CASE STUDY

HALLIBURTON

Permian Basin

Operator achieves single-run footage record in a 4-mile curve and lateral operation

HyperSteer™ directional drill bit helps reduce costs, trips, and operational time

CHALLENGE

- Operator wanted to drill four-mile curve and lateral in a single run

SOLUTION

- Customized HyperSteer™ directional drill bit to build the curve and drill the entire four-mile lateral of 20,565 ft
- Increase DLS in the curve and maintain low shock and vibration in the lateral to help increase RSS tool life

RESULT

- Curve and lateral drilled in a single run of 20,565 ft
- Eliminated trips
- Reduced costs and operational time
- New record set for single-run footage in the Permian Basin

Overview

Pleased with production results from a successful trial pad of four-mile laterals, an operator planned to drill multiple new wells, each 3.5 miles or longer. The operator consulted Halliburton to help engineer a bit for a successful single-run drilling strategy.

Challenge

Previous runs with bottomhole assemblies (BHAs) did not make it far into the lateral after drilling the curve before pulling out of hole because of penetration rates. Drilling a curve and lateral with a rotary steerable system (RSS) tool necessitates a highly steerable bit to meet dogleg severity (DLS) requirements. Simultaneously, the bit must remain stable during higher rates of penetration (ROP) to minimize harmful shock and vibration while drilling the lateral.

Solution

Halliburton's HyperSteer™ directional drill bits addressed both challenges through reduced makeup length and sufficient gauge length. The reduced makeup length allows the RSS to transfer more side force to the drill bit, enhances side cutting, and achieves higher build rates. Meanwhile, the gauge

length helps ensure stability in the lateral, particularly when ROP is increased. Halliburton selected an 8.75 in. HyperSteer HXi64MKs directional drill bit to increase DLS in the curve and maintain low shock and vibration in the lateral to help increase RSS tool life. The plan was to use the bit to build the curve and drill the entire four-mile lateral to a total depth (TD) of 30,315 ft.

Result

The operator drilled its first ever four-mile lateral in a single run in the Permian Basin. The 8.75 in. HyperSteer bit drilled 20,565 ft in the curve and lateral. During this run, the operator set a record in the Permian Basin for single-run footage. The HyperSteer directional drill bit technology and drilling strategy helped the operator reduce costs through the elimination of trips and reduced operational time.

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