Integrated Completion Solution Saves 27+ Hours of Deepwater Rig Time in Santos Basin, Offshore Brazil

Objectives

- Efficiently install downhole equipment to complete a deepwater well. To produce this well, the operator required a lower completion with a high-rate pumping capacity, an upper completion with dual production safety barriers, and a V0-rated interventionless-setting production packer for effective annular isolation.

Our Approach

- Weatherford completion experts met with the operator to review requirements for installing completions equipment and conducting an acid treatment to stimulate oil production from a carbonate formation in a deepwater well.
- At their workshop, Weatherford technicians designed and fabricated a splice sub to facilitate preparation and testing of tubing-hanger hydraulic and electric lines before shipment to the rig.
- Weatherford later dispatched a crew to the well and installed the lower completion with an RFID Optibarrier™ ball valve in combination with a WFX0 retrievable sealbore packer to provide fully testable zonal isolation. This configuration facilitated the required pump rate for acid treatment of up to 30 bbl/min. The RFID Optibarrier valve, set at 18,400 ft (5,608 m) MD, surpassed previous setting depths for this valve.
- For the upper completion, the crew installed the OptiPkr™ hydrostatic-set production packer to deliver a V0-rated, gas-tight seal between the outside of the production tubing and the inside of the casing.
- The Weatherford crew also set an Optimax™ ultra deep-set safety valve at 9,700 ft (2,957 m), which marked the first such installation in a deepwater well.
- The crew achieved another deepwater first with the installation of an OptiValve™ bidirectional isolation barrier ball valve, set at 7,250 ft (2,210 m).
- The RFID Optibarrier valve was closed and successfully pressure tested following the acid treatment. It was subsequently opened using a custom pressure algorithm sent from a remotely operated vehicle (ROV).

Value to Customer

- Weatherford developed an integrated completion solution that enabled crews to efficiently install the downhole equipment, which saved 27.5 hours of deepwater rig time.
- The RFID Optibarrier valve took approximately 2.5 hours to fully open to access the formation. Compared to competitor valves, which could take 12 hours to open, the Weatherford valve saved at least 9.5 hours.
- The splice sub enabled the tubing hanger assembly to be rigged up and tested in the workshop, which saved at least 6 hours of rig time.
- The OptiValve tubing isolation valve facilitated production tree installation without requiring slickline intervention, which saved 12 hours of rig time.

A Weatherford crew recorded a number of deepwater firsts while installing downhole completion equipment at this Santos Basin well.

LOCATION
Santos Basin, Offshore Brazil

WELL TYPE
Deepwater oil producer

FORMATION
Carbonate

HOLE SIZES
- 14-3/4 in. diameter to 18,511 ft (5,642 m)
- 8-1/2 in. diameter to 19,350 ft (5,898 m)

MAXIMUM INCLINATION
42.5°

CASING SIZES
- 10-3/4 in., 85.3 lb/ft
- 10-3/4 in., 109 lb/ft

TEMPERATURE
158 to 176°F (70 to 80°C)

MAXIMUM PRESSURE
6,640 psi (45.78 MPa)

PRODUCTS/SERVICES
- Tubing hanger splice and hanging sub
- OptiValve hydraulic tubing isolation valve
- Optimax ultra deep-set safety valve
- SBRO series gas-lift mandrel
- SBRO-CI chemical-injection mandrels
- OptiPkr production packer
- Shearable no-go centralizer with self-aligning mule shoe
- WFX0 seal bore packer
- RFID Optibarrier ball valve
- Inverted seal subs

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