

**SEISMIC STRATIGRAPHY OF ISOLATED
CARBONATE PLATFORM, DEEP-WATER INDUS
OFFSHORE, PAKISTAN**



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of the requirement for the degree of M.S in Geophysics

By

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ABSTRACT

The Indus Offshore Basin Pakistan is rift and passive margin basin, situated on the proximal position of Indus submarine fan system. It lies between the Murray Ridge in north and the Indian border in south-east direction. The rifting of the basin is associated with the breakup of Indian plate from the Madagascar during Late Cretaceous.

The present research work was carried out to delineate the depositional history of Paleocene –Eocene carbonate platform located in deeper water of the basin. This platform was developed over the top of volcanic high formed during the Deccan hotspot activity at the time of Paleocene. The study comprises of fourteen seismic lines with well log data to develop the sequence stratigraphic framework of studied carbonate platform covering an area of approximately 2500 km². Six sequences have been identified on the seismic line. Each sequence represents the transgressive – Regressive cycle which helped to track the depositional history and sea level changes during the past geological history of Late Paleocene to Early Eocene. The base of the sequence 1 is differentiated on the bases of nonconformity lies between carbonate sedimentary succession and volcanic rocks. On seismic profiles, boundaries between carbonate platform sequences are based on the surfaces of renewed carbonate growth such as mounding or downlap where as the sequence boundary marked between the sequence 4 and sequence 5 is reflects clearly sub-aerial exposure of studied platform. The top boundary is interpreted as type-3 sequence boundary between carbonate platform and clastic sedimentary succession.

Sea level changes caused a high impact during the depositional episodes of Platform. Rapid rise in sea level resulted the backstepping of the platform margin in all sequences and a complete drowning at the final stage of platform. Similarly, at the end of each sequence, there are shingled prograding facies developed which reflects the relative sea level fall and completion of sequence cycle. The environment of deposition interpreted on the bases of seismic sequence analysis and seismic facies analysis will aid in predicting the reservoir quality in studied carbonate platform.

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