



## **Hypotheses and Facts of the Interconnection of the Deep Processes in the Earth Crust with Recent Replenishment of Hydrocarbon Reserves**

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Degassing is a main process in the Earth's development, and the deep, reduced fluids belong to a wide range of degassing products. However, a lot of questions have to be answered at this point. Is the process of degassing related in some way to the recent (continuous or periodic) formation and reformation of oil and gas fields? What are its scale and intensity, if any? How can it be quantitatively evaluated? And how can this evaluation affect such practical aspects as the decision making on new exploration works, reserves evaluation, production designs, etc? The authors believe that these problems should be solved, apart from theoretical and laboratory studies, through the full-scale, oil-field, experiments. The crystalline basement studies executed in Tatarstan permit the observation of the most recent indications of deep, hydrogen-hydrocarbon degassing. In the year 2000, R.Kh. Muslimov, Adviser to the President of Tatarstan on the Natural Resources Management, for the first time in the history of petroleum industry of Tatarstan initiated studies of possible recharging of oil pools. It has been discovered that the cumulative production in some oil areas of the Romashkino oil field substantially exceeds formerly proven, recoverable, reserves. Moreover, the volume of oil produced has already significantly exceeded the amount of oil that the Domanik strata could have generated as supposed source rocks of the South Tatarstan arch and the adjacent areas. In addition, independent studies made at the "TatNIPIneft" Institute for Petroleum Research (Bugulma) under I.F. Glumov and S.G. Uvarov have found, via the analysis of the production performance of Romashkino and by numerous others criteria, 12 indirect indications of the possible oil inflow from great depths into the sedimentary cover. The modeling of the oil-field recharging mechanism can establish absolutely new criteria of searching for

prospective portions of the pool, which in turn can prompt new approaches to exploration and development of oil fields. Quantitative assessment of the recharging and its modeling can be performed via well surveys and geological studies of the anomalous zones detected by geophysical and other methods. Besides, there are new, geological-geochemical, geophysical, and field criteria of locating such zones.