

Evolution of Riftogenic Stratigraphic Sequences in Multi Segmented Rift Basin: It's Role in Evolution of Petroleum Systems of Krishna-Godavari Basin, India

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Krishna- Godavari basin is conspicuous by its outline on East coast of India. It presents a fully developed passive margin sequence in Northern part of basin while in Southern part it is characterized by en-echelon interior fracture and sags. Rift architecture controlled by fault geometry is itself modified by pre existing fabric of the Eastern ghat mobile belt and Pranhita –Godavari trend. Sixteen juxtaposed tectonic blocks showing horst & graben morphology provides a challenge to make spatio-temporal correlation across the sub basin. Authors, by comprehensive studies of seismic, well data and assimilation of biostrat. and sedimentological data brought out a workable model for exploration in this basin. This tectono-sedimentation model suggests the deposition of sediments under pre, syn and post rift phases during rifting and drifting of Indian plate from Gondwana assemblage, where time to time activation of various ridges separating the sub basin played a major role in providing seclusion and acting as provenance occasionally.

The Early riftogenic sedimentation during Permo Triassic times forms the floor for the divergent margin sequence, while Synrift sequence is present throughout the basin. Early drift phase is represented by deltaic facies of Krishna Godavari river system. Seven petroleum systems have been identified, and through these studies the elements of these petroleum systems are being attributed to different phases of basin development. The regional correlation and tying up of reflectors in seismic and wire line logs brought out the depositional model for various litho units and provides a lead for exploration in contiguous sub basins which were unexplored and thought to be of less priority, thus adding prognosticated reserves in this hitherto less explored basin.