CASE STUDY

MICROGUIDE REVEALS SINUSOIDAL BUCKLING IN WELLBORE, ENABLING OPERATOR TO OPTIMALLY PLACE PERFORATING GUNS FOR COMPLETIONS

▶ TECHNOLOGY

- MicroGuide™ wellbore tortuosity logs

▶ APPLICATION

- Wellbore quality
- Quality optimization
- Perforating gun placement

▶ LOCATION

- Karnes County, South Texas

INDUSTRY CHALLENGE + OBJECTIVE

An operator in South Texas had drilled a well and needed to understand wellbore quality in preparation to run the gun string in the lateral. Due to the relative lack of information from the MWD data, the operator decided to run our MicroGuide wellbore tortuosity logs to obtain greater insight into wellbore geometry and downhole phenomena that could affect how far the gun string could be run. This was a unique application for MicroGuide, as typically the system is used to optimize production equipment placement.

TECHNOLOGY + SERVICE SOLUTION

- We recommended performing a comprehensive MicroGuide logging analysis to provide true insight into tortuosity from surface to the kickoff point.
- 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

- We successfully ran a high-angle MicroGuide pumpdown to approximately 12,500 ft on a third-party wireline truck.
- Based on the MicroGuide data, we determined that there was a section of sinusoidal buckling from approximately 7,000 to 10,500 ft (Fig. 1). As the MWD data showed no issues, the operator would not been aware of this without high-resolution tortuosity data.
- The analysis of the completion equipment placement revealed that at an MD of 7,459 ft, a 52.3-ft device with a diameter of 3.38 in. would undergo a unifom bend of 6.996°/100 ft (Fig. 2), meaning that running the perforating gun on wireline to this depth should fall within string tolerance. At the same depth, however, there was no acceptable maximum diameter for a straight device, meaning future production equipment could not be placed in the same area.

40 gyrodata YEARS OF INNOVATION

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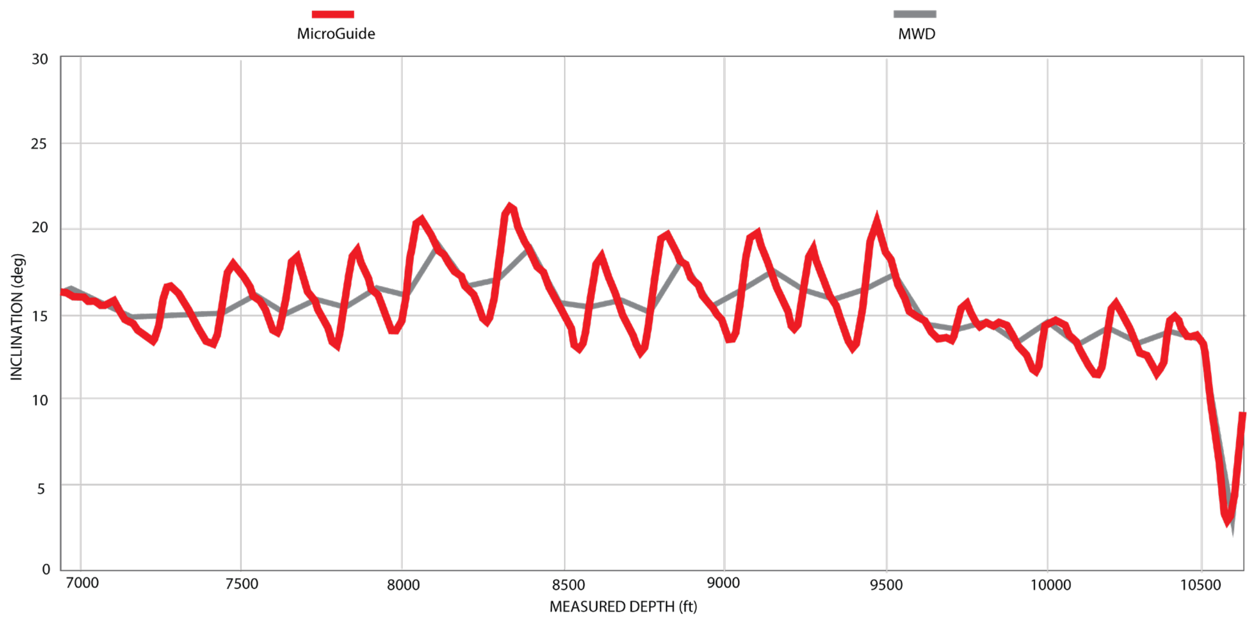

Fig. 1—The MicroGuide logs revealed sinusoidal buckling throughout the section that was otherwise invisible with standard MWD data.

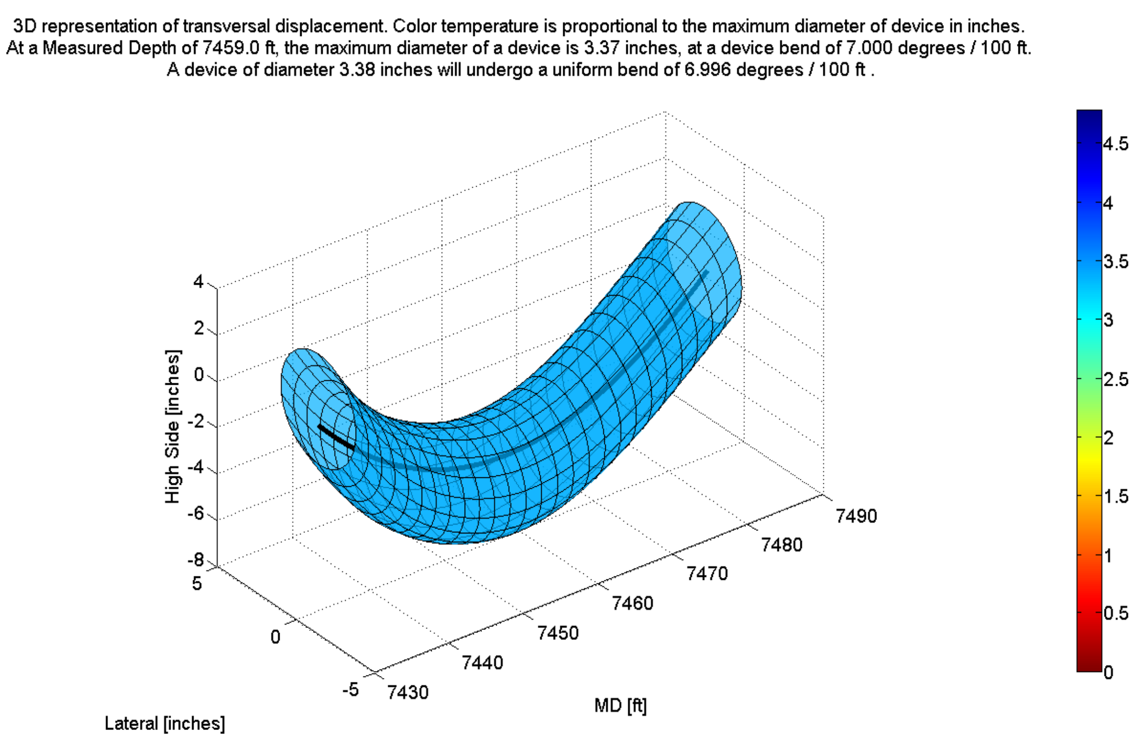

Fig. 2—MicroGuide showed that a 52.3-ft device with a diameter of 3.38 in. would undergo a unifom bend of 6.996°/100 ft at 7,459-ft MD, which was within tolerance. This would not have been possible with a straight device at the same depth.