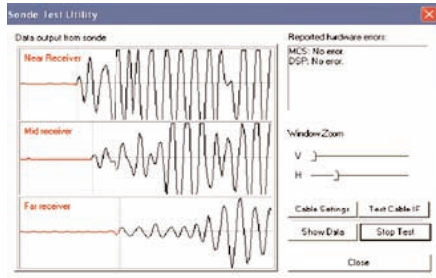


45mm FULL-WAVE TRIPLE SONIC PROBE

This highly compact slimhole tool is designed specifically for geotechnical and mining applications. The probe measures high (HR), medium (MR) resolution transit-time and fullwaveform data simultaneously from three receivers. The HR measurement gives excellent resolution of bed boundaries and in-seam structures whilst the MR measurement provides the average formation velocity even in the presence of moderate caving. Shear wave velocities from full-wave data may be used to calculate rock elasticity parameters.



PRINCIPLE OF MEASUREMENT:

The piezoelectric transmitter is stimulated by a high-voltage pulse and radiates a high-frequency acoustic wave through the borehole fluid and formation to each receiver. An accurate quartz clock measures the first arrival transit time.

Compensated sonic mode: Three receivers are used. The probe measures the time of the first compressional arrival at each receiver. The difference in arrival times between each pair of receivers allows determination of formation velocity independent of the borehole fluid path.

Full-wave sonic mode: The probe records the full sonic wave-train at all receivers simultaneously. This can be displayed either as a variable-density log (VDL) or as a waveform (wiggle trace). The waveform data may be exported to packages such as WellCAD for calculation of compressional, shear and Stoneley velocities.

FEATURES

- Shortprobe can be handled by single operator and easily transported
- Slim diameter for narrow boreholes
- Rigid construction for effective centralisation
- Down-hole digitisation of waveform data at 1cm interval
- Selectable baud rate up to 208 kbaud for maximum logging speed
- Detection gain and threshold under operator control. Detection point and wavelet display shown in real-time (see above)
- Optional natural-gamma measurement

MEASUREMENTS

- Formation velocity (slowness)
- Time of first arrival (delta-t)
- Integrated transit time
- Full-wave data from 3 receivers
- Shear and Stoneley velocities (requires additional software)

APPLICATIONS

- Geotechnical/ mining/ water**
- Fracture and permeability indication in hard rock
- Rock strength and elasticity
- Lithology identification
- Porosity
- Correction of seismic velocity

OPERATING CONDITIONS

- Borehole type:**
- Sonic: open-hole, water-filled
- Centralisation: 2 essential

SPECIFICATIONS

- Diameter:** 45mm
- Length:** 2.45m
- Weight:** 8kg (18lb)
- Max. temperature:** 70°C
(extended ranges available)
- Max. pressure:** 20MPa
(extended ranges available)
- Transducer type:** 23kHz piezoelectric
- Spacing:** Tx-Rx1: 60cm (24")
Tx -Rx2: 80cm (32")
Tx -Rx3: 100cm (40")
- Waveform acquisition:** 512 x 16 bit samples per receiver
- Sample interval:** 4 µs
- Down-hole gain:** 0db to 31db (surface control)

SALES INFORMATION

- Probe:** 25 086 000 Triple sonic probe
- Accessories:** 21 030 000 Centraliser 90 - 180mm
21 031 000 Centraliser 180 - 260mm
21 032 000 Centraliser 260 - 342mm
21 033 000 Centraliser 342 - 472mm

