

DEEP TECTONIC STRUCTURE AND OIL-GAS PROPERTIES OF THE LOWER KURA DEPRESSION

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As is known, the Kura Depression, which is one of the central zones of the territory of Azerbaijan, is divided into Upper, Middle and Lower Kura segments in a geomorphological sense. In recent years, geophysical-research area of Azerbaijan's "Exploratory Geophysics Production Department (EGPD, SOCAR) and the Conoco Phillips Company of the United States of America (USA) have been in the Lower Kura Depression (LKD). Geomorphologically, it covers the Mil, Shirvan and Salyan plains. Regional profiles are located in Imishli, Saatli, Hajigabul, Salyan, Neftchala, Bilasuvar and Jalilabad regions.

Starting from the beginning of the last century, geological planning, mapping, structure-research excavation and geophysical exploration works of various scales have been carried out in the researched areas. The southwestern slope of the depression, the area from the right bank of the Kura river to the Talish mountain range is covered with Quaternary sediments, and older rocks are found in the Tumarkhanli area with outcrops.

In 2017, geophysical (2D seismic and gravimagnetometric) exploration works were carried out on regional profiles, the regional characteristics of the Mesocenezoic sediments and the Saatli-Goychay uplift zone (SGUZ) were clarified, the geological development history and paleogeographical conditions of the depression were studied in the Yevlakh-Aghjabedi depression of the Republic of Azerbaijan. These regional works were repeated in LKD in 2018 with the aim of studying the thicknesses of sedimentary complexes of different ages and directing future exploration works.

Tectonic features of the area

The study area is tectonically located in the LKD, and includes the Jalilabad mulda and the Mingachevir-Saatli-Lankaran uplift zone.

The structures of the Mingachevir-Saatli-Lankaran uplift zone are mainly Cretaceous, Eocene, Miocene-Oligocene aged uplifts. Mughan monocline and Jalilabad mulda structures are Neogene-Paleogene-Mesozoic uplifts. The LKD structures are mainly uplifts of Pliocene age.

Paleogene-Miocene complex sediments are wedged into the underlying sediments in the North-Eastern flank of the Jalilabad mulda, where the regional profiles cross. The Garadonlu-Kızılagac ascent zone is separated in the studied area.

In the slope parts of the LKD, mainly on the southwest slope, the carbonate sediments of the Upper Cretaceous are fully silted. At the same time, the Western Kurd-Kirmyzikend and Kurd-Shorsulu wrinkle zone are located within the LKD.

The Sarıcallar-Daykend uplift zone is considered the outer northeastern element of the LKD.

In the south-western part of the LKD, a series of structural protrusions in the anti-Caucasus direction is separated. Here, a number of anticlinal belts are noted due to the Pliocene and underlying sediments. Regional profiles intersect the Karabakhli, Kursangi, Bandovan, Babazanen, and Neftchala structures. These structures are part of the Kirovdag-Neftchala and Kalamedin-Bandovan anticlinal belts. The uplifts are large brachyanticlinal and have a Caucasian direction. These folds are compounded by longitudinal and a series of transverse faults, as well as mud volcanoes.

Oil and gas characteristics of the area

In the area of AKC, where regional profiles are worked out, oil and gas occurrence is observed in natural or deep drilling wells. The prospect of the field is associated with Pliocene and Miocene granular, Mesozoic fractured reservoirs. There is no oil-gas manifestation in the wells drilled in Saatli-Sarkhanbeyli-Alibayramli (Shirvan) area. A number of oil fields - Khilli, Karabakhli, Kirovdag - are located on the northeastern slope of the Mugan Salyan syncline. In the northern part of the study area, a small amount of solid oil flow was obtained in well № 1 in Padar field. In the Shorsulu area, oil and gas occurrence was found in the Upper Mesozoic sediments.

The oil and gas content of the Hashimkhanli field is mainly associated with the collectors of separate intervals of sediments spread in the lower part of the MQ. The oil-gas content of the similar interval saturated with sandstone and sandstone-siltstone materials of the MG cross-section has been confirmed in the area of the Kirovdag-Neftchala uplift zone to the north and northeast of the mentioned area.

Oil and gas manifestation is also noted in the Jalilabad mulda.

In general, industrially important oil and gas in the LKD is associated with Upper-Lower Pliocene sediments. Numerous oil and gas manifestations have been recorded in oil fields such as Kirovdag, Kursangi, mud volcanoes, PL and Absheron outputs.

In the Bandovan area, there are natural gas exits due to the outputs of the gas layers of the Absheron sediments to the ground surface.

Directly, the wedging of lower Pliocene sediments in the Mugan monocline indicates the presence of lithological-stratigraphic type traps in this part of the section. This raises a certain interest for exploration work in that part. Also, Mesozoic effusive sediments may be promising. Thus, the prospects of the area can be connected with Mesozoic sediments as well as Neogene-Paleogene sediments.