RESERVOIR CHARACTERIZATION AND MICROFACIES ANALYSIS OF SAKESAR LIMESTONE, CENTRAL SALT RANGE, POTWAR BASIN, PAKISTAN

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DEDICATION

This dissertation is dedicated to my parents, who always facilitated my in every sphere of life with their immense practical advices and fulfilled all my wishes. I also dedicate it to my teachers who were committed and devoted all their efforts to guide us through the unsteady course of life, more than ever to my supervisors for their continuous support and help.

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ABSTRACT

In Katha section of Central Salt Range and Pindori Oil field, Sakesar Limestone of Eocene age has been investigated for the reservoir characterization, microfacies analysis and diagenetic fabric. The research work was carried out for the outcrop samples, picked from the Sakesar Limestone of Eastern Salt Range and two wells, selected in Pindori Oil field (Pindori-01 and 02) Potwar Plateau, Pakistan. 18 rock samples were collected in the field area, the microscopic study revealed five microfacies and sub-microfacies with distinct texture, fossils content and allochem types. These microfacies are Mudstone Microfacies, Wack-Packstone Microfacies, Mud-Wackstone Microfacies and sub microfacies are, Lockhartia, bioclasts, milliolids and nummulitic microfacies. On the basis of presence of biota, micritic matrix in various microfacies, the Sakesar Limestone is interpreted to be deposited in the inner to middle shelf settings. In the Central Salt Range, Sakesar Limestone has been affected and modified through various diagenetic events, demolishing the primary sources of reservoir and fabricating as a secondary reservoir. The diagenetic fabrics include the calcite filled micro fracture, aragonite to calcite transformation, micritization, cementation, mechanical compaction, chemical compaction. The petrophysical analysis for Pindori-01 and Pindori-02 is carried out by using Geographix software and gamma ray, sonic, caliper, neutron, density and resistivity logs are utilized to identify the subsurface lithology of the Sakesar Limestone.

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