QuickCut™ Casing-Exit Systems in Expandable-Liner Assemblies Provide One-Trip Multilateral Solution

Objectives

- Convert existing wells into multilateral wells to establish maximum reservoir contact and minimize the risk of early gas breakthrough.
- Avoid the use of slimhole drilling assemblies when drilling the new lateral wellbores to improve drilling efficiency and accommodate larger liner sizes.

Our Approach

- The operator decided to use Weatherford QuickCut casing-exit systems and an openhole expandable liner system to create multilaterals categorized as Level 2 by the Technical Advancement of Multilaterals (TAML) group.
- The Weatherford team used the shallow-angle QuickCut casing-exit system to sidetrack from above the existing watered-out wellbore, and then they horizontally drilled a 6.125-in. open hole to the target zone.
- An expandable liner system was run and tied back into the original 7-in. parent bore. The liner was then cemented and expanded both in the open hole and across the casing-exit window.
- The team deployed the QuickCut casing-exit system and retrievable whipstock packer into the expandable liner. They ran the entire system in a single trip and set it hydraulically, which eliminated the need to set a bridge plug at the junction point beforehand.
- The retrievable packer portion provided an anchoring point for the whipstock and isolated the lower production zones from harmful fluids and pressures during lateral wellbore construction operations.
- The team milled multiple windows from the expandable liner using the QuickCut casing-exit system. From these windows, they drilled 5.5-in. openhole laterals into the reservoir. As many as five window junctions and laterals were created in the expandable liner of a single wellbore.
- The team retrieved the complete QuickCut whipstock assembly using the primary recovery method, the QuickCut retrieval hook, and then achieved full-bore access and production from the lower wellbores.
- To date, 30 casing exits in 14 separate wells have been created in the horizontal expandable liner sections. The whipstock installation and recovery operations have been 100% successful across all 14 wells.

The Weatherford retrievable whipstock assembly (center) includes an ISO V3-rated retrievable packer for isolation and a 3° concave for deflecting the QuickCut milling assembly through the casing wall.

LOCATION
Saudi Arabia

WELL TYPE
Onshore, oil, multilateral

EXPANDABLE LINER SIZE
- Pre-expansion ID: 5.5 × 7 in.
- Post-expansion ID: 5.622 in.

CASING-EXIT DEPTHS
6,000 to 8,000 ft (1,829 to 2,438 m)

HOLE ANGLE AT CASING DEPTHS
90° horizontal

AVERAGE WINDOW MILLING TIME
2 hours

PRODUCTS/SERVICES
- QuickCut casing-exit system
- Shallow-angle QuickCut casing-exit system
- RHS (retrievable, hydraulic, sealing) packer anchor

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Value to Client

- With one-trip capabilities, the Weatherford QuickCut casing-exit systems reduced the time spent re-entering and converting the wells into multilaterals and, in turn, the associated risk for health, safety, and environmental incidents.
- The QuickCut casing-exit system provided quick milling speeds. Weatherford has milled all windows to date in one trip, with recent milling jobs averaging less than 2 hours.