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PS Petroleum Systems Offshore Cyprus*

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Abstract

Recent 2D and 3D seismic surveys shed new light on the petroleum potential offshore Cyprus, a large, mainly deep-water frontier area. The main tectono-stratigraphic events which shaped the area were: (a) the fragmentation of the northern margin of the Pangea with the Tethys Ocean by rifting from the Triassic to the Middle Jurassic and spreading during the Early Jurassic and the Late Cretaceous with the separation of the Eratosthenes Continental Block (ECB) from Arabia, and formation of the Levantine and Herodotus Basin; (b) the formation of the Cyprus Arc in the Late Cretaceous, part of the Alpine fold and thrust belt resulting from the change of motion of Africa relative to Eurasia; and (c) the new compressional/transpressional tectonic regime since the Oligocene-Miocene and particularly since the Late Miocene-Pliocene. It was a consequence of the separation of Arabia from Africa with the southwestward expulsion of the Anatolian microplate and the continuing N-S shortening between Africa and Eurasia. It was accompanied by a considerable increase in the influx of sediments, in particular, with the development of the Nile Delta and deep sea fan.

In the absence of any exploration well data offshore Cyprus, the petroleum assessment primarily relies on the recently acquired seismic data, the frequently observed amplitude anomalies, the hydrocarbon discoveries in the vicinity (Egypt, Gaza, Israel), and the widespread presence of the Messinian Evaporites seal.

A number of play concepts and large play fairways are associated with the following tectono-stratigraphic domains: (a) the Eastern Margin of the ECB and the Levantine Basin; (b) the carbonate plays on the ECB; (c) the SW ECB sub-basin and High; (d) the Pre-Messinian clastics in the Herodotus Basin; (e) the lowstand Messinian Nile Delta and the Plio-Pleistocene Deep Nile Delta fan; (f) the Eastern Cyprus Arc, and (g) the deformation front of the Cyprus Arc.

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