

**Schlumberger**

**Company: Nalcor Energy Oil and Gas**

**Well: Nalcor et al Seamus 1**

**Field: Parson's Pond**

**Rig: Stoneham #11**

**Province: Newfoundland**

# Nalcor Energy Oil and Gas

# Nalcor et al Seamus 1

# Parson's Pond

Province: **Newfoundland**

<div> <div>PLATFORM EXPRESS</div> <div>COMPENSATED NEUTRON</div> <div>LITHOLOGY DENSITY LOG</div> </div>			
<div> <div>LOCATION</div> <div> <div>Latitude: 49.98 N</div> <div>Longitude: 57.70 W</div> </div> </div>		<div> <div>Elev.:      K.B.      26.99 m</div> <div>G.L.      20.69 m</div> <div>D.F.      26.69 m</div> </div>	
<div> <div>Permanent Datum:      <u>Ground Level</u></div> <div>Log Measured From:      <u>Kelly Bushing</u></div> <div>Drilling Measured From:      <u>Kelly Bushing</u></div> </div>		<div> <div>Elev.:      <u>20.69 m</u></div> <div>6.30 m      above Perm. Datum</div> </div>	
<div>API Serial No.</div>		<div> <div>Latitude</div> <div>49.98 N</div> </div>	
<div> <div>Longitude</div> <div>57.70 W</div> </div>			

## Parson's Pond

## Parson's Pond

Latitude: 49.98 N

Nalcor et al Seamus 1

# Nalcor Energy Oil and Gas

## LOCATION

Latitude: 49.98 N

Longitude: 57.70 W

Elev.:

K.B.

G.L.

D.F. 26.69 m

Ground Level

Elev.: 20.69 m

Kelly Bushing

6.30 m above Perm. Datum

## Drilling Measured From:

Kelly Bushing

API Serial No

Latitude

Longitude

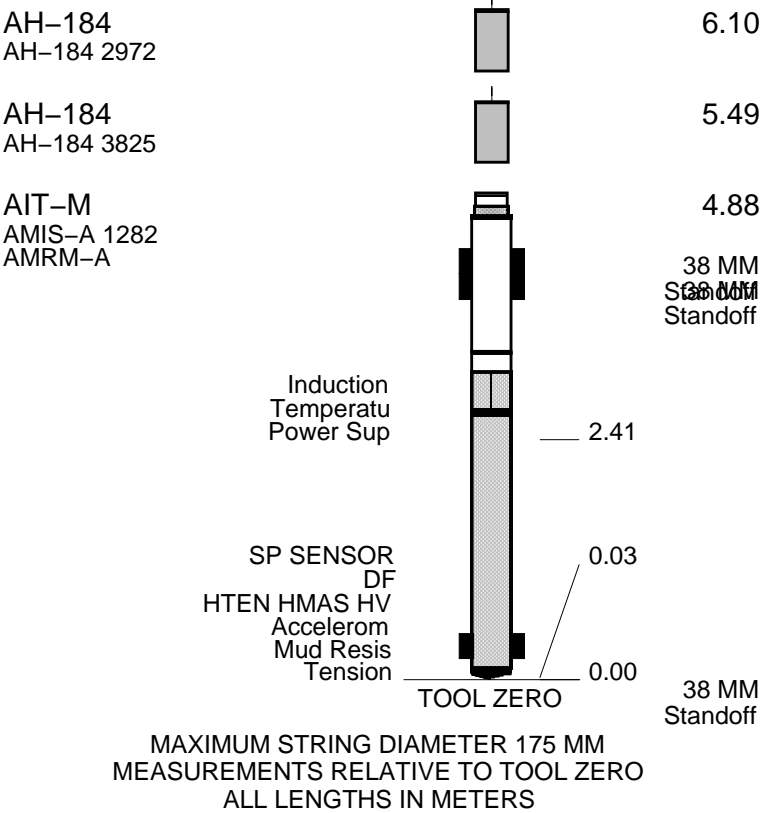
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Logging Date	15-May-2010				
Run Number	Run 1				
Depth Driller	3160 m				
Schlumberger Depth	3129.2 m				
Bottom Log Interval	3122.4 m				
Top Log Interval	2292.5 m				
Casing Driller Size @ Depth	244,500 mm		@	2292.4 m	@
Casing Schlumberger	2292.5 m				
Bit Size	216,000 mm				
Type Fluid In Hole	Gel Chem				
Density	1170 kg/m3	60 s			
Fluid Loss	PH	9.7			
Source Of Sample	Mud Pit				
RM @ Measured Temperature	0.950 ohm.m		@	21 degC	@
RMF @ Measured Temperature	0.710 ohm.m		@	21 degC	@
RMG @ Measured Temperature	1.450 ohm.m		@	21 degC	@
Source RMF	RMC		Calculated		
RM @ MRT	RMF @ MRT	0.546 @ 53	0.408	@ 53	@
Maximum Recorded Temperatures	53 degC				@
Circulation Stopped	Time			8:30	
Logger On Bottom	Time			18:25	
Unit Number	Location	6061	St.John's		
Recorded By	Greg Au				
Witnessed By	R. Strickland				

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				
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				

OTHER SERVICES1	OTHER SERVICES2
OS1: PEX-AIT	OS1:
OS2: DSI-FMI	OS2:
OS3: MDT	OS3:
OS4: VSP	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
All tools run as per tool sketch	
AIT run with 3 x 1.5" standoffs	
2 x AH-107 knuckle joints run above AIT for eccentralization	
HGNS run using a standard bowspring for eccentralization	
Nuclear measurements recorded on both Sandstone, Limestone, and Dolomite matrices	

Due to hole conditions the repeat log was done below casing as per request by client



Company: Nalcor Energy Oil and Gas

Well: Nalcor et al Seamus 1

Input DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:9	PRODUCER	15-May-2010 18:24	3135.5 M	2218.0 M
Output DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_016PUP	FN:23	PRODUCER	15-May-2010 20:21	3140.5 M	2223.1 M
CUSTOMER	AIT_TLD_MCFL_CNL_016PUP	FN:24	PRODUCER	15-May-2010 20:21	3140.5 M	2223.1 M

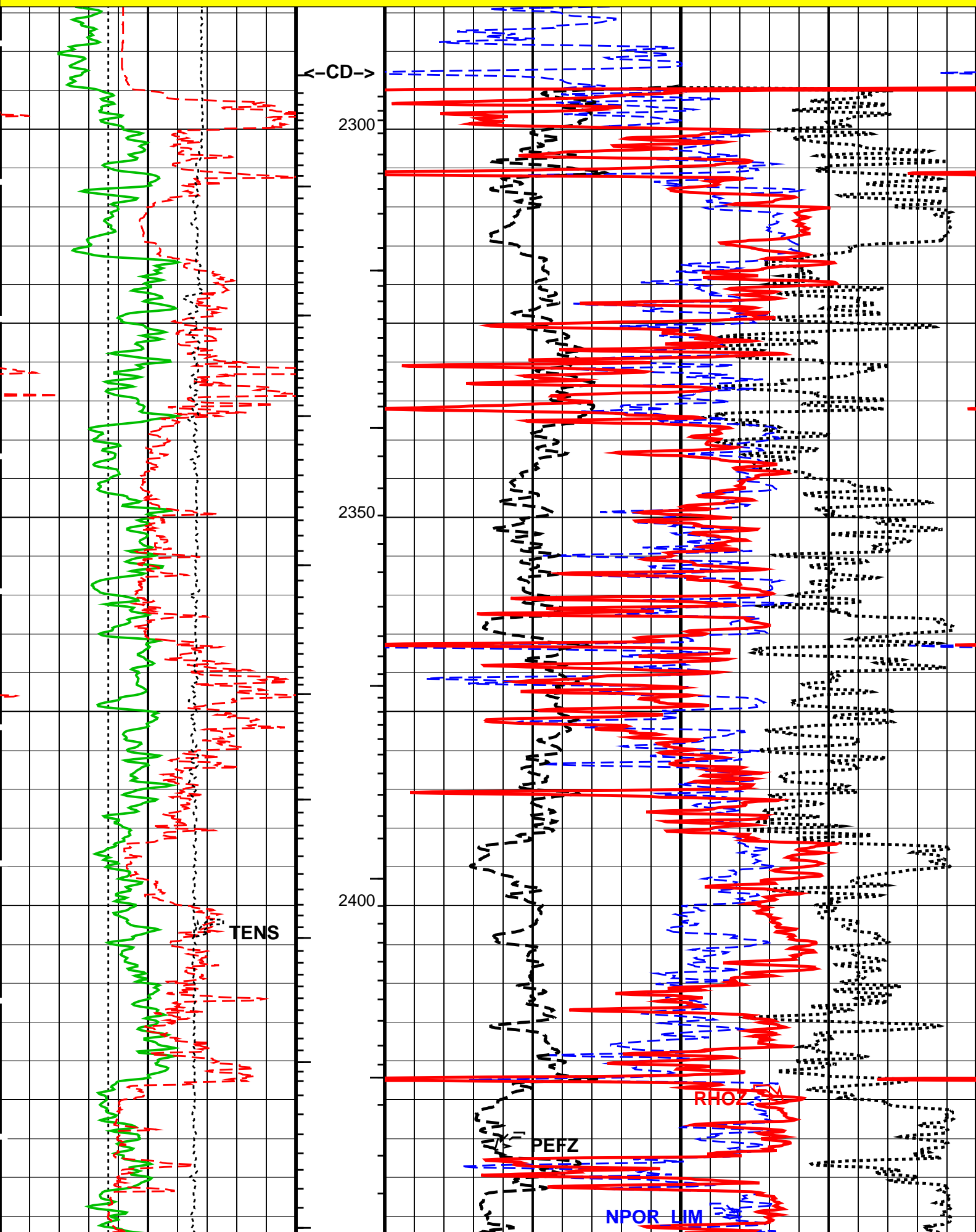
Integrated Hole/Cement Volume Summary	
Hole Volume = 45.03 M3	
Cement Volume = 23.97 M3 (assuming 177.80 MM casing O.D.)	
Computed from 3140.5 M to 2292.4 M using data channel(s) HCAL	

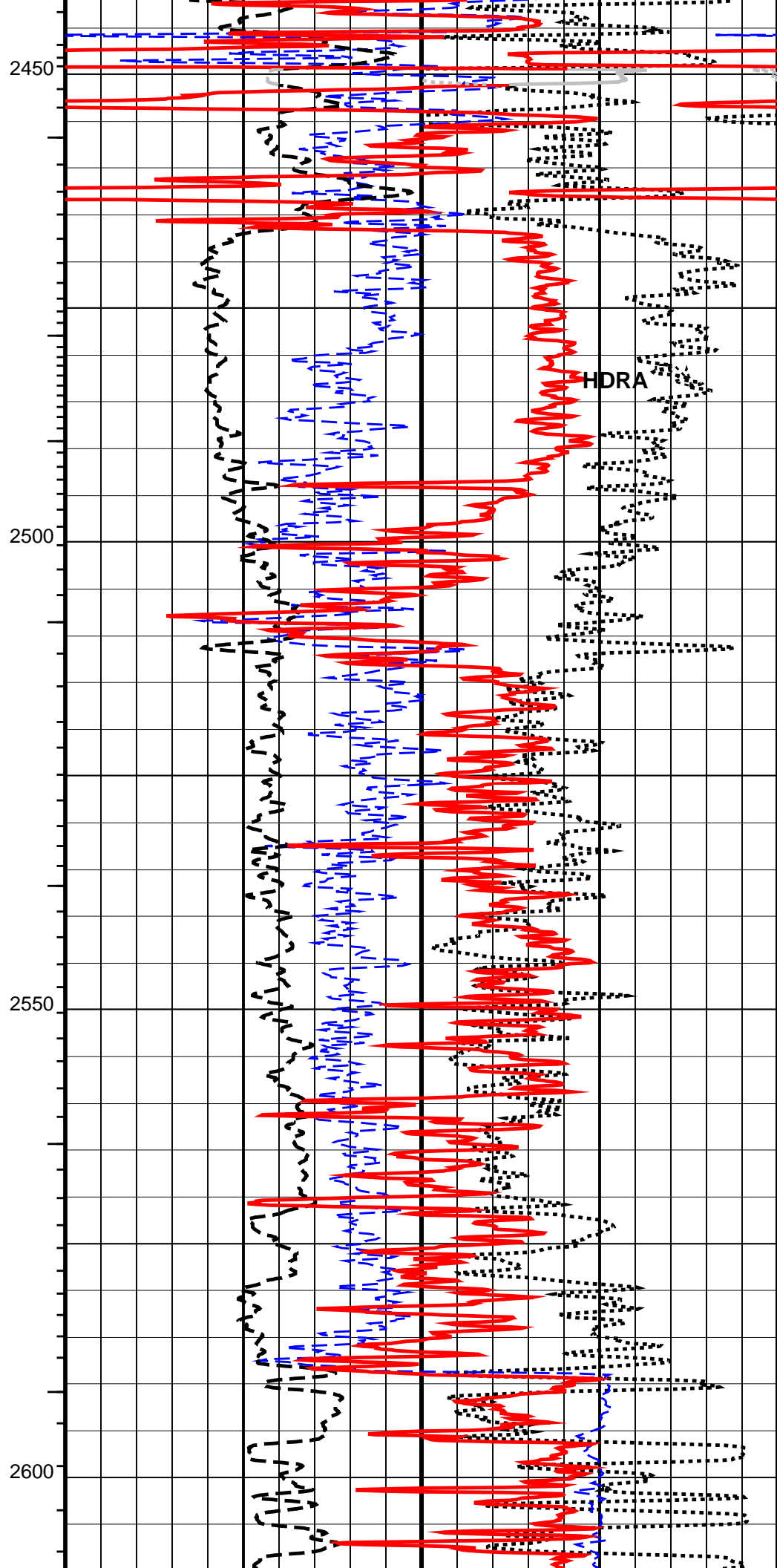
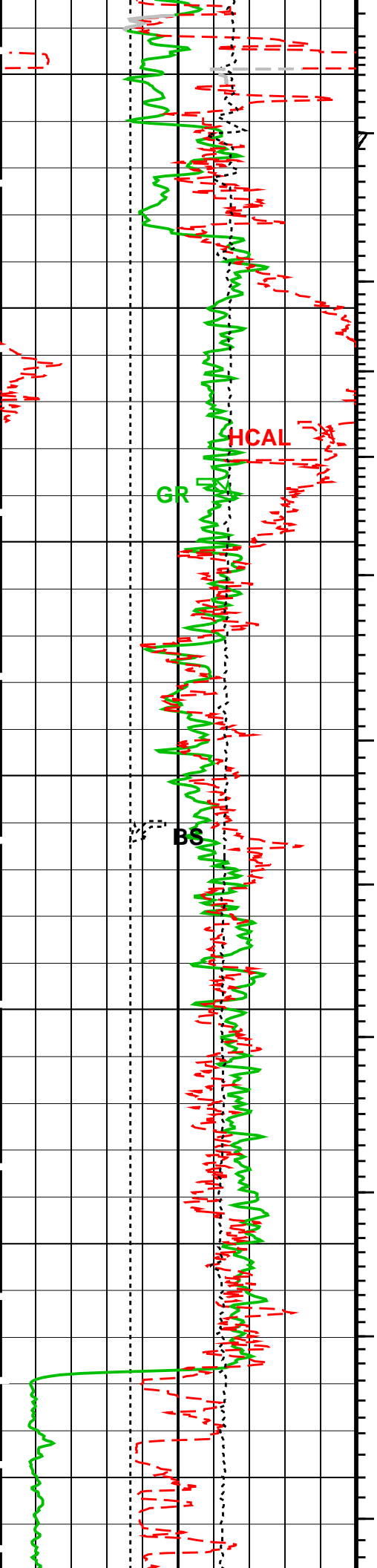
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AIT-M	17C0-154	HILTH-FTB	17C0-154
DTC-H	17C0-154		

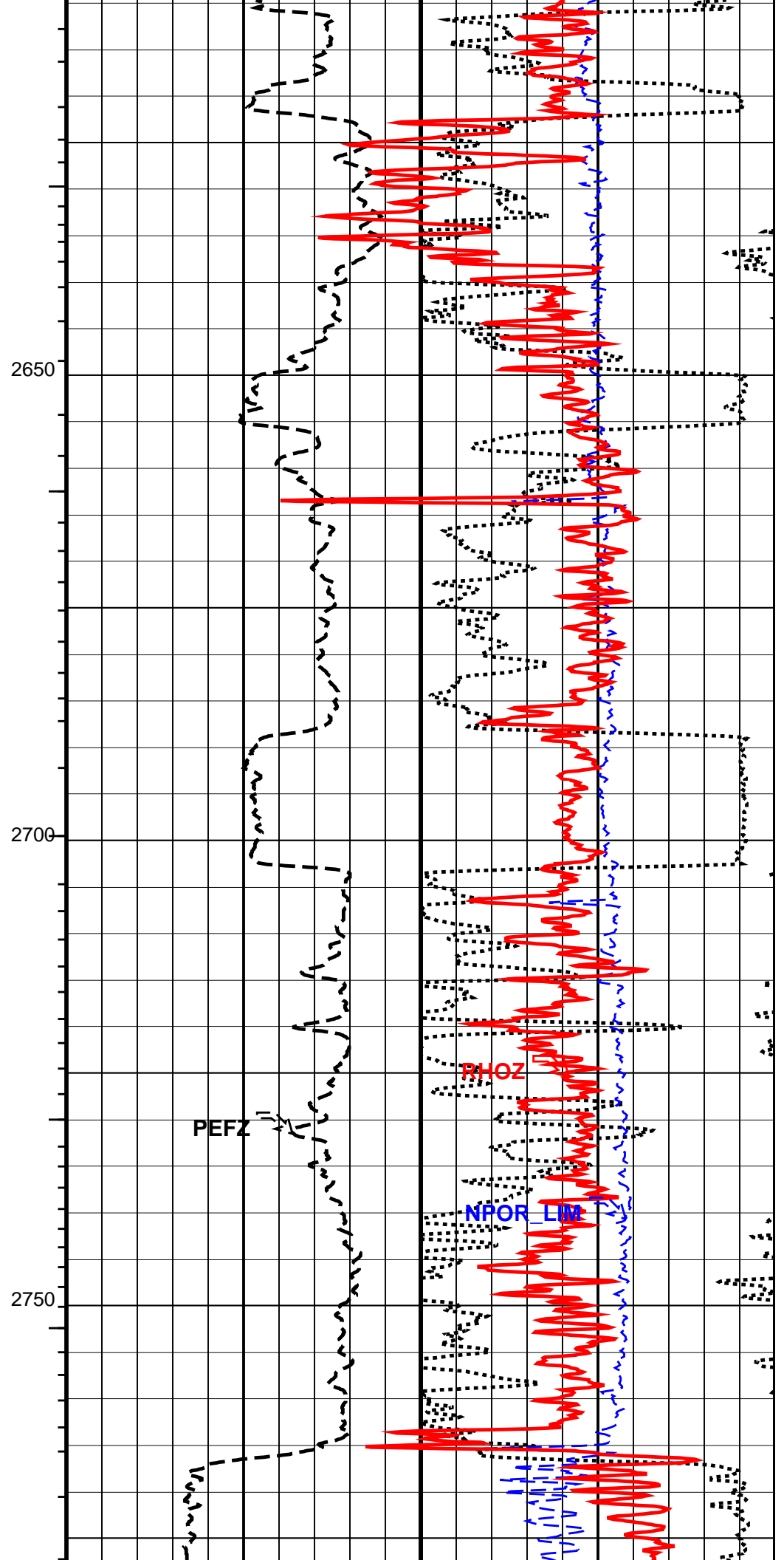
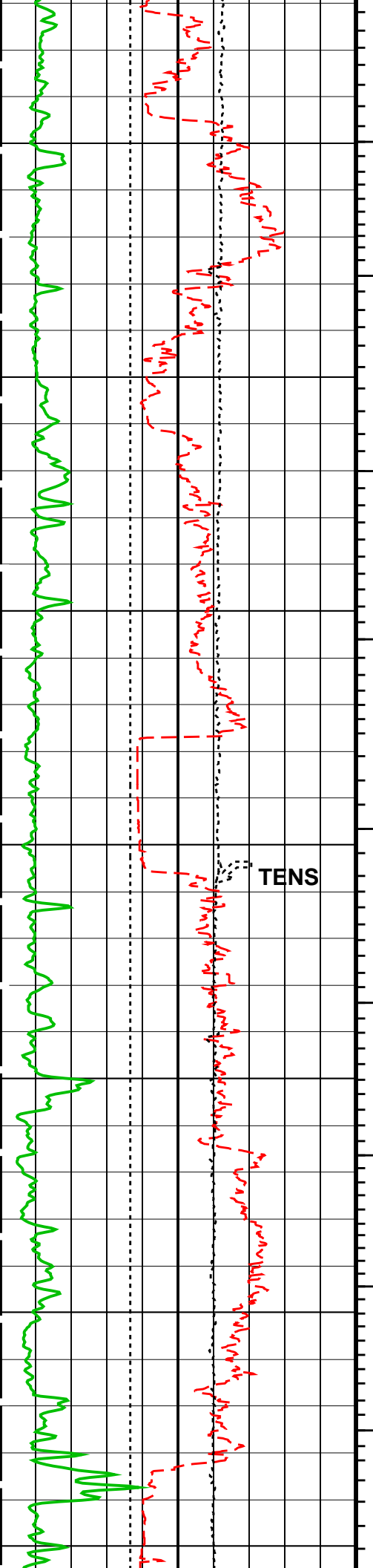
PIP SUMMARY	
└ Integrated Hole Volume Minor Pip Every 0.1 M3	
└ Integrated Hole Volume Major Pip Every 1 M3	
└ Integrated Cement Volume Minor Pip Every 0.1 M3	
└ Integrated Cement Volume Major Pip Every 1 M3	
Time Mark Every 60 S	

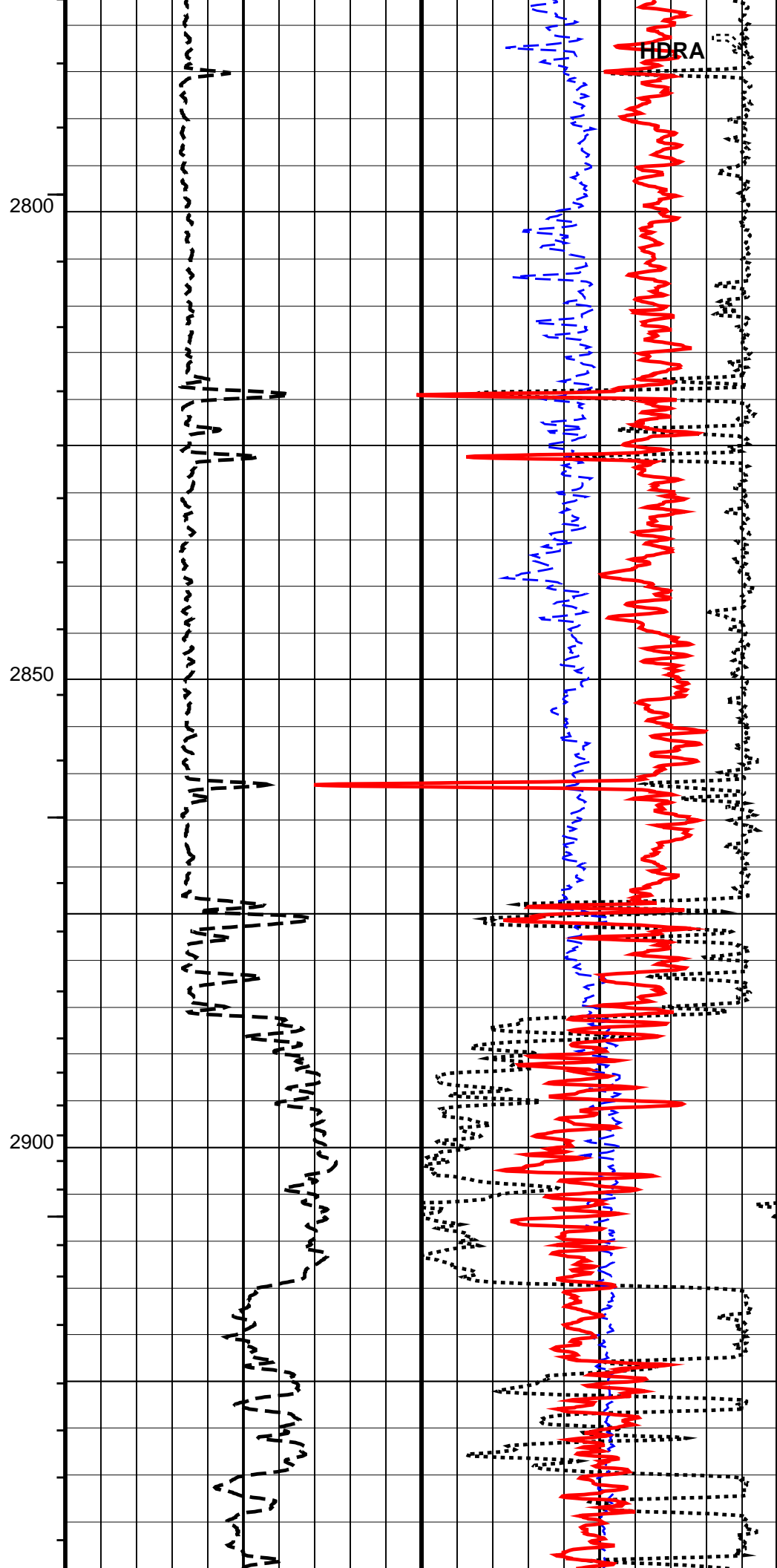
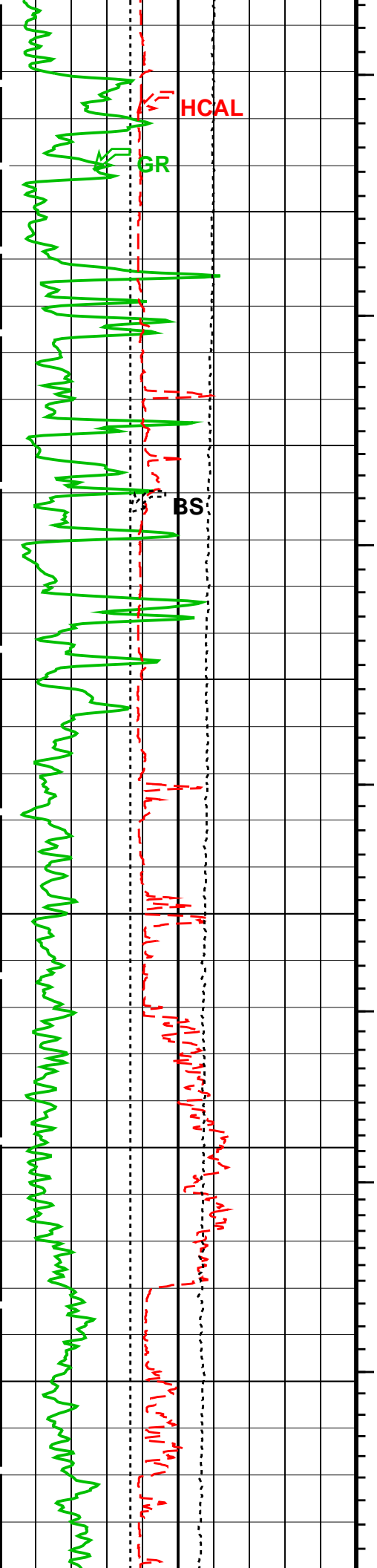
Tension (TENS) 25000 (N) 0		Std. Res. Formation Density (RHOZ) 2000 (K/M3) 3000	
Gamma Ray (GR) 0 (GAPI) 150		Std. Res. Formation Pe (PEFZ) 0 (----) 10 450	
HILT Caliper (HCAL) 125 (MM) 375		Density Correction (HDRA) (K/M3) -50	
Bit Size (BS)		NPOR for LIME (NPOR_LIM)	

\*\*\*MAIN PASS: PEX - FORMATION BULK DENSITY LOG\*\*\*

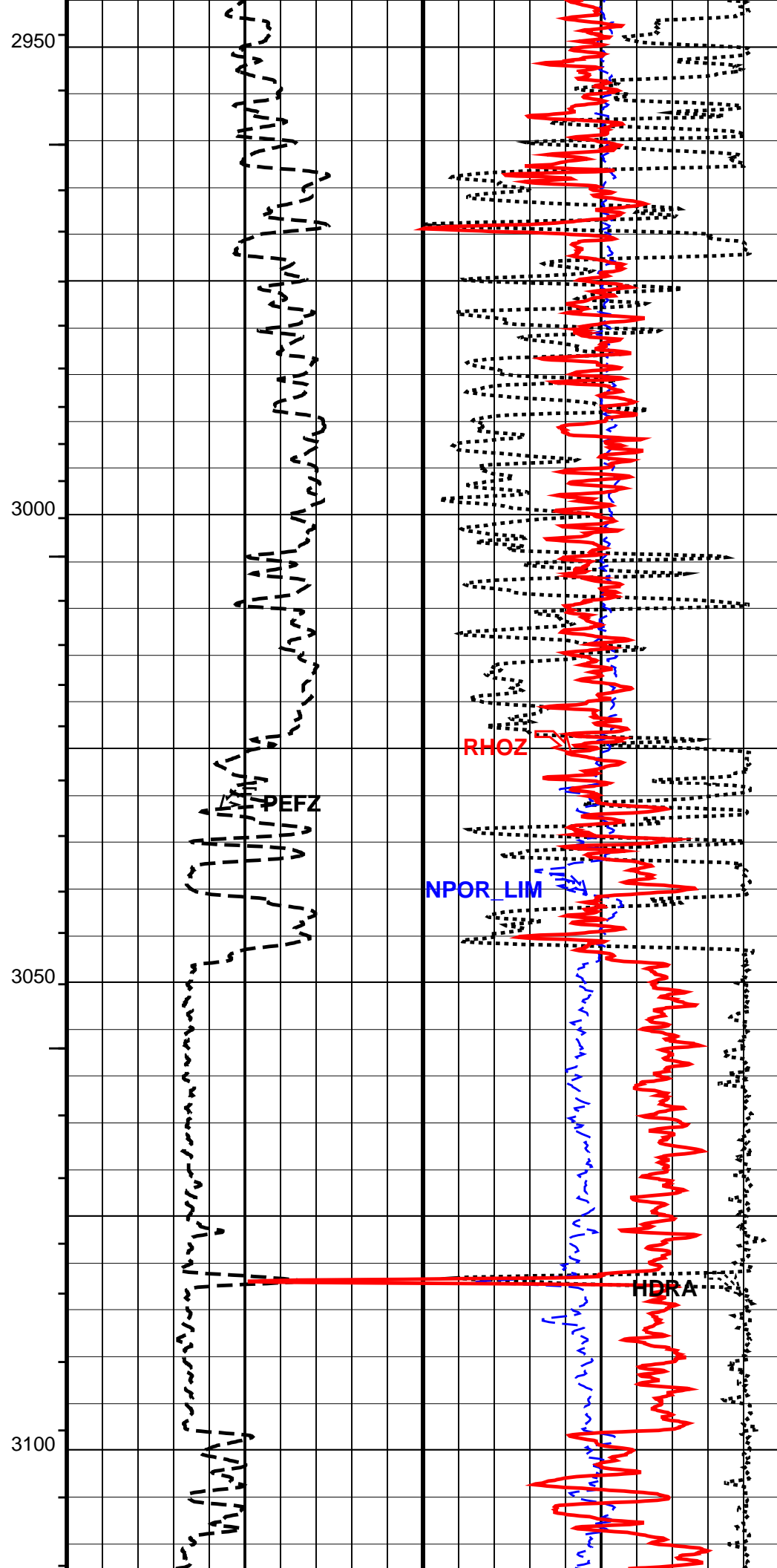
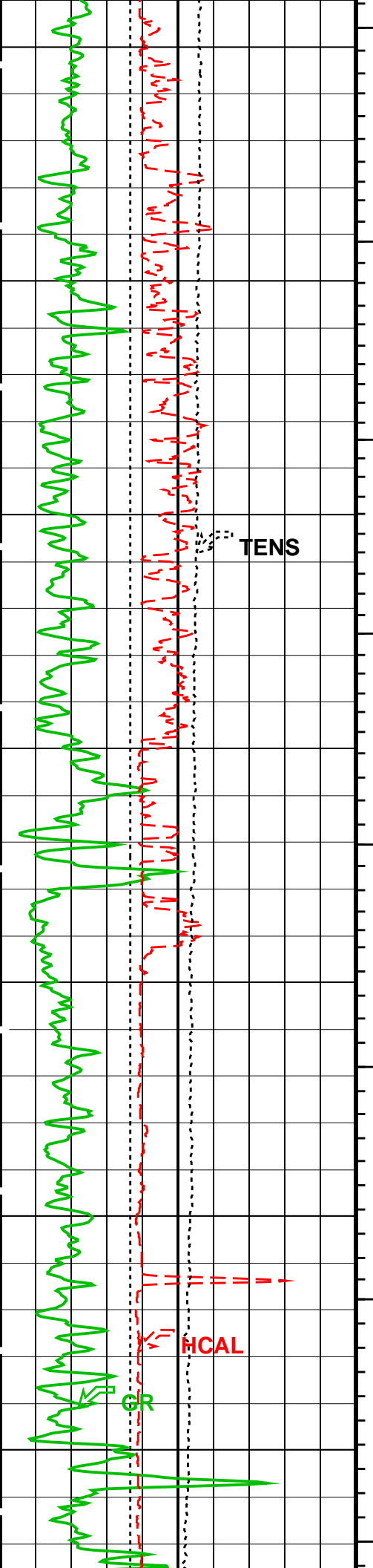


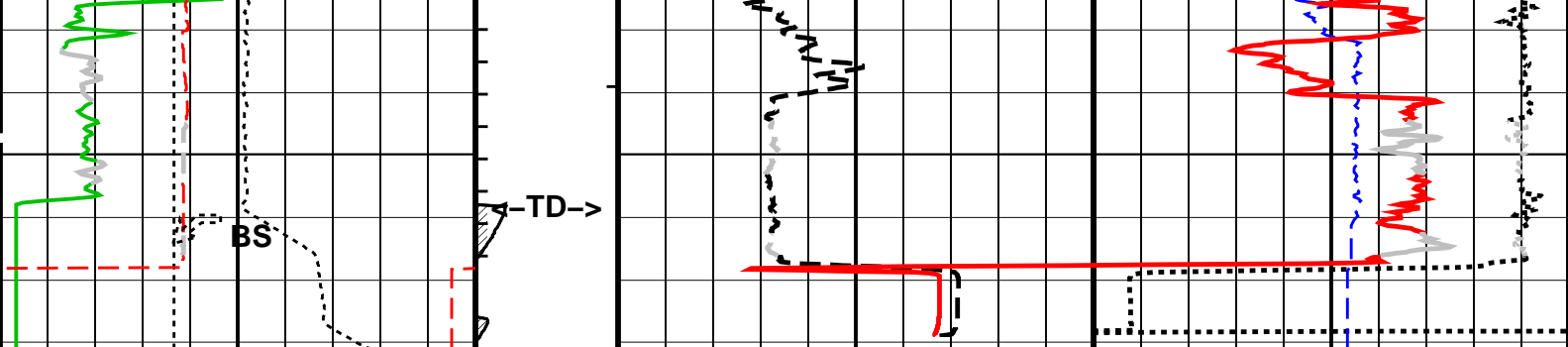












\*\*\*MAIN PASS: PEX – FORMATION BULK DENSITY LOG\*\*\*

Bit Size (BS) (MM)		NPOR for LIME (NPOR_LIM) (V/V)	
125	375	0.45	-0.15
HILT Caliper (HCAL) (MM)		Std. Res. Formation Pe (PEFZ) (----	Density Correction (HDRA) (K/M3)
125	375	0	10 450 -50
Gamma Ray (GR) (GAPI)		Std. Res. Formation Density (RHOZ) (K/M3)	
0	150	2000	3000
Tension (TENS) 25000 (N)			
	0		

PIP SUMMARY

- └ Integrated Hole Volume Minor Pip Every 0.1 M3
- └ Integrated Hole Volume Major Pip Every 1 M3
  - └ Integrated Cement Volume Minor Pip Every 0.1 M3
  - └ Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
AIT-M: Array Induction Tool – M			
BHS	Borehole Status	OPEN	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HILTH-FTB: High resolution Integrated Logging Tool-DTS			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal-like Formation Option	NO	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HSCO	Hole Size Correction Option	YES	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	VeryHiRes	
NSAR	HRDD Depth Sampling Rate	12.7	MM
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SOCN	Standoff Distance	3.175	MM
SOCO	Standoff Correction Option	YES	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
FCD	Future Casing (Outer) Diameter	177.8	MM
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	1.5	M
TDD	Total Depth – Driller	3160.00	M
TDL	Total Depth – Logger	3160.00	M

BS	Bit Size	216.000	MM
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	244.500	MM
CWEI	Casing Weight	64.74	KG/M
DFD	Drilling Fluid Density	1170.00	K/M3
DO	Depth Offset for Playback	5.0	M
DORL	Depth Offset for Repeat Analysis	0.0	M
MST	Mud Sample Temperature	21.00	DEGC
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	0.7100	OHMM
TD	Total Depth	3160	M

Format: DENSITY\_D600

Vertical Scale: 1:600

Graphics File Created: 15-May-2010 20:21

OP System Version: 17C0-154			
AIT-M	17C0-154	HILTH-FTB	17C0-154
DTC-H	17C0-154		

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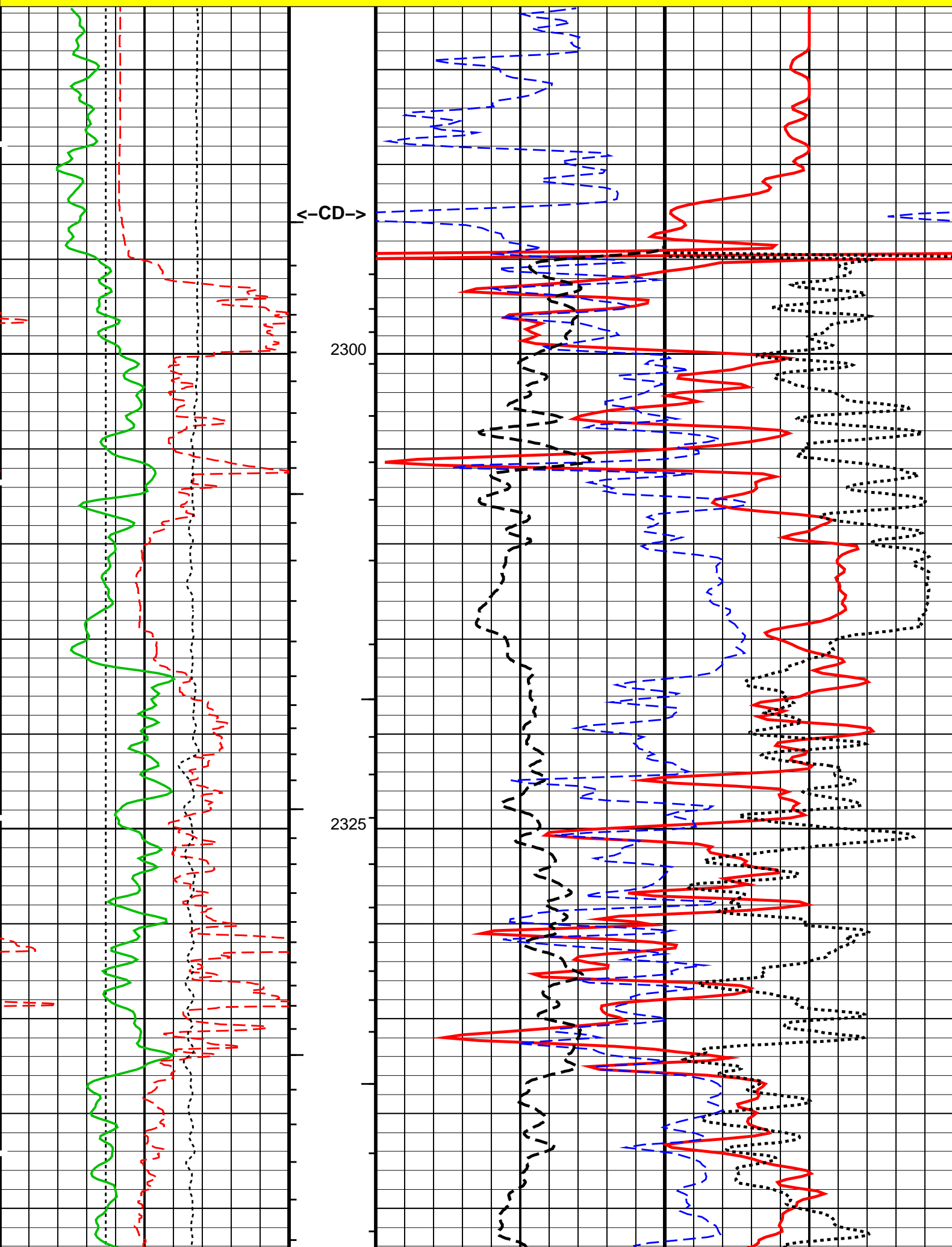
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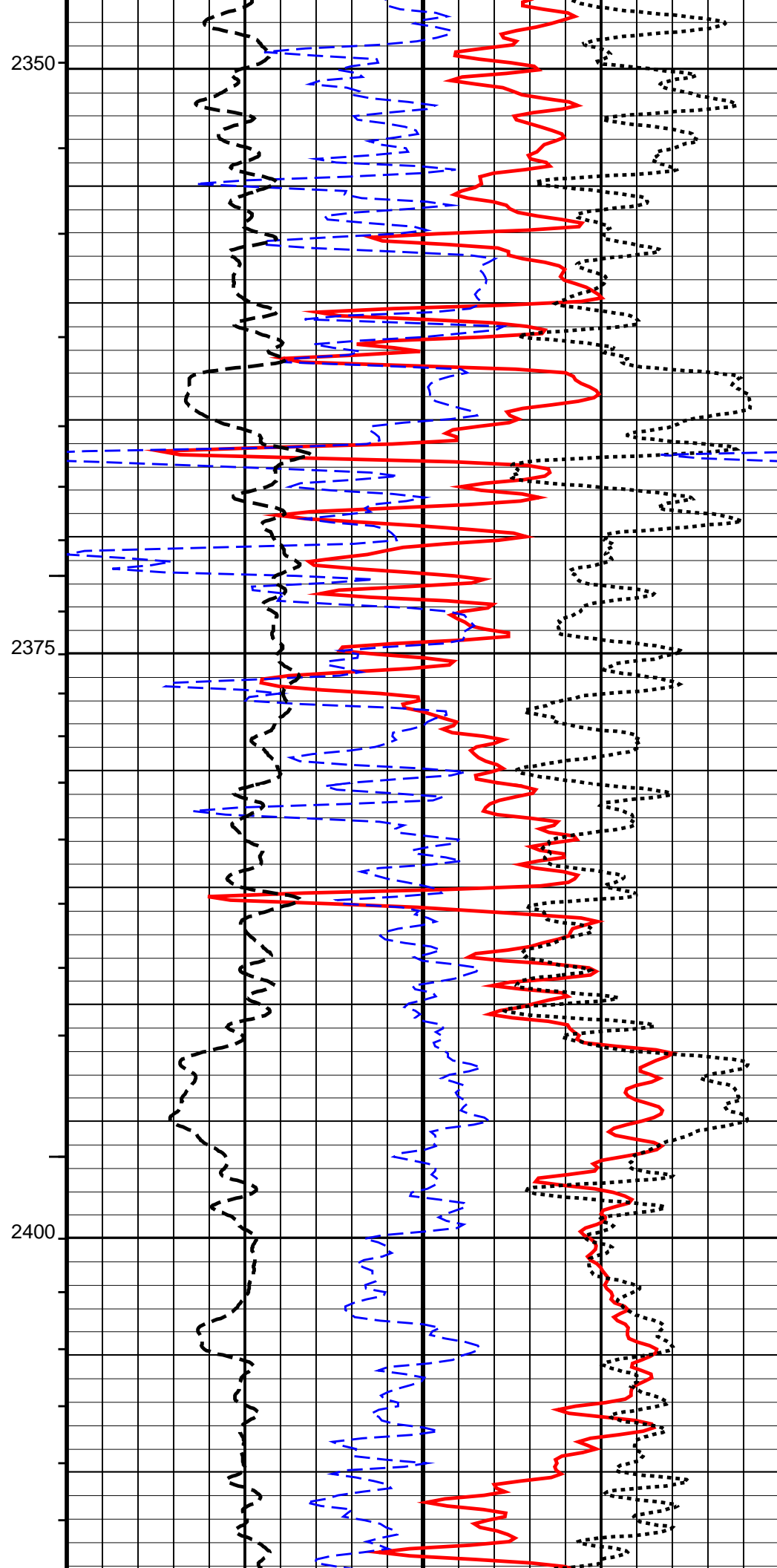
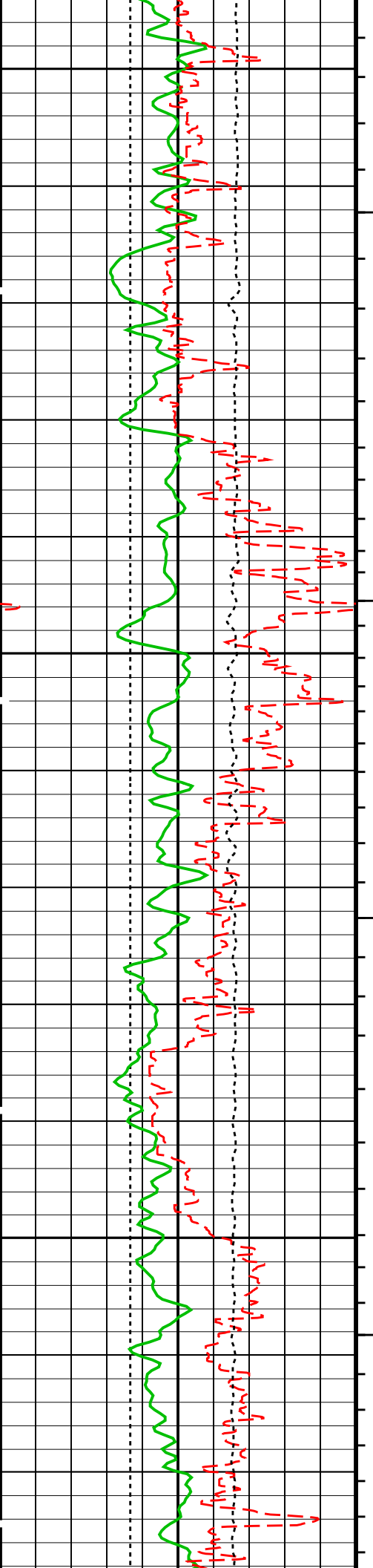
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Hole Volume = 45.03 M3	
Cement Volume = 23.97 M3 (assuming 177.80 MM casing O.D.)	
Computed from 3140.5 M to 2292.4 M using data channel(s) HCAL	

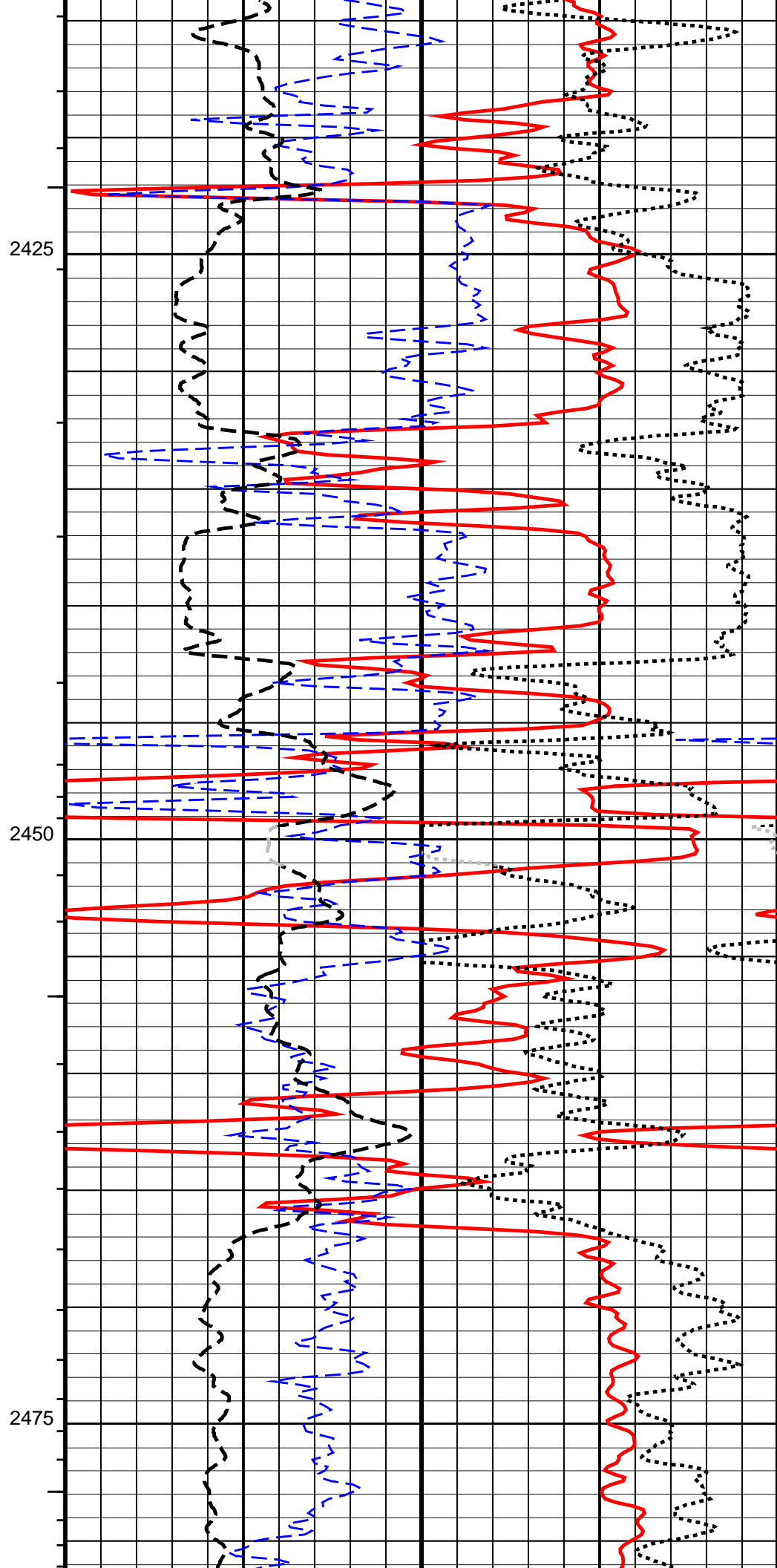
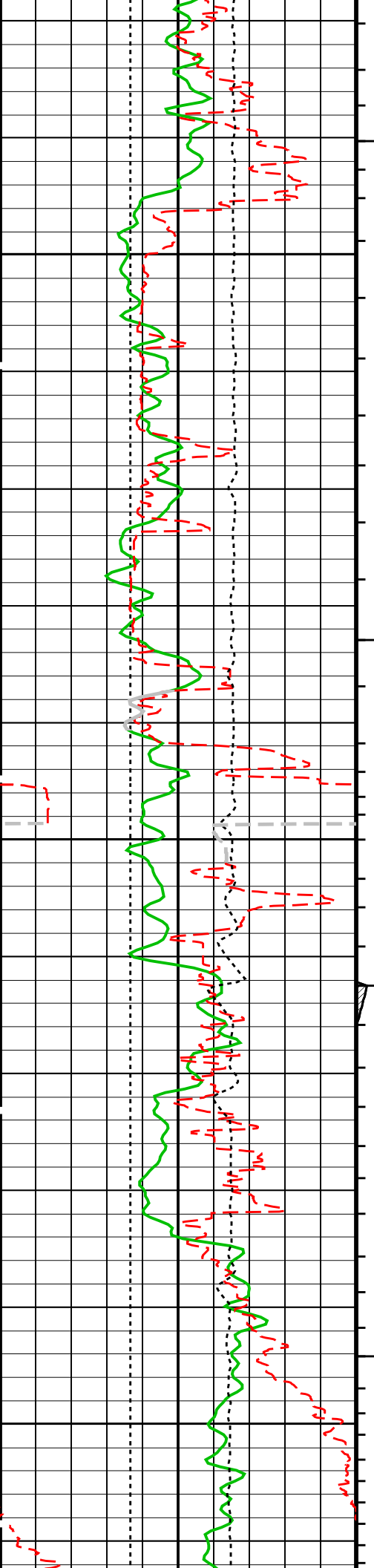
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AIT-M	17C0-154	HILTH-FTB	17C0-154
DTC-H	17C0-154		

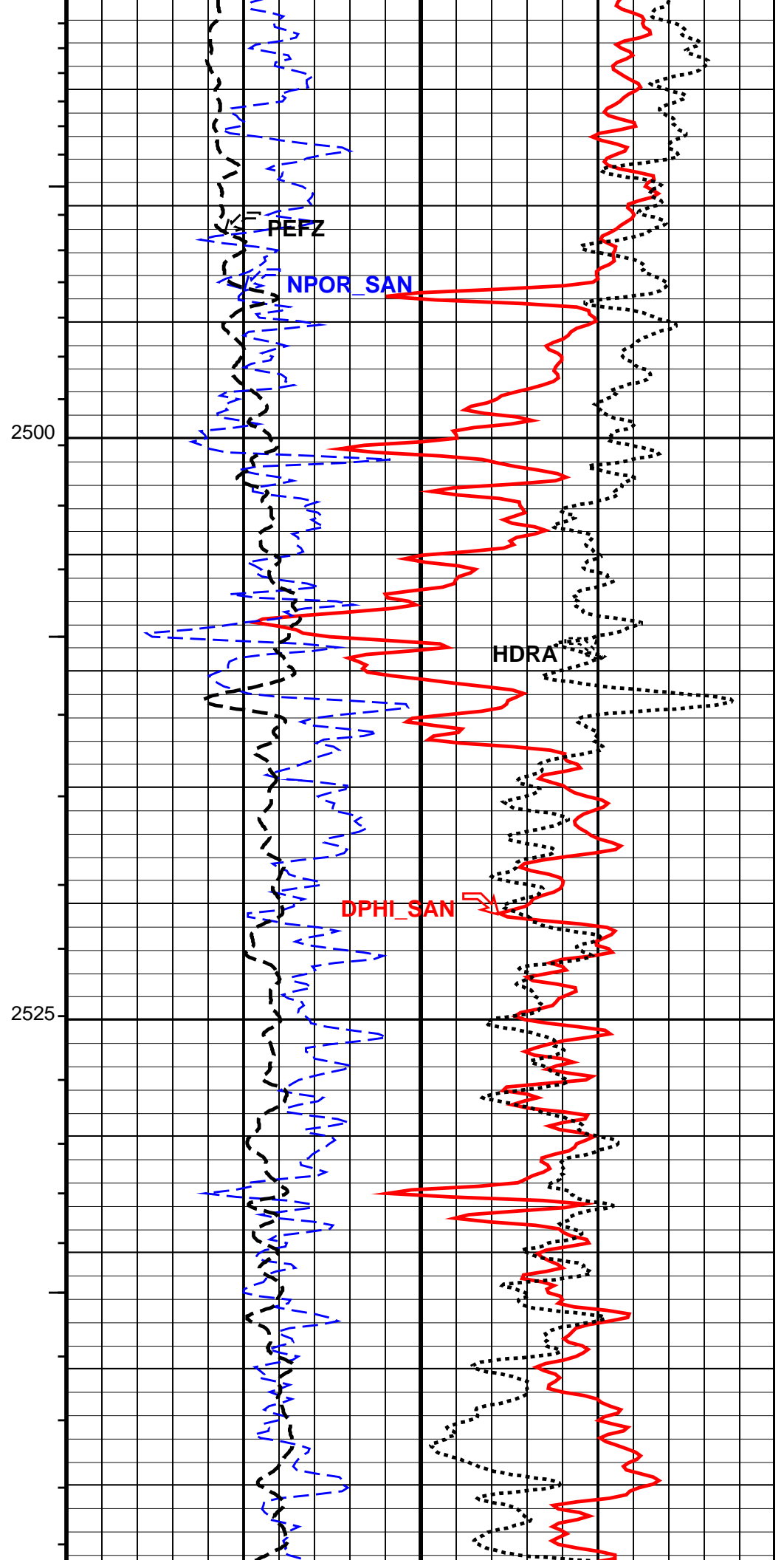
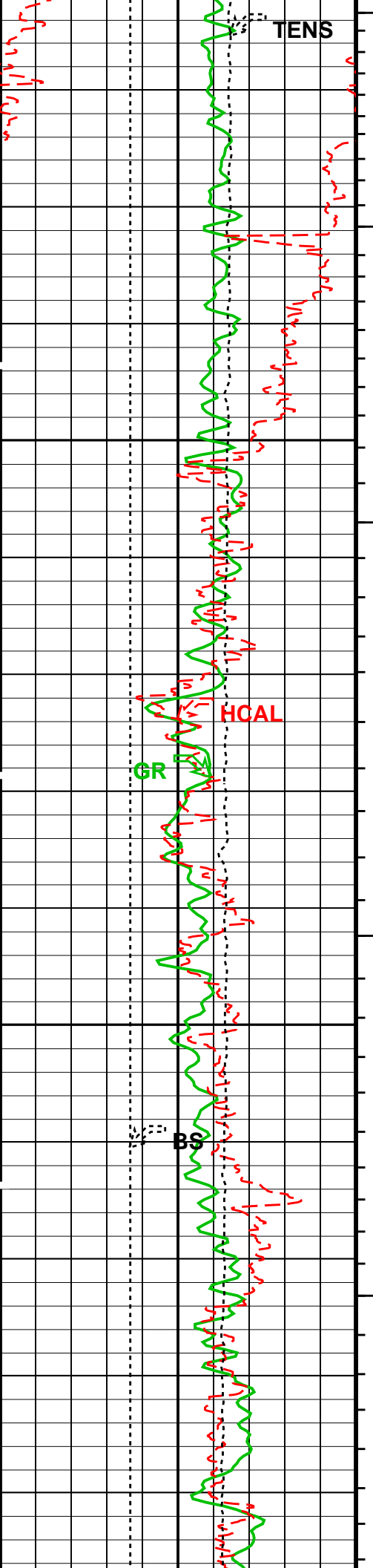
PIP SUMMARY	
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└┐ Integrated Cement Volume Minor Pip Every 0.1 M3	
└┐ Integrated Cement Volume Major Pip Every 1 M3	

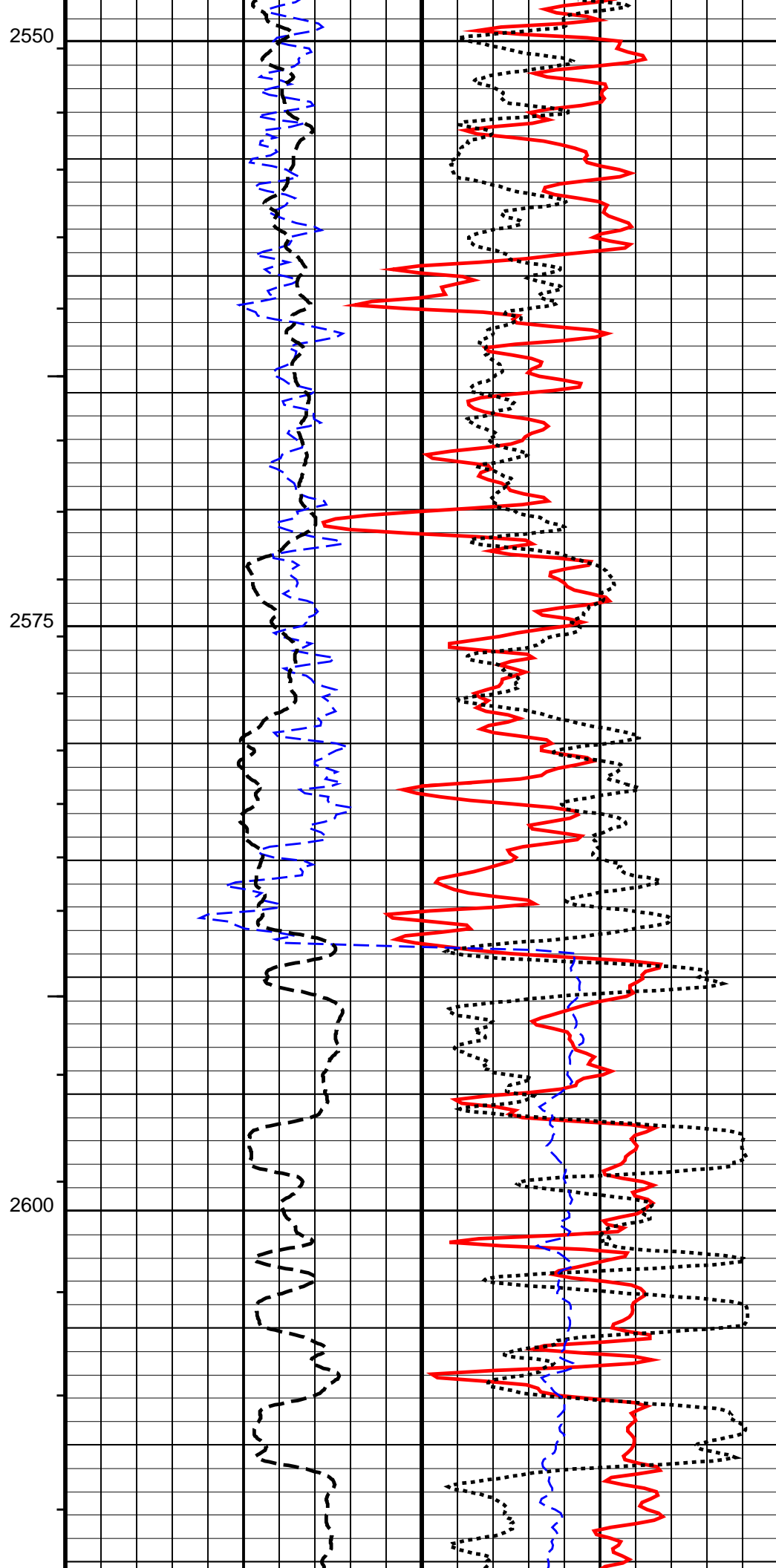
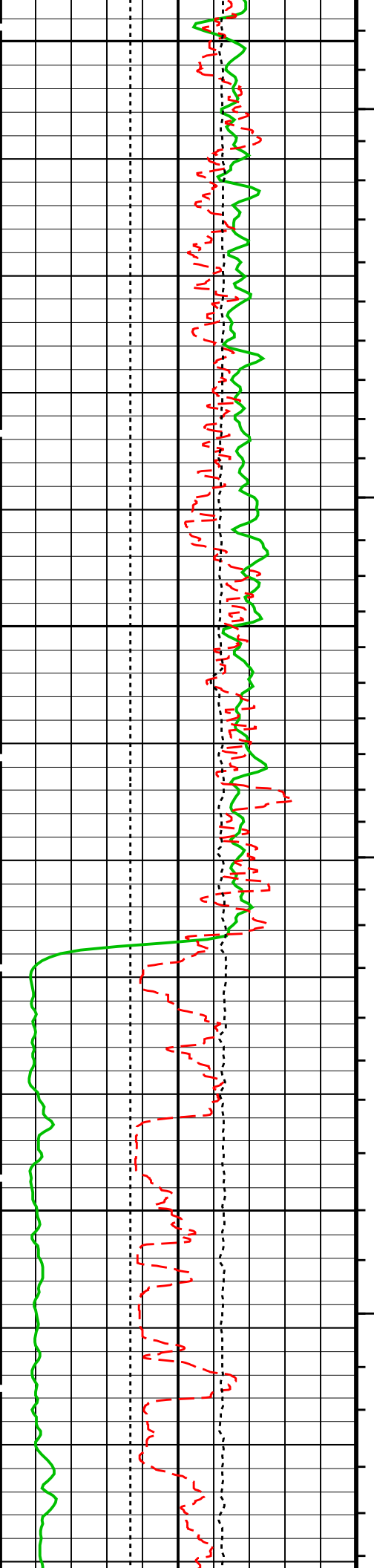
Time Mark Every 60 S	
	Tension (TENS)
	25000 (N) 0
Gamma Ray (GR)	
0	(GAPI) 150
HILT Caliper (HCAL)	
125	(MM) 375
Bit Size (BS)	
125	(MM) 375
Std. Res. Formation Pe (PEFZ)	
0	(----) 10 450
Density Correction (HDRA)	
	(K/M3) -50
NPOR for SAND (NPOR_SAN)	
0.45	(V/V) -0.15
DPHI for SAND (DPHI_SAN)	
0.45	(V/V) -0.15



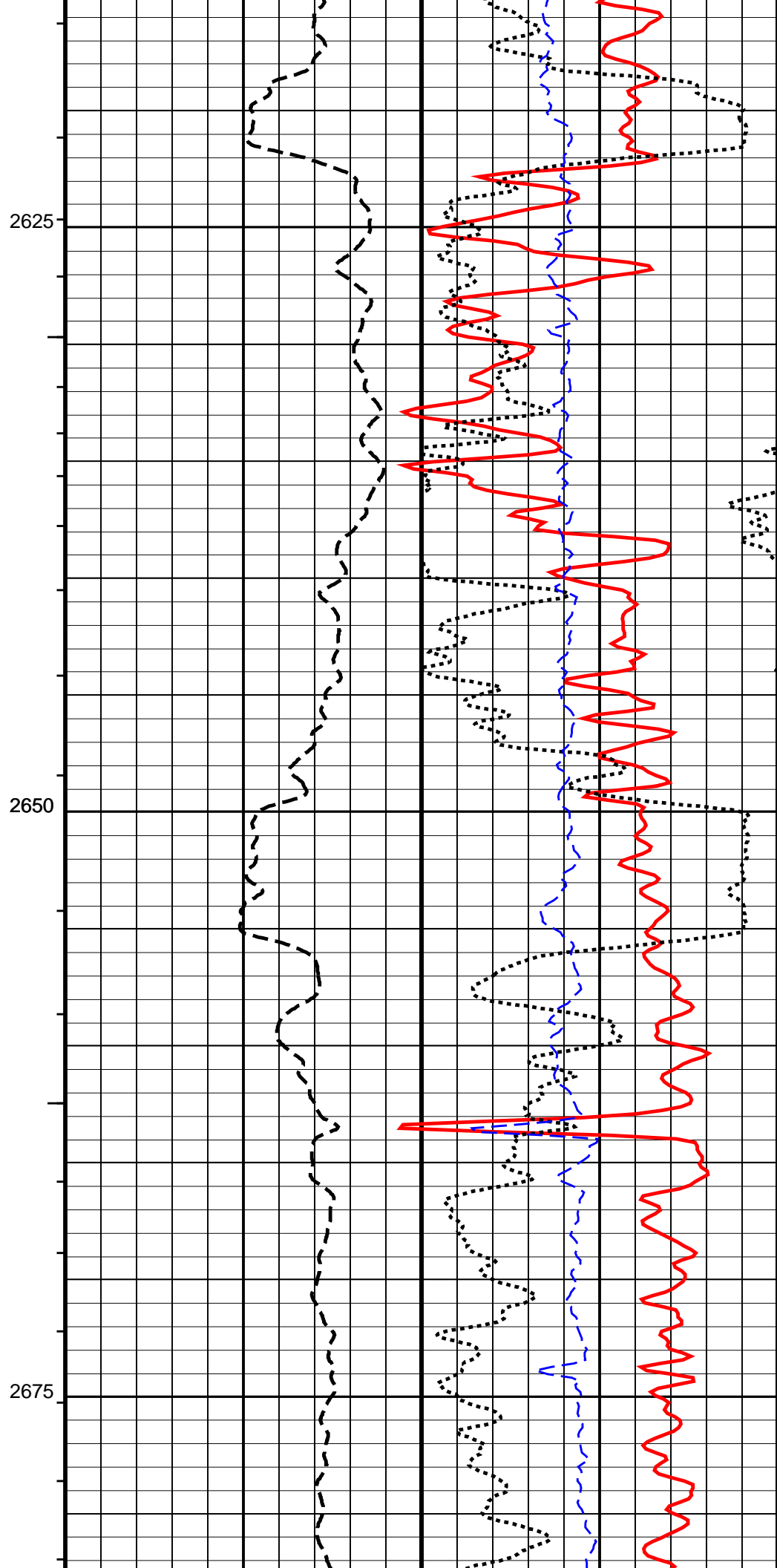
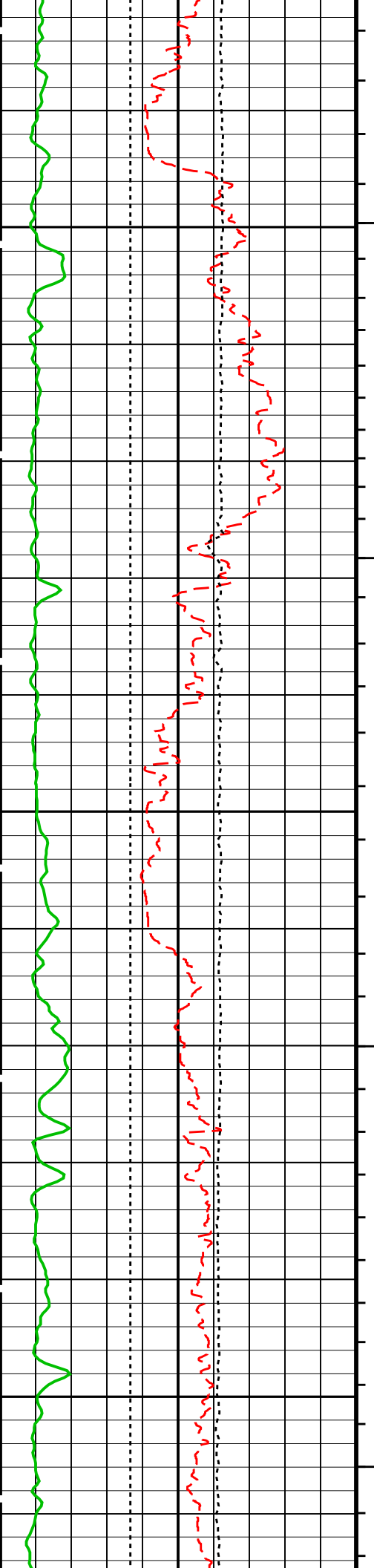


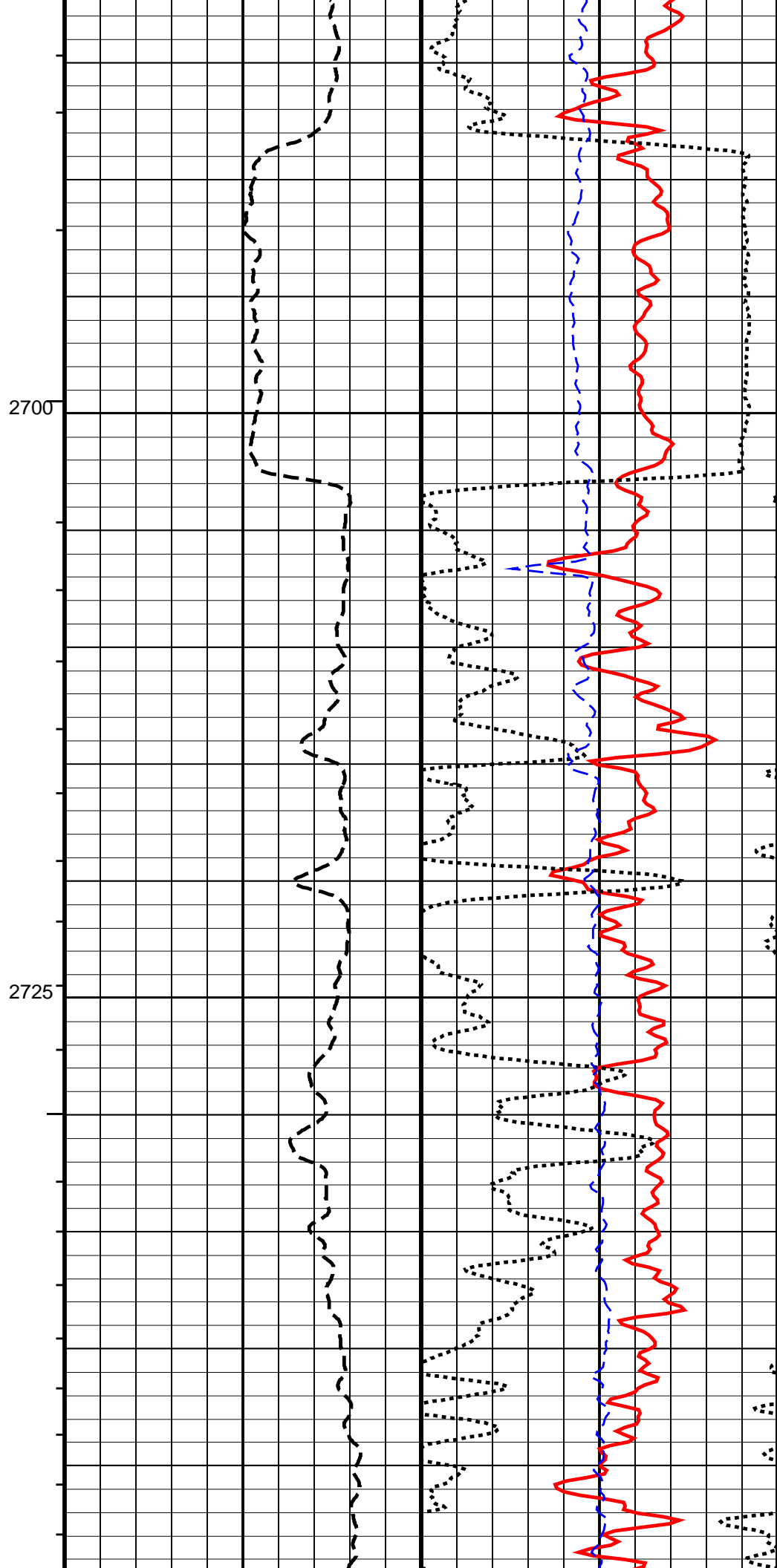
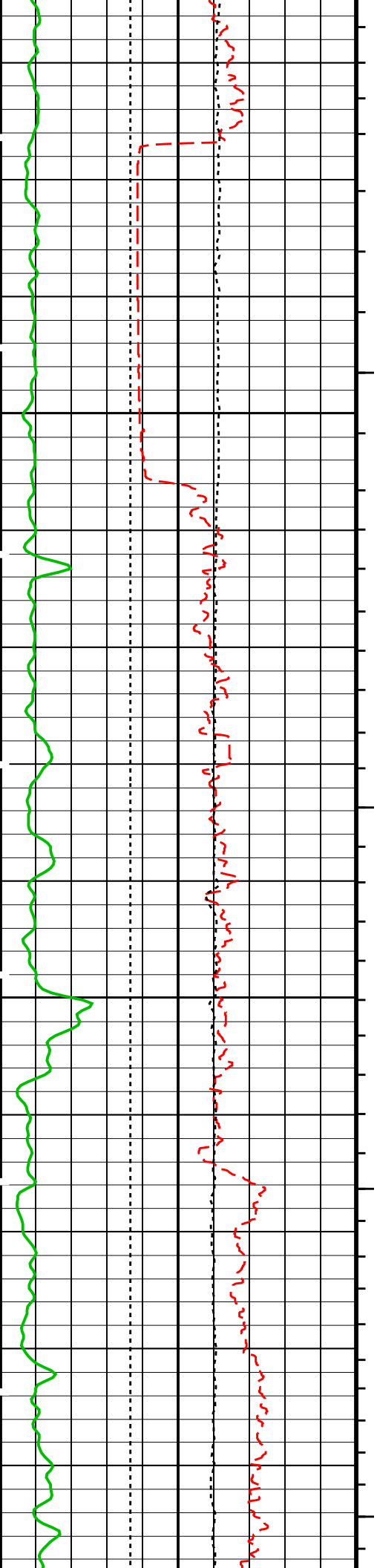


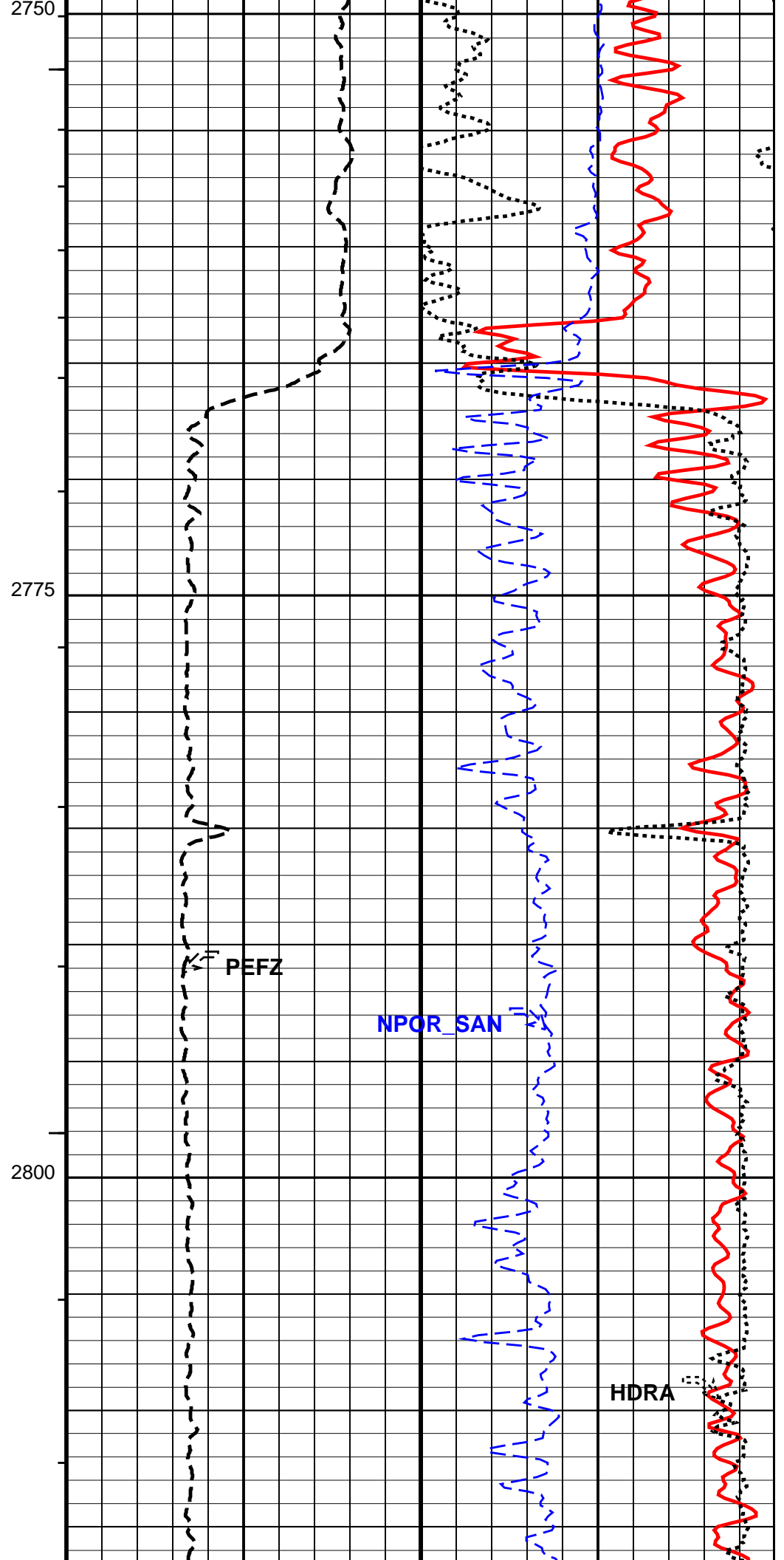
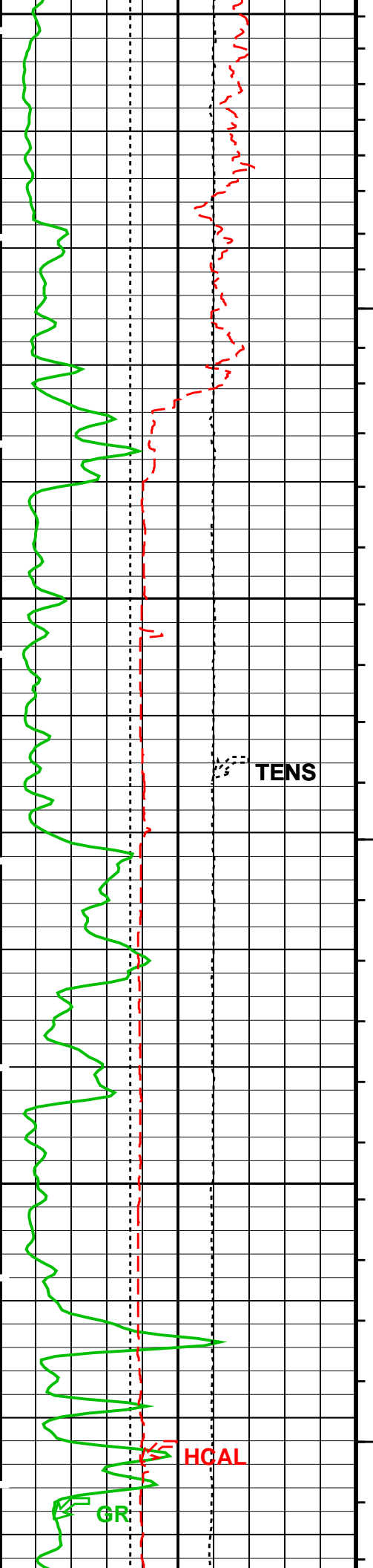


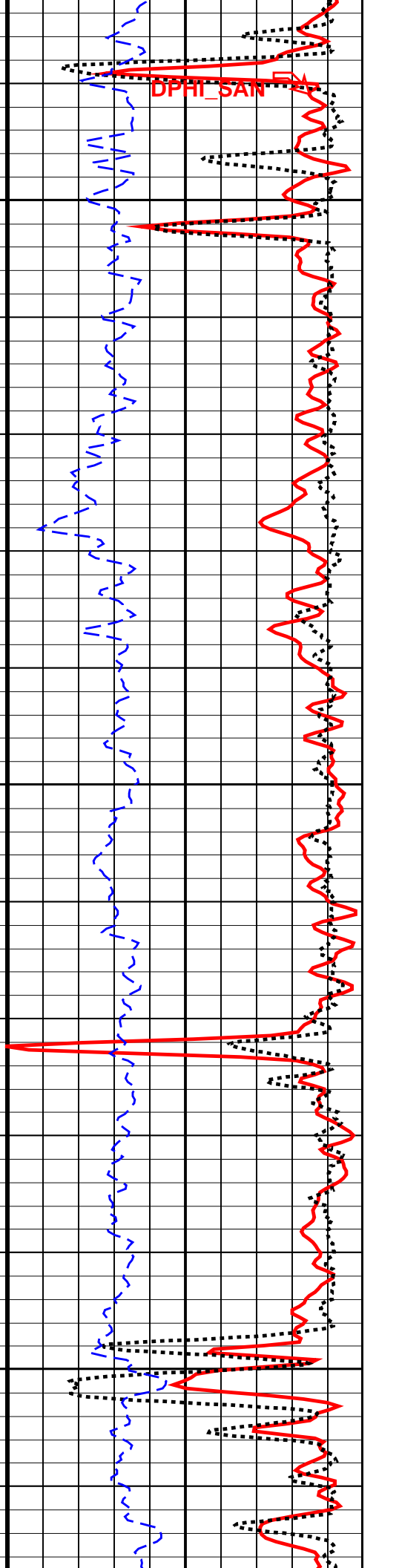
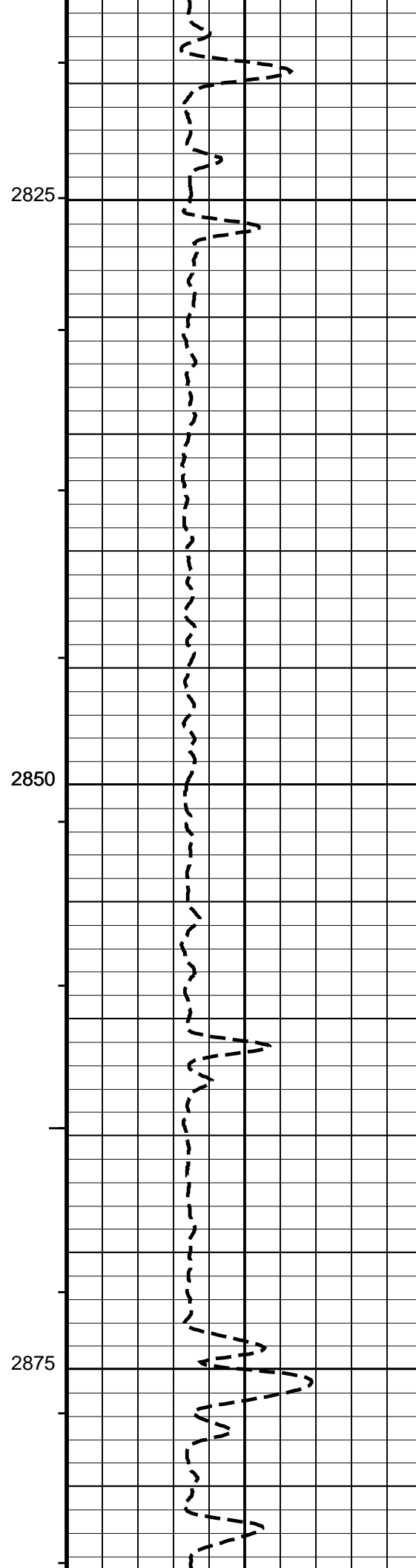
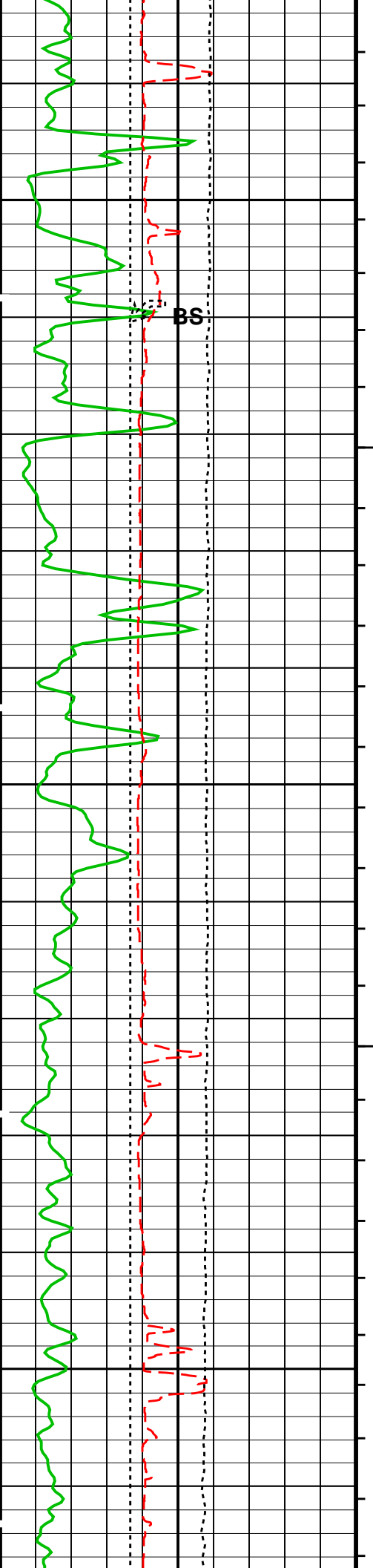


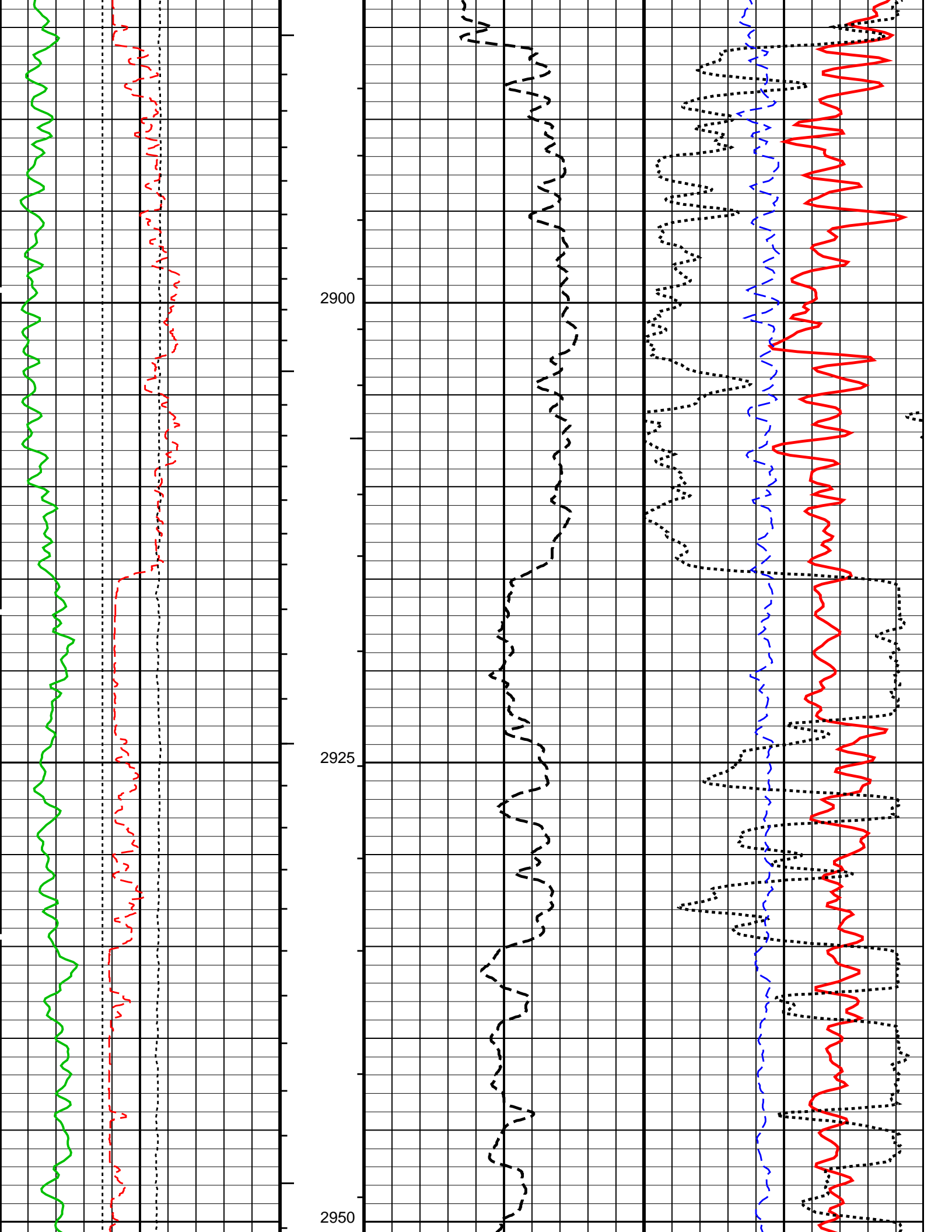


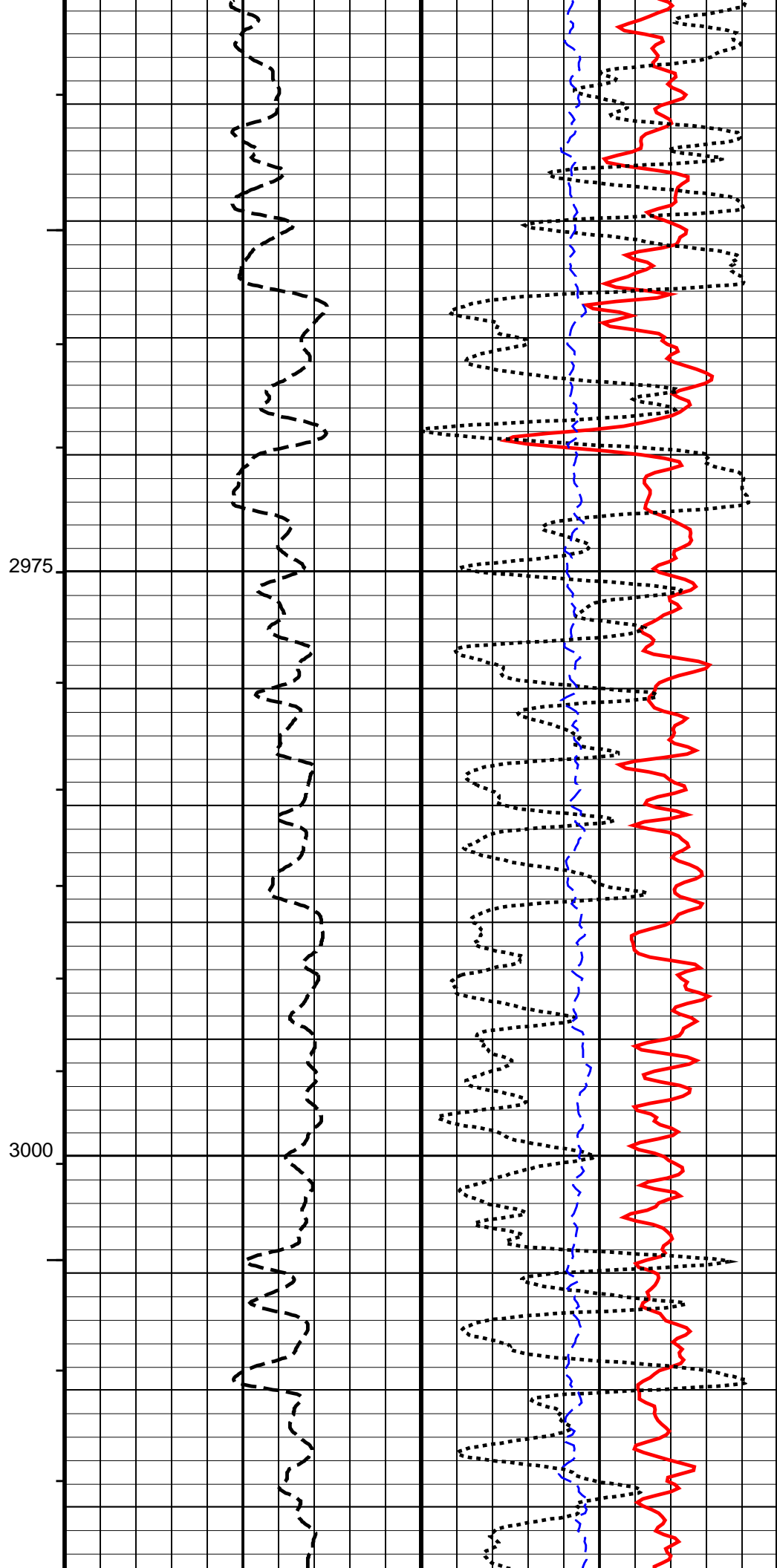
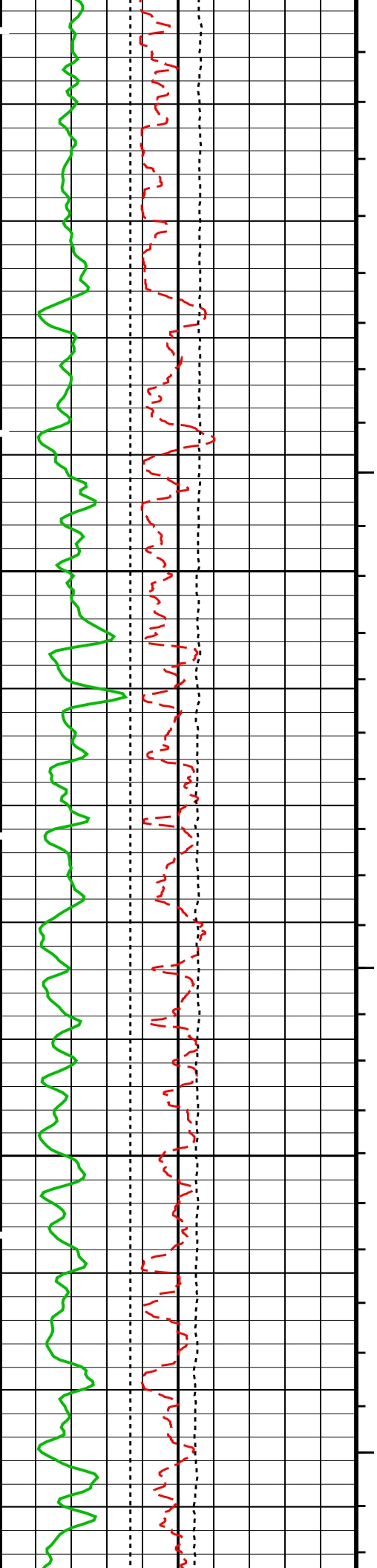


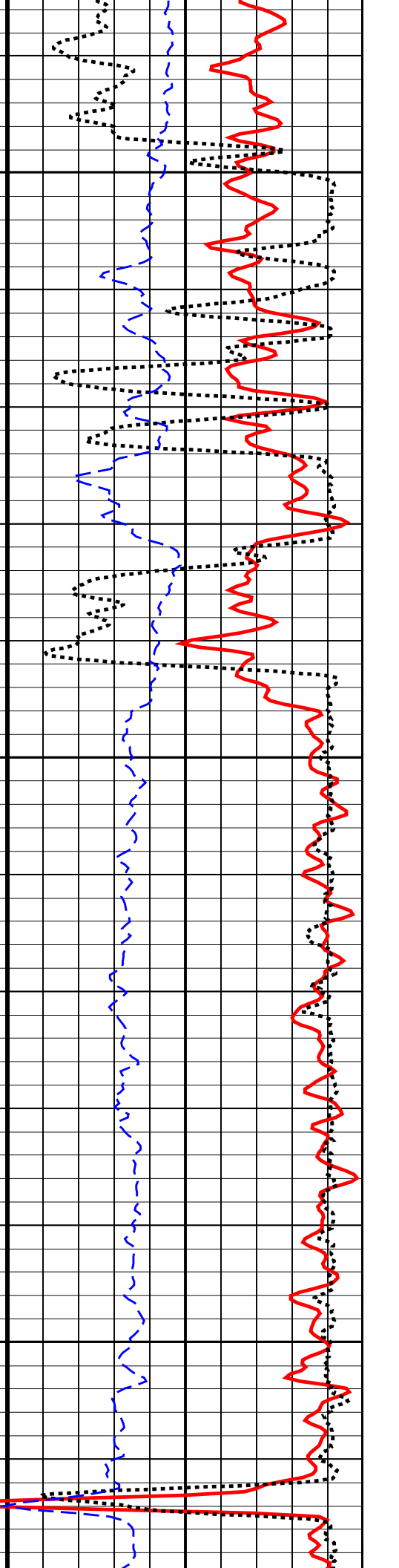
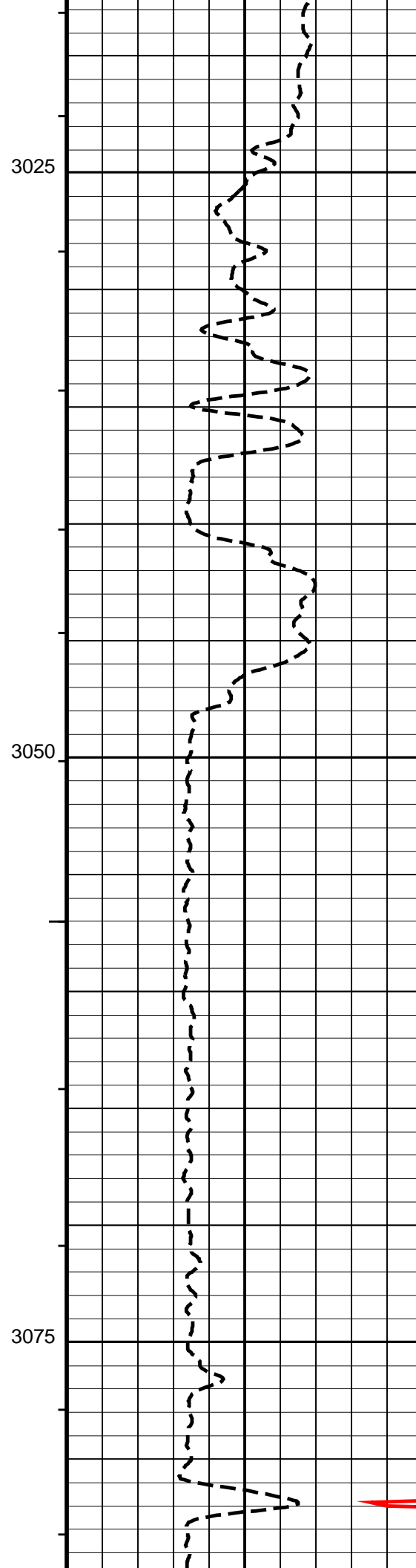
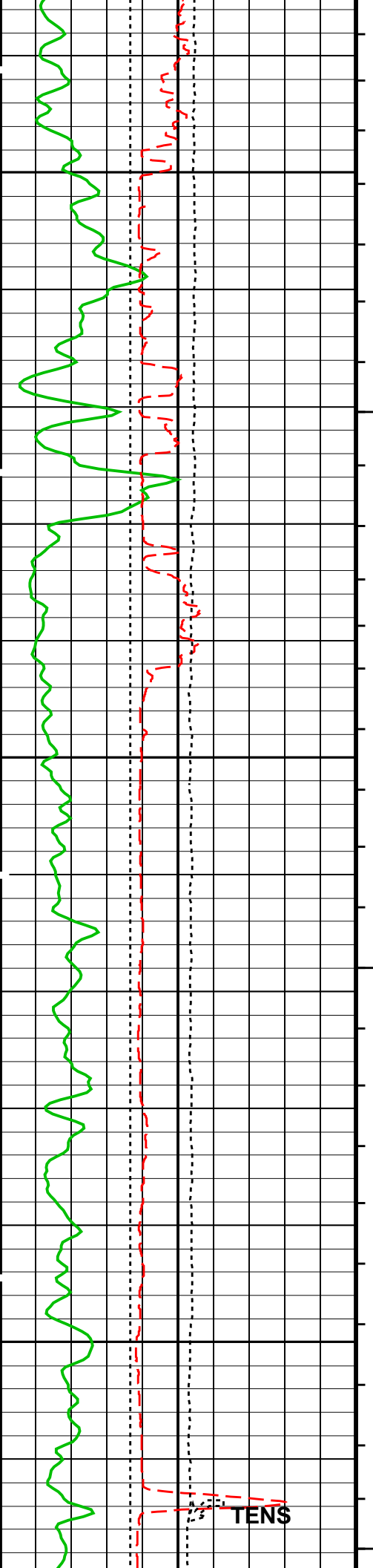


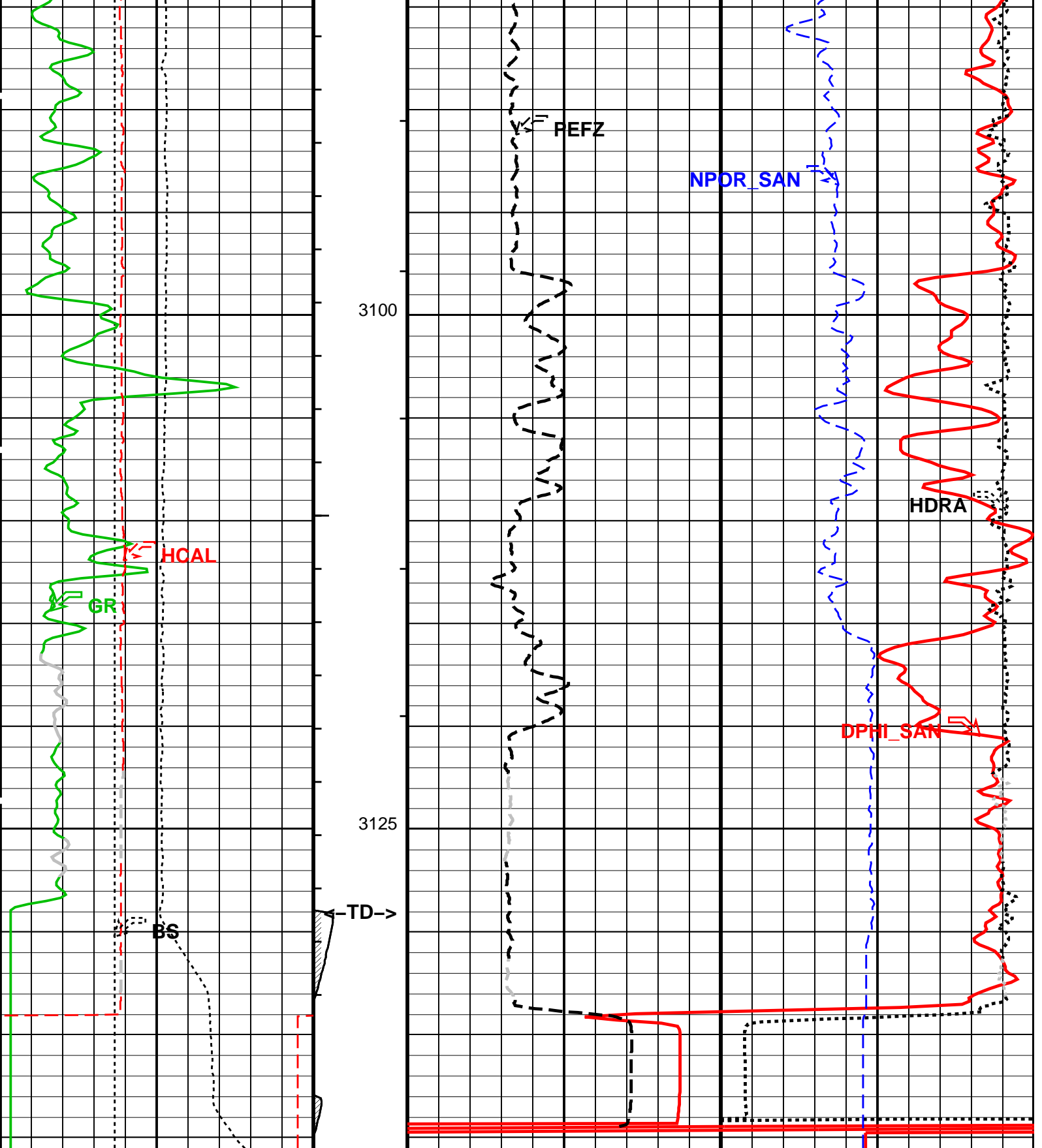












\*\*\*MAIN PASS: PEX-NEUTRON DENSITY POROSITY LOG - SANDSTONE 2650 KG/M3\*\*\*

Bit Size (BS)		
(MM)		
125		375
HILT Caliper (HCAL)		
(MM)		
125		375
Gamma Ray (GR)		
(GAPI)		
0		150

DPHI for SAND (DPHI_SAN)		
(V/V)		
0.45		-0.15
NPOR for SAND (NPOR_SAN)		
(V/V)		
0.45		-0.15
Std. Res. Formation Pe (PEFZ)		Density Correction (HDRA)
(-----)		(K/M3)
0	10 450	-50



## PIP SUMMARY

- └ Integrated Hole Volume Minor Pip Every 0.1 M3
- └ Integrated Hole Volume Major Pip Every 1 M3
  - └ Integrated Cement Volume Minor Pip Every 0.1 M3
  - └ Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S

## Parameters

DLIS Name	Description	Value	
AIT-M: Array Induction Tool - M			
AAPL	Array Induction Answer Product Level(Depth Log/View only)	3_BholeCorr_BasicLogs_RadialProcessing	
ABHM	Array Induction Borehole Correction Mode	2_ComputeStandoff	
ABHV	Array Induction Borehole Correction Code Version Number	900	
ABLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
ABLV	Array Induction Basic Logs Code Version Number	223	
ACDE	Array Induction Casing Detection Enable	No	
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
ACSED	Array Induction Casing Shoe Estimated Depth	-50000	M
ADITM	Array Induction Desired Tool Mode	0x00_Log_000	
AEBG	Array Induction Enable Borehole Correction	Yes	
AEBL	Array Induction Enable Basic Logs	Yes	
AERP	Array Induction Enable Radial Processing	Yes	
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes	
AFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	
AFVN	Array Induction Firmware Code Version Number	1	
AIGS	Array Induction Select Akima Interpolation Gating	On	
ALNV	Array Induction Log Not Valid Flag	Log_Valid-No_Default_Parameters	
AMRD	Array Induction Mud Resistivity Calibration Depth	0	M
AMRF	Array Induction Mud Resistivity Factor	1	
AORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20	
ARFV	Array Induction Radial Profiling Code Version Number	701	
ARPM	Array Induction Radial Processing Mode	0_One	
ARPV	Array Induction Radial Parametrization Code Version Number	232	
ARTS	AIT Rt Selection (for ALLRES computation)	AITM_OneResTrueDeep	
ASTA	Array Induction Tool Standoff	38.1	MM
ATRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
ATSE	Array Induction Temperature Selection(Sonde Error Correction)	Internal	
ATTY	Array Induction Tool Type (of acquired data)	AITM	
AULV	Array Induction User Level Control	Normal	
AZRSV	Array Induction Response Set Version for Z Resolution	00.10.25.00	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	58.4	DEGC
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
RTCO	RTCO - Rt Invasion Correction	YES	
SHT	Surface Hole Temperature	30	DEGC
SPNV	SP Next Value	0	MV
HILTH-FTB: High resolution Integrated Logging Tool-DTS			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	58.4	DEGC
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
EXSICL	External Shale Indicator Clean Value	20	
EXSISH	External Shale Indicator Shale Value	150	
FD	Fluid Density	1000	K/M3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal-like Formation Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M

GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HACPP	Accelerometer PROM Presence	PRESENT_DOWNHOLE	
HART	Accelerometer Reference Temperature	25	DEGC
HDCOD	HILT Density Coal detection	2000	K/M3
HDSAD	HILT Density Salt detection	2100	K/M3
HILT_GAS_DENSITY	HILT Gas Downhole Density	0	K/M3
HILT_GAS_OPTION	HILT Gas Computation Option	OFF	
HNCOD	HILT Neutron Coal detection	0.45	V/V
HNSAD	HILT Neutron Salt detection	0.05	V/V
HPHIECUT	HILT effective Porosity Cutoff	0.05	V/V
HSCO	Hole Size Correction Option	YES	
HSIS	HILT Shale Indicator Selection	GR	
HSSO	HRDD Nuclear Source Strength Option	NORMAL	
HSWCUT	HILT Water Saturation from AITH cutoff	50	%
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2710	K/M3
MHC0	MCFL B0 Contrast Correction Coefficient	2.2e-005	OHMS
MHC1	MCFL B1 Contrast Correction Coefficient	3.2e-005	OHMS
MHCC	MCFL High Contrast Correction Switch	NO	
MPOF	MCFL Processing Operation Mode	ON	
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	VeryHiRes	
NSAR	HRDD Depth Sampling Rate	12.7	MM
PEA_FILTER	PEA Filter	NO_FILTER	
PEFC_FILTER	PEFC Filter	NO_FILTER	
PHIMAX	HILT max porosity	0.35	V/V
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SEXP_HILT	HILT Saturation Exponent	2	
SHT	Surface Hole Temperature	30	DEGC
SOCN	Standoff Distance	3.175	MM
SOCO	Standoff Correction Option	YES	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	58.4	DEGC
FCD	Future Casing (Outer) Diameter	177.8	MM
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	30	DEGC
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	1.5	M
TDD	Total Depth - Driller	3160.00	M
TDL	Total Depth - Logger	3160.00	M
System and Miscellaneous			
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	216.000	MM
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	244.500	MM
CWEI	Casing Weight	64.74	KG/M
DFD	Drilling Fluid Density	1170.00	K/M3
DO	Depth Offset for Playback	5.0	M
DORL	Depth Offset for Repeat Analysis	0.0	M
FLEV	Fluid Level	0.00	M
MST	Mud Sample Temperature	21.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	0.7100	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	3160	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: NUCLEAR\_D240    Vertical Scale: 1:240    Graphics File Created: 15-May-2010 20:21

## OP System Version: 17C0-154

AIT-M	17C0-154	HILTH-FTB	17C0-154
DTC-H	17C0-154		

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:9	PRODUCER	15-May-2010 18:24	3135.5 M	2218.0 M
Output DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_016PUP	FN:23	PRODUCER	15-May-2010 20:21		
CUSTOMER	AIT_TLD_MCFL_CNL_016PUP	FN:24	PRODUCER	15-May-2010 20:21		

Company: Nalcor Energy Oil and Gas Well: Nalcor et al Seamus 1

Input DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:9	PRODUCER	15-May-2010 18:24	3135.5 M	2218.0 M
Output DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_016PUP	FN:23	PRODUCER	15-May-2010 20:21	3140.5 M	2223.1 M
CUSTOMER	AIT_TLD_MCFL_CNL_016PUP	FN:24	PRODUCER	15-May-2010 20:21	3140.5 M	2223.1 M

**Integrated Hole/Cement Volume Summary**

Hole Volume = 45.03 M3  
Cement Volume = 23.97 M3 (assuming 177.80 MM casing O.D.)  
Computed from 3140.5 M to 2292.4 M using data channel(s) HCAL

**OP System Version: 17C0-154**

AIT-M	17C0-154	HILTH-FTB	17C0-154
DTC-H	17C0-154		

**PIP SUMMARY**

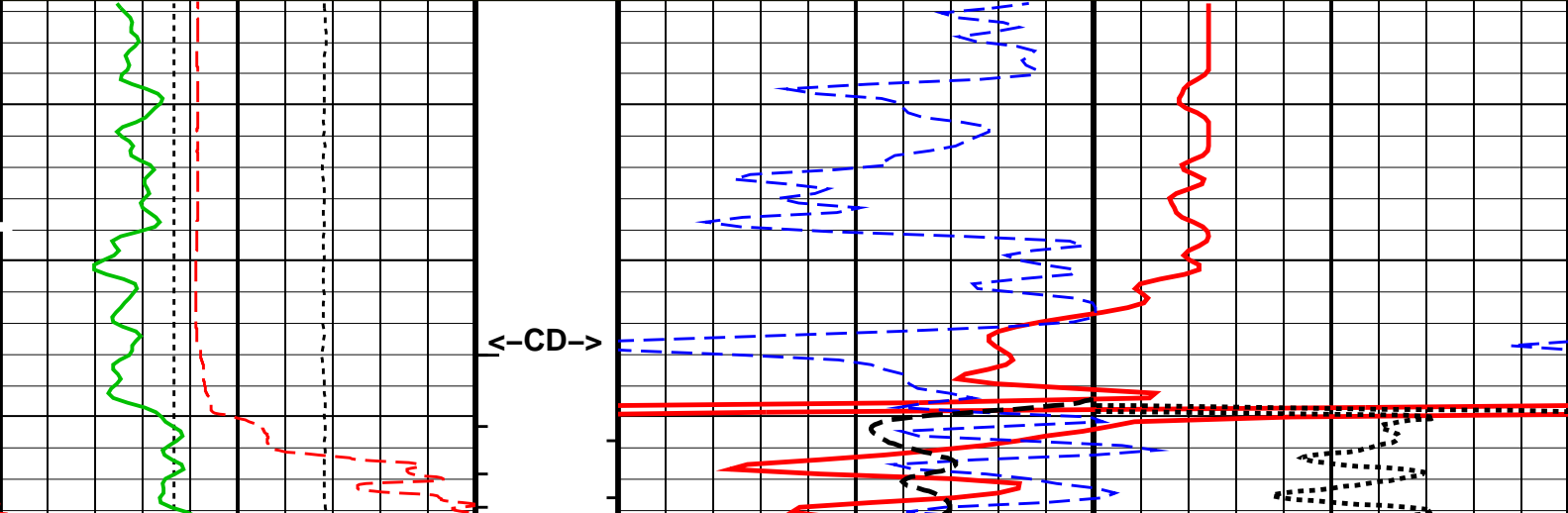
- └ Integrated Hole Volume Minor Pip Every 0.1 M3
- └ Integrated Hole Volume Major Pip Every 1 M3
  - └ Integrated Cement Volume Minor Pip Every 0.1 M3
  - └ Integrated Cement Volume Major Pip Every 1 M3

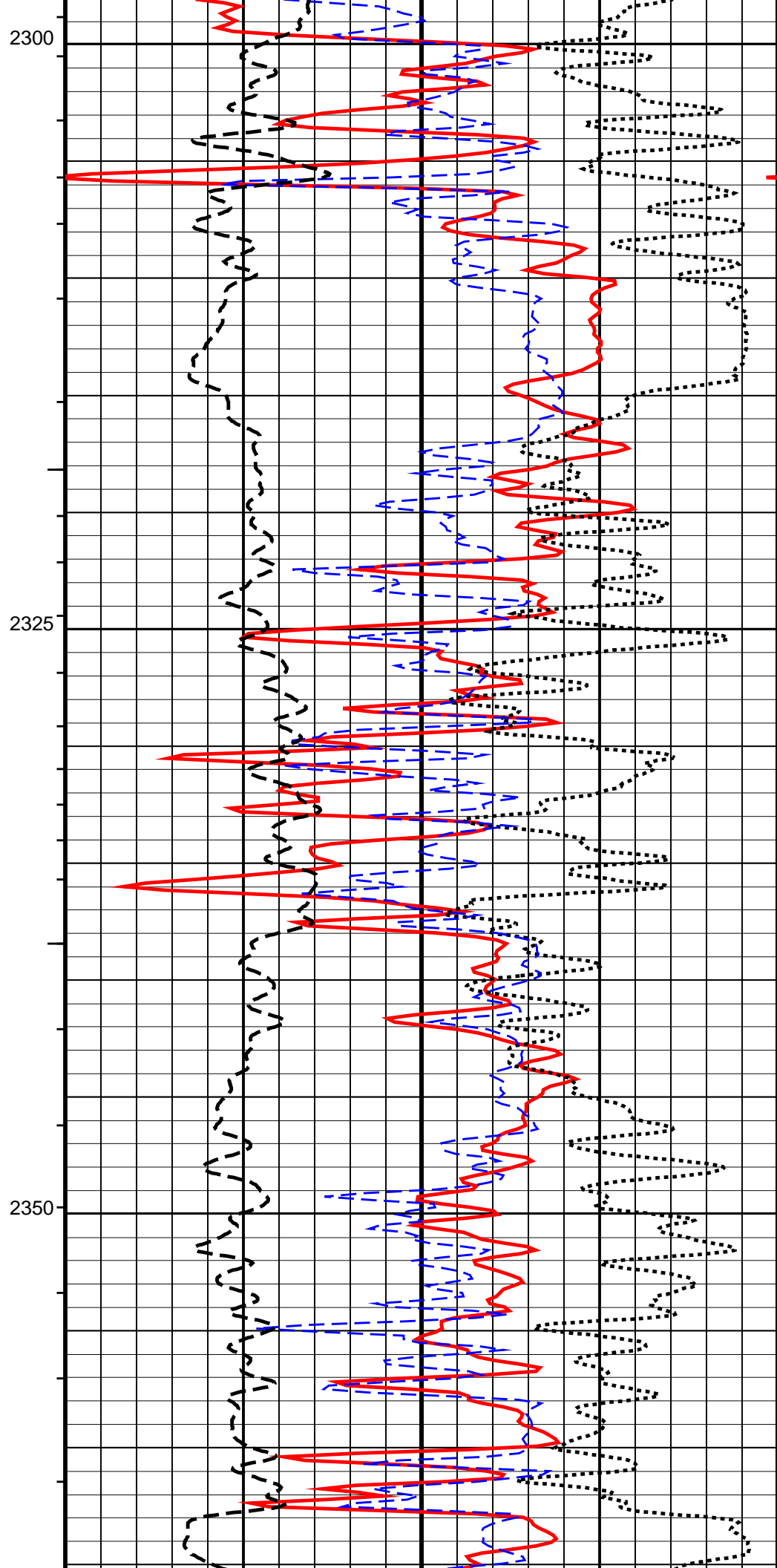
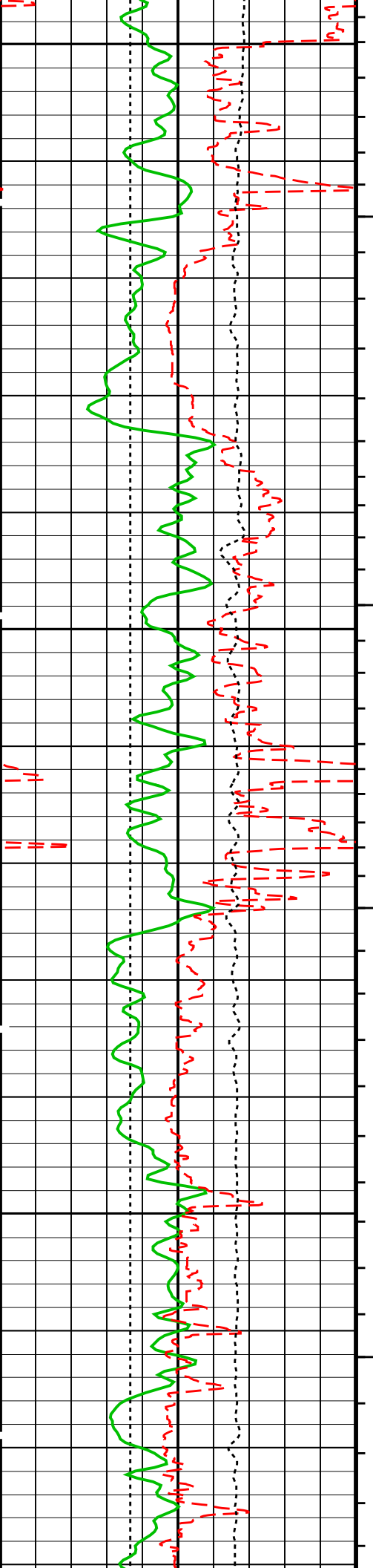
☒ Time Mark Every 60 S

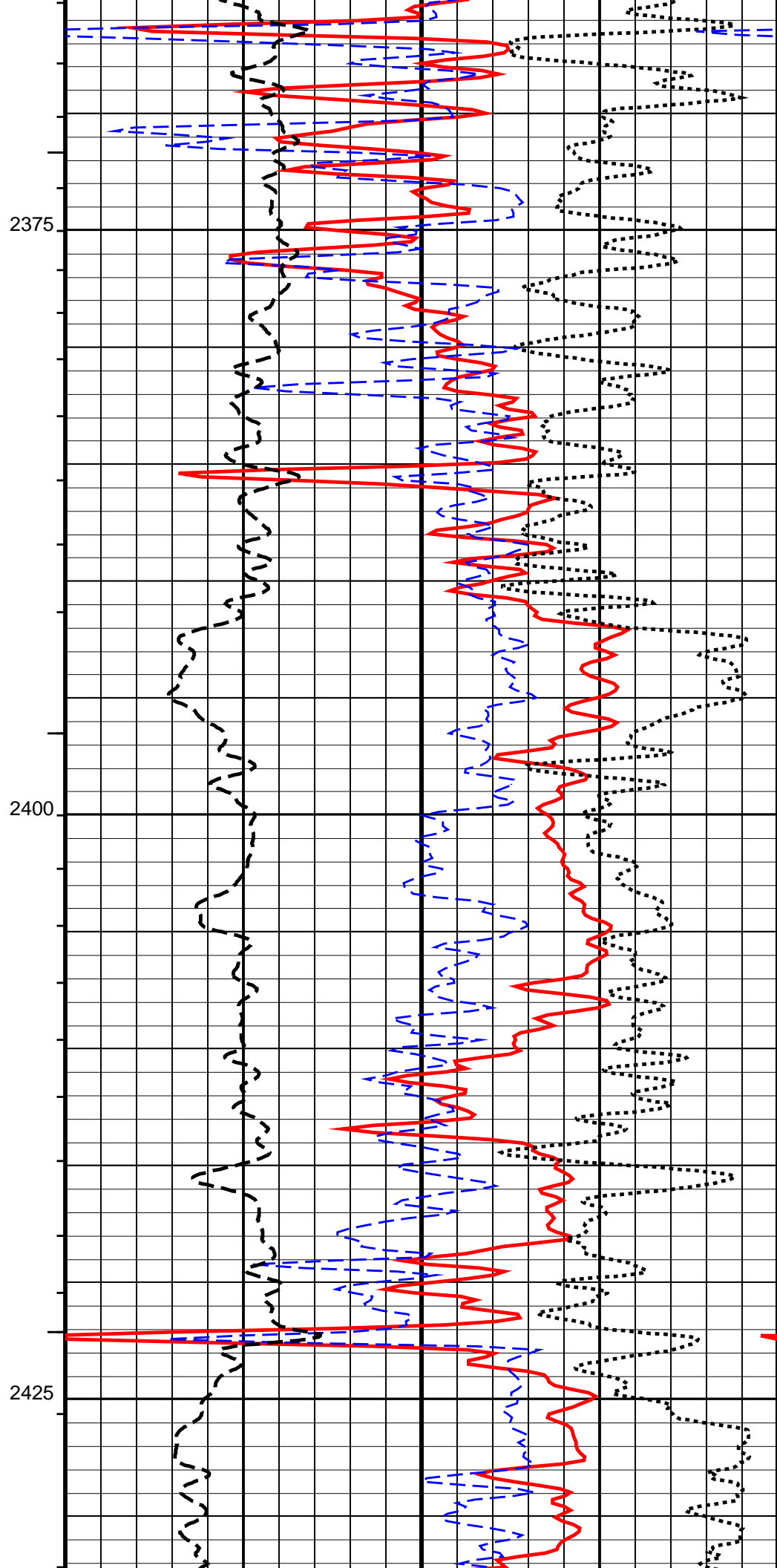
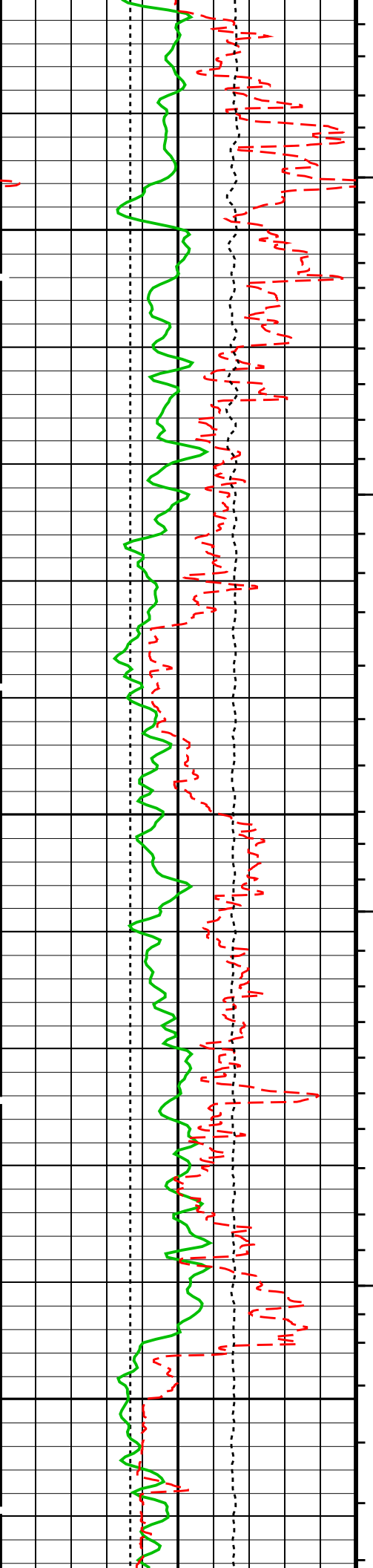
		Tension (TENS)	
		25000 (N)	0
Gamma Ray (GR)			
0	(GAPI)		150
HILT Caliper (HCAL)			
125	(MM)		375
Bit Size (BS)			
125	(MM)		375

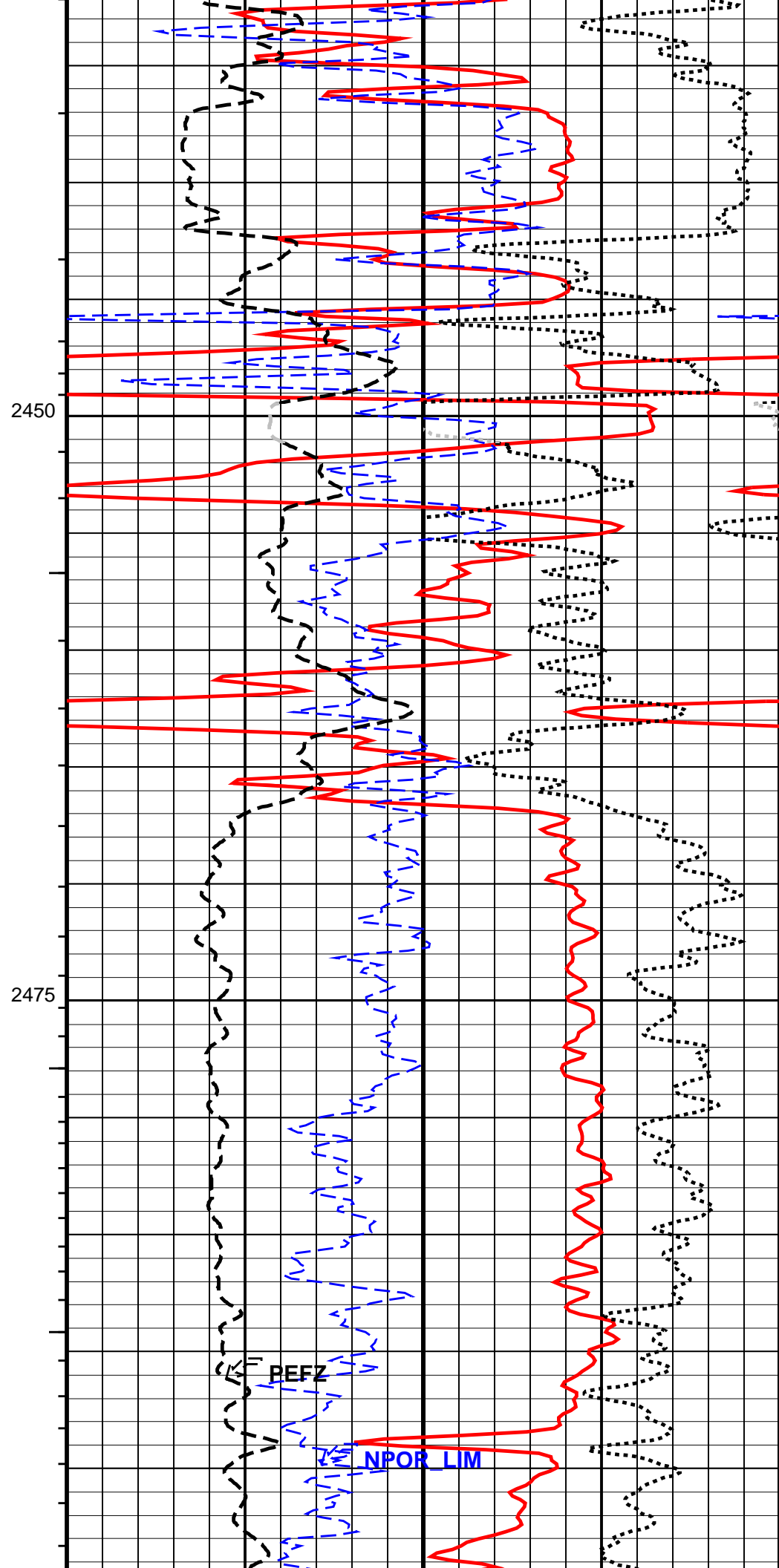
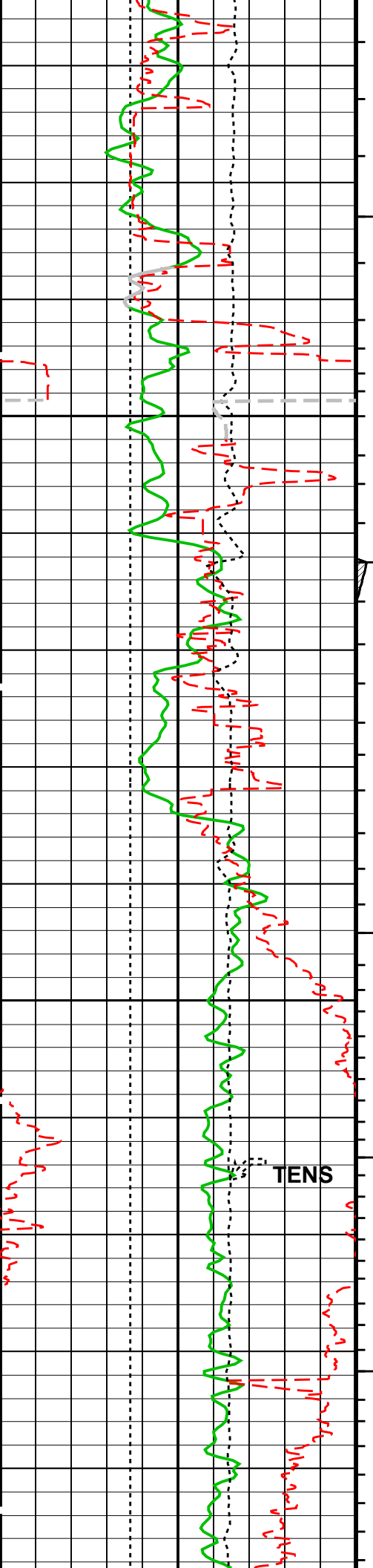
Std. Res. Formation Pe (PEFZ)		Density Correction (HDRA)	
0	(----	10 450	(K/M3)-----50
NPOR for LIME (NPOR_LIM)			
0.45	(V/V)		-0.15
DPHI for LIME (DPHI_LIM)			
0.45	(V/V)		-0.15

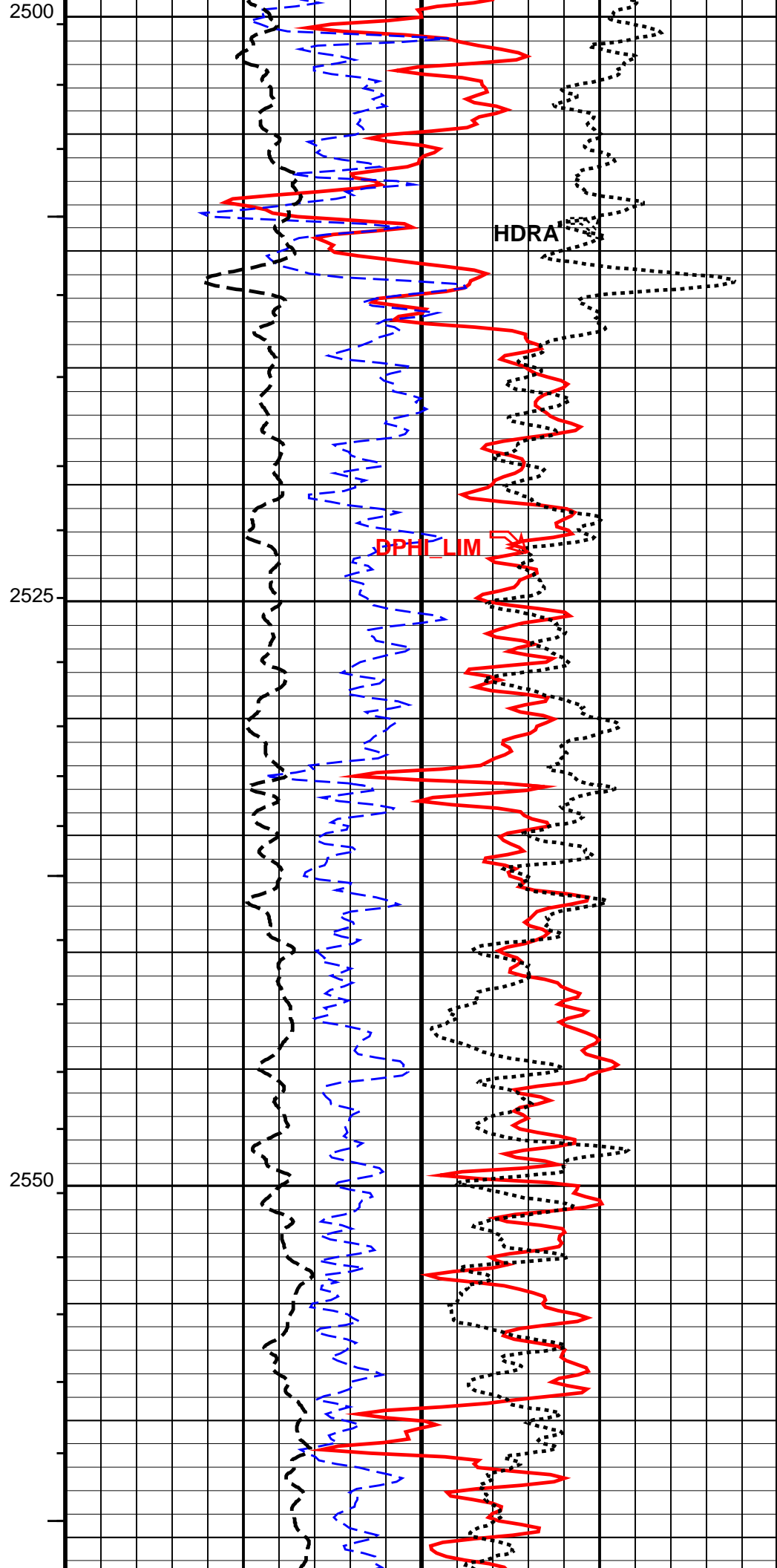
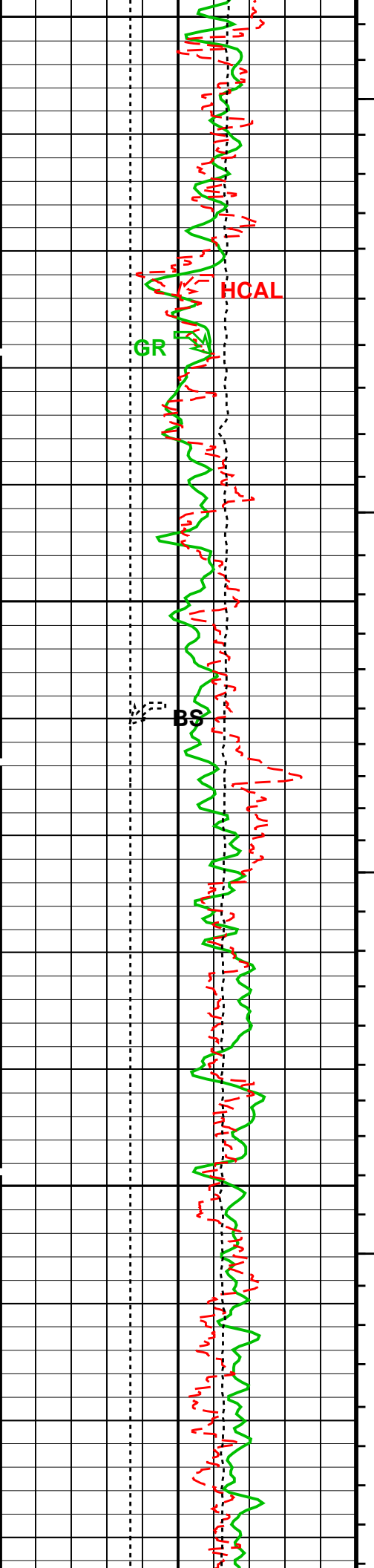
\*\*\*MAIN PASS: PEX-NEUTRON DENSITY POROSITY LOG - LIMESTONE 2710 KG/M3\*\*\*

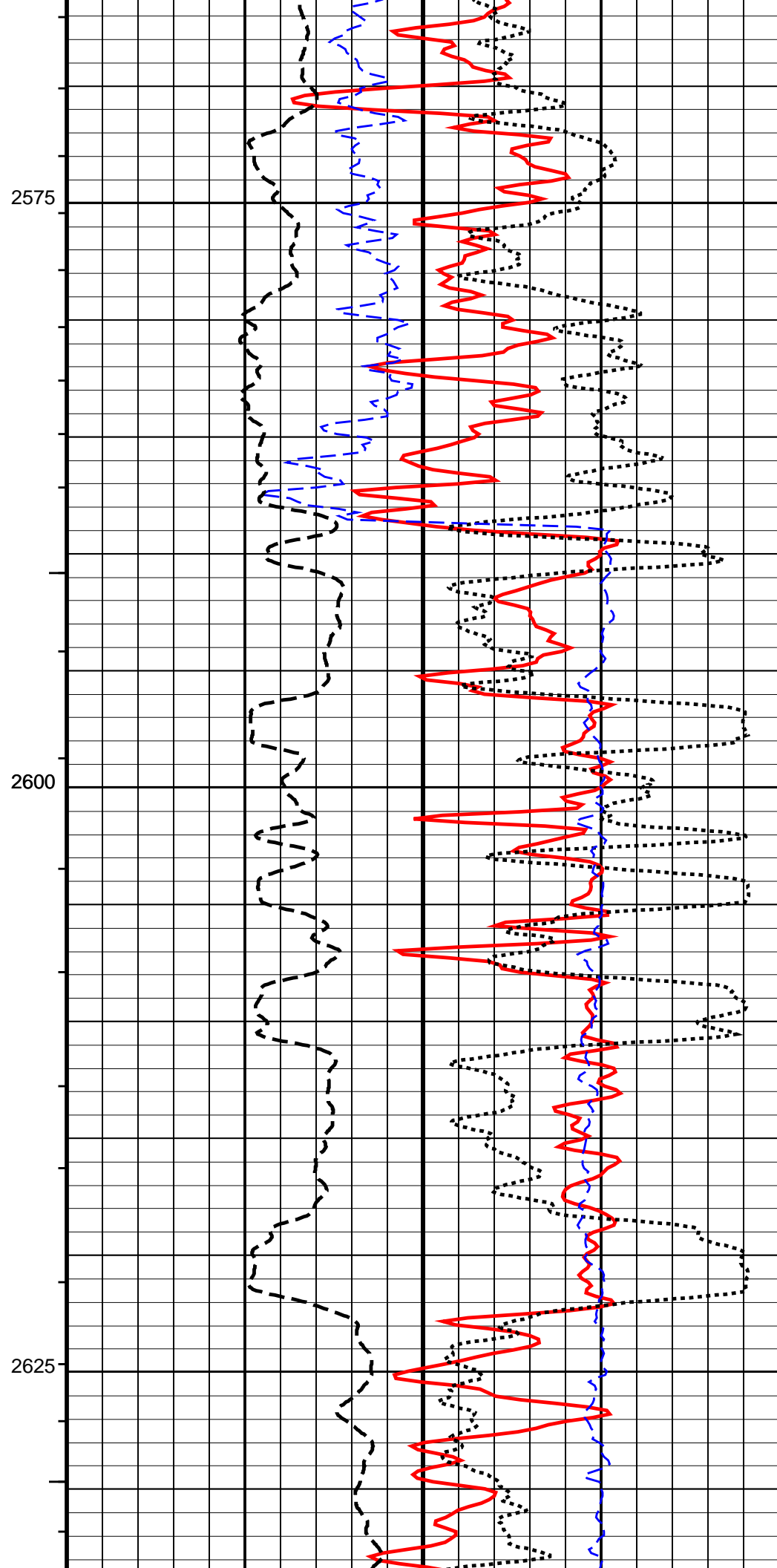
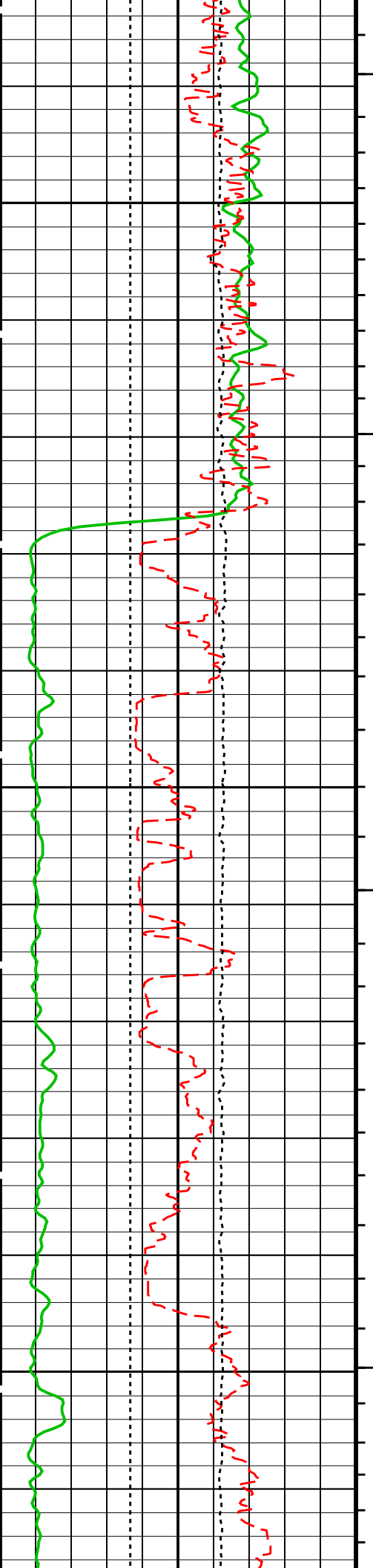




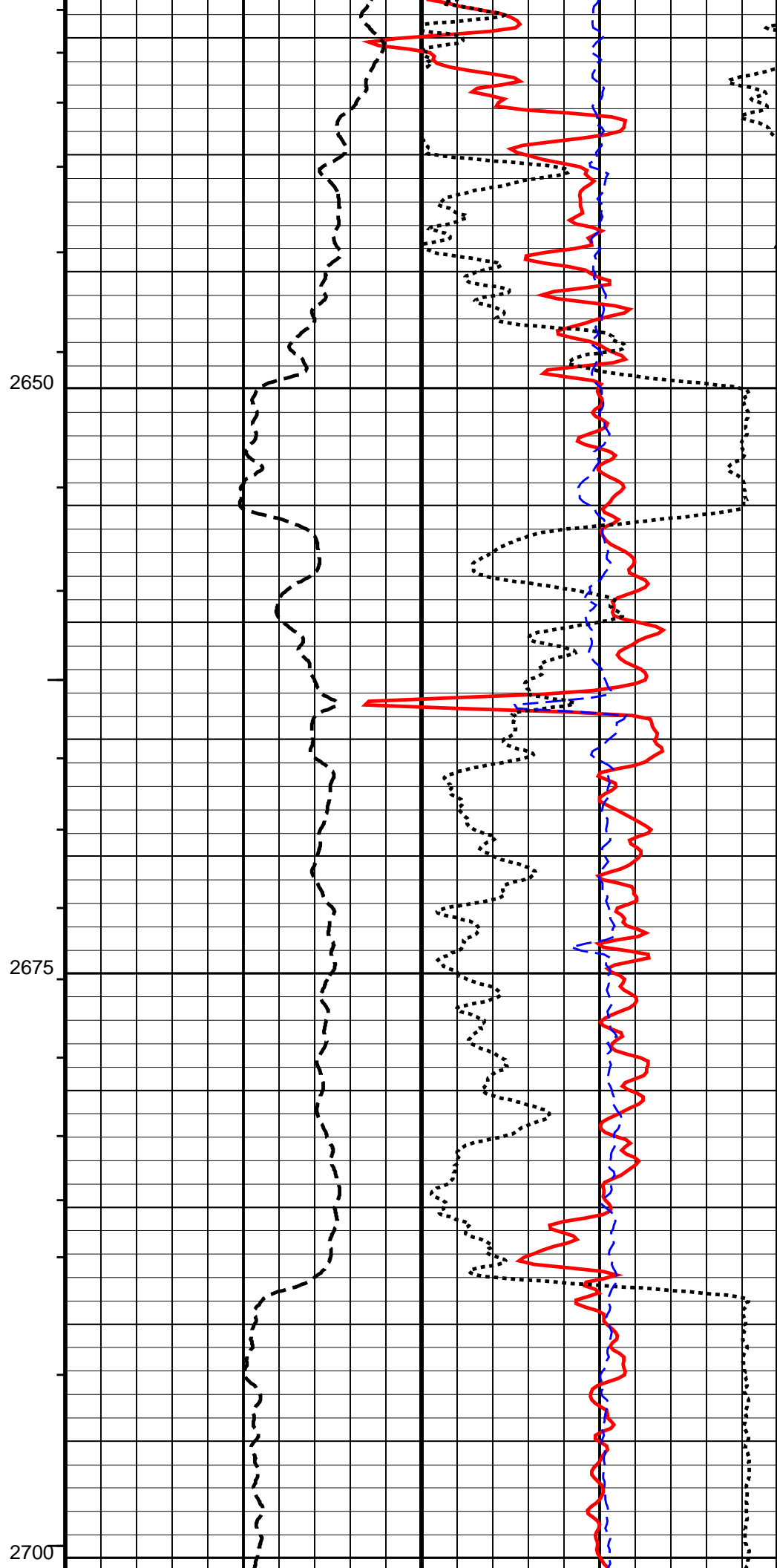
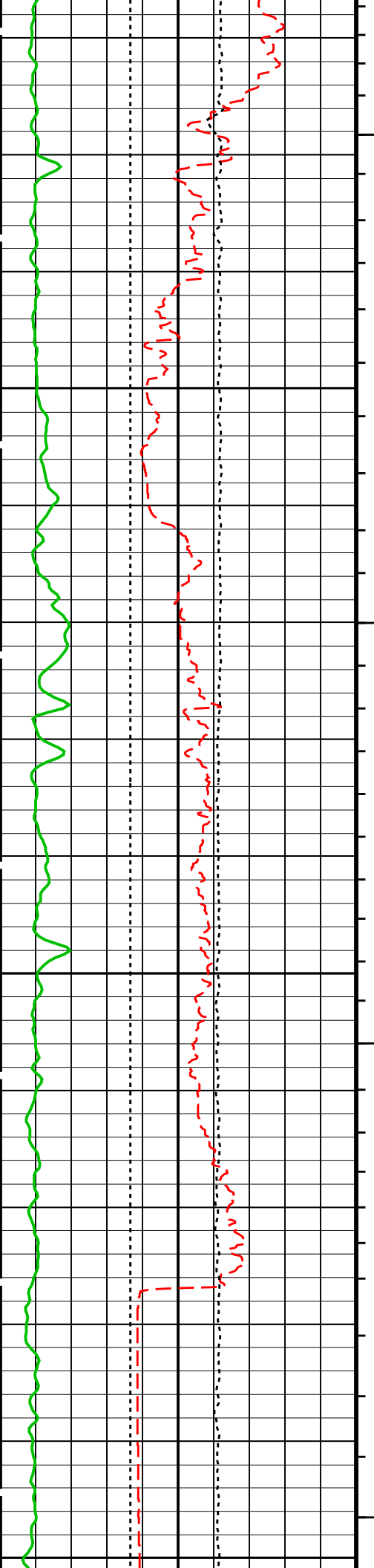


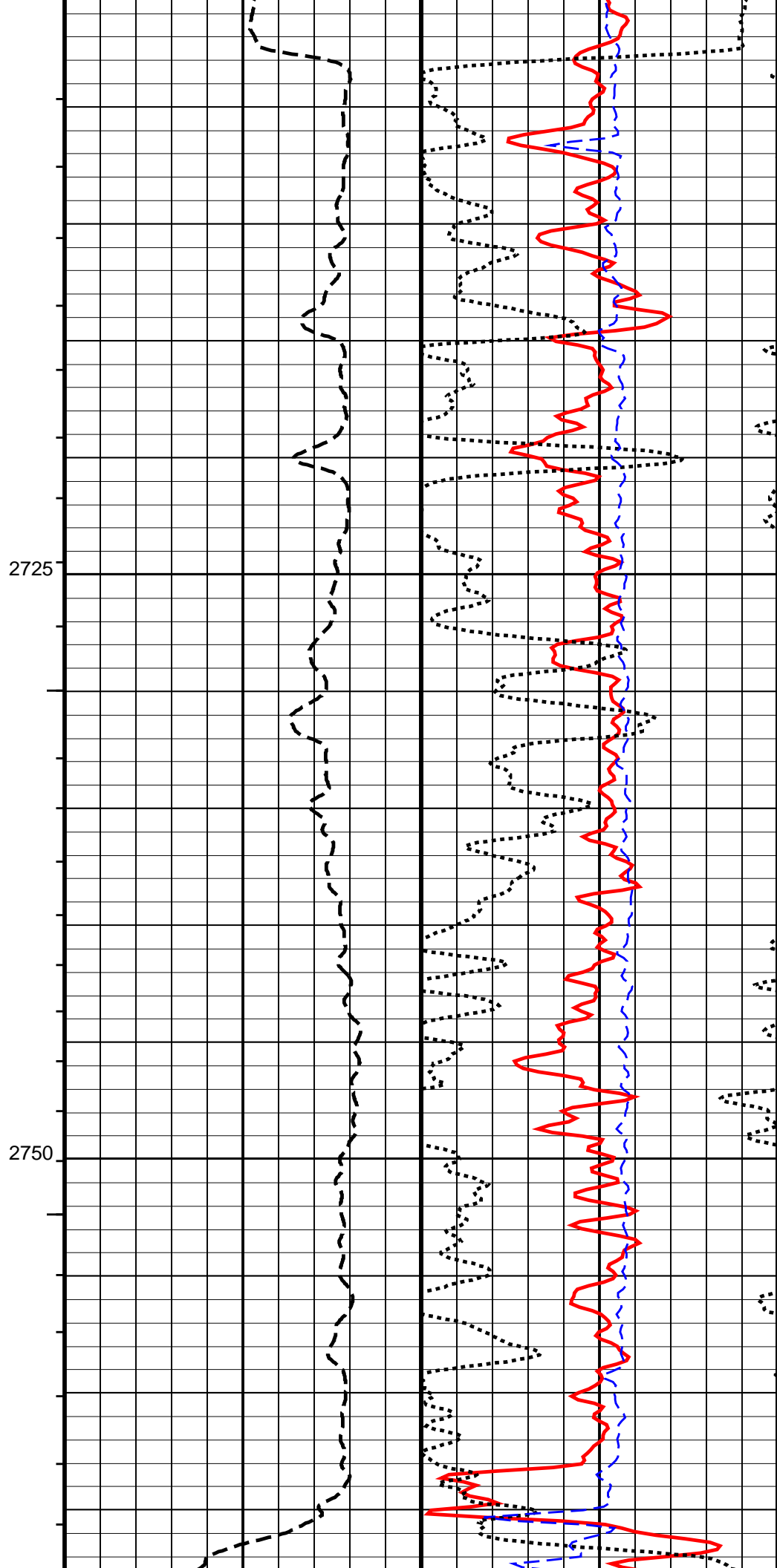
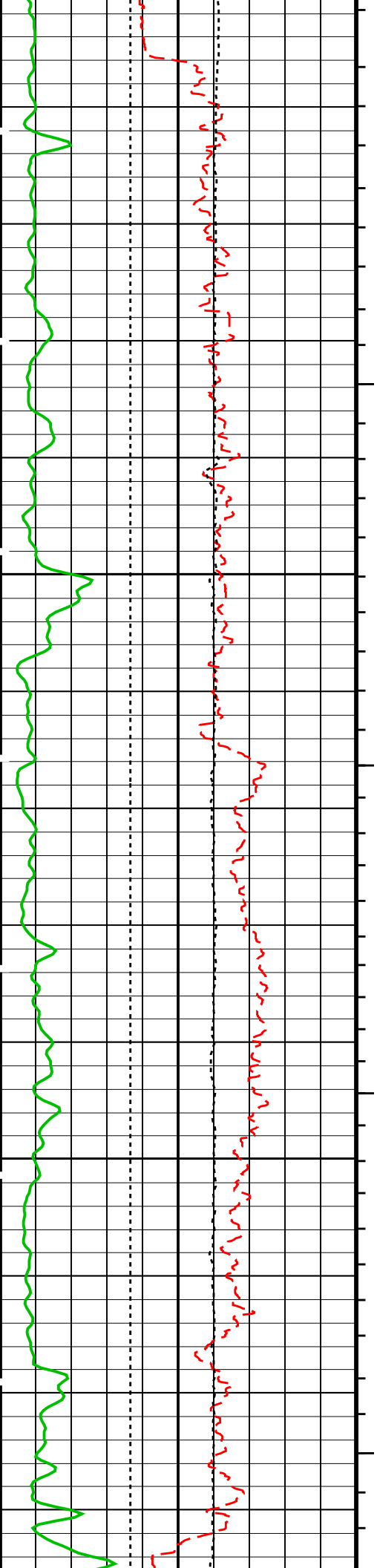


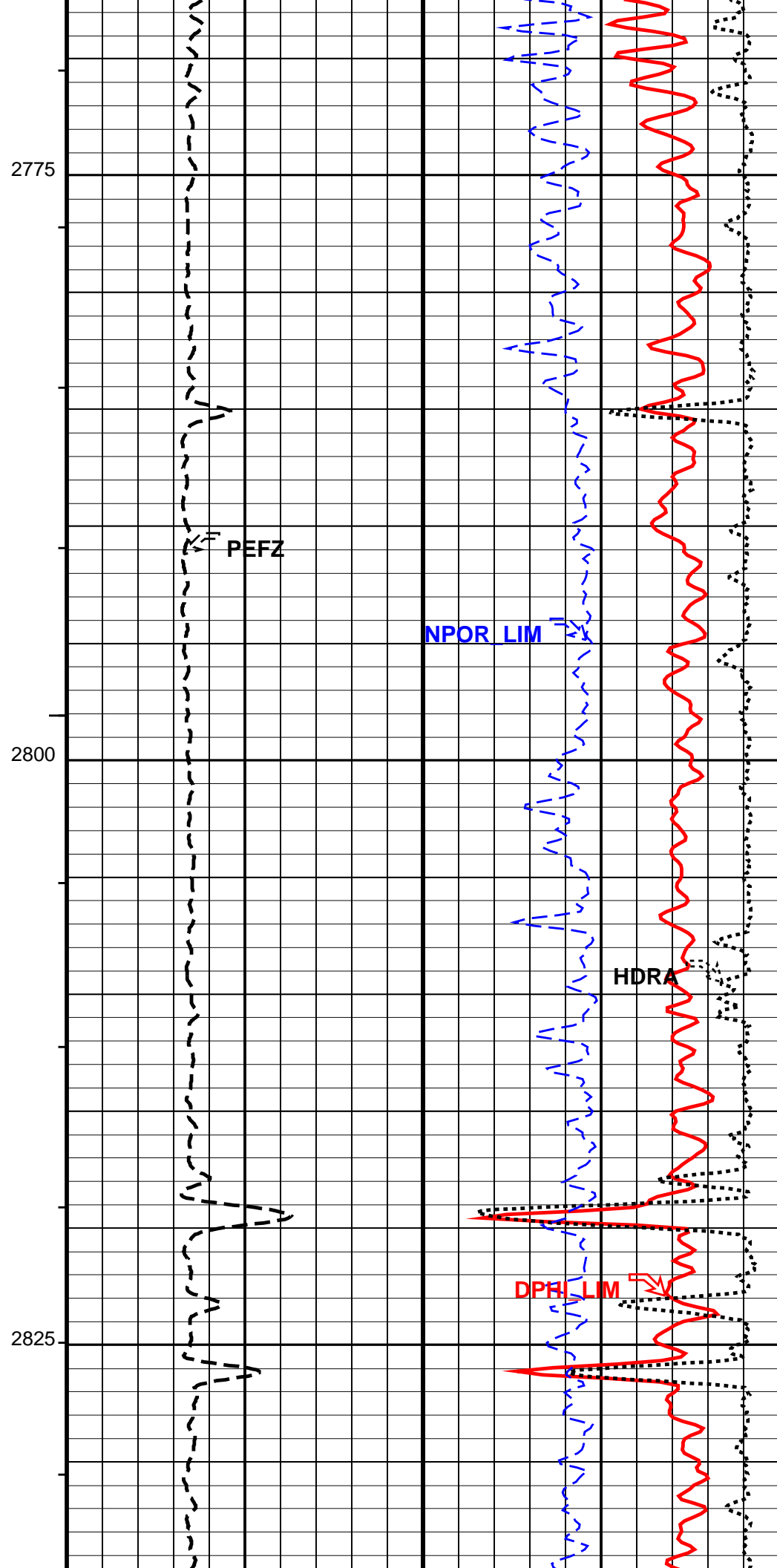
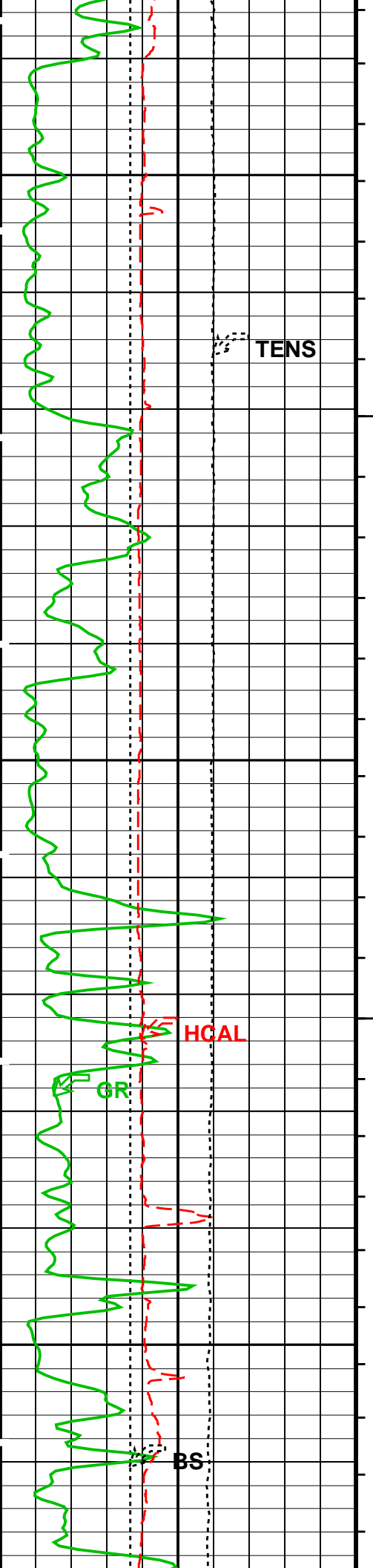


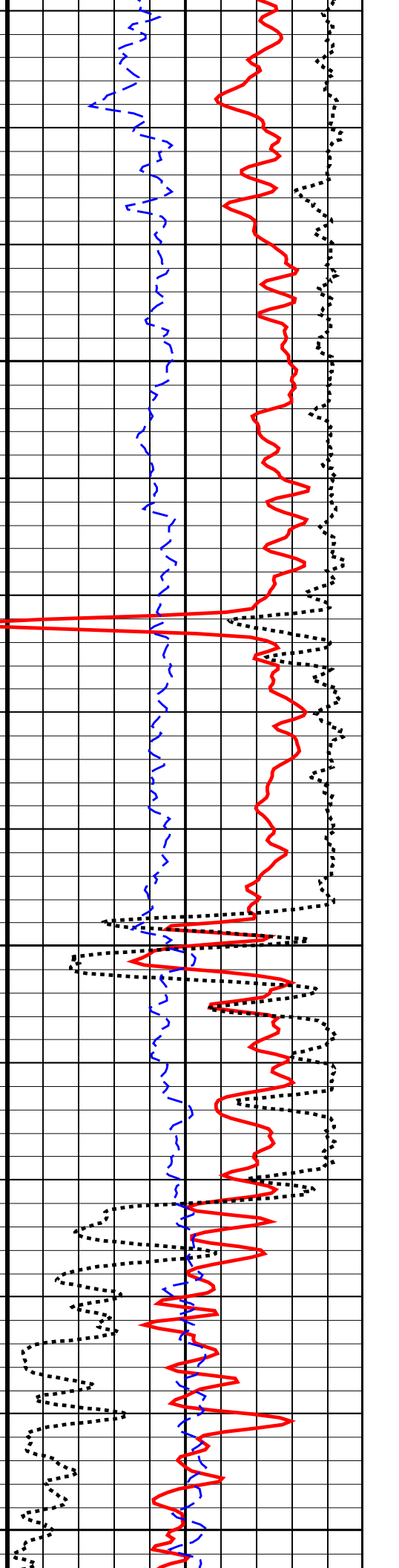
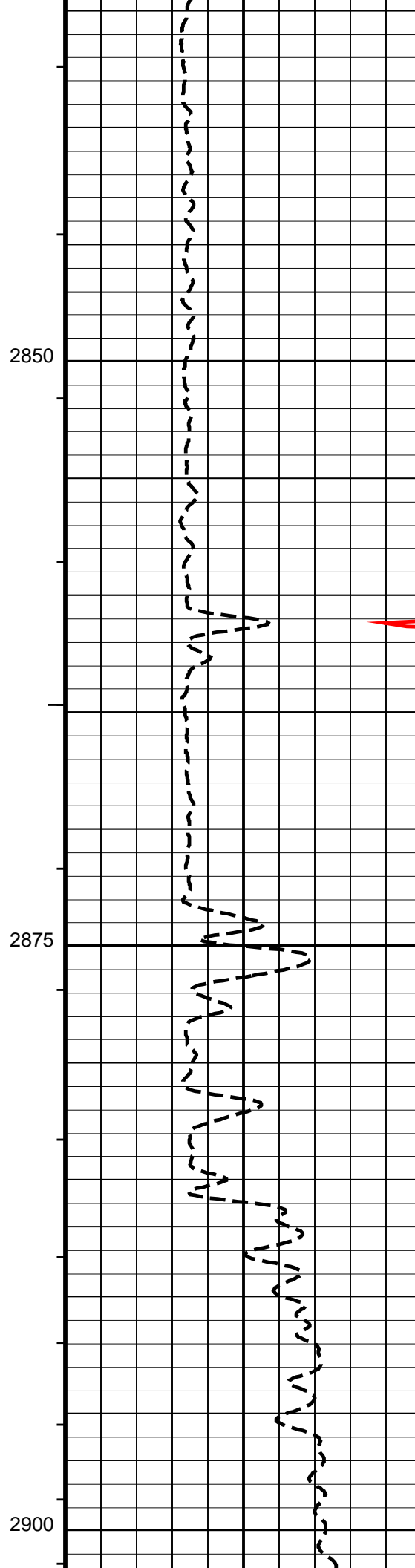
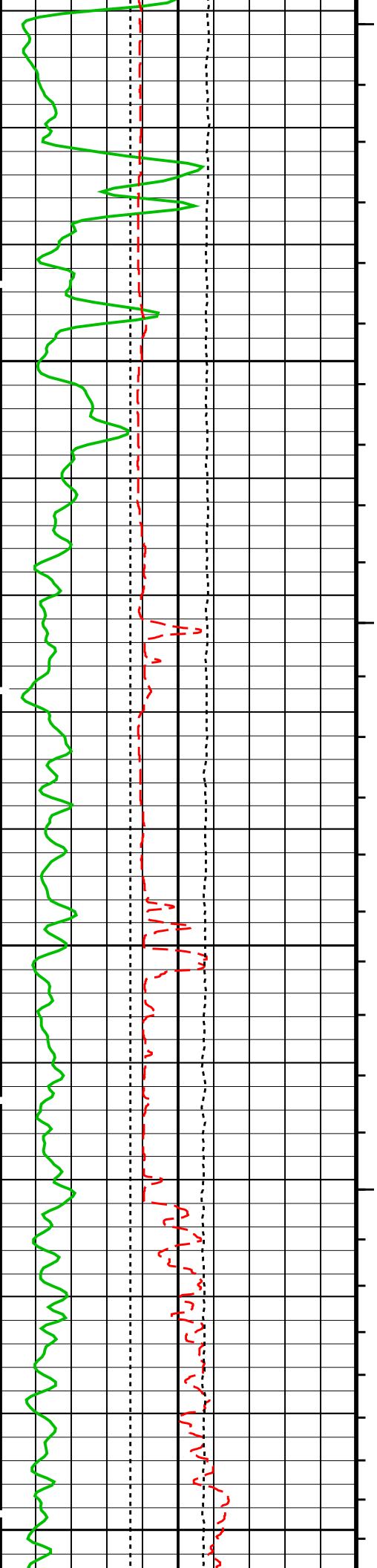


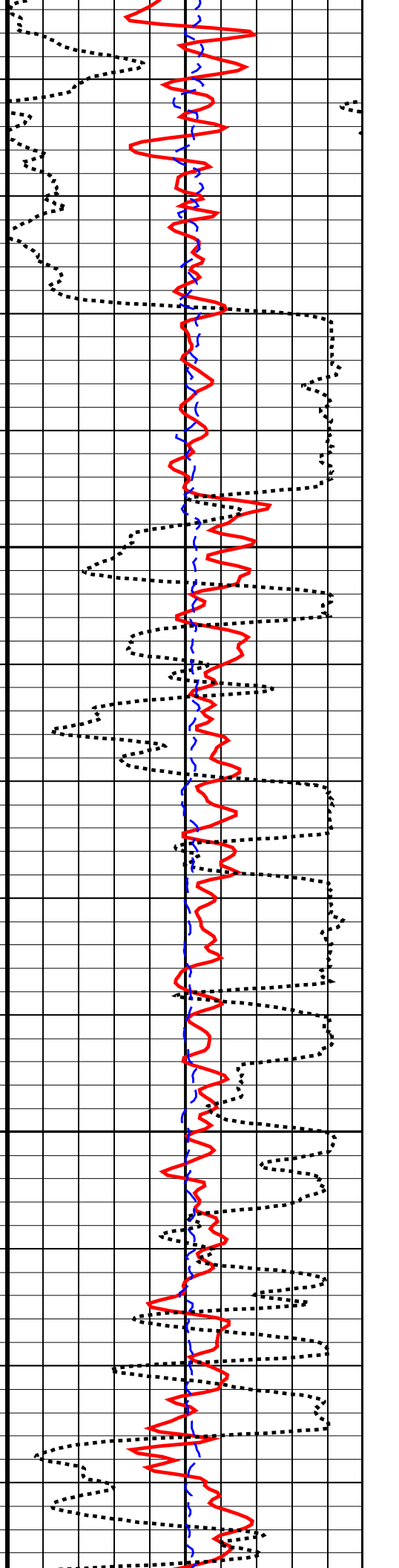
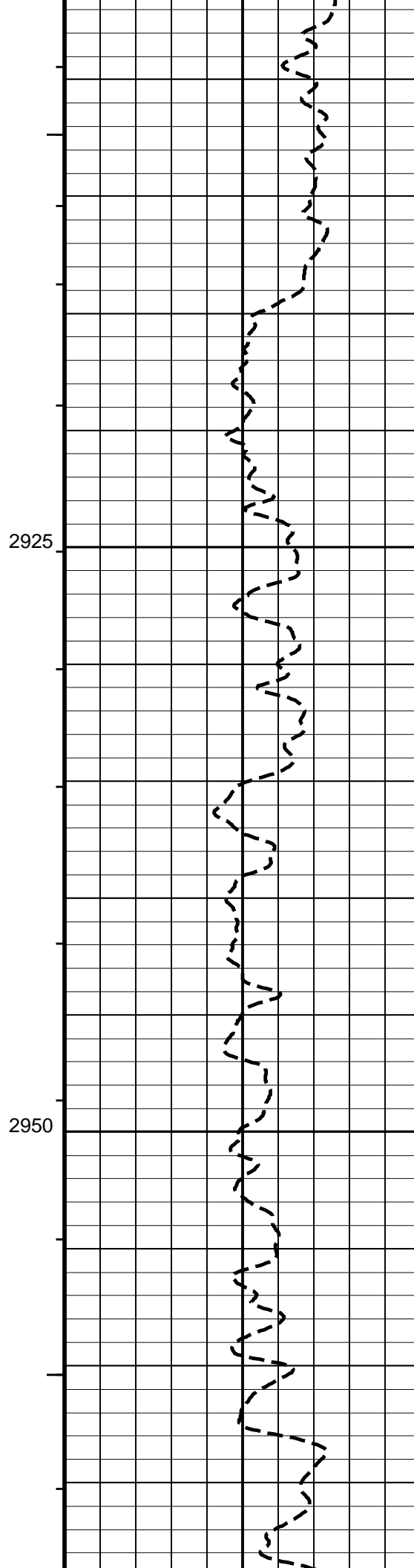
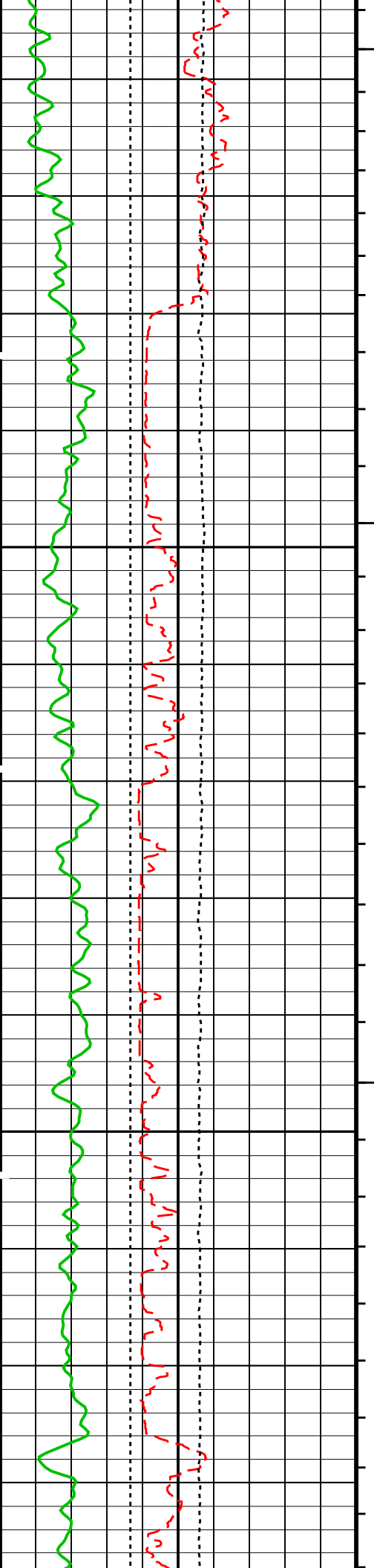


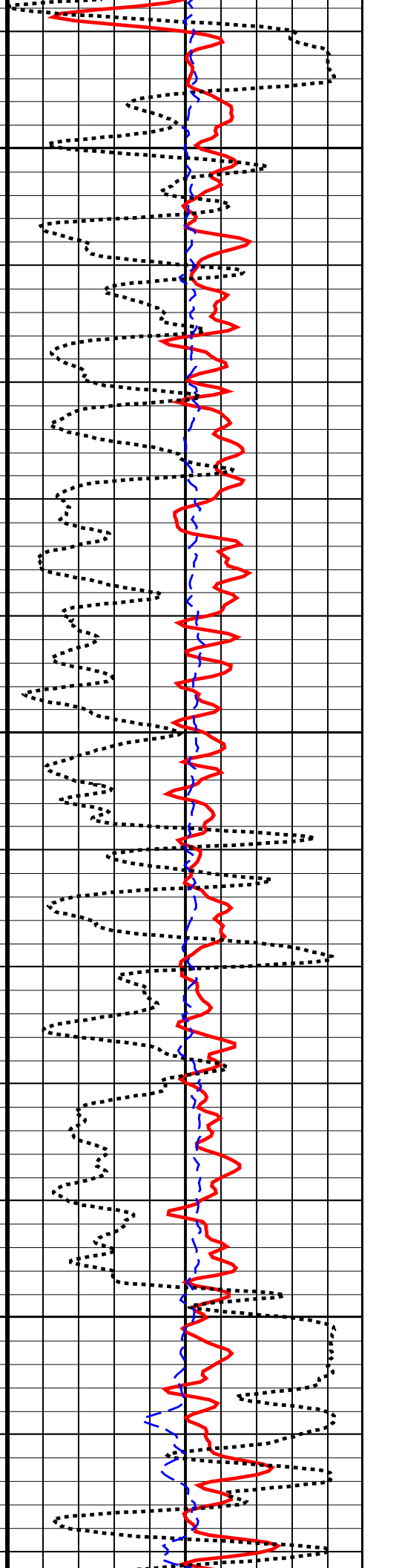
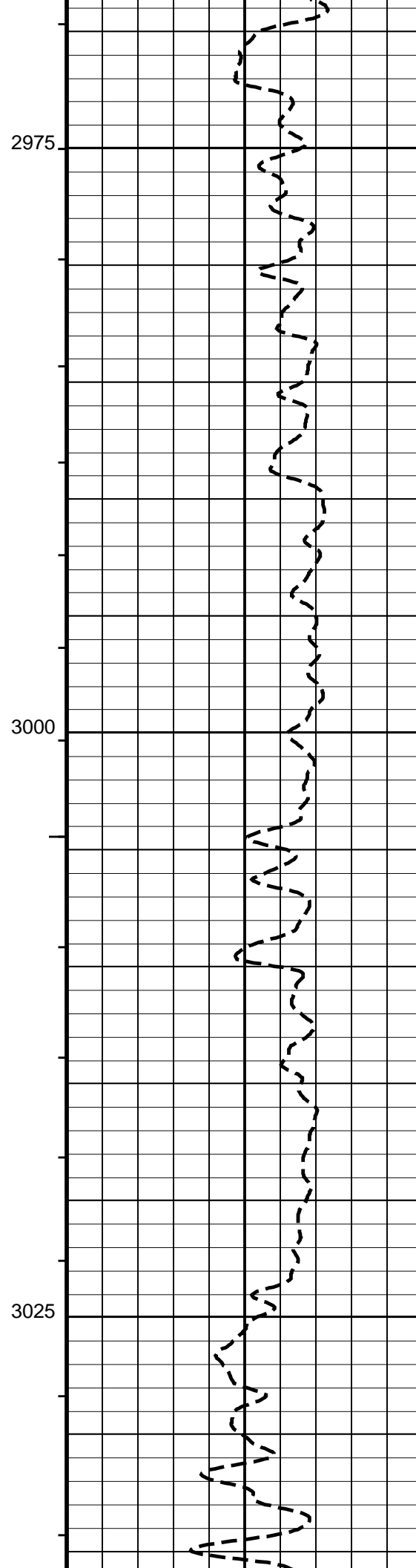
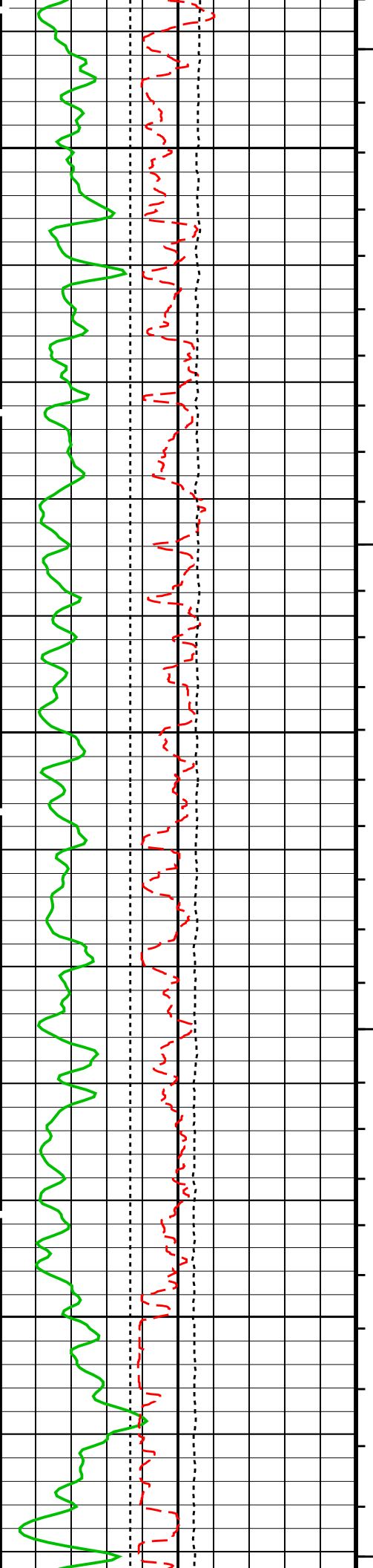


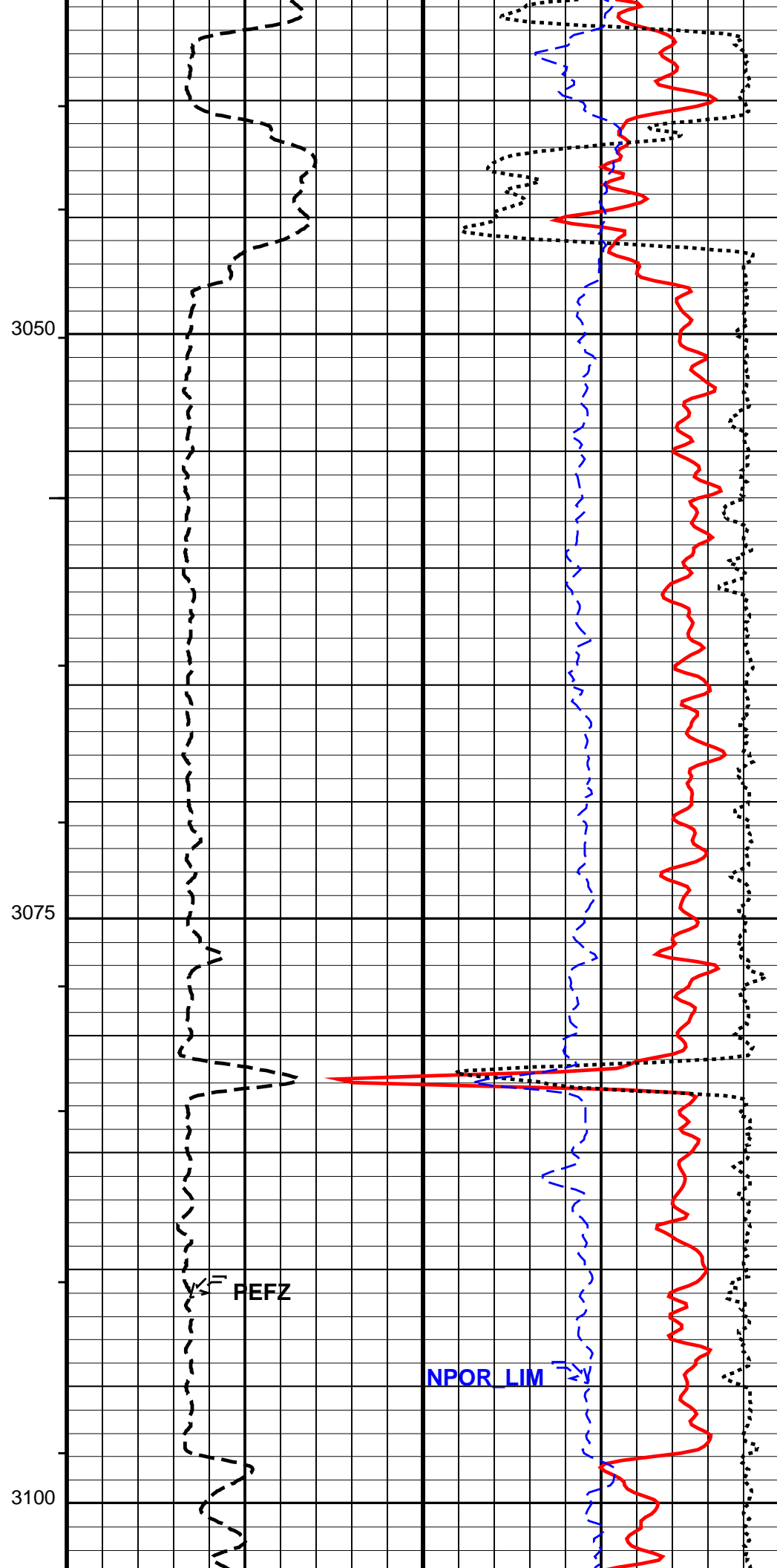
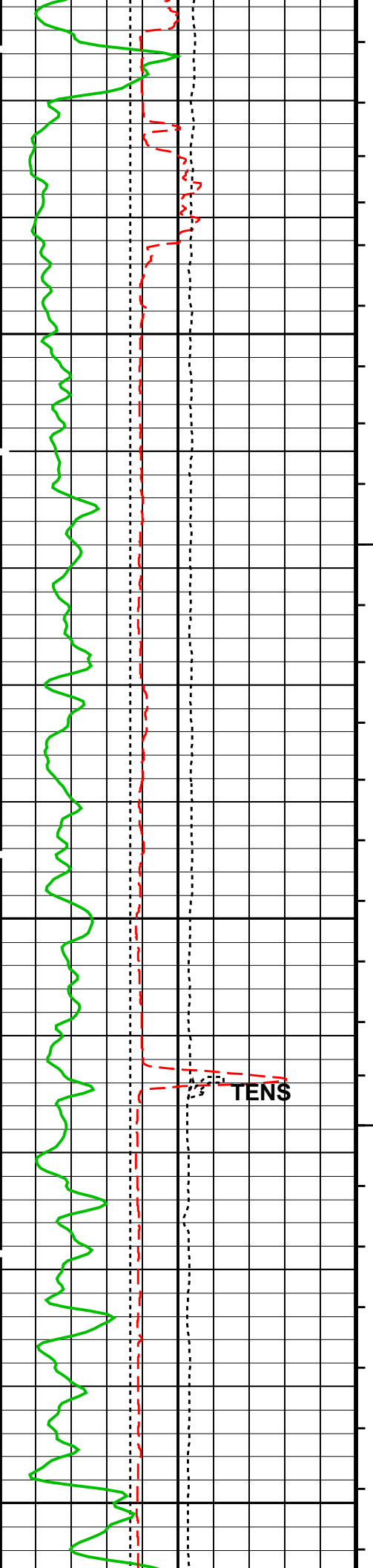


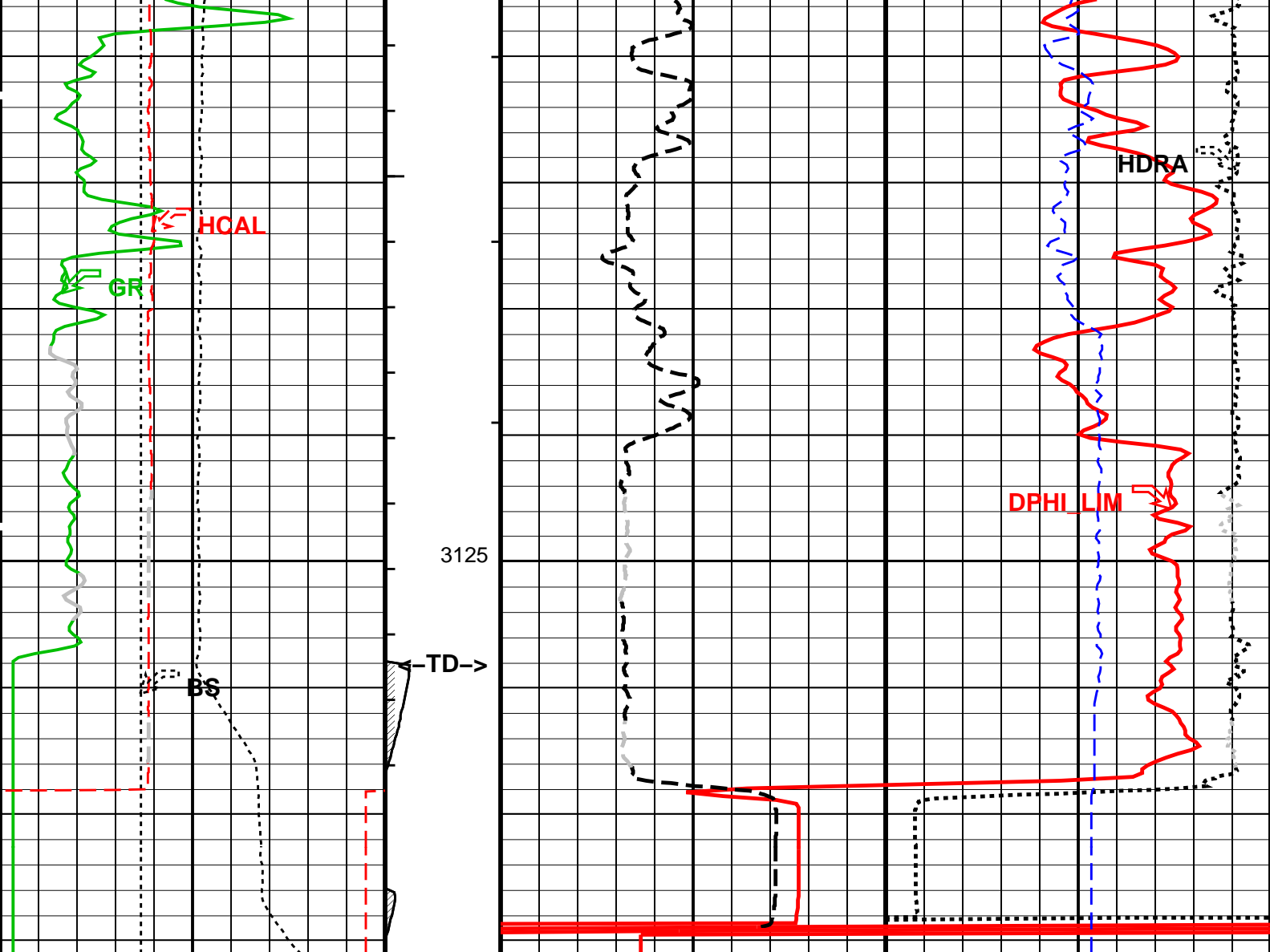












***MAIN PASS: PEX-NEUTRON DENSITY POROSITY LOG - LIMESTONE 2710 KG/M3***		
Bit Size (BS) (MM)		DPHI for LIME (DPHI_LIM) (V/V)
125 375		0.45 -0.15
HILT Caliper (HCAL) (MM)		NPOR for LIME (NPOR_LIM) (V/V)
125 375		0.45 -0.15
Gamma Ray (GR) (GAPI)		Std. Res. Formation Pe (PEFZ)
0 150		Density Correction (HDRA) (K/M3)
Tension (TENS) 25000 (N) 0		0 10 450 -50

PIP SUMMARY	
└ Integrated Hole Volume Minor Pip Every 0.1 M3	
└ Integrated Hole Volume Major Pip Every 1 M3	
└ Integrated Cement Volume Minor Pip Every 0.1 M3	
└ Integrated Cement Volume Major Pip Every 1 M3	
Time Mark Every 60 S	

Parameters		
DLIS Name	Description	Value
AAPL	AIT-M: Array Induction Tool - M	
ABHM	Array Induction Answer Product Level(Depth Log/View only)	
ABHV	3_BholeCorr_BasicLogs_RadialProcessing	
ABLM	Array Induction Borehole Correction Mode	2_ComputeStandoff
ABLV	Array Induction Borehole Correction Code Version Number	900
	Array Induction Basic Logs Mode	6_One_Two_and_Four
	Array Induction Basic Logs Code Version Number	223



ABLV	Array Induction Basic Logs Code Version Number	223	
ACDE	Array Induction Casing Detection Enable	No	
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
ACSED	Array Induction Casing Shoe Estimated Depth	-50000	M
ADITM	Array Induction Desired Tool Mode	0x00_Log_000	
AEBBC	Array Induction Enable Borehole Correction	Yes	
AEBL	Array Induction Enable Basic Logs	Yes	
AERP	Array Induction Enable Radial Processing	Yes	
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes	
AFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	
AFVN	Array Induction Firmware Code Version Number	1	
AIGS	Array Induction Select Akima Interpolation Gating	On	
ALNV	Array Induction Log Not Valid Flag	Log_Valid-No_Default_Parameters	
AMRD	Array Induction Mud Resistivity Calibration Depth	0	M
AMRF	Array Induction Mud Resistivity Factor	1	
AORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20	
ARFV	Array Induction Radial Profiling Code Version Number	701	
ARPM	Array Induction Radial Processing Mode	0_One	
ARPV	Array Induction Radial Parametrization Code Version Number	232	
ARTS	AIT Rt Selection (for ALLRES computation)	AITM_OneResTrueDeep	
ASTA	Array Induction Tool Standoff	38.1	MM
ATRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
ATSE	Array Induction Temperature Selection(Sonde Error Correction)	Internal	
ATTY	Array Induction Tool Type (of acquired data)	AITM	
AULV	Array Induction User Level Control	Normal	
AZRSV	Array Induction Response Set Version for Z Resolution	00.10.25.00	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	58.4	DEGC
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
RTCO	RTCO - Rt Invasion Correction	YES	
SHT	Surface Hole Temperature	30	DEGC
SPNV	SP Next Value	0	MV
HILTH-FTB: High resolution Integrated Logging Tool-DTS			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	58.4	DEGC
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
EXSICL	External Shale Indicator Clean Value	20	
EXSISH	External Shale Indicator Shale Value	150	
FD	Fluid Density	1000	K/M3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal-like Formation Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HACPP	Accelerometer PROM Presence	PRESENT_DOWNHOLE	
HART	Accelerometer Reference Temperature	25	DEGC
HDCOD	HILT Density Coal detection	2000	K/M3
HDSAD	HILT Density Salt detection	2100	K/M3
HILT_GAS_DENSITY	HILT Gas Downhole Density	0	K/M3
HILT_GAS_OPTION	HILT Gas Computation Option	OFF	
HNCOD	HILT Neutron Coal detection	0.45	V/V
HNSAD	HILT Neutron Salt detection	0.05	V/V
HPHIECUT	HILT effective Porosity Cutoff	0.05	V/V
HSCO	Hole Size Correction Option	YES	
HSIS	HILT Shale Indicator Selection	GR	
HSSO	HRDD Nuclear Source Strength Option	NORMAL	
HSWCUT	HILT Water Saturation from AITH cutoff	50	%
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2710	K/M3
MHC0	MCFL B0 Contrast Correction Coefficient	2.2e-005	OHMS
MHC1	MCFL B1 Contrast Correction Coefficient	3.2e-005	OHMS
MHCC	MCFL High Contrast Correction Switch	NO	

MPOF	MCFL Processing Operation Mode	ON	
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	VeryHiRes	
NSAR	HRDD Depth Sampling Rate	12.7	MM
PEA_FILTER	PEA Filter	NO_FILTER	
PEFC_FILTER	PEFC Filter	NO_FILTER	
PHIMAX	HILT max porosity	0.35	V/V
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SEXP_HILT	HILT Saturation Exponent	2	
SHT	Surface Hole Temperature	30	DEGC
SOCN	Standoff Distance	3.175	MM
SOCO	Standoff Correction Option	YES	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	58.4	DEGC
FCD	Future Casing (Outer) Diameter	177.8	MM
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	30	DEGC
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	1.5	M
TDD	Total Depth – Driller	3160.00	M
TDL	Total Depth – Logger	3160.00	M
System and Miscellaneous			
ALTDPCN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	216.000	MM
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	244.500	MM
CWEI	Casing Weight	64.74	KG/M
DFD	Drilling Fluid Density	1170.00	K/M3
DO	Depth Offset for Playback	5.0	M
DORL	Depth Offset for Repeat Analysis	0.0	M
FLEV	Fluid Level	0.00	M
MST	Mud Sample Temperature	21.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	0.7100	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	3160	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: NUCLEAR\_D240\_LIME      Vertical Scale: 1:240      Graphics File Created: 15-May-2010 20:21

## OP System Version: 17C0-154

AIT-M	17C0-154	HILTH-FTB	17C0-154
DTC-H	17C0-154		

### Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:9	PRODUCER	15-May-2010 18:24	3135.5 M	2218.0 M
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### Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_016PUP	FN:23	PRODUCER	15-May-2010 20:21		
CUSTOMER	AIT_TLD_MCFL_CNL_016PUP	FN:24	PRODUCER	15-May-2010 20:21		

Company: Nalcor Energy Oil and Gas      Well: Nalcor et al Seamus 1

### Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:9	PRODUCER	15-May-2010 18:24	3135.5 M	2218.0 M
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### Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_027PUP	FN:38	PRODUCER	15-May-2010 21:47	3140.5 M	2223.1 M
CUSTOMER	AIT_TLD_MCFL_CNL_027PUP	FN:39	PRODUCER	15-May-2010 21:47	3140.5 M	2223.1 M

# Integrated Hole/Cement Volume Summary

Hole Volume = 45.03 M3

Cement Volume = 23.97 M3 (assuming 177.80 MM casing O.D.)

Computed from 3140.5 M to 2292.4 M using data channel(s) HCAL

## OP System Version: 17C0-154

AIT-M  
DTC-H

17C0-154  
17C0-154

HILTH-FTB

17C0-154

### PIP SUMMARY

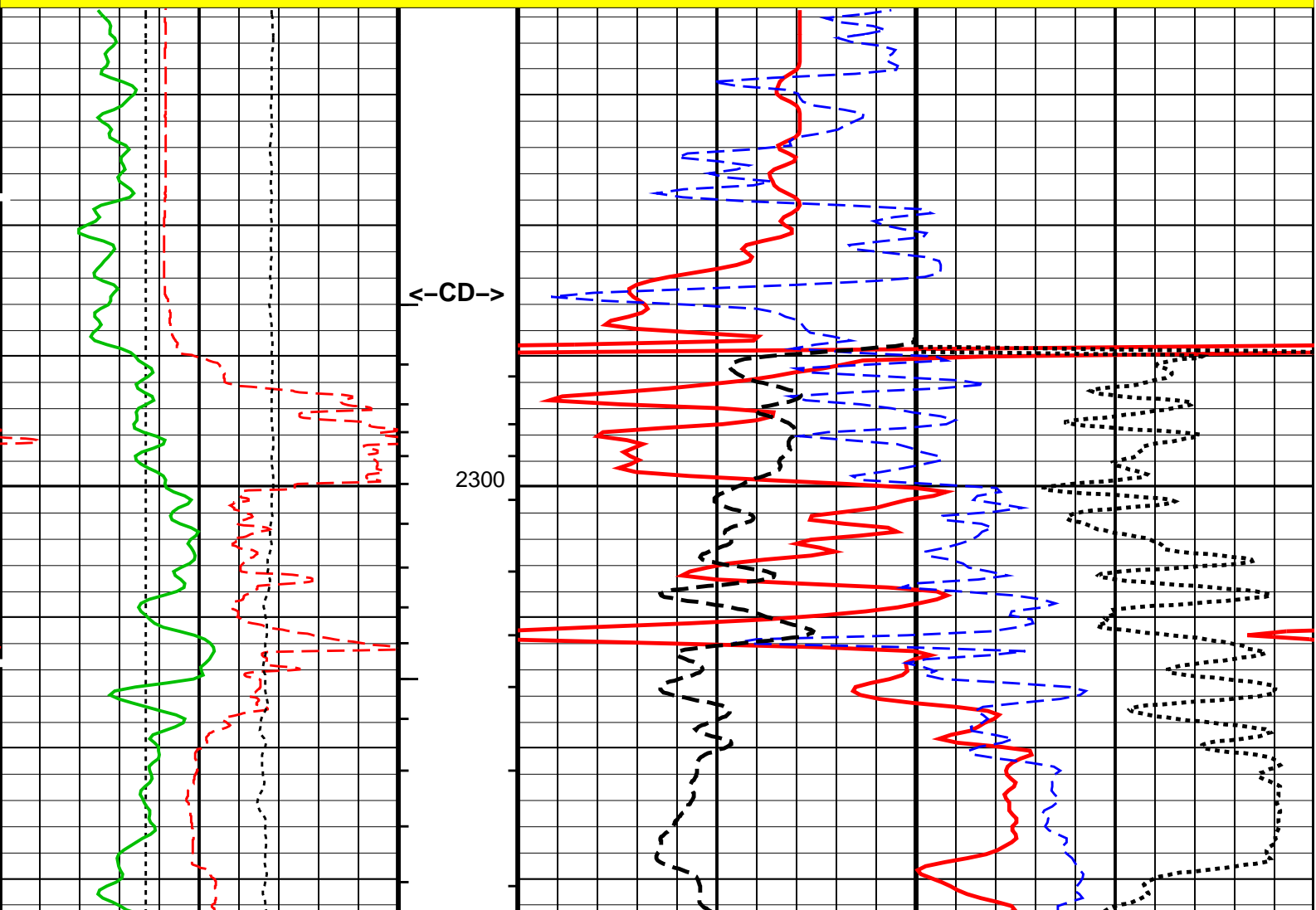
- └ Integrated Hole Volume Minor Pip Every 0.1 M3
- └ Integrated Hole Volume Major Pip Every 1 M3
  - └ Integrated Cement Volume Minor Pip Every 0.1 M3
  - └ Integrated Cement Volume Major Pip Every 1 M3

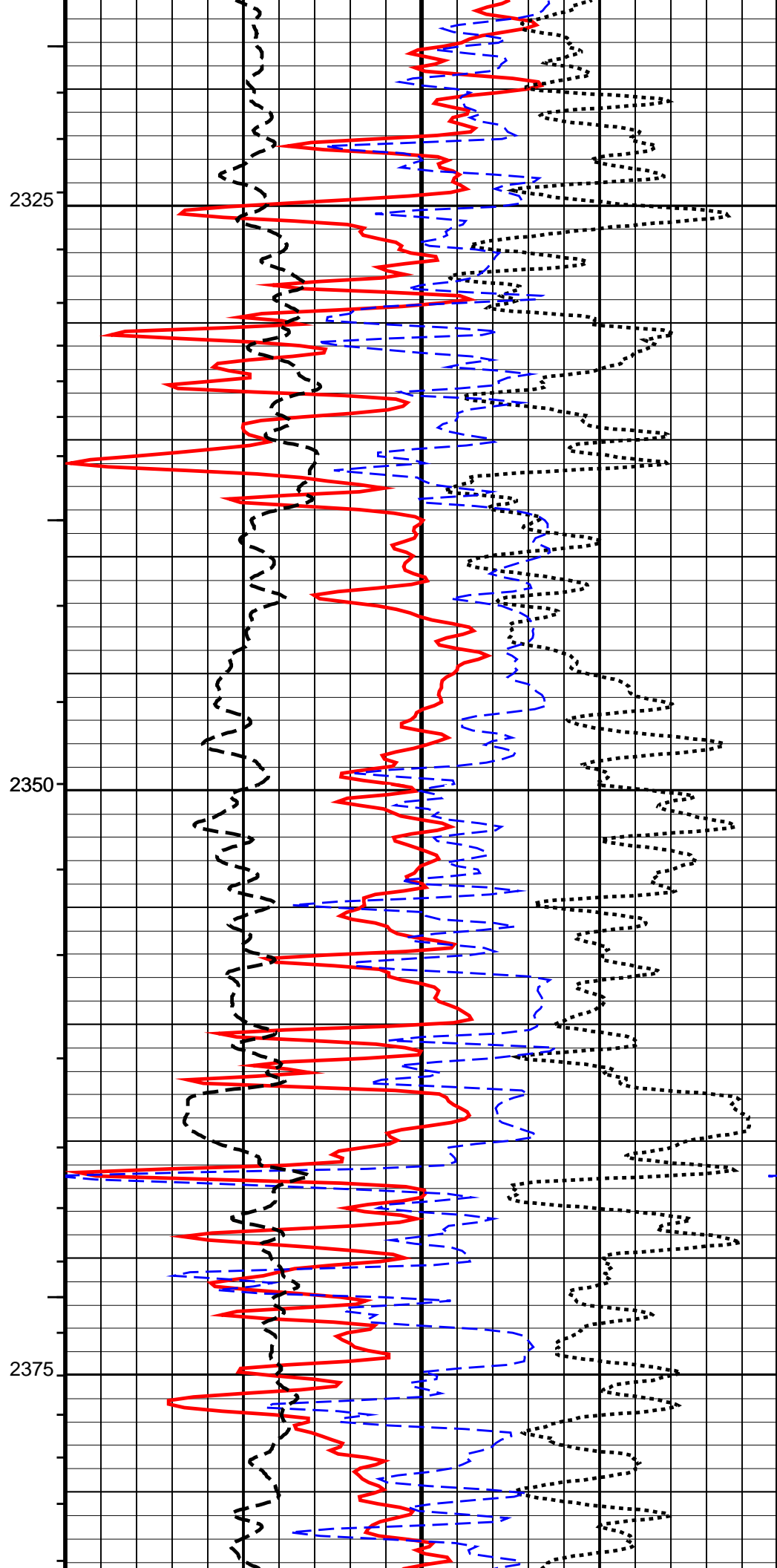
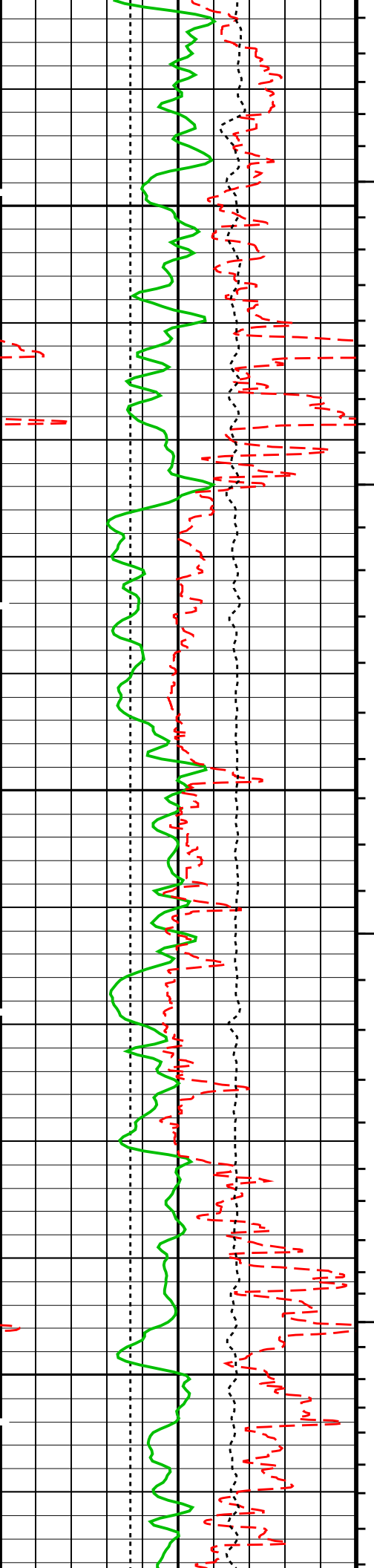
Time Mark Every 60 S

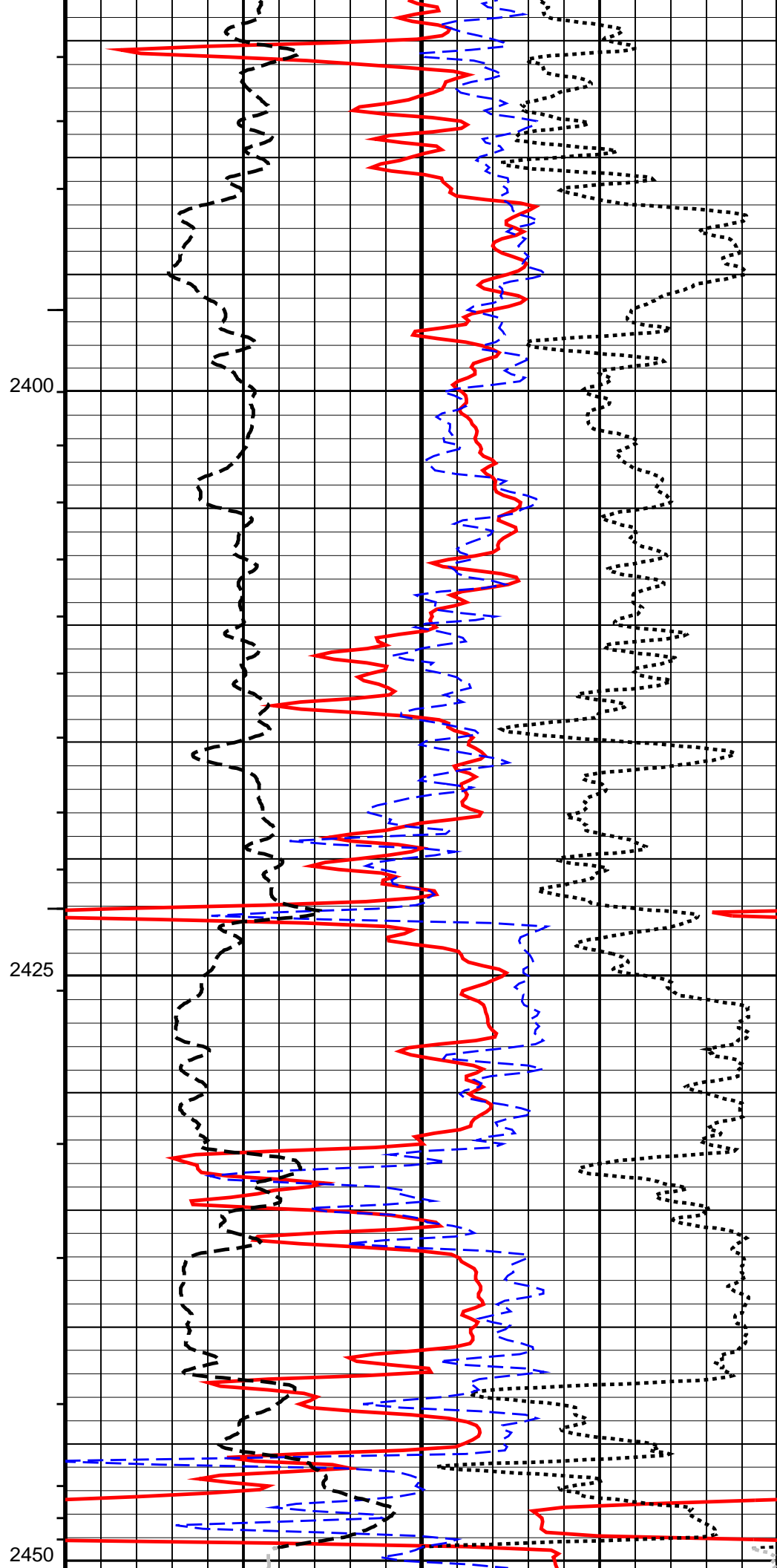
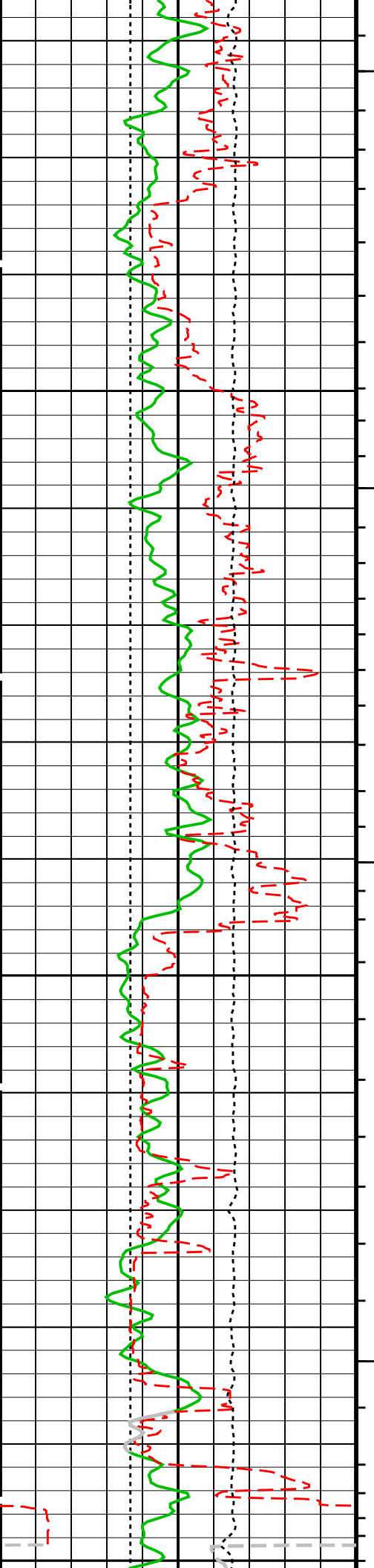
Tension (TENS)	
25000 (N)	0
Gamma Ray (GR)	
(GAPI)	150
HILT Caliper (HCAL)	
(MM)	375
Bit Size (BS)	
(MM)	375

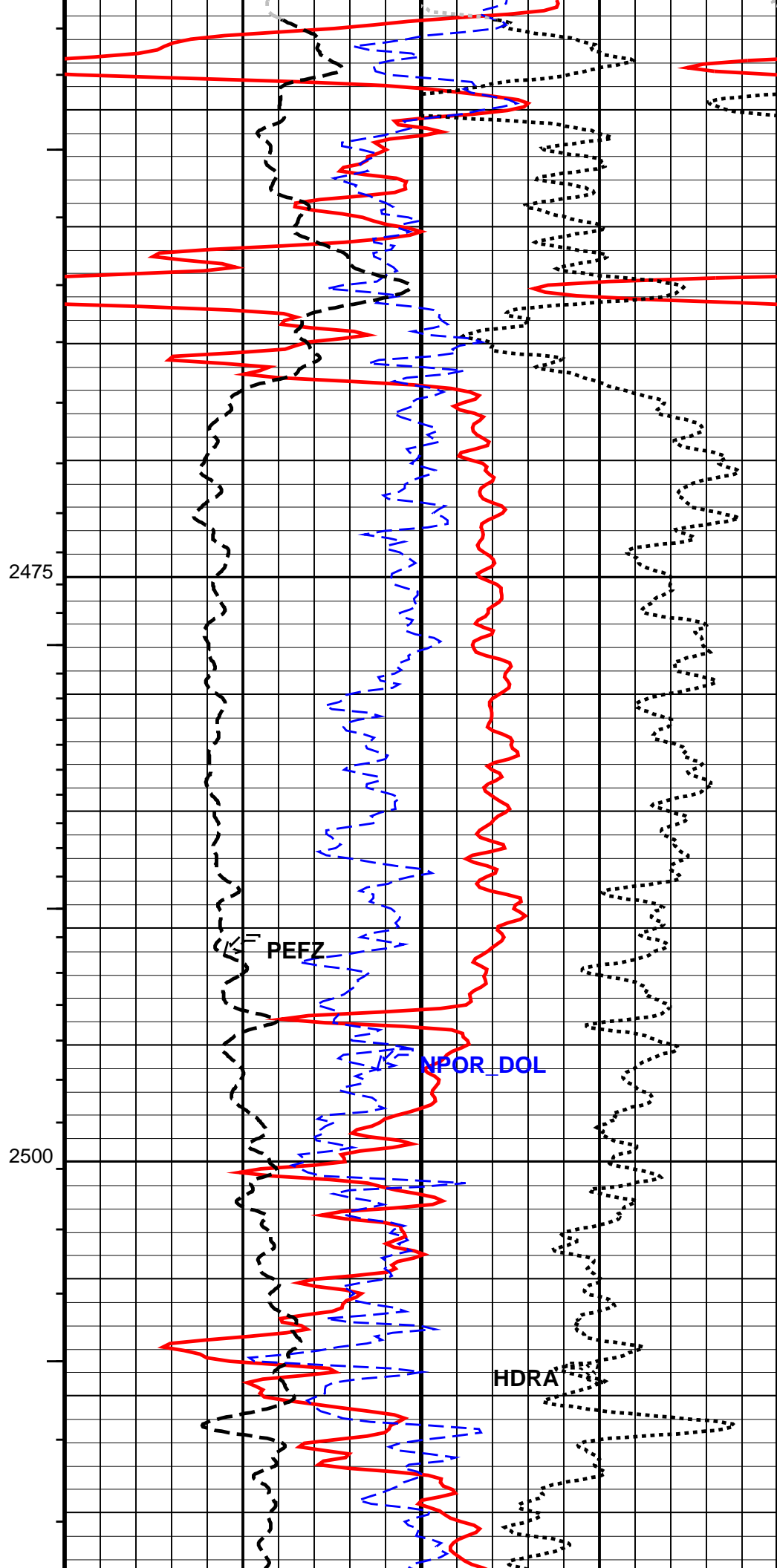
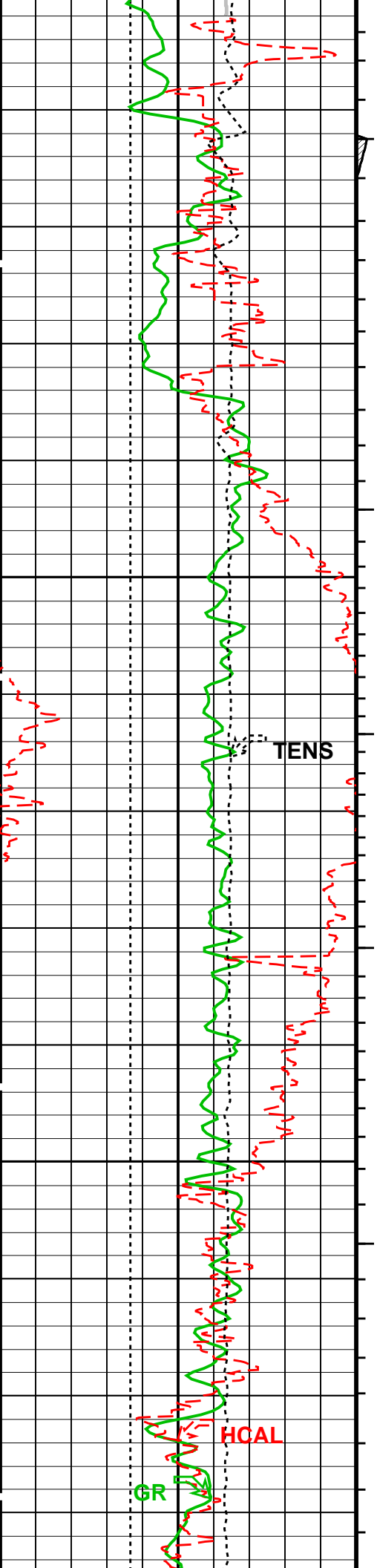
Std. Res. Formation Pe (PEFZ)		Density Correction (HDRA)	
0	10 450		-50
(-----)		(K/M3)	
NPOR for DOLO (NPOR_DOL)		(V/V)	
0.45			-0.15
DPHI for DOLO (DPHI_DOL)		(V/V)	
0.45			-0.15

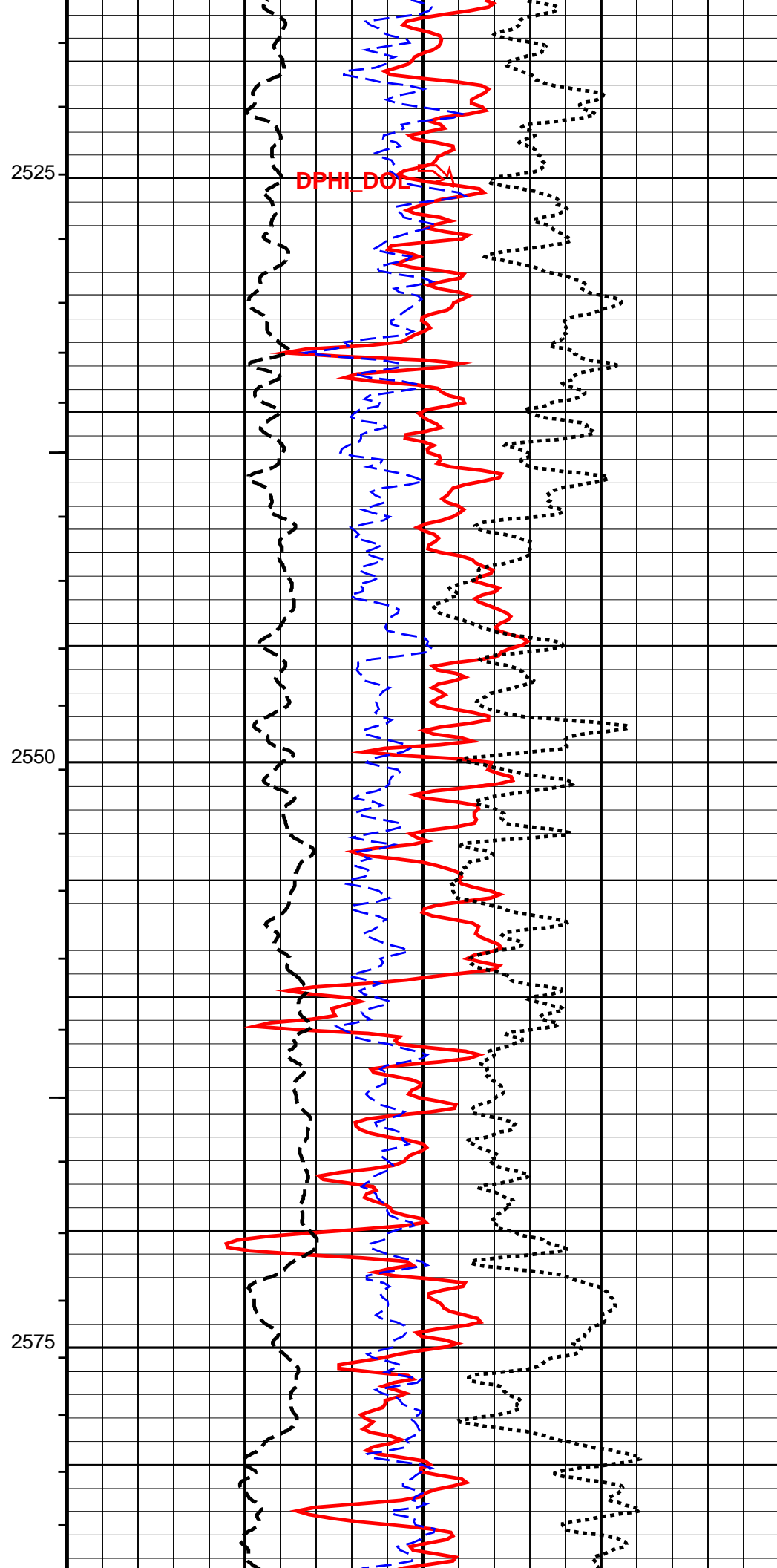
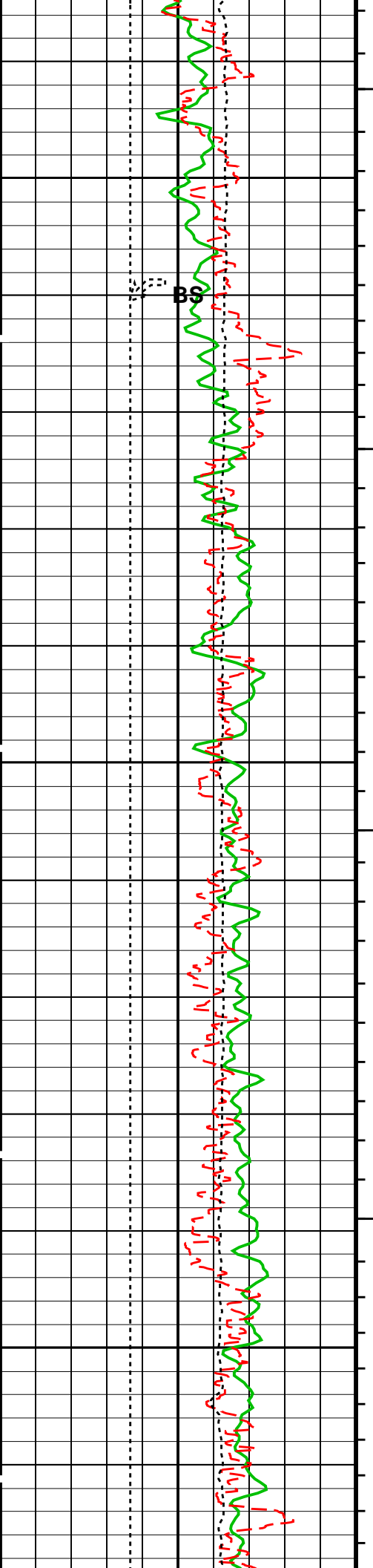
\*\*\*MAIN PASS: PEX-NEUTRON DENSITY POROSITY LOG - LIMESTONE 2710 KG/M3\*\*\*

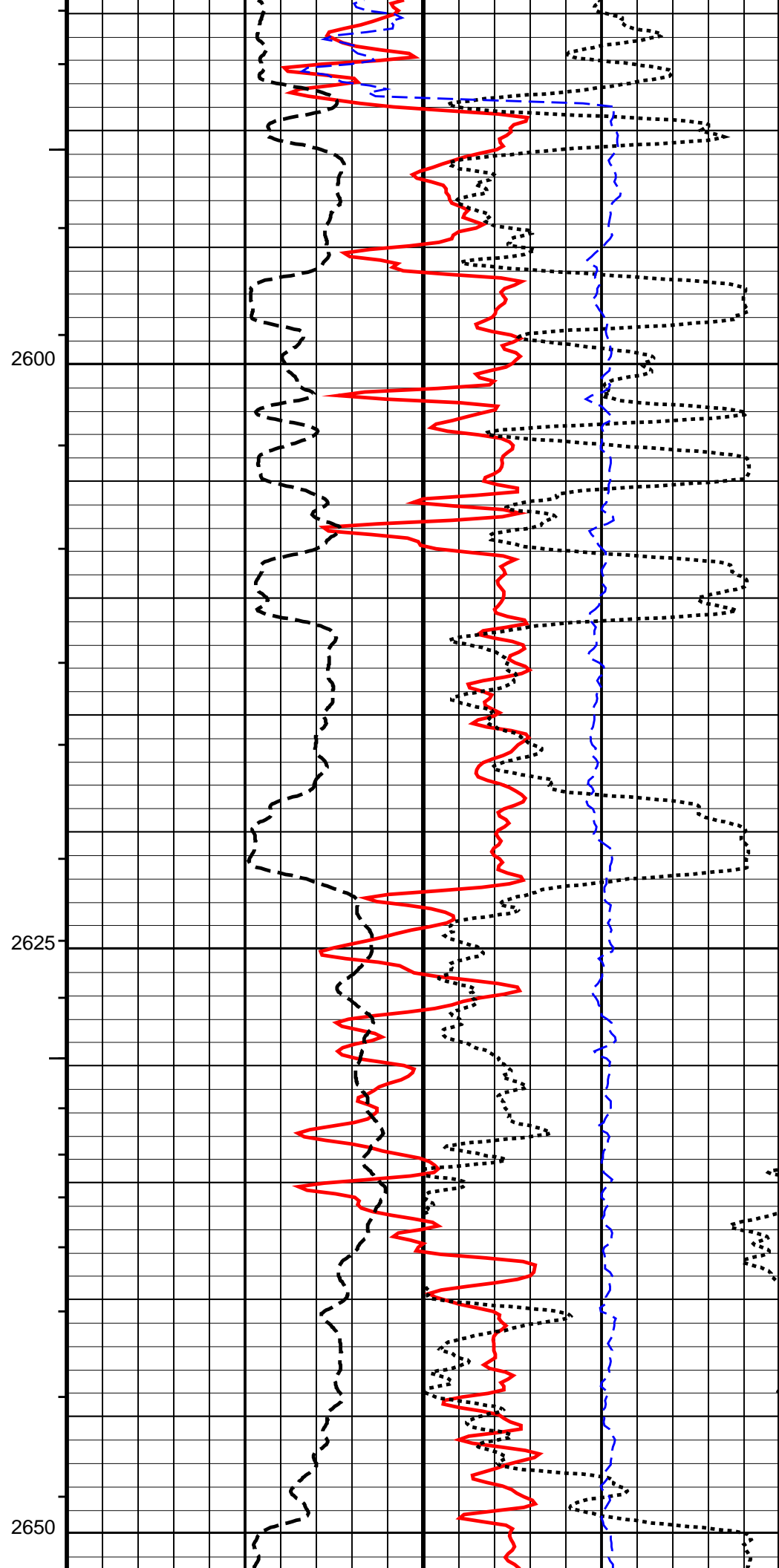
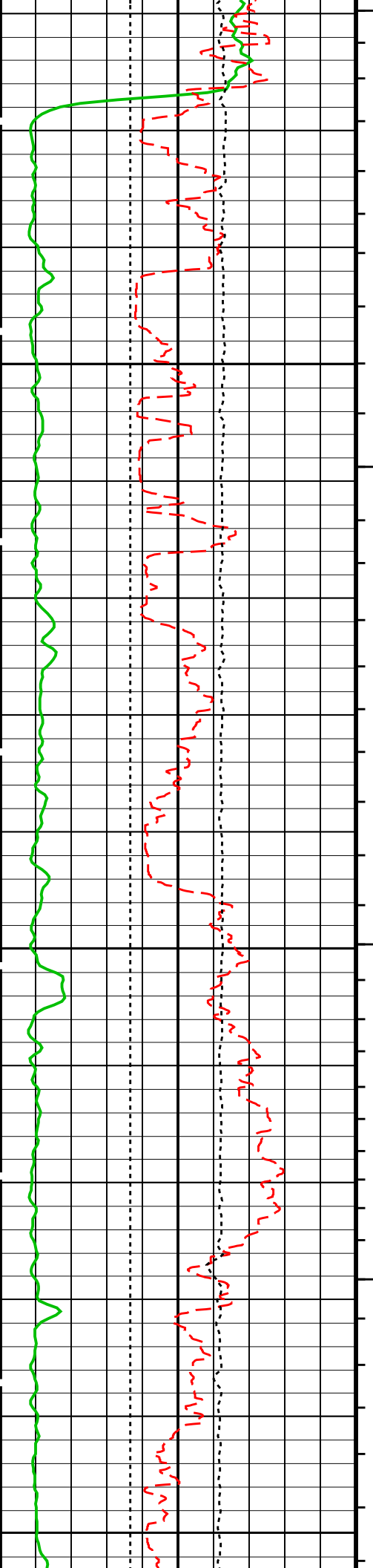




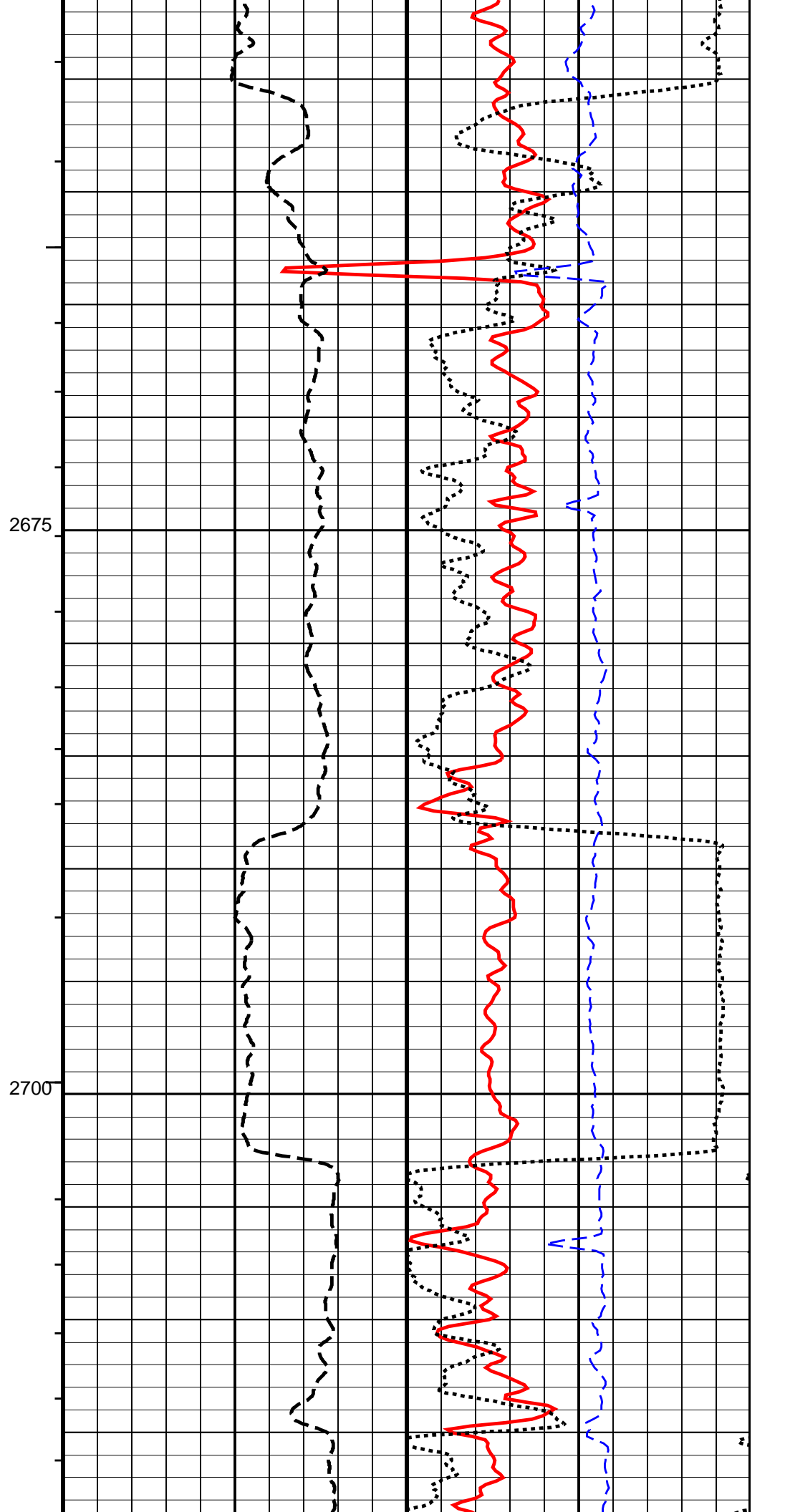
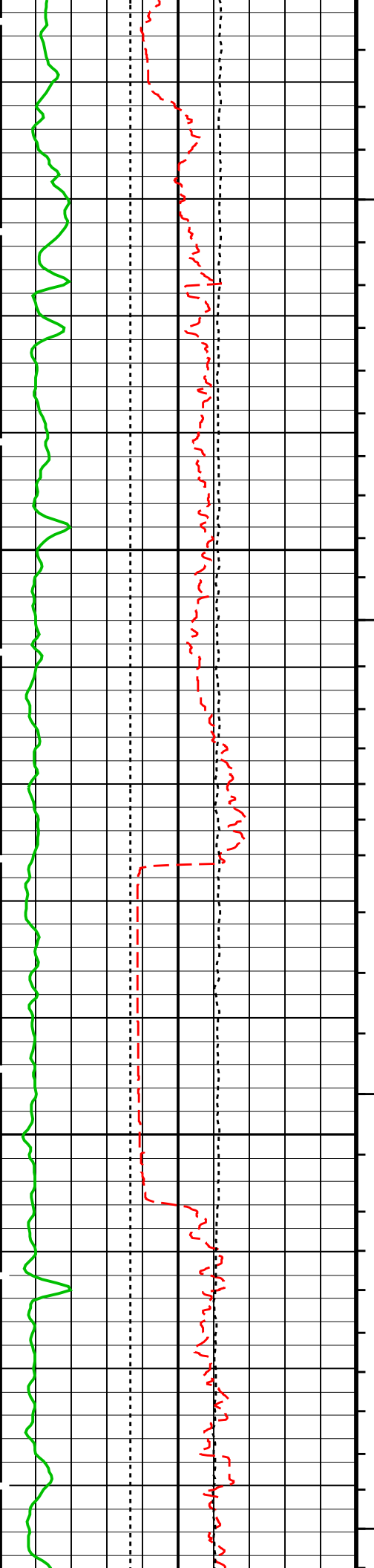


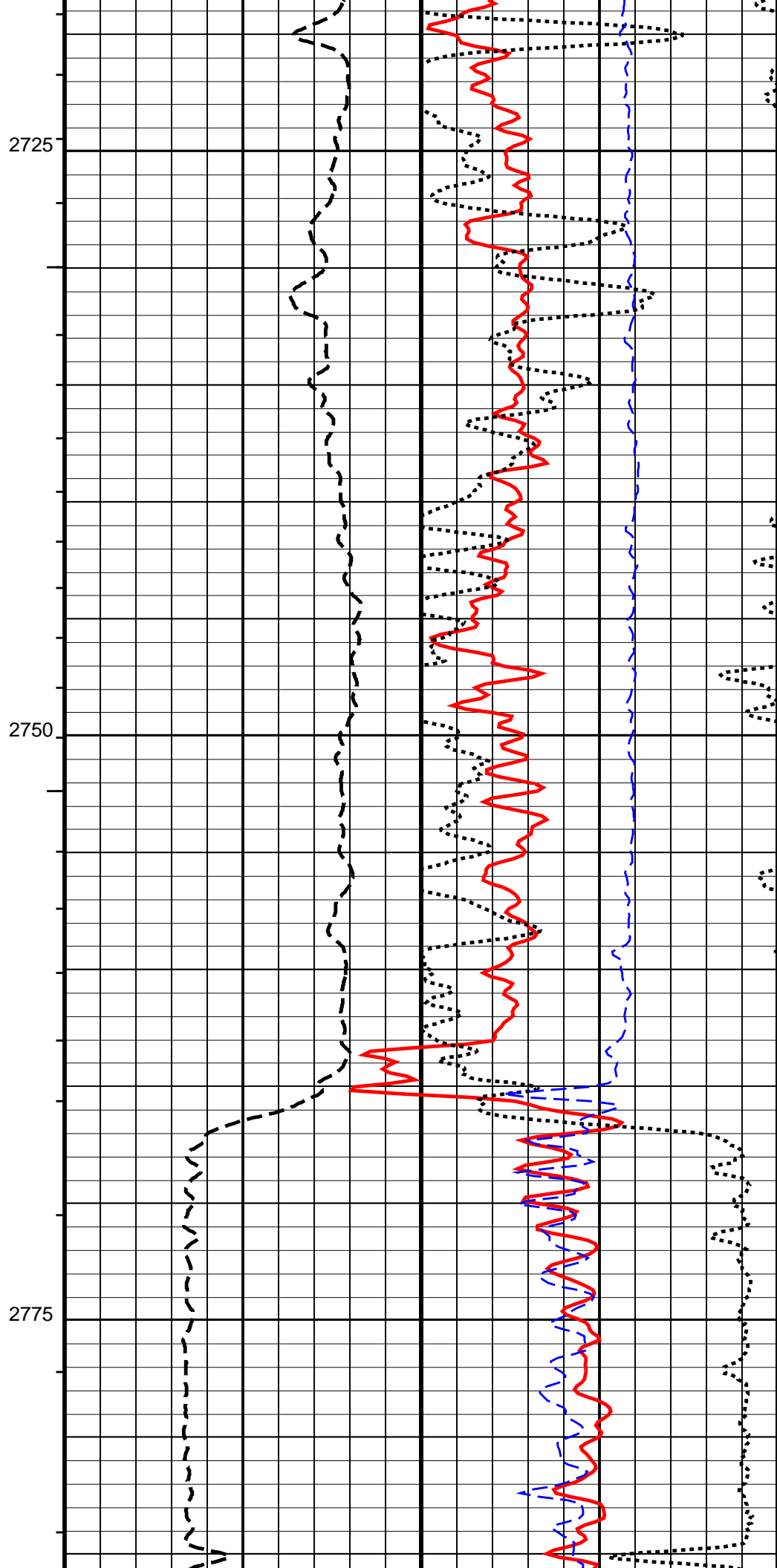
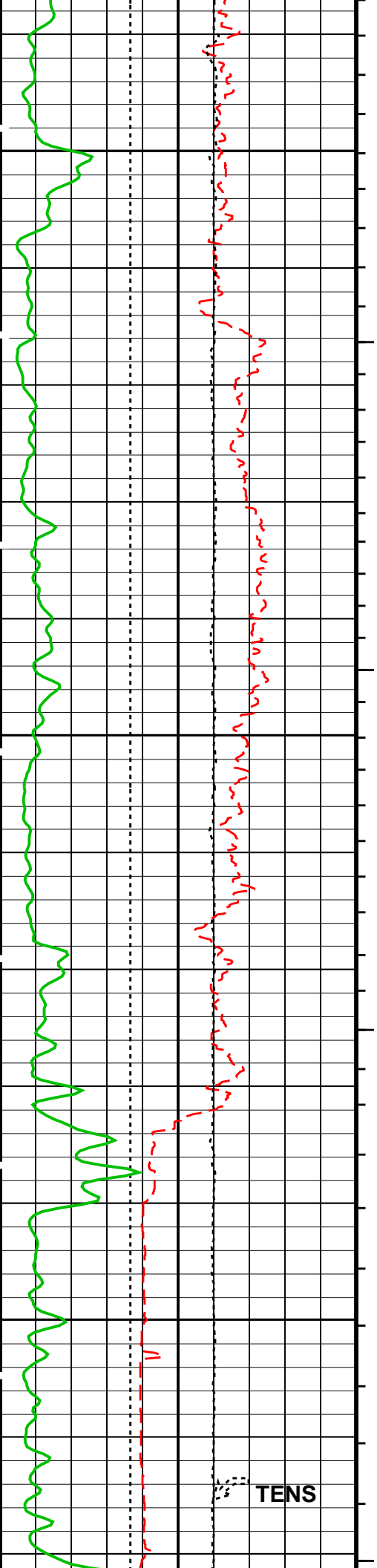


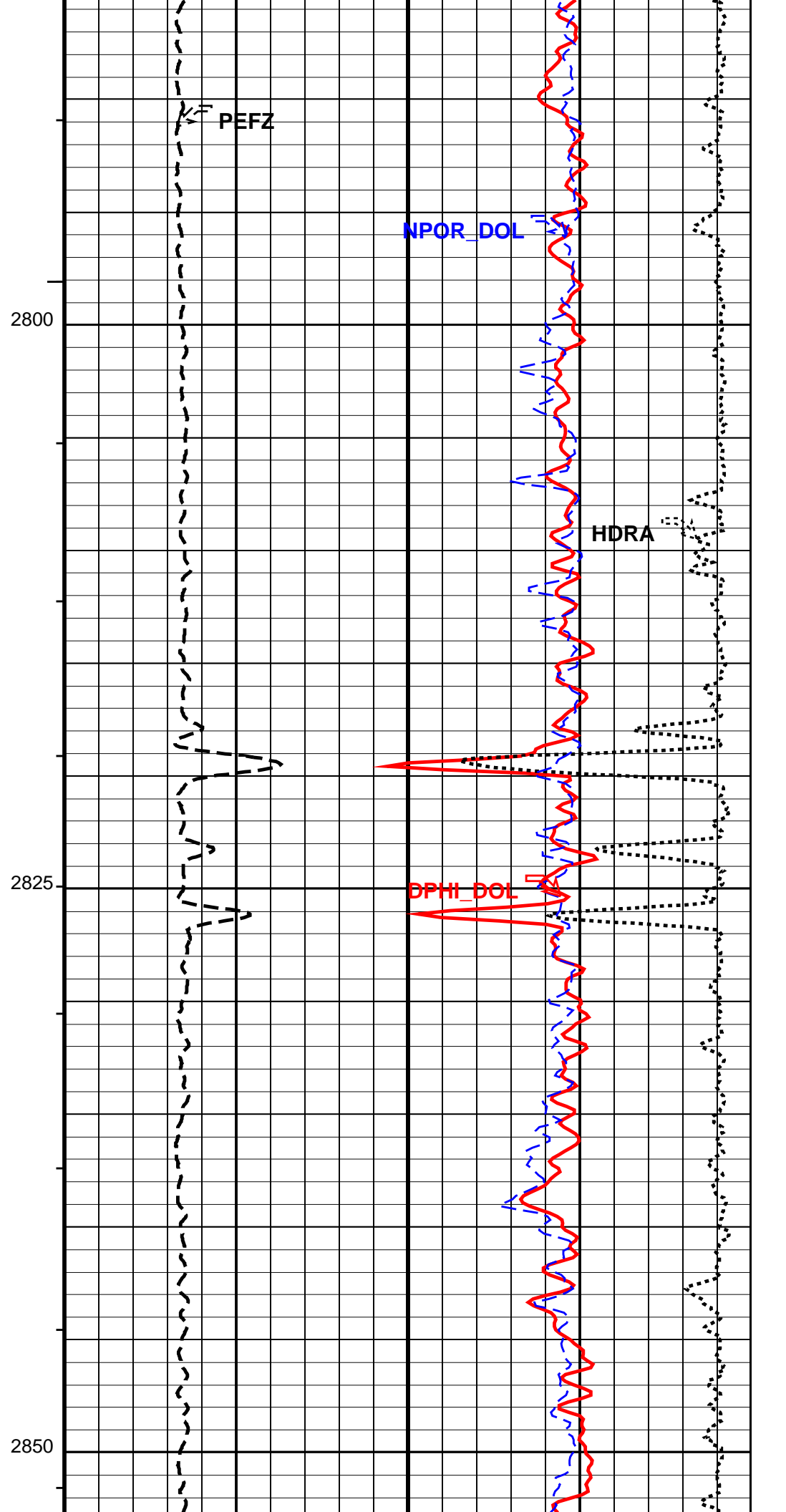
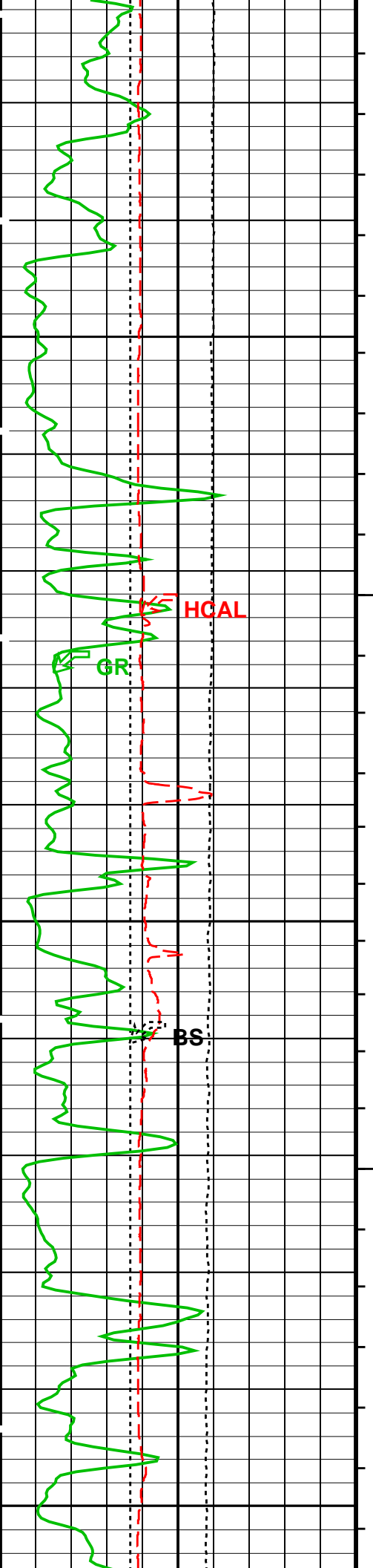


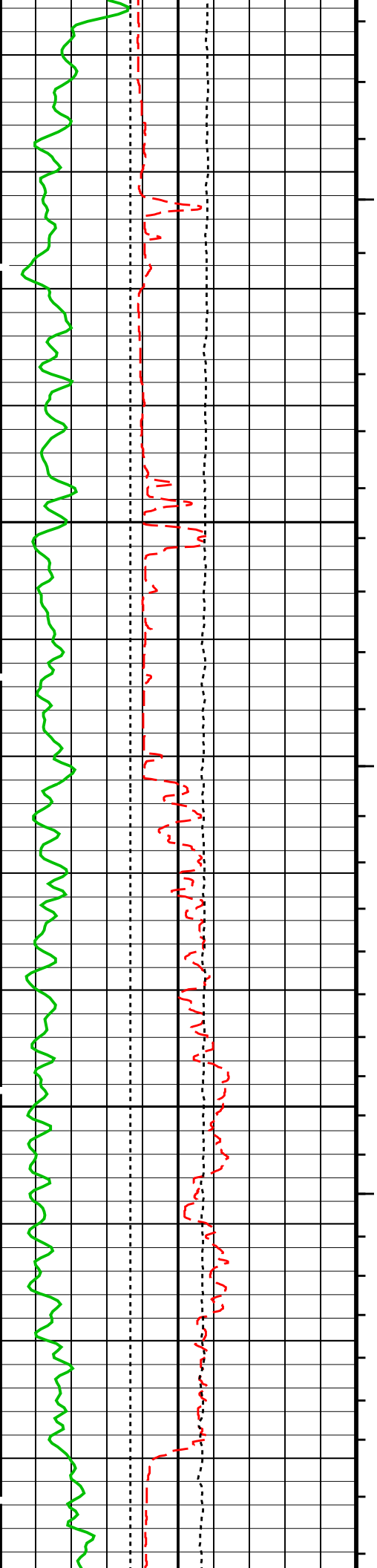






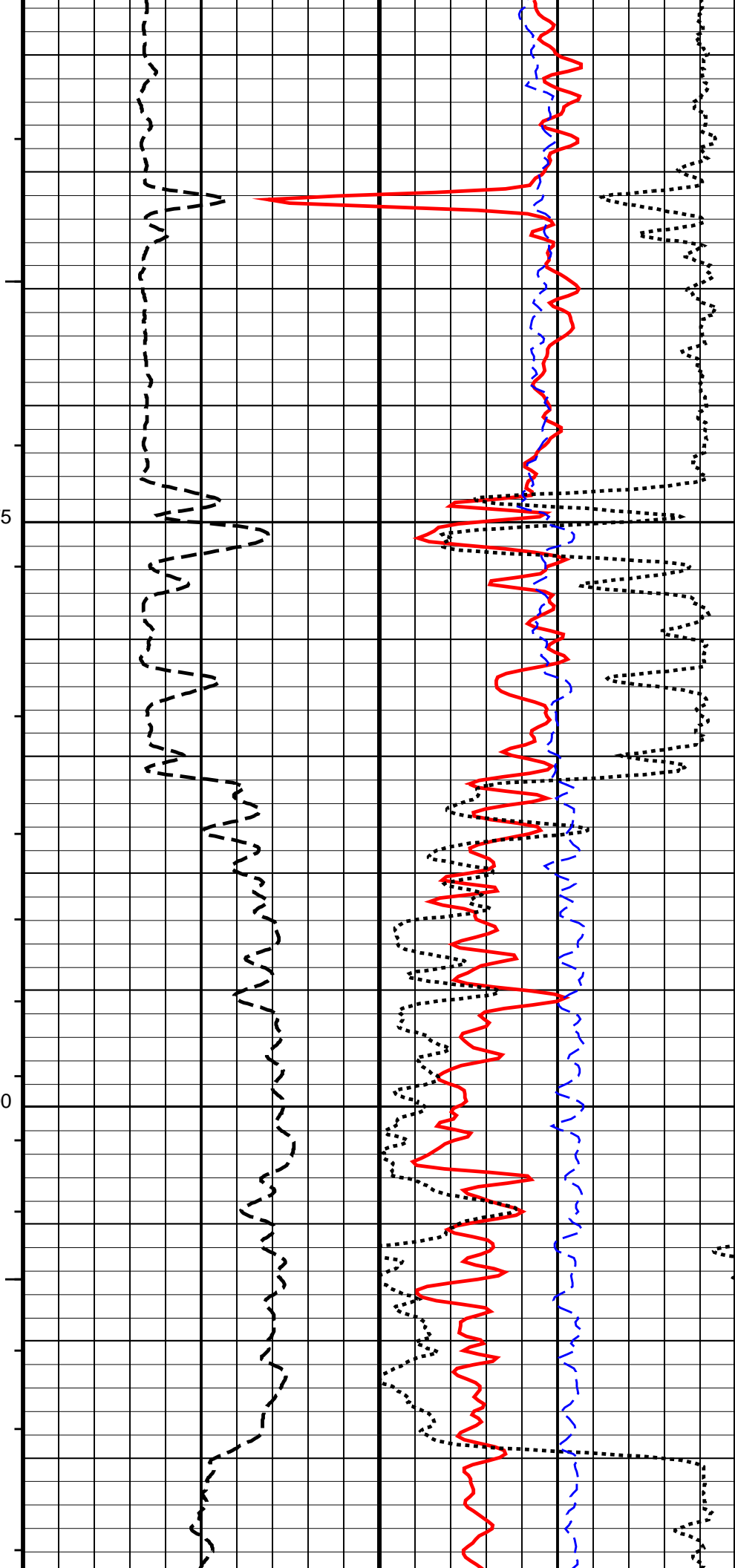


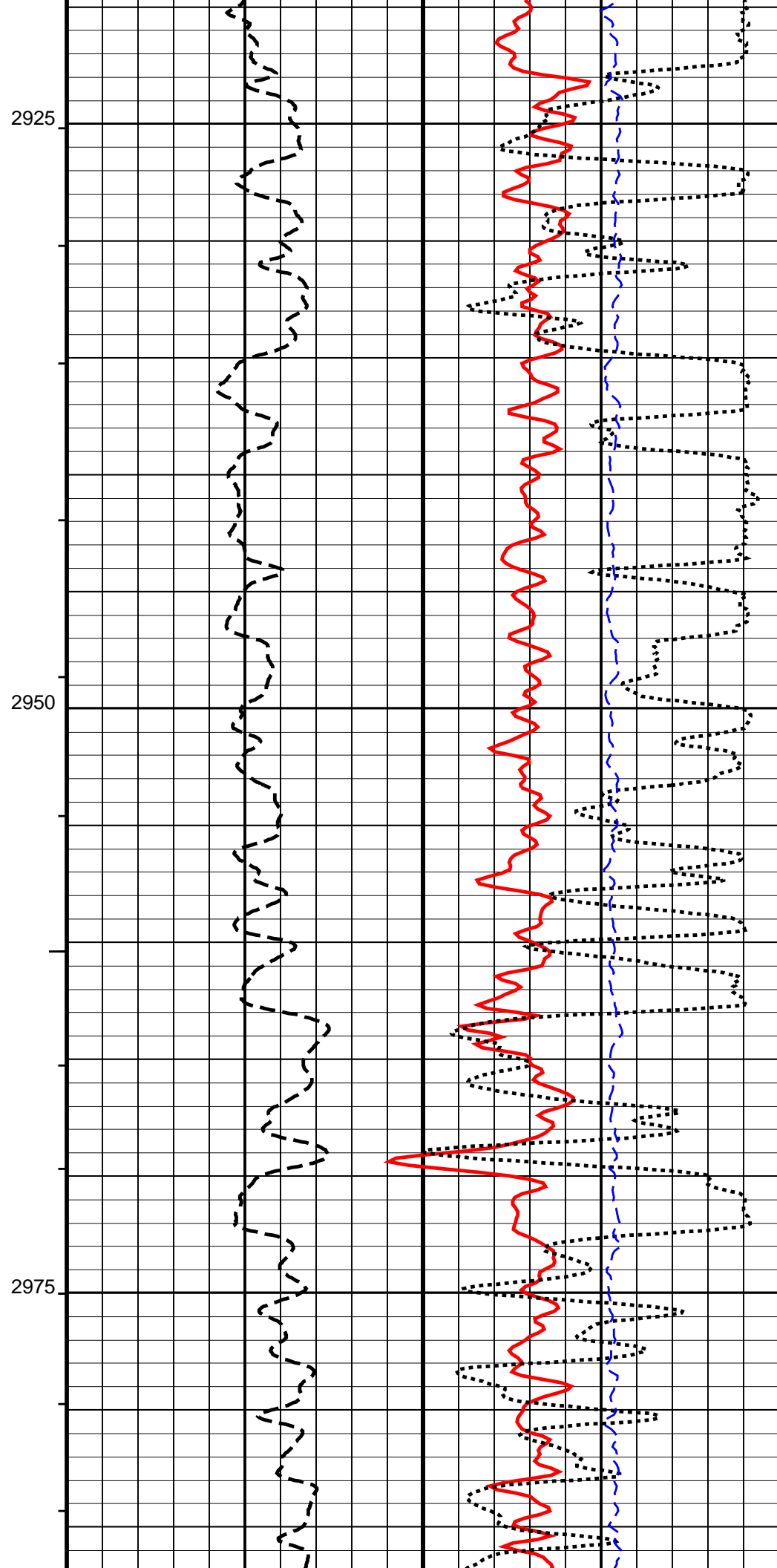
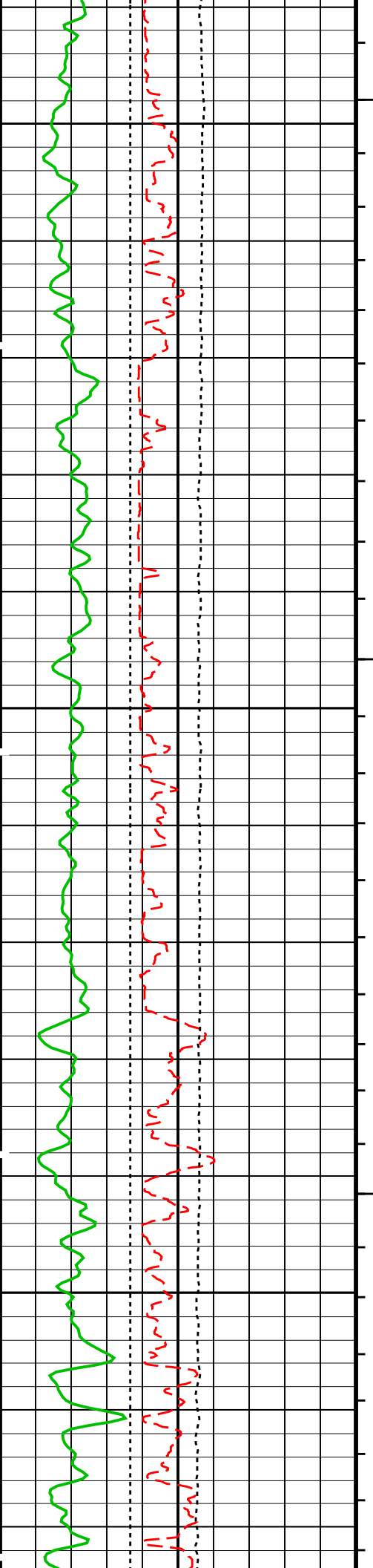


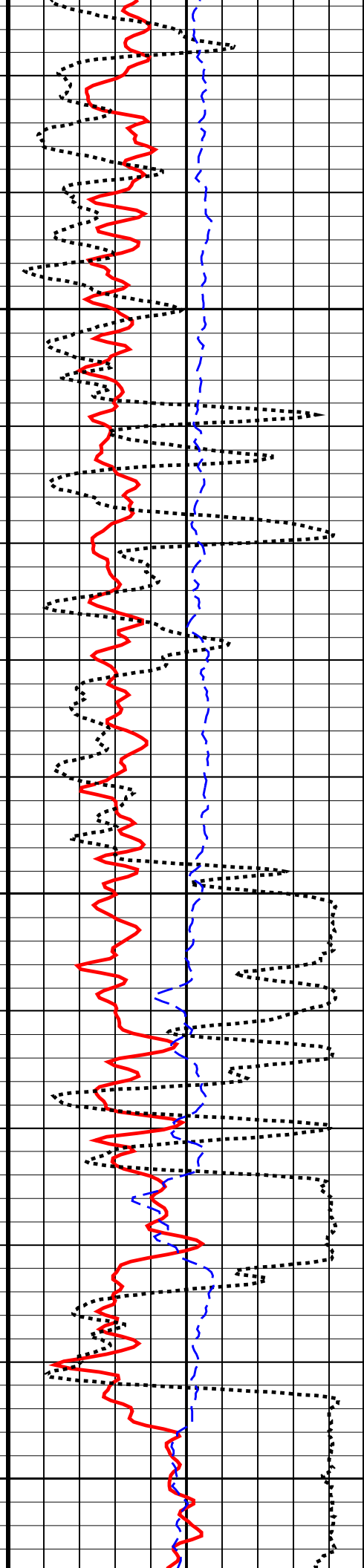
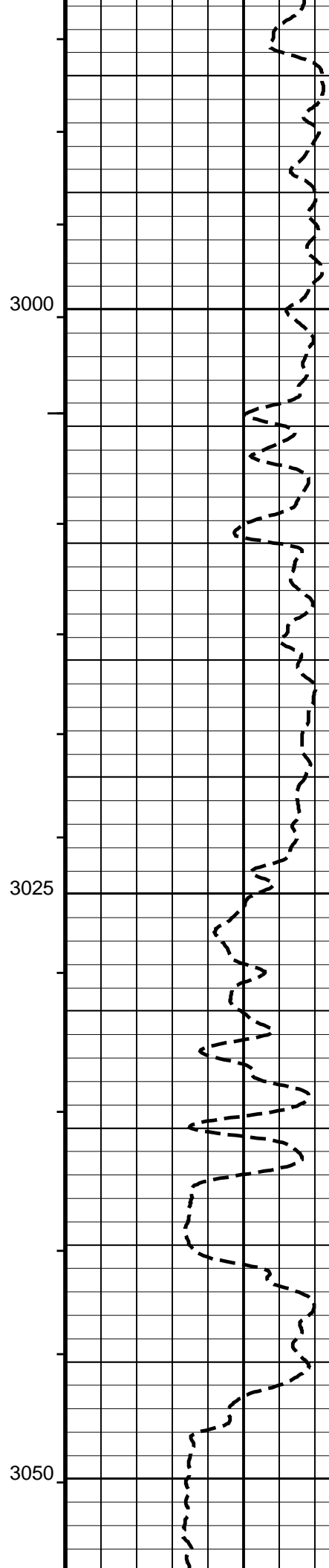
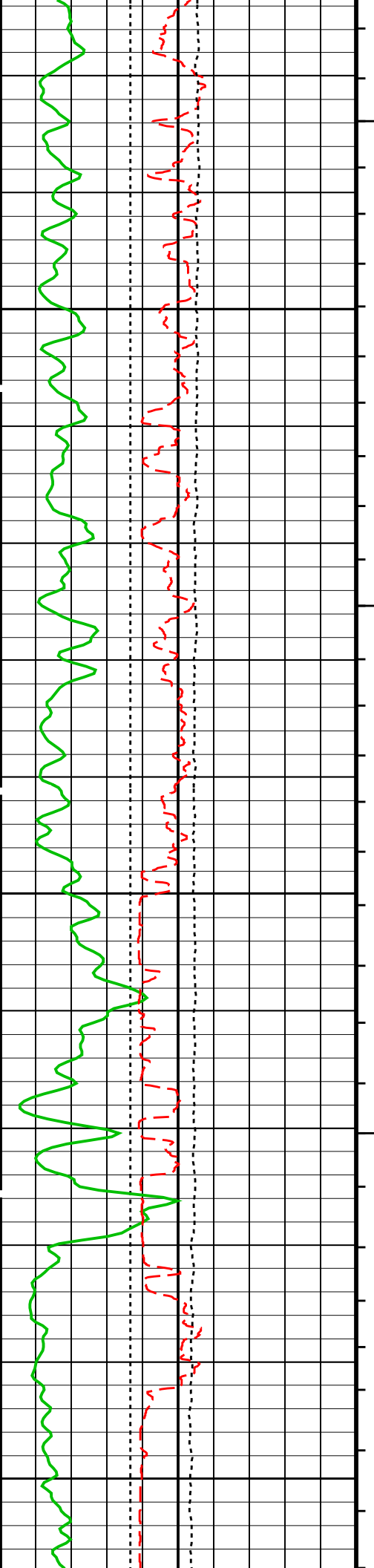


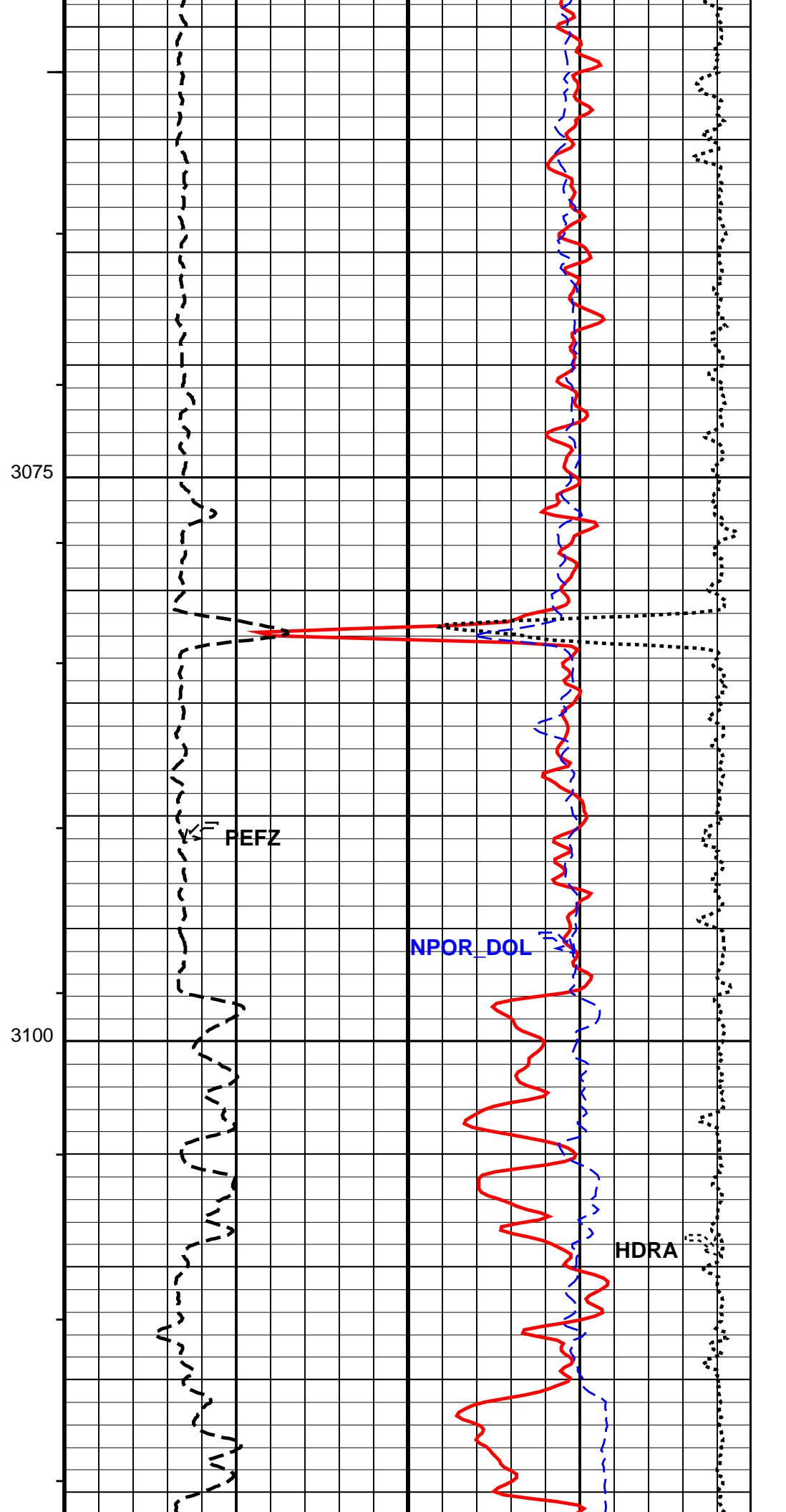
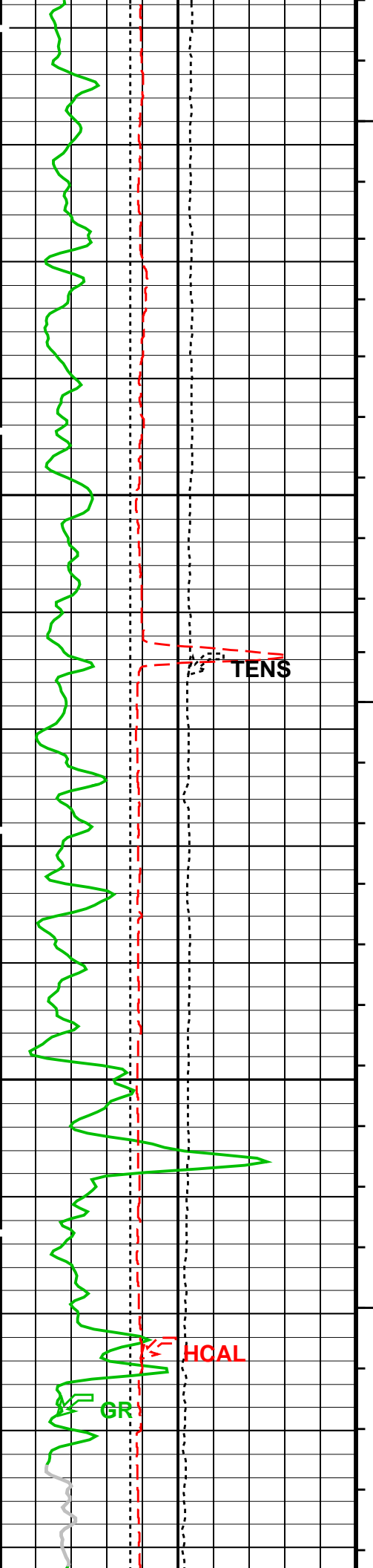
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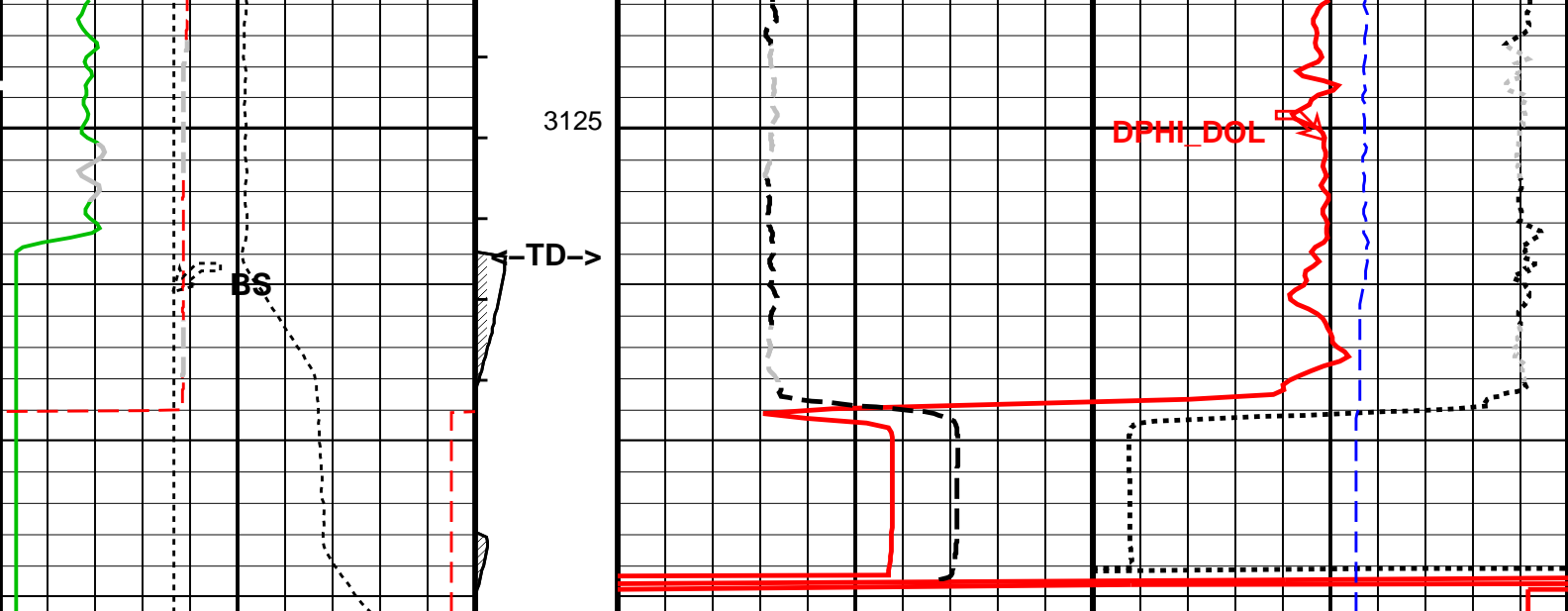
2900











Bit Size (BS) (MM)		DPHI for DOLO (DPHI_DOL) (V/V)	
125	375	0.45	-0.15
HILT Caliper (HCAL) (MM)		NPOR for DOLO (NPOR_DOL) (V/V)	
125	375	0.45	-0.15
Gamma Ray (GR) (GAPI)		Std. Res. Formation Pe (PEFZ) (----	
0	150	0	10
Tension (TENS) 25000 (N)		Density Correction (HDRA) (K/M3)	
	0	450	-50

#### PIP SUMMARY

- └ Integrated Hole Volume Minor Pip Every 0.1 M3
- └ Integrated Hole Volume Major Pip Every 1 M3
  - └ Integrated Cement Volume Minor Pip Every 0.1 M3
  - └ Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S

#### Parameters

DLIS Name	Description	Value
AIT-M: Array Induction Tool - M		
AAPL	Array Induction Answer Product Level(Depth Log/View only)	
	3_BholeCorr_BasicLogs_RadialProcessing	
ABHM	Array Induction Borehole Correction Mode	2_ComputeStandoff
ABHV	Array Induction Borehole Correction Code Version Number	900
ABLM	Array Induction Basic Logs Mode	6_One_Two_and_Four
ABLV	Array Induction Basic Logs Code Version Number	223
ACDE	Array Induction Casing Detection Enable	No
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered
ACSED	Array Induction Casing Shoe Estimated Depth	-50000 M
ADITM	Array Induction Desired Tool Mode	0x00_Log_000
AEBC	Array Induction Enable Borehole Correction	Yes
AEBL	Array Induction Enable Basic Logs	Yes
AERP	Array Induction Enable Radial Processing	Yes
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes
AFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20
AFVN	Array Induction Firmware Code Version Number	1
AIGS	Array Induction Select Akima Interpolation Gating	On
ALNV	Array Induction Log Not Valid Flag	Log_Valid-No_Default_Parameters
AMRD	Array Induction Mud Resistivity Calibration Depth	0 M
AMRF	Array Induction Mud Resistivity Factor	1
AORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20
ARFV	Array Induction Radial Profiling Code Version Number	701
ARPM	Array Induction Radial Processing Mode	0_One
ARPV	Array Induction Radial Parametrization Code Version Number	232
ARTS	AIT Rt Selection (for ALLRES computation)	AITM_OneResTrueDeep
ASTA	Array Induction Tool Standoff	38.1 MM
ATRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20
ATSE	Array Induction Temperature Selection(Sonde Error Correction)	Internal



AITM	Array Induction Tool Type (of acquired data)	Normal	
AULV	Array Induction User Level Control	00.10.25.00	
AZRSV	Array Induction Response Set Version for Z Resolution	OPEN	
BHS	Borehole Status	52.5	DEGC
BHT	Bottom Hole Temperature (used in calculations)	2	
FEXP	Form Factor Exponent	1	
FNUM	Form Factor Numerator	DPHZ	
FPHI	Form Factor Porosity Source	HCAL	
GCSE	Generalized Caliper Selection	20	DEG
GDEV	Average Angular Deviation of Borehole from Normal	0.018227	DC/M
GGRD	Geothermal Gradient	AITM_RESIST	
GRSE	Generalized Mud Resistivity Selection	HSTS_HTEM	
GTSE	Generalized Temperature Selection	NOBARITE	
ISSBAR	Barite Mud Switch	LIMESTONE	
MATR	Rock Matrix for Neutron Porosity Corrections	YES	
RTCO	RTCO – Rt Invasion Correction	30	DEGC
SHT	Surface Hole Temperature	0	MV
SPNV	SP Next Value		
HILTH-FTB: High resolution Integrated Logging Tool-DTS			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	52.5	DEGC
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
EXSICL	External Shale Indicator Clean Value	20	
EXSISH	External Shale Indicator Shale Value	150	
FD	Fluid Density	1000	K/M3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal-like Formation Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HACPP	Accelerometer PROM Presence	PRESENT_DOWNHOLE	
HART	Accelerometer Reference Temperature	25	DEGC
HDCOD	HILT Density Coal detection	2000	K/M3
HDSAD	HILT Density Salt detection	2100	K/M3
HILT_GAS_DENSITY	HILT Gas Downhole Density	0	K/M3
HILT_GAS_OPTION	HILT Gas Computation Option	OFF	
HNCOD	HILT Neutron Coal detection	0.45	V/V
HNSAD	HILT Neutron Salt detection	0.05	V/V
HPHIECUT	HILT effective Porosity Cutoff	0.05	V/V
HSCO	Hole Size Correction Option	YES	
HSIS	HILT Shale Indicator Selection	GR	
HSSO	HRDD Nuclear Source Strength Option	NORMAL	
HSWCUT	HILT Water Saturation from AITH cutoff	50	%
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2710	K/M3
MHC0	MCFL B0 Contrast Correction Coefficient	2.2e-005	OHMS
MHC1	MCFL B1 Contrast Correction Coefficient	3.2e-005	OHMS
MHCC	MCFL High Contrast Correction Switch	NO	
MPOF	MCFL Processing Operation Mode	ON	
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	VeryHiRes	
NSAR	HRDD Depth Sampling Rate	12.7	MM
PEA_FILTER	PEA Filter	NO_FILTER	
PEFC_FILTER	PEFC Filter	NO_FILTER	
PHIMAX	HILT max porosity	0.35	V/V
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SEXP_HILT	HILT Saturation Exponent	2	
SHT	Surface Hole Temperature	30	DEGC
SOCN	Standoff Distance	3.175	MM
SOCO	Standoff Correction Option	YES	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	52.5	DEGC
FCD	Future Casing (Outer) Diameter	177.8	MM
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	

GTSE	Generalized Temperature Selection	HSTS_HTEM	
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	30	DEGC
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	1.5	M
TDD	Total Depth – Driller	3160.00	M
TDL	Total Depth – Logger	3160.00	M
System and Miscellaneous			
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	216.000	MM
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	244.500	MM
CWEI	Casing Weight	64.74	KG/M
DFD	Drilling Fluid Density	1170.00	K/M3
DO	Depth Offset for Playback	5.0	M
DORL	Depth Offset for Repeat Analysis	5.3	M
FLEV	Fluid Level	0.00	M
MST	Mud Sample Temperature	21.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	0.7100	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	3160	M
TWS	Temperature of Connate Water Sample	37.78	DEGC
Format: NUCLEAR_D240_DOL Vertical Scale: 1:240 Graphics File Created: 15-May-2010 21:47			

## OP System Version: 17C0-154

AIT-M	17C0-154	HILTH-FTB	17C0-154
DTC-H	17C0-154		

### Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:9	PRODUCER	15-May-2010 18:24	3135.5 M	2218.0 M
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### Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_027PUP	FN:38	PRODUCER	15-May-2010 21:47		
CUSTOMER	AIT_TLD_MCFL_CNL_027PUP	FN:39	PRODUCER	15-May-2010 21:47		

Company: Nalcor Energy Oil and Gas	Well: Nalcor et al Seamus 1
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### Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:9	PRODUCER	15-May-2010 18:24	3135.5 M	2218.0 M
DEFAULT	AIT_TLD_MCFL_CNL_015PUP	FN:21	PRODUCER	15-May-2010 20:19	2404.9 M	2276.4 M

### Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_016PUP	FN:23	PRODUCER	15-May-2010 20:21	3140.5 M	2223.1 M
CUSTOMER	AIT_TLD_MCFL_CNL_016PUP	FN:24	PRODUCER	15-May-2010 20:21	3140.5 M	2223.1 M

## Integrated Hole/Cement Volume Summary

Hole Volume = 45.03 M3

Cement Volume = 23.97 M3 (assuming 177.80 MM casing O.D.)

Computed from 3140.5 M to 2292.4 M using data channel(s) HCAL

## OP System Version: 17C0-154

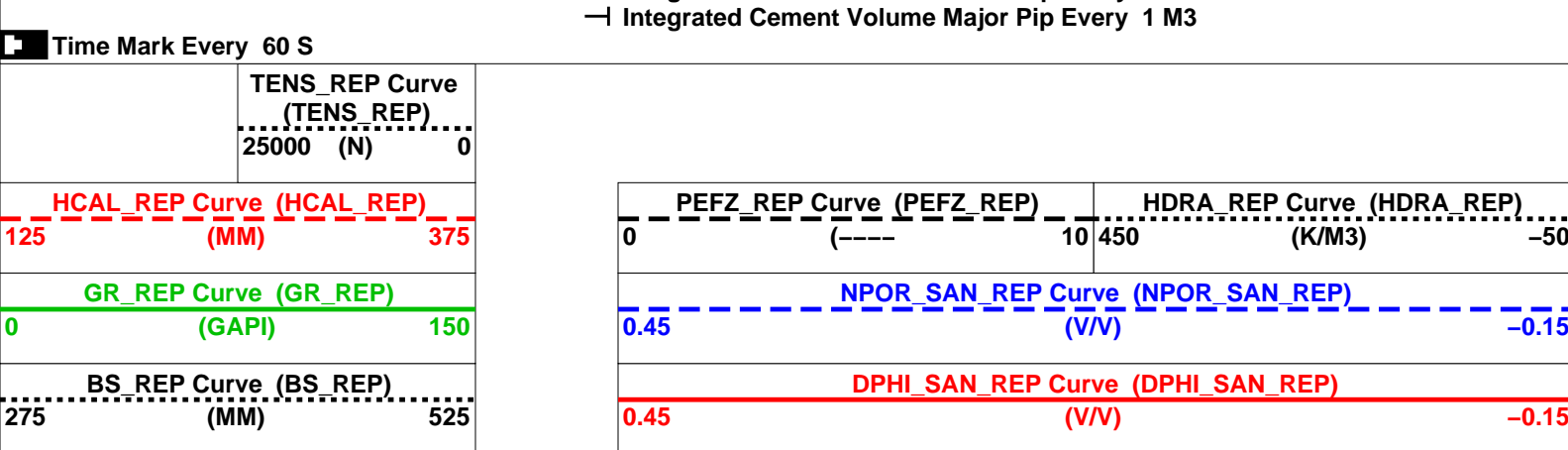
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DTC-H	17C0-154		

### PIP SUMMARY

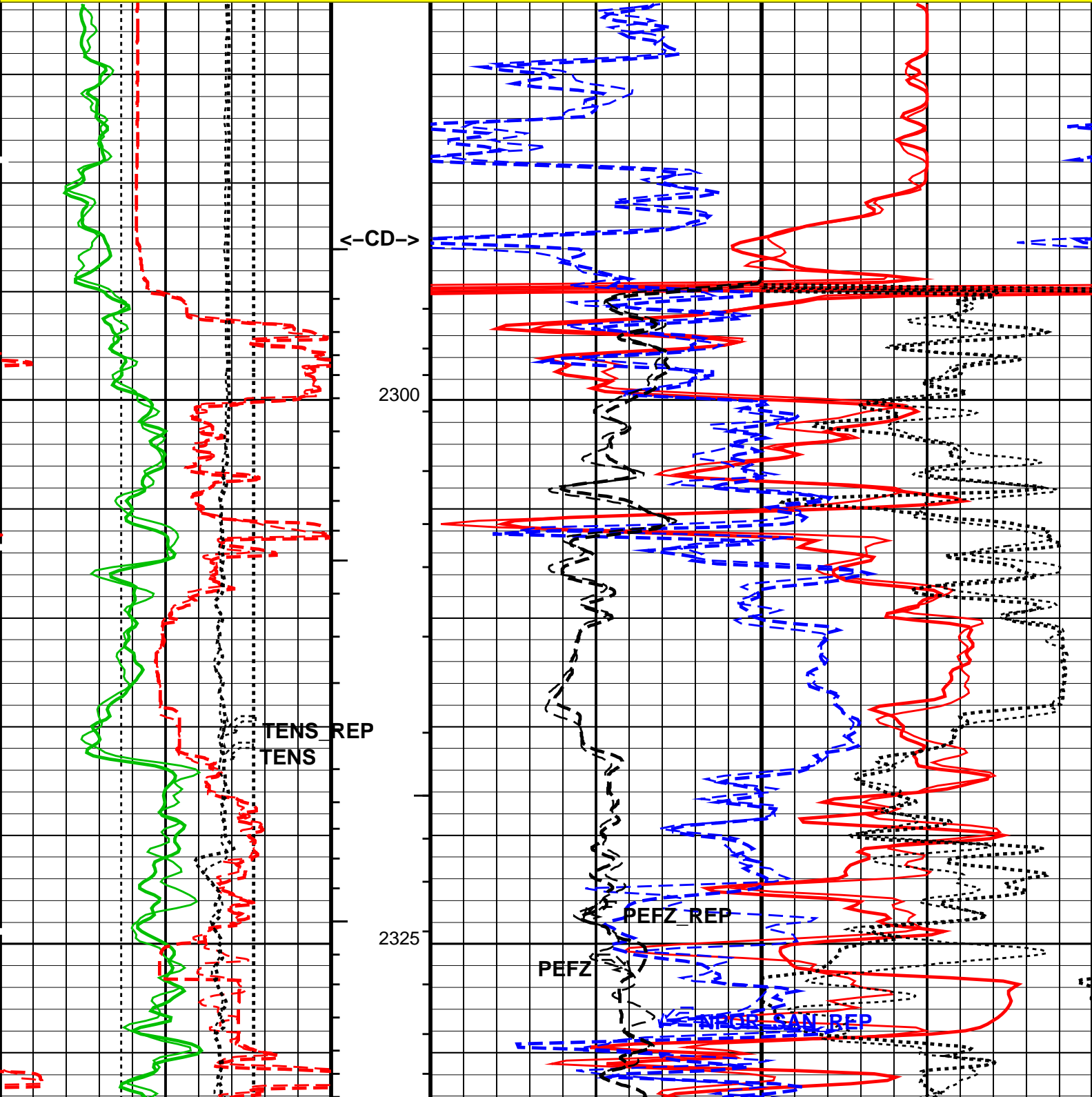
└ Integrated Hole Volume Minor Pip Every 0.1 M3

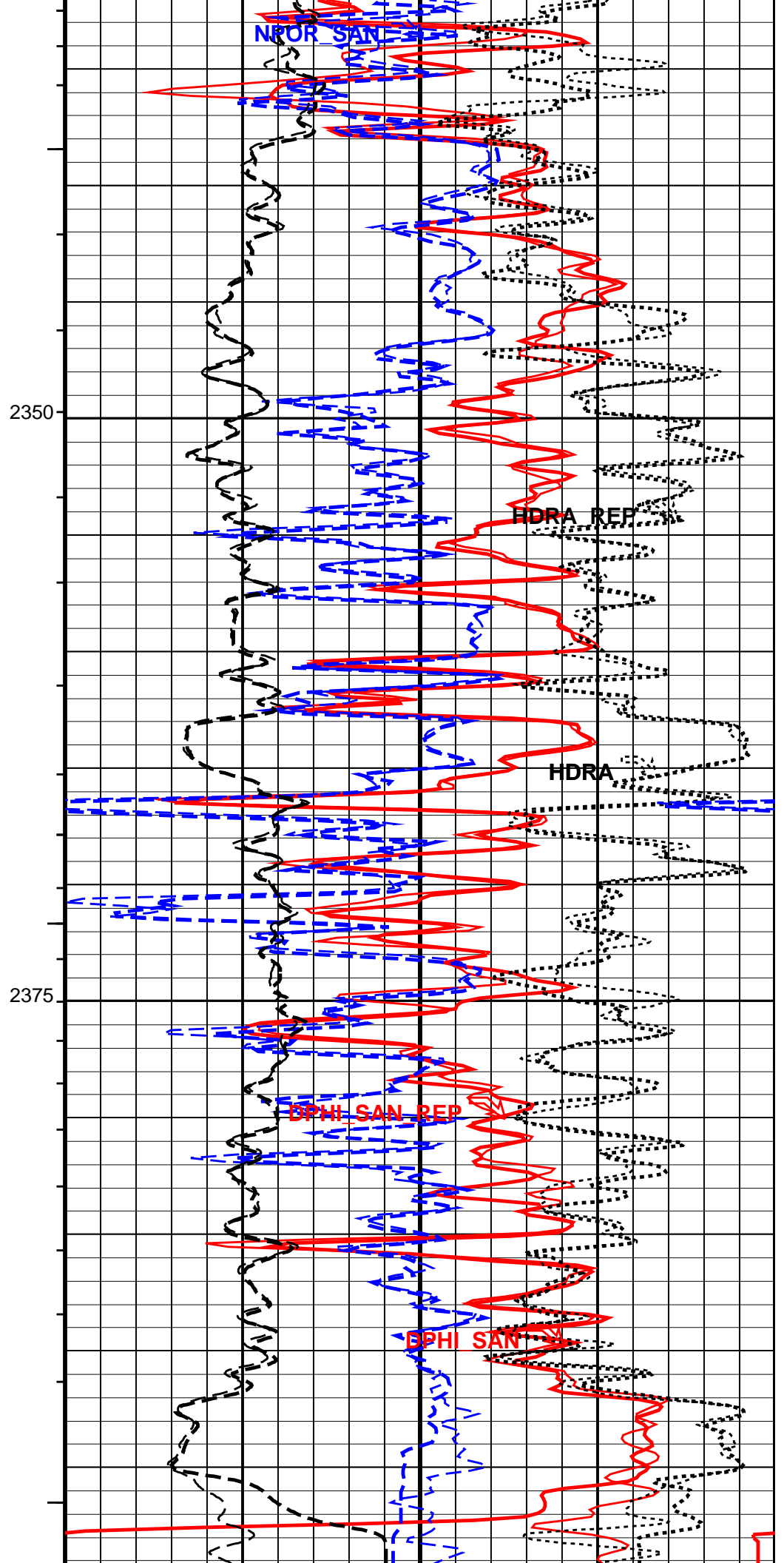
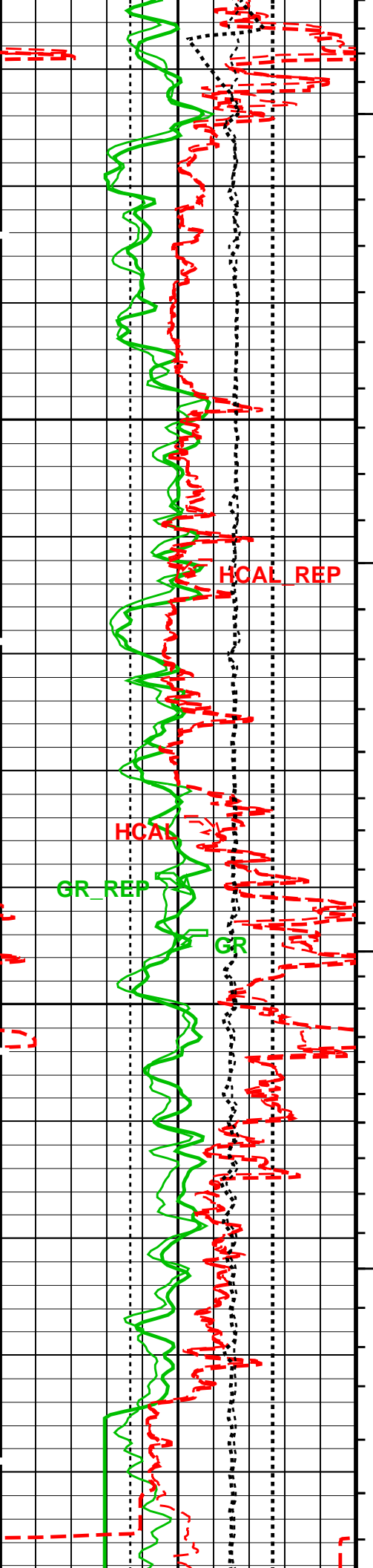
└ Integrated Hole Volume Major Pip Every 1 M3

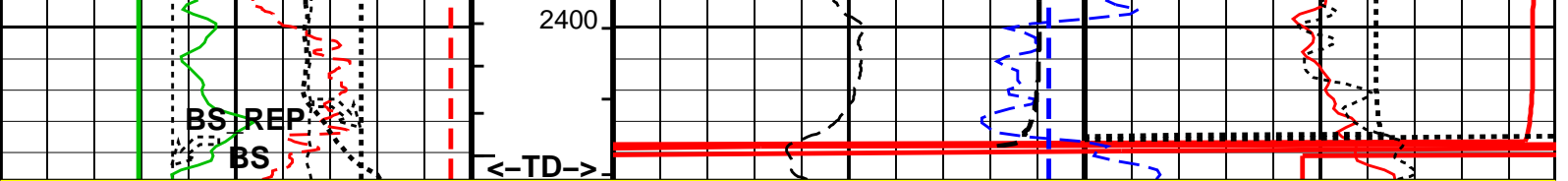
└ Integrated Cement Volume Minor Pip Every 0.1 M3



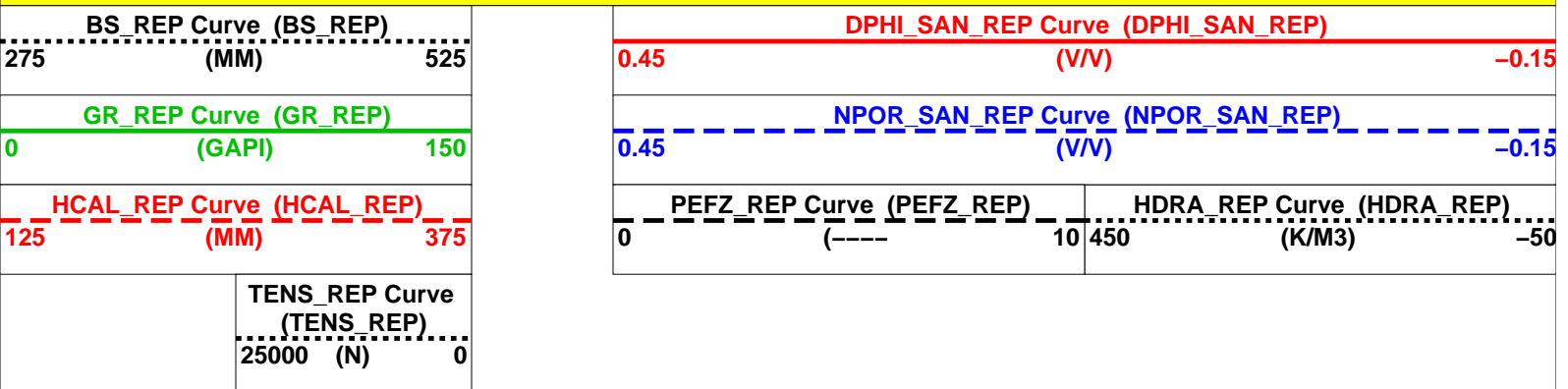
\*\*\*REPEAT ANALYSIS: PEX-NEUTRON DENSITY POROSITY LOG - SANDSTONE 2650 KG/M3\*\*\*







\*\*\*REPEAT ANALYSIS: PEX-NEUTRON DENSITY POROSITY LOG – SANDSTONE 2650 KG/M3\*\*\*



#### PIP SUMMARY

- └ Integrated Hole Volume Minor Pip Every 0.1 M3
- └ Integrated Hole Volume Major Pip Every 1 M3
  - └ Integrated Cement Volume Minor Pip Every 0.1 M3
  - └ Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S

#### Parameters

DLIS Name	Description	Value	
AIT-M: Array Induction Tool – M			
BHS	Borehole Status	OPEN	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HILTH-FTB: High resolution Integrated Logging Tool-DTS			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1000	K/M3
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal-like Formation Option	NO	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HSCO	Hole Size Correction Option	YES	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	VeryHiRes	
NSAR	HRDD Depth Sampling Rate	12.7	MM
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SOCN	Standoff Distance	3.175	MM
SOCO	Standoff Correction Option	YES	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
FCD	Future Casing (Outer) Diameter	177.8	MM
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
STI: Stuck Tool Indicator			
TDL	Total Depth – Logger	3160.00	M
System and Miscellaneous			
BS	Bit Size	216.000	MM
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	244.500	MM
CWEI	Casing Weight	64.74	KG/M
DFD	Drilling Fluid Density	1170.00	K/M3
DO	Depth Offset for Playback	5.0	M
DORL	Depth Offset for Repeat Analysis	0.0	M
MST	Mud Sample Temperature	21.00	DEGC

MSI	Mud Sample Temperature	21.00	DEGC
PP	Playback Processing		
RMFS	Resistivity of Mud Filtrate Sample	0.7100	OHMM
TD	Total Depth	3160	M

Format: NUCLEAR\_D240\_REP      Vertical Scale: 1:240      Graphics File Created: 15-May-2010 20:21

## OP System Version: 17C0-154

AIT-M                      17C0-154                      HILTH-FTB                      17C0-154  
DTC-H                      17C0-154

### Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:9	PRODUCER	15-May-2010 18:24	3135.5 M	2218.0 M
DEFAULT	AIT_TLD_MCFL_CNL_015PUP	FN:21	PRODUCER	15-May-2010 20:19	2404.9 M	2276.4 M

### Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_016PUP	FN:23	PRODUCER	15-May-2010 20:21
CUSTOMER	AIT_TLD_MCFL_CNL_016PUP	FN:24	PRODUCER	15-May-2010 20:21

Company: Nalcor Energy Oil and Gas      Well: Nalcor et al Seamus 1

### Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:9	PRODUCER	15-May-2010 18:24	3135.5 M	2218.0 M
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### Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_023PUP	FN:31	PRODUCER	15-May-2010 20:39	2783.0 M	2578.0 M
CUSTOMER	AIT_TLD_MCFL_CNL_023PUP	FN:32	PRODUCER	15-May-2010 20:39	2783.0 M	2578.0 M

## Integrated Hole/Cement Volume Summary

Hole Volume = 11.37 M3

Cement Volume = 6.28 M3 (assuming 177.80 MM casing O.D.)

Computed from 2783.0 M to 2578.2 M using data channel(s) HCAL

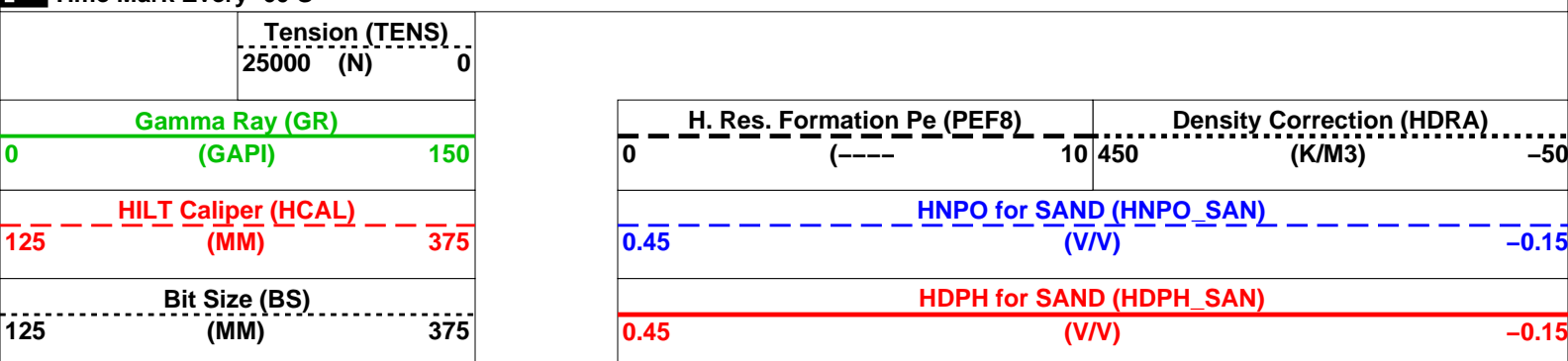
## OP System Version: 17C0-154

AIT-M                      17C0-154                      HILTH-FTB                      17C0-154  
DTC-H                      17C0-154

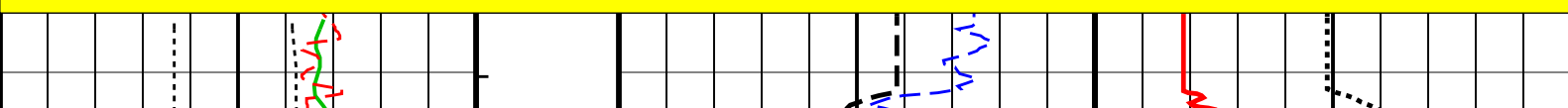
### PIP SUMMARY

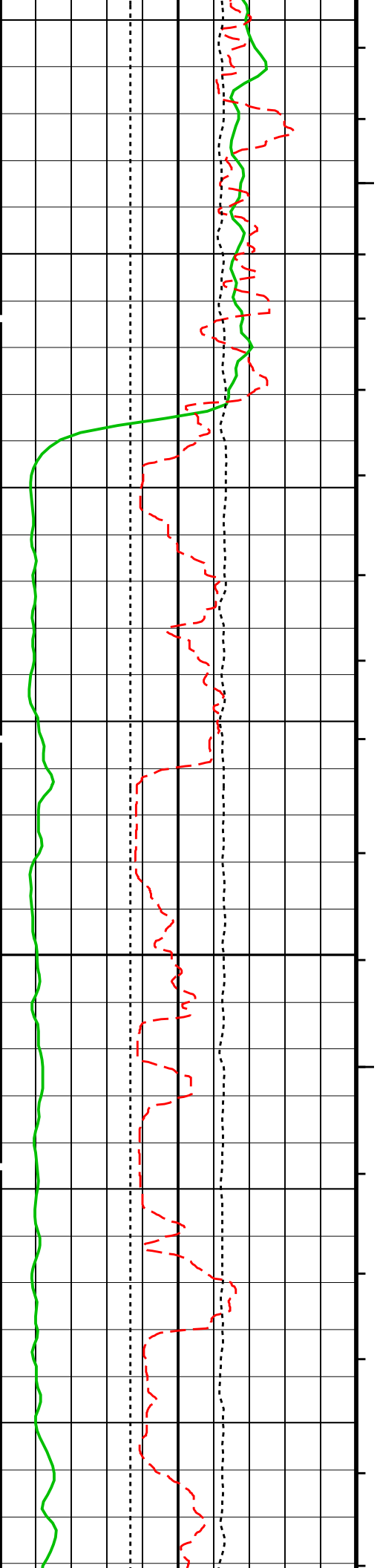
- └ Integrated Hole Volume Minor Pip Every 0.1 M3
- └ Integrated Hole Volume Major Pip Every 1 M3
  - └ Integrated Cement Volume Minor Pip Every 0.1 M3
  - └ Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S

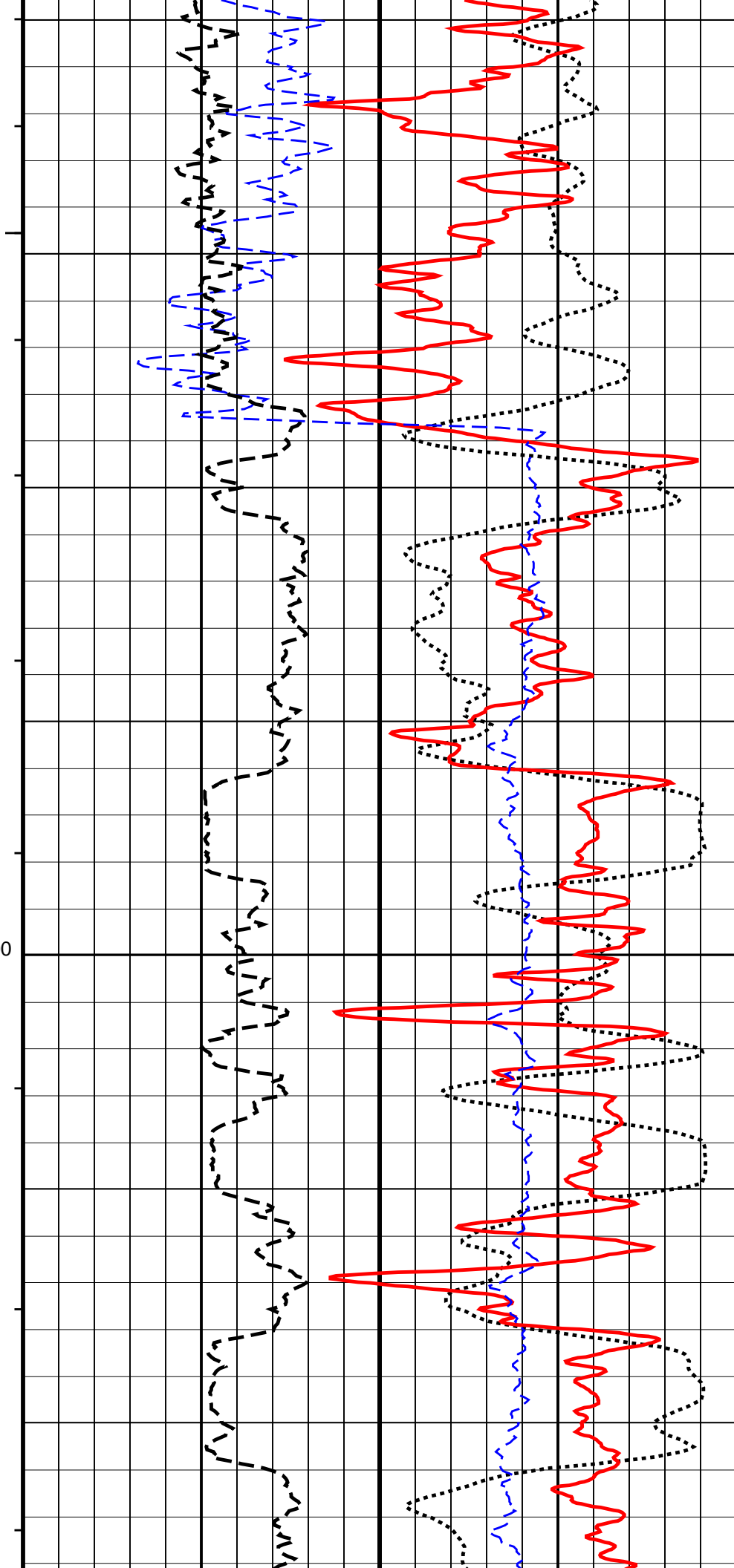


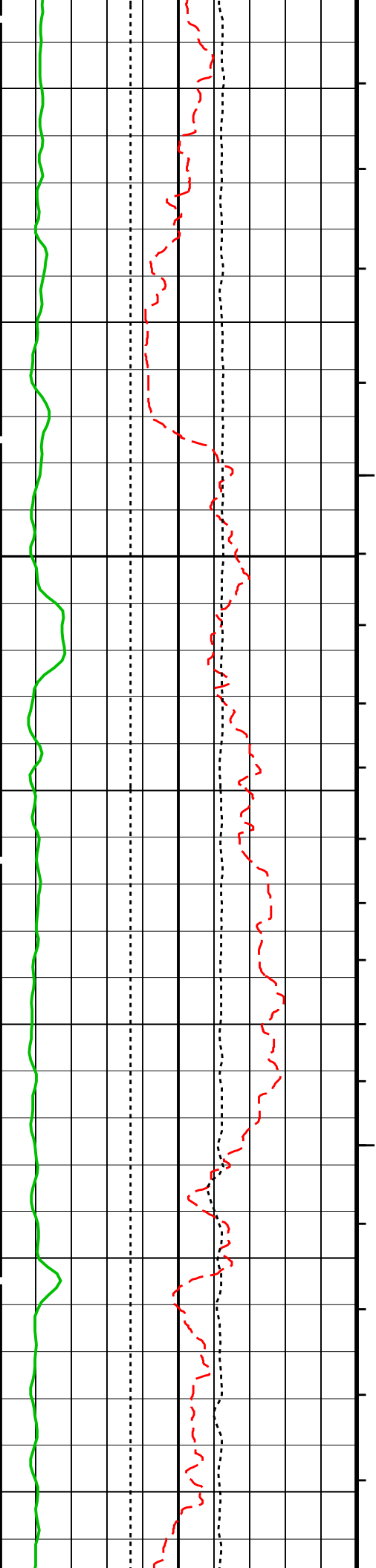
\*\*\*PEX-NEUTRON DENSITY POROSITY LOG-HIGH RESOLUTION PASS-SANDSTONE 2650 KG/M3\*\*\*



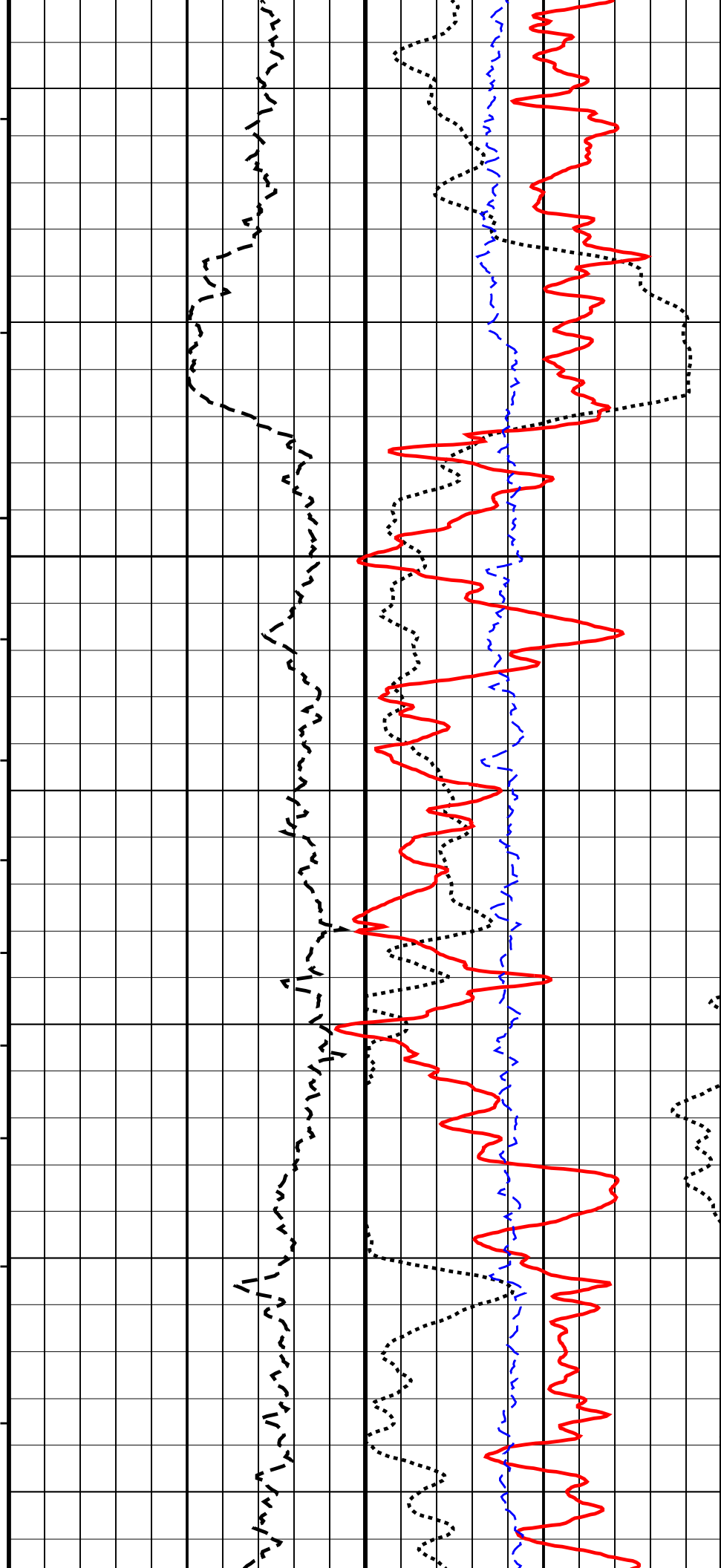


2600

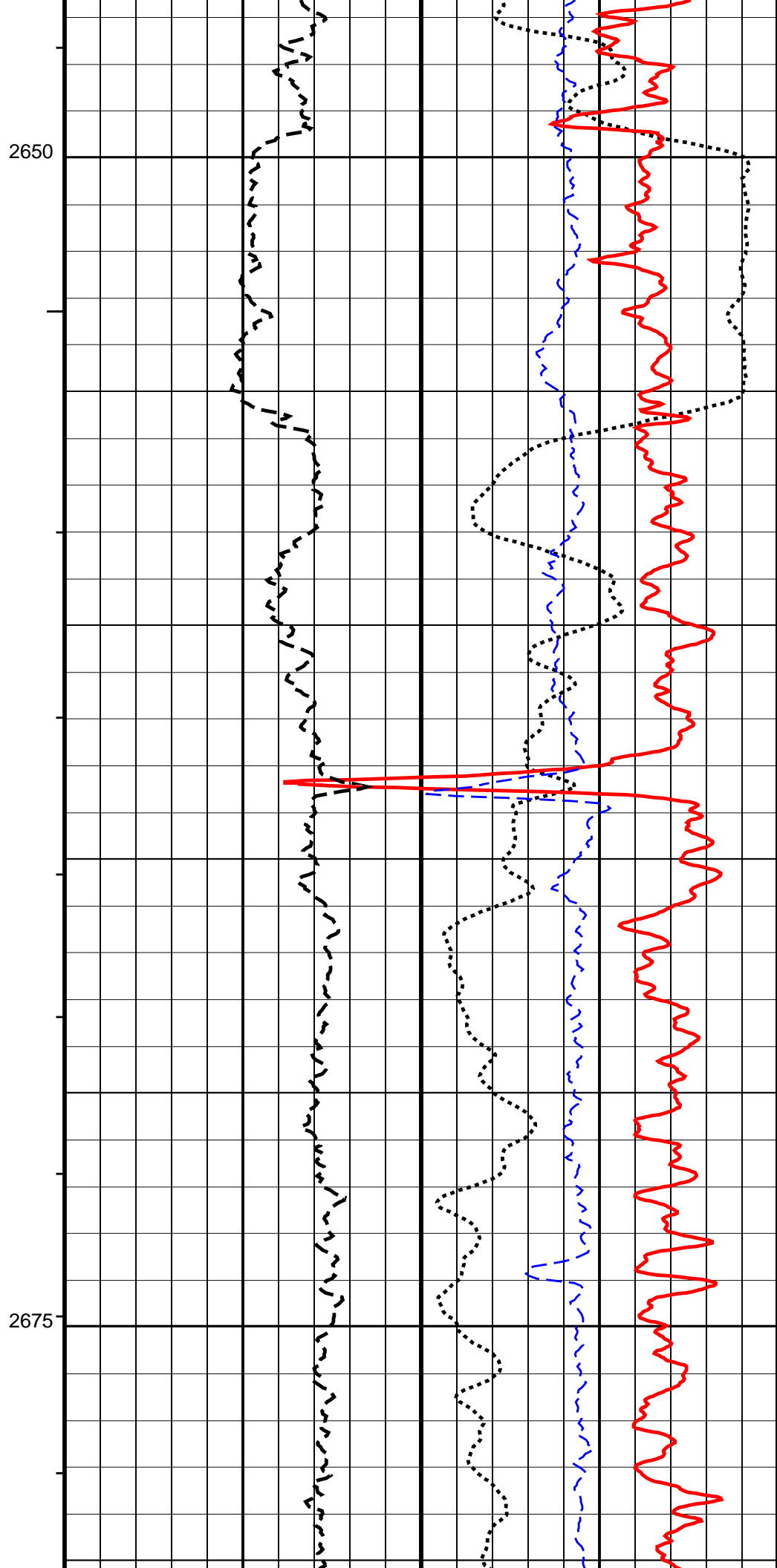
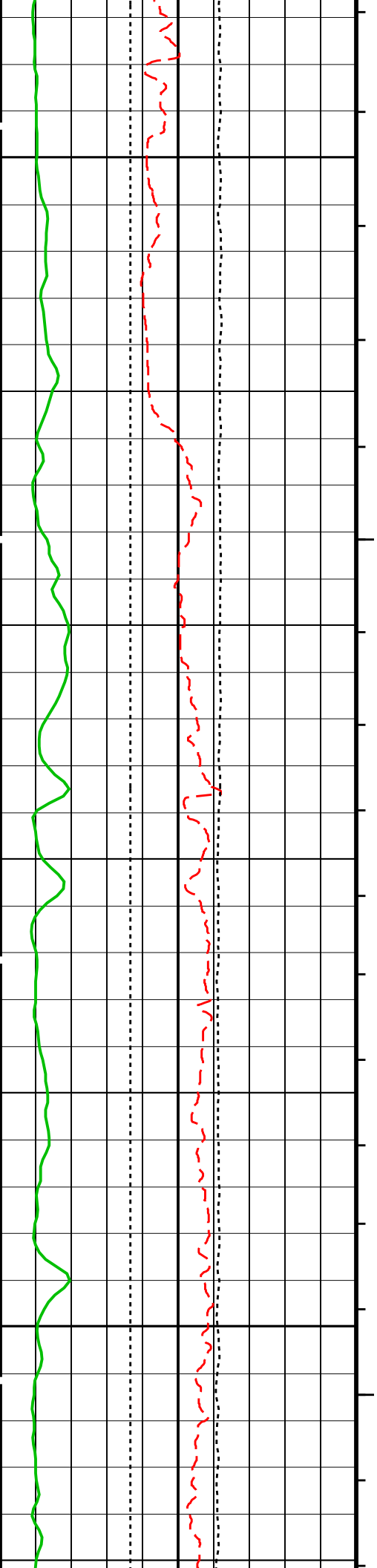


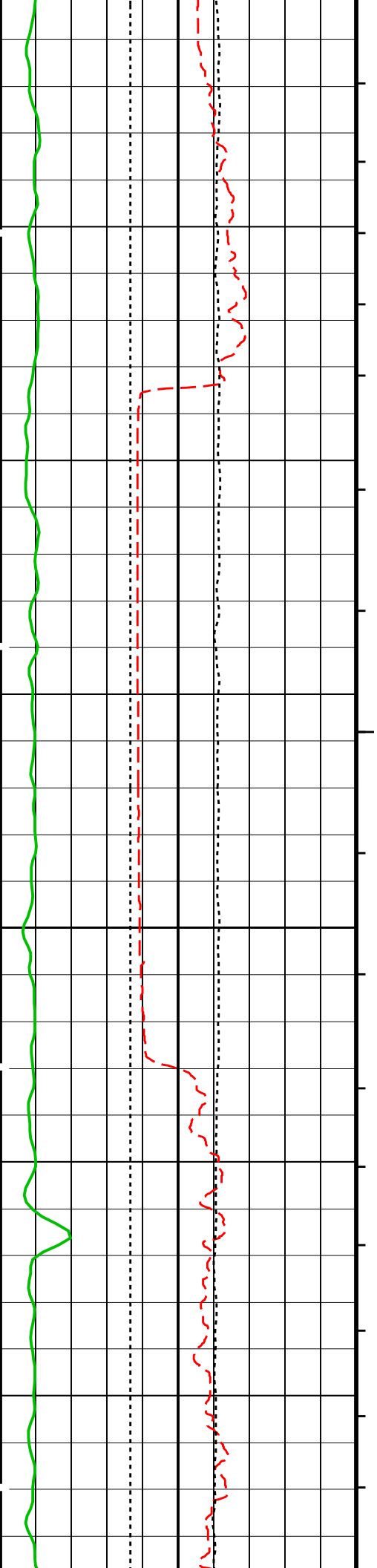


2625

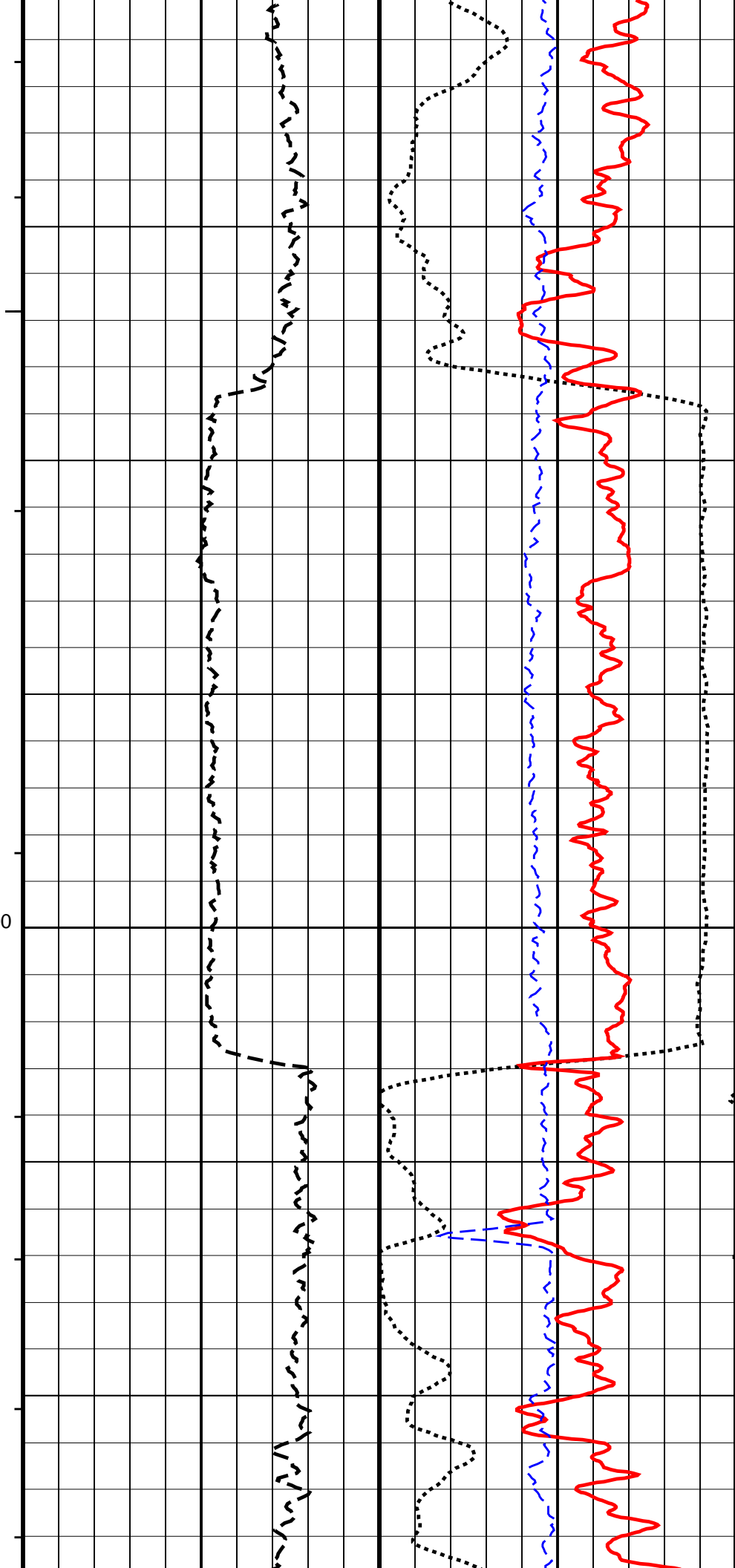


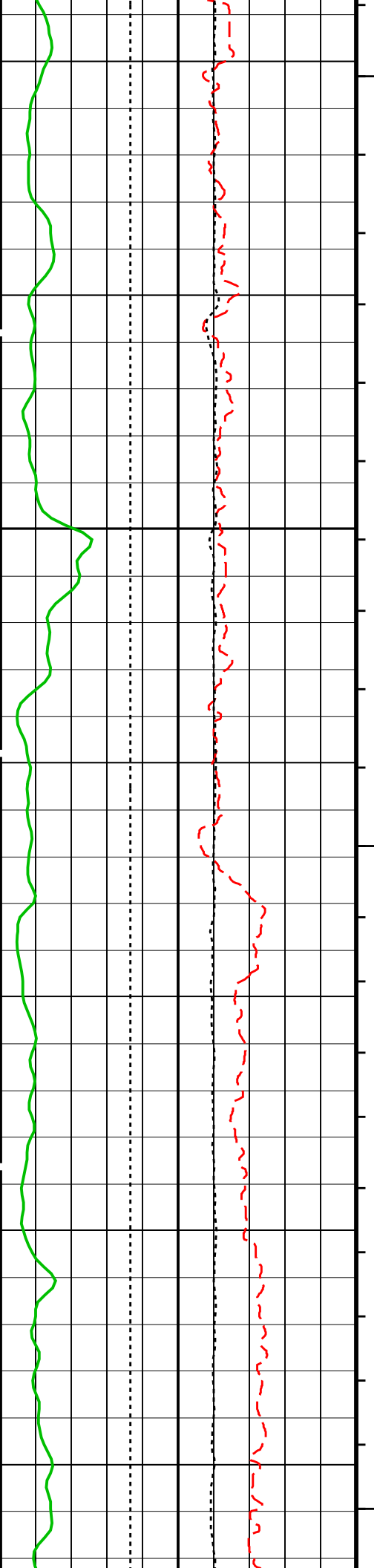




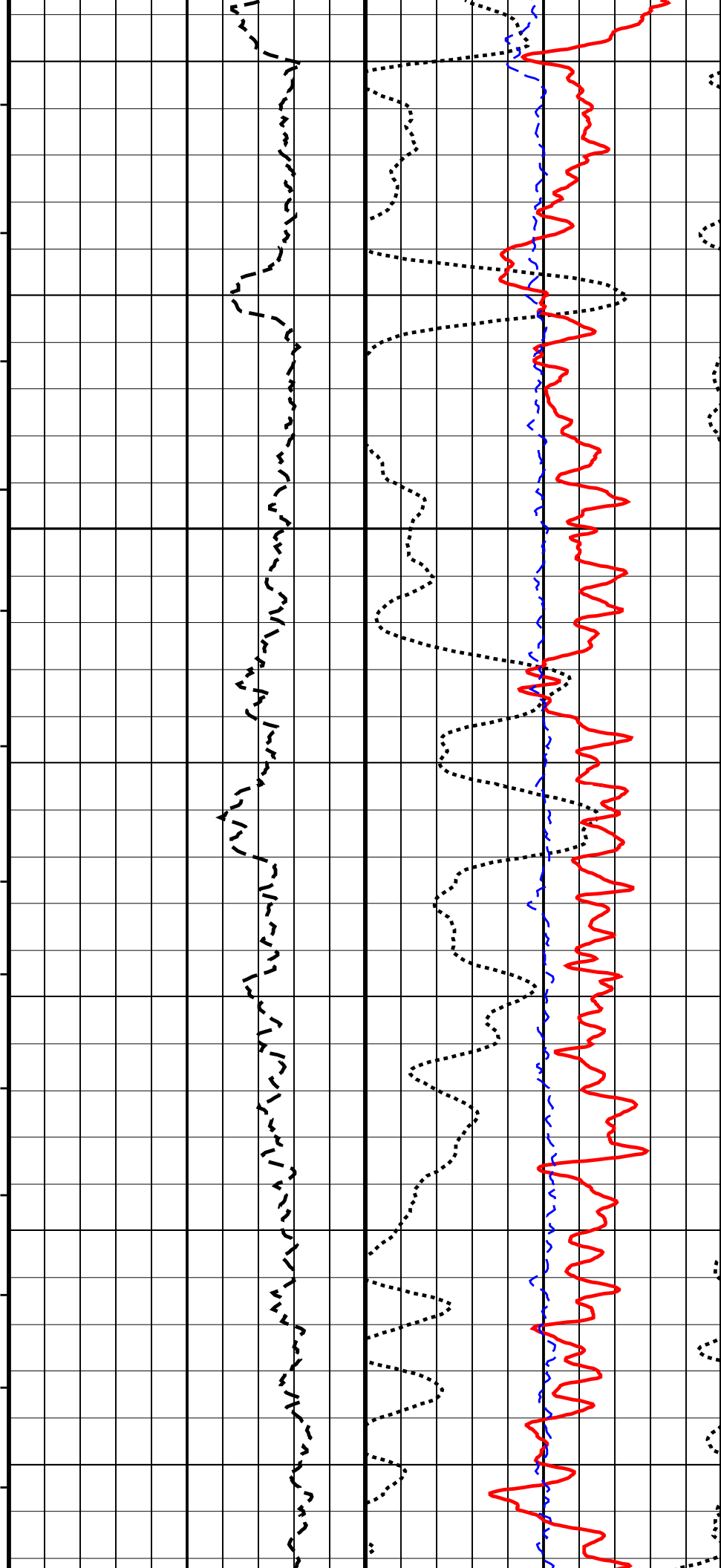


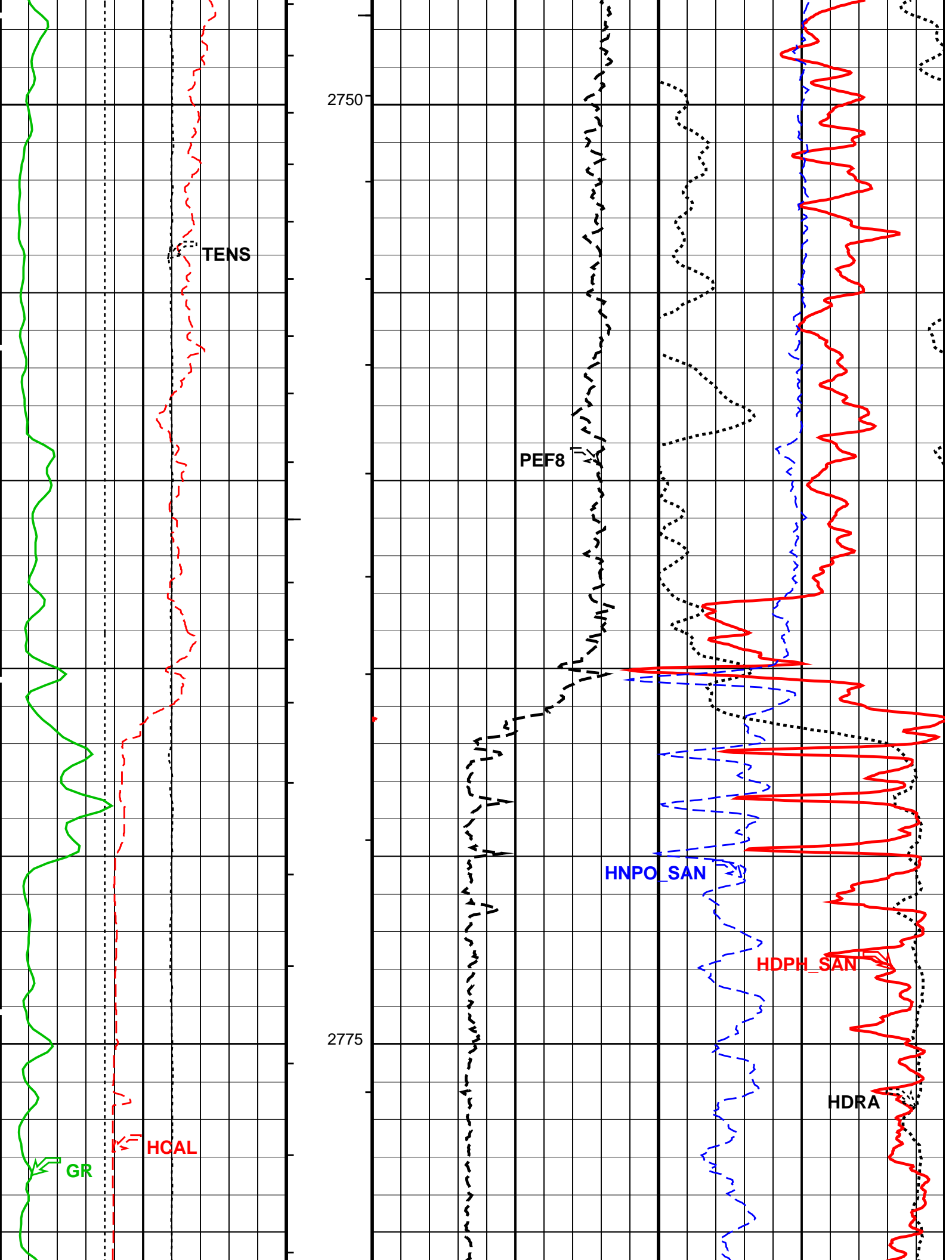
2700

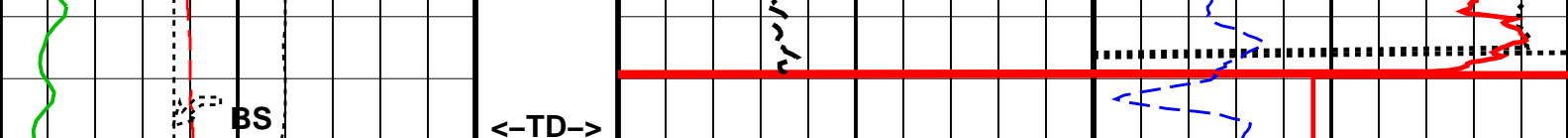




2725







***PEX-NEUTRON DENSITY POROSITY LOG-HIGH RESOLUTION PASS-SANDSTONE 2650 KG/M3***			
Bit Size (BS)		HDPH for SAND (HDPH_SAN)	
125	(MM)	375	0.45 (V/V) -0.15
HILT Caliper (HCAL)		HNPO for SAND (HNPO_SAN)	
125	(MM)	375	0.45 (V/V) -0.15
Gamma Ray (GR)		H. Res. Formation Pe (PEF8)	
0	(GAPI)	150	Density Correction (HDRA)
Tension (TENS)		0 10 450 (K/M3) -50	
25000	(N)	0	

PIP SUMMARY			
└ Integrated Hole Volume Minor Pip Every 0.1 M3			
└ Integrated Hole Volume Major Pip Every 1 M3			
└ Integrated Cement Volume Minor Pip Every 0.1 M3			
└ Integrated Cement Volume Major Pip Every 1 M3			
Time Mark Every 60 S			

Parameters			
DLIS Name	Description	Value	
AIT-M: Array Induction Tool – M			
BHS	Borehole Status	OPEN	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HILTH-FTB: High resolution Integrated Logging Tool-DTS			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1000	K/M3
FSAL	Formation Salinity	–50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal-like Formation Option	NO	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HSCO	Hole Size Correction Option	YES	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	VeryHiRes	
NSAR	HRDD Depth Sampling Rate	12.7	MM
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SOCN	Standoff Distance	3.175	MM
SOCO	Standoff Correction Option	YES	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
FCD	Future Casing (Outer) Diameter	177.8	MM
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	1.5	M
TDD	Total Depth – Driller	3160.00	M
TDL	Total Depth – Logger	3129.20	M
System and Miscellaneous			
BS	Bit Size	216.000	MM
BSAL	Borehole Salinity	–50000.00	PPM
CSIZ	Current Casing Size	244.500	MM
CWEI	Casing Weight	64.74	KG/M
DFD	Drilling Fluid Density	1170.00	K/M3
DO	Depth Offset for Playback	5.0	M
MST	Mud Sample Temperature	21.00	DEGC
PR	Playback Processing	RECOMPUTE	

PP RMFS TD	Playback Processing Resistivity of Mud Filtrate Sample Total Depth	RECOMPUTE 0.7100 3129.2	OHMM M		
Format: NUC_HIRES_VHIRES		Vertical Scale: 1:120		Graphics File Created: 15-May-2010 20:39	
OP System Version: 17C0-154					
AIT-M DTC-H	17C0-154 17C0-154	HILTH-FTB	17C0-154		
Input DLIS Files					
DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:9	PRODUCER	15-May-2010 18:24	3135.5 M 2218.0 M
Output DLIS Files					
DEFAULT	AIT_TLD_MCFL_CNL_023PUP	FN:31	PRODUCER	15-May-2010 20:39	
CUSTOMER	AIT_TLD_MCFL_CNL_023PUP	FN:32	PRODUCER	15-May-2010 20:39	

Calibration and Check Summary							
Measurement	Nominal	Master	Before	After	Change	Limit	Units
Array Induction Tool – M Wellsite Calibration – Electronics Calibration Check – Thru Cal Mag. & Phase							
Master: 10-Mar-2010 11:28 Before: 15-May-2010 16:33							
Thru Cal Magnitude – 0	0	0.6110	0.6109	N/A	N/A	N/A	V
Thru Cal Magnitude – 1	0	1.252	1.252	N/A	N/A	N/A	V
Thru Cal Magnitude – 2	0	0.6190	0.6191	N/A	N/A	N/A	V
Thru Cal Magnitude – 3	0	0.7007	0.7008	N/A	N/A	N/A	V
Thru Cal Magnitude – 4	0	1.311	1.311	N/A	N/A	N/A	V
Thru Cal Magnitude – 5	0	1.907	1.907	N/A	N/A	N/A	V
Thru Cal Magnitude – 6	0	1.908	1.908	N/A	N/A	N/A	V
Thru Cal Magnitude – 7	0	1.369	1.369	N/A	N/A	N/A	V
Thru Cal Phase – 0	0	202.8	208.0	N/A	N/A	N/A	DEG
Thru Cal Phase – 1	0	201.8	206.9	N/A	N/A	N/A	DEG
Thru Cal Phase – 2	0	198.2	203.3	N/A	N/A	N/A	DEG
Thru Cal Phase – 3	0	197.4	202.6	N/A	N/A	N/A	DEG
Thru Cal Phase – 4	0	191.3	196.4	N/A	N/A	N/A	DEG
Thru Cal Phase – 5	0	189.6	194.8	N/A	N/A	N/A	DEG
Thru Cal Phase – 6	0	189.6	194.8	N/A	N/A	N/A	DEG
Thru Cal Phase – 7	0	188.8	194.0	N/A	N/A	N/A	DEG
Array Induction Tool – M Wellsite Calibration – Electronics Calibration Check – Auxiliary							
Master: 10-Mar-2010 11:28 Before: 15-May-2010 16:33							
Array Induction SPA Plus	991.0	988.3	988.2	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	-0.1558	-0.1367	N/A	N/A	N/A	MV
Array Induction Temperature PI	0.9170	0.9155	0.9154	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	-0.0001589	-0.0001373	N/A	N/A	N/A	V
Array Induction Tool – M Wellsite Calibration – Test Loop Gain Correction							
Master: 10-Mar-2010 11:28							
Test Loop Gain Correctio – 0	0	1.016	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 1	0	1.017	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 2	0	1.014	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 3	0	1.013	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 4	0	0.9955	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 5	0	0.9948	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 6	0	1.006	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 7	0	1.010	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 0	0	0.5251	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 1	0	0.5984	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 2	0	0.09321	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 3	0	0.07661	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 4	0	0.04668	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 5	0	0.1832	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 6	0	0.5476	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 7	0	0.2810	N/A	N/A	N/A	N/A	DEG
Array Induction Tool – M Wellsite Calibration – Sonde Error Correction							
Master: 10-Mar-2010 11:28							
R Sonde Error Correction – 0	0	-110.7	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 1	0	157.6	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 2	0	130.5	N/A	N/A	N/A	N/A	MM/M

R Sonde Error Correction – 3	0	60.75	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 4	0	25.64	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 5	0	15.51	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 6	0	10.89	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 7	0	–1.689	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 0	0	–87.39	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 1	0	91.95	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 2	0	–42.80	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 3	0	–18.29	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 4	0	–11.47	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 5	0	–19.14	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 6	0	–1.742	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 7	0	–0.5896	N/A	N/A	N/A	N/A	MM/M

Array Induction Tool – M Wellsite Calibration – Mud Gain Correction

Master: 10–Mar–2010 11:28

Coarse – Mag, Real, Imag – 0	0	1.005	N/A	N/A	N/A	N/A	
Coarse – Mag, Real, Imag – 1	0	1.005	N/A	N/A	N/A	N/A	
Coarse – Mag, Real, Imag – 2	0	1.005	N/A	N/A	N/A	N/A	
Fine – Mag, Real, Imag – 0	0	1.001	N/A	N/A	N/A	N/A	
Fine – Mag, Real, Imag – 1	0	1.001	N/A	N/A	N/A	N/A	
Fine – Mag, Real, Imag – 2	0	1.001	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Stab Measurement Summary

Before: 15–May–2010 11:50

BS Window Ratio	0.7368	N/A	0.7380	N/A	N/A	N/A	
BS Window Sum	25580	N/A	25600	N/A	N/A	N/A	CPS
SS Window Ratio	0.4768	N/A	0.4764	N/A	N/A	N/A	
SS Window Sum	11970	N/A	11980	N/A	N/A	N/A	CPS
LS Window Ratio	0.2989	N/A	0.2979	N/A	N/A	N/A	
LS Window Sum	1429	N/A	1425	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Photo–multiplier High Voltages Calibrations

Before: 15–May–2010 11:50

BS PM High Voltage (Command)	1513	N/A	1495	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1764	N/A	1790	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1267	N/A	1280	N/A	N/A	N/A	V

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Crystal Quality Resolutions Calibration

Before: 15–May–2010 11:50

BS Crystal Resolution	11.17	N/A	11.11	N/A	N/A	N/A	%
SS Crystal Resolution	10.66	N/A	11.11	N/A	N/A	N/A	%
LS Crystal Resolution	8.413	N/A	8.284	N/A	N/A	N/A	%

High resolution Integrated Logging Tool–DTS Wellsite Calibration – MCFL Calibration

Before: 15–May–2010 11:51

Raw B0 Resistivity	3875	N/A	3846	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3798	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3804	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool–DTS Wellsite Calibration – HILT Caliper Calibration

Before: 15–May–2010 11:43

HILT Caliper Zero Measurement	203.2	N/A	188.7	N/A	N/A	N/A	MM
HILT Caliper Plus Measurement	304.8	N/A	300.2	N/A	N/A	N/A	MM

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Detector Calibration

Before: 15–May–2010 11:44

Gamma Ray Background	30.00	N/A	16.67	N/A	N/A	N/A	GAPI
Gamma Ray (Jig – Bkg)	182.3	N/A	182.3	N/A	N/A	16.57	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Zero Measurement

Master: 14–Apr–2010 12:41 Before: 15–May–2010 11:45

CNTC Background	26.49	26.49	25.76	N/A	N/A	3.974	CPS
CFTC Background	26.70	26.70	25.69	N/A	N/A	4.005	CPS

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Ratio Measurement

Master: 14–Apr–2010 12:41

Thermal Near Corr. (Tank)	5800	5411	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2244	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.412	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Accelerometer Calibration

Before: 15–May–2010 16:31

Z–Axis Acceleration	9.810	N/A	9.784	N/A	N/A	N/A	M/S2
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High resolution Integrated Logging Tool–DTS Master Calibration – Inversion results

Master: 12–May–2010 21:49

Rho Aluminum	2596	2601	--	--	--	--	K/M3
Rho Magnesium	1686	1688	--	--	--	--	K/M3
Pe Aluminum	2.570	2.567	--	--	--	--	

Pe Magnesium	2.650	2.627	--	--	--	--	--
High resolution Integrated Logging Tool–DTS Master Calibration – Deviation Summary							
Master: 12–May–2010 21:49							
BS Average Deviation	0	0.2831	--	--	--	--	%
BS Max Deviation	0	0.7776	--	--	--	--	%
SS Average Deviation	0	0.4247	--	--	--	--	%
SS Max Deviation	0	1.524	--	--	--	--	%
LS Average Deviation	0	0.7017	--	--	--	--	%
LS Max Deviation	0	1.630	--	--	--	--	%

The GLS–VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT–B Water Temperature    12.0    DEGC.  
 Thermal Housing Size        85.522   MM.  
 NSR–F serial number        5004

Array Induction Tool – M / Equipment Identification

Primary Equipment:  
 Rm/SP Bottom Nose  
 Array Induction Sonde  
 Auxiliary Equipment:

AMRM – A  
 AMIS – A  
 1282

Array Induction Tool – M Wellsite Calibration							
Electronics Calibration Check – Thru Cal Mag. & Phase							
Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.6110		0.6100	202.8		197.0
	Before	0.6109			208.0		
1	Master	1.252		1.270	201.8		196.0
	Before	1.252			206.9		
2	Master	0.6190		0.6200	198.2		192.0
	Before	0.6191			203.3		
3	Master	0.7007		0.7000	197.4		191.0
	Before	0.7008			202.6		
4	Master	1.311		1.340	191.3		185.0
	Before	1.311			196.4		
5	Master	1.907		1.960	189.6		182.0
	Before	1.907			194.8		
6	Master	1.908		1.960	189.6		181.0
	Before	1.908			194.8		
7	Master	1.369		1.410	188.8		175.0
	Before	1.369			194.0		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom –60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)
Master: 10–Mar–2010 11:28				Before: 15–May–2010 16:33			

Array Induction Tool – M Wellsite Calibration							
Electronics Calibration Check – Auxiliary							
Phase	Array Induction SPA Plus MV		Value	Phase	Array Induction SPA Zero MV		Value
Master			988.3	Master			–0.1558
Before			988.2	Before			–0.1367
		941.0	981.0			1040	
						–50.00	0
						50.00	





Array Induction Tool – M Wellsite Calibration							
Mud Gain Correction							
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag	
0	1.005				1.001		
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)	0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.005				1.001		
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)	0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.005				1.001		
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)	0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
Master: 10–Mar–2010 11:28							

Master: 10–Mar–2010 11:28

Array Induction Tool – M Master Calibration									
Electronics Calibration Check – Thru Cal Mag. & Phase									
Idx	Phase	Value	Thru Cal Magnitude V		Nominal	Value	Thru Cal Phase DEG		Nominal
0	Master	0.6110			0.6100	202.8			197.0
1	Master	1.252			1.270	201.8			196.0
2	Master	0.6190			0.6200	198.2			192.0
3	Master	0.7007			0.7000	197.4			191.0
4	Master	1.311			1.340	191.3			185.0
5	Master	1.907			1.960	189.6			182.0
6	Master	1.908			1.960	189.6			181.0
7	Master	1.369			1.410	188.8			175.0
		60.00 % (Minimum)	(Nominal)		140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)		Nom + 60.00 (Maximum)
Master: 10-Mar-2010 11:28									

Master: 10–Mar–2010 11:28

Array Induction Tool – M Master Calibration							
Electronics Calibration Check – Auxiliary							
Phase	Array Induction SPA Plus MV		Value	Phase	Array Induction SPA Zero MV		Value
Master			988.3	Master			-0.1558
	941.0 (Minimum)	991.0 (Nominal)	1040 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
Phase	Array Induction Temperature Plus V		Value	Phase	Array Induction Temperature Zero V		Value
Master			0.9155	Master			-0.0001589
	0.8710 (Minimum)	0.9170 (Nominal)	0.9630 (Maximum)		-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)
Master: 10-Mar-2010 11:28							

Master: 10–Mar–2010 11:28

Array Induction Tool – M Master Calibration							
Test Loop Gain Correction							
Idx	Value	Test Loop Gain Correction Magnitude V			Value	Test Loop Gain Correction Phase DEG	
0	1.016				0.5251		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.017				0.5984		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.014				0.09321		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.013				0.07661		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9955				0.04668		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9948				0.1832		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

6	1.006	(Minimum)	(Nominal)	(Maximum)	0.5476	(Minimum)	(Nominal)	(Maximum)
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.010	(Minimum)	(Nominal)	(Maximum)	0.2810	(Minimum)	(Nominal)	(Maximum)
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: 10-Mar-2010 11:28

Array Induction Tool – M Master Calibration								
Sonde Error Correction								
Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	-110.7	(Minimum)	(Nominal)	(Maximum)	-87.39	(Minimum)	(Nominal)	(Maximum)
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	157.6	(Minimum)	(Nominal)	(Maximum)	91.95	(Minimum)	(Nominal)	(Maximum)
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	130.5	(Minimum)	(Nominal)	(Maximum)	-42.80	(Minimum)	(Nominal)	(Maximum)
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	60.75	(Minimum)	(Nominal)	(Maximum)	-18.29	(Minimum)	(Nominal)	(Maximum)
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	25.64	(Minimum)	(Nominal)	(Maximum)	-11.47	(Minimum)	(Nominal)	(Maximum)
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	15.51	(Minimum)	(Nominal)	(Maximum)	-19.14	(Minimum)	(Nominal)	(Maximum)
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	10.89	(Minimum)	(Nominal)	(Maximum)	-1.742	(Minimum)	(Nominal)	(Maximum)
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-1.689	(Minimum)	(Nominal)	(Maximum)	-0.5896	(Minimum)	(Nominal)	(Maximum)
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 10-Mar-2010 11:28

Array Induction Tool – M Master Calibration								
Mud Gain Correction								
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag		
0	1.005	(Minimum)	(Nominal)	(Maximum)	1.001	(Minimum)	(Nominal)	(Maximum)
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.005	(Minimum)	(Nominal)	(Maximum)	1.001	(Minimum)	(Nominal)	(Maximum)
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.005	(Minimum)	(Nominal)	(Maximum)	1.001	(Minimum)	(Nominal)	(Maximum)
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

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### High resolution Integrated Logging Tool–DTS / Equipment Identification

#### Primary Equipment:

HILT high-Resolution Mechanical Sonde  
HILT Rxo Gamma-ray Device  
HILT Micro Cylindrically Focused Log Dev  
GR Logging Source  
HILT High Res. Control Cartridge  
HILT Gamma-Ray Neutron Sonde–DTS  
HGNS Gamma-Ray Device  
HGNS Neutron Detector with Alpha Source

HRMS – H 3971  
HRGD – H 3996  
MCFL – H  
GLS – VJ 5237  
HRCC – H 3990  
HGNS – H 4706  
HGR –  
HCNT – H




#### Auxiliary Equipment:

Neutron Calibration Tank  
Gamma Source Radioactive  
HGNS Housing


NCT – B  
GSR – U/Y  
HGNS – 3771

High resolution Integrated Logging Tool-DTS Wellsite Calibration
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## Ratio Measurement

Phase	Thermal Near Corr. (Tank) CPS			Value	Phase	Thermal Far Corr. (Tank) CPS			Value	Phase	CNTC/CFTC (Tank)			Value
Master				5411	Master				2244	Master				2.412
	4700 (Minimum)	5800 (Nominal)	6900 (Maximum)			1900 (Minimum)	2400 (Nominal)	2900 (Maximum)			2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)	

Master: 14-Apr-2010 12:41

High resolution Integrated Logging Tool-DTS Wellsite Calibration			
Accelerometer Calibration			
Phase	Z-Axis Acceleration M/S2	Value	
Before		9.784	
	9.610 (Minimum)	9.810 (Nominal)	10.01 (Maximum)
Before: 15-May-2010 16:31			



Before: 15-May-2010 16:31

High resolution Integrated Logging Tool-DTS Master Calibration							
Inversion results							
Phase	Rho Aluminum K/M3		Value	Phase	Rho Magnesium K/M3		Value
Master			2601	Master			1688
	2586 (Minimum)	2596 (Nominal)	2606 (Maximum)		1676 (Minimum)	1686 (Nominal)	1696 (Maximum)
Phase	Pe Aluminum		Value	Phase	Pe Magnesium		Value
Master			2.567	Master			2.627
	2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)		2.550 (Minimum)	2.650 (Nominal)	2.750 (Maximum)
Master: 12-May-2010 21:49							

Master: 12-May-2010 21:49

High resolution Integrated Logging Tool-DTS Master Calibration											
Deviation Summary											
Phase	BS Average Deviation %		Value	Phase	SS Average Deviation %		Value	Phase	LS Average Deviation %		Value
Master	<div><div></div></div>		0.2831	Master	<div><div></div></div>		0.4247	Master	<div><div></div></div>		0.7017
	-0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)		-1.000 (Minimum)	0 (Nominal)	1.000 (Maximum)		-1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)
Phase	BS Max Deviation %		Value	Phase	SS Max Deviation %		Value	Phase	LS Max Deviation %		Value
Master	<div><div></div></div>		0.7776	Master	<div><div></div></div>		1.524	Master	<div><div></div></div>		1.630
	-1.600 (Minimum)	0 (Nominal)	1.600 (Maximum)		-2.500 (Minimum)	0 (Nominal)	2.500 (Maximum)		-3.500 (Minimum)	0 (Nominal)	3.500 (Maximum)
Master: 12-May-2010 21:49											

Master: 12-May-2010 21:49

High resolution Integrated Logging Tool-DTS Master Calibration									
Zero Measurement									
Phase	CNTC Background CPS			Value	Phase	CFTC Background CPS			Value
Master				26.49	Master				26.70
	5.000 (Minimum)	26.49 (Nominal)	40.00 (Maximum)			5.000 (Minimum)	26.70 (Nominal)	40.00 (Maximum)	
Master: 14-Apr-2010 12:41									

Master: 14-Apr-2010 12:41

High resolution Integrated Logging Tool-DTS Master Calibration											
Tank Measurement											
Phase	Thermal Near Corr. (Tank) CPS		Value	Phase	Thermal Far Corr. (Tank) CPS		Value	Phase	CNTC/CFTC (Tank)		Value
Master	<div><div></div></div>		5411	Master	<div><div></div></div>		2244	Master	<div><div></div></div>		2.412
	4700 (Minimum)	5800 (Nominal)	6900 (Maximum)		1900 (Minimum)	2400 (Nominal)	2900 (Maximum)		2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)
Master: 14-Apr-2010 12:41											

Master: 14-Apr-2010 12:41

## DTS Telemetry Tool / Equipment Identification

## Primary Equipment:

DTC-H Auxiliary Cartridge  
DTC-H Telemetry Cartridge

DTCH - A

DTCH - A

8855

## Auxiliary Equipment:

DTCH Telemetry Cartridge Housing

ECH - KC

9932

Company: **Nalcor Energy Oil and Gas**



Well: **Nalcor et al Seamus 1**

Field: **Parson’s Pond**

Rig: **Stoneham #11**

Province: **Newfoundland**

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