



Regarding oil deep origin and some consequences for oil and gas geology

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The origin of hydrocarbons is one of the basic problem in the modern geology having both fundamental scientific and practical significance. At present more and more researchers hold that oil and natural gas have deep abiogenic origin. Experiments and thermodynamic calculations showed that methane can not be polymerized into heavier hydrocarbons at pressures lower than 5 kbar. For synthesis of hydrocarbon systems similar on composition to nature oils it is necessary to reach 700-1800° and 15-80 kbar [1]. If oil had been formed in mantle, composed mainly of ultrabasic rocks, then it is logically to suppose that oil and ultramaphite interrelation should be reflected upon its microelement composition. The results of geochemical analysis of oil samples from West Siberia and Tatarstan show [2] that oil samples investigated have an extremely specific microelement composition. The main geochemical oil features are limitedly low contents of the majority of microelements and a brightly expressed positive europium anomaly, characteristic for deep formations. REE distribution as well as Ni, Co, Cr, V, Cs, Sr, Zr and PGE contents in oils are quite comparable with ultrabasites. A series of experiments on the mass transport of the organic compounds from the bituminous argillites samples into synthesised hydrocarbons and mineralized thermal waters has been made. It was shown that biomarker presence in natural oils is not a proof of the oil organic origin, but may be quite gained by the hydrocarbons in the process of migration through sedimentary rocks, containing the organic substance [3].

The recognition of abiogenic oil origin does not at all mean the necessity and expediency of oil deposits prospecting in the West-Siberian basement outside of the well-known oil-bearing provinces. If there were significant oil-bearing deep faults, then oil deposits should be found in the sediments. Thus the main conclusion is quite different: the theory of abiogenic deep oil origin causes rather high possibility of accumulation of oil reserves in multibeds deposits. Therefore, the primary objects for oil deposits prospecting are the lower horizons of sedimentary rocks and the basement in the frame of the oil-bearing fields, especially of great and elephant fields. The researches are fulfilled within the frames of the Program "Fundamental problems of geology and geochemistry of oil and gas..." of Russian Academy of Sciences (projects 09--5-1008, 10-35-09NDR).

References.

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