Permian Basin

HyperSteer[™] directional bit technology helps operator achieve longer, more consistent runs

A new Wolfcamp D days from spud record of 18.06 days was achieved and surpassed the previous record by more than five days

CHALLENGE

 Design an ultra-short makeup bit to minimize shock and vibration which would enable one-run curve/ lateral sections

SOLUTION

 Leveraged the DatCl process to create the HyperSteer directional drill with Razor 4D-shaped cutters

RESULT

- Longer, consistent runs compared to the incumbent bit
- Flex joint removal reduced shock and vibration
- Improved well, cementing, and production schedules
- Set a new spud record of 18.06 days which surpassed the previous operator record by over five days

Challenge

An operator in the Permian Basin faced durability and directional challenges while drilling a curve and lateral using a push-the-bit rotary steerable system. Seeking a solution, they turned to Halliburton for assistance in designing an ultra-short makeup length bit within a tight timeframe.

Solution

Halliburton leveraged the Design at the Customer Interface (DatCl[™]) process and engaged with the operator to understand design requirements and application specifics. Based on this information, Halliburton designed and built the HyperSteer[™] directional drill bit for initial testing. The initial bit performed admirably, exhibiting significantly less shock and vibration than the incumbent bit. However, the operator requested further improvements to achieve higher rate of penetration (ROP).

The revised HyperSteer drill bit design incorporated several enhancements. First, Razor™ 4D-shaped cutters would offer improved contact stress



Wolfcamp D – Days from Spud Operator Record

distribution along the rock interface, which would optimize rock failure. With their domed center, they would also facilitate efficient cuttings removal and evacuation. Additionally, the new design featured a more efficient cutting profile, higher side cutting efficiency, erosionresistant hardfacing, and reduced blade tops—all tailored to meet the customer's requirements.

Results

The HyperSteer directional drill bit yielded remarkable outcomes: longer, more consistent runs than the incumbent bit, consistently low shock and vibration, improved planning for well, cementing, and production schedules, and an impressive new spud-to-total-depth (TD) record of 18.06 days. This achievement exceeded the previous operator record by over five days, resulting in substantial cost savings.

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