

AN OVERVIEW OF THE HYDROCARBON POTENTIAL OF THE LESS EXPLORED KHARAN FOREARC BASIN, BALOCHISTAN PROVINCE, PAKISTAN

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The frontal region of the Raskoh and Kharan forearc region remained one of the least studied parts of the Balochistan basin, and therefore neither the overall structural geometries of the region, nor their prospectivity and hydrocarbon potential were clearly understood. Kharan area is classified as a forearc region of the Balochistan basin, which is analogous to several oil and gas producing regions elsewhere in the world.

Kharan forearc basin is an enclosed drainage basin at about 500m above mean sea level and is constituted by flat area including the Hamun-i-Mashkhel and Kharan platform draped by superficial Quaternary sand deposits. It is more than 100 km wide from the foothills of Raskoh arc to the northern border of Siahan range. The aeromagnetic and gravity data over this area show considerable thickness of sedimentary pile over the basement rocks, which could have analogous sedimentary sequence as in the Chagai and Raskoh arcs. The arc to trench distance ranges from 300 to 500 km from north to south, one of the widest in the world, similar to what is observed in the producing Cook-Inlet basin of Alaska.

Based on the field data gathered by Pakistan Petroleum Limited (PPL) and previous studies, the depositional setting of the Palaeogene succession in Mashkhel (Kharan) forearc basin indicates that there are favorable conditions for occurrence of potential source, reservoir and cap rock assemblage and a viable petroleum system. Tectonic development of the basin also shows progressive decrease in the structural complexity southward of Raskoh range resulting in likely occurrence of less complex structural traps of considerable pool size.

The objective of this paper is to summarize the relevant data on stratigraphy, structure, and source-reservoir characteristics of the exposed sequences in the southern part of Raskoh range. This will lead to the understanding of basin evolution and help us propose a petroleum geological model for the area to carry out detailed exploration work. This paper is a prerequisite to document and assess the hydrocarbon potential of the stratigraphic sequences likely to extend into the forearc region of Balochistan basin.