Sondex™
a Baker Hughes business

Ultrasonic Pulse Echo tool

High-resolution simultaneous cement evaluation and casing inspection

The primary goal of cement placement is to provide zonal isolation while at the same time protect the casing from corrosive fluids. However, the cement sheath can be stressed by well activity or a poor cementing job to the point where it is no longer effective. The casing is the first barrier for well integrity and it endures significant wear and corrosive conditions throughout the lifecycle of the well. Compromised casing can lead to catastrophic failure impacting safety, the environment and production.

Regulatory compliance requires evaluation of the casing and cement to ensure well integrity is maintained over the lifecycle of the well.

The **Ultrasonic™ Pulse Echo tool** from Sondex provides ultrasonic pulse echo mapping of the casing and cement with one logging run to gain maximum understanding of wellbore zonal isolation. The Ultrasonic Pulse Echo tool employs a rotating transducer to provide high resolution, 360-degree assessment of both the casing integrity and the cement bond. The transducer uses varying frequencies from 150 to 450 kHz to transmit and measure ultrasonic waveforms reflected from the casing and the cement to assess annular integrity. It provides high-resolution circumferential casing and cement coverage data – detecting defects or channels as narrow as 1.2-in. (30.5 mm) The Ultrasonic Pulse Echo tool can also identify casing integrity problems by inspecting the casing for drill wear, ovality and corrosion.

The Ultrasonic Pulse Echo tool simultaneously acquires measurements for casing and cement in one run. Post processing of the logs is integrated with the acquisition software. The evaluation logs are available immediately after the run reducing non-productive time and significantly shortening the time to make critical decisions to maintain well integrity.

To learn more about how the Ultrasonic Pulse Echo tool will provide maximum understanding of your wellbore zonal isolation in one run, contact your Sondex representative or visit sondex.com.

Applications

- Cement top determination and mapping of cement placement
- Deepwater wells with a variety of cement or fluid conditions
- Drilling wear and corrosion evaluation
- Primary or remedial cement job quality check
- Locating internal and external casing defects
- Heavy wellbore fluid environments

Benefits

- Compliance with well integrity regulations
- Operational efficiency
- Reduce risk of zonal communication
- Reduce risk of casing failure
- Reduce Non-productive time

Ultrasonic Pulse Echo tool specifications	
Answer Products	Acoustic impedance, cement bond data, casing thickness, internal radius, external radius, ovality, internal rugosity, burst pressure
Range of measurement	0 - 10 Mrayl
Accuracy	
Cement impedance	0 - 3.3 Mrayl +/- 0.50 Mrayl; > 3.3 Mrayl +/- 15%
Casing thickness	+/- 2%
Maximum operating pressure	20,000 psi (138 kPa)
Maximum operating temperature	347° F (175 °C) for 4 hr
Maximum casing size (OD)	20.0-in. (508 mm)
Minimum casing size (OD)	4.5-in.* (114.3 mm)
Mud type or weight limitations	
Maximum water-base mud weight	Any weight
Maximum oil-base mud weight	16.7 ppg (2.0 g/cc)
Tool OD	3-⅝-in. (92 mm)
Length	12.86 ft (3.92 m)
Weight (in air)	216 lb (98 kg)
Maximum logging speed	40 ft/min (13 m/min)
Combinability	INTeX, DAL

* Minimum ID of 4.00-in.

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