

Nuclear Probes

Compensated Neutron & neutron-neutron Probes

APPLICATIONS

Compensated Neutron

- Quantitative Porosity
- Lithology Identification
- Petrophysical properties
- Correlation
- Aquifer analysis

Neutron-Neutron

- Qualitative Porosity
- Lithology Identification
- Petrophysical properties
- Correlation
- Aquifer analysis

The compensated Dual Neutron Sonde provides quantitative formation porosity measurements in uncased holes, based on Hydrogen Index. The Neutron-Neutron probe is a single detector slim probe for qualitative porosity measurements in most borehole conditions.

OVERVIEW

Dual Neutron Compensated Neutron: The sonde uses a bottom loading neutron source and a set of two detectors at different spacing to detect the neutrons that are slowed down by hydrogen in the formation. As the sonde is sensitive to hydrogen, it is used to distinguish between fluid bearing formations and solid matrix rock. 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 is available for qualitative porosity measurements and can be run in any environment.



SPECIFICATION

	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
Source	Proportional counters ²⁴¹ Am-Be	Proportional Counter ²⁴¹ Am-Be
Max. Pressure	Typically 2.5 Ci	1Ci
Max. Temperature	20 MPa	20 MPa
Combinability	80°C	80°C
Borehole	Modular (Can connect probes above only)	Modular (Can connect probes above only)
Centralisation	Water, Mud	Water, Mud
Accessories	Open/Cased Hole	Open/Cased Hole
	Ex-centralised	Not Required
	Bow Spring	Source holder
	Verification jig	
	Source holder	
	Source handling tool	