STRUCTURAL INTERPRETATION, FORMATION AND PORE PRESSURE ANALYSIS USING WELL LOGS OF JOYAMAIR AREA, UPPER INDUS BASIN, PAKISTAN

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ABSTRACT

The Joyamair Oilfield lies in the south-southeast of the Salt Range-Potwar foreland basin (SRPFB). It is the result of Tertiary Himalayan collision between the Indian and Eurasian plates and characterized by number of reverse and thrust faults which results in formation of different hydrocarbon traps. The main objective of research was to reveal the structure of the area and hydrocarbon prospect with the help of available 2D seismic data. Interpretation of seismic data and generation of TWT maps and depth contour maps show a triangle zone in the area bounded by two major faults. It is concluded on the basis of study that the Joyamair structure is the combination of thrust and back-thrust, forming a triangle zone at subsurface. The triangle zone is the result of two phases of Himalayan thrusting. Petroleum play of the area shows that Patala Formation of Paleocene age act as a source rock while Chorgali and Sakesar Formation of Eocene age are two major reservoirs in the area while Muree Formation of Miocene age is acting as a seal. Petrophysical evaluation for Joyamair-01 and Joyamair-04 is carried out which shows more water saturation than hydrocarbon saturation. Pore pressure prediction is carried out for Joyamair-04 which is helpful in understanding subsurface pressure conditions and it can be further used for safe drilling and helps in correct identification of mud weight window. Study done for pore pressure prediction for Joyamair-04 show area of high pressure zone due to the compressional tectonic regime of the area so for safe drilling the mud weight should be kept high.

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