High-Quality, Real-Time Sonic Data Enables Optimal Well Placement in Chinese Tight Gas Reservoir

SonicScope service provides real-time data that enables 300-m extension of lateral section

**CHALLENGE**
Drill horizontal well in complex, tight gas reservoir with thickness of only 3.6 m.

**SOLUTION**
Use SonicScope* multipole sonic-while-drilling service to identify gas zones and aid in well placement.

**RESULTS**
Provided effective real-time gas detection and reservoir identification to extend the horizontal section by 300 m—doubling the length of the well in this thin, tight reservoir.

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Complex thin gas reservoir requires accurate well placement
An operator in central China planned to drill a horizontal well in a thin, tight gas reservoir. The target layer had a thickness of just 3.6 m. The operator needed real-time seismic correlations, formation evaluation, and gas detection for optimum well placement in this complex structure.

**SonicScope service optimizes detection and placement in tight gas reservoirs**
Schlumberger recommended using SonicScope service, which is designed for optimal performance in tight gas, for the first time in China. SonicScope service acquires real-time and recorded compressional and shear data in both fast and slow formations. A unique mode enables Stoneley wave acquisition while drilling for fracture evaluation in horizontal wells with challenging formations. Accurate prediction and knowledge of rock mechanics helps provide optimal well placement.

During drilling of the horizontal well, SonicScope service obtained high-quality compressional and shear data. The real-time compressional slowness provided a good gas indicator. In the upper part of the well, the real-time sonic-to-seismic correlation helped define the bit position and enabled proper entry to the reservoir. The SonicScope service was combined with adnVISION* azimuthal density neutron service to jointly provide a quantitative formation evaluation and fracture analysis in the horizontal section.

**Real-time data helped double the horizontal length of the well**
The data from SonicScope service showed good gas indication, which led the operator to drill ahead. In fact, the lateral section was extended 300 m by adjusting the well trajectory based on the integrated sonic-to-seismic correlation and real-time formation evaluation. The total horizontal length was 748 m. The combination of LWD services helped the operator avoid inherent risks associated with tough logging conditions in a horizontal well.

With success in the first-time deployment of SonicScope service in China, the operator optimized well placement and extended the well to lengths well beyond the planned horizontal.

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High-quality real-time data from SonicScope service provided quantitative formation evaluation as well as fracture identification.