



GEOPHYSICAL LOGGING PROBES

Dual Neutron Porosity

DNNS

MEASUREMENT PRINCIPLE

The dual neutron employs a 3 curie Americium-Beryllium (Am-Be) source to generate neutrons which interact with the formation. The thermal neutrons generated through this process are detected by two helium³ 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 dual neutron is an effective measure of porosity in the formation.

The dual neutron uses the ratio of the long and short neutron detectors to calculate a Hydrogen Index which allows for compensation of borehole conditions and hence the accurate measurement of formation porosity.

Ideally suited for:

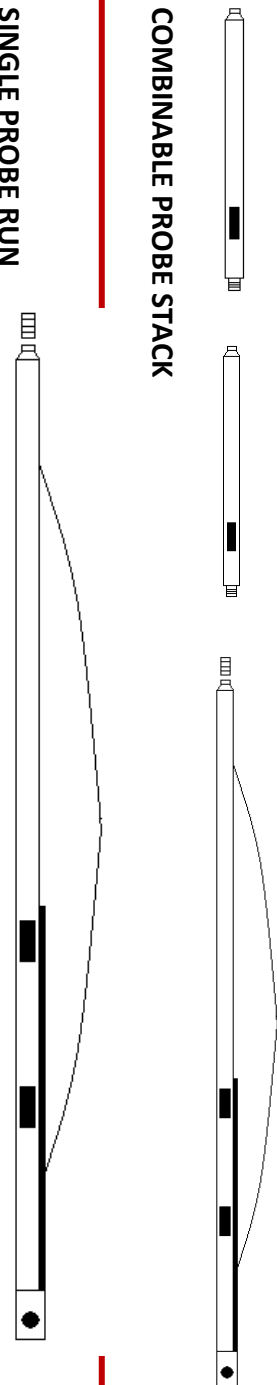
- Coal exploration and mining.
- Groundwater investigations - porosity.
- Uranium exploration and mining – ISL mining.

Operations & Calibration:

- Minimum borehole diameter of 75mm.
- Fluid filled borehole – for quantitative porosity measurements.
- Open borehole and/or steel cased borehole.
- Typically recorded in an uphole logging direction at logging speeds of 3 - 5 m/min. (Downhole logging can be recorded for QA purposes).
- Final curve units can be counts per second, % porosity based upon a specific matrix.
- 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

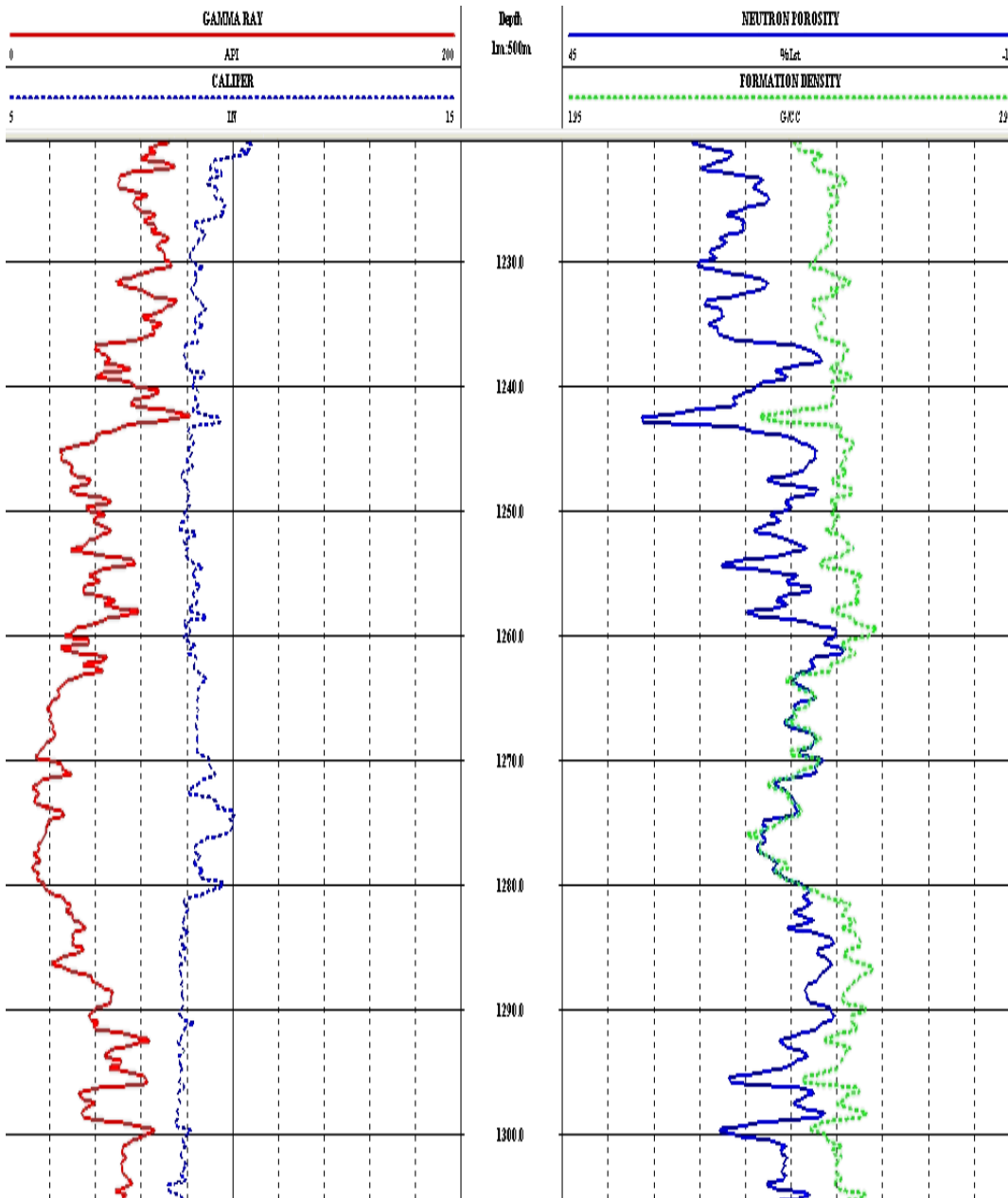
Weight	13.0kg
Length	1.28m
Diameter	63mm
Neutron Detectors	LSN, SSN (Helium proportional)
Source	²⁴¹ Am-Be 111 GBq
Maximum Pressure	20 MPa
Maximum Temperature	80°C



GEOPHYSICAL LOGGING PROBES

Dual Neutron Porosity

DNNS



SINGLE PROBE RUN

COMBINABLE PROBE STACK

