

# eVolve Optimization Service delivers innovative solution to double ROP and save operator more than USD 700,000 in Brazil presalt application

## Innovation in action

A client operating in Brazil needed to optimize a challenging deepwater project. The eVolve team worked with the client to identify the drilling program changes necessary to improve performance using a combination of products, software, and drilling dynamics expertise.

We used our BlackBox and Black-Box HD tools to analyze high-frequency downhole data, allowing us to determine optimum drilling practices and parameters for the operation. We worked with the client to design an innovative new BHA that combined a smaller, 17½-in. PDC bit with a concentric reamer and Helios cutters to aggressively drill the challenging section. This led to a host of key benefits:

- Reduced time to change BHA for next hole section and enabled reuse of the bit and RSS
- Enabled the client to almost double ROP versus the field average and increase ROP by more than 57% versus the best offset
- Maintained low ROP and drilled to TD in one run
- Reduced drilling time by more than 1.5 days, saving more than USD 700,000

## Technology

NOV's eVolve™ Optimization Service delivers complete, integrated, and innovative 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 develop a customized bottomhole assembly (BHA) design.

## Performance

Previous offset wells had used a positive displacement motor and were usually drilled in either two runs with roller cone bits or single run with a PDC bit. High torque stalled the motor or the topdrive with a 26-in. PDC bit, and deviation issues at the end of the run compromised rate of penetration (ROP) due to low weight on bit. The eVolve team used the high-frequency downhole data from the BlackBox and BlackBox HD units to optimize drilling practices and parameters, with the dual objectives of maintaining low inclination and improved ROP and drilling the entire section in one run through the surface hole formation, stopping in the salt.

## Results

The eVolve team worked with the client to design a completely new BHA, using a 17½-in. PDC bit matched with a concentric reamer and Helios™ cutters to aggressively drill the challenging section. This reduced the time required to change the BHA for the next hole section and enabled both the bit and rotary steerable system (RSS) to be reused. In addition, the average ROP for the run was almost double that of the field average and more than 57% higher than the best offset, leading to reduced drilling time of more than 1.5 days. The eVolve team met the objective of maintaining low inclination at improved ROP and drilled to total depth (TD) in a single run, ultimately saving the operator more than USD 700,000.

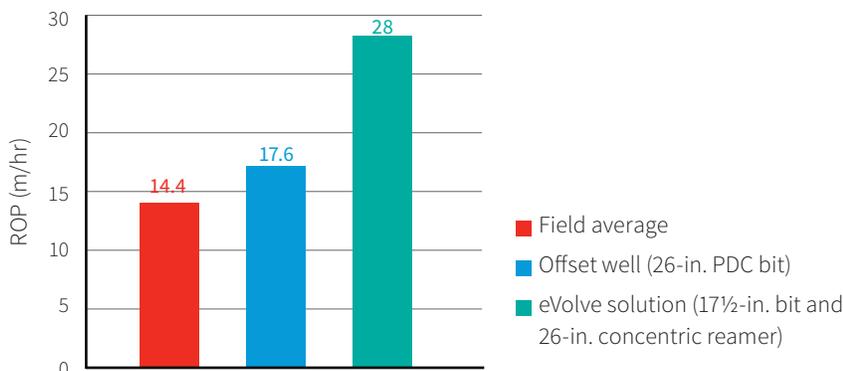


Figure 1 - The graph above shows the increases in ROP enabled by the eVolve service. Average ROP for the run was almost double that of the field average, and more than 57% higher than the best offset.