SMITH BITS
A Schlumberger Company

Groupement Reggane Nord (GRN) Consortium Achieves Record Run, Saves USD 306,000 with StingBlade Bit

Conical diamond element bit enables first shoe-to-shoe run in dolerite section in Kahlouche Field, Algeria

CHALLENGE

Improve drilling rate and reduce trips while drilling a formation with hard dolerite inclusions.

SOLUTION

- Use the IDEAS* integrated dynamic design and analysis platform to simulate drilling performance and the DBOS* drillbit optimization system to determine an optimal bit design.
- Introduce the StingBlade* conical diamond element bit to provide greater impact strength and directional response than previous PDC or roller cone bits.

RESULTS

- Drilled the challenging 8½-in section in just one run, achieving the first shoe-to-shoe run through a dolerite section in Kahlouche Field.
- Saved an estimated USD 306,000 in drilling costs by eliminating trips, increasing ROP, and reducing nonproductive time.

Improve drilling efficiency in damaging dolerite sections

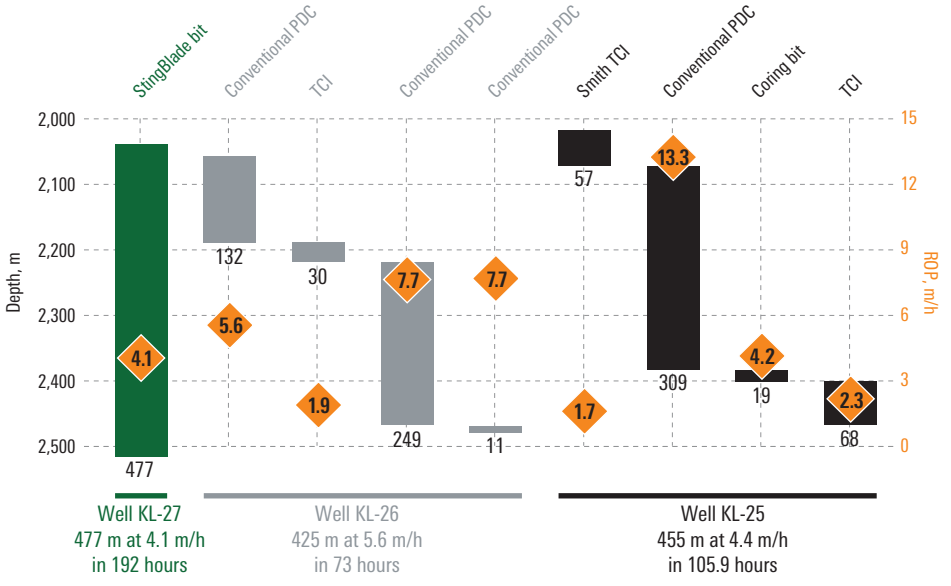
The Kahlouche Field in Algeria contains hard dolerite layers above the pay zone, presenting many unique drilling challenges. With unconfined compressive strength (UCS) up to 45,000 psi [310.26 MPa], unpredictable distribution, and varying thickness, the dolerite inclusions were considered “undrillable” using conventional PDC bits. Drilling through this high-impact rock required GRN to pull out of hole and replace several damaged bits before reaching target depth. The consortium sought to minimize the number of trips required in these difficult dolerite sections without compromising penetration rates.

Overcome bit failure with advanced diamond element bit

GRN partnered with Schlumberger to drill the 8½-in section, which had a predicted dolerite layer at 2,077-m [6,814-m] TVD with an estimated thickness of 20 m [65.6 ft]. After conducting a detailed study using the IDEAS platform, Smith Bits, a Schlumberger company, recommended the StingBlade conical diamond element bit, which includes Stinger* elements. The Stinger elements have a thicker diamond table to enhance impact resistance and have proved to provide superior impact strength and wear resistance in hard-to-drill formations.

Drilled section in one run and saved USD 306,000

The StingBlade bit mitigated bit damage, becoming the first bit to drill a section with dolerite from shoe to shoe in Kahlouche Field. GRN drilled a total of 477 m [1,565 ft] in one run—including the dolerite intrusion that turned out to be 28 m [92 ft] thick—saving more than USD 306,000.



The StingBlade bit helped GRN reduce bit trips and drill longer at an average sustained ROP than nearby offsets or previous runs with conventional PDC bits. Consistency and run time outperformed short bursts of speed.

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