



Geochemical study of ejected rocks (oil shale and oil-bearing rocks) of mud volcanoes in Shamakhi-Gobustan region (Azerbaijan) as indicators of hydrocarbon generation and accumulation

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The study area Shamakhi-Gobustan region is located in the south-eastern part of the subsidence of the Greater Caucasus and stands out with the most widespread mud volcanoes in it, that more than 120. Majority of the structures in the region, relate to mud volcanoes are potentially oil-bearing.

Volcanic products brought from the depths of 6-8 km or more by the eruption of mud volcanoes, provide data on deep deposits of the region, whereas the modern equipment and geophysical investigations are not assumed in the ability for studying such depths. In connection with this, Shamakhi-Gobustan mud volcanic area is a model region to search for hydrocarbons at great depths.

The paper is aimed at obtaining new information on generation and accumulation of hydrocarbons in the depths of investigated area. In order to determine the hydrocarbon generation potential in the Eocene and Maikop sediments and its possible accumulation in comparatively young rocks (Productive Series and Miocene), geochemical and geological studies were conducted.

The research was performed on oil shale and oil-bearing rocks (Paleogene-Miocene age), which were sampled from mud volcano breccia. The average amount of organic matter in the composition of oil shale ranges between 7.56-42.55 %.

The results of geochemical investigations of oil shale show that, depending on geological, thermobaric condition, an organic part of oil shale can be subjected to repeated change in the course of evolution. Initially, C-C bonds are disrupted at the catagenesis stages, then minerals and organic matters are detached from each other in kerogen and the process completed with the formation of hydrocarbons.

The analysis on bitumes which is derived from kerogen part of oil shale and oil-bearing rocks prove that oil shale and oil-bearing rocks are genetically close to each other in the studied section of mud volcanic area.

In conclusion, geological and geophysical studies give grounds for assuming that in the region (Central and South Gobustan), Paleogene-Miocene reserves were very promising for the formation of hydrocarbons. Its possible accumulation may be associated with both of fractured reservoirs of the Eocene and granular sediments of the Productive Series and Miocene.