

@balance Family of Services Automates Drilling Control, Saves 10 Rig Days and USD 20 Million

Managed pressure drilling delivers extended-reach well with 0.4-ppg operating window in highly fractured carbonate formation, offshore Venezuela

CHALLENGE

Ensure well control while drilling an extended-reach well through a heterogeneous carbonate reservoir with an operating window of just 0.4 ppg.

SOLUTION

Use the @balance family of managed pressure and underbalanced drilling services to automate bottomhole pressure control while drilling, tripping, and running liner.

RESULTS

- Saved 10 rig days and more than USD 20 million.
- Delivered more than 2,300 ft of open reservoir with liner in place.
- Managed influx and loss events with no incidents or NPT.



Drill extended-reach well through pressure-sensitive formation

Complex fracture and fault networks in a carbonate reservoir off the coast of Venezuela contributed to numerous drilling risks, including severe fluid losses, high equivalent circulating density (ECD) along the horizontal section, differential sticking, packoff, and poor hole cleaning. With a narrow operating window of just 0.4 ppg due to close pore and fracture gradients, the operator needed to maintain precise control of bottomhole conditions without sacrificing safety or drilling efficiency.

Provide real-time, automated pressure control

M-I SWACO deployed dedicated engineers to the customer office and wellsite to finalize the managed pressure drilling engineering processes, design, training, and procedures. The team proposed using the @balance family of managed pressure and underbalanced drilling services, which features an early kick-detection system, an automated choke manifold, an integrated backpressure pump, a mud-gas separator, and proprietary software to identify annular pressure while drilling. This advanced system enabled the

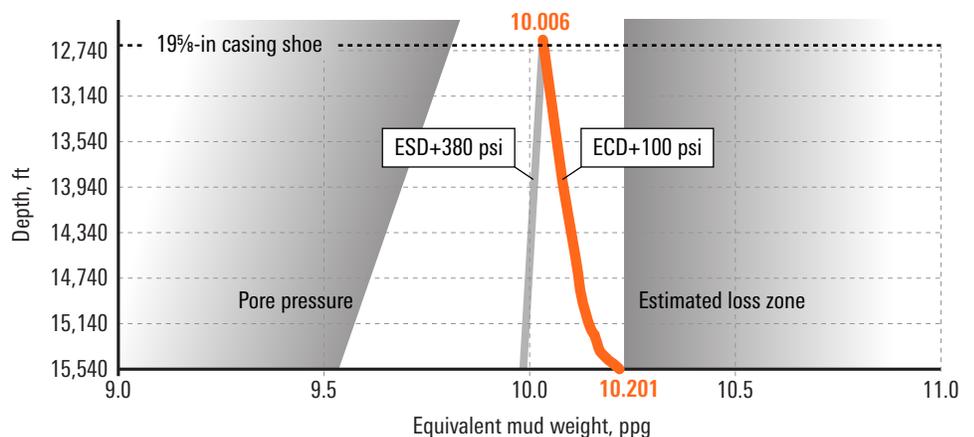


M-I SWACO engineers on the rig during the drilling operation.

operator to quickly detect and respond to changing conditions, ensuring constant bottomhole pressure control despite influxes or losses.

Successfully delivered complex well 10 days faster compared with offset

Using the @balance family of services with 0.6-ppg static underbalanced drilling fluid, M-I SWACO delivered more than 2,300 ft of open reservoir with liner in place—with no NPT caused by influxes or losses. Managed pressure drilling minimized risk and enhanced efficiency during drilling and completions, saving the operator a total of 10 rig days valued at more than USD 20 million.



The @balance family of services enabled the equivalent circulating density to be held within a narrow 0.4-ppg operating window throughout the complex drilling operation.

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Dynamic Pressure Management