

Reservoir zonation of upper part of the Sarvak Formation using velocity deviation log in Sirri Esfand oilfield of the Persian Gulf

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Abstract

In this research, the Sarvak Formation with Cenomanian-Early Turonian in age was studied in Sirri Esfand field in order to investigate the pore system and reservoir zonation using velocity deviation log. The results show that there is a significant and consistent correlation between the variations of this log with the facies characteristics and core porosity and permeability values of reservoir rocks, which based on three reservoir zones were differentiated in the field. In these zones, variations in the quantitative and qualitative values of velocity deviation log can be related with pore system properties of the reservoir facies with respect to their primary texture and the effect of the diagenetic processes. Comparison of differentiated zones shows that zone-1 in upper part of the reservoir under the effect of sedimentary texture as well as the effect of diagenetic processes such as dissolution has high reservoir quality. Zone-3 in lower part of the formation, due to the mud-dominated texture of the facies has a lower reservoir quality. Zone-2 has an intermediate state in terms of reservoir quality.

Keywords: Velocity deviation, Pore system, Depositional texture, Diagenesis