

Tool Record Rates:
 EcoScope Res, Density & Neutron @ 2 sec
 sonicVISION Delta T @ 10 sec

Tool Software Version:
 TeleScope: 9.0_C03 EcoScope: 11
 sonicVISION: 6.4_B10
 Crew: L. Loh and D. Buster

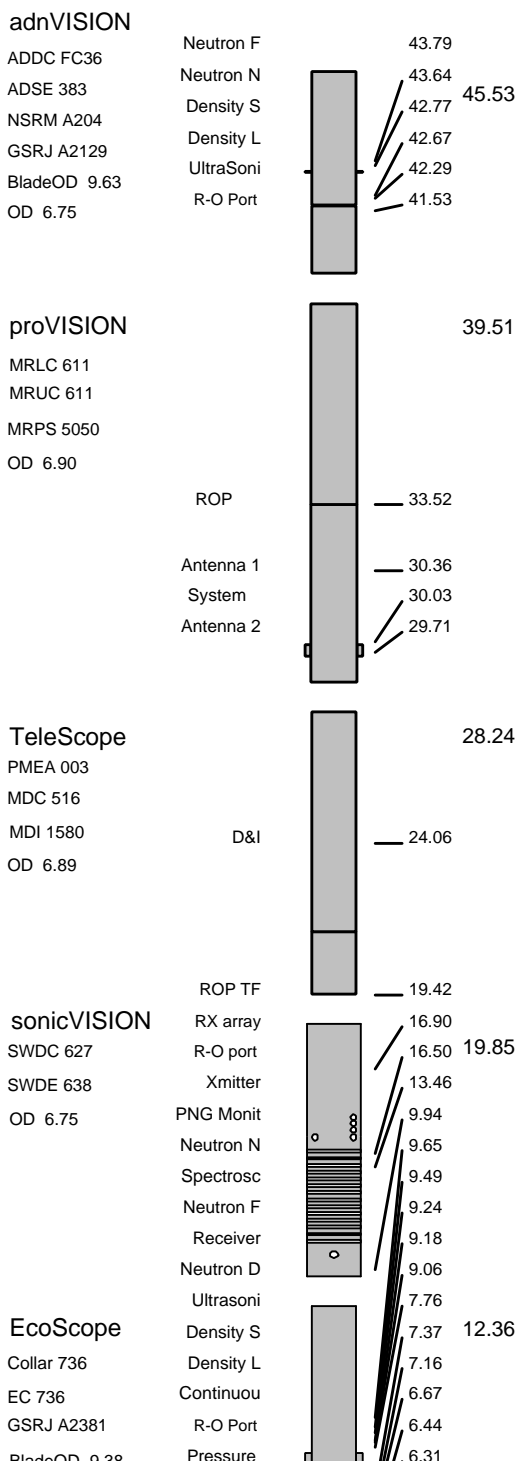
EQUIPMENT DESCRIPTION

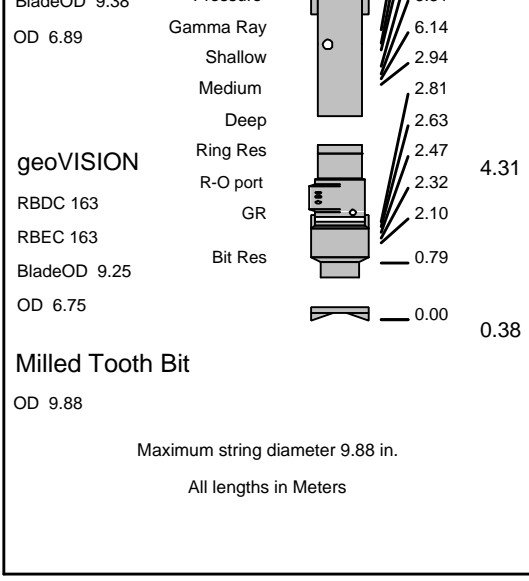
RUN1

RUN

RUN

DOWNHOLE EQUIPMENT





Variable Name	Variable Description	Run Name & Value
Run Number		1
General Information		
BHT_RM	Bottom Hole Temperature (RM)	39.200001
BSAL_RM	Mud Salinity (RM)	0.000000
BS_RM	Bit Size (RM)	9.875000
COEF_M	User Defined FEXP in Clean Sand	1.650000
C_WS	Overpressure correction to Sw and M	1.000000
FEXP	Formation Factor Exponent(RM)	2.000000
FNUM	Formation Factor Enumerator(RM)	1.000000
FPHI_RM	Formation Factor Porosity Source (RM)	XPLOT
MST_RM	Mud Sample temperature (RM)	75.000000
MW_RM	Mud Weight (RM)	8.500000
OBMF_RM	Oil Based Mud (RM)	NO
RHOF_RM	Mud Filtrate Density (RM)	1.000000
RHOM_RM	Matrix density (RM)	2.650000
RMS_RM	Resistivity of Mud Sample (RM)	1.000000
RWA_COMP_M	Rwa computation model	BASIC
RWA_DEN_AD	Rwa Density Input ADN	RHOB
RWA_DEN_CD	Rwa Density Input CDN	RHOB
RWA_DEN_IN	Rwa Density Input	RHOB
RWA_FORM_M	Rwa computation formation model	CLASTIC
RWA_RES_IN	Rwa computation resistivity input	RT
RWS_RM	Resistivity of Connate Water (RM)	1.000000
SHT_RM	Surface Hole Temperature (RM)	15.000000
TD_RM	Total Measured Depth (RM)	5357.600098
TWS_RM	Temperature of Connate Water (RM)	75.000000
VF_ILLI	Fraction of illite in shales	0.500000
VF_KAOL	Fraction of kaolinite in shales	0.500000
VF_MONT	Fraction of montmorillonite in shales	0.000000
XPDM_RM	Cross plot density porosity multiplier	0.675000
XPNM_RM	Cross plot neutron porosity multiplier	0.325000
ISONIC		
FP_SD	First Sample delay	600.00
STC_CF	Center frequency of Filter	13.00
STC_BW	Bandwidth (kHz)	3.125 kHz
STC_RWI	Receiver waveform ignored	None
PM_TOFF	Tool Time offset from surface system	0.00
DT_COH	Delta-T Coherence Cutoff Value	0.70
PPC_PF	Porosity Formula	Raymer-Hunt
PPC_PS	Sonic Porosity Source	DTRA
PPC_MDT	Matrix Delta-T	55.50
PPC_FDT	Fluid Delta-T	189.00
DVD		
LWD_RM/STATION_FILE/PARAMETER	Station Time-frame file name	Station
-----	Density Parameter-----	Density
-----	Neutron Parameter-----	Neutron
-----	Interpretation Parameter-----	Interpretation
-----	Sigma Parameter-----	Sigma
A12A	ARC Air Cal Attenuation From T1 at 2 MHz	8.096470
A14A	ARC Air Cal Attenuation From T1 at 400 KHz	8.154540
A22A	ARC Air Cal Attenuation From T2 at 2 MHz	6.357980
A24A	ARC Air Cal Attenuation From T2 at 400 KHz	6.313930
A32A	ARC Air Cal Attenuation From T3 at 2 MHz	4.697780
A34A	ARC Air Cal Attenuation From T3 at 400 KHz	4.754960
A42A	ARC Air Cal Attenuation From T4 at 2 MHz	4.759350
A44A	ARC Air Cal Attenuation From T4 at 400 KHz	4.713040
A52A	ARC Air Cal Attenuation From T5 at 2 MHz	3.258230
A54A	ARC Air Cal Attenuation From T5 at 400 KHz	3.315620
ABNT	Abnormal Transmitter Indicator	No_Tx_Failed
ALPHA_DEN	Density Enhanced Vertical Resolution Processing Switch	YES
ANISO_COMP	Anisotropy Computation Option	YES

ATMP_ARC	ARC Select Temperature Channel	Annulus_Temp	
AZMF	Formation DIP Azimuth	0.000000	
BH_COMPUTE	Borehole Inversion Computation Option		YES
CALG	DVDM Gamma Ray Cal Gain Factor	-1.000000	
CDPTH_ARC	Process Start Depth	100.000000	
DEVI	Well Section Deviation	0.100000	
DIELEC_COM	Dielectric Computation Option		YES
DIPF	Formation DIP Angle	0.000000	
DVDM DHS	DVDM Down Hole Software Version	0.000000	
DYN_IMAGE	Generate Dynamic Normalized Image?		YES
EDPTH	Wizard Process Stop Depth	50000	
EN_WIZARD	Enable ARC Wizard Processing		NO
ERRCT	Percentage Error Cutoff	4.500000	
EVRL	Surface Processing Blending number of samples (RM)		49
FWVN	Firmware Version Number	1.100000	
GCSE	Generalized Caliper Selection	BS	
GRBC	RM: DVDM Gamma Ray Blanket (CPS)	75.000000	
GRSH	GR Shale (Invasion Computation Cutoff)	1000.000000	
GR_CF	Gamma Ray Correction Factor	2.250000	
HIGH_BLEND	High Resistivity Threshold for Blending	2.000000	
IDQT	Image Derived Quality Threshold	1.000000	
IMAGE_MAX	Image Density Caliper Right Scale	8.000000	
IMAGE_MAX	Image Density Quality Right Scale	1.000000	
IMAGE_MAX	Image PEF(Segment) Right Scale	6.000000	
IMAGE_MAX	Image RHOB(Segment) Right Scale	2.650000	
IMAGE_MIN	Image Density Caliper Left Scale	2.000000	
IMAGE_MIN	Image Density Quality Left Scale	0.000000	
IMAGE_MIN	Image PEF(Segment) Left Scale	2.000000	
IMAGE_MIN	Image RHOB(Segment) Left Scale	2.050000	
IMAGE_ORIE	Image Orientation Options, e.g. Top of Hole or True North		NORTH
INCLIN_B0	ARC Bias Constant (mg)	0.000000	
INCLIN_B1	ARC Bias First-order Coefficient (mg/degC)	0.000000	
INCLIN_B2	ARC Bias Secod-order Coeeficient (mg/degC)	0.000000	
INCLIN_B3	ARC Bias Third-order Coeeficient (mg/degC)	0.000000	
INCLIN_C0	ARC Current Scale Factor Constant (mA/g)	1.000000	
INCLIN_C1	ARC Scale First-order Coeeficient (mA/g/degC)	0.000000	
INCLIN_C2	ARC Scale Second-order Coeeficient (mA/g/degC)	0.000000	
INCLIN_C3	ARC Scale Third-order Coeeficient (mA/g/degC)	0.000000	
INVAS_COMP	Invasion Computation Option		YES
JSD	Acquisition start date	YES	
JSD_ARC	ARC Acquisition start date	YES	
LOW_BLEND	Low Resistivity Threshold for Blending	1.000000	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
MSWS	ARC Wizard Model Switch Window	5.000000	
MULTIEFFEC	Multi Effect Option	YES	
NEU_DCOR_O	Density Correction Source for Neutron Processing		Average
NEU_FTUBE	Far Thermal Tube Selection		Both
NTIK_SEL	Neutron Tick Channel Name		FAZ1
OACF	O2 Activation Correction Factor (RM)	0.000000	
P12A	ARC Air Cal Phase-Shift From T1 at 2 MHz	1.143270	
P14A	ARC Air Cal Phase-Shift From T1 at 400 KHz	1.838910	
P22A	ARC Air Cal Phase-Shift From T2 at 2 MHz	-1.152680	
P24A	ARC Air Cal Phase-Shift From T2 at 400 KHz	-1.826430	
P32A	ARC Air Cal Phase-Shift From T3 at 2 MHz	1.064520	
P34A	ARC Air Cal Phase-Shift From T3 at 400 KHz	1.835500	
P42A	ARC Air Cal Phase-Shift From T4 at 2 MHz	-1.202580	
P44A	ARC Air Cal Phase-Shift From T4 at 400 KHz	-1.845070	
P52A	ARC Air Cal Phase-Shift From T5 at 2 MHz	1.092880	
P54A	ARC Air Cal Phase-Shift From T5 at 400 KHz	1.844270	
PMUD	Potassium Concentration in Mud	0.000000	
POFFSET	Pressure Offset	0.000000	
PRTD	Preferred Resistivity Log for Rt Display while Multi-Effects		P34B
PSOF_ADJ_T	ARC: User Input Phase offset	0.000000	
RESTIK	ARC resistivity tick source	Phase	
SDPTH	Wizard Process Start Depth	100	
SIG_PCOR_O	Porosity Correction Source for Sigma Processing		Best
SPEC_CSG_D	Casing Depth for Spectroscopy Processing	100.000000	
SPL_CLAY_M	SpectroLith Clay Model		ARENITE
SPL_COAL_O	SpectroLith Coal Processing Option		NONE
SPL_SULFUR	SpectroLith Sulfur Mineral Option		ANHYDRITE
STAB_SIZE	Stabilizer Size	9.375000	
STOH	Density Top of Hole Sector (Left Boundary)		SECTOR_0
TRNO	Tool Run Number	5357.600098	
TSIZ_ARC	ARC Tool Size	6.900000	
TSNO	Tool Serial Number	6.900000	
UNIFORM_CO	Uniform Rock Option	YES	
VERS_ARC	ARC Down hole software version Number	1.100000	
WRK	Way to Report Potassium Concentration	K_by_Wgt_%	
WSDI	Window Size of Dynamic Normalization Image	50.000000	

Run number	1									
Bit size	in.	9.875								
Bit start depth	m	1333								
Bit end depth	m	1633								
Top interval logged	m	1333								
Bottom interval logged	m	1627								
Begin log: time		18:30								
Begin log: date		23-Sep-05								
End log: time		08:10								
End log: date		24-Sep-05								
Mud data										
Depth	m	1333								
Type		Seawater								
Mud weight	ppg	8.5								
Solids	%	n/a								
Chlorides	mg/L	Seawater								
Rm	ohmmdegF	Seawater								
Rmf	ohmmdegF	Seawater								
Rmc	ohmmdegF	Seawater								
Potassium	ppm	n/a								
Environmental data										
GR										
Mud weight	ppg	8.5								
Bit size	in.	9.875								
Resistivity										
Neutron porosity										
Hole Size	in.	9.875								
Mud weight	ppg	8.5								
Temperature	degC	4								
Mud salinity	ppm	Seawater								
Formation salinity	ppm	n/a								
Recording rate 1	SEC	5 sec								
Recording rate 2	SEC	10 sec								
Filtering GR		3 points								
Filtering density		3 points								
Filtering Neutron		3 points								
Company representative		G. Myers								
Schlumberger D&M Personnel		L. Loh								

IDEAL Version: ID10_2B_08
IDF

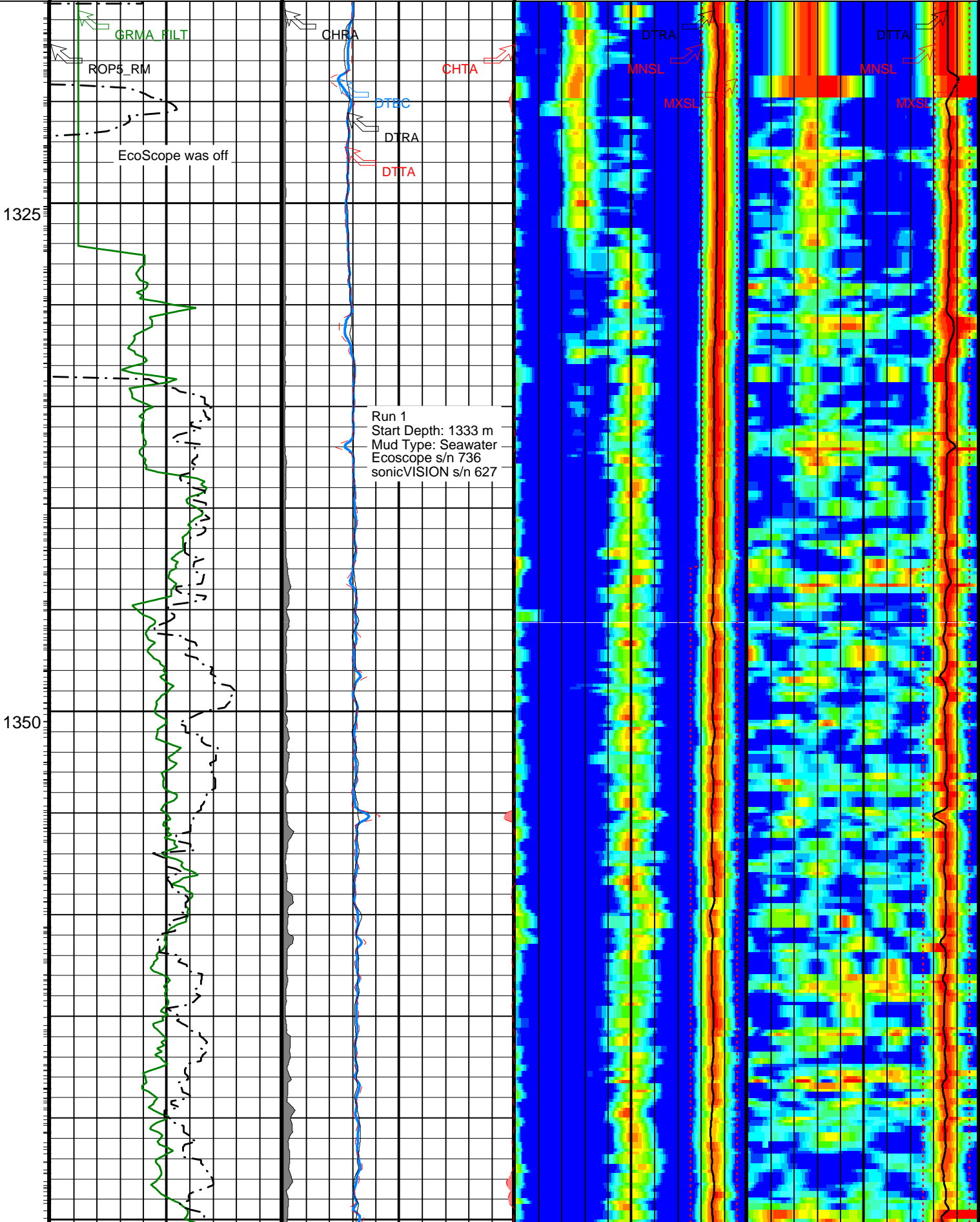
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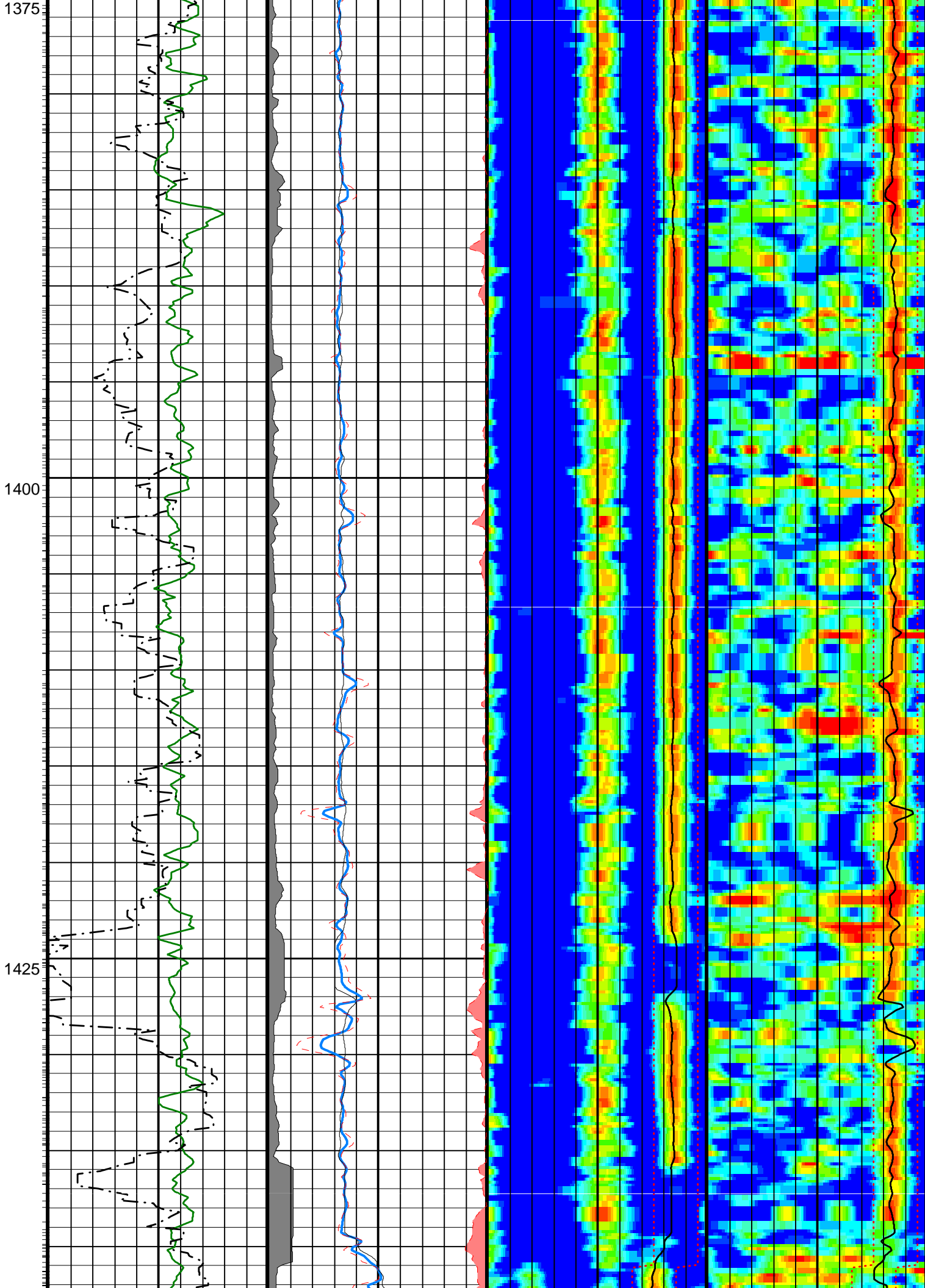
PIP SUMMARY

- └ ISONIC Integrated Transit Time Every 1 MS
- └ ISONIC Integrated Transit Time Every 10 MS
- └ ISONIC Samples

	Delta-T Compressional Borehole Compensated (Depth Derived) (DTBC)		
	240 (US/F) 140		
	Delta-T Compressional from Transmitter Array (DTTA)	Min Amplitude Max 0 RCVR Projection 1 40 (US/F) 240	Min Amplitude Max 0 TRSM Projection 1 40 (US/F) 240
	Delta-T Compressional from Receiver Array (DTRA)	Maximum Labeling Slowness, Compressional (MXSL)	Maximum Labeling Slowness, Compressional (MXSL)
	240 (US/F) 140	40 (US/F) 240	40 (US/F) 240
Gamma Ray, Calibrated and Filtered, Average (GRMA_	Coherence at Compressional Peak for the Transmitter Array	Minimum Labeling Slowness, Compressional (MNSL)	Minimum Labeling Slowness, Compressional (MNSL)

0	FIL1) (GAPI)	150	-4	(---)	1	40	(US/F)	240	40	(US/F)	240
Rate of Penetration, Averaged over Last 5ft (ROP5_RM)			Coherence at Compressional Peak for the Receiver Array (CHRA)			Delta-T Compressional from Receiver Array (DTRA)			Delta-T Compressional from Transmitter Array (DTTA)		
100	(M/HR)	0	1	(---)	-4	40	(US/F)	240	40	(US/F)	240





1450

1475

1500

GRMA FILT
ROP5_RM

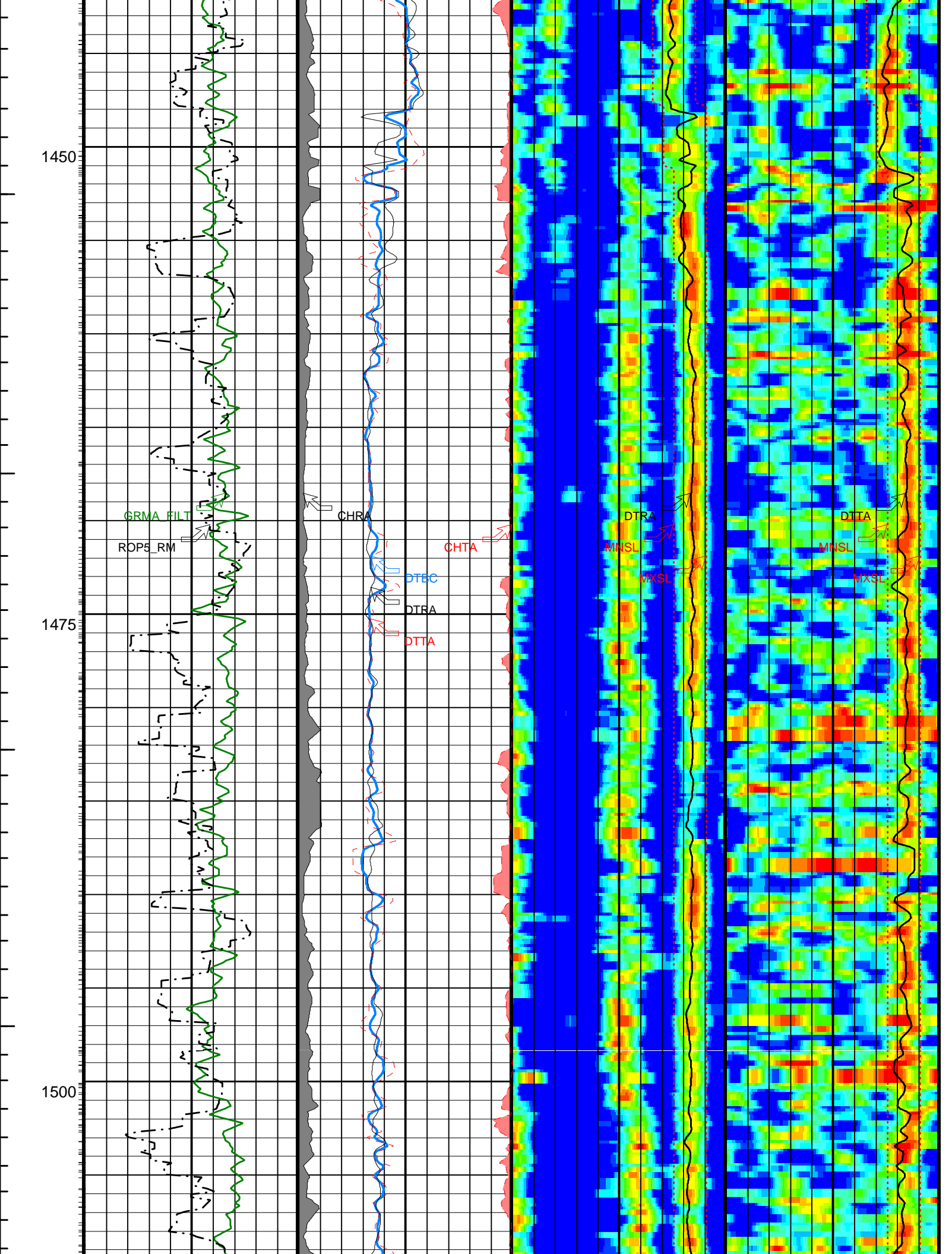
CHRA

DTEC
DTRA
DTTA

CHTA

DTRA
MNSL
MXSL

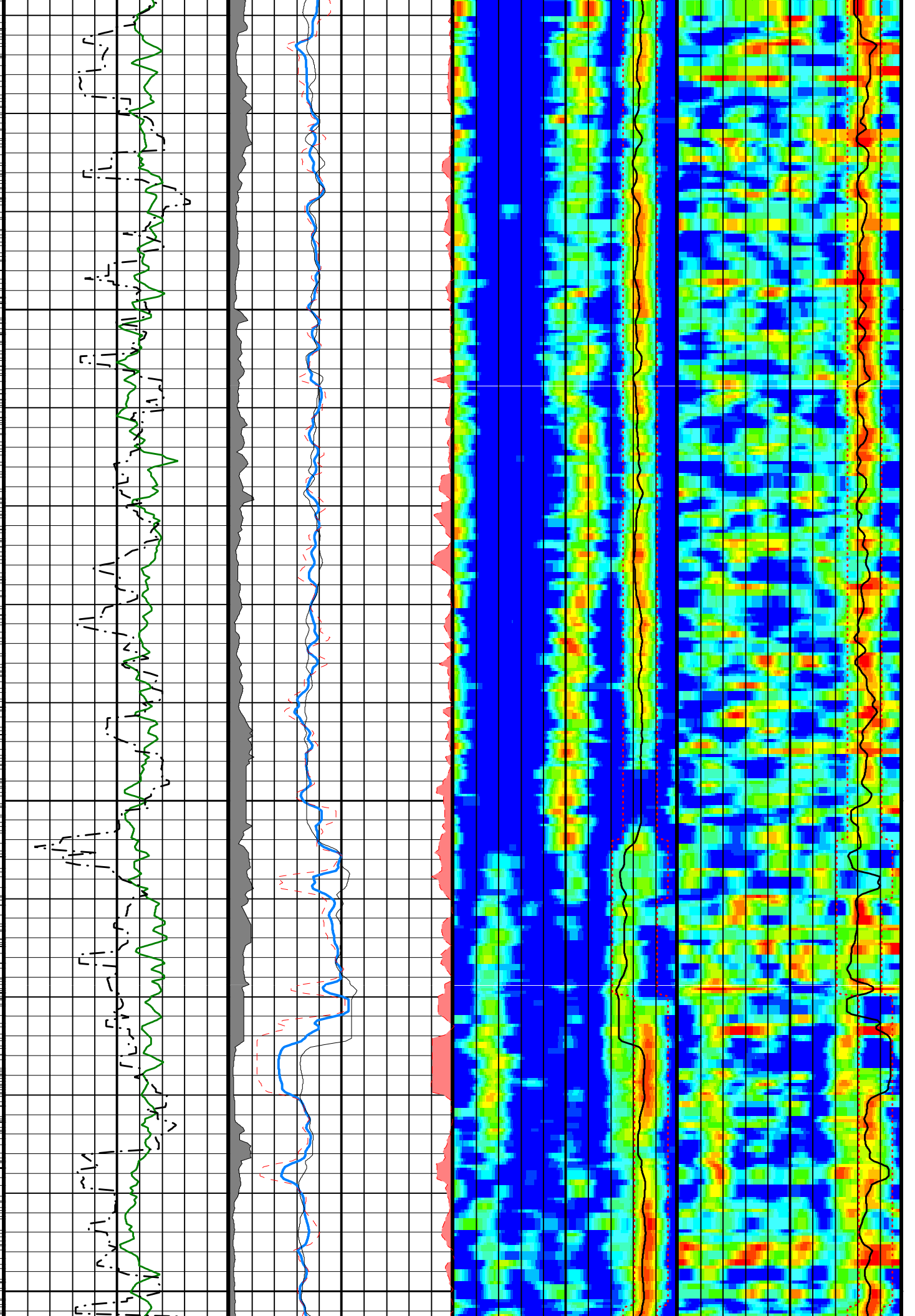
DTTA
MNSL
MXSL

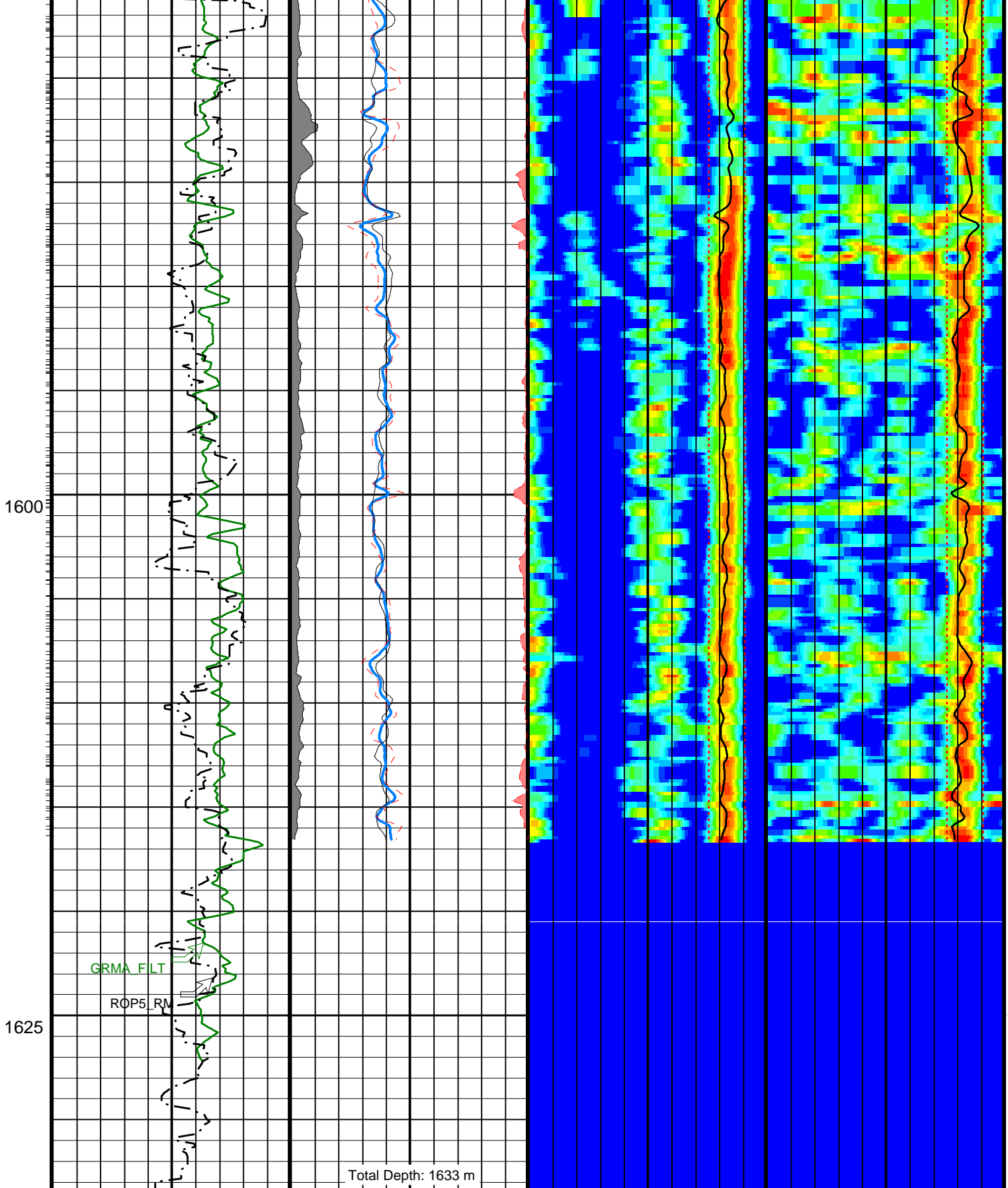


1575

1550

1525





Rate of Penetration, Averaged over Last 5ft (ROP5_RM)	Coherence at Compressional Peak for the Receiver Array (CHRA)	Delta-T Compressional from Receiver Array (DTRA)	Delta-T Compressional from Transmitter Array (DTTA)
100 (M/HR) 0	1 (---) -4	40 (US/F) 240	40 (US/F) 240
Gamma Ray, Calibrated and Filtered, Average (GRMA_FILT)	Coherence at Compressional Peak for the Transmitter Array (CHTA)	Minimum Labeling Slowness, Compressional (MNSL)	Minimum Labeling Slowness, Compressional (MNSL)
0 (GAPI) 150	-4 (---) 1	40 (US/F) 240	40 (US/F) 240
	Delta T Compressional from	Maximum Labeling Slowness	Maximum Labeling Slowness

Delta-T Compressional from Receiver Array (DTRA)	240 (US/F)	140	Maximum Labeling Slowness, Compressional (MXSL)	40 (US/F)	240	Maximum Labeling Slowness, Compressional (MXSL)	40 (US/F)	240
Delta-T Compressional from Transmitter Array (DTTA)	240 (US/F)	140	Min	Amplitude	Max	Min	Amplitude	Max
			0	RCVR Projection (STRA)	1	0	TRSM Projection (STTA)	1
			40	(US/F)	240	40	(US/F)	240
Delta-T Compressional Borehole Compensated (Depth Derived) (DTBC)	240 (US/F)	140						

PIP SUMMARY

- └ ISONIC Integrated Transit Time Every 1 MS
- └ ISONIC Integrated Transit Time Every 10 MS
- └ ISONIC Samples

IDEAL Version: ID10_2B_08
IDF

EcoScope Integrated Logging-While-Drilling Tool - 6.75 inch / Equipment Identification

Primary Equipment:
 Tool Name and Serial Number
 Calibration Status
 Collar Type and Serial Number
 Chassis Type and Serial Number
 Stabilizer Type and Serial Number
 Neutron Logging Source
 Density Logging Source
 Stabilizer Size

ECO - 675 736
 ADDC - AA
 ADSE - EA
 ADCS - CA
 NSR - M
 GSR - J/Z
 9.38 - in.

Master: 22-Jul-2005 12:37

EcoScope Integrated Logging-While-Drilling Tool - 6.75 inch Calibration

SSn LSn : Water Tank

Phase	SSn Gain	Value	Phase	SSn Offset	Value
Master		1.000	Master		0
	0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)			-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
Phase	LSn Gain	Value	Phase	LSn Offset	Value
Master		1.000	Master		0
	0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)			-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	

Master: 22-Jul-2005 12:37

EcoScope Integrated Logging-While-Drilling Tool - 6.75 inch Calibration

Neutron: Water Tank

Phase	Far 2 Gain	Value	Phase	Far 2 Offset	Value
Master		1.056	Master		-0.7620
	0.7000 (Minimum) 1.000 (Nominal) 1.300 (Maximum)			-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
Phase	Far 1 Gain	Value	Phase	Far 1 Offset	Value
Master		1.055	Master		-0.4690
	0.7000 (Minimum) 1.000 (Nominal) 1.300 (Maximum)			-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
Phase	Thermal Near gain	Value	Phase	Thermal Near offset	Value
Master		1.155	Master		-137.6
	0.7000 (Minimum) 1.000 (Nominal) 1.300 (Maximum)			-500.0 (Minimum) 0 (Nominal) 500.0 (Maximum)	
Phase	Epithermal Near gain	Value	Phase	Epithermal Near offset	Value
Master		1.221	Master		-13.57
	0.7000 (Minimum) 1.000 (Nominal) 1.300 (Maximum)			-300.0 (Minimum) 0 (Nominal) 300.0 (Maximum)	

Master: Calibration out of date 11-Apr-2005 19:14

EcoScope Integrated Logging-While-Drilling Tool - 6.75 inch Calibration

Gamma Density: Magnesium Block

Phase	LS window 3 - Mg CPS	Value	Phase	SS window 1 - Mg CPS	Value	Phase	SS window 3 - Mg CPS	Value
Master		2041	Master		5077	Master		11910
	1000 (Minimum) 2000 (Nominal) 3000 (Maximum)			2500 (Minimum) 5250 (Nominal) 8000 (Maximum)			6000 (Minimum) 12000 (Nominal) 18000 (Maximum)	

Master: Calibration out of date 11-Apr-2005 19:14

EcoScope Integrated Logging-While-Drilling Tool - 6.75 inch Calibration									
Gamma Density: Aluminum Block									
Phase	LS window 3 - Al CPS	Value	Phase	SS window 1 - Al CPS	Value	Phase	SS window 3 - Al CPS	Value	
Master		372.3	Master		2692	Master		8750	
	200.0 (Minimum) 400.0 (Nominal) 600.0 (Maximum)			1500 (Minimum) 3000 (Nominal) 4500 (Maximum)			4000 (Minimum) 8500 (Nominal) 13000 (Maximum)		

Master: Calibration date not found

EcoScope Integrated Logging-While-Drilling Tool - 6.75 inch Calibration									
Gamma Density: Background									
Phase	LS window 3 - Background CPS	Value	Phase	SS window 1 - Background CPS	Value	Phase	SS window 3 - Background CPS	Value	
Master		57.82	Master		85.68	Master		413.0	
	50.00 (Minimum) 70.00 (Nominal) 90.00 (Maximum)			50.00 (Minimum) 75.00 (Nominal) 100.0 (Maximum)			270.0 (Minimum) 370.0 (Nominal) 470.0 (Maximum)		

Master: Calibration date not found

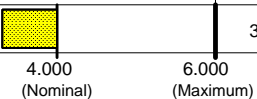
EcoScope Integrated Logging-While-Drilling Tool - 6.75 inch Calibration									
Gamma Density: Water Block Check									
Phase	Long spacing water density G/C3	Value	Phase	Short spacing water density G/C3	Value				
Master		1.047	Master		1.262				
	0.9000 (Minimum) 1.150 (Nominal) 1.400 (Maximum)			0.9000 (Minimum) 1.150 (Nominal) 1.400 (Maximum)					

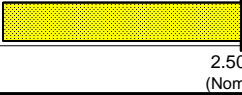
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EcoScope Integrated Logging-While-Drilling Tool - 6.75 inch Calibration									
Resistivity: Air									
Phase	Phase-Shift T1	Value	Phase	Phase-Shift T2	Value	Phase	Phase-Shift T3	Value	
Master		1.143	Master		-1.153	Master		1.065	
	-4.000 (Minimum) 0 (Nominal) 4.000 (Maximum)			-4.000 (Minimum) 0 (Nominal) 4.000 (Maximum)			-4.000 (Minimum) 0 (Nominal) 4.000 (Maximum)		
Phase	Phase-Shift T4	Value	Phase	Phase-Shift T5	Value	Phase	Phase-Shift T1 at 400KHz	Value	
Master		-1.203	Master		1.093	Master		1.839	
	-4.000 (Minimum) 0 (Nominal) 4.000 (Maximum)			-4.000 (Minimum) 0 (Nominal) 4.000 (Maximum)			-4.000 (Minimum) 0 (Nominal) 4.000 (Maximum)		
Phase	Phase-Shift T2 at 400KHz	Value	Phase	Phase-Shift T3 at 400KHz	Value	Phase	Phase-Shift T4 at 400KHz	Value	
Master		-1.826	Master		1.836	Master		-1.845	
	-4.000 (Minimum) 0 (Nominal) 4.000 (Maximum)			-4.000 (Minimum) 0 (Nominal) 4.000 (Maximum)			-4.000 (Minimum) 0 (Nominal) 4.000 (Maximum)		
Phase	Phase-Shift T5 at 400KHz	Value							
Master		1.844							
	-4.000 (Minimum) 0 (Nominal) 4.000 (Maximum)								

Master: Calibration date not found

EcoScope Integrated Logging-While-Drilling Tool - 6.75 inch Calibration									
Resistivity: Air									
Phase	Attenuation T1	Value	Phase	Attenuation T2	Value	Phase	Attenuation T3	Value	
Master		8.096	Master		6.358	Master		4.698	
	7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)			4.000 (Minimum) 6.000 (Nominal) 8.000 (Maximum)			3.500 (Minimum) 5.500 (Nominal) 7.500 (Maximum)		
Phase	Attenuation T4	Value	Phase	Attenuation T5	Value	Phase	Attenuation T1 at 400KHz	Value	
Master		4.759	Master		3.258	Master		8.155	
	2.500 (Minimum) 4.500 (Nominal) 6.500 (Maximum)			2.000 (Minimum) 4.000 (Nominal) 6.000 (Maximum)			7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)		
Phase	Attenuation T2 at 400KHz	Value	Phase	Attenuation T3 at 400KHz	Value	Phase	Attenuation T4 at 400KHz	Value	
Master		6.314	Master		4.755	Master		4.713	
	4.000 (Minimum) 6.000 (Nominal) 8.000 (Maximum)			3.500 (Minimum) 5.500 (Nominal) 7.500 (Maximum)			2.500 (Minimum) 4.500 (Nominal) 6.500 (Maximum)		
Phase	Attenuation T5 at 400KHz	Value							

Master		3.316
	2.000 (Minimum)	6.000 (Maximum)

Master: Calibration date not found		
EcoScope Integrated Logging-While-Drilling Tool - 6.75 inch Calibration		
Gamma Ray: Blanket		
Phase	Gamma ray factor	Value
Master		2.250
	2.000 (Minimum)	3.000 (Maximum)

Company: Lamont-Doherty Borehole Research

Schlumberger

Well: IODP Expedition 311 CAS-01B

Field: Cascadia Margin

Rig: JOIDES Resolution

State: Pacific Ocean

sonicVISION - STC - Projection (Fluid Arrival)

1:240 Measured Depth

Recorded Mode Log

Geomarket	NGC	Location
Job Date	23-SEP-2005	Customer
Rig	JOIDES Resolution	Field/Well
Engineer	Lake Loh	Job Number

Operator
Presentation

Description of Well - Names, Geometry, Services, L...
Header, user of trademarks, directional data, well plot
sensor to toolface angle recorded

Equipment and Software Description

Tool sketch, equipment numbers, software versions, d

Processing Traceability and Environment Descriptio

Acquisition environment, parameters and key constan

remarks

Annotations, Presented Formats, QC Curves, Print

Documented splice points, data gap explanations, nu

selection

Calibration and Ver

Calibration / Before survey verification / After surve

Validity, completeness (includes equipment number),

Operating Proceed

Depth Control

Comparison with driller's depth, other logs, other bit run

listing

Logging speed and sampling rates

As recommended in reference manual or job planner.

Data Comparison

Between runs and passes, with data from nearby well

Operating Anomalies/Failure/Missing Data/Sensor t

Absence of noise and spurious variations, anomaly re

Digital Delivery

Digital Products

Labeled, verification listing with complete digital recor

hard copy.

Job Quality Rating (JQR)

Number of boxes without numbe

Environmental

Irregular Operation

Excessive ROP or speed, high deviation, shocks, vibr

Borehole Geometry

Shape (caves, etc), rugosity, spiralled hole, mud indu

Borehole Fluid

Barite, KCl, salinity, additives, gas cut, unstable

Interferences

External noise, nearby casing or drillpipe, debris, unus

Operation Outside Tool Specifications

Geomarket temperature, pressure, hole size, hole dev

value of parameter

Environmental Quality Rating

Number of boxes without num

