STRUCTURAL AND PETROPHYSICAL ANALYSIS OF MINWAL AREA, UPPER INDUS BASIN, PAKISTAN

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ABSTRACT

Minwal area is located 105kms southwest of Islamabad, in Chakwal district. Geographically, the study area lies between 33°2'51"N and 72°51'16"E. Geologically, the oilfield is situated in southeast of Salt Range, Upper Indus Basin, which is characterized by number of thrust faults and reverse faults, producing anticlines and synclines. The research highlights the 2D structural interpretation and well logs integration in order to reveal the structure of the area and hydrocarbon prospect. TWT, velocity and depth contour maps generated show a triangle zone in the area, bounded by two thrust faults. Petroleum play in the area reveals that Patala Formation of Paleocene is acting as a source rock; Chorgali Formation and Sakesar Limestone of Eocene is acting as a reservoir and Murree Formation of Miocene is acting as a seal. A synthetic seismogram has also been generated using the concept of forward modeling, of the location. Mainly, the zone of interest in well log interpretation lies in Sakesar Formation, in which, three zones have been marked. Log analysis of these three zones shows that the zone 1 of Sakesar limestone is more promising for hydrocarbon potential. Work is concluded by reserve estimation through volumetric method. Reserve Estimation further also confirms that the zone 1 has more hydrocarbon potential as compared to the two other zones.

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