



Compact™ Sonic Sonde (MSS)

Weatherford's *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.

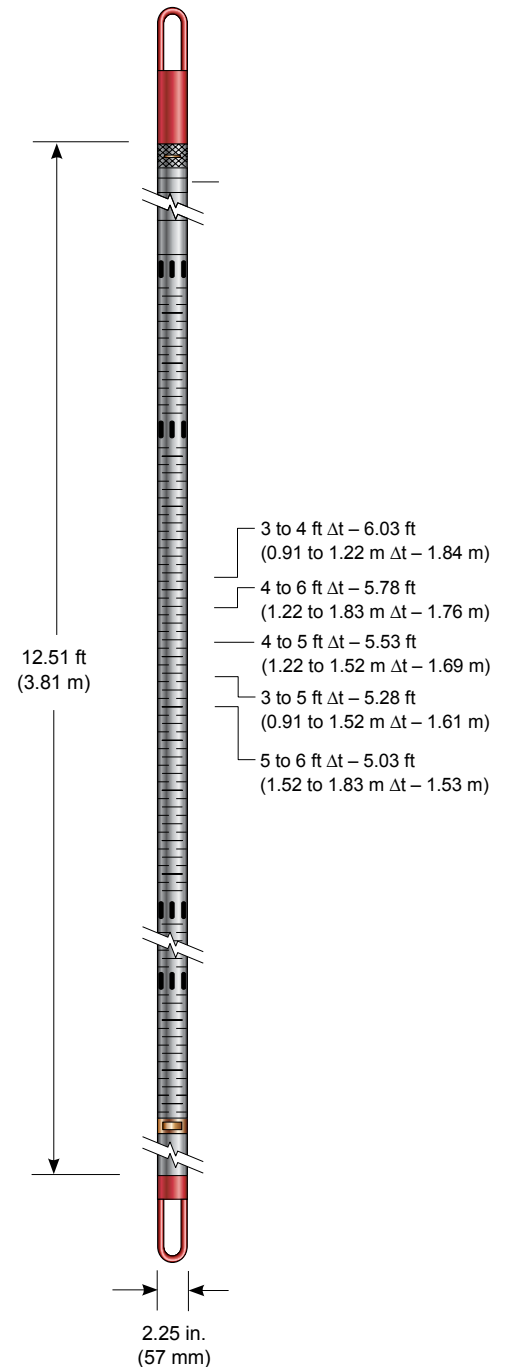
Data quality is maintained at high levels over a broad range of environmental conditions from a combination of high transmitter output, real-time despiking, and cycle-stretch compensation. Cycle-stretch compensation gives improved accuracy and consistency by adjusting transit times based on information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

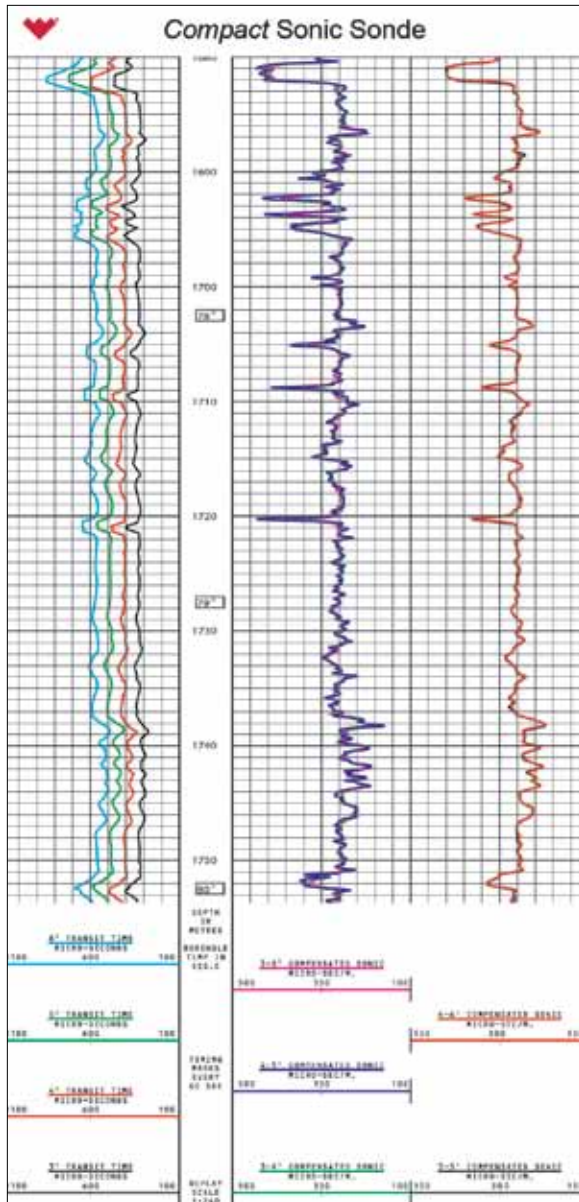
Features, Advantages and Benefits

- 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



Specifications

| Measurement specifications | |
|----------------------------|--|
| 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 $\mu\text{s}/\text{ft}$ (130 to 820 $\mu\text{s}/\text{m}$) |
| 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 : $\pm 0.25 \mu\text{s}/\text{ft}$ ($\pm 0.82 \mu\text{s}/\text{m}$) |
| Depth of investigation | 3 in. (76.2 mm) |
| Borehole fluids | WBM OBM Salt |

| Mechanical specifications | |
|---------------------------|---|
| 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 | MSS - A/AA/AB/CA/CB: 257°F (125°C) MSS - CJ/CK: 275°F (135°C) |
| Maximum pressure | MSS - A/AA/AB: 12.5 kpsi (86 MPa) MSS - CA/CB/CJ/CK: 15.0 kpsi (103 MPa) |
| Maximum borehole diameter | 13.9 in. (353 mm) |
| Minimum borehole diameter | 2.8 in. (70 mm) |