

## Rehabilitation Cycles as the Basis of Efficient Extraction of Residual Oil

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Human needs are so vast and incomprehensible and grow so rapidly that Nature can hardly withstand the load. A telling example is the way hydrocarbon production is increasing all over the world. In fact, our planet has turned into a great petroleum polygon.

Super-intensive depletion of the easy-to-get oil reserves results in a fast exhaustion of an oilfield. However the natural fluid-saturated system – oil deposit – is a living rock-fluid system and is capable of restoring its resources in the process of «rest» and rehabilitation (even if its «rest» was caused just by technical factors).

The problem is to use **rehabilitation cycles** in an efficient, theoretically-grounded way. The fact that the next rehabilitation cycle is needed can be seen from the depression value during the oilfield development. In case the depression on the stratum ( $\Delta P =$  formation pressure FP – bottom-hole pressure BHP) exceeds 5-8 MPa, it means that the fluid-saturated system of the stratum has reached its critical threshold and the system needs a rest – a rehabilitation cycle. The cycle may be focal (local). The critical state of the system can also be determined from some other parameters. To some extent, this principle can be compared to the functioning of human cardiovascular system and bio-cycles.

It should be noted that a rehabilitation cycle is not just a rest and a pause in the activity of the system. Methods and technologies must be provided for **active rehabilitation**. To achieve fast and efficient results: to restore the active reserves at least in the bottom-hole area to increase the well productivity, –it is necessary to apply innovative methods and technologies.

The necessity for rehabilitation cycles must be provided for in all the regulatory and licensing documentation, development projects, and long-term programmes. This aspect of the oil resources management must be formally codified in the appropriate laws.

### Biography:

Nikolay Zapivalov was Born in 1931, Nikolay Zapivalov graduated the Mining Institute (Yekaterinburg) in 1955; Ph. D. – 1962, Dr. Sc. (Petroleum geology) – 1985. He had been a geologist, chief geologist and General Director of West Siberian oil exploration enterprises for many years. He was directly involved in discovering many oil and gas fields in Siberia and in India. He has a rich experience in managing, field operations, scientific research and in teaching profession (66 years in petroleum geology). Current research activity: forecasting of large and high-production oil-and-gas pools; geofluidodynamics of oil-saturated systems. Author and co-author of 800 publications.