Compact™ Sonic Sonde

Delivers accurate acoustic reservoir measurements

Applications

- Determining secondary porosity and lithology
- Determining formation mechanical properties
- Providing gas detection
- Integrating seismic, time-to-depth corrections
- Providing a synthetic seismogram when combined with the Compact photodensity (MPD) tool
- Providing a cement bond log

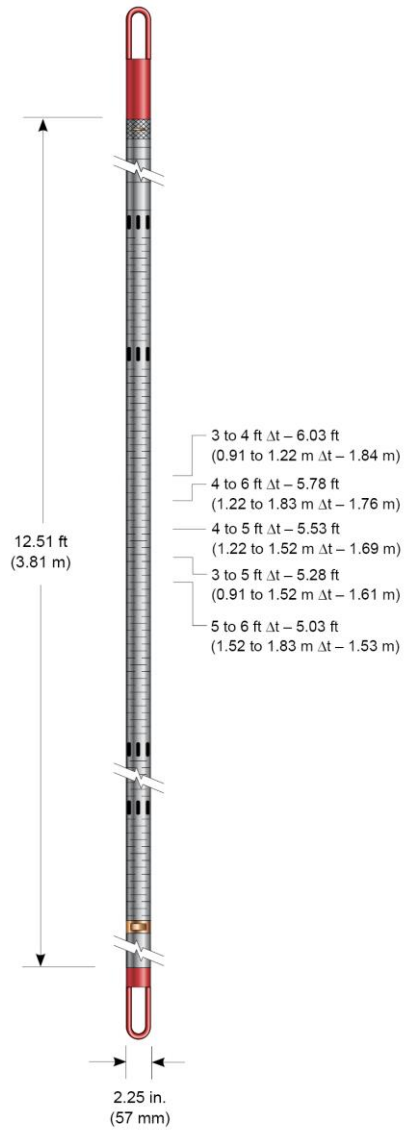
Features and Benefits

- Unlike traditional 3- to 5-ft (0.91- to 1.52-m) sonic tools, the Compact sonic sonde (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 thru-drillpipe logging for increased operational efficiency.
- The small diameter of the tool facilitates deployment in wireline or memory mode to mitigate the risk of bridging events and to reduce nonproductive time.
- The MSS can be run simultaneously with other Compact tools.

Tool Description

The Weatherford Compact sonic sonde (MSS) measures formation compressional slowness (inverse velocity) at five long 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.



The Compact sonic sonde (MSS) provides accurate acoustic measurements in wireline or memory mode.

Weatherford®

Compact™ Sonic Sonde

Specifications

Measurement

Data	Compressional Δt, porosity, waveforms, amplitude In CBL mode: travel time and variable density waveform
Logging speed	3,600 ft/hr (18 m/min)
Measurement range - compressional slowness	40 to 250 µs/ft (130 to 820 µs /m)
Vertical resolution	Compressional Δt: 2 ft (0.61 m) Enhanced: 1 ft (0.3 m) Cement bond log: amp ~ 3 ft (0.91 m) VDL: ~ 5 ft (1.52 m)
Accuracy	Δt: ±1 µs/ft (±3 µs/m)
Depth of investigation	3 in. (76.2 mm)
Borehole fluids	WBM, OBM, salt

Mechanical

Maximum outer diameter	2.25 in. (57 mm)
Length	12.5 ft (3.8 m)
Weight (air)	73 lb (33 kg)
Maximum temperature	320°F (160°C)
Maximum pressure	15,000 psi (103 MPa)
Maximum borehole diameter	14 in. (356 mm)
Minimum borehole diameter	2.8 in. (70 mm)