

# BHA Optimization with Custom Drill Bit Increases Average ROP from 15 to 34 m/h in Lateral Sections

IDEAS platform designs bit to boost performance downhole while drilling with underpowered rig

## CHALLENGE

Increase ROP in horizontal sections while taking rig limitations into consideration.

## SOLUTION

Optimize BHA design by replacing other manufacturer's bit with one custom-designed using the IDEAS\* integrated drillbit design platform, which analyzes and simulates the bit performance in downhole conditions to ensure optimal design.

## RESULTS

Improved drilling performance by switching to customized drill bit that increased ROP to 34 m/h.

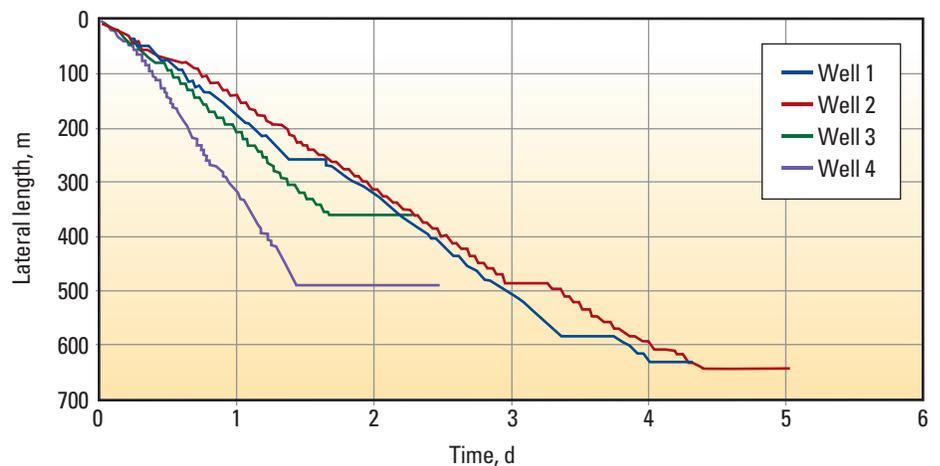


## Maximize drilling performance in slim lateral section

An operator drilling horizontal wells in Western Siberia had been using PowerDrive X6\* rotary steerable system (RSS) with a drill bit from another manufacturer in 6½-in lateral sections. Using this BHA design in multiple wells, the drilling team had achieved an average ROP of 15 m/h. The operator asked Schlumberger to find a way to increase ROP in the next well to maximize drilling performance. One challenge in accomplishing this task would be to overcome rig limitations, including a topdrive system that inhibited the flexibility of drilling parameters to increase ROP.

## Optimize BHA design with bit customized for best performance

Because the underpowered rig limited the options for adjusting drilling parameters to make improvements, the team focused on BHA optimization. Schlumberger proposed replacing the other bit with a custom drill bit designed by the IDEAS platform from Smith Bits, a Schlumberger company, specifically to meet requirements for the BHA, lithology, and planned trajectory. The platform was used to select a directional MDi416 fixed cutter PDC bit, then analyzed and simulated the downhole conditions to ensure optimal performance before drilling operations even started.



The fourth horizontal well's lateral section was drilled using the MDi416 drill bit, which resulted in a significant increase in drilling performance.

## CASE STUDY: IDEAS platform designs bit to boost performance downhole while drilling with underpowered rig

### Boost average ROP from 15 to 34 m/h

In the first well drilled using the PowerDrive X6 RSS BHA with the MDi416 bit, the team achieved all drilling objectives, including those for performance improvement. Average ROP was increased from 15 m/h in previous wells drilled with another manufacturer's bit to 34 m/h with the custom drill bit designed using the IDEAS platform. This boost in drilling performance saved the operator approximately 1 day of drilling time off the average for previous wells in the field.

Contact your local Schlumberger representative to learn more.



*Switching to the optimized bit design enabled the team to increase average ROP from 15 to 34 m/h.*

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