

Effect of Clay Minerals on Primary Migration in Pabdeh Source Rock in Karanj Oil Field

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Abstract

The Pabdeh Formation represents organic matter enrichment in some oil fields which can be considered as source rock. The effect of clay minerals on early migration in this formation was studied in an unknown well in Karanj oil field. Based on the results of the Rock-eval and the XRD as well as the electron microscopy imaging before and after heating of the samples and creation of artificial thermal maturation, it was found that the illitization process could play an important role in the development and opening of microfractures in this source rock. In fact, by maturing the immature source rock in the laboratory, it was shown that during the illitization process by releasing water and creating pore fluid pressure, the micro-fractures initiate particularly in shales with high smectite/illite content, and could thus explain primary migration in Pabdeh source rock in Karanj oil field.