Schlumberger

Company: **Lamont Doherty**

Well: **Expedition 339, Site U1389 GC−11A Hole A**
Field: **Mediterranean Outflow (Portugal)**
Rig: **JOIDES Resolution** Ocean: **Atlantic**

Rig: JOIDES Resolution
Field: Mediterranean Outflow (Portugal)
Location: Latitude: N 36* 25.517'
Well: Expedition 339, Site U1389 GC−11A
Company: Lamont Doherty

High Resolution Laterolog Array
Hostile Litho Density Sonde
Hostile Natural Gamma Sonde

LOCATION

Latitude: N 36* 25.517'
Longitude: W 7* 16.688'

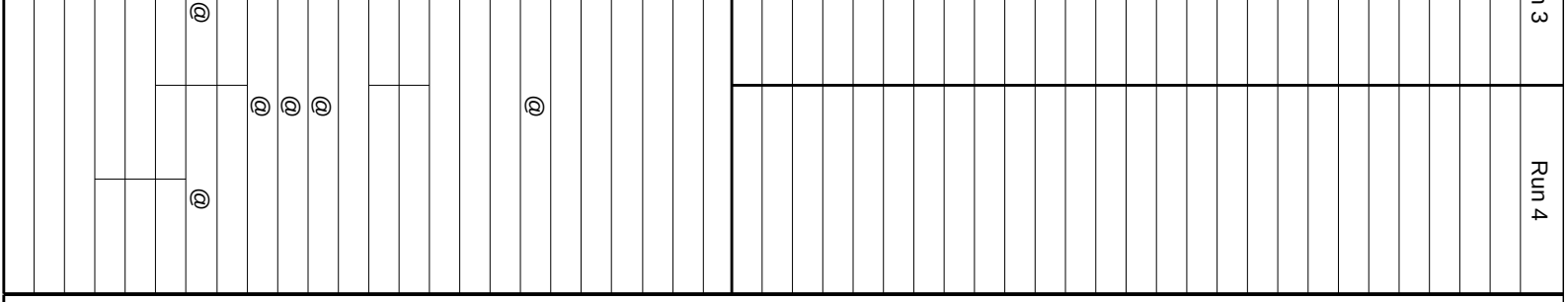
Elev.: K.B. 11.00 m
G.L. −645.00 m
D.F. 11.00 m

Permanent Datum: Mean Sea Level — Elev.: 0.00 m
Log Measured From: Drill Floor — 11.00 m above Perm. Datum
Drilling Measured From: Drill Floor

API Serial No.	Max. Hole Devi. 0 deg	Longitude W 7.2781*	Latitude N 36.42528*

	Run 1	Run 2	Run 3
Logging Date	23−Dec−2011		
Run Number	1		
Depth Driller	356 m		
Schlumberger Depth	356 m		
Bottom Log Interval	356 m		
Top Log Interval	0 m		
Casing Driller Size @ Depth	10.750 in @ 86 m	@	@
Casing Schlumberger	85 m		
Bit Size	9.875 in		
Type Fluid In Hole	Seawater Gel		
MUD Density / Viscosity	1.25 g/cm3 /	/	/
MUD Fluid Loss / PH	/	/	/
MUD Source Of Sample	N/A		
RM @ Measured Temperature	@	@	@
RMF @ Measured Temperature	@	@	@
RMC @ Measured Temperature	@	@	@
Source RMF / RMC	N/A / N/A	/	/
RM @ MRT / RMF @ MRT	@ 21 / @ 21	@ / @	@ / @
Maximum Recorded Temperatures	21 degC		
Circulation Stopped / Time	23−Dec−2011 / 21:00		
Logger On Bottom / Time	23−Dec−2011 / 23:35		
Unit Number / Location	625003 / Houston	/	/
Recorded By	K. Swain		
Witnessed By	T. Williams, J. Lofi		

	Run 1	Run 2	Run 3
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth	@		
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
MUD Density / Viscosity	/		
MUD Fluid Loss / PH	/		
MUD Source Of Sample			
RM @ Measured Temperature	@		
RMF @ Measured Temperature	@		
RMC @ Measured Temperature	@		
Source RMF / RMC	/		
RM @ MRT / RMF @ MRT	@ / @		
Maximum Recorded Temperatures			
Circulation Stopped / Time	/		
Logger On Bottom / Time	/		
Unit Number / Location	/		
Recorded By			
Witnessed By			



DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED−DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED−DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED−DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED−DATA.

OTHER SERVICES1	OTHER SERVICES2
OS1: FMS/DSI	OS1:
OS2: VSI	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
Hole GC−11A Hole C was drilled with a 9 7/8" APC/XCB bit to TDD of 355 mbsf.	
This log orginally acquired in measured depth from rig floor but played back	
with a depth offset of −656m to make the sea floor at 0m	
as requested by Lamont Doherty.	
A playback was produced and listed on the log for caliper input for hole size.	
The original logs were acquired with bit size as the hole size assumption.	
Barite mud ID was used in the playback and not on the original log.	
All logs recorded via wireline thru 5−5.5" drillpipe and APC/SCB coring BHA	
consisting of a bit release sub, Kinley sub, drill collars and lockable flapper	
valve. The bit is large enough to log through and not need to be released prior	
to logging.	
HRLA encountered spikes within 60m of drillpipe and does not repeat from passes.	
This indicates a possible hardware issue not identified in the LQC log at the	
depth of the spiking only. All other logged interval is normal for all curves.	

RUN 1		RUN 2	
SERVICE ORDER #:		SERVICE ORDER #:	
PROGRAM VERSION:	19C0−187	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

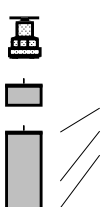
SURFACE EQUIPMENT

RUN 1

GSR−U 616008
WITM (EDTS)−A 1

RUN 2

DOWNHOLE EQUIPMENT



LEH−QT 29.71
LEH−QT 301

AH−369 28.82

EDTC−B 28.38
EDTH−B 8528
EDTC−B 8529

EDTG−A/B 77693

EDTCB Ele — 26.40

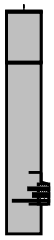
ILE−F — 26.40
ILE−F 14

LDSC−B — 23.96
LDSH−A 319

LDSC Stat — 23.43

HLDS — 22.90
GSR−Z 2397
HLDV−D 45
HLDS−D 45
HEH−H 47
HLDP−C 45

Caliper
SS LS Status — 18.84



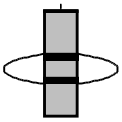
AH−Knuckle — 18.08

AH−Knuckle — 17.47

AH−Knuckle — 16.86

AH−Knuckle — 16.25

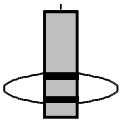
AH−MCD2 — 15.64
AH−MCD2 22



HRLT−B — 13.36
HRUH−B 769
HRUC−B 769
HRLS−B 969
HRLH−B 759
HRLC−B 759
AH−270 773

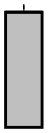
High Res. — 9.78

AH−MCD — 5.99
AH−MCD 1



HNGS−BA — 3.71
HNGS−BA 194
HNSH−BA 205

Upper_1 — 3.01
Lower_2 — 2.79



HNGC−B — 1.21
HNGH−A 115

HNGC Stat — 0.67

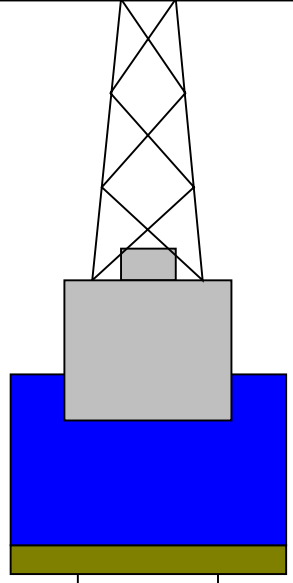
DF ACCZ
Tension HV — 0.00

BNS−CCS — 0.14

TOOL ZERO

MAXIMUM STRING DIAMETER 4.50 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Production String	(in) OD	(in) ID	(M) MD	Well Schematic	(M) MD	(in) OD	(in) ID	Casing String

Kelly Bushing Elevation			−656				
Derrick Floor Elevation			−656				
Mean Sea Level			−645				
						4.1	
					0	3.80	Sea Floor
					86	9.875	Open Hole
					355		Total Depth

Input DLIS Files

DEFAULT	NGS_HRLA_LDL_037PUP	FN:56	PRODUCER	25−Dec−2011 23:20	1012.7 M	648.2 M

Output DLIS Files

DEFAULT	NGS_HRLA_LDL_038PUP	FN:57	PRODUCER	27−Dec−2011 01:39	356.6 M	−7.8 M

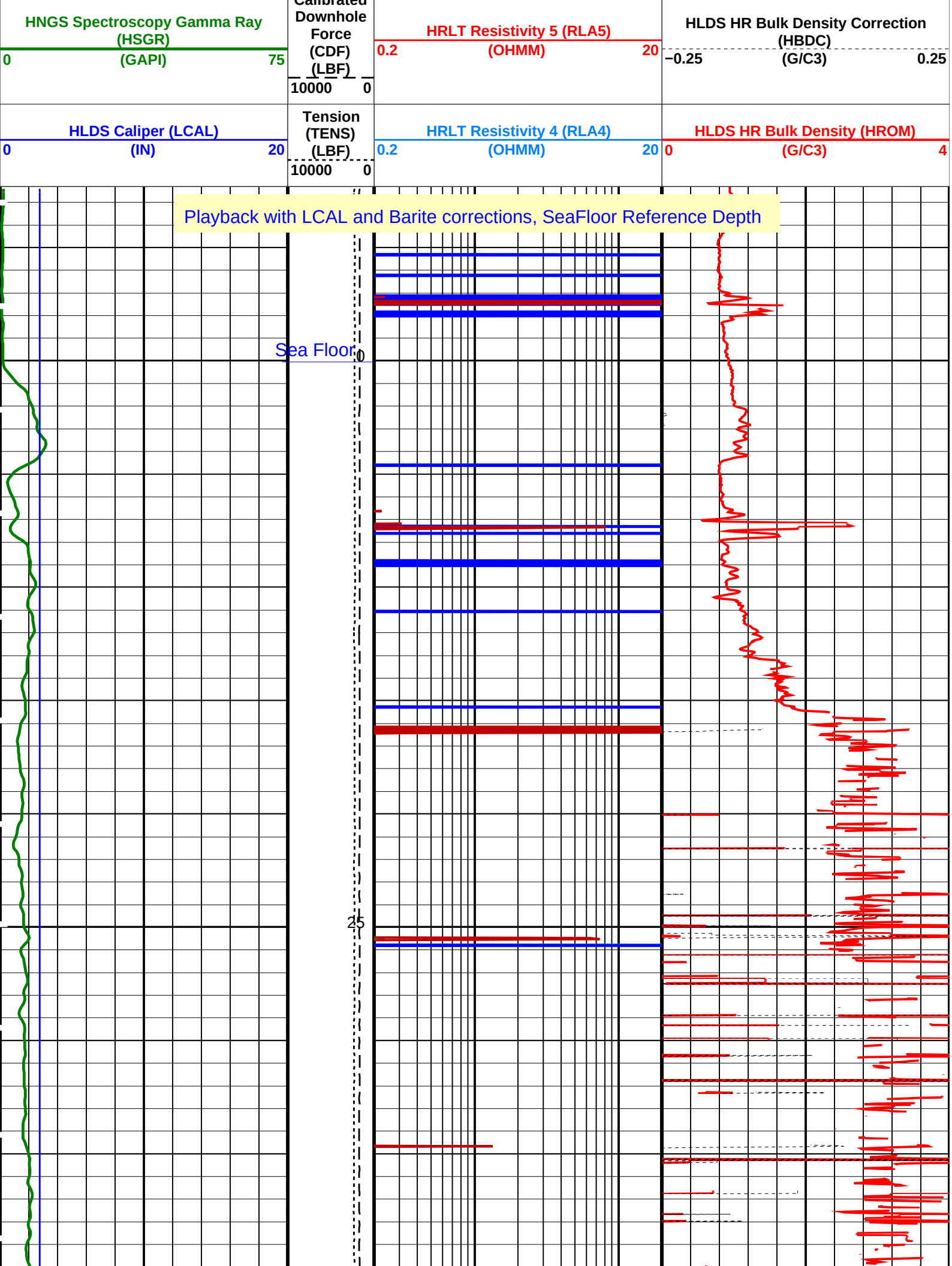
OP System Version: 19C0−187

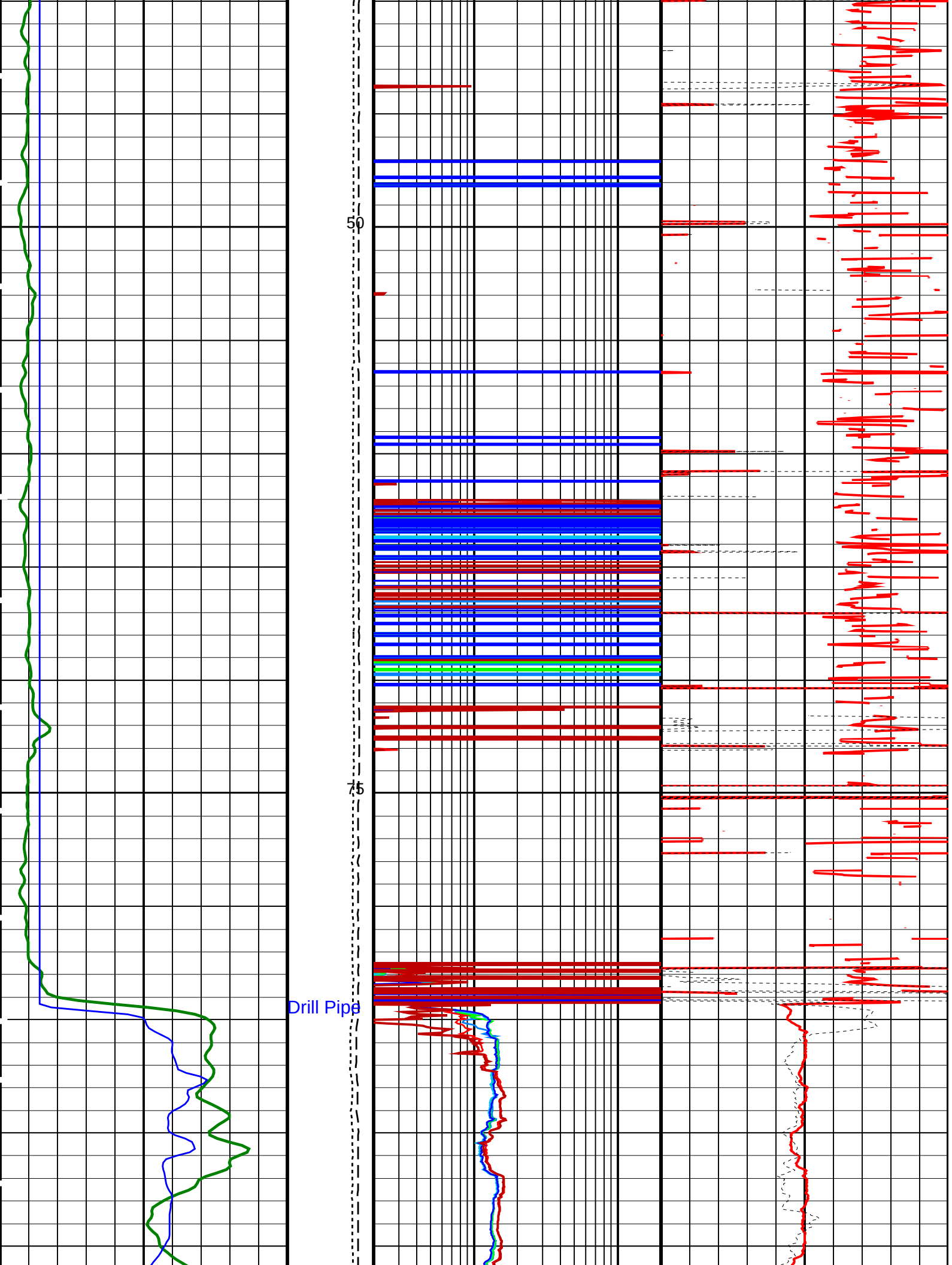
HNGC−B	19C0−187	HNGS−BA	19C0−187
HRLT−B	19C0−187	HLDS	19C0−187
LDSC−B	19C0−187	EDTC−B	19C0−187

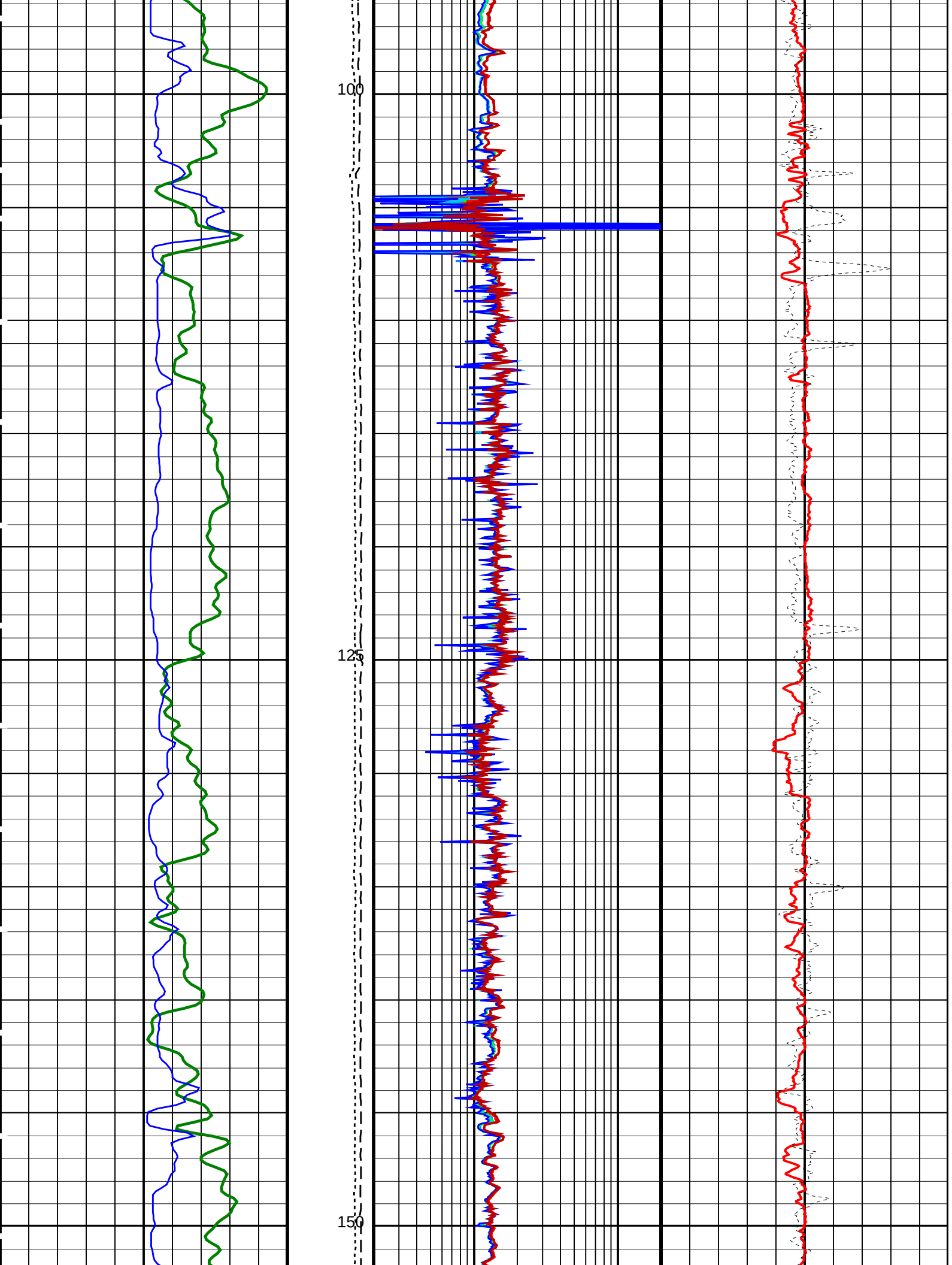
PIP SUMMARY

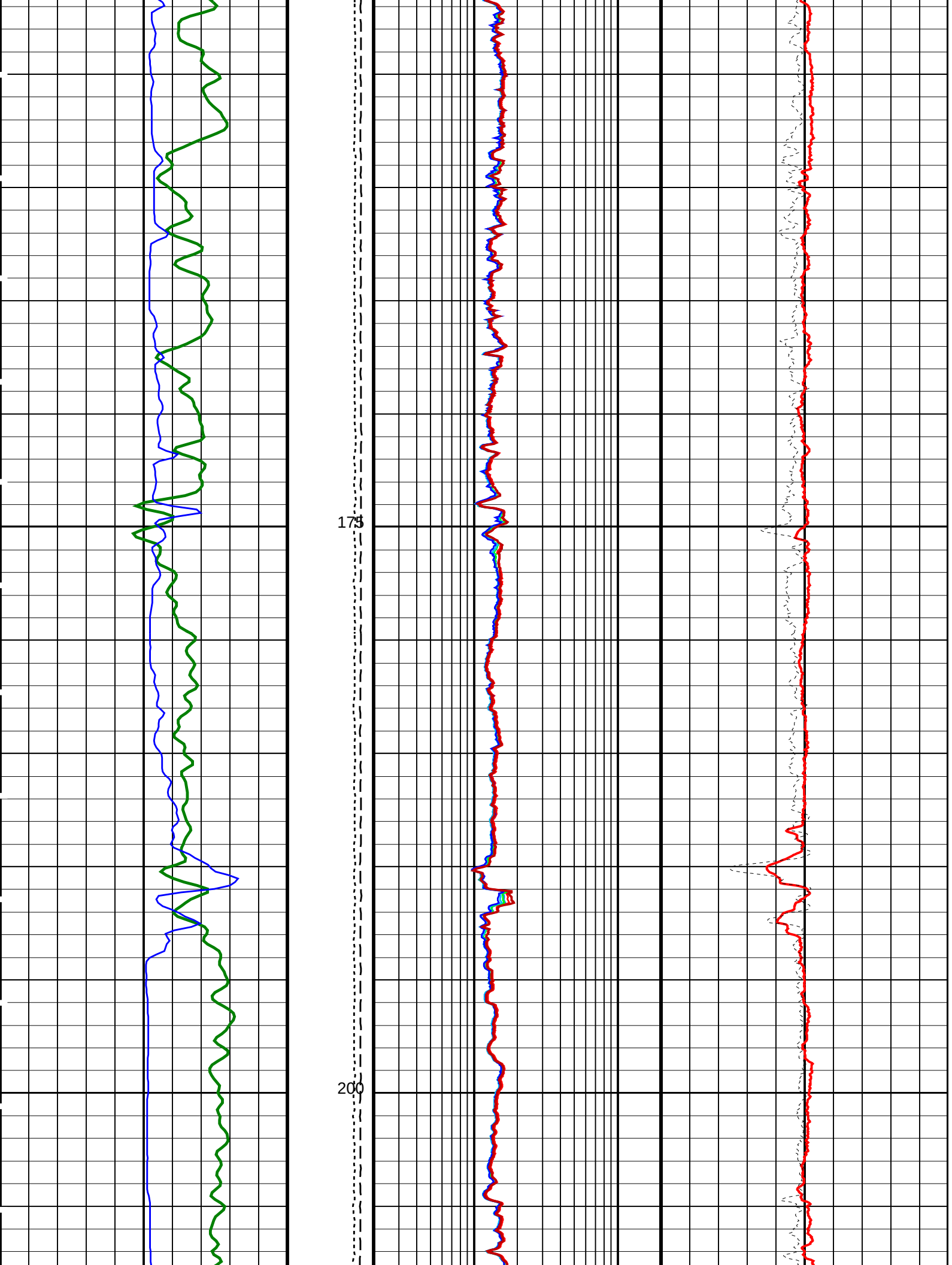
Time Mark Every 60 S

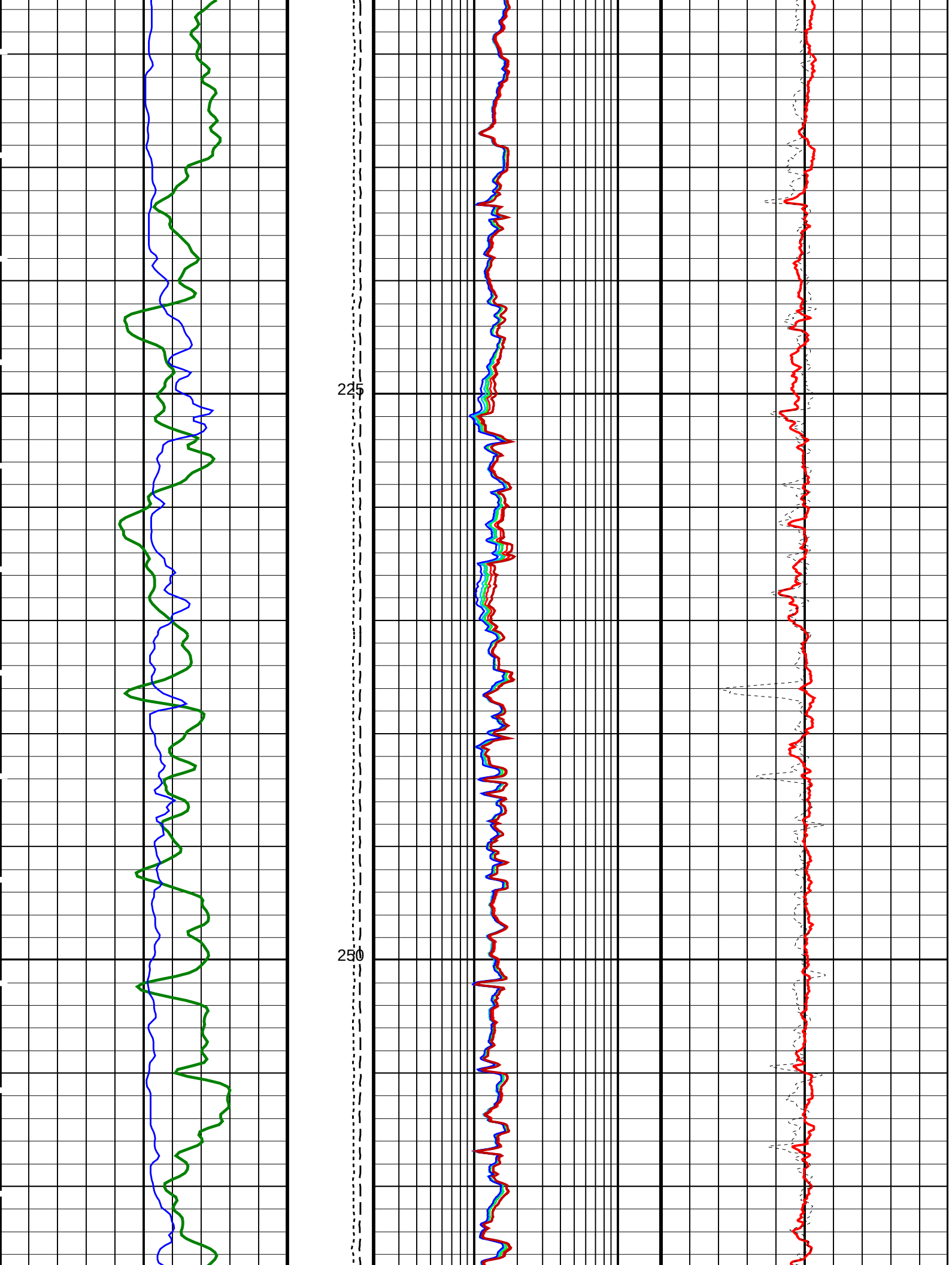
		HRLT True Resistivity (RT_HRLT)	
		0.2 (OHMM) 20	
		HRLT Resistivity 1 (RLA1)	
		0.2 (OHMM) 20	
		HRLT Resistivity 2 (RLA2)	
		0.2 (OHMM) 20	
		HRLT Resistivity 3 (RLA3)	
		0.2 (OHMM) 20	
	Calibrated		

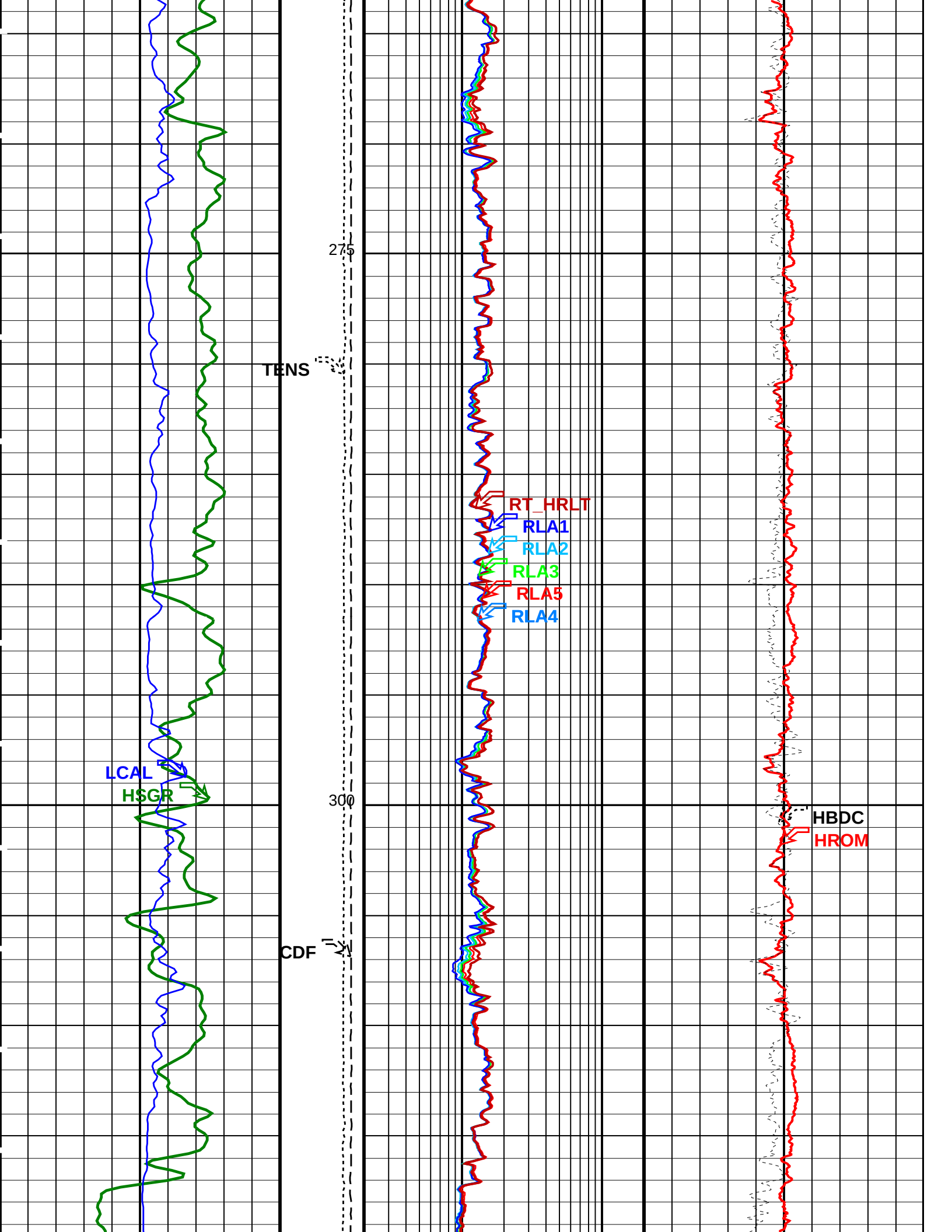

HNGS Spectroscopy Gamma Ray (HSGR)
0
(GAPI)
75
Calibrated Downhole Force (CDF) (LBF)
10000
0
HRLT Resistivity 5 (RLA5)
0.2
(OHMM)
20
HLDS HR Bulk Density Correction (HBDC)
−0.25
(G/C3)
0.25
HLDS Caliper (LCAL)
0
(IN)
20
Tension (TENS) (LBF)
10000
0
HRLT Resistivity 4 (RLA4)
0.2
(OHMM)
20
HLDS HR Bulk Density (HROM)
0
(G/C3)
4
Playback with LCAL and Barite corrections, SeaFloor Reference Depth
Sea Floor
0
25

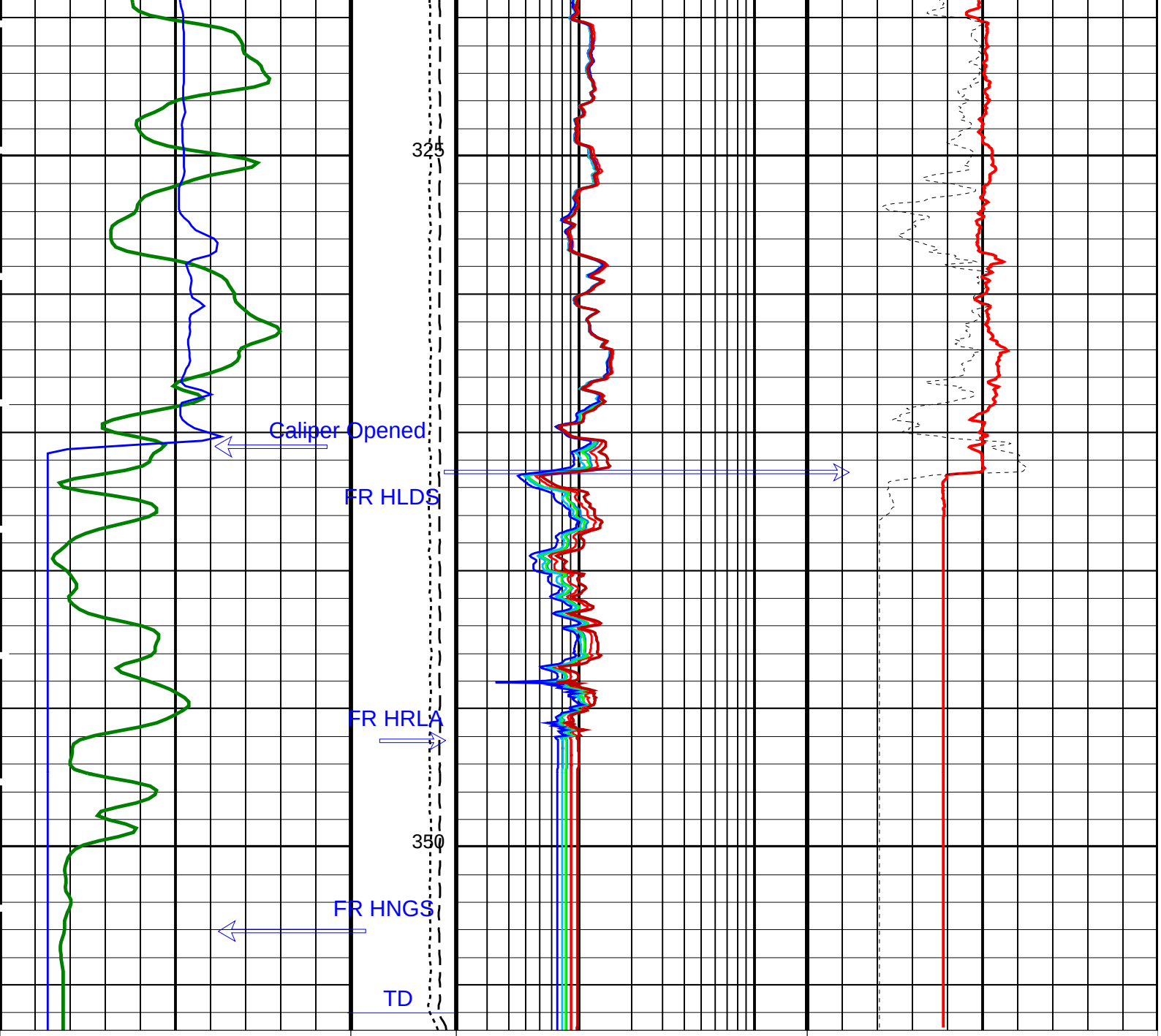

50
75
Drill Pipe


100
125
150


175
200


225
250


275
TENS
RT_HRLT
RLA1
RLA2
RLA3
RLA5
RLA4
LCAL
HSGR
300
HBDC
HROM
CDF



HLDS Caliper (LCAL) 0 (IN) 20	Tension (TENS) (LBF) 10000 0	HRLT Resistivity 4 (RLA4) 0.2 (OHMM) 20
HLDS HR Bulk Density (HROM) 0 (G/C3) 4		
HNGS Spectroscopy Gamma Ray (HSGR) 0 (GAPI) 75	Calibrated Downhole Force (CDF) (LBF) 10000 0	HRLT Resistivity 5 (RLA5) 0.2 (OHMM) 20
HLDS HR Bulk Density Correction (HBDC) −0.25 (G/C3) 0.25		
		HRLT Resistivity 3 (RLA3) 0.2 (OHMM) 20
		HRLT Resistivity 2 (RLA2) 0.2 (OHMM) 20
		HRLT Resistivity 1 (RLA1) 0.2 (OHMM) 20
		HRLT True Resistivity (RT_HRLT) 0.2 (OHMM) 20

Parameters

DLIS Name	Description	Value	
	HNGS−BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	−0.00279021	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	BARI	
HNPE	HNGS Processing Enable	YES	
ISSBAR	Barite Mud Switch	BARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
SHT	Surface Hole Temperature	68	DEGF
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.960045	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.971544	
	HRLT−B: High Resolution Laterolog Array − B		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	17.0393	DEGC
FREQ0	HRLT Frequency Index for Mode 0	32	
FREQ1	HRLT Frequency Index for Mode 1	128	
FREQ2	HRLT Frequency Index for Mode 2	104	
FREQ3	HRLT Frequency Index for Mode 3	86	
FREQ4	HRLT Frequency Index for Mode 4	56	
FREQ5	HRLT Frequency Index for Mode 5	44	
FREQ6	HRLT Frequency Index for Mode 6	116	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	BARITE	
KFAC_HRLT	HRLT K Factor Option	SONDE	
LOOPCOEF_S	HRLT Loop Coefficient for Shallow Modes	LOW	
LOOPMOD0	HRLT Mode 0 Loop Mode	AUTO	
LOOPMOD1	HRLT Mode 1 Loop Mode	AUTO	
LOOPMOD2	HRLT Mode 2 Loop Mode	AUTO	
LOOPMOD3	HRLT Mode 3 Loop Mode	AUTO	
LOOPMOD4	HRLT Mode 4 Loop Mode	AUTO	
LOOPMOD5	HRLT Mode 5 Loop Mode	AUTO	
LOOPMOD6	HRLT Mode 6 Loop Mode	AUTO	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
PROCINV	Inversion Selection	ON	
PROCMFL	Inversion Micro−Resistivity Selection	NO_EXTERNAL_RXO	
PROCMSO	Mechanical Standoff Fin Size	0	IN
PROCRM	Processing Mud Resistivity Select	HRLT_Compute	
PROCSPO	Sonde Position	Centered	
SHT	Surface Hole Temperature	68	DEGF
	HLDS: Hostile Litho−Density Sonde		
CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	OFF	
LLDL	HLDS LS Low Level Discriminator DAC	14000	

LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.71	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
EDTC−B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO	Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	BARITE	
ISSBAR_EDTC	Nuclear Mud Type	BARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	BARI	
MWCO	Mud Weight Correction Option	YES	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	68	DEGF
SOCN	Standoff Distance	0	IN
SOCO	Standoff Correction Option	NO	
TPOS_EDTC	EDTC Tool Centered/Eccentered	Eccentered	
U−ETELM_EDTS	Telemetry Mode for eWAFE	Standard_EDTS	
U−TELM_EDTS	Telemetry Mode for WAFE	Standard_EDTS	
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	10.750	IN
CWEI	Casing Weight	43.00	LB/F
DFD	Drilling Fluid Density	1.25	G/C3
DO	Depth Offset for Playback	−656.0	M
FLEV	Fluid Level	−50000.00	M
MST	Mud Sample Temperature	−50000.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	3330	FT
TDD	Total Depth − Driller	991.00	M
TDL	Total Depth − Logger	991.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: TripleCombo Vertical Scale: 1:200 Graphics File Created: 27−Dec−2011 01:39

OP System Version: 19C0−187

HNGC−B	19C0−187	HNGS−BA	19C0−187
HRLT−B	19C0−187	HLDS	19C0−187
LDSC−B	19C0−187	EDTC−B	19C0−187

Input DLIS Files

DEFAULT	NGS_HRLA_LDL_037PUP	FN:56	PRODUCER	25−Dec−2011 23:20	1012.7 M	648.2 M

Output DLIS Files

DEFAULT	NGS_HRLA_LDL_038PUP	FN:57	PRODUCER	27−Dec−2011 01:39		

Input DLIS Files

DEFAULT	NGS_HRLA_LDL_013LUP	FN:18	PRODUCER	23−Dec−2011 23:56	1012.7 M	648.2 M

Output DLIS Files

DEFAULT	NGS_HRLA_LDL_035PUP	FN:54	PRODUCER	25−Dec−2011 04:23	356.6 M	−7.8 M

OP System Version: 19C0−187

HNGC−B	19C0−187	HNGS−BA	19C0−187
HRLT−B	19C0−187	HLDS	19C0−187
LDSC−B	19C0−187	EDTC−B	19C0−187

PIP SUMMARY

Time Mark Every 60 S

Main Uplog Sea Floor Referenced

HRLT True Resistivity (RT_HRLT)
0.2 (OHMM) 20

HRLT Resistivity 1 (RLA1)
0.2 (OHMM) 20

HRLT Resistivity 2 (RLA2)
0.2 (OHMM) 20

HRLT Resistivity 3 (RLA3)
0.2 (OHMM) 20

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 75

Calibrated Downhole Force (CDF) (LBF)
10000 0

HRLT Resistivity 5 (RLA5)
0.2 (OHMM) 20

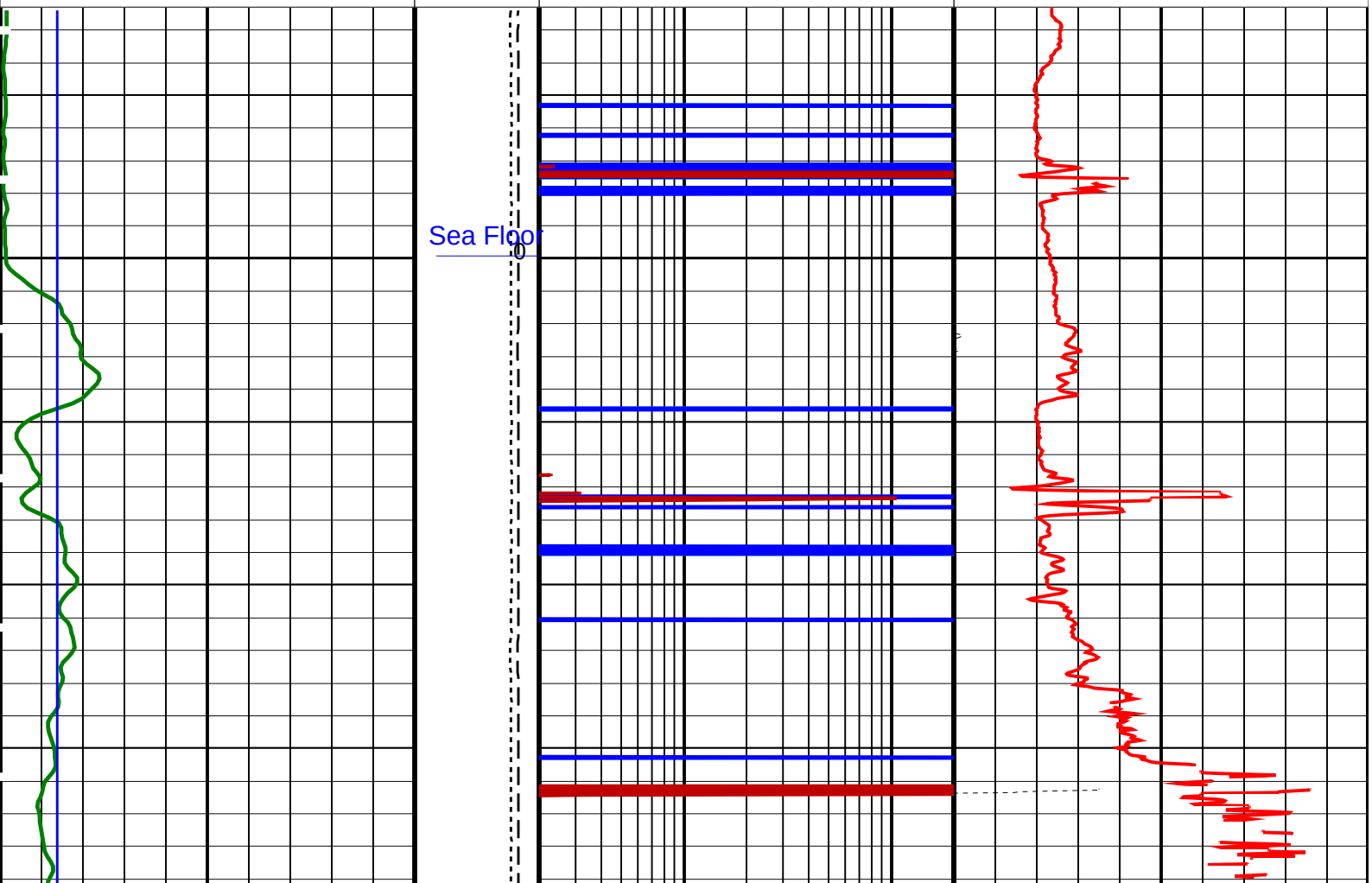
HLDS HR Bulk Density Correction (HBDC)
−0.25 (G/C3) 0.25

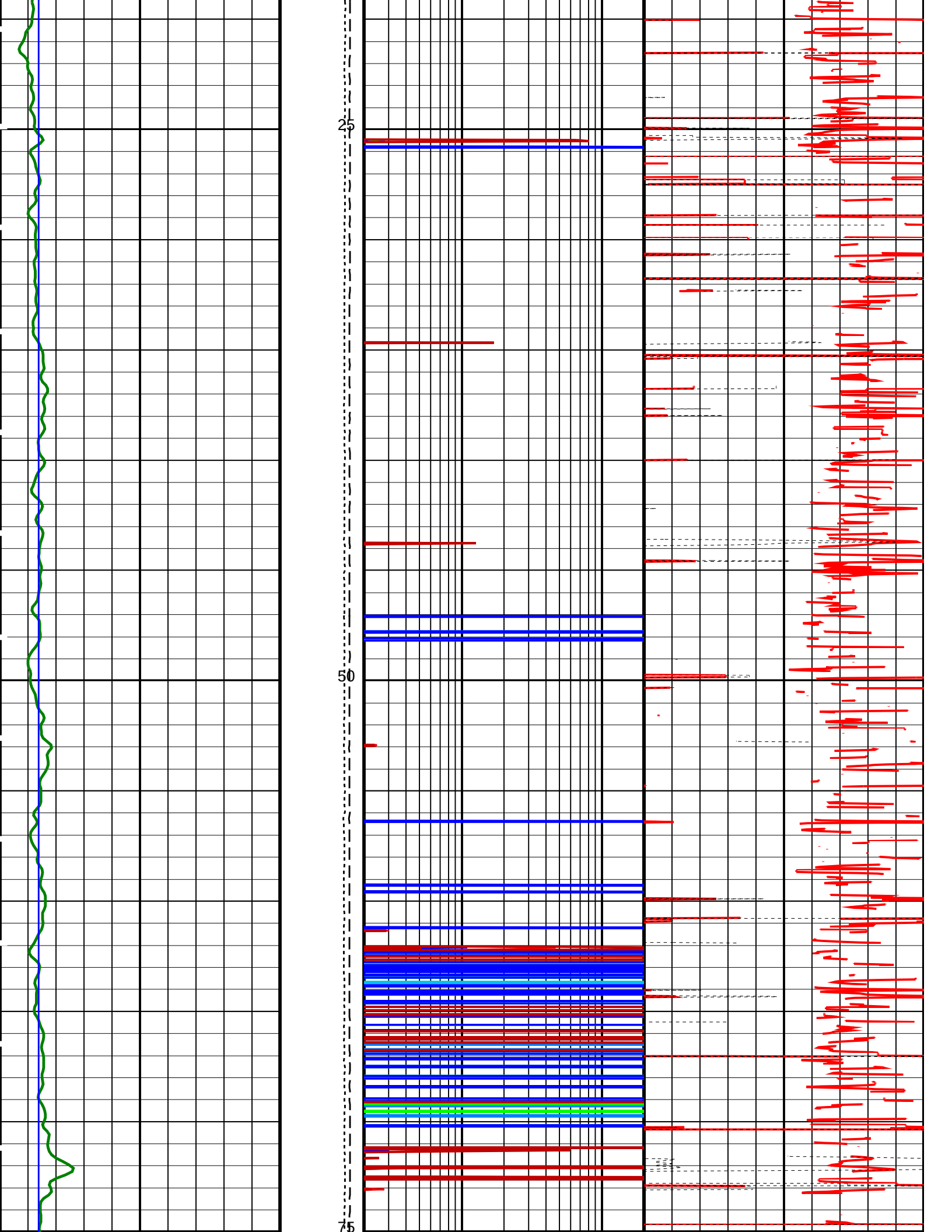
HLDS Caliper (LCAL)
0 (IN) 20

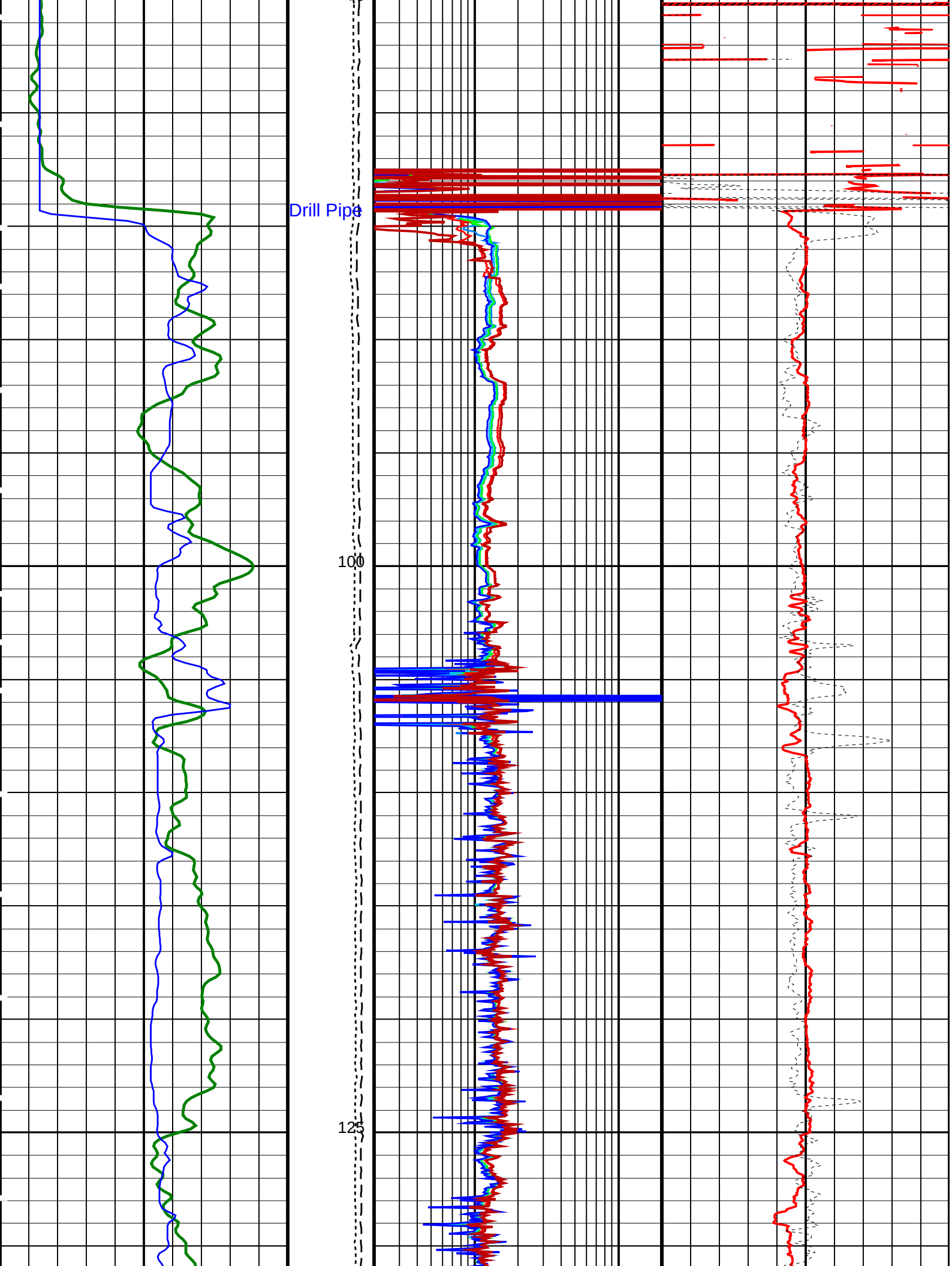
Tension (TENS) (LBF)
10000 0

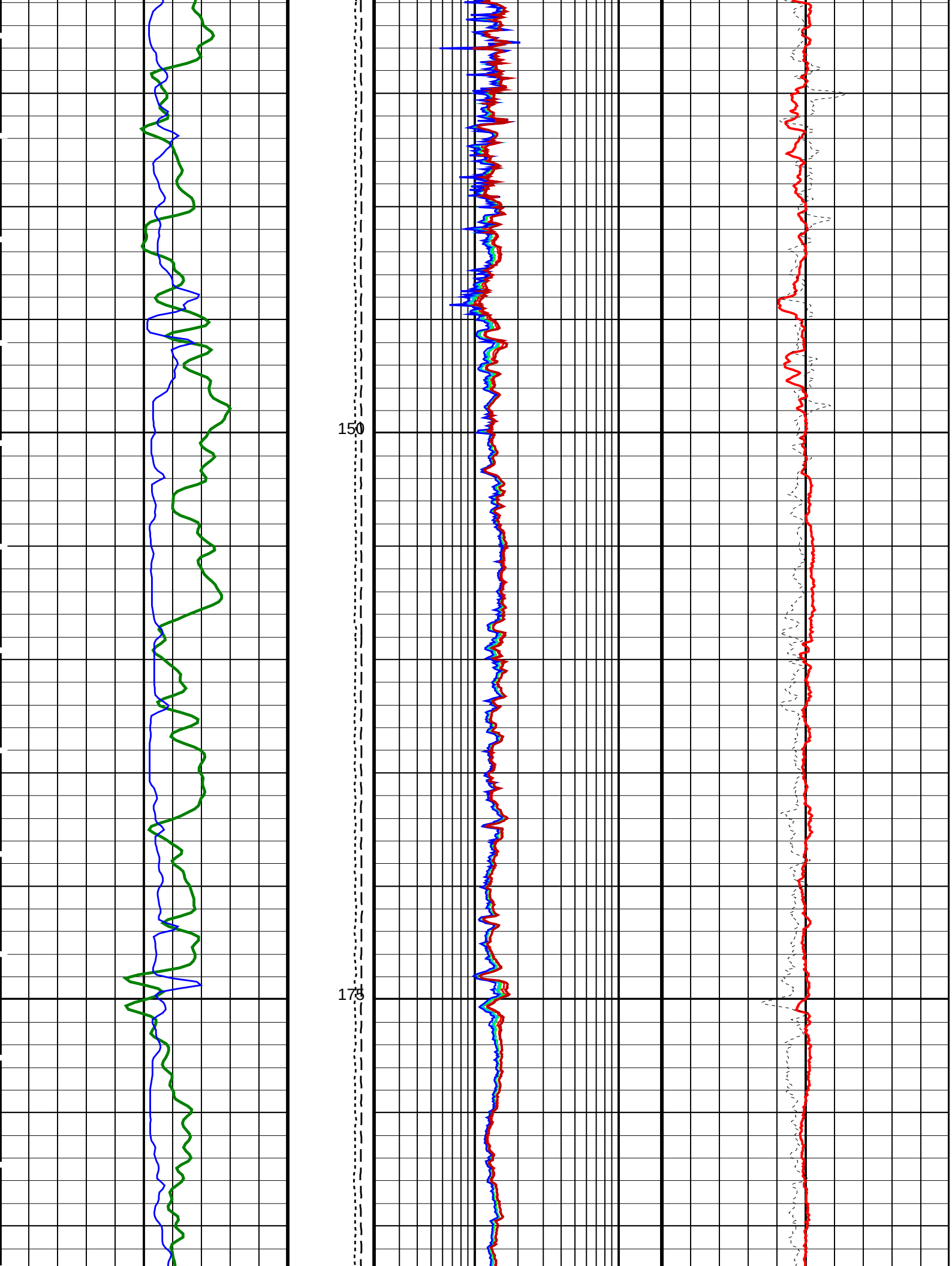
HRLT Resistivity 4 (RLA4)
0.2 (OHMM) 20

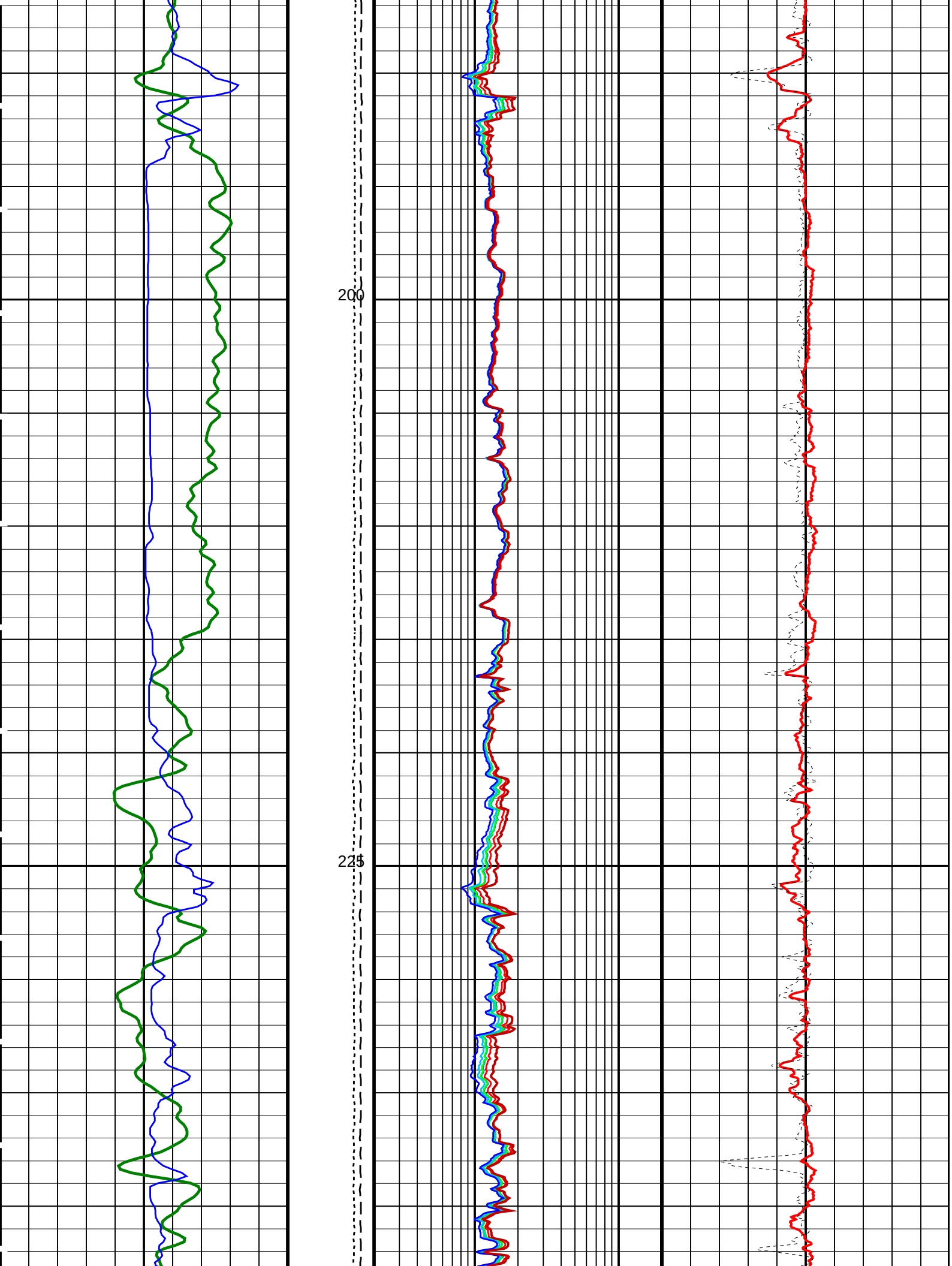
HLDS HR Bulk Density (HROM)
0 (G/C3) 4

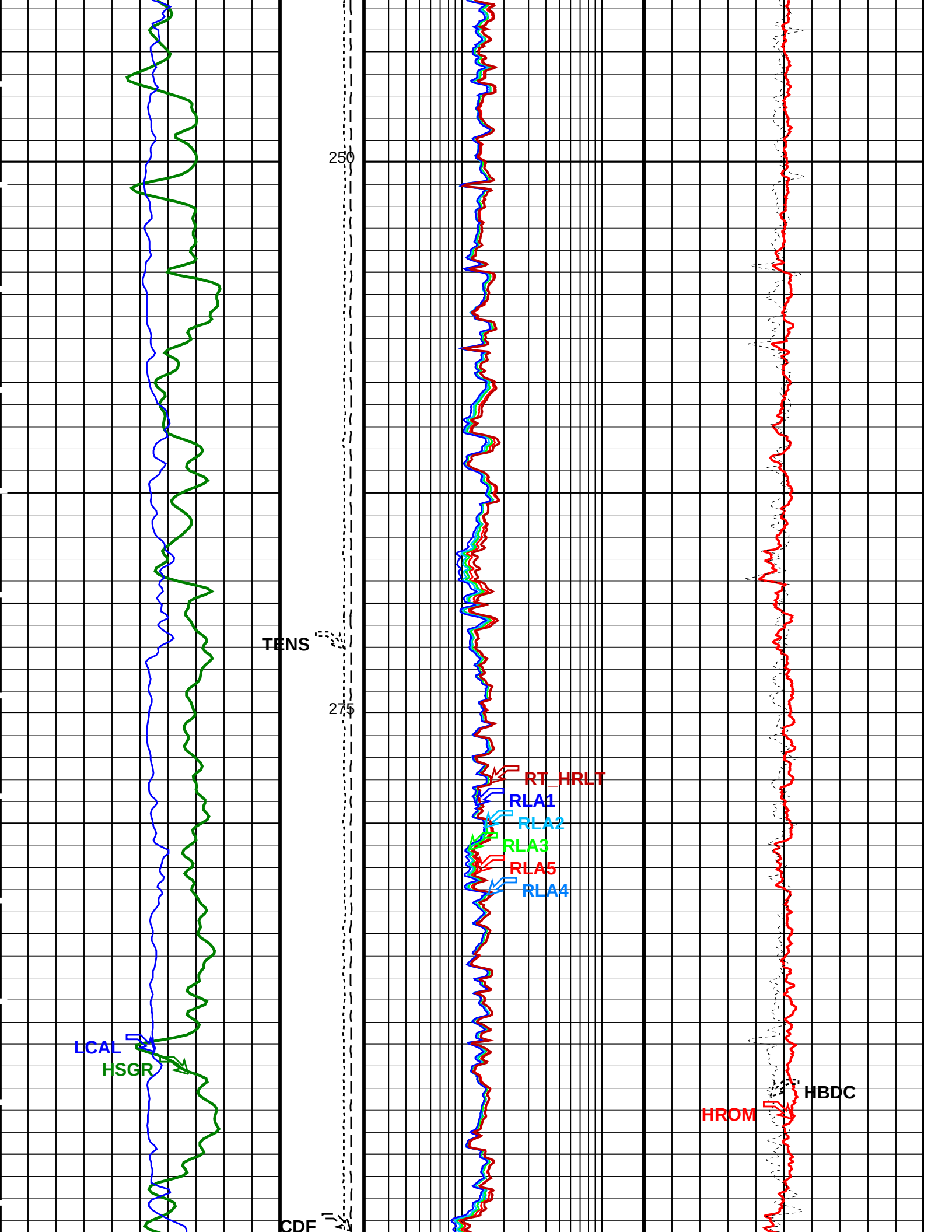


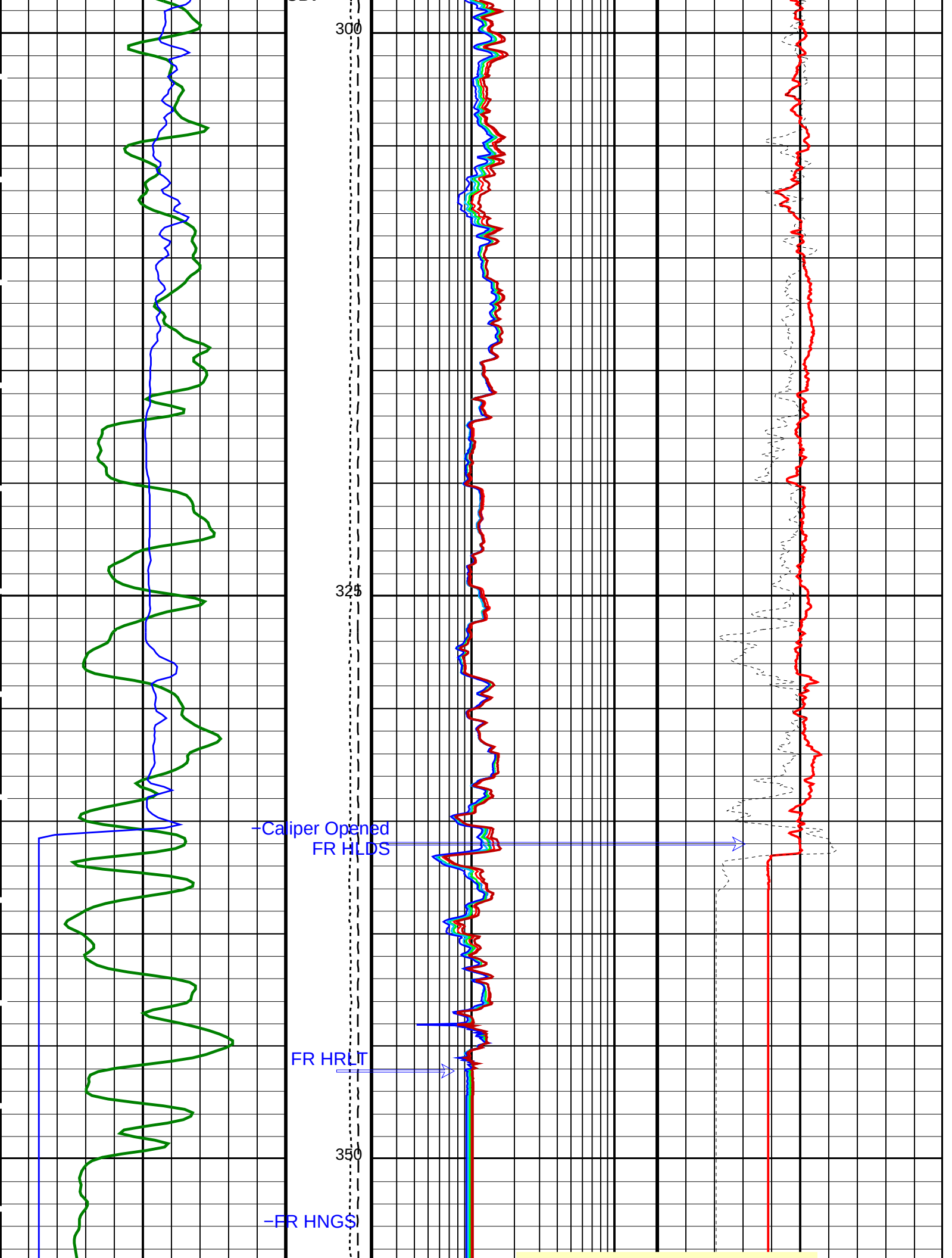

25
50
75

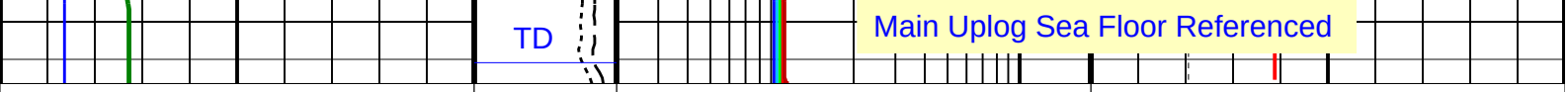

Drill Pipe
100
125


150
175


200
225


250
TENS
275
RT_HRLT
RLA1
RLA2
RLA3
RLA5
RLA4
LCAL
HSGR
HBDC
HROM
CDF


300
325
Caliper Opened
FR HLDS
FR HRLT
350
FR HNGS



HLDS Caliper (LCAL)	Tension (TENS)	HRLT Resistivity 4 (RLA4)	HLDS HR Bulk Density (HROM)
0 (IN) 20	(LBF) 10000 0	0.2 (OHMM) 20	0 (G/C3) 4
HNGS Spectroscopy Gamma Ray (HSGR)	**Calibrated Downhole Force (CDF) (LBF)**	**HRLT Resistivity 5 (RLA5)**	**HLDS HR Bulk Density Correction (HBDC)**
0 (GAPI) 75	10000 0	0.2 (OHMM) 20	−0.25 (G/C3) 0.25
		HRLT Resistivity 3 (RLA3) 0.2 (OHMM) 20	
		HRLT Resistivity 2 (RLA2) 0.2 (OHMM) 20	
		HRLT Resistivity 1 (RLA1) 0.2 (OHMM) 20	
		HRLT True Resistivity (RT_HRLT) 0.2 (OHMM) 20	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HNGS−BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	−0.00268293	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
SHT	Surface Hole Temperature	68	DEGF
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.957535	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.956327	
	HRLT−B: High Resolution Laterolog Array − B		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	17.0393	DEGC
FREQ0	HRLT Frequency Index for Mode 0	32	
FREQ1	HRLT Frequency Index for Mode 1	128	
FREQ2	HRLT Frequency Index for Mode 2	104	
FREQ3	HRLT Frequency Index for Mode 3	86	
FREQ4	HRLT Frequency Index for Mode 4	56	
FREQ5	HRLT Frequency Index for Mode 5	44	
FREQ6	HRLT Frequency Index for Mode 6	116	
GCSE	Generalized Caliper Selection	BS	

GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
KFAC_HRLT	HRLT K Factor Option	SONDE	
LOOPCOEF_S	HRLT Loop Coefficient for Shallow Modes	LOW	
LOOPMOD0	HRLT Mode 0 Loop Mode	OFF	
LOOPMOD1	HRLT Mode 1 Loop Mode	OFF	
LOOPMOD2	HRLT Mode 2 Loop Mode	OFF	
LOOPMOD3	HRLT Mode 3 Loop Mode	OFF	
LOOPMOD4	HRLT Mode 4 Loop Mode	OFF	
LOOPMOD5	HRLT Mode 5 Loop Mode	OFF	
LOOPMOD6	HRLT Mode 6 Loop Mode	OFF	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
PROCINV	Inversion Selection	ON	
PROCMFL	Inversion Micro−Resistivity Selection	NO_EXTERNAL_RXO	
PROCMSO	Mechanical Standoff Fin Size	0	IN
PROCRM	Processing Mud Resistivity Select	HRLT_Compute	
PROCSPO	Sonde Position	Centered	
SHT	Surface Hole Temperature	68	DEGF
HLDS: Hostile Litho−Density Sonde			
CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	OFF	
LLDL	HLDS LS Low Level Discriminator DAC	14000	
LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.71	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
EDTC−B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO	Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
ISSBAR_EDTC	Nuclear Mud Type	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	NO	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	68	DEGF
SOCN	Standoff Distance	0	IN
SOCO	Standoff Correction Option	NO	
TPOS_EDTC	EDTC Tool Centered/Eccentered	Eccentered	
U−ETELM_EDTS	Telemetry Mode for eWAFE	Standard_EDTS	
U−TELM_EDTS	Telemetry Mode for WAFE	Standard_EDTS	
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	10.750	IN
CWEI	Casing Weight	43.00	LB/F
DFD	Drilling Fluid Density	1.25	G/C3
DO	Depth Offset for Playback	−656.0	M
FLEV	Fluid Level	−50000.00	M
MST	Mud Sample Temperature	−50000.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	3330	FT

TD	Total Depth	3330	FT
TDD	Total Depth − Driller	991.00	M
TDL	Total Depth − Logger	991.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: TripleCombo Vertical Scale: 1:200 Graphics File Created: 25−Dec−2011 04:24

OP System Version: 19C0−187

HNGC−B	19C0−187	HNGS−BA	19C0−187
HRLT−B	19C0−187	HLDS	19C0−187
LDSC−B	19C0−187	EDTC−B	19C0−187

Input DLIS Files

DEFAULT	NGS_HRLA_LDL_013LUP	FN:18	PRODUCER	23−Dec−2011 23:56	1012.7 M	648.2 M

Output DLIS Files

DEFAULT	NGS_HRLA_LDL_035PUP	FN:54	PRODUCER	25−Dec−2011 04:23		

Input DLIS Files

DEFAULT	NGS_HRLA_LDL_012LUP	FN:16	PRODUCER	23−Dec−2011 23:36	1005.8 M	933.8 M

Output DLIS Files

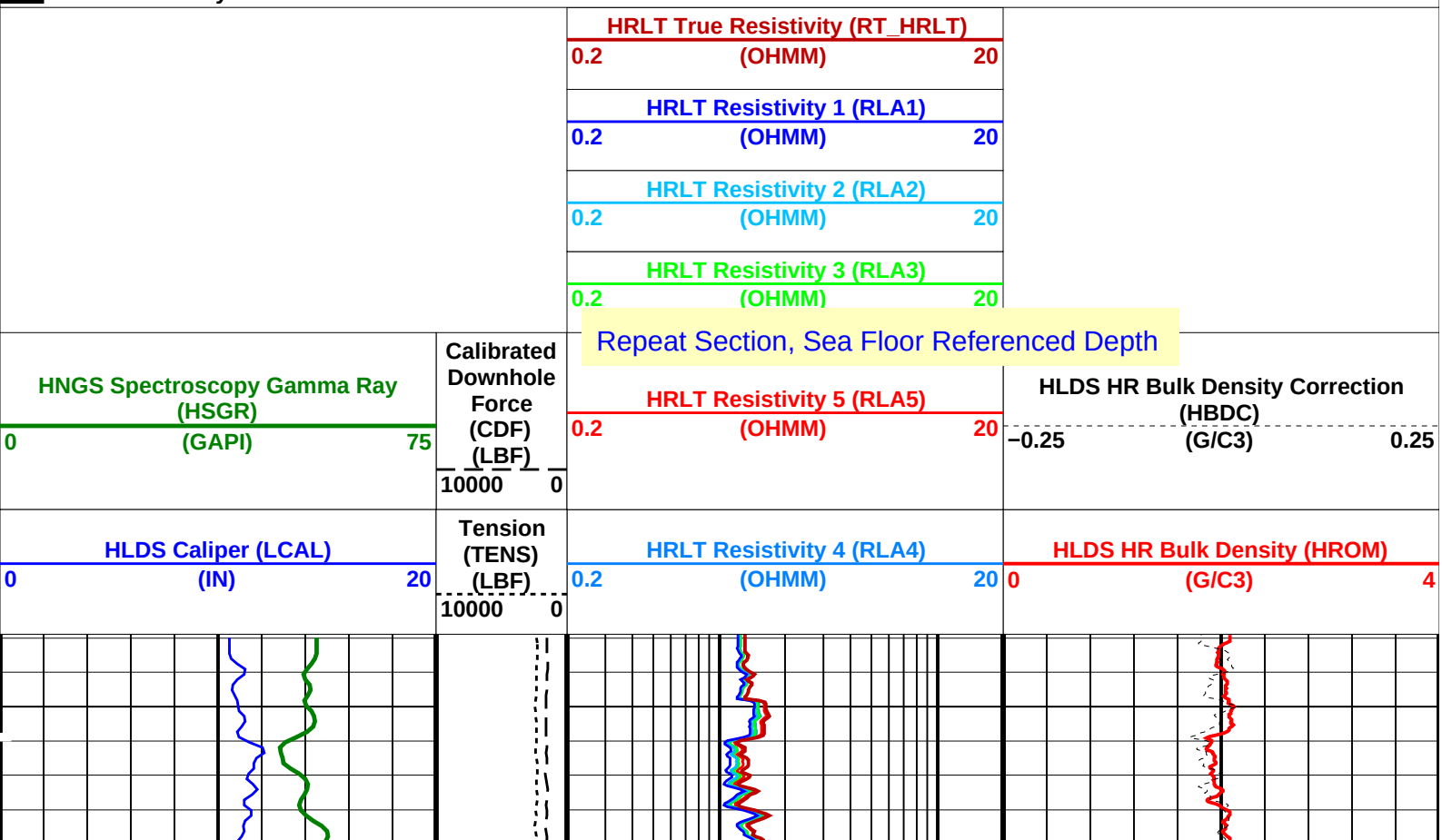
DEFAULT	NGS_HRLA_LDL_034PUP	FN:53	PRODUCER	25−Dec−2011 04:16	349.8 M	277.8 M

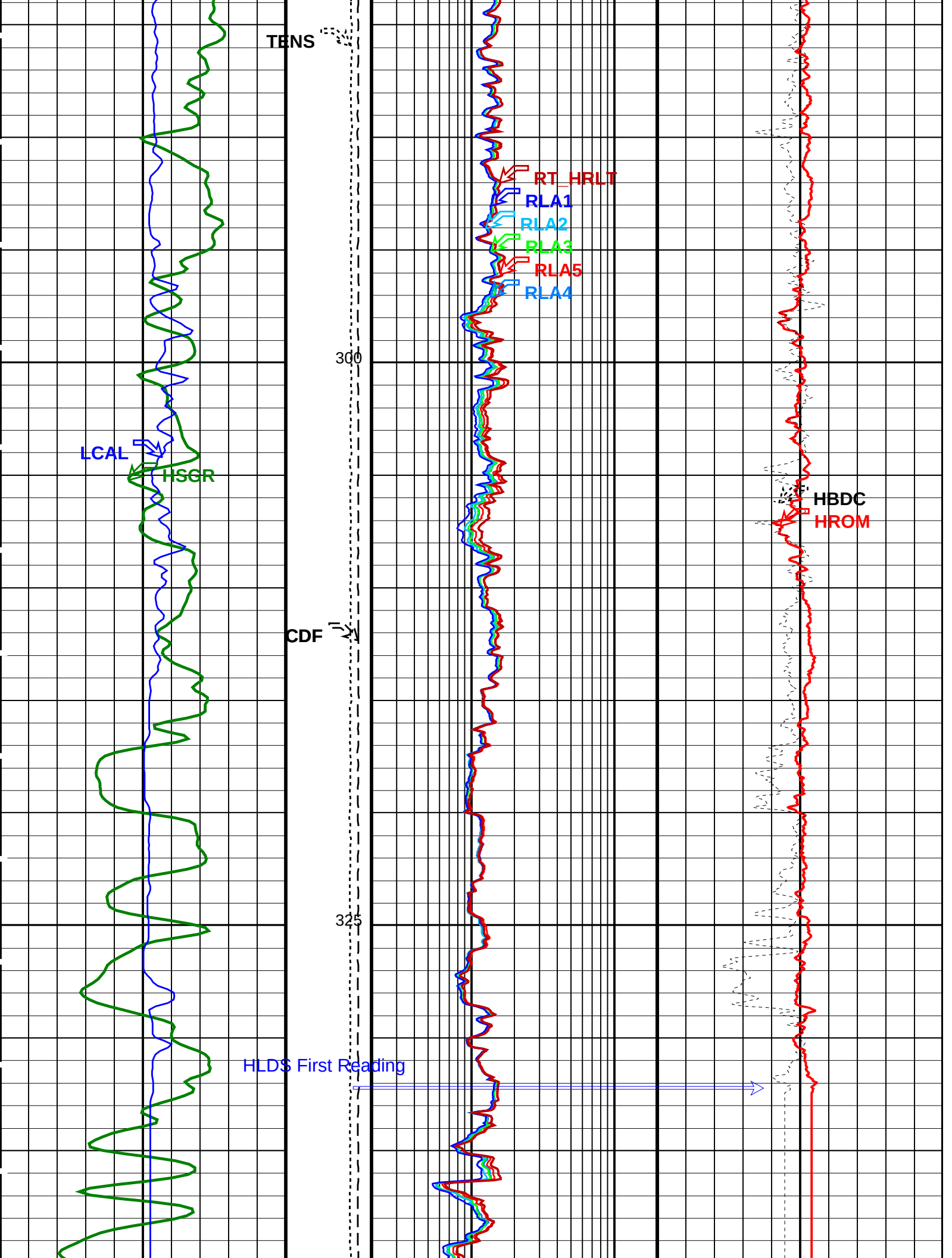
OP System Version: 19C0−187

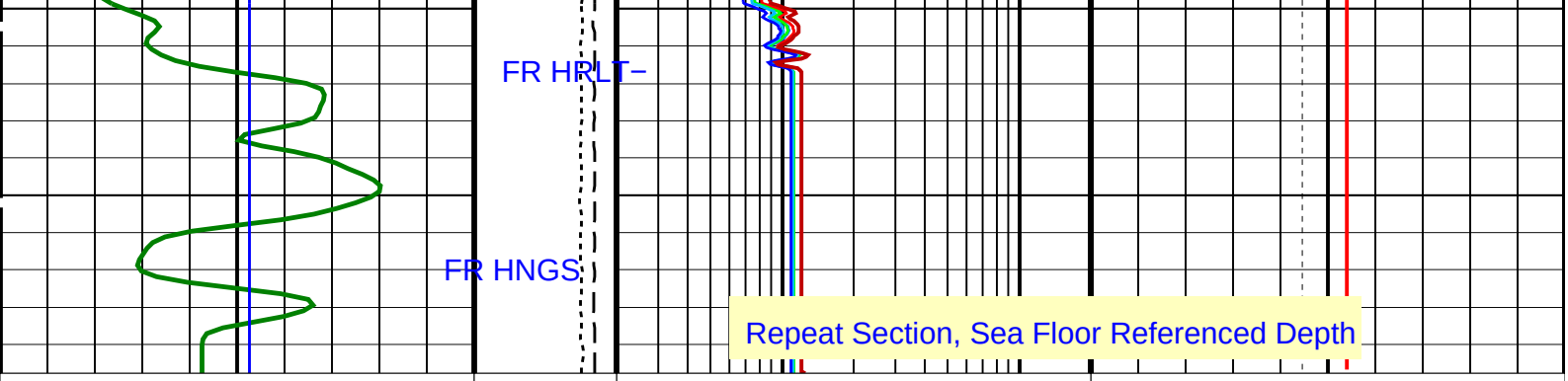
HNGC−B	19C0−187	HNGS−BA	19C0−187
HRLT−B	19C0−187	HLDS	19C0−187
LDSC−B	19C0−187	EDTC−B	19C0−187

PIP SUMMARY

Time Mark Every 60 S




TENS
RT_HRLT
RLA1
RLA2
RLA3
RLA5
RLA4
300
LCAL
HSGR
HBDC
HROM
CDF
325
HLDS First Reading



HLDS Caliper (LCAL) 0 (IN) 20	Tension (TENS) (LBF) 10000 0	HRLT Resistivity 4 (RLA4) 0.2 (OHMM) 20	HLDS HR Bulk Density (HROM) 0 (G/C3) 4
HNGS Spectroscopy Gamma Ray (HSGR) 0 (GAPI) 75	Calibrated Downhole Force (CDF) (LBF) 10000 0	HRLT Resistivity 5 (RLA5) 0.2 (OHMM) 20	HLDS HR Bulk Density Correction (HBDC) −0.25 (G/C3) 0.25
		HRLT Resistivity 3 (RLA3) 0.2 (OHMM) 20	
		HRLT Resistivity 2 (RLA2) 0.2 (OHMM) 20	
		HRLT Resistivity 1 (RLA1) 0.2 (OHMM) 20	
		HRLT True Resistivity (RT_HRLT) 0.2 (OHMM) 20	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HNGS−BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	−0.00268293	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
SHT	Surface Hole Temperature	68	DEGF
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.957535	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.956327	
	HRLT−B: High Resolution Laterolog Array − B		

BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	17.0393	DEGC
FREQ0	HRLT Frequency Index for Mode 0	32	
FREQ1	HRLT Frequency Index for Mode 1	128	
FREQ2	HRLT Frequency Index for Mode 2	104	
FREQ3	HRLT Frequency Index for Mode 3	86	
FREQ4	HRLT Frequency Index for Mode 4	56	
FREQ5	HRLT Frequency Index for Mode 5	44	
FREQ6	HRLT Frequency Index for Mode 6	116	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
KFAC_HRLT	HRLT K Factor Option	SONDE	
LOOPCOEF_S	HRLT Loop Coefficient for Shallow Modes	LOW	
LOOPMOD0	HRLT Mode 0 Loop Mode	OFF	
LOOPMOD1	HRLT Mode 1 Loop Mode	OFF	
LOOPMOD2	HRLT Mode 2 Loop Mode	OFF	
LOOPMOD3	HRLT Mode 3 Loop Mode	OFF	
LOOPMOD4	HRLT Mode 4 Loop Mode	OFF	
LOOPMOD5	HRLT Mode 5 Loop Mode	OFF	
LOOPMOD6	HRLT Mode 6 Loop Mode	OFF	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
PROCINV	Inversion Selection	ON	
PROCMFL	Inversion Micro−Resistivity Selection	NO_EXTERNAL_RXO	
PROCMSO	Mechanical Standoff Fin Size	0	IN
PROCRM	Processing Mud Resistivity Select	HRLT_Compute	
PROCSPO	Sonde Position	Centered	
SHT	Surface Hole Temperature	68	DEGF
HLDS: Hostile Litho−Density Sonde			
CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	OFF	
LLDL	HLDS LS Low Level Discriminator DAC	14000	
LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.71	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
EDTC−B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO	Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
ISSBAR_EDTC	Nuclear Mud Type	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	NO	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	68	DEGF
SOCN	Standoff Distance	0	IN
SOCO	Standoff Correction Option	NO	
TPOS_EDTC	EDTC Tool Centered/Eccentered	Eccentered	
U−ETELM_EDTS	Telemetry Mode for eWAFE	Standard_EDTS	
U−TELM_EDTS	Telemetry Mode for WAFE	Standard_EDTS	
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN

BS	**Bit Size**	**9.875**	**IN**
BSAL	**Borehole Salinity**	**−50000.00**	**PPM**
CSIZ	**Current Casing Size**	**10.750**	**IN**
CWEI	**Casing Weight**	**43.00**	**LB/F**
DFD	**Drilling Fluid Density**	**1.25**	**G/C3**
DO	**Depth Offset for Playback**	**−656.0**	**M**
FLEV	**Fluid Level**	**−50000.00**	**M**
MST	**Mud Sample Temperature**	**−50000.00**	**DEGC**
PBVSADP	**Use alternate depth channel for playback**	**NO**	
PP	**Playback Processing**	**NORMAL**	
RMFS	**Resistivity of Mud Filtrate Sample**	**−50000.0000**	**OHMM**
RW	**Resistivity of Connate Water**	**1.0000**	**OHMM**
TD	**Total Depth**	**3330**	**FT**
TDD	**Total Depth − Driller**	**991.00**	**M**
TDL	**Total Depth − Logger**	**991.00**	**M**
TWS	**Temperature of Connate Water Sample**	**37.78**	**DEGC**

Format: TripleCombo **Vertical Scale: 1:200** **Graphics File Created: 25−Dec−2011 04:16**

OP System Version: 19C0−187

HNGC−B	**19C0−187**	**HNGS−BA**	**19C0−187**
HRLT−B	**19C0−187**	**HLDS**	**19C0−187**
LDSC−B	**19C0−187**	**EDTC−B**	**19C0−187**

Input DLIS Files

DEFAULT	**NGS_HRLA_LDL_012LUP**	**FN:16**	**PRODUCER**	**23−Dec−2011 23:36**	**1005.8 M**	**933.8 M**

Output DLIS Files

DEFAULT	**NGS_HRLA_LDL_034PUP**	**FN:53**	**PRODUCER**	**25−Dec−2011 04:16**

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 1 Check							
Master: 17−Nov−2011 7:57 Before: 26−Nov−2011 0:21							
Na 511 Peak Loc	40.00	39.70	39.69	N/A	N/A	1.000	
Na 511 Peak Res	15.50	15.50	15.07	N/A	N/A	2.000	%
High Voltage	1150	1176	1168	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	142.1	141.8	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	8.309	8.731	N/A	N/A	2.000	%
Temperature	15.50	29.76	21.55	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	20.77	21.01	N/A	N/A	8.000	CPS
Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 2 Check							
Master: 17−Nov−2011 7:57 Before: 26−Nov−2011 0:21							
Na 511 Peak Loc	40.00	39.60	39.49	N/A	N/A	1.000	
Na 511 Peak Res	15.50	16.99	15.91	N/A	N/A	2.000	%
High Voltage	1150	1109	1091	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	142.6	142.3	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	9.914	8.591	N/A	N/A	2.000	%
Temperature	15.50	29.91	21.84	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	21.44	20.97	N/A	N/A	8.000	CPS
Hostile Natural Gamma Ray Sonde Wellsite Calibration − Ratio Of Detector 1 To Detector 2							
Master: 17−Nov−2011 7:57 Before: 26−Nov−2011 0:21							
Coincidence Count Rate Ratio	1.000	0.9705	1.004	N/A	N/A	0.05000	
Hostile Natural Gamma Ray Sonde Master Calibration − Detector 1 Calibration							
Master: 17−Nov−2011 7:52							
Na 511 Peak Set Point	40.00	41.00	−−	−−	−−	−−	
Th Peak Loc	209.6	210.8	−−	−−	−−	−−	
Th Peak Res	7.000	6.865	−−	−−	−−	−−	%
Background Count Rate	142.5	24.91	−−	−−	−−	−−	CPS
Gain Ratio	1.000	1.010	−−	−−	−−	−−	
Hostile Natural Gamma Ray Sonde Master Calibration − Detector 2 Calibration							
Master: 17−Nov−2011 7:52							
Na 511 Peak Set Point	40.00	41.00	−−	−−	−−	−−	
Th Peak Loc	209.6	208.5	−−	−−	−−	−−	
Th Peak Res	7.000	6.879	−−	−−	−−	−−	%

Background Count Rate	142.5	24.15	−−	−−	−−	−−	CPS
Gain Ratio	1.000	1.001	−−	−−	−−	−−	

High Resolution Laterolog Array − B Wellsite Calibration − HRLT M01
Before: 23−Dec−2011 21:55

HRLT M0−M1 Voltage Plus − 0	0	N/A	−319.5	N/A	N/A	9.681	UV
HRLT M0−M1 Voltage Plus − 1	0	N/A	−336.5	N/A	N/A	9.681	UV
HRLT M0−M1 Voltage Plus − 2	0	N/A	−336.3	N/A	N/A	9.681	UV
HRLT M0−M1 Voltage Plus − 3	0	N/A	−339.6	N/A	N/A	9.681	UV
HRLT M0−M1 Voltage Plus − 4	0	N/A	−326.8	N/A	N/A	9.681	UV
HRLT M0−M1 Voltage Plus − 5	0	N/A	−322.7	N/A	N/A	9.681	UV
HRLT M0−M1 Voltage Plus − 6	0	N/A	327.5	N/A	N/A	9.681	UV
HRLT M0−M1 Voltage Plus − 7	0	N/A	−322.7	N/A	N/A	9.681	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT M12
Before: 23−Dec−2011 21:55

HRLT M1−M2 Voltage Plus − 0	0	N/A	1756	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 1	0	N/A	1849	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 2	0	N/A	1843	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 3	0	N/A	1862	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 4	0	N/A	1793	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 5	0	N/A	1772	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 6	0	N/A	−1807	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 7	0	N/A	1781	N/A	N/A	53.42	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT M23
Before: 23−Dec−2011 21:55

HRLT M2−M3 Voltage Plus − 0	0	N/A	1742	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 1	0	N/A	1846	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 2	0	N/A	1841	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 3	0	N/A	1864	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 4	0	N/A	1788	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 5	0	N/A	1768	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 6	0	N/A	−1793	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 7	0	N/A	1781	N/A	N/A	53.42	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT V34
Before: 23−Dec−2011 21:55

HRLT A3−A4 Voltage Plus − 0	0	N/A	68500	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 1	0	N/A	72380	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 2	0	N/A	72490	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 3	0	N/A	73660	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 4	0	N/A	70650	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 5	0	N/A	69860	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 6	0	N/A	−69310	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT V45
Before: 23−Dec−2011 21:55

HRLT A4−A5 Voltage Plus − 0	0	N/A	68780	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 1	0	N/A	72760	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 2	0	N/A	72850	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 3	0	N/A	74000	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 4	0	N/A	70930	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 5	0	N/A	70140	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 6	0	N/A	−69700	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT V56
Before: 23−Dec−2011 21:55

HRLT A5−A6 Voltage Plus − 0	0	N/A	68680	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 1	0	N/A	72490	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 2	0	N/A	72610	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 3	0	N/A	73780	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 4	0	N/A	70800	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 5	0	N/A	70040	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 6	0	N/A	−69400	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT VTP
Before: 23−Dec−2011 21:55

HRLT Torpedo−M0 Voltage − 0	0	N/A	−68360	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 1	0	N/A	−72830	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 2	0	N/A	−72920	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 3	0	N/A	−74090	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 4	0	N/A	−71000	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 5	0	N/A	−70190	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 6	0	N/A	69690	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 7	0	N/A	−70000	N/A	N/A	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT VBD
Before: 23−Dec−2011 21:55

HRLT Bridle#9−M0 Voltage − 0	0	N/A	−68350	N/A	N/A	2100	UV
HRLT Bridle#9−M0 Voltage − 1	0	N/A	−72800	N/A	N/A	2100	UV
HRLT Bridle#9−M0 Voltage − 2	0	N/A	−72890	N/A	N/A	2100	UV
HRLT Bridle#9−M0 Voltage − 3	0	N/A	−74060	N/A	N/A	2100	UV
HRLT Bridle#9−M0 Voltage − 4	0	N/A	−70990	N/A	N/A	2100	UV
HRLT Bridle#9−M0 Voltage − 5	0	N/A	−70180	N/A	N/A	2100	UV
HRLT Bridle#9−M0 Voltage − 6	0	N/A	69660	N/A	N/A	2100	UV
HRLT Bridle#9−M0 Voltage − 7	0	N/A	−70000	N/A	N/A	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT ISO
Before: 23−Dec−2011 21:55

HRLT Source Current Plus − 0	0	N/A	285.0	N/A	N/A	8.520	UA
HRLT Source Current Plus − 1	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus − 2	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus − 3	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus − 4	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus − 5	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus − 6	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus − 7	0	N/A	281.1	N/A	N/A	8.520	UA

High Resolution Laterolog Array − B Wellsite Calibration − HRLT MV
Before: 23−Dec−2011 21:55

HRLT Vertical Voltage Pl − 0	0	N/A	−322.0	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 1	0	N/A	−330.7	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 2	0	N/A	−329.6	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 3	0	N/A	−331.3	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 4	0	N/A	−316.2	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 5	0	N/A	−327.5	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 6	0	N/A	334.8	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 7	0	N/A	−322.7	N/A	N/A	9.681	UV

Hostile Litho−Density Sonde Wellsite Calibration − Background Measurement
Master: 17−Nov−2011 16:03 Before: 17−Nov−2011 15:55

SS Cs Resolution Bkg	9.000	7.741	7.618	N/A	N/A	1.800	%
LS Cs Resolution Bkg	9.000	8.089	8.025	N/A	N/A	1.800	%
LSW1 Background	100.0	87.45	87.45	N/A	N/A	3.000	CPS
LSW2 Background	100.0	80.38	80.38	N/A	N/A	3.000	CPS
LSW3 Background	200.0	180.0	180.0	N/A	N/A	6.000	CPS
LSW4 Background	250.0	224.8	224.8	N/A	N/A	7.500	CPS
LSW5 Background	600.0	526.0	526.0	N/A	N/A	18.00	CPS
SSW1 Background	100.0	85.28	85.28	N/A	N/A	3.000	CPS
SSW2 Background	200.0	147.3	147.3	N/A	N/A	6.000	CPS
SSW3 Background	500.0	409.2	409.2	N/A	N/A	15.00	CPS
SSW4 Background	270.0	221.7	221.7	N/A	N/A	8.100	CPS
SSW5 Background	200.0	158.7	158.7	N/A	N/A	6.000	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Aluminum Measurement
Master: 17−Nov−2011 16:33

LSW1 Aluminum	600.0	560.2	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	815.4	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	984.8	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	493.4	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	450.2	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2639	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	7196	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	10050	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	4135	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	504.7	N/A	N/A	N/A	N/A	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Lithology Measurement
Master: 17−Nov−2011 16:29

LSW1 Iron	400.0	389.4	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	674.0	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	897.0	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	464.0	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	424.7	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1967	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	6145	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	9395	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3871	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	460.2	N/A	N/A	N/A	N/A	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Caliper Calibration
Before: 17−Dec−2011 9:53

HLDS Caliper Small Ring	12.00	N/A	14.33	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	15.19	N/A	18.10	N/A	N/A	N/A	IN

Enhanced DTS Cartridge Wellsite Calibration − EDTC Accelerometer Calibration
Before: 23−Dec−2011 21:51

EDTC Z−Axis Acceleration	9.810	N/A	9.813	N/A	N/A	N/A	M/S2

Enhanced DTS Cartridge Wellsite Calibration − Detector Calibration

Before: Calibration out of date 26−Nov−2011 0:18

Gamma Ray (Jig − Bkg)	163.8	N/A	163.8	N/A	N/A	14.89	GAPI
Gamma Ray (Calibrated)	164.0	N/A	164.0	N/A	N/A	15.00	GAPI

Hostile Natural Gamma Ray Cartridge − B / Equipment Identification

Primary Equipment:		
HNGC Cartridge	HNGC − B	300
Auxiliary Equipment:		
HNGC Housing	HNGH − A	115

Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:		
HNGS Sonde	HNGS − BA	194
Auxiliary Equipment:		
HNGS Sonde Housing	HNSH − BA	205
Gamma Source Radioactive	GSR − U	616008

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 1 Check

Phase	Na 511 Peak Loc	Value
Master		39.70
Before		39.69
	37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)	

Phase	Na 511 Peak Res %	Value
Master		15.50
Before		15.07
	12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)	

Phase	High Voltage V	Value
Master		1176
Before		1168
	900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)	

Phase	Na 1785 Peak Loc	Value
Master		**142.1**
Before		141.8
	135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)	

Phase	Na 1785 Peak Res %	Value
Master		**8.309**
Before		8.731
	7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)	

Phase	Temperature DEGC	Value
Master		**29.76**
Before		21.55
	−28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)	

Phase	Na Count Rate CPS	Value
Master		20.77
Before		21.01
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)	

Master: 17−Nov−2011 7:57 Before: 26−Nov−2011 0:21

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value
Master		39.60
Before		39.49
	37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)	

Phase	Na 511 Peak Res %	Value
Master		16.99
Before		15.91
	12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)	

Phase	High Voltage V	Value
Master		1109
Before		1091
	900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)	

Phase	Na 1785 Peak Loc	Value
Master		142.6
Before		142.3
	135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)	

Phase	Na 1785 Peak Res %	Value
Master		9.914
Before		8.591
	7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)	

Phase	Temperature DEGC	Value
Master		29.91
Before		21.84
	−28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)	

Phase	Na Count Rate CPS	Value
Master		21.44
Before		20.97
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)	

Master: 17−Nov−2011 7:57 Before: 26−Nov−2011 0:21

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Ratio Of Detector 1 To Detector 2

Phase	Coincidence Count Rate Ratio	Value
Master		0.9705
Before		1.004

0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)

Master: 17−Nov−2011 7:57

Before: 26−Nov−2011 0:21

Hostile Natural Gamma Ray Sonde Master Calibration

Detector 1 Calibration

Phase	Na 511 Peak Set Point	Value	Phase	Th Peak Loc	Value	Phase	Th Peak Res %	Value
Master		41.00	Master		210.8	Master		6.865
	38.00 (Minimum) 40.00 (Nominal) 43.00 (Maximum)			201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum)			5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum)	

Phase	Background Count Rate CPS	Value	Phase	Gain Ratio	Value
Master		24.91	Master		1.010
	10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)			0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)	

Master: 17−Nov−2011 7:52

Hostile Natural Gamma Ray Sonde Master Calibration

Detector 2 Calibration

Phase	Na 511 Peak Set Point	Value	Phase	Th Peak Loc	Value	Phase	Th Peak Res %	Value
Master		41.00	Master		208.5	Master		6.879
	38.00 (Minimum) 40.00 (Nominal) 43.00 (Maximum)			201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum)			5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum)	

Phase	Background Count Rate CPS	Value	Phase	Gain Ratio	Value
Master		24.15	Master		1.001
	10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)			0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)	

Master: 17−Nov−2011 7:52

High Resolution Laterolog Array − B / Equipment Identification

Primary Equipment:		
HRLT Sonde	HRLS − B	969
Auxiliary Equipment:		
HRLT lower Housing	HRLH − B	759
HRLT Lower Cartridge	HRLC − B	759
HRLT upper Housing	HRUH − B	769
HRLT Upper Cartridge	HRUC − B	769

High Resolution Laterolog Array − B Wellsite Calibration

HRLT M01

Idx	Phase	HRLT M0−M1 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−319.5	−322.7	−280.7	−379.7
1	Before		−336.5	−322.7	−280.7	−379.7
2	Before		−336.3	−322.7	−280.7	−379.7
3	Before		−339.6	−322.7	−280.7	−379.7
4	Before		−326.8	−322.7	−280.7	−379.7
5	Before		−322.7	−322.7	−280.7	−379.7
6	Before		327.5	322.7	379.7	280.7
7	Before		−322.7	−322.7	−280.7	−379.7
		(Minimum) (Nominal) (Maximum)				

Before: 23−Dec−2011 21:55

High Resolution Laterolog Array − B Wellsite Calibration

HRLT M12

Idx	Phase	HRLT M1−M2 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1756	1781	2095	1549
1	Before		1849	1781	2095	1549
2	Before		1843	1781	2095	1549
3	Before		1862	1781	2095	1549
4	Before		1793	1781	2095	1549
5	Before		1772	1781	2095	1549
6	Before		−1807	−1781	−1549	−2095
7	Before		1781	1781	2095	1549
		(Minimum) (Nominal) (Maximum)				

Before: 23−Dec−2011 21:55

High Resolution Laterolog Array − B Wellsite Calibration

HRLT M23

Idx	Phase	HRLT M2−M3 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1742	1781	2095	1549
1	Before		1846	1781	2095	1549
2	Before		1841	1781	2095	1549
3	Before		1864	1781	2095	1549
4	Before		1788	1781	2095	1549
5	Before		1768	1781	2095	1549
6	Before		−1793	−1781	−1549	−2095
7	Before		1781	1781	2095	1549
		(Minimum) (Nominal) (Maximum)				

Before: 23−Dec−2011 21:55

High Resolution Laterolog Array − B Wellsite Calibration

HRLT V34

Idx	Phase	HRLT A3−A4 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68500	70000	82360	60900
1	Before		72380	70000	82360	60900
2	Before		72490	70000	82360	60900
3	Before		73660	70000	82360	60900
4	Before		70650	70000	82360	60900
5	Before		69860	70000	82360	60900
6	Before		−69310	−70000	−60900	−82360
7	Before		70000	70000	82360	60900
		(Minimum) (Nominal) (Maximum)				

Before: 23−Dec−2011 21:55

High Resolution Laterolog Array − B Wellsite Calibration

HRLT V45

Idx	Phase	HRLT A4−A5 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68780	70000	82360	60900
1	Before		72760	70000	82360	60900
2	Before		72850	70000	82360	60900
3	Before		74000	70000	82360	60900
4	Before		70930	70000	82360	60900
5	Before		70140	70000	82360	60900

Idx	Phase		Value	Nominal	Maximum	Minimum
6	Before		−69700	−70000	−60900	−82360
7	Before		70000	70000	82360	60900
		(Minimum) (Nominal) (Maximum)				

Before: 23−Dec−2011 21:55

High Resolution Laterolog Array − B Wellsite Calibration

HRLT V56

Idx	Phase	HRLT A5−A6 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68680	70000	82360	60900
1	Before		72490	70000	82360	60900
2	Before		72610	70000	82360	60900
3	Before		73780	70000	82360	60900
4	Before		70800	70000	82360	60900
5	Before		70040	70000	82360	60900
6	Before		−69400	−70000	−60900	−82360
7	Before		70000	70000	82360	60900
		(Minimum) (Nominal) (Maximum)				

Before: 23−Dec−2011 21:55

High Resolution Laterolog Array − B Wellsite Calibration

HRLT VTP

Idx	Phase	HRLT Torpedo−M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−68360	−70000	−60900	−82360
1	Before		−72830	−70000	−60900	−82360
2	Before		−72920	−70000	−60900	−82360
3	Before		−74090	−70000	−60900	−82360
4	Before		−71000	−70000	−60900	−82360
5	Before		−70190	−70000	−60900	−82360
6	Before		69690	70000	82360	60900
7	Before		−70000	−70000	−60900	−82360
		(Minimum) (Nominal) (Maximum)				

Before: 23−Dec−2011 21:55

High Resolution Laterolog Array − B Wellsite Calibration

HRLT VBD

Idx	Phase	HRLT Bridle#9−M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−68350	−70000	−60900	−82360
1	Before		−72800	−70000	−60900	−82360
2	Before		−72890	−70000	−60900	−82360
3	Before		−74060	−70000	−60900	−82360
4	Before		−70990	−70000	−60900	−82360
5	Before		−70180	−70000	−60900	−82360
6	Before		69660	70000	82360	60900
7	Before		−70000	−70000	−60900	−82360
		(Minimum) (Nominal) (Maximum)				

Before: 23−Dec−2011 21:55

High Resolution Laterolog Array − B Wellsite Calibration

HRLT ISO

Idx	Phase	HRLT Source Current Plus UA	Value	Nominal	Maximum	Minimum

0	Before		285.0	284.0	334.1	247.0
1	Before		281.1	281.1	330.7	244.4
2	Before		281.1	281.1	330.7	244.4
3	Before		281.1	281.1	330.7	244.4
4	Before		281.1	281.1	330.7	244.4
5	Before		281.1	281.1	330.7	244.4
6	Before		281.1	281.1	330.7	244.4
7	Before		281.1	281.1	330.7	244.4
		(Minimum) (Nominal) (Maximum)				

Before: 23−Dec−2011 21:55

High Resolution Laterolog Array − B Wellsite Calibration

HRLT MV

Idx	Phase	HRLT Vertical Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−322.0	−322.7	−280.7	−379.7
1	Before		−330.7	−322.7	−280.7	−379.7
2	Before		−329.6	−322.7	−280.7	−379.7
3	Before		−331.3	−322.7	−280.7	−379.7
4	Before		−316.2	−322.7	−280.7	−379.7
5	Before		−327.5	−322.7	−280.7	−379.7
6	Before		334.8	322.7	379.7	280.7
7	Before		−322.7	−322.7	−280.7	−379.7
		(Minimum) (Nominal) (Maximum)				

Before: 23−Dec−2011 21:55

Hostile Litho−Density Sonde / Equipment Identification

Primary Equipment:

Hostile Litho Density Sonde	HLDS − D	45
Hostile Litho Density High Voltage	HLDV − D	45
Gamma Source Radioactive	GSR − Z	2397

Auxiliary Equipment:

Hostile Litho Density Pad	HLDP − C	45
Hostile Litho Density High Voltage Housi	HEH − H	47

Hostile Litho−Density Sonde Wellsite Calibration

Background Measurement

Phase	SS Cs Resolution Bkg %	Value
Master		7.741
Before		7.618
	7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)	

Phase	LS Cs Resolution Bkg %	Value
Master		8.089
Before		8.025
	7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)	

Phase	LSW1 Background CPS	Value
Master		87.45
Before		87.45
	55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)	

Phase	LSW2 Background CPS	Value
Master		80.38
Before		80.38
	50.00 (Minimum) 100.0 (Nominal) 140.0 (Maximum)	

Phase	LSW3 Background CPS	Value
Master		180.0
Before		180.0
	110.0 (Minimum) 200.0 (Nominal) 290.0 (Maximum)	

Phase	LSW4 Background CPS	Value
Master		224.8
Before		224.8
	140.0 (Minimum) 250.0 (Nominal) 360.0 (Maximum)	

Phase	LSW5 Background CPS	Value
Master		526.0
Before		526.0
	330.0 (Minimum) 600.0 (Nominal) 830.0 (Maximum)	

Phase	SSW1 Background CPS	Value
Master		85.28
Before		85.28
	55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)	

Phase	SSW2 Background CPS	Value
Master		147.3
Before		147.3
	100.0 (Minimum) 200.0 (Nominal) 260.0 (Maximum)	

Phase	SSW3 Background CPS	Value
Master		409.2

Phase	SSW4 Background CPS	Value
Master		231.7

Phase	SSW5 Background CPS	Value
Master		158.7

Phase		Value
Master		409.2
Before		409.2
	280.0 (Minimum) 500.0 (Nominal) 700.0 (Maximum)	

Phase		Value
Master		221.7
Before		221.7
	150.0 (Minimum) 270.0 (Nominal) 380.0 (Maximum)	

Phase		Value
Master		158.7
Before		158.7
	110.0 (Minimum) 200.0 (Nominal) 270.0 (Maximum)	

Master: 17−Nov−2011 16:03 Before: 17−Nov−2011 15:55

Hostile Litho−Density Sonde Master Calibration

Detector Background Measurement

Phase	LSW1 Background CPS	Value
Master		87.45
	55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)	

Phase	LSW2 Background CPS	Value
Master		80.38
	50.00 (Minimum) 100.0 (Nominal) 140.0 (Maximum)	

Phase	LSW3 Background CPS	Value
Master		180.0
	110.0 (Minimum) 200.0 (Nominal) 290.0 (Maximum)	

Phase	LSW4 Background CPS	Value
Master		224.8
	140.0 (Minimum) 250.0 (Nominal) 360.0 (Maximum)	

Phase	LSW5 Background CPS	Value
Master		526.0
	330.0 (Minimum) 600.0 (Nominal) 830.0 (Maximum)	

Phase	LS Cs Resolution Bkg %	Value
Master		8.089
	7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)	

Phase	SSW1 Background CPS	Value
Master		85.28
	55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)	

Phase	SSW2 Background CPS	Value
Master		147.3
	100.0 (Minimum) 200.0 (Nominal) 260.0 (Maximum)	

Phase	SSW3 Background CPS	Value
Master		409.2
	280.0 (Minimum) 500.0 (Nominal) 700.0 (Maximum)	

Phase	SSW4 Background CPS	Value
Master		221.7
	150.0 (Minimum) 270.0 (Nominal) 380.0 (Maximum)	

Phase	SSW5 Background CPS	Value
Master		158.7
	110.0 (Minimum) 200.0 (Nominal) 270.0 (Maximum)	

Phase	SS Cs Resolution Bkg %	Value
Master		7.741
	7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)	

Master: 17−Nov−2011 16:03

Hostile Litho−Density Sonde Master Calibration

Detector Aluminum Measurement (bkgd−subtracted)

Phase	LSW1 Aluminum CPS	Value
Master		560.2
	420.0 (Minimum) 600.0 (Nominal) 770.0 (Maximum)	

Phase	LSW2 Aluminum CPS	Value
Master		815.4
	650.0 (Minimum) 900.0 (Nominal) 1150 (Maximum)	

Phase	LSW3 Aluminum CPS	Value
Master		984.8
	800.0 (Minimum) 1100 (Nominal) 1450 (Maximum)	

Phase	LSW4 Aluminum CPS	Value
Master		493.4
	410.0 (Minimum) 580.0 (Nominal) 740.0 (Maximum)	

Phase	LSW5 Aluminum CPS	Value
Master		450.2
	410.0 (Minimum) 570.0 (Nominal) 740.0 (Maximum)	

Phase	SSW1 Aluminum CPS	Value
Master		2639
	2000 (Minimum) 2800 (Nominal) 3200 (Maximum)	

Phase	SSW2 Aluminum CPS	Value
Master		7196
	5800 (Minimum) 8000 (Nominal) 9300 (Maximum)	

Phase	SSW3 Aluminum CPS	Value
Master		10050
	8300 (Minimum) 11600 (Nominal) 13500 (Maximum)	

Phase	SSW4 Aluminum CPS	Value
Master		4135
	3500 (Minimum) 5000 (Nominal) 5800 (Maximum)	

Phase	SSW5 Aluminum CPS	Value
Master		504.7
	430.0 (Minimum) 660.0 (Nominal) 770.0 (Maximum)	

Master: 17−Nov−2011 16:33

Hostile Litho−Density Sonde Master Calibration

Detector Litholog Measurement (bkgd−subtracted)

Phase	LSW1 Iron CPS	Value
Master		389.4
	290.0 (Minimum) 400.0 (Nominal) 560.0 (Maximum)	

Phase	LSW2 Iron CPS	Value
Master		674.0
	520.0 (Minimum) 730.0 (Nominal) 950.0 (Maximum)	

Phase	LSW3 Iron CPS	Value
Master		897.0
	720.0 (Minimum) 1000 (Nominal) 1350 (Maximum)	

Phase	LSW4 Iron CPS	Value
Master		464.0
	370.0 (Minimum) 520.0 (Nominal) 700.0 (Maximum)	

Phase	LSW5 Iron CPS	Value
Master		424.7
	340.0 (Minimum) 470.0 (Nominal) 750.0 (Maximum)	

Phase	SSW1 Iron CPS	Value
Master		1967
	1500 (Minimum) 2100 (Nominal) 2400 (Maximum)	

Phase	SSW2 Iron CPS	Value
Master		6145
	4900 (Minimum) 6800 (Nominal) 7900 (Maximum)	

Phase	SSW3 Iron CPS	Value
Master		9395
	7800 (Minimum) 10800 (Nominal) 12600 (Maximum)	

Phase	SSW4 Iron CPS	Value
Master		3871
	3300 (Minimum) 4600 (Nominal) 5400 (Maximum)	

Phase	SSW5 Iron CPS	Value
Master		460.2
	420.0 (Minimum) 580.0 (Nominal) 680.0 (Maximum)	

Master: 17−Nov−2011 16:29

Hostile Litho−Density Sonde Master Calibration

Quality Ratios

Phase	AL CALIBRATION RATIO 1	Value
Master		1.044
	0.9000 (Minimum) 1.000 (Nominal) 1.100 (Maximum)	

Phase	AL CALIBRATION RATIO 2	Value
Master		2.167
	1.900 (Minimum) 2.100 (Nominal) 2.300 (Maximum)	

Phase	AL CALIBRATION RATIO 3	Value
Master		0.5937
	0.4500 (Minimum) 0.5500 (Nominal) 0.6500 (Maximum)	

Phase	AL CALIBRATION RATIO 4	Value
Master		0.5690
	0.4000 (Minimum) 0.5500 (Nominal) 0.6500 (Maximum)	

Phase	Pad−Wear SS Ratio	Value
Master		0.9915
	0.9800 (Minimum) 0.9880 (Nominal) 0.9960 (Maximum)	

Phase	Pad−Wear LS Ratio	Value
Master		0.9856
	0.9800 (Minimum) 0.9880 (Nominal) 0.9960 (Maximum)	

Phase	Pad−Position SS Ratio	Value
Master		1.003
	0.9900 (Minimum) 0.9940 (Nominal) 1.015 (Maximum)	

Phase	Pad−Position LS Ratio	Value
Master		0.9882
	0.9850 (Minimum) 0.9940 (Nominal) 1.010 (Maximum)	

Master: 17−Nov−2011 16:35

Litho−Density Spectroscopy Cartridge − B / Equipment Identification

Primary Equipment:		
LDSC Cartridge	LDSC − B	521
Auxiliary Equipment:		
LDSC Housing	LDSH − A	319

Enhanced DTS Cartridge / Equipment Identification

Primary Equipment:		
EDTC Gamma Ray Detector	EDTG − A/B	77693
Enhanced DTS Cartridge	EDTC − B	8529
Auxiliary Equipment:		
EDTC Housing	EDTH − B	8528

Enhanced DTS Cartridge Wellsite Calibration

EDTC Accelerometer Calibration

Phase	EDTC Z−Axis Acceleration M/S2	Value
Before		9.813
	9.610 (Minimum) 9.810 (Nominal) 10.01 (Maximum)	

Before: 23−Dec−2011 21:51

Enhanced DTS Cartridge Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value
Before		9.201
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)	

Phase	Gamma Ray (Jig − Bkg) GAPI	Value
Before		163.8
	148.9 (Minimum) 163.8 (Nominal) 178.7 (Maximum)	

Phase	Gamma Ray (Calibrated) GAPI	Value
Before		164.0
	149.0 (Minimum) 164.0 (Nominal) 179.0 (Maximum)	

Before: Calibration out of date 26−Nov−2011 0:18

Company: **Lamont Doherty**

Schlumberger

Well: **Expedition 339, Site U1389 GC−11A Hole A**

Field: **Mediterranean Outflow (Portugal)**

Rig:	**JOIDES Resolution**
Ocean:	**Atlantic**
	High Resolution Laterolog Array
	Hostile Litho Density Sonde
	Hostile Natural Gamma Sonde