UltraWave™ Ultra-Sonic Imager LWD

Identifies Fractures in Horizontal Shale Well Drilled With Oil-based Mud, Saves $1.5 M in Completion Costs

Objectives

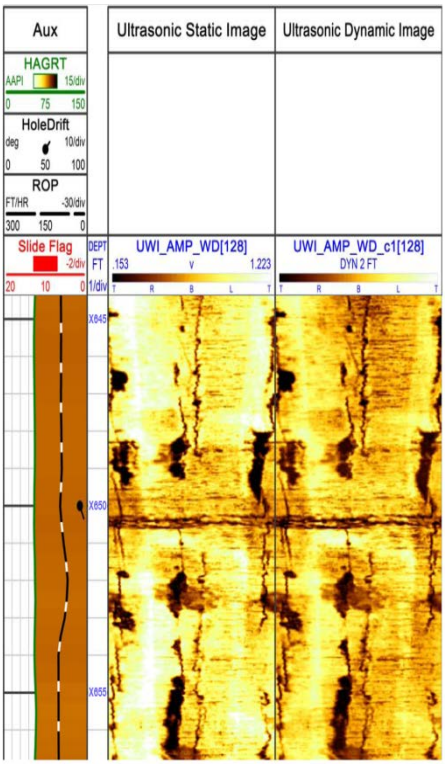
- Obtain high-quality image data to identify fractures in a horizontal shale well drilled with oil-based mud (OBM).
- Evaluate fractures observed while drilling infill development wells.
- Process and deliver a final image log in less than 24 hours after reaching total depth (TD), to enable quick decision-making at the wellsite.

Our Approach

- Weatherford Drilling Services specialists met with the operator to propose using the UltraWave ultra-sonic imager LWD to obtain high-quality images in an upcoming unconventional well. The Weatherford team worked with the operator's drilling engineers and reservoir team to confirm that drilling parameters would not hinder wellbore imaging quality.
- The Weatherford team deployed the UltraWave LWD and the HEL™ hostile environment logging system. As the driller maintained a 150 ft/h (45.7 m/h) rate of penetration across the lateral section, the UltraWave LWD acquired image data. The HEL MWD system obtained total gamma ray, vibration monitoring, and HAGR™ azimuthal gamma ray data. While rotating, the HEL system also acquired continuous inclination and azimuth measurements; during connections, this system acquired six-vector directional survey data.
- Weatherford Interpretation and Evaluation Services (IES) petrophysicists downloaded and processed memory data from the tool when it was retrieved to surface. They returned the image logs to the operator in a matter of hours.

Value to Customer

- The UltraWave ultrasonic imager acquired high-quality images that were quickly processed. Rapid turnaround enabled the operator to evaluate the logs in time to make decisions that would affect ongoing wellsite operations.
- This novel technology enabled the customer to identify significant fracture zones that would make a positive impact on their completion program. The operator drafted a new plan that reduces completion costs by 10-20% per well, ultimately saving $300,000 for each of five wells drilled from the pad, for a total of $1.5 million.
- Based on image quality and support provided by Weatherford operations and petrophysics personnel, the operator intends to run the oil-based, high resolution LWD imager on offset wells to evaluate reservoir rock properties.



UltraWave image log showing fractures identified in a horizontal well drilled with oil-based mud.

LOCATION
Texas, USA

WELL TYPE
Onshore horizontal shale well

MAXIMUM HOLE ANGLE
90°

HOLE SIZE
8.75 in.

MAXIMUM TEMPERATURE
250°F (121°C)

TOTAL DEPTH
10,000 ft (305 m)

PRODUCTS/SERVICES
- LWD services
- UltraWave ultra-sonic imager
- HEL system
- IES Petrophysical support

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