



**GEOPHYSICAL LOGGING PROBES**

# Single Neutron

SNNS

**MEASUREMENT PRINCIPLE**

The single neutron employs a 1 curie Americium-Beryllium (Am-Be) source to generate neutrons which interact with the formation. The thermal neutrons generated through this process are detected by one helium<sup>3</sup> proportional detectors. Hydrogen, present as water in pore spaces or within clay minerals, is a very effective moderator of the neutrons emitted from the Am-Be source such that the single neutron is an estimator of porosity. A dual neutron probe is required for quantitative porosity measurements.

The single neutron can be used to generate a qualitative measure of the Hydrogen Index.

**Ideally suited for:**

- Coal exploration and mining.
- Groundwater investigations – hydrogen index.
- Uranium exploration and mining – ISL mining.

**Operations & Calibration:**

- Minimum borehole diameter of 50mm.
- Fluid filled borehole—for porosity estimation.
- Open borehole and/or cased borehole.

Typically recorded in an uphole logging direction at logging speeds of 5 - 7 m/min. (Downhole logging can be recorded for QA purposes).

Final curve units can be counts per second, Hydrogen Index.

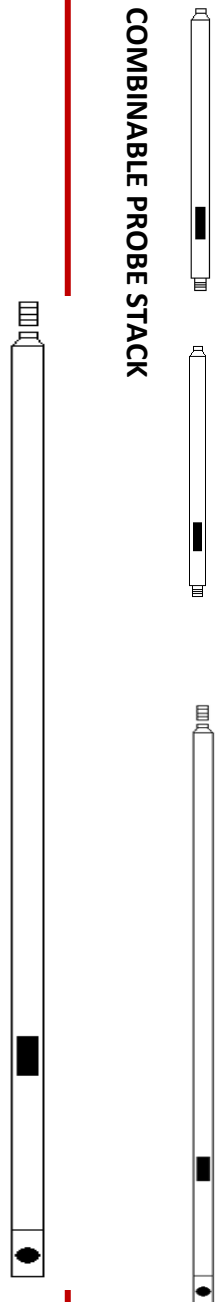
Calibration is undertaken at the Adelaide Models.

Probes can be stacked to the top of the probe. Typical combinations are:

- Gamma, gamma and magnetic deviation.

SINGLE PROBE RUN

COMBINABLE PROBE STACK



PHYSICAL SPECIFICATIONS	
Weight	10.0kg
Length	1.25m
Diameter	38mm
Neutron Detectors	LSN (Helium proportional)
Source	<sup>241</sup> Am-Be 37 GBq
Maximum Pressure	20 MPa
Maximum Temperature	80°C

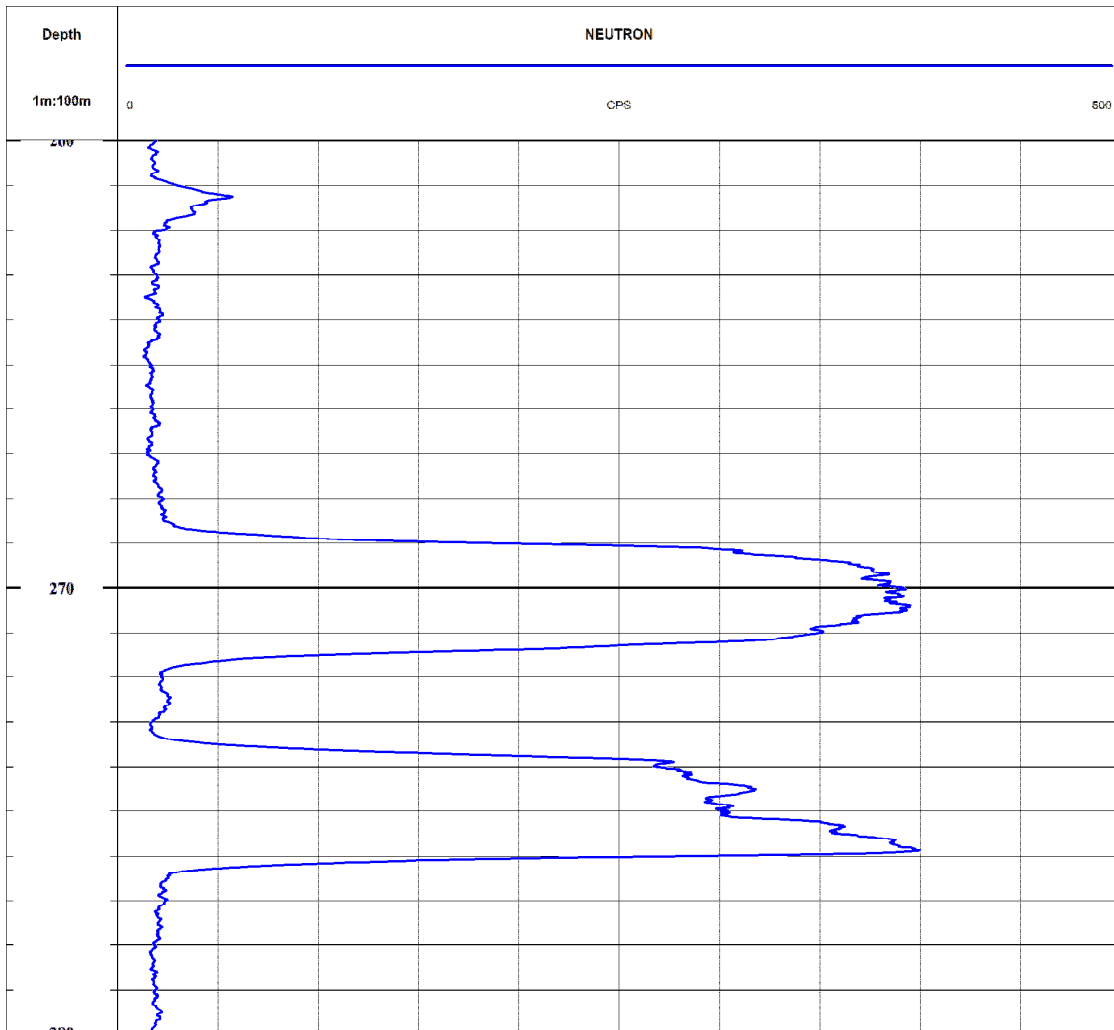




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