

Zeolitic mineralization of permian clastic reservoirs of the ashchinskoye bituminous field

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Abstract

© SGEM2017. All Rights Reserved. The Ashchinskoye bituminous field is located in the southeast of Tatarstan Republic, in south-east part (Volga-Ural region) of Russian platform. The Permian reservoir sandstones from above present productive layers blocked by caprocks of Kazanian claystones. Bituminous sandwich of greywacke, fine-grained, loose aggregate, cemented with bitumen. The study of sandstones by SEM analysis showed a high content of analcime - a mineral group of zeolites. Analcime forms crusts consisting of irregular crystal intergrowths. Large crystals are found in the form of tetragonal trioctahedra. Formation of analcime was formed in two stages. First stage is feldspars hydrolysis caused by CO₂ fluids. It led to the appearance on the surfaces of effusive fragments of aggregates of gibbsite and kaolinite. Then the pores in the sandstones were filled with alkaline (pH = 8-11) soda water. Analcime developed in the alkaline environment and was replaced of gibbsite and kaolinite. The sources of Al³⁺ и Si⁴⁺ were dissolving gibbsite and quartz.

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Keywords

Analcime, Bitumen, Clastic reservoir, Zeolites

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