New K-Ar dates from the Kirtland Formation (Cretaceous), San Juan Basin, New Mexico

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Isochron/West, Bulletin of Isotopic Geochronology, v. 33, pp. 17-18

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NEW K-Ar DATES FROM THE KIRTLAND FORMATION (CRETACEOUS), SAN JUAN BASIN, NEW MEXICO

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We report K-Ar ages for four K-feldspar concentrates from volcanic ash units from the Kirtland Formation, San Juan Basin, New Mexico. Data for two altered biotites are presented, but the ages are anomalously low (see comments under nos. 2 & 4). The ashes have been subjected to alteration, with pronounced development of montmorillonite on volcanic clasts and post-formational calcite coating grains and filling original voids. Large samples from four sites were collected in summer 1981 by J. K. Rigby and analyzed by Geochron Laboratories, Cambridge, MA 02139. These dates are considered important as the ash units occur in rocks at or close to the Campanian–Maastrichtian boundary

SAMPLE DESCRIPTIONS

1. *JKR-54* K-Ar
Volcanic ash, Kirtland Formation (center S23,T24N,R13W; 108°11'29.5''W, 36°18'03.5''N; Alamo Mesa West quad, San Juan Co., NM). *Analytical data:* K = 3.145, 3.184%, $^{*40}Ar$ = 0.01805, 0.01791 ppm, $^{*40}Ar/\Sigma^{40}Ar$ = 0.791, 0.636.
(sanidine; some quartz) 78.0 ± 3.1 m.y.

2. *JKR-54* K-Ar
Volcanic ash, Kirtland Formation (center S23,T24N,R13W; 108°11'29.5''W, 36°18'03.5''N; Alamo Mesa West quad, San Juan Co., NM). *Analytical data:* K = 6.450, 6.317%, $^{*40}Ar$ = 0.03136, 0.03269 ppm $^{*40}Ar/\Sigma^{40}Ar$ = 0.790, 0.687. *Comment:* This biotite is considered too young as ammonites from the overlying and underlying rocks suggest a 72 m.y. date with reference to standard time scales.
(biotite; altered) 69.0 ± 2.6 m.y.

3. *JKR-62* K-Ar
Volcanic ash, Kirtland Formation (center SE¼ SE¼ S21,T24N,R13W; 108°13'28.6''W, 36°17'43.9''N; Alamo Mesa quad, San Juan Co., NM). *Analytical data:* K = 2.562, 2.604%, $^{*40}Ar$ = 0.01386, 0.01346 ppm, $^{*40}Ar/\Sigma^{40}Ar$ = 0.413, 0.793.
(sanidine; some quartz) 72.7 ± 3.0 m.y.

4. *JKR-62* K-Ar
Volcanic ash, Kirtland Formation (center SE¼ SE¼ S21,T24N,R13W; 108°13'28.6''W, 36°17'43.9''N; Alamo Mesa quad, San Juan Co., NM). *Analytical data:* K = 1.439, 1.461%, $^{*40}Ar$ = 0.005396, 0.005907 ppm, $^{*40}Ar/\Sigma^{40}Ar$ = 0.188, 0.131. *Comment:* This biotite is clearly much too young; we interpret this as due to the severe alteration of the sample.
(altered biotite) 53.8 ± 2.4 m.y.

5. *JKR-4* K-Ar
Volcanic ash, Kirtland Formation (center NW¼ S3,T24N,R13W; 108°11'46.9''W, 36°16'30.8''N; Alamo Mesa quad, San Juan Co., NM). *Analytical data:* K = 2.440, 2.425, $^{*40}Ar$ = 0.01363, 0.01348 ppm, $^{*40}Ar/\Sigma^{40}Ar$ = 0.564, 0.438.
(sanidine; some quartz) 76.5 ± 3.1 m.y.

6. *JKR-93* K-Ar
Volcanic ash, Kirtland Formation (T24N,R12W; 108°08'4.5''W, 36°16'04.8''N; Alamo Mesa quad, San Juan Co., NM). *Analytical data:* K = 2.430, 2.418%, $^{*40}Ar$ = 0.01301, 0.01410 ppm, $^{*40}Ar/\Sigma^{40}Ar$ = 0.679, 0.462.
(sanidine; some quartz) 76.8 ± 3.1 m.y.