

Zhaikmunai Saves Drilling Days, Enhances Lithology Identification Using StingBlade Bit

Conical diamond element bit and advanced RSS increase ROP by 166%, generate larger cuttings in chert-inclusive hard carbonate, Kazakhstan

CHALLENGE

Improve ROP in hard carbonate formation with high concentrations of chert while identifying lithology types and properties.

SOLUTION

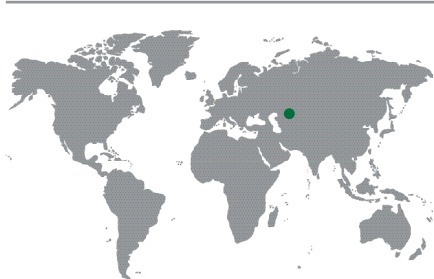
Deploy a custom StingBlade* conical diamond element bit to enhance drilling performance in hard, transitional formation.

RESULTS

- Drilled entire planned interval at 9.05 m/h, increasing ROP by 166%.
- Generated larger cuttings, allowing wellsite geologists to identify lithology types and properties while reducing mud replacements.
- Saved 6 days of drilling time and approximately USD 180,000.

“The StingBlade bit significantly increased ROP, saving us 6 days in the section. The larger cuttings allowed us to better evaluate the formation characteristics and make quicker and more accurate decisions about the drilling operations for the well.”

Engineer
Zhaikmunai LLP

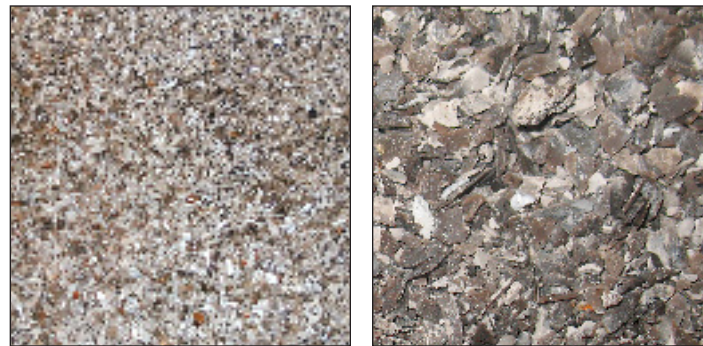


Increase drilling speed and durability

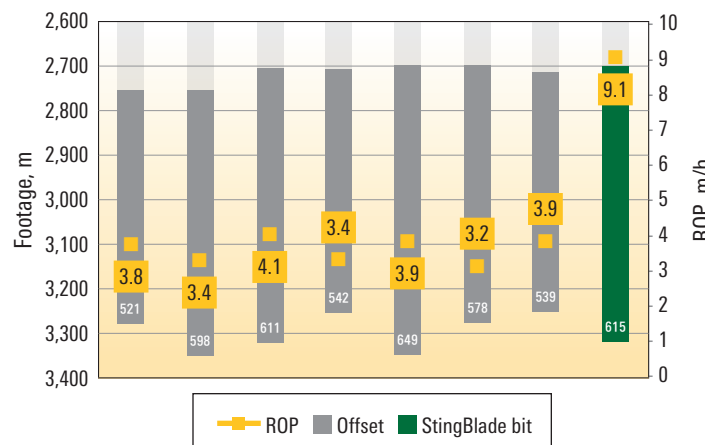
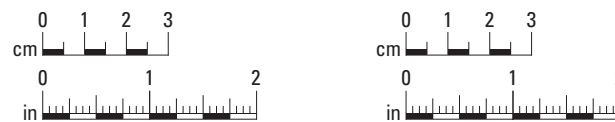
During operations in Kazakhstan’s Chinarevskoe field, Zhaikmunai LLP, a member of the Nostrum Oil & Gas Group, sought to increase ROP and identify lithology types and properties of a hard carbonate formation with high chert concentration. Diamond-impregnated drill bits were the standard approach due to high durability, but ROP was low and cuttings were small, limiting surface logging formation evaluation. Furthermore, the small cuttings made it difficult to separate them from the drilling fluid, which created a gradual increase in mud weight throughout the interval.

Deliver larger cuttings at high ROP

After consulting with Zhaikmunai, Smith Bits engineers suggested using the StingBlade bit along with the PowerV* vertical drilling RSS. Using the IDEAS* integrated drillbit design platform, the engineering team modeled how the RSS would interact with the bit and strategically placed Stinger* conical diamond elements across the StingBlade bit face in a configuration that would optimize bit and BHA performance for the specific formation and application.

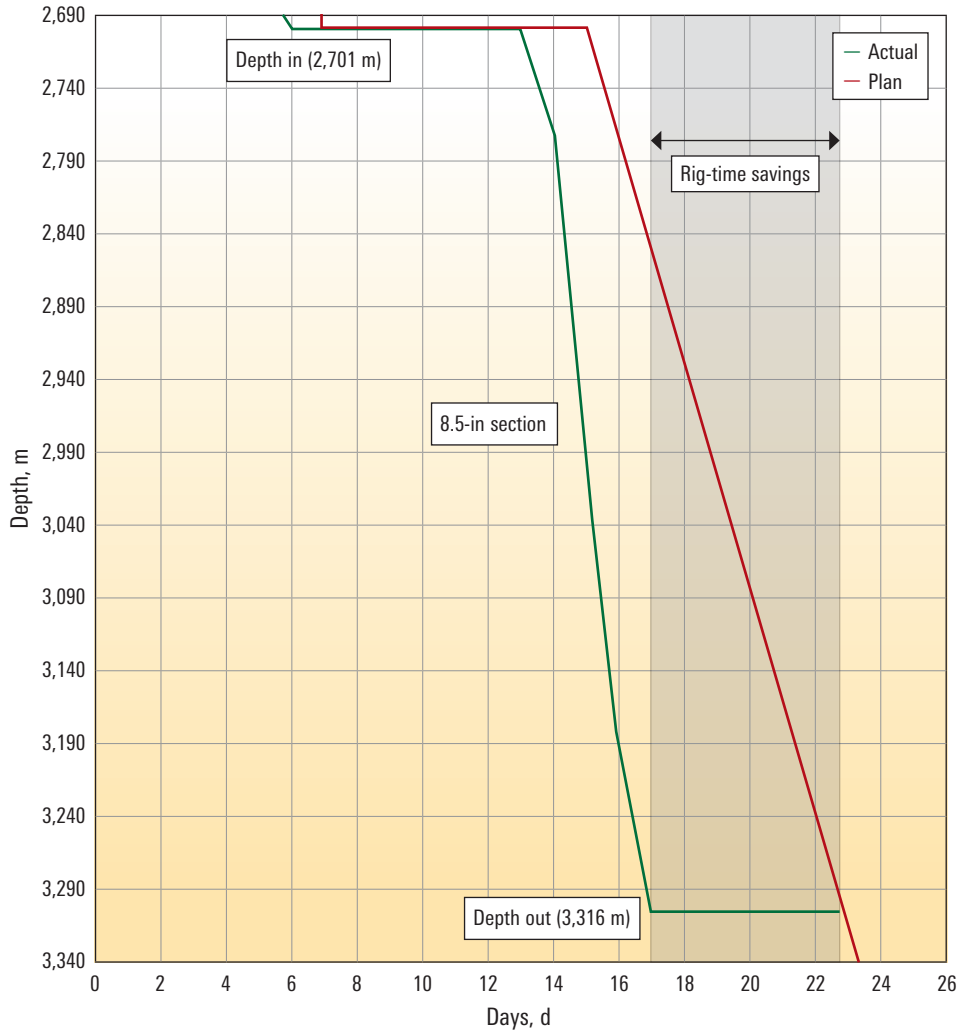


Compared with the cuttings generated by a bit in an offset well (left), the cuttings created by the StingBlade bit (right) were significantly larger, enabling improved surface formation evaluation.

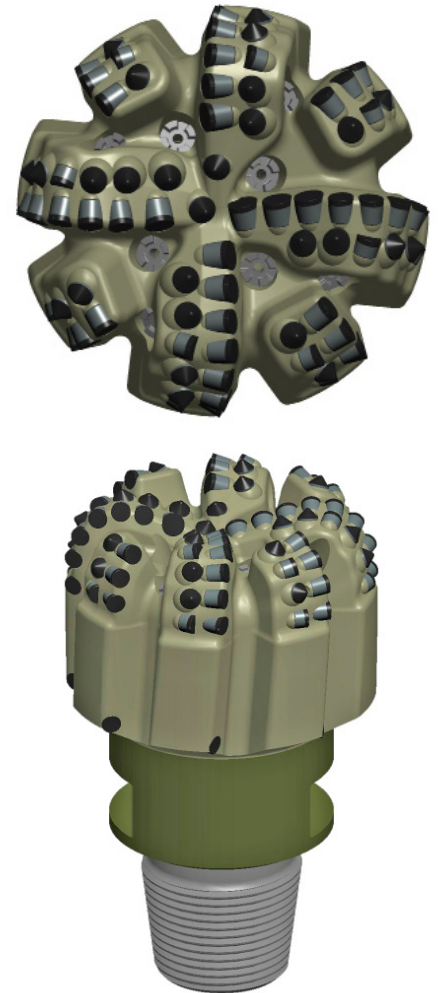


The StingBlade bit and PowerV RSS enabled drilling the entire interval at 9.05 m/h, an ROP increase of 166%.

CASE STUDY: StingBlade bit enables accurate surface formation evaluation, Kazakhstan



Drilling the entire planned interval with one bit and at faster ROP enabled Zhaikmunai to save 6 days of rig time and approximately USD 180,000.



The StingBlade bit was customized using the IDEAS integrated drillbit design platform.

Stinger elements' three-dimensional conical shape is designed to fail high-compressive-strength rock with a concentrated point load while maintaining high strength and durability. The elements interact with the formation with a unique rock-destruction mechanism that creates larger cutting sizes at optimal drilling speeds.

Saved substantial drilling time and associated costs

The integrated BHA drilled the entire planned interval at 9.05 m/h, a 166% increase in ROP compared with offset wells. This improved drilling efficiency saved Zhaikmunai 6 days of drilling time and approximately USD 180,000. The larger cuttings produced by the StingBlade bit enabled wellsite geologists to readily identify lithology types and properties. The cuttings were also easier to separate from the drilling fluid, reducing costly mud replacements.

slb.com/StingBlade

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