

Case study: Permian Basin, United States

Kymera Mach 5 hybrid bit drilled one run curve in unconsolidated formation saving \$100,000 USD

An operator in the Permian Basin needed to drill the curve section in the challenging Middle Sprayberry formation. The soft shale and unconsolidated sands made it difficult to complete a build angle due to erratic toolface control. The previous well required three different bottomhole assemblies (BHAs) to finish the curve, resulting in five days of drilling, putting them behind schedule and over budget.

Using more aggressive deflection settings on the motor generates severe doglegs in the curve and creates problems when drilling the lateral section. In order to drill the curve in one run and get back on track Baker Hughes provided a **Kymera™ hybrid drill bit**, with extended cone cutting structure. The unique hybrid polycrystalline diamond compact

(PDC) and roller cone cutting structure delivers increased rate of penetration (ROP) while maintaining excellent toolface control and build rates in soft, interbedded, or hard formations.

The Kymera Mach 5 extended reach cone extends the efficiency of the hybrid dual cutting structure to the center of the bit. This balances the engagement of the tungsten carbide insert (TCI) and PDC cutting elements to provide higher durability in the cone of the bit as well as an overall improvement to steerability. Baker Hughes also provided a parameter optimization roadmap and on-site application engineering support.

The operator was able to achieve a build-up rate (BUR) of 16°/100 ft (30 m) with a 2.2° adjustable kick off (AKO) setting on the motor. The instantaneous ROP peaked above 150 ft/hr (30 m/hr).

The average penetration rate for the curve section was 63.6 ft/hr (19.3 m/hr), 60% faster than the competitor average, saving a full day of drilling time. This set a customer record for the fastest and longest one-run curve in the area.

The quality and durability of the Kymera Mach 5 hybrid drill bit allowed the customer to complete the curve with one bit, increased ROP, and improved directional control, saving more than \$100,000 USD in drilling costs.



In addition to outstanding performance, the dull was in excellent condition.

Challenges

- Complete curve in one run with high ROP
- Achieve desired build-up rate in unconsolidated formation with good toolface control
- Drill on schedule and under budget

Results

- Drilled full curve on one run
- Achieved 16°/100 ft BUR
- Drilled 60% faster than the competitor average
- Saved a full day of drilling time
- Saved \$100,000 USD in drilling costs

Copyright 2019 Baker Hughes Company. All rights reserved. The information contained in this document is company confidential and proprietary property of Baker Hughes and its affiliates. It is to be used only for the benefit of Baker Hughes and may not be distributed, transmitted, reproduced, altered, or used for any purpose without the express written consent of Baker Hughes.

Baker Hughes reserves the right to make changes in specifications and features shown herein, or discontinue the product described at any time without notice or obligation. Contact your Baker Hughes representative for the most current information. The Baker Hughes logo and Kymera are trademarks of Baker Hughes Company.