

Neutron porosity tools

Geovista offer two neutron sondes. The Dual Neutron Sonde provides quantitative formation porosity measurements in uncased holes. The Neutron-Neutron probe is a single detector slim probe for qualitative porosity measurements in most boreholes.

APPLICATIONS

- Quantitative porosity (compensated only)
- Qualitative porosity (Neutron—Neutron only)
- Lithology identification
- Petrophysical properties
- Correlation
- Aquifer analysis

Dual Neutron Compensated Neutron: The sonde uses a bottom loading neutron source and a set of two detectors at different spacings to detect the neutrons that are slowed by hydrogen in the formation. As the sonde is sensitive to hydrogen, it is used to distinguish between fluid bearing formations and rock matrix. In order to optimise performance, the sonde is designed with three main features:

1. A side-walling bow spring to ensure that the detector measures only the neutrons slowed by the formation
2. A detector mandrel diameter that is large enough to minimise the sonde and borehole curvature mismatch and improve sonde to formation contact to minimise the effect of the borehole fluid
3. An efficient detector shield to prevent neutrons from travelling up inside the sonde body

Neutron-Neutron: A reduced diameter version with only one detector available for qualitative porosity measurements. Can be run in any environment.



SPECIFICATIONS

	Dual Neutron	Neutron-Neutron
Weight	23 kg	5 kg
Length	1.67 m	1.44 m
Diameter	60 mm	38 mm
Detector	x2 ³ He	x1 ³ He
	proportional	proportional
	counters	counter
Source	²⁴¹ Am-Be	²⁴¹ Am-Be
	Typically 2.5 Ci	1Ci
Max. Pressure	20 MPa	20 MPa
Max. Temperature	80 °C	80 °C
Combinability	Modular	Modular
	(Can connect probes above only)	(Can connect probes above only)
Borehole	Water, mud	Water, mud
	open/cased Hole	open/cased Hole
Centralisation	Ex-centralised	Not required
Accessories	Bow spring	Source holder
	Verification jig	
	Source holder	
	Source handling tool	