The effect of diagenetic processes on reservoir quality in Fahliyan formation (early Cretaceous) in Arvand oil field, Abadan plain

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Abstract

The purpose of this study is to investigate the diagenetic processes and their influenceimpact on the reservoir quality of Early Cretaceous Fahliyan Formation in subsurface section of wells 1 and 2 of Arvand oil field located in Abadan plain. This study based on petrographic and petrophysical studies including 229 thin sections and well logging. Diagenesis events showed that dissolution and cementation, dolomitization, and micritization, bioaccumulation, compressive pressure dissolution and compaction are the most common diagenetic processes affecting the studied formation. Among these processes, cementation and physical compaction cause porosity to dissolve, and desroy but dissolution and dolomitization have increased porosity. Styloliticity stylolitization in some cases due to dolomitization and dissolution along it increases Reservoir quality and in some cases due to the concentration of nondisolved residues, permeability barriers are created Thin sections studied show that the porosity are intergranular, voggy and fractures types. Petrophysical studies of the studied reservoir indicate that calcareous facies of the Fahliyan Formation, is associated with inter layers of shale. Rock porosity is between 3 to 8 percent and shale volume is less than 5percent, water saturation is between 10 to 40 percent, and oil and water content is high with high water saturation. According to the microfacies study, the proposed sedimentary model is carbonate ramp and due to the limited expansion of effective diagenetic processes in reservoir quality and value of lime mud, the reservoir quality of Fahliyan Formation in Arvand field is moderate.

Keywords*: Fahliyan formation, diagenesis, Arvand oil field, reservoir quality, early Cretaceous*