Operator Saves 36 Drilling Days and USD 13.3 Million in Deepwater Gulf of Mexico

Performance management decreases connection times and achieves footage records in challenging salt drilling application

**CHALLENGE**
Optimize common rig activity and improve overall drilling performance without compromising HSE during well construction in deepwater Gulf of Mexico.

**SOLUTION**
Customize a drilling strategy that included the OptiWell* well construction performance service to monitor surface and downhole data to ensure that KPIs are met.

**RESULTS**
Saved 36 drilling days and USD 13.3 million through best-in-class well performance that included

- Drilling 2,826 ft [861 m] in 24 hours, a record for the operator
- Achieving an average on-bottom ROP of 141 ft/h [43 m/h], a 93% increase compared with the offset average of 73 ft/h [22 m/h]
- Decreasing average connection time to 17 min, a 40% reduction compared with the offset average of 28.5 min
- Reducing BOP test times from 11.4 h to 3.6 h per test.

The integrated drilling solution enabled achieving best-in-class performance and completing drilling operations 45 days ahead of AFE.

**Enhance salt drilling efficiency in deepwater Gulf of Mexico**
Deepwater Gulf of Mexico hosts some of the most technically complex operations in the industry. Because a deepwater well can cost more than USD 150 million, even small improvements in efficiency can amount to millions in cost savings.

While developing an oil field in the Gulf of Mexico, an operator aimed to optimize common rig activity, enhance drilling operations, and continuously improve benchmark performance while ensuring adherence to strict HSE guidelines. The operator sought to achieve consistent improvement across three wells with step-by-step implementations addressing

- tripping speeds
- connection times
- ROP optimization
- mechanical specific energy
- BOP test times.

**Deploy a fit-for-purpose well construction performance service solution**
Schlumberger collaborated with the operator to customize a plan using the OptiWell service. As a team, the companies worked to provide monitoring of surface and downhole data, event detection and reporting, KPI tracking, and fit-for-purpose workflows to meet the specific challenges faced throughout the entire well construction process.

A Schlumberger team was stationed at the operator’s office to facilitate more regular interaction with the operator. After a prewell project meeting, Schlumberger, the operator, and the drilling contractor participated in knowledge-sharing workshops and formulated a plan to meet objectives. The plan included

- implementing a connection procedure agreed upon by Schlumberger, the operator, and the drilling contractor
- identifying and mitigating excessive shock and vibration
- careful monitoring of equivalent circulating density and intervening on possible packoff
- tracking tripping speeds and setting future achievable benchmarks based on technical limits
- optimizing drilling parameters in real time
- tracking trips out versus the surge and swab model to ensure that limits are not exceeded
- analyzing BOP testing to enable real-time efficiency improvements
- monitoring and graphing slip and cut times to identify outliers.

KPIs for each hole section were tracked and compared with the benchmarks daily to identify opportunities for cost savings and performance improvements.
CASE STUDY: OptiWell service saves 36 drilling days and USD 13.3 million in deepwater Gulf of Mexico

Drilling efficiency was measured against offset wells and technical limits for drilling parameters. The well in which the OptiWell service was implemented exceeded efficiency performance compared with historical wells in terms of salt drilling ROP and tripping speed while running in hole and pulling out of hole.

Set drilling records, save 36 days and USD 13.3 million
The successful implementation of the OptiWell service—along with extensive collaboration between Schlumberger, the operator, the drilling contractor, and other third parties—resulted in best-in-class well performance by a number of parameters.

The operator set a record for the most footage drilled in the Gulf of Mexico in 24 hours—2,826 ft [861.4 m] drilled in the 16½-in × 19-in section. Over the course of three wells, average on-bottom ROP increased 93% from 73 ft/h to 141 ft/h, and average connection time was decreased from 28.5 min to 17 min. Additionally, BOP test times were reduced from 11.4 h to 3.6 h per test. As a result of the improved efficiency enabled by the OptiWell service on the deepwater Gulf of Mexico operation, the operator saved 36 drilling days and USD 13.3 million.

Additional Schlumberger drilling and measurement technologies were deployed to further enhance operational efficiency and save rig time.

- The connection procedure was optimized using the QuikSurvey* continuous-circulation directional survey service, which has the ability to decrease rig time by taking surveys while circulating.
- Additionally, the PowerDrive X6* RSS was deployed, which enabled significantly reduced backreaming requirements on connections and decreased connection times.
- The OptiDrill* real-time drilling intelligence service was also used to actively manage shock and vibration through while-drilling parameter optimization recommendations. Active management of shock and vibration resulted in increased ROP.

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