

Clastic Reservoir Facies and Sequence Stratigraphic Analysis Of Eastern Tunisia Miocene Deposits

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During Miocene, Pelagian block of Eastern Tunisia, which is located in the Maghrebian Alpine foreland, has acted as flexural subsident basin filled by important continental deposits, essentially of fluvio-deltaic to shelf environments. Some sandy bodies of these series constitute a proven hydrocarbon reservoir in the Gulf of Hammamet Oil fields.

The study of the Miocene series of Central-oriental Tunisia (Sahel of Kairouan) and North Eastern Tunisia (Cap Bon Peninsula and Hammamet Gulf) has been carried out following an integrated approach including sedimentology, sequence stratigraphy, seismic reflection and wire line logging.

Sequence analysis of Miocene deposits outcropping in Jebel Abderrahmane and Saouaf syncline has led to identify five third-order depositional sequences (SDM1-SDM5) within the Langhian-Tortonian time interval. The subsurface analogues of these sequences have been characterised by seismic stratigraphic analyses of several calibrated seismic lines in Gulf of Hammamet and the Kairouan zones.

The compilation of the available enabled us to reconstruct the Miocene spatial distribution deposits (facies and thickness variations) and to highlight the role of the tectonics and sea level changes in controlling the geometry and relationships between the different sequences and associated facies.

High resolution surface to subsurface correlations constrained by stratigraphic well data and log analysis, permitted to outline the lateral extension and the architecture of the sandstone bodies of the five sequences.

Sedimentary characteristics and sequential organization suggest that the sandstone bars correspond to quite different depositional environments of deltaic to siliciclastic shelf system. The sandy bodies of the lowstand deposits are the most important intervals in terms of reservoir characteristics and interest. The latter have been identified at the base of SDM2 (Birsa formation) as well as within SDM3 of Saouef formation.

The presence within the Langhian-Tortonian deposits of several separated clastic reservoir intervals sealed by thick shaley units illustrates a multi-layers reservoir type that has to be more investigated.