



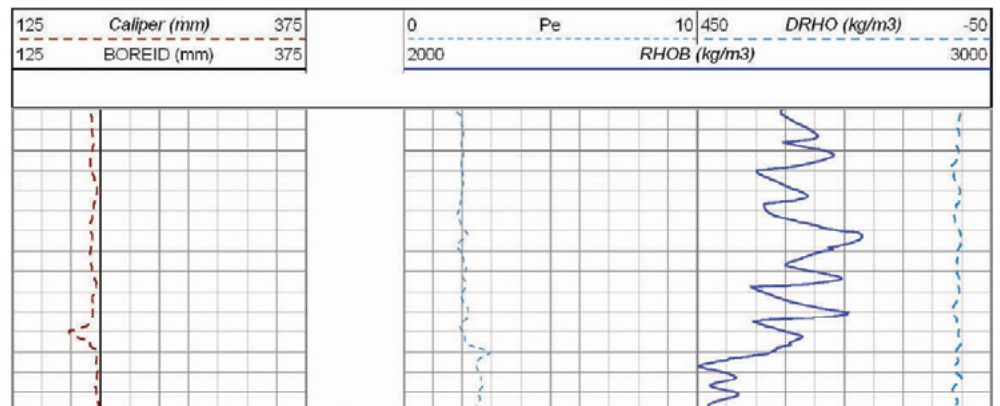
The Lithology Density Tool (LDT) is used to measure the bulk density of the formation, which is then related to formation porosity. The tool also determines the Pe of the formation, allowing for lithology identification, and contains a motorized caliper that is used for borehole diameter information. When the LDT is logged in combination with the Compensated Neutron tool, gas identification is possible.

The LDT tool has a pad section that contains a radioactive  $^{137}\text{Cs}$  (74 Gbq) Cesium 137 gamma source and two scintillation detectors. The pad is pressed against the formation wall by the caliper while focused high-energy gamma rays are emitted from the source. Some of the gamma rays are absorbed by the formation. The LDT tool monitors the energy levels of the gamma rays that return to the detectors and records this energy spectrum.

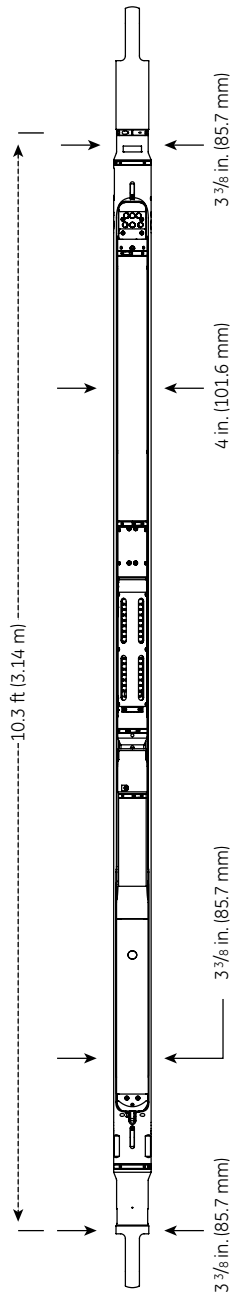
By examining the position of the gamma ray energy in the spectrum, both the bulk density and the formation lithology can be determined. The two-detector arrangement of the LDT compensates for mud cake effects.

#### Features

- Full energy spectrum displayed at surface for both detectors
- Quick-release source handling to reduce radiation exposure for operators
- Easily removable pad to reduce the weight of loading and unloading tools
- Fully compatible with Sondex Ultrawire\* tools
- Compact design puts sensors closer to bottom requiring less rat hole



# Lithology Density Tool (LDT)



Specifications	
Maximum OD	4.5 in. (114.3 mm)
Makeup Length	9.75 ft. (2.97 m)
Weight	310 lb. (141 kg)
Maximum temperature	302° F (150° C)
Maximum Pressure	20,000 psi (137.9 Mpa)
Minimum Hole	6 in. (152 mm)
Maximum Hole	22 in. (0.55 m)
Tensile Strength	50,000 lb. (22,700 kg)
Compressive Strength	5,500 lb. (2,500 kg)
Sensor Offsets	
RHOB	1.84 ft. (0.56 m)
Caliper (8 in. hole)	1.84 ft. (0.56 m)
Borehole Conditions	
Borehole Fluids	Fresh, Salt, Oil, Air
Maximum Logging Speed	30 ft/min (10 m/min)
Tool Position	Eccentralized
Measurements	
Accuracy (RHOB)	+/- 0.015 g/cc
Accuracy (Pe)	+/- 0.2 barns/elctron for < .125 in. of mud cake, no barite
Accuracy Radius (Caliper)	+/- 0.075 in. (+/- 2 mm)
Vertical Resolution (RHOB)	1.33 ft. (0.41 m)
Vertical Resoution (Pe)	1.33 ft. (0.41 m)
Measurement Range (RHOB)	1.3 - 3.0 g/cc
Measurement Range (Pe)	1.4 - 10 barns/electron
Primary Curves	RHOB, DRHO, Pe, Caliper
Secondary Curves	Limestone Porosity, Sandstone Porosity, Dolomite Porosity
Hardware & Power Requirements	
Tool Bus	Ultrawire*
Power	142 mA (18V DC)

Specifications courtesy of GE Oil & Gas



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