**CHALLENGE**

Reduce number of BHA runs required to drill 8-1/2-inch curve and lateral section of a horizontal well by extending footage drilled per bit

**SOLUTION**

Design a Halliburton PDC bit with the Stega™ efficient layout feature to optimize backup cutter engagement, deliver greater footage, and increase ROP

**RESULTS**

- Newly designed GTD64DC bit with the Stega feature drilled the curve and lateral section in a single run with a single BHA
- Achieved 41 percent more footage, with a single run of 8,483 feet (2,586 meters) as compared to best offset
- Increased average ROP by 19 percent over best offset, reducing total hours to drill the interval

**TECHNOLOGY ADVANTAGES**

The Stega efficient layout technique improves the bit’s drilling efficiency by strategically changing cutter positions and optimally offsetting the backup cutters. This optimized cutter placement is made possible through Halliburton advanced bit/rock interaction modeling. Our latest proprietary and patented model is proven through rigorous lab and field trials. Using the DatCI process, which brings custom solutions to specific applications, the Stega feature can be applied during bit design to optimize cutter engagement and improve drilling performance for the specific application at hand.

**PDC Bit Designed with Stega™ Feature Improves ROP and Drilling Results in Horizontal Well**

WOLFCAMP FORMATION, WEST TEXAS

**CHALLENGE**

In the Wolfcamp formation of West Texas, where horizontal drilling benchmarks are well established, one operator wanted to improve efficiency by drilling the 8-1/2-inch curve and lateral section in a single run, when two bottomhole assembly (BHA) runs typically were required. Offset bit performance had improved to 6,033 feet (1,839 meters), drilled at 80 feet/hour (24 meters/hour), but still required two runs to complete the interval.

**SOLUTION**

Halliburton recommended applying the new Stega™ efficient layout technique to optimize cutter layout on its existing GTD64C bit design. Delivered through the Design at the Customer Interface (DatCI™) process, the Stega feature determines the specific location of polycrystalline diamond compact (PDC) cutters in an optimum bit design in order to maximize efficiency when backup cutters contact the formation being drilled.

**RESULTS**

- Newly designed GTD64DC bit with the Stega feature drilled the curve and lateral section in a single run with a single BHA
- Achieved 41 percent more footage, with a single run of 8,483 feet (2,586 meters) as compared to best offset
- Increased average ROP by 19 percent over best offset, reducing total hours to drill the interval
- Achieved 41 percent more footage with a single run
- Increased average ROP by 19 percent over best offset, reducing total hours to drill the interval

**ACHIEVED**

41 PERCENT MORE FOOTAGE WITH A SINGLE RUN

**CASE STUDY**
The Stega™ efficient layout feature strategically positions backup cutters along the profile to remove load stress from the primary cutting structure and ensure highly efficient backup cutter engagement for greater footage and faster ROP.

Whether trying to drill faster with no loss of durability, or farther while retaining high ROP, the Stega efficient layout feature is proving to be an effective design solution in a range of applications around the world.

CONCLUSION

Halliburton PDC bits designed with the innovative Stega feature are optimized for maximum cutter efficiency when backup cutters come into contact with the formation. By strategically changing backup cutter location to take advantage of the bottomhole pattern created by the primary cutting structure, the customized layout optimizes backup cutter engagement without compromising cutting structure durability or toughness. As a result, even in applications like the Wolfcamp formation, where performance benchmarks have been established, PDC bits designed with the Stega feature continue to deliver drilling performance improvements with longer runs and faster penetration rates.