CASE STUDY

MICROGUIDE IDENTIFIES TORTUOUS AREAS IN WELLBORE, ENABLING OPTIMIZED ESP PLACEMENT AND ELIMINATING PREMATURE EQUIPMENT FAILURES

TECHNOLOGY

- MicroGuide™ wellbore tortuosity logs

APPLICATION

- ESP placement

LOCATION

- Permian Basin

INDUSTRY CHALLENGE + OBJECTIVE

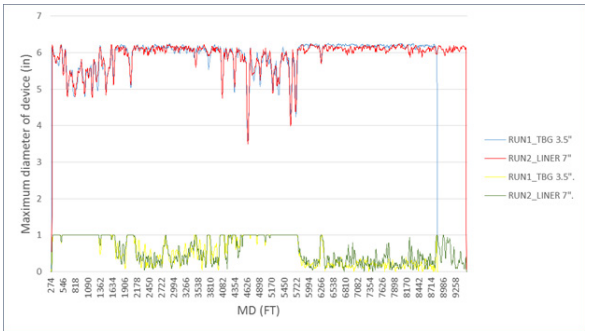
An operator in the Permian Basin experienced a pump failure and was in in the process of replacing it with a new electric submersible pump (ESP). The operator had struggled with premature ESP failures due to cable and stator/armature damage brought on by traversing the wellbore to a less than ideal set depth. To reduce the risk of another pump failure and/or decreased production potential, the operator required a detailed description of the wellbore and its intricacies.

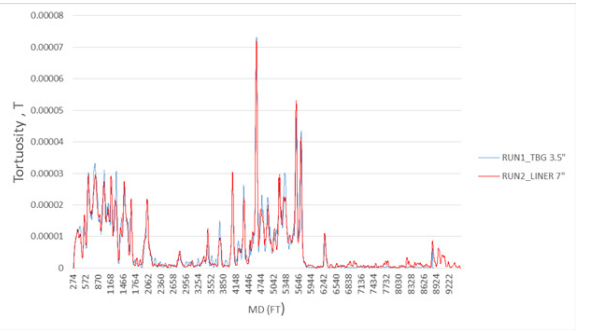
TECHNOLOGY + SERVICE SOLUTION

- We collected high-resolution tortuosity data via a MicroGuide analysis, which displayed doglegs, tortuosity, total displacement, maximum diameter of the straight device, and 3D wellbore graphics.
- MicroGuide was first run from 250 to 8,876 feet in 3½-in. tubing before the current pump was removed. After pump removal, MicroGuide was run again from 250 to 9,518 feet in 9⅝- and 7-in. casing to log the entire wellbore. The MicroGuide analysis was performed based on the operator's specifications of a 6.28-in. casing ID, 6,276-ft installation depth, and 5.62-in. OD, 60.54-ft ESP dimensions.

RESULTS + VALUE DELIVERED

- The MicroGuide analysis showed that from 250 to 2,000 feet and 4,000 to 6,000 feet, tortuosity was severe enough to present a problem with proper ESP placement. Additionally, the analysis revealed that in these locations, the maximum diameter of a straight device would be less than the 5.62-in. OD of the ESP. These results were confirmed with both sets of data providing the client with extra peace of mind and quality control.
- We highlighted areas of the wellbore that could potentially cause issues when traversing the ESP to our optimum suggested ESP set depth. The operator reduced the tubing size from 2⅞ to 2⅜ in., increased the number of cable clamps, and slowed the inrun speeds in trouble areas of the wellbore.
- Through the use of our MicroGuide technology, the operator successfully placed the ESP at the recommended set depth without damaging it. The ESP is currently online and has been running for 202 days without issues.





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