

TABLE 1 - REPRESENTATIVE ANALYSES FROM THE ELQUI COMPLEX

SAMPLE	GUANTA			MONTOSA			
	EV-GU	RBT289	HC211	AC484B	AC481	AC494B	AC441
SiO ₂	58.11	59.72	62.60	64.64	67.70	69.70	73.18
TiO ₂	0.72	1.47	0.38	0.62	0.55	0.45	0.25
Al ₂ O ₃	18.42	15.98	15.21	16.74	15.28	14.68	14.00
Fe ₂ O ₃	-	3.15	2.20	2.13	2.02	1.48	0.97
FeO	6.77	4.28	3.38	2.52	2.21	1.90	0.77
\$[FeO*	6.77	6.96	5.34	4.28	3.94	3.14	1.47]
MnO	0.17	0.12	0.12	0.10	0.09	0.09	0.05
MgO	4.05	2.06	2.97	1.54	1.41	1.13	0.51
CaO	5.02	4.84	5.26	4.22	3.90	2.97	1.30
Na ₂ O	3.88	4.10	3.17	4.23	4.04	3.79	3.68
K ₂ O	2.54	2.98	2.57	1.69	1.60	2.47	4.19
P ₂ O ₅	-	0.39	0.12	0.18	0.17	0.12	0.06
H ₂ O ⁺	-	0.99	1.56	1.08	1.26	1.02	1.06
H ₂ O ⁻	-	0.09	-	-	-	-	-
CO ₂	-	0.18	0.08	0.11	0.09	0.09	0.16
S	-	0.01	0.04	0.01	0.01	0.01	0.01
C	-	0.01	0.02	0.02	0.04	0.01	0.01
Total	99.68	100.37	99.68	99.83	100.37	99.91	100.20
La	21.3	50.2	32.8	13.6	24.0	33.7	34.8
Ce	51.8	115.8	63.8	39.4	52.2	70.3	68.8
Nd	27.1	64.2	30.8	-	26.8	31.9	21.1
Sm	6.28	12.2	6.68	5.45	4.70	5.70	2.77
Eu	1.12	2.17	0.834	1.29	1.11	1.03	0.689
Tb	1.06	1.53	1.01	0.754	0.617	0.823	0.281
Yb	3.76	4.52	3.80	2.56	2.13	2.41	1.06
Lu	0.513	0.636	0.537	0.339	0.296	0.356	0.155
Rb	90	130	122	72	84	92	126
Sr	271	320	209	310	266	245	190
Ba	699	924	371	657	427	1044	879
Cs	2.7	3.7	9.1	2.0	3.0	2.3	2.2
U	1.6	3.6	3.8	1.7	1.6	1.8	1.2
Th	4.7	19.6	9.4	4.1	7.0	8.6	10.5
Hf	3.5	15.5	3.0	5.6	4.8	4.8	2.5
Ta	0.8	1.4	0.9	0.7	0.7	0.8	0.5
Sc	2.5	17.7	22.4	13.5	10.8	8.6	2.9
Cr	58	12	44	5	5	6	2
Ni	18	17	9	3	4	5	-
Co	21	204	-	-	-	-	-
RATIOS							
FeO/MgO	1.7	3.5	1.8	2.9	2.9	2.9	3.2
Na ₂ O/K ₂ O	1.5	1.4	1.2	2.5	2.5	1.5	0.88
Al ₂ O ₃ /	1.01	0.85	0.87	1.02	0.99	1.03	1.08
(Na ₂ O+K ₂ O+CaO)molar							
La/Sm	3.4	4.1	4.9	2.5	5.1	5.9	12.6
La/Yb	5.7	11.1	8.6	5.3	11.3	14.0	32.9
Eu/Eu*	0.54	0.60	0.40	0.77	0.78	0.58	0.90
Ba/La	32.9	18.4	11.3	48.3	17.8	31.0	25.2
Th/U	3.0	5.4	2.5	2.4	4.3	4.8	8.7
Rb/Sr	0.33	0.41	0.58	0.23	0.32	0.38	0.66

\$ - Total Fe as FeO determined from INAA analyses.

Notes for Tables 1 to 4:

Sample locations shown on Figure 2 in paper. Major elements, volatiles, Rb and Sr for all samples except EV-GU analyzed at SERGOMIN in Santiago, Chile. See Nasi and others (1985) for techniques. Major elements for EV-GU done by electron microprobe analyses of fused glass at Cornell University. Trace element analyses determined by Instrumental Neutron Activation Analyses (INAA) at Ward Laboratory, Cornell University. Analytical techniques and standard values for Cornell analyses discussed by Kay et al. (1987). Na rather than Fe was used as internal flux monitor for concentration levels of elements determined by INAA (see discussion in Kay et al. 1987). FeO* (total Fe as FeO) as determined by INAA is shown for comparison.

TABLE 2 - REPRESENTATIVE ANALYSES FROM THE ELQUI COMPLEX

SAMPLE	COCHIGUAS				EL VOLCAN		
	HC221	HC219	NBT599	RBT276	HC20	HC191 /	HC29
SiO ₂	72.43	72.58	73.31	74.48	69.71	72.81	75.79
TiO ₂	0.18	0.14	0.07	0.25	0.26	0.33	0.17
Al ₂ O ₃	15.21	14.92	14.81	13.26	15.62	13.41	12.63
Fe ₂ O ₃	0.44	0.62	0.62	0.45	1.31	0.39	0.52
FeO	1.02	1.32	0.57	0.80	2.11	2.41	1.14
\$[FeO*	1.41	1.63	1.03	1.30	3.07	2.73	1.44]
MnO	0.06	0.04	0.03	0.03	0.04	0.06	0.04
MgO	0.44	0.48	0.15	0.32	0.55	0.49	0.20
CaO	2.07	2.38	0.81	1.62	2.32	2.14	1.28
Na ₂ O	3.60	3.11	3.73	3.33	3.83	2.53	2.35
K ₂ O	3.43	3.35	4.53	4.11	2.53	4.21	4.75
P ₂ O ₅	0.11	0.11	0.15	0.05	0.12	0.10	0.06
H ₂ O ⁺	0.71	1.04	0.87	0.74	1.60	0.93	0.79
H ₂ O ⁻	0.12	-	0.06	0.10	-	0.10	0.22
CO ₂	0.01	0.01	0.15	0.18	0.04	0.01	0.01
S	0.01	0.01	0.01	0.01	0.01	0.01	0.05
C	0.13	0.05	0.02	0.01	0.05	0.04	0.01
Total	99.97	100.16	99.89	99.74	100.10	99.97	100.01
La	20.5	24.1	10.3	34.9	36.4	27.6	21.8
Ce	39.4	47.7	21.5	68.8	68.1	55.7	51.9
Nd	16.5	20.3	8.5	27.0	29.6	23.9	25.9
Sm	3.04	3.54	2.50	5.60	5.44	5.55	5.67
Eu	0.664	0.955	0.492	0.834	1.02	0.855	0.561
Tb	0.315	0.287	0.391	0.942	0.737	0.835	1.061
Yb	0.86	0.64	0.89	4.70	2.38	2.31	3.88
Lu	0.108	0.081	0.117	0.672	0.339	0.321	0.533
Rb	136	117	200	196	124	146	209
Sr	240	300	89	120	250	94	74
Ba	611	1394	382	877	747	674	421
Cs	5.1	3.8	1.6	8.2	6.4	8.0	5.3
U	0.9	0.7	1.2	4.2	1.4	1.7	2.4
Th	5.9	7.8	3.7	20.1	14.5	9.7	11.7
Hf	2.4	3.1	1.7	4.9	7.1	4.0	2.7
Ta	0.8	0.6	0.9	2.4	0.7	0.9	1.1
Sc	2.5	3.0	2.5	6.1	9.7	5.8	5.5
Cr	1	5	24	16	5	75	4
Ni	1	1	2	7	4	6	-
Co	1.3	-	0.7	-	-	4.1	1.7
RATIOS							
FeO/MgO	3.2	3.9	7.5	3.0	6.0	5.6	8.0
Na ₂ O/K ₂ O	1.1	0.93	0.82	0.81	1.5	0.60	0.50
Al ₂ O ₃ / (Na ₂ O+K ₂ O+CaO)molar	1.14	1.14	1.18		1.18	1.06	1.11
La/Sm	6.7	6.8	4.1	6.2	6.7	5.0	3.9
La/Yb	23.9	37.9	11.6	7.4	15.3	11.9	5.6
Eu/Eu*	0.78	1.05	0.62	0.46	0.61	0.49	0.29
Ba/La	29.8	57.9	37.0	25.2	20.5	24.4	19.2
Th/U	6.2	10.5	3.1	4.8	10.1	5.7	4.8
Rb/Sr	0.57	0.39	2.25	1.63	0.50	1.55	2.82

\$ - Total Fe as FeO determined from INAA analyses.

TABLE 3 - REPRESENTATIVE ANALYSES FROM THE INGAGUAS COMPLEX

SAMPLE	LOS CARRICITOS					CHOLLAY			
	AC305	RBT296A	HC227	HC86	AC9	AC42	AC336	NBT107	IS1
SiO ₂	66.49	67.73	68.74	69.28	69.59	67.20	68.48	73.00	74.84
TiO ₂	0.40	0.43	0.29	0.25	0.43	0.52	0.42	0.23	0.22
Al ₂ O ₃	16.60	15.51	15.60	16.08	14.90	16.57	15.98	14.22	12.90
Fe ₂ O ₃	1.89	1.18	1.29	1.32	1.63	1.68	1.51	1.06	0.65
FeO	1.93	1.79	2.02	1.78	1.58	1.51	1.39	0.76	0.70
§[FeO*	3.30	2.79	3.13	2.70	2.71	2.73	2.74	1.64	1.27]
MnO	0.08	0.05	0.06	0.05	0.06	0.08	0.08	0.09	0.06
MgO	1.46	1.46	1.11	1.10	1.18	1.03	0.91	0.65	0.38
CaO	4.28	4.32	3.76	3.16	2.99	2.97	2.67	0.95	1.23
Na ₂ O	4.07	3.88	3.34	3.64	3.64	4.66	4.11	4.22	3.96
K ₂ O	1.59	1.86	2.00	2.18	3.07	2.83	3.51	3.82	3.78
P ₂ O ₅	0.12	0.12	0.16	0.14	0.12	0.19	0.12	0.11	0.05
H ₂ O ⁺	0.90	0.86	1.66	0.94	1.16	0.98	0.84	0.89	0.44
H ₂ O ⁻	-	0.12	-	-	-	-	-	0.06	0.12
CO ₂	0.08	0.22	0.08	0.05	0.12	0.11	0.09	0.12	0.18
S	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C	0.01	0.01	0.06	0.06	0.02	0.05	0.01	0.01	0.01
Total	99.91	99.55	100.18	100.03	100.50	100.37	100.13	100.20	99.53
La	17.1	20.1	27.1	19.7	19.7	26.2	56.3	22.5	24.4
Ce	35.2	36.7	56.0	41.6	39.2	52.5	104.2	49.8	49.6
Nd	16.0	0.0	21.2	22.1	14.4	24.8	36.6	20.1	18.6
Sm	3.13	2.93	3.40	3.62	2.57	4.49	5.96	4.47	4.22
Eu	0.817	0.754	0.892	0.809	0.728	1.15	0.910	0.487	0.423
Tb	0.380	0.402	0.336	0.403	0.358	0.640	0.762	0.690	0.684
Yb	1.13	1.30	0.73	1.09	1.45	2.98	2.71	3.02	2.77
Lu	0.155	0.183	0.095	0.151	0.214	0.420	0.366	0.432	0.409
Rb	38	59	73	79	92	80	132	250	232
Sr	352	420	240	428	220	276	214	137	100
Ba	561	622	759	668	790	939	1531	505	377
Cs	1.2	1.7	1.8	7.0	1.3	1.5	1.8	8.3	5.0
U	0.4	1.0	0.7	0.9	1.6	0.7	2.2	2.8	2.0
Th	3.3	6.9	5.6	5.9	8.6	5.2	10.9	14.6	17.5
Hf	2.8	3.7	3.9	3.2	3.8	6.3	4.6	3.2	2.9
Ta	0.3	0.5	0.6	0.5	0.5	0.7	1.0	1.3	1.6
Sc	6.6	7.9	4.3	5.8	6.9	6.3	7.4	6.2	5.5
Cr	9	27	9	10	9	6	4	19	25
Ni	7	19	2	9	4	-	3	1	16
Co	-	-	5.6	-	-	-	-	1.8	-
RATIOS									
FeO/MgO	2.5	2.0	2.9	2.7	2.6	2.9	3.0	2.6	3.4
Na ₂ O/K ₂ O	2.6	2.1	1.7	1.7	1.2	1.7	1.2	1.1	1.1
Al ₂ O ₃ /(Na ₂ O+K ₂ O+CaO) ^{molar}	1.03	0.95	1.08	1.14	1.01	1.03	1.04	1.11	1.01
La/Sm	5.5	6.9	8.0	5.4	7.7	5.8	9.5	5.4	5.8
La/Yb	15.1	15.4	37.2	15.1	13.5	8.8	20.8	7.5	8.8
Eu/Eu*	0.89	0.84	0.96	0.78	0.92	0.82	0.51	0.34	0.31
Ba/La	32.8	31.0	28.0	33.9	40.1	35.8	27.2	22.4	15.5
Th/U	8.4	7.0	8.1	6.5	5.3	7.4	4.9	5.2	8.9
Rb/Sr	0.11	0.14	0.30	0.18	0.42	0.29	0.62	1.82	2.32

§ - Total Fe as FeO determined from INAA analyses.

TABLE 4 - REPRESENTATIVE ANALYSES FROM THE INGAGUAS COMPLEX

SAMPLE	EL LEON					EL COLORADO			
	AC402	AC335	RAC322	HC48	HC7	AC361	HC178	AC36	NBT390
SiO ₂	72.85	73.32	75.10	76.07	78.65	75.20	76.50	77.51	77.52
TiO ₂	0.25	0.30	0.13	0.17	0.05	0.13	0.12	0.08	0.08
Al ₂ O ₃	14.34	13.62	13.73	12.82	11.77	13.32	12.54	11.81	11.96
Fe ₂ O ₃	1.30	1.46	0.59	0.43	0.34	0.82	1.28	0.82	0.65
FeO	0.77	0.73	0.49	0.64	0.54	0.18	0.20	0.46	0.21
\$[FeO*	1.73	1.78	0.92	1.28	0.83	0.84	1.29	1.13	0.88]
MnO	0.05	0.06	0.04	0.05	0.05	0.04	0.01	0.01	0.04
MgO	0.43	0.64	0.25	0.17	0.05	0.13	0.02	0.05	0.07
CaO	0.94	0.92	0.73	0.58	0.43	0.53	0.11	0.08	0.32
Na ₂ O	4.62	3.98	4.08	4.14	3.68	3.88	3.96	4.30	3.72
K ₂ O	3.64	3.88	3.74	4.06	3.88	4.77	4.30	4.18	4.52
P ₂ O ₅	0.06	0.09	0.04	0.05	0.03	0.04	0.04	0.04	0.06
H ₂ O ⁺	0.70	0.94	0.68	0.53	0.64	0.56	0.54	0.40	0.35
H ₂ O ⁻	-	-	-	0.16	-	-	-	-	0.05
CO ₂	0.20	0.35	0.21	0.01	0.04	0.09	0.08	0.09	0.09
S	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
C	0.01	0.04	0.01	0.10	0.08	0.03	0.13	0.04	0.10
Total	100.17	100.33	99.83	99.99	100.24	99.73	99.84	99.88	99.75
La	35.9	20.8	20.7	29.0	18.6	24.7	41.1	34.0	29.6
Ce	75.3	47.5	42.5	69.0	42.9	52.2	92.2	76.9	65.5
Nd	31.5	23.2	19.4	27.8	20.9	20.3	40.5	34.1	31.1
Sm	6.56	3.98	3.03	6.63	5.90	4.78	8.88	7.63	6.50
Eu	0.889	0.737	0.571	0.402	0.157	0.540	1.13	0.162	0.508
Tb	1.10	0.497	0.417	1.16	0.970	0.783	1.15	1.30	1.18
Yb	3.94	1.96	1.70	3.72	3.48	3.66	4.97	5.52	4.37
Lu	0.565	0.272	0.248	0.503	0.480	0.542	0.699	0.760	0.600
Rb	164	163	137	-	185	222	182	160	185
Sr	128	148	96	-	23	63	65	15	23
Ba	682	869	841	390	170	544	916	189	515
Cs	2.9	2.1	2.3	3.2	5.1	4.6	3.3	0.6	4.9
U	1.9	3.3	2.0	1.8	3.1	2.7	2.8	3.5	2.8
Th	17.0	10.3	9.0	13.8	17.2	21.8	17.0	14.2	16.6
Hf	6.3	4.1	2.6	5.8	3.1	2.8	7.2	7.6	4.2
Ta	1.4	0.7	1.1	1.2	1.4	1.4	1.1	1.9	1.5
Sc	5.3	4.2	2.7	2.7	3.5	4.2	5.3	3.3	4.5
Cr	4	3	7	2	5	2	2	2	28
Ni	2	1	1	1	<1	4	4	<1	3
Co	-	-	-	0.9	-	-	-	-	0.3
RATIOS									
FeO/MgO	4.5	3.2	4.1	6.1	17.0	7.1	67.5	24.0	11.4
Na ₂ O/K ₂ O	1.3	1.0	1.1	1.0	0.95	0.81	0.92	1.0	0.82
Al ₂ O ₃ /	1.08	1.10	1.14	0.20	1.07	1.07	1.10	1.01	1.03
(Na ₂ O+K ₂ O+CaO)molar									
La/Sm	5.5	5.2	6.9	4.4	3.2	5.2	4.6	4.5	4.6
La/Yb	9.1	10.6	12.2	7.8	5.3	6.7	8.3	6.2	6.8
Eu/Eu*	0.41	0.63	0.62	0.18	0.08	0.35	0.42	0.06	0.23
Ba/La	19.0	41.8	40.6	13.5	9.1	22.0	22.3	5.6	17.4
Th/U	8.9	3.1	4.6	7.5	5.6	8.2	6.1	4.1	6.0
Rb/Sr	1.28	1.10	1.43	-	8.04	3.52	2.80	10.67	8.04

\$ - Total Fe as FeO determined from INAA analyses.