

Study of Rift Related Transfer Zones and Their Influence on Sedimentation Pattern in North Cambay Basin, India

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This study discusses the interplay of rift architecture and sedimentation at the North Cambay basin in western part of India. Three tectonosedimentary stages have been recognized within Syn rift: Early Rift, Rift Climax and Late Rift. Major transfer fault barriers have been identified, and it is noticed that the Central Horst System (CHS) has undergone major swings and is displaced considerably along these barriers. Till the end of Rift Climax period, basin filling and amalgamation activity of smaller lakes was more in the eastern grabens, while during Late Rift period, the graben filling systems became hyperactive in the western side of the CHS. The main reason of this difference of basin filling is attributed to the variation in tectonic activities of two flanks of CHS. The time structure map prepared at the Trap top indicates remarkable spatial difference between the western and eastern grabens with respect to the CHS. The western grabens are narrower while the eastern grabens are much broader and are flanked by a flexural fault bounded eastern main margin. By the end of rift, eastern grabens remained tectonically active, experiencing continuous subsidence, resulting in a thickened section on the eastern, hanging wall side of CHS. Although tectonics waned significantly on the western side of the CHS, minor fault activations continued till the end of the rift phase, providing subtle control on sedimentary patterns. Four major generation kitchen have been identified during Rift Climax period. The sediments deposited during Late Rift period are identified to be having good reservoir potential. Both reactivated and newly created rift forming faults are believed to have acted as conduits for the hydrocarbons. These faults along with Rift Climax and Laterift source-reservoir couplets form the Synrift GME component.