

# DwC System with Defyer® DPA Bit Sets Casing at TD, Saves 1 Day of Rig Time in Unstable Formation

## Objectives

- Simultaneously drill and case a vertical 1,634-ft (498-m) well section to total depth (TD) in a formation with wellbore stability issues. In an offset well, the operator had experienced problems with fluid losses and hole cleaning.

## Our Approach

- Weatherford proposed drilling-with-casing (DwC) techniques to simultaneously drill and case the well, reduce fluid losses, and improve hole cleaning. DwC techniques plaster drilled cuttings to the borehole wall and create an impenetrable mud cake that can minimize or stop fluid losses. The techniques also result in a smaller annulus that can double the wellbore fluid velocity and improve hole cleaning compared to conventional drilling methods.
- The Weatherford team deployed a DwC system with a 22-in.-OD Defyer DPA drillable casing bit and the DwC internal casing drive tool. The team also used conventional tubular-running equipment, including a power tong, power unit, single-joint elevator, and hand slips.
- The partial and total loss zones were drilled with a weight on bit from 2,000 to 11,000 lb (1 to 5 tonnes), rpm from 40 to 60, flow rates from 300 to 750 gal/min (1,136 to 2,839 L/min), and pressures from 35 to 763 psi (241 to 5,261 kPa).
- The casing remained near or on bottom during drilling to keep the problematic zones behind the pipe until reaching the desired section depth at 1,680 ft (512 m).
- A multishot gyro was run at the end of the section to determine the verticality of the well. The build rate progressed from 0° at 46 ft (14.0 m) to 4° at 1,655 ft (504.4 m), which met the client's approval.
- The shoe track was drilled out on a separate run using a milled-tooth bit.
- The job was completed with no personnel injuries or operational incidents.

## Value to Client

- The DwC system enabled the client to drill through problematic loss zones, reach the planned depth, and case off the entire well section 1 day ahead of the drilling schedule.



The Weatherford DwC system with the Defyer DPA drillable casing bit reduced well-construction time by simultaneously drilling and casing a 1,634-ft (498-m) section in one trip.

### CLIENT

Total E&P PNG Limited

### LOCATION

Papua New Guinea

### WELL TYPE

Onshore, appraisal, gas condensate

### FORMATIONS

Era Bed and Upper Orubadi

### HOLE SIZE

22 in.

### CASING SIZE AND TYPE

18 5/8-in., 87.5-lb/ft K55 with BTC connection and torque rings

### BIT TYPE AND SIZE

Defyer DPA 8619X, 18 5/8-in. casing × 22-in. bit OD

### DRILLING INTERVAL LENGTH

1,634 ft (498 m)

### SETTING DEPTH

1,680 ft (512 m)

### PRODUCTS/SERVICES

- Defyer DPA 8619X
- DwC internal casing drive tool (ICDT)
- Power tong
- Power unit
- Single-joint elevator (SJE)
- Hand slips



\* Total Depth and Defyer are registered trademarks of Weatherford in the US.