Neftyanoe Khozyaystvo - Oil Industry 2017 N12, pages 86-89

Oil-generating potential of bituminous rocks from Permian and Domanic deposits in Tatarstan by the data of the pyrolytic Rock-Eval method

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Abstract

Using the Rock-Eval pyrolytic method, a comparative analysis of bituminous rock samples from the Permian deposits of the Ashalchinskoye oil deposit and the house (Domanic) deposits of the Romashkinskoye oil field was carried out and their oil-generating potential was estimated. It is shown that according to the content of organic matter, rocks differentiate from very good productive deposits to satisfactory. Permian rocks contain a high content of free hydrocarbons, after extraction, which the oil-producing potential of rocks sharply decreases. The residual organic matter is characterized by low values of the hydrogen index, high values of the oxygen index and a low degree of maturity, which is typical for kerogen of type III, formed from the sediments of the continental type. A distinctive feature of the dominant rocks is the low content of free hydrocarbons and the high content of insoluble kerogen of types I and II associated with organic matter of marine origin and possessing high oil and gas generation potential, the realization of which with the formation of free hydrocarbons is possible using technologies simulating artificial maturation of kerogen directly in productive layers. The heterogeneity of rocks from the Permian and Domanic deposits by the oil-generating potential determined by the different organic matter contents in rocks, by its nature and resistance to thermal effects, indicates the various possibilities and conditions for its implementation.

http://dx.doi.org/10.24887/0028-2448-2017-12-86-89

Keywords

Composition, Domanic deposits, Heavy oil, Kerogen, Oil and gas generation potential, Organic matter, Permian deposits

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