STRUCTURAL INTERPRETATION AND PROSPECT EVALUATION OF CONVENTIONAL RESERVOIRS AND IDENTIFICATION OF SHALE PLAYS IN SINJHORO AREA, LOWER INDUS BASIN, PAKISTAN

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ABSTRACT

The research work was carried out in Sinjhoro block of Sanghar district which is situated at Thar platform of Southern Indus Basin, Pakistan. The data used in the project comprises of nine 2-D seismic lines and borehole data of three wells in SEGY and LAS format respectively. The study focuses on various technical aspects of hydrocarbon exploration in the area through integration of different geophysical and geological techniques. These techniques include subsurface structural modeling at different levels via interpretation of 2-D seismic data, defining net pay zones of Lower Goru sands via petrophysical analysis of borehole logs and calculation of probable (P10), possible (P50) and proven (P90) volumes of identified reservoir in the area. Additionally, a technique named ΔLogR was also applied to qualitatively evaluate the possibility of Talhar Shale to be a Shale Play in the area. The technique directly uses well logs (mostly sonic and resistivity) to evaluate the source potential of the rock by integrating different characteristics of the rock. Along with this all, the depositional trend of lithological facies at Cretaceous level was also anticipated through well logs correlation. The results of the study support the already established geological framework of the area which includes its extensional tectonic regime and identification of local leads that provide basis for which already present wells were drilled. It also confirms the existence of petroleum system in the area i.e. the Basal sand as proven reservoir rock along with the idea of truncation of sand facies while moving from East to West. Results also indicate a few more leads which could be considered while planning any further development of the field. The results of ΔLogR technique show a bright possibility of Talhar Shale to be a Shale Play and could be considered for exploitation of unconventional hydrocarbon resources (Shale Gas) in the area.

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