Compact™ Microresistivity Tool

Determines flushed-zone resistivity in any wellbore geometry

Applications

- Determining the flushed-zone resistivity (R_{xo}) of the formation
- Creating an invasion profile to indicate permeability
- Providing invasion-correction data in conductive-mud environments
- Delineating thin beds and reserve estimates
- Detecting moveable fluids

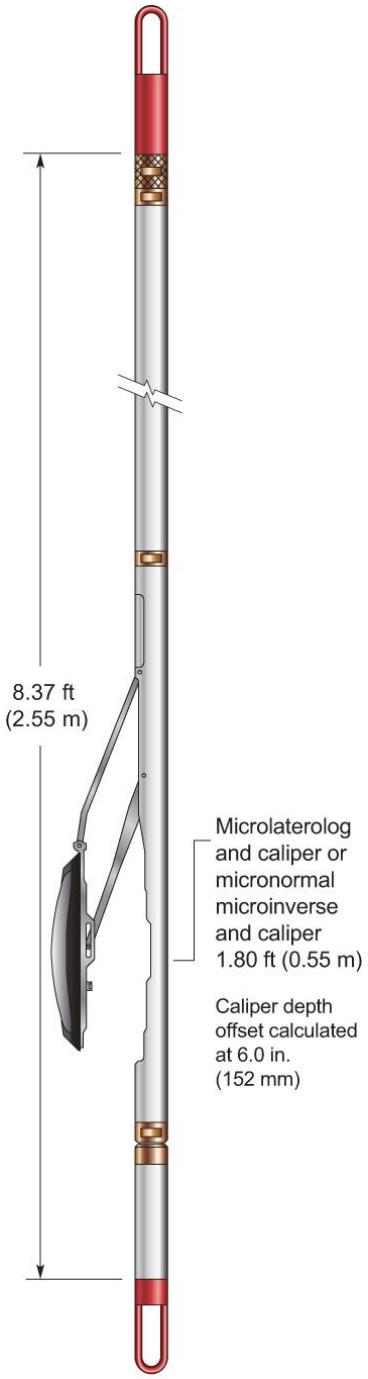
Features and Benefits

- The Compact microresistivity tool (MMR/MML) tool produces a high-resolution R_{xo} measurement that improves thin-bed delineation and enhances the vertical resolution of resistivity tools.
- The MMR/MML tool can be run with the Compact dual laterolog (MDL) tool to provide an independent, shallower data set, which improves the accuracy of the R_{xo} measurement and formation resistivity (R_t) data in complex invasion profiles.
- The small diameter of the MMR/MML tool facilitates deployment in wireline or memory mode to mitigate the risk of bridging events and to reduce nonproductive time.

Tool Description

The Weatherford Compact microresistivity (MMR/MML) tool, equipped with either a microlog (MML) pad or a microlaterolog (MMR) pad, provides resistivity measurements with high vertical resolution and shallow penetration. The MML pad provides micronormal and microinverse curves, which are sensitive to mudcake thickness and provide an important permeability indicator. The MMR measurement is made with a focused-current beam that penetrates mudcake, making it sensitive to the invaded zone. This measurement is used to correct the deep-penetration curve from the Compact dual laterolog (MDL) tool and to detect moveable fluids when used in calculating the flushed-zone saturation (S_{xo}).

Each type of measurement is derived from a single conformable pad held against the borehole wall by a sturdy caliper mechanism. The electrode configuration within each pad matches that used in conventionally sized tools and provides similar response characteristics. The MMR and MML pads are interchangeable, and when both sets of measurements are required, the tools can be stacked.



The Compact microresistivity (MMR/MML) tool provides resistivity measurements with memory or surface readout capability.

Weatherford®

Compact™ Microresistivity Tool

Specifications

Measurement

Tool	MMR	MML
Data	flushed-zone resistivity, caliper	micronormal, microinverse, caliper
Logging speed	3,600 ft/hr (18 m/min)	
Measurement range	0.2 to 2,000 ohm-m	0.1 to 200 ohm-m
Vertical resolution	1.8 in. (45 mm)	2.0 in. (50 mm)
Resolution	1% of measured value	
Depth of investigation	3.1 in. (80 mm)	4.0 in. (100 mm)
Borehole fluids	WBM, salt	

Mechanical

Maximum outer diameter	2.25 to 5.1 in. (57 to 129 mm)	3.7 to 5.1 in. (94 to 129 mm)
Length	8.37 ft (2.55 m)	
Weight (air)	109 lb (49 kg)	
Maximum temperature	320°F (160°C)	
Maximum pressure	15,000 psi (103 MPa)	
Maximum borehole diameter	13.90 in. (457 mm)	
Minimum borehole diameter	3.0 in. (76 mm)	