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Facies Analysis and Depositional Environment of Late Cretaceous (Cenomanian) Lidam Formation, South East Sirt Basin, Libya

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Abstract : This study concentrates on the facies analysis, cyclicity and depositional environment of the Upper Cretaceous (Cenomanian) carbonate ramp deposits of the Lidam Formation. Core description, petrographic analysis data from five wells in Hamid and 3V areas in the SE Sirt Basin, Libya were studied in detail. The Lidam Formation is one of the main oil producing carbonate reservoirs in Southeast Sirt Basin and this study represents one of the key detailed studies of this Formation. In this study, ten main facies have been identified. These facies are; Chicken-Wire Anhydrite Facies, Fine Replacive Dolomite Facies, Bioclastic Sandstone Facies, Laminated Shale Facies, Stromatolitic Laminated Mudstone Facies, Ostracod Bioturbated Wackestone Facies, Bioturbated Mollusc Packstone Facies, Foraminifera Bioclastic Packstone/Grainstone Facies Peloidal Ooidal Packstone/Grainstone Facies and Squamariacean/Coralline Algae Bindstone Facies. These deposits are inferred to have formed in supratidal sabkha, intertidal, semi-open restricted shallow lagoon and higher energy shallow shoal environments. The overall depositional setting is interpreted as have been deposited in inner carbonate ramp deposits. The best reservoir quality is encountered in Peloidal- Ooidal Packstone/Grainstone facies, these facies represents storm - dominated shoal to back shoal deposits and constitute the inner part of carbonate ramp deposits. The succession shows a conspicuous hierarchical cyclicity. Porous shoal and backshoal deposits form during maximum transgression system and early regression hemi-cycle of the Lidam Fm. However; oil producing from shoal and backshoal deposits which only occur in the upper intervals 15 - 20 feet, which forms the large scale transgressive cycle of the Upper Lidam Formation.

Keywords : Lidam Fm. Sirt Basin, Wackestone Facies, petrographic, intertidal
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