

Components of the Petroleum System of the South Caspian Basin

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The “modern” era of petroleum exploration in the South Caspian began more than 100 years ago. Even with this long history several aspects of the petroleum system have remained largely speculation. Recent integrated geologic and geochemical studies have attempted to establish elements of the petroleum system and define the lateral and stratigraphic limits of the system.

This study confirmed the Maykop Suite as an oil source, but restricted its stratigraphic distribution to only parts of this unit, which may exceed 1000 meters. Source rock deposition was cyclic and included both oil- and gas-prone episodes.

Geochemically the region's oils are highly variable as a result of their complex and variable migration and alteration histories. This study showed that all of the oils were generated within the conventional “oil-window” (R_o 0.9-1.0%). This places the source system at depths in excess of 5 km and establishes the importance of vertical migration in the development of the basin's hydrocarbon accumulations. There is evidence that migration was episodic, possibly related to the activity of mud diapirs. Model results also suggest that the rapid Plio-Pleistocene sedimentation was the primary control on hydrocarbon generation.