

Hydrocarbon generative - accumulative system of deep-seated sediments of the north of Western Siberia

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The current practice of geological and exploration works on increasing hydrocarbon resources is aimed in many countries for non-traditional objects, among which deep-seated deposits (below 4 – 5 km) play an important role. So, one of the promising targets for the search for hydrocarbons is the Triassic deflections in the north of Western Siberia, discovered by the Tyumen superdeep well (btm is the 7502 m) (the Korotchaevsky deflection), the Yen-Yakhinsk superdeep well (8250 m) (the Yen-Yakhinsky deflection), and the Jarudey Parametric well (5010 m) (the Jarudean deflection). According to the data of drilling, it was found out that the thickness of the Triassic terrigenous strata reaches to 1,350 m in which the oil and gas reservoirs have been identified.

The density of the C_{org} content is the highest in the petroleum bearing strata of the Jarudei deflection, Triassic deposits according to the Rock Eval pyrolysis data are in the main oil formation zone. The petroleum bearing strata in the Korotchaevsky and the Yen-Yakhinsky deflections experienced a high catagenesis (AK₃) and are in the main gas formation zone, having passed the main oil formation zone in the Middle Jurassic-Early Cretaceous time (Meshcheriakov and Karaseva, 2010).

The results of the tests confirm that the development of reservoirs at great depths below 5.5 km. Core porosity and geophysical exploration of wells reach 16% in the Triassic sandstones of the Korotchaevsky deflection, and 14% – in the Yen-Yakhinsky deflection.

The ideas of the continuous compaction of terrigenous rocks with depth and the absence of reservoirs at great depths were refuted. The reservoirs of different types below 4-5 km are recorded both in sedimentary and in volcanic strata of the Triassic.

The reservoirs with relatively low values of porosity and permeability at great depths under conditions of abnormally high reservoir pressures are favorable for the development of migration and the formation of zones of gaseous hydrocarbons accumulation.

Based on the results of the tests in the conditions of high temperatures (more than 150 °C) and anomalous pressures (Ka > 1.7), the inflows of hydrocarbon gas enriched with methane in the depth interval of 5700 – 7100 m were obtained in the Korotchaevsky and the Yen-Yakhinsky deflections. Intense oil manifestations in the Triassic sediments of the Yaroudey deflection is marked (Karaseva *et al.*, 2012).

The generative - accumulative system of hydrocarbons in the Yaroudey deflection contributed to the development of oil accumulations, whereas in the Yen-Yakhinsky and the Korotchaevsky deflections – the formation of gas deposits.

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