CASE STUDY

HALLIBURTON

Europe

Continuous circulation system enables record-depth drilling with improved hole cleaning and pressure management

e-cd™ device maintains uninterrupted fluid flow and improves wellbore stability during drillpipe connections

CHALLENGE

- Narrow pressure window
- Extended-reach hole cleaning
- Static-phase instability

SOLUTION

- Deployed e-cd™ continuous circulation system
- Enabled drillpipe connections without stopping flow
- Improved cuttings transport

RESULT

- Reached 23,314 ft (7,106 m) total depth
- Completed 1,694 drillpipe connections
- Achieved 3,713 circulating hours
- Maintained wellbore stability
- Reduced nonproductive time

Overview

Halliburton deployed the e-cd™ continuous circulation system (CCS) to drill the deepest well ever completed with this technology at 23,314 ft (7,106 m). The operation required precise pressure management, improved hole cleaning, and uninterrupted drilling fluid circulation.

To meet these requirements, Halliburton implemented the e-cd™ CCS. The system improved bottomhole pressure (BHP) management, improved cuttings transport, and reduced the risk of wellbore instability throughout the operation.

Challenge to keep the wellbore integrity

The e-cd™ CCS is an Eni-patented system offered by Halliburton as a simple solution for managed pressure drilling (MPD) operations. Its integration served as a critical component of the technical strategy and contributed to the successful completion of this record-depth well.

Challenge

The operator faced challenges with wellbore integrity while drilling extended-reach sections. Efficient cuttings transport and precise BHP control proved essential due to tight pore and fracture pressure margins. Static phases such as connections, tripping, and liner runs increased the risk of washouts and instability.

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Solution

Halliburton deployed the e-cd™ CCS to maintain continuous drilling fluid circulation during drill pipe connections. The system enabled uninterrupted flow through the drillstring and allowed rig pumps to remain active while adding or removing pipe.

This approach improved the wellbore stability. It also helped facilitate hole cleaning and suitable cuttings removal capability. These improvements helped avoid accumulations that may cause stuck pipe incidents, circulation losses, and malfunctions or failures of downhole tools. The study notes that the application of continuous circulation leads to improved safety and wellbore quality and mitigates NPT. It also provides time and cost savings benefits.

Result

The operator drilled to 23,314 ft (7,106 m) measured depth using the e-cd™ CCS. The system supported 181 continuous operational days, 165 standby days, 3,713 circulating hours, and 1,694 drill pipe connections. These outcomes improved pressure management, reduced nonproductive time, and preserved wellbore stability throughout the operation.

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