

AFR™ Azimuthal Focused Resistivity Sensor

GAIN GREATER RESERVOIR INSIGHT WITH HIGH-RESOLUTION IMAGES WHILE DRILLING

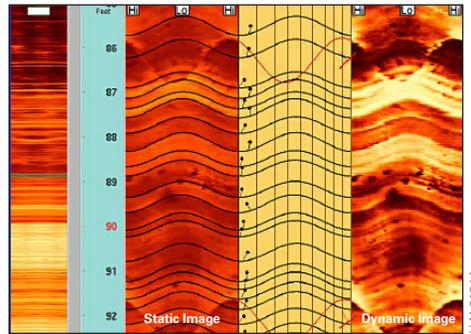
OVERVIEW

The AFR™ Azimuthal Focused Resistivity Sensor from Halliburton Sperry Drilling delivers high-resolution logging-while-drilling (LWD) borehole images for improved reserves estimates and enhanced understanding of the reservoir structure. It also provides an at-bit resistivity measurement, along with omni-directional and azimuthal laterolog-type resistivity measurements, for quantitative resistivity in environments where the ratio of formation resistivity to mud resistivity (R_f/R_m) is high.

DELIVERING HIGH-RESOLUTION BOREHOLE IMAGES WHILE DRILLING FOR BETTER GEOLOGICAL UNDERSTANDING AND ACCURATE WELL PLACEMENT

Developed for use in electrically conductive muds, the AFR sensor complements propagation-type resistivity sensors like the EWR® Electromagnetic Wave Resistivity family of sensors. The compensated sensor array provides measurements at three different depths of investigation for the 4¾-in. and 6¾-in. tools, and two depths of investigation for the 8-in. tool. The tool also features multiple sensor buttons at each spacing, spread around the tool's circumference, providing complete azimuthal coverage even at low rotary speeds. The sensor is equipped with high-resolution and standard-resolution options, ensuring the best possible image quality, even in high-resistivity formations.

The high-resolution, detailed images of structural and stratigraphic features allow for accurate determination of dip and fracture orientation. Understanding dip from real-time images helps improve wellbore placement in the reservoir. In thinly laminated reservoirs, the AFR sensor delivers the fine vertical resolution necessary to make accurate net-pay calculations, and to determine the direction of breakout for wellbore stability and stress analysis to reduce drilling risks.



AFR™ sensor image data provides accurate dip and fracture information.

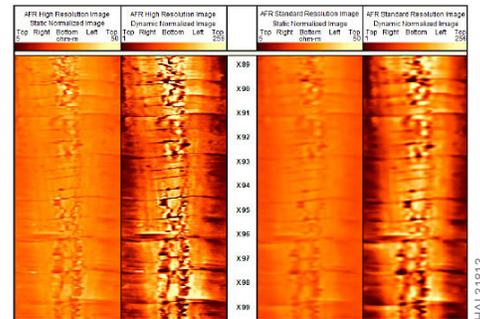


Image shows a combination of high-resolution and standard-resolution data. The AFR™ sensor provides high-quality images in the widest range of formation resistivities.

BENEFITS

Drill to Produce

- » Make geosteering decisions confidently with real-time borehole images for precise wellbore placement
- » Stop precisely at desired casing or coring points, using the at-bit resistivity measurement

Enhance Reservoir Understanding

- » Gain geological insight with high-resolution images, illuminating fractures and thin beds
- » Acquire resistivity logs in high R_f/R_m environments
- » Improve interpretation with accurate resistivity values in high-resistivity formations

Reduce Well Time

- » Determine direction of breakout for wellbore stability and stress

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

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