

INK-Services Drills Longest Lateral in Eastern Siberia Using Integrated BHA, Irkutsk

Combination of AxeBlade bit, PowerDrive X6 RSS, and ImPulse platform enable record-length lateral while simultaneously acquiring additional exploration data

INK-Services, LLC used a combination of AxeBlade* ridged diamond element bit, PowerDrive X6* rotary steerable system, and ImPulse* integrated MWD platform telemetry to drill the longest lateral in eastern Siberia. Not only did the well reach 5,542-m TD while holding maximum target zone contact, INK-Services simultaneously acquired exploration data on the underlying geologic formation along the wellbore.

INK-Services faced long well displacement

Eastern Siberia has a unique geological character that exacerbates shock and vibration, mud losses, and unpredicted gas kick while drilling horizontal sections. At-surface geology also prevented locating the rig closer to the reservoir targets. Planning concerns centered on a long well displacement, which can lead to high torque that exceeds limits for drill pipes, and possible downhole weight on bit (WOB) transfer problems due to buckling in slide mode when using a positive displacement motor (PDM).

Conventional PDM limits results

Conventional wisdom used PDMs to drill the wells and the geology restrained directional drilling index (DDI) to less than 6.5. DDI is a measurement of directional drilling complexity for a given well plan. The resulting maximum achievable depth was limited to 4,700 m due to buckling of drill pipes.

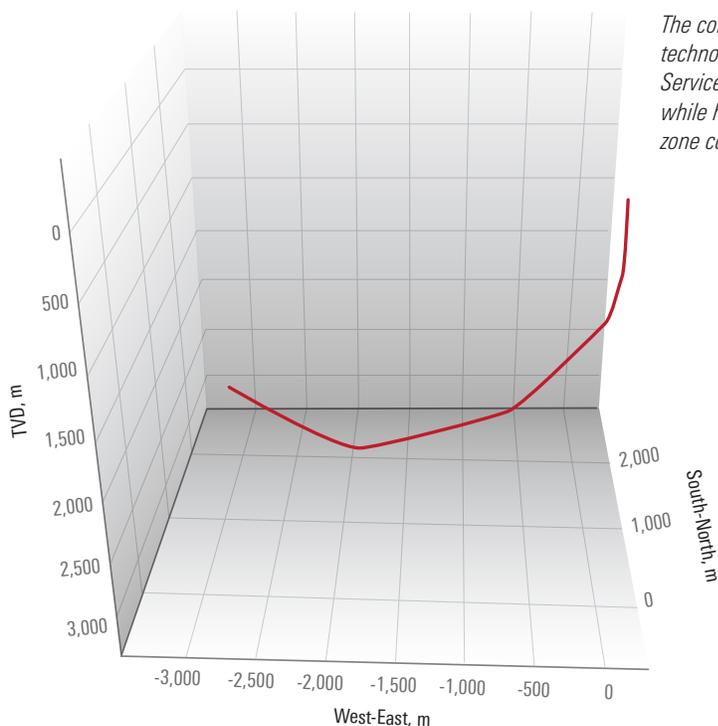
Schlumberger combines 3D bit with RSS and integrated MWD telemetry

Complex engineering calculations for geological target optimization revealed that the target locations could actually be closer to the rig surface location. This would help avoid high torque by decreasing well horizontal displacement.

Nevertheless, targets remained in the zone of interest as originally defined by the client. Consequently, Schlumberger recommended using PowerDrive RSS technology combined with ImPulse platform telemetry. Rotary steerable technology eliminates the need for slide mode that causes WOB transfer problems, and the ImPulse platform enabled trajectory control according to the data from geologists. Moreover, the BHA would be tipped with an AxeBlade bit proven in long laterals to increase ROP through hard and high-impact formations.

INK-Services achieved 100% of planned target and sets record

Integrating an AxeBlade bit with a 4³/₄-in slimhole PowerDrive X6 RSS that used ImPulse platform telemetry, INK-Services drilled the longest lateral well in eastern Siberia. The wellbore reached 5,542-m TD and sustained trajectory within the maximum target productive zone. Additionally, real-time GR and resistivity measurements enabled INK-Services to simultaneously acquire data on the underlying geologic formation along the wellbore, confirming earlier calculations indicating closer zones of interest to the surface rig. This was due to RSS capability of dropping the inclination angle and, as a result, the drilled well is a combination of both production and exploration.



The combined Schlumberger technologies enabled INK-Services to reach 5,542-m TD while holding maximum target zone contact.