

In Oman, Operator Achieves Benchmark Drilling Performance in Development Fields

CUSTOMIZED GEOTECH® FIXED CUTTER BIT DRILLS VERTICAL WELL AT HIGHER ROP THAN COMPETITOR OFFSET WELLS, ENABLING OPERATOR TO SAVE USD 15,870 IN ONE RUN

OMAN

CHALLENGE

For a vertical well, engineer a custom bit that would be capable of:

- » Drilling shoe-to-shoe
- » Improving ROP and bit stability
- » Providing effective hole cleaning

SOLUTION

Engineered custom bit design, utilizing DatCISM process and the following:

- » GeoTech® fixed cutter PDC bit (the 12.25-inch GT56RMHOs model) for optimal efficiency and performance
- » Cerebro™ in-bit electronics data capture system to capture data directly from the bit
- » Shyfter™ R2 active element, with impact arrestors and long gauge, to improve bit stability
- » Dual-action hydraulics to help optimize cuttings removal for increased ROP

RESULTS

- » Drilled 863 meters (2,831 feet) at an average ROP of approximately 37 meters/hour (121 feet/hour)
- » Improved ROP by 58 percent compared to the field average, and 16 percent vs. recent best offset
- » Saved 16 hours vs. offset wells and reached section TD 1.5 days ahead of plan
- » Saved operator USD 15,870 in one run

OVERVIEW

An operator drilling development fields in Oman needed to drill shoe-to-shoe in a vertical well from the Sharji to Dhurma formation at a high rate of penetration (ROP). A dysfunction analysis summary of offset wells showed that stick slip was a potential issue that required a customized bit design to optimize performance. Halliburton Drill Bits and Services used the collaborative Design at the Customer Interface (DatCISM) process to quickly find a unique solution, leveraging application intelligence and ensuring superior execution.

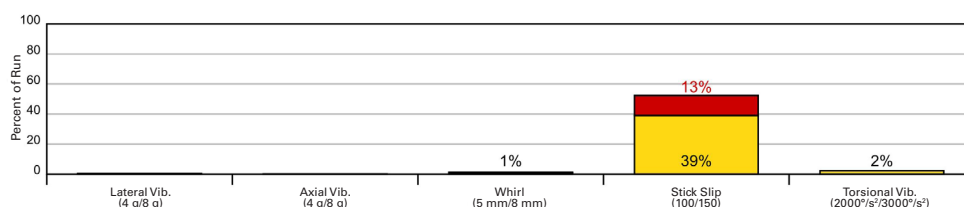
ENGINEERED BIT DESIGN FOR HIGH-PERFORMANCE DRILLING

The resulting Halliburton engineered bit design consisted of several components configured to deliver high-performance drilling. The foundation technology, GeoTech® fixed cutter PDC bit, was enhanced by the Cerebro™ in-bit electronics data capture system – capable of continuous high-frequency data capture (1,000 Hz) – to optimize drilling parameters and mitigate drilling dysfunction. To increase point loading and efficiently fracture rock, the Shyfter™ R2 active element (the most durable of the Shyfter active line) was added; its impact arrestors and long gauge helped minimize bit instability. And to optimize cuttings removal for increased ROP, dual-action hydraulics was employed for more efficient heat removal at the PDC bit, while reducing stagnation zones across the flow between blades.



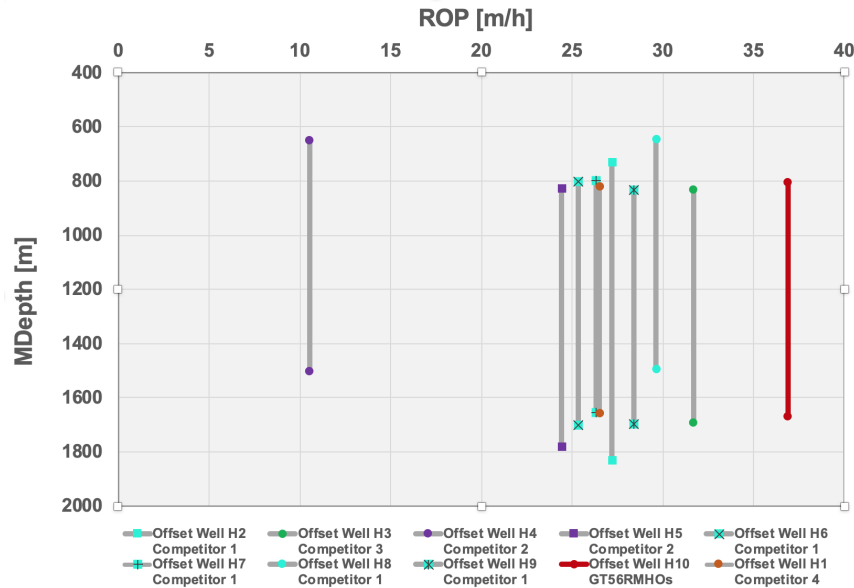
GeoTech® fixed cutter PDC bit (the 12.25-inch GT56RMHOs model)

DYSFUNCTION SUMMARY

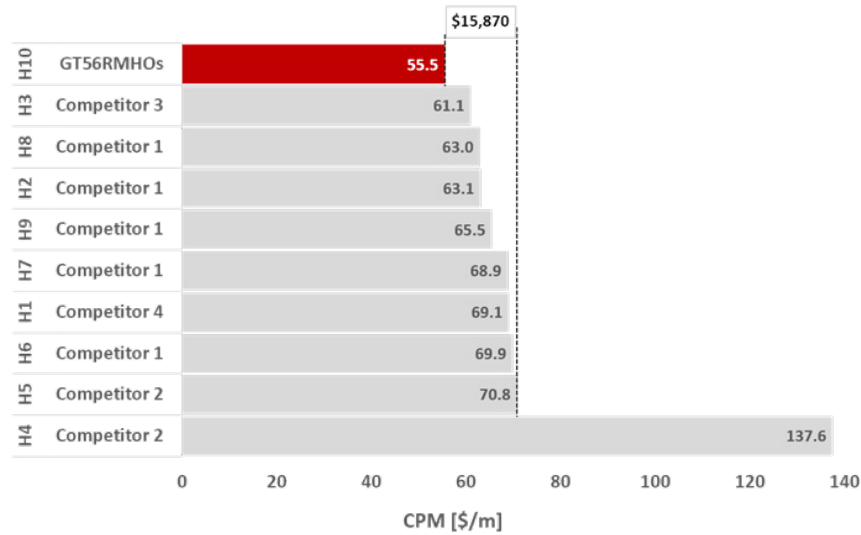


OPTIMIZED ROP BREAKS RECORD AMONG OFFSET WELLS

The innovative, high-performance bit design enabled the operator to successfully drill the 863-meter (2,831-foot) section at an average ROP of approximately 37 meters/hour (121 feet/hour). This represented a 58 percent improvement in ROP over the same field average and 16 percent higher than the recent best offset. Additional achievements included saving 16 hours of rig time compared to the offset wells, reaching the section total depth (TD) ahead of plan by 1.5 days, and saving USD 15,870 in just one run.



This chart shows ROP for GT56RMHOs bit compared to competitors' offset well performance.



This graph shows savings of USD 15,870 compared to competitors' offset well performance.

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