

Confidently drill through complex reservoirs with precise measurements

LithoTrak UHD precise neutron porosity and bulk density service

Evaluating a reservoir is essential for estimating hydrocarbon reserves, determining the life of a well, and making future decisions on field development. Failing to assess the reservoir accurately could result in completing a limited-producing well, plugging and abandoning a high-value well, or misreporting reserve estimations.

The **LithoTrak™ UHD precise neutron porosity and bulk density service** from Baker Hughes is designed to minimize these risks. LithoTrak UHD provides real-time formation evaluation to estimate reservoir value and enable precise geomechanical analysis. By combining neutron porosity and formation bulk density measurements, the service helps identify and quantify hydrocarbons in the reservoir, providing information on formation porosity and relative volumes of gas, oil, and water in the pore spaces.

The service delivers a range of additional measurements, including:

- Azimuthal density acquisition captures stand-off measurements in 16 sectors and then generates circumferential images that provide real-time information on borehole quality, bed boundaries, and structural dip azimuth of the formations being drilled.

- Photoelectric effect (Pe) measurements provide additional insights into caliper or borehole size readings, while adding lithology identification in mixed formations.
- Azimuthal caliper measurements provide accurate borehole shape and orientation data to support wellbore stability analysis.

These measurements are available in multiple tool sizes, making LithoTrak UHD versatile for boreholes ranging from 5 7/8 in. to 12 1/4 in. Applications include deepwater drilling, extended-reach wells, low-resistivity contrast reservoirs, and wells with borehole stability challenges.

Building on a proven legacy

LithoTrak UHD complements the well-established **LithoTrak™ advanced LWD porosity service** with several new features, including:

- Advanced density imaging in harsh drilling dynamics environments
- A new algorithm for acoustic caliper measurement across washout zones

Driving greater value in real-time reservoir evaluation

LithoTrak UHD's real-time borehole imaging and azimuthal density

Applications

- Standoff binning
- All hole angle deviations
- Managed stand-off for extended-reach drilling intervals
- Deepwater drilling
- Wells with stability challenges
- Straight hole rotary
- Steerable motors
- Rotary steerable systems

Benefits

- Increased recovery from precise reservoir navigation
- Accurate, real-time density and neutron measurements
- Superior safety in tight ECD environments
- Reduced risk with sharper wellbore integrity evaluation
- Enhanced wellbore stability through real time geo-mechanics monitoring

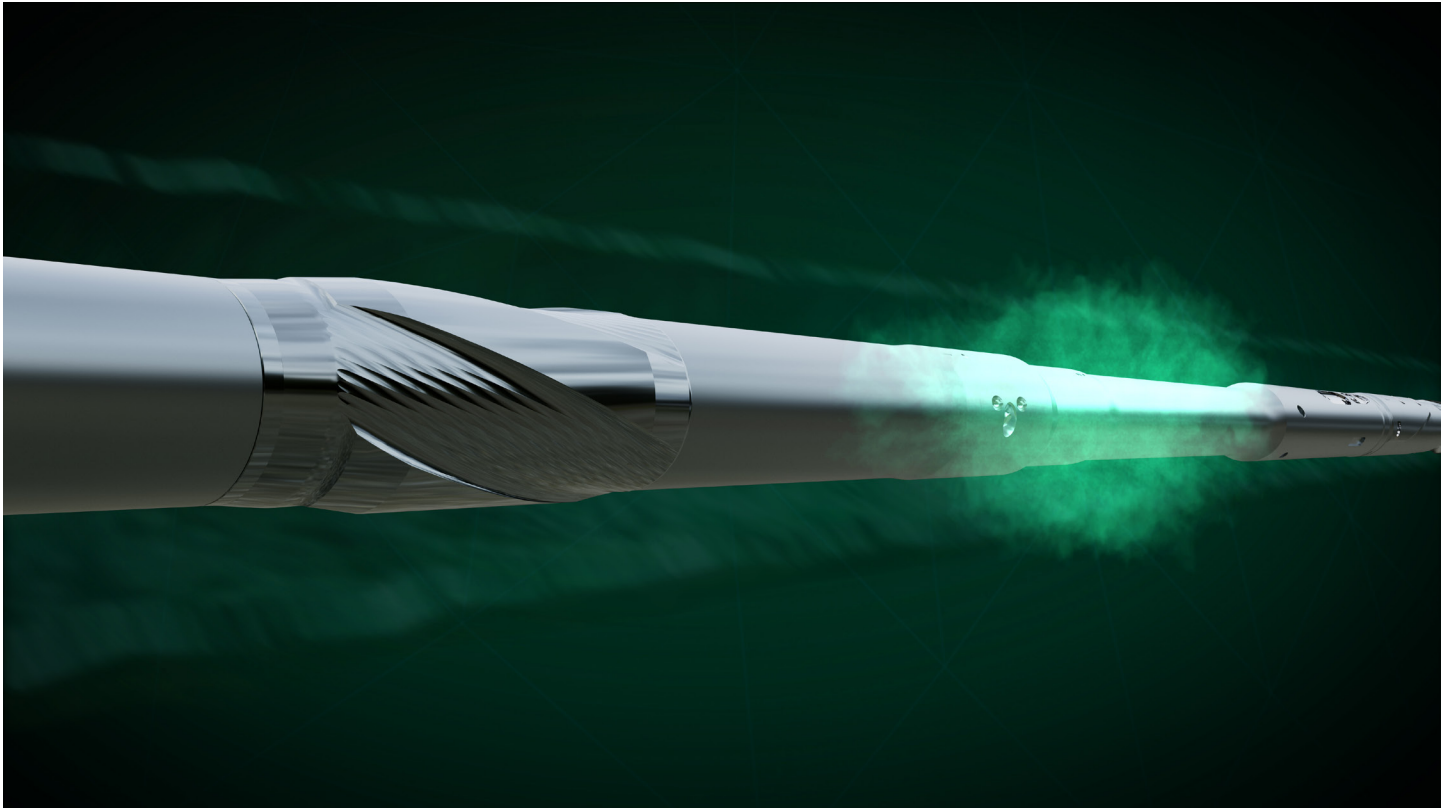
measurements provide significant value throughout the reservoir lifecycle.

- Real-time azimuthal density images and borehole quality evaluations support geosteering. LithoTrak UHD's measurements determine structural dip and dip azimuth, critical information for accurate reservoir navigation and wellbore placement in highly deviated and horizontal wells.
- When integrated with acoustic data, density measurements generate synthetic seismograms that improve seismic correlation and reduce geologic uncertainty. The service also provides critical inputs for geomechanics stress calculations and breakout risks while drilling, helping to avoid costly stuck-pipe and lost-in-hole events.
- When combined with formation evaluation measurements such as gamma ray, resistivity, magnetic resonance, and formation pressure, LithoTrak UHD helps provide accurate volumetric quantification of the reservoir. Detailed insights into hydrocarbon types, reserves in place, and total recoverable hydrocarbons help determine the optimal downhole completion equipment and surface production systems.
- LithoTrak UHD's density measurements can be integrated with acoustic data to provide valuable insights into rock strength and help pinpoint the best wellbore trajectory, optimal mud weight, and controlled breakout. Such insights also minimize formation damage while guiding efficient production strategies that maximize hydrocarbon recovery.
- LithoTrak UHD's real-time measurements help develop in-situ stress and mechanical property characterizations that inform hydraulic fracturing design, pore volume compressibility, sand production prediction, critical drawdown pressure, and water cut effects—all of which contribute to more effective and reliable completions.

Gaining greater measurement certainty

LithoTrak UHD's modular design allows it to be placed anywhere in the BHA, hence much closer to the bit than other providers. The integrated fluid displacer design ensures more precise measurements, lowering the potential for standoff errors encountered with other tools.

Contact Baker Hughes to discover how LithoTrak UHD can help mitigate risk and support reservoir navigation for optimal well placement.



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