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THE SANDIA GRANITE, NEW MEXICO—BIOTITE METAMORPHIC AND WHOLE ROCK RB–SR AGES

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We report evidence of metamorphism of the Sandia Granite at about 1.33 BYBP based on Rb-Sr biotite ages and a 1.44 BYBP revised age of formation for the Sandia Granite. The whole rocks used for the formational age include three previously reported (Taggart and Brookins, 1975) and eight new samples. The biotites are separates from the eight new samples.

ANALYTICAL PROCEDURES

The new Rb and Sr contents were determined by isotope dilution. The data are precise to ± 0.5 percent (two sigma). The $^{87}Sr/^{86}Sr$ data were calculated from the Sr isotope dilution experiments and are precise to ± 0.0000_5 for the whole rocks and ± 0.0010 for the biotites (two sigma). Five runs on Eimer and Amend standard $SrCO_3$ yielded $^{87}Sr/^{86}Sr = 0.7080_3$ (two sigma). All Sr isotopic data were normalized to $^{86}Sr/^{88}Sr = 0.1194$. The decay constant for ^{87}Rb was taken as 1.42×10^{-11}/y, and standard least squares analysis was used to calculate the isochron shown in Fig. 1.

COMMENT

The new biotite data support the earlier data for a metamorphic event affecting the Sandia Granite at about 1.3–1.4 BYBP (see Brookins, 1974; Brookins and Shafiqullah, 1975; Brookins and others, 1975). The whole rock age of 1.44 BYBP is consistent with earlier reports (Taggart and Brookins, 1975; Brookins, 1975) based on recalculating the ages using the presently accepted decay constant.

SAMPLE DESCRIPTIONS

The whole rock samples are all leucocratic, coarse grained, hypidiomorphic quartz monzonites consisting of interlocking grains of plagioclase (An_{26}), 30–33%, quartz, 28–31%, K-feldspar, 18–22%, biotite, 6–10%, hornblende, 1–4%, magnetite, 1–1.5% with minor apatite, epidote, zircon, sphene, ± monazite, ± beryl.

ACKNOWLEDGMENT

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TABLE 1. Sample locations and whole rock data.

Sample	W. Longitude	N. Latitude	$^{87}Sr/^{86}Sr$	Rb (ppm)	Sr (ppm)	$^{87}Rb/^{86}Sr$
N-9	106°28′54″	35°16′01″	0.75938	191.05	209.12	2.65
N-11	106°28′50″	35°16′14″	0.75880	174.94	191.68	2.66
N-12	106°28′50″	35°16′09″	0.75758	183.48	198.22	2.69
N-13	106°28′29″	35°15′55″	0.75325	155.28	188.27	2.40
T-9	106°28′22″	35°03′47″	0.74690	145.42	207.45	2.04
T-11	106°28′22″	35°03′47″	0.74405	148.76	225.01	1.92
HV-1	106°28′47″	35°07′45″	0.74568	149.55	220.83	1.97
DT-5	106°28′22″	35°03′47″	0.74492	140.34	212.78	1.92
3001-S*	106°28′42″	35°10′44″	0.7758	255.	216.	3.49
3002-S*	106°28′05″	35°11′30″	0.7613	251.	265.	2.79
3003-S*	106°28′26″	35°11′38″	0.7481	184.	251.	2.17

*Data from Taggart and Brookins (1975)

TABLE 2. Biotite data*.

Sample	$^{87}Sr/^{86}Sr$	Rb (ppm)	Sr (ppm)	$^{87}Rb/^{86}Sr$	Age (BYBP)**
N-9	1.1871	422.5	51.51	24.85	1.35
N-11	1.5822	712.3	48.03	46.59	1.33
N-12	1.1844	564.9	67.44	25.37	1.33
N-13	1.2208	572.9	64.80	26.87	1.34
T-9	1.3397	498.8	45.13	33.96	1.31
T-11	1.4398	529.0	41.37	39.64	1.30
HV-1	1.3912	534.0	45.86	35.94	1.34
DT-5	1.1438	491.9	64.07	23.16	1.32

*Locations are given in Table 1.

**Ages calculated by mineral-whole rock isochrons (two points each).

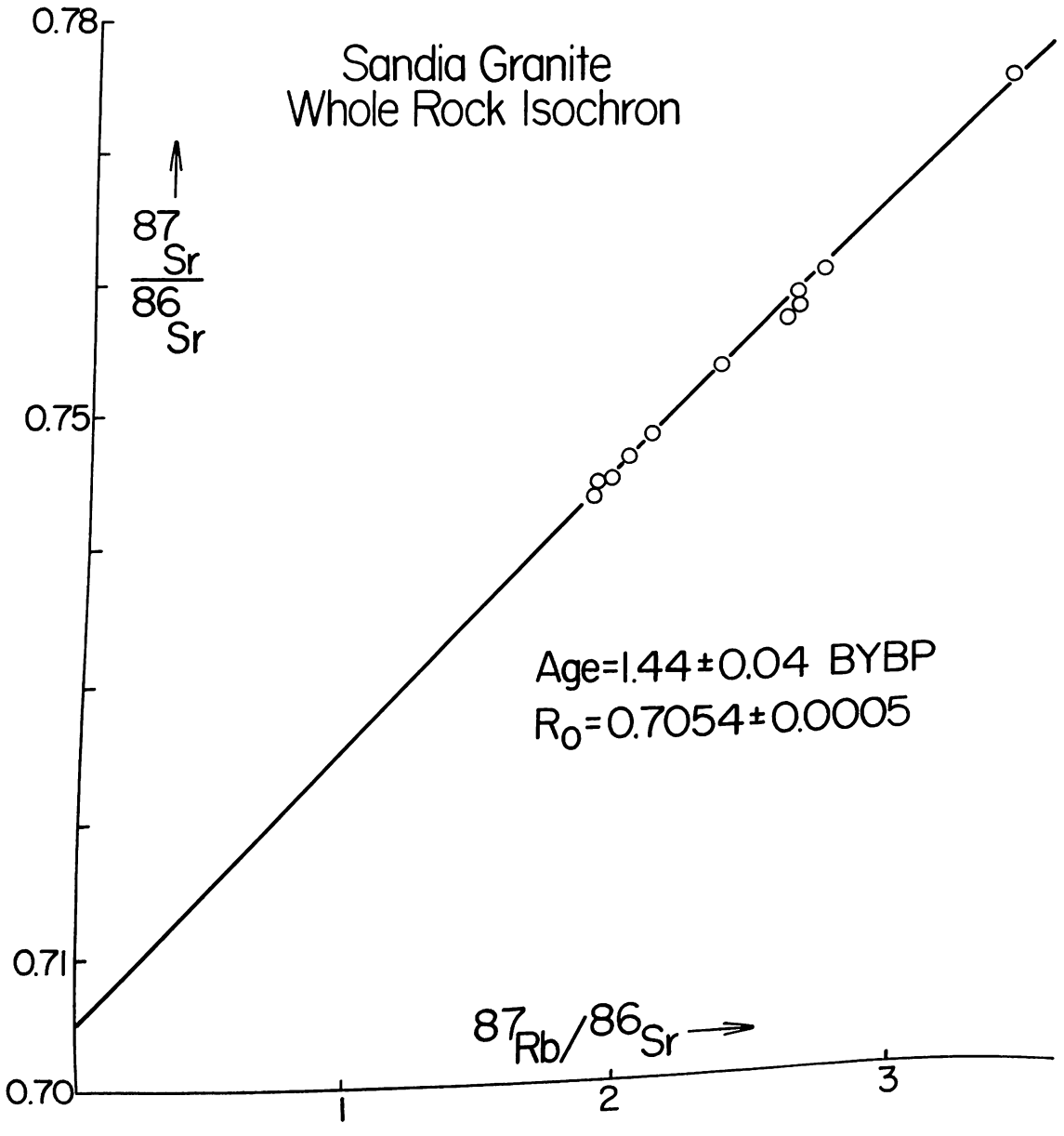

FIGURE 1. Sandia Granite whole rock isochron.