

Company: Nighthawk Production LLC

Well: John Craig 10 10

Field: Old Homestead

County: Lincoln State: Colorado

Platform Express

Triple Combo

County:	Lincoln
Field:	Old Homestead
Location:	SHL: NWSE 1985' FSL & 2147' FEL
Well:	John Craig 10 10
Company:	Nighthawk Production LLC
Location:	
SHL: NWSE 1985' FSL & 2147' FEL	Elev.: K.B. 5456.00 ft
Section 10, Township 10S, Range 56W	G.L. 5441.00 ft
Lat: 39.191680, Long: -103.647980	D.F. 5455.00 ft
Permanent Datum:	Ground Level
Log Measured From:	Kelly Bushing
Drilling Measured From:	Kelly Bushing
API Serial No.	Section: 10
05-073-06567-00	Township: 10S
	Range: 56W

Logging Date	21-May-2014
Run Number	Run 1
Depth Driller	8405.00 ft
Schlumberger Depth	8414.00 ft
Bottom Log Interval	8414.00 ft
Top Log Interval	369.00 ft
Casing Driller Size @ Depth	9.625 in @ 367.00 ft
Casing Schlumberger	369 ft
Bit Size	7.875 in
Type Fluid In Hole	Fresh Water
Density	8.75 lbm/gal
Fluid Loss	PH
Source of Sample	Active Tank
RM @ Meas Temp	1.18 ohm.m @ 80.5 degF
RMF @ Meas Temp	0.88 ohm.m @ 80.5 degF
RMC @ Meas Temp	1.48 ohm.m @ 80.5 degF
Source RMF	Calculated
RM @ BHT	0.52 @ 193
RMF @ BHT	0.39 @ 193
Max Recorded Temperatures	193 degF
Circulation Stopped	20-May-2014 21:00:00
Logger on Bottom	21-May-2014 07:10:25
Unit Number	2135
Recorded By	Max Pace
Witnessed By	Jim Weir

Disclaimer

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Well Sketch

Driller Depth

0.00 ft

367.00 ft

Casing 9.625in
24lbm/ft



Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	7.875					
Top Driller (ft)	367					
Top Logger (ft)	369					
Bottom Driller (ft)	8405					
Bottom Logger (ft)	8414					
Casing						
Size (in)	9.625					
Weight (lbm/ft)	24					
Inner Diameter (in)	9.157					
Grade	J55					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	367					
Bottom Logger (ft)	369					

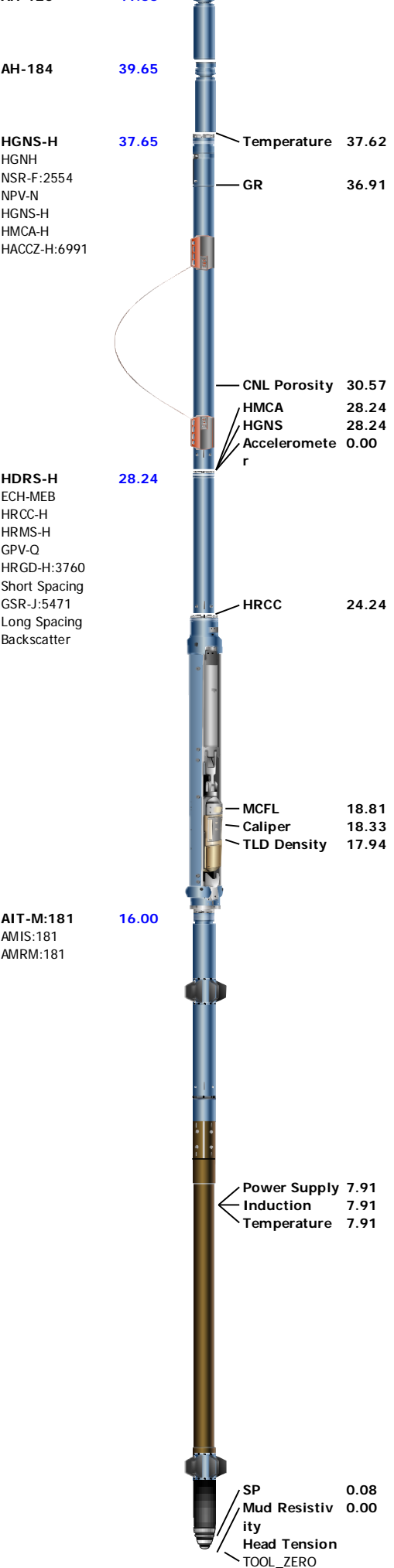
Borehole Fluids

Parameter(unit)	Run 1					
Fluid Type	Water					
Fluid Name	Fresh Water					
Max Recorded Temperatures (degF)	193					
Source of Sample	Active Tank					
Salinity (ppm)	1100					
Density (lbm/gal)	8.75					
Funnel Viscosity (s)	63					
Fluid Loss (cm3)						
PH	8.19					
Date/Time Circulation Stopped	20-May-2014 21:00:00					
Date Logger on Bottom	21-May-2014					
Time Logger on Bottom	07:10:25					
Source RMF	Calculated					
RMC	Calculated					
RM @ Meas Temp (ohm.m@degF)	1.18 @ 80.5					
RMF @ Meas Temp (ohm.m@degF)	0.88 @ 80.5					

RMC @ Meas Temp (ohm.m@degF)	1.48 @ 80.5					
RM @ BHT (ohm.m@degF)	0.52 @ 193					
RMF @ BHT (ohm.m@degF)	0.39 @ 193					
RMC @ BHT (ohm.m@degF)	0.64 @ 193					
Total Solid (%)						
High Gravity Solids (%)						

Remarks and Equipment Summary

Run 1: Toolstring				Run 1: Remarks	
Equip name	Length	MP name	Offset	<div></div>	
LEH-QT	73.17				
LEH-QT					
EDTC-B	70.25				
EDTH-B					
EDTG-A					
EDTC-B					
		CTEM	66.75		
		ACCZ	0.00		
		HV	0.00		
		Gamma Ray	64.88		
		TelStatus	63.75		
PPC-B:1234	63.75				
PPC-B:1234					
		PPC-B Caliper	62.61		
		s			
				</	



Lengths are in ft

Maximum Outer Diameter = 5.300 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL_ZERO

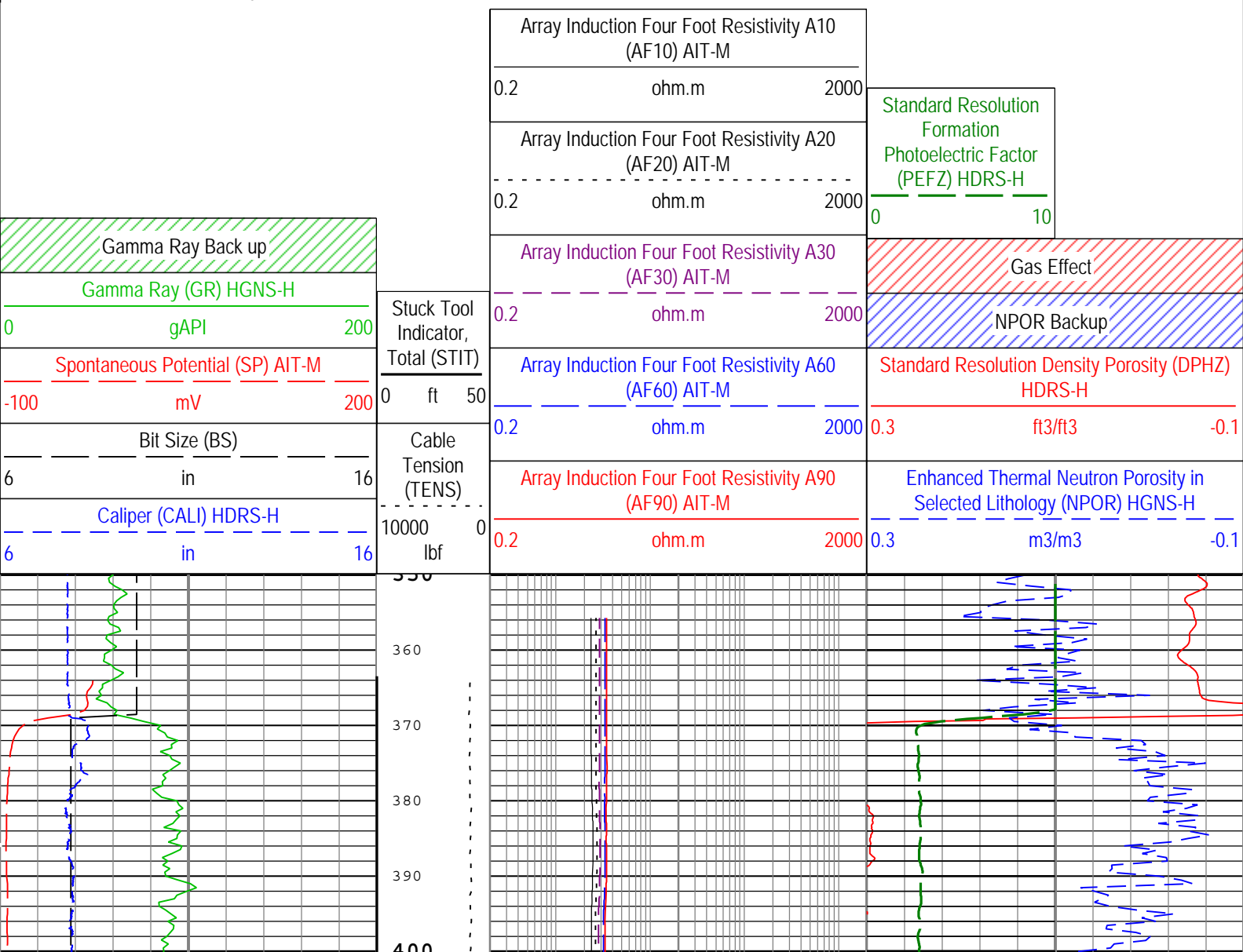
All measurements are relative to TOOL_ZERO									
Depth Summary									
		Run 1							
Depth Measuring Device									
Type	IDW-B								
Serial Number									
Calibration Date									
Calibrator Serial Number									
Calibration Cable Type									
Wheel Correction 1									0
Wheel Correction 2	0								
Tension Device									
Type	CMTD-B/A								
Serial Number									
Calibration Date									
Calibrator Serial Number									
Number of Calibration Points	0								
Logging Cable									
Type	7-46NT-XS								
Serial Number									
Length									24000.00 ft
Conveyance Type									Wireline
Rig Type									Land
Run 1:Depth Control Parameters				Depth Control Remarks					
Log Sequence	First Log In the Well								
Rig Up Length At Surface									
Rig Up Length At Bottom									
Rig Up Length Correction									
Stretch Correction									
Tool Zero Check At Surface									
Run 1									
Software Version									
Acquisition System						Version			
MaxWell						4.0.9163.3000			
Application Patch						Patch-SP-10767_18214-4.0.9163.3001			
						Patch-Hotfix_Task_Tree_GDI_SP2-20806-4.0.9434.3002			
Computation	Description						Version		
Borehole	Borehole Ensemble provides common Borehole Parameters and Channels						4.0.9433.3000		
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
Run 1	Log[5]:Up	Up	363.46 ft	8438.27 ft	21-May-2014 7:14:36 AM	21-May-2014 10:39:44 AM	ON	2.80 ft	No

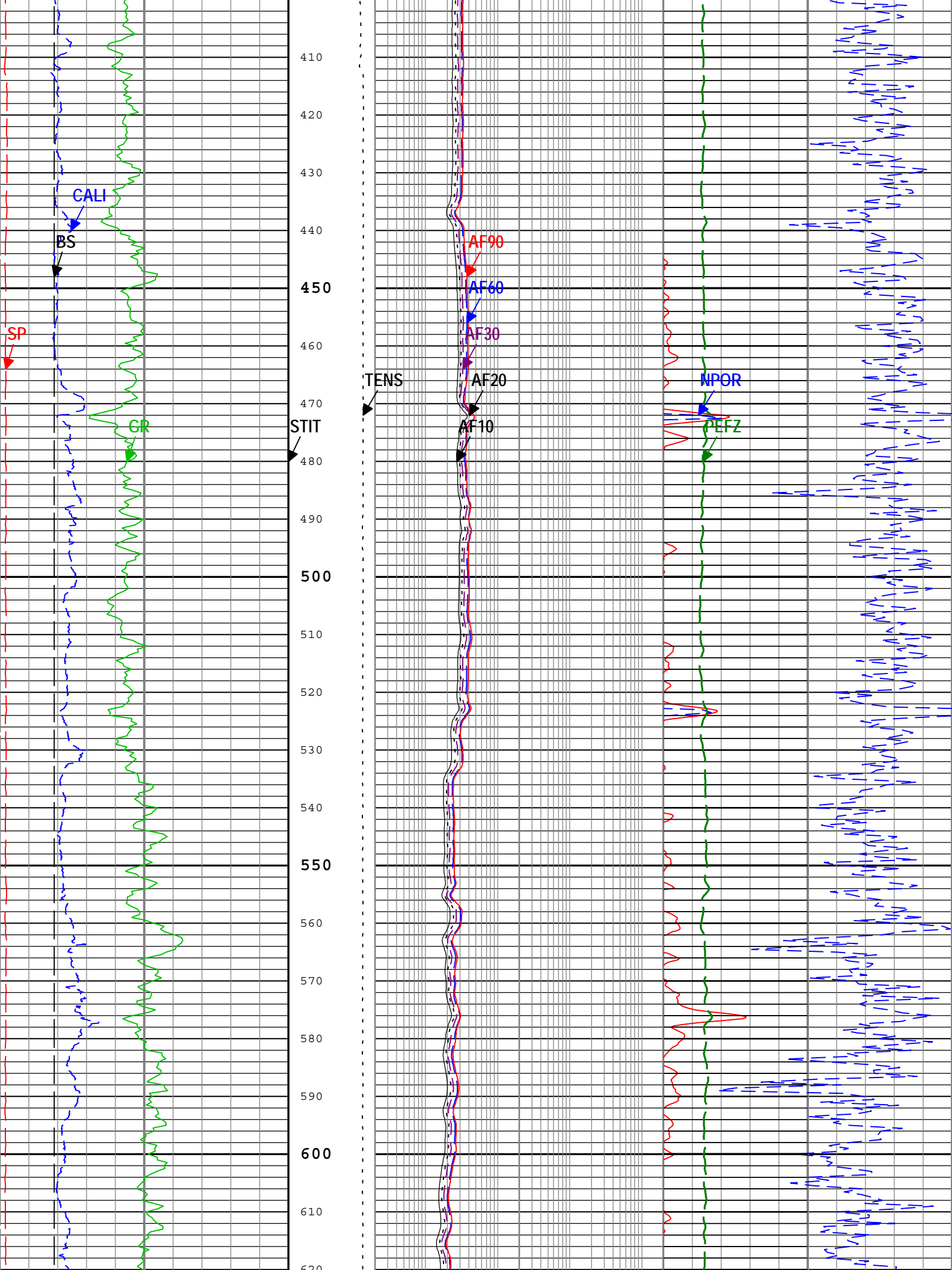
Log

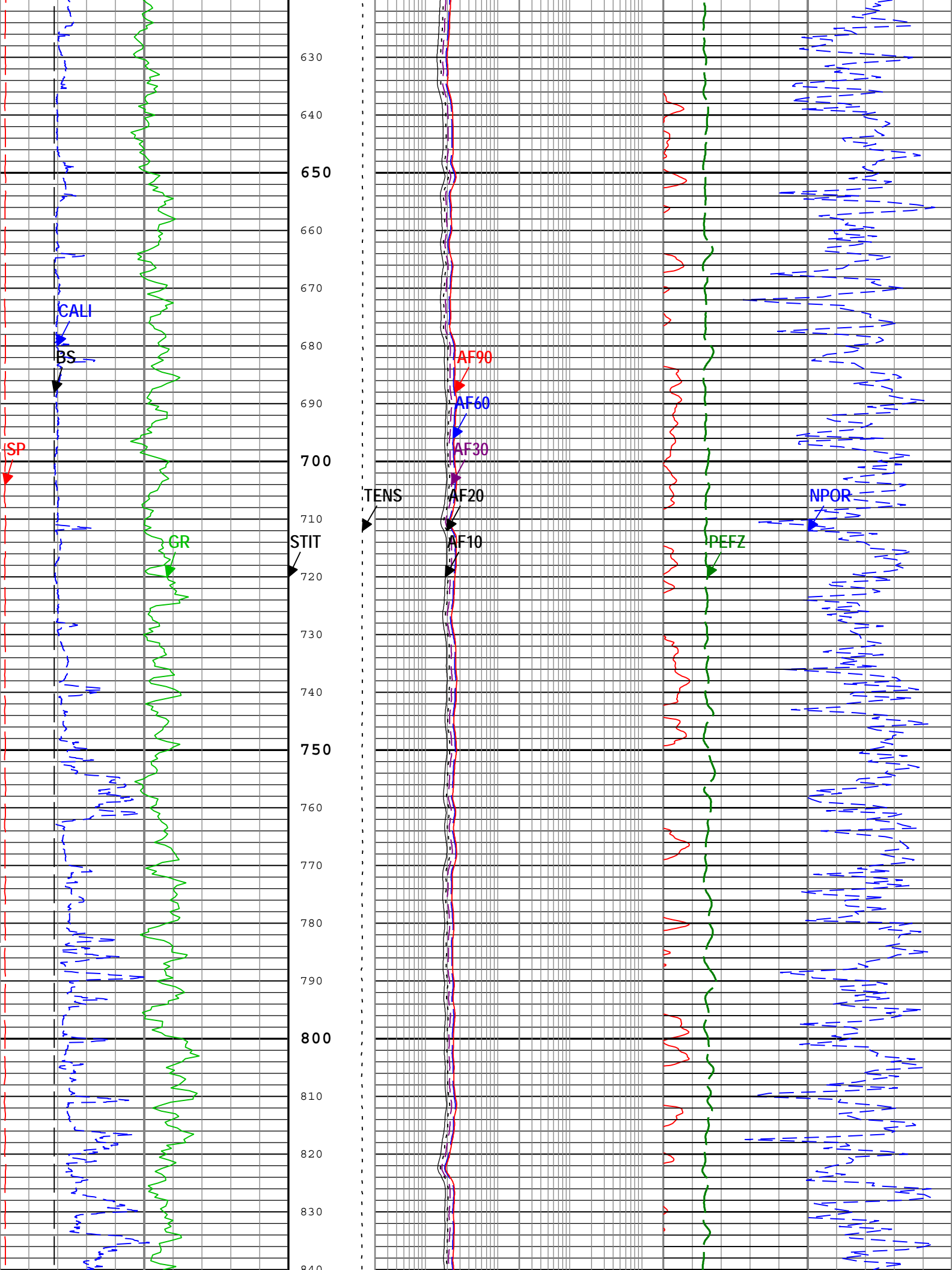
Well:John Craig 10 10

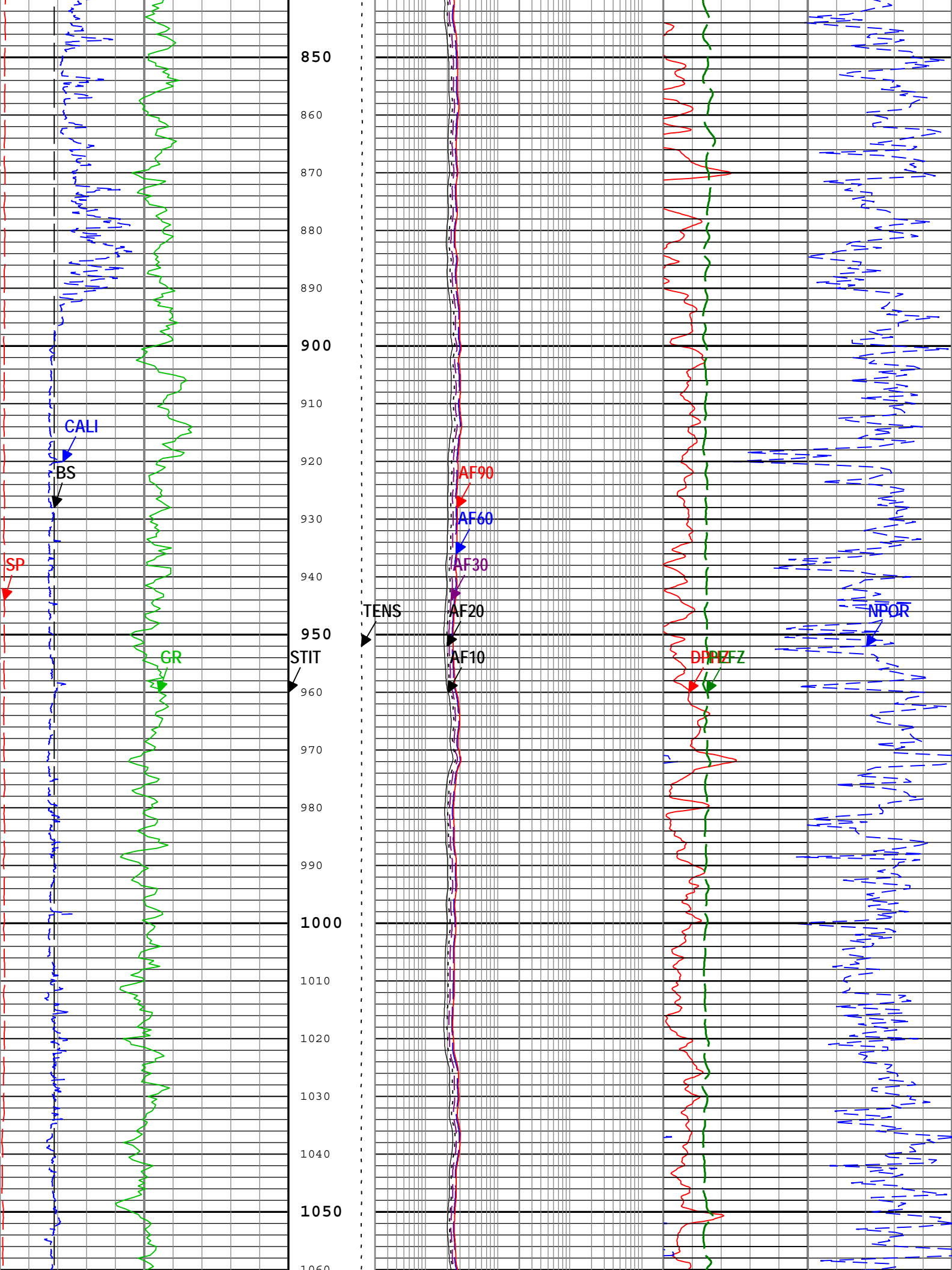
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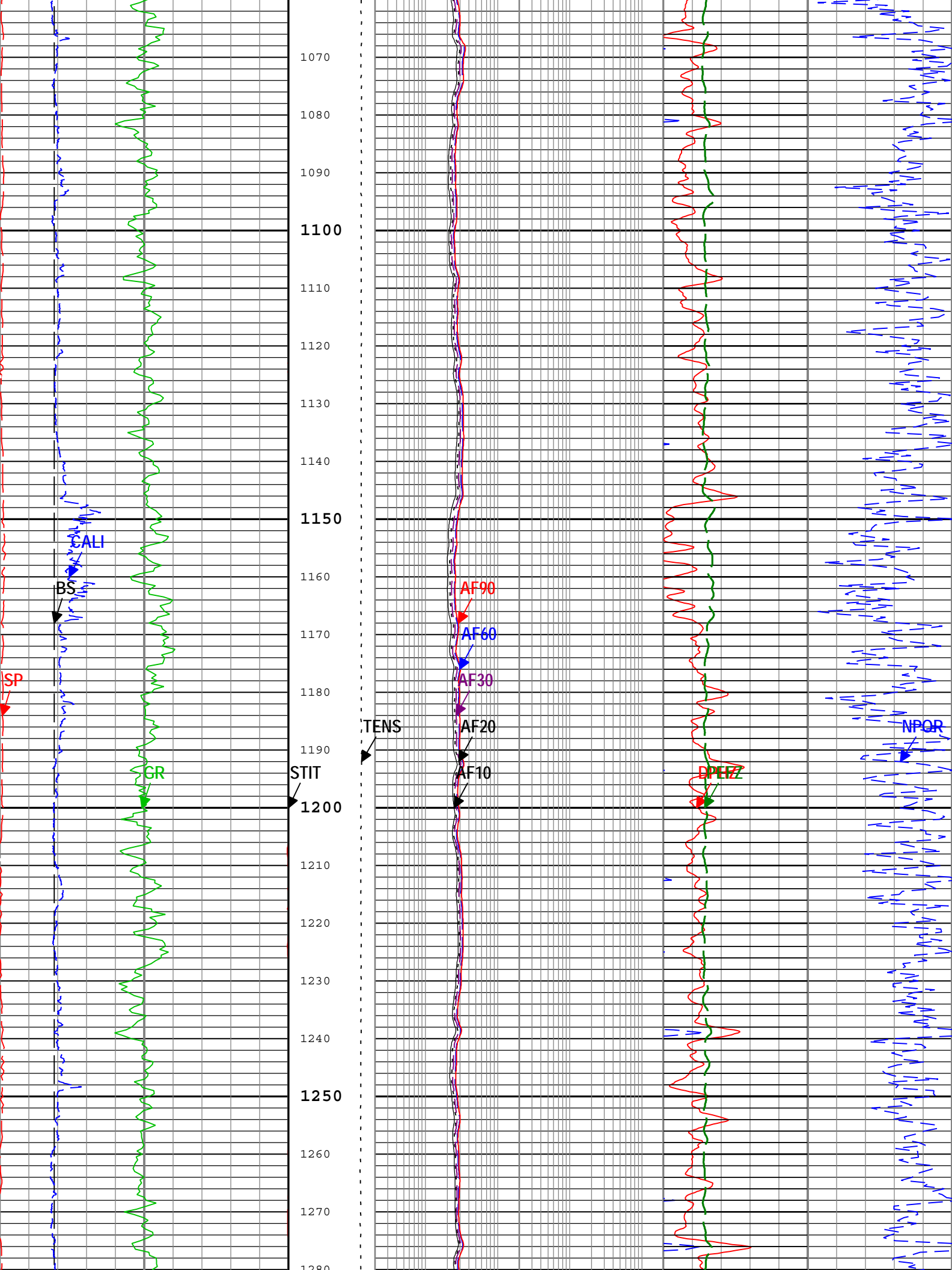
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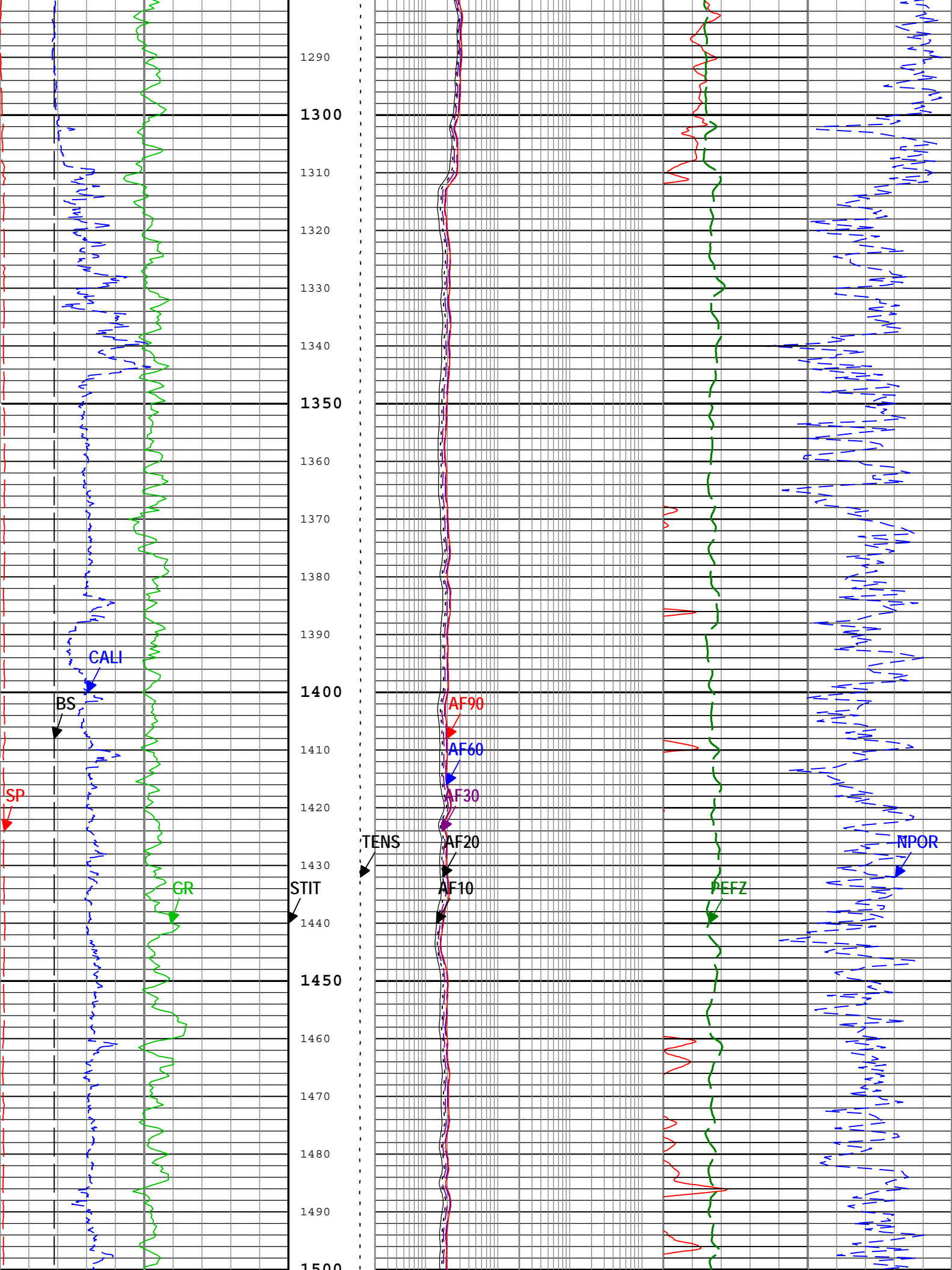


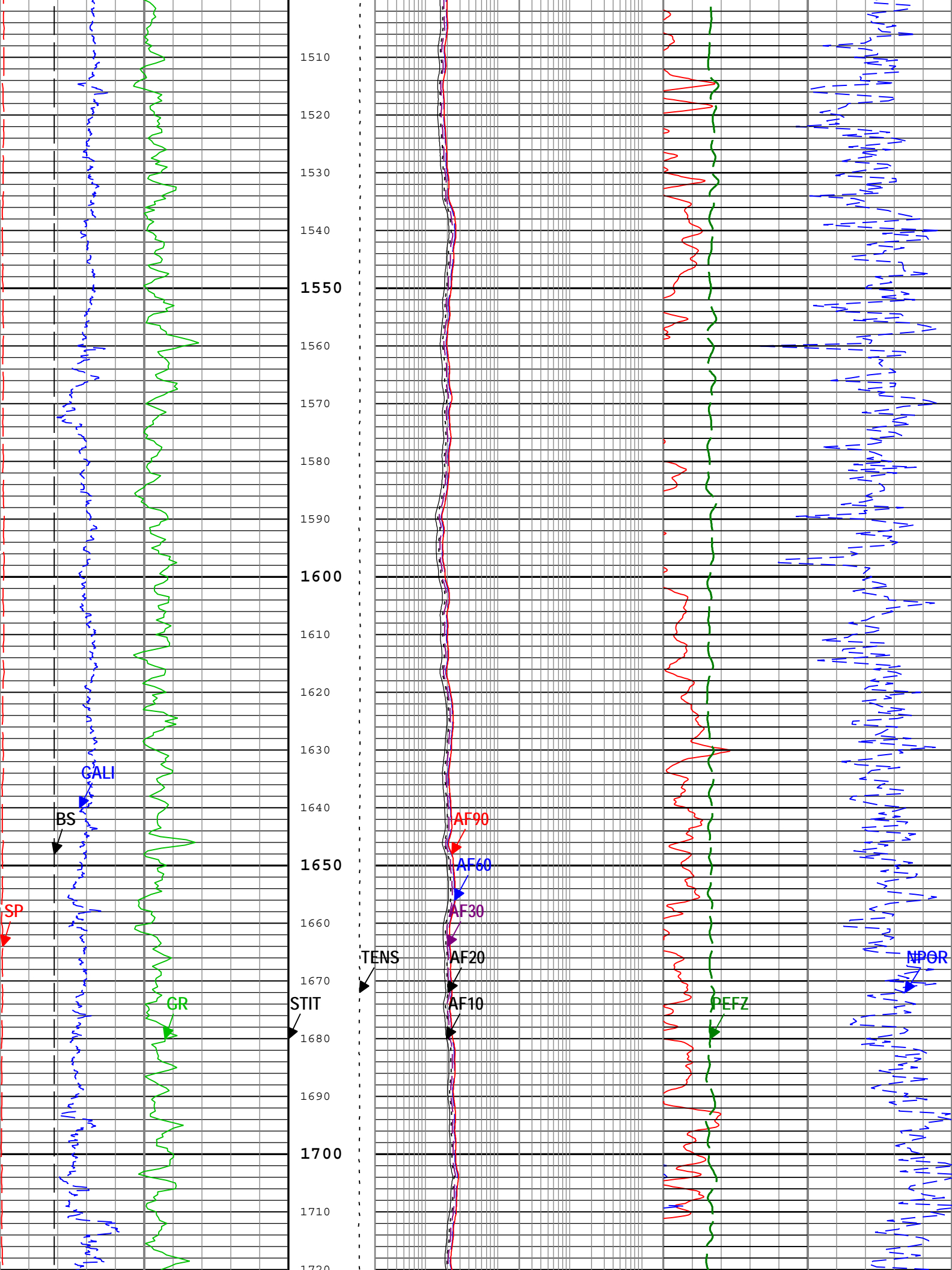


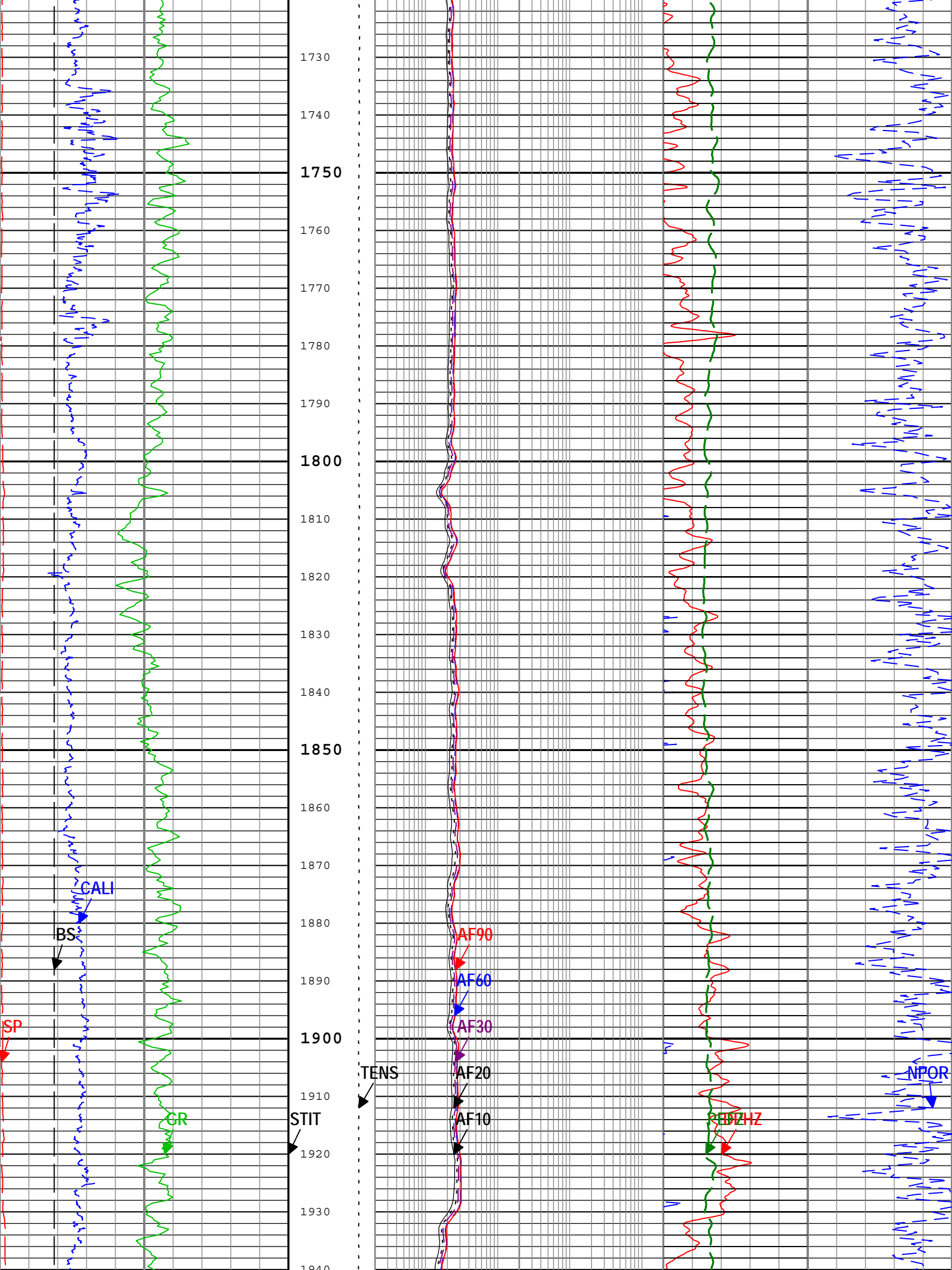


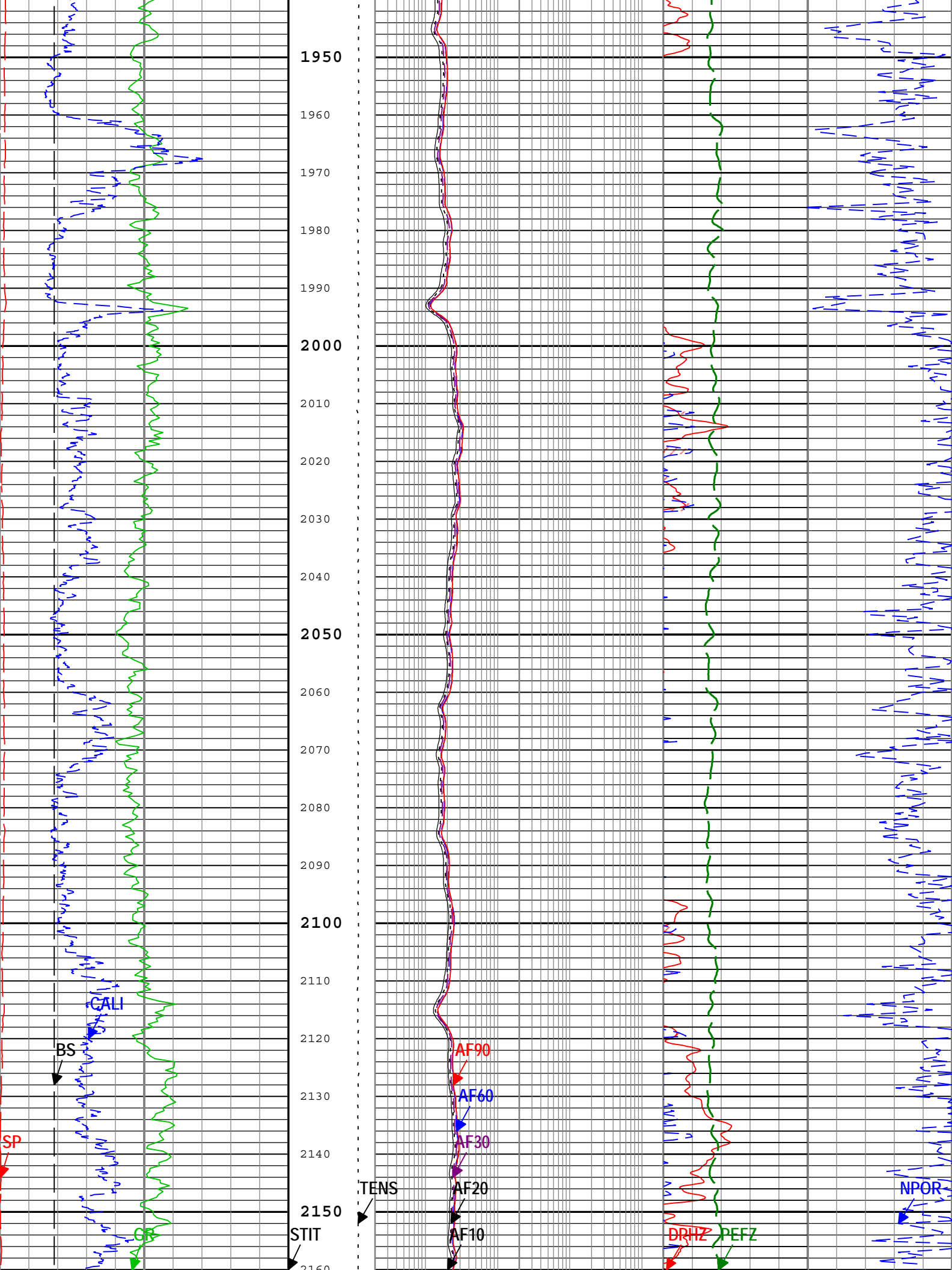


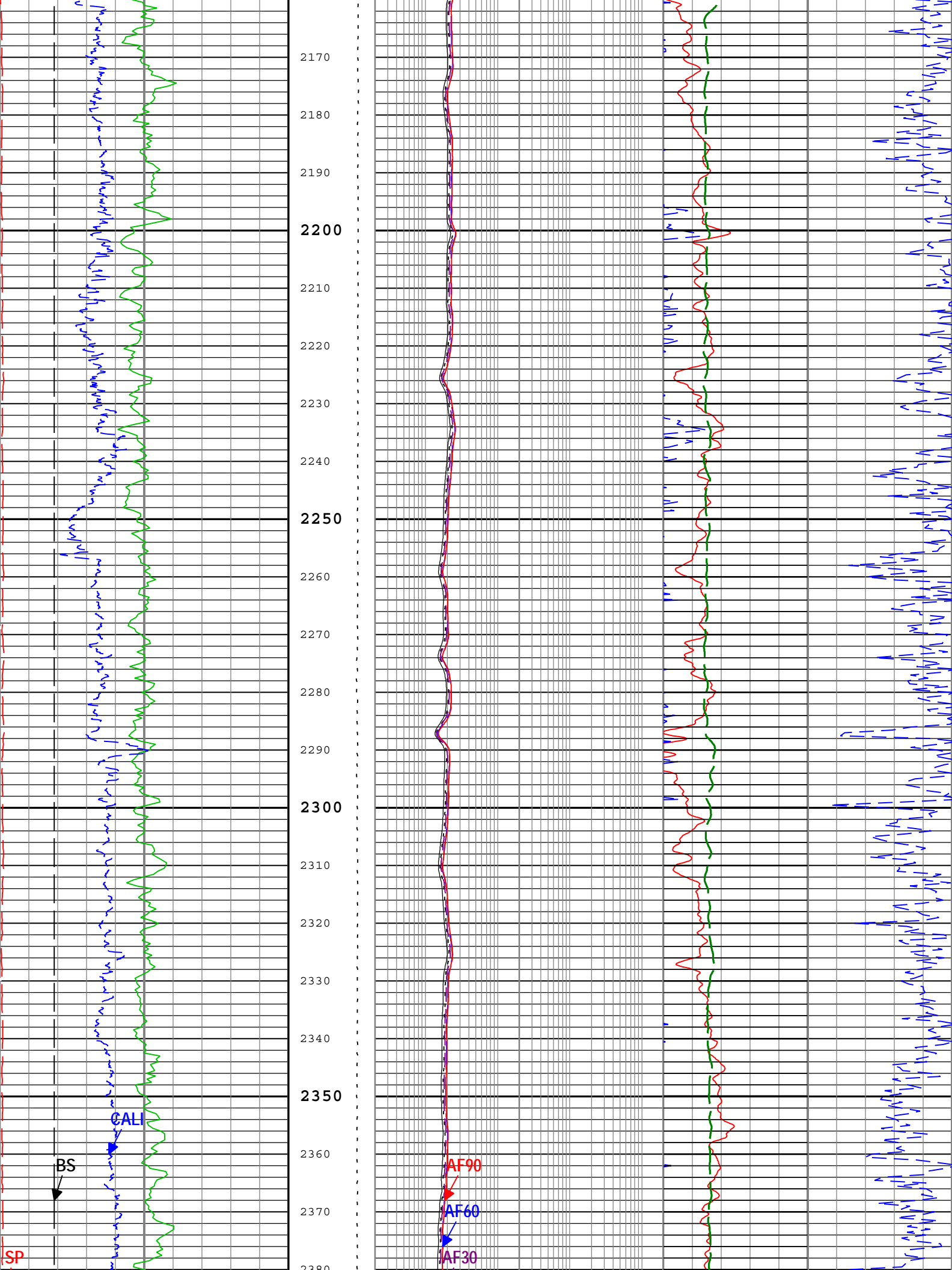


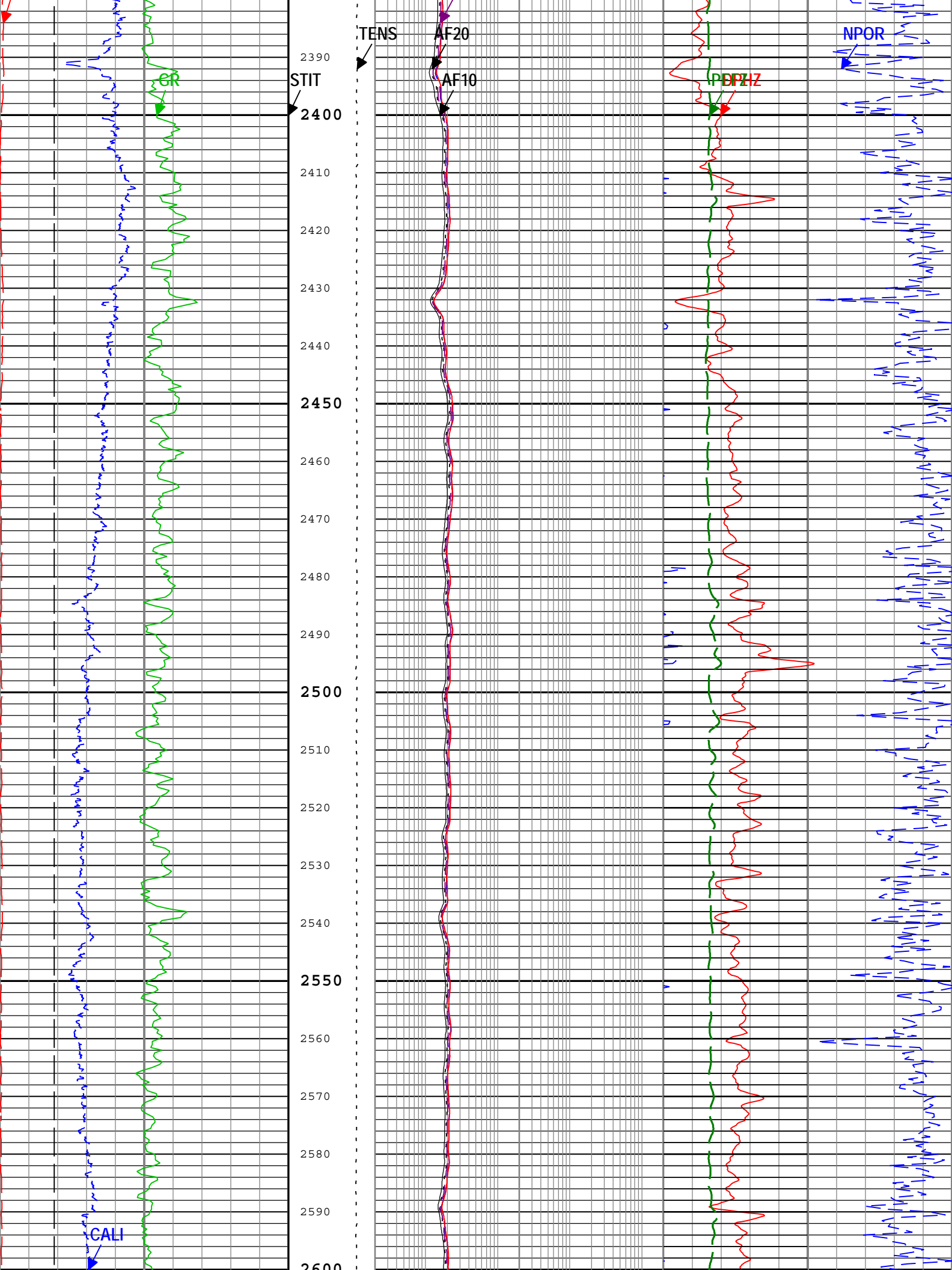


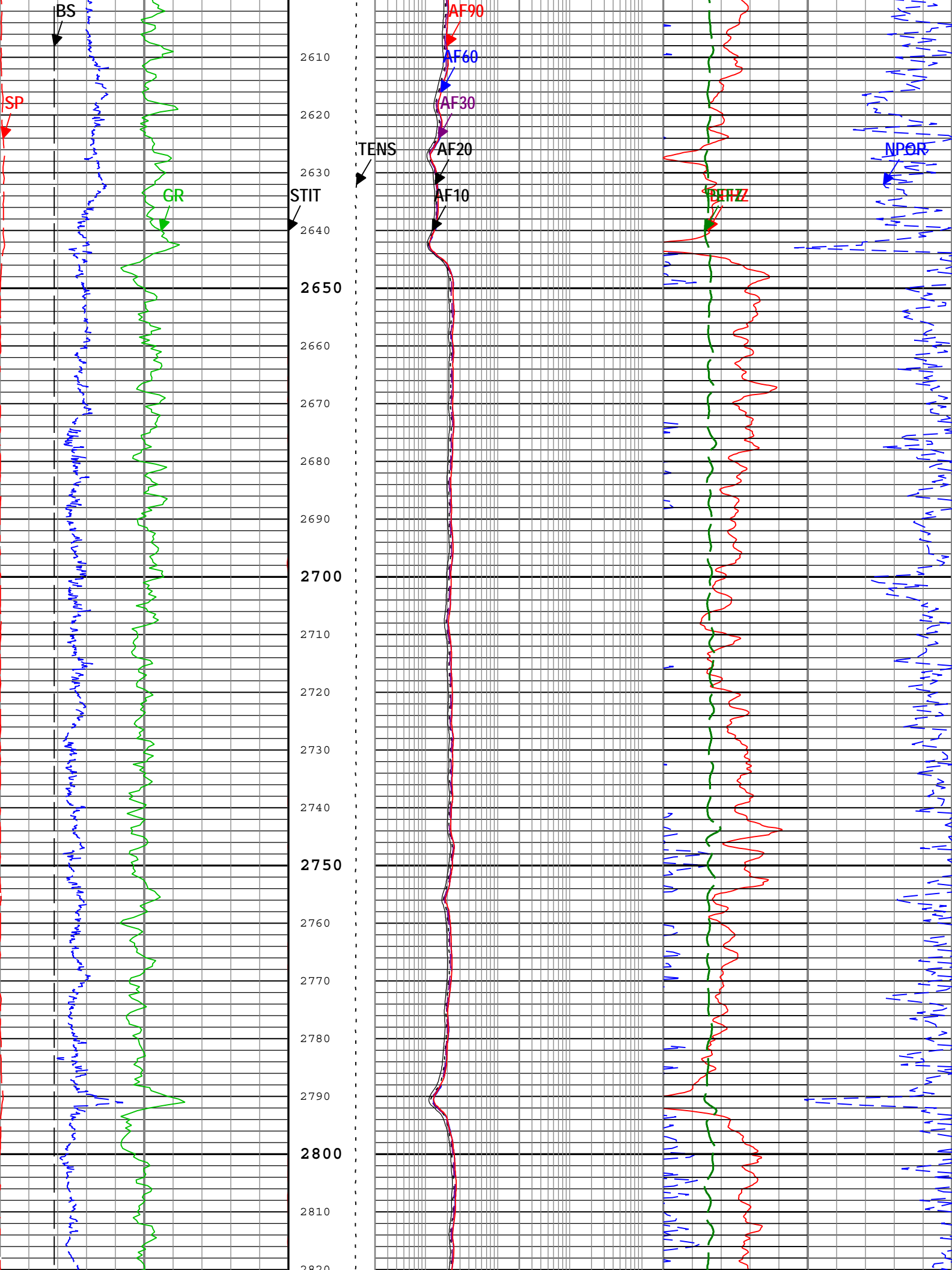


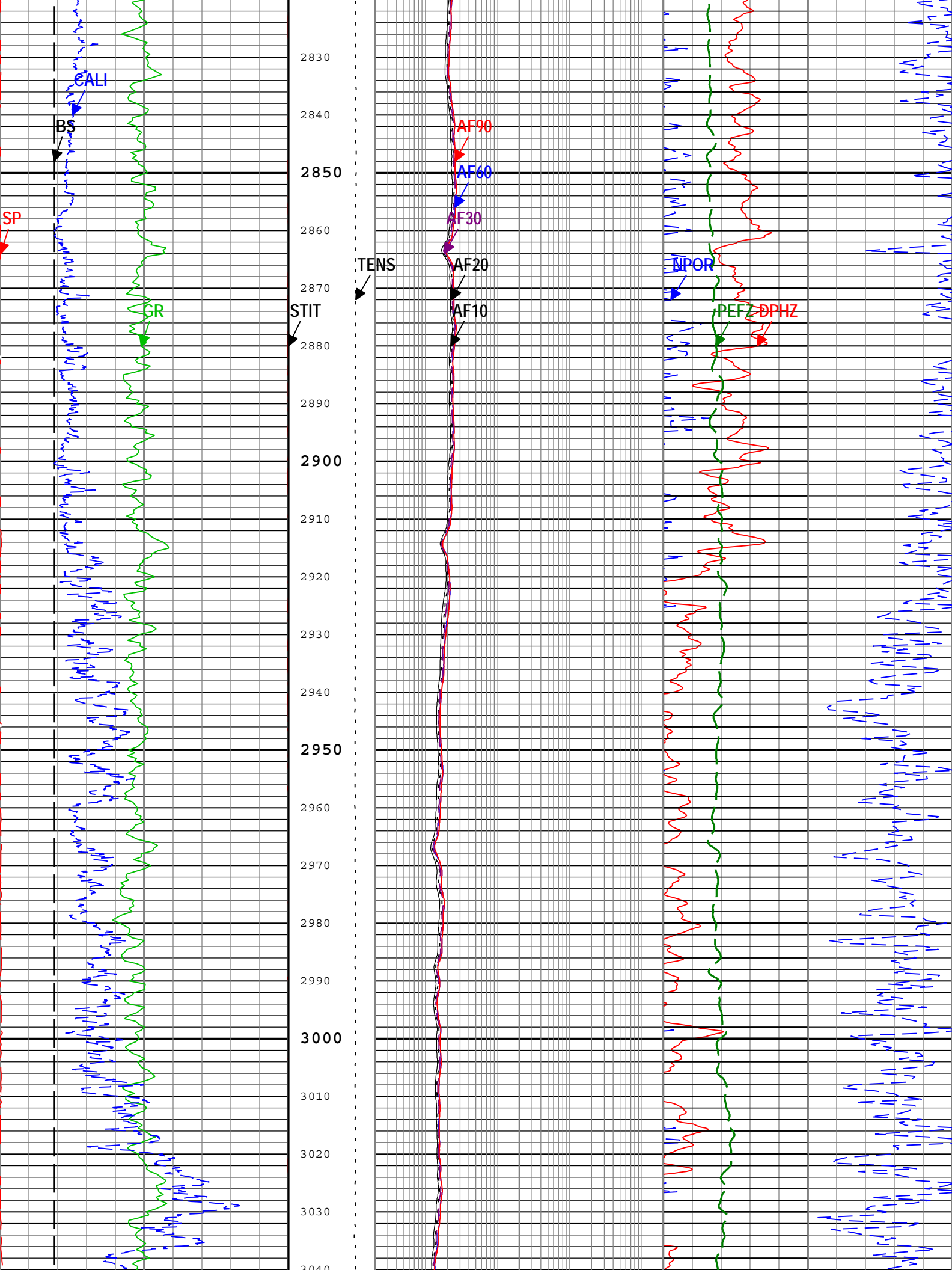


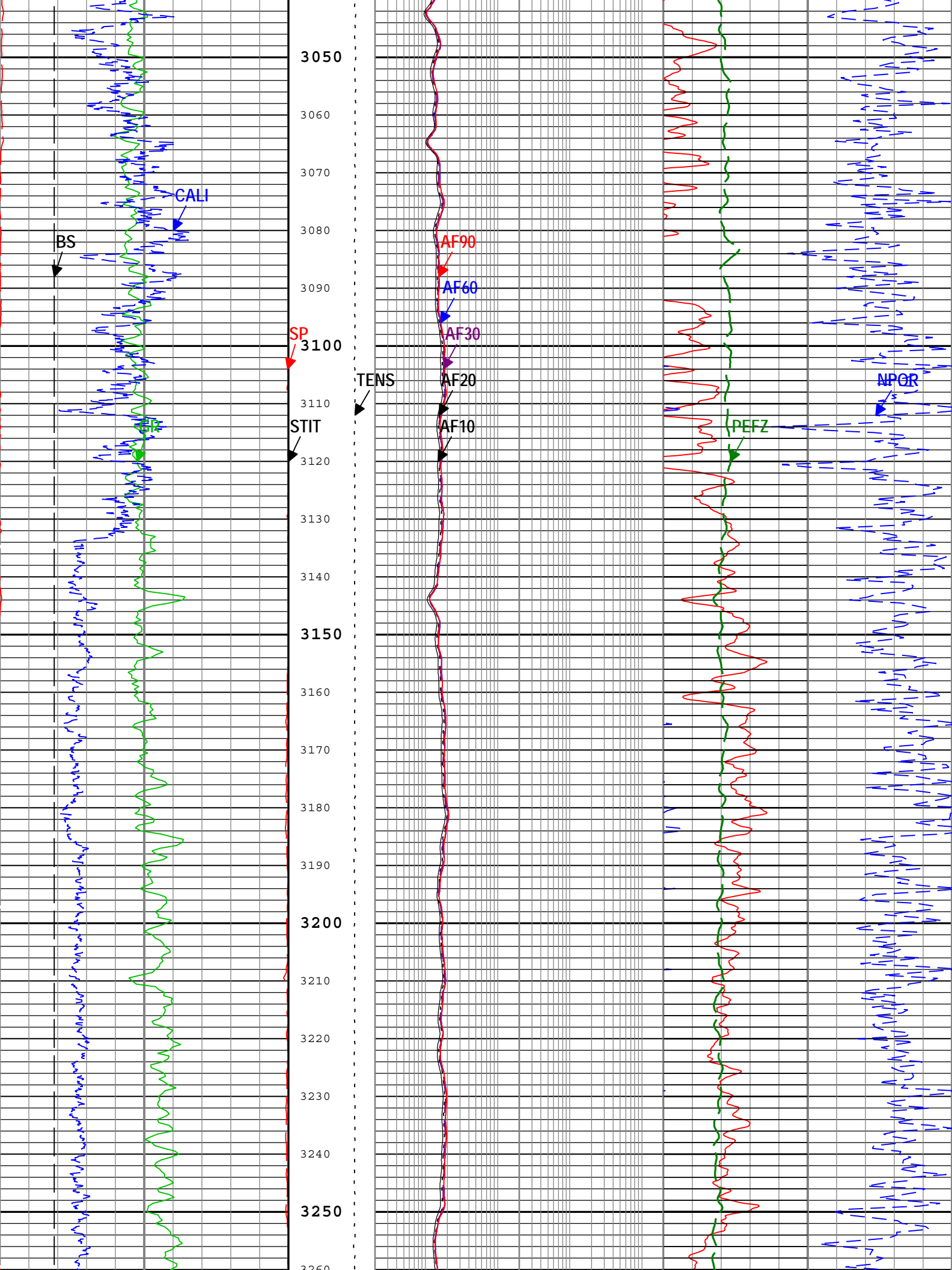


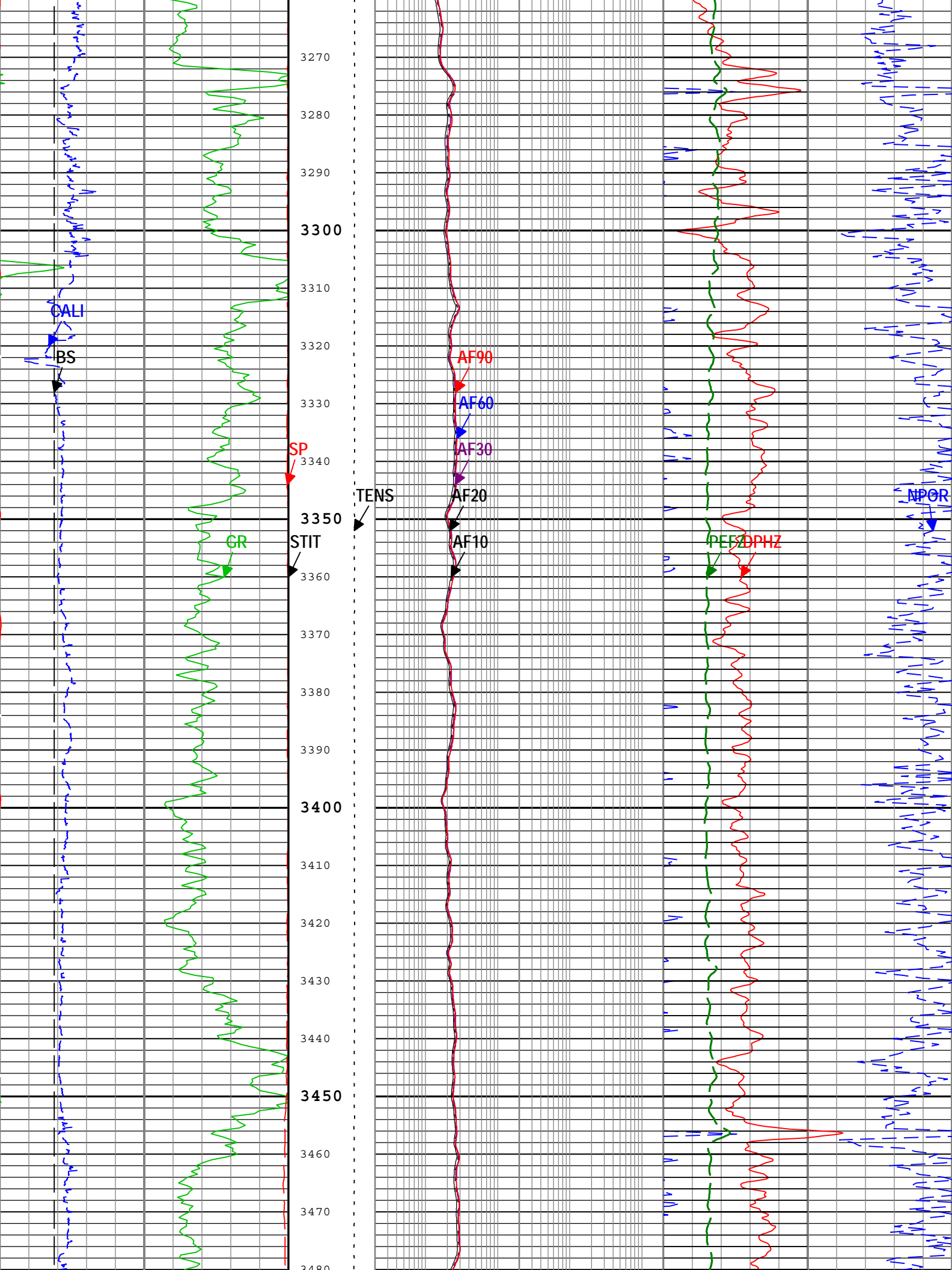


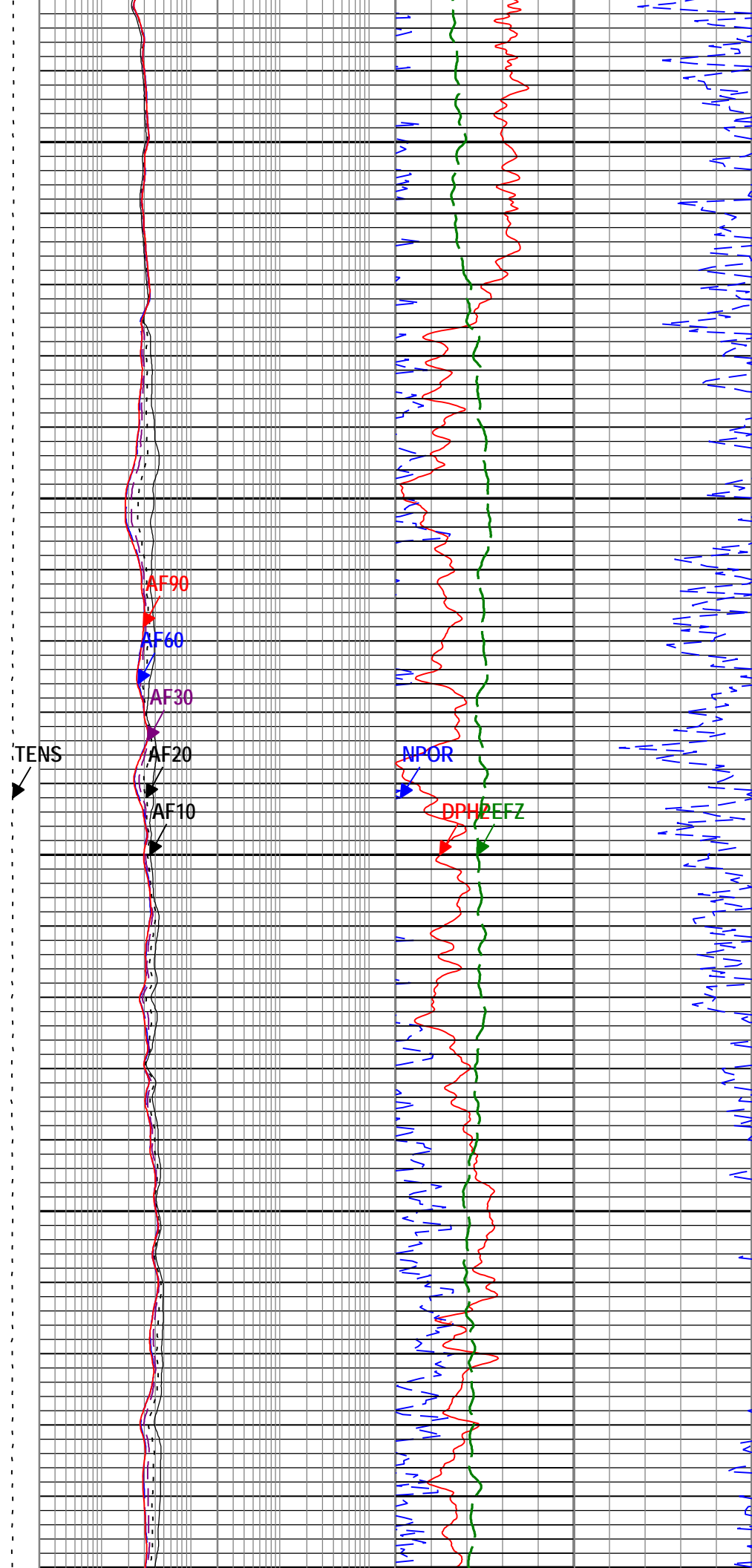
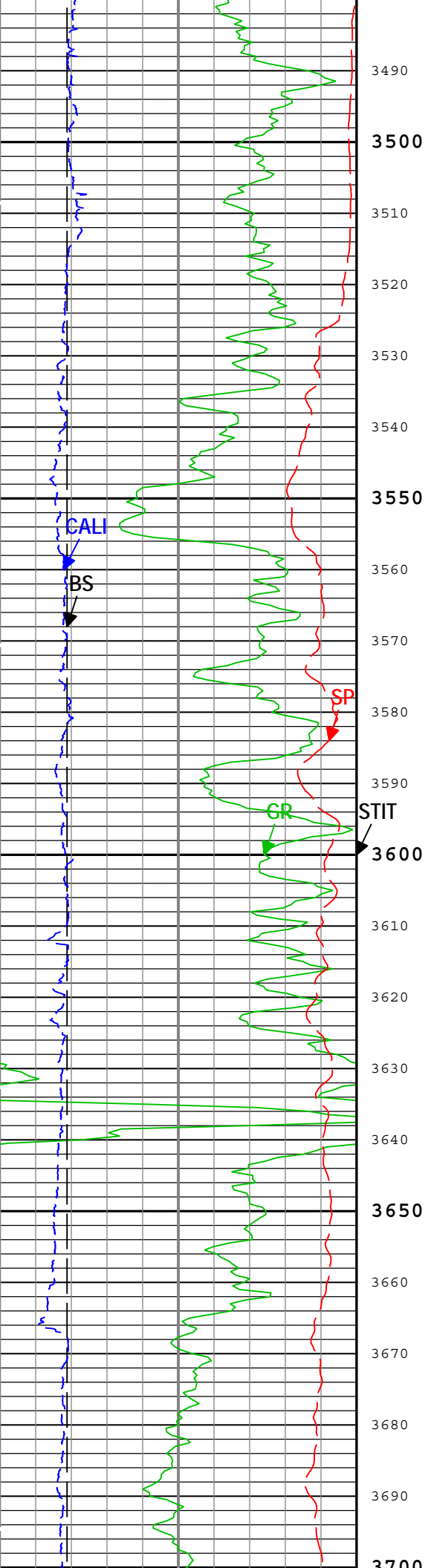


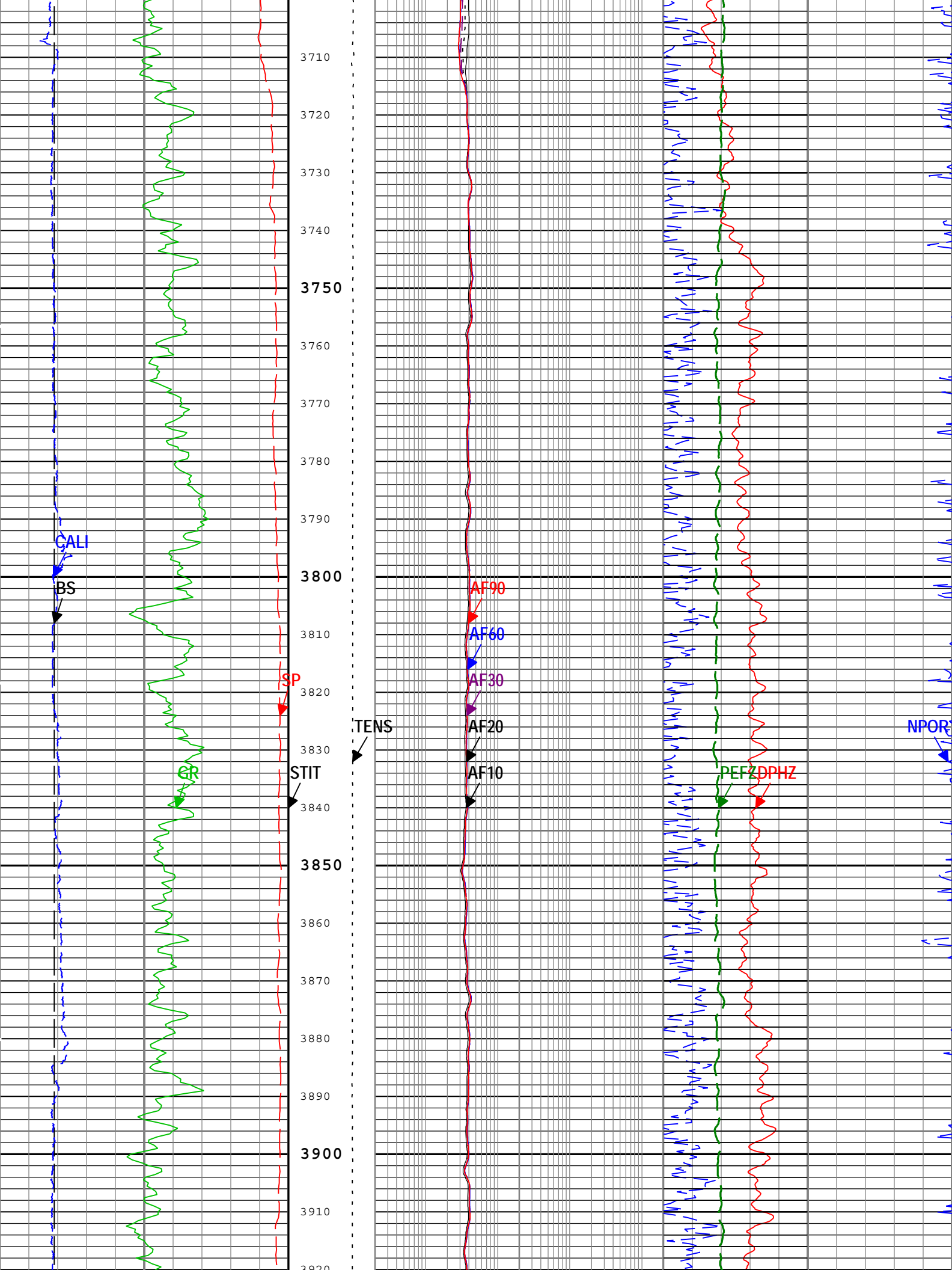


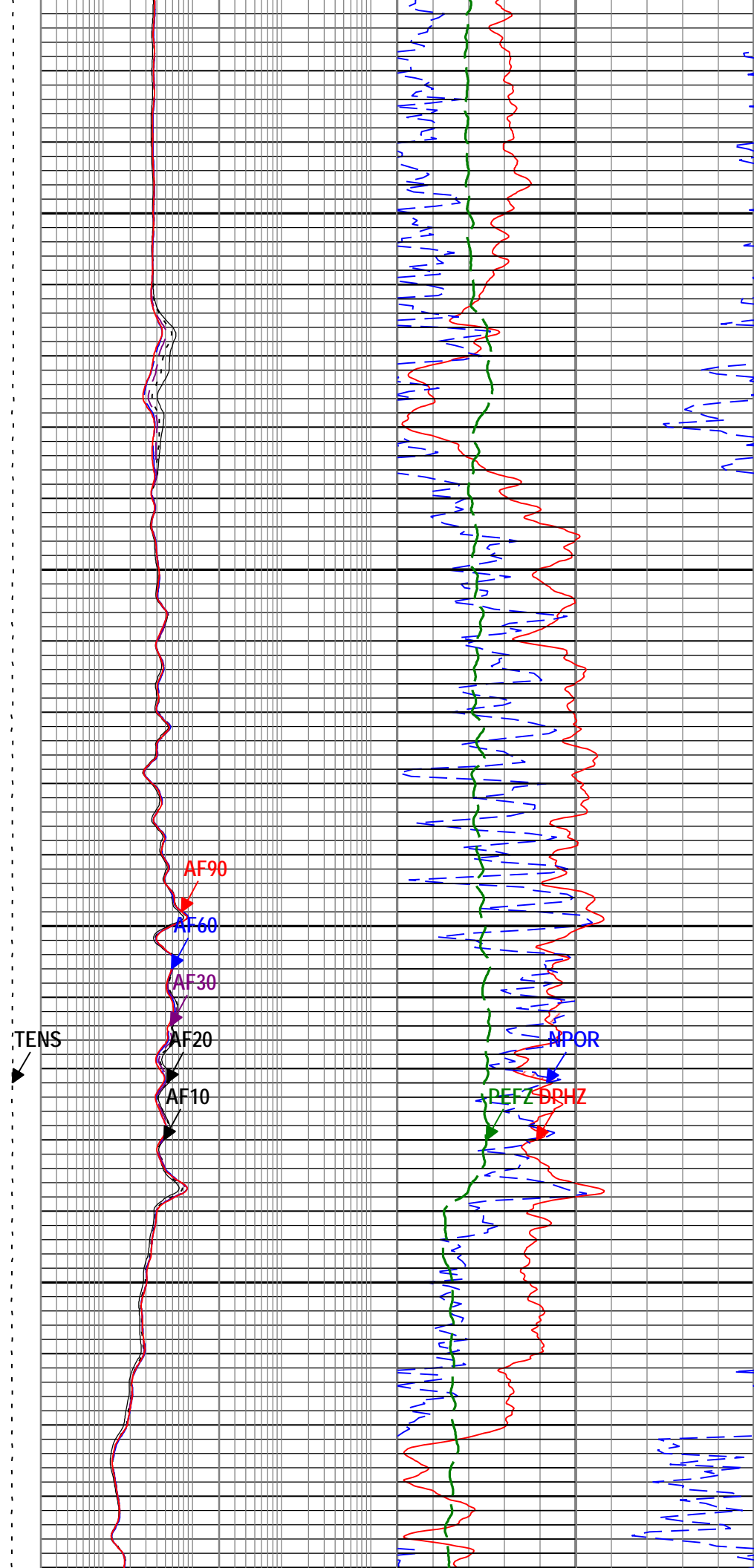
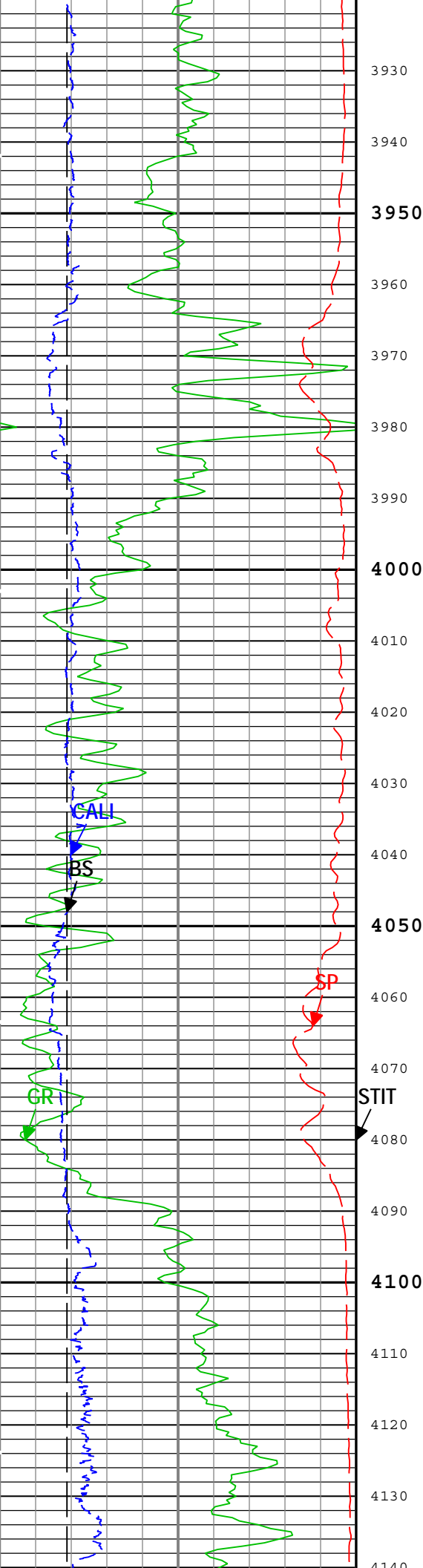


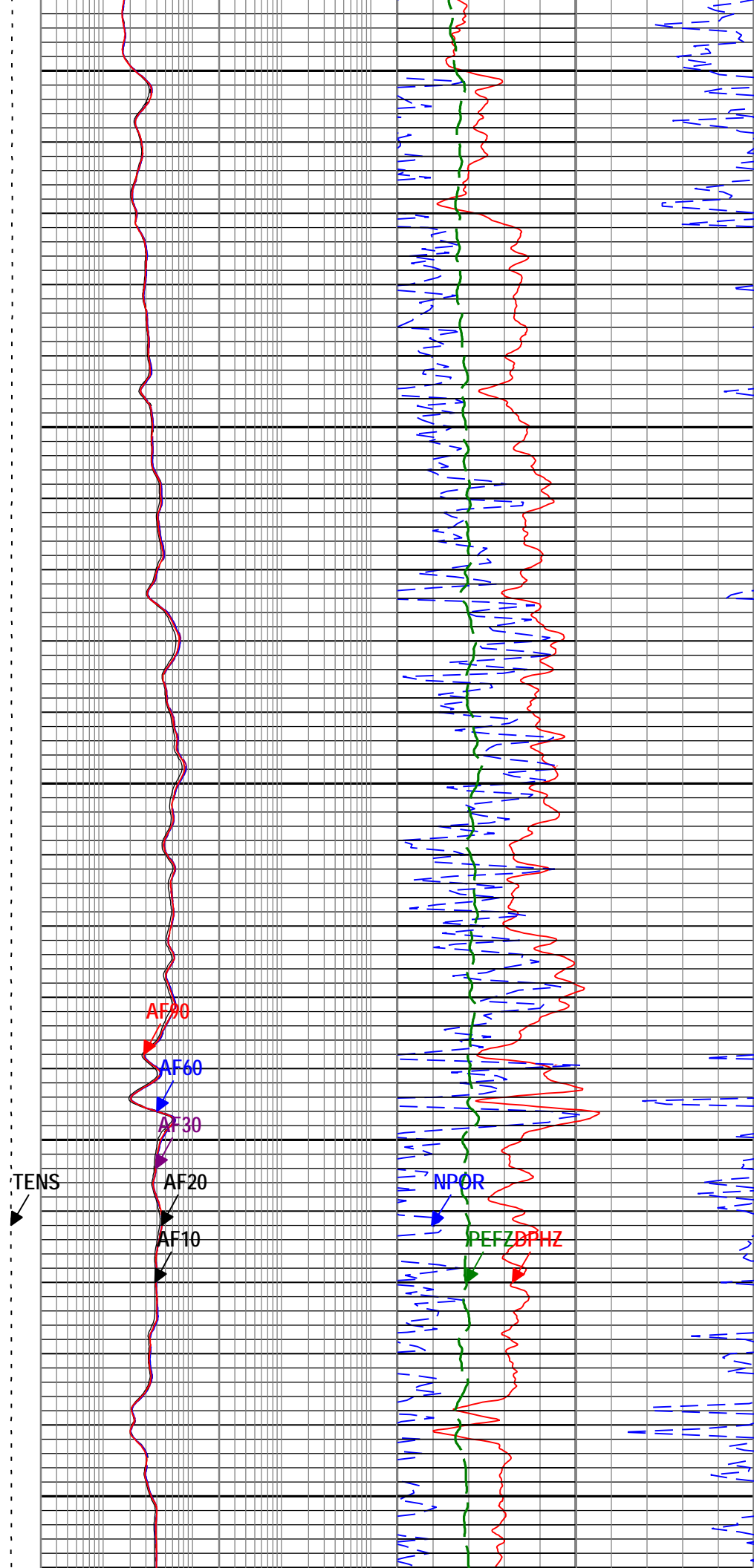
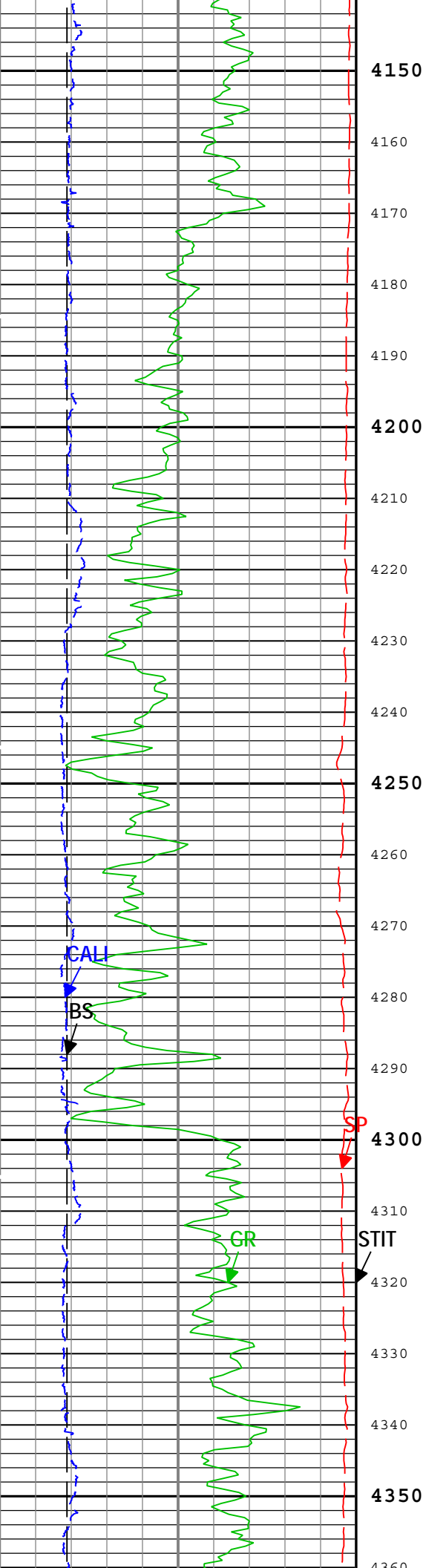


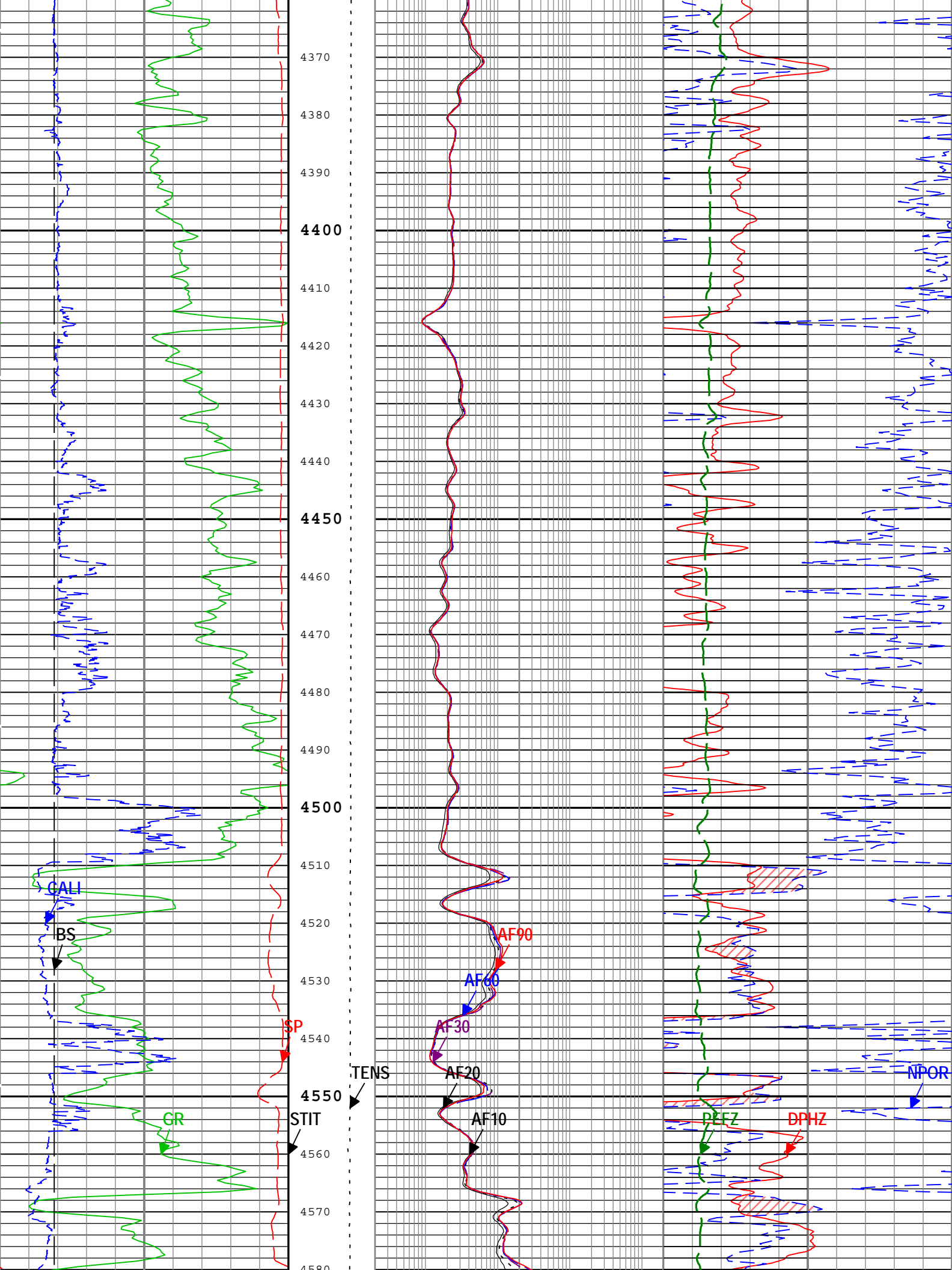


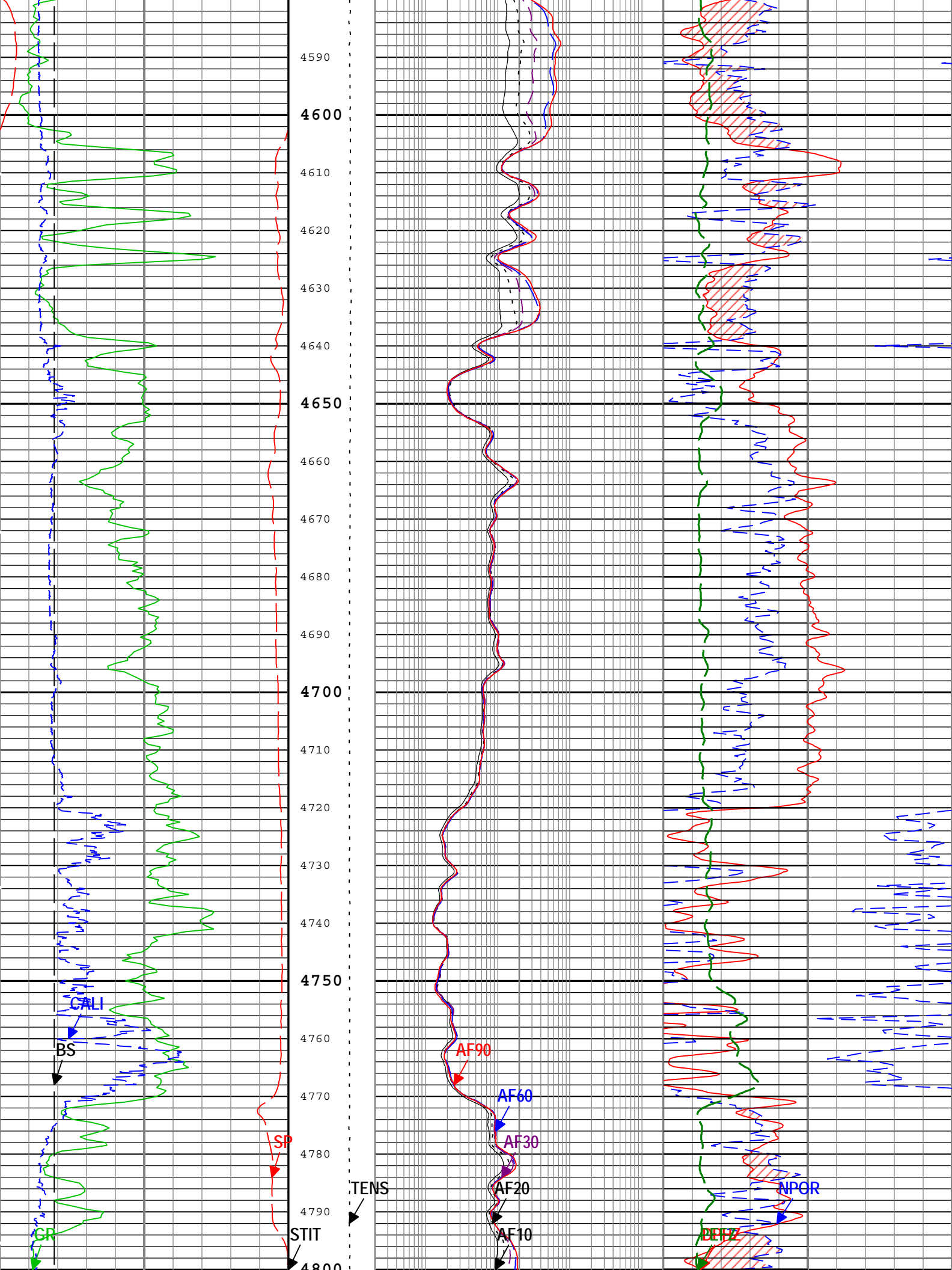


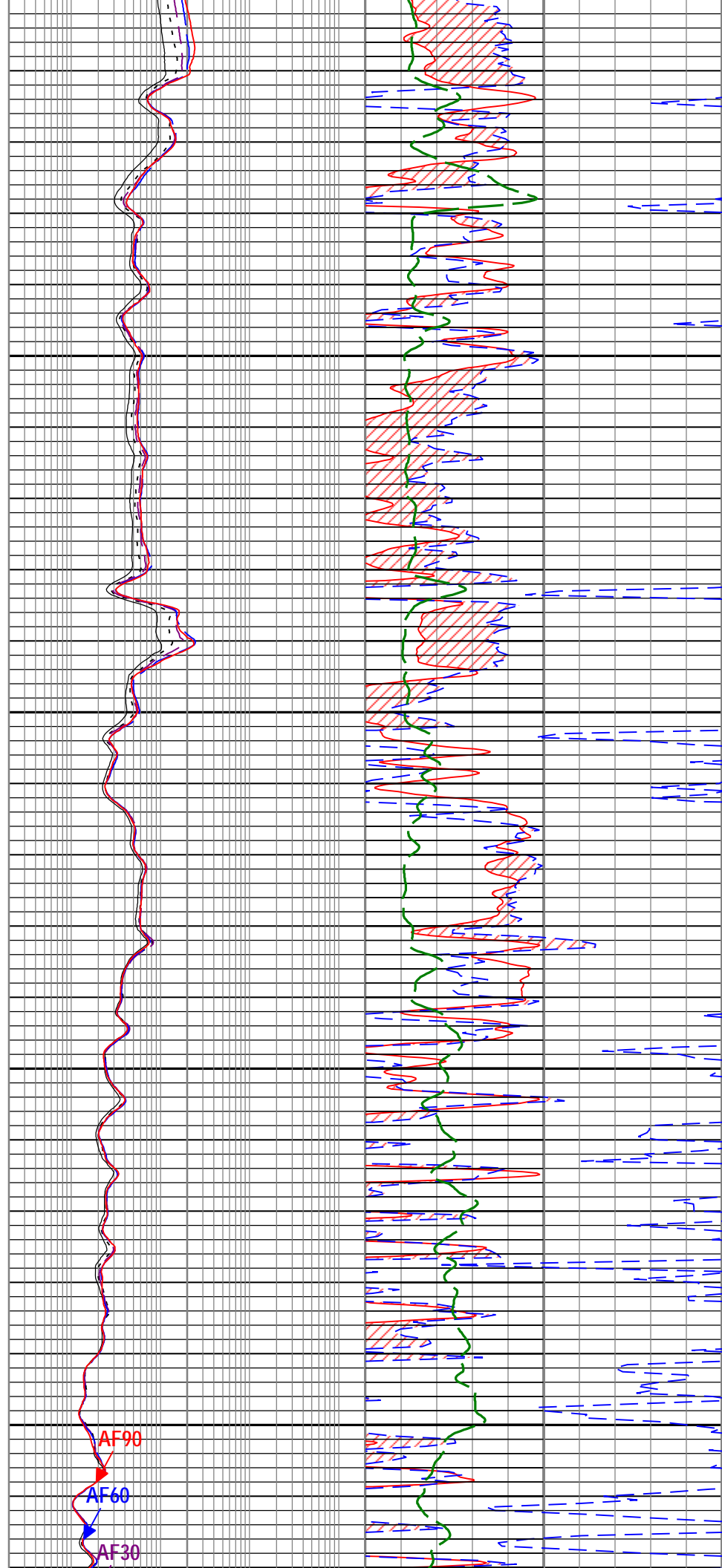
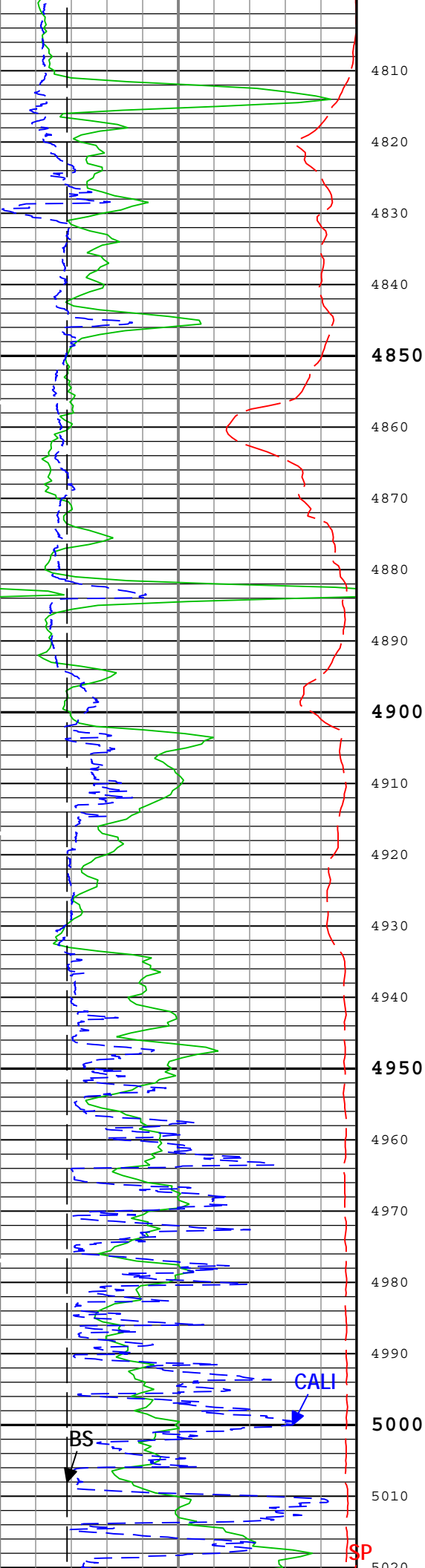


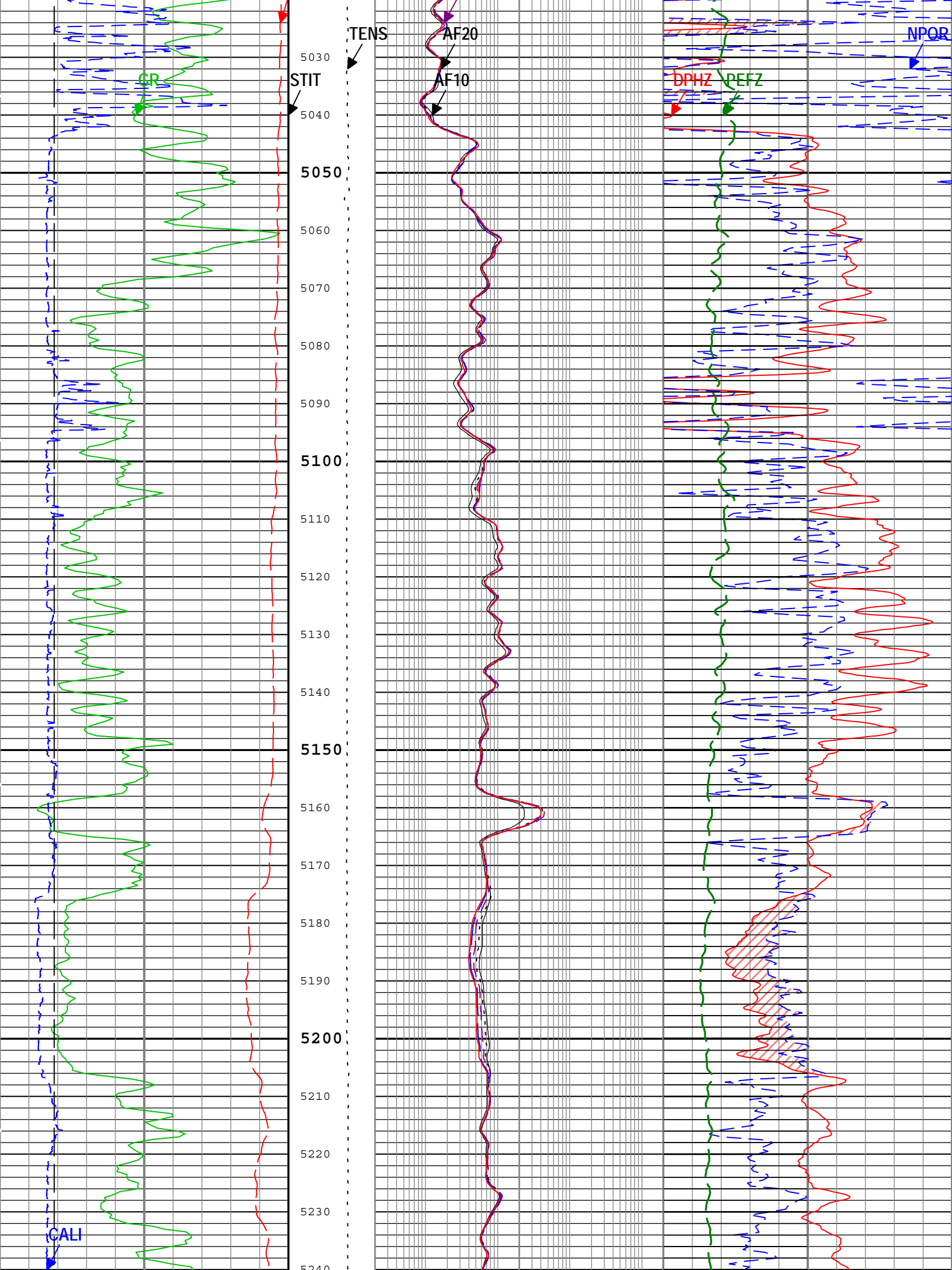


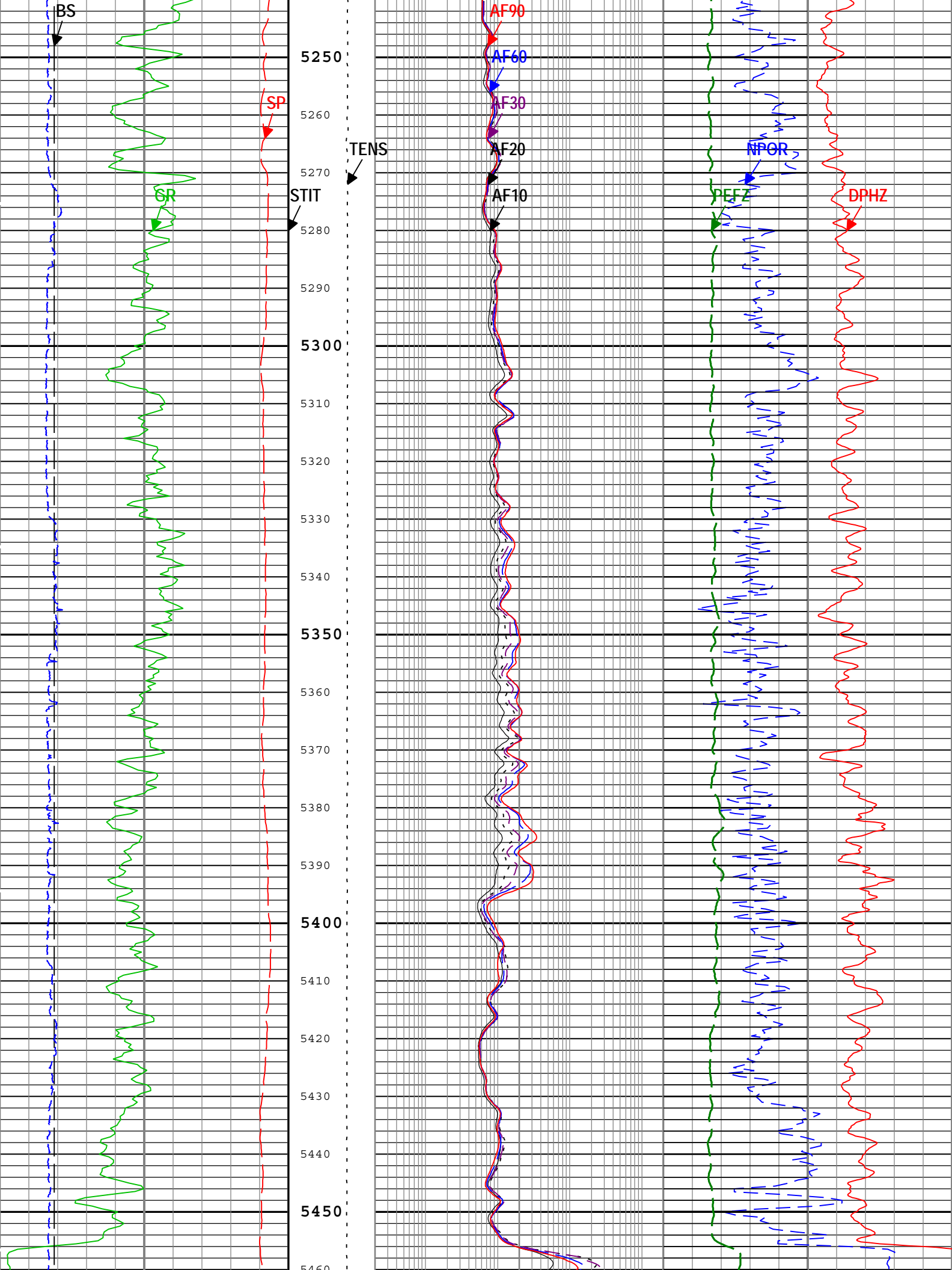


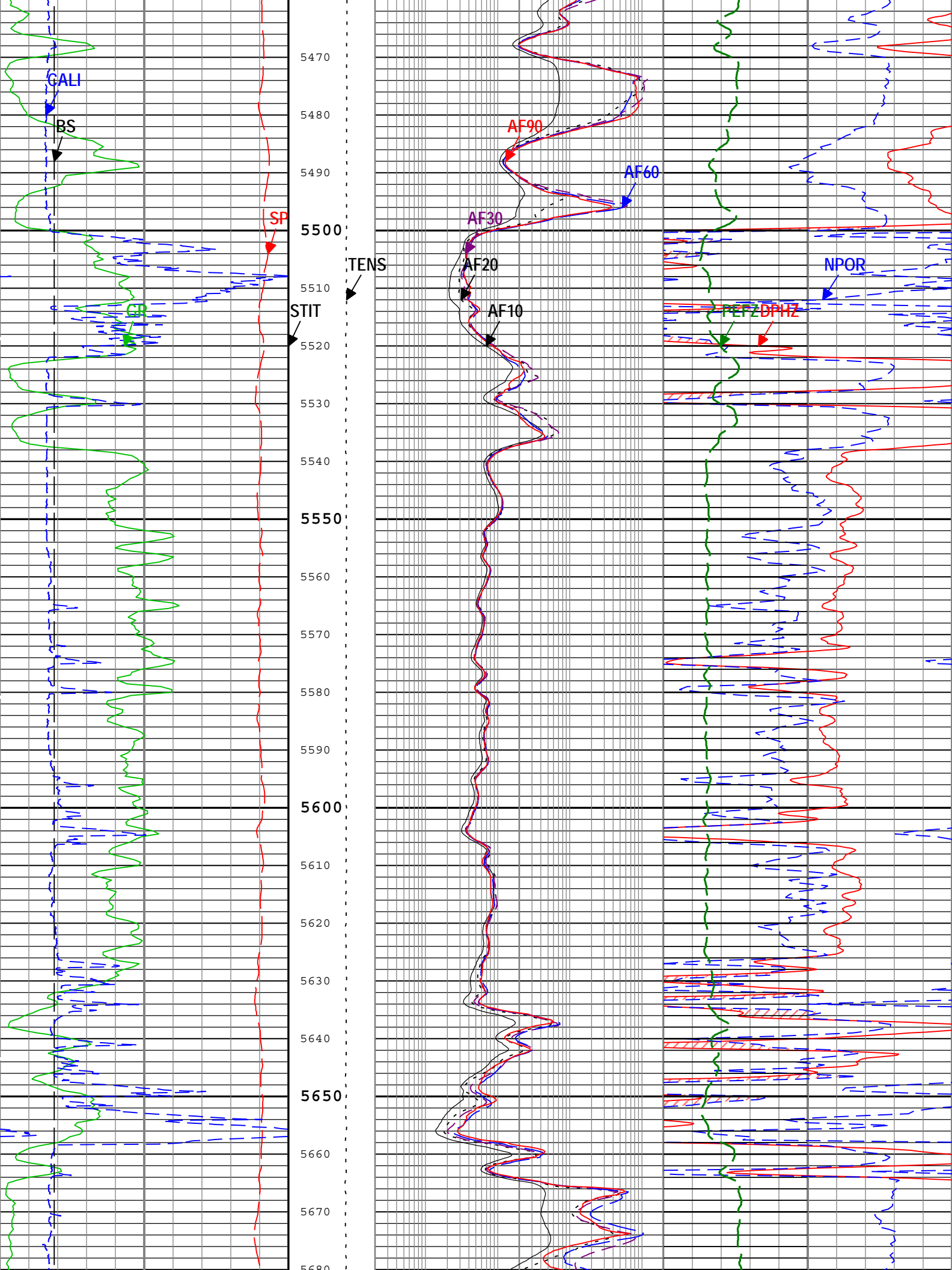


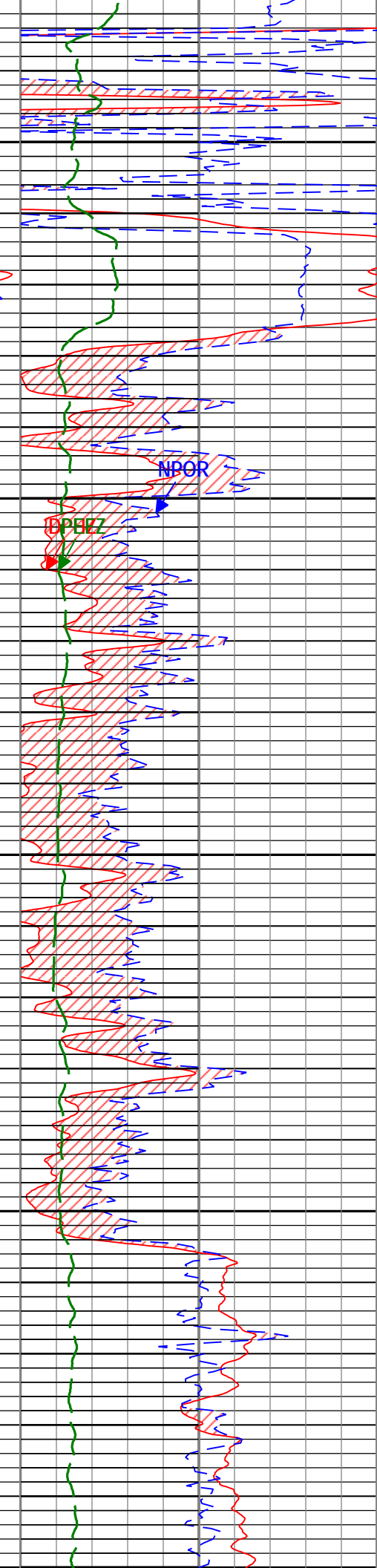
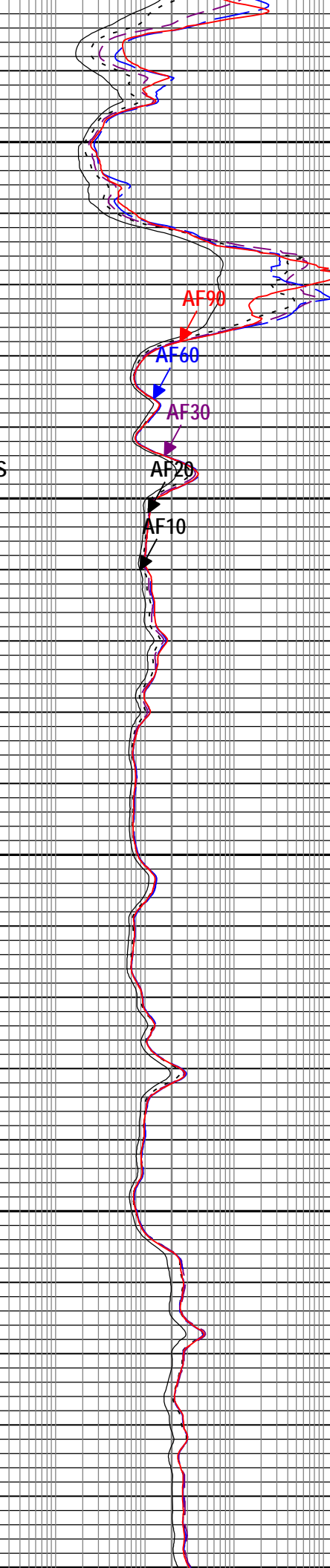
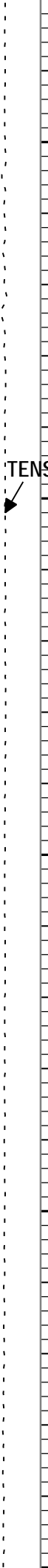
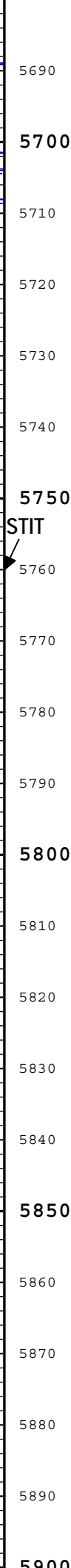
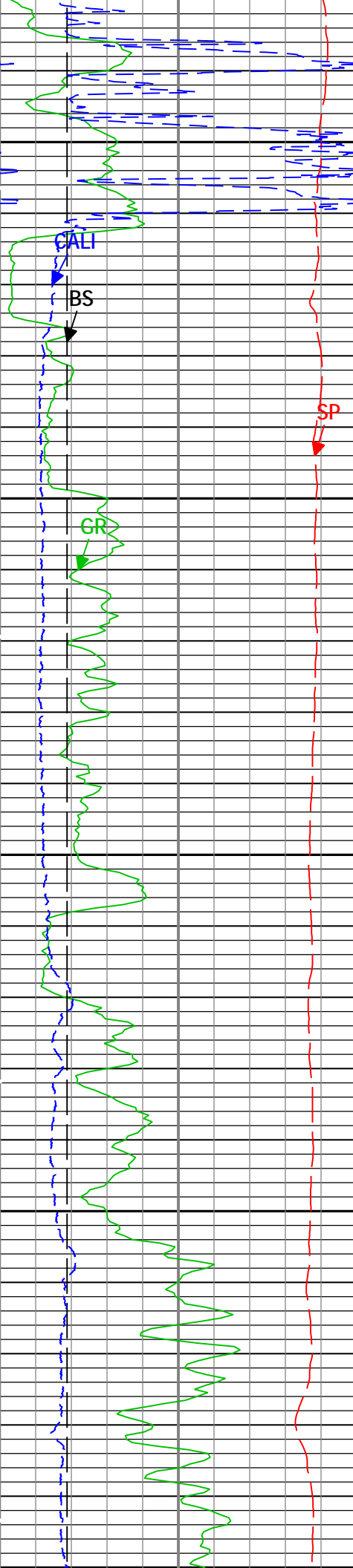


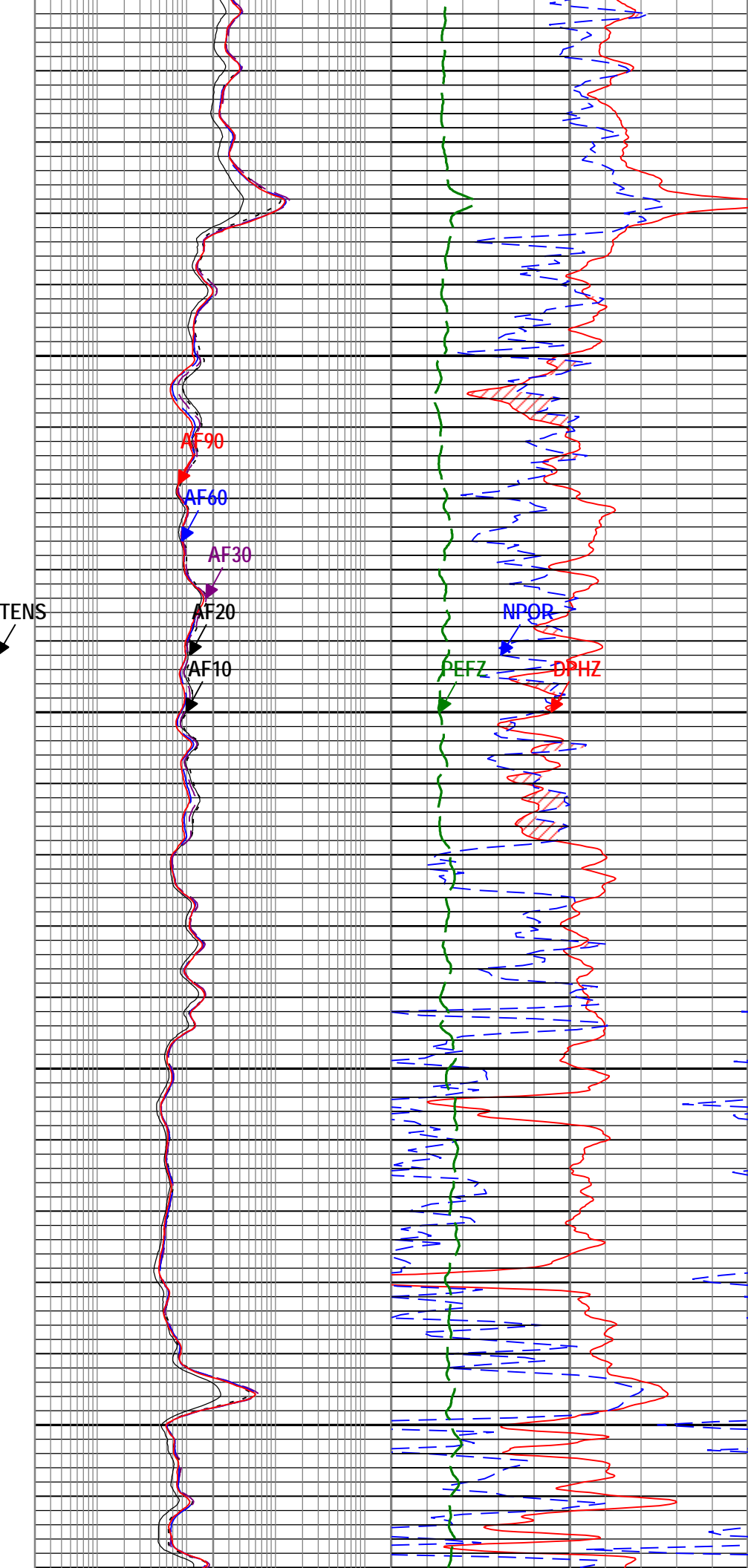
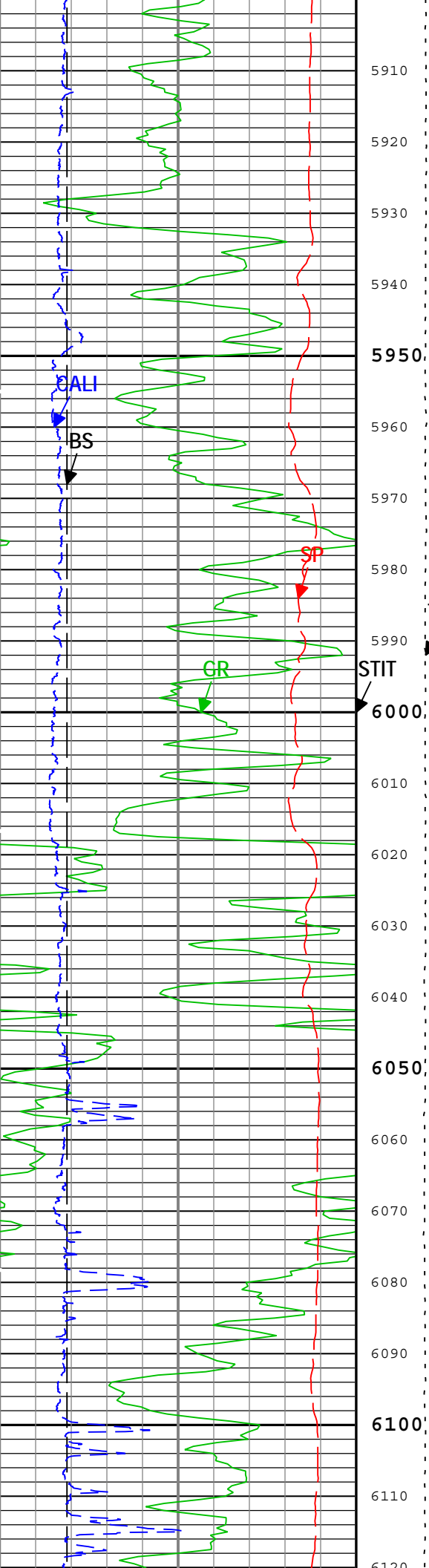


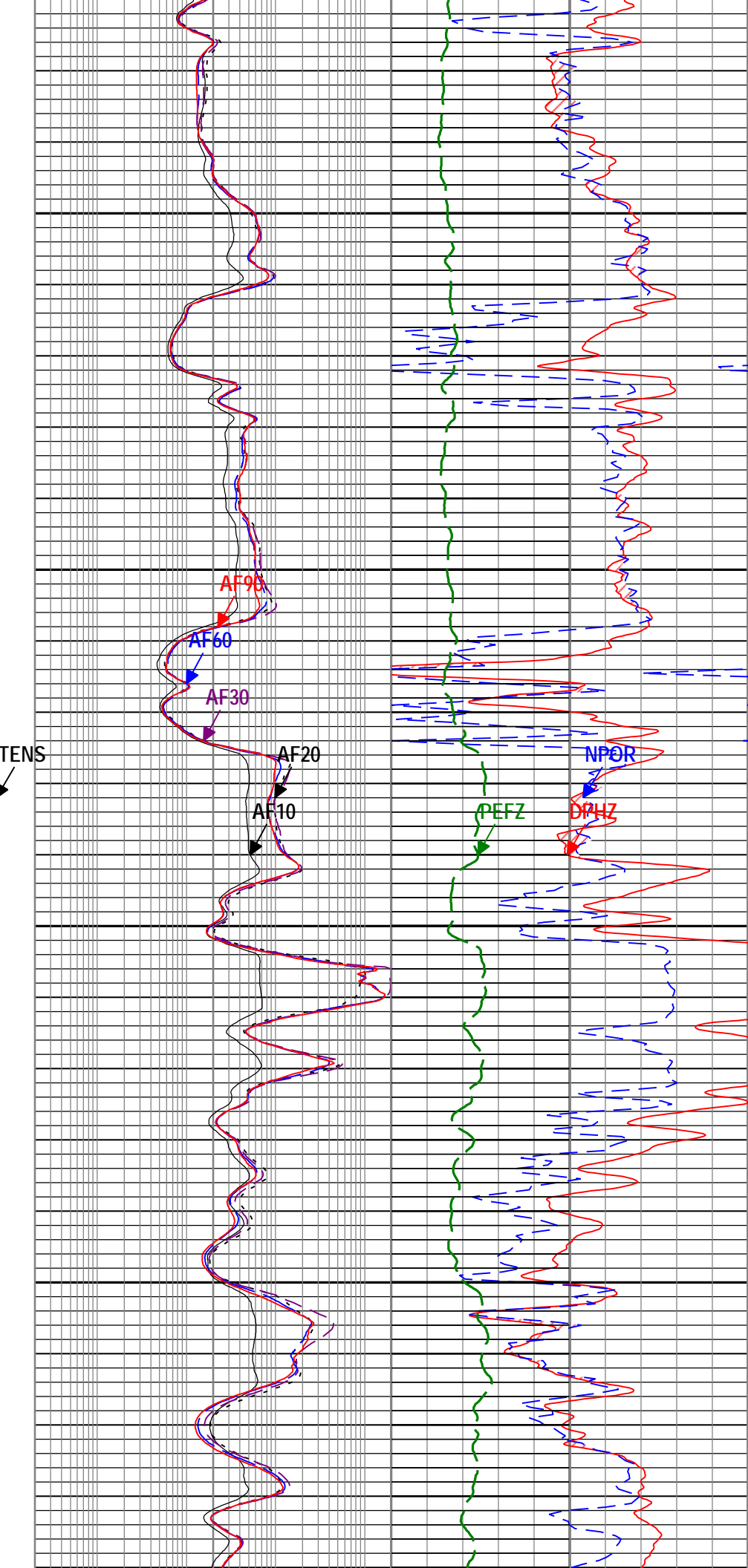
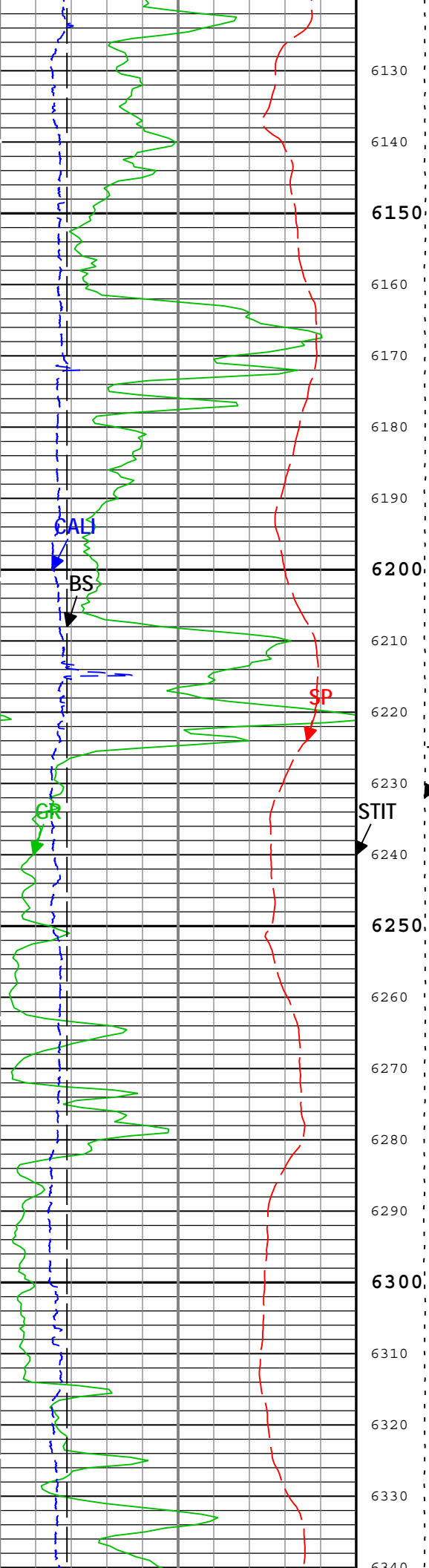


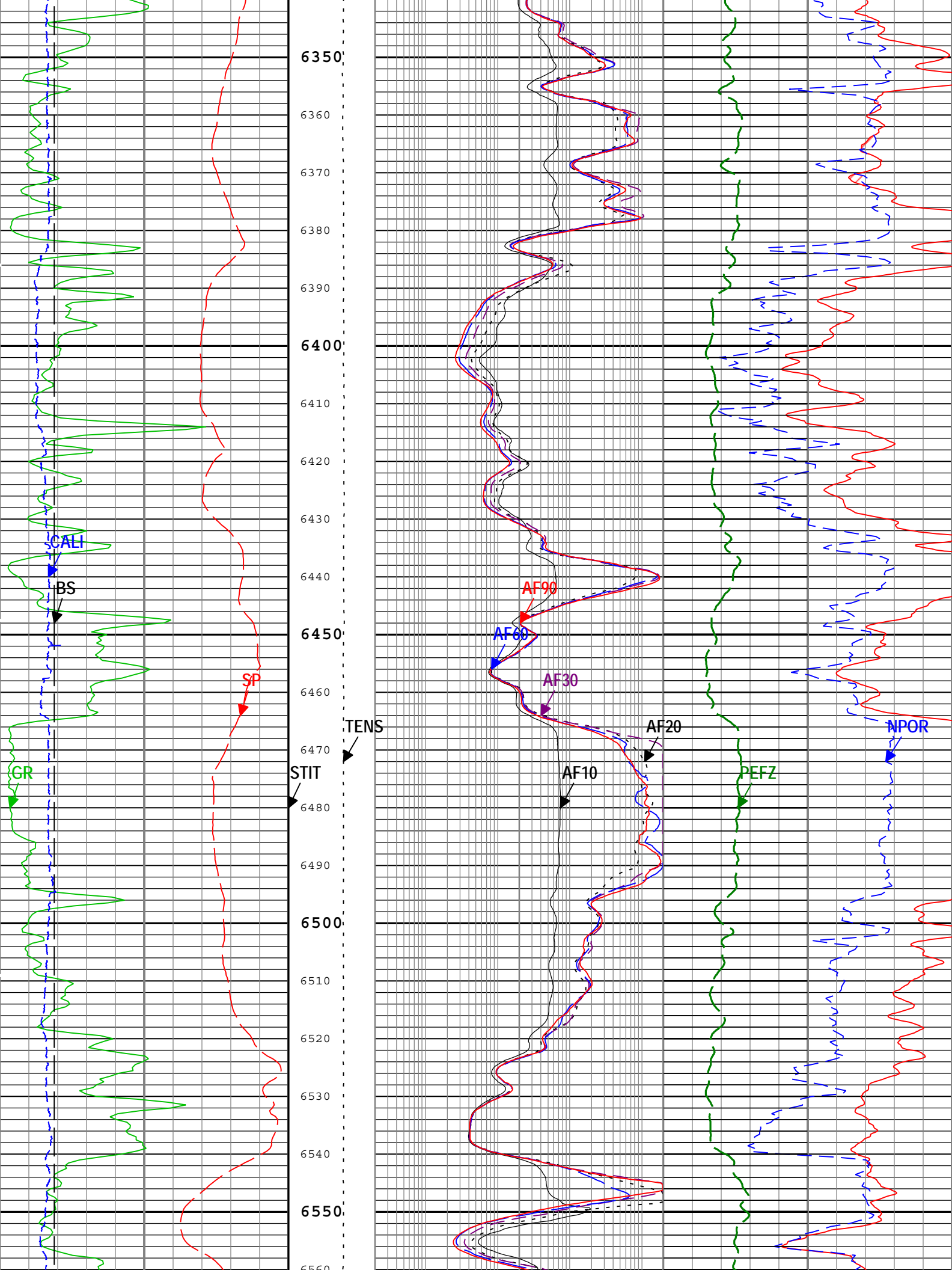


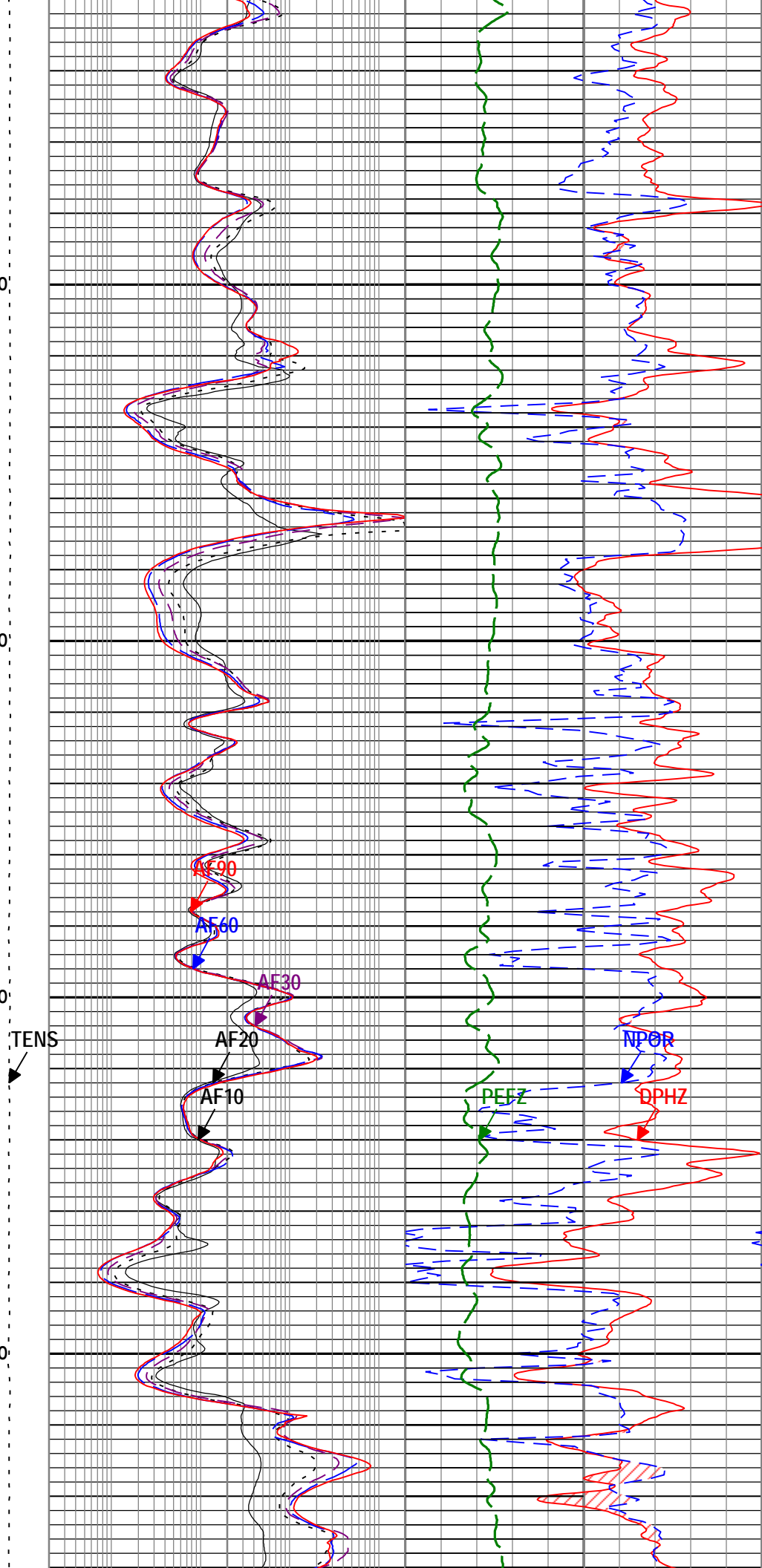
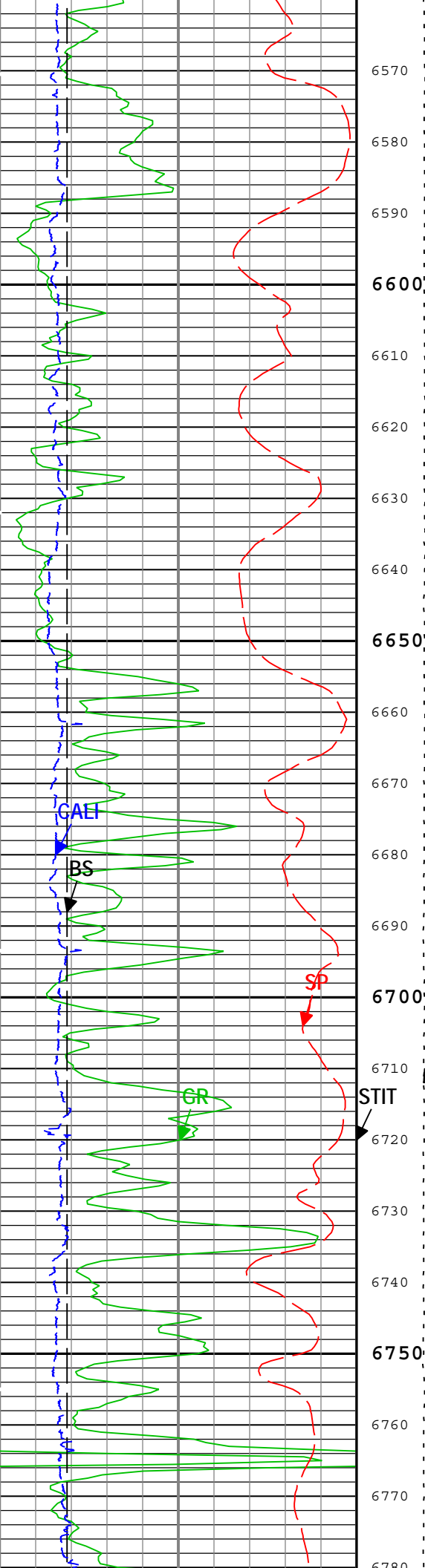


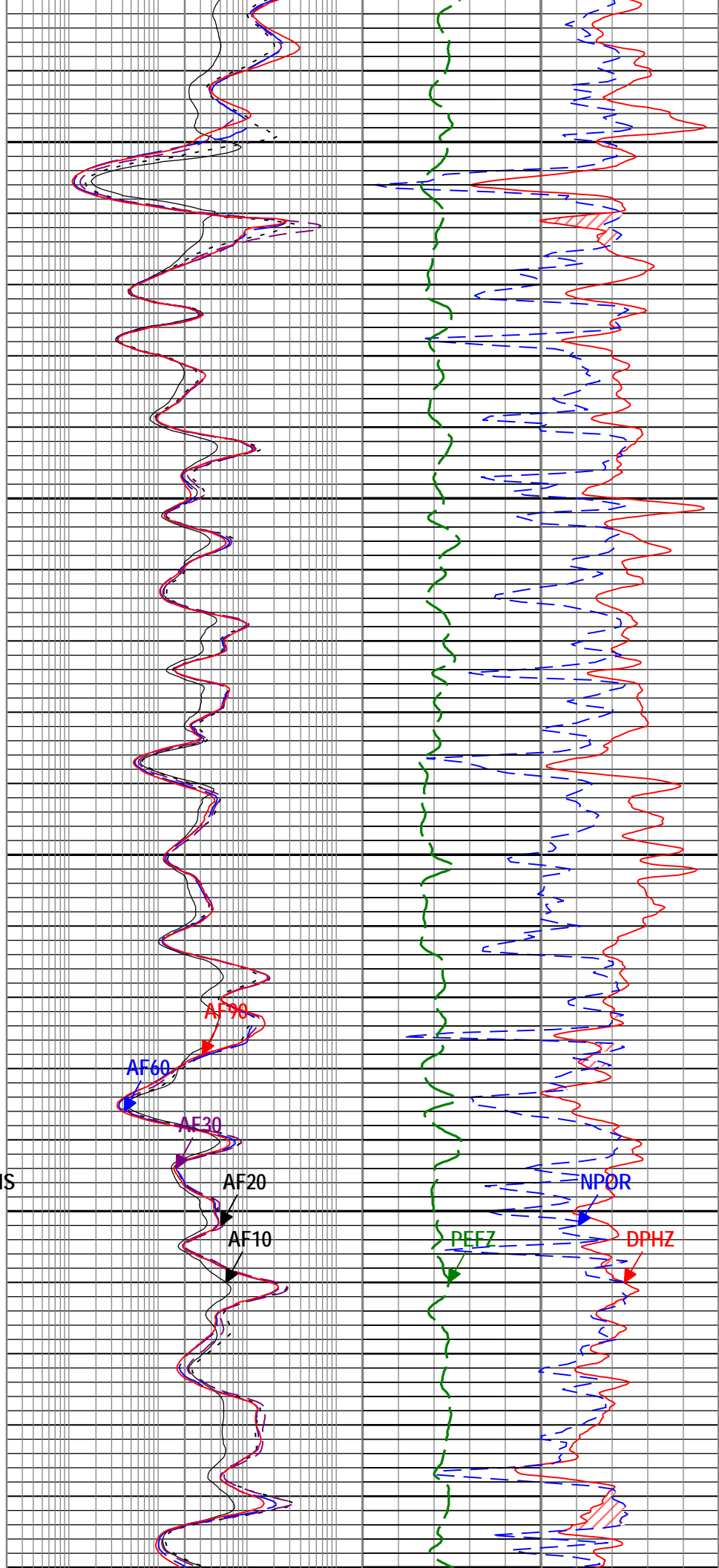
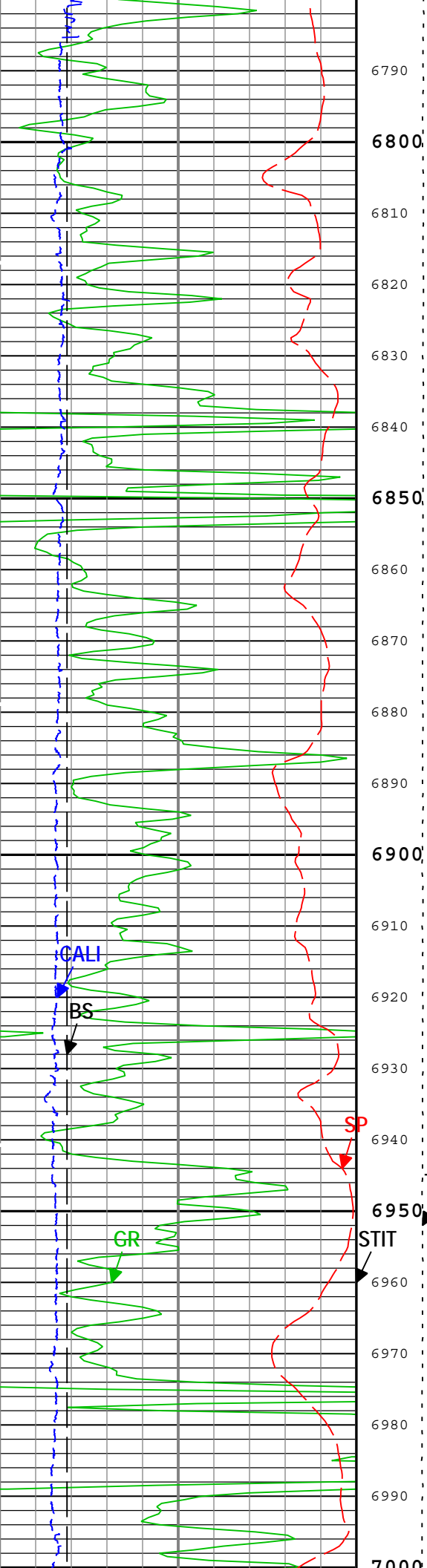


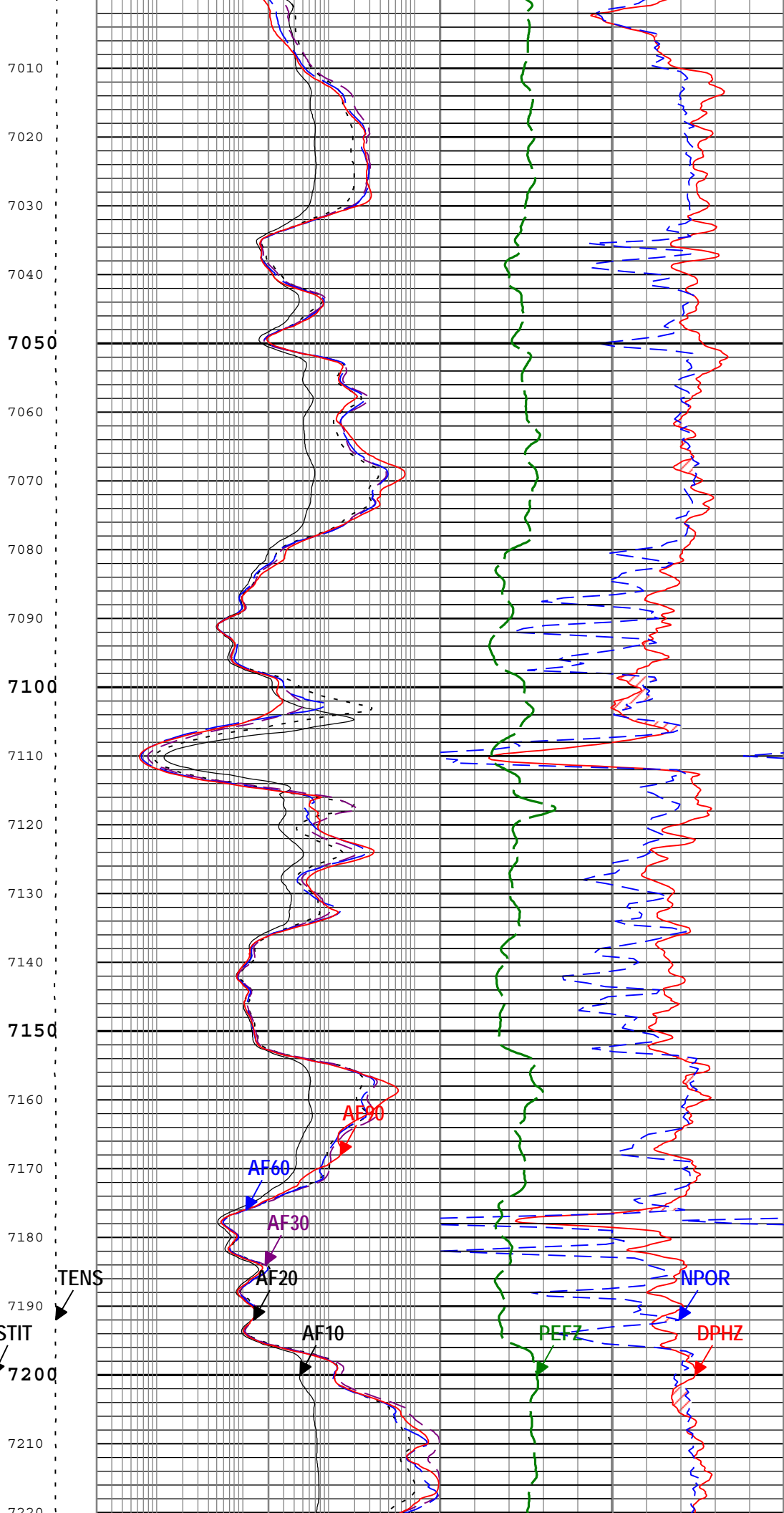
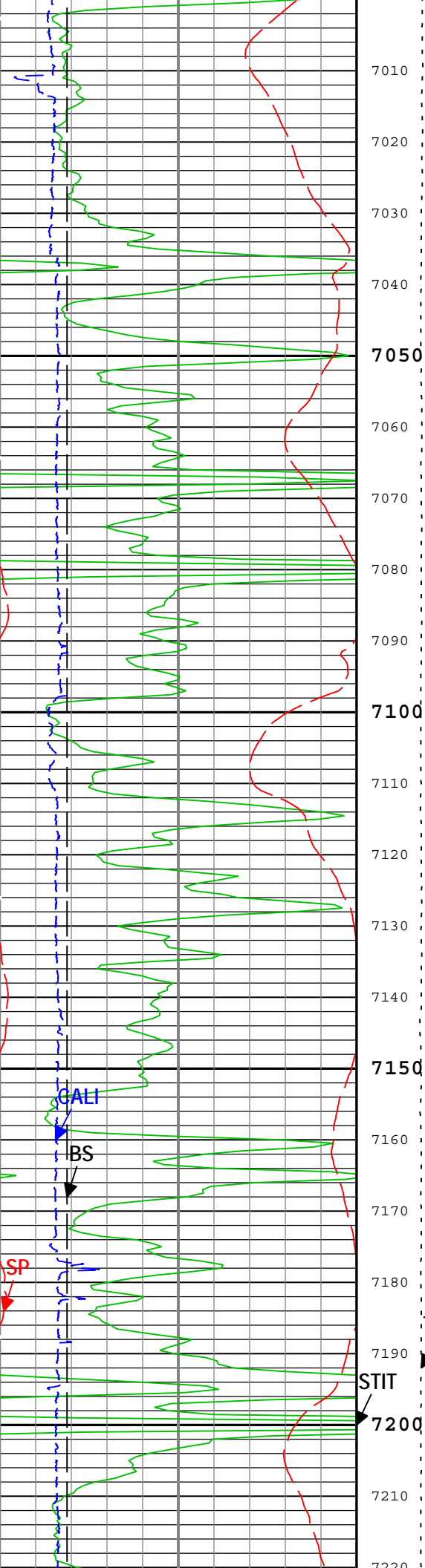


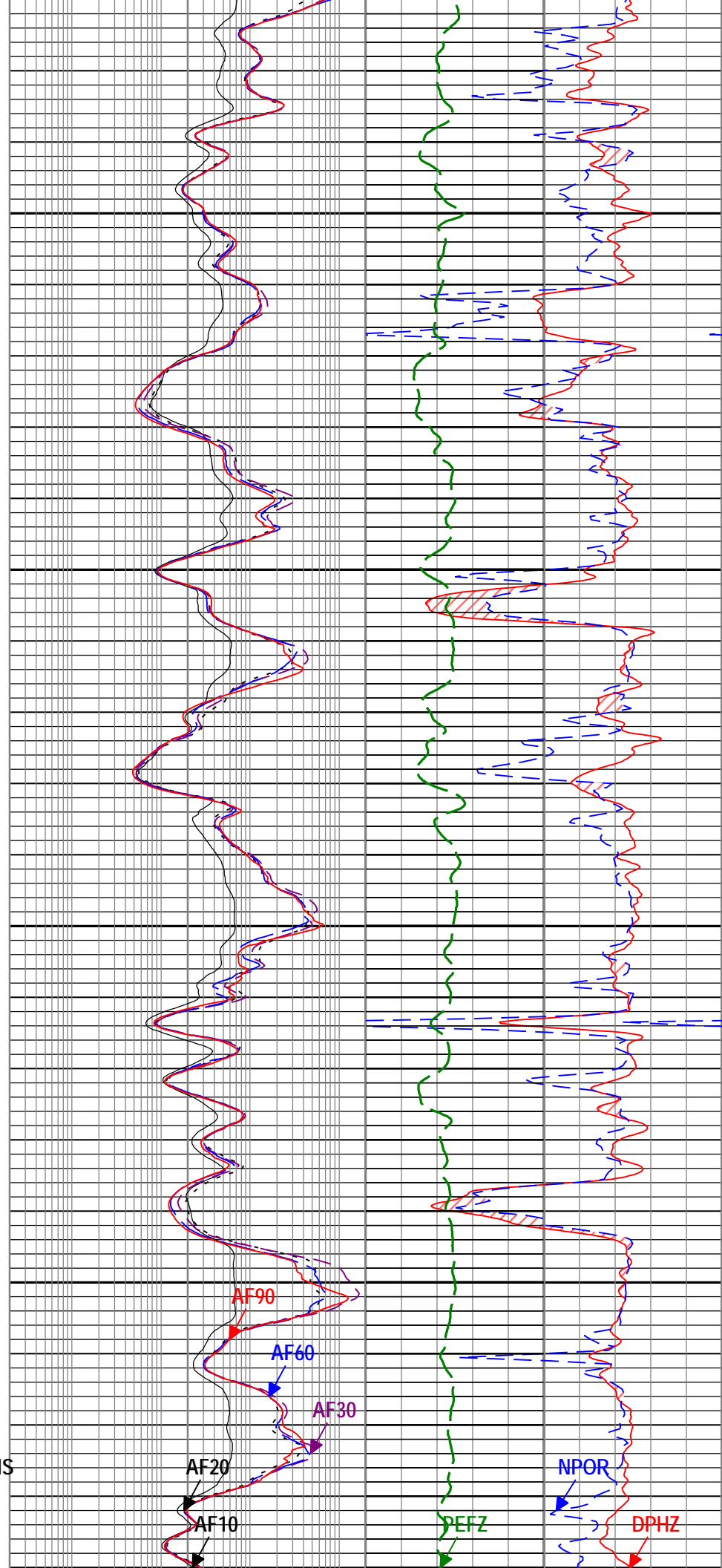
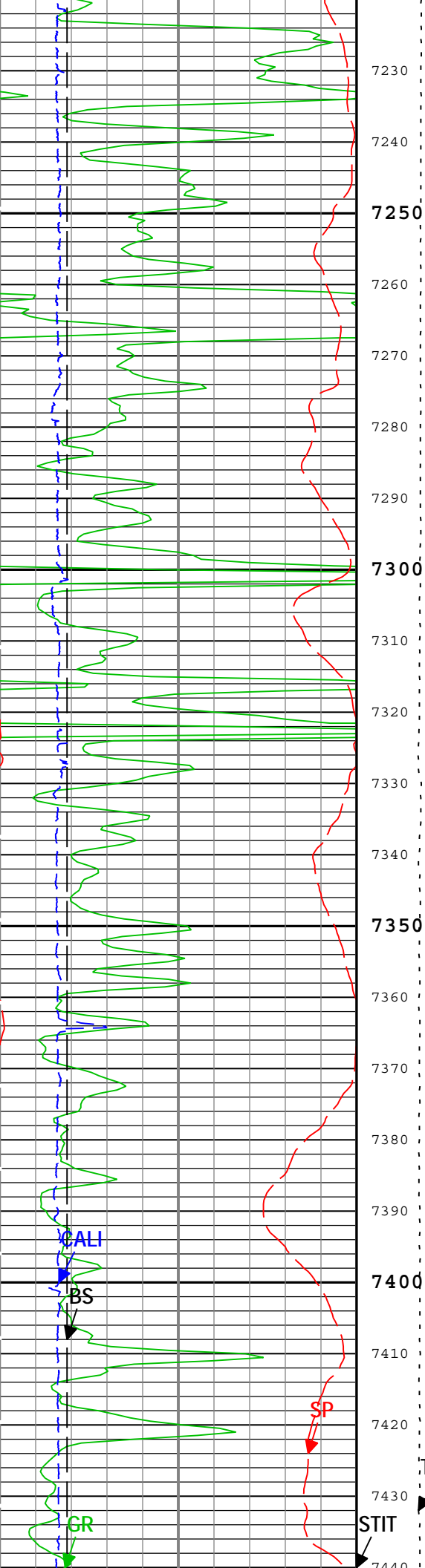


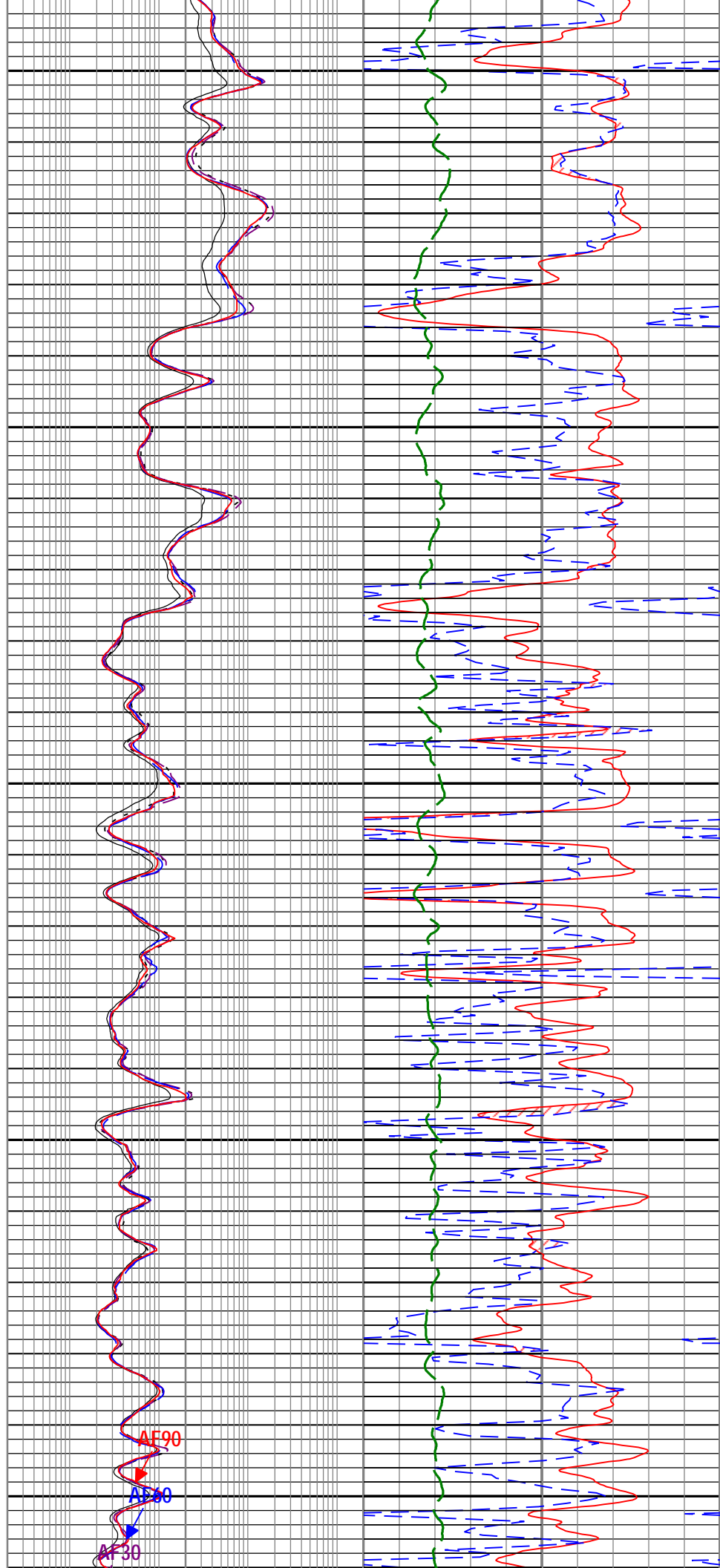
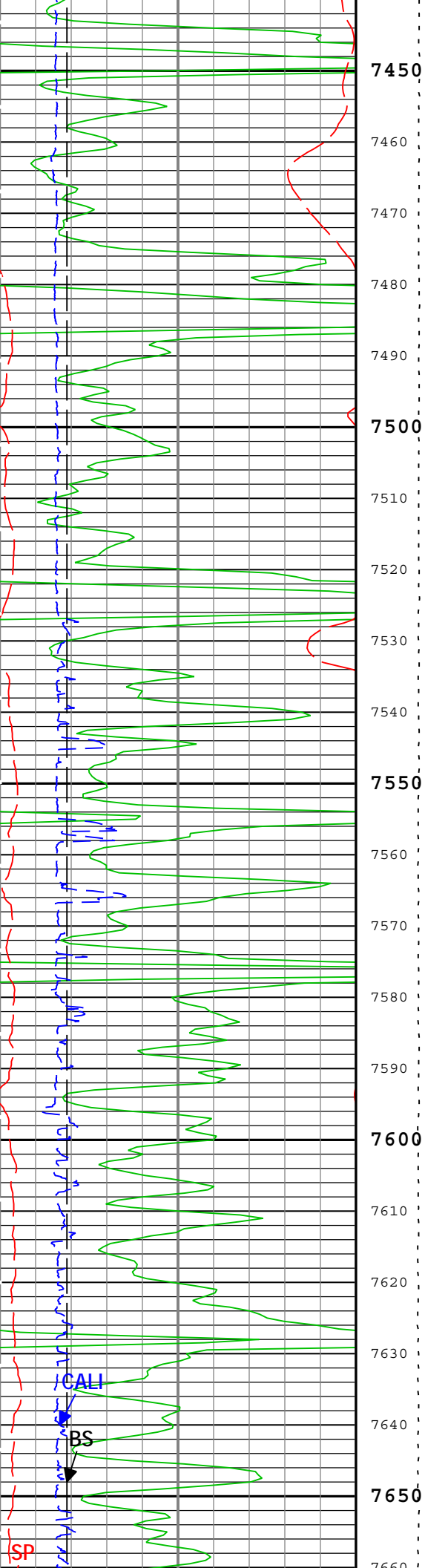


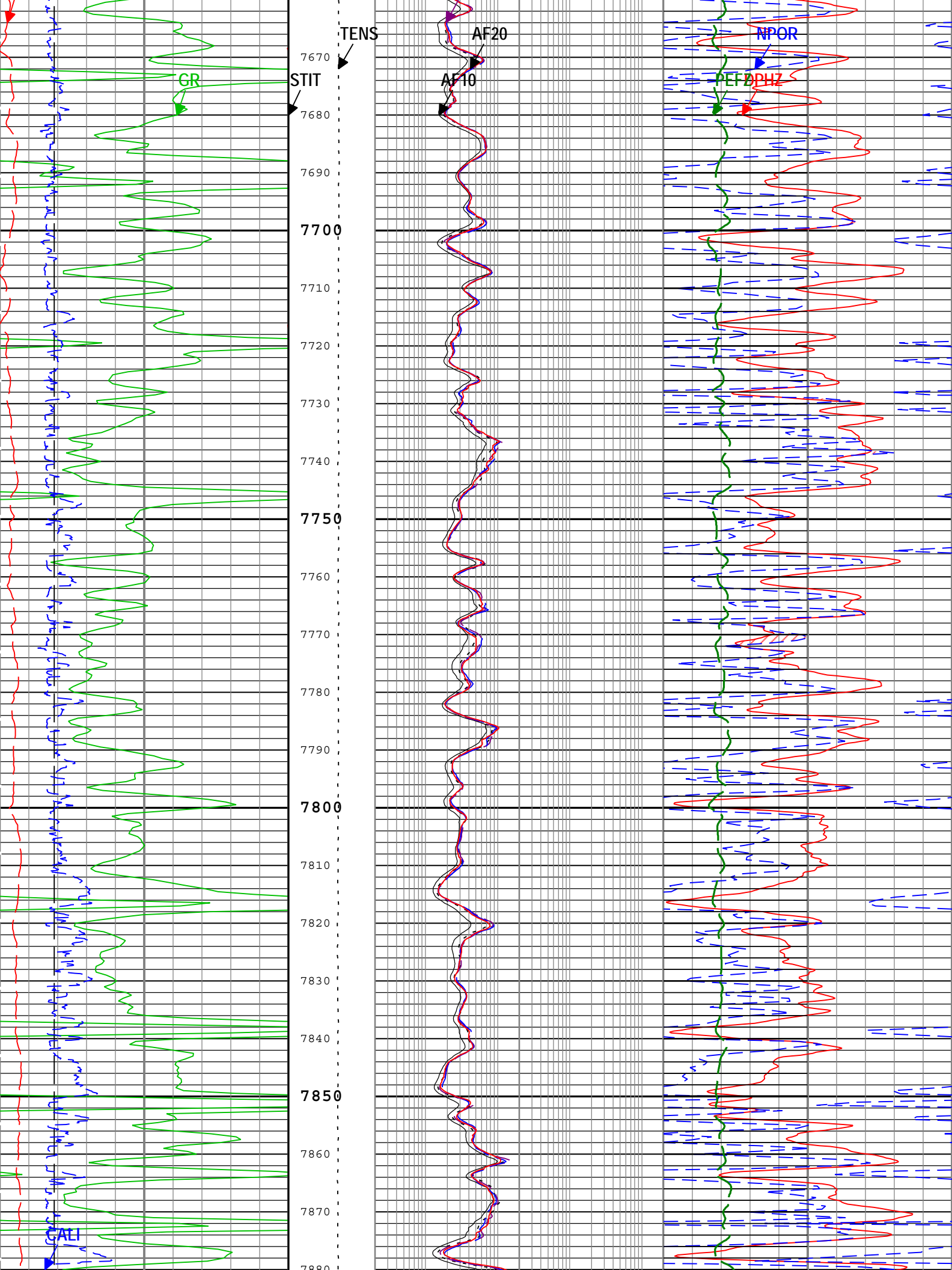


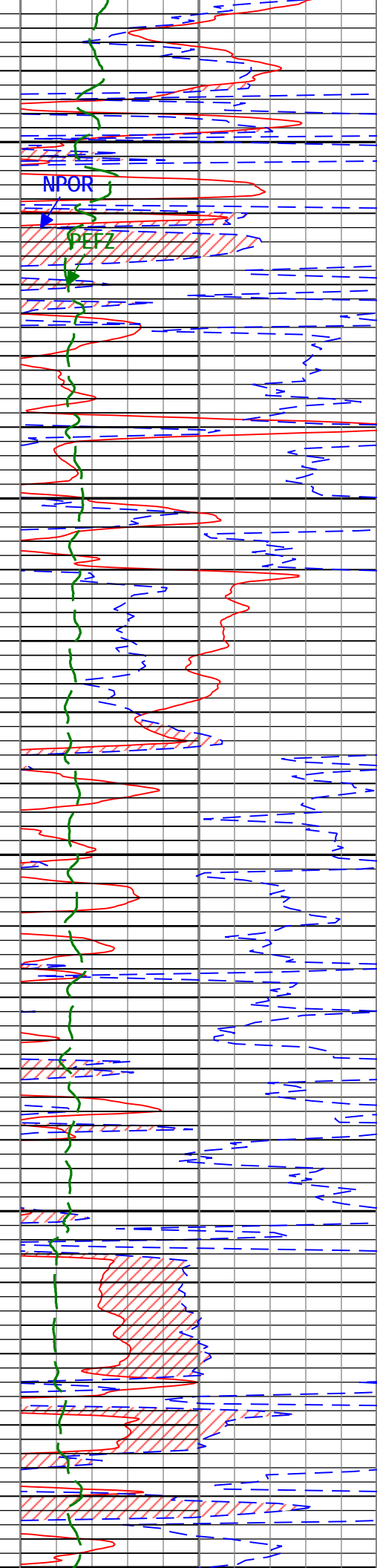
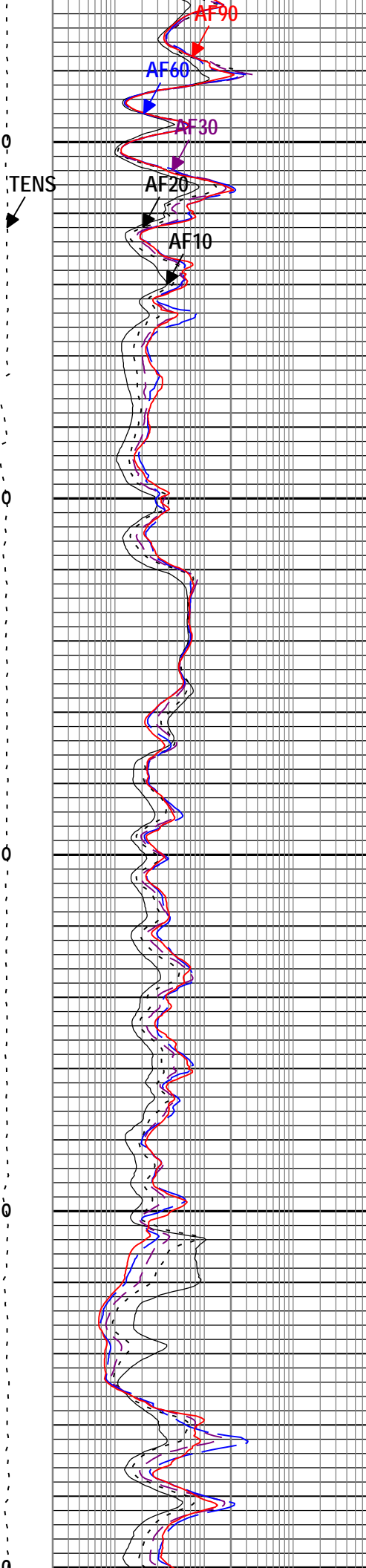
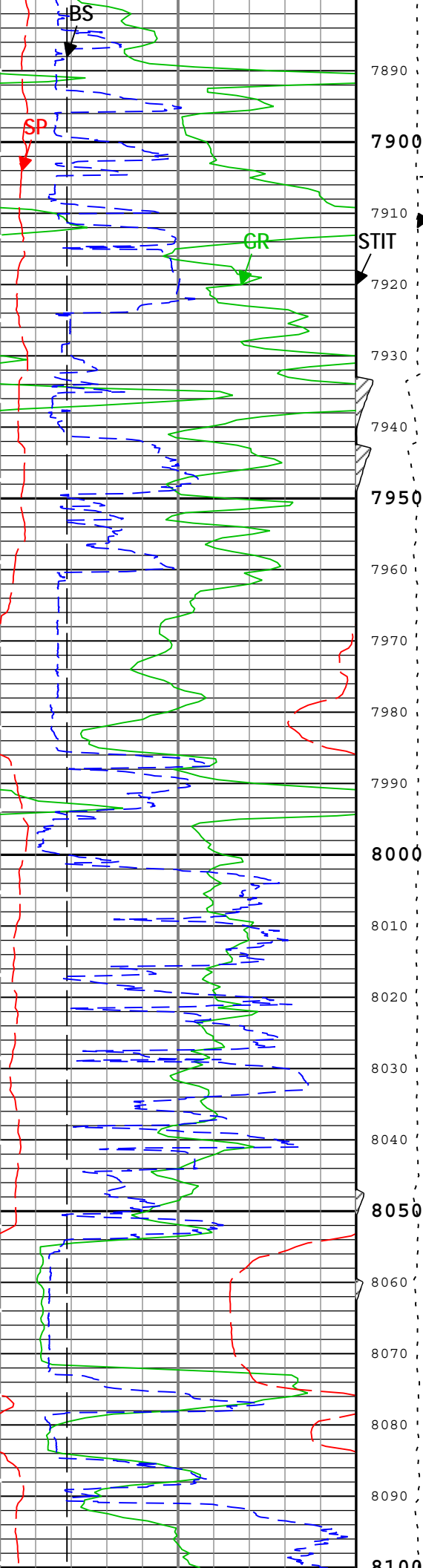


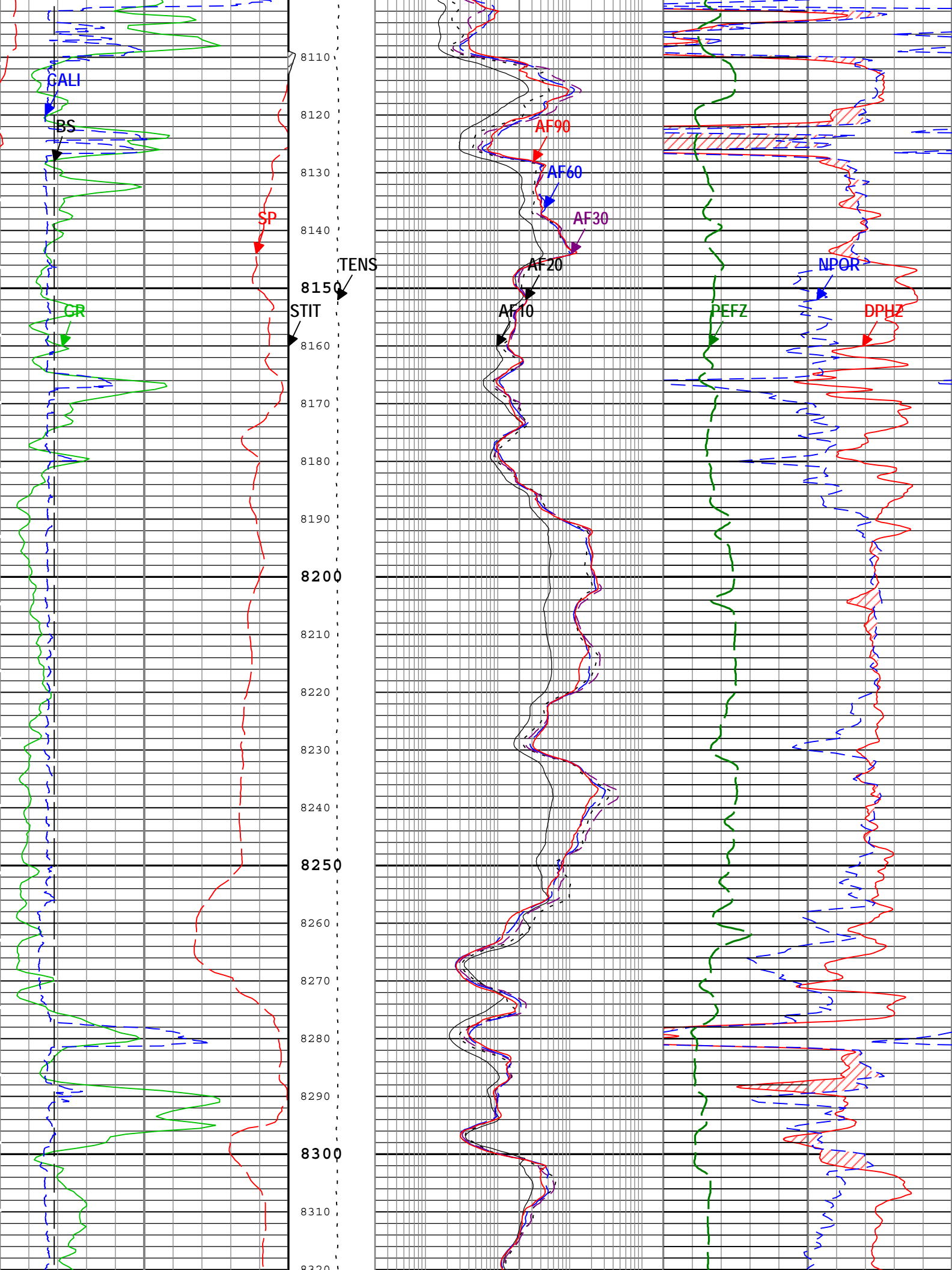


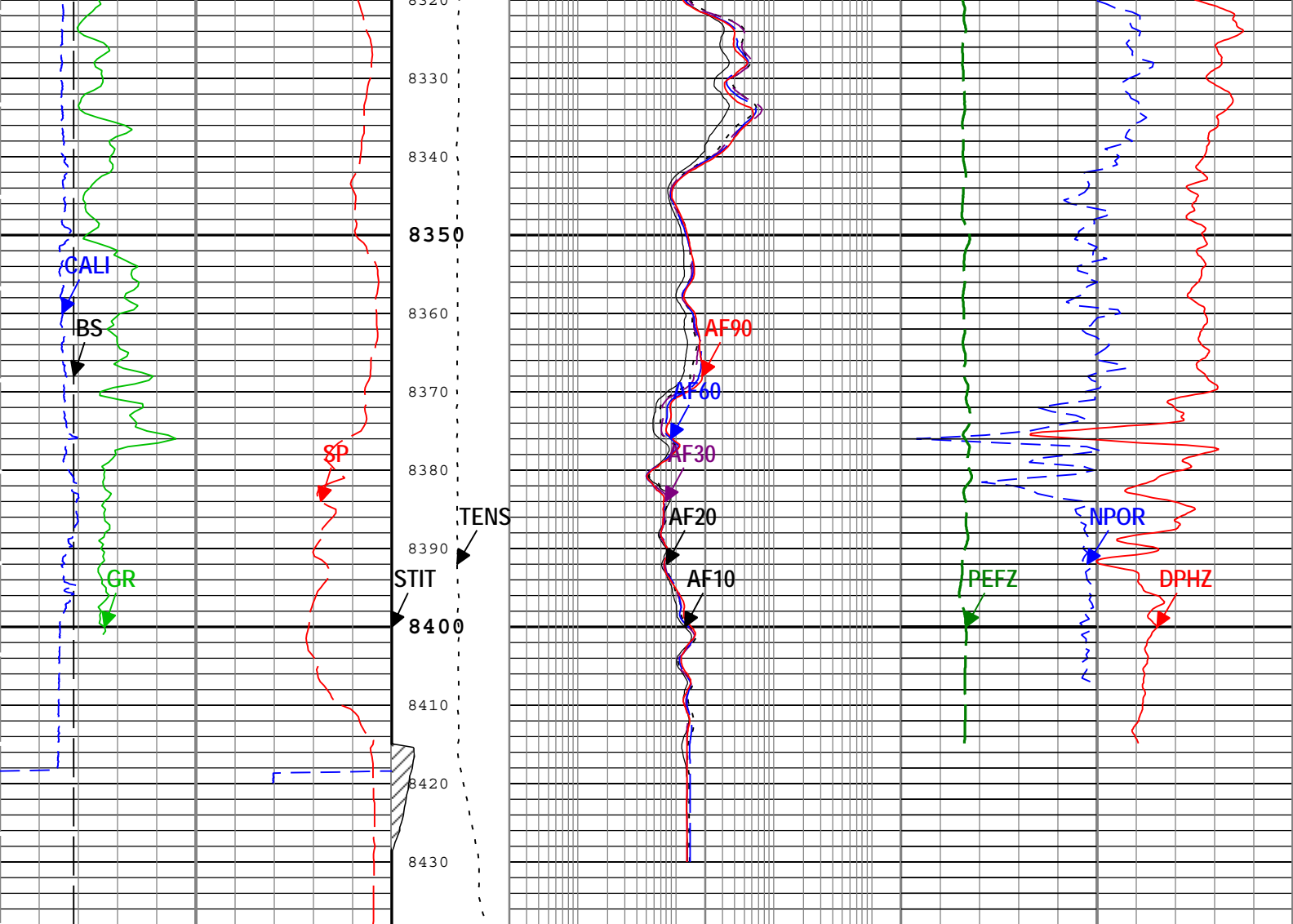












Gamma Ray Back up			Stuck Tool Indicator, Total (STIT)	Array Induction Four Foot Resistivity A10 (AF10) AIT-M			Gas Effect			
Gamma Ray (GR) HGNS-H				0.2 ohm.m 2000			NPOR Backup			
0	gAPI		200	0	ft	50				
				Cable Tension (TENS)	Array Induction Four Foot Resistivity A20 (AF20) AIT-M			Standard Resolution Density Porosity (DPHZ) HDRS-H		
-100 Spontaneous Potential (SP) AIT-M 200					0.2 ohm.m 2000			0.3 ft3/ft3 -0.1		
Bit Size (BS)				10000 lbf	Array Induction Four Foot Resistivity A30 (AF30) AIT-M			Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H		
6	in		16		0.2 ohm.m 2000			0.3 m3/m3 -0.1		
Caliper (CALI) HDRS-H					Array Induction Four Foot Resistivity A60 (AF60) AIT-M			Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		
6 in 16					0.2 ohm.m 2000			0 10		
					Array Induction Four Foot Resistivity A90 (AF90) AIT-M					
					0.2 ohm.m 2000					

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: 21-May-2014 10:53:37

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	Yes	
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BHT	Bottom Hole Temperature	Borehole	193	degF
BS	Bit Size	WLSESSION	7.875	in
BSAL	Borehole Salinity	Borehole	1100	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0	in
CBLO	Casing Bottom (Logger)	WLSESSION	369	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DFD	Drilling Fluid Density	Borehole	8.75	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	
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	80.5	degF
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.88	ohm.m
SOCO	Standoff Correction Option	HGNS-H	Yes	
SPDR	SP Drift Per Foot	AIT-M	0	mV/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

Run 1									

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Run 1	Log[3]:Up	Up	7371.44 ft	8435.74 ft	21-May-2014 6:17:48 AM	21-May-2014 6:36:06 AM	ON	8.50 ft	No
Run 1	Log[5]:Up	Up	363.46 ft	8438.27 ft	21-May-2014 7:14:36 AM	21-May-2014 10:39:44 AM	ON	2.80 ft	No

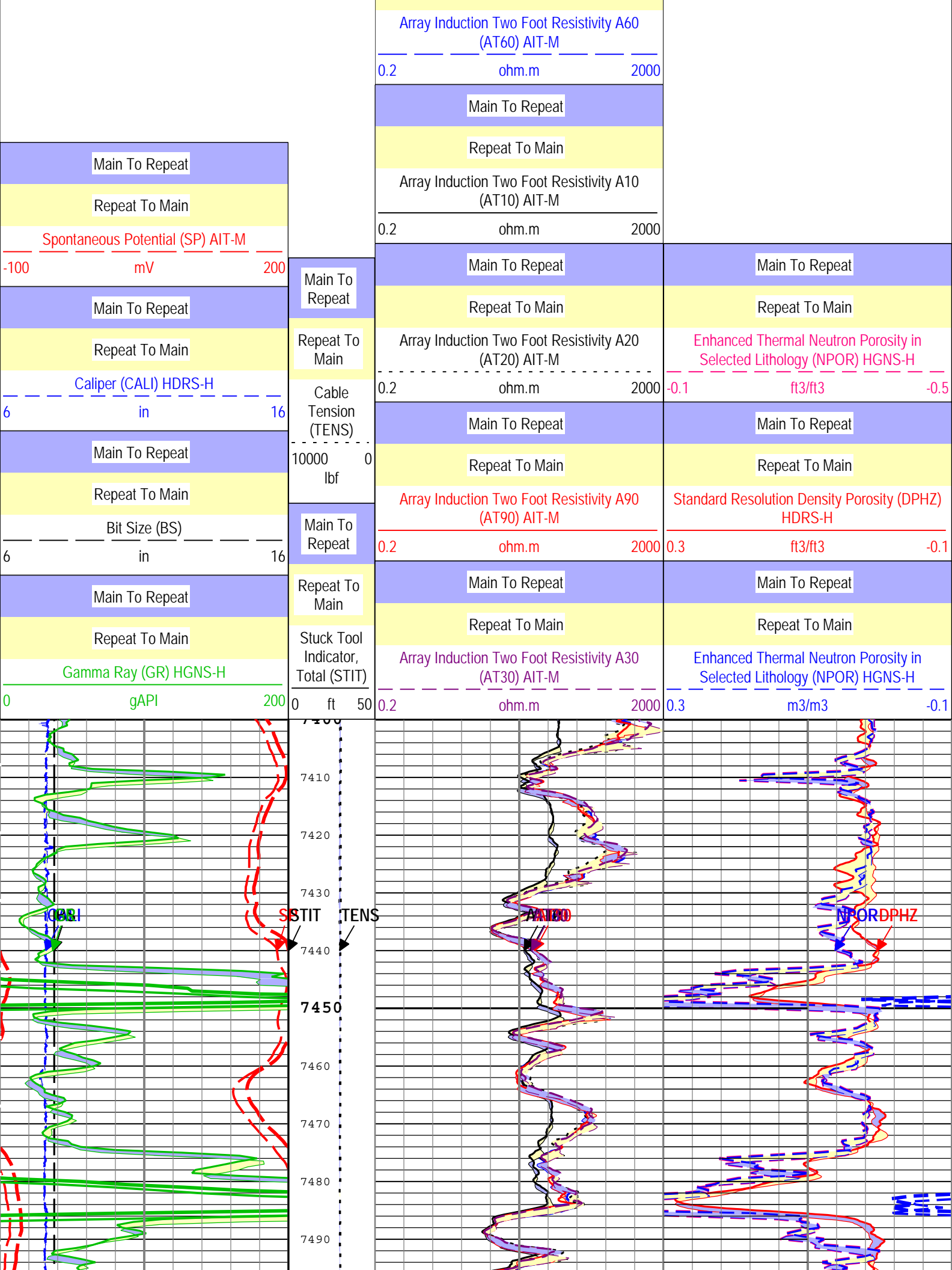
All depths are referenced to toolstring zero

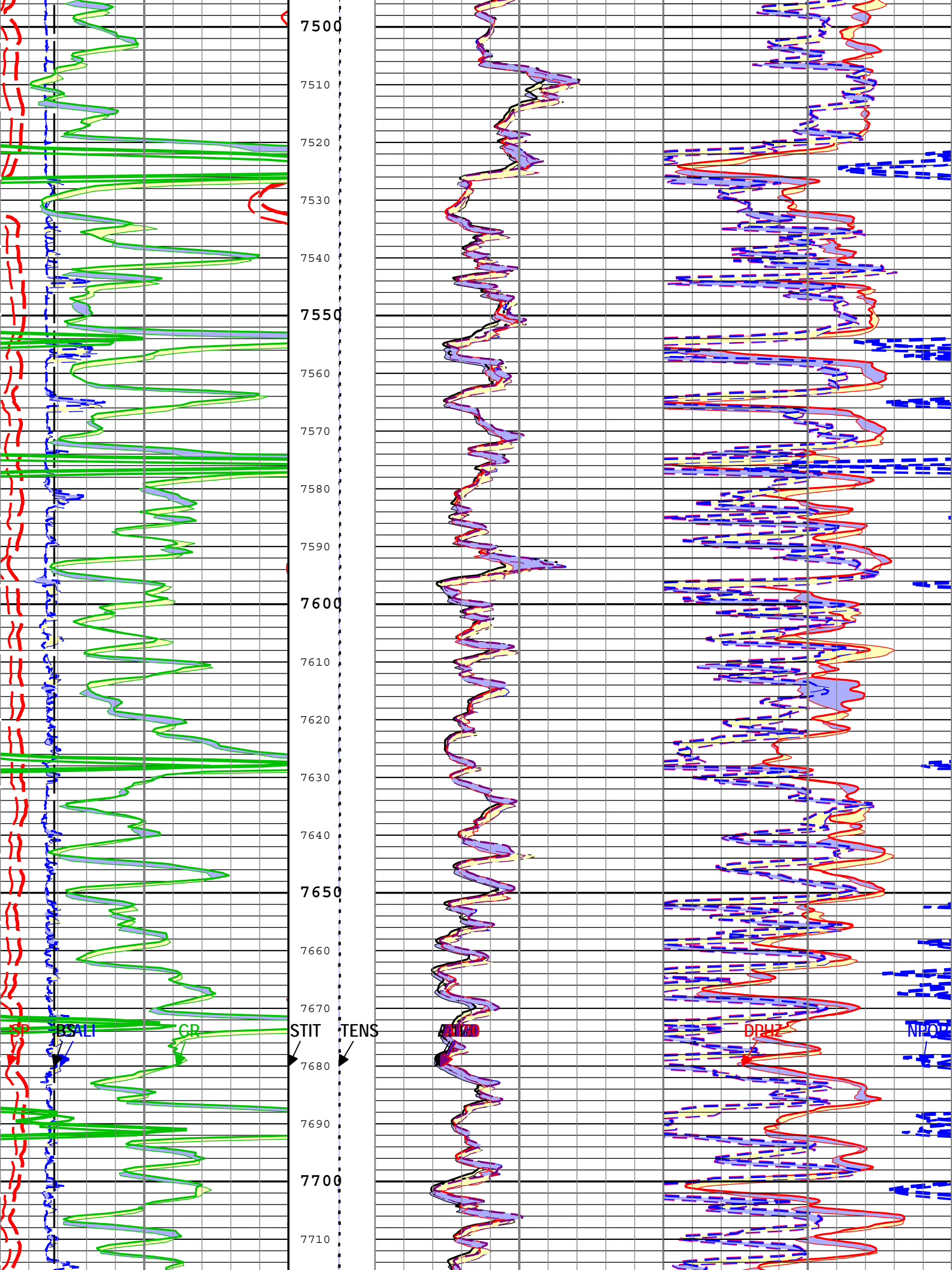
Log	<div>Company:Nighthawk Production LLC</div> <div>Well:John Craig 10 10</div> <div>Run 1: Log[5]:Up:S011</div>
-----	---

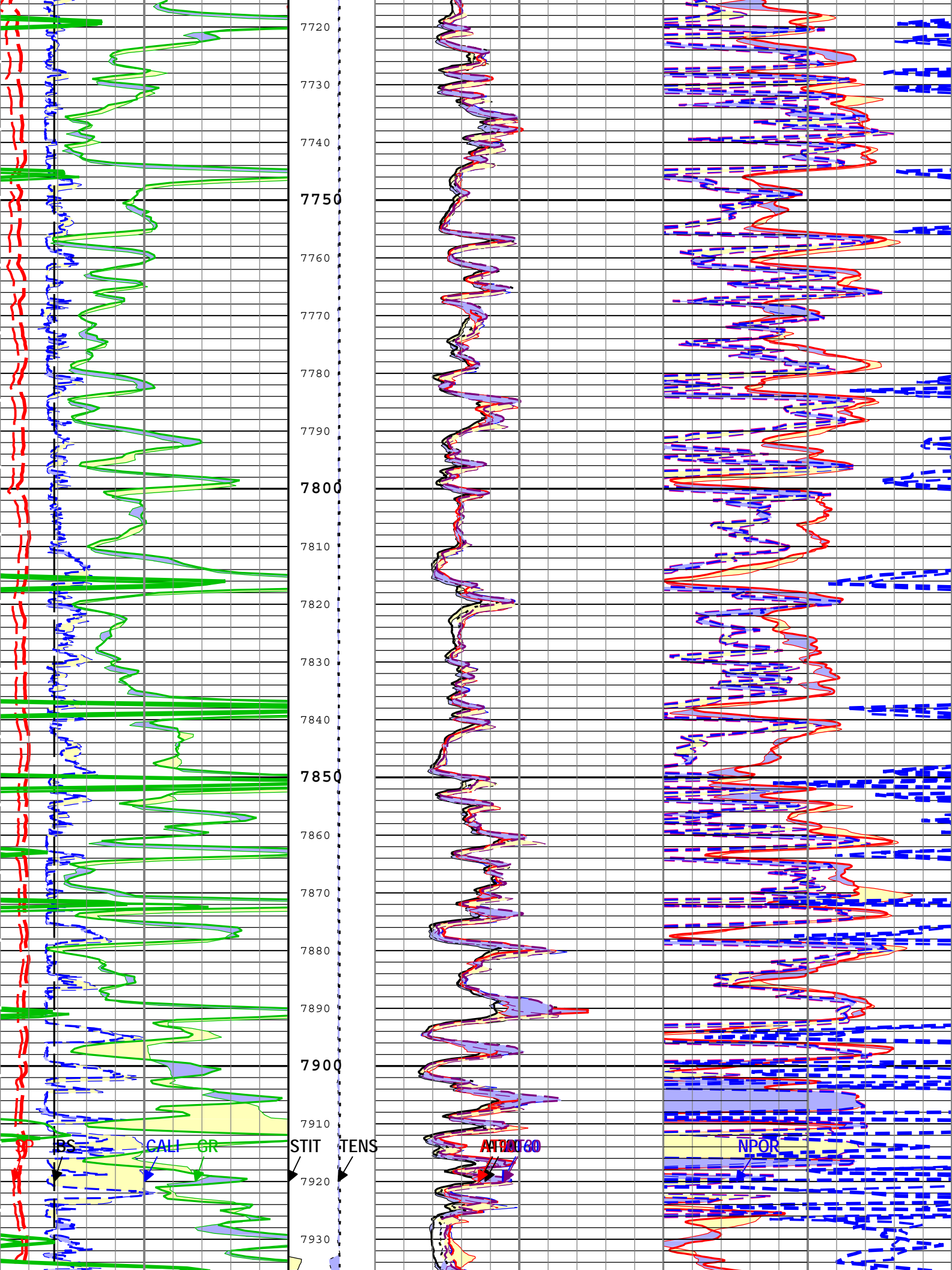
Description: HGNS standard resolution porosities for Platform Express Format: Log (EMD 5in Triple Combo Linear RA_1) Index Scale: 5 in per 100 ft
Index Unit: ft Index Type: Measured Depth Creation Date: 21-May-2014 10:53:41

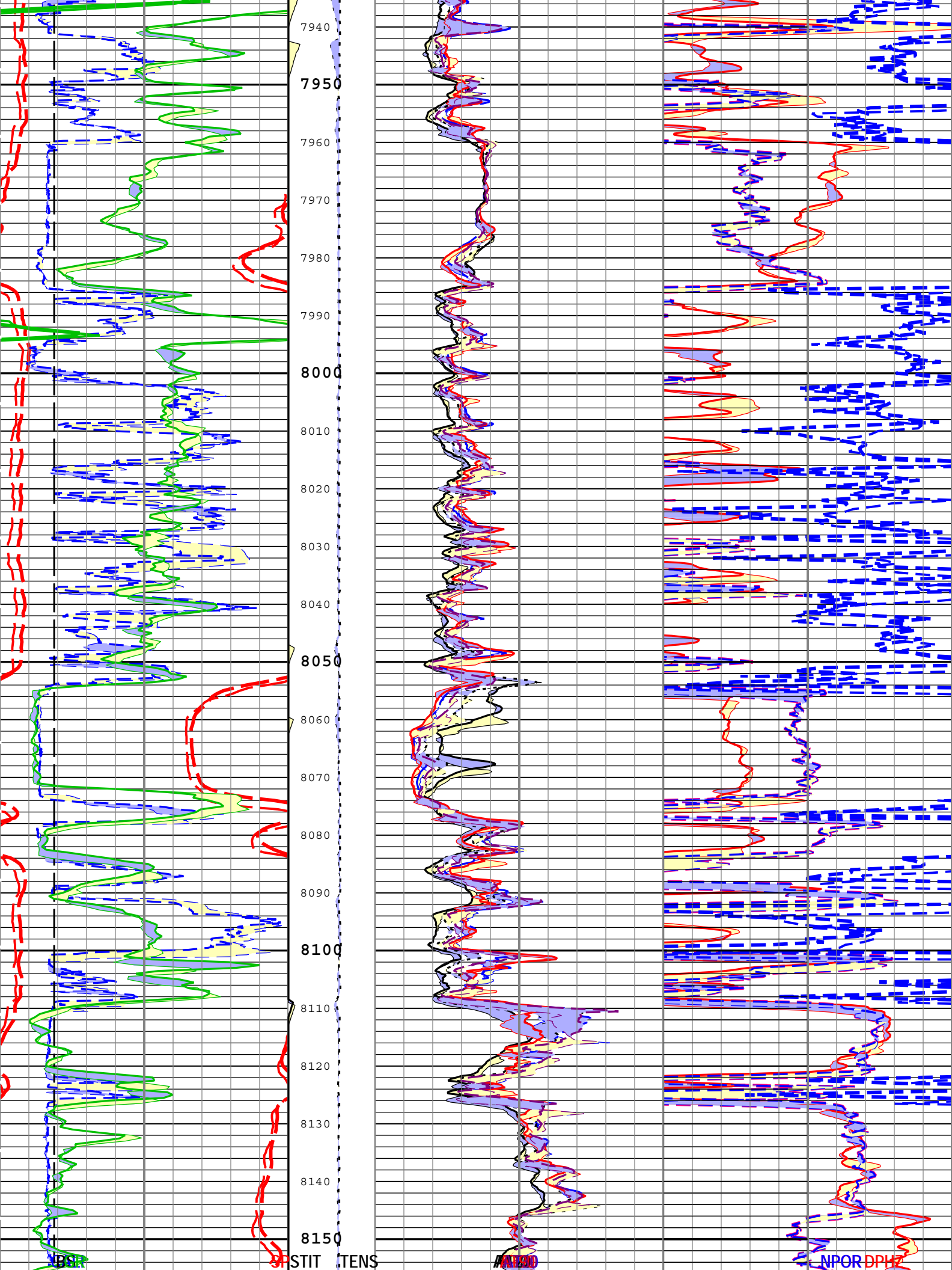
TIME_1900 - Time Marked every 60.00 (s)

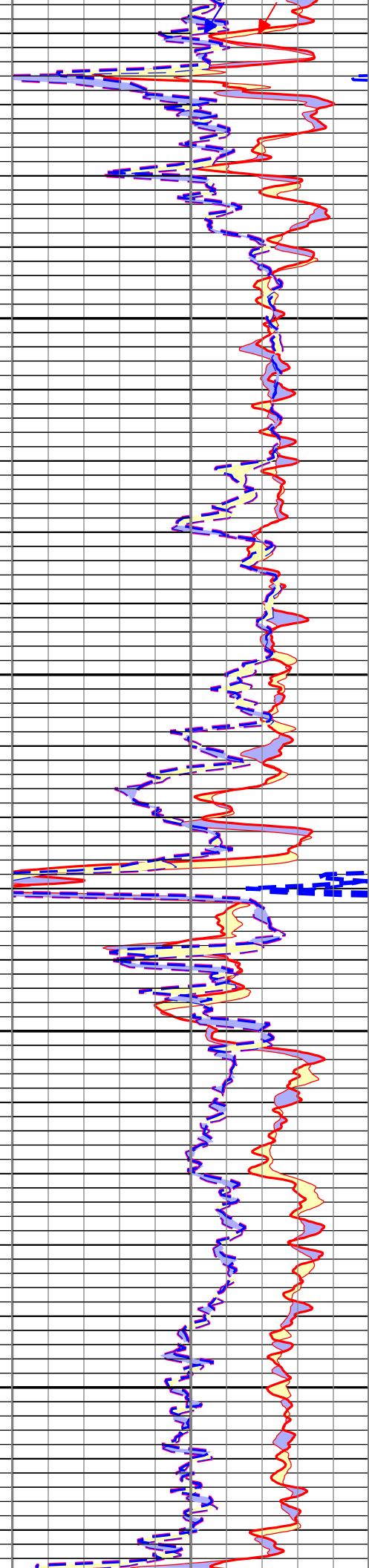
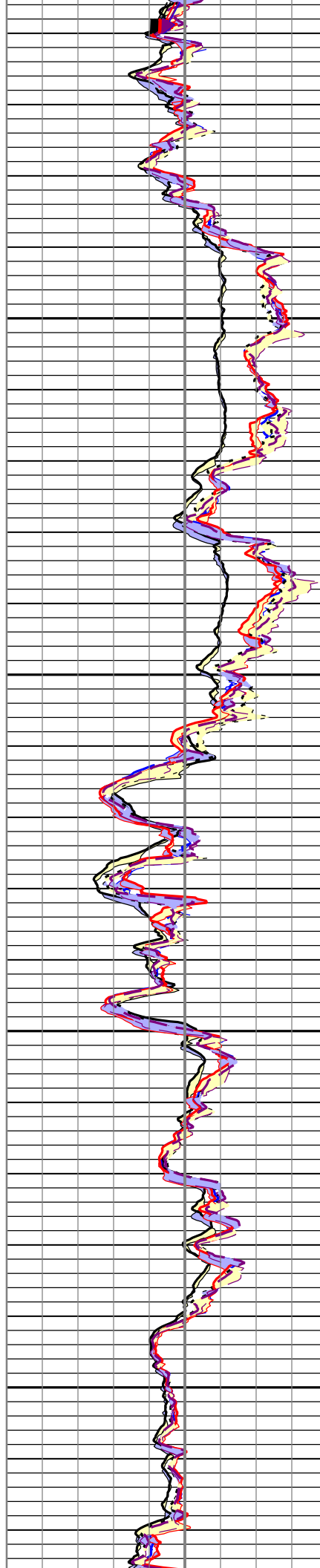
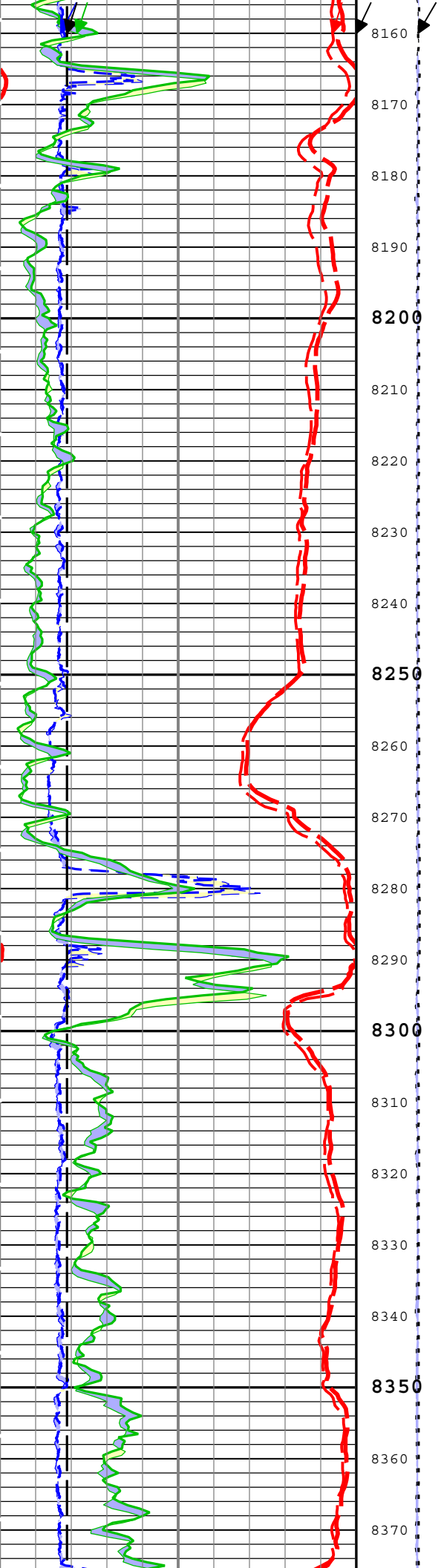
		Main To Repeat	
		Repeat To Main	

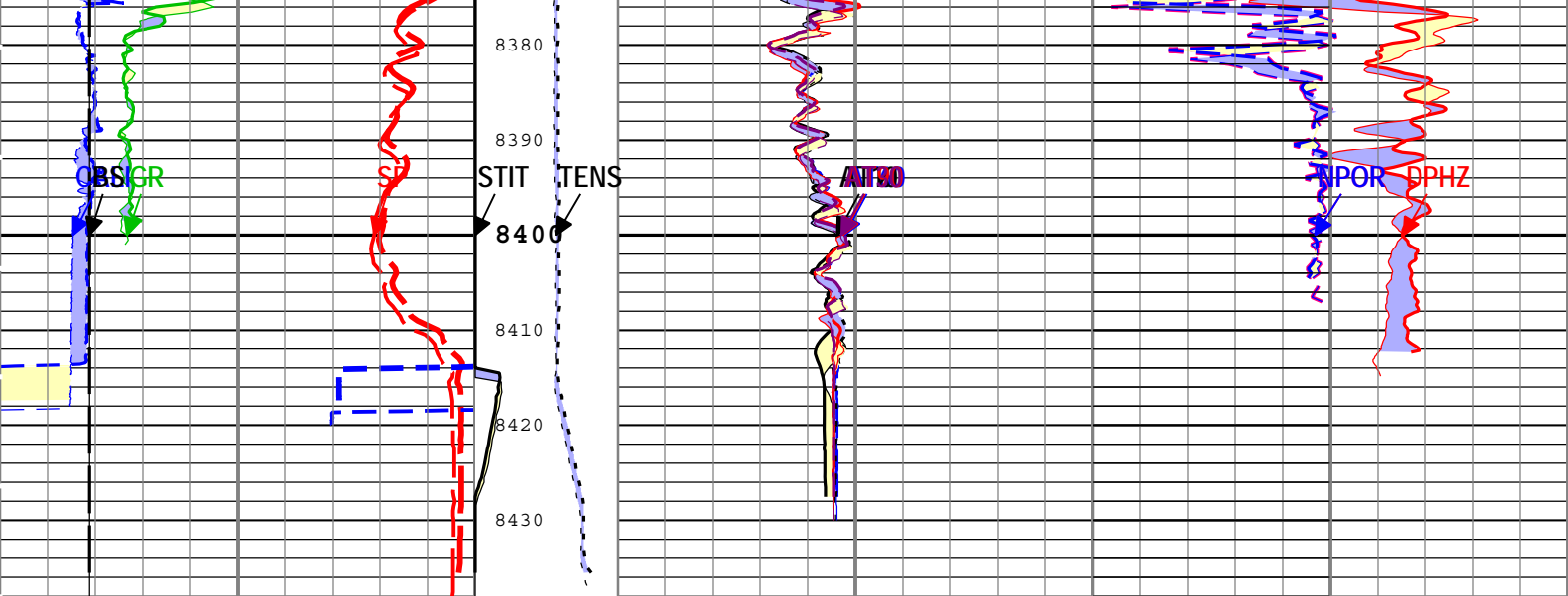












Main To Repeat	Main To Repeat	Main To Repeat	Main To Repeat
Repeat To Main	Repeat To Main	Repeat To Main	Repeat To Main
Spontaneous Potential (SP) AIT-M	Repeat To Main	Array Induction Two Foot Resistivity A60 (AT60) AIT-M	Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H
-100 mV 200	Cable Tension (TENS)	0.2 ohm.m 2000	-0.1 ft3/ft3 -0.5
Main To Repeat	10000 lbf 0	Main To Repeat	Main To Repeat
Repeat To Main	Main To Repeat	Repeat To Main	Repeat To Main
Caliper (CALI) HDRS-H	Repeat To Main	Array Induction Two Foot Resistivity A10 (AT10) AIT-M	Standard Resolution Density Porosity (DPHZ) HDRS-H
6 in 16	Stuck Tool Indicator, Total (STIT)	0.2 ohm.m 2000	0.3 ft3/ft3 -0.1
Main To Repeat	0 ft 50	Main To Repeat	Main To Repeat
Repeat To Main		Repeat To Main	Repeat To Main
Bit Size (BS)		Array Induction Two Foot Resistivity A20 (AT20) AIT-M	Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H
6 in 16		0.2 ohm.m 2000	0.3 m3/m3 -0.1
Main To Repeat		Main To Repeat	
Repeat To Main		Repeat To Main	
Gamma Ray (GR) HGNS-H		Array Induction Two Foot Resistivity A90 (AT90) AIT-M	
0 gAPI 200		0.2 ohm.m 2000	
		Main To Repeat	
		Repeat To Main	
		Array Induction Two Foot Resistivity A30 (AT30) AIT-M	
		0.2 ohm.m 2000	

TIME_1900 - Time Marked every 60.00 (s)

Description: HGNS standard resolution porosities for Platform Express Format: Log (EMD 5in Triple Combo Linear RA_1) Index Scale: 5 in per 100 ft
Index Unit: ft Index Type: Measured Depth Creation Date: 21-May-2014 10:53:41

Well: John Craig 10 10
Field: Old Homestead
County: Lincoln
State: Colorado

Platform Express
Triple Combo