

Tandem DDV[®] System Enables Underbalanced Drilling With Zero NPT in Fractured Carbonates

Objectives

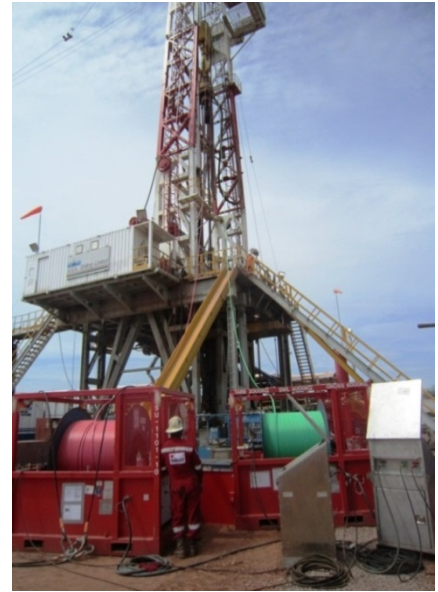
- Drill an 889-ft (271-m) section in underbalanced conditions through a fractured carbonate reservoir.
- Prevent fluid losses, avoid formation damage, and establish reservoir characteristics.
- Determine the maximum flow rate for the producing formation and acquire quality pressure data and formation fluid samples to optimize reservoir management.

Our Approach

- The fractured nature of the reservoir precluded conventional drilling; therefore, Weatherford adjusted operating parameters using underbalanced drilling (UBD) technology to create UBD conditions.
- The Weatherford team deployed two downhole deployment valve (DDV) systems in tandem to isolate the well in underbalanced conditions when needed and to minimize formation damage.
- The team drilled in UBD mode for 889 ft (271 m) until reaching total depth (TD). After penetrating the gas zone, the team used single-phase drilling fluid and production gas and collected formation and fluid samples to determine reservoir dynamics and production potential.
- Using the same UBD package, the team conducted isochronal testing for better information about reservoir performance.
- The tandem DDVs provided dependable pressure control throughout the well. As a result, the team performed safe, efficient tripping operations without killing the well during trips for drilling, logging, and running the lower completion.
- The Weatherford Compact™ well shuttle (CWS) messenger system—designed for the safe conveyance and transportation of logging tools in underbalanced formations—enabled the transmission of real-time data without interrupting the well flow.

Value to Client

- The tandem DDVs enabled the operator to penetrate the producing formation using UBD techniques without nonproductive time (NPT), fluid losses, formation damage, or health, safety, and environmental (HSE) issues.



The tandem Weatherford DDV system provided an alternative to conventional tripping techniques that enhanced safety, increased efficiency, and eliminated formation damage.

LOCATION

Thailand

WELL TYPE

Onshore, deviated, gas

HOLE SIZE

6 in.

SECTION LENGTH

889 ft (271 m)

PRODUCTS/SERVICES

- Underbalanced drilling
- Downhole deployment valve
- Compact well shuttle messenger
- UBD choke manifold
- Four-phase vertical separator
- 120-ft (37-m) flare stack
- SafeShield[®] Model 7100 rotating control device



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