CASE STUDY

HALLIBURTON

Argentina

Single-trip abandonment cement plug helps operator save 20 hours of rig time

BHKA Disconnect™ plug setting tool allows operator to permanently abandon 1015-m openhole section in single trip

CHALLENGE

- Place abandonment cement plug in 1015-m openhole section

SOLUTION

- Deploy BHKA Disconnect™ tool to safely place single 1090-m cement plug
- Deploy Commander™ 500 top-drive cement head to achieve mechanical separation of cementing fluids and string rotation

RESULT

- Flawless execution of design of service
- Achieved openhole abandonment by tagging TOC at planned depth
- Saved approximately 20 hours of rig time

Overview

Cement plugs are required for proper isolation in plug and abandonment (P&A) operations. The conventional method to stack short-length cement plugs usually requires long cement setting time and has a low success rate related to high contamination levels.

Challenge

As part of the permanent abandonment plan, an operator in Argentina required isolation of 1015 m of a 6.131-in. openhole section and a minimum of 30 m of coverage inside the cemented 7-in. casing. Previous conventional cement plug operations indicated a minimum of three independently positioned/stacked cement plugs were necessary to achieve the required isolation from the bottom of the hole at 3890 m with effective TOC at 2800 m. An additional surface cement plug would position up the string with its base at 860 m and effective top of cement at 660 m.

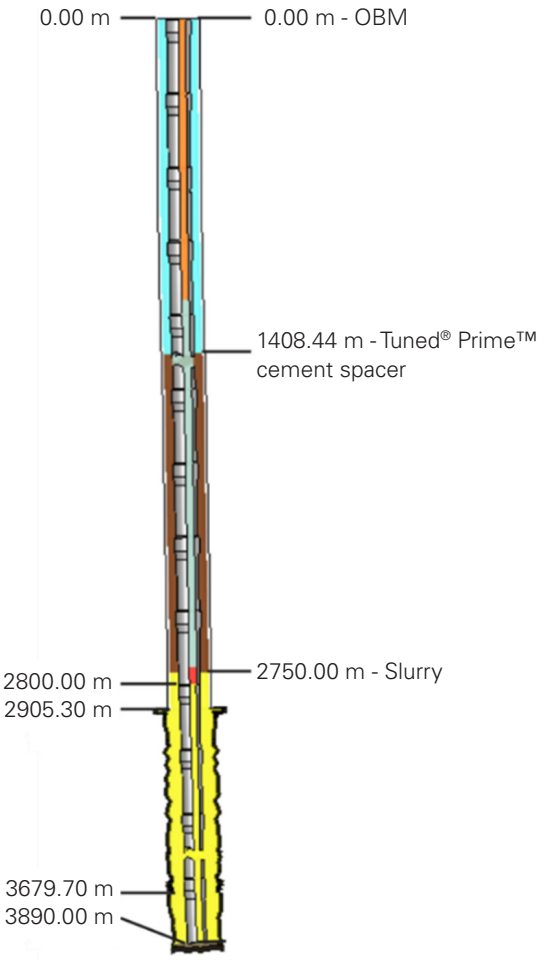
Solution

Halliburton proposed deployment of the BHKA Disconnect™ plug setting tool with a sacrificial tailpipe to enable the safe placement of a single, undisturbed, 1090-m cement plug. The displacement dart and BHKA tool's safe disconnection mechanism help drastically minimize cement contamination and the risk of stuck string associated with spotting the ~1000-m long balanced cement plug. A wirelessly operated Commander™ 500 top drive cement head was also proposed to promote safe and positive dart displacement and to maintain effective mechanical fluid separation during cement plug placement and string rotation cement best practices for optimum cement plug placement. Halliburton designed a 16-lbm/gal slurry in accordance with best practices and with consideration to the best scenario to achieve the operator's abandonment objectives.

Result

After getting to bottom at 3890 m with 3 1/2-in. tubing, the cement operation followed the design of service with wellbore circulation and full string rotation at 10 rev/min in preparation to spot the cement plug. At the end of cement displacement, a clear tailpipe release was observed by the 1,900-psi differential pressure spike. Once the setting time was complete, TOC was tagged 5 m above planned, which met job objectives and allowed placement of the 200-m surface-balanced plug with the same work string.

The streamlined operation eliminated the need for stacked cement plugs, additional rig time, and well cleanup operations, which the three independent cement operations using conventional methods would have incurred. This solution saved an estimated 20 hours of rig time.



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