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Bazhenov Formation as an intermediate hydrocarbon reservoir in fault zones (West Siberia)

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The Bazhenov Formation which contains about 15% of hydrocarbon (HC) resources of West Siberia is of a great interest as a target of HC accumulations in reservoirs of unconventional type. The bituminous Bazhenov Formation belongs among domonikoid formations and is characterized by abnormal reservoir pressures, higher temperatures, low viscosity and density of HC mixtures at their high gas saturation. The formation contains swelling clay minerals of hydromica-montmorillonite composition, interlayers of radiolarian silicites and Pelecypodian shelly deposits of porous loose structure. This fact favors petroleum HC sorption and their concentration as local accumulations inside the oil-source strata. Interlayers of secondary altered radiolarites and Pelecypodian shelly deposits in well logs show features typical of fine-grained sandstones and silt stones. Enhanced fracturing and ability to brecciation of rocks confined to zones of deep faults with events of dynamic fluid migration benefit anomalous processes of kaolinitization, partial carbonatization and silicification of rocks with the formation of secondary porosity and reservoirs of improved quality. Hydrothermal processes are often connected with a neotectonic stage of tectonic activation and caused by vertical migration of deep fluids. Siliceous (radiolarites), carbonate (shelly) and microlaminated silica-clay rocks of the Bazhenov Formation undergone hydrothermal changes can serve as reservoirs accepting allochthonous hydrocarbons in addition to autochthonous ones. When the pressure forced by deep fluids exceeds the reservoir pressure in "oil-source" strata, there occurs a fluid fracturing, HCs migrate up the section and accumulate in overlying porous reservoirs. From this stand point, the Bazhenov Formation may be thought of as an intermediate hydrocarbon reservoir.

Biography

O N Zlobina has completed her PhD from Trofimuk Institute of Petroleum Geology and Geophysics in the specialty Lithology. She is Senior Research Assistant at IPGG Sedimentology Laboratory. Over the past 5 years, she has published 29 scientific works, including 8 in reviewed journals, has participated with reports at 16 scientific conferences (including 9 international)..

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