

Implementing Swellable Packer Technology for Well Intervention in Steam Recovery Operations
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Abstract

In the Tatarstan Republic of Russia approximately 1000km southeast of Moscow, there are large deposits of bitumen and heavy oil. These wells are shallow in heavy oil reservoirs with 100 meters TVD. A process similar to SAGD operations is used; however there are also some specialty injector/producer wells with two well heads, one vertical, and a slant at 45 degrees. Through the bitumen layer filters or screens are deployed at the top of the bitumen layer on each side a stage tool is installed with casing back to surface. It was determined from temperature surveys and observation wells that the stage tool in well Ashalchinskoye 241 was leaking on the slant side, potentially creating a surface event. The stage tool leak needed to be plugged off and eliminated.

The proposed solution was to pump thermally stable cement with accelerator in two stages to assist in zonal isolation across the stage tool. To prevent cement from falling down to the screens or filters downhole, an inflatable bridge plug (figure 5) was required to be set below the stage tool. It was also decided to use a steam injection swellable packer set across the stage tool to provide additional assurance the leak was eliminated. After the cement was drilled out, the swell packer was run across the stage tool and allowed to swell for two days. Once confirmed it was anchored, the work string was retrieved by actuating the HR which is a hydraulic release tool that can be functioned with or without dropping a ball (see figure 4) and the inflatable plug retrieved.

The value created was in re-establishing well integrity, and made it possible to pump steam down both well heads, making steam injection more efficient, allowing maximized production. The well was returned to production and has been successfully operated for three years now.

[Complete paper](#)