**Table 1** Major oxides, and trace, REE and PGE concentration of Anjar intertrappean layers

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample No.** |  | **SGA-1** | **SGA-2** | **SGA-3** | **SGA-4** | **SGA-5** | **SGA-6** | **SGA-7** | **SGA-8** | **SGA-9** | **SGA-10** | **SGA-11** | **SGA-12** | **SGA-13** | **SGA-14** | **SGA-15** | **SGA-16** | **SGA-17** |  |
| Major Oxide (wt%) | | | | | | | | | | | | | | | | | | | |
| SiO2 |  | 30.29 | 45.79 | 58.99 | 60.60 | 58.06 | 50.31 | 15.56 | 61.02 | 12.01 | 60.55 | 19.38 | 60.90 | 20.48 | 58.08 | 9.15 | 32.44 | 17.62 |  |
| Al2O3 |  | 2.44 | 0.71 | 2.73 | 2.91 | 8.74 | 4.24 | 1.09 | 5.75 | 1.00 | 5.61 | 1.15 | 4.16 | 0.90 | 6.73 | 0.41 | 1.56 | 0.86 |  |
| Fe2O3 |  | 10.67 | 10.62 | 4.50 | 5.10 | 4.81 | 13.80 | 2.08 | 5.25 | 1.39 | 5.55 | 1.45 | 7.76 | 1.03 | 5.31 | 0.60 | 5.05 | 1.93 |  |
| MnO |  | 0.02 | 0.02 | 0.04 | 0.02 | 0.05 | 0.08 | 0.27 | 0.24 | 0.16 | 0.08 | 0.23 | 0.08 | 0.14 | 0.06 | 0.13 | 0.21 | 0.34 |  |
| MgO |  | 3.29 | 5.15 | 3.70 | 2.51 | 3.98 | 3.01 | 1.98 | 3.37 | 2.15 | 3.73 | 3.30 | 8.46 | 4.19 | 7.23 | 1.95 | 5.05 | 2.37 |  |
| CaO |  | 36.10 | 21.84 | 10.63 | 7.96 | 9.41 | 17.35 | 44.21 | 5.60 | 43.21 | 3.67 | 43.49 | 4.17 | 40.00 | 7.62 | 47.58 | 30.13 | 44.21 |  |
| Na2O |  | 1.13 | 0.72 | 0.55 | 0.61 | 0.49 | 0.45 | 0.21 | 0.38 | 0.18 | 0.38 | 0.14 | 0.26 | 0.18 | 0.26 | 0.06 | 0.16 | 0.06 |  |
| K2O |  | 0.16 | 0.08 | 0.28 | 0.26 | 1.09 | 0.63 | 0.30 | 0.76 | 0.19 | 0.72 | 0.15 | 0.38 | 0.16 | 0.56 | 0.07 | 0.22 | 0.09 |  |
| TiO2 |  | 0.11 | 0.02 | 0.99 | 0.63 | 1.56 | 0.01 | 0.60 | 1.50 | 0.39 | 1.56 | 0.38 | 1.19 | 0.30 | 1.41 | 0.16 | 0.74 | 0.42 |  |
| P2O5 |  | 0.14 | 0.39 | 0.17 | 0.38 | 0.19 | 0.27 | 0.14 | 0.26 | 0.17 | 0.20 | 0.08 | 0.05 | 0.23 | 0.18 | 0.12 | 0.11 | 0.21 |  |
| LOI |  | 15.55 | 13.77 | 16.79 | 17.84 | 11.23 | 10.22 | 33.38 | 15.03 | 39.09 | 17.13 | 30.67 | 12.57 | 31.91 | 12.71 | 38.89 | 24.08 | 31.86 |  |
| Trace and Rare Earth Elements (ppm) | | | | | | | | | | | | | | | | | | | |
| Sc(45) |  | 0.65 | 0.50 | 9.44 | 3.66 | 16.50 | 12.58 | 5.18 | 1.14 | 3.67 | 1.17 | 4.73 | 1.06 | 5.51 | 1.30 | 3.44 | 9.90 | 0.56 | 0.57 |
| V(51) |  | 299.42 | 272.78 | 233.57 | 77.71 | 493.72 | 748.19 | 128.89 | 193.43 | 77.93 | 259.88 | 65.43 | 87.11 | 100.20 | 79.95 | 19.53 | 87.95 | 62.63 | 64.08 |
| Cr(53) |  | 12.46 | 10.36 | 25.68 | 13.05 | 27.09 | 24.87 | 19.10 | 5.48 | 28.53 | 8.94 | 21.53 | 5.29 | 16.83 | 6.90 | 16.87 | 21.94 | 4.85 | 7.52 |
| Co(59) |  | 2.10 | 5.17 | 17.69 | 6.23 | 20.79 | 43.18 | 24.42 | 4.28 | 19.41 | 2.64 | 20.68 | 3.25 | 14.19 | 3.72 | 6.34 | 29.29 | 0.70 | 0.70 |
| Ni(60) |  | 3.61 | 12.35 | 18.87 | 8.82 | 19.32 | 22.93 | 17.83 | 3.77 | 16.25 | 7.66 | 18.35 | 3.64 | 21.43 | 4.18 | 23.11 | 22.83 | 3.26 | 3.26 |
| Cu(63) |  | 2.33 | 3.51 | 41.83 | 24.34 | 72.82 | 65.13 | 25.57 | 6.34 | 21.43 | 7.25 | 19.04 | 4.93 | 17.72 | 4.85 | 12.03 | 31.59 | 1.85 | 1.89 |
| Zn(66) |  | 66.21 | 56.99 | 71.65 | 52.06 | 109.27 | 196.85 | 169.82 | 52.08 | 104.63 | 43.78 | 68.47 | 14.89 | 84.05 | 20.20 | 120.22 | 58.16 | 14.29 | 16.61 |
| Ga(71) |  | 1.99 | 1.40 | 7.26 | 3.03 | 12.44 | 9.83 | 3.15 | 3.39 | 2.10 | 3.35 | 2.68 | 3.13 | 2.99 | 5.07 | 1.91 | 9.28 | 1.45 | 1.44 |
| Rb(85) |  | 77.12 | 41.15 | 53.86 | 21.00 | 165.84 | 127.88 | 38.39 | 212.29 | 24.24 | 213.71 | 22.33 | 118.29 | 24.72 | 171.83 | 10.05 | 37.84 | 17.35 | 17.48 |
| Sr(88) |  | 104.81 | 64.19 | 433.32 | 284.22 | 354.54 | 261.82 | 108.58 | 174.67 | 95.14 | 108.52 | 67.67 | 71.59 | 81.58 | 197.76 | 105.16 | 139.35 | 85.87 | 86.12 |
| Y(89) |  | 4.92 | 4.45 | 9.93 | 7.72 | 10.76 | 8.67 | 6.62 | 8.53 | 4.72 | 5.68 | 3.36 | 3.16 | 5.31 | 10.79 | 5.66 | 12.33 | 5.06 | 5.14 |
| Zr(90) |  | 33.35 | 24.53 | 79.77 | 34.17 | 108.76 | 94.84 | 36.13 | 48.03 | 27.61 | 47.80 | 30.74 | 41.25 | 32.25 | 137.47 | 32.86 | 128.91 | 24.06 | 22.02 |
| Nb(93) |  | 14.57 | 12.47 | 14.71 | 5.80 | 21.42 | 18.05 | 5.94 | 25.14 | 3.83 | 23.92 | 5.08 | 21.53 | 5.91 | 84.66 | 7.41 | 27.63 | 9.91 | 9.61 |
| Cs(133) |  | 0.32 | 0.15 | 1.33 | 0.64 | 2.29 | 1.68 | 0.57 | 0.28 | 0.36 | 0.28 | 0.41 | 0.20 | 0.50 | 0.35 | 0.30 | 0.73 | 0.07 | 0.07 |
| Ba(137) |  | 9.59 | 13.70 | 114.44 | 56.18 | 91.74 | 135.18 | 124.96 | 47.84 | 55.96 | 25.91 | 57.04 | 13.44 | 69.52 | 13.58 | 86.93 | 85.04 | 66.92 | 14.83 |
| La(139) |  | 8.96 | 5.30 | 13.85 | 8.18 | 15.56 | 12.59 | 8.60 | 10.74 | 6.14 | 7.38 | 4.70 | 4.86 | 8.92 | 26.81 | 7.82 | 20.14 | 5.04 | 5.09 |
| Ce(140) |  | 16.02 | 10.73 | 24.06 | 13.78 | 35.06 | 36.92 | 13.69 | 26.91 | 9.75 | 18.26 | 7.83 | 12.29 | 14.64 | 66.50 | 12.66 | 41.63 | 10.08 | 10.23 |
| Pr(141) |  | 1.81 | 1.14 | 3.19 | 1.81 | 4.12 | 3.27 | 1.67 | 2.60 | 1.24 | 1.86 | 1.07 | 1.08 | 1.88 | 5.92 | 1.43 | 4.66 | 0.84 | 0.86 |
| Nd(146) |  | 9.39 | 6.02 | 12.11 | 7.04 | 15.78 | 12.64 | 6.48 | 14.21 | 4.78 | 10.06 | 4.15 | 5.32 | 6.74 | 27.39 | 5.02 | 16.89 | 4.34 | 4.41 |
| Sm(147) |  | 1.73 | 1.20 | 2.47 | 1.44 | 3.44 | 2.75 | 1.37 | 2.63 | 1.02 | 1.91 | 0.97 | 1.06 | 1.44 | 4.31 | 1.03 | 3.56 | 0.76 | 0.82 |
| Eu(153) |  | 0.50 | 0.35 | 0.72 | 0.44 | 1.02 | 0.83 | 0.44 | 0.80 | 0.31 | 0.55 | 0.28 | 0.28 | 0.39 | 0.85 | 0.25 | 0.86 | 0.25 | 0.23 |
| Gd(157) |  | 1.64 | 1.21 | 2.30 | 1.49 | 3.19 | 2.55 | 1.42 | 2.60 | 1.04 | 1.80 | 0.91 | 0.94 | 1.30 | 3.02 | 1.03 | 3.02 | 0.84 | 0.81 |
| Tb(159) |  | 0.26 | 0.19 | 0.36 | 0.24 | 0.52 | 0.42 | 0.22 | 0.41 | 0.17 | 0.29 | 0.14 | 0.15 | 0.20 | 0.50 | 0.17 | 0.47 | 0.14 | 0.14 |
| Dy(163) |  | 1.40 | 1.08 | 1.79 | 1.24 | 2.55 | 2.19 | 1.12 | 2.24 | 0.88 | 1.62 | 0.71 | 0.84 | 0.95 | 2.94 | 0.89 | 2.33 | 0.82 | 0.83 |
| Ho(165) |  | 0.24 | 0.19 | 0.37 | 0.25 | 0.51 | 0.40 | 0.24 | 0.38 | 0.18 | 0.28 | 0.15 | 0.15 | 0.19 | 0.50 | 0.20 | 0.45 | 0.16 | 0.16 |
| Er(166) |  | 0.48 | 0.40 | 1.00 | 0.68 | 1.33 | 1.12 | 0.66 | 0.74 | 0.49 | 0.53 | 0.40 | 0.34 | 0.53 | 0.94 | 0.58 | 1.20 | 0.38 | 0.37 |
| Tm(169) |  | 0.07 | 0.05 | 0.14 | 0.09 | 0.19 | 0.15 | 0.09 | 0.09 | 0.07 | 0.08 | 0.06 | 0.06 | 0.08 | 0.13 | 0.09 | 0.16 | 0.06 | 0.06 |
| Yb(172) |  | 0.51 | 0.36 | 0.94 | 0.57 | 1.34 | 1.05 | 0.58 | 0.61 | 0.51 | 0.55 | 0.40 | 0.36 | 0.54 | 0.99 | 0.66 | 1.13 | 0.37 | 0.36 |
| Lu(175) |  | 0.07 | 0.06 | 0.15 | 0.09 | 0.20 | 0.16 | 0.11 | 0.08 | 0.09 | 0.08 | 0.08 | 0.06 | 0.10 | 0.13 | 0.12 | 0.17 | 0.06 | 0.06 |
| Hf(178) |  | 0.48 | 0.34 | 2.04 | 0.91 | 3.23 | 2.65 | 1.01 | 0.68 | 0.75 | 0.66 | 0.88 | 0.54 | 0.87 | 1.66 | 0.92 | 3.38 | 0.33 | 0.30 |
| Ta(181) |  | 0.04 | 0.04 | 0.88 | 0.35 | 1.34 | 1.15 | 0.44 | 0.09 | 0.29 | 0.06 | 0.35 | 0.06 | 0.48 | 0.20 | 0.61 | 1.53 | 0.03 | 0.03 |
| Pb(208) |  | 1.72 | 41.04 | 1.09 | 0.67 | 1.73 | 2.10 | 0.90 | 2.50 | 0.74 | 29.43 | 1.01 | 1.70 | 0.97 | 4.05 | 1.47 | 1.94 | 1.38 | 1.47 |
| Th(232) |  | 0.18 | 0.17 | 2.40 | 1.08 | 3.46 | 2.93 | 0.90 | 0.29 | 0.73 | 0.31 | 0.99 | 0.24 | 1.09 | 0.93 | 1.14 | 4.10 | 0.13 | 0.10 |
| U(238) |  | 3.35 | 2.51 | 3.84 | 3.15 | 5.00 | 6.71 | 1.50 | 3.31 | 1.36 | 2.45 | 1.14 | 0.93 | 1.00 | 1.22 | 0.65 | 0.92 | 0.92 | 0.93 |
| Platinum Group of Elements (ppb) | | | | | | | | | | | | | | | | | | | |
| Ru(101) | 3.078 | 3.10 | 55.90 |  |  | 1.27 | 2.09 |  | 6.77 | 2.24 |  | 4.05 | 5.01 | 1.42 |  |  | 11.14 | 2.43 |  |
| Rh(103) | 6.832 | 6.89 | 2.31 |  |  | 2.01 | 0.96 |  | 1.69 | 0.37 |  | 1.53 | 2.17 | 0.91 |  |  | 1.63 | 0.56 |  |
| Pd(105) | 39.335 | 39.49 | 92.79 |  |  | 22.54 | 24.75 |  | 21.62 | 7.14 |  | 15.41 | 19.79 | 3.13 |  |  | 32.36 | 12.50 |  |
| Os(189) | 1.237 | 1.09 | 13.12 |  |  | 1.53 | 0.50 |  | 0.38 | 0.89 |  | 0.35 | 0.95 | 0.28 |  |  | 0.44 | 1.50 |  |
| Ir(193) | 0.427 | 0.39 | 8.50 |  |  | 0.50 | 0.62 |  | 0.74 | 0.41 |  | 0.99 | 1.16 | 0.59 |  |  | 0.56 | 0.72 |  |
| Pt(195) | 4.769 | 4.73 | 18.42 |  |  | 15.69 | 13.88 |  | 39.38 | 3.12 |  | 13.34 | 44.63 | 7.47 |  |  | 25.49 | 3.81 |  |
| Au(197) | 19.555 | 19.43 | 52.98 |  |  | 226.79 | 126.67 |  | 23.86 | 22.56 |  | 26.81 | 45.30 | 10.55 |  |  | 37.61 | 18.84 |  |