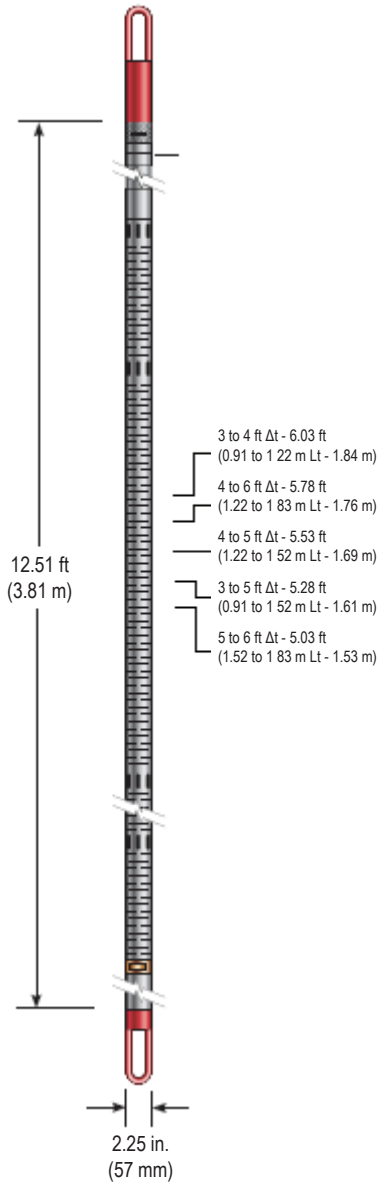
WIRELINE LOGGING SOLUTIONS

Compact™ Sonic Sonde (MSS)

The Compact sonic sonde (MSS) measures formation compressional slowness (inverse velocity) at five spacings with 1- and 2-ft (0 30- and 0 61-m) vertical resolution. In cement bond log (CBL)/variable density log (VDL) mode, the MSS tool records a waveform (normally from the 5-ft [1 52-m] receiver) and up to four first-arrival amplitude logs. The ratio of two amplitude curves defines an attenuation log that is sensitive to cement bond quality.

Data quality is maintained at high levels over a broad range of environmental conditions from a combination of high transmitter output, real-time despiking, and cycle-stretch compensation. Cycle-stretch compensation gives improved accuracy and consistency by adjusting transit times based on information about waveform shapes close to the first arrivals.



Applications

- Determining secondary porosity and lithology
- Providing formation mechanical properties
- Providing fracture detection
- Providing gas detection
- Integrating seismic, time-to-depth corrections
- Providing a synthetic seismogram (when used with the MPD tool)
- Providing a CBL

Features and Benefits

- Unlike traditional 3- to 5-ft (0 91- to 1 52-m) sonic tools, the MSS uses a single-sided array with depth-derived, cave compensation and tilt correction. This feature, together with a short electronics package, makes the tool unusually short and light.
- The MSS passes through restrictions as small as 2 5 in (63 mm), enabling through-drillpipe logging for increased operational efficiency.

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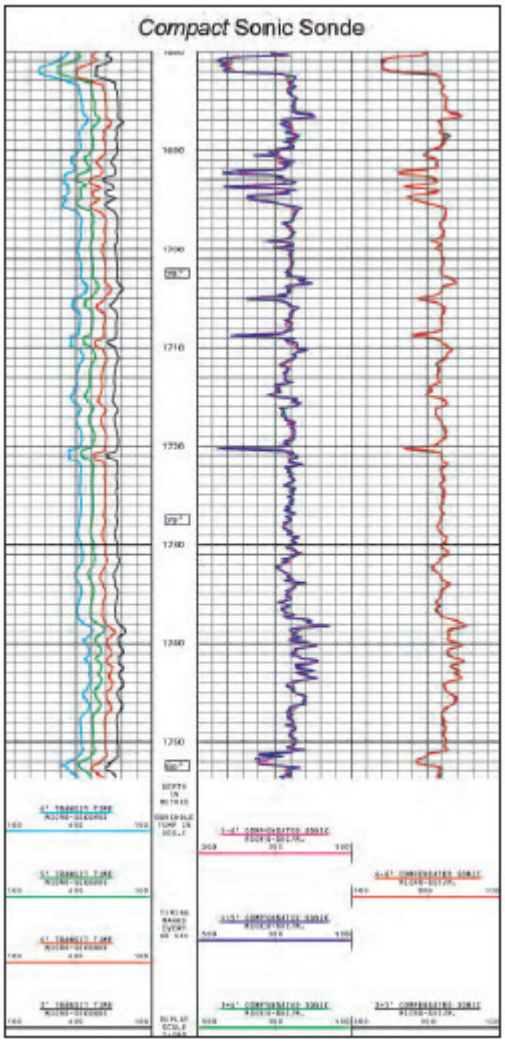
Log Presentation



Measurements

Data	Compressional Δt, porosity, waveforms, amplitude CBL mode: travel time, variable density waveform
Logging Speed	1,800 ft/hr (549 m/hr)
Measurement range	40 to 250 µs/ft (130 to 820 µs/m)
Vertical resolution	Compressional Δt: 1 ft (0.30 m) 2 ft (0.61 m) Cement bond log: amp 3 ft (0.91 m) VDL 5 ft (1.52 m)
Accuracy	Δt: ±0.25 µs/ft (±0.82 µs/m)
Depth of investigation	3 in (76.2 mm)
Borehole fluids	WBB, OBM, Salt

Mechanical

Maximum outer diameter	2.25 in. (57 mm)
Length	12.51 ft (3.81 m)
Total weight (in air)	72.8 lb (33 kg)
Maximum temperature	300°F (150°C)
Maximumpressure	15 kpsi (103 MPa)
Maximum borehole diameter	13.9 in. (353 mm)
Minimum borehole diameter	2.8 in. (70 mm)

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