

Horizontal Well Downhole Dynamometer Data Acquisition (HWDDDA)

Victoria Pons, Ph.D. WellWorx Energy

Dr. Tony Podio

Lynn Rowlan, Echometer

Robert Valadez, Marathon

Michael Romer, Exxon Mobil

Walter Phillips, Wansco

Gregg Hurst, Lifting Solutions

Abstract:

Current models for design and analysis of rod pumped wells are based on data from vertical wells. The assumption that these models work is only theoretical. Such models have never been validated with actual measurements from deviated or horizontal wells.

The result has been rod string designs which are either too conservative or overly optimistic. This can result in excess rod string weight which constrains production rates; or premature rod failures that necessitate well interventions and production interruptions. From a diagnostic point of view, the software that is used for analysis and in wellsite controllers today still rely on the vertical hole model, which are inadequate at dealing with deviated wells and the mechanical friction responsible for the majority of today's failures.

The HWDDDA project aims to gather true measured data such as tri-axial load and acceleration to help improve design and control software for rod systems. The goal of the HWDDDA project is to design and manufacture downhole tools and deploy those tools in deviated and horizontal wells. Data gathered during the HWDDDA project can be used to validate existing models and develop models better equipped to handle the complicated balance of forces occurring during pumping in deviated and horizontal wells. Data collected by the HWDDDA tools will be validated, archived, and distributed to the industry.

Thanks to the generous contributions of our member companies, the design and manufacturing of downhole tools is underway. In this presentation, details on the HWDDDA projects as well as an update on status and recent developments is provided.