

DENSITY

Formation Sidewall Density Sonde

This combinable sonde is suitable for quantitative formation density measurements in uncased holes. It uses a bottom loading gamma ray source (Typically 100 mCi activity) and a set of two or optionally three detectors at different spacing to detect the gamma rays scattered by the formation. The amount of scattered gamma rays is a function of the electron density of the formation material and hence, a function of its bulk density. This relationship is used to calibrate the density sonde and then use it to log the bulk density of the formations crossed by the borehole. In order to optimize performance, the sonde is designed with three main features:

Weight/Length/Diam:	26 kg / 2.06 m / 54mm
Detector (NaI) spacing:	47 and 25 cm.
Source:	3.7GBq 60Co or 137Cs 9.25 GBq
Density Range:	1 - 4.5 g/cc
Calliper:	60 to 450 mm
Max. Temperature:	80°C Max.
Pressure:	20 MPa

Application

1. A side-walling caliper to ensure that the detector measures only the radiation scattered by the formation.
2. A detector mandrel diameter that is large enough to minimise the sonde and borehole curvature mismatch and improve sonde to formation contact to minimise the effect of the borehole fluid.
3. An efficient detector shield to prevent gamma rays from travelling up, inside the sonde body. of radioactive materials
 - Lithology and ore-body identification
 - Quantitative Density
 - Bed Boundaries
 - Calculated Density Porosity
 - Borehole Diameter

