

## **Tectonic Control on Major Hydrocarbon Accumulations in Dhansiri Valley, Assam and Assam Arakan Basin , India**

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Dhansiri valley constitutes the southern part of Assam shelf which falls in Assam and Assam Arakan basin located in the northeastern part of India. The Assam shelf represents structurally disturbed thrust fold belt placed between two major orogenic belts; namely the Himalayan Mountain ranges to the north and Naga Hills to the east. The area is mainly represented by sedimentary succession ranging in age from Permian to recent. A maximum thickness of over 5 km is observed in the southeastern part of the basin. In addition to the fractured basement of Pre-Cambrian age a number of commercial hydrocarbon bearing reservoirs occur in the Dhansiri valley ranging in age from Paleocene to Miocene,

Tectonically the area has been evolved through rift, drift and collision stages, resulting in complex structural history and varied sedimentary facies distribution. The area is characterized by a series of horst and graben structures related to initial rifting stage, followed by passive margin setting and finally transformed to foreland basin during Mio-Pliocene. In this poly tectonic setup the hydrocarbons are established almost in all the stratigraphic horizons including the fractured basement. The hydrocarbon plays in different fault blocks are different at different stratigraphic levels. The hydrocarbon bearing reservoirs are mainly sandstone with good porosity and permeability and occasionally within the limestone. Shallow marine thick carbonaceous shale of Late Eocene age is the mature source rock for the generation of hydrocarbon in the study area.

The study indicates that the major hydrocarbon accumulations in the Dhansiri valley are at deeper stratigraphic levels within the horst and graven structures towards the Schuppen belt in the S E and relatively small hydrocarbon accumulations are observed at shallower stratigraphic level restricted in the hanging wall side, away from Schuppen belt. The hydrocarbon accumulations are essentially controlled by structural elements rather than stratigraphic plays. Systematic study of identifying the play types helps in minimizing the exploration risk in order to identify areas of potential hydrocarbon prospects.