Schlumberger

High-Definition Survey Service

High-resolution well path description for more accurate trajectory and TVD

APPLICATIONS

- Extended-reach drilling
- Close-proximity wells
- Precise fluid contact proximity determination
- Complex reservoirs with geometric pinchout
- 3D sector model updating based on curtain section
- Thin-layer drilling

BENEFITS

- Reduces rig time by decreasing static survey frequency
- Enables high-accuracy wellbore position through the use of actual tortuosity for TVD calculation
- Improves log interpretation and reservoir modeling
- Enhances TVD accuracy for LWD tie-in
- Provides legacy well position correction
- Increases postjob torque and drag calculation accuracy
- Optimized ESP setting depth selection

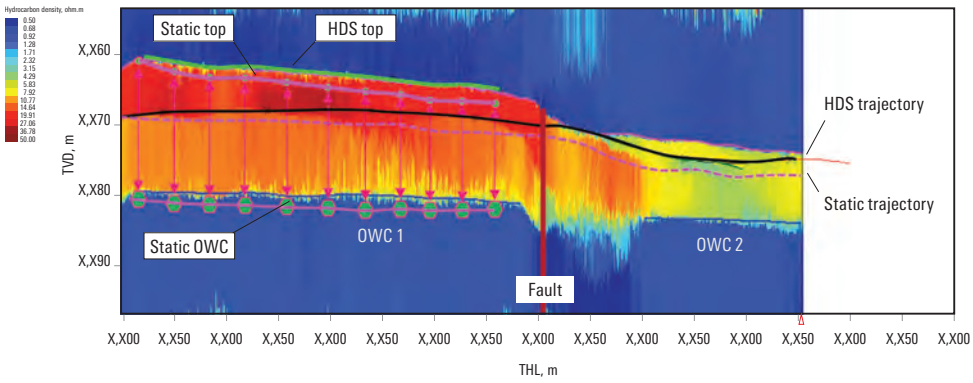
FEATURES

- Surveys up to every 10 ft [3 m] and at inclinations of 15° and greater
- Improves geosteering versus static surveys when used in real time
- Filters continuous inclination data for noise and bias to match or intersect static MWD surveys

The Schlumberger high-definition survey (HDS) service uses continuous inclination measurement to reduce errors associated with conventional surveying. The HDS service surveys as often as every 10 ft, greatly improving on the 100-ft [30-m] survey interval of traditional surveying methods. This process replaces traditional directional survey methods with a high-resolution description of the well path to better capture true borehole trajectory and avoid significant TVD errors. The magnitude of correction and subsequent improvement in TVD is dependent on drilling parameters and the tools deployed.

The HDS service uses while-drilling continuous inclination measurements to build a higher-resolution survey that describes all wellbore deflections, including microdoglegs, which are not identified by static surveys. By identifying microdoglegs, the HDS service improves formation boundary identification when used with the GeoSphere* reservoir mapping-while-drilling service or PeriScope* bed boundary mapping service. This capability further enhances geosteering within thin layers, where microdoglegs are not visible with static surveys. With the ability to identify these deflections, users can avoid mapping an artificial formation boundary bend on the inversion, making incorrect predictions of formation structural behavior, and exiting the thin target layer.

The use of standard survey frequencies in high-angle geosteered reservoirs or directionally complex applications often leads to significant TVD errors related to significant changes in inclination between surveys. Using static and continuous surveys, the HDS service determines the best representation of the well path, minimizing potential TVD errors.



An operator improved well path location in relation to reservoir fluids using the HDS service. When combined with reservoir-scale mapping from the GeoSphere service, the top and oil/water-contact (OWC) boundaries were further optimized.