

Study of Structural Styles and Hydrocarbon Potential of Rajan Pur Area, Middle Indus Basin, Pakistan

Authors : Zakiullah Kalwar, Shabeer Abbassi

Abstract : This research encompasses the study of structural styles and evaluation of the hydrocarbon potential of Kotrum and Drigri anticlines located in Rajanpur Area, Middle Indus Basin of Pakistan with the approach of geophysical data integration. The study area is situated between the Sulaiman Foldbelt on the west and Indus River in the east. It is an anticlinal fold, located to the southeast of Sakhi Sarwar anticline and separated from a prominent syncline. The structure has a narrow elongated crest, with the axis running in SSW-NNE direction. In the east, the structure is bounded by a gentle syncline. Structural Styles are trending East-West and perpendicular to tectonic transport and stress direction and the base of the structures gradually dipping Eastward beneath the deformation frontal part in Eastern Sulaiman Fold Belt. Middle Indus Basin can be divided into Foreland, Sulaiman fold belt and a broad foredeep. Sulaiman represents a blind thrust front, which suggests that all frontal folds of the fold belt are cored by blind thrust. The deformation of frontal part of Sulaiman Lobe represents the passive roof duplex stacked beneath the frontal passive roof thrust. The passive roof thrust, which has a back thrust sense of motion and extends into the interior of Fold belt. Left lateral Kingri Fault separates Eastern and Central Sulaiman fold belt. In Central Sulaiman fold belt the deformation front moved further towards fore deep as compared to Eastern Sulaiman. Two wells (Kotrum-01, Drigri-01) have been drilled in the study area with the objective to determine the potential of oil and gas in Habib Rahi Limestone of Eocene age, Dunghan Limestone of Paleocene age and Pab Sandstone of cretaceous age and role of structural styles in hydrocarbon potential of study area. Kotrum-01 well was drilled to its T.D of 4798m. Besides fishing and side tracking, tight whole conditions, high pressure, and losses of circulation were also encountered. During production, testing Pab sandstone were tested but abandoned found. Drigri-01 well was drilled to its T.D 3250 m. RFT was carried out at different points, but all points showed no pressure / seal failure and the well was plugged and declared abandoned.

Keywords : hydrocarbon potential, structural style, reserve calculation, enhance production

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