

CASE HISTORY

ULT LOGS WELLBORE STRESSES IN CLOSE PROXIMITY TO SALTWATER DISPOSAL WELL

APPLICATION

Geomechanical Reservoir Modeling
Completion Optimization

TECHNOLOGY

Unconventional Logging Tool (ULT)

LOCATION

Oklahoma STACK, US

CLIENT CHALLENGE

An operator drilling in Oklahoma planned a series of horizontal wells adjacent to a saltwater disposal well that had been injecting produced water over the previous 3 years. While extensive wireline logging was performed before the disposal well was drilled, it was theorized that the downhole stresses might have changed after the prolonged injection of produced water.

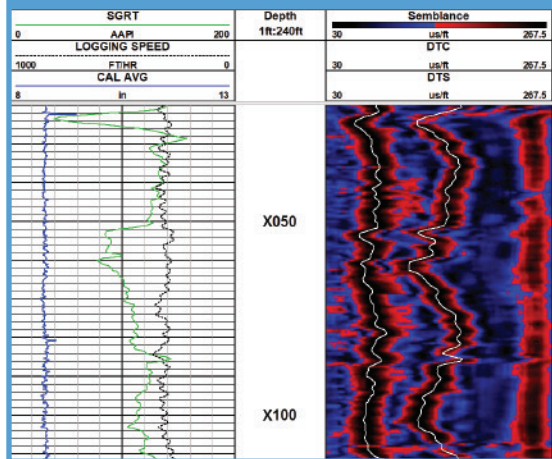
The operator needed high-resolution logging data in the vertical, curve, and lateral to update their mechanical earth model and optimize future drilling and completions practices in the surrounding area with similar conditions.

SCIENTIFIC SOLUTION

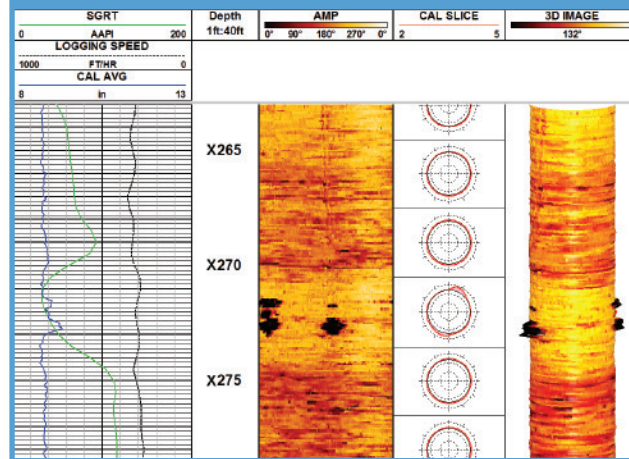
Scientific Drilling International's Unconventional Logging Tool (ULT) boasts an array of advanced logging sensors designed to perform in the most challenging downhole conditions. ULT's ultrasonic sensor package records 128-sector images capable of identifying micro-features, such as fractures and borehole breakout. Its integrated collar design also includes a spectral gamma-ray and azimuthal sonic for a complete geomechanical evaluation logging tool suite.

This unique LWD tool was deployed in the drilling BHA to log the vertical, curve, and lateral in a single bit run. After the well was drilled to landing point, the ULT tool was made up to the lateral BHA and logged while tripping in, as well as while drilling the well to total depth. The data recorded to the tool's memory was able to be incorporated into the mechanical earth model for future optimization efforts in the offset well's drilling and completion program.

Delta-T Slowness plot logged while tripping-in through the intermediate section.



Ultrasonic Caliper with 3-D Image of borehole breakout in the NNE-SSW direction.



CLIENT VALUE

The ULT's integrated collar design minimized additional length and LIH risk compared to traditional LWD tools. With a dual-battery powered setup, the ULT was able to stay downhole for 7.5 days, capturing high-resolution logging data the entire time. Therefore, logging data was able to be acquired across the zones of interest without affecting the expected drilling timeline or Days vs Depth.