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GEOLOGICAL SURVEY

Summary of country rock types for a
suite of granitoid rocks from the
Basin-Range Province

By

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This report is preliminary and has not been reviewed
for conformity with U.S. Geological Survey editorial
standards and stratigraphic nomenclature.

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BACKGROUND

The purpose of this note is to record country rock types for a suite of 228 granitoid rocks from the Basin-Range province of Nevada, Utah, Arizona, and California (fig. 1). I collected these granitoid rocks during 1969-1976 in order to investigate possible relationships among their locations, major and minor element contents, isotopic compositions, essential and accessory mineral contents, associated ore deposits and country rock types. Although many data on these rocks have been assembled, and some have been published, it is now clear that it will take many years and a variety of interests and talents to make maximum use of this suite of granitoid rocks.

The oxygen isotope compositions of these granitoid rocks were discussed by Lee, Friedman, and Gleason (1981), and the deuterium contents of selected samples were presented by Lee, Friedman, and Gleason (1984). Major element analyses, rock norms, semiquantitative analyses, and quantitative data for antimony, arsenic, barium, bismuth, cadmium, cesium, chlorine, fluorine, lithium, mercury, rubidium, strontium, thallium, thorium, uranium and zinc were listed by Lee (1984), who also gave exact locations, sampling methods, and analytical techniques. Christiansen and Lee (in press) relate the chlorine and fluorine contents of these granitoid rocks to the geology of the Basin-Range province, and McNeal and others (1981) completed a statistical analysis of uranium and thorium data. Lee and others (1980) discussed the barium analyses.

In addition to these works, Ronald W. Kistler of the U.S. Geological Survey is engaged in a study of the strontium isotope compositions of these granitoid rocks. Also, Eric H. Christiansen of the University of Iowa and Joaquín Ruiz of the University of Arizona are planning work on the neodymium and hafnium isotopic compositions of these rocks.

For additional studies, rock powders and/or hand specimens of all 228 granitoid rocks in the suite are available from the Smithsonian Institution. Write Curator-in-charge, Division of Petrology and Volcanology, Department of Mineral Sciences, Mail Stop 119, Smithsonian Institution, Washington, D.C., 20560.

Country rock ages and types are keyed in tables 1 and 2, respectively, and data for the entire suite are summarized in table 3. These tables may be useful to help develop ideas on the possible relationships between host rocks and other aspects of these granitoids. Ideas so developed may then be investigated further by reference to available maps.

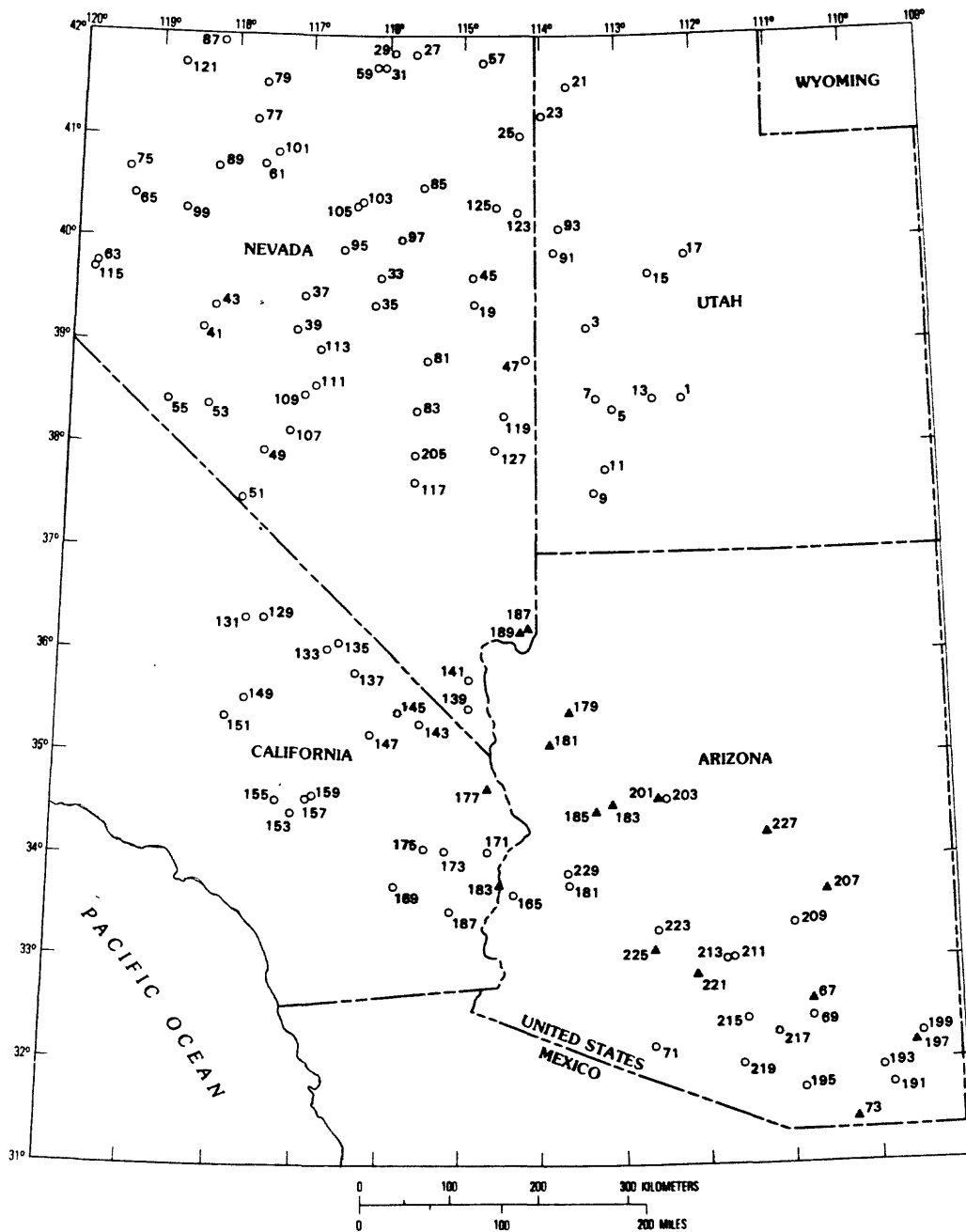


Figure 1.--Outline map showing distribution of sample pairs included in tables 1-3 (only odd-numbered samples shown; for example: sample 1 denotes site of samples 1 and 2). Solid triangle--Precambrian intrusion; open circle--post-Cambrian intrusion.

Table 1.--Key to the ages of country rocks for a suite of granitoid rocks from
the Basin-Range province.

- A - PRECAMBRIAN
- B - LATEST PRECAMBRIAN-EARLY CAMBRIAN
- C - PALEOZOIC
- D - CAMBRIAN
- E - ORDOVICIAN
- F - CAMBRIAN-ORDOVICIAN
- G - SILURIAN
- H - ORDOVICIAN-SILURIAN
- J - DEVONIAN
- K - CAMBRIAN-DEVONIAN
- L - MISSISSIPPIAN
- M - DEVONIAN-MISSISSIPPIAN
- N - MISSISSIPPIAN-PENNSYLVANIAN
- P - PENNSYLVANIAN-PERMIAN
- Q - PERMIAN
- R - PERMIAN-TRIASSIC
- S - MESOZOIC
- T - TRIASSIC
- U - JURASSIC
- V - TRIASSIC-JURASSIC
- W - CRETACEOUS
- X - TERTIARY
- Y - PRECAMBRIAN AND CRETACEOUS-TERTIARY
- Z - UNKNOWN-(INTRUSIVE RISES FROM ALLUVIUM OR IS FLANKED BY UNIDENTIFIED
YOUNGER ROCKS)

Table 2--Key to the types of country ^{1/} rocks for a suite of granitoid rocks from the Basin-Range province.

A - L.S.

B - Sh

C - S.S.

D - L.S. - Sh - S.S.

E - L.S. - S.S. - Sh

F - Sh - L.S. - S.S.

G - Sh - S.S. - L.S.

H - S.S. - Sh - L.S.

J - S.S. - L.S. - Sh

K - L.S. - Sh

M - Sh - L.S.

N - S.S. - Sh

P - Sh - S.S.

Q - L.S. - S.S.

R - S.S. - L.S.

S - VOLCANIC ROCKS

T - UNDIFFERENTIATED METAMORPHIC ROCKS

U - GNEISS AND/OR SCHIST

V - GNEISS AND GRANITE

W - SEDIMENTARY ROCKS, UNDIVIDED

X - VOLCANIC ROCKS, S.S. + Sh

Y - VOLCANIC ROCKS, L.S. + Sh

Z - UNKNOWN

¹ Sh = shale=siltstone=argillite=phyllite=slate

S.S. = quartzite=sandstone

LS = carbonate (includes limestone and dolomite)

Table 3.--Summary of data on the ages and types of country rocks for a suite of granitoid rocks from the Basin-Range province

Sample No.	Age	Type	Sample No.	Age	Type	Sample No.	Age	Type	Sample No.	Age	Type	Sample No.	Age	Type
GR-1	X	S	GR-47	D	K	GR- 93	N	K	GR-139	Z	Z	GR-185	A	U
2	X	S	48	D	K	94	N	K	140	Z	Z	186	A	U
3	D	A	49	A	M	95	J	A	141	A	T	187	A	U
4	D	A	50	A	M	96	J	A	142	A	T	188	A	U
5	Z	Z	51	F	F	97	P	A	143	Z	Z	189	A	U
6	Z	Z	52	F	F	98	P	A	144	Z	Z	190	A	U
7	D	A	53	V	X	99	V	G	145	Z	Z	191	A	U
8	D	A	54	V	X	100	V	G	146	Z	Z	192	A	U
9	W	N	55	S	S	101	Q	P	147	Z	Z	193	A	U
10	W	N	56	S	S	102	Q	P	148	Z	Z	194	A	U
11	S	E	57	Q	K	103	U	S	149	Z	Z	195	S	S
12	S	E	58	Q	K	104	U	S	150	Z	Z	196	S	A
13	X	S	59	G	K	105	P	J	151	A	T	197	A	U
14	X	S	60	G	K	106	P	J	152	A	T	198	A	U
15	A	P	61	Q	J	107	H	F	153	Z	Z	199	A	V
16	A	P	62	Q	J	108	H	F	154	Z	Z	200	A	V
17	D	Q	63	Z	Z	109	F	F	155	Z	A	201	A	U
18	D	Q	64	Z	Z	110	F	F	156	Z	A	202	A	U
19	A	N	65	Z	Z	111	F	F	157	A	U	203	A	V
20	A	N	66	Z	Z	112	F	F	158	A	U	204	A	V
21	M	F	67	A	E	113	E	D	159	Z	Z	205	E	D
22	M	F	68	A	E	114	E	D	160	Z	Z	206	E	D
23	C	H	69	Y	V	115	Z	Z	161	S	T	207	A	Y
24	C	H	70	Y	V	116	Z	Z	162	S	T	208	A	Y
25	D	C	71	Z	Z	117	L	N	163	A	U	209	A	U
26	D	C	72	Z	Z	118	L	N	164	A	U	210	A	U
27	C	M	73	A	Z	119	X	S	165	S	F	211	A	V
28	C	M	74	A	Z	120	X	S	166	S	F	212	A	V
29	C	F	75	R	S	121	V	P	167	A	V	213	A	V
30	C	F	76	R	S	122	V	P	168	A	V	214	A	V
31	F	G	77	T	P	123	M	D	169	A	U	215	M	W
32	F	G	78	T	P	124	M	D	170	A	U	216	M	W
33	E	P	79	T	P	125	Q	Q	171	A	V	217	W	S
34	E	P	80	T	P	126	Q	Q	172	A	V	218	W	S
35	H	D	81	D	A	127)	No		173	Z	Z	219	U	P
36	H	D	82	D	A	128)	Data		174	Z	Z	220	U	P
37	K	H	83	F	D	129	Q	F	175	Z	Z	221	A	U
38	K	H	84	F	D	130	Q	F	176	Z	Z	222	A	U
39	F	G	85	S	V	131	M	Q	177	A	V	223	A	V
40	F	G	86	S	V	132	M	Q	178	A	V	224	A	V
41	T	X	87	Z	Z	133	A	T	179	A	U	225	A	Z
42	T	X	88	Z	Z	134	A	T	180	A	U	226	A	Z
43	V	X	89	V	P	135	A	T	181	A	Z	227	A	S
44	V	X	90	V	P	136	A	T	182	A	Z	228	A	S
45	B	H	91	B	N	137	Z	Z	183	A	U	229	A	V
46	B	H	92	B	N	138	Z	Z	184	A	U	230	A	V

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