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Title of article Reconnaissance geochemistry of the Lassiter Coast Intrusive Suite, southern Antarctic Peninsula

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For Geological Society of America Data Bank

Table A1. Chemical data for plutonic rocks from the southern Antarctic Peninsula

Rock type	Gb	Di	Di	Di	Qd	Di	Qgb	Di	Di	Qmd
Pluton name	L	JS	EW	S	M	C	SJ	SP	NL	W
Sample no.	Ro40a	Ro45b	V84b	W176a	Ro501g	Ke3g	By28b	F1a	S9a	Ke41c
	Chemical analyses, in weight percent									
SiO_2------	41.9	42.1	45.9	46.2	47.06	47.1	47.43	47.5	48.4	50.7
Al_2O_3-----	19.7	21.3	20.3	19.0	18.61	19.9	12.99	19.9	18.5	18.2
Fe_2O_3-----	6.2	5.4	3.5	3.1	5.10	4.4	5.36	1.3	4.4	2.7
FeO-------	7.2	6.2	7.6	8.1	6.19	6.3	9.07	7.2	5.9	6.8
MgO-------	6.1	4.9	4.1	5.1	5.04	6.3	8.33	5.6	3.4	3.8
CaO-------	13.9	14.9	13.1	11.7	9.94	11.9	11.56	11.0	12.6	9.8
Na_2O------	1.3	1.4	2.8	2.1	2.68	2.7	1.33	2.3	2.7	2.8
K_2O-------	0.43	0.30	0.43	1.3	2.08	0.29	0.98	1.6	0.56	2.5
H_2O^+------	1.3	1.1	0.97	1.4	1.33	0.72	0.73	1.6	0.94	1.2
H_2O^- -----	0.11	0.09	0.03	0.04		0.15		0.08		0.07
TiO_2------	1.1	1.0	1.2	0.92	1.26	0.80	1.33	1.6	1.5	1.0
P_2O_5------	0.52	0.85	0.72	0.87	0.47	0.46	0.20	0.13	0.21	0.68
MnO-------	0.21	0.20	0.21	0.22	0.19	0.15	0.24	0.12	0.23	0.14
CO_2-------	<0.05	<0.05	0.05	<0.05	n.d.	0.09	n.d.	<0.05	n.d.	0.03
Total	100.0	99.7	100.9	100.1	99.9	101.3	99.5	99.9	99.3	100.4

Semiquantitative spectographic analyses, in parts per million										
Ba--------	90	72	72	358	500	104	200	192	200	780
Be--------	N	N	L	N	N	L	N	N	1	L
Ce--------	N	N	L	N	N	L	N	N	N	L
Co--------	30	18	11	21	20	39	30	30	30	28
Cr--------	9	N	L	18	7	36	70	88	30	27
Cu--------	13	11	19	22	150	23	150	L	15	53
Ga--------	9	10	7	14	30	7	15	10	15	12
La--------	N	N	L	N	N	L	N	N	N	L
Mn--------	1740	1610	2360	1910	1000	1890	1000	1230	2100	2050
Mo--------	2	1	3	3	N	3	N	N	7	5
Nb--------	N	N	L	N	10	L	N	N	N	L
Nd--------	N	34	L	N	L	L	n.d.	N	N	L
Ni--------	11	2	1	14	7	20	30	38	30	17
Pb--------	3	1	3	3	N	2	N	7	5	6
Pr--------	4	6	7	4	n.d.	L	n.d.	N	N	11
Sc--------	21	18	11	>32	30	41	30	43	200	25
Sn--------	N	N	L	N	n.d.	L	n.d.	4	N	3
Sr--------	580	615	850	630	1000	490	500	370	1000	1230
V---------	>215	110	97	>210	200	260	200	174	200	225
Y---------	7	10	11	18	30	9	15	13	20	14
Yb--------	1	2	1	2	3	2	2	2	2	2
Zn--------	95	83	77	114	n.d.	103	n.d.	68	n.d.	88
Zr--------	16	17	15	16	50	16	20	61	30	16

CIPW norms, in weight percent										
Or--------	2.54	1.78	2.52	7.68	12.30	1.69	5.82	9.46	3.33	14.71
Ab--------	11.00	11.88	20.97	17.76	22.69	22.56	11.31	19.41	23.00	23.59
An--------	46.66	51.08	41.12	38.56	32.62	40.81	26.70	39.28	36.95	29.58
Ne--------	••	••	1.36	••	••	••	••	0.04	••	••
Q---------	••	••	••	••	••	••	0.92	••	2.02	••
Di--------	15.26	14.11	15.06	11.35	11.00	11.27	23.97	11.84	20.03	11.74
Hy--------	1.27	0.81	••	5.76	0.07	5.67	19.75	••	3.95	9.55
Fo--------	6.45	4.92	4.39	4.67	6.17	5.45	••	7.34	••	1.05
Fa--------	3.12	2.51	4.48	4.54	2.94	2.64	••	5.68	••	1.08
Mt--------	8.99	7.85	5.03	4.49	7.40	6.30	7.81	1.89	6.42	3.90
Il--------	2.09	1.90	2.26	1.75	2.39	1.50	2.54	3.04	2.87	1.89
Ap--------	1.23	2.02	1.69	2.06	1.11	1.08	0.48	0.31	0.50	1.60

Selected chemical parameters										
ASI--------	0.71	0.72	0.70	0.73	0.75	0.75	0.53	0.78	0.66	0.72
$Fe^{3+}/Fe^{2+} + Fe^{3+}$	0.46	0.47	0.31	0.28	0.45	0.41	0.37	0.15	0.43	0.28

Sample no.	Ro40a	Ro45b	V84b	W176a	Ro501g	Ke3g	By28b	F1a	S9a	Ke41c
Modes, in volume percent										
Plagioclase	42.6	66.8	56.4	53.6	46.1	51.2	27.4	69.0	64.1	43.0
K-Feldspar--	••	••	0.4	Tr.	••	••	0.3	••	3.9	11.0
Quartz------	••	••	0.2	Tr.	3.2	0.2	1.5	••	1.2	2.4
Amphibole---	48.8	14.8	40.2	28.0	5.2	37.6	22.8	••	12.2	3.0
Biotite-----	••	0.4	••	15.4	19.0	••	6.2	1.8	0.6	7.4
Pyroxene----	4.0	14.0	2.4	1.6	18.7	6.4	36.4	24.0	13.4	19.2
Opaques-----	3.6	4.0	0.2	1.4	4.8	3.4	4.4	4.0	3.0	1.8
Apatite-----	••	••	0.2	••	0.1	0.8	••	Tr.	••	0.6
Sphene------	Tr.	••	••	••	••	••	••	••	Tr.	••
Chlorite----	0.2	••	Tr.	••	1.8	0.4	1.0	••	0.8	11.6
Epidote-----	0.8	••	Tr.	••	1.0	••	••	1.2	0.8	••
Zircon------	••	••	••	••	0.1	••	••	••	••	••

Note: Rapid-rock chemical analyses by Gillison Chloe, Paul Elmore, J. L. Glenn, D. Hopping, James Kelsey, J. Riviello, and Hezekiah Smith. Methods used are described by Shapiro and Brannock (1962) and are supplemented by atomic absorption. Six-step semiquantitative spectrographic analyses by J. D. Fletcher, J. C. Hamilton, and J. L. Harris. N, not detected or at limit of detection; L, detected, but below limit of determination; n.d., not determined; ••, not present; Tr., trace amount present (<0.1 percent); ASI, aluminum saturation index, mol. (Al_2O_3/ (Na_2O + CaO + K_2O)]. Underlined number shows total H_2O. Not detected or at limit of determination for all samples: Ag, As, Au, B, Bi, Cd, Cs, Dy, Er, Eu, Gd, Ge, Hf, Hg, Ho, In, Ir, Li, Lu, Os, Pd, Pt, Rb, Re, Rh, Ru, Sb, Sm, Ta, Tb, Te, Th, Tl, Tm, U, and W. Rock types: Ap, aplite; Di, diorite; Gb, gabbro; Gr, granite; Grd, granodiorite; M, monzonite; Md, monzodiorite; Qd, quartz diorite; Qgb, quartz gabbro; Qm, quartz monzonite; Qmd, quartz monzodiorite; Ton, tonalite. Pluton names: L, Laudon; JS, Johnson Spur, EW, east Wegener; S, Squires; M, Merrick; C, Coman; SJ, south Jenkins, SP, southwest Playfair; NL, north Latady; W, Werner.

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Table A2.

Rock type	Qd	Grd	Qd	Di	Di	Qd	Qmd	Qd	Di	Qd
Pluton name	NL	J	W	W	A	W	NL	M	W	G
Sample no.	$S2d_1$	Ro410a	V39f	Ka225	Ro297a	V39c	S2a	V177a	Ro241a	Ro304a
Chemical analyses, in weight percent										
SiO_2------	50.8	51.05	51.1	51.5	51.7	51.9	53.0	53.22	53.4	53.4
Al_2O_3-----	18.0	18.03	21.2	16.5	19.0	14.5	18.0	18.41	19.9	18.3
Fe_2O_3-----	3.6	2.93	3.2	0.70	3.7	1.0	3.3	4.01	1.9	4.2
FeO-------	5.6	5.16	4.6	10.0	6.2	6.7	4.9	4.47	5.6	5.4
MgO-------	3.2	4.26	4.3	5.7	3.9	9.1	2.9	4.55	4.3	4.1
CaO-------	10.0	8.20	10.8	9.4	9.8	10.7	9.9	9.24	10.1	9.8
Na_2O------	2.5	2.54	2.5	2.5	2.9	1.7	2.9	3.16	3.3	2.9
K_2O-------	1.5	3.36	0.60	2.0	0.41	0.93	1.8	0.62	1.2	0.81
H_2O^+------	1.45	1.62	0.92	0.98	0.75	1.4	0.9	1.11	0.59	0.82
H_2O^- -----			0.18	0.12	0.01	0.13			0.05	0.00
TiO_2------	1.60	1.12	0.48	1.2	1.0	0.43	1.4	0.66	0.41	0.82
P_2O_5------	0.42	0.39	0.17	0.44	0.22	0.18	0.41	0.16	0.32	0.30
MnO-------	0.26	0.17	0.00	0.15	0.19	0.20	0.22	0.14	0.12	0.15
CO_2-------	n.d.	n.d.	0.04	0.10	0.06	0.23	••	••	0.02	0.02
Total-----	98.9	98.8	100.1	101.3	99.8	99.1	99.6	99.7	101.2	101.0

Semiquantitative spectographic analyses, in parts per million										
Ba--------	300	700	166	471	82	165	500	300	215	163
Be--------	1	N	L	1	L	L	1	N	L	L
Ce--------	N	N	L	85	L	L	N	N	L	L
Co--------	20	15	31	31	16	42	15	20	24	26
Cr--------	30	5	20	112	3	215	30	20	10	11
Cu--------	20	200	17	64	21	35	15	100	26	41
Ga--------	15	30	9	10	9	2	15	15	8	9
La--------	N	N	L	22	L	L	N	N	L	L
Mn--------	2450	1000	1440	2190	2220	1530	2050	700	1690	1840
Mo--------	5	N	4	2	3	2	5	N	3	2
Nb--------	N	N	L	L	L	L	N	N	L	L
Nd--------	N	N	L	L	L	L	N	N	L	L
Ni--------	30	7	22	37	3	81	30	10	8	12
Pb--------	N	N	5	5	2	2	N	N	4	7
Pr--------	N	N	L	L	L	n.d.	n.d.	n.d.	6	L
Sc--------	150	15	40	41	12	27	15	50	23	22
Sn--------	N	N	L	L	L	L	N	n.d.	L	L
Sr--------	1000	700	610	564	433	340	1000	500	415	498
V---------	150	200	224	257	268	125	150	300	188	224
Y---------	30	30	9	15	5	7	50	30	10	15
Yb--------	3	3	1	3	1	1	5	3	2	2
Zn--------	n.d.	n.d.	70	108	87	77	n.d.	n.d.	60	82
Zr--------	70	70	23	79	15	30	100	30	17	37
CIPW norms, in weight percent										
Or--------	8.96	20.09	3.54	11.67	2.43	5.55	10.68	3.67	7.01	4.74
Ab--------	21.38	21.75	21.12	20.89	24.58	14.52	24.63	26.81	27.59	24.29
An--------	33.83	28.20	44.79	27.54	37.68	29.45	30.89	34.30	35.51	34.17
Q---------	6.12	0.30	4.51	••	6.03	2.64	6.28	6.79	1.32	7.29
Di--------	11.05	8.42	6.05	12.50	7.53	17.34	12.79	8.51	9.68	9.64
Hy--------	7.87	12.24	12.92	16.67	13.08	25.71	5.40	11.35	13.99	1.61
Fo--------	••	••	••	2.30	••	••	••	••	••	••
Fa--------	••	••	••	2.87	••	••	••	••	••	••
Mt--------	5.28	4.30	4.63	1.00	5.37	1.46	4.80	5.83	2.72	6.03
Il--------	3.07	2.15	0.91	2.25	1.90	0.82	2.67	1.26	0.77	1.54
Ap--------	1.01	0.94	0.40	1.03	0.52	0.43	0.97	0.38	0.75	0.70
Selected chemical parameters										
ASI---------	0.75	0.36	0.87	0.71	0.82	0.62	0.73	0.81	0.79	0.78
$Fe^{3+}/Fe^{2+} + Fe^{3+}$	0.39	0.79	0.41	0.07	0.37	0.13	0.40	0.47	0.25	0.44

Sample no.	$S2d_1$	Ro410a	V39f	Ka225	Ro297a	V39c	S2a	V177a	Ro241a	Ro304a
					Modes, in volume percent					
Plagioclase	53.3	36.0	64.5	42.2	66.6	51.4	49.0	62.0	62.2	59.1
K-Feldspar--	5.2	18.6	1.5	4.5	0.4	3.1	12.8	1.3	1.4	0.5
Quartz------	7.5	18.6	5.4	1.1	2.6	6.2	5.2	8.1	0.6	5.2
Amphibole---	30.2	1.8	15.0	5.6	23.6	32.2	24.0	19.1	7.8	23.2
Biotite-----	0.6	4.4	11.6	17.2	3.6	Tr.	0.6	0.3	13.6	7.8
Pyroxene----	••	••	••	28.0	••	••	••	4.1	11.2	1.4
Opaques-----	1.0	1.8	0.4	0.4	2.6	1.3	1.8	3.9	0.6	1.8
Apatite-----	••	••	••	0.2	••	1.9	Tr.	••	0.4	Tr.
Sphene------	1.0	0.8	••	••	••	1.7	1.4	0.1	••	Tr.
Chlorite----	0.4	13.0	0.8	0.2	0.4	0.3	2.4	1.0	2.2	0.4
Epidote-----	0.8	••	0.6	••	0.2	1.0	2.8	0.1	••	0.6
Muscovite---	••	••	0.2	0.6	••	0.6	••	••	••	••
Zircon------	••	••	••	••	••	0.3	••	••	••	••
Calcite-----	••	5.0	••	••	••	Tr.	••	••	••	••

Note: Rapid-rock chemical analyses by Gillison Chloe, Paul Elmore, J. L. Glenn, D. Hopping, James Kelsey, J. Riviello, and Hezekiah Smith. Methods used are described by Shapiro and Brannock (1962) and are supplemented by atomic absorption. Six-step semiquantitative spectrographic analyses by J. D. Fletcher, J. C. Hamilton, and J. L. Harris. N, not detected or at limit of detection; L, detected, but below limit of determination; n.d., not determined; ••, not present; Tr., trace amount present (<0.1 percent); ASI, aluminum saturation index, mol. [Al_2O_3/ (Na_2O + CaO + K_2O)]. Underlined number shows total H_2O. Not detected or at limit of determination for all samples: Ag, As, Au, B, Bi, Cd, Cs, Dy, Er, Eu, Gd, Ge, Hf, Hg, Ho, In, Ir, Li, Lu, Os, Pd, Pt, Rb, Re, Rh, Ru, Sb, Sm, Ta, Tb, Te, Th, Tl, Tm, U, and W. Rock types: Ap, aplite; Di, diorite; Gb, gabbro; Gr, granite; Grd, granodiorite; M, monzonite; Md, monzodiorite; Qd, quartz diorite; Qgb, quartz gabbro; Qm, quartz monzonite; Qmd, quartz monzodiorite; Ton, tonalite. Pluton names: NL, north Latady; J, Janke; W, Werner; A, Axworthy; M, Merrick; G, Grimminger.

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Table A3.

Rock type	Qmd	Qmd	Ton	M	Qmd	Qmd	Grd	Qd	Grd	Qd
Pluton name	JS	R	MC	L	CR	CER	M	C	EW	WW
Sample no.	Re23c	Ro160a	S26a	W103	W134d$_2$	Ro99a	Ro500a	Ro204b	Ro319a	V86a
Chemical analyses, in weight percent										
SiO_2------	55.2	56.4	57.4	57.6	57.8	58.6	59.15	59.4	60.1	60.1
Al_2O_3-----	17.9	17.4	16.8	17.6	18.0	17.4	16.88	18.3	15.4	18.5
Fe_2O_3-----	4.0	3.4	0.7	3.7	2.2	1.2	3.39	2.9	2.3	3.1
FeO-------	3.6	4.5	7.8	3.6	4.6	5.6	3.47	3.8	4.1	3.2
MgO-------	2.5	2.6	2.9	2.3	3.2	2.7	2.88	3.1	3.7	1.5
CaO-------	8.7	7.3	7.0	6.8	7.4	7.5	5.92	7.3	7.0	7.5
Na_2O------	3.2	3.1	2.7	3.4	2.8	2.8	2.78	3.8	3.0	3.6
K_2O-------	2.1	2.6	2.4	2.9	2.1	2.1	2.87	0.47	2.6	1.4
H_2O^+------	0.75	1.1	1.37	0.33	1.0	0.59	0.96	1.1	0.70	0.35
H_2O^- -----	0.07	0.05		0.06	0.05	0.06		0.18	0.05	0.05
TiO_2------	1.1	0.87	0.84	0.69	0.52	0.61	0.61	0.51	0.60	0.59
P_2O_5------	0.75	0.48	0.31	0.32	0.24	0.19	0.18	0.43	0.46	0.36
MnO-------	0.16	0.16	0.21	0.19	0.14	0.15	0.14	0.11	0.10	0.13
CO_2-------	<0.05	<0.05	••	<0.05	<0.05	<0.05	n.d.	0.04	0.01	0.02
Total	100.0	100.0	100.4	99.5	100.1	99.5	99.2	101.4	100.1	100.4

Semiquantitative spectographic analyses, in parts per million										
Ba--------	466	418	1000	733	390	251	1000	318	442	345
Be--------	N	1	2	N	N	N	N	L	2	L
Ce--------	42	51	N	49	35	N	N	74	62	73
Co--------	12	11	30	11	14	11	20	20	14	10
Cr--------	3	2	20	3	12	6	7	3	135	2
Cu--------	N	N	15	22	22	7	100	26	67	6
Ga--------	12	14	15	11	9	9	20	10	9	8
La--------	15	20	50	20	23	N	N	21	15	16
Mn--------	1630	1410	2710	1730	1250	1320	700	1620	1360	1640
Mo--------	2	2	3	2	1	1	N	3	2	1
Nb--------	N	N	10	N	N	N	L	L	L	L
Nd--------	N	27	N	34	34	34	N	L	L	L
Ni--------	3	2	30	2	8	5	7	4	19	L
Pb--------	4	6	3	13	6	5	N	4	7	5
Pr--------	5	5	n.d.	5	7	4	n.d.	L	5	5
Sc--------	11	12	100	7	16	15	30	13	18	11
Sn--------	5	5	N	5	4	4	n.d.	L	L	L
Sr--------	762	543	1000	674	393	343	700	543	613	434
V---------	157	128	100	111	90	87	200	113	94	56
Y---------	13	26	70	11	14	13	30	13	21	16
Yb--------	3	3	7	2	2	2	3	2	3	3
Zn--------	71	70	n.d.	24	55	59	n.d.	61	52	55
Zr--------	30	49	300	21	29	42	50	91	13	65

CIPW norms, in weight percent										
Or--------	12.41	15.37	14.12	17.23	12.40	12.47	17.09	2.74	15.35	8.24
Ab--------	27.07	26.24	22.75	28.92	23.68	23.81	23.71	31.70	25.35	30.34
An--------	28.27	25.89	26.52	24.32	30.33	28.85	25.30	31.04	20.85	30.06
Q---------	9.64	9.85	9.53	10.03	11.81	12.45	15.02	14.91	13.63	16.31
Di--------	7.97	5.88	5.10	6.05	3.93	6.09	2.51	1.33	8.73	3.70
Hy--------	4.21	7.92	17.31	5.61	12.06	12.32	8.87	10.85	9.79	4.48
Mt--------	5.80	4.93	1.01	5.39	3.19	1.75	4.95	4.14	3.33	4.48
Il--------	2.09	1.65	1.59	1.32	0.99	1.16	1.17	0.95	1.14	1.12
Ap--------	1.78	1.14	0.73	0.76	0.57	0.45	0.43	1.00	1.09	0.85

				Selected chemical parameters						
ASI---------	0.77	0.82	0.85	0.83	0.89	0.85	0.92	0.91	0.75	0.88
$Fe^{3+}/Fe^{2+} + Fe^{3+}$	0.53	0.43	0.08	0.51	0.32	0.18	0.49	0.43	0.36	0.49
Sample no.	Re23c	Ro160a	S26a	W103	W134d$_2$	Ro99a	Ro500a	Ro204b	Ro319a	V86a
				Modes, in volume percent						
Plagioclase	55.6	51.5	45.7	47.7	45.6	43.4	47.9	71.4	40.2	65.5
K-Feldspar--	12.5	15.1	3.0	27.9	12.5	9.8	7.0	0.6	11.2	5.4
Quartz------	5.3	10.0	13.5	3.4	11.9	13.0	16.2	9.0	25.4	14.3
Amphibole---	9.8	16.2	15.4	14.8	19.0	21.4	20.1	13.8	11.2	9.2
Biotite-----	5.4	4.6	21.4	0.2	10.0	10.6	1.9	0.6	11.2	3.6
Pyroxene----	7.8	Tr.	••	3.2	••	0.4	0.9	••	••	••
Opaques-----	2.4	1.4	0.2	1.4	0.4	Tr.	5.6	2.0	0.2	1.8
Apatite-----	••	••	••	0.4	Tr.	Tr.	0.1	0.4	Tr.	Tr.
Sphene------	1.0	0.6	Tr.	0.2	Tr.	••	0.1	••	0.2	0.2
Chlorite----	0.2	0.6	0.8	0.2	0.4	1.4	0.1	1.4	0.4	Tr.
Epidote-----	••	••	••	0.6	0.2	••	0.1	0.8	Tr.	Tr.

Note: Rapid-rock chemical analyses by Gillison Chloe, Paul Elmore, J. L. Glenn, D. Hopping, James Kelsey, J. Riviello, and Hezekiah Smith. Methods used are described by Shapiro and Brannock (1962) and are supplemented by atomic absorption. Six-step semiquantitative spectrographic analyses by J. D. Fletcher, J. C. Hamilton, and J. L. Harris. N, not detected or at limit of detection; L, detected, but below limit of determination; n.d., not determined; ••, not present; Tr., trace amount present (<0.1 percent); ASI, aluminum saturation index, mol. [Al_2O_3/ (Na_2O + CaO + K_2O)]. Underlined number shows total H_2O. Not detected or at limit of determination for all samples: Ag, As, Au, B, Bi, Cd, Cs, Dy, Er, Eu, Gd, Ge, Hf, Hg, Ho, In, Ir, Li, Lu, Os, Pd, Pt, Rb, Re, Rh, Ru, Sb, Sm, Ta, Tb, Te, Th, Tl, Tm, U, and W. Rock types: Ap, aplite; Di, diorite; Gb, gabbro; Gr, granite; Grd, granodiorite; M, monzonite; Md, monzodiorite; Qd, quartz diorite; Qgb, quartz gabbro; Qm, quartz monzonite; Qmd, quartz monzodiorite; Ton, tonalite. Pluton names: JS, Johnson Spur; R, Rath; MC, McLaughlin; L, Laudon; CR, Crowell; CER, central RARE; M, Merrick; C, Coman; EW, east Wegener; WW, west Wegener.

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Table A4.

Rock type	Grd	Qmd	Qmd	Qmd	Grd	Md	Ton	Ton	Grd	Grd
Pluton name	NS	M	NL	W	CR	S	A	NE	GA	J
Sample no.	Ro86b	By56f	S8b	V8b	B24e	Ro192a	Ke59a	Ro461a	Ro301c	Ro21a
Chemical analyses, in weight percent										
SiO_2------	60.1	60.64	60.9	61.0	61.3	61.4	61.6	61.60	61.7	62.0
Al_2O_3-----	17.0	16.89	17.2	15.2	17.2	16.2	17.6	17.31	17.4	17.1
Fe_2O_3-----	3.3	3.21	2.4	3.6	2.6	3.1	2.7	2.84	0.70	0.94
FeO-------	3.0	2.87	3.6	4.1	3.9	3.5	3.6	2.37	4.2	4.6
MgO-------	2.1	2.73	1.7	2.6	2.1	2.5	2.2	2.17	1.7	1.9
CaO-------	7.0	5.99	7.2	5.6	6.6	5.0	6.7	6.00	6.6	5.9
Na_2O------	3.0	2.68	3.2	3.0	3.0	2.8	3.1	2.97	3.4	2.8
K_2O-------	2.7	2.59	2.1	3.1	1.4	3.1	1.3	2.14	2.1	3.0
H_2O^+------	0.43	1.06	0.97	0.56	0.97	1.4	0.67	1.24	0.67	0.86
H_2O^- -----	0.05			0.09		0.10	0.04		0.00	0.05
TiO_2------	0.77	0.54	0.73	0.96	0.47	0.63	0.54	0.48	0.39	0.53
P_2O_5------	0.25	0.13	0.18	0.44	0.20	0.20	0.22	0.11	0.22	0.20
MnO-------	0.14	0.12	0.21	0.14	0.15	0.14	0.10	0.13	0.12	0.12
CO_2-------	<0.05	n.d.	n.d.	0.02	0.04	<0.05	0.02	n.d.	0.10	<0.05
Total--	99.8	99.5	100.4	100.4	99.9	100.1	100.4	99.4	99.3	100.0

Semiquantitative spectographic analyses, in parts per million										
Ba--------	482	1000	500	359	500	398	274	700	683	541
Be--------	N	N	1	2	1	N	L	N	L	N
Ce--------	N	N	N	134	N	51	L	N	44	N
Co--------	5	15	10	10	15	11	14	10	8	8
Cr--------	6	7	50	11	50	5	2	3	12	10
Cu--------	15	70	15	15	100	10	22	7	3	12
Ga--------	11	20	10	11	15	12	9	15	11	9
La--------	N	N	N	61	N	28	L	N	L	N
Mn--------	1240	700	1950	1920	1610	1190	1460	1000	1760	1220
Mo--------	1	N	15	2	5	2	2	N	2	1
Nb--------	N	10	N	7	3	N	2	N	<2	N
Nd--------	N	N	N	95	N	24	L	N	L	N
Ni--------	4	7	30	3	50	4	1	L	5	4
Pb--------	9	N	3	12	N	9	4	N	7	5
Pr--------	3	n.d.	N	13	N	5	6	n.d.	<2	4
Sc--------	6	20	70	27	10	10	17	15	9	9
Sn--------	N	n.d.	N	5	N	5	L	n.d.	L	N
Sr--------	565	700	700	340	700	380	405	1000	563	403
V---------	44	150	70	97	100	92	180	100	63	79
Y---------	15	30	20	65	20	29	16	15	12	9
Yb--------	3	3	2	11	2	3	2	3	2	2
Zn--------	52	n.d.	n.d.	75	n.d.	75	56	n.d.	50	46
Zr--------	58	70	30	206	100	121	34	70	74	48
CIPW norms, in weight percent										
Or--------	15.98	15.39	12.36	18.24	8.28	18.31	7.65	12.73	12.50	17.73
Ab--------	25.43	22.80	26.97	25.28	25.40	23.68	26.13	25.29	28.97	23.69
An--------	24.99	26.55	26.26	18.78	29.35	22.46	30.15	27.76	26.20	25.23
Q---------	15.87	18.35	16.76	16.85	20.25	18.18	20.18	20.14	16.17	16.72
Di--------	6.54	1.98	6.72	4.78	1.53	0.82	1.14	1.18	3.94	2.29
Hy--------	3.88	7.85	4.70	0.77	9.00	8.91	8.56	6.34	9.04	10.60
Mt--------	4.79	4.68	3.47	5.20	3.77	4.49	3.90	4.14	1.02	1.36
Il--------	1.47	1.03	1.38	1.82	0.89	1.20	1.02	0.92	0.75	1.01
Ap--------	0.59	0.31	0.43	1.03	0.47	0.47	0.52	0.26	0.52	0.47

Selected chemical parameters										
ASI---------	0.83	0.93	0.83	0.82	0.93	0.98	0.94	0.96	0.87	0.92
$Fe^{3+}/Fe^{2+} + Fe^{3+}$	0.52	0.53	0.40	0.47	0.40	0.47	0.42	0.55	0.14	0.17
Sample no.	Ro86b	By56f	S8b	V8b	B24e	Ro192a	Ke59a	Ro461a	Ro301c	Ro21a
Modes, in volume percent										
Plagioclase	48.9	51.4	48.9	37.4	53.0	17.4	61.4	58.9	57.5	39.1
K-Feldspar--	12.6	11.1	16.2	18.0	11.4	••	1.4	4.5	7.4	20.5
Quartz------	26.9	15.5	14.9	12.4	17.2	Tr.	15.8	17.0	16.9	17.2
Amphibole---	9.0	15.7	18.2	13.8	13.6	7.8	9.8	11.0	14.4	14.4
Biotite-----	1.6	1.7	••	14.8	2.4	••	8.8	••	2.6	8.4
Pyroxene----	••	••	••	Tr.	••	••	••	••	••	••
Opaques-----	0.6	4.4	0.6	2.6	1.6	1.6	2.2	3.8	Tr.	Tr.
Apatite-----	••	0.1	••	0.2	••	••	Tr.	••	Tr.	Tr.
Sphene------	0.2	••	0.8	0.8	Tr.	••	••	0.4	••	••
Chlorite----	0.2	••	••	••	0.8	2.2	Tr.	4.4	1.0	0.4
Epidote-----	••	••	0.4	••	Tr.	0.8	0.6	••	0.2	••
Zircon------	••	0.1	••	••	••	••	••	••	••	••
Groundmass--	••	••	••	••	••	70.2	••	••	••	••

Note: Rapid-rock chemical analyses by Gillison Chloe, Paul Elmore, J. L. Glenn, D. Hopping, James Kelsey, J. Riviello, and Hezekiah Smith. Methods used are described by Shapiro and Brannock (1962) and are supplemented by atomic absorption. Six-step semiquantitative spectrographic analyses by J. D. Fletcher, J. C. Hamilton, and J. L. Harris. N, not detected or at limit of detection; L, detected, but below limit of determination; n.d., not determined; ••, not present; Tr., trace amount present (<0.1 percent); ASI, aluminum saturation index, mol. [Al_2O_3/mol. (Na_2O + CaO + K_2O)]. Underlined number shows total H_2O. Not detected or at limit of determination for all samples: Ag, As, Au, B, Bi, Cd, Cs, Dy, Er, Eu, Gd, Ge, Hf, Hg, Ho, In, Ir, Li, Lu, Os, Pd, Pt, Rb, Re, Rh, Ru, Sb, Sm, Ta, Tb, Te, Th, Tl, Tm, U, and W. Rock types: Ap, aplite; Di, diorite; Gb, gabbro; Gr, granite; Grd, granodiorite; M, monzonite; Md, monzodiorite; Qd, quartz diorite; Qgb, quartz gabbro; Qm, quartz monzonite; Qmd, quartz monzodiorite; Ton, tonalite. Pluton names: NS, north Sumner; M, Merrick; NL, north Latady; W, Werner; CR, Crowell; S, Squires; A, Axworthy; NE, north Edward; GA, Galen; J, Johnson.

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Table A5.

Rock type	Grd	Grd	Grd	Di	Qd	Grd	Qmd	Grd	Grd	Grd
Pluton name	CR	WE	WI	CN	CN	WE	SK	W	NWS	J
Sample no.	B24f	S54a	Ro441d	M311a	M325d	B22a	Ro498j	W172	C34	Ro32a
Chemical analyses, in weight percent										
SiO_2------	62.4	62.5	62.72	62.8	62.9	63.1	63.33	63.4	63.49	63.5
Al_2O_3-----	16.1	16.8	16.81	17.0	16.1	16.7	16.41	17.1	16.97	17.2
Fe_2O_3-----	2.7	2.5	1.99	2.7	2.4	2.7	2.66	2.5	2.36	2.8
FeO-------	3.9	3.5	3.32	2.9	3.0	3.2	2.25	2.4	2.59	2.3
MgO-------	2.0	2.0	2.13	1.6	2.0	2.0	1.94	1.5	2.50	1.2
CaO-------	5.2	6.3	5.52	5.0	4.7	6.1	5.48	5.4	5.52	5.3
Na_2O------	3.2	2.8	3.00	3.1	2.9	2.7	2.85	3.1	2.58	3.0
K_2O-------	2.9	1.9	2.50	2.9	3.6	2.2	2.58	3.0	2.07	2.3
H_2O^+------				0.89	1.1			0.63		0.74
H_2O^- -----	1.09	1.08	0.90	0.11	0.09	0.9	0.86	0.00	0.73	0.09
TiO_2------	0.78	0.42	0.62	0.49	0.61	0.44	0.47	0.53	0.35	0.44
P_2O_5------	0.36	0.19	0.22	0.28	0.31	0.17	0.17	0.34	0.08	0.16
MnO-------	0.13	0.17	0.14	0.16	0.14	0.17	0.10	0.09	0.12	0.10
CO_2-------	n.d.	n.d.	n.d.	<0.05	<0.05	n.d.	n.d.	<0.05	n.d.	<0.05
Total--	100.8	100.2	99.9	99.9	99.9	100.4	99.1	100.0	99.4	99.1

Semiquantitative spectographic analyses, in parts per million										
Ba--------	500	700	1000	700	1000	1000	500	552	700	407
Be--------	3	1	2	1	1	1	2	2	N	1
Ce--------	N	N	N	100	100	N	N	47	N	27
Co--------	15	15	15	10	15	15	15	5	15	9
Cr--------	50	30	3	15	10	30	7	4	15	6
Cu--------	20	20	15	10	10	15	50	3	2	2
Ga--------	15	10	20	20	15	10	15	11	15	11
La--------	70	N	N	70	50	N	N	24	N	N
Mn--------	1200	1500	1000	n.d.	n.d.	1600	700	936	700	987
Mo--------	5	3	N	N	5	3	N	2	N	1
Nb--------	15	7	N	N	N	3	N	N	N	2
Nd--------	N	N	N	N	N	N	N	21	N	29
Ni--------	50	30	L	7	N	30	7	2	7	3
Pb--------	7	L	10	7	10	7	N	13	10	11
Pr--------	N	N	n.d.	n.d.	n.d.	N	n.d.	7	n.d.	5
Sc--------	15	10	15	10	10	10	15	13	15	7
Sn--------	N	N	n.d.	n.d.	n.d.	N	n.d.	4	n.d.	N
Sr--------	700	700	700	700	700	700	1000	480	500	404
V---------	70	100	150	50	70	100	150	61	100	54
Y---------	70	20	30	50	50	20	20	24	15	16
Yb--------	7	2	5	5	5	2	3	3	2	3
Zn--------	n.d.	n.d.	n.d.	N	N	n.d.	n.d.	46	n.d.	38
Zr--------	150	30	100	150	200	100	70	207	70	84

CIPW norms, in weight percent										
Or--------	17.01	11.21	14.79	17.15	21.31	12.95	15.38	17.73	12.31	13.71
Ab--------	26.87	23.65	25.42	26.25	24.58	22.76	24.34	26.23	21.97	25.61
An--------	20.84	27.62	25.05	22.99	20.31	26.85	24.59	23.89	27.04	25.47
Q---------	18.20	21.66	19.87	20.20	19.06	22.32	22.69	20.45	24.27	24.14
C---------	••	••	••	0.34	••	••	••	••	0.65	0.53
Di--------	1.99	1.93	0.76	••	2.17	1.79	1.38	0.55	••	••
Hy--------	7.82	8.00	8.63	6.57	6.02	7.31	5.57	5.10	8.74	4.40
Mt--------	3.89	3.62	2.89	3.92	3.49	3.90	3.89	3.63	3.44	4.09
Il--------	1.47	0.80	1.18	0.93	1.16	0.83	0.90	1.01	0.67	0.84
Ap--------	0.85	0.45	0.52	0.66	0.74	0.40	0.41	0.81	0.19	0.38

					Selected chemical parameters					
ASI---------	0.90	0.93	0.95	0.98	0.96	0.93	0.94	0.94	1.03	1.01
$Fe^{3+}/Fe^{2+} + Fe^{3+}$	0.41	0.42	0.37	0.48	0.44	0.46	0.54	0.51	0.48	0.55
Sample no.	B24f	S54a	Ro441d	M311a	M325d	B22a	Ro498j	W172	C34	Ro32a
					Modes, in volume percent					
Plagioclase	42.1	49.8	50.5	32.3	35.9	47.1	50.6	47.9	45.0	46.4
K-Feldspar--	18.0	15.2	12.2	••	••	16.9	19.5	14.6	5.4	19.5
Quartz------	22.9	20.0	23.7	0.5	2.5	20.8	17.3	16.7	33.2	21.7
Amphibole---	6.2	11.2	9.2	4.8	9.0	11.4	7.0	5.2	7.4	3.6
Biotite-----	8.2	2.4	3.4	3.4	Tr.	2.2	1.4	13.2	7.2	3.8
Opaques-----	1.6	1.0	0.8	1.4	0.4	1.6	2.2	2.0	0.6	0.6
Apatite-----	Tr.	••	••	••	••	Tr.	••	••	0.2	••
Sphene------	0.8	0.2	••	0.2	0.2	Tr.	••	0.2	••	0.2
Chlorite----	0.2	••	0.2	••	1.8	Tr.	1.8	0.2	0.6	2.2
Epidote-----	••	0.2	••	••	1.2	Tr.	••	••	0.4	2.0
Zircon------	••	••	••	••	••	••	0.2	••	••	••
Groundmass--	••	••	••	58.6	49.0	••	••	••	••	••

Note: Rapid-rock chemical analyses by Gillison Chloe, Paul Elmore, J. L. Glenn, D. Hopping, James Kelsey, J. Riviello, and Hezekiah Smith. Methods used are described by Shapiro and Brannock (1962) and are supplemented by atomic absorption. Six-step semiquantitative spectrographic analyses by J. D. Fletcher, J. C. Hamilton, and J. L. Harris. N, not detected or at limit of detection; L, detected, but below limit of determination; n.d., not determined; ••, not present; Tr., trace amount present (<0.1 percent); ASI, aluminum saturation index, mol. [Al_2O_3/ (Na_2O + CaO + K_2O)]. Underlined number shows total H_2O. Not detected or at limit of determination for all samples: Ag, As, Au, B, Bi, Cd, Cs, Dy, Er, Eu, Gd, Ge, Hf, Hg, Ho, In, Ir, Li, Lu, Os, Pd, Pt, Rb, Re, Rh, Ru, Sb, Sm, Ta, Tb, Te, Th, Tl, Tm, U, and W. Rock types: Ap, aplite; Di, diorite; Gb, gabbro; Gr, granite; Grd, granodiorite; M, monzonite; Md, monzodiorite; Qd, quartz diorite; Qgb, quartz gabbro; Qm, quartz monzonite; Qmd, quartz monzodiorite; Ton, tonalite. Pluton names: CR, Crowell; WE, Wetmore; WI, Witte; CN, Copper Nunataks; SK, Sky-Hi; NWS, northwest Sweeney; J, Johnson.

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Table A6.

Rock type	Gr	Grd	Grd	Gr	Grd	Qd	Grd	Grd	Qd	Grd
Pluton name	W	W	S	W	MC	CN	CG	A	CN	CER
Sample no.	Ro198a	Ke16a	W176b	Re90	S16x	M311C$_1$	Ro11a	Ro294a	M311b	Ro80a
Chemical analyses, in weight percent										
SiO_2------	63.6	63.8	63.8	64.1	64.2	64.5	64.6	64.6	64.7	64.9
Al_2O_3-----	15.3	16.7	16.6	16.2	15.4	16.1	16.6	16.3	16.3	16.1
Fe_2O_3-----	3.3	2.5	2.4	2.5	1.0	2.3	2.0	1.1	2.2	3.0
FeO-------	2.6	3.0	3.1	2.4	4.0	2.4	2.8	3.2	2.4	2.4
MgO-------	1.5	1.9	1.8	1.5	1.6	1.5	1.4	1.7	1.6	1.3
CaO-------	4.7	5.5	4.6	5.3	4.4	4.8	5.1	5.4	4.7	4.9
Na_2O------	3.0	3.6	3.1	2.9	2.8	2.9	2.9	3.0	2.8	2.6
K_2O-------	3.7	2.5	3.1	3.4	3.2	3.5	3.3	3.1	3.2	3.2
H_2O^+------	0.84	0.91	0.61	0.63	1.19	0.95	0.44	0.89	1.1	0.64
H_2O^- -----	0.03	0.08	0.05	0.05		0.05	0.04	0.11	0.09	0.09
TiO_2------	0.79	0.39	0.35	0.56	0.56	0.45	0.53	0.27	0.47	0.53
P_2O_5------	0.49	0.23	0.19	0.38	0.28	0.29	0.25	0.31	0.28	0.18
MnO-------	0.12	0.08	0.13	0.12	0.14	0.12	0.09	0.06	0.12	0.11
CO_2-------	<0.05	0.02	<0.05	<0.05	n.d.	<0.05	<0.05	0.10	<0.05	<0.05
Total--	100.0	101.2	99.8	100.0	98.8	99.9	100.1	100.1	100.0	99.9

Semiquantitative spectographic analyses, in parts per million										
Ba--------	703	566	682	666	1000	1000	551	546	700	464
Be--------	2	2	1	2	3	1	2	2	1	1
Ce--------	68	L	28	49	N	100	49	60	150	42
Co--------	7	17	8	7	15	10	5	8	7	5
Cr--------	6	10	6	9	50	10	23	16	15	5
Cu--------	15	18	7	7	30	50	8	28	20	18
Ga--------	12	13	11	11	15	15	11	11	15	8
La--------	31	L	15	37	70	70	19	23	100	15
Mn--------	1190	1450	1110	1050	1325	n.d.	1300	1120	n.d.	1050
Mo--------	1	3	1	N	3	N	1	1	N	2
Nb--------	5	2	N	N	10	N	N	L	N	N
Nd--------	45	L	N	32	N	N	44	L	N	34
Ni--------	3	4	4	4	50	N	3	5	3	2
Pb--------	11	8	3	13	20	10	7	16	10	9
Pr--------	7	L	n.d.	7	N	n.d.	6	5	n.d.	5
Sc--------	7	15	5	13	70	10	9	22	10	9
Sn--------	5	L	n.d.	4	N	n.d.	N	4	n.d.	N
Sr--------	637	453	816	420	700	700	664	530	700	386
V---------	82	84	81	65	70	50	72	76	50	54
Y---------	27	17	12	35	50	50	15	41	50	17
Yb--------	4	3	1	5	5	5	3	5	5	3
Zn--------	51	49	46	43	n.d.	N	36	49	N	37
Zr--------	141	68	86	111	200	150	88	334	150	88

CIPW norms, in weight percent										
Or--------	21.87	14.60	18.35	20.08	19.15	20.71	19.49	18.29	18.92	18.92
Ab--------	25.39	30.10	26.28	24.53	23.99	24.57	24.53	25.35	23.70	22.01
An--------	17.36	21.76	21.62	21.14	20.25	20.61	22.52	21.82	21.50	22.82
Q---------	21.23	18.59	20.40	21.52	22.25	21.95	21.76	20.68	23.58	25.11
C---------	••	••	0.24	••	0.01	••	••	••	0.35	••
Di--------	2.20	2.92	••	2.15	••	0.87	0.93	1.89	••	0.26
Hy--------	3.66	6.16	7.87	4.34	9.96	5.42	5.81	7.92	6.02	4.37
Mt--------	4.79	3.58	3.49	3.62	1.47	3.34	2.90	1.59	3.19	4.35
Il--------	1.50	0.73	0.67	1.06	1.08	0.86	1.01	0.51	0.89	1.01
Ap--------	1.16	0.53	0.45	0.90	0.67	0.69	0.59	0.73	0.66	0.43

Selected chemical parameters										
ASI---------	0.87	0.90	0.99	0.89	0.96	0.93	0.94	0.90	0.98	0.97
$Fe^{3+}/Fe^{2+} + Fe^{3+}$	0.56	0.45	0.44	0.51	0.20	0.49	0.42	0.26	0.48	0.55
Sample no.	Ro198a	Ke16a	W176b	Re90	S16x	$M311c_1$	Ro11a	Ro294a	M311b	Ro80a
Modes, in volume percent										
Plagioclase	43.9	50.6	44.0	36.7	42.5	38.0	42.4	41.4	40.6	41.2
K-Feldspar--	24.7	12.4	21.7	23.2	18.3	Tr.	16.2	10.1	Tr.	19.0
Quartz------	20.9	17.0	20.3	23.7	21.6	2.8	21.4	30.9	3.8	26.0
Amphibole---	8.2	8.6	9.0	7.2	7.2	4.8	10.4	7.6	8.8	7.2
Biotite-----	0.6	5.4	3.6	6.6	8.6	3.8	7.0	9.6	3.0	3.4
Opaques-----	0.8	1.4	1.4	1.6	0.8	1.2	1.4	Tr.	1.2	1.2
Apatite-----	••	0.2	••	Tr.	••	••	••	Tr.	••	••
Sphene------	0.2	0.2	••	0.6	1.0	0.2	0.6	••	0.2	0.2
Chlorite----	1.4	4.0	••	0.2	Tr.	2.4	0.6	0.4	0.6	1.2
Epidote-----	0.2	0.2	••	0.2	Tr.	••	••	••	••	0.6
Muscovite---	••	••	••	••	Tr.	••	••	••	••	••
Groundmass--	••	••	••	••	••	46.8	••	••	41.8	••

Note: Rapid-rock chemical analyses by Gillison Chloe, Paul Elmore, J. L. Glenn, D. Hopping, James Kelsey, J. Riviello, and Hezekiah Smith. Methods used are described by Shapiro and Brannock (1962) and are supplemented by atomic absorption. Six-step semiquantitative spectrographic analyses by J. D. Fletcher, J. C. Hamilton, and J. L. Harris. N, not detected or at limit of detection; L, detected, but below limit of determination; n.d., not determined; ••, not present; Tr., trace amount present (<0.1 percent); ASI, aluminum saturation index, mol. [Al_2O_3/ (Na_2O + CaO + K_2O)]. Underlined number shows total H_2O. Not detected or at limit of determination for all samples: Ag, As, Au, B, Bi, Cd, Cs, Dy, Er, Eu, Gd, Ge, Hf, Hg, Ho, In, Ir, Li, Lu, Os, Pd, Pt, Rb, Re, Rh, Ru, Sb, Sm, Ta, Tb, Te, Th, Tl, Tm, U, and W. Rock types: Ap, aplite; Di, diorite; Gb, gabbro; Gr, granite; Grd, granodiorite; M, monzonite; Md, monzodiorite; Qd, quartz diorite; Qgb, quartz gabbro; Qm, quartz monzonite; Qmd, quartz monzodiorite; Ton, tonalite. Pluton names: W, Werner; S, Squires; MC, McLaughlin; CN, Copper Nunataks; CG, central Guettard, A, Axworthy; CER, central RARE.

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Table A7.

Rock type	Grd	Grd	Grd	Gr	Gr	Grd	Gr	Gr	Grd	Gr
Pluton name	T	CN	W	CN	CN	MC	MCE	CR	CN	T
Sample no.	P22c	M321c	Ro289a	M321i	M421	$S23a_2$	Ro130a	B21a	B25a	$S48a_1$
Chemical analyses, in weight percent										
SiO_2------	64.9	65.2	65.5	65.5	65.6	65.7	65.8	65.9	66.0	66.1
Al_2O_3-----	15.2	16.0	16.8	15.8	16.0	15.3	14.8	15.5	15.7	14.8
Fe_2O_3-----	2.1	1.8	1.9	1.8	1.8	2.2	3.1	2.1	1.9	1.7
FeO-------	3.8	2.9	1.7	2.6	1.8	3.2	2.3	3.0	2.9	3.6
MgO-------	1.9	1.6	1.1	1.6	1.2	1.5	1.3	1.4	1.6	1.7
CaO-------	4.4	5.0	5.3	4.7	4.1	4.1	3.7	4.0	4.6	4.0
Na_2O------	2.8	3.3	3.6	3.0	3.2	2.9	3.1	3.0	2.9	2.6
K_2O-------	3.6	2.4	1.7	3.2	4.1	3.3	3.6	3.6	3.2	3.9
H_2O^+------	0.81	0.68	0.89	0.85	1.3	1.08	1.1	0.86	0.12	1.06
H_2O^- -----		0.16	0.07	0.11	0.05		0.13			
TiO_2------	0.65	0.52	0.21	0.51	0.41	0.58	0.71	0.56	0.51	0.61
P_2O_5------	0.17	0.26	0.29	0.27	0.25	0.32	0.27	0.27	0.20	0.16
MnO-------	0.10	0.12	0.04	0.08	0.09	0.12	0.09	0.20	0.22	0.12
CO_2-------	n.d.	<0.05	0.19	<0.05	<0.05	n.d.	<0.05	n.d.	n.d.	n.d.
Total--	100.4	99.9	99.3	100.0	99.9	100.3	100.0	100.4	99.9	100.3

Semiquantitative spectographic analyses, in parts per million										
Ba--------	700	700	469	500	1000	1000	619	1000	700	700
Be--------	1	1	2	1	2	2	2	3	2	2
Ce--------	N	N	43	100	N	N	70	N	N	N
Co--------	20	10	4	7	7	30	5	10	7	10
Cr--------	50	15	11	15	10	20	4	30	50	50
Cu--------	15	7	4	5	30	15	N	20	30	30
Ga--------	15	15	9	15	15	15	12	15	15	15
La--------	70	N	23	50	50	50	48	70	50	70
Mn--------	900	n.d.	885	n.d.	n.d.	950	843	1900	n.d.	980
Mo--------	5	N	1	N	N	3	1	5	5	3
Nb--------	10	N	3	N	N	10	5	15	7	10
Nd--------	N	N	L	N	N	N	36	N	N	N
Ni--------	50	N	8	N	N	30	2	50	50	50
Pb--------	10	10	11	10	10	3	14	10	7	10
Pr--------	N	n.d.	5	n.d.	n.d.	N	8	N	n.d.	N
Sc--------	15	10	12	10	7	100	9	15	10	15
Sn--------	N	n.d.	L	n.d.	n.d.	N	4	N	n.d.	N
Sr--------	1000	500	671	700	700	1000	617	500	1000	700
V---------	100	50	40	50	50	100	85	50	70	70
Y---------	70	30	17	50	30	70	26	70	30	50
Yb--------	7	3	2	5	3	7	5	7	3	5
Zn--------	n.d.	N	37	N	N	N	38	n.d.	N	n.d.
Zr--------	150	200	58	150	100	300	156	300	100	200

CIPW norms, in weight percent										
Or--------	21.18	14.19	10.12	18.91	24.25	19.44	21.27	21.19	18.94	22.97
Ab--------	23.59	27.94	30.68	25.38	27.11	24.47	26.23	25.29	24.58	21.92
An--------	18.20	21.77	23.36	20.19	17.20	18.19	15.84	18.01	20.40	17.13
Q---------	21.51	23.20	26.00	23.22	21.18	24.50	24.75	23.22	23.98	23.65
C---------	••	••	0.54	••	••	0.27	••	0.04	••	••
Di--------	2.01	1.11	••	1.11	1.23	••	0.60	••	0.94	1.33
Hy--------	8.06	6.65	4.05	6.04	3.71	7.04	3.61	6.68	6.85	7.97
Mt--------	3.03	2.61	2.77	2.61	2.61	3.18	4.49	3.03	2.76	2.46
Il--------	1.23	0.99	0.40	0.97	0.78	1.10	1.35	1.06	0.97	1.15
Ap--------	0.40	0.62	0.69	0.64	0.59	0.76	0.64	0.64	0.47	0.38

				Selected chemical parameters						
ASI---------	0.92	0.93	0.97	0.93	0.93	0.97	0.94	0.96	0.95	0.94
$Fe^{2+}/$ $Fe^{2+} + Fe^{3+}$	0.35	0.38	0.53	0.41	0.50	0.41	0.57	0.41	0.39	0.32
Sample no.	P22c	M321c	Ro289a	M321i	M421	$S23a_2$	Ro130a	B21a	B25a	$S48a_1$
				Modes, in volume percent						
Plagioclase	43.4	46.2	41.7	40.8	37.2	41.5	36.4	36.6	40.0	35.6
K-Feldspar--	19.8	12.1	9.9	23.4	28.6	16.1	28.2	22.3	19.4	27.7
Quartz------	20.6	27.5	29.6	25.0	25.6	29.4	23.6	28.5	28.2	23.5
Amphibole---	7.4	6.2	4.6	5.8	6.0	4.0	5.2	6.2	6.0	5.8
Biotite-----	6.8	7.4	7.6	1.4	1.2	6.0	3.6	4.2	5.2	5.0
Opaques-----	1.4	0.4	1.2	0.8	0.8	1.2	2.2	1.4	0.4	1.2
Apatite-----	••	••	••	••	••	Tr.	Tr.	Tr.	••	••
Sphene------	0.2	••	0.2	0.4	0.4	1.0	0.4	0.6	0.6	0.4
Chlorite----	0.4	0.2	4.0	2.4	0.2	0.8	0.4	0.2	0.2	0.8
Epidote-----	••	••	0.8	Tr.	••	Tr.	••	••	••	Tr.
Muscovite---	••	••	0.4	••	••	••	••	••	••	••

Note: Rapid-rock chemical analyses by Gillison Chloe, Paul Elmore, J. L. Glenn, D. Hopping, James Kelsey, J. Riviello, and Hezekiah Smith. Methods used are described by Shapiro and Brannock (1962) and are supplemented by atomic absorption. Six-step semiquantitative spectrographic analyses by J. D. Fletcher, J. C. Hamilton, and J. L. Harris. N, not detected or at limit of detection; L, detected, but below limit of determination; n.d., not determined; ••, not present, Tr., trace amount present (<0.1 percent); ASI, aluminum saturation index, mol. [Al_2O_3/ (Na_2O + CaO + K_2O)]. Underlined number shows total H_2O. Not detected or at limit of determination for all samples: Ag, As, Au, B, Bi, Cd, Cs, Dy, Er, Eu, Gd, Ge, Hf, Hg, Ho, In, Ir, Li, Lu, Os, Pd, Pt, Rb, Re, Rh, Ru, Sb, Sm, Ta, Tb, Te, Th, Tl, Tm, U, and W. Rock types: Ap, aplite; Di, diorite; Gb, gabbro; Gr, granite; Grd, granodiorite; M, monzonite; Md, monzodiorite; Qd, quartz diorite; Qgb, quartz gabbro; Qm, quartz monzonite; Qmd, quartz monzodiorite; Ton, tonalite. Pluton names: T, Terwileger; CN, Copper Nunataks; W, Werner; MC, McLaughlin; MCE, McElroy; CR, Crowell.

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Table A8.

Rock type	Gr	Gr	Qmd	Grd	Gr	Gr	Gr	Gr	Grd	Grd
Pluton names	W	MCE	I	GA	JS	CR	CR	T	H	WR
Sample no.	Ka222	Ro147a	Ro6a	Ke61f	W121c	W55b	W56	S49	V55	W144a
	Chemical analyses, in weight percent									
SiO_2------	66.1	66.2	67.0	67.0	67.2	67.3	67.4	67.4	67.6	67.7
Al_2O_3-----	16.7	15.3	16.0	17.1	16.2	15.2	14.0	14.9	16.3	15.4
Fe_2O_3-----	1.6	2.6	1.8	1.4	1.8	1.2	1.8	1.6	1.5	0.63
FeO-------	2.3	2.0	2.5	1.6	1.6	2.9	2.6	2.8	1.9	2.7
MgO-------	1.3	1.4	1.2	0.71	1.0	1.1	1.2	1.3	1.2	1.5
CaO-------	5.1	4.4	4.9	5.0	3.3	3.5	3.8	3.6	4.6	4.9
Na_2O------	3.4	2.9	3.0	3.8	4.1	3.2	3.1	2.7	3.3	2.8
K_2O-------	3.3	3.4	2.1	2.1	3.1	3.6	4.1	4.3	3.4	2.7
H_2O^+------	0.53	0.93	0.39	0.63	0.87	0.9	0.99	0.86	0.61	0.84
H_2O^- -----	0.14	0.05	0.04	0.00	0.09				0.02	0.08
TiO_2------	0.27	0.49	0.35	0.20	0.38	0.46	0.47	0.46	0.25	0.28
P_2O_5------	0.20	0.26	0.09	0.25	0.13	0.23	0.23	0.16	0.21	0.09
MnO-------	0.07	0.07	0.11	0.04	0.09	0.13	0.12	0.13	0.04	0.07
CO_2-------	0.04	<0.05	<0.05	0.03	<0.05	n.d.	n.d.	n.d.	0.06	0.05
Total--	101.1	100.0	99.5	99.9	99.9	99.7	99.8	100.2	101.0	99.5

Semiquantitative spectographic analyses, in parts per million										
Ba--------	629	502	420	346	598	500	700	1000	548	373
Be--------	1	2	N	2	5	3	1	2	1	N
Ce--------	L	52	N	37	46	N	N	N	45	N
Co--------	7	5	8	4	5	10	10	7	4	6
Cr--------	9	5	5	4	7	50	50	30	5	21
Cu--------	22	4	87	4	N	15	15	20	2	6
Ga--------	8	12	6	11	13	15	15	15	8	6
La--------	L	29	N	20	26	50	50	50	25	N
Mn--------	1240	885	1340	760	900	n.d.	n.d.	n.d.	862	n.d.
Mo--------	2	N	N	1	N	3	3	3	1	N
Nb--------	L	N	N	L	10	15	15	7	3	N
Nd--------	L	37	30	L	23	N	N	N	43	25
Ni--------	4	2	3	2	4	30	30	50	2	6
Pb--------	8	15	3	8	8	15	15	10	6	7
Pr--------	L	5	5	5	5	n.d.	n.d.	n.d.	5	3
Sc--------	12	11	9	13	4	10	10	10	11	9
Sn--------	L	N	4	L	N	n.d.	n.d.	n.d.	L	N
Sr--------	549	413	438	516	930	500	500	1000	375	272
V---------	83	68	86	32	47	30	30	50	54	60
Y---------	17	23	14	24	15	70	50	50	21	11
Yb--------	3	4	3	3	4	7	5	5	3	2
Zn--------	39	29	42	31	19	n.d.	n.d.	n.d.	22	25
Zr--------	130	110	59	76	126	300	300	150	89	32

CIPW norms, in weight percent										
Or--------	19.30	20.09	12.47	12.43	18.35	21.33	24.27	25.36	19.89	16.04
Ab--------	28.47	24.54	25.52	32.20	34.74	27.15	26.28	22.80	27.65	23.81
An--------	20.35	18.69	23.85	23.01	15.54	15.91	12.20	15.81	19.43	21.59
Q---------	20.79	25.47	28.38	25.22	22.87	24.75	24.31	24.70	23.71	27.57
C---------	••	••	0.10	0.15	0.41	0.23	••	••	••	••
Di--------	2.59	1.15	••	••	••	••	4.27	0.81	1.17	1.04
Hy--------	4.49	3.79	5.75	3.30	3.49	6.57	3.62	6.13	4.28	7.36
Mt--------	2.30	3.77	2.62	2.03	2.61	1.75	2.61	2.31	2.15	0.92
Il--------	0.51	0.93	0.67	0.38	0.72	0.88	0.89	0.87	0.47	0.53
Ap--------	0.47	0.62	0.21	0.59	0.31	0.55	0.55	0.38	0.49	0.21

				Selected chemical parameters						
ASI---------	0.91	0.93	0.99	0.97	1.01	0.98	0.85	0.95	0.93	0.96
$Fe^{3+}/$ $Fe^{2+} + Fe^{3+}$	0.41	0.57	0.42	0.47	0.53	0.29	0.41	0.36	0.44	0.19
Sample no.	Ka222	Ro147a	Ro6a	Ke61f	W121c	W55b	W56	S49	V55	W144a
				Modes, in volume percent						
Plagioclase	41.0	33.0	52.4	49.0	44.6	35.5	41.4	34.4	45.3	35.4
K-Feldspar--	27.3	24.4	15.0	12.1	25.2	28.0	26.9	19.0	16.8	11.5
Quartz------	20.3	26.6	14.4	22.9	25.2	25.7	22.1	33.0	22.5	29.9
Amphibole---	5.4	7.0	13.8	2.4	2.4	3.4	2.6	4.4	5.2	8.0
Biotite-----	4.2	6.6	1.6	12.4	1.4	5.8	5.6	6.8	8.8	14.2
Opaques-----	0.2	1.2	1.8	0.4	0.6	1.0	0.4	0.6	0.6	Tr.
Apatite-----	..	..	..	Tr.	..	..	..	..	Tr.	..
Sphene------	..	0.6	0.4	..	0.4	0.4	0.8	0.2	..	..
Chlorite----	1.6	0.6	0.6	0.2	0.2	0.2	0.2	1.6	0.8	0.8
Epidote-----	..	..	..	0.6	..	..	..	Tr.	..	0.2

Note: Rapid-rock chemical analyses by Gillison Chloe, Paul Elmore, J. L. Glenn, D. Hopping, James Kelsey, J. Riviello, and Hezekiah Smith. Methods used are described by Shapiro and Brannock (1962) and are supplemented by atomic absorption. Six-step semiquantitative spectrographic analyses by J. D. Fletcher, J. C. Hamilton, and J. L. Harris. N, not detected or at limit of detection; L, detected, but below limit of determination; n.d., not determined; ..., not present; Tr., trace amount present (<0.1 percent); ASI, aluminum saturation index, mol. [Al_2O_3/ (Na_2O + CaO + K_2O)]. Underlined number shows total H_2O. Not detected or at limit of determination for all samples: Ag, As, Au, B, Bi, Cd, Cs, Dy, Er, Eu, Gd, Ge, Hf, Hg, Ho, In, Ir, Li, Lu, Os, Pd, Pt, Rb, Re, Rh, Ru, Sb, Sm, Ta, Tb, Te, Th, Tl, Tm, U, and W. Rock types: Ap, aplite; Di, diorite; Gb, gabbro; Gr, granite; Grd, granodiorite; M, monzonite; Md, monzodiorite; Qd, quartz diorite; Qgb, quartz gabbro; Qm, quartz monzonite; Qmd, quartz monzodiorite; Ton, tonalite. Pluton names: W, Werner; MCE, McElroy; I, Irvine; GA, Galan; JS, Johnson Spur; CR, Crowell; T, Terwileger; H, High; WR, west RARE.

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Table A9.

Rock type	Gr	Qm	Grd	Grd	Gr	Grd	Grd	Ton	Gr	Gr
Pluton name	CN	EW	W	V	CN	M	W	W	WW	W
Sample no.	M318a	Ro319c	Ro240a	Ro246a	M430	V178i	Ro275a	V35e	Ro322a	V48a
	Chemical analyses, in weight percent									
SiO_2------	67.8	68.0	68.0	68.1	68.1	68.17	68.5	68.5	68.9	68.9
Al_2O_3-----	15.9	15.4	16.1	15.4	15.8	15.85	16.2	19.0	15.4	15.5
Fe_2O_3-----	1.1	2.0	1.6	1.8	1.3	0.56	1.7	0.40	1.9	1.3
FeO-------	2.0	1.4	1.6	1.9	1.7	2.15	1.2	1.2	1.5	1.6
MgO-------	1.0	0.80	0.99	1.0	1.1	1.00	0.41	0.49	0.83	0.95
CaO-------	3.9	4.2	4.5	4.4	3.9	2.14	3.6	5.9	3.6	3.9
Na_2O------	3.2	3.6	3.2	3.3	3.1	3.23	3.9	4.2	3.5	2.5
K_2O-------	4.0	3.2	3.5	3.3	4.2	5.29	3.1	1.0	3.7	4.2
H_2O^+------	0.54	0.68	0.54	0.60	0.22	1.07	0.41	0.49	0.34	0.44
H_2O^- -----	0.03	0.09	0.01	0.00	0.00		0.00	0.09	0.04	0.04
TiO_2------	0.32	0.51	0.17	0.26	0.35	0.29	0.18	0.15	0.29	0.14
P_2O_5------	0.18	0.26	0.15	0.25	0.16	0.09	0.18	0.02	0.21	0.16
MnO-------	0.06	0.05	0.04	0.04	0.06	0.07	0.01	0.00	0.04	0.04
CO_2-------	<0.05	0.03	0.08	0.08	<0.05	n.d.	0.03	0.03	0.05	0.03
Total--	100.0	100.2	100.5	100.4	100.0	99.9	99.4	101.5	100.3	99.7

Semiquantitative spectographic analyses, in parts per million										
Ba--------	1000	481	442	401	1000	700	549	329	654	631
Be--------	1	2	1	2	2	N	2	1	1	1
Ce--------	N	55	L	37	N	N	48	L	35	L
Co--------	7	3	6	5	7	7	3	3	3	6
Cr--------	15	6	9	29	7	N	10	8	4	6
Cu--------	15	11	6	8	3	7	37	L	1	8
Ga--------	15	6	11	8	15	15	11	10	7	11
La--------	N	29	L	22	70	N	26	L	16	L
Mn--------	n.d.	718	970	910	n.d.	300	598	262	679	941
Mo--------	N	L	2	1	N	30	1	L	L	1
Nb--------	N	5	L	3	N	N	5	L	3	2
Nd--------	N	27	L	L	N	N	L	L	L	L
Ni--------	N	1	3	8	N	N	5	2	2	4
Pb--------	10	9	14	11	15	15	20	7	12	17
Pr--------	n.d.	7	L	4	n.d.	n.d.	6	L	4	2
Sc--------	7	5	13	9	10	7	3	3	6	13
Sn--------	n.d.	L	L	L	n.d.	n.d.	4	L	L	L
Sr--------	700	474	438	506	500	500	446	631	335	424
V---------	30	42	53	54	30	30	26	22	28	47
Y---------	30	30	19	20	30	30	17	L	16	21
Yb--------	3	5	3	3	3	3	3	1	2	3
Zn--------	N	24	28	30	N	n.d.	25	21	24	27
Zr--------	150	165	73	161	150	100	117	166	70	40

CIPW norms, in weight percent										
Or--------	23.63	18.87	20.58	19.42	24.82	31.29	18.43	5.82	21.80	24.89
Ab--------	27.07	30.39	26.95	27.80	26.23	27.36	33.19	35.02	29.53	21.22
An--------	17.20	16.37	19.14	17.39	16.79	10.04	16.59	28.53	15.34	18.17
Q---------	23.67	25.85	25.10	25.90	24.06	21.91	26.13	25.89	25.90	28.35
C---------	••	••	••	••	••	1.14	0.39	0.39	••	0.20
Di--------	0.80	1.99	1.30	1.81	1.23	••	••	••	0.63	••
Hy--------	4.44	1.23	4.99	3.23	3.72	5.63	1.55	2.81	2.53	4.09
Mt--------	1.59	2.89	2.31	2.60	1.89	0.81	2.48	0.57	2.75	1.89
Il--------	0.61	0.97	0.32	0.49	0.67	0.55	0.34	0.28	0.55	0.27
Ap--------	0.43	0.61	0.35	0.59	0.38	0.21	0.43	0.05	0.50	0.38

Selected chemical parameters										
ASI---------	0.95	0.90	0.93	0.91	0.94	1.06	0.99	1.01	0.94	0.98
$Fe^{3+}/Fe^{2+} + Fe^{3+}$	0.35	0.59	0.50	0.49	0.43	0.21	0.59	0.25	0.56	0.45
Sample no.	M318a	Ro319c	Ro240a	Ro246a	M430	V178i	Ro275a	V35e	Ro322a	V48a
Modes, in volume percent										
Plagioclase	43.5	35.9	43.8	41.8	29.8	53.0	42.4	57.2	34.4	25.2
K-Feldspar--	30.5	38.0	19.9	16.4	34.4	15.3	18.8	5.1	24.6	33.8
Quartz------	20.6	14.5	25.5	30.0	26.6	18.1	30.8	27.0	34.4	31.9
Amphibole---	2.8	3.8	4.2	6.2	3.0	9.7	0.6	0.3	1.8	3.4
Biotite-----	1.6	3.4	4.8	4.0	4.8	2.1	5.4	8.9	3.6	5.4
Opaques-----	0.8	1.2	0.8	0.2	1.2	1.8	1.0	••	0.6	0.2
Apatite-----	••	Tr.	••	••	••	••	Tr.	0.1	••	••
Sphene------	Tr.	0.4	••	Tr.	Tr.	••	0.4	Tr.	0.4	••
Chlorite----	0.2	2.8	1.0	1.4	0.2	••	0.6	0.4	0.2	0.2
Epidote-----	••	Tr.	••	Tr.	••	••	••	0.6	••	••
Muscovite---	••	••	••	••	••	••	••	0.1	••	••
Zircon------	••	••	••	••	••	••	••	0.3	••	••

Note: Rapid-rock chemical analyses by Gillison Chloe, Paul Elmore, J. L. Glenn, D. Hopping, James Kelsey, J. Riviello, and Hezekiah Smith. Methods used are described by Shapiro and Brannock (1962) and are supplemented by atomic absorption. Six-step semiquantitative spectrographic analyses by J. D. Fletcher, J. C. Hamilton, and J. L. Harris. N, not detected or at limit of detection; L, detected, but below limit of determination; n.d., not determined; ••, not present; Tr., trace amount present (<0.1 percent); ASI, aluminum saturation index, mol. [Al_2O_3/ (Na_2O + CaO + K_2O)]. Underlined number shows total H_2O. Not detected or at limit of determination for all samples: Ag, As, Au, B, Bi, Cd, Cs, Dy, Er, Eu, Gd, Ge, Hf, Hg, Ho, In, Ir, Li, Lu, Os, Pd, Pt, Rb, Re, Rh, Ru, Sb, Sm, Ta, Tb, Te, Th, Tl, Tm, U, and W. Rock types: Ap, aplite; Di, diorite; Gb, gabbro; Gr, granite; Grd, granodiorite; M, monzonite; Md, monzodiorite; Qd, quartz diorite; Qgb, quartz gabbro; Qm, quartz monzonite; Qmd, quartz monzodiorite; Ton, tonalite. Pluton names: CN, Copper Nunataks; EW, east Wegener; W, Werner; V, Virdin; M, Merrick; WW, west Wegener.

For GSA Data Bank

Table A10.

Rock type	Grd	Grd	Gr	Grd	Gr	Gr	Grd	Gr	Ap	Ap
Pluton name	W	W	MO	W	W	CN	GA	MC	W	CR
Sample no.	Bo26a	V83	By3a	V39g	Ro285a	M429c	Ro301d	S28b	Ke26d	W54b
	Chemical analyses, in weight percent									
SiO_2--------	69.2	69.3	69.42	69.7	69.7	71.9	72.1	73.6	74.4	75.6
Al_2O_3-------	15.7	16.2	15.56	17.6	15.5	14.2	16.0	14.4	14.2	13.2
Fe_2O_3-------	0.70	1.4	0.53	0.30	1.3	0.80	0.30	0.20	0.10	0.41
FeO---------	1.8	1.2	2.19	1.3	1.2	1.0	1.0	1.4	0.12	0.28
MgO---------	1.1	0.55	1.12	0.80	0.68	0.51	0.33	0.51	0.06	0.18
CaO---------	4.6	4.0	2.65	6.2	4.0	2.4	4.6	1.2	0.65	1.4
Na_2O--------	3.4	3.6	3.07	3.5	3.8	2.7	3.6	3.3	3.6	3.4
K_2O---------	3.7	3.0	4.51	0.82	3.4	4.8	1.5	4.6	6.0	5.0
H_2O^+--------	0.47	0.47	0.56	0.73	0.47	0.54	0.58	0.72	0.46	0.42
H_2O^- -------	0.19	0.00		0.07	0.00	0.02	0.00		0.07	0.06
TiO_2--------	0.22	0.16	0.38	0.22	0.21	0.20	0.09	0.30	0.06	0.08
P_2O_5--------	0.22	0.12	0.10	0.21	0.15	0.06	0.17	0.12	0.06	0.01
MnO---------	0.05	0.03	0.08	0.00	0.02	0.04	0.01	0.02	0.02	0.05
CO_2---------	0.10	0.02	n.d.	0.04	0.05	<0.05	0.09	n.d.	0.01	0.01
Total--	101.5	100.1	100.2	101.5	100.5	99.2	100.4	100.4	99.8	100.1

Semiquantitative spectographic analyses, in parts per million										
Ba----------	515	453	1000	345	545	1000	383	500	3	34
Be----------	2	2	2	L	1	2	1	1	1	2
Ce----------	68	38	N	L	30	N	L	N	L	L
Co----------	4	2	N	6	3	N	2	N	L	L
Cr----------	34	3	1	4	6	3	3	50	2	L
Cu----------	L	3	15	23	10	5	3	10	L	4
Ga----------	9	8	15	7	11	10	9	10	11	9
La----------	27	16	N	L	16	70	L	50	L	L
Mn----------	974	619	500	285	564	n.d.	300	n.d.	47	151
Mo----------	1	L	N	L	L	L	L	N	L	L
Nb----------	5	L	10	L	3	N	L	10	6	5
Nd----------	L	L	N	L	25	N	L	N	L	L
Ni----------	13	1	N	4	2	N	2	50	1	L
Pb----------	20	10	15	5	15	15	8	50	80	24
Pr----------	6	6	n.d.	L	4	n.d.	4	n.d.	L	L
Sc----------	13	5	7	1	4	7	1	30	1	L
Sn----------	6	L	n.d.	L	L	N	L	n.d.	L	L
Sr----------	450	382	500	658	514	300	561	150	3	29
V----------	32	29	50	25	28	15	11	30	2	5
Y----------	30	15	30	L	13	30	8	30	7	6
Yb----------	4	2	3	1	2	3	1	3	1	2
Zn----------	30	22	n.d.	24	22	n.d.	18	n.d.	L	L
Zr----------	77	60	100	145	47	100	110	150	14	69

CIPW norms, in weight percent										
Or----------	21.55	17.72	26.61	4.77	20.00	28.60	8.83	27.08	35.52	29.52
Ab----------	28.36	30.45	25.93	29.18	32.00	23.04	30.35	27.82	30.52	28.74
An----------	16.41	18.92	12.47	28.71	15.12	11.61	21.06	5.15	2.77	5.98
Q----------	24.08	27.49	25.78	31.15	25.79	31.94	35.00	32.80	29.23	33.56
C----------	••	0.09	1.05	0.27	••	0.35	0.70	2.09	0.77	••
Di----------	3.33	••	••	••	2.70	••	••	••	••	0.66
Hy----------	3.48	2.21	5.89	3.71	1.19	2.21	2.27	3.21	0.23	0.27
Mt----------	1.00	2.03	0.77	0.43	1.88	1.17	0.43	0.29	0.15	0.59
Il----------	0.41	0.30	0.72	0.41	0.40	0.38	0.17	0.57	0.11	0.15
Ap----------	0.51	0.28	0.24	0.49	0.35	0.14	0.40	0.28	0.14	0.02

Selected chemical parameters										
ASI---------	0.87	0.99	1.05	0.98	0.90	1.01	1.01	1.14	1.04	0.97
Fe^{3+}/ $Fe^{2+} + Fe^{3+}$	0.28	0.54	0.19	0.19	0.52	0.44	0.23	0.13	0.45	0.59
Sample no.	Bo26a	V83	By3a	V39g	Ro285a	M429c	Ro301d	S28b	Ke26d	W54b
Modes, in volume percent										
Plagioclase	45.3	40.0	33.8	56.1	41.2	21.8	46.3	28.6	31.7	22.0
K-Feldspar--	15.9	17.4	27.4	7.1	26.8	39.9	5.5	31.5	41.5	42.4
Quartz------	27.7	28.6	26.8	26.8	24.6	35.9	37.2	34.9	26.0	35.0
Amphibole---	2.0	2.6	2.4	0.1	2.2	0.6	••	••	••	••
Biotite-----	6.1	9.0	9.4	9.5	4.0	1.2	10.4	2.8	Tr.	0.6
Opaques-----	••	0.2	••	0.2	0.4	0.4	Tr.	Tr.	••	••
Apatite-----	0.6	Tr.	••	Tr.	Tr.	••	••	••	Tr.	••
Sphene------	0.2	0.2	0.2	••	0.4	Tr.	••	Tr.	••	••
Chlorite----	0.9	2.0	••	0.1	0.4	0.2	0.6	0.4	••	••
Epidote-----	1.1	Tr.	••	0.1	Tr.	••	••	0.2	••	••
Muscovite---	0.2	Tr.	••	••	••	••	Tr.	1.6	0.8	••
Zircon------	Tr.	••	••	Tr.	••	••	••	Tr.	Tr.	••
Allanite----	Tr.	••	••	••	••	••	••	••	••	••

Note: Rapid-rock chemical analyses by Gillison Chloe, Paul Elmore, J. L. Glenn, D. Hopping, James Kelsey, J. Riviello, and Hezekiah Smith. Methods used are described by Shapiro and Brannock (1962) and are supplemented by atomic absorption. Six-step semiquantitative spectrographic analyses by J. D. Fletcher, J. C. Hamilton, and J. L. Harris. N, not detected or at limit of detection; L, detected, but below limit of determination; n.d., not determined; ••, not present; Tr., trace amount present (<0.1 percent); ASI, aluminum saturation index, mol. [Al_2O_3/ (Na_2O + CaO + K_2O)]. Underlined number shows total H_2O. Not detected or at limit of determination for all samples: Ag, As, Au, B, Bi, Cd, Cs, Dy, Er, Eu, Gd, Ge, Hf, Hg, Ho, In, Ir, Li, Lu, Os, Pd, Pt, Rb, Re, Rh, Ru, Sb, Sm, Ta, Tb, Te, Th, Tl, Tm, U, and W. Rock types: Ap, aplite; Di, diorite; Gb, gabbro; Gr, granite; Grd, granodiorite; M, monzonite; Md, monzodiorite; Qd, quartz diorite; Qgb, quartz gabbro; Qm, quartz monzonite; Qmd, quartz monzodiorite; Ton, tonalite. Pluton names: W, Werner; MO, Morgan; CN, Copper Nunataks; GA, Galan; MC, McLaughlin, CR, Crowell.

For GSA Data Bank

Table B. Chemical data for dikes from the southern Antarctic Peninsula

Rock type	Bas	And	Bas	And	And	And	And	Dac	Dac	R
Pluton name	M	SK	M	W	SK	CN	M	H	W	WW
Sample no.	Ro501h	Ke184c	V178f	V77c	Ro498g	M307	V177k	Wa17a	Ka317	V89b
Chemical analyses, in weight percent										
SiO_2	45.97	50.55	50.76	53.6	54.23	55.0	58.77	63.4	66.7	69.6
Al_2O_3	13.18	18.32	17.71	14.3	18.10	14.8	17.91	16.7	15.4	15.0
Fe_2O_3	2.72	4.16	2.28	3.2	4.05	4.3	3.83	1.3	2.0	1.4
FeO	13.86	6.00	7.40	5.5	4.37	5.0	2.66	3.6	2.3	1.2
MgO	7.03	4.85	5.12	6.7	4.20	4.5	2.42	1.7	1.3	0.66
CaO	9.29	6.47	10.11	7.0	8.15	8.8	5.46	5.6	4.7	2.9
Na_2O	1.79	3.22	1.90	2.5	2.87	1.8	3.63	3.3	3.3	3.8
K_2O	2.02	1.07	1.27	2.1	2.21	1.9	2.50	3.1	3.3	4.3
H_2O^+	1.84	3.92	2.22	2.0	1.05	2.1	1.34	1.4	0.60	0.78
H_2O^-				0.12		0.23		0.10	0.00	0.10
TiO_2	0.86	0.95	0.76	0.94	0.66	0.89	0.74	0.46	0.41	0.21
P_2O_5	0.16	0.09	0.17	0.29	0.19	0.19	0.30	0.32	0.28	0.15
MnO	0.19	0.07	0.17	0.21	0.17	0.19	0.14	0.09	0.05	0.03
CO_2	n.d.	n.d.	n.d.	0.62	n.d.	<0.05	n.d.	0.06	0.04	0.25
Total--	98.9	99.7	99.9	99.1	100.3	99.7	99.7	101.1	100.4	100.4

For GSA Data Bank

Table C1. Chemical and modal data for plutonic rocks from eastern Ellsworth Land, Antarctica (Laudon, 1982)

Rock type	Qd	Qd	Qd	Qd	Qm	Qmd
Pluton name	Merrick	Merrick	Merrick	Merrick	Hassage	Thomas
Sample no.	66-157	66-123	66-153	66-154	EE931	66-175
Chemical analyses, in weight percent						
SiO_2	51.32	53.30	53.40	54.96	58.23	59.10
Al_2O_3	18.32	18.85	19.07	17.42	17.68	16.04
Fe_2O_3	1.41	3.63	3.23	3.17	1.04	3.71
FeO	6.57	5.65	5.79	4.74	4.90	3.29
MgO	5.38	3.36	3.22	3.70	2.36	2.68
CaO	9.92	8.29	8.19	7.57	6.65	5.56
Na_2O	2.48	3.34	3.67	3.16	3.86	3.10
K_2O	1.15	1.30	1.13	2.29	2.77	3.90
H_2O^-	2.70	1.78	1.80	1.67	1.40	1.24
TiO_2	0.67	0.85	0.84	0.80	0.63	0.92
P_2O_5	0.15	0.33	0.32	0.27	0.36	0.45
MnO	0.16	0.13	0.13	0.14	0.14	0.12
CO_2	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Total	100.2	100.8	100.8	99.9	100.0	100.1
CIPW Norms, in weight percent						
Or	6.78	7.62	6.62	13.55	16.37	23.02
Ab	20.94	28.03	30.81	26.77	32.66	26.20
An	35.38	32.34	31.97	26.61	22.73	18.31
Q	1.82	5.56	4.51	6.25	6.28	11.34
C	..	..	..	..	..	..
Di	10.39	5.18	5.16	8.18	7.80	6.78
Hy	18.32	11.93	12.18	10.52	9.74	5.71
Mt	2.04	5.22	4.65	4.60	1.51	5.37
Il	1.27	1.60	1.58	1.52	1.20	1.75
Ap	0.38	0.78	0.75	0.33	0.33	0.28

Semiquantitative spectographic analyses, in parts per million

Ba--------	100	700	300	375	360	200	1000	450	350	755
Be--------	N	N	N	1	1	1	N	2	2	2
Ce--------	N	N	N	85	L	N	N	44	44	49
Co--------	30	50	30	34	18	20	15	6	4	2
Cr--------	70	10	20	190	9	70	N	6	5	5
Cu--------	2	200	150	42	23	30	30	2	5	9
Ga--------	15	30	15	9	17	15	30	10	8	8
La--------	N	N	N	20	29	N	N	21	22	23
Mn--------	1000	700	700	1610	2200	n.d.	700	1280	810	685
Mo--------	N	N	N	2	L	N	N	1	1	L
Nb--------	N	N	N	2	8	n.d.	N	L	3	5
Nd--------	N	N	N	40	L	n.d.	N	L	L	23
Ni--------	30	20	20	49	17	15	N	3	1	2
Pb--------	N	N	N	9	L	10	N	6	10	18
Pr--------	N	N	N	5	L	n.d.	N	5	5	5
Sc--------	30	30	30	24	24	50	20	9	8	3
Sn--------	N	N	N	L	L	n.d.	N	L	3	L
Sr--------	500	500	700	625	840	1000	1000	575	440	335
V---------	150	300	200	228	230	150	150	67	53	22
Y---------	15	15	15	19	20	50	30	19	23	18
Yb--------	2	2	3	2	3	5	3	3	3	3
Zn--------	N	N	N	84	48	N	N	62	42	26
Zr--------	30	50	30	122	62	100	100	89	116	111

CIPW norms, in weight percent

Or--------	12.25	6.68	7.79	12.86	13.36	11.52	15.03	18.11	19.43	25.31
Ab--------	15.27	28.32	16.26	21.92	24.65	15.63	31.47	27.61	27.82	32.03
An--------	22.53	33.66	37.00	22.45	30.05	27.43	25.60	21.36	17.39	11.13
Q---------	••	0.48	2.58	4.09	2.04	10.11	9.55	17.23	23.59	24.65
Ne--------	0.25	••	••	••	••	••	••	••	••	••
C---------	••	0.10	••	••	••	••	••	••	••	••
Di--------	18.93	••	12.04	9.54	10.33	13.39	••	3.05	3.06	0.53
Hy--------	1.99	26.76	20.77	24.87	16.60	17.92	15.10	7.55	3.71	2.14
Fo--------	9.54	••	••	••	••	••	••	••	••	••
Fa--------	14.21	••	••	••	••	••	••	••	••	••
Mt--------	3.24	2.08	1.85	1.71	1.62	1.81	1.16	1.86	2.89	2.02
Il--------	1.67	1.82	1.52	1.85	1.21	1.73	1.37	0.86	0.78	0.40
Ap--------	0.38	0.21	0.40	0.71	0.45	0.47	0.67	0.75	0.66	0.35

Selected chemical parameters										
ASI---------	0.60	1.01	0.77	0.75	0.83	0.70	0.96	0.88	0.88	0.93
$Fe^{3+}/$ $Fe^{2+} + Fe^{3+}$	0.16	0.41	0.23	0.37	0.48	0.46	0.59	0.27	0.47	0.54

Note: Rapid-rock chemical analyses by Gillison Chloe, Paul Elmore, J. L. Glenn, James Kelsey, J. Riviello, and Hezekiah Smith. Methods used are described by Shapiro and Brannock (1962) and are supplemented by atomic absorption. Six-step semiquantitative spectrographic analyses by J. C. Hamilton and J. L. Harris. N, not detected or at limit of detection; L, detected, but below limit of determination; ASI, aluminum saturation index, mol. [Al_2O_3/ (Na_2O + CaO + K_2O)]; n.d., not determined; ", not present. Underlined number shows total H_2O. Not detected or at limit of determination for all samples: Ag, As, Au, B, Bi, Cd, Cs, Dy, Er, Eu, Gd, Ge, Hf, Hg, Ho, In, Ir, Li, Lu, Os, Pd, Pt, Rb, Re, Rh, Ru, Sb, Sm, Ta, Tb, Te, Th, Tl, Tm, U, W. Rock types: And, andesite; Bas, basalt, Dac, dacite; Rd, rhyolite. Pluton names: M, Merrick; SK, Sky-Hi; W, Werner; CN, Copper Nunataks; H, High; WW, west Wegener.

	Modes, in volume percent					
Plagioclase--	58.8	65.4	66.4	53.5	40.3	51.9
K-spar-------	••	2.1	••	5.5	28.3	19.5
Quartz-------	5.6	7.4	5.5	12.2	12.1	15.1
Amphibole----	5.4	5.4	9.8	13.0	15.9	8.6
Biotite------	2.4	10.9	11.0	11.4	1.9	0.7
Pyroxene-----	18.0	4.7	3.3	0.6	••	••
Opaques------	0.1	3.7	3.1	1.8	0.1	2.3
Sphene-------	••	••	••	••	••	0.8
Zircon-------	••	••	••	••	••	0.1
Chlorite-----	9.6	0.3	0.9	2.0	1.0	0.4
Epidote------	0.1	0.1	••	••	0.1	0.6
Calcite------	••	••	••	••	0.3	••
ASI ------	.78	.86	.86	.81	.82	.83
$Fe^{3+}/(Fe^{2+}+Fe^{3+})$	.18	.39	.36	.40	.18	.53

Note: ASI, alumina saturation index, mol. $[Al_2O_3/(Na_2O + CaO + K_2O)]$; n.d., not determined; ••, not present; Gr, granite; Grd, granodiorite; Ton, tonalite; Qd, quartz diorite; Qm, quartz monzonite; Qmd, quartz monzodiorite.

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Table D. Chemical and normative data for dikes from eastern Ellsworth Land, Antarctica (Laudon, 1982)

Rock type	Bas	Bas	Bas	Bas	And	Lat	And	R	Ap
Sample no.	EE189	EE536	APT44	66-77	EE249	EE934	66-79	EE603	66-34
Chemical analyses, in weight percent									
SiO_2---------	44.1	45.8	45.97	46.62	52.10	55.4	58.48	72.81	76.47
Al_2O_3--------	13.7	12.3	15.82	16.52	19.24	14.2	16.90	13.83	11.98
Fe_2O_3--------	3.2	5.8	4.77	2.10	2.28	1.0	2.00	0.41	0.80
FeO----------	9.2	7.8	4.36	10.07	6.03	8.5	6.12	0.34	1.15
MgO----------	6.4	11.4	6.27	6.88	2.17	3.3	2.47	0.17	0.56
CaO----------	5.4	9.2	8.86	10.26	6.12	7.3	4.34	1.25	0.92
Na_2O---------	2.7	2.1	2.40	2.27	3.13	3.5	3.45	2.66	3.19
K_2O----------	0.9	1.8	1.45	1.84	4.22	3.6	2.70	4.36	3.54
H_2O----------	9.71[a]	2.57[a]	2.75	2.75	3.85	0.15[a]	3.45	1.47	n.d.
TiO_2---------	1.13	0.99	1.00	1.13	1.04	0.61	0.42	0.06	0.33
P_2O_5---------	0.45	0.19	0.29	0.19	0.42	0.38	0.14	0.15	0.10
MnO----------	0.14	0.2	0.12	0.14	0.14	0.15	0.08	0.14	0.01
CO_2----------	n.d.	n.d.	6.01	n.d.	n.d.	n.d.	n.d.	2.65	1.00
Total---	97.0	100.1	100.1	100.8	100.7	98.1	100.5	100.3	100.0
CIPW Norms, in weight percent									
Or----------	6.12	11.13	9.46	11.13	25.61	21.71	16.70	26.72	21.15
Ab----------	26.22	11.21	22.03	14.75	27.27	30.42	29.90	23.60	27.27
An----------	25.87	19.20	30.88	30.05	26.99	12.52	22.26	6.40	4.73
Q----------	••	••	••	••	••	••	10.10	38.94	41.46
Ne----------	••	3.87	••	2.52	••	••	••	••	••
C----------	••	••	••	••	••	••	0.41	2.55	1.22
Di----------	0.97	22.49	12.56	18.16	1.26	18.20	••	••	••
Hy----------	26.95	••	9.87	••	8.26	13.09	18.07	0.93	2.33
Fo----------	3.44	15.79	5.65	9.02	1.86	0.18	••	••	••
Fa----------	3.99	11.68	4.86	9.46	4.04	0.35	••	••	••
Mt----------	2.78	2.55	1.85	2.32	1.62	1.39	1.62	0.69	1.16
Il----------	2.43	1.97	2.12	2.12	1.97	1.21	0.76	••	0.61
Ap----------	1.34	••	0.67	••	1.00	0.91	••	••	••

Note: a, loss on ignition; ••, not present; And, andesite; Ap, aplite; Bas, basalt; Lat, latite; R, rhyolite.

	Modes, in volume percent						
Plagioclase--	39.6	47.8	••	37.5	41.0	24.0	30.0
K-spar-------	11.6	3.1	••	34.1	17.6	44.7	29.5
Quartz-------	25.0	30.6	••	20.7	25.2	24.1	30.8
Amphibole----	8.6	3.4	••	5.4	1.6	2.3	••
Biotite------	7.3	14.1	••	0.7	11.9	4.2	9.7
Pyroxene-----	••	••	••	••	••	••	••
Opaques------	6.2	••	••	0.6	0.3	••	••
Sphene-------	1.2	••	••	0.2	••	••	••
Zircon-------	••	••	••	••	••	••	••
Chlorite-----	0.5	0.5	••	0.8	2.4	0.7	••
Epidote------	••	0.5	••	••	••	••	••
Calcite------	••	••	••	••	••	••	••
ASI ------	.88	1.09	1.00	.93	1.18	1.03	1.12
$Fe^{3+}/(Fe^{2+}+Fe^{3+})$	.48	.25	.42	.46	.33	.23	.13

Note: ASI, alumina saturation index, mol. $[Al_2O_3/(Na_2O + CaO + K_2O)]$; a, loss on ignition; n.d., not determined; ••, not present; Gr, granite; Grd, granodiorite; Ton, tonalite; Qd, quartz diorite; Qm, quartz monzonite; Qmd, quartz monzodiorite.

For GSA Data Bank

Table C2.

Rock type	Grd	Ton	Gr	Gr	Grd	Gr	Gr
Pluton name	Quilty	Glowa	Thomas	Weather Guesser	Caywood	W. Behrendt	Merrick
Sample no.	66-217	66-57.3	EE780	66-1	EE281	66-19	APT51
Chemical analyses, in weight percent							
SiO_2	60.48	62.4	65.62	66.21	67.5	68.43	71.50
Al_2O_3	16.09	15.6	15.83	16.17	14.7	15.19	14.55
Fe_2O_3	3.45	1.2	2.00	1.58	1.0	0.77	0.22
FeO	3.67	3.6	2.79	1.86	2.0	2.63	1.48
MgO	2.36	1.6	1.69	1.23	0.8	1.08	0.95
CaO	5.50	3.9	3.63	3.89	2.5	2.65	2.15
Na_2O	3.27	2.7	3.04	3.59	2.7	3.05	2.79
K_2O	2.68	2.5	3.86	4.12	3.2	4.59	4.19
H_2O^-	1.06	0.53[a]	n.d.	1.23	0.32[a]	n.d.	n.d.
TiO_2	0.89	0.4	0.50	0.31	0.18	0.38	0.25
P_2O_5	0.35	n.d.	0.27	0.26	n.d.	0.24	0.19
MnO	0.13	0.06	0.10	0.08	0.06	0.07	0.01
CO_2	n.d.	n.d.	1.32	n.d.	n.d.	1.20	1.65
Total	99.9	94.5	100.6	100.5	95.0	100.3	99.9
CIPW Norms, in weight percent							
Or	15.85	15.72	22.66	24.22	19.98	27.05	24.78
Ab	27.69	24.32	22.56	30.22	24.14	25.74	23.63
An	21.33	20.59	17.24	15.76	13.10	12.65	10.61
Q	15.99	25.62	21.58	19.20	33.59	24.14	32.14
C	••	1.45	0.29	••	2.38	0.55	1.54
Di	4.16	••	••	2.39	••	••	••
Hy	6.94	9.64	7.31	3.95	5.92	6.68	4.85
Mt	5.01	1.85	2.88	2.28	1.53	1.11	0.32
Il	1.69	0.81	0.94	0.59	0.36	0.72	0.48
Ap	0.31	••	0.24	0.19	••	0.17	0.02