

Spectral Litho-Density & Resistivity

FDSP

MEASUREMENT PRINCIPLE

The spectral litho-density probe uses a small Cs^{137} or Co^{60} radioactive source, as a source of gamma radiation, to energise the formation. Bulk density and photoelectric curves are generated from a spectral analysis of long and short spaced detectors. PEEK plastic sleeves cover the long and short spaced detectors allowing low energy gamma through to the detectors for photoelectric effect computation. A small Cobalt source is set in the density section allowing reference peaks to be identified for temperature compensation.

To optimise quantitative density measurements the probe has a single arm caliper which is opened at the bottom of the logged interval. The caliper action pushes a thin, vertical detector window of the density detection section against the borehole wall. The remainder of the density detection section is covered by a dense collimated shield of lead and tungsten. This configuration reduces the environmental borehole effects upon the density measurement. There is an effective shield at the base of the probe to prevent gamma radiation travelling directly from the source to the probe.

This density probe has a single focussed resistivity electrode for qualitative resistivity of the formation. This makes the probe a very effective multi-parameter logging tool.

Ideally suited for:

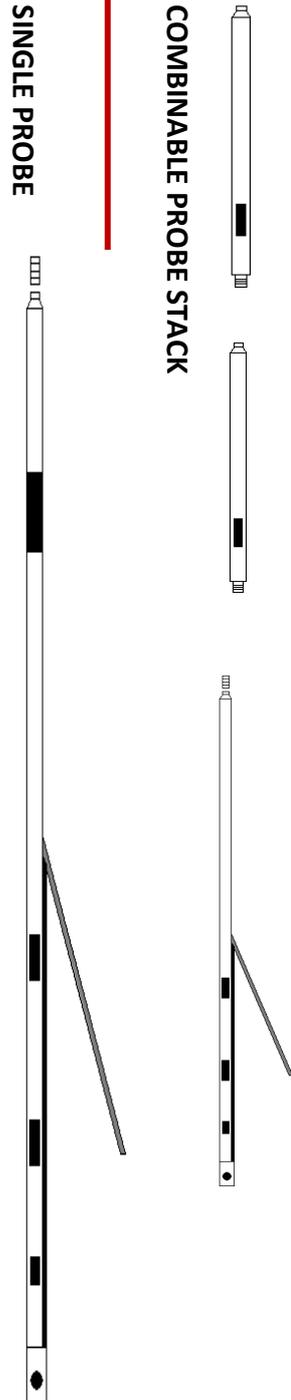
- Coal and iron ore exploration and mining.
- Uranium exploration and mining.
- Density assaying.

Operations & Calibration:

- Minimum borehole diameter of 60mm.
- Quantitative density measurements in fluid filled borehole and open borehole conditions.
- Typically recorded in an uphole logging direction at logging speeds of 3 – 5 m/min.

Final curve units can be counts per second, grams per cubic centimetre and ohm-metres
Calibration via Adelaide Models – AM8 and AM11, and specific project borehole when density assay data is available.

Probes can be stacked to the top of the probe. Typical combinations are:
Gamma, gamma and magnetic deviation.



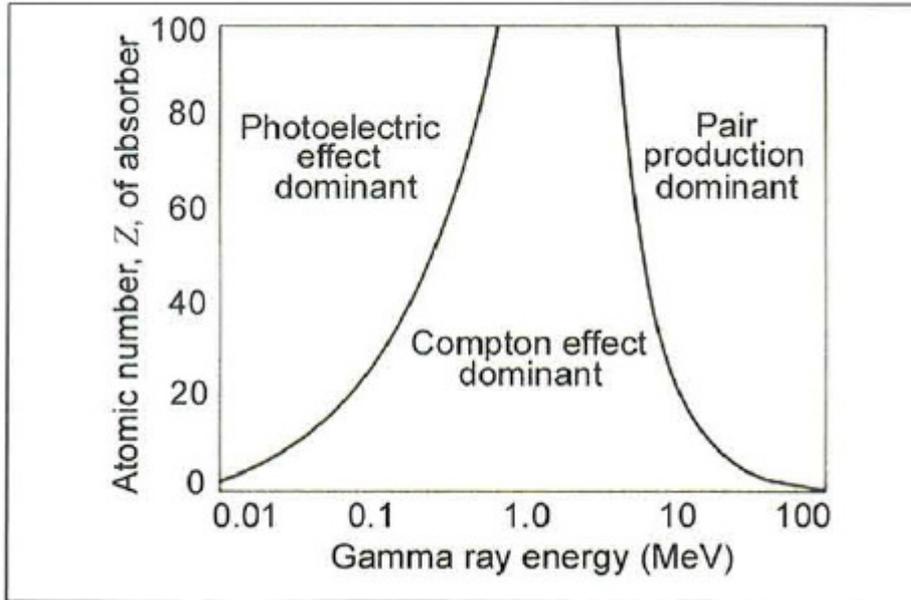
PHYSICAL SPECIFICATIONS	
Length, Weight & Diameter	2.63m, 30.0kg, 60mm
Density Detectors	LSD(48cm), SSD(25cm), BRD(14cm)
Spectral Density	LSD(48cm), SSD(25cm),
Pe Window	PEEK (polyetheretherketone)
Stabilisation Source	2.5 µcurie CO60
Caliper range & accuracy	350mm & +/- 5mm
Focussed resistivity	1–1000 OHMM
Source	Cs^{137} - COAL, Co^{60} —IRON ORE
Maximum Pressure	20 MPa
Maximum Temperature	80°C





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SINGLE PROBE



COMBINABLE PROBE STACK

