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Nisha Nair, Dhananjai K. Pandey

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Cenozoic sedimentation in the Mumbai Offshore Basin: Implications for tectonic evolution of the western continental margin of India

Nisha Nair¹, Dhananjai K. Pandey

¹ESSO-National Centre for Antarctic and Ocean Research, Goa, India, 403804

Abstract:

Interpretation of multichannel seismic reflection data along the Mumbai Offshore Basin (MOB) revealed the tectonic processes that led to the development of sedimentary basins during Cenozoic evolution. Structural interpretation along three selected MCS profiles from MOB revealed seven major sedimentary sequences (~3.0s TWT, thick) and the associated complex fault patterns. These stratigraphic sequences are interpreted to host detritus of syn- to post rift events during rift-drift process. The acoustic basement appeared to be faulted with interspaced intrusive bodies. The sections also depicted the presence of slumping of sediments, subsidence, marginal basins, rollover anticlines, mud diapirs etc accompanied by normal to thrust faults related to recent tectonics. Presence of upthrusts in the slope region marks the locations of local compression during collision. Forward gravity modeling constrained with results from seismic and drill results, revealed that the crustal structure beneath the MOB has undergone an extensional type tectonics intruded with intrusive bodies. Results from the seismo-gravity modeling in association with litholog data from drilled wells from the western continental margin of India (WCMI) are presented here.

Keywords: Continental rifting, sedimentation, western continental margin of India, Mumbai offshore basin, tectonics;

¹Corresponding author: nisha1711nair@gmail.com

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