

## ***K-Ar ages of volcanic rocks in the Luis Lopez Manganese district, Socorro Co., New Mexico***

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Isochron/West, Bulletin of Isotopic Geochronology, v. 2, pp. 47-48

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SHORT NOTESK-AR AGES OF THE VOLCANIC ROCKS IN THE LUIS LOPEZ MANGANESE DISTRICT,  
SOCORRO CO., NEW MEXICO

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The following four potassium-argon age determinations were run by Geochron Laboratories, Inc. for the New Mexico Bureau of Mines and Mineral Resources; all were collected by the author during a field study of the Luis Lopez Manganese mineralization.

On the basis of physical similarity all these rocks previously have been tentatively correlated with the Datil Group. The crystal tuff (G-F1244/NMBM-L3;  $15.0 \pm 0.6$  m.y.) was considered equivalent to the Hells Mesa Member (Weber - Isochron/West No. 1, p. 41; sample SM-191/NMBM-249-SR1; 32.4 m.y.) of the Datil. The above K-Ar age discrepancy may be due to the pervasive hydrothermal alteration apparent throughout the area. The volcanic glass (G-F1245/NMBM-L11;  $22.2 \pm 1.0$  m.y.) overlies the crystal tuff ( $15.0 \pm 0.6$  m.y.) which also suggests the K-Ar ratios have been variously altered. Hence, it may be concluded that all these rocks are 22 million years old or older and therefore are members of the Datil Group.

The argon analyses were made by standard isotope dilution techniques; the samples were fused by RF induction heating and the extracted argon was analyzed with a MS-10 mass spectrometer in the static mode. All analyses are in duplicate and separate aliquots of the samples and averages are reported. Analytical errors are reported at the 68 percent confidence level. The errors are based upon a statistical analysis of more than 500 pairs of duplicate argon and potassium analyses and include all analytical uncertainties. The constants used in the age calculations are:  $\lambda_e = 0.585 \times 10^{-10}$  /yr;  $\lambda_\beta = 4.72 \times 10^{-10}$  /yr;  $K^{40}/K_{total} = 1.22 \times 10^{-4}$  gm/gm.

G-F1244/NMBM-L3 K-Ar (sanidine)  $15.0 \pm 0.6$  m.y.

Luis Lopez crystal tuff. Welded crystal tuff ( $33^\circ 58' 15''$ N,  $106^\circ 59' 40''$ W; SE/4 Sec. 12, T4S, R2W; Tower Mine; Socorro Co., NM) with an abundance of quartz, sanidine, and biotite phenocrysts. Analytical data: K = 8.875%;  $\bar{A}r^{40} = 0.00957$  ppm;  $\bar{A}r^{40}/\Sigma Ar^{40} = 23, 42\%$ .

G-F1245/NMBM-L11 K-Ar (whole rock)  $22.2 \pm 1.0$  m.y.

Luis Lopez volcanic glass. Fresh black volcanic glass ( $33^\circ 56' 10''$ N,  $106^\circ 57' 40''$ W; NW/4 Sec. 29, T4S, R1W; Socorro Co., NM) at base of the rhyolite tuff that overlies G-F1244/NMBM-L3 near southern boundary of mining district. Analytical data: K = 4.152%;  $\bar{A}r^{40} = 0.00666$  ppm;  $\bar{A}r^{40}/\Sigma Ar^{40} = 19, 21\%$ .

G-F1461/NMBM-L26 K-Ar (sanidine)  $22.5 \pm 0.9$  m.y.

Magdalena crystal tuff. Rhyolite welded tuff ( $33^\circ 59' 05''$ N,  $107^\circ 05' 30''$ W; SW/4 Sec. 6, T4S, R2W; Six Mile Canyon E side Magdalena Mtns; Socorro Co., NM) similar to G-F1244/NMBM-L3 above. Analytical data: K = 6.668%;  $\bar{A}r^{40} = 0.0108$  ppm;  $\bar{A}r^{40}/\Sigma Ar^{40} = 46, 48\%$ .

G-F1334/NMBM-L19

K-Ar

(K-feldspar) 11.7±0.6 m.y.

Red Canyon dike. Coarsely porphyritic intermediate dike (33°56'50" N, 106°59'25" W; NE/4 Sec. 19, T4S, R1W; SW end of Red Canyon "box"; Socorro Co., NM) 100-600 feet across intruding G-F1244/NMBM-L3 (above).

Analytical data: K = 6.962%;  $^{40}\text{Ar}^*$  = 0.00582 ppm;  $^{40}\text{Ar}^*/\Sigma\text{Ar}^{40} = 42, 42\%$ .