X-tended Range Micro Imager (XRMI™) Tool
For Superior Borehole Images Even in Highly Resistive Formations

The X-tended Range Micro Imager (XRMI™) tool, a wireline borehole imaging tool, is designed to obtain quality images even in environments with a high formation resistivity to mud resistivity (Rt:Rm) ratio. The expanded operating range of the XRMI tool over conventional electrical imaging services is achieved through its state-of-the-art 32-bit digital signal acquisition architecture combined with a large increase in available power for the excitation current (EMEX).

As a result, the signal-to-noise ratio of the raw measurements is improved by a factor of up to five, and the dynamic range is expanded by a factor of up to three. The resulting images offer superior fidelity, even in highly resistive formations (Rt > 2,000 ohm-m) or relatively salty borehole fluids (Rm < 0.1 ohm-m).

Tool Design and Superior Image Quality
Besides the new electronics, the mandrel architecture derived from Halliburton’s highly successful EMI™ imaging tool greatly helps the XRMI tool generate superior-quality borehole images. Pads mounted on six independently articulated arms help maintain pad contact in rugose, washed-out, elliptical, or highly deviated boreholes. Further, a high sampling rate (120 samples per foot) and borehole coverage help obtain high-resolution pictures of the borehole walls.

Reduction in the E&P Risks
The XRMI tool reduces E&P risk by helping:

• Take the guess-work out of identifying the subsurface sedimentary sequence
• Describe the reservoir facies just like “cores,” the ground truth
• Show bedding dips that help rationalize the choice for the next drilling location
• Choose the sidewall core zones, formation testing zones, and perforation intervals accurately by integrating images with other open-hole logs
• Compute accurate, high-resolution net-to-gross

High-resolution XRMI™ tool images showing the micro-textural geological details in the fabric of a limestone section in a test well from the Permian Basin in west Texas: (a) vugular open porosity; (b) open natural fractures, and (c) stylolites. The Rt:Rm ratio exceeds 100,000 in this borehole.
Benefits
Halliburton’s XRMI tool can:

- Optimize offset well placement by evaluating structural and stratigraphic features and bedding orientation
- Improve net-to-gross estimations in laminated shaly sands and carbonates by delineating thin beds and laminations
- Rationalize the well stimulation and formation testing decisions by characterizing the secondary porosity (e.g., fractures and vugs) in reservoirs
- Optimize the drilling efficiency by evaluating and orienting borehole breakout
- Optimize the completion tactics and reservoir management by providing characterization of rock texture and electrofacies

For more information on how Halliburton’s X-tended Range Micro Imager (XRMI) Tool can give you superior images, even in highly resistive formations or relatively salty borehole fluids, talk to your Halliburton representative.