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/m3) 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.

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