

The Paleozoic oil in the Urman field (the southeast of Western Siberia)

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Abstract. This paper presents the results of applying paleotemperature modelling for determination possible sources, which form hydrocarbon deposits in the pre-Jurassic basement in the southeast of Western Siberia. Discovery of light oil deposits below the depth of 7000 m in the Tarim basin indicates the possibility of existence favourable temperature regime for generation and conservation of hydrocarbon deposits even at such great depths. According to some estimates about 40 % of the total proved oil and gas reserves in the world are distributed in the superdeep strata. Russian scientists also have extensive prospects for the Paleozoic sedimentary basins of Western Siberian Plate. These basins formed on betwixt mountains, where favourable environment for accumulation of dispersed organic matter and its transformation into hydrocarbons persisted for a long geological time. There are two concepts of “the main source” for oil accumulated in the Paleozoic reservoirs. The first suggests deposit formation via upward migration, while the second supports the idea of downward interstratal migration of hydrocarbons from the Jurassic source rocks. The aim of this study is to determine possible sources for the Paleozoic hydrocarbon deposits in the Urman field via modelling of thermal history of the Phanerozoic oil-source rocks. The first experience of performing such research is related to the Ostanino group of fields. The research is continued for the Chuzic-Chizhapka group of fields, which is located on the tectonic unit of the same name. Both groups are associated with the Nyuro sedimentary basin. It was found that the Paleozoic reservoir of the Urman field accumulates partially preserved gas generated by the Paleozoic source-rocks and oil representing a mixture of the Jurassic oil of marine and terrigenous origin.

Keywords:

origin of the Paleozoic hydrocarbon deposits, modelling of thermal history, the Phanerozoic oil-source rocks, the Urman field, southeast of Western Siberia

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