
Synrift Tectonics and Depositional Pattern at North Cambay Basin, India

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Cambay basin of India is a classic extensional province. The main aim of this study was to understand the Synrift architecture and associated depositional pattern of north Cambay basin for analyzing its hydrocarbon prospectivity. Within syn-rift, three tectono-sedimentary stages namely Early Rift, Rift Climax and Late Rift have been identified. Subsequently different horsts including the Central Horst Systems (CHS) and different fault bounded depocenters have been identified. Three major transfer fault barriers namely Sampra Barrier, Sobhasan Barrier and Linch Barrier have been identified, and it has been noticed that the CHS has taken major swings and displaced considerably along these Barriers.

It has been interpreted that till the end of rifting, eastern grabens remained tectonically active, experiencing continuous subsidence, resulting in a thickened section on the eastern side of CHS. Although after the Rift Climax phase, tectonics waned significantly in the western side of the CHS, minor fault activations continued till the end of the rift, providing subtle control on sedimentary patterns.

The sediments deposited during Late Rift period are having good reservoir potential owing to the high energy condition prevailed at that time. The depositional systems were initially flexural margin and subsequently south flowing axial drainage. South Patan, Bechraji, South Warosan and Linch lows have been identified as the major generation kitchen for Rift Climax sediments. Both reactivated and newly created rift forming faults acted as conduits for the hydrocarbons. Thus, these faults along with Rift Climax and Late rift source-reservoir couplets form exiting Synrift GME component.
