



# SURVEY MANAGEMENT

## REMOVE UNCERTAINTY WITH DATA AS YOU DRILL

Drilling practices alone are not enough to accurately deliver a high quality wellbore, as success is equally dependent on the accuracy of the wellbore survey. H&P's Survey Management increases the accuracy and consistency of how we measure boreholes, enabling the delivery of any outcome that relies on knowledge of the wellbore position or shape. These outcomes include landing a curve, properly spacing laterals, safely performing collision avoidance operations, and updating well plans and geological models to accurately reflect data that was measured while drilling.

## ACCURATE, CONSISTENT, AND RELIABLE WELLBORE SURVEYS

By reducing the magnitude of survey errors commonly encountered during drilling operations and through the early identification and elimination of gross errors related to the surveying process, Survey Management improves the accuracy, consistency and reliability of wellbore positioning operations.

H&P provides a pre-job report confirming basic well details and aligning operations on initialization of survey instruments. During drilling, real-time corrections of the survey data are performed and once the well is finished a post-job analysis of what occurred is provided so that operators can have greater confidence that survey execution was performed to their expectations. This helps eliminate gross errors that may directly contribute to major adverse events such as sidetracks, missed landing points and wellbore collisions. Reducing gross errors will in turn reduce the frequency of those negative outcomes.

### **Reducing survey uncertainty can:**

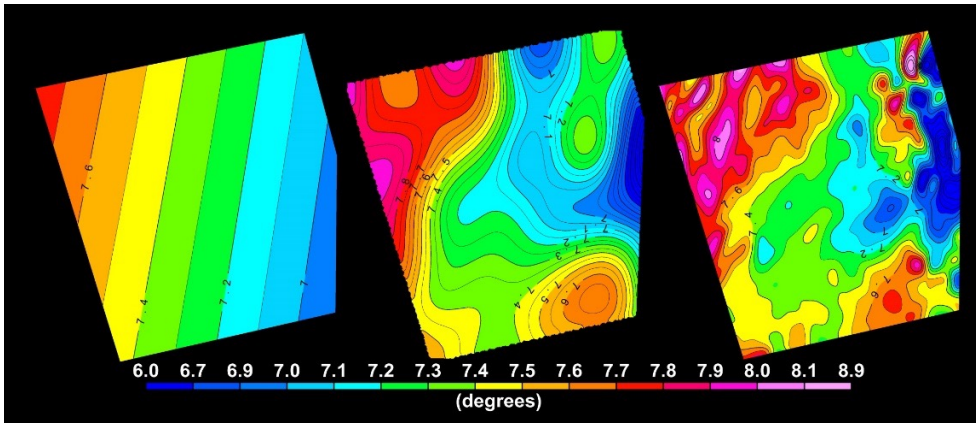
- Expand the safe operating envelope available to a driller when performing collision avoidance operations
- Drive more precise spacing of laterals
- Enable more accurate total vertical depth (TVD) estimation both when landing the curve and drilling the lateral

## SMOOTH OPERATIONAL PROCESS ENABLES PAINLESS IMPLEMENTATION

- Automated quality control and data processing
- API connections to third party software
- Trusted, technical experts provide procedures and best practices to help ensure survey success
- Operations to scale without compromising service quality

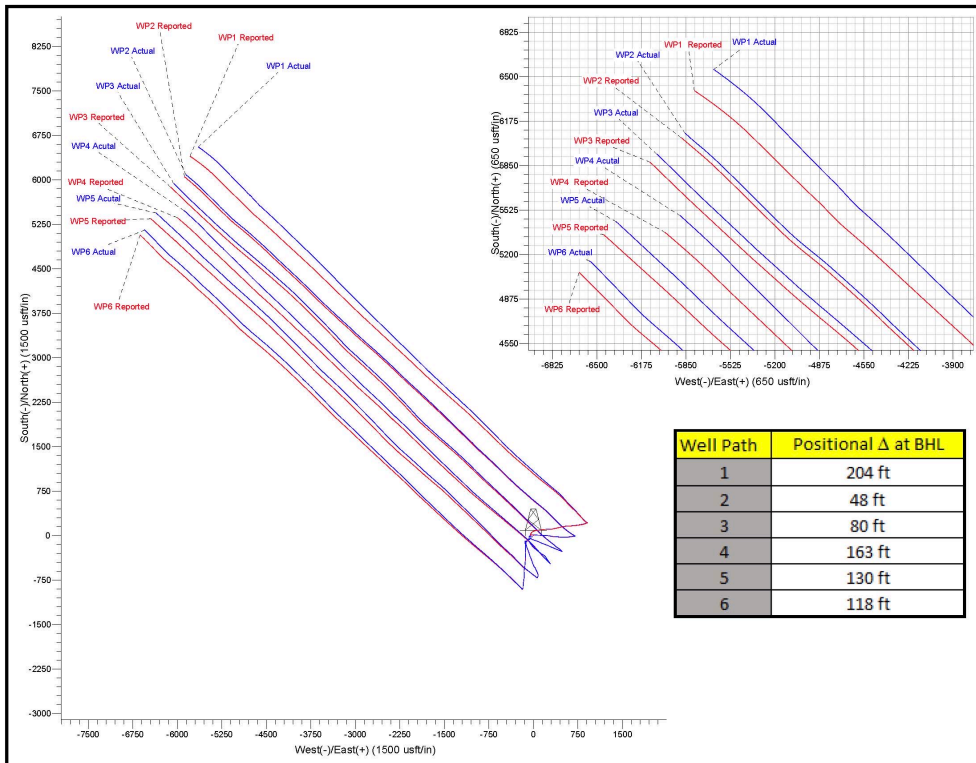
# PROOF POINTS

**FIGURE 1: REDUCE BOTTOMHOLE UNCERTAINTY BY UP TO 60% ACCURACY COMPARISON - MAGNETIC DECLINATION**



Main field model: 0.8-1.0 deg at  $2\sigma$   
 High-def model: 0.68 deg at  $2\sigma$   
 IFR1 model: 0.32 deg at  $2\sigma$   
 IFR1+GS Model: 0.16 deg at  $2\sigma$

**FIGURE 2: HIGH-DEFINITION MODELS + IN-FIELD REFERENCING + DIRECT OBSERVATION = EXTREME ACCURACY**



## CONTACT US

For more information on how H&P Survey Management can help you achieve better drilling outcomes, contact an H&P sales representative today or contact us through our website at [helmerichpayne.com/contact](http://helmerichpayne.com/contact).

**It's time to follow through on your drilling performance potential.**