APPENDIX -A-

JCU thesis collection numbers for rock samples

SAMPLE NO:	LOCATION		FORMATION	JCU CATOLOGUE NUMBER
	Longitude	Latitude		
mc 1.1 (RR1.1)	764336	7908920	Corbett	65842
mc 1.2 (RR1.2)	764336	7908920	Corbett	65843
mc 5 (RR5)	766794	7910219	Mt Helpmen	65846
mc 6 (RR6)	771180	7915363	Corbett	65847
mc 7 (RR7)	771305	7917191	Corbett	65848
mc 8 (RR8)	767021	7916936	Corbett	65849
mc 9 (RR9)	767491	7916441	Corbett	65850
mc 12 (RR12)	766222	7911253	Daniel Creek	65851
mc 13 (RR13)	766554	7911493	Daniel Creek	65852
mc 14.1 (RR14.1)	767524	7914460	Corbett	65853
mc 14.2 (RR14.2)	767524	7914460	Corbett	65854
mc 15 (RR15)	767540	7914318	Corbett	65855
mc 17 (RR17)	771692	7918815	Mt Helpmen	65856
mc 20 (RR20)	771005	7917398	Corbett	65859
mc 21 (RR21)	771075	7917325	Corbett	65860
mc 22 (RR22)	771270	7916996	Corbett	65861
mc 23 (RR23)	761536	7917660	Corbett	65862
mc 24-A (RR24)	762921	7918103	Corbett	65863
mc 25 (RR25)	764120	7918023	Corbett	65864
mc 26 (RR26)	765355	7917622	Corbett	65865
mc 27 (RR27)	766307	7916794	Corbett	65866
mc 28 (RR28)	766675	7916317	Corbett	65867
mc 30 (RR30)	766835	7916015	Corbett	65868
mc 31 (RR31)	766963	7915291	Corbett	65869
mc 32 (RR32)	767030	7914375	Corbett	65870
mc 33 (RR33)	761712	7918137	Corbett	65871
mc 34 (RR34)	762263	7918442	Corbett	65872
mc 35.1 (RR35.1)	762226	7918855	Corbett	65873
mc 35.2 (RR35.2)	762226	7918855	Corbett	65874
mc 36 (RR36)	764737	7920073	Corbett	65875
mc 37 (RR37)	765347	7912970	Corbett	65876
mc 38 (RR38)	764200	7912350	Corbett	65877
mc 39	761224	7922439	Corbett	71901
mc 49	761390	7917698	Corbett	71902
mc 55	766911	7913765	Corbett	71903
mc 58	767310	7913610	Corbett	71904
mc 65	768475	7911667	Mt Helpmen	71905
mc 66	766954	7911638	Mt Helpmen	71906
mc 68	771199	7915340	Corbett	71907
mc 71	772502	7915426	Corbett	71908
mc 81	766115	7915212	Corbett	71909
mc 84	765815	7914923	Corbett	71910
mc 87	765783	7911952	Corbett	71911
mc 103	765234	7909031	Corbett	71912
mc 105	762354	7917640	Corbett	71913
mc 108	763168	7917999	Corbett	71914
mc 110	764089	7917868	Corbett	71915
mc 121	766004	7914847	Corbett	71916

SAMPLE NO:	LOCATION		FORMATION	JCU CATOLOGUE NUMBER
	Longitude	Latitude		
mc 130	766169	7914478	Corbett	71917
mc 132-A	766290	7914077	Corbett	71918
mc 133	766241	7913964	Corbett	71919
mc 134	766069	7913697	Corbett	71920
mc 135	765925	7913537	Corbett	71921
mc 137	766250	7914376	Corbett	71922
mc 140	766234	7914354	Corbett	71923
mc 151	763511	7909738	Corbett	71924
mc 152	761701	7918113	Corbett	71925
mc 153	762093	7918303	Corbett	71926
mc 154	762204	7918600	Corbett	71927
mc 157	766780	7914996	Corbett	71928
mc 158	766734	7915225	Corbett	71929
mc 159	766719	7915288	Corbett	71930
mc 160	766670	7915539	Corbett	71931
mc132-B	766290	7914077	Corbett	71932
mc106	762613	7917725	Corbett	71933
mc24-B	762921	7918103	Corbett	71934
mc127	766389	7915038	Corbett	71935

APPENDIX -B-

Bulk rock compositions used in Section C

BULK ROCK COMPOSITIONS

	mc157	mc152	mc137	mc87	mc32	mc39	mc81	mc135	mc158	mc130	mc133	mc55
SiO2	68.9	66.2	66.2	70.1	58.4	64.4	63.4	61.8	64.1	69.5	59.6	61.8
Al2O3	15.1	15.3	17.1	15.1	21.9	18.7	17.7	18.8	18.1	14	20.7	20.3
FeO	5.9	6.98	5.37	4.02	4.53	5.95	5.73	5.91	5.14	5.48	6.13	5.99
MnO	0.15	0.1	0.1	0.09	0.07	0.07	0.1	0.15	0.13	0.14	0.11	0.12
MgO	2.2	2.57	2.06	0.69	2.21	1.73	2.28	2.25	1.84	2.27	2.67	2.08
CaO	0.67	0.68	0.58	0.15	0.57	0.39	0.36	0.3	0.61	0.84	0.49	0.37
Na2O	0.68	0.74	1.07	0.16	1.06	0.31	0.57	0.29	0.93	0.81	0.76	0.36
K2O	2.4	2.4	2.76	3.06	4.21	4.84	3.35	3.29	3.45	2.06	3.56	3.35
	1.5	0.03	0.16	0.07	0.05	0.03	4.56	5.7	3.63	2.98	3.45	3.37
SUM	97.5	95	95.24	93.37	93	96.42	98.05	98.49	97.93	98.08	97.47	97.74

	mc157	mc152	mc137	mc87	mc32	mc39	mc81	mc135	mc158	mc130	mc133	mc55
SiO2	1.14672791	1.10179083	1.10179083	1.16669995	0.97197257	1.07183277	1.0551894	1.02856002	1.06683976	1.15671393	0.99194461	1.02856002
Al2O3	0.14809729	0.15005885	0.16771283	0.14809729	0.21479011	0.18340526	0.17359749	0.18438603	0.1775206	0.13730875	0.20302079	0.19909769
FeO	0.08212009	0.09715224	0.0747432	0.05595301	0.06305153	0.08281602	0.07975392	0.08225928	0.07154191	0.07627425	0.08532138	0.08337277
MnO	0.00211455	0.0014097	0.0014097	0.00126873	0.00098679	0.00098679	0.0014097	0.00211455	0.00183261	0.00197358	0.00155067	0.00169164
MgO	0.05458515	0.06376538	0.05111155	0.01711989	0.05483327	0.04292378	0.05657007	0.05582572	0.04565304	0.05632195	0.06624653	0.05160778
CaO	0.01194743	0.01212575	0.01034255	0.0026748	0.01016423	0.00695447	0.00641952	0.0053496	0.01087751	0.01497887	0.00873767	0.00659784
Na2O	0.01097128	0.01193934	0.01726363	0.00258148	0.01710229	0.00500161	0.00919652	0.00467893	0.01500484	0.01306873	0.01226202	0.00580833
K2O	0.02547771	0.02547771	0.02929936	0.03248408	0.04469214	0.05138004	0.03556263	0.03492569	0.0366242	0.02186837	0.03779193	0.03556263
SUM	1.48204142	1.46371979	1.45367366	1.42687923	1.37759294	1.44530075	1.41769924	1.39809982	1.42589447	1.47850844	1.40687561	1.41229869
factor	67.4744973	68.3190871	68.7912307	70.0830161	72.5903837	69.1897517	70.5368227	71.5256512	70.1314173	67.6357317	71.0794894	70.8065517

molecular basis

	mc157	mc152	mc137	mc87	mc32	mc39	mc81	mc135	mc158	mc130	mc133	mc55
SiO2	77	75	76	82	71	74	74	74	75	78	71	73
Al2O3	10	10	12	10	16	13	12	13	12	9	14	14
FeO	6	7	5	4	5	6	6	6	5	5	6	6
MnO	0	0	0	0	0	0	0	0	0	0	0	0
MgO	4	4	4	1	4	3	4	4	3	4	5	4
CaO	1	1	1	0	1	0	0	0	1	1	1	0
Na2O	1	1	1	0	1	0	1	0	1	1	1	0
K2O	2	2	2	2	3	4	3	2	3	1	3	3
SUM	100	100	100	100	100	100	100	100	100	100	100	100
	4.41986794	4.04421841	4.13112981	5.48421554	3.39626175	3.86994554	3.91078831	3.78335381	3.97124568	4.59457331	3.39062547	3.68036582
factor	298.228367	276.29731	284.185504	384.350366	246.535944	267.760571	275.854581	270.606845	278.509088	310.757328	241.003927	260.594013

molecular basis minus SiO2

	mc157	mc152	mc137	mc87	mc32	mc39	mc81	mc135	mc158	mc130	mc133	mc55
Al2O3	44	41	48	57	53	49	48	50	49	43	49	52
FeO	24	27	21	22	16	22	22	22	20	24	21	22
MnO	1	0	0	0	0	0	0	1	1	1	0	0
MgO	16	18	15	7	14	11	16	15	13	18	16	13
CaO	4	3	3	1	3	2	2	1	3	5	2	2
Na2O	3	3	5	1	4	1	3	1	4	4	3	2
K2O	8	7	8	12	11	14	10	9	10	7	9	9
SUM	100	100	100	100	100	100	100	100	100	100	100	100

	mc157	mc152	mc137	mc87	mc32	mc39	mc81	mc135	mc158	mc130	mc133	mc55
A	52	48	57	67	65	59	56	57	60	51	57	60
F	29	31	25	25	19	27	26	26	24	28	24	25
M	19	21	17	8	16	14	18	17	15	21	19	15
AFM	0.26	0.24	0.29	0.38	0.31	0.12	0.27	0.34	0.26	0.25	0.31	0.37
A`	0.26	0.24	0.29	0.38	0.31	0.12	0.27	0.34	0.26	0.25	0.31	0.37
M	0.40	0.40	0.41	0.23	0.47	0.34	0.41	0.40	0.39	0.42	0.44	0.38

APPENDIX -C-

Microprobe analyses used in Section C

PROBE ANALYSES FOR SAMPLE MC30

ID = st1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	29.68	0.38	54.2	15.53	0.14	1.2	0	0	0.14	0.04	101.3
+/-2 SIGMA	0.76	0.27	0.93	0.84	0.3	0.46	0	0	0.15	0.12	
32 OXYGENS	5.56296	0.05412	11.9731	2.43331	0.02206	0.33419	0	0	0.03295	0.01119	20.424

ID = st2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	31.11	0.52	54.36	14.68	0.34	1.5	0	0.32	0	0.03	102.87
+/-2 SIGMA	0.76	0.27	0.91	0.81	0.28	0.46	0	0.55	0	0.12	
32 OXYGENS	5.71556	0.07232	11.7659	2.25413	0.05259	0.41149	0	0.11414	0	0.00912	20.39533

ID = st3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	30.37	0.41	54.15	14.69	0.32	1.4	0.08	0.25	0.08	0	101.76
+/-2 SIGMA	0.75	0.26	0.92	0.82	0.29	0.46	0.16	0.52	0.14	0	
32 OXYGENS	5.64711	0.05778	11.8656	2.28392	0.05014	0.38668	0.01592	0.09108	0.01895	0	20.41728

ID = rim1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.64	0	20	30.46	4.27	2.24	3.01	0	0.03	0	97.66
+/-2 SIGMA	0.76	0	0.66	1.04	0.45	0.49	0.26	0	0.16	0	
24 OXYGENS	6.17497	0	3.86636	4.17748	0.59368	0.54675	0.52948	0	0.00621	0	15.89495

ID = rim2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.69	0.03	20.48	31.64	2.23	2.4	3.35	0	0	0.06	97.9
+/-2 SIGMA	0.76	0.26	0.66	1.07	0.39	0.51	0.26	0	0	0.13	
24 OXYGENS	6.1477	0.00425	3.93685	4.3134	0.30838	0.58295	0.58603	0	0	0.0163	15.89592

ID = rim3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.25	0	19.77	30.25	4.31	1.67	3.71	0	0.05	0	97.01
+/-2 SIGMA	0.75	0	0.65	1.04	0.44	0.49	0.26	0	0.16	0	
24 OXYGENS	6.17132	0	3.85971	4.18836	0.60452	0.41132	0.65799	0	0.01115	0	15.9044

ID = bt1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.61	1.51	18.38	20.17	0.2	9.99	0.3	0	5.69	0.04	93.88
+/-2 SIGMA	0.78	0.29	0.64	0.92	0.28	0.58	0.2	0	0.27	0.13	
32 OXYGENS	8.25341	0.2488	4.75118	3.69905	0.03716	3.2667	0.06982	0	1.59207	0.01333	21.93156

ID = bt2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.85	1.12	18.28	20.45	0.03	9.6	0.52	0	5.53	0.12	91.51
+/-2 SIGMA	0.76	0.29	0.64	0.93	0.28	0.57	0.2	0	0.27	0.12	
32 OXYGENS	8.12403	0.19134	4.88112	3.87415	0.00646	3.24202	0.12617	0	1.59751	0.04531	22.08814

ID = plg1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	61.56	0.16	24.72	0.48	0	0	7.68	5.7	0.04	0	100.35
+/-2 SIGMA	0.95	0.24	0.67	0.33	0	0	0.33	0.67	0.15	0	
32 OXYGENS	10.8697	0.0212	5.14335	0.07042	0	0	1.45236	1.95133	0.00916	0	19.51761

ID = plg2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	62	0	25.04	0	0.03	0.04	7.58	6.74	0.12	0	101.55
+/-2 SIGMA	0.97	0	0.68	0	0.26	0.38	0.34	0.68	0.15	0	
32 OXYGENS	10.8376	0	5.15691	0	0.00466	0.01151	1.41969	2.28096	0.02616	0	19.73751

ID = plg3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.84	0	24.78	0.58	0	0.07	7.14	6	0.04	0	99.45
+/-2 SIGMA	0.95	0	0.67	0.35	0	0.37	0.33	0.68	0.15	0	
32 OXYGENS	10.8431	0	5.20467	0.08574	0	0.01798	1.3627	2.07199	0.00841	0	19.5947

ID = bt3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.19	1.33	17.84	18.37	0	9.85	0.26	0	6.45	0.03	91.33
+/-2 SIGMA	0.76	0.3	0.62	0.9	0	0.56	0.2	0	0.29	0.12	
32 OXYGENS	8.35992	0.22529	4.72656	3.45213	0	3.29957	0.06339	0	1.84923	0.01198	21.98811

ID = ms1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	49.35	0.2	34.64	1.12	0.01	0.42	0.09	0.46	9.88	0	96.17
+/-2 SIGMA	0.87	0.26	0.74	0.37	0.21	0.38	0.2	0.51	0.34	0	
32 OXYGENS	9.36463	0.02847	7.74517	0.1775	0.00084	0.1181	0.01926	0.17031	2.39027	0	20.01459

ID = ms2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	47.42	0.72	34.95	0.86	0	0.37	0	1.02	9.53	0	94.87
+/-2 SIGMA	0.88	0.27	0.76	0.37	0	0.4	0	0.54	0.34	0	
32 OXYGENS	9.13961	0.10358	7.93718	0.13857	0	0.10738	0	0.38237	2.34137	0	20.15008

ID = ms3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	47.52	0.76	32.38	1.73	0	1.43	0	0.29	10.11	0.08	94.29
+/-2 SIGMA	0.87	0.27	0.74	0.43	0	0.4	0	0.53	0.35	0.12	
32 OXYGENS	9.28838	0.11209	7.45714	0.28305	0	0.41605	0	0.10924	2.51919	0.02675	20.21193

PROBE ANALYSES FOR SAMPLE MC32

ID = grcore1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.57	0.03	20.33	30.11	3.98	1.71	4.36	0	0	0.03	99.12
+/-2 SIGMA	0.76	0.26	0.63	1.02	0.46	0.47	0.28	0	0	0.13	
24 OXYGENS	6.21764	0.00325	3.86212	4.05772	0.54337	0.41153	0.75239	0	0	0.00801	15.85606

ID = grcore2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.65	0	20.81	30.07	4.43	1.68	3.86	0	0.11	0.01	99.62
+/-2 SIGMA	0.77	0	0.64	1.03	0.46	0.46	0.27	0	0.16	0.11	
24 OXYGENS	6.19783	0	3.93116	4.03017	0.60182	0.40116	0.66365	0	0.02151	0.00245	15.84979

ID = grcore3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.82	0.3	20.41	29.98	4.38	1.79	3.76	0	0.03	0	99.46
+/-2 SIGMA	0.76	0.26	0.63	1.02	0.46	0.47	0.27	0	0.16	0	
24 OXYGENS	6.22607	0.03603	3.85672	4.01901	0.59513	0.42739	0.64651	0	0.00526	0	15.81215

ID = grcore4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.24	0.07	20.77	30.95	4.01	1.61	3.86	0.48	0.03	0	100.02
+/-2 SIGMA	0.76	0.26	0.64	1.02	0.45	0.47	0.27	0.69	0.16	0	
24 OXYGENS	6.1358	0.00798	3.92698	4.1514	0.54495	0.38443	0.66304	0.14968	0.00653	0	15.97083

ID = grcore5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.12	0	20.51	31.07	3.94	1.54	3.13	0	0.05	0	98.35
+/-2 SIGMA	0.76	0	0.63	1.03	0.45	0.48	0.25	0	0.16	0	
24 OXYGENS	6.20366	0	3.93341	4.2262	0.54317	0.37286	0.54526	0	0.01007	0	15.83466

ID = grcore6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	39.28	0.08	21.28	30.64	4.02	2.01	4.28	0	0	0	101.6
+/-2 SIGMA	0.77	0.26	0.64	1.03	0.46	0.46	0.28	0	0	0	
24 OXYGENS	6.16596	0.00971	3.93626	4.02021	0.53445	0.46968	0.71987	0	0	0	15.85618

ID = grrim1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.89	0.05	21.12	32.31	2.92	2.69	3.32	0	0	0.04	101.34
+/-2 SIGMA	0.77	0.25	0.64	1.04	0.41	0.47	0.26	0	0	0.13	
24 OXYGENS	6.13138	0.00593	3.92299	4.25809	0.38991	0.63264	0.56022	0	0	0.01159	15.91278

ID = grrim1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.89	0.05	21.12	32.31	2.92	2.69	3.32	0	0	0.04	101.34
+/-2 SIGMA	0.77	0.25	0.64	1.04	0.41	0.47	0.26	0	0	0.13	

24 OXYGENS	6.13138	0.00593	3.92299	4.25809	0.38991	0.63264	0.56022	0	0	0.01159	15.91278
ID = grrim2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	39.61	0	21.13	32.95	3.16	1.97	3.63	0.38	0	0.01	102.83
+/-2 SIGMA	0.79	0	0.65	1.07	0.43	0.49	0.27	0.75	0	0.14	
24 OXYGENS	6.1743	0	3.88132	4.29344	0.41678	0.45639	0.60544	0.11468	0	0.00375	15.94613
ID = grrim3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.36	0	20.47	31.6	3.46	2.28	3.24	0	0	0.16	99.56
+/-2 SIGMA	0.76	0	0.63	1.04	0.42	0.47	0.25	0	0	0.13	
24 OXYGENS	6.17424	0	3.88221	4.25201	0.47107	0.54695	0.55815	0	0	0.04231	15.92696
ID = plg1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.93	0	24.41	0.38	0.16	0.38	7.65	8.58	0	0	102.48
+/-2 SIGMA	0.92	0	0.64	0.38	0.27	0.4	0.34	0.77	0	0.09	
32 OXYGENS	10.6831	0	5.04224	0.05523	0.0233	0.09819	1.4369	2.91322	0	0.00095	20.25326
ID = plg2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	61.14	0	25.39	0.51	0	0	7.49	8.09	0.04	0.1	102.77
+/-2 SIGMA	0.91	0	0.64	0.37	0	0	0.34	0.78	0.15	0.12	
32 OXYGENS	10.663	0	5.21911	0.07465	0	0	1.39893	2.73404	0.0091	0.0297	20.12865
ID = plg3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.41	0	24.58	0.54	0.15	0	7.51	8.5	0.05	0	101.73
+/-2 SIGMA	0.92	0	0.65	0.37	0.27	0	0.34	0.77	0.15	0	
32 OXYGENS	10.6719	0	5.11625	0.07965	0.02231	0	1.42	2.90834	0.01124	0	20.22974
ID = bi1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.35	1.4	19.24	23.74	0.18	10.11	0.01	0.1	9.21	0.03	100.38
+/-2 SIGMA	0.74	0.3	0.63	1.03	0.28	0.6	0.19	0.78	0.33	0.13	
32 OXYGENS	7.76169	0.22503	4.84162	4.23739	0.03339	3.21642	0.00222	0.04228	2.50703	0.01264	22.87976
ID = bi2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.71	1.91	19.2	23.16	0.16	9.4	0.08	0	9.55	0.11	100.28
+/-2 SIGMA	0.76	0.3	0.63	1.06	0.29	0.61	0.22	0	0.35	0.13	
32 OXYGENS	7.83662	0.30592	4.83034	4.1335	0.0283	2.98917	0.01791	0	2.60099	0.04153	22.78432
ID = bi2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	39.11	0.17	21.67	39.45	2.55	2.15	3.07	0.36	0.13	0	108.67
+/-2 SIGMA	1.11	0.37	0.93	1.87	0.61	0.7	0.37	1.06	0.22	0	
32 OXYGENS	7.87934	0.02507	5.14436	6.6432	0.43518	0.6462	0.66258	0.14023	0.03461	0	21.61082

ID = mu1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	48.26	0.45	34.81	1.68	0	0.6	0.16	1.39	9.29	0	96.65
+/-2 SIGMA	0.83	0.25	0.71	0.4	0	0.41	0.2	0.6	0.33	0	
32 OXYGENS	9.16656	0.06406	7.79108	0.26707	0	0.17101	0.03233	0.5121	2.25125	0	20.25551

ID = plg4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	59.99	0	25.14	0.14	0	0	8.24	7.92	0.06	0	101.49
+/-2 SIGMA	0.91	0	0.65	0.35	0	0	0.35	0.77	0.15	0	
32 OXYGENS	10.6014	0	5.23537	0.02101	0	0	1.5595	2.71234	0.01456	0	20.14429

ID = plg5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.02	0.01	25.1	0.13	0.18	0	8.18	8.01	0.04	0	101.68
+/-2 SIGMA	0.9	0.2	0.64	0.35	0.27	0	0.35	0.77	0.15	0	
32 OXYGENS	10.5975	0.00125	5.22271	0.01894	0.02705	0	1.54691	2.74173	0.00918	0	20.16533

ID = mu2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	46.11	0.55	33.85	3.35	0	0.86	0.05	1.42	9.36	0.02	95.57
+/-2 SIGMA	0.81	0.26	0.71	0.5	0	0.42	0.21	0.61	0.34	0.12	
32 OXYGENS	8.97735	0.08084	7.76568	0.54542	0	0.24956	0.0108	0.53405	2.32451	0.00562	20.49386

ID = mu3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	47.12	0.54	35.03	1.01	0.03	0.16	0	1.38	10.31	0.02	95.6
+/-2 SIGMA	0.82	0.25	0.71	0.4	0.26	0.41	0	0.58	0.35	0.12	
32 OXYGENS	9.08436	0.07767	7.95709	0.16224	0.00552	0.047	0	0.51699	2.53404	0.00599	20.39093

ID = st1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	29.03	0.31	54.05	15.94	0.35	1.16	0.09	0.49	0.04	0	101.45
+/-2 SIGMA	0.71	0.25	0.88	0.86	0.29	0.49	0.17	0.59	0.15	0	
32 OXYGENS	5.46509	0.04336	11.9876	2.50758	0.05641	0.32566	0.01797	0.17889	0.00897	0	20.59164

ID = st2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	29.55	0.47	53.91	15.68	0.12	1.18	0	0	0.05	0	100.96
+/-2 SIGMA	0.72	0.26	0.87	0.87	0.28	0.49	0	0	0.15	0	
32 OXYGENS	5.55944	0.06593	11.9511	2.46622	0.01854	0.33129	0	0	0.01284	0	20.40545

ID = bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.91	1.68	19.75	17.87	0.02	10.56	0.1	0.18	9.7	0.05	96.83
+/-2 SIGMA	0.74	0.3	0.62	0.8	0.3	0.58	0.21	0.75	0.34	0.13	
24 OXYGENS	5.96874	0.20413	3.76341	2.41563	0.00308	2.54435	0.01703	0.05765	2.00039	0.01471	16.98916

ID = bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.85	1.57	19.59	18.4	0.06	9.97	0.15	0	9.97	0.02	96.57
+/-2 SIGMA	0.75	0.31	0.62	0.84	0.3	0.59	0.22	0	0.35	0.13	
24 OXYGENS	5.99718	0.1918	3.75681	2.50289	0.00792	2.41587	0.02545	0	2.06932	0.00604	16.97331

PROBE ANALYSES FOR SAMPLE MC39

ID = grtcore1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.56	0.16	20.42	32.7	4.36	1.53	3.25	0	0	0.01	100
+/-2 SIGMA	0.75	0.26	0.65	1.05	0.45	0.49	0.26	0	0	0.13	
24 OXYGENS	6.0811	0.01926	3.89514	4.42576	0.59706	0.37015	0.56357	0	0	0.0036	15.95567

ID = grtcore2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.33	0	20.23	30.95	3.51	2.2	4.05	0.51	0	0	98.78
+/-2 SIGMA	0.76	0	0.65	1.04	0.43	0.48	0.27	0.65	0	0	
24 OXYGENS	6.07876	0	3.88185	4.21351	0.48358	0.5349	0.70708	0.16122	0	0	16.06093

ID = grtcore3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.46	0.11	20.13	30.54	3.68	1.11	4.43	0.16	0	0	97.62
+/-2 SIGMA	0.75	0.26	0.65	1.05	0.43	0.49	0.29	0.66	0.14	0	
24 OXYGENS	6.1637	0.01417	3.90326	4.19959	0.51213	0.27287	0.77978	0.04941	0.00052	0	15.89546

ID = grtcore4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.39	0	20.81	31.47	3.63	1.66	3.8	0	0	0	98.76
+/-2 SIGMA	0.75	0	0.65	1.05	0.45	0.48	0.27	0	0	0	
24 OXYGENS	6.08469	0	3.99077	4.28093	0.5	0.40128	0.66221	0	0	0	15.91992

ID = grtcore5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.08	0.06	21.05	29.58	3.86	1.5	5.98	0.33	0	0.08	100.52
+/-2 SIGMA	0.76	0.27	0.65	1.02	0.43	0.48	0.3	0.64	0	0.13	
24 OXYGENS	6.07591	0.0076	3.95792	3.94514	0.52108	0.35614	1.0221	0.10318	0	0.02112	16.01023

ID = grtcore6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.45	0.11	20.08	28.56	3.71	1.15	5.51	0.08	0	0.01	96.65
+/-2 SIGMA	0.75	0.26	0.65	1.02	0.44	0.48	0.3	0.66	0	0.11	
24 OXYGENS	6.18768	0.01405	3.90865	3.94433	0.51926	0.28204	0.97449	0.02678	0	0.00148	15.85881

ID = grtcore7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.58	0	20.56	32.02	3.73	2.2	4.53	0	0.08	0.13	100.85
+/-2 SIGMA	0.75	0	0.65	1.04	0.42	0.48	0.28	0.25	0.16	0.13	
24 OXYGENS	6.02819	0	3.88596	4.29368	0.50726	0.52648	0.77868	0.00026	0.01684	0.03627	16.07366

ID = grtmedian	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.05	0	20.71	30.54	3.97	1.82	5.27	0	0.03	0	99.37
+/-2 SIGMA	0.75	0	0.65	1.03	0.43	0.48	0.29	0	0.15	0	

24 OXYGENS	6.00979	0	3.95823	4.14129	0.54472	0.43912	0.91478	0	0.00626	0	16.01423
ID = grtmedian2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.9	0	20.51	31.48	3.96	1.44	4.12	0	0.06	0	99.47
+/-2 SIGMA	0.76	0.23	0.66	1.05	0.44	0.48	0.27	0	0.16	0	
24 OXYGENS	6.13316	0.00019	3.91087	4.25761	0.54322	0.34628	0.71333	0	0.01298	0	15.91769
ID = grtmedian3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.9	0	20.55	30.87	3.77	1.34	5.68	0.34	0	0	100.45
+/-2 SIGMA	0.75	0	0.65	1.03	0.43	0.47	0.3	0.65	0	0	
24 OXYGENS	6.08383	0	3.88673	4.14184	0.5121	0.31936	0.97554	0.10673	0	0	16.02616
ID = grtmedian4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.86	0	20.68	31.42	3.36	1.3	4.77	0	0	0	99.4
+/-2 SIGMA	0.75	0	0.65	1.04	0.42	0.48	0.28	0	0	0	
24 OXYGENS	6.121	0	3.93994	4.24719	0.4606	0.31393	0.82634	0	0	0	15.90903
ID = grtmedian5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.23	0	20.46	31.59	3.19	1.44	4.52	0	0	0.13	98.57
+/-2 SIGMA	0.75	0	0.65	1.05	0.42	0.48	0.28	0	0.14	0.13	
24 OXYGENS	6.08988	0	3.94407	4.31916	0.4419	0.35126	0.79164	0	0.0003	0.03526	15.9735
ID = grtmedian6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.31	0	20.12	31.59	3.44	1.7	4.04	0	0.05	0	98.25
+/-2 SIGMA	0.75	0	0.65	1.04	0.43	0.48	0.27	0	0.16	0	
24 OXYGENS	6.11689	0	3.88678	4.32895	0.47808	0.41453	0.70888	0	0.01113	0	15.94528
ID = grtmedian7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.07	0	21.17	32.24	3.57	1.77	4.4	0.38	0	0.02	101.63
+/-2 SIGMA	0.75	0	0.65	1.05	0.42	0.48	0.27	0.65	0	0.13	
24 OXYGENS	6.04056	0	3.95851	4.27643	0.47917	0.41812	0.74827	0.11818	0	0.00482	16.04409
ID = grtmedian8	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.11	0	20.75	30.88	2.56	1.37	4.83	0.36	0.05	0	97.9
+/-2 SIGMA	0.76	0	0.67	1.06	0.41	0.48	0.29	0.65	0.16	0	
24 OXYGENS	6.08088	0	4.00709	4.2299	0.35477	0.33421	0.84708	0.11275	0.01047	0	15.97719
ID = Bt1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.51	1.93	19.14	19.82	0	7.86	0.12	0.34	9.45	0	94.17
+/-2 SIGMA	0.72	0.31	0.62	0.84	0	0.57	0.21	0.7	0.33	0	
24 OXYGENS	5.98001	0.24412	3.79774	2.79028	0	1.97286	0.02133	0.11199	2.02919	0	16.94758

ID = median9	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.99	0	20.35	32.47	2.43	1.33	4.39	0	0	0	97.97
+/-2 SIGMA	0.76	0	0.66	1.08	0.38	0.49	0.28	0	0	0	
24 OXYGENS	6.08721	0	3.94664	4.46687	0.33794	0.32694	0.77384	0	0	0	15.93947

ID = rim1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.63	0	20.08	31.81	1.76	1.41	5.76	0	0	0.03	98.47
+/-2 SIGMA	0.77	0	0.66	1.06	0.37	0.49	0.31	0	0	0.13	
24 OXYGENS	6.13926	0	3.86119	4.33813	0.24307	0.34217	1.0063	0	0	0.00883	15.93898

ID = median2a	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.79	0.12	20.49	28.58	3.64	1.43	7.51	0	0	0.02	98.58
+/-2 SIGMA	0.75	0.26	0.65	1	0.43	0.47	0.33	0	0	0.13	
24 OXYGENS	6.00167	0.01511	3.93785	3.89736	0.50214	0.34865	1.31148	0	0	0.00415	16.01844

ID = median2b	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.64	0.01	20.65	30.25	3.47	1.28	4.87	0	0	0.09	98.27
+/-2 SIGMA	0.76	0.23	0.66	1.06	0.44	0.49	0.29	0	0	0.13	
24 OXYGENS	6.13987	0.00084	3.96854	4.12406	0.47988	0.31056	0.85122	0	0	0.02545	15.90046

ID = median2c	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.73	0.06	20.98	29.09	3.05	1.31	6.68	0	0.06	0.02	98.98
+/-2 SIGMA	0.76	0.26	0.65	1.02	0.41	0.47	0.32	0	0.16	0.13	
24 OXYGENS	6.09066	0.0077	3.98991	3.92546	0.41688	0.3146	1.15566	0	0.01156	0.00563	15.9181

ID = mus1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	46.22	0.35	34.28	0.96	0	0.75	0.03	0.7	10.54	0	93.84
+/-2 SIGMA	0.81	0.25	0.73	0.32	0	0.43	0.21	0.56	0.35	0	
24 OXYGENS	6.80856	0.03848	5.95147	0.11851	0	0.16529	0.0041	0.20094	1.98057	0	15.26797

ID = bt2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	30.73	1.36	19.18	23.56	0.03	8.6	0.07	0.76	5.87	0	90.16
+/-2 SIGMA	0.69	0.29	0.63	0.92	0.28	0.6	0.2	0.7	0.28	0	
24 OXYGENS	5.48433	0.18237	4.03315	3.51442	0.00388	2.28711	0.01353	0.26107	1.33473	0	17.11461

ID = mus2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	45.83	0.57	33.59	1.9	0	0.55	0	0.67	9.76	0.05	92.93
+/-2 SIGMA	0.81	0.26	0.73	0.36	0.21	0.44	0	0.55	0.34	0.12	
24 OXYGENS	6.82449	0.06373	5.89371	0.23617	0.00056	0.12278	0	0.1942	1.8527	0.01282	15.20121

ID = rimmost1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.69	0.2	20.4	35.05	1.28	1.85	2.67	0	0	0	98.15
+/-2 SIGMA	0.76	0.26	0.67	1.11	0.36	0.5	0.24	0	0	0	
24 OXYGENS	6.04123	0.0248	3.95895	4.82465	0.17868	0.45456	0.47159	0	0	0	15.95449

ID = rimmost2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.77	0.01	20.57	34.7	1.61	1.98	2.4	0	0	0	98.03
+/-2 SIGMA	0.76	0.24	0.66	1.1	0.36	0.49	0.24	0	0.14	0	
24 OXYGENS	6.05377	0.00078	3.98965	4.77492	0.22407	0.48496	0.42233	0	0.00018	0	15.9507

ID = rimmost3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.61	0	20.78	35.53	1.54	1.49	2.68	0.16	0.04	0.03	99.86
+/-2 SIGMA	0.77	0	0.67	1.13	0.37	0.5	0.24	0.66	0.16	0.14	
24 OXYGENS	6.08937	0	3.96512	4.80928	0.21119	0.35974	0.46433	0.04993	0.00806	0.00926	15.96633

PROBE ANALYSES FOR SAMPLE MC55

ID = grtcore	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.39	0	20.1	28.01	6.86	1.67	4.62	0	0	0	98.65
+/-2 SIGMA	0.75	0	0.65	1	0.52	0.47	0.28	0	0	0	
24 OXYGENS	6.10552	0	3.86759	3.82287	0.94895	0.40715	0.80857	0	0	0	15.96068

ID = Zoinc	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	44.97	0.01	34.39	0.07	0.11	0	19	0.85	0	0	99.41
+/-2 SIGMA	0.81	0.2	0.73	0.3	0.28	0	0.49	0.56	0	0	
24 OXYGENS	6.27192	0.00057	5.653	0.00872	0.01288	0	2.8389	0.22996	0	0	15.01599

ID = grtcore2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.56	0.12	20.17	27.24	6.91	1.28	5.26	0	0.03	0.03	98.59
+/-2 SIGMA	0.75	0.25	0.65	0.99	0.53	0.47	0.29	0	0.16	0.13	
24 OXYGENS	6.12747	0.01476	3.87645	3.71466	0.95455	0.31062	0.91823	0	0.00552	0.00793	15.93024

ID = grtcore3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.74	0	20.85	27.94	6.9	1.4	4.78	0	0	0	99.6
+/-2 SIGMA	0.76	0	0.65	0.99	0.52	0.48	0.28	0	0	0	
24 OXYGENS	6.08997	0	3.96426	3.76811	0.94237	0.33701	0.82615	0	0	0	15.92789

ID = grtcore4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.34	0.16	20.76	28.14	6.84	1.35	5.06	0	0	0.01	100.66
+/-2 SIGMA	0.76	0.26	0.66	1.01	0.52	0.47	0.3	0	0	0.11	
24 OXYGENS	6.1193	0.01979	3.90491	3.75395	0.92439	0.32172	0.86435	0	0	0.00141	15.90986

ID = grtcore5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.36	0	20.98	28.47	7.37	1.13	5.33	0	0	0.09	101.72
+/-2 SIGMA	0.76	0	0.65	1	0.54	0.46	0.29	0	0	0.13	
24 OXYGENS	6.08747	0	3.92308	3.77667	0.98978	0.26776	0.90618	0	0	0.02376	15.97475

ID = grtcore6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.01	0.17	20.25	27.44	6.49	1.15	5.37	0	0	0	98.87
+/-2 SIGMA	0.75	0.27	0.65	1	0.51	0.47	0.29	0	0	0	
24 OXYGENS	6.16611	0.02057	3.86979	3.72049	0.89109	0.27812	0.93222	0	0	0	15.87841

ID = grtcore7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.79	0.01	20.55	28.04	6.46	1.62	5.48	0.44	0.19	0.05	100.62
+/-2 SIGMA	0.75	0.23	0.65	1	0.52	0.46	0.3	0.64	0.16	0.13	
24 OXYGENS	6.06114	0.00062	3.88331	3.75876	0.87698	0.38681	0.94129	0.13662	0.03862	0.01391	16.09812

ID = chlinc	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	46.6	0	33.01	0.45	0	0	18.1	1.47	0	0	99.62
+/-2 SIGMA	0.82	0	0.72	0.31	0	0	0.48	0.59	0	0	
24 OXYGENS	6.47493	0	5.40478	0.05235	0	0	2.69302	0.39514	0	0	15.02025

ID = grtmedian1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.38	0.07	20.41	28.69	6.26	0.94	5.27	0	0.09	0.02	99.14
+/-2 SIGMA	0.75	0.26	0.65	1.01	0.5	0.47	0.29	0	0.16	0.13	
24 OXYGENS	6.08936	0.00907	3.9176	3.9061	0.8632	0.2286	0.91903	0	0.01953	0.00633	15.95887

ID = grtmedian2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.36	0.06	20.98	29.27	5.65	1.1	5.56	0	0	0	101
+/-2 SIGMA	0.77	0.26	0.66	1.03	0.5	0.48	0.3	0	0	0	
24 OXYGENS	6.10737	0.00772	3.9357	3.89562	0.76214	0.25982	0.94866	0	0	0	15.91706

ID = grtmedian3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.25	0	21.16	28.37	5.38	1.42	5.72	0	0	0.02	99.3
+/-2 SIGMA	0.77	0	0.67	1.03	0.49	0.48	0.31	0	0	0.14	
24 OXYGENS	6.02425	0	4.03228	3.83515	0.7364	0.34123	0.99025	0	0	0.00602	15.96562

ID = grtmedian4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.72	0	21.18	29.47	5.07	1.06	5.45	0	0	0	99.96
+/-2 SIGMA	0.77	0	0.67	1.04	0.49	0.48	0.3	0	0	0	
24 OXYGENS	6.06604	0	4.01352	3.96211	0.69099	0.25497	0.93955	0	0	0	15.9272

ID = grtmedian5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.74	0	20.81	29.57	4.74	1.38	5.07	0.19	0	0	99.49
+/-2 SIGMA	0.77	0	0.67	1.04	0.47	0.48	0.3	0.65	0	0	
24 OXYGENS	6.09253	0	3.95983	3.99074	0.64783	0.33076	0.87624	0.05918	0	0	15.95714

ID = grtmedian6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.43	0	21.23	30.95	4.28	1.58	5.47	0	0.06	0	102
+/-2 SIGMA	0.76	0	0.65	1.02	0.44	0.47	0.29	0.25	0.16	0	
24 OXYGENS	6.06283	0	3.94686	4.08085	0.5711	0.37132	0.92374	0.00142	0.01261	0	15.97075

ID = grtmedian7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.07	0	20.7	30.77	4.2	1.55	5.39	0.57	0	0.01	101.25
+/-2 SIGMA	0.77	0.23	0.67	1.05	0.45	0.49	0.3	0.67	0	0.11	
24 OXYGENS	6.06541	0.0001	3.88586	4.09809	0.56608	0.36815	0.92014	0.17537	0	0.00231	16.08156

ID = grtrim1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.12	0	20.94	30.93	2.99	1.35	5.2	0	0	0.13	99.66

+/-2 SIGMA	0.76	0	0.65	1.04	0.41	0.47	0.29	0	0	0.13	
24 OXYGENS	6.13077	0	3.96867	4.15843	0.40716	0.32403	0.8958	0	0	0.03447	15.91936
ID = grtrim2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.33	0	20.79	30.76	2.75	1.31	5.03	0	0	0	97.97
+/-2 SIGMA	0.76	0	0.66	1.06	0.41	0.49	0.3	0	0	0	
24 OXYGENS	6.10356	0	4.00596	4.20442	0.38032	0.31884	0.88034	0	0	0	15.89345
ID = grtrim3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.52	0.12	21.09	31.2	2.82	1.36	4.51	0	0.05	0	98.68
+/-2 SIGMA	0.75	0.26	0.65	1.04	0.39	0.48	0.29	0	0.16	0	
24 OXYGENS	6.08974	0.0149	4.03376	4.23306	0.38786	0.32895	0.78455	0	0.01124	0	15.8841
ID = grtrim4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.67	0	20.68	31.38	2.19	1.33	4.27	0	0.01	0.03	97.57
+/-2 SIGMA	0.77	0	0.67	1.07	0.39	0.49	0.29	0	0.14	0.13	
24 OXYGENS	6.1698	0	3.99047	4.29606	0.30409	0.32446	0.74926	0	0.00156	0.00883	15.84457
ID = grtrim5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.08	0	20.66	34.23	1.38	1.92	4.7	0.27	0	0	101.24
+/-2 SIGMA	0.78	0	0.67	1.1	0.39	0.49	0.29	0.66	0	0	
24 OXYGENS	6.06752	0	3.87951	4.55985	0.18604	0.45484	0.80254	0.08479	0	0	16.03512
ID = rim1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.66	0	20.51	33.8	0.66	1.34	4.43	0	0.05	0	98.44
+/-2 SIGMA	0.77	0	0.67	1.09	0.31	0.5	0.28	0	0.16	0	
24 OXYGENS	6.14232	0	3.94244	4.60802	0.09066	0.32455	0.77317	0	0.01051	0	15.89171
ID = rim2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.45	0	20.49	32.08	1.32	1.83	4.38	0	0.02	0	97.57
+/-2 SIGMA	0.77	0	0.67	1.08	0.36	0.49	0.28	0	0.17	0	
24 OXYGENS	6.13611	0	3.95514	4.39417	0.18337	0.44689	0.76875	0	0.00371	0	15.88816
ID = rim3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.03	0	21.02	33.07	0.6	2.43	4.12	0.29	0	0	99.57
+/-2 SIGMA	0.76	0	0.66	1.09	0.33	0.49	0.28	0.66	0	0.11	
24 OXYGENS	6.09707	0	3.97097	4.43235	0.08163	0.58155	0.70803	0.09162	0	0.00038	15.96363
ID = bt1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.08	1.92	19.22	17.23	0	9.65	0.29	0.03	6.79	0	89.23
+/-2 SIGMA	0.71	0.3	0.62	0.78	0	0.59	0.2	0.71	0.3	0	
24 OXYGENS	5.90693	0.25074	3.92505	2.49533	0	2.49177	0.05352	0.01152	1.50139	0	16.63626

ID = bt2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.41	1.73	19.18	17.16	0	8.73	0.13	0	9.55	0	92.89
+/-2 SIGMA	0.74	0.31	0.64	0.82	0	0.59	0.21	0	0.34	0	
24 OXYGENS	6.11538	0.21792	3.79528	2.40936	0	2.18505	0.02299	0	2.0461	0	16.7921

ID = Ms1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	45.45	0.42	34.46	0.87	0.09	0.59	0.04	0.87	10.2	0.12	93.11
+/-2 SIGMA	0.83	0.27	0.75	0.34	0.27	0.43	0.21	0.54	0.36	0.13	
24 OXYGENS	6.75378	0.04714	6.03334	0.10747	0.01182	0.13079	0.00623	0.25105	1.93256	0.03007	15.30428

ID = plg1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	57.14	0.06	26.54	0.19	0	0	8.87	6.78	0.02	0.02	99.61
+/-2 SIGMA	0.89	0.24	0.67	0.28	0	0	0.36	0.7	0.15	0.12	
24 OXYGENS	7.72575	0.00571	4.22812	0.02174	0	0	1.28394	1.77527	0.00311	0.00457	15.04823

ID = plg2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	57.33	0	26.34	0.07	0.19	0.13	9.7	5.67	0	0.09	99.52
+/-2 SIGMA	0.9	0	0.68	0.29	0.27	0.42	0.37	0.72	0	0.12	
24 OXYGENS	7.75149	0	4.19584	0.00797	0.02165	0.02586	1.40487	1.48578	0	0.01951	14.913

ID = plg3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	57.06	0	26.05	0.01	0	0.27	9.07	6.52	0.11	0	99.09
+/-2 SIGMA	0.89	0	0.67	0.23	0	0.41	0.36	0.7	0.15	0	
24 OXYGENS	7.7514	0	4.16914	0.00064	0	0.05557	1.32016	1.71479	0.01937	0	15.0311

ID = Msinc	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	46.33	0.19	35.27	0.81	0.34	0.17	0.34	0	11.14	0.08	94.67
+/-2 SIGMA	0.81	0.23	0.73	0.32	0.26	0.42	0.21	0	0.36	0.12	
24 OXYGENS	6.78084	0.02087	6.08363	0.09879	0.04208	0.0373	0.05358	0	2.0787	0.01881	15.21464

ID = st1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	30.4	0.41	54.12	16.21	0.11	1.53	0.04	0	0.02	0.01	102.86
+/-2 SIGMA	0.76	0.27	0.91	0.85	0.28	0.46	0.16	0	0.15	0.13	
32 OXYGENS	5.62107	0.0572	11.792	2.50605	0.0176	0.4202	0.00862	0	0.00577	0.0041	20.4327

ID = st2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	30.65	0.38	54.49	15.64	0.15	1.45	0	0.17	0	0.08	103.02
+/-2 SIGMA	0.78	0.27	0.93	0.86	0.29	0.47	0	0.56	0.13	0.12	
32 OXYGENS	5.64583	0.05292	11.8278	2.40861	0.02387	0.39826	0	0.05913	0.00072	0.02568	20.44292

ID = st3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL

OXIDE	30.4	0.47	53.84	16.29	0.01	1.15	0.01	0	0.11	0	102.29
+/-2 SIGMA	0.76	0.27	0.92	0.84	0.23	0.47	0.14	0	0.15	0	
32 OXYGENS	5.65196	0.06625	11.7974	2.53167	0.00185	0.3183	0.00216	0	0.02686	0	20.3965

PROBE ANALYSES FOR SAMPLE MC81

ID = grtcore1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.4	0	21.3	27.93	6.81	1.67	4.37	0.17	0.11	0	99.78
+/-2 SIGMA	0.75	0	0.65	0.98	0.52	0.46	0.28	0.63	0.16	0	
24 OXYGENS	6.02495	0	4.04409	3.76135	0.92924	0.40019	0.75469	0.05425	0.02268	0	15.99147

ID = grtcore2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.02	0	21.05	27.68	6.45	1.36	4.58	0.43	0.1	0	98.67
+/-2 SIGMA	0.75	0	0.65	0.97	0.51	0.46	0.28	0.64	0.16	0.1	
24 OXYGENS	6.03355	0	4.04203	3.77138	0.89004	0.33015	0.79988	0.13572	0.02102	0.00061	16.02441

ID = grtcore3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.47	0.17	20.4	27.56	6.29	1.17	4.72	0	0	0.09	97.88
+/-2 SIGMA	0.75	0.26	0.64	0.97	0.51	0.46	0.28	0	0	0.13	
24 OXYGENS	6.14181	0.02079	3.93983	3.77629	0.87355	0.28657	0.82861	0	0	0.02541	15.89289

ID = grtcore4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.18	0	20.85	27.74	6.29	1.26	4.72	0	0	0.04	99.08
+/-2 SIGMA	0.75	0	0.64	0.97	0.51	0.45	0.28	0.25	0	0.13	
24 OXYGENS	6.16385	0	3.96627	3.74298	0.85956	0.30412	0.81612	0.00017	0	0.01145	15.86455

ID = grtcore5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.24	0.09	21.32	28.3	6.83	1.97	4.31	0.46	0.05	0.02	101.6
+/-2 SIGMA	0.75	0.26	0.65	0.97	0.51	0.46	0.28	0.62	0.16	0.13	
24 OXYGENS	6.04669	0.01107	3.97312	3.74035	0.91403	0.46508	0.72977	0.14146	0.0096	0.0053	16.03651

ID = grtcore6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.25	0.06	20.76	29.13	6.65	1.6	4.21	0.36	0	0	100.02
+/-2 SIGMA	0.76	0.26	0.66	1	0.52	0.48	0.28	0.65	0	0	
24 OXYGENS	6.01932	0.00742	3.95367	3.93574	0.91009	0.3859	0.72829	0.11192	0	0	16.05238

ID = plg1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	58.52	0.09	25.66	0	0.02	0.27	7.97	7.07	0.04	0	99.64
+/-2 SIGMA	0.89	0.24	0.66	0	0.26	0.4	0.34	0.69	0.15	0	
24 OXYGENS	7.87434	0.00956	4.06816	0	0.00254	0.05348	1.14841	1.84338	0.00762	0	15.00752

ID = plg2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	59.24	0.1	24.53	0.12	0.11	0.07	6.76	6.69	0	0	97.64
+/-2 SIGMA	0.9	0.23	0.65	0.25	0.26	0.41	0.32	0.71	0.13	0	
24 OXYGENS	8.07714	0.0104	3.94177	0.01424	0.01275	0.01424	0.98709	1.7672	0.0006	0	14.82546

ID = plg3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	57.65	0	25.82	0.23	0	0.06	8.66	6.24	0	0	98.67
+/-2 SIGMA	0.88	0	0.66	0.28	0	0.41	0.35	0.69	0	0	
24 OXYGENS	7.83749	0	4.13535	0.02641	0	0.01199	1.26121	1.64467	0	0	14.91716

ID = ms1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	45.94	0.41	34.23	0.8	0	0.88	0.15	1.17	10.13	0.03	93.75
+/-2 SIGMA	0.81	0.25	0.73	0.32	0	0.42	0.21	0.55	0.35	0.12	
24 OXYGENS	6.77453	0.04583	5.94857	0.0988	0	0.19354	0.02394	0.3356	1.90459	0.00659	15.33204

ID = ms2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	45.36	0.35	34.32	1.89	0.28	1.22	0.27	1.13	9.04	0.04	93.89
+/-2 SIGMA	0.81	0.25	0.73	0.36	0.25	0.42	0.2	0.56	0.33	0.12	
24 OXYGENS	6.6918	0.03917	5.96571	0.23304	0.03487	0.26818	0.04215	0.32218	1.7002	0.00935	15.30671

ID = ms3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	45.52	0.5	34.35	0.87	0.09	0.94	0.05	1.4	10.23	0.11	94.06
+/-2 SIGMA	0.81	0.25	0.73	0.33	0.26	0.43	0.2	0.55	0.35	0.12	
24 OXYGENS	6.71751	0.05591	5.9721	0.10771	0.01131	0.20637	0.00765	0.3993	1.92455	0.027	15.42946

ID = grtrim1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.28	0	20.86	32.64	1.29	2.32	2.92	0.36	0	0	97.67
+/-2 SIGMA	0.75	0	0.65	1.05	0.34	0.47	0.24	0.64	0	0	
24 OXYGENS	6.09708	0	4.02001	4.46288	0.17885	0.56525	0.51167	0.11428	0	0	15.95005

ID = grtrim2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.99	0.16	20.6	33.4	1.33	1.77	2.87	0	0	0.02	97.15
+/-2 SIGMA	0.75	0.25	0.64	1.05	0.34	0.49	0.24	0	0	0.13	
24 OXYGENS	6.10537	0.01994	4.00716	4.60831	0.18651	0.43592	0.50785	0	0	0.00649	15.8776

ID = grtrim3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.8	0	20.56	34.16	0.61	1.9	2.93	0	0	0.09	98.06
+/-2 SIGMA	0.75	0	0.65	1.04	0.33	0.48	0.25	0	0.14	0.13	
24 OXYGENS	6.17164	0	3.95633	4.66232	0.08365	0.4629	0.51304	0	0.00054	0.02483	15.87529

ID = bt1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.55	1.48	18.58	16.4	0.04	10.99	0.16	0.33	6.9	0.17	90.58
+/-2 SIGMA	0.72	0.29	0.61	0.78	0.28	0.61	0.2	0.69	0.29	0.13	
24 OXYGENS	6.04452	0.18895	3.72219	2.33126	0.00533	2.78277	0.02845	0.1086	1.49522	0.04948	16.75682

ID = bt2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.98	1.59	18.37	16.28	0.1	10.34	0.39	0	6.15	0.09	89.3

+/-2 SIGMA	0.74	0.3	0.62	0.78	0.27	0.6	0.2	0	0.29	0.12	
24 OXYGENS	6.15603	0.205	3.70427	2.32893	0.01426	2.63589	0.07166	0	1.34151	0.02601	16.4836
ID = chl	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	22.96	0	21.55	25.83	0.06	12.25	0.14	0.54	0	0	83.34
+/-2 SIGMA	0.62	0.22	0.67	0.95	0.27	0.68	0.16	0.75	0.13	0	
24 OXYGENS	4.42268	0.00032	4.89223	4.16024	0.00941	3.51579	0.02949	0.2007	0.00066	0	17.23156
ID = bt	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.85	1.23	17.87	16.12	0.27	9.52	0.37	0	7.21	0.05	87.49
+/-2 SIGMA	0.73	0.29	0.62	0.79	0.29	0.59	0.2	0	0.31	0.12	
24 OXYGENS	6.14936	0.16364	3.71632	2.37729	0.03967	2.50242	0.06933	0	1.62153	0.01625	16.65585
ID = grtmedian1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.65	0.11	21.01	28.87	6.12	1.56	4.24	0	0	0	99.55
+/-2 SIGMA	0.75	0.26	0.65	0.99	0.5	0.47	0.27	0	0	0	
24 OXYGENS	6.07422	0.01319	3.99331	3.89257	0.83614	0.3739	0.73255	0	0	0	15.91592
ID = grtmedian2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.84	0	21.02	28.52	6.12	1.19	4.57	0	0	0.01	99.26
+/-2 SIGMA	0.76	0	0.65	0.99	0.5	0.46	0.28	0	0	0.11	
24 OXYGENS	6.11484	0	4.00222	3.8525	0.83759	0.28654	0.79035	0	0	0.00197	15.88602
ID = grtmedian3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.54	0.08	20.88	28.67	5.57	1.46	4.17	0	0	0.01	98.41
+/-2 SIGMA	0.75	0.26	0.64	0.98	0.49	0.45	0.27	0	0	0.13	
24 OXYGENS	6.11031	0.01031	4.00489	3.90115	0.76809	0.35447	0.72767	0	0	0.0039	15.88082
ID = grtmedian4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.36	0.01	20.96	28.98	4.9	1.8	4.51	0	0	0.01	99.55
+/-2 SIGMA	0.75	0.23	0.64	0.99	0.48	0.47	0.28	0	0	0.13	
24 OXYGENS	6.15074	0.00072	3.96076	3.88481	0.66565	0.43057	0.77489	0	0	0.00389	15.87204
ID = grtmedian5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.21	0.32	20.34	28.51	5.42	1.39	4.14	0.24	0	0	97.58
+/-2 SIGMA	0.75	0.25	0.65	0.99	0.47	0.46	0.27	0.64	0	0	
24 OXYGENS	6.11633	0.03995	3.93929	3.91653	0.75428	0.34084	0.72846	0.07668	0	0	15.91241
ID = grtmedian6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.14	0	21.24	29.33	5.13	1.45	4.44	0	0	0	98.73
+/-2 SIGMA	0.77	0.22	0.67	1.01	0.48	0.48	0.28	0	0	0	
24 OXYGENS	6.03959	0.00043	4.0697	3.98601	0.70621	0.35026	0.77287	0	0	0	15.92511

ID = grtmedian7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.87	0.06	20.74	31.05	4.21	1.61	4.12	0.36	0.09	0.02	100.14
+/-2 SIGMA	0.75	0.26	0.65	1.01	0.44	0.47	0.27	0.65	0.16	0.13	
24 OXYGENS	6.09067	0.0076	3.92976	4.174	0.57266	0.38645	0.71032	0.11216	0.0185	0.00627	16.00845

ID = grtmedian8	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.6	0	20.84	29.87	4.61	1.37	4.1	0	0	0.11	98.5
+/-2 SIGMA	0.75	0	0.65	1	0.47	0.47	0.28	0	0	0.13	
24 OXYGENS	6.12531	0	3.99906	4.06686	0.63588	0.33338	0.71464	0	0	0.02917	15.90433

ID = grtmedian9	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.99	0	20.92	29.68	4.95	1.68	4.17	0.67	0	0	99.05
+/-2 SIGMA	0.77	0	0.67	1.02	0.47	0.47	0.28	0.66	0	0	
24 OXYGENS	6.01559	0	4.00895	4.03541	0.68145	0.4062	0.72716	0.21025	0	0	16.08505

ID = grtmedian10	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.16	0.2	20.29	30.7	4.4	1.32	3.79	0	0	0.01	97.86
+/-2 SIGMA	0.77	0.26	0.67	1.04	0.46	0.48	0.27	0	0	0.11	
24 OXYGENS	6.11262	0.02423	3.93279	4.22127	0.61299	0.32462	0.66819	0	0	0.00156	15.89831

ID = grtmedian11	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.01	0	20.57	30.24	4.4	1.33	4.05	0	0.07	0	97.68
+/-2 SIGMA	0.76	0	0.66	1.02	0.46	0.48	0.28	0	0.16	0	
24 OXYGENS	6.09451	0	3.99164	4.16231	0.61335	0.32684	0.71378	0	0.01441	0	15.91687

ID = grtmedian12	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.46	0.12	20.74	30.79	3.33	1.25	4.29	0	0.09	0.07	98.15
+/-2 SIGMA	0.75	0.25	0.65	1.03	0.43	0.49	0.27	0	0.16	0.13	
24 OXYGENS	6.12264	0.01534	3.99514	4.20594	0.46055	0.3052	0.75009	0	0.01898	0.02047	15.89441

ID = grtmedian13	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.98	0	20.37	31.34	3.84	1.56	4.13	0.22	0.12	0	99.55
+/-2 SIGMA	0.75	0	0.64	1.04	0.42	0.47	0.27	0.65	0.16	0	
24 OXYGENS	6.14017	0	3.88099	4.23563	0.52536	0.37497	0.71513	0.07029	0.02381	0	15.96638

ID = grtmedian14	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.55	0.12	20.8	32.07	2.93	1.91	4.03	0	0	0.12	99.53
+/-2 SIGMA	0.75	0.26	0.65	1.05	0.41	0.48	0.27	0	0	0.13	
24 OXYGENS	6.06836	0.01481	3.96098	4.33263	0.40161	0.45952	0.6984	0	0	0.03225	15.96859

ID = grtmedian15	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL

OXIDE	37.59	0.01	21.04	32.48	2.18	1.88	4.16	0.26	0.11	0	99.72
+/-2 SIGMA	0.76	0.22	0.65	1.06	0.4	0.46	0.27	0.66	0.16	0	
24 OXYGENS	6.05662	0.00165	3.99455	4.37424	0.29749	0.45088	0.71751	0.0813	0.02165	0	15.99592

ID = grtmedian16	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.27	0.02	20.39	32.01	2.41	2	4.1	0	0	0.07	98.27
+/-2 SIGMA	0.76	0.26	0.66	1.08	0.41	0.49	0.28	0	0	0.13	
24 OXYGENS	6.09433	0.00236	3.92814	4.37582	0.33348	0.48613	0.71891	0	0	0.02052	15.95974

ID = grtmedian17	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.26	0	20.74	32.04	2.25	2.51	4.22	0.14	0	0	99.17
+/-2 SIGMA	0.75	0	0.65	1.05	0.39	0.48	0.27	0.65	0.14	0.1	
24 OXYGENS	6.03171	0	3.95569	4.3349	0.30876	0.60502	0.73119	0.0454	0.00087	0.00086	16.01445

ID = grtrim4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.23	0.13	21.5	32.67	2.46	2.46	3.77	0.42	0	0	101.64
+/-2 SIGMA	0.77	0.26	0.67	1.09	0.4	0.49	0.27	0.67	0	0	
24 OXYGENS	6.0294	0.01532	3.99574	4.30742	0.32882	0.57856	0.63732	0.12958	0	0	16.02219

ID = grtrim5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.58	0	21.05	33.02	1.44	2.06	3.92	0.11	0	0.02	99.19
+/-2 SIGMA	0.76	0	0.66	1.06	0.37	0.49	0.27	0.65	0	0.13	
24 OXYGENS	6.0714	0	4.00701	4.45936	0.19643	0.49559	0.67851	0.03351	0	0.00469	15.94653

ID = grtrim6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.72	0	20.89	33.47	1.41	1.97	3.46	0	0.02	0.02	98.98
+/-2 SIGMA	0.77	0	0.67	1.09	0.36	0.5	0.27	0	0.16	0.14	
24 OXYGENS	6.10895	0	3.98634	4.5307	0.19396	0.47523	0.60082	0	0.00368	0.00643	15.90615

ID = chlinclusion	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	27.34	0.15	20.83	25.38	0.19	13.37	0.29	0	0	0	87.55
+/-2 SIGMA	0.66	0.24	0.66	0.96	0.28	0.68	0.18	0	0	0	
24 OXYGENS	4.92134	0.01979	4.41795	3.81964	0.02948	3.58629	0.05535	0	0	0	16.84988

ID = rim7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.99	0	21.02	34.48	0.99	2.27	2.94	0.45	0.17	0	100.31
+/-2 SIGMA	0.75	0	0.65	1.09	0.34	0.48	0.25	0.67	0.16	0.11	
24 OXYGENS	6.08375	0	3.96675	4.6151	0.13478	0.54041	0.50381	0.14101	0.03547	0.00057	16.02169

ID = btinclusion	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.42	2.23	17.49	18.18	0.07	10.84	0.21	0	6.67	0.01	89.11
+/-2 SIGMA	0.71	0.31	0.61	0.82	0.28	0.61	0.2	0	0.29	0.1	

24 OXYGENS	5.8556	0.29424	3.61019	2.66181	0.00977	2.82923	0.03958	0	1.48923	0.00213	16.79181
ID = plgriminclusic	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	57.41	0.08	26.13	0.46	0	0.21	8.46	6.98	0.05	0	99.78
+/-2 SIGMA	0.89	0.24	0.66	0.29	0	0.41	0.35	0.7	0.15	0	
24 OXYGENS	7.75423	0.00836	4.15921	0.05152	0	0.0424	1.22427	1.82655	0.00901	0	15.07557
ID = grtrim	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.98	0	20.76	33.82	1.55	2.29	3.78	0.21	0.11	0	99.51
+/-2 SIGMA	0.75	0	0.65	1.06	0.37	0.48	0.27	0.64	0.16	0	
24 OXYGENS	5.99716	0	3.968	4.58573	0.2127	0.55336	0.65699	0.06659	0.02312	0	16.0637
ID = chlinc	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	24.86	0	20.58	27.32	0.24	12.93	0.06	0.39	0.05	0.01	86.44
+/-2 SIGMA	0.63	0	0.65	0.96	0.28	0.67	0.16	0.74	0.15	0.12	
24 OXYGENS	4.62959	0	4.5161	4.25283	0.03747	3.58813	0.01236	0.14002	0.01166	0.00414	17.19235
ID = st1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	27.95	0.46	53.55	13.14	0	1.43	0	0.14	0.02	0	96.69
+/-2 SIGMA	0.7	0.26	0.89	0.72	0	0.49	0.15	0.57	0.15	0	
24 OXYGENS	4.07808	0.05014	9.2059	1.60194	0	0.31013	0.00021	0.04019	0.00458	0	15.29121
ID = st2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	27.72	0.25	52.62	14.52	0	1.33	0	0.26	0.12	0	96.83
+/-2 SIGMA	0.7	0.26	0.89	0.73	0	0.5	0	0.56	0.15	0	
24 OXYGENS	4.07506	0.02726	9.11405	1.78457	0	0.29145	0	0.07458	0.02186	0	15.38887
ID = st3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	28.04	0.41	53.16	13.66	0.09	1.52	0	0.18	0.07	0	97.13
+/-2 SIGMA	0.7	0.26	0.89	0.72	0.27	0.49	0	0.56	0.14	0	
24 OXYGENS	4.08695	0.04495	9.1323	1.66411	0.01115	0.33063	0	0.04988	0.01375	0	15.33376

PROBE ANALYSES FOR SAMPLE MC133

ID = 45st_4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.16	0	21.55	29.96	6.06	1.45	4.39	0.16	0.02	0.02	101.76
+/-2 SIGMA	0.76	0	0.67	1	0.49	0.5	0.28	0.68	0.16	0.13	
24 OXYGENS	6.04058	0	4.02002	3.96439	0.81235	0.34261	0.74384	0.04809	0.00308	0.00587	15.98087

ID = g1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.08	0	21.26	28.65	6.01	1.68	3.79	0	0	0.11	99.57
+/-2 SIGMA	0.77	0	0.66	1	0.5	0.49	0.27	0	0.14	0.13	
24 OXYGENS	6.11975	0	4.02668	3.84858	0.81856	0.40158	0.6517	0	0.00006	0.03037	15.89731

ID = g2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.31	0	20.96	28.36	5.83	1.58	4.07	0.13	0	0.16	99.39
+/-2 SIGMA	0.77	0	0.66	0.99	0.5	0.5	0.27	0.67	0	0.13	
24 OXYGENS	6.16505	0	3.97514	3.8148	0.79374	0.37757	0.70142	0.03926	0	0.04401	15.91102

ID = g3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.5	0.01	21.07	29.47	5.91	1.64	4.09	0	0.04	0	100.73
+/-2 SIGMA	0.77	0.23	0.66	1	0.5	0.49	0.27	0	0.16	0	
24 OXYGENS	6.12974	0.00086	3.95279	3.92189	0.79715	0.3882	0.69798	0	0.00872	0	15.89736

ID = g4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.18	0	21.64	29.12	6.16	1.89	3.84	0	0	0	100.81
+/-2 SIGMA	0.78	0	0.68	1.01	0.51	0.49	0.28	0	0	0	
24 OXYGENS	6.0648	0	4.05076	3.8664	0.82819	0.447	0.65263	0	0	0	15.90981

ID = g5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.58	0.04	21.13	28.56	5.82	2.02	4.32	0.19	0	0.06	100.72
+/-2 SIGMA	0.76	0.25	0.66	0.99	0.49	0.48	0.28	0.65	0	0.13	
24 OXYGENS	6.12485	0.00421	3.95193	3.79021	0.78177	0.4786	0.73465	0.05741	0	0.01572	15.93939

ID = ctd	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	26.09	0	18.88	30.35	0.08	10.48	0	0	0.04	0.09	86.01
+/-2 SIGMA	0.65	0	0.64	0.99	0.28	0.64	0	0	0.15	0.13	
24 OXYGENS	4.94404	0	4.21747	4.80877	0.01252	2.95979	0	0	0.00919	0.02825	16.98007

ID = ctd	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	25.39	0.69	20.37	26.92	0.48	10.42	0.48	0	0	0.07	84.81

+/-2 SIGMA	0.65	0.28	0.66	0.99	0.31	0.63	0.18	0	0	0.12	
24 OXYGENS	4.80729	0.09881	4.54371	4.26085	0.07734	2.93762	0.09639	0	0	0.0224	16.84444

ID = mu	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	46.67	0.61	33.87	1.15	0.15	0.59	0	1.29	9.35	0.14	93.81
+/-2 SIGMA	0.82	0.26	0.73	0.33	0.26	0.43	0	0.56	0.34	0.12	
24 OXYGENS	6.85926	0.06746	5.86664	0.14082	0.01851	0.12812	0	0.36652	1.75169	0.03562	15.23469

ID = gr7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.17	0.16	21.82	29.85	5.88	1.89	3.91	0	0	0.06	101.75
+/-2 SIGMA	0.76	0.26	0.67	1.02	0.5	0.49	0.27	0	0	0.13	
24 OXYGENS	6.0231	0.01956	4.05691	3.93732	0.78615	0.44534	0.66047	0	0	0.01734	15.94622

ID = gr8	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.27	0.09	21.35	29.76	5.78	1.9	3.95	0	0	0	101.1
+/-2 SIGMA	0.76	0.26	0.66	1.03	0.49	0.48	0.27	0	0	0	
24 OXYGENS	6.07329	0.01123	3.99256	3.94683	0.776	0.44869	0.67056	0	0	0	15.91919

ID = gr9	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.29	0.03	21.14	29.29	5.44	1.91	4.28	0.14	0.09	0.06	100.68
+/-2 SIGMA	0.76	0.26	0.66	1	0.49	0.49	0.27	0.68	0.16	0.13	
24 OXYGENS	6.09721	0.00345	3.96773	3.89942	0.73379	0.45216	0.73	0.04465	0.01867	0.01694	15.96407

ID = gr8	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.8	0	21.75	28.22	5.34	1.68	4.2	0.14	0	0.09	100.21
+/-2 SIGMA	0.77	0	0.66	0.99	0.49	0.49	0.28	0.67	0	0.13	
24 OXYGENS	6.15574	0	4.06538	3.74283	0.71719	0.39594	0.71329	0.04235	0	0.02516	15.85791

ID = gr10	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.8	0.14	21.54	29.34	5.45	1.7	3.92	0	0.06	0.1	101.04
+/-2 SIGMA	0.76	0.26	0.66	0.99	0.49	0.49	0.27	0	0.16	0.13	
24 OXYGENS	6.13482	0.01699	4.01326	3.87811	0.72927	0.39928	0.66365	0	0.01227	0.02662	15.87431

ID = gr11	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.7	0.04	21.94	29.25	5.43	1.76	4.05	0.01	0	0.01	101.19
+/-2 SIGMA	0.76	0.26	0.66	1	0.48	0.48	0.27	0.26	0	0.11	
24 OXYGENS	6.10031	0.00443	4.07528	3.85434	0.72535	0.41389	0.68296	0.00206	0	0.00264	15.86128

ID = gr12	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL

OXIDE	39.05	0.07	21.53	29.44	5.12	2	4.08	0	0	0	101.29
+/-2 SIGMA	0.76	0.26	0.65	1.01	0.48	0.48	0.27	0	0	0	
24 OXYGENS	6.14342	0.00862	3.99183	3.87131	0.6814	0.46829	0.68711	0	0	0	15.85202
ID = gr13	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.75	0.09	21.65	28.84	5.16	1.76	4.02	0.16	0.08	0.04	100.56
+/-2 SIGMA	0.77	0.26	0.66	1	0.48	0.49	0.27	0.65	0.16	0.13	
24 OXYGENS	6.13785	0.01077	4.04149	3.81864	0.69225	0.41479	0.68229	0.04808	0.01696	0.01166	15.87481
ID = gr14	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.42	0	21.67	30.21	4.46	2.18	3.8	0	0.1	0.05	100.88
+/-2 SIGMA	0.77	0	0.67	1.01	0.45	0.49	0.27	0	0.16	0.13	
24 OXYGENS	6.08532	0	4.04324	3.99902	0.5979	0.51344	0.64387	0	0.02046	0.01333	15.91661
ID = gr16	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.97	0.27	21.71	31.13	3.8	1.62	3.76	0	0.06	0.03	101.35
+/-2 SIGMA	0.77	0.25	0.67	1.02	0.44	0.49	0.27	0	0.16	0.13	
24 OXYGENS	6.1354	0.03246	4.02771	4.09727	0.50645	0.37948	0.63373	0	0.0115	0.00732	15.83135
ID = gr17	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.51	0.13	21.23	29.81	4.03	2.08	3.8	0	0	0	99.6
+/-2 SIGMA	0.77	0.26	0.66	1	0.45	0.49	0.27	0	0	0	
24 OXYGENS	6.15149	0.01616	3.99544	3.98031	0.54462	0.49582	0.65073	0	0	0	15.83461
ID = gr18	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	39.12	0.04	21.72	30.95	3.86	2.38	3.84	0.25	0.14	0.03	102.31
+/-2 SIGMA	0.77	0.26	0.66	1.02	0.44	0.48	0.27	0.67	0.16	0.13	
24 OXYGENS	6.10385	0.00521	3.99408	4.03723	0.50941	0.55221	0.64096	0.07438	0.02743	0.0069	15.9517
ID = gr19	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.29	0.16	20.88	30.85	3.96	1.5	3.71	0	0	0.03	99.38
+/-2 SIGMA	0.76	0.26	0.66	1.01	0.45	0.5	0.27	0	0	0.13	
24 OXYGENS	6.16425	0.01965	3.96074	4.15221	0.5402	0.3598	0.63883	0	0	0.00899	15.84472
ID = gr20	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.45	0.09	20.68	31.59	2.69	2.27	4.01	0	0	0.01	99.8
+/-2 SIGMA	0.76	0.26	0.66	1.03	0.39	0.5	0.27	0	0	0.13	
24 OXYGENS	6.15425	0.01096	3.90015	4.22624	0.36443	0.54143	0.68721	0	0	0.0036	15.88831

ID = gr21	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.01	0.03	21.21	32.35	2.09	2.01	3.43	0	0.04	0	99.18
+/-2 SIGMA	0.77	0.26	0.67	1.05	0.4	0.5	0.26	0	0.16	0	
24 OXYGENS	6.11979	0.00403	4.02421	4.35337	0.28474	0.4818	0.59178	0	0.00859	0	15.86836

ID = gr22	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.58	0.02	21.25	32.03	1.98	2.12	3.81	0	0	0.14	99.94
+/-2 SIGMA	0.77	0.26	0.66	1.02	0.39	0.5	0.27	0	0	0.13	
24 OXYGENS	6.154	0.00247	3.99492	4.27117	0.26741	0.50435	0.65171	0	0	0.03656	15.88263

ID = mu1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.92	1.44	19.3	18.39	0	9.84	0.09	0.38	9.92	0.07	96.35
+/-2 SIGMA	0.74	0.31	0.63	0.82	0	0.61	0.2	0.72	0.34	0.13	
24 OXYGENS	6.03105	0.17665	3.71421	2.5105	0	2.39397	0.01593	0.11902	2.06663	0.01865	17.04666

ID = mu2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.41	1.84	18.5	18.88	0.08	10.2	0.09	0.49	9.88	0.06	95.43
+/-2 SIGMA	0.73	0.31	0.63	0.83	0.28	0.61	0.21	0.72	0.34	0.13	
24 OXYGENS	5.89381	0.22981	3.62884	2.6261	0.01086	2.52927	0.01595	0.1586	2.09592	0.01705	17.20627

ID = plg1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.95	0	24.8	0.19	0	0	7.19	8.02	0.03	0.05	101.22
+/-2 SIGMA	0.91	0	0.66	0.27	0	0	0.33	0.74	0.15	0.12	
24 OXYGENS	8.0649	0	3.86648	0.02097	0	0	1.0192	2.05551	0.00504	0.01138	15.04352

ID = plg2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	61.2	0.43	24.52	0.18	0	0	6.95	8.4	0	0	101.68
+/-2 SIGMA	0.91	0.24	0.66	0.26	0	0	0.32	0.75	0	0	
24 OXYGENS	8.06547	0.04274	3.80707	0.02023	0	0	0.98049	2.14444	0	0	15.06047

ID = plg3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	61.19	0	25.52	0.36	0	0	6.74	8.17	0.01	0.03	102.01
+/-2 SIGMA	0.91	0	0.66	0.3	0	0	0.32	0.74	0.13	0.12	
32 OXYGENS	10.704	0	5.26149	0.05263	0	0	1.2619	2.76809	0.00209	0.00796	20.05824

ID = bi1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.65	1.81	19.85	18.56	0.22	9.49	0.13	0	9.39	0	95.1
+/-2 SIGMA	0.73	0.31	0.64	0.82	0.28	0.6	0.21	0	0.34	0	
24 OXYGENS	5.89799	0.22567	3.86936	2.56594	0.03111	2.33796	0.023	0	1.98117	0	16.93224

ID = bi2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.09	1.66	19.37	19.16	0.1	9.6	0	0.49	8.84	0	95.3
+/-2 SIGMA	0.73	0.3	0.64	0.83	0.28	0.6	0	0.72	0.33	0	
24 OXYGENS	5.95585	0.20536	3.76758	2.64395	0.01348	2.35952	0	0.15781	1.86063	0	16.96422

ID = gr23	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	39.04	0.22	22.21	32.75	2.41	2.44	3.38	0	0	0	102.44
+/-2 SIGMA	0.77	0.26	0.67	1.04	0.39	0.49	0.26	0	0	0	
24 OXYGENS	6.07091	0.02543	4.06975	4.25706	0.31722	0.5649	0.56349	0	0	0	15.86878

ID = bi3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.65	1.67	19.48	17.66	0.06	10.03	0.08	0.03	9.49	0.02	95.17
+/-2 SIGMA	0.74	0.3	0.64	0.79	0.27	0.61	0.21	0.74	0.34	0.12	
24 OXYGENS	6.01852	0.2062	3.76933	2.4233	0.00832	2.45247	0.01395	0.01054	1.9864	0.00665	16.89573

ID = bi4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.5	1.35	18.53	17.58	0.12	10.15	0.16	0	9.07	0	92.47
+/-2 SIGMA	0.73	0.3	0.62	0.78	0.29	0.61	0.21	0	0.33	0	
24 OXYGENS	6.01465	0.17131	3.69935	2.48901	0.01776	2.56255	0.0297	0	1.95998	0	16.94435

ID = pl4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.97	0	24.72	0.07	0.11	0.15	6.6	7.72	0.1	0	100.45
+/-2 SIGMA	0.93	0	0.67	0.28	0.26	0.42	0.33	0.75	0.16	0	
32 OXYGENS	10.8018	0	5.16094	0.00983	0.01722	0.03972	1.25184	2.64902	0.02353	0	19.95398

ID = pl5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.36	0	25.19	0	0	0.29	6.35	7.52	0.1	0	99.81
+/-2 SIGMA	0.91	0	0.67	0	0	0.41	0.32	0.75	0.15	0	
32 OXYGENS	10.7412	0	5.28226	0	0	0.07632	1.2104	2.59238	0.02248	0	19.92508

ID = pl6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.54	0	24.9	0.32	0.05	0	6.38	7.3	0.06	0	99.56
+/-2 SIGMA	0.91	0	0.66	0.3	0.26	0	0.32	0.75	0.15	0	
32 OXYGENS	10.8021	0	5.23471	0.04788	0.00746	0	1.21929	2.52441	0.01342	0	19.84937

ID = gr24	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.73	0.09	21.69	30.73	2.94	2.26	3.27	0	0.09	0	99.79
+/-2 SIGMA	0.78	0.26	0.67	1.03	0.41	0.49	0.26	0	0.16	0	

24 OXYGENS	6.1545	0.0113	4.06175	4.08122	0.39592	0.53405	0.55592	0	0.01726	0	15.81195
ID = gr25	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.08	0.13	20.49	31.14	3.03	2.02	3.47	0	0.04	0.09	98.49
+/-2 SIGMA	0.76	0.26	0.66	1.03	0.41	0.5	0.26	0	0.16	0.13	
24 OXYGENS	6.17826	0.01567	3.91843	4.22383	0.41567	0.48711	0.60361	0	0.00846	0.02606	15.87714
ID = gr26	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.92	0.1	21.63	31.18	2.27	2.45	3.27	0.01	0	0	98.83
+/-2 SIGMA	0.78	0.27	0.68	1.05	0.39	0.5	0.26	0.27	0	0	
24 OXYGENS	6.09297	0.01192	4.09543	4.18744	0.3083	0.58725	0.56242	0.00322	0	0	15.84899
ID = gr27	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.11	0.01	20.79	31.76	2.58	1.94	3.86	0.19	0	0.02	99.25
+/-2 SIGMA	0.77	0.23	0.66	1.03	0.4	0.5	0.27	0.67	0	0.13	
24 OXYGENS	6.14185	0.00136	3.94826	4.2789	0.35162	0.46481	0.66591	0.05979	0	0.00644	15.91899
ID = gr28	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.26	0.13	21.27	31.19	2.77	1.8	3.63	0	0.05	0	99.1
+/-2 SIGMA	0.76	0.25	0.67	1.02	0.41	0.5	0.26	0	0.16	0	
24 OXYGENS	6.14851	0.01588	4.02748	4.1909	0.37712	0.43152	0.6254	0	0.01002	0	15.82687
ID = gr29	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.94	0	21.14	32.16	2.59	2.25	3.71	0	0	0.04	99.82
+/-2 SIGMA	0.76	0	0.66	1.04	0.4	0.49	0.26	0	0	0.13	
24 OXYGENS	6.08497	0	3.9946	4.31144	0.35161	0.53784	0.63723	0	0	0.01044	15.92817
ID = bi7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.1	1.28	19.94	16.66	0.16	10.44	0.2	0	9.39	0	94.19
+/-2 SIGMA	0.74	0.3	0.64	0.8	0.28	0.62	0.21	0	0.34	0	
24 OXYGENS	5.96742	0.15953	3.88432	2.30229	0.02302	2.56923	0.03511	0	1.97984	0	16.9208
ID = bi7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.59	1.58	20.65	17.57	0	10.06	0.24	0	9.5	0.07	95.26
+/-2 SIGMA	0.74	0.3	0.65	0.8	0	0.61	0.2	0	0.34	0.13	
24 OXYGENS	5.84872	0.1952	3.99941	2.41288	0	2.46259	0.04178	0	1.99154	0.01985	16.972
ID = bi8	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.59	1.58	20.65	17.57	0	10.06	0.24	0	9.5	0.07	95.26

+/-2 SIGMA	0.74	0.3	0.65	0.8	0	0.61	0.2	0	0.34	0.13	
24 OXYGENS	5.84872	0.1952	3.99941	2.41288	0	2.46259	0.04178	0	1.99154	0.01985	16.972
ID = pl7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.5	0.12	25.3	0.39	0	0.23	7.05	7.53	0.12	0	101.25
+/-2 SIGMA	0.91	0.24	0.66	0.28	0	0.42	0.32	0.74	0.15	0	
32 OXYGENS	10.6663	0.01643	5.25672	0.05806	0	0.05945	1.3313	2.57305	0.02779	0	19.98923
ID = pl8	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.51	0.01	24.74	0.17	0	0	6.88	7.89	0.04	0.1	100.34
+/-2 SIGMA	0.91	0.19	0.66	0.28	0	0	0.32	0.74	0.15	0.12	
32 OXYGENS	10.7609	0.00177	5.18343	0.026	0	0	1.30997	2.71741	0.0094	0.03025	20.03922
ID = pl9	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.98	0.01	25.33	0	0.14	0	6.66	8.08	0	0.06	101.26
+/-2 SIGMA	0.91	0.2	0.67	0	0.26	0	0.32	0.74	0.13	0.12	
32 OXYGENS	10.7317	0.00177	5.25324	0	0.02109	0	1.25447	2.75451	0.00071	0.01715	20.03467
ID = mu4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	46.53	0.39	36.24	0.98	0.24	1.07	0.13	1.51	10.3	0.08	97.47
+/-2 SIGMA	0.82	0.26	0.75	0.33	0.26	0.43	0.21	0.57	0.35	0.12	
24 OXYGENS	6.62793	0.04161	6.08258	0.11701	0.0286	0.2279	0.02023	0.41655	1.87	0.01979	15.45223
ID = mu5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	46.9	0.35	35.64	1.17	0.09	1.09	0.16	1.3	9.62	0	96.34
+/-2 SIGMA	0.83	0.25	0.74	0.34	0.26	0.43	0.2	0.56	0.34	0.1	
24 OXYGENS	6.71745	0.03808	6.01396	0.14006	0.01142	0.23285	0.02507	0.36041	1.7567	0.00081	15.29685
ID = mu6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	46.73	0.28	35.89	0.73	0.02	0.65	0	1.5	10.23	0.01	96.05
+/-2 SIGMA	0.82	0.25	0.74	0.31	0.27	0.43	0	0.55	0.35	0.1	
24 OXYGENS	6.71977	0.03067	6.0821	0.08795	0.00221	0.13915	0	0.41695	1.87625	0.00241	15.35751
ID = st1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	28.94	0.46	54.58	13.15	0.42	1.06	0	0.15	0.08	0	98.83
+/-2 SIGMA	0.72	0.26	0.91	0.7	0.28	0.51	0	0.6	0.15	0	
24 OXYGENS	4.12988	0.0493	9.17952	1.56842	0.05074	0.22601	0	0.04028	0.01397	0	15.25817
ID = st2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL

OXIDE	28.84	0.49	54.38	13.28	0.3	1.67	0.01	0	0	0.04	99.01
+/-2 SIGMA	0.72	0.27	0.91	0.73	0.28	0.52	0.15	0	0	0.12	
24 OXYGENS	4.11046	0.0522	9.13291	1.5823	0.03661	0.35482	0.00154	0	0	0.01023	15.28111

ID = st3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	29.5	0.43	53.59	13.44	0.07	1.28	0.02	0	0.06	0	98.39
+/-2 SIGMA	0.73	0.26	0.91	0.73	0.28	0.52	0.16	0	0.15	0	
24 OXYGENS	4.22365	0.04601	9.04158	1.60831	0.00811	0.27238	0.00382	0	0.01131	0	15.2152

ID = gr30	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.33	0	21.2	28.61	6.1	2.06	4.22	0.1	0.04	0.01	100.66
+/-2 SIGMA	0.76	0	0.66	0.99	0.5	0.48	0.27	0.67	0.16	0.11	
24 OXYGENS	6.0953	0	3.97256	3.80353	0.82109	0.4876	0.71928	0.0301	0.00794	0.00269	15.94014

ID = gr31	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.31	0.12	21.46	29.16	6.2	1.75	3.9	0.65	0.19	0.1	101.84
+/-2 SIGMA	0.76	0.26	0.66	0.99	0.5	0.48	0.27	0.66	0.15	0.13	
24 OXYGENS	6.05351	0.0139	3.99541	3.85151	0.8301	0.41222	0.65969	0.19961	0.03737	0.02712	16.0805

PROBE ANALYSES FOR SAMPLE MC135

ID = gr31	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.29	0	21.82	31.42	6.02	2.95	1.92	0	0.03	0.14	102.58
+/-2 SIGMA	1.06	0	0.92	1.43	0.69	0.68	0.31	0	0.23	0.18	
24 OXYGENS	6.00707	0	4.03365	4.12073	0.79974	0.68991	0.32229	0	0.00538	0.0359	16.01469

ID = grcore	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.16	0	21.8	30.45	5.91	2.62	1.86	0	0	0.06	100.85
+/-2 SIGMA	0.76	0	0.67	1.03	0.49	0.49	0.22	0	0	0.13	
24 OXYGENS	6.05791	0	4.07654	4.03978	0.79397	0.61946	0.31612	0	0	0.0153	15.91912

ID = grcore	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.88	0	21.54	31.23	5.37	2.48	1.97	0.51	0	0	101.98
+/-2 SIGMA	0.77	0	0.66	1.02	0.48	0.49	0.23	0.67	0	0	
24 OXYGENS	6.10739	0	3.9876	4.10095	0.71428	0.57992	0.33064	0.15598	0	0	15.9768

ID = grcore	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.91	0.02	21.46	30.91	5.85	2.56	1.86	0.46	0	0	102.04
+/-2 SIGMA	0.78	0.26	0.67	1.04	0.49	0.5	0.23	0.66	0	0	
24 OXYGENS	6.11022	0.00271	3.97092	4.05804	0.77785	0.59857	0.31313	0.14027	0	0	15.97173

ID = grcore	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.61	0	21.22	30.95	5.27	2.07	2.09	0	0.08	0.06	100.34
+/-2 SIGMA	0.77	0	0.66	1.03	0.48	0.5	0.23	0	0.16	0.14	
24 OXYGENS	6.16011	0	3.98869	4.12751	0.71231	0.49195	0.35672	0	0.01642	0.01668	15.87044

ID = grcore	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.41	0	21.82	29.62	5.63	2.31	2.17	0	0	0	99.95
+/-2 SIGMA	0.76	0	0.66	1.01	0.48	0.5	0.23	0	0	0	
24 OXYGENS	6.11774	0	4.09625	3.9437	0.75917	0.54762	0.36962	0	0	0	15.83413

ID = grmedian	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.05	0	21.57	30.33	5.54	2.33	1.86	0	0	0.01	99.69
+/-2 SIGMA	0.77	0	0.67	1.02	0.49	0.5	0.23	0	0	0.13	
24 OXYGENS	6.09832	0	4.07412	4.06361	0.75166	0.55707	0.31981	0	0	0.00355	15.86817

ID = grmedian	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.53	0	21.34	30.44	5.67	2.42	1.85	0	0.01	0.17	100.43
+/-2 SIGMA	0.77	0	0.67	1.01	0.49	0.51	0.23	0	0.15	0.13	
24 OXYGENS	6.13909	0	4.00624	4.05528	0.7655	0.57552	0.31491	0	0.00243	0.04582	15.90482

ID = grmedian	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.29	0	21.03	30.55	5.32	2.25	1.98	0	0	0.06	99.5
+/-2 SIGMA	0.77	0.22	0.66	1.03	0.49	0.5	0.23	0	0	0.13	
24 OXYGENS	6.15599	0.00004	3.98453	4.10612	0.72471	0.53896	0.34132	0	0	0.01767	15.86938

ID = grrim	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.73	0.08	21.54	31.26	5.33	2.16	2.03	0	0	0	100.12
+/-2 SIGMA	0.76	0.26	0.67	1.02	0.48	0.51	0.23	0	0	0	
24 OXYGENS	6.04937	0.00999	4.07022	4.18967	0.7236	0.51473	0.34791	0	0	0	15.90553

ID = grrim	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.84	0.04	21.75	30.93	4.95	2.37	2.15	0	0	0	101.04
+/-2 SIGMA	0.78	0.26	0.67	1.04	0.48	0.51	0.24	0	0	0	
24 OXYGENS	6.12976	0.00514	4.04514	4.08072	0.66151	0.55626	0.36395	0	0	0	15.84251

ID = grrim	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.89	0.07	21.4	30.73	5.22	1.94	2	0	0	0	99.25
+/-2 SIGMA	0.76	0.25	0.66	1.02	0.47	0.5	0.23	0.26	0	0	
24 OXYGENS	6.10965	0.0079	4.06528	4.14164	0.713	0.46578	0.34587	0.00129	0	0	15.85045

ID = grrim	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.86	0.04	21.54	32.01	4.86	2.37	2.02	0.23	0	0.09	102.03
+/-2 SIGMA	0.78	0.26	0.68	1.05	0.48	0.51	0.23	0.72	0	0.14	
24 OXYGENS	6.10965	0.00487	3.99112	4.20667	0.64701	0.55601	0.33982	0.06945	0	0.02515	15.9498

ID = grrim	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.79	0	21.96	31.77	4	1.95	2	0	0.03	0	100.5
+/-2 SIGMA	0.77	0	0.67	1.04	0.44	0.49	0.23	0	0.16	0.11	
24 OXYGENS	6.1486	0	4.10189	4.21069	0.53664	0.46019	0.33919	0	0.00646	0.00131	15.805

ID = mu	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.94	2.17	19.8	19.13	0.04	8.15	0.03	0.35	9.4	0.06	94.07
+/-2 SIGMA	0.73	0.32	0.65	0.84	0.28	0.6	0.21	0.72	0.34	0.13	
24 OXYGENS	5.87828	0.27402	3.92506	2.68987	0.00556	2.04337	0.00489	0.11259	2.01553	0.01783	16.96705

ID = mu	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	45.73	0.9	36.11	0.9	0	0.76	0.21	0.99	10.7	0	96.31
+/-2 SIGMA	0.82	0.26	0.75	0.32	0	0.44	0.2	0.56	0.36	0	
24 OXYGENS	6.58988	0.09749	6.13283	0.10829	0	0.1627	0.03309	0.27714	1.96664	0	15.3681

ID = mu	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	45.74	0.93	35.21	0.85	0.04	0.15	0.01	0.99	11.01	0.06	94.99

+/-2 SIGMA	0.83	0.28	0.75	0.32	0.26	0.45	0.18	0.57	0.36	0.12	
24 OXYGENS	6.69103	0.10254	6.06947	0.10372	0.00459	0.03215	0.00164	0.27917	2.05387	0.01445	15.35267
ID = bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.11	0.86	20.98	21.96	0.05	8.84	0.09	0	8.36	0.07	94.31
+/-2 SIGMA	0.71	0.28	0.66	0.88	0.27	0.61	0.2	0	0.32	0.13	
24 OXYGENS	5.61263	0.10973	4.19054	3.11119	0.00711	2.23108	0.01678	0	1.80654	0.01921	17.10485
ID = grrim	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.37	0.04	21.78	33.95	3.45	1.47	2.36	0	0.02	0.01	101.45
+/-2 SIGMA	0.78	0.26	0.69	1.11	0.43	0.52	0.24	0	0.16	0.11	
24 OXYGENS	6.08494	0.00507	4.07001	4.50076	0.46353	0.34657	0.40158	0	0.00493	0.00153	15.87897
ID = gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.32	0.03	20.45	32.64	5.08	0.95	2.02	0	0.01	0	98.5
+/-2 SIGMA	0.85	0.24	0.77	1.14	0.47	0.58	0.24	0	0.14	0	
24 OXYGENS	6.13491	0.00365	3.96104	4.4846	0.70707	0.23225	0.35641	0	0.0019	0	15.88186
ID = gr1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.14	0	20.4	32.53	5.23	1.62	2.17	0	0.02	0.03	99.13
+/-2 SIGMA	0.83	0	0.76	1.12	0.46	0.55	0.24	0	0.16	0.14	
24 OXYGENS	6.07636	0	3.93181	4.44792	0.72383	0.39525	0.38045	0	0.00417	0.00734	15.96717
ID = gr2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.72	0	21.29	33.45	5.12	2.04	2.13	0	0	0	101.75
+/-2 SIGMA	0.84	0	0.76	1.12	0.47	0.54	0.24	0	0	0	
24 OXYGENS	6.00718	0	3.9954	4.45372	0.69102	0.48367	0.36409	0	0	0	15.99511
ID = gr3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.35	0.11	20.71	32.91	5.18	1.89	2.19	0	0.07	0.07	100.5
+/-2 SIGMA	0.83	0.23	0.76	1.11	0.46	0.55	0.24	0	0.16	0.14	
24 OXYGENS	6.03327	0.01305	3.94133	4.44381	0.70856	0.45583	0.37943	0	0.01535	0.01862	16.00929
ID = gr5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.75	0.05	20.02	32.77	5.02	1.49	2	0	0	0.01	99.11
+/-2 SIGMA	0.84	0.23	0.75	1.12	0.46	0.55	0.24	0	0	0.11	
24 OXYGENS	6.16512	0.00568	3.85299	4.47269	0.69355	0.36326	0.34937	0	0	0.00205	15.90475
ID = gr6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.48	0	21.16	32.65	5.23	2.26	2	0	0.03	0	100.8
+/-2 SIGMA	0.85	0	0.76	1.14	0.48	0.56	0.24	0	0.16	0	
24 OXYGENS	6.01225	0	4.00043	4.37904	0.71029	0.53922	0.34362	0	0.00531	0	15.99019

ID = gr7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.87	0.17	20.67	33.3	5	1.78	2.12	0	0.21	0.02	101.14
+/-2 SIGMA	0.85	0.24	0.76	1.14	0.47	0.56	0.24	0	0.16	0.14	
24 OXYGENS	6.07335	0.02	3.90703	4.46445	0.67907	0.42405	0.36329	0	0.04371	0.00564	15.98062

ID = gr8	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.57	0.06	20.07	32.8	5.42	1.56	1.95	0	0.18	0.17	99.78
+/-2 SIGMA	0.83	0.23	0.75	1.12	0.47	0.55	0.23	0	0.16	0.14	
24 OXYGENS	6.12435	0.00692	3.85472	4.46847	0.74826	0.37994	0.33986	0	0.03763	0.0463	16.00648

ID = gr9	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.94	0.01	20.58	32.67	5.28	1.84	1.84	0.09	0.07	0	100.32
+/-2 SIGMA	0.84	0.21	0.75	1.11	0.47	0.55	0.23	0.85	0.15	0	
24 OXYGENS	6.1152	0.00127	3.90858	4.40204	0.72127	0.44241	0.3176	0.02728	0.01434	0	15.95004

ID = gr9	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.46	0.02	20.76	33.31	4.85	1.8	2.13	0	0.12	0	100.44
+/-2 SIGMA	0.83	0.23	0.75	1.11	0.46	0.55	0.24	0	0.16	0	
24 OXYGENS	6.04899	0.00264	3.95009	4.49543	0.66267	0.43254	0.36876	0	0.02432	0	15.98548

ID = gr10	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.72	0	21.53	33.84	5.15	2.21	2.14	0	0.04	0	102.63
+/-2 SIGMA	0.85	0	0.77	1.14	0.46	0.56	0.23	0	0.16	0.11	
24 OXYGENS	5.96587	0	4.01196	4.47399	0.69025	0.51952	0.36205	0	0.00894	0.00081	16.03343

ID = gr13	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.79	0	20.94	32.32	4.78	1.84	2.23	0.15	0	0	100.05
+/-2 SIGMA	0.84	0	0.75	1.12	0.47	0.55	0.24	0.91	0	0	
24 OXYGENS	6.08962	0	3.97594	4.35367	0.6521	0.44243	0.38529	0.04662	0	0	15.94571

ID = gr13	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.82	0	21.29	33.23	5.42	2.29	2.29	0	0	0.08	102.41
+/-2 SIGMA	0.86	0	0.77	1.15	0.47	0.55	0.24	0	0	0.14	
24 OXYGENS	5.99195	0	3.97376	4.40028	0.7267	0.54005	0.3884	0	0	0.02184	16.04301

ID = gr14	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.32	0	20.77	32.98	4.82	2.29	2.03	1.1	0	0.08	102.39
+/-2 SIGMA	0.84	0	0.75	1.12	0.46	0.55	0.24	0.84	0	0.14	
24 OXYGENS	6.06506	0	3.87257	4.36254	0.64574	0.54027	0.34377	0.33733	0	0.02042	16.18775

ID = gr14	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL

OXIDE	37.98	0	21.12	33.07	4.73	1.98	2.35	0	0	0	101.23
+/-2 SIGMA	0.85	0	0.76	1.14	0.47	0.56	0.24	0	0.14	0	
24 OXYGENS	6.061	0	3.9705	4.41075	0.63931	0.47069	0.40131	0	0.00033	0	15.95391
ID = gr15	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.98	0	21.27	32.46	5	1.61	2.24	0	0	0	100.56
+/-2 SIGMA	0.86	0	0.78	1.14	0.47	0.56	0.25	0	0	0	
24 OXYGENS	6.08802	0	4.01784	4.34972	0.67884	0.38489	0.38372	0	0	0	15.90306
ID = gr16	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.24	0	20.59	32.91	5.25	1.48	1.88	0	0.12	0.05	99.52
+/-2 SIGMA	0.83	0	0.75	1.12	0.47	0.55	0.24	0	0.16	0.14	
24 OXYGENS	6.07491	0	3.95852	4.48683	0.72493	0.36015	0.32774	0	0.02542	0.01271	15.97125
ID = gr17	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.88	0	20.28	32.98	4.95	1.07	2.02	0	0.12	0.05	98.36
+/-2 SIGMA	0.83	0	0.76	1.12	0.46	0.55	0.24	0	0.16	0.14	
24 OXYGENS	6.09555	0	3.95037	4.55632	0.69277	0.26348	0.35825	0	0.02496	0.01411	15.95585
ID = gr17	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.49	0	21.04	32.72	5.28	1.67	2.22	0	0.08	0.05	100.55
+/-2 SIGMA	0.85	0	0.76	1.13	0.47	0.54	0.24	0	0.16	0.14	
24 OXYGENS	6.04168	0	3.99655	4.40817	0.72072	0.40167	0.38271	0	0.01702	0.0123	15.98086
ID = gr18	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.6	0.09	20.85	34.06	4.42	1.59	2.05	0	0.13	0.03	100.81
+/-2 SIGMA	0.84	0.23	0.75	1.14	0.44	0.53	0.24	0	0.16	0.14	
24 OXYGENS	6.05459	0.01033	3.95687	4.58458	0.60315	0.38144	0.35266	0	0.02599	0.00715	15.97679
ID = gr18	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.95	0	21.02	34.4	4.09	1.29	2.2	0	0.1	0	101.04
+/-2 SIGMA	0.85	0	0.77	1.16	0.43	0.54	0.24	0	0.16	0	
24 OXYGENS	6.08802	0	3.97352	4.61371	0.55533	0.30738	0.37749	0	0.01946	0	15.93495
ID = AlO2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	40.43	0.1	32.33	0.04	0	0	0.06	0	0.13	0	73.08
+/-2 SIGMA	0.87	0.22	0.85	0.36	0	0	0.16	0	0.15	0	
24 OXYGENS	7.01488	0.01281	6.60909	0.00568	0	0	0.01135	0	0.02784	0	13.68168
ID = bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.09	1.3	18.42	24.41	0.08	5.76	0.12	0	7.68	0.08	90.94
+/-2 SIGMA	0.79	0.27	0.73	1.07	0.27	0.67	0.21	0	0.32	0.14	

24 OXYGENS	5.89284	0.17421	3.86518	3.63287	0.01245	1.52802	0.02252	0	1.74445	0.02375	16.89634
ID = bi2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.89	1.76	18.68	20.93	0	7.49	0	0	8.73	0.03	91.52
+/-2 SIGMA	0.8	0.28	0.74	0.91	0	0.65	0	0	0.33	0.14	
24 OXYGENS	5.90834	0.23119	3.83732	3.05008	0	1.94463	0	0	1.94046	0.0096	16.92164
ID = mu	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	43.56	0.9	33.84	0.96	0	0	0	0.71	9.49	0	89.46
+/-2 SIGMA	0.9	0.25	0.85	0.35	0	0	0	0.74	0.35	0	
24 OXYGENS	6.70963	0.10389	6.14109	0.12321	0	0	0	0.21155	1.86462	0	15.15401
ID = bi3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.13	2.01	18.54	20.81	0.01	6.7	0	0	8.67	0.05	91.91
+/-2 SIGMA	0.8	0.3	0.73	0.91	0.22	0.65	0	0	0.33	0.13	
24 OXYGENS	6.06777	0.26122	3.77237	3.00415	0.00162	1.72336	0	0	1.90857	0.01546	16.75457
ID = mu	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	46.34	0.84	34.61	0.63	0	0.39	0.19	0.88	9.49	0.08	93.45
+/-2 SIGMA	0.9	0.25	0.83	0.35	0	0.48	0.21	0.73	0.35	0.13	
24 OXYGENS	6.80883	0.09296	5.99275	0.07709	0	0.08613	0.03051	0.24918	1.77785	0.02092	15.13627

PROBE ANALYSES FOR SAMPLE MC137

ID = gr1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.6	0	21.33	34.37	3.94	2.33	1.33	0	0	0	100.9
+/-2 SIGMA	0.81	0	0.71	1.11	0.46	0.57	0.22	0	0	0	
24 OXYGENS	6.0216	0	4.02499	4.60059	0.53476	0.556	0.22793	0	0	0	15.96589

ID = gr2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.78	0.06	20.71	33.56	4.01	2.11	1.79	0	0	0	100.02
+/-2 SIGMA	0.82	0.25	0.72	1.12	0.46	0.57	0.23	0	0	0	
24 OXYGENS	6.0949	0.00714	3.93759	4.52624	0.54823	0.50594	0.30908	0	0	0	15.92915

ID = gr3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.67	0	20.93	34.03	3.69	2.8	2.18	0	0	0	101.31
+/-2 SIGMA	0.82	0	0.72	1.13	0.46	0.57	0.24	0	0	0	
24 OXYGENS	6.01029	0	3.93508	4.53931	0.49872	0.66547	0.37326	0	0	0	16.02216

ID = gr4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.12	0.07	20.33	32.96	3.33	2.13	2.29	0	0	0.04	98.27
+/-2 SIGMA	0.82	0.25	0.73	1.11	0.44	0.58	0.24	0	0	0.14	
24 OXYGENS	6.09082	0.00885	3.93009	4.52067	0.46206	0.52107	0.40168	0	0	0.01164	15.94692

ID = gr6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.72	0	21.31	35.19	3.81	2.16	1.27	0.19	0	0.02	102.66
+/-2 SIGMA	0.84	0	0.73	1.15	0.46	0.58	0.21	0.85	0	0.13	
24 OXYGENS	6.09368	0	3.95241	4.62904	0.50714	0.50525	0.21432	0.05651	0	0.00611	15.96448

ID = gr7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.88	0.25	21.14	34.03	3.64	2.6	2.2	0	0	0	102.75
+/-2 SIGMA	0.82	0.26	0.72	1.12	0.44	0.57	0.24	0	0	0	
24 OXYGENS	6.08813	0.02961	3.90015	4.45455	0.48273	0.6074	0.36955	0	0	0	15.93217

ID = gr8	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.22	0.07	20.95	37.1	3.06	1.39	1.42	0	0	0.02	101.22
+/-2 SIGMA	0.82	0.26	0.72	1.15	0.44	0.56	0.22	0	0	0.13	
24 OXYGENS	6.00493	0.00807	3.98229	5.00314	0.41815	0.33417	0.24506	0	0	0.00509	16.00093

ID = gr8	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.71	1.73	18.99	24.07	0.02	7.62	0.1	0.54	8.68	0.11	95.58
+/-2 SIGMA	0.77	0.31	0.7	1.01	0.3	0.67	0.21	0.9	0.34	0.13	
32 OXYGENS	7.63765	0.29534	5.07036	4.55724	0.00392	2.57167	0.02328	0.2383	2.50635	0.04353	22.94768

ID = bi1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.8	1.74	19.16	24.24	0	7.64	0.11	0.65	8.69	0.11	96.14
+/-2 SIGMA	0.75	0.3	0.68	0.98	0	0.65	0.21	0.88	0.33	0.13	
32 OXYGENS	7.61641	0.2946	5.08619	4.56561	0	2.56517	0.02638	0.28585	2.49711	0.04049	22.97787

ID = gr10	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.99	0.04	19.98	35.96	4.05	1.36	1.69	0	0	0.08	99.14
+/-2 SIGMA	0.8	0.24	0.73	1.21	0.45	0.6	0.23	0	0	0.13	
32 OXYGENS	7.96146	0.00628	5.20689	6.64795	0.75859	0.44689	0.40071	0	0	0.02914	21.45794

ID = gr12	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.5	0	19.84	35.35	4.1	2.1	2.52	0	0	0	99.41
+/-2 SIGMA	0.8	0	0.72	1.18	0.45	0.57	0.24	0	0	0	
32 OXYGENS	7.83969	0	5.16154	6.52544	0.76677	0.69049	0.59558	0	0	0	21.57953

ID = 2_gr1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.83	0.01	20.46	34.44	3.59	1.97	1.8	0	0.09	0	100.19
+/-2 SIGMA	0.81	0.22	0.72	1.11	0.44	0.57	0.23	0	0.16	0	
24 OXYGENS	6.1097	0.00168	3.89388	4.64956	0.49137	0.47406	0.3119	0	0.01897	0	15.95116

ID = bi2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.51	2.11	19.61	22.32	0.03	7.61	0	0	9.15	0.03	95.38
+/-2 SIGMA	0.76	0.32	0.69	0.96	0.29	0.66	0	0	0.34	0.13	
32 OXYGENS	7.738	0.35524	5.18236	4.18318	0.00642	2.54187	0	0	2.61694	0.01279	22.63684

ID = mus1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	44.66	0.63	35.77	0.93	0.02	0.67	0.2	0.92	10.09	0.13	94.03
+/-2 SIGMA	0.86	0.26	0.81	0.37	0.27	0.49	0.21	0.72	0.36	0.12	
32 OXYGENS	8.77604	0.09307	8.28422	0.15325	0.00409	0.19694	0.04164	0.35016	2.52879	0.04308	20.47133

ID = grrim	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.98	0	20.59	35.75	2.76	1.99	2.23	0	0.12	0.04	101.46
+/-2 SIGMA	0.81	0	0.71	1.13	0.41	0.55	0.24	0	0.16	0.13	
24 OXYGENS	6.07671	0	3.88211	4.7817	0.37323	0.47461	0.38154	0	0.02459	0.00984	16.00437

ID = mus2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	44.24	0.74	35.34	0.97	0	0.21	0.24	0.47	9.67	0.08	91.98
+/-2 SIGMA	0.85	0.26	0.8	0.36	0	0.49	0.21	0.7	0.35	0.12	
32 OXYGENS	8.84369	0.11128	8.32393	0.16288	0	0.06401	0.05207	0.18394	2.46638	0.02836	20.23658

ID = bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.02	1.62	18.88	24.56	0.11	7.63	0.22	0	8.94	0.03	96.02
+/-2 SIGMA	0.77	0.3	0.7	1	0.29	0.67	0.22	0	0.33	0.13	
32 OXYGENS	7.67894	0.27546	5.02128	4.63317	0.02102	2.56516	0.05271	0	2.57431	0.0127	22.8348

ID = mc137-pl	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.2	0	23.53	0	0.2	0	6.14	6.53	0.11	0.09	96.81
+/-2 SIGMA	0.97	0.19	0.7	0	0.26	0	0.31	0.86	0.15	0.12	
32 OXYGENS	10.9988	0.0003	5.06691	0	0.0303	0	1.20208	2.31249	0.02517	0.02818	19.66436

ID = mc137-pl	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL

OXIDE	58.65	0.13	24.16	0.5	0.24	0.09	5.37	7.84	0.64	0.04	97.66
+/-2 SIGMA	0.96	0.25	0.72	0.37	0.26	0.41	0.31	0.89	0.17	0.12	
32 OXYGENS	10.7428	0.01766	5.21484	0.0768	0.03775	0.02327	1.05303	2.78241	0.14918	0.01278	20.11064

ID = mc137-pl	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	59.47	0.08	23.61	0.32	0.3	0	6.42	7.37	0.14	0	97.71
+/-2 SIGMA	0.97	0.23	0.7	0.29	0.27	0	0.32	0.86	0.15	0	
32 OXYGENS	10.8486	0.01096	5.07461	0.04859	0.04691	0	1.2536	2.60652	0.03296	0	19.92282

ID = mc137-pl	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	59.07	0.22	24.88	0.36	0	0	6.35	7.22	0.12	0	98.21
+/-2 SIGMA	0.96	0.24	0.72	0.33	0	0	0.33	0.87	0.15	0	
32 OXYGENS	10.7033	0.02932	5.31113	0.05384	0	0	1.23305	2.53488	0.02729	0	19.89287

ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.77	0	20.57	30.12	5.24	1.39	3.63	0	0	0	97.73
+/-2 SIGMA	0.8	0	0.72	1.05	0.5	0.56	0.27	0	0	0	
24 OXYGENS	6.06609	0	3.99868	4.15344	0.73253	0.3416	0.6422	0	0	0	15.93456

ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.7	0.22	19.74	30.15	5.66	1.55	3.84	0	0	0	98.86
+/-2 SIGMA	0.81	0.25	0.71	1.06	0.51	0.56	0.27	0	0	0	
24 OXYGENS	6.15395	0.02639	3.79715	4.11375	0.78293	0.3762	0.67068	0	0	0	15.92108

ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.17	0.03	20.88	30.71	3.44	1.73	4.31	0	0	0	99.27
+/-2 SIGMA	0.81	0.25	0.71	1.07	0.44	0.55	0.29	0	0	0	
24 OXYGENS	6.14509	0.00347	3.96123	4.13319	0.46931	0.41473	0.74377	0	0	0	15.87082

ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.33	0.17	20.73	30.84	5.27	1.73	3.93	0	0.02	0.06	100.08

+/-2 SIGMA	0.81	0.26	0.72	1.06	0.5	0.56	0.28	0	0.16	0.13	
24 OXYGENS	6.02938	0.0212	3.94421	4.16391	0.72055	0.41722	0.67906	0	0.00349	0.01603	15.99509
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.27	0	20.75	29.88	4.79	1.89	3.56	0	0	0.01	98.16
+/-2 SIGMA	0.81	0	0.72	1.05	0.49	0.56	0.27	0	0	0.1	
24 OXYGENS	6.08956	0	3.99511	4.0806	0.66322	0.46074	0.62362	0	0	0.00203	15.91491
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.33	0.04	20.35	29.94	5.81	1.6	3.77	0.49	0	0	100.33
+/-2 SIGMA	0.81	0.25	0.7	1.05	0.52	0.56	0.27	0.8	0	0	
24 OXYGENS	6.15223	0.0053	3.848	4.01649	0.78984	0.3828	0.64797	0.15158	0	0	15.99425
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.01	0.12	20.82	30.82	4.54	2.34	3.6	0.22	0	0	100.47
+/-2 SIGMA	0.81	0.25	0.71	1.07	0.47	0.55	0.27	0.81	0	0	
24 OXYGENS	6.07461	0.0146	3.92103	4.11747	0.61487	0.55722	0.6158	0.06924	0	0	15.98488
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.57	0.22	20.69	31.21	4.14	1.58	3.64	0	0.17	0	99.22
+/-2 SIGMA	0.81	0.25	0.71	1.07	0.46	0.57	0.27	0	0.16	0	
24 OXYGENS	6.09268	0.02656	3.95349	4.22988	0.56846	0.38236	0.6328	0	0.03547	0	15.92173
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.44	0	20.24	32.41	3.4	1.85	3.48	0	0	0	98.81
+/-2 SIGMA	0.81	0	0.71	1.08	0.44	0.57	0.27	0	0	0	
24 OXYGENS	6.10805	0	3.89065	4.41988	0.46924	0.45005	0.60873	0	0	0	15.94662
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.27	0.07	19.96	32.61	2.2	1.77	3.38	0	0.16	0	97.41
+/-2 SIGMA	0.81	0.25	0.71	1.09	0.39	0.57	0.27	0	0.16	0	

24 OXYGENS	6.15135	0.00921	3.88244	4.49925	0.30752	0.43409	0.59763	0	0.03341	0	15.91492
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.41	0.07	20.77	33.88	1.23	2.58	2.98	0	0.05	0.03	99.01
+/-2 SIGMA	0.82	0.25	0.72	1.11	0.36	0.58	0.26	0	0.16	0.13	
24 OXYGENS	6.06396	0.00874	3.96669	4.59029	0.16847	0.62249	0.51789	0	0.01071	0.00884	15.95814
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.89	0.02	19.82	33.76	2.05	1.9	3.14	0	0	0	97.59
+/-2 SIGMA	0.81	0.25	0.72	1.1	0.39	0.59	0.26	0	0	0	
24 OXYGENS	6.10552	0.00281	3.86572	4.67107	0.28693	0.46966	0.55705	0	0	0	15.95879
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.79	0	20.42	31.94	3.07	2.32	3.04	0	0.02	0.08	98.67
+/-2 SIGMA	0.81	0	0.72	1.08	0.44	0.58	0.26	0	0.16	0.13	
24 OXYGENS	6.14078	0	3.91041	4.33853	0.42213	0.56071	0.5292	0	0.00444	0.02065	15.92689
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.47	0	20.26	32.96	2.52	1.83	2.81	0.28	0	0	98.14
+/-2 SIGMA	0.81	0	0.71	1.1	0.39	0.59	0.25	0.86	0	0	
24 OXYGENS	6.14099	0	3.91294	4.51497	0.34975	0.44619	0.49293	0.0895	0	0	15.94729
ID = mc137-pl	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	59.13	0.21	24.34	0.38	0	0	6.93	7.88	0	0.05	98.93
+/-2 SIGMA	0.96	0.25	0.71	0.35	0	0	0.33	0.89	0	0.12	
32 OXYGENS	10.6919	0.029	5.1853	0.05724	0	0	1.34228	2.76114	0	0.01514	20.08209
ID = mc137-pl	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	58.06	0.06	23.94	0.25	0.05	0	6.68	7.4	0.16	0	96.59
+/-2 SIGMA	0.96	0.25	0.72	0.35	0.27	0	0.34	0.9	0.15	0.09	
32 OXYGENS	10.7269	0.00824	5.21323	0.0392	0.00738	0	1.32112	2.64747	0.03676	0.00092	20.00128

ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.18	0.19	19.86	33.01	2.85	2.11	3.12	0	0.05	0	97.37
+/-2 SIGMA	0.8	0.25	0.71	1.09	0.42	0.58	0.26	0	0.16	0	
24 OXYGENS	6.0183	0.02402	3.89303	4.59092	0.402	0.52168	0.55569	0	0.01093	0	16.01662

ID = mc137-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	31.62	1.18	16.8	18.89	0.08	10.15	0.18	0	5.07	0.03	84
+/-2 SIGMA	0.74	0.28	0.68	0.9	0.29	0.74	0.2	0	0.27	0.12	
32 OXYGENS	7.83614	0.22056	4.90629	3.91274	0.01667	3.74897	0.048	0	1.60146	0.01321	22.30408

ID = mc137-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.3	1.46	17.01	20.14	0	11.38	0.27	0.42	6.63	0.13	90.74
+/-2 SIGMA	0.76	0.28	0.68	0.91	0	0.72	0.2	0.93	0.3	0.13	
32 OXYGENS	7.74622	0.25481	4.66299	3.91661	0	3.94229	0.06658	0.18986	1.96601	0.05145	22.79685

ID = mc137-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.02	1.83	16.85	17.9	0	9.44	0.11	0	7.89	0	87.04
+/-2 SIGMA	0.75	0.3	0.67	0.87	0	0.7	0.2	0	0.32	0	
32 OXYGENS	7.95912	0.33209	4.78655	3.60668	0	3.39076	0.02754	0	2.42547	0	22.52824

ID = mc137-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.88	1.47	17.13	16.71	0.09	10.12	0.08	0.74	8.33	0.03	88.58
+/-2 SIGMA	0.76	0.29	0.67	0.84	0.29	0.7	0.21	0.9	0.32	0.12	
32 OXYGENS	8.00311	0.26066	4.7671	3.29871	0.0177	3.56118	0.02117	0.33811	2.50794	0.012	22.78771

ID = mc137-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.14	1.4	17.68	17.27	0	9.92	0.16	0	8.49	0	90.07
+/-2 SIGMA	0.77	0.29	0.68	0.85	0	0.7	0.21	0	0.33	0	
32 OXYGENS	8.12172	0.24314	4.8163	3.33717	0	3.41701	0.03993	0	2.50337	0	22.47867

ID = mc137-st	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	25.92	0.47	52.17	14.79	0.15	0.78	0.04	0	0.02	0.02	94.37
+/-2 SIGMA	0.73	0.25	0.97	0.8	0.28	0.61	0.17	0	0.15	0.12	
32 OXYGENS	5.23334	0.07084	12.4138	2.4971	0.02623	0.23514	0.00931	0	0.00624	0.0068	20.49884

ID = mc137-st	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	27.01	0.53	52.93	14.52	0.17	1.57	0	0	0.05	0.09	96.86
+/-2 SIGMA	0.74	0.25	0.97	0.79	0.29	0.59	0	0	0.15	0.12	
32 OXYGENS	5.30204	0.07847	12.243	2.38203	0.02784	0.45862	0	0	0.01193	0.02945	20.5334

ID = mc137-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.3	1.63	17.49	17.31	0	10.96	0.15	0	7.66	0	89.5
+/-2 SIGMA	0.76	0.29	0.67	0.86	0.25	0.71	0.21	0	0.32	0	
32 OXYGENS	7.96527	0.28441	4.78522	3.36051	0.00038	3.79143	0.03647	0	2.26794	0	22.49167

ID = mc137-m	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	42.34	0.44	34.35	1.04	0	0.24	0.01	0.42	8.99	0.06	87.89
+/-2 SIGMA	0.83	0.24	0.8	0.35	0	0.5	0.18	0.7	0.33	0.12	
32 OXYGENS	8.83043	0.0691	8.4415	0.18048	0	0.07443	0.0026	0.17106	2.3912	0.02259	20.18344
ID = mc137-pl	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.2	0	23.53	0	0.2	0	6.14	6.53	0.11	0.09	96.81
+/-2 SIGMA	0.97	0.19	0.7	0	0.26	0	0.31	0.86	0.15	0.12	
32 OXYGENS	10.9988	0.0003	5.06691	0	0.0303	0	1.20208	2.31249	0.02517	0.02818	19.66436

ID = mc137-pl	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	58.65	0.13	24.16	0.5	0.24	0.09	5.37	7.84	0.64	0.04	97.66
+/-2 SIGMA	0.96	0.25	0.72	0.37	0.26	0.41	0.31	0.89	0.17	0.12	
32 OXYGENS	10.7428	0.01766	5.21484	0.0768	0.03775	0.02327	1.05303	2.78241	0.14918	0.01278	20.11064

ID = mc137-pl	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	59.47	0.08	23.61	0.32	0.3	0	6.42	7.37	0.14	0	97.71

+/-2 SIGMA	0.97	0.23	0.7	0.29	0.27	0	0.32	0.86	0.15	0	
32 OXYGENS	10.8486	0.01096	5.07461	0.04859	0.04691	0	1.2536	2.60652	0.03296	0	19.92282
ID = mc137-pl	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	59.07	0.22	24.88	0.36	0	0	6.35	7.22	0.12	0	98.21
+/-2 SIGMA	0.96	0.24	0.72	0.33	0	0	0.33	0.87	0.15	0	
32 OXYGENS	10.7033	0.02932	5.31113	0.05384	0	0	1.23305	2.53488	0.02729	0	19.89287
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.77	0	20.57	30.12	5.24	1.39	3.63	0	0	0	97.73
+/-2 SIGMA	0.8	0	0.72	1.05	0.5	0.56	0.27	0	0	0	
24 OXYGENS	6.06609	0	3.99868	4.15344	0.73253	0.3416	0.6422	0	0	0	15.93456
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.7	0.22	19.74	30.15	5.66	1.55	3.84	0	0	0	98.86
+/-2 SIGMA	0.81	0.25	0.71	1.06	0.51	0.56	0.27	0	0	0	
24 OXYGENS	6.15395	0.02639	3.79715	4.11375	0.78293	0.3762	0.67068	0	0	0	15.92108
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.17	0.03	20.88	30.71	3.44	1.73	4.31	0	0	0	99.27
+/-2 SIGMA	0.81	0.25	0.71	1.07	0.44	0.55	0.29	0	0	0	
24 OXYGENS	6.14509	0.00347	3.96123	4.13319	0.46931	0.41473	0.74377	0	0	0	15.87082
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.33	0.17	20.73	30.84	5.27	1.73	3.93	0	0.02	0.06	100.08
+/-2 SIGMA	0.81	0.26	0.72	1.06	0.5	0.56	0.28	0	0.16	0.13	
24 OXYGENS	6.02938	0.0212	3.94421	4.16391	0.72055	0.41722	0.67906	0	0.00349	0.01603	15.99509
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.27	0	20.75	29.88	4.79	1.89	3.56	0	0	0.01	98.16
+/-2 SIGMA	0.81	0	0.72	1.05	0.49	0.56	0.27	0	0	0.1	

24 OXYGENS	6.08956	0	3.99511	4.0806	0.66322	0.46074	0.62362	0	0	0.00203	15.91491
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.33	0.04	20.35	29.94	5.81	1.6	3.77	0.49	0	0	100.33
+/-2 SIGMA	0.81	0.25	0.7	1.05	0.52	0.56	0.27	0.8	0	0	
24 OXYGENS	6.15223	0.0053	3.848	4.01649	0.78984	0.3828	0.64797	0.15158	0	0	15.99425
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.01	0.12	20.82	30.82	4.54	2.34	3.6	0.22	0	0	100.47
+/-2 SIGMA	0.81	0.25	0.71	1.07	0.47	0.55	0.27	0.81	0	0	
24 OXYGENS	6.07461	0.0146	3.92103	4.11747	0.61487	0.55722	0.6158	0.06924	0	0	15.98488
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.57	0.22	20.69	31.21	4.14	1.58	3.64	0	0.17	0	99.22
+/-2 SIGMA	0.81	0.25	0.71	1.07	0.46	0.57	0.27	0	0.16	0	
24 OXYGENS	6.09268	0.02656	3.95349	4.22988	0.56846	0.38236	0.6328	0	0.03547	0	15.92173
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.44	0	20.24	32.41	3.4	1.85	3.48	0	0	0	98.81
+/-2 SIGMA	0.81	0	0.71	1.08	0.44	0.57	0.27	0	0	0	
24 OXYGENS	6.10805	0	3.89065	4.41988	0.46924	0.45005	0.60873	0	0	0	15.94662
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.27	0.07	19.96	32.61	2.2	1.77	3.38	0	0.16	0	97.41
+/-2 SIGMA	0.81	0.25	0.71	1.09	0.39	0.57	0.27	0	0.16	0	
24 OXYGENS	6.15135	0.00921	3.88244	4.49925	0.30752	0.43409	0.59763	0	0.03341	0	15.91492
ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.41	0.07	20.77	33.88	1.23	2.58	2.98	0	0.05	0.03	99.01
+/-2 SIGMA	0.82	0.25	0.72	1.11	0.36	0.58	0.26	0	0.16	0.13	
24 OXYGENS	6.06396	0.00874	3.96669	4.59029	0.16847	0.62249	0.51789	0	0.01071	0.00884	15.95814

ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.89	0.02	19.82	33.76	2.05	1.9	3.14	0	0	0	97.59
+/-2 SIGMA	0.81	0.25	0.72	1.1	0.39	0.59	0.26	0	0	0	
24 OXYGENS	6.10552	0.00281	3.86572	4.67107	0.28693	0.46966	0.55705	0	0	0	15.95879

ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.79	0	20.42	31.94	3.07	2.32	3.04	0	0.02	0.08	98.67
+/-2 SIGMA	0.81	0	0.72	1.08	0.44	0.58	0.26	0	0.16	0.13	
24 OXYGENS	6.14078	0	3.91041	4.33853	0.42213	0.56071	0.5292	0	0.00444	0.02065	15.92689

ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.47	0	20.26	32.96	2.52	1.83	2.81	0.28	0	0	98.14
+/-2 SIGMA	0.81	0	0.71	1.1	0.39	0.59	0.25	0.86	0	0	
24 OXYGENS	6.14099	0	3.91294	4.51497	0.34975	0.44619	0.49293	0.0895	0	0	15.94729

ID = mc137-pl	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	59.13	0.21	24.34	0.38	0	0	6.93	7.88	0	0.05	98.93
+/-2 SIGMA	0.96	0.25	0.71	0.35	0	0	0.33	0.89	0	0.12	
32 OXYGENS	10.6919	0.029	5.1853	0.05724	0	0	1.34228	2.76114	0	0.01514	20.08209

ID = mc137-pl	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	58.06	0.06	23.94	0.25	0.05	0	6.68	7.4	0.16	0	96.59
+/-2 SIGMA	0.96	0.25	0.72	0.35	0.27	0	0.34	0.9	0.15	0.09	
32 OXYGENS	10.7269	0.00824	5.21323	0.0392	0.00738	0	1.32112	2.64747	0.03676	0.00092	20.00128

ID = mc137-gr	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.18	0.19	19.86	33.01	2.85	2.11	3.12	0	0.05	0	97.37
+/-2 SIGMA	0.8	0.25	0.71	1.09	0.42	0.58	0.26	0	0.16	0	
24 OXYGENS	6.0183	0.02402	3.89303	4.59092	0.402	0.52168	0.55569	0	0.01093	0	16.01662

ID = mc137-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	31.62	1.18	16.8	18.89	0.08	10.15	0.18	0	5.07	0.03	84
+/-2 SIGMA	0.74	0.28	0.68	0.9	0.29	0.74	0.2	0	0.27	0.12	
32 OXYGENS	7.83614	0.22056	4.90629	3.91274	0.01667	3.74897	0.048	0	1.60146	0.01321	22.30408

ID = mc137-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.3	1.46	17.01	20.14	0	11.38	0.27	0.42	6.63	0.13	90.74
+/-2 SIGMA	0.76	0.28	0.68	0.91	0	0.72	0.2	0.93	0.3	0.13	
32 OXYGENS	7.74622	0.25481	4.66299	3.91661	0	3.94229	0.06658	0.18986	1.96601	0.05145	22.79685

ID = mc137-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.02	1.83	16.85	17.9	0	9.44	0.11	0	7.89	0	87.04
+/-2 SIGMA	0.75	0.3	0.67	0.87	0	0.7	0.2	0	0.32	0	
32 OXYGENS	7.95912	0.33209	4.78655	3.60668	0	3.39076	0.02754	0	2.42547	0	22.52824

ID = mc137-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.88	1.47	17.13	16.71	0.09	10.12	0.08	0.74	8.33	0.03	88.58
+/-2 SIGMA	0.76	0.29	0.67	0.84	0.29	0.7	0.21	0.9	0.32	0.12	
32 OXYGENS	8.00311	0.26066	4.7671	3.29871	0.0177	3.56118	0.02117	0.33811	2.50794	0.012	22.78771

ID = mc137-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.14	1.4	17.68	17.27	0	9.92	0.16	0	8.49	0	90.07
+/-2 SIGMA	0.77	0.29	0.68	0.85	0	0.7	0.21	0	0.33	0	
32 OXYGENS	8.12172	0.24314	4.8163	3.33717	0	3.41701	0.03993	0	2.50337	0	22.47867

ID = mc137-st	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	25.92	0.47	52.17	14.79	0.15	0.78	0.04	0	0.02	0.02	94.37
+/-2 SIGMA	0.73	0.25	0.97	0.8	0.28	0.61	0.17	0	0.15	0.12	
32 OXYGENS	5.23334	0.07084	12.4138	2.4971	0.02623	0.23514	0.00931	0	0.00624	0.0068	20.49884

ID = mc137-st	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL

OXIDE	27.01	0.53	52.93	14.52	0.17	1.57	0	0	0.05	0.09	96.86
+/-2 SIGMA	0.74	0.25	0.97	0.79	0.29	0.59	0	0	0.15	0.12	
32 OXYGENS	5.30204	0.07847	12.243	2.38203	0.02784	0.45862	0	0	0.01193	0.02945	20.5334

ID = mc137-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.3	1.63	17.49	17.31	0	10.96	0.15	0	7.66	0	89.5
+/-2 SIGMA	0.76	0.29	0.67	0.86	0.25	0.71	0.21	0	0.32	0	
32 OXYGENS	7.96527	0.28441	4.78522	3.36051	0.00038	3.79143	0.03647	0	2.26794	0	22.49167

ID = mc137-m	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	42.34	0.44	34.35	1.04	0	0.24	0.01	0.42	8.99	0.06	87.89
+/-2 SIGMA	0.83	0.24	0.8	0.35	0	0.5	0.18	0.7	0.33	0.12	
32 OXYGENS	8.83043	0.0691	8.4415	0.18048	0	0.07443	0.0026	0.17106	2.3912	0.02259	20.18344

PROBE ANALYSES FOR SAMPLE MC152

ID = mc152-gr11	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.63	0	21.01	33.98	5.3	2.71	1.61	0.1	0.05	0.08	102.48
+/-2 SIGMA	0.78	0	0.68	1.12	0.49	0.51	0.22	0.7	0.16	0.13	
24 OXYGENS	5.97314	0	3.93107	4.50952	0.7128	0.64143	0.27292	0.03141	0.0094	0.02241	16.10415

ID = mc152-gr12	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.07	0.18	21.19	33.51	5.15	2.2	1.46	0	0.12	0.03	100.89
+/-2 SIGMA	0.77	0.27	0.68	1.11	0.5	0.51	0.22	0	0.16	0.13	
24 OXYGENS	5.96482	0.02165	4.01862	4.50774	0.70181	0.52618	0.25149	0	0.02376	0.00721	16.02331

ID = mc152-gr12	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.76	0	21.88	34.07	5.09	2.79	1.69	0.89	0.07	0	104.25
+/-2 SIGMA	0.78	0	0.69	1.12	0.5	0.5	0.23	0.69	0.16	0	
24 OXYGENS	5.89003	0	4.02161	4.44229	0.67258	0.64931	0.28208	0.26888	0.01358	0	16.24039

ID = mc152-gr13	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.25	0	21.26	34	5.51	2.64	1.62	0.04	0.06	0	102.38
+/-2 SIGMA	0.78	0	0.69	1.12	0.5	0.51	0.22	0.73	0.16	0	
24 OXYGENS	5.92461	0	3.98342	4.52003	0.74194	0.62583	0.27585	0.01222	0.01166	0	16.09561

ID = mc152-gr14	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.41	0.14	20.68	32.7	5.32	2.29	2.74	0.14	0	0.02	101.45
+/-2 SIGMA	0.78	0.26	0.69	1.1	0.49	0.5	0.25	0.7	0	0.13	
24 OXYGENS	5.9892	0.01708	3.90169	4.37586	0.72138	0.54498	0.47054	0.04416	0	0.00555	16.07049

ID = mc152-gr15	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.7	0	21.35	33.24	5.65	1.93	2.55	0	0.12	0.09	103.64
+/-2 SIGMA	0.78	0	0.68	1.11	0.5	0.5	0.24	0	0.16	0.14	
24 OXYGENS	6.05453	0	3.9367	4.34769	0.74906	0.44993	0.42736	0	0.02366	0.02267	16.01162

ID = mc152-gr16	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.52	0.05	21.2	32.84	5.09	2.42	2.57	0.08	0.04	0.13	101.94
+/-2 SIGMA	0.78	0.27	0.69	1.11	0.5	0.51	0.24	0.71	0.16	0.13	
24 OXYGENS	5.97101	0.00595	3.97572	4.36915	0.68636	0.57387	0.43725	0.02366	0.00801	0.03522	16.08624

ID = mc152-gr17	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.78	0	21.25	31.87	4.94	2.75	2.61	0	0.05	0.02	101.26
+/-2 SIGMA	0.78	0	0.68	1.11	0.49	0.49	0.25	0	0.16	0.13	

24 OXYGENS	6.01	0	3.984	4.23764	0.66495	0.65111	0.4452	0	0.01011	0.00424	16.0073
ID = mc152-gr18	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.31	0	20.86	34.28	5.72	2.47	1.75	0	0	0	103.38
+/-2 SIGMA	0.78	0	0.68	1.12	0.5	0.52	0.23	0	0	0	
24 OXYGENS	6.02797	0	3.86699	4.50867	0.76151	0.57799	0.29538	0	0	0	16.03853
ID = mc152-gr20	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.16	0	21.09	33.35	5.42	2.63	1.28	0	0	0.05	100.98
+/-2 SIGMA	0.78	0	0.68	1.13	0.5	0.51	0.22	0	0	0.13	
24 OXYGENS	5.97126	0	3.99427	4.47974	0.73795	0.62857	0.21979	0	0	0.01392	16.04552
ID = mc152-gr21	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.36	0	21.04	35.53	6.03	1.65	1.21	0	0.06	0	102.87
+/-2 SIGMA	0.77	0	0.69	1.14	0.51	0.51	0.21	0	0.16	0	
24 OXYGENS	5.95803	0	3.95414	4.7354	0.81367	0.39211	0.20579	0	0.01145	0	16.07063
ID = mc152-gr22	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.35	0	21.63	34.5	5.48	1.66	1.61	0	0.04	0	102.27
+/-2 SIGMA	0.78	0	0.69	1.13	0.51	0.5	0.22	0	0.16	0	
24 OXYGENS	5.95035	0	4.06128	4.59478	0.73889	0.39375	0.27539	0	0.00909	0	16.02356
ID = mc152-plg1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	62.39	0	23.95	0.07	0.2	0.44	5.32	8.53	0.04	0	100.95
+/-2 SIGMA	0.96	0	0.66	0.34	0.28	0.41	0.31	0.78	0.15	0	
32 OXYGENS	10.9707	0	4.96262	0.01068	0.0304	0.11465	1.00187	2.90457	0.00925	0	20.00484
ID = mc152-plg2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	66.64	0.1	20.93	0.01	0	0.21	2.1	9.82	0.13	0	99.94
+/-2 SIGMA	0.98	0.25	0.64	0.28	0	0.41	0.23	0.8	0.15	0	
32 OXYGENS	11.6787	0.01378	4.32262	0.00153	0	0.05377	0.39327	3.33524	0.02962	0	19.8286
ID = mc152-plg3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	62.81	0	23.21	0.2	0	0.19	5.25	8.58	0.09	0.04	100.37
+/-2 SIGMA	0.96	0	0.66	0.34	0	0.41	0.31	0.78	0.15	0.12	
32 OXYGENS	11.0988	0	4.83306	0.02888	0	0.05017	0.99358	2.939	0.02114	0.01067	19.97538
ID = mc152-plg4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	63.41	0.06	23.78	0.14	0.21	0.71	5.48	7.57	0.16	0	101.51
+/-2 SIGMA	0.98	0.25	0.67	0.35	0.27	0.41	0.31	0.78	0.15	0	
32 OXYGENS	11.0521	0.00806	4.88387	0.01978	0.0317	0.18441	1.02231	2.555	0.03626	0	19.79352

ID = mc152-plg5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	62.79	0	23.53	0.4	0	0.45	5.8	7.9	0.1	0.01	100.98
+/-2 SIGMA	0.96	0	0.66	0.34	0	0.41	0.31	0.78	0.15	0.09	
32 OXYGENS	11.034	0	4.87206	0.05948	0	0.11723	1.09157	2.68916	0.02202	0.00219	19.88774

ID = mc152-bi1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.47	1.82	19.3	22.48	0.22	8.91	0.15	0	8.93	0.05	97.32
+/-2 SIGMA	0.75	0.33	0.66	1	0.3	0.61	0.21	0	0.33	0.13	
32 OXYGENS	7.78028	0.29938	4.98938	4.12154	0.0413	2.91085	0.03453	0	2.49671	0.01943	22.69343

ID = mc152-bi2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.29	1.87	18.55	22.6	0	9.3	0.14	0	6	0	92.76
+/-2 SIGMA	0.74	0.32	0.65	0.99	0	0.63	0.2	0	0.28	0	
32 OXYGENS	7.78675	0.3198	4.96365	4.29071	0	3.14769	0.03452	0	1.73695	0	22.28009

ID = mc152-bi3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.03	1.52	18.43	21.69	0.14	9.02	0.19	0	7.98	0.08	93.07
+/-2 SIGMA	0.74	0.31	0.64	0.99	0.29	0.61	0.21	0	0.32	0.13	
32 OXYGENS	7.7846	0.26055	4.96775	4.14723	0.02622	3.07326	0.04735	0	2.32795	0.0321	22.66705

ID = mc152-bi4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.82	1.95	17.94	22.11	0.23	10.75	0.27	0	5.59	0.06	92.71
+/-2 SIGMA	0.75	0.32	0.66	1.01	0.28	0.65	0.2	0	0.28	0.13	
32 OXYGENS	7.68465	0.33385	4.80437	4.19985	0.04348	3.63807	0.06574	0	1.61854	0.02413	22.41272

ID = mc152-plg6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	61.72	0	23.23	0	0	0.19	5.39	8.35	0.17	0	99.05
+/-2 SIGMA	0.96	0	0.66	0	0	0.42	0.3	0.79	0.15	0	
32 OXYGENS	11.0488	0	4.9001	0	0	0.05007	1.03414	2.89665	0.03906	0	19.96892

ID = mc152-bi5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.36	2.07	19.91	22.98	0	9.24	0.38	0	8.93	0.01	98.88
+/-2 SIGMA	0.75	0.34	0.66	1.01	0	0.6	0.21	0	0.33	0.1	
32 OXYGENS	7.64112	0.33625	5.06856	4.15098	0	2.97294	0.08843	0	2.46007	0.00331	22.72169

ID = mc152-bi6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.05	1.74	18.47	22.36	0.32	9.13	0.23	0.25	7.36	0	93.91
+/-2 SIGMA	0.74	0.33	0.65	1	0.3	0.62	0.21	0.78	0.31	0	
32 OXYGENS	7.72199	0.29698	4.93496	4.23953	0.06119	3.08329	0.05657	0.10904	2.12898	0	22.63256

ID = mc152-bi7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.3	1.63	19.95	21.74	0.04	8.84	0.26	0	9.26	0.1	96.11
+/-2 SIGMA	0.75	0.32	0.67	0.99	0.29	0.6	0.21	0	0.34	0.13	
32 OXYGENS	7.62999	0.27303	5.22856	4.0423	0.00711	2.92787	0.06079	0	2.62602	0.03768	22.83339

ID = mc152-plg7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	61.76	0.23	23.26	0.03	0	0.39	5.19	9.18	0.1	0	100.15
+/-2 SIGMA	0.96	0.26	0.67	0.32	0	0.42	0.3	0.78	0.15	0	
32 OXYGENS	10.9726	0.03104	4.87026	0.00509	0	0.10295	0.98828	3.15896	0.02278	0	20.15204

ID = mc152-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.21	1.87	18.75	21.99	0	8.11	0.25	0	8.66	0.03	93.87
+/-2 SIGMA	0.75	0.32	0.66	1	0	0.62	0.21	0	0.33	0.13	
32 OXYGENS	7.78454	0.31967	5.02853	4.18206	0	2.74939	0.06023	0	2.51413	0.01222	22.65081

ID = mc152-plg	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	61.48	0.01	22.99	0	0	0.12	5.62	8.21	0	0.15	98.57
+/-2 SIGMA	0.96	0.2	0.67	0	0.22	0.41	0.31	0.79	0.13	0.12	
32 OXYGENS	11.0684	0.00071	4.87653	0	0.00004	0.0315	1.08268	2.86409	0.00106	0.04473	19.96985

ID = mc152-gr23	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.62	0	21.15	32.03	5.94	2.45	2.46	0	0	0	100.65
+/-2 SIGMA	0.78	0	0.69	1.1	0.5	0.52	0.25	0	0	0	
24 OXYGENS	5.9102	0	4.02243	4.32031	0.81132	0.58935	0.42493	0	0	0	16.07858

ID = mc152-gr24	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.95	0	21.7	33.13	5.53	2.87	1.76	0	0.11	0	102.05
+/-2 SIGMA	0.78	0	0.69	1.12	0.5	0.5	0.23	0.27	0.16	0.11	
24 OXYGENS	5.87865	0	4.06769	4.40524	0.74485	0.67948	0.30046	0.00033	0.02187	0.00069	16.0993

ID = mc152-gr25	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.1	0	20.74	33.47	5.32	2.26	1.62	0	0	0.03	100.53
+/-2 SIGMA	0.78	0	0.69	1.13	0.5	0.52	0.22	0	0	0.13	
24 OXYGENS	5.99868	0	3.95091	4.5234	0.72794	0.54437	0.28053	0	0	0.00725	16.03312

ID = mc152-gr26	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.23	0	20.38	32.3	4.8	1.88	2.42	0	0	0.03	98.03
+/-2 SIGMA	0.77	0	0.68	1.11	0.49	0.52	0.24	0	0	0.13	
24 OXYGENS	5.99887	0	3.97681	4.47046	0.67255	0.46412	0.42987	0	0	0.00713	16.01985

ID = mc152-gr27	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL

OXIDE	36.06	0	20.69	32.51	4.79	1.93	2.94	0	0.01	0.11	99.04
+/-2 SIGMA	0.78	0	0.69	1.11	0.49	0.51	0.25	0	0.16	0.13	
24 OXYGENS	5.92958	0	4.00828	4.46881	0.66739	0.4737	0.51693	0	0.00309	0.03032	16.09814
ID = mc152-gr28	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.08	0.25	19.82	33.42	5.04	1.84	2.21	0	0.2	0	98.87
+/-2 SIGMA	0.77	0.27	0.68	1.13	0.49	0.51	0.24	0	0.16	0	
24 OXYGENS	5.97192	0.03158	3.86418	4.62365	0.70671	0.45456	0.39086	0	0.0418	0	16.0853
ID = mc152-gr29	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.07	0.01	20.22	33.19	4.87	1.94	1.36	0	0.11	0.02	97.8
+/-2 SIGMA	0.78	0.24	0.69	1.13	0.49	0.51	0.22	0	0.16	0.13	
24 OXYGENS	6.00466	0.00104	3.96635	4.61823	0.68592	0.48024	0.2427	0	0.02387	0.00665	16.02971
ID = mc152-gr30	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.51	0	19.72	33.74	4.78	1.69	2.08	0	0	0.06	97.58
+/-2 SIGMA	0.77	0	0.69	1.13	0.49	0.51	0.23	0	0	0.13	
24 OXYGENS	5.96471	0	3.90293	4.73773	0.68044	0.42395	0.37403	0	0	0.01625	16.10008
ID = mc152-gr31	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.43	0.19	21.19	33.63	5.29	2.28	1.66	0.23	0	0	101.91
+/-2 SIGMA	0.78	0.27	0.69	1.12	0.5	0.51	0.23	0.71	0	0	
24 OXYGENS	5.96554	0.02228	3.97967	4.48003	0.7144	0.54116	0.28359	0.07127	0	0	16.05797
ID = mc152-gr32	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.47	0.1	20.4	32.99	5.07	2.4	1.62	0.66	0.04	0	99.75
+/-2 SIGMA	0.77	0.26	0.68	1.12	0.49	0.51	0.22	0.72	0.16	0	
24 OXYGENS	5.95468	0.01239	3.92411	4.50207	0.70137	0.58474	0.28296	0.20971	0.00733	0	16.17939
ID = mc152-gr33	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.98	0	20.61	33.86	5.3	2.39	1.65	0	0	0	100.78
+/-2 SIGMA	0.77	0	0.68	1.13	0.49	0.51	0.22	0	0	0	
24 OXYGENS	5.97681	0	3.92412	4.57368	0.72534	0.5751	0.28606	0	0	0	16.06113
ID = mc152-gr34	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.84	0	20.24	32.86	5.44	2.6	2.1	0.32	0	0	100.4
+/-2 SIGMA	0.77	0	0.67	1.11	0.49	0.5	0.24	0.7	0	0	
24 OXYGENS	5.97607	0	3.86879	4.45587	0.7472	0.62745	0.36419	0.09983	0	0	16.13944
ID = mc152-gr35	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.87	0	20.94	34.07	4.99	1.99	1.77	0	0.05	0.06	100.74

+/-2 SIGMA	0.78	0	0.69	1.13	0.49	0.51	0.23	0	0.16	0.13	
24 OXYGENS	5.96438	0	3.99164	4.60767	0.68318	0.48056	0.30733	0	0.00999	0.01756	16.06236
ID = mc152-gr36	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.64	0	20.58	34.71	5.41	1.66	1.71	0.9	0	0.06	101.67
+/-2 SIGMA	0.77	0	0.68	1.14	0.5	0.51	0.23	0.7	0	0.13	
24 OXYGENS	5.92448	0	3.92125	4.69069	0.74035	0.40082	0.29685	0.28088	0	0.01556	16.2709
ID = mc152-st	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	27.8	0.48	52.87	16.53	0.21	1.9	0.14	0.26	0.03	0	100.22
+/-2 SIGMA	0.73	0.27	0.94	0.86	0.29	0.52	0.17	0.62	0.15	0	
32 OXYGENS	5.32657	0.06939	11.9354	2.64726	0.03355	0.54362	0.02787	0.09796	0.00708	0	20.68882
ID = mc152-st	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	27.48	0.47	52.78	16.06	0.19	1.39	0.11	0.21	0	0	98.69
+/-2 SIGMA	0.72	0.27	0.93	0.86	0.3	0.52	0.16	0.63	0	0	
32 OXYGENS	5.33134	0.06913	12.067	2.60425	0.031	0.40048	0.02252	0.08037	0	0	20.60618
ID = mc152-st	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	28.4	0.9	53.71	15.91	0.33	1.64	0	0	0.03	0	100.94
+/-2 SIGMA	0.72	0.26	0.93	0.86	0.3	0.52	0	0	0.15	0.1	
32 OXYGENS	5.37358	0.12867	11.9732	2.51602	0.05281	0.46329	0	0	0.00692	0.00133	20.51591
ID = mc152-mu1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	45.21	0.58	35.27	0.91	0.12	0.68	0	0.76	9.45	0	92.97
+/-2 SIGMA	0.84	0.28	0.77	0.38	0.27	0.44	0	0.6	0.35	0.1	
32 OXYGENS	8.91632	0.08577	8.19601	0.14993	0.01929	0.19866	0	0.29045	2.37729	0.00028	20.23405
ID = mc152-st4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	28.41	0.75	52.91	16.22	0.13	1.95	0.06	0	0.1	0	100.54
+/-2 SIGMA	0.72	0.27	0.93	0.86	0.28	0.51	0.17	0	0.15	0	
32 OXYGENS	5.40637	0.10741	11.8632	2.57969	0.02113	0.55269	0.01127	0	0.0254	0	20.56727
ID = mc152-mu2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	45.2	0.96	34.6	0.78	0.09	0.49	0	1.11	9.75	0.06	93.05
+/-2 SIGMA	0.84	0.28	0.76	0.37	0.27	0.44	0	0.6	0.35	0.12	
32 OXYGENS	8.94222	0.14256	8.06505	0.12937	0.01557	0.14515	0	0.42651	2.45897	0.02131	20.34675
ID = mc152-mu3prog	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	44.57	0.53	35.37	0.78	0.02	0.85	0.16	1.57	9.77	0	93.64
+/-2 SIGMA	0.83	0.28	0.77	0.39	0.26	0.44	0.21	0.61	0.35	0	

32 OXYGENS	8.78688	0.07792	8.21675	0.12923	0.00359	0.25004	0.03457	0.59892	2.45673	0	20.55466
ID = mc152-mu3prog	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	44.57	0.53	35.37	0.78	0.02	0.85	0.16	1.57	9.77	0	93.64
+/-2 SIGMA	0.83	0.28	0.77	0.39	0.26	0.44	0.21	0.61	0.35	0	
32 OXYGENS	8.78688	0.07792	8.21675	0.12923	0.00359	0.25004	0.03457	0.59892	2.45673	0	20.55466
ID = mc152-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.49	1.7	19.14	21.62	0	8.92	0.2	0.11	8.54	0.02	95.75
+/-2 SIGMA	0.75	0.32	0.66	0.98	0	0.6	0.21	0.76	0.33	0.13	
32 OXYGENS	7.85892	0.28248	4.99564	4.00135	0	2.94385	0.04836	0.04893	2.41137	0.00764	22.59857
ID = mc152-st	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	27.75	0.53	53.29	16.14	0.37	1.64	0.02	0	0.07	0	99.81
+/-2 SIGMA	0.72	0.27	0.94	0.87	0.28	0.52	0.17	0	0.15	0	
32 OXYGENS	5.32267	0.07708	12.0468	2.58822	0.06033	0.46994	0.00357	0	0.01626	0	20.58495
ID = mc152-mu	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	44.73	0.92	35.44	0.77	0.04	1.17	0.21	1.22	9.91	0	94.41
+/-2 SIGMA	0.84	0.28	0.77	0.37	0.28	0.43	0.21	0.62	0.35	0	
32 OXYGENS	8.7484	0.13458	8.16597	0.12659	0.00704	0.34125	0.04355	0.46212	2.47107	0	20.50062
ID = mc152-st	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	27.27	0.75	53.83	15.98	0.14	1.92	0	0	0	0	99.88
+/-2 SIGMA	0.72	0.28	0.93	0.87	0.29	0.51	0	0	0	0	
32 OXYGENS	5.22158	0.10794	12.1431	2.55682	0.02294	0.54646	0	0	0	0	20.5989
ID = mc152-mu	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	44.41	0.66	34.33	0.72	0	0.64	0.16	1.53	10	0.06	92.51
+/-2 SIGMA	0.84	0.27	0.77	0.38	0.22	0.45	0.21	0.6	0.35	0.12	
32 OXYGENS	8.87794	0.09891	8.08705	0.11957	0.00011	0.1905	0.0344	0.59405	2.54815	0.02007	20.5708
ID = mc152-mu	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	45.11	0.78	34.81	0.96	0.03	0.58	0.12	1.22	9.77	0	93.38
+/-2 SIGMA	0.83	0.28	0.76	0.37	0.27	0.44	0.21	0.62	0.35	0	
32 OXYGENS	8.90227	0.11547	8.09472	0.15755	0.00512	0.17145	0.02546	0.46657	2.45904	0	20.3977
ID = mc152-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.81	1.32	18.34	21.37	0.32	9.7	0.36	0	6.91	0.04	92.18
+/-2 SIGMA	0.74	0.31	0.65	0.98	0.29	0.61	0.2	0	0.3	0.13	
32 OXYGENS	7.76138	0.2276	4.96144	4.09923	0.06183	3.31794	0.08951	0	2.02268	0.01433	22.55597

ID = mc152-mu	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	45.34	0.84	35.67	1.01	0.26	0.85	0	1.54	9.93	0.06	95.51
+/-2 SIGMA	0.84	0.28	0.77	0.38	0.27	0.44	0	0.61	0.35	0.12	
32 OXYGENS	8.78423	0.12298	8.145	0.16376	0.04301	0.24579	0	0.57678	2.45418	0.01995	20.55572

ID = mc152-g1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.15	0.25	20.8	33.21	4.94	2.11	1.7	0	0	0.08	99.25
+/-2 SIGMA	0.77	0.27	0.69	1.12	0.49	0.51	0.22	0	0	0.13	
24 OXYGENS	5.92827	0.03112	4.01835	4.5528	0.68586	0.51647	0.29853	0	0	0.02315	16.05459

ID = mc152-g2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.67	0.09	20.91	34.53	5.35	2.33	1.53	0	0	0	101.42
+/-2 SIGMA	0.78	0.26	0.68	1.12	0.49	0.5	0.22	0	0.15	0	
24 OXYGENS	5.90885	0.01136	3.97047	4.65035	0.72954	0.56015	0.26376	0	0.00009	0	16.09459

ID = mc152-g3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.91	0	20.03	32.64	5.19	1.62	1.53	0	0.03	0.05	98
+/-2 SIGMA	0.77	0	0.68	1.12	0.49	0.51	0.22	0	0.16	0.13	
24 OXYGENS	6.10995	0	3.90769	4.51663	0.72691	0.39973	0.27213	0	0.00628	0.01458	15.95393

ID = mc152-g4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.64	0	20.7	34.11	5.23	2.22	1.89	0	0	0	100.78
+/-2 SIGMA	0.77	0	0.68	1.12	0.48	0.5	0.23	0	0	0	
24 OXYGENS	5.93568	0	3.9522	4.61902	0.71769	0.53507	0.32853	0	0	0	16.08821

ID = mc152-g5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.43	0	20.58	33.74	5.21	2.44	1.47	0	0	0	100.86
+/-2 SIGMA	0.77	0	0.68	1.13	0.49	0.51	0.22	0	0	0	
24 OXYGENS	6.02724	0	3.90446	4.5416	0.71015	0.58409	0.25296	0	0	0	16.02053

ID = mc152-g6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.74	0.22	21.32	32.55	5.01	2.54	1.96	0.06	0.04	0	101.44
+/-2 SIGMA	0.78	0.27	0.68	1.11	0.49	0.5	0.24	0.69	0.16	0	
24 OXYGENS	6.00157	0.02595	3.99573	4.32671	0.67444	0.60209	0.33454	0.01886	0.00822	0	15.98815

ID = mc152-g7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.71	0.11	20.63	32.28	5.1	2.41	2.26	0	0.04	0	99.53
+/-2 SIGMA	0.77	0.26	0.68	1.11	0.48	0.51	0.24	0	0.16	0	
24 OXYGENS	5.97837	0.01303	3.95848	4.39419	0.70288	0.58354	0.3944	0	0.00886	0	16.03378

ID = mc152-g8	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.55	0	20.99	33.3	4.87	2.02	2.26	0.69	0.02	0.04	101.74
+/-2 SIGMA	0.78	0	0.68	1.11	0.48	0.5	0.24	0.69	0.16	0.13	
24 OXYGENS	5.99735	0	3.94998	4.44591	0.65846	0.48129	0.38596	0.21306	0.0043	0.01011	16.14645

ID = mc152-g9	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.37	0	21.31	33.58	5.51	2.51	2.21	0.43	0	0	102.92
+/-2 SIGMA	0.78	0	0.69	1.11	0.49	0.5	0.24	0.72	0	0	
24 OXYGENS	5.91434	0	3.97288	4.4415	0.73858	0.5908	0.37448	0.13323	0	0	16.16583

ID = mc152-g10	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.02	0	20.19	32.94	4.98	2.03	2.07	0	0.18	0.11	99.51
+/-2 SIGMA	0.77	0	0.67	1.11	0.48	0.49	0.24	0	0.16	0.13	
24 OXYGENS	6.05088	0	3.88849	4.5013	0.68874	0.49484	0.3621	0	0.03694	0.02937	16.0527

ID = mc152-grim	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.87	0	20.89	34.39	5.31	2.04	1.28	0	0.06	0	100.84
+/-2 SIGMA	0.77	0	0.68	1.13	0.5	0.5	0.21	0	0.16	0	
24 OXYGENS	5.96452	0	3.98196	4.65038	0.72747	0.49222	0.22158	0	0.01269	0	16.05085

ID = mc152-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.31	1.82	18.36	21.82	0.06	9.34	0.14	0	7.62	0.01	93.48
+/-2 SIGMA	0.74	0.32	0.65	0.99	0.29	0.61	0.21	0	0.31	0.13	
32 OXYGENS	7.78516	0.31094	4.9094	4.13888	0.01103	3.15727	0.0347	0	2.20353	0.00496	22.55592

ID = mc152-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.62	1.89	19.19	23.49	0	8.91	0.05	0.23	9.08	0.02	97.47
+/-2 SIGMA	0.75	0.32	0.66	1.03	0	0.61	0.21	0.76	0.34	0.13	
32 OXYGENS	7.64183	0.31397	4.99083	4.33438	0	2.92929	0.01069	0.09997	2.55554	0.00932	22.88586

ID = mc152-bi	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.05	1.52	18.63	20.5	0.09	8.83	0.22	0	8.04	0.19	92.08
+/-2 SIGMA	0.74	0.32	0.65	0.96	0.29	0.61	0.21	0	0.32	0.13	
32 OXYGENS	7.83587	0.26342	5.05235	3.94441	0.01735	3.02679	0.05465	0	2.35928	0.07407	22.62824

ID = mc152-mu	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	44.09	0.45	34.65	0.73	0	0.01	0	1.31	9.62	0.08	90.94
+/-2 SIGMA	0.85	0.27	0.78	0.38	0	0.3	0	0.62	0.35	0.12	
32 OXYGENS	8.92197	0.06893	8.26282	0.12358	0	0.00334	0	0.51234	2.48167	0.02808	20.40276

ID = mc152-mu	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL

OXIDE	45.87	0.45	34.97	0.93	0	1.02	0.18	1.41	10.18	0.03	95.04
+/-2 SIGMA	0.84	0.26	0.76	0.37	0	0.43	0.21	0.6	0.35	0.12	
32 OXYGENS	8.91841	0.06642	8.01301	0.15181	0	0.29561	0.03663	0.52931	2.52413	0.01145	20.54683

ID = mc152-porp	SiO2	TiO2	Al2O3	FeO	CaO	MgO	MnO	K2O	ZnO	TOTAL
OXIDE	27.1	0.53	45.26	21.57	0.21	1.72	0	0.34	1.09	97.82
+/-2 SIGMA	1.62	0.67	1.72	2.4	0.38	0.93	0	0.35	1.87	
23 OXYGENS	3.97465	0.05815	7.82096	2.64357	0.03365	0.3763	0	0.06339	0.1177	15.08841

ID = mc152-st	SiO2	TiO2	Al2O3	FeO	CaO	MgO	MnO	K2O	ZnO	TOTAL
OXIDE	27.1	0.53	45.26	21.57	0.21	1.72	0	0.34	1.09	97.82
+/-2 SIGMA	1.62	0.67	1.72	2.4	0.38	0.93	0	0.35	1.87	
23 OXYGENS	3.97465	0.05815	7.82096	2.64357	0.03365	0.3763	0	0.06339	0.1177	15.08841

PROBE ANALYSES FOR SAMPLE MC157

ID = plg1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	54.22	0.1	28.53	0.76	0.1	0	11.3	5.26	0.03	0.01	100.31
+/-2 SIGMA	0.93	0.25	0.75	0.37	0.28	0	0.41	0.82	0.15	0.09	
32 OXYGENS	9.80456	0.01363	6.08013	0.11438	0.01557	0	2.18868	1.84191	0.00762	0.00176	20.06828

ID = plg2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	52.18	0.26	27.66	0.32	0.18	0	11.64	5.28	0.19	0	97.71
+/-2 SIGMA	0.92	0.25	0.76	0.36	0.27	0	0.41	0.84	0.15	0	
32 OXYGENS	9.72184	0.03601	6.07235	0.04935	0.02814	0	2.32232	1.90607	0.04578	0	20.18189

ID = plg3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	54.9	0	27.1	0.51	0.04	0	10.36	6.05	0.02	0	98.99
+/-2 SIGMA	0.93	0	0.74	0.36	0.27	0	0.39	0.85	0.15	0.09	
32 OXYGENS	10.0311	0	5.83501	0.07836	0.0068	0	2.02756	2.14015	0.0049	0.00101	20.12493

ID = plg4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	53.01	0.14	28.79	0.49	0	0	12.16	4.64	0.1	0	99.35
+/-2 SIGMA	0.92	0.25	0.75	0.36	0.22	0	0.42	0.82	0.15	0	
32 OXYGENS	9.68633	0.01968	6.19925	0.07549	0.00051	0	2.38022	1.64128	0.02444	0	20.02722

ID = gr1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.08	0	20.52	30.26	6.91	1.64	4.27	0	0.08	0.12	99.88
+/-2 SIGMA	0.79	0	0.7	1.12	0.53	0.5	0.29	0	0.16	0.13	
24 OXYGENS	5.90473	0	3.95796	4.1395	0.95818	0.39926	0.74815	0	0.01693	0.03358	16.15833

ID = gr2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.06	0.05	19.97	31.6	6.26	0.87	4.46	0	0.12	0	100.39
+/-2 SIGMA	0.79	0.27	0.69	1.13	0.54	0.51	0.29	0	0.16	0.11	
24 OXYGENS	6.03588	0.00585	3.83322	4.30156	0.86297	0.21155	0.77841	0	0.02436	0.00132	16.05515

ID = gr3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.88	0.25	20.03	32.44	6.18	1.11	4.22	0.35	0	0	101.46
+/-2 SIGMA	0.79	0.27	0.69	1.15	0.52	0.51	0.29	0.82	0	0	
24 OXYGENS	5.96471	0.03077	3.81634	4.38592	0.84622	0.26782	0.73017	0.10869	0	0	16.15068

ID = bi1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.25	1.55	18.86	20.16	0	9.68	0.31	0	8.69	0	94.51
+/-2 SIGMA	0.77	0.3	0.69	0.96	0	0.66	0.21	0	0.33	0	
32 OXYGENS	7.8704	0.26017	4.96307	3.76372	0	3.21833	0.07523	0	2.47386	0	22.62482

ID = mus1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	44.73	0.37	34.65	0.92	0.06	0.76	0.22	1.76	9.23	0.05	92.75
+/-2 SIGMA	0.85	0.26	0.78	0.38	0.26	0.45	0.21	0.71	0.34	0.12	
32 OXYGENS	8.88927	0.05499	8.11273	0.15315	0.01075	0.22512	0.04641	0.67615	2.33767	0.0166	20.52288

ID = plg5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.65	0	24.2	0.31	0.31	0	6.1	8.18	0	0	99.74
+/-2 SIGMA	0.97	0	0.71	0.34	0.27	0.26	0.32	0.91	0	0	
32 OXYGENS	10.8397	0	5.09619	0.04606	0.04708	0.00051	1.16713	2.8309	0	0	20.02763

ID = plg6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.77	0.01	24.43	0.47	0	0.21	6.42	8.12	0.21	0	100.63
+/-2 SIGMA	0.97	0.2	0.71	0.33	0	0.4	0.33	0.9	0.15	0	
32 OXYGENS	10.7848	0.00166	5.10834	0.06989	0	0.05541	1.2197	2.79122	0.0476	0	20.07872

ID = plg7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	59.56	0.16	24.95	0.27	0.04	0	7.09	7.85	0.03	0.01	99.95
+/-2 SIGMA	0.96	0.25	0.72	0.33	0.27	0	0.33	0.89	0.15	0.09	
32 OXYGENS	10.651	0.02132	5.25817	0.03992	0.00634	0	1.35811	2.72026	0.00704	0.0022	20.06441

ID = plg7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.04	0	24.26	0.86	0.05	0	6.13	7.8	0	0.05	99.19
+/-2 SIGMA	0.97	0	0.72	0.35	0.27	0	0.32	0.92	0	0.12	
32 OXYGENS	10.8026	0	5.14458	0.12905	0.00762	0	1.18166	2.719	0	0.01468	19.99925

ID = plg8	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.04	0	24.26	0.86	0.05	0	6.13	7.8	0	0.05	99.19
+/-2 SIGMA	0.97	0	0.72	0.35	0.27	0	0.32	0.92	0	0.12	
32 OXYGENS	10.8026	0	5.14458	0.12905	0.00762	0	1.18166	2.719	0	0.01468	19.99925

ID = grrim1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.1	0	20.14	36.5	1.44	1.56	3.59	0.09	0	0	100.43
+/-2 SIGMA	0.79	0.23	0.7	1.19	0.37	0.52	0.27	0.85	0	0.1	
24 OXYGENS	6.02458	0.00025	3.85372	4.95476	0.19824	0.37744	0.62513	0.02829	0	0.00136	16.06381

ID = grrim2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.44	0.23	20.6	37.99	1.59	2	3.27	0	0.17	0.09	103.38
+/-2 SIGMA	0.79	0.26	0.7	1.21	0.37	0.53	0.27	0	0.16	0.13	
24 OXYGENS	5.93801	0.02691	3.8498	5.03608	0.21372	0.4726	0.55617	0	0.03371	0.02525	16.15229

ID = plg9	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	59.39	0	23.81	0.39	0	0	6.34	8	0.1	0.09	98.13

+/-2 SIGMA	0.96	0.2	0.71	0.35	0.22	0.26	0.32	0.9	0.15	0.12	
32 OXYGENS	10.8107	0.00063	5.10573	0.05969	0.00059	0.00096	1.23541	2.82163	0.02218	0.02761	20.08524
ID = plg9	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.78	0.03	19.71	36.82	1.57	1.76	3.18	0	0	0	99.84
+/-2 SIGMA	0.78	0.27	0.69	1.21	0.37	0.53	0.26	0	0	0	
24 OXYGENS	6.02197	0.00405	3.80319	5.03943	0.21746	0.42831	0.55791	0	0	0	16.07236
ID = grrim3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.78	0.03	19.71	36.82	1.57	1.76	3.18	0	0	0	99.84
+/-2 SIGMA	0.78	0.27	0.69	1.21	0.37	0.53	0.26	0	0	0	
24 OXYGENS	6.02197	0.00405	3.80319	5.03943	0.21746	0.42831	0.55791	0	0	0	16.07236
ID = bi2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.31	1.75	19.52	19.98	0.06	9.59	0.15	0	8.95	0	95.31
+/-2 SIGMA	0.77	0.32	0.68	0.97	0.28	0.64	0.21	0	0.33	0	
32 OXYGENS	7.81177	0.29122	5.08683	3.69492	0.01175	3.15963	0.03584	0	2.52318	0	22.61518
ID = bi2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	33.61	1.63	17.38	23.87	0.1	8.46	0	0	8.13	0.03	93.21
+/-2 SIGMA	0.75	0.31	0.66	1.05	0.3	0.64	0	0	0.32	0.13	
32 OXYGENS	7.78069	0.28422	4.74265	4.61998	0.01982	2.91609	0	0	2.40053	0.01099	22.775
ID = grrim4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.72	0.12	20.61	33.97	3.78	1.07	4.52	0	0	0.02	101.82
+/-2 SIGMA	0.79	0.26	0.69	1.18	0.44	0.51	0.29	0	0.14	0.13	
24 OXYGENS	6.03152	0.01451	3.88313	4.54106	0.51252	0.25518	0.7742	0	0.00049	0.00669	16.01933
ID = bi3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.45	1.29	18.23	22.45	0	9.28	0.09	0	7.68	0.05	93.52
+/-2 SIGMA	0.75	0.3	0.67	1.01	0	0.63	0.2	0	0.31	0.12	
32 OXYGENS	7.83882	0.22024	4.88659	4.27012	0	3.14456	0.02258	0	2.22942	0.0182	22.63056
ID = bi4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.53	1.48	18.6	22.84	0.15	8.97	0.18	0	8.16	0.08	94.99
+/-2 SIGMA	0.76	0.31	0.68	1.02	0.29	0.64	0.21	0	0.32	0.12	
32 OXYGENS	7.77436	0.24987	4.93524	4.29799	0.0287	3.0072	0.04332	0	2.34283	0.02874	22.7083
ID = grrim6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.69	0	20.31	37.89	1.78	2.44	2.94	0	0.06	0.08	102.19
+/-2 SIGMA	0.79	0	0.7	1.22	0.38	0.52	0.26	0	0.16	0.13	
24 OXYGENS	5.8991	0	3.84771	5.09304	0.24215	0.58325	0.5058	0	0.0119	0.02285	16.20584

ID = musmatrix	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	43.95	0.7	34.47	0.78	0.08	0.39	0	1.39	9.66	0	91.44
+/-2 SIGMA	0.85	0.26	0.78	0.4	0.29	0.45	0	0.71	0.35	0	
32 OXYGENS	8.862	0.10653	8.18953	0.13155	0.01389	0.11851	0	0.5447	2.48462	0	20.45135

ID = musst	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	44.18	0.72	34.98	1.15	0.18	0.54	0.01	1.86	9.54	0	93.16
+/-2 SIGMA	0.84	0.26	0.79	0.4	0.26	0.45	0.18	0.71	0.34	0	
32 OXYGENS	8.77684	0.10764	8.18771	0.19092	0.03028	0.16036	0.00133	0.71618	2.41689	0	20.5882

ID = plagst	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.18	0	24.63	0.4	0	0.23	6.49	8.19	0.06	0	100.19
+/-2 SIGMA	0.97	0	0.71	0.35	0	0.41	0.32	0.89	0.15	0	
32 OXYGENS	10.728	0	5.17482	0.06012	0	0.06011	1.23967	2.82944	0.01405	0	20.10629

ID = plg1st	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.18	0	24.63	0.4	0	0.23	6.49	8.19	0.06	0	100.19
+/-2 SIGMA	0.97	0	0.71	0.35	0	0.41	0.32	0.89	0.15	0	
32 OXYGENS	10.728	0	5.17482	0.06012	0	0.06011	1.23967	2.82944	0.01405	0	20.10629

ID = plg2st	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.58	0	24.72	0.25	0	0	6.49	8.69	0.19	0.03	100.95
+/-2 SIGMA	0.97	0	0.72	0.35	0	0	0.33	0.91	0.15	0.12	
32 OXYGENS	10.7365	0	5.16322	0.03697	0	0	1.2318	2.98411	0.04248	0.00801	20.20316

ID = bist1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.69	1.61	19.89	22.24	0	9.81	0.23	0	8.84	0	98.3
+/-2 SIGMA	0.78	0.32	0.7	1.03	0	0.65	0.22	0	0.34	0	
32 OXYGENS	7.71442	0.26091	5.06746	4.0181	0	3.15874	0.05357	0	2.4354	0	22.70863

ID = bist2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.56	1.65	20.15	21.15	0.11	9.48	0.11	0.47	8.69	0.01	97.38
+/-2 SIGMA	0.77	0.32	0.69	0.99	0.29	0.64	0.21	0.91	0.33	0.13	
32 OXYGENS	7.72826	0.26982	5.16103	3.84338	0.02087	3.06896	0.02623	0.19829	2.40733	0.00477	22.72898

ID = musst2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	45.03	0.62	35.1	0.94	0.19	1	0.24	1.4	9.67	0.05	94.25
+/-2 SIGMA	0.85	0.26	0.78	0.39	0.27	0.44	0.21	0.69	0.35	0.12	
32 OXYGENS	8.82673	0.09173	8.10699	0.15401	0.03174	0.29185	0.05047	0.53273	2.41619	0.01743	20.51993

ID = musst3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL

OXIDE	45.1	0.64	35.44	1.09	0.16	0.95	0.1	1.05	9.74	0.12	94.38
+/-2 SIGMA	0.85	0.27	0.78	0.39	0.27	0.45	0.21	0.74	0.35	0.12	
32 OXYGENS	8.82171	0.09342	8.16898	0.1782	0.02623	0.27756	0.02046	0.39678	2.43078	0.0394	20.45356
ID = musst4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	44.98	0.46	34.47	1.05	0.15	1.07	0.08	1.57	9.56	0.09	93.49
+/-2 SIGMA	0.85	0.26	0.78	0.38	0.27	0.45	0.21	0.7	0.35	0.12	
32 OXYGENS	8.89197	0.06801	8.0281	0.17391	0.0246	0.31492	0.01783	0.60264	2.41054	0.02947	20.56203
ID = plgst2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	61.42	0.06	24.22	0.14	0.24	0.17	6.35	8.06	0.04	0	100.7
+/-2 SIGMA	0.97	0.24	0.71	0.36	0.28	0.41	0.32	0.9	0.15	0	
32 OXYGENS	10.8623	0.00771	5.04696	0.02097	0.03594	0.04455	1.20315	2.76123	0.00844	0	19.99132
ID = plgst3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.5	0	24.35	0.38	0	0.13	6.32	7.92	0.09	0	99.69
+/-2 SIGMA	0.97	0	0.71	0.33	0	0.4	0.32	0.92	0.15	0	
32 OXYGENS	10.8126	0	5.12769	0.05664	0	0.03536	1.20914	2.74263	0.02143	0	20.00555
ID = grst1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.26	0	20.46	36.59	1.99	2.03	3.41	0	0.09	0.05	101.88
+/-2 SIGMA	0.79	0	0.7	1.2	0.38	0.52	0.27	0	0.16	0.13	
24 OXYGENS	5.97449	0	3.86513	4.90366	0.27013	0.48378	0.58607	0	0.01931	0.01404	16.11664
ID = grst2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.81	0.19	21.42	36.39	2.19	1.94	3.61	0	0.09	0	103.64
+/-2 SIGMA	0.79	0.26	0.7	1.2	0.39	0.52	0.27	0	0.16	0	
24 OXYGENS	5.93671	0.02262	3.96239	4.77607	0.29086	0.45405	0.60785	0	0.01773	0	16.06833
ID = grst3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.94	0	21.09	37.11	1.72	1.57	3.4	0.4	0.13	0.04	102.4
+/-2 SIGMA	0.79	0.23	0.7	1.21	0.38	0.53	0.27	0.86	0.16	0.13	
24 OXYGENS	5.9068	0.00019	3.97401	4.95998	0.23321	0.37505	0.58158	0.12333	0.02698	0.01118	16.19234
ID = grst4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.14	0	20.87	37.16	1.51	1.98	3.59	0	0	0	102.26
+/-2 SIGMA	0.79	0	0.71	1.2	0.36	0.52	0.27	0	0	0	
24 OXYGENS	5.92981	0	3.92698	4.95991	0.20477	0.47072	0.61449	0	0	0	16.1067
ID = grcore2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.26	0.23	20.24	30.77	7.34	1.35	4.59	0.35	0	0	102.13
+/-2 SIGMA	0.79	0.26	0.69	1.12	0.56	0.5	0.29	0.83	0	0	

24 OXYGENS	5.96724	0.02789	3.81996	4.11971	0.99578	0.32208	0.7876	0.10915	0	0	16.14946
ID = grcore3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.78	0	20.86	32.95	6.12	1.43	3.69	0.46	0	0	103.3
+/-2 SIGMA	0.79	0	0.7	1.15	0.52	0.51	0.27	0.84	0.14	0	
24 OXYGENS	5.97689	0	3.88953	4.3582	0.8194	0.33786	0.62513	0.14208	0.0005	0	16.14963
ID = grcore3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.45	0	20.59	30.53	7.07	1.39	4.41	0	0.04	0	101.48
+/-2 SIGMA	0.79	0	0.69	1.13	0.55	0.49	0.29	0	0.16	0	
24 OXYGENS	6.00717	0	3.89174	4.09333	0.96057	0.33119	0.75835	0	0.00915	0	16.05153
ID = gr1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.53	0.01	20.52	35.96	0.36	2.13	4.08	0	0	0	99.58
+/-2 SIGMA	0.79	0.23	0.7	1.19	0.33	0.52	0.28	0	0	0	
24 OXYGENS	5.95435	0.0012	3.94157	4.89898	0.04901	0.51608	0.71242	0	0	0	16.07365
ID = gr2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.79	0.1	19.87	36.33	0.29	1.75	4.01	0	0	0	98.14
+/-2 SIGMA	0.78	0.26	0.7	1.2	0.32	0.53	0.28	0	0	0	
24 OXYGENS	5.9494	0.01299	3.89278	5.04923	0.04016	0.43317	0.71346	0	0	0	16.09121
ID = gr3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.6	0	19.79	36.42	0.33	1.62	4.14	0	0	0	97.9
+/-2 SIGMA	0.78	0	0.7	1.2	0.32	0.53	0.28	0	0	0	
24 OXYGENS	5.94351	0	3.89281	5.08281	0.04597	0.40401	0.74093	0	0	0	16.11008
ID = gr4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.59	0	19.96	36.02	0.36	1.62	4.26	0	0	0.13	97.93
+/-2 SIGMA	0.79	0	0.71	1.2	0.31	0.53	0.28	0	0	0.13	
24 OXYGENS	5.93781	0	3.92415	5.02366	0.05135	0.40257	0.76055	0	0	0.03603	16.13614
ID = gr4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.17	0.09	20.02	36.6	0.72	2.04	4.06	0	0.09	0	99.79
+/-2 SIGMA	0.79	0.26	0.7	1.21	0.31	0.53	0.28	0	0.16	0	
24 OXYGENS	5.92498	0.01151	3.86483	5.01159	0.09956	0.49744	0.71199	0	0.01828	0	16.14022
ID = gr4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.97	0.12	19.69	35.81	0.21	1.65	4.58	0	0	0.11	98.12
+/-2 SIGMA	0.78	0.25	0.7	1.2	0.31	0.53	0.29	0	0	0.13	
24 OXYGENS	5.97853	0.0151	3.85735	4.97517	0.02911	0.4076	0.81479	0	0	0.02962	16.1073

ID = gr5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.19	0	20.18	36.09	0.26	2.19	4.93	0	0.14	0.08	100.06
+/-2 SIGMA	0.78	0.23	0.69	1.19	0.31	0.51	0.3	0	0.16	0.13	
24 OXYGENS	5.90571	0.00037	3.88053	4.92219	0.03615	0.53302	0.8611	0	0.0291	0.0208	16.189

ID = gr6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.96	0	20.32	36.78	0.25	1.44	4.74	0.05	0.14	0.02	100.7
+/-2 SIGMA	0.79	0	0.7	1.21	0.32	0.52	0.29	0.85	0.16	0.13	
24 OXYGENS	5.98671	0	3.87945	4.98098	0.03487	0.34817	0.82186	0.0147	0.02825	0.00561	16.10066

ID = gr7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.33	0.15	20.27	37.25	0.4	1.59	4.96	0	0	0.05	100.98
+/-2 SIGMA	0.79	0.26	0.7	1.21	0.31	0.51	0.3	0	0	0.13	
24 OXYGENS	5.89706	0.01802	3.87667	5.05408	0.05478	0.3844	0.86151	0	0	0.0134	16.15997

ID = gr8	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.12	0.07	20.11	36.64	0.28	1.41	5.09	0	0	0	99.7
+/-2 SIGMA	0.79	0.26	0.7	1.21	0.32	0.51	0.3	0	0	0	
24 OXYGENS	5.92573	0.00811	3.8872	5.02443	0.03844	0.34436	0.89427	0	0	0	16.12256

ID = gr9	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.89	0.01	20.24	35.73	0.16	1.42	4.97	0	0.06	0.04	98.5
+/-2 SIGMA	0.78	0.23	0.7	1.2	0.31	0.5	0.3	0	0.16	0.13	
24 OXYGENS	5.93872	0.00111	3.94611	4.9428	0.02206	0.34967	0.88076	0	0.01172	0.01124	16.10422

ID = gr10	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.2	0.14	18.97	35.16	0.81	0.7	5.14	0	0	0.02	96.13
+/-2 SIGMA	0.79	0.26	0.7	1.2	0.33	0.51	0.3	0	0	0.13	
24 OXYGENS	6.00167	0.01768	3.81145	5.01073	0.11652	0.17786	0.93897	0	0	0.00438	16.0793

ID = gr10	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.3	0	20.38	35.4	0.46	1.18	5	0	0	0	97.73
+/-2 SIGMA	0.79	0	0.71	1.2	0.32	0.52	0.3	0	0	0	
24 OXYGENS	5.89468	0	4.01087	4.94114	0.0645	0.29447	0.89418	0	0	0	16.09988

ID = gr11	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.3	0	18.98	34.55	0.56	0.89	5.26	0	0	0	95.54
+/-2 SIGMA	0.78	0	0.7	1.18	0.34	0.51	0.3	0	0.14	0	
24 OXYGENS	6.03146	0	3.82145	4.93537	0.08051	0.22676	0.96188	0	0.00072	0	16.05818

ID = gr12	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.75	0.16	19.56	34.5	0.89	1.08	5.53	0	0.11	0.04	97.63

+/-2 SIGMA	0.79	0.26	0.69	1.18	0.34	0.5	0.31	0	0.16	0.13	
24 OXYGENS	5.97857	0.02004	3.85472	4.82254	0.12645	0.26947	0.99023	0	0.02391	0.01178	16.09776
ID = gr13	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.17	0	19.29	34.57	1.15	0.9	5.65	0	0	0.09	97.83
+/-2 SIGMA	0.79	0	0.69	1.18	0.36	0.51	0.31	0	0	0.13	
24 OXYGENS	6.04076	0	3.79636	4.82633	0.16322	0.22376	1.0106	0	0	0.02481	16.08587
ID = gr14	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.38	0	19.05	34.77	1.44	0.83	5.81	0	0	0	97.28
+/-2 SIGMA	0.78	0	0.7	1.18	0.38	0.51	0.32	0	0	0	
24 OXYGENS	5.97274	0	3.78929	4.90589	0.20597	0.20864	1.05005	0	0	0	16.13261
ID = gr14	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.5	0	20.1	32.75	2.88	0.52	5.99	0	0.02	0.05	97.82
+/-2 SIGMA	0.78	0	0.7	1.16	0.43	0.51	0.31	0	0.16	0.13	
24 OXYGENS	5.9347	0	3.96049	4.57635	0.40789	0.13017	1.07281	0	0.0052	0.01545	16.1031
ID = gr15	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.19	0	20.23	32.71	3.41	1.18	5.21	0	0.08	0.08	99.09
+/-2 SIGMA	0.79	0	0.7	1.16	0.46	0.5	0.3	0	0.16	0.13	
24 OXYGENS	5.95973	0	3.92487	4.50158	0.47562	0.28861	0.91892	0	0.01698	0.02231	16.10863
ID = gr16	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.64	0.11	19.68	33.19	3.59	0.45	5.25	0	0.02	0.04	97.96
+/-2 SIGMA	0.79	0.26	0.7	1.15	0.46	0.5	0.31	0	0.16	0.13	
24 OXYGENS	5.96846	0.01347	3.88309	4.64639	0.50945	0.11152	0.94168	0	0.00486	0.01083	16.08978
ID = gr17	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.69	0.1	19.49	32.3	3.94	0.67	5.02	0.01	0.07	0.06	97.34
+/-2 SIGMA	0.78	0.26	0.7	1.16	0.46	0.51	0.3	0.32	0.16	0.13	
24 OXYGENS	6.00138	0.01298	3.86116	4.53939	0.56076	0.16692	0.90341	0.00273	0.01532	0.01623	16.08032
ID = gr18	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.24	0.13	19.74	32.76	4.67	0.66	4.83	0.12	0	0.01	98.16
+/-2 SIGMA	0.78	0.27	0.69	1.17	0.47	0.51	0.3	0.87	0	0.13	
24 OXYGENS	5.90702	0.0162	3.8988	4.59063	0.66319	0.16585	0.86625	0.03881	0	0.00401	16.15079
ID = gr19	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.33	0	19.17	32.68	4.39	0.92	4.67	0	0	0.02	97.18
+/-2 SIGMA	0.78	0	0.7	1.16	0.47	0.51	0.29	0	0	0.13	
24 OXYGENS	5.97321	0	3.81913	4.61849	0.62855	0.23209	0.84572	0	0	0.00541	16.12264

ID = gr20	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.21	0	19.41	31.47	4.42	0.86	5.22	0	0.1	0.04	97.72
+/-2 SIGMA	0.79	0	0.7	1.16	0.48	0.5	0.31	0	0.16	0.13	
24 OXYGENS	6.04777	0	3.81943	4.39326	0.62457	0.21352	0.93335	0	0.02117	0.0116	16.0647

ID = gr21	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.77	0	19.28	31.99	4.2	0.97	5.73	0	0.01	0.06	98
+/-2 SIGMA	0.79	0	0.7	1.15	0.46	0.51	0.31	0	0.16	0.13	
24 OXYGENS	5.98234	0	3.79933	4.47293	0.59483	0.2408	1.02619	0	0.00307	0.01696	16.13648

ID = gr22	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.35	0.17	19.21	32.65	4.14	0.99	5.15	0	0.05	0.04	97.76
+/-2 SIGMA	0.79	0.27	0.69	1.16	0.46	0.51	0.31	0	0.16	0.13	
24 OXYGENS	5.9433	0.02133	3.80696	4.58871	0.58978	0.24917	0.92744	0	0.01031	0.0128	16.14985

ID = gr23	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.03	0.11	19.4	32.57	4.49	1.22	4.8	0	0	0	98.62
+/-2 SIGMA	0.79	0.27	0.69	1.15	0.47	0.5	0.3	0	0.14	0	
24 OXYGENS	5.98439	0.0132	3.79691	4.52185	0.63098	0.30199	0.8545	0	0.00014	0	16.10401

ID = gr23	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.59	0.01	19.72	33.35	4.22	1.43	4.18	0.07	0	0	98.58
+/-2 SIGMA	0.79	0.23	0.69	1.17	0.46	0.5	0.28	0.84	0	0	
24 OXYGENS	5.92422	0.00173	3.86773	4.64026	0.59449	0.35557	0.74426	0.02376	0	0	16.15206

ID = gr25	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.93	0	19.49	35.17	4.28	1.16	4.02	0	0.08	0.03	99.16
+/-2 SIGMA	0.78	0	0.7	1.18	0.46	0.51	0.28	0	0.16	0.13	
24 OXYGENS	5.8453	0	3.84401	4.92003	0.60601	0.28888	0.72027	0	0.01634	0.00885	16.24972

ID = gr26	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.03	0.08	19.45	32.73	4.2	1	3.86	0	0	0	96.35
+/-2 SIGMA	0.78	0.26	0.69	1.15	0.47	0.52	0.28	0	0	0.1	
24 OXYGENS	5.95825	0.01013	3.89851	4.65349	0.60515	0.2534	0.7034	0	0	0.00122	16.08358

ID = gr27	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.4	0	19.22	33.5	4.21	0.59	3.96	0	0	0.06	97.93
+/-2 SIGMA	0.79	0	0.69	1.17	0.47	0.52	0.28	0	0.14	0.13	
24 OXYGENS	6.08959	0	3.78936	4.68426	0.59695	0.14661	0.7087	0	0.00044	0.01563	16.03157

ID = gr28	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL

OXIDE	35.31	0	19.12	32.67	4.47	0.7	3.43	0	0	0	95.7
+/-2 SIGMA	0.78	0	0.69	1.17	0.48	0.51	0.27	0	0	0	
24 OXYGENS	6.04305	0	3.85588	4.67455	0.64832	0.17903	0.62815	0	0	0	16.02901

ID = gr29	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.26	0	19.4	32.93	5.06	0.77	4.16	0	0	0	97.57
+/-2 SIGMA	0.78	0	0.7	1.16	0.49	0.52	0.28	0	0	0.11	
24 OXYGENS	5.94983	0	3.85846	4.64545	0.72243	0.19235	0.75239	0	0	0.00067	16.1216

ID = gr30	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	34.58	0.04	18.76	32.5	5.17	0.2	4.6	0	0.09	0	95.93
+/-2 SIGMA	0.78	0.26	0.69	1.15	0.49	0.5	0.29	0	0.16	0	
24 OXYGENS	5.96261	0.00461	3.81123	4.68427	0.75535	0.05051	0.84906	0	0.019	0	16.13666

ID = gr31	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.07	0.04	19.91	32.68	5.1	0.69	4.77	0.07	0.08	0.01	99.44
+/-2 SIGMA	0.78	0.26	0.7	1.15	0.49	0.5	0.29	0.84	0.16	0.13	
24 OXYGENS	5.95748	0.00553	3.87495	4.51234	0.71365	0.17071	0.84442	0.02309	0.01771	0.00391	16.12383

ID = gr32	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.91	0	19.56	32.2	4.81	0.6	5.02	0.47	0	0	98.57
+/-2 SIGMA	0.8	0	0.71	1.17	0.49	0.53	0.31	0.87	0	0.11	
24 OXYGENS	5.98058	0	3.83898	4.48314	0.67839	0.14805	0.89515	0.15119	0	0.0003	16.17582

ID = gr33	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.98	0.17	19.71	32.29	4.54	0.65	5.54	0	0.06	0.16	99.1
+/-2 SIGMA	0.78	0.27	0.7	1.15	0.48	0.5	0.31	0	0.16	0.13	
24 OXYGENS	5.96253	0.0207	3.84821	4.47261	0.6366	0.1616	0.98378	0	0.01316	0.04397	16.14321

ID = gr34	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.39	0	19.41	31.98	5.11	0.68	5.26	0	0.1	0.06	98.99
+/-2 SIGMA	0.79	0	0.69	1.14	0.49	0.49	0.3	0	0.16	0.13	
24 OXYGENS	6.02972	0	3.78931	4.42911	0.71725	0.167	0.93286	0	0.02068	0.01564	16.1016

ID = gr35	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.39	0.08	19.84	31.96	5.07	1.13	5.33	0.42	0.02	0	100.24
+/-2 SIGMA	0.79	0.27	0.7	1.15	0.48	0.5	0.3	0.79	0.16	0	
24 OXYGENS	5.94976	0.01001	3.82196	4.36856	0.7015	0.27614	0.93337	0.13206	0.00375	0	16.19715

ID = gr36	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.66	0.14	19.98	33.63	4.52	0.4	4.8	0	0.04	0.12	100.3
+/-2 SIGMA	0.79	0.26	0.7	1.17	0.48	0.51	0.3	0	0.15	0.13	

24 OXYGENS	6.00346	0.0171	3.85548	4.60357	0.62705	0.09795	0.84265	0	0.00879	0.03321	16.0893
ID = gr37	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.64	0.15	20.37	32.02	4.96	1.01	5.62	0.04	0	0	100.8
+/-2 SIGMA	0.79	0.26	0.7	1.14	0.48	0.5	0.31	0.83	0	0	
24 OXYGENS	5.93976	0.01861	3.89167	4.33959	0.6806	0.24394	0.97508	0.01301	0	0	16.10229
ID = gr38	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	42.29	0	17.74	30.59	4.12	0.6	3.52	0	0.01	0.04	98.91
+/-2 SIGMA	0.83	0	0.67	1.13	0.46	0.5	0.27	0	0.16	0.13	
24 OXYGENS	6.7818	0	3.35248	4.10075	0.55917	0.14231	0.60391	0	0.00298	0.01044	15.55388
ID = gr39	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.62	0	19.88	32.76	4.3	1.35	4.38	0.56	0	0.09	99.93
+/-2 SIGMA	0.79	0	0.7	1.15	0.48	0.51	0.29	0.82	0	0.13	
24 OXYGENS	5.99393	0	3.83356	4.48177	0.59549	0.32835	0.7677	0.17691	0	0.02413	16.20188
ID = gr39	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.77	0	19.48	33.26	4.23	0.71	4.9	0.15	0	0.03	99.54
+/-2 SIGMA	0.79	0	0.69	1.15	0.47	0.5	0.3	0.84	0	0.13	
24 OXYGENS	6.05173	0	3.77879	4.57656	0.58925	0.17484	0.86428	0.04678	0	0.00823	16.09049
ID = gr40	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.77	0	19.48	33.26	4.23	0.71	4.9	0.15	0	0.03	99.54
+/-2 SIGMA	0.79	0	0.69	1.15	0.47	0.5	0.3	0.84	0	0.13	
24 OXYGENS	6.05173	0	3.77879	4.57656	0.58925	0.17484	0.86428	0.04678	0	0.00823	16.09049
ID = gr41	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.31	0.09	19.7	32.4	4.46	0.77	4.39	0.17	0	0	98.29
+/-2 SIGMA	0.79	0.27	0.69	1.16	0.48	0.5	0.29	0.83	0	0	
24 OXYGENS	6.0329	0.01113	3.85602	4.50039	0.62788	0.19082	0.7813	0.05495	0	0	16.05542
ID = gr42	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.86	0	19.36	33.6	4.2	1.1	3.82	0.28	0.01	0.02	99.25
+/-2 SIGMA	0.79	0	0.69	1.17	0.46	0.5	0.28	0.85	0.14	0.13	
24 OXYGENS	6.07645	0	3.76065	4.63023	0.5859	0.27074	0.67394	0.08814	0.0024	0.00661	16.09511
ID = gr43	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.78	0	20.16	32.67	4	1.03	4.92	0.28	0	0	98.84
+/-2 SIGMA	0.78	0	0.69	1.15	0.45	0.5	0.29	0.81	0	0	
24 OXYGENS	5.92405	0	3.93278	4.52075	0.56026	0.25299	0.87323	0.09092	0	0	16.15501

ID = gr44	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.55	0	19.59	33.59	3.82	0.93	5.49	0	0.05	0.05	99.06
+/-2 SIGMA	0.78	0	0.69	1.16	0.45	0.51	0.31	0	0.16	0.13	
24 OXYGENS	5.91191	0	3.83786	4.66903	0.53731	0.23026	0.97754	0	0.01042	0.01517	16.18954

ID = gr45	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.64	0	19.88	32.4	3.58	0.87	5.56	0	0	0.04	98.96
+/-2 SIGMA	0.79	0.23	0.69	1.15	0.45	0.5	0.31	0	0	0.13	
24 OXYGENS	6.03118	0.00042	3.85739	4.45802	0.49843	0.21449	0.97974	0	0	0.01015	16.04985

ID = gr46	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.05	0	19.47	33.99	2.87	0.96	5.42	0.35	0.02	0	99.14
+/-2 SIGMA	0.78	0	0.69	1.16	0.42	0.51	0.31	0.85	0.16	0	
24 OXYGENS	5.96875	0	3.79943	4.70396	0.40306	0.23716	0.96073	0.11295	0.00386	0	16.18994

ID = gr47	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.76	0.24	19.9	34.79	2.44	0.99	5.5	0	0	0.05	100.68
+/-2 SIGMA	0.8	0.26	0.7	1.18	0.39	0.51	0.31	0	0	0.13	
24 OXYGENS	5.97807	0.0297	3.81312	4.72944	0.33665	0.24024	0.9584	0	0	0.01261	16.09827

ID = gr48	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.65	0	19.9	33.02	2.12	0.92	5.76	0	0.08	0	97.44
+/-2 SIGMA	0.78	0	0.69	1.17	0.4	0.49	0.31	0	0.16	0	
24 OXYGENS	5.96463	0	3.92241	4.618	0.29966	0.229	1.03185	0	0.01715	0	16.08274

ID = gr49	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.96	0	19.58	32.79	1.43	1.73	5.84	0.73	0	0.05	98.12
+/-2 SIGMA	0.8	0	0.71	1.2	0.37	0.51	0.32	0.85	0	0.14	
24 OXYGENS	5.96457	0	3.82679	4.54645	0.20144	0.42825	1.03685	0.23529	0	0.01458	16.25426

ID = gr50	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.81	0	19.8	35.73	1.13	1.26	5.48	0	0.01	0.05	99.27
+/-2 SIGMA	0.78	0	0.7	1.19	0.35	0.52	0.31	0	0.16	0.13	
24 OXYGENS	5.91924	0	3.85569	4.9376	0.15838	0.31076	0.96965	0	0.00313	0.01298	16.16746

ID = gr51	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.22	0	19.69	35.54	0.67	1.2	5.22	0.13	0	0	98.67
+/-2 SIGMA	0.79	0	0.7	1.19	0.34	0.52	0.31	0.86	0	0	
24 OXYGENS	5.99354	0	3.83955	4.91691	0.0935	0.29671	0.92582	0.04123	0	0	16.1073

ID = gr52	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.49	0	19.16	34.56	0.63	1.4	5.41	0.01	0	0	96.66

+/-2 SIGMA	0.78	0	0.7	1.18	0.32	0.53	0.31	0.35	0	0.11	
24 OXYGENS	5.99086	0	3.8125	4.87777	0.08959	0.3526	0.9787	0.00165	0	0.00073	16.10444
ID = gr53	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.5	0	19.94	35.78	0.83	1.74	4.71	0	0.01	0	99.52
+/-2 SIGMA	0.79	0	0.7	1.2	0.33	0.51	0.3	0.33	0.16	0	
24 OXYGENS	5.97899	0	3.84956	4.89927	0.11557	0.4242	0.8267	0.00067	0.00313	0	16.09813
ID = gr54	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	35.99	0.25	20.12	35.8	0.98	1.17	4.35	0	0.01	0	98.66
+/-2 SIGMA	0.78	0.27	0.69	1.2	0.35	0.52	0.29	0	0.14	0	
24 OXYGENS	5.95384	0.03093	3.92209	4.95048	0.13797	0.28795	0.76984	0	0.00205	0	16.05519
ID = mc157-g1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.23	0.16	21.38	29.34	7.15	1.28	4.52	0.17	0	0.05	101.27
+/-2 SIGMA	0.78	0.28	0.68	1.07	0.55	0.49	0.29	0.7	0	0.13	
24 OXYGENS	5.95762	0.01909	4.03128	3.92442	0.9686	0.30544	0.77421	0.05388	0	0.01245	16.04703
ID = mc157-g2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.64	0.2	20.64	30.24	6.92	1.45	4.13	0	0	0.02	101.25
+/-2 SIGMA	0.78	0.27	0.68	1.07	0.54	0.48	0.28	0	0	0.13	
24 OXYGENS	6.03086	0.02374	3.89759	4.05061	0.93874	0.34674	0.70829	0	0	0.00638	16.00298
ID = mc157-g3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.29	0	21.14	31.21	6.6	1.56	4.82	0	0.05	0	102.66
+/-2 SIGMA	0.78	0	0.69	1.09	0.53	0.49	0.29	0	0.16	0	
24 OXYGENS	5.92116	0	3.95655	4.14239	0.88765	0.36843	0.81972	0	0.00929	0	16.10521
ID = mc157-g4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.54	0	20.9	30.73	5.69	1.69	4.5	0.07	0.06	0.16	100.33
+/-2 SIGMA	0.78	0	0.69	1.1	0.52	0.48	0.29	0.71	0.16	0.13	
24 OXYGENS	5.92745	0	3.99468	4.16665	0.78117	0.40755	0.78098	0.02146	0.01192	0.04457	16.13647
ID = mc157-g5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.36	0.11	20.46	31.52	5.29	1.1	4.29	0	0.05	0.03	100.2
+/-2 SIGMA	0.78	0.27	0.68	1.1	0.5	0.49	0.29	0	0.16	0.13	
24 OXYGENS	6.05298	0.01285	3.90652	4.26922	0.72571	0.2651	0.74384	0	0.00932	0.00893	15.9945
ID = mc157-g6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.79	0.05	20.28	32.29	4.32	1.21	4.22	0.34	0.04	0	99.53
+/-2 SIGMA	0.77	0.27	0.68	1.1	0.46	0.49	0.28	0.71	0.16	0	
24 OXYGENS	6.01429	0.0058	3.90621	4.41247	0.59861	0.29452	0.73805	0.10622	0.00739	0	16.0836

ID = mc157-g7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	38.12	0	21.12	34.79	2.05	1.69	4.02	0	0.04	0.06	101.88
+/-2 SIGMA	0.79	0	0.69	1.14	0.39	0.5	0.28	0	0.16	0.13	
24 OXYGENS	6.04933	0	3.94876	4.61524	0.27575	0.39982	0.68335	0	0.008	0.01625	15.99654

ID = mc157-gcore1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.56	0.02	20.97	30.28	7.31	1.46	4.74	0	0.2	0.08	102.62
+/-2 SIGMA	0.78	0.27	0.68	1.08	0.56	0.47	0.29	0	0.16	0.13	
24 OXYGENS	5.9653	0.00291	3.92446	4.02061	0.98313	0.34637	0.80678	0	0.03993	0.02103	16.11056

ID = st1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	28.54	0.39	51.15	17.55	0.13	2	0	0.35	0	0.03	100.14
+/-2 SIGMA	0.73	0.27	0.89	0.88	0.29	0.48	0	0.57	0	0.12	
20 OXYGENS	3.43469	0.03528	7.25359	1.76605	0.01357	0.35885	0	0.08234	0	0.00616	12.95057

ID = st2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	28.46	0.35	51.46	15.63	0.05	2.08	0	0	0	0	98.03
+/-2 SIGMA	0.74	0.27	0.9	0.86	0.28	0.49	0	0	0	0	
20 OXYGENS	3.45799	0.03169	7.36766	1.58719	0.00557	0.37635	0	0	0	0	12.82648

ID = st3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	28.86	0.21	50.83	16.4	0.12	1.44	0	0	0	0	98.21
+/-2 SIGMA	0.73	0.27	0.88	0.87	0.29	0.47	0	0	0	0	
20 OXYGENS	3.50701	0.01887	7.27958	1.66616	0.01253	0.26142	0	0	0	0	12.78109

ID = st4	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	28.72	0.68	51.66	16.01	0.23	1.86	0	0.32	0.03	0.05	99.57
+/-2 SIGMA	0.73	0.26	0.89	0.87	0.28	0.47	0	0.56	0.15	0.13	
20 OXYGENS	3.45088	0.06171	7.31246	1.60747	0.02334	0.33276	0	0.07463	0.0043	0.00931	12.87812

ID = st5	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	28.01	0.86	50.28	15.83	0.13	1.77	0	0.16	0.01	0.13	97.18
+/-2 SIGMA	0.73	0.28	0.88	0.85	0.29	0.48	0	0.59	0.13	0.12	
20 OXYGENS	3.45154	0.07957	7.29954	1.63075	0.01359	0.32469	0	0.03753	0.00127	0.02696	12.86548

ID = st6	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	28.25	0.35	50.71	15.57	0.31	1.1	0	0.17	0.14	0	96.6
+/-2 SIGMA	0.74	0.27	0.88	0.85	0.28	0.48	0	0.58	0.15	0	
20 OXYGENS	3.49135	0.03253	7.38455	1.60847	0.03251	0.20242	0	0.04129	0.02264	0	12.8158

ID = st7	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	26.88	0.27	50.77	16.46	0	1.19	0	0	0	0.03	95.6
+/-2 SIGMA	0.73	0.27	0.89	0.88	0	0.49	0	0	0	0.13	

20 OXYGENS	3.37148	0.0256	7.50461	1.72643	0	0.22248	0	0	0	0.00743	12.85805

PROBE ANALYSES FOR SAMPLE MC158

ID = plg1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	64.19	0	24.4	0.22	0.1	0.06	6.27	7.52	0.08	0	102.84
+/-2 SIGMA	0.97	0	0.66	0.32	0.26	0.37	0.31	0.69	0.15	0	
32 OXYGENS	11.0488	0	4.94807	0.03197	0.01417	0.01619	1.15523	2.50893	0.0165	0	19.73989

ID = plg2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	65.21	0.1	23.47	0.15	0	0	4.26	7.36	0.63	0.03	101.21
+/-2 SIGMA	0.98	0.25	0.67	0.34	0	0	0.28	0.69	0.17	0.12	
32 OXYGENS	11.3244	0.01267	4.80251	0.02143	0	0	0.79226	2.47697	0.13959	0.00896	19.57886

ID = plg3(core)	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.53	0.05	24.18	0.49	0	0.28	6.08	5.74	0.77	0	98.12
+/-2 SIGMA	0.94	0.25	0.66	0.35	0	0.37	0.31	0.67	0.17	0	
32 OXYGENS	10.9269	0.00702	5.14324	0.07347	0	0.07534	1.17578	2.00851	0.17654	0	19.58691

ID = plg3(core)	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	60.53	0.05	24.18	0.49	0	0.28	6.08	5.74	0.77	0	98.12
+/-2 SIGMA	0.94	0.25	0.66	0.35	0	0.37	0.31	0.67	0.17	0	
32 OXYGENS	10.9269	0.00702	5.14324	0.07347	0	0.07534	1.17578	2.00851	0.17654	0	19.58691

ID = ms1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	45.4	0.49	33.45	5.9	0.05	0.76	0.05	0.76	8.42	0.04	95.32
+/-2 SIGMA	0.85	0.26	0.75	0.59	0.27	0.39	0.19	0.53	0.32	0.12	
32 OXYGENS	8.91652	0.07303	7.74122	0.96941	0.00776	0.22166	0.01084	0.28904	2.10964	0.01432	20.35349

ID = ms2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	47.46	0.61	34.59	1.04	0.05	0.54	0.04	1.01	9.99	0.11	95.45
+/-2 SIGMA	0.87	0.27	0.75	0.37	0.26	0.39	0.2	0.54	0.35	0.12	
32 OXYGENS	9.14427	0.08897	7.85271	0.16743	0.00769	0.15525	0.00864	0.3763	2.4545	0.03635	20.29215

ID = ms3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	48.2	0.58	36.06	0.87	0	0.35	0	0.51	9.53	0.17	96.29
+/-2 SIGMA	0.88	0.27	0.77	0.38	0	0.39	0	0.54	0.35	0.12	
32 OXYGENS	9.13522	0.08249	8.05377	0.13823	0	0.09952	0	0.18885	2.30339	0.05474	20.05626

ID = Bt1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.55	1.5	18.61	19.51	0	9.69	0.2	0	7.53	0.07	94.65
+/-2 SIGMA	0.78	0.3	0.64	0.92	0	0.56	0.2	0	0.31	0.12	
32 OXYGENS	8.23085	0.24646	4.80586	3.57416	0	3.1641	0.04597	0	2.10463	0.02564	22.19771

ID = Bt2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.43	1.47	19.68	19.5	0.01	8.73	0.17	0	8.32	0.01	95.31
+/-2 SIGMA	0.78	0.3	0.65	0.92	0.23	0.55	0.2	0	0.32	0.1	
32 OXYGENS	8.16761	0.24133	5.05985	3.55681	0.00118	2.83668	0.04016	0	2.31494	0.00216	22.22076

ID = Bt3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.31	1.23	20.38	18.69	0.14	9.55	0.33	0.3	7.58	0.03	95.54
+/-2 SIGMA	0.78	0.29	0.66	0.92	0.27	0.56	0.2	0.67	0.31	0.12	
32 OXYGENS	8.07079	0.19995	5.19363	3.37986	0.02649	3.07611	0.0771	0.12628	2.09071	0.00994	22.25089

ID = Bt3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.6	0	20.18	31.5	3.73	1.53	2.8	0	0.02	0.01	97.37
+/-2 SIGMA	0.75	0	0.65	1.04	0.43	0.48	0.24	0	0.16	0.1	
24 OXYGENS	6.19568	0	3.91892	4.3389	0.52106	0.37433	0.49391	0	0.00406	0.00177	15.84866

ID = rim2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.03	0	20.4	32.16	3.06	2.16	2.9	0	0	0.09	97.8
+/-2 SIGMA	0.75	0	0.65	1.05	0.41	0.49	0.25	0	0	0.13	
24 OXYGENS	6.09159	0	3.95299	4.42228	0.4266	0.52818	0.51023	0	0	0.02538	15.95729

ID = rim3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	36.74	0	20.55	31.83	3.48	1.87	2.66	0	0.04	0	97.18
+/-2 SIGMA	0.75	0	0.66	1.06	0.41	0.49	0.25	0	0.16	0	
24 OXYGENS	6.08005	0	4.0077	4.40333	0.48697	0.46152	0.47178	0	0.0094	0	15.92079

ID = st1	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	30.49	0.62	53.59	14.13	0.15	1.16	0	0	0	0	100.14
+/-2 SIGMA	0.75	0.27	0.9	0.8	0.28	0.45	0	0	0	0	
32 OXYGENS	5.72954	0.08749	11.8652	2.21989	0.02401	0.32414	0	0	0	0	20.25034

ID = st2	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	30.8	0.79	53.9	15.61	0.12	1.48	0.03	0.06	0.03	0.11	102.93
+/-2 SIGMA	0.77	0.27	0.92	0.84	0.28	0.45	0.16	0.55	0.15	0.13	
32 OXYGENS	5.68014	0.10883	11.7124	2.40625	0.01944	0.40706	0.0062	0.02254	0.00633	0.03517	20.40442

ID = st3	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	30.14	0.42	52.85	15.42	0.3	0.67	0	0	0	0.05	99.86
+/-2 SIGMA	0.76	0.26	0.92	0.83	0.29	0.46	0	0	0	0.12	
32 OXYGENS	5.72489	0.0602	11.8295	2.44824	0.0481	0.18911	0	0	0	0.01717	20.3173

ID = rim	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.29	0	20.72	31.69	3.74	2.02	3.08	0	0	0.07	98.6
+/-2 SIGMA	0.76	0	0.66	1.05	0.43	0.49	0.25	0	0	0.13	
24 OXYGENS	6.08203	0	3.98114	4.31971	0.5164	0.49061	0.53748	0	0	0.01823	15.94562

ID = rim	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	TOTAL
OXIDE	37.29	0	20.72	31.69	3.74	2.02	3.08	0	0	0.07	98.6
+/-2 SIGMA	0.76	0	0.66	1.05	0.43	0.49	0.25	0	0	0.13	
24 OXYGENS	6.08203	0	3.98114	4.31971	0.5164	0.49061	0.53748	0	0	0.01823	15.94562

APPENDIX -D-

Mineral end member calculations for samples used in Sections C & D

SAMPLE MC32

GARNET normalized to 12 O

	analysis #	grcore3	grcore1	grcore2	grcore4	grcore5	grrim1	grrim2	grrim3
SiO2	**Wt. % oxide**	38.82	38.57	38.65	38.24	38.12	38.24	39.61	38.36
Al2O3		20.41	20.33	20.81	20.77	20.51	21.27	21.13	20.47
TiO2		0.3	0.03	0	0.07	0	0.11	0	0
FeO		29.98	30.11	30.07	30.95	31.07	31.02	32.95	31.6
MnO		4.38	3.98	4.43	4.01	3.94	2.75	3.16	3.46
MgO		1.79	1.71	1.68	1.61	1.54	2.24	1.97	2.28
CaO		3.76	4.36	3.86	3.86	3.13	3.34	3.63	3.24
Total		99.44	99.09	99.50	99.51	98.31	98.97	102.45	99.41
mol.prop/O	**0x.mw/cat**								
m.p. Si	60.08	0.65	0.64	0.64	0.64	0.63	0.64	0.66	0.64
m.p. Al	50.98	0.40	0.40	0.41	0.41	0.40	0.42	0.41	0.40
m.p. Ti	79.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m.p. Fe	71.85	0.42	0.42	0.42	0.43	0.43	0.43	0.46	0.44
m.p. Mn	70.94	0.06	0.06	0.06	0.06	0.06	0.04	0.04	0.05
m.p. Mg	40.30	0.04	0.04	0.04	0.04	0.04	0.06	0.05	0.06
m.p. Ca	56.08	0.07	0.08	0.07	0.07	0.06	0.06	0.06	0.06
Moles cations		1.64	1.64	1.64	1.64	1.62	1.64	1.69	1.64
Moles Oxygen		2.49	2.48	2.49	2.48	2.45	2.49	2.56	2.48
Oxygen norm factor		4.82	4.84	4.82	4.84	4.89	4.82	4.69	4.83
cat Si	4	3.11	3.11	3.10	3.08	3.10	3.07	3.09	3.09
cat Al	3	1.93	1.93	1.97	1.97	1.97	2.01	1.95	1.94
cat Ti	4	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00
cat Fe	2	2.01	2.03	2.02	2.08	2.11	2.08	2.15	2.13
cat Mn	2	0.30	0.27	0.30	0.27	0.27	0.19	0.21	0.24
cat Mg	2	0.21	0.21	0.20	0.19	0.19	0.27	0.23	0.27
cat Ca	2	0.32	0.38	0.33	0.33	0.27	0.29	0.30	0.28
Total cations		7.90	7.92	7.92	7.93	7.91	7.92	7.93	7.94
Almandine		70.67	70.39	70.76	72.27	74.30	73.72	74.36	72.95
Grossular		11.35	13.06	11.64	11.55	9.59	9.00	10.49	9.58
Pyrope		7.52	7.13	7.05	6.70	6.57	9.49	7.92	9.38
Spessartine		10.46	9.42	10.56	9.48	9.54	6.62	7.22	8.09
Fe/(Fe+Mg)		0.90	0.91	0.91	0.92	0.92	0.89	0.90	0.89

SAMPLE MC32

STAUROLITE normalized to 23 O

	analysis #	st1	st2	**AVE**
SiO2	**wt. % oxide**	29.03	29.55	29.29
Al2O3		54.05	53.91	53.98
TiO2		0.31	0.47	0.39
FeO		15.94	15.68	15.81
MnO		0.35	0.12	0.24
MgO		1.16	1.18	1.17
CaO		0.09	0	0.05
ZnO		0.00	0	0.00
Total		100.93	100.91	100.92
mol.prop/O	**0x.mw/cat**	**cations**		
m.p. Si	60.08	0.48	0.49	0.49
m.p. Al	50.98	1.06	1.06	1.06
m.p. Ti	79.90	0.00	0.01	0.00
m.p. Fe	71.85	0.22	0.22	0.22
m.p. Mn	70.94	0.00	0.00	0.00
m.p. Mg	40.30	0.03	0.03	0.03
m.p. Ca	56.08	0.00	0.00	0.00
m.p. Zn	76.38	0.00	0.00	0.00
Moles cations		1.80	1.80	1.80
Moles Oxygen		2.82	2.83	2.83
Oxygen norm factor		8.15	8.12	8.14
cat Si	4	3.94	4.00	3.97
cat Al	3	8.64	8.59	8.62
cat Ti	4	0.03	0.05	0.04
cat Fe	2	1.81	1.77	1.79
cat Mn	2	0.04	0.01	0.03
cat Mg	2	0.23	0.24	0.24
cat Zn	2	0.00	0.00	0.00
cat Ca	2	0.01	0.00	0.01
Total cations		14.71	14.66	14.68
x(st)		0.87	0.88	0.872
M(st)		0.02	0.01	0.01

SAMPLE MC32

BIOTITE normalized to 22 O

	anaysis #	bi1	bi2	AVE
SiO2	**Wt. % oxide**	36.91	36.85	36.88
Al2O3		19.75	19.59	19.67
TiO2		1.68	1.57	1.63
FeO		17.87	18.40	18.14
MnO		0.02	0.06	0.04
MgO		10.56	9.97	10.27
CaO		0.10	0.15	0.13
Na2O		0.18	0.00	0.09
K2O		9.70	9.97	9.84
Cl		0.05	0.02	0.04
Total		96.82	96.58	96.70
mol.prop/O	**0x.mw/cat**	**cations**		
m.p. Si	60.084	0.614	0.613	0.614
m.p. Al	50.981	0.387	0.384	0.386
m.p. Ti	79.898	0.021	0.020	0.020
m.p. Fe	71.846	0.249	0.256	0.252
m.p. Mn	70.937	0.000	0.001	0.001
m.p. Mg	40.304	0.262	0.247	0.255
m.p. Ca	56.079	0.002	0.003	0.002
m.p. Na	30.989	0.006	0.000	0.003
m.p. K	47.098	0.206	0.212	0.209
Moles cations		1.747	1.736	1.742
Moles Oxygen		2.470	2.455	2.463
Oxygen norm factor		8.905	8.961	8.933
cat Si	4	5.471	5.496	5.483
cat Al	3	3.450	3.443	3.447
cat Ti	4	0.187	0.176	0.182
cat Fe	2	2.215	2.295	2.255
cat Mn	2	0.003	0.008	0.005
cat Mg	2	2.333	2.217	2.275
cat Ca	2	0.016	0.024	0.020
cat Na	1	0.052	0.000	0.026
cat K	1	1.834	1.897	1.865
Total cations		13.674	13.658	13.666

Tetrahedral				
	Si	5.471	5.496	5.483
	Al	2.529	2.504	2.517
		8.000	8.000	8.000
Octahedral				
	Al	0.920	0.939	0.930
	Ti	0.187	0.176	0.182
	Fe	2.215	2.295	2.255
	Mn	0.003	0.008	0.005
	Mg	2.333	2.217	2.275
		5.658	5.634	5.646
A site	Ca	0.016	0.024	0.020
	Na	0.052	0.000	0.026
	K	1.834	1.897	1.865
		1.902	1.921	1.911
	xFe	0.391	0.407	0.399
	xMg	0.412	0.393	0.403
	xTi	0.033	0.031	0.032
	xAl	0.163	0.167	0.165
	xK	0.964	0.988	0.976
Fe/(Fe+Mg)		0.487	0.509	0.498
Mg/(Mg+Fe)		0.513	0.491	0.502

SAMPLE MC32

MUSCOVITE normalized to 22 O

	analysis #	mu1	mu2	mu3	AVE
SiO2	**Wt. % oxide**	48.26	46.11	47.12	47.16
Al2O3		34.81	33.85	35.03	34.56
TiO2		0.45	0.55	0.54	0.51
FeO		1.68	3.35	1.01	2.01
MnO		0.00	0	0.03	0.01
MgO		0.60	0.86	0.16	0.54
CaO		0.16	0.05	0	0.07
Na2O		1.39	1.42	1.38	1.40
K2O		9.29	9.36	10.31	9.65
Cl		0.00	0.02	0.02	0.01
Total		96.64	95.57	95.60	95.94
mol.prop/O	**0x.mw/cat**	**cations**			
m.p. Si	60.084	0.803	0.767	0.784	0.785
m.p. Al	50.981	0.683	0.664	0.687	0.678
m.p. Ti	79.898	0.006	0.007	0.007	0.006
m.p. Fe	71.846	0.023	0.047	0.014	0.028
m.p. Mn	70.937	0.000	0.000	0.000	0.000
m.p. Mg	40.304	0.015	0.021	0.004	0.013
m.p. Ca	56.079	0.003	0.001	0.000	0.001
m.p. Na	30.989	0.045	0.046	0.045	0.045
m.p. K	47.098	0.197	0.199	0.219	0.205
Moles cations		1.775	1.752	1.760	1.762
Moles Oxygen		2.804	2.736	2.763	2.768
Oxygen norm factor		7.846	8.042	7.963	7.949
cat Si	4	6.302	6.171	6.245	6.240
cat Al	3	5.357	5.340	5.471	5.389
cat Ti	4	0.044	0.055	0.054	0.051
cat Fe	2	0.183	0.375	0.112	0.223
cat Mn	2	0.000	0.000	0.003	0.001
cat Mg	2	0.117	0.172	0.032	0.107
cat Ca	2	0.022	0.007	0.000	0.010
cat Na	1	0.352	0.368	0.355	0.358
cat K	1	1.548	1.598	1.743	1.629
Total cations		12.026	12.120	11.917	12.021

SAMPLE MC32

Tetrahedral	Si	6.302	6.171	6.245	6.240
	Al	1.698	1.829	1.755	1.760
		8.000	8.000	8.000	8.000
Octahedral	Al	3.659	3.511	3.716	3.629
	Ti	0.044	0.055	0.054	0.051
	Fe	0.183	0.375	0.112	0.223
	Mn	0.000	0.000	0.003	0.001
	Mg	0.117	0.172	0.032	0.107
		4.003	4.113	3.917	4.011
A site	Ca	0.022	0.007	0.000	0.010
	Na	0.352	0.368	0.355	0.358
	K	1.548	1.598	1.743	1.629
		1.922	1.974	2.098	1.998
	x musc	0.805	0.810	0.831	0.816
	x para	0.183	0.187	0.169	0.179
	xAl	0.914	0.854	0.949	0.905
					0.819744379

PLAGIOCLASE normalized to 8 O

	analysis #	plg1	plg2	plg3	AVG
SiO2	**Wt. % oxide**	60.93	61.14	59.83	60.63
Al2O3		24.41	25.39	25.15	24.98
TiO2		0.00	0.00	0.11	0.04
FeO		0.38	0.51	0.20	0.36
MnO		0.16	0.00	0.17	0.11
MgO		0.38	0.00	0.32	0.23
Cr2O3		0.00	0	0	0.00
CaO		7.65	7.49	7.05	7.40
Na2O		8.58	8.09	7.02	7.90
K2O		0.00	0.04	0.16	0.07
Total		102.49	102.66	100.01	101.72

SAMPLE MC32

mol.prop/O	0x.mw/cat	cations			
m.p. Si	60.084	1.014	1.018	0.996	1.009
m.p. Al	50.981	0.479	0.498	0.493	0.490
m.p. Ti	79.898	0.000	0.000	0.001	0.000
m.p. Fe	71.846	0.005	0.007	0.003	0.005
m.p. Mn	70.937	0.002	0.000	0.002	0.002
m.p. Mg	40.304	0.009	0.000	0.008	0.006
m.p. Cr	75.995	0.000	0.000	0.000	0.000
m.p. Ca	56.079	0.136	0.134	0.126	0.132
m.p. Na	30.989	0.277	0.261	0.227	0.255
m.p. K	47.098	0.000	0.001	0.003	0.001
Moles cations		1.923	1.918	1.859	1.900
Moles Oxygen		3.038	3.054	2.988	3.027
Oxygen norm factor		2.633	2.620	2.677	2.643
cat Si	4	2.670	2.666	2.666	2.667
cat Al	3	1.261	1.305	1.321	1.295
cat Ti	4	0.000	0.000	0.004	0.001
cat Fe	2	0.014	0.019	0.007	0.013
cat Mn	2	0.006	0.000	0.006	0.004
cat Mg	2	0.025	0.000	0.021	0.015
cat Cr	3	0.000	0.000	0.000	0.000
cat Ca	2	0.359	0.350	0.337	0.349
cat Na	1	0.729	0.684	0.606	0.674
cat K	1	0.000	0.002	0.009	0.004
Total cations		5.064	5.025	4.978	5.022

Mole% Ab	66.99	66.01	63.70	65.65
Mole% An	33.01	33.77	35.35	34
Mole% Or	0.00	0.21	0.96	0.36
Sum	100	100	100	100

SAMPLE MC39

GARNET normalized to 12 O

	analysis #	gr12	gr10	gr5	gr37	gr39	gr34	gr40	gr41	**AVE**
SiO2	**Wt. % oxide**	37.3	36.62	36.31	37.63	37.03	37.21	37.11	36.76	37.03
Al2O3		21.4	20.73	19.62	20.08	21.39	20.52	21.06	21.22	20.93
TiO2		0	0	0	0	0	0.43	0.06	0.16	0.22
FeO		29.54	29.4	31.44	31.81	34.8	29.29	36.11	36.48	33.96
MnO		5.37	5.26	3.61	1.76	1.12	4.37	1.67	1.39	2.48
MgO		1.16	1.14	0.72	1.41	1.99	1.55	1.85	1.59	1.66
CaO		6.1	5.75	6.48	5.76	2.44	5.38	2.36	2.46	3.40
Total		100.87	98.90	98.18	98.45	98.77	98.75	100.22	100.06	99.68
mol.prop/O	**0x.mw/cat**									
m.p. Si	60.08	0.62	0.61	0.60	0.63	0.62	0.62	0.62	0.61	0.62
m.p. Al	50.98	0.42	0.41	0.38	0.39	0.42	0.40	0.41	0.42	0.41
m.p. Ti	79.90	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
m.p. Fe	71.85	0.41	0.41	0.44	0.44	0.48	0.41	0.50	0.51	0.47
m.p. Mn	70.94	0.08	0.07	0.05	0.02	0.02	0.06	0.02	0.02	0.03
m.p. Mg	40.30	0.03	0.03	0.02	0.03	0.05	0.04	0.05	0.04	0.04
m.p. Ca	56.08	0.11	0.10	0.12	0.10	0.04	0.10	0.04	0.04	0.06
Moles cations		1.66	1.63	1.61	1.63	1.63	1.63	1.65	1.64	1.64
Moles Oxygen		2.50	2.44	2.41	2.45	2.46	2.46	2.47	2.46	2.46
Oxygen norm factor		4.81	4.91	4.98	4.90	4.89	4.88	4.86	4.87	4.87
cat Si	4	2.99	2.99	3.01	3.07	3.01	3.02	3.00	2.98	3.00
cat Al	3	2.02	2.00	1.92	1.93	2.05	1.97	2.01	2.03	2.00
cat Ti	4	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.01
cat Fe	2	1.98	2.01	2.18	2.17	2.37	1.99	2.44	2.47	2.30
cat Mn	2	0.36	0.36	0.25	0.12	0.08	0.30	0.11	0.10	0.17
cat Mg	2	0.14	0.14	0.09	0.17	0.24	0.19	0.22	0.19	0.201
cat Ca	2	0.52	0.50	0.58	0.50	0.21	0.47	0.20	0.21	0.30
Total cations		8.01	8.01	8.03	7.97	7.96	7.97	7.99	7.99	7.98
Almandine		65.85	66.63	70.36	73.15	81.68	68	81.84	83.15	77.55
Grossular		17.42	16.69	18.58	16.97	7.34	16	6.85	7.18	9.95
Pyrope		4.61	4.61	2.87	5.78	8.33	6	7.47	6.46	6.77
Spessartine		12.12	12.07	8.18	4.10	2.66	10	3.83	3.21	5.73
Fe/(Fe+Mg)		0.93	0.94	0.96	0.93	0.91	0.91	0.92	0.93	0.92

SAMPLE MC39

STAUROLITE normalized to 23 O

	analysis #	st1	st1	st2	st3	st4	st5	st6	st7	st8
SiO2	**wt. % oxide**	27.10	28.37	28.98	27.95	28.35	28.83	28.39	27.53	28.1
Al2O3		45.26	52.63	52.81	53	52.34	53.54	52.91	51.72	51.93
TiO2		0.53	0.56	0.48	0.46	0.49	0.3	0.46	0.55	0.35
FeO		21.57	16.03	15.49	15.44	15.76	15.99	15.96	16.13	16.1
MnO		0.00	0.2	0	0.28	0.07	0.16	0	0	0
MgO		1.72	1.16	1.02	0.8	1.18	1.66	1.17	0.91	1.63
CaO		0.21	0	0	0.08	0	0	0	0	0.01
ZnO		1.09	0.08	0.01	0.27	0	0.05	0.09	0.5	0.05
Total		97.48	99.03	98.79	98.28	98.19	100.53	98.98	97.34	98.17
mol.prop/O	**0x.mw/cat**	**cations**								
m.p. Si	60.08	0.45	0.47	0.48	0.47	0.47	0.48	0.47	0.46	0.47
m.p. Al	50.98	0.89	1.03	1.04	1.04	1.03	1.05	1.04	1.01	1.02
m.p. Ti	79.90	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00
m.p. Fe	71.85	0.30	0.22	0.22	0.21	0.22	0.22	0.22	0.22	0.22
m.p. Mn	70.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m.p. Mg	40.30	0.04	0.03	0.03	0.02	0.03	0.04	0.03	0.02	0.04
m.p. Ca	56.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m.p. Zn	76.38	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Moles cations		1.71	1.77	1.77	1.75	1.75	1.80	1.77	1.73	1.76
Moles Oxygen		2.61	2.76	2.77	2.74	2.75	2.81	2.77	2.71	2.74
Oxygen norm factor		8.82	8.33	8.30	8.38	8.38	8.19	8.32	8.50	8.40
cat Si	4	3.98	3.93	4.00	3.90	3.95	3.93	3.93	3.90	3.93
cat Al	3	7.83	8.59	8.60	8.71	8.60	8.60	8.63	8.62	8.56
cat Ti	4	0.06	0.06	0.05	0.05	0.05	0.03	0.05	0.06	0.04
cat Fe	2	2.65	1.86	1.79	1.80	1.84	1.82	1.85	1.91	1.88
cat Mn	2	0.00	0.02	0.00	0.03	0.01	0.02	0.00	0.00	0.00
cat Mg	2	0.38	0.24	0.21	0.17	0.25	0.34	0.24	0.19	0.34
cat Zn	2	0.13	0.01	0.00	0.03	0.00	0.01	0.01	0.06	0.01
cat Ca	2	0.03	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Total cations		15.05	14.71	14.65	14.70	14.70	14.74	14.71	14.73	14.75
x(st)		0.88	0.88	0.89	0.90	0.88	0.84	0.88	0.91	0.85
M(st)		0.00	0.01	0.00	0.02	0.00	0.01	0.00	0.00	0.00

SAMPLE MC39

BIOTITE normalized to 22 O

	anaysis #	bi1	bi2	bi3	bi13	bi14	bi15
SiO2	**Wt. % oxide**	34.31	34.13	34.69	32.28	37.03	35.57
Al2O3		18.36	16.96	18.12	19.48	19.96	19.03
TiO2		1.82	2.03	1.44	1.41	1.54	1.15
FeO		21.82	25.42	26.50	22.68	20.35	22.91
MnO		0.06	0.00	0.00	0.04	0.00	0.14
MgO		9.34	6.66	6.69	8.49	7.78	6.86
CaO		0.14	0.00	0.01	0.10	0.00	0.16
Na2O		0.00	0.00	0.13	0.25	0.41	0.00
K2O		7.62	7.31	7.05	7.23	7.77	8.32
Cl		0.01	0.00	0.09	0.00	0.17	0.04
Total		93.48	92.51	94.72	91.96	95.01	94.18
mol.prop/O	**0x.mw/cat**	**cations**					
m.p. Si	60.084	0.571	0.568	0.577	0.537	0.616	0.592
m.p. Al	50.981	0.360	0.333	0.355	0.382	0.392	0.373
m.p. Ti	79.898	0.023	0.025	0.018	0.018	0.019	0.014
m.p. Fe	71.846	0.304	0.354	0.369	0.316	0.283	0.319
m.p. Mn	70.937	0.001	0.000	0.000	0.001	0.000	0.002
m.p. Mg	40.304	0.232	0.165	0.166	0.211	0.193	0.170
m.p. Ca	56.079	0.002	0.000	0.000	0.002	0.000	0.003
m.p. Na	30.989	0.000	0.000	0.004	0.008	0.013	0.000
m.p. K	47.098	0.162	0.155	0.150	0.154	0.165	0.177
Moles cations		1.655	1.600	1.640	1.627	1.682	1.650
Moles Oxygen		2.348	2.283	2.336	2.292	2.424	2.355
Oxygen norm factor		9.372	9.638	9.418	9.597	9.077	9.342
cat Si	4	5.352	5.475	5.438	5.156	5.594	5.531
cat Al	3	3.375	3.206	3.348	3.667	3.554	3.487
cat Ti	4	0.213	0.245	0.170	0.169	0.175	0.134
cat Fe	2	2.846	3.410	3.474	3.030	2.571	2.979
cat Mn	2	0.008	0.000	0.000	0.005	0.000	0.018
cat Mg	2	2.172	1.593	1.563	2.022	1.752	1.590
cat Ca	2	0.023	0.000	0.002	0.017	0.000	0.027
cat Na	1	0.000	0.000	0.040	0.077	0.120	0.000

SAMPLE MC39

cat K	1	1.516	1.496	1.410	1.473	1.497	1.650
Total cations		13.989	13.929	13.994	14.066	13.646	13.766
Tetrahedral							
	Si	5.352	5.475	5.438	5.156	5.594	5.531
	Al	2.648	2.525	2.562	2.844	2.406	2.469
		8.000	8.000	8.000	8.000	8.000	8.000
Octahedral							
	Al	0.727	0.681	0.785	0.823	1.148	1.018
	Ti	0.213	0.245	0.170	0.169	0.175	0.134
	Fe	2.846	3.410	3.474	3.030	2.571	2.979
	Mn	0.008	0.000	0.000	0.005	0.000	0.018
	Mg	2.172	1.593	1.563	2.022	1.752	1.590
		5.966	5.929	5.992	6.049	5.646	5.740
A site	Ca	0.023	0.000	0.002	0.017	0.000	0.027
	Na	0.000	0.000	0.040	0.077	0.120	0.000
	K	1.516	1.496	1.410	1.473	1.497	1.650
		1.540	1.496	1.451	1.568	1.618	1.677
	xFe	0.477	0.575	0.580	0.501	0.455	0.519
	xMg	0.364	0.269	0.261	0.334	0.310	0.277
	xTi	0.036	0.041	0.028	0.028	0.031	0.023
	xAl	0.122	0.115	0.131	0.136	0.203	0.177
	xK	0.985	1.000	0.972	0.940	0.926	0.984
Fe/(Fe+Mg)		0.567	0.682	0.690	0.600	0.595	0.652
Mg/(Mg+Fe)		0.433	0.318	0.310	0.400	0.405	0.348

SAMPLE MC39

MUSCOVITE normalized to 22 O

	analysis #	mu1	mu2	musmatrix	**AVE**
SiO2	**Wt. % oxide**	45.87	44.09	46.11	45.36
Al2O3		34.97	34.65	33.23	34.28
TiO2		0.45	0.45	0.47	0.46
FeO		0.93	0.73	1.32	0.99
MnO		0.00	0	0.05	0.02
MgO		1.02	0.01	0.91	0.65
CaO		0.18	0	0.1	0.09
Na2O		1.41	1.31	1.05	1.26
K2O		10.18	9.62	10.55	10.12
Cl		0.03	0.08	0.03	0.05
Total		95.04	90.94	93.82	93.27
mol.prop/O	**0x.mw/cat**	**cations**			
m.p. Si	60.084	0.763	0.734	0.767	0.755
m.p. Al	50.981	0.686	0.680	0.652	0.672
m.p. Ti	79.898	0.006	0.006	0.006	0.006
m.p. Fe	71.846	0.013	0.010	0.018	0.014
m.p. Mn	70.937	0.000	0.000	0.001	0.000
m.p. Mg	40.304	0.025	0.000	0.023	0.016
m.p. Ca	56.079	0.003	0.000	0.002	0.002
m.p. Na	30.989	0.046	0.042	0.034	0.041
m.p. K	47.098	0.216	0.204	0.224	0.215
Moles cations		1.758	1.676	1.726	1.720
Moles Oxygen		2.739	2.632	2.697	2.689
Oxygen norm factor		8.031	8.359	8.158	8.180
cat Si	4	6.131	6.134	6.261	6.175
cat Al	3	5.509	5.681	5.318	5.501
cat Ti	4	0.045	0.047	0.048	0.047
cat Fe	2	0.104	0.085	0.150	0.113
cat Mn	2	0.000	0.000	0.006	0.002
cat Mg	2	0.203	0.002	0.184	0.131
cat Ca	2	0.026	0.000	0.015	0.014

SAMPLE MC39

cat Na	1	0.365	0.353	0.276	0.332
cat K	1	1.736	1.707	1.827	1.757
Total cations		12.018	11.949	11.981	11.983
Tetrahedral	Si	6.131	6.134	6.261	6.175
	Al	1.869	1.866	1.739	1.825
		8.000	8.000	8.000	8.000
Octahedral	Al	3.640	3.815	3.578	3.676
	Ti	0.045	0.047	0.048	0.047
	Fe	0.104	0.085	0.150	0.113
	Mn	0.000	0.000	0.006	0.002
	Mg	0.203	0.002	0.184	0.131
		3.993	3.949	3.966	3.969
A site	Ca	0.026	0.000	0.015	0.014
	Na	0.365	0.353	0.276	0.332
	K	1.736	1.707	1.827	1.757
		2.127	2.061	2.118	2.102
	x musc	0.816	0.829	0.863	0.836
	x para	0.172	0.171	0.130	0.158
	xAl	0.912	0.966	0.902	0.926

SAMPLE MC55

GARNET normalized to 12 O

	analysis #	grcore3	grcore2	grcore5	grmedian1	grmedian2	grmedian3	grrim1	grrim2	grrim3
SiO2	**Wt. % oxide**	37.74	37.56	38.36	37.38	38.36	37.25	38.12	37.33	37.52
Al2O3		20.85	20.17	20.98	20.41	20.98	21.16	20.94	20.79	21.09
TiO2		0.19	0.12	0	0.07	0.06	0	0	0	0.12
FeO		27.94	27.24	28.47	28.69	29.27	28.37	30.93	30.76	31.2
MnO		6.9	6.91	7.37	6.26	5.65	5.38	2.99	2.75	2.82
MgO		1.4	1.28	1.13	0.94	1.1	1.42	1.35	1.31	1.36
CaO		4.78	5.26	5.33	5.27	5.56	5.72	5.2	5.03	4.51
Total		99.80	98.54	101.64	99.02	100.98	99.30	99.53	97.97	98.62
mol.prop/O	**0x.mw/cat**									
m.p. Si	60.08	0.63	0.63	0.64	0.62	0.64	0.62	0.63	0.62	0.62
m.p. Al	50.98	0.41	0.40	0.41	0.40	0.41	0.42	0.41	0.41	0.41
m.p. Ti	79.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m.p. Fe	71.85	0.39	0.38	0.40	0.40	0.41	0.39	0.43	0.43	0.43
m.p. Mn	70.94	0.10	0.10	0.10	0.09	0.08	0.08	0.04	0.04	0.04
m.p. Mg	40.30	0.03	0.03	0.03	0.02	0.03	0.04	0.03	0.03	0.03
m.p. Ca	56.08	0.09	0.09	0.10	0.09	0.10	0.10	0.09	0.09	0.08
Moles cations		1.65	1.62	1.67	1.63	1.66	1.64	1.64	1.62	1.63
Moles Oxygen		2.48	2.45	2.52	2.45	2.51	2.47	2.48	2.44	2.46
Oxygen norm factor		4.84	4.90	4.77	4.90	4.78	4.86	4.83	4.91	4.88
cat Si	4	3.04	3.06	3.04	3.05	3.05	3.01	3.07	3.05	3.05
cat Al	3	1.98	1.94	1.96	1.96	1.97	2.02	1.98	2.00	2.02
cat Ti	4	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
cat Fe	2	1.88	1.86	1.89	1.95	1.95	1.92	2.08	2.10	2.12
cat Mn	2	0.47	0.48	0.50	0.43	0.38	0.37	0.20	0.19	0.19
cat Mg	2	0.17	0.16	0.13	0.11	0.13	0.17	0.16	0.16	0.16
cat Ca	2	0.41	0.46	0.45	0.46	0.47	0.50	0.45	0.44	0.39
Total cations		7.96	7.96	7.98	7.97	7.96	7.98	7.94	7.95	7.94
Almandine		64.16	62.97	63.58	66.02	66.41	64.95	72	72.68	73.83
Grossular		14.06	15.58	15.25	15.54	16.16	16.78	15	15.23	13.67
Pyrope		5.73	5.27	4.50	3.86	4.45	5.80	6	5.52	5.74
Spessartine		16.05	16.18	16.67	14.59	12.98	12.48	7	6.58	6.76
Fe/(Fe+Mg)		0.92	0.92	0.93	0.94	0.94	0.92	0.93	0.93	0.93

SAMPLE MC55

STAUROLITE normalized to 23 O

	analysis #	st1	st2	st3
SiO2	**wt. % oxide**	30.40	27.8	27.48
Al2O3		53.84	52.87	52.78
TiO2		0.47	0.48	0.47
FeO		16.29	16.53	16.06
MnO		0.01	0.21	0.19
MgO		1.15	1.9	1.39
CaO		0.01	0.14	0.11
ZnO		0.00	0.29	0.21
Total		102.17	100.22	98.69
mol.prop/O	**0x.mw/cat**	**cations**		
m.p. Si	60.08	0.51	0.46	0.46
m.p. Al	50.98	1.06	1.04	1.04
m.p. Ti	79.90	0.01	0.01	0.01
m.p. Fe	71.85	0.23	0.23	0.22
m.p. Mn	70.94	0.00	0.00	0.00
m.p. Mg	40.30	0.03	0.05	0.03
m.p. Ca	56.08	0.00	0.00	0.00
m.p. Zn	76.38	0.00	0.00	0.00
Moles cations		1.82	1.79	1.76
Moles Oxygen		2.86	2.78	2.74
Oxygen norm factor		8.03	8.28	8.38
cat Si	4	4.06	3.83	3.83
cat Al	3	8.48	8.58	8.68
cat Ti	4	0.05	0.05	0.05
cat Fe	2	1.82	1.90	1.87
cat Mn	2	0.00	0.02	0.02
cat Mg	2	0.23	0.39	0.29
cat Zn	2	0.00	0.03	0.02
cat Ca	2	0.00	0.02	0.02
Total cations		14.65	14.83	14.78
x(st)		0.888	0.82	0.86
M(st)		0.00	0.01	0.01

SAMPLE MC55

BIOTITE normalized to 22 O

	anaysis #	bt1	bt2
SiO2	**Wt. % oxide**	34.08	36.41
Al2O3		19.22	19.18
TiO2		1.92	1.73
FeO		17.23	17.16
MnO		0.00	0.00
MgO		9.65	8.73
CaO		0.29	0.13
Na2O		0.03	0.00
K2O		6.79	9.55
Cl		0.00	0.00
Total		89.21	92.89
mol.prop/O	**0x.mw/cat**	**cations**	
m.p. Si	60.084	0.567	0.606
m.p. Al	50.981	0.377	0.376
m.p. Ti	79.898	0.024	0.022
m.p. Fe	71.846	0.240	0.239
m.p. Mn	70.937	0.000	0.000
m.p. Mg	40.304	0.239	0.217
m.p. Ca	56.079	0.005	0.002
m.p. Na	30.989	0.001	0.000
m.p. K	47.098	0.144	0.203
Moles cations		1.598	1.664
Moles Oxygen		2.305	2.379
Oxygen norm factor		9.545	9.249
cat Si	4	5.414	5.604
cat Al	3	3.598	3.479
cat Ti	4	0.229	0.200
cat Fe	2	2.289	2.209
cat Mn	2	0.000	0.000
cat Mg	2	2.285	2.003
cat Ca	2	0.049	0.021
cat Na	1	0.009	0.000

SAMPLE MC55

cat K	1	1.376	1.875
Total cations		13.865	13.518
Tetrahedral			
	Si	5.414	5.604
	Al	2.586	2.396
		8.000	8.000
Octahedral			
	Al	1.012	1.084
	Ti	0.229	0.200
	Fe	2.289	2.209
	Mn	0.000	0.000
	Mg	2.285	2.003
		5.816	5.496
A site	Ca	0.049	0.021
	Na	0.009	0.000
	K	1.376	1.875
		1.435	1.897
	xFe	0.394	0.402
	xMg	0.393	0.364
	xTi	0.039	0.036
	xAl	0.174	0.197
	xK	0.959	0.989
Fe/(Fe+Mg)		0.500	0.524
Mg/(Mg+Fe)		0.500	0.476

SAMPLE MC55

MUSCOVITE normalized to 22 O

	analysis #	ms1	mu2	mu3	AVE	mc55/Msinc	mu5	mu6
SiO2	**Wt. % oxide**	45.45	44.09	45.21	44.92	46.33	44.97	44.73
Al2O3		34.46	34.65	35.27	34.79	35.27	34.39	35.44
TiO2		0.42	0.45	0.58	0.48	0.19	0.01	0.92
FeO		0.87	0.73	0.91	0.84	0.81	0.07	0.77
MnO		0.09	0	0.12	0.07	0.34	0.11	0.04
MgO		0.59	0.01	0.68	0.43	0.17	0	1.17
CaO		0.04	0	0	0.01	0.34	19	0.21
Na2O		0.87	1.31	0.76	0.98	0	0.85	1.22
K2O		10.20	9.62	9.45	9.76	11.14	0	9.91
Cl		0.12	0.08	0	0.07	0.08	0	0
Total		93.11	90.94	92.98	92.34	94.67	99.40	94.41
mol.prop/O	**0x.mw/cat**	**cations**						
m.p. Si	60.084	0.756	0.734	0.752	0.748	0.771	0.748	0.744
m.p. Al	50.981	0.676	0.680	0.692	0.682	0.692	0.675	0.695
m.p. Ti	79.898	0.005	0.006	0.007	0.006	0.002	0.000	0.012
m.p. Fe	71.846	0.012	0.010	0.013	0.012	0.011	0.001	0.011
m.p. Mn	70.937	0.001	0.000	0.002	0.001	0.005	0.002	0.001
m.p. Mg	40.304	0.015	0.000	0.017	0.011	0.004	0.000	0.029
m.p. Ca	56.079	0.001	0.000	0.000	0.000	0.006	0.339	0.004
m.p. Na	30.989	0.028	0.042	0.025	0.032	0.000	0.027	0.039
m.p. K	47.098	0.217	0.204	0.201	0.207	0.237	0.000	0.210
Moles cations		1.711	1.676	1.708	1.698	1.728	1.792	1.745
Moles Oxygen		2.688	2.632	2.701	2.674	2.729	2.864	2.724
Oxygen norm factor		8.183	8.359	8.145	8.228	8.061	7.681	8.077
cat Si	4	6.190	6.134	6.129	6.151	6.216	5.749	6.013
cat Al	3	5.532	5.681	5.635	5.615	5.577	5.182	5.615
cat Ti	4	0.043	0.047	0.059	0.050	0.019	0.001	0.093
cat Fe	2	0.099	0.085	0.103	0.096	0.091	0.007	0.087
cat Mn	2	0.010	0.000	0.014	0.008	0.039	0.012	0.005
cat Mg	2	0.120	0.002	0.137	0.087	0.034	0.000	0.234
cat Ca	2	0.006	0.000	0.000	0.002	0.049	2.603	0.030
cat Na	1	0.230	0.353	0.200	0.260	0.000	0.211	0.318

SAMPLE MC55

cat K	1	1.772	1.707	1.634	1.704	1.907	0.000	1.700
Total cations		12.000	11.949	12.077	12.009	12.024	13.554	12.077
Tetrahedral	Si	6.190	6.134	6.129	6.151	6.216	5.749	6.013
	Al	1.810	1.866	1.871	1.849	1.784	2.251	1.987
		8.000	8.000	8.000	8.000	8.000	8.000	8.000
Octahedral	Al	3.722	3.815	3.764	3.766	3.792	2.931	3.628
	Ti	0.043	0.047	0.059	0.050	0.019	0.001	0.093
	Fe	0.099	0.085	0.103	0.096	0.091	0.007	0.087
	Mn	0.010	0.000	0.014	0.008	0.039	0.012	0.005
	Mg	0.120	0.002	0.137	0.087	0.034	0.000	0.234
		3.994	3.949	4.077	4.007	3.975	2.951	4.047
A site	Ca	0.006	0.000	0.000	0.002	0.049	2.603	0.030
	Na	0.230	0.353	0.200	0.260	0.000	0.211	0.318
	K	1.772	1.707	1.634	1.704	1.907	0.000	1.700
		2.008	2.061	1.834	1.967	1.955	2.813	2.048
	x musc	0.883	0.829	0.891	0.867	0.975	0.000	0.830
	x para	0.114	0.171	0.109	0.132	0.000	0.075	0.155
	xAl	0.932	0.966	0.923	0.940	0.954	0.993	0.897

SAMPLE MC55

PLAGIOCLASE normalized to 8 O

	analysis #	plg1	plg2(core)	plg3	AVG
SiO2	**Wt. % oxide**	57.14	57.33	57.06	57.18
Al2O3		26.54	26.34	26.05	26.31
TiO2		0.06	0.00	0	0.02
FeO		0.19	0.07	0.01	0.09
MnO		0.00	0.19	0	0.06
MgO		0.00	0.13	0.27	0.13
Cr2O3		0	0	0	0.00
CaO		8.87	9.70	9.07	9.21
Na2O		6.78	5.67	6.52	6.32
K2O		0.02	0.00	0.11	0.04
Total		99.60	99.43	99.09	99.37
mol.prop/O	**0x.mw/cat**				
m.p. Si	60.084	0.951	0.954	0.950	0.952
m.p. Al	50.981	0.521	0.517	0.511	0.516
m.p. Ti	79.898	0.001	0.000	0.000	0.000
m.p. Fe	71.846	0.003	0.001	0.000	0.001
m.p. Mn	70.937	0.000	0.003	0.000	0.001
m.p. Mg	40.304	0.000	0.003	0.007	0.003
m.p. Cr	75.995	0.000	0.000	0.000	0.000
m.p. Ca	56.079	0.158	0.173	0.162	0.164
m.p. Na	30.989	0.219	0.183	0.210	0.204
m.p. K	47.098	0.000	0.000	0.002	0.001
Moles cations		1.852	1.834	1.842	1.843
Moles Oxygen		2.955	2.955	2.941	2.950
Oxygen norm factor		2.707	2.708	2.720	2.712
cat Si	4	2.575	2.583	2.583	2.581
cat Al	3	1.409	1.399	1.390	1.399

SAMPLE MC55

cat Ti	4	0.002	0.000	0.000	0.001
cat Fe	2	0.007	0.003	0.000	0.003
cat Mn	2	0.000	0.007	0.000	0.002
cat Mg	2	0.000	0.009	0.018	0.009
cat Cr	3	0.000	0.000	0.000	0.000
cat Ca	2	0.428	0.468	0.440	0.446
cat Na	1	0.592	0.495	0.572	0.553
cat K	1	0.001	0.000	0.006	0.002
Total cations		5.015	4.965	5.011	4.997
Mole% Ab		57.98	51.40	56.19	55
Mole% An		42	49	43.19	44
Mole% Or		0.11	0.00	0.62	0
Sum		100	100	100	100

SAMPLE MC81

GARNET normalized to 12 O

	analysis #	grcore1	grcore2	grcore3	grmedian3	grmedian4	grmedian5	grrim1	grrim2	grrim3
SiO2	**Wt. % oxide**	37.4	37.02	37.47	37.54	38.36	37.21	37.28	36.99	37.8
Al2O3		21.3	21.05	20.4	20.88	20.96	20.34	20.86	20.6	20.56
TiO2		0	0	0.17	0.08	0.01	0.32	0	0.16	0
FeO		27.93	27.68	27.56	28.67	28.98	28.51	32.64	33.4	34.16
MnO		6.81	6.45	6.29	5.57	4.9	5.42	1.29	1.33	0.61
MgO		1.67	1.36	1.17	1.46	1.8	1.39	2.32	1.77	1.9
CaO		4.37	4.58	4.72	4.17	4.51	4.14	2.92	2.87	2.93
Total		99.48	98.14	97.78	98.37	99.52	97.33	97.31	97.12	97.96
mol.prop/O	**0x.mw/cat**									
m.p. Si	60.08	0.62	0.62	0.62	0.62	0.64	0.62	0.62	0.62	0.63
m.p. Al	50.98	0.42	0.41	0.40	0.41	0.41	0.40	0.41	0.40	0.40
m.p. Ti	79.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m.p. Fe	71.85	0.39	0.39	0.38	0.40	0.40	0.40	0.45	0.46	0.48
m.p. Mn	70.94	0.10	0.09	0.09	0.08	0.07	0.08	0.02	0.02	0.01
m.p. Mg	40.30	0.04	0.03	0.03	0.04	0.04	0.03	0.06	0.04	0.05
m.p. Ca	56.08	0.08	0.08	0.08	0.07	0.08	0.07	0.05	0.05	0.05
Moles cations		1.64	1.62	1.61	1.62	1.65	1.60	1.61	1.60	1.62
Moles Oxygen		2.48	2.44	2.44	2.45	2.49	2.43	2.44	2.42	2.45
Oxygen norm factor		4.85	4.91	4.92	4.89	4.82	4.95	4.92	4.96	4.90
cat Si	4	3.02	3.03	3.07	3.06	3.08	3.06	3.06	3.05	3.09
cat Al	3	2.03	2.03	1.97	2.00	1.98	1.97	2.01	2.00	1.98
cat Ti	4	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.00
cat Fe	2	1.88	1.89	1.89	1.95	1.94	1.96	2.24	2.31	2.33
cat Mn	2	0.47	0.45	0.44	0.38	0.33	0.38	0.09	0.09	0.04
cat Mg	2	0.20	0.17	0.14	0.18	0.22	0.17	0.28	0.22	0.23
cat Ca	2	0.38	0.40	0.41	0.36	0.39	0.37	0.26	0.25	0.26
Total cations		7.97	7.96	7.93	7.94	7.93	7.93	7.94	7.94	7.93
Almandine		64.35	65.12	65.52	67.85	67.51	68.24	78.04	80.33	81.49
Grossular		12.90	13.80	14.38	12.64	13.46	12.69	9.00	8.84	8.95
Pyrope		6.86	5.70	4.96	6.16	7.47	5.93	9.89	7.59	8.08
Spessartine		15.89	15.37	15.15	13.35	11.56	13.14	3.12	3.24	1.47
Fe/(Fe+Mg)		0.90	0.92	0.93	0.92	0.90	0.92	0.89	0.91	0.91

SAMPLE MC81

STAUROLITE normalized to 23 O

	analysis #	st1
SiO2	**wt. % oxide**	28.04
Al2O3		54.16
TiO2		0.41
FeO		14.66
MnO		0.09
MgO		1.52
CaO		0.00
ZnO		0.00
Total		98.88

mol.prop/O	**0x.mw/cat**	**cations**
m.p. Si	60.08	0.47
m.p. Al	50.98	1.06
m.p. Ti	79.90	0.01
m.p. Fe	71.85	0.20
m.p. Mn	70.94	0.00
m.p. Mg	40.30	0.04
m.p. Ca	56.08	0.00
m.p. Zn	76.38	0.00

Moles cations		1.78
Moles Oxygen		2.78
Oxygen norm factor		8.27
cat Si	4	3.86
cat Al	3	8.79
cat Ti	4	0.04
cat Fe	2	1.69
cat Mn	2	0.01
cat Mg	2	0.31
cat Zn	2	0.00
cat Ca	2	0.00
Total cations		14.70
x(st)		0.840
M(st)		0.01

SAMPLE MC81

BIOTITE normalized to 22 O

	anaysis #	bi1	bi2	AVG	biinc
SiO2	**Wt. % oxide**	35.55	35.77	35.66	33.42
Al2O3		19.58	19.48	19.53	17.49
TiO2		1.48	1.54	1.51	2.23
FeO		17.40	15.79	16.60	18.18
MnO		0.04	0.07	0.06	0.07
MgO		10.99	10.67	10.83	10.84
CaO		0.16	0.28	0.22	0.21
Na2O		0.33	0.17	0.25	0
K2O		6.90	6.53	6.72	6.67
Cl		0.17	0.17	0.17	0.01
Total		92.60	90.47	91.54	89.12
mol.prop/O	**0x.mw/cat**	**cations**			
m.p. Si	60.084	0.592	0.595	0.594	0.556
m.p. Al	50.981	0.384	0.382	0.383	0.343
m.p. Ti	79.898	0.019	0.019	0.019	0.028
m.p. Fe	71.846	0.242	0.220	0.231	0.253
m.p. Mn	70.937	0.001	0.001	0.001	0.001
m.p. Mg	40.304	0.273	0.265	0.269	0.269
m.p. Ca	56.079	0.003	0.005	0.004	0.004
m.p. Na	30.989	0.011	0.005	0.008	0.000
m.p. K	47.098	0.147	0.139	0.143	0.142
Moles cations		1.670	1.631	1.651	1.596
Moles Oxygen		2.393	2.365	2.379	2.280
Oxygen norm factor		9.192	9.303	9.247	9.647
cat Si	4	5.439	5.538	5.488	5.366
cat Al	3	3.530	3.555	3.542	3.310
cat Ti	4	0.170	0.179	0.175	0.269
cat Fe	2	2.226	2.044	2.136	2.441
cat Mn	2	0.005	0.009	0.007	0.010
cat Mg	2	2.506	2.463	2.485	2.595
cat Ca	2	0.026	0.046	0.036	0.036
cat Na	1	0.098	0.051	0.075	0.000

SAMPLE MC81

cat K	1	1.347	1.290	1.318	1.366
Total cations		13.904	13.835	13.869	14.027
Tetrahedral					
	Si	5.439	5.538	5.488	5.366
	Al	2.561	2.462	2.512	2.634
		8.000	8.000	8.000	8.000
Octahedral					
	Al	0.969	1.093	1.031	0.676
	Ti	0.170	0.179	0.175	0.269
	Fe	2.226	2.044	2.136	2.441
	Mn	0.005	0.009	0.007	0.010
	Mg	2.506	2.463	2.485	2.595
		5.877	5.788	5.833	5.991
A site	Ca	0.026	0.046	0.036	0.036
	Na	0.098	0.051	0.075	0.000
	K	1.347	1.290	1.318	1.366
		1.471	1.387	1.429	1.402
	xFe	0.379	0.353	0.366	0.408
	xMg	0.426	0.425	0.426	0.433
	xTi	0.029	0.031	0.030	0.045
	xAl	0.165	0.189	0.177	0.113
	xK	0.916	0.930	0.922	0.974
Fe/(Fe+Mg)		0.470	0.454	0.462	0.485
Mg/(Mg+Fe)		0.530	0.546	0.538	0.515

SAMPLE MC81

MUSCOVITE normalized to 22 O

	analysis #	mu1	mu2	mu3	**AVE**
SiO2	**Wt. % oxide**	45.94	45.36	45.52	**45.61**
Al2O3		34.23	34.32	34.35	**34.30**
TiO2		0.41	0.35	0.5	**0.42**
FeO		0.80	1.89	0.87	**1.19**
MnO		0.00	0.28	0.09	**0.12**
MgO		0.88	1.22	0.94	**1.01**
CaO		0.15	0.27	0.05	**0.16**
Na2O		1.17	1.13	1.4	**1.23**
K2O		10.13	9.04	10.23	**9.80**
Cl		0.00	0.04	0.11	**0.05**
Total		93.71	93.90	94.06	**93.89**
mol.prop/O	**0x.mw/cat**	**cations**			
m.p. Si	60.084	0.765	0.755	0.758	**0.759**
m.p. Al	50.981	0.671	0.673	0.674	**0.673**
m.p. Ti	79.898	0.005	0.004	0.006	**0.005**
m.p. Fe	71.846	0.011	0.026	0.012	**0.017**
m.p. Mn	70.937	0.000	0.004	0.001	**0.002**
m.p. Mg	40.304	0.022	0.030	0.023	**0.025**
m.p. Ca	56.079	0.003	0.005	0.001	**0.003**
m.p. Na	30.989	0.038	0.036	0.045	**0.040**
m.p. K	47.098	0.215	0.192	0.217	**0.208**
Moles cations		1.730	1.726	1.738	**1.731**
Moles Oxygen		2.709	2.708	2.707	**2.708**
Oxygen norm factor		8.122	8.124	8.127	**8.124**
cat Si	4	6.210	6.133	6.157	**6.167**
cat Al	3	5.453	5.469	5.475	**5.466**
cat Ti	4	0.042	0.036	0.051	**0.043**
cat Fe	2	0.090	0.214	0.098	**0.134**
cat Mn	2	0.000	0.032	0.010	**0.014**
cat Mg	2	0.177	0.246	0.190	**0.204**
cat Ca	2	0.022	0.039	0.007	**0.023**
cat Na	1	0.307	0.296	0.367	**0.323**

SAMPLE MC81

cat K	1	1.747	1.559	1.765	**1.690**
Total cations		11.995	12.169	11.989	**12.051**
Tetrahedral	Si	6.210	6.133	6.157	**6.167**
	Al	1.790	1.867	1.843	**1.833**
		8.000	8.000	8.000	**8.000**
Octahedral	Al	3.664	3.602	3.632	**3.633**
	Ti	0.042	0.036	0.051	**0.043**
	Fe	0.090	0.214	0.098	**0.134**
	Mn	0.000	0.032	0.010	**0.014**
	Mg	0.177	0.246	0.190	**0.204**
		3.973	4.130	3.981	**4.028**
A site	Ca	0.022	0.039	0.007	**0.023**
	Na	0.307	0.296	0.367	**0.323**
	K	1.747	1.559	1.765	**1.690**
		2.075	1.895	2.140	**2.037**
	x musc	0.842	0.823	0.825	**0.830**
	x para	0.148	0.156	0.172	**0.159**
	xAl	0.922	0.872	0.912	**0.902**
					0.839439504

SAMPLE MC81

PLAGIOCLASE normalized to 8 O

	analysis #	plg1	plg2(rim)	plg3	AVG	plginc	plg16
SiO2	**Wt. % oxide**	58.52	59.24	57.65	58.47	57.41	61.27
Al2O3		25.66	24.53	25.82	25.34	26.13	25.43
TiO2		0.09	0.10	0.00	0.06	0.08	0
FeO		0.00	0.12	0.23	0.12	0.46	0
MnO		0.02	0.11	0.00	0.04	0	0
MgO		0.27	0.07	0.06	0.13	0.21	0.5
Cr2O3		0.00	0	0	0.00	0	0
CaO		7.97	6.76	8.66	7.80	8.46	6.29
Na2O		7.07	6.69	6.24	6.67	6.98	8
K2O		0.04	0.13	0.00	0.06	0	0.02
Total		99.64	97.75	98.66	98.68	99.73	101.51

mol.prop/O	**0x.mw/cat**	**cations**					
m.p. Si	60.084	0.974	0.986	0.959	0.973	0.955	1.020
m.p. Al	50.981	0.503	0.481	0.506	0.497	0.513	0.499
m.p. Ti	79.898	0.001	0.001	0.000	0.001	0.001	0.000
m.p. Fe	71.846	0.000	0.002	0.003	0.002	0.006	0.000
m.p. Mn	70.937	0.000	0.002	0.000	0.001	0.000	0.000
m.p. Mg	40.304	0.007	0.002	0.001	0.003	0.005	0.012
m.p. Cr	75.995	0.000	0.000	0.000	0.000	0.000	0.000
m.p. Ca	56.079	0.142	0.121	0.154	0.139	0.151	0.112
m.p. Na	30.989	0.228	0.216	0.201	0.215	0.225	0.258
m.p. K	47.098	0.001	0.003	0.000	0.001	0.000	0.000

SAMPLE MC81

Moles cations		1.857	1.813	1.826	1.832	1.857	1.902
Moles Oxygen		2.969	2.931	2.938	2.946	2.957	3.042
Oxygen norm factor		2.695	2.729	2.723	2.715	2.706	2.630
cat Si	4	2.625	2.691	2.612	2.643	2.585	2.682
cat Al	3	1.356	1.313	1.379	1.350	1.387	1.312
cat Ti	4	0.003	0.003	0.000	0.002	0.003	0.000
cat Fe	2	0.000	0.005	0.009	0.004	0.017	0.000
cat Mn	2	0.001	0.004	0.000	0.002	0.000	0.000
cat Mg	2	0.018	0.005	0.004	0.009	0.014	0.033
cat Cr	3	0.000	0.000	0.000	0.000	0.000	0.000
cat Ca	2	0.383	0.329	0.420	0.378	0.408	0.295
cat Na	1	0.615	0.589	0.548	0.584	0.609	0.679
cat K	1	0.002	0.008	0.000	0.003	0.000	0.001
Total cations		5.003	4.947	4.972	4.974	5.024	5.002
Mole% Ab		61.48	63.65	56.60	60.54	59.89	69.63
Mole% An		38.30	36	43	39.12	40	30.25
Mole% Or		0.23	0.81	0.00	0.34	0.00	0.11
Sum		100	100	100	100	100	100

SAMPLE 133

GARNET normalized to 12 O

	analysis #	gr1	gr14	gr30	gr31	gr5	grrim24	grrim25	grrim3	**AVE**
SiO2	**Wt. % oxide**	38.08	38.42	38.33	38.31	38.58	38.73	38.08	37.92	38.24
Al2O3		21.26	21.67	21.2	21.46	21.13	21.69	20.49	21.63	21.27
TiO2		0	0	0	0.12	0.04	0.09	0.13	0.1	0.11
FeO		28.65	30.21	28.61	29.16	28.56	30.73	31.14	31.18	31.02
MnO		6.01	4.46	6.1	6.2	5.82	2.94	3.03	2.27	2.75
MgO		1.68	2.18	2.06	1.75	2.02	2.26	2.02	2.45	2.24
CaO		3.79	3.8	4.22	3.9	4.32	3.27	3.47	3.27	3.34
Total		99.47	100.74	100.52	100.90	100.47	99.71	98.36	98.82	98.96
mol.prop/O	**0x.mw/cat**									
m.p. Si	60.08	0.63	0.64	0.64	0.64	0.64	0.64	0.63	0.63	0.64
m.p. Al	50.98	0.42	0.43	0.42	0.42	0.41	0.43	0.40	0.42	0.42
m.p. Ti	79.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m.p. Fe	71.85	0.40	0.42	0.40	0.41	0.40	0.43	0.43	0.43	0.43
m.p. Mn	70.94	0.08	0.06	0.09	0.09	0.08	0.04	0.04	0.03	0.04
m.p. Mg	40.30	0.04	0.05	0.05	0.04	0.05	0.06	0.05	0.06	0.06
m.p. Ca	56.08	0.07	0.07	0.08	0.07	0.08	0.06	0.06	0.06	0.06
Moles cations		1.64	1.67	1.66	1.67	1.66	1.65	1.63	1.64	1.64
Moles Oxygen		2.49	2.52	2.51	2.52	2.51	2.51	2.46	2.49	2.49
Oxygen norm factor		4.83	4.76	4.78	4.77	4.77	4.77	4.87	4.83	4.82
cat Si	4	3.06	3.04	3.05	3.04	3.07	3.08	3.09	3.05	3.07
cat Al	3	2.01	2.02	1.99	2.01	1.98	2.03	1.96	2.05	2.01
cat Ti	4	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01
cat Fe	2	1.92	2.00	1.90	1.94	1.90	2.04	2.11	2.09	2.08
cat Mn	2	0.41	0.30	0.41	0.42	0.39	0.20	0.21	0.15	0.19
cat Mg	2	0.20	0.26	0.24	0.21	0.24	0.27	0.24	0.29	0.27
cat Ca	2	0.33	0.32	0.36	0.33	0.37	0.28	0.30	0.28	0.29
Total cations		7.93	7.95	7.96	7.95	7.94	7.90	7.92	7.92	7.92
Almandine		67.27	69.48	65.22	66.95	65.52	73.30	73.69	74.17	73.72
Grossular		11.40	11.20	12.32	11.47	12.70	9.00	10.52	9.97	10.16
Pyrope		7.03	8.94	8.37	7.16	8.26	9.61	8.52	10.39	9.50
Spessartine		14.29	10.39	14.08	14.42	13.52	7.10	7.26	5.47	6.61
Fe/(Fe+Mg)		0.91	0.89	0.89	0.90	0.89	0.88	0.90	0.88	0.89

SAMPLE 133

STAUROLITE normalized to 23 O

	analysis #	st1	st2	st3	**AVE**
SiO2	**wt. % oxide**	28.94	28.84	29.5	28.89
Al2O3		54.58	54.38	53.59	54.48
TiO2		0.46	0.49	0.43	0.48
FeO		13.15	13.28	13.44	13.22
MnO		0.42	0.3	0.07	0.36
MgO		1.06	1.67	1.28	1.37
CaO		0.00	0.01	0.02	0.01
ZnO		0.23	0.04	0.06	0.14
Total		98.84	99.01	98.39	98.93
mol.prop/O	**0x.mw/cat**	**cations**			
m.p. Si	60.08	0.48	0.48	0.49	0.48
m.p. Al	50.98	1.07	1.07	1.05	1.07
m.p. Ti	79.90	0.01	0.01	0.01	0.01
m.p. Fe	71.85	0.18	0.18	0.19	0.18
m.p. Mn	70.94	0.01	0.00	0.00	0.01
m.p. Mg	40.30	0.03	0.04	0.03	0.03
m.p. Ca	56.08	0.00	0.00	0.00	0.00
m.p. Zn	76.38	0.00	0.00	0.00	0.00
Moles cations		1.78	1.78	1.77	1.78
Moles Oxygen		2.80	2.80	2.79	2.80
Oxygen norm factor		8.22	8.20	8.24	8.21
cat Si	4	3.96	3.94	4.05	3.95
cat Al	3	8.80	8.75	8.66	8.77
cat Ti	4	0.05	0.05	0.04	0.05
cat Fe	2	1.50	1.52	1.54	1.51
cat Mn	2	0.05	0.03	0.01	0.04
cat Mg	2	0.22	0.34	0.26	0.28
cat Zn	2	0.02	0.00	0.01	0.01
cat Ca	2	0.00	0.00	0.00	0.00
Total cations		14.60	14.64	14.58	14.62
x(st)		0.85	0.80	0.85	0.825
M(st)		0.03	0.02	0.00	0.02

SAMPLE 133

BIOTITE normalized to 22 O

	anaysis #	bi1	bi2	**AVE**
SiO2	**Wt. % oxide**	35.65	36.09	35.87
Al2O3		19.85	19.37	19.61
TiO2		1.81	1.66	1.74
FeO		18.56	19.16	18.86
MnO		0.22	0.10	0.16
MgO		9.49	9.60	9.55
CaO		0.13	0.00	0.07
Na2O		0.00	0.49	0.25
K2O		9.39	8.84	9.12
Cl		0.00	0.00	0.00
Total		95.10	95.31	95.21
mol.prop/O	**0x.mw/cat**	**cations**		
m.p. Si	60.084	0.593	0.601	0.597
m.p. Al	50.981	0.389	0.380	0.385
m.p. Ti	79.898	0.023	0.021	0.022
m.p. Fe	71.846	0.258	0.267	0.263
m.p. Mn	70.937	0.003	0.001	0.002
m.p. Mg	40.304	0.235	0.238	0.237
m.p. Ca	56.079	0.002	0.000	0.001
m.p. Na	30.989	0.000	0.016	0.008
m.p. K	47.098	0.199	0.188	0.194
Moles cations		1.704	1.711	1.708
Moles Oxygen		2.415	2.421	2.418
Oxygen norm factor		9.110	9.088	9.099
cat Si	4	5.405	5.459	5.432
cat Al	3	3.547	3.453	3.500
cat Ti	4	0.206	0.189	0.198
cat Fe	2	2.353	2.424	2.389
cat Mn	2	0.028	0.013	0.021
cat Mg	2	2.145	2.165	2.155
cat Ca	2	0.021	0.000	0.011
cat Na	1	0.000	0.144	0.072

SAMPLE 133

cat K	1	1.816	1.706	1.761
Total cations		13.707	13.701	13.704
Tetrahedral				
	Si	5.405	5.459	5.432
	Al	2.595	2.541	2.568
		8.000	8.000	8.000
Octahedral				
	Al	0.952	0.912	0.932
	Ti	0.206	0.189	0.198
	Fe	2.353	2.424	2.389
	Mn	0.028	0.013	0.021
	Mg	2.145	2.165	2.155
		5.685	5.701	5.693
A site	Ca	0.021	0.000	0.011
	Na	0.000	0.144	0.072
	K	1.816	1.706	1.761
		1.837	1.849	1.843
	xFe	0.414	0.425	0.420
	xMg	0.377	0.380	0.378
	xTi	0.036	0.033	0.035
	xAl	0.168	0.160	0.164
	xK	0.989	0.922	0.955
Fe/(Fe+Mg)		0.523	0.528	0.526
Mg/(Mg+Fe)		0.477	0.472	0.474

SAMPLE 133

MUSCOVITE normalized to 22 O

	analysis #	mu1	mu2	mu3	AVE
SiO2	**Wt. % oxide**	46.53	46.9	46.73	46.72
Al2O3		36.24	35.64	35.89	35.92
TiO2		0.39	0.35	0.28	0.34
FeO		0.98	1.17	0.73	0.96
MnO		0.24	0.09	0.02	0.12
MgO		1.07	1.09	0.65	0.94
CaO		0.13	0.16	0	0.10
Na2O		1.51	1.3	1.5	1.44
K2O		10.30	9.62	10.23	10.05
Cl		0.08	0	0.01	0.03
Total		97.47	96.32	96.04	96.61
mol.prop/O	**0x.mw/cat**	**cations**			
m.p. Si	60.084	0.774	0.781	0.778	0.778
m.p. Al	50.981	0.711	0.699	0.704	0.705
m.p. Ti	79.898	0.005	0.004	0.004	0.004
m.p. Fe	71.846	0.014	0.016	0.010	0.013
m.p. Mn	70.937	0.003	0.001	0.000	0.002
m.p. Mg	40.304	0.027	0.027	0.016	0.023
m.p. Ca	56.079	0.002	0.003	0.000	0.002
m.p. Na	30.989	0.049	0.042	0.048	0.046
m.p. K	47.098	0.219	0.204	0.217	0.213
Moles cations		1.803	1.778	1.777	1.786
Moles Oxygen		2.804	2.789	2.778	2.790
Oxygen norm factor		7.845	7.888	7.920	7.884

SAMPLE 133

cat Si	4	6.075	6.157	6.160	6.130
cat Al	3	5.576	5.514	5.575	5.555
cat Ti	4	0.038	0.035	0.028	0.034
cat Fe	2	0.107	0.128	0.080	0.105
cat Mn	2	0.027	0.010	0.002	0.013
cat Mg	2	0.208	0.213	0.128	0.183
cat Ca	2	0.018	0.023	0.000	0.014
cat Na	1	0.382	0.331	0.383	0.366
cat K	1	1.716	1.611	1.720	1.682
Total cations		12.050	12.080	11.973	12.034
Tetrahedral	Si	6.075	6.157	6.160	6.130
	Al	1.925	1.843	1.840	1.870
		8.000	8.000	8.000	8.000
Octahedral	Al	3.651	3.671	3.735	3.686
	Ti	0.038	0.035	0.028	0.034
	Fe	0.107	0.128	0.080	0.105
	Mn	0.027	0.010	0.002	0.013
	Mg	0.208	0.213	0.128	0.183
		4.031	4.058	3.973	4.021
A site	Ca	0.018	0.023	0.000	0.014
	Na	0.382	0.331	0.383	0.366
	K	1.716	1.611	1.720	1.682
		2.116	1.965	2.104	2.061
	x musc	0.811	0.820	0.818	0.816
	x para	0.181	0.168	0.182	0.177
	xAl	0.906	0.905	0.940	0.917

SAMPLE 133

PLAGIOCLASE normalized to 8 O

	analysis #	plg1	plg2	plg3	AVG	plg3	plg16
SiO2	**Wt. % oxide**	60.95	61.20	61.19	61.11	59.7	61.27
Al2O3		24.80	24.52	25.52	24.95	24.94	25.43
TiO2		0.00	0.43	0.00	0.14	0.12	0
FeO		0.19	0.18	0.36	0.24	0.32	0
MnO		0.00	0.00	0.36	0.12	0	0
MgO		0.00	0.00	0.00	0.00	0.58	0.5
Cr2O3		0.00	0	0	0.00		0
CaO		7.19	6.95	6.74	6.96	6.35	6.29
Na2O		8.02	8.40	8.17	8.20	7.63	8
K2O		0.03	0.00	0.01	0.01	0	0.02
Total		101.18	101.68	102.35	101.74	99.64	101.51

mol.prop/O	**0x.mw/cat**	**cations**					
m.p. Si	60.084	1.014	1.019	1.018	1.017	0.994	1.020
m.p. Al	50.981	0.486	0.481	0.501	0.489	0.489	0.499
m.p. Ti	79.898	0.000	0.005	0.000	0.002	0.002	0.000
m.p. Fe	71.846	0.003	0.003	0.005	0.003	0.004	0.000
m.p. Mn	70.937	0.000	0.000	0.005	0.002	0.000	0.000
m.p. Mg	40.304	0.000	0.000	0.000	0.000	0.014	0.012
m.p. Cr	75.995	0.000	0.000	0.000	0.000	0.000	0.000
m.p. Ca	56.079	0.128	0.124	0.120	0.124	0.113	0.112
m.p. Na	30.989	0.259	0.271	0.264	0.265	0.246	0.258
m.p. K	47.098	0.001	0.000	0.000	0.000	0.000	0.000

SAMPLE 133

Moles cations		1.891	1.902	1.913	1.902	1.863	1.902
Moles Oxygen		3.019	3.031	3.050	3.033	2.979	3.042
Oxygen norm factor		2.650	2.639	2.623	2.637	2.685	2.630
cat Si	4	2.688	2.688	2.671	2.682	2.668	2.682
cat Al	3	1.289	1.269	1.313	1.291	1.314	1.312
cat Ti	4	0.000	0.014	0.000	0.005	0.004	0.000
cat Fe	2	0.007	0.007	0.013	0.009	0.012	0.000
cat Mn	2	0.000	0.000	0.013	0.004	0.000	0.000
cat Mg	2	0.000	0.000	0.000	0.000	0.039	0.033
cat Cr	3	0.000	0.000	0.000	0.000	0.000	0.000
cat Ca	2	0.340	0.327	0.315	0.327	0.304	0.295
cat Na	1	0.686	0.715	0.692	0.698	0.661	0.679
cat K	1	0.002	0.000	0.001	0.001	0.000	0.001
Total cations		5.011	5.021	5.018	5.017	5.002	5.002
Mole% Ab		66.76	68.62	68.65	68.01	68.50	69.63
Mole% An		33.07	31.38	31.30	32	31.50	30.25
Mole% Or		0.16	0.00	0.06	0.07	0.00	0.11
Sum		100	100	100	100	100	100

SAMPLE MC135

GARNET normalized to 12 O

	analysis #	grcore	grcore	gcore	gr30	gr31	gr5	grrim24	grrim25	grrim3
SiO2	**Wt. % oxide**	38.16	38.88	38.41	38.33	38.31	38.58	38.73	38.08	37.92
Al2O3		21.8	21.54	21.82	21.2	21.46	21.13	21.69	20.49	21.63
TiO2		0	0	0	0	0.12	0.04	0.09	0.13	0.1
FeO		30.45	31.23	29.62	28.61	29.16	28.56	30.73	31.14	31.18
MnO		5.91	5.37	5.63	6.1	6.2	5.82	2.94	3.03	2.27
MgO		2.62	2.48	2.31	2.06	1.75	2.02	2.26	2.02	2.45
CaO		1.86	1.97	2.17	4.22	3.9	4.32	3.27	3.47	3.27
Total		100.80	101.47	99.96	100.52	100.90	100.47	99.71	98.36	98.82
mol.prop/O	**0x.mw/cat**									
m.p. Si	60.08	0.64	0.65	0.64	0.64	0.64	0.64	0.64	0.63	0.63
m.p. Al	50.98	0.43	0.42	0.43	0.42	0.42	0.41	0.43	0.40	0.42
m.p. Ti	79.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m.p. Fe	71.85	0.42	0.43	0.41	0.40	0.41	0.40	0.43	0.43	0.43
m.p. Mn	70.94	0.08	0.08	0.08	0.09	0.09	0.08	0.04	0.04	0.03
m.p. Mg	40.30	0.07	0.06	0.06	0.05	0.04	0.05	0.06	0.05	0.06
m.p. Ca	56.08	0.03	0.04	0.04	0.08	0.07	0.08	0.06	0.06	0.06
Moles cations		1.67	1.68	1.65	1.66	1.67	1.66	1.65	1.63	1.64
Moles Oxygen		2.52	2.53	2.51	2.51	2.52	2.51	2.51	2.46	2.49
Oxygen norm factor		4.77	4.73	4.78	4.78	4.77	4.77	4.77	4.87	4.83
cat Si	4	3.03	3.06	3.06	3.05	3.04	3.07	3.08	3.09	3.05
cat Al	3	2.04	2.00	2.05	1.99	2.01	1.98	2.03	1.96	2.05
cat Ti	4	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01
cat Fe	2	2.02	2.06	1.97	1.90	1.94	1.90	2.04	2.11	2.09
cat Mn	2	0.40	0.36	0.38	0.41	0.42	0.39	0.20	0.21	0.15
cat Mg	2	0.31	0.29	0.27	0.24	0.21	0.24	0.27	0.24	0.29
cat Ca	2	0.16	0.17	0.19	0.36	0.33	0.37	0.28	0.30	0.28
Total cations		7.95	7.94	7.92	7.96	7.95	7.94	7.90	7.92	7.92
Almandine		70.02	71.61	70.16	65.22	66.95	65.52	73.30	73.69	74.17
Grossular		5.48	5.79	6.58	12.32	11.47	12.70	9.00	10.52	9.97
Pyrope		10.74	10.14	9.75	8.37	7.16	8.26	9.61	8.52	10.39
Spessartine		13.76	12.47	13.51	14.08	14.42	13.52	7.10	7.26	5.47
Fe/(Fe+Mg)		0.87	0.88	0.88	0.89	0.90	0.89	0.88	0.90	0.88

SAMPLE MC135

BIOTITE normalized to 22 O

	anaysis #	bi1	bi2	**bi3**
SiO2	**Wt. % oxide**	33.89	33.09	35.13
Al2O3		18.68	18.42	18.54
TiO2		1.76	1.3	2.01
FeO		20.93	24.41	20.81
MnO		0	0.08	0.01
MgO		7.49	5.76	6.7
CaO		0	0.12	0
Na2O		0	0	0
K2O		8.73	7.68	8.67
Cl		0.03	0.08	0.05
Total		91.52	90.94	91.91

mol.prop/O	**0x.mw/cat**	**cations**		
m.p. Si	60.084	0.564	0.551	0.585
m.p. Al	50.981	0.035	0.025	0.039
m.p. Ti	79.898	0.234	0.231	0.232
m.p. Fe	71.846	0.291	0.340	0.290
m.p. Mn	70.937	0.000	0.001	0.000
m.p. Mg	40.304	0.186	0.143	0.166
m.p. Ca	56.079	0.000	0.002	0.000
m.p. Na	30.989	0.000	0.000	0.000
m.p. K	47.098	0.185	0.163	0.184
Moles cations		1.495	1.456	1.496
Moles Oxygen		2.217	2.168	2.241
Oxygen norm factor		9.922	10.146	9.819
cat Si	4	5.596	5.588	5.741
cat Al	3	0.343	0.259	0.387
cat Ti	4	2.320	2.339	2.278
cat Fe	2	2.890	3.447	2.844
cat Mn	2	0.000	0.011	0.001
cat Mg	2	1.844	1.450	1.632
cat Ca	2	0.000	0.022	0.000
cat Na	1	0.000	0.000	0.000
cat K	1	1.839	1.655	1.807
Total cations		11.149	11.633	11.250
Tetrahedral				
	Si	5.596	5.588	5.741
	Al	2.404	2.412	2.259
		8.000	8.000	8.000
Octahedral				
	Al	-2.061	-2.153	-1.872
	Ti	2.320	2.339	2.278
	Fe	2.890	3.447	2.844
	Mn	0.000	0.011	0.001
	Mg	1.844	1.450	1.632
		4.993	5.095	4.884
A site	Ca	0.000	0.022	0.000
	Na	0.000	0.000	0.000
	K	1.839	1.655	1.807
		1.839	1.676	1.807
	xFe	0.579	0.677	0.582
	xMg	0.369	0.285	0.334
	xTi	0.465	0.459	0.467
	xAl	-0.413	-0.423	-0.383
	xK	1.000	0.987	1.000
Fe/(Fe+Mg)		0.611	0.704	0.635
Mg/(Mg+Fe)		0.389	0.296	0.365

SAMPLE MC135

MUSCOVITE normalized to 22 O

	analysis #	mu1	mu2	mu3
SiO2	**Wt. % oxide**	43.56	46.34	34.94
Al2O3		33.84	34.61	19.8
TiO2		0.9	0.84	2.17
FeO		0.96	0.63	19.13
MnO		0	0	0.04
MgO		0	0.39	8.15
CaO		0	0.19	0.03
Na2O		0.71	0.88	0.35
K2O		9.49	9.49	9.4
Cl		0	0.08	0.06
Total		89.46	93.45	94.07
mol.prop/O	**0x.mw/cat**	**cations**		
m.p. Si	60.084	0.725	0.771	0.582
m.p. Al	50.981	0.018	0.016	0.043
m.p. Ti	79.898	0.424	0.433	0.248
m.p. Fe	71.846	0.013	0.009	0.266
m.p. Mn	70.937	0.000	0.000	0.001
m.p. Mg	40.304	0.000	0.010	0.202
m.p. Ca	56.079	0.000	0.003	0.001
m.p. Na	30.989	0.023	0.028	0.011
m.p. K	47.098	0.201	0.201	0.200
Moles cations		1.404	1.473	1.552
Moles Oxygen		2.449	2.570	2.298
Oxygen norm factor		8.983	8.559	9.575
cat Si	4	6.512	6.601	5.568
cat Al	3	0.159	0.141	0.408
cat Ti	4	3.805	3.708	2.373
cat Fe	2	0.120	0.075	2.550
cat Mn	2	0.000	0.000	0.005
cat Mg	2	0.000	0.083	1.936
cat Ca	2	0.000	0.029	0.005
cat Na	1	0.206	0.243	0.108
cat K	1	1.810	1.725	1.911
Total cations		10.596	10.637	12.845
Tetrahedral	Si	6.512	6.601	5.568
	Al	1.488	1.399	2.432
		8.000	8.000	8.000
Octahedral	Al	-1.329	-1.258	-2.024
	Ti	3.805	3.708	2.373
	Fe	0.120	0.075	2.550
	Mn	0.000	0.000	0.005
	Mg	0.000	0.083	1.936
		2.596	2.608	4.840
A site	Ca	0.000	0.029	0.005
	Na	0.206	0.243	0.108
	K	1.810	1.725	1.911
		2.016	1.997	2.024
	x musc	0.898	0.864	0.944
	x para	0.102	0.122	0.053
	xAl	-0.512	-0.482	-0.418

SAMPLE MC137

GARNET normalized to 12 O

	analysis #	gr1	gr2	gr3	gr7	gr8	gr17	gr11	gr12	gr16
SiO2	**Wt. % oxide**	38.66	38.61	38.75	38.51	38.03	38.46	38.64	36.71	38.03
Al2O3		20.61	20.65	20.28	20.52	20.5	21.08	20.42	20.63	20.59
TiO2		0.08	0.07	0.03	0	0.17	0.09	0.04	0.11	0
FeO		31.3	29.38	29.17	30.61	29.9	31.14	30.26	32.28	31.22
MnO		3.98	5.7	5.17	4.66	5.5	3.31	5.02	5.1	4.15
MgO		1.9	2.25	1.4	1.84	2.38	2.25	2.33	2.41	1.49
CaO		3.52	3.74	3.86	2.91	3	3.53	3.57	2.26	3.8
Total		100.05	100.40	98.66	99.05	99.48	99.86	100.28	99.50	99.28
mol.prop/O	**0x.mw/cat**									
m.p. Si	60.08	0.64	0.64	0.64	0.64	0.63	0.64	0.64	0.61	0.63
m.p. Al	50.98	0.40	0.41	0.40	0.40	0.40	0.41	0.40	0.40	0.40
m.p. Ti	79.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m.p. Fe	71.85	0.44	0.41	0.41	0.43	0.42	0.43	0.42	0.45	0.43
m.p. Mn	70.94	0.06	0.08	0.07	0.07	0.08	0.05	0.07	0.07	0.06
m.p. Mg	40.30	0.05	0.06	0.03	0.05	0.06	0.06	0.06	0.06	0.04
m.p. Ca	56.08	0.06	0.07	0.07	0.05	0.05	0.06	0.06	0.04	0.07
Moles cations		1.65	1.66	1.63	1.63	1.64	1.65	1.66	1.64	1.63
Moles Oxygen		2.50	2.51	2.47	2.47	2.48	2.50	2.50	2.45	2.47
Oxygen norm factor		4.81	4.79	4.86	4.85	4.84	4.80	4.80	4.89	4.86
cat Si	4	3.09	3.08	3.13	3.11	3.06	3.07	3.09	2.99	3.08
cat Al	3	1.94	1.94	1.93	1.95	1.95	1.98	1.92	1.98	1.96
cat Ti	4	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00
cat Fe	2	2.09	1.96	1.97	2.07	2.01	2.08	2.02	2.20	2.11
cat Mn	2	0.27	0.38	0.35	0.32	0.38	0.22	0.34	0.35	0.28
cat Mg	2	0.23	0.27	0.17	0.22	0.29	0.27	0.28	0.29	0.18
cat Ca	2	0.30	0.32	0.33	0.25	0.26	0.30	0.31	0.20	0.33
Total cations		7.93	7.95	7.90	7.92	7.95	7.93	7.95	8.01	7.94
Almandine		72.41	66.84	69.71	72.30	68.65	72.38	68.66	72.32	72.69
Grossular		10.43	10.90	11.82	8.81	8.82	10.51	9.00	6.49	11.34
Pyrope		7.84	9.12	5.96	7.75	9.74	9.32	9.42	9.62	6.18
Spessartine		9.33	13.13	12.51	11.15	12.79	7.79	11.54	11.57	9.79
Fe/(Fe+Mg)		0.90	0.88	0.92	0.90	0.88	0.89	0.88	0.88	0.92

SAMPLE MC137

STAUROLITE normalized to 23 O

	analysis #	st1	st2	st3	**AVE**	st4	st5	st6
SiO2	**wt. % oxide**	29.83	28.44	28.26	28.84	28.4	28.41	27.75
Al2O3		53.44	53.42	54.3	53.72	53.71	52.91	53.29
TiO2		0.72	0.3	0.43	0.48	0.9	0.75	0.53
FeO		15.60	16.37	16.65	16.21	15.91	16.22	16.54
MnO		0.44	0.35	0.09	0.29	0.33	0.13	0.37
MgO		1.94	1.53	1.53	1.67	1.64	1.95	1.64
CaO		0.00	0.07	0.14	0.07	0	0.06	0.02
ZnO		0.22	0	0.44	0.22	0.03	0.1	0.07
Total		102.19	100.48	101.84	101.50	100.92	100.53	100.21
mol.prop/O	**0x.mw/cat**	**cations**						
m.p. Si	60.08	0.50	0.47	0.47	0.48	0.47	0.47	0.46
m.p. Al	50.98	1.05	1.05	1.07	1.05	1.05	1.04	1.05
m.p. Ti	79.90	0.01	0.00	0.01	0.01	0.01	0.01	0.01
m.p. Fe	71.85	0.22	0.23	0.23	0.23	0.22	0.23	0.23
m.p. Mn	70.94	0.01	0.00	0.00	0.00	0.00	0.00	0.01
m.p. Mg	40.30	0.05	0.04	0.04	0.04	0.04	0.05	0.04
m.p. Ca	56.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m.p. Zn	76.38	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Moles cations		1.83	1.80	1.82	1.82	1.80	1.80	1.79
Moles Oxygen		2.86	2.80	2.83	2.83	2.82	2.80	2.78
Oxygen norm factor		8.05	8.22	8.13	8.13	8.17	8.22	8.27
cat Si	4	4.00	3.89	3.82	3.90	3.86	3.88	3.82
cat Al	3	8.44	8.61	8.66	8.57	8.61	8.53	8.64
cat Ti	4	0.07	0.03	0.04	0.05	0.09	0.08	0.05
cat Fe	2	1.75	1.87	1.88	1.83	1.81	1.85	1.90
cat Mn	2	0.05	0.04	0.01	0.03	0.04	0.02	0.04
cat Mg	2	0.39	0.31	0.31	0.34	0.33	0.40	0.34
cat Zn	2	0.02	0.00	0.05	0.02	0.00	0.01	0.01
cat Ca	2	0.00	0.01	0.02	0.01	0.00	0.01	0.00
Total cations		14.71	14.77	14.80	14.76	14.74	14.78	14.81
x(st)		0.80	0.842	0.86	0.83	0.83	0.82	0.83
M(st)		0.02	0.02	0.00	0.02	0.02	0.01	0.02

SAMPLE MC137

BIOTITE normalized to 22 O

	anaysis #	bi1	bi2	bi3
SiO2	**Wt. % oxide**	36.00	34.13	34.69
Al2O3		18.18	16.96	18.12
TiO2		1.39	2.03	1.44
FeO		21.50	25.42	26.50
MnO		0.00	0.00	0.00
MgO		10.71	6.66	6.69
CaO		0.03	0.00	0.01
Na2O		0.09	0.00	0.13
K2O		8.56	7.31	7.05
Cl		0.00	0.00	0.09
Total		96.46	92.51	94.72

mol.prop/O	**0x.mw/cat**	**cations**		
m.p. Si	60.084	0.599	0.568	0.577
m.p. Al	50.981	0.357	0.333	0.355
m.p. Ti	79.898	0.017	0.025	0.018
m.p. Fe	71.846	0.299	0.354	0.369
m.p. Mn	70.937	0.000	0.000	0.000
m.p. Mg	40.304	0.266	0.165	0.166
m.p. Ca	56.079	0.001	0.000	0.000
m.p. Na	30.989	0.003	0.000	0.004
m.p. K	47.098	0.182	0.155	0.150
Moles cations		1.723	1.600	1.640
Moles Oxygen		2.426	2.283	2.336
Oxygen norm factor		9.069	9.638	9.418

cat Si	4	5.434	5.475	5.438
cat Al	3	3.234	3.206	3.348
cat Ti	4	0.158	0.245	0.170
cat Fe	2	2.714	3.410	3.474
cat Mn	2	0.000	0.000	0.000
cat Mg	2	2.410	1.593	1.563
cat Ca	2	0.005	0.000	0.002
cat Na	1	0.026	0.000	0.040
cat K	1	1.648	1.496	1.410
Total cations		13.954	13.929	13.994
Tetrahedral				
	Si	5.434	5.475	5.438
	Al	2.566	2.525	2.562
		8.000	8.000	8.000
Octahedral				
	Al	0.668	0.681	0.785
	Ti	0.158	0.245	0.170
	Fe	2.714	3.410	3.474
	Mn	0.000	0.000	0.000
	Mg	2.410	1.593	1.563
		5.949	5.929	5.992
A site	Ca	0.005	0.000	0.002
	Na	0.026	0.000	0.040
	K	1.648	1.496	1.410
		1.679	1.496	1.451
	xFe	0.456	0.575	0.580
	xMg	0.405	0.269	0.261
	xTi	0.027	0.041	0.028
	xAl	0.112	0.115	0.131
	xK	0.981	1.000	0.972
Fe/(Fe+Mg)		0.530	0.682	0.690
Mg/(Mg+Fe)		0.470	0.318	0.310

SAMPLE MC137

MUSCOVITE normalized to 22 O

	analysis #	mu1	mu2	mu3
SiO2	**Wt. % oxide**	46.55	46.16	45.21
Al2O3		34.79	34.53	35.27
TiO2		0.50	0.55	0.58
FeO		1.54	1.45	0.91
MnO		0.15	0.17	0.12
MgO		0.30	0.18	0.68
CaO		0.21	0.04	0
Na2O		2.10	1.3	0.76
K2O		10.06	10.07	9.45
Cl		0.03	0	0
Total		96.23	94.45	92.98

mol.prop/O	**0x.mw/cat**	**cations**		
m.p. Si	60.084	0.775	0.768	0.752
m.p. Al	50.981	0.682	0.677	0.692
m.p. Ti	79.898	0.006	0.007	0.007
m.p. Fe	71.846	0.021	0.020	0.013
m.p. Mn	70.937	0.002	0.002	0.002
m.p. Mg	40.304	0.007	0.004	0.017
m.p. Ca	56.079	0.004	0.001	0.000
m.p. Na	30.989	0.068	0.042	0.025
m.p. K	47.098	0.214	0.214	0.201
Moles cations		1.780	1.736	1.708
Moles Oxygen		2.761	2.722	2.701
Oxygen norm factor		7.968	8.083	8.145

cat Si	4	6.173	6.210	6.129
cat Al	3	5.437	5.474	5.635
cat Ti	4	0.050	0.056	0.059
cat Fe	2	0.171	0.163	0.103
cat Mn	2	0.017	0.019	0.014
cat Mg	2	0.059	0.036	0.137
cat Ca	2	0.030	0.006	0.000
cat Na	1	0.540	0.339	0.200
cat K	1	1.702	1.728	1.634
Total cations		11.937	11.964	12.077
Tetrahedral	Si	6.173	6.210	6.129
	Al	1.827	1.790	1.871
		8.000	8.000	8.000
Octahedral	Al	3.611	3.684	3.764
	Ti	0.050	0.056	0.059
	Fe	0.171	0.163	0.103
	Mn	0.017	0.019	0.014
	Mg	0.059	0.036	0.137
		3.907	3.958	4.077
A site	Ca	0.030	0.006	0.000
	Na	0.540	0.339	0.200
	K	1.702	1.728	1.634
		2.272	2.073	1.834
	x musc	0.749	0.834	0.891
	x para	0.238	0.164	0.109
	xAl	0.924	0.931	0.923

SAMPLE MC137

PLAGIOCLASE normalized to 8 O

	analysis #	plg1	plg2	plg3	plg4	plg5	plg6	plg7
SiO2	**Wt. % oxide**	60.30	60.58	61.34	60.55	61.21	60.89	60.83
Al2O3		24.60	24.01	24.42	23.85	24.05	24.57	24.07
TiO2		0.02	0.00	0.09	0	0.01	0	0
FeO		0.64	0.22	0.74	0.38	0.03	0	0.14
MnO		0.08	0.09	0.09	0	0.13	0.03	0
MgO		0.00	0.00	0.00	0	0.14	0	0.04
Cr2O3		0.00	0	0	0	0	0	0
CaO		7.35	6.78	6.83	6.99	7.43	7.12	7.85
Na2O		8.55	8.07	8.63	8.40	7.90	8.61	7.22
K2O		0.05	0.07	0.06	0.12	0.10	0.02	0.12
Total		101.59	99.82	102.20	100.29	101.00	101.24	100.27

mol.prop/O	**0x.mw/cat**	**cations**						
m.p. Si	60.084	1.004	1.008	1.021	1.008	1.019	1.013	1.012
m.p. Al	50.981	0.483	0.471	0.479	0.468	0.472	0.482	0.472
m.p. Ti	79.898	0.000	0.000	0.001	0.000	0.000	0.000	0.000
m.p. Fe	71.846	0.009	0.003	0.010	0.005	0.000	0.000	0.002
m.p. Mn	70.937	0.001	0.001	0.001	0.000	0.002	0.000	0.000
m.p. Mg	40.304	0.000	0.000	0.000	0.000	0.003	0.000	0.001
m.p. Cr	75.995	0.000	0.000	0.000	0.000	0.000	0.000	0.000
m.p. Ca	56.079	0.131	0.121	0.122	0.125	0.132	0.127	0.140
m.p. Na	30.989	0.276	0.260	0.278	0.271	0.255	0.278	0.233
m.p. K	47.098	0.001	0.001	0.001	0.003	0.002	0.000	0.003
Moles cations		1.904	1.866	1.914	1.879	1.886	1.901	1.863
Moles Oxygen		3.011	2.979	3.036	2.984	3.012	3.016	2.994
Oxygen norm factor		2.657	2.685	2.635	2.681	2.656	2.652	2.672

SAMPLE MC137

cat Si	4	2.666	2.708	2.690	2.702	2.706	2.688	2.705
cat Al	3	1.282	1.265	1.262	1.254	1.253	1.278	1.262
cat Ti	4	0.001	0.000	0.003	0.000	0.000	0.000	0.000
cat Fe	2	0.024	0.008	0.027	0.014	0.001	0.000	0.005
cat Mn	2	0.003	0.003	0.003	0.000	0.005	0.001	0.000
cat Mg	2	0.000	0.000	0.000	0.000	0.009	0.000	0.003
cat Cr	3	0.000	0.000	0.000	0.000	0.000	0.000	0.000
cat Ca	2	0.348	0.325	0.321	0.334	0.352	0.337	0.374
cat Na	1	0.733	0.699	0.734	0.727	0.677	0.737	0.623
cat K	1	0.003	0.004	0.003	0.007	0.006	0.001	0.007
Total cations		5.060	5.012	5.044	5.038	5.009	5.042	4.978
Mole% Ab		67.62	68.03	69.35	68.06	65.44	68.56	62.04
Mole% An		32.12	31.58	30.33	31.30	34.01	31.33	37.28
Mole% Or		0.26	0.39	0.32	0.64	0.55	0.10	0.68
Sum		100	100	100	100	100	100	100

SAMPLE MC152

GARNET normalized to 12 O

	analysis #	gr35	gr34	gr36	**AVE**	gr18	gr20	gr21	**AVE**	gr27
SiO2	**Wt. % oxide**	36.87	36.84	36.64	36.78	38.31	37.16	37.36	37.61	36.06
Al2O3		20.94	20.24	20.58	20.59	20.86	21.09	21.04	21.00	20.69
TiO2		0	0	0	0.00	0	0	0	0.00	0
FeO		34.07	32.86	34.71	33.88	34.28	33.35	35.53	34.39	32.51
MnO		4.99	5.44	5.41	5.28	5.72	5.42	6.03	5.72	4.79
MgO		1.99	2.6	1.66	2.08	2.47	2.63	1.65	2.25	1.93
CaO		1.77	2.1	1.71	1.86	1.75	1.28	1.21	1.41	2.94
Total		100.63	100.08	100.71	100.47	103.39	100.93	102.82	102.38	98.92
mol.prop/O	**0x.mw/cat**									
m.p. Si	60.08	0.61	0.61	0.61	0.61	0.64	0.62	0.62	0.63	0.60
m.p. Al	50.98	0.41	0.40	0.40	0.40	0.41	0.41	0.41	0.41	0.41
m.p. Ti	79.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m.p. Fe	71.85	0.47	0.46	0.48	0.47	0.48	0.46	0.49	0.48	0.45
m.p. Mn	70.94	0.07	0.08	0.08	0.07	0.08	0.08	0.09	0.08	0.07
m.p. Mg	40.30	0.05	0.06	0.04	0.05	0.06	0.07	0.04	0.06	0.05
m.p. Ca	56.08	0.03	0.04	0.03	0.03	0.03	0.02	0.02	0.03	0.05
Moles cations		1.65	1.65	1.64	1.65	1.70	1.66	1.68	1.68	1.63
Moles Oxygen		2.47	2.46	2.46	2.46	2.54	2.49	2.50	2.51	2.43
Oxygen norm factor		4.86	4.88	4.89	4.88	4.73	4.83	4.79	4.78	4.94
cat Si	4	2.98	2.99	2.98	2.99	3.01	2.99	2.98	2.99	2.96
cat Al	3	2.00	1.94	1.97	1.97	1.93	2.00	1.98	1.97	2.00
cat Ti	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cat Fe	2	2.30	2.23	2.36	2.30	2.25	2.24	2.37	2.29	2.24
cat Mn	2	0.34	0.37	0.37	0.36	0.38	0.37	0.41	0.39	0.33
cat Mg	2	0.24	0.31	0.20	0.25	0.29	0.31	0.20	0.27	0.24
cat Ca	2	0.15	0.18	0.15	0.16	0.15	0.11	0.10	0.12	0.26
Total cations		8.02	8.04	8.03	8.03	8.02	8.02	8.03	8.02	8.03
Almandine		75.81	71.91	76.56	74.75	73.38	73.84	77.02	74.75	72.94
Grossular		5.05	5.89	4.83	5.26	4.80	3.63	3.36	3.94	8.45
Pyrope		7.89	10.14	6.53	8.19	9.42	10.38	6.38	8.72	7.72
Spessartine		11.25	12.06	12.09	11.80	12.40	12.15	13.24	12.60	10.89
Fe/(Fe+Mg)		0.91	0.88	0.92	0.90	0.89	0.88	0.92	0.90	0.90

SAMPLE MC152

STAUROLITE normalized to 23 O

	analysis #	st1	st2	st3
SiO2	**wt. % oxide**	27.10	27.75	27.48
Al2O3		45.26	53.29	52.78
TiO2		0.53	0.53	0.47
FeO		21.57	16.14	16.06
MnO		0.00	0.37	0.19
MgO		1.72	1.64	1.39
CaO		0.21	0.02	0.11
ZnO		1.09	0	0.21
Total		97.48	99.74	98.69
mol.prop/O	**0x.mw/cat**	**cations**		
m.p. Si	60.08	0.45	0.46	0.46
m.p. Al	50.98	0.89	1.05	1.04
m.p. Ti	79.90	0.01	0.01	0.01
m.p. Fe	71.85	0.30	0.22	0.22
m.p. Mn	70.94	0.00	0.01	0.00
m.p. Mg	40.30	0.04	0.04	0.03
m.p. Ca	56.08	0.00	0.00	0.00
m.p. Zn	76.38	0.01	0.00	0.00
Moles cations		1.71	1.78	1.76
Moles Oxygen		2.61	2.78	2.74
Oxygen norm factor		8.82	8.29	8.38
cat Si	4	3.98	3.83	3.83
cat Al	3	7.83	8.66	8.68
cat Ti	4	0.06	0.05	0.05
cat Fe	2	2.65	1.86	1.87
cat Mn	2	0.00	0.04	0.02
cat Mg	2	0.38	0.34	0.29
cat Zn	2	0.13	0.00	0.02
cat Ca	2	0.03	0.00	0.02
Total cations		15.05	14.79	14.78
x(st)		0.88	0.830	0.86
M(st)		0.00	0.02	0.01

SAMPLE MC152

BIOTITE normalized to 22 O

	anaysis #	bi1	bi2	bi3
SiO2	**Wt. % oxide**	34.31	34.13	34.69
Al2O3		18.36	16.96	18.12
TiO2		1.82	2.03	1.44
FeO		21.82	25.42	26.50
MnO		0.06	0.00	0.00
MgO		9.34	6.66	6.69
CaO		0.14	0.00	0.01
Na2O		0.00	0.00	0.13
K2O		7.62	7.31	7.05
Cl		0.01	0.00	0.09
Total		93.48	92.51	94.72
mol.prop/O	**0x.mw/cat**	**cations**		
m.p. Si	60.084	0.571	0.568	0.577
m.p. Al	50.981	0.360	0.333	0.355
m.p. Ti	79.898	0.023	0.025	0.018
m.p. Fe	71.846	0.304	0.354	0.369
m.p. Mn	70.937	0.001	0.000	0.000
m.p. Mg	40.304	0.232	0.165	0.166
m.p. Ca	56.079	0.002	0.000	0.000
m.p. Na	30.989	0.000	0.000	0.004
m.p. K	47.098	0.162	0.155	0.150
Moles cations		1.655	1.600	1.640
Moles Oxygen		2.348	2.283	2.336
Oxygen norm factor		9.372	9.638	9.418

cat Si	4	5.352	5.475	5.438
cat Al	3	3.375	3.206	3.348
cat Ti	4	0.213	0.245	0.170
cat Fe	2	2.846	3.410	3.474
cat Mn	2	0.008	0.000	0.000
cat Mg	2	2.172	1.593	1.563
cat Ca	2	0.023	0.000	0.002
cat Na	1	0.000	0.000	0.040
cat K	1	1.516	1.496	1.410
Total cations		13.989	13.929	13.994
Tetrahedral				
	Si	5.352	5.475	5.438
	Al	2.648	2.525	2.562
		8.000	8.000	8.000
Octahedral				
	Al	0.727	0.681	0.785
	Ti	0.213	0.245	0.170
	Fe	2.846	3.410	3.474
	Mn	0.008	0.000	0.000
	Mg	2.172	1.593	1.563
		5.966	5.929	5.992
A site	Ca	0.023	0.000	0.002
	Na	0.000	0.000	0.040
	K	1.516	1.496	1.410
		1.540	1.496	1.451
	xFe	0.477	0.575	0.580
	xMg	0.364	0.269	0.261
	xTi	0.036	0.041	0.028
	xAl	0.122	0.115	0.131
	xK	0.985	1.000	0.972
Fe/(Fe+Mg)		0.567	0.682	0.690
Mg/(Mg+Fe)		0.433	0.318	0.310

SAMPLE MC152

MUSCOVITE normalized to 22 O

	analysis #	mu1	mu2	mu3	AVE
SiO2	**Wt. % oxide**	45.87	44.09	45.21	45.06
Al2O3		34.97	34.65	35.27	34.96
TiO2		0.45	0.45	0.58	0.49
FeO		0.93	0.73	0.91	0.86
MnO		0.00	0	0.12	0.04
MgO		1.02	0.01	0.68	0.57
CaO		0.18	0	0	0.06
Na2O		1.41	1.31	0.76	1.16
K2O		10.18	9.62	9.45	9.75
Cl		0.03	0.08	0	0.04
Total		95.04	90.94	92.98	92.99
mol.prop/O	**0x.mw/cat**	**cations**			
m.p. Si	60.084	0.763	0.734	0.752	0.750
m.p. Al	50.981	0.686	0.680	0.692	0.686
m.p. Ti	79.898	0.006	0.006	0.007	0.006
m.p. Fe	71.846	0.013	0.010	0.013	0.012
m.p. Mn	70.937	0.000	0.000	0.002	0.001
m.p. Mg	40.304	0.025	0.000	0.017	0.014
m.p. Ca	56.079	0.003	0.000	0.000	0.001
m.p. Na	30.989	0.046	0.042	0.025	0.037
m.p. K	47.098	0.216	0.204	0.201	0.207
Moles cations		1.758	1.676	1.708	1.714
Moles Oxygen		2.739	2.632	2.701	2.691
Oxygen norm factor		8.031	8.359	8.145	8.176

SAMPLE MC152

cat Si	4	6.131	6.134	6.129	6.131
cat Al	3	5.509	5.681	5.635	5.607
cat Ti	4	0.045	0.047	0.059	0.050
cat Fe	2	0.104	0.085	0.103	0.097
cat Mn	2	0.000	0.000	0.014	0.005
cat Mg	2	0.203	0.002	0.137	0.116
cat Ca	2	0.026	0.000	0.000	0.009
cat Na	1	0.365	0.353	0.200	0.306
cat K	1	1.736	1.707	1.634	1.693
Total cations		12.018	11.949	12.077	12.015
Tetrahedral	Si	6.131	6.134	6.129	6.131
	Al	1.869	1.866	1.871	1.869
		8.000	8.000	8.000	8.000
Octahedral	Al	3.640	3.815	3.764	3.738
	Ti	0.045	0.047	0.059	0.050
	Fe	0.104	0.085	0.103	0.097
	Mn	0.000	0.000	0.014	0.005
	Mg	0.203	0.002	0.137	0.116
		3.993	3.949	4.077	4.007
A site	Ca	0.026	0.000	0.000	0.009
	Na	0.365	0.353	0.200	0.306
	K	1.736	1.707	1.634	1.693
		2.127	2.061	1.834	2.007
	x musc	0.816	0.829	0.891	0.843
	x para	0.172	0.171	0.109	0.152
	xAl	0.912	0.966	0.923	0.933

SAMPLE MC157

GARNET normalized to 12 O

	analysis #	gr52	gr51	gr53	gr43	gr45	gr46	gr59	gr57	gr40
SiO2	**Wt. % oxide**	37.7	37.85	37.36	38.09	37.83	37.84	38.15	37.11	37.64
Al2O3		21.06	21.4	21.99	21.63	21.22	21.54	21.46	20.72	21.7
TiO2		0.19	0	0	0.29	0.04	0.06	0	0.01	0
FeO		27.81	28.85	28.27	31.5	30.98	30.8	29.54	29.78	34.23
MnO		7.97	7.78	7.71	4.28	5.96	5.75	6.42	6.67	1.25
MgO		1.31	1.13	1.66	1.77	1.34	1.47	1.59	1.61	2.6
CaO		3.97	4.49	4.39	4.03	3.02	3.53	4.72	3.1	3.42
Total		100.01	101.50	101.38	101.59	100.39	100.99	101.88	99.00	100.84
mol.prop/O	**0x.mw/cat**									
m.p. Si	60.08	0.63	0.63	0.62	0.63	0.63	0.63	0.63	0.62	0.63
m.p. Al	50.98	0.41	0.42	0.43	0.42	0.42	0.42	0.42	0.41	0.43
m.p. Ti	79.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m.p. Fe	71.85	0.39	0.40	0.39	0.44	0.43	0.43	0.41	0.41	0.48
m.p. Mn	70.94	0.11	0.11	0.11	0.06	0.08	0.08	0.09	0.09	0.02
m.p. Mg	40.30	0.03	0.03	0.04	0.04	0.03	0.04	0.04	0.04	0.06
m.p. Ca	56.08	0.07	0.08	0.08	0.07	0.05	0.06	0.08	0.06	0.06
Moles cations		1.65	1.67	1.67	1.68	1.65	1.66	1.68	1.63	1.67
Moles Oxygen		2.48	2.51	2.51	2.53	2.49	2.50	2.53	2.45	2.51
Oxygen norm factor		4.83	4.78	4.78	4.75	4.83	4.79	4.75	4.90	4.78
cat Si	4	3.03	3.01	2.97	3.01	3.04	3.02	3.02	3.03	2.99
cat Al	3	2.00	2.01	2.06	2.02	2.01	2.02	2.00	1.99	2.03
cat Ti	4	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
cat Fe	2	1.87	1.92	1.88	2.08	2.08	2.05	1.95	2.03	2.28
cat Mn	2	0.54	0.52	0.52	0.29	0.41	0.39	0.43	0.46	0.08
cat Mg	2	0.16	0.13	0.20	0.21	0.16	0.17	0.19	0.20	0.31
cat Ca	2	0.34	0.38	0.37	0.34	0.26	0.30	0.40	0.27	0.29
Total cations		7.96	7.98	8.00	7.96	7.96	7.97	7.98	7.98	7.99
Almandine		64.22	64.84	63.30	71.34	71.59	70.37	65.76	68.65	76.90
Grossular		11.75	12.93	12.59	11.69	8.94	10.33	13.46	9.00	9.84
Pyrope		5.39	4.53	6.63	7.15	5.52	5.99	6.31	6.62	10.41
Spessartine		18.64	17.71	17.48	9.82	13.95	13.31	14.47	15.57	2.84
Fe/(Fe+Mg)		0.92	0.93	0.91	0.91	0.93	0.92	0.91	0.91	0.88

SAMPLE MC157

STAUROLITE normalized to 23 O

	analysis #	st1	st2	st3	st4	st5	st6
SiO2	**wt. % oxide**	28.54	27.8	27.48	28.4	28.41	27.75
Al2O3		51.15	52.87	52.78	53.71	52.91	53.29
TiO2		0.39	0.48	0.47	0.9	0.75	0.53
FeO		17.55	16.53	16.06	15.91	16.22	16.54
MnO		0.13	0.21	0.19	0.33	0.13	0.37
MgO		2.00	1.9	1.39	1.64	1.95	1.64
CaO		0.00	0.14	0.11	0	0.06	0.02
ZnO		0.35	0	0.21	0.03	0.1	0.07
Total		100.11	99.93	98.69	100.92	100.53	100.21
mol.prop/O	**0x.mw/cat**	**cations**					
m.p. Si	60.08	0.48	0.46	0.46	0.47	0.47	0.46
m.p. Al	50.98	1.00	1.04	1.04	1.05	1.04	1.05
m.p. Ti	79.90	0.00	0.01	0.01	0.01	0.01	0.01
m.p. Fe	71.85	0.24	0.23	0.22	0.22	0.23	0.23
m.p. Mn	70.94	0.00	0.00	0.00	0.00	0.00	0.01
m.p. Mg	40.30	0.05	0.05	0.03	0.04	0.05	0.04
m.p. Ca	56.08	0.00	0.00	0.00	0.00	0.00	0.00
m.p. Zn	76.38	0.00	0.00	0.00	0.00	0.00	0.00
Moles cations		1.78	1.79	1.76	1.80	1.80	1.79
Moles Oxygen		2.77	2.78	2.74	2.82	2.80	2.78
Oxygen norm factor		8.32	8.29	8.38	8.17	8.22	8.27
cat Si	4	3.95	3.83	3.83	3.86	3.88	3.82
cat Al	3	8.35	8.59	8.68	8.61	8.53	8.64
cat Ti	4	0.04	0.05	0.05	0.09	0.08	0.05
cat Fe	2	2.03	1.91	1.87	1.81	1.85	1.90
cat Mn	2	0.02	0.02	0.02	0.04	0.02	0.04
cat Mg	2	0.41	0.39	0.29	0.33	0.40	0.34
cat Zn	2	0.04	0.00	0.02	0.00	0.01	0.01
cat Ca	2	0.00	0.02	0.02	0.00	0.01	0.00
Total cations		14.84	14.82	14.78	14.74	14.78	14.81
x(st)		0.826	0.82	0.86	0.83	0.82	0.83
M(st)		0.01	0.01	0.01	0.02	0.01	0.02

SAMPLE MC157

BIOTITE normalized to 22 O

	anaysis #	bi1	bi2	bi4a
SiO2	**Wt. % oxide**	37.11	34.13	35.79
Al2O3		18.36	16.96	19.94
TiO2		1.82	2.03	1.33
FeO		21.82	25.42	18.42
MnO		0.06	0.00	0.00
MgO		9.34	6.66	9.29
CaO		0.14	0.00	0.26
Na2O		0.00	0.00	0.45
K2O		7.62	7.31	8.49
Cl		0.01	0.00	0.09
Total		96.28	92.51	94.06

mol.prop/O	**0x.mw/cat**	**cations**		
m.p. Si	60.084	0.618	0.568	0.596
m.p. Al	50.981	0.360	0.333	0.391
m.p. Ti	79.898	0.023	0.025	0.017
m.p. Fe	71.846	0.304	0.354	0.256
m.p. Mn	70.937	0.001	0.000	0.000
m.p. Mg	40.304	0.232	0.165	0.230
m.p. Ca	56.079	0.002	0.000	0.005
m.p. Na	30.989	0.000	0.000	0.015
m.p. K	47.098	0.162	0.155	0.180
Moles cations		1.701	1.600	1.690
Moles Oxygen		2.441	2.283	2.400
Oxygen norm factor		9.014	9.638	9.166

cat Si	4	5.567	5.475	5.460
cat Al	3	3.246	3.206	3.585
cat Ti	4	0.205	0.245	0.153
cat Fe	2	2.738	3.410	2.350
cat Mn	2	0.008	0.000	0.000
cat Mg	2	2.089	1.593	2.113
cat Ca	2	0.023	0.000	0.042
cat Na	1	0.000	0.000	0.133
cat K	1	1.458	1.496	1.652
Total cations		13.875	13.929	13.702
Tetrahedral				
	Si	5.567	5.475	5.460
	Al	2.433	2.525	2.540
		8.000	8.000	8.000
Octahedral				
	Al	0.813	0.681	1.045
	Ti	0.205	0.245	0.153
	Fe	2.738	3.410	2.350
	Mn	0.008	0.000	0.000
	Mg	2.089	1.593	2.113
		5.853	5.929	5.660
A site	Ca	0.023	0.000	0.042
	Na	0.000	0.000	0.133
	K	1.458	1.496	1.652
		1.481	1.496	1.828
	xFe	0.468	0.575	0.415
	xMg	0.357	0.269	0.373
	xTi	0.035	0.041	0.027
	xAl	0.139	0.115	0.185
	xK	0.985	1.000	0.904
Fe/(Fe+Mg)		0.567	0.682	0.527
Mg/(Mg+Fe)		0.433	0.318	0.473

SAMPLE MC157

MUSCOVITE normalized to 22 O

	analysis #	mu1	mu2	mu3	mu4	mu5	mu6
SiO2	**Wt. % oxide**	43.69	44.09	45.21	45.2	44.57	44.73
Al2O3		33.70	34.65	35.27	34.6	35.37	35.44
TiO2		0.67	0.45	0.58	0.96	0.53	0.92
FeO		4.01	0.73	0.91	0.78	0.78	0.77
MnO		0.00	0	0.12	0.09	0.02	0.04
MgO		1.02	0.01	0.68	0.49	0.85	1.17
CaO		0.18	0	0	0	0.16	0.21
Na2O		1.41	1.31	0.76	1.11	1.57	1.22
K2O		10.18	9.62	9.45	9.75	9.77	9.91
Cl		0.03	0.08	0	0.06	0	0
Total		94.89	90.94	92.98	93.04	93.62	94.41
mol.prop/O	**0x.mw/cat**	**cations**					
m.p. Si	60.084	0.727	0.734	0.752	0.752	0.742	0.744
m.p. Al	50.981	0.661	0.680	0.692	0.679	0.694	0.695
m.p. Ti	79.898	0.008	0.006	0.007	0.012	0.007	0.012
m.p. Fe	71.846	0.056	0.010	0.013	0.011	0.011	0.011
m.p. Mn	70.937	0.000	0.000	0.002	0.001	0.000	0.001
m.p. Mg	40.304	0.025	0.000	0.017	0.012	0.021	0.029
m.p. Ca	56.079	0.003	0.000	0.000	0.000	0.003	0.004
m.p. Na	30.989	0.046	0.042	0.025	0.036	0.051	0.039
m.p. K	47.098	0.216	0.204	0.201	0.207	0.207	0.210
Moles cations		1.743	1.676	1.708	1.710	1.735	1.745
Moles Oxygen		2.678	2.632	2.701	2.692	2.702	2.724
Oxygen norm factor		8.216	8.359	8.145	8.171	8.143	8.077

SAMPLE MC157

cat Si	4	5.974	6.134	6.129	6.147	6.041	6.013
cat Al	3	5.431	5.681	5.635	5.546	5.650	5.615
cat Ti	4	0.069	0.047	0.059	0.098	0.054	0.093
cat Fe	2	0.459	0.085	0.103	0.089	0.088	0.087
cat Mn	2	0.000	0.000	0.014	0.010	0.002	0.005
cat Mg	2	0.208	0.002	0.137	0.099	0.172	0.234
cat Ca	2	0.026	0.000	0.000	0.000	0.023	0.030
cat Na	1	0.374	0.353	0.200	0.293	0.413	0.318
cat K	1	1.776	1.707	1.634	1.692	1.689	1.700
Total cations		12.167	11.949	12.077	11.990	12.030	12.077
Tetrahedral	Si	5.974	6.134	6.129	6.147	6.041	6.013
	Al	2.026	1.866	1.871	1.853	1.959	1.987
		8.000	8.000	8.000	8.000	8.000	8.000
Octahedral	Al	3.405	3.815	3.764	3.693	3.690	3.628
	Ti	0.069	0.047	0.059	0.098	0.054	0.093
	Fe	0.459	0.085	0.103	0.089	0.088	0.087
	Mn	0.000	0.000	0.014	0.010	0.002	0.005
	Mg	0.208	0.002	0.137	0.099	0.172	0.234
		4.140	3.949	4.077	3.990	4.007	4.047
A site	Ca	0.026	0.000	0.000	0.000	0.023	0.030
	Na	0.374	0.353	0.200	0.293	0.413	0.318
	K	1.776	1.707	1.634	1.692	1.689	1.700
		2.176	2.061	1.834	1.984	2.125	2.048
	x musc	0.816	0.829	0.891	0.852	0.795	0.830
	x para	0.172	0.171	0.109	0.148	0.194	0.155
	xAl	0.822	0.966	0.923	0.926	0.921	0.897

SAMPLE MC157

PLAGIOCLASE normalized to 8 O

	analysis #	plg30	plg28	plg33	plg35	plg41b	plg39c	plg10	plg16
SiO2	**Wt. % oxide**	58.96	59.65	58.55	61.36	59.61	60.85	58.96	61.27
Al2O3		25.72	26.08	26.86	24.82	25.77	25.01	25.06	25.43
TiO2		0.00	0.00	0.17	0.00	0.28	0	0.07	0
FeO		0.45	0.16	0.12	0.45	0.6	0.24	0.26	0
MnO		0.14	0.00	0.04	0.21	0.05	0.06	0.03	0
MgO		0.58	0.28	0.69	0.00	0.35	0.09	0.04	0.5
Cr2O3		0.00	0	0		0	0	0	0
CaO		8.61	7.58	8.60	6.94	6.75	6.8	6.88	6.29
Na2O		5.71	6.25	6.29	6.67	6.57	6.75	6.54	8
K2O		0.04	0.00	0.00	0.00	0	0	0	0.02
Total		100.21	100.00	101.32	100.45	99.98	99.8	97.84	101.51
mol.prop/O	**0x.mw/cat**	**cations**							
m.p. Si	60.084	0.981	0.993	0.974	1.021	0.992	1.013	0.981	1.020
m.p. Al	50.981	0.505	0.512	0.527	0.487	0.505	0.491	0.492	0.499
m.p. Ti	79.898	0.000	0.000	0.002	0.000	0.004	0.000	0.001	0.000
m.p. Fe	71.846	0.006	0.002	0.002	0.006	0.008	0.003	0.004	0.000
m.p. Mn	70.937	0.002	0.000	0.001	0.003	0.001	0.001	0.000	0.000
m.p. Mg	40.304	0.014	0.007	0.017	0.000	0.009	0.002	0.001	0.012
m.p. Cr	75.995	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
m.p. Ca	56.079	0.154	0.135	0.153	0.124	0.120	0.121	0.123	0.112
m.p. Na	30.989	0.184	0.202	0.203	0.215	0.212	0.218	0.211	0.258
m.p. K	47.098	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Moles cations		1.847	1.850	1.879	1.856	1.851	1.849	1.812	1.902
Moles Oxygen		2.988	2.998	3.018	3.013	2.994	2.998	2.935	3.042
Oxygen norm factor		2.677	2.668	2.651	2.655	2.672	2.668	2.726	2.630

SAMPLE MC157

cat Si	4	2.627	2.649	2.583	2.711	2.651	2.703	2.675	2.682
cat Al	3	1.351	1.365	1.397	1.293	1.351	1.309	1.340	1.312
cat Ti	4	0.000	0.000	0.006	0.000	0.009	0.000	0.002	0.000
cat Fe	2	0.017	0.006	0.004	0.017	0.022	0.009	0.010	0.000
cat Mn	2	0.005	0.000	0.001	0.008	0.002	0.002	0.001	0.000
cat Mg	2	0.039	0.019	0.045	0.000	0.023	0.006	0.003	0.033
cat Cr	3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
cat Ca	2	0.411	0.361	0.407	0.329	0.322	0.324	0.334	0.295
cat Na	1	0.493	0.538	0.538	0.571	0.567	0.581	0.575	0.679
cat K	1	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Total cations		4.945	4.937	4.982	4.928	4.947	4.934	4.940	5.002
Mole% Ab		54.41	59.87	56.96	63.49	63.79	64.24	63.24	69.63
Mole% An		45.34	40.13	43.04	36.51	36.21	35.76	36.76	30
Mole% Or		0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.11
Sum		100	100	100	100	100	100	100	100

APPENDIX -E-

NCMnKFMASH data file for THERMOCALC used in Sections C & D

```
% NCMnKFMASH datafile
%_____________________________________________________________________

chl 5     % order-disorder model

      x(chl) 0.51 % bulk Fe/(Fe+Mg)
      y(chl) 0.64   % y = 1/2 = clinochlore-amesite
      Q(chl) 0.35  % order parameter
      M(chl) 0.01

 % ------------------------------------------------

  p(afchl) 1  1    1  2 -1  y -1  Q

  p(clin)  2  1    0  1  2  Q
              2    0  2 -2/5  x -2/5  M   3  1 -1  y

  p(daph)  1  2    0  1  2/5  x    3  1 -1  y

  p(ames)  1  1    0  2  1  y -1  Q

  p(mnchl) 1  2    0  1  2/5  M    3  1 -1  y

% ------------------------------------------------
  sf

  W(afch,clin)  18   0  0
  W(afchl,daph) 14.5 0  0
  W(afchl,ames) 20   0  0
  W(afchl,mnchl) 0   0        0
  W(clin,daph)   2.5 0  0
  W(clin,ames)  18   0  0
  W(clin,mnchl)  0     0  0
  W(daph,ames)  13.5 0  0
  W(daph,mnchl)  0   0  0
  W(ames,mnchl)  0   0  0

 % ------------------------------------------------
 13

  x(Fe,M23)  1  1    0  1  1  x
  x(Mg,M23)  1  1    1  2 -1  x -1  M
  x(Mn,M23)  1  1    0  1  1  M

  x(Al,M1)   1  1    0  2  1  y -1  Q
  x(Fe,M1)   1  2    0  1  1  x     1  2 -1  y  1  Q
  x(Mg,M1)   1  2    1  2 -1  x -1  M    1  2 -1  y  1  Q
  x(Mn,M1)   1  2    0  1  1  M     1  2 -1  y  1  Q

  x(Al,M4)   1  1    0  2  1  y  1  Q
  x(Fe,M4)   1  2    0  1  1  x     1  2 -1  y -1  Q
  x(Mg,M4)   1  2    1  2 -1  x -1  M    1  2 -1  y -1  Q
  x(Mn,M4)   1  2    0  1  1  M     1  2 -1  y -1  Q

  x(Al,T2)   1  1    0  1  1  y
  x(Si,T2)   1  1    1  1 -1  y

 % ------------------------------------------------

 afchl  1  4    x(Mg,M23) 4   x(Mg,M1) 1   x(Mg,M4) 1   x(Si,T2) 2
   check 0 0 0 0

 clin   4  5    x(Mg,M23) 4   x(Mg,M1) 1   x(Al,M4) 1   x(Al,T2) 1  x(Si,T2) 1
   check 0 1/2 1/2 0

 daph   4  5    x(Fe,M23) 4   x(Fe,M1) 1   x(Al,M4) 1   x(Al,T2) 1  x(Si,T2) 1
   check 1 1/2 1/2 0
```

```
 ames   1  4    x(Mg,M23) 4   x(Al,M1) 1   x(Al,M4) 1   x(Al,T2) 2
   check 0 1 0 0

 mnchl  4  5    x(Mn,M23) 4   x(Mn,M1) 1   x(Al,M4) 1   x(Al,T2) 1  x(Si,T2) 1
               check 0 1/2 1/2 1

% ____________________________________________________________

bi 5      % order-disorder model

 x(bi) 0.60     % bulk Fe/(Fe + Mg +Mn)
 y(bi) 0.53     % x(Al,M1)
 Q(bi) 0.18     % 3(x - x(Fe,M2))
 M(bi) 0.008

% ------------------------------------------------

  p(phl)  2 2    1  2 -1  x -1  M   1  1 -1  y
            1    0  1 -2/3   Q

  p(ann)  1 1    0  2  1   x  -1/3  Q

  p(east) 1 1    0  1  1   y

  p(obi)  2 2    0  1 -1   x    0  1  1  y
            1    0  1  1   Q

  p(mnbi) 1 1    0  1  1   M

% ------------------------------------------------

  sf

  W(phl,ann)    9  0  0
  W(phl,east)  10  0  0
  W(phl,obi)    3  0  0
  W(phl,mnbi)   0  0  0
  W(ann,east)  -1  0  0
  W(ann,obi)    6  0  0
  W(ann,mnbi)   0  0  0
  W(east,obi)  10  0  0
  W(east,mnbi)  0  0  0
  W(obi,mnbi)   0  0  0

% ------------------------------------------------
  9     % no of site fractions

  x(Al,M1)  1 1    0  1  1   y

  x(Fe,M1)  2 2    0  1  1   x    1  1 -1  y
              1    0  1 2/3  Q

  x(Mg,M1)  2 2    1  2 -1   x -1  M   1  1 -1  y
              1    0  1 -2/3 Q

  x(Mn,M1)  1 1    0  1  1  M

  x(Fe,M2)  1 1    0  2  1  x -1/3  Q

  x(Mg,M2)  1 1    1  3 -1  x  1/3  Q -1  M

  x(Mn,M2)  1 1    0  1  1  M

  x(Al,T1)  1 1    1/2 1  1/2  y

  x(Si,T1)  1 1    1/2 1 -1/2  y
```

```
% ------------------------------------------------

      phl      4  4    x(Mg,M1) 1   x(Mg,M2) 2   x(Al,T1) 1   x(Si,T1) 1
         check 0 0 0 0

   ann      4  4    x(Fe,M1) 1   x(Fe,M2) 2   x(Al,T1) 1   x(Si,T1) 1
         check 1 0 0 0

   east     1  3    x(Al,M1) 1   x(Mg,M2) 2   x(Al,T1) 2
         check 0 1 0 0

   obi      4  4    x(Fe,M1) 1   x(Mg,M2) 2   x(Al,T1) 1   x(Si,T1) 1

         make       2   phl 2/3 ann 1/3
         DQF      -10.73  0  0
         check 1/3 0 1 0

   mnbi     4  4    x(Mn,M1) 1   x(Mn,M2) 2   x(Al,T1) 1   x(Si,T1) 1
                                              check 0 0 0 1



%_____________________________________________________________________

st 3
     x(st) 0.80
     M(st) 0.003

  p(mst)   1 1      1  2 -1  x -1  M

  p(fst)   1 1      0  1  1  x

  p(mnst)             1 1                                        0  1  1  M


  sf

  w(mst,fst) -8 0 0
  w(mst,mnst) 0 0 0
  w(fst,mnst) 0 0 0

  3  x(Mg)   1 1      1  2 -1  x -1  M

     x(Fe)   1 1      0  1  1  x

     x(Mn)                    1 1                                          0  1  1  M

  mst     1  1      x(Mg)  4

  fst     1  1      x(Fe)  4

  mnst   1       1               x(Mn)  4

%_____________________________________________________________________

ctd 3
      x(ctd) 0.76
      M(ctd) 0.06

  p(mctd)   1 1      1  2 -1  x -1 M

  p(fctd)   1 1      0  1  1  x

  p(mnctd)  1 1      0  1  1  M

  sf
```

```
  w(mctd,fctd)  1 0 0
  w(mctd,mnctd) 0 0 0
  w(fctd,mnctd) 0 0 0

  3  x(Mg)   1 1      1  2 -1  x -1  M

     x(Fe)   1 1      0  1  1  x

     x(Mn)   1 1      0  1  1  M

  mctd     1  1      x(Mg)  1

  fctd     1  1      x(Fe)  1

  mnctd    1  1      x(Mn)  1

% _____________________________________________________________________
% ternary plag: SF: symmetric

pl 3

   ca(pl) 0.18
   k(pl) 0.007

% ---------------------------------------------------

  p(ab)    1 1    1 2 -1 k -1 ca
  p(an)    1 1    0 1  1 ca
  p(san)   1 1    0 1  1 k

% ---------------------------------------------------
  sf

    w(aban)     0   0     0
    w(sanab) 15.3   0 0.225
    w(sanan)   45   0     0

% ---------------------------------------------------
  3

  x(K)     1 1    0 1  1 k
  x(Na)    1 1    1 2 -1 k -1 ca
  x(Ca)    1 1    0 1  1 ca

% ---------------------------------------------------

  abh      1 1     x(Na) 1
  an       1 1     x(Ca) 1
           DQF   6.01  -0.0035  0     % C1 plag
  san      1 1     x(K) 1

% _____________________________________________________________________

%____  Garnet _____________________________________________________________

g 4
      F(g)   0.76  % Fe/Fe+Mg+Ca+Mn
      C(g)   0.10   % Ca/Fe+Mg+Ca+Mn
      M(g)   0.09    % Mn/Fe+Mg+Ca+Mn

%--------------------------------------------------------------------
   p(alm)  1  1    0  1  1  F
   p(gr)   1  1    0  1  1  C
   p(spss) 1  1    0  1  1  M
   p(py)   1  1    1  3 -1  C -1  F -1  M
```

```
% ------------------------------------------------
   sf

   W(gr,alm)        0  0  0
   W(gr,py)        33  0  0
   W(gr,spss)       0  0  0
   W(alm,py)      2.5  0  0
   W(alm,spss)   0.24  0  0
   W(py,spss)     4.5  0  0

% ------------------------------------------------
   4

   x(Fe,M1)   1  1    0  1  1  F

   x(Ca,M1)   1  1    0  1  1  C

   x(Mn,M1)   1  1    0  1  1  M

    x(Mg,M1)   1  1    1  3 -1  C -1  F -1  M

% ------------------------------------------------

 alm     1  1      x(Fe,M1)  3
 check 1 0 0

 gr      1  1      x(Ca,M1)  3
 check 0 1 0

 spss    1  1      x(Mn,M1)  3
 check 0 0 1

 py      1  1      x(Mg,M1)  3
 check 0 0 0

% ____________________________________________________________________

%__________mucsovite with (Fe)celadonite, DQF paragonite
mixing_____________________________________

mu 4
      x(mu) 0.72 %Fe/Fe+Mg
      y(mu) 0.93  %Al,T1
      N(mu) 0.13 %Na/K+Na

% ------------------------------------------------

   p(mu)    1 1      0  2  1  y  -1  N

   p(cel)   1 2      1  1 -1  x       1  1 -1  y

   p(fcel)  1 2      0  1  1  x       1  1 -1  y

   p(pa)               1 1      0  1  1  N


% ------------------------------------------------

sf

W(mu,cel)      0   0   0
W(mu,fcel)     0   0   0
W(mu,pa)      12   0  0.4
W(cel,fcel)    0   0   0
W(cel,pa)     14   0  0.2
W(fcel,pa)    14   0  0.2
```

```
% ------------------------------------------------

7
   x(Na,A)             1 1      0  1   1  N

   x(K,A)      1 1      1  1  -1  N

        x(Al,M2A)   1 1      0  1   1  y

   x(Mg,M2A)   1 2      1  1  -1  x       1  1 -1  y

   x(Fe,M2A)   1 2      0  1   1  x       1  1 -1  y

   x(Al,T1)    1 1      0  1   1/2  y

   x(Si,T1)    1 1      1  1  -1/2  y


% ------------------------------------------------

      mu     4  4      x(K,A) 1                x(Al,M2A) 1    x(Al,T1) 1    x(Si,T1)  1
           check 0 1 0
      cel    1  3      x(K,A) 1                x(Mg,M2A) 1    x(Si,T1) 2
             check 0 0 0
      fcel   1  3      x(K,A) 1                x(Fe,M2A) 1    x(Si,T1) 2
             check 1 0 0
      pa     4  4      x(Na,A) 1        x(Al,M2A) 1    x(Al,T1) 1    x(Si,T1)  1
                             DQF 1.42  0  0.4
                             check 0 1 1

%_____________________________________________________________________
zo ky sill kao pa and q H2O

*
%omit bi and sill ky

fluidpresent yes
fluidexcess yes
setexcess q

calctatp ask

setdefTwindow yes  450 700
setdefPwindow yes  0.001   18

calcsdnle yes
pseudosection yes
%
% ------------------------------------------------
%                 Al2O3       CaO        MgO      FeO       K2O      Na2O      MnO
setbulk yes      0.165132  0.009632  0.050489  0.069041  0.02930  0.01726  0.000704
% ------------------------------------------------
%dogmin yes
setiso yes
setmodeiso yes
zeromodeiso yes

project no

drawpd yes
moreprec yes

*
```

APPENDIX -F-

Microprobe set-up for monazite analysis used in Section D

Analytical setup for monazite analyses

Major elements

Element	Line	Xtal	Standart
Si	Kα	TAP	$PbSiO_3$
P	Kα	PET	$CePO_4$
Ca	Kα	PET	$CaSiO_3$
Th	Mα	PET	ThO_2
Y	Lα	TAP	YPO_4
La	Lα	LIF	$LaPO_4$
Ce	Lα	LIF	$CePO_4$
Nd	Lα	LIF	$NdPO_4$
Pr	Lβ	LIF	$PrPO_4$
Sm	Lβ	LIF	$SmPO_4$
Gd	Lβ	LIF	$GdPO_4$
Dy	Lβ	LIF	$DyPO_4$

Run at 15kv and 20 nA

Trace Elements

Th	Mα	PET	ThO_2
Y	Lα	TAP	YPO_4
Pb	Mα	PET	$PbSiO_3$
U	Mβ	PET	U

Run at 15kv and 200 nA

APPENDIX -G-

Monazite trace element results for age calculations used in Section D

Analysis no:	Sample name	Concentration (wt % oxide)				Counting error (1-sigma%)			calculated age	simulated error
		Y2O3	PbO	UO2	ThO2	Pb	U	Th	(ma)	(95% conf. level)
1	135m3-1	1.83	0.40	0.45	4.01	1.36	1.87	0.38	1616	44
2	135m3-2	1.93	0.36	0.39	3.69	1.49	2.14	0.4	1613	48
3	135m3-3	1.86	0.34	0.37	3.44	1.56	2.22	0.41	1615	51
4	135m3-4	1.74	0.37	0.39	3.96	1.46	2.1	0.38	1573	46
5	135m3-5	1.65	0.37	0.32	4.23	1.46	2.49	0.36	1572	46
6	135m3-6	1.61	0.39	0.31	4.38	1.4	2.56	0.36	1607	47
7	135m3-7	1.99	0.60	0.65	6.36	0.98	1.34	0.28	1592	31
8	135m3-8	1.9	0.61	0.61	6.57	0.98	1.41	0.28	1598	31
9	135m3-9	1.8	0.49	0.58	4.91	1.17	1.49	0.33	1590	37
10	135m4-1	1.78	0.45	0.46	4.79	1.26	1.79	0.34	1587	40
11	135m4-2	1.96	0.46	0.53	4.58	1.24	1.6	0.35	1602	41
12	135m4-3	1.95	0.56	0.57	5.86	1.05	1.49	0.3	1616	35
13	135m4-4	1.89	0.40	0.44	4.06	1.38	1.88	0.37	1603	46
14	135m4-5	1.84	0.38	0.36	3.89	1.44	2.25	0.38	1647	48
15	135m4-6	1.77	0.36	0.38	3.96	1.49	2.15	0.38	1549	46
16	152m1-1hi	0.62	0.73	0.52	8.63	0.86	1.56	0.24	1582	27
17	152m1-2	0.71	0.41	0.40	4.45	1.35	2.03	0.35	1599	43
18	152m1-3	1.10	0.44	0.44	4.75	1.27	1.89	0.34	1591	41
19	152m1-4	1.55	0.41	0.47	4.25	1.34	1.8	0.36	1591	43
20	152m1-5	1.48	0.38	0.44	4.05	1.43	1.91	0.37	1553	44
21	152m2-1	3.03	0.26	0.41	2.22	1.87	2.06	0.55	1630	60
22	152m2-2	2.33	0.30	0.44	2.65	1.73	1.94	0.49	1605	55
23	152m2-3	2.99	0.28	0.42	2.47	1.76	2.04	0.51	1634	56
24	152m2-4	1.61	0.34	0.55	3.03	1.56	1.58	0.45	1572	49
25	152m2-5	1.51	0.36	0.54	3.14	1.51	1.6	0.44	1602	49
26	152m3-1	2.15	0.47	0.67	4.16	1.22	1.32	0.37	1622	40
27	152m3-2	2.26	0.55	0.71	5.05	1.06	1.24	0.33	1640	35
28	152m3-3	2.09	0.52	0.69	4.96	1.12	1.28	0.33	1583	35
29	152m3-4	1.47	0.36	0.49	3.47	1.51	1.77	0.41	1568	47
30	152m3-5	1.48	0.35	0.60	3.23	1.53	1.47	0.43	1492	45
31	135g-1	2.15	0.57	0.77	5.32	1.01	1.17	0.31	1601	32
32	135g-2	2.55	0.57	0.79	5.08	1.01	1.14	0.32	1627	33
33	135g-3	2.55	0.54	0.75	5	1.05	1.19	0.33	1590	33
34	135g-4	1.99	0.43	0.45	4.66	1.26	1.87	0.34	1558	40
35	135g-5	2.35	0.44	0.50	4.53	1.25	1.72	0.34	1580	40
36	135g-6	2.42	0.49	0.63	4.44	1.13	1.39	0.35	1649	38
37	135g-7	2.33	0.52	0.75	4.92	1.08	1.19	0.33	1567	34
38	135g-8	2.76	0.35	0.58	3	1.47	1.51	0.45	1577	47
39	135g-9	1.99	0.48	0.46	5.33	1.16	1.83	0.31	1561	38
40	135m1-1	1.79	0.40	0.41	4.49	1.33	2.04	0.35	1547	42
41	135m1-2	1.86	0.42	0.43	4.77	1.28	1.93	0.33	1537	40
42	135m1-3	2	0.54	0.55	5.9	1.05	1.56	0.29	1577	33
43	135m1-4	1.94	0.40	0.42	4.21	1.35	1.99	0.36	1590	44
44	135m1-5	1.95	0.38	0.42	4.08	1.41	2	0.37	1541	44
45	135m1-6	1.8	0.45	0.44	4.98	1.23	1.88	0.33	1560	39
46	135m2-1	1.8	0.42	0.44	4.54	1.28	1.91	0.34	1569	41
47	135m2-2	1.75	0.44	0.45	4.72	1.24	1.86	0.34	1588	40
48	135m2-3	1.75	0.38	0.38	4.05	1.4	2.16	0.37	1586	44
49	135m2-4	1.76	0.35	0.36	3.89	1.5	2.27	0.38	1531	47
50	135m2-5	1.72	0.40	0.42	4.44	1.33	1.99	0.35	1552	41
51	135m2-6	1.8	0.36	0.39	3.79	1.47	2.13	0.38	1566	46
52	135m2-7	1.77	0.34	0.35	3.81	1.51	2.33	0.38	1554	46
53	135m2-8	1.78	0.36	0.36	3.88	1.46	2.26	0.38	1575	46
54	152SS-1	1.82	0.44	0.63	4.01	1.22	1.39	0.37	1605	39
55	152SS-2	1.85	0.45	0.64	4.34	1.22	1.37	0.35	1548	37
56	152SS-3	1.61	0.28	0.49	2.42	1.83	1.78	0.52	1515	54
57	152SS-4	1.94	0.31	0.52	2.71	1.63	1.66	0.48	1562	50
58	152SS-5	1.9	0.43	0.70	3.67	1.27	1.28	0.39	1574	40
59	133-st1-1	1.72	0.69	0.44	8.5	0.87	1.81	0.24	1559	28
60	133-st1-2	1.73	0.64	0.41	8.12	0.91	1.95	0.24	1543	28
61	133-st1-3	1.68	0.65	0.37	8.59	0.91	2.12	0.24	1497	28
62	133-st1-4	1.71	0.67	0.37	8.74	0.89	2.08	0.23	1517	27
63	133-st1-5	1.6	0.68	0.38	8.8	0.89	2.11	0.24	1529	28
64	133-st1-6	1.57	0.53	0.40	6.72	1.07	2.01	0.27	1490	32
65	133-m1-1	1.76	1.03	0.47	13.86	0.64	1.65	0.18	1521	20
66	133-m1-2	1.72	1.01	0.44	13.66	0.65	1.72	0.18	1515	20

Analysis no:	Sample name	Concentration (wt % oxide)				Counting error (1-sigma%)			calculated age	simulated error
		Y2O3	PbO	UO2	ThO2	Pb	U	Th	(ma)	(95% conf. level)
67	133-m1-3	1.76	0.57	0.34	7.53	1	2.27	0.26	1502	30
68	133-m1-4	1.76	0.69	0.38	8.95	0.86	2.06	0.23	1527	28
69	133-m1-5	1.74	0.68	0.36	9.05	0.87	2.14	0.23	1516	27
70	133-st2-1	1.71	0.78	0.46	9.89	0.79	1.75	0.22	1545	25
71	133-st2-2	1.69	0.76	0.44	9.66	0.81	1.81	0.22	1544	25
72	133-st2-3	1.7	0.77	0.45	9.97	0.8	1.78	0.22	1522	25
73	133-st2-4	1.72	0.77	0.44	10	0.79	1.81	0.22	1531	24
74	133-st2-5	1.7	0.71	0.43	9.39	0.84	1.85	0.22	1500	26
75	133-st2-6	1.7	0.62	0.38	7.96	0.95	2.09	0.25	1516	29
76	133-m2-1	1.6	0.45	0.27	5.66	1.2	2.81	0.3	1556	37
77	133-m2-2	1.61	0.47	0.28	6.05	1.17	2.72	0.29	1530	36
78	133-m2-3	1.71	0.49	0.31	6.28	1.13	2.49	0.28	1521	35
79	133-m2-4	1.65	0.44	0.29	5.53	1.24	2.72	0.31	1524	38
80	133-m2-5	1.76	0.55	0.29	7.1	1.03	2.66	0.26	1545	32
81	133-m3-1	1.51	0.33	0.29	4.04	1.55	2.79	0.37	1506	47
82	133-m3-2	1.83	0.53	0.44	6.41	1.06	1.85	0.28	1510	32
83	133-m3-3	1.9	0.56	0.50	6.6	1.01	1.66	0.28	1531	32
84	133-m3-4	1.87	0.64	0.53	7.51	0.91	1.57	0.26	1555	29
85	133-m3-5	1.81	0.49	0.41	5.99	1.12	1.99	0.29	1520	34
86	133-m3-6	1.54	0.31	0.27	3.72	1.62	2.93	0.39	1539	50
87	133-m3-7	1.87	0.55	0.51	6.3	1.03	1.62	0.28	1540	33
88	133-m3-8	1.77	0.45	0.38	5.53	1.21	2.1	0.31	1492	37
89	133-m3-9	1.56	0.33	0.30	3.97	1.57	2.62	0.37	1480	47
90	133-m3-10	1.72	0.43	0.34	5.18	1.24	2.31	0.32	1546	39
91	133-m3-11	1.71	0.47	0.35	5.7	1.17	2.27	0.3	1535	36
92	133-m3-12	1.62	0.36	0.31	4.3	1.45	2.57	0.36	1517	45
93	81-1-1	1.56	0.31	0.33	3.27	1.65	2.53	0.43	1591	53
94	81-1-2	1.71	0.38	0.38	4.27	1.4	2.18	0.37	1548	44
95	81-1-3	1.65	0.37	0.31	4.26	1.44	2.58	0.37	1552	45
96	81-1-4	1.89	0.43	0.45	4.81	1.27	1.87	0.34	1528	38
97	81-1-5	1.88	0.56	0.50	6.7	1.03	1.66	0.28	1499	31
98	81-2-1	1.6	0.28	0.27	3.3	1.78	3.02	0.43	1523	56
99	81-2-2	1.85	0.38	0.44	4.12	1.4	1.91	0.38	1518	43
100	81-2-3	1.45	0.26	0.28	3.02	1.89	2.87	0.46	1506	58
101	81-2-4	1.45	0.27	0.25	2.96	1.85	3.27	0.46	1609	61
102	81-2-5	1.48	0.28	0.29	3.09	1.78	2.82	0.45	1572	58
103	81-2-6	1.45	0.26	0.27	2.94	1.89	3.03	0.47	1550	58
104	81-2-7	1.57	0.34	0.32	3.92	1.52	2.55	0.39	1539	47
105	81-3-1	1.43	0.27	0.30	3	1.84	2.73	0.46	1541	57
106	81-3-2	1.71	0.36	0.49	3.88	1.45	1.76	0.39	1486	42
107	81-3-3	1.59	0.33	0.37	3.68	1.55	2.25	0.4	1530	48
108	81-3-4	1.64	0.34	0.37	3.54	1.52	2.25	0.41	1591	49
109	81-4-1	1.53	0.30	0.32	3.36	1.71	2.58	0.43	1524	53
110	81-4-2	1.66	0.31	0.29	3.66	1.63	2.74	0.4	1523	50
111	81-4-3	1.64	0.30	0.32	3.42	1.68	2.55	0.42	1530	53
112	81-4-4	1.78	0.33	0.34	3.6	1.57	2.39	0.41	1548	49
113	81-4-5	1.77	0.31	0.30	3.39	1.65	2.69	0.42	1570	54
114	81-4-6	1.6	0.29	0.31	3.04	1.75	2.65	0.45	1594	57
115	81-4-7	1.69	0.35	0.37	3.76	1.5	2.21	0.4	1552	47
116	81-5-1	1.51	0.24	0.33	2.46	2.01	2.51	0.52	1541	61
117	81-5-2	1.61	0.27	0.34	2.71	1.84	2.43	0.49	1571	57
118	81-5-3	1.73	0.34	0.44	3.55	1.54	1.9	0.41	1503	47
119	81-5-4	1.62	0.23	0.35	2.24	2.12	2.38	0.56	1500	63
120	81-5-5	1.66	0.25	0.35	2.72	1.94	2.38	0.49	1462	56
121	81-5-6	1.71	0.35	0.41	4.1	1.48	2.05	0.38	1442	43
122	81-5-7	1.62	0.30	0.36	3.39	1.66	2.25	0.42	1482	50
123	130-1-1	1.54	0.32	0.32	3.65	1.61	2.52	0.4	1524	51
124	130-1-2	1.35	0.22	0.23	2.65	2.17	3.48	0.5	1479	65
125	130-1-3	1.51	0.24	0.31	2.45	2.05	2.7	0.52	1558	64
126	130-1-4	1.64	0.33	0.41	3.85	1.55	2.03	0.39	1438	44
127	130-1-5	1.39	0.22	0.26	2.21	2.22	3.11	0.56	1583	71
128	130-1-6	1.35	0.22	0.26	2.28	2.25	3.2	0.55	1547	69
129	130-2-1	1.31	0.22	0.30	2.25	2.22	2.78	0.56	1517	67
130	130-2-2	1.46	0.26	0.31	2.8	1.93	2.62	0.48	1508	58
131	130-2-3	1.28	0.17	0.21	1.74	2.83	3.88	0.66	1523	88
132	130-2-4	1.39	0.24	0.33	2.31	2.1	2.57	0.55	1550	64

Analysis	Sample name	Concentration (wt % oxide)				Counting error (1-sigma%)			calculated age	simulated error
no:		Y2O3	PbO	UO2	ThO2	Pb	U	Th	(ma)	(95% conf. level)
133	130-2-5	1.29	0.17	0.27	1.74	2.73	3.05	0.66	1474	83
134	mc13700-m1-1	1.72	0.42	0.49	4.48	1.31	1.75	0.36	1547	41
135	mc13700-m1-2	1.32	0.28	0.30	3.2	1.8	2.75	0.44	1530	56
136	mc13700-m1-3	1.35	0.24	0.24	2.56	2.07	3.34	0.51	1609	68
137	mc13700-m1-4	1.35	0.25	0.24	2.9	2	3.33	0.47	1545	63
138	mc13700-2st-1	1.8	0.27	0.46	2.31	1.86	1.9	0.54	1581	59
139	mc13700-2st-2	1.9	0.39	0.60	3.54	1.4	1.47	0.41	1556	44
140	mc13700-3st-2	2.12	0.26	0.43	2.07	1.95	2.03	0.58	1622	62
141	mc13700-3st-3	1.71	0.30	0.45	2.68	1.73	1.94	0.49	1592	56
142	mc13700-3st-4	1.66	0.23	0.31	2.41	2.18	2.66	0.53	1479	64
143	mc13700-4mat-1	1.4	0.38	0.25	4.6	1.44	3.13	0.35	1569	46
144	mc13700-4mat-2	1.43	0.31	0.28	3.55	1.67	2.89	0.41	1579	54
145	158-1-1	1.43	0.27	0.29	3.06	1.85	2.85	0.45	1532	57
146	158-1-2	1.42	0.28	0.31	3.04	1.81	2.62	0.45	1538	56
147	158-1-3	1.46	0.30	0.30	3.31	1.71	2.69	0.43	1558	55
148	158-2-1	1.52	0.29	0.36	3.02	1.78	2.32	0.45	1525	54
149	158-2-2	1.42	0.24	0.29	2.35	2.09	2.86	0.54	1594	69
150	158-2-3	1.4	0.23	0.28	2.36	2.11	2.94	0.54	1587	67
151	158-2-4	1.5	0.31	0.34	3.19	1.67	2.47	0.44	1588	54
152	158-2-5	1.45	0.22	0.28	2.13	2.24	2.97	0.58	1586	71
153	158-2-6	1.49	0.25	0.32	2.54	1.98	2.63	0.51	1567	62
154	158-2-7	1.46	0.23	0.29	2.36	2.17	2.91	0.54	1541	68
155	158-2-8	1.64	0.26	0.32	2.61	1.91	2.59	0.5	1584	61
156	158-2-9	1.42	0.25	0.27	2.76	1.98	3.02	0.48	1541	60
157	158-2-10	2	0.48	0.55	4.73	1.16	1.57	0.34	1626	37
158	158-2-11	1.73	0.46	0.47	4.94	1.2	1.8	0.33	1581	38
159	158-2-12	1.48	0.29	0.35	3.14	1.76	2.39	0.44	1522	54
160	158-3-1	1.73	0.35	0.54	2.92	1.51	1.64	0.46	1630	49
161	158-3-2	1.77	0.32	0.52	2.57	1.61	1.7	0.5	1651	52
162	158-3-3	1.81	0.31	0.55	2.49	1.64	1.6	0.52	1601	53
163	158-4-1	1.7	0.27	0.32	2.86	1.84	2.61	0.47	1561	58
164	158-4-2	1.6	0.30	0.30	3.05	1.69	2.72	0.45	1656	57
165	158-4-3	1.35	0.25	0.28	2.65	2.02	2.96	0.5	1545	63
166	158-4-4	1.28	0.30	0.30	3.26	1.71	2.74	0.43	1581	55
167	158-4-5	1.3	0.27	0.28	2.96	1.89	2.94	0.46	1541	59
168	158-4-6	1.46	0.25	0.28	2.75	2.01	2.95	0.48	1520	62
169	158-4-7	1.64	0.26	0.27	2.73	1.93	2.99	0.49	1593	62
170	158-4-8	1.64	0.34	0.34	3.76	1.54	2.45	0.4	1551	49
171	158-4-9	1.58	0.32	0.31	3.48	1.6	2.62	0.42	1596	53
172	158-4-11	1.4	0.23	0.27	2.42	2.14	3.03	0.53	1556	67
173	158-5-1	1.91	0.47	0.61	4.71	1.16	1.44	0.34	1578	36
174	158-5-2	1.92	0.47	0.55	4.79	1.16	1.58	0.34	1606	38
175	158-5-3	2.05	0.53	0.65	5.23	1.06	1.35	0.32	1609	35
176	158-5-4	2.12	0.49	0.65	4.6	1.14	1.37	0.35	1608	36
177	158-5-5	2.05	0.41	0.56	3.95	1.3	1.55	0.38	1581	41
178	158-5-6	1.74	0.33	0.40	3.2	1.56	2.09	0.44	1616	51
179	158-5-7	1.86	0.42	0.52	4.13	1.29	1.65	0.37	1581	41
180	158-5-8	2	0.41	0.58	4.05	1.3	1.52	0.38	1552	41
181	105-1-1	1.68	0.27	0.31	2.7	1.87	2.69	0.49	1599	61
182	105-1-2	1.6	0.29	0.31	3.2	1.74	2.69	0.44	1559	55
183	105-1-3	1.68	0.30	0.34	3.1	1.73	2.49	0.45	1574	54
184	105-1-4	1.66	0.29	0.32	3.03	1.75	2.65	0.45	1582	57
185	105-1-5	1.61	0.23	0.28	2.4	2.14	2.98	0.53	1545	66
186	105-1-6	1.65	0.24	0.29	2.49	2.07	2.9	0.51	1560	66
187	105-2-1	1.88	0.45	0.43	4.92	1.23	1.96	0.33	1582	40
188	105-2-2	1.89	0.46	0.43	5.16	1.2	1.96	0.32	1579	38
189	105-2-3	1.92	0.39	0.38	4.39	1.37	2.17	0.36	1561	44
190	105-2-4	2	0.38	0.35	3.94	1.41	2.36	0.38	1647	48
191	105-2-5	1.65	0.38	0.32	4.23	1.42	2.57	0.36	1598	46
192	105-2-6	1.69	0.30	0.29	3.47	1.68	2.83	0.41	1544	52
193	105-2-7	1.6	0.25	0.27	2.6	2.01	3.09	0.5	1584	63
194	105-2-8	1.71	0.28	0.33	2.88	1.81	2.55	0.47	1573	56
195	105-2-9	1.81	0.34	0.39	3.62	1.54	2.18	0.4	1536	49
196	87-1-1	1.62	0.28	0.34	2.71	1.82	2.49	0.49	1613	59
197	87-1-2	1.68	0.30	0.39	3	1.73	2.18	0.45	1540	53
198	87-1-3	1.46	0.21	0.27	2.22	2.28	3.1	0.55	1540	69

Analysis no:	Sample name	Concentration (wt % oxide)				Counting error (1-sigma%)			calculated age	simulated error
		Y2O3	PbO	UO2	ThO2	Pb	U	Th	(ma)	(95% conf. level)
199	87-1-4	1.43	0.26	0.35	2.6	1.95	2.41	0.5	1524	60
200	87-1-5	1.4	0.25	0.29	2.77	1.97	2.9	0.48	1535	61
201	87-1-6	1.38	0.22	0.27	2.26	2.21	3.12	0.55	1581	35
202	87-2-1	1.64	0.30	0.39	3.27	1.7	2.17	0.43	1488	26
203	87-2-2	1.46	0.28	0.32	2.97	1.82	2.63	0.46	1546	29
204	87-2-3	1.49	0.24	0.30	2.44	2.06	2.82	0.52	1563	33
205	87-2-4	1.38	0.26	0.39	2.33	1.91	2.21	0.54	1595	31
206	87-2-5	1.56	0.30	0.42	3	1.69	2.03	0.45	1535	26
207	87-2-6	1.38	0.24	0.36	2.36	2.05	2.36	0.53	1516	32
208	87-2-7	1.4	0.25	0.37	3.1	2.01	2.28	0.44	1287	26
209	87-2-8	1.4	0.23	0.38	2.06	2.13	2.24	0.58	1538	33
210	87-2-9	1.52	0.25	0.32	2.55	1.99	2.62	0.51	1539	32
211	87-3-1	1.45	0.35	0.35	3.74	1.51	2.36	0.4	1589	24
212	87-3-2	1.63	0.31	0.39	3.14	1.64	2.18	0.44	1578	26
213	87-3-3	1.68	0.32	0.40	3.11	1.63	2.13	0.45	1587	25
214	87-3-4	1.59	0.34	0.31	3.8	1.56	2.66	0.39	1562	25
215	87-3-5	1.63	0.31	0.37	3.24	1.66	2.29	0.43	1550	26
216	87-3-6	1.64	0.34	0.39	3.7	1.52	2.18	0.4	1547	23
217	87-4-1	1.62	0.28	0.32	2.99	1.83	2.66	0.46	1532	28
218	87-4-2	1.85	0.45	0.46	4.9	1.22	1.88	0.33	1578	19
219	87-4-3	1.58	0.35	0.31	4.14	1.49	2.64	0.37	1537	24
220	87-4-4	1.6	0.30	0.32	3.28	1.7	2.6	0.43	1550	26
221	87-4-5	1.81	0.47	0.49	5.38	1.17	1.74	0.32	1517	18
222	87-4-6	1.78	0.32	0.35	3.44	1.6	2.4	0.42	1564	26
223	87-4-7	1.71	0.37	0.40	4.04	1.44	2.12	0.38	1535	22
224	87-4-8	1.76	0.39	0.38	4.9	1.36	2.21	0.33	1449	20
225	152-1-1	1.68	0.29	0.67	1.9	1.79	1.4	0.63	1565	27
226	152-1-2	1.3	0.44	0.94	2.89	1.29	1.04	0.47	1594	20
227	152-1-3	1.61	0.38	0.86	2.35	1.44	1.13	0.54	1593	23
228	152-1-4	1.53	0.37	0.85	2.3	1.48	1.13	0.55	1574	23
229	152-1-5	1.269	0.38	0.83	2.5	1.44	1.15	0.52	1593	23
230	152-1-6	2.22	0.27	0.67	1.51	1.89	1.4	0.74	1573	29
231	152-1-7	2.3	0.31	0.74	1.59	1.71	1.27	0.71	1628	27
232	152-2-1	1.64	0.29	0.36	2.95	1.79	2.38	0.47	1556	28
233	152-2-2	1.71	0.50	0.46	5.79	1.14	1.87	0.31	1539	18
234	152-2-3	1.77	0.29	0.38	3.03	1.79	2.25	0.46	1513	27
235	152-2-4	1.68	0.55	0.49	6.14	1.06	1.74	0.3	1587	17
236	152-2-5	1.64	0.28	0.37	2.72	1.81	2.32	0.49	1598	29
237	152-3-1	1.62	0.15	0.26	1.25	3.16	3.27	0.86	1543	49
238	152-3-2	1.62	0.13	0.22	1.24	3.55	3.95	0.86	1486	53
239	152-3-3	1.43	0.10	0.12	0.93	4.55	6.79	1.07	1632	73
240	152-3-4	1.87	0.13	0.18	1.19	3.56	4.6	0.89	1588	57
241	152-3-5	1.34	0.22	0.33	2.2	2.23	2.61	0.57	1522	34
242	152-3-6	1.82	0.13	0.20	1.49	3.43	4.26	0.75	1411	49
243	152-4-1	1.88	0.39	0.49	4.1	1.39	1.81	0.38	1536	22
244	152-4-2	2.38	0.56	0.71	5.5	1.05	1.29	0.32	1585	17
245	152-4-3	1.76	0.50	0.46	5.83	1.14	1.87	0.31	1543	18
246	152-4-4	1.86	0.50	0.54	5.46	1.14	1.64	0.32	1550	19
247	152-4-5	1.66	0.46	0.45	5.21	1.22	1.91	0.33	1543	19
248	152-4-6	1.58	0.20	0.31	1.76	2.48	2.77	0.66	1580	38
249	152-4-7	1.62	0.38	0.42	4.12	1.43	2.05	0.38	1541	23
250	152-4-8	1.63	0.31	0.41	3.12	1.67	2.13	0.45	1565	26
251	152-5-1	1.68	0.40	0.63	3.77	1.38	1.45	0.4	1510	21
252	152-5-2	1.75	0.41	0.69	3.85	1.33	1.33	0.4	1503	20
253	152-5-3	1.61	0.22	0.28	2.37	2.24	3.07	0.54	1503	34
254	152-5-4	1.65	0.37	0.65	3.37	1.45	1.42	0.43	1508	22
255	152-5-5	1.67	0.32	0.55	2.89	1.65	1.64	0.47	1509	25
256	157-1-1	1.56	0.15	0.47	0.481	3.13	1.94	1.86	1596	49
257	157-1-2	1.6	0.16	0.48	0.482	2.97	1.92	1.85	1662	47
258	157-1-3	1.66	0.19	0.62	0.647	2.66	1.51	1.44	1488	38
259	157-1-4	1.87	0.24	0.77	0.491	2.15	1.25	1.83	1640	33
260	157-1-5	1.94	0.28	0.89	0.691	1.85	1.1	1.36	1633	28
261	157-1-6	1.55	0.17	0.48	0.661	2.87	1.9	1.41	1607	89
262	157-1-7	2.08	0.29	1.05	0.348	1.78	0.95	2.45	1622	54
263	157-1-8	1.57	0.14	0.46	0.255	3.35	1.96	3.25	1662	103
264	157-1-9	2.04	0.28	0.91	0.684	1.87	1.07	1.37	1593	56

Analysis	Sample name	Concentration (wt % oxide)				Counting error (1-sigma%)			calculated age	simulated error
no:		Y2O3	PbO	UO2	ThO2	Pb	U	Th	(ma)	(95% conf. level)
265	157-1-10	1.53	0.13	0.42	0.431	3.57	2.15	2.03	1548	105
266	137-1-1	1.46	0.34	0.26	4.1	1.54	3.07	0.38	1558	49
267	137-1-2	1.38	0.30	0.26	3.59	1.74	3.25	0.41	1531	55
268	137-2-1	1.61	0.29	0.28	3.25	1.8	2.97	0.44	1554	56
269	137-2-2	1.56	0.25	0.30	2.85	2.02	2.84	0.48	1481	61
270	137-2-3	1.73	0.33	0.36	3.66	1.63	2.42	0.41	1511	50
271	137-2-4	1.5	0.31	0.27	4.18	1.68	3.02	0.37	1398	48
272	152-6-1	1.87	0.40	0.46	4.5	1.36	1.92	0.36	1497	41
273	152-6-2	1.89	0.37	0.45	4.05	1.46	1.96	0.38	1497	43
274	152-6-3	1.94	0.49	0.61	5.24	1.17	1.47	0.33	1502	36
275	152-6-4	1.93	0.53	0.64	5.67	1.1	1.41	0.31	1523	34
276	152-6-5	1.87	0.64	0.77	6.84	0.95	1.2	0.28	1520	29
277	152-6-6	1.52	0.38	0.48	3.96	1.45	1.86	0.39	1519	45
278	152-7-1	1.33	0.42	0.60	4.02	1.34	1.51	0.38	1557	42
279	152-7-2	1.7	0.31	0.45	2.68	1.72	1.96	0.5	1622	57
280	152-7-3	1.6	0.33	0.64	2.46	1.6	1.44	0.53	1593	50