Petrography and Diagenesis of `as Sarir Formation` in Abu Attifel Oil Field, Sirt Basin, Libya

Abstract
The Sirt Basin is one of the youngest sedimentary basins in Libya and covers an area of approximately 600,000 km² in north central Libya. It is located on the northern margin of the African plate, with approximate coordinates 14°00’-20°00’E and 28°00’-31°00’N. The Late Jurassic-Early Cretaceous as Sarir Sandstone in the Sirt Basin evolved as a consequence of the interplay between global eustasy and regional tectonics. As Sarir Sandstone of the eastern Sirt Basin is composed mainly of sandstones and shales resting unconformably on a basement complex of igneous and metamorphic rocks. It is unconformably overlain by the Upper Cretaceous sediments of Maragh, Lidam and Etel formations. It has been subdivided into three members. The upper member consists mainly of sandstones with intercalations of siltstones and shales of variable thickness. The middle member consists of shale and silty shale. The basal part of the formation, which rests directly on the crystalline basement represents the lower member. It is comprised of sandstone with subordinate intercalations of siltstones and shales of variable thickness. The middle member consists of shale and silty shale. The basal part of the formation, which rests directly on the crystalline basement represents the lower member. It is comprised of sandstone with subordinate intercalations of siltstones and shales of variable thickness. The middle member consists of shale and silty shale. The basal part of the formation, which rests directly on the crystalline basement represents the lower member. It is comprised of sandstone with subordinate intercalations of siltstones and shales of variable thickness. The middle member consists of shale and silty shale. The basal part of the formation, which rests directly on the crystalline basement represents the lower member. 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depositional environments. Meandering Lithofacies are formed from continuous sand successions and show good porosities, up to 18.51%, and permeabilities up to 125.5mD. The Braided Lithofacies also show good reservoir quality, but the effective porosity and permeability are lower, because of associated shales. The most important diagenetic features responsible for a reduction in reservoir quality are those resulting from compaction, cementation, and the diagenesis of clay minerals.