

Cruzer™ Depth-of-Cut Rolling Element Greatly Reduces Curve Drilling Time

ROLLING ELEMENT TECHNOLOGY OVERCOMES DIRECTIONAL CHALLENGES OF COMPLEX WELL GEOMETRIES

WILLISTON BASIN

CHALLENGE

- » Achieve higher ROP without sacrificing steerability while drilling the curve in an unconventional horizontal well

SOLUTION

- » Halliburton PDC bit with Cruiser™ depth-of-cut rolling element to reduce reactive torque, allowing greater WOB for tighter toolface control at higher penetration rates

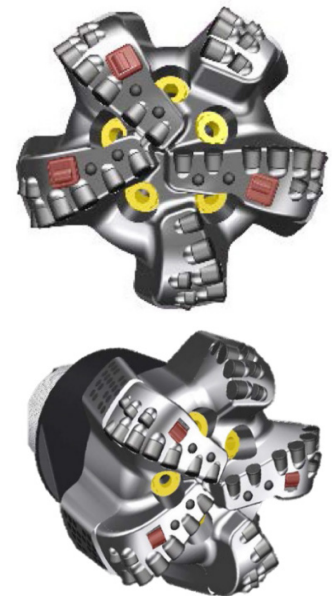
RESULT

- » Achieved greater WOB, enabling faster kickoffs and higher ROP throughout runs
- » Reduced average drilling time in curve from 12.4 on-bottom hours to only 7.12 hours, including one curve that took just 4.9 hours
- » Provided tighter tool-face control, enabling precise steerability at increased ROP from kickoff to landing

OVERVIEW

In the unconventional horizontal wells of the Williston Basin, where performance standards are well defined, the Halliburton Drill Bits and Services' Cruiser™ depth-of-cut rolling element has established a new benchmark for one operator—slashing the average on-bottom time to drill the curve from 12.4 hours to just 7.12 hours.

Already used successfully on more than 50 unconventional drilling projects in the Williston Basin, Cruiser technology is designed to increase toolface control without reducing drilling efficiency. In this case, the operator had drilled multiple wells from the pad over the course of a year, using competitor bits that yielded an average 12.4 on-bottom hours to drill the curve, including a single best performance in which the curve took 9.1 hours. The introduction of Cruiser technology delivered immediate improvement over offsets, with an initial application of an 8-3/4 inch GeoTech® GTD55DCU bit incorporating Cruiser technology drilling the curve in only 7.75 on-bottom hours, and a subsequent best performance taking just 4.9 hours. Overall, Cruiser technology reduced the average on-bottom time to drill the curve by 43 percent.



8-3/4 inch GeoTech®
GTD55DCU Drill Bit

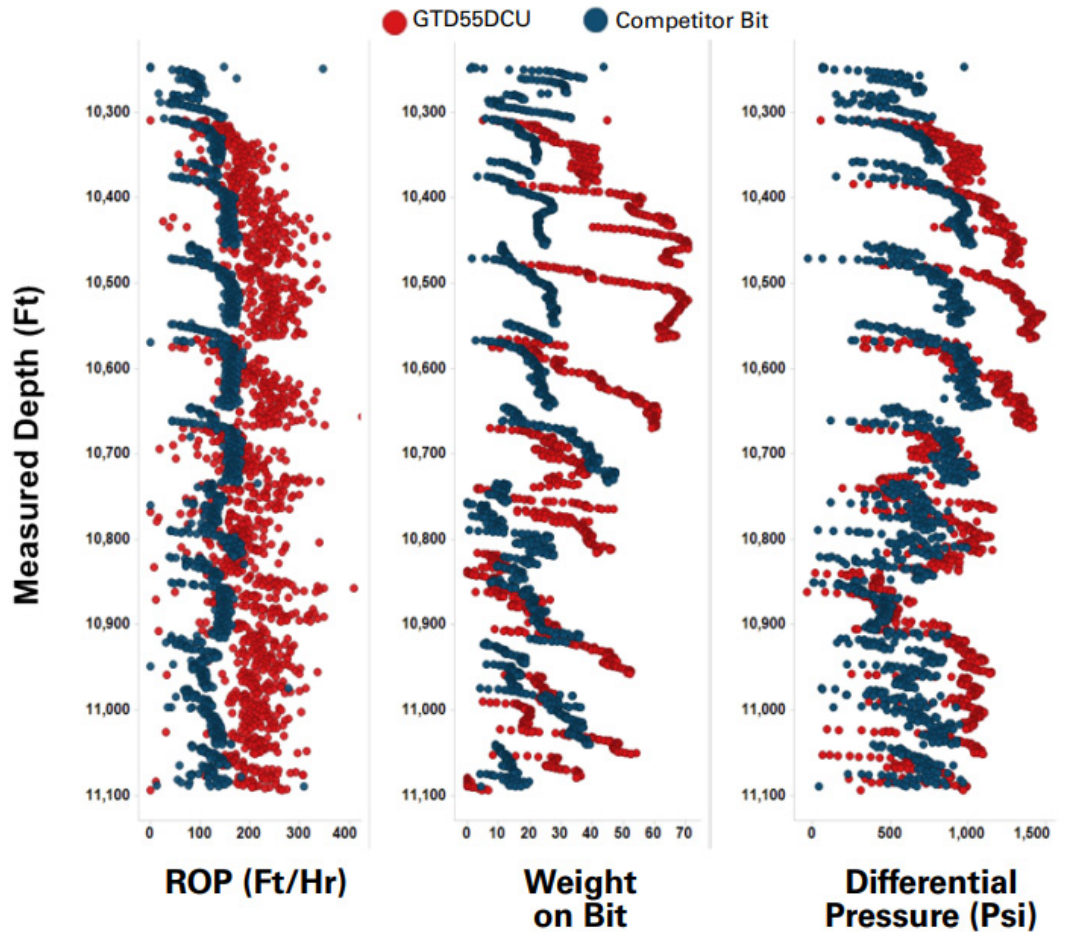
CRUZER ELEMENT OFFERS TECHNOLOGICAL ADVANCEMENTS

Developed to control the depth-of-cut without taking energy away from the cutting structure, Cruiser technology helps maximize penetration rates while delivering better toolface control, thus ensuring that intervals are drilled consistently on target. The depth-of-cut control (DOCC) rolling element reduces PDC bit over-engagement due to formation changes or vibration without compromising cutting energy, so all available torque can be used by the cutters to shear rock for more efficient drilling, while toolface control is enhanced by the consistent depth-of-cut. For this Williston Basin application, the operator realized the following benefits:

- » Greater weight on bit (WOB) can be applied above the curve, leading to faster kickoff
- » Ability to run increased differential without sacrificing toolface control yields higher rates of penetration (ROP) from kickoff to landing
- » Toolface control is much easier to maintain and stays within a tighter window

RESULTS

Delivering faster ROP with greater toolface control, Halliburton drill bits that incorporate the Cruiser DOCC rolling element easily overcome the directional challenges of complex well geometries like those in the unconventional horizontal wells of the Williston Basin. A design option for Halliburton high-performance PDC bits, the rolling DOCC element improves depth-of-cut control while dramatically reducing the energy loss by the element, thereby greatly enhancing drilling performance in a wide range of applications.



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