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MODEL OF MUD VOLCANO BY THE GEOPHYSICAL, GEODETIC AND GEOCHEMICAL DATA

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Abstract. In the South Caspian Basin, the general region of onshore and offshore Azerbaijan is home to over 300 mud diapirs and/or mud volcanoes. These mud structures are associated with the production of copious oil and gas, and production wells are being found on the flanks of many onshore mud diapirs. This association is no mere coincidence but is related to the dynamical development of mud diapirs and the generation, migration, and accumulation of hydrocarbons in the South Caspian Basin as has been detailed elsewhere.

Unfortunately, in spite of long-term complex studies of Azerbaijan mud volcanoes, there had not been done special geophysical investigations. There are only the results of geophysical studies obtained simultaneously while solving other tasks. But these investigations are not enough for compiling the mud volcano model and study the dynamics of its activity. This task's solution is able only with special very detailed geophysical, geodetic, geochemical and other investigations.

The present investigations contain the results of such investigations carried out firstly on volcanoes Lokbatan, Akhtarma-Puta and Gushkhana located within one tectonic zone. It is necessary to note that mud volcano Lokbatan had been chosen because it is the most active not only in Azerbaijan but also all over the world. It erupted 21 times for 200-year history. The last eruption had been occurred on October 25, 2001. The studies had been started immediately after that eruption. It is well known that areas of the Azerbaijan mud volcanoes development are reflected by minimum of gravity field in Bouguer reduction (from -120 to -40 mGal). The conducted GPS measurements show that the decrease of velocity vector of horizontal movement up to zero takes place in zone of mud volcanoes location.