

## FEATURES

- Motorized arm linkages conform to a wide range of casing IDs (5.5 to 15.2 in.) to permit single-run cement evaluations over multiple casing sizes
- LOGIQ® telemetry enables combinability with multiple openhole logging tools, allowing for full service customization and increased operational efficiency

## BENEFITS

- Eliminates log uncertainty and rig standby costs in high-pressure wells where fluid type, fluid density, and casing thickness may limit acoustic tool measurements
- Attenuation-based measurements can be correlated to compressive strength values, providing an indirect assessment of the mechanical properties of cement behind pipe
- Combinable with the CAST and BSAT as part of a redundant service package delivered in a single pass
- Accurately evaluates foam, lightweight, and other complex cement slurries using the Halliburton ACE™ processing service

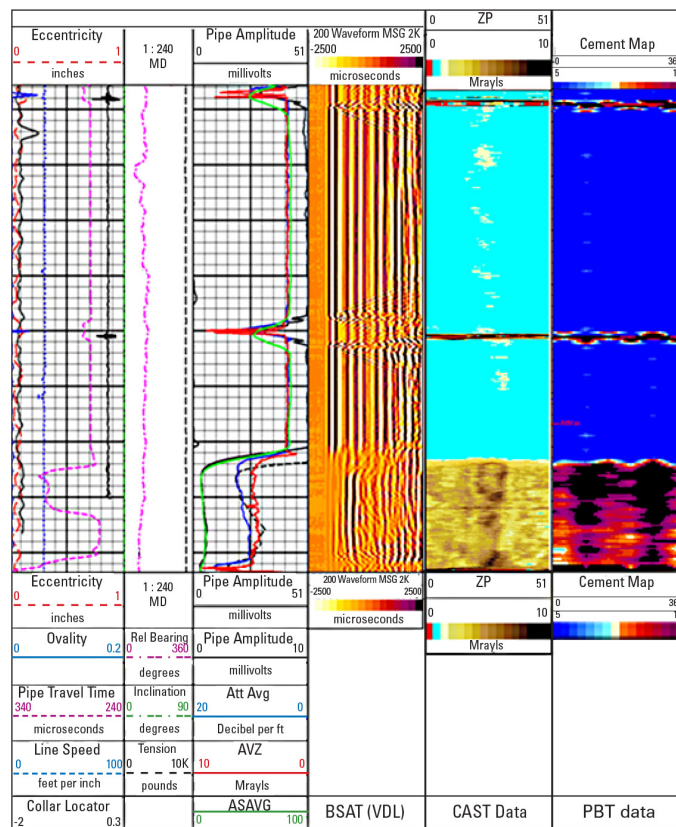
## WELL ASSURANCE | CEMENT EVALUATION

## Pad bond tool

Evaluates cement in hostile environments

## Overview

Diagnosing cement can be an environmental challenge in deep and ultradeepwater wells, where numerous influences, such as heavy mud systems and thick pipe, can affect tool response. The Halliburton Pad Bond Tool (PBT) is designed to overcome these extreme conditions by using mechanical arms to place sensors against the inner wall. The sensors are mechanically coupled to the casing inner wall using sensor-embedded pads during logging operations allowing measurements to completely bypass the wellbore fluids, eliminating fluid attenuation effects to ensure an accurate cement evaluation.



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The Halliburton Pad Bond Tool is designed to provide cement evaluation capability across all ranges of known environments with respect to well construction in terms of casing design and borehole fluids. Above log shows the PBT Cement Map on the far right compared with the CAST™ and BSAT™ tools.

The PBT delivers excellent centralization capabilities, since each pad remains independent of the tool's mandrel movement via individual arm linkage. Casing contact is consistently maintained, even at some of the highest deviated well trajectories, resulting in high-measurement quality.

Exclusively designed for the most uncompromising bottomhole conditions found in today's offshore wells, the PBT is qualified to operate in bottomhole pressures up to 35,000 psi, as well as to deliver effective wave propagation in heavy-walled casing. When the most assailing well conditions are present, the Pad Bond Tool can be run in combination with the CAST™ and BSAT™ tools to deliver a robust and data-redundant solution, providing two distinctively different technologies for examining cement bonding and integrity.

#### PAD BOND TOOL SPECIFICATIONS

Pressure Rating	35,000 psi / 241.3 MPa
Temperature Rating	350oF / 177oC
Tool OD	4 <sup>7</sup> / <sub>16</sub> in. / 11.28 cm
Tool Length	22 ft / 6.7 m
Tool Weight	800 lb / 362.9 kg
Minimum Casing Internal Diameter	5.5 in. / 139.7 mm
Maximum Casing Internal Diameter	15.2 in. / 386.1 mm
Measurement Type	6 independent arms
Azimuthal Pad Phasing	60°
Sampling Rate	4 spf / 13 spm
Acoustic Attenuation Measurement Range	25 dB/ft (82 dB/m)
Acoustic Attenuation Measurement Accuracy	0.75 dB/ft (2.4 dB/m)
Mud Type and Weight	Brine/WBM/OBM/SOBM No mud weight limit
Maximum Logging Speed	30 ft/min / 9.1 m/min
Combinability	LOGIQ® Tools OH/CH combo runs available
Azimuthal Measurement	+/- 5°
Vertical Resolution	+/- 1°



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