

Progress Energy Increases ROP 95%, Saves USD 178,500 Using StingBlade Bit in Montney Play

Conical diamond element bit drills 181% more footage compared with nearby offset wells in hard and abrasive formation, British Columbia

CHALLENGE

Drill an 8¾-in curve section through hard, abrasive formations in the Montney shale play while maintaining high ROP and minimizing cutter damage.

SOLUTION

Use the IDEAS* integrated drillbit design platform to develop a fit-for-purpose StingBlade* conical diamond element bit to maximize strength and durability.

RESULTS

- Drilled 245 m in one run at an ROP of 6.4 m/h, a 95% increase compared with offset wells.
- Drilled 181% more footage compared with offset wells.
- Saved USD 178,500 in rig time and associated costs.



Drill through alternating lithologies at high ROP

Progress Energy sought to develop natural gas reserves in the Montney shale play in the Julienne field of British Columbia, Canada. To reach the reservoir, the operator had to drill through a formation with alternating lithologies of hard and abrasive sandstone, shale, chert, limestone, dolomite, anhydrite, and silt. This type of formation often causes vibration-induced cutter damage, abrasive wear, and slow ROP, which increase costs and make it difficult to predict expenditures on future operations. To mitigate these issues and to improve interval length and ROP performance, Progress required a bit with a cutting structure capable of remaining sharp and resisting impact damage when drilling through the hard, abrasive formation.

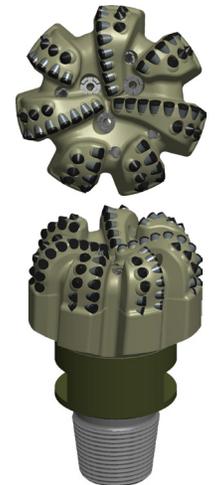
Use StingBlade bit to improve performance in difficult formations

Engineers at Smith Bits, a Schlumberger company, used the IDEAS platform to develop a StingBlade conical diamond element bit (Z713) with Stinger* conical diamond elements strategically positioned across seven blades from bit center to gauge. Leveraging the superior impact and wear resistance of Stinger elements, StingBlade bits improve footage drilled and ROP while maintaining greater toolface control and minimizing shock in challenging drilling applications that can cause impact damage to conventional bits.

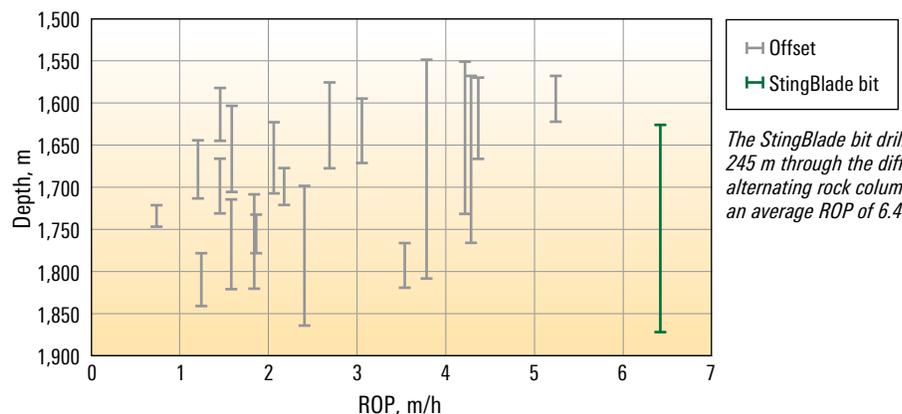
Stinger elements apply a significantly higher concentrated point load on the rock, and the elements' thicker diamond table enhances impact strength and wear resistance. A curve-optimization system was used to determine the best combination of WOB and drillstring rpm to deliver maximum power to the bit.

Achieved higher ROP compared with 20 nearby offset wells

Using the StingBlade bit, Progress Energy drilled 245 m through the difficult alternating rock column at an ROP of 6.4 m/h. Compared with 20 offsets drilled within a 10-km radius, the StingBlade bit drilled 181% more footage and increased ROP by 95%. When the bit was POOH, it was in good dull condition. The reduced rig time and bit spend saved the operator USD 178,500.



Z713 StingBlade bit with Stinger elements.



The StingBlade bit drilled 245 m through the difficult alternating rock column at an average ROP of 6.4 m/h.

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