

Geo-Vista

(I) Cement Bond Imaging Logging System (CBILOG)

PI Data Acquisition System (PIDAS)

Ultrasonic Scan Imaging Tool-Slim (USI-S)

Radial Cement Bond Logging System (RadialCBL)

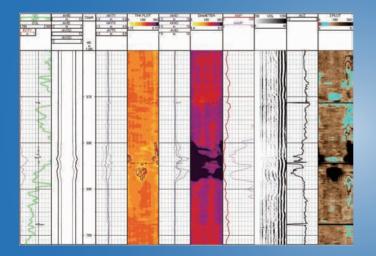
Hexapod Segmented Bond Tool (HSB)

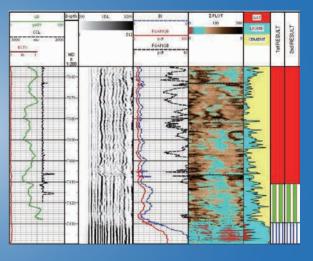
Multi-Finger Imaging Tool (MFI)

Telemetry/Gamma Ray/Orientation Tool-Single Conductor (TGO-S)

Casing Collar Locator-Slim (CCL-S)

Temperature/Tension/Mud Resistivity Tool-Slim (TTR-S)





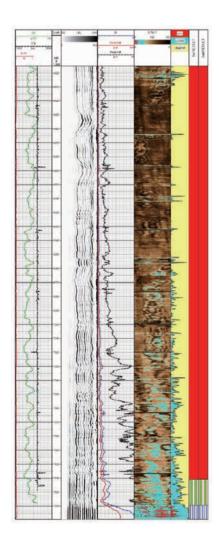


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- Delivers the high-quality cement evaluation and casing inspection results with the USI-S / RadialCBL service
- Ensures high-resolution (0.0039 in.) characterization of the casing inner wall, with the MFI tool's direct-contact caliper technology
- Improves understanding of casing conditions, with additional provision of interactive 3D mapping and statistical reports
- Tractor or PCL conveyance for deviated and horizontal well applications
- Traditional cased hole pressure controls equipment compared to 7 conductor cable

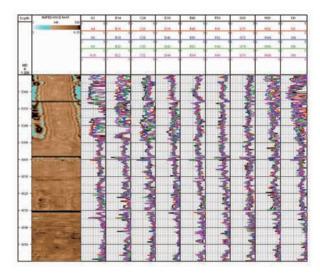


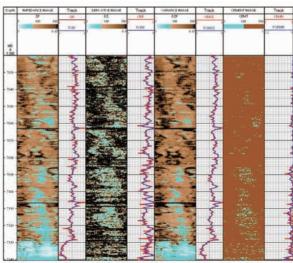
Introduction

The Combination of the Ultrasonic Scan Imaging Tool-Slim (USI-S), Radial Cement Bond Logging Tool (RadialCBL) and Multi-Finger Imaging Tool (MFI) string was designed to augment well-integrity data acquisition with three independent data-acquisition technologies, particularly when suspected poor casing conditions are likely to impact data acquisition from acoustic tools. It enables enhanced well evaluation.

The USI-S / RadialCBL / MFI tool string was designed with 2.875 in. OD for smaller hole size and can be run with single conductor cable which is needed for traditional cased hole PCE work. The tool string acquires multiple data sets from 3.75 in. to 12.9 in. ID casing, including cement impedance, 5-ft. acoustic waveform, and 2D imaging logs, as well as interactive 3D maps of casing inner wall and statistical reports on casing wear.

This comprehensive solutions package permits the customer to fully understand the condition of both the casing and the cement when well conditions demand service innovation











Features

- The system records the data including the original signal of the instrument, calibrated engineering value and the processed data. Because the original signal of the instrument is recorded, the logging data could be reprocessed by different parameters if required.
- All of the calibration value and verification value could be displayed by the operator, therefore, it is easy to confirm: the value of the super-value will flash, causing the operator's attention.
- Repeated curves can be real-time displayed on the main logging curves to verify the repeatability of the curves.
- Real-time plotting of cross-plot graphs allows the operator to verify the correctness of the logging response which is based on the expected model.
- Real-time environmental correction eliminates the subjective assessment of the operator's quality control process.
- Real-time similarity correction verifies the integrity of the acoustic waveform data.
- Using personnel safety and data protection systems.
- Reduces wellsite operating time and ensure system reliability by using advanced computer technology and redundant design simplify data acquisition and processing.
- * Telemetry :

MGTS SGTS

RGTS

Wireline Perforating Panel (WPP)

Features

- Wide voltage input (100 Vac-240 Vac)
- With safety switch
- PFC power supply is up to 150 V, and perforating and coring power supply adopts the mode of external DC power supply
- The polarity of perforating and coring voltage is adjustable

Introduction

The PI Data Acquisition System (PIDAS) is designed for data acquisition and processing in combination with Open-hole and Cased Hole tool. This PIDAS is based on portable notebook as a host and remote transmission system with high-speed data communication.







Specifications

Physical Dimensions & Weights

 Height
 29.13 in. (740 mm)

 Depth
 29.33 in. (745 mm)

 Width
 27.56 in. (700 mm)

 Shipping Weight
 160.9 lbs. (73 kg)

Environmental Characteristics

 $\begin{array}{lll} \mbox{Operating Temperature} & 0^{\circ}\mbox{C} {\sim} +50^{\circ}\mbox{C} \\ \mbox{Storage Temperature} & -20^{\circ}\mbox{C} {\sim} +75^{\circ}\mbox{C} \\ \mbox{Relative Humidity} & < 95\% \\ \end{array}$

Vibration (3D) 3 g 10-60 Hz (When not working)
Shock (3D) 3 g 10-60 Hz (When not working)
System Power Supply 85-265 Vac, 43 Hz-70 Hz

Downhole Instrument Power Supply

AC Power 0-720 Vac, 2 A, 1440 W 0-1440 Vac, 1 A, 1440 W DC Power 0-1000 Vdc, 2 A, 2000 W

System Composition

Portable surface logging system is divided into: data acquisition system, power supply system and other major parts. The functions of each part is as follows:

- 1. Surface Data Acquisition System: the computer is the core, controlled by several loaded software, to complete a variety of logging operations. Such as the processing, recording, display, quality control and fast processing and interpretation of logging data on the wellsite. Including: PC, Wireline Acquisition Panel (WAP).
- 2. Power Supply System provides power to the surface system and downhole equipment. Currently, logging power supply system usually use vehicle generators or wellsite power.
- 3. Hoist Display Unit (HDU) is the display unit for the Surface System. Equipped with a color LCD touch screen display, the unit provides a continuous display of depth information. In addition, HDU also displays other variables monitored and provides a visual and audible alarm when any of these variables are outside a preset range.





Features

Used for a variety of downhole instruments for openhole and cased hole with different modules.

PI Data Acquisition System (PIDAS)

Post-processing & presentation management (FileView)

PI Wireline Formation Sampling and Testing System (PIWST)

- ·PI Formation Coring Software (PIWST-FCT)
- ·PI Mechanical Sidewall Coring Software (PIWST-MSC)
- PI Reservoir Characterization Tester Software (PIWST-RCT)
- ·PI Formation Test, Fluid Analysis, Pump-Thru Software (PIWST-FFP)

PI Production and Engineering Logging System (PIPES)

- ·PI Down Hole Camera Software (PIPES-DHC)
- ·PI Free Point Indicator Software (PIPES-FPI)
- PI Mechanical Downhole Cutter (PIPES-MDC)
- ·PI Rotary Magnet Ranging Software (PIPES-RMR)
- ·PI Gyroscope Orientation Software (PIPES-GOT)
- PI Downhole Casing & Tubing Tractor Software (PIPES-CTT)
- ·PI Downhole Hydraulic Tractor Software (PIPES-DHT)
- ·PI MFI Logging System (PIPES-MFI)
- PI Memory Acquisition and Processing Software (PIPES-MAP)

PI Vertical Seismic Profile System (PIVSP)

Microseismic monitoring data processing and interpretation software (MMDPI)

PI Logging While Drilling System (PILWD)

- ·PI Rotary Steerable Software
- ·PI LWD Data Presentation Software
- ·PI LWD Remote Monitoring Software
- Using multi-window to display nuclear logging equipment which is obtained by the spectrum, acoustic and imaging instruments. These windows can be controlled by the user, in order to display the original data or the processed data, so that, the operator can control the quality of the real-time logging data.
- Provides Multi-tasking and distributed processing at the wellsite, improving log data integrity and wellsite efficiency.

PIDAS Software Introduction

The PIDASView software contains two parts: PIDAS software and FileView software. Each part can run independently.

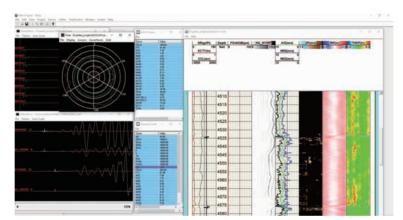
The PIDAS software is a control acquisition processing system based on WINDOWS with multi-task & multi-user, and using a large number of modern image processing technology.

The control acquisition processing system is used to acquire and process various signals of the downhole logging instrument detectorand to control other functions of the downhole instrumentand converts the acquired signals to engineering values and provides the logging data required by the user

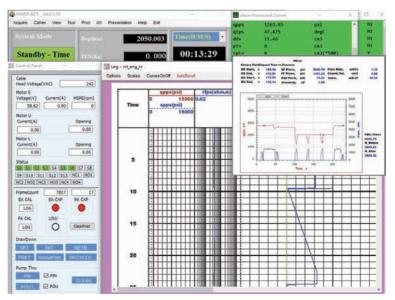
By equipment array, imaging and large information, real-time logging data acquisition, control and processing achieve multi-parameter acquisition and multi-task time-sharing processing.

PIDAS software can be used for a variety of downhole instruments for openhole and cased hole with different modules.

The FileView is a post-processing and presentation software. It can support the basic functions, such as the heading, toolstring, well sketch, calibration, parameters, log plot, data convert, etc. Also, it can provide the data analysis and processing, 2D, 3D, cross plot, compose plot, etc. advanced functions.



USI-G/CBL/VDL service by PI Data Acquisition System module



Pressure Test and Sampling service by PI Reservoir Characterization Tester Software





Features

- Equipped with a safety switch to ensure safe operation.
- Power supply to GR and CCL instruments, the voltage is up to 160 Vdc.
- Adjust the polarity of the power supply
- Both hands must be used simultaneously for perforation and coring to ensure the safety of the operation.
- Using an external DC power supply, the perforation voltage and current no limited by this panel.
- With BYPASS mode, connected with any system.
- Perforation and coring functions, no more panels required.
- Provide a powerless CCL visual indication and signal conditioning

Introduction

Wireline Perforating Panel (WPP) is used for Perforating Control, Coring Control, PFC (Perforating Formation Correlation) power supply for Gamma Ray and CCL, Powerless CCL. It is the first panel connected to the cable drums, and suitable for 7-Conductor and Mono-conductor cable.



Specifications

Physical Specifications

 Length
 17.7.00 in. (45 cm)

 Width
 19 in. (48.26 cm)

 Height
 5.3 in. (13.35 cm)

 Weight
 22.05 lbs. (10 kg)

Electrical Parameters

AC Input 100-265 Vac / 47-63 Hz

PFC Output Voltage 0-160 Vdc

Environmental Specifications

Operating Temperature Range $32^{\circ}F$ (0°C) to $104^{\circ}F$ (+40°C) Storage Temperature Range $-4^{\circ}F$ (-20°C) to $158^{\circ}F$ (+70°C)

Maximum Humidity 95%



(USI-S) **Geo-Vista**

Applications

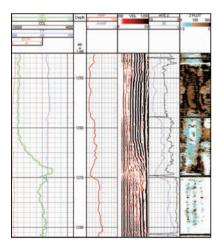
- Casing Inspection (both Thickness and
- Ultrasonic Cement Evaluation/ Imaging

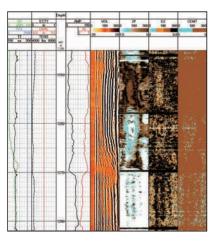
Benefits

Reveals bonding and image channels in the cement sheath directly outside the

Features

■ Measures casing properties such as thickness, internal, and external diameters





Introduction

The USI-S tool provides high-resolution cement and casing evaluation images oriented with respect to high side-low side of the wellbore, enabling identification of both internal and external casing wear, erosion, corrosion, or mechanical damage. USI-S provides the same capabilities as the USI-V/USI-F/USI-G, but with a smaller diameter tool, the cement evaluation and casing inspection service can now be acquired in 4-1/2 in. to 13-3/8 in. casing.

USI-S tool consists of 2 sections: electronic assembly and scanner assembly. USI-S tool is MGTS interface type tool.

Specifications

Maximum Temperature 350°F (175°C) 20,000 psi (137.9 MPa) Maximum Pressure **Tool Diameter** 2.875 in. (73 mm) 180 Vdc, 200 mA Power Supply

Cement Bond & Casing Corrosion Mode

Firing Rate 36, 45, 60, 72, 90 shots/scan (Optional)

Vertical Scan Rate 4 scans/ft. at 3.0 in. sampling

Vertical Sampling(Software) 6.0. 3.0. or 1.0 in.

Logging Speed 60, 30 or 10 ft./min (Depending on sampling rate)

Principle Ultrasonic Pulse Echo and time of flight

Reflected Amplitude, Radius Acoustic Impedance, **Primary Curves**

Casing Wall Thickness

Secondary Curves Relative Bearing, Deviation, Fluid TT,

Compressive Strength, Mud Impedance

Imaging Inspection Mode

Firing Rate 180 shots/scan

Vertical Scan Rate 40 scans/ft. at 3.0 in. sampling

Vertical Sampling(Software) 0.3 in. Logging Speed 21 ft./min

Ultrasonic Pulse Echo and time of flight Principle **Primary Curves** Reflected Amplitude, Travelling Time Relative Bearing, Deviation, Fluid TT, Radius Secondary Curves

Minimum Diameter Hole 3.75 in. (95 mm) Maximum Diameter Hole 13 in. (330 mm) Wireline Requirements 7-Conductor Cable

250 kHz, 350 kHz, 450 kHz, flat type Transducer

> 380 kHz, focal type 300 kHz, mud transducer

Combinability MGTS type tool Motor Speed 2-5 rps (Adjustable) Centralizer Inline centralizer

Head Assembly

Fixed 3-1/8 in.,3-5/8 in., 4-3/8 in., 5-5/8 in., 7 in. dia.

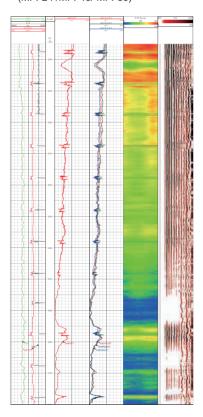
Adjustable 3 in.-5.25 in.effective head radius



- Evaluation of cement bond quality and integrity
- Location of free-pipe and cement-top

Features

- 360° cement bond imaging view
- RBM could combine with a pipe scraper, logging while pipe cleaning under thru-pipe logging memory mode
- OSB & DSB could combine with USI-V/USI-G
- Combine with Multi-Finger Imaging Tool (MFI-24 /MFI-40/ MFI-60)





Calibration Tank

Introduction

The Radial Cement Bond Tools provide the operator with an accurate and economic means of inspecting the quality of the cement bond to casing and formation.

The tools evaluate the cement bond quality and integrity to both casing and formation by providing the measurements of the cement bond amplitude (CBL) through the near receiver (3 feet), and variable density log (VDL) through the far receiver (5 feet). Depending on tool size, the tool has 6/8/12 segmented receivers. These radial receivers are used to provide a high resolution cement bond imaging view.

Specifications

_								
	Radial Bond Logging with Memory Mode			Octopod Segmented Bond Tool		Dodeca Segmented		
						Bond Tool		
		(RBM)		(OSB)		(DSB)		
	(6 segments)			(8 segments)		(12 segments)		
Pressure	20,000 psi		20,000 psi *		20,000 psi *			
(Maximum)	(140 MPa)		(140 MPa)		(140 MPa)			
Temperature (Maximum)	350°F/ 175°C 350°F/175°C*		350°F/175°C*		350°F/175°C*			
Diameter	1.78 in.	2	.13 in.	2.5 in.	2.88 in.	3.50 in.		
Diameter	(45 mm)	(5	54 mm)	(63 mm)	(73 mm)	(89 mm)		
Length	9.93 ft.		11.4	8 ft.	13.12 ft.			
Lengin	(3.03 m)			(3.5 m)		(4.00 m)		
Weight	40 lbs.			110 lbs.		231.48 lbs.		
vveignt	(18.1 kg)			(50 kg)		(105 kg)		
Transducer Type	е							
Receiver (s)								
Bandwidth	18-32 kHz			18-24 kHz		18-24 kHz		
Receiver (3 ft.)	6 Segments Synthesized			Monopole		Monopole		
Receiver (5 ft.)	Monopole			Monopole		Monopole		
Receiver (2 ft.)				8 segments		12 segments		
Transmitter (s)								
	Piezoelectric (Monopole)							
Type				Piezoeiectric (Monopole)				
Bandwidth	18-22 kHz		18-24 kHz		18-24 kHz			
Number	1				1	1		
Recommended Casing Range								
Minimum	2.875 in.		4.00 in.		5.00 in.			
Casing OD	(73.0 mm)		(101.6 mm)		(127 mm)			
Maximum	7.5 in		10 in.	10.75 in.	13.375 in.	13.375 in.		
Casing OD	(190.5 m	nm)	(254 mm)	(273 mm)	(340 mm)	(340 mm)		
Data Acquisition								
Maximum	100 ft./min							
Logging Speed	(30 m/min)**							
Tool Positioning	Centralized							
Gamma Ray	Optional Integrated							
CCL	Optional Integrated							
Temperature	Optional Integrated							
Power Requiren	nents							
Input Voltage	150 to 220 Vdc		150 Vdc/180 Vac***		150 Vdc/180 Vac ***			
Input Current Required	50 mA		90 mA		80 to 90 mA			

 $^{^{*}}$ 25,000 psi (172.4 MPa) / 400°F (204°C) is optional.

 $^{^{\}star\star}$ The maximum speed is 30 ft./min (9 m/min) if connect with USI-V/USI-G.

^{***} Mono-conductor cable is DC powered, multi-conductor cable is AC powered.

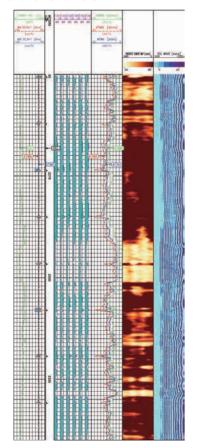




- Evaluate cement bond quality in six sectors
- Cased-hole wells
- Continuous cement map
- Advanced channel analysis

Features & Benefits

- Evaluates multiple-size casing strings in one logging pass
- Through tubing to log the exposed casing section
- Provides qualitative analysis in light cement
- Provides accurate measurement, even in fast formations, heavy mud, and thick wall casing
- Combinable with Ultrasonic Scan Imaging Tool (USI-V/USI-G)
- Combinable with Tractor in high deviated and horizontal wells



Introduction

The HSB is a unique cement bond logging tool. It can find and define channels in the cement annulus which could result in a poor hydraulic seal. Conversely, the HSB can reliably find zones of uniform bonding over only a few feet of casing. Under conditions where a short bonded interval produces an adequate hydraulic seal, unnecessary squeeze jobs can be avoided.

Specifications

Maximum Logging Speed

Detector Type

 Maximum Temperature
 350°F (175°C)

 Maximum Pressure
 20,000 psi (137.9 MPa)

 Minimum Casing ID.
 4.0 in. ID (101.6 mm)

 Maximum Casing ID.
 15.5 in. ID (393.7 mm)

 Tool Diameter
 3.38 in. (85.7 mm)

 Make-up Length

 Pad section
 17 ft.-3.87 in. (5.28 m)

 VDL section
 7 ft.-8.13 in. (2.34 m)

Shipping Length
Pad section 19 ft. (5.79 m)
VDL section 9 ft.-3.81 in. (2.84 m)

 Weight
 240 lbs. (108 kg)

 VDL section
 108 lbs. (49 kg)

Auxiliary Data Mode Limited only by GR resolution required
Normal Mode 35 ft./min (10.7 m/min)

Measurement Range 0-22 dB/ft. Compensated attenuation

Absolute Accuracy ±1.0 dB/ft. or 10% of log value

Repeatability ±1.0 dB/ft. or 10% of log value

Vertical Resolution 0.25 ft. (76.2 mm) Basic measurement

Normal Presentation presents data averaged over 3 ft. (91 cm)

Radial Resolution 60 degrees

Depth of Investigation 2 in. (50.8 mm)

Power Requirements 150 Vdc

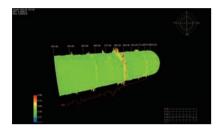
Wireline Requirements Single conductor

VDL 20 kHz Piezo-electric cylinder
Pads 100 kHz Piezo-electric Stack
Pad Force 50 lbs. (22.7 kg)



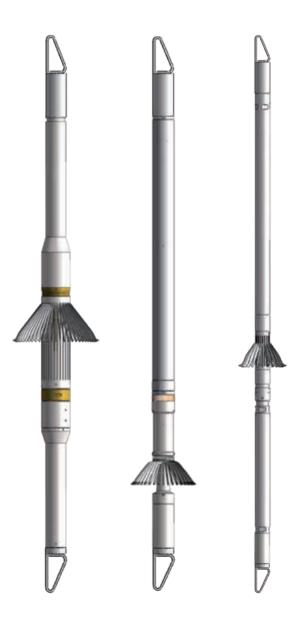


- Casing Deformation
- Casing Wear
- Perforation Mapping
- Accurate location of holes or anomalies



Introduction

The Multi-Finger Imaging Tool (MFI) is used to detect very small changes to the internal surface condition of tubing or casing with a high degree of accuracy. A range of tool sizes with 24, 40, or 60 fingers are available to suit different casing diameters and each tool has two types fingers to increase the measurement range. The tool includes an inclinometer to indicate well bore deviation and the tool bearing relative to the high side of pipe.







Specifications

Item	MFI-24	MFI-40	MFI-60				
Max. Temperature	350°F (175°C)						
Max. Pressure	15,000 psi (103 MPa)						
Make-up Length	4 ft2.59 in. (1.285 m)	7 ft6.12 in. (2.29 m)	6 ft0.36 in. (1.84 m)				
Shipping Length	5 ft4.57 in. (1.64 m)	7 ft11.64 in. (2.43 m)	6 ft5.88 in (1.98 m)				
Weight	20.7 lbs. (9.38 kg)	79.4 lbs. (36 kg)	111.3 lbs. (50.5 kg)				
Tool Diameter	1.688 in. (43 mm)	2.875 in. (73 mm)	4 in. (102 mm)				
Min. Hole Diameter	1.97 in. (50 mm)	3.15 in. (80 mm)	4.5 in. (115 mm)				
	(4.5 in. finger)	(7 in. finger)	(10 in. finger)				
May Hala Diamatan	4.5 in. (114.3 mm)	7 in. (177.8 mm)	10 in. (254 mm)				
Max. Hole Diameter	(4.5 in. finger)	(7 in. finger)	(10 in. finger)				
Recommended	22 # /min (6.7 m/min)						
Logging Speed	22 ft./min (6.7 m/min)						
Max. Logging Speed	43 ft./min (13.3 m/min)						
Dadial Assuman	±0.02 in. (0.5 mm) STD	±0.02 in. (0.5 mm) STD	±0.025 in. (0.64 mm) STD				
Radial Accuracy	±0.02 in. (0.5 mm) EXT	±0.025 in. (0.64 mm) EXT	±0.03 in. (0.76 mm) EXT				
Radial Resolution	0.0039 in. (0.1 mm)						
Rotation	±3°						
Inclinometer	±3°						
Power Requirements	18 Vdc (Nominal) 13-23 Vdc (Range)						
Current Consumption	30 mA @ 18 Vdc (Logging)						
	450 mA @ 18 Vdc (Motor operating)						
Extending Finger	7 in. fingers (EXT)	10 in. fingers (EXT)	14 in. fingers (EXT)				
	Min: 1.97 in. (50 mm)	Min: 4.7 in. (119 mm)	Min: 4.5 in. (115 mm)				
	Max: 7 in. (177.8 mm)	Max: 10 in. (254 mm)	Max: 14 in. (356 mm)				
	Tool OD 1.688 in. (43 mm)	Tool OD 4.33 in. (110 mm)	Tool OD 4 in. (102 mm)				
	1						





- Data control
- Lithology identification
- Measuring bed thickness
- Borehole orientation

Introduction

This tool is the downhole telemetry interface tool. The primary function of the TGO-S is to act as a repeater of the telemetry channels and to create the SGTS tool Bus. A secondary function is to acquire data from several sensors located in its electronic cartridge and outside of it. It can acquire the signal of natural gamma-ray, three orthogonal accelerometers and magnetometers, it can acquire the data from the downhole temperature/tension/mud resistivity.

Specifications

Maximum Temperature 350°F (175°C)

Maximum Pressure 25,000 psi (172.4 MPa) **Tool Diameter** 2.75 in. (70 mm) Minimum Hole Diameter 3.5 in. (89 mm) Maximum Hole Diameter 16 in. (406.4 mm) Make-up Length 9 ft.-0.12 in. (2.75 m) 10 ft. -3.08 in. (3.13 m) Shipping Length Weight 75.85 lbs. (34.4 kg)

Maximum Tensile Force 49,000 lbs Maximum Compressive Force 44,500 lbs

60 ft./min (18 m/min) Maximum Logging Speed

Gamma Ray Energy Range 0.06 to 3.5 MeV

Accuracy GR: ±3% of measured value

Measure Point 1 ft.-1.7 in. (448mm) from bottom of sub

Orientation:

Sensor Accuracy Azimuth ± 1.5 degrees Deviation ± 0.25 degrees

Drift Azimuth Deviation range 9° to 90° DAZ ± 1.5 degrees

> Deviation range 5° to 9° DAZ ± 6.0 degrees Deviation range 1° to 5° DAZ ± 10.0 degrees

Power Requirements:

Operating Voltage & Current 180 Vdc, 55 mA

Wireline Requirements Single or Multi-Conductor Cable



■ Depth Measurement

Introduction

The CCL-S Tool measurement is based upon the principle that a changing magnetic flux within the tool sensor coil generates a voltage across the terminals of that sensor coil. The magnetic field of a CCL-S magnet is affected by any magnetically sensitive material close to it, such as the casing in a borehole. A collar or joint in the casing changes the magnetic flux field including the flux passing through the sensor coil ends adjacent to the magnets, causing an electric voltage to be generated.

Specifications

350°F (175°C) Maximum Temperature Maximum Pressure 25,000 psi (172.4 MPa) **Tool Diameter** 2.75 in. (70 mm) 3.5 in. (89 mm) Minimum Hole Diameter Maximum Hole Diameter 12.0 in. (305 mm) Make-up length 1 ft.-10.42 in. (0.57 m) Shipping length 3 ft.-1.38 in. (0.95 m) Weight 20 lbs. (9.1 kg) Source Type Magnets Sensor Type Coil

Maximum Tensile Force 100,000 lbf.

Maximum Compressive Force 100,000 lbf.





■ Detect and measure borehole temperature mud resistivity (Rm), and external cablehead tension and compression forces at the top of the tool string

Introduction

The TTR-S is a 2.75 in. diameter sub containing three types of sensors for measurement of cablehead tension/compression force, borehole temperature, and mud resistivity.

Specifications

Maximum Temperature 350°F (175°C) Maximum Pressure 20,000 psi (137.9 MPa) **Tool Diameter** 2.75 in. (70 mm) Minimum Hole Diameter 3.5 in. (89 mm) Make-up Length 5 ft.-1.3 in. (1.56 m) Shipping Length 6 ft.-4.28 in. (1.94 m) Weight 45.2 lbs (20.5 kg) Maximum Logging Speed 100 ft./min (30 m/min)

Measurement Range

Borehole Temperature

Cablehead Tension 0 to 12,000 lbs Tension

0 to 10,000 lbs Compression 32°F to 450°F (0°C to 230°C) 0.01 ohmm to 10 ohmm

Mud Resistivity
Absolute Accuracy

Cablehead Tension ± 800 lbs Tension ± 5% *

± 800 lbs Compression ± 5% *

Differential Cablehead Tension ± 100 lbs Tension

 \pm 100 lbs Compression

Borehole Temperature \pm 4°F \pm 5% (2°C \pm 5%) Mud Resistivity 0.01 ohmm \pm 5%

* The absolute accuracy is limited because of effects of pressure, temperature, and measurement electronics. Therefore the TTR-S should only be used as a differential CHT device.

Repeatability

Cablehead tension ± 100 lbs Tension

± 100 lbs Compression

Borehole Temperature $\pm 2^{\circ}\text{C}$ Mud Resistivity ± 0.01 ohmm
Maximum Tensile Force 50,000 lbf.
Maximum Compressive Force 18,000 lbf.



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