

Geochemical evidence for Palaeozoic and Mesozoic fluids interaction

KRASNOVA E^{1,2}, STOUPAKOVA A¹, SUSLOVA A¹

¹Lomonosov Moscow State University, Leninskie Gory 1, 119991 Moscow, Russia,

²V.I.Vernadsky Institute of Geochemistry and Analytical Chemistry, Kosygin St. 19, 119991 Moscow, Russia

The structures and hydrocarbon prospectivity of Russian Western Siberian and Arctic basins show wide areas, which are favourable for hydrocarbon accumulations. West Siberian basins are filled by mainly Palaeozoic and Mesozoic sedimentary successions. Many common stratigraphic complexes and unconformities show similarity of geological conditions of their formation [1]. Although a wide variety of potential source rocks have been identified, most of the petroleum discovered is derived from a few narrowly defined stratigraphic intervals in the Devonian, Triassic and Jurassic. Upper Jurassic marine shales are one of the principal source rocks for oil and gas in the West Siberian Basin [2]. Organic-rich, marine rocks of Devonian age (the marine Domanik Formation) were considered as a separate Palaeozoic petroleum basin with high prospects for the hydrocarbon accumulations exploration [1].

Biomarker analysis and isotopic data suggests several genetic families of oils from Bazhenov and Domanic formations [3]. For each formation the geochemical data shows individual patterns of the potential oil source rock. Geochemical data in several Jurassic interval identify geochemical and isotope characteristics of source rock associated with the complex of Palaeozoic strata, Domanic-like facies. Most traps are present within this complexes with multiple faults and can be filled by hydrocarbon due to the migration of fluids from the neighbouring kitchens of Domanic Formation.

[1] Anthony M. Spencer, Ashton F. Embry, Donald L. Gautier, Antonina V. Stoupakova, and Kai Sorensen. An overview of the petroleum geology of the arctic. APG, v 35 of GSM, p 1–15, 2011.

[2] Kontorovich, A. E., Moskvina, V. I. et al. 1997. Main oil source formations of the West Siberian basin. *Petroleum Geoscience*, 3, 343–358.

[3] Peters, K. E., Ramos, L. S., Zumberge, J. E., Scotese, C.R. & Gautier, D. L. 2007. Circum-Arctic Petroleum Systems identified using decision-tree chemometrics. *AAPG Bulletin*, 91, 877–913.