

Slimhole MWD Service Powers Complex Suite of LWD Services in ConocoPhillips Bakken Well

DigiScope MWD service powers entire BHA, transmits 12-Hz signal while logging horizontal section at 140 ft/h

CHALLENGE

Drill a 6-in lateral section using an extensive suite of LWD tools to provide real-time data for formation evaluation.

SOLUTION

Use a combination suite of LWD services to log the well at high speed with DigiScope* slimhole MWD service powering MicroScope* resistivity- and imaging-while-drilling, SonicScope* multipole sonic-while-drilling, and adnVISION* azimuthal density neutron services for simultaneous acquisition and transmission of real-time data.

RESULTS

- Powered the entire BHA simultaneously using DigiScope slimhole MWD service.
- Delivered real-time data at a logging speed of 140 ft/h.
- Achieved 6-bps physical bit rate while relogging, with 12-Hz signal strength.



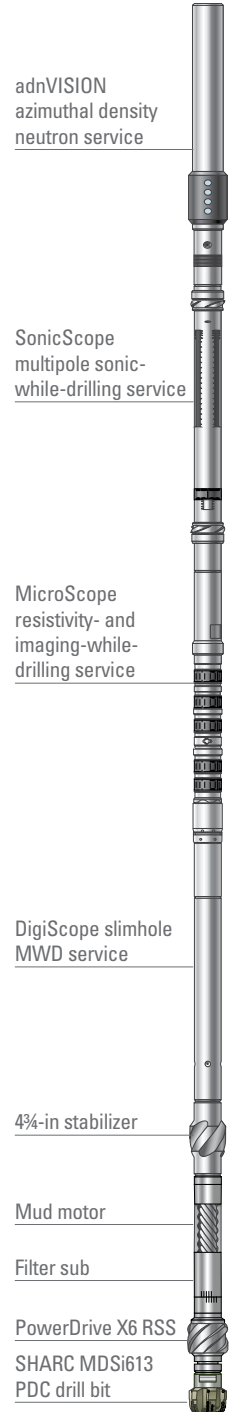
Comprehensive LWD data needed for 6-in lateral section

ConocoPhillips planned to drill a slimhole well in the Bull Moose field of the Bakken shale play in North Dakota, USA. The Red Wing 16-1H ST01 well was designed for an 8¼-in vertical section that extended to landing the curve, after which gamma ray correlation would be used to drill the 6-in horizontal section to TD in the middle Bakken dolomite formation. To drill the well in the target zone and perform formation evaluation, the operator needed continuous wellbore survey, shock and vibration, acoustic, and azimuthal density neutron data.

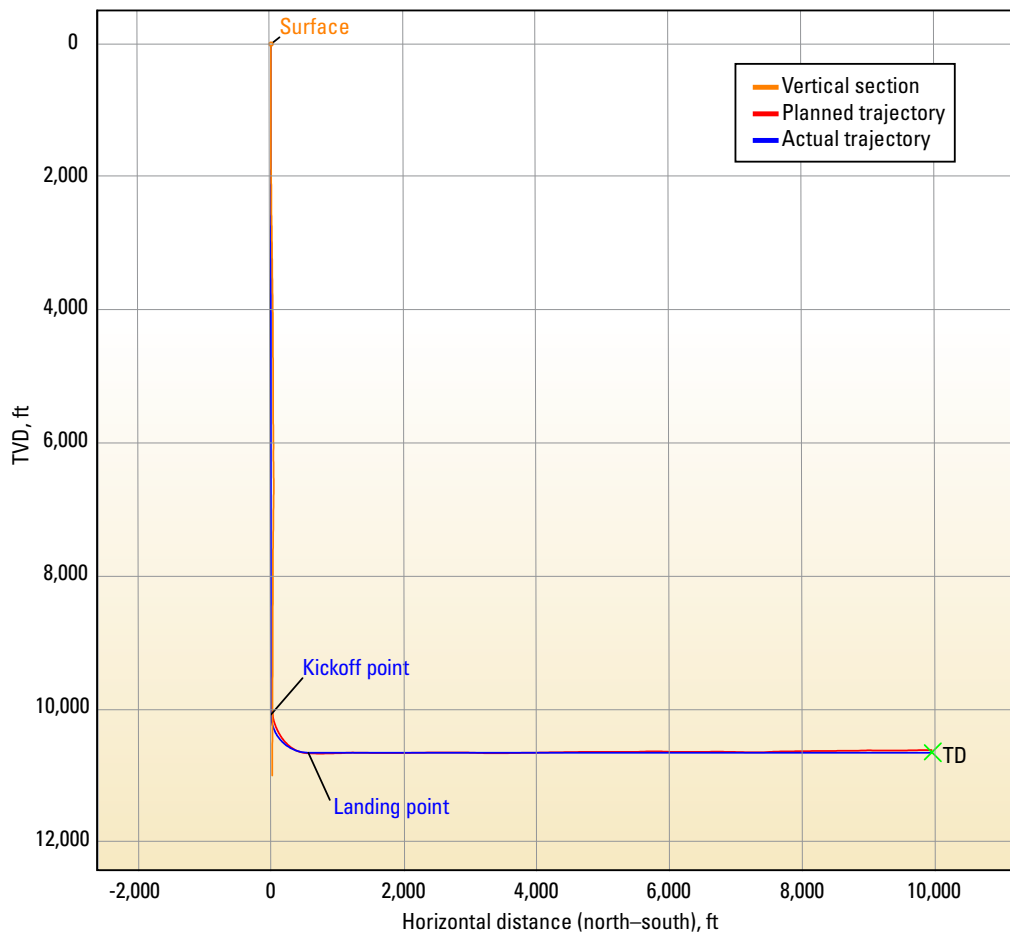
Slimhole MWD selected to power extensive BHA

A BHA designed to collect this expanse of LWD data for the 6-in lateral needed to include an MWD tool that could simultaneously power all three LWD services, ensuring continuous real-time data for complete reservoir description. Schlumberger provided the DigiScope slimhole MWD service that, in addition to its own power consumption, generates 110 W uphole and 110 W downhole for flexibility in BHA configuration.

In addition to using the DigiScope service to collect wellbore surveys and shock and vibration data, the team was able to include MicroScope, SonicScope, and adnVISION services to ensure acquisition of all desired data in real time. The PowerDrive X6* rotary steerable system (RSS) and a mud motor were included with an MDSi613 SHARC* high-abrasion-resistance PDC drill bit from Smith Bits, a Schlumberger company, for full directional control and reliability as the team used gamma ray correlation to drill the lateral section to TD. Then the BHA was picked up to relog the section from 20,350 to 11,347 ft MD.



The custom-designed BHA included a powerful suite of LWD services.



DigiScope service was used for power generation and real-time data transmission in the 6-in lateral section, which provided valuable data to guide drilling within the zone and to evaluate the formation.

Power generated for entire BHA, enabling LWD data acquisition

ConocoPhillips moved forward with the slimhole BHA for the 6-in lateral section and was able to acquire all the required data in high resolution. With the DigiScope slimhole MWD service incorporated, the combination suite of LWD tools was powered continuously while logging at a speed of 140 ft/h and provided good-quality real-time and recorded mode data. The DigiScope service achieved 12-Hz signal strength and 6-bps physical bit rate during relogging.

Contact your local Schlumberger representative to learn more.

slb.com/DigiScope

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