

Company: Dorado E&P Partners, LLC

Well: Dealy 2-31 SWD

Field: Wildcat

County: Reno State: Kansas

PLATFORM EXPRESS

COMPENSATED NEUTRON

LITHOLOGY DENSITY

Reno
Wildcat
150' FNL - 400' FEL
Dealy 2-31 SWD
Dorado E&P Partners, LLC

Location:		Elev.		K.B.	
150' FNL - 400' FEL				1730.00 ft	
Permanent Datum:		Ground Level		Elev.: 1718.00 f	
Log Measured From:		Kelly Bushing		12.00 ft	
Drilling Measured From:		Kelly Bushing		above Perm.Datum	
API Serial No.	Section:	Township:		Range:	
15-155-21614	31	24S		9W	

Logging Date 05-Dec-2012

Run Number One

Depth Driller 4265.00 ft

Schlumberger Depth 4254.00 ft

Bottom Log Interval 4254.00 ft

Top Log Interval 250.00 ft

Casing Driller Size @ Depth 13.375 in @ 250.00 ft

Casing Schlumberger 250 ft

Bit Size 12.25 in

Type Fluid In Hole Water

Density 9.35 lbm/gal

Fluid Loss PH 6.4 cm3

Source of Sample Active Tank

RM @ Meas Temp 0.85 ohm.m @ 58.7 degF

RMF @ Meas Temp 0.72 ohm.m @ 58.7 degF

RMC @ Meas Temp 1.18 ohm.m @ 58.7 degF

Source RMF RMC Calculated

RM @ BHT 0.44 @ 119 0.37 @ 119

Max Recorded Temperatures 119 degF 119 119

Circulation Stopped 05-Dec-2012 14:30:00

Logger on Bottom 05-Dec-2012 19:48:45

Unit Number 2281 Location: Elk City, OK

Recorded By Matt Cramer

Witnessed By John Conley

Disclaimer

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE 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.

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9.5 Parameter Listing

Borehole Fluids

Parameter(unit)	ONE					
Fluid Type	Water					
Max Recorded Temperatures (degF)	119					
Source of Sample	Active Tank					
Salinity (ppm)	8360.5					
Density (lbm/gal)	9.35					
Funnel Viscosity (s)	60					
Fluid Loss (cm3)	6.4					
PH	10.5					
Date/Time Circulation Stopped	05-Dec-2012 14:30:00					
Date Logger on Bottom	05-Dec-2012					
Time Logger on Bottom	19:48:45					
Source RMF	Calculated					
RMC	Calculated					
RM @ Meas Temp (ohm.m@degF)	0.85 @ 58.7					
RMF @ Meas Temp (ohm.m@degF)	0.72 @ 58.7					
RMC @ Meas Temp (ohm.m@degF)	1.18 @ 58.7					
RM @ BHT (ohm.m@degF)	0.44 @ 119					
RMF @ BHT (ohm.m@degF)	0.37 @ 119					
RMC @ BHT (ohm.m@degF)	0.62 @ 119					
Total Solid (%)						
High Gravity Solids (%)						

Remarks and Equipment Summary

ONE: Toolstring				ONE: Remarks	
Equip name	Length	MP name	Offset	Tool ran per tool sketch	
LEH-QT:2519	51.15			All logs presented as per client request	
LEH-QT:2519				Logs computed on Limestone matrix (MDEN = 2.71 g/cc).	
DTC-H:8497	48.23	CTEM	47.33	Main Pass logged from SLB TD to CSG. Repeat Pass logged 400' from SLB TD.	
ECH-KC:9614		HV	0.00		
DTC-H:8497		ToolStatus	45.23	Hole-Cement Volume computed given a future casing diameter of 9.625".	
		TelStatus	45.23	Maximum recorded temperature was 119 degF, obtained from HGNS temperature senso	
MLT-B	45.23			Thank you for choosing Schlumberger of Elk City, OK. 580-225-4300	
MLT-B				Your crew today was Jonathan, James, and Matt.	
		Microlog Pad	41.82		
		Microlog Station	37.65		
HGNS-H:3964	37.65	Temperature	37.62		
HGNH:3715					
NPV-N:5075		GR	36.91		

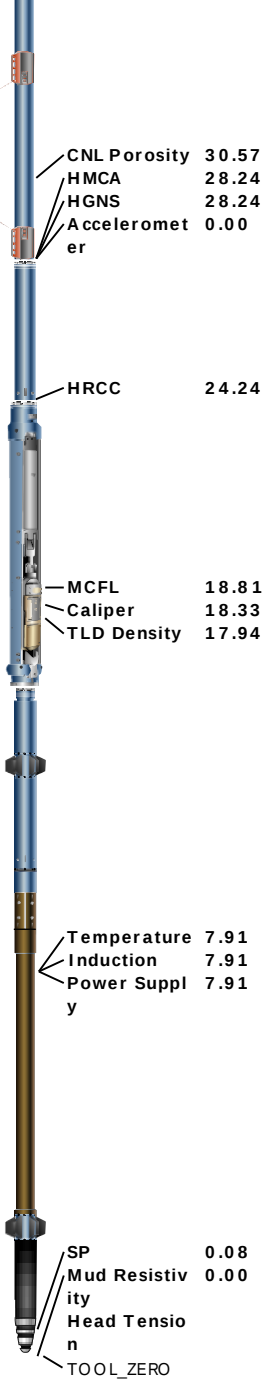
NSR-F:5075
HGNS-H:3964
HMCA-H
HACCZ-H:4166

HDRS-H:4723 28.24

ECH-MEB:2972
HRCC-H:3965
HRMS-H:4723
GSR-J:5347
Short Spacing:27775
Long Spacing:28941
GPV-Q:5347
Backscatter
HRGD-H:4770

AIT-M:229 16.00

AMIS:229
AMRM:229



Lengths are in ft
Maximum Outer Diameter = 5.875 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL ZERO

Depth Summary			
Depth Control Parameters	ONE		
Conveyance Type	Wireline		
Log Sequence	First Trip to Wellsite		
Rig Up Length at Surface (ft)	179.00		
Rig Up Length at Bottom (ft)	178.80		
Rig Up Length Correction (ft)	0.20		
Stretch Correction (ft)	1.20		
Tool Zero Reference Check at Surface (ft)	0.20		
Rig Type	Land Triple		
Depth Remark Parameters	ONE		
Depth Remark 1	All Schlumberger depth control policies and procedures were followed.		
Depth Remark 2	IDW used as primary depth control device. Z-Chart used as secondary		

	device. Z-Chart used as secondary depth control measure		
Depth Remark 3	First Trip to Wellsite. Logs correlated to down pass.		
Depth Measuring Device	ONE		
Type	IDW-JA		
Serial Number	5904		
Calibration Date	13-NOV-2012		
Calibrator Serial Number	NA		
Calibration Cable Type	7-46A-XS		
Wheel Correction 1	-8		
Wheel Correction 2	-6		
Tension Device	ONE		
Type	CMTD-B/A		
Serial Number	NA		
Calibration Date	22-Nov-2012		
Calibrator Serial Number	1018		
Calibration Points	10		
Calibration RMS	10		
Calibration Peak Error	16		
Logging Cable	ONE		
Type	7-46A-XS		
Serial Number	U711104		
Logging Cable Length (ft)	18100.00		

ONE

Main Pass Density 5" = 100'

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
IHV	Integrated Hole Volume	GCSE_UP_PASS	3480.69	ft3
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	1453.9	ft3

Software Version

Acquisition System	Version
MaxWell	3.1.9755.0
Application Patch	SP-20120723-3.1.9755.1112
	EXP_APL-MASTAXIS-3.1.9755.1221

Computation	Description	Version
Borehole	Borehole Ensemble provides common Borehole Parameters and Channels	3.1.9755.0

Tool Elements	Description	Software Version	Firmware Version
HRCC-H	HILT High-Resolution Control Cartridge, 150 degC	3.1.9755.0	2.0
HRGD-H	HILT Resistivity Gamma-Ray Density Device, 150 degC	3.1.9755.0	3.0
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	3.1.9755.0	2.0

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	144.03 ft	4263.83 ft	05-Dec-2012 7:48:19 PM	05-Dec-2012 9:08:23 PM	0.00 ft	

All depths are referenced to toolstring zero

Log

ONE: Log[3]:Up

Description: Nuclear standard resolution template for Platform Express Format: Log (Bulk Density 5 Inch) Index Scale: 2 in per 100 ft Index Unit: ft

Channel	Source	Sampling
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Channel	Source	Sampling
CALI	HDRS-H:HRCC-H:HRCC-H	1in
GR	HGNS-H:HGNS-H:HGNS-H	6in
HDRA	HDRS-H:HRMS-H:HRGD-H	2in
ICV	Borehole	6in
IHV	Borehole	6in
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in
RHOZ	HDRS-H:HRMS-H:HRGD-H	2in
TENS	WLWorkflow	6in

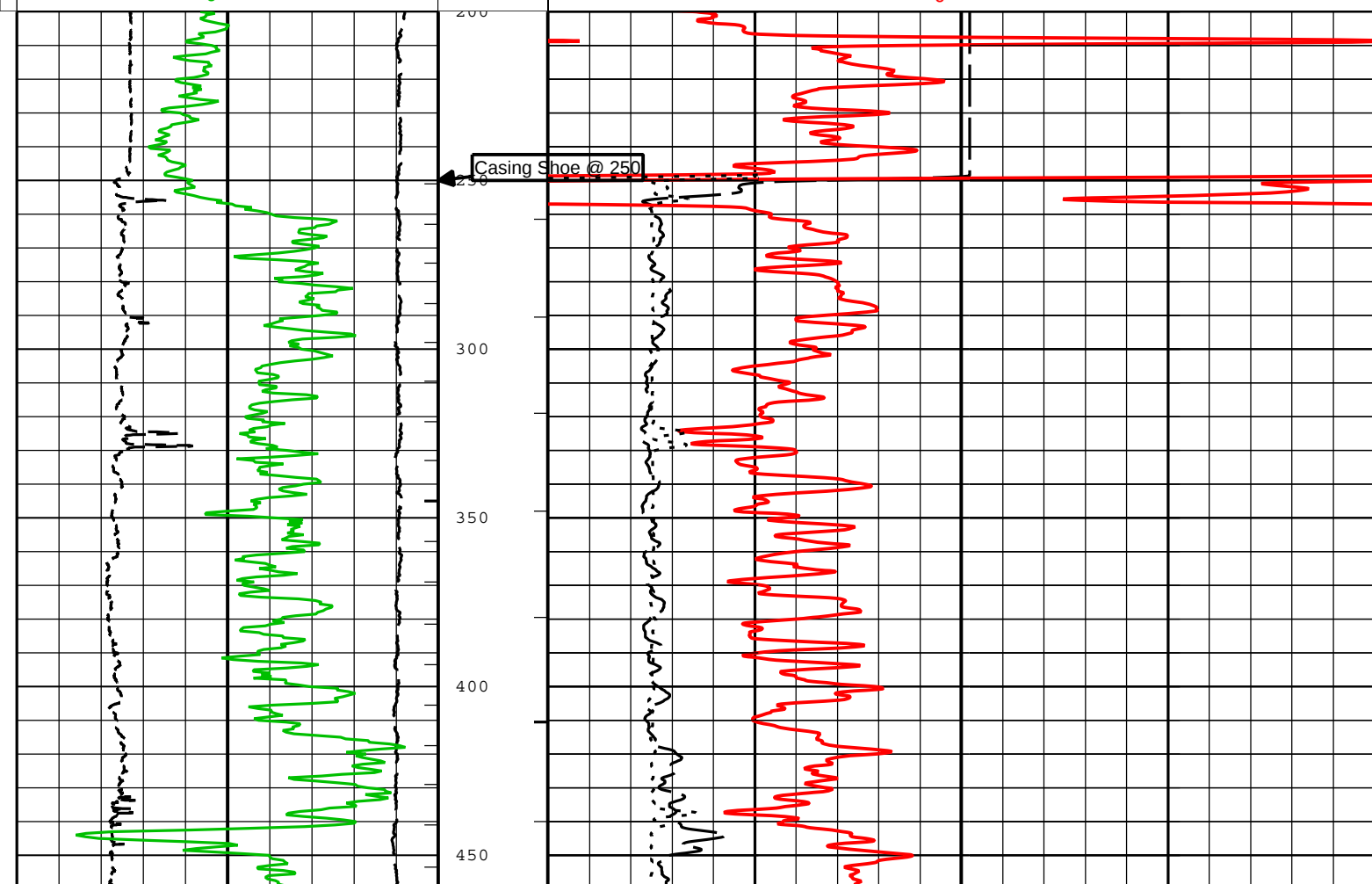
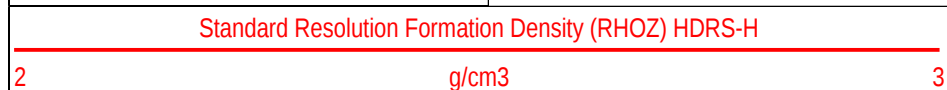
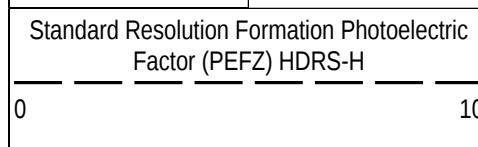
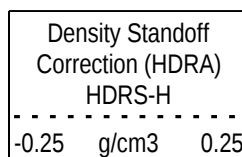
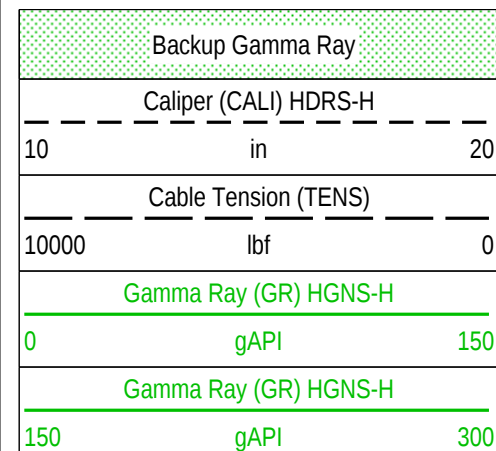
—ICV - Integrated Cement Volume every 100.00 (ft3)

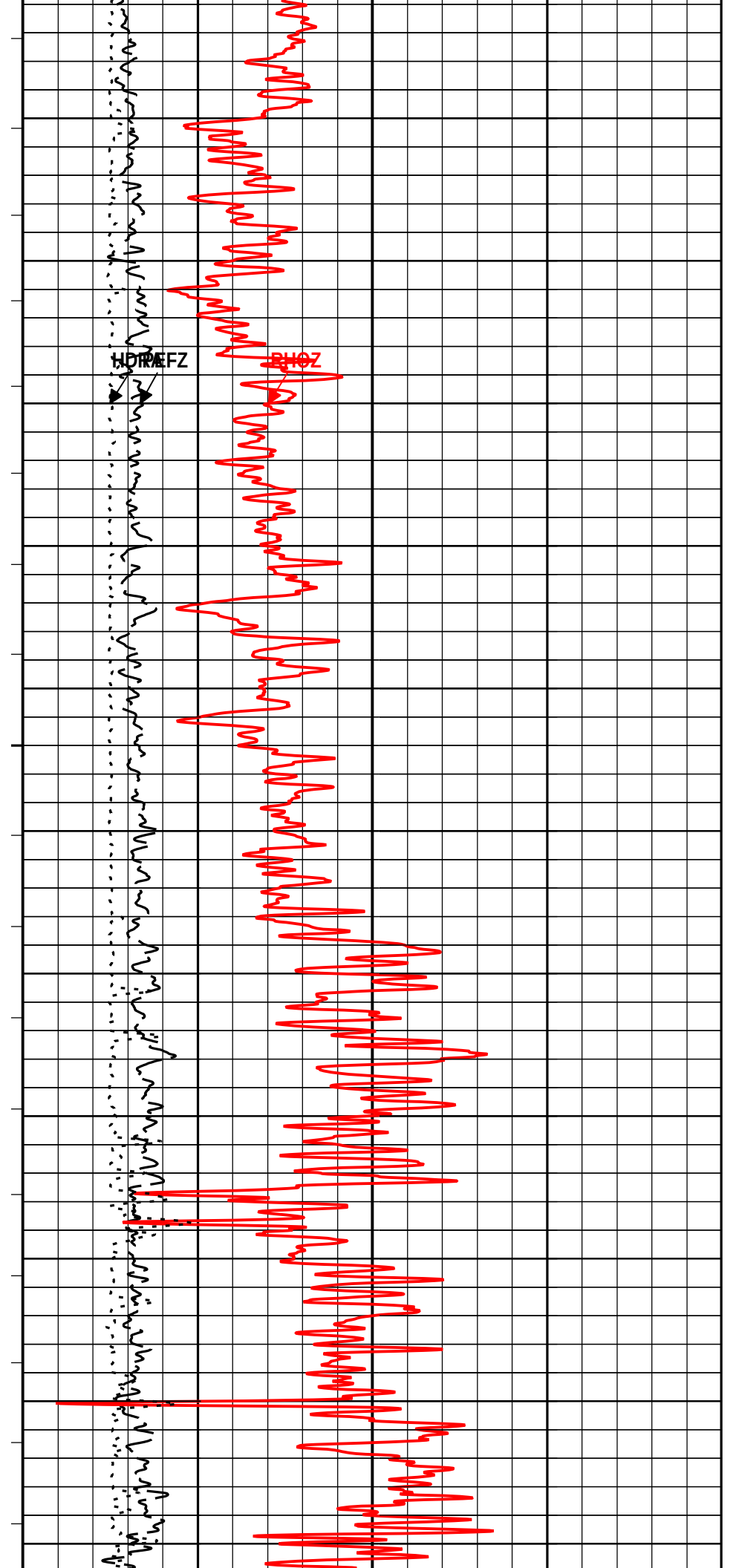
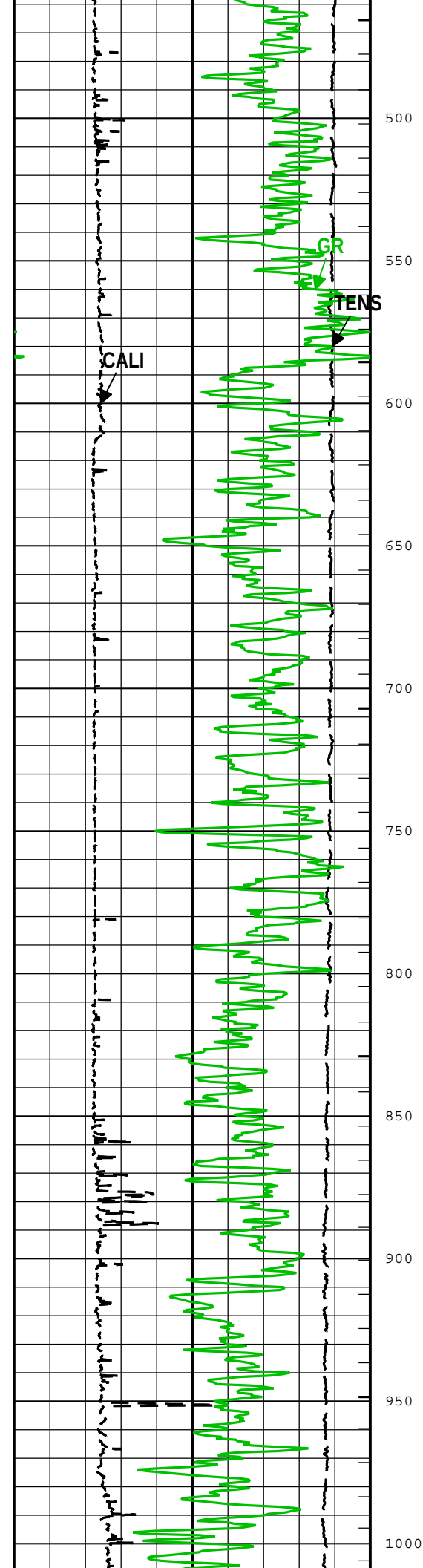
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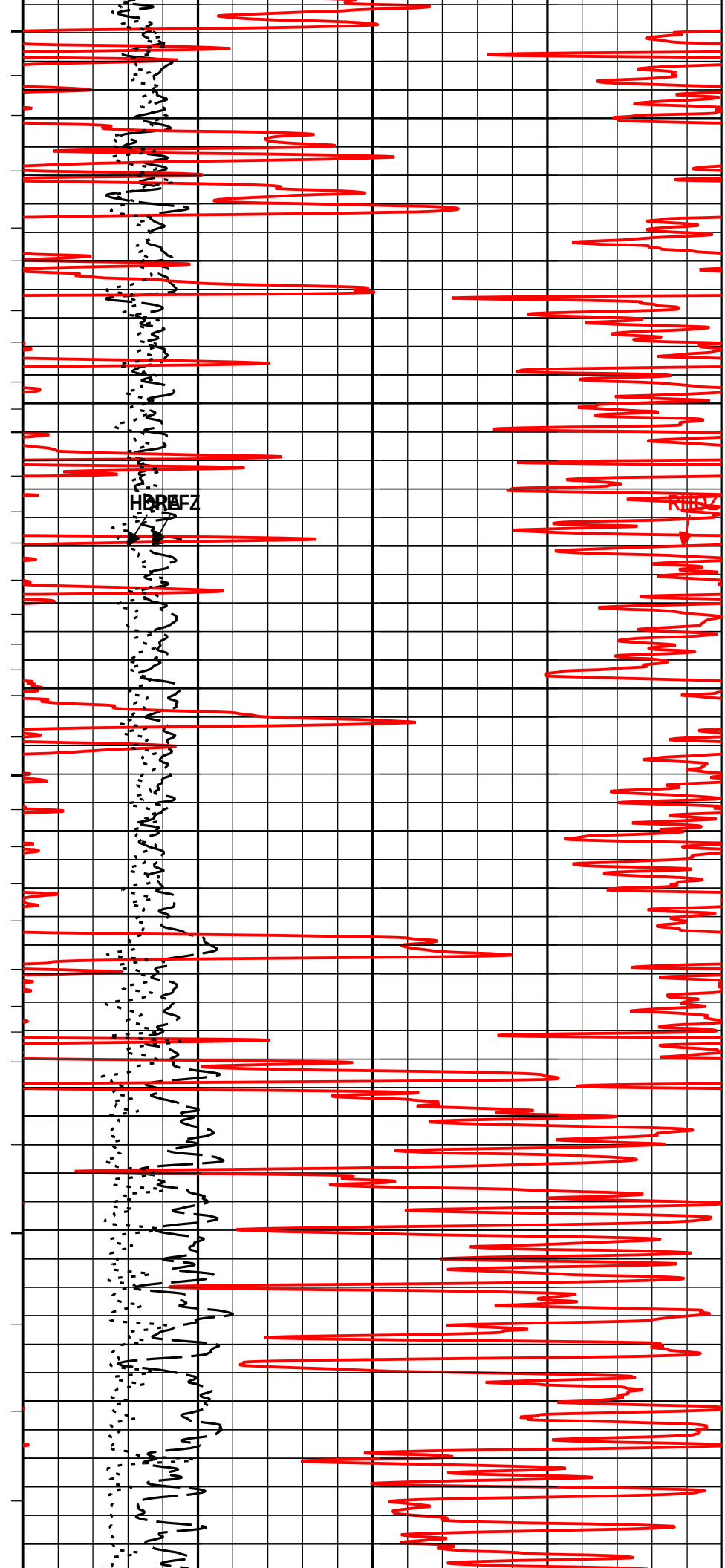
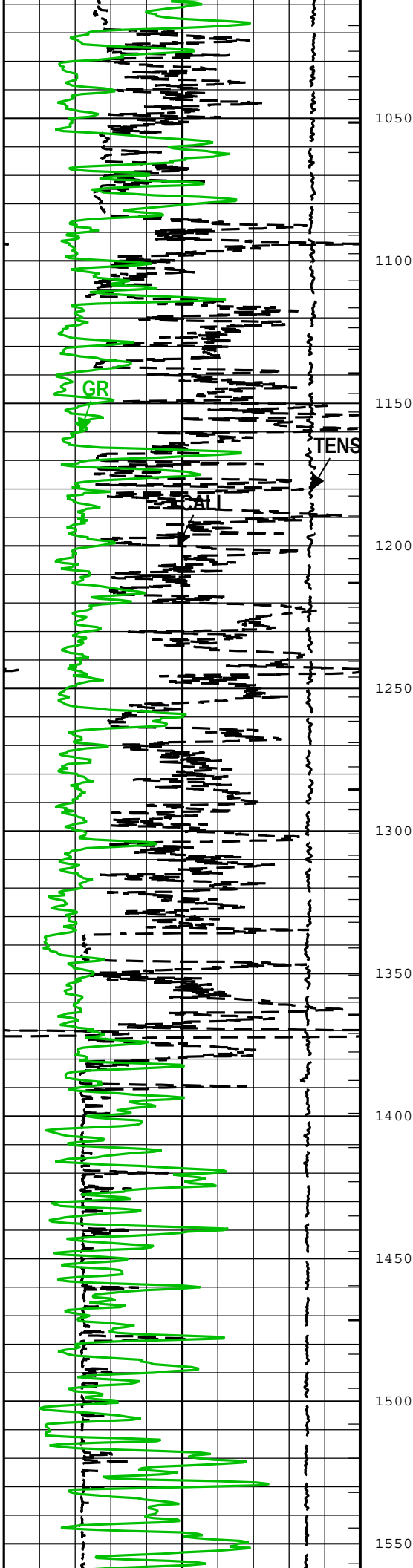
TIME_1900 - Time Marked every 60.00 (s)

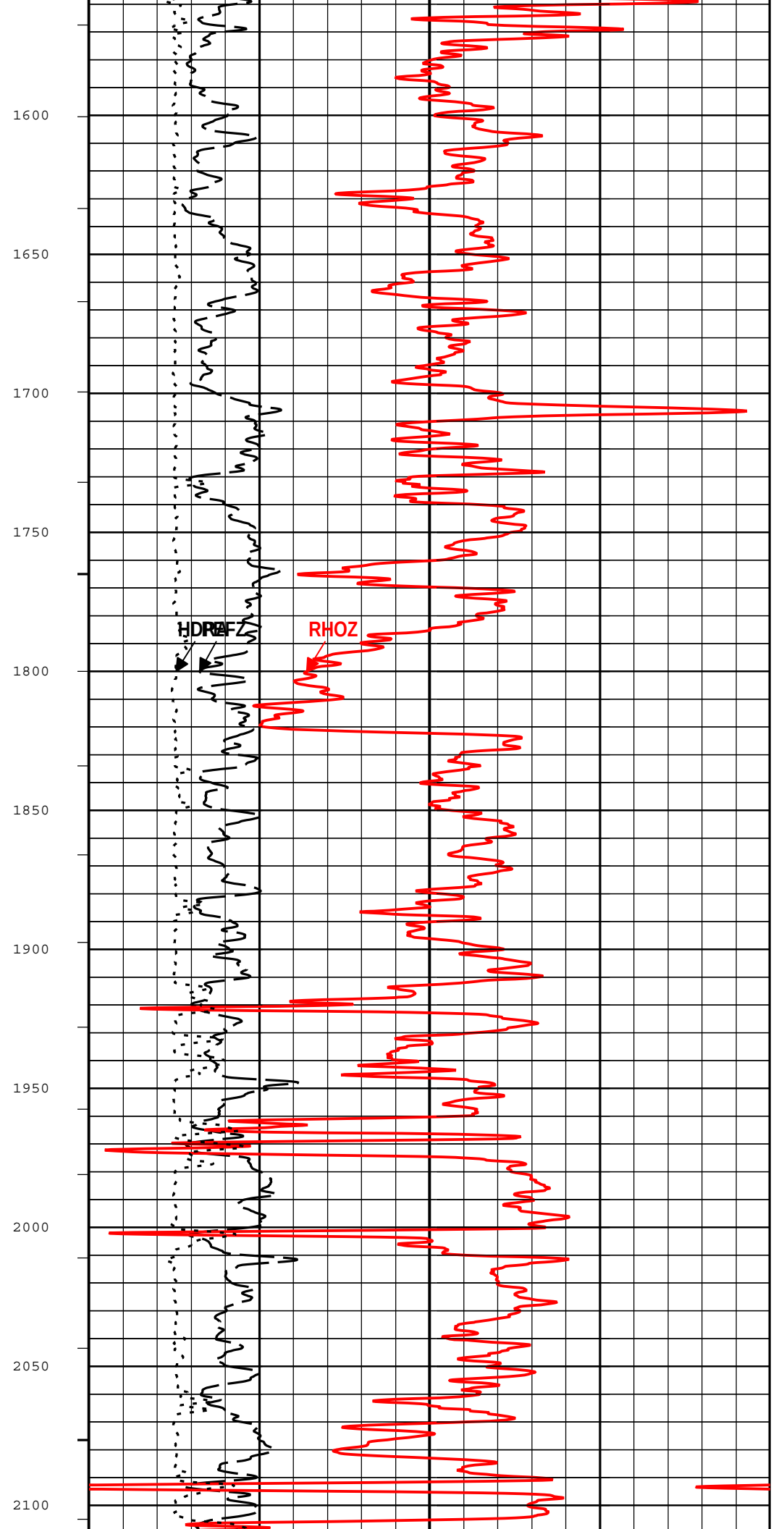
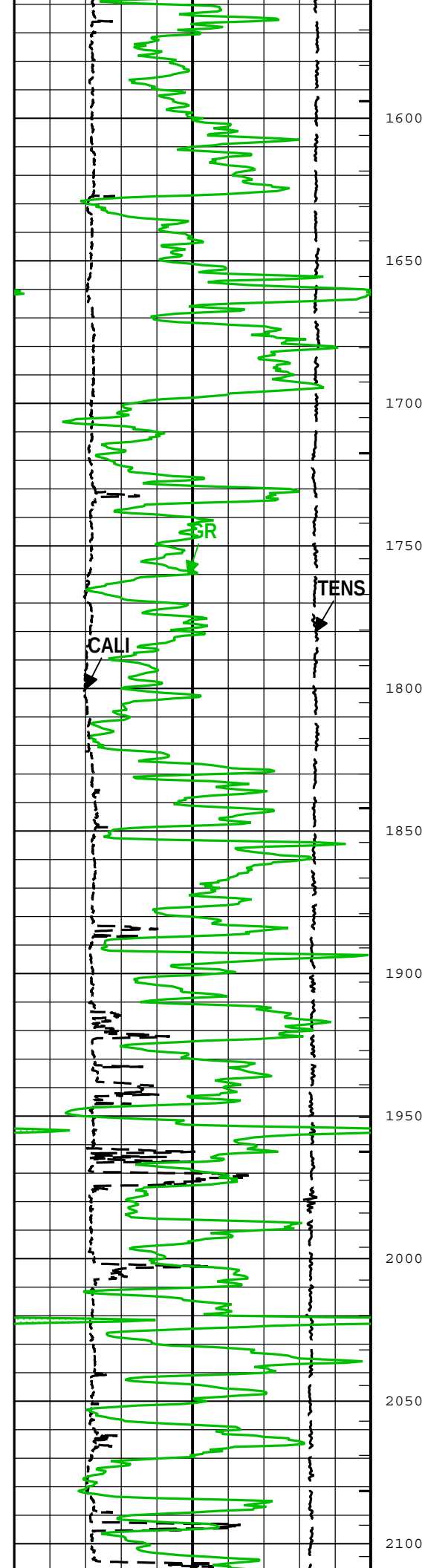
—ICV - Integrated Cement Volume every 10.00 (ft3)

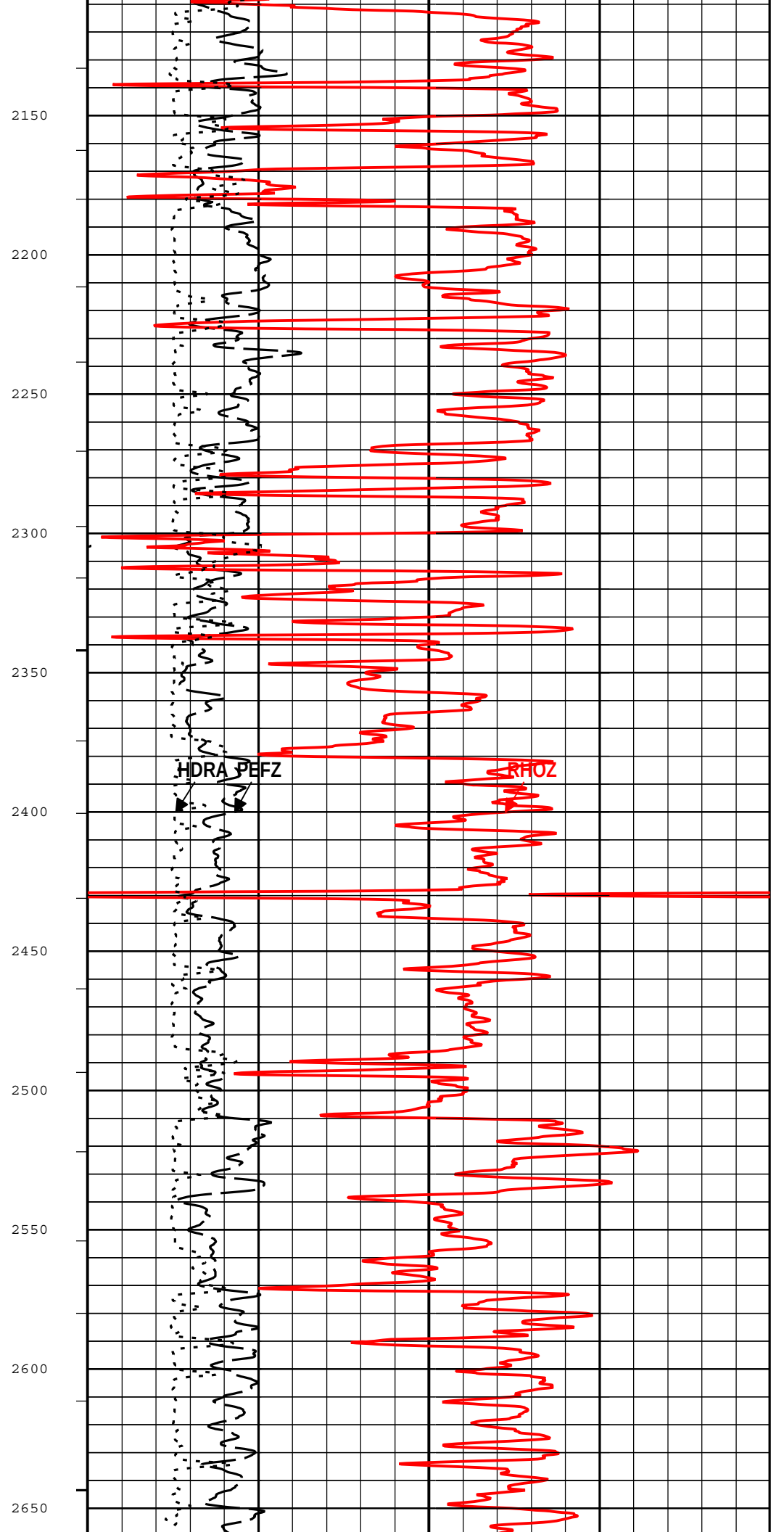
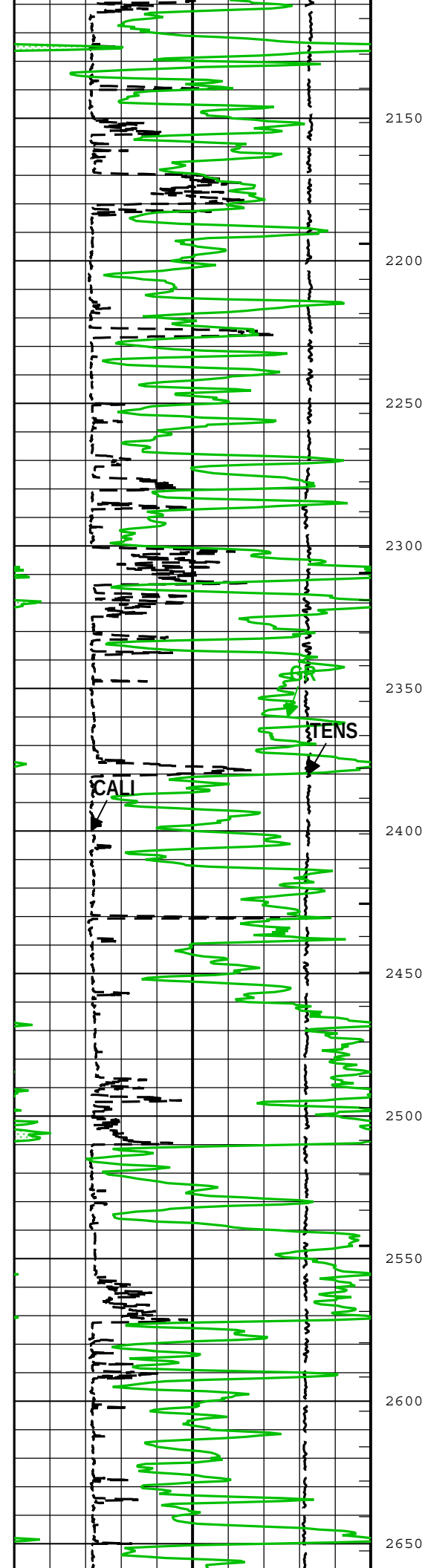
—IHV - Integrated Hole Volume every 100.00 (ft3)

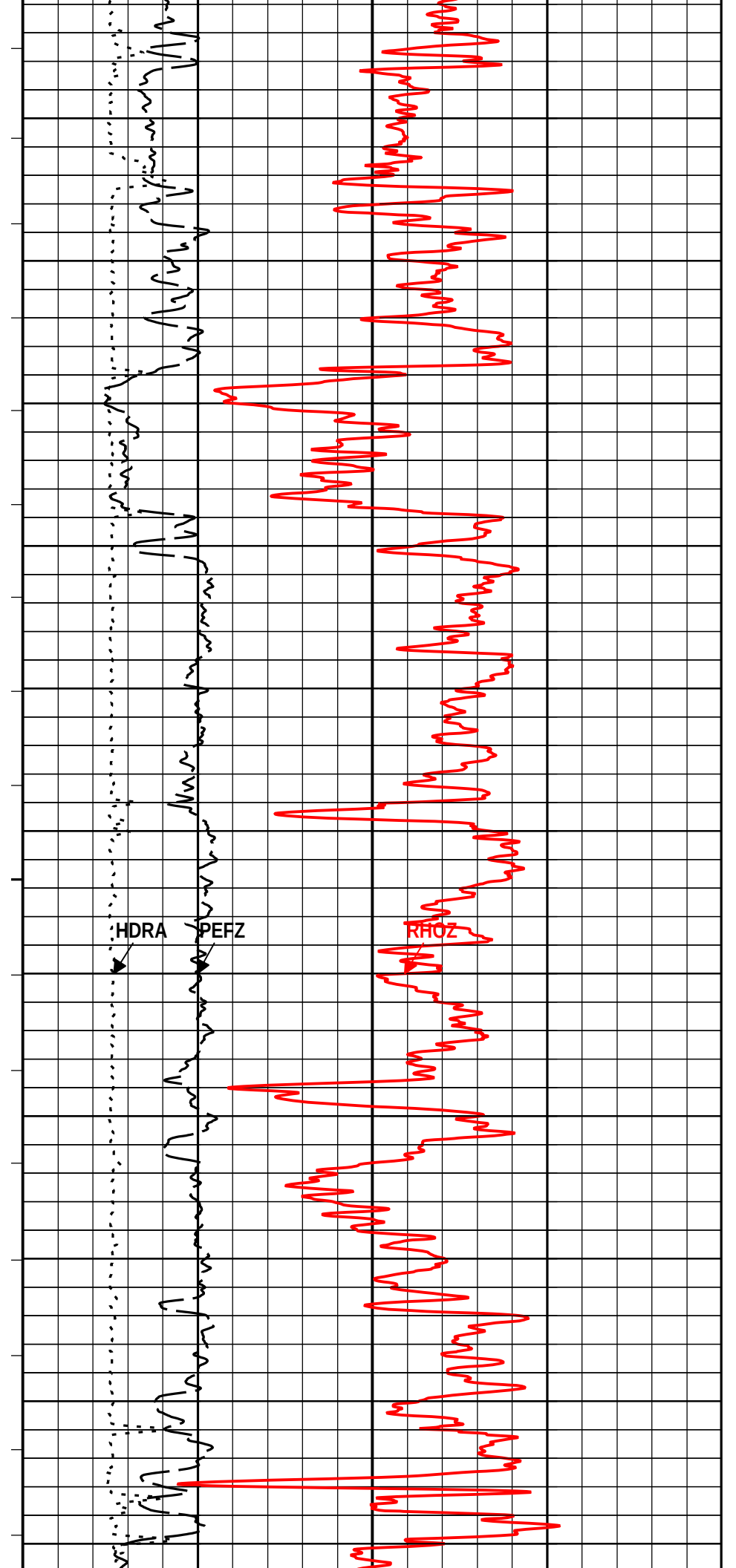
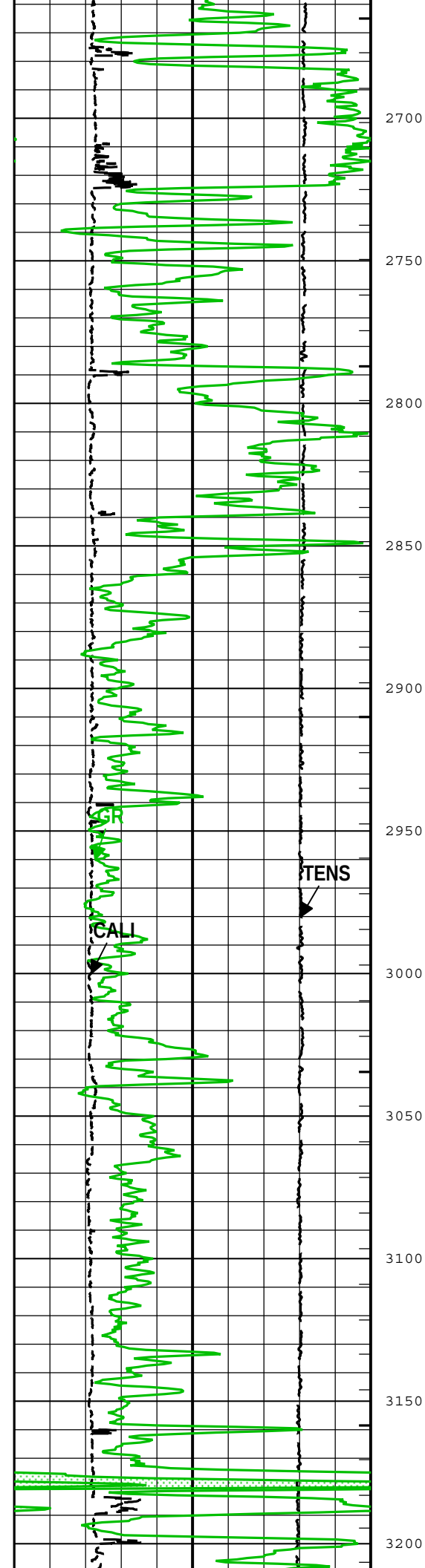


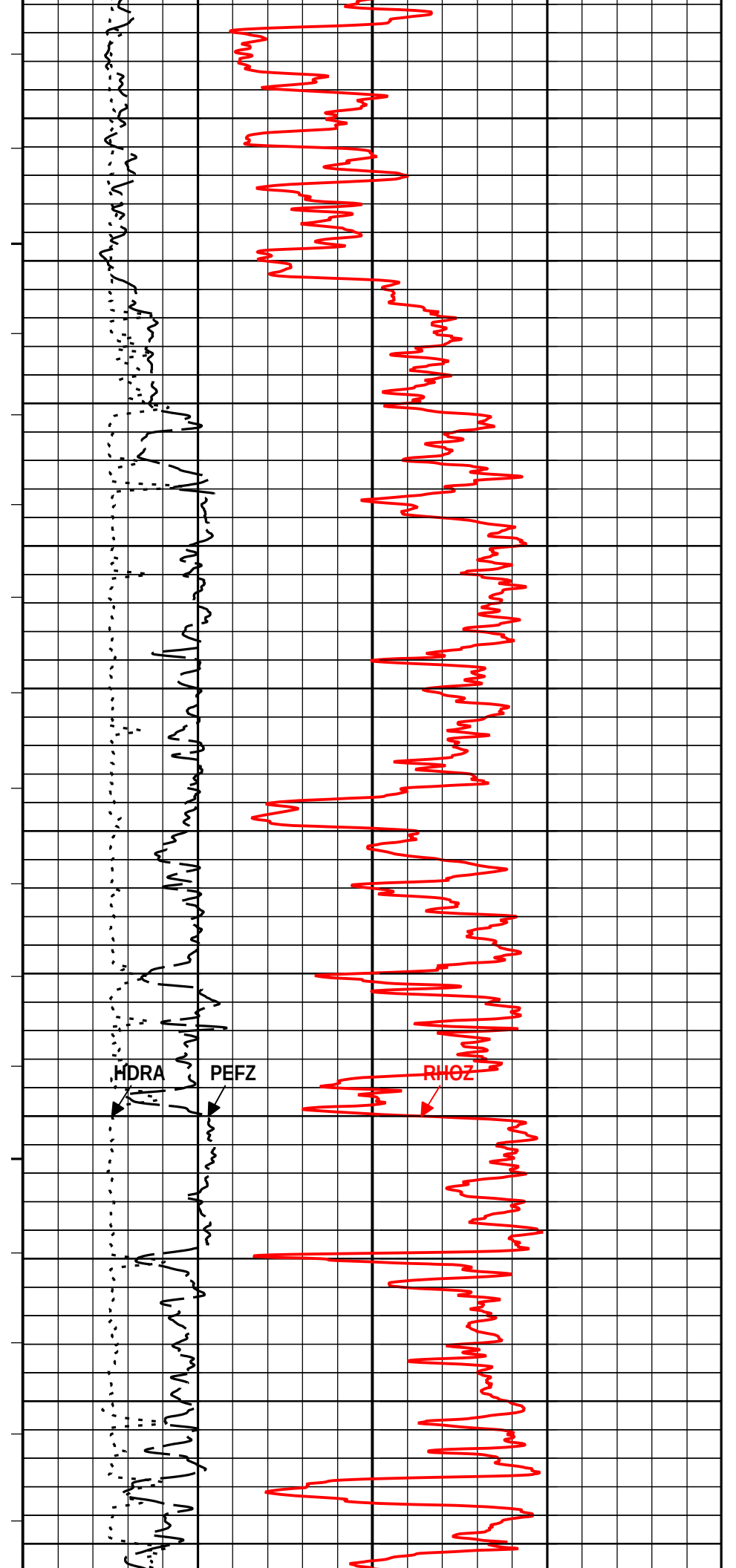
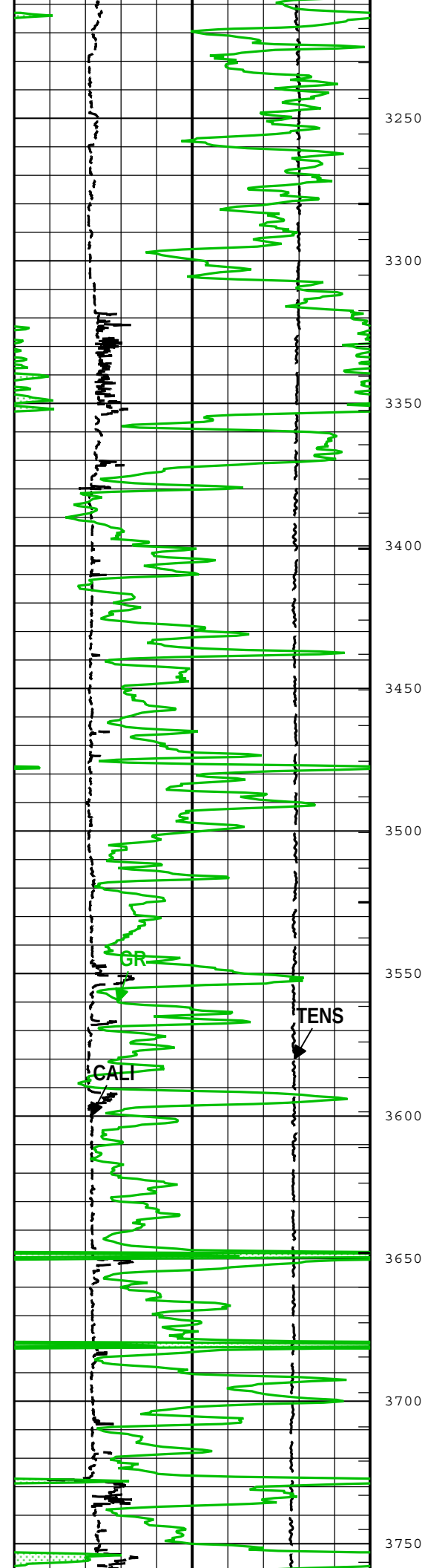


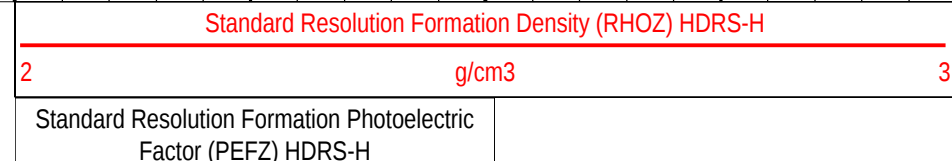
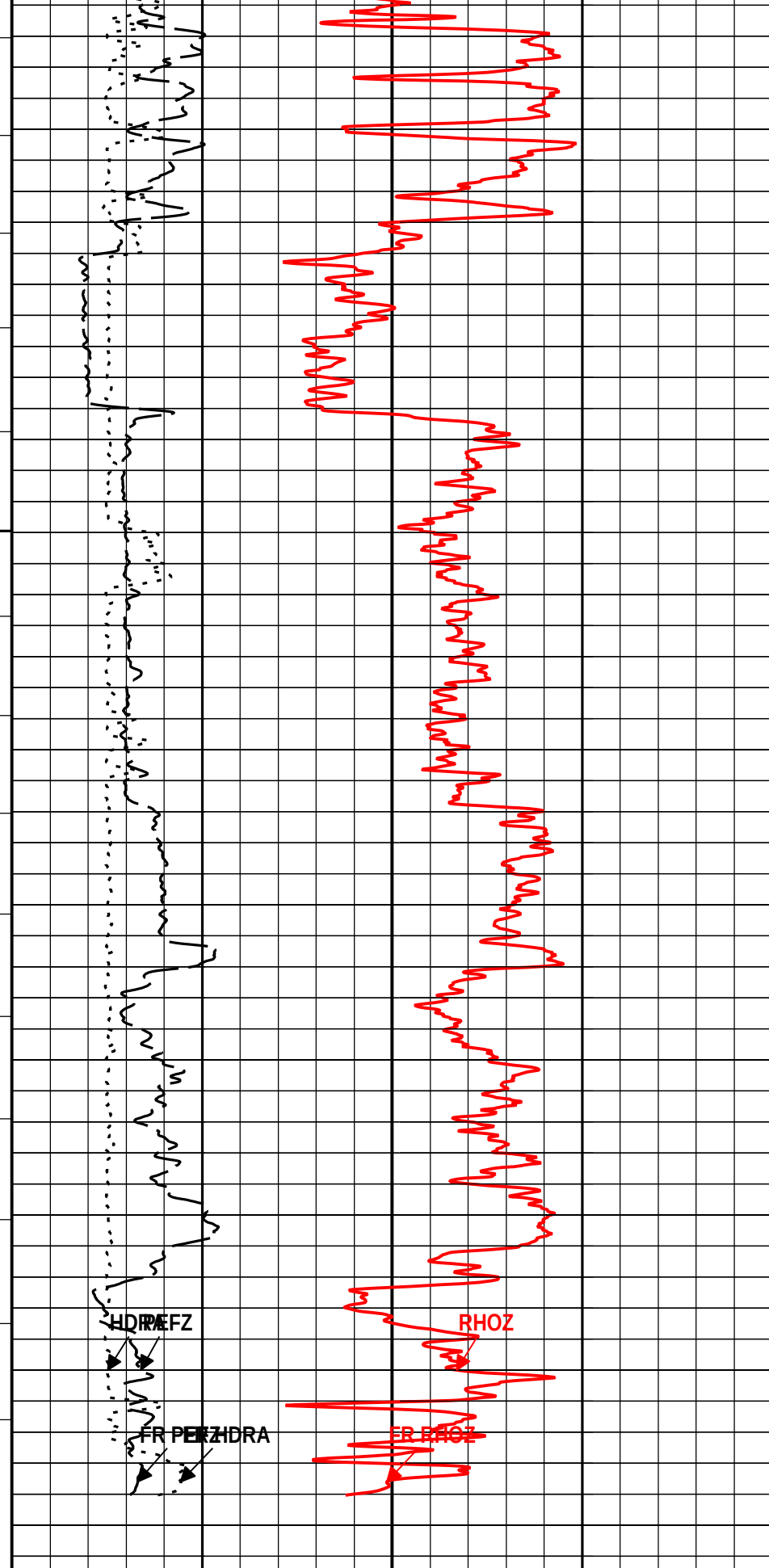
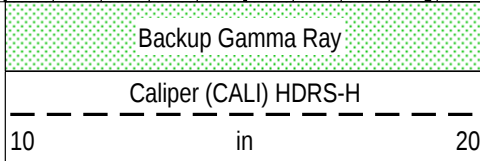
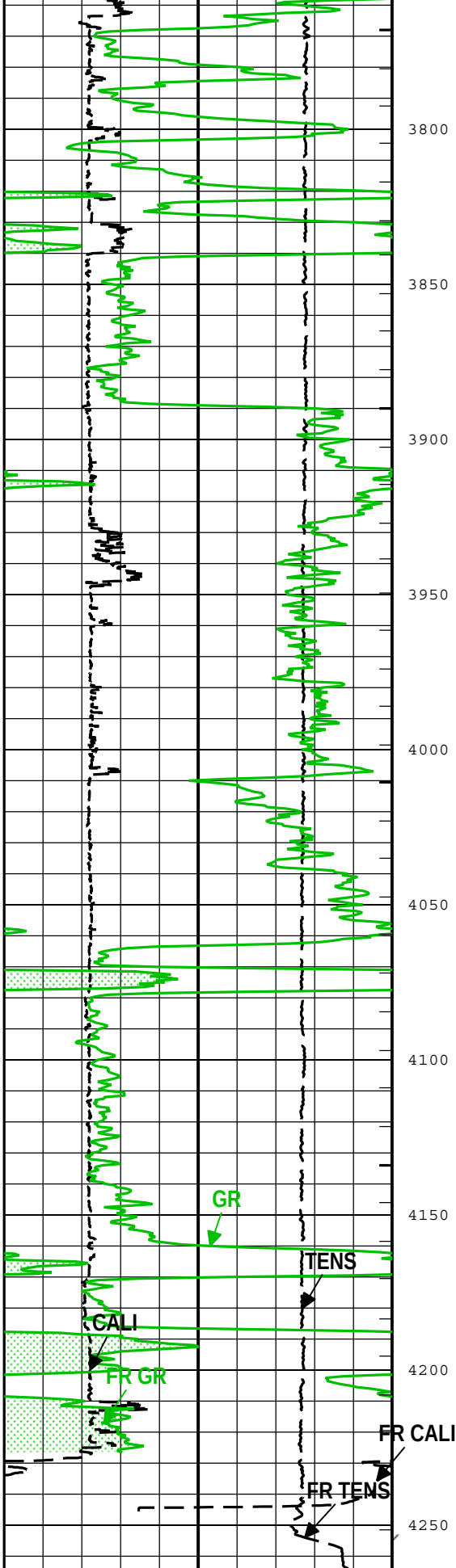












Cable Tension (TENS)		
10000	lbf	0
Gamma Ray (GR) HGNS-H		
0	gAPI	150
Gamma Ray (GR) HGNS-H		
150	gAPI	300

0	10
Density Standoff Correction (HDRA) HDRS-H ----- -0.25 g/cm3 0.25	

- IHV - Integrated Hole Volume every 100.00 (ft3)
- ICV - Integrated Cement Volume every 10.00 (ft3)
- TIME_1900 - Time Marked every 60.00 (s)
- IHV - Integrated Hole Volume every 10.00 (ft3)
- ICV - Integrated Cement Volume every 100.00 (ft3)

Description: Nuclear standard resolution template for Platform Express Format: Log (Bulk Density_5 Inch) Index Scale: 2 in per 100 ft Index Unit: ft
Index Type: Measured Depth Creation Date: 07-Dec-2012 07:46:11

Channel Processing Parameters

Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.187	in
CBLO	Casing Bottom (Logger)	WLSESSION	250	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	13.375	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9.35	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DHC	Density Hole Correction	HDRS-H	Bit Size	
FCD	Future Casing (Outer) Diameter	WLSESSION	9.625	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
SOCO	Standoff Correction Option	HGNS-H	Yes	

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	0	200	250
BS	12.25	250	4264
All depth are actual.			

Tool Control Parameters

Parameter	Description	Tool	Value	Unit
HRGD_BRD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

ONE

Main Pass Porosity 5" = 100'

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	1453.9	ft3
IHV	Integrated Hole Volume	GCSE_UP_PASS	3480.69	ft3

Software Version

Gamma Ray (GR) HGNS-H

150 gAPI 300

Cable Tension (TENS)

10000 lbf 0

Standard Resolution Density Porosity (DPHZ) HDR3-H

0.3

ft3/ft3

-0.1

Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H

0.3

ft3/ft3

-0.1

Limestone Matrix, 2.71 g/cc

Caliper Check in CSG = 12.701"

TENS

210

220

230

240

250

260

270

280

290

300

310

320

330

340

350

360

370

380

390

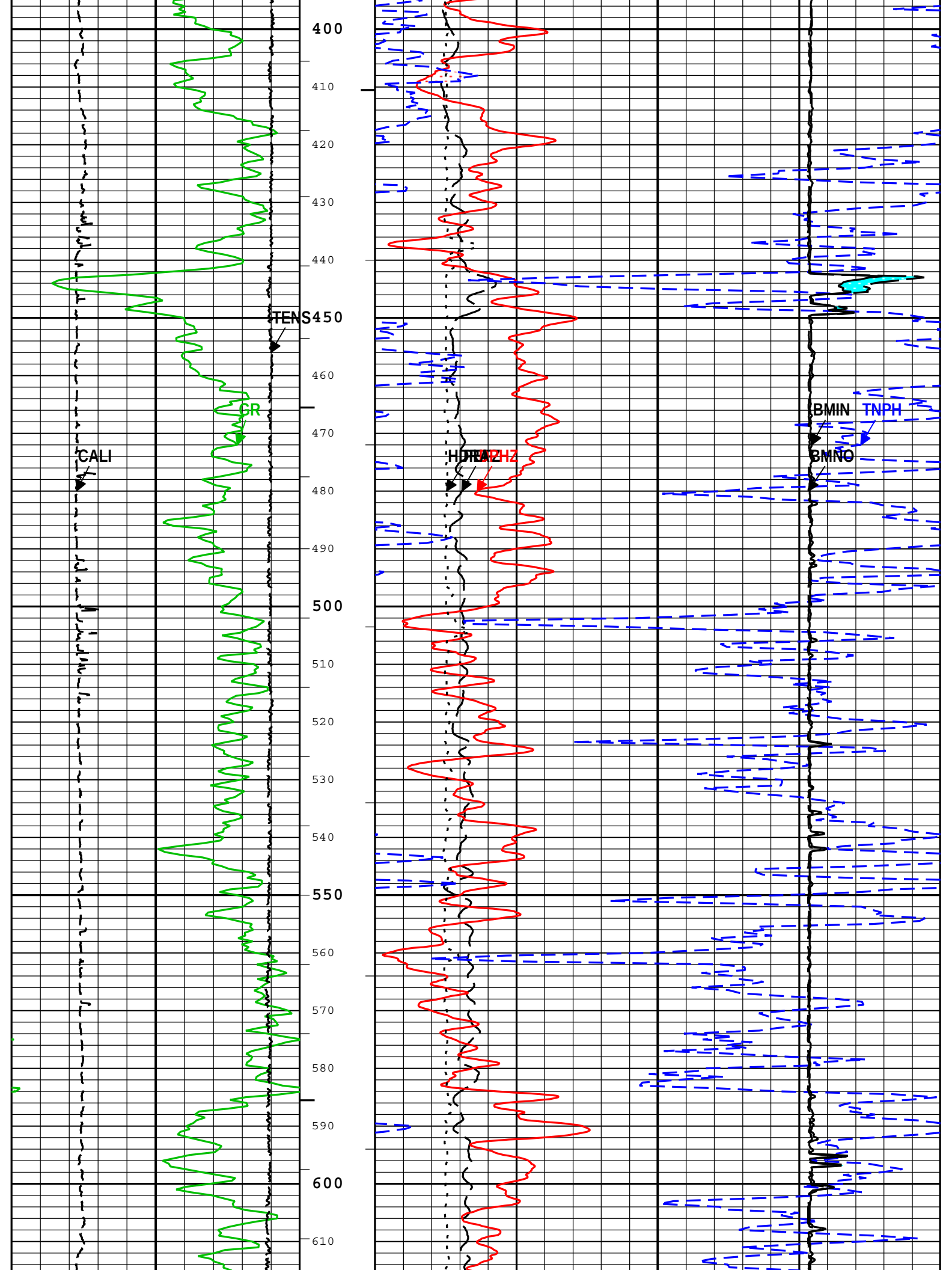
Casing Shoe @ 250'

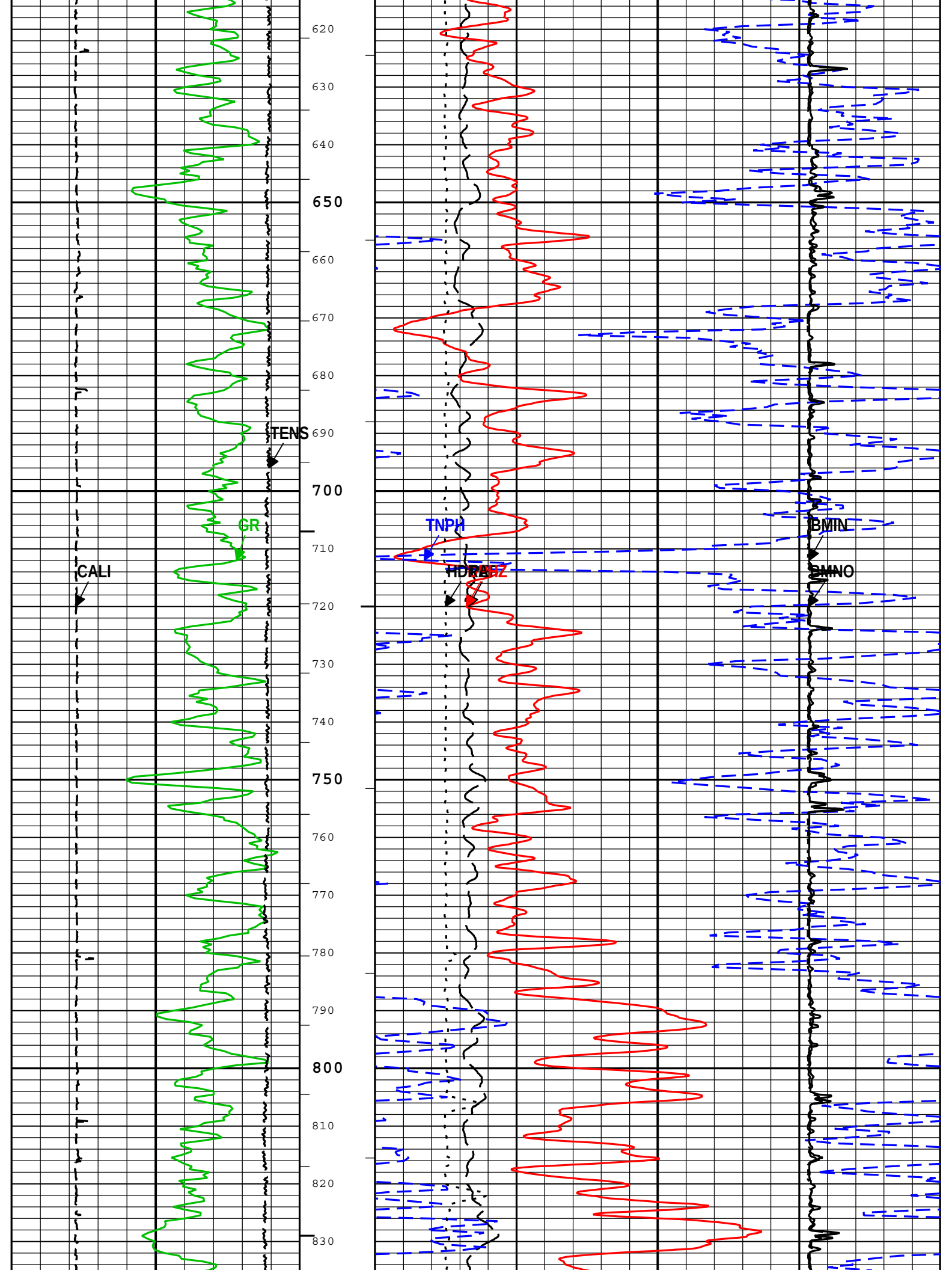
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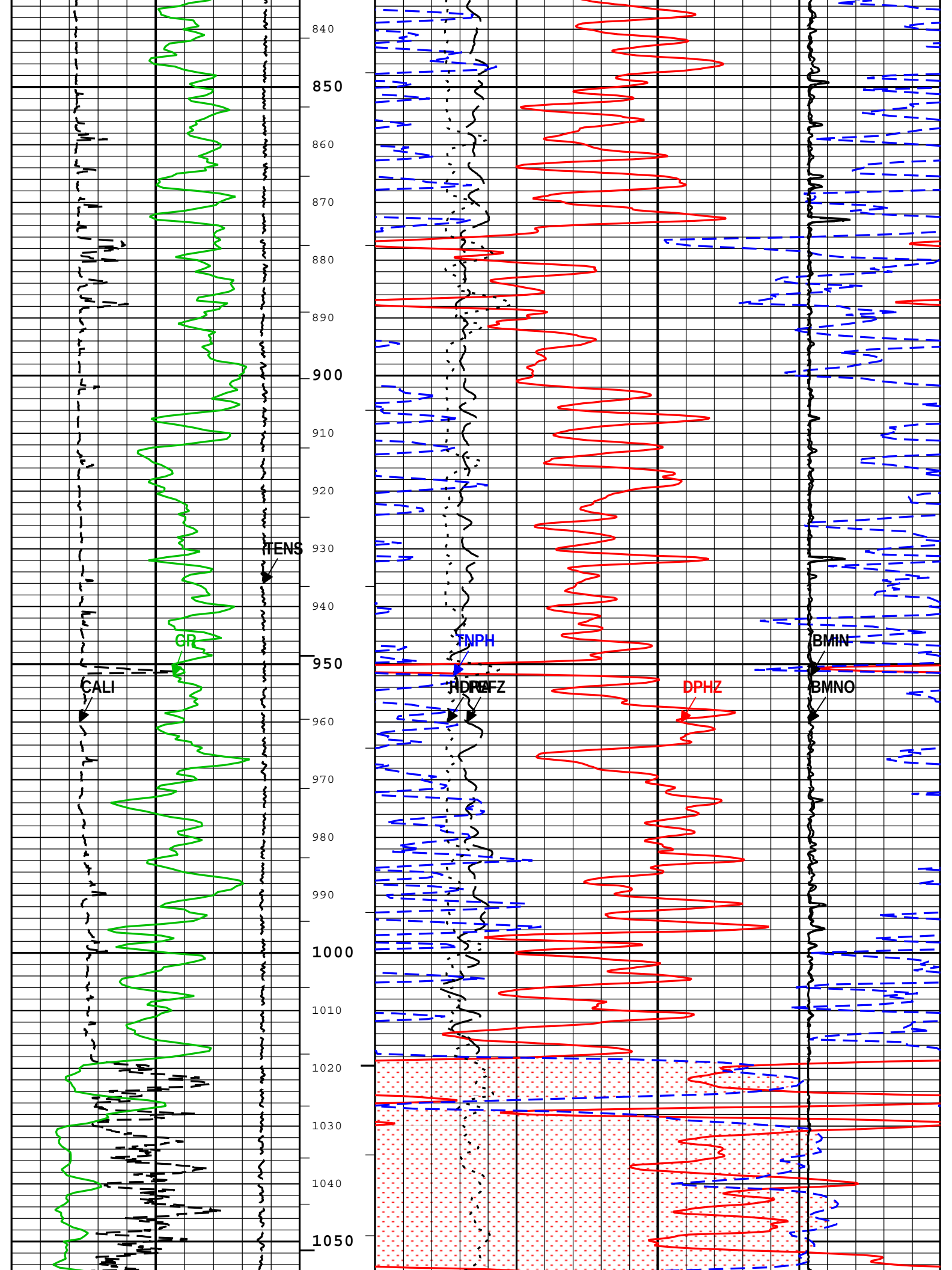
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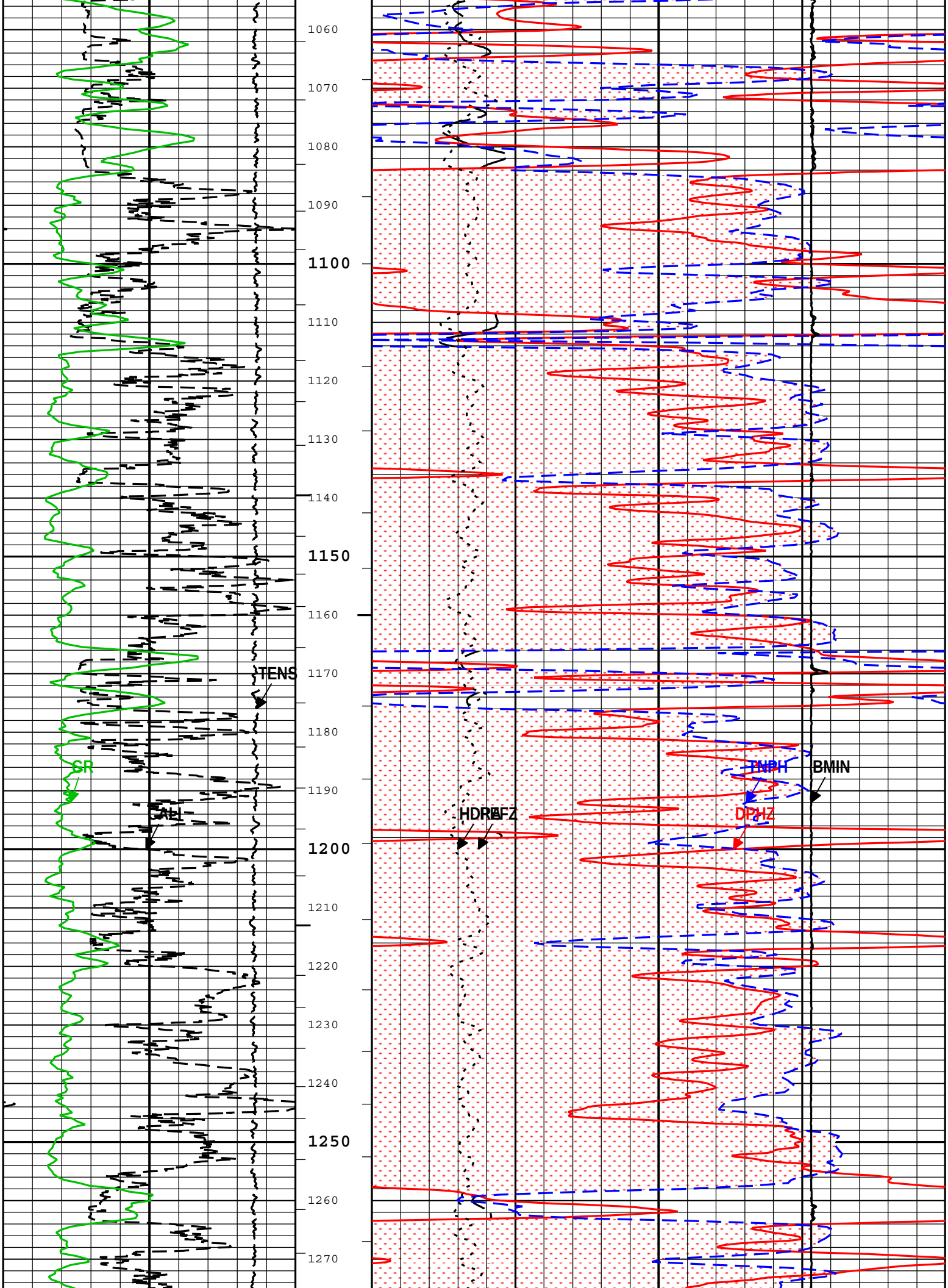
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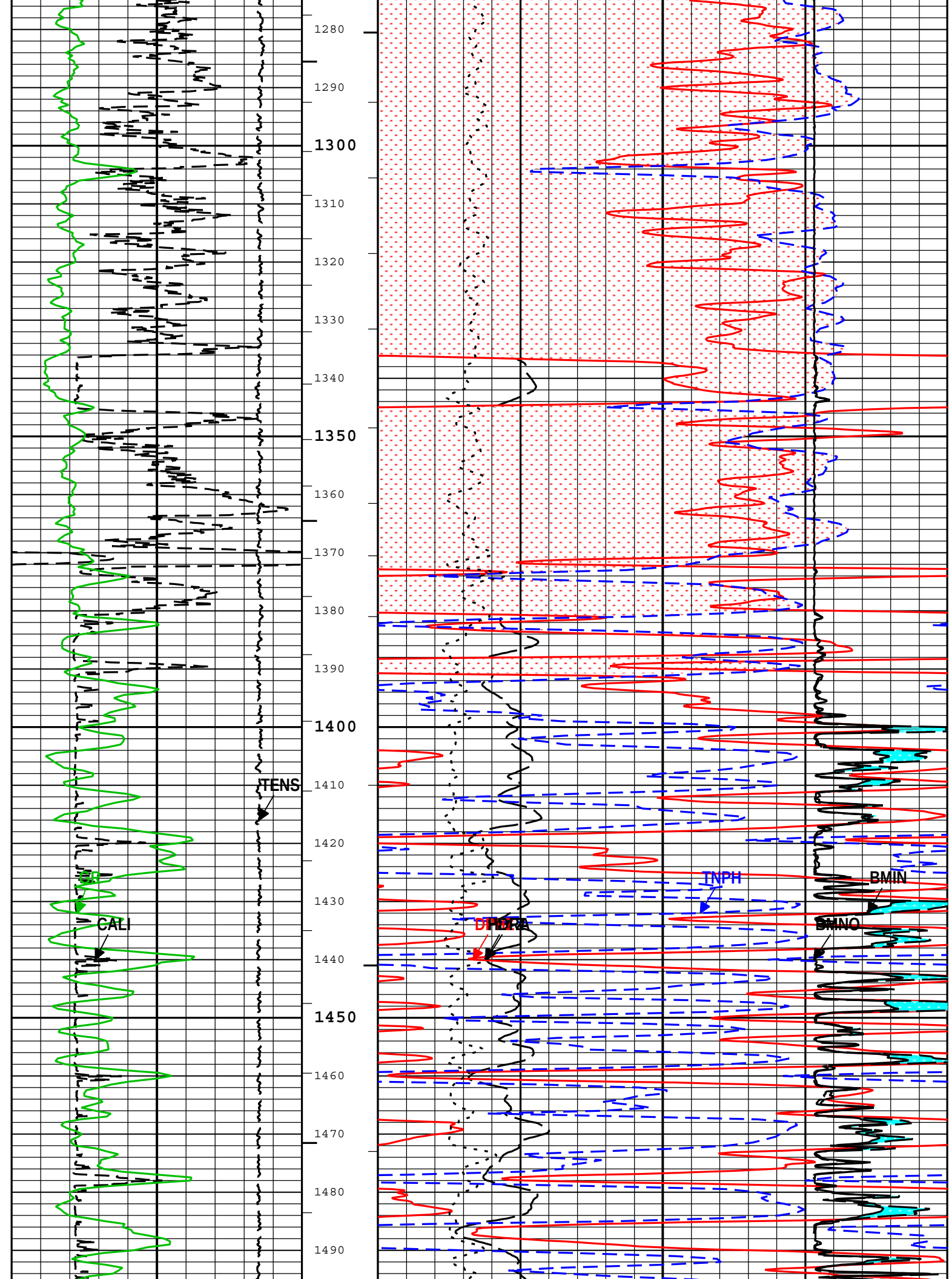
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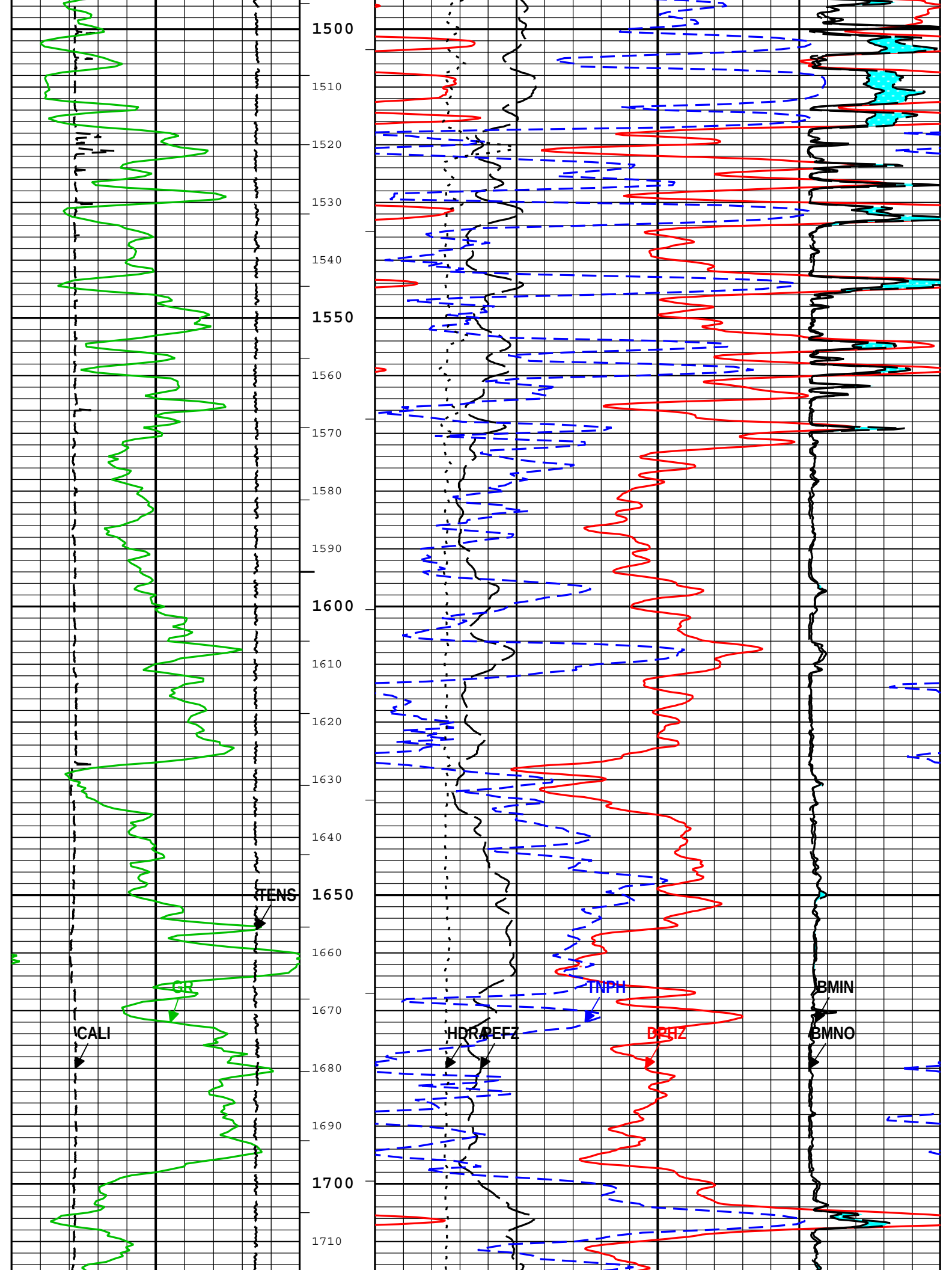


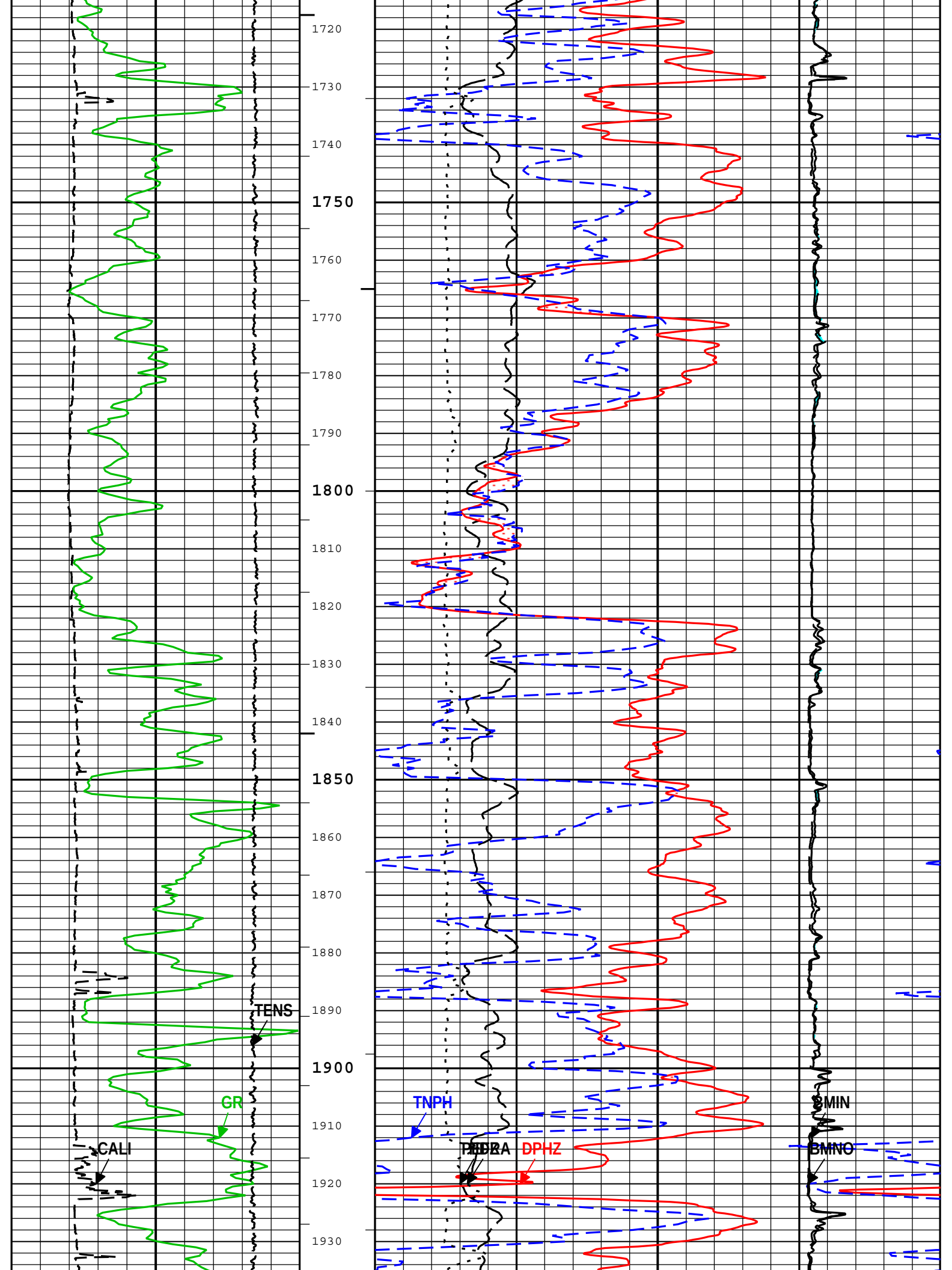


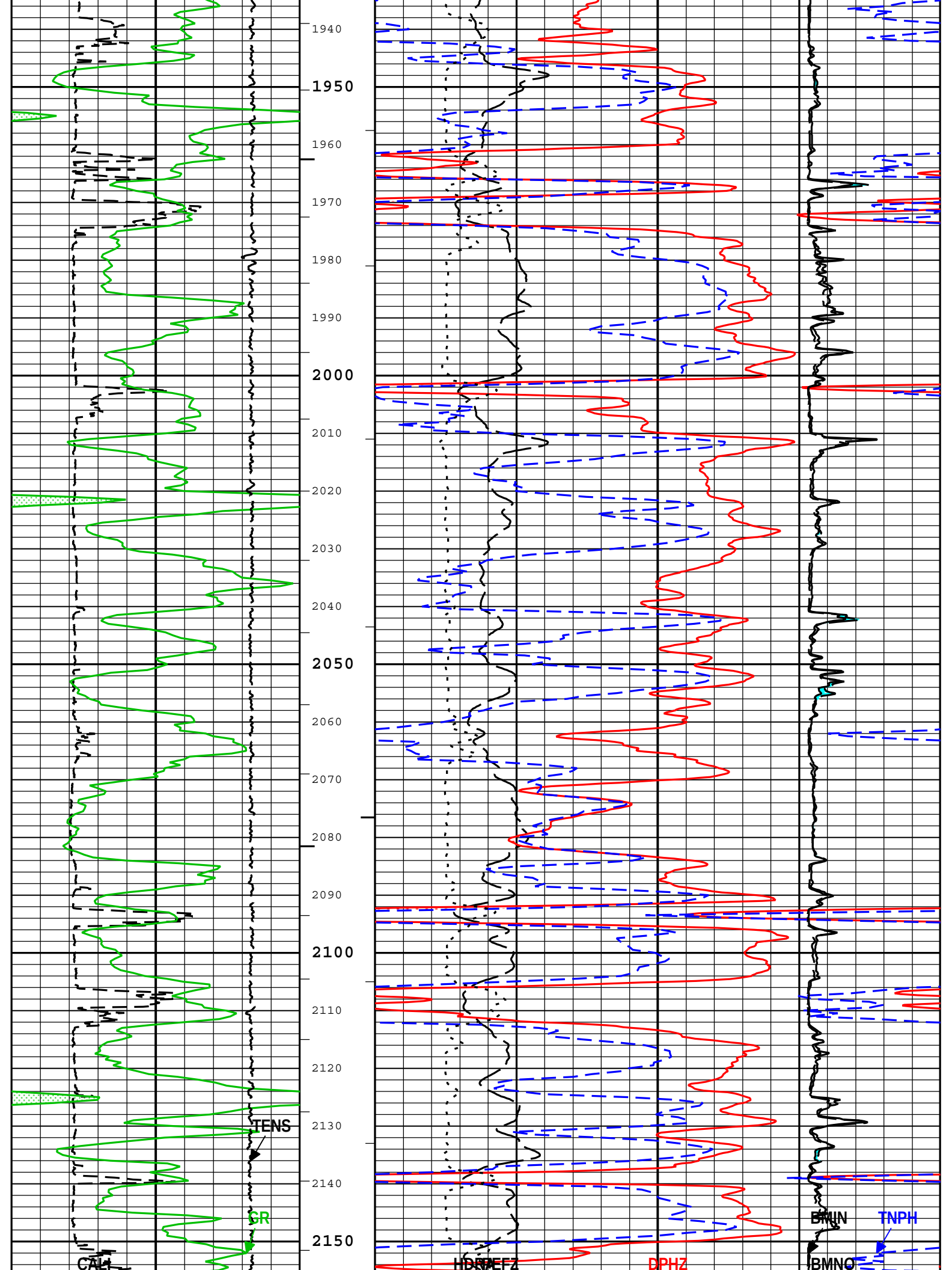


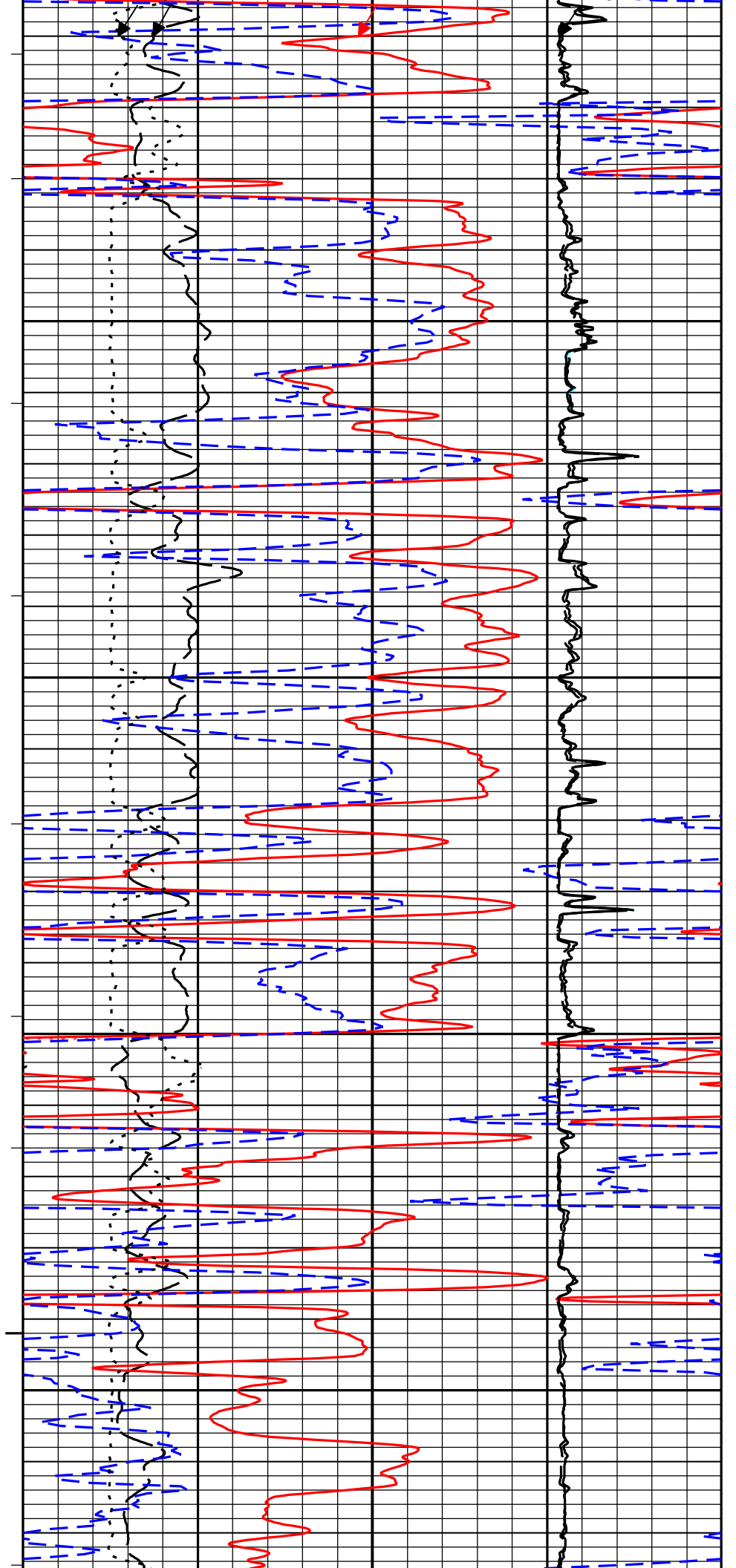
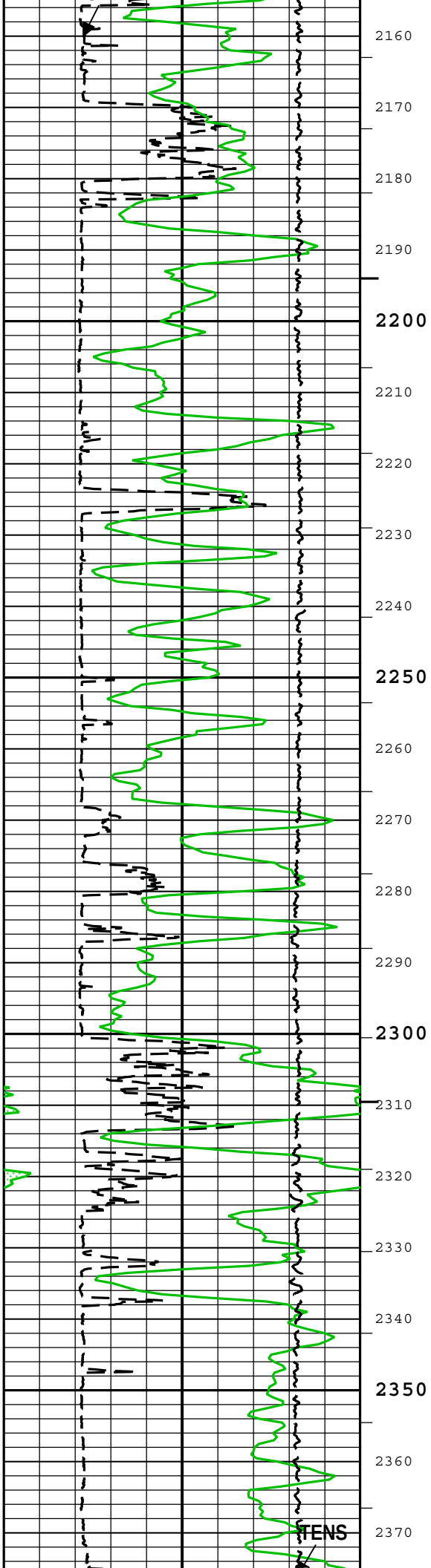


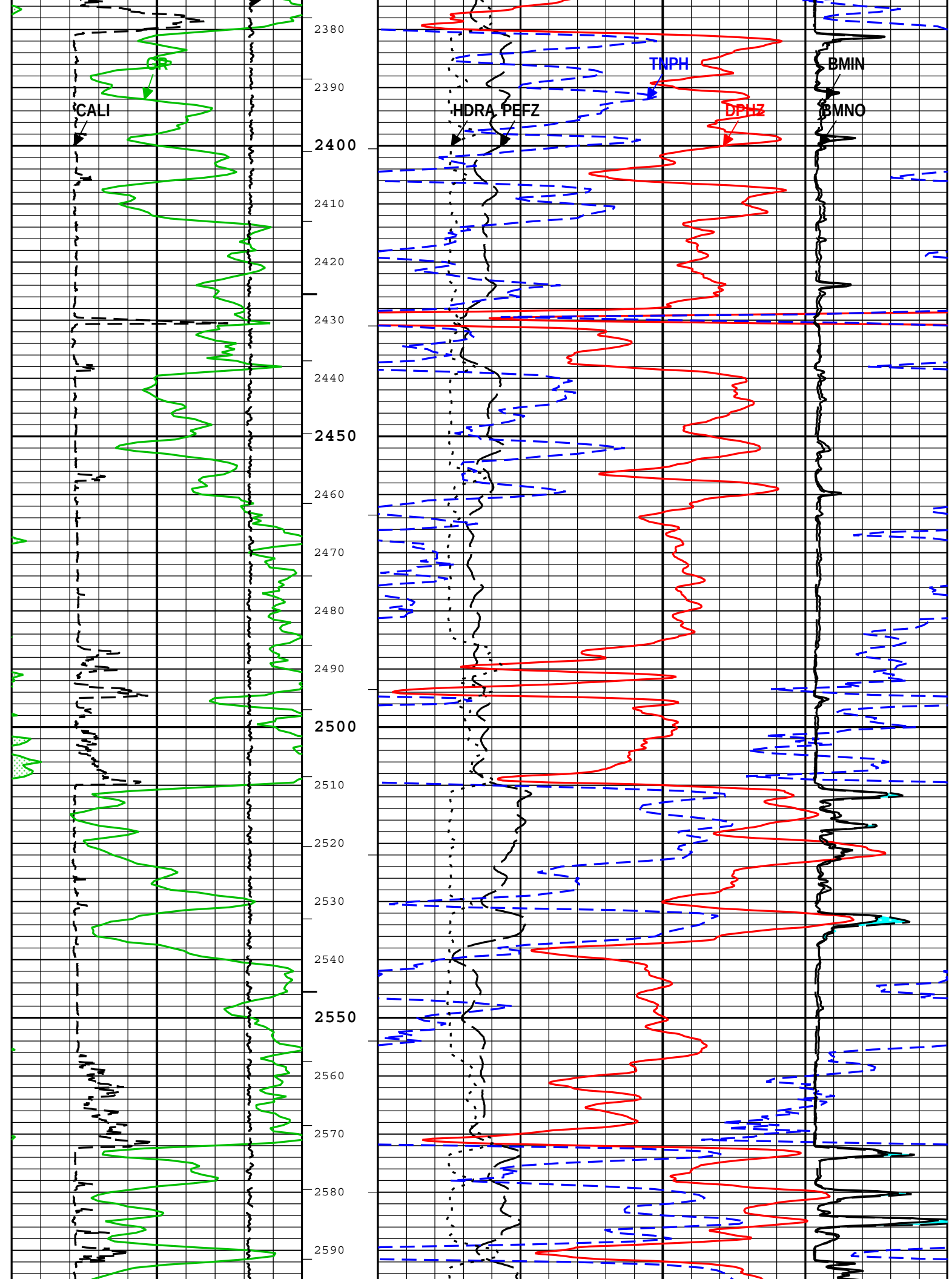


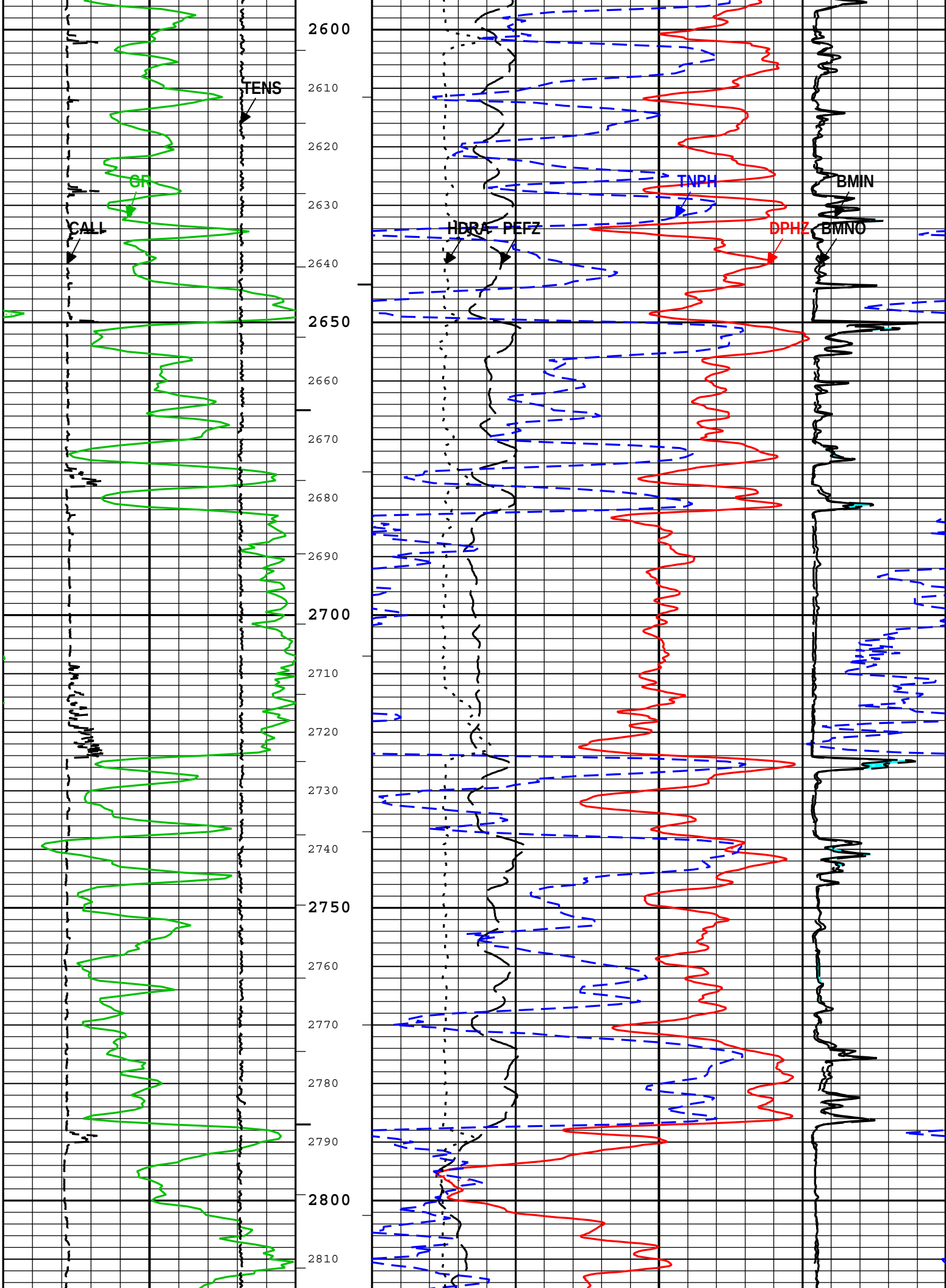


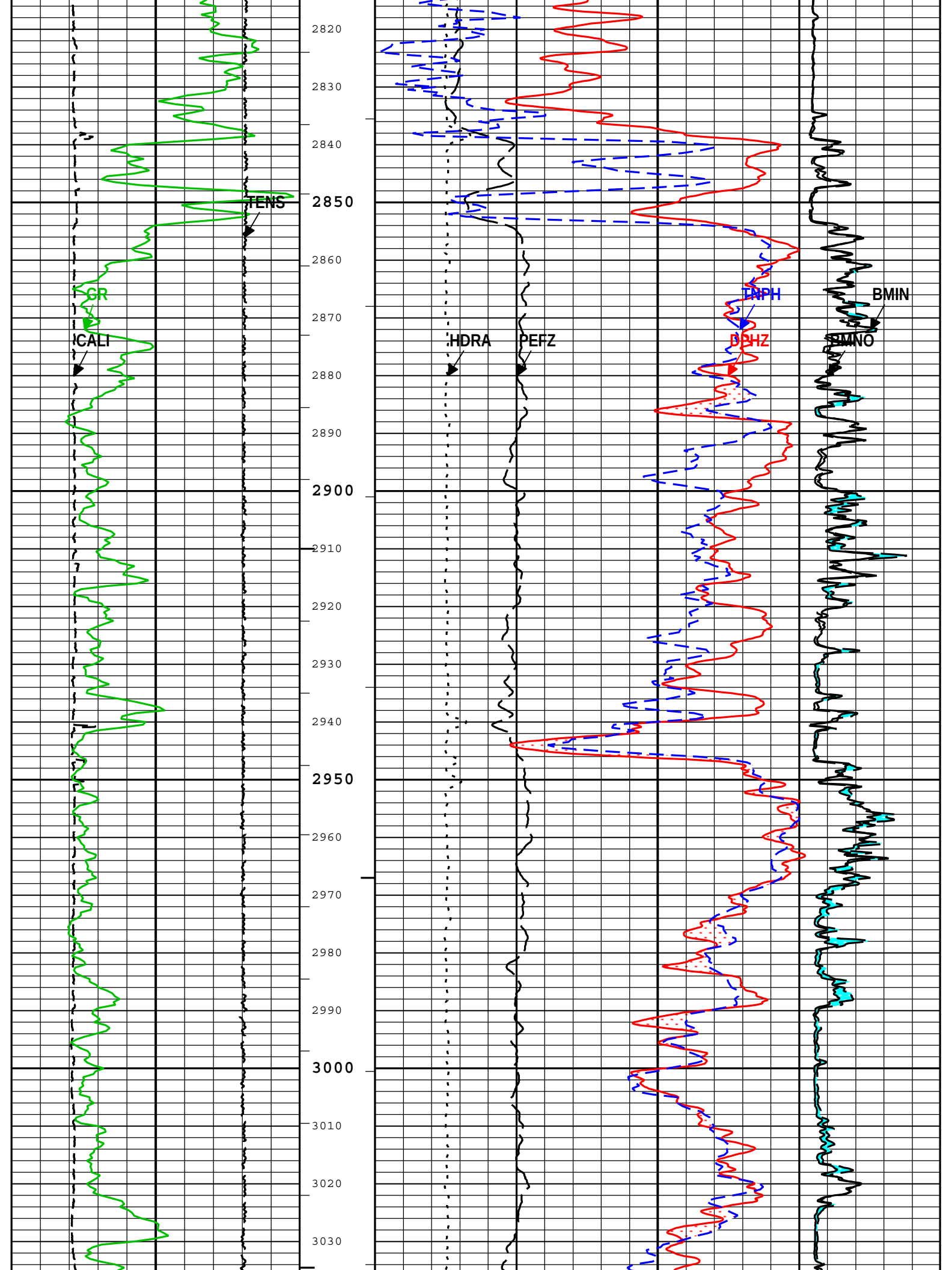


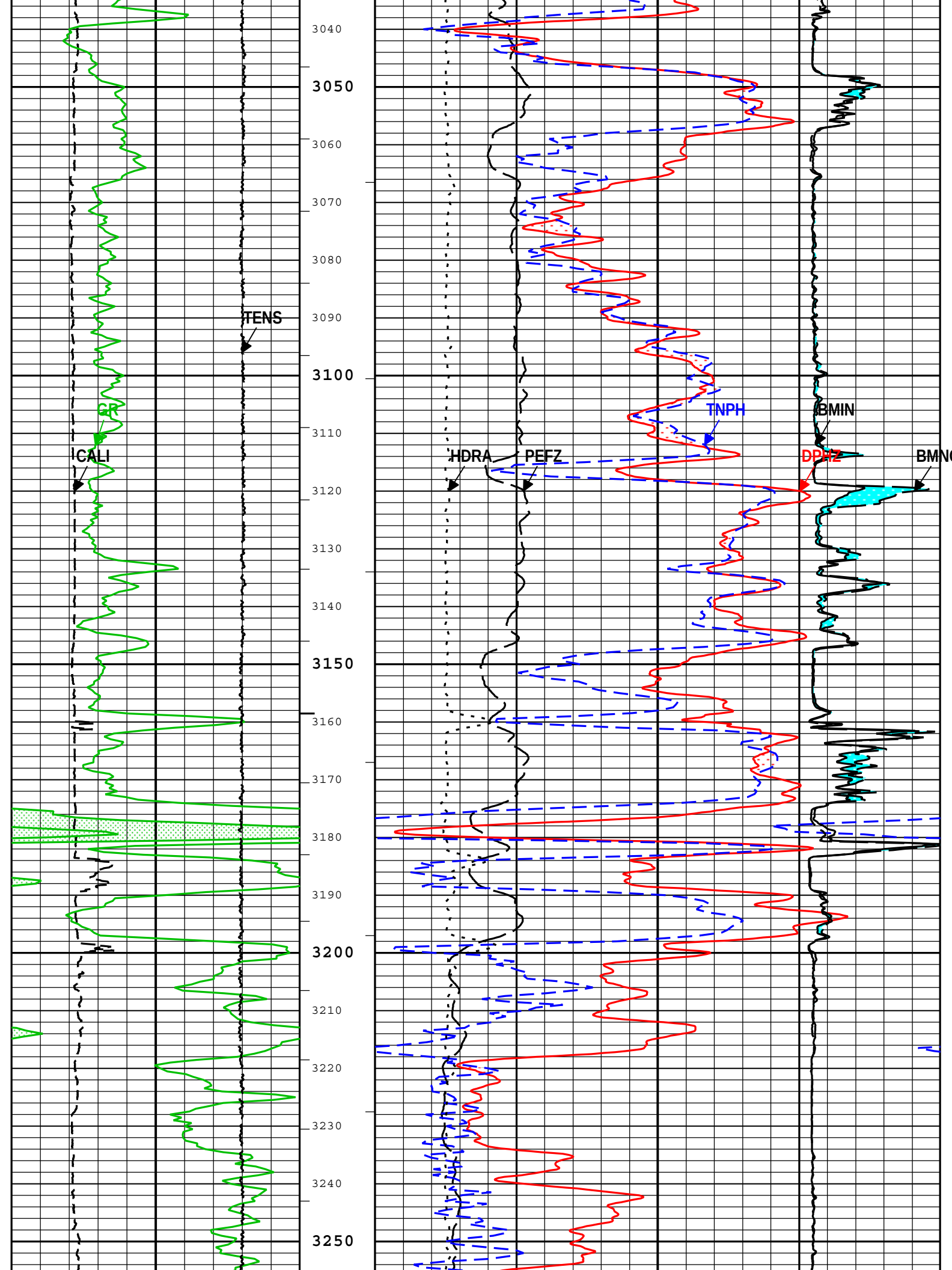


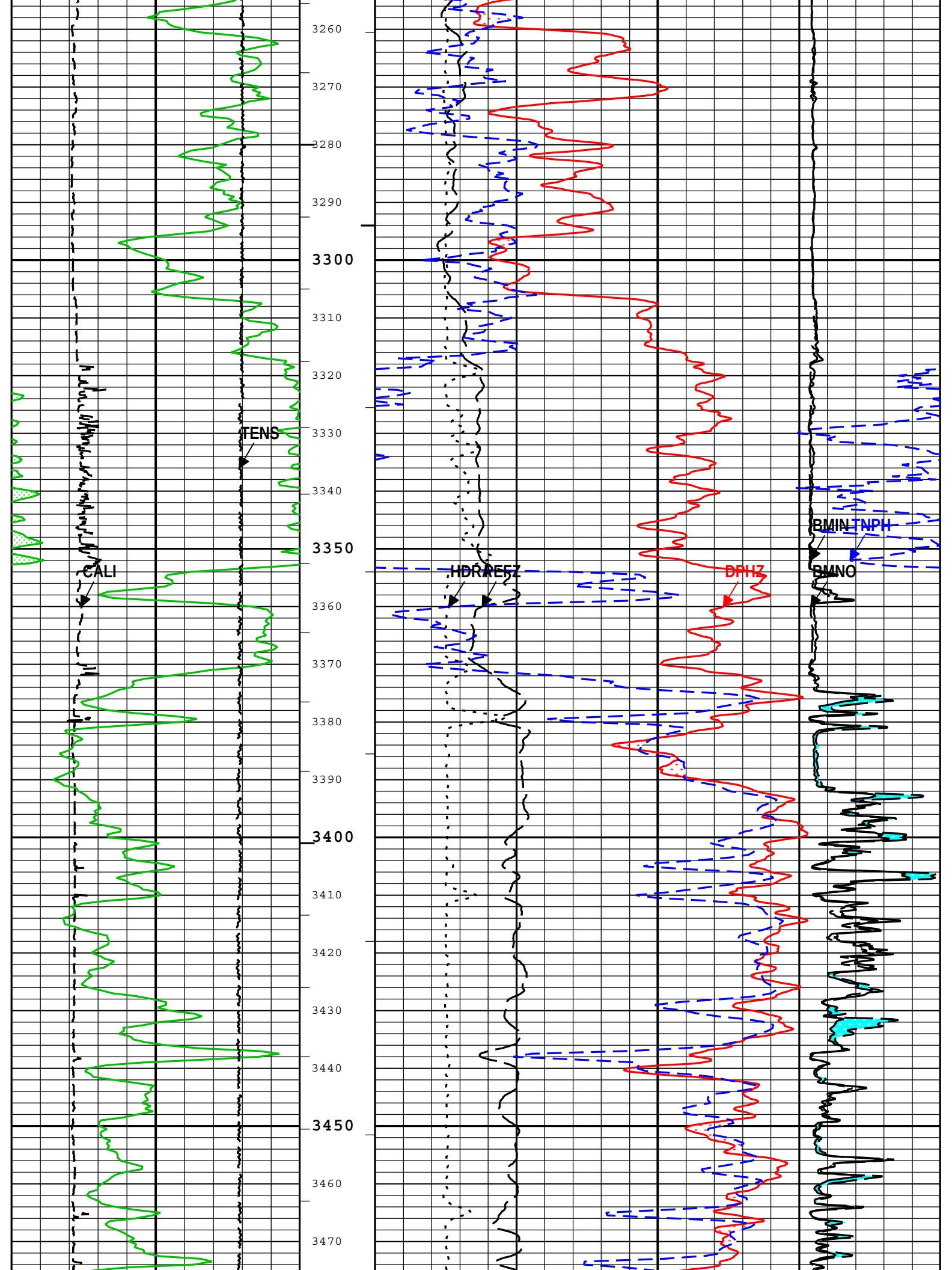


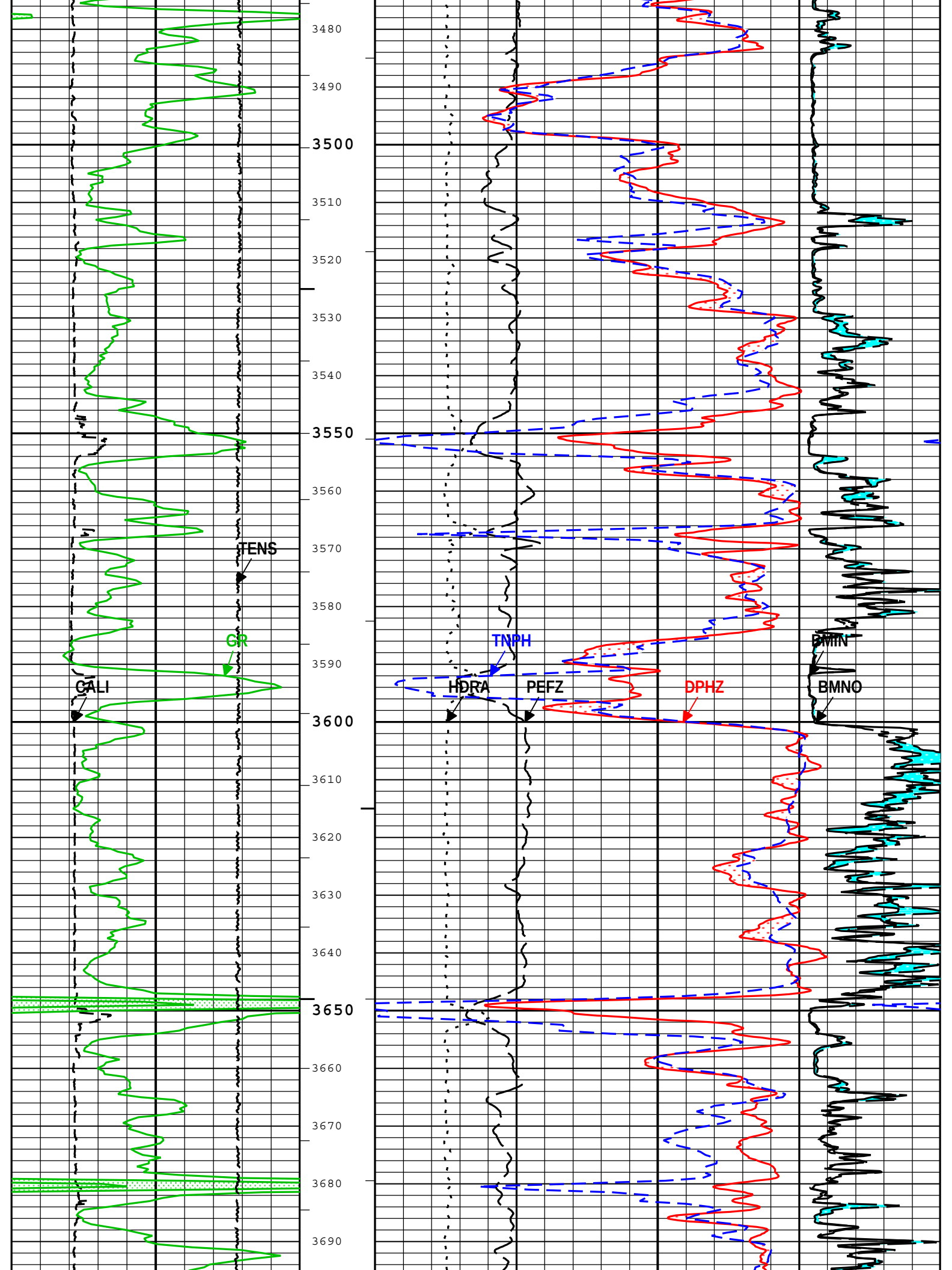


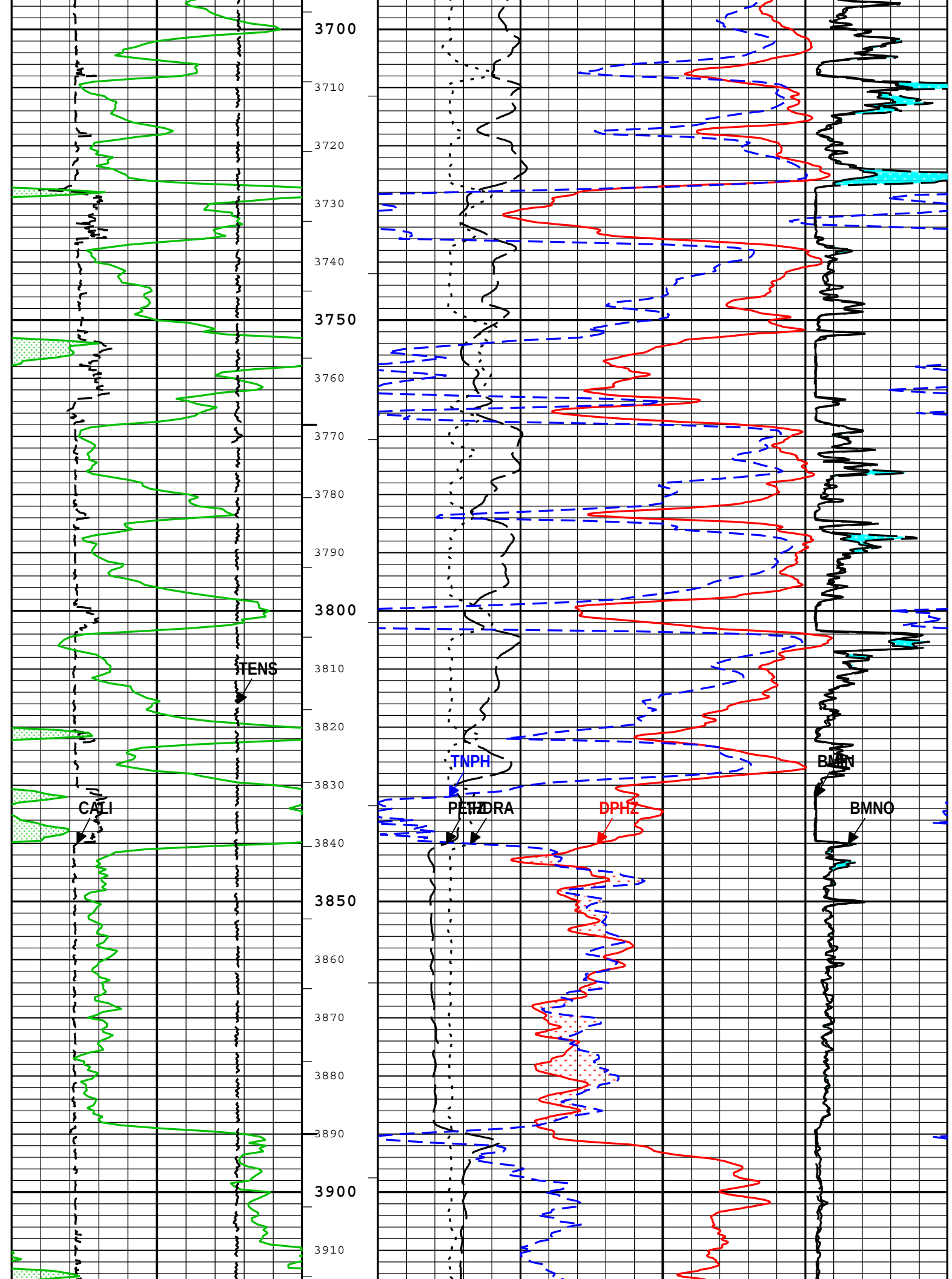


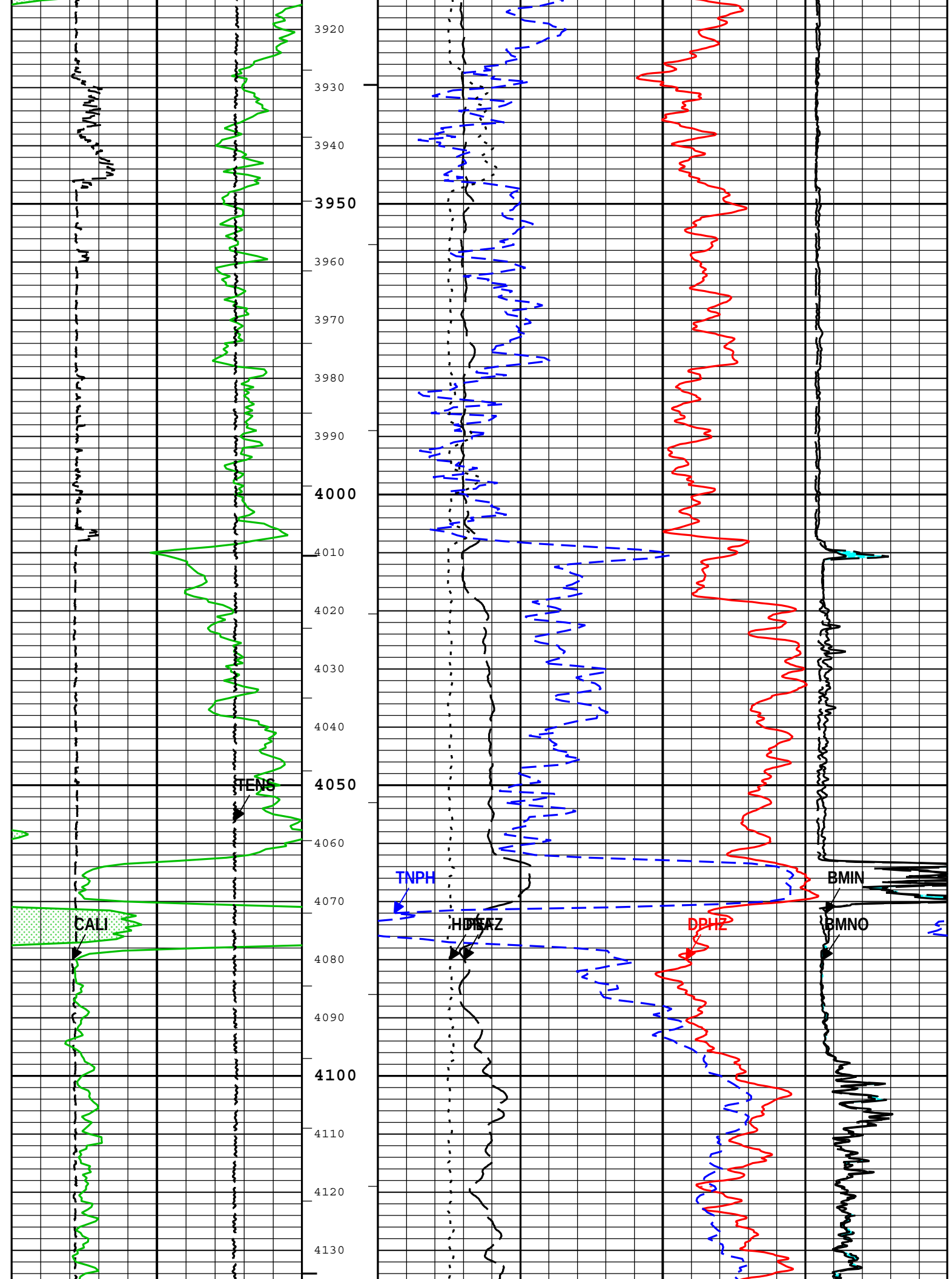


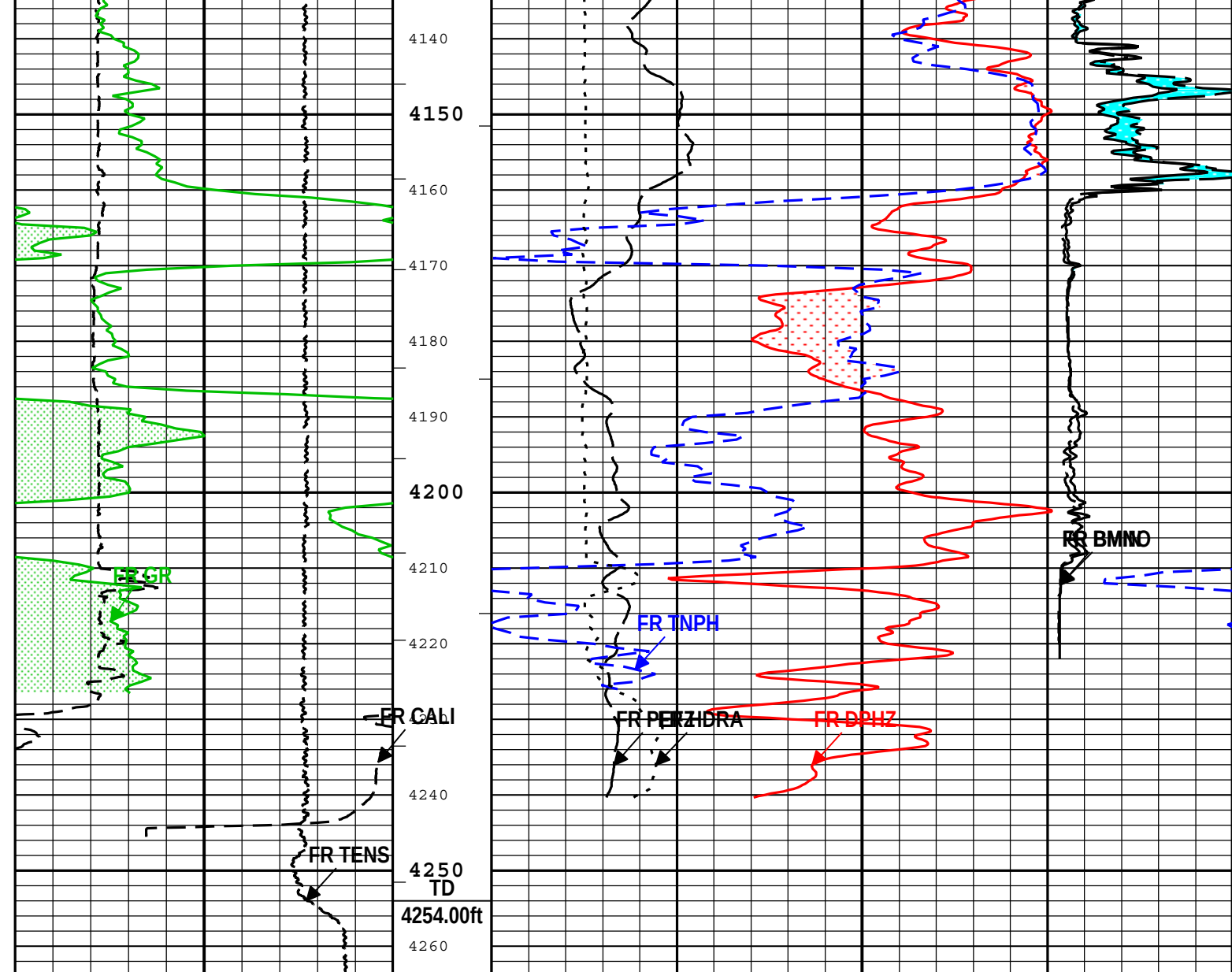












Limestone Matrix, 2.71 g/cc

Backup Gamma Ray

Caliper (CALI) HDRS-H

10 in 20

Gamma Ray (GR) HGNS-H

0 gAPI 150

Gamma Ray (GR) HGNS-H

150 gAPI 300

Cable Tension (TENS)

10000 lbf 0

Gas

Standard Resolution Density Porosity (DPHZ) HDRS-H

0.3 ft3/ft3 -0.1

Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H

0.3 ft3/ft3 -0.1

Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H

0 10

Density Standoff Correction (HDRA) HDRS-H

-0.25 g/cm3 0.25

Possible Permeability

Micro Normal (BMNO) MLT-B

0 ohm.m 80

Micro Inverse (BMIN) MLT-B

0 ohm.m 80

TIME_1900 - Time Marked every 60.00 (s)

ICV - Integrated Cement Volume every 100.00 (ft3)

IHV - Integrated Hole Volume every 10.00 (ft3)

— IHV - Integrated Hole Volume every 100.00 (ft3)				
— ICV - Integrated Cement Volume every 10.00 (ft3)				
Description: Nuclear standard resolution template for Platform Express Format: Log (Porosity 5 inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type:				
Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
BSAL	Borehole Salinity	Borehole	8360.5	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.187	in
CBLO	Casing Bottom (Logger)	WLSESSION	250	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	13.375	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9.35	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DHC	Density Hole Correction	HDRS-H	Bit Size	
FCD	Future Casing (Outer) Diameter	WLSESSION	9.625	in
FD	Fluid Density	Borehole	1	g/cm3
FSAL	Formation Salinity	Borehole	0	ppm
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	LIMESTONE	
MDEN	Matrix Density for Density Porosity	Borehole	2.71	g/cm3
MFST	Mud Filtrate Sample Temperature	Borehole	58.7	degF
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.72	ohm.m
SOCO	Standoff Correction Option	HGNS-H	Yes	
Depth Zone Parameters				
Parameter	Value	Start (ft)	Stop (ft)	
BS	0	200	250	
BS	12.25	250	4263.83	
All depth are actual.				
Tool Control Parameters				
Parameter	Description	Tool	Value	Unit
HMCA_BRD_TYPE	HMCA Board Type	HGNS-H	1	
HRGD_BRD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h
ONE				
Repeat Pass Porosity 5" = 100'				
Integration Summary				
Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	141.53	ft3
IHV	Integrated Hole Volume	GCSE_UP_PASS	377.3	ft3
Scale Integration				

Software Version								
Acquisition System						Version		
MaxWell						3.1.9755.0		
Application Patch						SP-20120723-3.1.9755.1112		
						EXP_APL-MASTAXIS-3.1.9755.1221		
Computation		Description					Version	
Borehole		Borehole Ensemble provides common Borehole Parameters and Channels					3.1.9755.0	
HENVIR		Computation Ensemble for the HGNS Neutron environmental corrections					3.1.9755.0	
Tool Elements		Description			Software Version		Firmware Version	
HRCC-H		HILT High-Resolution Control Cartridge, 150 degC			3.1.9755.0		2.0	
HRGD-H		HILT Resistivity Gamma-Ray Density Device, 150 degC			3.1.9755.0		3.0	
MLT-B		Microlog Tool			3.1.9755.0			
HGNS-H		HILT Gamma-Ray and Neutron Sonde, 150 degC			3.1.9755.0		2.0	
Pass Summary								
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
ONE	Log[2]:Up	Up	3778.36 ft	4269.05 ft	05-Dec-2012 7:28:57 PM	05-Dec-2012 7:43:05 PM	1.00 ft	
All depths are referenced to toolstring zero								
Log	ONE: Log[2]:Up							
Description: Nuclear standard resolution template for Platform Express Format: Log (Porosity 5 inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type:								
Channel	Source	Sampling						
BMIN	MLT-B:MLT-B:MLT-B	2in						
BMNO	MLT-B:MLT-B:MLT-B	2in						
CALI	HDRS-H:HRCC-H:HRCC-H	1in						
DPHZ	HDRS-H:HRMS-H:HRGD-H	2in						
GR	HGNS-H:HGNS-H:HGNS-H	6in						
HDRA	HDRS-H:HRMS-H:HRGD-H	2in						
ICV	Borehole	6in						
IHV	Borehole	6in						
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in						
TENS	WLWorkflow	1in						
TNPH	HGNS-H:HGNS-H:HGNS-H	6in						
ICV - Integrated Cement Volume every 10.00 (ft3) IHV - Integrated Hole Volume every 100.00 (ft3) IHV - Integrated Hole Volume every 10.00 (ft3) ICV - Integrated Cement Volume every 100.00 (ft3)								
TIME_1900 - Time Marked every 60.00 (s)								
Backup Gamma Ray		Density Standoff Correction (HDRA) HDRS-H -0.25 g/cm3 0.25			Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H 0 10		Possible Permeability Micro Normal (BMNO) MLT-B 0 ohm.m 80 Micro Inverse (BMIN) MLT-B 0 ohm.m 80	
Caliper (CALI) HDRS-H 10 in 20								
Gamma Ray (GR) HGNS-H 0 gAPI 150								
Gas								

Gamma Ray (GR) HGNS-H

150 gAPI 300

Cable Tension (TENS)

10000 lbf 0

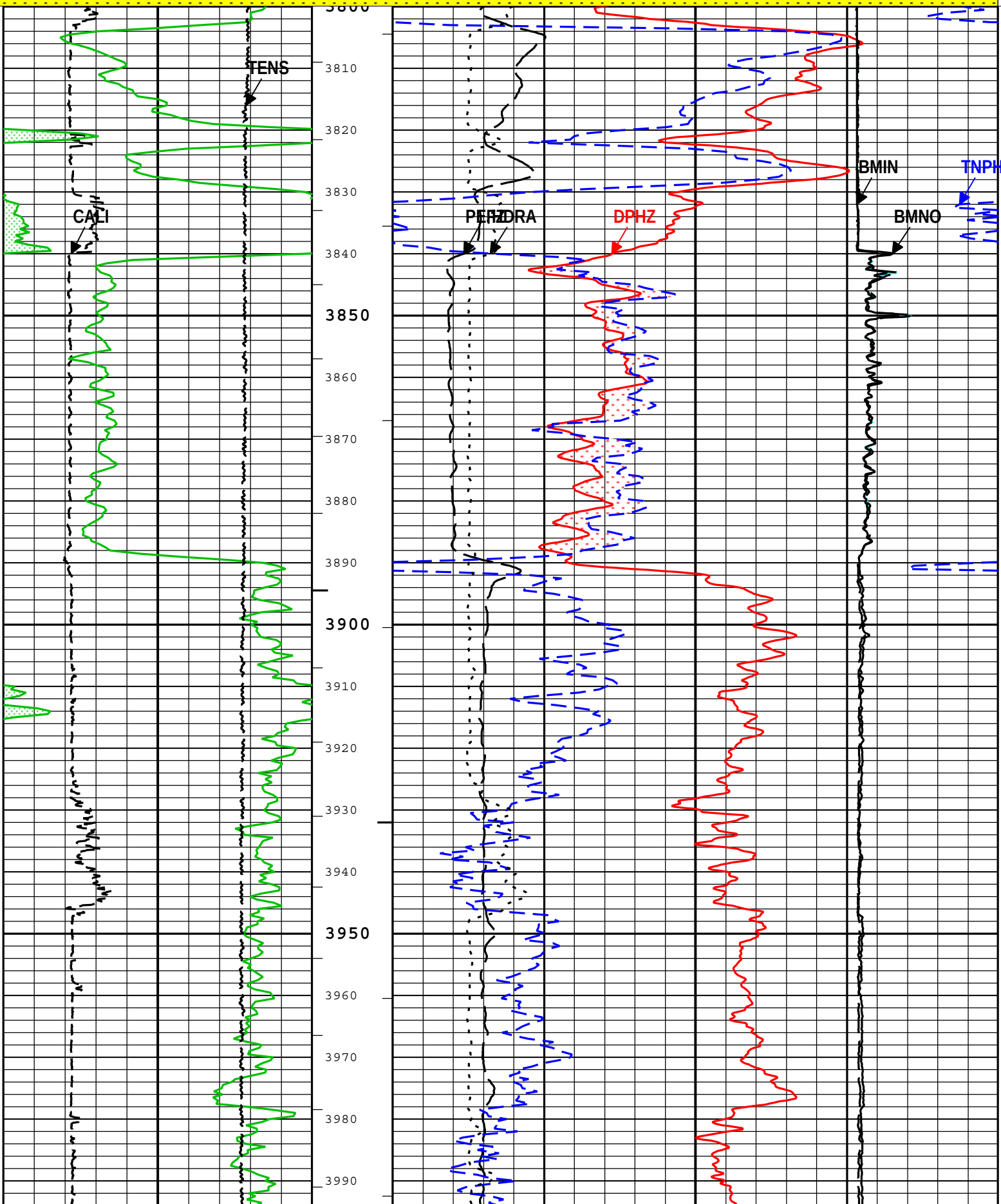
Standard Resolution Density Porosity (DPHZ) HDRS-H

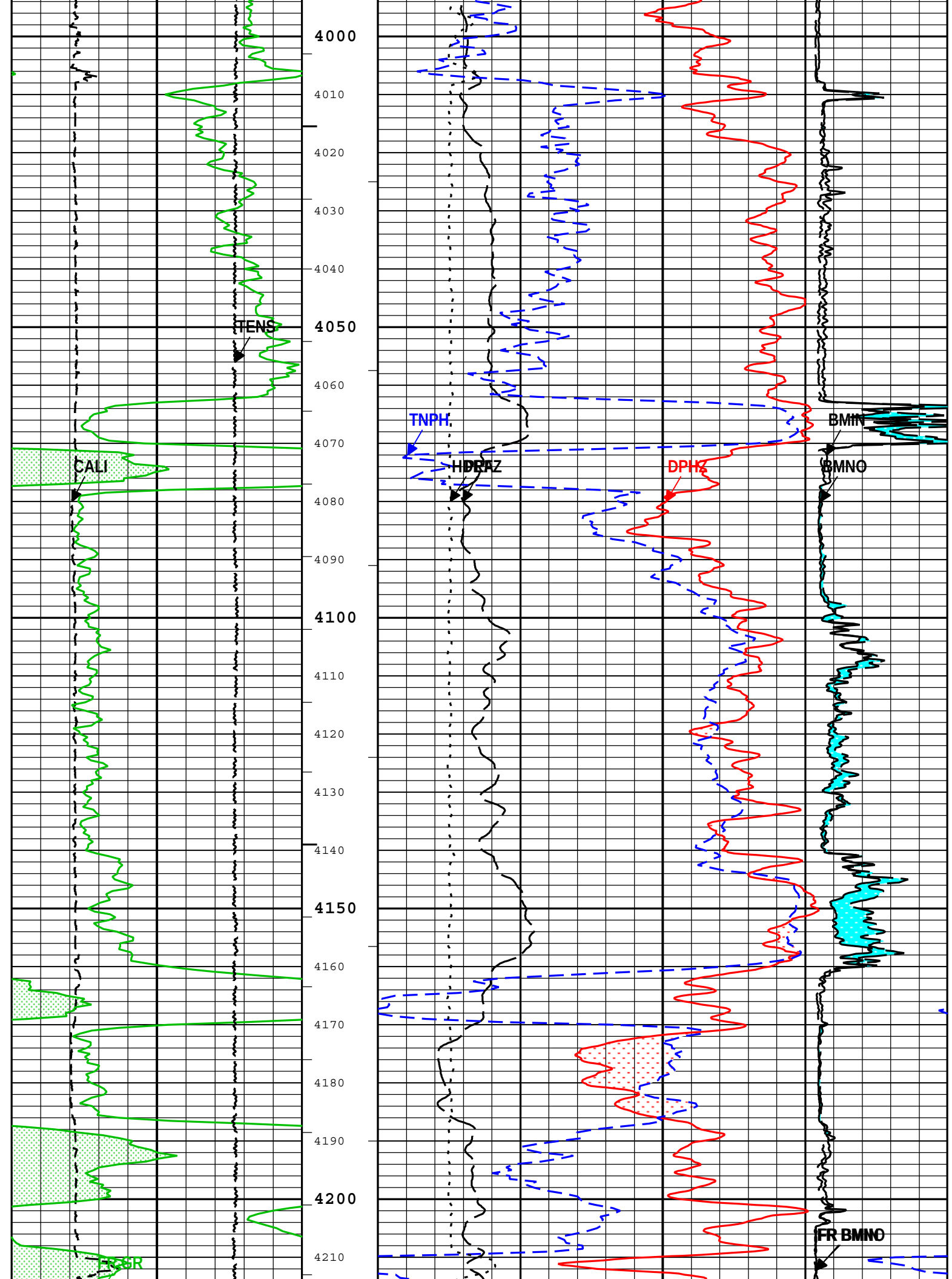
0.3 ft3/ft3 -0.1

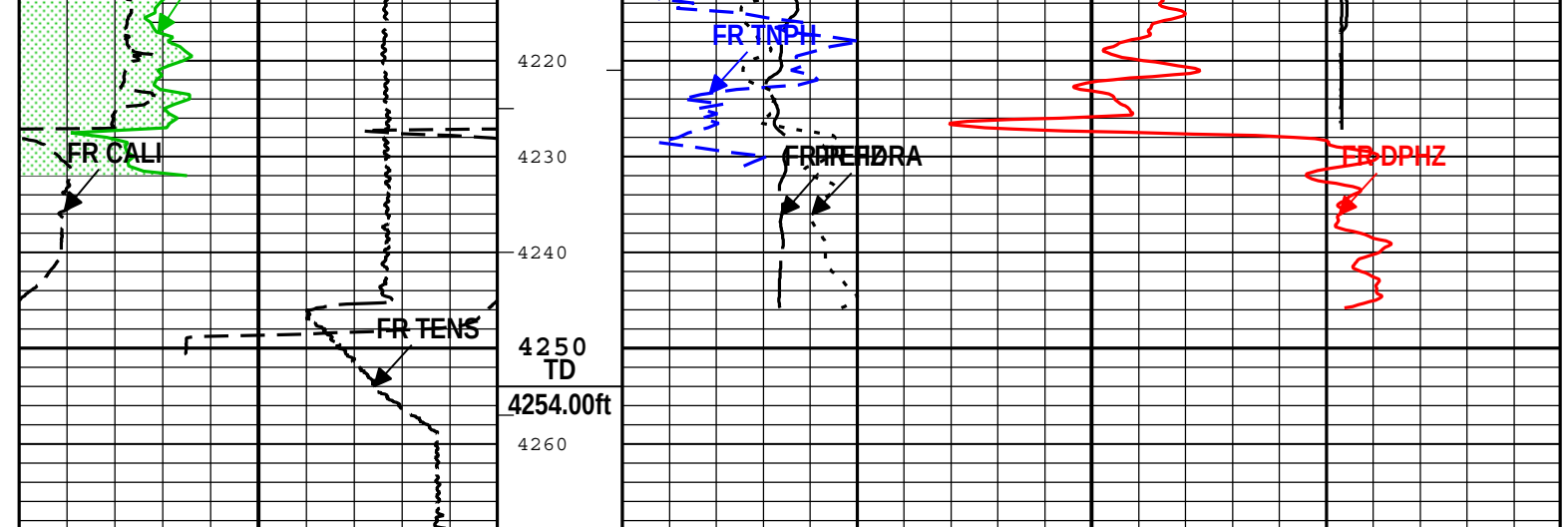
Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H

0.3 ft3/ft3 -0.1

Limestone Matrix, 2.71 g/cc







Limestone Matrix, 2.71 g/cc

Backup Gamma Ray		
Caliper (CALI) HDRS-H		
10	in	20
Gamma Ray (GR) HGNS-H		
0	gAPI	150
Gamma Ray (GR) HGNS-H		
150	gAPI	300
Cable Tension (TENS)		
10000	lbf	0

Gas		
Standard Resolution Density Porosity (DPHZ) HDRS-H		
0.3	ft3/ft3	-0.1
Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H		
0.3	ft3/ft3	-0.1
Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		Possible Permeability
0	10	
Density Standoff Correction (HDRA) HDRS-H		
-0.25 g/cm3 0.25		Micro Normal (BMNO) MLT-B
		0 ohm.m 80
		Micro Inverse (BMIN) MLT-B
		0 ohm.m 80

TIME_1900 - Time Marked every 60.00 (s)

—|ICV - Integrated Cement Volume every 100.00 (ft3)

—|IHV - Integrated Hole Volume every 10.00 (ft3)

—|IHV - Integrated Hole Volume every 100.00 (ft3)

—|ICV - Integrated Cement Volume every 10.00 (ft3)

Description: Nuclear standard resolution template for Platform Express Format: Log (Porosity 5 inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type:

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	12.25	in
BSAL	Borehole Salinity	Borehole	8360.5	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.187	in
CBLO	Casing Bottom (Logger)	WLSESSION	250	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9.35	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DHC	Density Hole Correction	HDRS-H	Bit Size	
EDP	External Casing (Outer) Diameter	WLSESSION	0.625	in

FCD	Future Casing (Outer) Diameter	WLSESSION	9.625	in
FD	Fluid Density	Borehole	1	g/cm3
FSAL	Formation Salinity	Borehole	0	ppm
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	LIMESTONE	
MDEN	Matrix Density for Density Porosity	Borehole	2.71	g/cm3
MFST	Mud Filtrate Sample Temperature	Borehole	58.7	degF
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.72	ohm.m
SOCO	Standoff Correction Option	HGNS-H	Yes	

Tool Control Parameters

Parameter	Description	Tool	Value	Unit
HMCA_BRD_TYPE	HMCA Board Type	HGNS-H	1	
HRGD_BRD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

ONE

Repeat Analysis

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
ONE	Log[2]:Up	Up	3778.36 ft	4269.05 ft	05-Dec-2012 7:28:57 PM	05-Dec-2012 7:43:05 PM	1.00 ft	
ONE	Log[3]:Up	Up	144.03 ft	4263.83 ft	05-Dec-2012 7:48:19 PM	05-Dec-2012 9:08:23 PM	0.00 ft	

All depths are referenced to toolstring zero

Log

ONE: Log[3]:Up

Description: Nuclear standard resolution template for Platform Express Format: Log (Porosity 5 inch RA_1) Index Scale: 5 in per 100 ft Index Unit: ft
Index Type: Measured Depth Creation Date: 07-Dec-2012 07:46:17

Channel	Source	Sampling
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ICV Borehole 6in

JHV Borehole 6in

—ICV - Integrated Cement Volume every 10.00 (ft3)

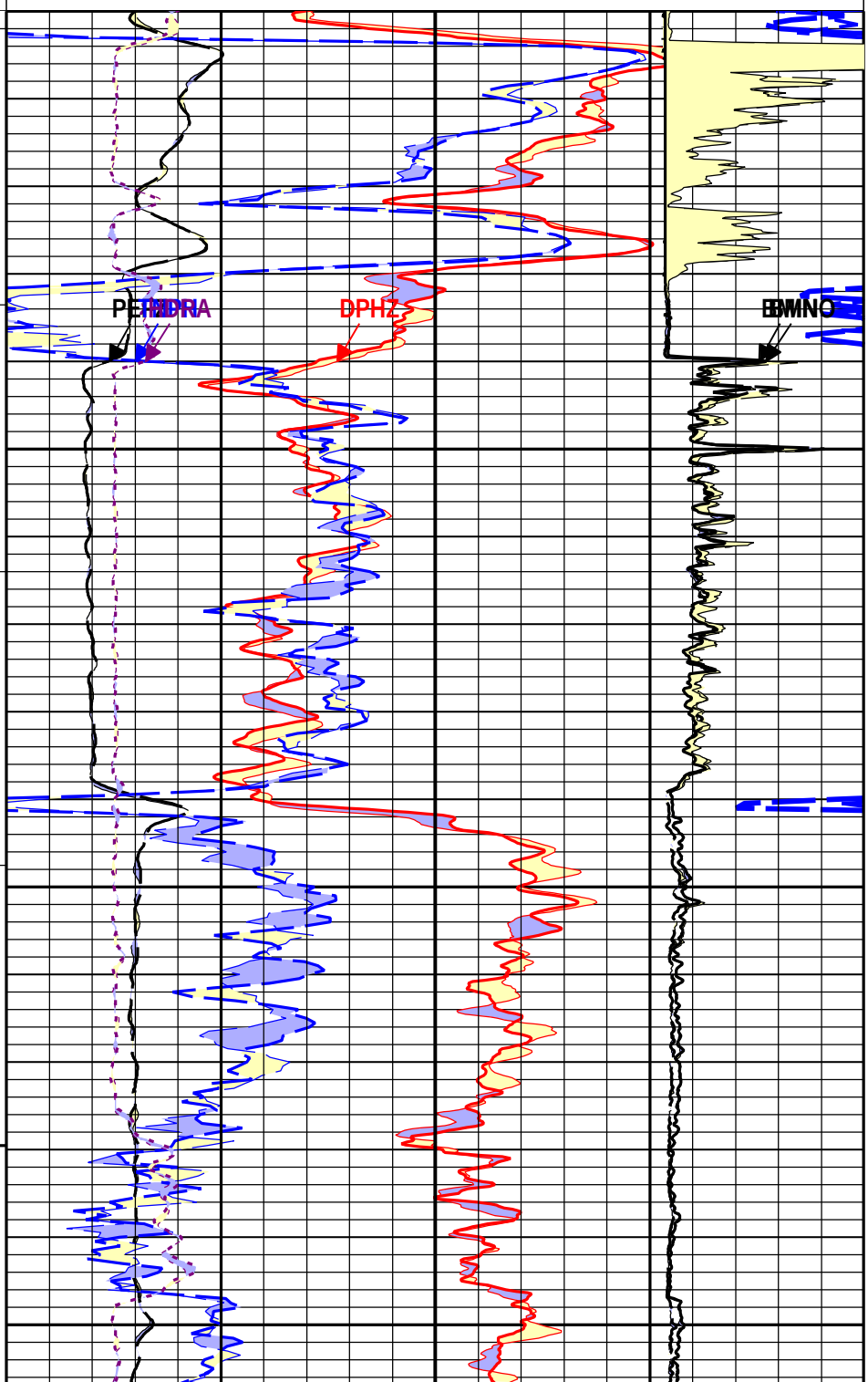
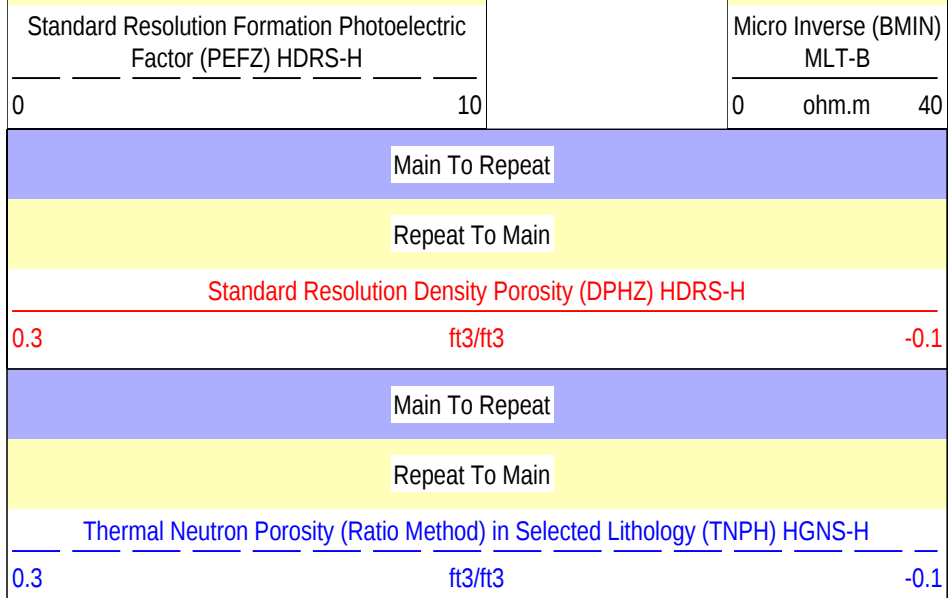
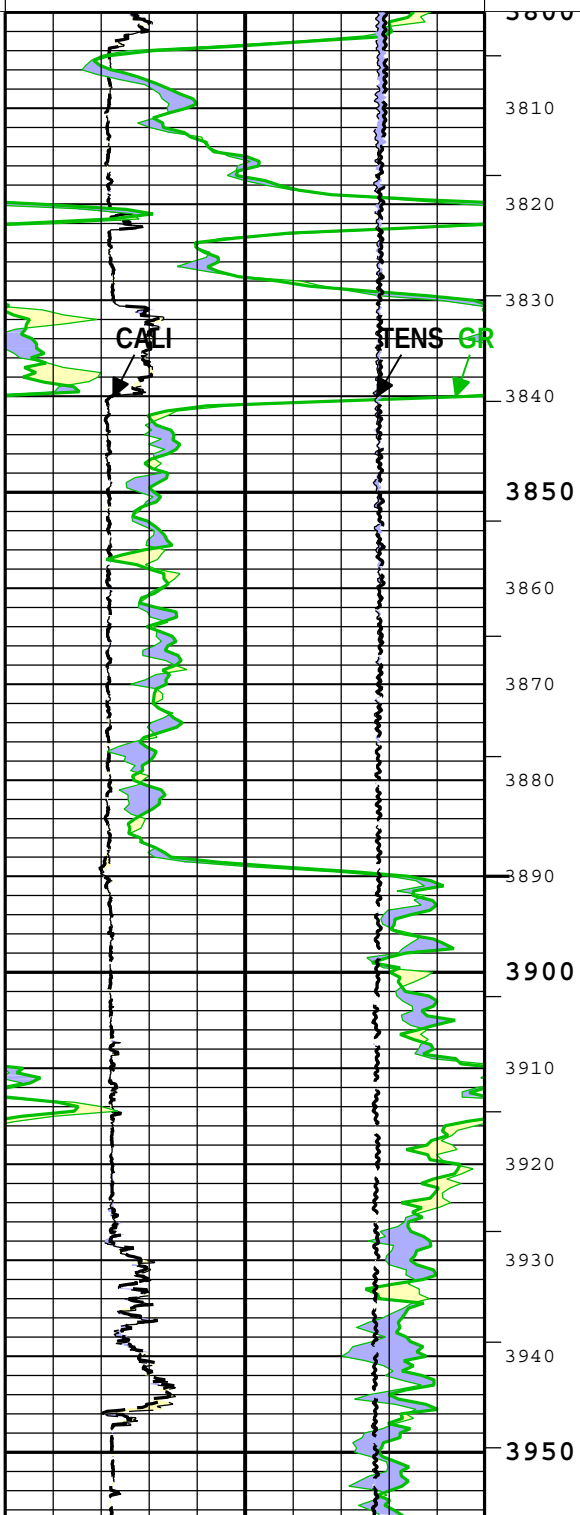
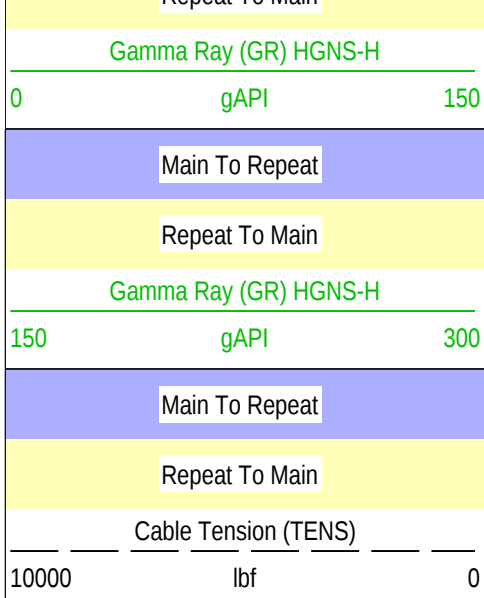
— IHV - Integrated Hole Volume every 100.00 (ft3)

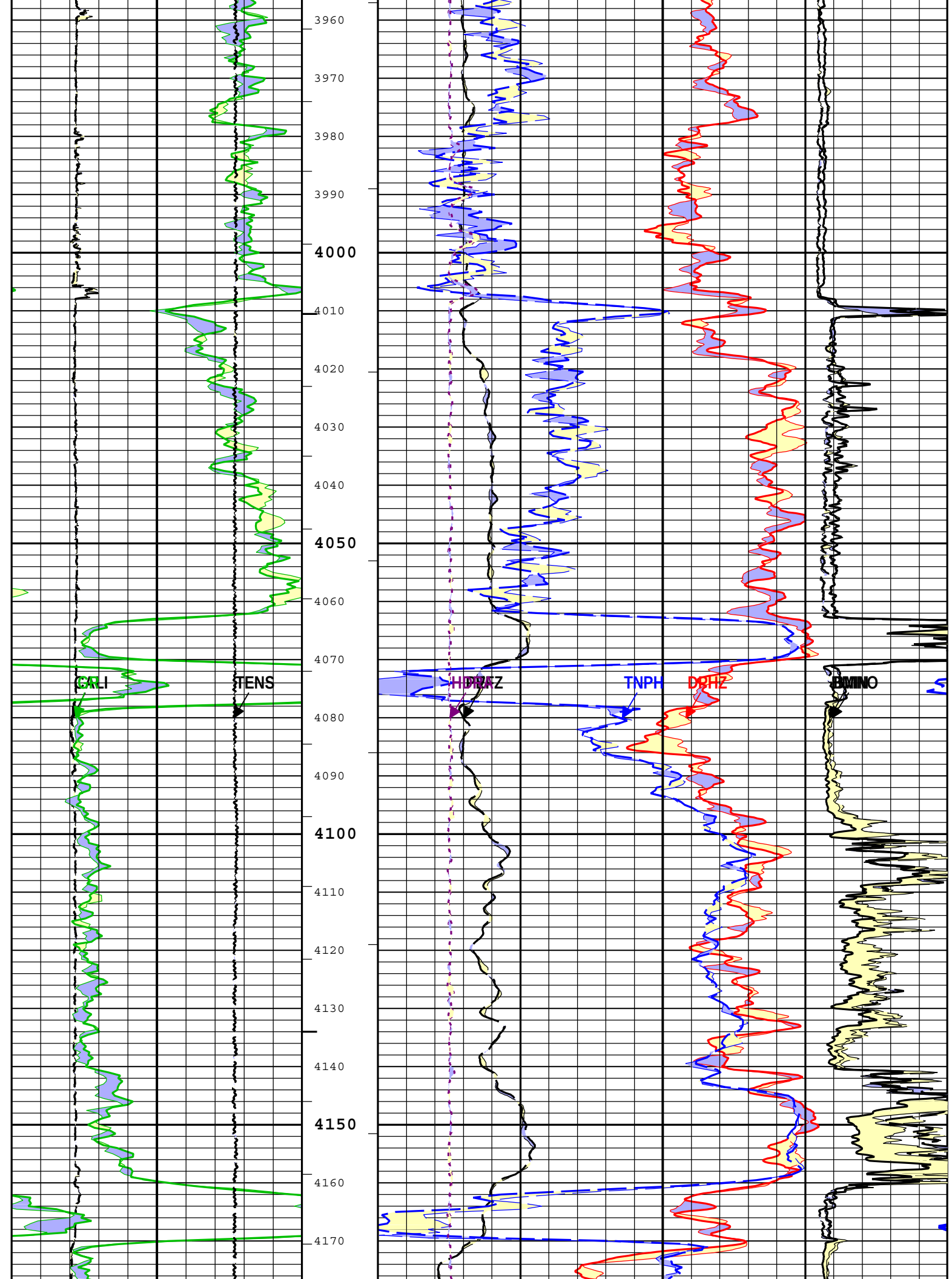
— IHV - Integrated Hole Volume every 10.00 (ft3)

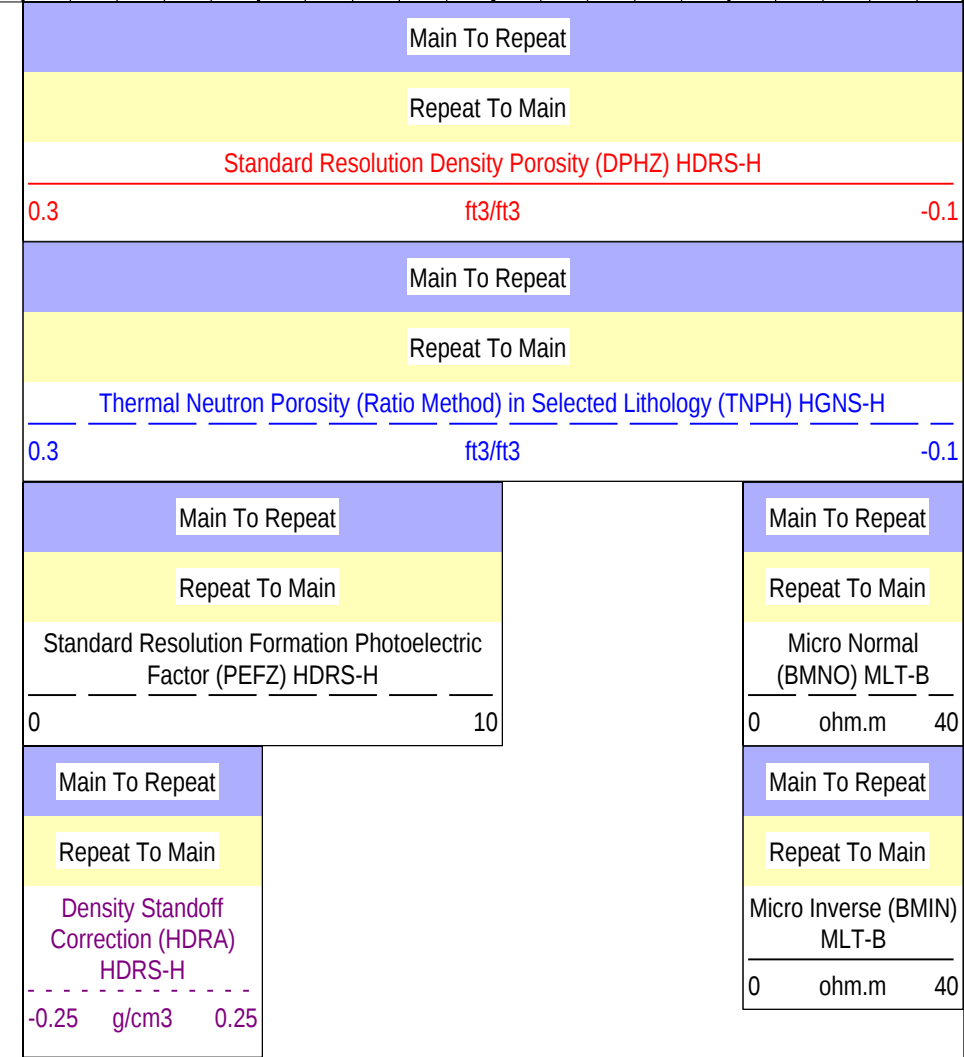
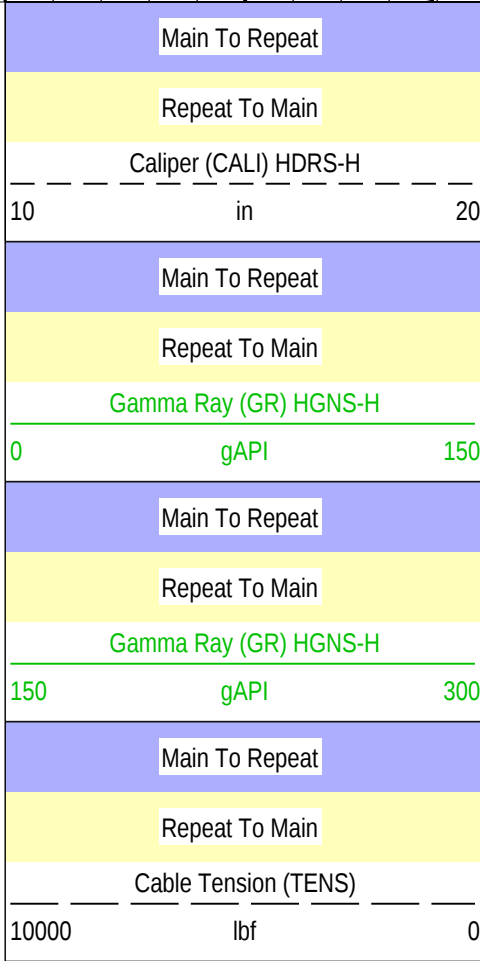
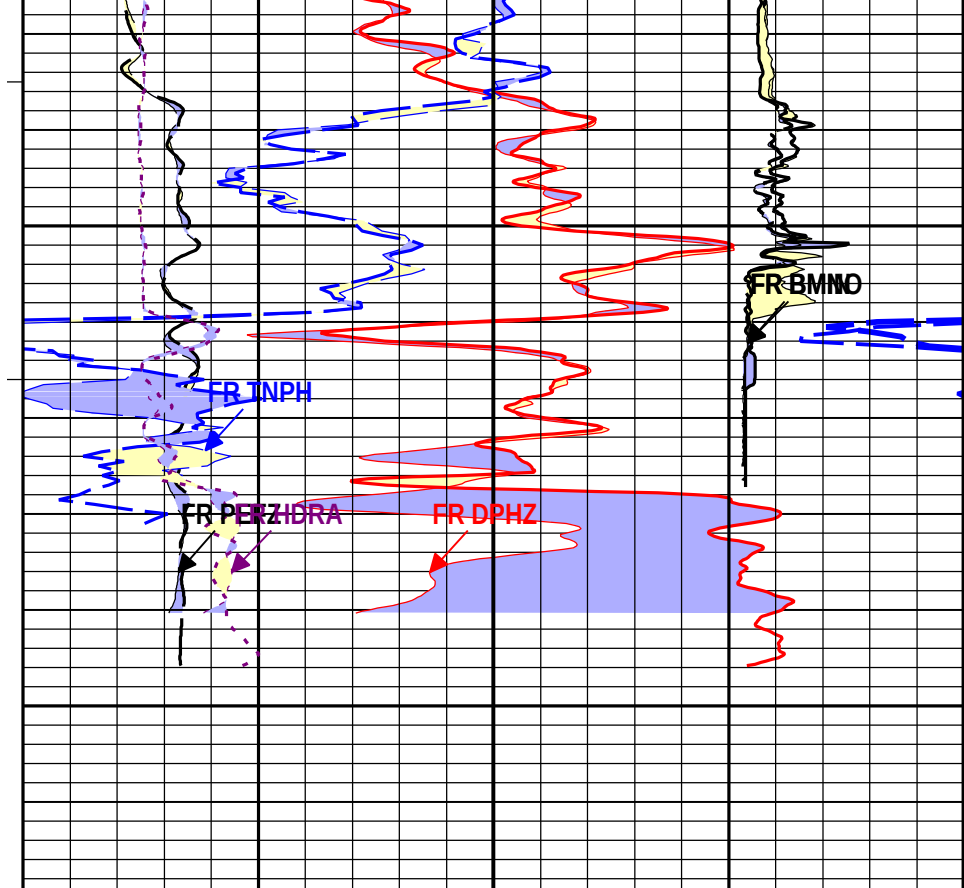
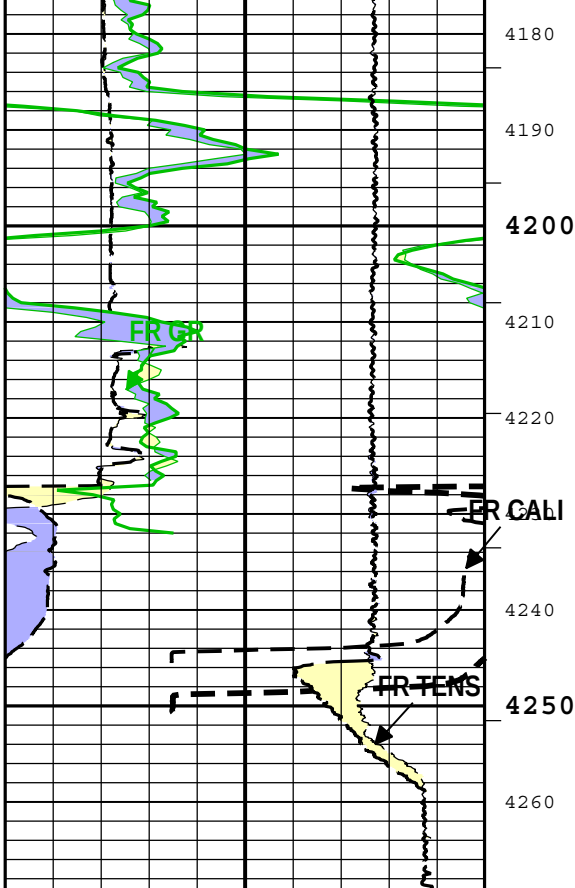
—ICV - Integrated Cement Volume every 100.00 (ft3)

Diagram illustrating three examples of a Main To Repeat / Repeat To Main cycle:

- Example 1:** Main To Repeat (blue), Repeat To Main (yellow), Caliper (CALI) HDRS-H (white), 10 in 20.
- Example 2:** Main To Repeat (blue), Repeat To Main (yellow), Density Standoff Correction (HDRA) HDRS-H (white), -0.25 g/cm3 0.25.
- Example 3:** Main To Repeat (blue), Repeat To Main (yellow), Micro Normal (BMNO) MLT-B (white), 0 ohm.m 40.







ICV - Integrated Cement Volume every 100.00 (ft3)

IHV - Integrated Hole Volume every 10.00 (ft3)

IHV - Integrated Hole Volume every 100.00 (ft3)

ICV - Integrated Cement Volume every 10.00 (ft3)

Calibration Report

AIT-M (Array Induction Tool - M) Calibration - Run ONE

Primary Equipment :							
Array Induction Sonde - M			AMIS			229	
Auxiliary Equipment :							
AITM Rm/SP Bottom Nose			AMRM			229	

AIT Sonde Calibration - Test Loop Gain

Master (EEPROM):		11:43:11 26-Oct-2012					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Test Loop Gain - 0		Master	1.000	0.950	1.012	1.050	
Test Loop Phase - 0	deg	Master	0	-3.000	0.560	3.000	
Test Loop Gain - 1		Master	1.000	0.950	1.014	1.050	
Test Loop Phase - 1	deg	Master	0	-3.000	0.718	3.000	
Test Loop Gain - 2		Master	1.000	0.950	1.016	1.050	
Test Loop Phase - 2	deg	Master	0	-3.000	0.140	3.000	
Test Loop Gain - 3		Master	1.000	0.950	1.011	1.050	
Test Loop Phase - 3	deg	Master	0	-3.000	0.142	3.000	
Test Loop Gain - 4		Master	1.000	0.950	0.994	1.050	
Test Loop Phase - 4	deg	Master	0	-3.000	0.108	3.000	
Test Loop Gain - 5		Master	1.000	0.950	0.986	1.050	
Test Loop Phase - 5	deg	Master	0	-3.000	-0.078	3.000	
Test Loop Gain - 6		Master	1.000	0.950	0.994	1.050	
Test Loop Phase - 6	deg	Master	0	-3.000	0.243	3.000	
Test Loop Gain - 7		Master	1.000	0.950	1.006	1.050	
Test Loop Phase - 7	deg	Master	0	-3.000	-0.041	3.000	

AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM):		11:43:11 26-Oct-2012					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Sonde Error Correction Real - 0	mS/m	Master	-----	-231.000	-95.532	119.000	
Sonde Error Correction Quad - 0		Master	-----	-2250.000	-1082.545	2250.000	
Sonde Error Correction Real - 1	mS/m	Master	-----	114.000	161.893	204.000	
Sonde Error Correction Quad - 1		Master	-----	-625.000	164.135	625.000	
Sonde Error Correction Real - 2	mS/m	Master	-----	66.000	109.218	156.000	
Sonde Error Correction Quad - 2		Master	-----	-350.000	-146.182	350.000	
Sonde Error Correction Real - 3	mS/m	Master	-----	39.000	49.795	89.000	
Sonde Error Correction Quad - 3		Master	-----	-250.000	-21.815	250.000	
Sonde Error Correction Real - 4	mS/m	Master	-----	15.000	27.091	35.000	
Sonde Error Correction Quad - 4		Master	-----	-63.000	1.553	63.000	
Sonde Error Correction Real - 5	mS/m	Master	-----	4.000	13.215	24.000	
Sonde Error Correction Quad - 5		Master	-----	-50.000	-0.906	50.000	
Sonde Error Correction Real - 6	mS/m	Master	-----	5.000	9.873	15.000	
Sonde Error Correction Quad - 6		Master	-----	-30.000	0.685	30.000	
Sonde Error Correction Real - 7	mS/m	Master	-----	-5.000	-0.825	5.000	
Sonde Error Correction Quad - 7		Master	-----	-30.000	0.214	30.000	

AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM):		11:43:11 26-Oct-2012					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coarse Gain		Master	1.000	0.800	1.031	1.200	
Fine Gain		Master	1.000	0.800	1.026	1.200	

AIT Electronics Check - Thru Calibration Check

Master (EEPROM):		11:43:11 26-Oct-2012	Before (Measured):	20:28:42 17-Jan-2013	After:		
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Thru Cal Mag - 0	V	Master	-----	0.366	0.613	0.854	
		Before	-----	0.366	0.613	0.854	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	0.000	-----	
		After-Before	-----	-----	-----	-----	
Thru Cal Phase - 0	deg	Master	-----	137.000	-170.542	-103.000	

		Before	----	137.000	-170.076	-103.000	
		After	----	----	----	----	
		Before-Master	----	----	0.466	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 1	V	Master	----	0.762	1.256	1.778	
		Before	----	0.762	1.257	1.778	
		After	----	----	----	----	
		Before-Master	----	----	0.001	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 1	deg	Master	----	136.000	-171.609	-104.000	
		Before	----	136.000	-171.142	-104.000	
		After	----	----	----	----	
		Before-Master	----	----	0.467	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 2	V	Master	----	0.372	0.622	0.868	
		Before	----	0.372	0.622	0.868	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 2	deg	Master	----	132.000	-175.163	-108.000	
		Before	----	132.000	-174.699	-108.000	
		After	----	----	----	----	
		Before-Master	----	----	0.464	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 3	V	Master	----	0.420	0.703	0.980	
		Before	----	0.420	0.703	0.980	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 3	deg	Master	----	131.000	-175.925	-109.000	
		Before	----	131.000	-175.461	-109.000	
		After	----	----	----	----	
		Before-Master	----	----	0.464	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 4	V	Master	----	0.804	1.315	1.876	
		Before	----	0.804	1.315	1.876	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 4	deg	Master	----	125.000	177.964	-115.000	
		Before	----	125.000	178.425	-115.000	
		After	----	----	----	----	
		Before-Master	----	----	0.461	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 5	V	Master	----	1.176	1.915	2.744	
		Before	----	1.176	1.915	2.744	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 5	deg	Master	----	122.000	176.323	-118.000	
		Before	----	122.000	176.781	-118.000	
		After	----	----	----	----	
		Before-Master	----	----	0.458	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 6	V	Master	----	1.176	1.911	2.744	
		Before	----	1.176	1.911	2.744	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 6	deg	Master	----	121.000	176.366	-119.000	
		Before	----	121.000	176.824	-119.000	
		After	----	----	----	----	
		Before-Master	----	----	0.458	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 7	V	Master	----	0.846	1.378	1.974	
		Before	----	0.846	1.378	1.974	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	

		After-Before	----	----	----	----	
Thru Cal Phase - 7	deg	Master	----	115.000	175.636	-125.000	
		Before	----	115.000	176.064	-125.000	
		After	----	----	----	----	
		Before-Master	----	----	0.428	----	
		After-Before	----	----	----	----	
SPA Zero	mV	Master		-50.000	-0.093	50.000	
		Before		-50.000	-0.076	50.000	
		After	----	----	----	----	
		Before-Master	----	----	0.017	----	
		After-Before	----	----	----	----	
SPA Plus	mV	Master		941.000	994.921	1040.000	
		Before		941.000	994.842	1040.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.079	----	
		After-Before	----	----	----	----	
Temperature Zero	V	Master		-0.050	0.000	0.050	
		Before		-0.050	0.000	0.050	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Temperature Plus	V	Master		0.870	0.922	0.960	
		Before		0.870	0.922	0.960	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	

HDRS-H (HILT Density and Rxo Sonde, 150 degC) Calibration - Run ONE

Primary Equipment :							
	HILT High-Resolution Control Cartridge, 150 degC	HRCC-H		3965			
	HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H		4770			
Auxiliary Equipment :							
	HRDD Backscatter Detector	Backscatter					
	HRDD Long Spacing Detector	Long Spacing		28941			
	HRDD Short Spacing Detector	Short Spacing		27775			
	Cesium 137 Gamma-Ray Logging Source	GSR-J		5347			
	HILT High-Resolution Control Cartridge, 150 degC	HRCC-H		3965			
	HILT High-Resolution Mechanical Sonde, 150 degC	HRMS-H		4723			
Calibration Parameter :							
	Small Ring Size (Caliper Calibration Small Ring)	8.00					
	Large Ring Size (Caliper Calibration Large Ring)	12.00					

HDRS Caliper Calibration - Caliper Accumulations

Before (Measured):		22:12:27 04-Dec-2012					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	7.89	10.00	
Large Ring	in	Before	12.00	9.00	12.36	15.00	

HDRS Density Calibration - Inversion Results

Master (EEPROM):		17:14:08 03-Dec-2012					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.597	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.688	1.696	
Pe Aluminum		Master	2.570	2.470	2.530	2.670	
Pe Magnesium		Master	2.650	2.550	2.629	2.750	

HDRS Density Calibration - Deviation Summary

Master (EEPROM):		17:14:08 03-Dec-2012					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.1742	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.4458	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.3212	1.0000	

SS Max Deviation	%	Master	0	-2.5000	0.8660	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.6301	1.5000	
LS Max Deviation	%	Master	0	-3.5000	1.4093	3.5000	

HDRS Density Calibration - Background Summary

Master (EEPROM):		17:14:08 03-Dec-2012		Before (Measured):		22:14:47 04-Dec-2012	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7415		
		Before	0.7415	0.7044	0.7424	0.7786	
		Before-Master	-----	-----	0.0009	-----	
BS Window Sum	1/s	Master	1		28726		
		Before	28726	27290	28791	30162	
		Before-Master	-----	-----	65	-----	
SS Window Ratio		Master	1.0000		0.4819		
		Before	0.4819	0.4578	0.4829	0.5060	
		Before-Master	-----	-----	0.0010	-----	
SS Window Sum	1/s	Master	1		11309		
		Before	11309	10743	11305	11874	
		Before-Master	-----	-----	-4	-----	
LS Window Ratio		Master	1.0000		0.3002		
		Before	0.3002	0.2852	0.2999	0.3152	
		Before-Master	-----	-----	-0.0003	-----	
LS Window Sum	1/s	Master	1		1345		
		Before	1345	1278	1336	1412	
		Before-Master	-----	-----	-9	-----	

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM):		17:14:08 03-Dec-2012		Before (Measured):		22:14:47 04-Dec-2012	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1522	2400	
		Before		1000	1517	2400	
		Before-Master	-----	-100	-5	100	
SS PM High Voltage	V	Master		1000	1423	2400	
		Before		1000	1433	2400	
		Before-Master	-----	-100	10	100	
LS PM High Voltage	V	Master		1000	1615	2400	
		Before		1000	1625	2400	
		Before-Master	-----	-100	10	100	

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM):		17:14:08 03-Dec-2012		Before (Measured):		22:14:47 04-Dec-2012	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	10.87	25.00	
		Before		5.00	10.82	25.00	
		Before-Master	-----	-1.00	-0.05	1.00	
SS Crystal Resolution	%	Master		5.00	9.29	20.00	
		Before		5.00	9.48	20.00	
		Before-Master	-----	-1.00	0.19	1.00	
LS Crystal Resolution	%	Master		5.00	9.03	20.00	
		Before		5.00	8.86	20.00	
		Before-Master	-----	-1.00	-0.17	1.00	

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured):		22:15:20 04-Dec-2012					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3756	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3794	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3800	4136	

HGNS-H (HILT Gamma-Ray and Neutron Sonde, 150 degC) Calibration - Run ONE

Primary Equipment :			
HILT Gamma-Ray and Neutron Sonde, 150 degC		HGNS-H	3964
Auxiliary Equipment :			
HGNS Accelerometer, 150 degC		HACCZ-H	4166
AmBe Neutron Logging Source		NSR-F	5075

Calibration Parameter :

Water Temperature

Housing Size

JIG-BKG (Jig minus background reference)

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HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured):18:56:24 05-Dec-2012

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	ft/s2	Before	32.2	31.5	32.1	32.8	

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM):00:00:00 15-Jul-2005

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Accelerometer Manufacturer		Master			QAT_160		
Accelerometer Reference Temperature	degF	Master		30.2	77.0	122.0	
Accelerometer Coefficients - 0		Master	----	----	11397.000	----	
Accelerometer Coefficients - 1		Master	----	----	-4.294	----	
Accelerometer Coefficients - 2		Master	----	----	-0.010	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	2.740	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	299.000	----	
Accelerometer Coefficients - 9		Master	----	----	0.994	----	

HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM):17:02:00 26-Nov-2012Before (Measured):22:11:14 04-Dec-2012After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	28.2	40.0	
		Before	0	5.0	27.5	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.2	-0.7	4.2	
		After-Before	----	----	----	----	
Far Zero Measurement	1/s	Master	0	5.0	29.2	40.0	
		Before	0	5.0	27.6	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.4	-1.6	4.4	
		After-Before	----	----	----	----	
Near Plus Measurement - 0	1/s	Master	6031.0	4700.0	5254.0	6900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Plus Measurement - 0	1/s	Master	2793.0	1900.0	2187.0	2900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Near Corrected Plus Measurement - 0	1/s	Master		4700.0	5286.0	6900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Corrected Plus Measurement - 0	1/s	Master		1900.0	2197.0	2900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured):		22:12:48 04-Dec-2012					
		After:					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	23.8	120.0	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
RGR Plus Measurement	gAPI	Before	179.8	152.4	164.9	200.0	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

Company:	Dorado E&P Partners, LLC	
Well:	Dealy 2-31 SWD	
Field:	Wildcat	
County:	Reno	
State:	Kansas	