

ABI 85-92

High temperature acoustic televiewer

Acoustic borehole scanner tools generate an image of the borehole wall by transmitting ultrasound pulses from a rotating sensor and recording the amplitude and travel time of the signal reflected at the interface between mud and formation (borehole wall).

The ABI85 is a new generation of high temperature and high pressure acoustic imaging tool based on the well known ABI40 televiewer technology. The new electronic architecture uses a 14 Bit A/D converter directly coupled to a FAST 75 Mops 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.

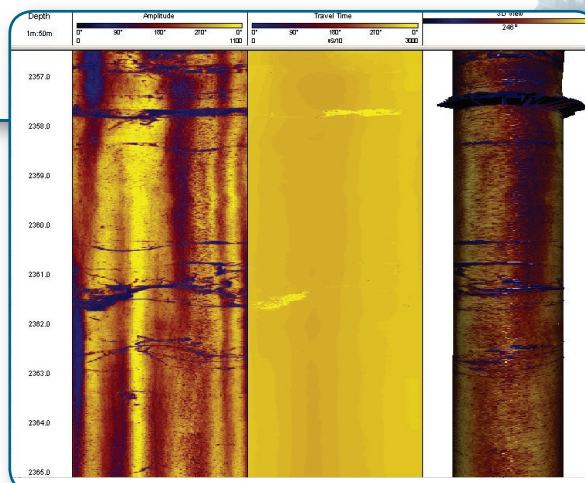
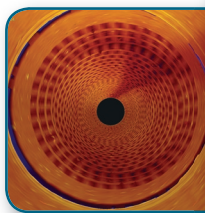
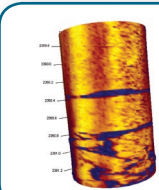
Dewar technology is applied to shield the electronics. Maximum operating time is 10 hours at 275°C ambient temperature.

Applications /

The purpose of the acoustic borehole imaging tool is to provide detailed, oriented caliper and structural information on the basis 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.

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 (inner corrosion only)
- high resolution caliper measurements



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The ABI 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/classify all subsequent echoes.

- Direct linear 14 Bit, 10 MOPS A/D conversion
- Dynamic range of amplitude measurement is 84dB
- Caliper resolution is better than 0.1mm
- 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 7000 m (23000 ft) of seven-conductors.
- Full wave form recording and real time display for quality control
- Automatic optimisation of measurement window under all borehole conditions
- Improvement of dynamic range of signal detection
- Very high travel time resolution
- Implementation of different operating modes.



Technical specifications /

	ABI85	ABI92
Diameter:	85mm (3" 3/8)	92mm (3" 5/8)
Length:		
<i>With "inline" centralisers</i>	5,2 m (205")	id
<i>Without "inline" centralisers</i>	3,7 m (145")	id
Weight:	150 Kgs	180 Kgs
Max temp:	275°C (300°C) for 10 hours	id
Max pressure:	800 bar (12000 PSI)	1400 bar (20000 PSI)
Borehole diameter:	4" to 25" depending on mud conditions	id
Logging speed:	variable function of resolution and wireline. i.e 2.0 m/min at 144x3mm	id
Cable:		
Cable type:	mono, four-conductor, seven-conductor, coax	
Digital data transmission:	up to 500 Kbits per second depending on wireline.	
Compatibility:	ALTlogger - Abox - Matrix	
Telemetry:	automatic telemetry according to the cable length /type	
sensor:		
Acoustic sensor:	fixed transducer and rotating focusing mirror	
Focusing:	8" 1/2	
Frequency:	1.2 Mhz	
Acoustic beam width:	3 mm +/- 3 db	
Rotation speed:	up to 5 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:	+/- 1.5 degree	

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