Autonomous Downhole Control System
Minimize surface interference and eliminate downlinks

And we’re talking auto-vertical, auto-tangent—and, now, auto-curve.

Specifically, the technology enables the auto-curve capability by bundling all the steps of manual mode into a single downhole autonomous process that begins with the directional driller downlinking the dogleg severity (DLS) and TF as required on the well plan. The ABSS or RSS receives the command downhole and alone automatically adjusts its steering force and TF to match the demanded DLS and TF.

Additionally, the BHA tracks its continuous inclination and azimuth using sensors close to the bit (3-axis inclinometers and triple 3-axis magnetometers). With the addition of downhole ROP data, the autonomous controls enable the tool to compute its resulting DLS and TF. Each second, the tool adjusts its steering parameters to meet the designated trajectory to stay on plan. The technology functions without the need for surface control, which means fewer downlinks and less time lost to the cycle. Tortuosity is reduced compared with the infrequent and violent surface control. And freed from trajectory concerns, the directional driller can focus on drilling efficiency.

The takeaways
Decisions and adjustments are made when and where tools encounter the data, which means far better verticals, steeper curves, less tortuous tangents, and way more accurate laterals. This all translates to consistent directional results well after well and better well economics, reduced carbon, and an overall better outcome.