

Case study: Marcellus

Dynamus bit with Apex shaped cutters saves 17 hours vs. average offset in single-run tangent/curve

A customer in the Northeast United States was drilling horizontal wells in the Marcellus shale for natural gas. The limber bottom hole assembly (BHA) required to drill the curve resulted in problems with wellbore tortuosity in the in the horizontal section. In order to run a stiffer BHA in the horizontal section, it was required that the tangent and curve section be drilled in one run.

The customer reached out to Baker Hughes to provide a solution to drill the tangent and curve in one run. The Baker Hughes team proposed the 8½-in. (215.9 mm) **Dynamus™ ATD506X advanced PDC drill bit** with **Apex™ shaped-cutter technology** and the **AutoTrak™ Curve high build-rate rotary steerable service**.

The Apex shaped cutters provide strategically placed point loading in the cutting structure to deliver peak penetration rate in tough, ductile formations without sacrificing durability. Apex shaped cutters have been engineered to provide the most efficient cutting action while maintaining the

durability needed in tough to drill applications.

The Dynamus AT506X with Apex shaped cutters and the AutoTrak Curve rotary steerable service successfully drilled the tangent and curve sections in one run. The start of the tangent was at 1,694 ft (515.4 m) and the landing point was at 7,493 ft (2284 m) measured depth. The total drilled interval of 5,799 ft (1768 m) and was completed in 49 hours for an overall penetration rate of 118.3 ft/hr (36 m/hr). The result was the fastest well on the pad to the landing point that saved 17 hours versus the offset average and 8.2 hours versus the next best well.

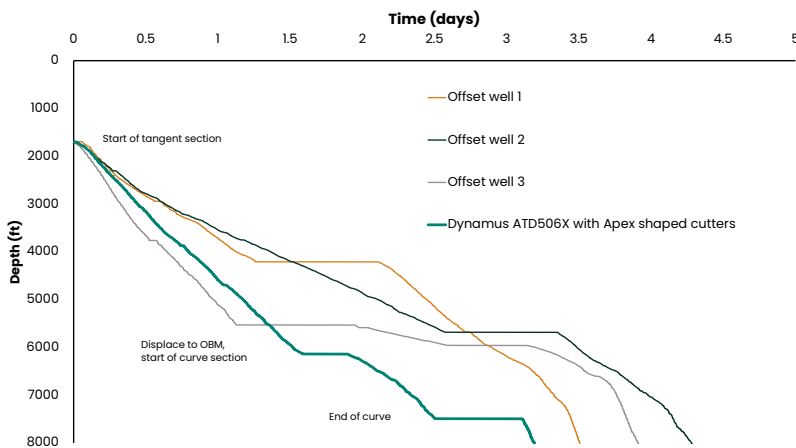
With the tangent and curve drilled in one run, this enabled the horizontal section to be drilled with a stiffer BHA resulting in improved wellbore quality and lower torque and drag. The benefits were improved performance and a high quality wellbore that was the longest well on the pad with the horizontal section reaching a total measured depth of 26,838 ft (8180.2 m).

Challenges

- Drill tangent and curve in one run
- Improve penetration rate

Results

- Drilled the tangent and curve in one run
- Improved ROP and saved 17 hours versus the offset average



Fastest well on the pad to the landing point at the end of the curve section.