
Oil-Oil Correlation of Asmari and Bangestan Reservoirs in Giant Marun Oilfield, SW Iran

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For this study, Asmari (Oligo-Miocene) and Bangestan (Cretaceous) reservoir oils of Marun oilfield were studied geochemically. Gas chromatograms and Stable isotopes of carbon and sulfur in different oil fractions were studied. Normal alkanes nC_{15+} are as high as 93% with saturate percentage up to 53.9% which reveal high maturity of Asmari and Bangestan reservoir paraffinic oils. Carbon Preference Index of both reservoir oils are around one, indicating mature oil samples. Pr/nC₁₇ and Ph/nC₁₈ ratios have confirmed this conclusion. Pr/Ph ratio is less than one and plot of $\delta^{13}C_{Aro.}$ (‰) versus $\delta^{13}C_{Sat.}$ (‰), both indicate marine reducing environment during deposition of their source rocks. The organic matter deposited in these sediments is of kerogen Type II (Algal). The Kazhdumi Formation (Albian) pyrolyzed by Rock-Eval VI, show high TOC, HI and PI and is introduced as the best source rock of Marun oilfield, and the results are in accordance with other geochemical data. Stable carbon isotope results versus Pr/Ph ratio indicate that both oils are originated from the same shaley limestone of Mesozoic age. This study also proves that H₂S gas polluted Asmari oils have similar isotopic range as Bangestan reservoir oil, hence the source of contamination originated from Bangestan reservoir. Isotopic and geochemical results for the first time introduce three oil families; two H₂S polluted families and one non-H₂S polluted oil family; in the entire Marun oilfield.
