A major operator working in Oklahoma’s SCOOP shale play needed to reduce the number of bits required to drill a challenging vertical section in its next well. The 12¼-in. section had to be drilled through the Hogshooter formation to reach the operator’s targeted Woodford shale production zone. But the Hogshooter formation—which is characterized by interbedded sections of hard, high-strength sandstones, limestones, and dolomite—is notorious for causing premature bit damage, and as a result was driving up the number of bits needed on previous wells.

Despite attempts to improve performance by experimenting with a variety of bit designs, the operator continued to experience erratic footage, inconsistent rates of penetration (ROP), and poor dull conditions. Seeking a bit design that could deliver improved performance across a long interval, the operator contacted Baker Hughes for a solution.

After reviewing the well plan, the Baker Hughes, a GE company (BHGE) team recommended using a seven-bladed Talon Force™ polycrystalline diamond compact (PDC) drill bit outfitted with new StayTrue™ shaped diamond element technology. Unlike the standard approach of adding or removing conventional cutters to increase durability or speed, the StayTrue technology delivers both. Its unique chisel shape and engineered placement on the bit reduce lateral vibrations by up to 40% while also keeping the bit centered in the wellbore for longer, faster runs, and more efficient drilling performance across changing formations. Stabilis™ reinforced cutters were also incorporated into the bit design for added durability.

In contrast to the offset wells that required two or more bits to drill each vertical interval, the Talon Force bit with StayTrue shaped diamond element technology drilled through the Hogshooter formation to target total depth in a single, smooth run. In addition to saving a bit trip—and 12 hours and over USD 40,000—the StayTrue technology also improved footage by 142% compared to offsets, and with no drop in average ROP. When pulled out of hole, the bit also showed a significant
improvement in overall dull condition compared to previous bits.

By effectively mitigating lateral vibrations and bit whirl, the StayTrue technology enabled the operator to drill much farther and with consistent ROP. Pleased with the results, the operator plans to use StayTrue technology on future wells to improve overall drilling efficiency.

While conventional bit designs showed inconsistent performance, the Talon Force PDC bit outfitted with StayTrue diamond element technology stabilized the bit and expanded the smooth drilling window, allowing it to drill 142% farther than the best offset with no average drop in ROP.