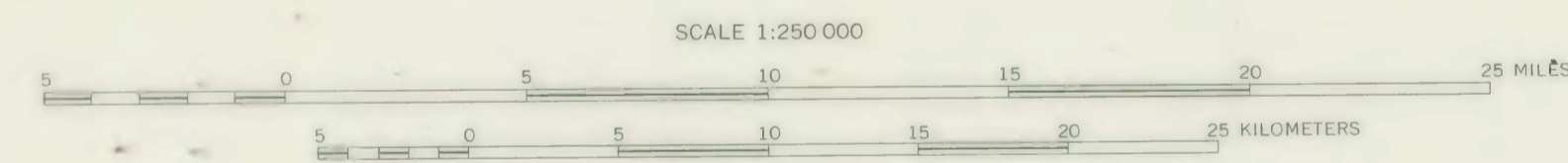


Base from USGS 1:250,000 Topo Series: CHIGNIK
SUTWIK ISLAND, 1963, 200' contour interval ALASKA.
Compiled by Menlo Base Map Section (11-77)(38-28) Detterman.

Scale 1:250,000



Appendix 4.--Chemical and normative data for analyzed igneous rocks

	Meskik volcanic rocks				Eocene-Oligocene intrusions				Miscellaneous igneous rocks				Late Tertiary igneous rocks							Granite cobble Chignik Formation							
	78AMS-31	78AMS-32	78AMS-58	78AMS-61	77AMS-30	77AMS-40	77AMS-74	78AMS-17	78AMS-24	78AMS-42	77AMS-122	77AMS-137	77AMS-01	78AMS-98	77AMS-09	77AMS-12	77AMS-100	77AMS-112b	77AMS-125	77AMS-134	77AMS-152	77AMS-190b	77AMS-215	77AMS-186			
SiO ₂	55.54	52.21	57.49	61.58	59.17	50.02	59.80	47.14	54.11	58.19	64.74	66.60	55.54	49.57	56.89	51.89	67.54	49.28	57.62	62.77	59.17	57.28	62.20	68.93			
Al ₂ O ₃	18.45	15.88	16.66	16.48	17.64	16.15	15.40	17.11	17.47	17.53	16.18	16.12	17.56	16.53	17.08	17.39	15.49	18.14	18.76	16.54	17.05	18.17	16.55	16.37			
FeO	3.43	2.90	4.26	4.03	3.68	5.12	2.82	1.64	1.33	3.07	2.47	1.85	3.71	2.64	3.78	2.99	1.84	2.96	3.84	3.04	3.57	1.41	3.62	.88			
MgO	3.39	4.33	2.87	1.54	2.32	6.18	1.76	7.01	4.72	3.08	2.12	2.36	5.00	7.18	3.76	6.89	2.73	7.93	4.00	2.56	3.28	5.26	2.90	1.48			
MnO	4.34	7.84	3.30	1.96	2.71	4.42	2.05	7.01	5.80	3.05	1.74	1.88	3.98	5.65	4.08	5.05	1.62	6.21	2.39	2.21	3.09	3.08	2.23	.90			
CaO	7.98	8.81	6.65	5.51	6.54	8.07	5.46	8.74	6.04	5.16	4.37	4.04	8.28	9.77	7.12	9.32	4.42	10.58	6.75	5.22	6.33	6.63	5.44	3.06			
Na ₂ O	3.23	2.64	2.93	3.31	3.69	2.75	2.47	3.22	5.08	4.50	3.93	3.73	3.10	2.41	3.58	3.17	3.57	3.01	3.95	3.48	3.29	3.67	3.58	5.17			
K ₂ O	1.21	.93	1.44	1.20	1.12	1.19	2.65	.49	.71	1.65	1.37	1.99	.61	.15	1.72	1.01	2.19	.62	1.52	1.71	1.27	1.24	1.43	1.17			
TiO ₂	.75	.69	.80	.59	.52	.83	.53	.96	.87	.75	.53	.65	.95	1.45	.98	1.23	.53	1.09	.77	.51	.66	.69	.59	.28			
P ₂ O ₅	.14	.16	.19	.13	.23	.21	.21	.11	.17	.26	.15	.17	.32	.15	.25	.34	.10	.34	.23	.16	.19	.28	.19	.06			
MdO	.13	.14	.08	.07	.13	.21	.09	.55	.11	.10	.08	.03	.17	.15	.13	.17	.08	.18	.11	.11	.08	.14	.09	.04			
H ₂ O ⁺	.33	.81	1.01	.92	1.22	2.83	2.18	3.08	1.26	1.35	.86	.97	1.68	2.07	.48	.50	.53	.27	.58	1.24	.78	2.32	.82	.74			
H ₂ O ⁻	.61	1.20	1.37	2.07	.60	.56	.98	.29	.21	.12	.13	.11	.16	.41	1.10	.62	.07	.51	.10	.36	.46	.25	.20	.16			
CO ₂	.05	1.10	.80	.21	.69	.34	3.51	2.09	.20	.05	.08	.06	.17	1.23	.09	.12	.06	.06	.06	.16	.17	.23	.06	.23			
TOTAL	98.58	99.64	99.85	99.60	100.26	100.88	99.91	99.44	98.68	98.86	98.75	100.55	101.23	99.36	101.04	100.69	100.77	101.18	100.67	100.07	99.39	100.65	99.50	99.47			
NORMATIVE MINERALS:																											
Quartz	9.24	4.21	17.42	24.25	16.70	4.60	23.17		10.42		25.00	25.50	11.66	5.17	9.54	2.17	25.86		10.69	21.34	17.39	10.29	20.96		25.83		
Orthoclase	7.15	5.69	8.80	7.36	6.77	7.24	16.79	3.08	4.32	10.02	8.28	11.76	3.60	.93	10.16	5.97	12.94	3.66	6.98	10.10	7.66	7.49	8.45		6.91		
Albite	27.33	23.14	25.65	29.05	31.94	23.95	22.41	28.97	44.22	39.12	34.01	31.56	26.23	21.32	30.29	26.82	30.21	25.07	33.42	29.44	26.41	31.73	30.29		43.74		
Anorthite	32.27	29.77	29.02	27.47	28.91	34.65	24.78	32.74	23.42	23.38	21.17	18.03	32.20	35.36	25.45	30.24	19.77	34.15	28.97	24.46	26.58	30.09	24.86		14.79		
Dioptase	2.67	6.02	1.60		1.15	2.15	1.17	5.26	4.32	.49				5.96	3.44		.63	6.73	1.26	.16	.92	.69	.37				
Dioptase-wollastonite	.44	1.05	.09		.08	.73	.04	1.92	1.23	.10			.88	2.20	.60	2.21	.24	2.63	.41	.03	.18	.34	.07				
Ferrosillite	1.98	4.40	1.31		.93	1.30	.98	3.08	2.80	.35			1.78	3.48	2.52	3.29	.36	3.61	.78	.12	.66	.34	.26				
Hypersthene-enstatite	1.96	3.79	.51		.53	5.59	.17	2.46	3.88	2.03	1.32	1.79	3.99	7.10	1.81	6.25	2.52	3.59	2.70	1.52	1.99	7.44	1.46		1.60		
Hypersthene-ferrosillite	8.83	15.82	7.19	5.06	5.98	10.03	4.49	3.95	7.71	7.45	4.43	4.68	8.13	11.23	7.64	9.29	3.76	5.21	5.17	5.39	7.20	7.50	5.29		2.24		
Olivine																											
Magnetite	4.97	4.36	6.39	3.61	5.46	7.64	4.39	2.53	1.98	4.57	3.66	2.68	5.38	4.00	5.48	4.34	2.67	4.29	5.57	4.41	5.28	2.09	5.25		1.28		
Ilmenite	1.42	1.36	1.57	1.16	1.01	1.62	1.08	1.94	1.70	1.46	1.03	1.23	1.80	2.88	1.86	2.34	1.01	2.07	1.46	.97	1.28	1.34	1.12		.53		
Apatite	.32	.30	.46	.31	.54	.50	.52	.27	.40	.62	.36	.39	.74	.36	.58	.79	.23	.78	.53	.37	.45	.66	.44		.14		
Hematite				1.69																							
TOTAL	98.59	100.00*	100.00*	100.00*	100.00*	100.00*	100.01*	100.00*	100.00*	100.00*	100.00*	99.42	99.22	100.00*	99.37	99.45	100.11	100.34	99.94	98.31	100.00*	100.00*	98.82		98.34		

*Chemical constituents normalized before norm calculation.

Analysts: XRF, P. Bristow, S.R. Morgan; FeO, H₂O, CO₂, M.J. Cremer, S.T. Neill.