Seismic & Sequence Stratigraphic Framework and Depositional Architecture of Shallow and Deepwater Postrift Sediments in East Andaman Basin: An overview

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The East Andaman Basin, which is located along the western flank of NE-SW trending Mergui Ridge running across the Andaman Sea, is currently under ultra-deepwater regime with water depth varying from 1000 m to 3000 m. Exploration efforts by Eni India have already established a plausible petroleum system in its synrift sediments (Jha et.al, 2008, 2010). However, keeping in mind the global exploration efforts on deepwater petroleum systems over the last decade, the postrift deepwater setting of East Andaman Basin deserves critical attention by its own merit.

Seismic data show that the basin has a thick pile of postrift sediments (reaching up to 2500 m at places), deposited since Middle Miocene in shallow and deep marine environment under a restricted/ ponded setting. In this work, we put forward our interpretation to highlight the influence of the regional/ local tectonic events on postrift sedimentation in the East Andaman Basin study area. Careful analysis of the seismic data reveals typical shallow marine and deepwater deposition elements in the system (e.g. channel-levee complexes, incised valleys, canyon cuts, gullies, sheet sands, slumps, fan/ lobes, gravity flows/ mass transport complexes etc.) which can be directly associated with regional tectonic events. Using all these indications and by analyzing the seismic facies characters of the sediments, a comprehensive sequence stratigraphic model have been proposed, followed by a discussion on the plausible deepwater petroleum system of the basin. All these efforts point towards the fact that tectonics plays the most significant role in the basin building process.