

Hydrocarbon Prospectivity of the Adana Basin Based on Sequence Stratigraphy of the Miocene Clastic Sediments, Eastern Mediterranean, Turkey

Teymur Pince, Serpil, Ahmet Guven, Yasar Akcay, Ugras Isik, Levent Korpe, Nihal Akca, and Ozgur Temel, Turkish Petroleum Co, Ankara, Turkey

Northeast to southwest oriented Adana Basin merges with the offshore Clicia Basin extending to the northern flank of the Girne Range at Cyprus. Miocene succession of the basin corresponds to the Aquitanian to Messinian sediments exceeding 6000 meters in thickness. Early Miocene is characterised by the domination of the carbonate deposition having its reefal facies towards the basin margin. The overlying sediments mainly consist of rapidly deposited clastic material.

Three megasequences were distinguished within the Miocene clastic succession. Burdigalian to Serravalian is composed of two megasequences essentially represented by the retrogradational depositional patterns of a second order transgression period. Tortonian and Messinian sediments of the youngest megasequence consist of a regressive progradational pattern, and are terminated by evaporite deposition during Late Messinian. Older two megasequences are generally corresponding to low stand and transgressive stacks. However, high stand stacks are dominated within the following Upper Miocene megasequence.

Oil is produced in a restricted area, from the solution enhanced fractures of the carbonates in the basin. In the overlying clastic strata, oil and gas shows are also detected in the wells distributed within the basin, as well as oil seep along the fault activated during the 1997 earthquake. Submarine fan complexes and the buried fills of the incised valleys of Burdigalian-Langhian age, and the wave dominated delta front sands of Tortonian are interpreted to be reservoir rocks in the clastics. Paleozoic shales in the underlying basement rocks and distal pelagic shales of the Miocene are expected to be source rocks as an integrated part of the system. Both stratigraphic and structural traps are possible targets for hydrocarbon exploration in the area.