

Application of a ramp / flat fault model to interpretation of the Naga thrust and possible implications for petroleum exploration along the Naga thrust front

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ABSTRACT

The Assam-Arakan thrust belt extends along the India-Myanmar border, from the Chinese border on the north to the Bay of Bengal on the south. Tertiary nonmarine sediments dominate the stratigraphy within the frontal zone of this fold and thrust belt. Thrust fault flats occur in the upper Barail Group coaly interval, and ramps are localized by preexistent normal faults and stratigraphic discontinuities. As a result, the frontal zone of the thrust belt is characterized by multiscale imbricate structures. The Jaipur anticline occurs at the foreland edge of the Naga thrust imbricate zone, at the northeastern end of the Assam valley. Application of flat/ramp geometric models, with a limited data set from the Jaipur anticline, allows creation of geometrically viable models for interpreting the general structure of the Jaipur anticline and for developing hydrocarbon exploration leads. The results of this method indicate that (1) the proven productive foreland trend extends several kilometers beneath the Naga thrust, and (2) zones of high dip in the thrust belt mark the location of prospect leads probably related to local thrust imbrication. The method provides a testable process of identifying prospective areas; therefore, it can minimize exploration expense and optimize exploration planning.