Single-Trip Cleanout and Displacement for Deepwater Pre-Salt Well

Location: Deepwater Brazil

Overview

While drilling a pre-salt offshore deepwater appraisal well in Brazil, a major operator found that the well needed a robust and efficient single-trip wellbore cleanout system. Due to anticipated well challenges during the completion, they needed to find a system that was capable of drilling cement, shoetrack, and reaming while still providing an effective wellbore cleanout trip.

The operator and Halliburton jointly worked on the detailed plans and contingencies to ensure successful deployment of an effective wellbore cleanout strategy of debris accumulation in this critical deepwater well.

Halliburton proposed CleanWell® system’s single-trip cleanout tools to mechanically clean the required sections of the casing and riser during the displacement from drilling mud to brine. CleanWell tools work by combining multiple tools on a single string to help the operator save significant rig time by reducing the need for dedicated trips and improving operational efficiency.

Due to the HP/HT conditions of the well, Halliburton used high-performance magnet inserts to execute the displacement in two phases and maintained full hydrostatic control of the well at all times.

All pre-planning was completed well in advance of the operation to ensure that the equipment and personnel were in country and prepared for the execution.

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<th>CHALLENGE</th>
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<td>Provide a single-trip wellbore cleanout system that was capable of drilling cement, along with the shoetrack, and reaming while still providing an effective wellbore cleanout trip.</td>
<td>CleanWell® system’s single-trip cleanout tools to mechanically clean the required sections of the casing and riser during the displacement from drilling mud to brine.</td>
<td>Halliburton successfully deployed the CleanWell tools as well as conducted a successful displacement from oil-based drilling mud to completion brine. As a result, Halliburton saved the operator a tremendous amount of rig time with zero safety incidents and zero NPT.</td>
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CASE STUDY Successful displacement from oil-based drilling mud to completion brine

Pre-planning included:

- Extensive planning and well modeling (torque and drag and fluid hydraulics to simulate the bucking and lock up of string during running and functioning specific to the well design)

- Hydraulic modeling to ensure turbulent flow / velocities for the available pump pressure

- Hydraulic modeling to predict pressure profiles when displacing from drilling mud to inhibited brine with 18% MEG

Results

Halliburton successfully deployed the CleanWell tools as well as conducted a successful displacement from oil-based drilling mud to completion brine. Halliburton was able to save the operator a tremendous amount of rig time with zero safety incidents and zero NPT. The single-trip operation was completed with the efficient jetting of the blowout preventer (BOP) and recovery of dislodged debris totaling approximately 163 lbs (74 kgs).

- Vali Tech® downhole mechanical filters validated the cleanliness of the wellbore and captured the debris that could not be hydraulically circulated to surface, as well as debris that was dislodged from cavities during the BOP jetting operation

- CleanWell bottomhole assembly allowed the casing and liner sections to be scraped clean of all mud residues and the Mag Tech® riser magnet was utilized to recover any ferrous materials from the wellbore