

CASE HISTORY

ULT DETERMINES FRACTURE COMMUNICATION BETWEEN WELLS

APPLICATION

- Completion Optimization
- Collision Avoidance
- Pad Drilling
- Geosteering

TECHNOLOGY

- Logging While Drilling (LWD)
 - + Unconventional Logging Tool (ULT)
- Passive Magnetic Ranging
 - + Continuous BTotal

LOCATION

Eagle Ford Shale,
South Texas, US

CLIENT CHALLENGE

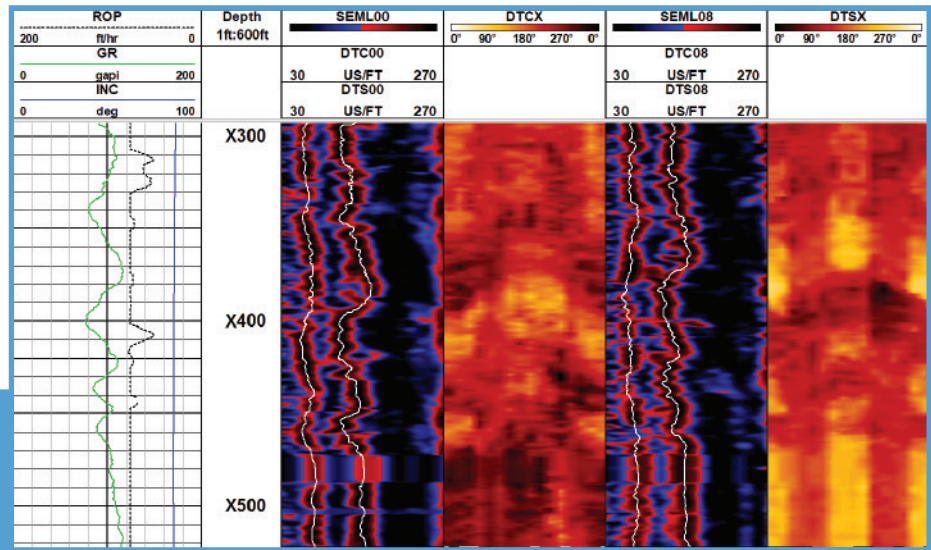
An operator in South Texas was planning to drill a horizontal well with several close approaches to existing producing horizontal wells. Their goal was to cross directly over these offset laterals with the monitoring well and image the wellbore to determine the extent of hydraulic fracturing in different stratigraphic intervals.

The Client's well was going to be drilled with an oil-based mud system which prevented traditional LWD micro-imaging technology from being utilized. Critical information regarding the stress anisotropy changes near these close approaches was required to improve the accuracy of the drainage models for the area. To gain a time-lapse view of the wellbore's induced fracture features, the LWD imaging tool was to be run in the drilling BHA. Subsequent operations of back-reaming out of the hole after reaching total depth would then be performed.

SCIENTIFIC SOLUTION

Scientific Drilling International (SDI) utilized Continuous Btotal from the MWD survey sensor to ensure collision avoidance. SDI's new Unconventional Logging Tool (ULT) was proposed to the operator for identifying fractures in oil-based mud systems. This unique LWD tool measures spectral gamma ray, 128-sector ultrasonic images, borehole caliper, and azimuthal sonic in an integrated collar design that is only 15ft long. The ULT would be run above the MWD tool so that the bit-to-sensor for the MWD surveys and continuous B-total for ranging was not affected.

The proximity to the offset wells was proactively monitored in real-time as the monitoring well passed within 30ft center-to-center of an existing producer well. Expedited turnaround time of the ULT data processing & interpretation was performed to adjust the depth ranges of repeat passes of the drill-pipe conveyed wireline logs ran before starting production casing operations.



Azimuthal Unipole Sonic Log from lateral section of monitoring well. Sonic semblances from Up and Down direction are plotted along with the Compressional and Shear images processed from the 16 azimuthal sonic semblances.

CLIENT VALUE

By utilizing Scientific Drilling's services for LWD and Magnetic Ranging, the operator avoided collision with the offset wells while obtaining high-quality logging measurements for fracture identification and stress orientation.

With the high-resolution data acquired by the ULT, the operator was able to improve the accuracy of the geomechanical models for predicting production by mapping hydraulic fractures across multiple wells for optimal well spacing and completion techniques.