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NEW K-Ar AGES FROM THE BASELINE SANDSTONE (CENOMANIAN), NORTH MUDDY MOUNTAINS, CLARK COUNTY, NEVADA

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Radiometric ages relevant to the timing of deformation of the foreland fold-and-thrust belt in southern Nevada are reported. In this belt, thrust faults and east-vergent recumbent folds are associated with Albian and Cenomanian synorogenic rocks. The Baseline Sandstone was first described in the North Muddy Mountains by Longwell (1949). It is a synorogenic deposit of the Sevier orogeny (Armstrong, 1968) consisting of interbedded medium- to thick-bedded fluvial sandstone, conglomerate, and rare vitric tuff beds (Longwell, 1949; Bohannon, 1983; D. Carpenter, 1968).

K-Ar determinations utilized biotite concentrates derived from vitric tuff beds (3 determinations), and yield Cenomanian ages for the Baseline Sandstone (white and red members). These age determinations are the only available radiometric data for the Baseline Sandstone, and represent the youngest reported dates for the Sevier orogeny in this area. Previously, an Albian age was assigned to the underlying Willow Tank Formation. The fern *Tempskya* reported from the Willow Tank Formation (Ash and Read, 1976) and two K-Ar age determinations of 98.4 and 98.6 m.y. (Fleck, 1970) confirm an Albian age.

The new dates for the white and red members of the Baseline Sandstone allow precise age bracketing of local thrust faults. Movement on the west-directed North Buffington back thrust occurred after deposition of the Willow Tank Formation and the white (lowermost) member of the Baseline Sandstone. Both are interpreted as synorogenic rocks derived from thrust faulting to the west of the study area (Schmitt and Kohout, 1986; D. Carpenter, in prep.). Movement on the North Buffington back thrust is bracketed between 95.8 and 93.1 m.y., a period of 2.7 m.y. It was later truncated and overturned by the east-directed Muddy Mountain-Keystone thrust (D. Carpenter, in prep.; J. Carpenter, in prep.). The Muddy Mountain-Keystone thrust (Longwell, 1960) and Weiser back thrust (J. Carpenter, in prep.) together shed the red (middle) member of the Baseline Sandstone. The Muddy Mountain-Keystone thrust later overrode all three members, including the uppermost Overton Conglomerate Member, of the Baseline Sandstone. Thus, final emplacement of the Muddy Mountain-Keystone thrust postdates a 93.1 m.y. age. Movement on the Muddy Mountain-Keystone thrust produced the Weiser and Anderson recumbent synclines. Tightening of these recumbent synclines resulted in movement on the Summit-Willow Tank thrust, an out-of-syncline thrust with a lateral ramp between the synclines. The thrust cuts the white member and is overlapped unconformably by the red member, constraining movement to an interval of 2.7 m.y. (D. Carpenter, in prep.). The results of the new data combined with prior studies show that timing of deformation in the North Muddy Mountains spans, at least, Albian and Cenomanian time.

Analyses were performed by Krueger Enterprises Geochron Laboratory, Cambridge, MA. Samples were collected during the 1986 field season, supported by Chevron USA Incorporated. Spence J. Reber, of Chevron, suggested the research and has contributed greatly to our interpretations.

The decay constants used for age calculations are: $\lambda\beta = 4.962 \times 10^{-10}$/yr; $\lambda\epsilon = 0.581 \times 10^{-10}$/yr; $K^{40}/K = 1.193 \times 10^{-4}$ g/g.

SAMPLE DESCRIPTIONS

1. *35,010-2 (Geochron B-7679)* K-Ar
Biotite-bearing vitric tuff, white member of the Baseline Sandstone (36°24'33"N,114°33'35"W; NE¼ NW¼ SW¼ SW¼ S6,T17S,R66½E; Valley of Fire West quad., Clark Co., NV). *Analytical data:* K = 6.495, 6.520%; $*Ar^{40}$ = 0.04405, 0.04473 ppm; $Ar^{40}/\Sigma Ar^{40}$ = 0.781, 0.785.
(biotite concentrate) 95.8 ± 3.5 m.y.

2. *35,015-1 (Geochron B-7681)* K-Ar
Biotite-bearing vitric tuff, red member of the Baseline Sandstone (36°30'50"N,114°29'51"W; SW¼ SE¼ SW¼ NE¼ S28,T16S,R67E; Overton quad., Clark Co., NV). *Analytical data:* K = 6.870, 6.832%; $*Ar^{40}$ = 0.04538, 0.04534 ppm; $*Ar^{40}/\Sigma Ar^{40}$ = 0.662, 0.794.
(biotite concentrate) 93.1 ± 3.4 m.y.

3. *35,017-3 (Geochron B-7682)* K-Ar
Biotite-bearing vitric tuff, white member of the Baseline Sandstone (36°28'27"N,114°30'34"W; NE¼ SE¼ NW¼ NW¼ S9,T17S,R67E; Valley of Fire West quad., Clark Co., NV). *Analytical data:* K = 5.106, 4.946%; $*Ar^{40}$ = 0.03284, 0.03654 ppm; $*Ar^{40}/\Sigma Ar^{40}$ = 0.532, 0.462.
(biotite concentrate) 96.9 ± 3.6 m.y.

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