2D SEISMIC INTERPRETATION OF GHAUSPUR AREA AND PETROPHYSICAL ANALYSIS OF INDUS-1B AND BADAR SOUTH-O1 CENTRAL INDUS BASIN, PAKISTAN

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ABSTRACT

The research work is carried out in Ghauspur block district Sukkur, Pakistan. The block covers the area of 2435.40 Km^2 and is almost 71 meter above the sea level. Geologically the area lies on the southern margin of Central Indus Basin. There is no outcrop exposed but subsurface strata ranging from Jurassic to recent represents extensional regime. The main objective of the research work was to model the productive zones from seismic and well log data. Study was conducted by acquiring ten seismic lines and well log data of Badar south-1 and Indus-1B by the Directorate General of Petroleum Concession. During the study of Seismic sections, firstly interested reflectors i.e Sui main and Sui upper limestone were picked along the faults from the seismic sections with the help of synthetic seismic section. Then the time and depth contours were generated by using Kingdom software by the help of which structure was interpreted. In Petrophysical studies, reservoir zone was identified and reservoir parameters that are volume of shale, porosity, net pay calculation after application of cut-off, resistivity of water, water saturation, hydrocarbon saturation, Lithology was determined. During petrophysical interpretation, water Saturation against depth interval shows the behavior of the key reservoir. 3D Structural correlation between both wells was carried out through VuPak module of Kingdom in order to check the behavior of structure and as a validation of seismic interpretation. The seismic interpretation shows that the area is majorly comprise of normal faulting and negative flower structures in the area indicates presence of strike slip component. Over all the structure is getting shallower toward western side and is deeper in eastern side of the study area. An anticlinal structure is confirmed on western side by time and depth contouring. Petrophysically both the wells are water wet with hydrocarbon saturation of 33% and 35.1% in Badar south-1 and Indus-1B respectively at Sui main limestone level. In both wells good porosity lies only in top portion but do not have enough hydrocarbon saturation to be produced as commercially.

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