Schlumberger

Company: Lamont-Doherty Borehole Research

Well: IODP Expedition 311 CAS-02C

Field: Cascadia Margin

Rig: JOIDES Resolution State: Pacific Ocean

Rig: JOIDES Resolution
Field: Cascadia Margin
Location: Vancouver Island
Well: IODP Expedition 311 CAS-02C
Company: Lamont-Doherty Borehole Research

sonicVISION - STC - Projection (Fluid Arrival)
1:240 Measured Depth
Recorded Mode Log

Location

Total depth:	2562 m
Spud date:	20-Sep-2005
Runs:	1 To 1

Elevation

K.B.	10.06 m
G.L.	-2202 m
D.F.	9.60 m

Permanent datum:	MEAN SEA LEVEL	Elev.:	0 m
Log measured from:	Kelly Bushing	10.06 m	above Perm. datum
Depth reference:	Driller's Depth		

Service Order no.	NAD 27	Longitude	Latitude
40012416	UTM Zone 10 N	W 126.98322	N 48.64480

Depth logged:	2212 m	To 2556 m	Mag decl:	18.83 deg.	Other services:
Date logged:	20-Sep-05	To 21-Sep-05	Mag dip:	69.17 deg.	geoVISION, proVISION

Bore hole record

Hole size	from	to
9.875 in.	2212 m	2562 m

Casing record

Size	Density	from	to

Mud record

Type	from	to
Seawater	2212 m	2562 m

Borehole deviation record

Min	Max	from	to

Surface equipment

Unit	TWIS
Depth system	Geolograph

Software record

IDEAL Wis	ID10_2C_01		
SPM	hspm10_1c_05		
LWD	See Remarks		
MWD	9.0_C03		

OTHER SERVICES FOR RUN

OTHER SERVICES FOR RUN 1
Real Time STC Projection
Annular Pressure While Drilling

OTHER SERVICES FOR RUN

REMARKS: RUN NUMBER

REMARKS: RUN NUMBER

REMARKS: RUN NUMBER 1
Run Objective: Drill and log sites CAS-02C to select the coring point.
Source of data: Recorded Mode
Reason POOH: To change batteries before start drilling the next sites.
EcoScope gamma ray is not environmentally corrected.
EcoScope resistivity is borehole compensated and is environmentally corrected for bit size and mud resistivity.
Barite was not present in the mud.
sonicVISION Delta T is borehole compensated
Delta T data is processed and labeled based on fluid arrival.

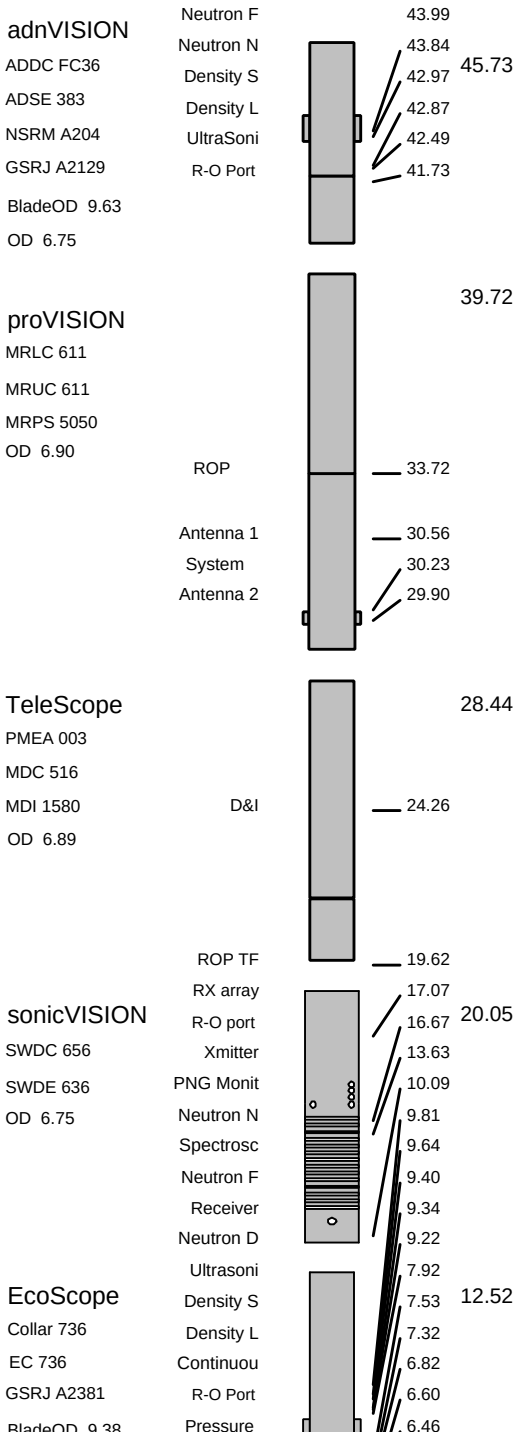
Tool Record Rates:
EcoScope Res, Density & Neutron @ 2 sec
sonicVISION Delta T @ 10 sec

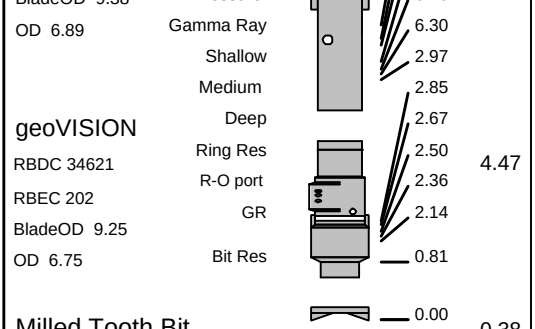
Tool Software Version:
TeleScope: 9.0_C03 EcoScope: 11
sonicVISION: 6.4_B10
Crew: L. Loh and D. Buster

EQUIPMENT DESCRIPTION

RUN1	RUN	RUN

DOWNHOLE EQUIPMENT





Bit Run Summary

Run number		1									
Bit size	in.	9.875									
Bit start depth	m	2212									
Bit end depth	m	2562									
Top interval logged	m	2212									
Bottom interval logged	m	2556									
Begin log: time		23:08									
Begin log: date		20-Sep-05									
End log: time		19:28									
End log: date		21-Sep-05									
Mud data											
Depth	m	2212									
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									

Variable Name	Variable Description	Run Name & Value
Run Number		1
General Information		
BHT_RM	Bottom Hole Temperature (RM)	41.000000
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)	8405.509766
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/PARAMETERStation 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
DVDMDHS	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	EVR Process averaging 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	8405.509766
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

Schlumberger Drilling & Measurements Parameter Insert Header Software version 2.0c

IDEAL Version: ID10_2B_08

IDF

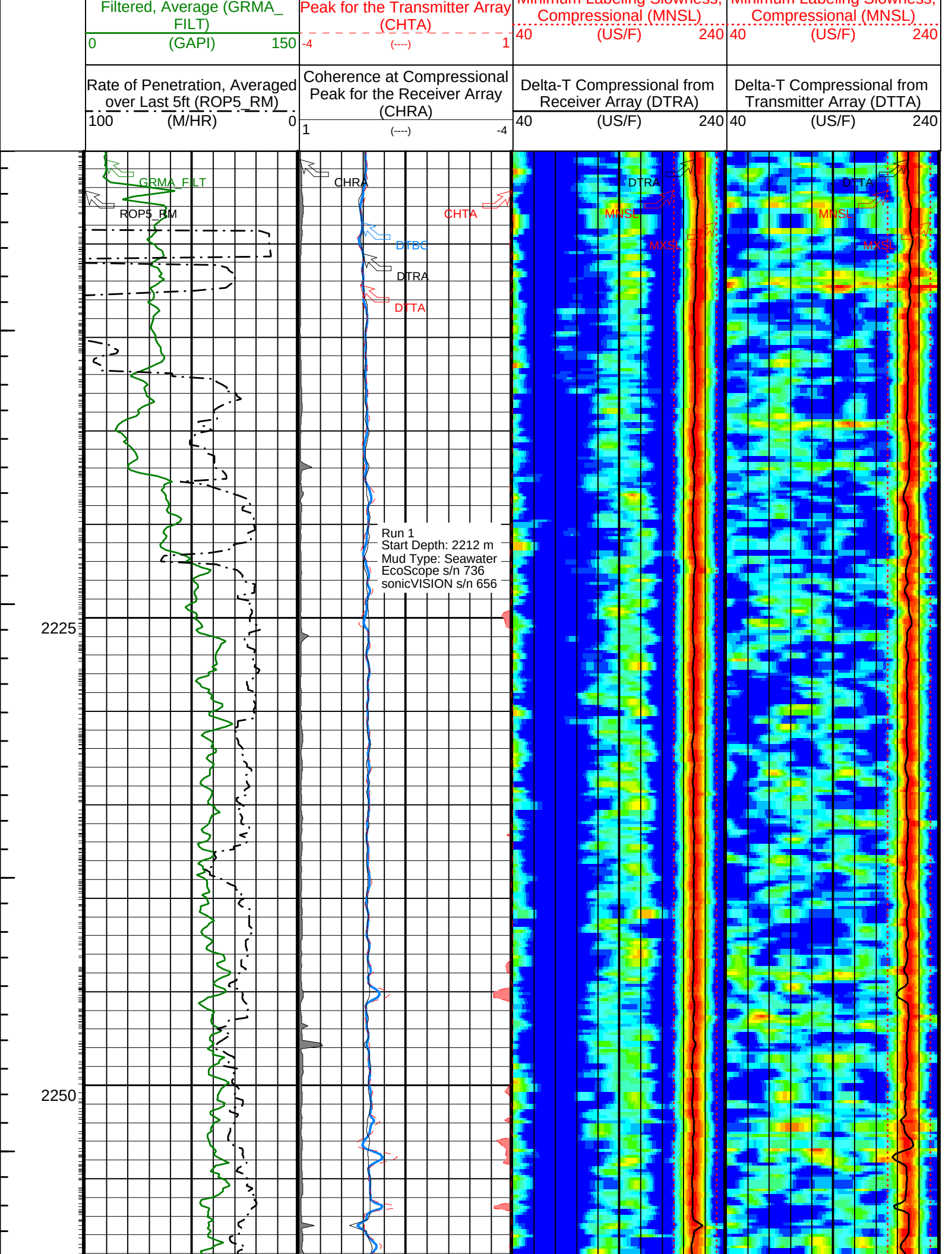
ADN id10_2c_01

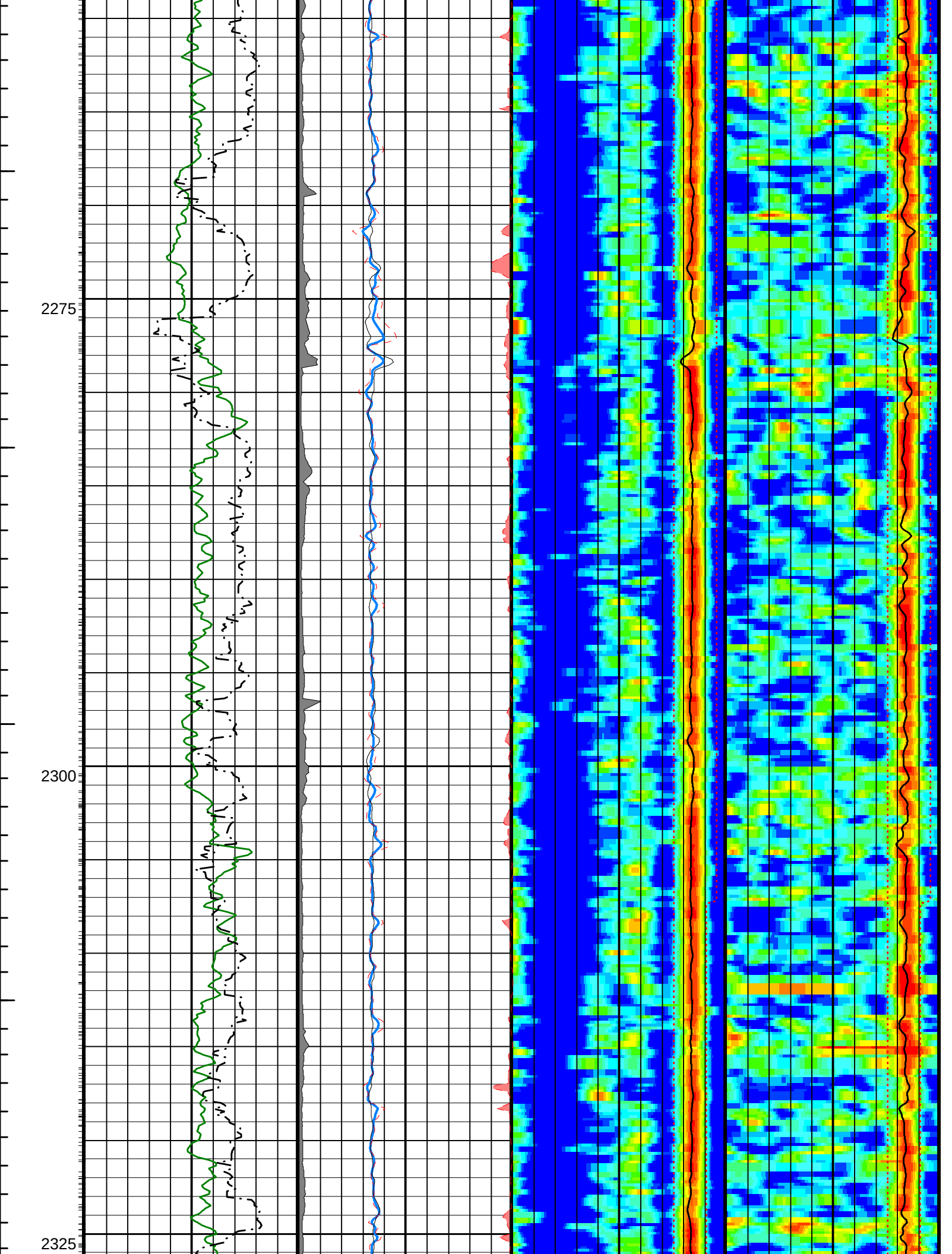
Format: 5 MD ISONIC RECV/TRSM Vertical Scale: 1:240 Graphics File Created: 05-Oct-2005 13:02

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) 240 (US/F) 140	Min Amplitude Max 0 RCVR Projection (STRA) 1 40 (US/F) 240	Min Amplitude Max 0 TRSM Projection (STTA) 1 40 (US/F) 240
	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
Gamma Ray, Calibrated and	Coherence at Compressional	Minimum Labeling Slowness	Minimum Labeling Slowness


Filtered, Average (GRMA_FILT)
0 (GAPI) 150
Peak for the Transmitter Array (CHTA)
-4 (----) 1
Minimum Labeling Slowness, Compressional (MNSL)
40 (US/F) 240
Minimum Labeling Slowness, Compressional (MNSL)
40 (US/F) 240
Rate of Penetration, Averaged over Last 5ft (ROP5_RM)
100 (M/HR) 0
Coherence at Compressional Peak for the Receiver Array (CHRA)
1 (----) -4
Delta-T Compressional from Receiver Array (DTRA)
40 (US/F) 240
Delta-T Compressional from Transmitter Array (DTTA)
40 (US/F) 240
GRMA_FILT
ROP5_RM
CHRA
CHTA
DTBC
DTRA
DTTA
DTRA
MNSL
MXSL
DTTA
MNSL
MXSL
Run 1
Start Depth: 2212 m
Mud Type: Seawater
EcoScope s/n 736
sonicVISION s/n 656
2225
2250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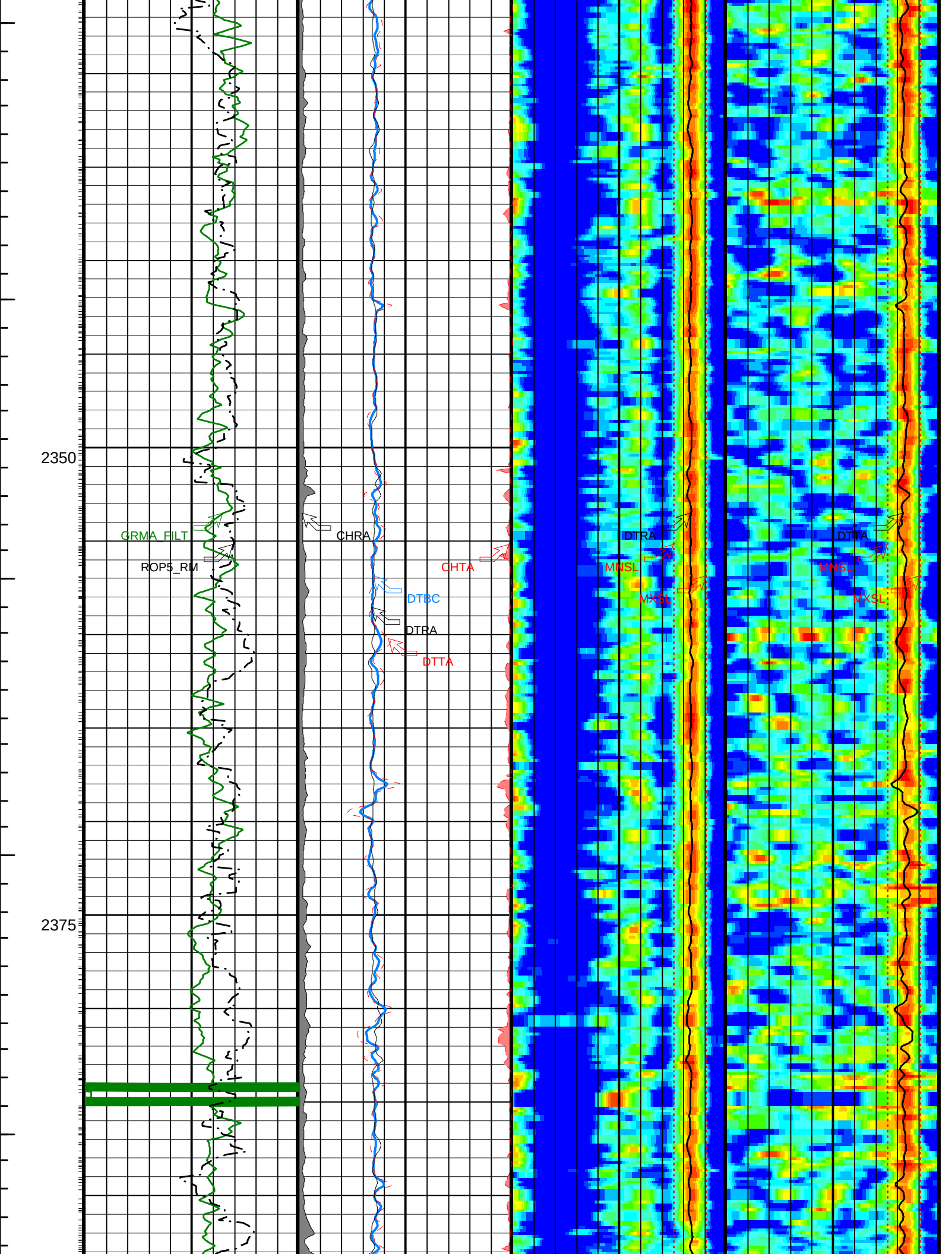
2300
2325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GRMA_FILT
ROP5_RM
CHRA
CHTA
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DTRA
DTTA
DTRA
MNSL
MXSL
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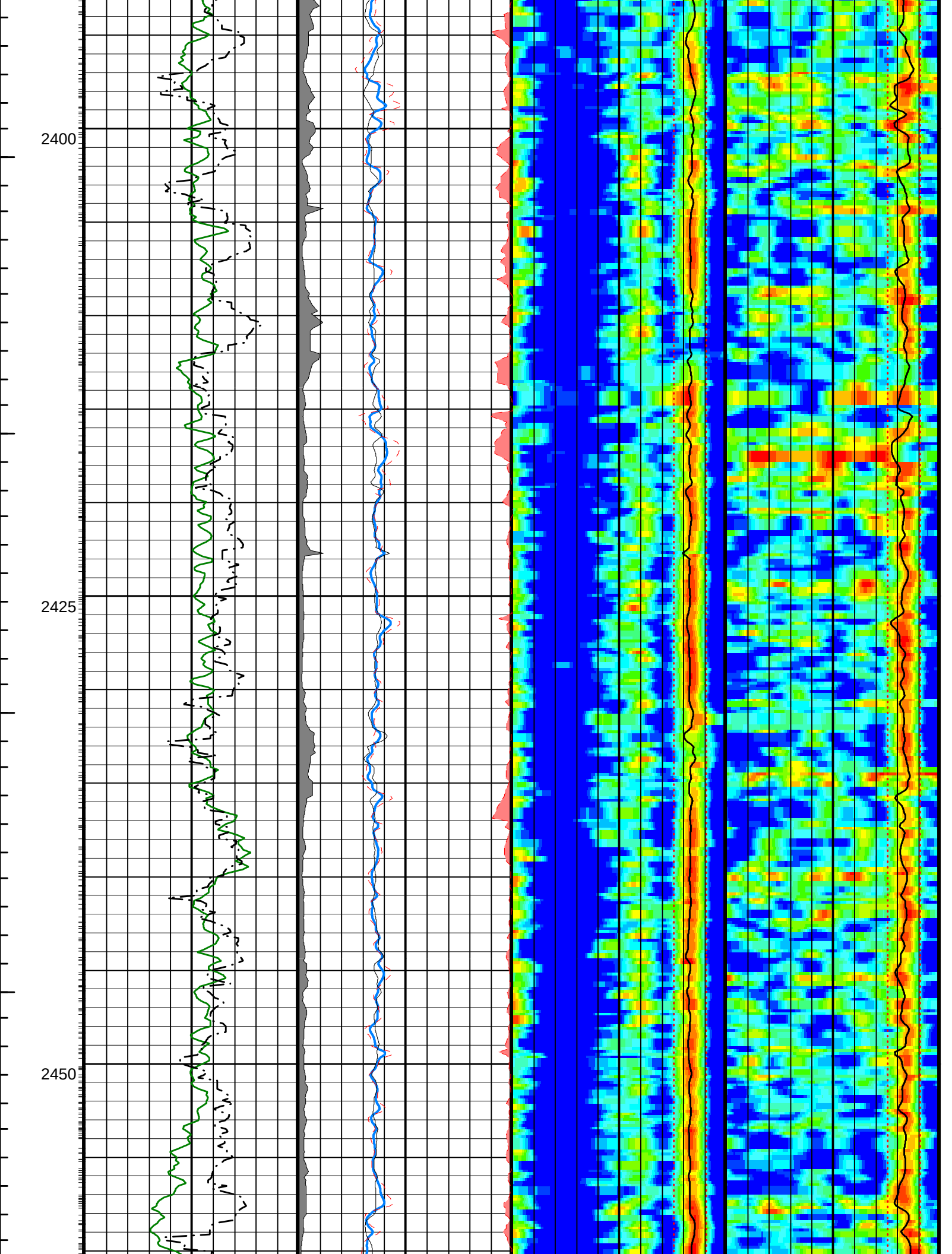
MNSL
MXSL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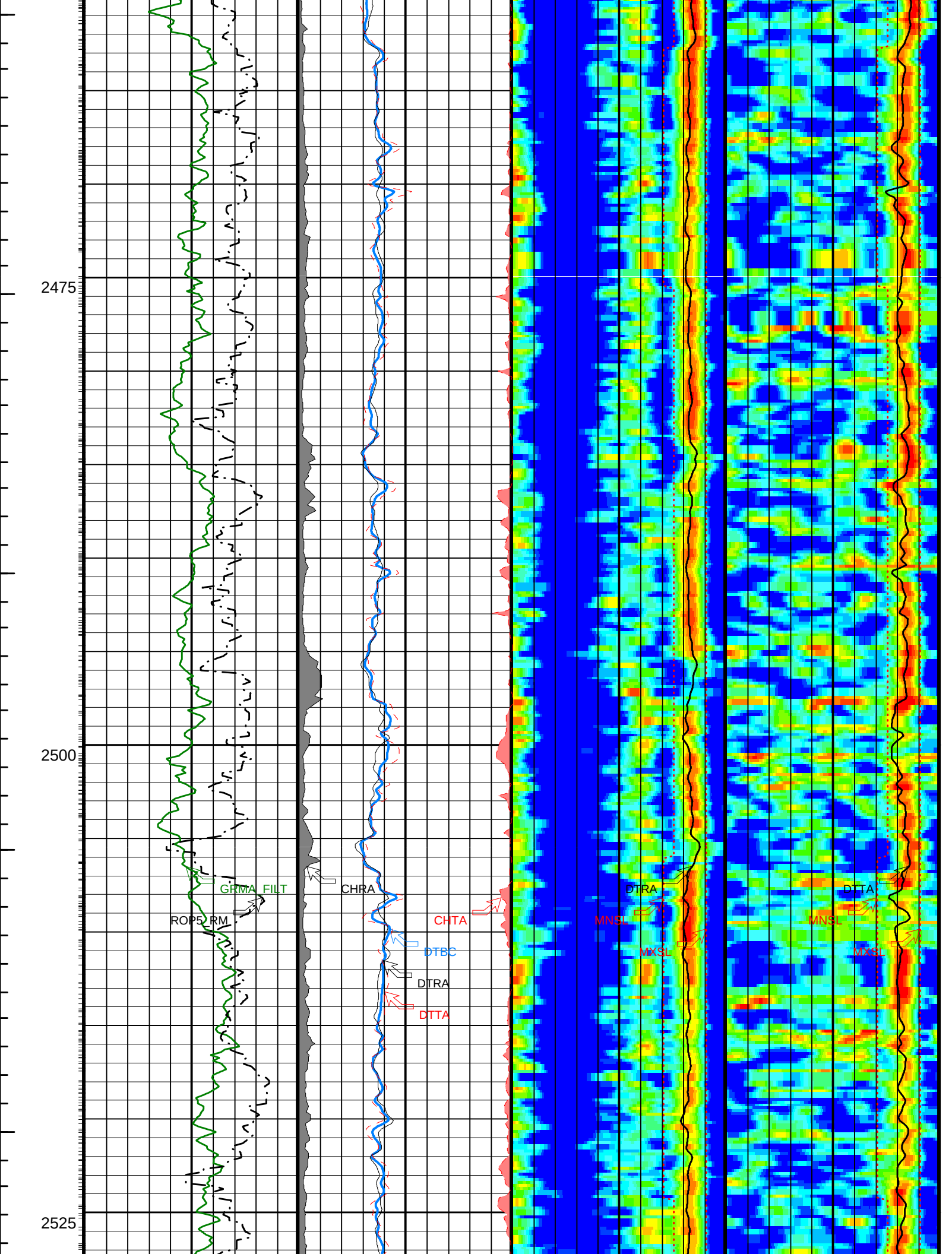
2425
2450


2475
2500
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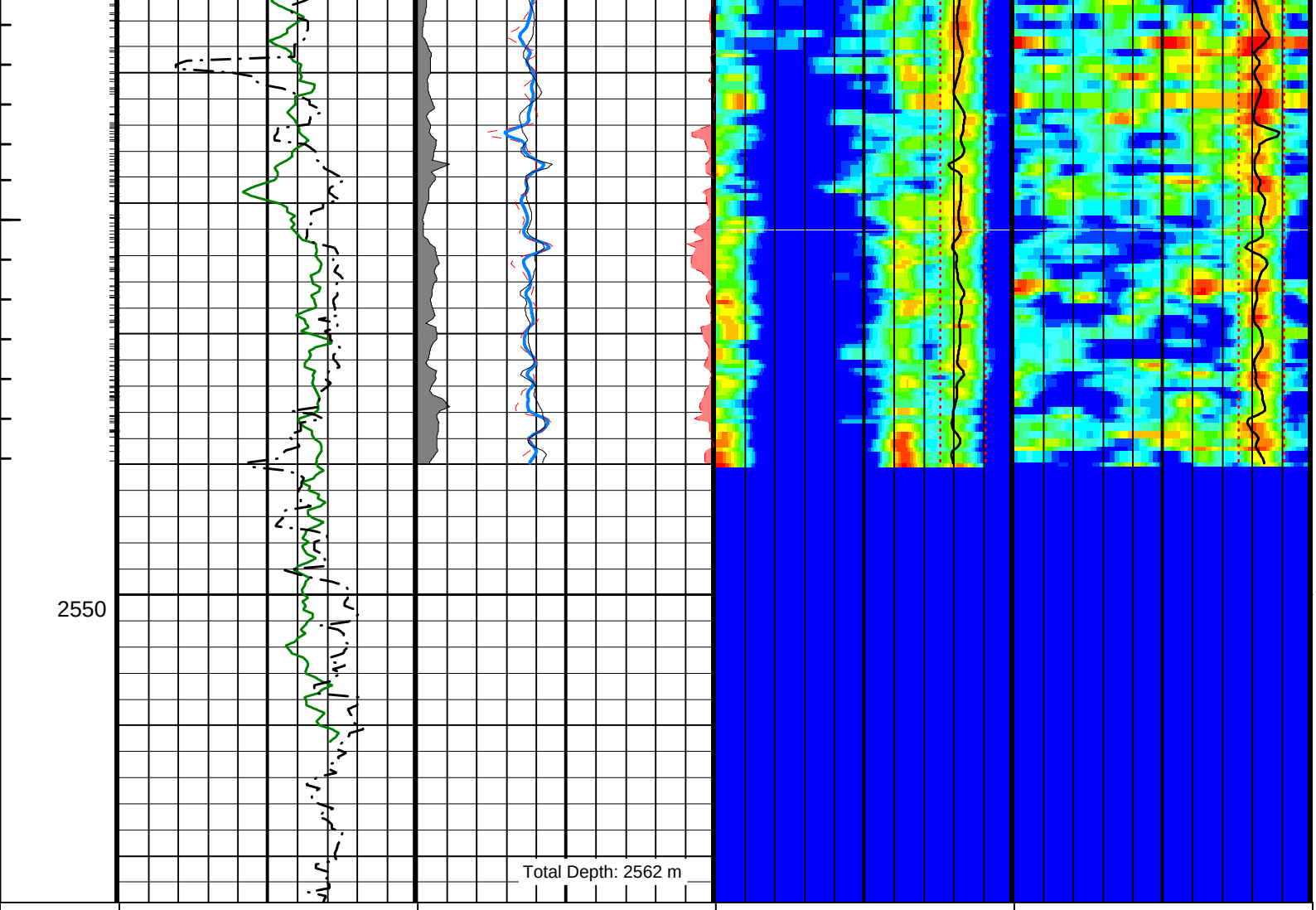
GRMA_FILT
ROP5_RM
CHRA
CHTA
DTBC
DTRA
DTTA
DTRA
MNSL
MXSL
DTTA
MNSL
MXSL



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

ADN id10_2c_01

Company:	Lamont-Doherty Borehole Research
Well:	IODP Expedition 311 CAS-02C
Field:	Cascadia Margin
Rig:	JOIDES Resolution
State:	Pacific Ocean

Schlumberger

sonicVISION - STC - Projection (Fluid Arrival)
1:240 Measured Depth
Recorded Mode Log

Geomarket	NGC	Location	Vancouver Island
Job Date	20-SEP-2005	Customer	Lamont-Doherty Borehole Research
Rig	JOIDES Resolution	Field/Well	Cascadia Margin/CAS-02C
Engineer	Lake Loh	Job Number	40012416

Type

Res

G

Operation

Presentation

Description of Well - Names, Geometry, Services, Location and References; General Content Header, user of trademarks, directional data, well plot, order of components, spelling and style, units sensor to toolface angle recorded

Equiment and Software Description

Tool sketch, equipment numbers, software versions, data rates, filtering weights

Processing Traceability and Environment Description
Acquisition environment, parameters and key constants for each run or zone, complete and relavant remarks

1

Annotations, Presented Formats, QC Curves, Print Quality
Documented splice points; data gap explanations, mud changes, movement indicator, color selection

Calibration and Verifications

Calibration / Before survey verification / After survey verification

Validity, completeness (includes equipment number), timeliness, unedited, descrepency explained

Operating Procedures

Depth Control
Comparison with driller's depth, other logs, other bit runs, between RT and RM. Depth summary listing

2

Logging speed and sampling rates

As recommended in reference manual or job planner. No loss of data or spatial resolution

Data Comparison

Between runs and passes, with data from nearby wells, other conveyance, mud log and markers

Operating Anomalies/Failure/Missing Data/Sensor Orientation/Transmission Losses

Absence of noise and spurious variations, anomaly repeated, corrected, reported or explained.

Digital Delivery

Digital Products
Labeled, verification listing with complete digital record, backup for archival; record matches hard copy.

Job Quality Rating (JQR)
Number of boxes without number X 10

80

Environmental effects

Irregular Operation

Excessive ROP or speed, high deviation, shocks, vibrations, sticking conditions

1

Borehole Geometry

Shape (caves, etc), rugosity, spiralled hole, mud induced fractures. Casing, tubing conditions

2

Borehole Fluid

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

Interferences

External noise, nearby casing or drillpipe, debris, unusual formation composition

Operation Outside Tool Specifications
GeomarketTemperature, pressure, hole size, hole deviation, dog-leg severity, flow rate, rpm, solids value of parameter

Environmental Quality Rating (EQR)
Number of boxes without number X 20

60

2

80

1

2

60

Geomarket	NGC	Location	Vancouver Island
Job Date	20-SEP-2005	Customer	Lamont-Doherty Borehole Research
Rig	JOIDES Resolution	Field/Well	Cascadia Margin/CAS-02C
Engineer	Lake Loh	Job Number	40012416

Operation

Presentation

- Description of Well - Names, Geometry, Services, Location and References; General Content Header, user of trademarks, directional data, well plot, order of components, spelling and style, units sensor to toolface angle recorded
- Equiment and Software Description
  Tool sketch, equipment numbers, software versions, data rates, filtering weights
- Processing Traceability and Environment Description
  Acquisition environment, parameters and key constants for each run or zone, complete and relavant remarks
- Annotations, Presented Formats, QC Curves, Print Quality
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Calibration and Verifications

- Calibration / Before survey verification / After survey verification
  Validity, completeness (includes equipment number), timeliness, unedited, descrepency explained

Operating Procedures

- Depth Control
  Comparison with driller's depth, other logs, other bit runs, between RT and RM. Depth summary listing
- Logging speed and sampling rates
  As recommended in reference manual or job planner. No loss of data or spatial resolution
- Data Comparison
  Between runs and passes, with data from nearby wells, other conveyance, mud log and markers
- Operating Anomalies/Failure/Missing Data/Sensor Orientation/Transmission Losses
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Digital Delivery

- Digital Products
  Labeled, verification listing with complete digital record, backup for archival; record matches hard copy.

Job Quality Rating (JQR)
Number of boxes without number X 10

Environmental effects

- Irregular Operation
  Excessive ROP or speed, high deviation, shocks, vibrations, sticking conditions
- Borehole Geometry
  Shape (caves, etc), rugosity, spiralled hole, mud induced fractures. Casing, tubing conditions
- Borehole Fluid
  Barite, KCl, salinity, additives, gas cut, unstable
- Interferences
  External noise, nearby casing or drillpipe, debris, unusual formation composition
- Operation Outside Tool Specifications
  GeomarketTemperature, pressure, hole size, hole deviation, dog-leg severity, flow rate, rpm, solids value of parameter

Environmental Quality Rating (EQR)
Number of boxes without number X 20

Type

Res | G

Data Quality Report

of Measurement

R | Delta T

When data does not meet standards, put a number in the colum corresponding to the measurement with a corresponding number and remark below. Use additional pages for remarks
Positive remarks are welcome; do not append them with a number.

Remarks

1. Correcting the resistivity data by assumming mud resistivity as 1 ohmm @ 75 degF.
2. Depth is not compensated for heave. The heave cause the spikes of ROP and this eventually cause the low data density and distortion on the image. The heave also cause the curves (gamma ray, resistivity, and delta T) do not correlate to each other very well and cause the resistivity curves blocky.

Delta T column: 2 (Depth Control); JQR: 90

1. Excessive ROP is causing low data density.
2. Borehole washouts cause the resistivity curves separation.
3. Existing of gas in the borehole attenuate the sonic signal.

Delta T column: 1 (Irregular Operation); 3 (Borehole Fluid); EQR: 60

Cell Manager: Lake Loh FSM: Vijay Moras

of Measurement

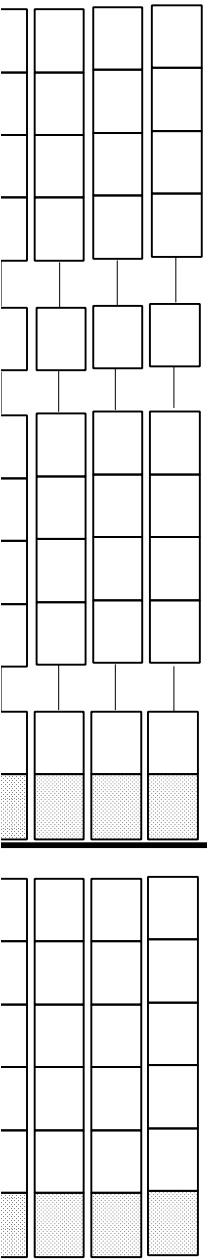
Data Quality Report

R | Delta T

When data does not meet standards, put a number in the colum corresponding to the measurement with a corresponding number and remark below. Use additional pages for remarks

Positive remarks are welcome; do not append them with a number.

Remarks



Cell Manager: Lake Loh FSM: Vijay Moras

DQR Header Utility ver 1.1c

Schlumberger Drilling & Measurements

Revised January 2002