TABLE DR1. U-PB ZIRCON DATA FOR THE GOLDEN BEAR AND COSO DIKE SETS AND THEIR WALL ROCKS

fraction (n)*	weight (mg)	conc. (ppm) U	conc. (ppm) Pb*	$^{206}Pb^{\dagger}/^{204}Pb$	$^{206}Pb^{\ddagger}/^{238}U$	error (%)	$^{207}Pb^{\ddagger}/^{235}U$	error (%)	$^{207}Pb^{\ddagger}/^{206}Pb$	error (%)	ages (Ma) $^{206}Pb/^{238}U$	ages (Ma) $^{207}Pb/^{235}U$	ages (Ma) $^{207}Pb/^{206}Pb$	corr. coeff.	total common Pb (pg)
GB0105: Golden Bear Dike (east) (384234, 4068088)**															
6b (1)	0.0070	781.8	13.7	3146.0	0.01701	(.16)	0.11394	(.21)	0.04858	(.14)	109	110	128	0.763	1.9
6a (1)	0.0070	781.8	11.9	2546.5	0.01482	(.20)	0.09816	(.25)	0.04804	(.14)	94.8	95.1	101.1	0.821	2.0
1 (19)	0.0140	1996	27.5	10289	0.01305	(.20)	0.08574	(.23)	0.04766	(.10)	83.6	83.5	82.3	0.902	2.3
4 (6)	0.0127	475.6	6.62	2746.7	0.01296	(.19)	0.08519	(.24)	0.04768	(.15)	83.0	83.0	83.3	0.790	1.8
5 (35)	0.0265	771.0	10.7	11716	0.01290	(.15)	0.08476	(.18)	0.04764	(.11)	82.7	82.6	81.2	0.806	1.4
76 (3)	0.0141	571.2	7.68	2310.2	0.01271	(.19)	0.08351	(.24)	0.04767	(.14)	81.4	81.4	82.8	0.816	2.8
3 (30)	0.0706	392.3	5.27	11957	0.01264	(.11)	0.08284	(.15)	0.04754	(.10)	81.0	80.8	76.4	0.741	1.9
GB02-13: Golden Bear Dike (west) (379270, 4064598)															
C (4)	0.0067	771.4	10.7	821.40	0.01298	(1.1)	0.08552	(1.2)	0.04779	(.25)	83.1	83.3	88.8	0.976	5.3
D (20)	0.0186	425	5.98	3300.5	0.01301	(.23)	0.08561	(.26)	0.04773	(.12)	83.3	83.4	85.8	0.881	2.0
E (5)	0.0044	453.8	6.39	1262.7	0.01305	(.36)	0.08617	(.51)	0.04790	(.35)	83.6	83.9	94.6	0.739	1.3
F (10)	0.0070	834.	11.7	3312.9	0.01304	(.18)	0.08606	(.24)	0.04787	(.16)	83.5	83.8	92.8	0.754	1.5
020517-1: Coso Dike (east) (443119, 4004141)															
E (1)	0.0282	156.5	2.07	2912.1	0.01334	(.23)	0.08782	(.27)	0.04774	(.13)	85.4	85.5	86.2	0.875	1.3
F (1)	0.0170	425	5.84	5940.6	0.01296	(.13)	0.08527	(.17)	0.04772	(.11)	83.0	83.1	85.4	0.761	1.0
G (5)	0.0190	58.59	0.82	749.24	0.01315	(.57)	0.08842	(.67)	0.04878	(.33)	84.2	86.0	137	0.867	1.3
H (3)	0.0280	151.9	3.13	4776.0	0.01968	(.15)	0.1326	(.19)	0.04887	(.12)	126	126	142	0.778	1.1
A (14)	0.0100	933.7	14.2	4221.7	0.01458	(.15)	0.09743	(.20)	0.04846	(.13)	93.3	94.4	122	0.744	2.1
91 (7)	0.0061	597.2	8.75	2302.1	0.01476	(.21)	0.09822	(.25)	0.04828	(.14)	94.4	95.1	113	0.820	1.5
96 (1)	0.0188	227.2	3.20	415.68	0.01307	(1.3)	0.08596	(1.4)	0.04769	(.35)	83.7	83.7	83.7	0.966	9.0
020518-2c: Coso Dike (west) (418921, 4008306)**															

A (3)	0.0090	241.9	3.32	1879.0	0.01337	(.25)	0.08881	(.30)	0.04818	(.16)	85.6	86.4	108.2	0.844	1.0
B (1)	0.0144	405.4	5.78	4774.5	0.01425	(.16)	0.09368	(.21)	0.04768	(.13)	91.2	90.9	83.5	0.774	1.1
C (2)	0.0113	515.4	11.3	4272.8	0.02129	(.14)	0.1437	(.18)	0.04896	(.11)	136	136.	146	0.788	1.9
D (5)	0.0118	266.5	3.68	2177.2	0.01326	(.21)	0.08750	(.25)	0.04787	(.14)	84.9	85.2	93.0	0.824	1.2
G (10)	0.0045	1016	13.7	2304.7	0.01291	(.24)	0.08502	(.31)	0.04775	(.19)	82.7	82.9	87.0	0.786	1.6
H (8)	0.0060	752.8	11.3	1410.0	0.01433	(.34)	0.09487	(.39)	0.04803	(.18)	91.7	92.0	101	0.887	3.0
90 (7)	0.0041	700.2	13.4	2211.2	0.01721	(.27)	0.1154	(.32)	0.04865	(.16)	110	111	131	0.853	1.4
97 (2)	0.0060	213.8	3.24	449.16	0.01406	(.91)	0.09448	(1.0)	0.04875	(.45)	90.0	91.7	136	0.899	2.7
IP0203: Independence Pluton (386604,4066534)															
d (2)	0.0141	527.0	8.46	1810.5	0.01604	(.23)	0.1066	(.28)	0.04819	(.14)	103	103	109	0.852	4.2
a (5)	0.0058	811.7	13.7	1429.4	0.01601	(.34)	0.1065	(.39)	0.04821	(.18)	102	103	110	0.887	3.4
71 (1)	0.0282	109.8	2.01	822.43	0.01603	(.49)	0.1061	(.55)	0.04802	(.24)	103	102	100	0.899	3.9
b (25)	0.0147	1039	16.3	4697.6	0.01540	(.21)	0.1021	(.23)	0.04807	(.11)	98.5	98.7	103	0.891	3.2
80 (2)	0.0057	258.0	4.14	469.11	0.01508	(.85)	0.1018	(.99)	0.04896	(.47)	96.5	98.5	146	0.878	3.1
c (13)	0.0060	2174	33.2	1404.0	0.01500	(.40)	0.09938	(.45)	0.04804	(.19)	96.0	96.2	101	0.906	9.0
020518-3: Leucogranite of Cactus Flat (423291, 4004785)**															
f (1)	0.0044	1176	20.4	2561.8	0.01601	(.54)	0.1059	(.57)	0.04799	(.19)	102	102	98.9	0.943	2.1
h (1)	0.0376	256.5	4.12	957.16	0.01593	(.51)	0.1057	(.55)	0.04813	(.20)	102	102	106	0.932	10
73 (1)	0.0141	507.0	8.22	2536.3	0.01586	(.18)	0.1050	(.23)	0.04802	(.14)	101	101	100	0.801	2.9
88 (2)	0.0098	741.8	12.2	1078.1	0.01580	(.65)	0.1048	(.71)	0.04811	(.27)	101	101	105	0.923	6.9
g (1)	0.0094	435.0	7.00	2461.6	0.01576	(.21)	0.1046	(.25)	0.04814	(.14)	100	101	106	0.835	1.7

[*] Radiogenic Pb.

[†] Measured ratio corrected for fractionation only. All Pb isotope ratios were measured using the Daly detector, and are corrected for mass fractionation using 0.18 %/amu.

[‡] Corrected for fractionation, spike, blank, and initial common Pb. After subtraction of blank Pb (<5 pg), common Pb corrections were unnecessary for most fractions. For fractions with total common Pb in excess of 5 pg, corrections were made using Stacey and Kramers (1975) initial Pb.

[**] All locations reported as UTM coordinates using NAD 27 datum.

The samples were crushed and zircons were separated using standard density and magnetic methods. All zircon fractions were handpicked by color, size, and morphology, and were air abraded (Krogh, 1982), spiked with ^{205}Pb-^{233}U-^{236}U, and dissolved (Krogh, 1973). Isolation of U and Pb followed the methods of Parrish (1987). Purified U and Pb fractions were loaded on single Re filaments with silica gel and graphite, respectively. Procedural blanks during analysis were estimated to be a maximum of 5 pg Pb. Most fractions have total common Pb less than 5 pg; therefore, all common Pb present was assumed to be blank Pb. For fractions with more than 5 pg common Pb, Stacey and Kramers (1975) model Pb was used to correct the data. Analysis accomplished with a VG Sector 54 thermal ionization mass spectrometer at the University of North Carolina. Decay constants used are ^{238}U = 0.155125 x 10^{-9}yr^{-1}, and ^{235}U = 0.98485 x 10^{-9}yr^{-1} (Steiger and Jäger, 1977). Weights are estimated using a video camera and scale, and are known to within 10%. Data reduction and error analysis was accomplished using PbMacDat-2 by D.S. Coleman, using the algorithms of Ludwig (1989, 1990) and all errors are reported in percent at the 2ω confidence interval.

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TABLE DR2. LOCATIONS, MAJOR AND TRACE ELEMENT AND ISOTOPIC DATA FOR SAMPLES FROM THE GOLDEN BEAR AND COSO DIKE SETS AND THEIR WALL ROCKS

	Golden Bear dike				Coso dikes				Independence	Cactus Flat
sample[†]	0102-11C	0102-10M	0102-13M	0105C	020517-1C	020517-2C	020518-2C	020518-2M	IP0203	020518-3
easting[‡]	378069	378079	379270	384234	443119	437424	418931	418941	387370	423291
northing	4010079	4010079	4064598	4068088	4004141	4002629	4008310	4008320	4068820	4004785
					(weight percent oxide)[§]					
SiO_2	69.21	68.03	68.62	69.88	68.31	66.18	69.32	68.71	73.08	72.78
TiO_2	0.367	0.446	0.412	0.355	0.348	0.497	0.379	0.434	0.113	0.181
Al_2O_3	15.8	16.77	16.52	15.72	16.51	16.69	16.25	17	14.9	14.47
FeO	2.29	2.62	2.54	2.03	1.79	2.6	1.78	2.07	1.09	1.55
MgO	0.59	0.71	0.66	0.64	0.6	0.85	0.67	0.7	0.28	0.31
MnO	0.05	0.081	0.056	0.03	0.032	0.036	0.029	0.027	0.023	0.042
CaO	2.61	2.93	2.77	2.45	2.08	2.92	1.77	2.17	0.79	0.94
K_2O	3.59	3.61	3.64	3.96	4.08	3.86	3.97	3.82	4.8	4.84
Na_2O	4.35	4.51	4.52	4.3	4.85	4.5	4.74	5.07	4.59	4.29
P_2O_5	0.137	0.163	0.153	0.134	0.134	0.2	0.15	0.189	0.044	0.064
Total	98.99	99.87	99.89	99.5	98.73	98.33	99.05	100.19	99.71	99.46
					(ppm)[§]					
Ba	918	1450	1350	843	2600	1510	1700	1680	453	461
Cr	3	3	4	3	1	3	1	1	0	0
Cs	1.7	2.6	1.7	1.2	0.95	0.94	1.2	1.5	1.4	0.99
Cu	4	3	6	1	6	90	40	80	2	2
Ga	20	21	22	21	22	21	21	22	15	15
Hf	4.61	5.19	4.90	4.28	4.92	5.60	5.20	5.58	3.52	4.49
Nb	8.4	10	10	9.4	7.9	8.7	7.3	8.1	11	14
Ni	5	3	4	6	7	5	9	8	8	5
Pb	15	12	13	13	17	8.0	16	19	11	3.0
Rb	123	140	122	110	99.0	93.0	91.0	101	174	129

Sc	3	3	4	3	4	5	0	4	1	0
Sr	597	659	652	591	577	790	779	926	106	114
Ta	0.74	0.74	0.74	0.72	0.50	0.52	0.45	0.46	0.75	1.0
Th	16	8.0	10	17	7.0	7.0	7.0	5.0	13	14
U	4.13	1.70	2.34	3.63	1.59	1.79	1.07	1.46	1.81	1.85
V	35	42	35	33	33	49	40	42	3.0	12
Y	9.0	9.0	9.0	7.0	6.0	8.0	6.0	6.0	16	22
Zn	59	66	58	33	44	35	44	52	15	19
Zr	172	207	203	153	189	221	207	229	111	146
La	34.42	39.49	38.03	31.04	38.81	41.66	40.34	42.61	25.41	24.84
Ce	58.05	68.36	66.42	52.46	66.32	73.20	69.40	73.88	42.97	44.54
Pr	5.97	7.11	6.88	5.43	6.89	7.80	7.31	7.81	4.41	4.88
Nd	21.56	25.74	24.91	19.46	24.40	28.71	26.03	28.15	15.12	18.15
Sm	3.67	4.41	4.30	3.28	3.84	4.78	4.07	4.27	3.08	3.77
Eu	0.9	1.1	1.1	0.9	0.9	1.2	1.0	1.1	0.5	0.5
Gd	2.4	3.0	2.8	2.2	2.1	3.0	2.3	2.4	2.4	3.2
Tb	0.30	0.37	0.36	0.27	0.24	0.35	0.25	0.27	0.41	0.57
Dy	1.6	1.9	1.9	1.4	1.2	1.7	1.1	1.3	2.4	3.5
Ho	0.27	0.33	0.34	0.24	0.19	0.28	0.19	0.22	0.49	0.73
Er	0.69	0.84	0.83	0.62	0.48	0.70	0.47	0.51	1.4	2.1
Tm	0.1	0.1	0.1	0.09	0.07	0.09	0.06	0.07	0.2	0.3
Yb	0.63	0.75	0.73	0.57	0.42	0.54	0.40	0.44	1.5	2.1
Lu	0.1	0.1	0.1	0.09	0.07	0.08	0.06	0.07	0.2	0.3
				(measured and initial isotopic ratios)[#]						
$^{87}Sr/^{86}Sr_m$	0.707915	0.707666	0.707600	0.707944	0.708127	0.708764	0.708176	0.707783	0.712645	0.710744
$^{87}Sr/^{86}Sr_i$	0.707208	0.706937	0.706958	0.707305	0.707538	0.708360	0.707775	0.707408	0.705723	0.705974
±[††]	0.000018	0.000017	0.000017	0.000018	0.000018	0.000017	0.000015	0.000014	0.000191	0.00014
$^{143}Nd/^{144}Nd_m$	0.512237		0.512282		0.512205	0.512137	0.512183	0.512237	0.512382	
$\kappa_{Nd}(t)$[‡‡]	-6.82		-5.97		-7.36	-8.74	-7.78	-6.7	-4.03	
±[#]	0.19		0.23		0.17	0.19	0.19	0.15	0.21	

[†]"C" and "M" designation after dike samples indicates sample taken from the center or margin of a dike, respectively.

[‡]All locations are in UTM coordinates using NAD 27

[§]XRF analytical procedures and data reduction followed Johnson et al. (1999). ICP-MS analytical procedures and data reduction followed Knaack et al. (1994).

[#]All Sr and Nd isotopic analyses performed at the UNC thermal ionization mass spectrometry lab on the VG Insturments, Sector-54 mass spectrometer. Strontium was separated using crown-ether resin after Pin and Bassin (1992). Strontium was loaded on single Re filaments with $TaCl_5$ and analyzed with $^{88}Sr = 3 *10^{-11}$ amps in triple-dynamic multicollector mode. All Sr data are normalized to $^{86}Sr/^{88}Sr = 0.1194$ assuming exponential fractionation behavior. Replicate analyses of NBS-987 yield $^{87}Sr/^{86}Sr = 0.710262 \pm 0.000012$ (absolute 2ω error of the mean; n = 81).Neodymium was separated using conventional cation exchange chromatography to isolate a bulk REE fraction and methylactic acid chemistry to separate Nd from the other REEs. Neodymium was loaded on triple Re filaments and analyzed with $^{144}Nd = 1.5 *10^{-11}$ amps in triple-dynamic multicollector mode. All Nd data are normalized to $^{146}Nd/^{144}Nd = 0.7219$ assuming exponential fractionation behavior. Replicate analyses of Ames metal yield $^{143}Nd/^{144}Nd = 0.512143 \pm 0.000018$ (absolute 2ω error of the mean; n = 41), and La Jolla Nd yield $^{143}Nd/^{144}Nd = 0.511858 \pm 0.000014$ (absolute 2ω error of the mean; n = 7). Calculation of initial Sr and Nd ratios was accomplished using [Sr], [Rb], [Nd] and [Sm] from XRF and ICP analyses listed in this table, and 83.4 Ma as the age of the Golden Bear and Coso dikes and 102.5 Ma as the age of the leucogranites. Decay constants used are $^{87}Rb = 1.42 *10^{-11}yr^{-1}$ and $^{147}Sm = 6.54 *10^{-12}yr^{-1}$ Steiger and Jäger (1977).

[††]Errors in the initial Sr and Nd data are listed as ± absolute 2ω error of the mean.

[‡‡]$\kappa_{Nd}(t)$ calculated assuming $^{143}Nd/^{144}Nd_{CHUR} = 0.512638$ and $^{147}Sm/^{144}Nd_{CHUR} = 0.1967$.

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