CASE STUDY: *Success depends not only on the quantity of core samples, but also on the quality of the cores*

Halliburton GeoTech™ GT65D Drill Bit

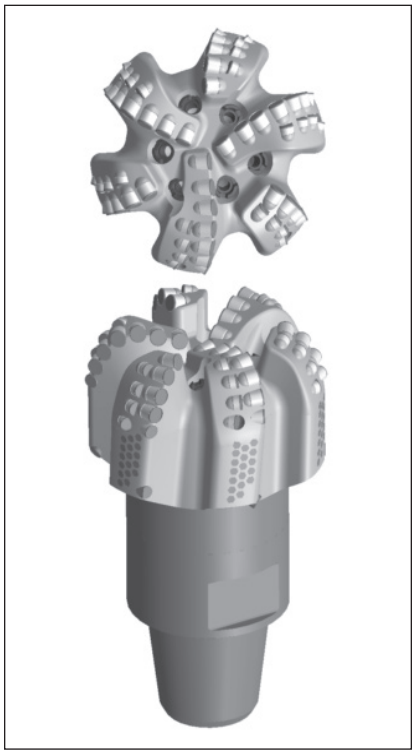
New GeoTech™ Fixed Cutter Drill Bit cuts further and faster with less wear in Williston Basin

Location: Williston Basin, North Dakota

Overview

In the Williston Basin of North Dakota, where a typical well was being drilled vertically in an 8¾-in. hole to kick off point at around 9,000 ft true vertical depth (TVD), a new GeoTech™ fixed cutter drill bit was introduced to the application , which reduced the cost per foot for drilling the interval from an offset high of $28.54 to only $20.10 per foot.

The new GeoTech GT65D drill bit was modified to include GeoTech PDC technology and was run to evaluate performance compared to offset bits using MegaForce™ technology. The GeoTech drill bit drilled 6,423 ft to the planned section total depth (TD) at 8,435 ft measured depth (MD) at an above average rate of penetration (ROP) of 132.4 ft/hr—compared to seven offset bits that averaged 107.6 ft/hr over 6,594 ft. In addition, the GeoTech GT65D drill bit was pulled with an above average dull grade, exhibiting less wear and less spalling when chipping was present compared to offset drill bits.



GeoTech™ GT65D Drill Bit

CHALLENGE	SOLUTION	RESULT
Drilling cost with upper and lower shale intervals and middle layer of sandstone. Drilling to extreme depths was both costly and time-consuming.	GeoTech GT65D drill bit to include GeoTech PDC technology to planned TD at 8,435 ft MD.	Drill bit achieved average ROP of 132.4 ft/hr, bettering offset bits and with less wear and less spalling, and reduced cost per foot for the interval from $28.54 to $20.10.

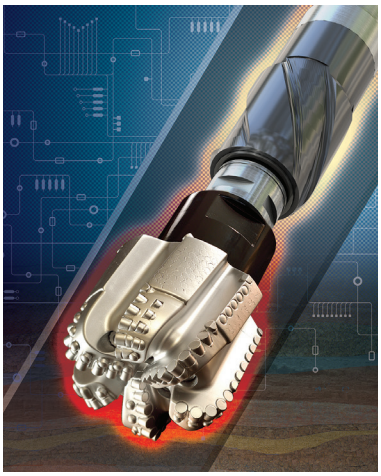
GeoTech™ Fixed Cutter Drill Bits

With new materials, the latest upgraded iBitS™ bit design technology, and continuous cutter innovations, Halliburton's latest-generation GeoTech™ fixed cutter drill bits are drilling greater footage at faster penetration rates to lower cost per foot in the most challenging applications around the world.

Superior Design Expertise Leads to Better Drilling Performance

New GeoTech drill bits incorporate GeoTech PDC cutter technology in a two-step cutting structure, designed with Depth of Cut Control technology to smooth torque fluctuations and significantly increase the amount of rock removed with less cutter wear. This yields higher average ROP and up to four times the footage of previous products.

Through Halliburton's proprietary design process, DatCI℠ (Design at the Customer Interface), GeoTech drill bits are designed to meet the customer's application-specific requirements, and modeled to help ensure that modifications will lead to optimum performance improvement in the given application.

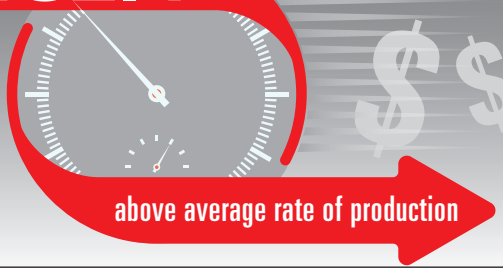


New GeoTech™ drill bits incorporate SelectCutter™ PDC cutter technology.

Drilled ***faster*** to 8,435 ft

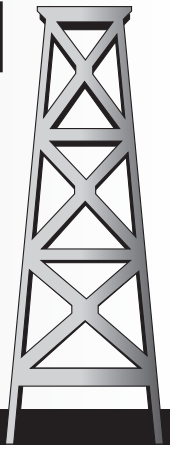
Reduced Drilling Cost per foot from $28.54 to $20.10

Achieved ROP of 132.4



Best Run on the Pad

Less wear and less spalling



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