

Compact™ Dual Laterolog Tool

Delivers accurate formation resistivity measurements regardless of wellbore geometry in conductive-mud environments

Applications

- Determining formation conductivity in conductive-mud environments
- Determining water saturation (S_w)
- Providing well-to-well correlation
- Identifying moveable fluids and fluid contacts
- Creating an invasion profile to indicate permeability

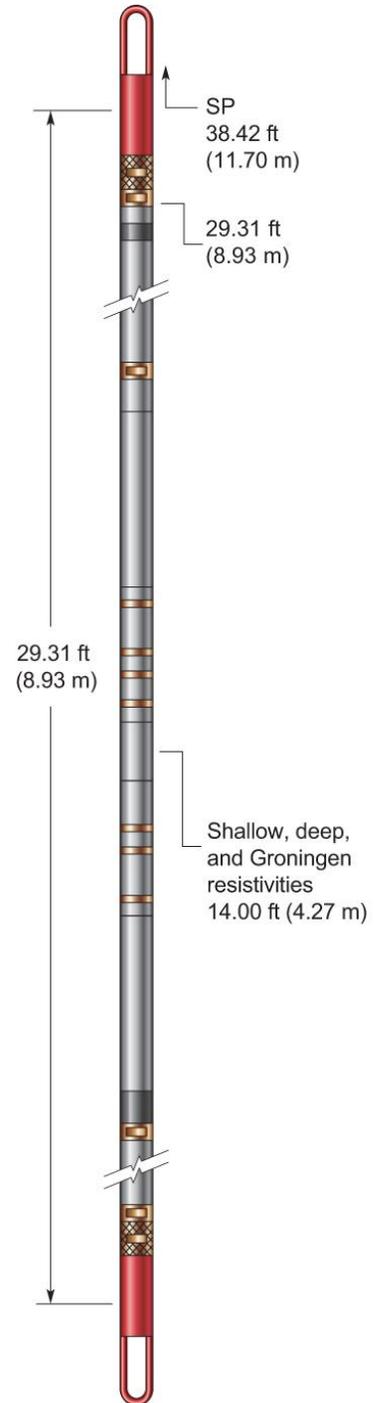
Features and Benefits

- A unique electrode arrangement on the Compact dual laterolog (MDL) tool detects the Groningen effect, which enhances quality control and provides accurate, real-time, deep-resistivity readings.
- The MDL runs with the Compact microlaterolog (MMR) pad to obtain an independent, shallower data set, which improves the accuracy of flushed-zone resistivity (R_{xo}) and formation resistivity (R_f) data in complex invasion profiles.
- Data from the Compact shallow-focused electric (MFE) tool can enhance the vertical resolution of the MDL to 6 in. (0.15 m), which improves thin-bed analysis and reserve estimates.
- The small diameter of the MDL tool facilitates deployment in wireline or memory mode to mitigate the risk of bridging events and to reduce nonproductive time.
- The MDL is fully combinable with the Compact array induction (MAI) tool to provide a unique invasion profiling.
- The tool runs without wireline when used with the Compact memory logging (CML) system.

Tool Description

The Weatherford Compact dual laterolog (MDL) tool provides accurate resistivity measurements in high-contrast conductive-mud environments. The MDL tool provides individually optimized deep- and shallow-penetration curves that share a common 2-ft (0.6-m) vertical resolution. The deep measurement provides the Groningen curve and detects anomalous responses when the tool approaches nonconductive formations, such as salt caps.

Optimized-electrode geometry and digital-measurement sequence control enhance performance over a wide range of mud resistivities (R_m) and hole sizes and virtually eliminate electrode-polarization effects. The voltage reference and simultaneous SP electrodes are incorporated into a stiff bridle at the top of the toolstring to optimize reliability.



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Specifications

Measurement

Data	Deep and shallow resistivity, Groningen, SP
Logging speed	3,600 ft/hr (18 m/min)
Measurement range	0.1 to 40,000 ohm-m
Resolution	1% of measured value
Accuracy	0.00075 s/m or 2% (whichever is greater)
Depth of investigation	Deep: 50.4 in. (1.27 m) Groningen: 50.4 in. (1.27 m) Shallow: 16.2 in. (0.41 m)
Borehole fluids	WBM, salt

Mechanical

Maximum outer diameter	2.25 in. (57 mm)
Length	29.31 ft (8.93 m)
Weight (air)	109 lb (49 kg)
Maximum temperature	320°F (160°C)
Maximum pressure	15,000 psi (103 MPa)
Maximum borehole diameter	19 in. (483 mm)
Minimum borehole diameter	2.8 in. (70 mm)

