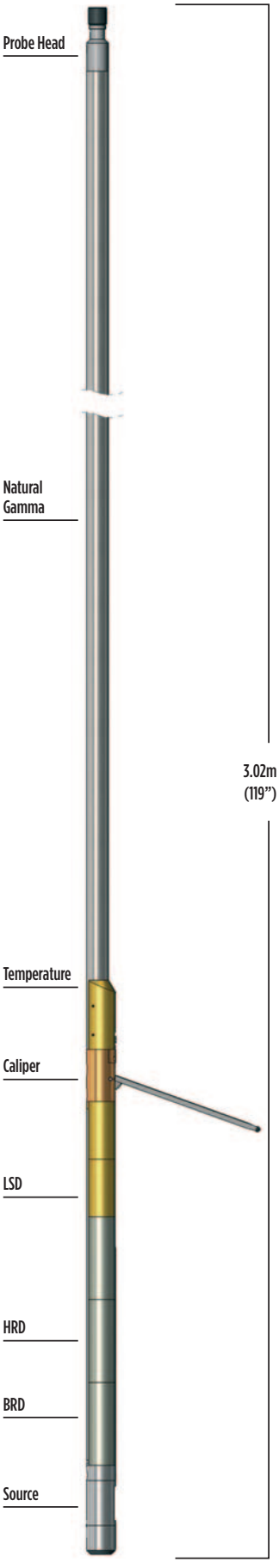
PROBES

FORMATION DENSITY

ROBERTSON GEO
Unlocking Your GeoData



Formation Density Probe

The Formation Density probe provides a calibrated, borehole-compensated density measurement using a detachable 137Cs gamma source and dual shielded detectors.

The far spaced detector (LSD) is calibrated, giving the best estimate of formation density as borehole wall effects are minimised. A shorter spaced detector (HRD) is also calibrated which provides improved vertical resolution. An optional shorter spaced third detector (BRD) provides a qualitative log with excellent vertical resolution for bed boundary delineation.

Principle of Measurement:

The source and detectors are held in contact with the borehole wall by a spring-loaded caliper arm measuring diameter for borehole compensation. Gamma radiation from the source is back-scattered (Compton effect) in the formation, reaching the detectors where the relative counts are measured using sodium iodide scintillation detectors. Calibration constants are determined using a water tank and an aluminium block which has previously undergone a primary calibration. The calibration constants are combined with the gamma counts and diameter readings in the supplied software to give a calibrated density in g/cc.

SPECIFICATION:

Features

- Compensated density output in engineering units (g/cc)
- Short-spacing detector for high vertical resolution
- Tungsten shielding reduces borehole effects
- Standard calibration blocks for field or base use

Measurements

- Bulk density
- Dual-calibrated density channels (LSD & HRD)
- Natural gamma
- Caliper
- **Options:** Bed-resolution density (BRD) and Temperature

Applications

Minerals:
- Density and porosity
- Lithology
- Bed thickness and boundary location
- Coal ash and moisture content

Engineering:
- Rock strength and elasticity parameters (with sonic log)
- Detection of weathered or fractured zones

Water:
- Location of aquifer and aquitard
- Detection of cavities and missing cement

Operating Conditions

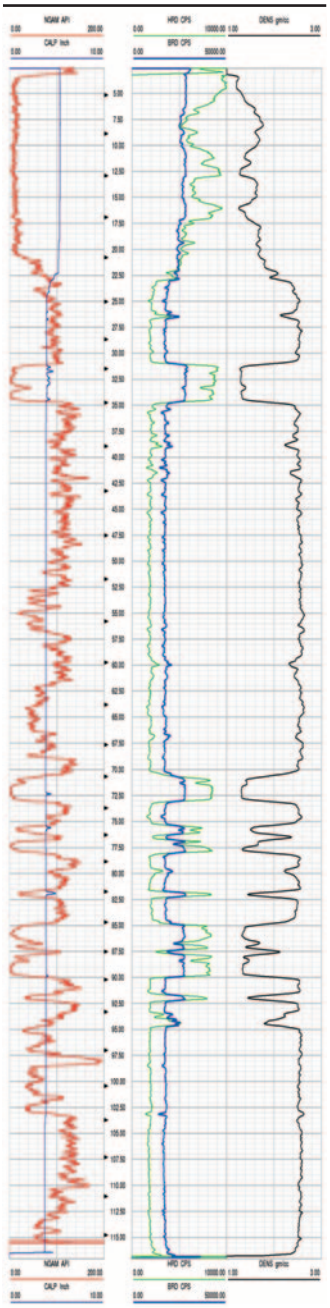
Borehole type:	All, including air filled (qualitative measurement only)
Recommended Logging Speed:	3m/min

Specifications

Diameter:	51mm
Length:	3.02m
Weight:	24kg
Temperature:	0-70°C (extended ranges available)
Max. pressure:	20MPa
Density range:	1.1 to 2.95g/cc
Caliper range:	51mm to 300mm

Part Numbers

I002013	Formation Density probe
I002016	– includes BRD and temperature



Example of logging data

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