CBL - VDL

HT HP

Cement Bond Log – Variable Density Log

FLODIM
Challenging the limits

OPERATING PRINCIPLE:

The Cement Bond Log instrument acquires an omnidirectional, high-resolution full-wave acoustic data in cased and open holes. It accurately infers directly the cement quality from the degree of acoustic coupling of the cement to the casing and to the formation.

One ceramic monopole transmitter and two ceramic receivers are used to produce and analyse the waves.

It operates on the principle that acoustic amplitude (in millivolts) is rapidly attenuated in good cement bond but not in partial bond or free pipe.

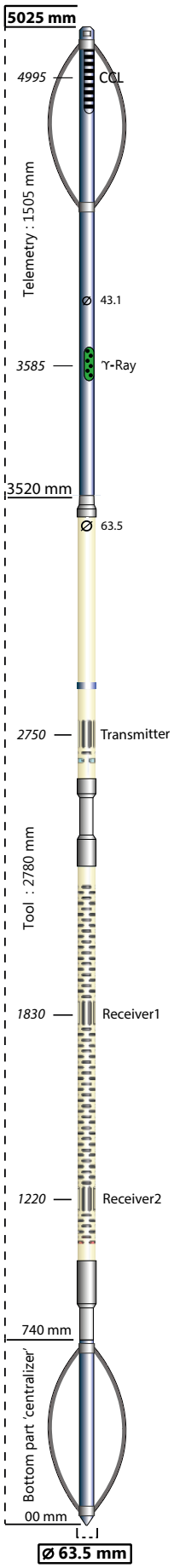
Reduction of the amplitude or increase of the decibel attenuation is an indication of better quality bonding of the cement behind the casing to the casing wall.

On the recorded **cased hole** data, it is possible to identify the Cement Bond and define a Bond Index.

Cement bonding is affected by:

- Cement job design and execution as well as effective mud removal
- Cement in place and its mechanical properties (compressive strength)
- Temperature and pressure changes applied to the casing after cementing
- Cement additives or epoxy resin applied to the outer wall of the casing

On the recorded **open hole** data, it is possible to obtain information on formation's interval transit time.



APPLICATIONS

- Evaluation of cement quality
- Location of cement top
- Well integrity
- Determination of zone isolation
- Leakage source detection

BENEFITS

- Surface leakage prevention
- Hydraulic Bond
- Zone isolation

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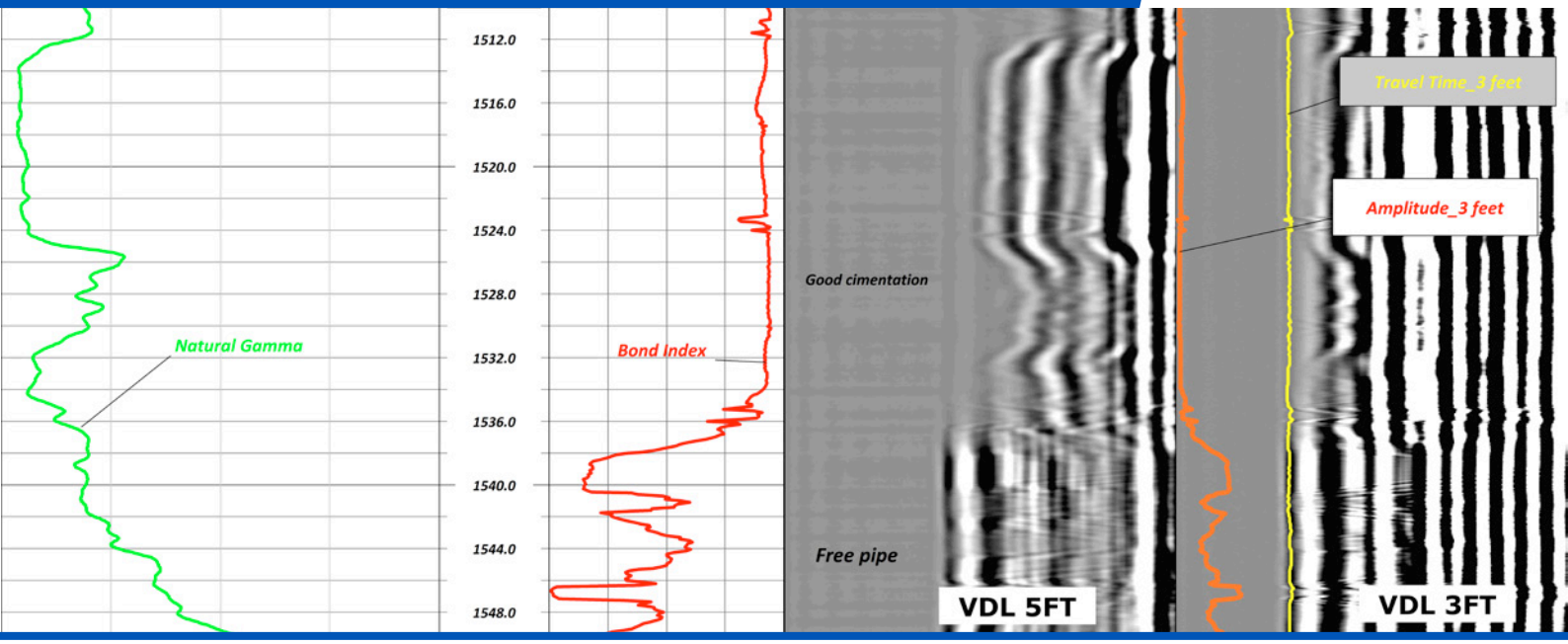

SPECIFICATIONS:

	imperial	metric
Max OD	2.5″	63.5 mm
Length	16.4′	5.03 m
Weight	72.3 lb (90.4 lb with Telemetry)	33 kg (41 kg with Telemetry)
Max. Temp	257/350 ºF	125/175 ºC
Max. Pressure	12 kpsi	850 bar

Transmitter type	Ceramic, monopole
Spacing	
T1-R1	3 ft 915 mm
T1-R2	5 ft 1515 mm
Verification	Casing slowness check 187µs/m (57µs/m)
Logging Parameters	
Casing OD Range	4″ - 16″ 100 – 400 mm
Logging Speed	1800 - 3000 ft/h 9-15 m/min
Sample rate	Selectable
Centering	Required
Cable compatibility	Mono or multi conductor
Top Connector	GO1
Output	
	Depth Correlation (Gamma Ray, CCL) Run-time Single receiver transit time (T1-R1, T1-R2) [µsec] Full Waveform [µsec] Amplitude Near, Amplitude Far (mV) BI – Bond Index

Measuring Parameters	
Full-wave sonic	
Vertical Resolution	2′ 610 mm
Measuring Range	15-250 µsec/ft 50-800 µsec/m
Accuracy of DT [1]	1 µsec/ft +/- 3µsec/m
Repeatability of DT [1]	1 µsec/ft +/- 3µsec/m
	[1] centralized tool in a 200mm OD casing
Verification	Casing slowness check 187µs/m (57µs/m)
Gamma Ray	
Sensor type	NaI scintillation cristal
Range	0 – 3000 GAPI
Accuracy	+/- 5% of measured values [2]

[2] Gamma Ray measurements are radioactive measurements and hence subject to statistical variations. These variations depend inter alia on logging speed and filter strength.