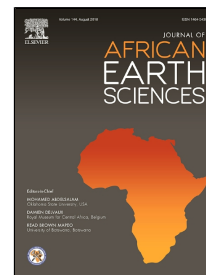


Accepted Manuscript

Oil-oil correlation, geochemical characteristics, and origin of hydrocarbons from Mansourabad oilfield, SW Iran

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PII: S1464-343X(18)30162-6
DOI: 10.1016/j.jafrearsci.2018.06.008
Reference: AES 3234
To appear in: *Journal of African Earth Sciences*
Received Date: 03 December 2016
Accepted Date: 09 June 2018

Please cite this article as: Bahram Alizadeh, Khaled Maroufi, Mehdi Fajrak, Oil-oil correlation, geochemical characteristics, and origin of hydrocarbons from Mansourabad oilfield, SW Iran, *Journal of African Earth Sciences* (2018), doi: 10.1016/j.jafrearsci.2018.06.008

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1 **Oil-oil correlation, geochemical characteristics, and origin of hydrocarbons from Mansourabad**
2 **oilfield, SW Iran**

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9

10 **Abstract**

11 Biological markers and carbon isotope data were used to delineate characteristics, maturity, and source of the
12 crude oils from Asmari and Bangestan reservoirs of the Mansourabad oilfield, SW Iran. In spite of extremely
13 similar source-related parameters reflecting an identical source, non-biodegraded Asmari and Bangestan oils
14 have different gravities. Based on not-equilibrated maturity parameters, Bangestan oils are slightly more mature
15 than Asmari oils resulting in higher API gravity. Geochemical indicators propose a carbonate-marl source rock
16 deposited in a marine environment under anoxic-suboxic conditions as the source of the oils. Strong marine
17 organic matter signature of predominantly algal origin along with robust signals of contribution from land plants
18 were detected. Based on geochemical evidence, the Mansourabad field Asmari and Bangestan oils being
19 sourced from a mix of Kazhdumi and Pabdeh organic matters. Carbon isotope composition and V/Ni ratio of the
20 oils delineate Kazhdumi Formation of Albian age as the main source rock. Nevertheless, partial contribution of
21 Pabdeh source rocks of Middle Eocene-Early Oligocene were also deduced based on medium concentration of
22 oleanane, low sulfur content, and less than unity values of C₂₉/C₃₀ hopanes ratio. It seems that the degree of
23 contribution from Pabdeh-derived oils were insufficient to impact a typical mixed signature over the
24 geochemical fingerprint of the reservoir oils. According to the stratigraphic levels, the latest more mature
25 Kazhdumi-derived oils only charged the adjacent reservoir, resulting in higher overall maturity of the Bangestan
26 oils. Since maturity and bulk geochemical properties of the Asmari and Bangestan oils are different, it can be
27 concluded that fluids within the reservoirs are completely separated from each other by effective static barriers
28 of dense Pabdeh and Gurpi beds.

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