

Case study: Kazakhstan

# Aptum seals, Premier NXT packers skip fluid heating step, save \$60,000 per well, secure early production

An operator in Kazakhstan installed Baker Hughes **Premier™ NXT removable production packers** as part of an upper completion. The existing seals have a temperature range of 100 to 450°F (37 to 232°C) yet require the stimulation fluid to heat up at the surface to ensure the fluid is not too cold while contacting with the packer's elastomers during stimulation. Contact at low temperatures can cause integrity issues in the well. The process of heating the stimulation fluid incurs additional rig time and requires extra personnel and heating equipment.

In order to avoid the heating the fluid—and eliminate the requirement of heating equipment, the field personnel to operate it, and streamline the operation—Baker Hughes proposed a field trial where the Premier NXT packers would be equipped with **Aptum™ seals**.

The Aptum compound balances the performance envelope in the temperature ranges from 40 to 350°F (4.4 to 176.7°C). The seal outperforms other elastomers in the industry on hydrogen sulfide (H<sub>2</sub>S; 0.1 – 10%), oil resistance, and is resistant to the

chemical attack of inhibited brines such as calcium chloride (CaCl<sub>2</sub>), calcium bromide (CaBr<sub>2</sub>), sodium bromide (NaBr), and zinc bromide (ZnBr<sub>2</sub>).

Baker Hughes engineers demonstrated the viability of the Aptum elastomer in a qualification test. Satisfied, the operator collaborated with Baker Hughes engineers to identify a candidate well. In January 2021, field personnel deployed a Premier NXT packer with the Aptum seals. The deployment stage was flawlessly executed. During the stimulation stage, the fluid was pumped downhole without heating, and the NXT packer and Aptum elastomer met all the operator's expectations and the well objectives.

The result saved approximately 24 hours in completion time, enabling the operator to achieve earlier production.

The Aptum seals ensured integrity during well stimulation, avoiding the conventional heating of the fluid on the surface, a process that costs up to \$60,000 USD per well.

## Challenges

- Install production packer
- Stimulate lower completion with acid stimulation
- Put well on production after well testing

## Results

- Eliminated requirement to heat fluid at the surface prior to stimulation operations
- Saved up to \$60,000 USD per well
- Improved health, safety and environmental (HSE) risk by removing field personnel from heating operations
- Achieved earlier production
- Experienced zero nonproductive time (NPT)