

CASE HISTORY

REAL-TIME PORE PRESSURE PREDICTION USING ULT'S SONIC MEASUREMENT

APPLICATION

Pore Pressure Prediction
Offshore Drilling
Exploration Well

TECHNOLOGY

- Logging While Drilling (LWD)
- + Unconventional Logging Tool (ULT)
 - + Wave Propagation Resistivity (WPR)
 - + Pressure While Drilling (PWD)
- Measurement While Drilling (MWD)
- + Falcon MP MWD

LOCATION

Offshore,
Gulf of Mexico

CLIENT CHALLENGE

An operator drilling a well on the shelf in the Gulf of Mexico needed accurate real-time resistivity and sonic data for pore pressure prediction. The well was an exploration well in an area with a known overpressured gradient. The real-time data needed to be accurate and in high data density so that calculations and trend lines could be firmly established while drilling to prevent drilling with inadequate mud weights.

SCIENTIFIC SOLUTION

Scientific Drilling's ULT tool provided real-time sonic data along with resistivity from the WPR tool. These two tools in conjunction were able to transmit data to surface via the Falcon MWD Mud-Pulse System. Having achieved highly reliable and fast data transmission with Scientific Drilling's solution, the operator gained the confidence they needed to continue drilling to their planned TD, which was just above the start of the overpressured zone. Also included in the MWD tool was a Pressure-While-Drilling (PWD) sensor which was actively monitoring downhole Equivalent Circulating Densities (ECD).

After the BHA was on surface, memory logs from the ULT showed some natural fracturing in the formation above the well's target zone. Subsequent wireline logs showed good correlation between the LWD and wireline comparative measurements.

CLIENT VALUE

A rotary steerable system was used to drill the production section, resulting in bit-to-sensor distances for the sonic and resistivity packages at 56ft and 22ft, respectively. These high-quality measurements allowed well correlation, payzone evaluation, and pore pressure prediction.

The expedited turnaround time (<24 hours) of processing the memory data allowed informed decisions to be made regarding which suite of logs to run via wireline. Due to the high confidence in the LWD data, the Client carried out well-informed and intelligent decision making and the production section of 2,680ft was drilled in only 44 on-bottom hours.

