Williston Basin

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Razor[™] 4D-shaped cutter technology helps operator decrease drilling time in lateral interval

Consistent one-bit-to-total depth performance reduces on-bottom drilling time by 28%

CHALLENGE

- Drill lateral interval in a single run to reduce overall drilling time
- Formation consists of interbedded hard stringers of carbonate and occasional pyrite, which has a history of core outs and DBRs

SOLUTION

 Deploy Razor 4D-shaped cutter technology to improve bit durability and maintain sharpness

RESULT

- Consistently achieved TD in one run
- Reduced on-bottom drilling time by 28%
- Contributed to the operator's goal to minimize spud-to-TD time

Challenge

An operator drilling in the Three Forks formation of the Williston Basin tasked Halliburton to optimize drilling the lateral interval. The Three Forks formation presented challenges due to interbedded hard stringers of carbonate and occasional pyrite. The primary objective was to achieve total depth (TD) in a single run to minimize drilling time. Initially, the operator used a Halliburton drill bit with round cutter technology and competitor six-blade design. Although this approach completed the interval in one run, further improvements were sought.

Solution

Halliburton introduced the Razor[™] 4D-shaped cutters to enhance bit durability and maintain sharpness, ultimately to reduce drilling time. These cutters feature unique geometries compared to traditional cylinder cutters, which result in more efficient drilling. The Razor cutter design effectively engages with rock to maximize contact stress along the cutter-rock interface. It features an enhanced



Total Depth (ft. vs Hours)

edge profile for improved cuttings removal and evacuation and a durable domed center.

Result

The Razor 4-D shaped cutter technology significantly reduced on-bottom drilling time by 28%. The operator consistently reached TD in one run, which exceeded expectations. The durability and productivity advantages of Razor 4D-shaped cutter technology contributed to overall drilling performance improvements.

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