Stratigraphic Framework and its Implications for Structural Styles in Raskoh Range, Pakistan

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Abstract

The ENE-WSW trending Raskoh Range was termed Frontal Arc of Chagai-Raskoh Arc System and Geanticline by earlier workers. Late Jurassic to Oligocene age rocks are exposed in the area which are having a complex distribution in terms of litho-facies. During Cretaceous sedimentation was interrupted by submarine volcanic eruption and subsequently also affected by magmatic intrusion during Paleogene. A variety of complex structural style was observed during geological field work which shows that in N-NW periphery of Raskoh Range where thick Kuchakki Volcanics of Cretaceous age exposed, the nappe structures are present. A very large displacement was observed along a thrust sheet near IraniThal area along which Kuchakki Volcanics were emplaced on rocks of Pishi Group of Paleocene-Oligocene age. Obduction of ophiolites mélanges was also observed along these thrusts where Bunap Sedimentary Complexes of Late Jurassic age is overlain by relatively thin Kuchakki Volcanics particularly in the eastern and western margins of the NNW periphery of Raskoh Range. Soft sediments of Paleocene Rakhshani Formation are molded along intrusive bodies whereas structural features particularly thrust faults take large turns and follow upto some extent the structural contours of these intrusive bodies. In the central and western part of Raskoh Range, suits of large scale folds having wavelengths in kilometers were observed. These folds were occurred within thick sedimentary package of Rakhshani and Nauroz formations in the east whereas witin Kuchakki Volcanics and Pishi Group in the west. A shorter wave lengths type folding pattern was observed in the south eastern part of Raskoh Range where Eocene Kharan Limestone is deposited between Paleocene Rakhshani and Late Eocene-Oligocene Nauroz formations. It is considered that Kharan Limestone being a competent sequence, shaped wavelength of the folds during folding process according to its thickness. These folds vary from plunging to doubly plunging, gently to steeply asymmetrical south facing.

Field observations, stratigraphic correlation and structural cross-sections suggest that the overall structural styles and their kinematics were controlled by distribution of different rock units and their behavior to deformation mechanism. Findings of this paper can be used as analogue elsewhere in defining the hydrocarbon entrapment mechanism in fold and thrust belts with multiple deformation phases and complex stratigraphic settings.