



Critical Well Successfully Placed in Complex Reservoir Despite Limited and Uncertain Seismic Data

GEOSTEERING SERVICE FIRST-TIME USE IN INDIA HELPS DRILL 6" HORIZONTAL SECTION OF WELL THROUGH DIP CHANGES IN SAND ZONE

INDIA

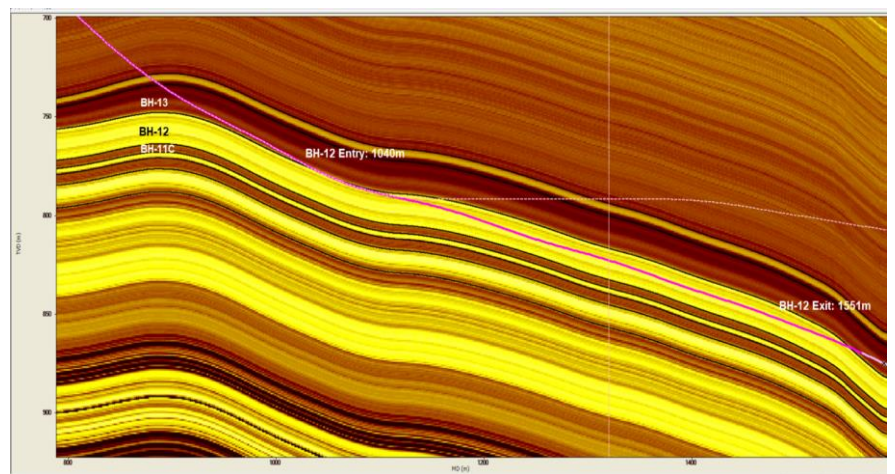
An oil and gas operator challenged Halliburton Sperry Drilling to place a horizontal well in a sand zone, which was interbedded with shale zones, both within and out. The plan was to drill a 6" horizontal section of the well in BH-12 sand in between the shale zones of BH-13 and BH-11C, and following the dip in the formation (see image on right).

Although the zone thickness was of 15 m, the main challenge was to stay in the clean zone of 5 m thickness. The surfaces provided by the customer were only partial due to poor quality seismic data. The surface depths were not accurate, the bed dips were unknown, and there were no control wells drilled in the vicinity to give a better understanding of the reservoir. There was a possibility of encountering two faults, as well, while drilling the horizontal section.

Halliburton Sperry Drilling utilized its ADR™ azimuthal deep resistivity service, along with the Geo-Pilot® 5200 series rotary steerable system (RSS), to expertly navigate this dynamic formation characterized by dip changes. The Geo-Pilot 5200 RSS offers slim hole, point-the-bit technology ideal for this dynamic structure characterized by dip changes.

Additionally, the bottomhole assembly (BHA) consisted of 4-3/4" tools to safely navigate, assisted by ADR data gathered close to the bit to ensure precise geosteering. Finally, images were pulsed up in real time to calculate bed dips while drilling.

This solution enabled the operator to enhance reservoir understanding and successfully enter the clean sand in the middle of the reservoir at a depth of 1,185 m MD-RKB, and continue to steer the well with the help of geosignals and ABG™ at-bit gamma sensor, reaching 1,435 m MD-RKB with an inclination of 80°.



Shows horizontal well path (pink line) geosteered through challenging formation.

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