

The Significance of the Tectonic interpretation of the Hydrocarbon Basins

K. K. Agarwal

Centre of Advanced Study in Geology, Lucknow University, Lucknow-226 007

The correct tectonic interpretation of the basins important for the hydrocarbons remains the most important aspect for the future of the industry. We recognize several types of important structural features either through the surface exposures, which are limited, or through subsurface data, such as seismic reflection profiles, but critical gaps in data may remain unexplored at depths either because of the steepness of the strata or other types of structural complexities. The structural complexities arise due to the structural evolutionary history of the basin, e.g. most of the basins important for the hydrocarbon generation are the inverted basins, and their correct tectonic history becomes then a very significant aspect for the future exploration and exploitation later on.

The analogue modeling experiments provides an important means to understand the basin evolution through time and space. These experiments are conducted using simple apparatus, called deformation rig where the sand pack of known dimensions are laid on a deformable basement (of known physical properties) and are then the entire sand pack is first detached under the extensional environment and then contractional environment. The systematic recording at fixed interval of such experiments provides meaningful results which can be compared with the natural systems believed to have developed under similar conditions. Several changes in the deforming systems of such experiments are possible to create different kind of geological settings. The significance of such experiments remain in the fact that these experiments are simple and save us from having multiple interpretations, which may lead to severe confusions and discrepancies.