

Microfacies, diagenetic processes and their effect on reservoir quality of the Fahliyan Formation in Arvand oil field

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Abstract

The Fahliyan Formation in Arvand oil field has a low lithological diversity and includes limestone in the lower parts and dolostone in the upper parts of the reservoir. The goal of this study is determination of microfacies, depositional environment, diagenetic processes and their effect on the reservoir quality of this formation. Microscopic studies of 478 thin sections of cores led to the identification of 19 microfacies which belong to 4 facies belts including tidal flat, lagoon, shoal and open marine. This study also revealed diagenetic processes including micritization, bioturbation, neomorphism, compaction, dissolution, cementation and replacement. After studies of microfacies and diagenetic processes that affected these microfacies, eight petrophysical rock type, based on petrophysical classes of Lucia, were identified. Grainstone microfacies have the higher reservoir quality because of dissolution processes, packstone microfacies has good reservoir quality and the wackestone microfacies have lower reservoir quality.

Keywords: Fahliyan formation, Arvand oil field, Depositional environment, Diagenesis, Reservoir quality.