

# Radial Cement Bond Log (RCBL™)

## Powerful, Versatile Logging Tool for Reliable Cement Evaluation

**H**alliburton's Radial Cement Bond Log (RCBL™) tool captures the downhole data that ensures reliable cement bond evaluation for a full range of through tubing logging and casing completions, from small diameter tubing to 13.38-in casing. Determining cement sheath integrity leaves no room for question; confirmation of a competent cement bond requires the best information available.

A proven sonic logging tool, the RCBL is equipped with one omni-directional transmitter and two omni-directional receivers, as well as eight radial receivers for comprehensive borehole coverage and clear indication of channels or intervals.

Digital recording of waveform data allows for real time data transmission and application of advanced interpretational methods, making the RCBL a powerful and versatile evaluation tool.

### Comprehensive Capabilities

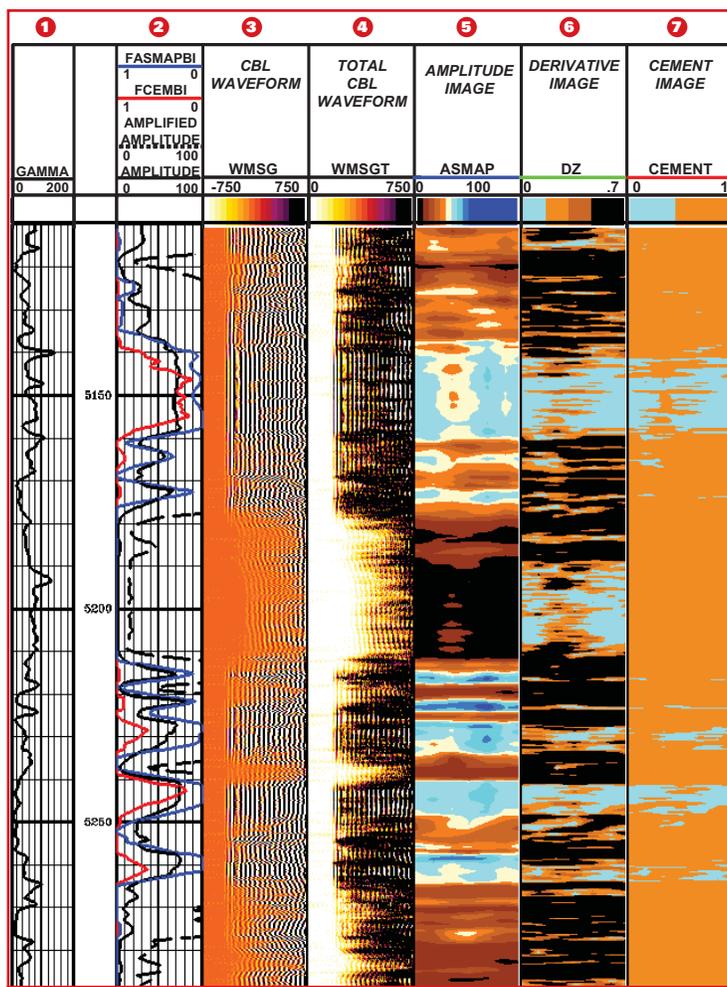
Whatever the cementing application, whether to pipe, formation or casing, the RCBL delivers the data required for accurate bond evaluation:

The RCBL tool generates waveform images and amplitudes derived from acoustic signals, which combine to describe cement-to-pipe and cement-to-formation bonding. Waveform data is correlated with other petrophysical measurements, such as gamma ray, porosity, or resistivity data to identify acoustic coupling of the cement to both the casing and formation, while advanced waveform processing (ACE™) provides concentric casing string evaluation.

Compatible with all types of wireline, the RCBL can be run in conjunction with a range of tools such as neutron and gamma ray for depth correlation and formation evaluation, and includes a temperature probe for identifying top of cement (TOC) in cases where bonding is poor or the cement is green.

### Benefits

- Enables use of advanced waveform processing methods for concentric casing string evaluation
- Locates free pipe and TOC, with temperature probe to identify TOC in cases where bonding is poor or the cement is green



RCBL log produced by ACE processing:

- Track 2 contains two bond indices, one from raw data (ASMAP), and one from ACE, which is the cement bond index (CEMBI) generated from the cement map (CEMENT).
- All bond index curves are filtered to 3 feet, the vertical resolution of the amplitude curve, enabling comparisons of pipe-to-cement bonds.
- Track 4 contains the total CBL waveform (WMSGT), which is the SVP processing of the WMSG added back to the WMSG.
- Track 6 consists of the DZ image or SVP processing of raw amplitude data. Blue indicates a consistent measurement, while the darker colors indicate more variance.
- Track 7 is the cement map, which uses both SVP and raw data to determine bonding. If blue (fluid) is present, it means both raw data and SVP processing indicated fluid. If data in any of the images exceeded cutoffs, the material in the cement map would be considered either cement or a solid (brown).

- Provides depth correlation when run in combination with gamma ray and collar locator
- Allows optional neutron correlation logs or Dual-Spaced Neutron II Tool (DSN II™) logs for formation evaluation where gamma ray contrast is minimal
- Provides accurate correlation to open-hole measurements

### Features

- Comprehensive cement bond evaluation, including channel identification in cement-to-pipe, cement-to-formation, and cement-to- both casing and formation
- Compatible with all types of wireline, from large diameter 0.9375-in. slammer hepta-cables to 0.22-in. sour gas service mono conductor cables
- Digitally records waveform data for real time data transmission and advanced methods of interpretation

### Lose Nothing in the Interpretation

Halliburton's Radial Cement Bond Log tool records waveform data digitally, allowing real time data transmission during logging, and advanced data processing at surface.

Using a statistical variation process, the Advanced Cement Evaluation (ACE™) method provides fast, accurate interpretation of RCBL data, clearly revealing cement bond integrity.

<b>Radial Cement Bond Log (RCBL™) Specifications</b>			
<b>Diameter*</b>	<b>Weight</b>	<b>Assembled Length</b>	<b>Temperature Range</b>
1.69 in	75 lbs	177 in	-30° to 400° F
3.13 in	215 lbs	159 in	-30° to 375° F

\* Radial Cement Bond Log (RCBL) tools are available in two diameter sizes for use in a full range of through tubing logging and casing completions, from small diameter tubing to 13.38-in casing.