

An Analysis of Pre-Tertiary Plays in Matimekhana- Deohal Area- A Case Study from OIL's Operational Area in Northeast India

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Occurrence of oil in Gondwana sediments of Cretaceous age in the drilled wells of East Lakhbari and Furkating areas in Assam Shelf has led to renewed interest in the Cretaceous sediments of the Upper Assam Basin. Sedimentation in the Upper Assam Basin started locally by the Campanian age (Cretaceous period of Mesozoic Era), with deposition of Dergaon Group (and equivalents) of shales and sandstones. A case study has been presented here on the observed Pre- Tertiary sequence in Matimekhana- Deohal area which is expected to be equivalent of Dergaon Group (Cretaceous age). A critical examination of seismic data acquired over a period has revealed a mappable Pre- Tertiary thickness in Matimekhana-Deohal area. Seismic interpretation was carried out for three seismic reflectors which are equivalent to Top Langpar, Base of Langpar (Eocene age) and Top of Basement to analyse the prospectivity of the play. During study it was observed that Pre- Tertiary sequence was deposited in a narrow north- south trending graben with maximum thickness of around 700 m to 800 m at depth range of 3800 m and below. Hydrocarbon prospectivity of the Pre- Tertiary play is expected to be insitu generation of oil/gas from Cretaceous shale entrapped within the sand units of Cretaceous Formation. The expected hydrocarbon generated for accumulation in the graben is of the order of 80 MMT as per 1D modelling. The main objectives of this study are

- I) to map the extra sediment preserved between Langpar Formation and Basement, and
 - II) to establish the existence of pre-Tertiary petroleum system in this part of Upper Assam Basin.
- It is envisaged that pre-requisite conditions for petroleum system viz. source, reservoir, cap rock and entrapment condition exist in this deeper part of Upper Assam petroliferous basin.