The StingBlock® advanced stabilization conical element cutter block improves footage and ROP in challenging drilling applications that pose a high risk of vibration to the BHA and impact damage to conventional cutter blocks. This unique-geometry cutter block features a staged gauge pad for increased stability and Stinger conical diamond elements for enhanced impact resistance. Field tests have demonstrated up to a 29% increase in ROP and a 56% increase in footage compared with benchmark results in the Gulf of Mexico.

**Enhanced stability for shock and vibration mitigation**
In high-impact and challenging applications, cutter blocks with a single gauge pad lack the necessary stabilization when encountering hard and interbedded formations. The increased area of the main gauge pad, coupled with the additional staged gauge pads, uniformly distributes the cutter block forces, enabling significantly enhanced stability with lower lateral displacement. During testing of multiple cutter block sizes in different formations, finite element analysis simulation studies show an average of 65% less lateral vibration compared with standard blocks. Full-scale drilling tests demonstrated an average reduction of 83% in lateral vibrations.

**Increased durability for maximum ROP and longer runs**
The Stinger element has a diamond layer twice as thick as that of a conventional PDC cutter for enhanced impact strength and cutter durability. Its unique geometry extends runs and increases ROP by creating an ultrahigh-concentrated force that fractures high-compressive-strength rock more efficiently. Additionally, the advanced stabilization from the staged gauge pad reduces vibration and enables longer runs with the StingBlock cutter block as well as prolongs the operating life of the underreamer and other BHA components.

**Improved drilling efficiency in a wider range of operating parameters**
The nonlinear cutter alignment disrupts drilling harmonics so that more energy is applied to drilling ahead instead of being lost to vibrations. Full-scale drilling tests show that the StingBlock cutter block requires 24% less weight on reamer compared with conventional cutter blocks, enabling a wider range of operating parameters.