

Kol-Seal® Lightweight Cement System Enables Reliable Liner Cementing and Zonal Isolation in UAE Well

Location: United Arab Emirates

Application: Production liner cementing and zonal isolation

Product: Kol-Seal® Lost Circulation Material / Cement Extender

Challenge

- Highly compressible sand interval created risk of liner buckling
- Uniform annular cement coverage required to prevent sand subsidence
- Low annular velocities complicated effective mud displacement
- Cement system required low density while maintaining high compressive strength

Solution

- Specialized cement placement process improved displacement efficiency
- Kol-Seal incorporated into lightweight cement slurry design
- Controlled particle distribution supported slurry stability and placement
- Density flexibility enabled accurate cement placement across the interval
- Effective mud displacement achieved despite low annular velocity

Results

- Successful cementing of 7-5/8 in. production liner
- Uniform cement coverage achieved across the annulus
- Post-job ABI logging confirmed effective cement bond integrity
- Long-term zonal isolation expected due to strong hydraulic bond
- Specialized cementing process prevented costly remediation

CHALLENGE

A major operator in the United Arab Emirates required a cementing solution capable of achieving uniform cement coverage across a highly compressible sand interval within the annulus. If the sand were allowed to subside, the resulting formation compaction could lead to production liner buckling and potential well integrity risks.

The well geometry imposed low annular velocities during displacement, increasing the difficulty of achieving effective mud removal and uniform cement placement around the liner. Ensuring consistent cement coverage and a reliable hydraulic bond across the interval was therefore critical to maintaining long-term zonal isolation.

In addition, the cement system needed to provide low density to manage hydrostatic pressure while maintaining sufficient compressive strength to withstand formation compaction forces and long-term downhole stresses.

SOLUTION

The operator selected a major oilfield service company utilizing a specialized cement placement process designed to maximize displacement efficiency and placement accuracy within the wellbore. A cement system incorporating Kol-Seal® lost circulation material and cement extender was used as a key component of the slurry design. Kol-Seal's engineered particle size distribution enabled effective bridging and slurry stability while supporting the development of a lightweight cement system capable of maintaining strong mechanical properties.

The flexibility of the slurry density allowed the cement to be placed precisely across the targeted interval while maintaining stable rheological properties during displacement. The high displacement efficiency of the cement system ensured positive cement coverage around the liner despite the low annular velocity conditions imposed by the well geometry.

The service company cemented the 7-5/8 in. production liner using the specialized process on the liner tack, followed by a conventional cement slurry for the top-of-liner squeeze.

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RESULTS

The cementing operation successfully achieved uniform cement coverage and effective zonal isolation across the interval.

To verify cement integrity and evaluate the relationship between cement bonding and formation compaction, the operator requested a post-job evaluation. Conventional evaluation methods were not suitable for this application. The service company deployed an acoustic borehole imaging (ABI) device to obtain detailed bond-log data and statistical variance analysis. The logging results confirmed effective cement placement and bonding across the liner interval. Due to the efficient mud displacement and optimized cement design, the well is expected to maintain long-term hydraulic bonds and reliable zonal isolation.

By preventing potential formation compaction issues and ensuring reliable liner support, the specialized cementing process incorporating Kol-Seal enabled the operator to avoid costly remediation and drilling delays.