

Managed Pressure Drilling Saves \$18 Million in Challenging Deepwater Clastic Formation



Using a Weatherford MPD system built to specific requirements for the clastic formation, the customer improved drilling efficiency and achieved the desired target depth.

Objectives

- Design a managed pressure drilling (MPD) system for a multiwell campaign.
- Drill through a clastic formation with a narrow mud-weight window while safely diverting gas to reach the target depth.
- Increase operational efficiency by using a mud weight less than the pore-pressure gradient during drilling and a bottomhole pressure higher than the equivalent circulating density (ECD) during connections.

Our Approach

- Weatherford engineered and installed an MPD system on a moored, deepwater rig.
- The MPD system left existing flowlines intact and allowed reverting to conventional methods.
- The MPD control system enabled efficient drilling with a synthetic-based mud (SBM) weighing 8.5 lb/gal (1,019 kg/m³), which was less than the pore-pressure gradient. The system used surface backpressure to maintain a bottomhole pressure higher than the ECD of 0.2 lb/gal (24 kg/m³) during connection makeup, which helped avert influxes.
- Compared to a diverter, the RCD and MPD manifold enhanced safety when managing riser gas by immediately detecting and subsequently exerting pressure and processing the gas in a controlled manner. This capability is not available with conventional diverter systems.

LOCATION

Indonesia

WELL TYPE

Offshore, deepwater

FORMATION

Clastic

WATER DEPTH

7,500 ft (2,286 m) approximately

TARGET DEPTH

20,000 ft (6,096 m) approximately

PRODUCTS/SERVICES

- Managed pressure drilling
- MPD rig integration
- MPD control system
- SeaShield® Model 7875 below-tension-ring (BTR) RCD



Managed Pressure Drilling Saves \$18 Million in Challenging Deepwater Clastic Formation

Our Approach (continued)

- When ballooning was encountered during drilling, the MPD seal mimicked the closure of subsea blowout preventers used in the Gulf of Mexico to eliminate the risk of wear.
- The planned depth was reached at approximately 20,000 ft (6,096 m).

Value to Customer

- Installing MPD on the first well in the campaign saved 5 days and reduced drilling costs by approximately US \$18 million compared to the authorized amount.
- MPD helped the customer navigate narrow mud-weight windows, maintain control of gas influxes, and reach the target depth according to the planned casing program, which would have been impossible using conventional methods.

