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3D VISUALIZATION OF STRUCTURAL SETTING OF SYLHET TROUGH OF BANGLADESH

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Sylhet Trough of Bangladesh is one of the main gas-producing basins located on the northeastern margin of present Bengal Basin, which is 130 km long, and 60 km wide oval shape in outline. The Dauki Fault bounds the trough in the north, Madhupur-Tripura threshold zone in the south, Chittagong-Tripura folded belt in the east and the Hinge zone in the west. Gravity over –80 mgal in the centre of the basin supports the very thick sedimentary pile. 3D visualization of available data of surface and subsurface is the powerful technique to understand the tectonics involved and modelling the geologic history. The data sets used are the time contours of few available horizons of the trough, interpreted seismic cross-sections, surface and subsurface geological data and the digital elevation model of the basin. R2V™ has been used to digitise the two-way time contour maps. gOcad™ serves as powerful software for interpreting the time surfaces to depth surfaces along with well data and cross-sections. ArcMap™ is used to plot and to analyse the available geological and field data. Horizon Upper Marine Shale (Late Miocene) and DupiTila Formation (Plio-Pleistocene) show refold stuctures at the southeast part of the trough which possibly due to the interaction between the north-westward moving of Burmese plate with northeast ward moving Indian Plate. The north-south oriented folds are interpreted by the east-west shortening due to Indian plate and Burmese Plate collision. The east west structures at the eastern margin are the result of south directed shortening from Dauki Fault. The huge depression on both Upper Marine Shale and DupiTila horizons in the vicinity of the fault is the 'sag pond' like features produced due to Dauki fault. The available earthquake data are correlated with the available geological features like faults, lineaments etc. The kink bands like topography around the Dauki Fault are marked on DEM. This, together with some poorly preserved slickenslides on exposed Sylhet Limestone at Jaflong, is a good indication for the possible oblique slip nature of Dauki fault. The geological field data around the Dauki Fault were interpreted with ArcMap™, showing the monocline nature at the south of the fault. The alluvium covered branch of Dauki fault can be traced with the help of seismic and topographic data on DEM. The extracted data for lineaments are used to interpreting the tectonics of the area. The step like faults on the west of Madhupur tract, straightness of Brahmaputra river and straight sharp elevated morphological features on north of Shillong Plateau increase the possibility of a long transverse strike slip fault of Himalayan system runs from Bhutan along Brahmaputra river which might stopped the westward propagation of rising of Shillong plateau.