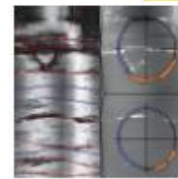
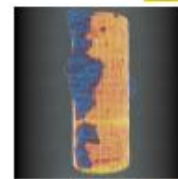
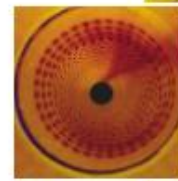
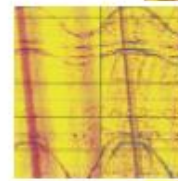
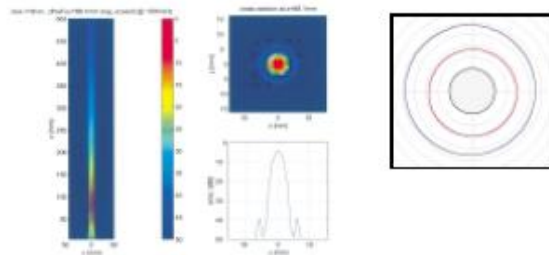
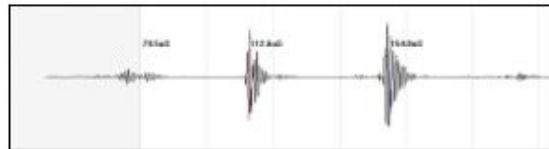


ABI 40

slimhole acoustic televiewer



The ABI40 is the latest generation of the FAC40. Based on 8 years of experience and market leadership with BHTV technology, the new system consists of industry standard focused acoustic head with completely new deviation subsystem and redesigned electronics. The new electronic architecture uses a A/D converter 14 Bit directly coupled to a super FAST 75Mops DSP processor. The DSP is performing complex data processing operations in real time on each individual ultrasonic wave train enabling higher dynamic range of signal detection and easy field operation in a wide variety of logging applications.



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ABI 40

slimhole acoustic televiewer



- Direct linear 14 Bit, 10kHz A/D conversion (automatic gain settings)
- Dynamic range of amplitude measurement is 84dB
- Caliper resolution is better than 0.1mm
- New orientation sensor (3 accelerometers and 3 axis magnetometer)
- New orientation sensor (3 accelerometers and 3 axis magnetometer) which does not require field calibration
- Increased telemetry bandwidth (data transmission rate up to 500 Kbits depending on wireline), 166 kbps typical on 3000m Four-conductor.
- Full wave form recording and real time display for quality control
- Multi-echo mode to realize acoustic measurements through plastic pipes (require the plastic pipe to be centralized inside the borehole)
- Pipe-inspection mode to detect inner corrosion, outer corrosion, and wall thickness
- Automatic measurement window definition to gain optimum performance and variable borehole conditions

Tool design philosophy:

Acoustic borehole scanner tools generate an image of the borehole wall by transmitting ultrasound pulses from emitting sensor and recording the amplitude and travel time of the signals reflected at the interface between mud and formation (borehole wall). Compared to the FOCAD, which measures one echo (one amplitude and one travel time), the AB is a multi-echo system. This is achieved by digital recording of the reflected acoustic wave train. On line analysis of the acoustic data is made by a DSP (Digital Signal Processor). Sophisticated algorithms allow the system to detect the reflection from the acoustic window and to separate clearly all subsequent echoes. Minimum input of the operator is needed to enable:

- Automatic optimization of measurement window under all borehole conditions
- Automatic adaptation to variable borehole conditions
- Improvement of dynamic range of signal detection
- Very high travel time resolution
- Implementation of different operating modes.

E.g. when run inside plastic casing, the tool can record both the echo of the casing end of the borehole wall. Tool upgrades and implementations of customized operating modes can be simply made by downloading new firmware into the tool from the surface computer.

Technical specifications

• Diameter:	40mm
• Length:	16m
• Weight:	9kg
• Max temp:	70°C
• Max pressure:	200bar
• Borehole diameter:	2" to 2 1/2" depending on mud conditions variable function of resolution and wireline.
• Logging speed:	i.e. 2.0m/min at 1443mm
Cable:	
• Cable type:	mono four-conductor, seven-conductor
• digital data transmission:	up to 500 Kbits per second depending on wireline.
• compatibility:	JLTLogger - JLTToolX - Mount Super Mod (limited to 41Kbps)
sensor:	
• acoustic sensor:	fixed transducer and rotating focusing mirror
• focusing:	3" or 6"
• frequency:	12 MHz
• acoustic beam width:	15 mm (-3dB) focal distance
• rotation speed:	up to 10 revolutions per second - automatic
• samples per revolution:	72, 144, 288 user defined
• caliper resolution:	0.08mm
• orientation:	3 axis magnetometer, 3 accelerometers
• inclination accuracy:	± 0.5 degree
• Azimuth accuracy:	± 1.0 degree

The specifications are not contractual and are subject to modification without notice.

Applications:

The purpose of the acoustic borehole imaging tool is to provide detailed, oriented caliper and structural information on the beds of high resolution ultrasonic travel time and amplitude images. The travel time is used to determine exceptionally accurate borehole diameter data, which makes the tool ideal for borehole deformation description (stress field analysis) and casing inspection. Travel time is also used for quality control of the amplitude measurement. The amplitude of the reflection from the borehole wall is representative of the acoustic (elastic) properties of the surrounding rock. Therefore, the tool is ideal for fracture detection and geotechnical rock classification. Cement bond quality can be checked if the reflection signal from behind casing is analyzed.

Most common applications are:

- fracture detection and evaluation
- detection of thin beds
- determination of bedding dip
- lithological characterization
- breakout analysis
- monitoring of earth stress field
- casing inspection
- high resolution caliper measurements



*released in 2002