**Table S2.** Site mean ChRM directions from the Xiaoqiebao Formation.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Site ID | Lithology | Bedding | | *n*/*N* | Paleomagnetic direction of ChRM | | | | | | *λp* | *φp* |
| Strike | dip | *Dg* | *Ig* | *Ds* | *Is* | *k* | *α*95 |
| Section A (33°N, 88.4°E) | | | | | | | | | | | | |
| A01 | Andesite | 91 | 87 | 6/6 | 171.0 | -42.3 | 12.5 | -49.7 | 32.6 | 10.7 | -25.4 | 76.5 |
| A02 | Andesite | 91 | 87 | 7/7 | 176.5 | -40.6 | 6.6 | -52.2 | 214.2 | 4.1 | -23.9 | 82.3 |
| A03 | Basalt | 91 | 87 | 8/8 | 195.2 | -36.6 | 341.5 | -54.0 | 43.4 | 8.5 | -20.3 | 104.6 |
| A04 | Basalt | 91 | 87 | 8/8 | 200.6 | -41.6 | 339.2 | -47.6 | 17.1 | 13.8 | -25.2 | 108.5 |
| A05 | Basalt | 91 | 87 | 10/10 | 192.6 | -39.3 | 346.3 | -52.2 | 173.0 | 3.7 | -22.9 | 100.9 |
| A06 | Basalt | 91 | 87 | 12/12 | 199.8 | -35.4 | 335 | -53.2 | 34.5 | 7.5 | -19.2 | 110.2 |
| A07 | Basalt | 91 | 87 | 9/10 | 204.9 | -31.7 | 325.6 | -53.6 | 174.0 | 3.9 | -15.5 | 117.4 |
| A08 | Basalt | 91 | 87 | 10/10 | 198.4 | -45.5 | 343.8 | -44.9 | 89.1 | 5.1 | -28.6 | 104.9 |
| A09 | Basalt | 91 | 87 | 6/6 | 199.2 | -41.3 | 340.3 | -48.4 | 219.7 | 4.5 | -24.9 | 107.3 |
| A10 | Basalt | 91 | 87 | 5/6 | 207.3 | -35.3 | 327.1 | -49.6 | 33.8 | 13.4 | -19.3 | 118.2 |
| A11 | Rhyolite | 91 | 87 | 9/9 | 218.5 | -37.0 | 320.4 | -41.6 | 16.3 | 13.2 | -21.7 | 127.2 |
| A12 | Rhyolite | 91 | 87 | 7/8 | 199.5 | -47.7 | 344.2 | -42.6 | 48.7 | 8.7 | -30.4 | 105.1 |
| A13 | Rhyolite | 91 | 87 | 14/14 | 188.8 | -39.4 | 351.0 | -53.0 | 145.6 | 3.3 | -22.9 | 96.5 |
| sites mean |  |  |  | 13/13 | 196.6 | -40.1 |  |  | 60.4 | 5.4 |  |  |
|  |  |  |  |  |  |  | 342.2 | -50.3 | 60.1 | 5.4 |  |  |
| Pole |  |  |  | 13/13 |  |  |  |  | 37.6 | 6.8 | -23.7 | 104.8 |
| Section B (33°N, 87.8°E) | | | | | | | | | | | | |
| B01 | Basalt | 300 | 21 | 8/8 | 181.3 | 24.6 | 173.8 | 42.5 | 45.6 | 8.3 | -32.1 | 94.5 |
| B02 | Basalt | 300 | 21 | 8/8 | 186.9 | 27.3 | 179.8 | 46.1 | 284.2 | 3.3 | -29.5 | 88.0 |
| B03 | Basalt | 315 | 24 | 8/8 | 188.9 | 26.4 | 177.3 | 44.5 | 66.4 | 6.8 | -30.8 | 90.6 |
| B04 | Basalt | 315 | 24 | 7/7 | 190.7 | 27.8 | 178.8 | 46.3 | 136.5 | 5.2 | -29.4 | 89.0 |
| B05 | Basalt | 315 | 24 | 6/6 | 182.2 | 36.6 | 163.5 | 51.7 | 134.2 | 5.8 | -22.8 | 102.9 |
| B06 | Basalt | 319 | 15 | 8/10 | 175.9 | 39.1 | 163.8 | 46.9 | 76.6 | 6.4 | -27.0 | 103.8 |
| B07 | Basalt | 300 | 23 | 7/7 | 170.0 | 32.4 | 155.4 | 48.3 | 315.9 | 3.4 | -23.5 | 111.1 |
| B08 | Basalt | 290 | 28 | 9/9 | 170.3 | 33.4 | 152.7 | 55.7 | 334.4 | 2.8 | -16.2 | 110.5 |
| B09 | Basalt | 322 | 17 | 6/7 | 171.6 | 37.1 | 158.1 | 43.8 | 453.5 | 3.1 | -27.8 | 110.1 |
| B10 | Basalt | 317 | 20 | 8/8 | 169.1 | 39.4 | 151.4 | 47.4 | 462.0 | 2.6 | -22.8 | 114.9 |
| B11 | Basalt | 293 | 20 | 7/7 | 166.1 | 36.8 | 151.6 | 52.4 | 228.8 | 4.0 | -18.8 | 112.7 |
| B12 | Basalt | 293 | 20 | 6/6 | 161.9 | 39.3 | 146.0 | 52.6 | 311.9 | 3.8 | -16.5 | 117.0 |
| sites mean |  |  |  | 12/12 | 176.6 | 33.7 |  |  | 70 | 5.2 |  |  |
|  |  |  |  |  |  |  | 163.2 | 48.8 | 81.9 | 4.8 |  |  |
| Pole |  |  |  | 12/12 |  |  |  |  | 53.9 | 6.0 | -25.1 | 104.1 |
| Sites Mean  (Section A+B) |  |  |  | 25/25 | 186.6 | -5.0 |  |  | 4.3 | 15.9 |  |  |
|  |  |  |  |  |  | 162.7 | 49.6 | 71.3 | 3.5 |  |  |

Notes: *n*/*N*: number of samples or sites used to calculate mean/total number of samples or sites; *Dg*, *Ig*, *Ds*, and *Is* are the declinations and inclinations before and after tilt correction, respectively; *k*, *α*95: the best estimate of the precision parameter and the radius that the mean direction lies within 95% confidence, respectively; *λp* and *φp* are the latitude and longitude of VGP.

The fold and reversal tests are positive according to the following results:

(1) McElhinny (1964) method: n = 25, kg/ks = 29.1 > F (2(n2 − 1), 2(n1 − 1)) = 1.97 at 99% confidence.

(2) McFadden (1990) method: critical value ξ at 99% = 8.18, ξ2 = 24.6 before and ξ2 = 1.49 after tilt correction.

(3) Watson and Enkin (1993) method: The optimum concentration is achieved at 101.6±2.0% unfolding.

(4) McFadden & McElhinny (1990) method: normal polarity: N1=12, D1=163.2, I1=48.8; reversal polarity: N2=13, D2=342.2, I2=-50.3; γcalculated=1.7°<γcritical=7.0°. The classification of the reversal test is B.

(5) Heslop and Roberts (2018) method: BF≈45.09, *p*(HA/X) = 0.98, strong support.