

RESERVOIR POTENTIAL OF BANNU, KOHAT & TANK SUBBASINS AND NORTHERN SULAIMAN FOLD BELT

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The study area straddles diverse structural zones in the fold / thrust belt system of northern Pakistan and lies in a zone of major structural strike change between the north-south trending Sulaiman Range and the east-west trending Bhattani-Pezu-Marwat Range which separates the Bannu, Kohat sub-basins in north from the Tank sub-basin to the south. The sharp change in strike at the confluence provides for varying lithology and stratigraphic nomenclature and complex structural styles.

Several oil and gas seepages present in the area have attracted exploration companies since long. However, even though the exploration history is fairly old, it may still be categorised as a frontier region, due to limited drilling undertaken and continues to present a challenge in terms of understanding its hydrocarbon habitat and successful completion of an exploration program.

Potential reservoirs are present within Mesozoic to Tertiary. These include both clastics and carbonates, exhibiting a wide range of depositional settings and depths. The Eocene carbonates ranging from shallow to relatively deep marine and sand intervals within the Jurassic and Paleocene sections have been especially attractive to explorationists. The recent oil & gas discovery within Mesozoic clastics at Shakardarra has renewed exploration interest in the area. However, the pitfall of classifying a particular formation as potential reservoir on generalised basis may be avoided and instead an approach wherein different formation units in a specific region are studied in detail to determine the true potential be adopted. Facies changes, pinchouts, truncations and variation in depth of potential reservoirs are common challenges in delineating economic reservoirs for successful drilling.

The paper attempts to discuss the different reservoirs within the region in terms of their depositional settings, thicknesses, depths and more importantly their overall hydrocarbon potential to evaluate the risks involved in exploration, based on our experience of exploration work and making use of available seismic, well results, geochemical data and field observations.