

## **Resistivity Borehole Imaging In Challenging Borehole Environments**

**Robert Kuchinski**

*Weatherford International*

[robert.kuchinski@me.weatherford.com](mailto:robert.kuchinski@me.weatherford.com)

Until recently, the acquisition of resistivity borehole image data from well bores less than 6" in diameter has been impossible, due to the size of conventional borehole imaging tools currently available on the market. In addition, conventional deployment methods limit efficient rig time utilization and ultimately lead to higher risk and costs associated with acquiring image data. The introduction of new logging technology now allows operators to obtain excellent image logs in wells as slim as 3 inches in diameter, and in wells with challenging hole conditions.

Image logs are required to properly understand formation properties and fractures details; and to help in future drilling and completion decisions. In Saudi Arabia, the cost savings that are possible by sidetracking existing well bores makes the drilling and completion of ultra slim lateral wells very desirable.

Access into these wells is achieved by employing numerous conveyance techniques including well tractors and drill pipe to push logging tools along the horizontal section to TD. The borehole images can be acquired using small diameter imaging technology with acquisition in real time and in memory. The combination of conveyance and imaging technologies enable operators to make important decisions on where to place completion hardware in the well to enable the well to produce to its full potential.

This paper describes the new imaging technology and will discuss the image acquisition experience in the world's first ultra slim hole and extended reach horizontal sections in Saudi Arabia.