



## TECHNICAL SHEET

**OIL FIELD**

**LITHO-DENSITY MODULE**

**SLIM-2.5"**

### Generality and principle of measurement

The lithodensity tool combines a borehole-corrected bulk density measurement with a photoelectric lithology log (Pe). The radioactive source and detectors are mounted in an articulated skid that is maintained in contact with the borehole wall by a powered backup arm to minimise borehole rugosity effects. The arm also doubles as a caliper measurement. The tool may be combined with compensated neutron and focused induction measurements in the classic 'triple-combo' configuration.

Gamma radiation from a <sup>137</sup>Cs source in the tool is Compton scattered by the formation and detected by two scintillation detectors. The relative intensities of the radiation at each detector give a measurement of formation bulk density. The photoelectric measurement is derived from the ratio of the gamma intensities in high and low energy windows at a detector. It depends of the formation atomic number and is a good lithology indicator. The measurements are influenced by the borehole environment. These effects are minimised by corrections calculated by extensive Monte Carlo modelling and benchmarked to standards at the Callisto facility in Leicestershire, UK.

### Measurements and applications

Bulk density ( $\rho_B$ )	Matrix identification
Correction indicator ( $\Delta\rho_H$ )	Porosity from density
Photoelectric factor (pef)	Formation fluid analysis
Average caliper (cal)	

### Technical specifications

Length	3.23m (127")
Diameter	63 mm (2.5")
Weight	60 kg (132LB)
Max. operating temp.	125° C
Max. operating pressure	86 MPa (12,500psi)
Operating conditions	Caliper Range 75mm (3") to 400mm (12") diam.

### Sensor Array

(HRD ; LSD) density sensors offsets	160 mm (6.3") , 399 mm (15.7")
Density range	1.1 -2.95 g/cc +/- 0.005 g/cc (1 std deviation)
Density radius of investigation	102 mm (4") to 152 mm (6")
Photoelectric range	1-10 Barns
Caliper range	75 mm (3") – 300 mm (12")
Caliper resolution	1 mm (0.04")

