



# Weatherford®

## REAL RESULTS

### Milling Tools Enable Operator To Remove Obstruction, Save \$500,000 of NPT in Offshore Well

#### Objectives

- Remove a setting ball to release pressure and retrieve downhole tools. A 1.875-in. stainless steel ball dropped to set a liner hanger had caused a pressure lock that prevented the operator from recovering the running tool and 5.5-in. drillpipe. This resulted from the operator's use of fluids with high solids content that increased friction and pressures.

#### Results

- Surface testing using water and 124-lb/ft<sup>3</sup> (1,989-kg/m<sup>3</sup>) mud established the needed coiled-tubing (CT) frictional pressure for the motor to function downhole.
- Weatherford deployed the 1 11/16-in. high-performance CTD positive-displacement motor with a 1.7-in. outside diameter (OD) MillSmart™ mill to equalize the pressure across the ball.
- On the first run, the tools milled the ball from 11,603.8 ft (3,536.8 m) down to 11,605.3 ft (3,537.3 m).
- The motors did not stall regardless of weight on bit; however, the tools made no further progress. Presumably, the tools stopped working correctly after the hydraulics below the bit pushed upward on them because of the close tolerance between the bit and the inside diameter of the seat.
- On the second run, a 1.7-in. OD bit cleared the hole, and the tools ran 20 ft (6 m) below the end of the ball seat.
- The tools milled the setting ball without complications. This enabled the operator to release the running tool with no overpull and return it to the surface.

#### Value to Client

- The high-performance CTD motor and MillSmart technology operated in heavy mud and high solid levels to enable milling that saved the operator 2 days of offshore nonproductive time (NPT), worth approximately US \$500,000.

The CTD positive-displacement motor has unique high-torque power sections that minimize stalls, save time, and enable the operator to focus on other aspects of the operation.

#### Location

Saudi Arabia

#### Well Type

Offshore, gas

#### Liner

7 x 4 1/2 in., 13.5 lb/ft

#### Minimum Restriction

1.795-in. ball seat

#### Maximum Bottomhole Temperature

242°F (117°C)

#### Depth to Milling Obstruction

11,603.8 ft (3,536.8 m)

#### Deviation

42°

#### Fluids and Solids Content

- Mud: 124 lb/ft<sup>3</sup> (1,989 kg/m<sup>3</sup>)
- Solids: 43%

#### Products/Services

- Thru-tubing services
- 1 11/16-in. CTD motor
- MillSmart technology



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