APPLICATION OF THE TECHNOLOGY OF DOWNHOLE PUMPING CONDITIONS IN STRUCTURALLY COMPLEX SHALLOW CARBONATE OIL DEPOSITS OF THE REPUBLIC OF TATARSTAN

Background
In modern conditions of oil production, an important task is to decrease the costs of oil production. Companies that use water flooding for reservoir pressure maintenance (RPM) spend approximately 50% of all consumed electricity for lifting and pumping of the well production, and more than a third is spent for RPM. Therefore, the efficiency of operation of the RPM system is a priority for all oil producing companies. To achieve minimum operating costs and save resources during oil production, current requirements to the RPM system include the need to improve the controllability and informative content of the flooding process, the effectiveness of stimulation, ecological safety, maximum power efficiency and economy. One of the ways to solve these problems is the technology of downhole pumping (DHP).

Aims and Objectives
Analysis of the efficiency of water flooding using DHP. The study of the positive and negative aspects of introducing this technology.

Methods
Research problems are solved in analytical way with the use of conventional methods of geological field analysis of oil field development and scientific and technical literature on the subject of research.

Results
The necessity of downhole pumping is substantiated for reservoir repressuring in the absence of appropriate infrastructure in small oil fields. Since the introduction of DHP in 2012 in the well No. 12 78 of Nekrasovskoye deposits 35.7 thousand m$^3$ of formation water has been pumped into the producing bed. Such decision has allowed to refuse the injection of brought water, to reduce significantly the costs of water transport and clearing of the roads, to stabilize the pumping mode and not to cool the reservoir by cold injected brought water in winter, which is very important in the development of heavy oil deposits. Since 2012 additional production in Nekrasovskoye field in the plot of the well No. 12 78 has made more than 10 thousand tons of oil.
Conclusion
Installations for downhole pumping of formation water demonstrated high effectiveness in maintaining reservoir pressure at small and remote fields. Use of mineralized ground water for oil deposit flooding contributes to a more rational development of oil fields and achievement of enhanced oil recovery. It allows to reduce technogenic load on the environment, and also allows a significant reduction of electric power costs and preservation of fresh water resources by giving up its use in the RPM system.

Key words: downhole pumping, well, injection, formation water, carbonate reservoirs

References
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