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The Various Petroleum Systems in the Eastern Offshore Tunisia

The offshore Tunisian Pelagian basin including the Gulf of Gabes towards the South and the Gulf of Hammamet towards the North can be considered as the most explored area in the country and as an attractive hydrocarbon province still containing substantial quantities of hydrocarbon reserves. Significant oil and gas accumulations had been discovered in the area such as Ashtart and Cercina oil fields and Hasdrubal and Miskar gas fields.

The Triassic-Pleistocene lithostratigraphic column encountered in the region consists of a variety of continental to open marine facies including various carbonate and siliciclastic reservoirs and several potential source rocks. The most important reservoir levels correspond to the Ypresian El Garia formation, the Lutetian Reinech formation, the Campanian Maastrichtian Abiod formation and the Serravalian Birsa formation. Within the area, at least three main potential source rocks can be identified; the Albian Lower Fahdene formation, the Late Cenomanian-Early Turonian Bahloul formation and the Ypresian Bou Dabbous formation which have fair to excellent oil with gas potential.

Oil to oil and oil to source rocks correlation shows the existence of at least three main active petroleum systems related to the above mentioned source rocks. The lower Fahdene/Abiod/Birsa petroleum systems are well known in the Gulf of Hammamet. The Bou Dabbous/El Garia/Reineche petroleum systems as well as Bahloul/El Garia/Abiod/Miocene petroleum systems are encountered mainly in the Gulf of Gabes.

A multi 1D basin modelling study performed on more than 200 wells and pseudo-well shows that the main source rocks are mature in most of the area and had generated and expelled oil since early Tertiary and is continuing until present day.