Woodmorappe Can't Read Rb-Sr Diagrams

Dr. Kevin R. Henke

Woodmorappe (1979, p. 122) attacks the validity of Rb-Sr isochron dating by claiming that the Pahrump Group 'Diabase' in California has been dated at 'no less than 34 billion years', which is approximately twice the age of the Big Bang and more than 7 times the age of the Earth!! Of course, both geologists and YECs agree that a 'date' of 34 billion years for this rock is completely ridiculous. Geochronologist Dalrymple (1984, p. 77-79) discusses the origin of this 'date' and denounces Woodmorappe (1979, p. 122) for misreading a 87Sr/86Sr vs. 87Rb/86Sr plot for the Pahrump Group 'Diabase'. The original sources of the Pahrump Group 'Diabase' Rb-Sr diagram are Wasserburg et al. (1964, p. 4397) and Faure and Powell (1972, p. 101-102). The diagram of the 'diabase' shows a terrible scatter and does NOT provide an isochron and an associated Rb-Sr date. Radiometric dating on related rocks, however, suggests that the 'diabase' is about 1.2 billion years old (Dalrymple, 1984, p. 79).

On the original diagram, Wasserburg et al. (1964, p. 4398) drew in age-meaningless reference isochrons of 1, 2, and 3 "billion years" to highlight the bad scatter of the data points. Later, Faure and Powell (1972, p. 101) used alternative reference isochrons of '34 billion years' and '1.09 billion years' to better bracket the large scatter of points. Obviously, these various reference isochrons have NO time meaning. Reference isochrons are simply drawn into the diagrams as guides for the reader in much the same way that a flying pilot may refer to the position of another plane as being between '9 and 11 o'clock' from her position. In this case, the '9 to 11 o'clock' has no time meaning but simply indicates that the other plane is from the left to the front left of the pilot. Certainly, the ability of Wasserburg et al. (1964, p. 4398) and Faure and Powell (1972, p. 101) to draw in various reference isochrons shows how worthless the data really are in this case. However, because Woodmorappe (1979, p. 122) wants radiometric dating to look as bad as possible, he improperly cites the 34 billion year old reference isochron as if it were the optimal Rb-Sr 'date' for the 'diabase' and ignores the 1.09 billion year reference isochron and the actual age estimate of approximately 1.2 billion years.

Computer scientist and creationist Dr. David Plaisted also cites the discussions of the Pahrump Group 'Diabase' in Woodmorappe (1979, p. 122) as a supposed

example of the unreliability of the Rb-Sr method. When discussing the 'diabase' diagram, Dr. Plaisted at A Reply to Dr. Henke and Others states:

> **'However, Dr. Henke is not giving the whole story here. It follows from the mathematical properties of isochrons that if an isochron, even with carefully selected samples, gives a Rb/Sr age of 34 billion years, then at least one of the samples must have a Rb/Sr age of 34 billion years or larger, and probably at least one more has a Rb/Sr age nearly this large or larger. In fact, from Dalrymple (1984, p. 79), three of the 8 samples have Rb/Sr ages of nearly 34 billion years or larger. Thus we still have a serious anomaly to contend with.'**

According to Faure and Powell (1972, p. 102), the scattered points on the Rb-Sr diagram probably resulted from 87Sr contamination from an adjacent granite or gneiss during Mesozoic metamorphism. Millions of years of 87Rb decay are required to produce a significant amount of 87Sr in the surrounding rocks. The Mesozoic metamorphic event probably dislodged some 87Sr from a large number of mineral grains in the granite and/or gneiss, but failed to significantly disperse and adequately mix the 87Sr with ambient concentrations of 86Sr. Wasserburg et al. (1964, p. 4395) even found excess 87Sr in Rb-poor plagioclases and apatites, which indicates strontium disequilibrium in these rocks. The metamorphosed 'diabase' would contain areas with poorly mixed 87Sr and low concentrations of Rb and K. These samples would then yield badly scattered analyses, including some values with high 87Sr/86Sr and low 87Rb/86Sr values (that is, absurd ages of '34 billion years,'), on a 87Sr/86Sr vs. 87Rb/86Sr diagram.

Abundant 87Sr cannot naturally form in 10,000 years or less. Therefore, to explain the existence of 87Sr, YECs must invoke miracles and unrealistic and groundless accelerations in radiometric decay rates (Vardiman et al., 2000; also see Rats in RATE'S 'Research'

While Woodmorappe (1999, p. 16, 21-22, 51-54, 82, 85, 95, etc.) frequently makes baseless and economically absurd accusations about scientists arbitrarily 'picking and choosing' the dates that they want, the selective misuse of data from the Pahrump Rb-Sr diagram by Woodmorappe (1979, p. 122) proves that hypocritical YECs are not above using this form of data manipulation. By arbitrarily ignoring certain data points on a graph with badly scattered results and then using the values that are left, careless individuals can obtain almost ANY line that they want, including 'isochrons' that represent

ridiculously old 'dates' of 34 billion years or even negative 'ages'. Three of the eight points for the 'Pahrump Diabase' do APPEAR to approximately plot on a false isochron of '34 billion years' as Dr. Plaisted states, but these data are age meaningless because the line does NOT fit the other five points, which Woodmorappe (1979, p. 122) and Dr. Plaisted want to ignore. The presence of excess 87Sr in Rb-poor plagioclases and apatites (Wasserburg et al., 1964, p. 4395) is a further indication that anomalously old Rb-Sr dates would be expected with these samples and that it would be unwise to assign time significance to the Rb-Sr data.

Rather than admitting his mistake in his 1979 article, Woodmorappe (1999, p. 2) again claims that the Rb-Sr diagram of the Pahrump Group 'Diabase' provides an anomalously old date. Now, however, Woodmorappe (1999, p. 2) claims that the Pahrump Group 'Diabase' was erroneously dated at 3.2 billion years instead of 34 billion years. How Woodmorappe (1999, p. 2) derived this new date is unknown. Perhaps he simply has a faulty memory and remembers the 34 billion year old reference isochron as being 3.2 billion years. Nevertheless, Woodmorappe (1999, p. 2) attempts to justify his misuse of reference isochrons by claiming that scientists will arbitrarily assign time meaning to reference isochrons if the 'isochrons' suit their agenda. To support his accusations, Woodmorappe (1999, p. 2) misrepresents the following quotation from Ziegler and Stoessel (1993, p. 48):

'As the reference age A is within the known age range for members of the Gamsberg Granite suite (see above), it POSSIBLY represents a reset age induced by the intrusion of Gamsberg magmas in the area.' [my emphasis]

Ziegler and Stoessel (1993, p. 48) are discussing a 87Sr/86Sr vs. 87Rb/86Sr diagram for the Opetjie Pluton of Namibia. Woodmorappe (1999, p. 2) claims that this is an example of scientists arbitrarily assigning time meaning to a reference isochron, supposedly because it suits their desires. If Ziegler and Stoessel (1993, p. 48) can assign time meaning to a reference isochron for the Opetjie Pluton, Woodmorappe (1979, p. 122) then argues that he should be able to derive a Rb-Sr 'date' from a reference isochron for the Pahrump Group 'Diabase'.

Unlike the various reference isochrons for the Pahrump Group 'Diabase', 'reference line A' for the Opetjie Pluton passes DIRECTLY THROUGH A VERY LINEAR distribution containing ALL of the data points. The distribution has a correlation coefficient of 0.994 (1.000 is perfectly linear)

with a date of 1163.6 **+/-** 61.4 Ma and a 87Sr/86Sr intercept of 0.7056 **+/-** 0.00097 (Ziegler and Stoessel, 1993, p. 48). Any quick visual comparison of the Rb-Sr diagrams for the Pahrump Group 'Diabase' (Faure and Powell, 1972, p. 101) and the Opetjie Pluton (Figure 8.10, Ziegler and Stoessel, 1993, p. 48) demonstrates that the Pahrump data as a whole do not fall on any isochron, whereas the Opetjie Pluton may. Clearly, geochronologists are not being arbitrary and Woodmorappe's (1999, p. 2) claims and accusations are inconsistent and groundless.

Woodmorappe (1999, p. 2) also cites Barovich and Patchett (1992, Figure 6 on p. 390) as another example of scientists using a reference isochron. In Figure 6, Barovich and Patchett (1992, p. 390) draw in a 1.4 billion year old reference isochron for some very scattered data on a Rb-Sr isochron plot of the Harquahala granite of western Arizona. Barovich and Patchett (1992) studied the isotopic behavior of Hf, Nd, and Sr in this frequently deformed (mylonitized) granite. However, the caption of Figure 6 in Barovich and Patchett (1992, p. 390) clearly warns the reader that the data are very scattered and that the 'isochron' is ONLY for reference purposes:

> **'Rb-Sr isochron plot of Harquahala granite samples. Symbols as in Fig. 3. The 1.4 Ga isochron is for reference only. Note the scatter of the data points.'**

That is, Barovich and Patchett (1992, Figure 6, p. 390) DO NOT consider the reference isochron to be a legitimate Rb-Sr date. Barovich and Patchett (1992, p. 386) conclude:

> **'The Rb-Sr iostopic data show considerable scatter on an isochron plot, exhibiting both gains and loses of Rb and Sr from the whole-rock systems. In contrast, the Sm-Nd and Lu-Hf isotopic diagrams, plotting mostly in tight clusters or along 1.4 Ga isochrons. The results show that while the Sr isotopic system in crustal rocks is quite susceptible to later tectonic disturbance, both Hf and Nd isotopic systems can provide RELIABLE model age information in continental crustal terranes even when the rocks have been subjected to low to medium grades of deformation and metamorphism.' [my emphasis]**

Like Ziegler and Stoessel (1993, p. 48), the discussions in Barovich and Patchett (1992) do not support Woodmorappe's (1999, p. 2) accusations that scientists arbitrarily assign dates to reference isochrons if these 'isochrons' suit their agenda. Clearly, even a cursory review of the scattered points on Pahrump Group 'Diabase' isochron (Faure and Powell, 1972, p. 101-102) and Figure 6 in Barovich and Patchett (1992, p. 390) demonstrate that these

diagrams provide no valid radiometric dates. Wasserburg et al. (1964, p. 4397) and Faure and Powell (1972, p. 101-102) even state that the Pahrump diagram is too scattered to provide any radiometric date. So, what justification does Woodmorappe (1979, 1999) have to erect a strawperson argument by claiming that the Pahrump diagram provides a radiometric date? Despite his irrational twisting of the data and further misquoting of the literature, Woodmorappe (1999, p. 2; 1979, p. 122) has NO justification for claiming that the data points on this terribly scattered Pahrump diagram provide a date of either 34 or 3.2 billion years.

Finally, Faure and Powell (1972, p. 102) state the following conclusions that should be important lessons to anyone that is interested in reliable radiometric dates:

> **'In summary, meaningful dates can be derived from altered rocks under the following conditions: (1) if isotopic homogenization has occurred among the minerals of a rock, the mineral isochron indicates the time elapsed since re-equilibration (2) if total-rock samples remained closed systems during the re-equilibration of the minerals, the total-rock isochron gives the time elapsed since crystallization and thus the "age" of the rocks; (3) if the total rocks were open to rubidium and strontium, but the minerals were isotopically homogenized, the mineral isochron indicates the time of last closure of the minerals, but the age of the rocks cannot be determined by the Rb-Sr method.'**

Clearly, the Pahrump diagram fails to meet these requirements and Woodmorappe (1979, p. 122; 1999, p. 2) has no basis for slandering Rb-Sr dating by trying to derive a date from the Pahrump data.

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