CASE STUDY

HALLIBURTON

Mexico

Continuous circulation system eliminates stuck pipe and improves drilling efficiency in Mexico

CCS deployment in an onshore field eliminates stuck pipe, stabilizes drilling, and sets new operational benchmark

CHALLENGE

- Formation instability
- High stuck pipe risk
- Poor hole cleaning
- Problematic tripping operations

SOLUTION

e-cd™ continuous circulation system (CCS) that includes:

- CCS manifold
- 31 CCS 7-in. XT57 subs

RESULT

- Eliminated stuck-pipe events
- Improved hole cleaning
- Maintained circulation during top-drive failures
- Completed 54 successful CCS connections
- Achieved stable equivalent circulating density (ECD) during drilling and tripping

Overview

In Tabasco, Mexico, formation instability has long challenged drilling operations. Historically, 80% of nonproductive time (NPT) in shallow formations has been attributed to the instability and brittle nature of Pleistocene-aged zones, particularly in the 18 ½-in. and 17 ½-in. hole sections. The most frequent operational issue is stuck pipe, with 60% of incidents occurring during tripping operations.

To mitigate risk in the 12 ½-in. section (3,220 to 4,070 m), the operator deployed e-cd™ continuous circulation system (CCS) for the first time in Mexico's onshore operations. The e-cd™ CCS maintains constant equivalent circulating density (ECD) and enables continuous hole cleaning during connections and tripping. This advanced technology helped prevent pressure fluctuations, eliminate stuck-pipe events, and improve hole cleaning, resulting in safer, more efficient operations.

Challenge

This onshore field's shallow formations are known for instability, with frequent stuck-pipe incidents during tripping operations. The well experienced an exceptionally high stuck-pipe risk in the 12 ½-in. section. This risk required a solution that could maintain wellbore stability and reduce NPT.

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Solution

Halliburton deployed its CCS technology to maintain constant circulation, stabilize downhole conditions, and reduce the risk of stuck pipe. The system allows rig pumps to remain active while adding or removing drillpipe, helping to prevent pressure fluctuations and maintain consistent ECD.

For this operation, 31 CCS 7-in. subs were preinstalled at the top of the drill pipe stands required for drilling the next openhole section. The number of subs used was determined by the section length to be drilled. This setup facilitates continuous circulation and improved operational efficiency throughout the drilling process.

Result

Halliburton's CCS, featuring the e-cd™ system, enabled uninterrupted mud pump flow during drill pipe connections and maintained constant ECD throughout the operation. The technology eliminated stuck-pipe incidents, improved hole cleaning, and allowed circulation to continue during top-drive failures. The operator completed 54 successful CCS connections and avoided health, safety, environmental, or service quality events. Based on these results, the operator chose to implement e-cd™ CCS in subsequent wells in the campaign.

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