Record-Setting StingBlade Bit Run Saves MOL Pakistan More Than USD 100,000 and 12 Rig Hours

Conical diamond element bit improves ROP by 17% in hard, abrasive Datta Formation

**CHALLENGE**
Increase drilling efficiency in the Datta Formation, a hard, abrasive sandstone and claystone formation with high pyrite concentrations.

**SOLUTION**
Use the StingBlade* conical diamond element bit, which features high-impact-resistance Stinger* conical diamond elements across the bit face, for increased durability and ROP.

**RESULTS**
- Drilled 74 m [243 ft] at an ROP of 1.13 m/h [3.71 ft/h], 13% faster compared with the performance benchmark set by the operator and 17% faster compared with the offset well average.
- Achieved nearly double the footage and faster ROP compared with conventional PDC bits used in the field.
- Set formation record for longest interval drilled in one run.

"The bit performance was as planned and met our expectations."
Drilling engineer
MOL Pakistan

**Boost drilling performance in hard, abrasive application**
MOL Pakistan Oil and Gas Co. B.V. was drilling a well in the Makori East field in Pakistan’s Tal Block. It planned to drill the 6-in section in the Datta Formation, a challenging hard and abrasive formation composed of sandstone and claystone beds with high concentrations of pyrite.

The hardness and abrasiveness of the formation cause severe bit dulling and require frequent changeout. Historically, PDC bits average 30- to 35-m [94- to 115-ft] intervals at an ROP of less than 1 m/h [3 ft/h] before wearing out. Thereafter, an operator must trip out and incur 20–25 hours of NPT.

**Deploy StingBlade bit for improved durability and ROP**
Schlumberger collaborated with MOL to design a solution that would help increase drilling efficiency in the challenging formation. After reviewing offset data, the team set performance benchmarks for durability (72 m [236 ft]) and ROP (1 m/h). The Schlumberger team recommended running the StingBlade conical diamond element bit, a new-generation bit design that features Stinger elements across the bit face.

Stinger elements are proved to apply a significantly higher concentrated point load on the rock, and the elements’ thicker diamond table enhances impact strength and wear resistance. This combination enables StingBlade bits to deliver improved footage and ROP, even in challenging drilling applications that cause impact damage to conventional bits.

The StingBlade bit was pulled out with a dull grade of 2-2 and worn and chipped teeth. Dull-grade analysis indicated that the bit could have drilled farther, demonstrating the bit’s durability in the challenging drilling environment.
**CASE STUDY:** StingBlade bit helps MOL Pakistan save more than USD 100,000 in hard, abrasive Datta Formation

The StingBlade bit drilled 74 m in the hard, highly abrasive formation at an ROP of 1.13 m/h — farther and faster compared with conventional bits drilled in offset wells. The performance set a Schlumberger record for the longest run in the Datta Formation.

**Achieve faster, more durable drilling performance**

In the Makori East well, the StingBlade bit drilled 74 m at an ROP of 1.13 m/h, exceeding the benchmark for ROP by 13%. The ROP also represents a 17% improvement compared with offset well performance. The bit was pulled out of hole with good dull condition, indicating that the bit was able to withstand the tough drilling environment and could have drilled farther.

The StingBlade bit drilled nearly double the footage and faster ROP compared with conventional PDC bits previously used in the field. As a result of improved drilling efficiency, MOL saved 12 hours of drilling time and approximately USD 100,000.