

Petroleum Generative Potential of Eocene-Paleocene Sequences of Potwar Basin, Pakistan

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Abstract : The investigation of the hydrocarbon source rock potential of Eocene-Paleocene formations of Potwar Basin, part of Upper Indus Basin Pakistan, was done using geochemical and petrological techniques. Analysis was performed on forty-five core-cutting samples from two wells. The sequences analysed are Sakesar, Lockhart and Patala formations of Potwar Basin. Patala Formation is one of Potwar Basin's major petroleum-bearing source rocks. The Lockhart Formation samples VR (%Ro) and Tmax data indicate that the formation is early mature to immature for petroleum generation for hydrocarbon generation; samples from the Patala and Sakesar formations, however, have a peak oil generation window and an early maturity (oil window). With 3.37 weight percent mean TOC and HI levels up to 498 mg HC/g TOC, the source rock characteristics of the Sakesar and Patala formations generally exhibit good to very strong petroleum generative potential. The majority of sediments representing Lockhart Formation have 1.5 wt.% mean TOC having fair to good potential with HI values ranging between 203-498 mg HC/g TOC. 1. The analysed sediments of all formations possess primarily mixed Type II/III and Type III kerogen. Analysed sediments indicate that both the Sakesar and Patala formations can possess good oil-generation potential and may act as an oil source rock in the Potwar Basin.

Keywords : Potwar Basin, Patala Shale, Rock-Eval pyrolysis, Indus Basin, VR %Ro

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