

Company: Nighthawk Production LLC

Well: Pikes Peak Williams 4-30

Field: Wildcat

County: Lincoln State: Colorado

Platform Express	
Compensated Neutron-- Litho Density	
County: Lincoln	
Field: Wildcat	
Location: NWNW Sec 30, T13S, R55W	
Well: Pikes Peak Williams 4-30	
Company: Nighthawk Production LLC	
Location:	
NWNW Sec 30, T13S, R55W	Elev. K.B. 5155.00 ft
SHL: 660' FNL x 660' FWL	G.L. 5143.00 ft
Lat/Long: 38.892850/-103.605630	D.F. 5154.00 ft
Permanent Datum:	Ground Level Elev.: 5143.00 f
Log Measured From: Kelly Bushing	12.00 ft above Perm.Datum
Drilling Measured From: Kelly Bushing	
API Serial No.	Section: 30 Township: 13S Range: 55W
05-073-06478-0000	

Logging Date	26-Sep-2012	
Run Number	Run 1	
Depth Driller	7896.00 ft	
Schlumberger Depth	7884.00 ft	
Bottom Log Interval	7884.00 ft	
Top Log Interval	342.00 ft	
Casing Driller Size @ Depth	8.625 in @ 328.00 ft	
Casing Schlumberger	342 ft	
Bit Size	7.875 in	
Type Fluid In Hole	Fresh Water	
Density	8.4 lbm/gal	44 s
Fluid Loss	PH 8.4 cm3	7.6
Source of Sample	Flowline	
RM @ Meas Temp	1.74 ohm.m @ 64.02 degF	
RMF @ Meas Temp	1.3 ohm.m @ 75 degF	
RMC @ Meas Temp	2.17 ohm.m @ 75 degF	
Source RMF	Calculated	
RM @ BHT	0.72 @ 163.67	0.63 @ 163.67
Max Recorded Temperatures	163.67 degF	
Circulation Stopped	26-Sep-2012	01:30:00
Logger on Bottom	26-Sep-2012	09:25:00
Unit Number	2135	Fort Morgan, Colora
Recorded By	Keri Lonng	
Witnessed By	Jim Weir / Andy Elgerd	

Disclaimer

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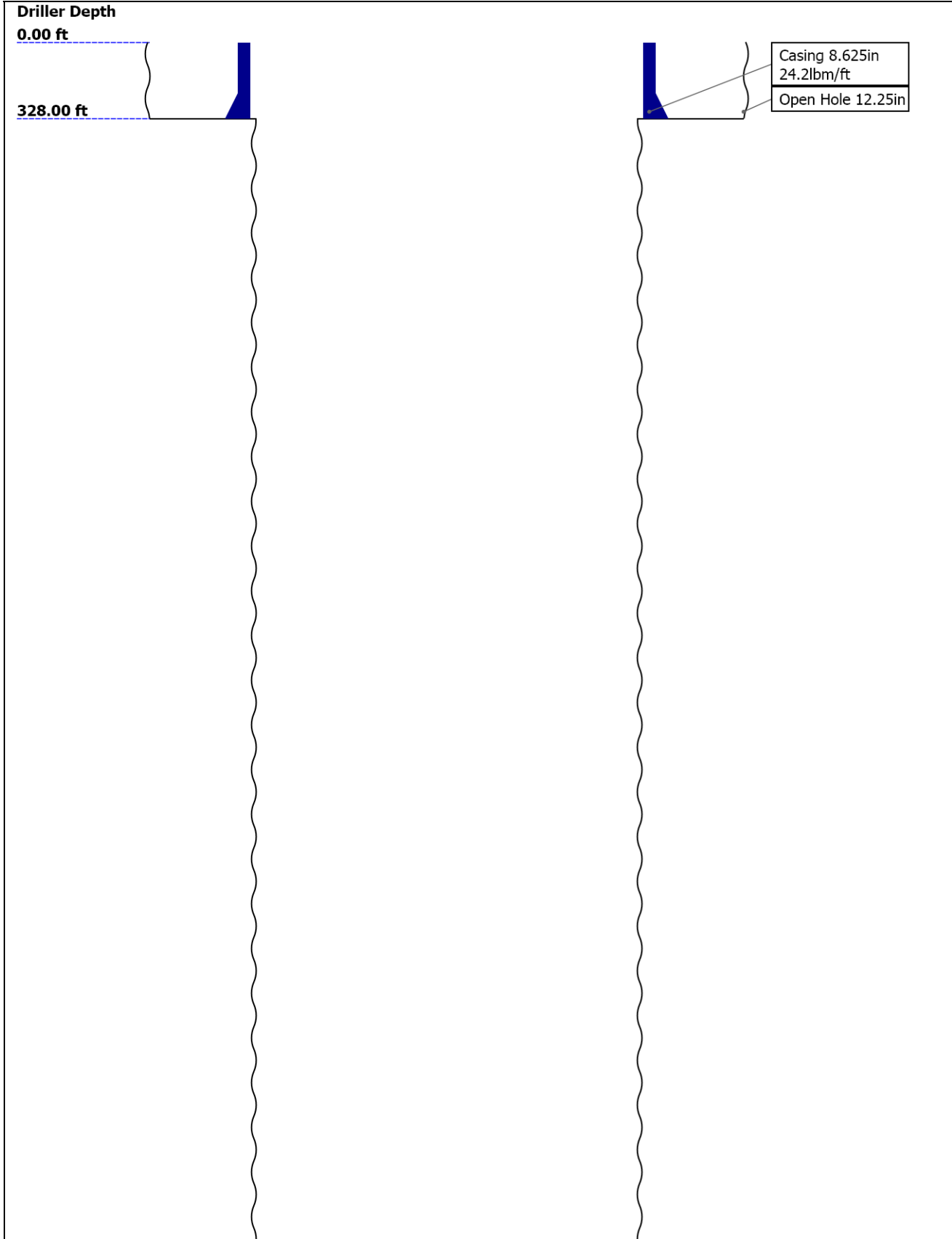
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Well Sketch



7896.00 ft

Open Hole 7.875in

Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	12.25	7.875				
Top Driller (ft)	0	328				
Top Logger (ft)	0	342				
Bottom Driller (ft)	328	7896				
Bottom Logger (ft)	342	7884				
Casing						
Size (in)	8.625					
Weight (lbm/ft)	24.2					
Inner Diameter (in)	8.095					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	328					
Bottom Logger (ft)	342					

Operational Run Summary

Parameter (unit)	Run 1					
Date Log Started	26-Sep-2012					
Time Log Started	08:13:59					
Date Log Finished	26-Sep-2012					
Time Log Finished	11:49:15					
Top Log Interval (ft)	342.00					
Bottom Log Interval (ft)	7884.00					
Total Depth (ft)	7884.00					
Max Hole Deviation (deg)	0.00					
Azimuth of Max Deviation (deg)	0.00					
Bit Size (in)	7.875					
Logging Unit Number	2135					
Logging Unit Location	Fort Morgan, Colorado					
Recorded By	Keri Loring					
Witnessed By	Jim Weir / Andy Elgerd					
Service Order Number	BX19-00056					

HRC C-H:5705
HRMS-H:4706
GPV-Q
GSR-J:5240
Short Spacing:27
634
Backscatter
HRGD-H:3816
Long Spacing:28
732

HRCC 46.88

MCFL 41.45
Caliper 40.96
TLD Density 40.57

AH-184:909 38.64

DSLT-H:8339 36.64
ECH-KH:8401
DSLC-H:8339
SLS-E:165

CBL 3ft 24.17
Upper-Near 24.17

VDL 5ft 23.17
Upper-Far 23.17

Delta-T 21.79

Lower-Far 20.42

Lower-Near 19.42

SLS-E 16.00

AIT-M:1270 16.00
AMIS:1270
AMRM:1270

Temperature 7.91
Power Supply 7.91
Induction 7.91



Lengths are in ft
Maximum Outer Diameter = 4.950 in
Line: Sensor Location, V value: Gating Offset
All measurements are relative to TOOL_ZERO

Depth Summary

Depth Control Parameters		Run 1		
Conveyance Type		Wireline		
Rig Type		Land		
Depth Remark Parameters		Run 1		
Depth Remark 1		All Schlumberger depth procedures followed.		
Depth Remark 2		IDW used as primary depth control device.		
Depth Remark 3		Z-chart used as secondary depth control device.		
Depth Measuring Device		Run 1		
Type		IDW-B		
Serial Number		4938		
Calibration Date		11-Apr-2012		
Calibration Cable Type		7-46P XS		
Wheel Correction 1		-6		
Wheel Correction 2		-6		
Tension Device		Run 1		
Type		CMTD-B/A		
Serial Number		1919		
Calibration Date		10-Sep-2012		
Calibrator Serial Number		78135a		
Calibration Points		10		
Calibration RMS		12		
Calibration Peak Error		24		
Logging Cable		Run 1		
Type		7-46P-XS		
Serial Number		U711057		
Logging Cable Length (ft)		24600.00		

Run 1

Porosity 5" = 100'

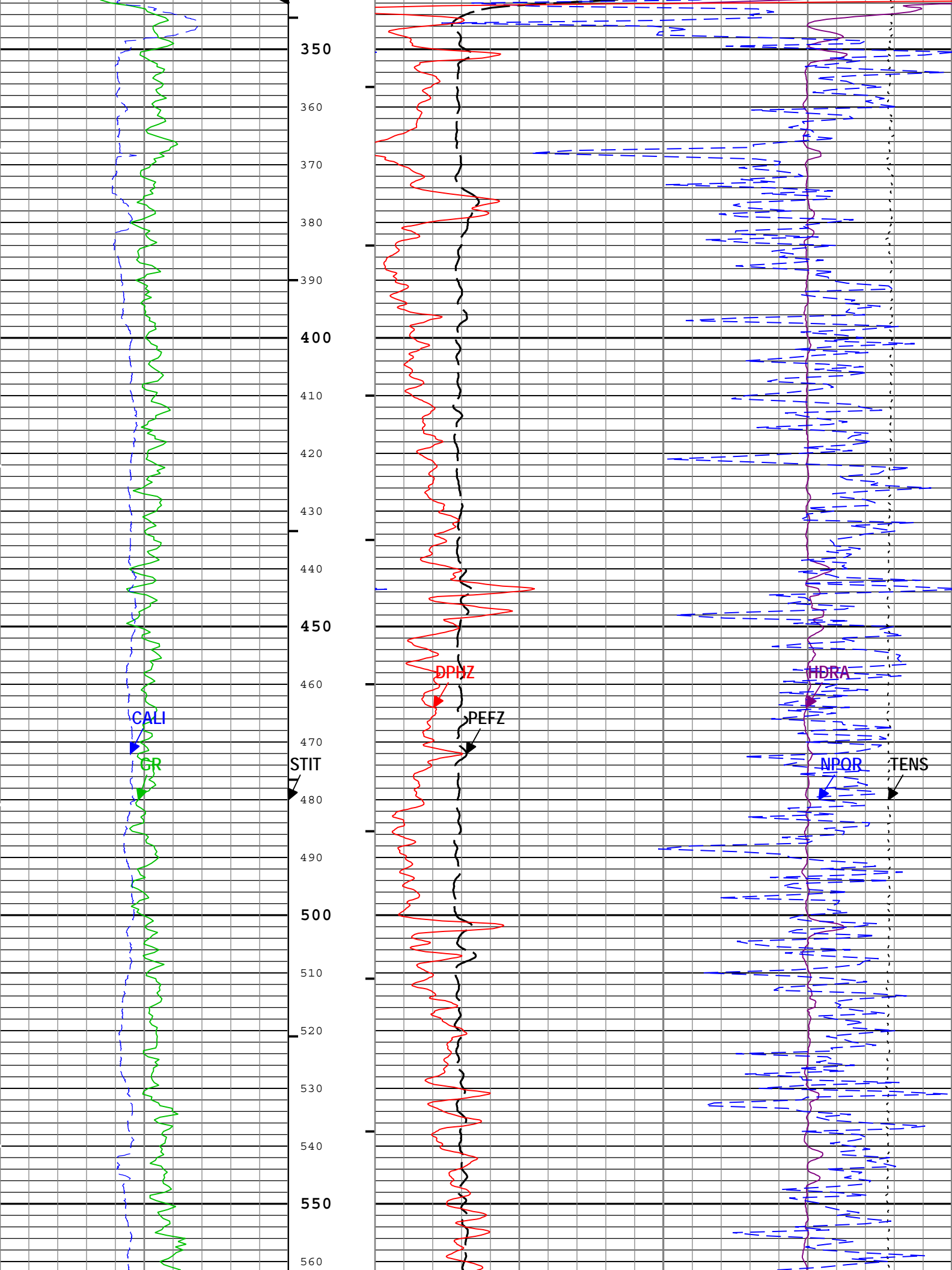
Integration Summary

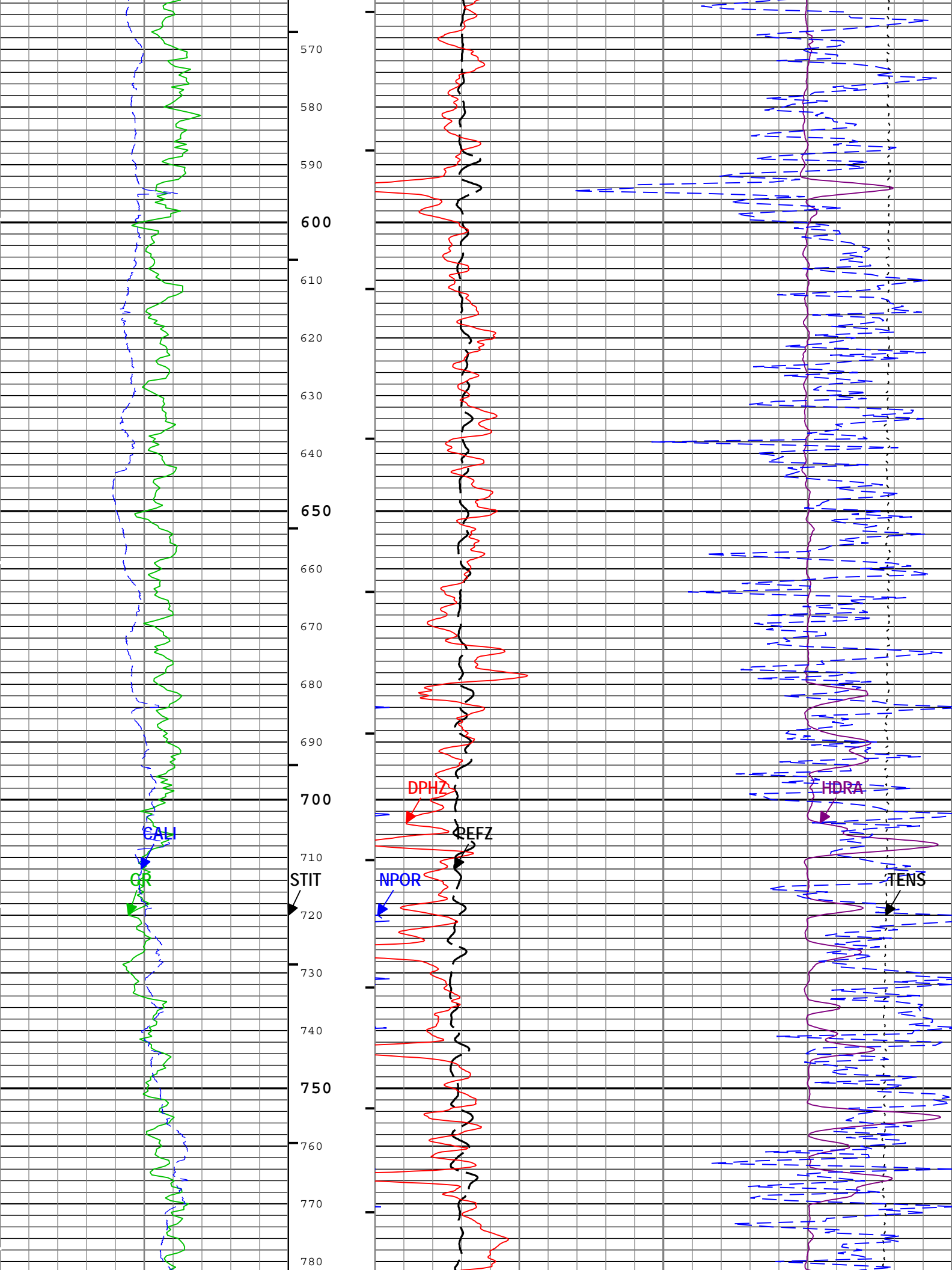
Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
IHV	Integrated Hole Volume	GCSE_UP_PASS	3036.35	ft3
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	1790.7	ft3

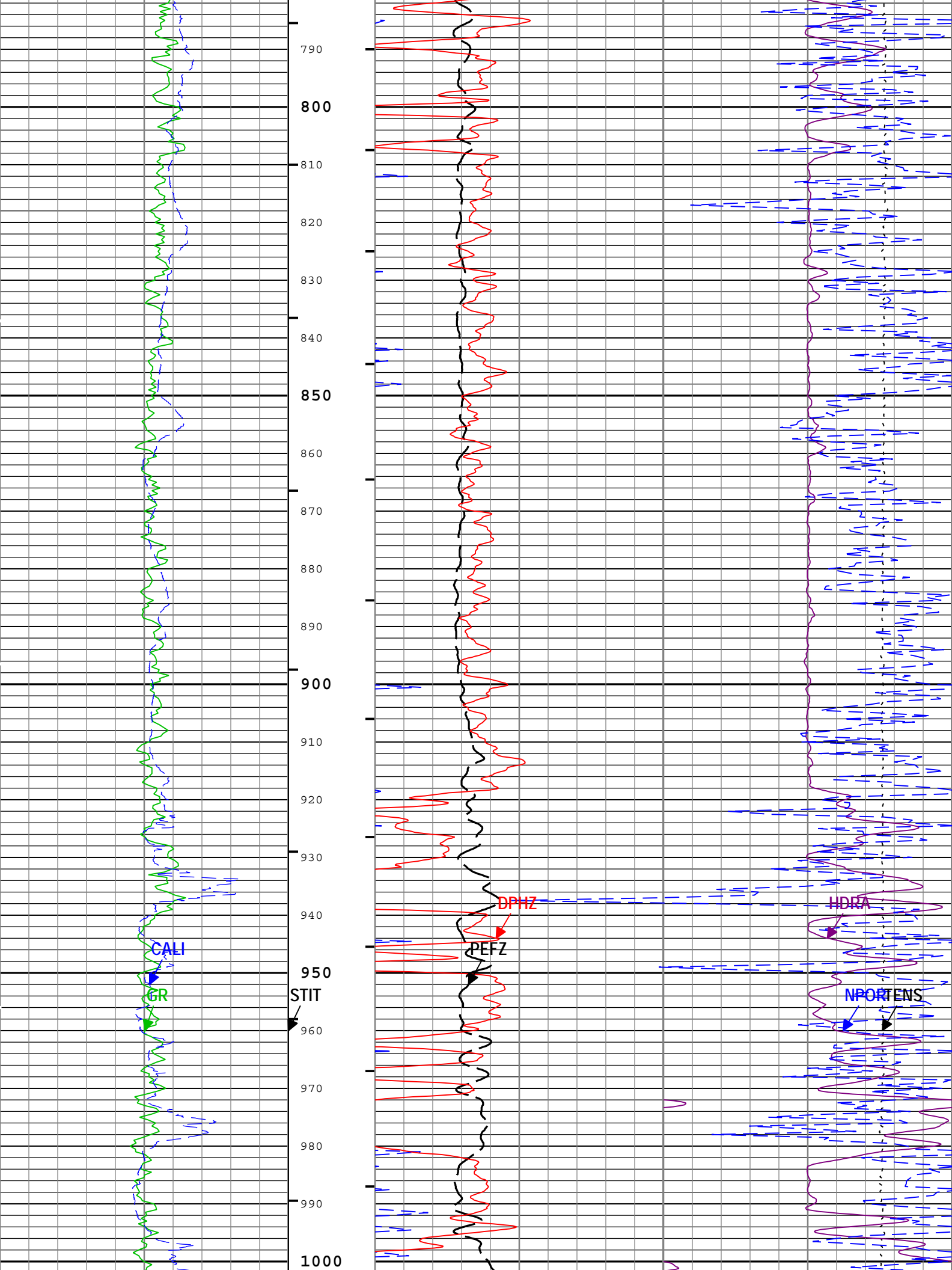
Software Version

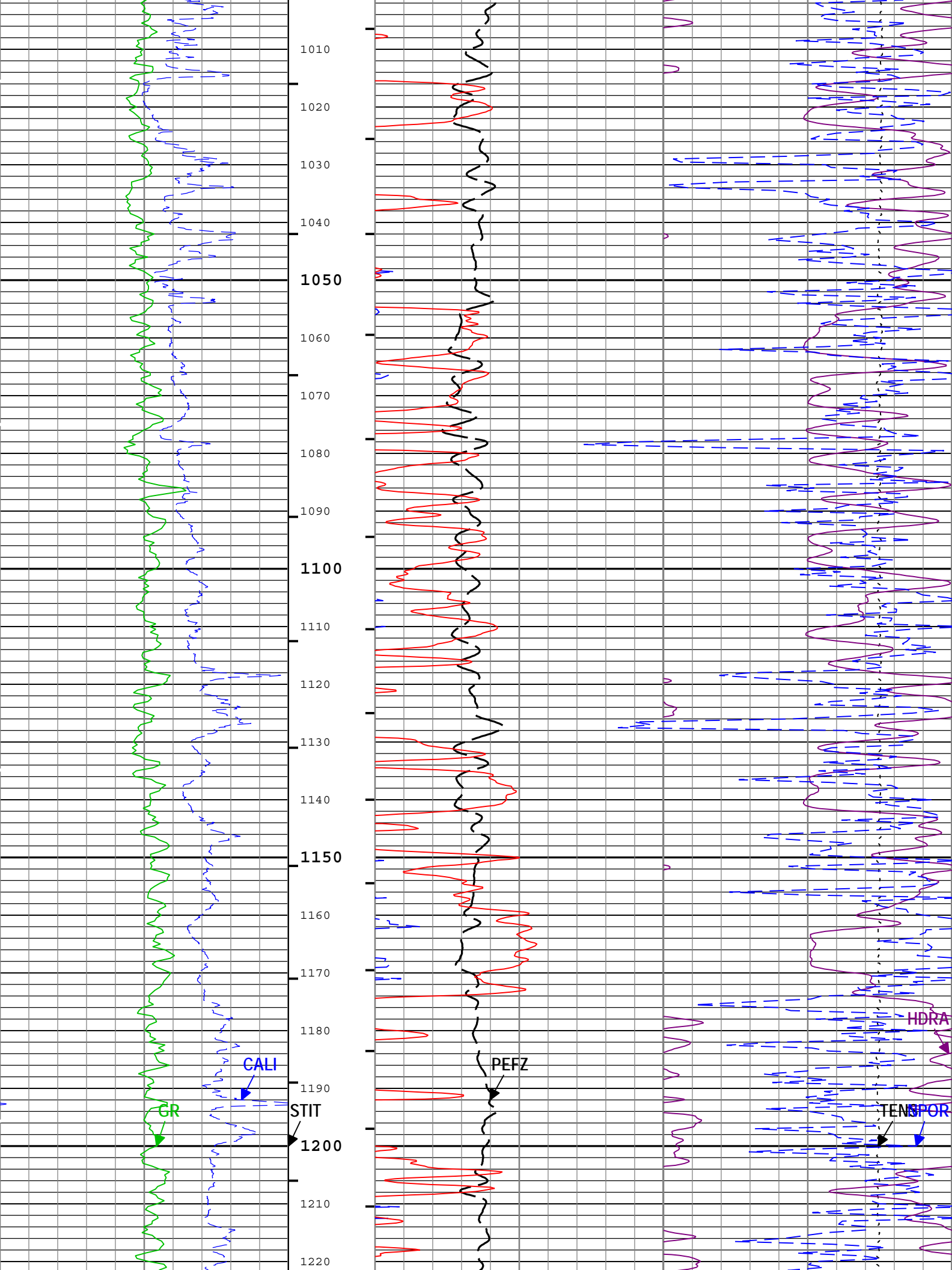
Acquisition System	Version
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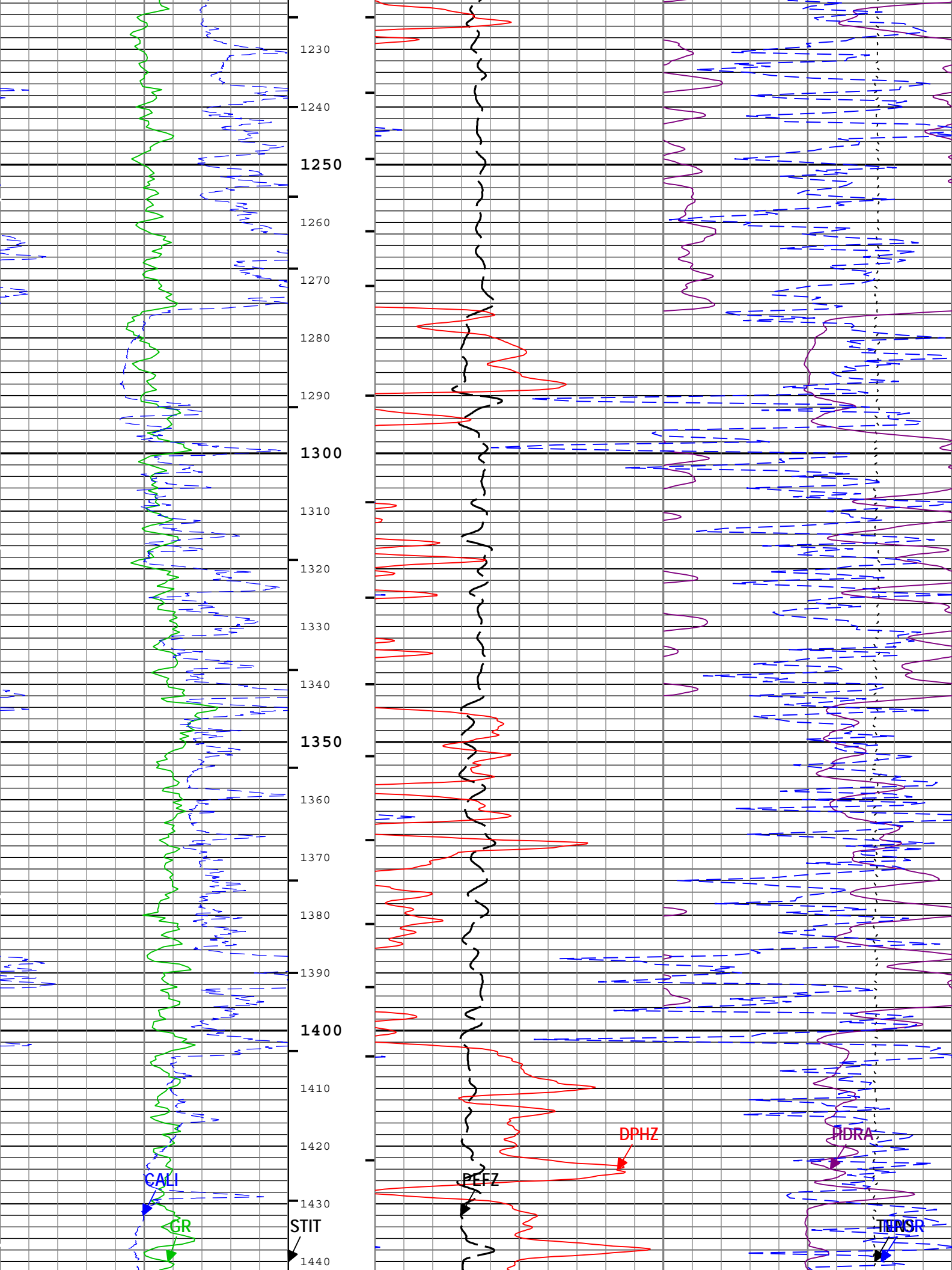
		Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		Cable Tension (TENS)	
		0 10		6000 lbf	
				Density Standoff Correction (HDRA) HDRS-H	
				-0.25 g/cm3 0.25	
GR Backup				Gas Effect	
Gamma Ray (GR) HGNS-H				Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H	
0 200	gAPI	Stuck Tool Indicator, Total (STIT)		0.3 m3/m3 -0.3	
Caliper (CALI) HDRS-H		0 ft 50		Standard Resolution Density Porosity (DPHZ) HDRS-H	
4 14	in			0.3 ft3/ft3 -0.3	
Casing Shoe @ 342 Feet		330 340			

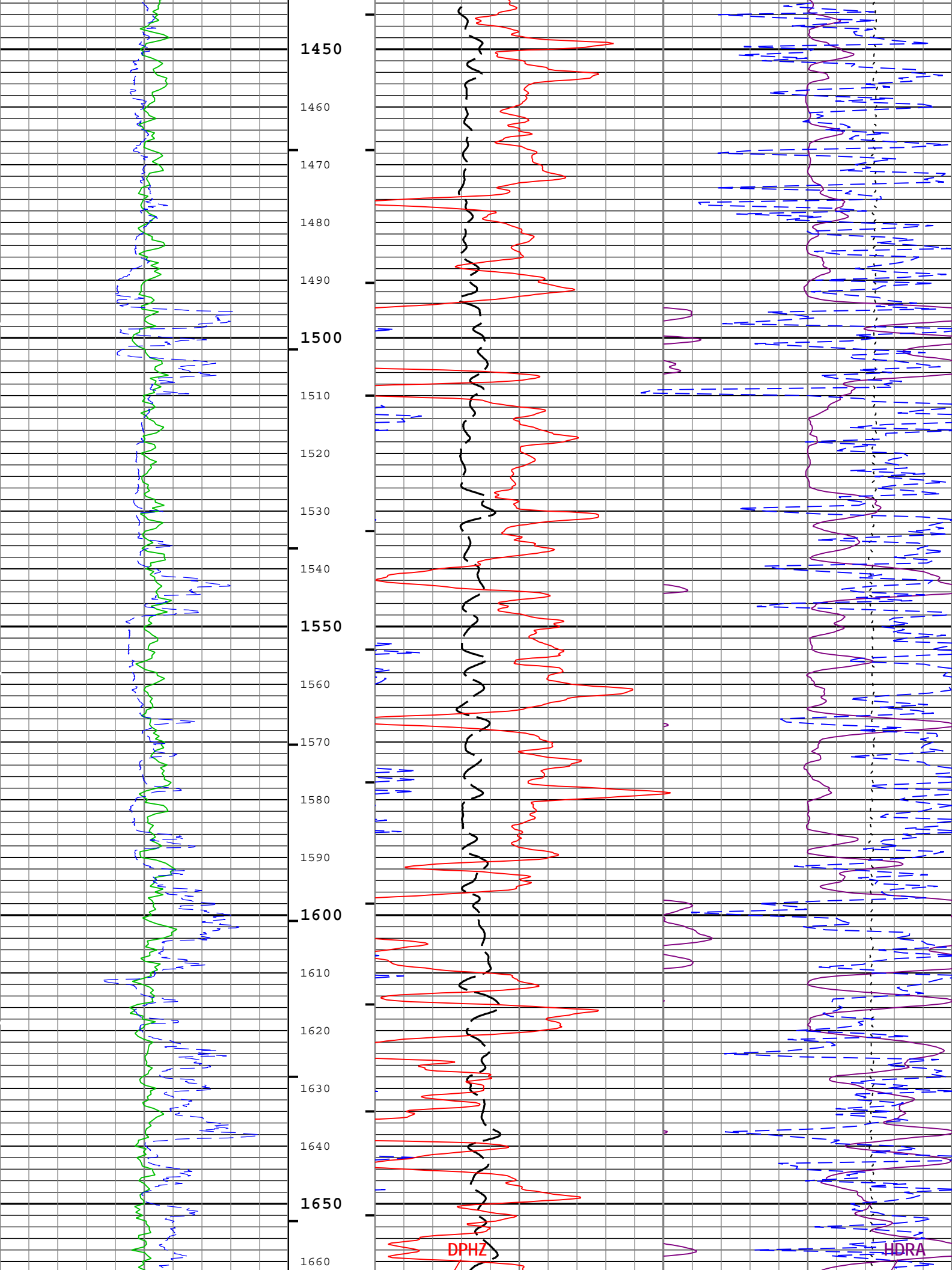


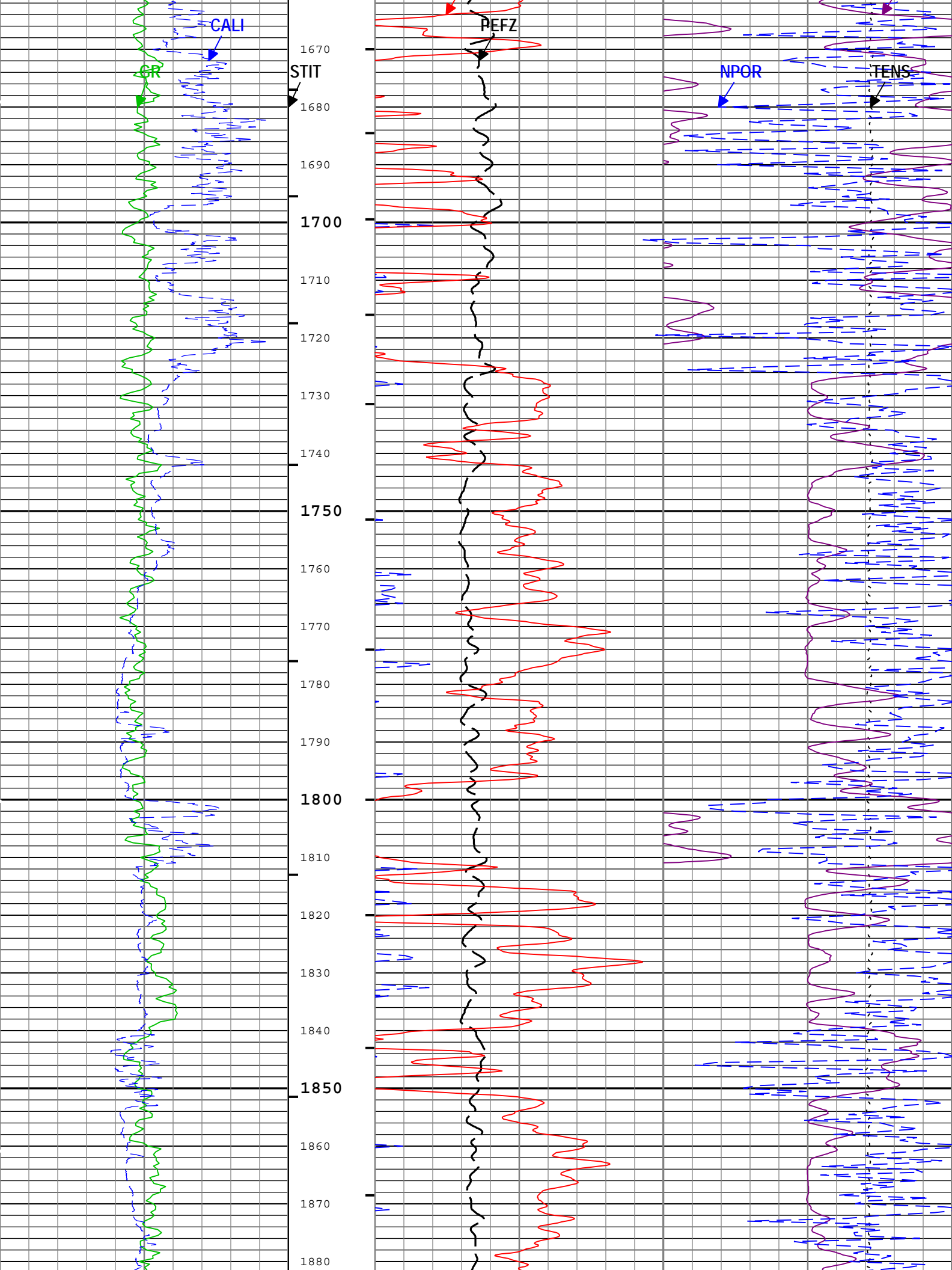


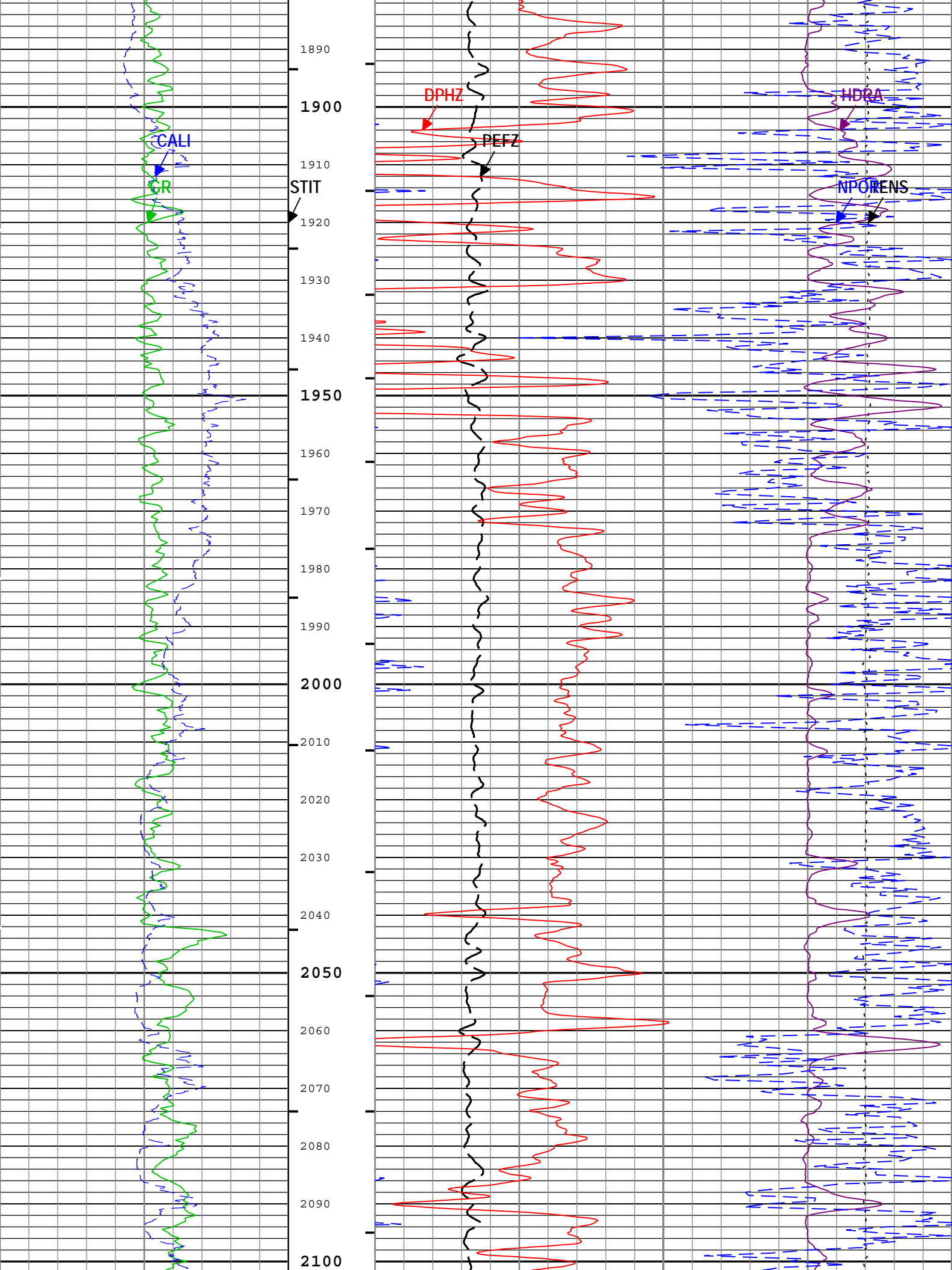


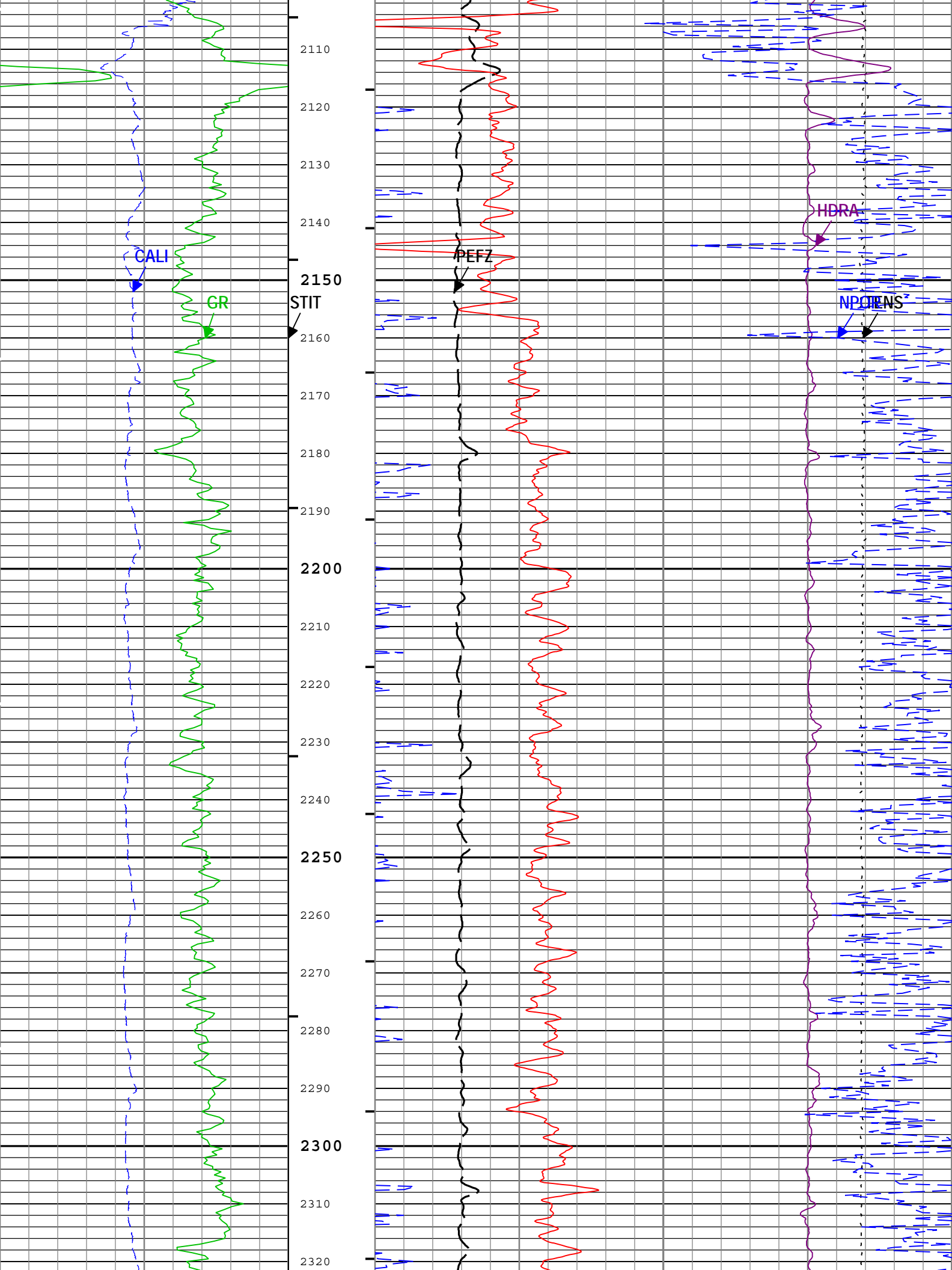


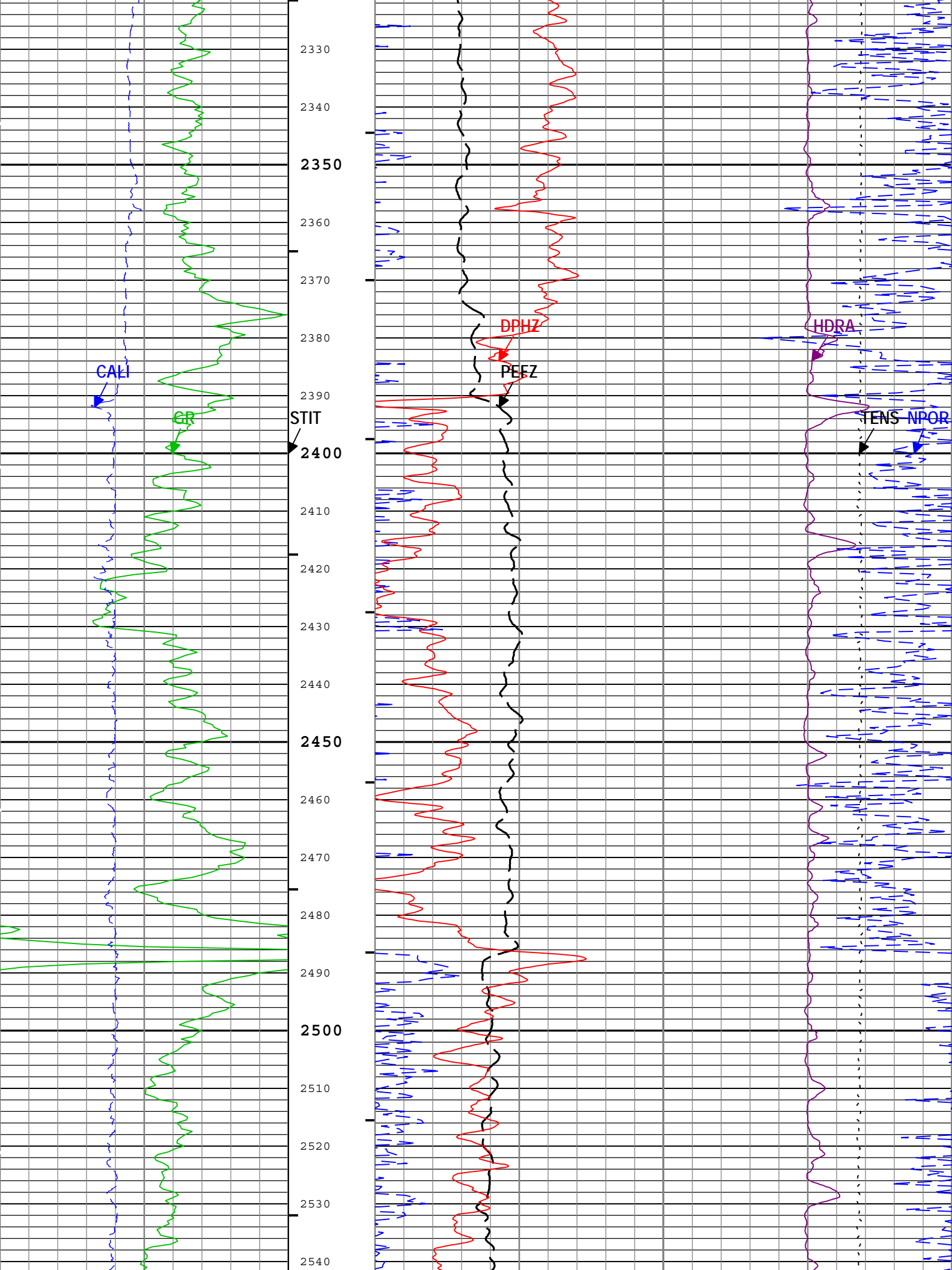


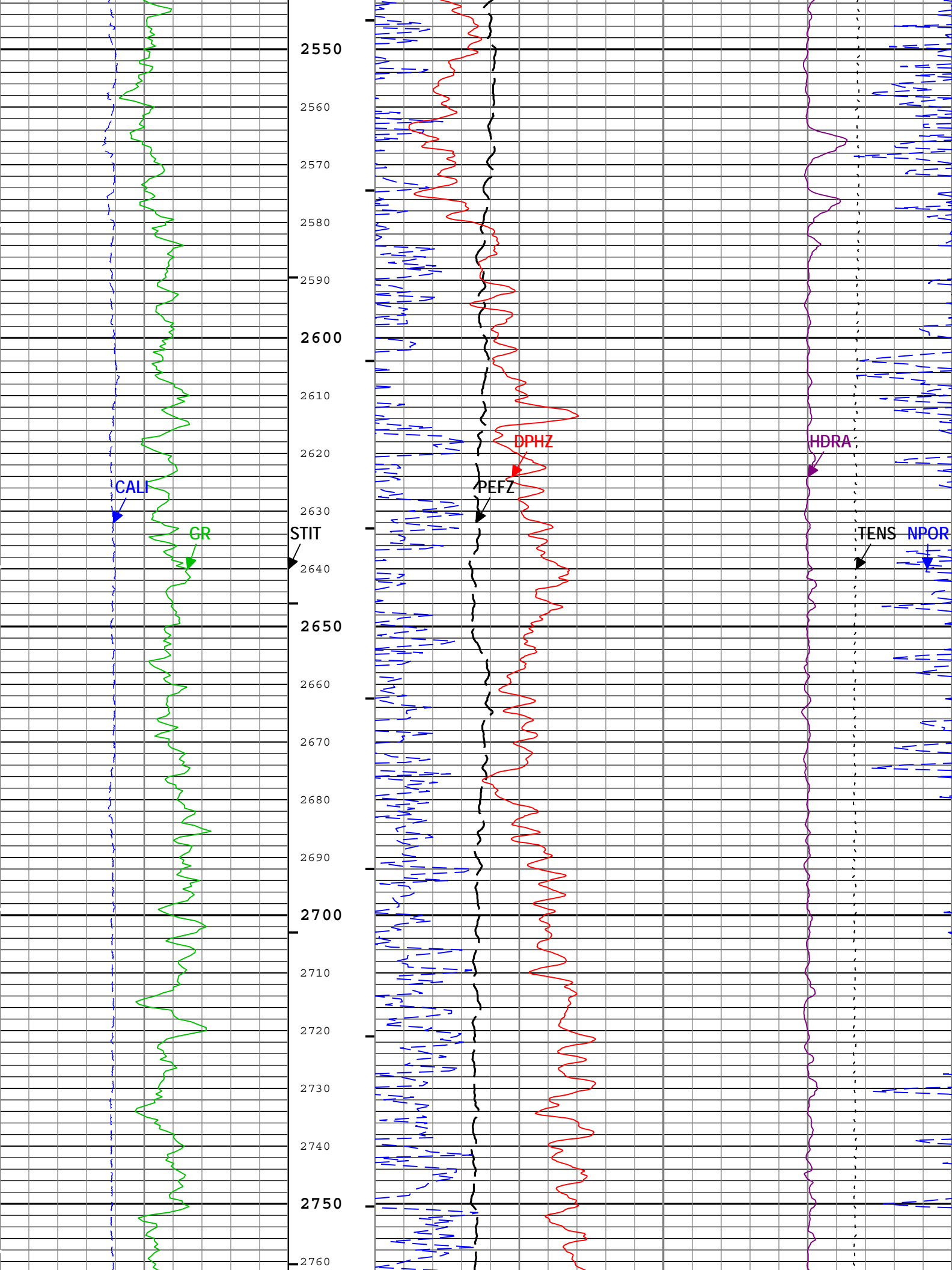


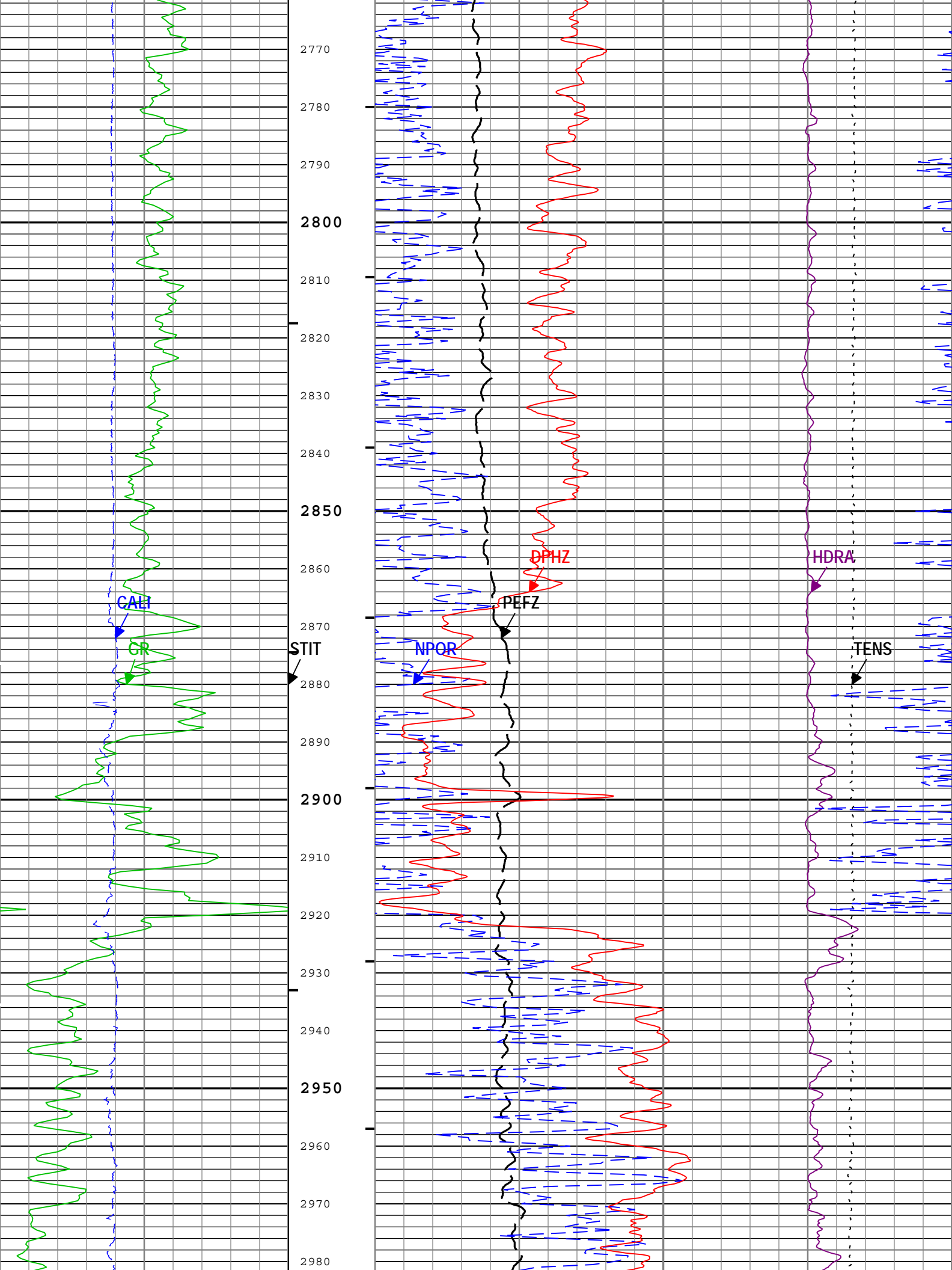


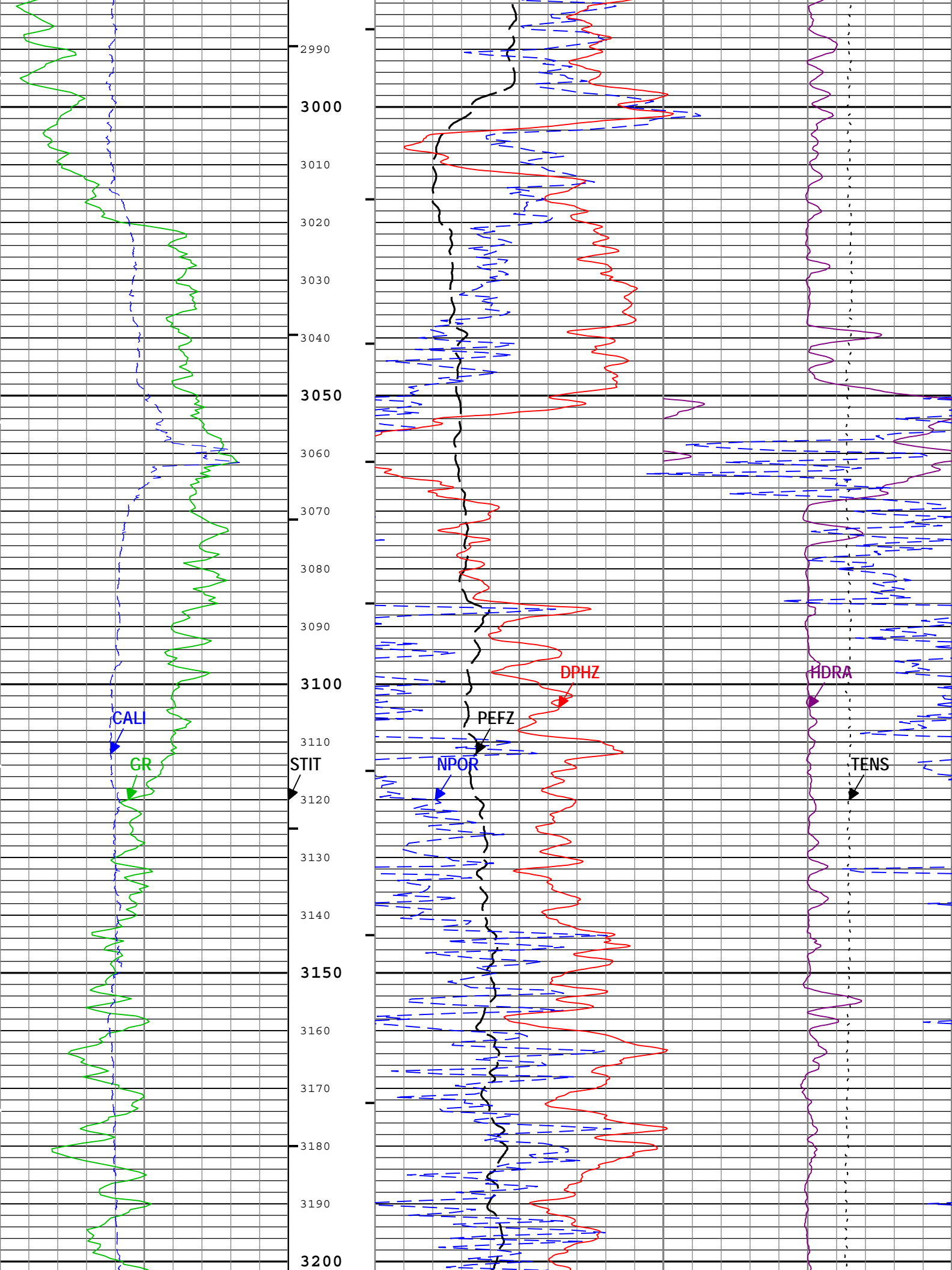


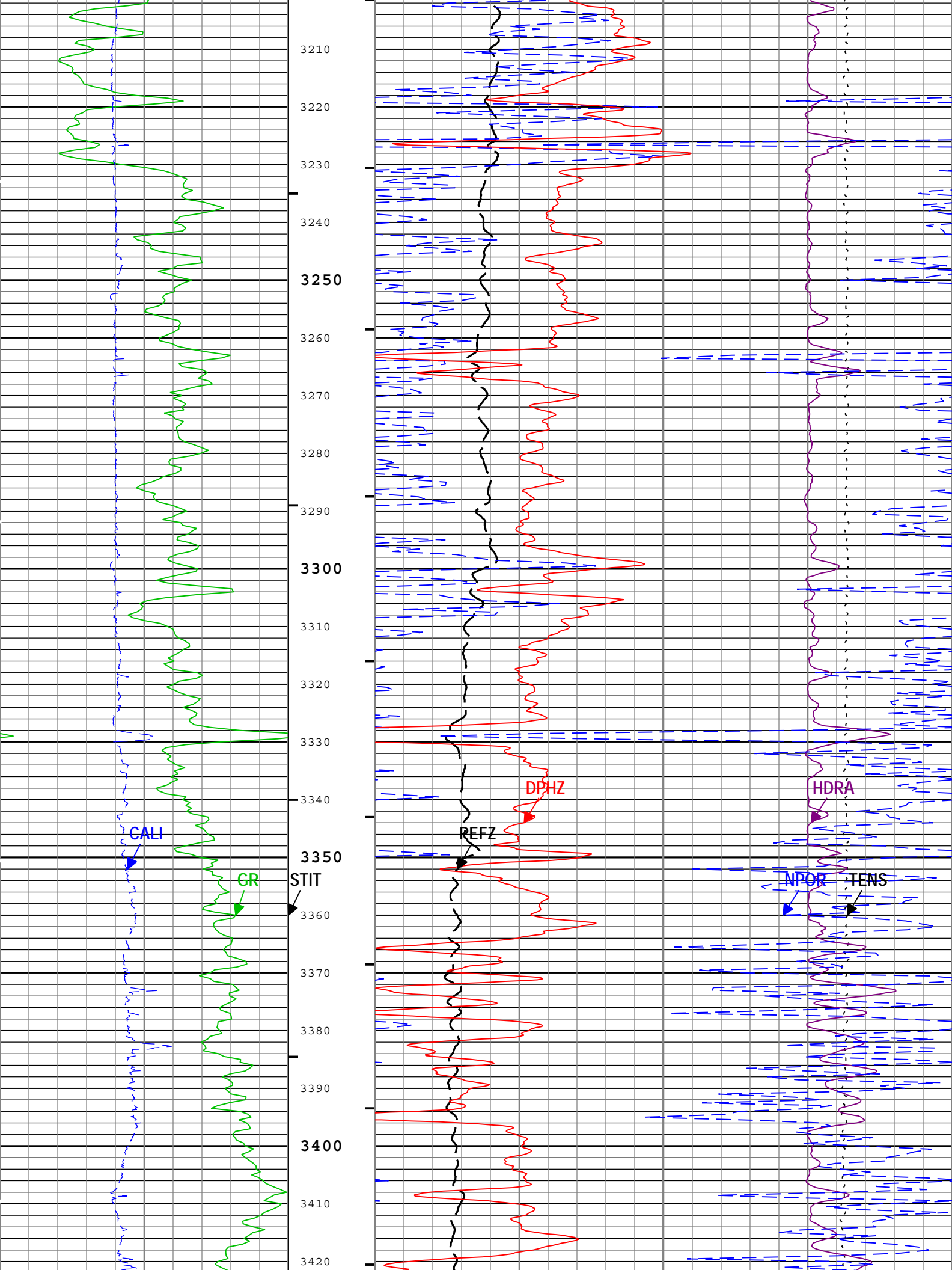


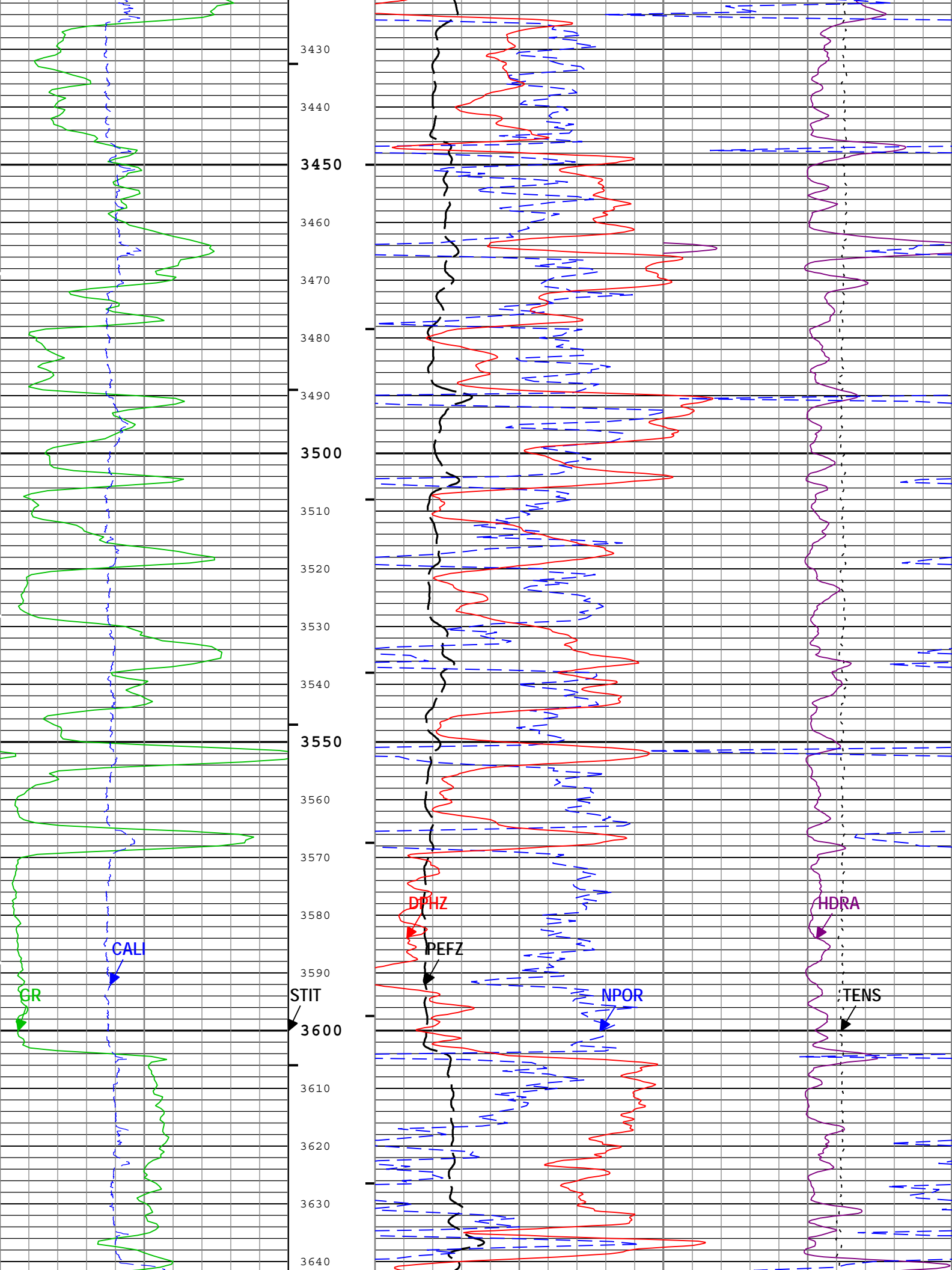


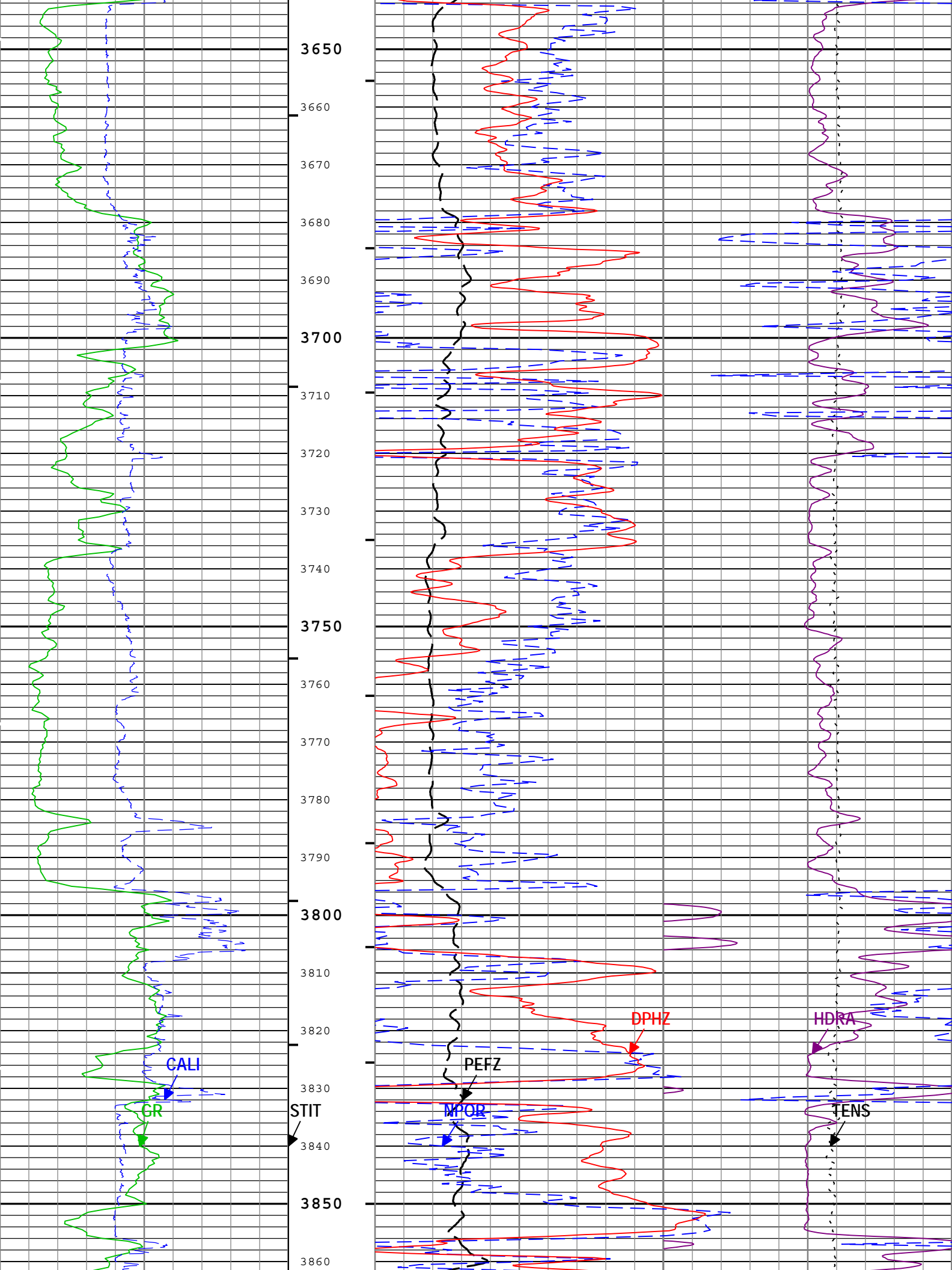


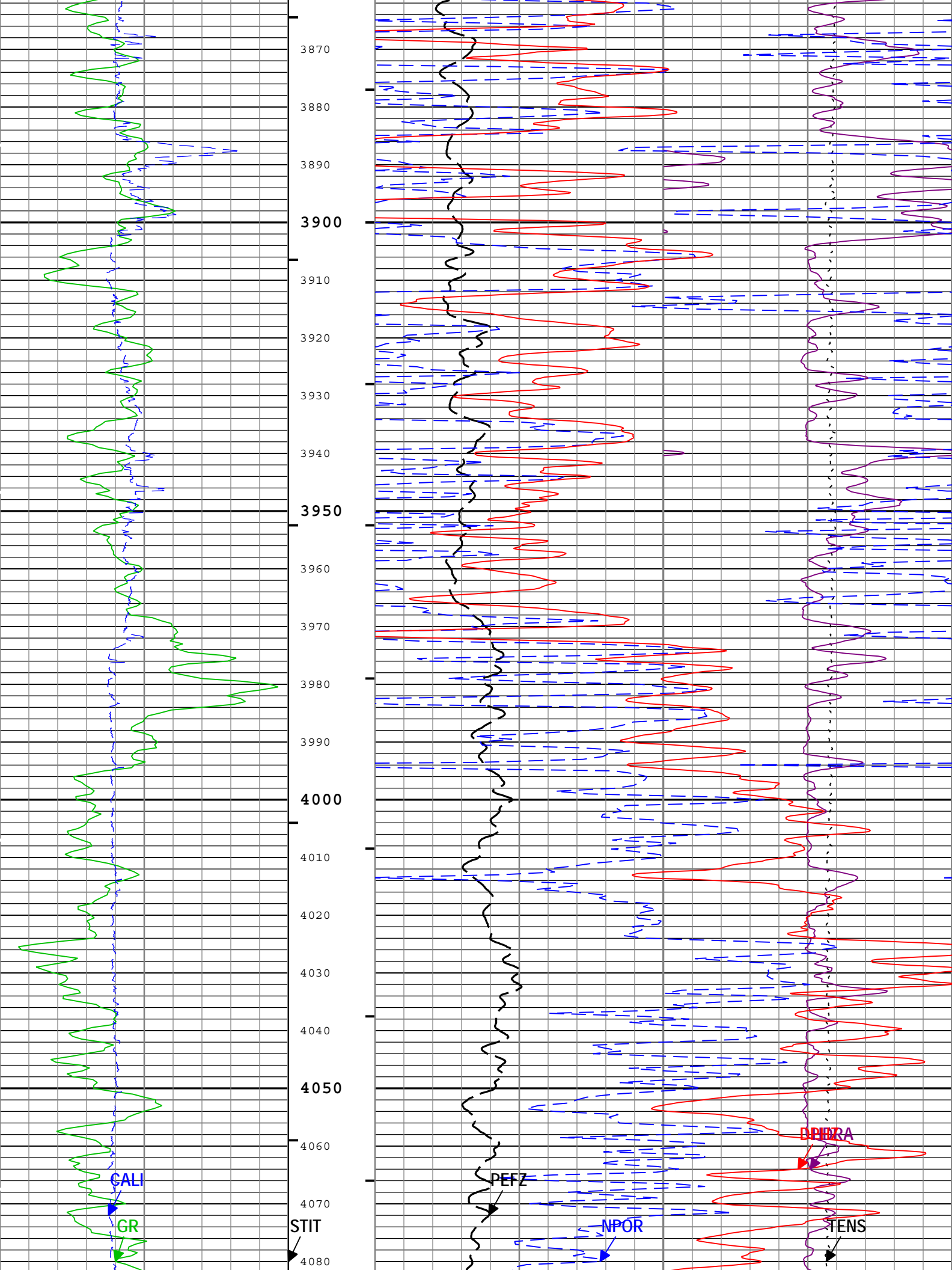


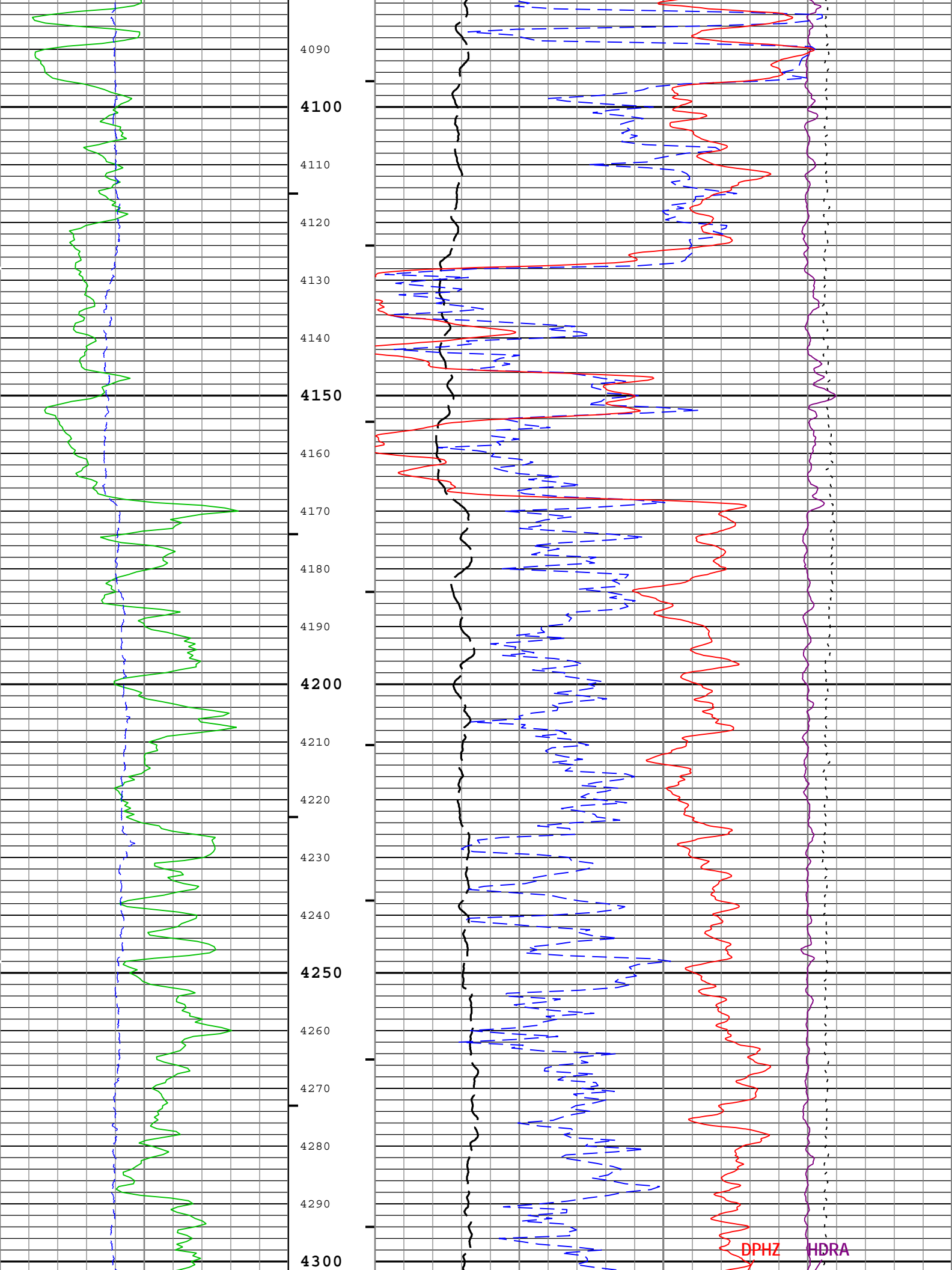


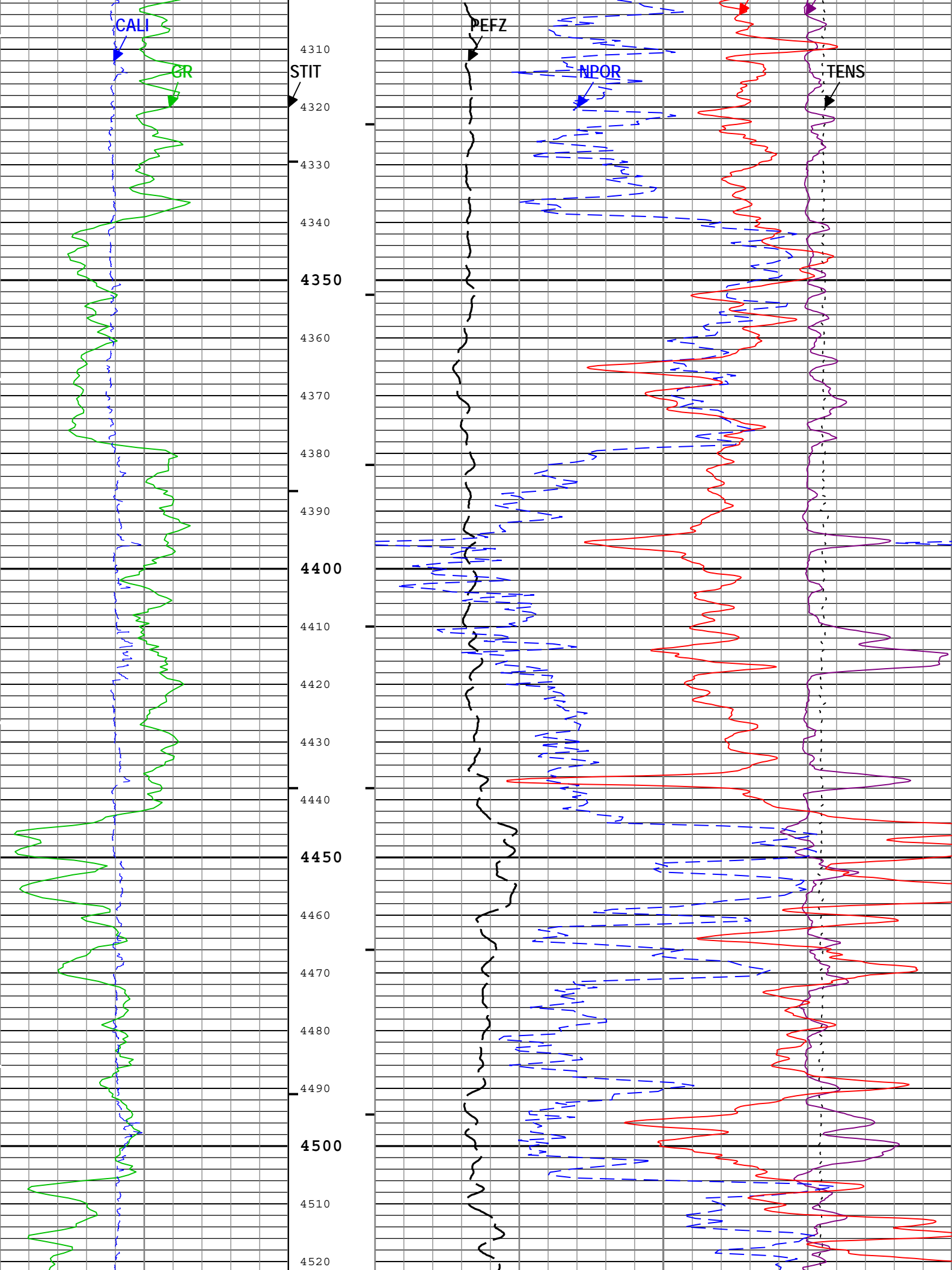


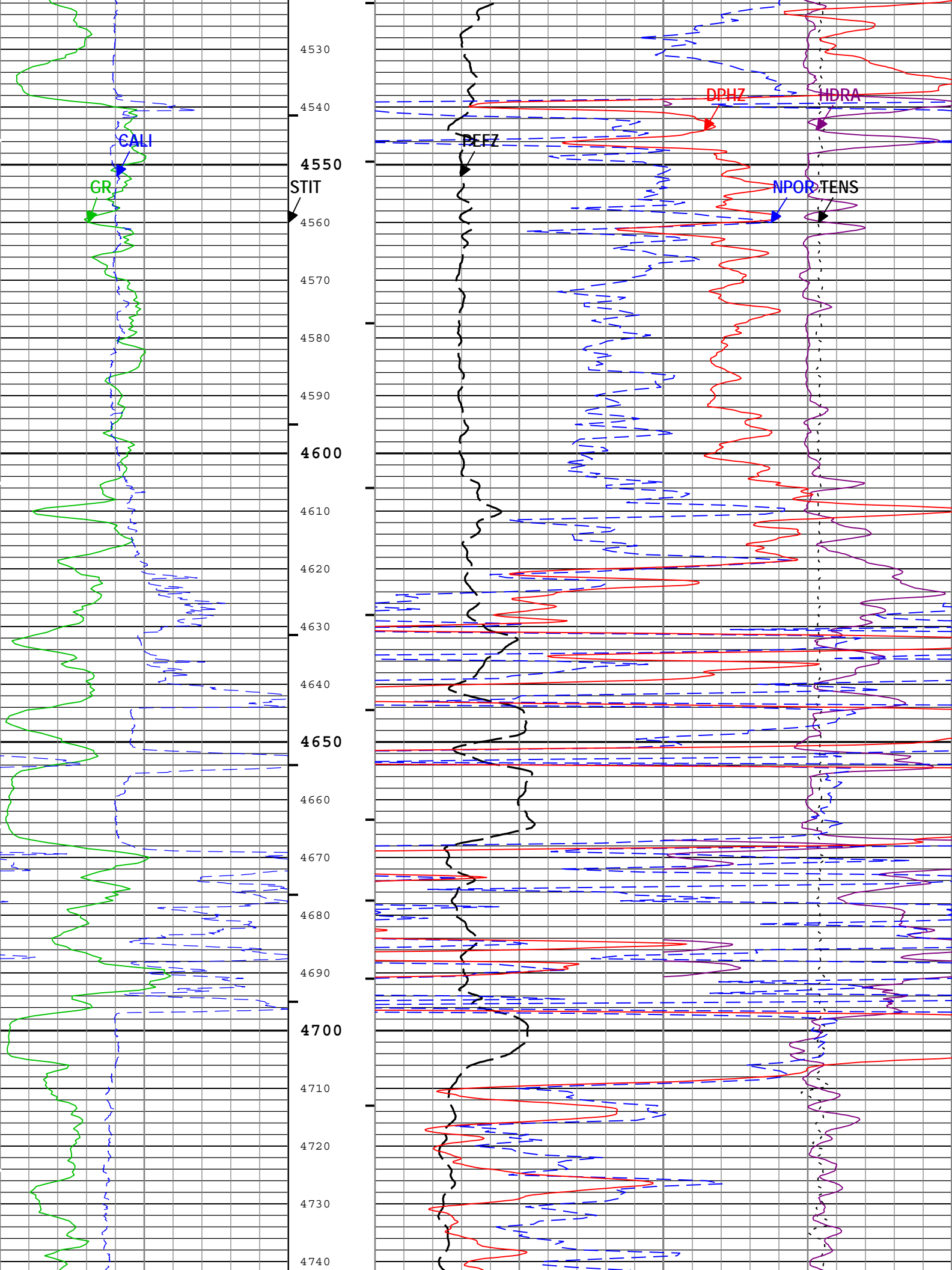


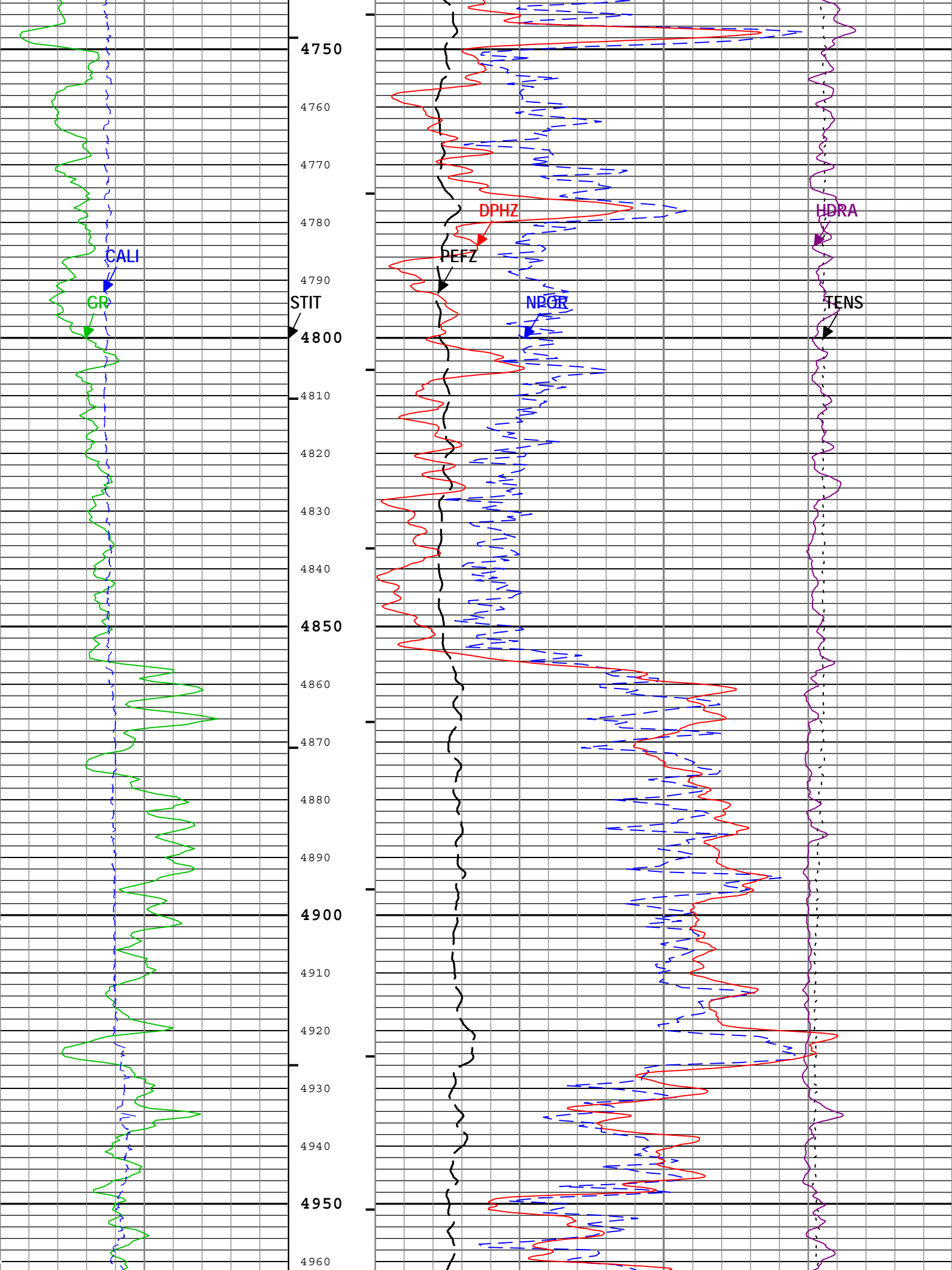


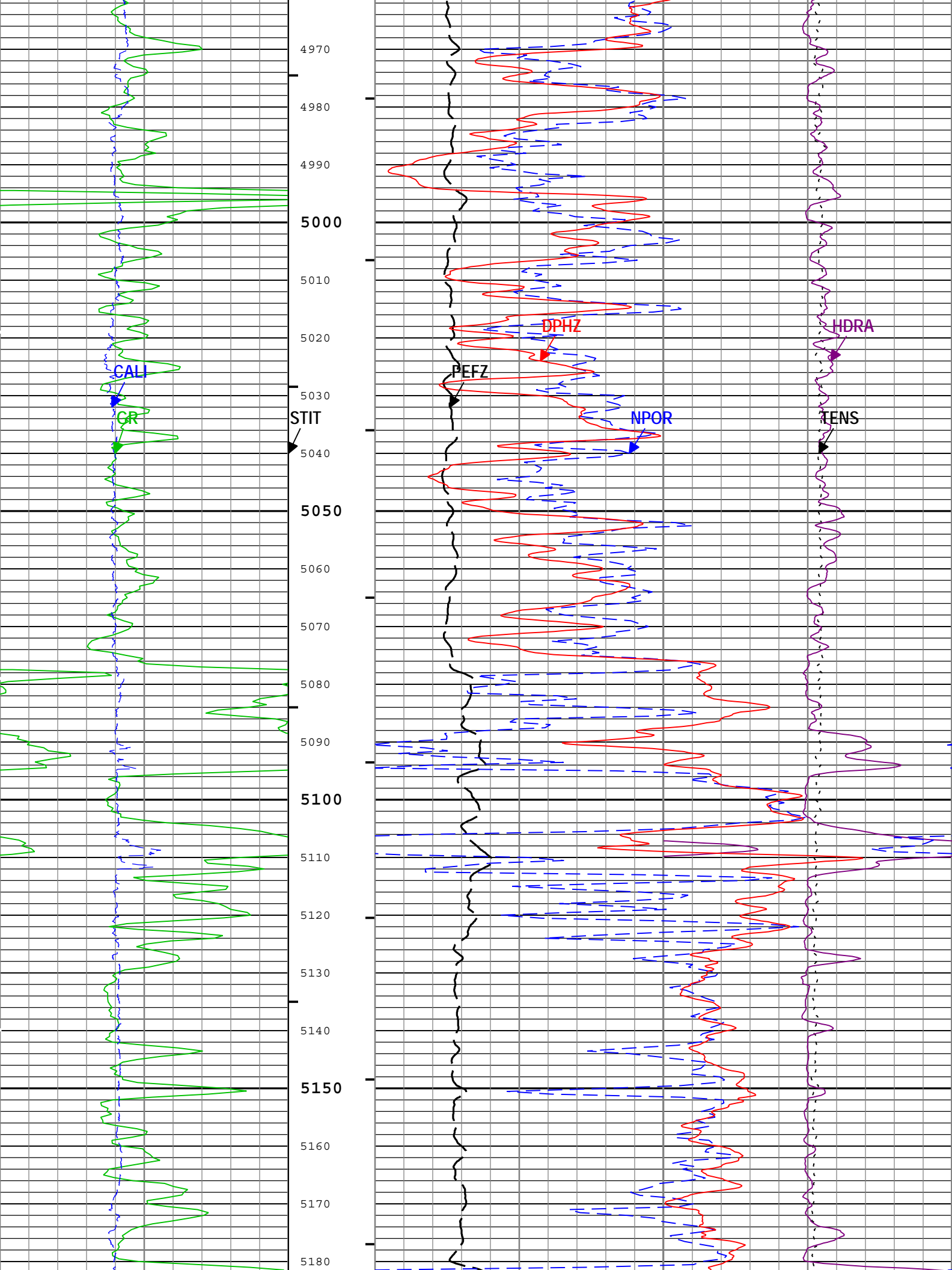


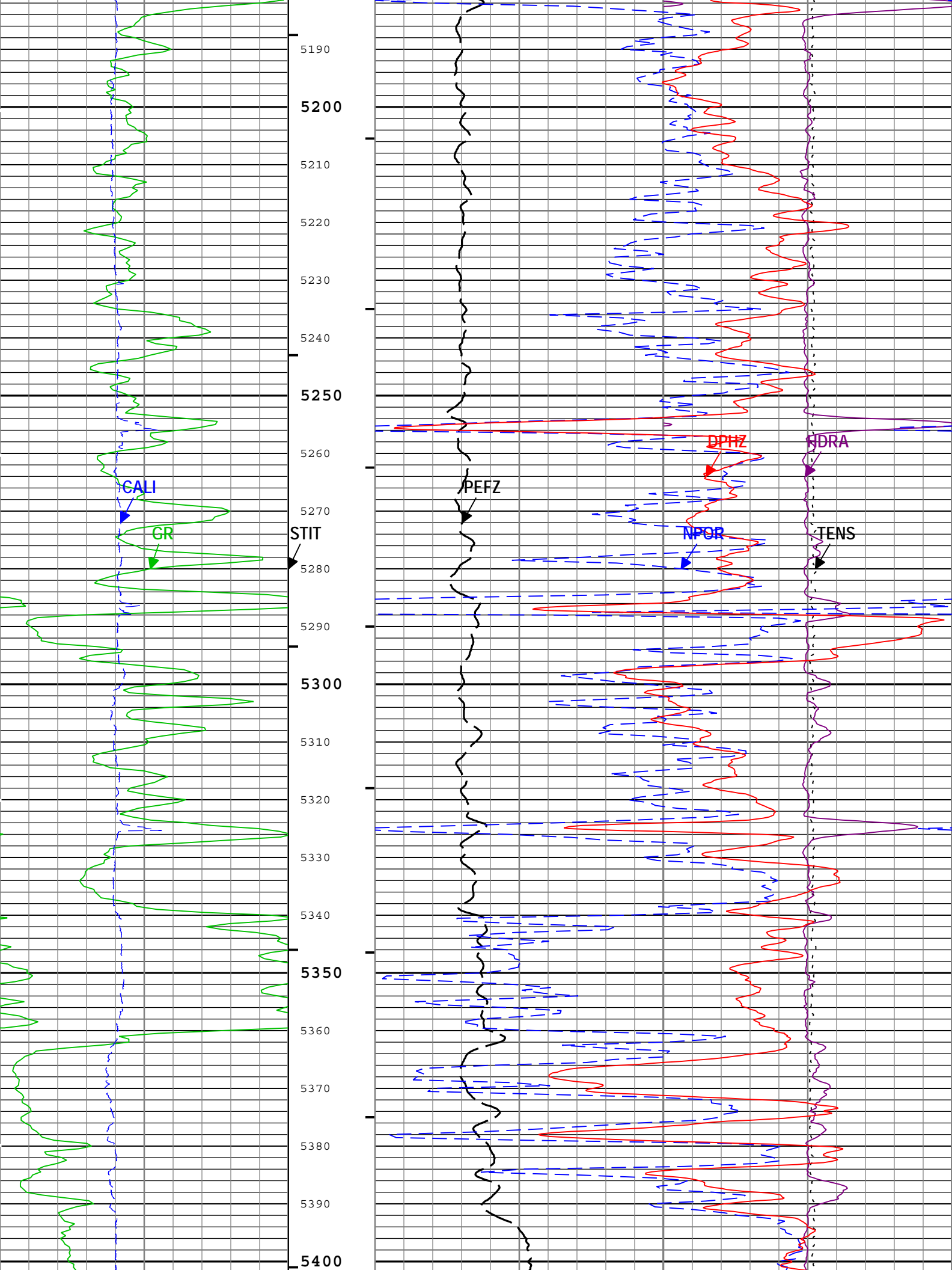


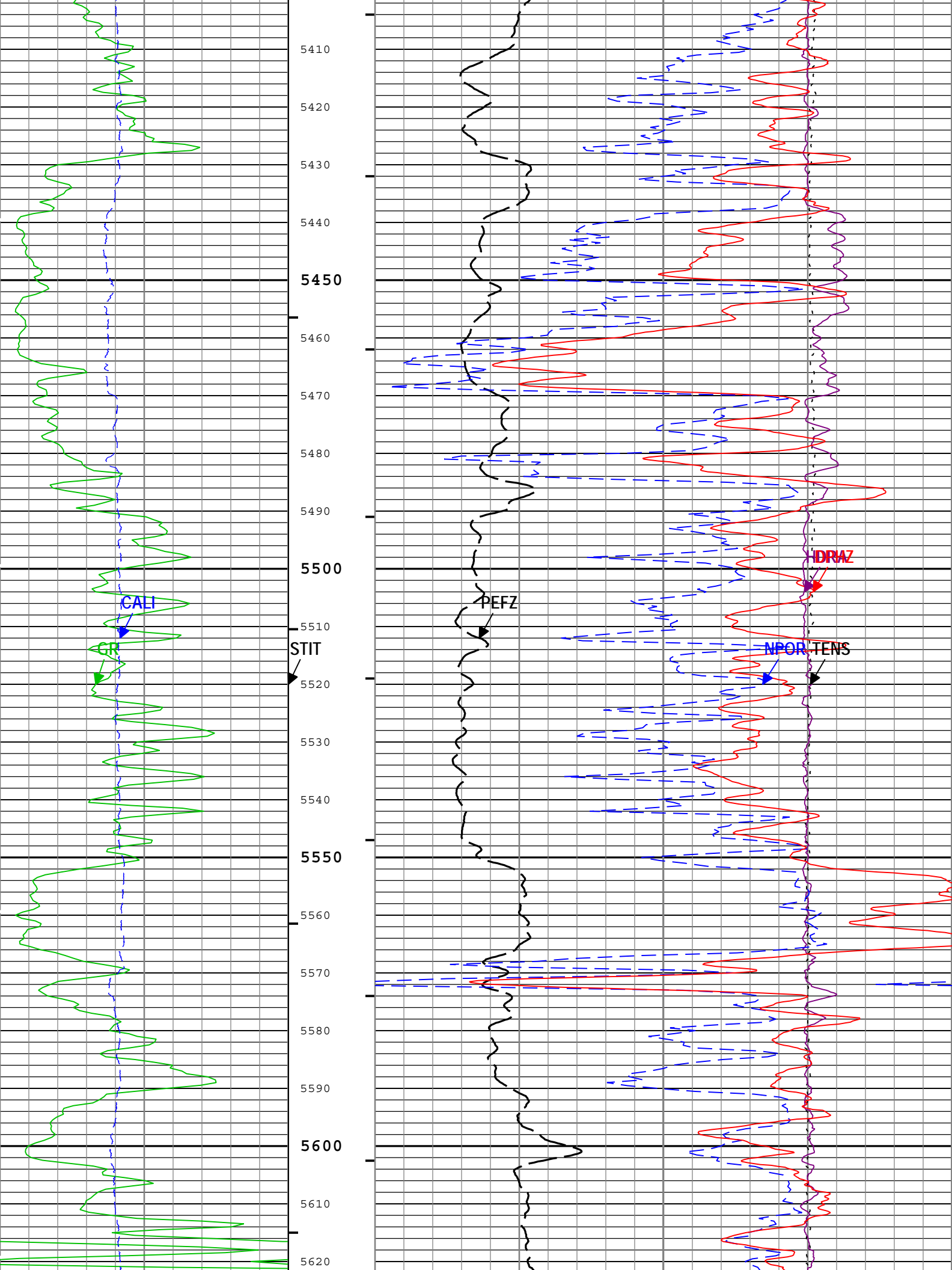


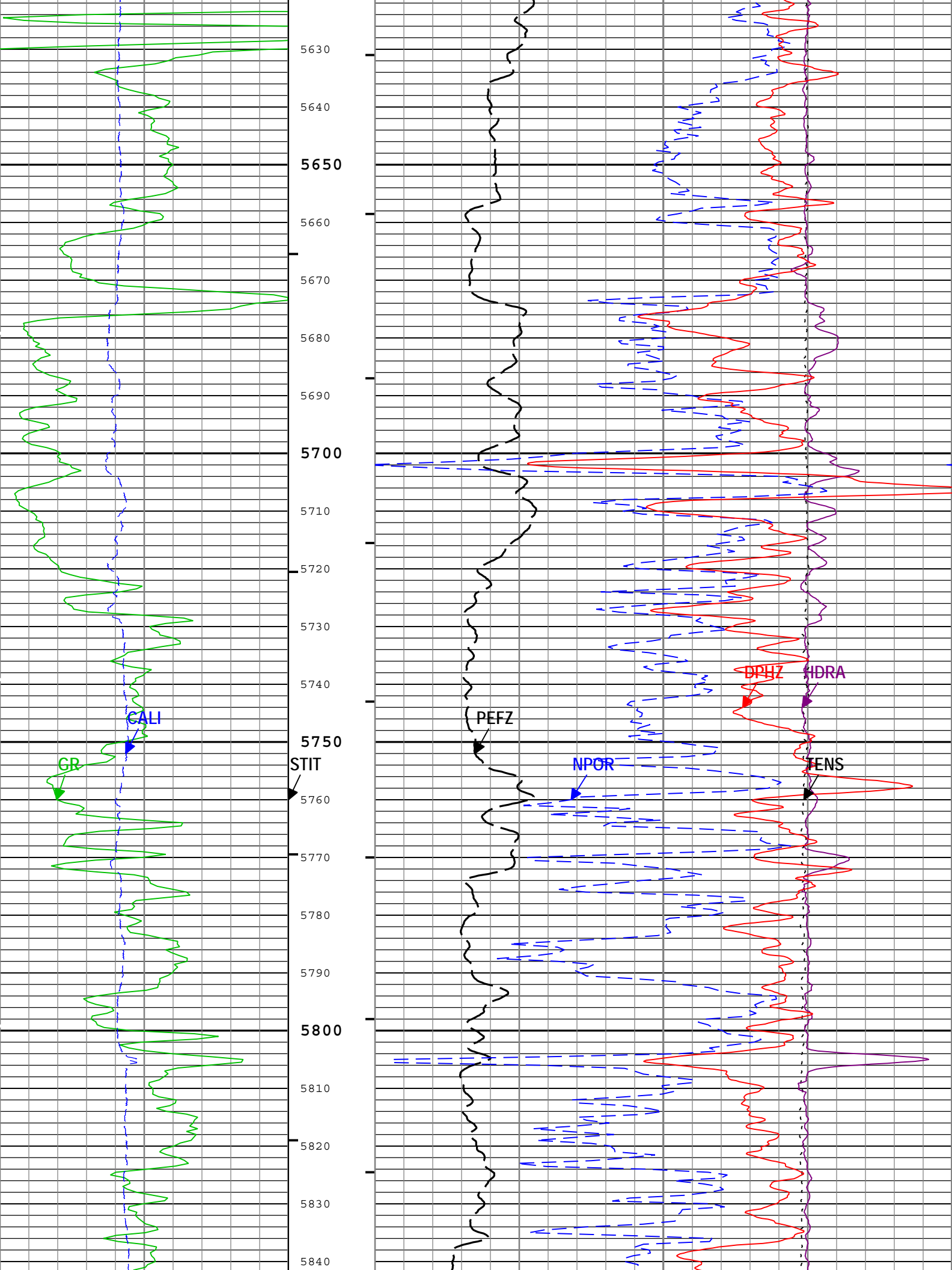


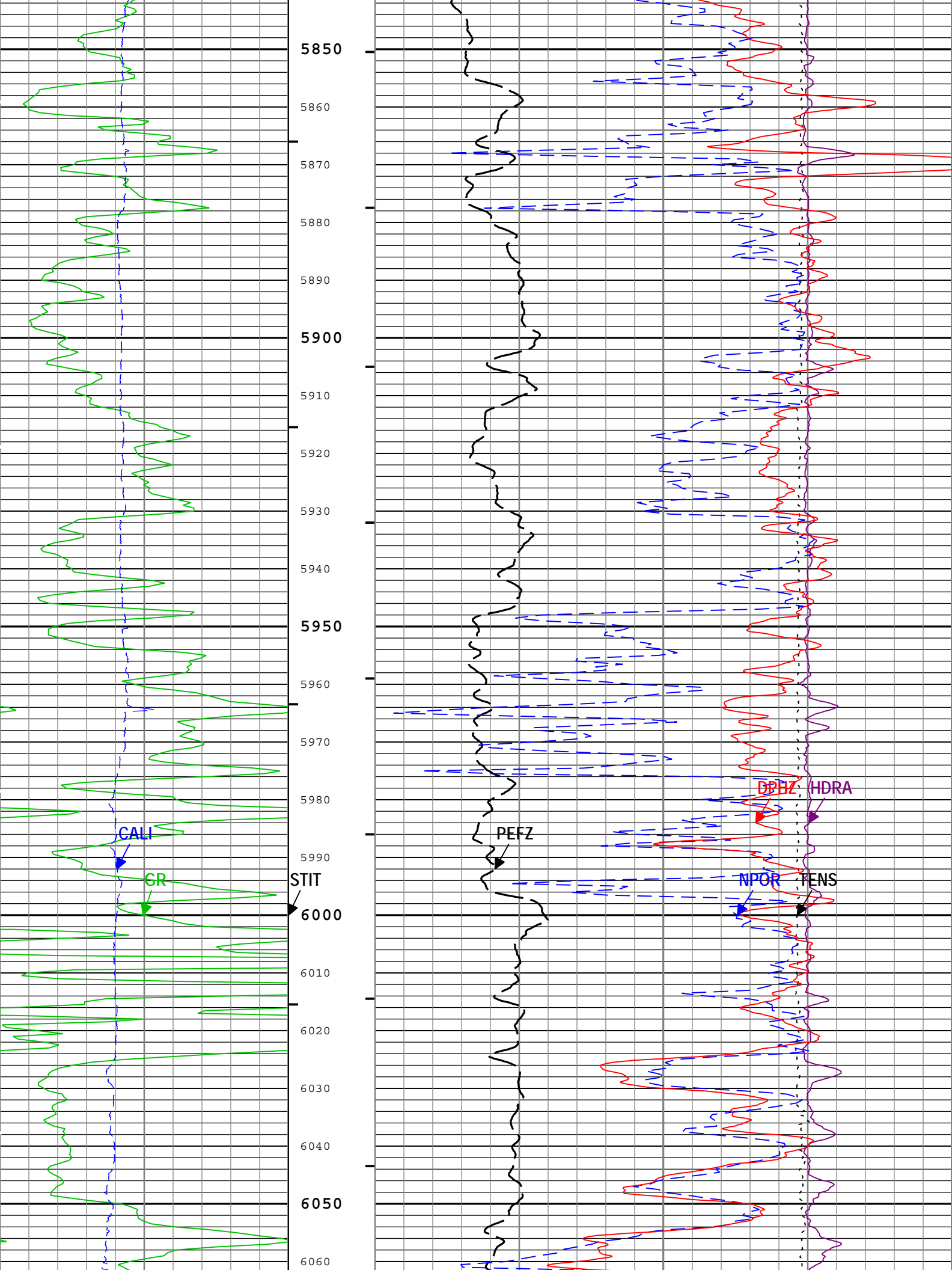


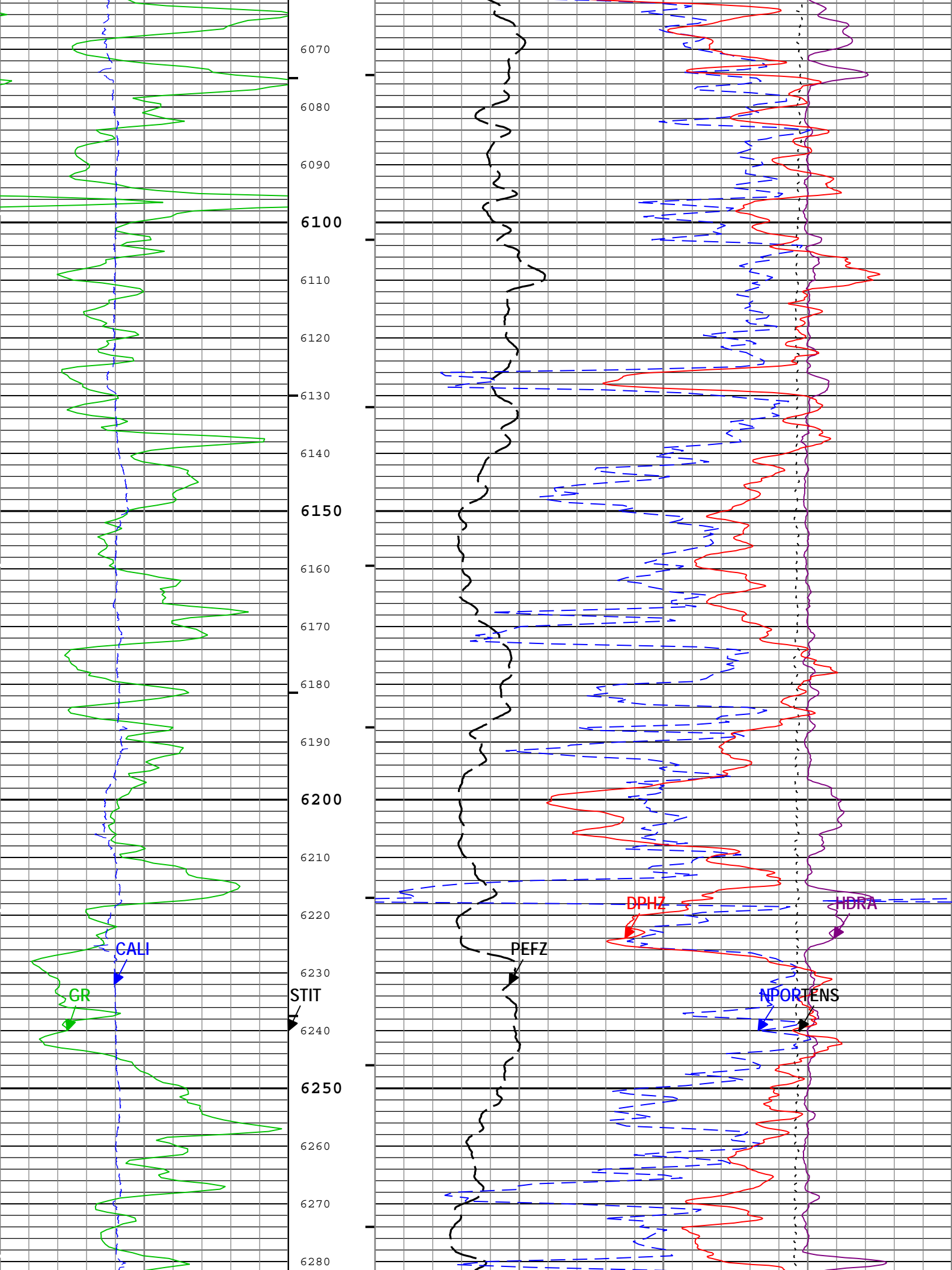


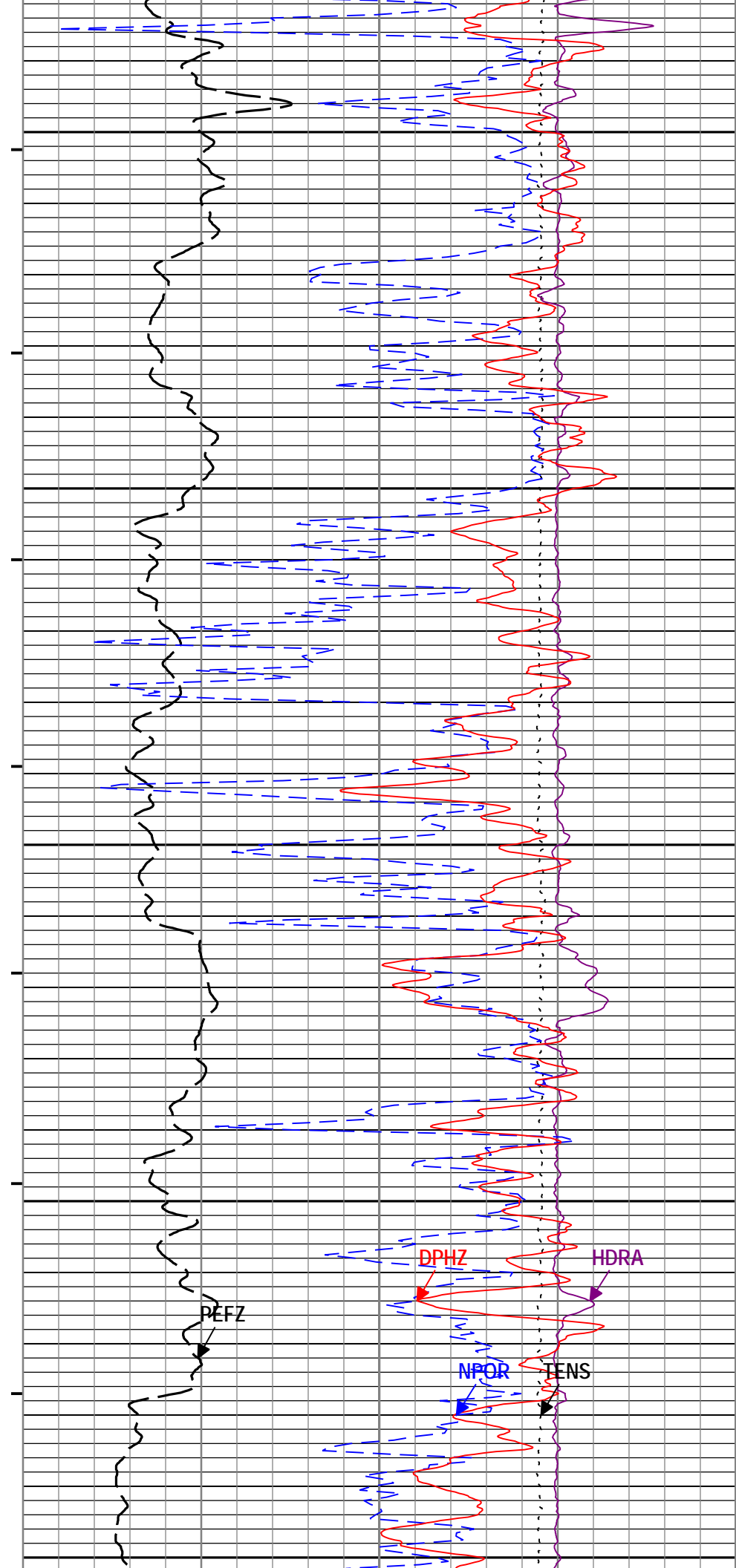
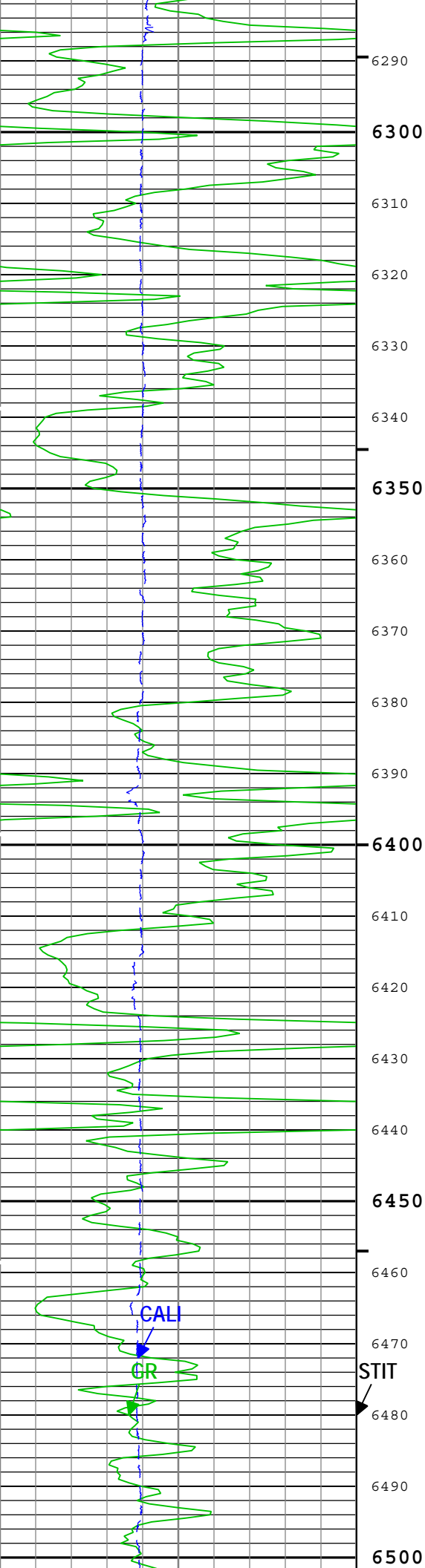


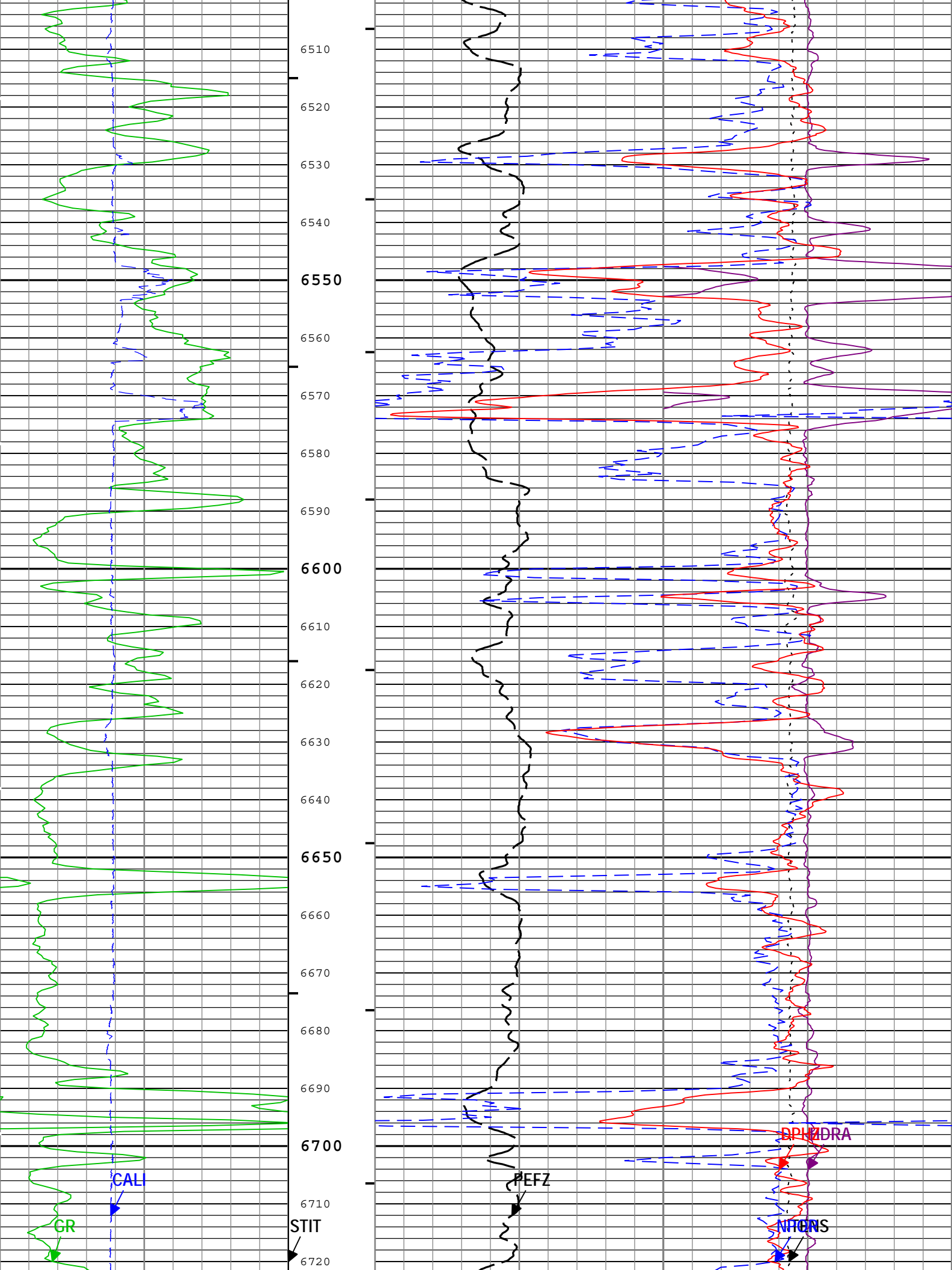


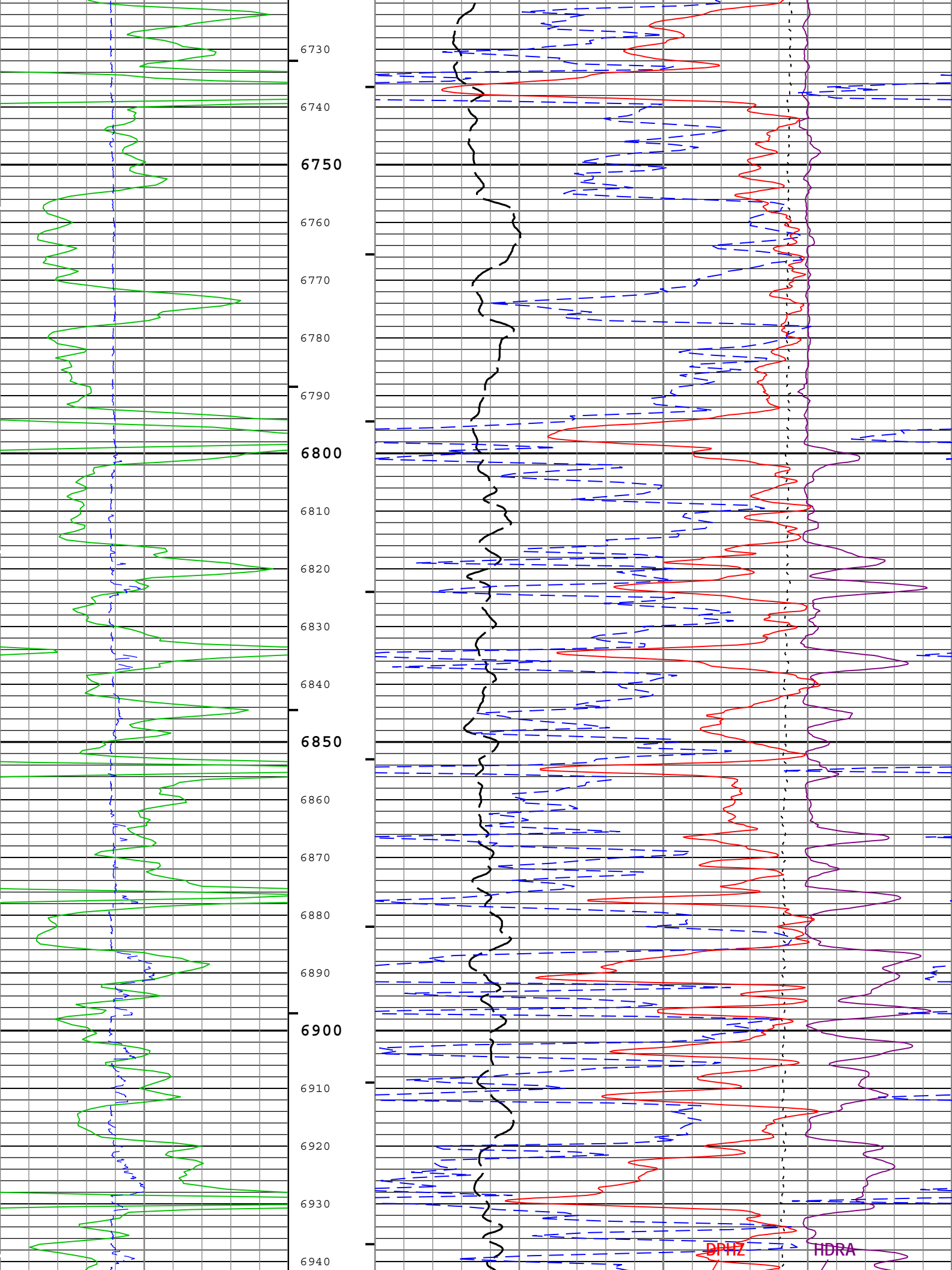


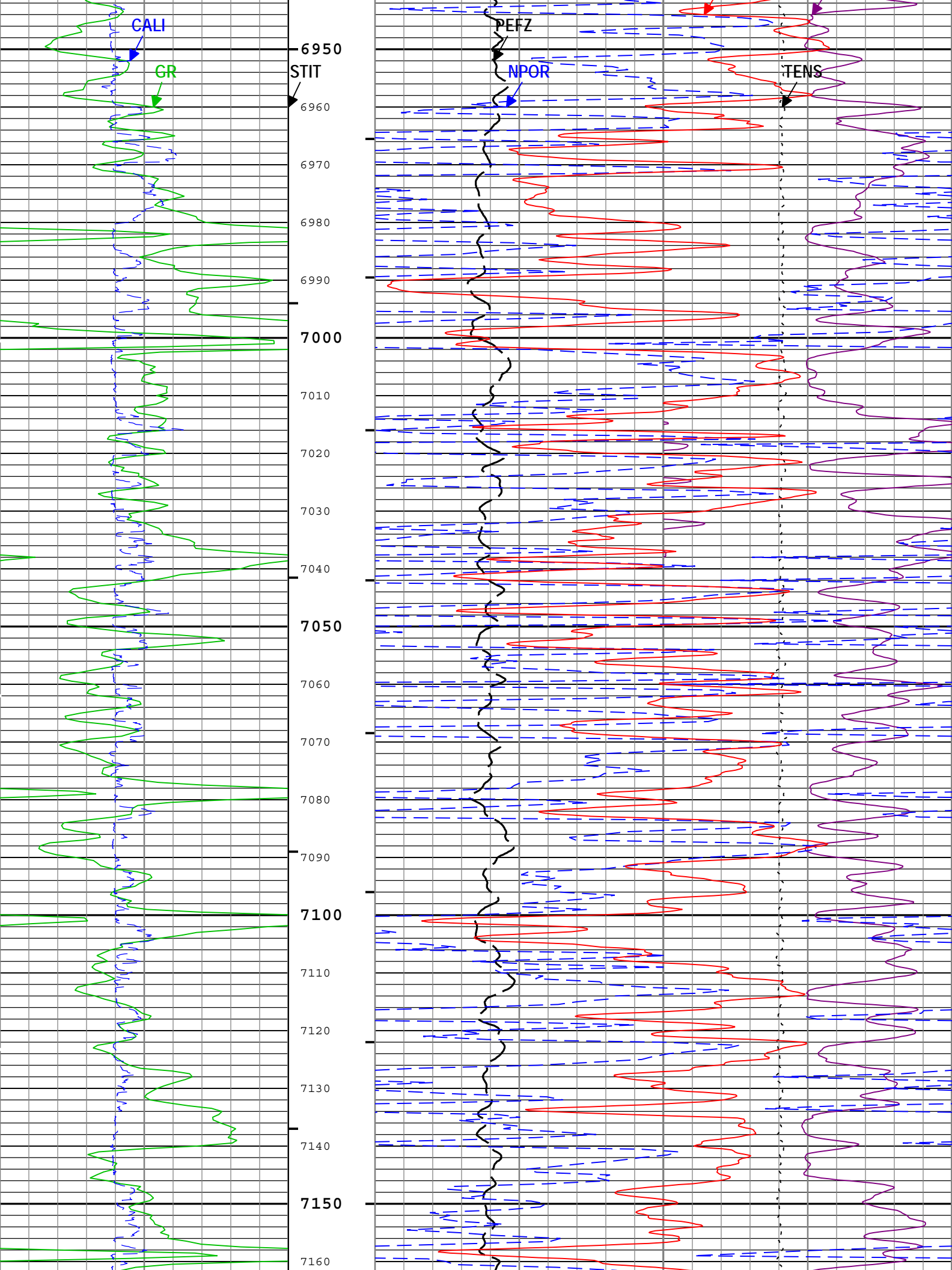


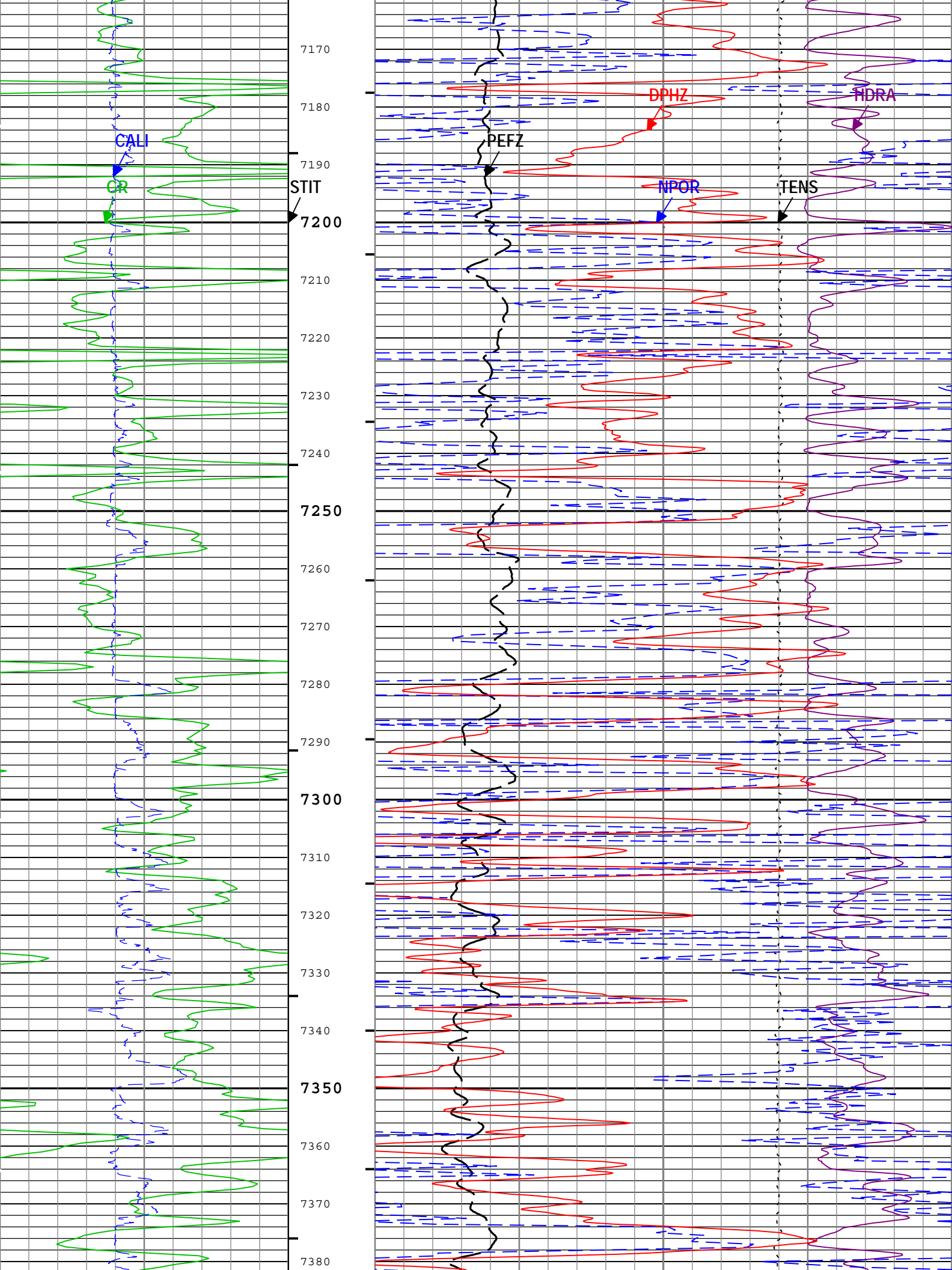


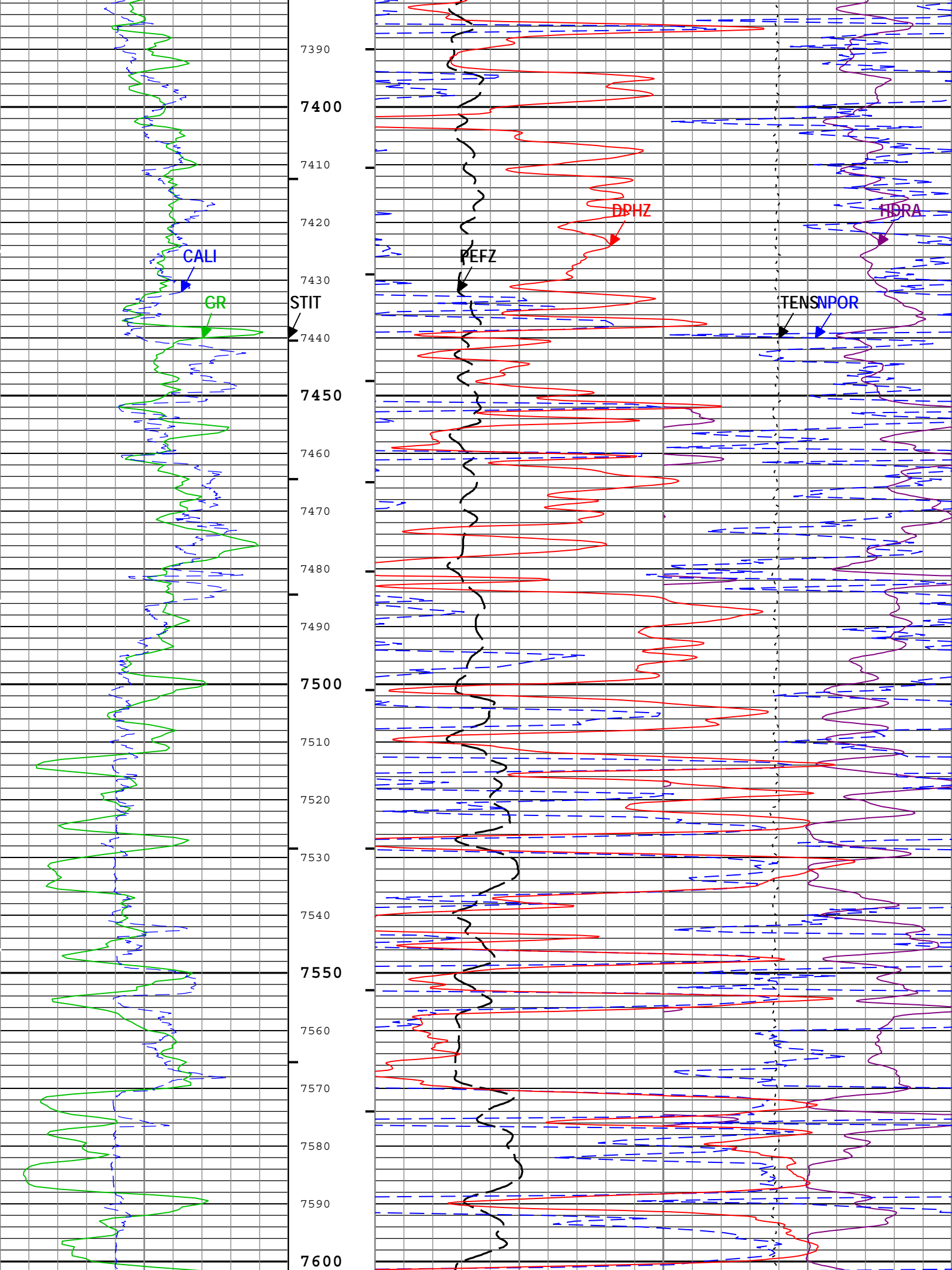


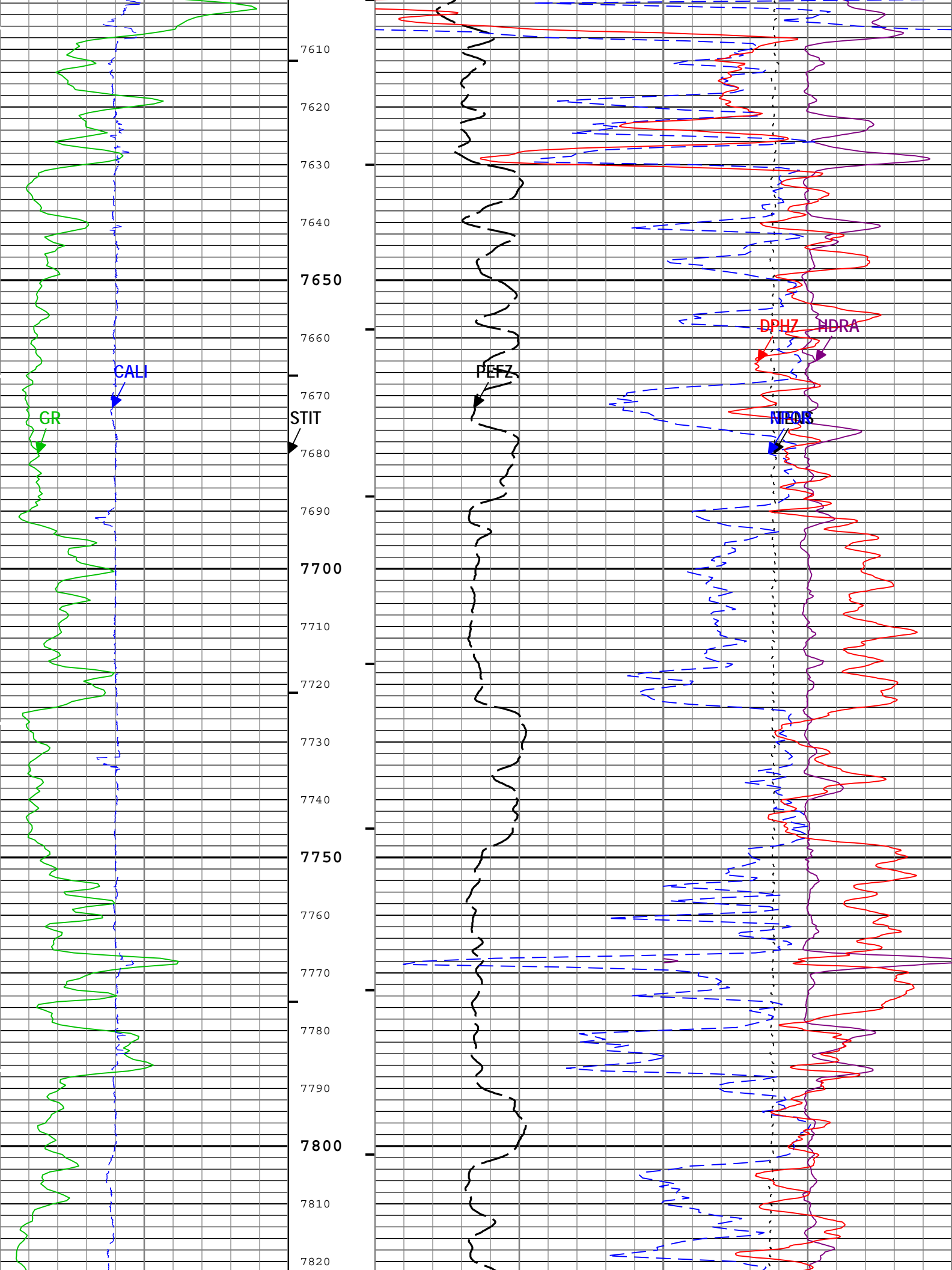


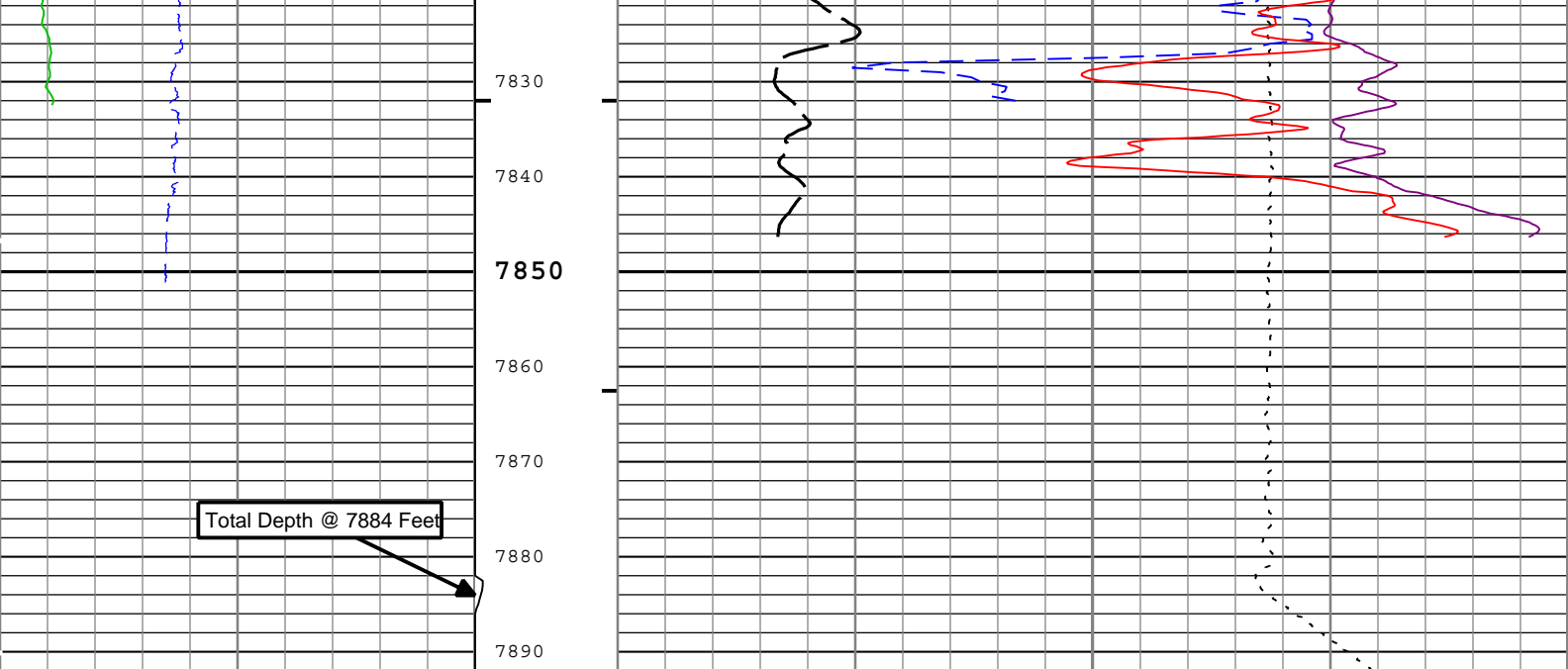












GR Backup			Stuck Tool Indicator, Total (STIT)			Gas Effect		
Gamma Ray (GR) HGNS-H						Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H		
0	gAPI	200	0	ft	50	0.3	m3/m3	-0.1
Caliper (CALI) HDRS-H						Standard Resolution Density Porosity (DPHZ) HDRS-H		
4	in	14				0.3	ft3/ft3	-0.1
			Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H			Cable Tension (TENS)		
			0			6000	lbf	0
						Density Standoff Correction (HDRA) HDRS-H		
						-0.25	g/cm3	0.25

TIME_1900 - Time Marked every 60.00 (s)

—IHV - Integrated Hole Volume every 10.00 (ft3)

—ICV - Integrated Cement Volume every 10.00 (ft3)

—ICV - Integrated Cement Volume every 10.00 (ft3)

—IHV - Integrated Hole Volume every 10.00 (ft3)

Description: HGNS standard resolution porosities for Platform Express Format: Log (5in Porosity) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 26-Sep-2012 12:26:02

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	3601.04	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.273	in
CBLO	Casing Bottom (Logger)	WLSESSION	342	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DFT_WATER	Drilling Fluid Water Type	Borehole	Fresh Water	
DHC	Density Hole Correction	HDRS-H	Bit Size	
FCD	Future Casing (Outer) Diameter	WLSESSION	5.5	in
FD	Fluid Density	Borehole	1	g/cm3

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	75	degF
RMFS	Resistivity of Mud Filtrate Sample	Borehole	1.3	ohm.m
SOCO	Standoff Correction Option	HGNS-H	Yes	
TD	Total Measured Depth	Borehole	7884	ft

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	330	342
BS	7.875	342	7892.17

All depth are actual.

Tool Control Parameters	
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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

Run 1

Porosity 5" = 100'

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
Run 1	Log[3]:Up	Up	7391.00 ft	7891.79 ft	26-Sep-2012 9:11:55 AM	26-Sep-2012 9:21:03 AM	5.73 ft	true
Run 1	Main[4]:Up	Up	31.88 ft	7892.18 ft	26-Sep-2012 9:23:43 AM	26-Sep-2012 11:48:38 AM	6.25 ft	true

All depths are referenced to toolstring zero

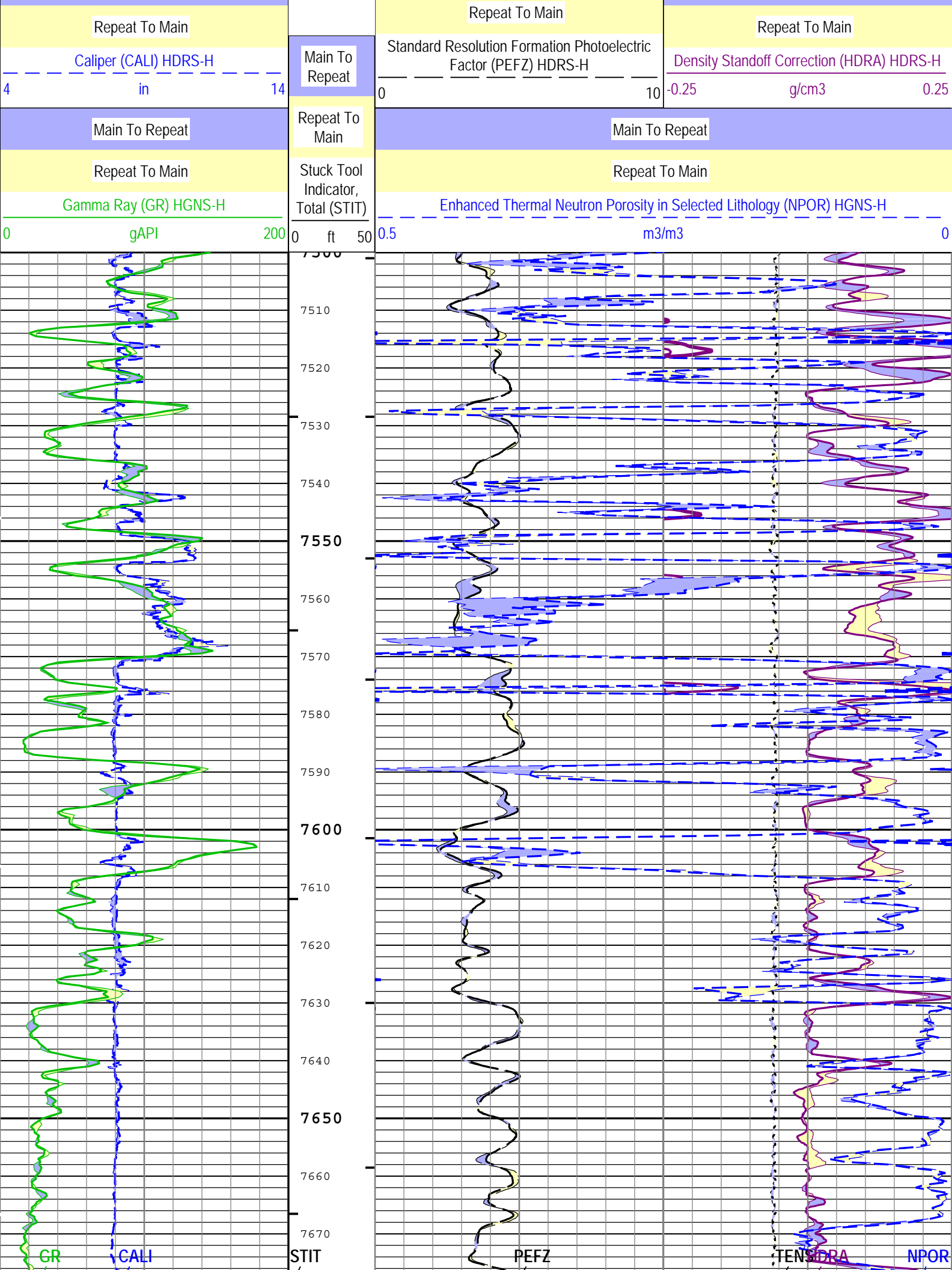
Log

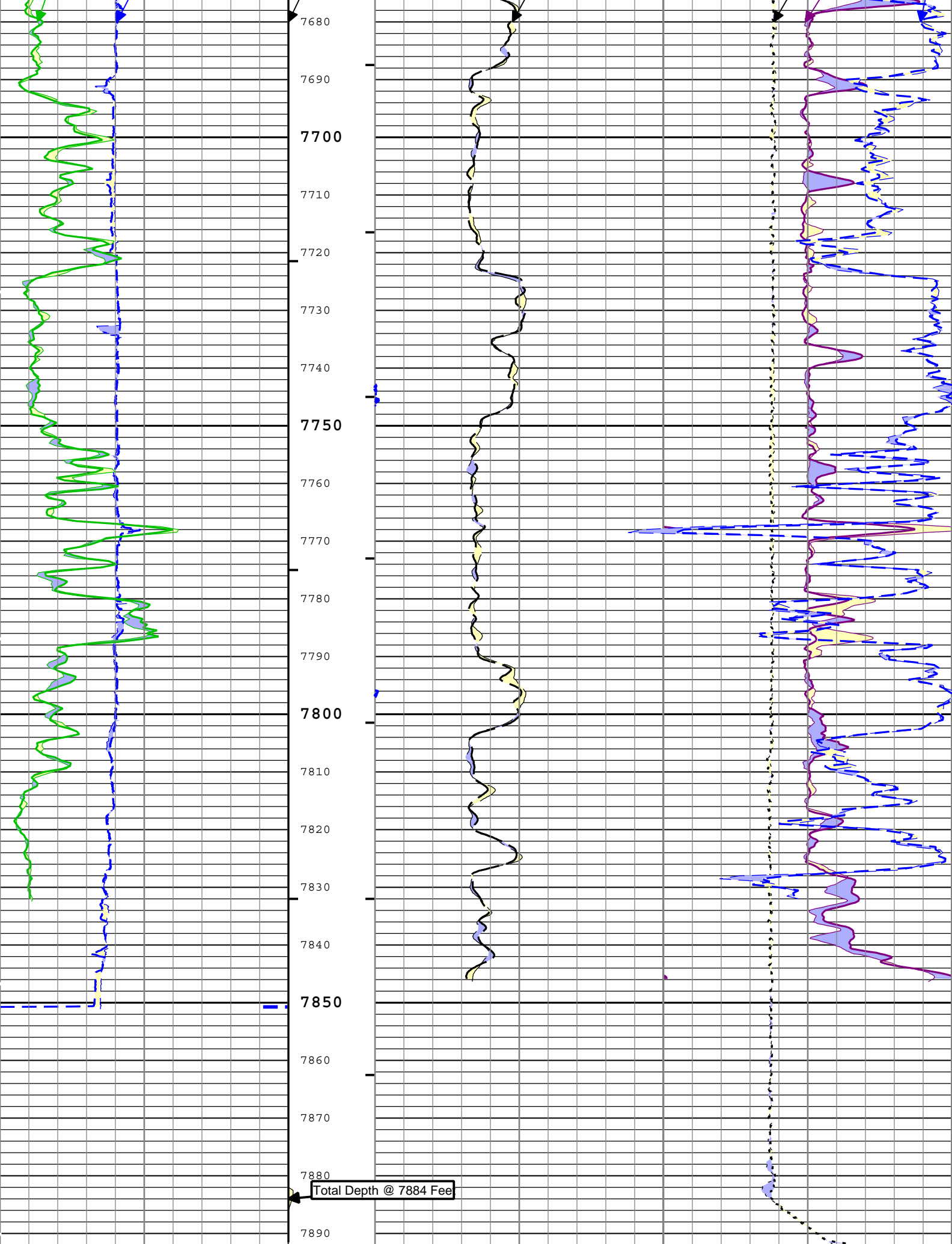
Run 1: Main[4]:Up

Description: HGNS standard resolution porosities for Platform Express
Type: Measured Depth Creation Date: 26-Sep-2012 12:26:06 Format: Log (5in Porosity RA) Index Scale: 5 in per 100 ft Index Unit: ft Index

	— IHV - Integrated Hole Volume every 10.00 (ft3)
	— ICV - Integrated Cement Volume every 10.00 (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)

The diagram illustrates the relationship between cable tension (TENS) and cable length (CL) for three different cable configurations. The top configuration shows a cable with a length of 6000 lbf and a tension of 6000 lbf. The middle configuration shows a cable with a length of 6000 lbf and a tension of 6000 lbf. The bottom configuration shows a cable with a length of 6000 lbf and a tension of 6000 lbf.





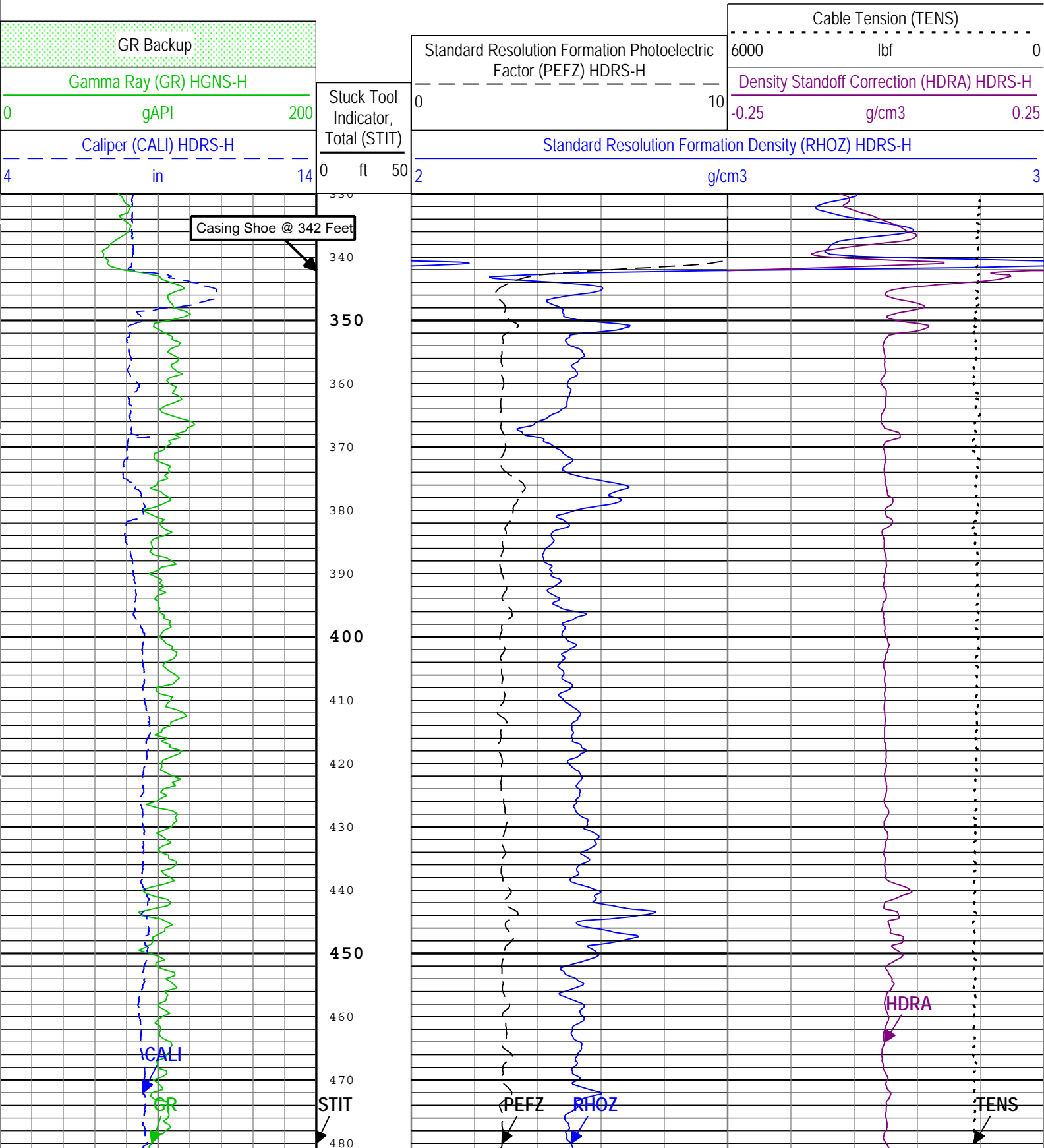
Repeat To Main			Repeat To Main		
Caliper (CALI) HDRS-H			Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H		
4	in	14	0.5	m3/m3	0
Main To Repeat			Main To Repeat		Main To Repeat
Repeat To Main			Repeat To Main		Repeat To Main
Gamma Ray (GR) HGNS-H			Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		Cable Tension (TENS)
0	gAPI	200	0	10	6000 lbf 0
					Main To Repeat
					Repeat To Main
					Density Standoff Correction (HDRA) HDRS-H
					-0.25 g/cm3 0.25
—IHV - Integrated Hole Volume every 10.00 (ft3)					
TIME_1900 - Time Marked every 60.00 (s)					
—ICV - Integrated Cement Volume every 10.00 (ft3)					
—ICV - Integrated Cement Volume every 10.00 (ft3)					
—IHV - Integrated Hole Volume every 10.00 (ft3)					
Description: HGNS standard resolution porosities for Platform Express Format: Log (5in Porosity RA) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 26-Sep-2012 12:26:06					

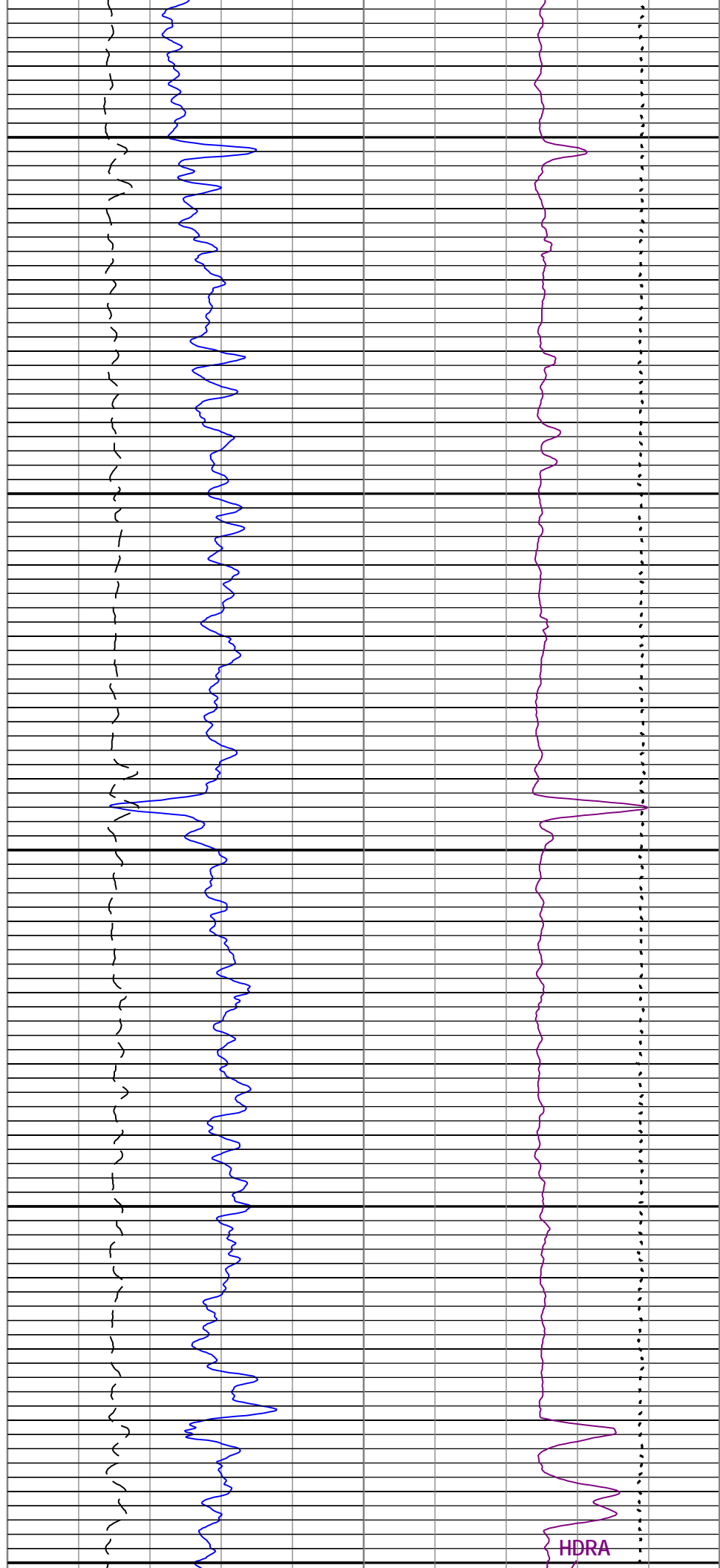
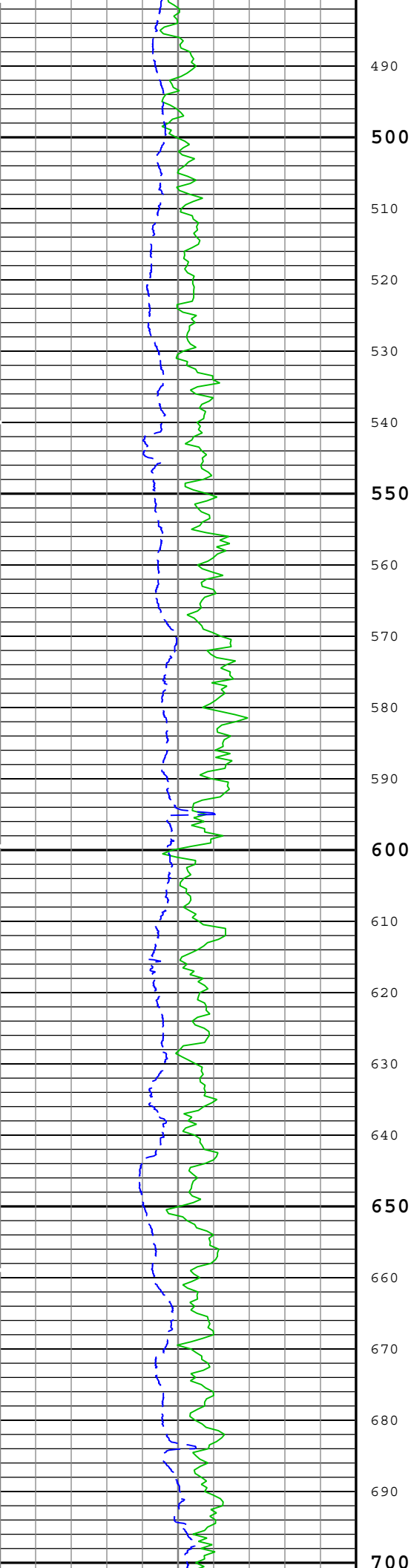
Run 1									
Density 5" = 100'									
Integration Summary									
Output Channel(s)	Output Description			Input Parameter			Output Value	Unit	
Software Version									
Acquisition System						Version			
MaxWell						3.1.9755.0			
Application Patch						SP-20120614-3.1.9755.1038			
Computation		Description					Version		
DepthCorrection		DepthCorrection					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	
HGNS-H		HILT Gamma-Ray and Neutron Sonde, 150 degC				3.1.9755.0		2.0	
HRGD-H		HILT Resistivity Gamma-Ray Density Device, 150 degC				3.1.9755.0		3.0	
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data	
Run 1	Main[4]:Up	Up	31.88 ft	7892.18 ft	26-Sep-2012 9:23:43 AM	26-Sep-2012 11:48:38 AM	6.25 ft	true	
All depths are referenced to toolstring zero									
Log	Run 1: Main[4]:Up								

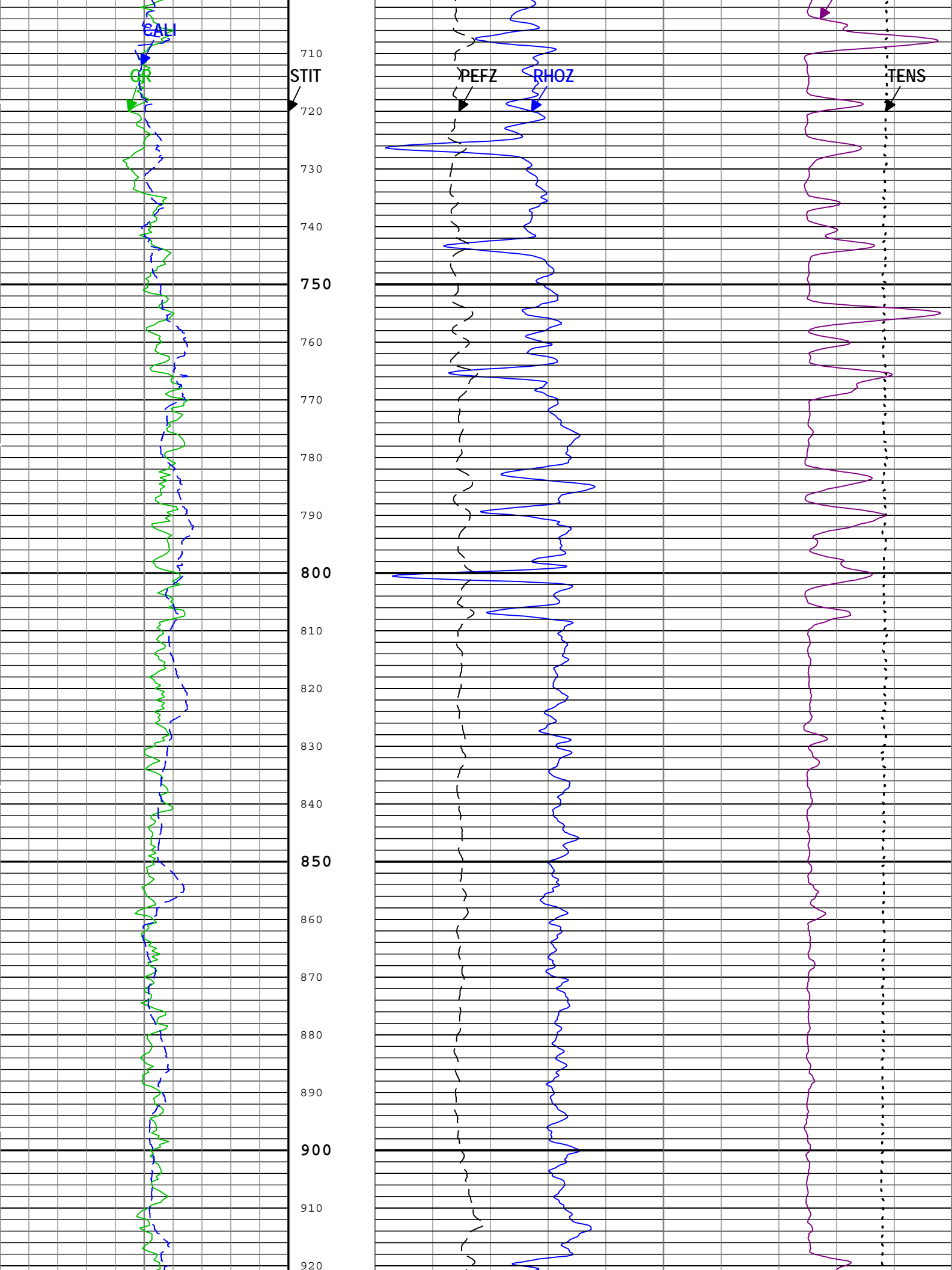
Description: Monosensor densities for Platform Express Format: Log (5in Density) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 26-Sep-2012 12:26:07								
Channel	Source			Sampling				

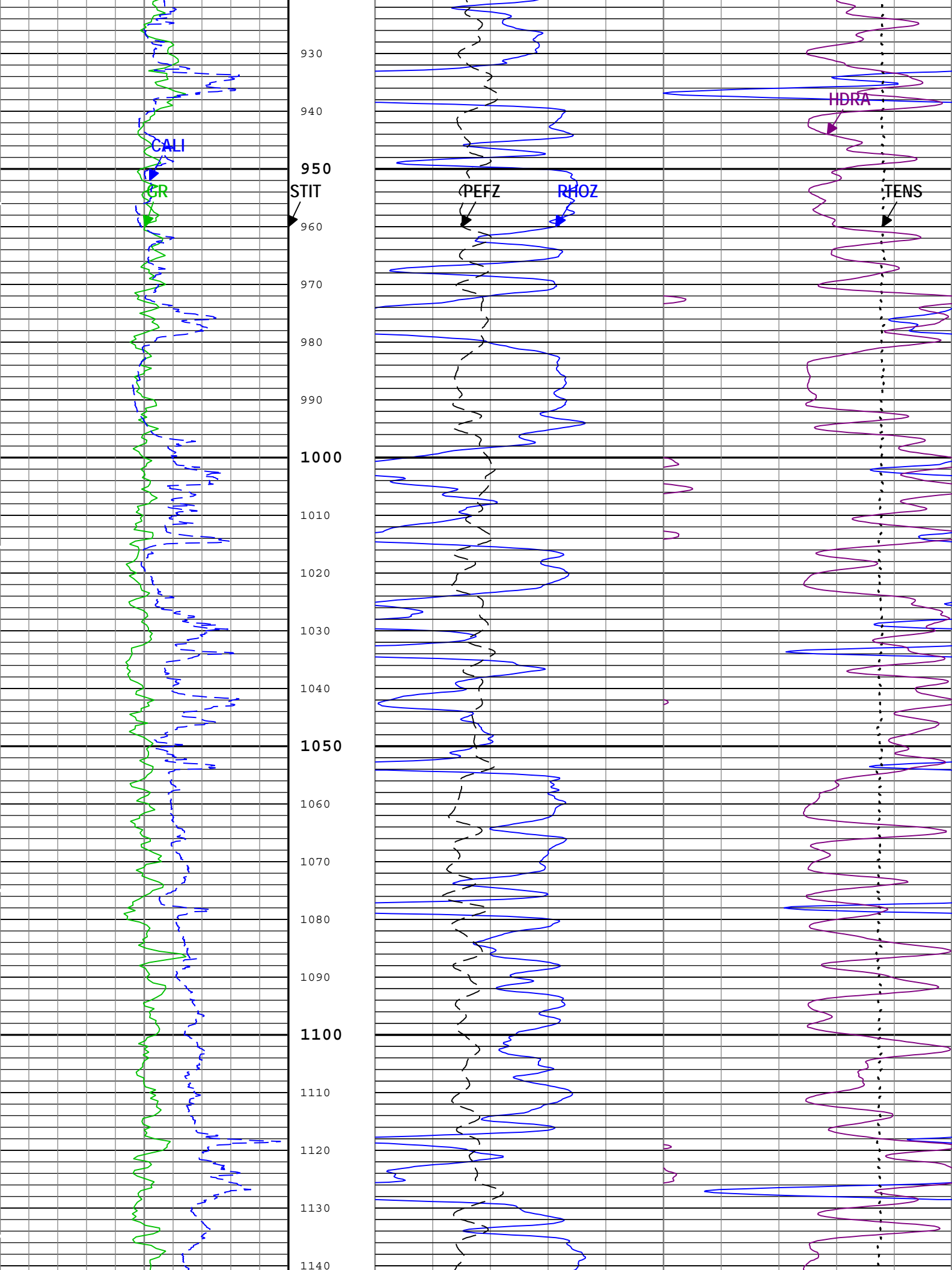
CALI	HDRS-H:HRCC-H:HRCC-H	1in
GR	HGNS-H:HGNS-H:HGNS-H	6in
HDRA	HDRS-H:HRMS-H:HRGD-H	2in
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in
RHOZ	HDRS-H:HRMS-H:HRGD-H	2in
STIT	DepthCorrection	6in
TENS	WLWorkflow	1in
TIME_1900	WLWorkflow	0.1in

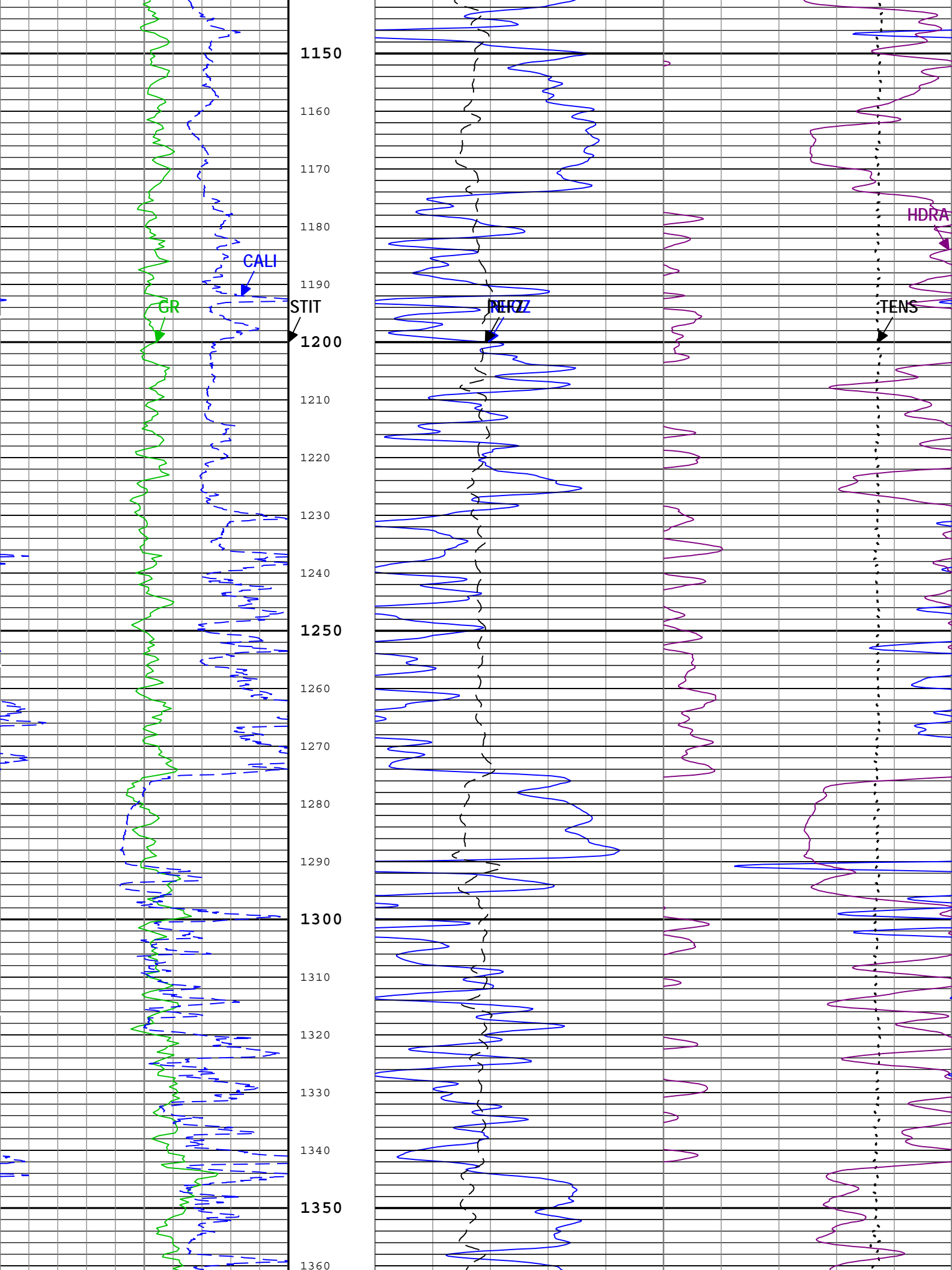
TIME_1900 - Time Marked every 60.00 (s)

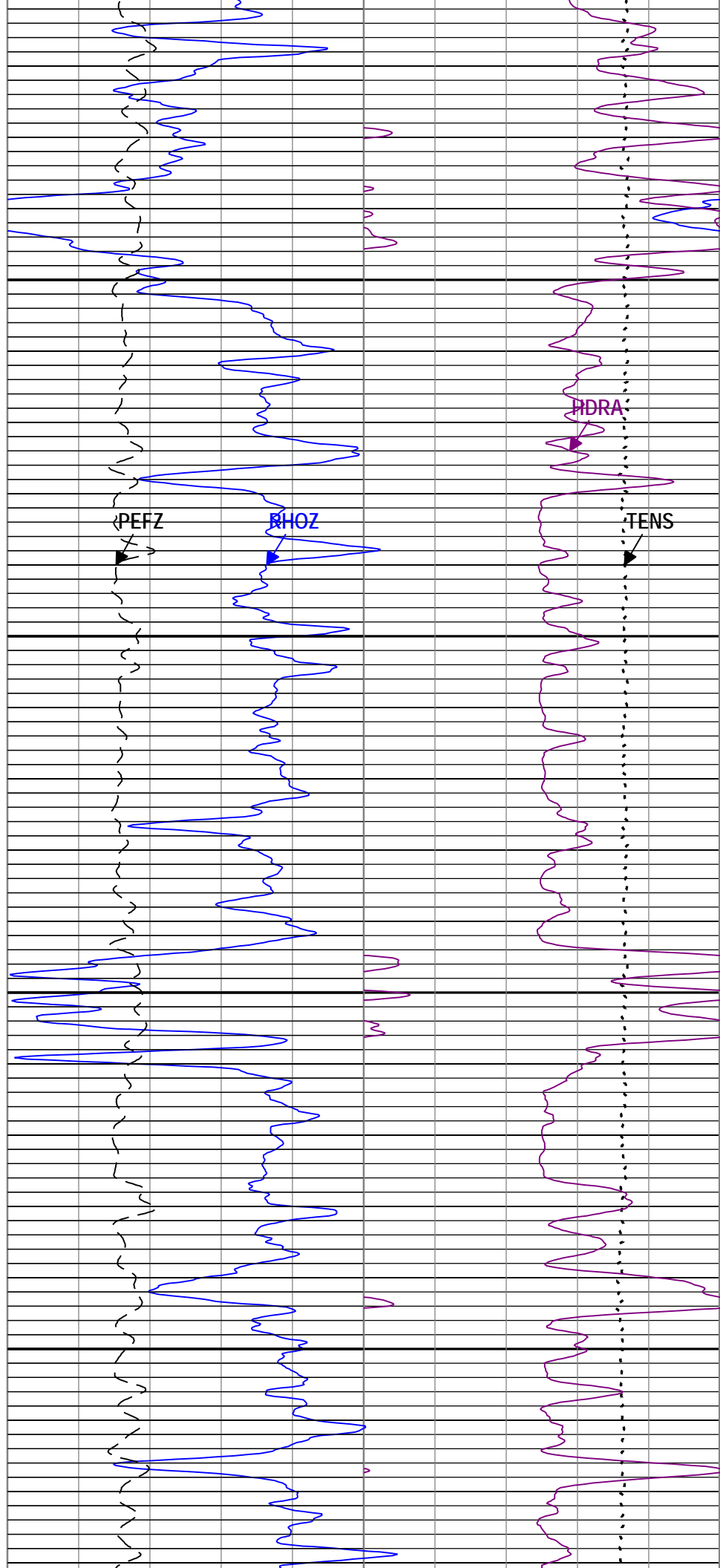
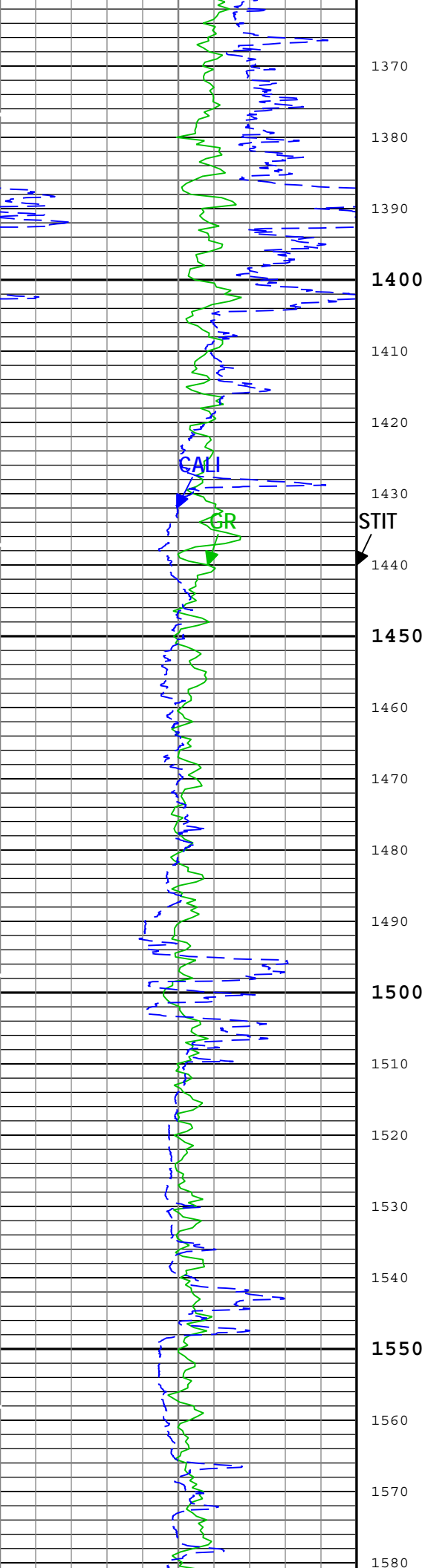


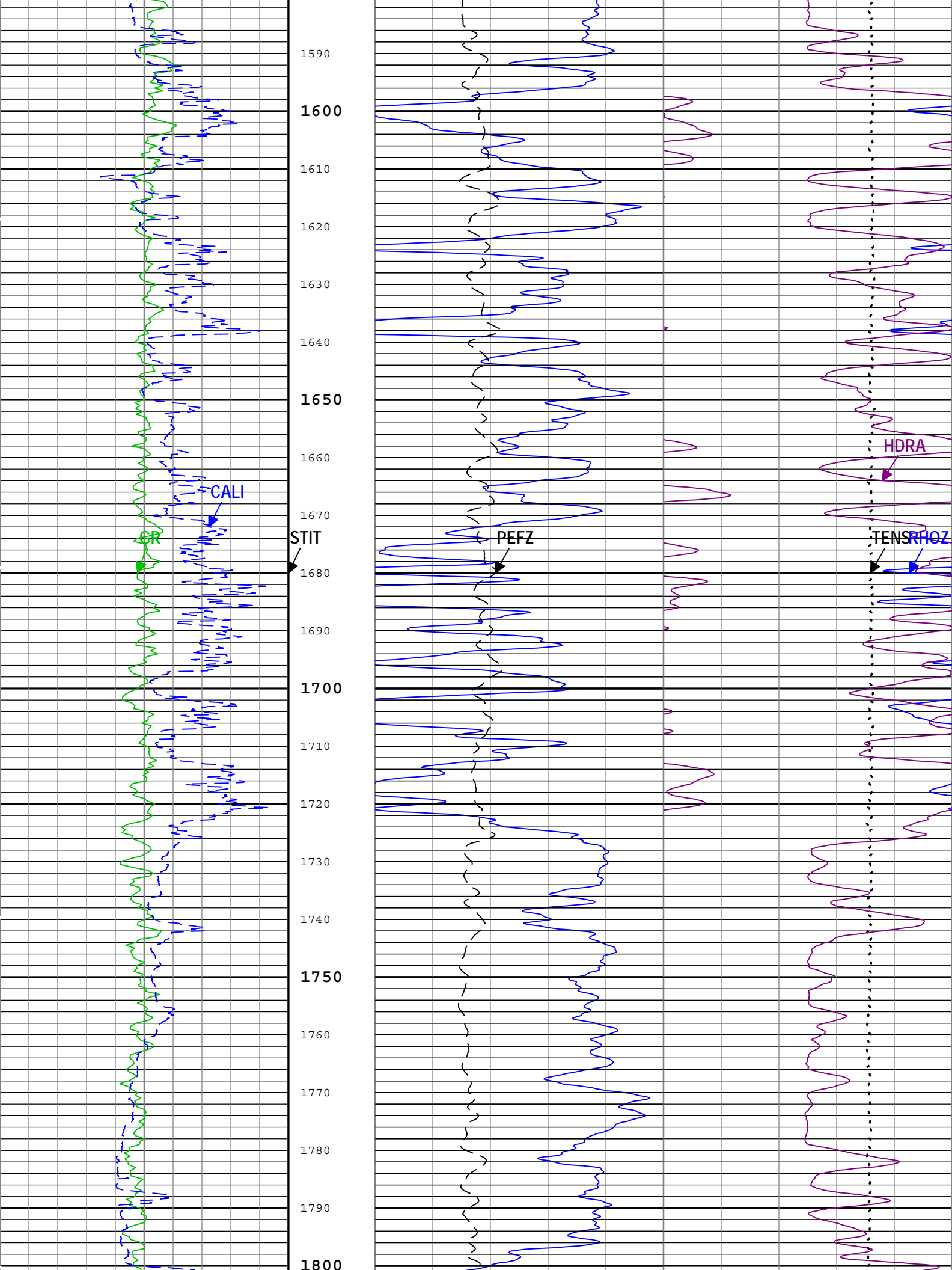


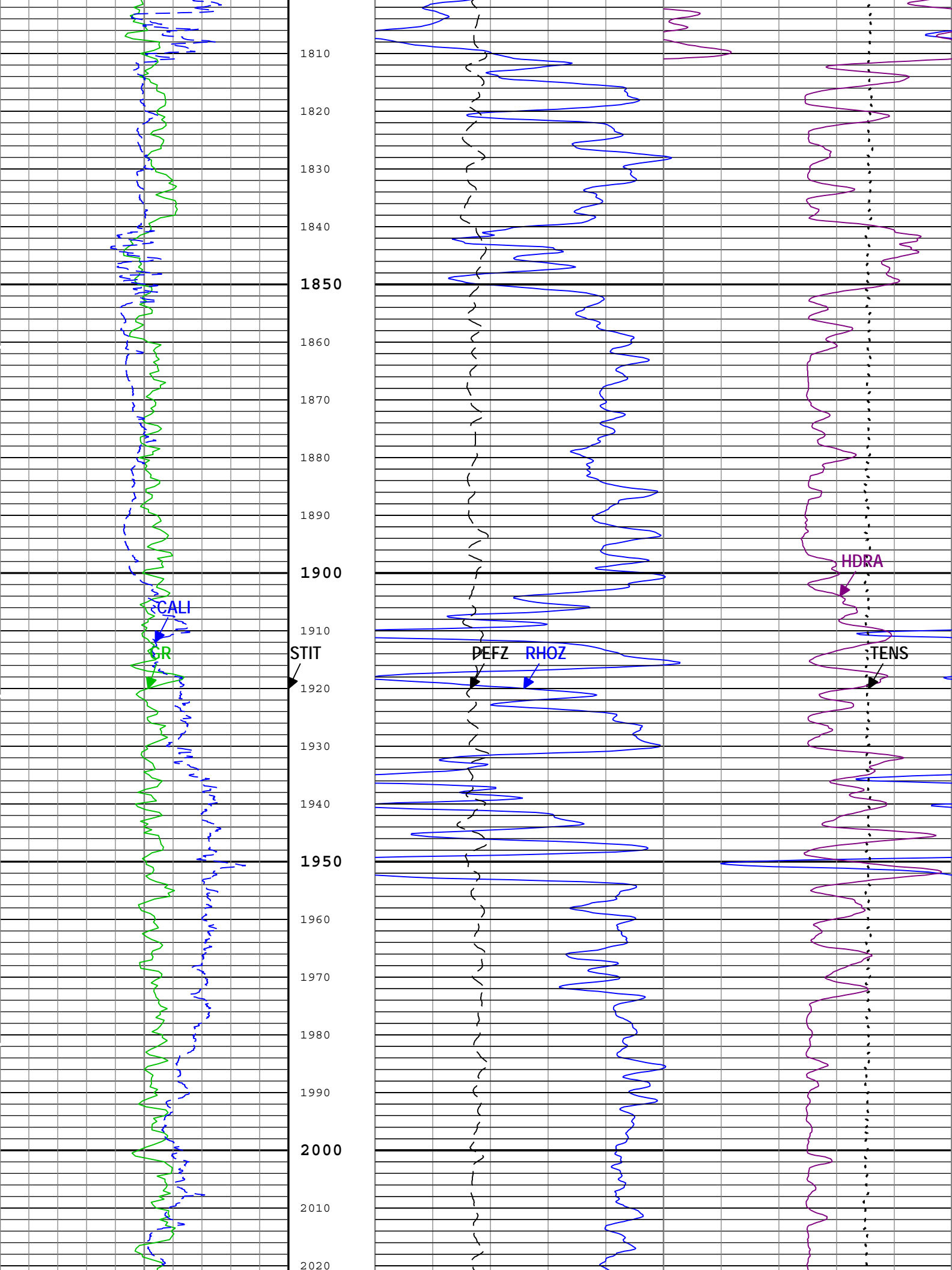


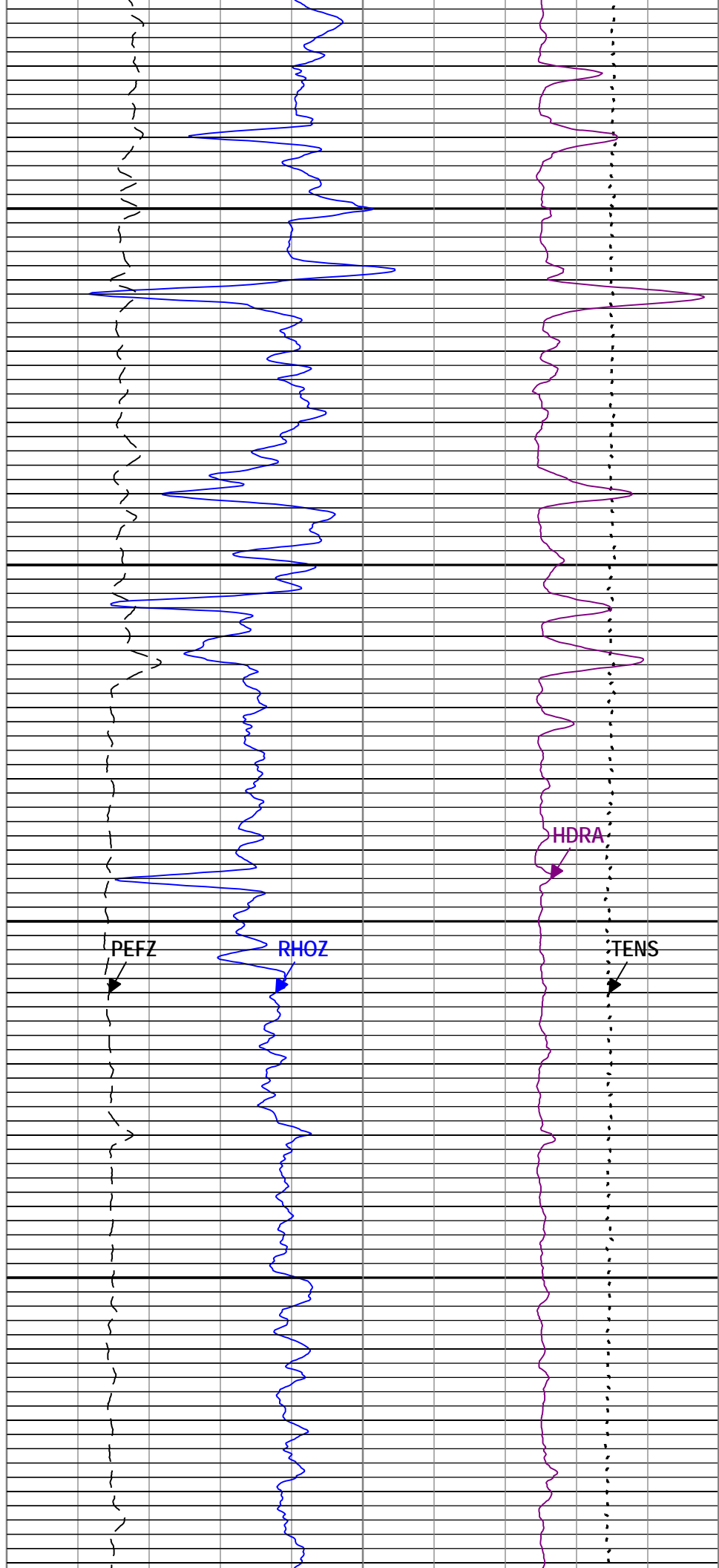
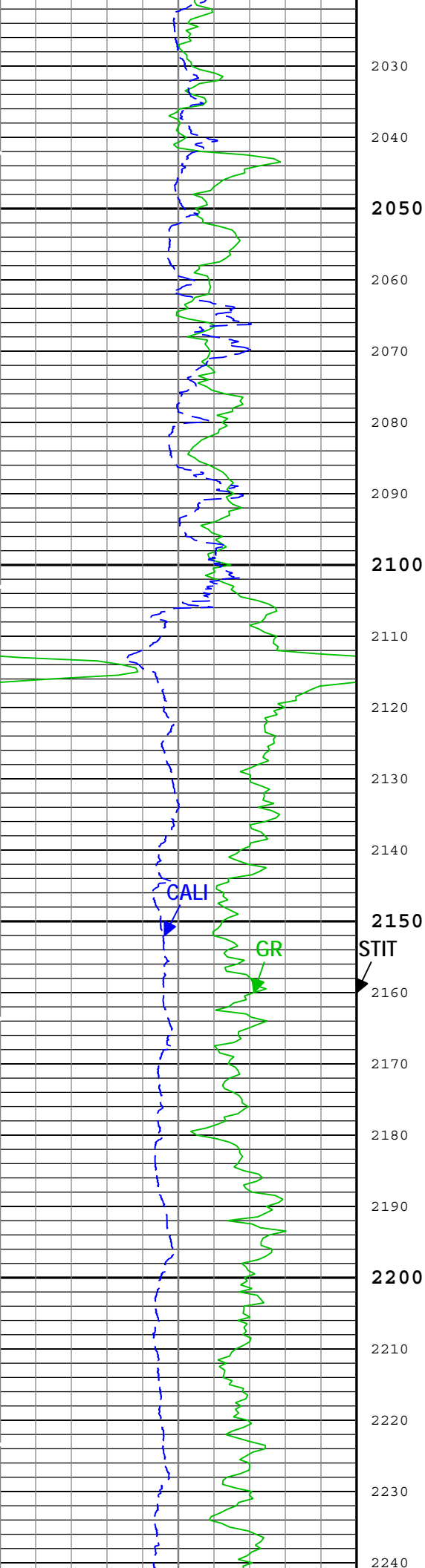


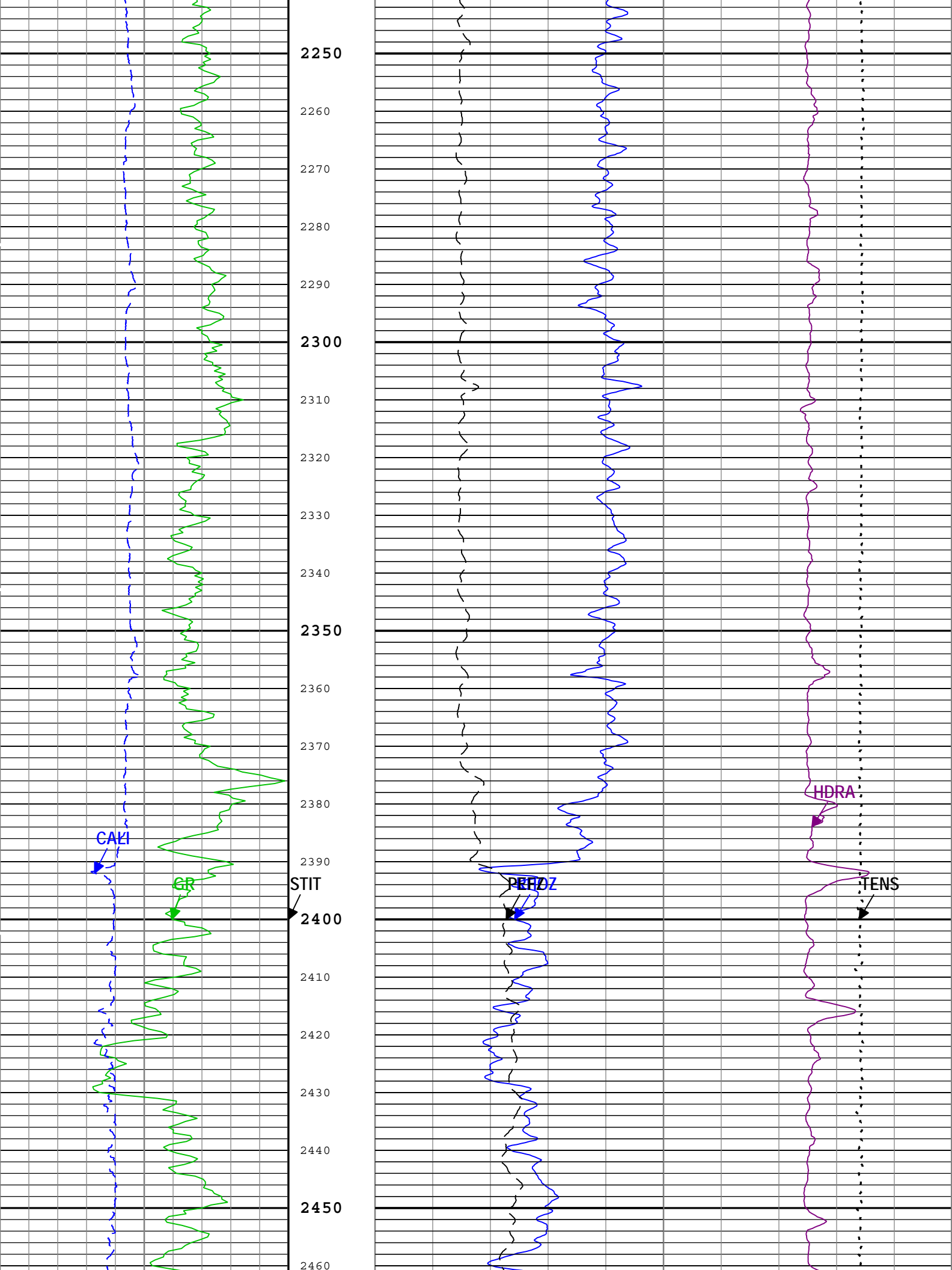


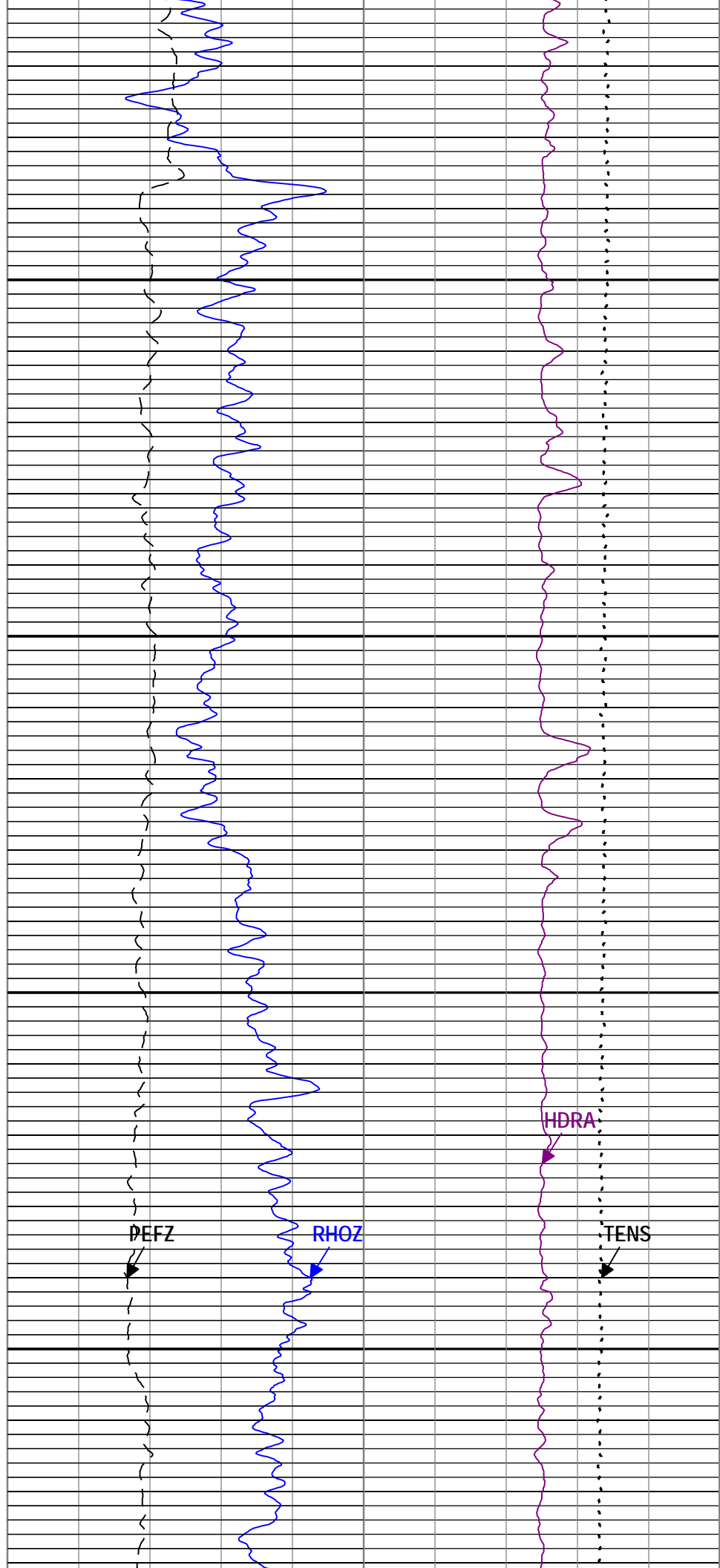
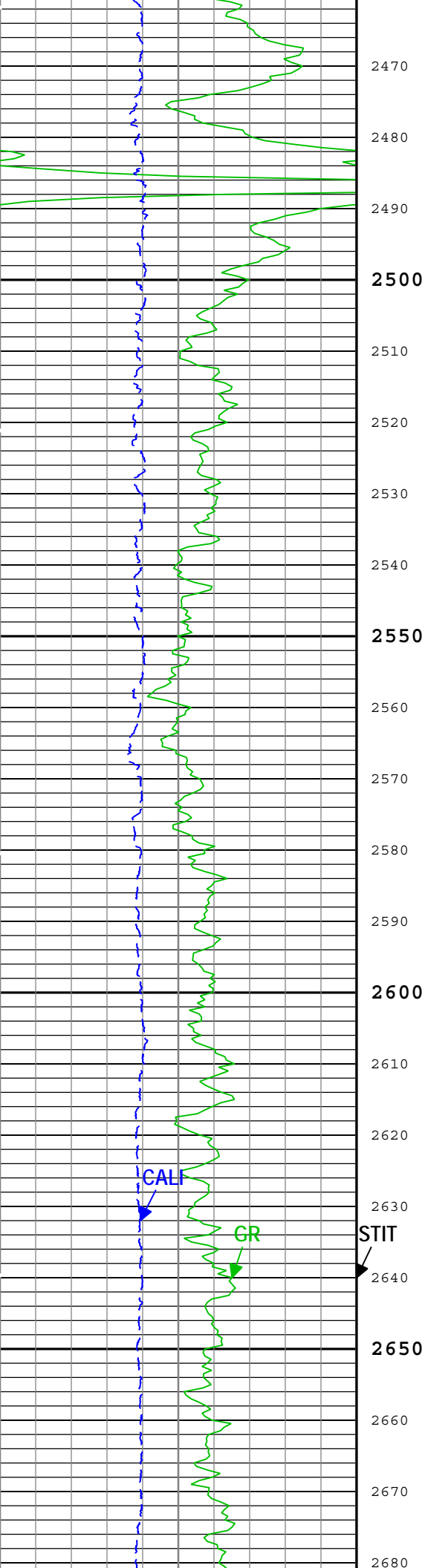


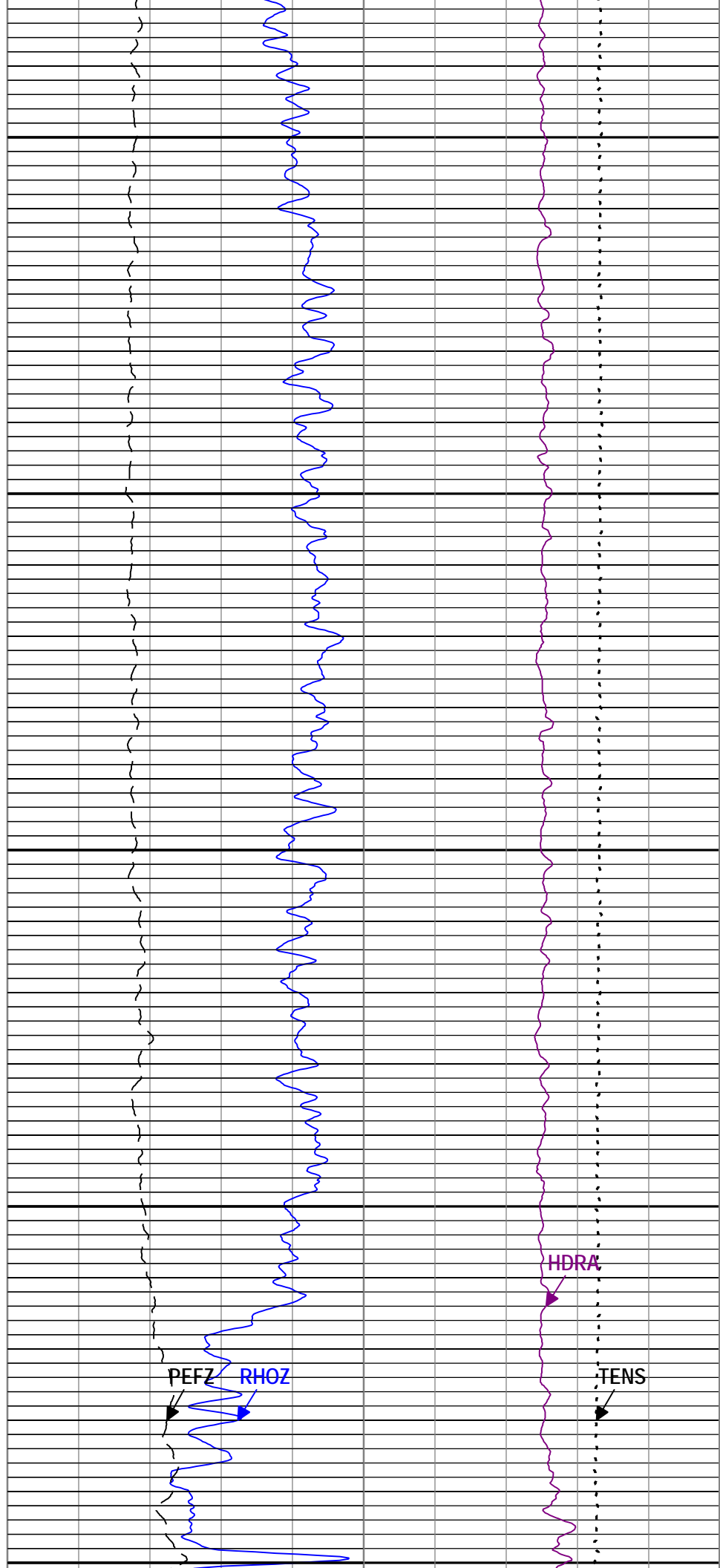
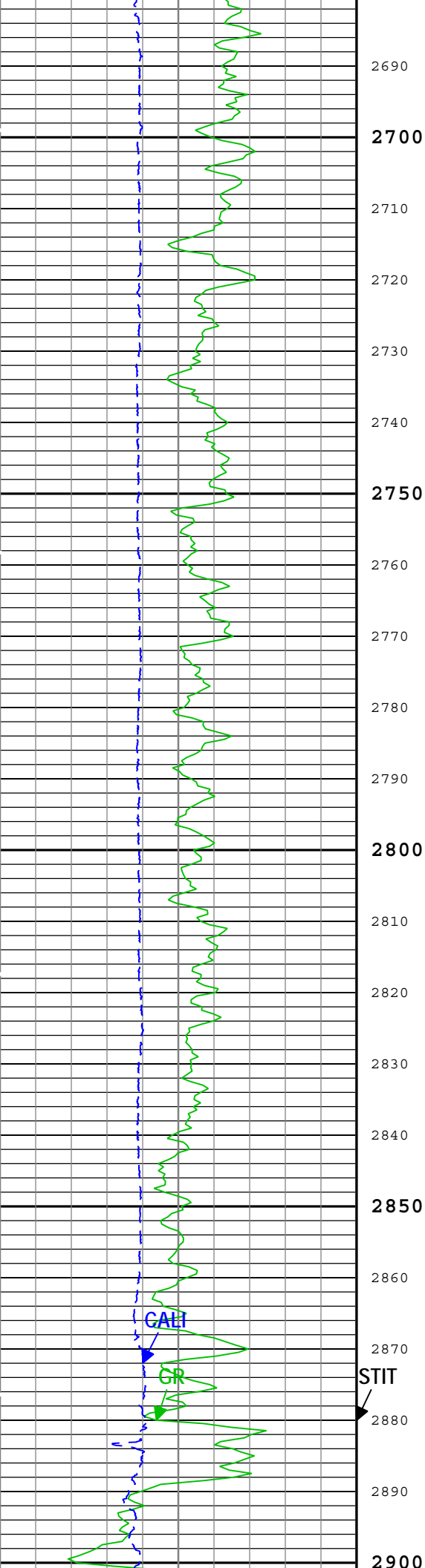


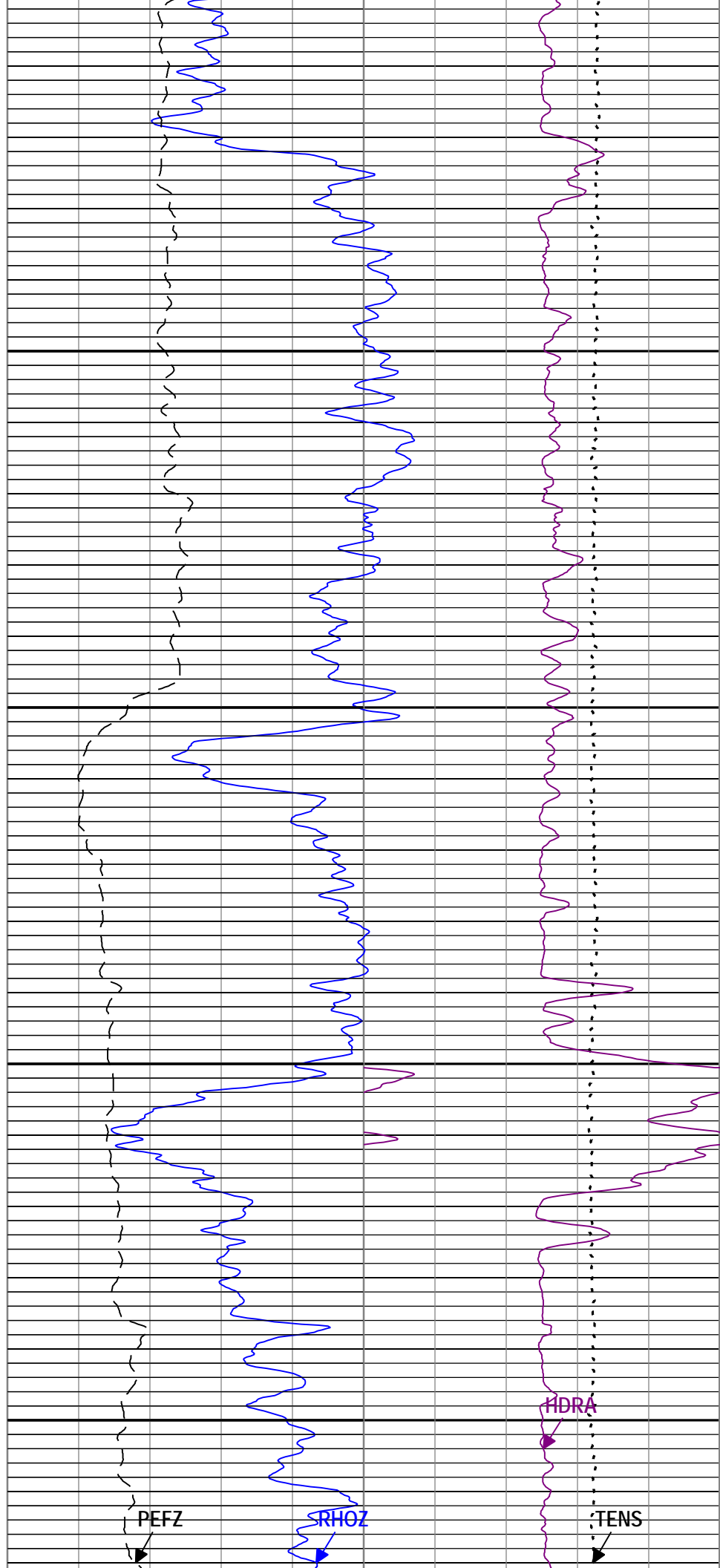
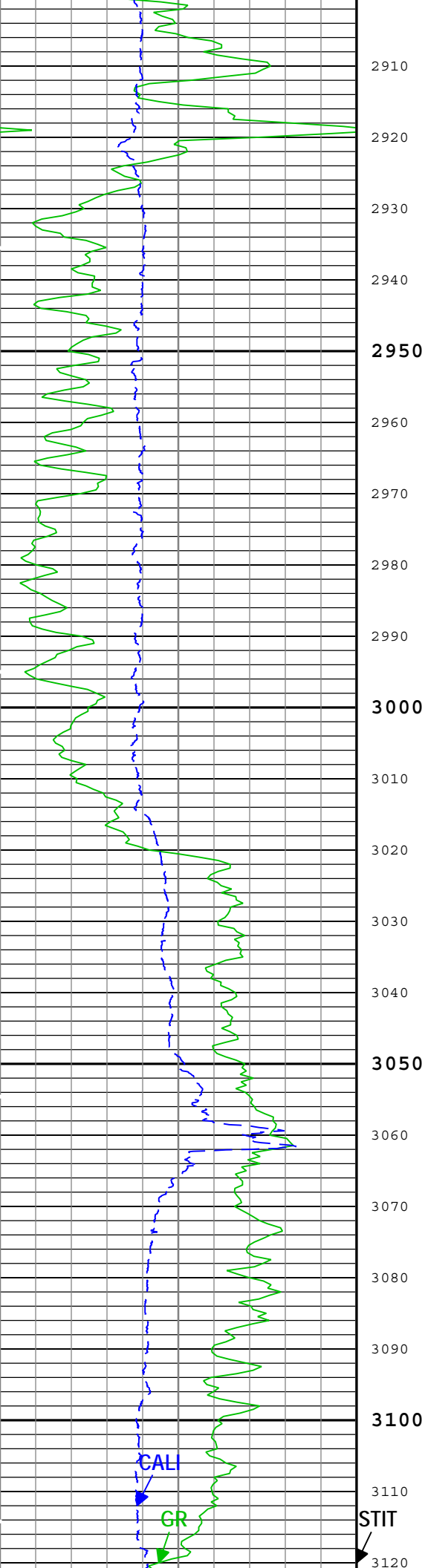


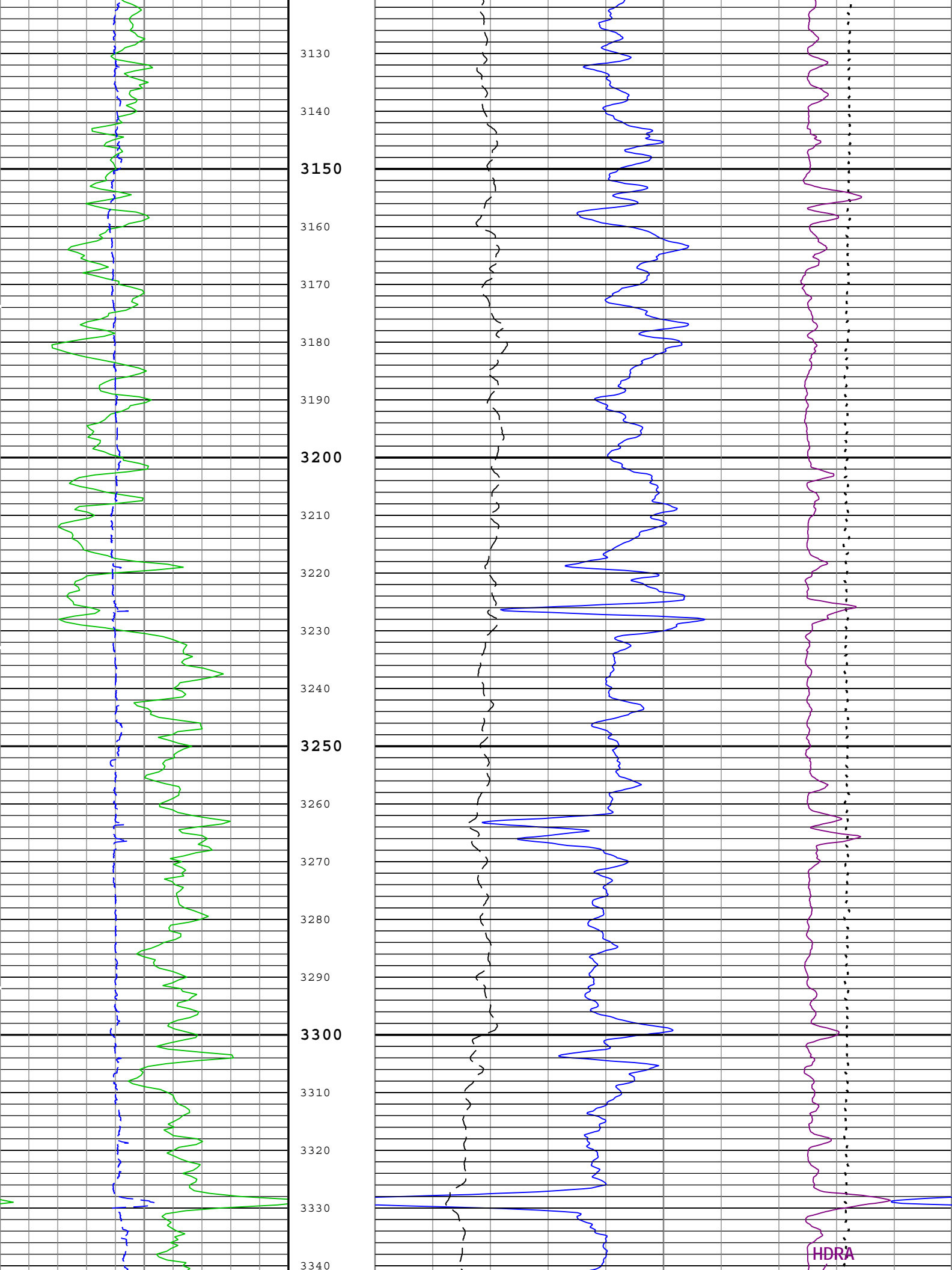


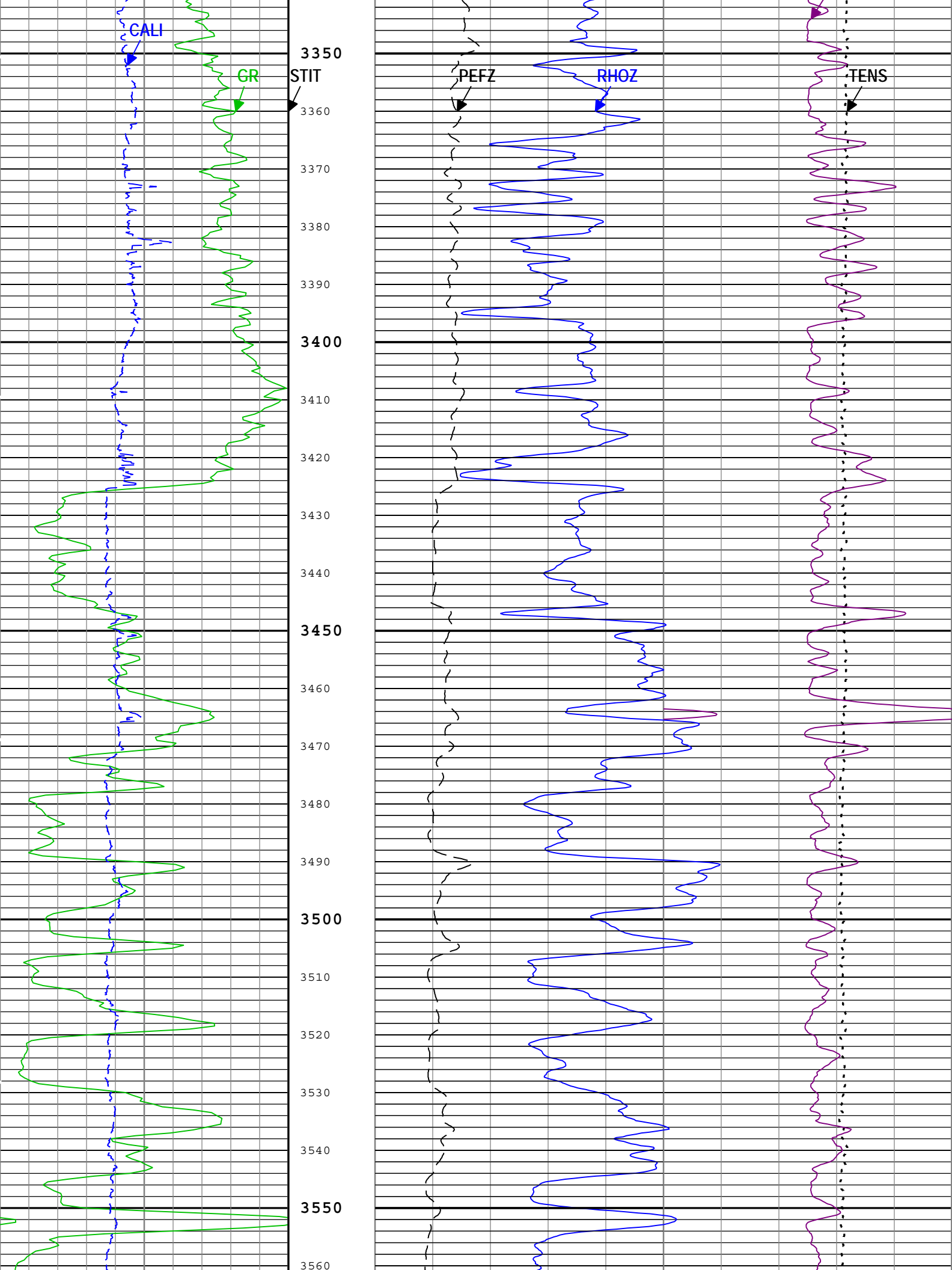


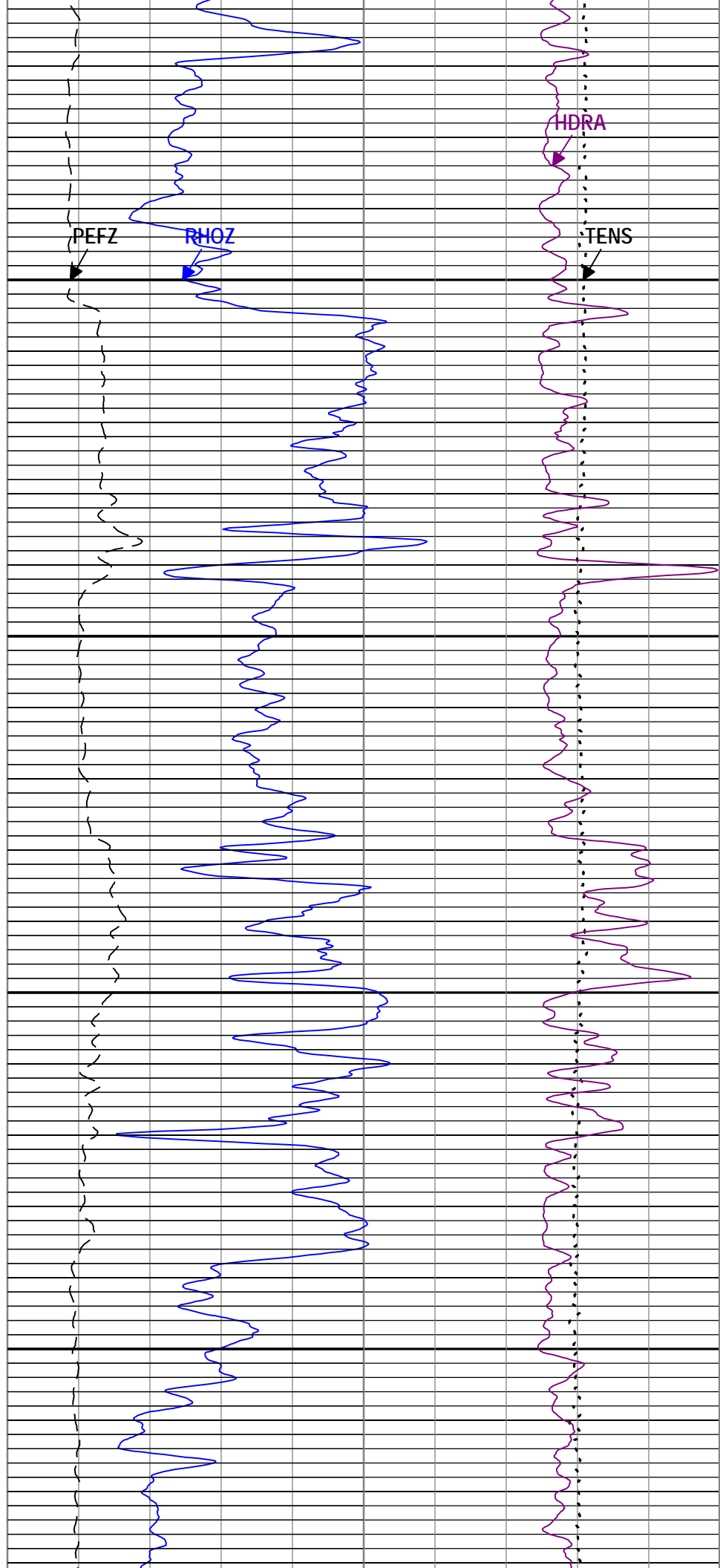
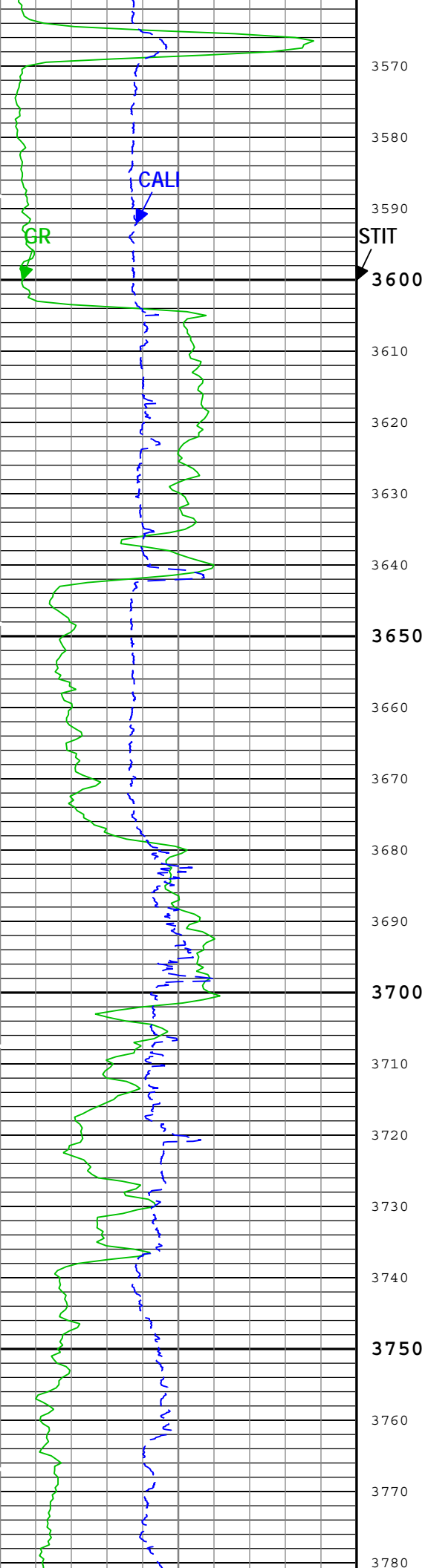


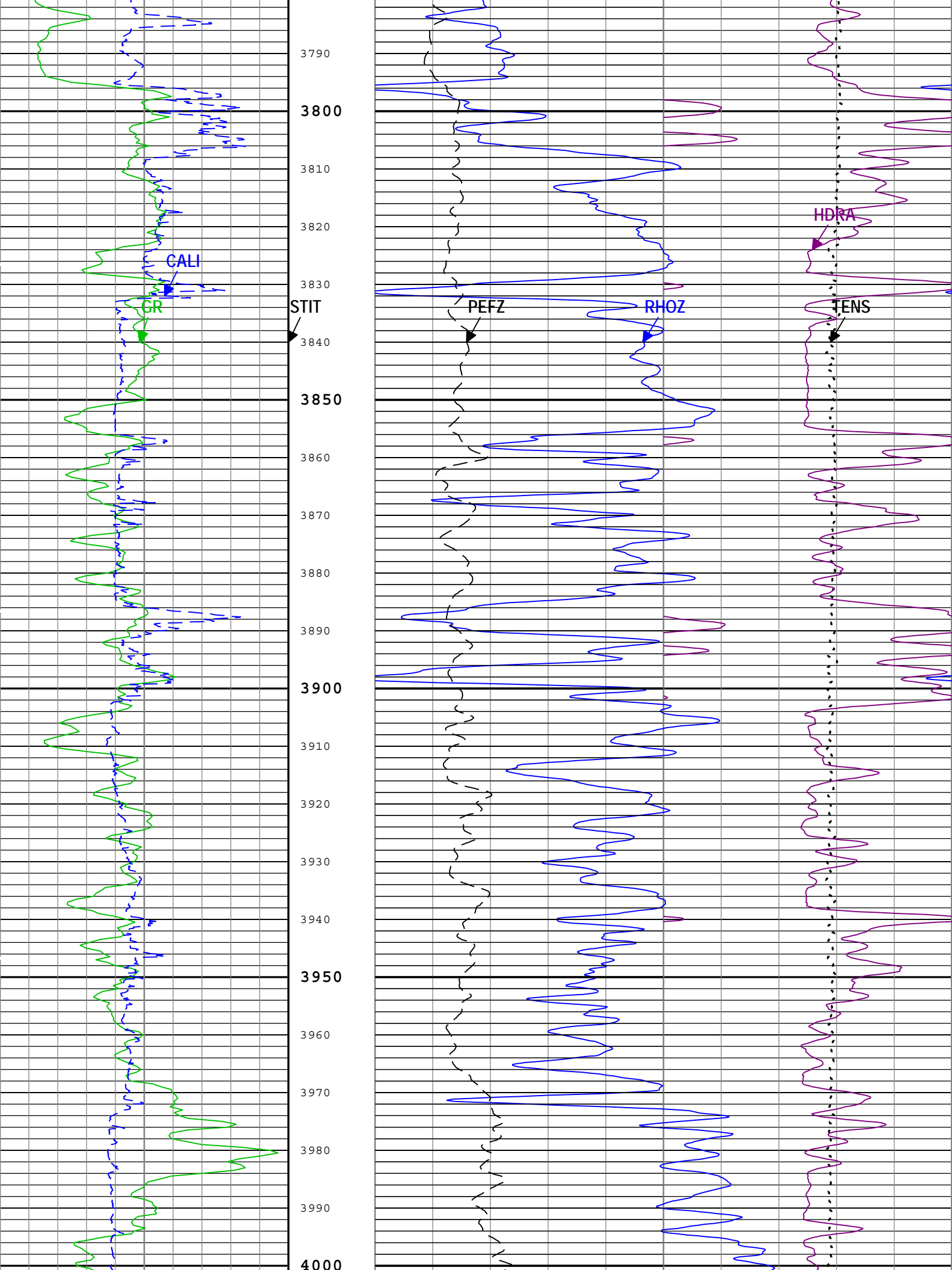


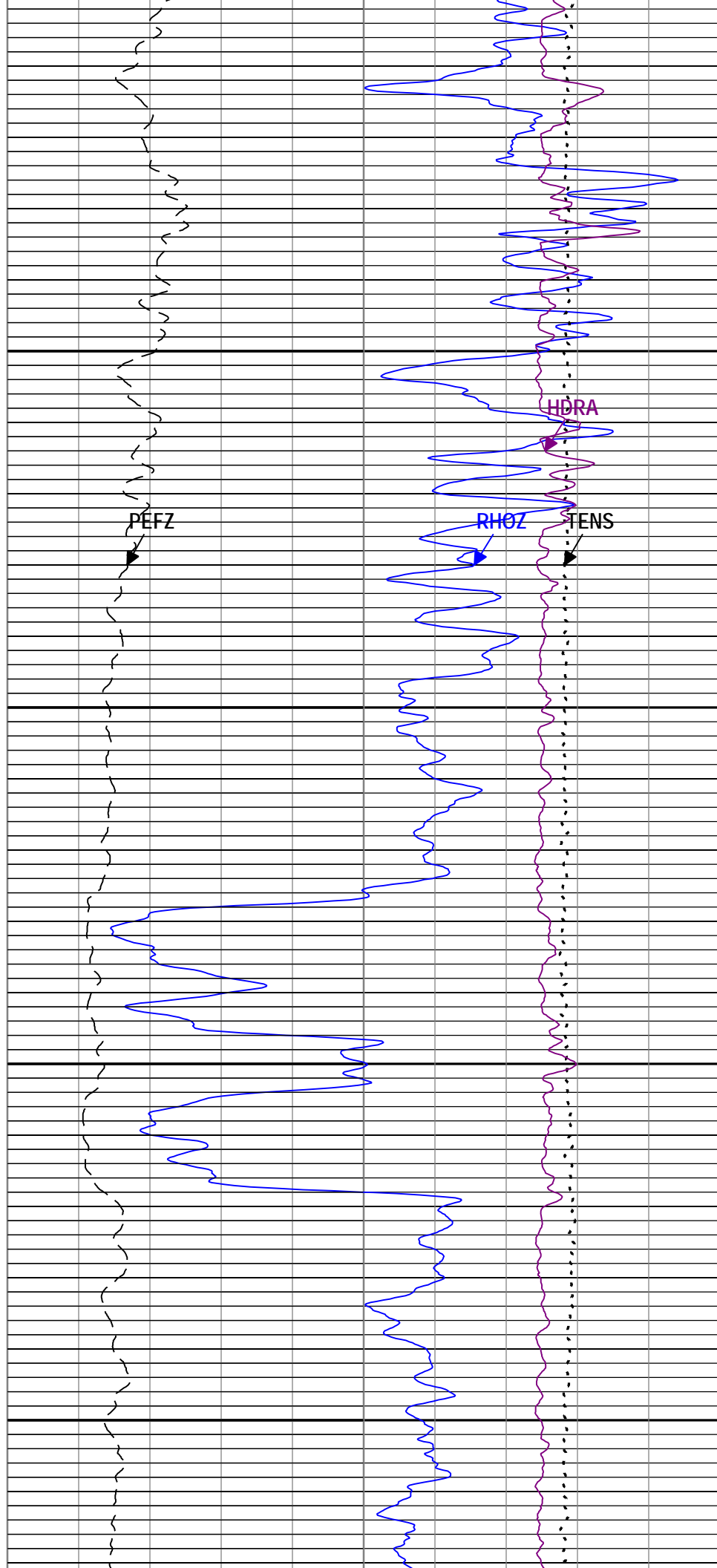
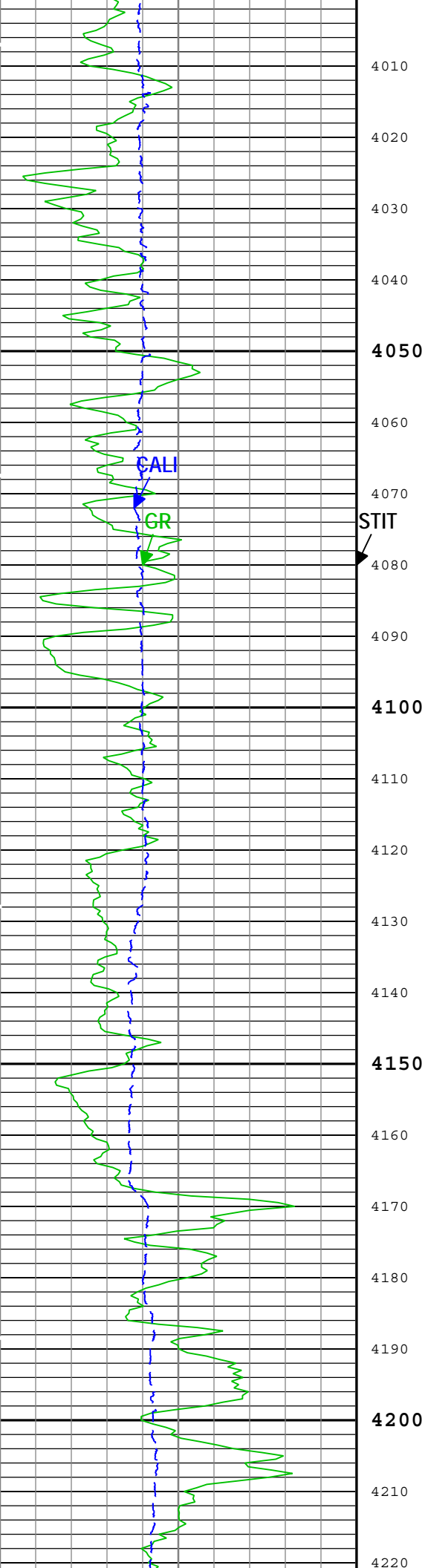


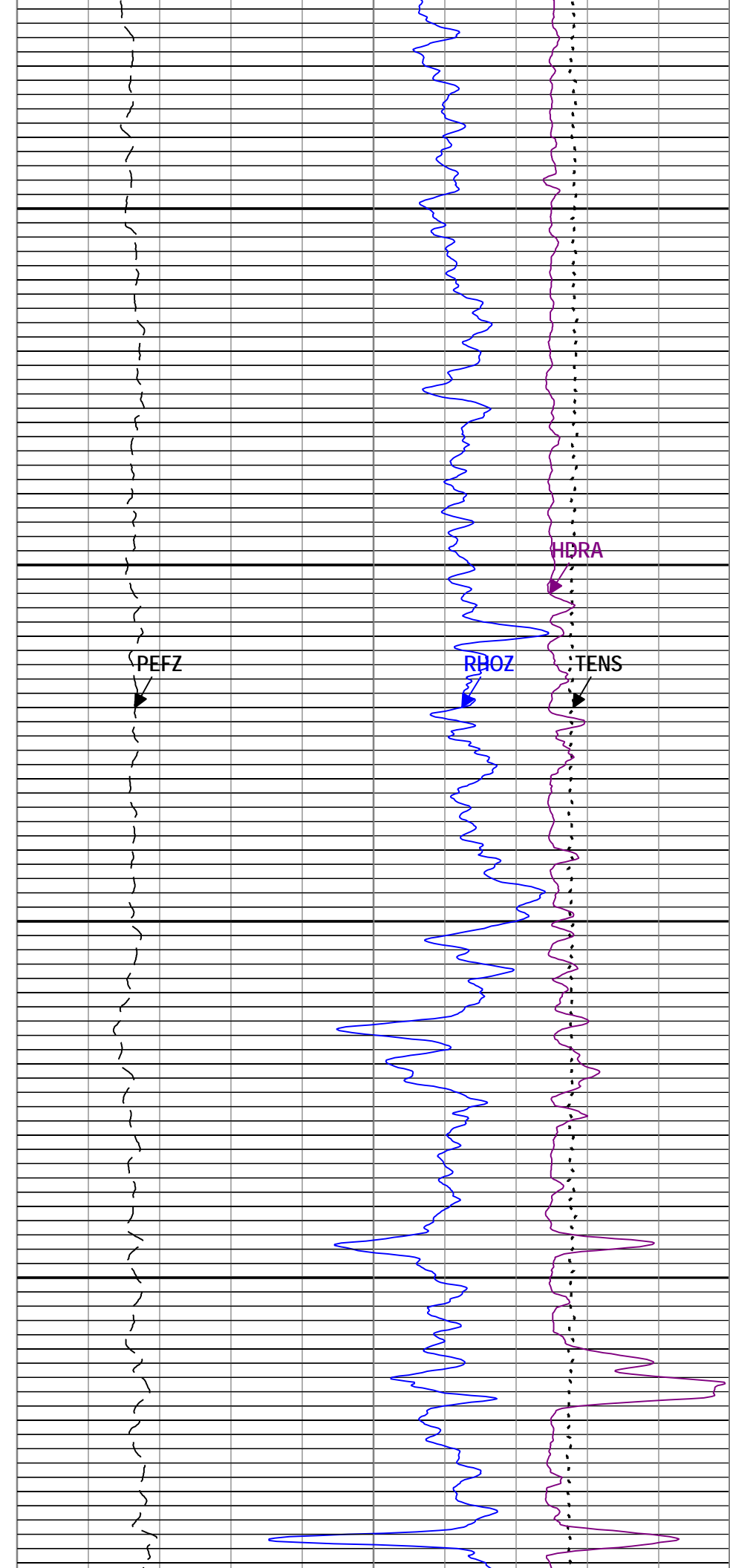
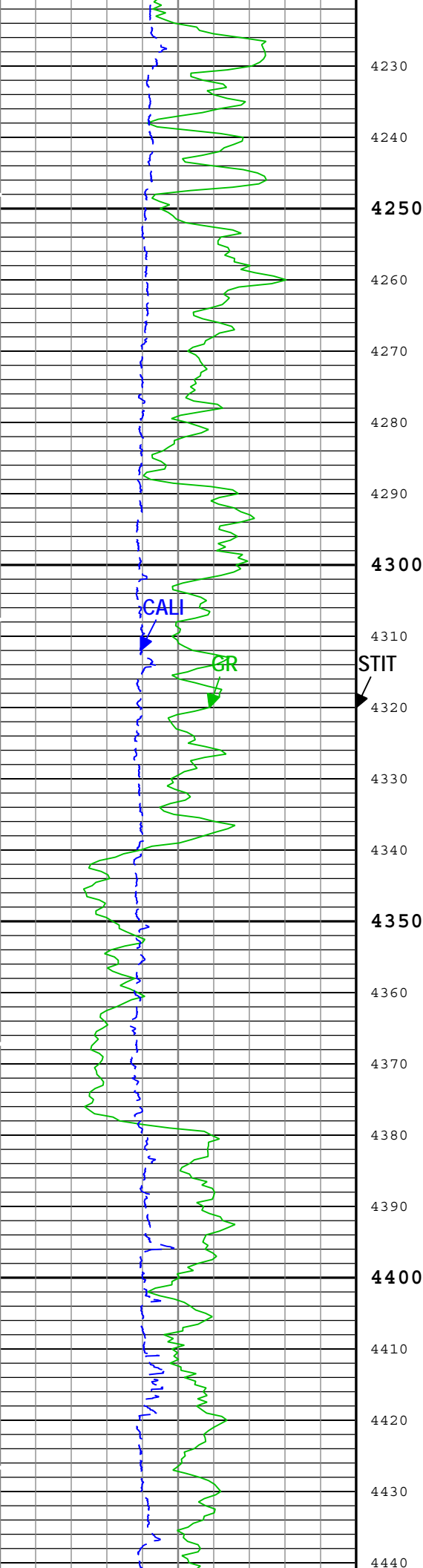


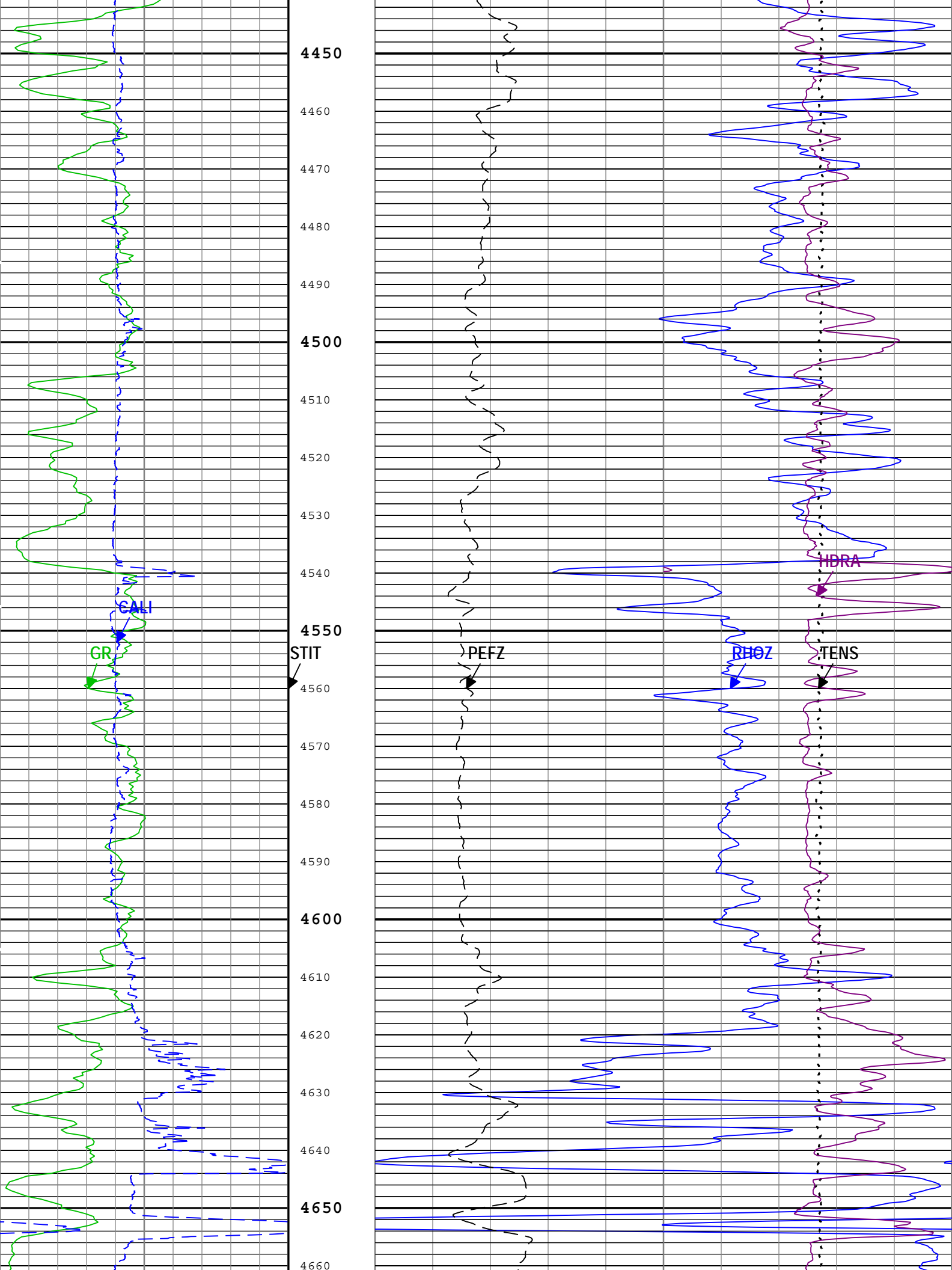


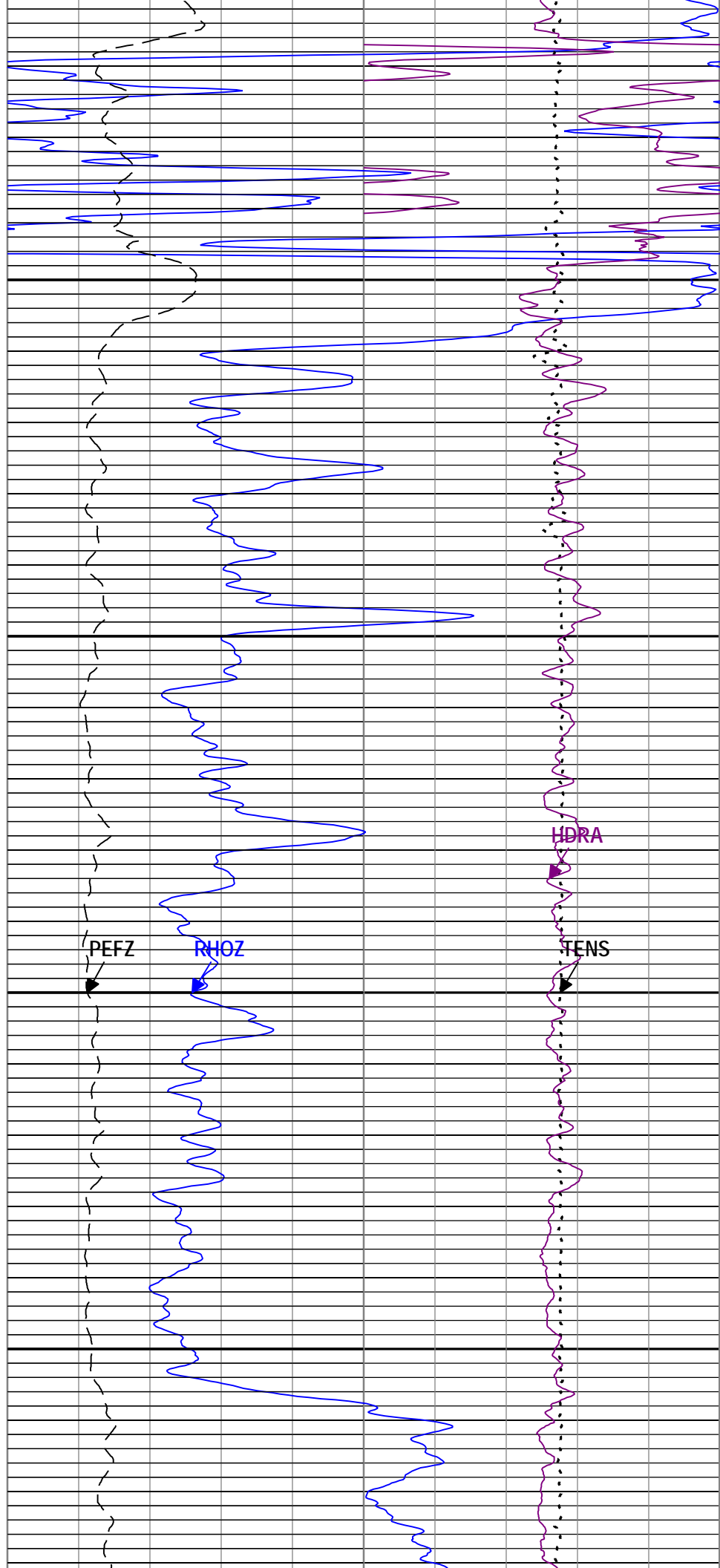
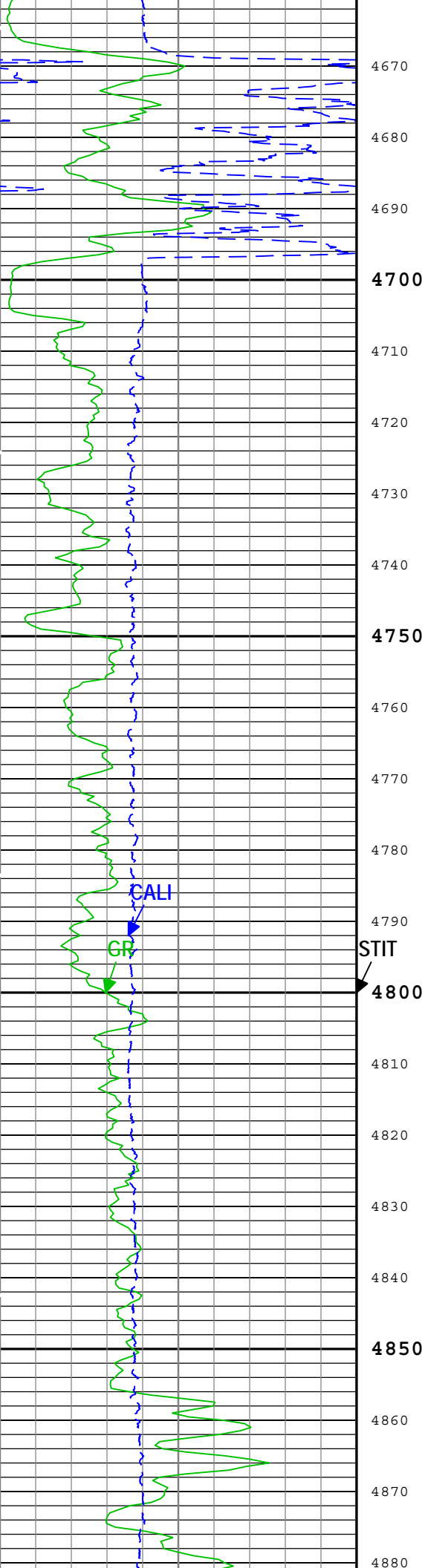


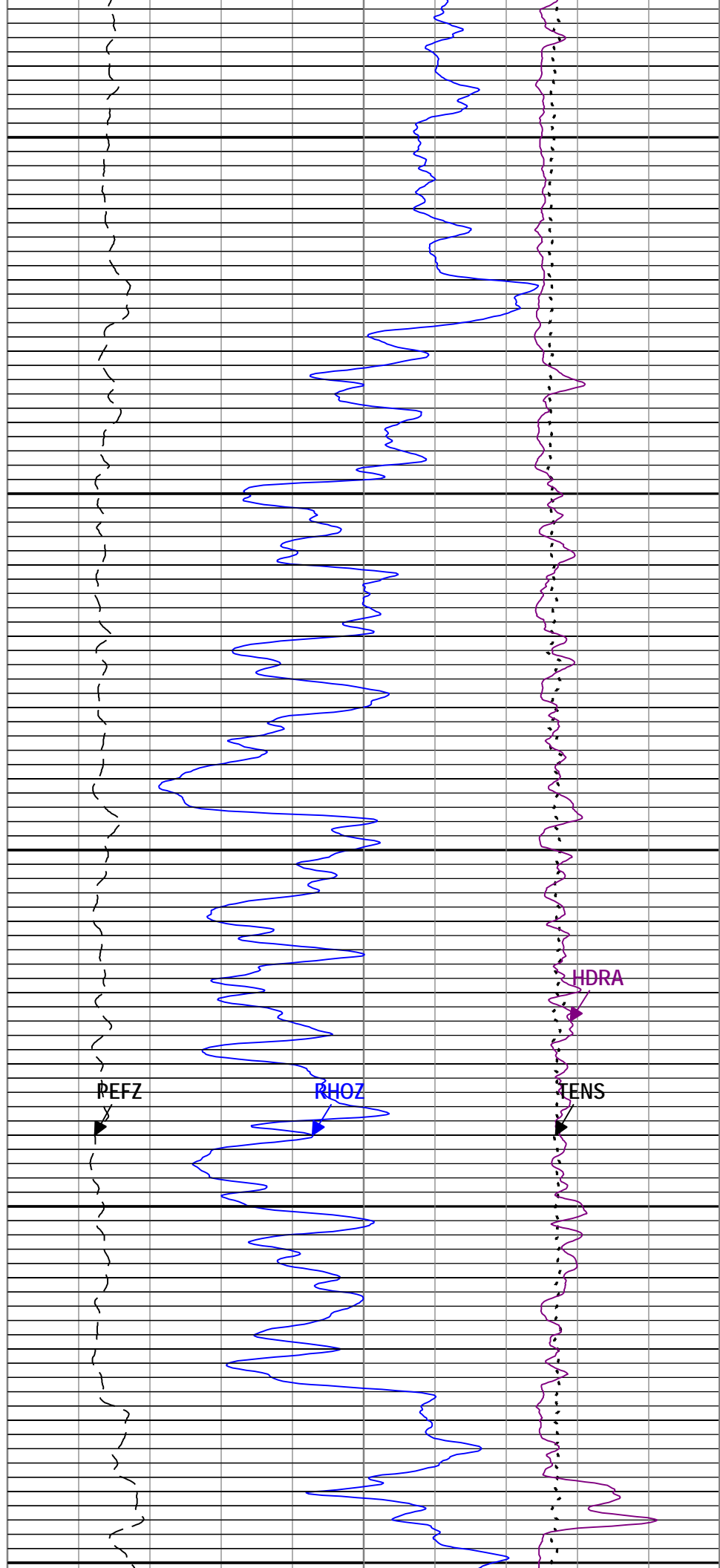
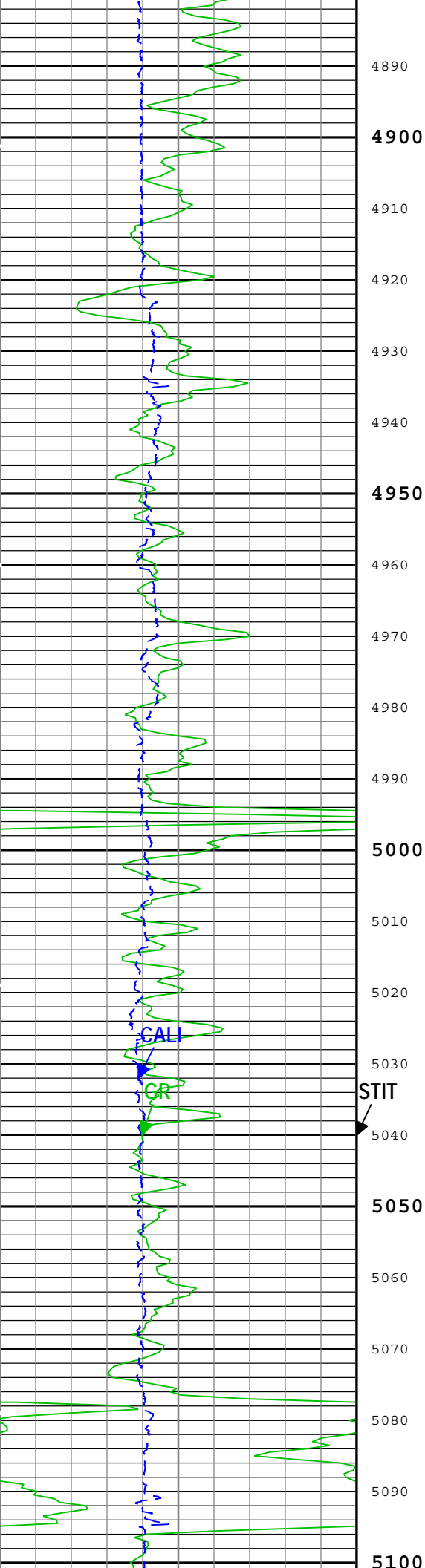


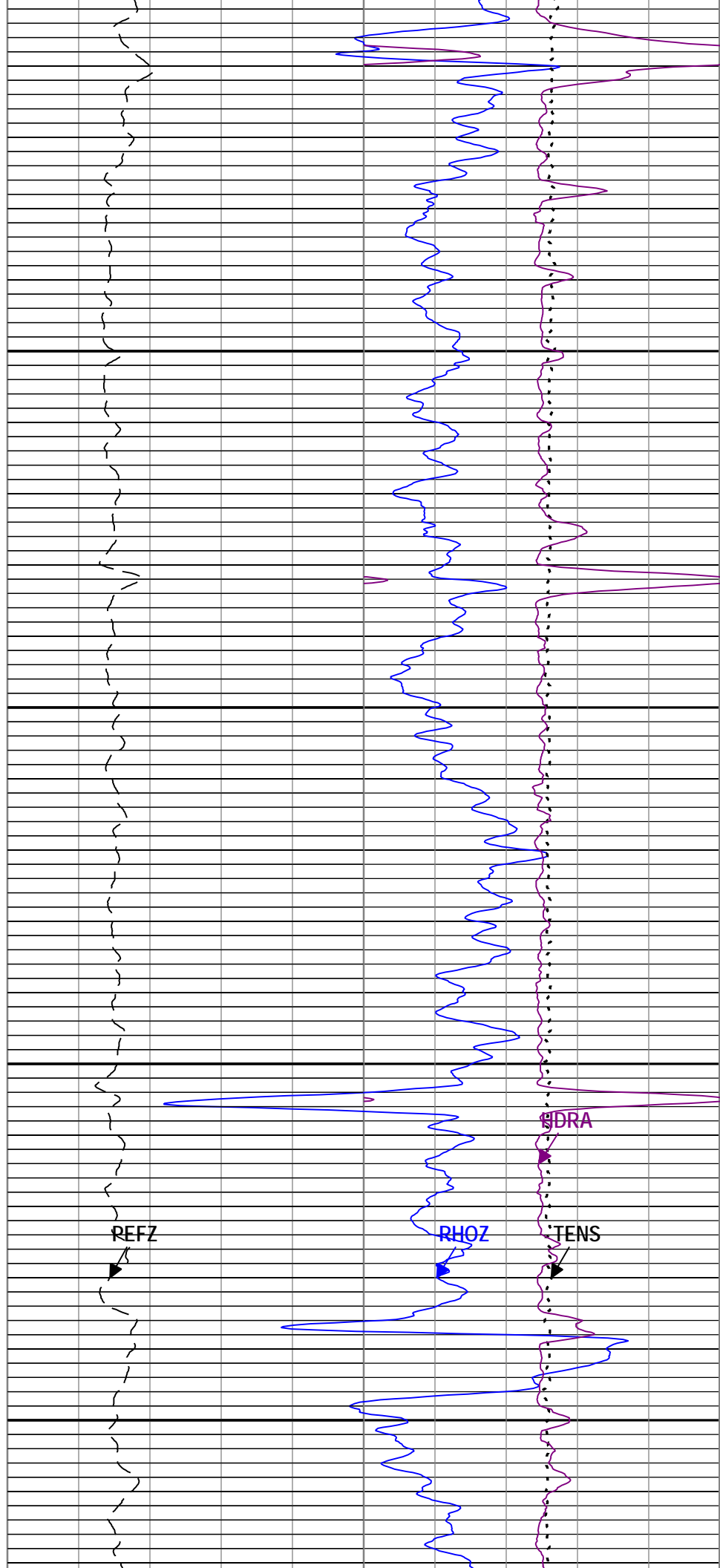
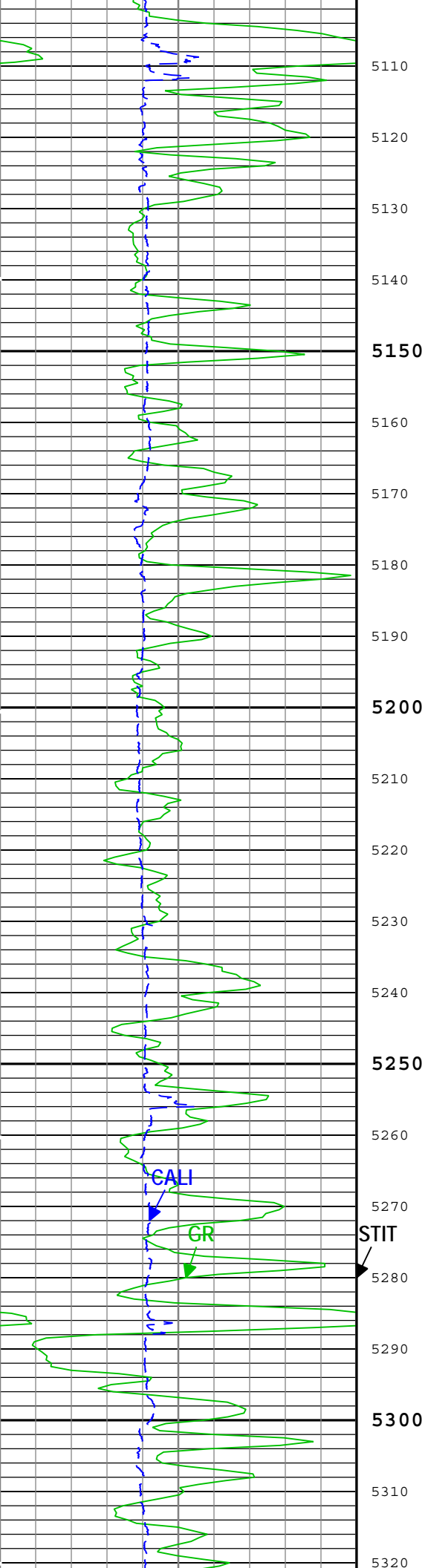


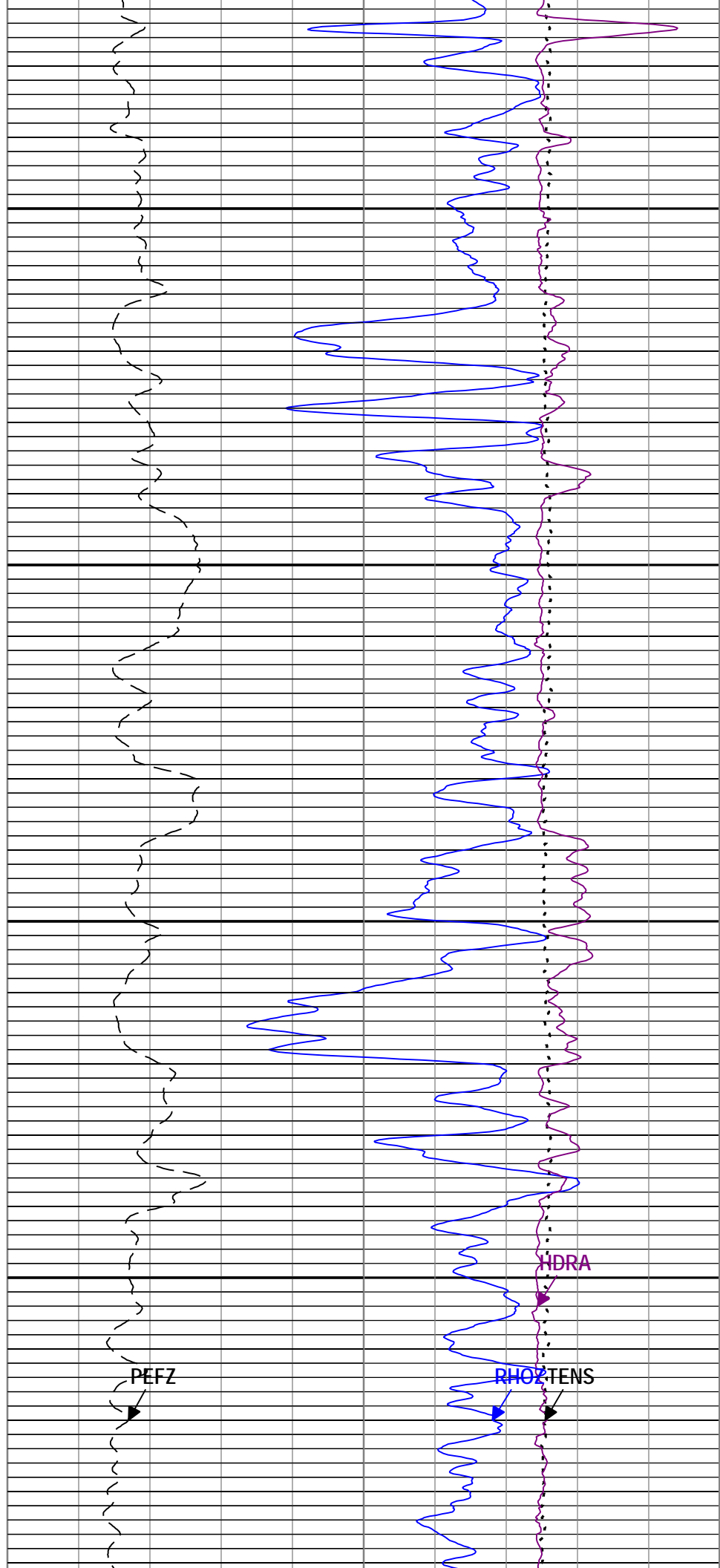
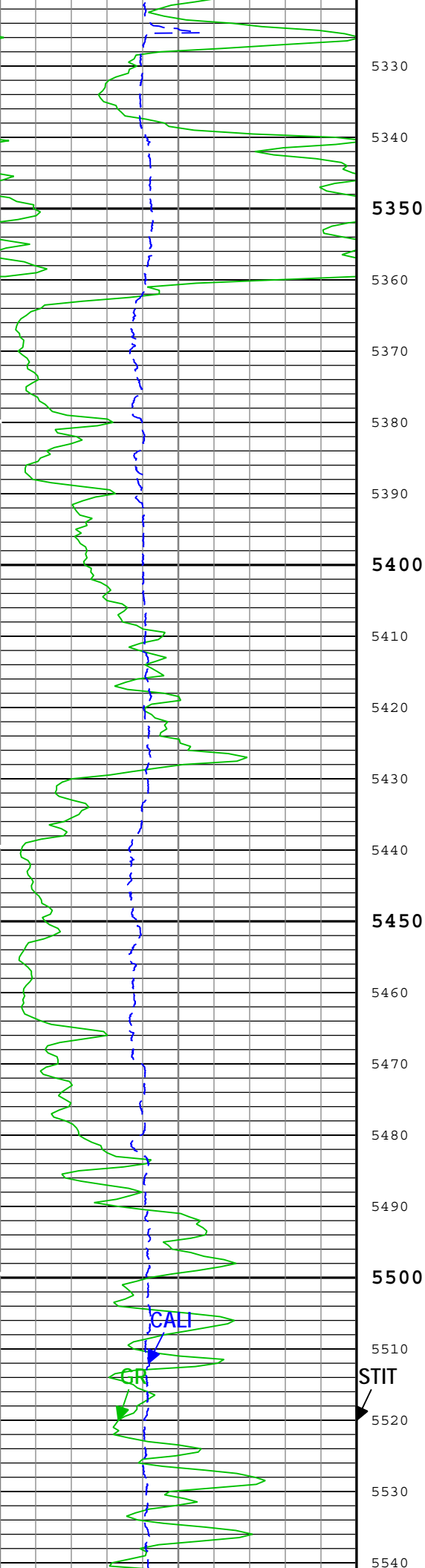


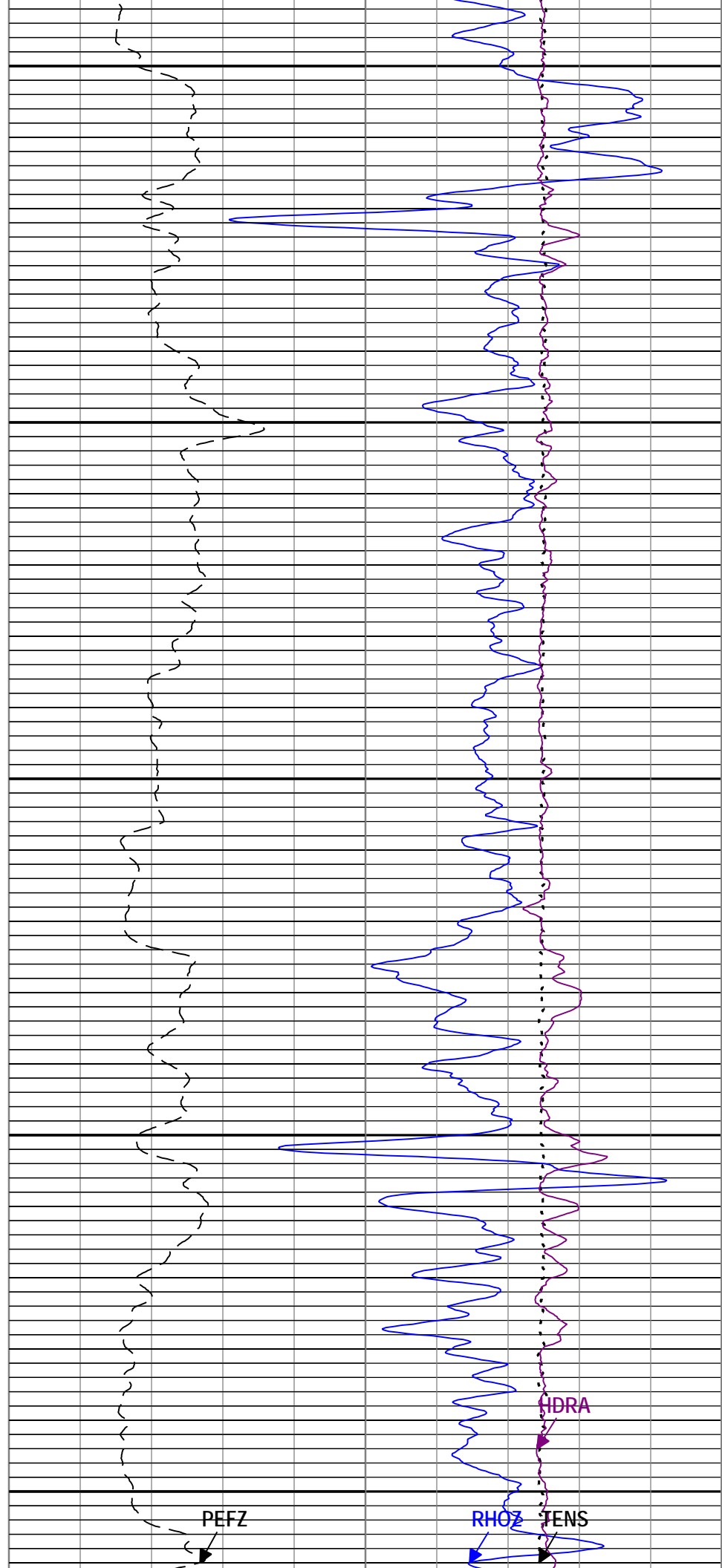
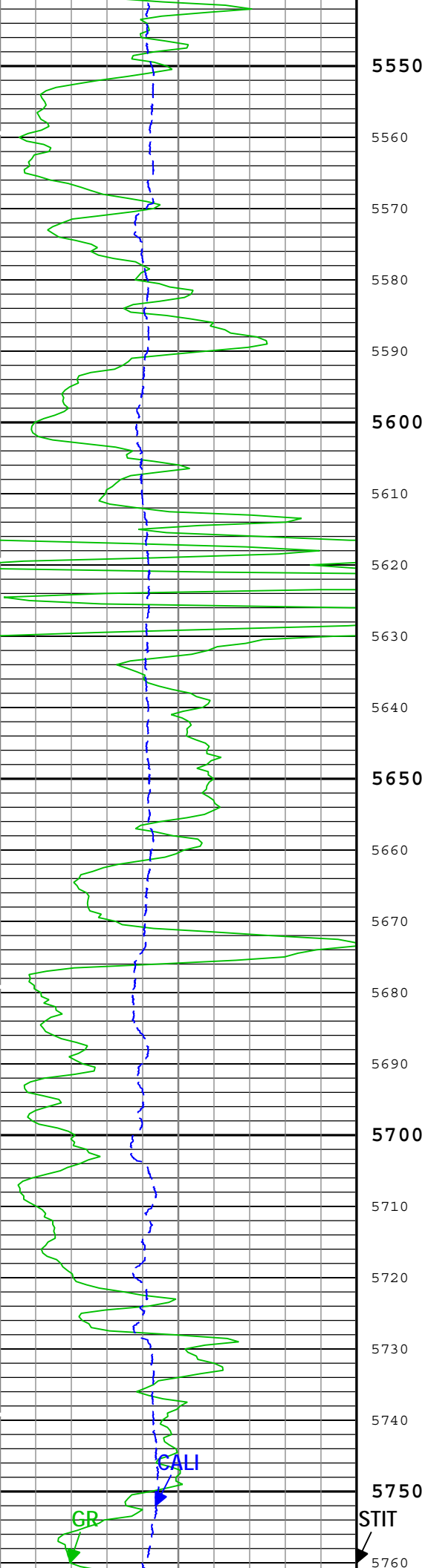


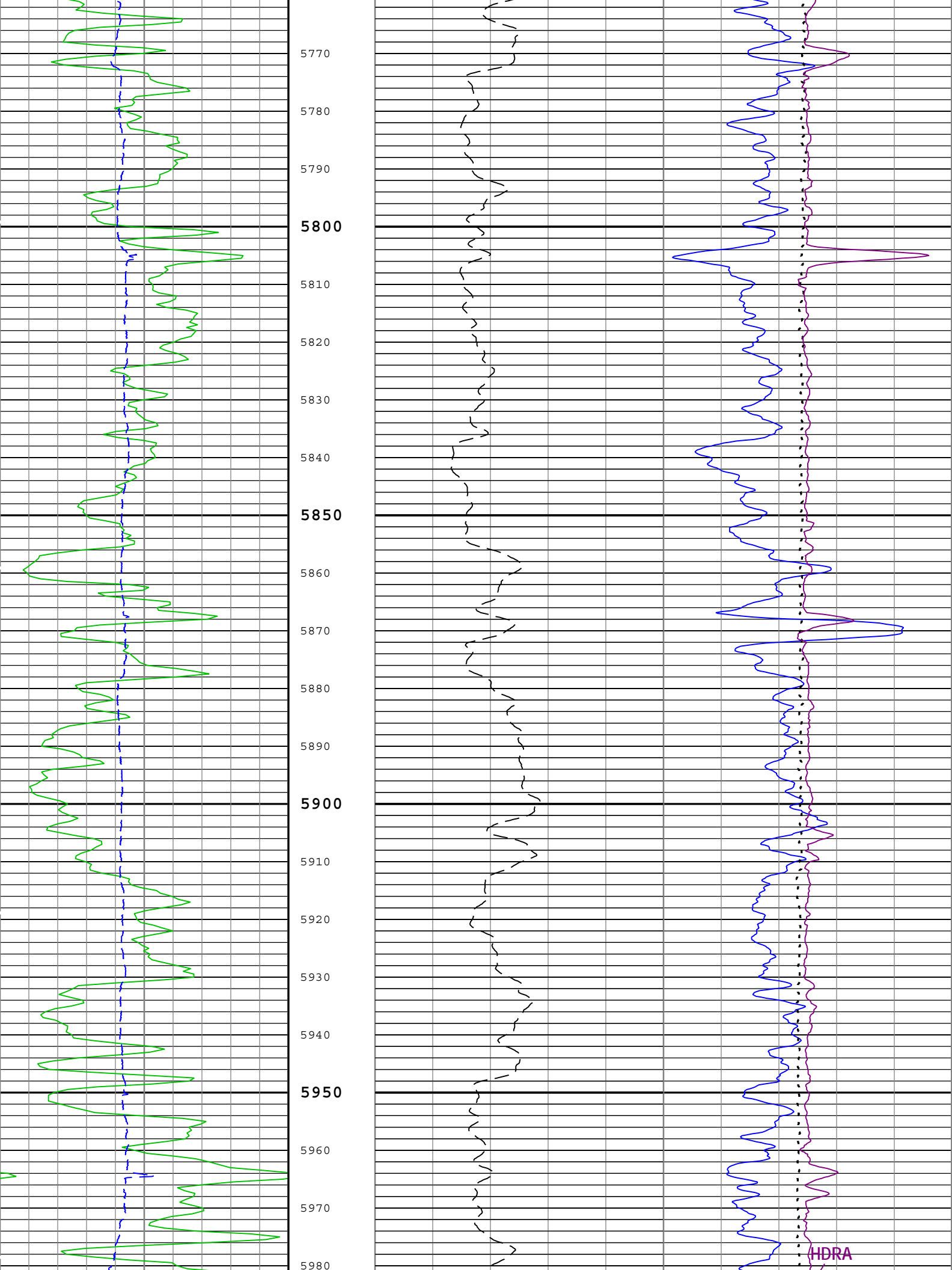


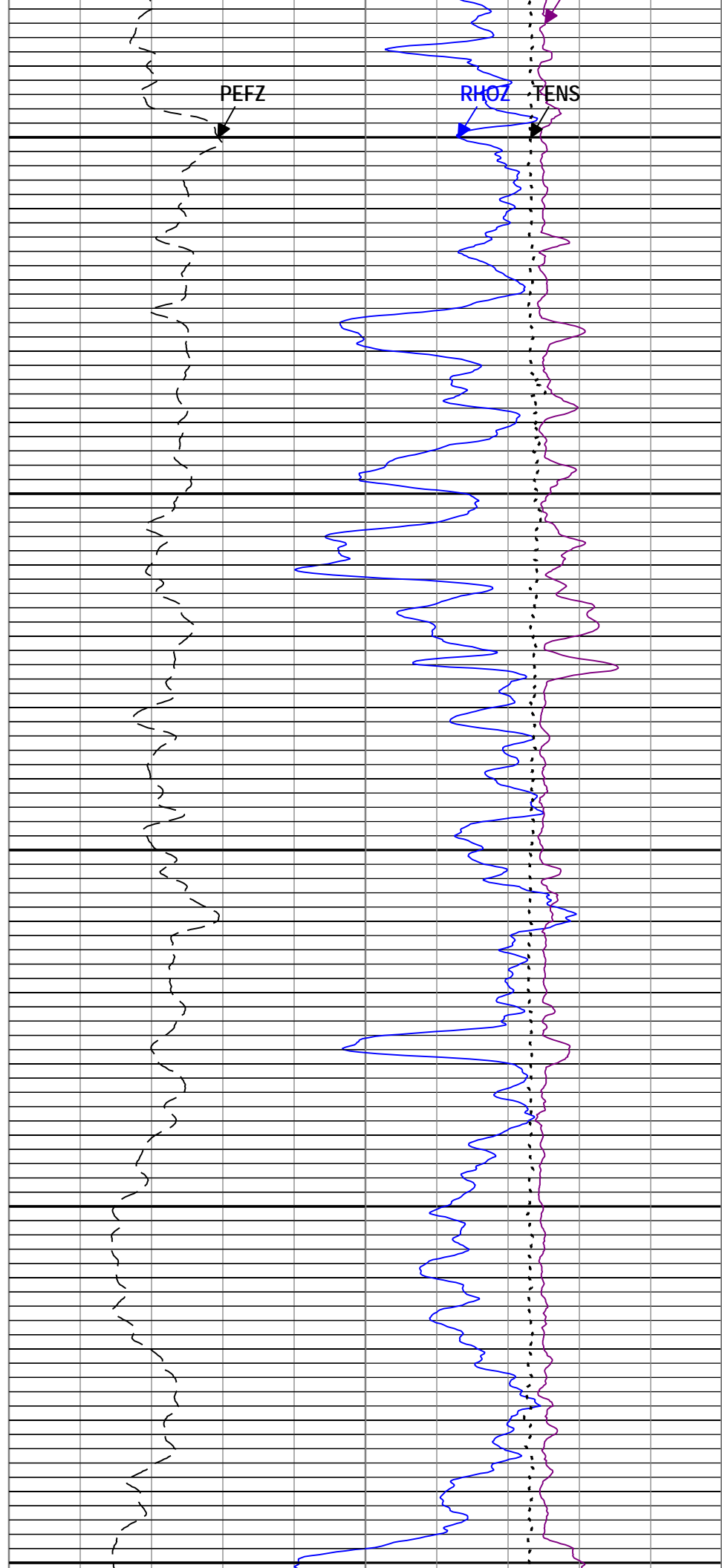
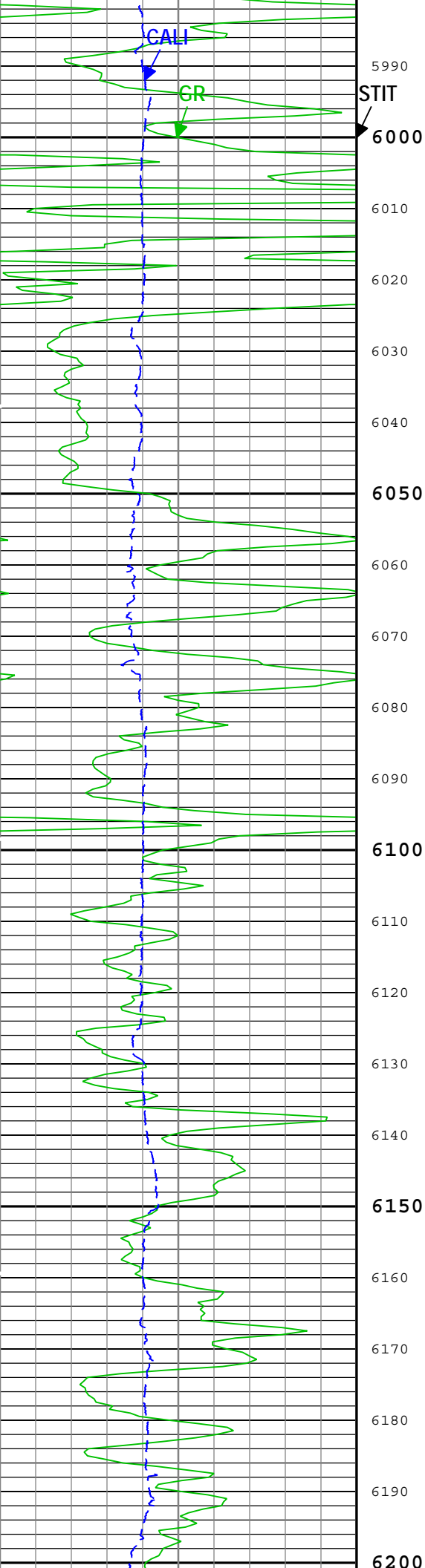


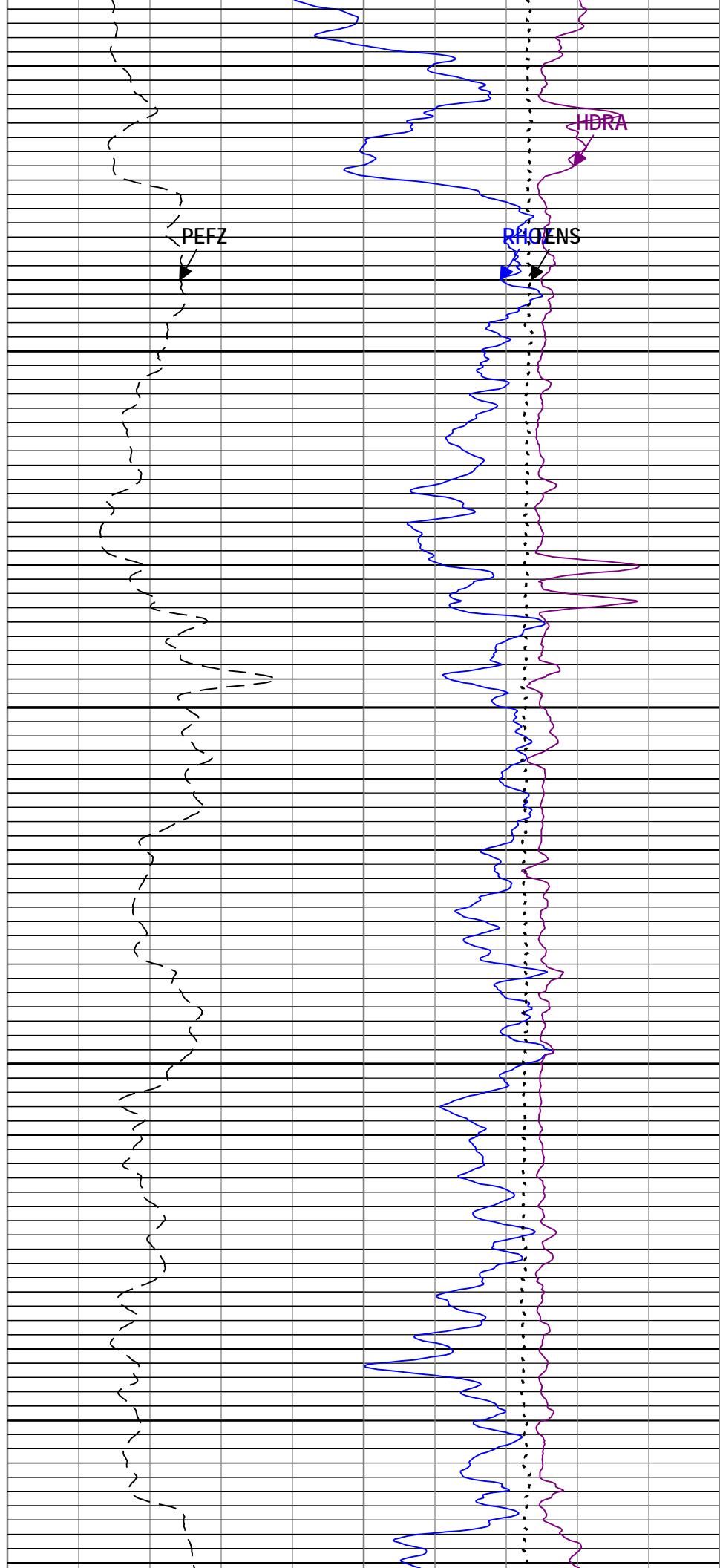
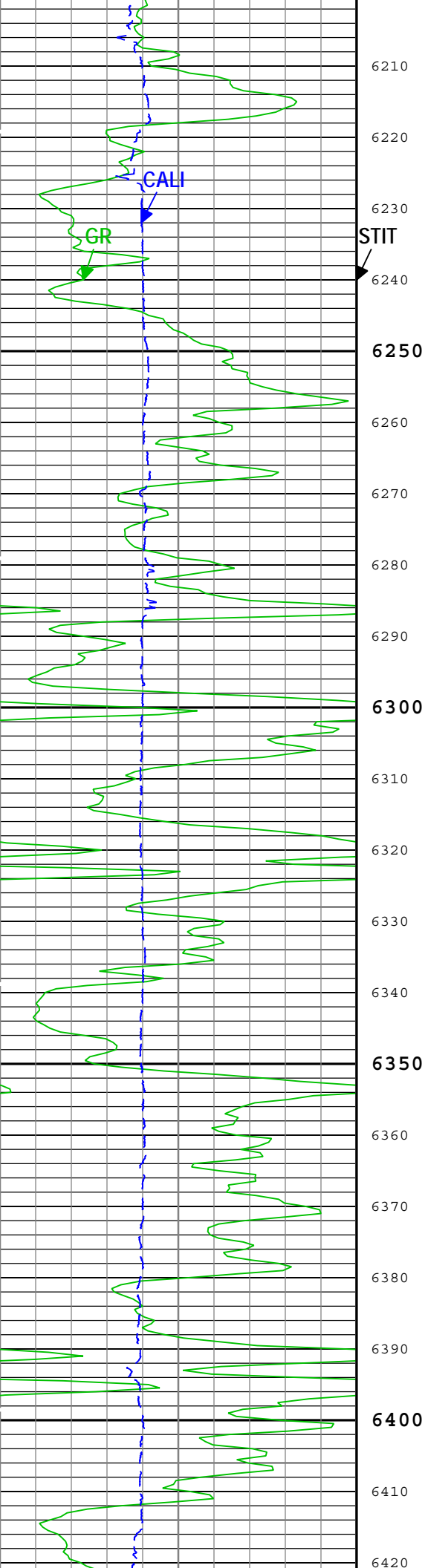


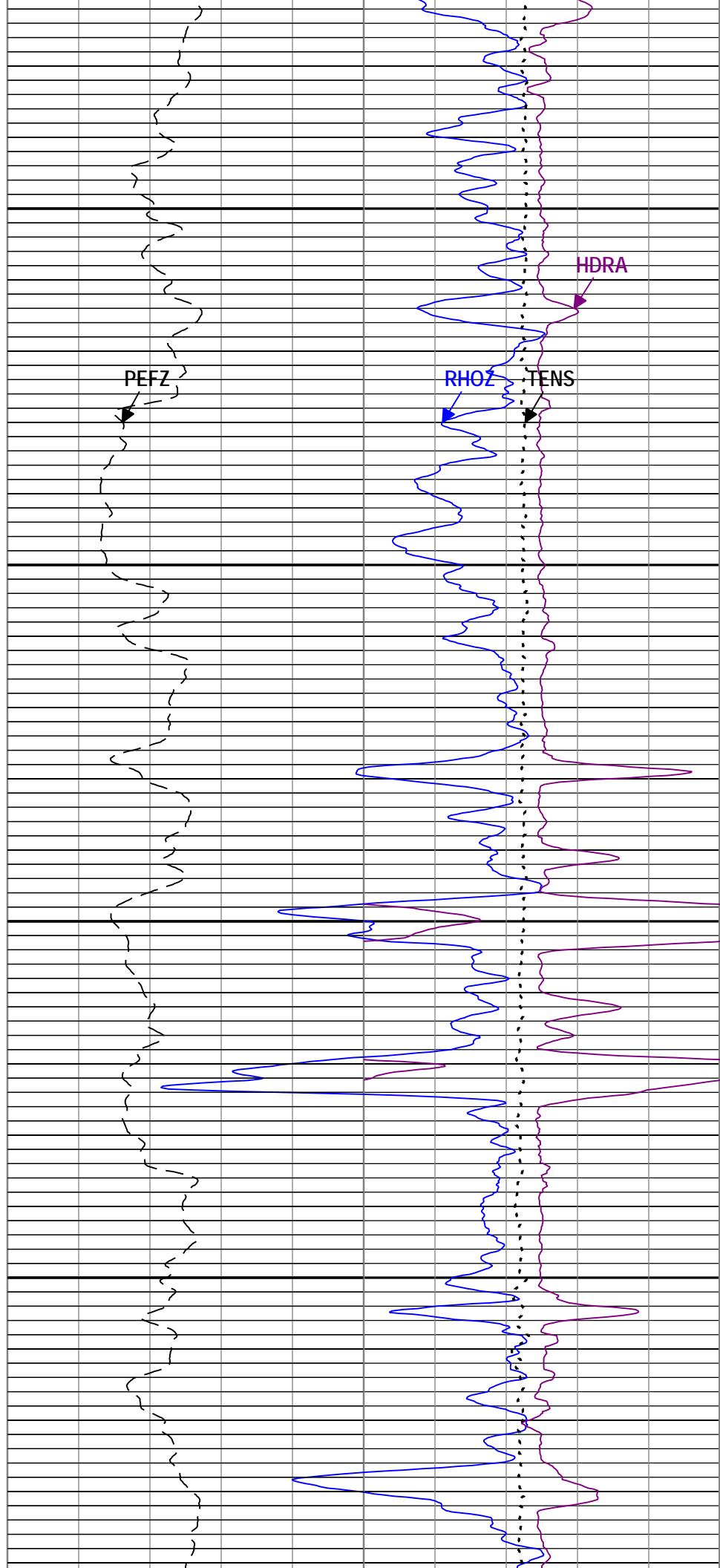
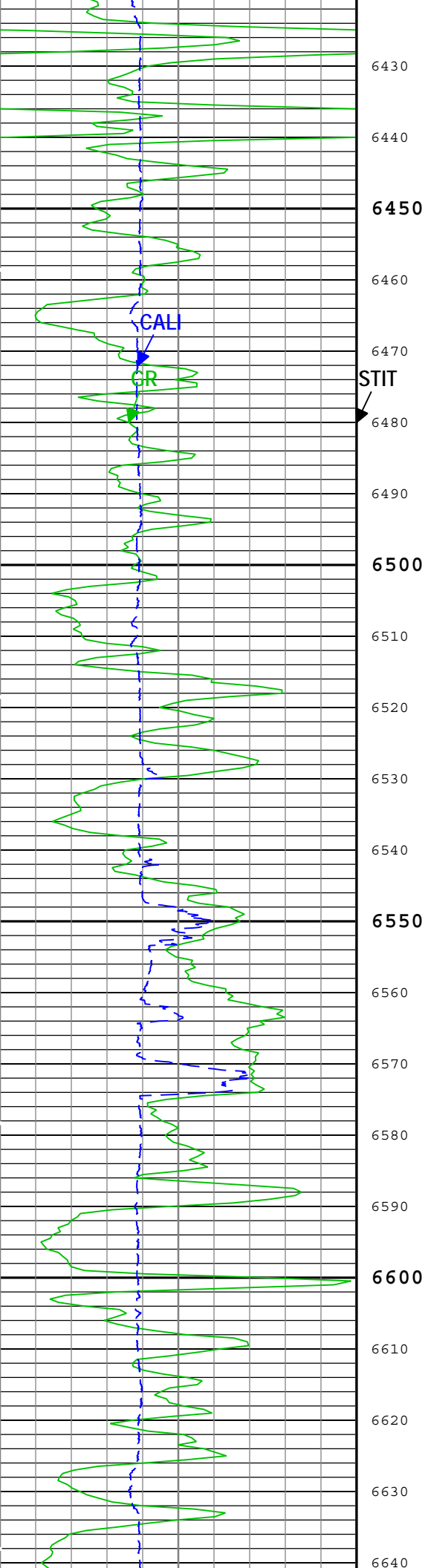


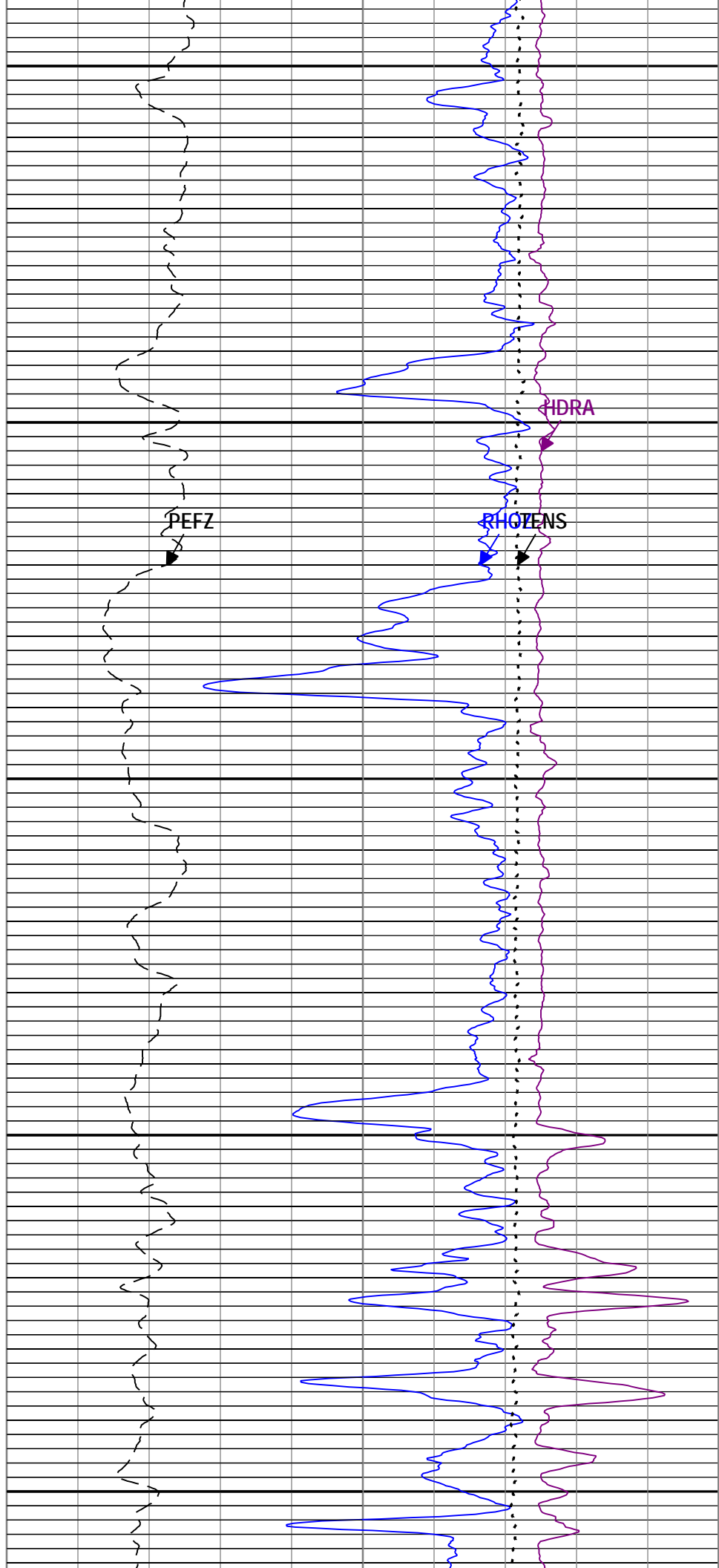
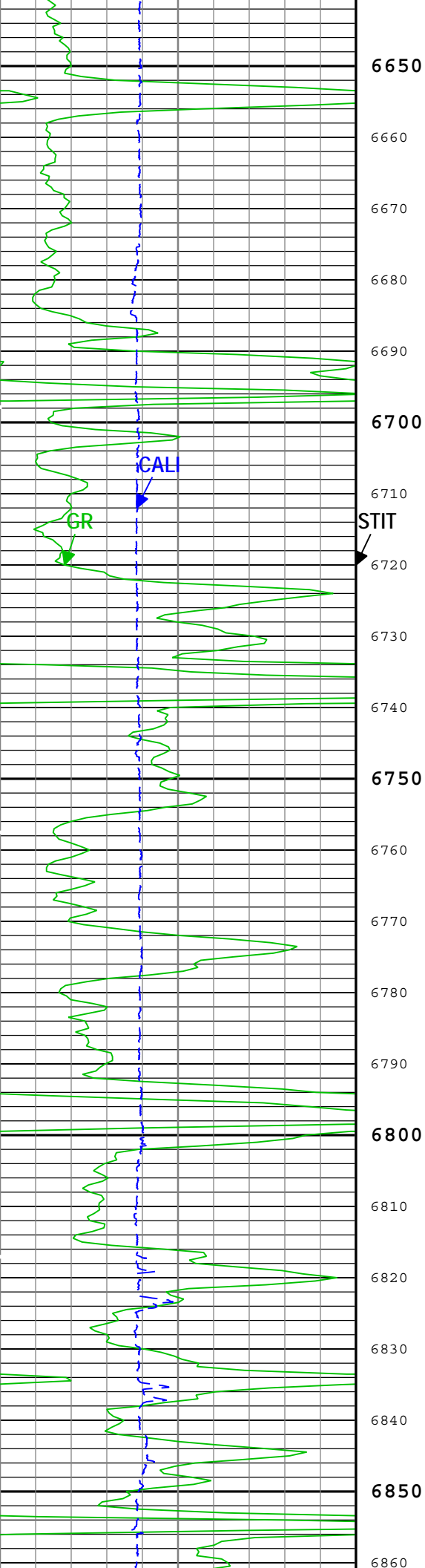


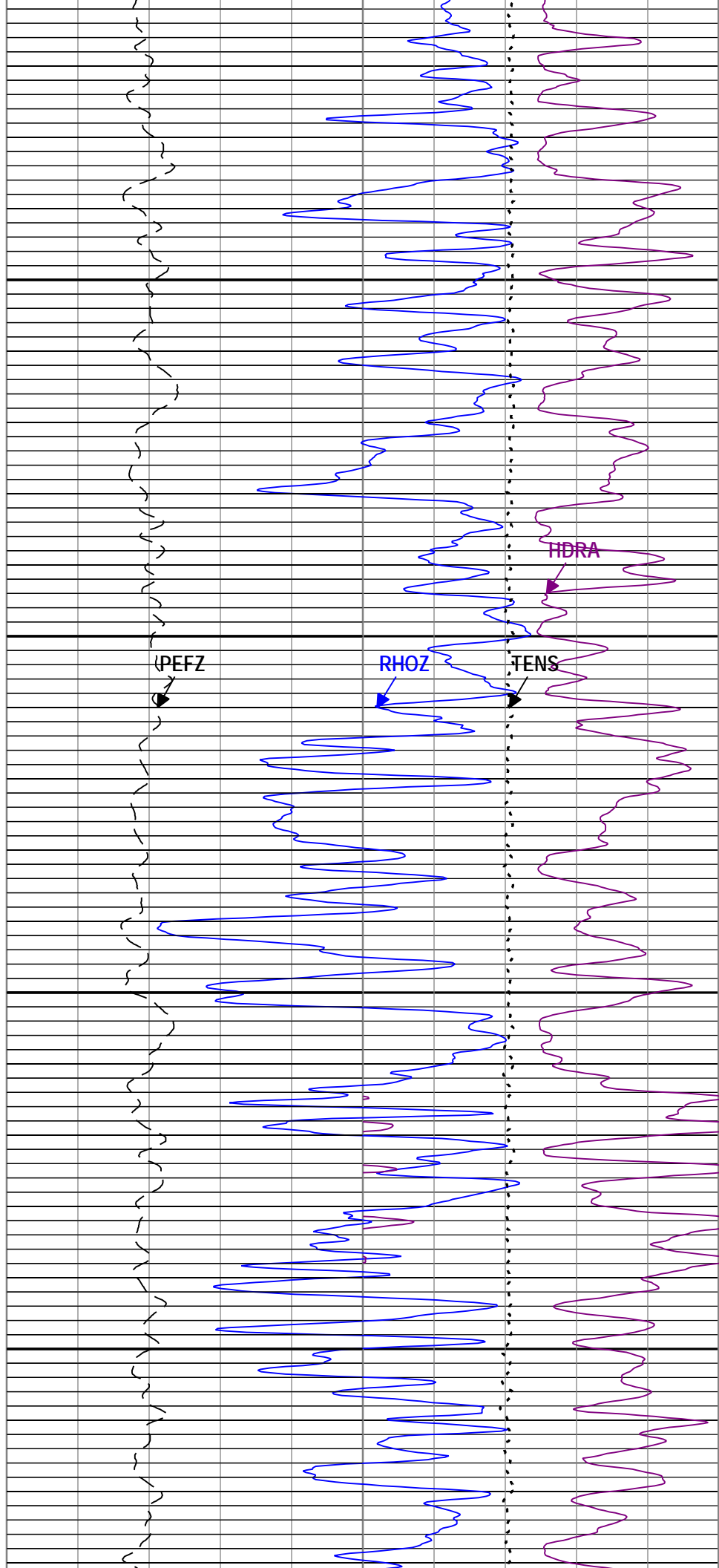
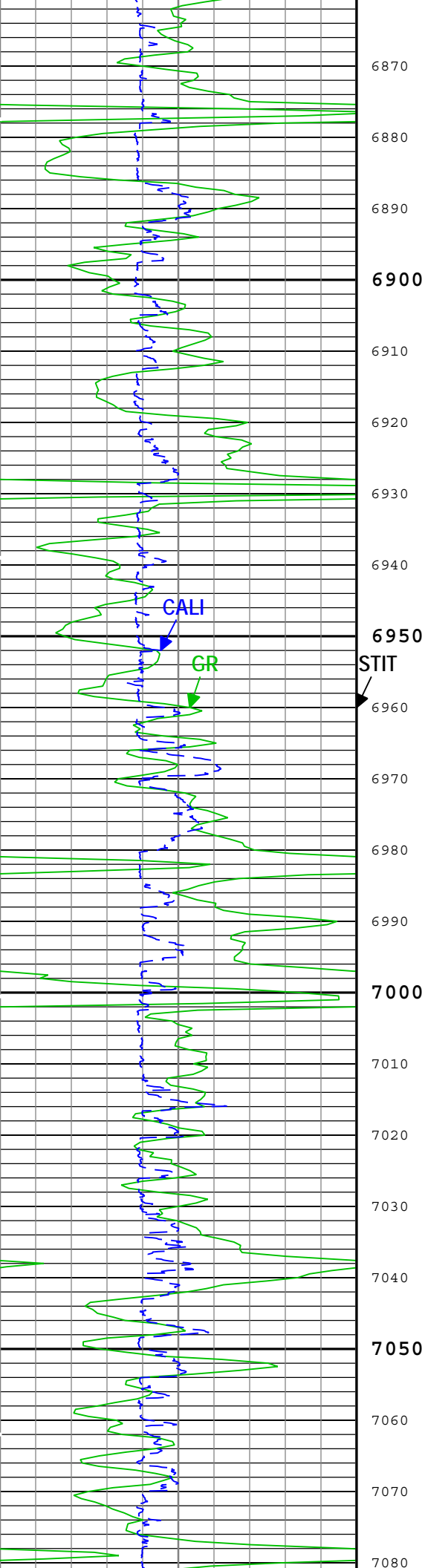


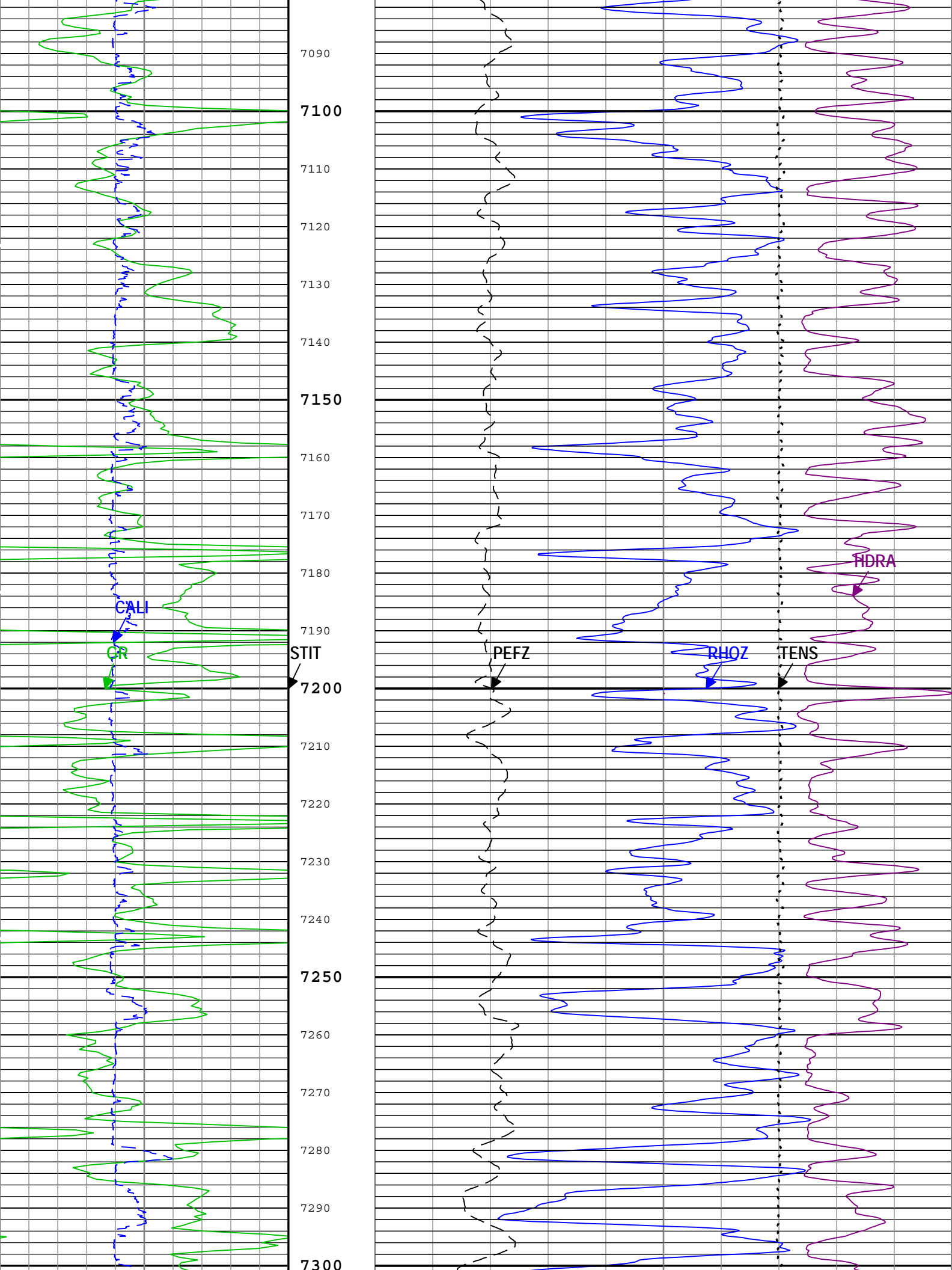


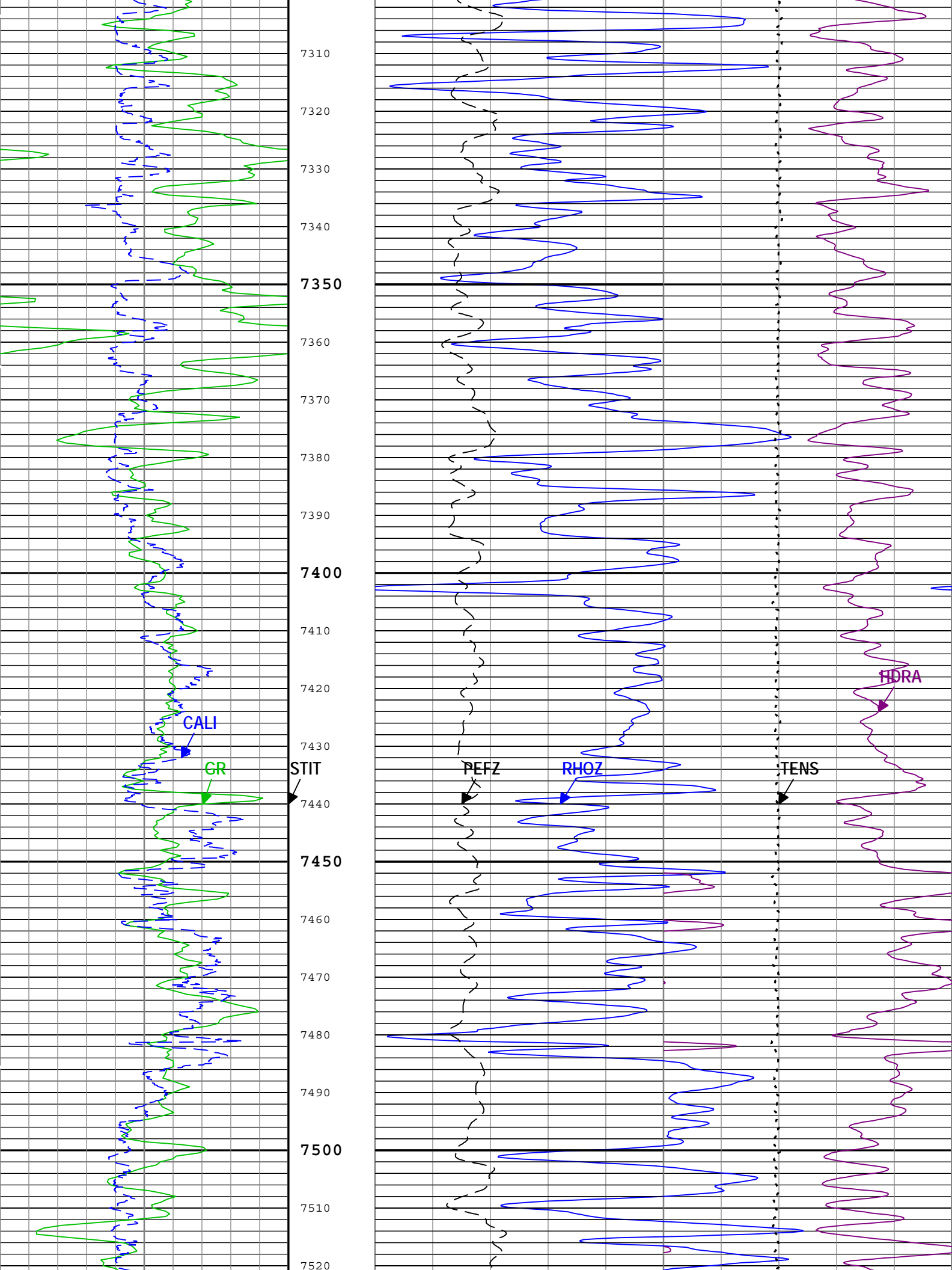


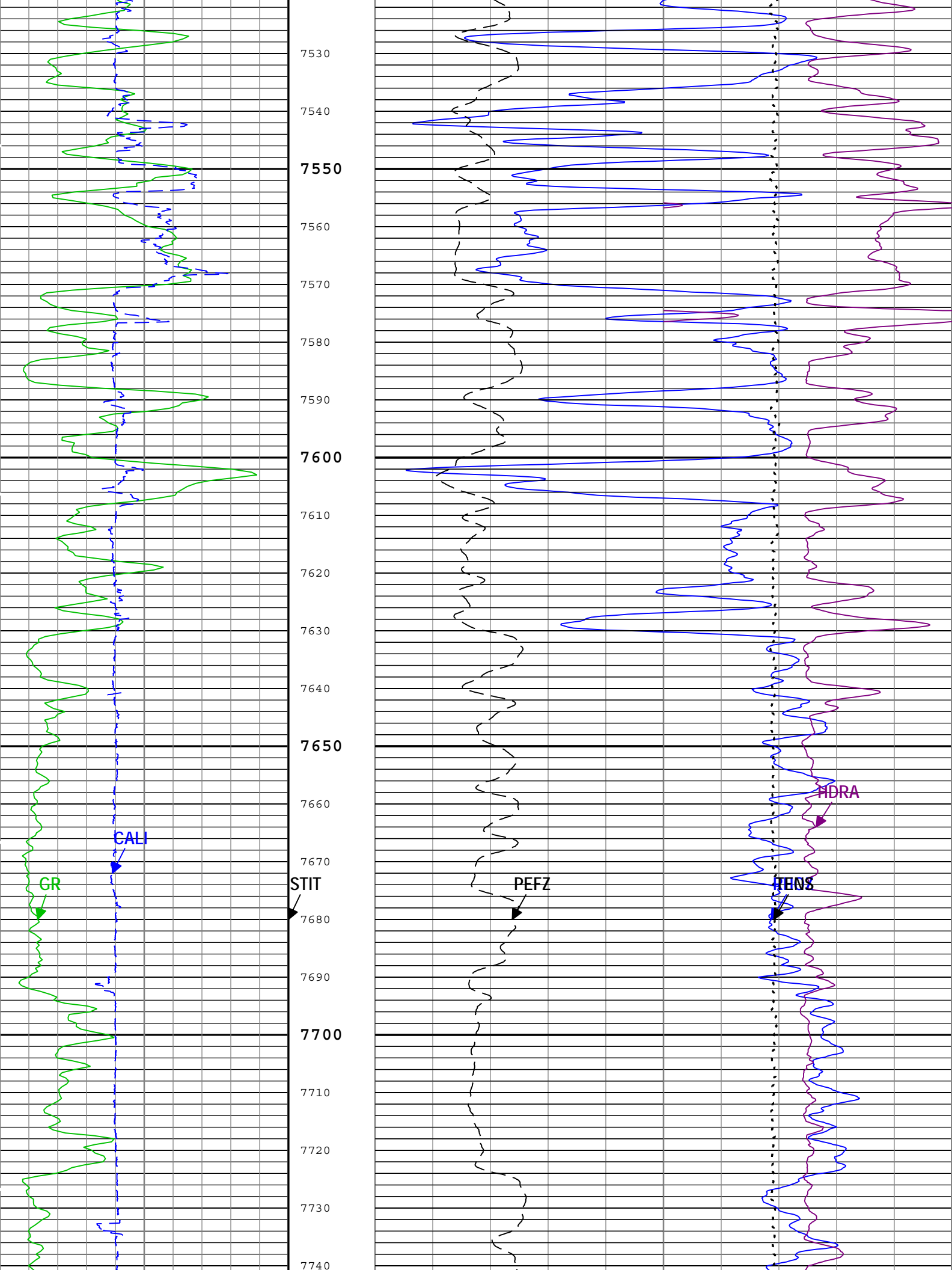


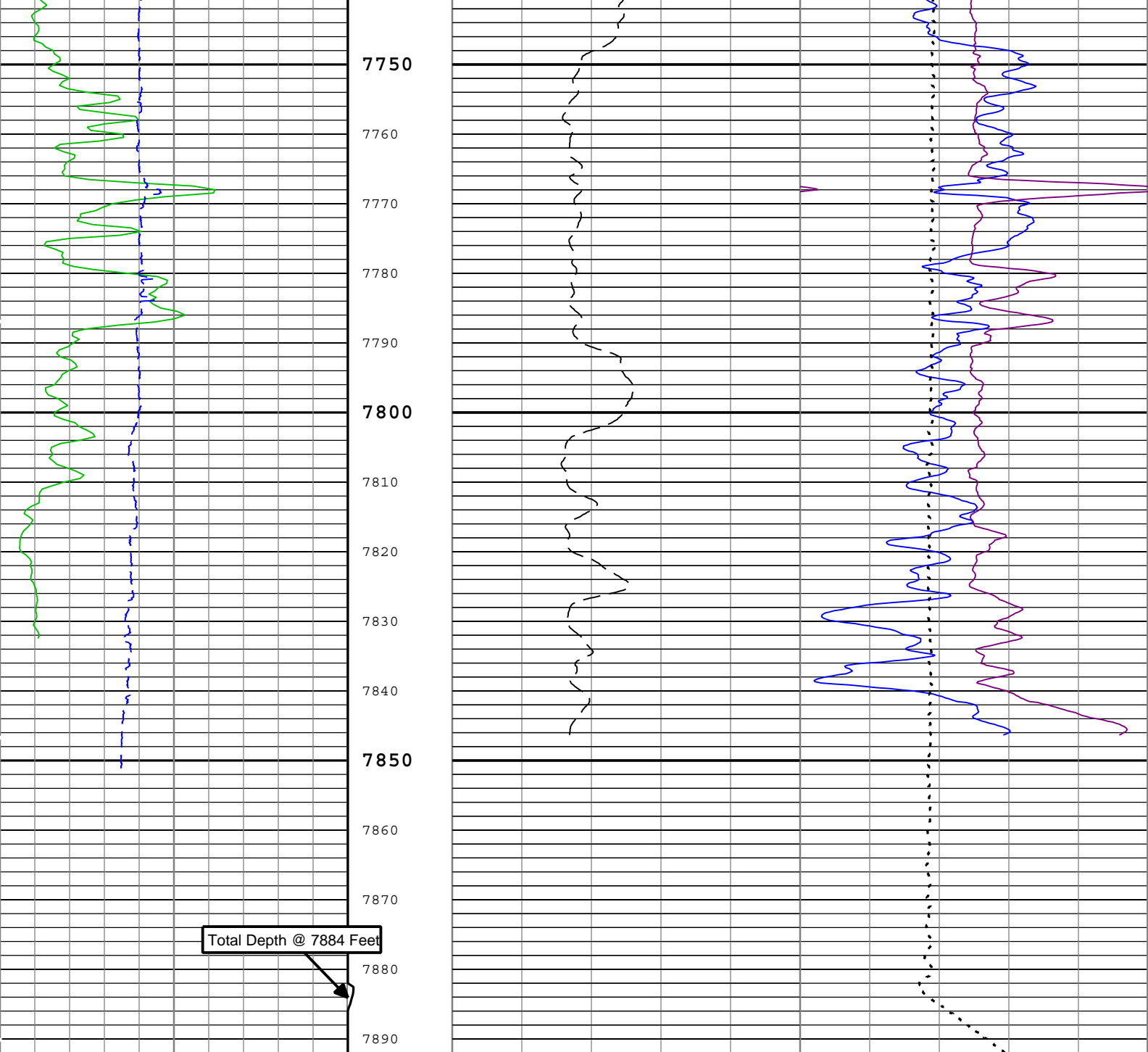












GR Backup		Stuck Tool Indicator, Total (STIT)	Standard Resolution Formation Density (RHOZ) HDRS-H		
Gamma Ray (GR) HGNS-H			g/cm3		
0	gAPI	200	Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		
Caliper (CALI) HDRS-H		0 ft 50	Cable Tension (TENS)		
4 in			lb		
			Density Standoff Correction (HDRA) HDRS-H		
			-0.25 g/cm3 0.25		

TIME_1900 - Time Marked every 60.00 (s)

Description: Monosensor densities for Platform Express Format: Log (5in Density) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured
Depth Creation Date: 26-Sep-2012 12:26:07

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	0.273	in

CBLO	Casing Bottom (Logger)	WLSESSION	342	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DHC	Density Hole Correction	HDRS-H	Bit Size	
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	
TD	Total Measured Depth	Borehole	7884	ft

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	330	342
BS	7.875	342	7892.17

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

Calibration Report

HDRS-H (HILT Density and Rxo Sonde, 150 degC) Calibration - Run 1

Primary Equipment :				
	HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	5705	
	HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H	3816	
Auxiliary Equipment :				
	HRDD Backscatter Detector	Backscatter		
	HRDD Long Spacing Detector	Long Spacing	28732	
	HRDD Short Spacing Detector	Short Spacing	27634	
	Cesium 137 Gamma-Ray Logging Source	GSR-J	5240	
	HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	5705	
	HILT High-Resolution Mechanical Sonde, 150 degC	HRMS-H	4706	
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):		12:01:23 25-Sep-2012					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	8.83	10.00	
Large Ring	in	Before	12.00	9.00	13.08	15.00	

HDRS Density Calibration - Inversion Results

Master (EEPROM):		05:11:40 26-Aug-2012 Expired by 1 days					
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	1.687	1.696	
Pe Aluminum		Master	2.570	2.470	2.552	2.670	
Pe Magnesium		Master	2.650	2.550	2.628	2.750	

HDRS Density Calibration - Deviation Summary

Master (EEPROM):		05:11:40 26-Aug-2012 Expired by 1 days					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.4613	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.9746	1.6000	

SS Max Deviation	%	Master	0	-1.0000	0.3374	1.0000	
SS Average Deviation	%	Master	0	-1.0000	0.3374	1.0000	
SS Max Deviation	%	Master	0	-2.5000	1.1245	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.6985	1.5000	
LS Max Deviation	%	Master	0	-3.5000	2.2980	3.5000	

HDRS Density Calibration - Background Summary

Master (EEPROM):		05:11:40 26-Aug-2012 Expired by 1 days		Before (Measured):		11:57:59 25-Sep-2012	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7499		
		Before	0.7499	0.7124	0.7499	0.7874	
		Before-Master	-----	-----	0.0000	-----	
BS Window Sum	1/s	Master	1		25953		
		Before	25953	24655	26182	27251	
		Before-Master	-----	-----	229	-----	
SS Window Ratio		Master	1.0000		0.4795		
		Before	0.4795	0.4555	0.4809	0.5034	
		Before-Master	-----	-----	0.0014	-----	
SS Window Sum	1/s	Master	1		10352		
		Before	10352	9834	10328	10870	
		Before-Master	-----	-----	-24	-----	
LS Window Ratio		Master	1.0000		0.3019		
		Before	0.3019	0.2868	0.3003	0.3170	
		Before-Master	-----	-----	-0.0016	-----	
LS Window Sum	1/s	Master	1		1212		
		Before	1212	1151	1203	1272	
		Before-Master	-----	-----	-9	-----	

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM):		05:11:40 26-Aug-2012 Expired by 1 days		Before (Measured):		11:57:59 25-Sep-2012	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1618	2400	
		Before		1000	1632	2400	
		Before-Master	-----	-100	14	100	
SS PM High Voltage	V	Master		1000	1405	2400	
		Before		1000	1413	2400	
		Before-Master	-----	-100	8	100	
LS PM High Voltage	V	Master		1000	1210	2400	
		Before		1000	1223	2400	
		Before-Master	-----	-100	13	100	

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM):		05:11:40 26-Aug-2012 Expired by 1 days		Before (Measured):		11:57:59 25-Sep-2012	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	11.39	25.00	
		Before		5.00	11.40	25.00	
		Before-Master	-----	-1.00	0.01	1.00	
SS Crystal Resolution	%	Master		5.00	9.84	20.00	
		Before		5.00	9.90	20.00	
		Before-Master	-----	-1.00	0.06	1.00	
LS Crystal Resolution	%	Master		5.00	8.07	20.00	
		Before		5.00	8.15	20.00	
		Before-Master	-----	-1.00	0.08	1.00	

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured):		09:11:48 26-Sep-2012					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3880	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3810	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3834	4136	

HGNS-H (HILT Gamma-Ray and Neutron Sonde, 150 degC) Calibration - Run 1

Primary Equipment :						
HILT Gamma-Ray and Neutron Sonde, 150 degC			HGNS-H		4779	
Auxiliary Equipment :						
HGNS Accelerometer, 150 degC			HACCZ-H		5736	
AmBe Neutron Logging Source			NSR-F		5168	

Calibration Parameter :
Water Temperature
Housing Size
JIG-BKG (Jig minus background reference) 165

HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured):		08:17:00 26-Sep-2012					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	ft/s2	Before	32.2	31.5	32.0	32.8	

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM):		00:00:00 15-Mar-2006					
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	----	----	8084.000	----	
Accelerometer Coefficients - 1		Master	----	----	-8.467	----	
Accelerometer Coefficients - 2		Master	----	----	0.009	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	2.722	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	298.700	----	
Accelerometer Coefficients - 9		Master	----	----	0.995	----	

HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM):		11:55:48 10-Jul-2012		Before (Measured):		11:55:23 25-Sep-2012		After:	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div></div>		
Near Zero Measurement	1/s	Master	0	5.0	25.2	40.0	<div></div>		
		Before	0	5.0	25.2	40.0	<div></div>		
		After	----	----	----	----	<div></div>		
		Before-Master	----	-3.8	0.0	3.8	<div></div>		
		After-Before	----	----	----	----	<div></div>		
Far Zero Measurement	1/s	Master	0	5.0	28.4	40.0	<div></div>		
		Before	0	5.0	27.7	40.0	<div></div>		
		After	----	----	----	----	<div></div>		
		Before-Master	----	-4.3	-0.7	4.3	<div></div>		
		After-Before	----	----	----	----	<div></div>		
Near Plus Measurement - 0	1/s	Master	6031.0	4700.0	5277.0	6900.0	<div></div>		
		Before	----	----	----	----	<div></div>		
		After	----	----	----	----	<div></div>		
		Before-Master	----	----	----	----	<div></div>		
		After-Before	----	----	----	----	<div></div>		
Far Plus Measurement - 0	1/s	Master	2793.0	1900.0	2204.0	2900.0	<div></div>		
		Before	----	----	----	----	<div></div>		
		After	----	----	----	----	<div></div>		
		Before-Master	----	----	----	----	<div></div>		
		After-Before	----	----	----	----	<div></div>		
Near Corrected Plus Measurement - 0	1/s	Master		4700.0	5227.0	6900.0	<div></div>		
		Before	----	----	----	----	<div></div>		
		After	----	----	----	----	<div></div>		
		Before-Master	----	----	----	----	<div></div>		
		After-Before	----	----	----	----	<div></div>		
Far Corrected Plus Measurement - 0	1/s	Master		1900.0	2158.0	2900.0	<div></div>		
		Before	----	----	----	----	<div></div>		
		After	----	----	----	----	<div></div>		
		Before-Master	----	----	----	----	<div></div>		
		After-Before	----	----	----	----	<div></div>		

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured):		12:01:46 25-Sep-2012		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	82.6	120.0	
		After	----	----	----	----	

		After-Before	-----	-----	-----	-----	
RGR Plus Measurement	gAPI	Before	185.4	157.1	168.1	206.3	
		After			NOT DONE		
		After-Before	-----	-----	-----	-----	
GR Calibration Gain		Before	0.89	0.80	0.98	1.05	
		After	-----	-----	-----	-----	
		After-Before	-----	-----	-----	-----	

Company:

Nighthawk Production LLC

Well:

Pikes Peak Williams 4-30

Field:

Wildcat

County:

Lincoln

State:

Colorado

Platform Express

Compensated Neutron-- Litho Density

Schlumberger