

The methods for performance improvement of technological wells at in-situ uranium leaching

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Operational efficiency of in-situ leaching (ISL) deposits essentially depends on the geotechnical well conditions. In most cases, during operation of such wells the decrease of well flow rate and injectability is observed, which is caused by the new formation of salts and clay particles that are deposited on the screen and in the near-screen area. In this connection, there is a need for various activities to restore the flow rate of geotechnical wells.

Zarechnoye and Kharassan Mines performed works to adapt the techniques for well performance improvement that are used in the oil and gas industry. The method is based on the specific acid treatment of host rocks with a special solution to ensure both cleaning of the pore space and creation of new solution flow channels and enlargement of the existing ones, and clay cake removal in the well bottom zone.

When the well flow rate cannot be restored by conventional method, the developed method allows achieving exceptional results. Thus, in the period from May to November 2013 the well workover was performed on 19 production wells at Zarechnoye deposit with the average flow rate before the repair being 5.6 m³/h. The repair of these wells by conventional methods managed to restore the flow rate to 12.7 m³/h on average. The use of new method at the final stage of well workover, airlift washing, resulted in achievement of 33.9 m³/h on average. The initial performance of submersible pumps after the well workover was 17.3 m³/h while at the initial operation stage the average flow rate, with no evidence of clogging, was 17.1 m³/h. As a result, the interrepair cycle more than doubled, and the average performance of production wells increased by 309%.

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