

ASSESSMENT OF HYDROCARBON POTENTIAL BASED ON GENERALIZED ANALYSIS OF RECENT GEOLOGICAL AND GEOPHYSICAL SURVEYS IN THE AJINOHUR POSSIBLE OIL AND GAS REGION (POGR)

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Ajinohur possible oil and gas region covers the Ajinohur depression bordered by the Ganikh fault in the west, the Western Caspian deep fault in the east, the North Ajinohur fault in the northeast, and the Kura and Mingachevir-Goychay faults in the south-southwest. The geological stratigraphic section of POGR includes rocks of Neogene-Anthropogen (~ 2 km), Paleogene-Miocene (~ 3.5 km) and Mesozoic (~ 2.5-3 km) ages. The hydrocarbon system includes Maykop and Jurassic sediments as source rocks, Productive series, Chokrak, Maykop, Cretaceous sediments as reservoir rocks, and Maykop, Productive layer sediments as seal rocks. There are 36 possible prospective structures for Paleogene-Miocene age sediments and 6 for Mesozoic age sediments in POGR.

Observation points were also set up in the Ajinohur desert during the variation design planning conducted in the Caucasian area in 1931-34. General gravimetric planning was carried out in 1950, detailed planning in 1964, 1966, 1971 and analysis, summation of the results of these surveys were in 1962 and 1972. As a result of seismic exploration conducted in 1980-83, Golluk, Bozarkh, Mahmudlu, Durgun structures and a number of structural nose were discovered. In 2013, 11 regional seismic profiles were done on the southern slope of the Greater Caucasus (in the Ajinohur, Low Kura, Gobustan depressions) by Geophysics and Geology Department (GGD) of SOCAR and ConocoPhillips. Exploration Geophysical Production Department (EGPD) of GGD carried out gravimagnetic exploration suveys on profiles done jointly with ConocoPhillips, in 2019.

In 1950-52, exploration drilling was carried out in well No. 2 in the East Gojashan structure, and in well No. 1 in the Gamigaya-Ajibulag structure. In 1979, the drilling of a deep exploration well to the Mesozoic sediments in the Western Gojashan structure began (Ajinohur well No. 1M); the well did not come out of the dipper Miocene sediments at a depth of 4050 m. An oil appearance was observed during the drilling of well No. 2 in the Chaygaragoyunlu structure, and gas flow were observed during the drilling of the Western Gojashan well.

During the latest regional geophysical research conducted jointly by specialists of GGD and ConocoPhillips, structures in POGR were reanalyzed, paleotectonic conditions were studied, and a preliminary structural model was made. Hydrocarbon system, prospective traps were studied and potential resources were initially assessed.

According to its geological structure, POGR consists of 3 prospective zones lie from the northwest to the southwest: Kura valley, Kura fold and mountain front. The mountain front zone is similar to the Terek Caspian basin in terms of its geological structure and hydrocarbon system. Based on the results of recent regional 2D studies, it was found that fault traps exist in this zone due to Mesozoic sediments. The gravimetric studies conducted in the following years confirmed these results. The hydrocarbon system has very good performance in this zone.

According to the current indicators, the probability of success of the mountain front zone is estimated as 11%. Trap and seal are considered as the main risk in the field. Intensive 2D seismic surveys in the area were proposed for reducing these risks.