VariForm® Centralizer Sub Enables Liner Setting in Highly Deviated GOM Well

Objectives

- Run an 11 7/8- x 11 3/4-in. liner string to a setting depth of 12,147 ft (3,702 m) in a 63° hole with a 12 1/4-in. drift. Minimize drag while running the liner.
- Maintain a minimum standoff of 70% to comply with local government requirements.
- Design a centralizer sub that can rotate with the liner during run-in.

Our Approach

- Weatherford designed, built, and tested custom VariForm centralizer subs based on the well geometry. First, the team performed preliminary centralizer modeling using CentraPro Plus® software and directional plans provided by the client. The software simulated how the tools would be run into the open hole, and testing confirmed that they met API 10D standards.
- Weatherford personnel was on site to run the liner string that included the centralizer subs.
- The centralizer subs landed at the setting depth and restored the bows to the full outer diameter (OD) to provide the necessary standoff.
- After Weatherford finished drilling out the shoe track of the liner, the operator tested the well to 13.5 lb/gal (1,618 kg/m^3) equivalent mud weight and recorded zero leak-off.

Value to Client

- The bow-spring profile of the VariForm centralizer subs enabled the operator to run the liner through an ultra-tight casing clearance with minimal axial drag.
- Once expanded at setting depth, the centralizer subs maintained at least 70% standoff, which demonstrated compliance.
- By centralizing the liner within the hole, the centralizer subs enhanced the quality of the cementing job and promoted life-of-well integrity.
- The leak-off test data confirmed cement integrity, which eliminated the need for an expensive cement squeeze and enabled the operator to drill the next hole section without any remedial cementing work.
- By establishing well integrity, the liner-installation operation reduced the risk of blowouts; production losses; and other threats to quality, health, safety, security, and the environment.
- The completion design eliminated the need for casing connection crossovers, which reduced the amount of equipment and the overall operational costs.

The curved bow-spring profile of the VariForm centralizer sub enables it to run in close-tolerance restrictions while maintaining adequate standoff.

LOCATION
Mississippi Canyon, Gulf of Mexico

WELL TYPE
Deepwater

FORMATION
Mars-Ursa Basin

HOLE SIZE AND ANGLE
14-3/4 in., 63°

PREVIOUS CASING TYPE AND SIZE
14 in., 115 lb/ft

LINER TYPE AND SIZE
- 11-7/8 in., 71.8 lb/ft
- 11-3/4 in., 65 lb/ft

SETTING DEPTH
12,147 ft (3,702 m)

TOTAL DEPTH
19,945 ft (6,079 m)

PRODUCTS/SERVICES
- VariForm centralizer sub
- Big Advantage remote-control top-drive cementing head
- Subsurface-release large-bore plug
- Rathole Killer® circulating sub
- Tubular Running Services

Weatherford®