The importance of mud-volcano gases, for petroleum research on the Kerch peninsula

Mykola Skalskyi

Kyiv National Taras Shevchenko University; Telephone: +38 097 128 97 60; E-mail: Mykola_geo@ukr.net

Black sea and Azov sea region is the one of the petroleum regions in Ukraine.Nowadays this region is considered to be challenging for gas and oil searching. Hydrocarbon resources mastering in the Ukrainian Black Sea sector will help to strengthen the energy potential of our country.

Kerch and Tamanian mud-volcano region located on the Kerch peninsula (Ukraine) and on the Tamanian peninsula (Russia), and consist of a couple mud-volcanos centres. On the different parts of the world, like Venezuela or Tajikistan, mud-volcano activities is a fine index for petroleum research. That's why this theme is very actualy of petroleum geoscience in Ukraine.

In this work considered changes in the componential composition in the mud-volcano gases, which was colected from four different mud-volcano centres (Bulganak center, Enikale center, Soldats'ko-Slobitskyi center and Malo-Tarchan center). This three centres located in the different places of the Kerch peninsula, and they have a different origin of gas.

Stratigraphy. Activities of mud-volcanoes related to Maikop fm., which spread almost on the all Black sea region. The mean value of thickness Maikop fm. on the Kerch peninsula changed from 1500 m. to 3000 m. Total thickness of the deposites, which overlaying the mud-volcano-centres is 5000 metres.

Lithology. The resault of mud-volcano acrivities on the Kerch peninsula is the great deposites of the mud-volcano breccia, which carry out from 5000 m. to surface, and formed specific structure – depressed syncline.

Mud-volcanoes gases. The daily production rate of gases at the studied area changed from 350-400 m^3/day during the quiet time to 1500-2000 m^3/day during the activization of mud-volcanic proceses. On the Kerch peninsula all mud-volcanoes centres divided on the six groups.

- Methane dominated gas
- Methane – carbon dioxide dominated gas
- Carbon-dioxide dominated gas
- Nitrogen – heavy-hydrocarbon dominated gas
- Carbon-dioxide-methane-nitrogen dominated gas

There are two types of mud-volcanoes located at the studied area: “methane” volcanoes - Bulganak center, Enikale center, Soldats’ko-Slobitskyi center, and “methane – carbon dioxide” volcanoes - Malo-Tarchan center.

The research resault show that chemical composition of gases is changed every day. The main component which was tested was carbon-dioxide, which is present in all volcanoes. Isotopic analysus shows that content of **C** is changed from +7,3‰ to +8,5‰ (Malo-Tarchan center). The changes of carbon-dioxide contents is the resault of seismic activities, or tectonic movements on this region.