SUBSURFACE STRUCTURAL ANALYSIS SEISMIC AND WELL LOG DATA TO IDENTIFY POTENTIAL HC'S ZONE OF MIANWALI AREA, UPPER INDUS BASIN, PAKISTAN

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ABSTRACT

Main purpose of this dissertation is to evaluate the structure and hydrocarbon potential using seismic and well log data of Isa Khel area (Mianwali), Upper Indus basin, north western Punjab, Pakistan. The Upper Indus basin is a compressional tectonic regime exhibiting thrust faulting. The area is bounded by Sirghar range in north and west, Kalabagh thrust in the east, Salt range thrust in the southeast whereas khisor range in the south. The area follows the geology of the Nammal Gorge. The targeted formations ranged from late Permian to early Jurassic. For structural enhancement, five seismic lines were used; 905-MWI-64, 905-MWI-69, 905-MWI-70, 905-MWI-77 (dip line), 905-MWI-71(strike line). These lines do not show any faults. Time and depth contours of three horizons, Samana Suk formation, Datta formation and Mianwali formation were generated which confirmed the monocline structures in the subsurface. Mechanical properties calculated through rock physics also provide support to the lithologies of potential zones at the level of Samana Suk, Datta and Mianwali Formations. Elastic moduli calculated through rock physics also provide sample support to the delineated structure, although the presence of fluid is confirmed at Datta Formation. Although potential reservoir zone were marked but the Isa Khel well-01 is exploratory abandoned.

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