



Unlock greater reservoir clarity in complex formations with real-time porosity data

MagTrak UHD accelerated magnetic resonance service

In geologically complex reservoirs, neutron porosity and density measurements often struggle to deliver accurate porosity readings or distinguish between reservoir fluids. These limitations make it challenging to identify productive intervals, estimate reserves, or design effective completion strategies. The result is increased risks of cost overruns, suboptimal production, and lower-than-expected recovery rates.

The MagTrak™ UHD accelerated magnetic resonance (MR) service from Baker Hughes is designed to mitigate these risks. This logging-while-drilling (LWD) service uses magnetic resonance to deliver real-time, lithology-independent measurements of total porosity. It also captures industry-standard T₂ magnetic resonance logging data to accurately characterize penetrated formations. The magnetic resonance data helps quantify fluids in pore spaces, differentiate between bound and free fluids, and determine a permeability index that informs fluid mobility in the reservoir—even in highly dynamic drilling environments.

The latest evolution of the proven MagTrak™ LWD nuclear magnetic resonance (NMR) service, the MagTrak UHD accelerated magnetic resonance service features design

advancements that enhance reservoir characterization and support smarter, more efficient well placement.

CAPTURE ACCURATE LOGS AT HIGH DRILLING SPEEDS

The MagTrak UHD service is available in a range of tool sizes to log wellbores from 5-7/8" in. to 12 1/4" in. diameter. The technology logs at rates of penetration (ROPs) up to 120 ft/hr across all tool sizes and transmits accurate T₂ spectrum in real-time. These innovations mitigate the impact of drilling dynamics on data quality, reduce overall drilling time, and ensure reliable formation evaluation without compromising operational efficiency.

COLLECT DETAILED DATA IN THE TOUGHEST DRILLING CONDITIONS

MagTrak UHD is a low-gradient tool that operates with a small static magnetic field gradient, producing a near-zero gradient within the zone of investigation. This design choice, coupled with low-motion stabilizers in the tool, makes MagTrak UHD less sensitive to lateral vibrations for improved T₂ distribution accuracy.

APPLICATIONS

- Salt-saturated muds
- High ROP and dynamic drilling
- Sourceless porosity
- Continuous permeability
- Fluid typing
- Reserve and production estimates

BENEFITS

- Extends operations in highly conductive muds
- Boosts drilling efficiency and accuracy under dynamic conditions
- Eliminates radioactive source handling and reduces HSE risks
- Avoids water-cut zones
- Provides input for completion design and reserves estimates
- Discovers productive zones in low-contrast reservoirs and other challenging environments

MORE PRECISE CHARACTERIZATION IN MORE RESERVOIR TYPES

With one of the shortest echo-time spacing intervals, the MagTrak UHD tool offers a superior signal-to-noise ratio for precise porosity measurements without sacrificing drilling performance. It also delivers partial porosities that distinguish clay-bound water, irreducible or capillary-bound water, and free fluid fractions. These values improve quantitative volumetric calculations of recoverable reserves while lowering the uncertainty of the reservoir's "net present value."

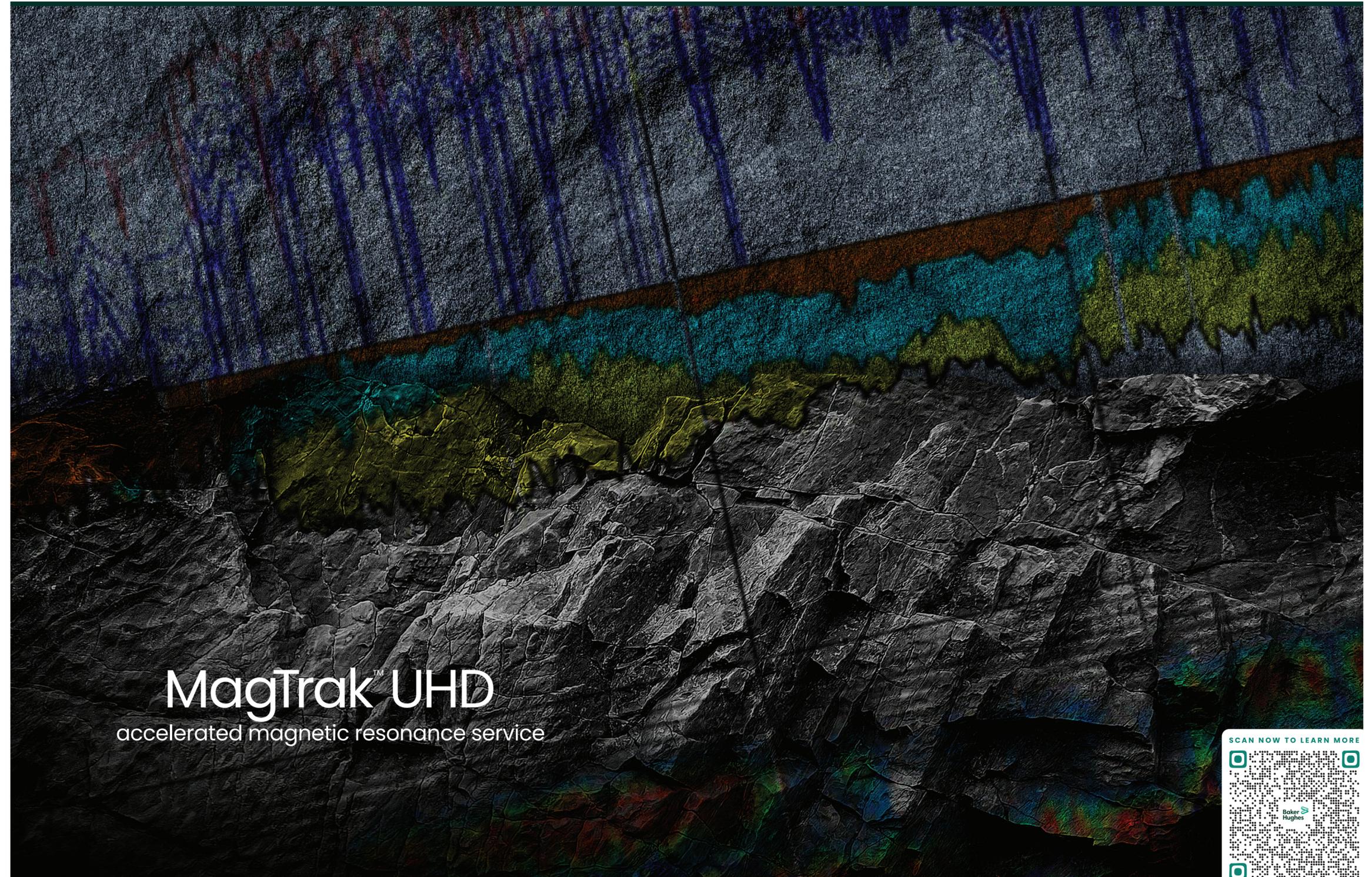
MagTrak UHD is equipped with a turbine alternator, which provides power in highly conductive muds, expanding the operating window beyond what other tools can deliver. And in environmentally sensitive areas where the use of radioactive sources is discouraged, MagTrak UHD provides sourceless measurements of porosities and permeability indices, reducing HSE risk.

OPTIMIZE WELL PLACEMENT AND COMPLETIONS

MagTrak UHD data also directly influences wellbore trajectory and completions strategies. High-resolution insights into porosity, fluid volumes, and permeability empower real-time geosteering decisions to keep the wellbore in the most productive zones, minimizing time spent in nonproductive intervals.

For reservoirs containing light hydrocarbons and gas, the MagTrak UHD service can be combined with the SoundTrak™ UHD advanced acoustic LWD service to provide sourceless, gas-corrected porosity measurements. The MagTrak UHD service's T_2 distributions also help identify testing and sampling locations for the TesTrak™ formation pressure testing or FasTrak™ Prism fluid analysis and sampling services. This integration optimizes sampling times, eliminates relogging operations, and helps guide wellbore placement into the reservoir's sweet spot.

Contact Baker Hughes to learn how the MagTrak UHD service can help minimize drilling risk and maximize reservoir understanding in your next project for predictable, productive, and profitable well construction projects.



MagTrak™ UHD
accelerated magnetic resonance service

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