

DiamondBack Reamer and VariForm® Centralizers Enable Setting of 7-in. Liner Through Weak Formation to Save Millions in a Challenging North Sea Well

Objectives

- Run the liner to total depth.
- Rotate the liner through tight spots and packoff zones through coal intervals.
- Rotate the liner during the cement job.

Our Approach

- Weatherford liner and cementing specialists met with the operator to review plans to run a 7-in. liner to total depth (TD) in a deviated well. The operator anticipated tight spots, and was concerned that weak interbedded coal seams in the Ness formation might prevent the liner from reaching TD.
- The Weatherford team recommended a premium liner hanger system with an ultra-high-torque running tool in combination with a DiamondBack reamer shoe to get to bottom. The team also recommended one-piece VariForm centralizers to provide proper standoff during the cementing operation.
- A Weatherford crew and equipment were dispatched to the rig. The crew made up a 7-in. shoe track with reamer shoe and float collar, and ran in the hole with the liner, liner hanger, and ultra-high-torque running tool.
- Below the casing shoe, the coal seams packed off around the liner, so the operator circulated and reamed from 14,131 to 16,460 ft (4,307 to 5,017 m) to reach bottom.
- Although the packoff prevented rotation during cementing, the crew was able to cement the liner successfully and test the liner top with positive results.

Value to Customer

- The DiamondBack reamer shoe and ultra-high-torque running tool, rated to 50,000 ft-lb (67,790 N·m), facilitated rotating, which enabled the operator to ream past tight spots as they ran the liner to TD.
- By running the liner to TD on the first trip, the operator was able to avoid pulling the liner and reconditioning the hole to rerun the liner, thus saving a day or more of rig time. Had the rerun attempt failed, the operator planned to drill a 6-in. hole, then run 4 1/2-in. liner. By successfully running and cementing the 7-in. liner, the operator was able to avoid the contingency drilling plan and save millions of dollars.



7 × 8-in. DiamondBack reamer shoe (upper left), 7 × 8 1/2-in. VariForm centralizers (lower left), and 7 × 9 5/8-in. liner hanger with ultra-high-torque running tool (right) All were key to delivering a successful liner job.

LOCATION

North Sea, Offshore Norway

WELL TYPE

Oil producer

FORMATION

Middle Jurassic Ness sandstone

HOLE SIZE AND ANGLE

8 1/2-in. open hole
89.5° @ 16,470 ft (5,020 m) MD

CASING SHOE

9 5/8-in. @ 12,630 ft (3,850 m) MD

CASING SIZE AND TYPE

9 5/8-in. 53.5 lb/ft, P110 VAM® 21 CWD

LINER SIZE AND TYPE

7-in. VAM HTTC , 29 lb/ft, L-80 13Cr

TOTAL DEPTH

16,470 ft (5,020 m) MD

PRESSURE

Pore Pressure: 1.14 SG
Mud Weight 1.3 SG

PRODUCTS/SERVICES

- Cementing and Liner Hanger services
- R-type running tool
- Floating tool extension
- Polished bore receptacle
- Packer
- Liner hanger
- VariForm centralizers
- DiamondBack reamer shoe



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