**IT’S ALL ABOUT THE DATA: Deviated Downhole Data Extraction**

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**Abstract**

In the 1990’s an epidemic of sucker rod failures caused rise for attention. Sandia National Laboratory was endorsed to run a series of field tests in which actual sucker rod forces were measured in vertical wells with dynamometer tools. This data was gathered in the hopes of diagnosing said failures and improve the efficiency of the overall rod lift system. The downhole data gathered led to the development and validation of the wave equation to calculate downhole conditions in a vertical well.

No such data is available for deviated or horizontal wells.

The assumptions made in the vertical well mathematical model prove the use of the wave equation to be no longer valid, in the case of a deviated well. The current industry standard is to manipulate the vertical well application as best possible; however, this often leads to oversized and highly stressed rod lift systems.

BHGE’s Rod Lift Systems team has developed a high-temperature, high-pressure downhole dynamometer tool capable of gathering downhole data in producing wells. With this tool, forces and stresses experienced in the rod system will be measured throughout the deviated and lateral sections of deviated wells. This unprecedented data collection will be analyzed and used to develop a series of new software tools specifically for deviated or horizontal well applications.

Downhole models tailored for deviated well conditions will result in enhanced system design and operational efficiency. Well failures, along with operational expenses, will be significantly reduced for operators. Deviated well diagnostic models will lead to a more accurate calculation of inferred production, improved well control, and extended life of the rod lift system.