

## SMART Sens™ Case Study: Pump Down Assurance in Extended Reach Lateral

### Background

- Client planned a multi-stage “plug and perf” operation with more than 50 stages per well.
- There has been a history of pump down conveyance problems due to complex well profiles.
- Because of the combined effects of cable friction in the flow tubes and cable friction in extended lateral wells, the tension measured at surface was not considered a reliable indicator of downhole tension at the logging head.
- Client requested SMART Sens™ to provide a real time measurement of downhole tension during pump down.



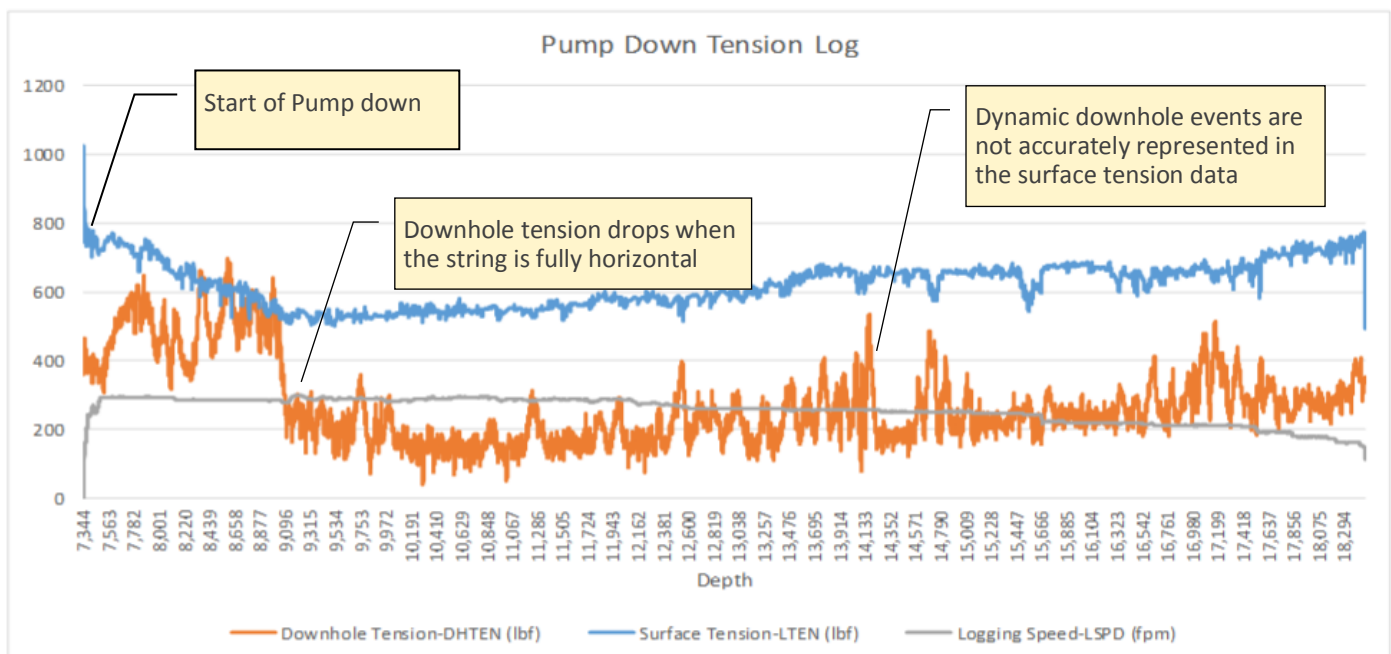
SMART Sens™ Tension Sub

### Project planning

- Two Smart Sens™ were deployed to the district and shop tested with a mock perforating string prior to deployment on location.

### Results

- 110 Pump down runs were completed in two wells with SMART Sens™.
- Perforating strings with plugs successfully conveyed to over 18,200 feet measured depth with over 9,200 feet of lateral.
- Campaign successfully completed with zero tool maintenance, zero tool failures, and zero lost time.
- Multiple instances observed where downhole head tension behaved differently from surface cable tension.



Example SMART Sens™ Pump Down Log