Compact™ Dual Neutron Tool

Delivers accurate compensated porosity measurements

Applications

- Determining porosity and lithology in openhole and cased-hole wells
- Identifying gas via density porosity
- Defining shale volume
- Providing input for water-saturation calculations
- Enabling detailed well-to-well correlation
- Delineating the reservoir

Features and Benefits

- The tool delivers excellent porosity sensitivity using advances in modeling and detector technology.
- The system provides deatailed measurements in air- and mud-filled environments.
- The small diameter of the tool facilitates deployment in wireline or memory mode to mitigate the risk of bridging events and to reduce nonproductive time.

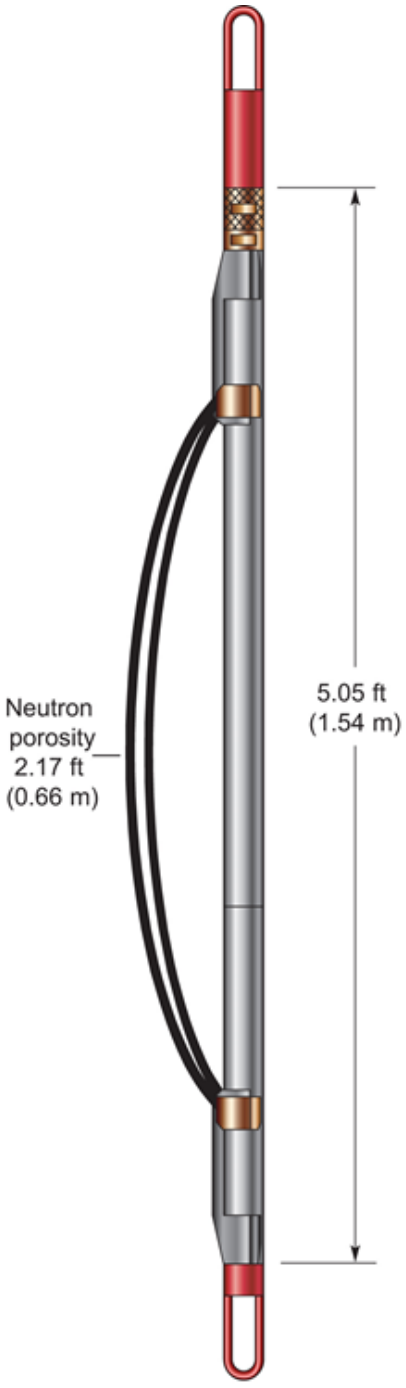
Tool Description

The Weatherford Compact dual neutron (MDN) tool provides a borehole-compensated porosity measurement. With a complete set of environmental corrections applied automatically during data acquisition, the MDN tool is fully characterized for air- and mud-filled environments in both openhole and cased-hole wells.

The MDN tool minimizes sensitivity to environmental effects across its broad operating range. The MDN tool delivers high-accuracy data recorded simultaneously in apparent limestone, sandstone, and dolomite porosity units with smaller borehole size corrections than conventionally sized tools.

Proprietary precision-enhanced neutron (PEN) processing is available. It improves statistical repeatability, logging speed, and the vertical resolution of the log.

The MDN tool typically runs with a V-bow spring, which forces the tool against the borehole wall for maximum sensitivity. In oval boreholes, this double-spring eccentralizer aligns the Compact photodensity (MPD) tool—normally placed below the MDN tool—along the short axis. Other ancillaries, such as the Compact V Caliper (MVC) tool, can enhance neutron and density data across a complete range of environments and applications.



The Compact dual neutron (MDN) tool provides high-quality data in routine to extreme boreholes.

Weatherford®

Compact™ Dual Neutron Tool

Specifications

Measurement

Data	Thermal neutron porosity (uncorrected, environmentally corrected, or PEN processed)
Logging speed	Standard: 1,800 ft/hr (9 m/min) High resolution: 1,800 ft/hr (9 m/min) in PEN mode High speed: 3,600 ft/hr (18 m/min) in PEN mode
Measurement range	-3 to 100 limestone porosity units
Measurement accuracy	Better than 0.5 at 20 pu
Vertical resolution	Standard mode: 24 in. (610 mm) PEN mode: 12 in. (305 mm)
Depth of investigation	10 in. (260 mm) at 20 pu
Borehole fluids	WBM , OBM, salt, air (limited)

Mechanical

Maximum outer diameter	2.25 in. (57 mm)
Length	5.04 ft (1.54 m)
Weight (air)	51 lb (23 kg)
Maximum temperature	320°F (160°C)
Maximum pressure	15,000 psi (103 MPa)
Maximum borehole diameter	18 in. (457.2 mm)
Minimum borehole diameter	3 in. (76 mm)