Geophysical Research Abstracts
Vol. 16, EGU2014-14838, 2014
EGU General Assembly 2014

Geochemical Features of Shale Hydrocarbons of the Central Part of Volga-Ural Oil and Gas Province

Fidania F. Nosova, Nikita V. Pronin, Irina N. Plotnikova, and Julia G. Nosova
Kazan Federal University, Department of Geology of Oil and Gas, (irena-2005@rambler.ru) +7843 2337983

This report contains the results of the studies of shale hydrocarbons from carbonate-siliceous rocks on the territory of South-Tatar arch of Volga-Ural oil and gas province of the East European Platform.
The assessment of the prospects of shale hydrocarbon in Tatarstan primarily involves finding of low permeable, poor-porous shale strata that would be rich in organic matter.
Basing on the analysis of the geological structure of the sedimentary cover, we can distinguish three main objects that can be considered as promising targets for the study from the point of the possible presence of shale hydrocarbons: sedimentary deposits Riphean- Vendian; Domanicoid high-carbon rocks of Devonian time; sedimentary strata in central and side areas of Kama-Kinel deflection system.
The main object of this study is Domanicoid high-carbon rocks of Devonian time. They are mainly represented by dark gray, almost black bituminous limestones that are interbedded with calcareous siliceous shales and cherts.
Complex studies include the following: extraction of bitumen from the rock, determination of organic carbon content, determination of the group and elemental composition of the bitumen, gas chromatographic studies of the alkanoic lube fractions of bitumoid and oil, gas chromato-mass spectrometry of the naphthenic lube fractions of bitumoid and oil, pyrolysis studies of the rock using the Rock –Eval method (before and after extraction), study of trace-element composition of the rocks and petrologen, comparison in terms of adsorbed gas and studying of the composition of adsorbed gases.
Group and elemental analyses showed that hydrocarbons scattered in the samples contain mainly resinous- and asphaltene components, the share lube fraction is smaller.
The terms sediment genesis changed from weakly to strongly reducing. According to the results of gas chromatography, no biodegradation processes were observed. According to biomarker indicators in the samples studied there is some certain heterogeneity in the composition of organic matter, which varies from sapropel to sapropel - humus.
The study of adsorbed gases show the following: all samples have increased, high and abnormally high concentration of selected gases. Their common characteristic is that the gases are heavy, fatty, and have low methane content and hydrocarbons of unsaturated series (ethylene, propylene and butylene). Heavy hydrocarbons of saturated series are dominating, their share is changing irregularly in the homologous series . There is a relation between silica and organic matter content, the amount of organic matter and adsorbed gas, the presence of lube fraction and isotopic composition.