

Customized Drilling Systems Save ERIELL 15 Days, Setting a Samburskoe Field Record

Multidiscipline team develop drilling solutions to improve performance on three sections of horizontal development well

CHALLENGE

Maximize drilling performance and minimize risk in vertical, build, and horizontal sections of Samburskoe field development well.

SOLUTION

Design application-specific BHAs for each well section that include PDC drill bits, rotary steerable systems, MLWD technologies, and drilling fluids.

RESULTS

- Drilled each section shoe to shoe with one BHA per section.
- Delivered good hole quality at an average on-bottom ROP of 26.8 m/h.
- Saved 15 days on well construction time, setting a record for region.

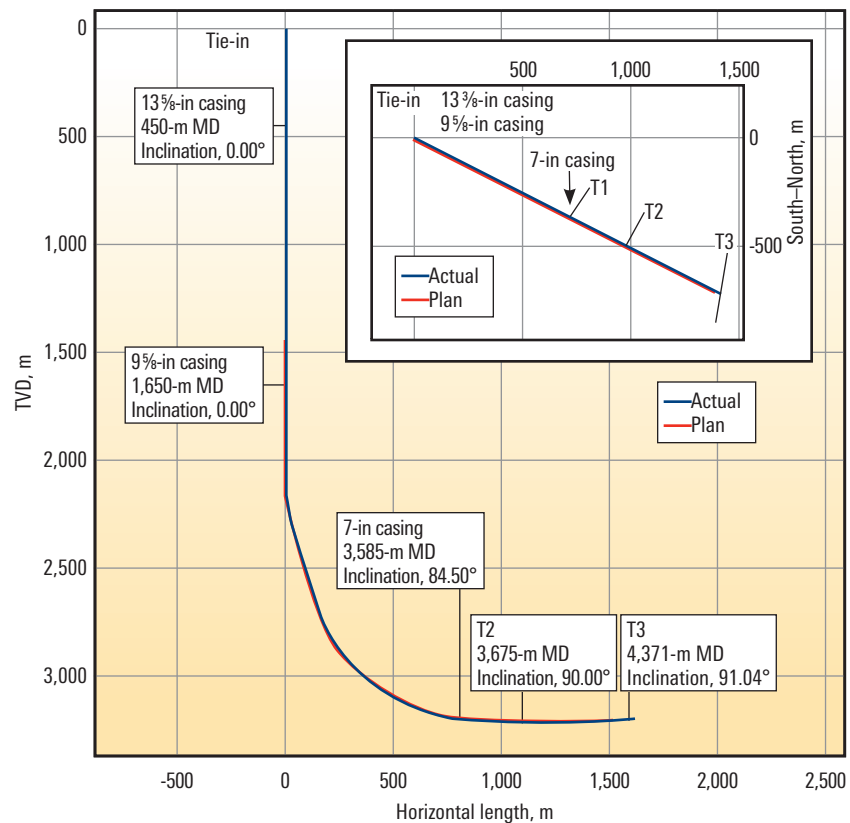


Maximize drilling performance in Russia horizontal development well

ERIELL wanted to maximize drilling performance and minimize risk in three sections of a Samburskoe field horizontal development well in north central Russia. The well plan called for drilling a vertical 11 $\frac{5}{8}$ -in section from the 13 $\frac{3}{8}$ -in casing point at 450-m MD to 1,650-m MD, followed by an 8 $\frac{5}{8}$ -in build section to 3,586-m MD and a 6-in horizontal section to TD at 4,371-m MD.

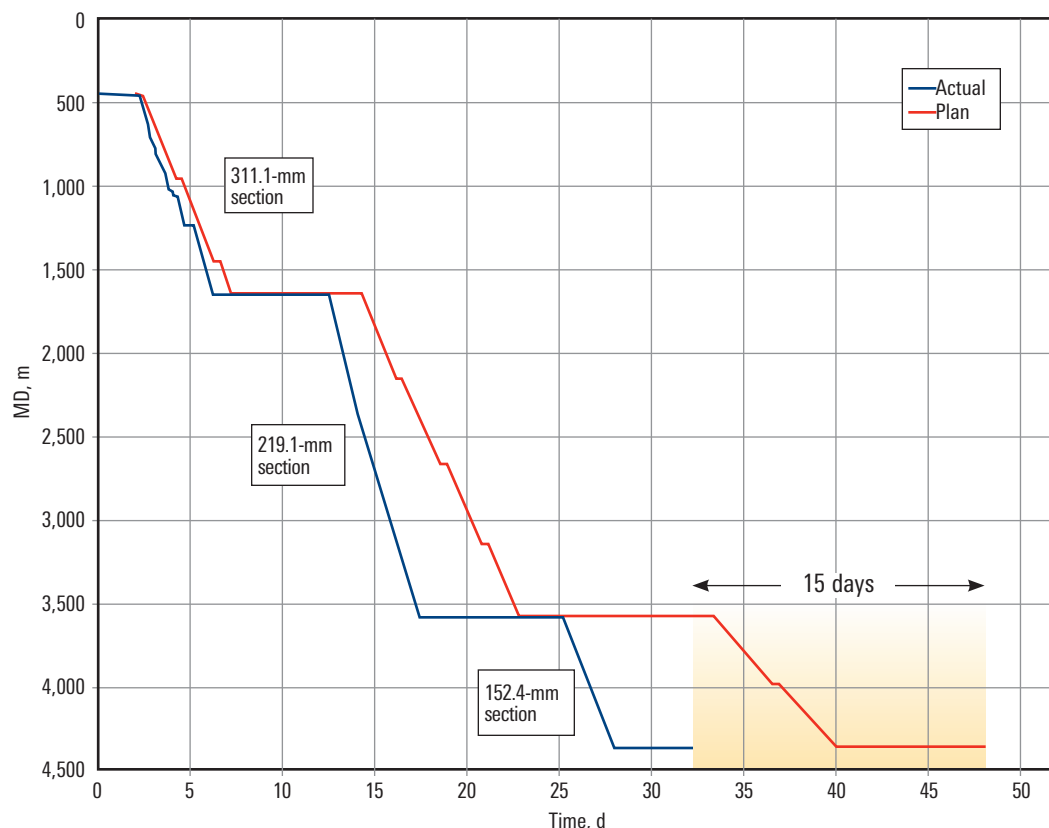
Design custom BHAs to drill shoe to shoe with one BHA per section

Engineers at the petrotechnical engineering center worked closely with the drilling contractor and the operator's engineering teams to establish detailed plans for drilling each section and select application-specific technologies for each section's BHA. The IDEAS* integrated design platform was used to simulate the drilling environment, determine optimum surface drilling parameters, and design one BHA for each hole section.



The Samburskoe S0404 well trajectory was drilled as planned using just one BHA for each hole section.

CASE STUDY: Custom BHA increases ROP and reduces well construction time



Schlumberger drilling solutions helped ERIELL deliver the Samburskoe S0404 well 15 days ahead of schedule.

Each BHA incorporated technologies from Schlumberger companies M-I SWACO and Smith Bits. The IDEAS platform provided optimized drill bits to run on a PowerPak* steerable motor or PowerDrive X6* rotary steerable system (RSS), which provided sustained ROP while delivering planned dogleg severity to the well. MEGADRIL[†] oil-base drilling fluid systems from M-I SWACO provided optimum rheological parameters for hole stability, shale inhibition, and lubricity. Resistivity data from the arcVISION* array resistivity compensated service guided the landing of the build section, and the adnVISION* azimuthal density neutron service, in conjunction with ImPulse* integrated MWD platform, provided real-time data while drilling the horizontal section to enhance the decision-making process.

Delivered well 15 days ahead of schedule

The integrated drilling system increased ROP by reducing shock and vibration and stick/slip and delivering good hole stability and hole cleaning. The application-specific BHAs drilled each section shoe to shoe with one BHA for each section, eliminating runs to pick up LWD tools and wiper trips. Each well section was drilled at an average ROP of 26.8 m/h. Total well construction time was 32 days, 15 days ahead of schedule—a record for ERIELL in the region. Wellbore quality allowed successful casing and liner running in all hole sections.

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