



Company: **Lamont Doherty Earth Observatory**

Well: **Expedition 341, Site U1418F**

Field: **Southern Alaska Margin Tectonics**Rig: **JOIDES Resolution** Ocean: **Pacific**

Rig: JOIDES Resolution Field: Southern Alaska Margin Tectonics Location: Latitude: N 58° 46.5883' Well: Expedition 341, Site U1418F Company: Lamont Doherty Earth Observatory	High Resolution Laterolog Array (HRLA) Hostile Litho Density Sonde (HLDS) Natural Gamma Ray / MSS				
	LOCATION	Latitude: N 58° 46.5883' Longitude: W 144° 29.5986'		Elev.: K.B. -3678.00 m G.L. 0.00 m D.F. -3678.00 m	
		Permanent Datum: Sea Floor		Elev.: 0.00 m	
		Log Measured From: Sea Floor		-3678.00 m above Perm. Datum	
		Drilling Measured From: Drill Floor			
API Serial No.		Max. Hole Devi. 0 deg	Longitude W 144.4933	Latitude N 58.7765	

Logging Date			8-Jul-2013					
Run Number			1					
Depth Driller			948.7 m					
Schlumberger Depth			571 m					
Bottom Log Interval			571 m					
Top Log Interval			0 m					
Casing Driller Size @ Depth			5.500 in @ 98.6 m			@		
Casing Schlumberger			99 m					
Bit Size			9.875 in					
Type Fluid In Hole			Seawater					
MUD	Density	Viscosity	1.03 g/cm3					
	Fluid Loss	PH						
	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		@ 18		@ 18		@	@
Maximum Recorded Temperatures			18 degC					
Circulation Stopped		Time	7-Jul-2013		18:00			
Logger On Bottom		Time	8-Jul-2013		2:00			
Unit Number		Location	625003		Houston			
Recorded By			K. Swain					
Witnessed By			A. Slagle, L. Drab					

[illegible]




	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			
	Fluid Loss	PH			
	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				

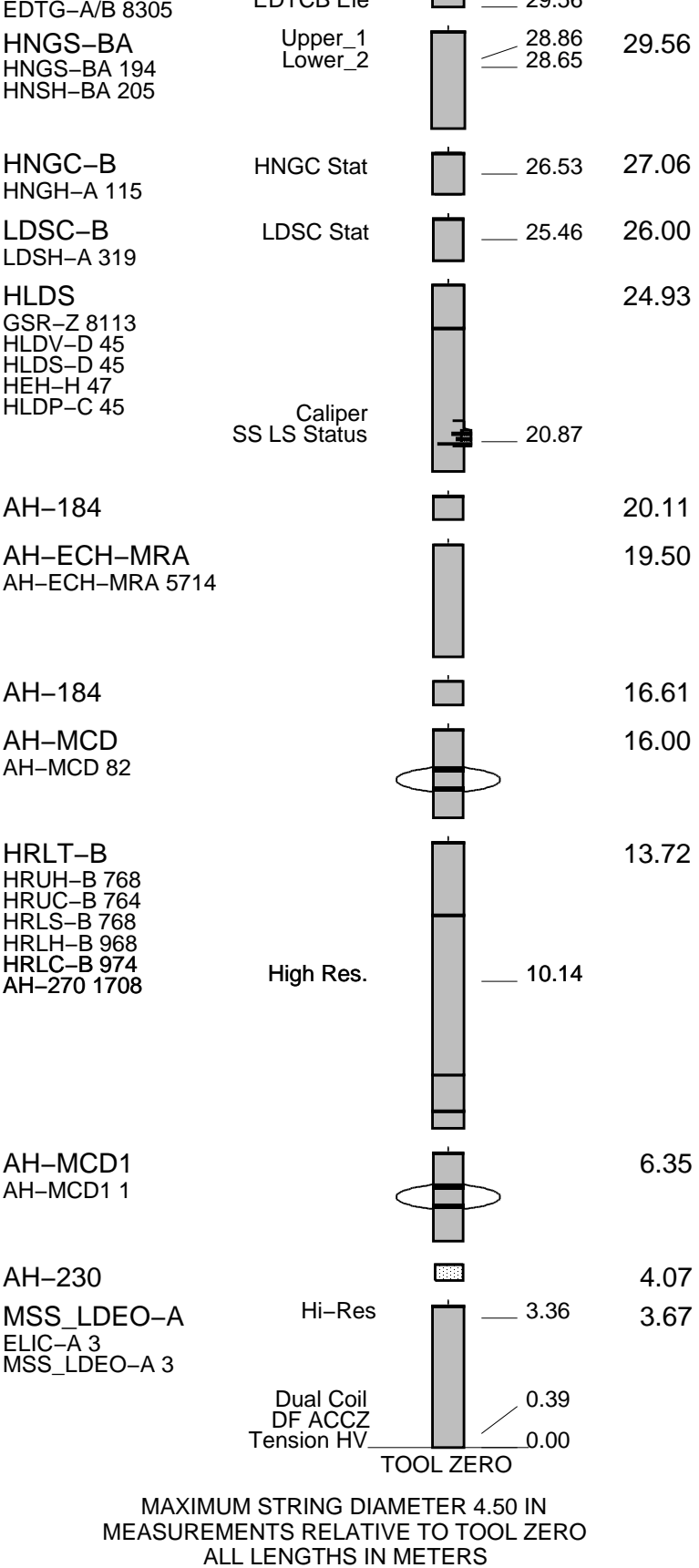
Run 4

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			OS1:		
OS2: DSI			OS2:		
OS3:			OS3:		
OS4: VSI			OS4:		
OS5:			OS5:		
REMARKS: RUN NUMBER 1			REMARKS: RUN NUMBER 2		
Hole drilled with RCB coring bit and bottom hole assembly (BHA). 9 7/8" BS					
Lamont Magnetic Susceptibility (MSS) tool run in combination with HRLA/HLDS/HNGS					
2 knuckle joints decouple the eccentered HLDS and HNGS from the centered HRLA					
and MSS. A thru wired ECH-MRA separates the 2 knuckles for added capability.					
HLDS SSW5 calibration values low due to weak source which does not affect					
density measurement. Pad position wear ratio also does not affect density.					
2 MCD (mechanical Caliper Device) centralizers run with HRLA.					
LDEO-MSS tool run below HRLA consisting of a deep reading sensor only with the					
electronics cartridge and ELIC.					
RCB coring bit released on bottom of hole prior to logging to allow					
wireline tools to pass out of drill collars/pipe into open hole.					
Downlog used for repeat section.					
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

RUN 1

SURFACE EQUIPMENT			
GSR-U 616008			
WITM (EDTS)-A			
DOWNHOLE EQUIPMENT			
LEH-MT 101			32.94
LEH-MT 101 101	MDSB EDTC		
AH-369	Mud Tempe		31.54
	CTEM		30.48
EDTC-B	Gamma Ray		29.91
EDTH-B 8303	EFTB DIAG		31.54
EDTC-B 8317	TelStatus		
	EDTCB Flo		29.56



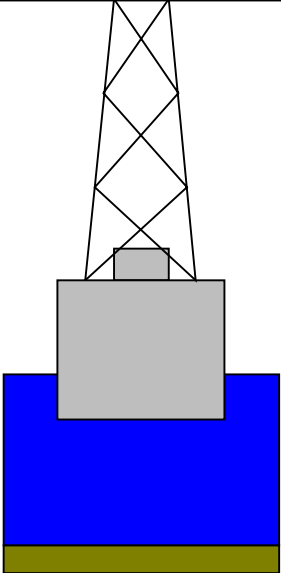
Production String	(in)	(M)	Well Schematic	(M)	(in)	Casing String
	OD	ID		MD	OD	

Kelly Bushing Elevation
Derrick Floor Elevation

Mean Sea Level

-3678
-3678

-3667



4.1

0
99

948.7

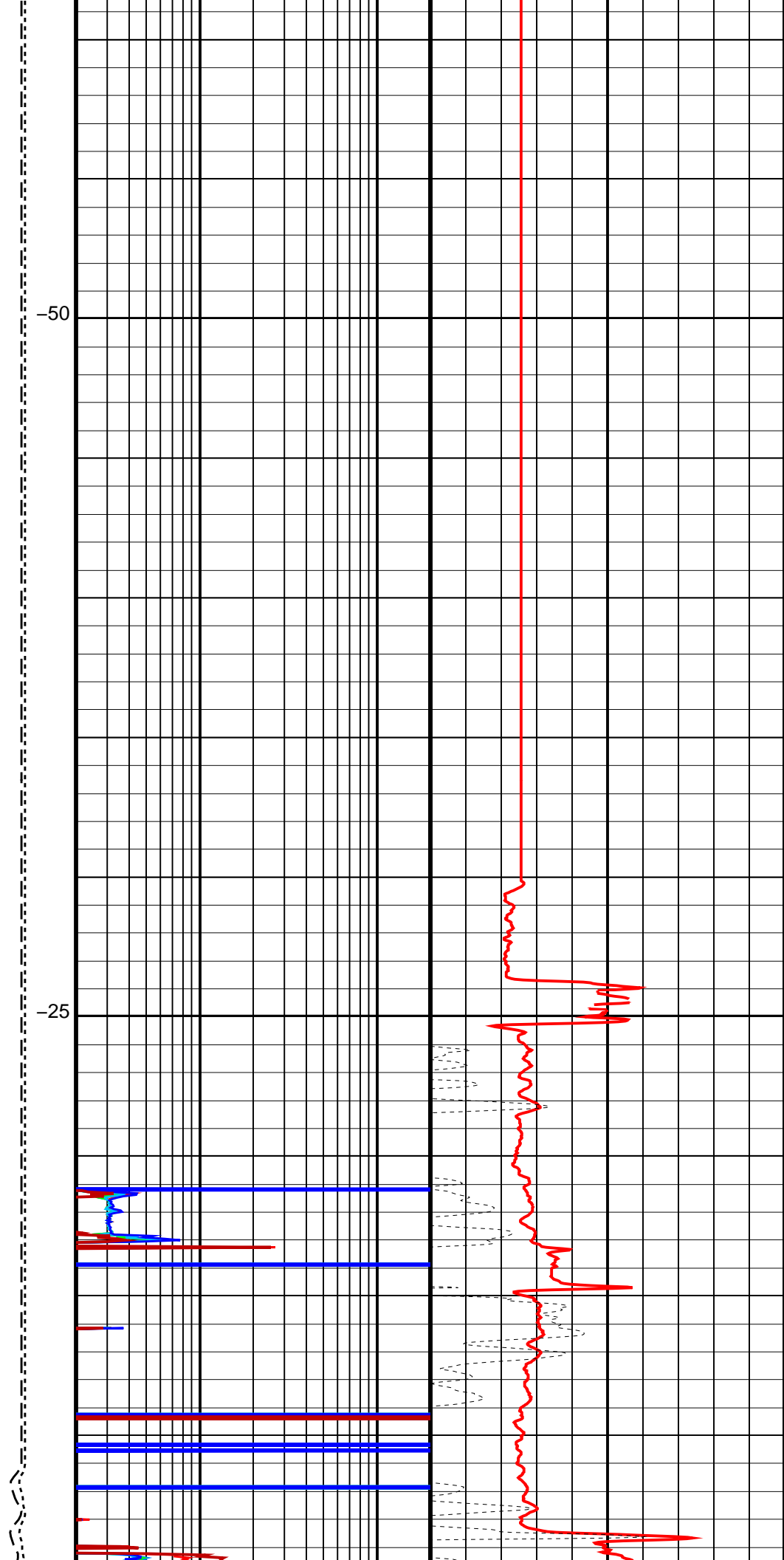
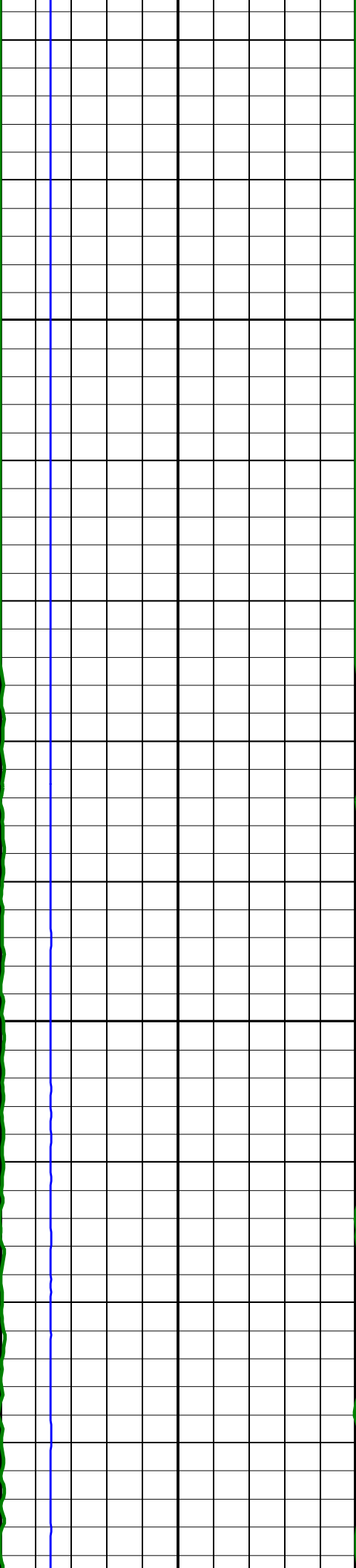
4.1
9.875

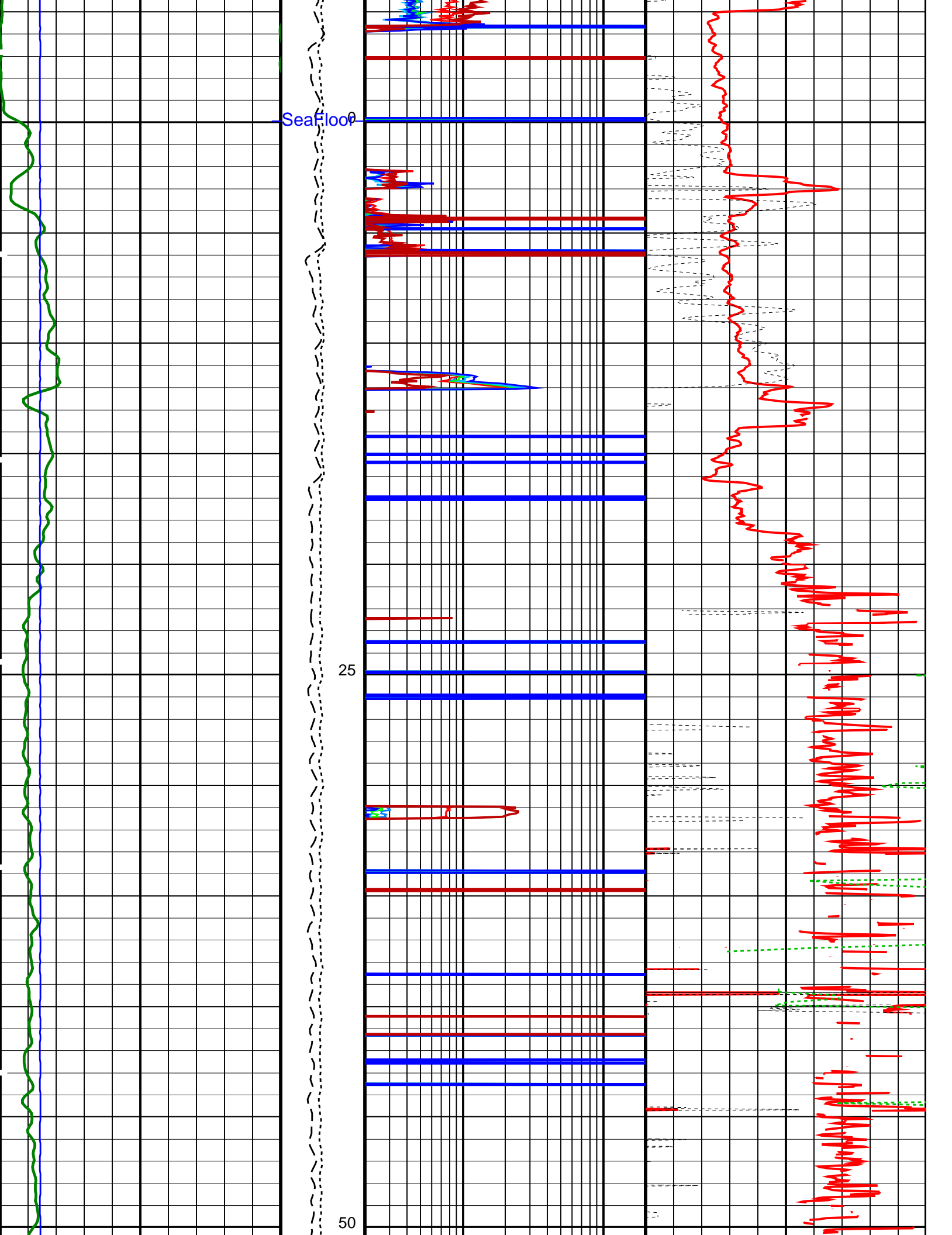
Sea Floor
Open Hole

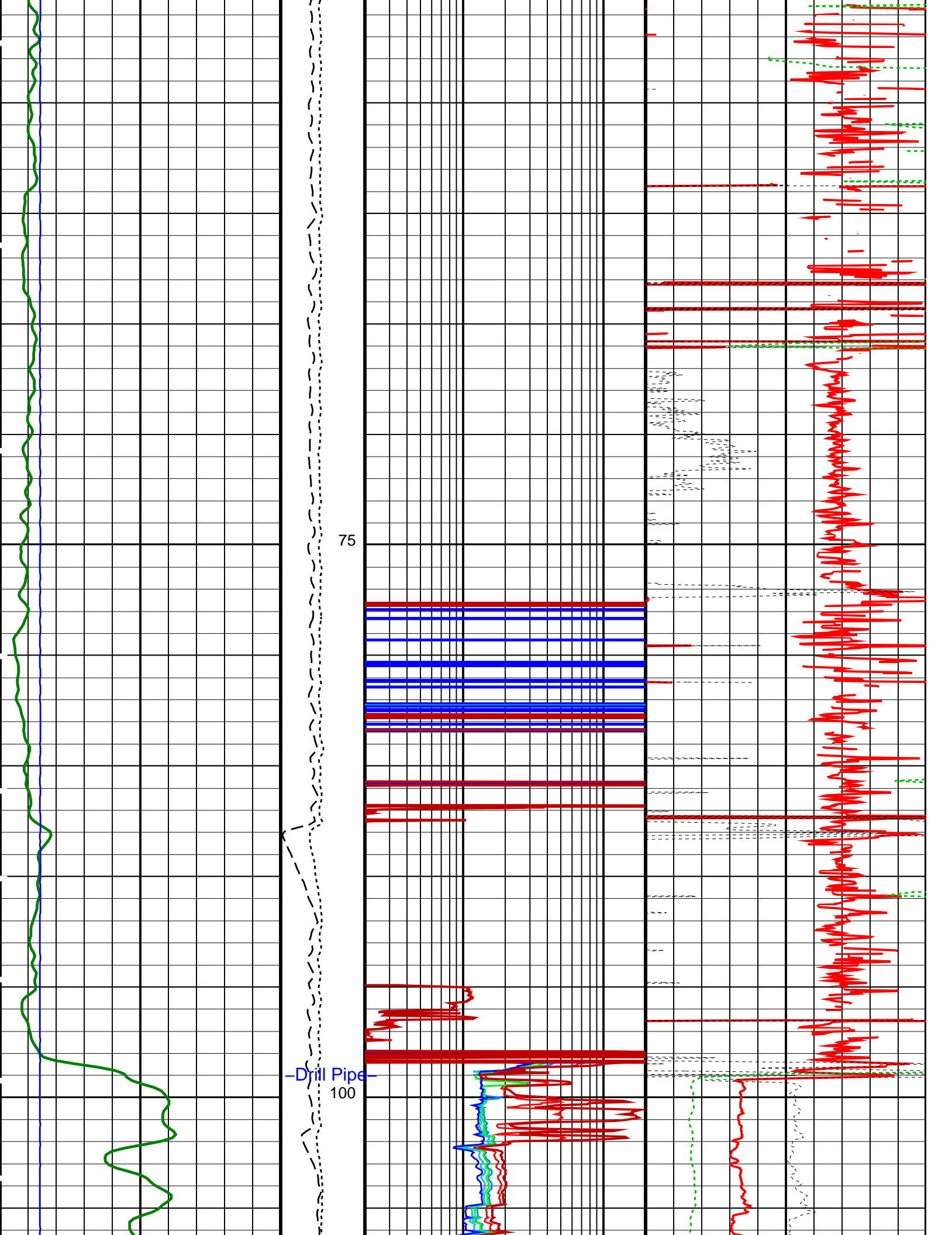
Total Depth

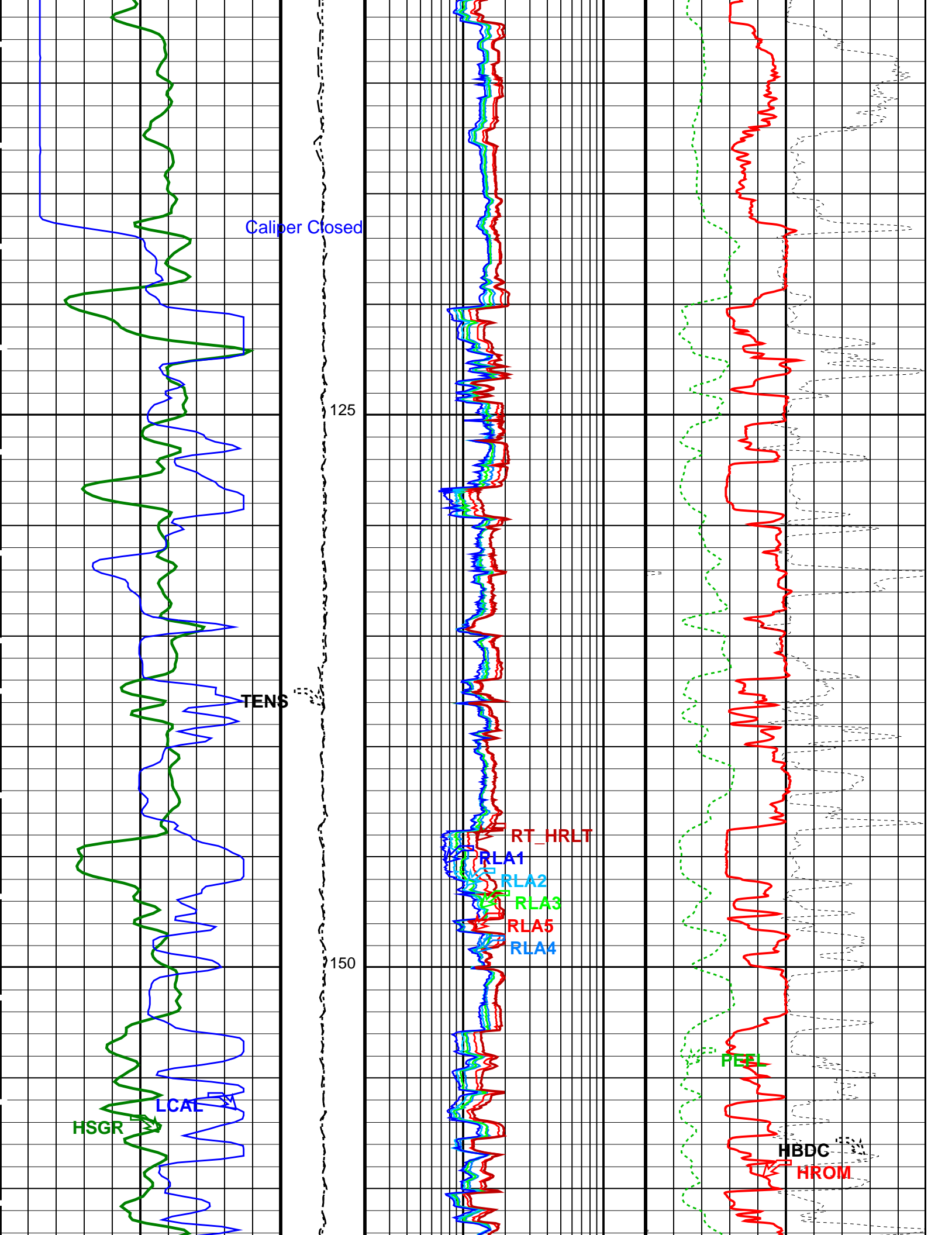
Input DLIS Files						
DEFAULT	MSS_LDEO_HRLA_LDL_013PUP	FN:17	PRODUCER	08-Jul-2013 13:43	4248.9 M	3606.7 M
Output DLIS Files						
DEFAULT	MSS_LDEO_HRLA_LDL_014PUP	FN:19	PRODUCER	08-Jul-2013 14:11	571.5 M	-102.6 M
DLISBACKUP	MSS_LDEO_HRLA_LDL_014PUP	FN:20	PRODUCER	08-Jul-2013 14:11	571.5 M	-102.6 M
OP System Version: 19C0-187						
MSS_LDEO-A	19C0-187		HRLT-B	19C0-187		
HLDS	19C0-187		LDSC-B	19C0-187		
HNGC-B	19C0-187		HNGS-BA	19C0-187		
EDTC-B	SKK-5169-EDTCB					
Changed Parameter Summary						
DLIS Name	New Value		Previous Value		Depth & Time	
GCSE	BS		BS		571.5 14:11:56	
PIP SUMMARY						
Time Mark Every 60 S						

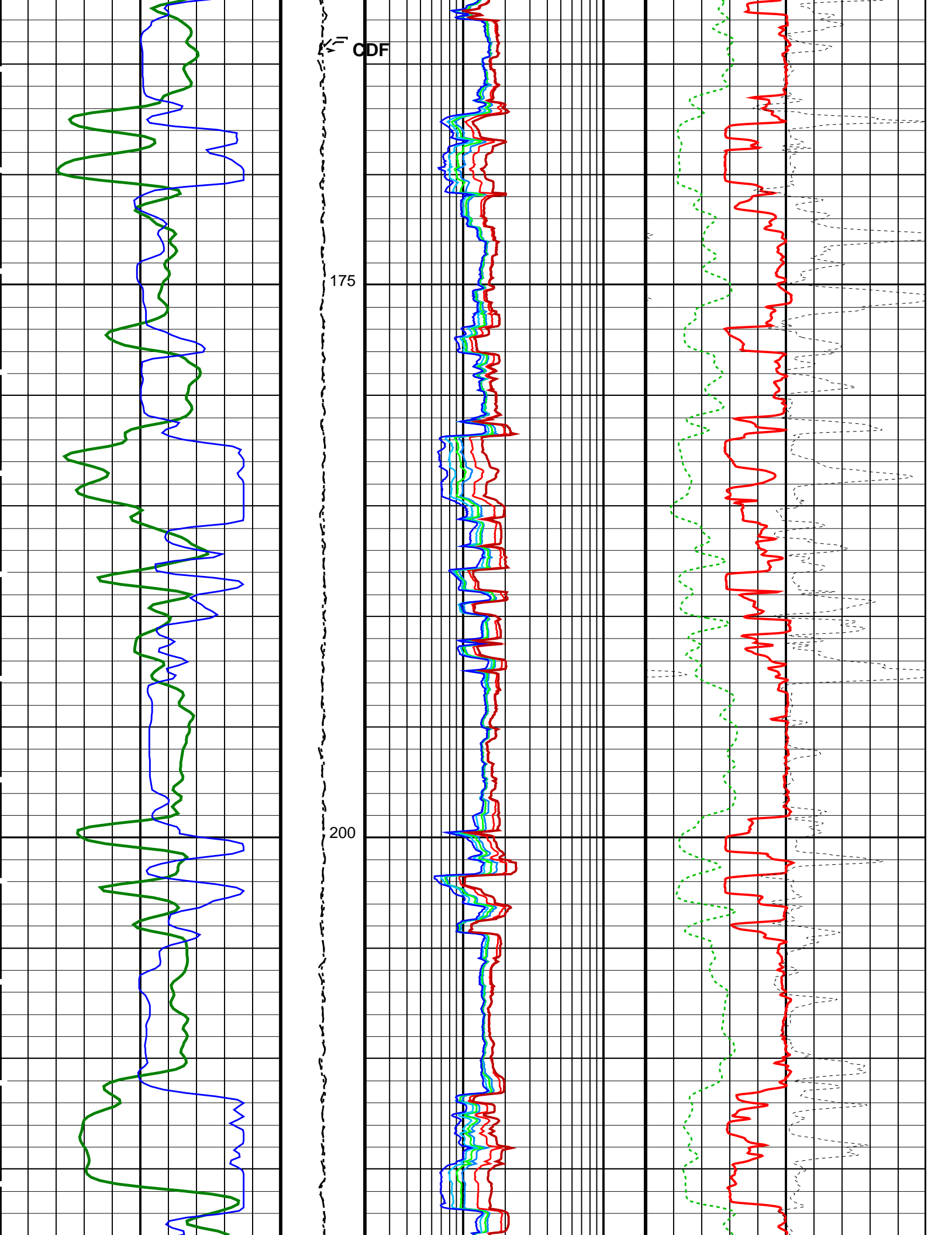
HRLT True Resistivity (RT_HRLT)		
0.2	(OHMM)	20
HRLT Resistivity 1 (RLA1)		
0.2	(OHMM)	20

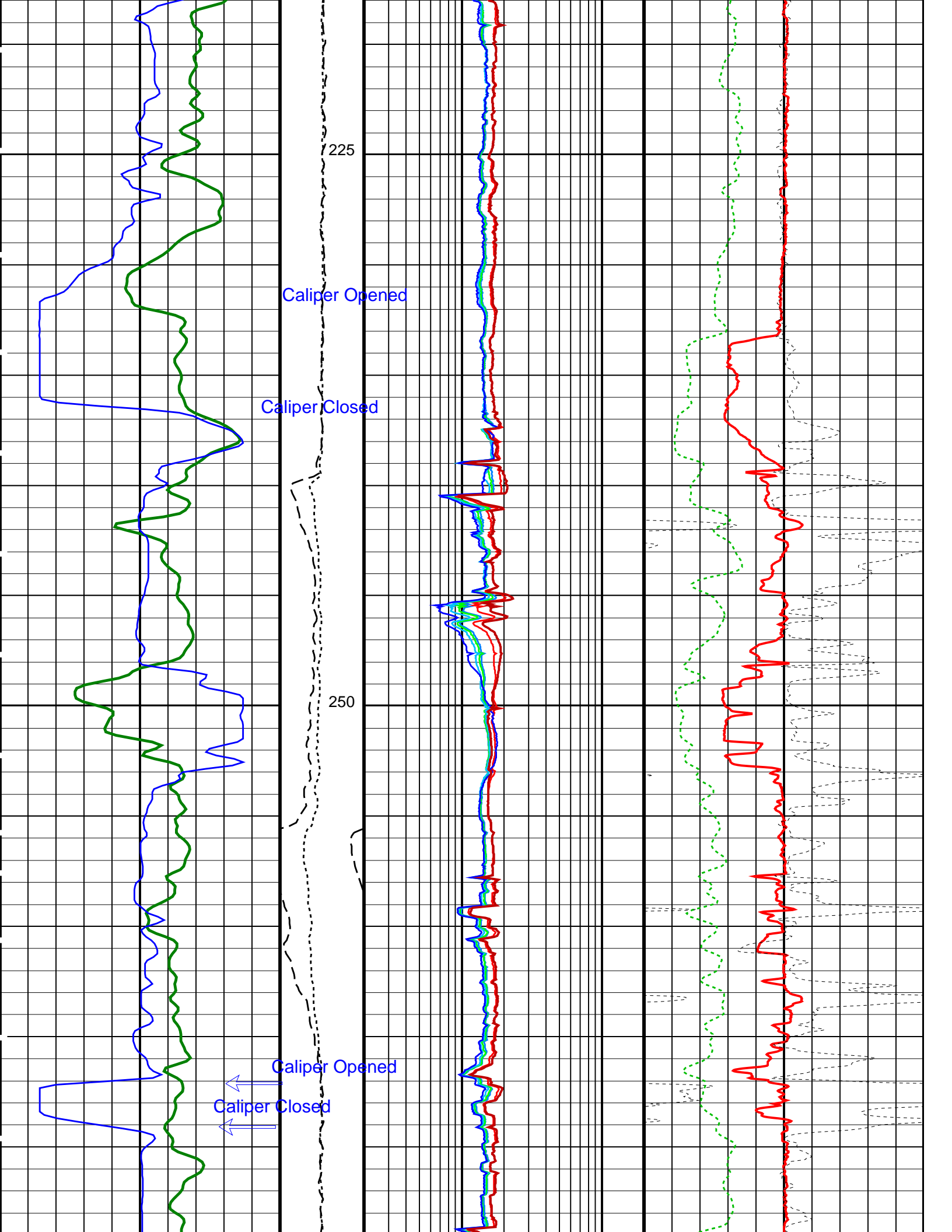


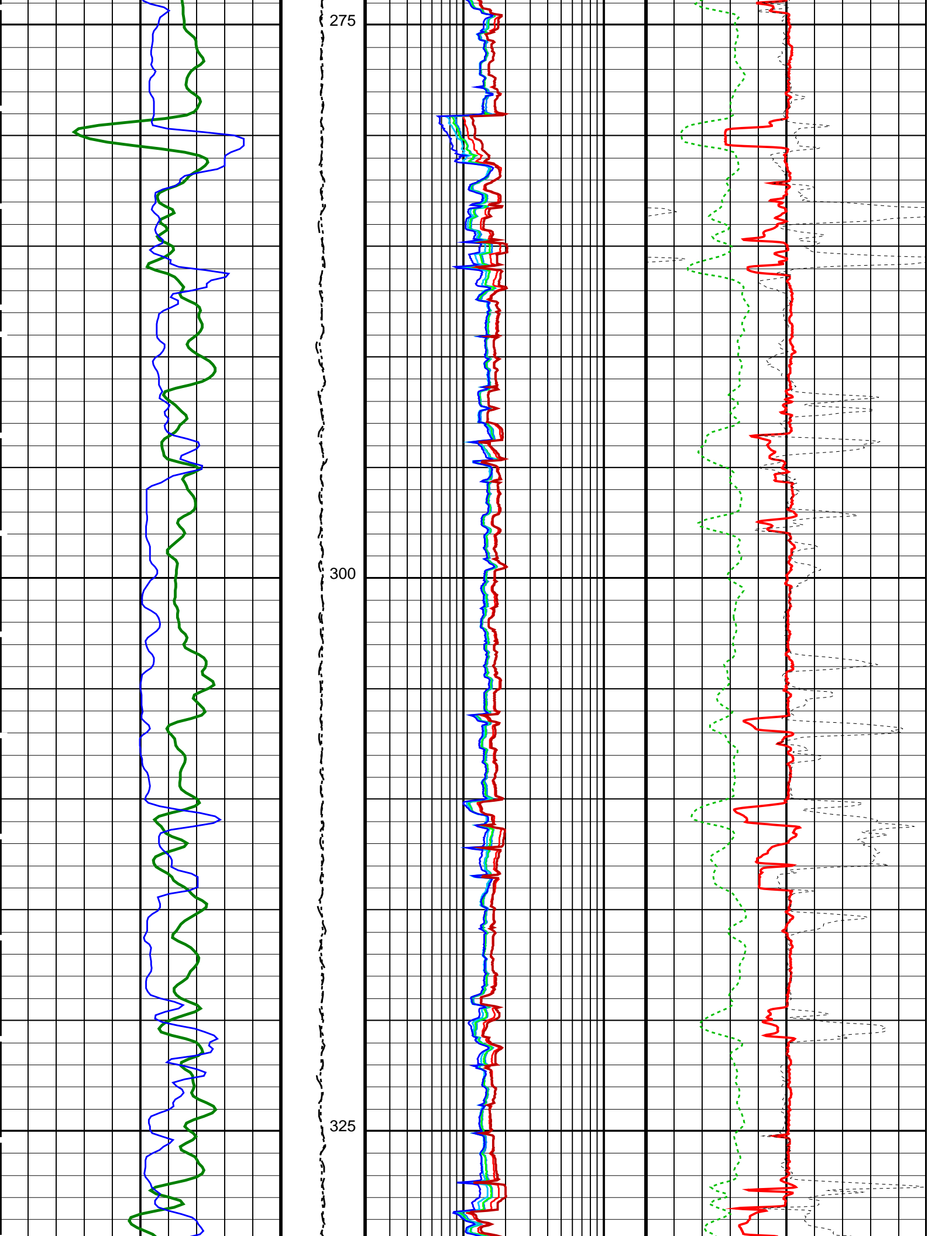


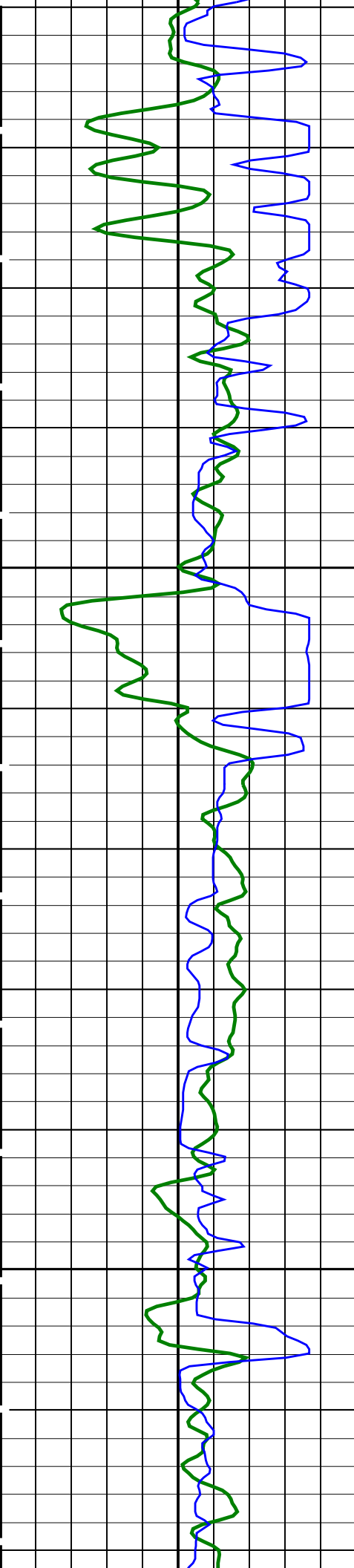






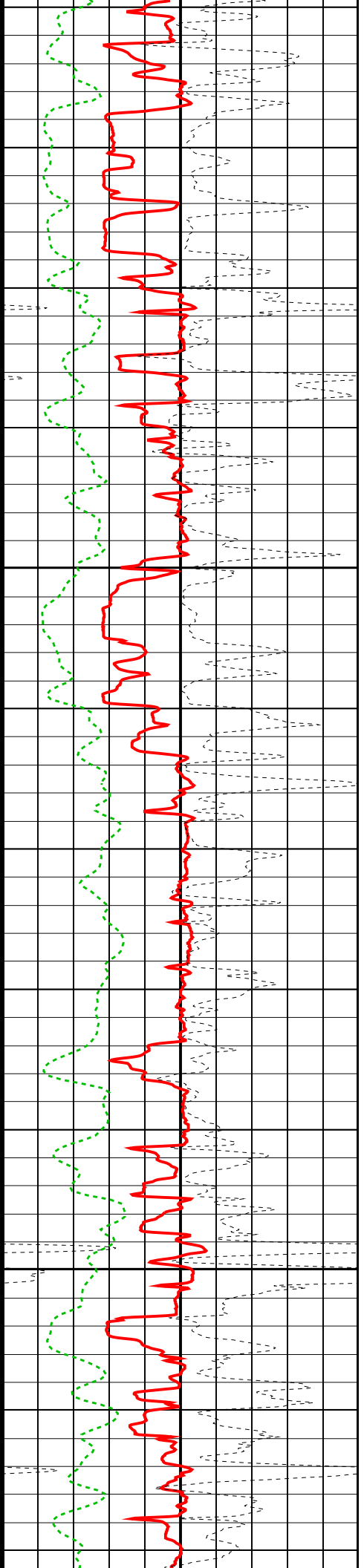
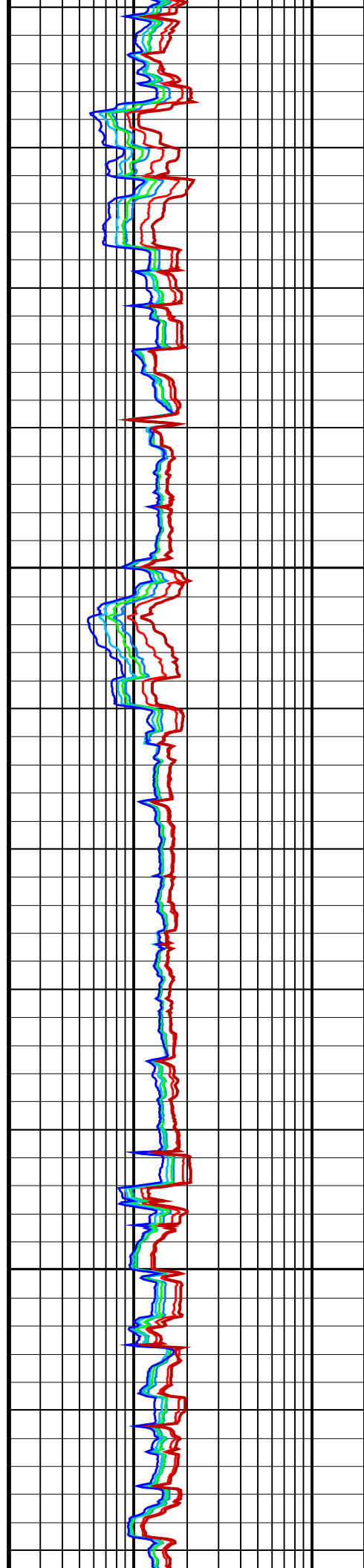


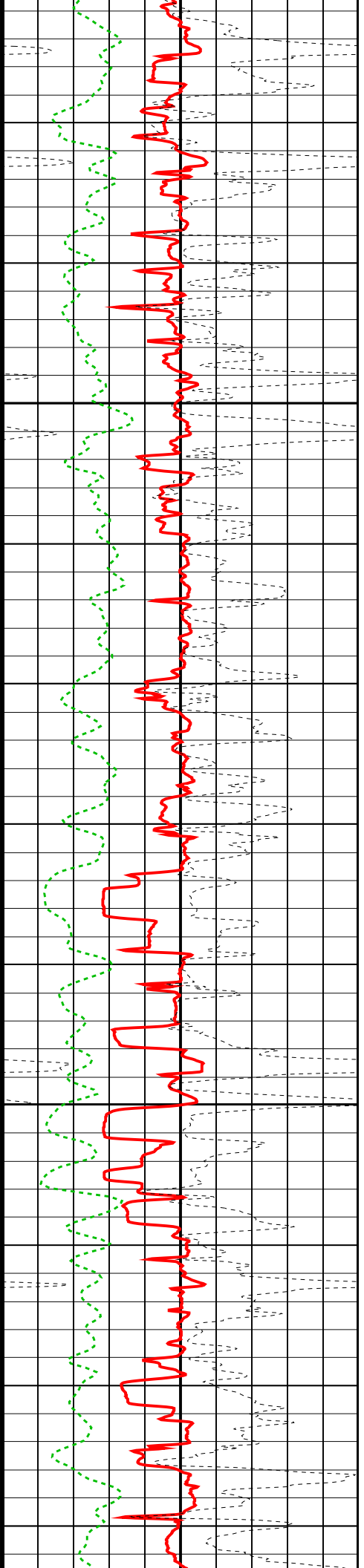
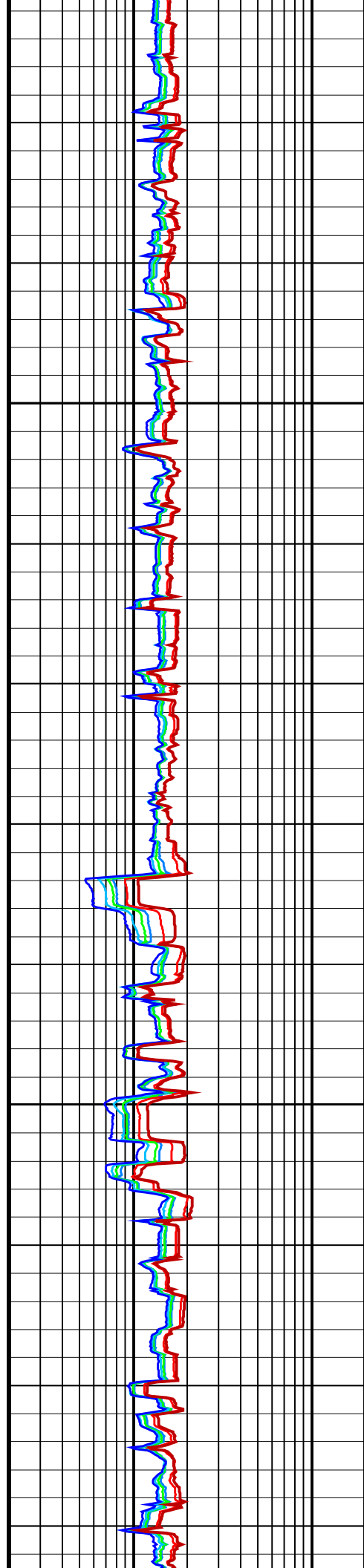
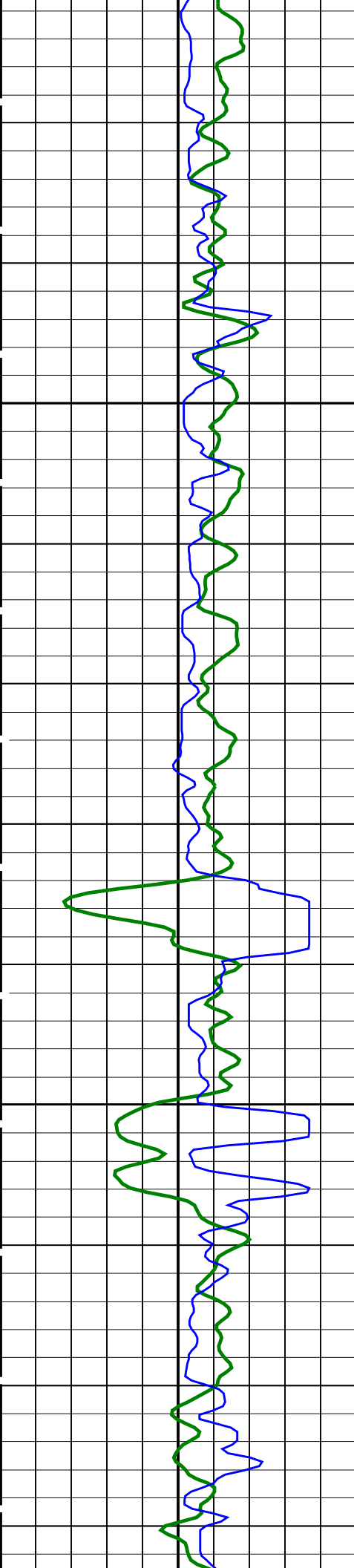


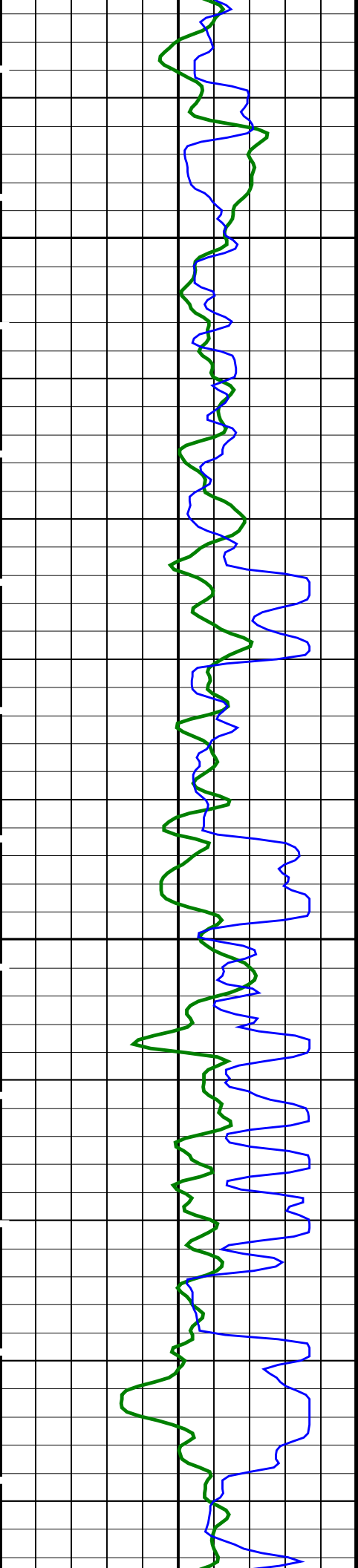


350

375

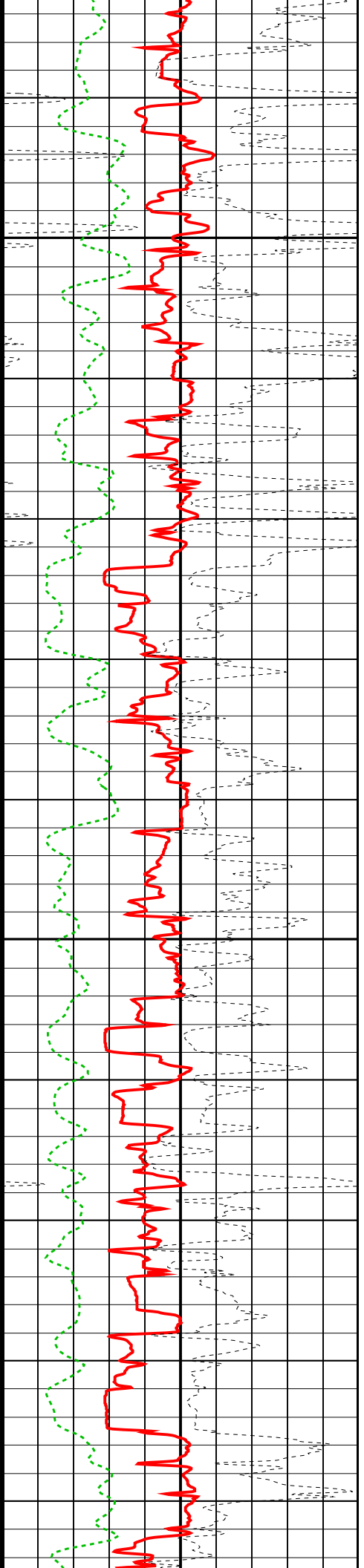
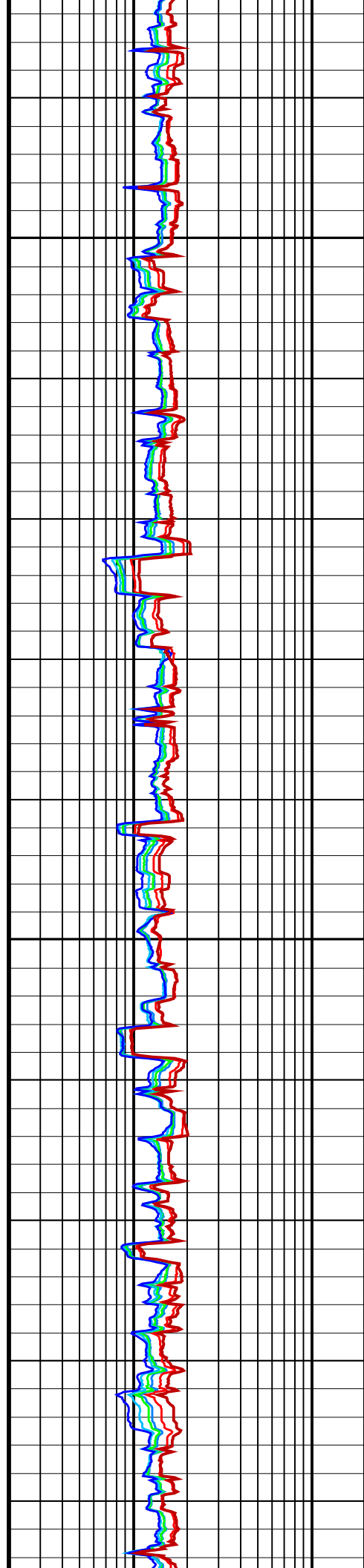


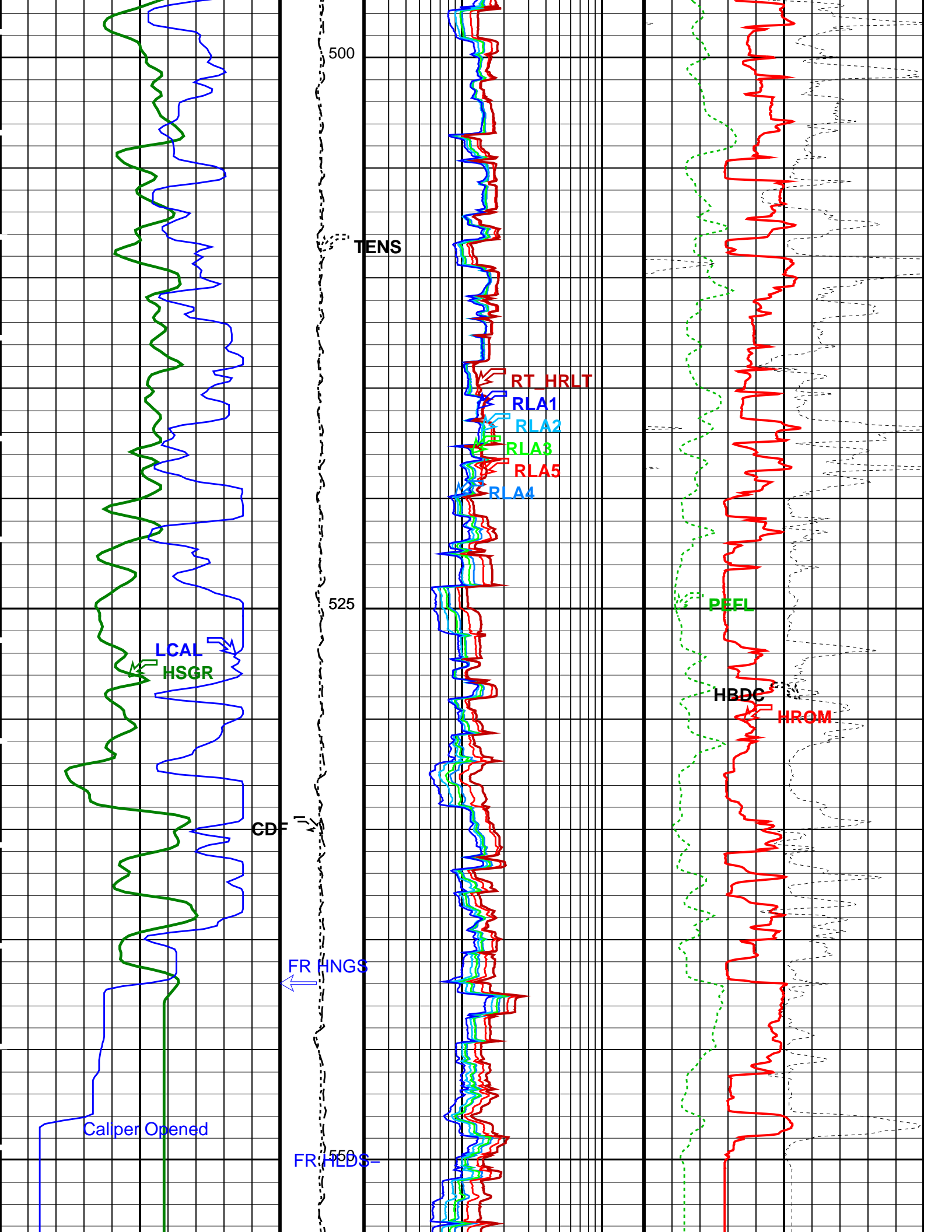


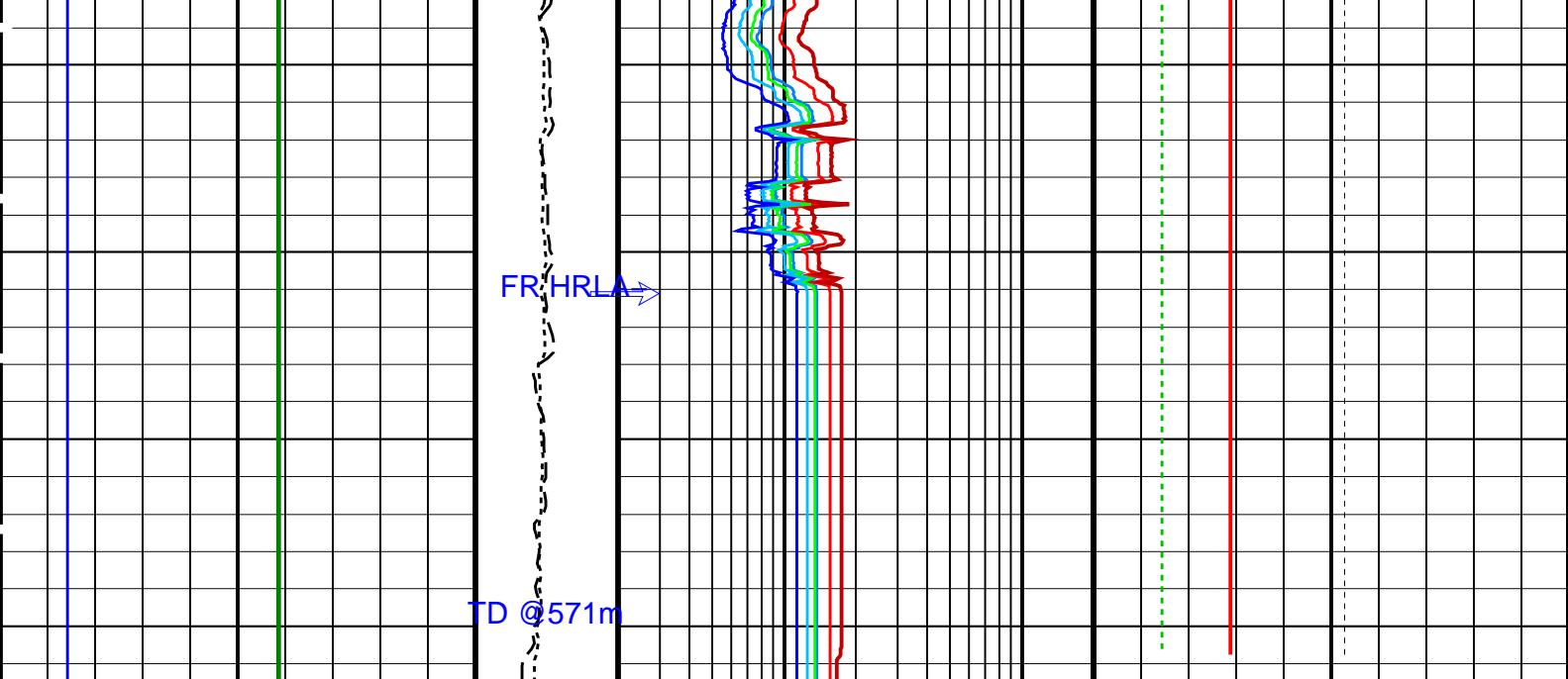


450

475







<div>HLDS Caliper (LCAL) (IN)</div> <div>020</div>	<div>Tension (TENS) (LBF)</div> <div>100000</div>	<div>HRLT Resistivity 4 (RLA4) (OHMM)</div> <div>0.220</div>	<div>HLDS HR Bulk Density (HROM) (G/C3)</div> <div>04</div>
<div>HNGS Spectroscopy Gamma Ray (HSGR) (GAPI)</div> <div>075</div>	<div>Calibrated Downhole Force (CDF) (LBF)</div> <div>30000</div>	<div>HRLT Resistivity 5 (RLA5) (OHMM)</div> <div>0.220</div>	<div>HLDS HR Bulk Density Correction (HBDC) (G/C3)</div> <div>-0.250.25</div>
<div>Main Uplog</div>		<div>HRLT Resistivity 3 (RLA3) (OHMM)</div> <div>0.220</div>	<div>HLDS Long Spaced Photoelectric Effect (PEFL) (----)</div> <div>010</div>
		<div>HRLT Resistivity 2 (RLA2) (OHMM)</div> <div>0.220</div>	
		<div>HRLT Resistivity 1 (RLA1) (OHMM)</div> <div>0.220</div>	
		<div>HRLT True Resistivity (RT_HRLT) (OHMM)</div> <div>0.220</div>	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
HRLT-B: High Resolution Laterolog Array – B			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	21	DEGC
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	14.1096	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	0.018227	DC/M
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	
LOGCOEFF_C	HRLT Log Coefficient for Shallow Modes	LOW	

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	
PROCSP0		Sonde Position	Centered	
SHT		Surface Hole Temperature	9	DEGC
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	ON	
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	
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)	21	DEGC
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	0.018227	DC/M
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	-0.00218346	
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	9	DEGC
TPOS		Tool Position	ECCE	
VBA1		HNGS Detector 1 Variable Barite Factor Running Average	1.00893	
VBA2		HNGS Detector 2 Variable Barite Factor Running Average	1.00784	
EDTC-B: Enhanced DTS Cartridge				
BHFL		Borehole Fluid Type	WATER	
BHS		Borehole Status	OPEN	
BHT		Bottom Hole Temperature (used in calculations)	21	DEGC
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	0.018227	DC/M
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	YES	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	9	DEGC
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			
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	5.500	IN
CWEI	Casing Weight	168.00	LB/F
DFD	Drilling Fluid Density	1.03	G/C3
DO	Depth Offset for Playback	-3678.0	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	OFF	
RMFS	Resistivity of Mud Filtrate Sample	-50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	4627	M
TDD	Total Depth - Driller	4627.00	M
TDL	Total Depth - Logger	4627.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: TripleCombo Vertical Scale: 1:200 Graphics File Created: 08-Jul-2013 14:11

OP System Version: 19C0-187

MSS_LDEO-A	19C0-187	HRLT-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
HNGC-B	19C0-187	HNGS-BA	19C0-187
EDTC-B	SKK-5169-EDTCB		

Input DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_013PUP	FN:17	PRODUCER	08-Jul-2013 13:43	4248.9 M	3606.7 M
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Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_014PUP	FN:19	PRODUCER	08-Jul-2013 14:11		
DLISBACKUP	MSS_LDEO_HRLA_LDL_014PUP	FN:20	PRODUCER	08-Jul-2013 14:11		

Input DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_012PUP	FN:15	PRODUCER	08-Jul-2013 13:28	4348.9 M	3593.6 M
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Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_015PUP	FN:21	PRODUCER	08-Jul-2013 14:15	669.8 M	-115.7 M
DLISBACKUP	MSS_LDEO_HRLA_LDL_015PUP	FN:22	PRODUCER	08-Jul-2013 14:15	669.8 M	-115.7 M

OP System Version: 19C0-187

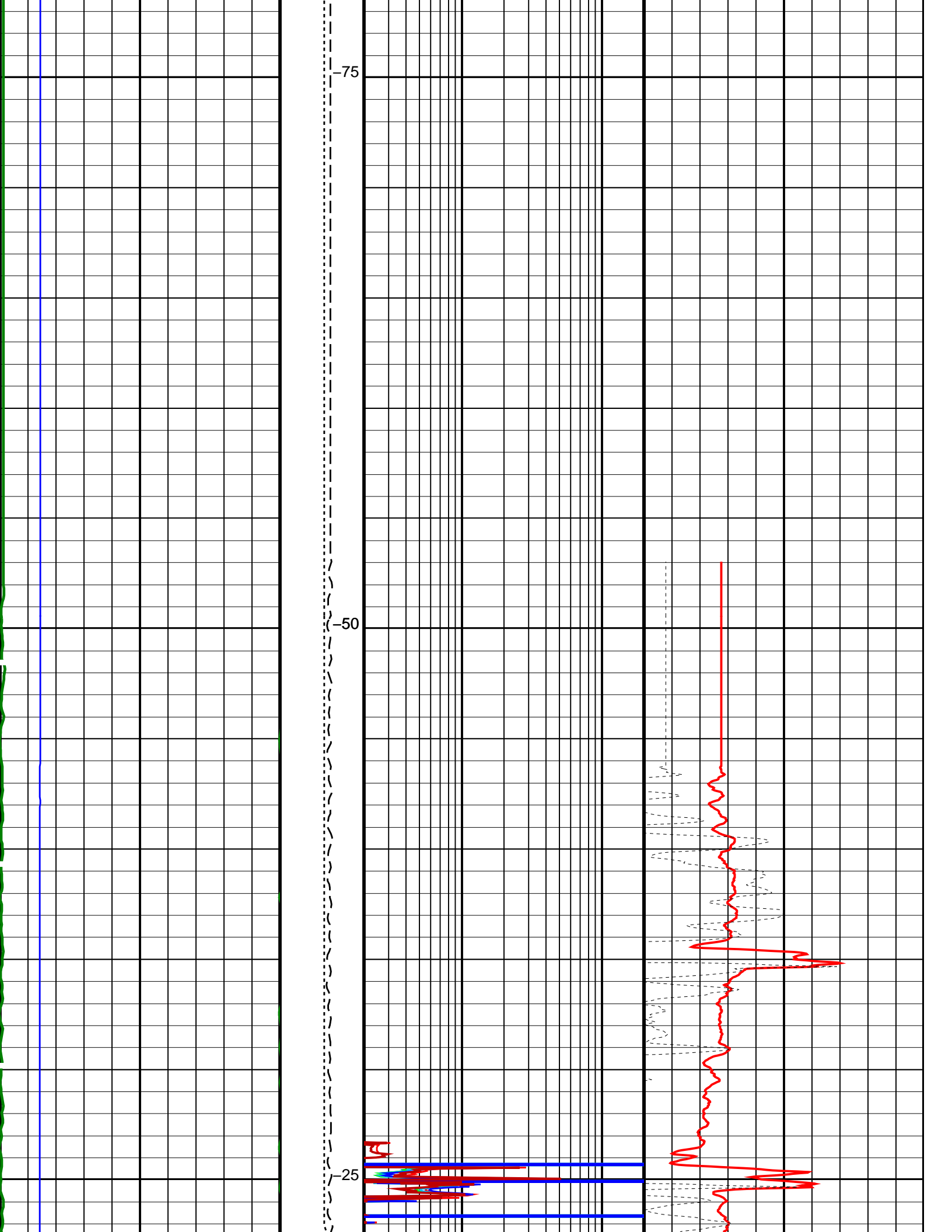
MSS_LDEO-A	19C0-187	HRLT-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
HNGC-B	19C0-187	HNGS-BA	19C0-187
EDTC-B	SKK-5169-EDTCB		

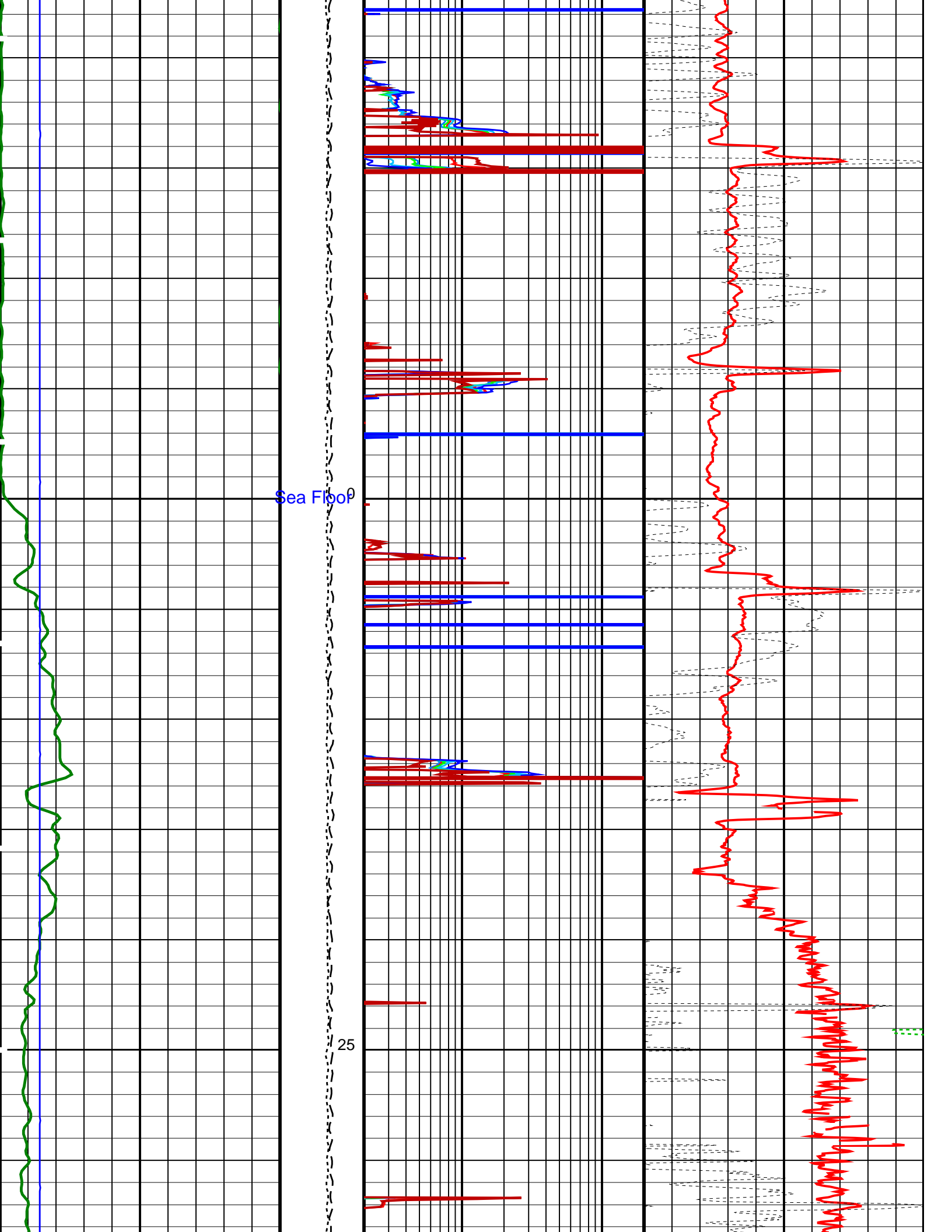
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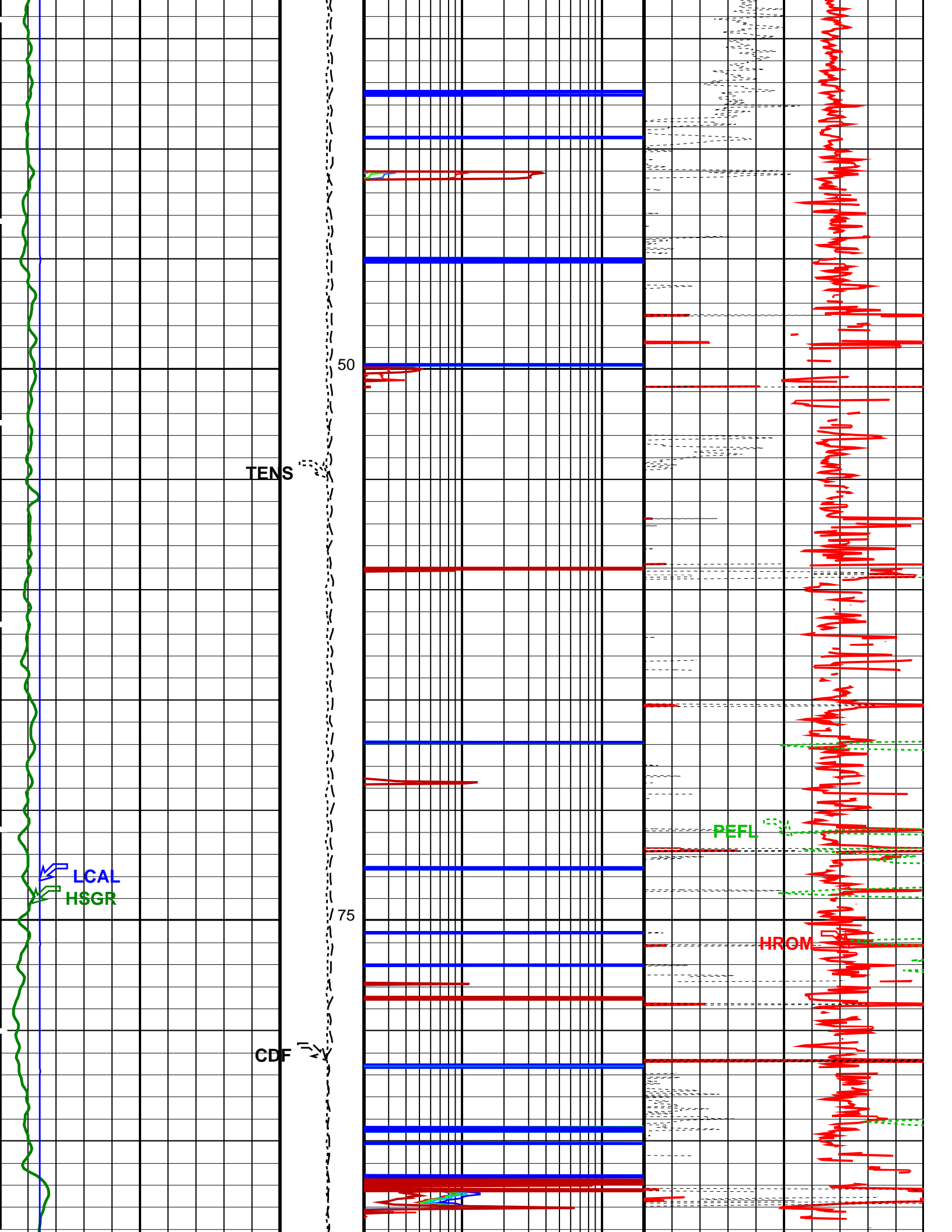
DLIS Name	New Value	Previous Value	Depth & Time
GCSE	BS	BS	669.8 14:15:14

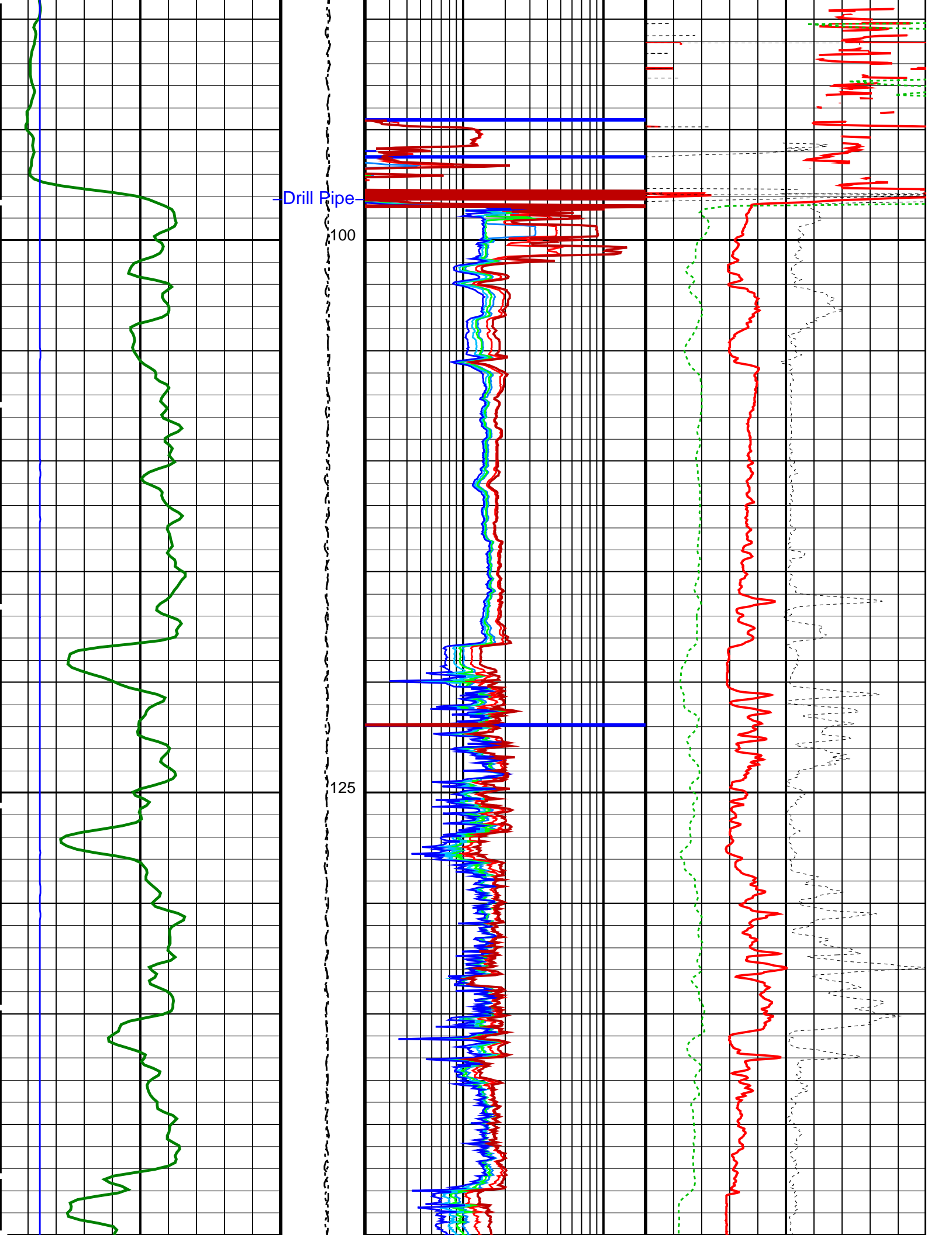
PIP SUMMARY

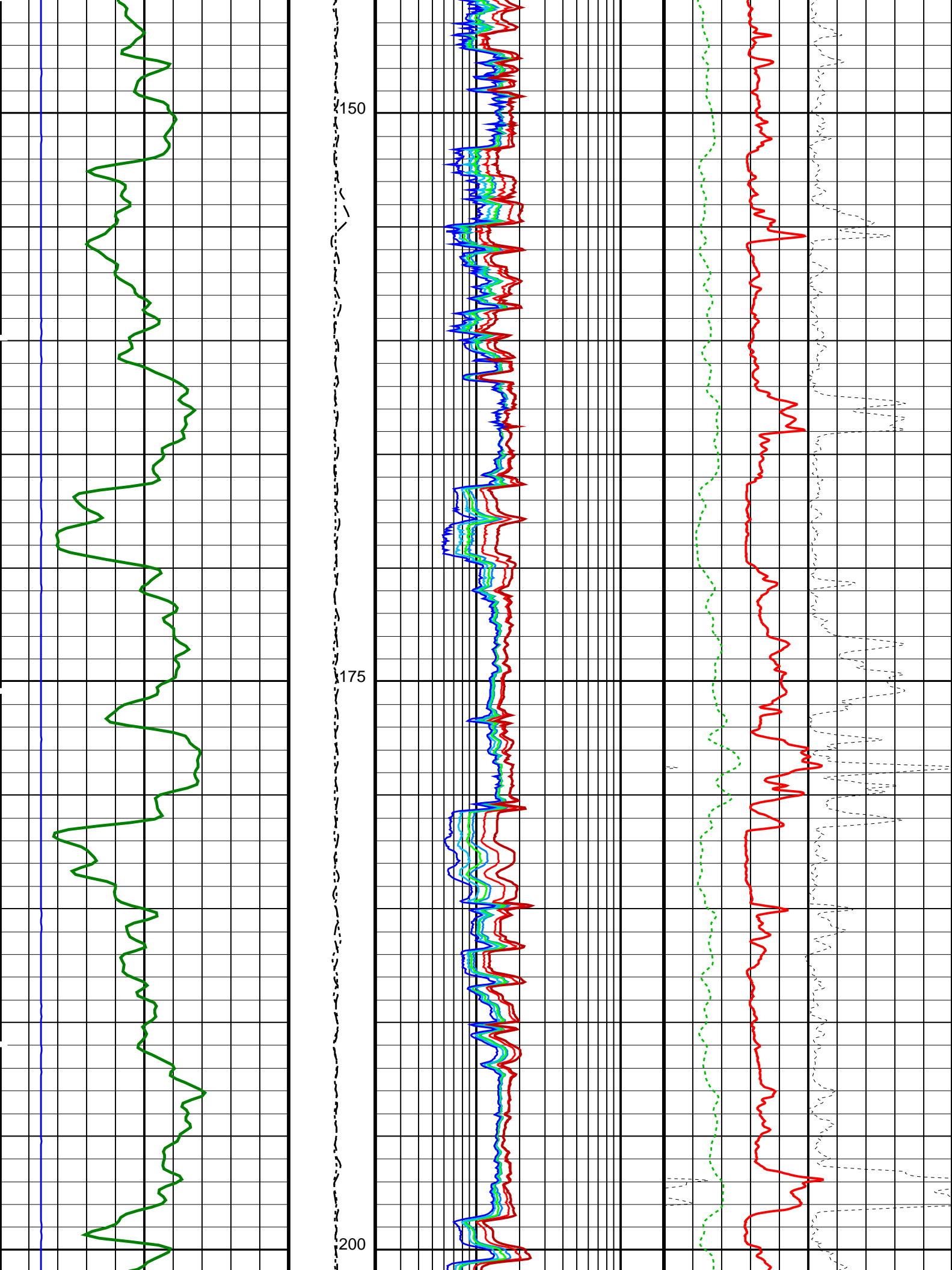
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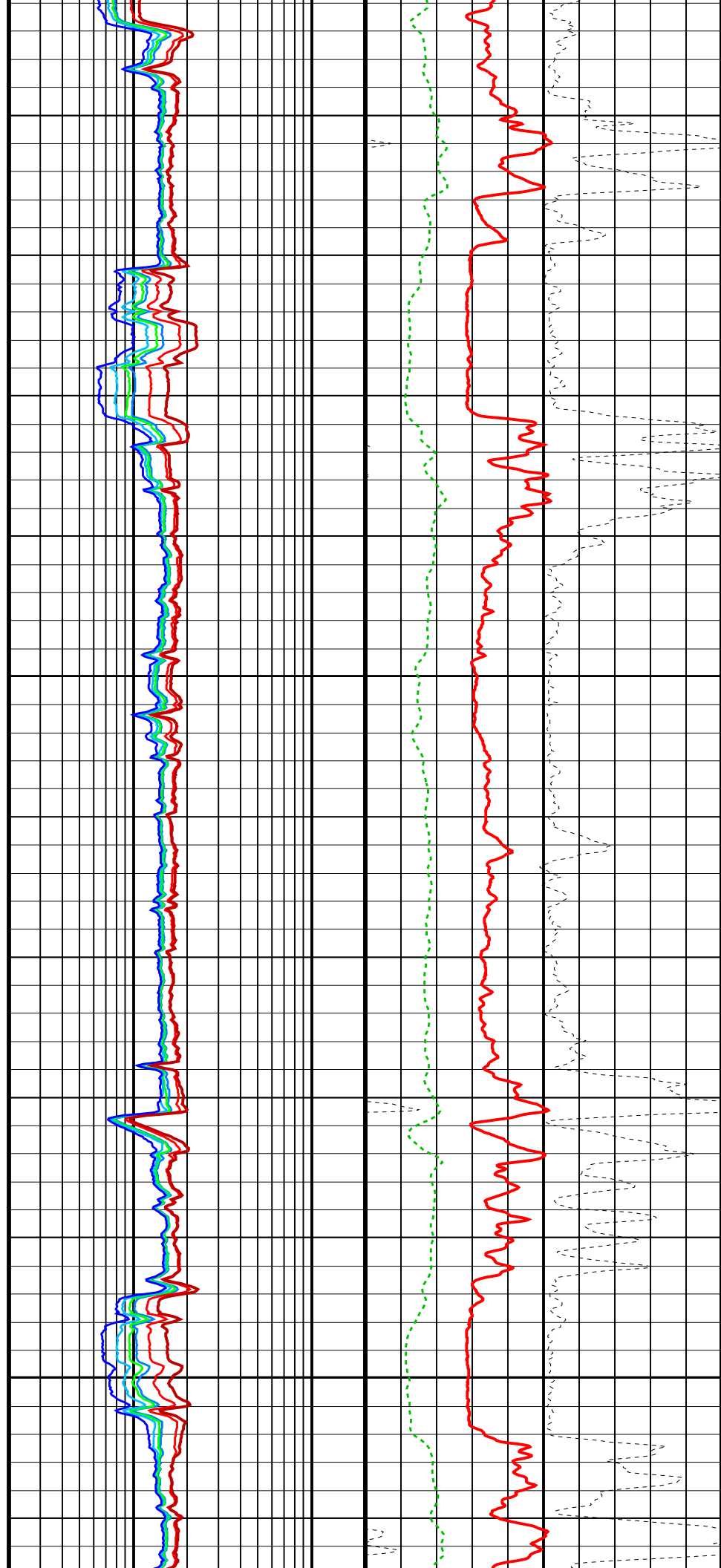
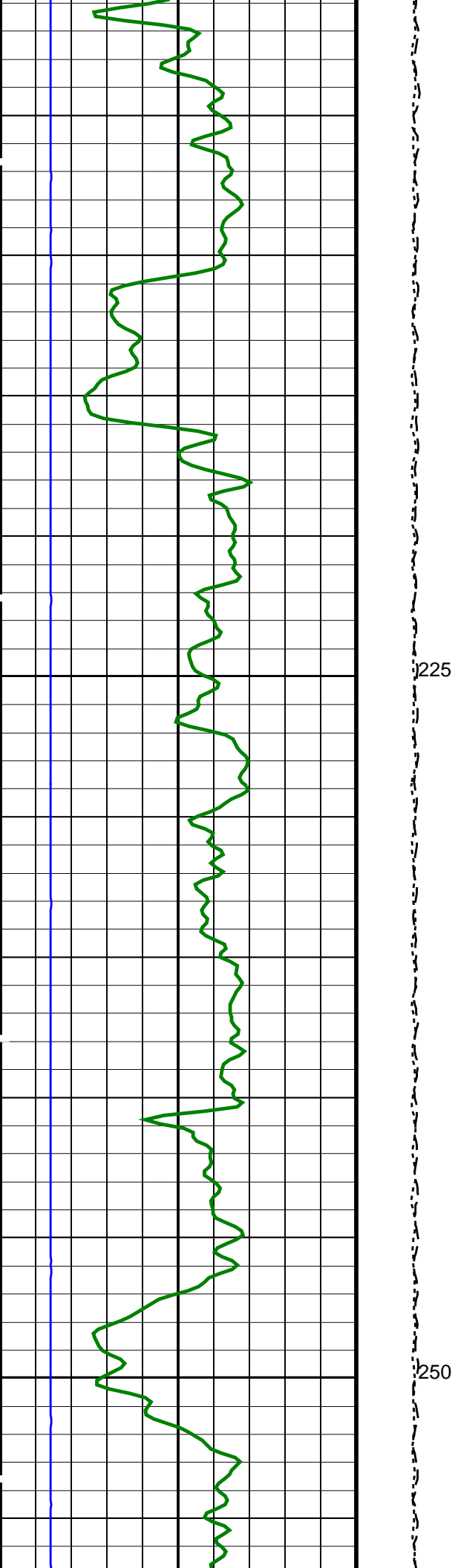


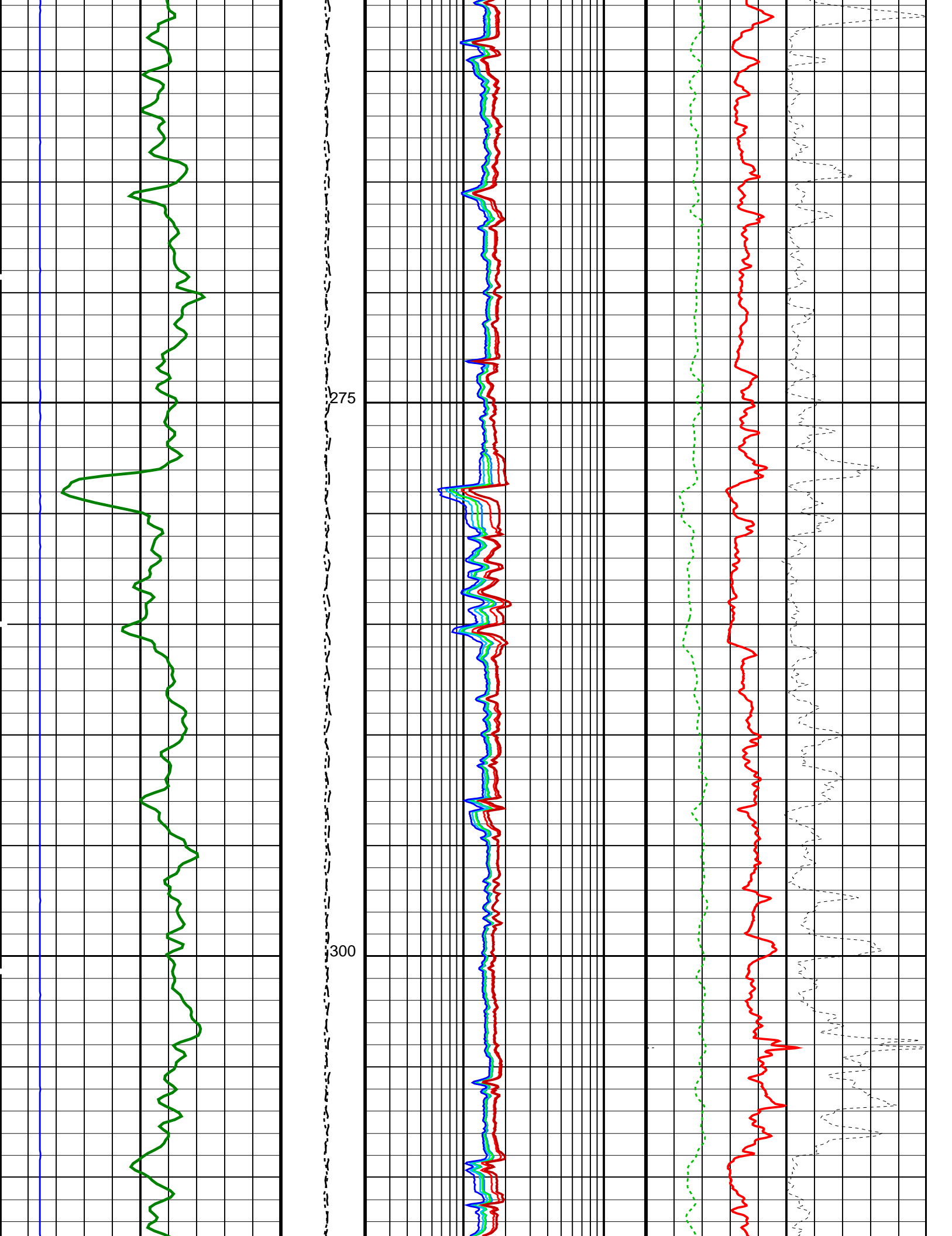


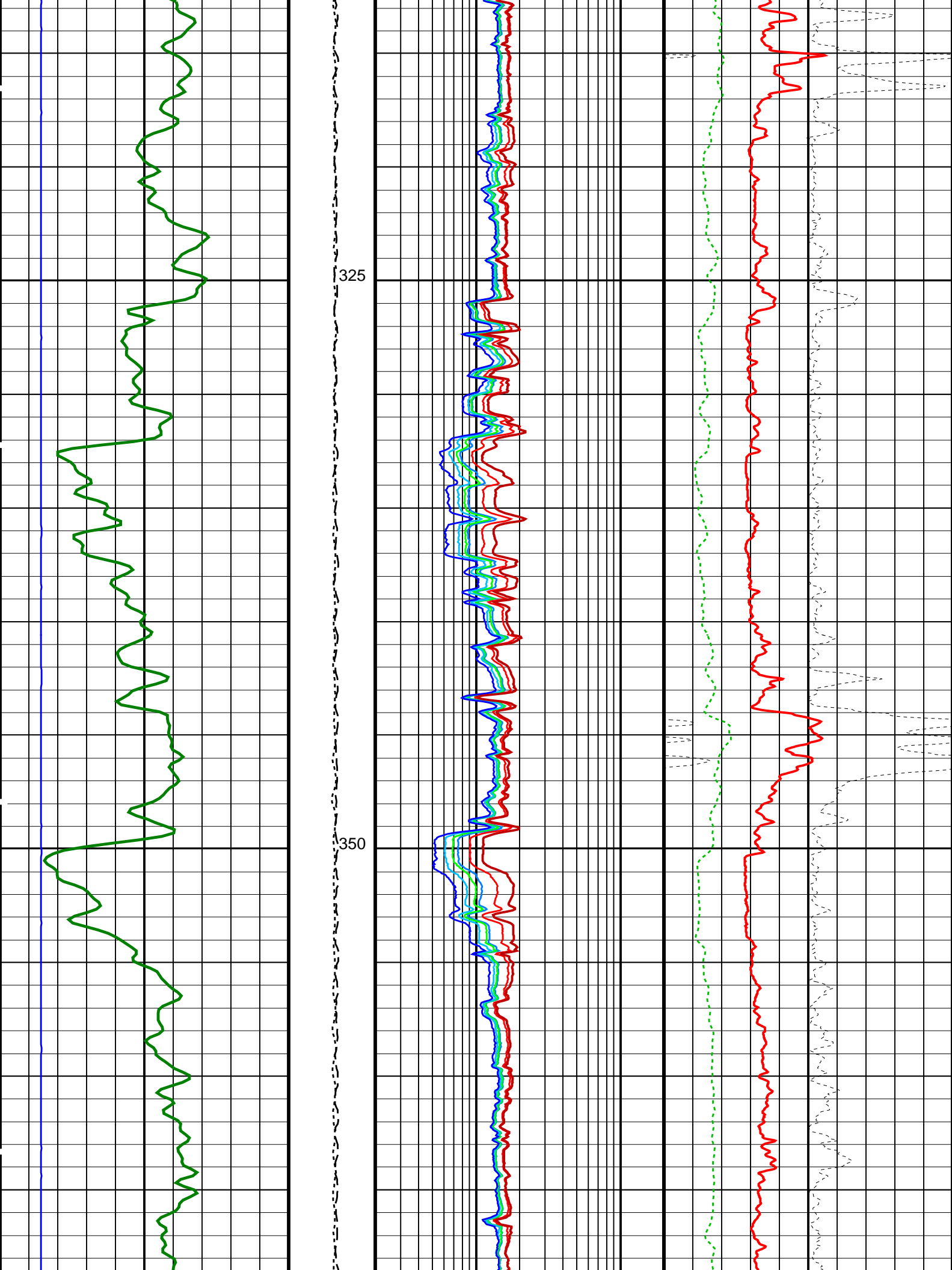


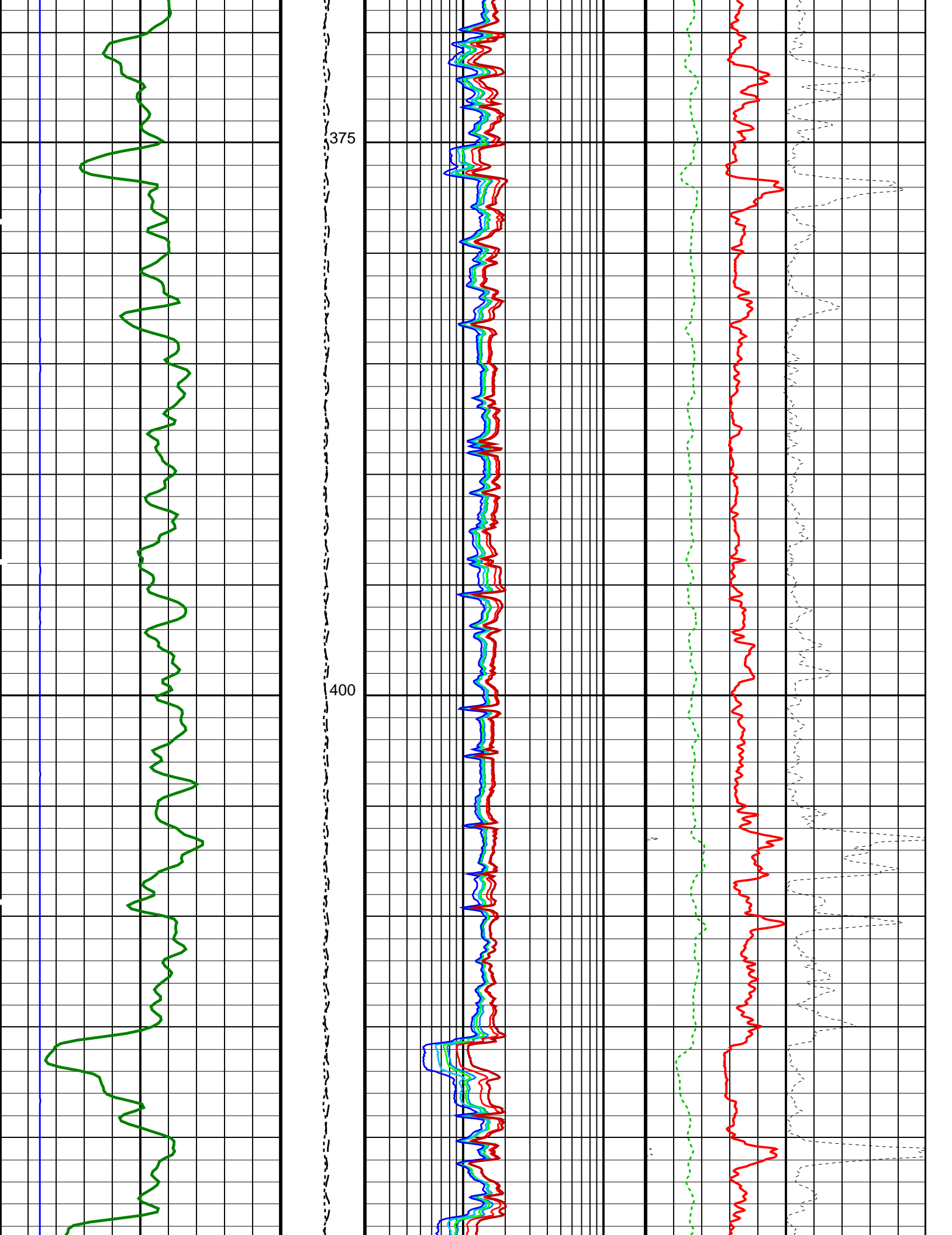


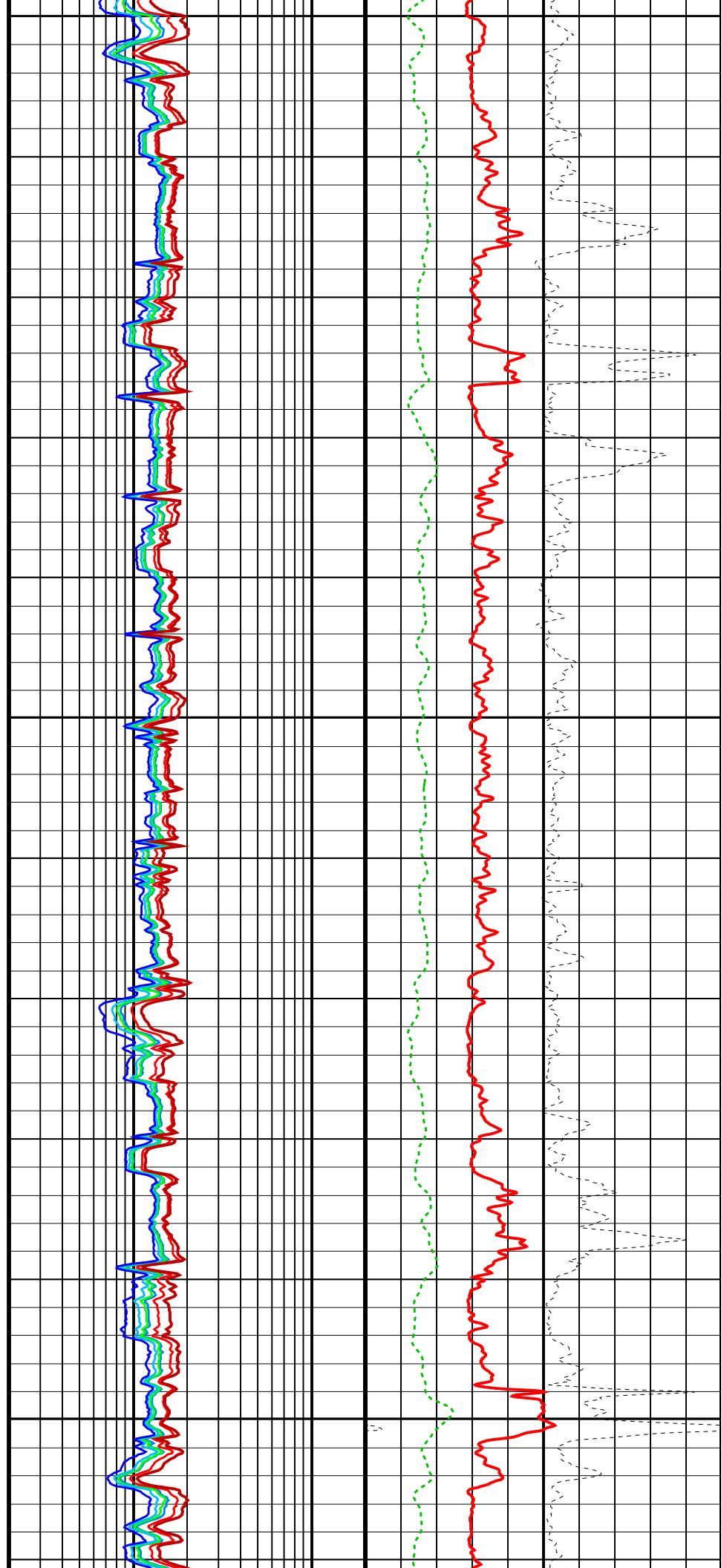
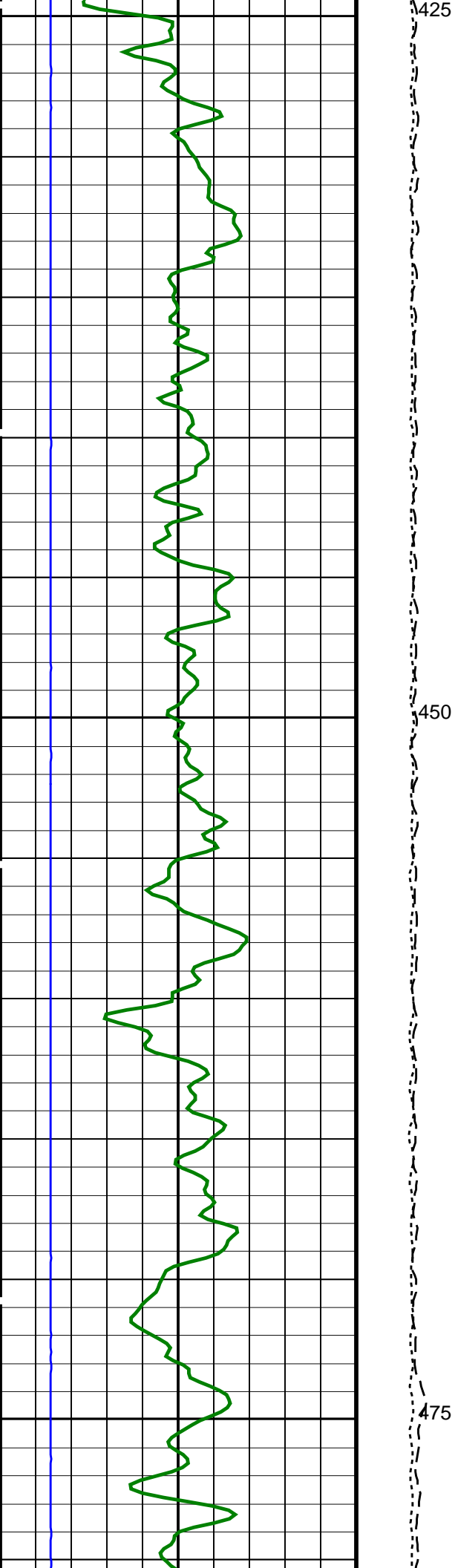


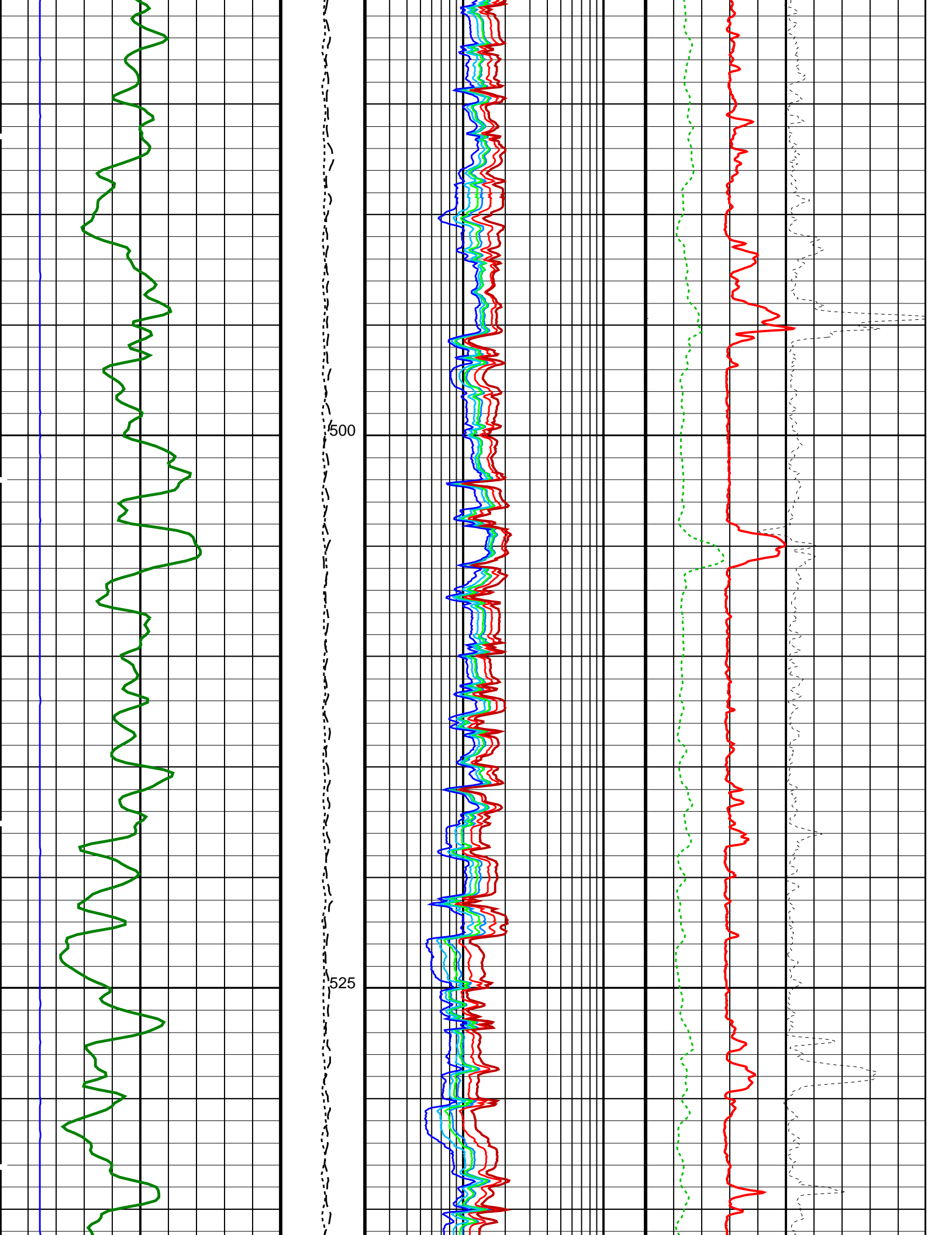


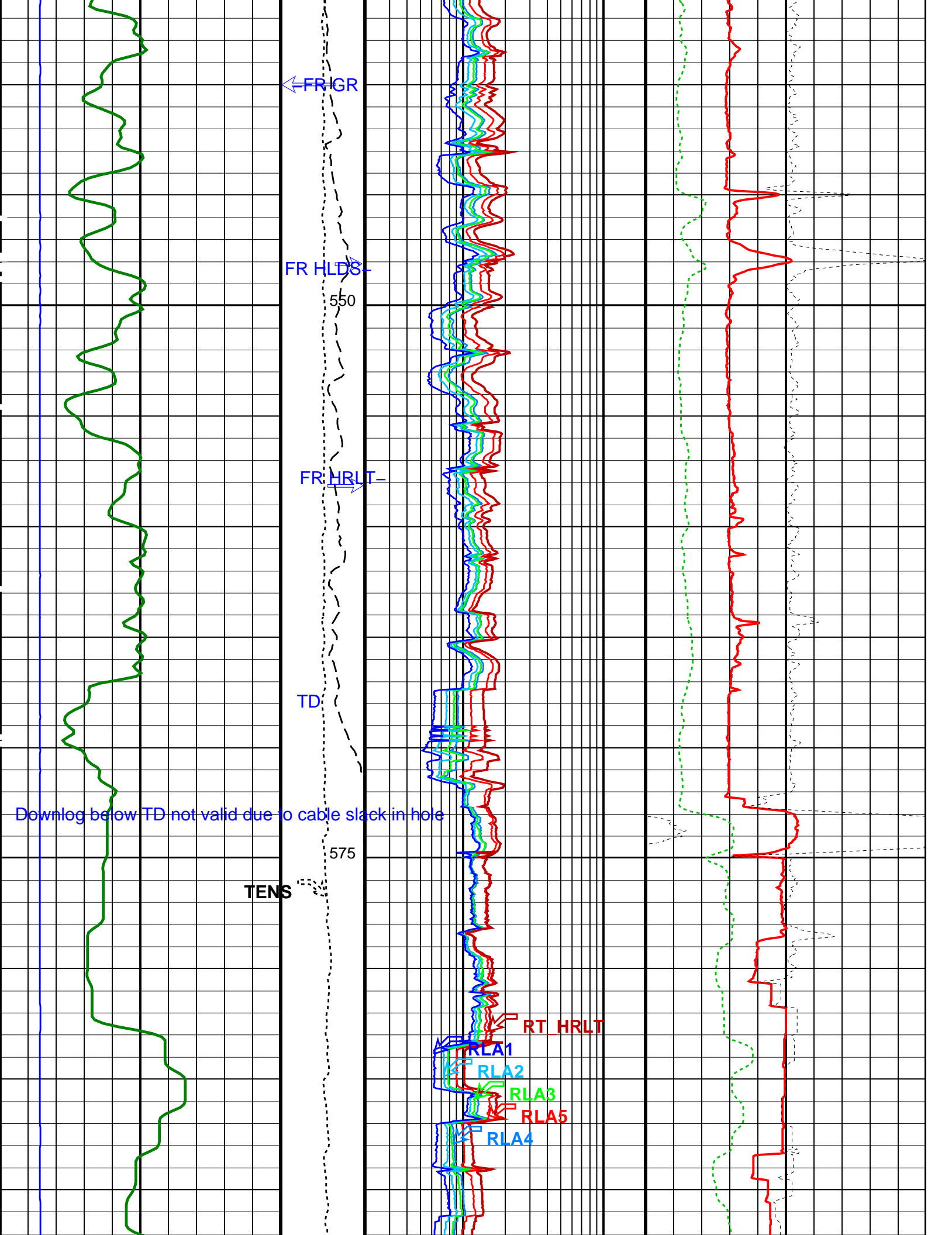


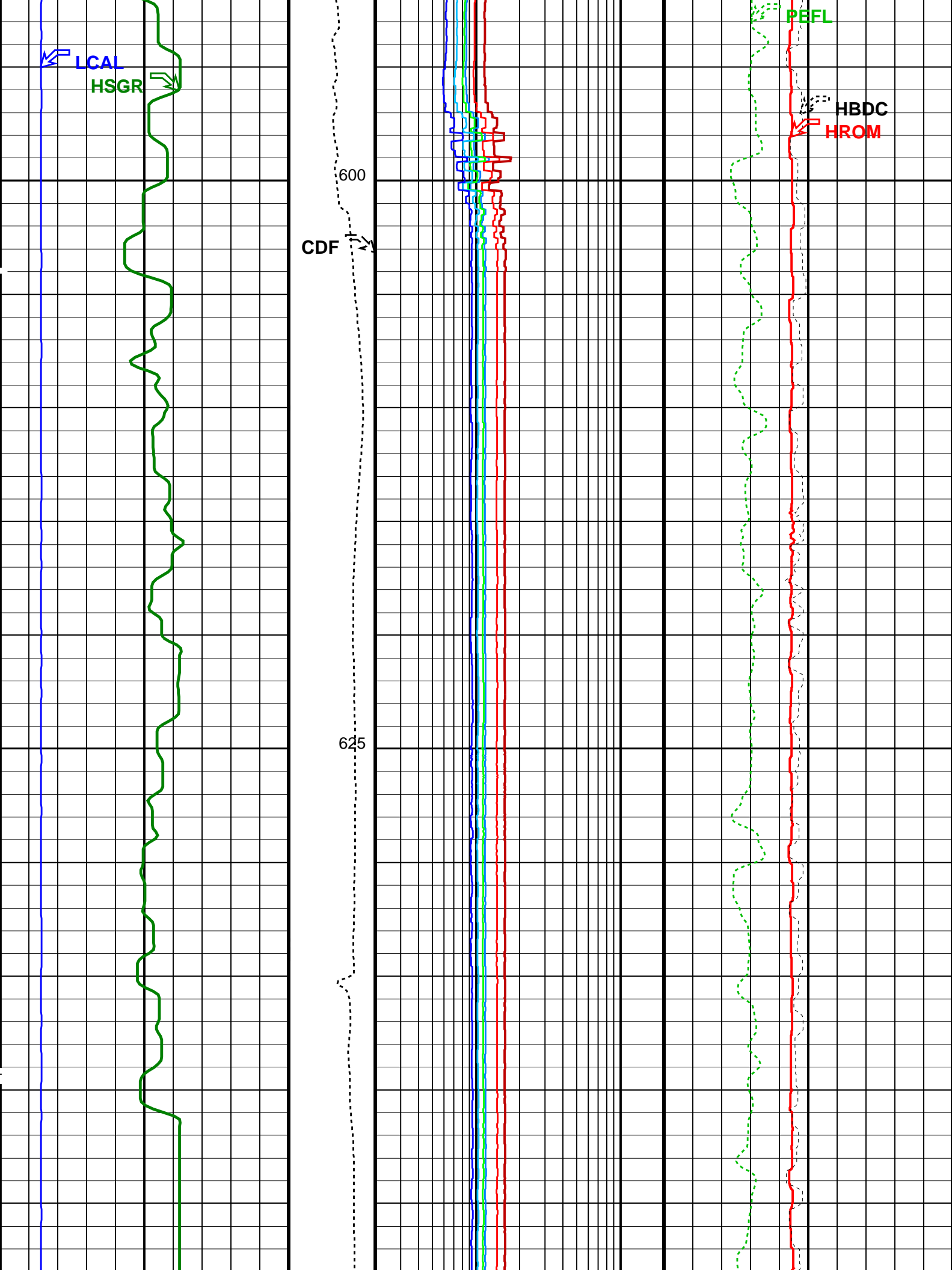


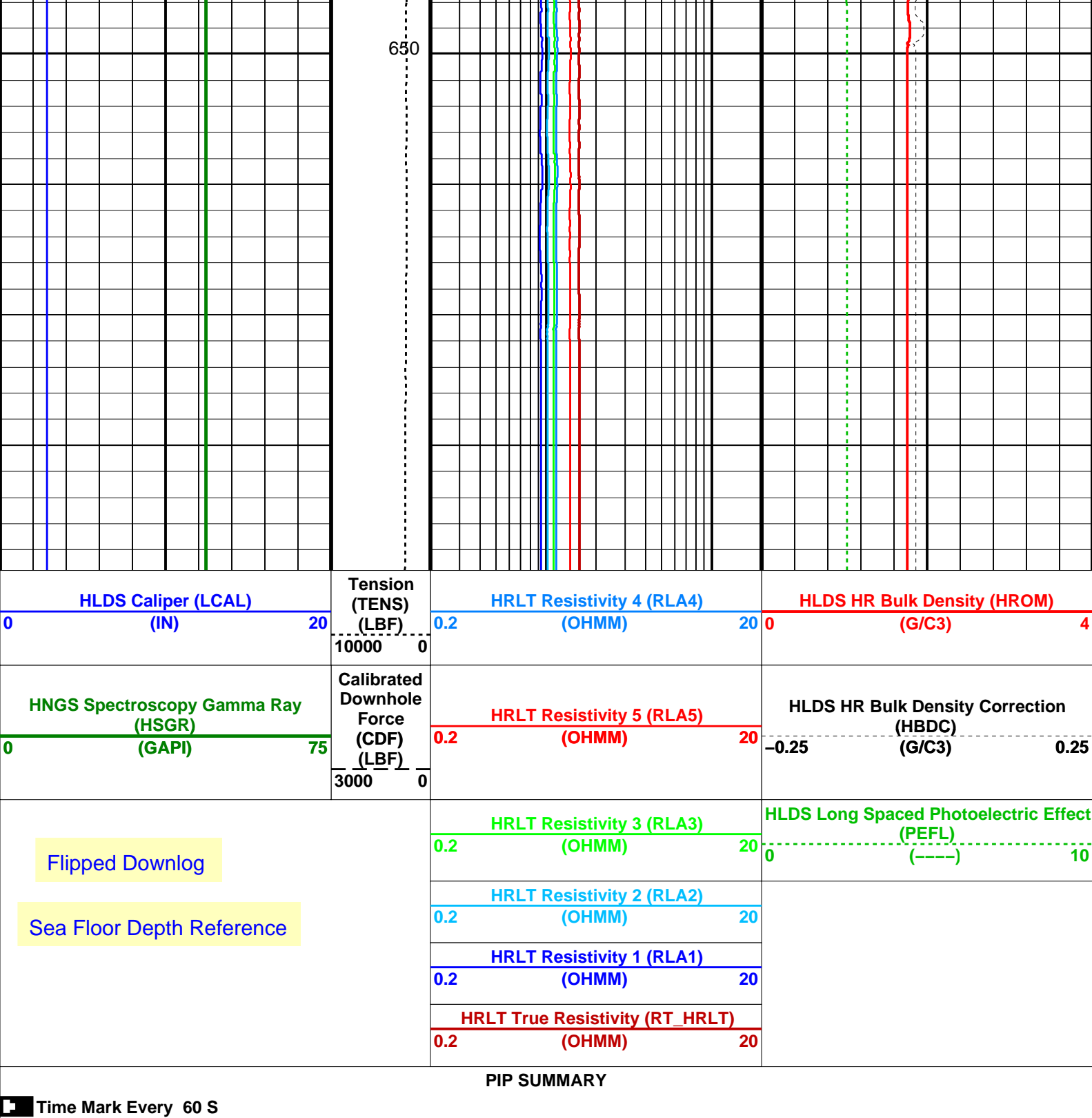












Parameters

DLIS Name	Description	Value	
HRLT-B: High Resolution Laterolog Array – B			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	21	DEGC
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	14.1096	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	0.018227	DC/M
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	9	DEGC
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	ON	
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	
HNGBS-BA: Hostile Natural Gamma Ray Sonde			
BAR1	HNGBS Detector 1 Barite Constant	1	
BAR2	HNGBS Detector 2 Barite Constant	1	
BHK	HNGBS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	21	DEGC
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	HNGBS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN 9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGBS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGBS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGBS Borehole Potassium Running Average	-0.00218346	
HALF	HNGBS Alpha Filter Length	60	IN
HCRB	HNGBS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGBS Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGBS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGBS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGBS Standard Gamma-Ray Correction Flag	YES	
SHT	Surface Hole Temperature	9	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGBS Detector 1 Variable Barite Factor Running Average	1.00893	
VBA2	HNGBS Detector 2 Variable Barite Factor Running Average	1.00784	
EDTC-B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	21	DEGC
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	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN 9	

GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	YES
HSCO	Hole Size Correction Option		NOBARITE
ISSBAR	Barite Mud Switch		NOBARITE
ISSBAR_EDTC	Nuclear Mud Type		LIMESTONE
MATR	Rock Matrix for Neutron Porosity Corrections		NO
MCCO	Mud Cake Correction Option		NATU
MCOR	Mud Correction		YES
MWCO	Mud Weight Correction Option		NO
PTCO	Pressure/Temperature Correction Option		SOCN
SDAT	Standoff Data Source		9
SHT	Surface Hole Temperature		0
SOCN	Standoff Distance		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			
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	5.500	IN
CWEI	Casing Weight	168.00	LB/F
DFD	Drilling Fluid Density	1.03	G/C3
DO	Depth Offset for Playback	-3678.0	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	OFF	
RMFS	Resistivity of Mud Filtrate Sample	-50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	4627	M
TDD	Total Depth - Driller	4627.00	M
TDL	Total Depth - Logger	4627.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: TripleCombo Vertical Scale: 1:200 Graphics File Created: 08-Jul-2013 14:15

OP System Version: 19C0-187

MSS_LDEO-A	19C0-187	HRLT-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
HNGC-B	19C0-187	HNGS-BA	19C0-187
EDTC-B	SKK-5169-EDTCB		

Input DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_012PUP	FN:15	PRODUCER	08-Jul-2013 13:28	4348.9 M	3593.6 M
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Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_015PUP	FN:21	PRODUCER	08-Jul-2013 14:15
DLISBACKUP	MSS_LDEO_HRLA_LDL_015PUP	FN:22	PRODUCER	08-Jul-2013 14:15

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High Resolution Laterolog Array - B Wellsite Calibration - HRLT M01							
Before: 8-Jul-2013 3:24 After: 8-Jul-2013 14:58							
HRLT M0-M1 Voltage Plus - 0	0	N/A	-319.7	-319.7	0.01654	9.681	UV
HRLT M0-M1 Voltage Plus - 1	0	N/A	-337.4	-338.3	-0.9566	9.681	UV
HRLT M0-M1 Voltage Plus - 2	0	N/A	-336.9	-338.0	-1.151	9.681	UV
HRLT M0-M1 Voltage Plus - 3	0	N/A	-340.2	-340.8	-0.6088	9.681	UV
HRLT M0-M1 Voltage Plus - 4	0	N/A	-327.5	-327.6	-0.1125	9.681	UV
HRLT M0-M1 Voltage Plus - 5	0	N/A	-323.2	-323.5	-0.2591	9.681	UV
HRLT M0-M1 Voltage Plus - 6	0	N/A	328.0	329.2	1.206	9.681	UV
HRLT M0-M1 Voltage Plus - 7	0	N/A	-322.7	-322.7	0	9.681	UV
High Resolution Laterolog Array - B Wellsite Calibration - HRLT M12							
Before: 8-Jul-2013 3:24 After: 8-Jul-2013 14:58							
HRLT M1-M2 Voltage Plus - 0	0	N/A	1758	1758	-0.5419	53.42	UV
HRLT M1-M2 Voltage Plus - 1	0	N/A	1859	1864	4.709	53.42	UV
HRLT M1-M2 Voltage Plus - 2	0	N/A	1850	1856	5.838	53.42	UV
HRLT M1-M2 Voltage Plus - 3	0	N/A	1866	1868	2.519	53.42	UV

HRLT M1-M2 Voltage Plus - 4	0	N/A	1795	1795	0.07727	53.42	UV
HRLT M1-M2 Voltage Plus - 5	0	N/A	1773	1773	0.6046	53.42	UV
HRLT M1-M2 Voltage Plus - 6	0	N/A	-1816	-1823	-6.609	53.42	UV
HRLT M1-M2 Voltage Plus - 7	0	N/A	1781	1781	0	53.42	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT M23

Before: 8-Jul-2013 3:24 After: 8-Jul-2013 14:58

HRLT M2-M3 Voltage Plus - 0	0	N/A	1744	1743	-0.3988	53.42	UV
HRLT M2-M3 Voltage Plus - 1	0	N/A	1857	1861	4.660	53.42	UV
HRLT M2-M3 Voltage Plus - 2	0	N/A	1848	1854	5.688	53.42	UV
HRLT M2-M3 Voltage Plus - 3	0	N/A	1868	1871	2.934	53.42	UV
HRLT M2-M3 Voltage Plus - 4	0	N/A	1791	1791	0.1779	53.42	UV
HRLT M2-M3 Voltage Plus - 5	0	N/A	1769	1770	1.340	53.42	UV
HRLT M2-M3 Voltage Plus - 6	0	N/A	-1802	-1809	-6.474	53.42	UV
HRLT M2-M3 Voltage Plus - 7	0	N/A	1781	1781	0	53.42	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT V34

Before: 8-Jul-2013 3:24 After: 8-Jul-2013 14:58

HRLT A3-A4 Voltage Plus - 0	0	N/A	68570	68570	2.508	2100	UV
HRLT A3-A4 Voltage Plus - 1	0	N/A	72800	73000	202.1	2100	UV
HRLT A3-A4 Voltage Plus - 2	0	N/A	72770	73020	247.3	2100	UV
HRLT A3-A4 Voltage Plus - 3	0	N/A	73830	73940	112.3	2100	UV
HRLT A3-A4 Voltage Plus - 4	0	N/A	70730	70750	21.38	2100	UV
HRLT A3-A4 Voltage Plus - 5	0	N/A	69890	69950	52.42	2100	UV
HRLT A3-A4 Voltage Plus - 6	0	N/A	-69660	-69930	-269.6	2100	UV
HRLT A3-A4 Voltage Plus - 7	0	N/A	70000	70000	0	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT V45

Before: 8-Jul-2013 3:24 After: 8-Jul-2013 14:58

HRLT A4-A5 Voltage Plus - 0	0	N/A	68850	68850	4.391	2100	UV
HRLT A4-A5 Voltage Plus - 1	0	N/A	73190	73390	196.6	2100	UV
HRLT A4-A5 Voltage Plus - 2	0	N/A	73140	73390	246.5	2100	UV
HRLT A4-A5 Voltage Plus - 3	0	N/A	74170	74290	117.7	2100	UV
HRLT A4-A5 Voltage Plus - 4	0	N/A	71040	71050	15.38	2100	UV
HRLT A4-A5 Voltage Plus - 5	0	N/A	70170	70220	47.25	2100	UV
HRLT A4-A5 Voltage Plus - 6	0	N/A	-70050	-70300	-250.5	2100	UV
HRLT A4-A5 Voltage Plus - 7	0	N/A	70000	70000	0	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT V56

Before: 8-Jul-2013 3:24 After: 8-Jul-2013 14:58

HRLT A5-A6 Voltage Plus - 0	0	N/A	68740	68750	6.898	2100	UV
HRLT A5-A6 Voltage Plus - 1	0	N/A	72920	73110	192.0	2100	UV
HRLT A5-A6 Voltage Plus - 2	0	N/A	72890	73140	246.5	2100	UV
HRLT A5-A6 Voltage Plus - 3	0	N/A	73950	74080	130.5	2100	UV
HRLT A5-A6 Voltage Plus - 4	0	N/A	70900	70930	24.06	2100	UV
HRLT A5-A6 Voltage Plus - 5	0	N/A	70050	70100	56.31	2100	UV
HRLT A5-A6 Voltage Plus - 6	0	N/A	-69760	-70020	-260.0	2100	UV
HRLT A5-A6 Voltage Plus - 7	0	N/A	70000	70000	0	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT VTP

Before: 8-Jul-2013 3:24 After: 8-Jul-2013 14:58

HRLT Torpedo-M0 Voltage - 0	0	N/A	-68450	-68430	21.57	2100	UV
HRLT Torpedo-M0 Voltage - 1	0	N/A	-73280	-73440	-165.2	2100	UV
HRLT Torpedo-M0 Voltage - 2	0	N/A	-73220	-73440	-220.5	2100	UV
HRLT Torpedo-M0 Voltage - 3	0	N/A	-74280	-74370	-96.92	2100	UV
HRLT Torpedo-M0 Voltage - 4	0	N/A	-71130	-71120	6.383	2100	UV
HRLT Torpedo-M0 Voltage - 5	0	N/A	-70240	-70270	-30.29	2100	UV
HRLT Torpedo-M0 Voltage - 6	0	N/A	70060	70300	247.4	2100	UV
HRLT Torpedo-M0 Voltage - 7	0	N/A	-70000	-70000	0	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT VBD

Before: 8-Jul-2013 3:24 After: 8-Jul-2013 14:58

HRLT Bridle#9-M0 Voltage - 0	0	N/A	-68410	-68420	-4.789	2100	UV
HRLT Bridle#9-M0 Voltage - 1	0	N/A	-73230	-73430	-204.3	2100	UV
HRLT Bridle#9-M0 Voltage - 2	0	N/A	-73170	-73420	-253.4	2100	UV
HRLT Bridle#9-M0 Voltage - 3	0	N/A	-74240	-74350	-118.6	2100	UV
HRLT Bridle#9-M0 Voltage - 4	0	N/A	-71100	-71120	-22.34	2100	UV
HRLT Bridle#9-M0 Voltage - 5	0	N/A	-70210	-70270	-52.55	2100	UV
HRLT Bridle#9-M0 Voltage - 6	0	N/A	70010	70260	256.4	2100	UV
HRLT Bridle#9-M0 Voltage - 7	0	N/A	-70000	-70000	0	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT ISO

Before: 8-Jul-2013 3:24 After: 8-Jul-2013 14:58

HRLT Source Current Plus - 0	0	N/A	285.3	285.3	0.002655	8.520	UA
HRLT Source Current Plus - 1	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus - 2	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus - 3	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus - 4	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus - 5	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus - 6	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus - 7	0	N/A	281.1	281.1	0	8.520	UA

High Resolution Laterolog Array – B Wellsite Calibration – HRLT MV

Before: 8-Jul-2013 3:24 After: 8-Jul-2013 14:58								
HRLT Vertical Voltage PI – 0	0	N/A	–322.3	–322.1	0.2796	9.681	UV	
HRLT Vertical Voltage PI – 1	0	N/A	–332.7	–333.4	–0.7059	9.681	UV	
HRLT Vertical Voltage PI – 2	0	N/A	–331.1	–332.0	–0.8658	9.681	UV	
HRLT Vertical Voltage PI – 3	0	N/A	–332.2	–332.5	–0.2955	9.681	UV	
HRLT Vertical Voltage PI – 4	0	N/A	–316.8	–316.6	0.1891	9.681	UV	
HRLT Vertical Voltage PI – 5	0	N/A	–327.7	–327.7	–0.02109	9.681	UV	
HRLT Vertical Voltage PI – 6	0	N/A	336.7	337.7	1.002	9.681	UV	
HRLT Vertical Voltage PI – 7	0	N/A	–322.7	–322.7	0	9.681	UV	

Hostile Litho–Density Sonde Wellsite Calibration – Background Measurement

Master: 23-May-2013 18:26 Before: 5-Jun-2013 5:19 After: 8-Jul-2013 15:10							
SS Cs Resolution Bkg	9.000	7.935	8.049	7.961	-0.08869	1.800	%
LS Cs Resolution Bkg	9.000	8.162	8.063	8.048	-0.01412	1.800	%
LSW1 Background	100.0	71.72	70.78	71.09	0.3166	3.000	CPS
LSW2 Background	100.0	65.95	64.89	64.69	-0.1998	3.000	CPS
LSW3 Background	200.0	146.1	143.2	142.5	-0.6803	6.000	CPS
LSW4 Background	250.0	176.3	175.6	174.8	-0.7964	7.500	CPS
LSW5 Background	600.0	404.2	405.6	402.8	-2.782	18.00	CPS
SSW1 Background	100.0	80.22	79.61	79.51	-0.1018	3.000	CPS
SSW2 Background	200.0	141.1	142.8	142.3	-0.4696	6.000	CPS
SSW3 Background	500.0	380.9	379.7	382.9	3.191	15.00	CPS
SSW4 Background	270.0	201.0	199.2	197.4	-1.822	8.100	CPS
SSW5 Background	200.0	143.8	144.9	142.7	-2.160	6.000	CPS

Hostile Litho–Density Sonde Wellsite Calibration – Aluminum Measurement

Master: 23-May-2013 19:07								
LSW1 Aluminum	600.0	513.7	N/A	N/A	N/A	N/A	CPS	
LSW2 Aluminum	900.0	737.9	N/A	N/A	N/A	N/A	CPS	
LSW3 Aluminum	1100	887.0	N/A	N/A	N/A	N/A	CPS	
LSW4 Aluminum	580.0	448.1	N/A	N/A	N/A	N/A	CPS	
LSW5 Aluminum	570.0	411.4	N/A	N/A	N/A	N/A	CPS	
SSW1 Aluminum	2800	2391	N/A	N/A	N/A	N/A	CPS	
SSW2 Aluminum	8000	6513	N/A	N/A	N/A	N/A	CPS	
SSW3 Aluminum	11600	9048	N/A	N/A	N/A	N/A	CPS	
SSW4 Aluminum	5000	3653	N/A	N/A	N/A	N/A	CPS	
SSW5 Aluminum	660.0	442.2	N/A	N/A	N/A	N/A	CPS	

Hostile Litho–Density Sonde Wellsite Calibration – Lithology Measurement

Master: 23-May-2013 18:57								
LSW1 Iron	400.0	354.2	N/A	N/A	N/A	N/A	CPS	
LSW2 Iron	730.0	602.9	N/A	N/A	N/A	N/A	CPS	
LSW3 Iron	1000	794.0	N/A	N/A	N/A	N/A	CPS	
LSW4 Iron	520.0	408.1	N/A	N/A	N/A	N/A	CPS	
LSW5 Iron	470.0	376.8	N/A	N/A	N/A	N/A	CPS	
SSW1 Iron	2100	1748	N/A	N/A	N/A	N/A	CPS	
SSW2 Iron	6800	5423	N/A	N/A	N/A	N/A	CPS	
SSW3 Iron	10800	8249	N/A	N/A	N/A	N/A	CPS	
SSW4 Iron	4600	3342	N/A	N/A	N/A	N/A	CPS	
SSW5 Iron	580.0	391.9	N/A	N/A	N/A	N/A	CPS	

Hostile Litho–Density Sonde Wellsite Calibration – Caliper Calibration

Before: 5-Jun-2013 5:19							
HLDS Caliper Small Ring	12.00	N/A	16.02	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	15.19	N/A	19.90	N/A	N/A	N/A	IN

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 1 Check

Master: 22-May-2013 20:18 Before: 5-Jun-2013 5:31 After: 8-Jul-2013 15:10								
Na 511 Peak Loc	40.00	39.77	39.78	39.56	-0.2224	1.000		
Na 511 Peak Res	15.50	15.23	15.40	14.97	-0.4249	2.000	%	
High Voltage	1150	1161	1143	1152	8.722	N/A	V	
Na 1785 Peak Loc	142.6	143.9	143.2	141.5	-1.730	7.000		
Na 1785 Peak Res	8.500	7.558	8.088	8.247	0.1592	2.000	%	
Temperature	15.50	16.49	14.24	17.54	3.303	N/A	DEG	
Na Count Rate	45.00	14.90	15.37	14.20	-1.173	8.000	CPS	

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 2 Check

Master: 22–May–2013 20:18 Before: 5–Jun–2013 5:31 After: 8–Jul–2013 15:10								
Na 511 Peak Loc	40.00	39.67	39.68	39.63	–0.04630	1.000		
Na 511 Peak Res	15.50	15.00	15.05	14.74	–0.3100	2.000	%	
High Voltage	1150	1082	1074	1085	10.86	N/A	V	
Na 1785 Peak Loc	142.6	141.4	140.3	141.2	0.8607	7.000		
Na 1785 Peak Res	8.500	9.134	8.027	8.459	0.4314	2.000	%	
Temperature	15.50	16.94	14.41	19.46	5.047	N/A	DEG	
Na Count Rate	45.00	14.58	15.20	14.21	–0.9928	8.000	CPS	

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Ratio Of Detector 1 To Detector 2

Master: 22-May-2013 20:18 Before: 5-Jun-2013 5:31 After: 8-Jul-2013 15:10						
Coincidence Count Rate Ratio	1.000	1.024	1.014	0.9989	-0.01462	0.05000

Hostile Natural Gamma Ray Sonde Master Calibration – Detector 1 Calibration							
Master: 22–May–2013 20:18							
Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	211.4	--	--	--	--	
Th Peak Res	7.000	6.972	--	--	--	--	%
Background Count Rate	142.5	18.97	--	--	--	--	CPS
Gain Ratio	1.000	1.011	--	--	--	--	

















Hostile Natural Gamma Ray Sonde Master Calibration – Detector 2 Calibration							
Master: 22–May–2013 20:18							
Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	208.8	--	--	--	--	
Th Peak Res	7.000	6.474	--	--	--	--	%
Background Count Rate	142.5	18.20	--	--	--	--	CPS
Gain Ratio	1.000	1.001	--	--	--	--	

Enhanced DTS Cartridge Wellsite Calibration – EDTC Accelerometer Calibration							
Before: 8–Jul–2013 3:23							
EDTC Z–Axis Acceleration	9.810	N/A	9.800	N/A	N/A	N/A	M/S2

















Enhanced DTS Cartridge Wellsite Calibration – Detector Calibration							
Before: Calibration out of date 5–Jun–2013 5:18							
Gamma Ray (Jig – Bkg)	156.4	N/A	156.4	N/A	N/A	14.22	GAPI
Gamma Ray (Calibrated)	164.0	N/A	164.0	N/A	N/A	15.00	GAPI

High Resolution Laterolog Array – B / Equipment Identification

Primary Equipment:		
HRLT Sonde	HRLS – B	768
Auxiliary Equipment:		
HRLT lower Housing	HRLH – B	968
HRLT Lower Cartridge	HRLC – B	974
HRLT upper Housing	HRUH – B	768
HRLT Upper Cartridge	HRUC – B	764

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT M01						
Idx	Phase	HRLT M0–M1 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		–319.7	–322.7	–280.7	–379.7
	After		–319.7			
1	Before		–337.4	–322.7	–280.7	–379.7
	After		–338.3			
2	Before		–336.9	–322.7	–280.7	–379.7
	After		–338.0			
3	Before		–340.2	–322.7	–280.7	–379.7
	After		–340.8			
4	Before		–327.5	–322.7	–280.7	–379.7
	After		–327.6			
5	Before		–323.2	–322.7	–280.7	–379.7
	After		–323.5			
6	Before		328.0	322.7	379.7	280.7
	After		329.2			
7	Before		–322.7	–322.7	–280.7	–379.7
	After		–322.7			
(Minimum) (Nominal) (Maximum)						
Before: 8–Jul–2013 3:24						
After: 8–Jul–2013 14:58						

HRLT M12

















Idx	Phase	HRLT M1–M2 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1758	1781	2095	1549
	After		1758			
1	Before		1859	1781	2095	1549
	After		1864			
2	Before		1850	1781	2095	1549
	After		1856			
3	Before		1866	1781	2095	1549
	After		1868			
4	Before		1795	1781	2095	1549
	After		1795			
5	Before		1773	1781	2095	1549
	After		1773			
6	Before		-1816	-1781	-1549	-2095
	After		-1823			
7	Before		1781	1781	2095	1549
	After		1781			
(Minimum) (Nominal) (Maximum)						

Before: 8-Jul-2013 3:24

After: 8-Jul-2013 14:58

High Resolution Laterolog Array – B Wellsite Calibration

HRLT M23


Idx	Phase	HRLT M2–M3 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1744	1781	2095	1549
	After		1743			
1	Before		1857	1781	2095	1549
	After		1861			
2	Before		1848	1781	2095	1549
	After		1854			
3	Before		1868	1781	2095	1549
	After		1871			
4	Before		1791	1781	2095	1549
	After		1791			
5	Before		1769	1781	2095	1549
	After		1770			
6	Before		-1802	-1781	-1549	-2095
	After		-1809			
7	Before		1781	1781	2095	1549
	After		1781			
(Minimum) (Nominal) (Maximum)						
















Before: 8-Jul-2013 3:24

















After: 8-Jul-2013 14:58




High Resolution Laterolog Array – B Wellsite Calibration














HRLT V34

















Idx	Phase	HRLT A3–A4 Voltage Plus UV	Value	Nominal	Maximum	Minimum
	Before		68570			






0	After		68570	70000	82360	60900
1	Before		72800	70000	82360	60900
	After		73000			
2	Before		72770	70000	82360	60900
	After		73020			
3	Before		73830	70000	82360	60900
	After		73940			
4	Before		70730	70000	82360	60900
	After		70750			
5	Before		69890	70000	82360	60900
	After		69950			
6	Before		-69660	-70000	-60900	-82360
	After		-69930			
7	Before		70000	70000	82360	60900
	After		70000			
(Minimum) (Nominal) (Maximum)						
Before: 8-Jul-2013 3:24						
After: 8-Jul-2013 14:58						

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT V45						
Idx	Phase	HRLT A4–A5 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68850	70000	82360	60900
	After		68850			
1	Before		73190	70000	82360	60900
	After		73390			
2	Before		73140	70000	82360	60900
	After		73390			
3	Before		74170	70000	82360	60900
	After		74290			
4	Before		71040	70000	82360	60900
	After		71050			
5	Before		70170	70000	82360	60900
	After		70220			
6	Before		-70050	-70000	-60900	-82360
	After		-70300			
7	Before		70000	70000	82360	60900
	After		70000			
(Minimum) (Nominal) (Maximum)						
Before: 8-Jul-2013 3:24						
After: 8-Jul-2013 14:58						

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT V56						
Idx	Phase	HRLT A5–A6 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68740	70000	82360	60900
	After		68750			
	Before		72920			

1	After		73110	70000	82360	60900
2	Before		72890	70000	82360	60900
	After		73140			
3	Before		73950	70000	82360	60900
	After		74080			
4	Before		70900	70000	82360	60900
	After		70930			
5	Before		70050	70000	82360	60900
	After		70100			
6	Before		-69760	-70000	-60900	-82360
	After		-70020			
7	Before		70000	70000	82360	60900
	After		70000			
(Minimum) (Nominal) (Maximum)						
Before: 8-Jul-2013 3:24						
After: 8-Jul-2013 14:58						

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT VTP						
Idx	Phase	HRLT Torpedo-M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-68450	-70000	-60900	-82360
	After		-68430			
1	Before		-73280	-70000	-60900	-82360
	After		-73440			
2	Before		-73220	-70000	-60900	-82360
	After		-73440			
3	Before		-74280	-70000	-60900	-82360
	After		-74370			
4	Before		-71130	-70000	-60900	-82360
	After		-71120			
5	Before		-70240	-70000	-60900	-82360
	After		-70270			
6	Before		70060	70000	82360	60900
	After		70300			
7	Before		-70000	-70000	-60900	-82360
	After		-70000			
(Minimum) (Nominal) (Maximum)						
Before: 8-Jul-2013 3:24						
After: 8-Jul-2013 14:58						

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT VBD						
Idx	Phase	HRLT Bridle#9-M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-68410	-70000	-60900	-82360
	After		-68420			
1	Before		-73230	-70000	-60900	-82360
	After		-73430			
2	Before		-73170			
	After					

2	After		-73420	-70000	-60900	-82360
3	Before		-74240	-70000	-60900	-82360
	After		-74350			
4	Before		-71100	-70000	-60900	-82360
	After		-71120			
5	Before		-70210	-70000	-60900	-82360
	After		-70270			
6	Before		70010	70000	82360	60900
	After		70260			
7	Before		-70000	-70000	-60900	-82360
	After		-70000			
(Minimum) (Nominal) (Maximum)						
Before: 8-Jul-2013 3:24						
After: 8-Jul-2013 14:58						

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT ISO						
Idx	Phase	HRLT Source Current Plus UA	Value	Nominal	Maximum	Minimum
0	Before		285.3	284.0	334.1	247.0
	After		285.3			
1	Before		281.1	281.1	330.7	244.4
	After		281.1			
2	Before		281.1	281.1	330.7	244.4
	After		281.1			
3	Before		281.1	281.1	330.7	244.4
	After		281.1			
4	Before		281.1	281.1	330.7	244.4
	After		281.1			
5	Before		281.1	281.1	330.7	244.4
	After		281.1			
6	Before		281.1	281.1	330.7	244.4
	After		281.1			
7	Before		281.1	281.1	330.7	244.4
	After		281.1			
(Minimum) (Nominal) (Maximum)						
Before: 8-Jul-2013 3:24						
After: 8-Jul-2013 14:58						

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT MV						
Idx	Phase	HRLT Vertical Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-322.3	-322.7	-280.7	-379.7
	After		-322.1			
1	Before		-332.7	-322.7	-280.7	-379.7
	After		-333.4			
2	Before		-331.1	-322.7	-280.7	-379.7
	After		-332.0			
3	Before		-332.2	-322.7	-280.7	-379.7
	After		-332.2			

3	After		-332.5	-322.7	-280.7	-379.7
4	Before		-316.8	-322.7	-280.7	-379.7
	After		-316.6			
5	Before		-327.7	-322.7	-280.7	-379.7
	After		-327.7			
6	Before		336.7	322.7	379.7	280.7
	After		337.7			
7	Before		-322.7	-322.7	-280.7	-379.7
	After		-322.7			
(Minimum) (Nominal) (Maximum)						
Before: 8-Jul-2013 3:24						
After: 8-Jul-2013 14:58						

Hostile Litho-Density Sonde / Equipment Identification

Primary Equipment:

Hostile Litho Density Sonde
Hostile Litho Density High Voltage
Gamma Source Radioactive

HLDS - D 45
HLDV - D 45
GSR - Z 8113

Auxiliary Equipment:

Hostile Litho Density Pad
Hostile Litho Density High Voltage Housi

HLDP - C 45
HEH - H 47

Hostile Litho-Density Sonde Wellsite Calibration













Background Measurement

Phase	SS Cs Resolution Bkg %	Value	Phase	LS Cs Resolution Bkg %	Value	Phase	LSW1 Background CPS	Value
Master		7.935	Master		8.162	Master		71.72
Before		8.049	Before		8.063	Before		70.78
After		7.961	After		8.048	After		71.09
7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)			7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)			55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)		
Phase	LSW2 Background CPS	Value	Phase	LSW3 Background CPS	Value	Phase	LSW4 Background CPS	Value
Master		65.95	Master		146.1	Master		176.3
Before		64.89	Before		143.2	Before		175.6
After		64.69	After		142.5	After		174.8
50.00 (Minimum) 100.0 (Nominal) 140.0 (Maximum)			110.0 (Minimum) 200.0 (Nominal) 290.0 (Maximum)			140.0 (Minimum) 250.0 (Nominal) 360.0 (Maximum)		
Phase	LSW5 Background CPS	Value	Phase	SSW1 Background CPS	Value	Phase	SSW2 Background CPS	Value
Master		404.2	Master		80.22	Master		141.1
Before		405.6	Before		79.61	Before		142.8
After		402.8	After		79.51	After		142.3
330.0 (Minimum) 600.0 (Nominal) 830.0 (Maximum)			55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)			100.0 (Minimum) 200.0 (Nominal) 260.0 (Maximum)		
Phase	SSW3 Background CPS	Value	Phase	SSW4 Background CPS	Value	Phase	SSW5 Background CPS	Value
Master		380.9	Master		201.0	Master		143.8
Before		379.7	Before		199.2	Before		144.9
After		382.9	After		197.4	After		142.7
280.0 (Minimum) 500.0 (Nominal) 700.0 (Maximum)			150.0 (Minimum) 270.0 (Nominal) 380.0 (Maximum)			110.0 (Minimum) 200.0 (Nominal) 270.0 (Maximum)		
Master: 23-May-2013 18:26			Before: 5-Jun-2013 5:19			After: 8-Jul-2013 15:10		

Hostile Litho-Density Sonde Master Calibration







Detector Background Measurement



Phase	LSW1 Background CPS	Value	Phase	LSW2 Background CPS	Value	Phase	LSW3 Background CPS	Value
Master		71.72	Master		176.3	Master		141.1
Before		70.78	Before		175.6	Before		142.8
After		71.09	After		174.8	After		142.3

Master		71.72	Master		65.95	Master		146.1
	55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)			50.00 (Minimum) 100.0 (Nominal) 140.0 (Maximum)			110.0 (Minimum) 200.0 (Nominal) 290.0 (Maximum)	
Phase	LSW4 Background CPS	Value	Phase	LSW5 Background CPS	Value	Phase	LS Cs Resolution Bkg %	Value
Master		176.3	Master		404.2	Master		8.162
	140.0 (Minimum) 250.0 (Nominal) 360.0 (Maximum)			330.0 (Minimum) 600.0 (Nominal) 830.0 (Maximum)			7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)	
Phase	SSW1 Background CPS	Value	Phase	SSW2 Background CPS	Value	Phase	SSW3 Background CPS	Value
Master		80.22	Master		141.1	Master		380.9
	55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)			100.0 (Minimum) 200.0 (Nominal) 260.0 (Maximum)			280.0 (Minimum) 500.0 (Nominal) 700.0 (Maximum)	
Phase	SSW4 Background CPS	Value	Phase	SSW5 Background CPS	Value	Phase	SS Cs Resolution Bkg %	Value
Master		201.0	Master		143.8	Master		7.935
	150.0 (Minimum) 270.0 (Nominal) 380.0 (Maximum)			110.0 (Minimum) 200.0 (Nominal) 270.0 (Maximum)			7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)	
Master: 23-May-2013 18:26								

Hostile Litho-Density Sonde Master Calibration											
Detector Aluminum Measurement (bkgd-subtracted)											
Phase	LSW1 Aluminum CPS		Value	Phase	LSW2 Aluminum CPS		Value	Phase	LSW3 Aluminum CPS		Value
Master	<div><div></div></div>		513.7	Master	<div><div></div></div>		737.9	Master	<div><div></div></div>		887.0
420.0 (Minimum)			600.0 (Nominal)	770.0 (Maximum)			650.0 (Minimum)			900.0 (Nominal)	1150 (Maximum)
Phase	LSW4 Aluminum CPS		Value	Phase	LSW5 Aluminum CPS		Value	Phase	SSW1 Aluminum CPS		Value
Master	<div><div></div></div>		448.1	Master	<div><div></div></div>		411.4	Master	<div><div></div></div>		2391
410.0 (Minimum)			580.0 (Nominal)	740.0 (Maximum)			410.0 (Minimum)			570.0 (Nominal)	740.0 (Maximum)
2000 (Minimum)			2800 (Nominal)	3200 (Maximum)			2000 (Minimum)			2800 (Nominal)	3200 (Maximum)
Phase	SSW2 Aluminum CPS		Value	Phase	SSW3 Aluminum CPS		Value	Phase	SSW4 Aluminum CPS		Value
Master	<div><div></div></div>		6513	Master	<div><div></div></div>		9048	Master	<div><div></div></div>		3653
5800 (Minimum)			8000 (Nominal)	9300 (Maximum)			8300 (Minimum)			11600 (Nominal)	13500 (Maximum)
3500 (Minimum)			5000 (Nominal)	5800 (Maximum)			3500 (Minimum)			5000 (Nominal)	5800 (Maximum)
Phase	SSW5 Aluminum CPS		Value								
Master	<div><div></div></div>		442.2								
430.0 (Minimum)			660.0 (Nominal)								
Master: 23-May-2013 19:07											

Hostile Litho-Density Sonde Master Calibration											
Detector Litholog Measurement (bkgd-subtracted)											
Phase	LSW1 Iron CPS		Value	Phase	LSW2 Iron CPS		Value	Phase	LSW3 Iron CPS		Value
Master	<div><div></div></div>		354.2	Master	<div><div></div></div>		602.9	Master	<div><div></div></div>		794.0
	290.0 (Minimum)	400.0 (Nominal)	560.0 (Maximum)		520.0 (Minimum)	730.0 (Nominal)	950.0 (Maximum)		720.0 (Minimum)	1000 (Nominal)	1350 (Maximum)
Phase	LSW4 Iron CPS		Value	Phase	LSW5 Iron CPS		Value	Phase	SSW1 Iron CPS		Value
Master	<div><div></div></div>		408.1	Master	<div><div></div></div>		376.8	Master	<div><div></div></div>		1748
	370.0 (Minimum)	520.0 (Nominal)	700.0 (Maximum)		340.0 (Minimum)	470.0 (Nominal)	750.0 (Maximum)		1500 (Minimum)	2100 (Nominal)	2400 (Maximum)
Phase	SSW2 Iron CPS		Value	Phase	SSW3 Iron CPS		Value	Phase	SSW4 Iron CPS		Value
Master	<div><div></div></div>		5423	Master	<div><div></div></div>		8249	Master	<div><div></div></div>		3342
	4900 (Minimum)	6800 (Nominal)	7900 (Maximum)		7800 (Minimum)	10800 (Nominal)	12600 (Maximum)		3300 (Minimum)	4600 (Nominal)	5400 (Maximum)
Phase	SSW5 Iron CPS		Value								
Master	<div><div>EXCEEDS LIMIT</div></div>		391.9								
	420.0 (Minimum)	580.0 (Nominal)	680.0 (Maximum)								
Master: 23-May-2013 18:57											

Hostile Litho-Density Sonde Master Calibration								
Quality Ratios								
Phase	AL CALIBRATION RATIO 1	Value	Phase	AL CALIBRATION RATIO 2	Value	Phase	AL CALIBRATION RATIO 3	Value
Master		1.032	Master		2.209	Master		0.5976
	0.9000 (Minimum) 1.000 (Nominal) 1.100 (Maximum)			1.900 (Minimum) 2.100 (Nominal) 2.300 (Maximum)			0.4500 (Minimum) 0.5500 (Nominal) 0.6500 (Maximum)	
Phase	AL CALIBRATION RATIO 4	Value	Phase	Pad-Wear SS Ratio	Value	Phase	Pad-Wear LS Ratio	Value
Master		0.5838	Master		0.9909	Master		0.9830

0.4000 (Minimum)	0.5500 (Nominal)	0.6500 (Maximum)	0.9800 (Minimum)	0.9880 (Nominal)	0.9960 (Maximum)	0.9800 (Minimum)	0.9880 (Nominal)	0.9960 (Maximum)
Phase	Pad-Position SS Ratio		Value	Phase	Pad-Position LS Ratio		Value	
Master			1.004	Master			0.9849	
0.9900 (Minimum)	0.9940 (Nominal)	1.015 (Maximum)		0.9850 (Minimum)	0.9940 (Nominal)	1.010 (Maximum)		

Master: 23-May-2013 19:13

Litho-Density Spectroscopy Cartridge – B / Equipment Identification

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

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 Gamma Source Radioactive	HNSH – BA GSR – U	205 616008

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 1 Check

Phase	Na 511 Peak Loc	Value	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		39.77	Master		15.23	Master		1161
Before		39.78	Before		15.40	Before		1143
After		39.56	After		14.97	After		1152
37.50 (Minimum)	40.00 (Nominal)	43.50 (Maximum)	12.00 (Minimum)	15.50 (Nominal)	19.00 (Maximum)	900.0 (Minimum)	1150 (Nominal)	1600 (Maximum)
Phase	Na 1785 Peak Loc	Value	Phase	Na 1785 Peak Res %	Value	Phase	Temperature DEGC	Value
Master		143.9	Master		7.558	Master		16.49
Before		143.2	Before		8.088	Before		14.24
After		141.5	After		8.247	After		17.54
135.0 (Minimum)	142.6 (Nominal)	150.3 (Maximum)	7.000 (Minimum)	8.500 (Nominal)	11.00 (Maximum)	-28.89 (Minimum)	15.50 (Nominal)	60.00 (Maximum)
Phase	Na Count Rate CPS	Value						
Master		14.90						
Before		15.37						
After		14.20						
10.00 (Minimum)	45.00 (Nominal)	100.0 (Maximum)						




Master: 22-May-2013 20:18



















Before: 5-Jun-2013 5:31

After: 8-Jul-2013 15:10






Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		39.67	Master		15.00	Master		1082

Before		39.68	Before		15.05	Before		1074
After		39.63	After		14.74	After		1085
37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)			12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)			900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)		
Phase	Na 1785 Peak Loc	Value	Phase	Na 1785 Peak Res %	Value	Phase	Temperature DEGC	Value
Master		141.4	Master		9.134	Master		16.94
Before		140.3	Before		8.027	Before		14.41
After		141.2	After		8.459	After		19.46
135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)			7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)			-28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)		
Phase	Na Count Rate CPS	Value						
Master		14.58						
Before		15.20						
After		14.21						
10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)								
Master: 22-May-2013 20:18			Before: 5-Jun-2013 5:31			After: 8-Jul-2013 15:10		

Hostile Natural Gamma Ray Sonde Wellsite Calibration		
Ratio Of Detector 1 To Detector 2		
Phase	Coincidence Count Rate Ratio	Value
Master		1.024
Before		1.014
After		0.9989
0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		
Master: 22-May-2013 20:18		
Before: 5-Jun-2013 5:31		
After: 8-Jul-2013 15:10		

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			211.4	Master			6.972			
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			18.97	Master			1.011							
10.00 (Minimum)			142.5 (Nominal)	265.0 (Maximum)	0.9400 (Minimum)						1.000 (Nominal)	1.060 (Maximum)		
Master: 22-May-2013 20:18														

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	<div><div></div></div>		41.00	Master	<div><div></div></div>		208.8	Master	<div><div></div></div>		6.474
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	<div><div></div></div>		18.20	Master	<div><div></div></div>		1.001				
10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)				0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)							
Master: 22-May-2013 20:18											

Enhanced DTS Cartridge / Equipment Identification

Primary Equipment:

EDTC Gamma Ray Detector
Enhanced DTS Cartridge

EDTG – A/B
EDTC – B

8305
8317

Auxiliary Equipment:

EDTC Housing

EDTH – B

8303

