MICROFACIES, PALEOENVIRONMENTS, DIAGENESIS, PALYNOFACIES AND SEQUENCE STRATIGRAPHIC STUDY OF THE CAMBRIAN DARWAZA FORMATION OF THE ATTOCK CHERAT RANGE, NORTHWEST, PAKISTAN

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Abstract
This integrated research work deals with the carbonate microfacies, diagenesis, palynofacies and sequence stratigraphy of the Cambrian Darwaza Formation of the Attock Cherat Range. Thirty-one representative samples were collected for the petrographic study. In light of detail petrographic and palynological studies, three microfacies, i.e. mudstone, siliciclastic mudstone and algal laminated mudstone and one palynofacies i.e. palynofacies Darwaza Formation the Darwaza section-1 (PDD-1) have been recognized in the Darwaza Formation. The microfacies types indicated an intertidal to supratidal depositional environment. In the studied strata, various diagenetic processes including cementation, dissolution, compaction (both mechanical and chemical) and microfractures have been identified in most of the samples. Three stages of diagenesis, i.e. marine, shallow and deep burial environments are recognized. The Cambrian strata of Attock Cherat Range is largely affected by various diagenetic events which indicated low hydrocarbon reservoir potential. The main factor which adds to the reservoir characterization ability is fracturing which are observed both on macro and micro scale. Due to absence of fossils in the studied sections of Attock Cherat Range, the microfacies types and their depositional environments have been used for the interpretation of depositional sequences followed by parasequences and their relative sea level curves. The Darwaza Formation is comprised of one composite sequence and fourteen parasequences of third order cycles.

Keywords: Microfacies, Paleoenvironments, Palynofacies, Sequence stratigraphy, Cambrian, Darwaza Formation.