

DENSITY GAMMA PROBE (TRISONDE)

The trisonde is a convenient alternative to the standard RG sidewall density probe whenever borehole diameter is restricted and qualitative density measurements are sufficient. One common application is logging through drill pipe when unstable borehole conditions prevent use of unprotected nuclear probes. The probe is unfocussed and indicates the average density of material surrounding the borehole.

PRINCIPLE OF MEASUREMENT:

The probe contains a gamma source and two high-sensitivity scintillation gamma detectors. Gamma radiation from the source is backscattered by the formation (Compton effect) and reaches the two detectors where the relative count-rates provide a measure of formation bulk density.

FEATURES

- Long-spacing detector (LSD) for deep penetration and immunity from borehole effects
- High-resolution detector (HRD) for accurate bed-boundary detection
- Optional temperature and borehole-inclination measurement

MEASUREMENTS

- Long-spacing density LSD
- High-resolution density HRD
- Natural gamma
- Temperature
- Borehole inclination

APPLICATIONS

Minerals

- Lithology
- Bulk density variations
- Correlation with other logs
- Bed thickness and boundary location
- Borehole inclination and true vertical depth

Engineering

- Detection of weathered or fractured zones
- Ground compaction studies

Water

- Location of aquifer and aquitard
- Detection of cavities and missing cement around casing

OPERATING CONDITIONS

Borehole type: all

SPECIFICATIONS

Diameter:	38mm
Length:	2.31m
Weight:	7.6kg
Max. temperature:	70°C (extended range available)
Max. pressure:	20MPa (extended range available)
Density detectors type:	Nal(Tl) scintillation crystal
Density detector spacings:	48cm (LSD) 24cm (HRD) 14 cm (BRD)
Natural-gamma detector:	50mm x 25mm Nal (Tl) scintillation crystal (larger sizes available)
Inclination range:	0 to 30°
Inclination accuracy:	+ / - 0.5°

SALES INFORMATION

Probe:	
25 004 000	Density-gamma probe with source holder and source transport container
25 005 000	- includes temperature
25 006 000	- includes inclination
Accessories:	
30 003 000	370MBq ¹³⁷ Cs gamma source
20 070 000	Natural-gamma API calibrator without source
30 010 000	3.7MBq ¹³⁷ Cs source for natural-gamma calibrator

