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Structural Interpretation of New High-Resolution Aeromagnetic and Radiometric Data over Central Iran: Block Definition and Rotational Tectonics

Ian Basson, Reza Ravasan, Farzad Mahdavi, Yeganeh Hemmati, Mohammad Sabzeparvar, Mehdi Masoodi, Adam Wooldridge, Jon Andrew, Gavin Doyle, Jude King



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1 **Structural Interpretation of New High-Resolution Aeromagnetic and Radiometric** 2 **Data over Central Iran: Block Definition and Rotational Tectonics**

3 **Ian Basson^{1,4†}, Reza Ravasan², Farzad Mahdavi², Yeganeh Hemmati², Mohammad**
4 **Sabzeparvar², Mehdi Masoodi³, Adam Wooldridge¹, Jon Andrew¹, Gavin Doyle¹, Jude**
5 **King¹**

6 ¹Xpotential Geoscientific Consulting, Unit 5, Amdec House, Silverwood Close, Steenberg Office
7 Park, Tokai, South Africa

8 ²Eagle Mining Exploration Company, Tehran, Iran, P.O. Box: 1961656514

9 ³Department of Geology, University of Hormozgan, Bandar Abbas, Iran

10 ⁴Department of Earth Sciences, Stellenbosch University, Private Bag X1, Matieland, 7602, South
11 Africa

12 †(current address) Tect Geological Consulting, Unit 3, Metrohm House, William Gardner
13 Avenue, Somerset West, South Africa

14 Corresponding author: Ian Basson (ianbasson@tect.co.za)

15 **Abstract**

16 New high-resolution geophysical data over Central Iran defines >30 continental fragments or
17 blocks and lithotectonic domains, which are bounded by large-scale, kinematically-coherent
18 structures that may be traced under significant cover. Thrusts, normal, inverted normal and
19 basin-bounding faults were transposed to steeper dips with subsequent strike-slip movement.
20 Assembly required three triangular “keystone blocks”, with edges defined by entrained
21 ophiolites, which are required by rotational tectonics and the assembly of at least three adjacent
22 blocks, in this instance combined with anticlockwise rotation of the Lut Block and Central
23 Iranian Microcontinent. Late-kinematic, brittle-ductile to brittle, NNE- to NE-trending structures
24 are superimposed on the macrostructural pattern. From *c.* 12. Ma onwards, NW-directed
25 compressional tectonics resulted in the development of NNW-trending, dextral, strike-slip
26 structures, notably the Dehshir Fault, which overlapped temporally with the main Cu-bearing
27 porphyry-forming event and Urumieh-Dokhtar Magmatic Arc development. The Shir-Kuh
28 Block and fragments to the north of this originated approximately 200 km to the north, at the SW
29 edge of the Anarak Metamorphic Complex. Its southward movement is due to a combination of
30 dextral movement along the Dehshir Fault and anticlockwise rotation of the Lut and Tabas
31 Blocks. Major faults are delineated in four separate basins: the Shotori Basin, the Kharanaq
32 Basin, the Farrokhi Basin and the Gonabad Basin.

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