

# eVolve Optimization Service increases ROP and extends interval in ultradeepwater GOM project

## Innovation in action

A client operating in the Gulf of Mexico (GOM) needed to optimize a challenging ultradeepwater project. The eVolve team worked with the client to identify the drilling program changes necessary to improve performance using a combination of our products, software, and drilling dynamics expertise.

We used a combination of several BlackBox tools to analyze the drilling operation and dynamics data, allowing us to determine optimum parameters, including the addition and placement of the V-Stab tool to dampen random shocks and minimize stick-slip. After implementing our changes, the client was able to reduce NPT, drill a longer interval at higher ROP, and reduce damage to the bits, saving USD 5.5 million versus the benchmark.

- Eliminated three twistoffs, three fishing jobs, and two bit trips, significantly reducing NPT
- Increased the drilling interval by 27% (from 3,115 to 3,950 ft) at a 43% higher ROP (13.8 to 19.1 ft/hr)
- Reduced damage to bit/reamer from 6-8 to 1-1

## Technology

NOV's innovative eVolve™ Optimization Service delivers complete, integrated drilling technologies to solve our clients' complex drilling problems. The eVolve team delivered a solution from the ADVISE tier, a data-driven optimization service incorporating our BlackBox™ memory-mode logging tools, to optimize the client's drilling operation and increase performance.

## Performance

After drilling the 12¼ x 13½-in. interval with significant nonproductive time (NPT) on the first exploratory well, the client asked us to help redesign the drillstring above the required MWD/LWD components in an effort to mitigate risk and improve drilling performance. A combination of BlackBox Eclipse and BlackBox HD tools were run at the bit and multiple locations in the bottomhole assembly to record vibration, enabling more thorough optimization.

## Results

We recommended adding the V-Stab™ tool and provided optimum placement and drilling parameters for its use. The result, compared to the benchmark, was the elimination of three twistoffs, three fishing jobs, and two bit trips, significantly reducing NPT. These recommendations also led to an increase in the drilling interval length of 27% at a 43% higher rate of penetration (ROP). In addition, damage to bit/reamer dulls was significantly reduced, from 6-8 to 1-1, while drilling the same formation. These improvements enabled the client to save approximately USD 5.5 million versus the field benchmark.

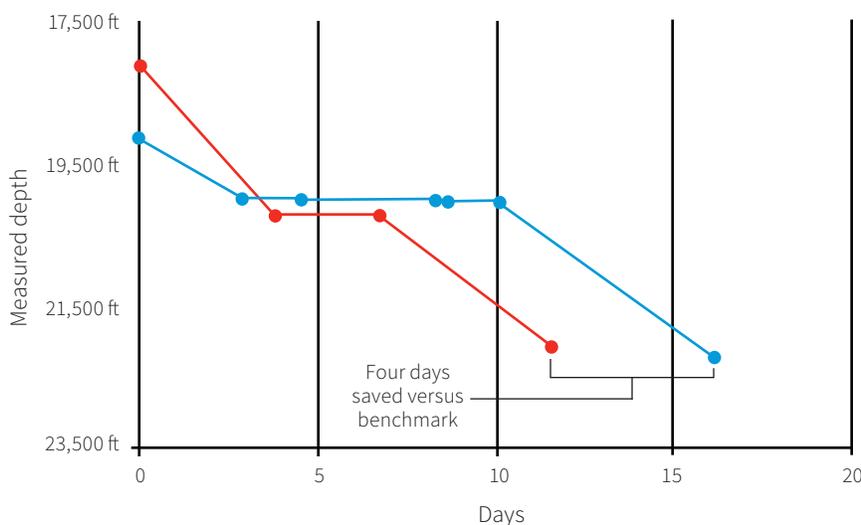


Figure 1 -The blue line in the graph at right represents the days versus depth (DVD) for the first exploratory well. The red line represents the DVD for the well that was drilled using the recommended parameters and incorporated the V-Stab tool.