Weatherford and Ardyne Technologies

Deliver Innovative Casing-Recovery Solution for Fewer POB, Less CO_2 Emissions, More Efficiency

Objectives

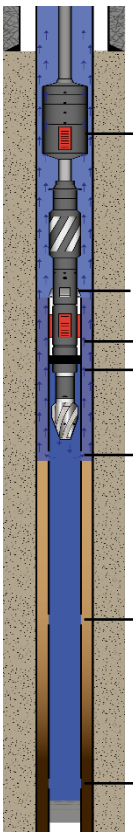
- Cut and recover 9 5/8-in. casing to the surface to enable setting a 13 3/8-in. whipstock for a casing exit. A high likelihood of gas in the annulus made an innovative solution necessary before jacking free and recovering the casing from the well.

Our Approach

- Weatherford and Ardyne collaborated to create an unprecedented casing-recovery solution with leading technologies from each of their portfolios. The solution included casing-cutting and jacking technology from Ardyne as well as the shallow-angle QuickCut™ casing-exit system and AccuView® real-time remote support system from Weatherford. Because of potential gas in the annulus, Ardyne also proposed running its DownHole Power Tool (DHPT) and FRM Spear with a packoff to allow circulation on the backside. This operation marked the first time in the world running this combination of Ardyne tools in the bottomhole assembly (BHA).
- Before deploying their technologies, both companies crosstrained one crew member from the other service provider on its technology. The same highly competent, multiskilled personnel on board (POB) executed the entire project.
- First, Ardyne and then Weatherford deployed their respective technologies.
- After circulating the annulus without seeing gas at the surface, personnel jacked free three sections of approximately 1,640 ft (500 m) of casing. The solution enabled completing circulation and jacking in a single trip.
  - Section 1 required 35 activations, an operating pressure of 2,611 psi (180 bar), and force of 346,000 kg (346 tonnes) to free.
  - Section 2 required 32 activations, an operating pressure of 3,481 psi (240 bar), and force of 458,000 kg (458 tonnes) to free.
  - Section 3 required 85 activations, an operating pressure of 4,496 psi (310 bar), and force of 594,000 kg (594 tonnes) to free.
- Personnel set the QuickCut system at a depth of 9,524 ft (2,903 m). The system provided a high-quality window, and the AccuView system provided real-time remote onshore monitoring.

Value to Customer

- Collaboration between Weatherford and Ardyne resulted in an innovative solution with world-class technologies that delivered the casing exit in a single trip. Compared to conventional methods, the solution reduced POB by 2 crew members and saved 27 hr of rig time for a 29% efficiency improvement and 47,000-kg (47-tonnes) CO_2 emission reduction.



The single-trip casing-recovery operation used a collaborative solution with technologies from two companies to make four cuts.

LOCATION
Norway

WELL TYPE
Offshore, oil

CASING SIZE AND TYPE
9-5/8 in.

DEPTH OF WHIPSTOCK
9,524 ft (2,903 m)

PROJECT EFFICIENCIES
- 27 hr
- 54 Mwh
- 4,755 gal (18,000 L) of diesel
- 47,000 kg (47 tonnes) of CO_2

PRODUCTS/SERVICES
Weatherford
- Shallow-angle QuickCut casing-exit system
- AccuView real-time remote support system

Ardyne
- DHPT
- FRM Spear

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