

AM-92-500

Evolution of magmatic and subsolidus AFM mineral assemblages in granitoid
rocks: Biotite, muscovite, and garnet in the Cuffytown Creek pluton,
South Carolina

J. Alexander Speer, Susan W. Becker

For deposit: appendix 1

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Appendix

for the paper

Evolution of magmatic and subsolidus AFM mineral assemblages in granitoid rocks: biotite, muscovite, and garnet in the Cuffytown Creek pluton, South Carolina

by

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BIOTITE ANALYSES (H2O INPUTTED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	38.84		37.80		37.37		38.06	
TiO2	2.08		1.72		1.74		1.76	
Al2O3	12.76		17.47		17.37		17.93	
FeO	18.80		18.93		18.63		17.72	
MnO	2.23		3.20		3.19		4.07	
MgO	12.53		4.76		4.65		4.46	
CaO	.14		.15		.15		.14	
Na2O	.27		.20		.20		.24	
K2O	9.87		9.71		9.59		9.67	
BaO	.23		.22		.22		.22	
F	3.97		1.72		1.73		2.10	
Cl	.10		.05		.05		.06	
H2O	2.09		3.02		2.98		2.86	
SUM	103.91		98.95		97.87		99.29	
-O= F+Cl	1.69		.74		.74		.90	
SUM	102.22		98.21		97.13		98.39	
Si	5.834	*	5.884	*	5.879	*	5.896	*
Al	2.166	8.000	2.116	8.000	2.121	8.000	2.104	8.000
Al	.092	*	1.088	*	1.099	*	1.168	*
Ti	.235	*	.201	*	.206	*	.205	*
Fe	2.361	*	2.464	*	2.451	*	2.296	*
Mn	.284	*	.422	*	.425	*	.534	*
Mg	2.805	5.777	1.104	5.280	1.090	5.271	1.030	5.233
Ca	.023	*	.025	*	.025	*	.023	*
Na	.079	*	.060	*	.061	*	.072	*
K	1.891	*	1.928	*	1.924	*	1.911	*
Ba	.014	2.006	.013	2.027	.014	2.024	.013	2.019
F	1.886	*	.847	*	.861	*	1.029	*
Cl	.025	*	.013	*	.013	*	.016	*
H	2.094	4.005	3.136	3.996	3.127	4.001	2.955	4.000
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	43.33		61.75		61.79		59.48	
Mg	51.47		27.68		27.49		26.68	
Mn	5.21		10.57		10.72		13.84	
A	.0221		.1279		.1303		.1392	
Mg/FeMg	.5420		.3095		.3079		.3097	
Mn/FeMn	.1072		.1462		.1478		.1887	

1 CB7-15 C BIOTITE INCLUSION IN QUARTZ (VPI)

2 CB7-15 F MATRIX BIOTITE (VPI)

3 CB7-15 F MATRIX BIOTITE (VPI)

4 CB7-15 A MATRIX BIOTITE (VPI)

BIOTITE ANALYSES (H2O INPUTTED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	37.98		37.96		37.68		37.82	
TiO2	1.23		1.21		1.23		1.18	
A2O3	13.06		13.01		12.95		12.96	
FeO	18.80		18.71		18.58		18.63	
MnO	3.07		3.08		3.02		2.94	
MgO	10.81		10.68		10.56		10.59	
CaO	.13		.14		.14		.14	
Na2O	.24		.23		.26		.26	
K2O	9.59		9.53		9.54		9.36	
BaO	.20		.22		.22		.21	
F	4.22		4.28		4.15		4.07	
Cl	.10		.08		.13		.09	
H2O	1.84		1.81		1.83		1.88	
SUM	101.27		100.94		100.29		100.13	
-O= F+Cl	1.80		1.82		1.78		1.73	
SUM	99.47		99.12		98.51		98.40	
Si	5.888	*	5.903	*	5.899	*	5.916	*
Al	2.112	8.000	2.097	8.000	2.101	8.000	2.084	8.000
Al	.274	*	.287	*	.288	*	.305	*
Ti	.143	*	.142	*	.145	*	.139	*
Fe	2.438	*	2.433	*	2.433	*	2.437	*
Mn	.403	*	.406	*	.400	*	.390	*
Mg	2.498	5.756	2.475	5.743	2.464	5.730	2.469	5.740
Ca	.022	*	.023	*	.023	*	.023	*
Na	.072	*	.069	*	.079	*	.079	*
K	1.896	*	1.890	*	1.905	*	1.868	*
Ba	.012	2.002	.013	1.996	.013	2.021	.013	1.983
F	2.069	*	2.105	*	2.055	*	2.014	*
Cl	.026	*	.021	*	.034	*	.024	*
H	1.903	3.998	1.878	4.004	1.911	4.001	1.962	3.999
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	45.66		45.79		45.92		46.02	
Mg	46.79		46.58		46.52		46.62	
Mn	7.55		7.63		7.56		7.36	
A	.0342		.0346		.0330		.0363	
Mg/FeMg	.5061		.5043		.5032		.5032	
Mn/FeMn	.1419		.1429		.1413		.1378	

1 S7-55 D BIOTITE INCLUSION IN QUARTZ (VPI)

2 S7-55 D BIOTITE INCLUSION IN QUARTZ (VPI)

3 S7-55 D BIOTITE INCLUSION IN QUARTZ (VPI)

4 S7-55 D BIOTITE INCLUSION IN QUARTZ (VPI)

BIOTITE ANALYSES (H2O INPUTTED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3	
SiO2	37.42		39.24		38.07	
TiO2	1.66		1.24		1.72	
Al2O3	16.57		12.76		13.62	
FeO	18.66		14.75		18.44	
MnO	2.87		1.77		2.64	
MgO	4.85		13.89		9.83	
CaO	.14		.14		.14	
Na2O	.21		.18		.20	
K2O	9.44		9.77		9.70	
BaO	.21		.21		.20	
F	2.72		4.26		4.11	
Cl	.05		.08		.07	
H2O	2.47		1.89		1.90	
SUM	97.27		100.18		100.64	
-O= F+Cl	1.16		1.81		1.75	
SUM	96.11		98.37		98.89	
Si	5.950	*	5.991	*	5.909	*
Al	2.050	8.000	2.009	8.000	2.091	8.000
Al	1.054	*	.287	*	.400	*
Ti	.198	*	.142	*	.201	*
Fe	2.481	*	1.883	*	2.394	*
Mn	.387	*	.229	*	.347	*
Mg	1.149	5.270	3.161	5.702	2.274	5.616
Ca	.024	*	.023	*	.023	*
Na	.065	*	.053	*	.060	*
K	1.914	*	1.903	*	1.920	*
Ba	.013	2.016	.013	1.991	.012	2.016
F	1.368	*	2.057	*	2.018	*
Cl	.013	*	.021	*	.018	*
H	2.620	4.001	1.925	4.003	1.967	4.003
O	24.000	*	24.000	*	24.000	*
Fe	61.77		35.72		47.73	
Mg	28.61		59.94		45.35	
Mn	9.62		4.34		6.92	
A	.1187		.0279		.0445	
Mg/FeMg	.3166		.6266		.4872	
Mn/FeMn	.1348		.1084		.1266	

- 1 S7-55 D MATRIX BIOTITE IN MUSCOVITE (VPI)
- 2 ED1-877 A BIOTITE INCLUSION IN QUARTZ (VPI)
- 3 ED1-877 H BIOTITE INCLUSION IN QUARTZ (VPI)

BIOTITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	37.40		38.55		38.48		37.91	
TiO2	1.82		1.96		1.72		1.60	
Al2O3	18.12		19.07		17.42		18.83	
FeO	19.06		18.40		17.75		17.58	
MnO	4.26		2.17		3.37		3.39	
MgO	4.64		4.56		5.00		4.69	
CaO	.02		.00		.02		.02	
Na2O	.07		.08		.12		.11	
K2O	10.63		10.07		10.52		10.24	
H2O	3.89		3.93		3.88		3.89	
SUM	99.91		98.79		98.28		98.26	
Si	5.757	*	5.878	*	5.947	*	5.843	*
Al	2.243	8.000	2.122	8.000	2.053	8.000	2.157	8.000
Al	1.044	*	1.304	*	1.119	*	1.262	*
Ti	.211	*	.225	*	.200	*	.185	*
Fe	2.454	*	2.346	*	2.294	*	2.266	*
Mn	.555	*	.280	*	.441	*	.443	*
Mg	1.065	5.329	1.036	5.191	1.152	5.206	1.077	5.233
Ca	.003	*	.000	*	.003	*	.003	*
Na	.021	*	.024	*	.036	*	.033	*
K	2.087	2.111	1.958	1.982	2.074	2.113	2.013	2.049
H	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	60.23		64.06		59.02		59.85	
Mg	26.13		28.29		29.63		28.46	
Mn	13.63		7.65		11.35		11.69	
A	.1262		.1662		.1200		.1534	
Mg/FeMg	.3026		.3064		.3342		.3222	
Mn/FeMn	.1846		.1066		.1613		.1634	

- 1 CB7-15 A MATRIX BIOTITE (VPI)
2 CB7-15 E MATRIX BIOTITE (VPI)
3 CB7-15 G MATRIX BIOTITE (VPI)
4 CB7-15 G MATRIX BIOTITE (VPI)

BIOTITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	38.22		37.57		38.27		38.19	
TiO2	1.66		1.47		1.54		1.64	
Al2O3	18.53		18.44		19.51		18.28	
FeO	19.29		19.03		18.58		18.95	
MnO	4.00		3.64		3.26		2.88	
MgO	3.86		4.42		4.45		4.29	
CaO	.00		.01		.01		.00	
Na2O	.04		.09		.08		.07	
K2O	9.73		9.57		9.54		9.55	
H2O	3.90		3.86		3.93		3.87	
SUM	99.23		98.10		99.17		97.72	
Si	5.871	*	5.831	*	5.828	*	5.916	*
Al	2.129	8.000	2.169	8.000	2.172	8.000	2.084	8.000
Al	1.225	*	1.204	*	1.329	*	1.253	*
Ti	.192	*	.172	*	.176	*	.191	*
Fe	2.478	*	2.470	*	2.366	*	2.455	*
Mn	.520	*	.479	*	.421	*	.378	*
Mg	.884	5.299	1.023	5.346	1.010	5.303	.991	5.268
Ca	.000	*	.002	*	.002	*	.000	*
Na	.012	*	.027	*	.024	*	.021	*
K	1.906	1.918	1.894	1.923	1.853	1.878	1.887	1.908
H	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	63.83		62.20		62.32		64.21	
Mg	22.76		25.75		26.60		25.91	
Mn	13.41		12.05		11.07		9.88	
A	.1565		.1549		.1769		.1579	
Mg/FeMg	.2629		.2928		.2992		.2875	
Mn/FeMn	.1735		.1623		.1509		.1334	

- 1 CB7-15 A MATRIX BIOTITE (VPI)
2 CB7-15 B MATRIX BIOTITE (VPI)
3 CB7-15 B MATRIX BIOTITE (VPI)
4 CB7-15 D MATRIX BIOTITE (VPI)

BIOTITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO ₂	37.58		40.16		37.90		39.85	
TiO ₂	1.82		1.70		1.79		1.56	
Al ₂ O ₃	13.49		19.00		18.64		19.27	
FeO	18.03		18.59		20.43		17.74	
MnO	1.78		4.16		4.46		2.89	
MgO	12.54		3.46		3.32		3.46	
CaO	.00		.00		.00		.00	
Na ₂ O	.13		.04		.05		.05	
K ₂ O	10.56		5.93		7.04		9.33	
H ₂ O	3.92		3.94		3.86		3.94	
SUM	99.85		96.98		97.49		98.09	
Si	5.746	*	6.113	*	5.880	*	6.064	*
Al	2.254	8.000	1.887	8.000	2.120	8.000	1.936	8.000
Al	.176	*	1.522	*	1.288	*	1.520	*
Ti	.209	*	.195	*	.209	*	.179	*
Fe	2.305	*	2.367	*	2.651	*	2.258	*
Mn	.231	*	.536	*	.586	*	.373	*
Mg	2.858	5.779	.785	5.404	.768	5.501	.785	5.114
Ca	.000	*	.000	*	.000	*	.000	*
Na	.039	*	.012	*	.015	*	.015	*
K	2.059	2.098	1.151	1.163	1.393	1.408	1.811	1.826
H	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	42.74		64.17		66.19		66.11	
Mg	52.98		21.29		19.17		22.98	
Mn	4.27		14.54		14.64		10.91	
A	.0303		.2337		.2002		.1931	
Mg/FeMg	.5535		.2491		.2246		.2579	
Mn/FeMn	.0908		.1848		.1811		.1416	

- 1 CB7-15 D BIOTITE INCLUSION IN QUARTZ (VPI)
2 CF-1 BIOTITE INTERGROWN WITH MUSCOVITE (USC)
3 CF-1 BIOTITE INTERGROWN WITH MUSCOVITE (USC)
4 CF-1 BIOTITE INTERGROWN WITH MUSCOVITE (USC)

BIOTITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	38.72		37.82		38.64		38.10	
TiO2	1.78		1.48		1.65		1.67	
Al2O3	19.17		17.27		17.82		17.42	
FeO	18.55		19.13		17.92		18.93	
MnO	3.95		1.76		1.86		2.88	
MgO	3.39		6.36		6.12		5.24	
CaO	.00		.04		.02		.03	
Na2O	.08		.17		.10		.08	
K2O	9.79		9.26		9.66		10.03	
H2O	3.93		3.85		3.90		3.87	
SUM	99.36		97.14		97.69		98.25	
Si	5.905	*	5.881	*	5.935	*	5.898	*
Al	2.095	8.000	2.119	8.000	2.065	8.000	2.102	8.000
Al	1.350	*	1.045	*	1.160	*	1.076	*
Ti	.204	*	.173	*	.191	*	.194	*
Fe	2.366	*	2.488	*	2.302	*	2.451	*
Mn	.510	*	.232	*	.242	*	.378	*
Mg	.771	5.201	1.474	5.411	1.401	5.295	1.209	5.309
Ca	.000	*	.007	*	.003	*	.005	*
Na	.024	*	.051	*	.030	*	.024	*
K	1.904	1.928	1.836	1.894	1.892	1.925	1.981	2.010
H	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	64.88		59.32		58.35		60.70	
Mg	21.13		35.15		35.52		29.95	
Mn	13.99		5.53		6.13		9.35	
A	.1736		.1313		.1415		.1264	
Mg/FeMg	.2457		.3721		.3784		.3304	
Mn/FeMn	.1774		.0852		.0951		.1335	

1 CF-1 BIOTITE INTERGROWN WITH MUSCOVITE (USC)

2 S7-50a C MATRIX BIOTITE (VPI)

3 S7-50a C MATRIX BIOTITE (VPI)

4 S7-50a MATRIX BIOTITE (VPI)

BIOTITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	38.05		39.08		38.94		38.12	
TiO2	1.43		1.88		1.72		1.44	
Al2O3	18.35		19.89		18.75		18.05	
FeO	19.05		17.17		18.39		17.50	
MnO	2.00		2.37		2.37		2.08	
MgO	6.58		5.14		6.70		5.73	
CaO	.05		.01		.04		.04	
Na2O	.13		.14		.15		.12	
K2O	9.99		10.17		10.14		9.55	
H2O	3.94		4.00		4.02		3.85	
SUM	99.57		99.85		101.22		96.48	
Si	5.786	*	5.856	*	5.802	*	5.926	*
Al	2.214	8.000	2.144	8.000	2.198	8.000	2.074	8.000
Al	1.074	*	1.368	*	1.094	*	1.233	*
Ti	.164	*	.212	*	.193	*	.168	*
Fe	2.422	*	2.152	*	2.291	*	2.275	*
Mn	.258	*	.301	*	.299	*	.274	*
Mg	1.491	5.408	1.148	5.180	1.488	5.365	1.328	5.278
Ca	.008	*	.002	*	.006	*	.007	*
Na	.038	*	.041	*	.043	*	.036	*
K	1.937	1.984	1.944	1.986	1.927	1.977	1.894	1.937
H	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	58.07		59.76		56.18		58.69	
Mg	35.75		31.88		36.48		34.25	
Mn	6.18		8.35		7.33		7.06	
A	.1348		.1752		.1387		.1499	
Mg/FeMg	.3810		.3479		.3937		.3685	
Mn/FeMn	.0961		.1226		.1154		.1074	

- 1 S7-50a MATRIX BIOTITE (VPI)
2 S7-50a C MATRIX BIOTITE (VPI)
3 S7-50a C MATRIX BIOTITE (VPI)
4 S7-50a C MATRIX BIOTITE (VPI)

BIOTITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	39.38		38.42		32.24		38.37	
TiO2	1.50		1.64		.05		2.06	
Al2O3	18.86		18.62		18.25		13.44	
FeO	18.88		18.74		31.08		19.50	
MnO	4.46		4.32		.38		2.78	
MgO	4.18		4.15		4.54		9.38	
CaO	.00		.00		.09		.01	
Na2O	.08		.09		.13		.10	
K2O	8.74		9.86		2.09		10.06	
H2O	3.97		3.92		3.58		3.89	
SUM	100.05		99.76		92.43		99.59	
Si	5.941	*	5.865	*	5.395	*	5.912	*
Al	2.059	8.000	2.135	8.000	2.605	8.000	2.088	8.000
Al	1.295	*	1.214	*	.994	*	.353	*
Ti	.170	*	.188	*	.006	*	.239	*
Fe	2.382	*	2.392	*	4.350	*	2.513	*
Mn	.570	*	.559	*	.054	*	.363	*
Mg	.940	5.357	.944	5.297	1.132	6.537	2.154	5.622
Ca	.000	*	.000	*	.016	*	.002	*
Na	.023	*	.027	*	.042	*	.030	*
K	1.682	1.705	1.920	1.946	.446	.504	1.977	2.009
H	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	61.21		61.42		78.57		49.96	
Mg	24.15		24.24		20.46		42.83	
Mn	14.64		14.34		.97		7.21	
A	.1751		.1531		.2178		.0413	
Mg/FeMg	.2829		.2830		.2066		.4616	
Mn/FeMn	.1931		.1893		.0122		.1261	

1 S7-50a BIOTITE INCLUSION IN QUARTZ, equilibrated with matrix (USC)

2 S7-50a BIOTITE INCLUSION IN QUARTZ, equilibrated with matrix (USC)

3 S7-53 BIOTITE (ALTERED TO CHLORITE) INCLUSION IN QUARTZ (USC)

4 S7-54 BIOTITE INCLUSION IN QUARTZ (VPI)

BIOTITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	37.96		37.10		37.87		38.49	
TiO2	2.09		1.95		2.06		1.71	
Al2O3	12.14		13.05		18.24		17.55	
FeO	18.70		18.42		18.63		18.75	
MnO	2.85		2.87		3.27		2.82	
MgO	9.85		10.02		4.11		5.15	
CaO	.00		.00		.01		.02	
Na2O	.07		.14		.22		.13	
K2O	9.84		9.91		9.86		10.37	
H2O	3.80		3.80		3.87		3.90	
SUM	97.30		97.26		98.14		98.89	
Si	5.982	*	5.853	*	5.864	*	5.918	*
Al	2.018	8.000	2.147	8.000	2.136	8.000	2.082	8.000
Al	.236	*	.280	*	1.192	*	1.097	*
Ti	.248	*	.231	*	.240	*	.198	*
Fe	2.464	*	2.430	*	2.412	*	2.411	*
Mn	.380	*	.384	*	.429	*	.367	*
Mg	2.314	5.642	2.356	5.681	.949	5.222	1.180	5.253
Ca	.000	*	.000	*	.002	*	.003	*
Na	.021	*	.043	*	.066	*	.039	*
K	1.978	1.999	1.994	2.037	1.947	2.015	2.034	2.076
H	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	47.77		47.01		63.66		60.91	
Mg	44.85		45.57		25.03		29.82	
Mn	7.37		7.42		11.32		9.28	
A	.0244		.0366		.1479		.1235	
Mg/FeMg	.4842		.4922		.2822		.3286	
Mn/FeMn	.1337		.1363		.1509		.1322	

1 S7-54 E BIOTITE INCLUSION IN QUARTZ (VPI)

2 S7-54 E BIOTITE INCLUSION IN QUARTZ (VPI)

3 S7-55 C MATRIX BIOTITE (VPI)

4 S7-55 D MATRIX BIOTITE (VPI)

BIOTITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	38.46		38.63		38.69		37.47	
TiO2	1.12		1.13		1.05		1.67	
Al2O3	13.13		13.23		13.47		16.87	
FeO	19.26		18.46		19.13		19.02	
MnO	2.88		2.75		2.75		4.18	
MgO	10.73		10.97		10.38		5.71	
CaO	.00		.00		.00		.00	
Na2O	.13		.12		.13		.11	
K2O	10.24		10.37		9.79		9.53	
H2O	3.89		3.90		3.89		3.85	
SUM	99.84		99.56		99.28		98.41	
Si	5.916	*	5.935	*	5.954	*	5.829	*
Al	2.084	8.000	2.065	8.000	2.046	8.000	2.171	8.000
Al	.296	*	.330	*	.397	*	.921	*
Ti	.130	*	.131	*	.122	*	.195	*
Fe	2.478	*	2.372	*	2.462	*	2.474	*
Mn	.375	*	.358	*	.358	*	.551	*
Mg	2.460	5.739	2.512	5.702	2.381	5.720	1.324	5.465
Ca	.000	*	.000	*	.000	*	.000	*
Na	.039	*	.036	*	.039	*	.033	*
K	2.009	2.048	2.032	2.068	1.922	1.961	1.891	1.924
H	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	46.63		45.25		47.33		56.89	
Mg	46.30		47.92		45.78		30.44	
Mn	7.06		6.83		6.89		12.66	
A	.0306		.0306		.0446		.1188	
Mg/FeMg	.4982		.5143		.4916		.3485	
Mn/FeMn	.1315		.1311		.1271		.1820	

- 1 S7-55 E BIOTITE INCLUSION IN QUARTZ (VPI)
- 2 S7-55 E BIOTITE INCLUSION IN QUARTZ (VPI)
- 3 S7-55 E BIOTITE INCLUSION IN QUARTZ (VPI)
- 4 S7-55 BIOTITE 1ST INCLUSION IN QUARTZ (USC)

BIOTITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	36.57		37.33		38.17		37.99	
TiO2	1.69		1.04		1.06		1.63	
Al2O3	17.55		13.09		13.06		13.75	
FeO	19.62		19.92		19.53		19.81	
MnO	4.07		2.59		2.71		2.51	
MgO	5.38		10.92		10.87		9.83	
CaO	.00		.00		.00		.00	
Na2O	.07		.09		.08		.06	
K2O	9.94		10.12		9.91		10.09	
H2O	3.84		3.84		3.87		3.88	
SUM	98.73		98.94		99.26		99.55	
Si	5.706	*	5.823	*	5.903	*	5.862	*
Al	2.294	8.000	2.177	8.000	2.097	8.000	2.138	8.000
Al	.933	*	.229	*	.283	*	.362	*
Ti	.198	*	.122	*	.123	*	.189	*
Fe	2.560	*	2.598	*	2.526	*	2.556	*
Mn	.538	*	.342	*	.355	*	.328	*
Mg	1.251	5.480	2.539	5.830	2.506	5.793	2.261	5.695
Ca	.000	*	.000	*	.000	*	.000	*
Na	.021	*	.027	*	.024	*	.018	*
K	1.978	1.999	2.013	2.041	1.955	1.979	1.986	2.004
H	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	58.86		47.42		46.89		49.68	
Mg	28.77		46.33		46.52		43.94	
Mn	12.37		6.24		6.59		6.38	
A	.1241		.0325		.0362		.0463	
Mg/FeMg	.3283		.4942		.4980		.4693	
Mn/FeMn	.1736		.1164		.1232		.1137	

1 S7-55 BIOTITE 1ST INCLUSION IN QUARTZ, equilibrated with matrix (USC)

2 S7-55 BIOTITE 2ND INCLUSION IN QUARTZ (USC)

3 S7-55 BIOTITE 2ND INCLUSION IN QUARTZ (USC)

4 S7-55 BIOTITE 3RD INCLUSION IN QUARTZ (USC)

BIOTITE ANALYSES (H₂O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO ₂	39.35		39.34		39.59		38.61	
TiO ₂	1.61		1.58		1.50		1.68	
Al ₂ O ₃	17.96		19.08		18.97		18.64	
FeO	17.13		19.31		18.74		18.95	
MnO	2.21		4.54		4.31		4.38	
MgO	5.56		4.24		4.27		4.16	
CaO	.05		.00		.00		.00	
Na ₂ O	.11		.07		.08		.08	
K ₂ O	9.46		8.14		9.52		9.49	
H ₂ O	3.91		3.99		4.00		3.94	
SUM	97.35		100.29		100.98		99.93	
Si	6.030	*	5.913	*	5.932	*	5.874	*
Al	1.970	8.000	2.087	8.000	2.068	8.000	2.126	8.000
Al	1.273	*	1.292	*	1.282	*	1.216	*
Ti	.186	*	.179	*	.169	*	.192	*
Fe	2.195	*	2.427	*	2.348	*	2.411	*
Mn	.287	*	.578	*	.547	*	.564	*
Mg	1.270	5.211	.950	5.426	.954	5.300	.943	5.327
Ca	.008	*	.000	*	.000	*	.000	*
Na	.033	*	.020	*	.023	*	.024	*
K	1.849	1.890	1.561	1.581	1.819	1.843	1.842	1.865
H	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	58.51		61.37		61.01		61.53	
Mg	33.85		24.02		24.78		24.07	
Mn	7.65		14.61		14.21		14.40	
A	.1524		.1856		.1641		.1589	
Mg/FeMg	.3665		.2813		.2888		.2812	
Mn/FeMn	.1155		.1923		.1889		.1897	

1 S7-65 6 MATRIX BIOTITE (VPI)

2 ED1-872 INCLUSION BIOTITE, equilibrated with matrix (USC)

3 ED1-872 INCLUSION BIOTITE, equilibrated with matrix (USC)

4 ED1-872 INCLUSION BIOTITE, equilibrated with matrix (USC)

BIOTITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	39.15		38.39		40.34		39.62	
TiO2	1.84		1.35		1.69		1.45	
Al2O3	13.98		14.30		13.49		13.92	
FeO	18.22		18.87		15.21		15.65	
MnO	2.45		2.63		1.70		1.70	
MgO	9.69		9.84		13.29		13.09	
CaO	.00		.00		.03		.02	
Na2O	.09		.13		.06		.09	
K2O	9.88		9.86		10.22		10.28	
H2O	3.92		3.90		4.02		4.00	
SUM	99.22		99.27		100.05		99.82	
Si	5.984	*	5.898	*	6.010	*	5.940	*
Al	2.016	8.000	2.102	8.000	1.990	8.000	2.060	8.000
Al	.502	*	.487	*	.379	*	.399	*
Ti	.211	*	.156	*	.189	*	.163	*
Fe	2.329	*	2.425	*	1.895	*	1.962	*
Mn	.317	*	.342	*	.215	*	.216	*
Mg	2.208	5.567	2.253	5.664	2.951	5.629	2.925	5.666
Ca	.000	*	.000	*	.005	*	.003	*
Na	.027	*	.039	*	.017	*	.026	*
K	1.926	1.953	1.932	1.971	1.942	1.964	1.966	1.995
H	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	47.98		48.30		37.45		38.45	
Mg	45.48		44.89		58.32		57.32	
Mn	6.53		6.82		4.24		4.23	
A	.0553		.0583		.0383		.0435	
Mg/FeMg	.4866		.4817		.6089		.5985	
Mn/FeMn	.1198		.1236		.1017		.0991	

1 ED1-877 B BIOTITE INCLUSION IN QUARTZ (VPI)

2 ED1-877 B BIOTITE INCLUSION IN QUARTZ (VPI)

3 ED1-877 F BIOTITE INCLUSION IN QUARTZ (VPI)

4 ED1-877 F BIOTITE INCLUSION IN QUARTZ (VPI)

BIOTITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	37.61		38.98		38.67		38.58	
TiO2	1.61		1.32		1.66		1.75	
Al2O3	14.59		13.97		17.81		17.59	
FeO	18.29		18.32		18.56		18.00	
MnO	1.54		1.78		3.59		3.59	
MgO	10.17		10.55		6.01		5.91	
CaO	.04		.03		.00		.00	
Na2O	.12		.12		.12		.14	
K2O	9.66		9.59		9.05		8.75	
H2O	3.85		3.91		3.94		3.91	
SUM	97.48		98.57		99.41		98.22	
Si	5.847	*	5.977	*	5.878	*	5.914	*
Al	2.153	8.000	2.023	8.000	2.122	8.000	2.086	8.000
Al	.519	*	.502	*	1.068	*	1.091	*
Ti	.188	*	.152	*	.190	*	.202	*
Fe	2.378	*	2.349	*	2.359	*	2.308	*
Mn	.203	*	.231	*	.462	*	.466	*
Mg	2.356	5.644	2.411	5.646	1.362	5.440	1.350	5.417
Ca	.007	*	.005	*	.000	*	.000	*
Na	.036	*	.036	*	.035	*	.042	*
K	1.915	1.958	1.876	1.916	1.755	1.790	1.711	1.752
H	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
O	24.000	*	24.000	*	24.000	*	24.000	*
Fe	48.16		47.06		56.40		55.95	
Mg	47.73		48.30		32.55		32.74	
Mn	4.11		4.63		11.05		11.30	
A	.0672		.0573		.1437		.1477	
Mg/FeMg	.4977		.5065		.3659		.3691	
Mn/FeMn	.0786		.0895		.1638		.1680	

1 ED1-897 BIOTITE INCLUSION IN QUARTZ (VPI)

2 ED1-897 BIOTITE INCLUSION IN QUARTZ (VPI)

3 ED1-926 BIOTITE INCLUSION IN QUARTZ (USC)

4 ED1-926 BIOTITE INCLUSION IN QUARTZ (USC)

BIOTITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2	
SiO2	38.30		32.90	
TiO2	1.68		.01	
Al2O3	17.38		23.19	
FeO	18.29		29.55	
MnO	3.79		.15	
MgO	5.95		.13	
CaO	.00		.09	
Na2O	.16		.05	
K2O	9.24		4.20	
H2O	3.90		3.67	
SUM	98.69		93.94	
Si	5.881	*	5.374	*
Al	2.119	8.000	2.626	8.000
Al	1.025	*	1.838	*
Ti	.194	*	.001	*
Fe	2.349	*	4.037	*
Mn	.493	*	.021	*
Mg	1.362	5.422	.032	5.929
Ca	.000	*	.016	*
Na	.048	*	.016	*
K	1.810	1.857	.875	.907
H	4.000	4.000	4.000	4.000
O	24.000	*	24.000	*
Fe	55.88		98.72	
Mg	32.40		.77	
Mn	11.73		.51	
A	.1332		.3026	
Mg/FeMg	.3670		.0078	
Mn/FeMN	.1735		.0051	

1 ED1-926 BIOTITE INCLUSION IN QUARTZ (USC)

2 ED1-926 BIOTITE INTERGROWN W/ CHLORITE (USC)

CHLORITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	23.74		23.68		23.76		23.44	
TiO2	.07		.28		.00		.00	
Al2O3	19.90		20.49		17.83		18.12	
FeO	35.20		33.71		44.12		43.17	
MnO	5.20		5.71		.91		.84	
MgO	2.26		3.62		2.28		2.12	
CaO	.01		.02		.01		.02	
Na2O	.01		.04		.01		.01	
K2O	.01		.11		.00		.01	
H2O	10.27		10.49		10.28		10.18	
SUM	96.67		98.15		99.20		97.91	
Si	5.539	*	5.410	*	5.538	*	5.518	*
Al	2.461	8.000	2.590	8.000	2.462	8.000	2.482	8.000
Al	3.010	*	2.926	*	2.435	*	2.545	*
Ti	.012	*	.048	*	.000	*	.000	*
Fe	6.868	*	6.440	*	8.600	*	8.500	*
Mn	1.028	*	1.105	*	.180	*	.168	*
Mg	.786	*	1.233	*	.792	*	.744	*
Ca	.000	*	.000	*	.000	*	.000	*
Na	.005	*	.018	*	.005	*	.005	*
K	.003	11.714	.032	11.806	.000	12.013	.003	11.969
H	16.000	16.000	16.000	16.000	16.000	16.000	16.000	16.000
O	36.000	*	36.000	*	36.000	*	36.000	*
Fe	79.11		73.37		89.85		90.32	
Mg	9.05		14.04		8.28		7.90	
Mn	11.84		12.59		1.88		1.78	
A	.1949		.2374		.2036		.2104	
Mg/FeMg	.1027		.1606		.0843		.0805	
Mn/FeMN	.1301		.1464		.0205		.0193	

1 CF-1 CHLORITE INTERGROWN W/ BIOTITE + MUSCOVITE (USC)

2 CF-1 CHLORITE (USC)

3 S7-50a CHLORITE INTERGROWN WITH MUSCOVITE (USC)

4 S7-50a CHLORITE INTERGROWN WITH MUSCOVITE (USC)

CHLORITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	5		6		7		8	
SiO2	24.53		24.89		24.12		23.97	
TiO2	.16		.03		.02		.03	
Al2O3	19.71		19.91		21.68		22.03	
FeO	38.11		36.46		37.69		38.28	
MnO	.38		.68		.58		.60	
MgO	4.63		5.17		2.17		1.96	
CaO	.01		.00		.01		.00	
Na2O	.01		.01		.02		.04	
K2O	.01		.09		.05		.00	
H2O	10.55		10.60		10.43		10.48	
SUM	98.10		97.84		96.77		97.39	
Si	5.572	*	5.626	*	5.540	*	5.482	*
Al	2.428	8.000	2.374	8.000	2.460	8.000	2.518	8.000
Al	2.847	*	2.930	*	3.407	*	3.420	*
Ti	.027	*	.005	*	.003	*	.005	*
Fe	7.239	*	6.892	*	7.239	*	7.322	*
Mn	.073	*	.130	*	.113	*	.116	*
Mg	1.568	*	1.742	*	.743	*	.668	*
Ca	.000	*	.000	*	.000	*	.000	*
Na	.004	*	.004	*	.009	*	.018	*
K	.003	11.764	.026	11.729	.015	11.532	.000	11.549
H	16.000	16.000	16.000	16.000	16.000	16.000	16.000	16.000
O	36.000	*	36.000	*	36.000	*	36.000	*
Fe	81.52		78.64		89.43		90.32	
Mg	17.65		19.87		9.18		8.24	
Mn	.82		1.49		1.39		1.43	
A	.2289		.2315		.2654		.2677	
Mg/FeMg	.1780		.2017		.0931		.0836	
Mn/FeMn	.0099		.0185		.0153		.0156	

5 S7-53 CHLORITE INTERGROWN WITH MUSCOVITE (USC)
6 S7-53 CHLORITE INTERGROWN WITH MUSCOVITE (USC)
7 S7-55 CHLORITE INTERGROWN WITH MUSCOVITE (USC)
8 S7-55 CHLORITE INTERGROWN WITH MUSCOVITE (USC)

CHLORITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	9		10		11		12	
SiO2	24.21		23.76		24.16		23.71	
TiO2	.04		.00		.02		.02	
Al2O3	19.77		18.74		19.69		18.40	
FeO	38.40		42.73		38.18		42.05	
MnO	.31		1.01		1.25		1.14	
MgO	4.48		2.30		4.27		2.08	
CaO	.03		.04		.03		.01	
Na2O	.03		.03		.01		.01	
K2O	.02		.00		.00		.00	
H2O	10.49		10.33		10.49		10.21	
SUM	97.78		98.94		98.10		97.63	
Si	5.531	*	5.510	*	5.520	*	5.568	*
Al	2.469	8.000	2.490	8.000	2.480	8.000	2.432	8.000
Al	2.853	*	2.631	*	2.820	*	2.659	*
Ti	.007	*	.000	*	.003	*	.004	*
Fe	7.336	*	8.287	*	7.295	*	8.258	*
Mn	.060	*	.198	*	.242	*	.227	*
Mg	1.525	*	.795	*	1.454	*	.728	*
Ca	.000	*	.000	*	.000	*	.000	*
Na	.013	*	.013	*	.004	*	.005	*
K	.006	11.808	.000	11.934	.000	11.826	.000	11.883
H	16.000	16.000	16.000	16.000	16.000	16.000	16.000	16.000
O	36.000	*	36.000	*	36.000	*	36.000	*
Fe	82.23		89.30		81.14		89.64	
Mg	17.10		8.57		16.17		7.90	
Mn	.67		2.14		2.69		2.46	
A	.2288		.2154		.2273		.2164	
Mg/FeMg	.1721		.0875		.1662		.0810	
Mn/FeMn	.0081		.0234		.0321		.0267	

9 S7-63 CHLORITE (USC)
 10 ED1-872 CHLORITE (USC)
 11 ED1-872 CHLORITE (USC)
 12 ED1-872 CHLORITE (USC)

CHLORITE ANALYSES (H2O CALCULATED) FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	13		14		15	
SiO2	22.56		22.41		27.44	
TiO2	.00		.00		.07	
Al2O3	19.36		19.69		20.40	
FeO	43.72		44.53		37.65	
MnO	.38		.46		.36	
MgO	.37		.33		.18	
CaO	.00		.00		.09	
Na2O	.03		.00		.08	
K2O	.00		.01		1.93	
H2O	10.00		10.08		10.66	
SUM	96.42		97.51		98.86	
Si	5.407	*	5.328	*	6.170	*
Al	2.593	8.000	2.672	8.000	1.830	8.000
Al	2.876	*	2.845	*	3.576	*
Ti	.000	*	.000	*	.012	*
Fe	8.764	*	8.854	*	7.080	*
Mn	.077	*	.093	*	.069	*
Mg	.132	*	.117	*	.060	*
Ca	.000	*	.000	*	.000	*
Na	.014	*	.000	*	.035	*
K	.000	11.863	.003	11.912	.554	11.406
H	16.000	16.000	16.000	16.000	16.000	16.000
O	36.000	*	36.000	*	36.000	*
Fe	97.67		97.69		98.21	
Mg	1.47		1.29		.84	
Mn	.86		1.02		.95	
A	.2333		.2335		.2490	
Mg/FeMg	.0148		.0130		.0084	
Mn/FeMn	.0087		.0103		.0096	

13 ED1-926 CHLORITE after magnetite (USC)

14 ED1-926 CHLORITE after magnetite (USC)

15 ED1-926 CHLORITE INTERGROWN W/ BIOTITE (USC)

FELDSPAR ANALYSES FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	1		2		3		4	
SiO2	67.94		64.21		67.52		68.59	
A2O3	19.87		18.54		20.39		20.17	
CaO	.16		.00		.50		.28	
Na2O	10.95		.38		11.58		11.76	
K2O	.16		16.68		.16		.28	
SUM	99.08		99.81		100.15		101.08	
Si	2.988	*	2.983	*	2.952	*	2.971	*
Al	1.030	4.018	1.015	3.998	1.051	4.003	1.029	4.000
Ca	.008	*	.000	*	.023	*	.013	*
Na	.934	*	.034	*	.982	*	.987	*
K	.009	.950	.988	1.023	.009	1.014	.015	1.016
O	8.000	*	8.000	*	8.000	*	8.000	*
AN		.79		.00		2.31		1.28
AB		98.26		3.35		96.81		97.20
OR		.94		96.65		.88		1.52

- 1 CF-1 PLAGIOCLASE (USC)
 2 CF-1 ALKALI FELDSPAR (USC)
 3 S7-50a PLAGIOCLASE (USC)
 4 S7-50a PLAGIOCLASE (USC)

	5		6		7		8	
SiO2	67.65		63.57		66.44		64.64	
A2O3	20.33		18.77		19.04		19.21	
CaO	.52		.00		.00		.00	
Na2O	10.73		.22		1.08		.51	
K2O	.15		16.75		14.62		16.19	
SUM	99.38		99.31		101.18		100.55	
Si	2.969	*	2.970	*	3.004	*	2.971	*
Al	1.051	4.020	1.033	4.003	1.015	4.019	1.040	4.011
Ca	.024	*	.000	*	.000	*	.000	*
Na	.913	*	.020	*	.095	*	.045	*
K	.008	.946	.998	1.018	.843	.938	.949	.994
O	8.000	*	8.000	*	8.000	*	8.000	*
AN		2.59		.00		.00		.00
AB		96.53		1.96		10.10		4.57
OR		.89		98.04		89.90		95.43

- 5 S7-50a PLAGIOCLASE (USC)
 6 S7-50a ALKALI FELDSPAR (USC)
 7 S7-50a ALKALI FELDSPAR, wide area analysis (USC)
 8 S7-50a ALKALI FELDSPAR (VPI)

FELDSPAR ANALYSES FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	9		10		11		12	
SiO2	68.34		67.87		66.88		65.86	
A2O3	21.15		20.81		21.73		18.71	
CaO	.63		.62		1.86		.00	
Na2O	11.28		11.39		10.37		.24	
K2O	.17		.18		.27		16.27	
SUM	101.57		100.87		101.11		101.08	
Si	2.943	*	2.945	*	2.902	*	3.004	*
Al	1.073	4.016	1.064	4.009	1.111	4.012	1.005	4.009
Ca	.029	*	.029	*	.086	*	.000	*
Na	.942	*	.958	*	.872	*	.021	*
K	.009	.980	.010	.997	.015	.974	.946	.968
O	8.000	*	8.000	*	8.000	*	8.000	*
AN	2.97		2.89		8.88		.00	
AB	96.08		96.11		89.59		2.19	
OR	.95		1.00		1.53		97.81	

9 S7-50a C PLAGIOCLASE (VPI)
 10 S7-50a C PLAGIOCLASE (VPI)
 11 S7-50a C PLAGIOCLASE (VPI)
 12 S7-50a C ALKALI FELDSPAR (VPI)

	13		14		15		16	
SiO2	67.37		68.12		66.67		64.29	
A2O3	18.94		19.13		20.94		18.74	
CaO	.00		.00		1.21		.00	
Na2O	.32		.39		10.15		.83	
K2O	5.47		13.37		.38		16.34	
SUM	92.10		101.01		99.35		100.20	
Si	3.133	*	3.045	*	2.935	*	2.974	*
Al	1.038	4.171	1.008	4.052	1.086	4.021	1.021	3.995
Ca	.000	*	.000	*	.057	*	.000	*
Na	.029	*	.034	*	.866	*	.074	*
K	.324	.353	.762	.796	.021	.945	.964	1.038
O	8.000	*	8.000	*	8.000	*	8.000	*
AN	.00		.00		6.04		.00	
AB	8.19		4.25		91.70		7.17	
OR	91.81		95.75		2.26		92.83	

13 S7-50a D ALKALI FELDSPAR, wide area analysis (USC)
 14 S7-50a D ALKALI FELDSPAR (USC)
 15 S7-50a D PLAGIOCLASE (USC)
 16 S7-53 ALKALI FELDSPAR, wide area analysis (USC)

FELDSPAR ANALYSES FOR THE CUFFYTOWN CREEK PLUTON, S.C.

	17		18		19		20	
SiO ₂	67.42		69.10		66.78		69.73	
Al ₂ O ₃	19.18		20.07		20.93		20.23	
CaO	.00		.35		.99		.13	
Na ₂ O	.45		10.88		10.22		11.55	
K ₂ O	13.40		.24		.32		.13	
SUM	100.45		100.64		99.24		101.77	
Si	3.035	*	2.992	*	2.940	*	2.989	*
Al	1.017	4.052	1.024	4.016	1.086	4.025	1.022	4.010
Ca	.000	*	.016	*	.047	*	.006	*
Na	.039	*	.913	*	.872	*	.960	*
K	.769	.809	.013	.943	.018	.937	.007	.973
O	8.000	*	8.000	*	8.000	*	8.000	*
AN	.00		1.72		4.98		.61	
AB	4.86		96.87		93.10		98.66	
OR	95.14		1.41		1.92		.73	

17 S7-53 ALKALI FELDSPAR, spot analysis (USC)

18 S7-53 PLAGIOCLASE (USC)

19 S7-55 PLAGIOCLASE (USC)

20 S7-55 PLAGIOCLASE (VPI)

	21		22		23		24	
SiO ₂	64.90		63.30		68.86		68.15	
Al ₂ O ₃	18.85		19.79		19.10		20.14	
CaO	.00		.02		.00		.32	
Na ₂ O	1.27		.23		.16		10.98	
K ₂ O	14.96		15.66		13.41		.13	
SUM	99.98		99.00		101.53		99.72	
Si	2.985	*	2.947	*	3.057	*	2.980	*
Al	1.022	4.007	1.086	4.033	.999	4.056	1.038	4.017
Ca	.000	*	.001	*	.000	*	.015	*
Na	.113	*	.021	*	.014	*	.931	*
K	.878	.991	.930	.952	.759	.773	.007	.953
O	8.000	*	8.000	*	8.000	*	8.000	*
AN	.00		.10		.00		1.57	
AB	11.43		2.18		1.78		97.67	
OR	88.57		97.71		98.22		.76	

21 S7-55 ALKALI FELDSPAR, wide area analysis (VPI)

22 S7-55 ALKALI FELDSPAR (VPI)

23 S7-55 ALKALI FELDSPAR (USC)

24 ED1-834 PLAGIOCLASE (USC)