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 \( R_t/R_m \) 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.

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 \( R_t/R_m \) 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

Sales of Halliburton products and services will be in accord solely with the terms and conditions contained in the contract between Halliburton and the customer that is applicable to the sale.

H013193 05/19 © 2019 Halliburton. All Rights Reserved.