Division of Geological & Geophysical Surveys

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ELECTRON MICROPROBE DATA FROM SELAWIK HILLS AND GRANITE MOUNTAIN PLUTONIC ROCKS, WESTERN ALASKSA

by

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Electron microprobe data from Selawik Hills and Granite Mountain plutonic rocks, western Alaska

Introduction:

Mineral compositions from rocks representative of the main intrusive types in the Selawik Hills plutonic complex and from the Granite Mountain pluton were analyzed. The samples, from the Selawik and Candle quadrangles, were collected by DGGS geologists in 1991; locations are indicated on the following two figures. Additional data from whole rock analyses are given in Solie and others, 1993.

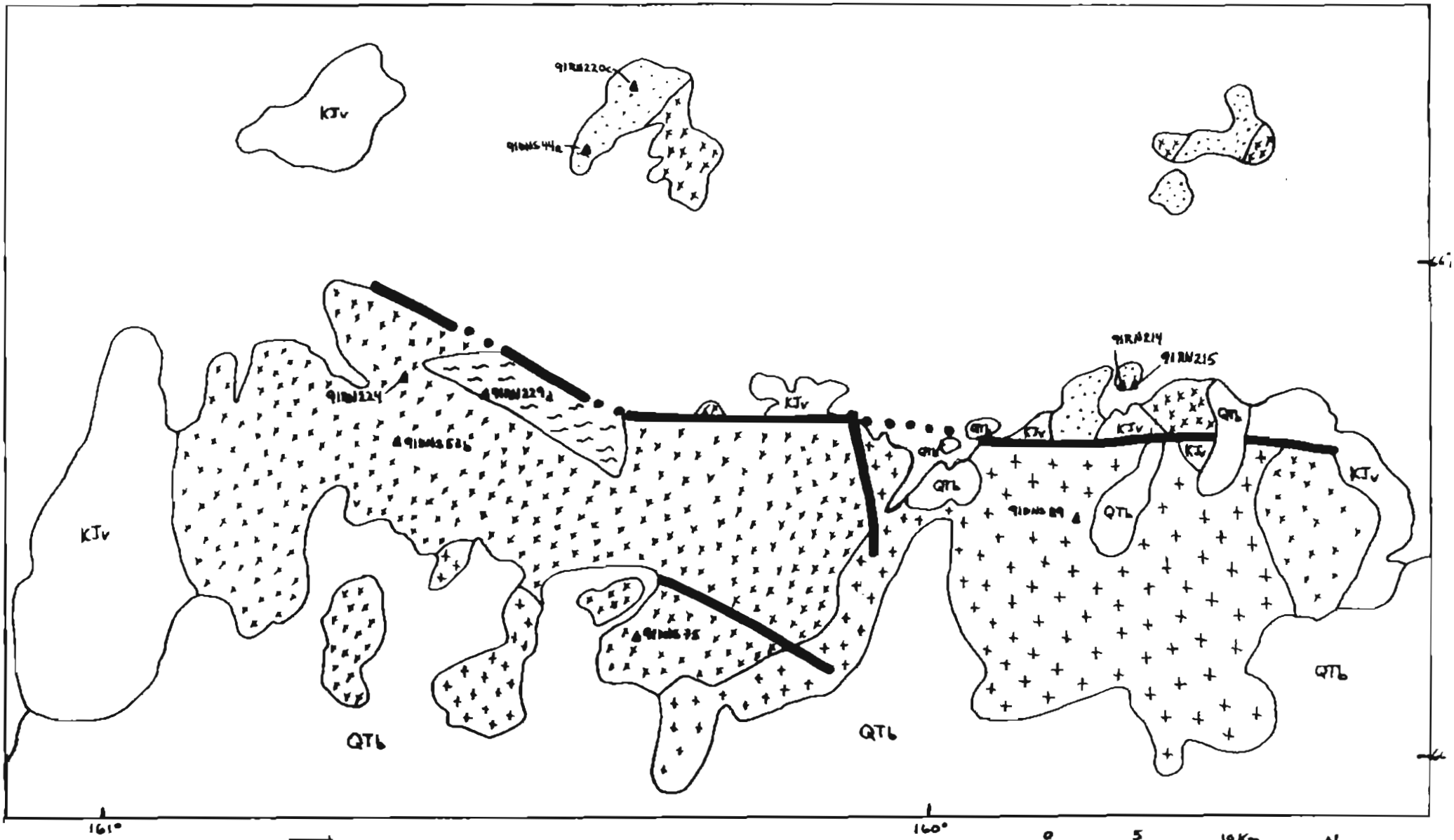
Analyses were done on polished thin sections on the Cameca SX50 electron microprobe at the University of Alaska, Fairbanks using UAF analytical programs MICABOZO and AMPHBOZO. Standards used are listed in the following tables. Operating conditions were 15 kV accelerating potential, a sample current of 10 nA, and a beam diameter of 5 μm for 10 s on peak and 10 s on background for each element in the analytical scheme.

References:

Jones, B.K. and Forbes, R.B., 1976, Investigation of Alaska's uranium potential, Part 2 - Uranium and thorium in granitic and alkaline rocks in western Alaska; Alaska Division of Geological and Geophysical Surveys report prepared for U.S. Energy Research and Development Administration, Grand Junction Office, Report GJO-1639 (GJBX-28), p. 2-1 - 1-66.

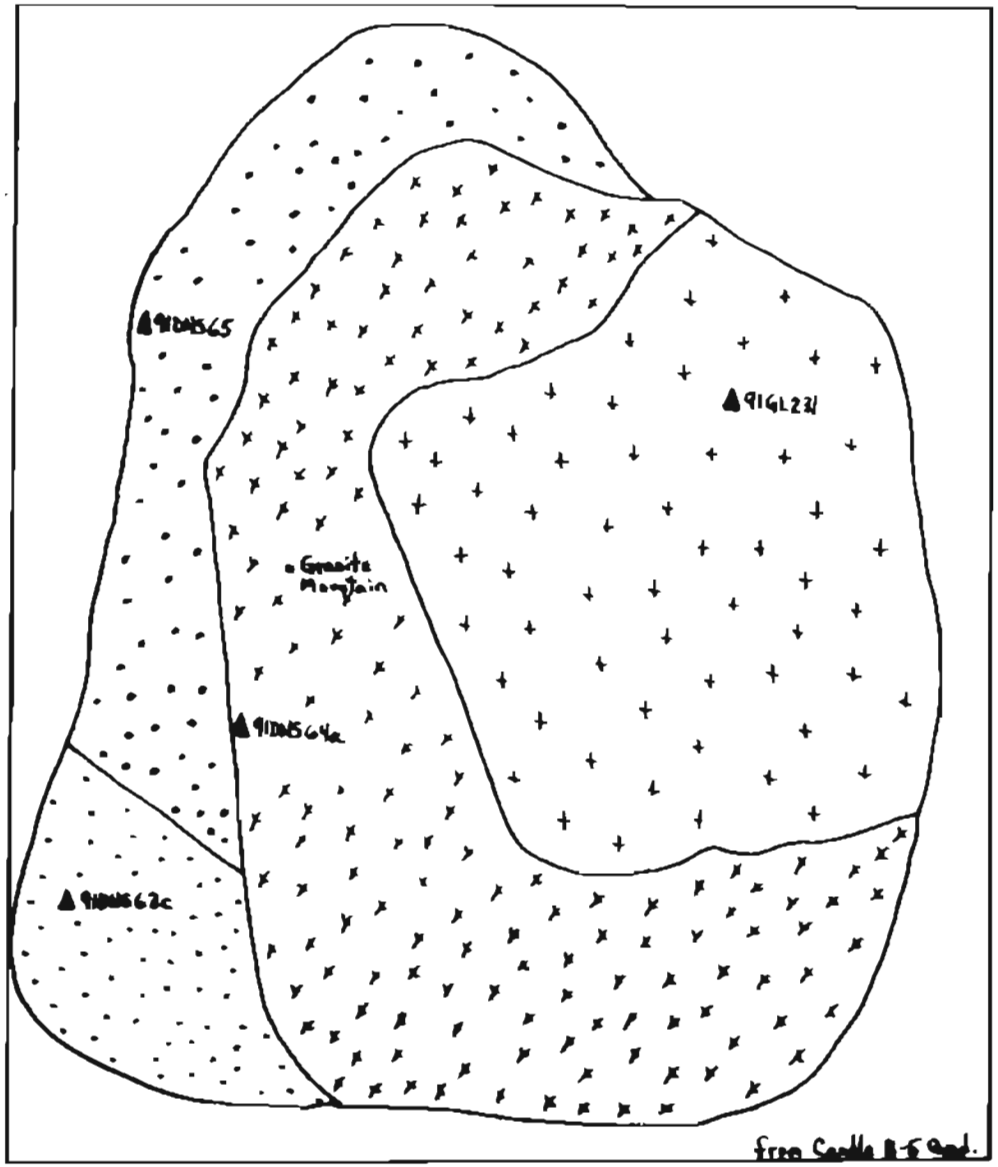
Patton, W.W., Jr., and Miller, T.P., 1968, Regional geologic map of the Selawik and southeastern Baird Mountains quadrangles, Alaska; United States Geological Survey Miscellaneous Geologic Investigations Map I-530, 1 sheet, scale 1:250,000.

Solie, D.N., E.E. Harris, Bundtzen, T.K., Wiltse, M.A., Newberry, R.J., Kline, J.T., and Smith,T.E., 1993, Land selection unit 16 (Selawik, Candle, Norton Bay, Unalakleet, Kateel River, and Nulato quadrangles): references, DGGS sample locations, geochemical and major oxide data; Alaska Division of Geological and Geophysical Surveys Public-Data File 93-16, 54 p., 2 sheets, scale 1:250,000.



GENERALIZED GEOLOGY OF SELAWIK HILLS

(modified from Patton and Miller, 1968)



Garnet syenite

Nepheline syenite

Monzonite

Quartz monzonite

▲ Probe sample location

(modified from Jones and Forbes, 1976)

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GENERALIZED GEOLOGY OF GRANITE MOUNTAIN

BIOTITE PROBE DATA, SELAWIK HILLS & GRANITE MOUNTAIN

LABEL	SYMBOL	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	F	Cl	H2O	O=F	O=Cl	Total
BIOT_215_GN1.1	BH1	0.393	9.644	12.585	37.015	9.358	0.000	1.932	0.825	24.461	0.755	0.009	3.453	−0.318	−0.002	100.130
BIOT_215_GN1.2	BH1	0.342	9.521	12.771	37.006	9.454	0.000	2.240	0.877	24.655	1.204	0.009	3.242	−0.507	−0.002	100.824
BIOT_215_GN1.3	BH1	0.351	9.312	12.550	36.829	9.372	0.000	2.089	0.845	24.251	1.298	0.003	3.144	−0.547	−0.001	99.298
BT_215_GN8.1	BH8	0.315	9.136	13.057	36.682	9.455	0.000	1.820	0.846	24.720	0.920	0.000	3.355	−0.387	0.000	99.919
BT_215_GN8.2	BH8	0.243	8.932	12.984	37.269	9.328	0.051	1.486	0.961	25.369	0.953	0.031	3.350	−0.401	−0.007	100.547
BT_215_GN8.3	BH8	0.244	8.966	12.964	37.171	9.270	0.000	1.770	0.843	25.957	1.146	0.000	3.273	−0.483	0.000	101.112
	91RN214 – Hunt Creek pluton nepheline syenite															
BT_214_GN1.1	BHa	0.292	9.641	13.811	36.748	9.496	0.027	1.662	0.771	25.448	0.953	0.000	3.407	−0.401	0.000	101.855
BT_214_GN1.2	BHa	0.226	9.335	13.748	37.717	9.396	0.060	1.553	0.802	24.662	1.193	0.000	3.292	−0.502	0.000	101.302
BT_214_GN1.3	BHa	0.222	9.515	13.594	37.085	9.370	0.034	1.551	0.717	25.273	1.200	0.009	3.266	−0.506	−0.002	101.329
	91DNS44a – Selawik Lake complex nepheline syenite															
BIOT_44A_GN10.1	BL10	0.177	16.179	12.663	38.941	10.163	0.053	1.562	0.569	15.402	2.047	0.000	2.943	−0.862	0.000	99.827
BIOT_44A_GN10.2	BL10	0.197	15.850	13.261	39.550	9.713	0.022	1.605	0.547	15.914	1.736	0.000	3.149	−0.731	0.000	100.603
BIOT_44A_GN10.3	BL10	0.141	15.803	13.229	38.927	10.103	0.044	1.445	0.664	16.885	1.383	0.041	3.303	−0.582	−0.009	101.077
BIOT 441 GN4.3	BL4	0.154	14.831	12.998	38.967	9.982	0.005	2.027	0.737	17.436	1.509	0.000	3.248	−0.635	0.000	101.259
BIOT 44A GN4.2	BL4	0.116	15.728	12.641	39.460	9.926	0.000	1.805	0.386	16.704	1.045	0.013	3.495	−0.440	−0.003	100.877
BIOT 91DNS44A GN4.1	BL4	0.173	15.149	12.977	39.480	10.089	0.000	1.552	0.640	17.340	2.121	0.025	2.943	−0.893	−0.006	101.590
BIOT 44A GN9.1	BL9	0.134	15.030	12.837	39.361	10.073	0.000	1.756	0.652	17.630	1.584	0.028	3.216	−0.667	−0.006	101.628
BIOT 44A GN9.2	BL9	0.160	14.776	12.640	39.135	10.263	0.000	1.936	0.983	17.544	1.170	0.000	3.422	−0.492	0.000	101.537
BIOT_44A_GN9.3	BL9	0.197	14.883	12.667	38.249	9.965	0.004	1.779	0.683	17.795	1.043	0.034	3.424	−0.439	−0.008	100.256
BIOT_44A_GN9.4	BL9	0.165	15.204	12.678	39.058	9.921	0.000	1.353	0.589	17.579	0.954	0.008	3.509	−0.402	−0.001	100.613
	91RN224 – Selawik Hills gneissic gt. nepheline syenite															
BT_224_GN1.1	Bs1	0.047	16.463	14.542	38.054	10.383	0.020	1.725	0.366	14.894	0.754	0.032	3.648	−0.317	−0.007	100.572
BT_224_GN1.2	Bs1	0.011	16.110	14.282	38.225	10.068	0.000	1.796	0.345	14.409	0.000	0.000	4.012	0.000	0.000	99.256
BT_224_GN2.1	Bs2	0.025	16.277	14.612	37.754	9.992	0.024	1.793	0.344	15.809	0.399	0.019	3.828	−0.168	−0.004	100.705
BT_224_GN2.2	Bs2	0.011	16.150	14.394	38.416	10.158	0.026	1.681	0.323	14.588	0.626	0.016	3.705	−0.263	−0.004	99.927
BT_224_GN3.1	Bs3	0.047	16.433	14.152	38.137	10.430	0.011	1.544	0.269	15.312	0.978	0.013	3.522	−0.411	−0.003	100.431
BT_224_NEAR6.1	Bs6	0.036	15.278	14.509	38.233	10.095	0.017	2.066	0.215	14.997	0.583	0.000	3.711	−0.246	0.000	99.494
BT_224_NEAR6.2	Bs6	0.053	15.850	14.285	38.450	10.152	0.000	1.817	0.323	14.707	1.199	0.035	3.394	−0.505	−0.008	99.752
	91DNS53b – Selawik Hills complex pyx–hb syenite															
BT_53B_GN3.1	BS3	0.218	14.865	14.750	40.081	10.002	0.064	0.951	0.483	15.174	3.148	0.041	2.438	−1.325	−0.009	100.881
BT_53B_GN3.2	BS3	0.205	14.159	15.473	39.352	9.803	0.175	1.155	0.397	15.460	2.456	0.038	2.775	−1.034	−0.009	100.405
	91RN229d – Selawik Hills 'xenolithic block' carbonate															
PHLOG_229D_GN2.1	Pm2	0.678	28.805	16.202	40.378	7.564	0.043	0.210	0.011	1.603	2.000	0.032	3.305	−0.842	−0.007	99.982
PHLOG_229D_GN4.1	Pm4	0.765	26.673	15.321	41.433	9.335	0.000	0.117	0.000	1.379	2.524	0.003	2.993	−1.063	−0.001	99.479
PHLOG_229D_GN4.2	Pm4	0.867	27.149	15.242	42.536	9.281	0.002	0.140	0.033	1.459	1.911	0.008	3.391	−0.805	−0.001	101.231
	91RN220c – Selawik Lake complex gt–bt nepheline syenite															
220CBIOT_GN1.1	BLn1	0.009	9.257	12.196	36.092	9.642	0.040	2.862	0.518	26.821	0.623	0.000	3.512	−0.262	0.000	101.020
220C_BIOT_GN1.2	BLn1	0.092	9.255	12.142	36.019	9.544	0.025	2.591	0.623	27.373	0.041	0.000	3.817	−0.017	0.000	101.505
220C_BIOT_GN1.3	BLn1	0.037	9.188	12.330	35.321	9.959	0.000	2.621	0.635	26.051	0.462	0.000	3.544	−0.195	0.000	99.963
220C_BIOT_GN1.4	BLn1	0.092	9.223	12.363	36.907	9.897	0.004	2.819	0.507	26.675	0.000	0.000	3.838	0.000	0.000	101.325
220C_BT_GN2.1	BLn2	0.043	8.810	12.409	35.393	9.403	0.000	2.793	0.486	27.015	0.705	0.000	3.426	−0.297	0.000	100.185
220C_BT_GN2.2	BLn2	0.085	8.714	12.520	35.019	9.454	0.011	2.949	0.729	26.492	0.629	0.022	3.443	−0.265	−0.005	99.777
220C_BT_GN2.3	BLn2	0.048	9.105	11.890	36.107	9.405	0.033	2.505	0.676	26.994	0.539	0.012	3.528	−0.227	−0.003	100.610
	91DNS75 – Selawik Hills complex gneissic pyx–hb syenite															
91DNS75_BT_GN1.1	BSm1	0.073	13.314	14.738	35.513	8.550	0.192	1.819	0.406	19.574	0.995	0.113	3.330	−0.419	−0.025	98.273
75_BT_GN1.2	.	0.005	1.883	21.342	41.151	1.061	22.075	0.448	0.022	3.659	0.000	0.098	4.067	0.000	−0.022	95.809
75_BT_GN1B.1	BSm1	0.120	13.338	14.287	37.705	9.579	0.071	2.138	0.161	19.808	1.343	0.088	3.277	−0.566	−0.020	101.129
75_BT_GN1B.2	.	0.008	5.506	18.562	39.238	2.854	15.323	1.021	0.109	10.351	0.151	0.047	3.944	−0.064	−0.011	97.039
75_BT_GN12.1	BSm12	0.091	13.132	14.210	35.428	9.208	0.126	2.071	0.225	19.590	0.781	0.088	3.424	−0.329	−0.020	98.023
75_BT_GN12.2	.	0.102	10.431	10.677	28.005	8.570	0.132	1.088	0.146	35.923	0.387	0.074	3.232	−0.163	−0.017	96.587
75_BT_GN13.1	.	0.135	14.285	15.238	34.697	5.776	0.164	1.507	0.182	20.062	1.124	0.054	3.242	−0.473	−0.012	95.981
75_BT_GN14.1	BSm14	0.091	12.896	13.857	36.024	9.553	0.077	2.111	0.438	20.966	0.729	0.075	3.503	−0.307	−0.017	99.996
	91DNS89 – Selawik Hills complex bt–granite															
91DNS89_BT_GN2.1	.	0.102	11.701	14.170	36.865	9.145	0.345	2.258	0.719	18.150	1.160	0.003	3.245	−0.488	−0.001	97.074
89_BT_GN2.2	BSq2	0.058	11.580	14.558	38.202	9.613	0.064	2.390	0.643	18.568	1.737	0.009	3.060	−0.732	−0.002	99.748
89_BT_GN7.1	BSq7	0.038	12.693	14.313	38.268	9.762	0.062	1.962	0.480	18.820	1.717	0.019	3.091	−0.723	−0.004	100.478
89_BT_GN7.2	BSq7	0.052	11.732	14.871	36.905	9.748	0.000	2.167	0.450	18.536	1.187	0.013	3.280	−0.500	−0.003	98.438
89_CHL_GN4.1	CSq4	0.031	15.508	20.374	25.856	0.024	0.077	0.000	1.063	25.273	0.000	0.000	3.625	0.000	0.000	91.831
89_CHL_GN4.2	CSq4	0.031	14.078	18.914	23.706	0.039	0.388	0.000	1.607	22.614	0.000	0.016	3.197	0.000	−0.004	81.784
89_CHL_GN6.1	CSq6	0.046	15.682	18.821	25.356	0.000	0.237	0.022	1.000	25.122	0.425	0.003	3.311	−0.179	−0.001	89.845
	91DNS83c – Granite Mountain fluorine–rich syenite															
83C_BT_GN2.1	BGn2	0.185	8.984	15.632	35.277	9.710	0.031	1.519	0.255	25.593	0.083	0.038	3.814	−0.035	−0.008	101.078
83C_BT_GN2.2	BGn2	0.209	9.170	15.712	34.834	9.189	0.040	1.383	0.287	24.551	0.795	0.003	3.408	−0.335	−0.001	99.243
83C_BT_GN2.3	BGn3	0.218	8.965	15.382	34.839	9.559	0.036	1.589	0.297	25.408	0.208	0.000	3.711	−0.088	0.000	99.996
	91DNS85 – Granite Mountain nepheline–syenite															
91DNS85_BT.1	BGg1	0.102	6.541	15.526	35.109	9.523	0.069	1.463	1.098	26.865	0.913	0.047	3.306	−0.384	−0.011	99.967
85_BT_.1	BGg1	0.173	7.292	15.620	34.849	9.678	0.022	2.609	1.945	22.397	0.484	0.044	3.522	−0.204	−0.010	98.421
85_BT_.2	BGg1	0.133	6.836	15.389	35.552	9.362	0.040	1.728	1.109	26.891	0.912	0.000	3.362	−0.384	0.000	100.919
85_BT_GN6B.1	BGg6	0.114	5.847	16.005	35.024	9.263	0.074	1.662	1.161	25.997	0.623	0.006	3.449	−0.262	−0.001	98.962

Data from University of Alaska, Fairbanks electron microprobe, 2/4/92 & 2/18/92

BIOTITE PROBE DATA, SELAWIK HILLS & GRANITE MOUNTAIN

LABEL	K	Na	Ca	Fe	Mg	Ti	Mn	Al total	Al VI	Al IV	Si
BIOT_215_GN1.1	1.878	0.120	0.000	3.220	2.261	0.229	0.110	2.333	0.155	2.178	5.822
BIOT_215_GN1.2	1.895	0.104	0.000	3.242	2.231	0.265	0.117	2.368	0.183	2.183	5.817
BIOT_215_GN1.3	1.907	0.109	0.000	3.234	2.213	0.250	0.087	2.359	0.232	2.127	5.873
BT_215_GN8.1	1.908	0.097	0.000	3.270	2.154	0.217	0.113	2.434	0.237	2.197	5.803
BT_215_GN8.2	1.872	0.074	0.009	3.339	2.095	0.176	0.128	2.409	0.275	2.134	5.866
BT_215_GN8.3	1.858	0.074	0.000	3.411	2.097	0.209	0.112	2.400	0.240	2.160	5.840
BT_214_GN1.1	1.882	0.088	0.005	3.307	2.233	0.194	0.101	2.529	0.239	2.290	5.710
BT_214_GN1.2	1.863	0.088	0.010	3.209	2.153	0.182	0.079	2.519	0.382	2.137	5.863
BT_214_GN1.3	1.869	0.067	0.006	3.303	2.216	0.182	0.095	2.504	0.299	2.205	5.795
BIOT_44A_GN10.1	1.985	0.053	0.009	1.974	3.698	0.180	0.074	2.287	0.255	2.032	5.968
BIOT_44A_GN10.2	1.871	0.058	0.004	2.010	3.522	0.182	0.070	2.358	0.330	2.028	5.972
BIOT_44A_GN10.3	1.947	0.041	0.007	2.133	3.491	0.164	0.085	2.356	0.237	2.119	5.881
BIOT 441 GN4.3	1.927	0.045	0.001	2.208	3.344	0.231	0.095	2.318	0.214	2.104	5.896
BIOT 44A GN4.2	1.901	0.034	0.000	2.098	3.520	0.204	0.049	2.237	0.163	2.074	5.926
BIOT 91DNS44A GN4.1	1.952	0.051	0.000	2.199	3.424	0.177	0.082	2.319	0.305	2.013	5.987
BIOT 44A GN9.1	1.939	0.039	0.000	2.225	3.361	0.199	0.083	2.283	0.223	2.060	5.940
BIOT 44A GN9.2	1.974	0.047	0.000	2.212	3.321	0.220	0.126	2.246	0.147	2.099	5.901
BIOT_44A_GN9.3	1.941	0.058	0.001	2.273	3.387	0.204	0.086	2.280	0.121	2.159	5.841
BIOT_44A_GN9.4	1.915	0.048	0.000	2.224	3.429	0.154	0.076	2.261	0.171	2.090	5.910
BT_224_GN1.1	1.974	0.014	0.003	1.882	3.668	0.194	0.046	2.562	0.251	2.311	5.689
BT_224_GN1.2	1.919	0.003	0.000	1.801	3.589	0.202	0.044	2.516	0.230	2.286	5.714
BT_224_GN2.1	1.900	0.007	0.004	1.971	3.616	0.201	0.043	2.567	0.195	2.372	5.628
BT_224_GN2.2	1.940	0.003	0.004	1.839	3.604	0.189	0.041	2.540	0.291	2.249	5.751
BT_224_GN3.1	2.001	0.014	0.002	1.926	3.583	0.175	0.034	2.508	0.243	2.265	5.735
BT_224_NEAR6.1	1.937	0.011	0.003	1.886	3.426	0.234	0.027	2.572	0.322	2.250	5.750
BT_224_NEAR6.2	1.956	0.016	0.000	1.857	3.568	0.206	0.041	2.542	0.348	2.194	5.806
BT_53B_GN3.1	1.942	0.064	0.011	1.931	3.372	0.109	0.062	2.645	0.744	1.901	6.099
BT_53B_GN3.2	1.899	0.060	0.028	1.963	3.204	0.132	0.051	2.769	0.744	2.025	5.975
PHLOG_229D_GN2.1	1.358	0.185	0.007	0.189	6.042	0.022	0.001	2.687	0.369	2.318	5.682
PHLOG_229D_GN4.1	1.704	0.212	0.000	0.185	5.689	0.013	0.000	2.584	0.513	2.071	5.929
PHLOG_229D_GN4.2	1.652	0.240	0.000	0.170	5.645	0.015	0.004	2.506	0.440	2.066	5.934
220CBIOT_GN1.1	1.937	0.003	0.007	3.493	2.175	0.339	0.069	2.264	0.000	2.264	5.684
220C_BIOT_GN1.2	1.903	0.028	0.004	3.578	2.155	0.305	0.082	2.237	0.000	2.237	5.630
220C_BIOT_GN1.3	2.024	0.011	0.000	3.472	2.182	0.314	0.086	2.316	0.000	2.316	5.629
220C_BIOT_GN1.4	1.973	0.028	0.001	3.486	2.148	0.331	0.057	2.277	0.000	2.277	5.610
220C_BT_GN2.1	1.913	0.013	0.000	3.603	2.094	0.335	0.063	2.332	0.000	2.332	5.644
220C_BT_GN2.2	1.930	0.020	0.002	3.546	2.079	0.355	0.099	2.362	0.000	2.362	5.605
220C_BT_GN2.3	1.900	0.014	0.005	3.575	2.149	0.298	0.091	2.219	0.000	2.219	5.717
91DNS75_BT_GN1.1	1.707	0.022	0.032	2.576	3.107	0.214	0.054	2.719	0.279	2.440	5.560
75_BT_GN1.2	0.197	0.002	3.450	0.446	0.409	0.049	0.003	3.569	1.671	1.998	6.002
75_BT_GN1B.1	1.862	0.036	0.012	2.498	3.029	0.245	0.021	2.565	0.309	2.256	5.744
75_BT_GN1B.2	0.542	0.002	2.445	1.289	1.222	0.114	0.014	3.257	1.100	2.157	5.843
75_BT_GN12.1	1.845	0.028	0.021	2.574	3.075	0.245	0.030	2.631	0.197	2.434	5.566
75_BT_GN12.2	1.463	0.034	0.025	5.246	2.715	0.143	0.022	2.197	0.000	2.197	4.890
75_BT_GN13.1	1.166	0.041	0.028	2.656	3.370	0.179	0.024	2.843	0.335	2.508	5.492
75_BT_GN14.1	1.889	0.027	0.013	2.719	2.980	0.246	0.057	2.532	0.117	2.415	5.585
91DNS89_BT_GN2.1	1.843	0.031	0.058	2.398	2.755	0.268	0.096	2.638	0.414	2.224	5.776
89_BT_GN2.2	1.892	0.017	0.011	2.395	2.663	0.277	0.084	2.648	0.543	2.105	5.895
89_BT_GN7.1	1.910	0.011	0.010	2.414	2.902	0.228	0.060	2.587	0.456	2.131	5.869
89_BT_GN7.2	1.939	0.016	0.000	2.417	2.726	0.254	0.059	2.732	0.486	2.246	5.754
89_CHL_GN4.1	0.005	0.010	0.014	3.496	3.823	0.000	0.149	3.972	0.249	3.723	4.277
89_CHL_GN4.2	0.009	0.011	0.078	3.575	3.931	0.000	0.255	3.514	0.000	3.514	4.441
89_CHL_GN6.1	0.000	0.015	0.043	3.586	3.990	0.003	0.145	3.787	0.116	3.671	4.329
63C_BT_GN2.1	1.923	0.056	0.005	3.322	2.079	0.177	0.034	2.860	0.336	2.524	5.476
63C_BT_GN2.2	1.858	0.064	0.007	3.254	2.166	0.165	0.038	2.935	0.456	2.479	5.521
63C_BT_GN2.3	1.940	0.067	0.006	3.345	2.104	0.185	0.040	2.854	0.307	2.547	5.453
91DNS65_BT.1	1.942	0.032	0.012	3.566	1.569	0.176	0.140	2.925	0.538	2.387	5.613
65_BT_.1	1.968	0.053	0.004	2.985	1.732	0.313	0.263	2.934	0.488	2.446	5.554
65_BT_.2	1.887	0.041	0.007	3.552	1.510	0.205	0.148	2.966	0.484	2.382	5.618
65_BT_GN6B.1	1.898	0.035	0.013	3.481	1.395	0.200	0.156	3.020	0.628	2.392	5.608

Data from University of Alaska, Fairbanks electron microprobe, 2/4/92 & 2/18/92

AMPHIBOLE PROBE DATA, SELAWIK HILLS & GRANITE MOUNTAIN

LABEL	SYMBOL	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	F	Cl	H2O	O=F	O=Cl	Total
	91RN215 – Hunt Creek pluton nepheline syenite															
HBMIDWAY_215_GN2.3	HH2	2.270	9.337	12.250	40.498	2.223	11.760	2.305	0.354	17.705	0.449	0.022	1.766	−0.189	−0.005	106.235
HBRIM_215_GN2.2	HH2	2.545	8.814	11.843	40.477	2.095	11.596	2.841	0.427	19.251	1.350	0.012	1.310	−0.568	−0.003	106.630
HB_215_GN2.1	HH2	2.238	9.716	12.308	40.015	2.344	11.693	3.942	0.547	16.733	0.723	0.059	1.619	−0.305	−0.013	106.197
HB_215_GN5.1	HH5	2.532	8.195	11.642	38.328	2.301	10.571	1.692	0.814	25.304	0.804	0.028	1.490	−0.338	−0.006	105.180
HB_215_GN5.2	HH5	2.633	8.255	11.789	38.114	2.330	10.445	1.292	0.804	26.720	0.593	0.090	1.575	−0.249	−0.020	106.394
HB_215_GN5.3	HH5	2.856	5.073	12.465	38.714	2.240	10.083	1.581	0.899	24.752	0.465	0.000	1.671	−0.196	0.000	105.699
HB_215_GN7.1	HH7	2.269	6.237	12.613	38.002	2.154	11.200	2.439	0.792	22.340	0.914	5.388	0.026	−0.385	−1.215	107.195
HB_215_GN7.2	HH7	2.697	6.142	12.404	39.223	2.163	10.987	1.320	0.944	23.228	0.557	0.019	1.642	−0.234	−0.004	105.928
HB_215_GN7.3	HH7	2.479	7.216	12.624	38.975	2.136	11.287	2.466	0.744	21.575	1.036	0.028	1.426	−0.436	−0.006	106.167
	91RN214 – Hunt Creek pluton nepheline syenite															
HB_214_GN5.1	HHe	2.786	6.153	11.278	40.456	2.170	10.285	1.901	0.690	23.197	0.684	0.059	1.575	−0.288	−0.013	105.889
HB_214_GN5.2	HHe	2.567	7.088	12.460	39.072	2.315	10.736	2.311	0.404	21.563	1.164	0.012	1.351	−0.490	−0.003	105.432
	91DNS53b – Selawik Hills complex pyx–hb syenite															
BLUE_53B_GN2.1	HS2	2.723	7.557	12.315	40.859	1.880	10.452	0.269	0.585	22.365	0.973	0.000	1.466	−0.410	0.000	105.637
BLUE_53B_GN2.2	HS2	2.959	7.269	12.318	40.181	1.952	10.647	0.873	0.489	22.944	0.508	0.016	1.588	−0.214	−0.004	106.337
BLUE_53B_GN2.3	HS2	2.966	7.104	12.091	40.605	1.936	10.654	0.314	0.245	21.965	0.847	0.041	1.494	−0.357	−0.009	104.702
HB_53B_GN4.1	HS4	2.968	8.059	12.448	40.053	1.941	10.731	1.057	0.394	21.339	0.855	0.056	1.511	−0.360	−0.013	105.948
HB_53B_GN4.2	HS4	2.704	8.155	12.448	40.800	1.939	11.040	1.237	0.479	20.492	0.984	0.025	1.473	−0.414	−0.006	105.999
HB_53B_GN4.3	HS4	2.668	7.954	12.583	40.948	2.062	11.124	0.990	0.426	20.731	0.900	0.059	1.804	−0.126	−0.013	106.220
HB2_53B_GN5.1	HS5	2.348	8.025	12.406	40.673	2.170	10.793	0.944	0.437	20.931	1.026	0.041	1.434	−0.432	−0.009	105.305
HB2_53B_GN5.2	HS5	2.605	7.888	12.264	40.270	1.972	10.990	1.775	0.426	20.729	1.068	0.018	1.422	−0.450	−0.004	105.548
HB2_53B_GN5.2	.	2.685	7.667	11.979	39.598	2.077	10.890	1.595	0.224	20.143	1.111	0.022	1.359	−0.468	−0.005	103.659
	91DNS75 – Selawik Hills complex gneissic pyx–hb syenite															
75_HB_GN3.1	HSm3	2.067	8.478	12.206	39.156	2.018	11.013	0.970	0.299	20.099	0.486	0.138	1.628	−0.205	−0.031	102.407
75_HB_GN3.2	HSm3	2.014	8.879	12.135	39.596	1.963	11.323	1.533	0.502	19.994	0.615	0.159	1.591	−0.259	−0.036	103.986
75_HB_GN3.3	HSm3	2.016	8.746	12.220	39.017	2.110	11.445	1.556	0.417	20.061	0.928	0.150	1.427	−0.391	−0.034	103.794
75_HB_GN4.1	HSm4	2.002	8.754	12.251	39.992	2.071	11.423	1.510	0.512	20.222	0.966	0.163	1.432	−0.407	−0.037	104.927
75_HB_GN4.2	HSm4	1.985	8.752	12.040	39.852	2.067	11.237	1.489	0.289	20.564	0.795	0.105	1.521	−0.335	−0.024	104.390
75_HB_GN4.3	HSm4	2.029	8.865	12.085	39.395	2.118	11.403	0.947	0.182	21.302	0.440	0.194	1.664	−0.185	−0.044	104.542
75_HB_GN17.1	HSm17	2.029	7.492	12.097	38.638	2.186	10.933	2.873	0.213	21.697	0.740	0.112	1.533	−0.312	−0.025	104.821
75_HB_GN17.2	HSm17	2.117	7.458	12.070	39.736	2.178	11.307	2.636	0.331	21.127	0.220	0.105	1.811	−0.093	−0.024	105.275
75_HB_GN17.3	HSm17	2.181	7.376	12.114	39.107	2.060	11.083	2.291	0.096	21.486	0.305	0.139	1.729	−0.128	−0.036	104.064
	91DNS63c – Granite Mountain fluorite–rich syenite															
91DNS63C_HB_GN5.1	HGn5	2.419	6.534	13.470	37.088	2.294	11.052	1.770	0.446	22.437	0.391	0.000	1.899	−0.165	0.000	104.148
63C_HB_GN5.2	HGn5	2.497	6.458	13.545	37.252	2.359	11.018	1.500	0.244	22.986	0.728	0.053	1.522	−0.307	−0.012	104.699
63C_HB_GN5.3	HGn5	2.654	6.362	13.890	37.047	2.351	10.900	1.454	0.371	23.259	0.656	0.031	1.518	−0.234	−0.007	105.256
63C_HB_GN10.1	HGn10	2.433	6.221	13.779	37.127	2.403	11.002	1.076	0.319	23.668	0.472	0.019	1.655	−0.199	−0.004	104.827
63C_HB_GN10.2	HGn10	2.663	6.614	14.022	37.434	2.234	10.581	0.873	0.244	22.661	0.769	0.047	1.502	−0.324	−0.011	104.196
63C_HB_GN.1	HGn1	2.694	6.488	13.304	37.638	2.278	10.805	0.829	0.382	22.480	0.386	0.059	1.677	−0.162	−0.013	103.817
	91GL231 – Granite Mountain quartz monzonite															
91GL231HB_GN2.1	HGq2	1.875	11.423	8.376	46.197	1.216	11.781	0.721	0.550	18.985	1.755	0.052	1.163	−0.739	−0.012	106.434
231_HB_GN2.2	HGq2	1.954	11.083	7.746	44.974	1.216	11.267	0.883	0.482	18.185	0.973	0.069	1.480	−0.410	−0.016	103.056
231_HB_GN2.3	HGq2	1.817	11.173	7.963	44.528	1.224	11.508	1.017	0.673	17.936	0.982	0.066	1.475	−0.413	−0.015	102.973
231_BH_GN3.1	HGq3	2.192	11.340	7.781	45.088	1.257	11.730	1.087	0.598	17.889	0.841	0.025	1.578	−0.354	−0.006	104.583
231_HB_GN3.2	HGq3	2.284	11.100	7.815	45.008	1.182	11.267	0.882	0.577	17.828	1.366	0.104	1.280	−0.575	−0.023	103.561
231_HB_GN3.3	HGq3	2.186	10.989	8.163	44.397	1.373	11.235	0.884	0.590	18.852	1.679	0.085	1.131	−0.707	−0.019	104.397
231_HB_GN3.4	HGq3	2.024	11.479	7.991	44.782	1.245	11.719	0.859	0.481	18.369	1.162	0.101	1.400	−0.485	−0.023	104.383
231_HB_GN8.1	HGq8	1.886	10.579	8.179	45.869	1.148	11.099	0.181	0.804	19.418	1.371	0.000	1.326	−0.577	0.000	104.397
231_HB_GN8.2	HGq8	1.605	10.543	8.223	45.873	1.034	11.303	0.203	0.620	18.356	0.854	0.019	1.561	−0.359	−0.004	102.470
231_HB_GN8.3	HGq8	1.622	11.412	7.264	45.680	1.149	11.368	0.000	0.812	19.879	0.682	0.044	1.660	−0.275	−0.010	104.028
231_HB_GN9.1	HGq9	2.033	11.758	7.652	44.992	1.078	11.598	0.972	0.791	18.295	1.195	0.069	1.392	−0.503	−0.016	104.427
231_HB_GN9.2	HGq9	1.927	11.448	8.015	44.678	1.221	11.506	0.885	0.494	17.801	1.022	0.057	1.461	−0.430	−0.013	103.020
231_HB_GN9.3	HGq9	1.978	11.597	8.110	45.739	1.075	11.370	1.068	0.602	18.677	1.027	0.083	1.482	−0.433	−0.014	103.394
231_HB?GN14.1	HGq14	1.774	11.689	7.427	44.821	1.129	11.459	0.635	0.440	18.117	1.597	0.038	1.173	−0.672	−0.009	102.521
231_HB?GN14.2	HGq14	2.084	11.090	8.309	44.318	1.288	11.302	0.951	0.471	18.396	1.315	0.000	1.331	−0.554	0.000	103.869
	91DNS64a – Granite Mountain pyx–hb syenite															
DNS64A_HB_GN1.1	HGm1	2.577	9.022	11.935	40.296	1.934	11.213	0.991	0.512	20.227	1.078	0.000	1.418	−0.454	0.000	105.260
64A_HB_GN1.2	HGm1	2.366	9.014	11.839	40.105	1.971	11.337	1.330	0.406	19.729	0.831	0.041	1.522	−0.350	−0.009	104.469
64A_HB_GN1.3	HGm1	2.379	8.883	11.772	39.182	1.940	10.935	1.237	0.597	20.633	0.525	0.056	1.646	−0.221	−0.013	103.870
64A_HB_GN1.4	HGm1	2.644	9.073	11.328	39.276	2.074	11.287	1.263	0.481	20.963	1.224	0.038	1.313	−0.515	−0.008	105.149

Data from University of Alaska, Fairbanks electron microprobe, 2/4/92 & 2/18/92

AMPHIBOLE PROBE DATA, SELAWIK HILLS & GRANITE MOUNTAIN

LABEL	Si	Al total	Al IV	Al VI	Fe	Mg	Ti	Mn	Na	K	Ca
					CATIONS ON 24 (O, OH, F, CL) BASIS						
HBMIDWAY_215_GN2.3	6.122	2.183	1.878	0.305	2.239	2.104	0.376	0.045	0.665	0.429	1.905
HBRIM_215_GN2.2	6.213	2.142	1.787	0.355	2.471	2.017	0.328	0.056	0.758	0.410	1.907
HB_215_GN2.1	6.069	2.200	1.931	0.269	2.122	2.198	0.450	0.070	0.857	0.453	1.900
HB_215_GN5.1	6.150	2.202	1.850	0.352	3.398	1.243	0.204	0.111	0.788	0.471	1.817
HB_215_GN5.2	6.084	2.218	1.916	0.302	3.567	1.250	0.155	0.109	0.815	0.474	1.796
HB_215_GN5.3	6.135	2.328	1.865	0.463	3.280	1.198	0.188	0.121	0.878	0.453	1.712
HB_215_GN7.1	6.235	2.439	1.765	0.674	3.085	1.525	0.301	0.110	0.722	0.451	1.969
HB_215_GN7.2	6.154	2.294	1.846	0.448	3.048	1.437	0.156	0.126	0.821	0.433	1.844
HB_215_GN7.3	6.073	2.318	1.927	0.391	2.812	1.676	0.289	0.098	0.749	0.425	1.884
HB_214_GN5.1	6.337	2.082	1.663	0.419	3.039	1.437	0.224	0.091	0.846	0.434	1.726
HB_214_GN5.2	6.147	2.310	1.853	0.457	2.837	1.662	0.273	0.054	0.763	0.465	1.810
BLUE_53B_GN2.1	6.356	2.258	1.644	0.614	2.909	1.752	0.032	0.077	0.821	0.373	1.742
BLUE_53B_GN2.2	6.232	2.252	1.768	0.484	2.976	1.681	0.078	0.064	0.890	0.386	1.769
BLUE_53B_GN2.3	6.373	2.242	1.627	0.615	2.890	1.666	0.037	0.033	0.905	0.389	1.796
HB_53B_GN4.1	6.220	2.278	1.780	0.498	2.771	1.866	0.123	0.052	0.894	0.384	1.785
HB_53B_GN4.2	6.286	2.260	1.714	0.546	2.640	1.873	0.143	0.083	0.809	0.381	1.822
HB_53B_GN4.3	6.260	2.264	1.740	0.524	2.651	1.812	0.114	0.055	0.791	0.402	1.822
HB2_53B_GN5.1	6.317	2.271	1.683	0.588	2.718	1.858	0.110	0.057	0.707	0.430	1.796
HB2_53B_GN5.2	6.250	2.243	1.750	0.493	2.690	1.825	0.207	0.056	0.784	0.390	1.827
HB2_53B_GN5.2	6.277	2.238	1.723	0.515	2.670	1.816	0.190	0.030	0.825	0.420	1.850
75_HB_GN3.1	6.200	2.278	1.800	0.478	2.662	2.001	0.116	0.040	0.634	0.408	1.868
75_HB_GN3.2	6.172	2.229	1.828	0.401	2.606	2.063	0.180	0.066	0.609	0.390	1.891
75_HB_GN3.3	6.142	2.267	1.858	0.409	2.641	2.052	0.184	0.056	0.615	0.424	1.930
75_HB_GN4.1	6.209	2.242	1.791	0.451	2.626	2.026	0.176	0.057	0.603	0.410	1.900
75_HB_GN4.2	6.208	2.211	1.792	0.419	2.679	2.032	0.174	0.038	0.599	0.411	1.876
75_HB_GN4.3	6.146	2.222	1.854	0.368	2.779	2.061	0.111	0.024	0.614	0.422	1.906
75_HB_GN17.1	6.090	2.235	1.910	0.325	2.845	1.751	0.339	0.028	0.617	0.437	1.837
75_HB_GN17.2	6.135	2.196	1.865	0.331	2.728	1.716	0.306	0.043	0.634	0.429	1.871
75_HB_GN17.3	6.127	2.237	1.873	0.364	2.815	1.722	0.270	0.013	0.662	0.412	1.860
91DNS63C_HB_GN5.1	5.901	2.526	2.099	0.427	2.985	1.549	0.212	0.080	0.745	0.466	1.884
63C_HB_GN5.2	5.938	2.545	2.062	0.483	3.064	1.534	0.180	0.033	0.772	0.480	1.882
63C_HB_GN5.3	5.879	2.598	2.121	0.477	3.087	1.505	0.174	0.050	0.817	0.476	1.853
63C_HB_GN10.1	5.909	2.585	2.091	0.494	3.153	1.476	0.129	0.043	0.791	0.488	1.876
63C_HB_GN10.2	5.976	2.638	2.024	0.614	3.024	1.574	0.105	0.033	0.824	0.455	1.810
63C_HB_GN.1	6.019	2.508	1.981	0.527	3.007	1.547	0.100	0.052	0.835	0.465	1.851
91GL231HB_GN2.1	6.897	1.474	1.103	0.371	2.370	2.542	0.081	0.070	0.543	0.232	1.885
231_HB_GN2.2	6.884	1.398	1.116	0.282	2.328	2.529	0.102	0.063	0.580	0.238	1.848
231_HB_GN2.3	6.821	1.438	1.179	0.259	2.298	2.551	0.117	0.087	0.540	0.239	1.889
231_BH_GN3.1	6.816	1.386	1.184	0.202	2.262	2.555	0.124	0.088	0.542	0.242	1.900
231_HB_GN3.2	6.906	1.413	1.094	0.319	2.288	2.539	0.102	0.075	0.579	0.231	1.852
231_HB_GN3.3	6.830	1.480	1.170	0.310	2.425	2.520	0.102	0.077	0.652	0.259	1.852
231_HB_GN3.4	6.809	1.432	1.191	0.241	2.336	2.502	0.098	0.062	0.597	0.241	1.909
231_HB_GN8.1	6.962	1.462	1.038	0.424	2.464	2.415	0.021	0.103	0.549	0.222	1.804
231_HB_GN8.2	6.981	1.475	1.019	0.456	2.336	2.391	0.023	0.080	0.474	0.201	1.843
231_HB_GN8.3	6.915	1.298	1.085	0.211	2.517	2.575	0.000	0.104	0.476	0.222	1.844
231_HB_GN9.1	6.825	1.368	1.175	0.193	2.321	2.661	0.111	0.102	0.598	0.209	1.885
231_HB_GN9.2	6.834	1.445	1.166	0.279	2.251	2.610	0.102	0.064	0.572	0.238	1.886
231_HB_GN9.3	6.909	1.444	1.091	0.353	2.107	2.611	0.121	0.077	0.579	0.207	1.840
231_HB?GN14.1	6.926	1.353	1.074	0.279	2.341	2.692	0.074	0.068	0.531	0.223	1.897
231_HB?GN14.2	6.798	1.502	1.202	0.300	2.360	2.536	0.110	0.061	0.620	0.252	1.858
DNS64A_HB_GN1.1	6.261	2.186	1.739	0.447	2.628	2.090	0.116	0.067	0.776	0.383	1.867
64A_HB_GN1.2	6.242	2.172	1.758	0.414	2.568	2.091	0.156	0.053	0.714	0.391	1.891
64A_HB_GN1.3	6.155	2.179	1.845	0.334	2.711	2.080	0.146	0.079	0.725	0.389	1.840
64A_HB_GN1.4	6.190	2.104	1.810	0.294	2.762	2.131	0.150	0.064	0.808	0.417	1.908

Data from University of Alaska, Fairbanks electron microprobe, 2/4/92 & 2/18/92

GARNET PROBE DATA, SELAWIK HILLS & GRANITE MOUNTAIN

LABEL	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	Total	Na	Ca	K	Mg	Ti	Mn	Fe	Al tot	Al VI	Al IV	Si
	91RN 215 – Hunt Creek pluton nepheline syenite										CATIONS BASED ON 24 OXYGENS										
GT_215_GN4.1	0.083	0.228	3.587	34.841	0.000	32.128	4.362	0.714	22.362	98.305	0.028	6.042	0.000	0.060	0.576	0.106	3.283	0.742	0.742	0.000	6.115
GT_215_GN4.2	0.124	0.263	3.662	34.450	0.000	31.841	4.506	0.576	21.520	97.162	0.043	6.036	0.000	0.069	0.600	0.086	3.184	0.810	0.810	0.000	6.095
	91RN214 – Hunt Creek pluton nepheline syenite																				
GT_214_GN4.1	0.069	0.137	4.047	35.778	0.031	33.444	3.924	0.523	20.616	98.569	0.023	6.213	0.007	0.035	0.512	0.077	2.989	0.827	0.827	0.000	6.203
	91DNS44A – Selawik Lake complex nepheline syenite																				
GT_44A_GN2.1	0.241	0.229	2.292	34.700	0.934	33.788	6.345	0.479	21.365	100.373	0.081	6.267	0.206	0.059	0.826	0.070	3.093	0.466	0.466	0.000	6.007
GT_44A_GN2.2	0.177	0.251	1.103	35.244	0.212	33.374	3.768	0.499	23.956	98.604	0.061	6.356	0.048	0.056	0.506	0.075	3.561	0.231	0.231	0.000	6.264
GT_44A_GN1.1_EDGE	0.056	0.285	2.397	35.670	0.046	33.262	2.885	0.372	23.775	98.759	0.020	6.276	0.010	0.075	0.382	0.055	3.502	0.498	0.498	0.000	6.283
	91RN224 – Selawik Hills gneissic gt. nepheline syenite																				
GT_224_GN7.1	0.066	0.370	3.199	35.252	0.021	33.361	3.962	0.235	21.926	98.432	0.029	6.263	0.005	0.097	0.522	0.035	3.211	0.560	0.560	0.000	6.172
GT_224_GN7.2	0.105	0.444	2.866	34.885	0.000	33.258	4.647	0.320	21.629	98.154	0.036	6.262	0.000	0.116	0.614	0.048	3.178	0.594	0.594	0.000	6.130
GT_224_GN7.3	0.044	0.445	3.687	35.366	0.036	33.140	3.763	0.214	21.731	98.626	0.015	6.182	0.008	0.115	0.493	0.032	3.164	0.798	0.798	0.000	6.157
	91RN220c – Selawik Lake complex bt – gt nepheline syenite																				
220C_GT_GN3.1	0.039	0.344	1.684	33.558	0.024	32.100	5.225	0.448	23.855	97.277	0.013	5.525	0.008	0.059	0.899	0.077	4.106	0.560	0.356	0.224	5.776
220C_GT_GN3.2	0.076	0.337	1.803	32.982	0.003	31.911	4.571	0.470	23.692	95.847	0.026	6.267	0.001	0.092	0.630	0.060	3.632	0.390	0.390	0.000	6.045
220C_GT_GN3.3	0.162	0.279	1.686	33.478	0.022	31.698	5.611	0.565	23.981	97.482	0.057	6.112	0.005	0.075	0.759	0.070	3.609	0.358	0.358	0.000	6.024
220C_GT_GN5.1	0.140	0.312	1.434	32.937	0.000	32.117	6.221	0.491	23.214	96.866	0.049	6.232	0.000	0.084	0.847	0.061	3.516	0.306	0.271	0.036	5.964

Data from University of Alaska, Fairbanks electron microprobe, 2/4/92 & 2/18/92

PYROXENE PROBE DATA, SELAWIK HILLS & GRANITE MOUNTAIN

LABEL	SYM	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	Total	Si	Al tot	Al IV	Al VI	Na	Mg	K	Ca	Ti	Mn	Fe
		91DNS44a – Selawik Lake complex nepheline syenite										CATIONS BASED ON 6 OXYGENS										
CPX_44A_GN1.2_NEAR	XL1	2.179	9.555	1.596	52.770	0.018	21.253	0.023	0.735	13.800	101.929	1.983	0.071	0.017	0.053	0.159	0.535	0.001	0.856	0.001	0.023	0.434
CPX_44A_GN1.3	XL1	0.219	15.171	1.651	54.980	0.005	24.679	0.351	0.044	6.704	103.804	1.960	0.069	0.040	0.029	0.015	0.808	0.000	0.943	0.009	0.001	0.200
CPX_44A_GN1.4	XL1	0.350	14.513	1.558	54.431	1.318	25.028	0.305	0.263	5.751	103.517	1.959	0.066	0.041	0.025	0.024	0.778	0.061	0.965	0.008	0.008	0.173
CPX_44A_GN1.5	XL1	0.288	14.677	2.457	54.107	0.508	24.463	0.580	0.088	5.852	103.120	1.941	0.104	0.059	0.045	0.020	0.785	0.023	0.940	0.018	0.003	0.176
		91DNS53b – Selawik Hills complex pyx–hb syenite																				
CPX_53B_GN1.1CORE	XS1	1.940	8.489	5.617	47.875	0.052	20.794	1.936	0.357	12.726	99.986	1.833	0.263	0.167	0.095	0.144	0.484	0.003	0.853	0.056	0.012	0.407
CPX_53B_GN1.2RIM	XS1	1.924	7.556	5.464	49.521	0.000	21.664	1.722	0.367	14.865	103.083	1.853	0.241	0.147	0.094	0.140	0.421	0.000	0.868	0.048	0.012	0.485
PX_53B_GN7.1	XS7	1.732	8.853	4.630	49.509	0.000	21.579	1.199	0.271	13.281	101.054	1.878	0.207	0.124	0.083	0.127	0.500	0.000	0.878	0.034	0.009	0.421
PX_53B_GN7.2	XS7	2.053	7.250	5.782	47.833	0.057	20.771	1.217	0.324	15.053	100.350	1.843	0.263	0.157	0.107	0.153	0.416	0.003	0.858	0.035	0.011	0.485
		91RN224 – Selawik Hills gneissic gt. nepheline syenite																				
PX_224_GN4.1	Xs4	1.178	12.584	1.530	53.886	0.029	22.974	0.444	0.197	8.359	101.181	1.986	0.086	0.014	0.052	0.084	0.691	0.001	0.907	0.012	0.006	0.258
PX_224_GN4.2	Xs4	1.778	10.385	1.931	52.979	0.029	21.747	0.302	0.326	11.039	100.516	1.988	0.085	0.012	0.074	0.129	0.581	0.001	0.875	0.009	0.010	0.347
PX_224_GN6.1	Xs6	2.069	9.381	3.180	51.913	0.023	20.880	0.785	0.466	12.567	101.264	1.948	0.141	0.052	0.089	0.151	0.525	0.001	0.839	0.022	0.015	0.394
PX_224_GN6.2	Xs6	1.999	9.378	2.993	52.346	0.009	21.676	0.994	0.304	12.596	102.295	1.946	0.131	0.054	0.077	0.144	0.520	0.000	0.883	0.028	0.010	0.392
		91DNS64a – Granite Mountain pyx–hb syenite																				
64A_PX_GN4.1	XGm4	1.099	9.357	4.819	49.779	0.047	20.189	0.578	0.315	13.583	99.753	1.870	0.362	0.130	0.232	0.082	0.351	0.004	0.758	0.022	0.012	0.511
64A_PX_GN4.2	XGm4	1.176	9.481	3.290	50.315	0.000	21.760	0.347	0.477	13.996	100.844	1.910	0.250	0.090	0.159	0.089	0.360	0.000	0.826	0.013	0.018	0.531
64A_PX_GN3.1CORE?	XGm3	0.939	12.626	2.319	52.106	0.000	22.918	0.350	0.416	9.131	100.805	1.980	0.176	0.020	0.156	0.071	0.480	0.000	0.871	0.013	0.018	0.347
64A_PX_GN3.2RIM	XGm3	1.289	9.579	2.765	49.966	0.000	22.256	0.440	0.261	13.609	100.175	1.920	0.213	0.080	0.133	0.100	0.368	0.000	0.855	0.017	0.010	0.523
64A_PX_GN3.3	XGm3	1.258	10.043	2.899	51.440	0.000	22.149	0.348	0.414	12.091	100.642	1.951	0.220	0.049	0.170	0.095	0.381	0.000	0.840	0.013	0.018	0.458
64A_PX_GN6.1	XGm6	1.263	9.594	3.511	49.831	0.000	21.736	0.370	0.673	13.364	100.342	1.898	0.267	0.102	0.165	0.096	0.385	0.000	0.828	0.014	0.026	0.509
		91DNS75 – Selawik Hills complex gneissic pyx–hb syenite																				
75_PX_GN8.1	XSm8	1.269	10.236	3.419	50.898	0.009	22.115	0.743	0.359	11.720	100.568	1.915	0.258	0.085	0.173	0.096	0.387	0.001	0.835	0.028	0.014	0.443
75_PX_GN8.2	XSm8	1.367	10.069	3.504	51.087	0.000	22.003	0.677	0.427	12.251	101.415	1.914	0.262	0.086	0.176	0.102	0.377	0.000	0.825	0.025	0.016	0.459
75_PX_GN9.1	XSm9	1.246	10.488	2.530	52.292	0.000	22.052	0.023	0.294	11.896	100.821	1.983	0.192	0.017	0.175	0.095	0.398	0.000	0.836	0.001	0.011	0.451
		91GL231 – Granite Mountain quartz monzonite																				
231_PX_GN1.1	XGq1	0.737	10.573	2.387	52.262	0.000	21.781	0.070	0.892	12.419	101.221	1.981	0.181	0.019	0.161	0.056	0.404	0.000	0.825	0.003	0.034	0.471
231_PX_GN1.2	XGq1	0.694	10.875	0.836	52.431	0.011	22.915	0.000	0.569	11.989	100.340	2.037	0.065	0.000	0.065	0.053	0.422	0.001	0.890	0.000	0.023	0.466
231_PX_GN6.1	XGq6	0.853	9.903	1.119	52.772	0.004	22.764	0.046	0.620	12.830	100.911	2.030	0.086	0.000	0.086	0.066	0.381	0.000	0.878	0.002	0.024	0.494
231_PXCORE_GN13.1	XGq13	0.582	15.657	1.341	54.814	0.031	23.030	0.259	0.220	5.637	101.571	2.064	0.101	0.000	0.101	0.044	0.590	0.002	0.867	0.010	0.008	0.212
231_PX_GN13.2	XGq13	0.881	16.759	2.111	54.894	0.061	21.198	0.071	0.156	5.058	101.189	2.054	0.158	0.000	0.158	0.066	0.827	0.005	0.793	0.003	0.006	0.189
231_PX_GN12.1	XGq12	0.631	10.565	1.422	52.699	0.000	22.884	0.000	0.501	12.547	101.049	2.019	0.109	0.000	0.109	0.048	0.405	0.000	0.869	0.000	0.019	0.481

Data from University of Alaska, Fairbanks electron microprobe, 2/4/92 & 2/18/92

REPORTED STANDARD COMPOSITIONS:

STANDARD	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	F	Cl	H2O+	H2O-	Rb2O	BaO	O=F,Cl	Total
DIOPSIDE 5a (Taylor)	0.38	17.94	0.43	55.19		25.18	0.02	0.05	0.89								100.08
AUGITE, KAKANUI(USNM 122142)	1.27	16.65	8.73	50.73	0.00	15.82	0.74	0.13	6.34								100.41
PYROPE, KAKANUI(USNM 143968)		18.51	23.73	41.46		5.17	0.47	0.28	10.68								100.30
BIOTITE (R-2208)	0.13	2.83	17.65	33.09	9.04	0.10	1.30	0.04	31.40	0.23	1.11	2.92	0.04	0.10	0.09	0.34	99.73
BIOTITE-1(TAYOR LP-6)	0.09	19.35	15.30	38.33	10.03	0.21	1.67	0.11	10.36	0.26		3.53	0.13	0.03	0.22	0.07	99.55
FPHLOG		28.70	12.09	42.79	11.18					9.02					<0.02	3.80	99.98
HB-1(USNM 111356)	1.91	14.24	15.47	41.46	0.21	11.55	1.41	0.15	11.47			1.21					99.08
HB-2(USNM 143965)	2.60	12.80	14.90	40.37	2.05	10.30	4.72	0.09	10.92			0.94					99.69

ANALYZED STANDARDS:

LABEL	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	MnO	FeO	F	Cl	H2O	O=F	O=Cl	Total
DIOPSIDE5 STD(2/18/92)	0.38	17.81	0.54	56.62	0.00	25.22	0.00	0.00	1.15						101.72
DIOPSIDE5 STD(2/18/92)	0.41	18.11	0.57	55.83	0.01	25.26	0.00	0.10	0.85						101.13
DIOPSIDE5 STD(2/18/92)	0.48	17.87	0.53	55.70	0.02	24.98	0.07	0.10	1.04						100.79
DIOPSIDE5 STD(2/18/92)	0.43	17.83	0.59	55.99	0.01	25.10	0.00	0.02	1.15						101.12
DIOPSIDE5 STD(2/18/92)	0.40	17.87	0.59	56.07	0.00	24.94	0.00	0.00	0.92						100.79
AUGITE STD CHK1(2/4/92)	1.40	16.02	8.63	52.94	0.02	16.41	0.89	0.16	6.05						102.53
PYROPE STD CHK(2/18/92)	0.02	19.18	24.71	43.66	0.01	5.42	0.81	0.43	10.34						104.58
PYROPE STD CHK(2/18/92)	0.04	19.30	24.68	43.24	0.00	5.47	0.62	0.32	10.46						104.12
PYROPE STD CHK(2/18/92)	0.03	19.21	24.57	43.31	0.00	5.36	0.34	0.36	10.57						103.76
PYROPE STD CHK(2/18/92)	0.02	19.32	24.33	42.96	0.00	5.17	0.37	0.54	10.51						103.22
PYROPE STD CHK(2/18/92)	0.01	19.14	24.23	43.67	0.02	5.27	0.34	0.47	10.64						103.79
BIOTITE STD CHK1 2/4/92	0.18	2.81	17.78	34.14	9.29	0.00	1.56	0.13	31.08	0.08	1.11	3.43	-0.03	-0.25	101.29
BIOTITE STD CHK2 2/4/92	0.12	20.47	15.29	38.62	9.82	0.14	1.56	0.12	9.75	0.09	0.01	4.09	-0.04	-0.00	100.03
BIOTITE1 STD CHK1 2/4/92	0.12	19.49	14.79	38.38	10.00	0.00	1.24	0.11	9.35	0.05	0.07	4.00	-0.02	-0.02	97.56
BIOTITE1 STD CHK3 2/4/92	0.05	18.55	15.35	38.35	10.28	0.01	1.97	0.13	11.54	0.00	0.00	4.11	0.00	0.00	100.34
FPHLOG STD CHK1 2/4/92	0.00	28.65	12.12	43.18	11.16	0.00	0.12	0.03	0.00	7.57	0.03	0.38	-3.19	-0.01	100.04
FPHLOG STD CHK2 2/4/92	0.00	29.59	11.81	41.99	10.92	0.00	0.00	0.00	0.00	10.42	0.03	0.00	-4.39	-0.01	100.36
BIOTITE STD CHK 2/18/92	0.07	2.89	17.32	33.09	8.92	0.00	1.46	0.06	30.44	0.25	1.04	3.25	-0.10	-0.24	98.45
BIOTITE STD CHK 2/18/92	0.10	2.86	17.43	32.88	9.00	0.00	1.50	0.00	29.90	0.21	1.00	3.27	-0.09	-0.23	97.83
BIOTITE STD CHK 2/18/92	0.11	2.88	17.49	33.05	9.00	0.03	1.26	0.00	30.82	0.08	1.06	3.34	-0.03	-0.24	98.84
BIOTITE STD CHK 2/18/92	0.20	2.80	17.62	33.25	8.86	0.04	1.15	0.00	30.76	0.48	1.01	3.16	-0.20	-0.23	98.88
BIOTITE STD CHK 2/18/92:LAST	0.18	2.90	17.73	33.44	9.04	0.00	1.43	0.04	31.18	0.12	1.05	3.37	-0.05	-0.24	100.20
TAYLOR-BIOT1 STD CHK 2/18/92	0.08	19.60	15.32	37.96	10.09	0.04	1.57	0.12	10.20	0.19	0.06	3.97	-0.08	-0.01	99.11
TAYLOR-BIOT1 STD CHK 2/18/92	0.11	19.54	15.25	37.75	10.55	0.00	1.54	0.03	10.54	0.09	0.04	4.02	-0.04	-0.01	99.41
TAYLOR-BIOT1 STD CHK 2/18/92	0.17	19.34	15.34	38.06	10.57	0.00	1.57	0.12	11.18	0.28	0.05	3.95	-0.12	-0.01	100.48
TAYLOR-BIOT1 STD CHK 2/18/92	0.13	19.32	15.18	37.73	10.33	0.02	1.24	0.14	10.26	0.37	0.01	3.85	-0.16	-0.00	98.41
TAYLOR-BIOT1 STD CHK 2/18/92	0.20	20.17	15.52	38.63	10.20	0.00	1.54	0.17	10.23	0.00	0.00	4.16	0.00	0.00	100.81
BIOTITE STD 2/18/92	0.17	2.91	18.03	33.65	8.99	0.00	1.45	0.01	30.78	0.52	1.17	3.15	-0.22	-0.26	100.36
BIOTITE STD 2/18/92	0.14	2.95	17.68	33.73	8.89	0.00	1.21	0.02	30.05	0.00	1.19	3.37	0.00	-0.27	98.97
BIOT1 STD CHK 2/18/92	0.10	19.56	15.49	38.58	10.07	0.00	1.84	0.13	9.81	0.14	0.01	4.05	-0.06	-0.00	99.70
BIOT1 STD CHK 2/18/92	0.12	19.77	15.39	38.77	9.88	0.05	1.65	0.09	10.17	0.00	0.03	4.13	0.00	-0.01	100.04
BIOT1 STD CHK1 2/18/92	0.21	19.95	15.69	38.33	10.04	0.00	1.22	0.12	10.99	0.27	0.05	3.99	-0.12	-0.01	100.72
BIOT1 STD CHK2 2/18/92	0.04	19.87	15.57	38.22	9.87	0.00	1.40	0.34	10.57	0.00	0.02	4.11	0.00	-0.00	100.00
BIOTITE STD CHK 2/18/92	0.14	2.83	17.40	33.74	8.82	0.00	1.37	0.18	30.51	0.00	1.09	3.40	0.00	-0.25	99.22
BIOTITE STD CHK 2/18/92	0.11	2.84	17.55	32.90	8.70	0.00	1.41	0.04	30.29	0.29	1.17	3.19	-0.12	-0.26	98.11
HB1 STD CHK1 (2/4/92)	2.25	14.73	14.82	43.83	0.22	12.05	1.49	0.13	11.42	0.00	0.00	2.12	0.00	0.00	105.54
HB2 STD CHK1 (2/4/92)	2.59	12.62	14.60	41.40	2.19	10.40	5.43	0.02	10.46	0.00	0.01	2.08	0.00	-0.00	106.58
HB2 STD CHK2 (2/4/92)	2.74	13.17	14.89	41.69	2.08	10.39	5.26	0.04	10.99	0.19	0.02	2.01	-0.08	-0.00	108.20
HB1 STD postCHK(2/18/92)	2.21	15.23	14.83	42.06	0.21	11.77	1.56	0.15	11.74	0.05	0.01	2.06	-0.02	-0.00	104.27
HB1 STD postCHK	2.15	15.04	14.68	41.78	0.22	11.79	1.26	0.15	11.35	0.05	0.01	2.04	-0.02	-0.00	102.85
HB1 STD postCHK	2.24	14.96	14.84	41.79	0.19	11.71	0.99	0.07	11.59	0.18	0.00	1.97	-0.08	0.00	102.85
HB1 STD postCHK	2.39	14.79	14.67	42.69	0.26	11.40	1.47	0.28	11.33	0.00	0.03	2.08	0.00	-0.01	104.03
HB1 STD postCHK:LAST	2.16	15.02	14.94	41.92	0.22	11.46	0.90	0.24	11.87	0.09	0.03	2.02	-0.04	-0.01	103.18
HB2 STD postchk	2.84	13.21	14.72	41.18	2.21	10.30	5.10	0.00	10.82	0.14	0.01	2.01	-0.06	-0.00	107.53
HB2 STD postchk	2.65	13.25	14.82	40.76	2.20	10.22	4.95	0.02	10.68	0.00	0.01	2.07	0.00	-0.00	106.46
HB2 STD postchk	2.64	13.30	14.67	40.68	2.04	10.03	5.47	0.02	11.49	0.37	0.00	1.90	-0.16	0.00	107.11
HB2 STD postchk	2.51	13.17	14.84	40.48	2.12	10.23	5.67	0.17	11.29	0.00	0.04	2.07	0.00	-0.01	107.20
HB2 STD postchk	2.74	13.15	14.67	40.56	2.15	10.11	4.56	0.05	11.12	0.05	0.00	2.03	-0.02	0.00	106.05
HB1 STD preCHK1(2/18/92)	2.16	15.14	14.40	42.05	0.21	11.69	1.24	0.18	11.88	0.00	0.00	2.07	0.00	0.00	103.38
HB1 STD preCHK2	2.19	15.10	14.66	42.16	0.19	11.46	1.81	0.34	11.27	0.00	0.05	2.07	0.00	-0.01	103.65
HB2 STD preCHK	2.49	13.49	14.35	40.02	2.11	10.53	4.93	0.00	10.20	0.05	0.03	2.01	-0.02	-0.01	104.77
HB2 STD preCHK	2.57	13.25	14.66	39.96	2.07	10.08	4.83	0.15	10.71	0.33	0.03	1.87	-0.14	-0.01	104.99

Data from University of Alaska, Fairbanks electron microprobe, 2/4/92 & 2/18/92