

Table 6: Potassium-argon Age determination data

| Sample  | Location               | Material | K<br>(wt%) | Sample weight<br>(g) | $^{40}\text{Ar}^*$<br>(mol/g) | % $^{40}\text{Ar}^*$ | Age<br>(Ma) | $\pm 1\sigma$ |
|---------|------------------------|----------|------------|----------------------|-------------------------------|----------------------|-------------|---------------|
| TQ-308  | 21° 02.4'N 103° 57.4'W | gms      | 0.7891     | 1.59556              | 4.481E-12                     | 22.7                 | 3.19        | 0.26          |
| Mas-530 | 20° 03.1'N 103° 59.9'W | gms      | 0.9993     | 1.99941              | 5.653E-12                     | 29.8                 | 3.26        | 0.18          |
| Mas-704 | 20° 12.3'N 103° 31.0'W | gms      | 1.171      | 2.02814              | 6.68E-12                      | 31.5                 | 3.29        | 0.12          |
| Mas-521 | 20° 51.7'N 103° 17.0'W | gms      | 1.334      | 1.92207              | 8.549E-12                     | 44.7                 | 3.69        | 0.13          |
| GD-6    | 20° 45.5'N 103° 17.4'W | gms      | 0.7737     | 2.00012              | 6.182E-12                     | 60.8                 | 4.6         | 0.13          |
| Mas-512 | 20° 40.1'N 103° 12.8'W | gms      | 1.687      | 1.91115              | 1.440E-11                     | 39.4                 | 4.92        | 0.15          |
| A-28    | 21° 01.8'N 103° 23.9'W | gms      | 0.9057     | 1.96674              | 1.513E-11                     | 47.9                 | 9.61        | 0.28          |
| 61-180  | 21° 22.5'N 103° 24.9'W | gms      | 0.8928     | 1.92087              | 1.588E-11                     | 35.1                 | 10.23       | 0.34          |
| A-30    | 21° 03.0'N 103° 25.6'W | gms      | 0.544      | 3.28257              | 9.69E-12                      | 32.5                 | 10.25       | 0.82          |
| A-81    | 21° 10.9'N 103° 29.3'W | gms      | 1.703      | 2.1969               | 3.254E-11                     | 40.3                 | 10.99       | 0.23          |
| Mas-712 | 20° 54.5'N 103° 42.3'W | gouge    | 0.1441     | 1.94216              | 3.82E-12                      | 4.1                  | 15.2        | 2.5           |
| Mas-714 | 20° 54.5'N 103° 42.3'W | gouge    | 2.250      | 0.99345              | 5.68E-11                      | 39.4                 | 14.50       | 0.41          |
| A-60    | 21° 33.4'N 103° 22.9'W | gms      | 1.741      | 1.9957               | 6.63E-11                      | 69.3                 | 21.81       | 1.04          |

gms: groundmass material

gouge: fault gouge

Decay constants:  $\lambda_{\epsilon} + \lambda_{\epsilon'} = 0.581 \times 10^{-10} \text{ yr}^{-1}$ ;  $\lambda_{\beta} = 4.962 \times 10^{-10} \text{ yr}^{-1}$ ;  $\lambda = 5.543 \times 10^{-10}$ ; and  $^{40}\text{K}/\text{K}_{\text{total}} = 1.167 \times 10^{-4}$ 

Note: Sample preparation technique is described by Allan (1986); duplicate K flame photometry analyses were done by J. Hampel and K. Righter (single analysis on Mas 712, 714). Ar extractions were done by T. Becker, Institute for Human Origins--Berkeley Geochronology Center, and are described in Dalrymple and Lanphere (1969).

Table 7: 40/39Ar age determination data

| Sample<br>Lab # | Location               | J       | 40 Ar<br>(moles) | 40/39  | 37/39  | 36/39<br>(E-05) | 40*/39 | % Rad | Age<br>(Ma) | $\pm 1\sigma$<br>(Ma) |
|-----------------|------------------------|---------|------------------|--------|--------|-----------------|--------|-------|-------------|-----------------------|
| IL89-14         | 21° 16.1'N 103° 28.5'W | 0.01771 |                  |        |        |                 |        |       |             |                       |
| 2749-01         |                        |         | 2.12E-11         | 0.7618 | 0.1300 | 7.1551          | 0.7489 | 98.3  | 23.77       | 0.12                  |
| 2749-02         |                        |         | 1.27E-11         | 0.7732 | 0.0636 | 6.636           | 0.7564 | 97.8  | 24.00       | 0.16                  |
| 2749-03         |                        |         | 8.50E-11         | 0.7685 | 0.0717 | 5.5774          | 0.7555 | 98.3  | 23.98       | 0.20                  |
| 2749-04         |                        |         | 5.43E-11         | 0.7658 | 0.0653 | 6.4766          | 0.7496 | 97.9  | 23.79       | 0.07                  |
| 2749-05         |                        |         | 2.46E-11         | 0.7579 | 0.0687 | 5.1575          | 0.7459 | 98.4  | 23.67       | 0.12                  |
| 2749-06         |                        |         | 2.56E-11         | 0.7756 | 0.1297 | 11.616          | 0.7495 | 96.6  | 23.79       | 0.13                  |
| Wtd. Mean       |                        |         |                  |        |        |                 |        |       | 23.80       | 0.05                  |
| IL89-8          | 21° 2.2'N 103° 24.8'W  | 0.01778 |                  |        |        |                 |        |       |             |                       |
| 2750-01         |                        |         | 1.45E-12         | 0.3538 | 2.3842 | 69.967          | 0.339  | 95.6  | 10.82       | 0.44                  |
| 2750-03         |                        |         | 1.27E-11         | 0.3366 | 0.0044 | 7.053           | 0.3137 | 93.2  | 10.01       | 0.07                  |
| 2750-04         |                        |         | 1.04E-11         | 0.3277 | 0.0033 | 2.584           | 0.318  | 97.0  | 10.15       | 0.07                  |
| 2750-06         |                        |         | 1.04E-11         | 0.3437 | 0.0058 | 5.4228          | 0.3257 | 94.8  | 10.40       | 0.08                  |
| Wtd. Mean       |                        |         |                  |        |        |                 |        |       | 10.17       | 0.04                  |
| IL89-5          | 21° 25.8'N 103° 29.4'W | 0.01778 |                  |        |        |                 |        |       |             |                       |
| 2751-01         |                        |         | 2.25E-10         | 0.8698 | 0.0146 | 2.5953          | 0.8609 | 99.0  | 27.41       | 0.19                  |
| 2751-02         |                        |         | 4.71E-10         | 0.8497 | 0.0138 | 1.8174          | 0.843  | 99.2  | 26.84       | 0.10                  |
| 2751-03         |                        |         | 1.26E-10         | 0.8582 | 0.0146 | 3.5422          | 0.8465 | 98.6  | 26.95       | 0.10                  |
| 2751-04         |                        |         | 1.01E-10         | 0.8655 | 0.0142 | 1.9419          | 0.8585 | 99.2  | 27.33       | 0.10                  |
| 2751-05         |                        |         | 1.34E-10         | 0.9132 | 0.0144 | 19.381          | 0.8547 | 93.6  | 27.21       | 0.09                  |
| Wtd Mean        |                        |         |                  |        |        |                 |        |       | 27.11       | 0.05                  |
| IL-12           | 21° 16.1'N 103° 28.5'W | 0.01778 |                  |        |        |                 |        |       |             |                       |
| 2752-01         |                        |         | 1.21E-10         | 0.7414 | 0.0238 | 2.1375          | 0.7346 | 99.1  | 23.41       | 0.11                  |
| 2752-02         |                        |         | 1.19E-10         | 0.7252 | 0.0268 | 5.4388          | 0.7089 | 97.8  | 22.65       | 0.08                  |
| 2752-03         |                        |         | 9.11E-11         | 0.7370 | 0.0185 | 8.0635          | 0.7122 | 96.6  | 22.76       | 0.27                  |
| 2752-04         |                        |         | 2.52E-12         | 0.7480 | 0.0187 | -2.7000         | 0.7551 | 100.9 | 24.12       | 0.55                  |
| 2752-05         |                        |         | 6.27E-11         | 0.7808 | 0.0244 | 18.109          | 0.7269 | 93.1  | 23.22       | 0.09                  |
| 2752-06         |                        |         | 7.22E-11         | 0.7266 | 0.0227 | 6.6725          | 0.7063 | 97.2  | 22.57       | 0.10                  |
| Wtd Mean        |                        |         |                  |        |        |                 |        |       | 22.92       | 0.05                  |
| IL89-10         | 21° 16.1'N 103° 28.5'W | 0.01777 |                  |        |        |                 |        |       |             |                       |
| 2753-01         |                        |         | 6.95E-11         | 0.7345 | 0.0216 | 3.5152          | 0.7235 | 98.5  | 23.05       | 0.09                  |
| 2753-02         |                        |         | 3.22E-11         | 0.7519 | 0.0164 | 7.6027          | 0.7284 | 96.9  | 23.21       | 0.10                  |
| 2753-04         |                        |         | 5.65E-11         | 0.7342 | 0.0249 | 8.2457          | 0.7094 | 96.6  | 22.61       | 0.09                  |
| 2753-05         |                        |         | 7.39E-11         | 0.7264 | 0.0183 | 2.8721          | 0.717  | 98.7  | 22.85       | 0.09                  |
| 2753-06         |                        |         | 9.81E-11         | 0.7219 | 0.0211 | 2.8267          | 0.7129 | 98.7  | 22.71       | 0.11                  |
| Wtd Mean        |                        |         | 1.40E-10         | 0.7424 | 0.0254 | 5.4679          | 0.7259 | 97.8  | 23.13       | 0.11                  |
|                 |                        |         |                  |        |        |                 |        |       | 22.92       | 0.04                  |
| IL89-1          | 21° 17.4'N 103° 28.9'W | 0.01776 |                  |        |        |                 |        |       |             |                       |
| 2754-01         |                        |         | 1.05E-10         | 0.7246 | 0.0292 | 2.1103          | 0.7183 | 99.1  | 22.87       | 0.09                  |
| 2754-02         |                        |         | 1.44E-10         | 0.7198 | 0.0191 | 1.9509          | 0.7132 | 99.1  | 22.71       | 0.09                  |
| 2754-03         |                        |         | 1.29E-10         | 0.7225 | 0.0215 | 1.7621          | 0.7167 | 99.2  | 22.82       | 0.09                  |
| 2754-04         |                        |         | 5.94E-11         | 0.7439 | 0.0155 | 2.4546          | 0.7355 | 98.9  | 23.41       | 0.09                  |
| 2754-05         |                        |         | 7.88E-11         | 0.7382 | 0.0181 | 3.1617          | 0.7279 | 98.6  | 23.17       | 0.12                  |
| 2754-06         |                        |         | 1.33E-10         | 0.731  | 0.0301 | 2.2925          | 0.7243 | 99.1  | 23.06       | 0.10                  |
| Wtd Mean        |                        |         |                  |        |        |                 |        |       | 22.99       | 0.04                  |

Isotope ratios are corrected for procedural blanks, mass discrimination, and radioactive decay. 40/39Ar analysis of individual grains followed the methods and procedures outlined by Deino and Potts (1990). Neutron fluence parameter "J" is calculated from analysis of Fish Canyon sanidine, with a reference age of 27.84 Ma.