CASE STUDY

First Global Deployment of an Offline Plug Container

SUCCESSFUL INNOVATION LEADS TO STANDARDIZED ENGINEERING SOLUTION FOR OFFLINE CEMENTING OPERATIONS

ARGENTINA

OVERVIEW

Innovative zonal isolation techniques are ever-evolving as operators seek to increase efficiency and reduce flat time between drilling operations. Offline cementing—defined as services performed outside the critical path while enabling the rig to simultaneously continue other drilling activities—is an example of this continued advancement.

Deployment of the first plug container designed for offline operations for an operator in Argentina led to the standardization of this novel offline cementing technique, with more than 100 successful operations performed to date.

CHALLENGES

- Eliminate leakage related to rig up of a conventional plug container to a hand-tight crossover
- Achieve quick, safe, and reliable installation
- Design a cement head with long enough chambers to store extended length wiper plugs

SOLUTIONS

- Leading design of plug container suitable for offline operations
- Innovative offline plug container designed with flange API 6A 7 1/16-in. BX-156 connection to production wellhead, rated to 10,000 psi
- Double the Lo Torc® flanged valves in the manifold to achieve a second barrier at the surface
- Plug chamber designed to load up to 20-in. long wiper plugs for unconventional cementing operations

RESULTS

- Zero NPT during rigup
- Eliminated HSE issues
- Increased well barrier integrity by loading extended length plugs before connection
- Completed more than 100 successful operations of this type to date

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CASE STUDY

CHALLENGES

An operator in Argentina tasked Halliburton with designing and deploying an offline cement head while mobilization and rig-up operations were simultaneously performed a few meters away on the same well pad. Traditional offline cementing techniques involved a conventional plug container and a crossover made up to the casing collar above the wellhead to house and release wiper plugs and displace cementing fluid down the casing string.

Because this operation is performed offline with a lack of rig resources, the makeup of the crossover is normally tightened using hand tools, resulting in a connection prone to leakage as casing internal pressure increases. This leakage can lead to poor cement placement, risking effective isolation, and requiring increased operational time to address the leaking connection.

The operator desired a cement head compatible with the flange connection on the completion stack (API 6A 7 1/16-in. BX-156) with long enough chambers to house extended-length wiper plugs for use on 5-in. casing extending 5784 m MD with 93° deviation.

SOLUTIONS

Halliburton designed a unique offline plug container that connects directly to the well head. This solution reduced the three to six hours of rig-up time typically necessary by incorporating an API 6A flange end with pressure sealing rated up to 10,000 psi and plug chambers to load up to a 20-in. long wiper plug. This novel flanged connection enabled plug container installation with required torque specifications, helping ensure pressure integrity and reducing the likelihood of leakage commonly encountered with previous methods.

RESULTS

The operation was performed with zero HSE or SQ incidents. Plug container rig up and installation were completed within 30 minutes. The top wiper plug was loaded into the cement head, and all surface equipment, including the plug container, were successfully pressure tested to 8,500 psi on the first attempt.

After four hours of prejob circulation, 70 bbl of Tuned® Prime™ cement spacer was pumped followed by 172 bbl of cement slurry. The top plug was released from the plug container and cementing fluid was displaced per schedule to land the top plug. A successful casing pressure test was performed with 5,200 psi at the surface.

To date, Halliburton has performed more than 100 successful operations using this new offline plug container design. Because of these operational successes, the operator implemented this new approach as part of their standard operating procedure.

For more information, contact your Halliburton representative or visit us at halliburton.com

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