

Diagenesis and its impact on the reservoir quality of Tipam Sandstone Formation of the Geleki oilfield of Assam and Assam–Arakan Basin

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The Tipam sandstones in Upper Assam Shelf oilfields exhibit comparatively high porosity. However, the productivity of the Geleki oilfield shows significant variation across different horizons. To understand this variability, this study evaluates the diagenetic behaviour of the Tipam sandstones and its influence on reservoir parameters. The analysis incorporates wireline logging, X-ray diffraction, scanning electron microscopy and petrographic thin section studies. The study reveals that the Tipam sandstones are moderately to poorly sorted. Their effective porosity is influenced by the precipitation of cementing materials, along with mechanical and chemical compaction. Burial diagenesis has further affected porosity and permeability through the presence of clay minerals and detrital or *in-situ* matrix. The clays, identified as smectite, corrensite, illite and chlorite, occur as grain draping, pore bridging and pore filling materials and thereby sealing the rock's intergranular spaces. The primary diagenetic processes modifying the sandstones reservoir properties include compaction, cementation, dissolution, and mineral replacement.

Keywords: Diagenesis, Geleki oilfield, reservoir properties, Tipam sandstone.