PETROPHYSICAL AND FACIES ANALYSIS OF DHODAK OIL FIELD, EASTERN SULAIMAN FOLD AND THRUST BELT, PAKISTAN, BY USING WIRELINE LOGS OF SELECTED WELLS

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ABSTRACT

Dhodak field is located in the in the Dera Ghazi Khan district, Punjab province and geologically it is the western boundary of middle Indus basin and lies eastern side of Sulaiman range. Middle Indus basin is separated from upper Indus basin by Sargodha high in the north and by Indian shield in the east, marginal zone of Indian plate in the west, and Mari-Kandhkot high in the south. Structurally, it is divided into Punjab Platform in the east and Sulaiman fold belt in the west. The Sulaiman lobe is a broad and gentle fold and thrust belt that is still tectonically active and it is a product of oblique collision between the Indian and Eurasian Plates during Paleocene to Pliocene time. The prime objective of this research work is to evaluate hydrocarbon potential by interpreting wire line logs of study wells with the help of Petrophysical parameters and facies analysis of study wells. To establish the reservoir for study wells, the petrophysical evaluation was done at minute scale manually and with the help of Geographix software. In Dhodak-01, Pab Sandstone (Upper Cretaceous) has two pay zones having thickness 5 m and 12 m where as saturation of hydrocarbons from 82% to 87% respectively. In Dhodak-03, both Pab Sandstone and Upper Ranikot Formation are producing hydrocarbons. The thickness of pay zone in Pab Sandstone is 16 m having saturation of hydrocarbons is 56.8% where as 17 m thickness of pay zone in Upper Ranikot Formation with 54% saturation of hydrocarbons. In Dhodak-05 Pab Sandstone and Lower Ranikot Formation are producing hydrocarbons. Pab Sandstone has two pay zones, thickness 34 m and 36 m with 60% to 70% saturation of hydrocarbons respectively whereas in Lower Ranikot Formation also has two pay zones, thickness 20 m and 30 m with 67% to 72% saturation of hydrocarbons respectively. The top Cretaceous regressive sequence (Pab Sandstone) and lower Paleocene transgressive deposits (Ranikot Formation) are pay zones in the study wells on the basis of petrophysical parameters.

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