

# **3-D Seismic Unravels Morphology and Architecture of Channel Complexes and Other Depositional Elements in Offshore Bengal Basin, India**

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Bengal Basin is located along north east coast of India. Its offshore continuation covers an area of 40,000 km<sup>2</sup> in the Bay of Bengal. The thick Neogene sedimentary sequence in the study area located in the southern part of offshore Bengal Basin was fed by number of large rivers like Ganga, Brahmaputra, Mahanadi and smaller rivers like Subarnarekha, Baitarani and Brahmani. The sediments in the present day shelf area exhibit a complex depositional history with unique juxtaposition of shallow and deep water sediments in form of deltas, distributary channels, pro-delta sediments and incised canyons, filled up with channel-levee complex deposits.

A study was carried out on the morphology and architecture of different depositional elements and units utilizing different vintages of 2-D / 3-D seismic and drilled wells data. Geo-Body mapping and attribute studies reveal finer details of the complex system. Special seismic attributes such as spectrally decomposed amplitude, wave-form classifier and 'sweetness' were quiet helpful in understanding the morphological details of the system. The following depositional elements have been brought out. • Delta-Distributary channel complex associated with incised valley and tidal inlets. • Shelfal Canyon cut and fill sequences; • Deep-Water Channel Complex: Fed by large canyon up-dip. These depositional elements do not form part of the canyon fill, but occur down-dip. The sand and silt distribution in the above depositional complexes form the predominant hydrocarbon reservoir units. The numerous reservoir bodies within the above units of varying lateral and vertical extents, are expected to hold the future exploration potential in this frontier basin.