

**DOLOMITIZATION IN SAMANASUK FORMATION. ITS  
IMPLICATIONS, PETROGRAPHY, GEOCHEMISTRY AND  
RESERVOIR CHARACTERISTICS IN KAHI SECTION NIZAMPUR  
BASIN, NORTH WESTERN HIMALAYAS, PAKISTAN**



A thesis submitted to Bahria University in partial fulfillment of the  
requirement for the degree of BS in Geology

**BY**

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## **ABSTRACT**

The dolomite of study area belongs to the Samanasuk Formation and is exposed in the Kahi area in Nowshera region, which is present in the Nizampur basin formed by the uplifting of Attock-Cherat ranges. The study of area was conducted through field observations, petrographic studies and isotopic analyses which helped in the identification and understanding of various diagenetic phases and their respective impacts on the reservoir attributes throughout the diagenesis. The various diagenetic phases recognized mainly consists of (i) Replacive dolomites of three different phases (ii) Saddle Dolomite (iii) White calcite cement formed during early stages (iv) White Calcite cement formed during late stages (v) The transparent calcite cement. Other features observed in the study area included Oolites, butcher chop weathering and bedding parallel stylolites. The studies conducted regarding porosity and permeability of the dolomite revealed that an increment in the porosity was generated as a result of certain diagenetic phases such as dissolution, replacement and recrystallization as well as diagenetic alterations along faults but was reduced due to the late stage processes of compaction and cementation. As concluded, circulation of Mg-rich fluids resulted in dolomitization along the fault and associated fractures. Underlying the Samanasuk formation lies the Chichali formation which is siliciclastic in nature and underwent dewatering of basinal fluids or deep and hot hydrothermal fluids which is considered the possible source of dolomitization for the study area dolomite.

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