

## **Achieving Increased Net Reservoir Contact Using High Resolution LWD Resistivity Imaging**

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### **Abstract**

A recent case study has reinforced utilizing high resolution LWD resistivity imaging for well-placement applications and reservoir characterization in a water based mud system. The case study achieved increased production due to maximizing reservoir contact utilizing more accurate dip picks and the quantitative at bit resistivity measurements.

The high vertical and azimuthal resolution, along with 100% borehole coverage, yield an image quality comparable to that of wireline service for applications that include fracture formation evaluation and characterization. In comparison to more traditional imaging tools, such as LWD density images, which utilize chemical radioactive sources, the high resolution resistivity image facilitated more accurate real-time dip picking which aided in the ability to geosteer within the sweet spot. The quantitative at bit resistivity measurement also allowed for early detection of boundaries in comparison to other LWD sensors in the same logging string. This tool was also able to achieve more indicative Rt measurement using the multiple depth laterolog resistivity in an environment where electromagnetic resistivity exhibited suffered from polarization and other bed boundary effects.

This paper describes a case study in a controlled carbonate field in the UAE. The LWD imager provides significant economic and logistic benefits, especially in slim and/or horizontal and high angle sections; in addition, it was able to identify fractured zones with mud loss potential shortly after penetration. The real-time resistivity image provides a good basis for accurate dip calculations. The LWD high resolution imager, utilized for the first time in a 6inch hole in this reservoir, proved to provide better value than the traditional techniques in this complex geosteering environment.