

PixStar™ High-Resolution Ultrasonic Imaging Service

PROVIDES GREATER WELLBORE COVERAGE TO ENHANCE RESERVOIR UNDERSTANDING

OVERVIEW

When drilling in oil-based mud, operators often lack high-quality images to make informed decisions about their fracturing and completion programs. The PixStar™ high-resolution ultrasonic imaging service from Halliburton Sperry Drilling is a logging-while-drilling (LWD) service that assesses borehole sizes and shapes in real time, and provides high-resolution acoustic amplitude images in oil- and water-based mud. The service enhances reservoir understanding of fractures, faults, and lithological features to help operators gain greater wellbore coverage and maximize their asset value.

The PixStar service uses four piezoelectric ultrasonic transducers placed at 90-degree-angle increments around the circumference of the tool, which operate in pulse-echo mode. All four transducers are excited simultaneously, generating 2,000 pulses per second. This high firing rate generates high-resolution amplitude and travel time images, even at high logging speeds, enabling detailed reservoir evaluation.

IDENTIFY FRACTURES, PLAN FRAC PROGRAM

By accurately identifying and interpreting fractures, operators have the information they need to plan and optimize their hydraulic fracture and completion programs. The PixStar service uses reflection amplitude images of the borehole surface to identify acoustic impedance changes associated with structural features (bedding, fractures, faults) and sedimentological features (vugs, clasts, bioturbation). By knowing the location of the natural fracture networks and clusters, operators can plan their fracture programs, maximizing production efficiency.

IMPROVE WELLBORE STABILITY, MINIMIZE RISK

Travel time measurements enable the derivation of borehole size and shape, and the orientation of borehole breakout, thus helping to identify wellbore stability issues. Understanding the stress distribution enables optimization of drilling parameters and mud weight, and provides input to the geomechanical model. This helps prevent wellbore washout or breakout and formation damage, and to minimize risk.

PLACE PACKERS ACCURATELY, OPTIMIZE COMPLETIONS

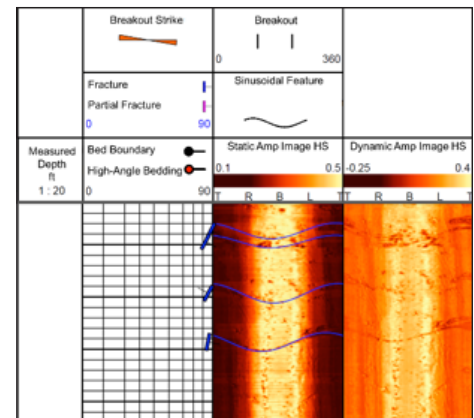
Borehole size and shape analysis is used to calculate total cement volume, enabling safe and efficient cement operations, and helping operators improve packer placement and optimize completion design.

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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High-resolution (540-sector) static and dynamic acoustic amplitude images from the PixStar™ service.

FEATURES

- » Four high-resolution transducers each provide redundancy and wireline-quality, motion-tolerant images
- » Simultaneous transducer firings provide caliper measurements when non-rotating or pulling out of hole
- » Motion-based image corrections remove unwanted artifacts resulting from eccentricity or lateral tool motions
- » Can be run in memory mode as a stand-alone service, or in real time with the LWD string

BENEFITS

Drill to Produce

- » Real-time evaluation of borehole size and shape for consistency
- » Real-time acoustic amplitude images enable porosity steering and geosteering

Enhance Reservoir Understanding

- » High-resolution images identify fractures, faults, and geological features to help optimize frac programs
- » Optimized high-resolution images based on hole size and ROP/RPM parameters

Reduce Well Time

- » Borehole size and shape analysis determines accurate cement volumes and improves wellbore stability
- » Identification of borehole degradation over time avoids costly well stability issues
- » High-resolution images for high-angle or challenging wells remove the need for separate wireline run