

CASE STUDY

MICROGUIDE REVEALS UNSEEN TORTUOSITY AND AZIMUTH ANOMALIES, ALLOWING OPTIMIZED ESP PLACEMENT

▶ TECHNOLOGY

- MicroGuide™ wellbore tortuosity logs

▶ APPLICATION

- Artificial lift
- ESP placement

▶ LOCATION

- Bakken Shale

INDUSTRY CHALLENGE + OBJECTIVE

An operator in the Bakken Shale was having issues with their electrical submersible pumps (ESPs) prematurely failing. After trying to determine a better downhole placement based on the existing MWD survey data, the operator realized that they did not have enough information to make this decision. As such, they requested that we run our MicroGuide wellbore tortuosity logs to obtain more detailed information on downhole conditions and wellbore geometry.

TECHNOLOGY + SERVICE SOLUTION

- With only a conventional MWD survey available, we recommended performing a comprehensive MicroGuide logging analysis to provide true insight into tortuosity over the entire depth of the well.
- Taking measurements in 1-ft increments versus stand-length intervals provides a detailed picture of true downhole conditions and issues that might be causing problems with artificial lift equipment.

RESULTS + VALUE DELIVERED

- The MicroGuide logs revealed previously unseen tortuosity from approximately 2,400 to 6,500 ft (Fig. 1), allowing the operator to place the ESP in an optimized location downhole. Ongoing monitoring of the well has shown that the operator has eliminated any premature failures.
- The MicroGuide data revealed that in the upper part of the hole, there was an erroneous azimuth reading on the MWD survey (Fig. 2) that caused an incorrect spike in DLS. Had the operator used this information, they would have incorporated additional equipment at greater cost to traverse the section there not being significant DLS in that area.
- We also provided the operator with a modeled rod guid analysis, which will be used when production from the ESP declines and they change their artificial lift method.

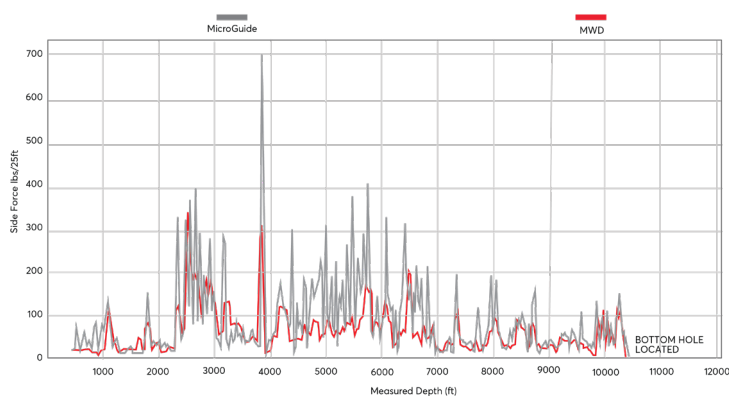


Fig. 1—The MicroGuide logs indicated that there was tortuosity throughout the well that had been undetected by the original MWD surveys.

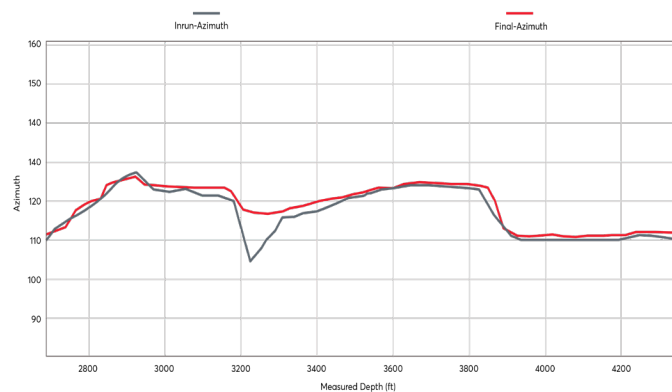


Fig. 2—The erroneous azimuth reading in the MWD data versus the true azimuth as shown with the MicroGuide logs.