

**RADIOMETRIC AGES OF ROCKS
IN THE
CHICO QUADRANGLE,
CALIFORNIA
SCALE 1:250,000**

Compiled by
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with assistance from
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Division of Mines and Geology

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CHICO QUADRANGLE MAP NO. 7A (GEOLOGY), SHEET 4

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RADIOMETRIC AGES OF ROCKS IN THE CHICO QUADRANGLE, CALIFORNIA SCALE 1:250,000

The map and accompanying table present a summary of radiometric ages determined from rock samples collected within the Chico 1° X 2° quadrangle. The ages used in this compilation are those reported in the references cited (based on decay constants accepted at the time of their publication), as well as recalculated ages using the standardized decay constants adopted by the IUGS Subcommittee on Geochronology (Steiger and Jäger, 1977). Tables for the conversion of K-Ar ages from old to new constants (Dalrymple, 1979) were used for this purpose.

Each location plotted on the geologic map is keyed by number to the table and accompanied by information pertaining to the dating method used, age, and mineral or material dated. The ages shown on the map have been recalculated where necessary. The ages, sample location, name of quadrangle where sample was taken, sample description, reference cited, and original sample number are shown on the accompanying table.

This compilation makes no attempt to interpret the data presented or to evaluate the validity of the ages reported. The readers, therefore, are advised to refer to the original reference for interpretive information.

These data were compiled from all known sources through May 1989. If any published or unpublished references containing radiometric ages have been overlooked, we would appreciate being informed. Please send any additional data to: George J. Saucedo, Department of Conservation, Division of Mines and Geology, 1145 Market Street, 3rd Floor, San Francisco, CA 94103-1513; or telephone (415) 557-1529

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LOCATION NUMBER	DATING METHOD ¹	SAMPLE LOCATION		MINERAL (or material) ²	AGE (IN MILLION YEARS)		DESCRIPTION OF SAMPLE	REFERENCE	(ORIGINAL) SAMPLE NUMBER)
		LATITUDE (NORTH) (QUADRANGLE) (7.5')	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
1	KA	39°53'52" (Storrie)	121°21'16"	B	128	131	Elephant Butte pluton (Grizzly pluton)	Evernden and Kistler, 1970, p. 31, Table 5; p. 35, Table 6	(1432)
	KA	do		H	142	145	do	do	(1433)
2	KA	39°58'15" (Storrie)	121°16'37"	B	132	135	Bucks pluton	do	(1436)
	KA	do		H	136	139	do	do	(1437)
3	KA	39°45'35" (Soapstone Hill)	121°18'34"	B	126	129	Merrimac pluton	do	(1438)
	KA	do		H	131	134	do	do	(1439)
4	KA	39°49'44" (Pulga)	121°24'18"	B	129	132	Cresta pluton (Grizzly pluton)	do	(1440)
	KA	do		H	132	135	do	do	(1441)
5	KA	39°57'57" (Storrie)	121°16'37"	H	143	146	Bucks pluton	do	(1442)
	KA	do		H	142	145	do	do	(1449)
6	KA	39°47'31" (Beckwourth Pass)	120°06'25"	B	86.8	89.0	Unnamed granitic rock	Evernden and Kistler, 1970, p. 31, Table 5; p. 36, Table 6	(1508)
	KA	do		B	88.9	91.1	do	do	(1508-B)

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		LATITUDE (NORTH)	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
7	KA	39°52'07"	120°24'07"	B	105	108	Unnamed granitic rock	Evernden and Kistler, 1970, p. 31, Table 5; p. 36, Table 6	(1509)
	KA	do (Portola)		H	105	108	do		do
8	KA	39°36'38"	120°29'37"	B	99.0	101.5	do	do	(1510)
9	KA	39°37'14"	120°28'30"	B	97.2	99.6	do	do	(1511)
	KA	do (Sattley)		B	97.5	99.9	do	do	(1511-10/16)
	KA	do		B	98.5	100.9	do	do	(1511-16/28)
	KA	do		B	101	104	do	do	(1511-35/48)
	KA	do		B	101	104	do	do	(1511-100/150)
	KA	do		H	125	128	do	do	(1511-HBD)
	KA	do		B	96.7	99.1	do	do	(1512)
	KA	do		H	97.8	100.2	do	do	(1512-HBD)
10	KA	39°19'06"	120°18'54"	B	92.5	94.8	do	do	(1512-PL)
	KA	do (Norden)		KF	100.1	102.6	do	do	(1512-KF)
	KA	do		Q	109	112	do	do	(1512-QTZ)
	KA	do					do	do	

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		LATITUDE (NORTH)	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
11	KA	*39°23.6'	121°05.0'	B	143	146	Unnamed granitic rock (Yuba Rivers pluton)	Evernden and Kistler, 1970, p. 33, Table 5; p. 40, Table 6	(1701)
	KA	do		H	146	150	do	do	(1701-HBD)
12	KA	*39°37.8'	120°34.0'	B	153	157	Unnamed granitic rock (Clio)	do	(1702)
	KA	do		H	150	154	do	do	(1702-HBD)
13	KA	*39°11.1'	121°49.6'	B	2.4	2.5	Rhyolitic fragments from basal Rampart beds (Sutter Buttes)	Williams and Curtis, 1977, p. 42	(62)
14	KA	*39°07.6'	121°56.5'	B	2.2	2.3	Biotite rhyolite (from buried "Colusa Buttes" Humble Well, 9,430 foot depth) (Meridian)	do	
15	KA	*39°13.6'	121°51.3'	B	2.0	2.1	Hornblende-biotite andesite (Sutter Buttes)	do	(64)
16	KA	*39°12.4'	121°47.3'	B	1.89	1.94	Rhyolite dome (Sutter Buttes)	do	(16)
17	KA	*39°13.1'	121°50.2'	B	1.8	1.8	Hornblende-biotite andesite (Sutter Buttes)	do	
18	KA	*39°16.3'	121°45.8'	B	1.76	1.81	Hornblende-biotite andesite (boulder in laharic deposits) (Pennington)	do	(67)
19	KA	*39°11.4'	121°49.8'	H	1.74	1.75	Hornblende-biotite andesite (from gas well) (Sutter Buttes)	do	

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		LATITUDE (NORTH) (QUADRANGLE) (7.5')	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
20	KA	*39°11.5'	121°46.5'	B	1.69	1.74	Biotite rhyolite	Williams and Curtis, 1977, p.42	(10)
21	KA	*39°10.9'	121°49.5'	H	1.66	1.70	Dacite fragments	do	
22	KA	*39°12.8'	121°49.0'	B	1.59	1.63	Hornblende-biotite andesite	do	
23	KA	*39°11.4'	121°48.3'	B	1.55	1.59	Biotite rhyolite	do, p. 43	
24	KA	*39°10.8'	121°48.2'	B	1.50	1.54	Hornblende-biotite andesite	do	(141)
25	KA	*39°16.2'	121°45.9'	B	1.40	1.44	Hornblende-biotite rhyodacite	do	(1 and 68)
26	KA	*39°15.1'	121°47.9'	?	136	139.3	Norite (Shell-Buttes Community No. 1 Well, 6,561 foot depth)	do p. 7	
27	KA	*39°11.8'	121°49.9'	?	138	141.3	Quartz-hornblende diorite (from gas well, 7,014 foot depth)	do p. 9	
28	KA	*39°59.9'	121°16.6'	B	135.7	132.5	Belden granodiorite	Curtis, and others, 1958, p. 6; p. 12, Table 1	(KA 98)
29	KA	39°33.58'	120°51.11'	M	175 ±6	Not applicable ⁴	Quartz-muscovite phyllite	Schweickert, and others, 1980, p. 29, Figure 3; p. 30, Table 1	(238A)
30	KA	39°33.54'	120°50.60'	WR	190 ±8	do	do	do	(323)

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		LATITUDE (NORTH)	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
31	KA	39°33.54'	120°50.69'	M	173 ±8	Not applicable ⁴	Quartz-muscovite phyllite	Schweickert, and others, 1980, p. 29, Figure 3; p. 30, Table 1	(324)
32	KA	39°33.58'	120°50.83'	WR	176 ±9	do	do	do	(327)
	KA	do	do	M	157 ±5	do	do	do	do
33	KA	39°19.33'	120°17.58'	P	26.4 ±0.8	do	Pyroxene-hornblende andesite	Morton, and others, 1977, p. 21	(BH-T)
34	KA	39°21.92'	120°21.83'	P	13.5 ±0.4	do	Andesite	do	(CP-4)
	KA	do	do	H	12.9 ±0.4	do	do	do	do
35	KA	39°46.2'	120°31.5'	P	11.0 ±0.9	do	Hornblende andesite (from mud-flow breccia)	do	(BONTA)
	KA	do	do	H	10.9 ±0.4	do	do	do	do
36	KA	*39°11.7'	121°46.2'	B	1.6	1.6	Rhyolite plug	Evernden, and others, 1964, p. 159, Table 5; p. 174	(KA 65)
37	KA	*39°15.9'	121°47.3'	B	1.5	1.5	Andesite flow	do p. 175	(KA 101)
38	KA	*39°12.4'	121°47.3'	B	1.9	2.0	Intrusive	do p. 179	(KA 490)
39	KA	*39°59.05'	120°33.8'	WR	11.5 ±0.4	11.8 ±0.4	Lovejoy Formation basalt (lowest flow)	Dalrymple, 1964, p. 4, Table 1; p. 34	(KA 994)

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		LATITUDE (NORTH) (QUADRANGLE) (7.5')	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
40	KA	*39°59.4'	120°33.8'	WR	11.6 ±0.6	11.9 ±0.6	Lovejoy Formation basalt (2nd flow from bottom)	Dalrymple, 1964, p. 4, Table 1; p. 35	(KA 1075)
	KA	do		WR	13.6 ±0.4	14.0 ±0.4	do (4th flow from bottom)	do	(KA 1076)
	KA	do		WR	3.5 ±0.7	3.6 ±0.7	do (7th flow from bottom)	do	(KA 1077)
41	KA	*39°17.7'	120°12.6'	WR	1.2 ±0.1	1.2 ±0.1	Bald Mountain olivine latite	do	(KA 1078)
42	KA	*39°22.2'	120°06.7'	WR	1.3 ±0.1	1.3 ±0.1	Hirschdale olivine latite	do	(KA 1094)
43	KA	*39°13.0'	120°05.2'	WR	2.2 ±0.1	2.3 ±0.1	Watsons Creek basalt	do	(KA 1096)
44	KA	*39°09.9'	120°10.1'	WR	1.9 ±0.1	2.0 ±0.1	Tahoe City olivine latite	do	(KA 1097)
45	KA	*39°37.5'	120°26.2'	S	16.1 ±0.3	16.5 ±0.3	Sattley rhyolite tuff	do p. 36	(KA 1098)
	KA	do		P	28.1 ±0.6	28.8 ±0.6	do	do p. 5, Table 1; p. 38	(KA 1202)
46	KA	*39°21.6'	120°12.9'	WR	2.3 ±0.1	2.4 ±0.1	Alder Hill basalt	do p. 4, Table 1; p. 36	(KA 1102)
47	KA	*39°19.5'	120°21.2'	P	7.4 ±0.2	7.6 ±0.2	Boreal Ridge basalt	do	(KA 1109)

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		LATITUDE (NORTH)	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
48	KA	*39°48.8'	120°32.6'	S	20.5 ±0.4	21.0 ±0.4	Delleker rhyolite tuff	do p. 5, Table 1; p. 37	(KA 1126)
	KA	do	do	B	29.9 ±0.6	30.7 ±0.6	do	do p. 38	(KA 1190)
49	KA	*39°48.6'	120°29.3'	S	26.1 ±0.5	26.8 ±0.5	Delleker rhyolite tuff	Dalrymple, 1964, p. 5, Table 1; p. 37	(KA 1127)
50	KA	*39°19.2'	120°47.7'	S	22.8 ±0.5	23.4 ±0.5	Skillman Flat rhyolite tuff	do	(KA 1129)
51	KA	*39°12.2'	120°49.0'	S	22.6 ±0.5	23.2 ±0.5	Lake Alta rhyolite tuff	do	(KA 1130)
	KA	do	do	P	28.1 ±0.6	28.8 ±0.6	do	do p. 38	(KA 1200)
52	KA	*39°19.1'	120°20.0'	S	33.2 ±0.7	34.1 ±0.7	Beacon Peak rhyolite (lower welded tuff)	do p. 37	(KA 1131)
	KA	do	do	S	26.0 ±0.5	26.7 ±0.5	do (upper welded tuff)	do p. 38	(KA 1235)
53	KA	*39°41.8'	120°59.4'	P	28.7 ±0.6	29.5 ±0.6	La Porte tuff	do p. 37	(KA 1133)
	KA	do	do	P	32.4	33.2	do	Evernden and James, 1964, p. 957, Table 3; p. 965; p. 967	do
54	KA	*39°33.6'	121°33.3'	P	23.8 ±0.6	24.4 ±0.6	Oroville Table Mountain tuff	Dalrymple, 1964, p. 5, Table 1; p. 38	(KA 1191)
55	KA	*39°58.8'	120°32.4'	S	22.2 ±0.4	22.8 ±0.4	Delleker rhyolite tuff	do	(KA 1234)

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LOCATION NUMBER	DATING METHOD ¹	SAMPLE LOCATION		MINERAL (or material) ²	AGE (IN MILLION YEARS)		DESCRIPTION OF SAMPLE	REFERENCE	(ORIGINAL) SAMPLE NUMBER)
		LATITUDE (NORTH)	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
56	KA	*39°04.6'	121°21.3'	P	53.5 ±1.1	54.9 ±1.1	Andesite pebbles from Wheatland Formation	do	(KA 1253)
57	KA	*39°20.1'	120°09.9'	WR	1.64 ±0.05	1.68 ±0.05	Olivine latite	Doell, and others, 1966, p. 532, Table 1; p. 534	(S19)
58	KA	*39°13.0'	120°05.2'	WR	2.46 ±0.07	2.53 ±0.07	Andesite	do	(S20)
59	KA	*39°51.3'	120°30.8'	P	10.81 ±0.54	11.10 ±0.54	Hornblende andesite intrusion	Dalrymple, and others, 1967, p. 165, Table 1; p. 171	(W27)
60	RS	*39°13.3'	121°20.1'	WR	152 ±3.6	Not applicable ⁴	Argillite	McJunkin, and others, 1979; also R.D. McJunkin, personal communication, March, 1984	
61	UPb	*39°21.7'	121°19.2'	Z	155-160	do	Plagiogranite	do age determination by T. Davis, Cal. State Univ., L.A.	
62	KA	*39°41.4'	120°56.4'	H	248	do	Amphibolite	Hietanen, 1981a, p. 17; also personal communication, February, 1986	(2043)
63	KA	*39°36.8'	120°51.8'	H	285 ±8	do	Metagabbro	do p. 20; Plate 1	(2371)
64	KA	*39°35.1'	120°59.7'	H	160 ±5	do	Hornblende gabbro of Scales pluton	do p. 28	(2458)

RADIOMETRIC AGES OF ROCKS WITHIN THE CHICO QUADRANGLE, CALIFORNIA, 1:250,000

LOCATION NUMBER	DATING METHOD ¹	SAMPLE LOCATION		MINERAL (or material) ²	AGE (IN MILLION YEARS)		DESCRIPTION OF SAMPLE	REFERENCE	(ORIGINAL) SAMPLE NUMBER)
		LATITUDE (NORTH)	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
65	KA	*39°36.7'	121°03.3'	H	161.9 ±8	Not applicable ⁴	Hornblende gabbro	Hietanen, 1981b, p. 9; Plate 1	(2637)
	KA	do	do	H	148.0 ±7.4	do	do	do	do
66	AA	39°47.5'	120°53.4'	H	395.2 ±12.5	do	Hornblende/plagioclase dike in Onion Valley mafic/ultramafic body	Standlee, 1978, p. 135; also personal communication, January, 1986	(178)
67	AA	39°42.4'	120°55.9'	H	278.0 ±4.2	do	Amphibolite	do p. 143	(102)
68	KA	*39°48.6'	120°29.2'	B	22.8 ±1.6	23.4 ±1.6	Delleker Formation	C. Durrell, 1984	(CD-1)
69	KA	*39°45.1'	120°33.1'	H	19.2 ±2.3	19.7 ±2.3	Andesite clast (from Bonta Formation)	do	(Bonta)
70	KA	39°41.45'	120°38.73'	H	122.3 ±0.9	Not applicable ⁴	Dacite porphyry dike	Lull and Brooks, 1983, p. 411; also E.R. Brooks, personal communication, March, 1984	(87-2)
71	KA	39°41.50'	120°38.78'	H	120.1 ±1.4	do	Hornblende-biotite tonalite stock	do	(M-1)
72	KA	39°30'20"	121°30'52"	WR	3.2 ±0.1	do	Dacite block from lahar	Busacca, and others, p. G129, Supplementary table 9, part 2	(Oro-9A)
	KA	do	do	B	3.4 ±0.2	do	do	do	(Oro-9B)
	KA	do	do	H	2.8 ±0.3	do	do	do	do
	KA	do	do	H	3.3 ±0.3	do	do	do	do

RADIOMETRIC AGES OF ROCKS WITHIN THE CHICO QUADRANGLE, CALIFORNIA, 1:250,000

LOCATION NUMBER	DATING METHOD ¹	SAMPLE LOCATION		MINERAL (or material) ²	AGE (IN MILLION YEARS)		DESCRIPTION OF SAMPLE	REFERENCE	(ORIGINAL) SAMPLE NUMBER
		LATITUDE (NORTH)	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
73	KA	39°31'21"	121°32'10"	B	3.4 ±0.2	Not applicable ⁴	do	do	(Oro-21)
	KA	do	do	H	3.2 ±0.3	do	do	do	do
74	KA	39°25.95'	120°51.68'	H	322 ±27	do	Homblende-diopside amphibolite	Böhlke and McKee, 1984, p. 5; p. 6	(G-45)
75	KA	39°26.85'	120°52.47'	B	273 ±5	do	Feldspathic biotite quartzite	do p. 6	(G-48)
76	KA	39°26.70'	120°49.40'	M	113 ±3	do	Gold-quartz-carbonate vein with "mariposite" (from #1 ore zone, lower level of Irelan Mine)	do	(311)
	RS ⁵	do	do	Q,Ca,M	115.7 ±3	do	do	Böhlke and Kistler 1986, Table 3; Appendix 1; also R.W. Kistler, personal communication, February, 1986	do
77	KA	39°29.20'	120°52.35'	H	345 ±9	do	Homblende-biotite amphibolite	Böhlke and McKee, 1984, p. 6	(342)
78	KA	39°31.00'	120°59.10'	H	143 ±5	do	Biotite quartz diorite (Indian Valley pluton)	do	(376)
79	KA	39°27.78'	120°50.28'	M	112 ±3	do	Quartz vein with "mariposite" inclusions (Rainbow Extension Mine)	do	(504)

RADIOMETRIC AGES OF ROCKS WITHIN THE CHICO QUADRANGLE, CALIFORNIA, 1:250,000

LOCATION NUMBER	DATING METHOD ¹	SAMPLE LOCATION		MINERAL (or material) ²	AGE (IN MILLION YEARS)		DESCRIPTION OF SAMPLE	REFERENCE	(ORIGINAL) SAMPLE NUMBER
		LATITUDE (NORTH)	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
80	RS ⁵	39°27'45"	120°50'35"	Ca,M	109.6 ±3	Not applicable ⁴	Carbonate-quartz-mariposite rock with quartz-dolomite veinlets and disseminated pyrite (Gold Crown Mine)	Böhke and Kistler, 1986, Table 3; Appendix 1; also R.W. Kistler, personal communication, February, 1986	(GC20)
81	RS ⁵	39°28'41"	120°53'13"	Q,Ca,M	124.4 ±3	do	Carbonate-quartz-mariposite rock heavily veined by quartz ± dolomite (Kate Hardy Mine)	do	(486)
82	KA	39°27'09"	120°48'45"	M	112.5 ±3	do	Massive inclusion of pale greenish mica in quartz vein (Plumbago Mine)	do Table 2	(551)
83	RS ⁵	39°20'55"	120°48'09"	Ca,M	119.4 ±3	do	Massive green mica plus coarse magnesite inclusion in carbonate-quartz-mariposite rock (Red Ledge Mine)	do Table 3	(378a)
	KA		do	M	120.9 ±4	do	do	do Table 2	do
84	RS ⁵	39°12'41"	121°01'01"	Q,M	140.9 ±3	do	Quartz-mica-pyrite-gold altered ultramafic (?) rock (Brunswick Mine)	do	(B-900)
	KA		do	M	143.7 ±4	do	do	do Table 2	do
85	KA	39°10'44"	121°04'04"	H	126.7 ±3	do	Grass Valley pluton	do Appendix 2	(AR1)

RADIOMETRIC AGES OF ROCKS WITHIN THE CHICO QUADRANGLE, CALIFORNIA, 1:250,000

LOCATION NUMBER	DATING METHOD ¹	SAMPLE LOCATION		MINERAL (or material) ²	AGE (IN MILLION YEARS)		DESCRIPTION OF SAMPLE	REFERENCE	(ORIGINAL) SAMPLE NUMBER
		LATITUDE (NORTH) (QUADRANGLE) (7.5')	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
86	UPb	*39°29.5' (Graniteville)	120°41.4'	Z	409 ±16	Not applicable ⁴	Granitic phase of Bowman Lake batholith	Girty, and others, 1984	
87	UPb	*39°28.1' (English Mtn.)	120°37.3'	Z	506 ±22	do	Detrital zircons from feldspathic sandstone blocks in Shoo Fly Complex (melange)	Girty and Wardlaw, 1984	(80-16)
88	UPb	*39°27.7' (Graniteville)	120°38.2'	Z	2087 ±20	do	Detrital zircons from sandstone in Shoo Fly Complex (Poison Canyon formation)	Girty and Wardlaw, 1985	
89	UPb	*39°18.0' (Cisco Grove)	120°35.8'	Z	163	do	Two-pyroxene diorite	Snoke, and others, 1982	
90	KA	*39°17.7' (Cisco Grove)	120°35.6'	P	179.2 ±1	183.4 ±1	O.B. James pluton	Drake, and others, 1974, p. 358; also H.R. Bowman, personal communication, January 1987	(OBJ-21)
91	KA	*39°17.9' (Cisco Grove)	120°35.9'	P	152.1 ±2.8	155.7 ±2.8	do	do	(OBJ-22)
92	KA	*39°18.1' (Cisco Grove)	120°36.2'	B	152.5 ±6.3	156.1 ±6.3	do	do	(OBJ-23)
93	KA	*39°18.3' (Cisco Grove)	120°36.4'	B	160.7 ±0.4	164.5 ±0.4	do	do	(OBJ-24)
94	KA	*39°22.3' (North Bloomfield)	120°59.8'	B	37.9 ±1	38.9 ±1	Biotite-rich tuff (from drill hole)	Yeend, 1974, p. 15; Plate 2	
95	KA	*39°12.3' (Dutch Flat)	120°48.8'	B	8.7 ±0.5	8.9 ±0.5	Biotite-rich tuff	do p. 17	

RADIOMETRIC AGES OF ROCKS WITHIN THE CHICO QUADRANGLE, CALIFORNIA, 1:250,000

LOCATION NUMBER	DATING METHOD ¹	SAMPLE LOCATION		MINERAL (or material) ²	AGE (IN MILLION YEARS)		DESCRIPTION OF SAMPLE	REFERENCE	(ORIGINAL) SAMPLE NUMBER
		LATITUDE (NORTH)	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
96	KA	*39°10.9'	120°15.9'	WR	4.4 ±0.1	Not applicable ⁴	Basalt dike	D.S. Harwood, 1986	(Sq-1)
97	KA	*39°11.8'	120°15.8'	WR	4.0 ±0.1	do	Basalt flow at High Camp	do	(Sq-3)
98	KA	*39°10.9'	120°16.1'	WR	4.7 ±0.1	do	Hypersthene andesite flow at Squaw Peak	do	(Sq-4)
	KA	do	do	WR	4.7 ±0.1	do	do	do	do
99	KA	*39°11.0'	120°15.6'	WR	3.9 ±0.1	do	Basalt dike (glassy)	do	(Sq-5)
100	KA	*39°11.0'	120°16.3'	WR	4.3 ±0.1	do	Basalt dike	do	(Sq-6)
101	KA	*39°11.1'	120°16.4'	WR	3.8 ±0.09	do	Emigrant andesite flow	do	(Sq-7)
	KA	do	do	WR	3.7 ±0.09	do	do	do	do
102	KA	*39°12.5'	120°19.2'	WR	3.3 ±0.09	do	Andesite flow at Lyon Peak	do	(GC-14)
103	KA	*39°14.9'	120°18.0'	WR	5.4 ±0.07	do	Andesite flow (Lowest flow in Squaw Valley region)	do	(GC-94)
104	KA	*39°05.4'	120°17.2'	WR	4.1 ±0.04	do	Andesite flow Powderhorn Creek area (bottom of stack)	do	(GC-99)
105	KA	*39°05.3'	120°14.9'	WR	3.6 ±0.5	do	Andesite flow Powderhorn Creek area (top of stack)	do	(GC-106)

RADIOMETRIC AGES OF ROCKS WITHIN THE CHICO QUADRANGLE, CALIFORNIA, 1:250,000

LOCATION NUMBER	DATING METHOD ¹	SAMPLE LOCATION		MINERAL (or material) ²	AGE (IN MILLION YEARS)		DESCRIPTION OF SAMPLE	REFERENCE	(ORIGINAL) SAMPLE NUMBER
		LATITUDE (NORTH)	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
		(QUADRANGLE) (7.5')							
106	KA	*39°03.7'	120°12.5'	WR	3.0 ±0.08	Not applicable ⁴	Andesite plug/vent Ellis Peak vent area	D.S. Harwood, 1986	(H-11)
107	KA	*39°03.6'	120°12.4'	WR	3.6 ±0.09	do	Andesite flow at Ellis Peak	do	(H-13)
108	KA	*39°12.2'	120°18.2'	WR	4.4 ±0.05	do	Andesite-Lyon Peak area (base of flows)	do	(GC-114)
109	KA	*39°04.7'	120°17.9'	WR	4.0 ±0.1	do	Hypersthene andesite	do	(GC-140)
	KA	do	do	WR	3.9 ±0.1	do	do	do	do
110	KA	*39°08.8'	120°14.7'	WR	4.0 ±0.1	do	Hornblende andesite dike	do	(GC-153)
	KA	do	do	WR	4.1 ±0.1	do	do	do	do
111	KA	*39°49.9'	121°50.6'	WR	2.41 ±0.12	do	Olivine basalt of Cohasset Ridge	Harwood, and others, 1981	
112	KA	*39°19.2'	120°20.0'	S	23.26 ±0.58	do	Nine Hill Tuff (Delleker Formation) at Beacon Hill	Deino, 1985, p. 182, Table 23; p. 184, Table 25b	(BH1)
113	KA	*39°39.9'	120°33.7'	S	23.06 ±0.54	do	Nine Hill Tuff (Delleker Formation) at Haskell Peak	do	(HP8)
114	KA	*39°10.4'	120°24.2'	S	25.74 ±0.60	do	Nine Hill Tuff (Delleker Formation) at Red Star Ridge	do	(RSR2)
115	KA	*39°55.8'	120°0.3'	S	27.6 ±0.7	do	Tuff of Dry Valley	do p. 346, Table 1	(BC)

RADIOMETRIC AGES OF ROCKS WITHIN THE CHICO QUADRANGLE, CALIFORNIA, 1:250,000

LOCATION NUMBER	DATING METHOD ¹	SAMPLE LOCATION		MINERAL (or material) ²	AGE (IN MILLION YEARS)		DESCRIPTION OF SAMPLE	REFERENCE	(ORIGINAL) SAMPLE NUMBER
		LATITUDE (NORTH)	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
116	KA	39°10.5'	121°22.9'	H	8.4 ±0.9	Not applicable ⁴	Hornblende andesite	Wagner and Saucedo, 1990, p. 149, Table 1	(GJS-100-84)
117	KA	39°10.6'	121°23.3'	P	18.0 ±0.5	do	Andesite block from mudflow breccia	do	(GJS-2-85)
118	KA	*39°24.3'	120°04.2'	WR	2.8	do	Latite flow at Boca Ridge	Latham, 1985, Table 3.3, Appendix B	(BOC29)
119	UPb	*39°43.8'	120°43.5'	Z	423 +5/-15	do	Tuff from Shoo Fly Complex	Saleeby, and others, 1987	
120	KA	39°54.3'	120°41.2'	WR	11.3 ±0.7	do	Andesite block from Ingalls Formation	Saucedo and Wagner, (unpublished)	(GJS-2-86)
121	KA	39°57.9'	120°32.4'	WR	11.4 ±0.7	do	Warner intrusive	do	(GJS-4-86)
122	KA	39°50.2'	120°40.4'	WR	6.8 ±0.7	do	Andesite block from Penman Formation	do	(GJS-7-86)
123	KA	39°46.3'	120°34.8'	WR	13.6 ±0.7	do	Penman intrusive	do	(GJS-8-86)
124	KA	39°30.8'	120°10.5'	WR	10.4 ±0.8	do	Andesite	do	(DW-X-1)
125	KA	39°40.8'	120°12.2'	WR	13.3 ±0.5	do	Dacitic intrusion	do	(DW-24-86)
126	KA	39°03.8'	121°22.1'	WR	13.0 ±0.4	do	Dacite fragments from lahar channeled into lone Formation	Wagner and Saucedo, 1990, p. 149, Table 1	(DW-17-85)

RADIOMETRIC AGES OF ROCKS WITHIN THE CHICO QUADRANGLE, CALIFORNIA, 1:250,000

LOCATION NUMBER	DATING METHOD ¹	SAMPLE LOCATION		MINERAL (or material) ²	AGE (IN MILLION YEARS)		DESCRIPTION OF SAMPLE	REFERENCE	(ORIGINAL) SAMPLE NUMBER
		LATITUDE (NORTH)	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
127	UPb	39°34.4'	121°23.0'	Z	140 ±2	Not applicable ⁴	Biotite granodiorite	Saleeby, and others, 1989; also J.B. Saleeby, personal communication, May, 1989	(CC1)
128	UPb	39°53.3'	121°21.5'	Z	140 ±2	do	Hornblende-biotite granodiorite	do	(CC2)
129	UPb	39°57.6'	121°17.0'	Z	140 ±2	do	Biotite-hornblende tonalite	do	(CC3)
130	UPb	39°17.8'	121°05.4'	Z	159 ±2	do	Hornblende-biotite tonalite	do	(CC4)
131	UPb	39°23.7'	121°05.0'	Z	159 ±2	do	Hornblende-biotite granodiorite	do	(CC5)
132	UPb	39°36.0'	120°59.6'	Z	168 +2/-6	do	Greenschist facies hornblende-pyroxene quartz diorite	do	(CC6)
133	UPb	39°18.1'	120°35.8'	Z	164 ±1	do	Hornblende-biotite two-pyroxene diorite	do	(CC7)
134	UPb	39°21.8'	121°19.2'	Z	162 ±1	do	Low greenschist facies hornblende tonalite screen	do	(SC1a)
135	UPb	39°21.7'	121°19.0'	Z	162 ±1	do	Quartz-albite granophyre screen	do	(SC2a)
	UPb	do		Z	162 ±1	do	Leucotonalite apophysis	do	(SC2b)

RADIOMETRIC AGES OF ROCKS WITHIN THE CHICO QUADRANGLE, CALIFORNIA, 1:250,000

LOCATION NUMBER	DATING METHOD ¹	SAMPLE LOCATION		MINERAL (or material) ²	AGE (IN MILLION YEARS)		DESCRIPTION OF SAMPLE	REFERENCE	(ORIGINAL) SAMPLE NUMBER)
		LATITUDE (NORTH)	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
136	UPb	39°03.4'	121°18.4'	Z	162 ±1	Not applicable ⁴	Foliated hornblende leucotonalite dike	Saleeby, and others, 1989; also J.B. Saleeby, personal communication, May, 1989	(SC3)
137	UPb	39°21.7'	121°17.9'	Z	162 ±1	do	Fine-grained plagiogranite screen	do	(SC4)
138	UPb	39°39.1'	121°27.7'	Z	164 ±1	do	Greenschist facies plagioclase phyric dacite	do	(SC5)
139	UPb	39°30.3'	121°02.9'	Z	205 ±3	do	Greenschist facies hornblende diorite	do	(CB10)
140	UPb	39°46.8'	121°04.2'	Z	193 +4/-7	do	Greenschist facies quartz-albite (?) phyric keratophyre tuff	do	(CB11)
141	UPb	39°47.1'	121°26.9'	Z	204 ±2	do	Blastomylonitic leucodiorite	do	(CB12a)
142	UPb	39°43.6'	121°29.8'	Z	196 +23/-11	do	Greenschist facies carbonate altered leuco-quartz diorite dike	do	(CB13a)
143	UPb	40°0.7'	121°09.9'	Z	314 +10/-8	do	Partially recrystallized quartz-albite granophyre	do	(FR1b)
144	UPb	39°28.2'	120°51.4'	Z	380 +20/-10	do	Coarse-grained albitized garnet-biotite granite lens	do	(FR5a)

RADIOMETRIC AGES OF ROCKS WITHIN THE CHICO QUADRANGLE, CALIFORNIA, 1:250,000

LOCATION NUMBER	DATING METHOD ¹	SAMPLE LOCATION		MINERAL (or material) ²	AGE (IN MILLION YEARS)		DESCRIPTION OF SAMPLE	REFERENCE	(ORIGINAL) SAMPLE NUMBER
		LATITUDE (NORTH) (QUADRANGLE) (7.5')	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
145	AA	39°27'38" (Alleghany)	120°51'27"	M	111 ±6	Not applicable ⁴	Hydrothermal mica (mariposite) in altered serpentinite adjacent to the Oriental vein (Oriental Mine)	Böhlke, and others, 1989; also J.K. Böhlke, personal communication, August, 1988	(611)
146	AA	39°59'11.7" (Grizzly Valley)	120°32'39"	S	30.08 ±0.06	do	Rhyolitic ash-flow tuff (Delleker Formation)	Siegel, 1988, p. 99, Table 5	(RCC-1)
147	AA	39°59'08.4" (Grizzly Valley)	120°32'39.1"	S	29.82 ±0.17	do	do	do	(RCC-2)
148	AA	39°59'13.7" (Grizzly Valley)	120°32'47.0"	-	14.35 ±0.66	do	Andesite clast from andesitic mudflow breccia (Ingalls Formation)	do	(RCC-3A)
149	AA	39°58'17.0" (Grizzly Valley)	120°33'04.0"	-	9.88 ±1.51	do	Basalt (Lovejoy Formation)	do	(RCC-5)
150	UPb	*39°27.3' *39°21.3' *39°29.2' (Graniteville/Blue Canyon)	120°38.7' 120°39.8' 120°41.8'	Z	364-385	do	Bowman Lake batholith	Hanson, and others, 1988; also R.E. Hanson, personal communication, September, 1988	(1,2,3)
151	UPb	*39°27.4' (English Mtn.)	120°36.5'	Z	368	do	Rhyolite sill within the Sierra Buttes Formation	do	(4)

RADIOMETRIC AGES OF ROCKS WITHIN THE CHICO QUADRANGLE, CALIFORNIA, 1:250,000

LOCATION NUMBER	DATING METHOD ¹	SAMPLE LOCATION		MINERAL (or material) ²	AGE (IN MILLION YEARS)		DESCRIPTION OF SAMPLE	REFERENCE	(ORIGINAL) SAMPLE NUMBER
		LATITUDE (NORTH) (QUADRANGLE) (7.5')	LONGITUDE (WEST)		AS ORIGINALLY REPORTED	RECALCULATED AGES USING NEW CONSTANTS ³			
152	KA	39°33.68' (Oroville)	121°33.20'	P	24.69 ±0.71	Not applicable ⁴	Dacite tuff	Wagner and Saucedo, 1990, p. 149, Table 1	(STM-1)
153	KA	39°33.87' (Oroville)	121°33.18'	WR	14.38 ±0.29	do	Andesite clast from breccia below Lovejoy basalt at Oroville South Table Mountain	do	(STM-3A)

Footnotes:

¹Method abbreviations: AA = ⁴⁰Argon/³⁹Argon; KA = Potassium/Argon; RS = Rubidium/Strontium; UPb = Uranium/Lead.

²Mineral or material abbreviations: B = Biotite; Ca = Carbonate; H = Hornblende; KF = K-feldspar; M = Mica; P = Plagioclase; Q = Quartz; S = Sanidine; WR = Whole Rock; Z = Zircon.

³Steiger, R.H., and Jäger, E., 1977, Subcommittee on geochronology: Earth and Planetary Science Letters, v. 36, p. 359-362; Dalrymple, G.B., 1979, Critical tables for conversion of K-Ar ages from old to new constants: Geology, v. 7, p. 558-560.

⁴Not applicable; new constants were used in original calculation or dating method does not require recalculation.

⁵Rubidium/Strontium mineral isochron.

*Latitude and longitude interpreted from written descriptions of locations or from locations plotted on maps in the original reference.

