

## CASE STUDY

# MICROGUIDE REVEALS BHA PERFORMANCE LIMITATIONS, ENABLES OPTIMIZED ESP PLACEMENT IN CHALLENGING WELL

### ▶ TECHNOLOGY      INDUSTRY CHALLENGE + OBJECTIVE

- MicroGuide™ wellbore tortuosity logs

### ▶ APPLICATION

- Artificial lift
- ESP placement

### ▶ LOCATION

- Latin America

In Latin America, an operator was experiencing challenges with ESP failure and incurring significant costs from lost time and damaged equipment. After having difficulty running the casing string, the operator suspected that there were problems with the BHA, but the well had been drilled according to plan and in line with readings from the MWD sensors. To determine the causes of equipment damage and failure, the operator decided to run the MicroGuide logging system in the 9<sup>5</sup>/<sub>8</sub>-in. casing section of the well.

## TECHNOLOGY + SERVICE SOLUTION

- The well was initially drilled with an RSS and surveyed with a drop gyro and MWD system down to 8,875 ft. MWD surveys were only collected to TD at 10,750 ft. The MWD surveys on the last 1,312 ft showed that with regards to azimuth, inclination was building from 58 to 70° over the section. However, there were indications of issues with the 12<sup>1</sup>/<sub>4</sub>-in. BHA on the trip out of hole, making backreaming from 10,794 to 9,104 ft and hole cleaning from 10,794 to 10,354 ft necessary.
- When running the 9<sup>5</sup>/<sub>8</sub>-in. casing, the string got stuck at 10,709 ft and could not be run further. Repeated attempts to pick up the string failed, with the operator having to perform a cleanout run to scrape the casing area clean. After running the completion assembly and placing the ESPs, production briefly came online before both ESPs failed.
- Running the MicroGuide system allowed the operator to track the well path at intervals of 1 ft, which showed a dramatically different picture of how the well had been drilled than what the operator previously had seen with just the MWD data.

## RESULTS + VALUE DELIVERED

- While examining the MWD sensor readings revealed no evidence of gross error, the well had not been drilled as expected, which was shown on the MicroGuide logs.
- The operator had already incurred costs of more than \$7 million from lost time and damaged equipment, but the MicroGuide system identified microdoglegs in the casing not picked up by the MWD surveys with data collected at stand-length intervals.
- The wellbore tortuosity data revealed the performance limitations of the existing BHA and helped the operator determine that optimal placement of the ESPs was 492 ft higher in the wellbore to avoid further damage.

