

**MICROFACIES AND DIAGENETIC ANALYSIS OF  
CHORGALI CARBONATES, CHORGALI PASS, KHAIR-  
E-MURAT RANGE: IMPLICATIONS FOR  
HYDROCARBON RESERVOIR CHARACTERIZATION**



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**2015**

## ABSTRACT

The Chorgali Formation of Eocene age is composed of light to dark grey, thin to medium bedded limestone with shale intercalations, which is exposed in the Chorgali Pass, Khair-e-Murat Range of the Northern Potwar Deformed Zone (NPDZ). Lower contact of Chorgali Formation is conformable with Sakesar Limestone, which is dark grey in color, thick to massive bedded and highly fossiliferous and upper contact is conformable with Kuldana Formation. In this study, the exposed stratigraphic section along axis of anticlinal structure is logged and sampled with a total of 6 samples. Three microfacies recognized from petrographic studies are: Bioclastic Wackestone-Packstone Microfacies, Mixed Bioclastic Wackestone-Packstone Microfacies and Larger Foraminiferal Wackestone-Packstone Microfacies. The depositional texture and faunal association suggested that the microfacies represents deposition in a low energy, distally steepened ramp setting. Due to the deposition in low energy environment the ratio of lime mud is more than bioclasts, due to which the primary pore spaces in the formation are negligible. The analysis further showed that the Chorgali Formation was also subjected to various diagenetic changes, mainly showing the compaction, stylolitization, aragonite to calcite transformation (neomorphism), tectonically induced fracturing and calcite veins passing from marine diagenesis to meteoric diagenesis through burial diagenesis. Fracturing due to later tectonic deformation have had a major influence on porosity generation and in some cases fracturing and stylolites together, have had an important effect on permeability values. The petrophysical analysis shows that the Eocene Chorgali Formation is very good reservoir with average hydrocarbon saturation of 80 %.

## ACKNOWLEDGEMENTS

I am very grateful to Dr. Birkhez Aslam Shami and Mr. Fahad Mahmood who supervised this study. Their ideas, discussions and encouragement paved way for the successful completion of this work.

I am also thankful to Prof. Dr. Tahseenullah Khan, who provided us his great attention and guidance all the time.

My gratitude to Prof. Dr. Muhammad Zafar (Head of Department, Earth and Environmental Sciences) for providing me with opportunity to work on this particular project.

I am very thankful to Mr. Nowrad Ali (Lecturer, Department of Geology, University of Peshawar) whose constant contribution in refinement of this study is worth mentioning and without his support this study was not possible.

My friends and fellows Zain-ur-Rahman and Imran Khan are thanked for valuable discussions, and guidelines in the field of sedimentology which helped me a lot in finalizing the project proposal for this study.

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