

Company: Cascade Petroleum LLC

Well: Gaede 9S-55W-8-16

Field: Wildcat

County: Lincoln State: Colorado

## Platform Express

## Triple Combo

## Linear

County: Lincoln  
Field: Wildcat  
Location: NWNE Sec8 T9S R55W  
Well: Gaede 9S-55W-8-16  
Company: Cascade Petroleum LLC

Location:		Elev.:	
NWNE Sec8 T9S R55W SHL: 530; FNL, 2520' FEL		K.B. 5602.00 ft G.L. 5587.00 ft D.F. 5601.00 ft	
Permanent Datum:	Ground Level	Elev.: 5587.00 f	
Log Measured From:	Kelly Bushing	15.00 ft above Perm.Datum	
Drilling Measured From:	Kelly Bushing		
API Serial No. 05-073-06665	Section: 8	Township: 9S	Range: 55W

Logging Date 10-Nov-2014

Run Number ONE

Depth Driller 8556.00 ft

Schlumberger Depth 8568.00 ft

Bottom Log Interval 8568.00 ft

Top Log Interval 3000.00 ft

Casing Driller Size @ Depth 8.625 in @ 544.00 ft

Casing Schlumberger 544 ft

Bit Size 7.875 in

Type Fluid In Hole Water

Density 8.9 lbm/gal

Viscosity 65 s

Fluid Loss PH 4.8 cm3

Source of Sample Active Tank

RM @ Meas Temp 0.2 ohm.m @ 68 degF

RMF @ Meas Temp 0.15 ohm.m @ 68 degF

RMC @ Meas Temp

Source RMF

RM @ BHT 0.07 @ 194 0.06 @ 194

Max Recorded Temperatures 194 degF

Circulation Stopped 09-Nov-2014 16:30:00

Logger on Bottom 10-Nov-2014 04:13:39

Unit Number 2135

Recorded By B Makinson

Witnessed By Jim Weir

## Disclaimer

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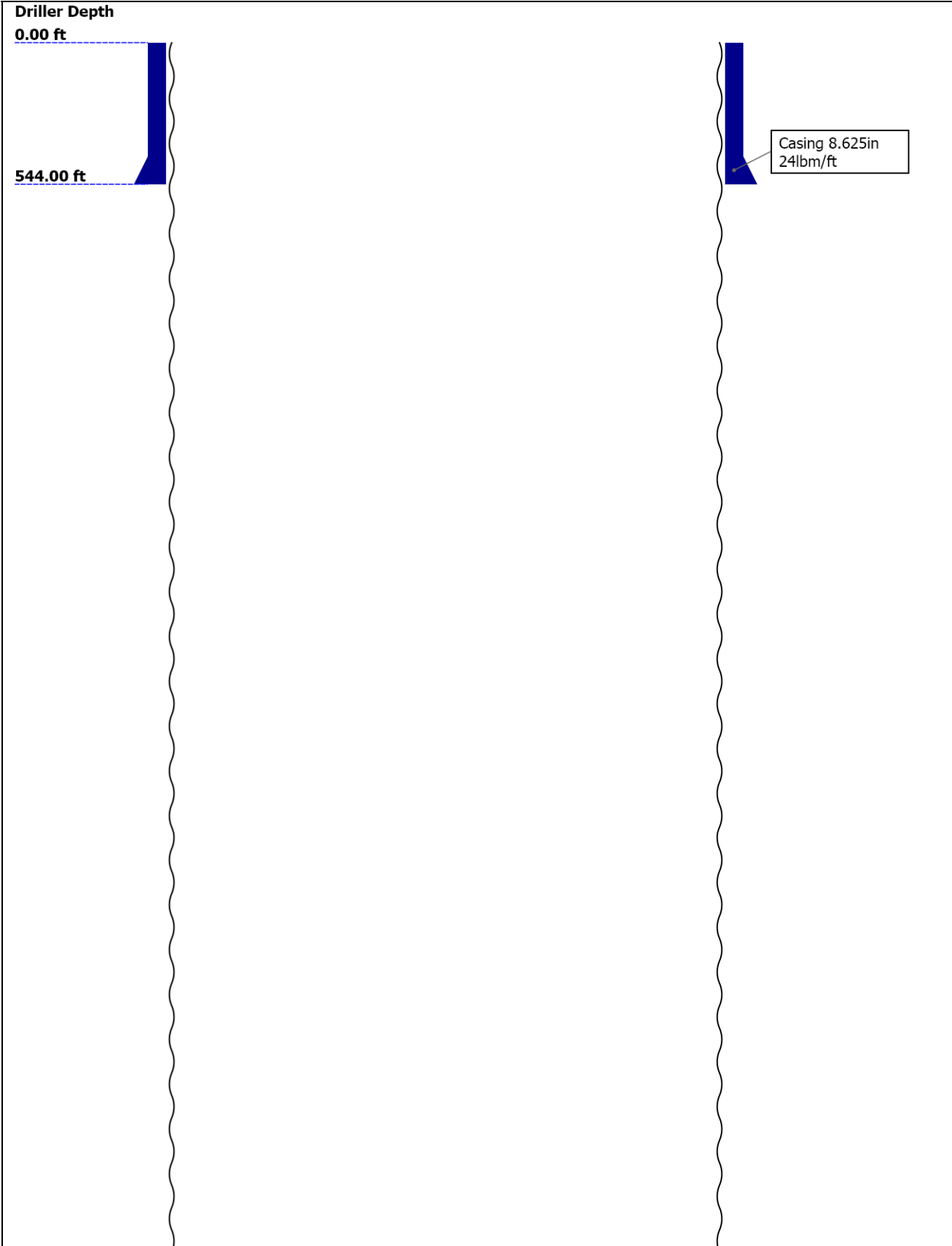
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Well Sketch



8556.00 ft

Open Hole 7.875in

Borehole Size/Casing/Tubing Record

Bit						
Bit Size ( in )	7.875					
Top Driller ( ft )	0					
Top Logger ( ft )	0					
Bottom Driller ( ft )	8556					
Bottom Logger ( ft )	8568					
Casing						
Size ( in )	8.625					
Weight ( lbm/ft )	24					
Inner Diameter ( in )	8.097					
Grade	N80					
Top Driller ( ft )	0					
Top Logger ( ft )	0					
Bottom Driller ( ft )	544					
Bottom Logger ( ft )	544					

Operational Run Summary

Parameter ( unit )	ONE					
Date Log Started	10-Nov-2014					
Time Log Started	02:08:53					
Date Log Finished	10-Nov-2014					
Time Log Finished	09:24:11					
Top Log Interval ( ft )	3000.00					
Bottom Log Interval ( ft )	8568.00					
Total Depth ( ft )	8568.00					
Max Hole Deviation ( deg )	3.82					
Azimuth of Max Deviation ( deg )	0.00					
Bit Size ( in )	7.875					
Logging Unit Number	2135					
Logging Unit Location	Fort Morgan					
Recorded By	B Makinson					
Witnessed By	Jim Weir					
Service Order Number	CZQH-00032					

Service Order Number		GZOH-000032					
Borehole Fluids							
Parameter( unit )	ONE						
Fluid Type	Water						
Max Recorded Temperatures ( degF )	194						
Source of Sample	Active Tank						
Salinity ( ppm )	1400						
Density ( lbm/gal )	8.9						
Funnel Viscosity ( s )	65						
Fluid Loss ( cm3 )	4.8						
PH	8.6						
Date/Time Circulation Stopped	09-Nov-2014 16:30:00						
Date Logger on Bottom	10-Nov-2014						
Time Logger on Bottom	04:13:39						
Source RMF							
RMC	Pressed						
RM @ Meas Temp ( ohm.m@degF )	0.2 @ 68						
RMF @ Meas Temp ( ohm.m@degF )	0.15 @ 68						
RMC @ Meas Temp ( ohm.m@degF )							
RM @ BHT ( ohm.m@degF )	0.07 @ 194						
RMF @ BHT ( ohm.m@degF )	0.06 @ 194						
RMC @ BHT ( ohm.m@degF )	NaN @ 194						
Total Solid ( % )							
High Gravity Solids ( % )							
Remarks and Equipment Summary							
ONE: Toolstring		ONE: Remarks					
Equip name	Length	MP name	Offset	This is first run in well.			
LEH-QT	73.17			Toolstring run as per tool sketch.			
LEH-QT				Neutron corrections applied: hole size, standoff.			
EDTC-B:8328	70.25			Matrix: Limestone, MDEN: 2.71			
EDTH-B				Down log stretch correction: 13.8 ft.			
EDTG-A				Cement volume calculated assuming 5.5 in future casing.			
EDTC-B:8328				Caliper check in casing. Cali Shift 0.5 in to read casing ID of 8.097 in.			
		CTEM	66.75	Mud resistivity measured from AIT AMF.			
		ACCZ	0.00				
		HV	0.00				
		Gamma Ray	64.88				
		TelStatus	63.75				
PPC-B:8352	63.75						
PPC-B:8352		PPC-B Caliper	62.61				
		s					

CMRT-B:144 57.24

CMRC:78  
CMRH:78  
CMRS:144

AH-184[2] 41.65

AH-184[1] 39.65

HGNS-H:4810 37.65

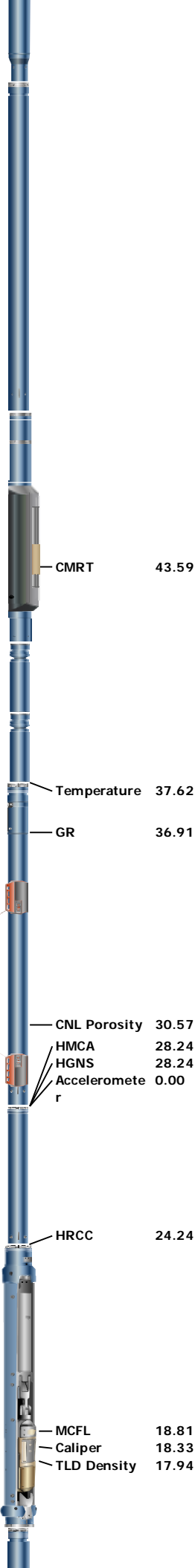
HGNH  
NPV-N  
NSR-F:5215  
HGNS-H:4810  
HACCZ-H:5955  
HMCA-H

HDRS-H 28.24

ECH-MEB  
HRCC-H  
HRMS-H  
HRGD-H:3760  
Long Spacing  
GPV-Q  
GSR-J:5471  
Short Spacing  
Backscatter

AIT-M:181 16.00

AMIS:181  
AMDI:181





Induction 7.91  
Power Supply 7.91  
Temperature 7.91

SP 0.08  
Mud Resistivity 0.00  
Head Tension  
TOOL\_ZERO

Lengths are in ft

Maximum Outer Diameter = 9.000 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL\_ZERO

## Depth Summary

ONE

### Depth Measuring Device

Type	IDW-JA		
Serial Number	6433		
Calibration Date	23-Sep-2014		
Calibrator Serial Number			
Calibration Cable Type	7-46 PXS		
Wheel Correction 1	-3		
Wheel Correction 2	-2		

### Tension Device

Type	CMTD-B/A		
Serial Number	1919		
Calibration Date	07-Nov-2014		
Calibrator Serial Number	441345A		
Number of Calibration Points	10		
Calibration Root Mean Square Error	13		
Calibration Peak Error	24		

### Logging Cable

Type	7-46P-XS		
Serial Number	U711057		
Length	24000.00 ft		
Conveyance Type	Wireline		
Rig Type	Single		

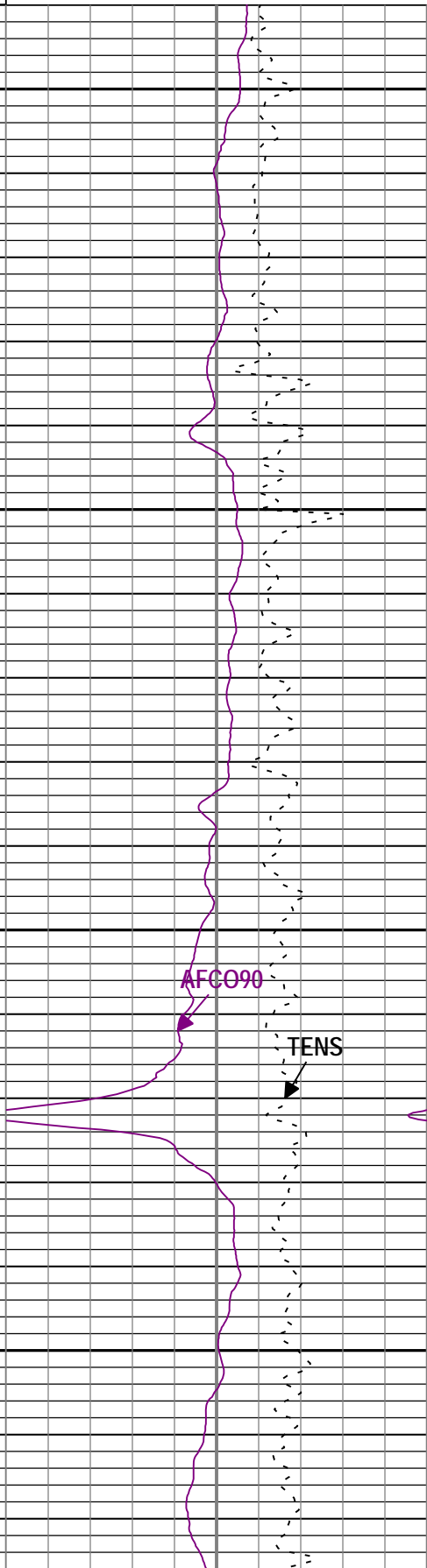
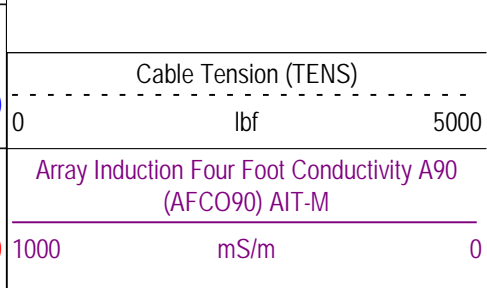
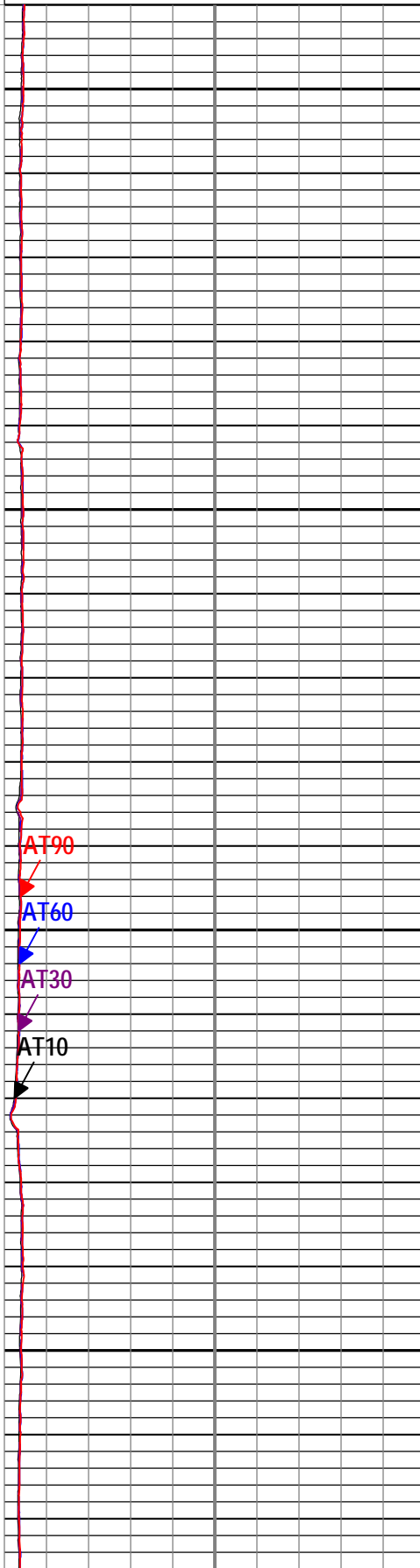
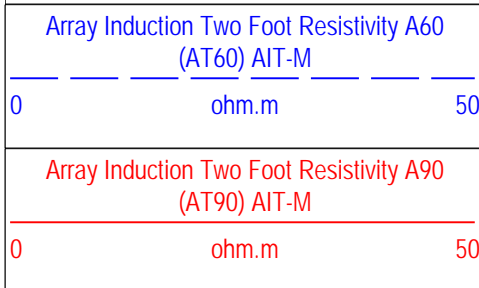
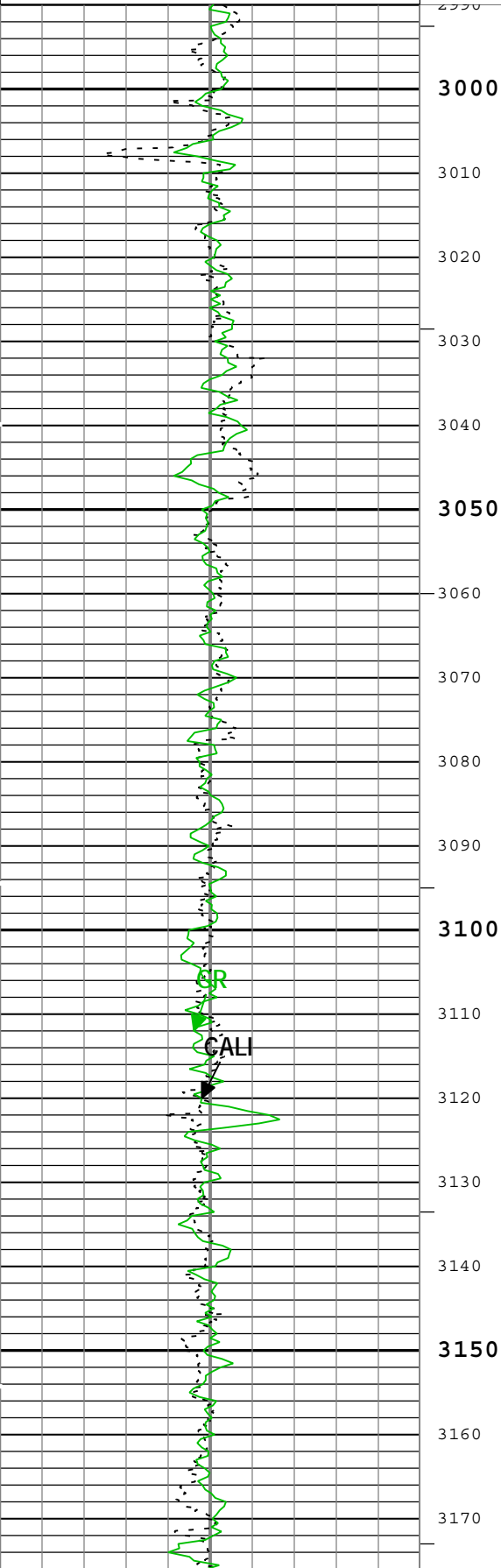
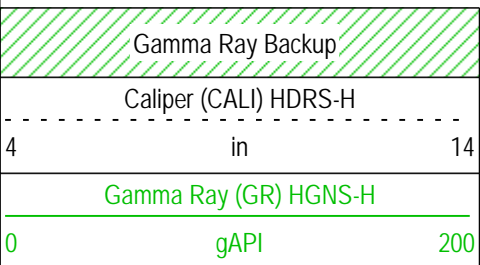
### ONE:Depth Control Parameters

Log Sequence	First Log In the Well
Rig Up Length At Surface	
Rig Up Length At Bottom	
Rig Up Length Correction	
Stretch Correction	13.80 ft
Tool Zero Check At Surface	

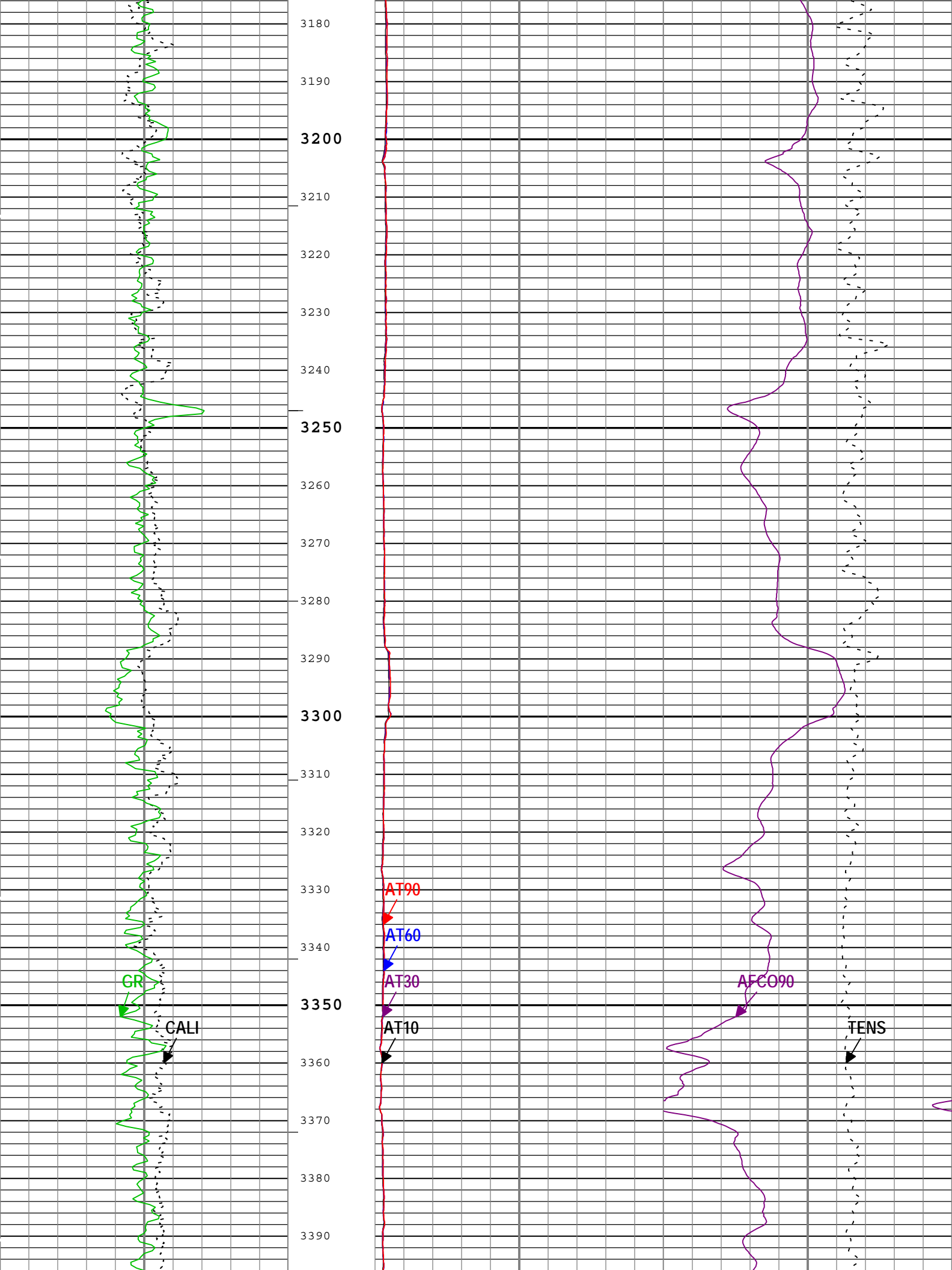
### Depth Control Remarks

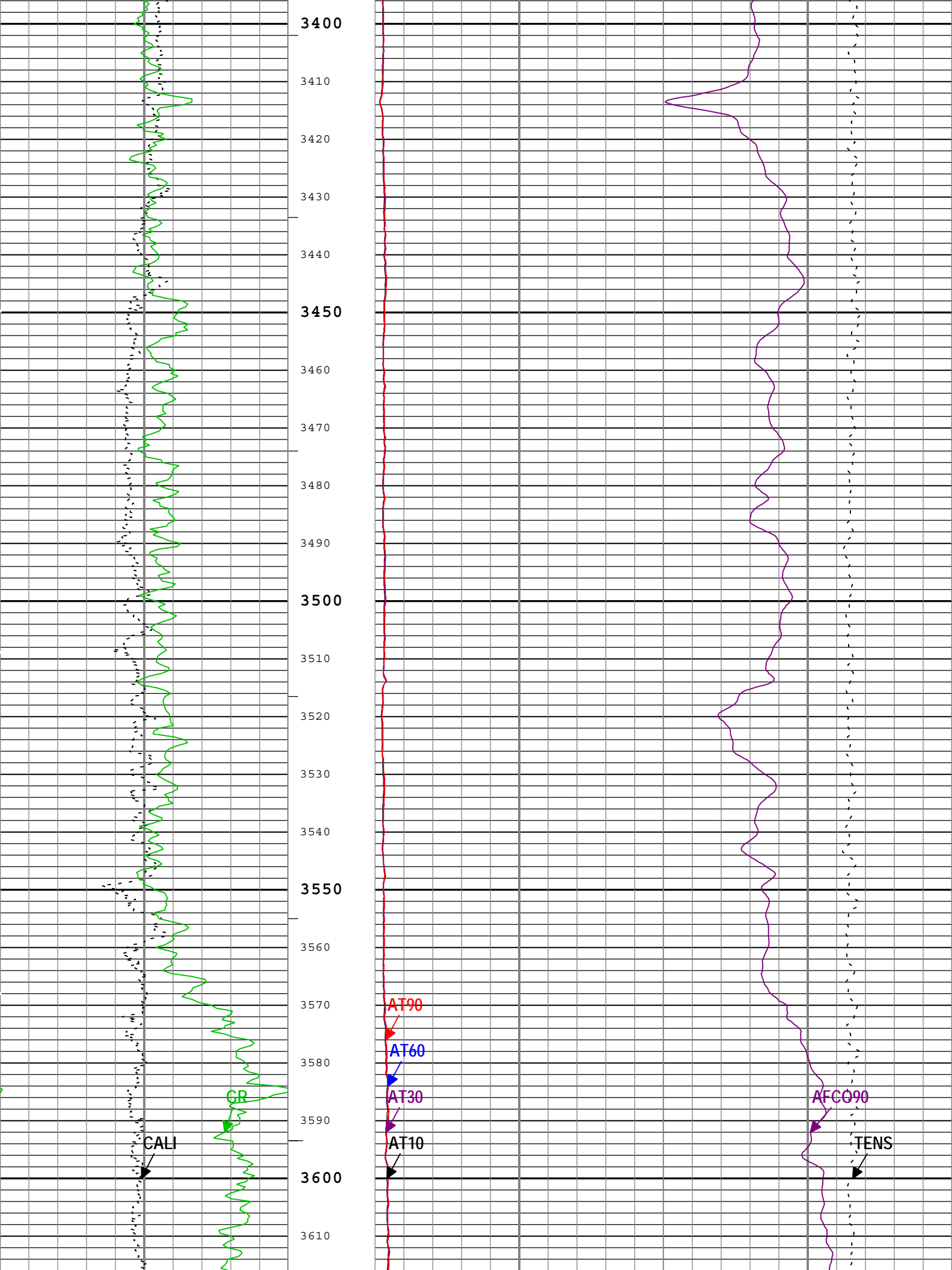
All Schlumberger depth control procedures followed.
IDW used as primary depth control.
Z-Chart used as secondary depth control.

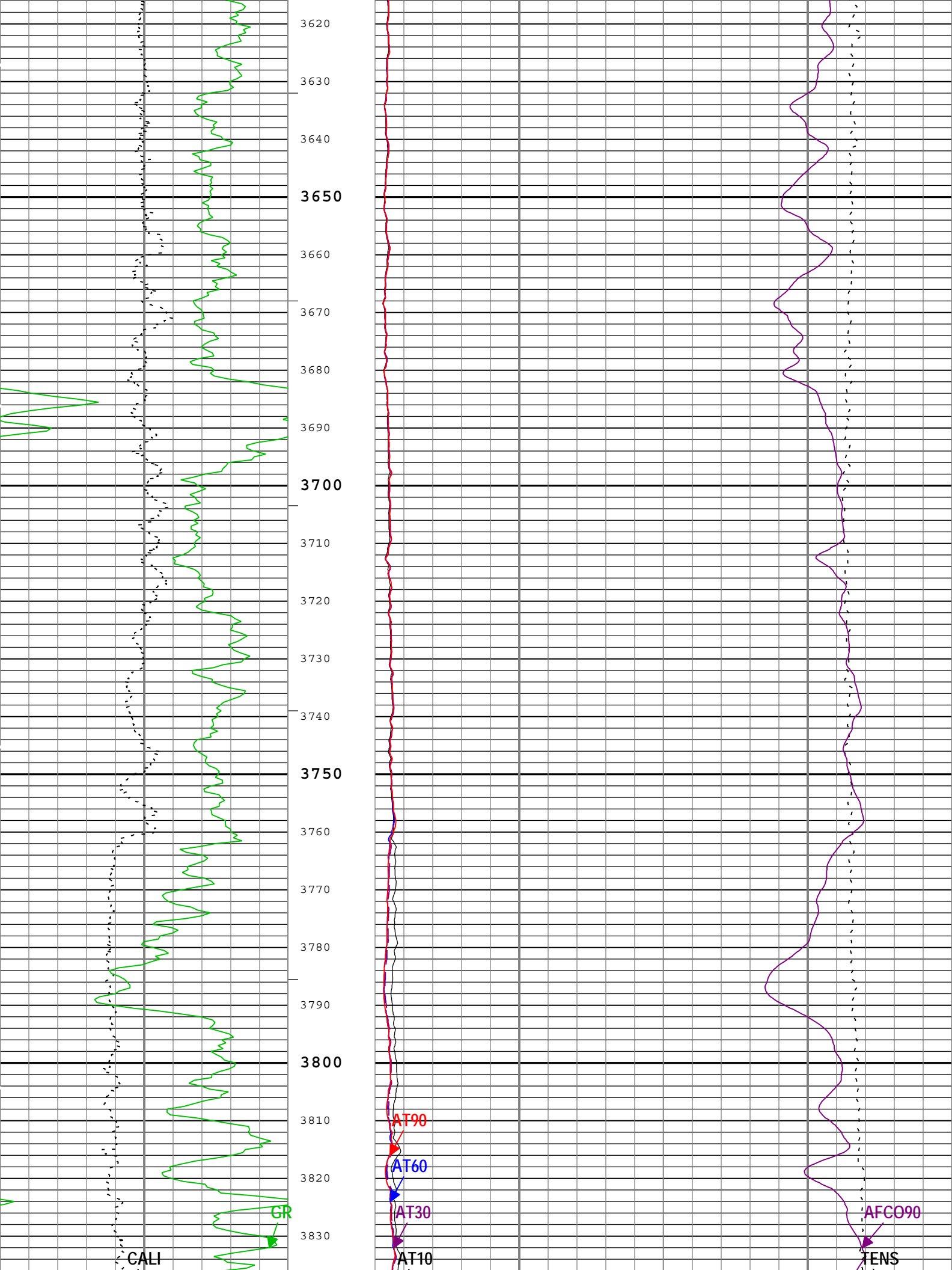


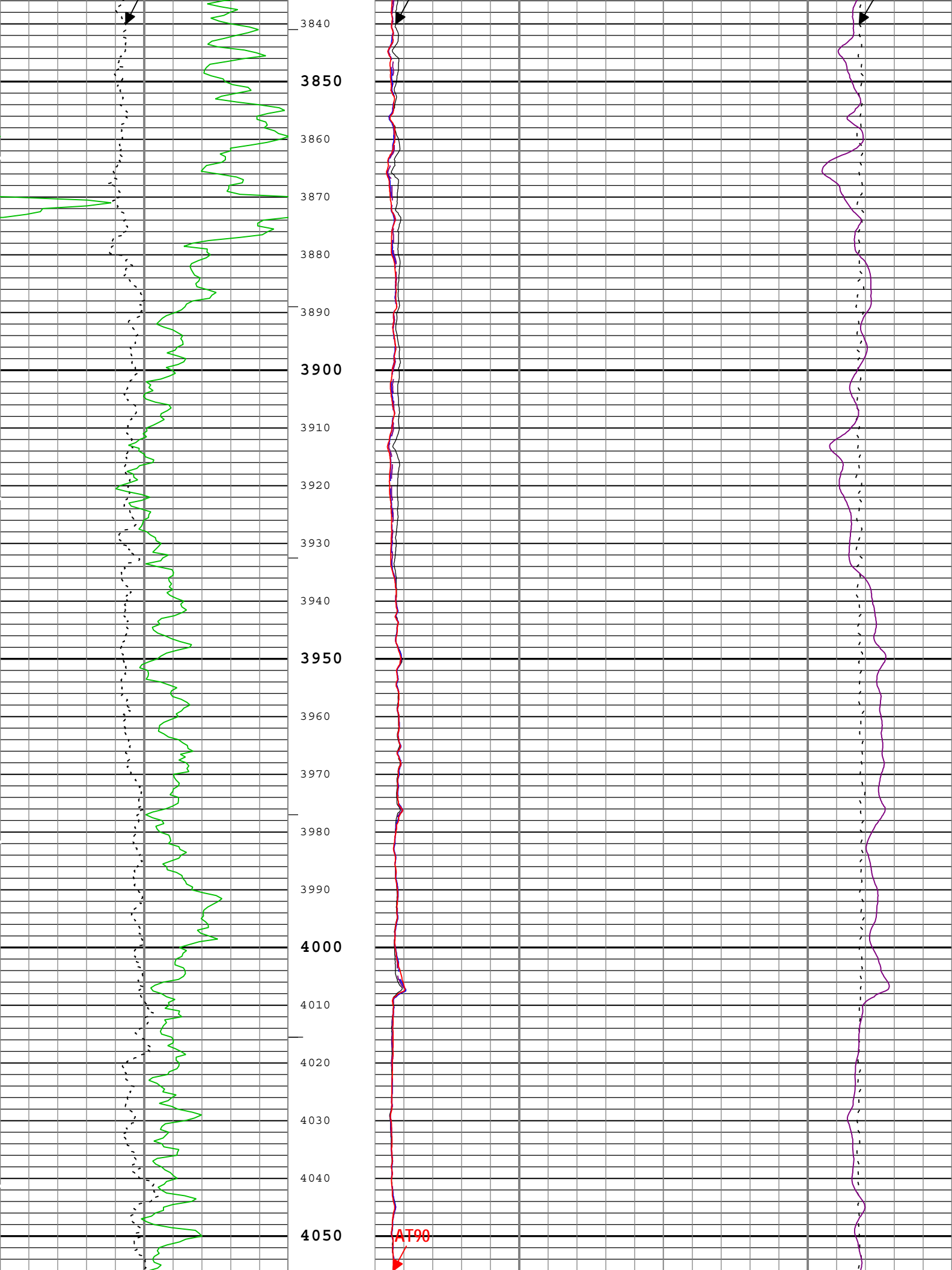


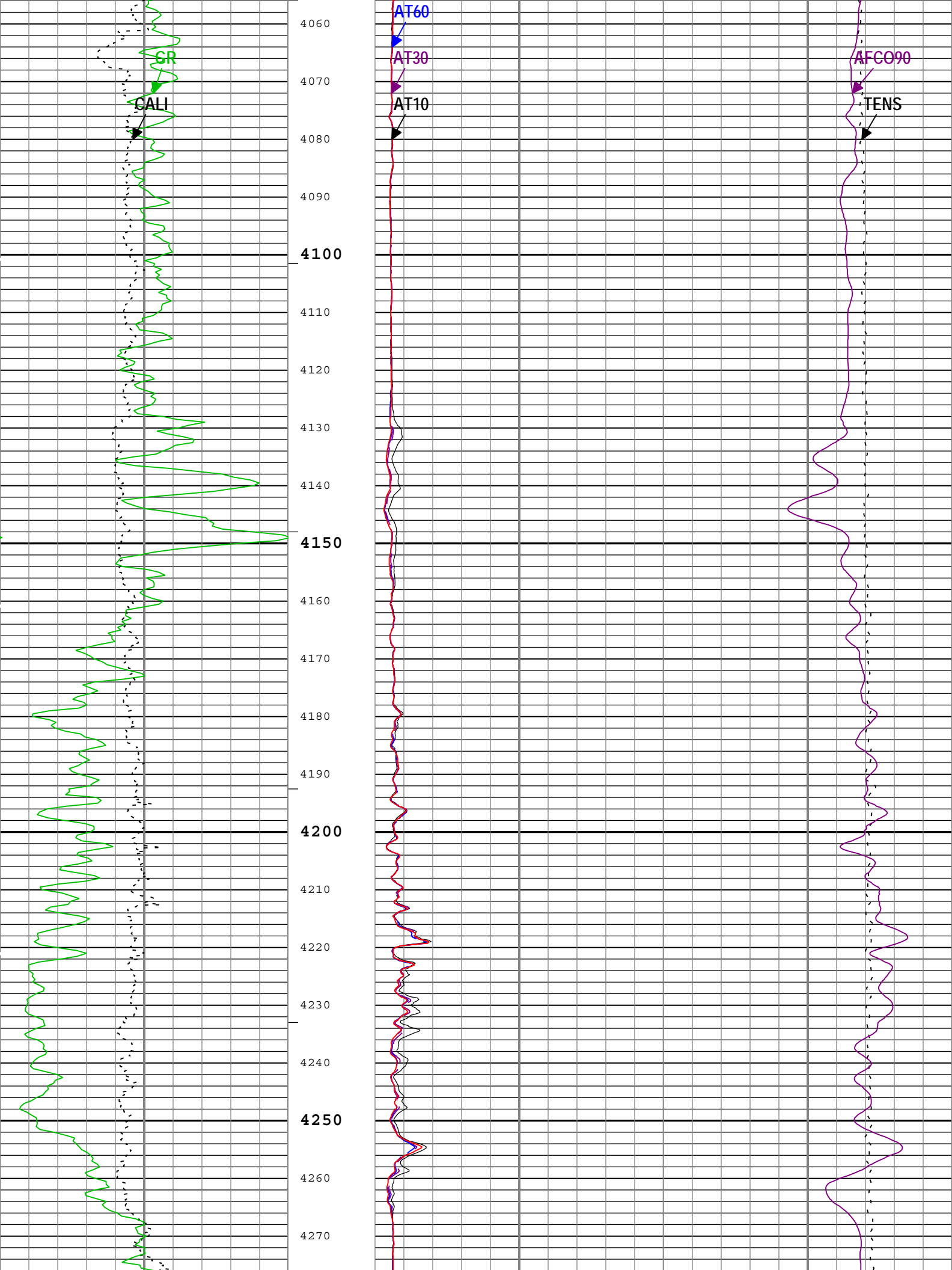


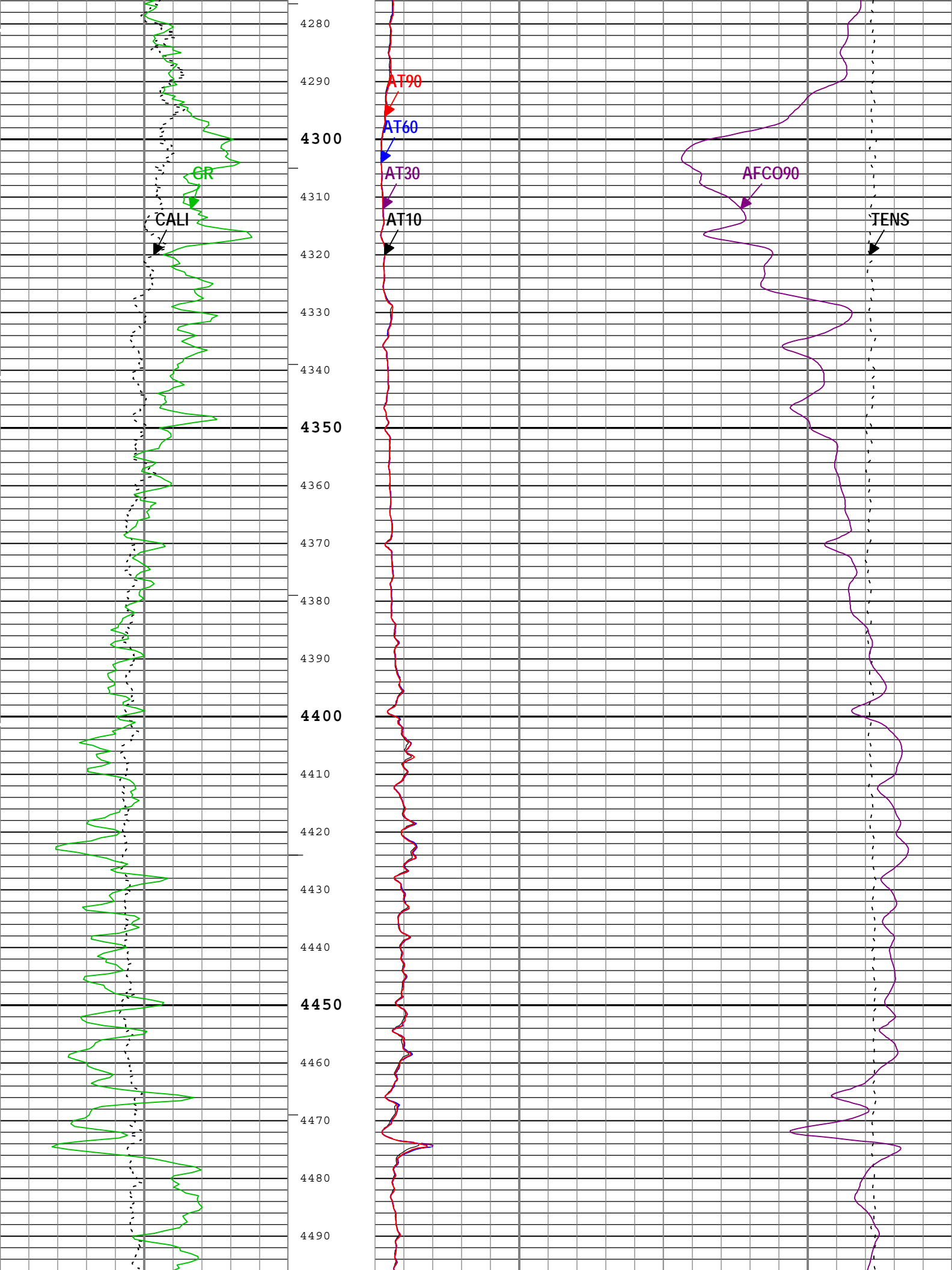


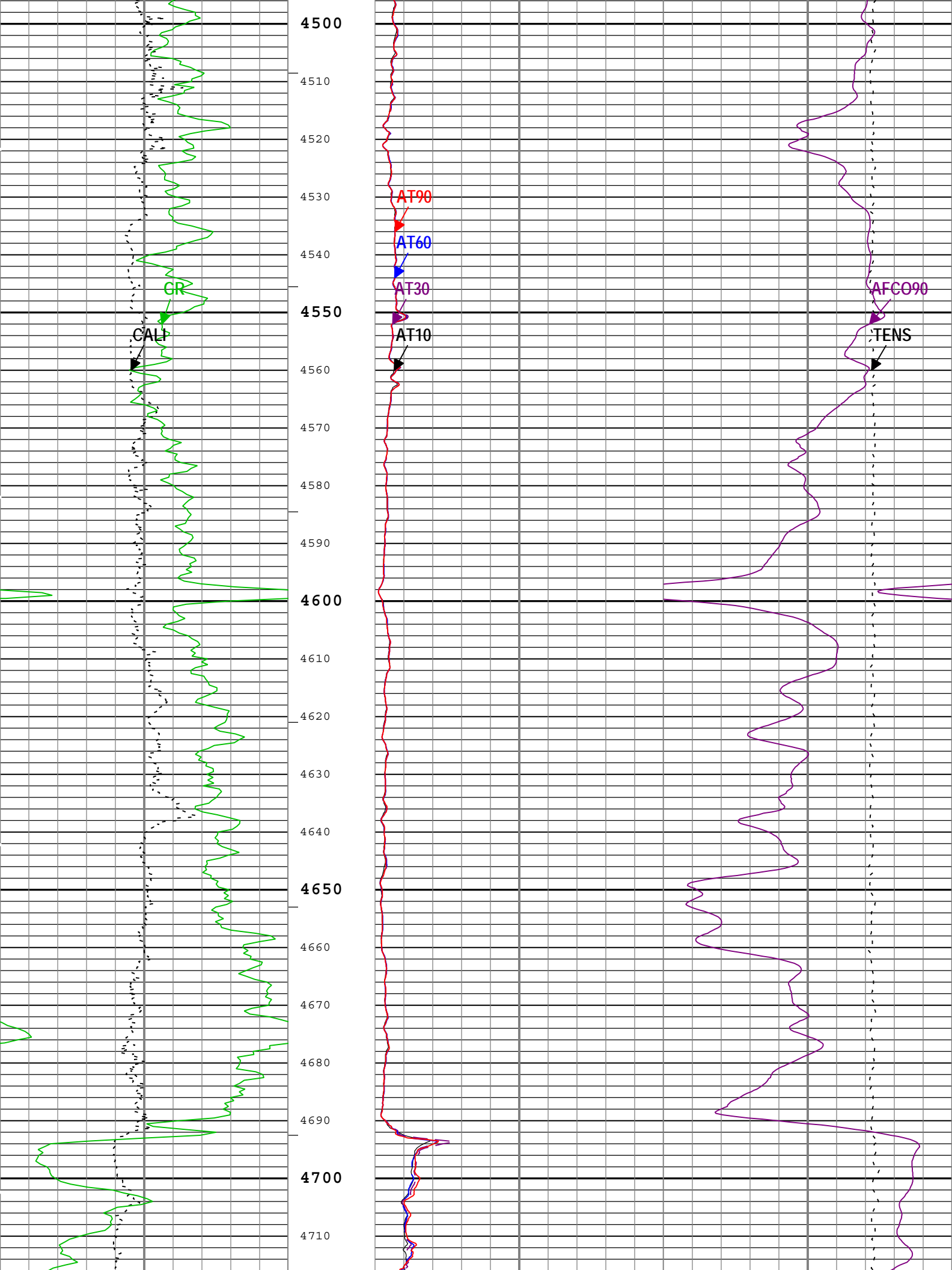


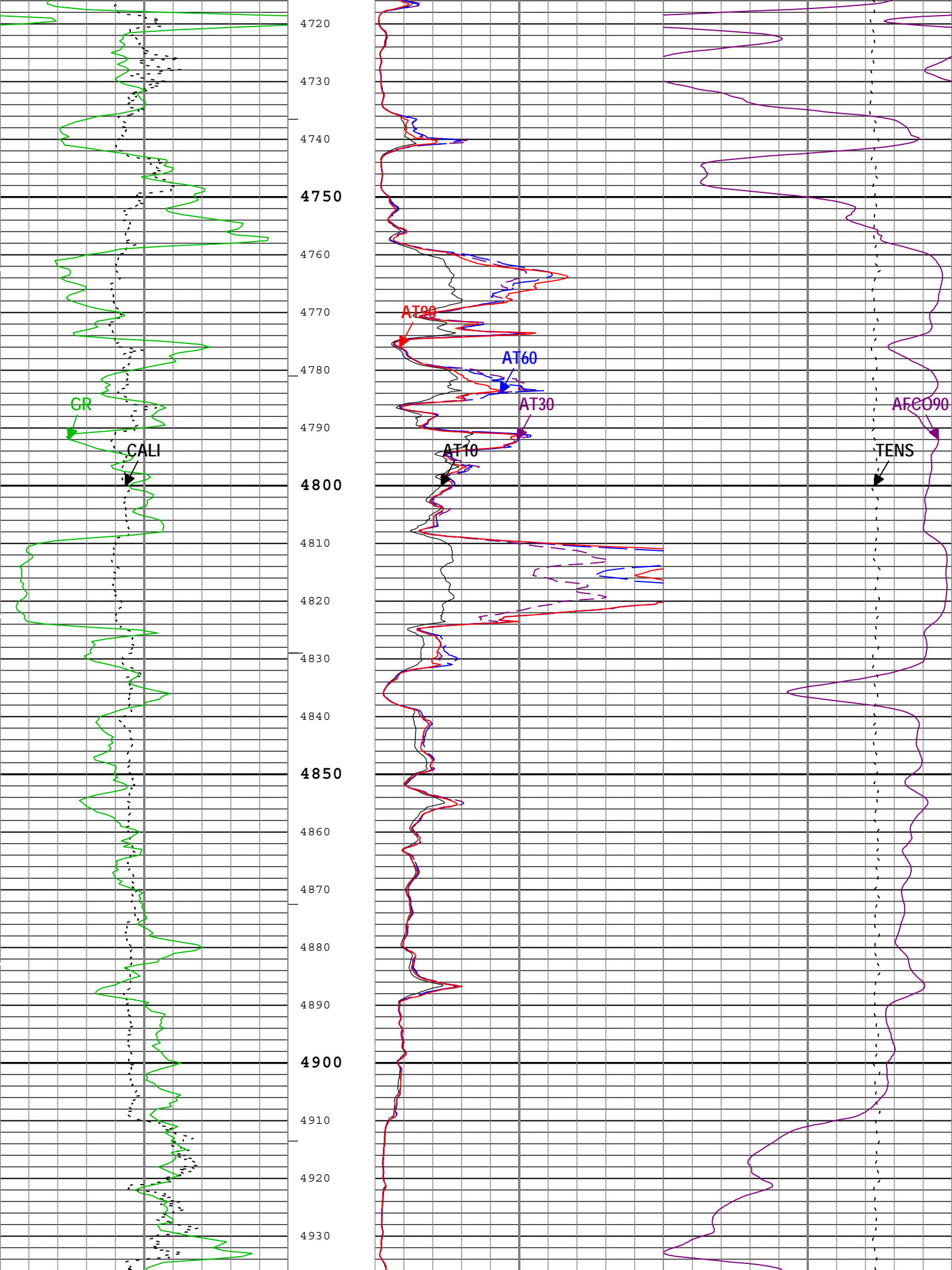




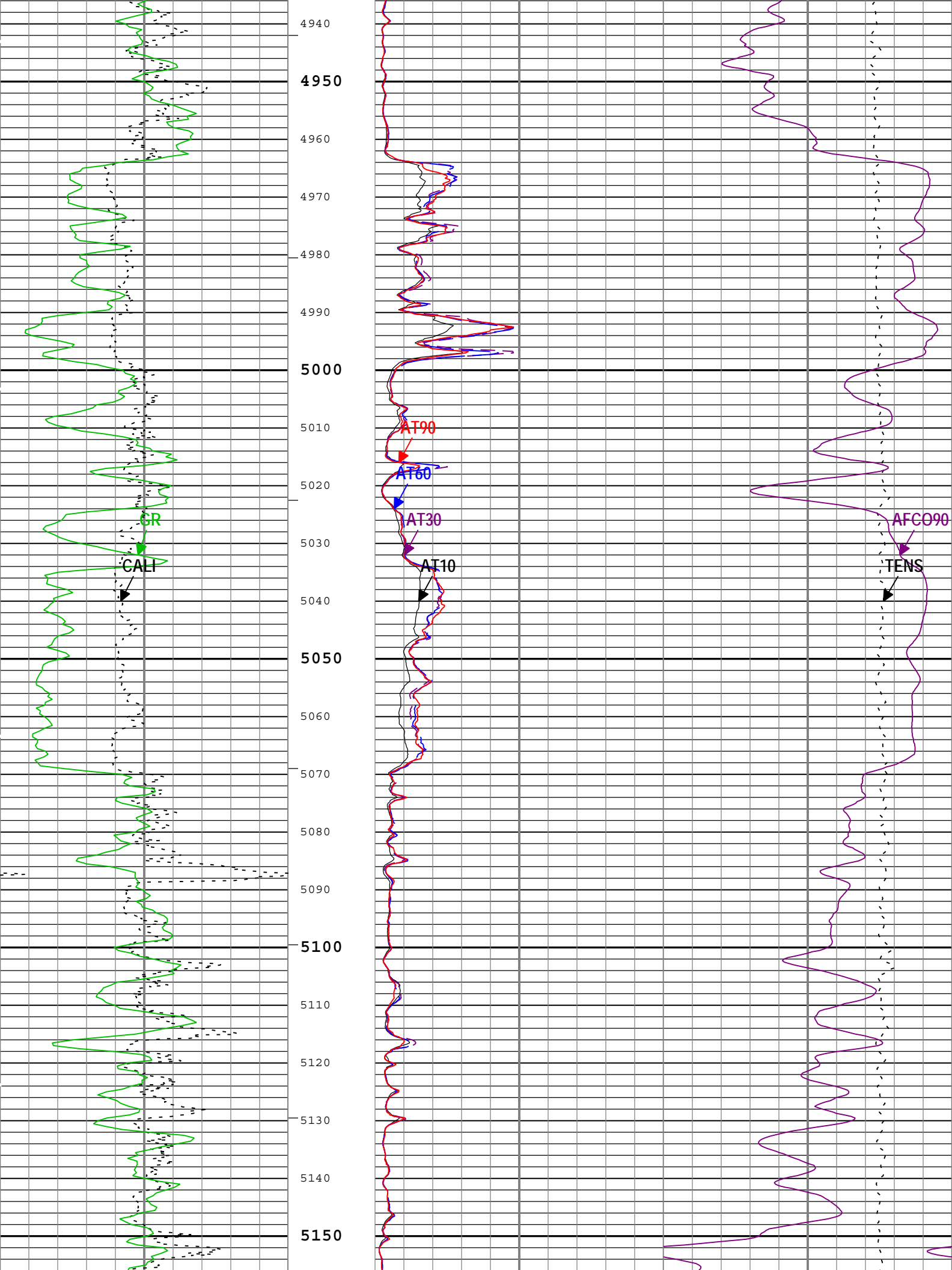


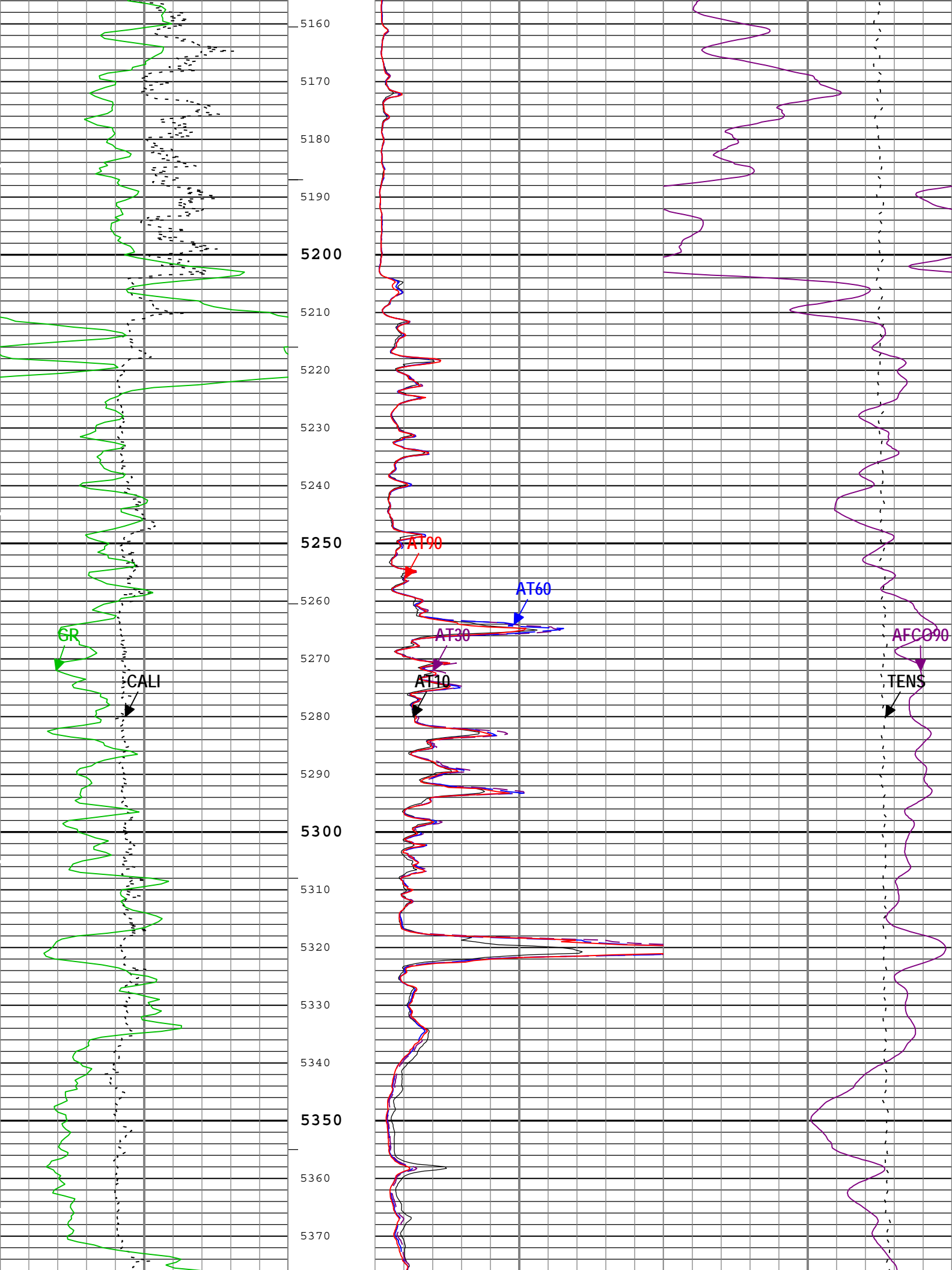


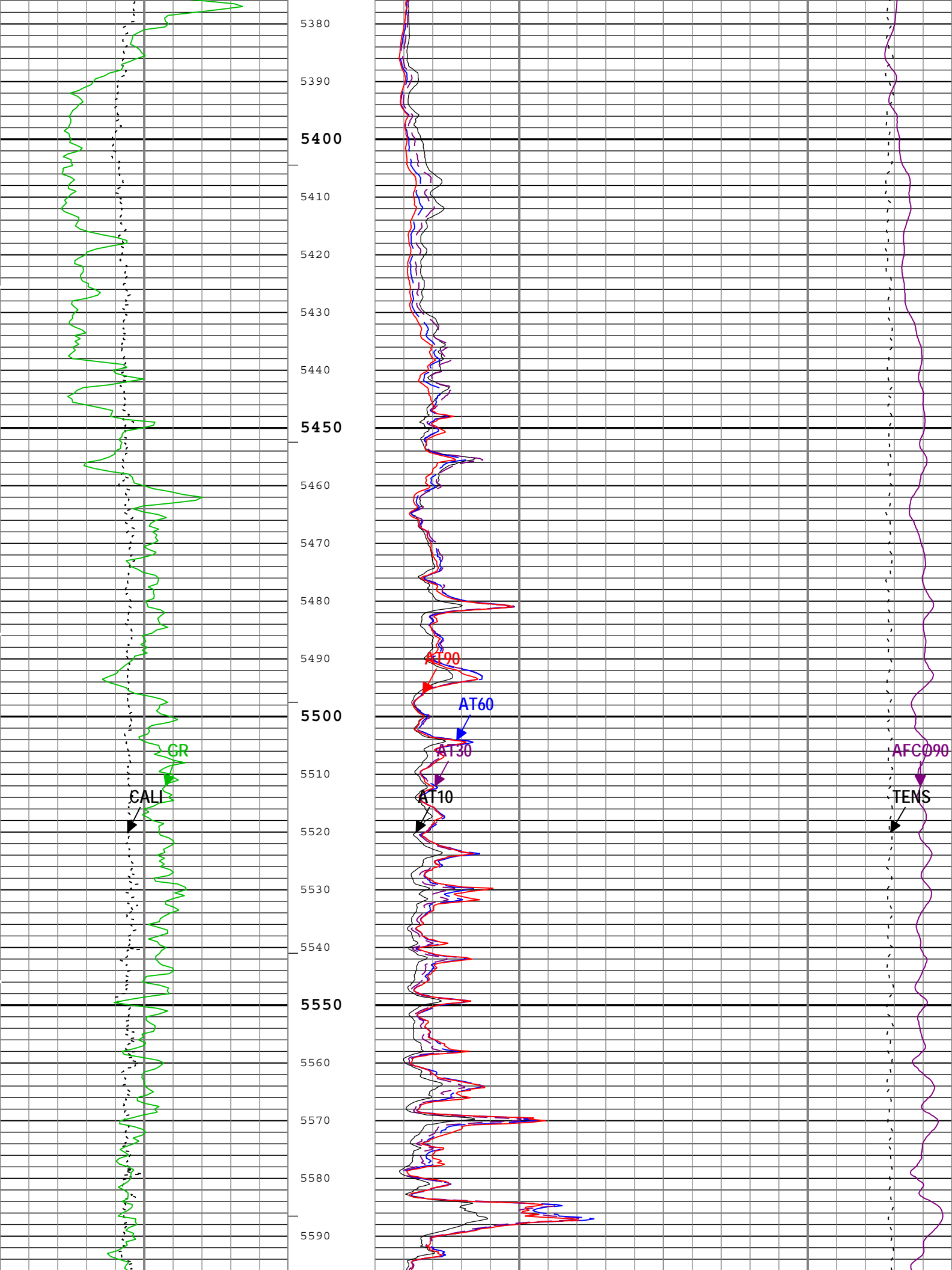


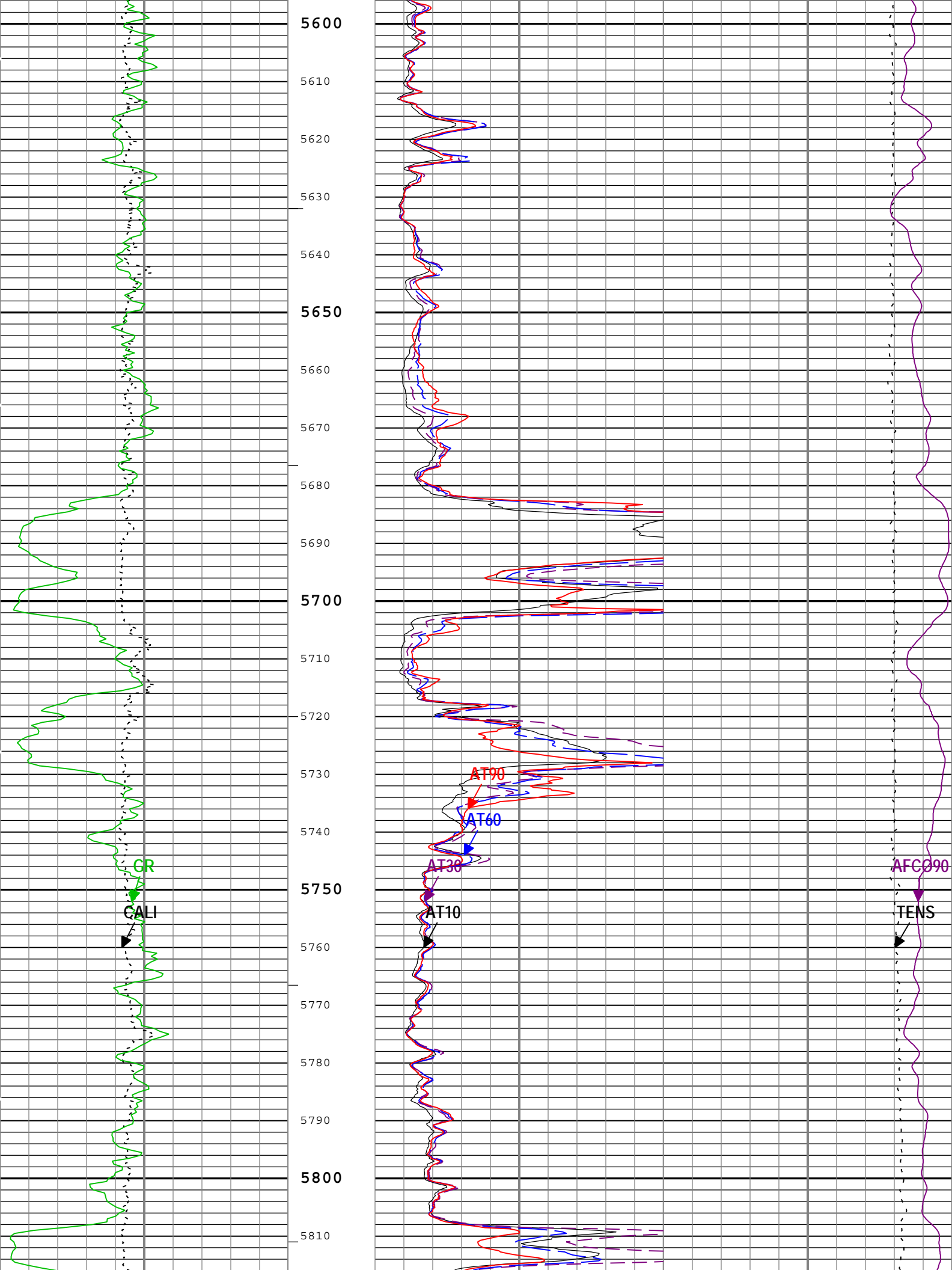


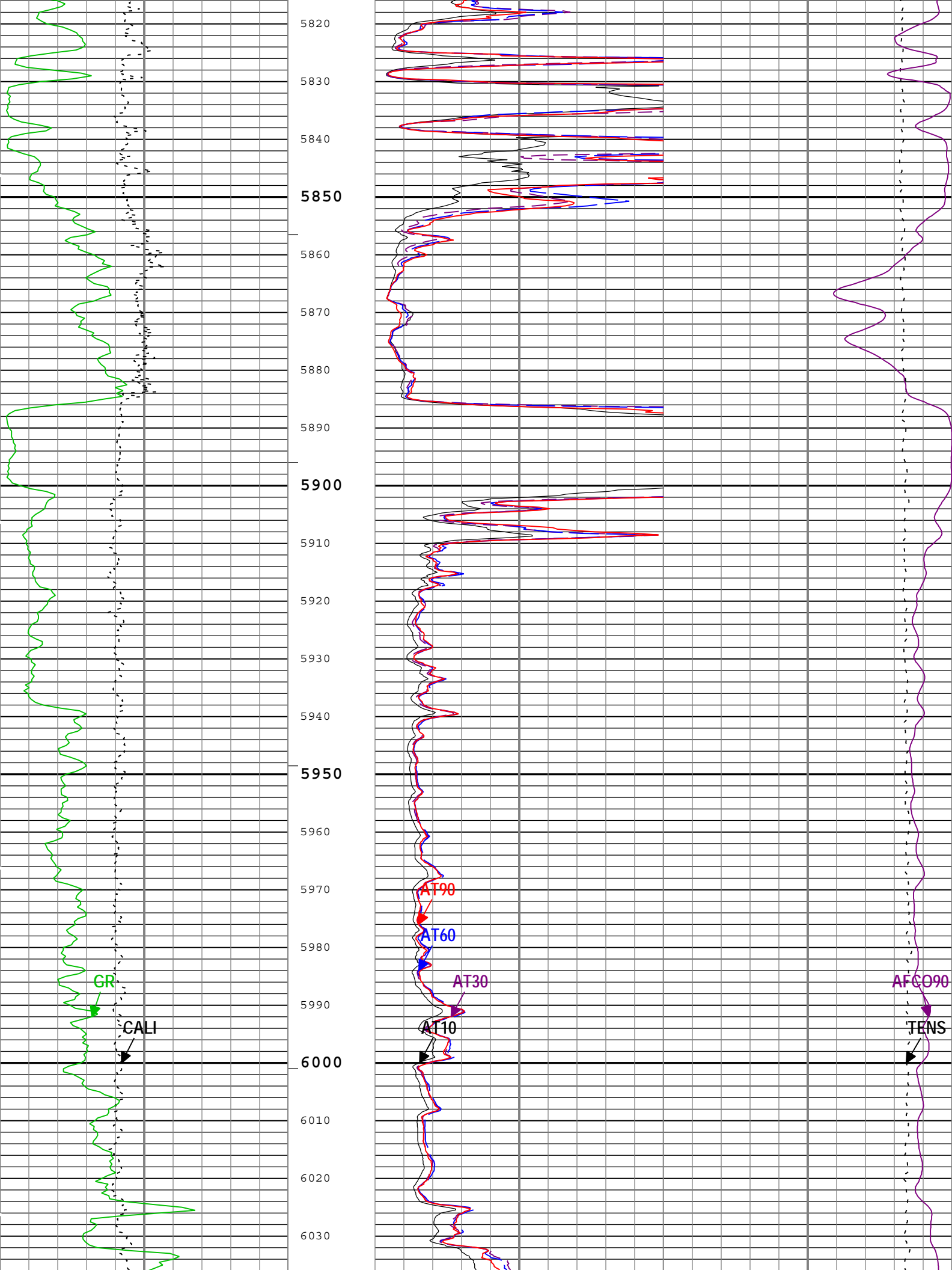


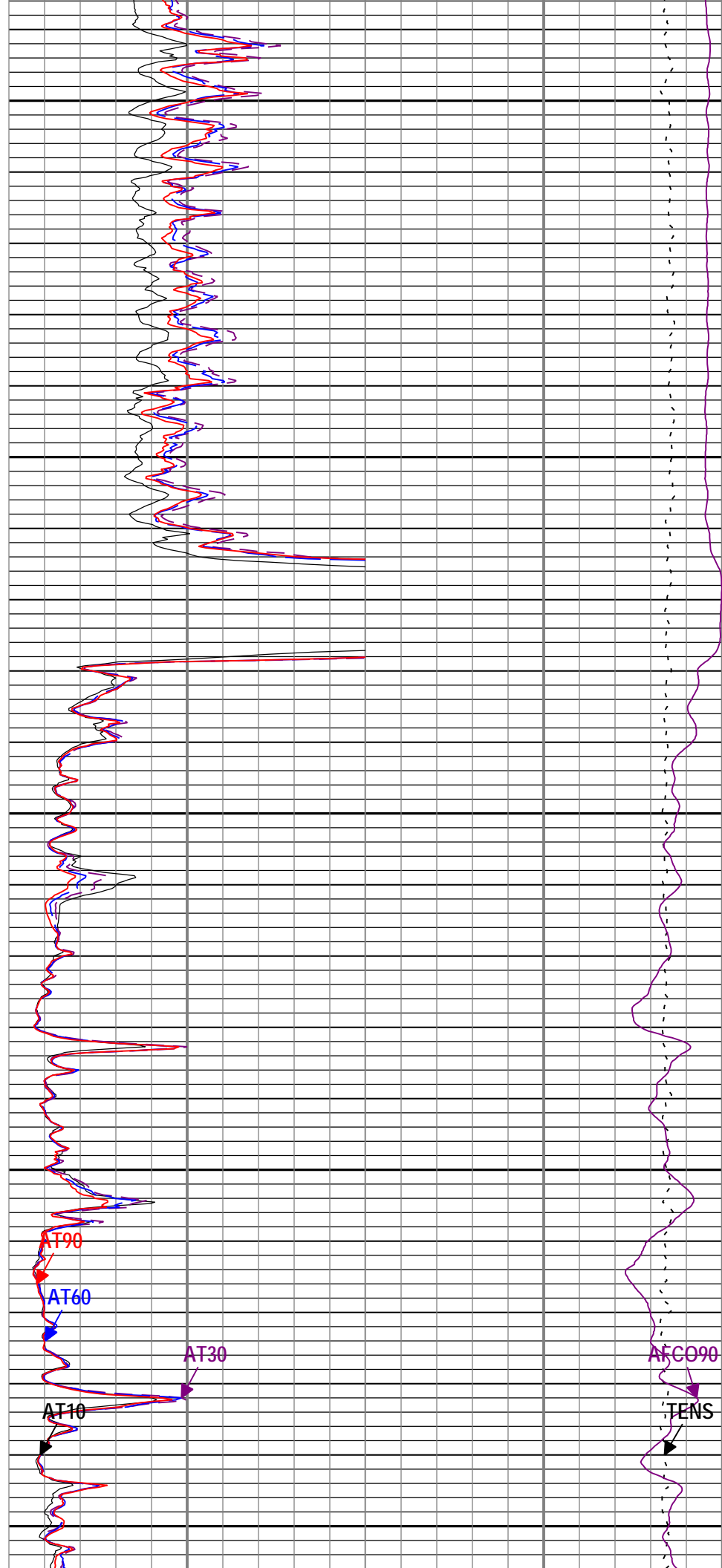
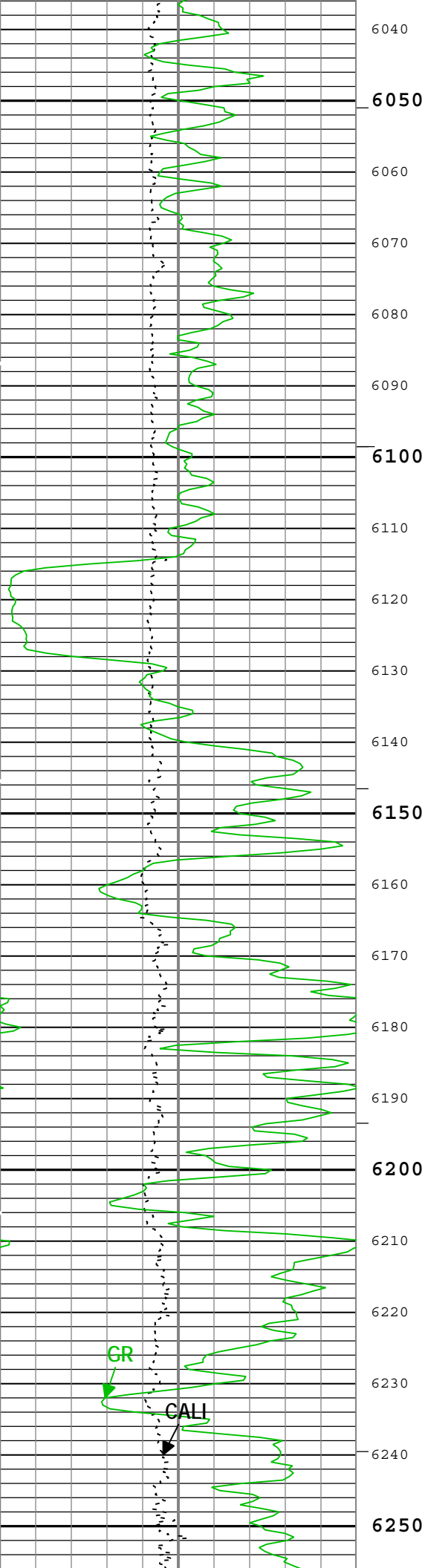


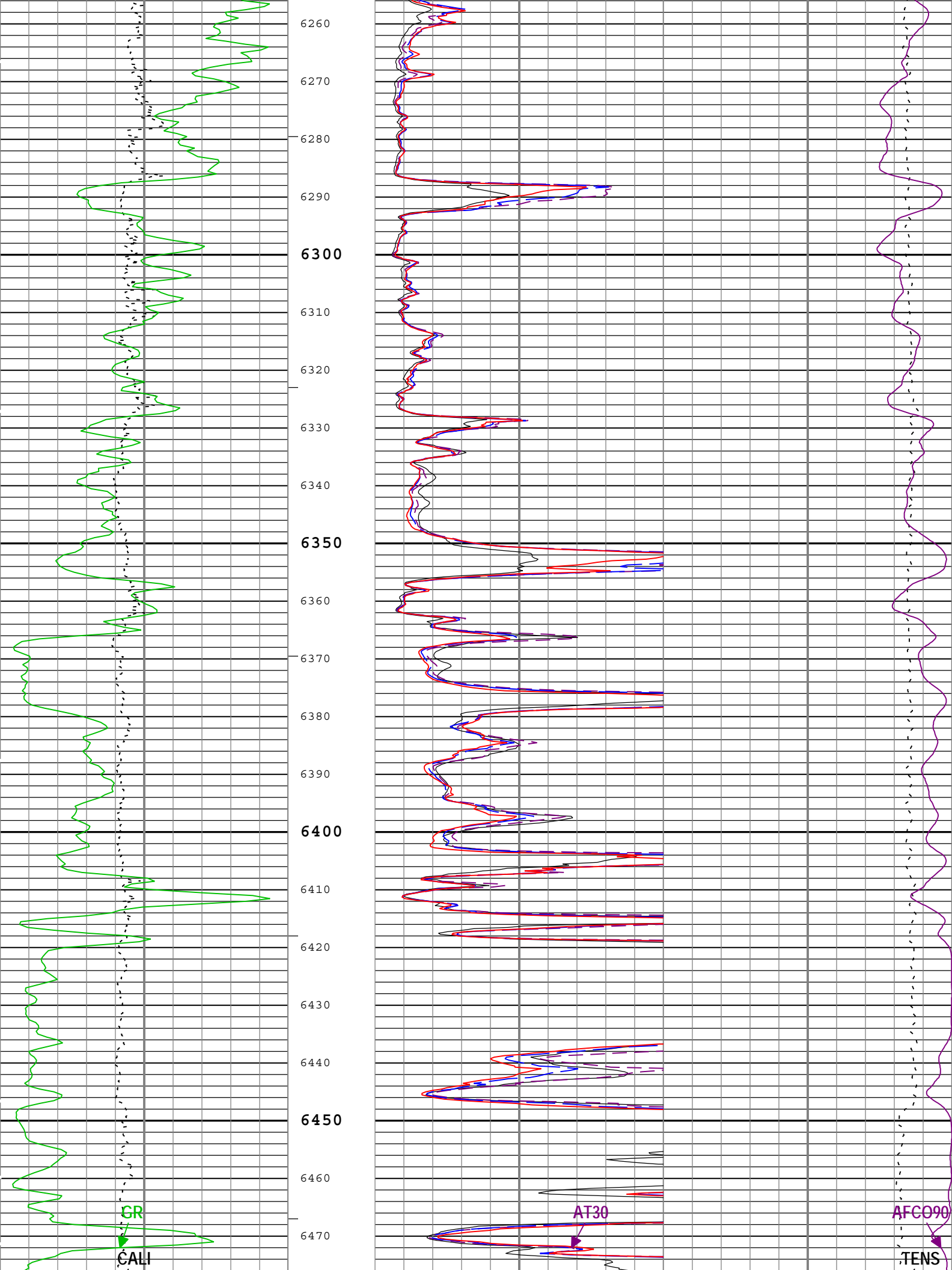


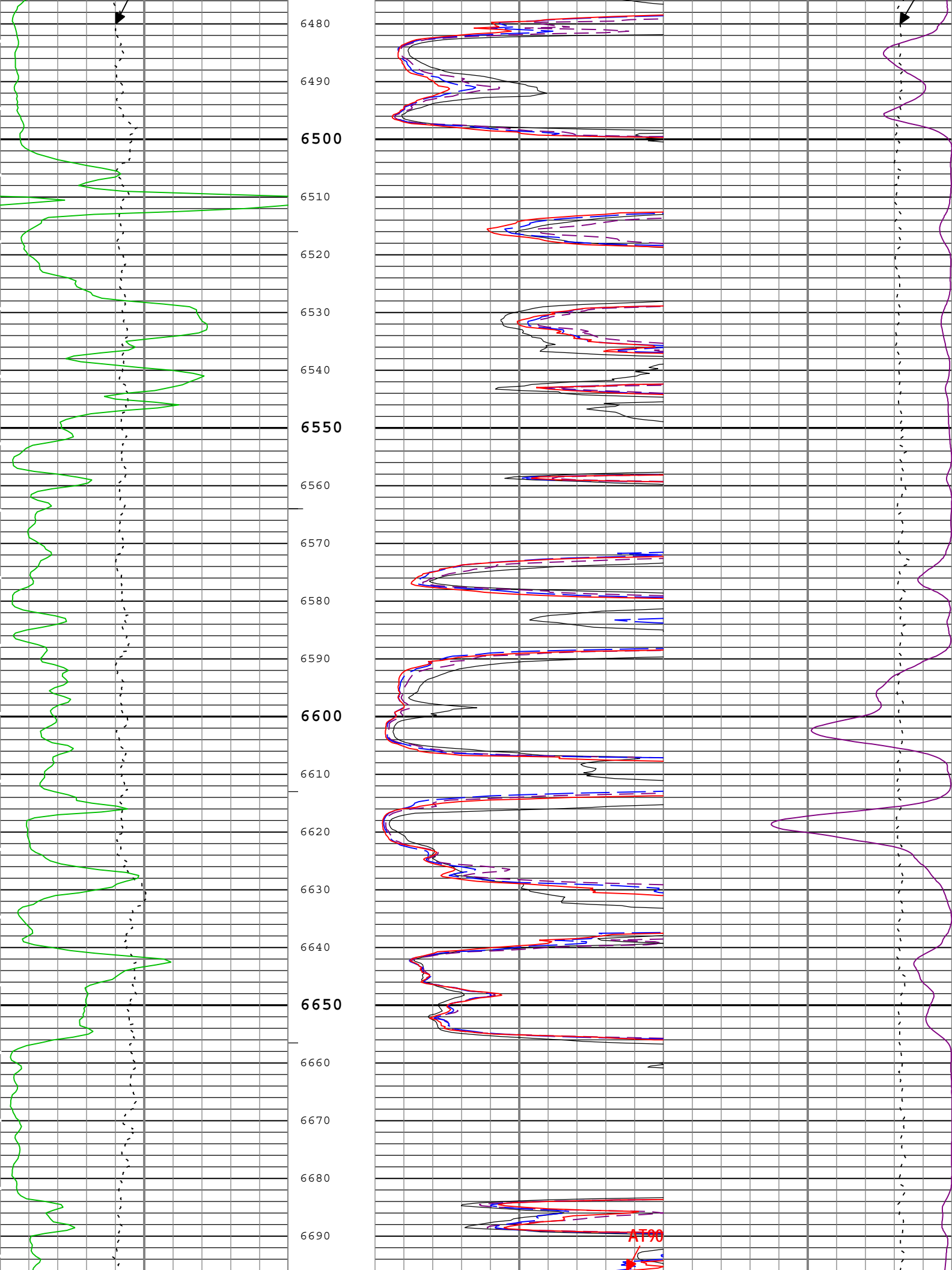




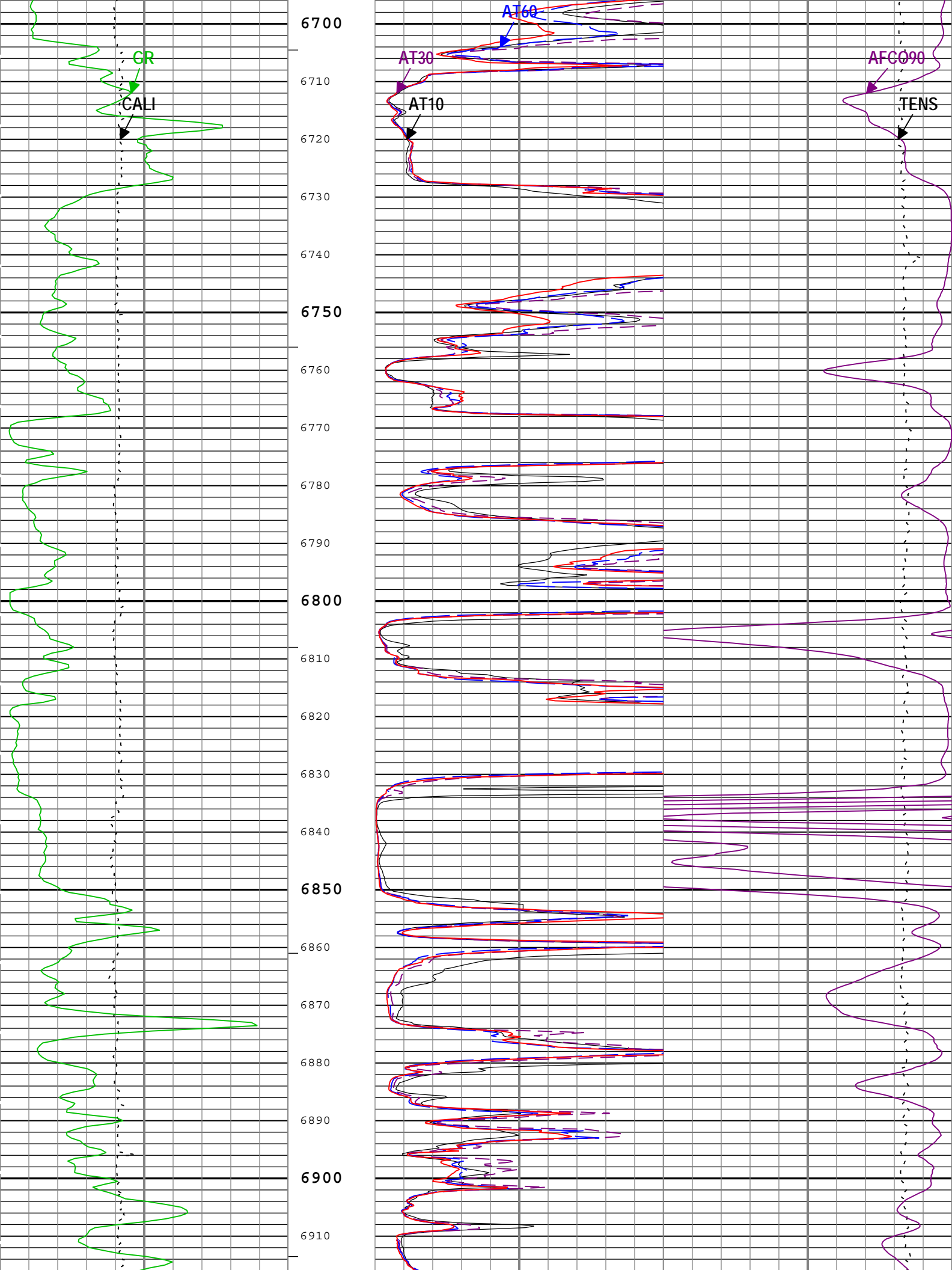


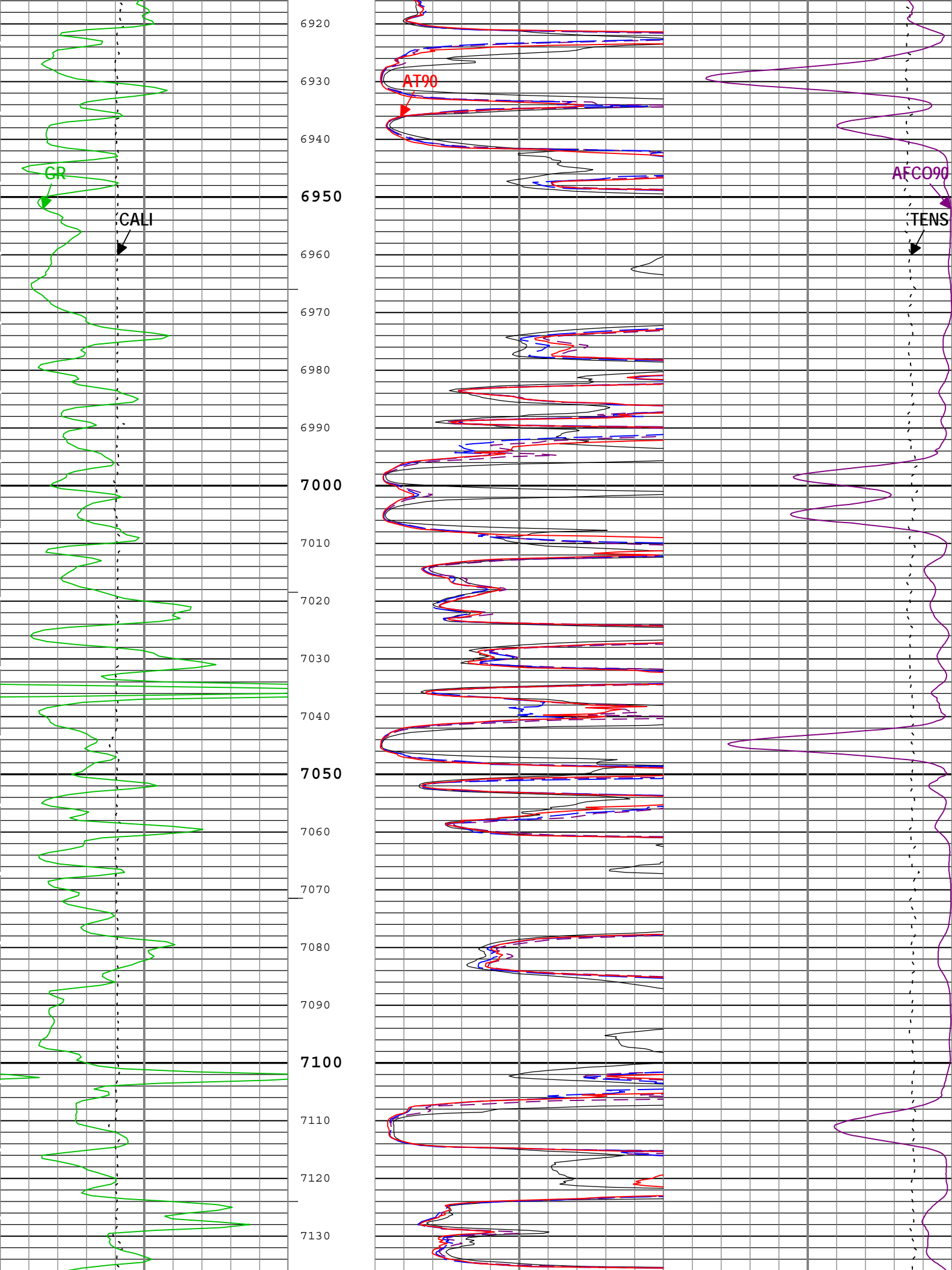


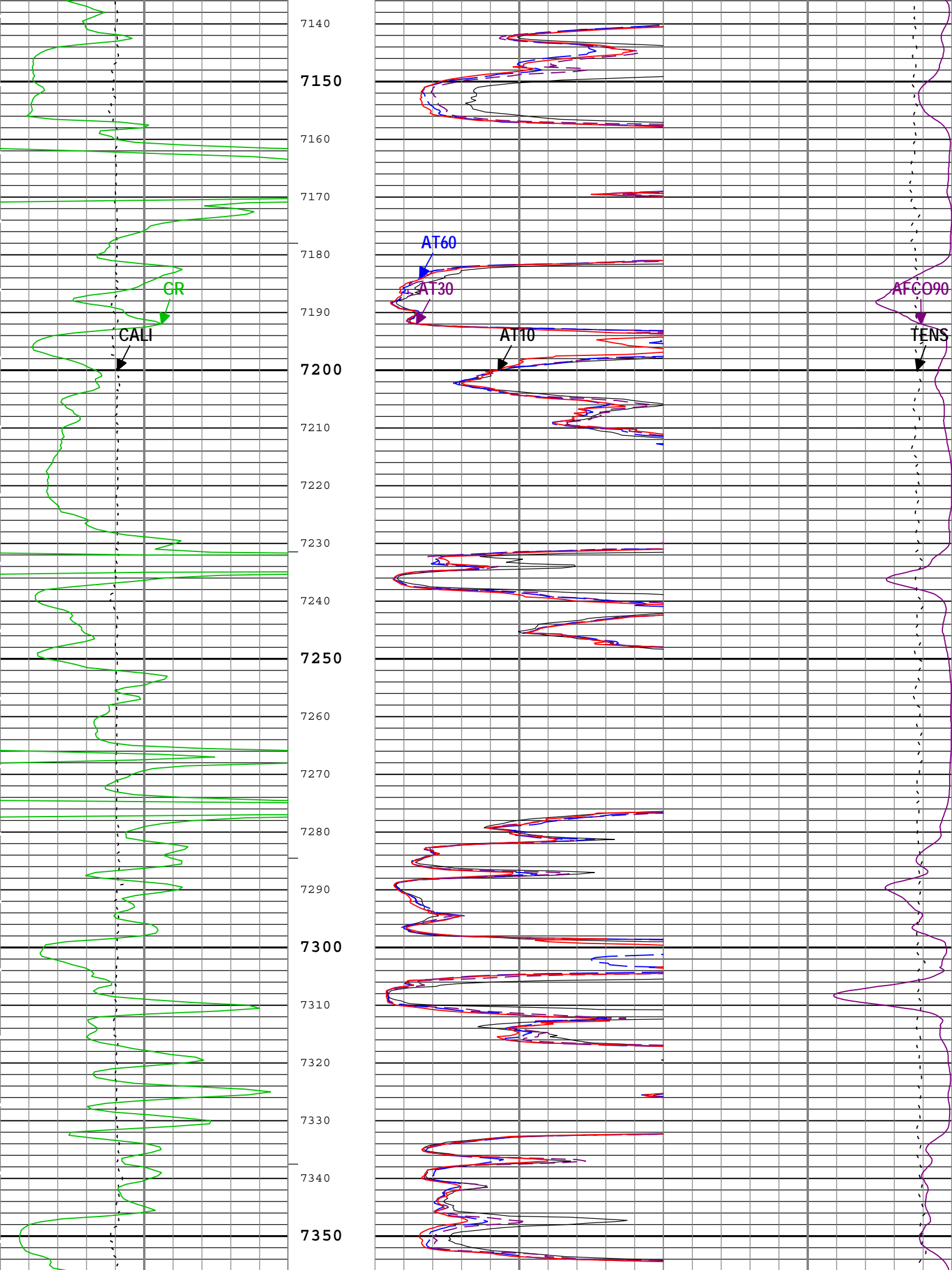


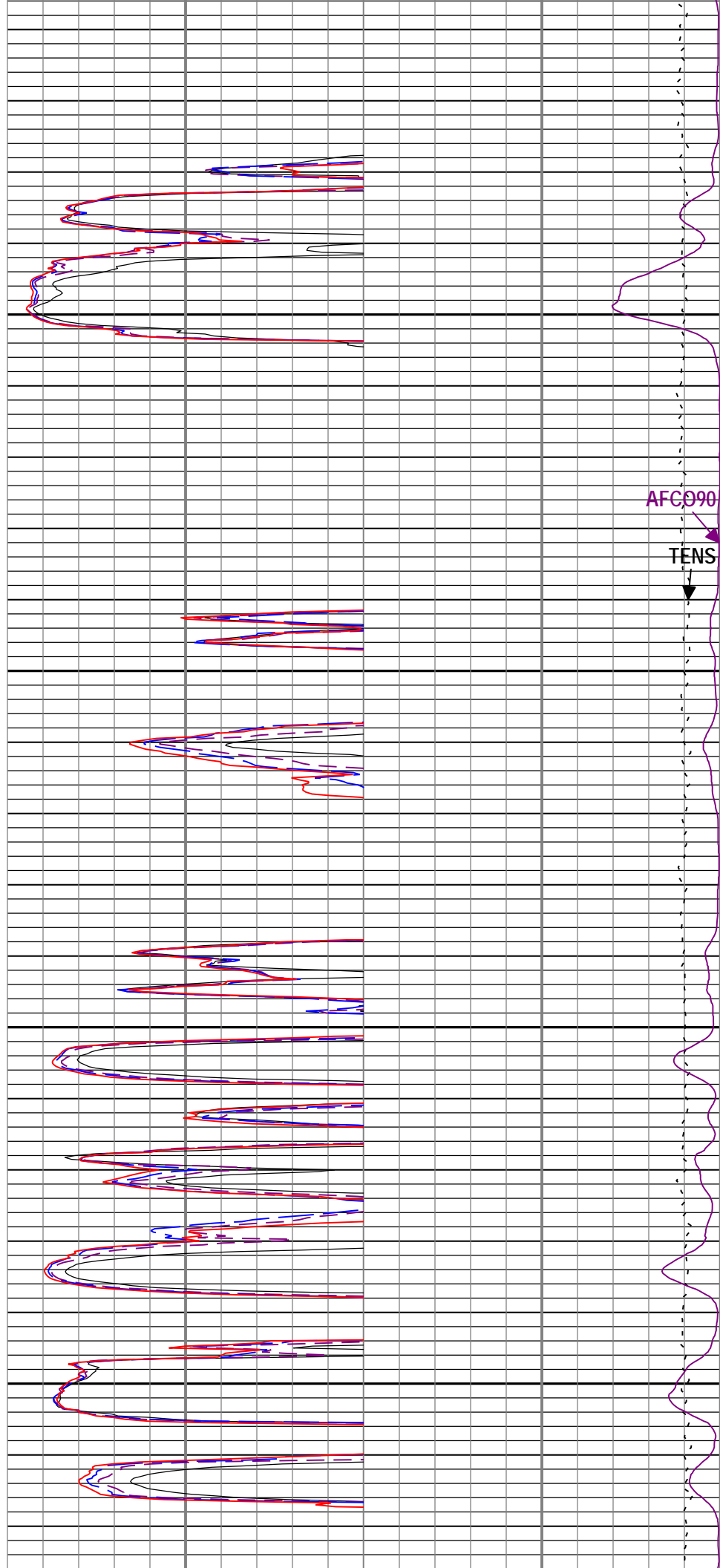
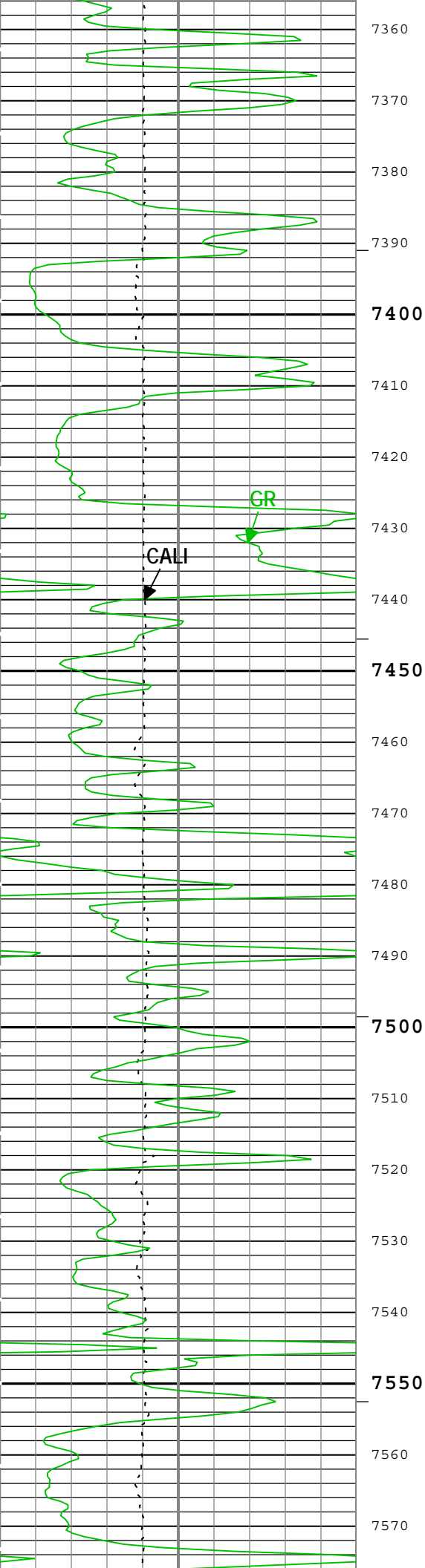


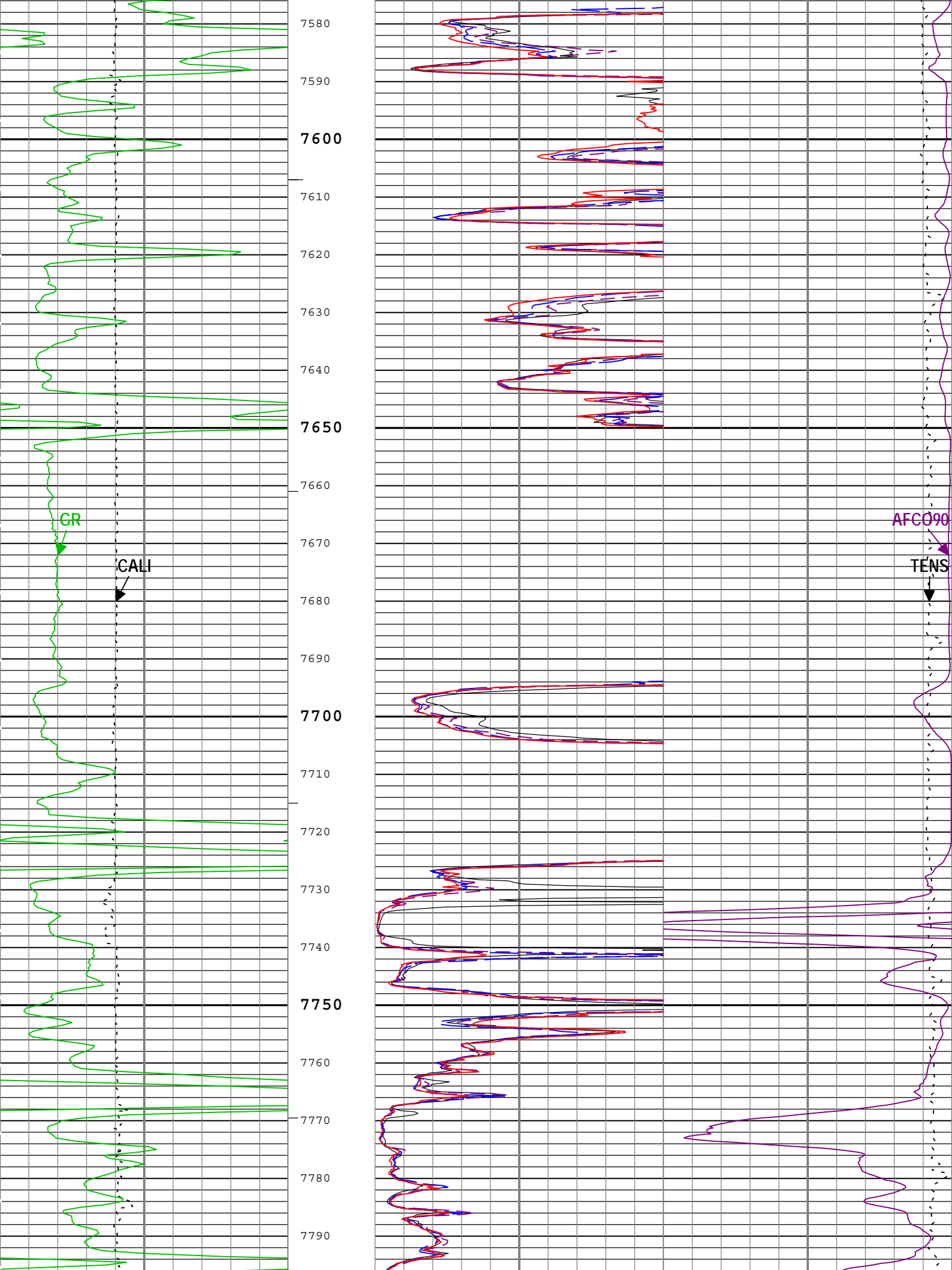


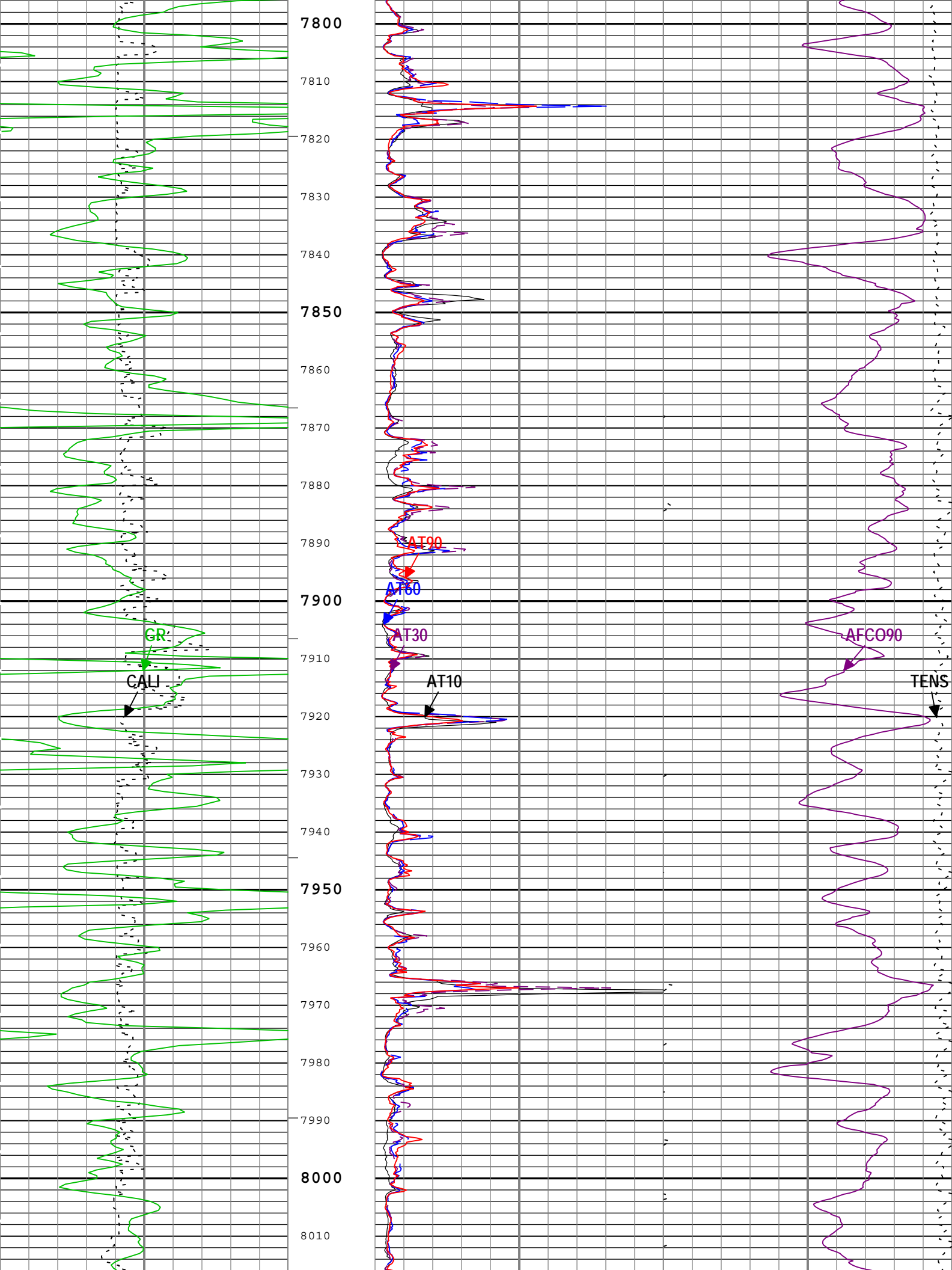


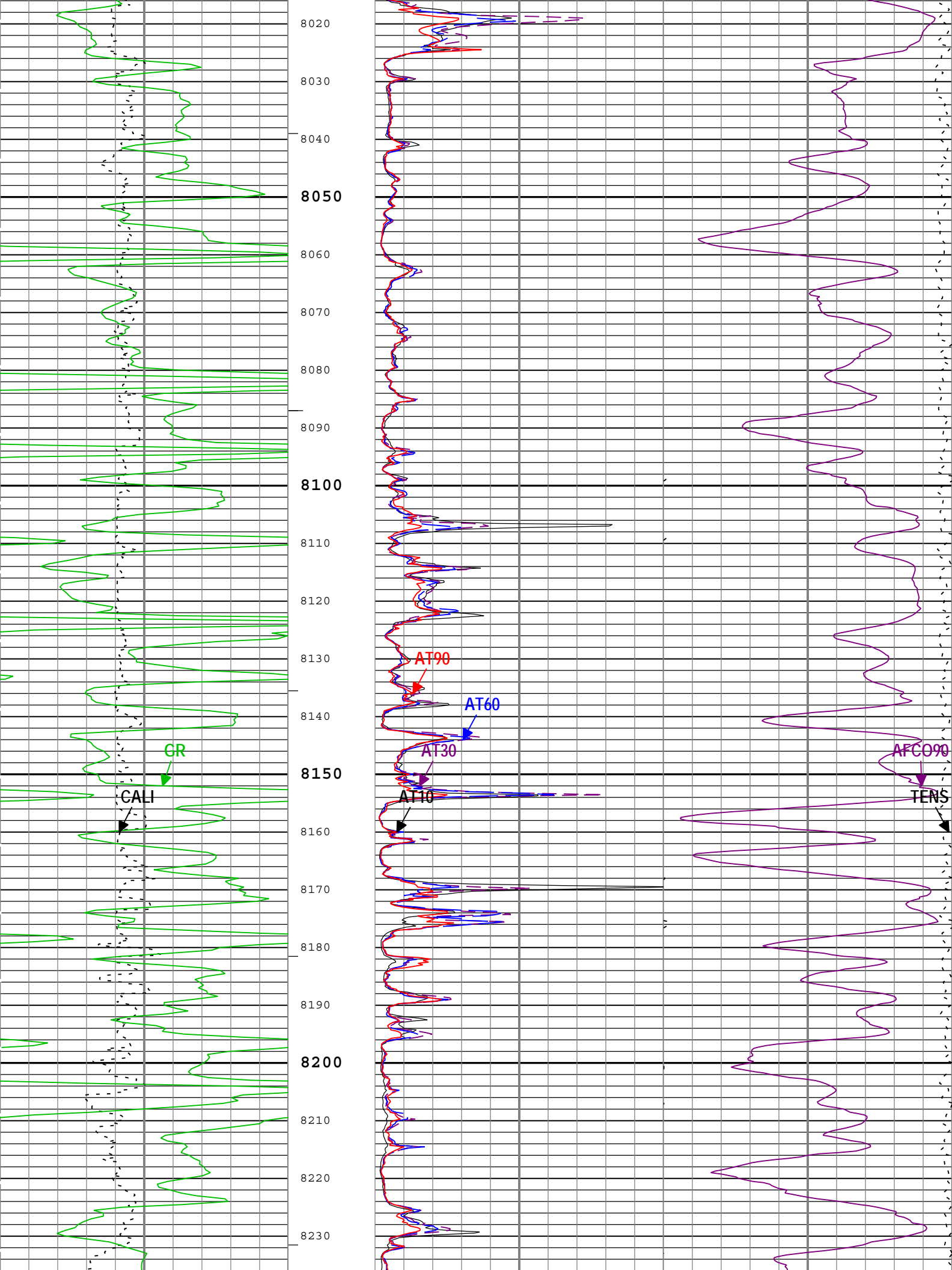


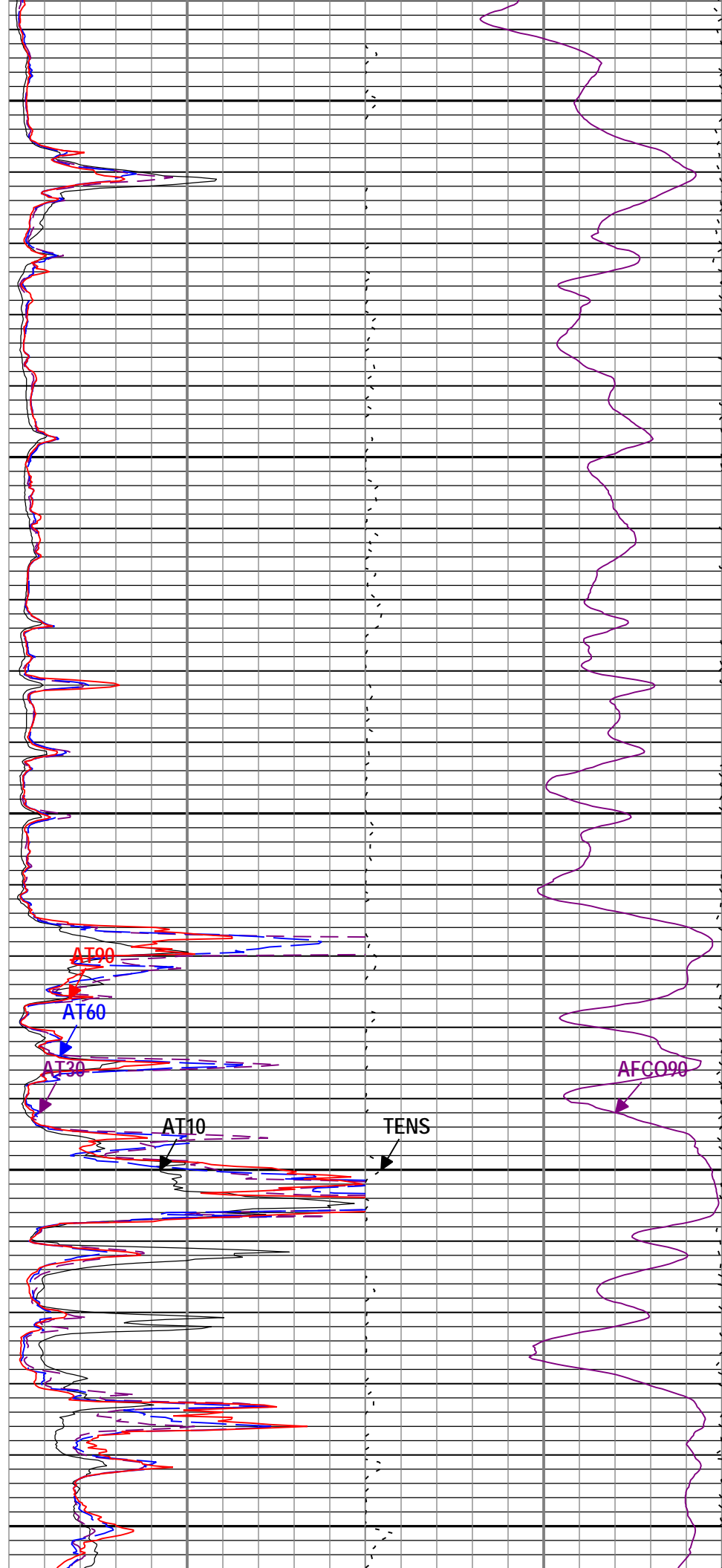
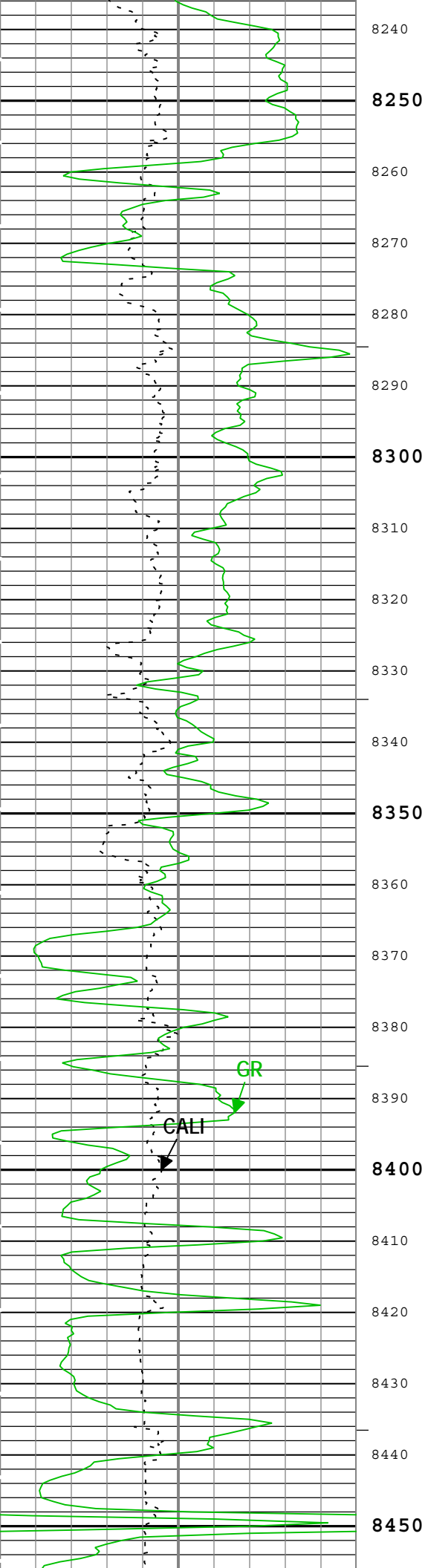




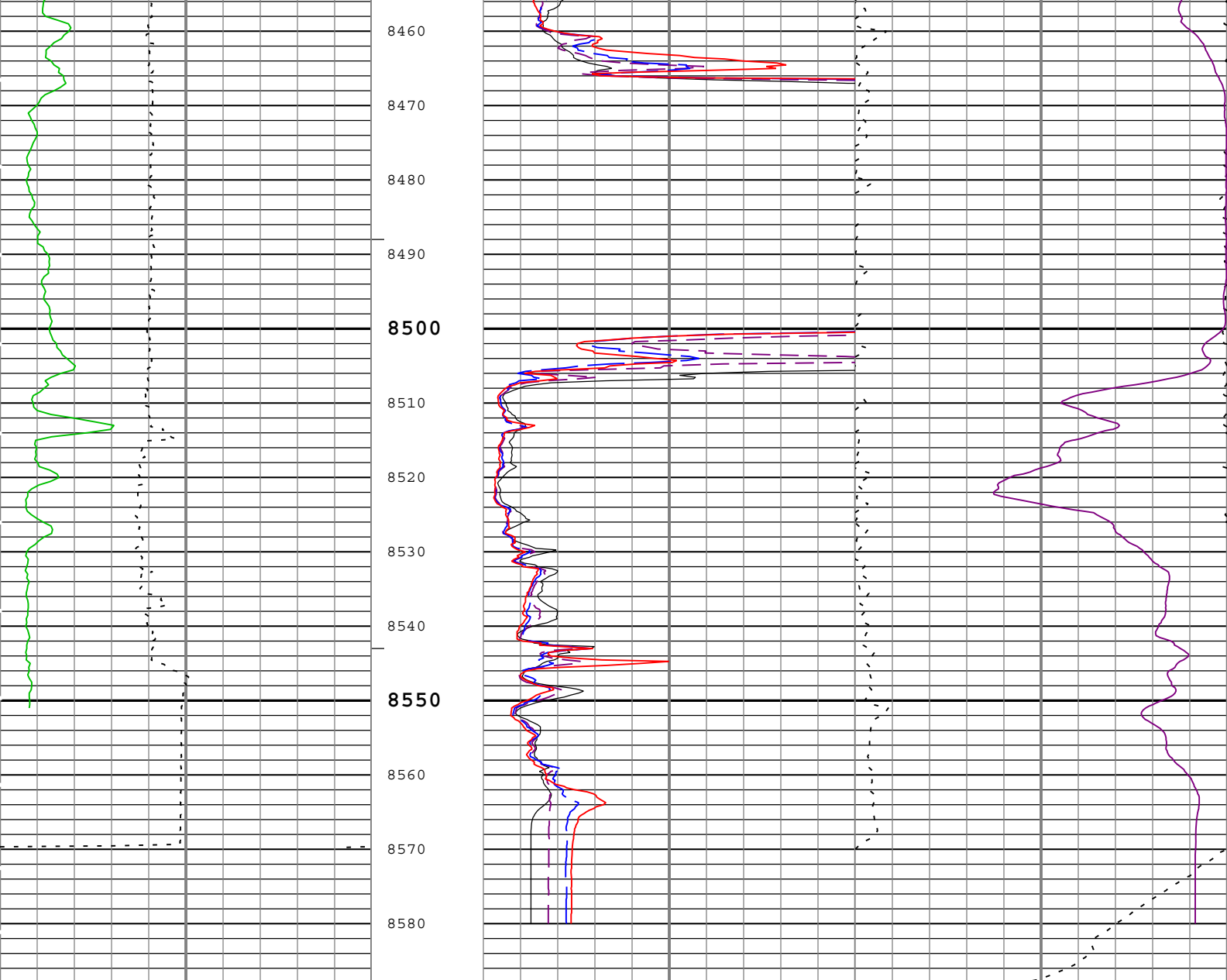












Gamma Ray Backup		
Caliper (CALI) HDRS-H		
4	in	14
Gamma Ray (GR) HGNS-H		
0	gAPI	200

Array Induction Two Foot Resistivity A10 (AT10) AIT-M		
0	ohm.m	50
Array Induction Two Foot Resistivity A30 (AT30) AIT-M		
0	ohm.m	50
Array Induction Two Foot Resistivity A60 (AT60) AIT-M		
0	ohm.m	50
Array Induction Two Foot Resistivity A90 (AT90) AIT-M		
0	ohm.m	50

Cable Tension (TENS)		
0	lbf	5000
Array Induction Four Foot Conductivity A90 (AFCO90) AIT-M		
1000	mS/m	0

— ICV - Integrated Cement Volume every 100.00 (ft3)  
— ICV - Integrated Cement Volume every 10.00 (ft3)

TIME\_1900 - Time Marked every 60.00 (s)

Description: AIT Basic Log Two    Format: Log ( EMD 1in Induction )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 10-Nov-2014 10:20:09

## Channel Processing Parameters

Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Standoff	
ACDE	Array Induction Casing Detection Enable	AIT-M	No	
ASTA	Array Induction Tool Standoff	AIT-M	1	in
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	7.875	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	544	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DFD	Drilling Fluid Density	Borehole	8.9	lbm/gal
FCD	Future Casing (Outer) Diameter	WLSESSION	5.5	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	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
SOCO	Standoff Correction Option	HGNS-H	Yes	

Tool Control Parameters				
Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	840	ft/h
ONE				
Main Pass - 2" Induction				

Integration Summary				
Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	1270.74	ft3

Software Version	
Acquisition System	Version
MaxWell	4.0.9163.3000
Application Patch	Patch-SP-10767_18214-4.0.9163.3001
	Patch-NPD_NEXT_C_Fld2-20493-4.0.9434.3002
	Patch-Hotfix_Task_Tree_GDI_SP2-20806-4.0.9434.3002
	Patch-Hotfix_MDT_18214-22198-4.0.9434.3002

Computation	Description	Version	
Borehole	Borehole Ensemble provides common Borehole Parameters and Channels	4.0.9433.3000	
Tool Elements	Description	Software Version	Firmware Version
HRCC-H	HILT High-Resolution Control Cartridge, 150 degC	4.0.9385.3000	2.0
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	4.0.9385.3000	2.0
AMIS	Array Induction Sonde - M	4.0.9427.3000	1

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[5]:Up	Up	348.49 ft	8588.12 ft	10-Nov-2014 4:56:43 AM	10-Nov-2014 9:20:17 AM	ON	14.40 ft	Yes
All depths are referenced to toolstring zero									

Log	<div>Company:Cascade Petroleum LLC      Well:Gaede 9S-55W-8-16</div> <div>ONE: Log[5]:Up:S008</div>								
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Description: AIT Basic Log Two
Format: Log ( EMD 2in Induction )
Index Scale: 2 in per 100 ft
Index Unit: ft
Index Type: Measured Depth
Creation Date: 10-Nov-2014 10:20:11

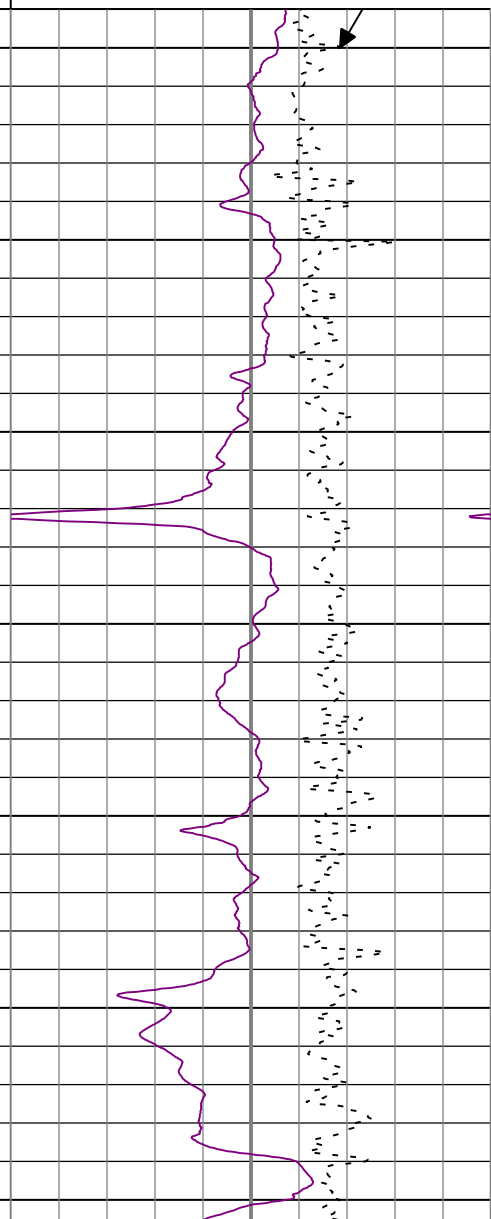
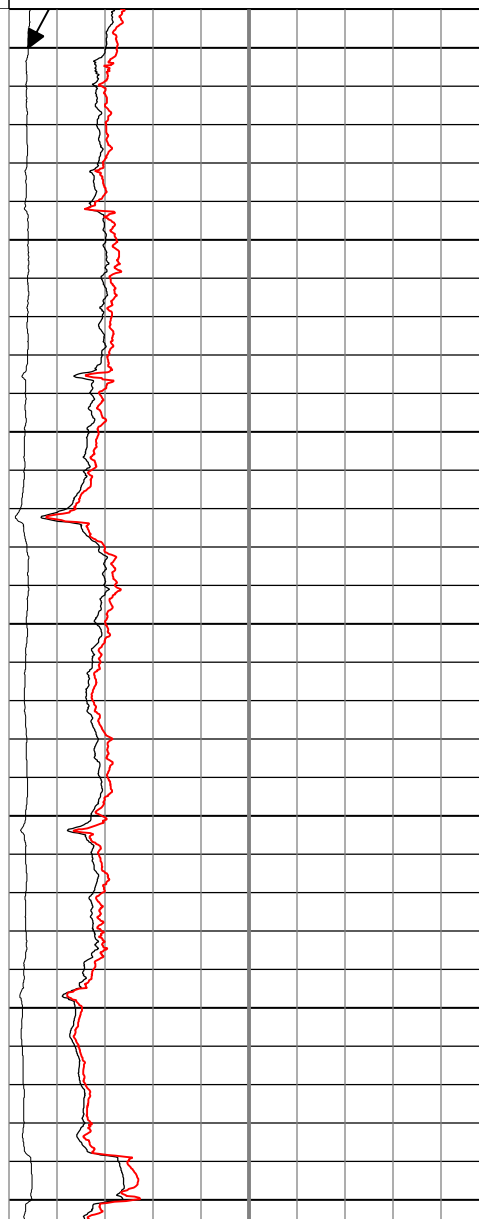
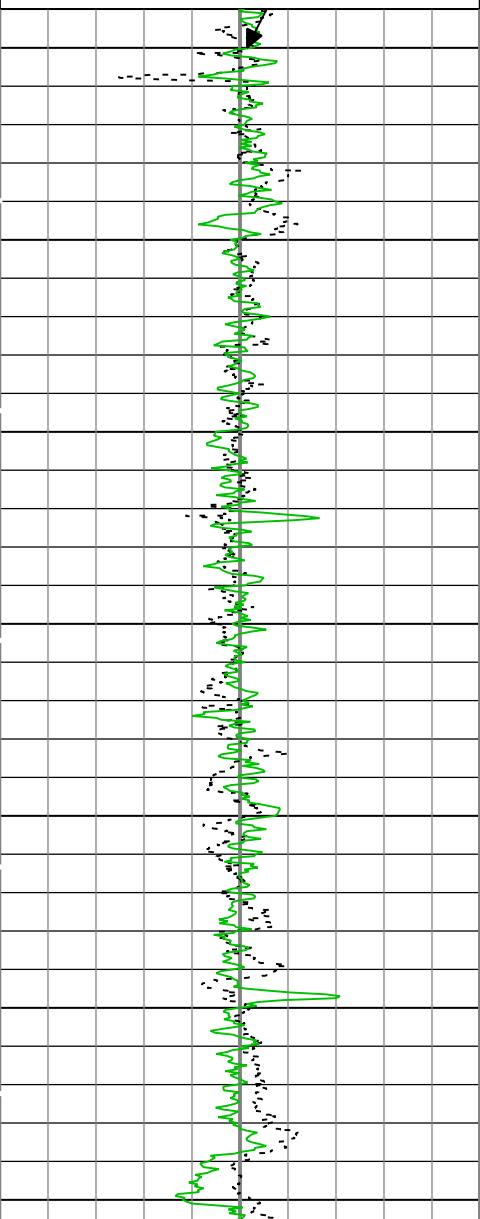
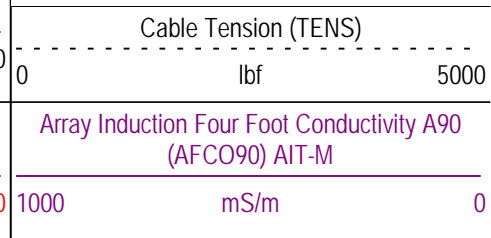
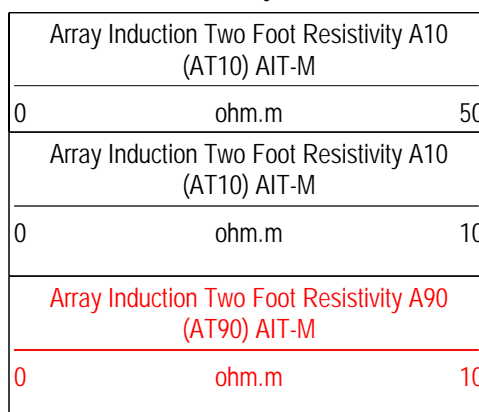
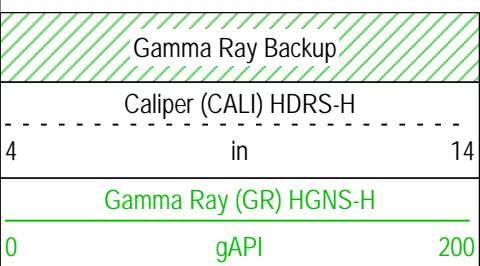
Channel	Source	Sampling
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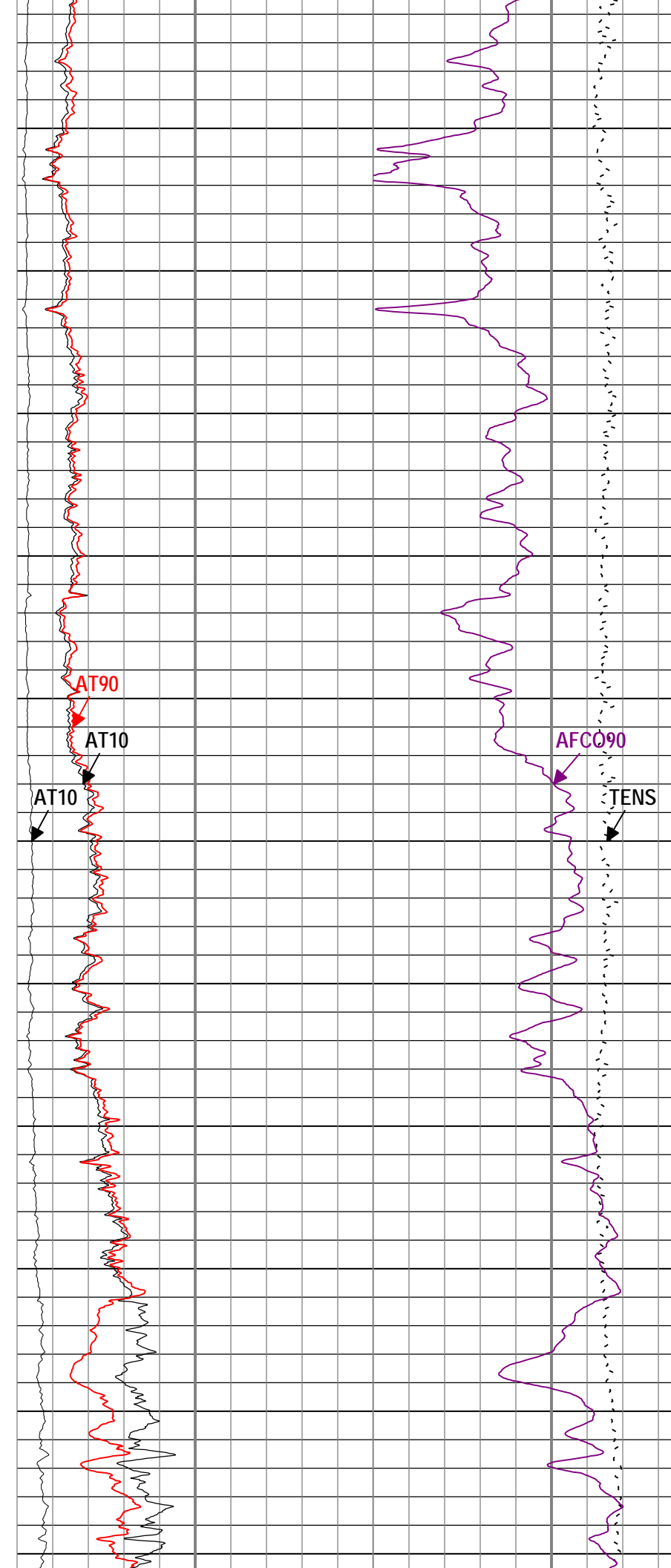
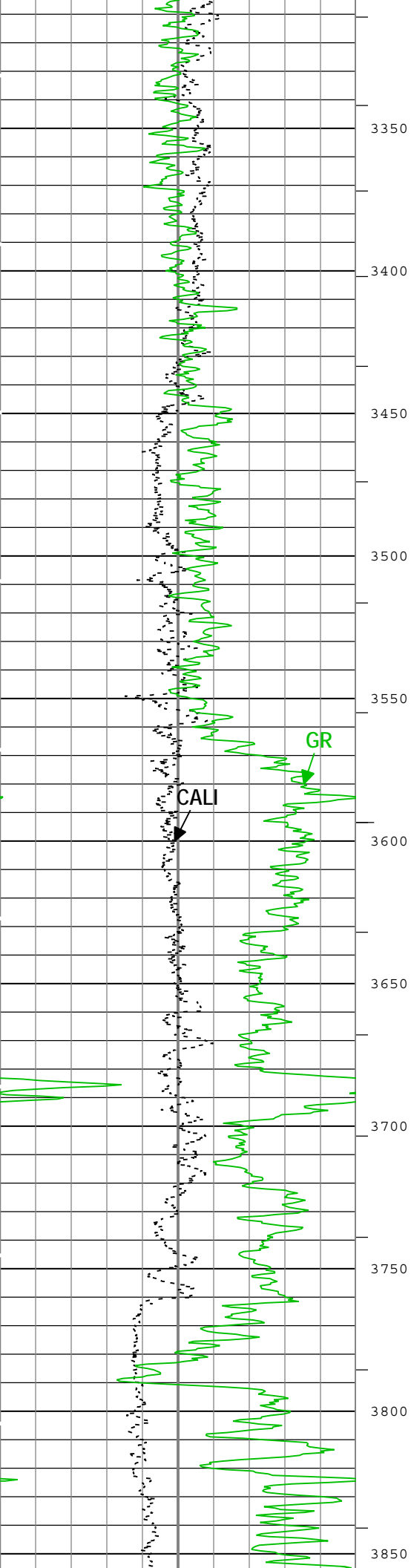
AFCO90	AIT-M:AMIS:AMIS	3in
AT10	AIT-M:AMIS:AMIS	3in
AT90	AIT-M:AMIS:AMIS	3in
CALI	HDRS-H:HRCC-H:HRCC-H	1in
GR	HGNS-H:HGNS-H:HGNS-H	6in
ICV	Borehole	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

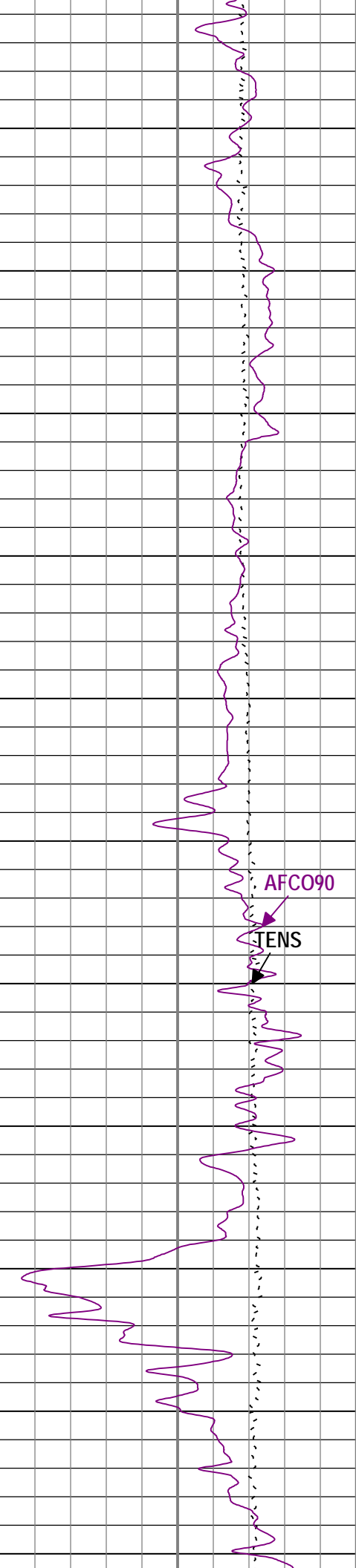
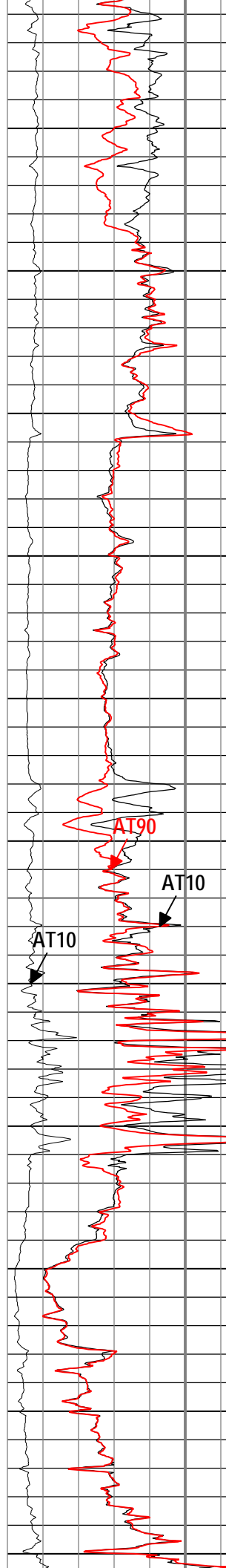
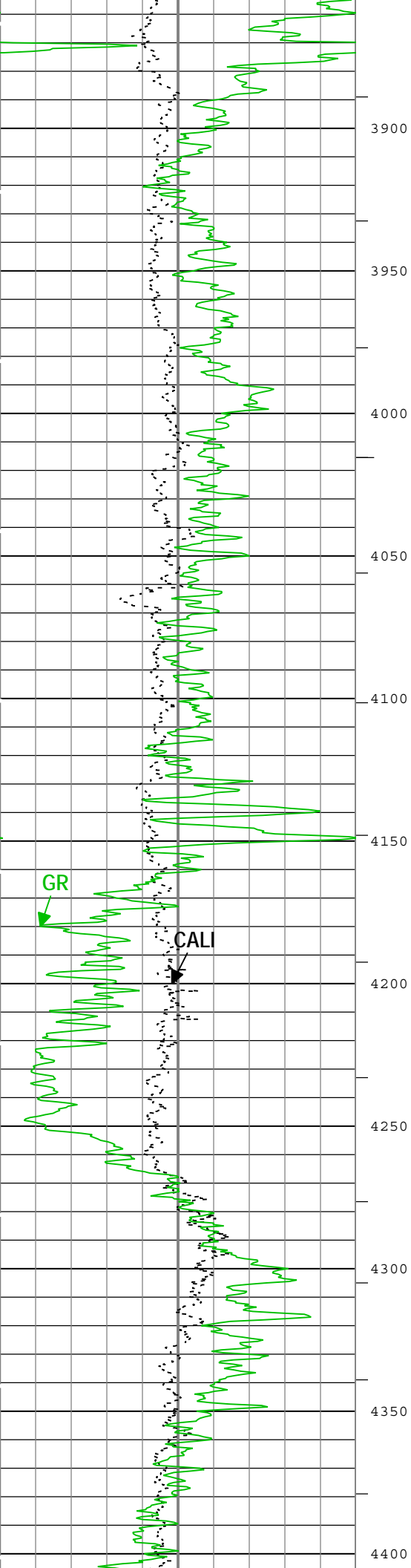
TIME\_1900 - Time Marked every 60.00 (s)

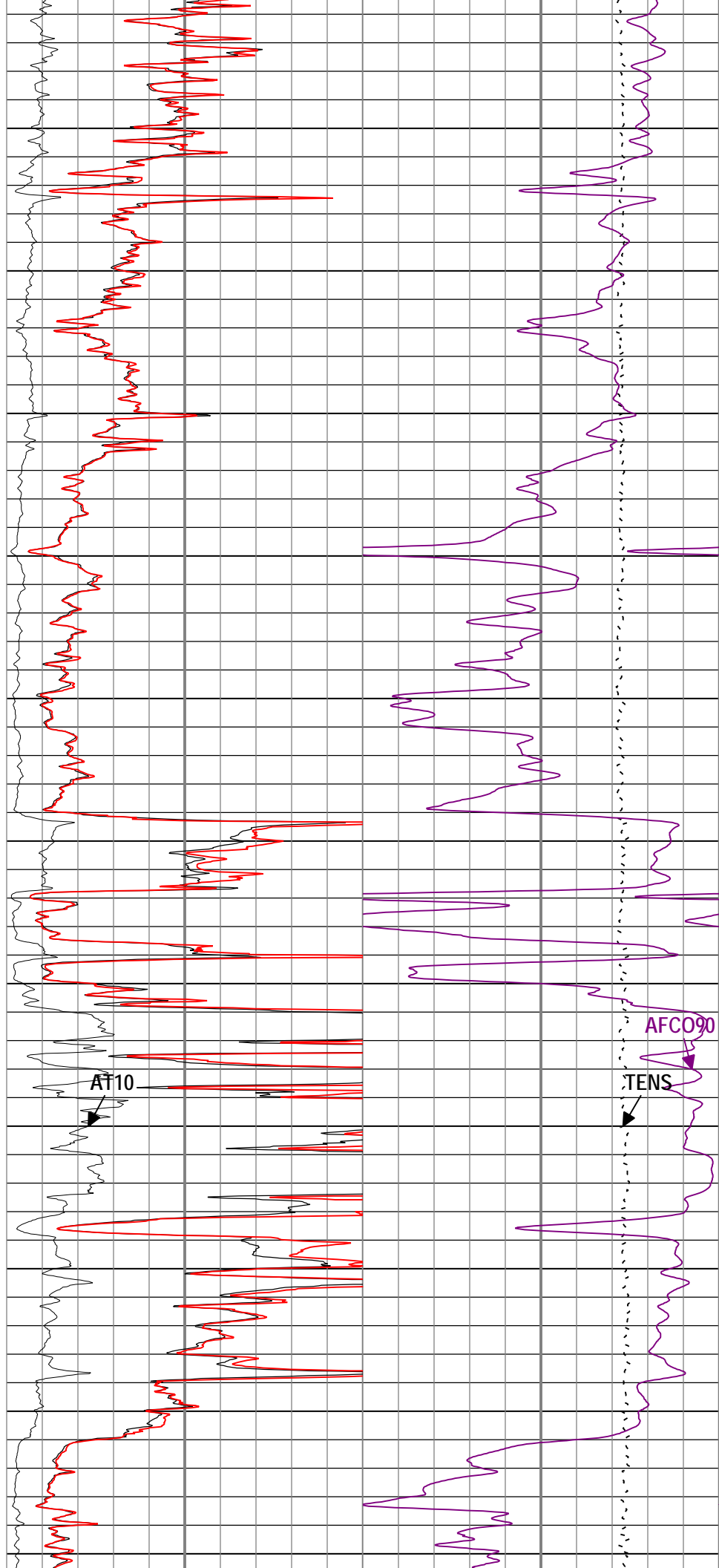
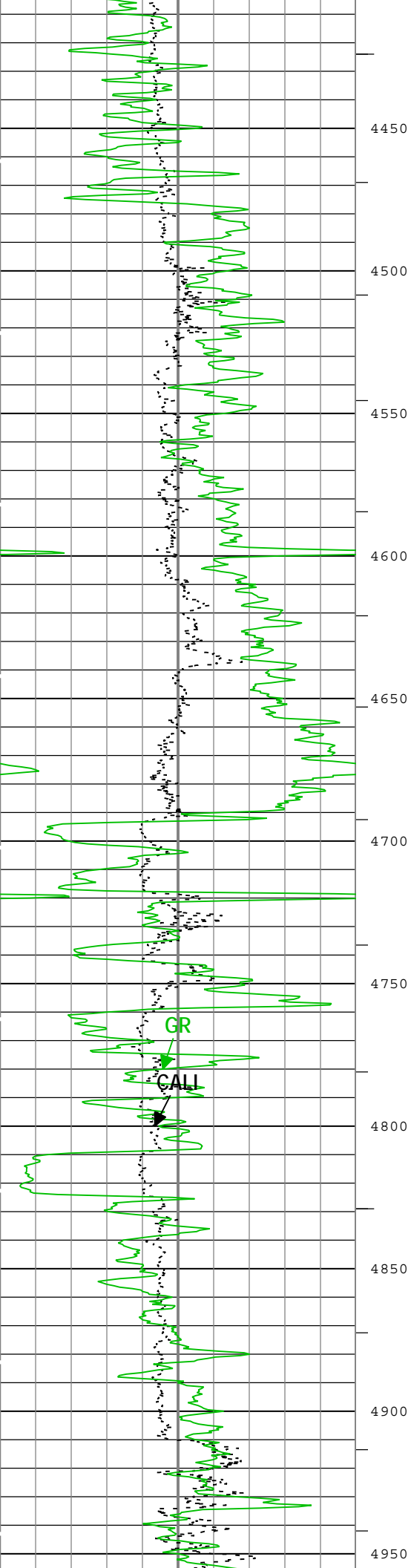
└ ICV - Integrated Cement Volume every 10.00 (ft3)

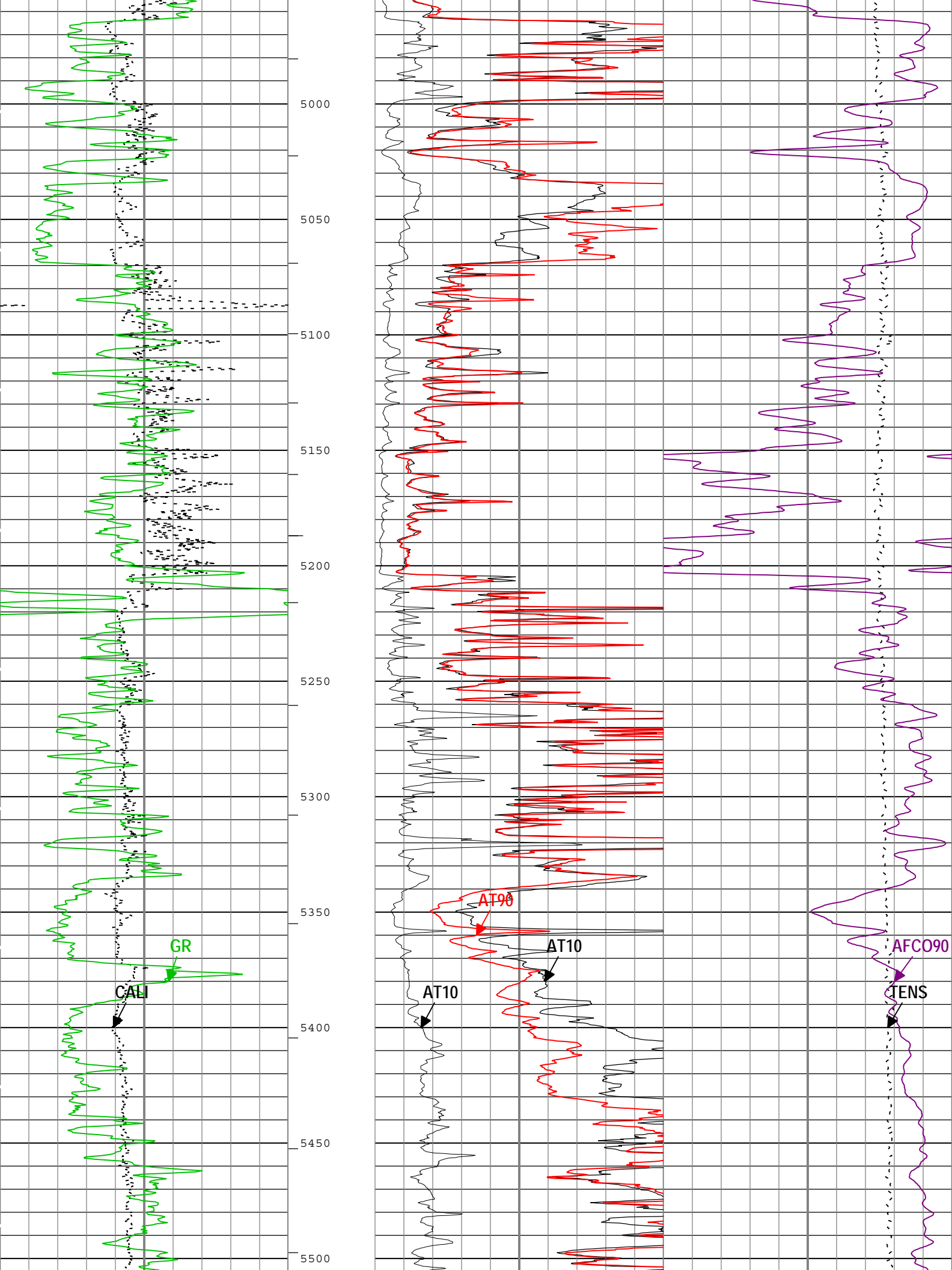
— ICV - Integrated Cement Volume every 100.00 (ft3)

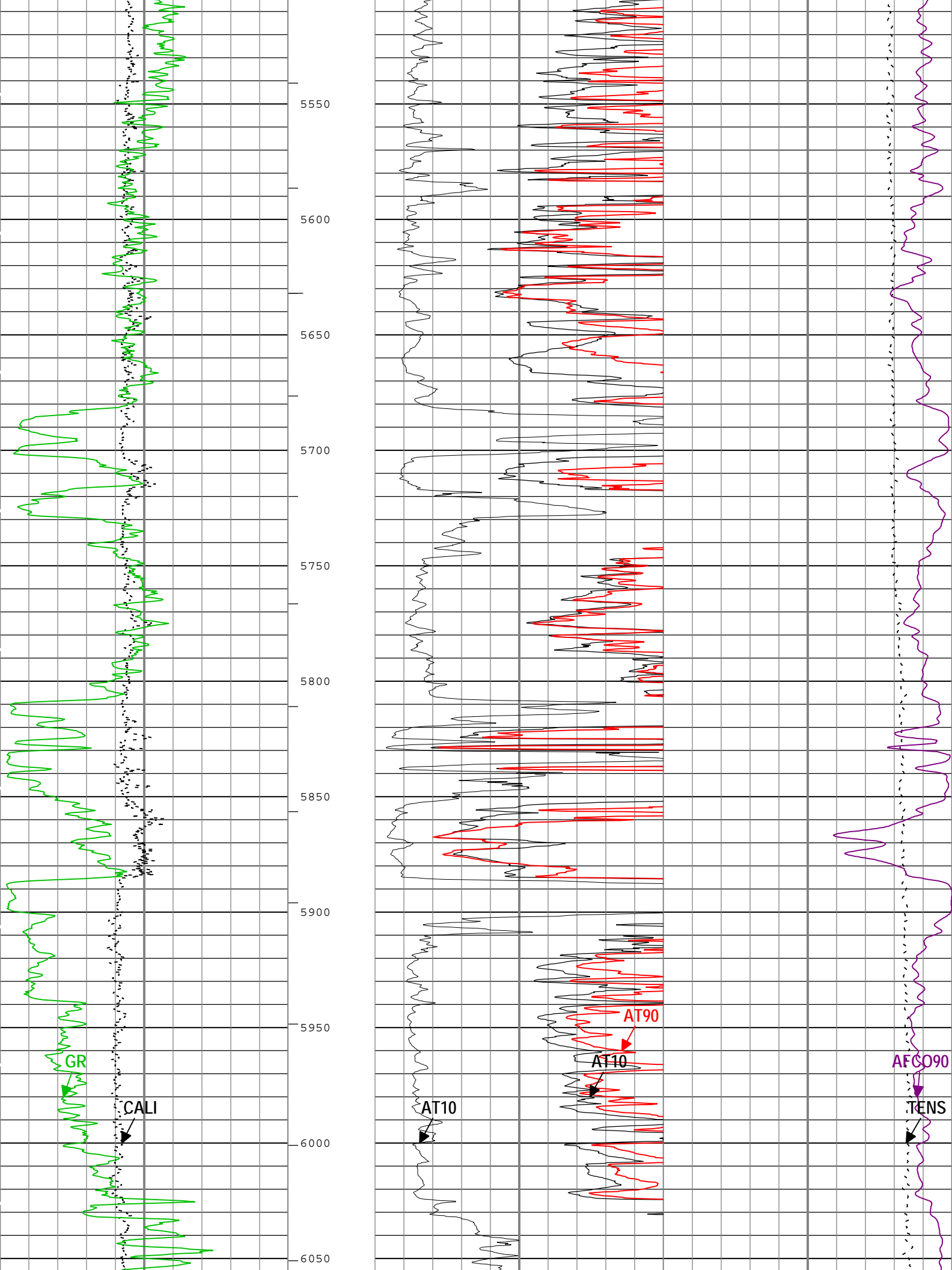




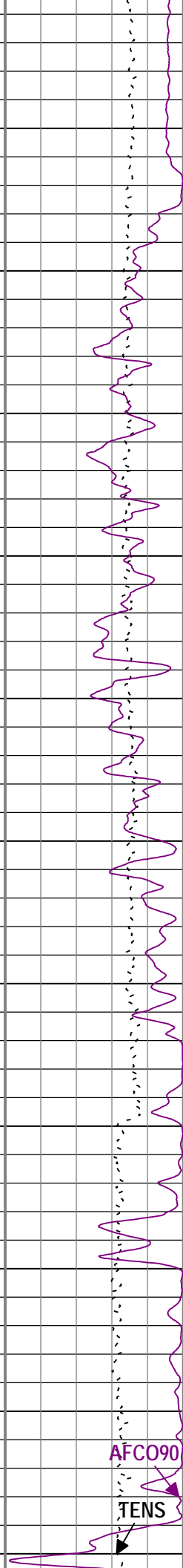
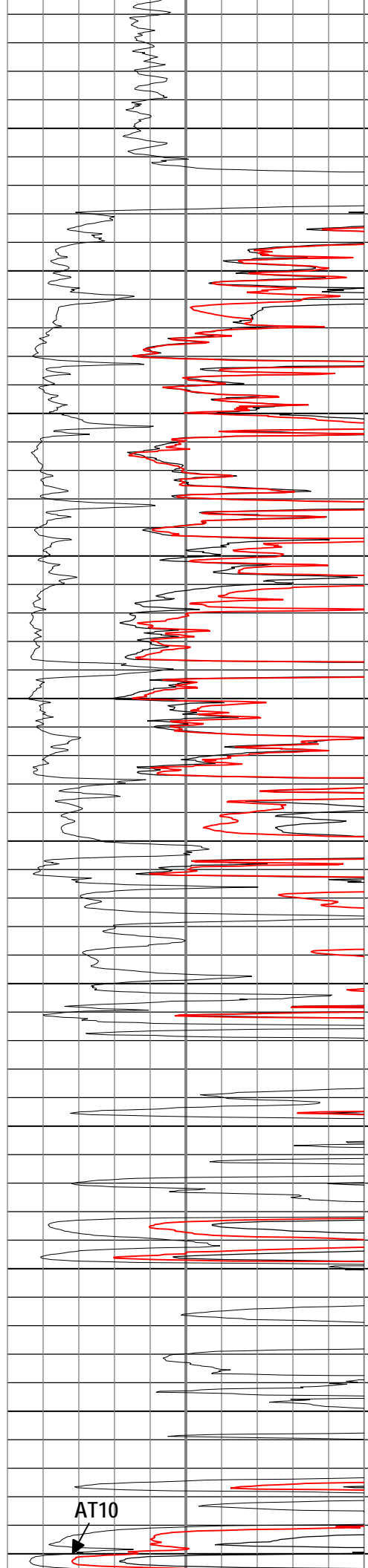
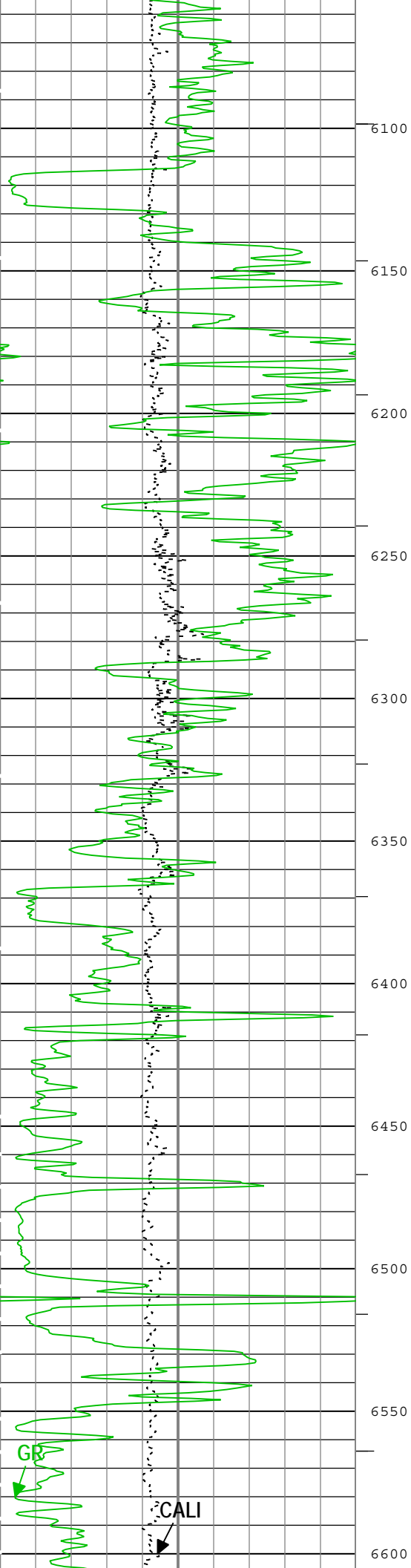


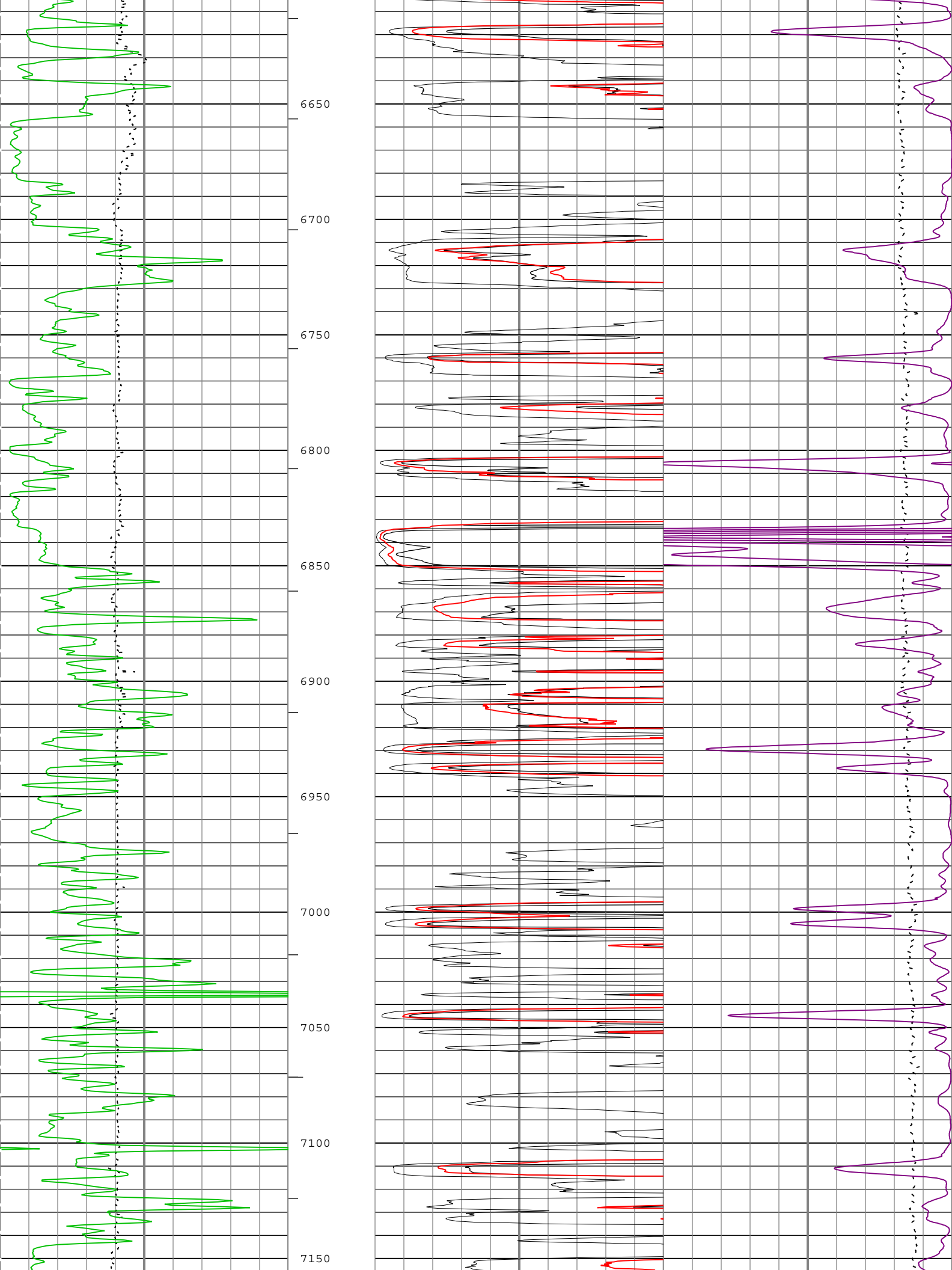


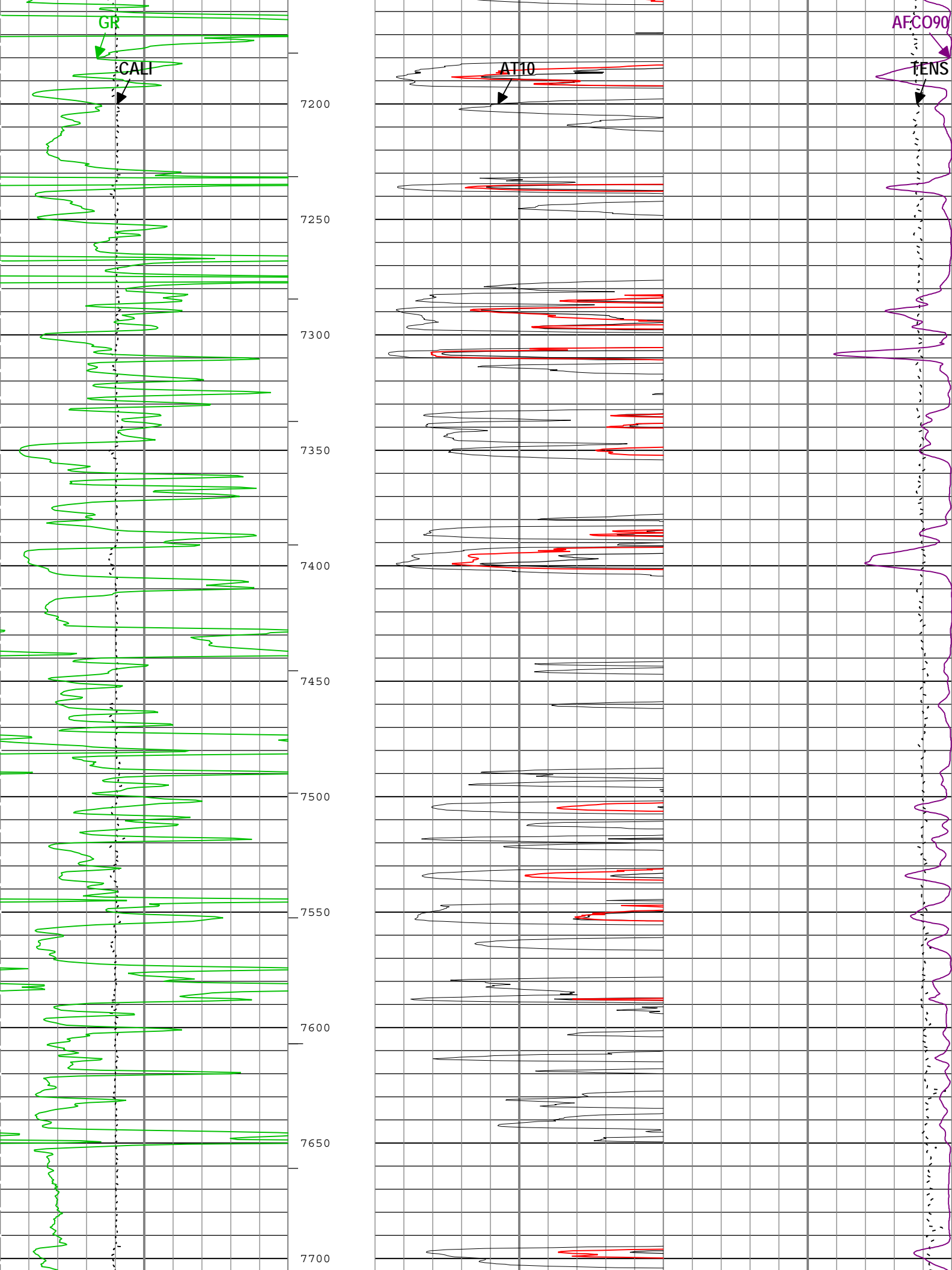


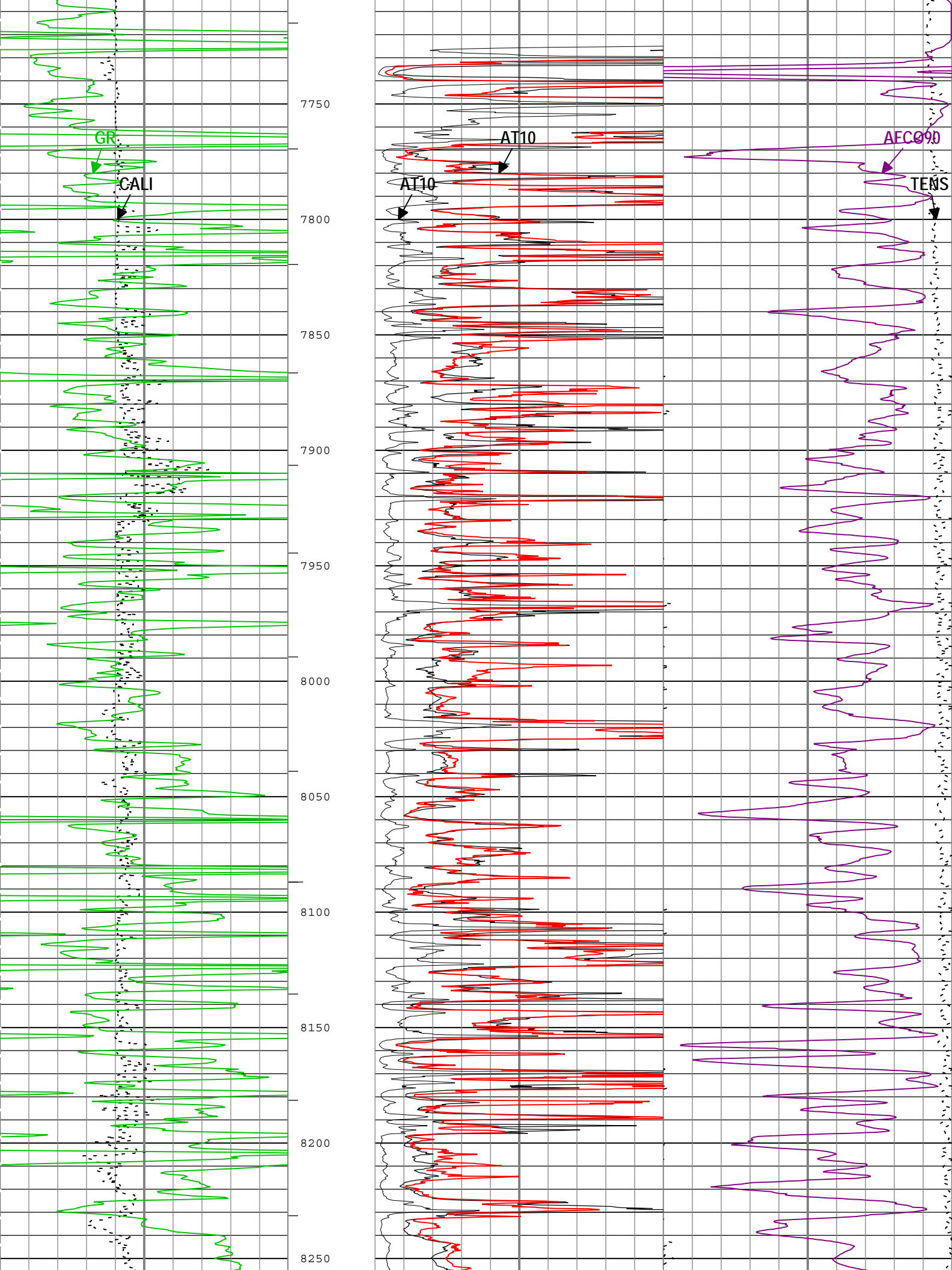


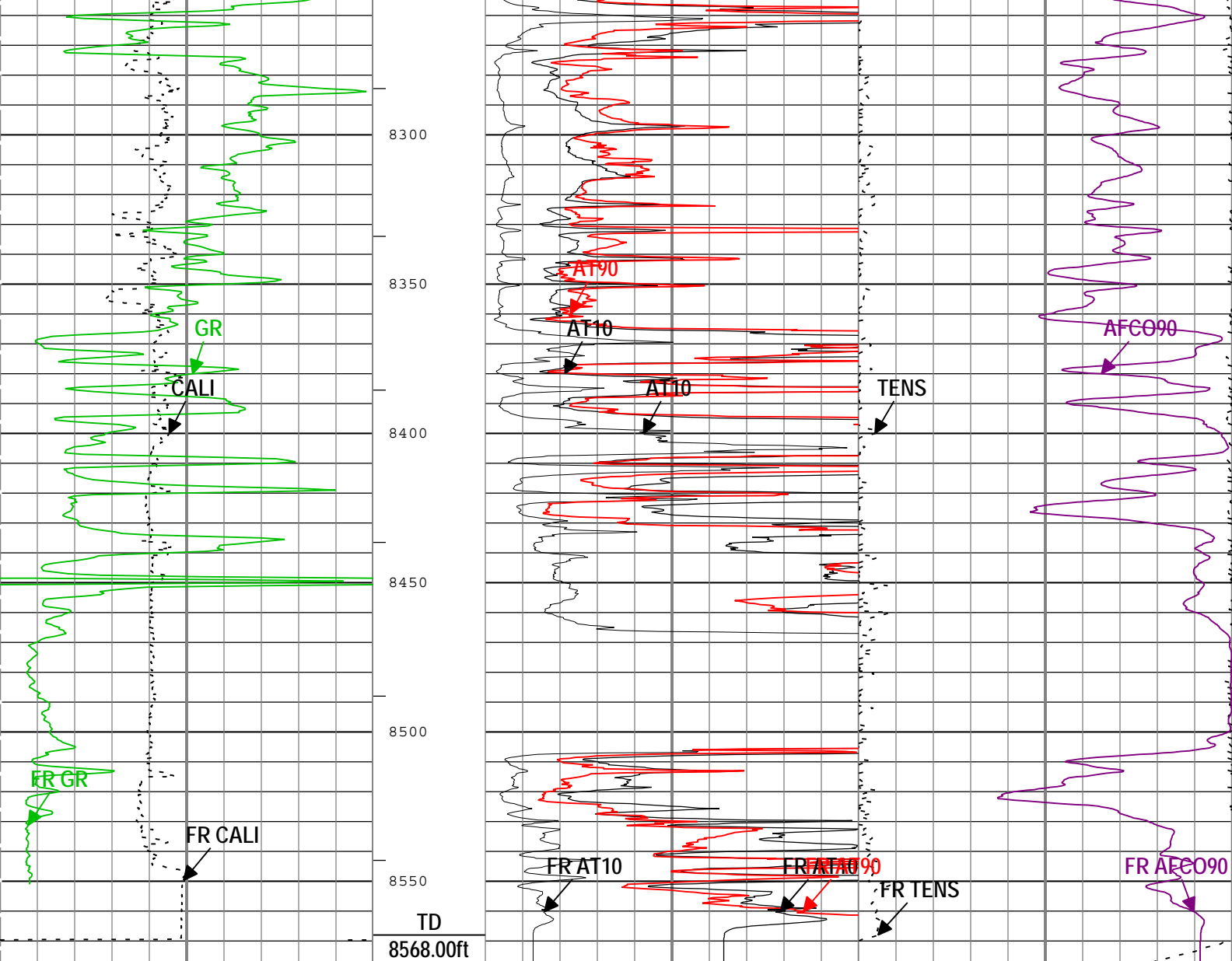












Gamma Ray Backup	
Caliper (CALI) HDRS-H	
4	14
in	
Gamma Ray (GR) HGNS-H	
0	200
gAPI	

Array Induction Two Foot Resistivity A10 (AT10) AIT-M		
0	ohm.m	50
Array Induction Two Foot Resistivity A10 (AT10) AIT-M		
0	ohm.m	10
Array Induction Two Foot Resistivity A90 (AT90) AIT-M		
0	ohm.m	10

Cable Tension (TENS)	
0	5000
lbf	
Array Induction Four Foot Conductivity A90 (AF90) AIT-M	
1000	0
mS/m	

ICV - Integrated Cement Volume every 100.00 (ft3)

ICV - Integrated Cement Volume every 10.00 (ft3)

TIME\_1900 - Time Marked every 60.00 (s)

Description: AIT Basic Log Two Format: Log ( EMD 2in Induction ) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Nov-2014 10:20:11

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Standoff	
ACDE	Array Induction Casing Detection Enable	AIT-M	No	
ASTA	Array Induction Tool Standoff	AIT-M	1	in

BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	7.875	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	544	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DFD	Drilling Fluid Density	Borehole	8.9	lbm/gal
FCD	Future Casing (Outer) Diameter	WLSESSION	5.5	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	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
SOCO	Standoff Correction Option	HGNS-H	Yes	

Tool Control Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	840	ft/h

ONE

Main Pass - 5" Triple Combo Linear

Software Version

Acquisition System	Version
MaxWell	4.0.9163.3000
Application Patch	Patch-SP-10767_18214-4.0.9163.3001
	Patch-NPD_NEXT_C_Fld2-20493-4.0.9434.3002
	Patch-Hotfix_Task_Tree_GDI_SP2-20806-4.0.9434.3002
	Patch-Hotfix_MDT_18214-22198-4.0.9434.3002

Computation	Description		Version
HENVIR	Computation Ensemble for the HGNS Neutron environmental corrections		4.0.9360.3000
DepthCorrection	DepthCorrection		4.0.9433.3000
Tool Elements	Description	Software Version	Firmware Version
HRCC-H	HILT High-Resolution Control Cartridge, 150 degC	4.0.9385.3000	2.0
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	4.0.9385.3000	2.0
HRGD-H	HILT Resistivity Gamma-Ray Density Device, 150 degC	4.0.9385.3000	3.0
AMIS	Array Induction Sonde - M	4.0.9427.3000	1

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[5]:Up	Up	348.49 ft	8588.12 ft	10-Nov-2014 4:56:43 AM	10-Nov-2014 9:20:17 AM	ON	14.40 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Cascade Petroleum LLC

Well:Gaede 9S-55W-8-16

ONE: Log[5]:Up:S008

Description: HGNS standard resolution porosities for Platform Express

Format: Log ( EMD 5in Triple Combo Linear )

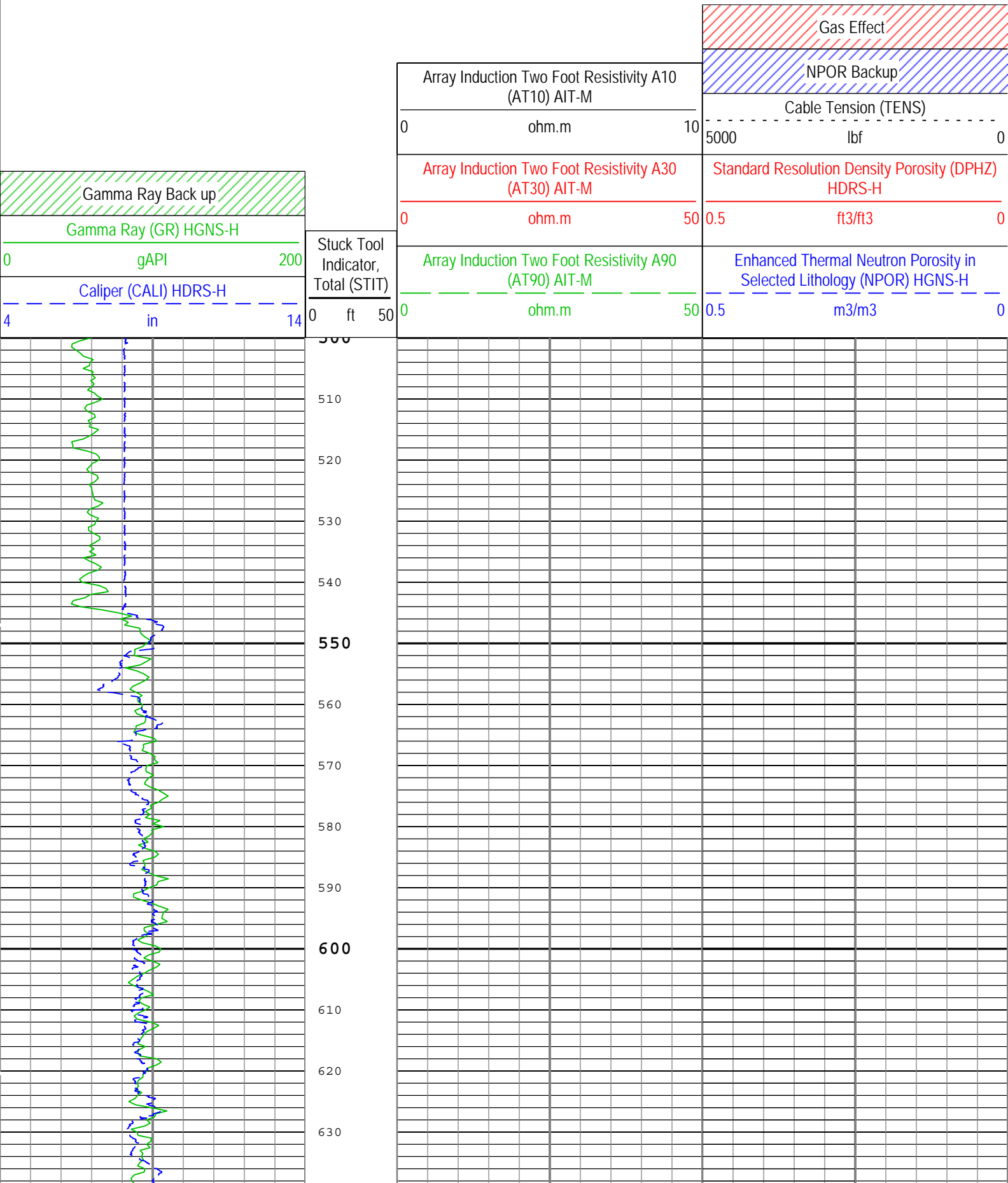
Index Scale: 5 in per 100 ft

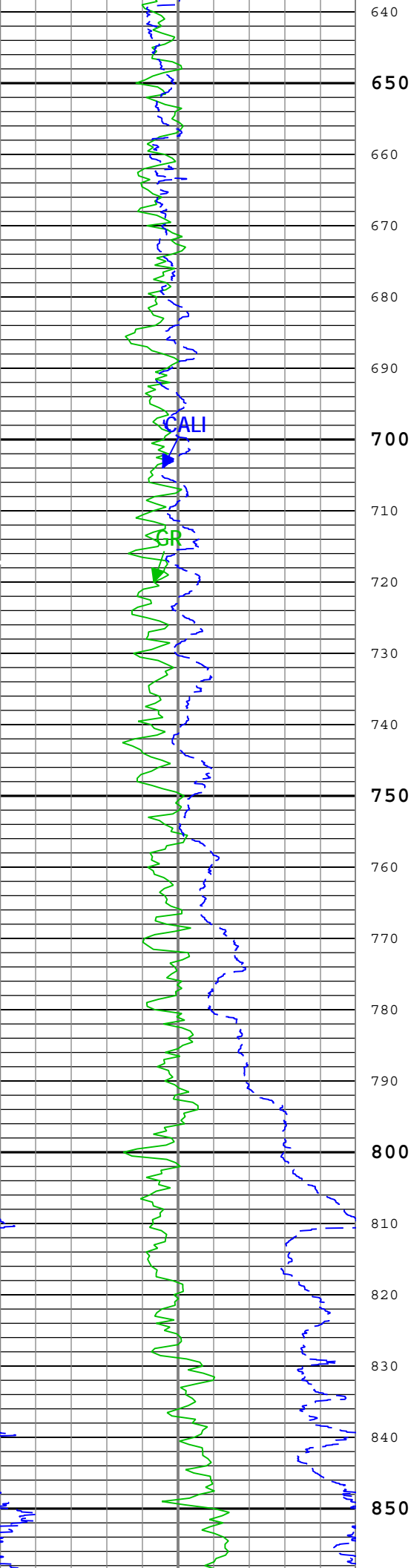
Index Unit: ft

Index Type: Measured Depth

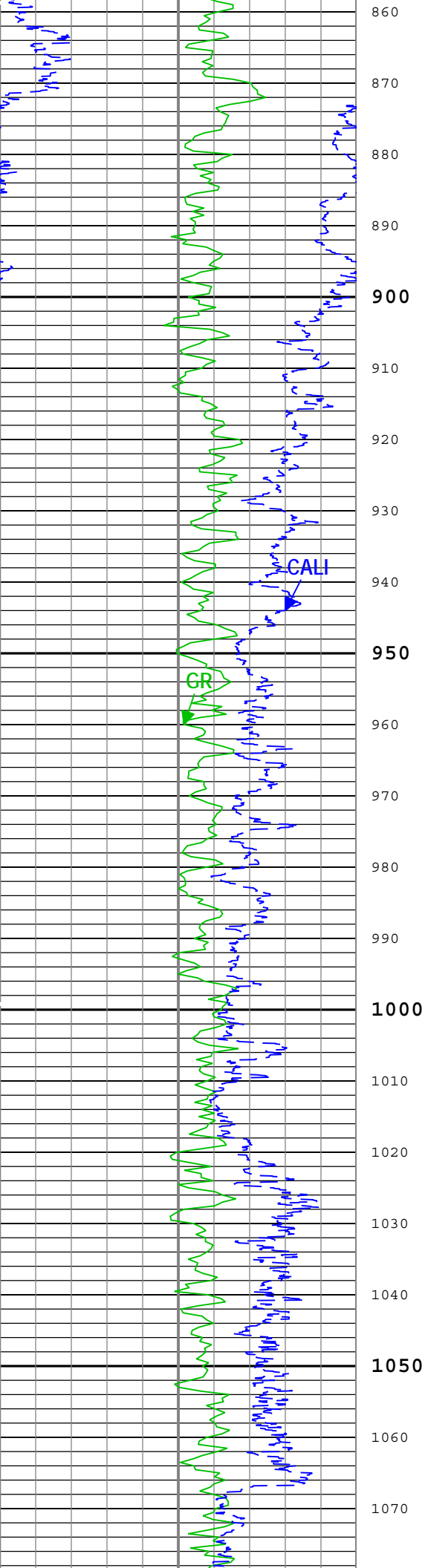
Creation Date: 10-Nov-2014 10:20:13

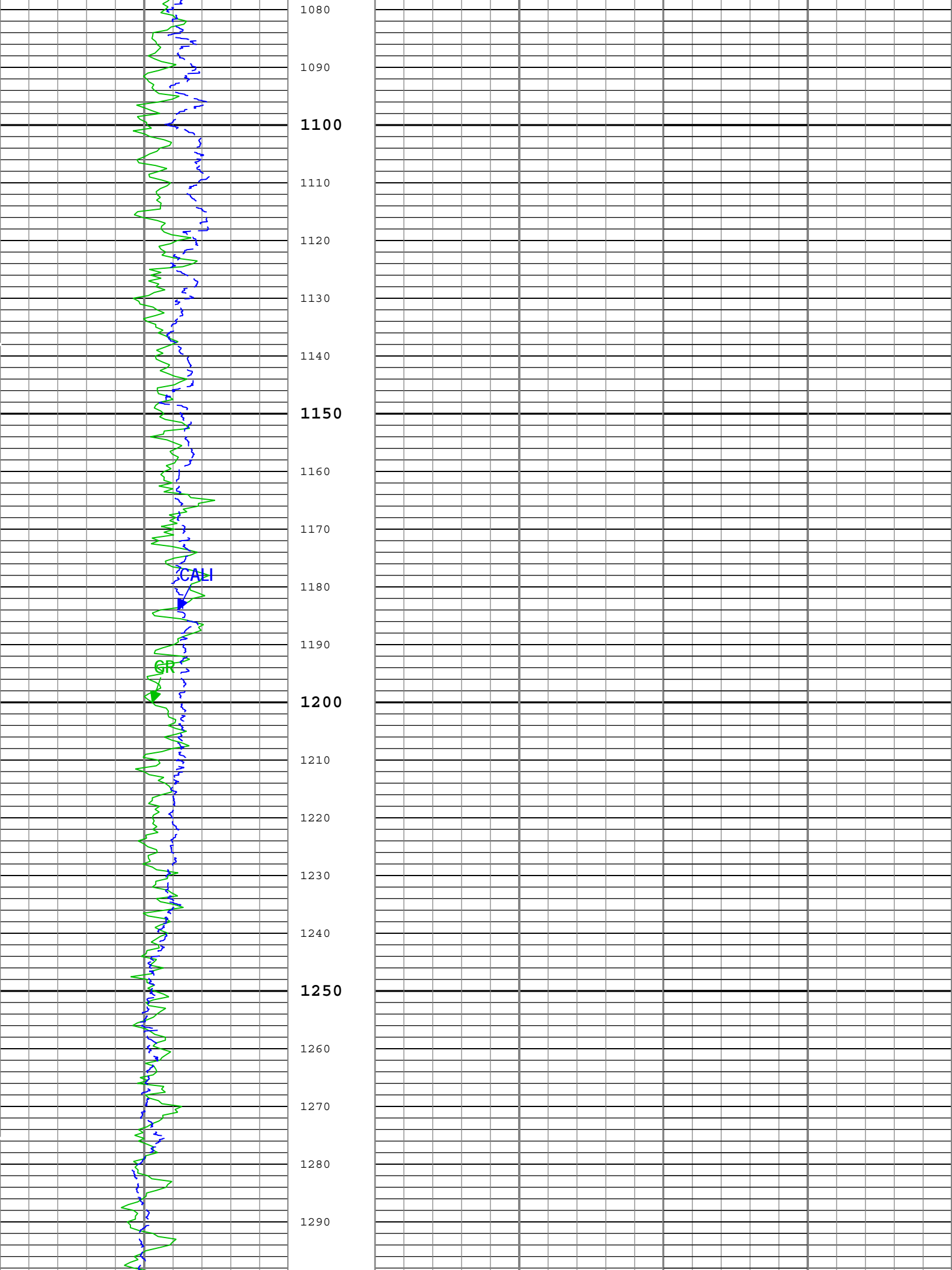
Channel	Source	Sampling
AT10	AIT-M:AMIS:AMIS	3in
AT30	AIT-M:AMIS:AMIS	3in
AT90	AIT-M:AMIS:AMIS	3in
CALI	HDRS-H:HRCC-H:HRCC-H	1in
DPHZ	HDRS-H:HRMS-H:HRGD-H	2in

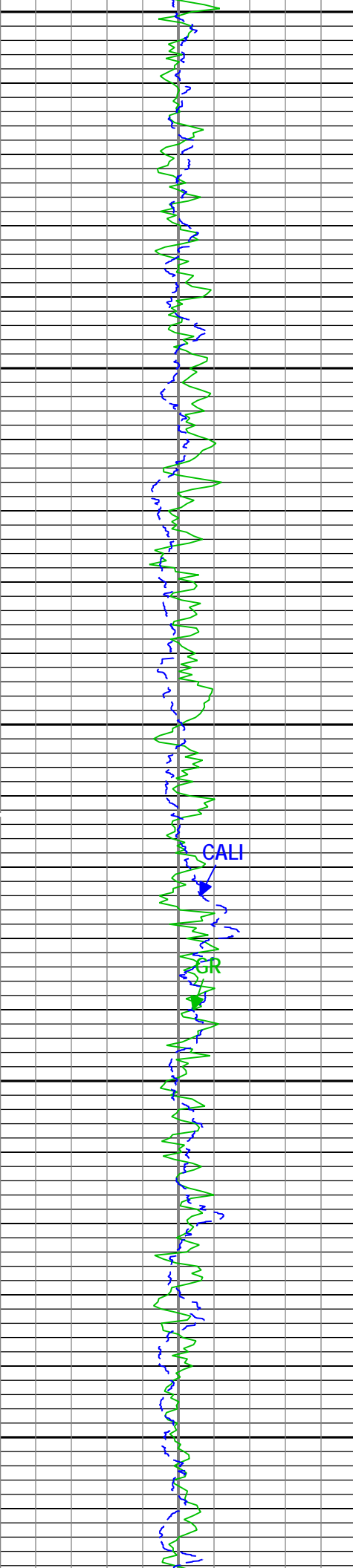
TIME\_1900 - Time Marked every 60.00 (s)











1300

1310

1320

1330

1340

1350

1360

1370

1380

1390

1400

1410

1420

1430

1440

1450

1460

1470

1480

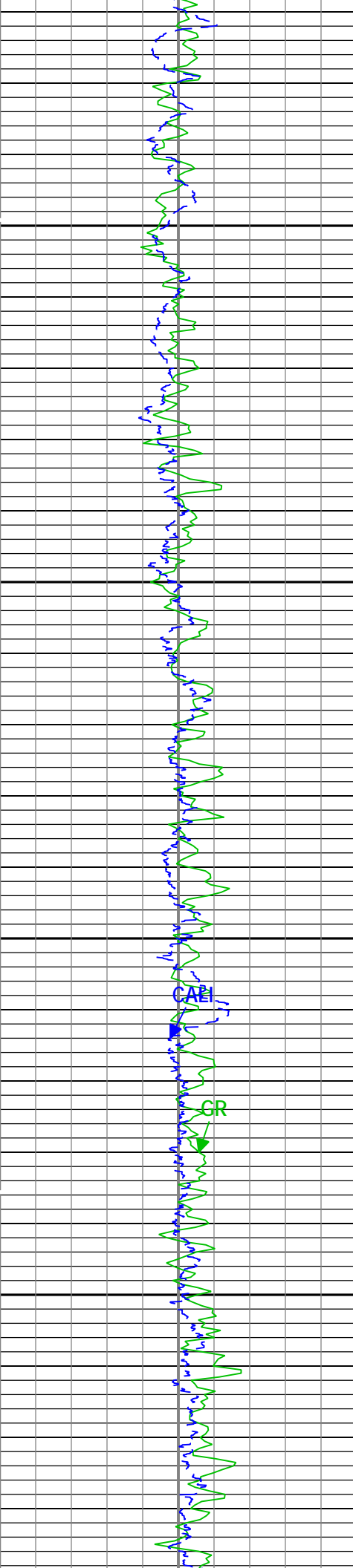
1490

1500

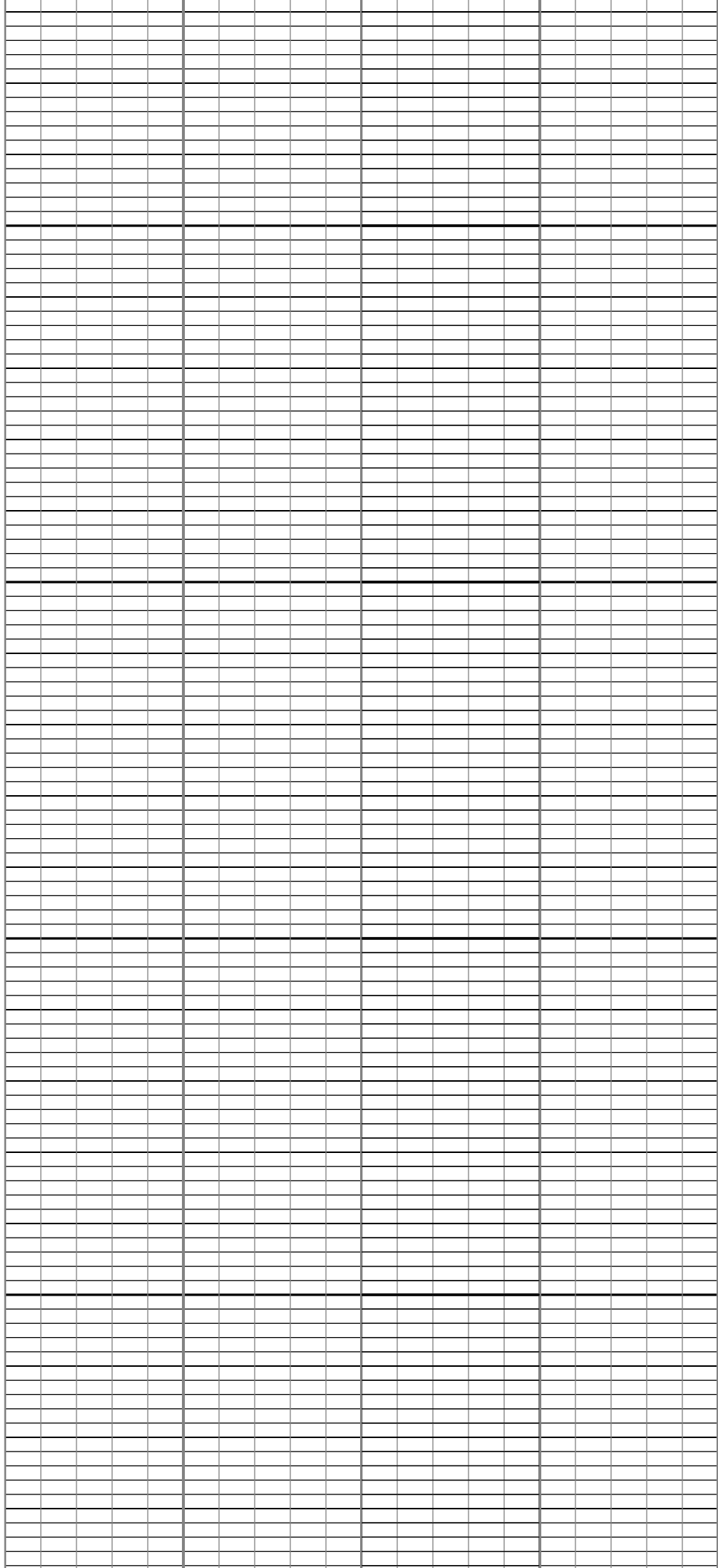
1510

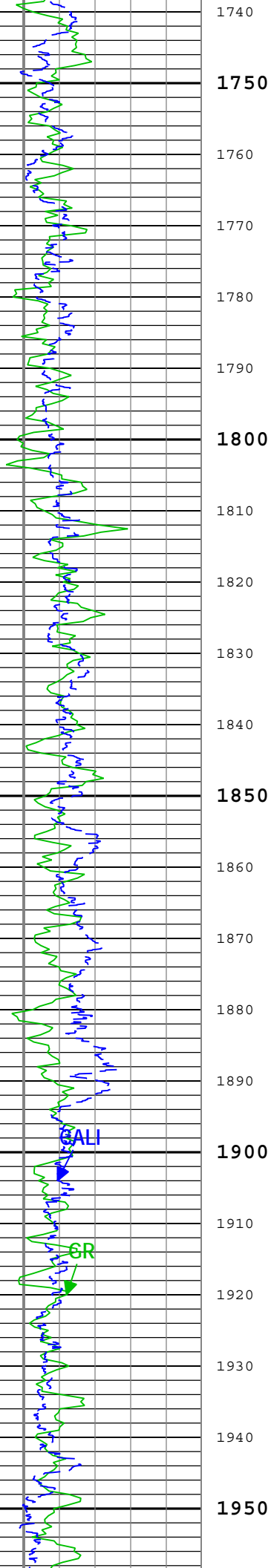
CALI

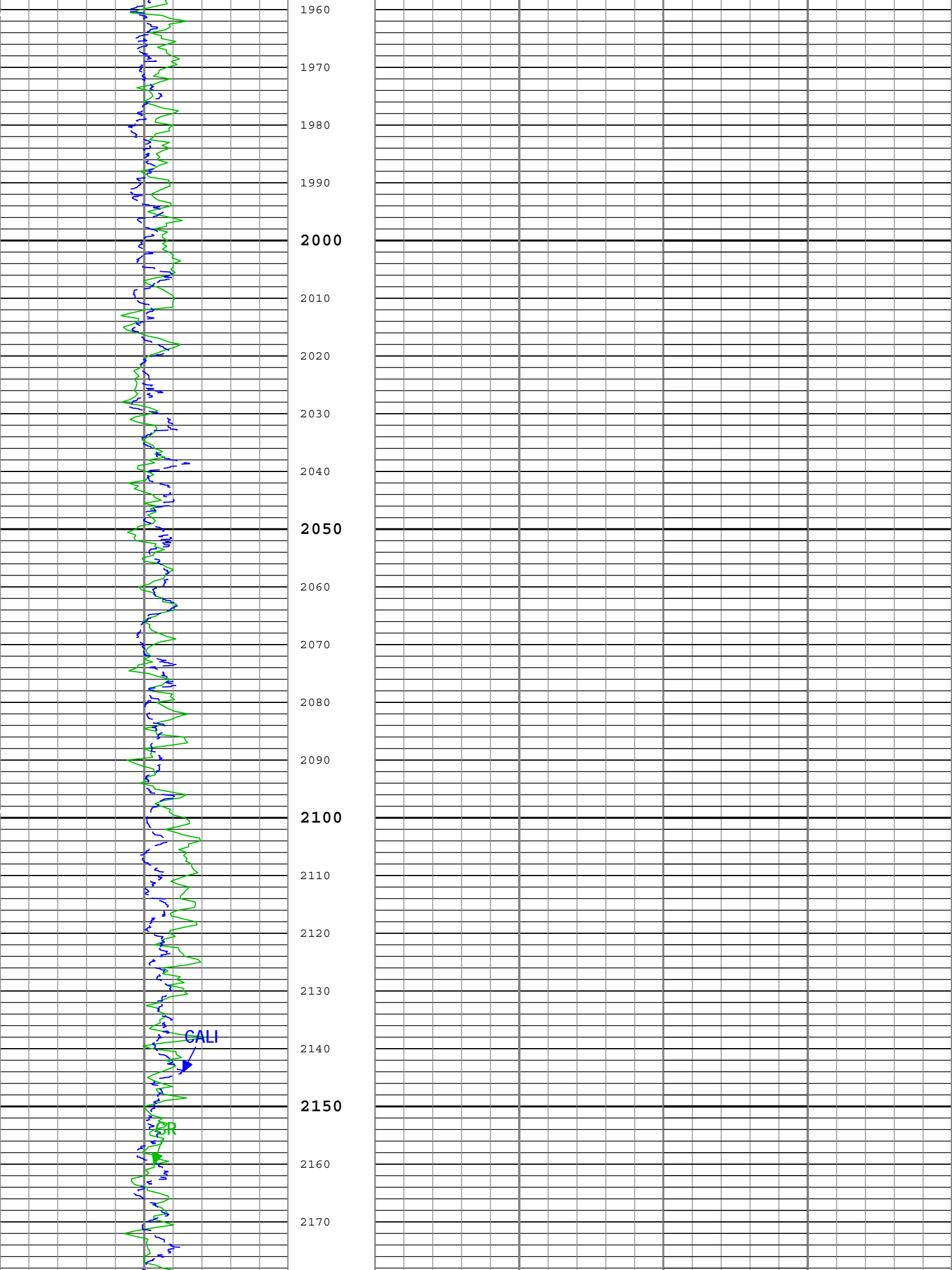
GP

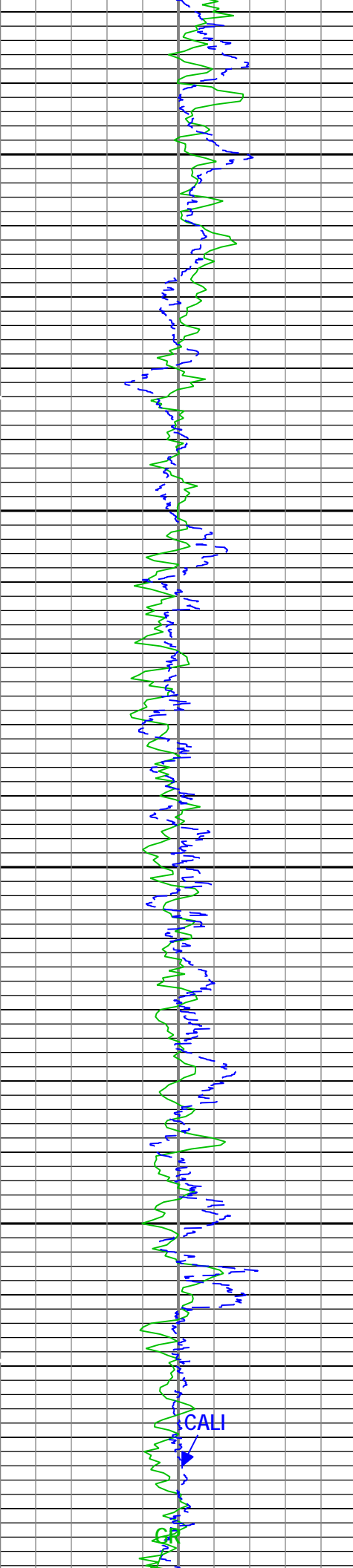


1520  
1530  
1540  
**1550**  
1560  
1570  
1580  
1590  
**1600**  
1610  
1620  
1630  
1640  
**1650**  
1660  
1670  
1680  
1690  
**1700**  
1710  
1720  
1730









2180

2190

**2200**

2210

2220

2230

2240

**2250**

2260

2270

2280

2290

**2300**

2310

2320

2330

2340

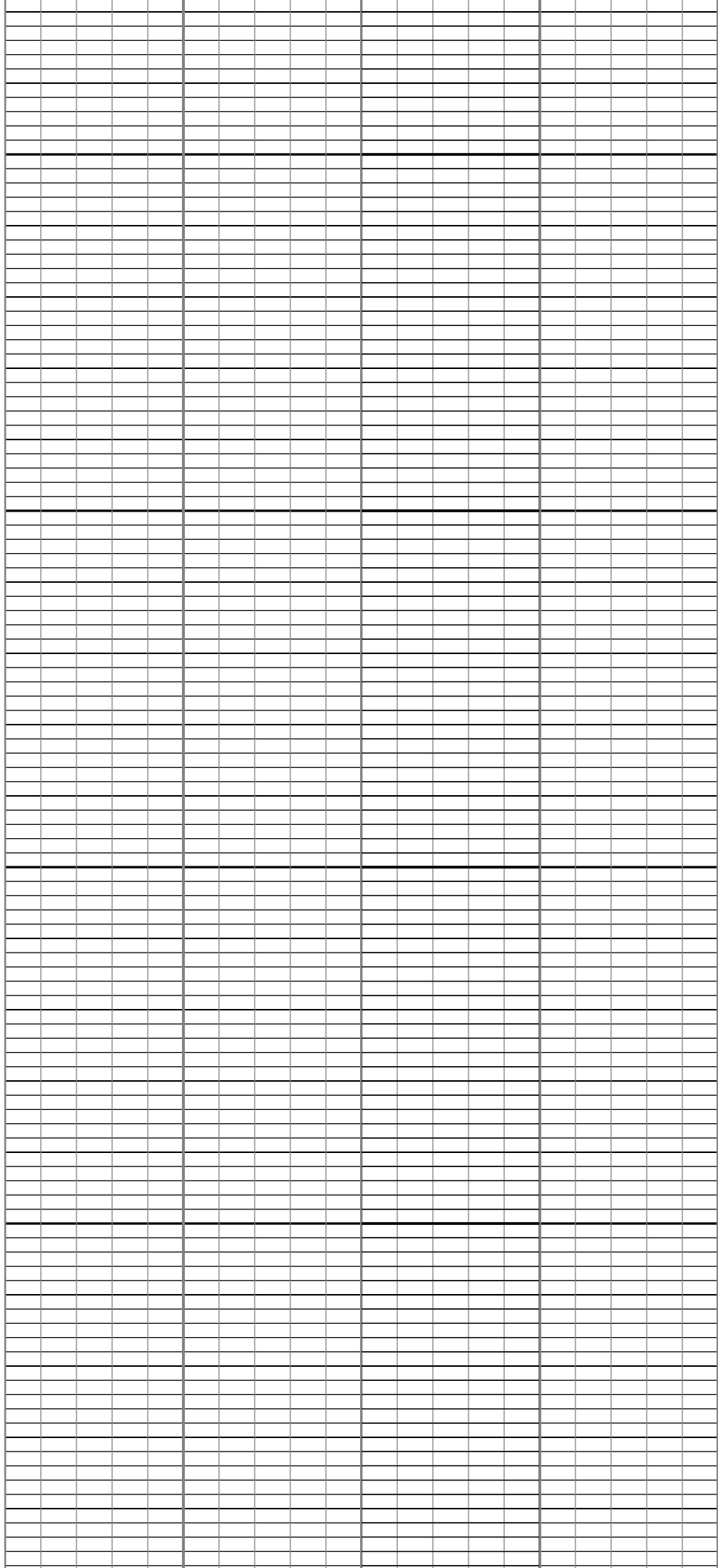
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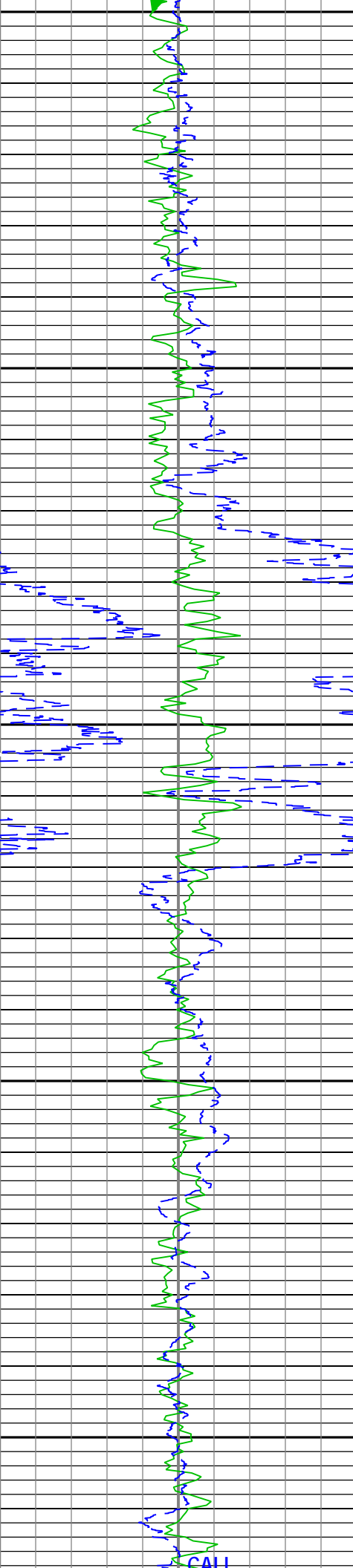
2360

2370

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2390





2400

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2500

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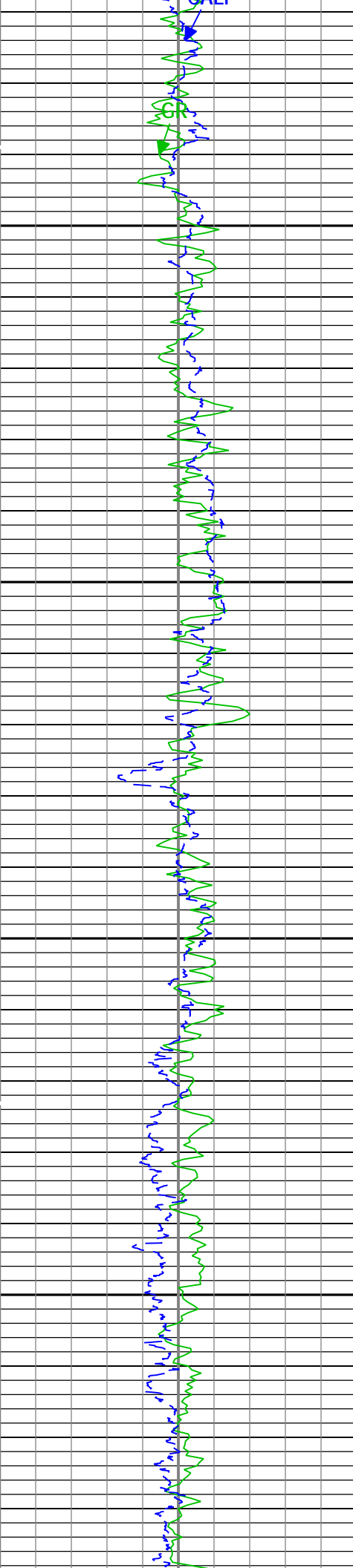
2590

2600

2610

CALL





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**2650**

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**2700**

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**2750**

2760

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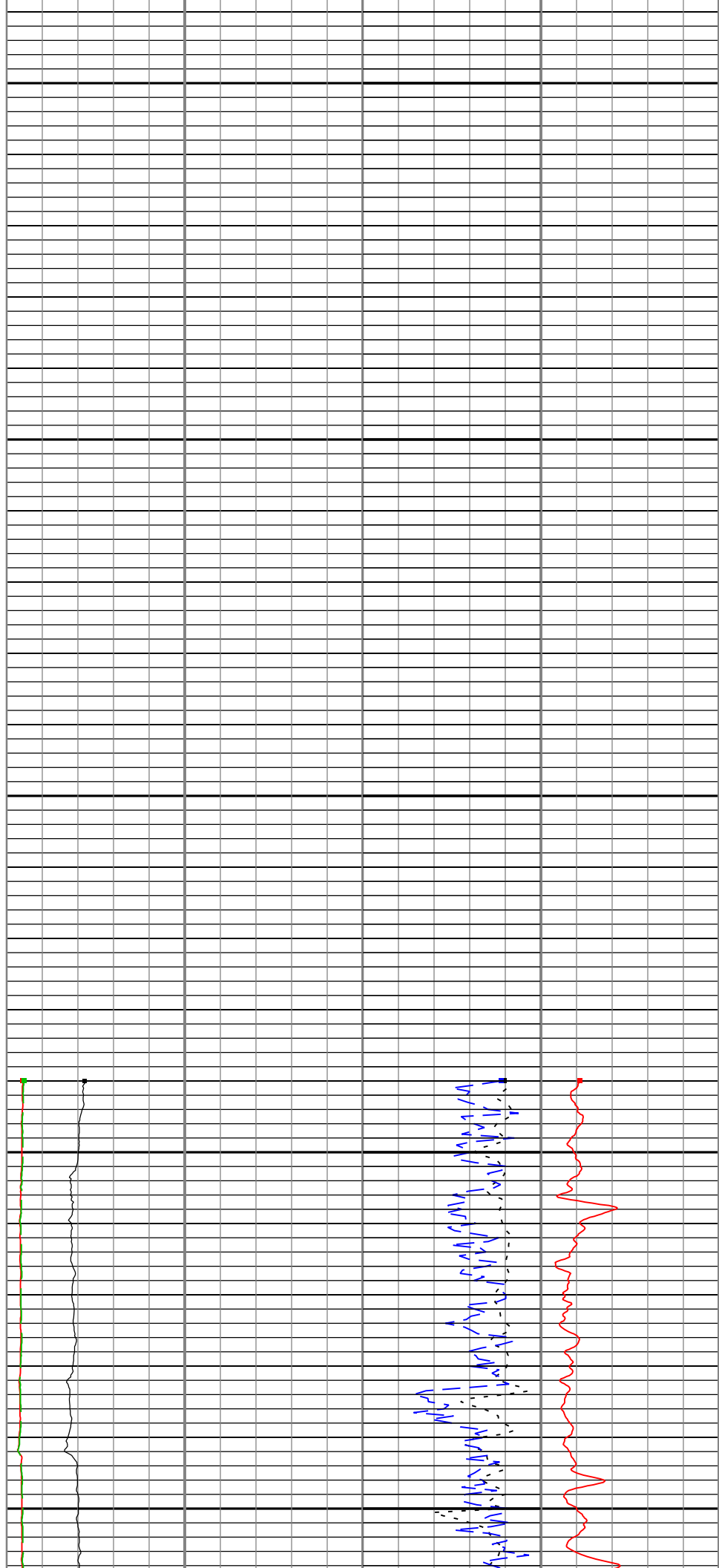
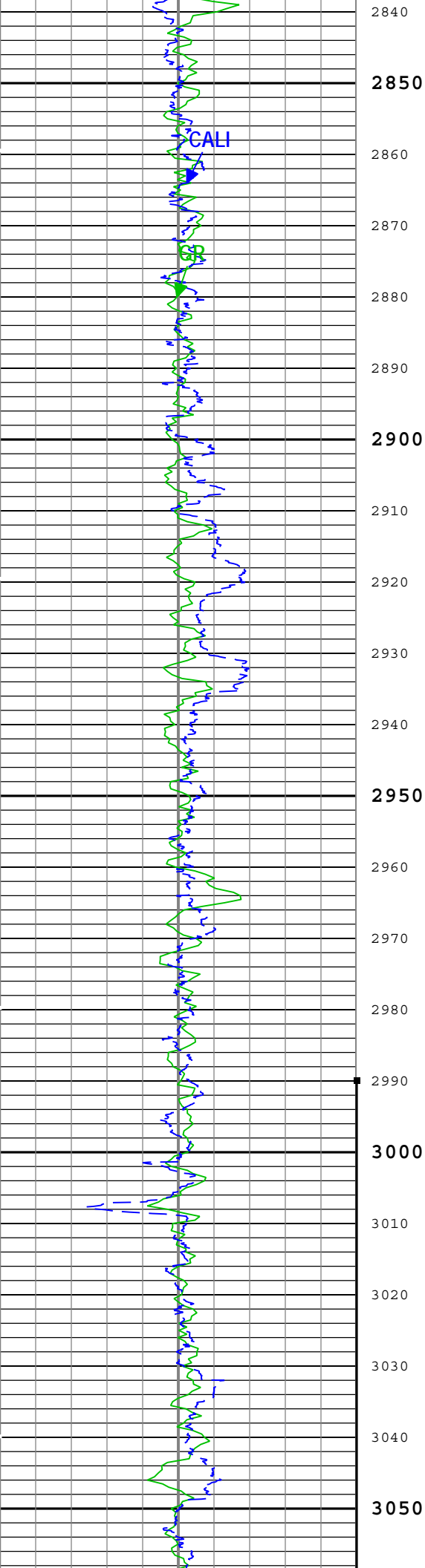
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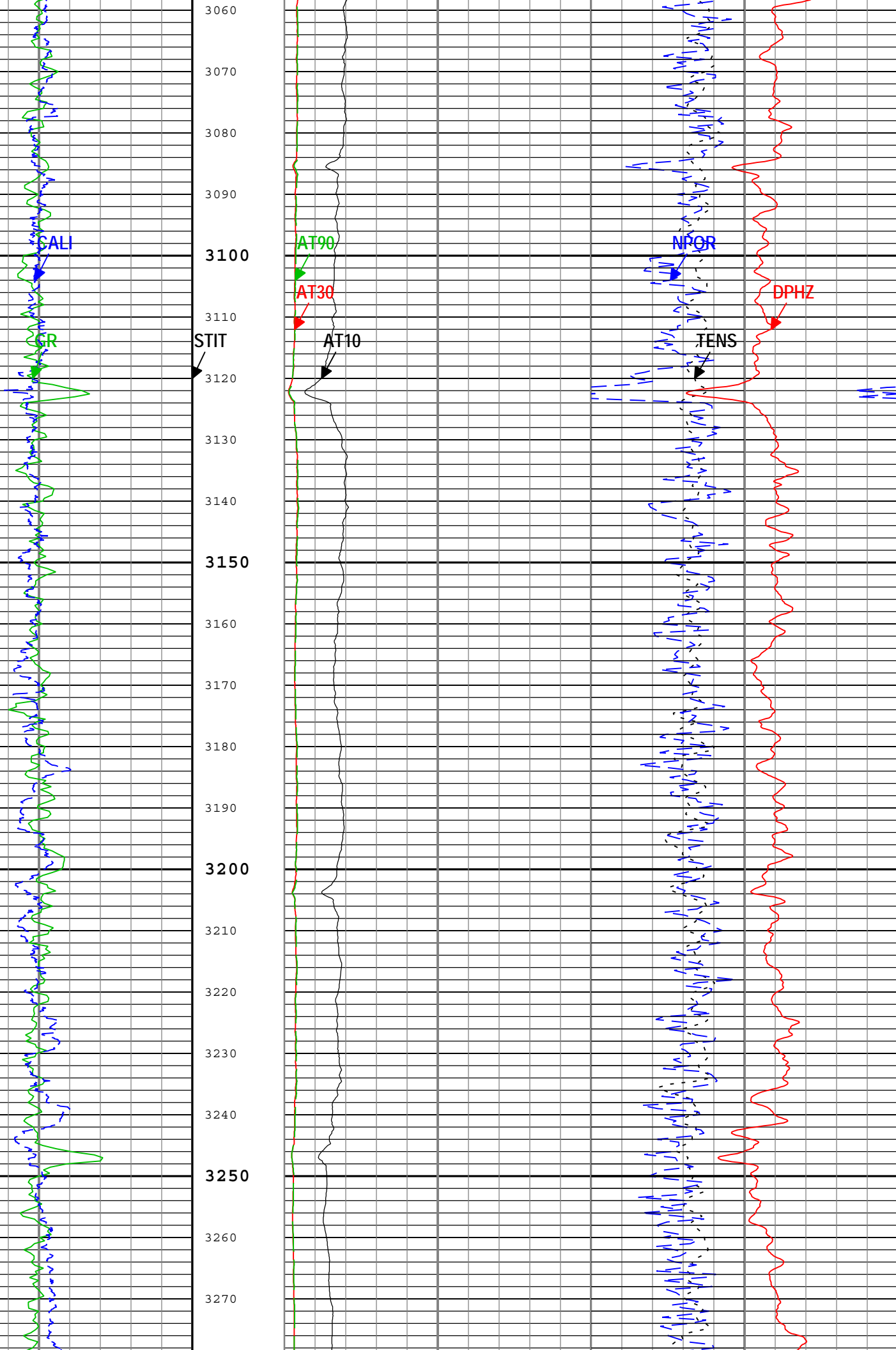
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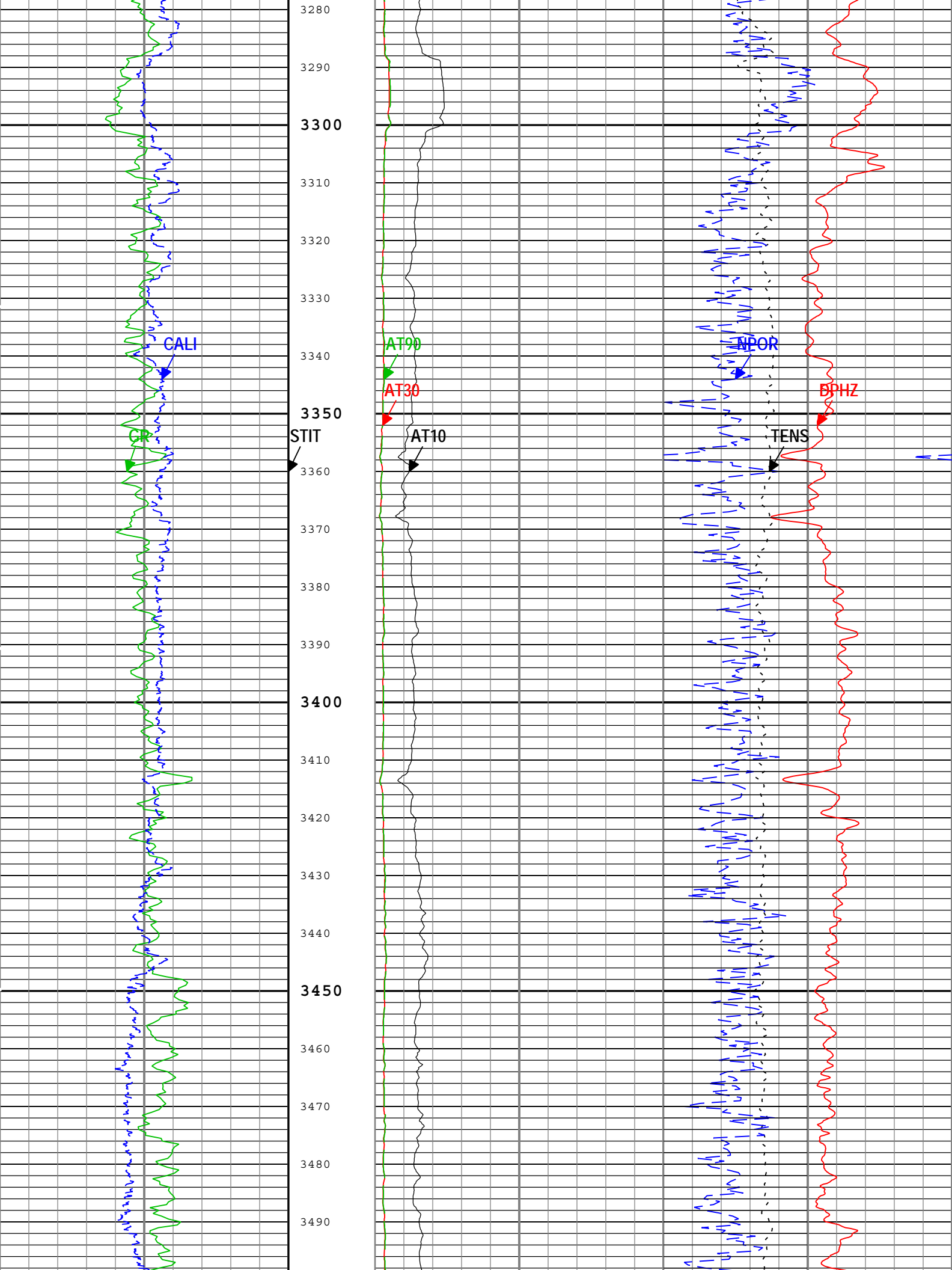
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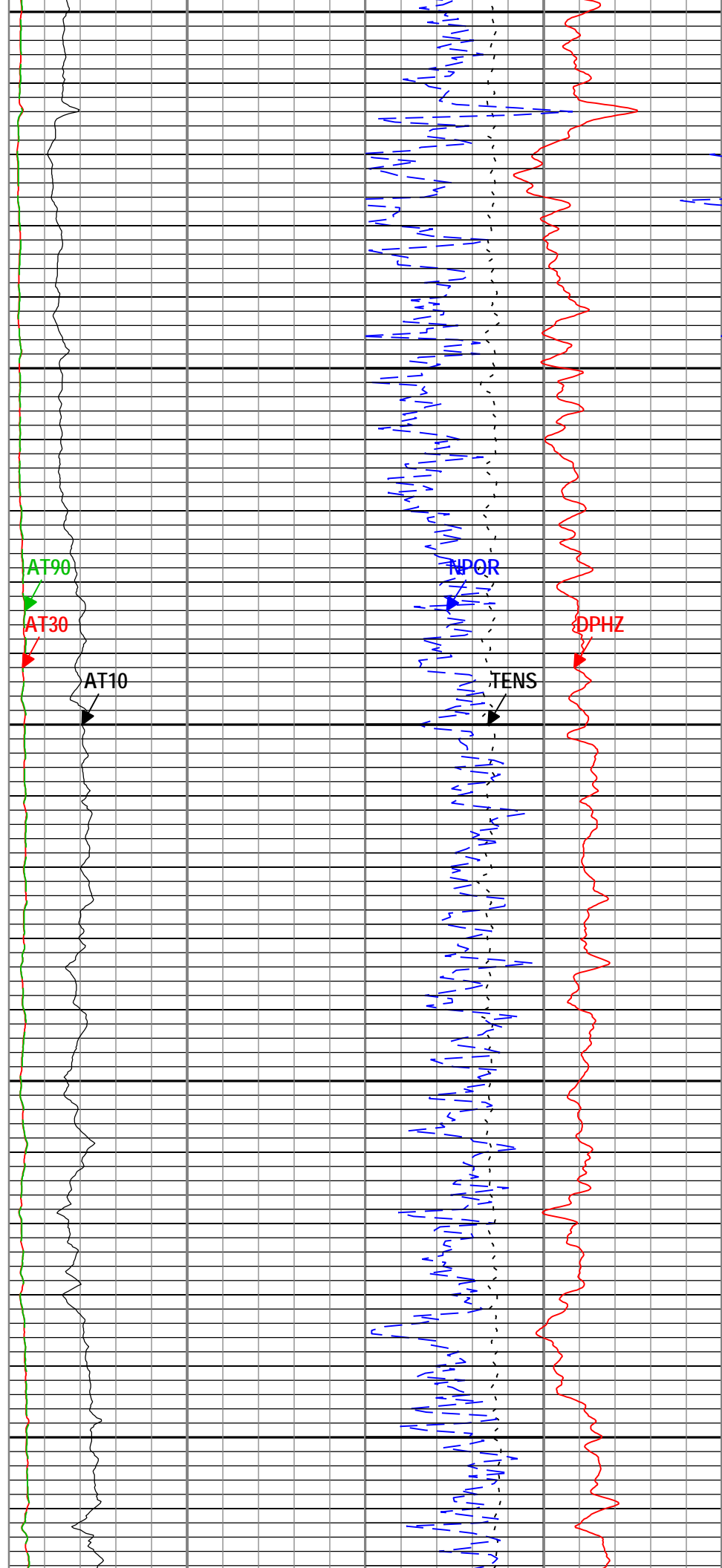
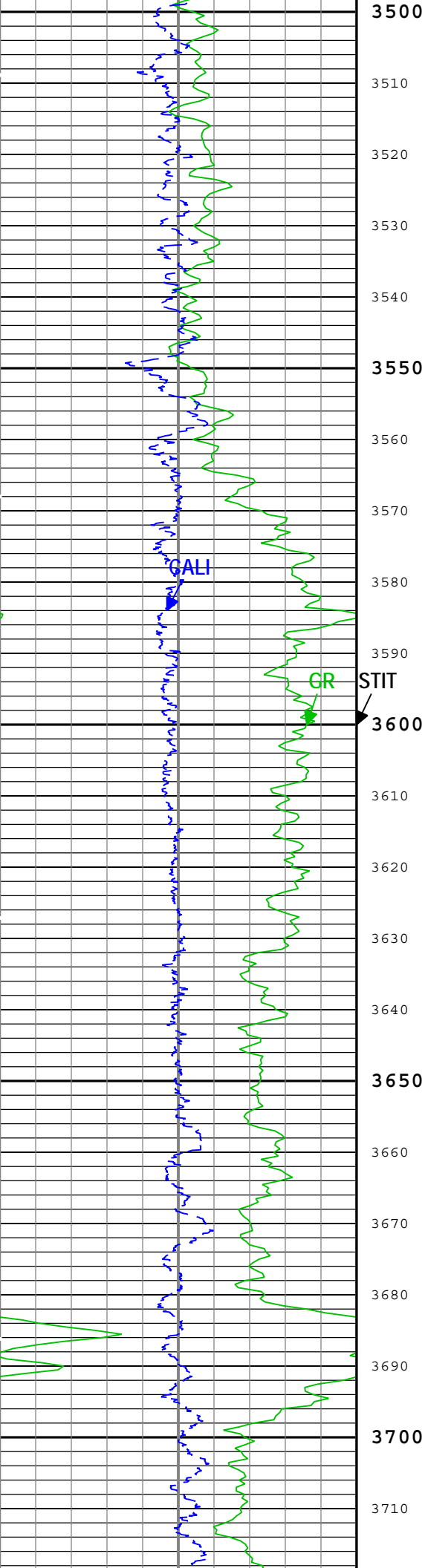
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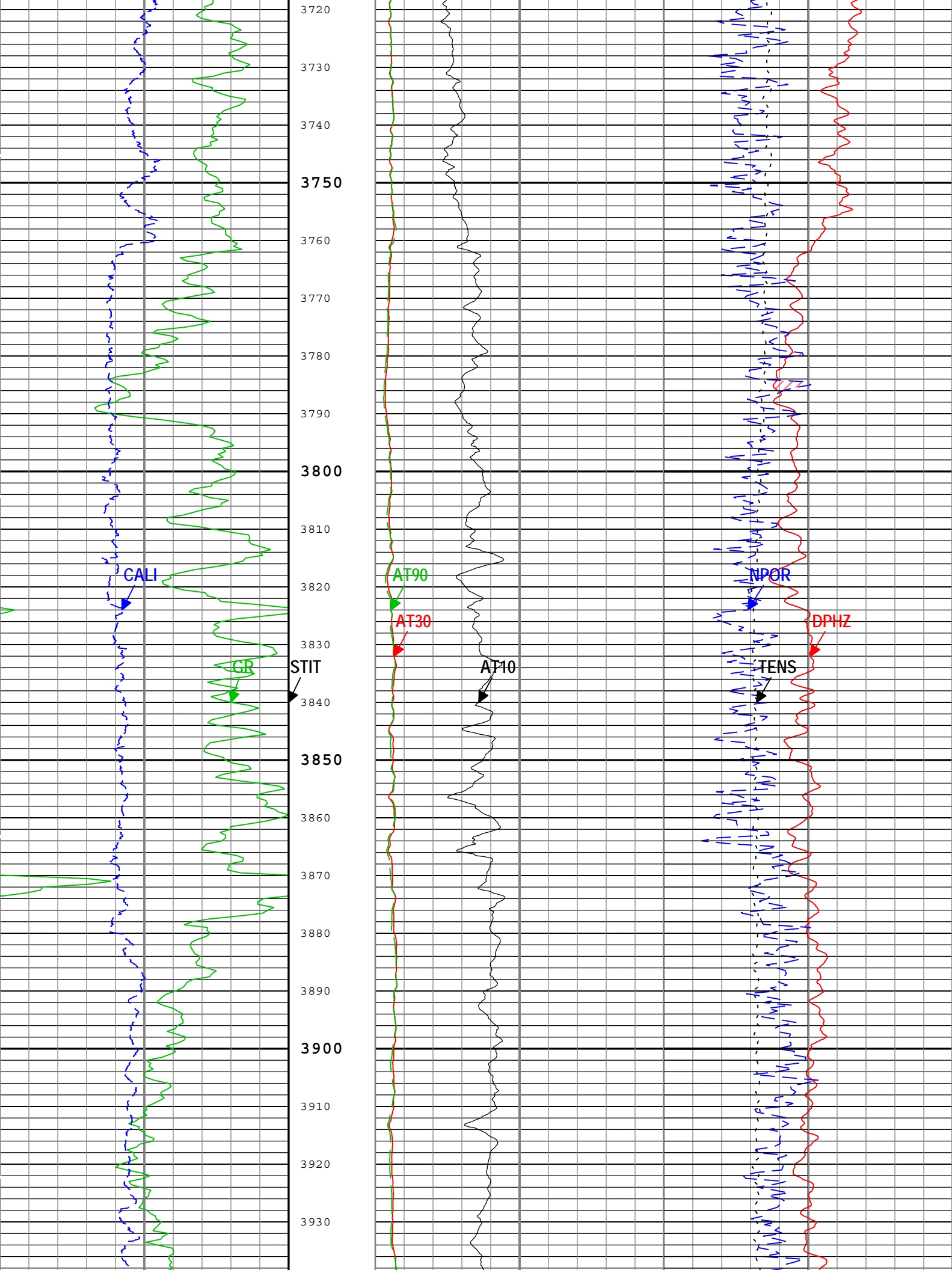
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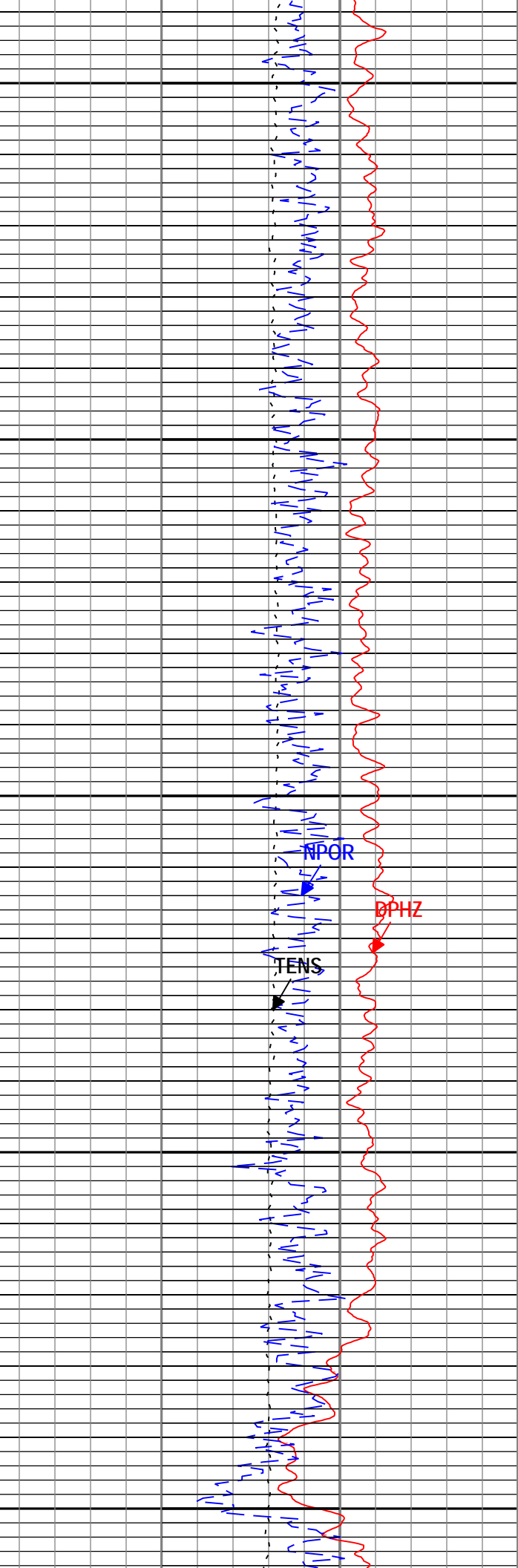
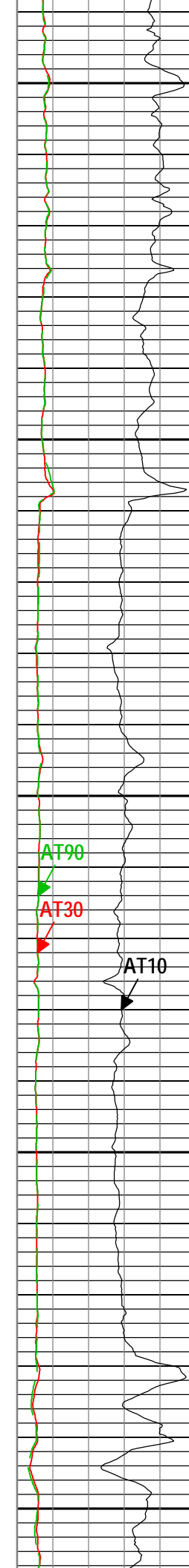
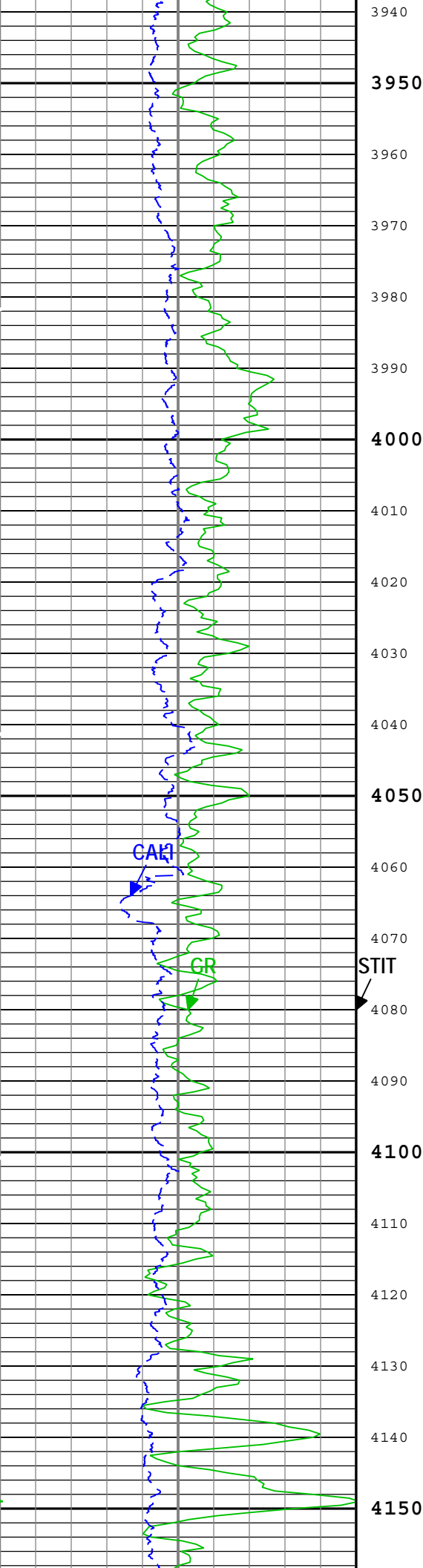


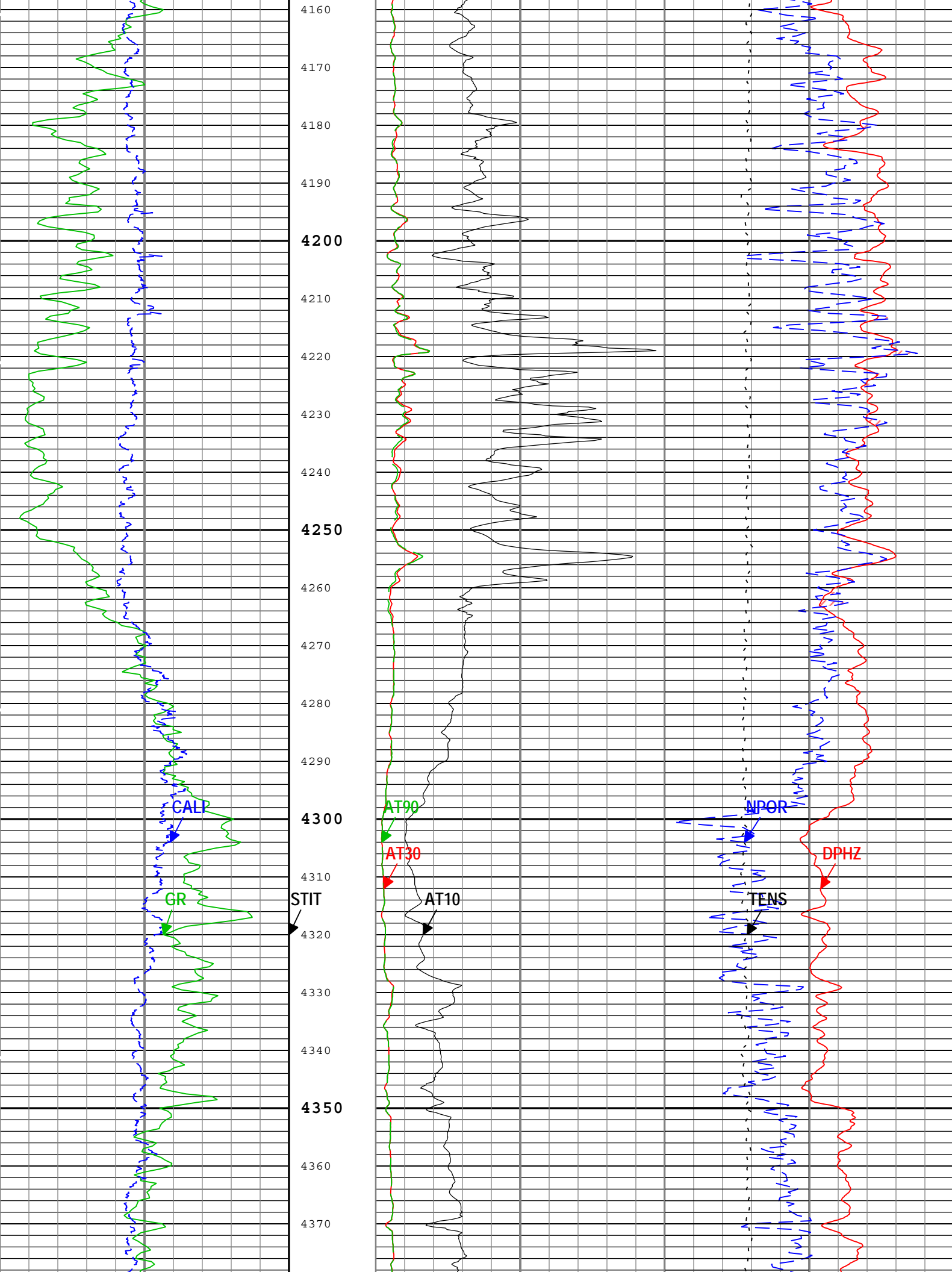




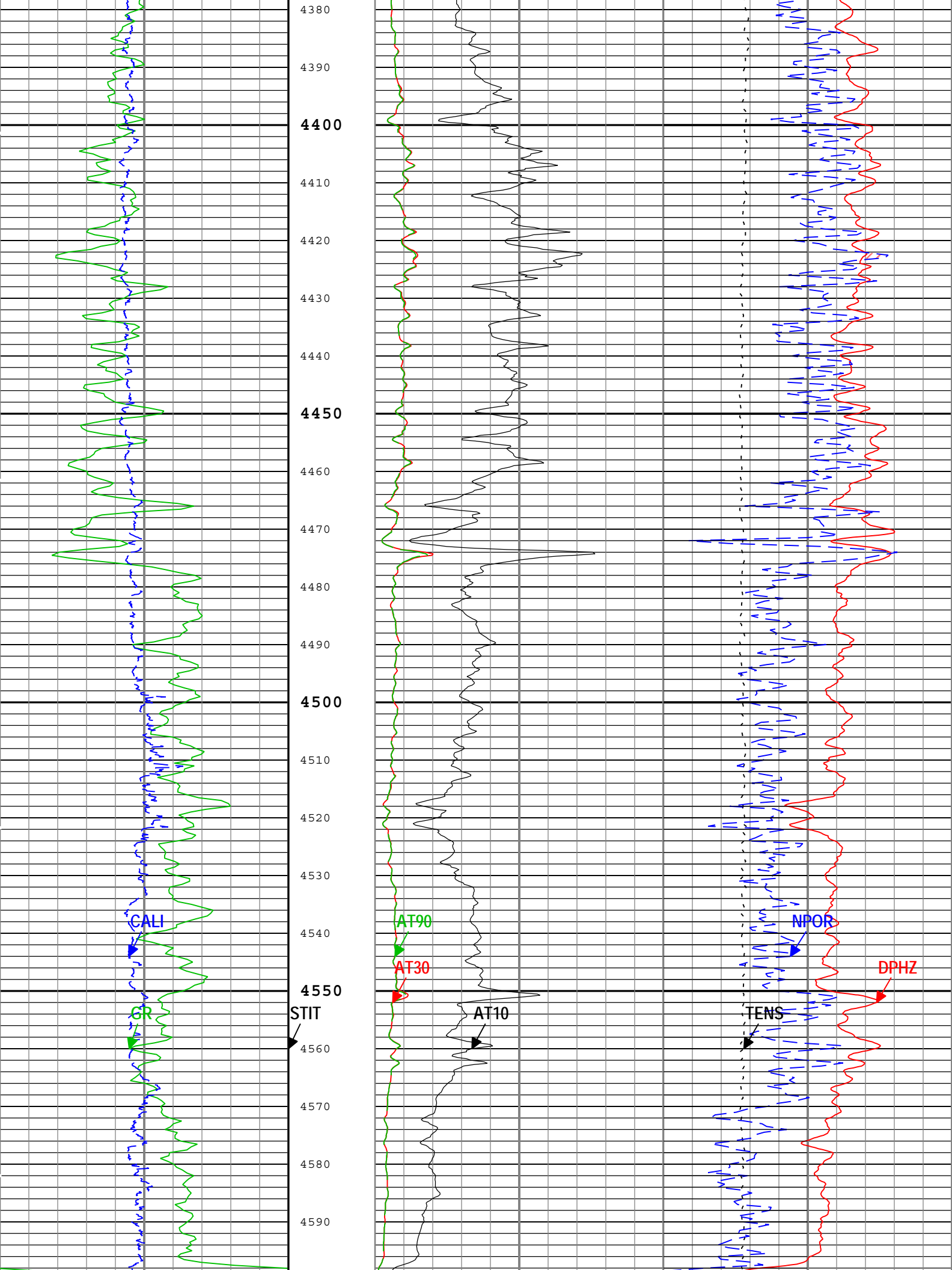


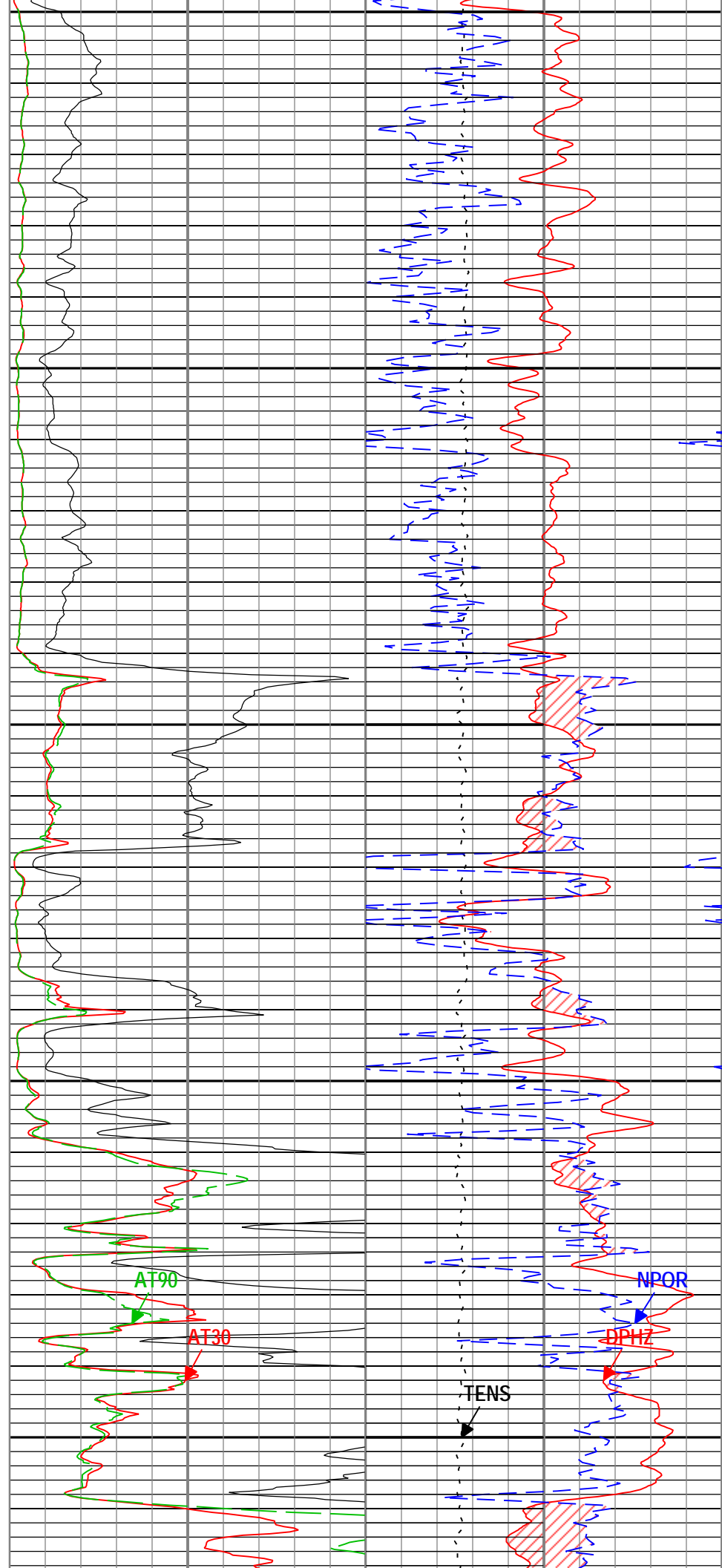
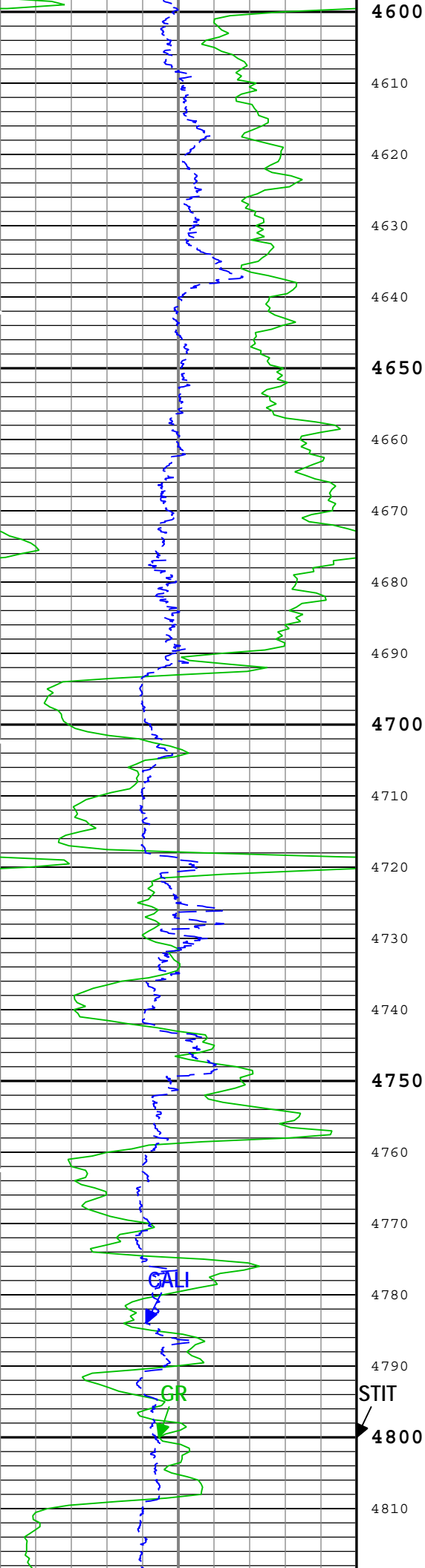


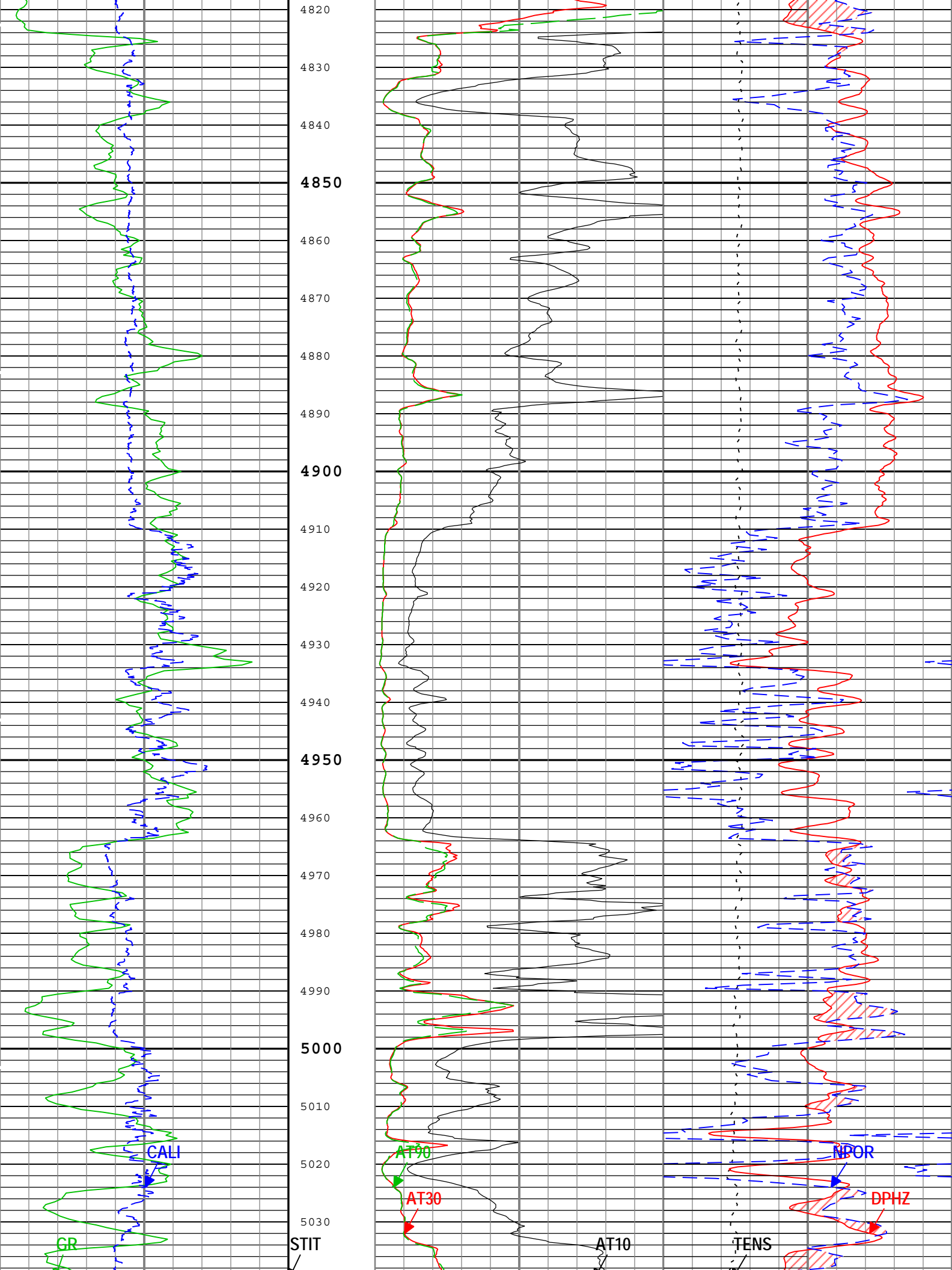


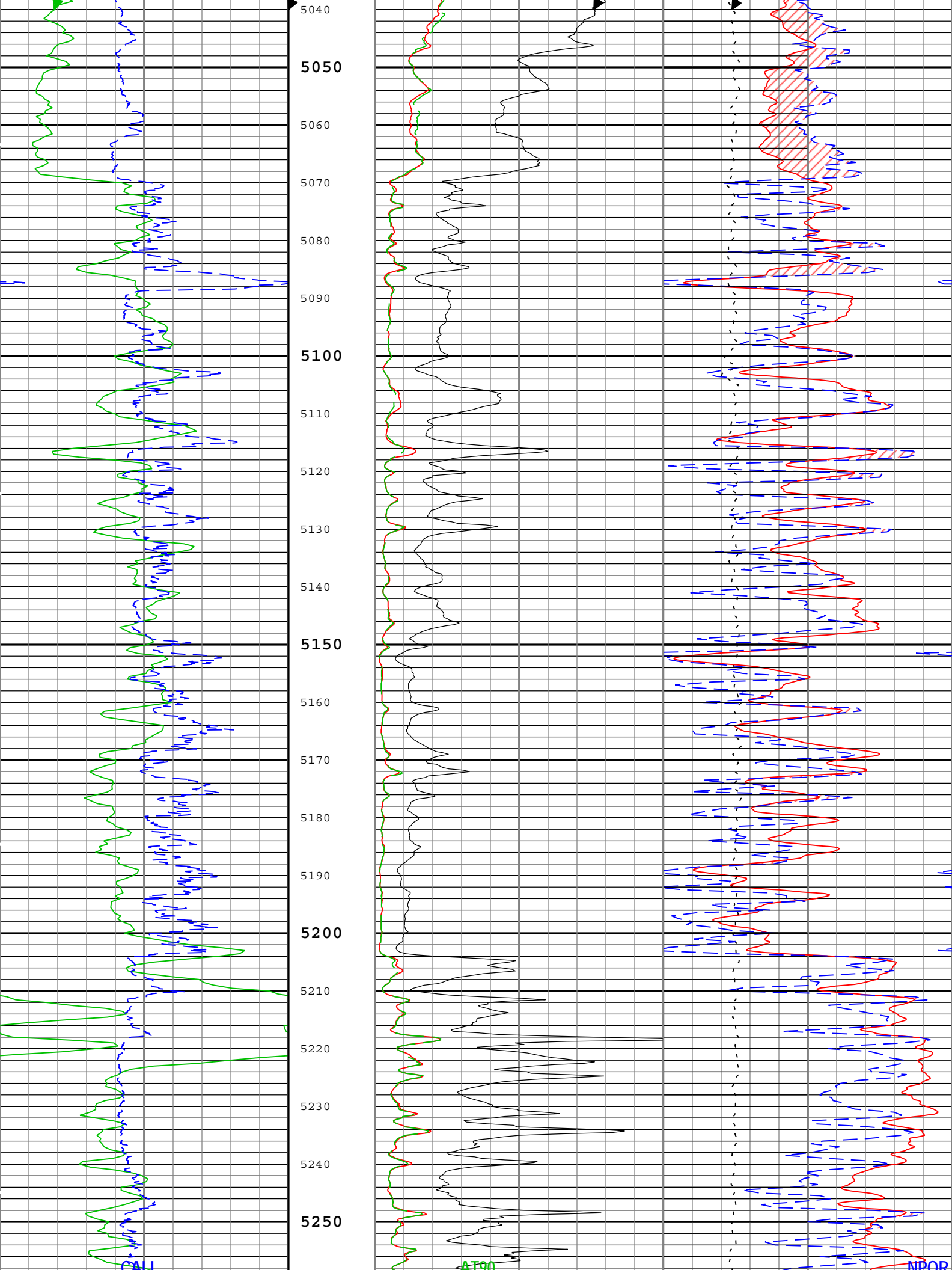


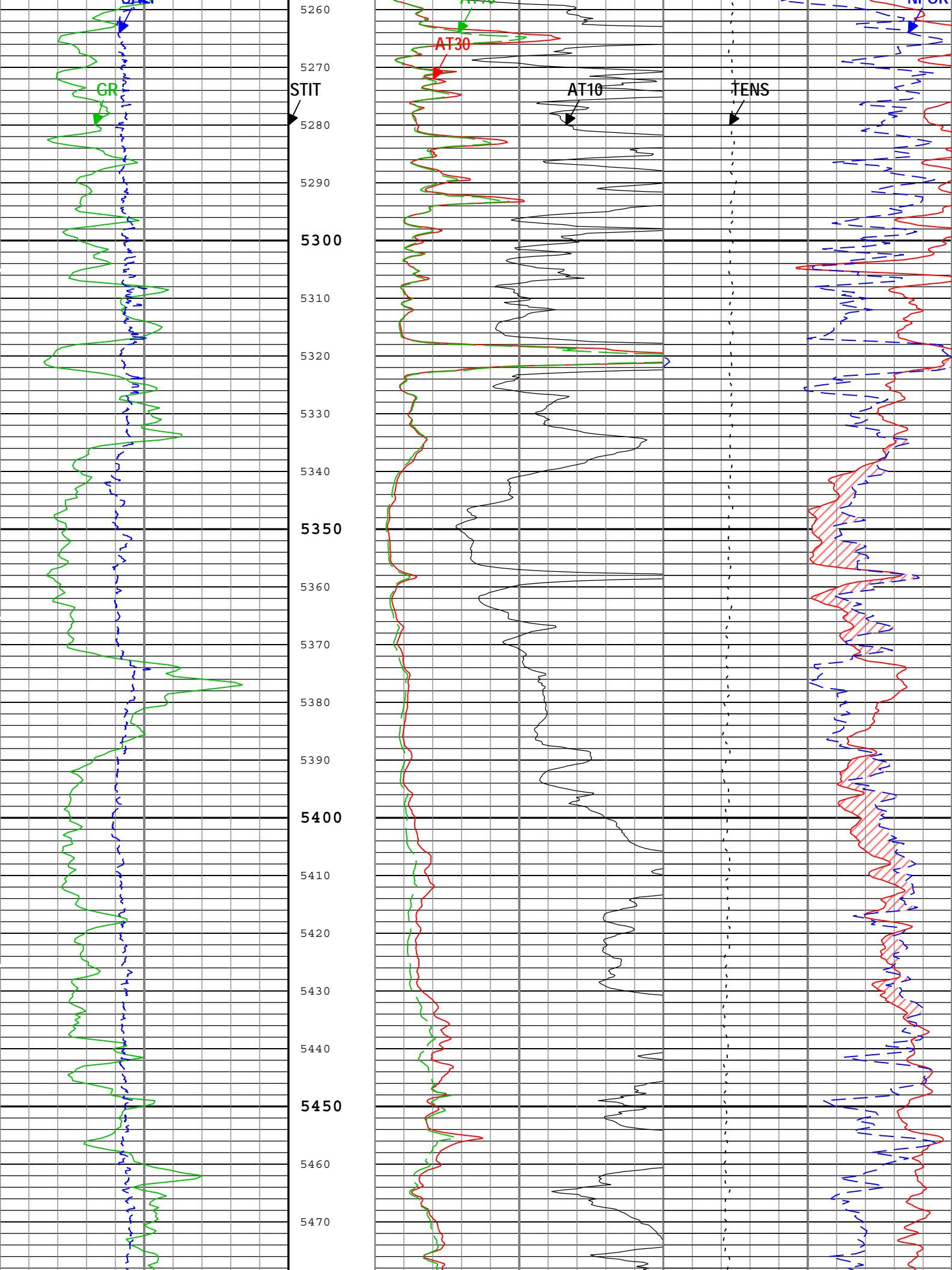


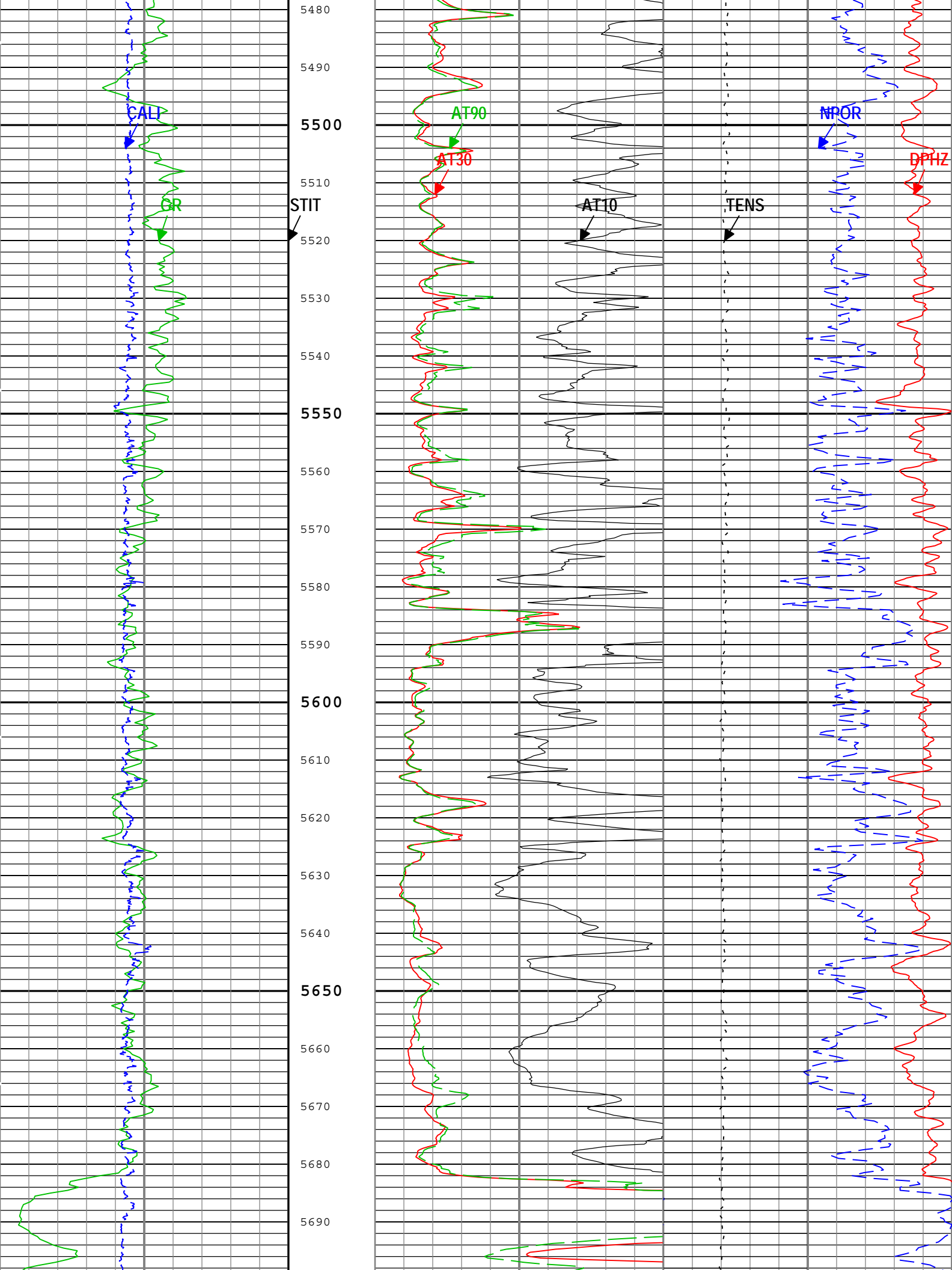


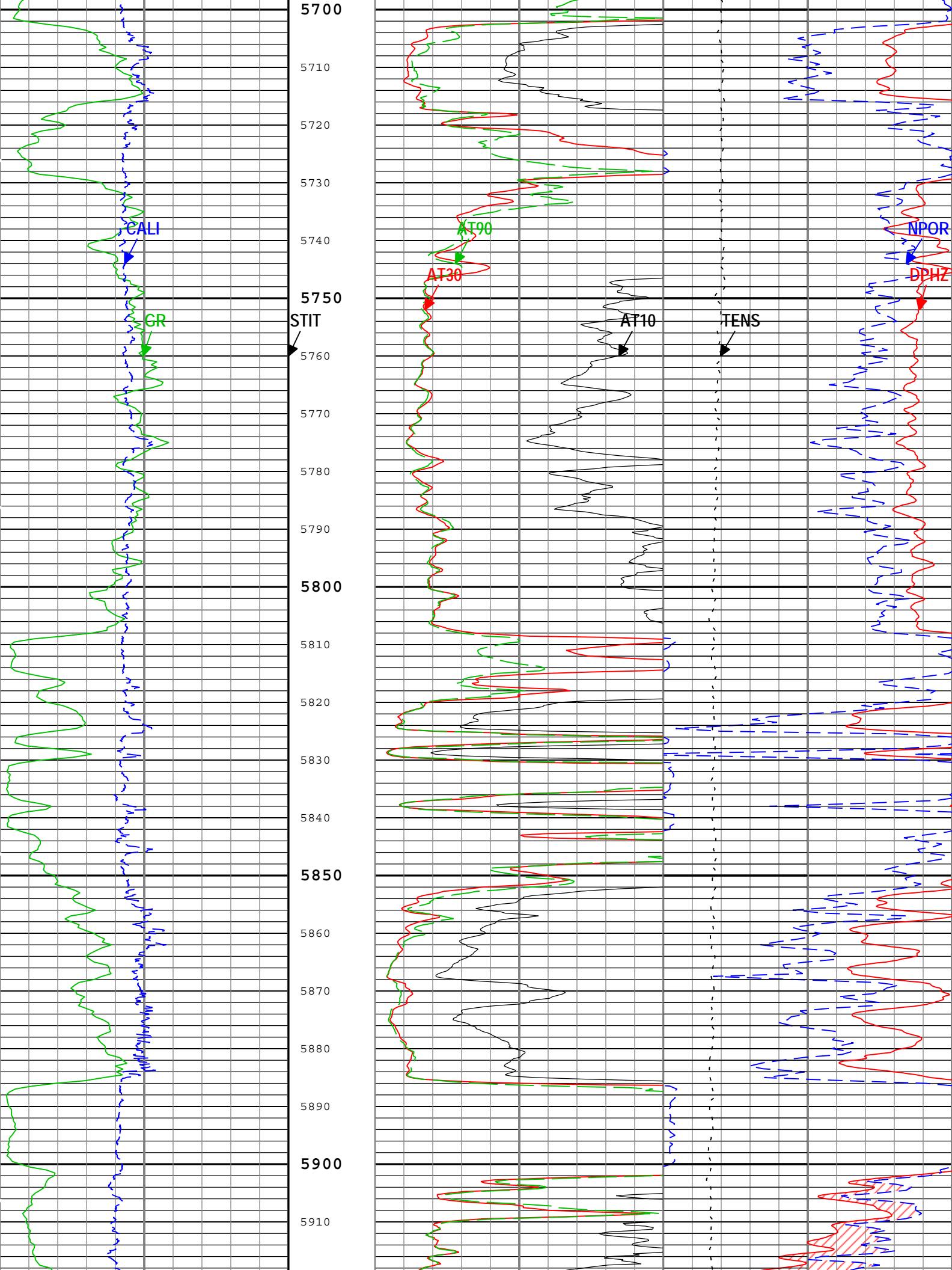


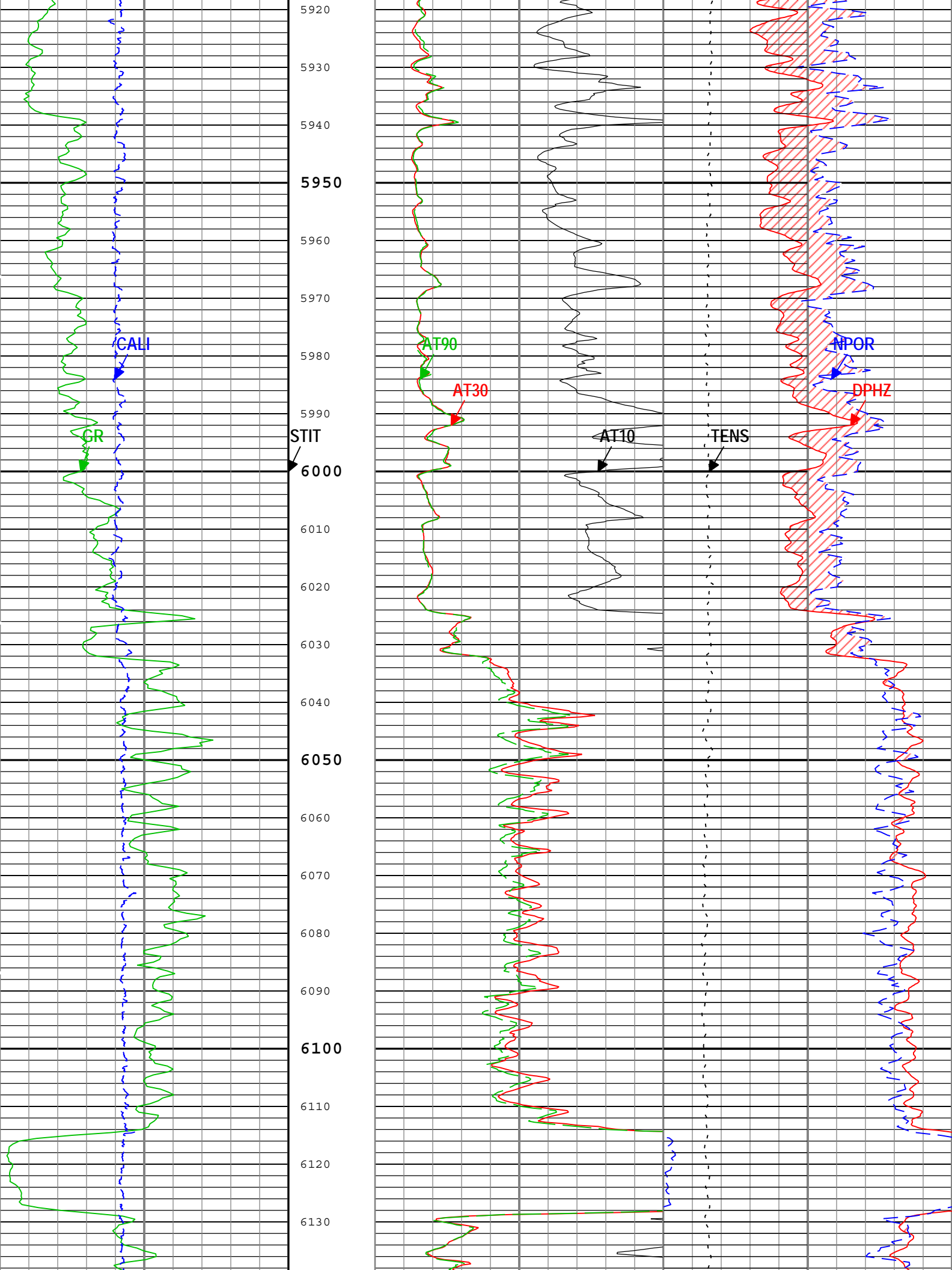




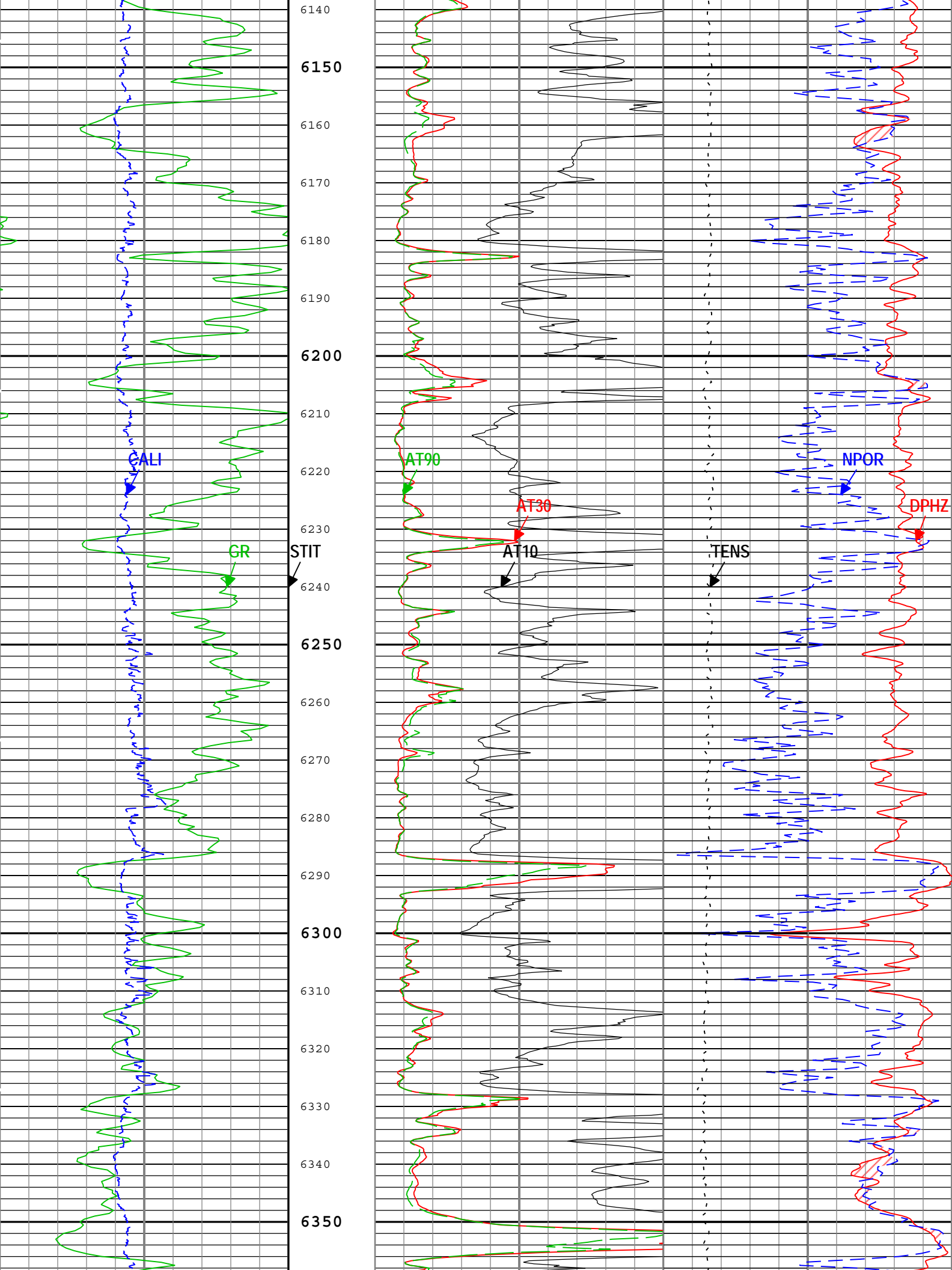


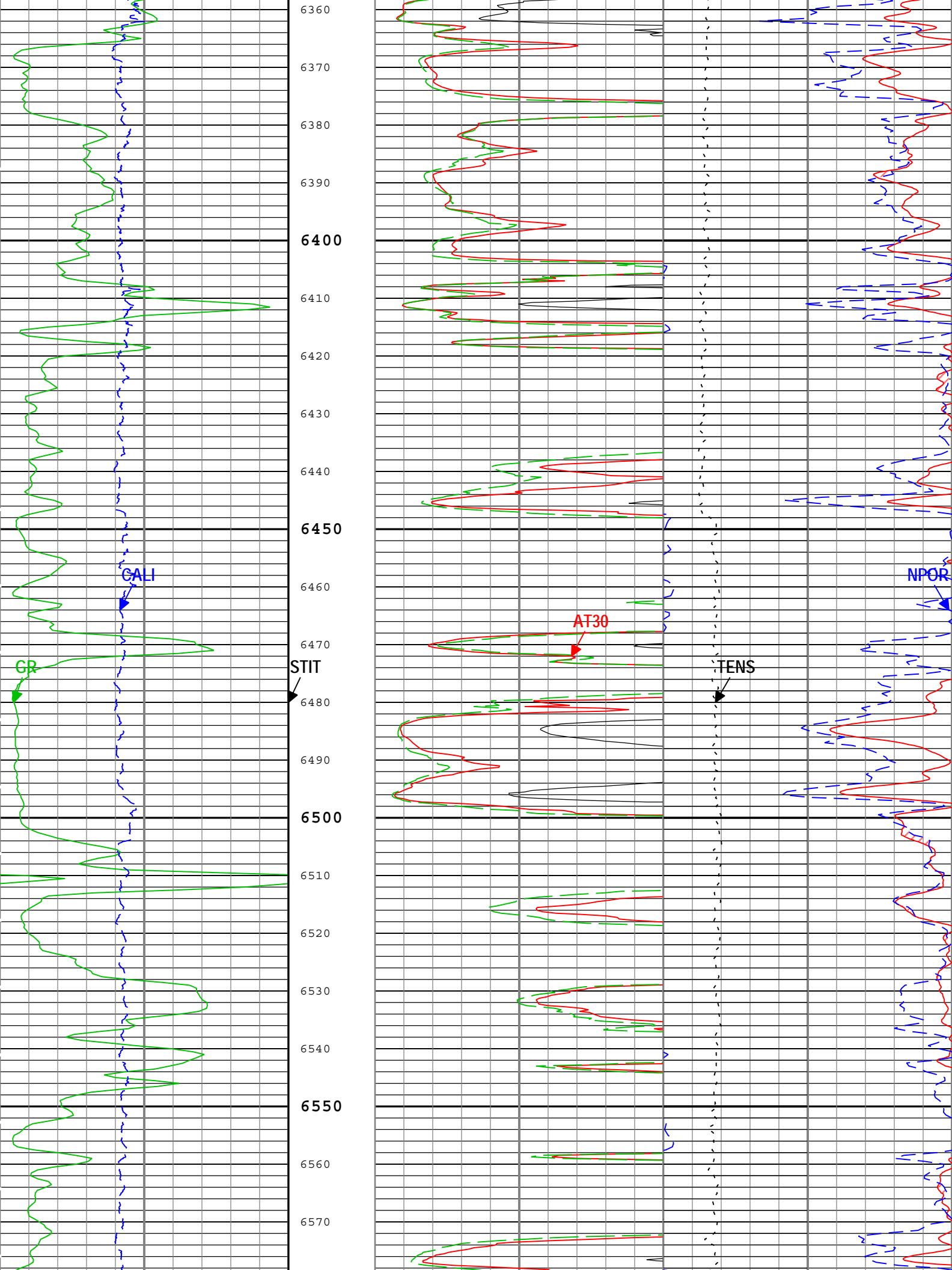


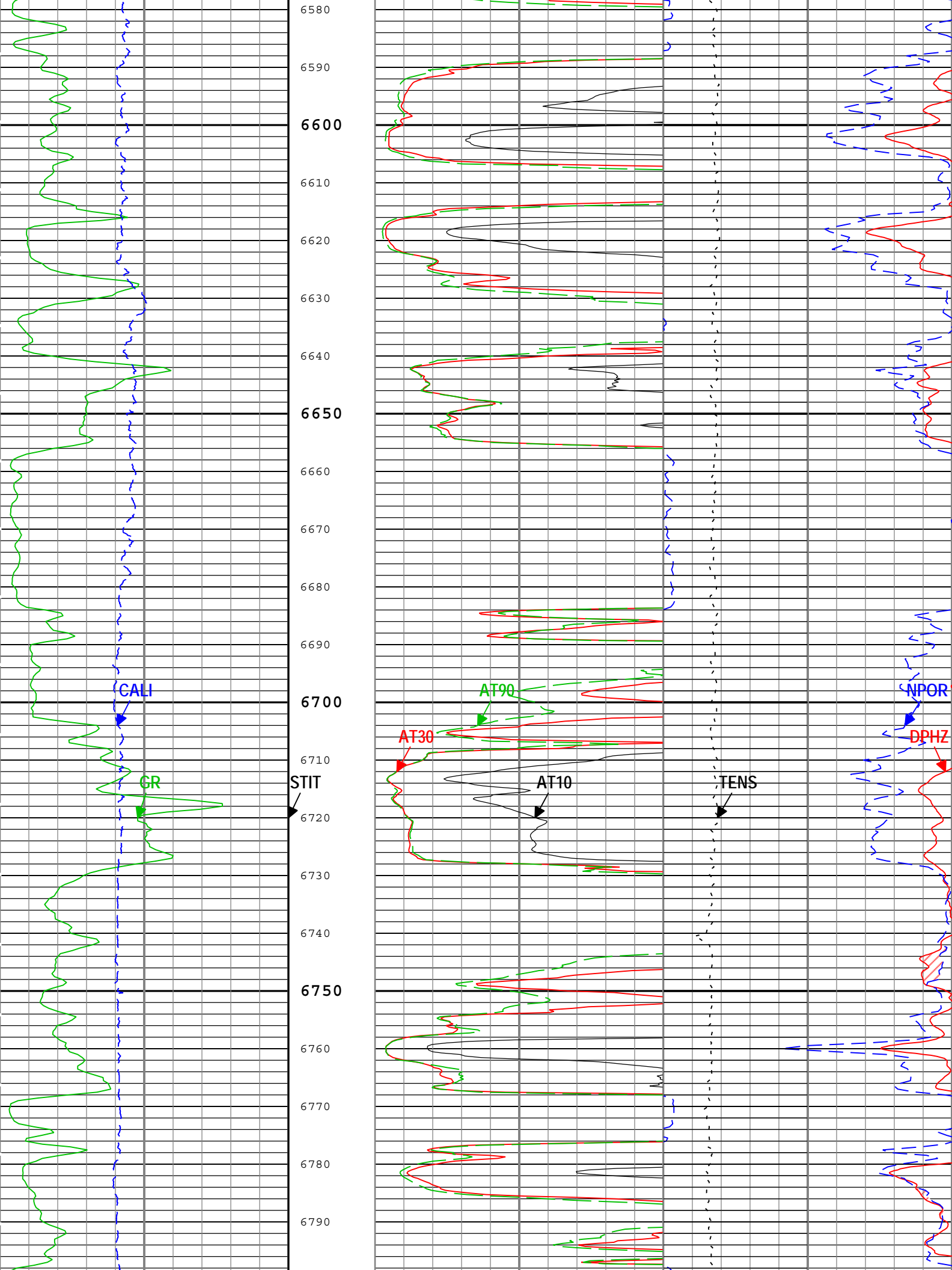


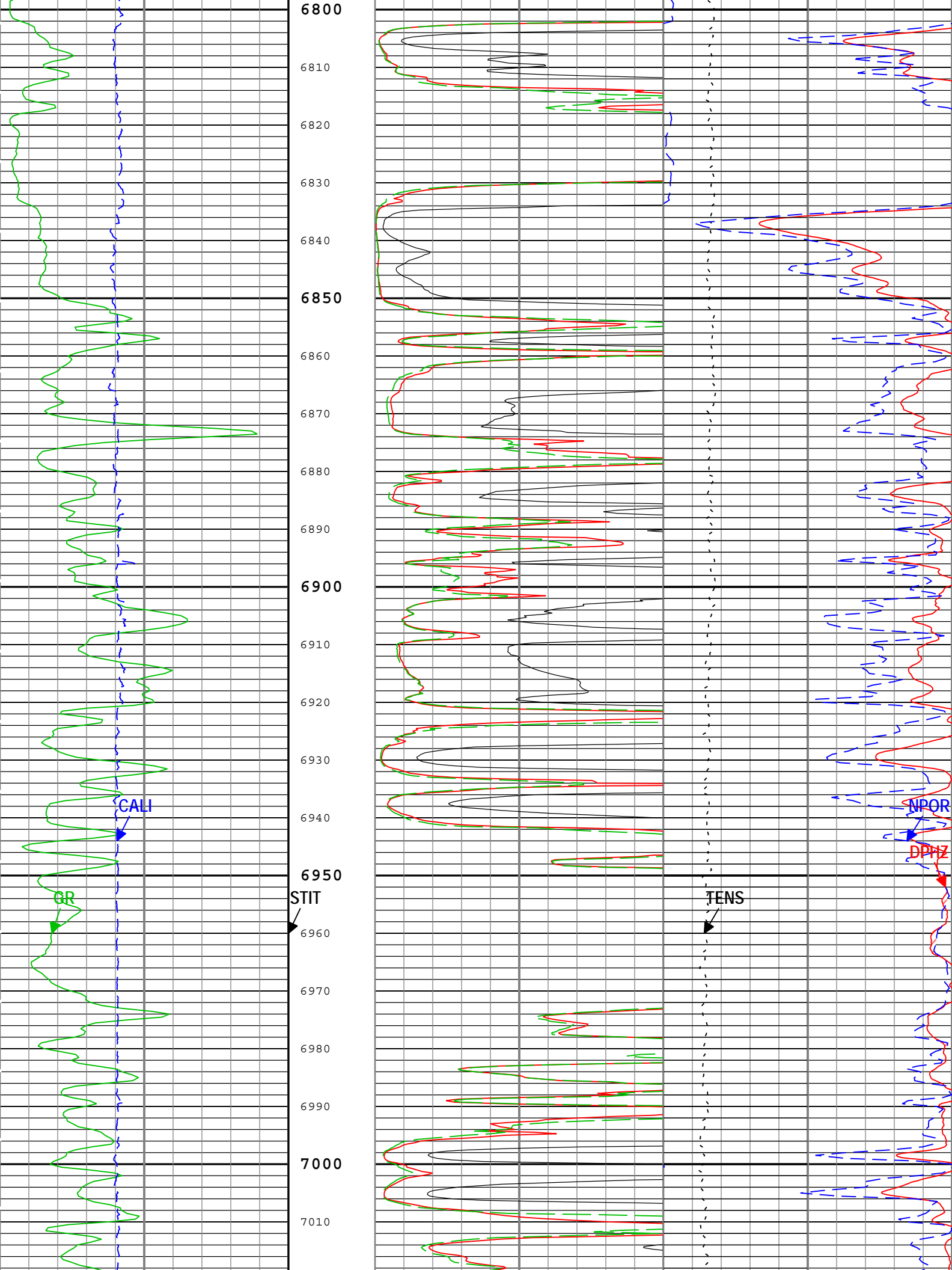


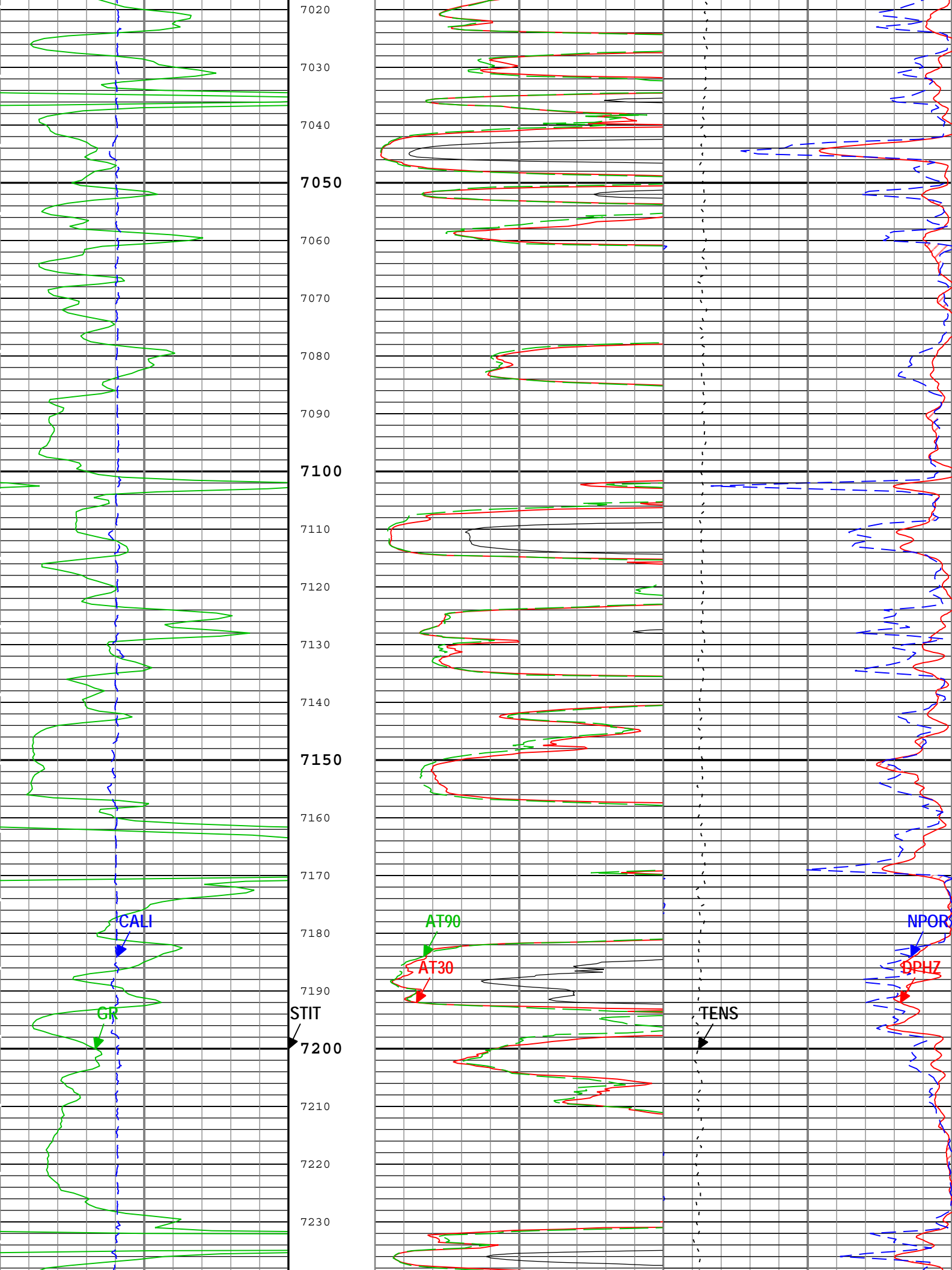


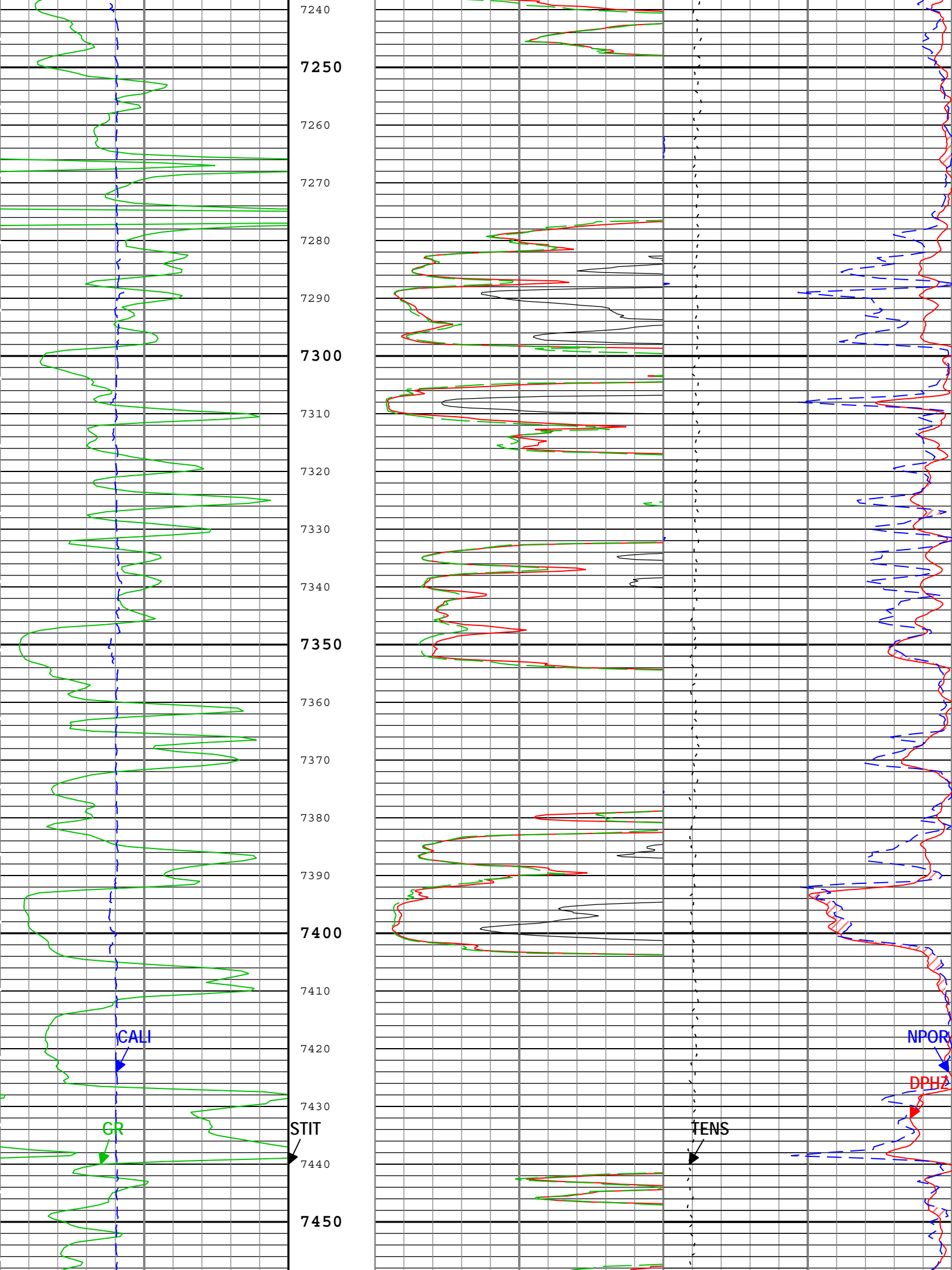


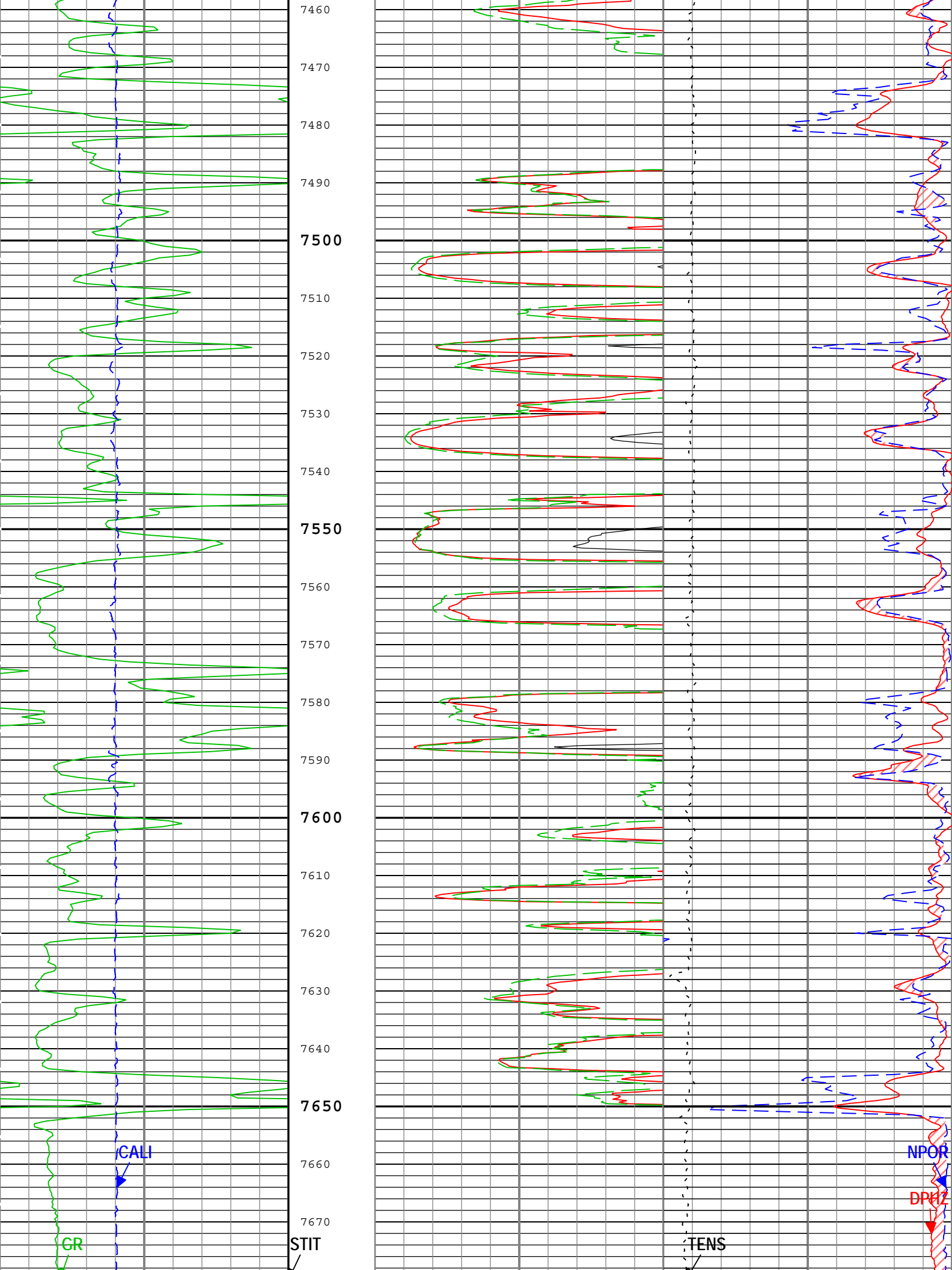


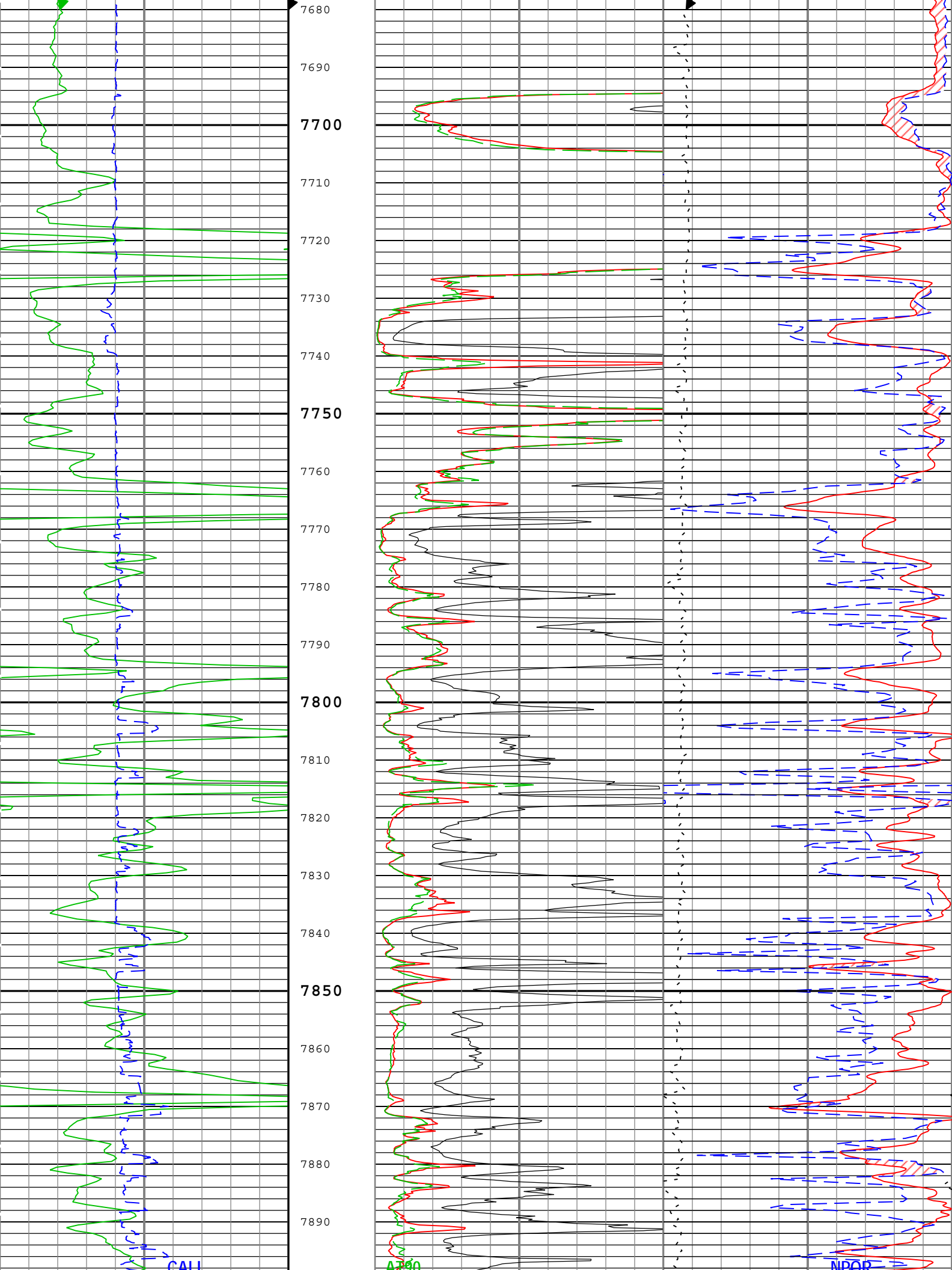




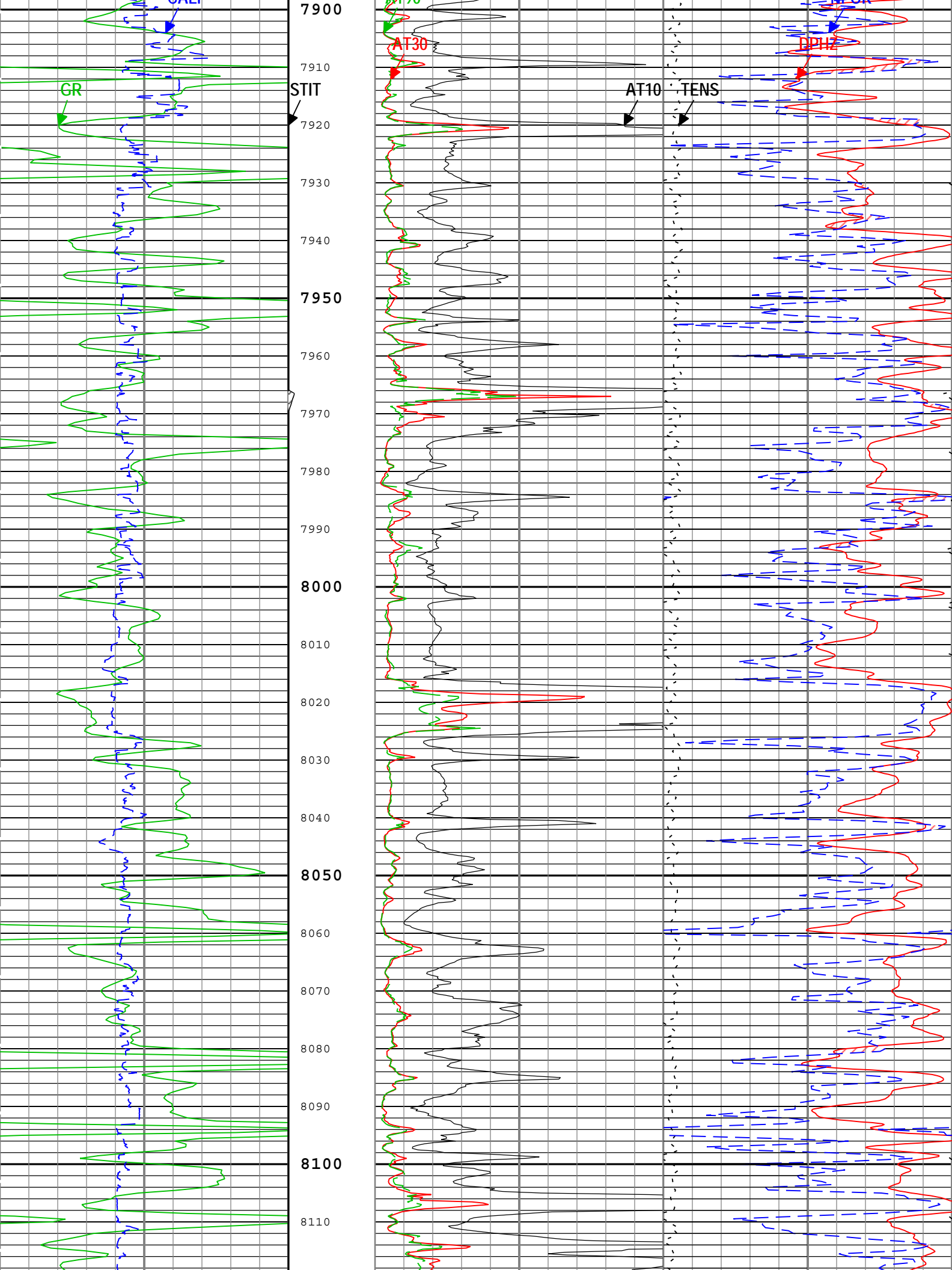


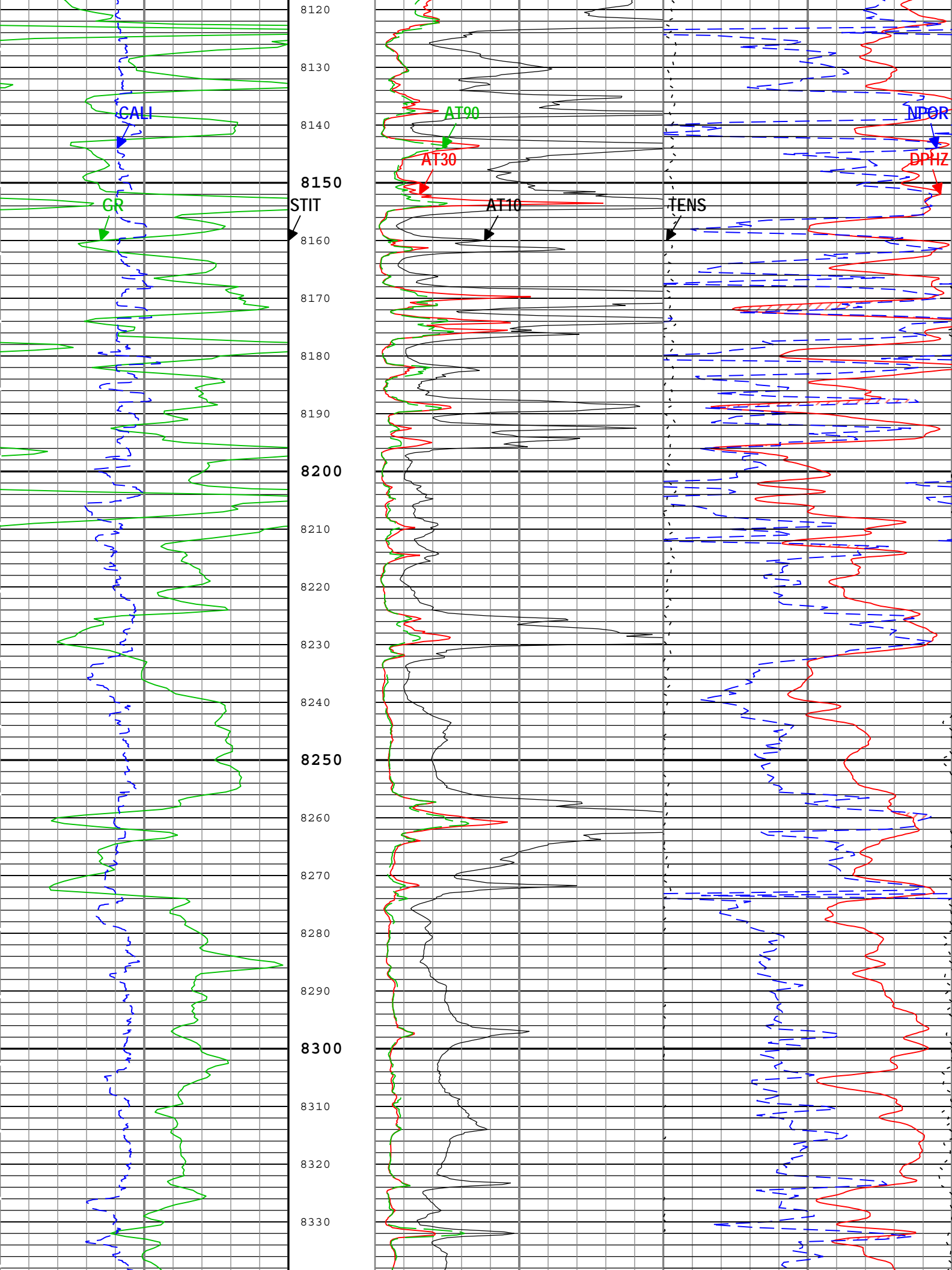


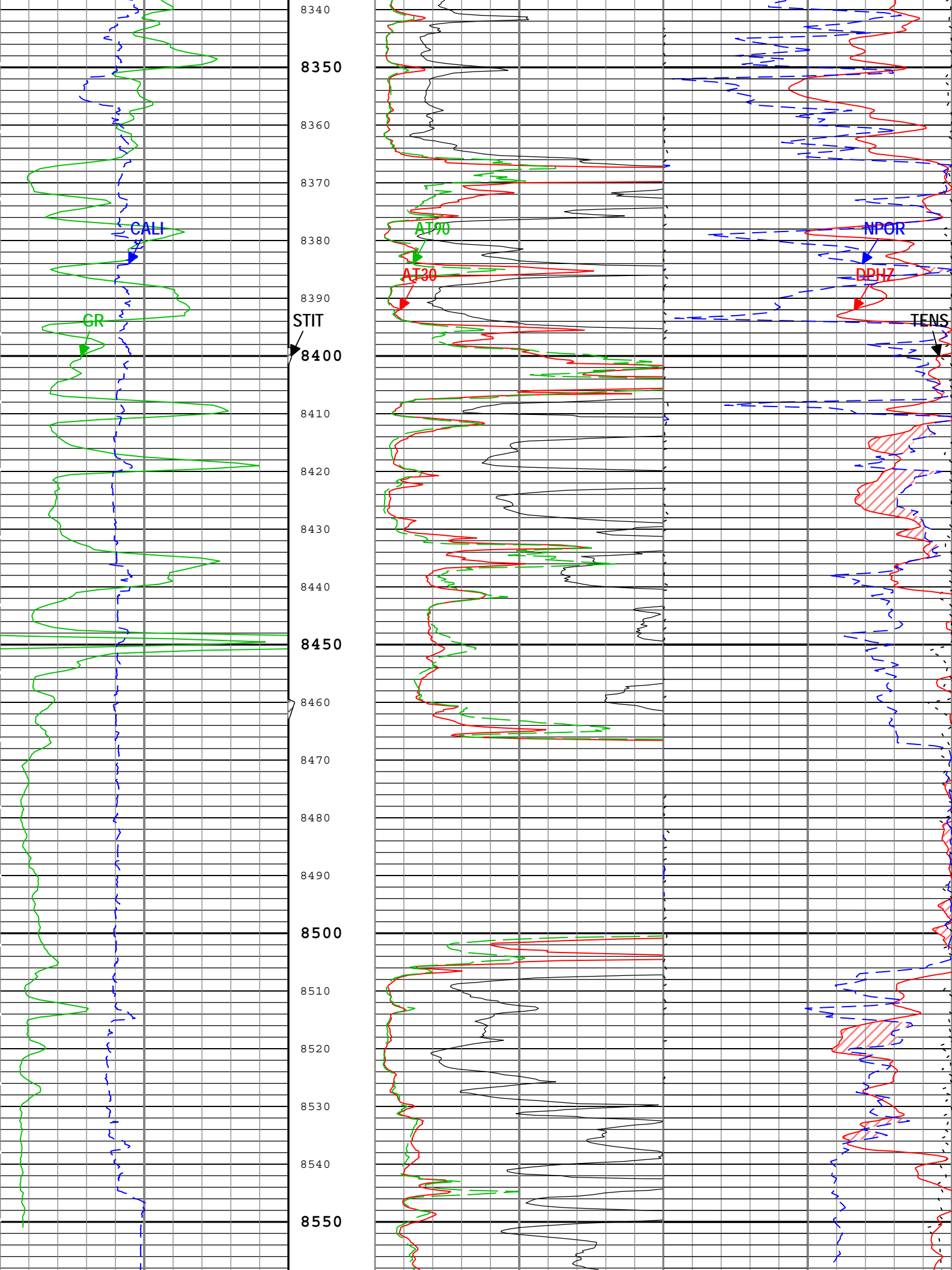


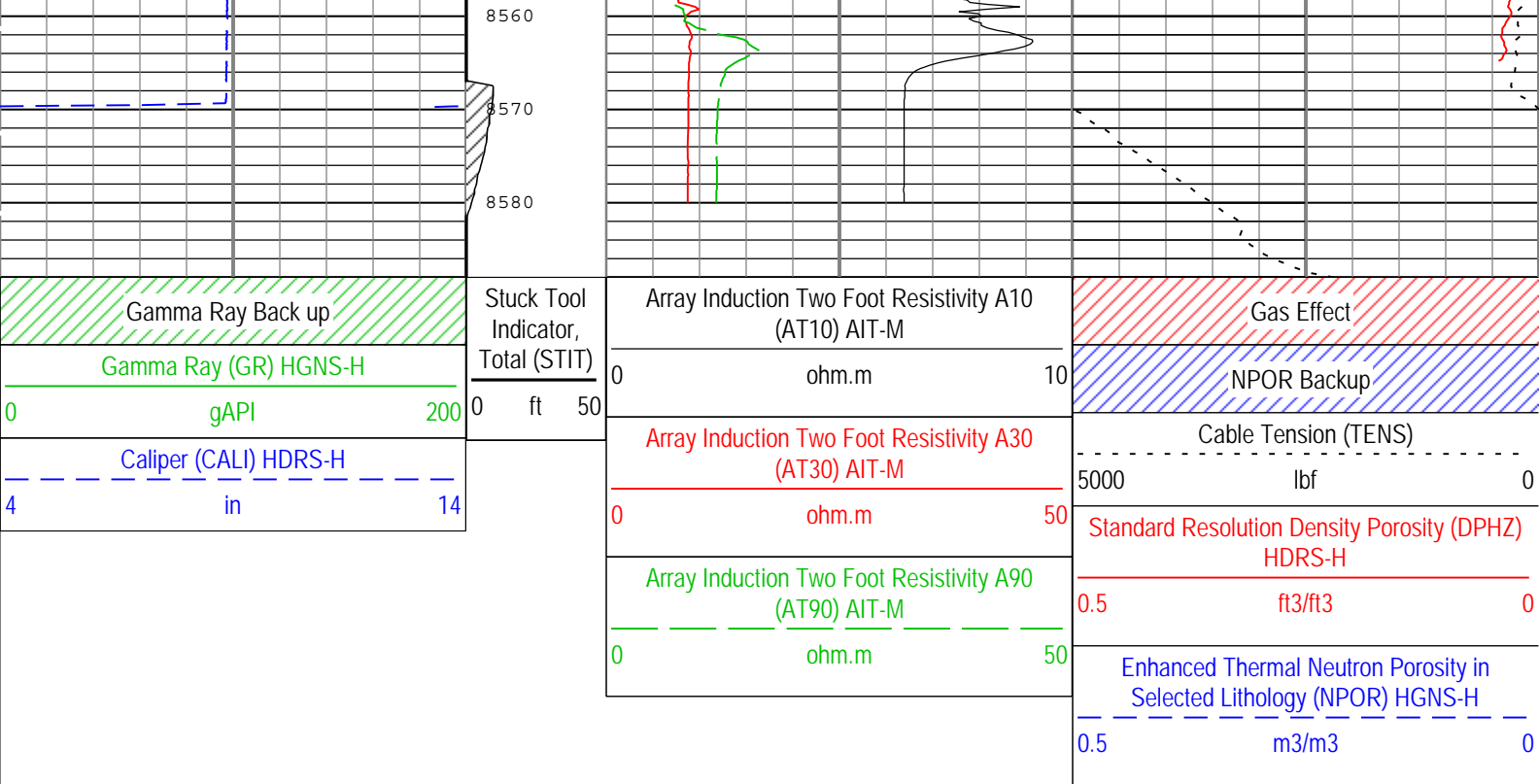












TIME\_1900 - Time Marked every 60.00 (s)

Description: HGNS standard resolution porosities for Platform Express    Format: Log ( EMD 5in Triple Combo Linear )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 10-Nov-2014 10:20:13

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Standoff	
ACDE	Array Induction Casing Detection Enable	AIT-M	No	
ASTA	Array Induction Tool Standoff	AIT-M	1	in
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BHT	Bottom Hole Temperature	Borehole	194	degF
BS	Bit Size	WLSESSION	7.875	in
BSAL	Borehole Salinity	Borehole	1400	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	544	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DFD	Drilling Fluid Density	Borehole	8.9	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DHC	Density Hole Correction	HDRS-H	Bit Size	
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	68	degF
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.15	ohm.m

SOCO	Standoff Correction Option	HGNS-H	Yes	
TD	Total Measured Depth	Borehole	8568	ft

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	840	ft/h

ONE

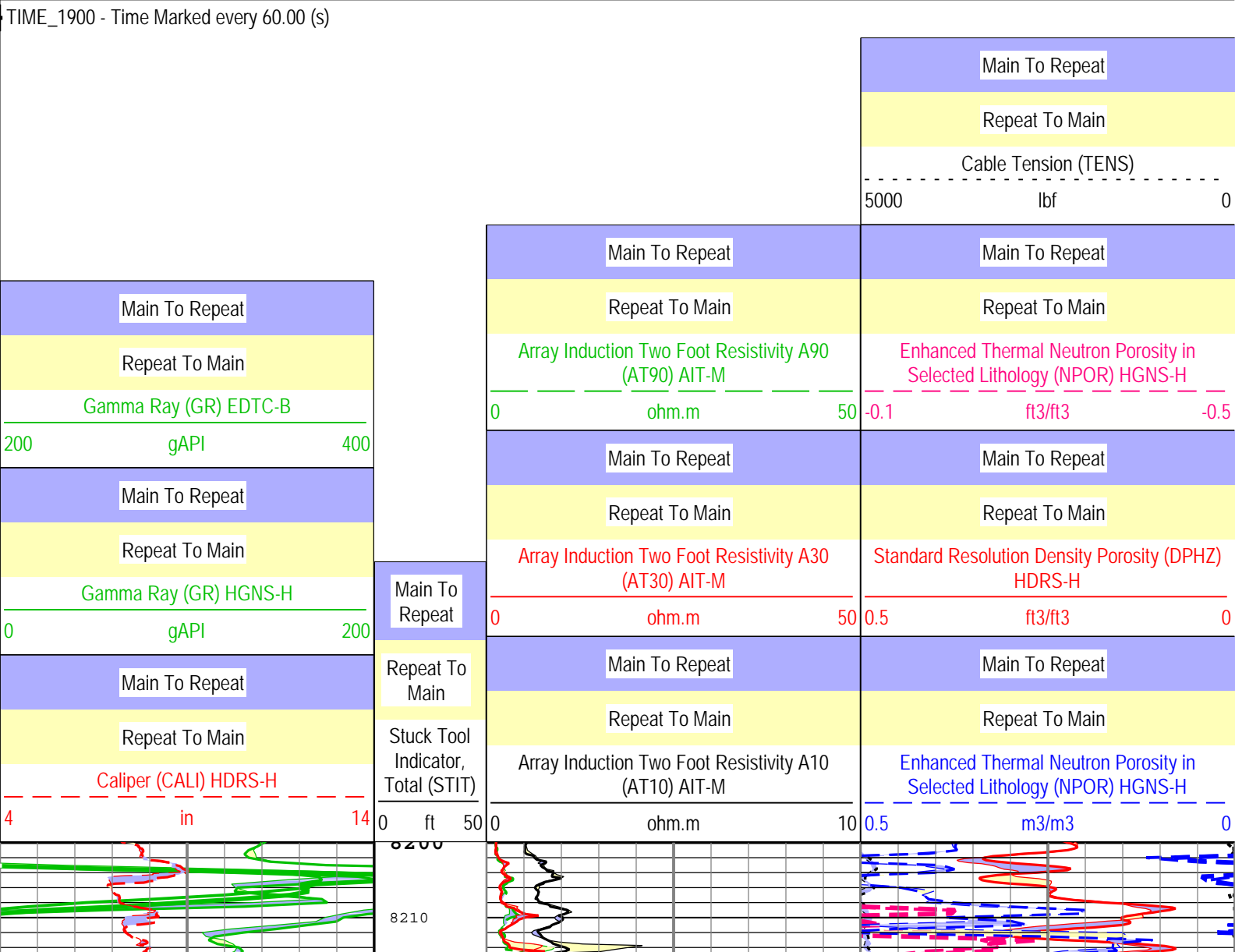
Triple Combo Repeat Analysis

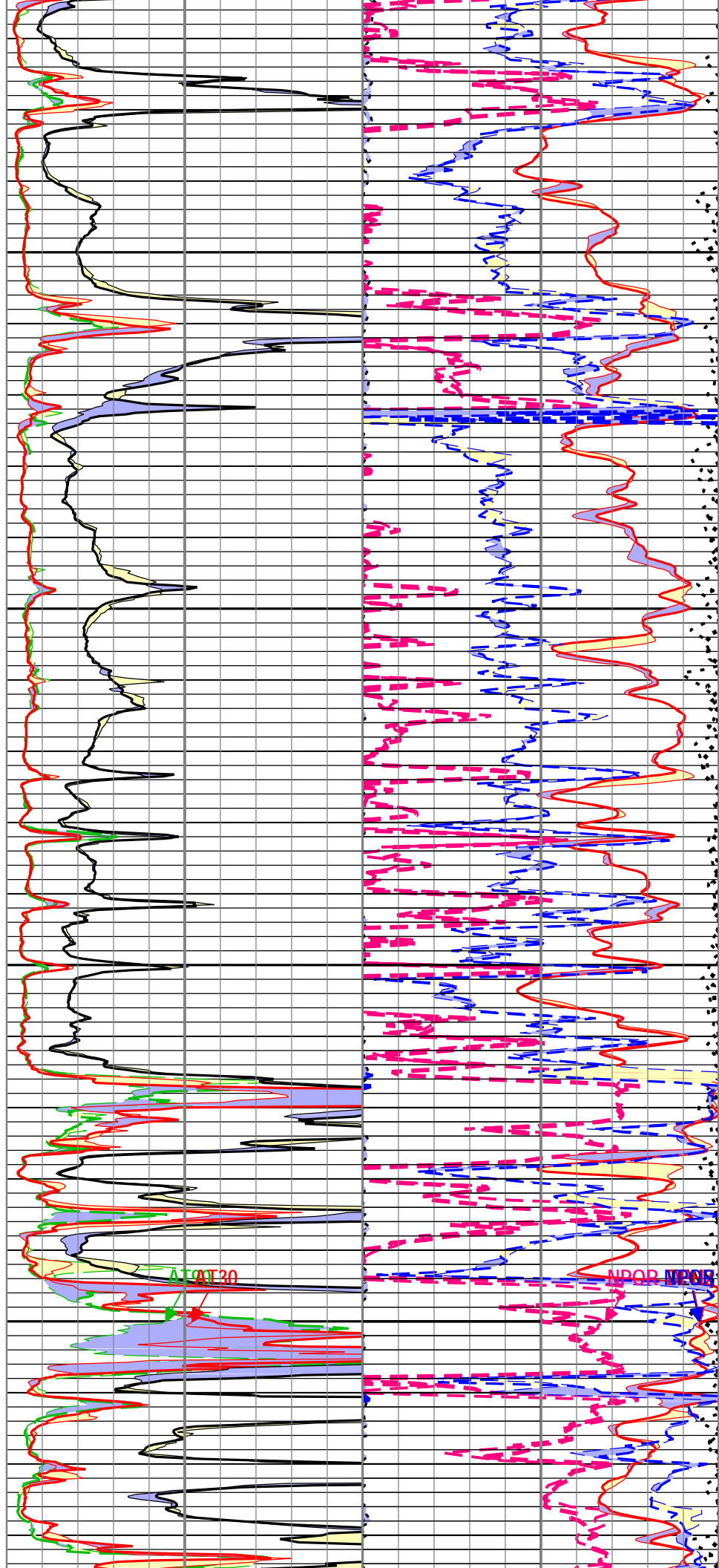
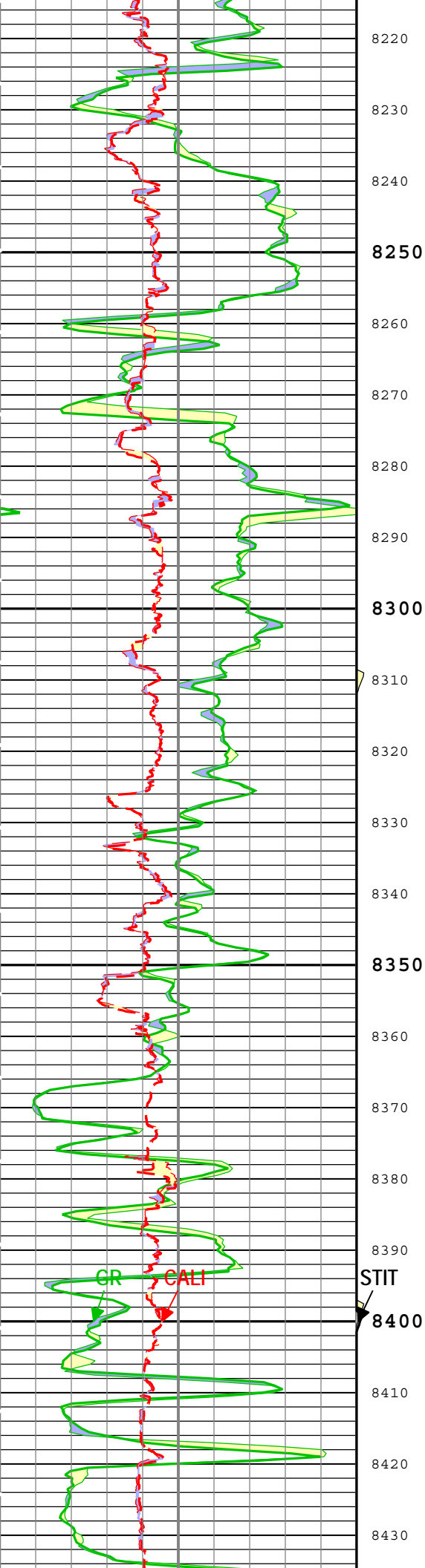
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	8152.55 ft	8583.84 ft	10-Nov-2014 4:13:40 AM	10-Nov-2014 4:52:19 AM	ON	14.06 ft	Yes
ONE	Log[5]:Up	Up	348.49 ft	8588.12 ft	10-Nov-2014 4:56:43 AM	10-Nov-2014 9:20:17 AM	ON	14.40 ft	Yes

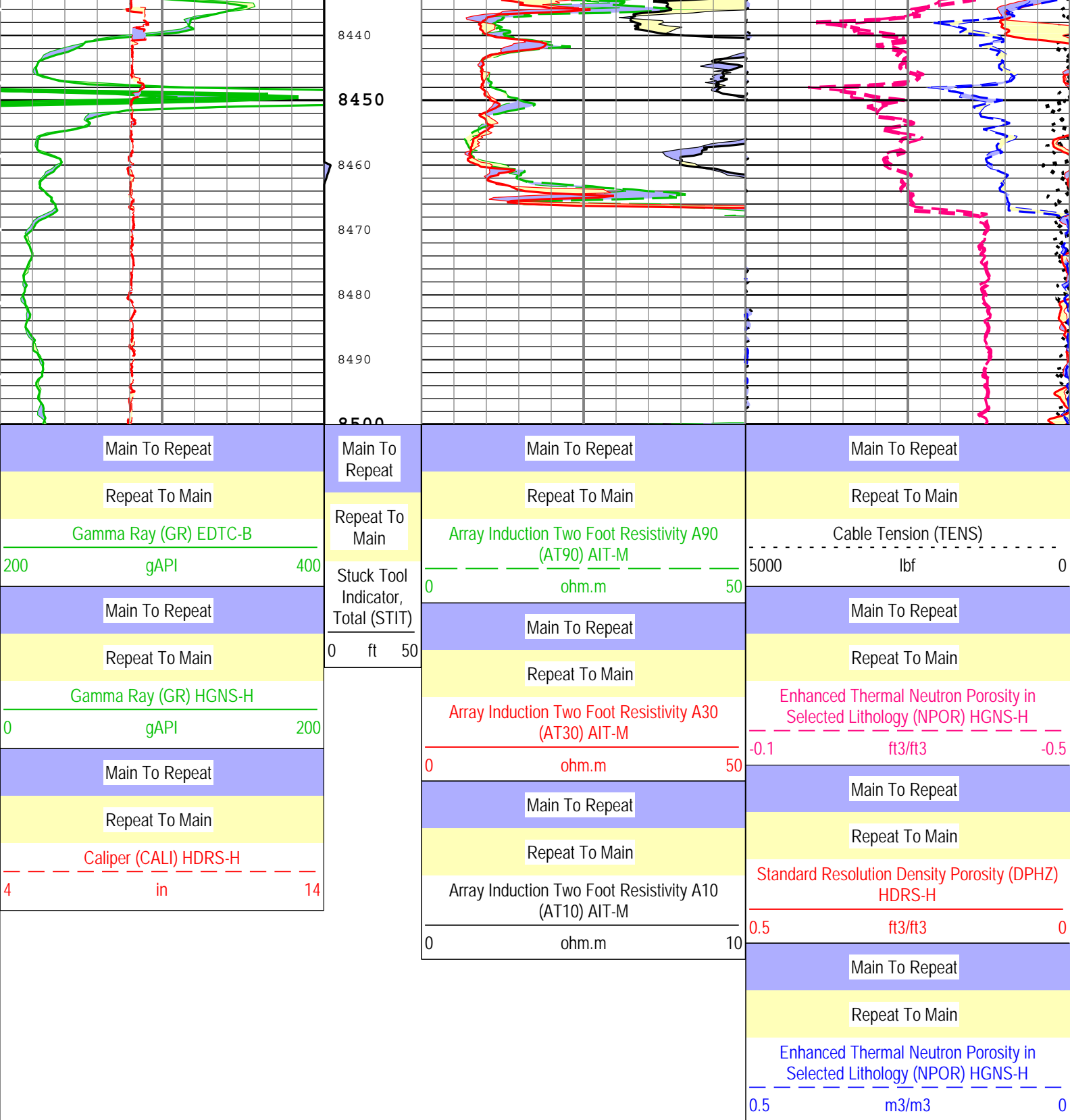
All depths are referenced to toolstring zero

Log	Company:Cascade Petroleum LLC      Well:Gaede 9S-55W-8-16 ONE: Log[4]:Up:S008
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Description: HGNS standard resolution porosities for Platform Express    Format: Log ( EMD 5in Triple Combo Linear RA )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 10-Nov-2014 10:20:16







TIME\_1900 - Time Marked every 60.00 (s)

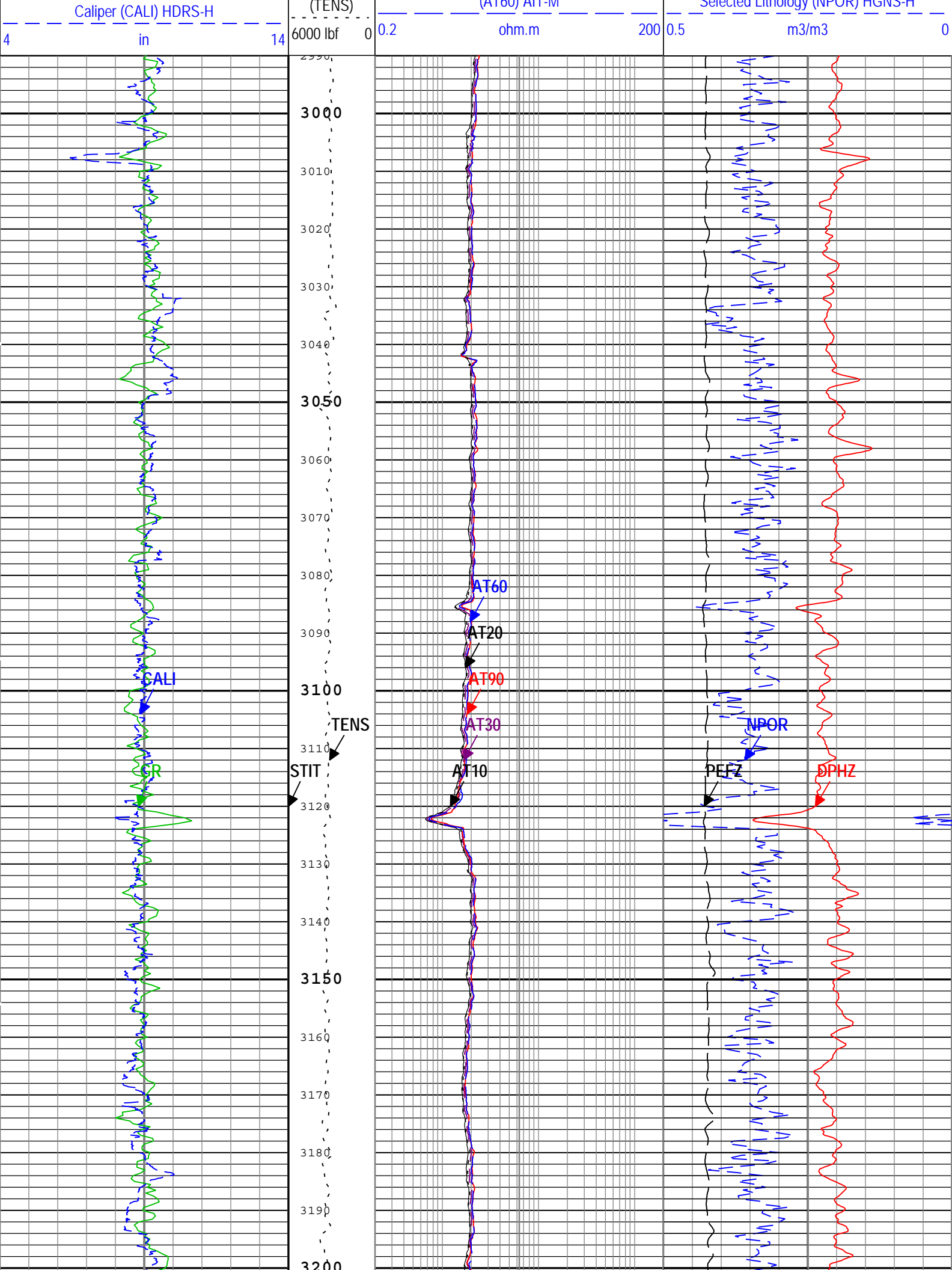
Description: HGNS standard resolution porosities for Platform Express    Format: Log ( EMD 5in Triple Combo Linear RA )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 10-Nov-2014 10:20:16

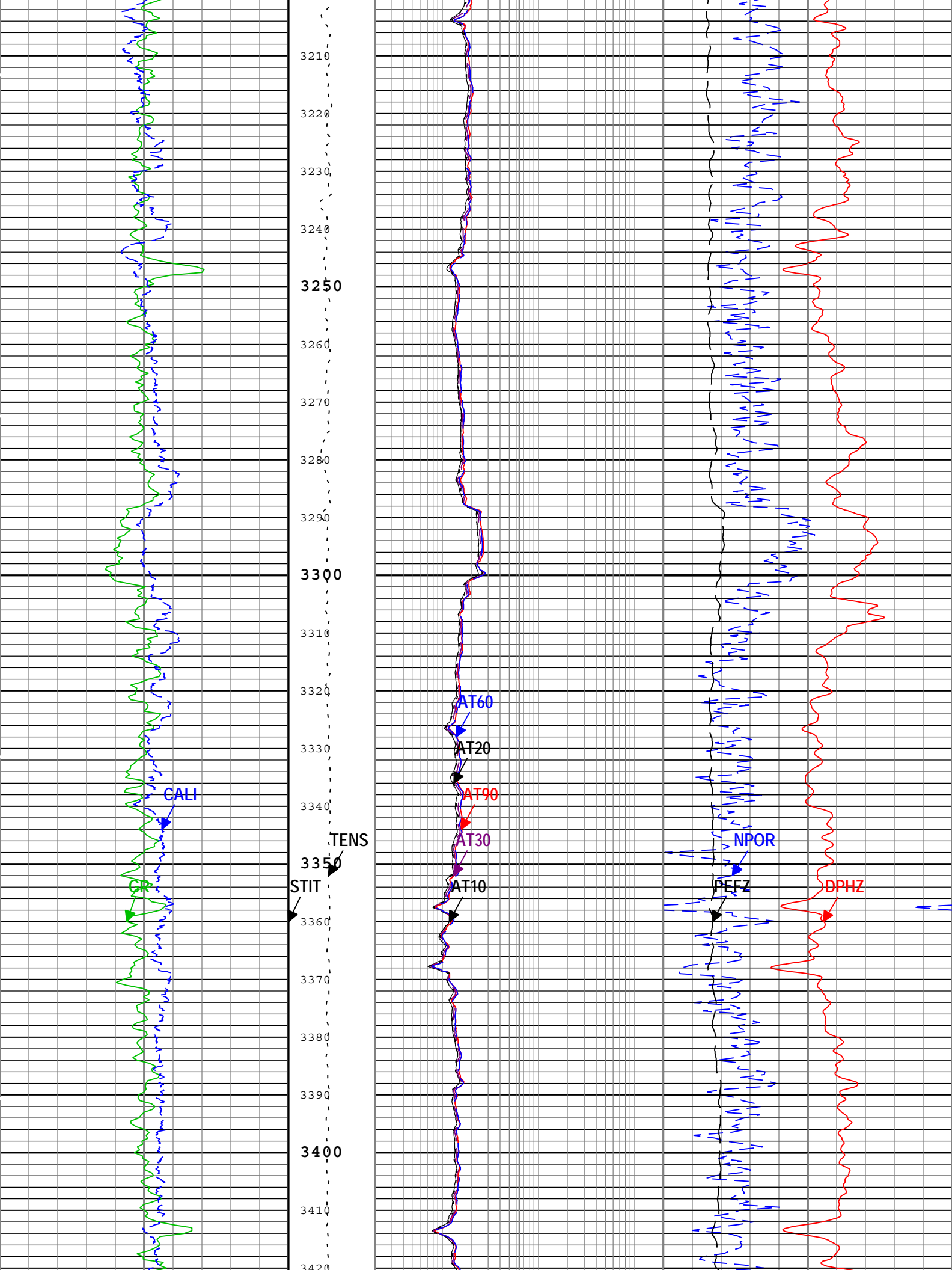
ONE	
Main Pass - 5" Triple Combo	
Software Version	
Acquisition System	Version
MaxWell	4.0.9163.3000
Application Patch	Patch-SP-10767_18214-4.0.9163.3001

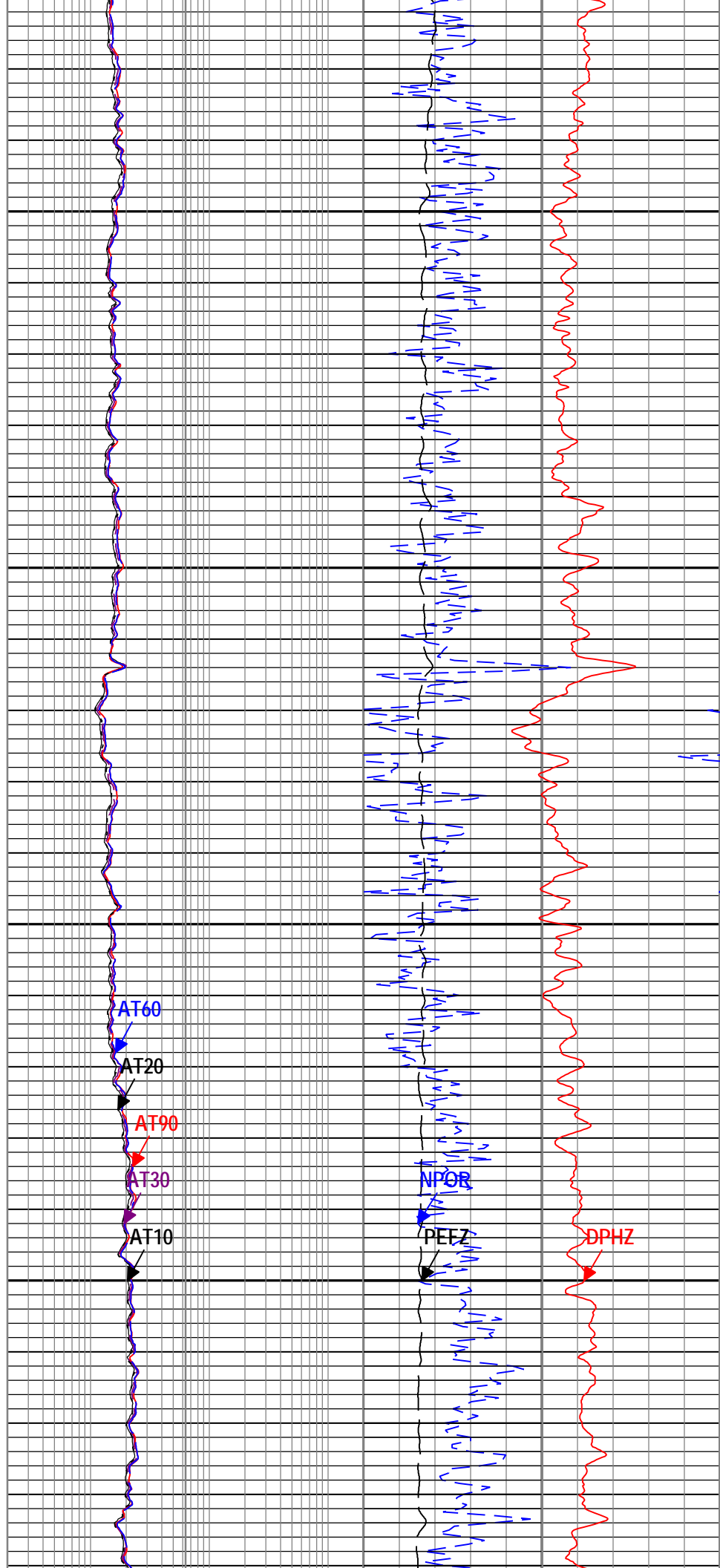
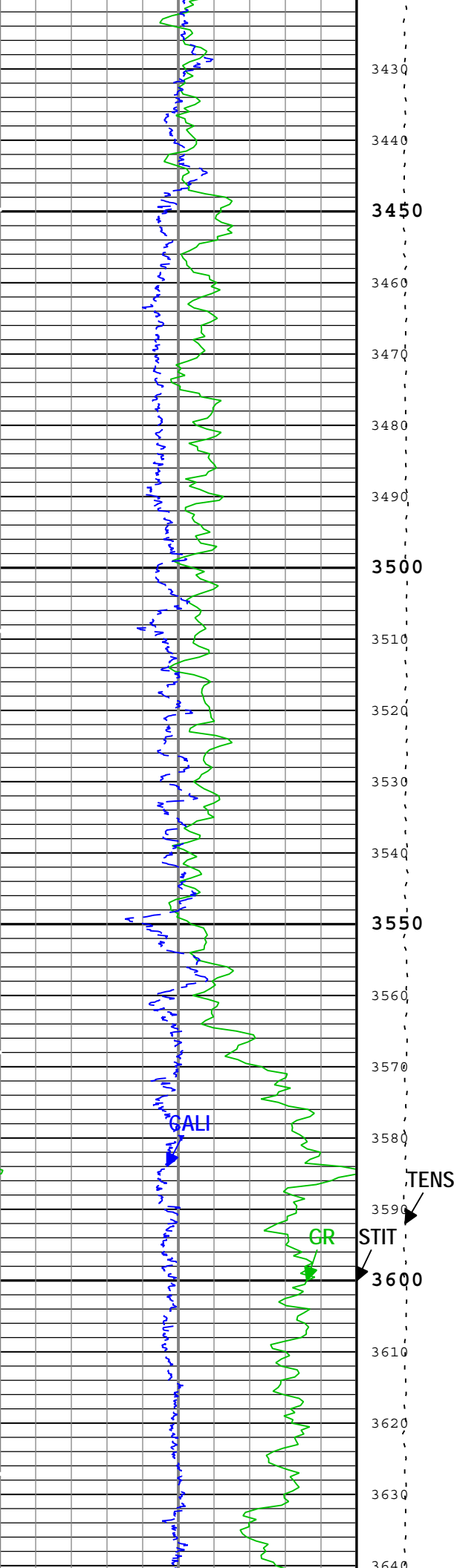


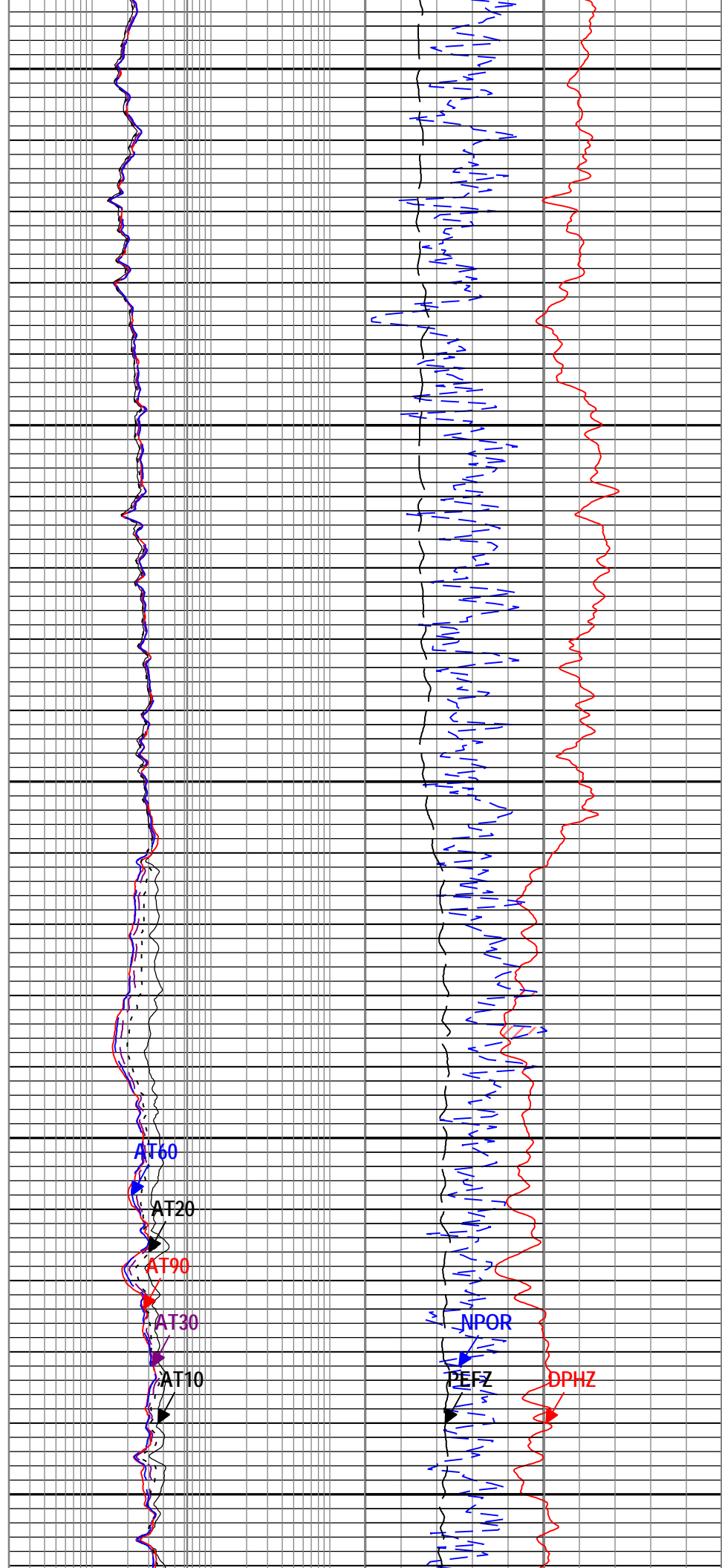
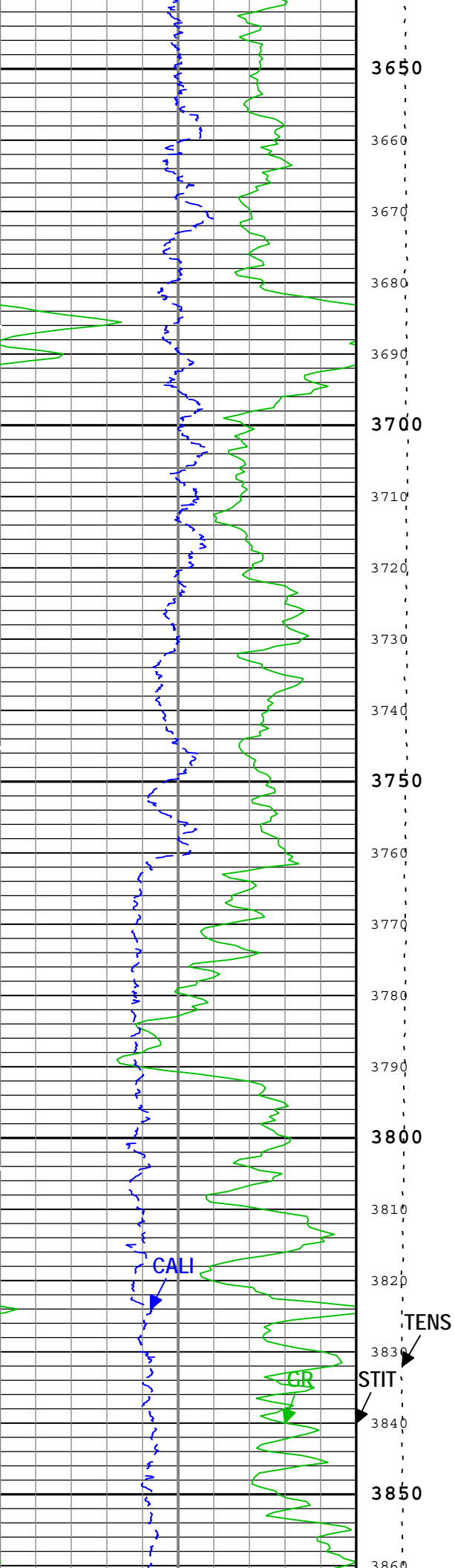
						Patch-NPD_NEXT_C_Fld2-20493-4.0.9434.3002			
						Patch-Hotfix_Task_Tree_GDI_SP2-20806-4.0.9434.3002			
						Patch-Hotfix_MDT_18214-22198-4.0.9434.3002			
Computation		Description						Version	
HENVIR		Computation Ensemble for the HGNS Neutron environmental corrections						4.0.9360.3000	
DepthCorrection		DepthCorrection						4.0.9433.3000	
Tool Elements		Description				Software Version		Firmware Version	
HRCC-H		HILT High-Resolution Control Cartridge, 150 degC				4.0.9385.3000		2.0	
HGNS-H		HILT Gamma-Ray and Neutron Sonde, 150 degC				4.0.9385.3000		2.0	
HRGD-H		HILT Resistivity Gamma-Ray Density Device, 150 degC				4.0.9385.3000		3.0	
AMIS		Array Induction Sonde - M				4.0.9427.3000		1	
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[5]:Up	Up	348.49 ft	8588.12 ft	10-Nov-2014 4:56:43 AM	10-Nov-2014 9:20:17 AM	ON	14.40 ft	Yes
All depths are referenced to toolstring zero									
Log	Company:Cascade Petroleum LLC						Well:Gaede 9S-55W-8-16		
ONE: Log[5]:Up:S008									
Description: HGNS standard resolution porosities for Platform Express    Format: Log ( EMD 5in Triple Combo )    Index Scale: 5 in per 100 ft    Index Unit: ft									
Index Type: Measured Depth    Creation Date: 10-Nov-2014 10:20:17									
Channel	Source		Sampling						
AT10	AIT-M:AMIS:AMIS		3in						
AT20	AIT-M:AMIS:AMIS		3in						
AT30	AIT-M:AMIS:AMIS		3in						
AT60	AIT-M:AMIS:AMIS		3in						
AT90	AIT-M:AMIS:AMIS		3in						
CALI	HDRS-H:HRCC-H:HRCC-H		1in						
DPHZ	HDRS-H:HRMS-H:HRGD-H		2in						
GR	HGNS-H:HGNS-H:HGNS-H		6in						
NPOR	HGNS-H:HGNS-H:HGNS-H		6in						
PEFZ	HDRS-H:HRMS-H:HRGD-H		2in						
STIT	DepthCorrection		6in						
TENS	WLWorkflow		6in						
TIME_1900	WLWorkflow		0.1in						
TIME_1900 - Time Marked every 60.00 (s)									
			Array Induction Two Foot Resistivity A10 (AT10) AIT-M				Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		
			0.2 ohm.m 200						
			Array Induction Two Foot Resistivity A30 (AT30) AIT-M						
			0.2 ohm.m 200				0 10		
			Array Induction Two Foot Resistivity A90 (AT90) AIT-M				Gas Effect		
Stuck Tool Indicator, Total (STIT)			0.2 ohm.m 200				NPOR Backup		
			Array Induction Two Foot Resistivity A20 (AT20) AIT-M				Standard Resolution Density Porosity (DPHZ) HDRS-H		
Gamma Ray Back up			0 ft 50				0.5 ft3/ft3 0		
Gamma Ray (GR) HGNS-H			0.2 ohm.m 200				Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H		
0 gAPI 200			Cable Tension (TENS)						
			Array Induction Two Foot Resistivity A60 (AT60) AIT-M						



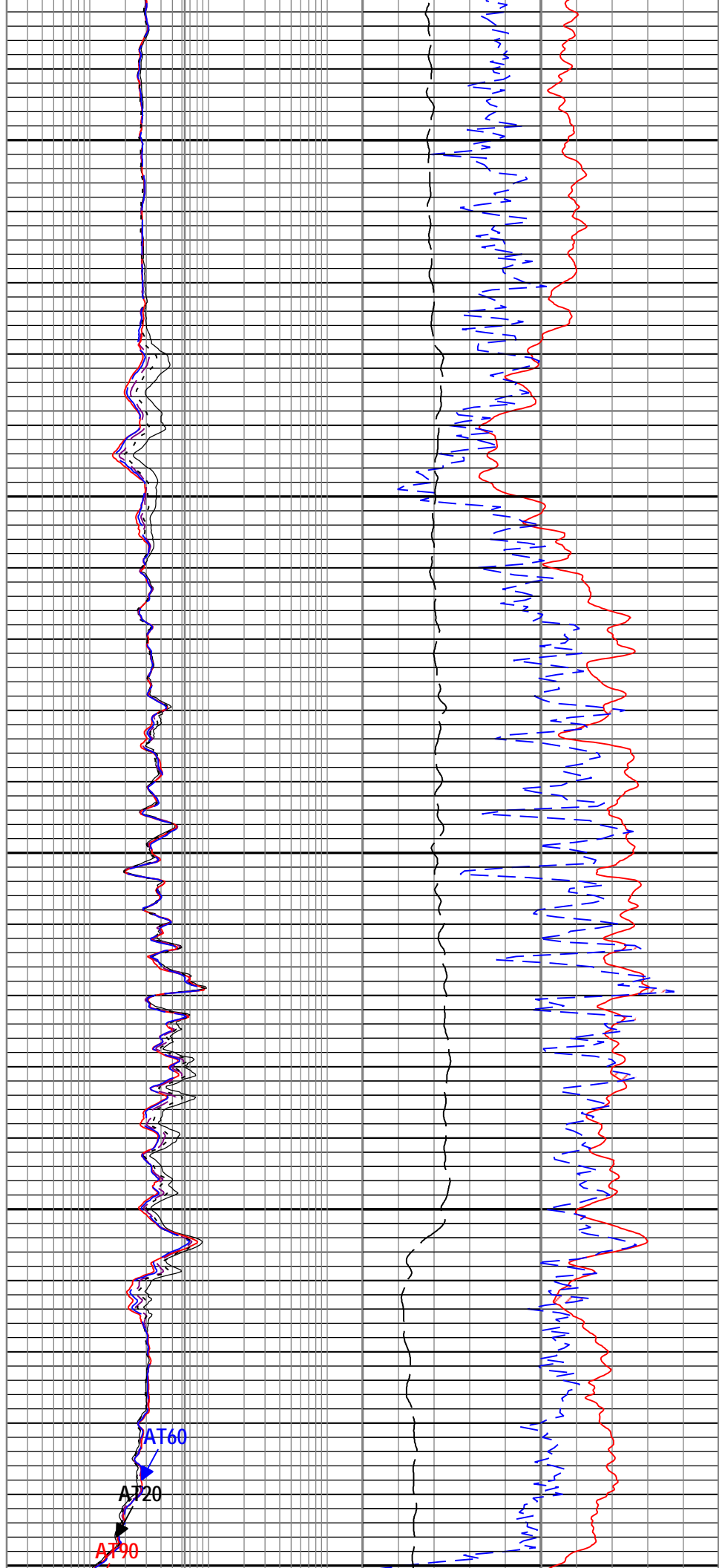
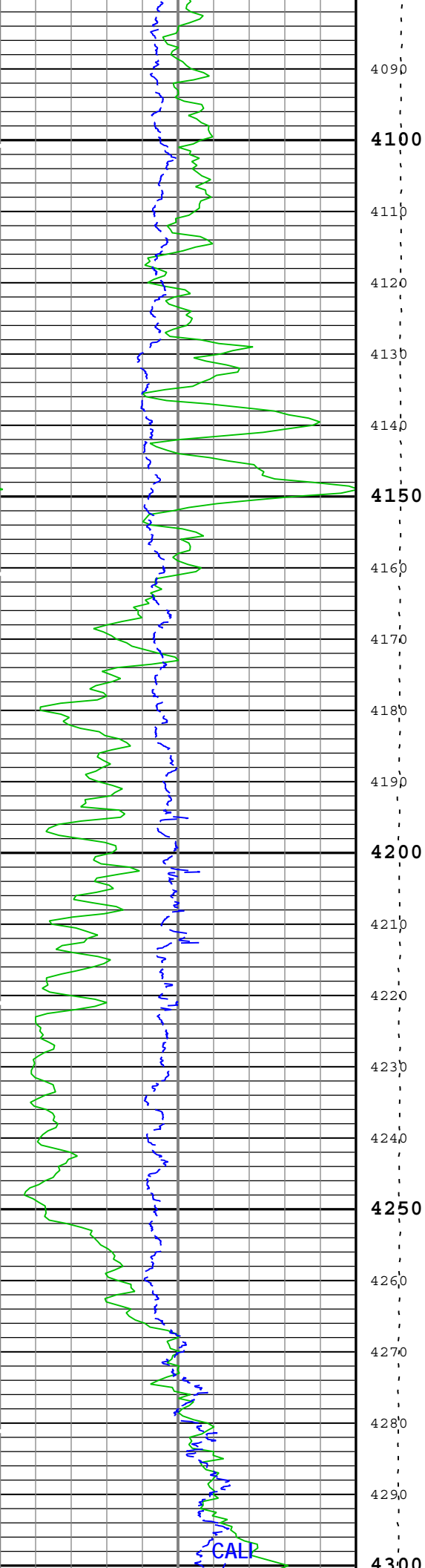


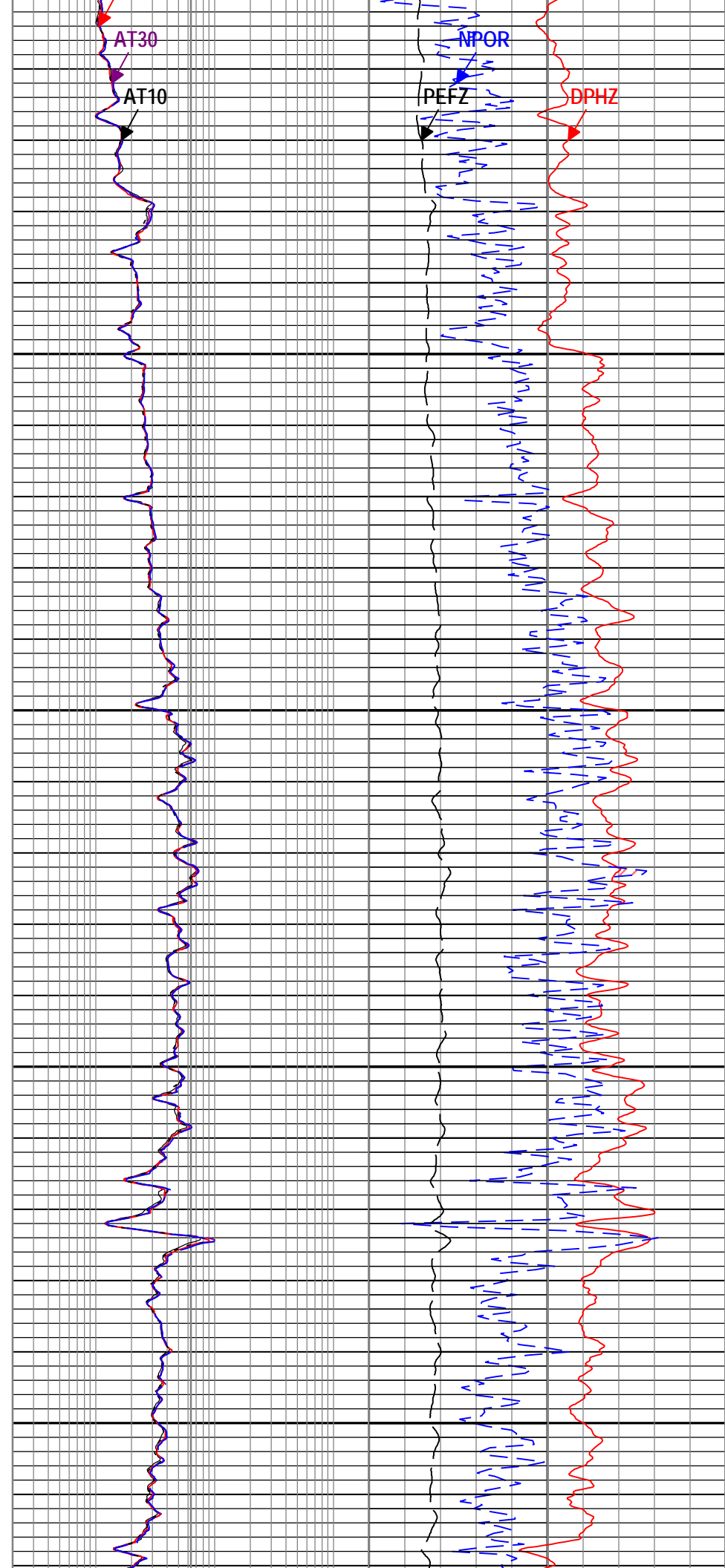
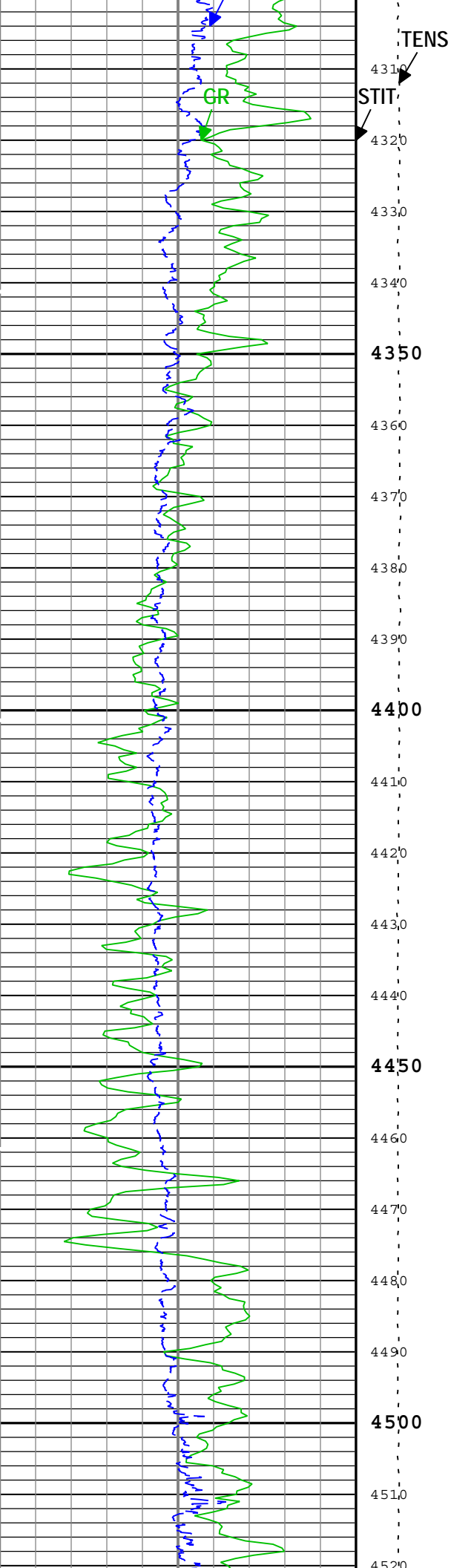


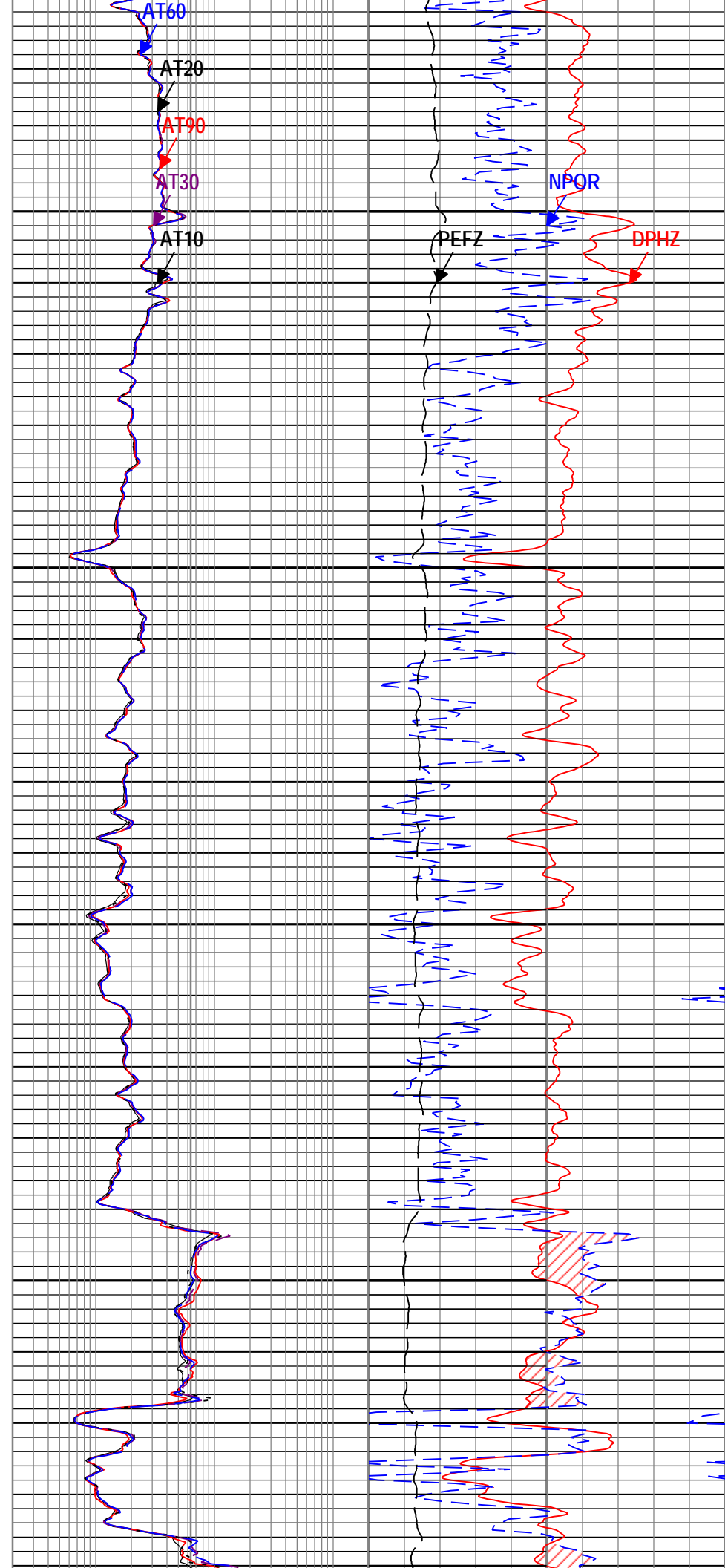
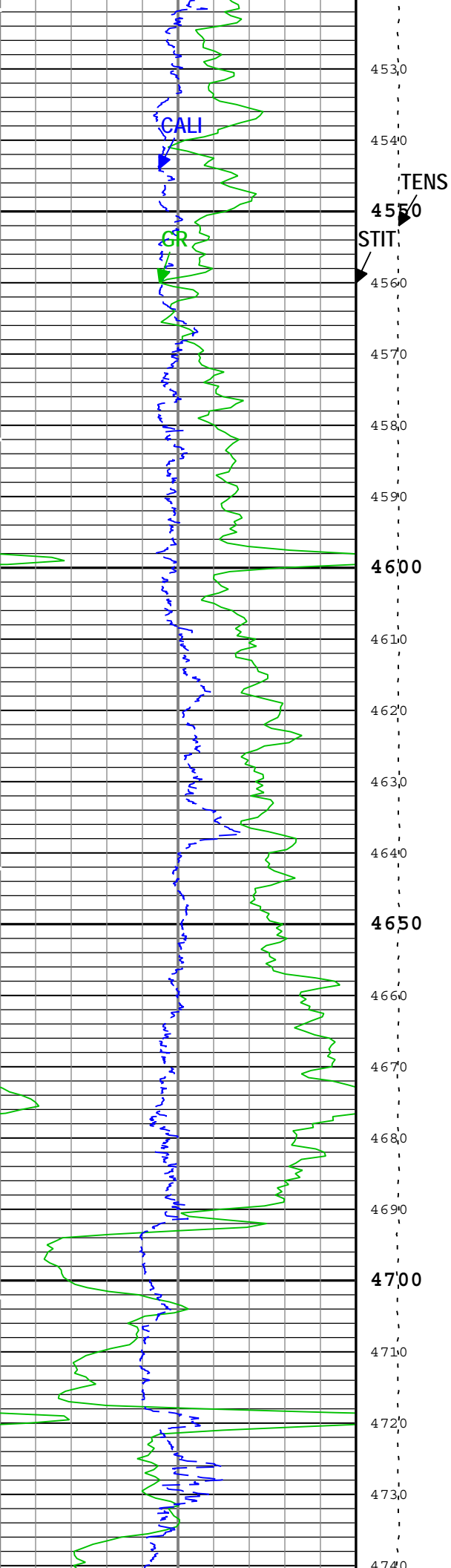




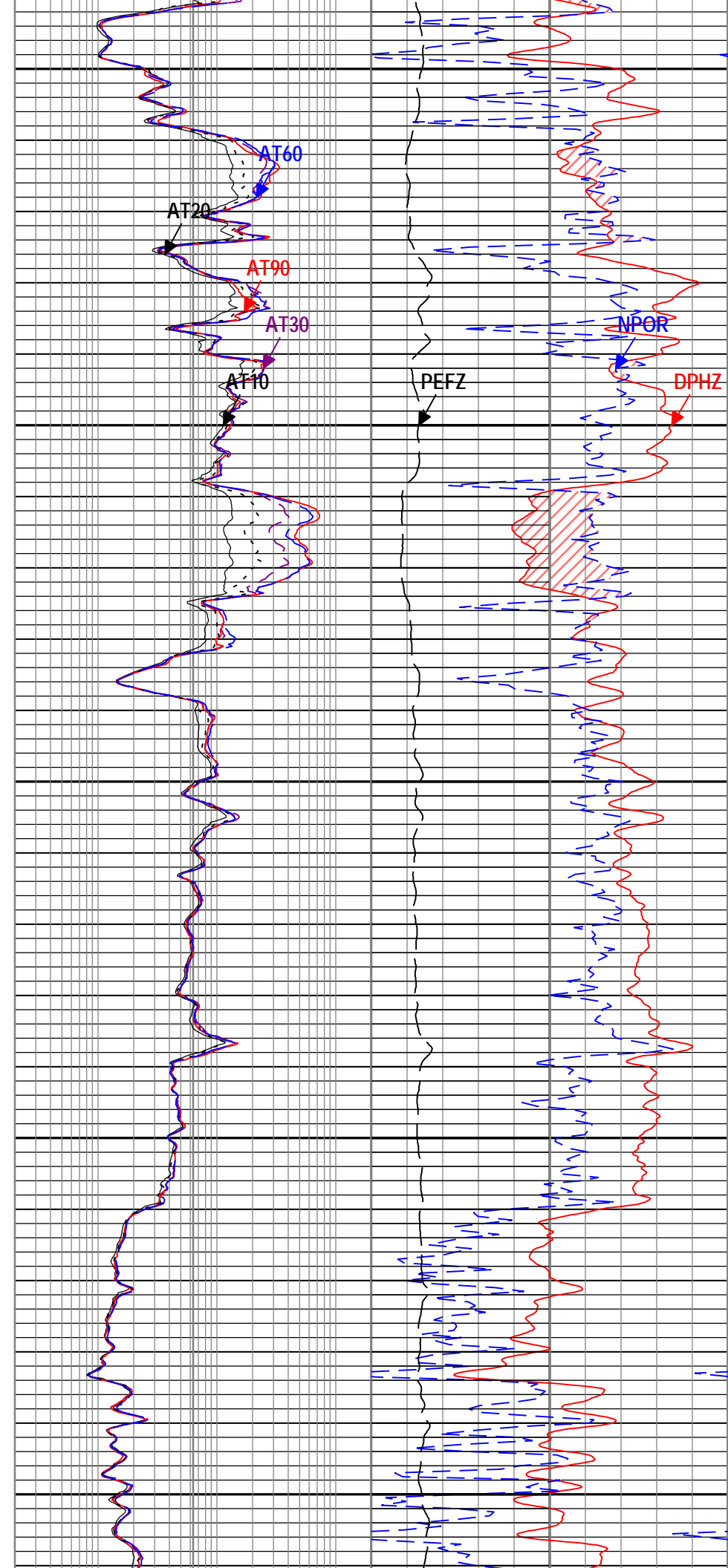
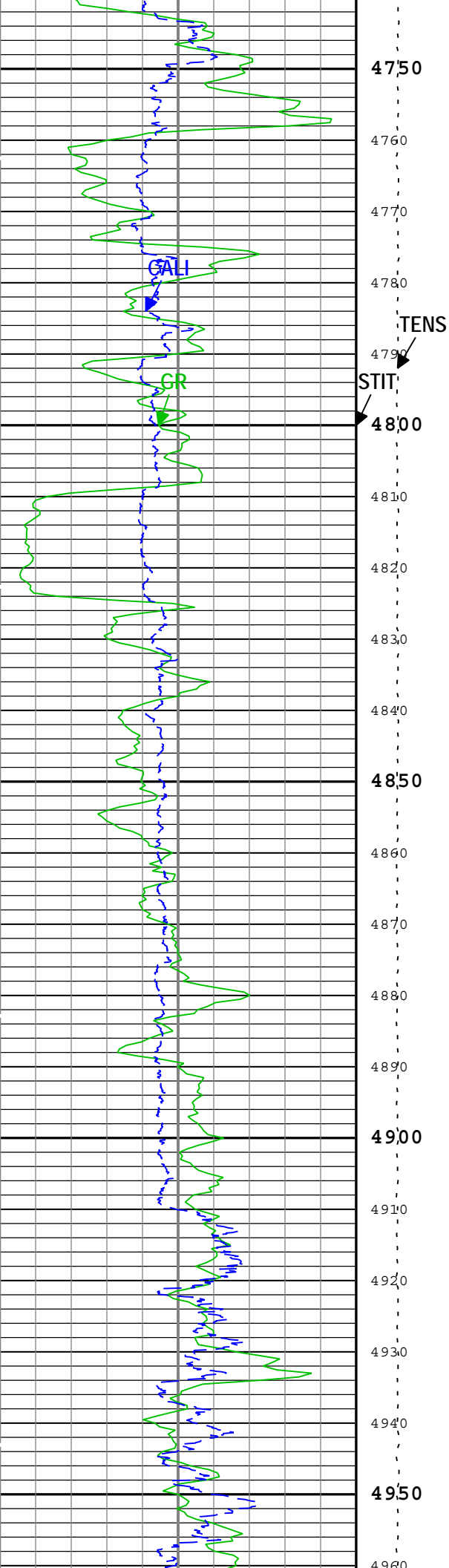


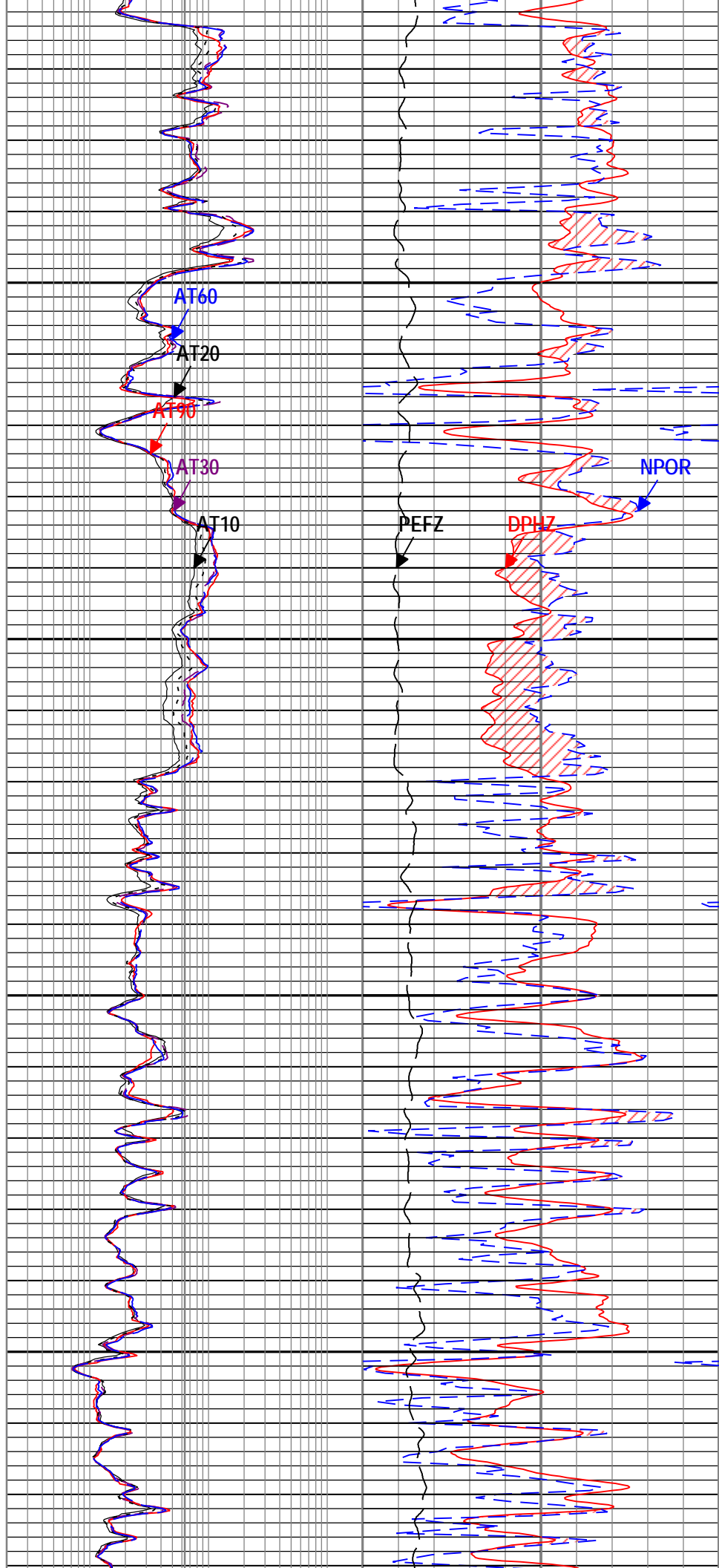
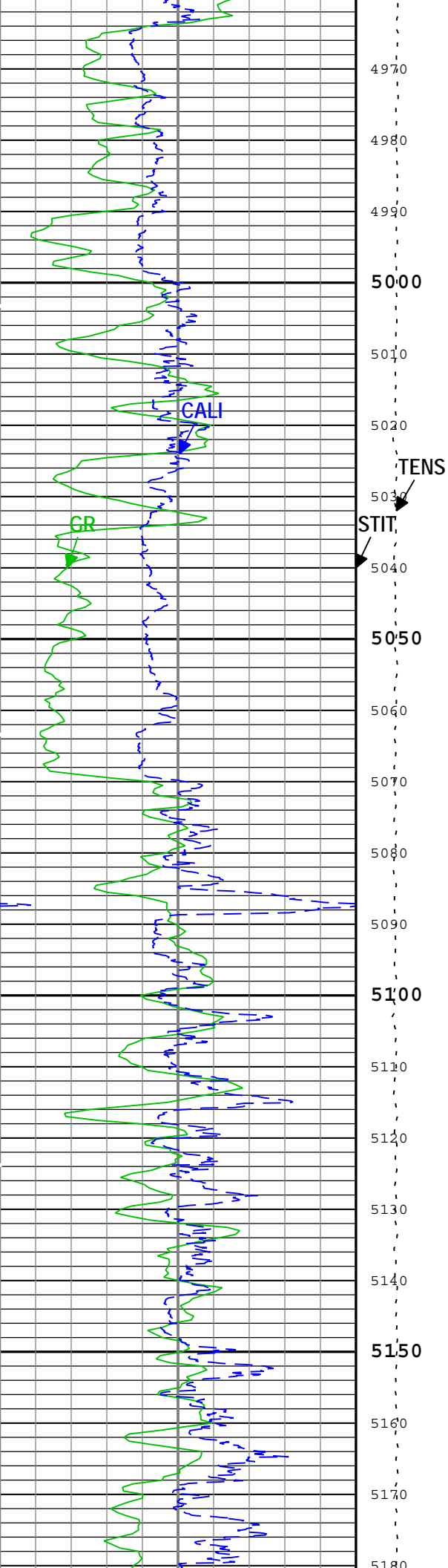


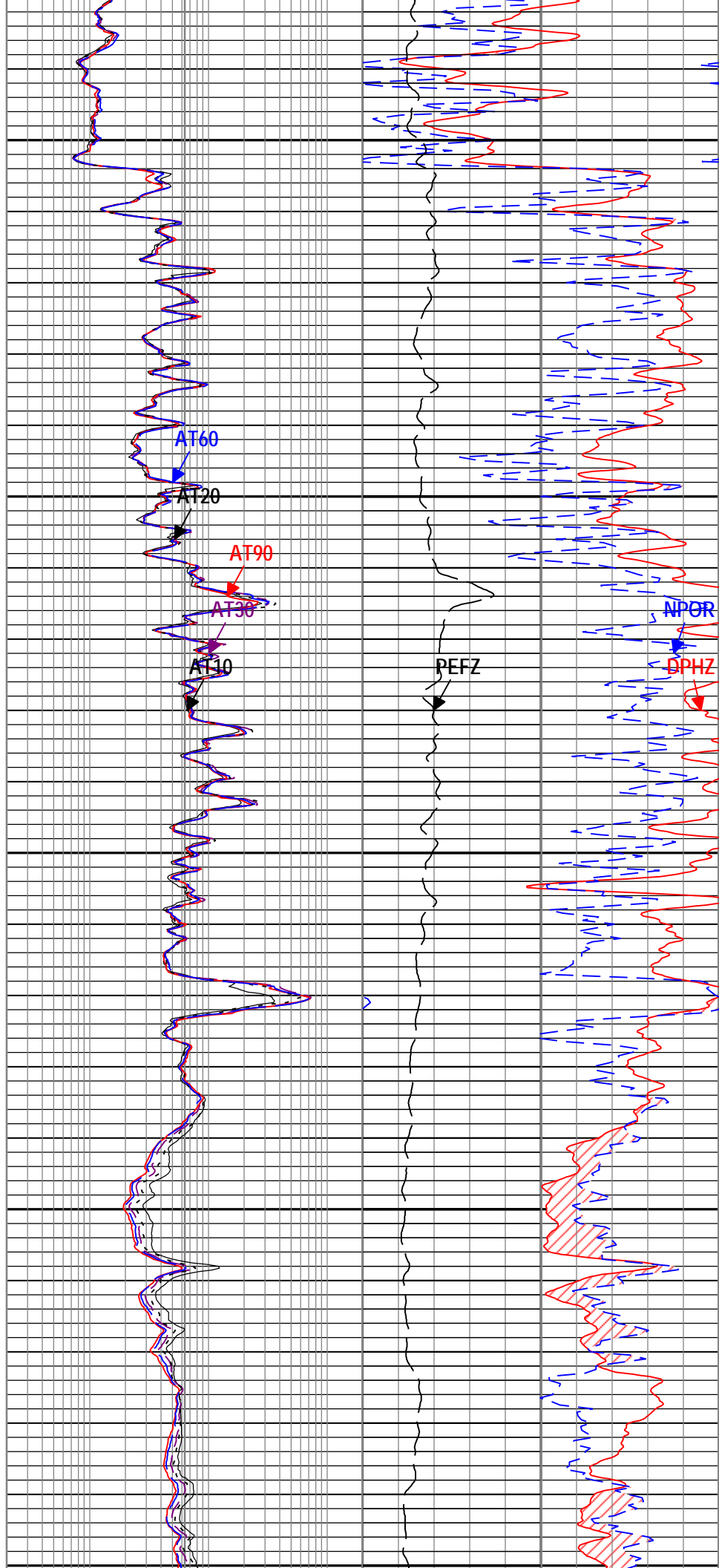
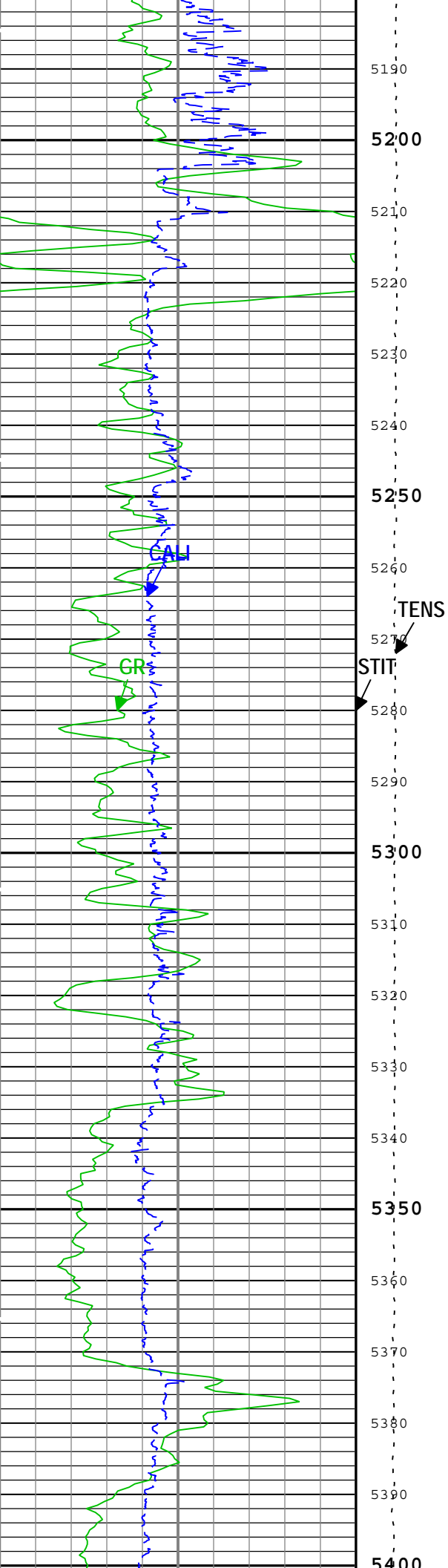


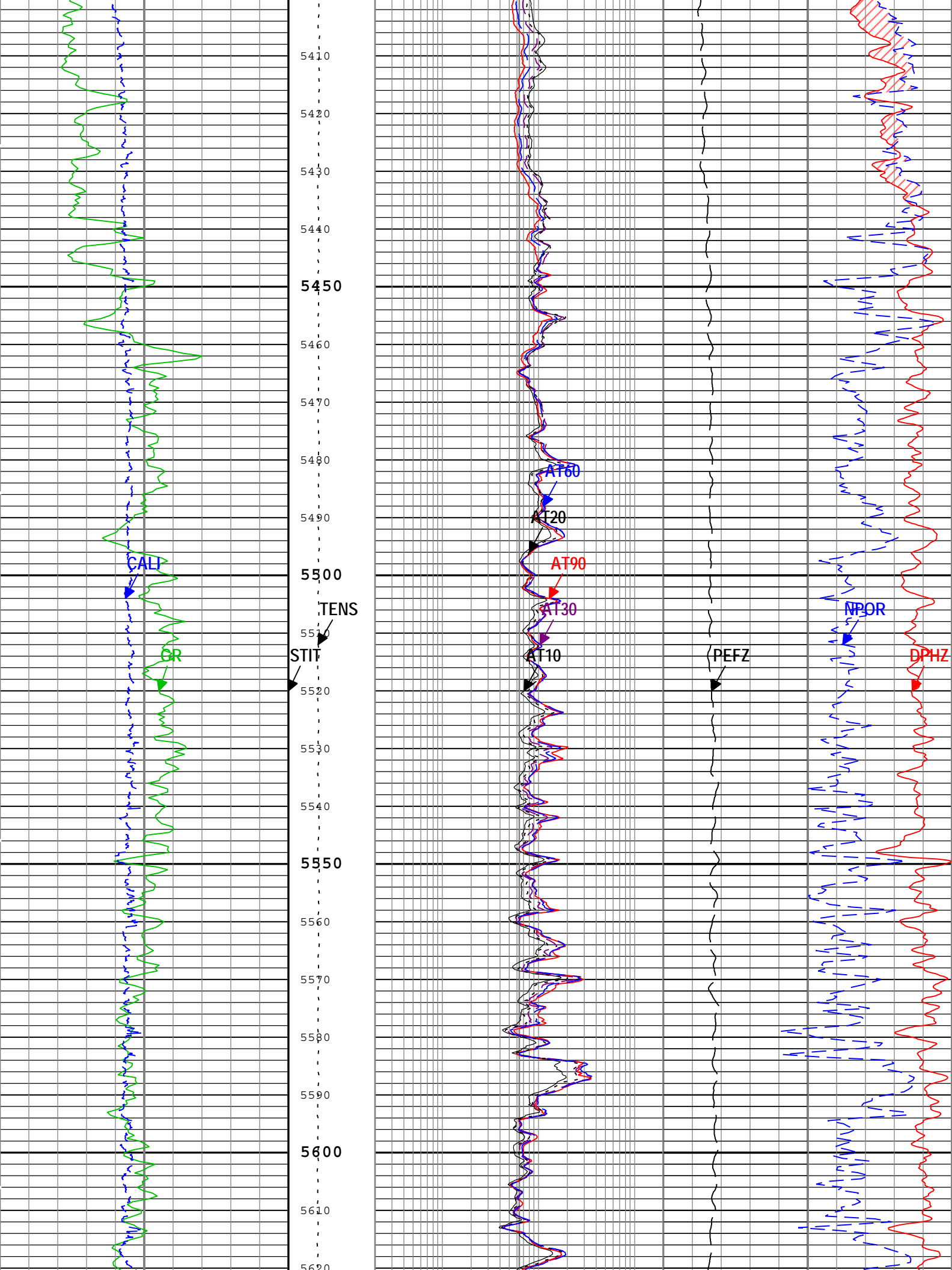


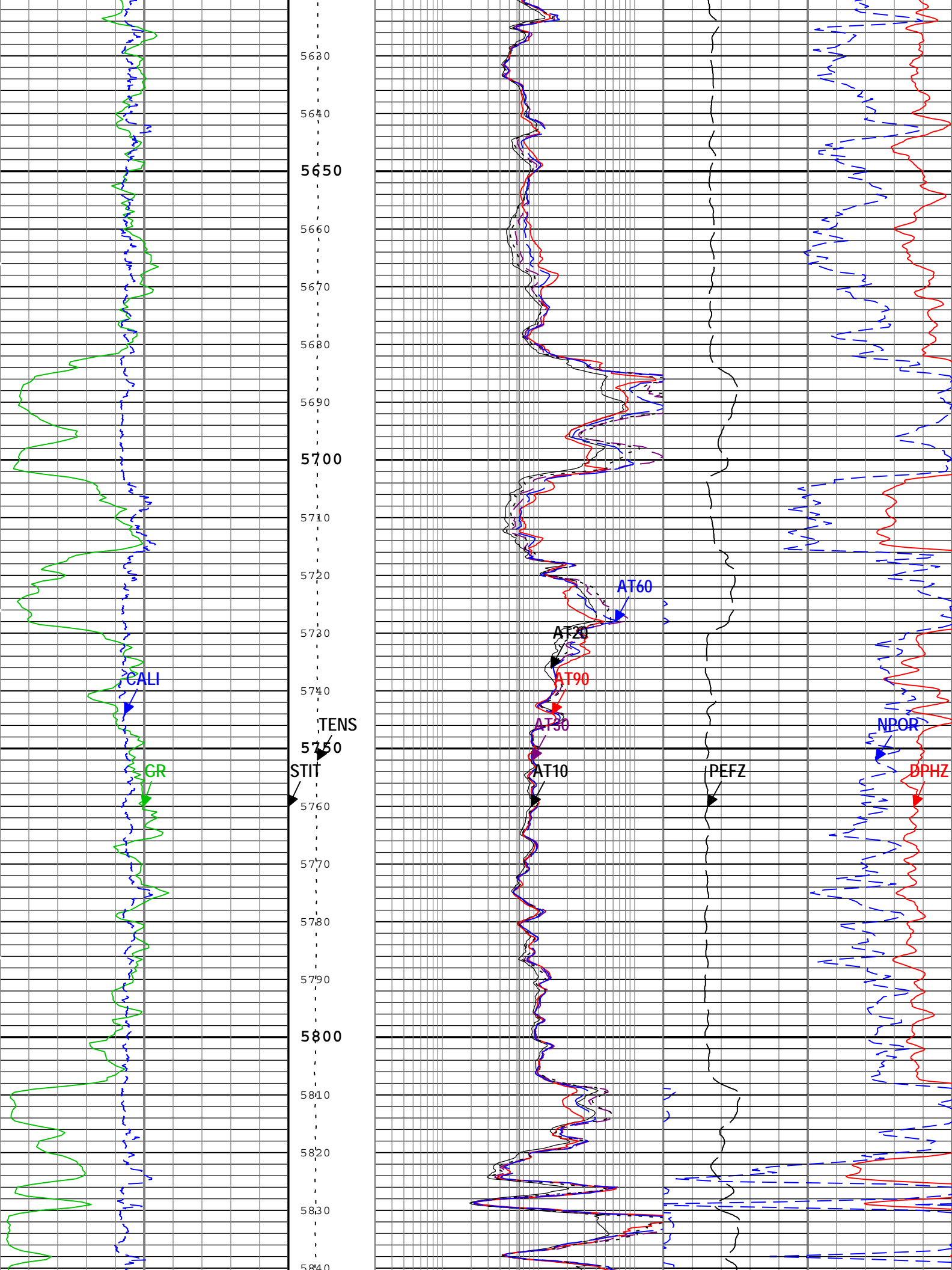


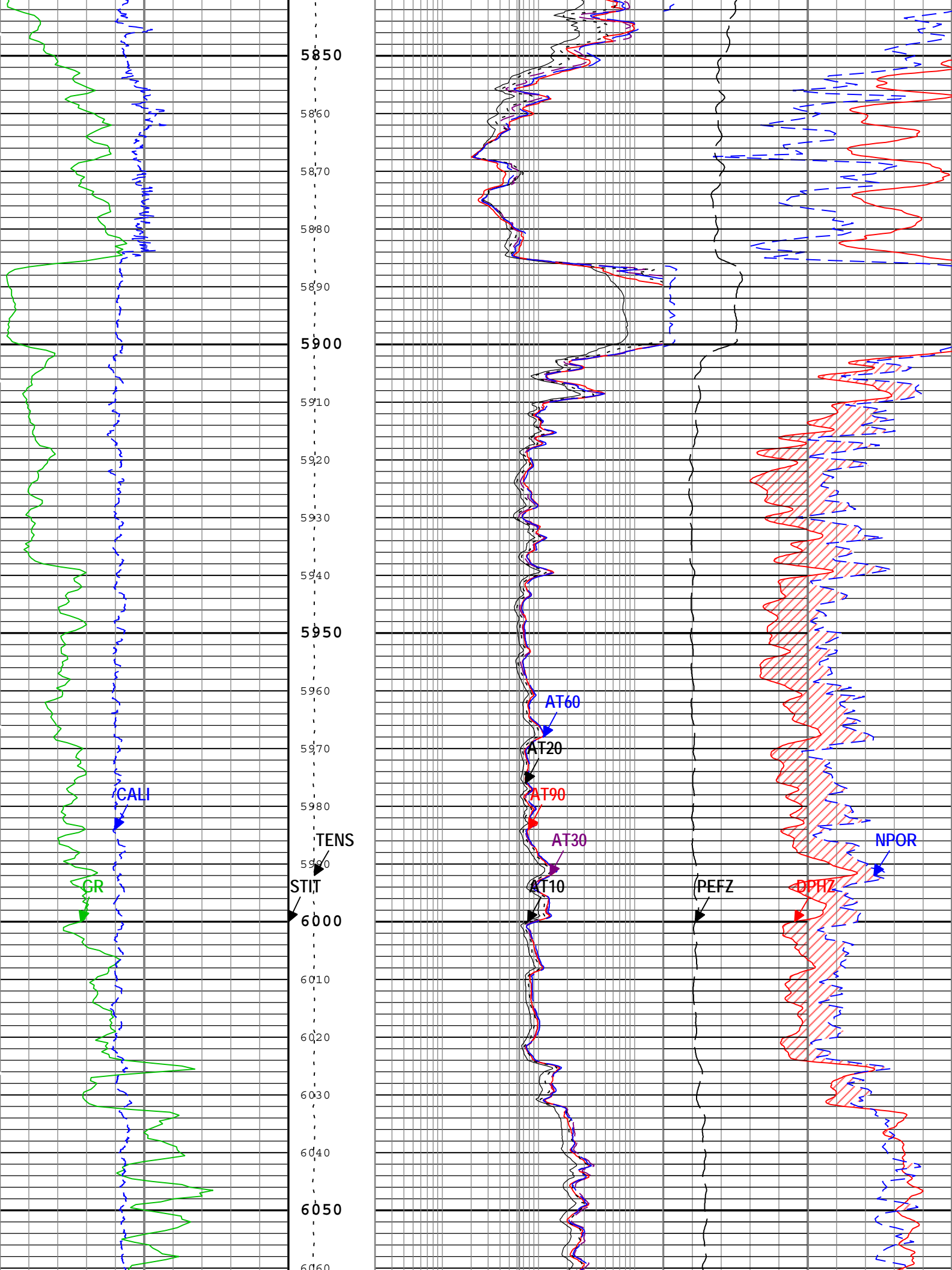


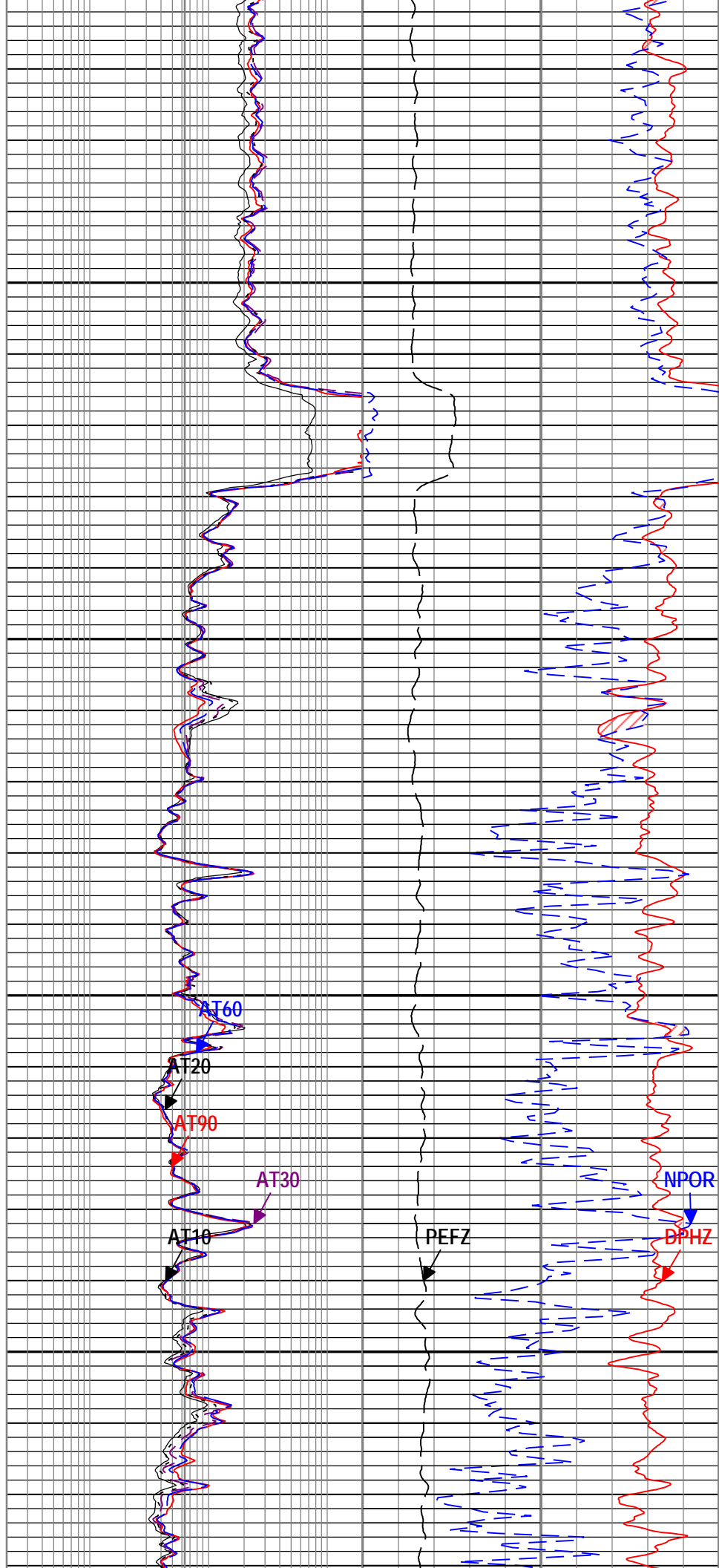
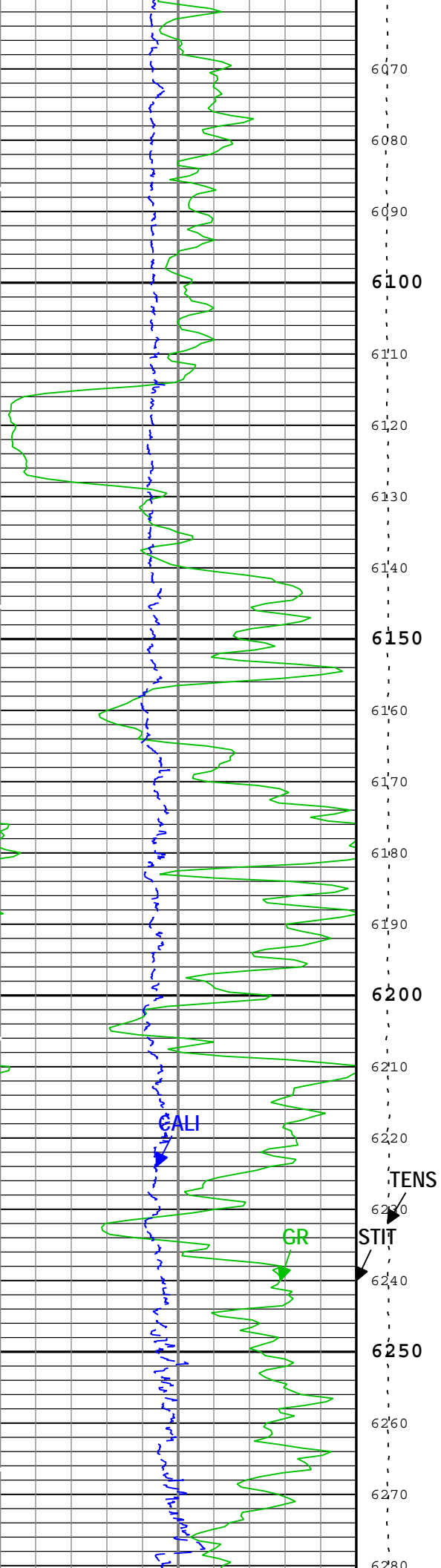


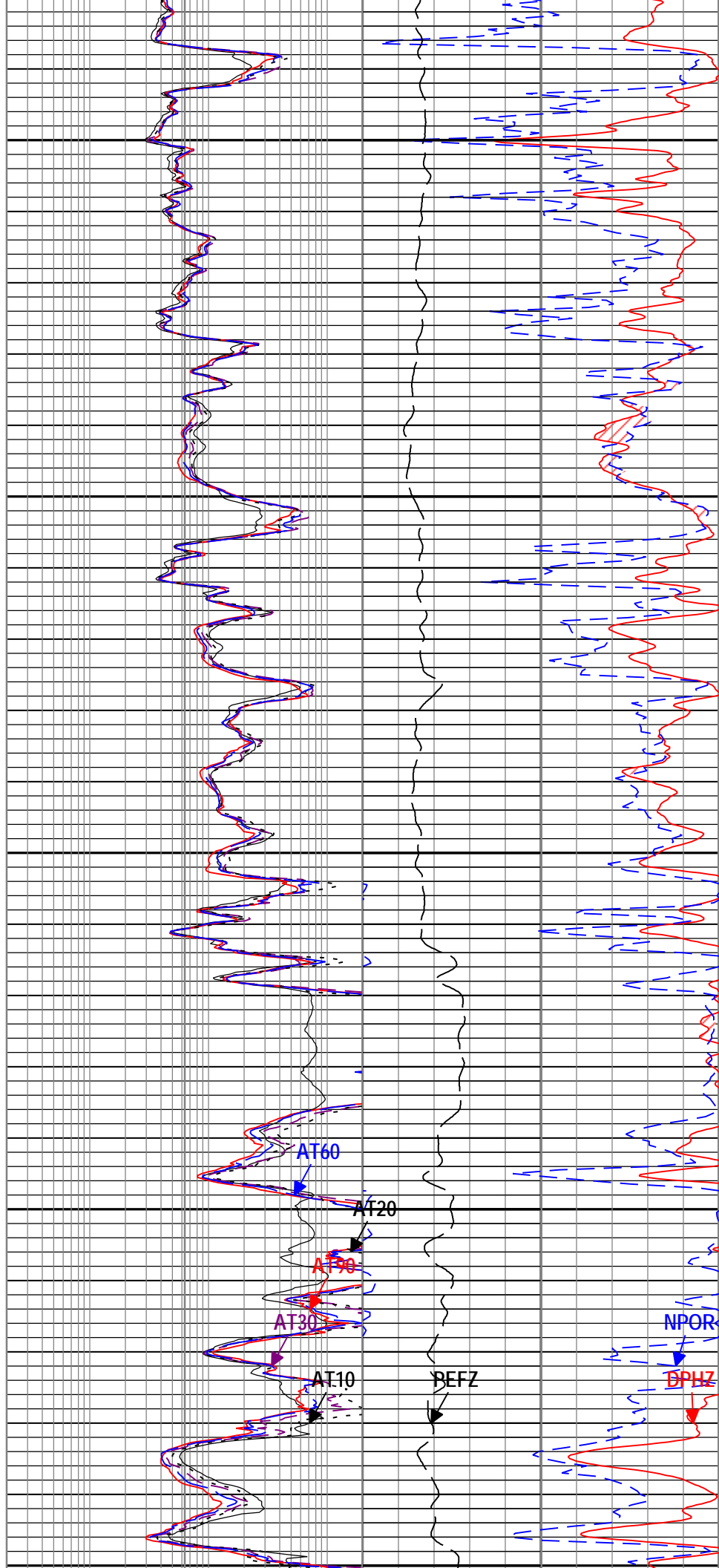
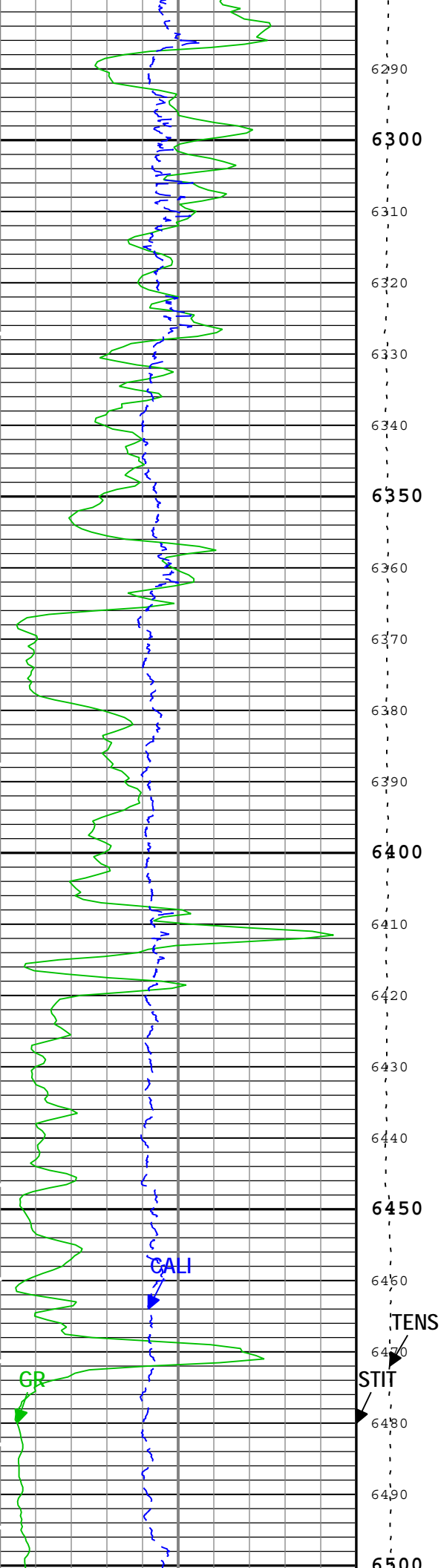




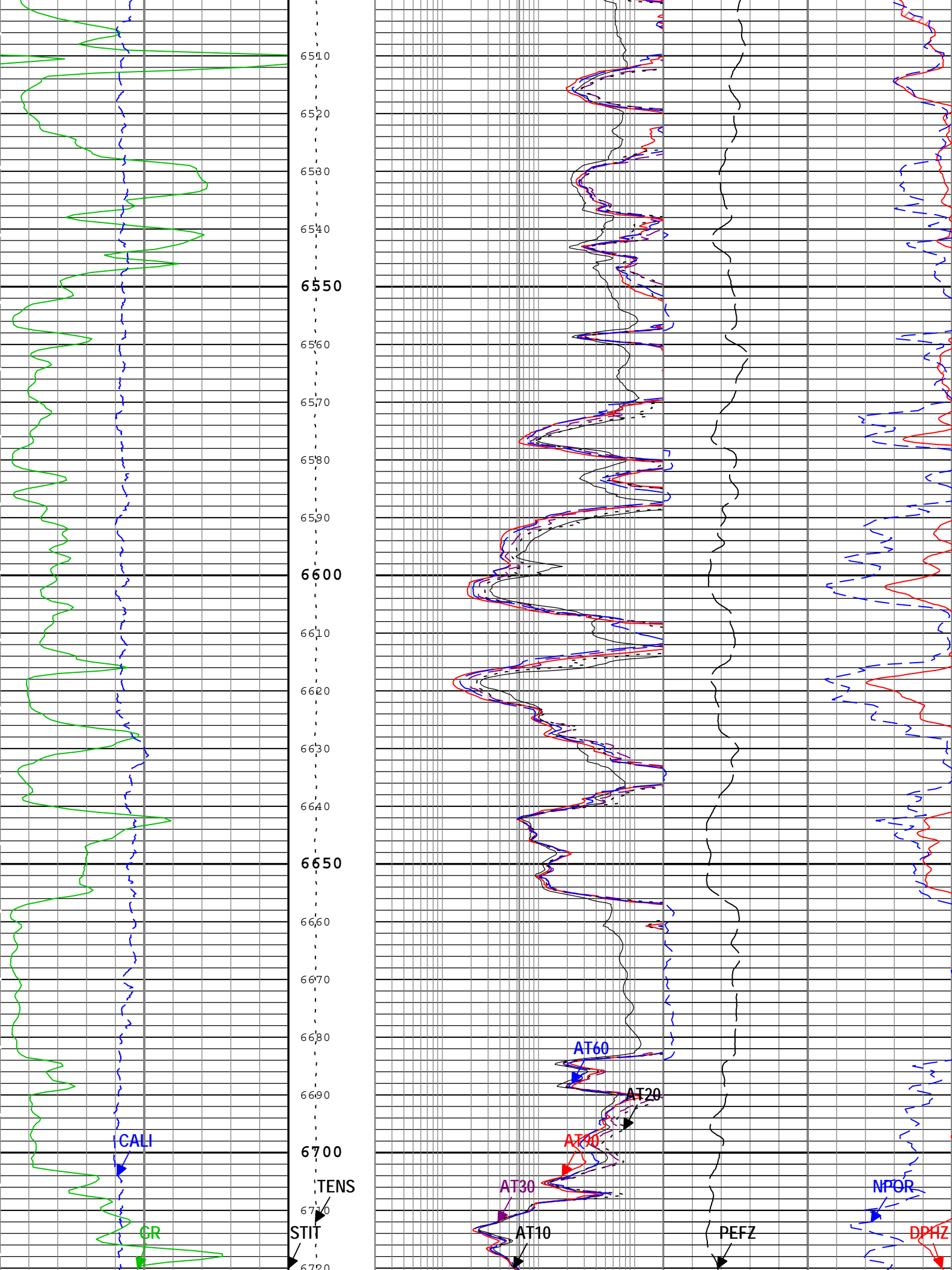


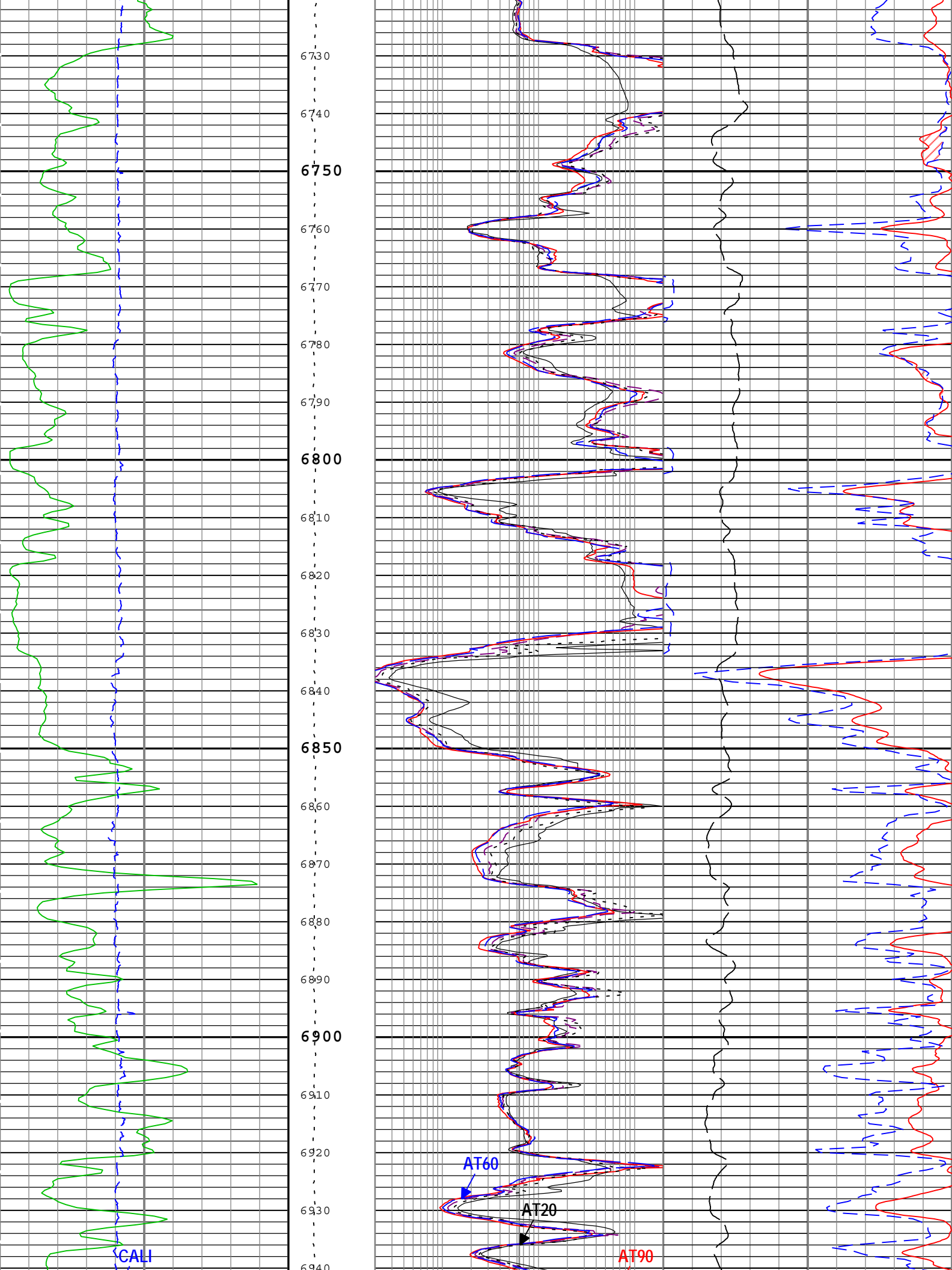


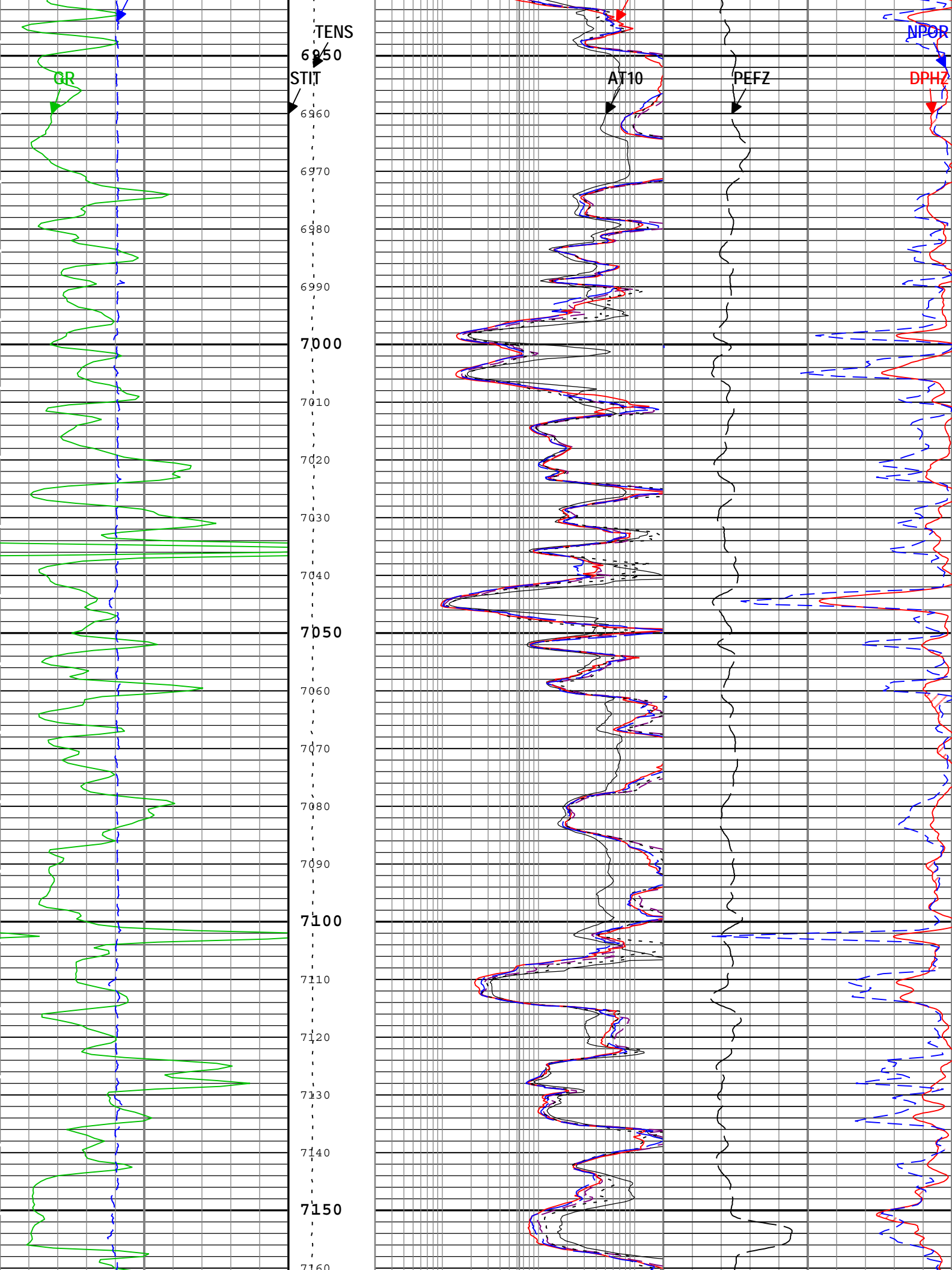


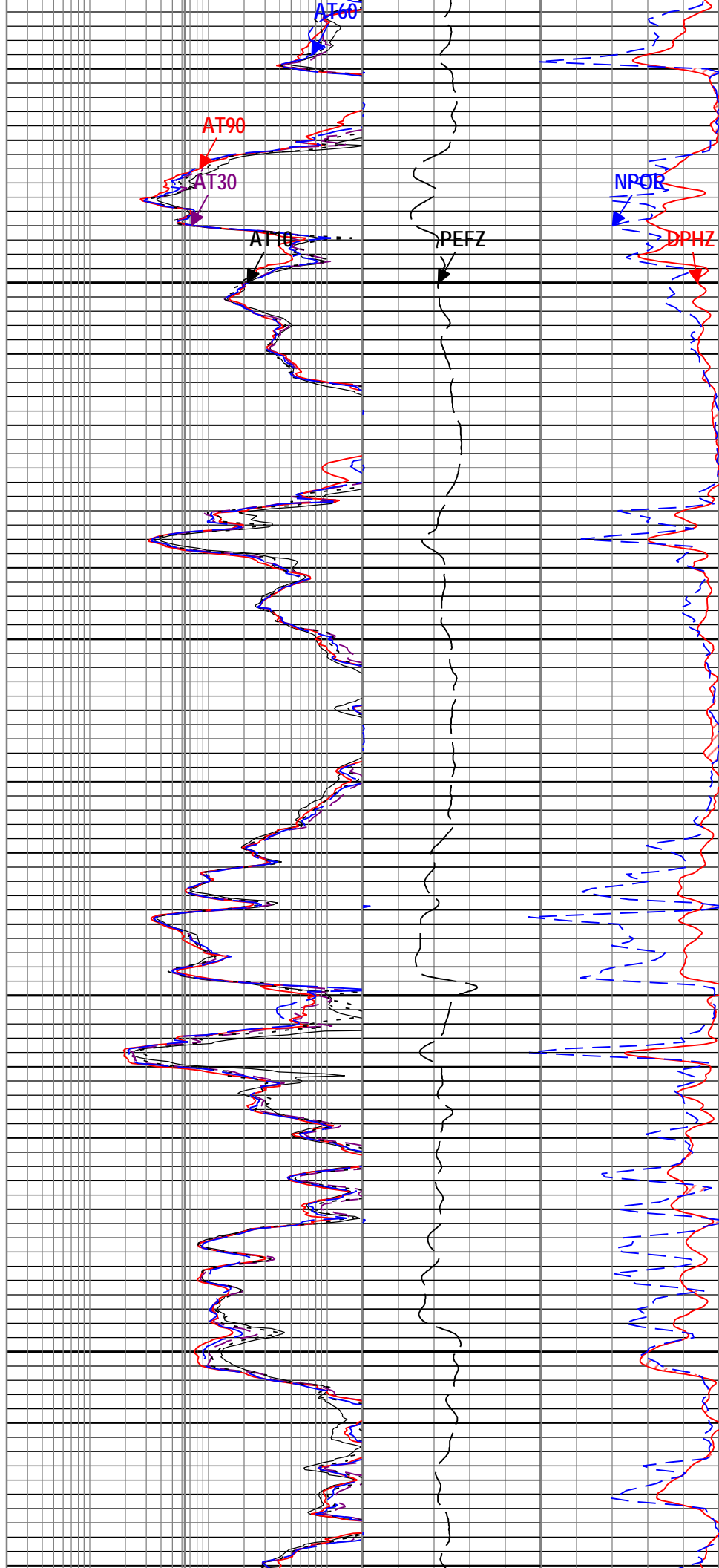
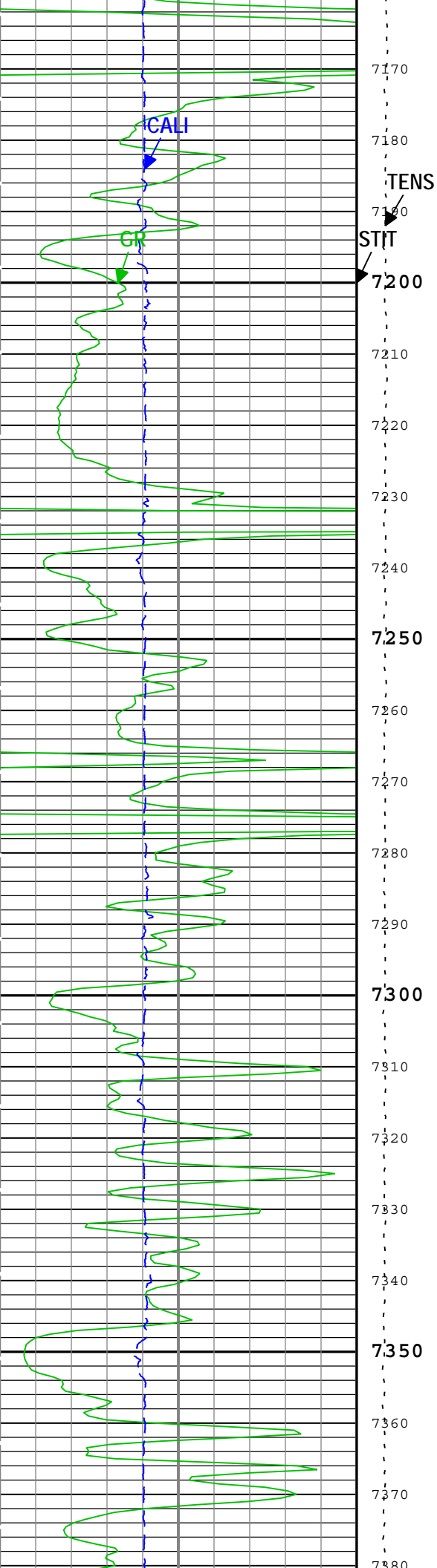


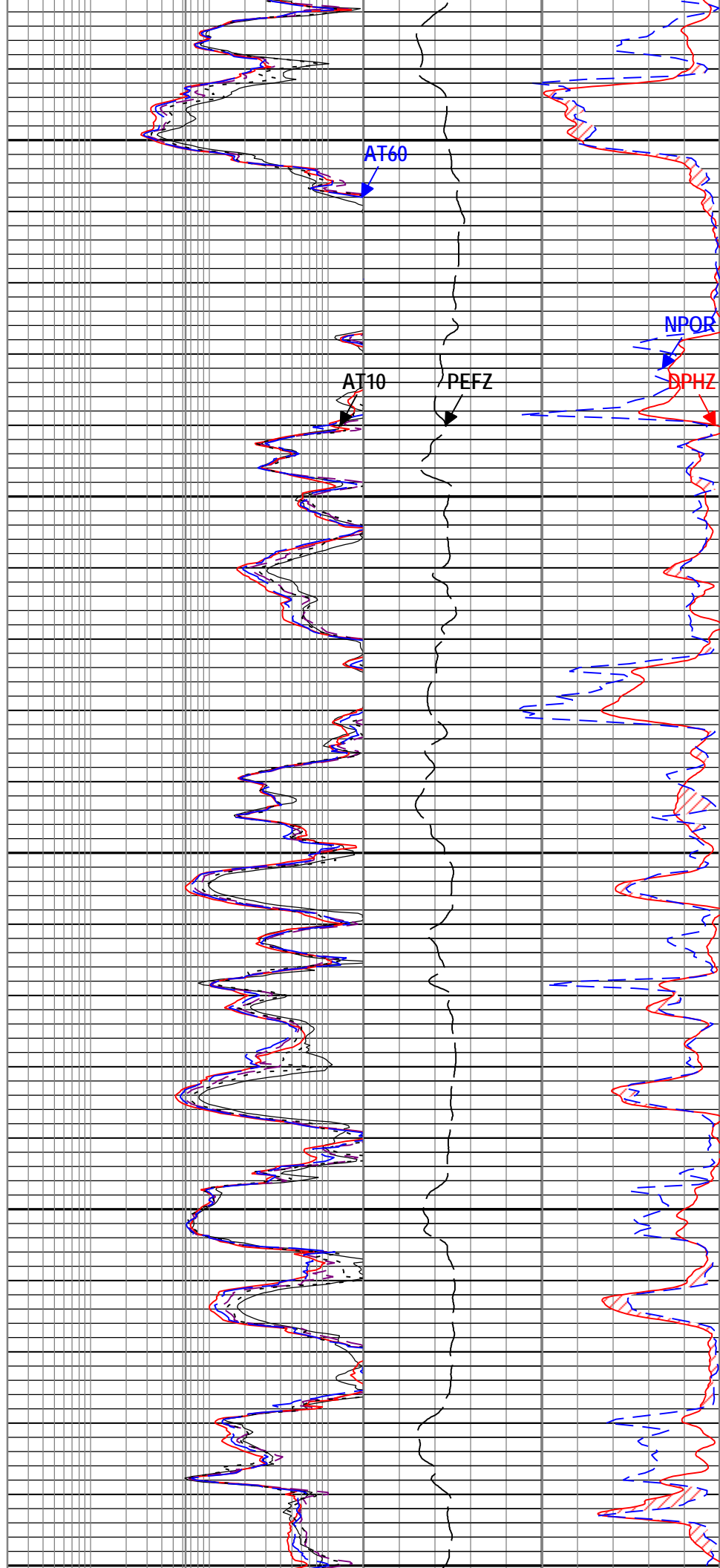
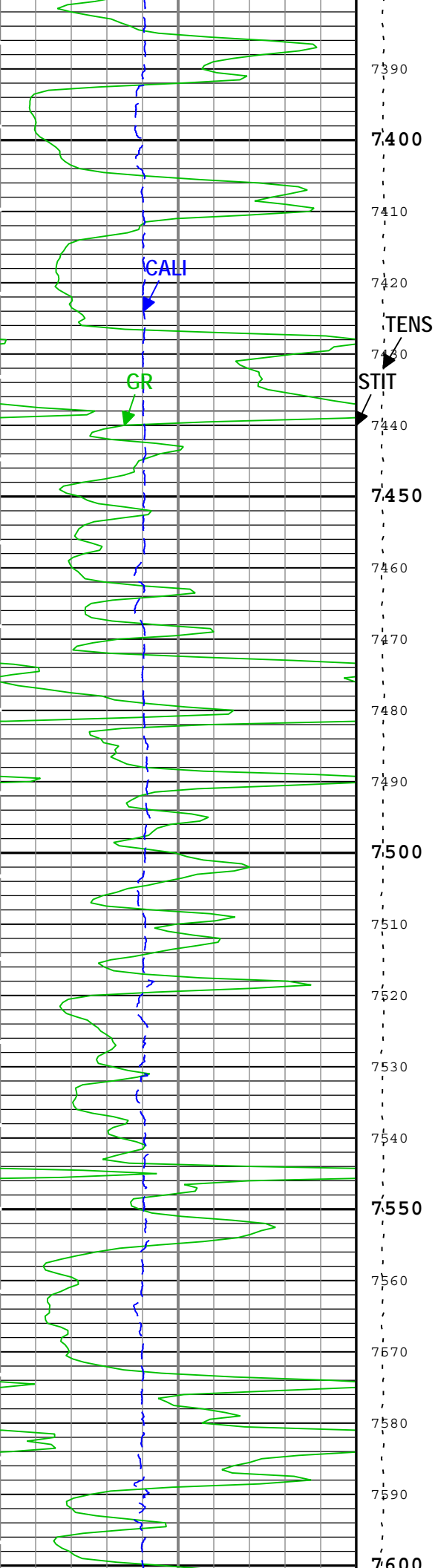


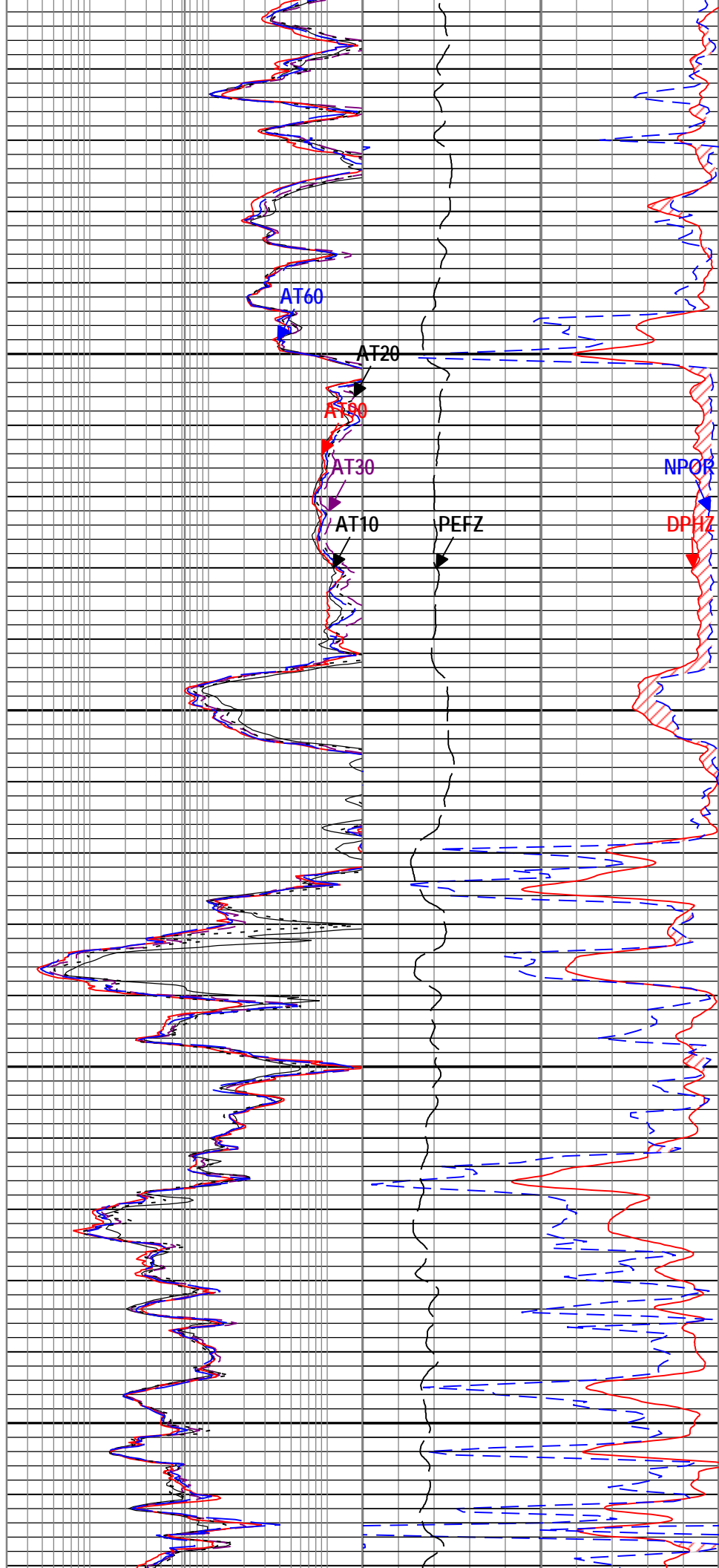
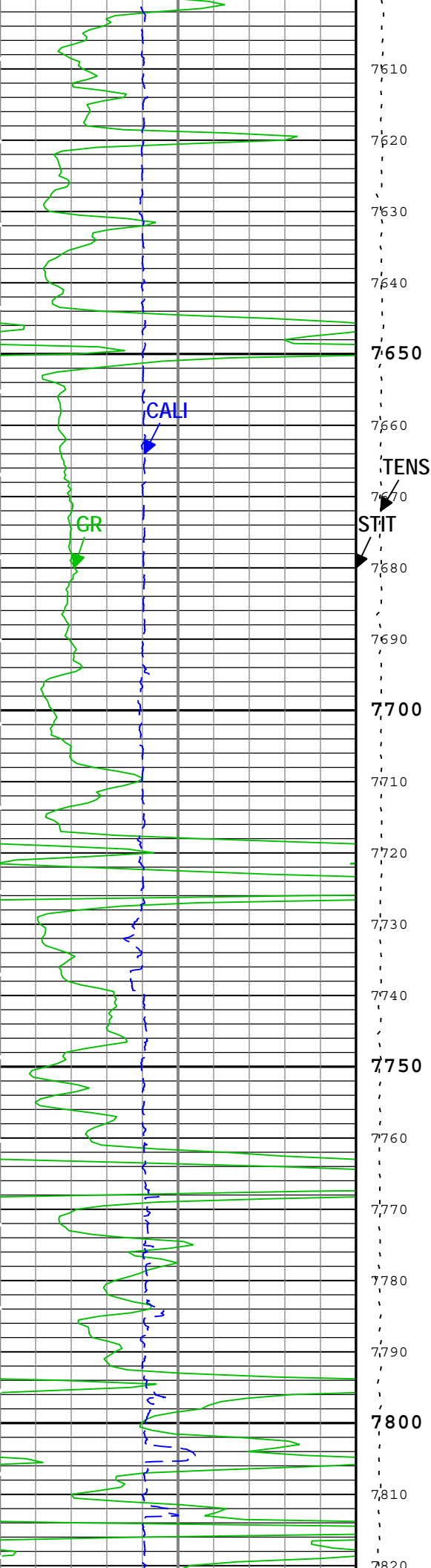


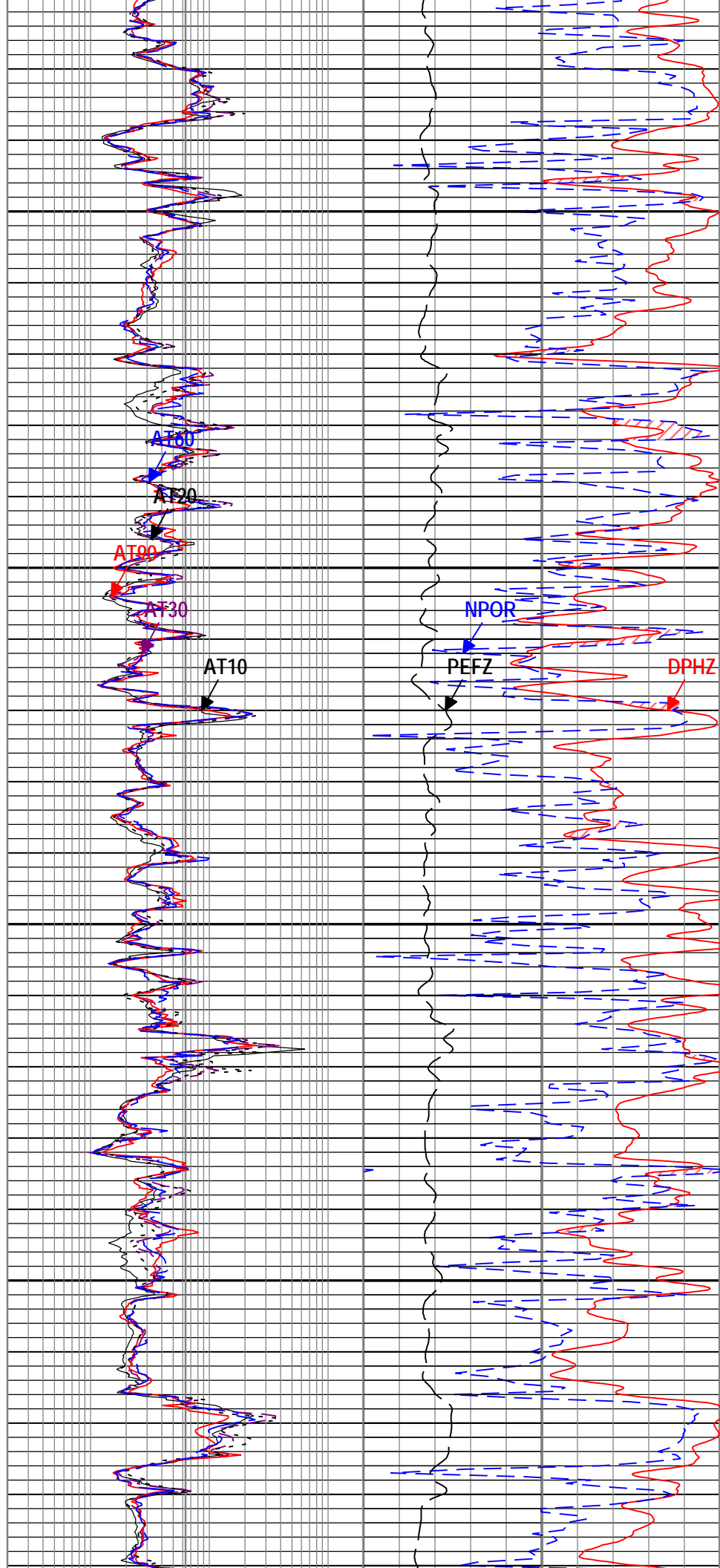
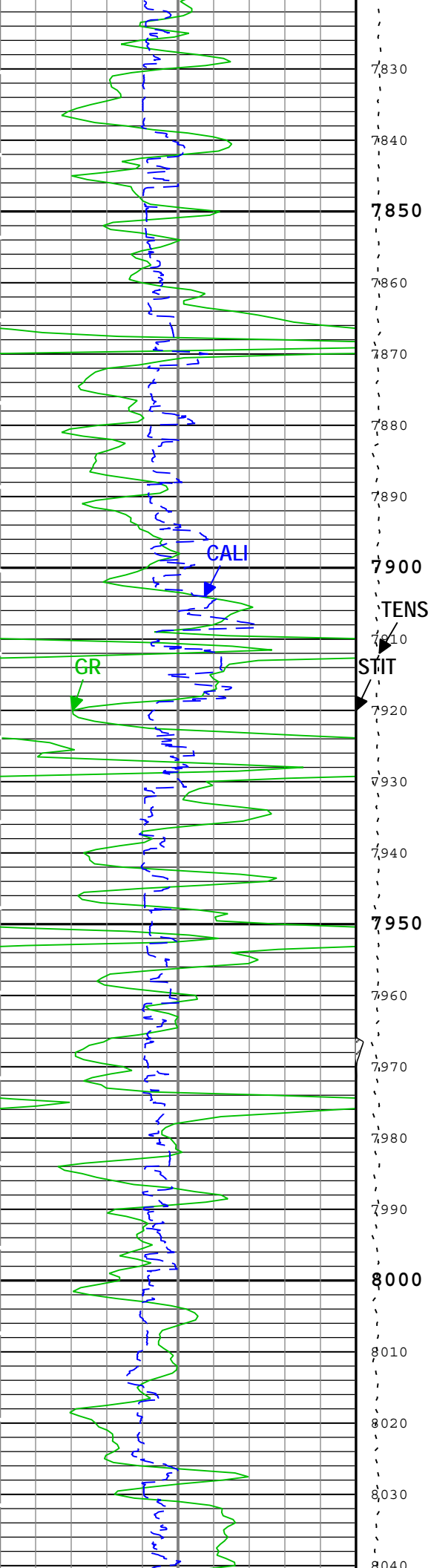




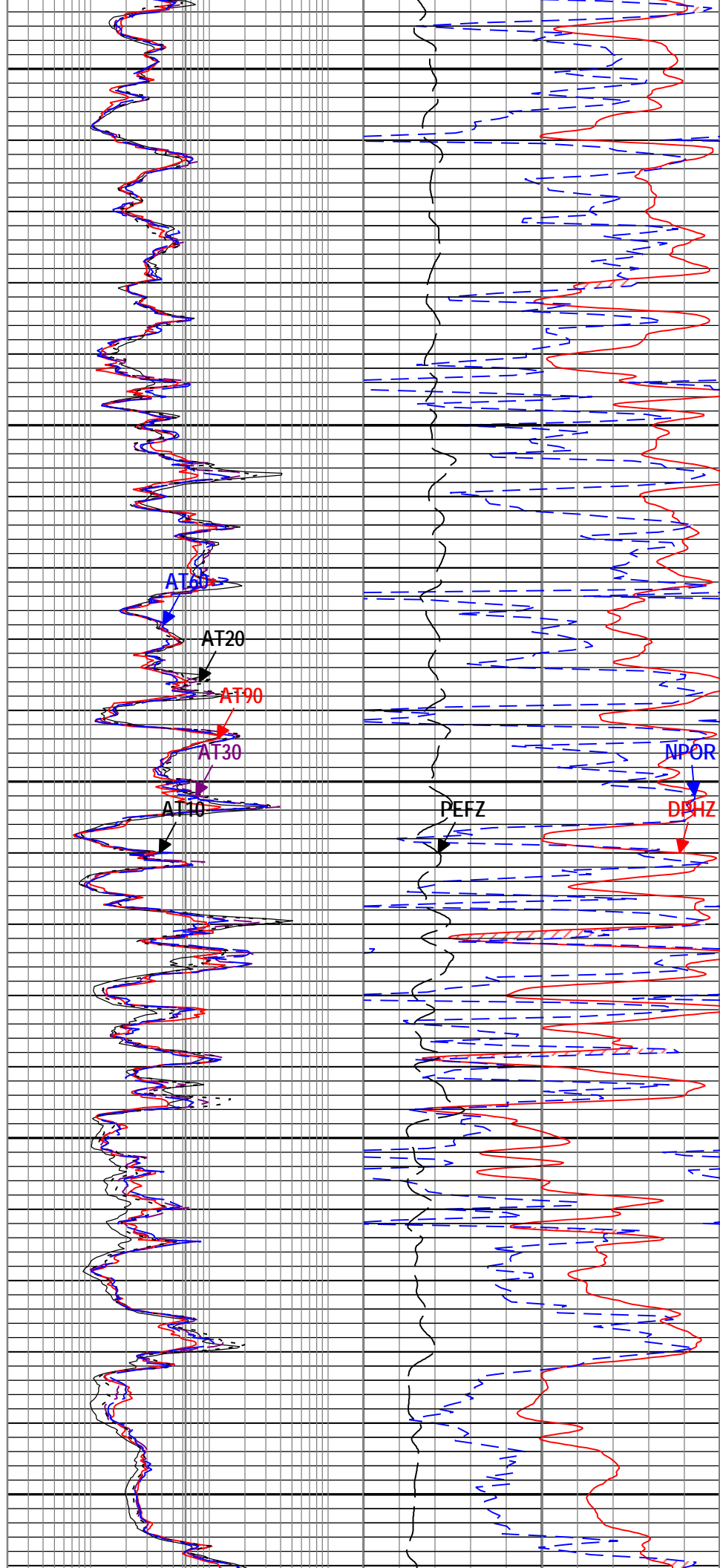
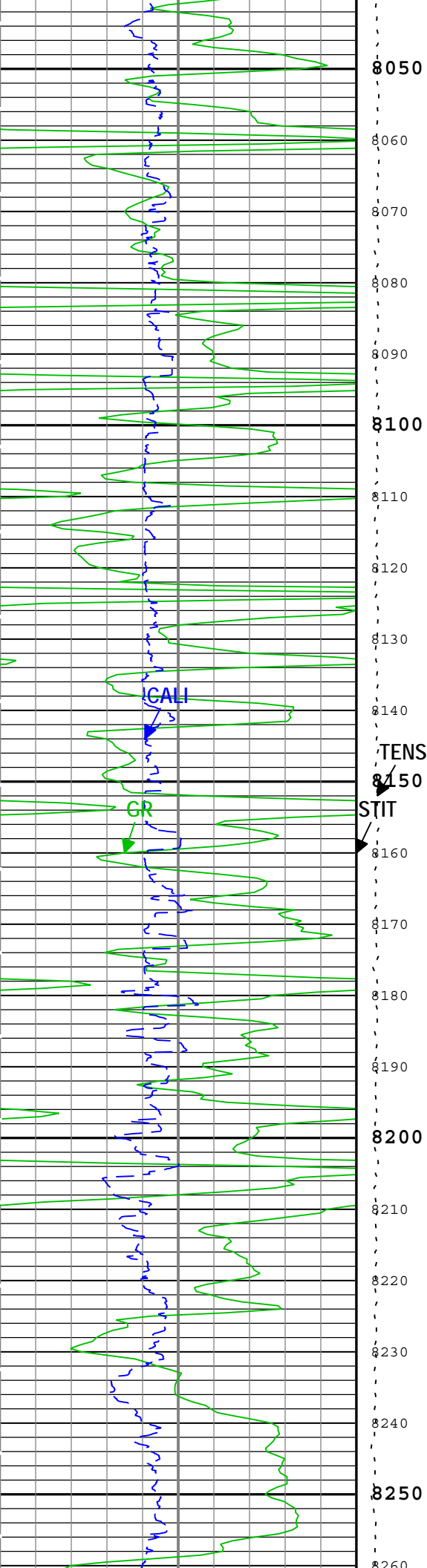




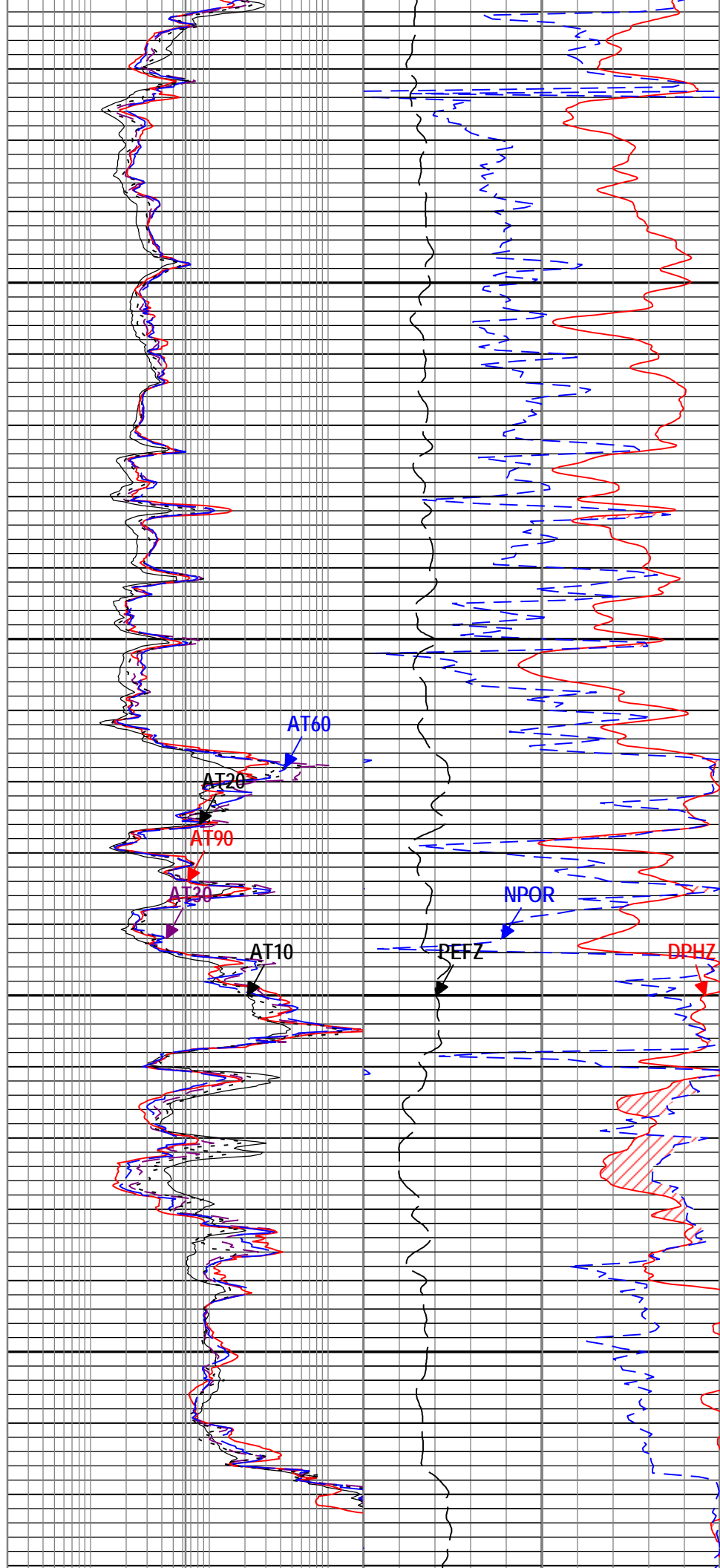
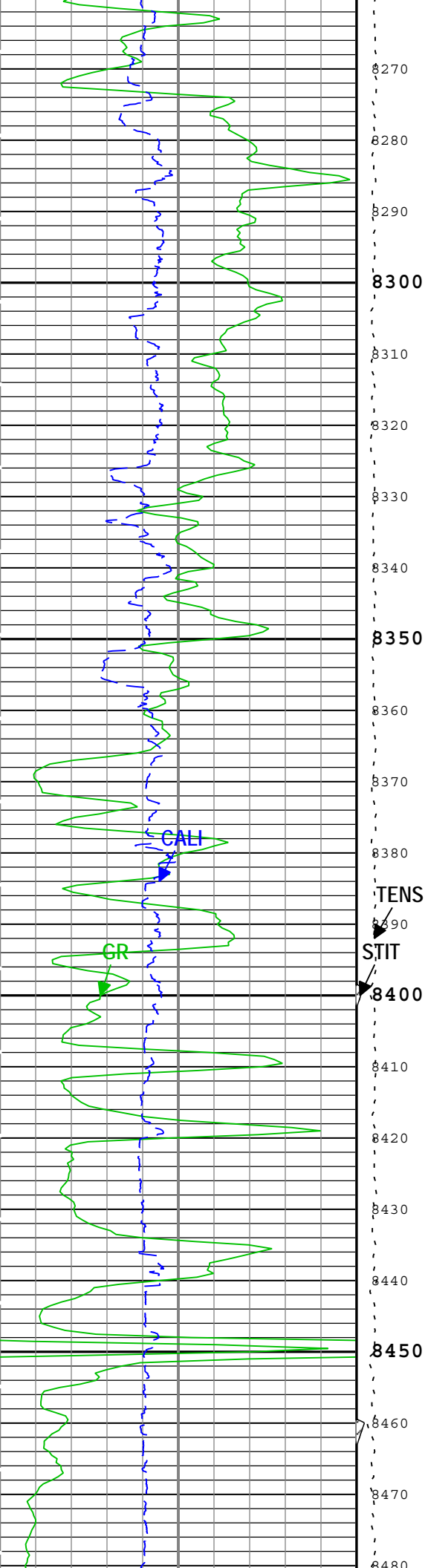


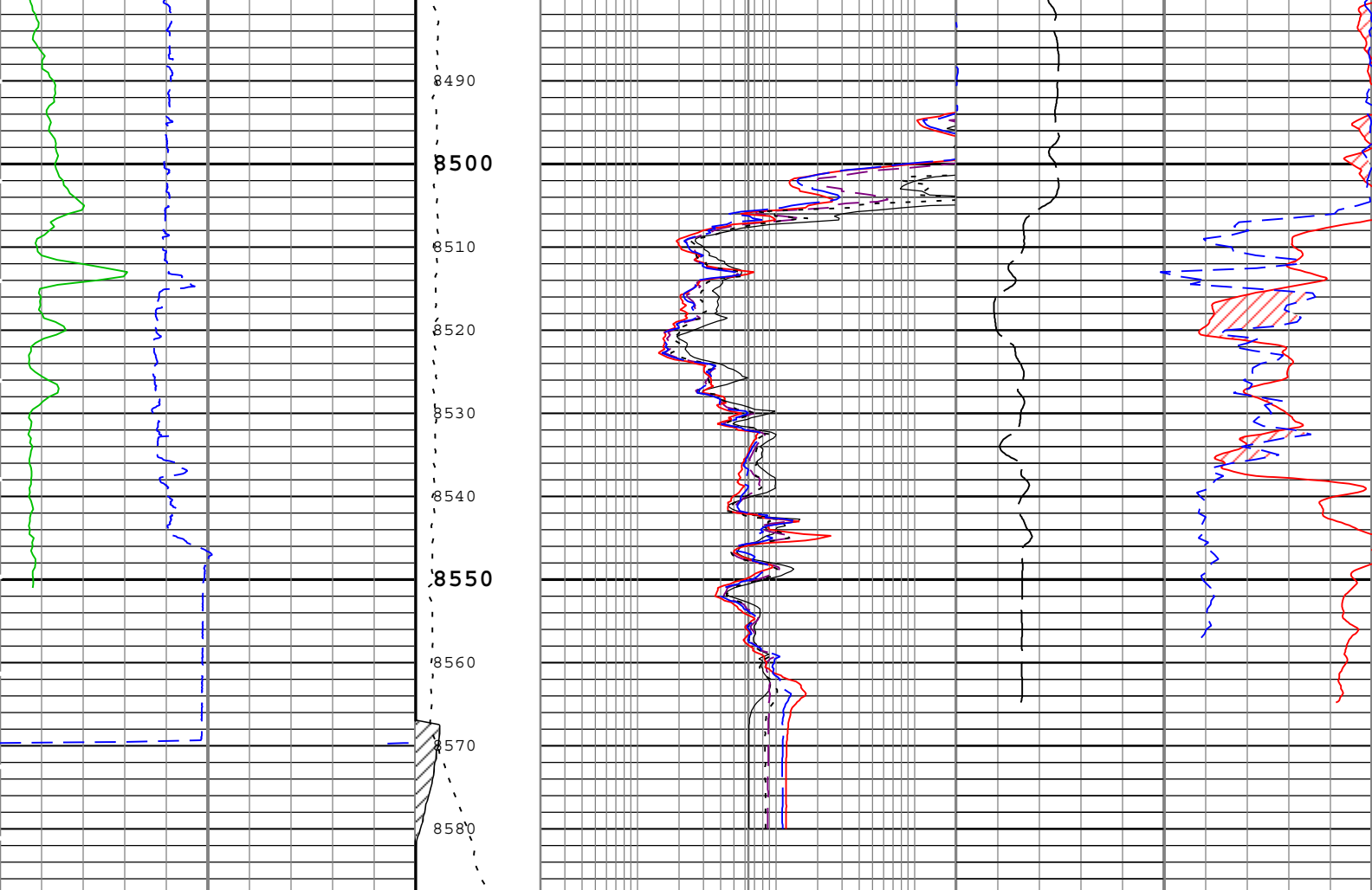












Gamma Ray Back up			Stuck Tool Indicator, Total (STIT)	Array Induction Two Foot Resistivity A10 (AT10) AIT-M			Gas Effect			
Gamma Ray (GR) HGNS-H				0.2 ohm.m 200			NPOR Backup			
0	gAPI		200	0	ft	50	Standard Resolution Density Porosity (DPHZ) HDRS-H			
				Cable Tension (TENS)	Array Induction Two Foot Resistivity A30 (AT30) AIT-M			0.5 ft3/ft3 0		
4	Caliper (CALI) HDRS-H		14		0.2 ohm.m 200					
				6000 lbf	0			Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H		
					Array Induction Two Foot Resistivity A90 (AT90) AIT-M			0.5 m3/m3 0		
					Array Induction Two Foot Resistivity A20 (AT20) AIT-M			Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		
					0.2 ohm.m 200			0 10		
					Array Induction Two Foot Resistivity A60 (AT60) AIT-M					
					0.2 ohm.m 200					

TIME\_1900 - Time Marked every 60.00 (s)

Description: HGNS standard resolution porosities for Platform Express Format: Log ( EMD 5in Triple Combo ) Index Scale: 5 in per 100 ft Index Unit: ft  
Index Type: Measured Depth Creation Date: 10-Nov-2014 10:20:17

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Standoff	
ACDE	Array Induction Casing Detection Enable	AIT-M	No	
ASTA	Array Induction Tool Standoff	AIT-M	1	in

BAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BHT	Bottom Hole Temperature	Borehole	194	degF
BS	Bit Size	WLSESSION	7.875	in
BSAL	Borehole Salinity	Borehole	1400	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	544	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DFD	Drilling Fluid Density	Borehole	8.9	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DHC	Density Hole Correction	HDRS-H	Bit Size	
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	68	degF
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.15	ohm.m
SOCO	Standoff Correction Option	HGNS-H	Yes	
TD	Total Measured Depth	Borehole	8568	ft

## 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	840	ft/h

## Calibration Report

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

Primary Equipment :

File code for AIT-MA Sonde Tool Element

AMIS

181

Auxiliary Equipment :

File code for AIT Bottom Nose Tool Element

AMRM

181

### AIT Sonde Calibration - Test Loop Gain

Master (EEPROM): 23:01:59 22-Sep-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Test Loop Gain - 0		Master	1.000	0.950	1.041	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 0	deg	Master	0	-3.000	1.805	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 1		Master	1.000	0.950	1.017	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 1	deg	Master	0	-3.000	0.902	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 2		Master	1.000	0.950	1.017	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 2	deg	Master	0	-3.000	0.392	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 3		Master	1.000	0.950	1.016	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 3	deg	Master	0	-3.000	0.089	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 4		Master	1.000	0.950	1.009	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 4	deg	Master	0	-3.000	0.141	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 5		Master	1.000	0.950	0.991	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 5	deg	Master	0	-3.000	-0.110	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 6		Master	1.000	0.950	0.998	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 6	deg	Master	0	-3.000	0.235	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 7		Master	1.000	0.950	1.010	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>

Test Loop Phase - 7	deg	Master	0	-3.000	-0.080	3.000	
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## AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM): 23:01:59 22-Sep-2014							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div></div>
Sonde Error Correction Real - 0	mS/m	Master	-----	-231.000	-113.093	119.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 0		Master	-----	-2250.000	114.931	2250.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 1	mS/m	Master	-----	114.000	157.599	204.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 1		Master	-----	-625.000	-170.942	625.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 2	mS/m	Master	-----	66.000	115.105	156.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 2		Master	-----	-350.000	-99.364	350.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 3	mS/m	Master	-----	39.000	49.447	89.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 3		Master	-----	-250.000	2.279	250.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 4	mS/m	Master	-----	15.000	26.217	35.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 4		Master	-----	-63.000	-3.708	63.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 5	mS/m	Master	-----	4.000	10.870	24.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 5		Master	-----	-50.000	21.802	50.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 6	mS/m	Master	-----	5.000	9.914	15.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 6		Master	-----	-30.000	2.857	30.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 7	mS/m	Master	-----	-5.000	-1.286	5.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 7		Master	-----	22.222	-1.522	22.222	<div><div></div><div></div><div></div><div></div><div></div></div>

Solid Error Correction Quad - 7		IVa
AIT Mud Calibration	Mud Calibration Coeff	

Master (EEPROM): 23:01:59 22-Sep-2014							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coarse Gain		Master	1.000	0.800	0.847	1.200	

File Gain		Master
<p>ANT File : <input type="text"/>    <input type="button" value="OK"/>    <input type="button" value="Cancel"/>    <input type="button" value="Help"/></p>		

Master (EEPROM):		23:01:59 22-Sep-2014		Before (Measured):		02:10:52 10-Nov-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div></div>
Thru Cal Mag - 0	V	Master	----	0.366	0.575	0.854	<div><div></div></div>
		Before	----	0.366	0.575	0.854	<div><div></div></div>
		Before-Master	----	----	0.000	----	<div><div></div></div>
Thru Cal Phase - 0	deg	Master	----	137.000	-169.442	-103.000	<div><div></div></div>
		Before	----	137.000	-167.318	-103.000	<div><div></div></div>
		Before-Master	----	----	2.124	----	<div><div></div></div>
Thru Cal Mag - 1	V	Master	----	0.762	1.178	1.778	<div><div></div></div>
		Before	----	0.762	1.178	1.778	<div><div></div></div>
		Before-Master	----	----	0.000	----	<div><div></div></div>
Thru Cal Phase - 1	deg	Master	----	136.000	-170.544	-104.000	<div><div></div></div>
		Before	----	136.000	-168.418	-104.000	<div><div></div></div>
		Before-Master	----	----	2.126	----	<div><div></div></div>
Thru Cal Mag - 2	V	Master	----	0.372	0.584	0.868	<div><div></div></div>
		Before	----	0.372	0.585	0.868	<div><div></div></div>
		Before-Master	----	----	0.001	----	<div><div></div></div>
Thru Cal Phase - 2	deg	Master	----	132.000	-174.186	-108.000	<div><div></div></div>
		Before	----	132.000	-172.060	-108.000	<div><div></div></div>
		Before-Master	----	----	2.126	----	<div><div></div></div>
Thru Cal Mag - 3	V	Master	----	0.420	0.660	0.980	<div><div></div></div>
		Before	----	0.420	0.660	0.980	<div><div></div></div>
		Before-Master	----	----	0.000	----	<div><div></div></div>
Thru Cal Phase - 3	deg	Master	----	131.000	-174.965	-109.000	<div><div></div></div>
		Before	----	131.000	-172.837	-109.000	<div><div></div></div>
		Before-Master	----	----	2.128	----	<div><div></div></div>
Thru Cal Mag - 4	V	Master	----	0.804	1.233	1.876	<div><div></div></div>
		Before	----	0.804	1.233	1.876	<div><div></div></div>
		Before-Master	----	----	0.000	----	<div><div></div></div>
Thru Cal Phase - 4	deg	Master	----	125.000	178.761	-115.000	<div><div></div></div>
		Before	----	125.000	-179.101	-115.000	<div><div></div></div>
		Before-Master	----	----	-357.862	----	<div><div></div></div>
Thru Cal Mag - 5	V	Master	----	1.176	1.795	2.744	<div><div></div></div>
		Before	----	1.176	1.795	2.744	<div><div></div></div>
		Before-Master	----	----	0.000	----	<div><div></div></div>
Thru Cal Phase - 5	deg	Master	----	122.000	177.104	-118.000	<div><div></div></div>
		Before	----	122.000	179.246	-118.000	<div><div></div></div>
		Before-Master	----	----	2.142	----	<div><div></div></div>





**HGNS Accelerometer Calibration - Accelerometer Accumulations**

Before (Measured): 02:10:08 10-Nov-2014

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-Jan-2007

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	-----	-----	1155.700	-----	
Accelerometer Coefficients - 1		Master	-----	-----	26.890	-----	
Accelerometer Coefficients - 2		Master	-----	-----	-0.008	-----	
Accelerometer Coefficients - 3		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 4		Master	-----	-----	2.748	-----	
Accelerometer Coefficients - 5		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 6		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 7		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 8		Master	-----	-----	298.600	-----	
Accelerometer Coefficients - 9		Master	-----	-----	0.983	-----	

**HGNS Neutron Calibration - HGNS Neutron Accumulations**

Master (EEPROM): 10:43:32 31-Oct-2014

Before (Measured):

13:56:29 09-Nov-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	24.4	40.0	
		Before	0	5.0	25.3	40.0	
		Before-Master	-----	-3.7	0.9	3.7	
Far Zero Measurement	1/s	Master	0	5.0	28.7	40.0	
		Before	0	5.0	27.2	40.0	
		Before-Master	-----	-4.3	-1.5	4.3	
Near Plus Measurement	1/s	Master	6031.0	4700.0	5257.0	6900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
Far Plus Measurement	1/s	Master	2793.0	1900.0	2224.0	2900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
Near Corrected Plus Measurement	1/s	Master		4700.0	5330.0	6900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
Far Corrected Plus Measurement	1/s	Master		1900.0	2259.0	2900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	

**HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations**

Before (Measured): 14:02:32 09-Nov-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	85.4	120.0	
RGR Plus Measurement	gAPI	Before	185.4	157.1	167.2	206.3	
GR Calibration Gain		Before	0.89	0.80	0.99	1.05	

**EDTC-B (Enhanced Digital Telemetry Cartridge - Version B) Calibration - Run ONE**

Primary Equipment :

EDTC-B

EDTC-B

8328

Calibration Parameter :

Plus Reference (Jig minus background reference)

165

**EDTC-B Accelerometer Calibration - EDTC-B Accelerometer Calibration**

Before (Measured): 02:11:25 10-Nov-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	ft/s2	Before	32.19	31.53	32.15	32.84	

**EDTC-B Memory Data - EDTC-B Memory Data**

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Initial PMT HV	V	Master			1440.000			
Accelerometer Serial Number		Master			1562			
Accelerometer Coefficients - 0		Master	----	----	2.955	----		
Accelerometer Coefficients - 1		Master	----	----	0.000	----		
Accelerometer Coefficients - 2		Master	----	----	0.000	----		
Accelerometer Coefficients - 3		Master	----	----	0.000	----		
Accelerometer Coefficients - 4		Master	----	----	0.000	----		
Accelerometer Coefficients - 5		Master	----	----	0.000	----		
Accelerometer Coefficients - 6		Master	----	----	0.000	----		
Accelerometer Coefficients - 7		Master	----	----	-0.006	----		
Accelerometer Coefficients - 8		Master	----	----	0.000	----		
Accelerometer Coefficients - 9		Master	----	----	0.000	----		
Accelerometer Coefficients - 10		Master	----	----	0.000	----		
Accelerometer Coefficients - 11		Master	----	----	0.000	----		
Gamma-Ray Detector Serial Number		Master			79498			
EDTC-B Gamma-Ray Calibration - Gamma Ray Coefficients								
Before (Measured): 14:02:40 09-Nov-2014								
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Gamma Ray Gain		Before	1.000	0.900	1.044	1.100		
EDTC-B Gamma-Ray Calibration - Gamma Ray Accumulations								
Before (Measured): 14:02:40 09-Nov-2014								
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
RGR Zero Measurement	gAPI	Before		0	71.721	120.000		
RGR Plus Measurement	gAPI	Before	165.000	150.000	158.002	180.000		



Company:	Cascade Petroleum LLC	Schlumberger
Well:	Gaede 9S-55W-8-16	
Field:	Wildcat	
County:	Lincoln	
State:	Colorado	
Platform Express		
Triple Combo		
Linear		