

Customized BHA Saves 12 Rig Days in Northern Kazakhstan

RSS, steerable motor, optimized drill bits, and MLWD services drill four well sections shoe to shoe in one run each with no NPT

CHALLENGE

Drill four well sections shoe to shoe in one run each and acquire MLWD data for formation evaluation.

SOLUTION

Integrate PowerDrive* rotary steerable systems (RSSs) and PowerPak* steerable motors with compatible drill bits, and quadcombo LWD and real-time MWD services.

RESULT

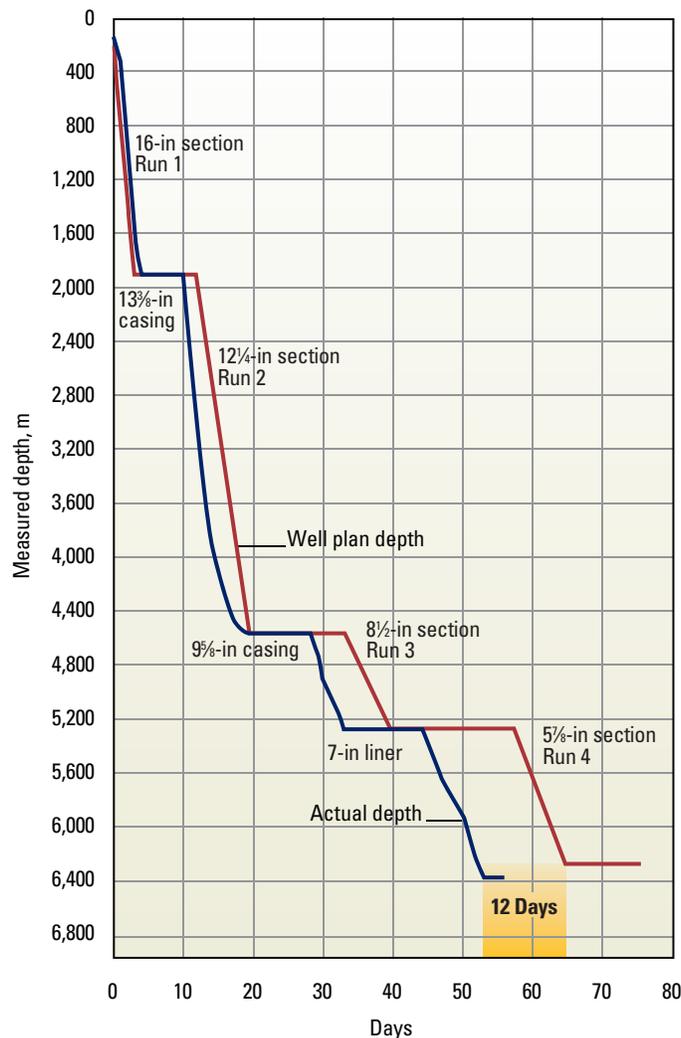
Drilled each section shoe to shoe in one run 12 days ahead of plan, with zero NPT. Acquired real-time and recorded MLWD data for full formation evaluation.

Schlumberger engineers in Kazakhstan developed customized BHAs to drill four well sections to TD in one run and acquire formation evaluation data.

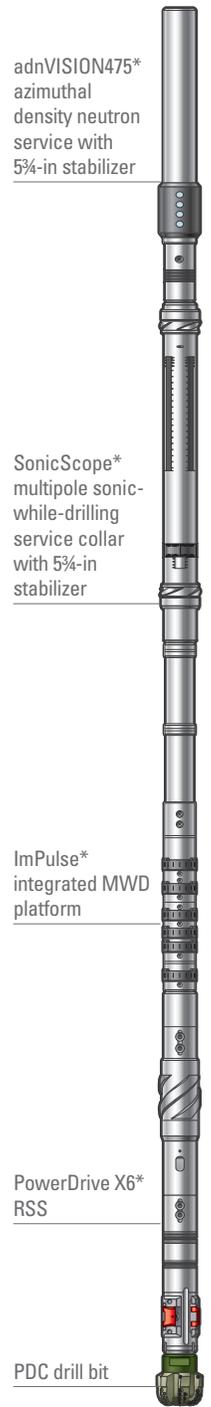


Drill shoe to shoe in four sections

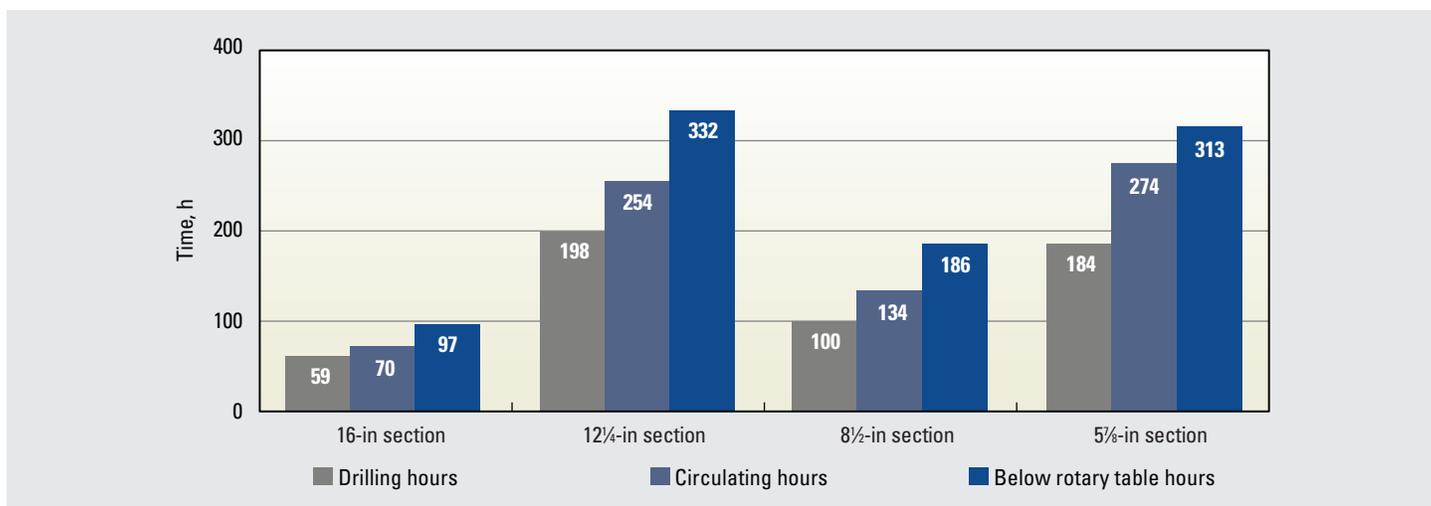
An operator in northern Kazakhstan planned to drill four well sections shoe to shoe and acquire formation evaluation data. The operator wanted to drill the 16-in, 12¼-in, 8½-in, and 5⅞-in sections in one run each to a total of more than 20,340-ft [6,200-m] MD. Because of the inclination of up to 88° in the 8½-in build section and 5⅞-in drain section, wireline logging was not a viable option, and MLWD would require complex BHAs.



The total measured depth for the four sections was more than 6,200 m.



CASE STUDY: Integrated BHA drills four sections shoe to shoe in one run each, saving 12 rig days



Each well section was drilled shoe to shoe with one BHA for each section.

Develop integrated BHA for Kazakhstan wells

Each section of the well was drilled with a PowerDrive RSS or PowerPak steerable motor, and the real-time and recorded LWD data needed for full formation evaluation was acquired in all sections. In the 12 1/4-in hole section, real-time gamma ray measurements helped reduce drilling risks by successfully identifying the essential 9 5/8-in casing point. Drill bits run on the PowerDrive RSS and PowerPak steerable motor were provided by Smith Bits, a Schlumberger company. The bits included 16-in and 12 1/4-in bits optimized for high ROP and a new 8 1/2-in PDC bit for the build section that was designed specifically for steering with a PowerPak motor.

The BHA for the nonstandard 5 7/8-in hole size included a PDC drill bit, 4.75-in OD PowerDrive X6 RSS, ImPulse integrated MWD platform, SonicScope multipole sonic-while-drilling service, and adnVISION475 azimuthal density neutron service.

Save 12 days of drilling time

Each well section was drilled shoe to shoe—with one BHA for each section—without tool failures, even though the circulation time for the 12 1/4-in and 5 7/8-in sections exceeded 250 hours. The well was drilled 12 days earlier than planned with zero NPT.



Drill bits used for this operation were optimized using the IDEAS* integrated design platform.

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