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Title of article Mid-Cenozoic high-K calc-alkalic and alkalic volcanism in eastern Chihuahua, Mexico: Geology and geochemistry of the Benavides-Pozos area

Author(s) Richard Gunderson, Kenneth Cameron, Maryellen Cameron

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Appendix : Escobillas Andesites-1

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	PZ-216	PZ-217	PZ-106	PZ-117	PZ-102	PZ-103	PZ-37
SiO2	53.85	58.02	59.13	59.68	60.29	62.48	62.73
TiO2	2.31	2.14	1.84	1.85	1.80	1.47	1.52
Al2O3	16.80	15.11	15.29	15.66	14.86	15.93	15.06
Fe2O3	1.63	1.52	1.37	1.34	1.30	1.00	1.11
FeO	8.17	7.60	6.85	6.68	6.52	4.99	5.56
MnO	.08	.13	.17	.12	.14	.11	.13
MgO	3.77	2.52	2.64	2.57	2.62	1.34	1.70
CaO	6.66	5.16	5.03	5.20	4.76	3.78	3.91
Na2O	3.88	3.80	3.90	3.99	3.60	4.10	3.93
K2O	2.36	3.54	3.33	2.48	3.71	4.28	3.98
P2O5	.47	.46	.44	.42	.40	.51	.36
LOI	3.25	1.80	.48	1.83	1.48	2.05	1.52
Orig. Tot.	100.02	99.55	100.44	99.78	100.84	100.92	100.13
Na2O+K2O	6.24	7.34	7.23	6.47	7.31	8.38	7.91
K/Na	.40	.61	.56	.41	.68	.69	.67
K+Na/Al	.53	.67	.66	.59	.67	.71	.72
Th	.	.	10.4	9.0	10.2	12.4	12.7
Pb	.	.	20.0	14.0	18.0	19.0	21.0
Rb	40.	96.	95.	81.	109.	117.	126.
Ba	.	.	729.	.	792.	.	.
Sr	504.	388.	397.	372.	369.	349.	329.
La	.	.	45.	.	50.	.	.
Ce	.	.	95.	.	103.	.	.
Nd	.	.	48.	.	50.	.	.
Y	42.	43.	49.	50.	46.	56.	57.
Nb	27.	28.	28.	29.	31.	36.	32.
Zr	361.	334.	349.	386.	361.	496.	384.
V	.	.	174.	.	159.	.	.
Cr	.	.	7.	.	8.	.	.
Ni	22.	9.	12.	17.	14.	7.	10.
K/Rb	489.	306.	291.	254.	283.	304.	262.
Rb/Sr	.079	.247	.239	.218	.295	.335	.383
La/Y	--	--	.9	--	1.1	--	--
Zr/Nb	13.4	11.9	12.5	13.3	11.6	13.8	12.0
Nb/Y	.64	.65	.57	.58	.67	.64	.56
Ba/La	--	--	.16.	--	16.	--	--
La/Nb	--	--	1.61	--	1.61	--	--
La/Th	--	--	4.3	--	4.9	--	--
Ti/V	--	--	56.	--	60.	--	--

Appendix 3: Escobillas Andesite-2, Charcos Dacite, RVT

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	PZ-31	PZ-33	-- PZ-110	PZ-111	-- PZ-23
SIO2	63.73	66.24	66.91	67.77	69.34
TIO2	1.07	1.00	.82	.78	.59
AI203	16.41	14.63	15.27	14.49	15.50
Fe203	.81	.79	.67	.64	.45
FeO	4.07	3.97	3.34	3.18	2.26
MnO	.14	.10	.09	.09	.10
MgO	1.45	1.59	1.11	.73	.72
CaO	3.18	2.95	2.84	2.29	1.62
Na2O	4.49	3.61	3.83	3.74	4.35
K2O	4.31	4.84	4.86	6.01	4.89
P205	.34	.27	.26	.27	.17
LOI	1.13	2.69	3.91	1.10	3.09
Orig. Tot.	99.12	100.04	100.94	100.40	101.65
Na2O+K2O	8.80	8.45	8.69	9.75	9.25
K/Na	.63	.88	.84	1.06	.74
K+Na/AI	.73	.76	.76	.87	.80
Th	11.9	16.9	15.2	15.3	15.1
Pb	23.0	29.0	31.0	29.0	33.0
Rb	126.	184.	185.	195.	175.
Ba	1290.	799.	1046.	.	.
Sr	456.	246.	389.	200.	189.
La	65.	62.	62.	.	.
Ce	130.	120.	122.	.	.
Nd	61.	53.	53.	.	.
Y	52.	52.	50.	54.	54.
Nb	43.	34.	34.	35.	48.
Zr	538.	407.	514.	494.	516.
V	28.	62.	34.	.	.
Cr	3.	6.	5.	.	.
NI	3.	3.	10.	14.	.
K/Rb	284.	218.	218.	256.	232.
Rb/Sr	.276	.748	.476	.975	.926
La/Y	1.3	1.2	1.2	--	--
Zr/Nb	12.5	12.0	15.1	14.1	10.8
Nb/Y	.83	.65	.68	.65	.89
Ba/La	20.	13.	17.	--	--
La/Nb	1.51	1.82	1.82	--	--
La/Th	5.5	3.7	4.1	--	--

Appendix 3: San Carlos Tuff

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	M336	M346	M344	M341
SiO2	74.12	74.69	75.41	76.78
TIO2	.25	.24	.27	.21
Al203	13.51	12.85	13.04	11.71
Fe203	.32	.32	.35	.27
FeO	1.61	1.62	1.73	1.36
MnO	.04	.04	.03	.03
MgO	.26	.11	.22	.11
CaO	.72	.67	.40	.75
Na2O	4.08	3.92	3.03	3.73
K2O	5.03	5.51	5.46	5.02
P205	.05	.03	.05	.03
LOI	1.23	.84	1.27	1.29
Orig. Tot.	101.61	101.74	100.48	101.27
Na2O+K2O	9.11	9.43	9.23	8.74
K/Na	.81	.92	.94	.89
K+Na/Al	.90	.97	.94	.99
Th	22.3	23.9	23.6	31.1
Pb	52.0	42.0	54.0	46.0
Rb	221.	262.	256.	285.
Ba	.	459.	.	.
Sr	110.	74.	55.	36.
La	.	66.	.	.
Ce	.	132.	.	.
Nd	.	53.	.	.
Y	54.	56.	74.	66.
Nb	46.	51.	63.	61.
Zr	214.	293.	348.	250.
V	.	12.	.	.
Cr	.	5.	.	.
Ni	.	.	1.	.
K/Rb	189.	175.	176.	146.
Rb/Sr	2.009	3.541	4.655	7.917
La/Y	--	1.2	--	--
Zr/Nb	4.7	5.7	5.5	4.1
Nb/Y	.85	.91	.85	.92
Ba/La	--	7.	--	--
La/Nb	--	1.29	--	--
La/Th	--	2.8	--	--

Appendix 3: Santana Tuff

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	M356	951	M358	M357	953	4021	561
SiO2	76.09	75.44	75.48	75.71	76.03	76.23	76.29
TiO2	.15	.16	.14	.14	.17	.14	.16
Al2O3	12.49	12.52	12.29	12.47	12.14	12.20	12.05
Fe2O3	.29	.31	.29	.29	.31	.29	.30
FeO	1.47	1.55	1.44	1.47	1.53	1.46	1.49
MnO	.05	.05	.05	.05	.05	.04	.05
MgO	.19	.24	.08	.03	.09	.04	.27
CaO	.66	1.18	.83	.88	.62	.81	.68
Na2O	3.91	3.32	4.52	4.34	3.43	3.50	3.59
K2O	4.70	5.20	4.88	4.60	5.61	5.27	5.10
P2O5	.01	.02	.01	.01	.02	.01	.02
LOI	3.66	3.80	.90	3.50	1.11	4.16	--
Orig. Tot.	101.11	101.19	101.99	96.60	101.19	100.10	96.93
Na2O+K2O	8.32	8.53	9.40	8.94	9.04	8.77	8.69
K/Na	.86	1.03	.71	.70	1.07	.99	.94
K+Na/Al	.88	.89	1.04	.97	.96	.94	.95
Th	31.9	28.6	32.3	31.3	30.8	.	31.4
Pb	33.0	33.0	26.0	33.0	27.0	.	21.0
Rb	246.	255.	238.	259.	259.	237.	229.
Ba	.	88.	40.	.	.	.	.
Sr	13.	31.	28.	46.	34.	46.	22.
La	.	81.	85.	.	.	.	.
Ce	.	159.	173.	.	.	.	.
Nd	.	64.	70.	.	.	.	.
Y	83.	63.	60.	59.	58.	76.	58.
Nb	117.	88.	95.	.	82.	99.	88.
Zr	402.	352.	366.	.	334.	367.	369.
V	.	5.	7.	.	.	.	.
Cr	.	5.	4.	.	.	.	.
Ni	.	.	.	.	.	.	.
K/Rb	159.	169.	170.	148.	180.	185.	185.
Rb/Sr	18.923	8.226	8.500	5.630	7.618	5.152	10.409
La/Y	--	1.3	1.4	--	--	--	--
Zr/Nb	3.4	4.0	3.9	--	4.1	3.7	4.2
Nb/Y	1.41	1.40	1.58	--	1.41	1.30	1.52
Ba/La	--	1.	.	--	--	--	--
La/Nb	--	.92	.89	--	--	--	--
La/Th	--	2.8	2.6	--	--	--	--

Appendix 3: Rawls Formation, Bofecillos Mts., West Texas

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	BM-10	BM-6	BM-5	1048	1049
SIO2	46.84	48.69	48.89	57.01	48.02
TIO2	2.71	2.40	2.43	1.74	3.27
Al203	16.33	16.98	16.92	17.23	16.86
Fe203	1.24	1.09	1.09	.79	1.34
FeO	10.36	9.08	9.05	6.58	11.17
MnO	.18	.16	.16	.16	.18
MgO	7.03	6.65	6.50	1.89	4.33
CaO	9.01	8.03	8.29	4.63	8.55
Na20	4.17	3.83	4.20	5.23	3.88
K20	1.25	2.28	1.69	4.07	1.76
P205	.89	.81	.80	.65	.64
LOI	2.39	2.27	2.46	--	--
Orig. Tot.	100.22	99.88	99.85	99.99	100.00
Na20+K20	5.42	6.11	5.89	9.30	5.64
K/Na	.20	.39	.26	.51	.30
K+Na/Al	.50	.52	.52	.76	.49
Th	.	.	.	.	.
Pb	.	.	.	.	.
Rb	34.	46.	64.	103.	31.
Ba	.	.	770.	.	.
Sr	1155.	1047.	1117.	530.	893.
La	.	.	37.	.	.
Ce	.	.	78.	.	.
Nd	.	.	37.	.	.
Y	28.	26.	27.	59.	31.
Nb	68.	67.	68.	123.	49.
Zr	212.	221.	227.	713.	248.
V	.	.	160.	.	.
Cr	.	.	120.	.	.
NI	80.	86.	90.	.	18.
K/Rb	305.	411.	219.	328.	470.
Rb/Sr	.029	.044	.057	.194	.035
La/Y	--	--	1.4	--	--
Zr/Nb	3.1	3.3	3.3	5.8	5.1
Nb/Y	2.43	2.58	2.52	2.08	1.58
Ba/La	--	--	21.	--	--
La/Nb	--	--	.54	--	--
La/Th	--	--	--	--	--
TI/V	--	--	79.	--	--

Appendix 3: Miscellaneous Intrusions, Basalts, Texas and Chihuahua

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	BB-1	BB-2	MNB-1	8203	8204	M359
SiO2	44.44	44.34	46.47	47.13	46.37	50.47
TiO2	1.83	1.84	2.20	2.23	2.20	2.28
Al2O3	14.16	14.17	15.79	16.22	15.92	16.17
Fe2O3	1.20	1.19	1.11	1.02	1.07	1.19
FeO	9.96	9.91	9.25	8.53	8.90	9.95
MnO	.19	.19	.18	.16	.16	.18
MgO	10.99	11.03	9.03	8.56	9.35	5.18
CaO	12.20	12.30	10.35	9.47	9.92	9.10
Na2O	3.70	3.29	4.14	4.05	4.19	3.57
K2O	.69	1.08	.85	2.00	1.35	1.48
P2O5	.65	.66	.63	.62	.58	.41
LOI	1.80	2.02	.85	1.07	1.14	.83
Orig. Tot.	100.08	100.25	98.98	99.94	99.46	101.89
Na2O+K2O	4.39	4.37	4.99	6.05	5.54	5.05
K/Na	.12	.22	.14	.32	.21	.27
K+Na/Al	.48	.46	.49	.54	.52	.46
Th	.	.	.	.	.	5.6
Pb	.	.	.	.	.	6.0
Rb	53.	26.	36.	43.	25.	26.
Ba	465.	.	693.	555.	.	505.
Sr	1050.	1092.	960.	811.	775.	567.
La	36.	.	50.	40.	.	30.
Ce	72.	.	96.	75.	.	62.
Nd	44.	.	41.	34.	.	33.
Y	30.	29.	26.	27.	28.	29.
Nb	20.	19.	81.	67.	65.	20.
Zr	167.	168.	242.	222.	209.	206.
V	297.	.	217.	192.	.	260.
Cr	403.	.	230.	230.	.	38.
Ni	153.	155.	157.	190.	228.	13.
K/Rb	108.	345.	197.	386.	447.	473.
Rb/Sr	.050	.024	.038	.053	.032	.005
La/Y	1.2	--	1.9	1.5	--	1.0
Zr/Nb	8.4	8.8	3.0	3.3	3.2	10.3
Nb/Y	.67	.66	3.12	2.48	2.32	.69
Ba/La	13.	--	14.	14.	--	17.
La/Nb	1.80	--	.62	.60	--	1.50
La/Th	--	--	--	--	--	5.4

Appendix 3: Miscellaneous Basaltic Rocks, Benavides-Pozos

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	PZ-51	PZ-233	PZ-112	SA-82	SA-98	SA-47
SiO2	51.01	47.66	47.12	52.25	45.80	47.31
TiO2	2.13	2.40	3.15	1.11	2.99	4.48
Al2O3	16.41	17.21	15.49	14.52	19.36	14.95
Fe2O3	1.15	1.29	1.49	1.05	1.07	1.51
FeO	9.56	10.72	12.39	8.73	8.93	12.61
MnO	.19	.16	.25	.19	.17	.22
MgO	5.47	6.61	4.91	8.23	4.37	5.28
CaO	8.27	9.38	9.24	9.72	11.39	7.84
Na2O	3.68	3.43	3.75	2.59	3.86	3.14
K2O	1.62	.70	1.31	1.29	1.06	1.48
P2O5	.50	.44	.92	.33	1.01	1.16
LOI	1.28	2.66	1.25	3.00	2.82	4.12
Orig. Tot.	100.05	101.35	99.83	100.71	99.91	100.55
Na2O+K2O	5.30	4.13	5.06	3.89	4.92	4.63
K/Na	.29	.13	.23	.33	.18	.31
K+Na/Al	.48	.37	.49	.39	.39	.45
Th	2.3	.	1.6	.4	1.6	4.5
Pb	6.8	.	5.4	5.7	4.4	5.9
Rb	31.	10.	20.	29.	16.	34.
Ba	652.	.	630.	.	265.	306.
Sr	580.	678.	638.	886.	1433.	949.
La	35.	.	31.	.	35.	34.
Ce	75.	.	74.	.	77.	82.
Nd	40.	.	45.	.	42.	46.
Y	39.	26.	44.	22.	24.	33.
Nb	19.	17.	30.	7.	28.	18.
Zr	280.	166.	240.	128.	176.	225.
V	233.	.	261.	.	176.	264.
Cr	16.	.	15.	.	22.	4.
Ni	48.	40.	28.	.	16.	1.
K/Rb	433.	579.	542.	370.	552.	362.
Rb/Sr	.053	.015	.031	.033	.011	.036
La/Y	.9	--	.7	--	1.5	1.0
Zr/Nb	14.7	9.8	8.0	18.3	6.3	12.5
Nb/Y	.49	.65	.68	.32	1.17	.55
Ba/La	19.	--	20.	--	8.	9.
La/Nb	1.84	--	1.03	--	1.25	1.89
La/Th	15.2	--	19.4	--	21.9	7.6
Ti/V	48.	--	63.	--	90.	89.

Appendix 3: Chisos Fm. Basalts- Big Bend Nat. Park, Bofecillos Mtns.

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	BB-4	559	BM-1	560	BM-4	BB-5	556
SIO2	56.08	55.77	53.78	51.08	51.24	54.41	50.94
TIO2	1.99	1.93	2.46	1.59	1.60	2.57	2.88
AI2O3	17.99	17.76	15.03	17.67	17.62	14.96	15.62
Fe2O3	.80	.84	1.16	1.04	1.04	1.17	1.34
FeO	6.65	6.98	9.64	8.67	8.68	9.74	11.17
MnO	.23	.22	.21	.13	.14	.17	.17
MgO	2.48	2.13	2.20	6.17	6.18	2.97	3.82
CaO	4.78	4.85	7.64	8.59	8.37	7.14	7.81
Na2O	4.57	5.54	4.14	3.63	3.76	3.78	3.40
K2O	3.73	3.24	2.64	1.05	1.06	2.61	2.21
P2O5	.71	.73	1.11	.37	.32	.47	.64
LOI	4.06	--	2.55	--	2.42	1.19	--
Orig. Tot	100.03	96.37	99.81	98.78	100.49	100.19	96.98
Na2O+K2O	8.29	8.78	6.78	4.68	4.82	6.39	5.62
K/Na	.54	.38	.42	.19	.19	.46	.43
K+Na/Al	.64	.71	.64	.40	.42	.60	.51
Th	.	.	.	.	.	.	.
Pb	.	.	.	.	.	.	.
Rb	62.	58.	53.	28.	30.	62.	57.
Ba	751.	728.	642.	.	363.	638.	.
Sr	931.	719.	620.	509.	504.	505.	539.
La	58.	62.	52.	.	23.	36.	.
Ce	122.	126.	117.	.	43.	80.	.
Nd	62.	62.	64.	.	25.	42.	.
Y	49.	40.	56.	30.	34.	43.	36.
Nb	84.	72.	41.	14.	12.	25.	24.
Zr	552.	537.	371.	187.	200.	312.	312.
V	36.	33.	89.	.	174.	293.	.
Cr	1.3	1.2	1.5	.	30.0	6.7	.
NI	4.	2.	6.	55.	56.	7.	10.
K/Rb	499.	464.	413.	312.	293.	350.	322.
Rb/Sr	.067	.081	.085	.055	.060	.123	.106
La/Y	1.2	1.5	.9	--	.7	.8	--
Zr/Nb	6.6	7.5	9.0	13.4	16.7	12.5	13.0
Nb/Y	1.71	1.80	.73	.47	.35	.58	.67
Ba/La	13.	12.	12.	--	16.	18.	--
La/Nb	.69	.86	1.27	--	1.92	1.44	--
La/Th	--	--	--	--	--	--	--

Appendix 3: El Matadero Formation

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	PZ-42	SA-43	PZ-83	M321	SA-18	SA-102	SA-40
SIO2	47.05	47.03	49.01	50.28	54.78	71.93	74.42
TIO2	3.42	2.75	2.12	1.71	1.55	.39	.42
AI203	16.82	19.65	17.08	17.73	16.91	14.40	12.77
Fe203	1.37	1.17	1.17	1.15	.99	.17	.19
FeO	11.44	9.79	9.77	9.56	8.24	1.45	1.60
MnO	.26	.21	.18	.14	.17	.05	.03
MgO	5.35	5.14	7.11	6.41	4.70	.29	.13
CaO	9.26	9.76	8.53	8.73	7.29	.86	1.05
Na20	3.06	3.13	3.57	3.43	3.74	3.94	3.45
K20	1.33	.90	1.07	.57	1.24	6.46	5.86
P205	.65	.46	.39	.30	.38	.06	.07
LOI	3.78	4.95	2.30	2.72	2.20	1.52	1.49
Orig. Tot.	100.50	101.50	100.75	101.80	99.63	99.79	99.39
Na20+K20	4.39	4.03	4.64	4.00	4.98	10.41	9.31
K/Na	.29	.19	.20	.11	.22	1.08	1.12
K+Na/AI	.38	.31	.41	.35	.44	.94	.94
Th	2.2	.9	.8	.5	3.6	19.6	13.5
Pb	5.4	2.1	5.0	4.8	11.0	32.0	25.0
Rb	22.	12.	16.	9.	62.	215.	187.
Ba	288.	274.	.	270.	608.	790.	.
Sr	777.	831.	685.	439.	544.	43.	79.
La	31.	23.	.	15.	28.	65.	.
Ce	68.	51.	.	34.	64.	136.	.
Nd	40.	27.	.	22.	34.	59.	.
Y	34.	18.	29.	23.	40.	61.	55.
Nb	35.	25.	18.	9.	16.	41.	33.
Zr	272.	179.	200.	150.	243.	454.	501.
V	276.	264.	.	205.	185.	10.	.
Cr	5.6	16.6	.	27.0	22.0	4.9	.
NI	12.	23.	65.	63.	36.	3.	2.
K/Rb	502.	623.	554.	527.	166.	250.	260.
Rb/Sr	.028	.014	.023	.021	.114	5.000	2.367
La/Y	.9	1.3	--	.7	.7	1.1	--
Zr/Nb	7.8	7.2	11.1	16.7	15.2	11.1	15.2
Nb/Y	1.03	1.39	.62	.39	.40	.67	.60
Ba/La	9.	12.	--	18.	22.	12.	--
La/Nb	.89	.92	--	1.67	1.75	1.59	--
La/Th	14.1	25.6	--	30.0	7.8	3.3	--
Ti/V	65.	55.	--	44.	44.	203.	--

Appendix 3: El Ranchito Formation-1

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	PZ-126	PZ-98	PZ-127	PZ-8	PZ-29	PZ-24	PZ-131
SiO2	64.03	65.89	66.64	67.11	67.15	67.34	67.70
TiO2	.84	.80	.62	.58	.58	.58	.54
Al2O3	17.38	16.49	15.82	15.99	16.02	15.95	15.95
Fe2O3	.74	.72	.62	.60	.71	.61	.58
FeO	3.72	3.62	3.12	3.02	3.57	3.06	2.92
MnO	.08	.10	.13	.08	.05	.11	.11
MgO	.47	.36	.74	.56	.37	.38	.33
CaO	2.29	2.01	2.51	1.74	1.12	1.41	1.42
Na2O	4.93	4.67	4.07	4.35	4.51	4.69	4.45
K2O	5.23	5.08	5.56	5.83	5.75	5.72	5.86
P2O5	.29	.27	.17	.14	.15	.14	.14
LOI	1.50	.81	1.03	1.87	.94	1.10	1.04
Orig. Tot.	99.30	99.25	101.00	99.55	99.27	99.86	100.26
Na2O+K2O	10.15	9.75	9.63	10.18	10.26	10.41	10.31
K/Na	.70	.72	.90	.88	.84	.80	.87
K+Na/Al	.79	.80	.80	.84	.85	.87	.86
Th	8.0	10.2	10.7	12.4	12.6	11.9	11.3
Pb	22.0	27.0	21.0	27.0	28.0	34.0	37.0
Rb	110.	114.	137.	134.	136.	144.	147.
Ba	.	.	.	.	1290.	890.	913.
Sr	336.	270.	182.	183.	165.	165.	150.
La	.	.	.	.	67.	69.	70.
Ce	.	.	.	.	126.	134.	141.
Nd	.	.	.	.	61.	66.	65.
Y	51.	65.	56.	52.	57.	61.	60.
Nb	36.	39.	39.	43.	42.	45.	36.
Zr	1036.	900.	866.	734.	809.	760.	692.
V	.	.	.	.	15.4	16.4	11.6
Cr	.	.	.	.	4.7	3.7	4.2
Ni	2.	.	.	.	.	.	.
K/Rb	394.	370.	337.	361.	351.	330.	331.
Rb/Sr	.327	.422	.753	.732	.824	.873	.980
La/Y	--	--	--	--	1.2	1.1	1.2
Zr/Nb	29.3	23.1	22.2	17.1	19.3	16.9	19.2
Nb/Y	.71	.60	.70	.83	.74	.74	.60
Ba/La	--	--	--	--	19.	13.	13.
La/Nb	--	--	--	--	1.60	1.53	1.94
La/Th	--	--	--	--	5.3	5.8	6.2

Appendix 3: El Ranchito Formation-2, Cerro Rhyolite

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	PZ-7	PZ-26	PZ-125 ¶	PZ-213	PZ-210	PZ-214	PZ-100
SiO2	68.31	69.38	70.78	71.99	72.73	72.81	73.41
TiO2	.57	.52	.44	.48	.43	.44	.40
Al2O3	15.70	15.34	14.65	14.04	13.90	14.12	13.40
Fe2O3	.60	.53	.45	.42	.39	.40	.36
FeO	2.98	2.66	2.24	2.12	1.97	2.00	1.82
MnO	.08	.07	.08	.05	.04	.05	.03
MgO	.48	.32	.52	.72	.48	.83	.41
CaO	1.18	1.30	1.34	1.87	1.62	2.16	.89
Na2O	4.23	4.08	3.99	3.68	3.80	3.84	3.36
K2O	5.72	5.62	5.38	4.53	4.53	3.26	5.81
P2O5	.14	.17	.12	.09	.09	.10	.11
LOI	1.69	1.18	.80	4.15	3.25	5.74	1.19
Orig. Tot.	99.31	99.94	100.03	100.05	100.20	100.49	100.06
Na2O+K2O	9.96	9.70	9.38	8.20	8.33	7.10	9.17
K/Na	.89	.91	.89	.81	.78	.56	1.14
K+Na/Al	.84	.83	.85	.78	.80	.70	.88
Th	13.2	15.4	16.8	.	.	.	21.5
Pb	25.0	30.0	19.0	.	.	.	29.0
Rb	143.	162.	167.	232.	272.	183.	214.
Ba	1007.	921.	1023.	614.	.	.	.
Sr	162.	161.	180.	197.	148.	328.	116.
La	73.	70.	64.	62.	.	.	.
Ce	140.	141.	124.	128.	.	.	.
Nd	72.	62.	52.	52.	.	.	.
Y	61.	55.	54.	51.	51.	51.	52.
Nb	44.	41.	33.	32.	32.	32.	32.
Zr	742.	574.	503.	298.	280.	287.	276.
V	12.	18.	10.	21.	.	.	.
Cr	4.	4.	4.	4.	.	.	.
Ni	2.	.	.	.	.	.	.
K/Rb	332.	288.	268.	162.	138.	148.	225.
Rb/Sr	.883	1.006	.928	1.178	1.838	.558	1.845
La/Y	1.2	1.3	1.2	1.2	--	--	--
Zr/Nb	16.9	14.0	15.2	9.3	8.8	9.0	8.6
Nb/Y	.72	.75	.61	.63	.63	.63	.62
Ba/La	14.	13.	16.	10.	--	--	--
La/Nb	1.66	1.71	1.94	1.94	--	--	--
La/Th	5.5	4.5	3.8	--	--	--	--

Appendix 3: San Antonio Dacites

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	M330	PZ-56	M329	SA-99	SA-96	M325	PZ-201
SiO2	66.41	66.12	66.16	66.36	66.43	66.51	67.09
TiO2	.92	.91	.93	.97	.93	.94	.96
Al2O3	14.95	14.92	14.97	14.85	14.95	14.88	15.34
Fe2O3	.85	.86	.88	.87	.85	.88	.89
FeO	4.27	4.29	4.40	4.34	4.23	4.41	4.45
MnO	.12	.14	.11	.13	.12	.13	.08
MgO	1.04	1.07	.91	1.05	1.04	1.00	.29
CaO	2.68	2.62	2.88	2.67	2.59	2.99	2.25
Na2O	3.77	3.72	3.90	3.79	3.47	3.88	3.63
K2O	4.70	5.01	4.58	4.67	5.07	4.09	4.72
P2O5	.29	.35	.29	.31	.31	.29	.31
LOI	2.26	1.85	1.61	1.88	2.09	3.24	3.20
Orig. Tot.	100.90	100.55	99.37	100.27	99.34	101.96	100.74
Na2O+K2O	8.46	8.72	8.48	8.46	8.54	7.97	8.35
K/Na	.82	.89	.77	.81	.96	.69	.86
K+Na/Al	.75	.77	.76	.76	.75	.73	.72
Th	15.3	.	16.3	15.0	15.1	15.5	.
Pb	38.0	.	37.0	35.0	38.0	35.0	.
Rb	188.	178.	171.	230.	176.	220.	316.
Ba	.	.	1149.	.	1139.	1129.	.
Sr	262.	264.	229.	247.	262.	240.	277.
La	.	.	68.	.	68.	68.	.
Ce	.	.	139.	.	136.	136.	.
Nd	.	.	66.	.	65.	66.	.
Y	64.	64.	57.	60.	61.	60.	62.
Nb	44.	41.	42.	45.	47.	45.	40.
Zr	550.	570.	485.	537.	559.	505.	548.
V	.	.	32.	.	29.	34.	.
Cr	.	.	5.	.	5.	7.	.
Ni	1.	.	4.	.	.	3.	.
K/Rb	207.	234.	223.	168.	239.	154.	124.
Rb/Sr	.718	.674	.747	.931	.672	.917	1.141
La/Y	--	--	1.2	--	1.1	1.1	--
Zr/Nb	12.5	13.9	11.5	11.9	11.9	11.2	13.7
Nb/Y	.69	.64	.74	.75	.77	.75	.65
Ba/La	--	--	17.	--	17.	17.	--
La/Nb	--	--	1.62	--	1.45	1.51	--
La/Th	--	--	4.2	--	4.5	4.4	--

Appendix 3: La Cuesta Tuff

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	M331	M327	PZ-61	PZ-93	M326	PZ-77	PZ-92
SIO2	73.67	74.39	74.37	74.70	74.69	75.38	76.20
TIO2	.29	.27	.26	.26	.23	.22	.21
Al2O3	13.31	13.27	13.15	13.00	12.92	12.70	12.52
Fe2O3	.28	.29	.29	.28	.25	.25	.24
FeO	1.42	1.45	1.44	1.40	1.26	1.25	1.20
MnO	.04	.05	.05	.03	.05	.05	.04
MgO	.21	.33	.27	.31	.11	.29	.80
CaO	1.04	.75	.97	.94	1.17	.83	.63
Na2O	3.37	3.09	3.71	3.45	3.54	3.63	2.44
K2O	6.28	6.06	5.42	5.56	5.74	5.32	5.66
P2O5	.09	.03	.08	.06	.04	.08	.05
LOI	.89	1.36	.56	1.26	.90	.60	3.55
Orig. Tot.	100.52	100.09	99.99	100.10	101.60	100.00	99.91
Na2O+K2O	9.88	9.65	9.13	9.01	9.28	8.95	8.11
K/Na	1.14	1.09	.96	1.06	1.07	.97	1.53
K+Na/Al	.96	.95	.91	.90	.93	.92	.81
Th	23.6	26.0	26.1	25.1	29.1	29.2	25.6
Pb	42.0	42.0	40.0	31.0	31.0	49.0	78.0
Rb	272.	236.	225.	223.	250.	246.	237.
Ba	.	403.	.	.	.	.	.
Sr	93.	109.	87.	93.	67.	56.	62.
La	.	76.	.	.	.	.	.
Ce	.	155.	.	.	.	.	.
Nd	.	56.	.	.	.	.	.
Y	59.	57.	58.	58.	47.	60.	54.
Nb	39.	43.	36.	35.	30.	37.	34.
Zr	273.	288.	251.	251.	233.	227.	187.
V	.	14.	.	.	.	.	.
Cr	.	5.	.	.	.	.	.
Ni	.	.	.	.	.	.	.
K/Rb	191.	212.	200.	207.	191.	180.	198.
Rb/Sr	2.925	2.165	2.586	2.398	3.731	4.393	3.823
La/Y	--	1.3	--	--	--	--	--
Zr/Nb	7.0	6.7	7.0	7.2	7.8	6.1	5.5
Nb/Y	.66	.75	.62	.60	.64	.62	.63
Ba/La	--	5.	--	--	--	--	--
La/Nb	--	1.77	--	--	--	--	--
La/Th	--	2.9	--	--	--	--	--

Appendix 3: La Cuesta Tuff, etc.

* * ANALYSES RECALCULATED TO 100% ANHYDROUS * *

	PZ-240	PZ-52	PZ-94	PZ-94gl	PZ-94fs	PZ-94hb
SIO2	62.01	78.96	73.44			
TIO2	1.43	.23	.31			
AI203	17.03	9.48	13.54			
Fe203	.78	.26	.30			
FeO	3.89	1.32	1.52			
MnO	.07	.10	.04			
MgO	1.22	.26	.22			
CaO	3.36	1.54	.93			
Na2O	5.07	3.32	3.54			
K2O	4.46	4.47	6.07			
P205	.68	.07	.08			
LOI	1.46	2.65	1.89			
Orig. Tot.	99.57	100.21	100.00			
Na2O+K2O	9.53	7.78	9.62			
K/Na	.58	.89	1.13			
K+Na/Al	.77	1.08	.92			
Th	.	27.1	26.3	.	.	.
Pb	.	20.0	46.0	.	.	.
Rb	152.	234.	190.	215.	87.	11.
Ba	.	76.	455.	.	.	.
Sr	486.	36.	96.	42.	368.	21.
La	.	34.	73.	.	.	.
Ce	.	73.	156.	.	.	.
Nd	.	26.	58.	.	.	.
Y	64.	87.	53.	52.	0.6	404.
Nb	50.	87.	38.	36.	1.6	74.
Zr	476.	473.	297.	177.	35.	72.
V	.	8.	8.	.	.	.
Cr	.	5.	4.	.	.	.
Ni	.	.	.	.	.	.
K/Rb	244.	158.	265.	.	.	.
Rb/Sr	.313	6.500	1.979	5.119	.236	.524
La/Y	--	.4	1.4	--	--	--
Zr/Nb	9.5	5.4	7.8	5.0	21.9	1.0
Nb/Y	.78	1.00	.72	.68	2.67	.18
Ba/La	--	2.	6.	--	--	--
La/Nb	--	.39	1.92	--	--	--
La/Th	--	1.3	2.8	--	--	--