

Paleocene-Eocene Play - Future Exploration Focus for Deeper Prospects in North Assam Shelf, Assam and Assam Arakan Basin, India*

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Abstract

This study presents an exploration focus in North Assam shelf, Assam and Assam-Arakan basin for probing the underexplored reservoirs of a deeper Paleocene-Eocene play and a paradigm shift from lithostratigraphic to chronostratigraphic approach. The application of high resolution sequence stratigraphy has helped in developing depositional models of Paleocene-Eocene (Tura, Sylhet, and Kopili formations) play in the entire North Assam shelf and their vast impact on hydrocarbon exploration. This study brings out a prospectivity perception of this underexplored deeper play within the Tura, Sylhet, and Kopili reservoirs in the identified parasequences/system tracts.

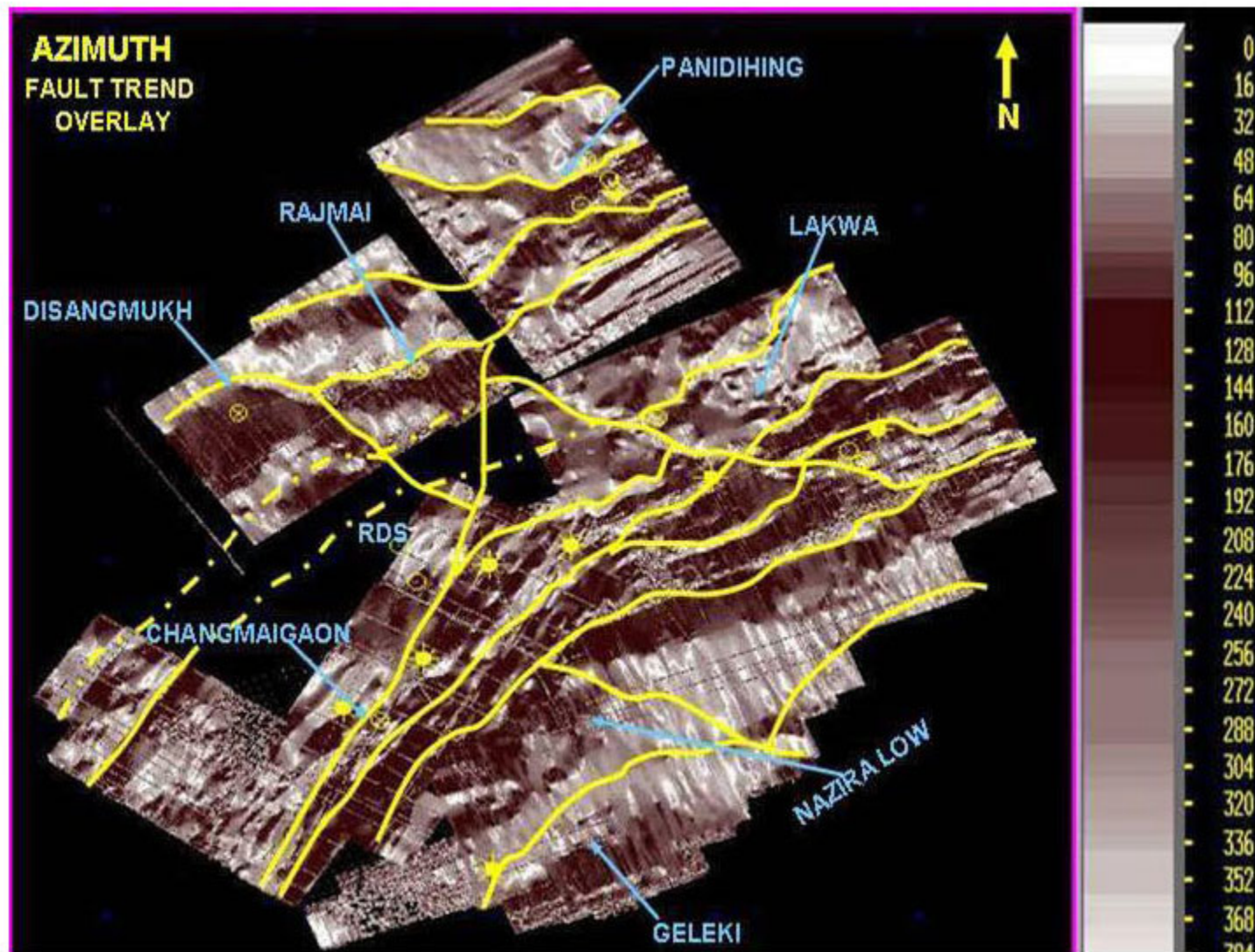
Six parasequences have been identified within the Tura and Sylhet formations, whereas three higher order sequences have been identified within the Kopili Formation. Data based on the lithologies identified in each parasequence were used to prepare isopach and facies maps (sand shale ratio/triangular facies maps) of parasequences S0 within the Tura Formation, S1, S2a, and S2b within the Sylhet Formation and sequences. I, II, and III (HST) within the Kopili Formation; these show maximal sand distribution trends.

The environment of deposition of the Tura Formation is mainly an active fluvial channel system extending to inner shelf environment, whereas the Sylhet Formation has been primarily deposited in a shallow marine environment. The Kopili Formation, on the other hand, is mainly a 'barrier bar - tidal inlet - tidal bar - tidal flat – lagoonal - bayhead delta depositional system.

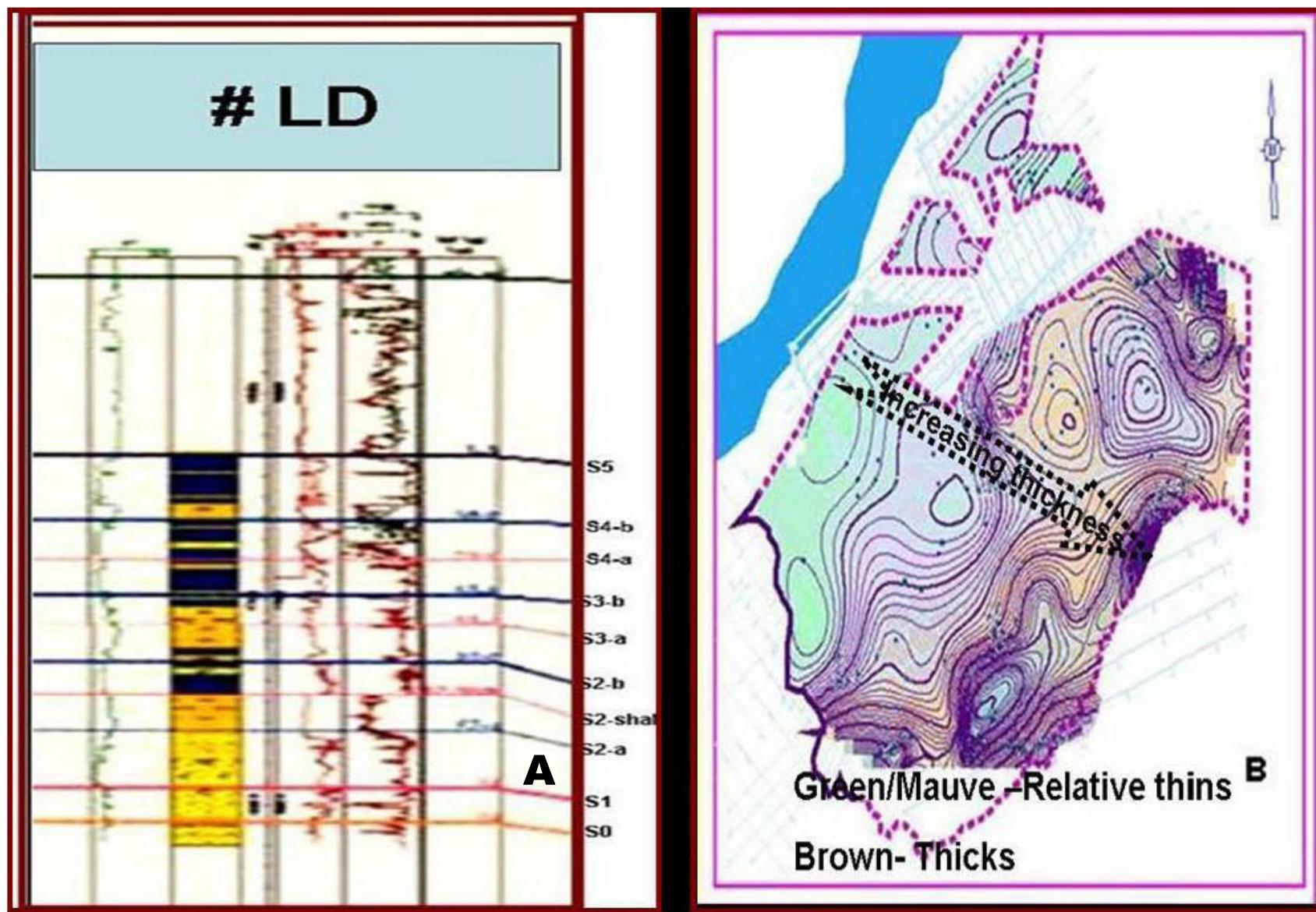
An attempt has been made in this study to bring out a perception of future prospectivity, based on identification of areas having good reservoirs (sand maximas) superposed on paleostructures which were present at the time of migration. It has been inferred that such

structures, which were pre-existing, have known occurrences of hydrocarbons in Panidihing, Lakwa and Geleki areas of North Assam shelf, whereas late formed (Post Miocene) inverted structures were found to be devoid of hydrocarbon charge.

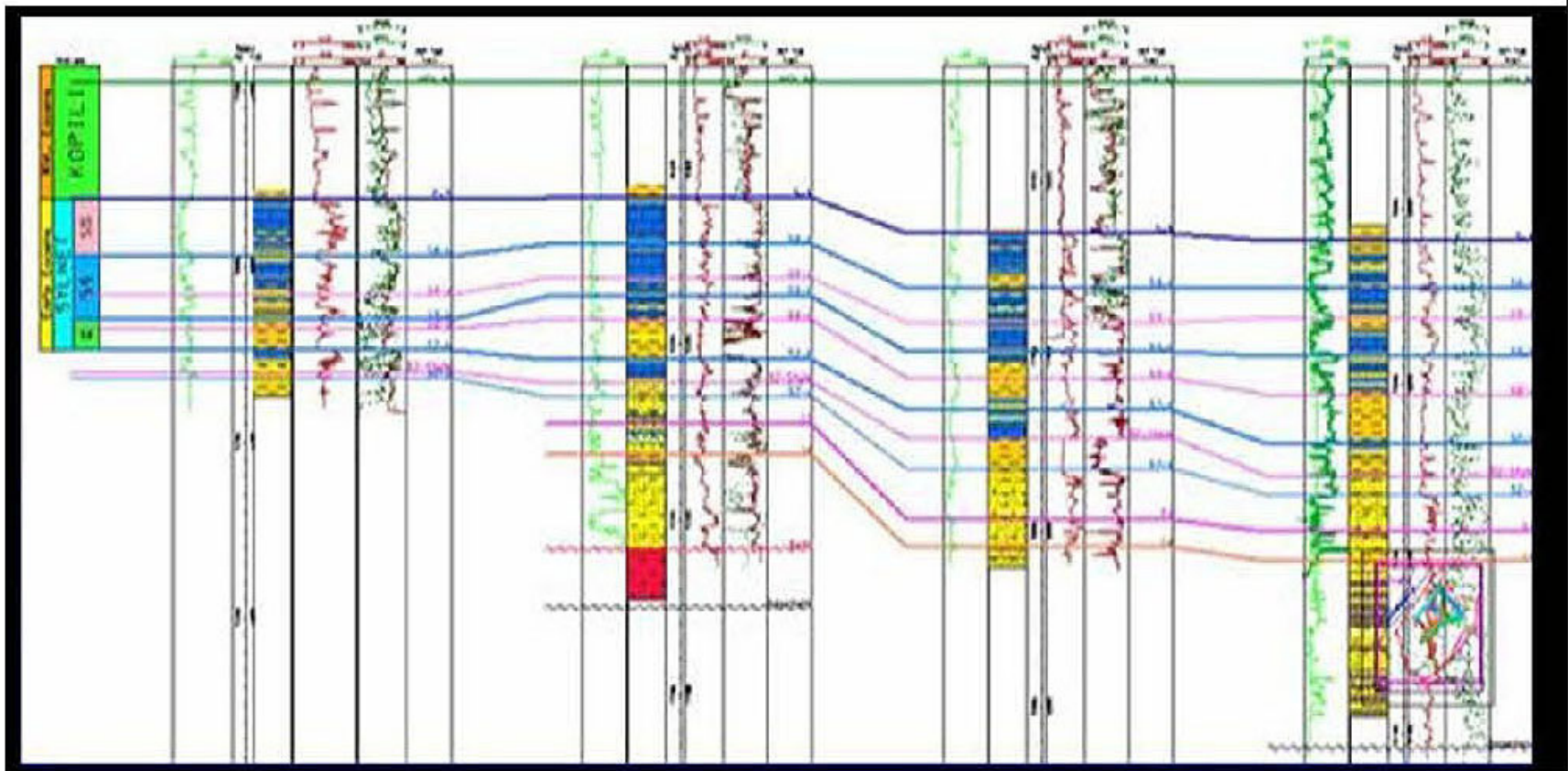
Based on the above analysis, prospective areas of significant areal extent with substantial reserve potential have been identified. Such studies can also give reason for renewed exploration of deeper prospects in fields where only shallow prospects have been probed so far.



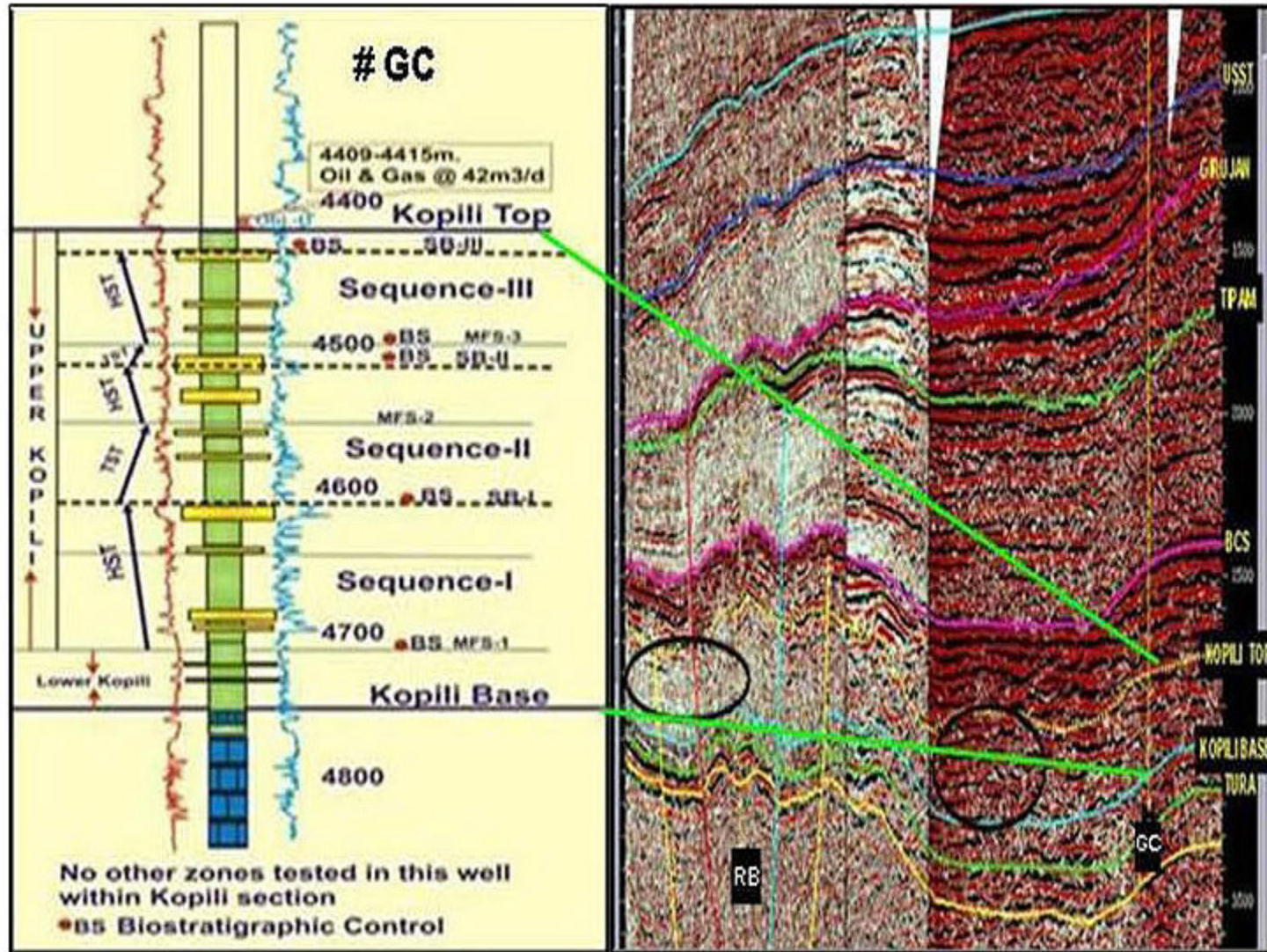
Area of study and Azimuth map extracted at Late Eocene top showing regional structural trends of the area.



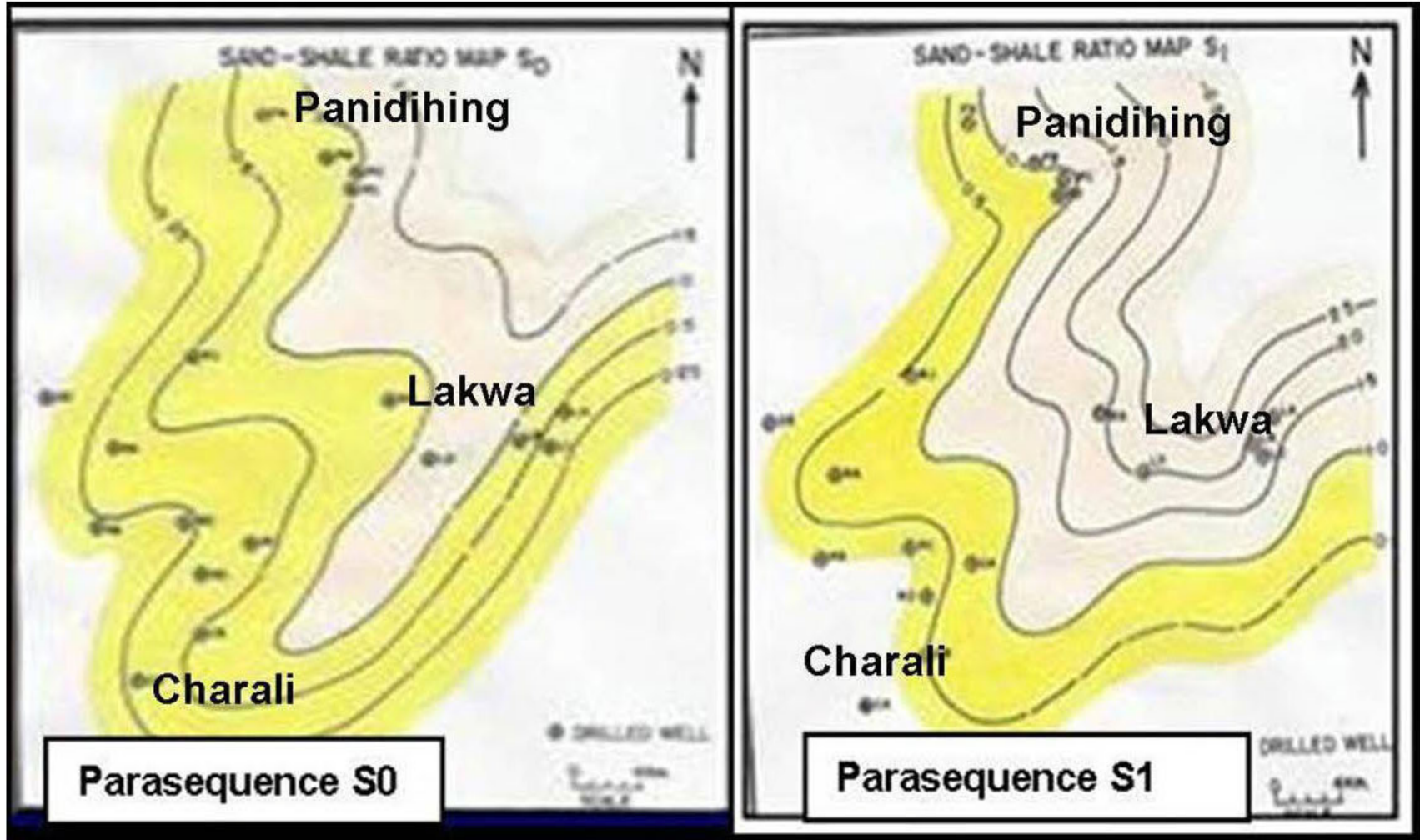
A. Type log for Tura and Sylhet Formations in well LD (Lakwa). B. Thickness map of Tura Formation.



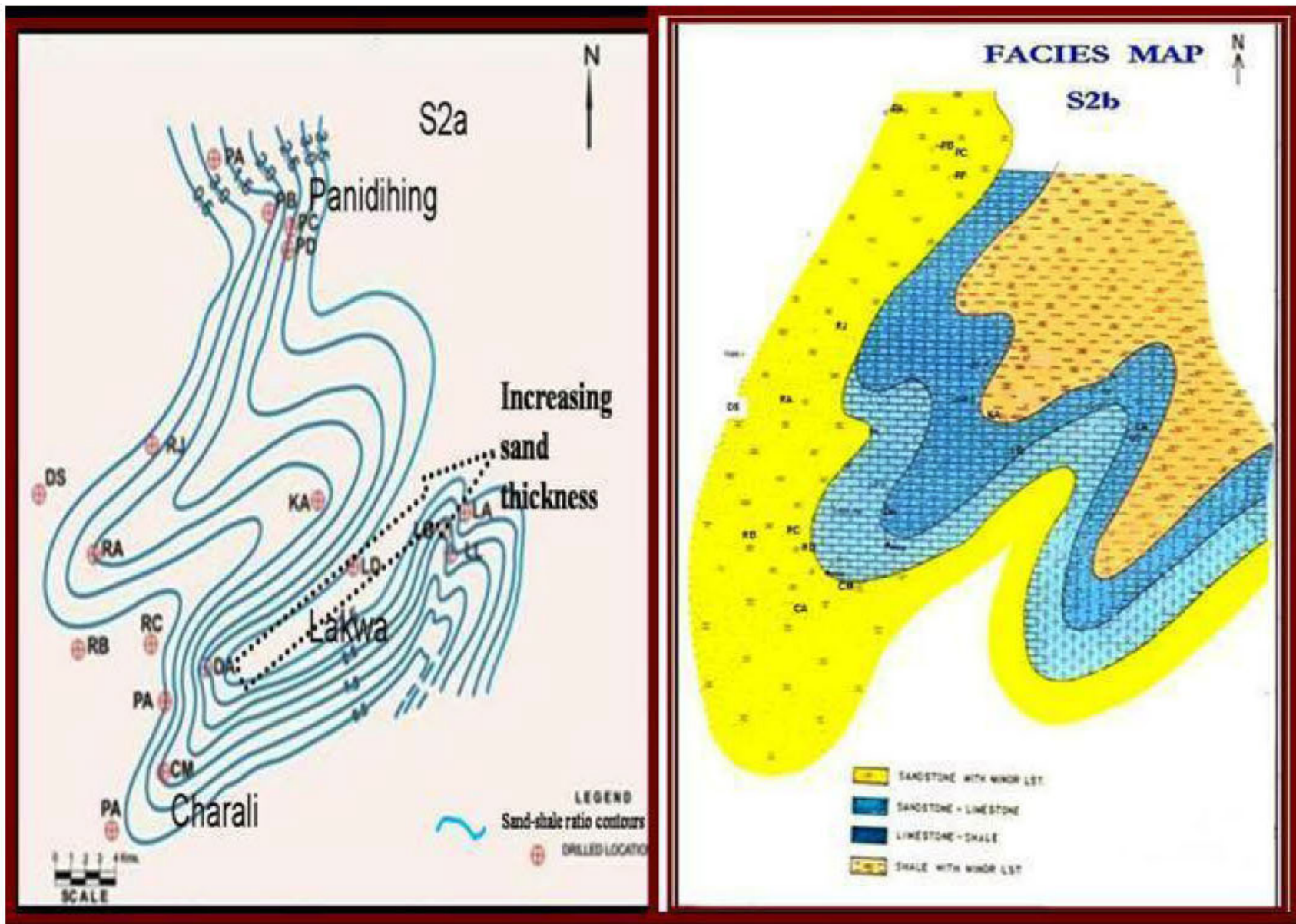
Dip correlation section (Tura and Sylhet formations identified on the left; Tura overlying basement) from Charali to Lakwa area (see maps of sand-shale ratios for general orientation).



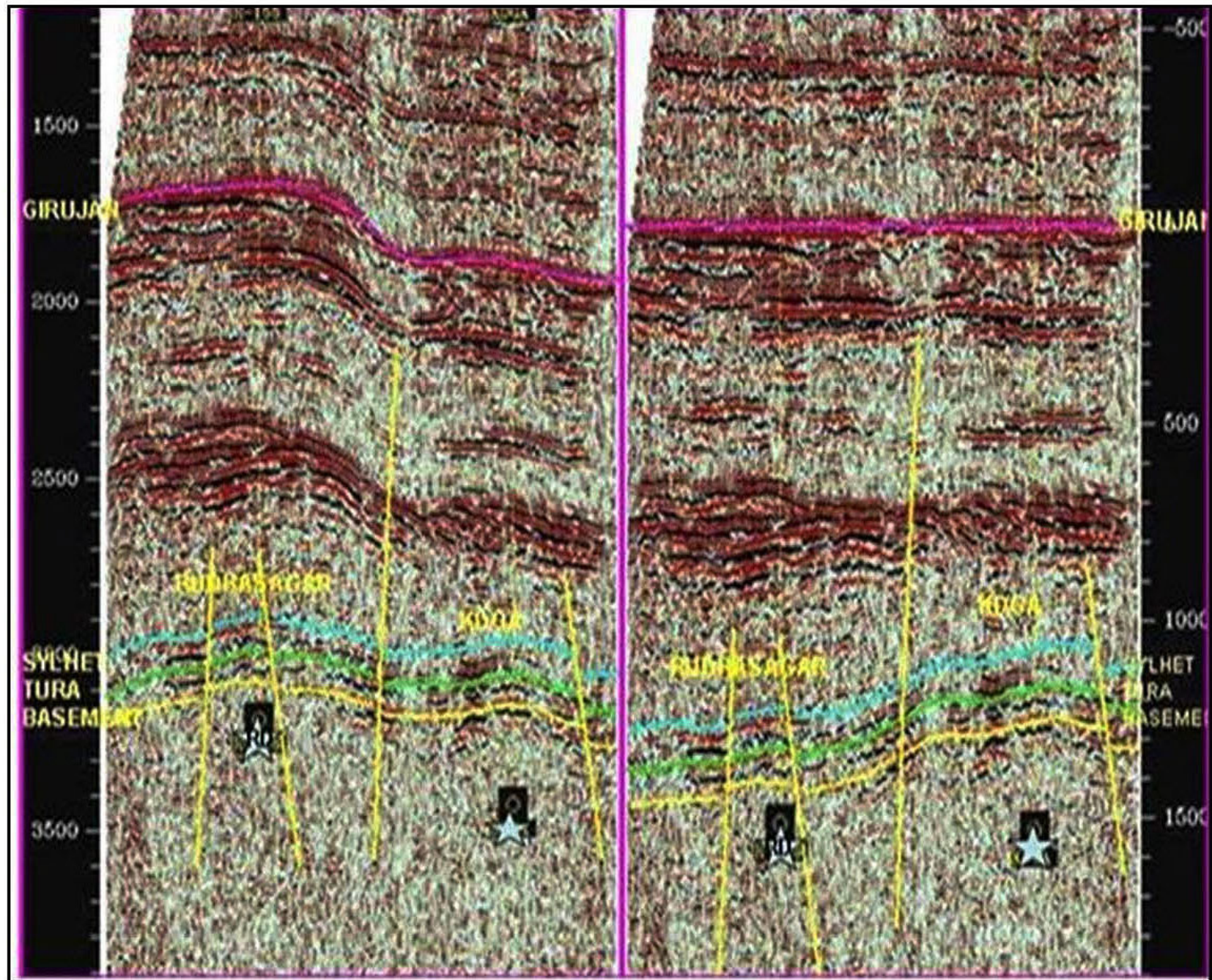
Type log for Kopili Formation in well GC.



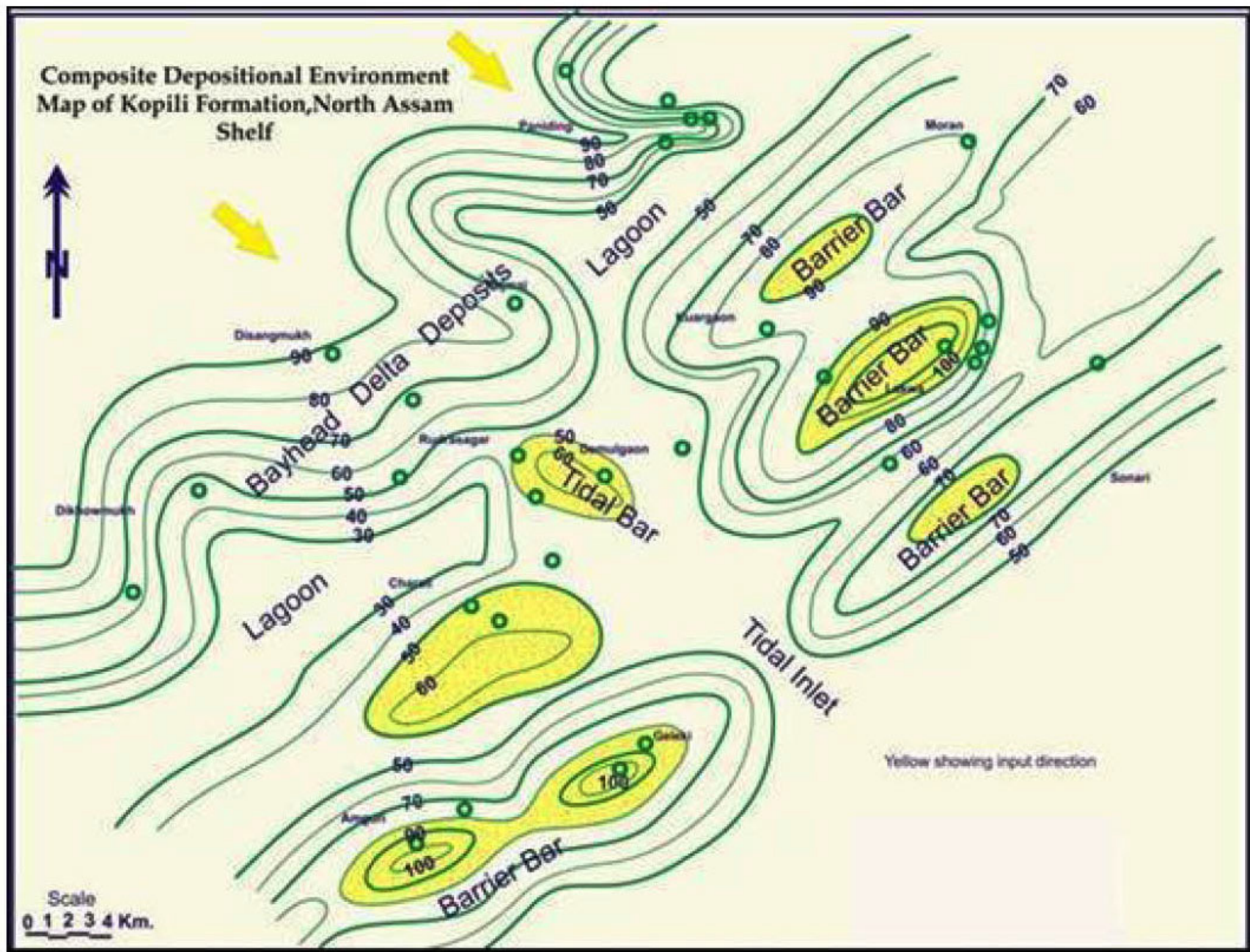
Sand-shale ratio maps. Parasequence S₀, Tura Formation (left), S₁, Sylhet Formation (right).



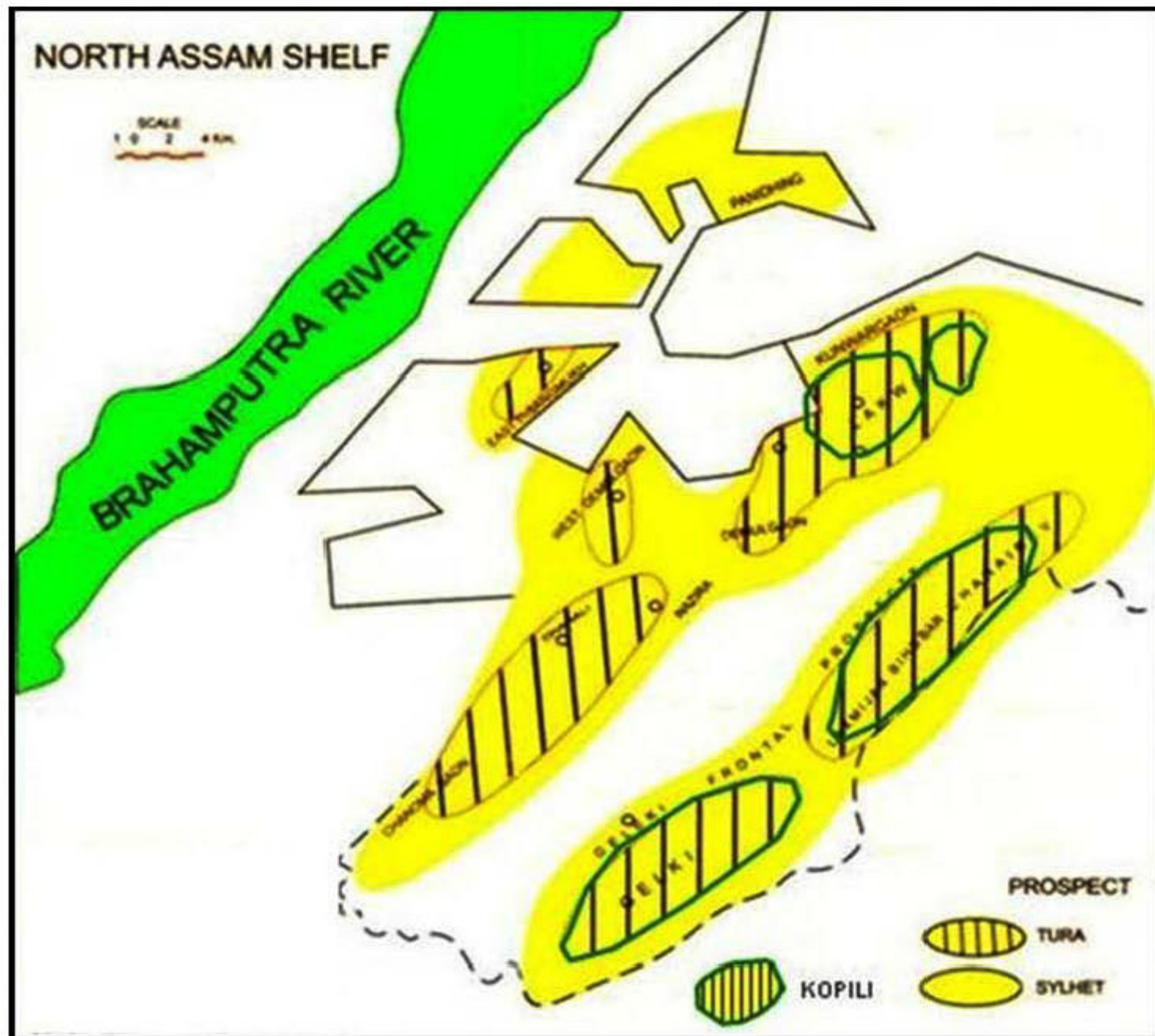
Sand-shale ratio map, S2A, Sylhet Formation (left), facies map, S2A (right).



Dip seismic line (RC), depicting present day (left) configuration and that at end Miocene (right).



Conceptual depositional environment map of Kopili Formation.



Identified prospective areas.

Selected Bibliography

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