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Morphological and genetic types of unconventional reservoir zones within basement of the Tatar arch

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Abstract

© SGEM2016.The structure of the Tatar arch (Eastern Russian Plate) includes several morphological and genetic types of unconventional reservoirs. The first type is presented by areal weathering crust (boundary between the sedimentary cover and the basement surface). It is characterized by the presence of weathering profile, zonal profile and diverse mineral composition of the clay component. Linear type is another morphological type of weathering crust. It has the local development in the territory of the Tatar arch and depends on fault tectonics of the basement. Peculiarity of the linear crust is in the absence of weathering profile and zoning. Destruction zone is another morphological and genetic type of unconventional reservoirs. In the body of the South-Tatar arch basement (below 3 km) specific zones – destructions zones (crushing and decompression) are established. They are metasomatic sub-horizontal geological and geodynamic formations. Destruction areas are divided into two types: compression and decompression. Their formation is associated with geodynamic stages of the basement development and the impact of late low-temperature processes. Zones have high capability of voids. The main processes are leaching, corrosion, exposure to low-temperature hydrothermal solutions to the metamorphic substrate. Allocated morphological and genetic types (weathering crust and destruction zones) with high reservoir characteristics can serve as unconventional reservoir zones at great depths of the Tatar arch.

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Keywords

Basement, Clay minerals, Destruction zones, Tatar arch, Weathering crust