



GEOPHYSICAL LOGGING PROBES

Formation Density (Dual Spacing)

FDSB

MEASUREMENT PRINCIPLE

The formation density probe uses a small Cs¹³⁷ or Co⁶⁰ radioactive source, as a source of gamma radiation, to energise the formation. Resulting back scatter with the formation is detected at two scintillation detectors spaced at different distances from the source. The amount of back scattered gamma radiation is inversely proportional to the apparent electron density of the formation.

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.

Ideally suited for:

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

Operations & Calibration:

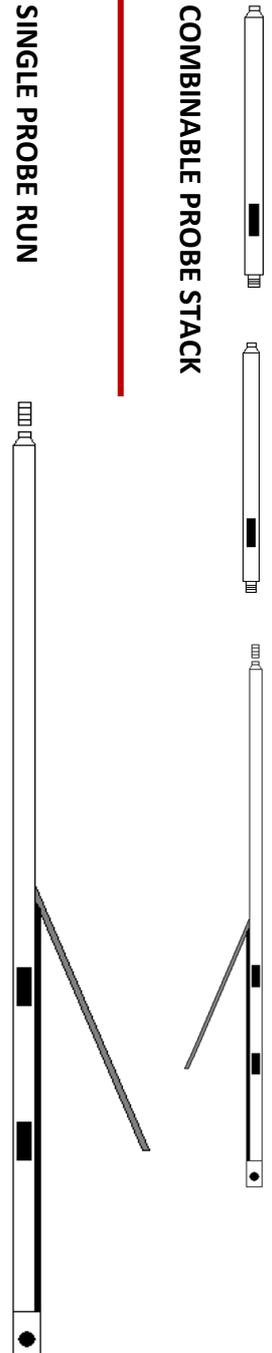
- Minimum borehole diameter of 75mm.
- Quantitative density measurements in fluid filled borehole and open borehole conditions.
- Typically recorded in an uphole logging direction at logging speeds of 3 – 5 m/min.

Final curve units can be counts per second, grams per cubic centimetre .
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.

SINGLE PROBE RUN

COMBINABLE PROBE STACK



PHYSICAL SPECIFICATIONS	
Weight	25.0kg
Length	1.92m
Diameter	60mm
Density Detectors	LSD(48cm), SSD(25cm),
Caliper range & accuracy	350mm & +/- 5mm
Source	Cs ¹³⁷ - COAL, Co ⁶⁰ —IRON ORE
Maximum Pressure	20 MPa
Maximum Temperature	80°C



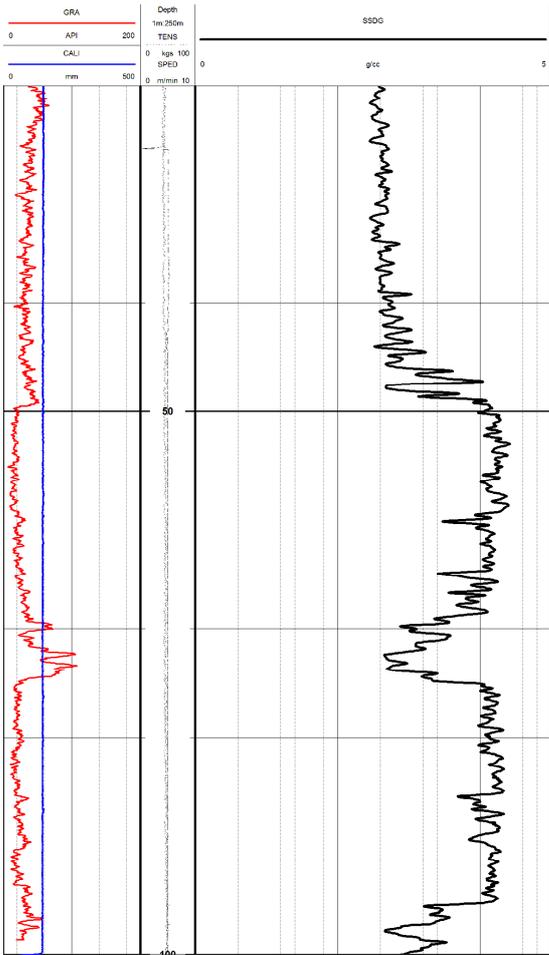


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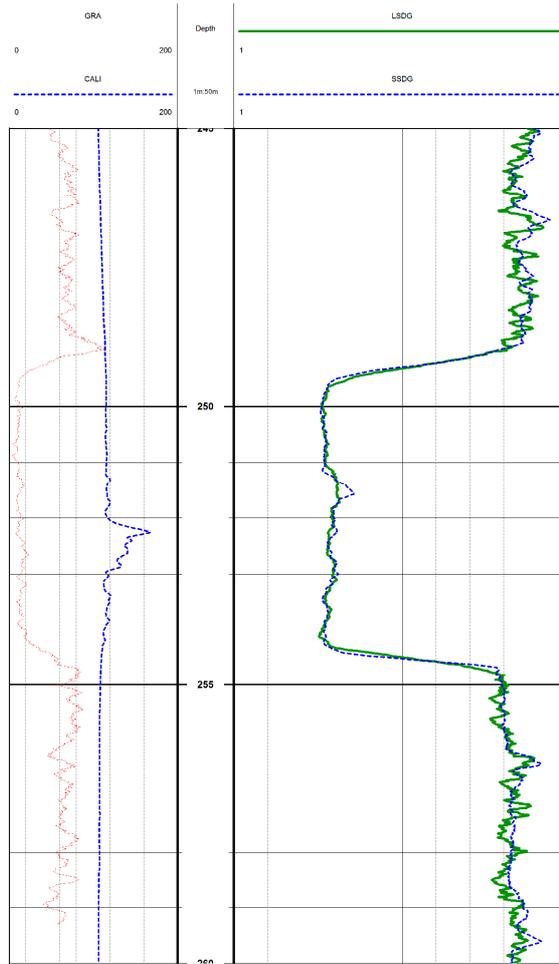
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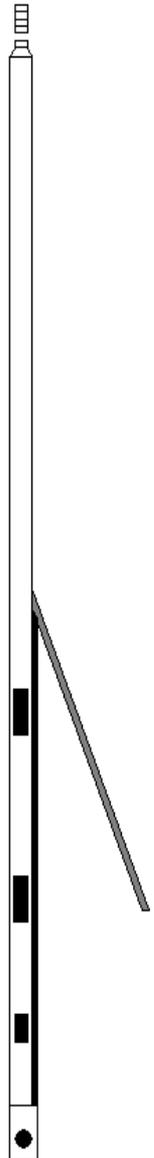
IRON ORE



COAL



SINGLE PROBE RUN



COMBINABLE PROBE STACK

