**Case History**

**Directional Drilling**

**SperryDrill® XL Motor Drills**
**First Single-Run 8 ½-Inch Hole Sections in Marcellus Shale Wells**

*Location: Marcellus Shale*

**OPERATOR’S CHALLENGE** – In this unconventional shale gas play, the operator wanted to minimize Authorization for Expenditure (AFE) and drive better economics by eliminating costly trips and additional equipment associated with multiple runs. In order to accomplish this, the operator challenged Sperry Drilling services to deliver a new well architecture, featuring a lengthy low-angle tangent to create displacement without sacrificing valuable lateral in zone.

Typically in this area, operators drill horizontal wells in 8-1/2 inch hole with long laterals through the targeted Marcellus Shale pay zone. In most wells, the vertical section, which encounters shales and some abrasive sands, requires a dedicated run with a second run to drill the curve and lateral.

Although several operators have tried but failed to drill the 8-1/2 inch hole in a single run, this operator challenged Sperry Drilling to provide a drilling solution that could do just that.

**HALLIBURTON’S SOLUTION** – For this challenging application, Sperry Drilling recommended the use of the SperryDrill® XL 6/7 5.0 motor, with an enhanced range of operating parameters that accommodate high string RPM for high rate-of-penetration (ROP).

SperryDrill XL series motors can deliver unsurpassed performance and reliability including 80 percent more power, 65 percent more torque load, 50 percent increase on operating differential pressure, and shorter bit-to-bend distance than conventional motors for improved build rates.
The SperryDrill XL motor was run in two wells, in which the assembly successfully drilled the entire 8-1/2 inch hole in a single run, from the 9-5/8 inch shoe at approximately 2,600 feet (792 meters) measured depth (MD), through the tangent to kick-off-point at approximately 6,000 feet (1,829 meters) MD, followed by the 3D curve over approximately 1,000 feet (305 meters) of drilling, and a 6,000 foot (1,829 meter) lateral out to target depth at 13,400 feet (4,084 meters) MD.

These were the first wells drilled in the Marcellus Shale where the entire 8 ½-inch hole section of over 10,000 feet (3,048 meters) was drilled in a single run, leading to plans for further use of the SperryDrill XL motor in additional wells in this project.

**ECONOMIC VALUE CREATED** – Sperry Drilling used the SperryDrill XL motor to successfully deliver two Marcellus Shale wells with the vertical, curve, and lateral drilled in a single run, saving one full round trip per well (approximately 22 hours each) and significantly reduced the cost per foot for directional drilling operations, as well as produced substantial savings by using only one set of equipment.