



RECONCILE UNCERTAINTY FOR ACCURATE PLACEMENT IN THE PAYZONE

Maximizing reservoir contact in unconventional laterals and horizontal drilling requires several moving parts across engineering and geology teams. With so much uncertainty in both the actual bottomhole location of the well, and the location of the payzone, staying on target can become a moving target.

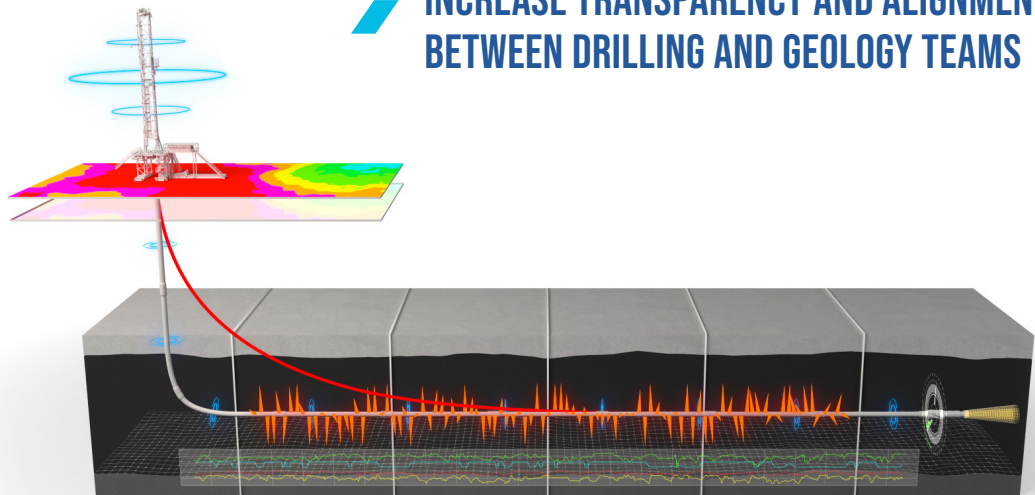
H&P's Automated Geosteering solution removes the manual burden of correlating gamma ray logs and instead uses real-time measurements of geological properties to update the well plan instantly, helping ensure that the borehole accesses the correct geology. It's like having a map that lets you see the whole journey upfront with the added benefit of real-time route adjustments when needed.



As our industry continues to innovate and automate, eliminating once manual tasks, there will also be a reduction in inconsistencies due to human variability. Reliable interpretations translate to maximized reservoir contact and substantial production gains.

➤ REMOVE SUBJECTIVITY AND INCONSISTENCY

➤ INCREASE TRANSPARENCY AND ALIGNMENT BETWEEN DRILLING AND GEOLOGY TEAMS



SO HOW DOES IT WORK?

There are two core algorithms that drive H&P's geology solutions: Formation Top Detection (FTD) and Automated Geosteering. Both algorithms operate on gamma ray data that is collected through H&P's Bit Guidance System (BGS) and provides a real-time assessment of what the log means geologically. FTD analyzes logs in the vertical and curve section where many layers of rock will be passed through in succession.

Key layers are identified in a pre-job geology prognosis by the customer, and when those layers are identified an alert is sent out announcing the presence of the layer and whether it was higher or lower than expected. This allows early changes to be made to the curve section of the well (moving kick-off or landing) based on the new geological knowledge. It can also be used to facilitate the adjustment of a driller's roadmap, where drilling parameters are selected to match the geology being drilled.

Automated Geosteering's correlation algorithm analyzes the gamma ray data after the well has reached its landing point, determining which layer of rock the lateral is currently drilling (hopefully parallel) through, and the angle of the bedding plane for that rock so the well can be kept within it. H&P geoprosessionals have the ability to propose updated well plans relative to the geology (by drawing target lines), which can then be passed back to the Bit Guidance System to follow. On the same display, the current drilling plan (called a convergence plan) is displayed for the geoprosessional so that there is early and clear communication between the drilling and geology groups on what the current plan is and whether changes need to be made.

MAKE ADJUSTMENTS EARLIER TO STAY IN ZONE



Drilling geology integration enables an early target change, avoiding an unnecessary slide.

CONTACT US

Interested in seeing Automated Geosteering in action, or have some questions about its technology?

Contact us at: helmerichpayne.com/contact.

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

PAST PERFORMANCE IS NOT A GUARANTEE OF FUTURE RESULTS. ANY STATEMENTS REGARDING PAST PERFORMANCE ARE NOT GUARANTEES OF FUTURE PERFORMANCE AND ACTUAL RESULTS MAY DIFFER MATERIALLY.
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