.06	0.82	0.78	0.77
AL203	(%)	16.0	10.7	12.9	15.0	15.2	15.5
CR203	(%)	0.00	0.00	0.06	0.01	0.01	0.01
FE203T	(%)	7.3	8.3	7.7	11.4	10.4	10.7
FE203	(%)	1.7	8.3	4.1	11.4	2.3	10.7
FEO	(%)	5.0		3.2		7.3	
MNO	(%)	0.16	0.18	0.14	0.18	0.19	0.17
MGO	(%)	2.67	4.26	6.14	6.39	5.50	5.13
CAO	(%)	3.94	9.57	4.15	5.51	7.42	10.51
NA2O	(%)	5.5	1.2	2.4	1.6	3.8	3.5
K2O	(%)	1.34	3.48	1.80	3.05	1.88	1.01
H2OT	(%)	2.5		3.4		2.9	
CO2T	(%)	3.5	4.3	1.7	2.9	1.0	0.2
P2O5	(%)	0.30	0.23	0.26	0.39	0.40	0.37
S	(%)	0.03	1.90	0.00	1.25	0.13	1.97
BA	(PPM)	833.	1050.	783.	2351.	1654.	462.
NB	(PPM)	0.	0.	5.	0.	0.	0.
RB	(PPM)	55.	52.	107.	44.	27.	0.
SR	(PPM)	328.	373.	436.	265.	394.	153.
Y	(PPM)	0.	0.	67.	0.	1.	0.
ZR	(PPM)	38.	70.	165.	39.	41.	36.
TOTAL	(%)	100.3	99.9	100.8	97.0	99.8	98.8

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
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X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S. BALLANTYNE PROJECT: 790003 REPORT: 152-87

LAB. NO.		55	56	57	58	59	60
SPL. NO.		104B-879 752	104B-879 753	104B-879 754	104B-879 755	104B-879 756	104B-879 757
SIO2	(%)	49.7	55.3	51.9	48.8	52.9	59.1
TIO2	(%)	0.83	0.69	0.68	0.76	0.74	1.05
AL203	(%)	15.0	15.2	15.8	15.0	18.2	12.9
CR203	(%)	0.01	0.00	0.01	0.00	0.00	0.07
FE203T	(%)	11.7	7.0	10.1	10.7	9.4	7.7
FE203	(%)	3.1	1.1	2.7	10.7	2.0	4.1
FEO	(%)	7.8	5.3	6.6		6.6	3.2
MNO	(%)	0.19	0.13	0.18	0.18	0.13	0.14
MGO	(%)	7.78	3.79	5.22	6.45	4.83	6.16
CAO	(%)	5.05	4.77	7.15	6.56	2.31	4.19
NA2O	(%)	2.8	3.6	3.3	1.8	4.5	2.4
K2O	(%)	2.18	3.46	2.41	3.66	3.56	1.82
H2OT	(%)	4.1	3.0	3.1		3.8	3.2
CO2T	(%)	0.7	2.9	0.2	1.2	0.1	1.7
P2O5	(%)	0.38	0.35	0.41	0.36	0.48	0.26
S	(%)	0.94	0.18	0.14	2.94	0.01	0.00
BA	(PPM)	1572.	2847.	1952.	2580.	2375.	747.
NB	(PPM)	0.	0.	0.	0.	0.	10.
RB	(PPM)	53.	38.	67.	51.	39.	115.
SR	(PPM)	409.	381.	454.	453.	398.	446.
Y	(PPM)	0.	0.	0.	0.	0.	67.
ZR	(PPM)	43.	48.	45.	43.	53.	168.
TOTAL	(%)	100.7	100.1	100.2	98.7	100.6	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).

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X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S. BALLANTYNE PROJECT: 790003 REPORT: 152-87

LAB. NO.		61	62	63	64	65	66
SPL. NO.		104B-879 758	104B-879 759	104B-879 760	104B-879 761	104B-879 762	104B-879 763
SIO2	(%)	47.3	48.1	46.9	42.7	48.9	56.4
TIO2	(%)	0.82	0.68	0.72	0.77	0.72	0.70
AL203	(%)	15.4	15.4	15.2	15.3	16.1	13.3
CR203	(%)	0.01	0.01	0.01	0.00	0.01	0.00
FE203T	(%)	10.8	10.3	9.3	12.6	10.6	7.7
FE203	(%)	2.4	1.9	2.3	2.7	1.8	0.8
FEO	(%)	7.6	7.5	6.3	8.9	8.0	6.2
MNO	(%)	0.20	0.21	0.20	0.22	0.18	0.12
MGO	(%)	5.95	8.01	5.21	5.97	6.60	3.78
CAO	(%)	5.77	6.70	7.45	8.01	5.03	7.06
NA2O	(%)	2.8	1.9	1.2	1.3	2.2	0.3
K2O	(%)	2.64	2.67	4.18	5.08	4.76	3.12
H2OT	(%)	4.5	4.3	4.3	4.2	3.9	3.5
CO2T	(%)	3.1	1.5	5.1	3.7	1.4	5.7
P2O5	(%)	0.39	0.33	0.36	0.69	0.31	0.39
S	(%)	0.90	0.32	0.29	0.24	0.01	0.03
BA	(PPM)	1884.	1739.	1606.	3677.	3327.	959.
NB	(PPM)	0.	0.	0.	0.	0.	0.
RB	(PPM)	56.	39.	114.	70.	88.	67.
SR	(PPM)	404.	403.	219.	968.	350.	248.
Y	(PPM)	0.	0.	0.	0.	0.	0.
ZR	(PPM)	44.	30.	43.	41.	42.	45.
TOTAL	(%)	99.9	99.8	99.9	100.3	100.2	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).

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X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S. BALLANTYNE PROJECT: 790003 REPORT: 152-87

LAB. NO.		67	68	69	70	71	72
SPL. NO.		104B-879 764	104B-879 765	104B-879 766	104B-879 767	104B-879 768	104B-879 769
SIO2	(%)	45.3	52.2	55.3	59.0	42.6	48.4
TIO2	(%)	1.13	0.91	0.42	1.06	0.77	0.80
AL203	(%)	13.3	16.0	17.5	13.8	15.2	17.5
CR203	(%)	0.00	0.02	0.00	0.06	0.00	0.00
FE203T	(%)	11.5	8.3	4.5	7.6	12.5	9.7
FE203	(%)	2.7	2.0	0.6	4.0	2.8	5.2
FEO	(%)	7.9	5.7	3.5	3.3	8.8	4.0
MNO	(%)	0.24	0.13	0.15	0.14	0.22	0.21
MGO	(%)	4.32	4.35	2.97	6.17	5.96	5.40
CAO	(%)	8.34	5.02	3.52	4.17	7.96	10.29
NA2O	(%)	3.0	5.0	3.4	2.4	1.3	4.1
K2O	(%)	2.15	1.87	7.01	1.83	5.06	0.35
H2O?	(%)	3.3	3.1	2.2	3.5	4.2	3.1
CO2?	(%)	6.8	3.1	2.6	1.8	3.7	0.1
P2O5	(%)	0.58	0.33	0.25	0.26	0.69	0.64
S	(%)	0.74	0.30	0.02	0.00	0.24	0.00
BA	(PPM)	1559.	1226.	2437.	689.	3734.	250.
NB	(PPM)	0.	0.	44.	0.	0.	0.
RB	(PPM)	53.	63.	122.	113.	74.	0.
SR	(PPM)	471.	831.	882.	443.	974.	2841.
Y	(PPM)	0.	0.	0.	58.	0.	0.
ZR	(PPM)	31.	89.	95.	167.	41.	49.
TOTAL	(%)	99.9	100.2	99.9	100.7	99.9	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).

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X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S. BALLANTYNE PROJECT: 790003 REPORT: 152-87

LAB. NO.		73	74	75	76	77	78
SPL. NO.		104B-879 770	104B-879 772	104B-879 773	104B-879 774	104B-879 775	104B-879 776
SIO2	(%)	49.5	47.9	49.5	73.1	62.9	53.9
TIO2	(%)	0.50	0.69	0.56	0.12	0.40	0.47
AL203	(%)	15.4	16.0	13.1	12.2	16.9	14.9
CR203	(%)	0.01	0.00	0.01	0.00	0.00	0.01
FE203T	(%)	6.3	8.6	9.5	2.4	4.2	15.9
FE203	(%)	0.9	1.8	9.5	0.5	0.5	15.9
FEO	(%)	4.9	6.1		1.7	3.3	
MNO	(%)	0.14	0.19	0.16	0.04	0.03	0.04
MGO	(%)	3.44	3.37	4.32	0.28	1.10	0.71
CAO	(%)	7.97	7.45	6.37	0.14	0.37	0.96
NA2O	(%)	3.3	2.9	1.6	0.5	2.1	2.8
K2O	(%)	4.53	4.34	5.28	9.44	9.24	7.74
H2OT	(%)	2.6	3.5		0.9	1.6	
CO2T	(%)	5.5	4.8	4.3	0.1	0.1	0.1
P2O5	(%)	0.31	0.60	0.32	0.03	0.21	0.41
S	(%)	0.13	0.05	2.49	0.22	0.97	1.96
BA	(PPM)	2006.	1740.	2006.	1120.	2777.	2233.
NB	(PPM)	0.	0.	0.	0.	0.	0.
RB	(PPM)	63.	70.	113.	140.	200.	144.
SR	(PPM)	1008.	742.	299.	61.	203.	141.
Y	(PPM)	0.	0.	0.	0.	0.	0.
ZR	(PPM)	44.	47.	66.	84.	58.	55.
TOTAL	(%)	99.4	100.0	97.8	99.4	100.1	100.1

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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X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S. BALLANTYNE PROJECT: 790003 REPORT: 152-87

LAB. NO.		79	80	81	82	83	84
SPL. NO.		104B-879 777	104B-879 778	104B-879 779	104B-879 780	104B-879 781	104B-879 782
SIO2	(%)	58.7	69.8	61.6	73.6	55.4	69.6
TIO2	(%)	1.06	0.14	0.48	0.07	0.56	0.23
AL2O3	(%)	12.7	14.4	17.4	13.5	15.6	13.4
CR2O3	(%)	0.06	0.00	0.00	0.00	0.00	0.00
FE2O3T	(%)	7.7	2.1	4.7	0.9	6.4	4.0
FE2O3	(%)	4.1	1.4	0.6		2.2	2.5
FEO	(%)	3.2	0.7	3.7	1.3	3.8	1.3
MNO	(%)	0.14	0.03	0.08	0.00	0.09	0.05
MGO	(%)	6.13	0.20	2.26	0.00	1.81	0.57
CAO	(%)	4.20	0.83	0.84	0.09	6.13	0.62
NA2O	(%)	2.4	3.4	5.3	2.6	2.3	2.4
K2O	(%)	1.82	8.13	5.16	8.52	5.43	8.38
H2OT	(%)	3.3	0.5	1.8	0.3	2.2	0.6
CO2T	(%)	1.7	0.4	0.0	0.1	4.2	0.1
P2O5	(%)	0.25	0.05	0.36	0.02	0.28	0.13
S	(%)	0.00	0.05	0.64	0.30	0.35	0.03
BA	(PPM)	768.	1275.	1669.	363.	2494.	1575.
NB	(PPM)	16.	0.	0.	0.	0.	0.
RB	(PPM)	111.	120.	103.	121.	120.	121.
SR	(PPM)	453.	183.	162.	43.	326.	136.
Y	(PPM)	62.	0.	0.	0.	0.	0.
ZR	(PPM)	160.	63.	38.	58.	84.	131.
TOTAL	(%)	99.9	100.2	100.3	100.5	100.6	100.1

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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X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S. BALLANTYNE PROJECT: 790003 REPORT: 152-87

LAB. NO.		85	86	87	88	89	90
SPL. NO.		104B-879 783	104B-879 784	104B-879 785	104B-879 786	104B-879 787	104B-879 788
SIO2	(%)	61.1	66.7	73.0	71.5	58.6	55.0
TIO2	(%)	0.53	0.10	0.08	0.08	1.06	0.57
AL2O3	(%)	16.2	17.3	12.7	15.2	13.8	15.5
CR2O3	(%)	0.00	0.00	0.00	0.00	0.06	0.00
FE2O3T	(%)	6.4	1.3	1.3	0.4	7.7	6.4
FE2O3	(%)	6.4	0.7	0.7	0.1	4.1	2.3
FEO	(%)		0.5	0.5	0.3	3.2	3.7
MNO	(%)	0.06	0.03	0.04	0.01	0.14	0.09
MGO	(%)	2.18	0.14	0.19	0.02	6.18	1.79
CAO	(%)	0.88	0.16	1.22	0.14	4.19	6.08
NA2O	(%)	5.6	4.2	3.7	3.9	2.5	2.2
K2O	(%)	3.63	9.16	6.04	8.36	1.84	5.39
H2OT	(%)		0.6	0.4	0.3	3.5	2.3
CO2T	(%)	0.1	0.1	0.9	0.1	1.7	4.0
P2O5	(%)	0.46	0.03	0.00	0.00	0.26	0.28
S	(%)	1.98	0.08	0.01	0.04	0.00	0.38
BA	(PPM)	1315.	3081.	334.	1326.	750.	2467.
NB	(PPM)	0.	0.	0.	0.	8.	0.
RB	(PPM)	80.	141.	80.	127.	115.	119.
SR	(PPM)	113.	247.	73.	158.	440.	326.
Y	(PPM)	0.	0.	0.	0.	65.	0.
ZR	(PPM)	47.	168.	160.	62.	166.	87.
TOTAL	(%)	99.3	100.1	99.5	100.2	100.2	99.9

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
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X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S. BALLANTYNE — PROJECT: 790003 — REPORT: 152-87

Internal

LAB. NO.		91	92	93	94	95	96
SPL. NO.		104B-879 789	104B-879 790	152-87-9 Lab# #16	152-87-9 #33	152-87-9 #46	152-87-9 #60
SIO2	(%)	55.7	53.5	40.8	70.7	51.2	58.9
TIO2	(%)	0.99	0.60	0.31	0.50	0.11	1.08
AL2O3	(%)	15.2	16.5	11.4	15.9	3.2	12.8
CR2O3	(%)	0.01	0.00	0.01	0.01	0.00	0.06
FE2O3T	(%)	8.5	7.0	1.9	1.9	17.6	7.5
FE2O3	(%)	2.3	3.3		1.9	17.6	3.9
FEO	(%)	5.6	3.4	2.5			3.2
MNO	(%)	0.12	0.10	0.12	0.00	0.18	0.14
MGO	(%)	4.60	1.69	0.89	1.01	0.65	6.14
CAO	(%)	5.98	5.33	21.04	0.14	4.66	4.17
NA2O	(%)	3.5	2.9	2.0	4.4	0.9	2.4
K2O	(%)	2.51	4.80	1.82	2.40	0.77	1.80
H2OT	(%)	2.6	2.3	1.9			3.6
CO2T	(%)	0.2	4.0	17.5	0.0	3.8	1.7
P2O5	(%)	0.18	0.34	0.08	0.03	0.06	0.25
S	(%)	0.01	0.16	0.28	1.33	15.67	0.00
BA	(PPM)	1199.	3096.	632.	1216.	311.	739.
NB	(PPM)	0.	0.	0.	0.	0.	14.
RB	(PPM)	53.	112.	75.	62.	0.	105.
SR	(PPM)	482.	402.	344.	187.	0.	448.
Y	(PPM)	0.	0.	0.	0.	1.	19.
ZR	(PPM)	115.	76.	93.	91.	14.	153.
TOTAL	(%)	99.6	99.3	100.7	98.5	98.9	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).

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MINERAL RESOURCES DIVISION
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X-RAY FLUORESCENCE LABORATORY

SUBMITTER'S NAME: S. BALLANTYNE PROJECT: 790003 REPORT: 152-87

LAB. NO.		97
SPL. NO.		152-87-9
		Lab # BC
SIO2	(%)	69.4
TIO2	(%)	0.23
AL203	(%)	13.3
CR203	(%)	0.00
FE203T	(%)	4.0
FE203	(%)	2.5
FEO	(%)	1.3
MNO	(%)	0.06
MGO	(%)	0.56
CAO	(%)	0.62
NA20	(%)	2.4
K20	(%)	8.25
H20T	(%)	0.6
C02T	(%)	0.1
P205	(%)	0.13
S	(%)	0.04
BA	(PPM)	1613.
NB	(PPM)	0.
RB	(PPM)	122.
SR	(PPM)	139.
Y	(PPM)	0.
ZR	(PPM)	136.
TOTAL	(%)	99.8

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).