

Company: Nighthawk Production LLC

Well: Snowbird 16-15

Field: Arikaree Creek

County: Lincoln Country: USA

County: Lincoln

Field: Arikaree Creek

Location: SESE Sec.15, T6S, R54W

Well: Snowbird 16-15

Company: Nighthawk Production LLC

Platform Express Field Print

Triple Combo

Induction & Nuclear

SESE Sec.15, T6S, R54W	Elev.:	K.B.	5256.00 ft
SHL: 620' FSL & 772' FEL		G.L.	5241.00 ft
Lat/Long: 39.522910/-103.419160		D.F.	5255.00 ft
Permanent Datum:	Ground Level	Elev.:	5241.00 f
Log Measured From:	Kelly Bushing	15.00 ft	above Perm.Datum
Drilling Measured From:	Kelly Bushing		
API Serial No.	Section:	Township:	Range:
05-073-06561-0000	15	6S	54W

Logging Date	12-Oct-2014	
Run Number	ONE	
Depth Driller	8403.00 ft	
Schlumberger Depth	8403.00 ft	
Bottom Log Interval	8410.00 ft	
Top Log Interval	347.00 ft	
Casing Driller Size @ Depth	9.625 in @ 347.00 ft	
Casing Schlumberger	347 ft	
Bit Size	8.75 in	
Type Fluid In Hole	WBM	
Density	9.2 lbm/gal	67 s
Fluid Loss	PH 4.8 cm3	8.5
Source of Sample	Active Tank	
RM @ Meas Temp	1.43 ohm.m @ 65.4 degF	
RMF @ Meas Temp	0.95 ohm.m @ 75 degF	
RMC @ Meas Temp	1.89 ohm.m @ 75 degF	
Source RMF	Calculated	
RM @ BHT	0.47 @ 212 0.35 @ 212	
Max Recorded Temperatures	190 degF	
Circulation Stopped	11-Oct-2014 19:30:00	
Logger on Bottom	12-Oct-2014 08:00:00	
Unit Number	9108	
Recorded By	Nolan Welsh	
Witnessed By	Lynn Gibbs	

Disclaimer

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Well Sketch

Driller Depth

0.00 ft

347.00 ft

Casing 9.625in
36lbm/ft

8403.00 ft

Open Hole 8.75in

Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	8.75					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	8403					
Bottom Logger (ft)	8403					
Casing						
Size (in)	9.625					
Weight (lbm/ft)	36					
Inner Diameter (in)	8.921					
Grade	K55					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	347					
Bottom Logger (ft)	347					

Operational Run Summary

Parameter (unit)	ONE					
Date Log Started	12-Oct-2014					
Time Log Started	05:41:45					
Date Log Finished	12-Oct-2014					
Time Log Finished	14:32:58					
Top Log Interval (ft)	347.00					
Bottom Log Interval (ft)	8410.00					
Total Depth (ft)	8410.00					
Max Hole Deviation (deg)	0.00					
Azimuth of Max Deviation (deg)	0.00					
Bit Size (in)	8.750					
Logging Unit Number	9108					
Logging Unit Location	Fort Morgan					
Recorded By	Nolan Welsh					
Witnessed By	Lynn Gibbs					
Service Order Number	CXPX-00041					

Borehole Fluids

Parameter(unit)	ONE					
Fluid Type	Water					
Fluid Name	WBM					
Max Recorded Temperatures (degF)	190					
Source of Sample	Active Tank					
Salinity (ppm)	1500					
Density (lbm/gal)	9.2					
Funnel Viscosity (s)	67					
Fluid Loss (cm3)	4.8					
PH	8.5					
Date/Time Circulation Stopped	11-Oct-2014 19:30:00					
Date Logger on Bottom	12-Oct-2014					
Time Logger on Bottom	08:00:00					
Source RMF	Calculated					
RMC	Calculated					
RM @ Meas Temp (ohm.m@degF)	1.43 @ 65.4					
RMF @ Meas Temp (ohm.m@degF)	0.95 @ 75					
RMC @ Meas Temp (ohm.m@degF)	1.89 @ 75					
RM @ BHT (ohm.m@degF)	0.47 @ 212					
RMF @ BHT (ohm.m@degF)	0.35 @ 212					
RMC @ BHT (ohm.m@degF)	0.71 @ 212					
Total Solid (%)						
High Gravity Solids (%)						

Remarks and Equipment Summary

ONE: Toolstring				ONE: Remarks
<div> <div>Equip name</div> <div>Length</div> <div>MP name</div> <div>Offset</div> </div> <div> <div>LEH-QT</div> <div>102.85</div> <div></div> <div></div> </div> <div>LEH-QT</div> <div> <div>EDTC-B</div> <div>99.93</div> <div></div> <div></div> </div> <div>EDTH-B</div> <div>EDTG-A</div> <div>EDTC-B</div> <div> <div>CTEM</div> <div>96.43</div> </div> <div> <div>ACCZ</div> <div>0.00</div> </div> <div> <div>HV</div> <div>0.00</div> </div> <div> <div>Gamma Ray</div> <div>94.56</div> </div> <div> <div>TelStatus</div> <div>93.43</div> </div> <div> <div>PPC-B:8193</div> <div>93.43</div> </div> <div>PPC-B:8193</div> <div> <div>PPC-B Calipers</div> <div>92.29</div> </div> <div>ers</div>	Tool string run as per tool sketch.			
	Matrix: Limestone, MDEN=2.71g/cc			
	Tool response affected by borehol conditions.			
	PEX repeat done from TD to 7000 ft., per client request.			
	Crew: Troy Ocanus, Aaron Weber			
	Density data affected from 3140-3020 ft. due to closing of calipers as tool was stuck.			

CMRT-F:202 86.92
CMRC:3
CMRH:3
CMRS:202

CMRT 73.27

ILE-F 71.33

AH-184[2] 63.33

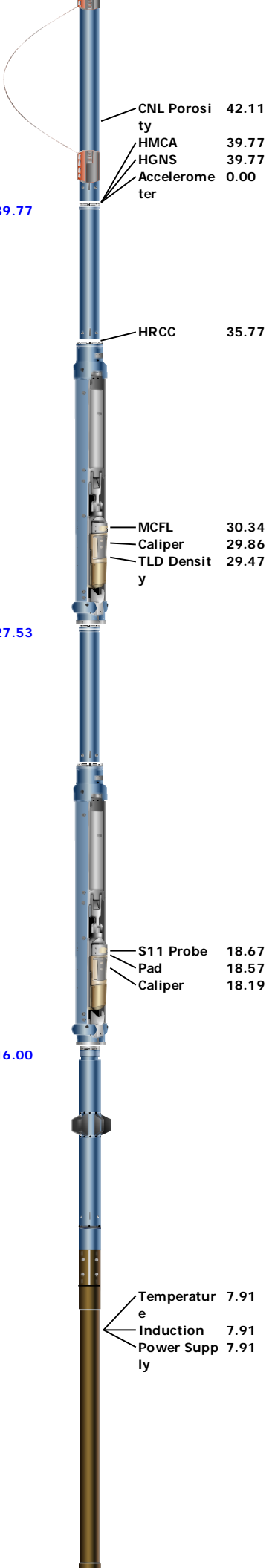
AH-184[1] 61.33

LDSC-B 59.33

LDSC-A
LDSC-B
Tel Status 57.58

ECS-A:19 55.83
ECSD-A:0
ECSD-A:0
ECSD-A:19
NSR-F
Detector 54.55

HGNS-H 49.18
HGNH
NPV-N
NSR-F:5068
HGNS-H
HACCZ-H:4269
HMCA-H
Temperature 49.16
GR 48.44



CNL Porosity 42.11
HMCA 39.77
HGNS 39.77
Accelerometer 0.00

HDRS-H:3933 39.77
ECH-MEB
HRCC-H
HRMS-H:3933
GPV-Q
GSR-J:5094
Backscatter:28736
Short Spacing:28736
Long Spacing:28736
HRGD-H:3933

HRCC 35.77

MCFL 30.34
Caliper 29.86
TLD Density 29.47

ADT-C 27.53
HECH-KDB
ADC-C
ADS-C
ADP-C

S11 Probe 18.67
Pad 18.57
Caliper 18.19

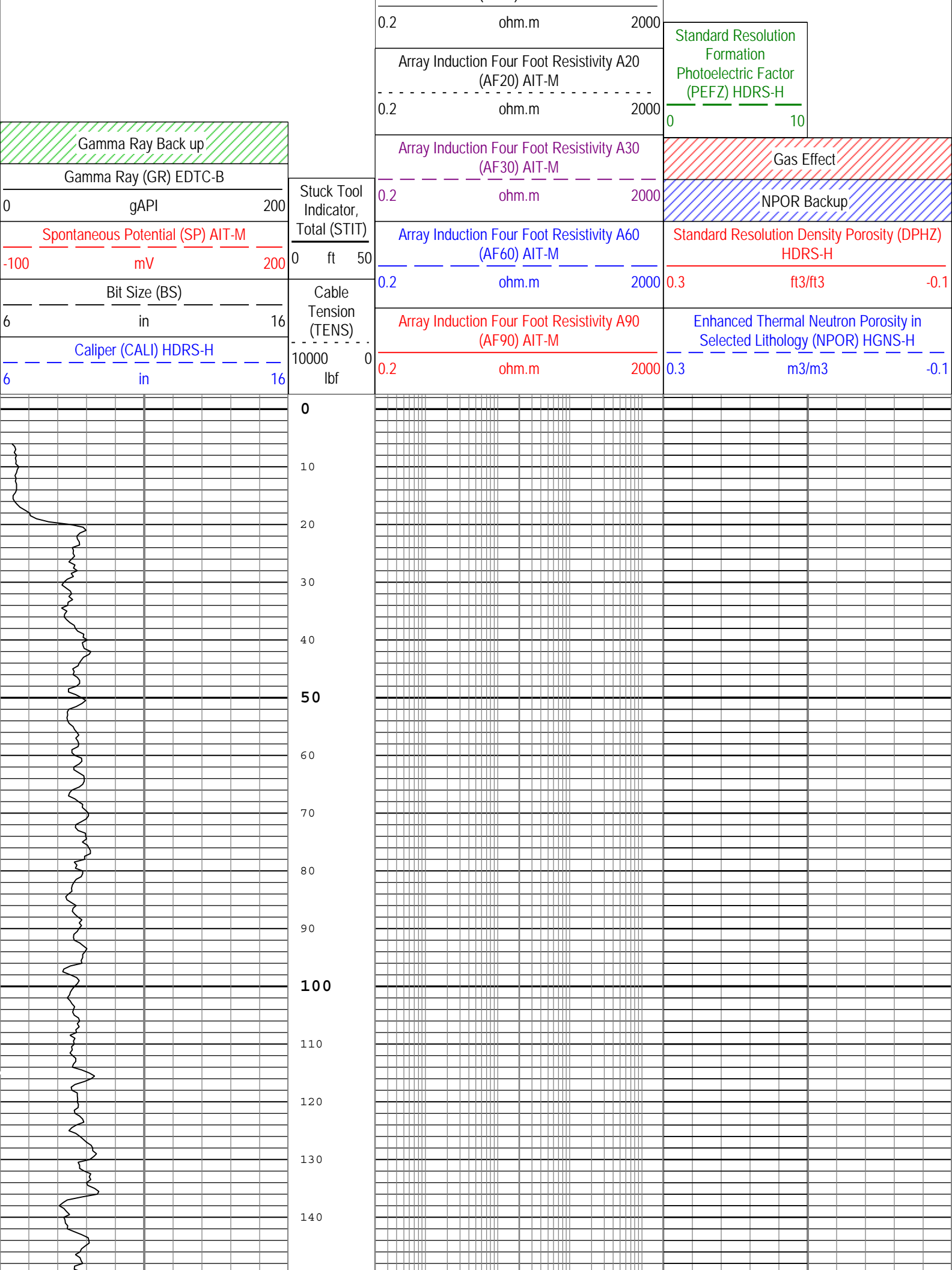
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AMRM:181

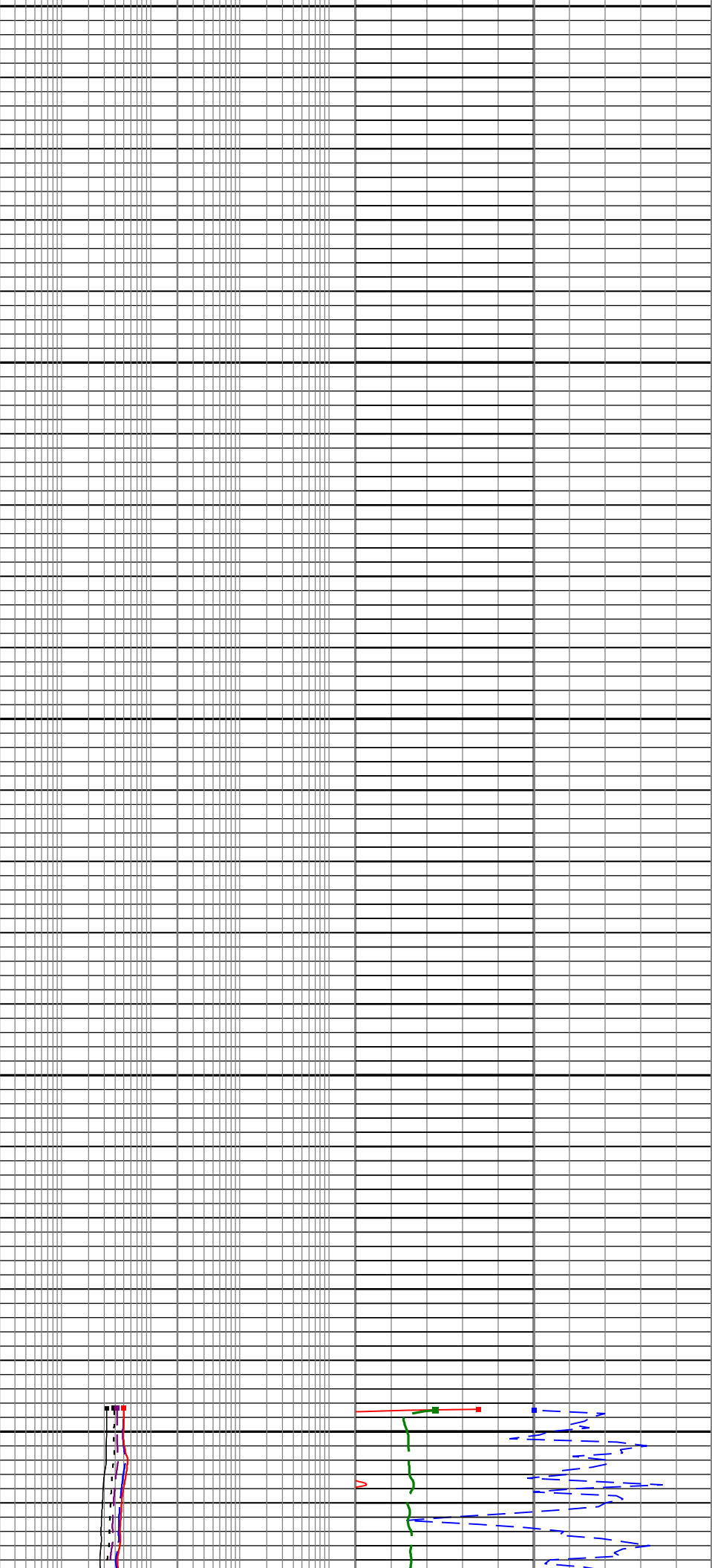
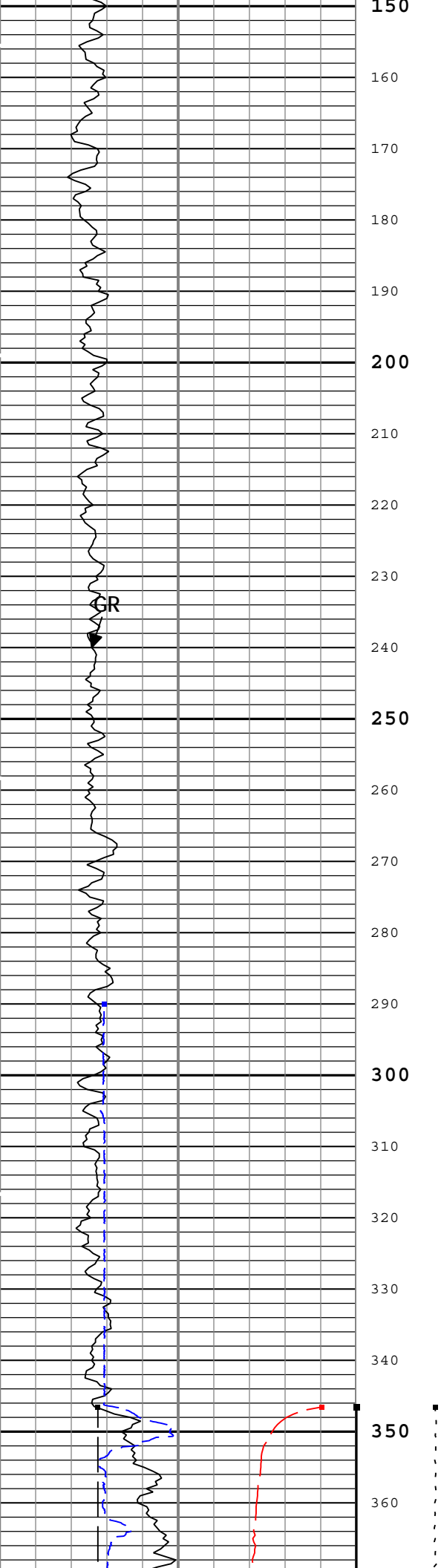
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Induction 7.91
Power Supply 7.91

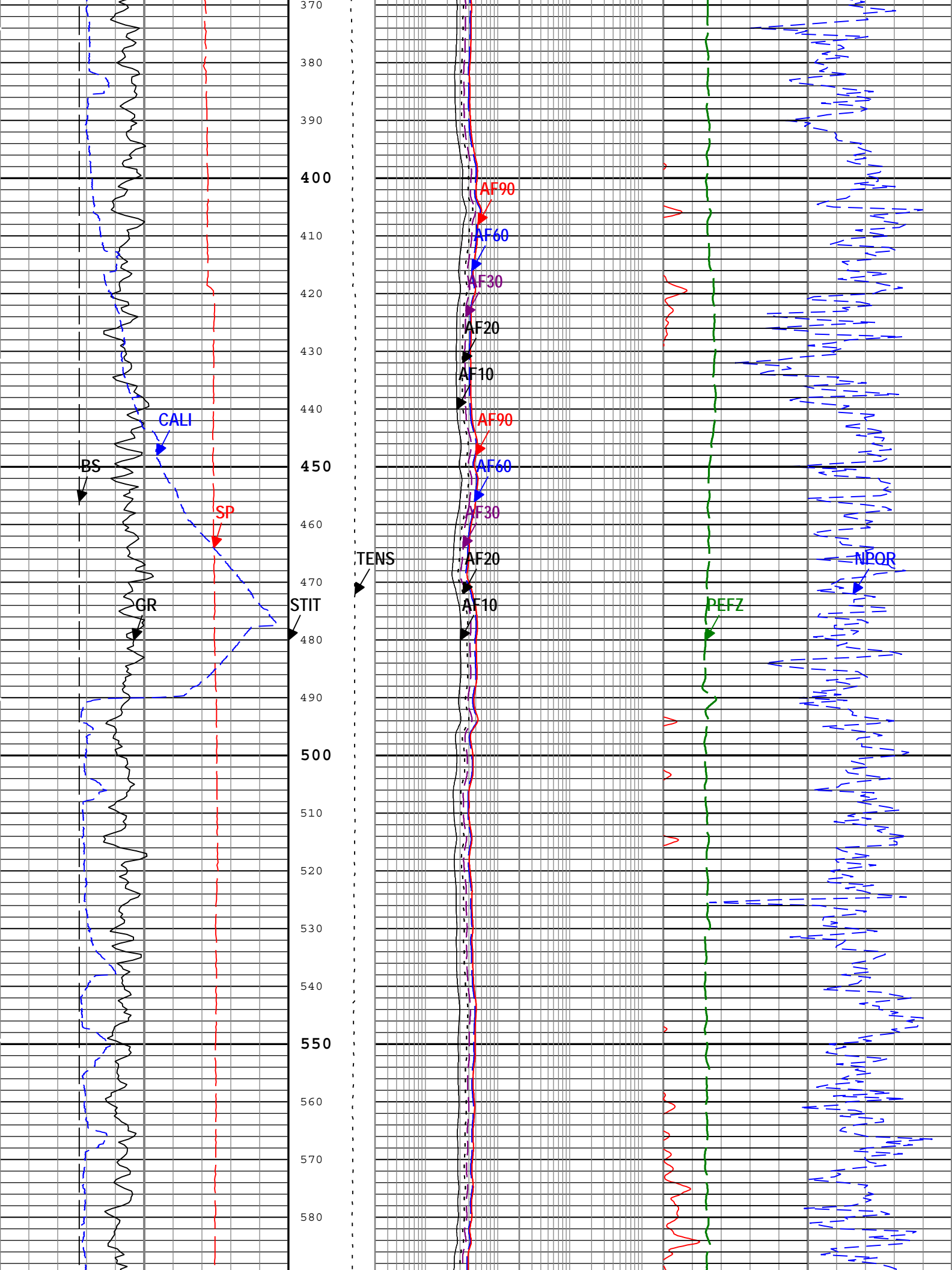
		
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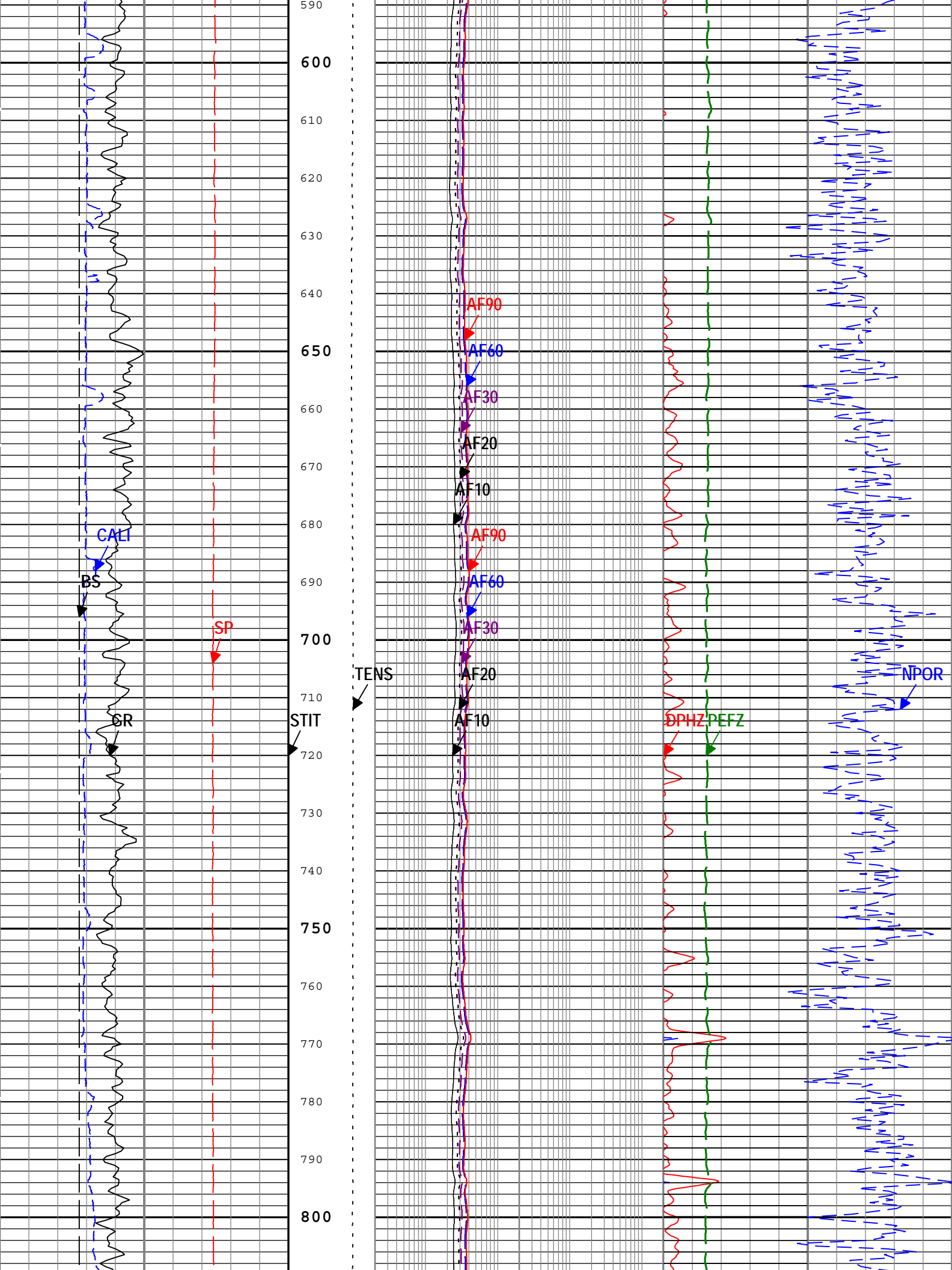
Depth Summary			
	ONE		
Depth Measuring Device			
Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		
Tension Device			
Type	CMTD-B/A		
Serial Number	147		
Calibration Date	18-AUG-2014		
Calibrator Serial Number	78135A		
Number of Calibration Points	10		
Calibration Root Mean Square Error	7		
Calibration Peak Error	11		
Logging Cable			
Type	7-46A-XS		
Serial Number			
Length	19500.00 ft		
Conveyance Type	Wireline		
Rig Type	Land		
ONE:Depth Control Parameters		Depth Control Remarks	
Log Sequence	First Log In the Well	All Schlumberger depth procedures followed.	
Rig Up Length At Surface		IDW used as primary depth device.	
Rig Up Length At Bottom		Z-Chart used as secondary depth device.	
Rig Up Length Correction			
Stretch Correction			
Tool Zero Check At Surface			
ONE			
5" Triple Combo			

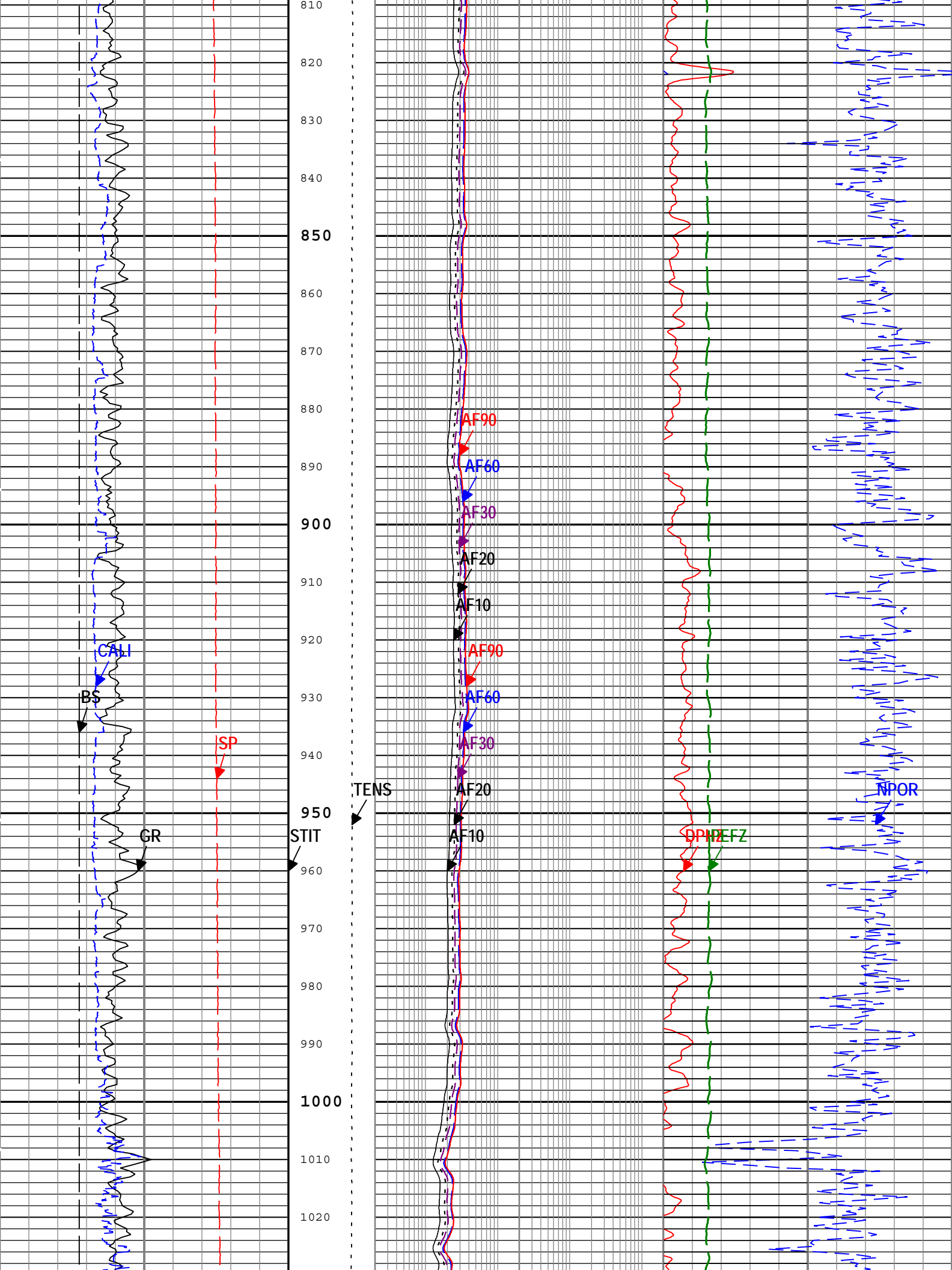
Software Version			
Acquisition System		Version	
MaxWell		4.0.9163.3000	
Application Patch		Patch-SP-10767_18214-4.0.9163.3001	
		Patch-Hotfix_Task_Tree_GDI_SP2-20806-4.0.9434.3002	
		Patch-NPD_CMRTF_SP2-22354-4.0.9434.3002	
Computation	Description	Version	
Borehole	Borehole Ensemble provides common Borehole Parameters and Channels	4.0.9469.3000	
HENVIR	Computation Ensemble for the HGNS Neutron environmental corrections	4.0.9469.3000	
DepthCorrection	DepthCorrection	4.0.9469.3000	
Tool Elements	Description	Software Version	Firmware Version

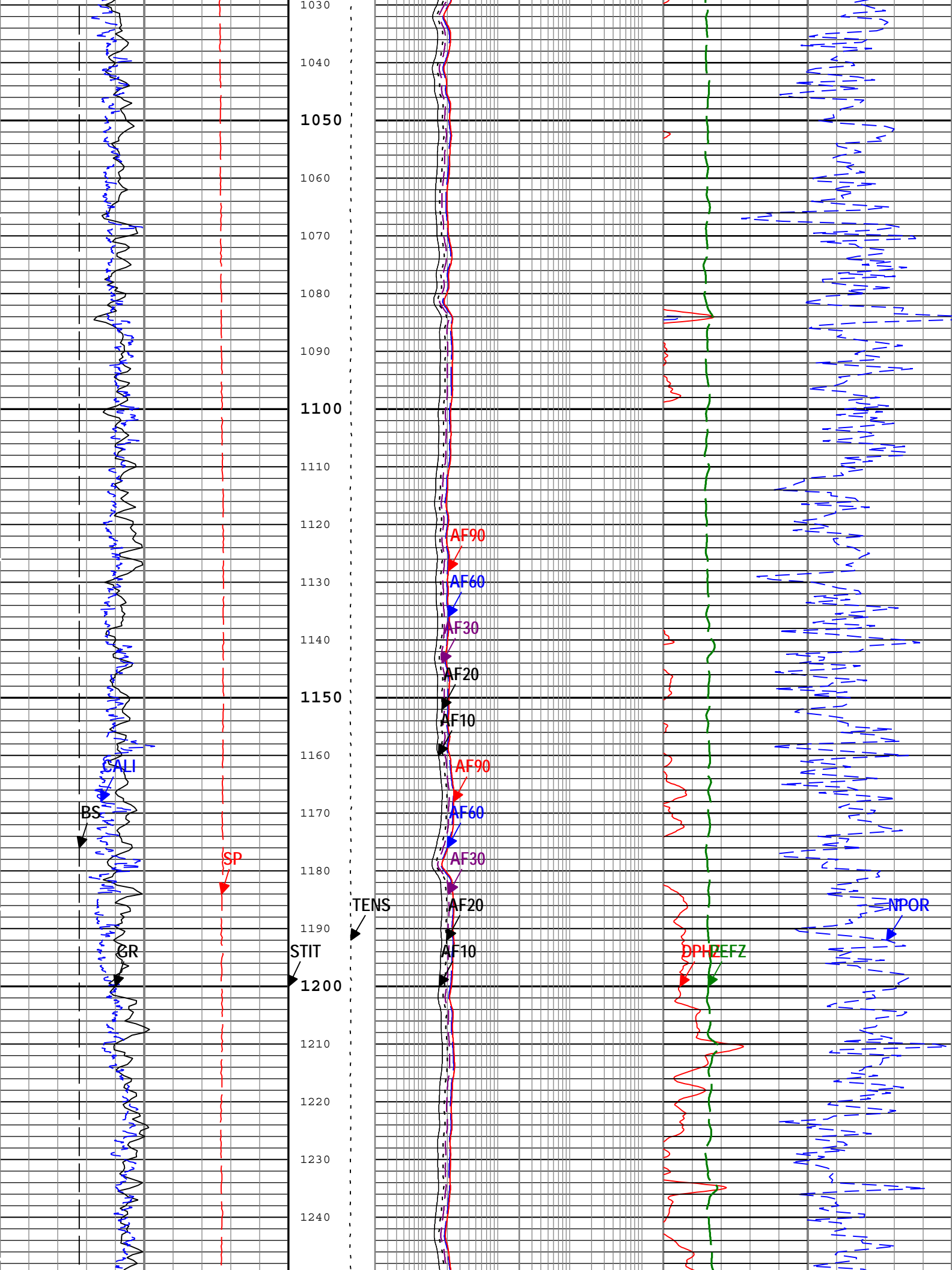


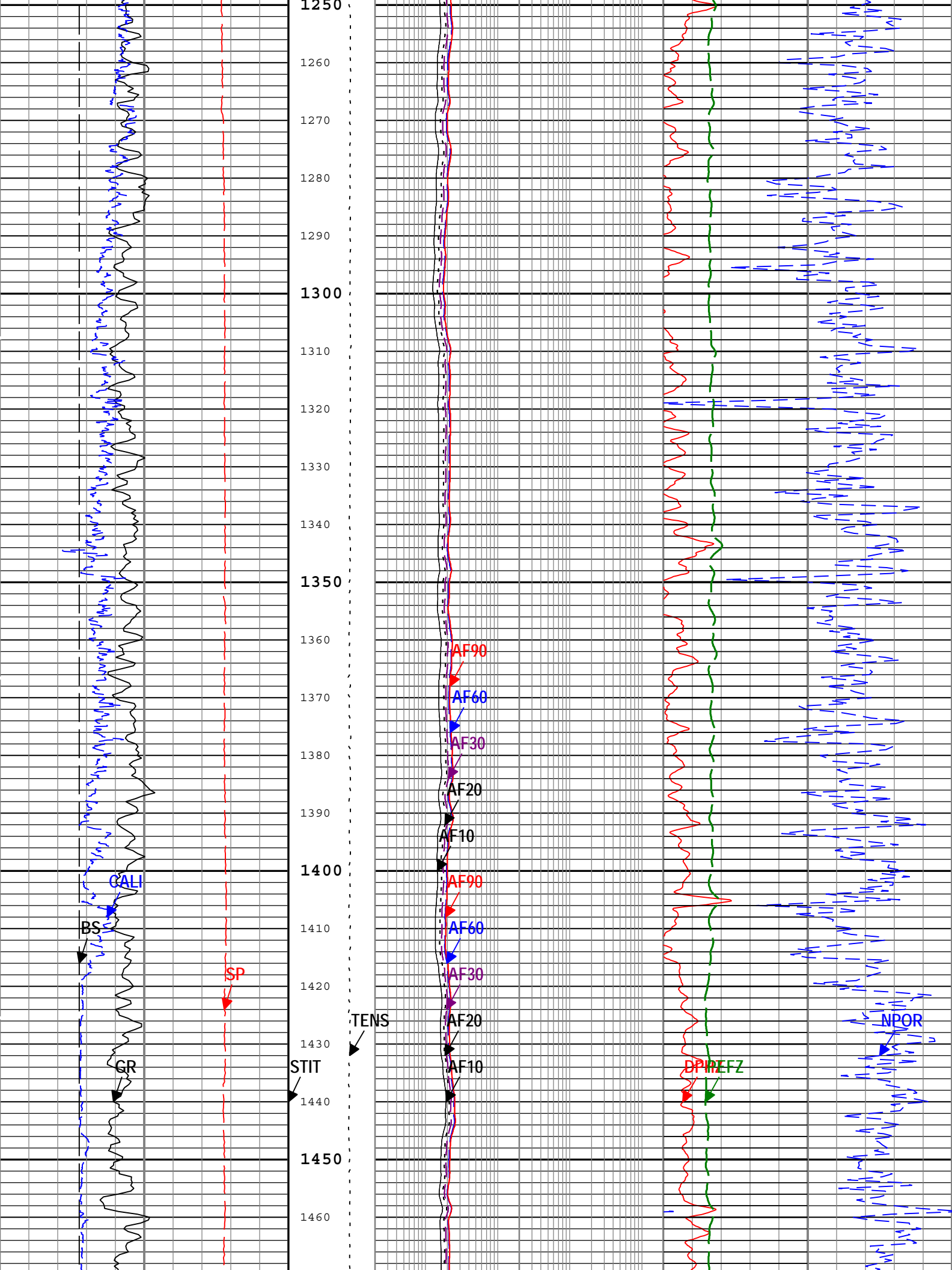


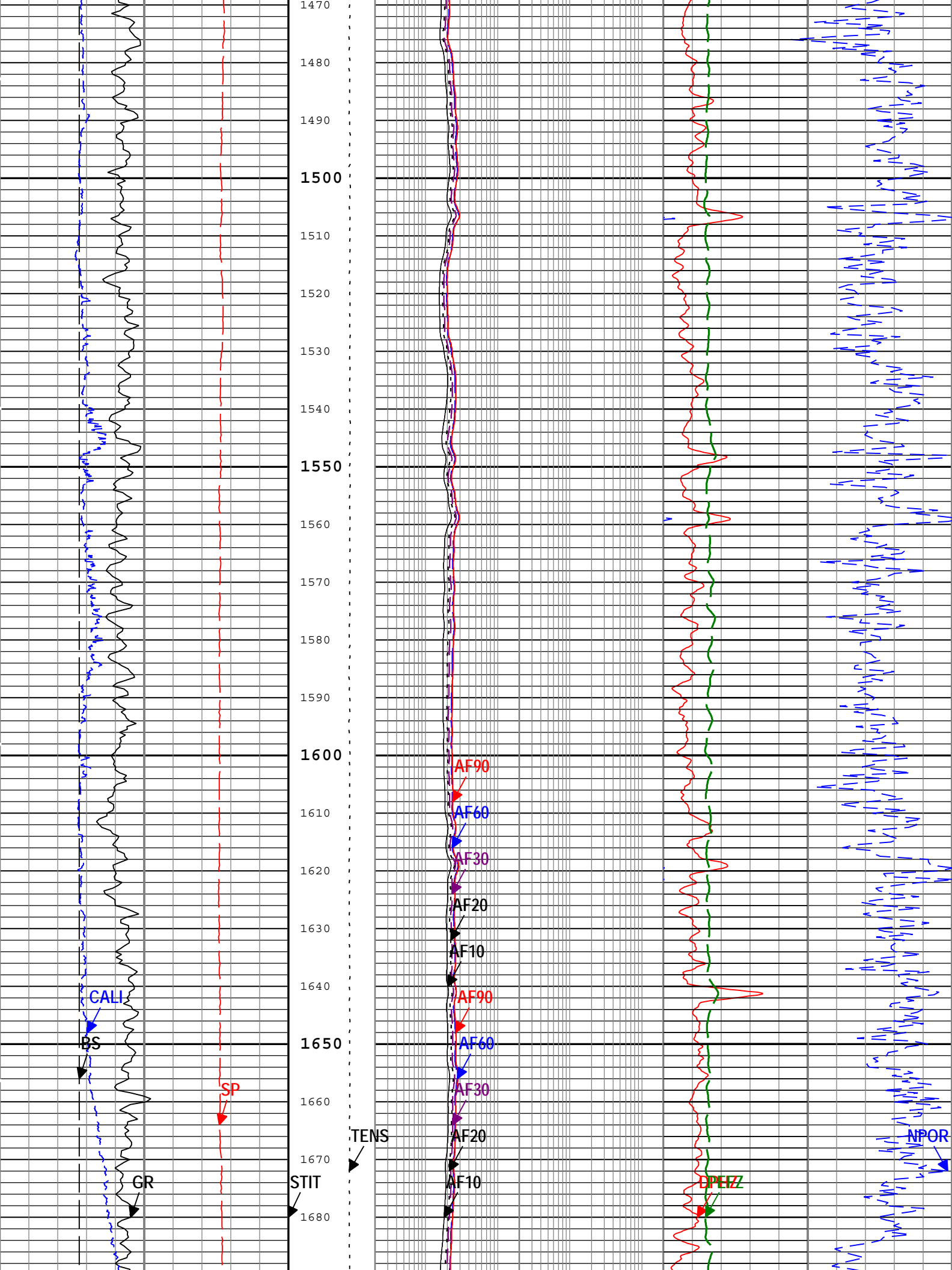


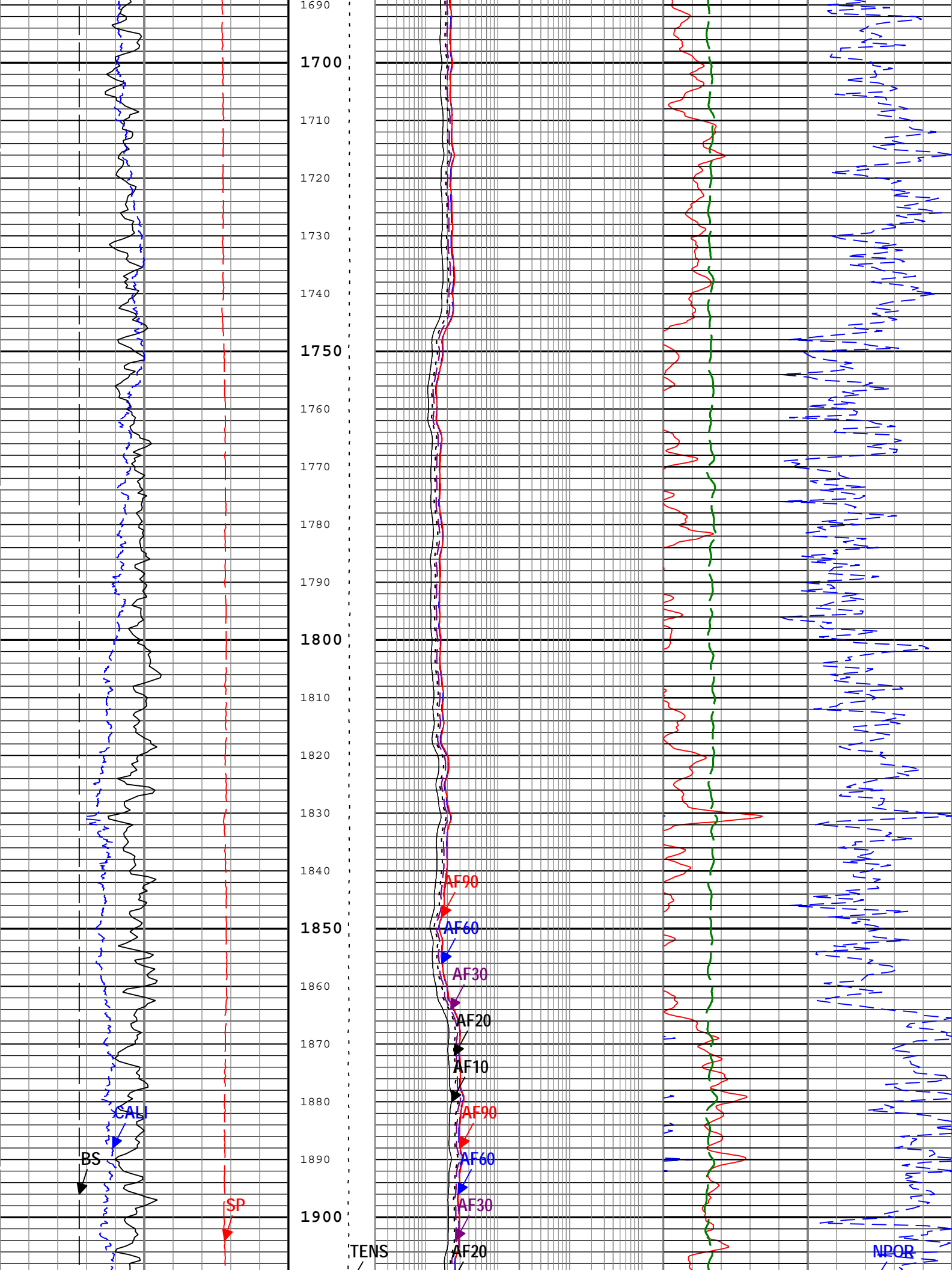


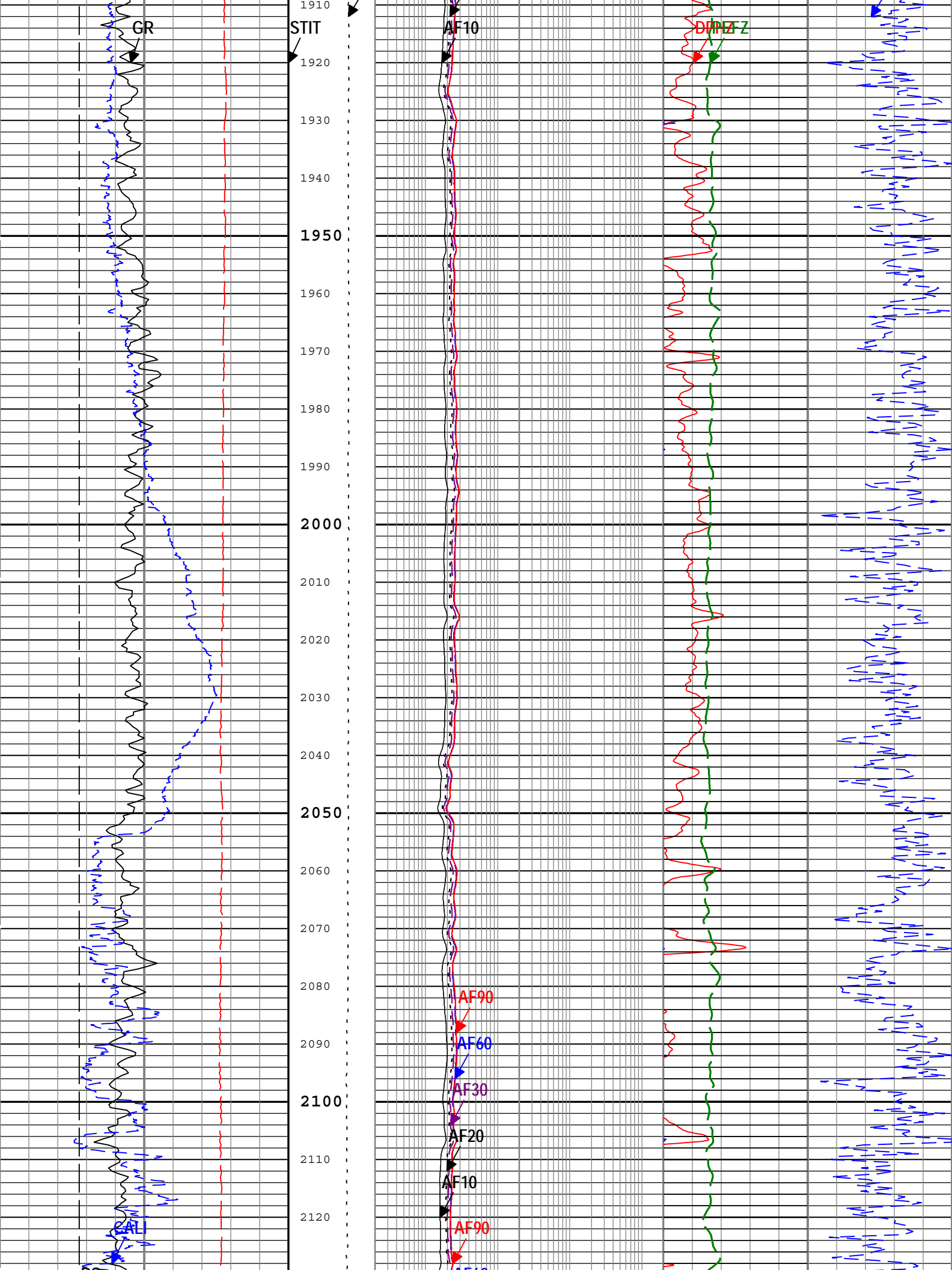


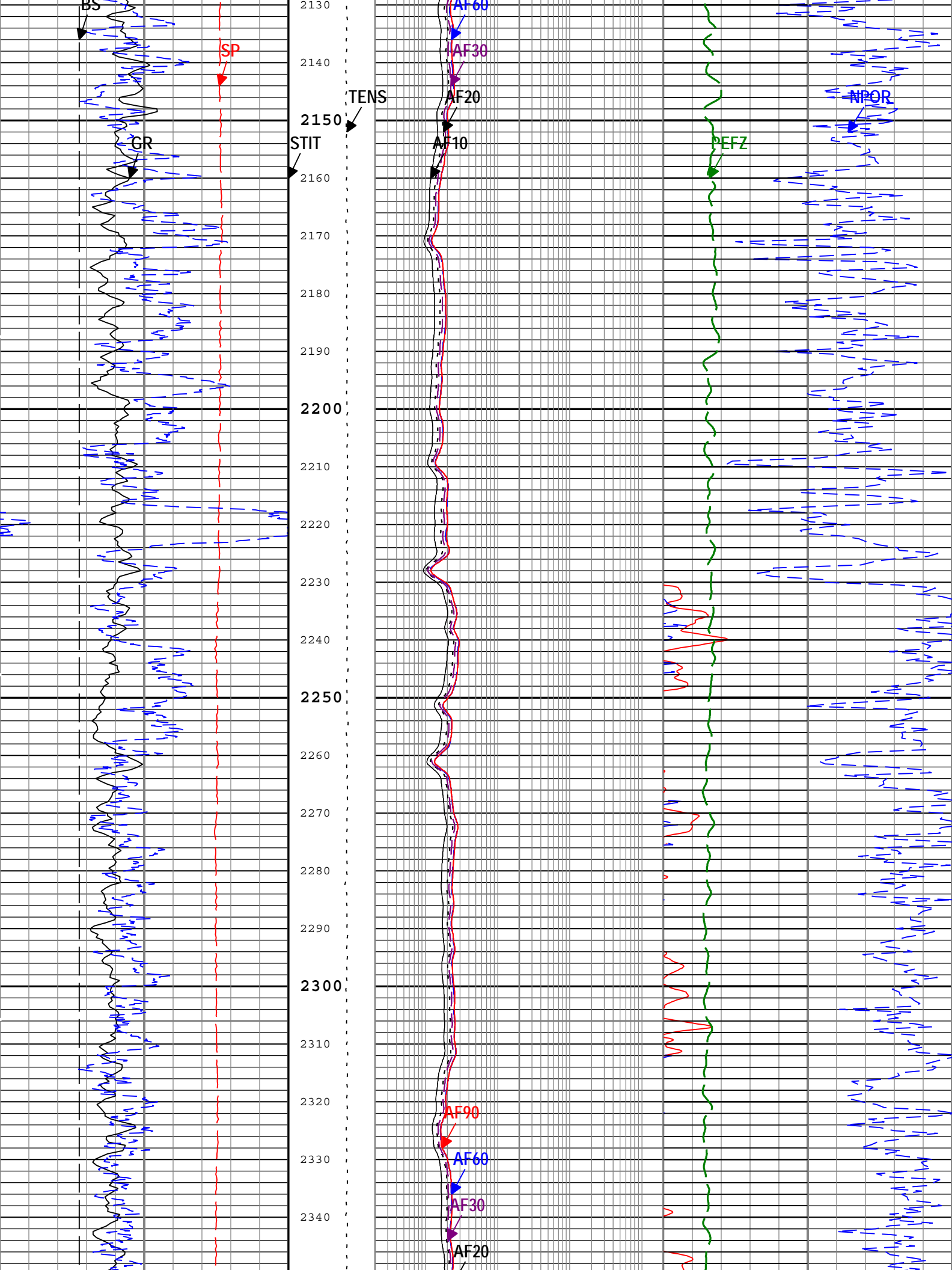


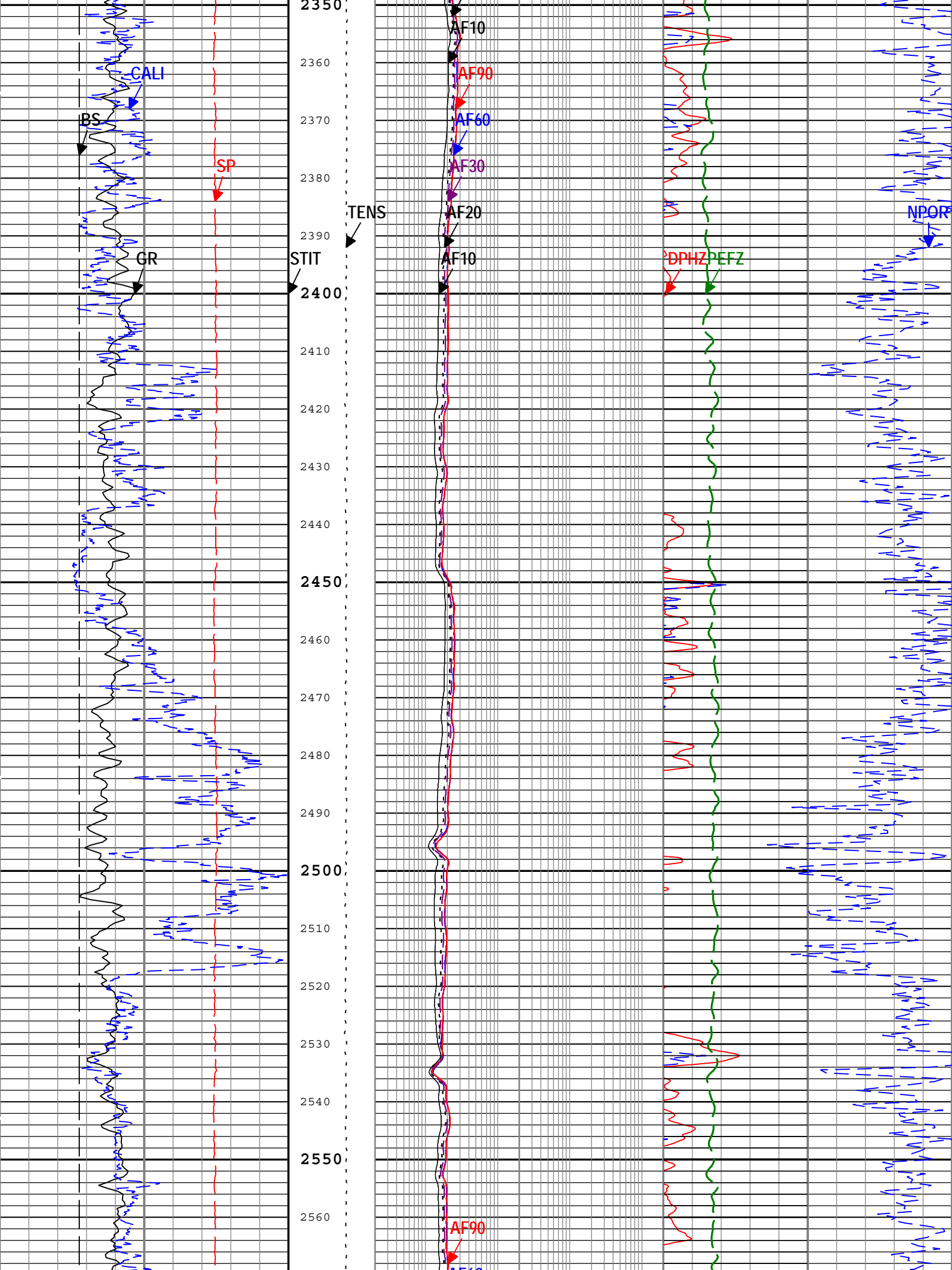


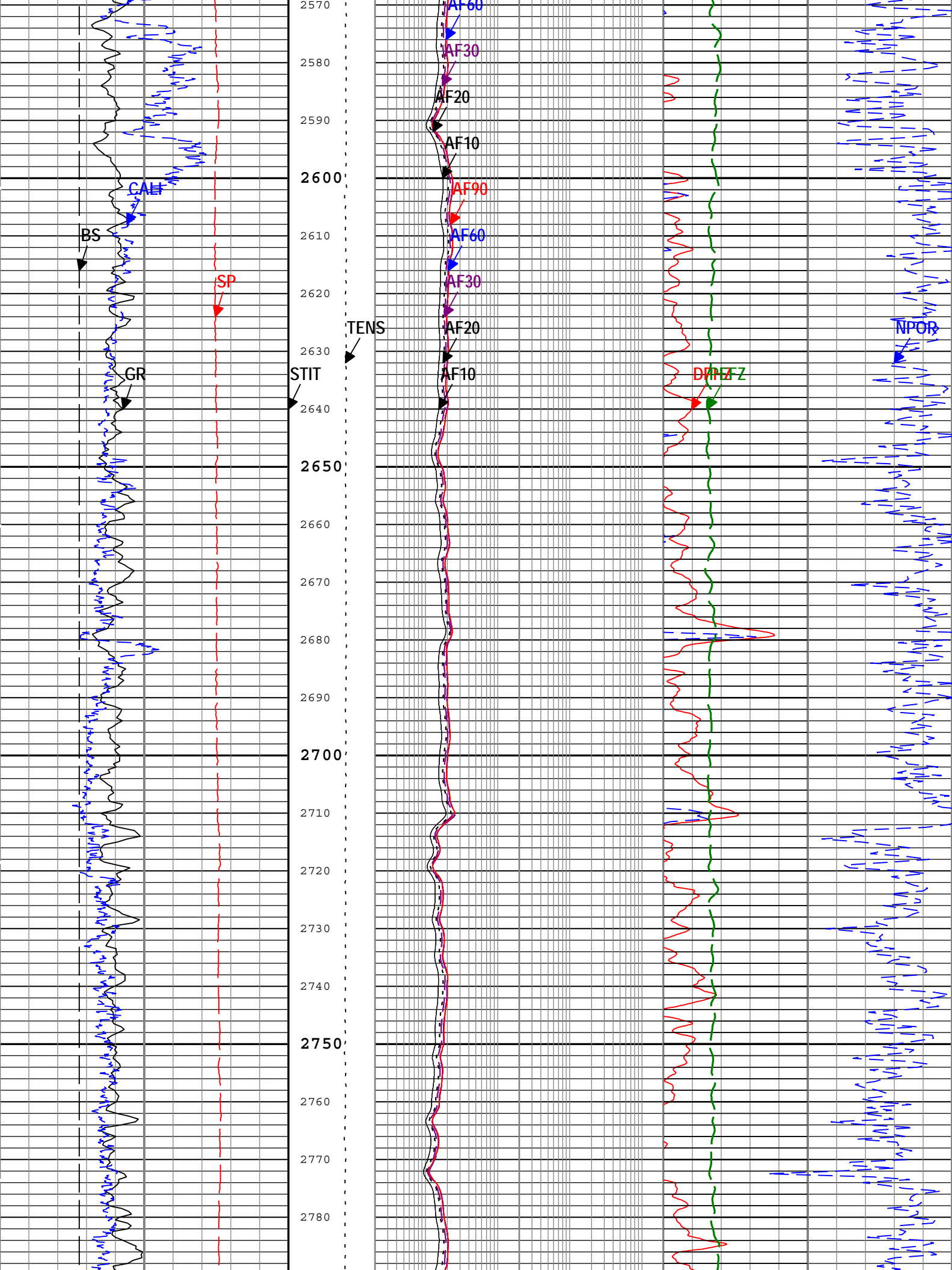


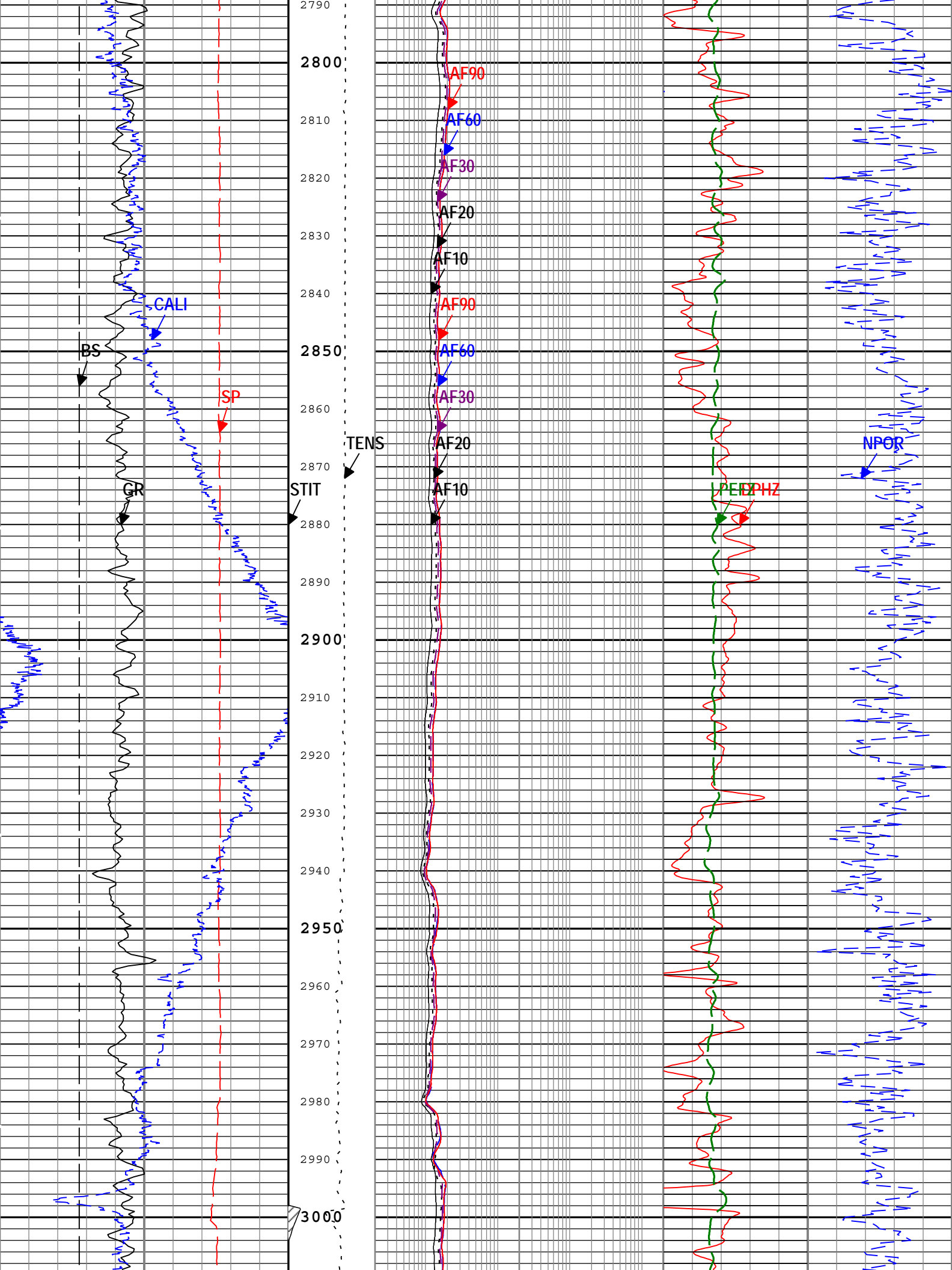


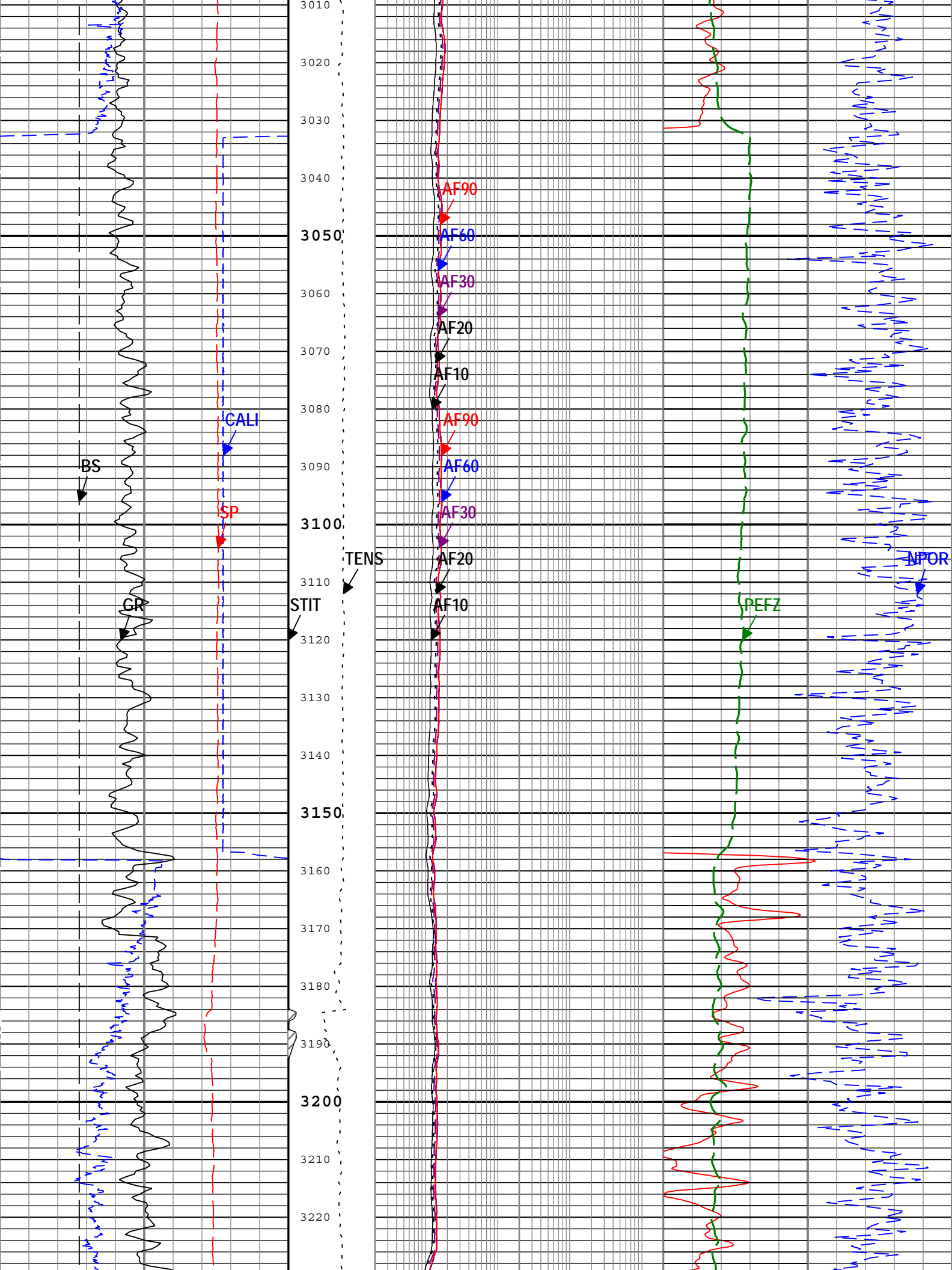


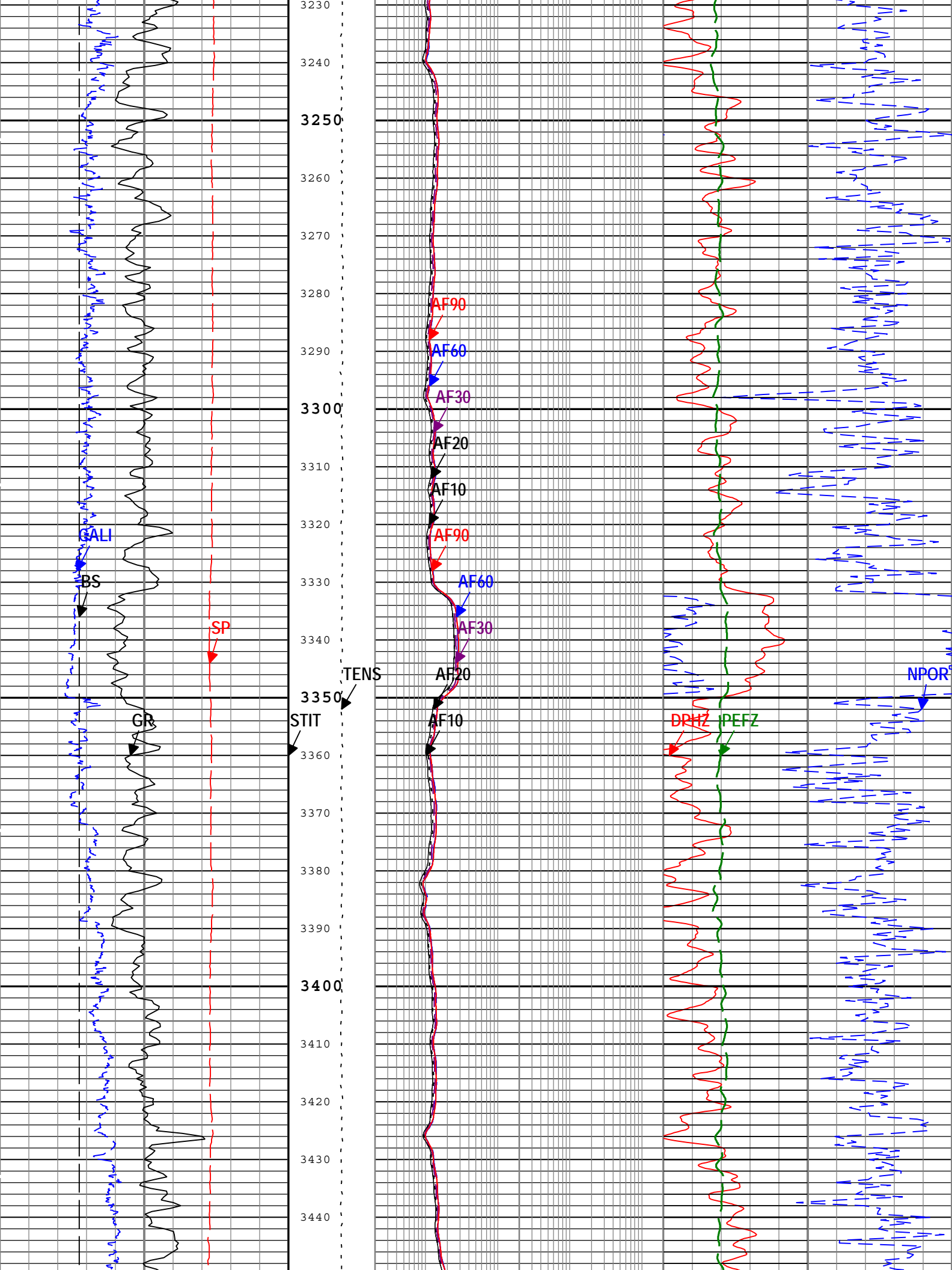


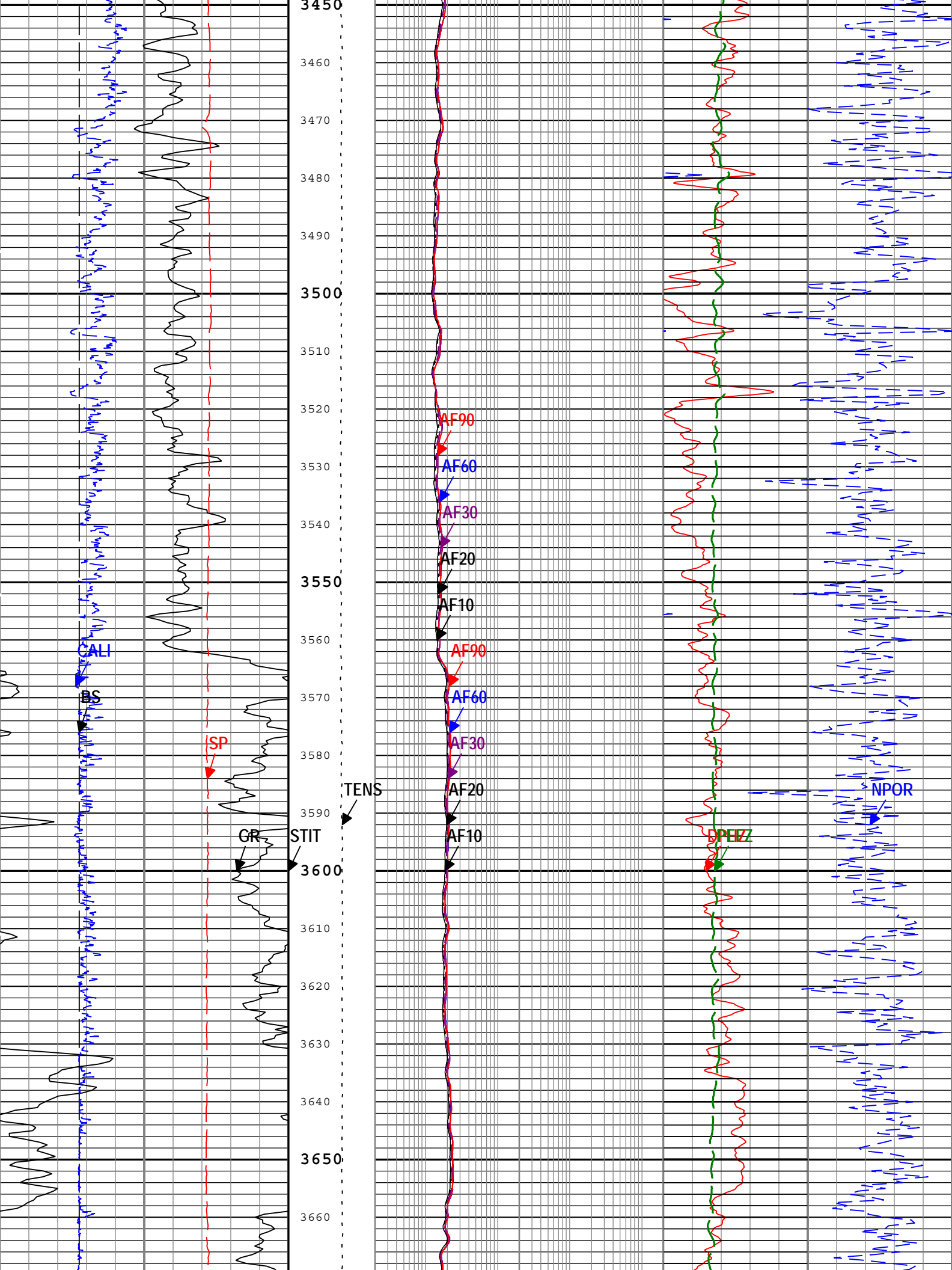


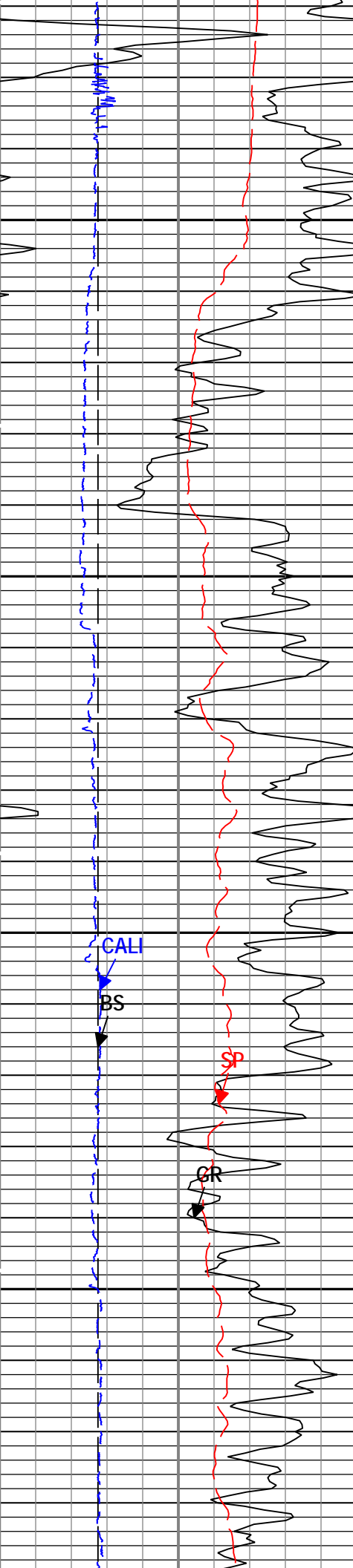




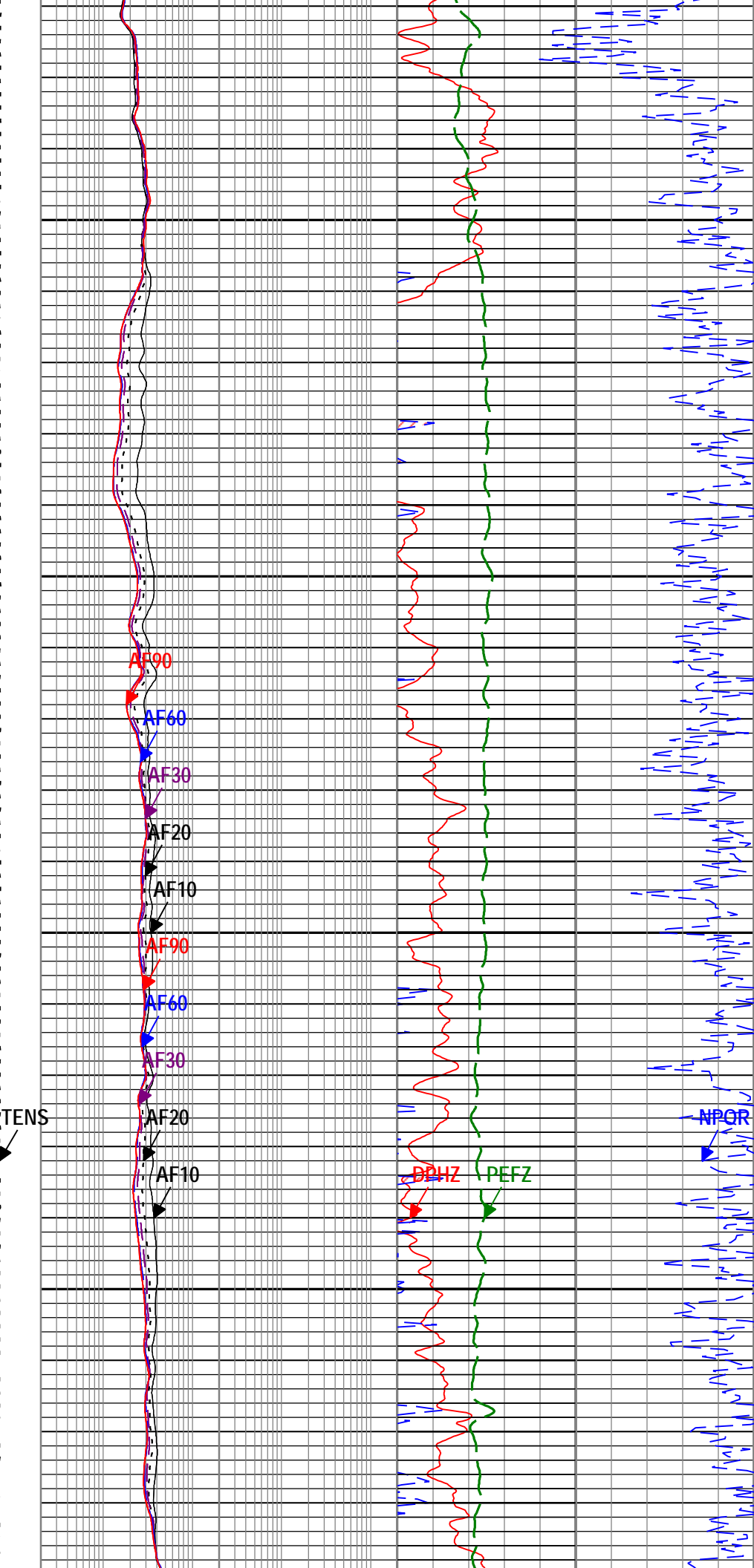


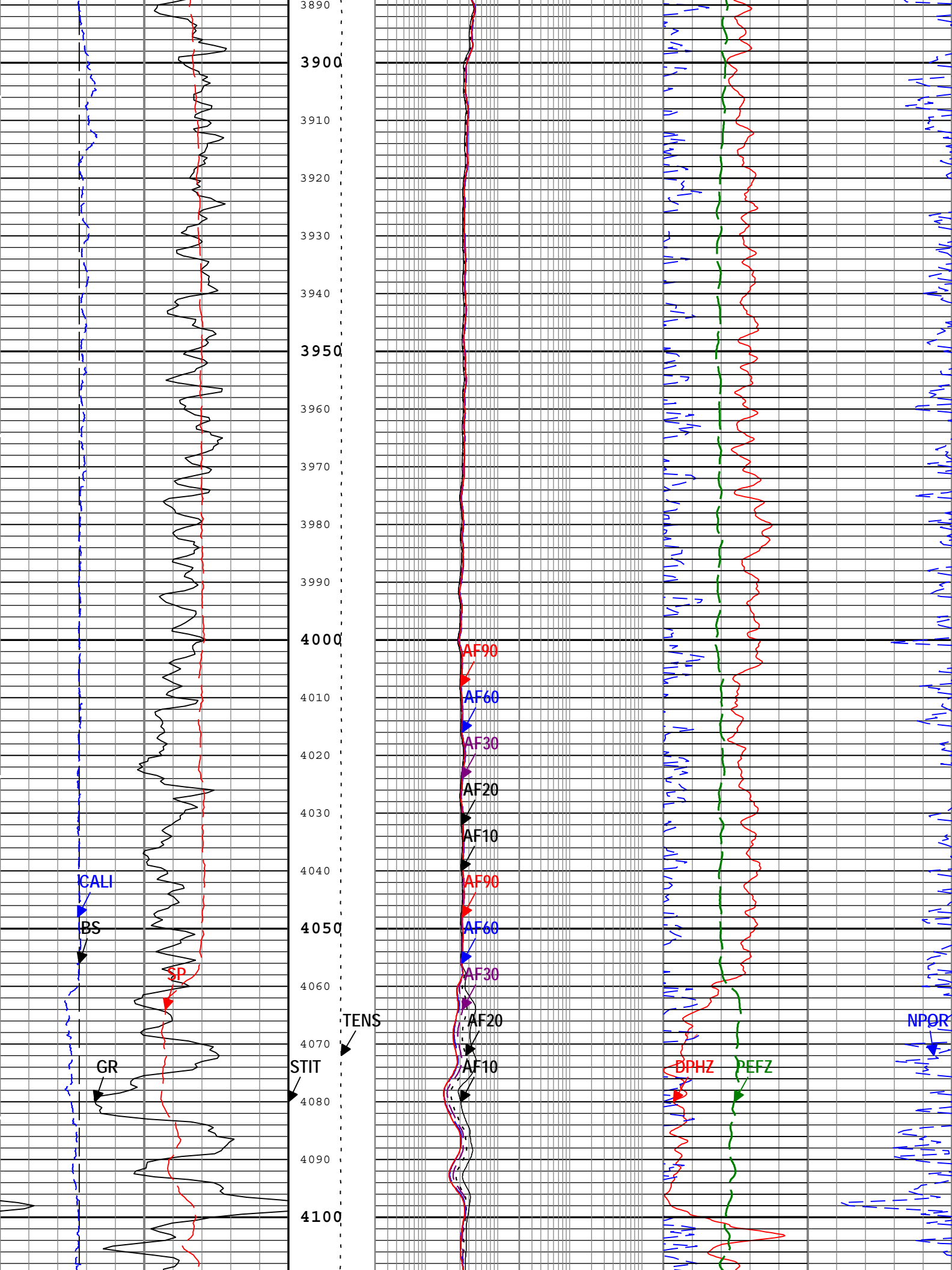


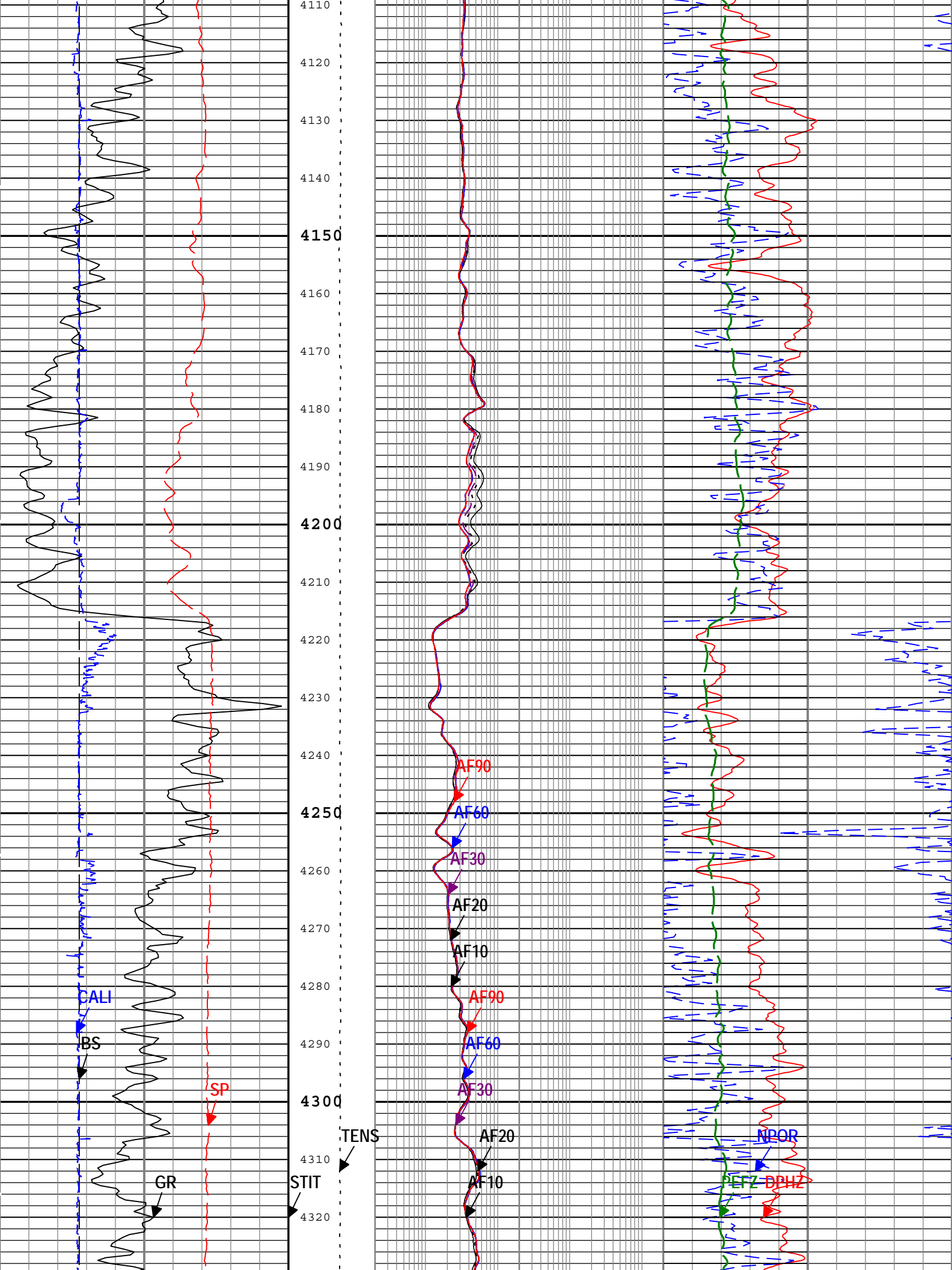


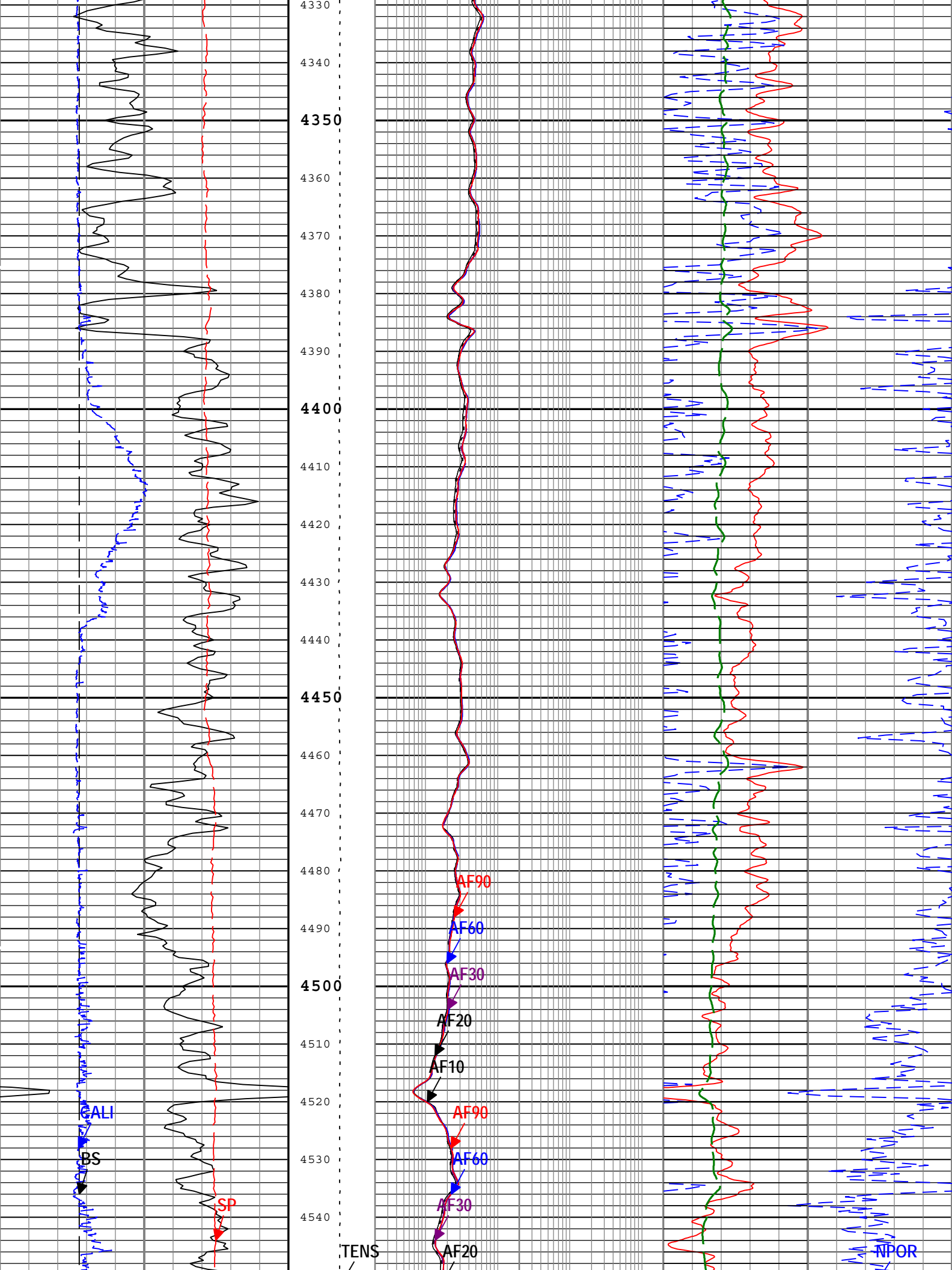


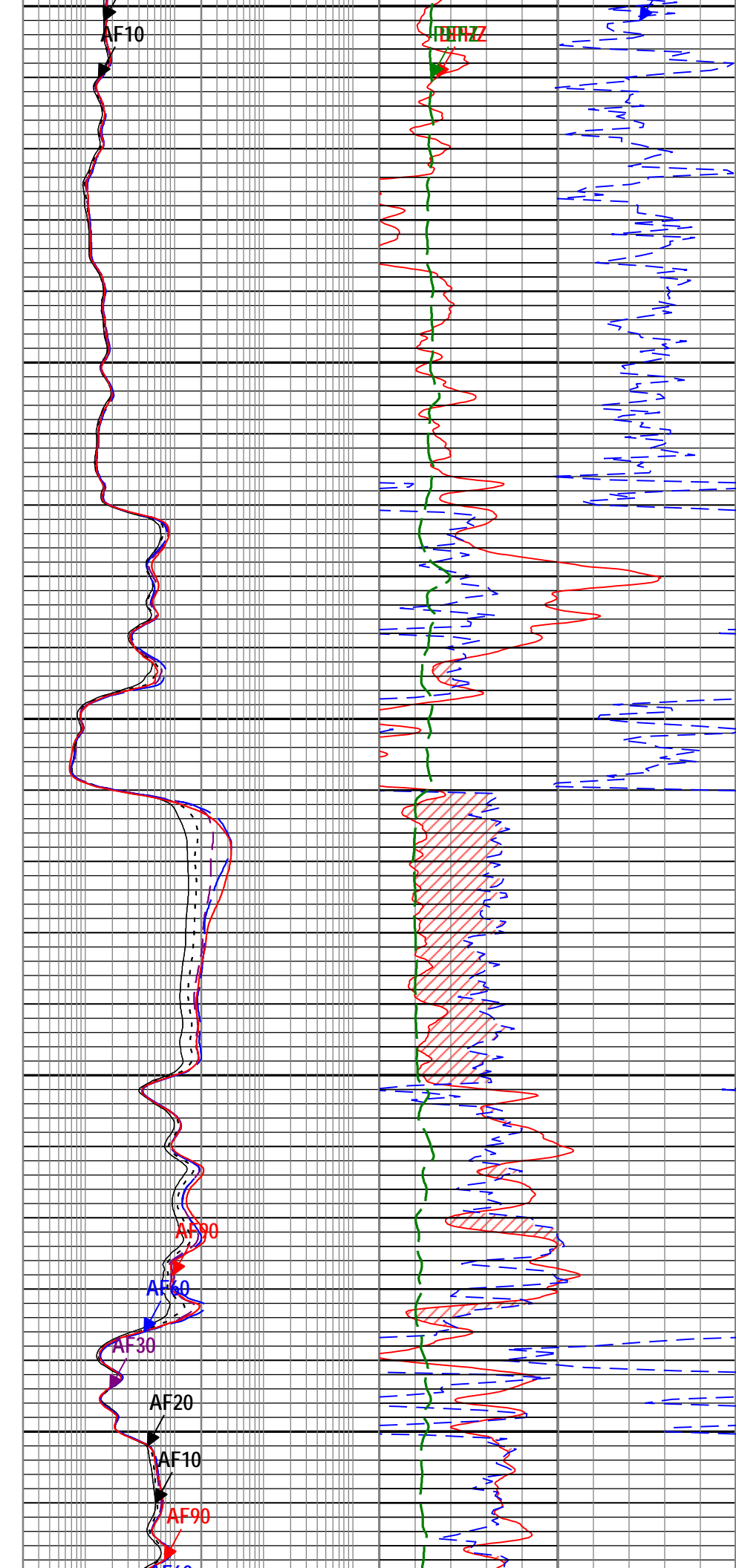
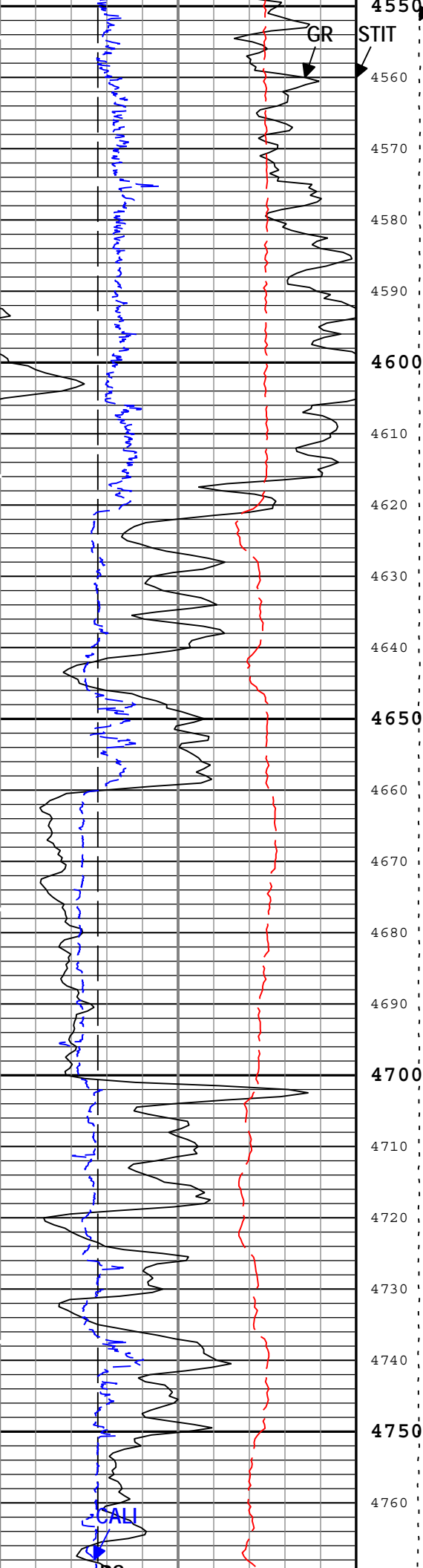
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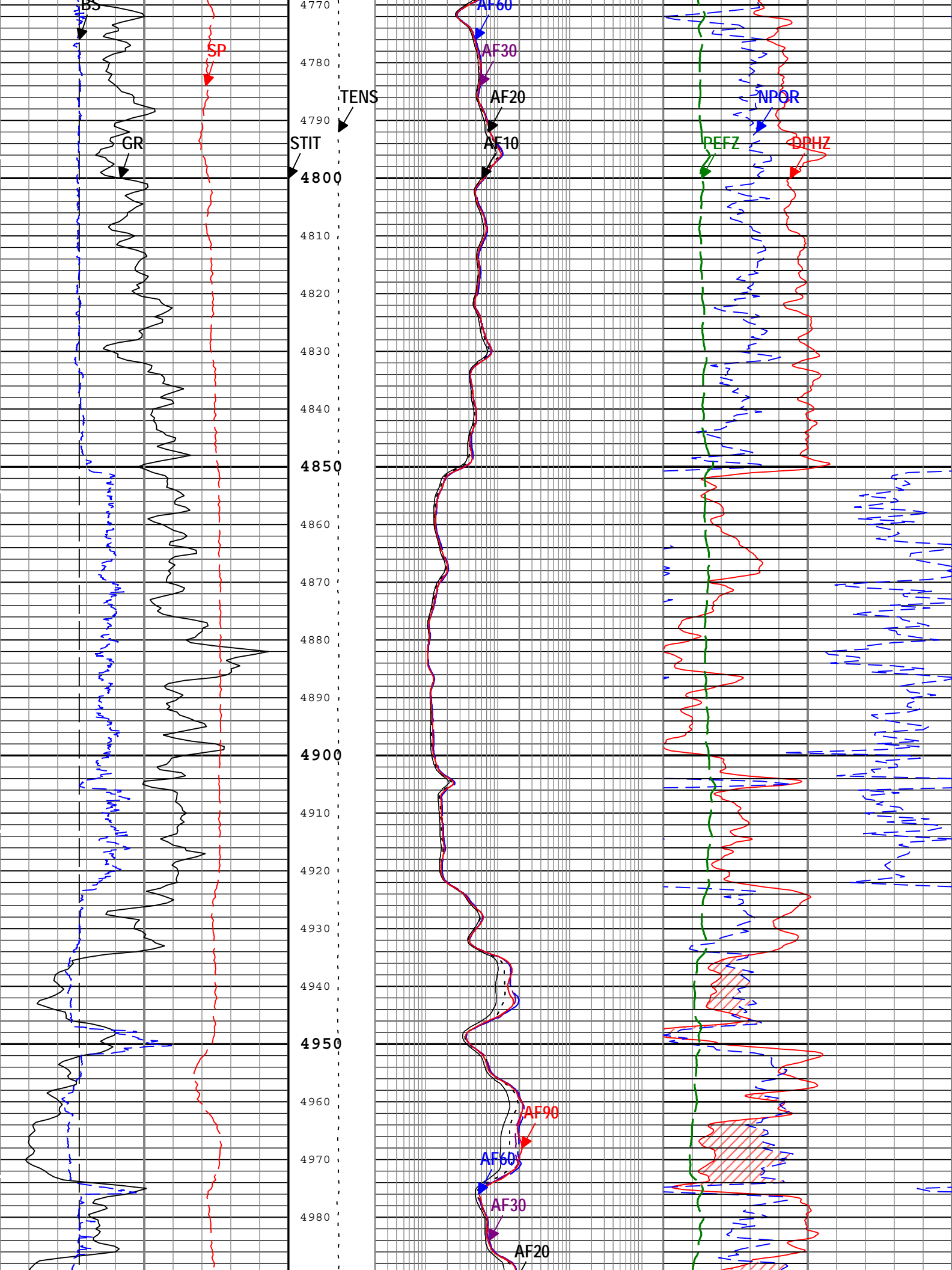


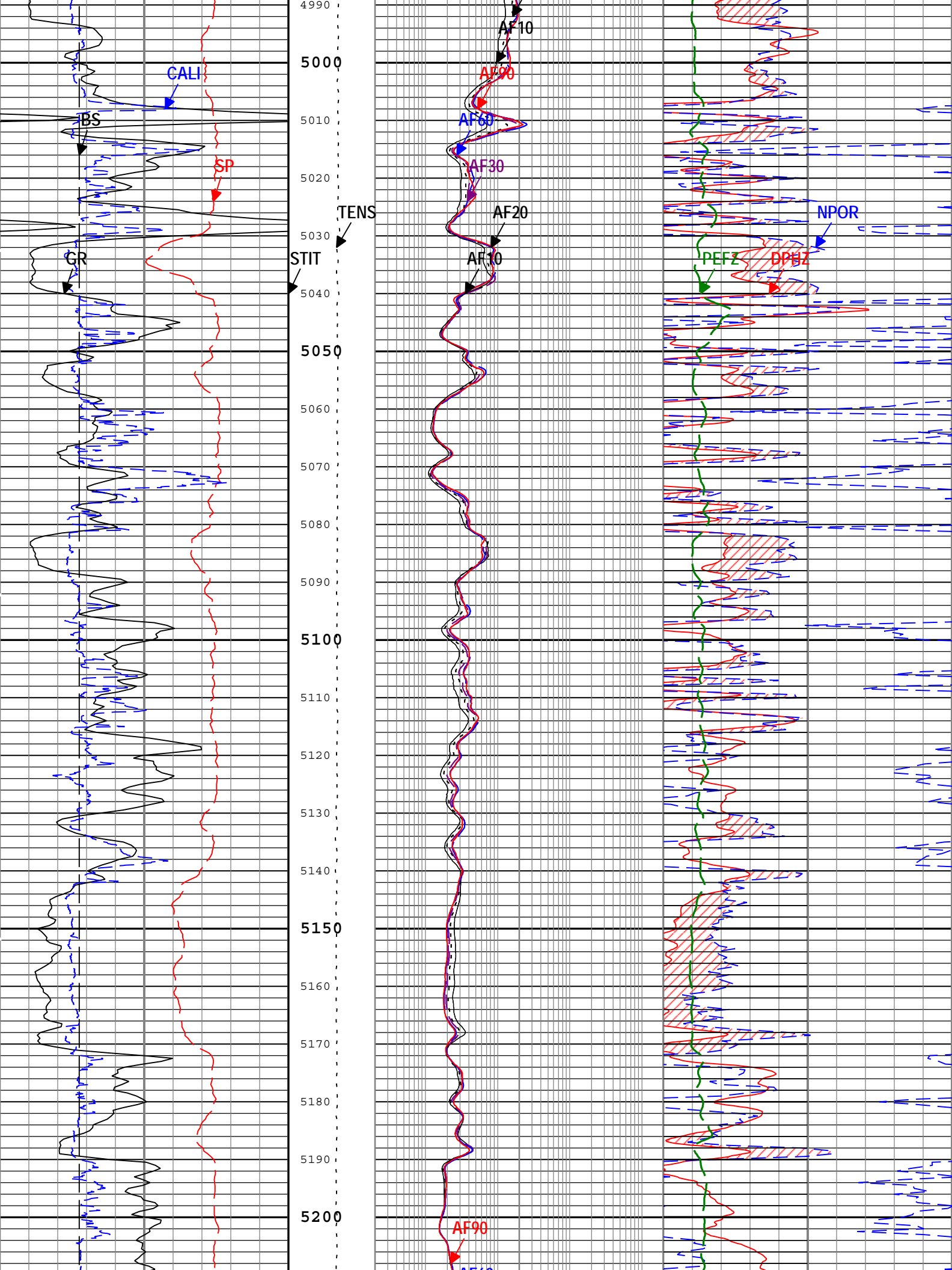


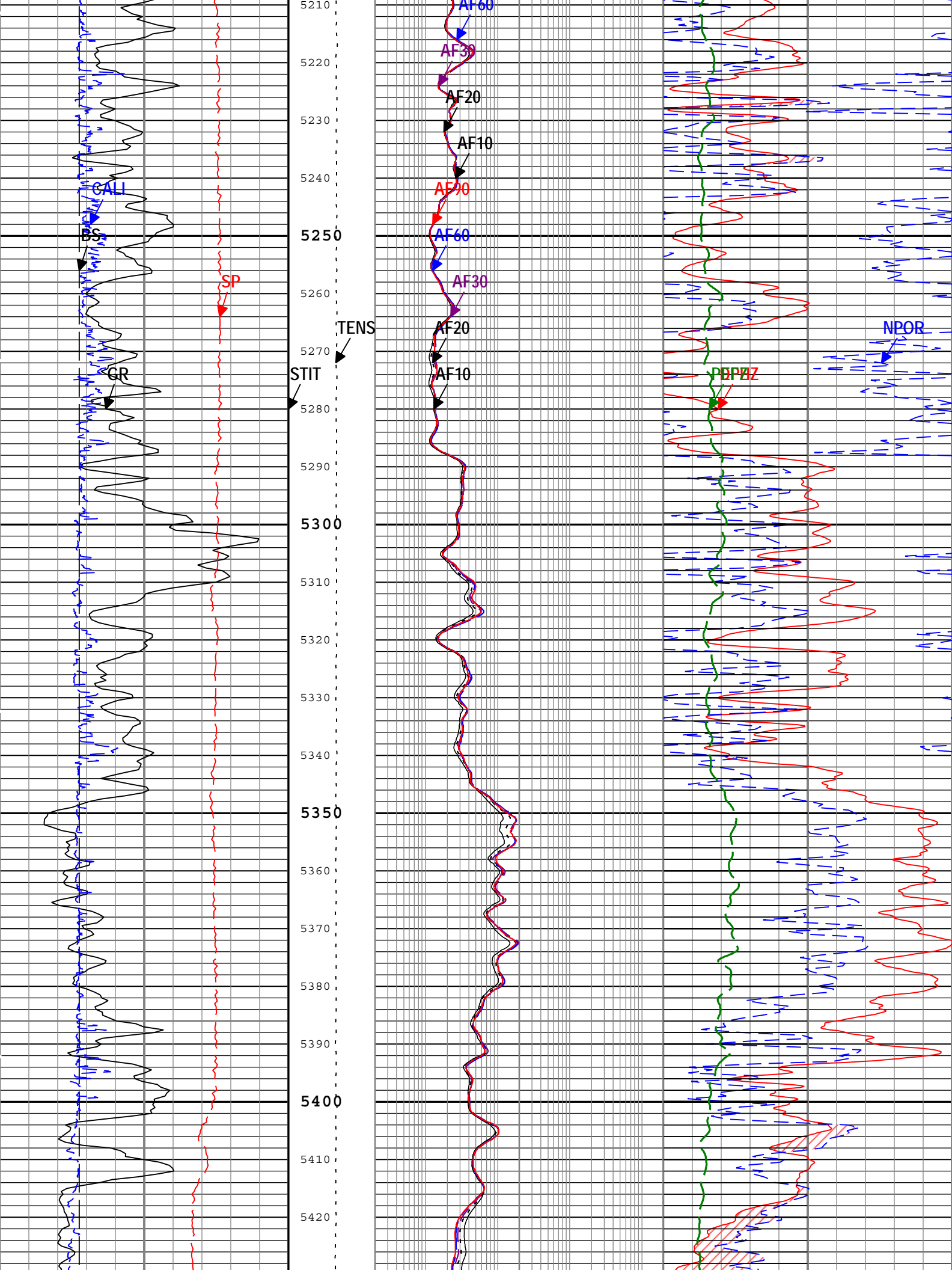


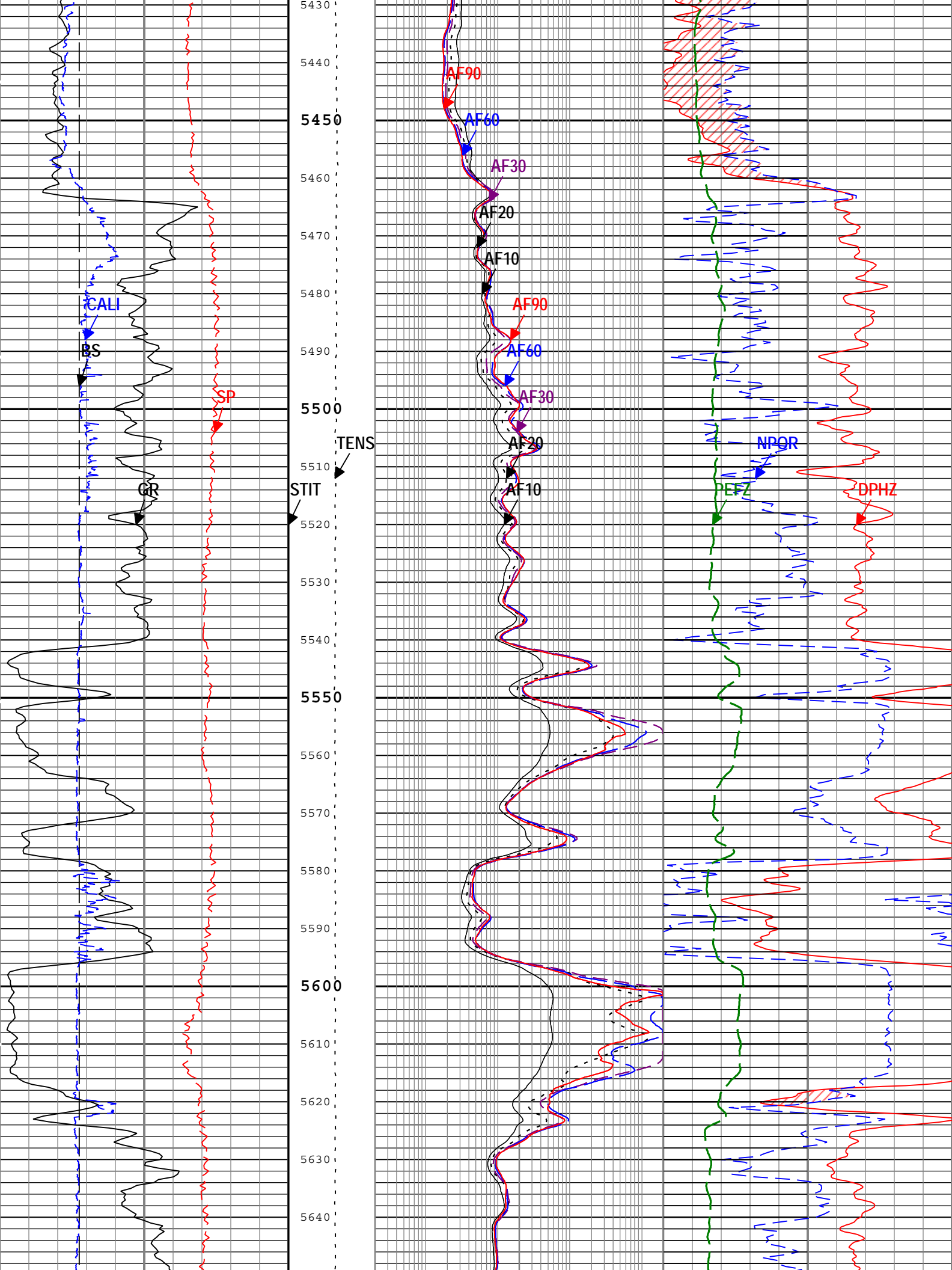


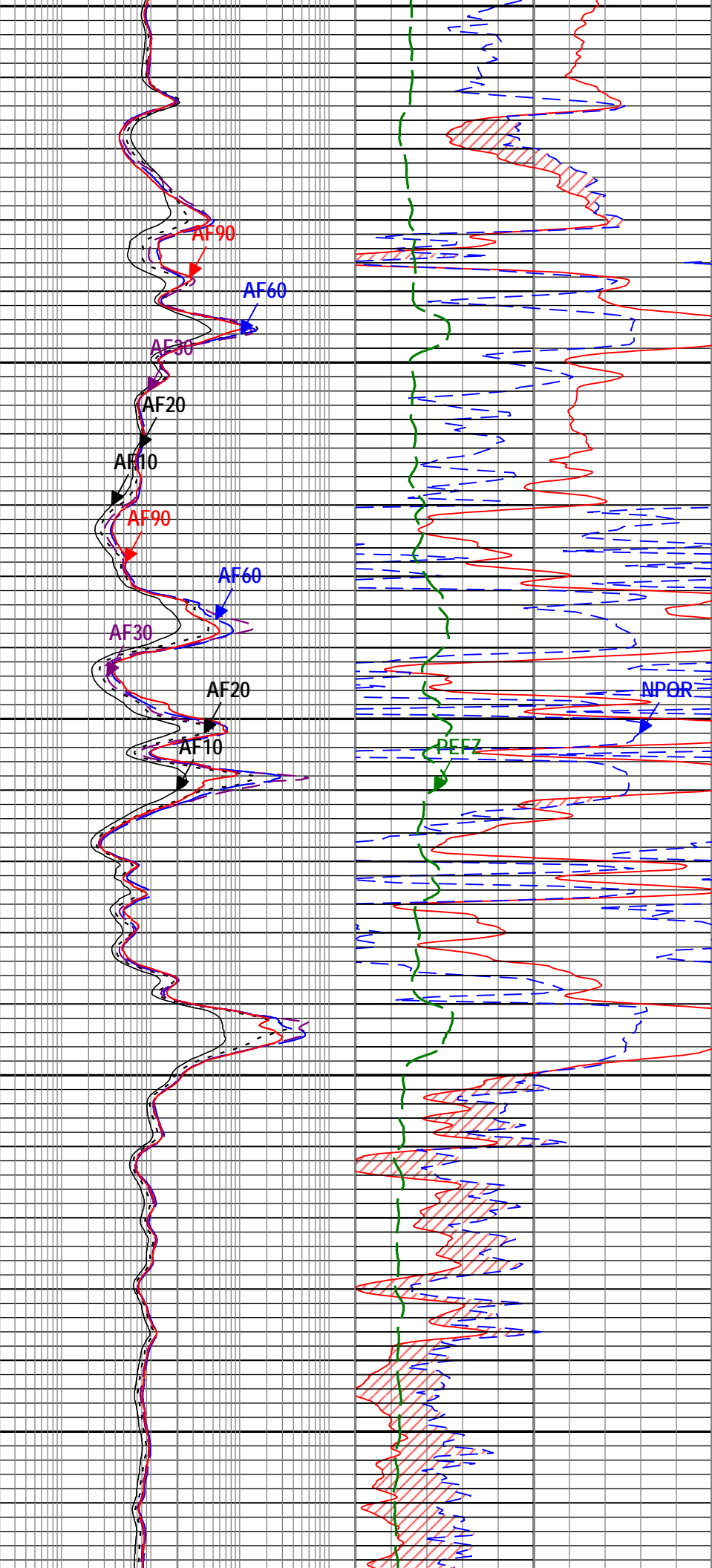
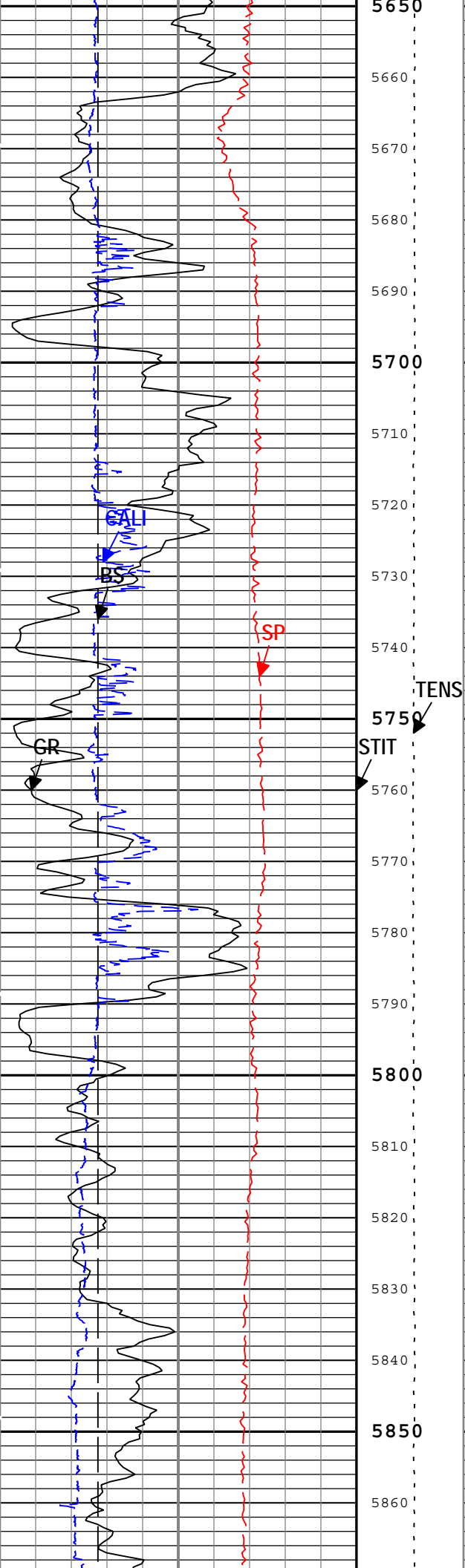


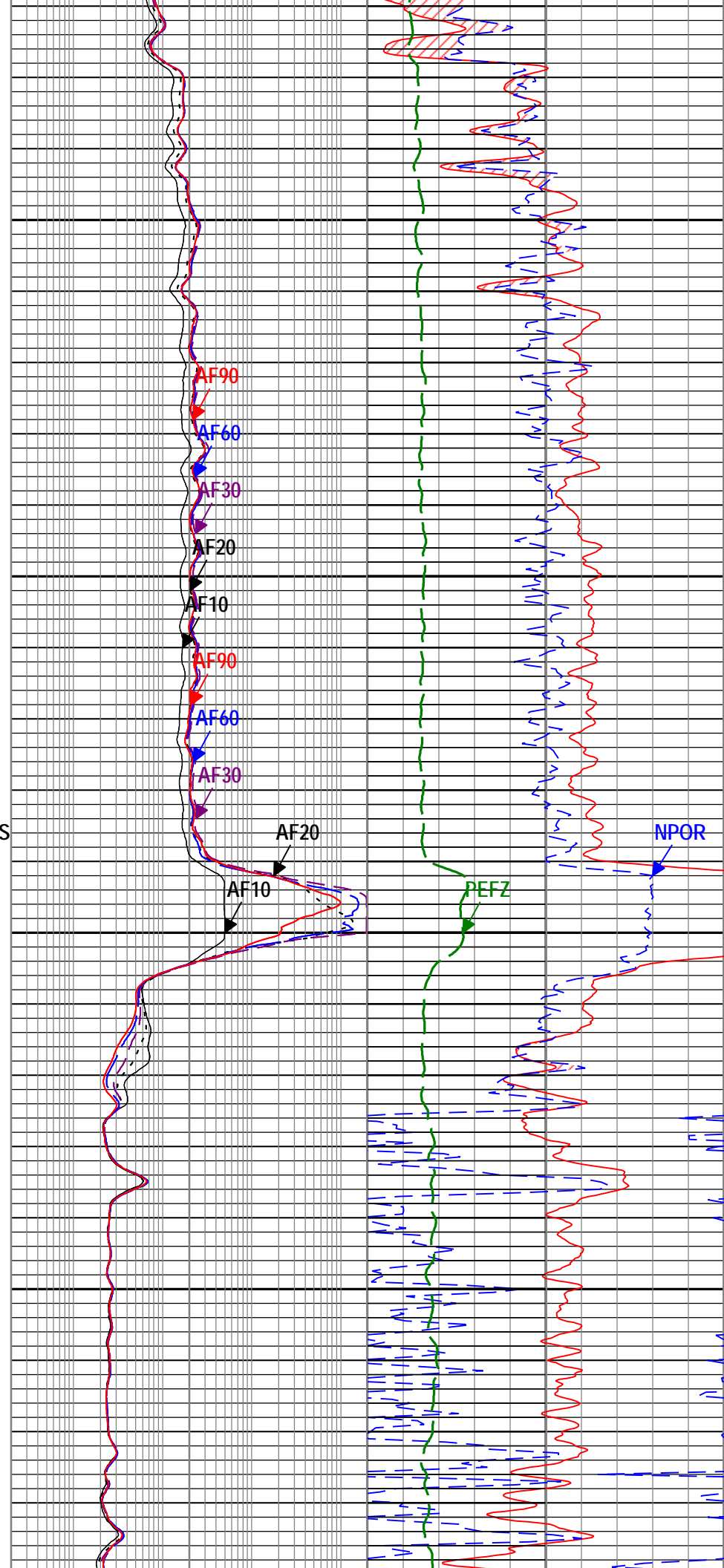
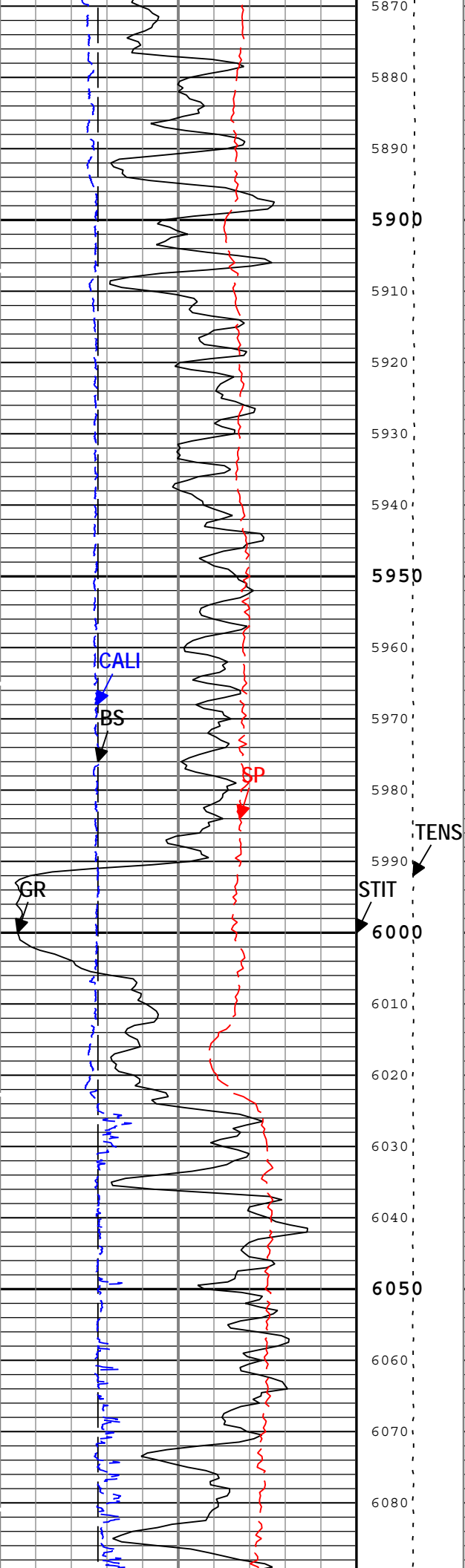


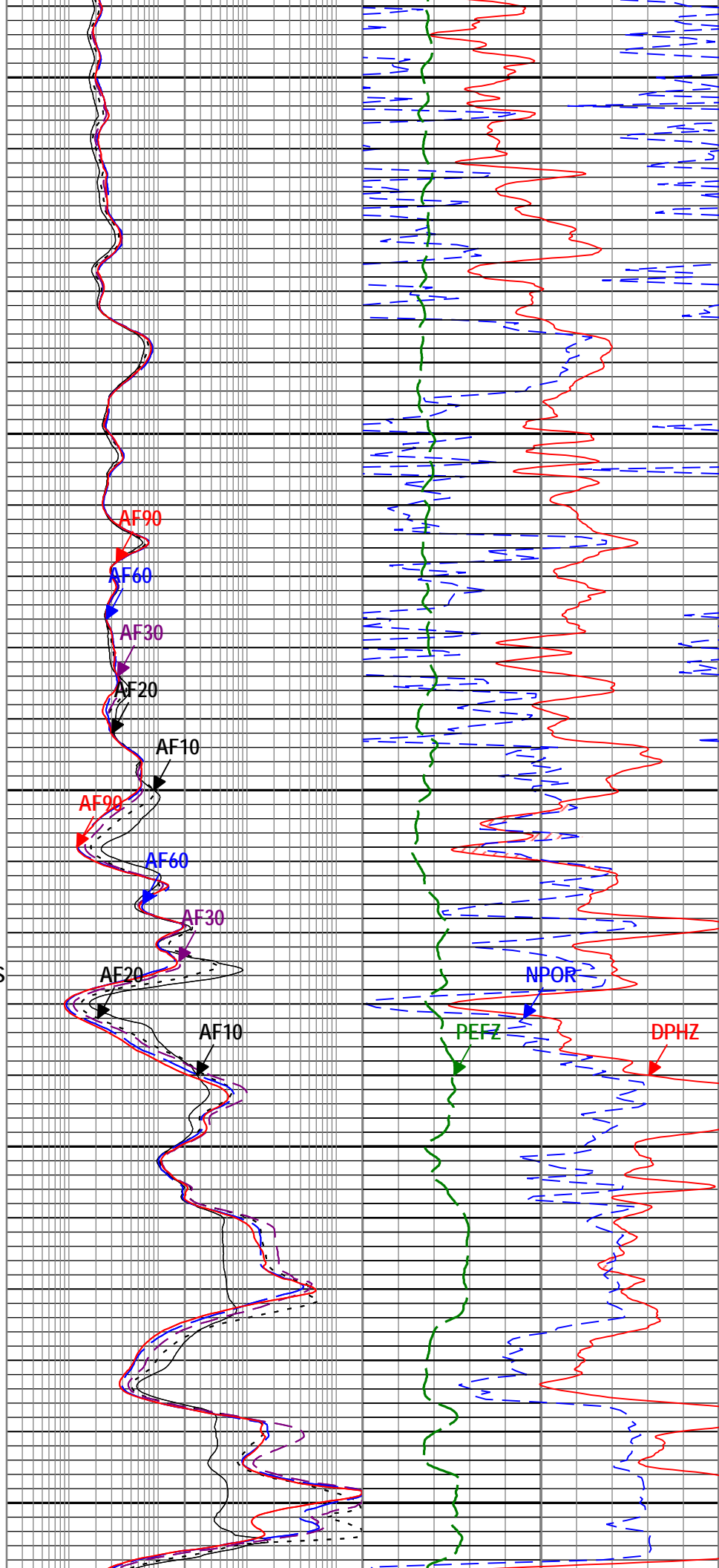
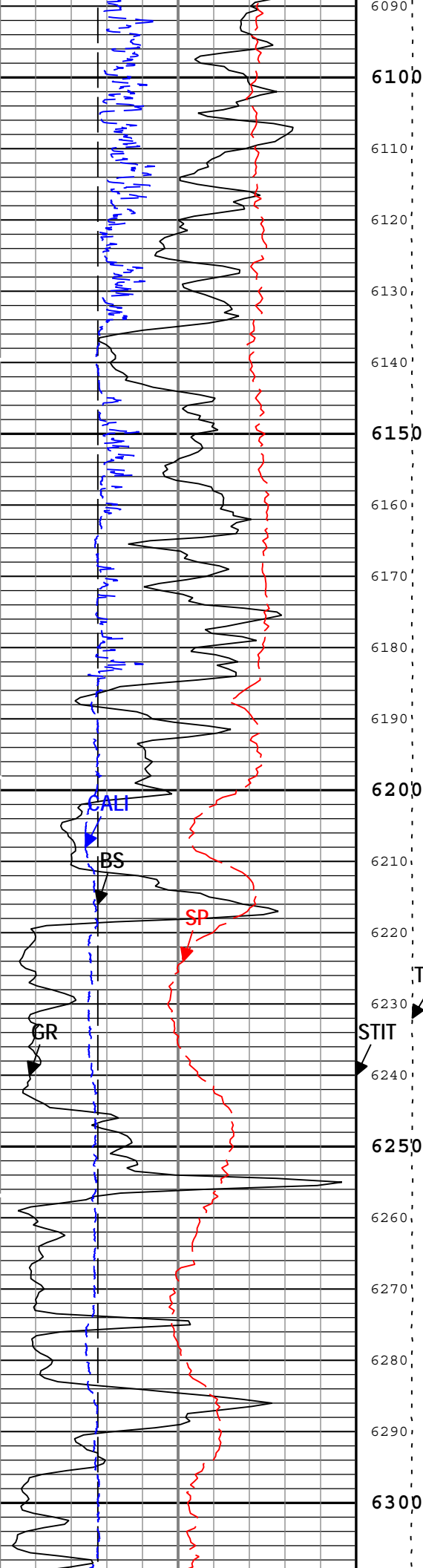


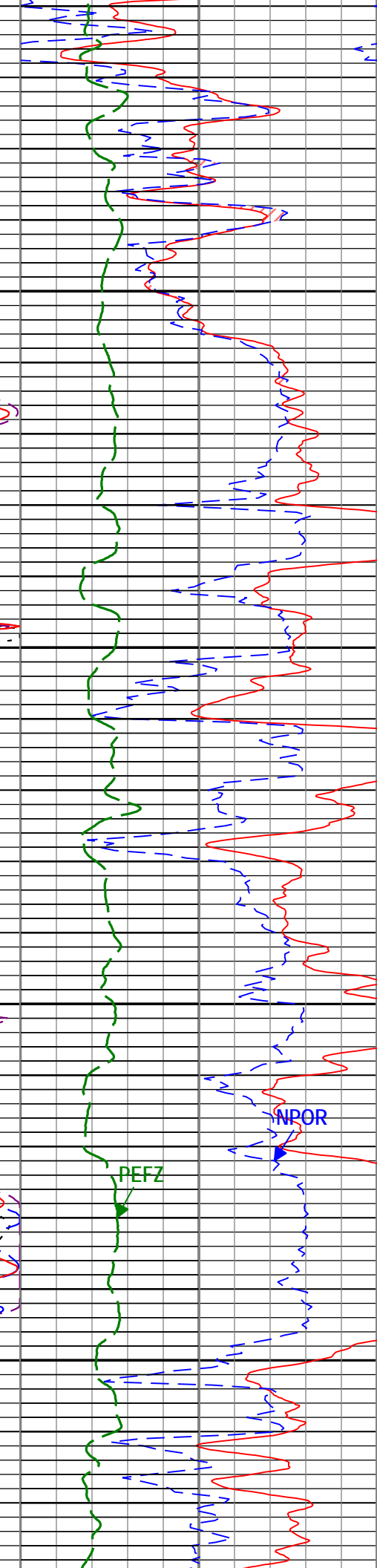
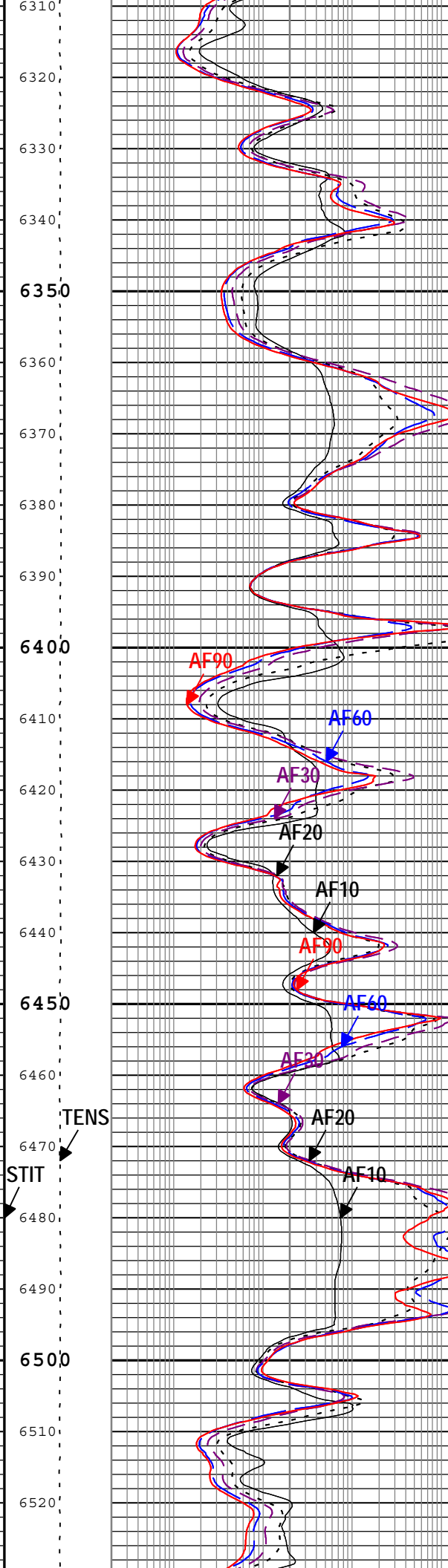
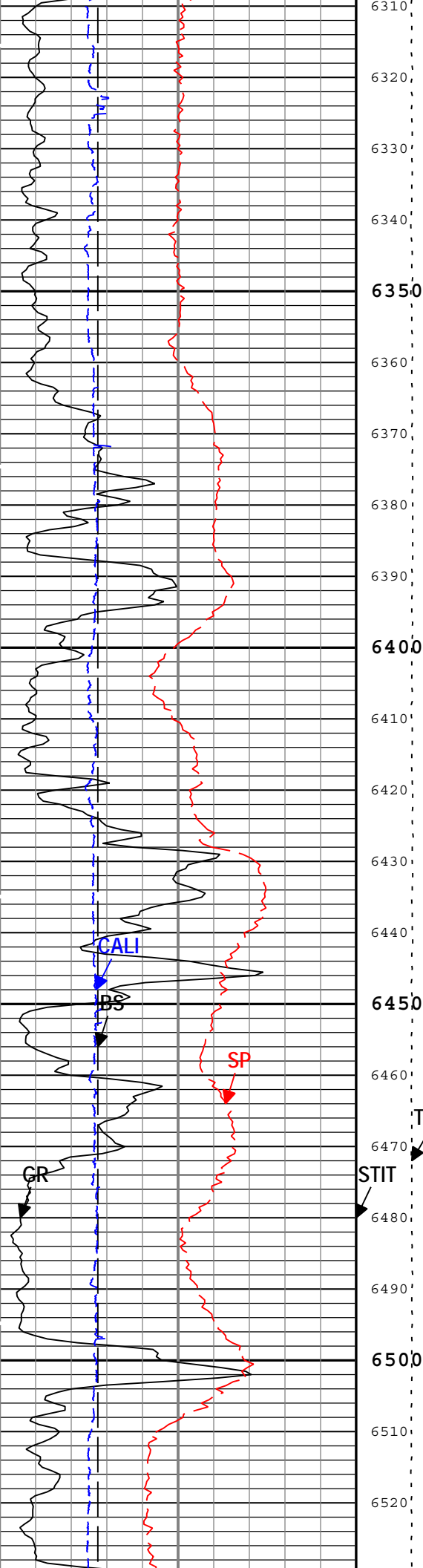


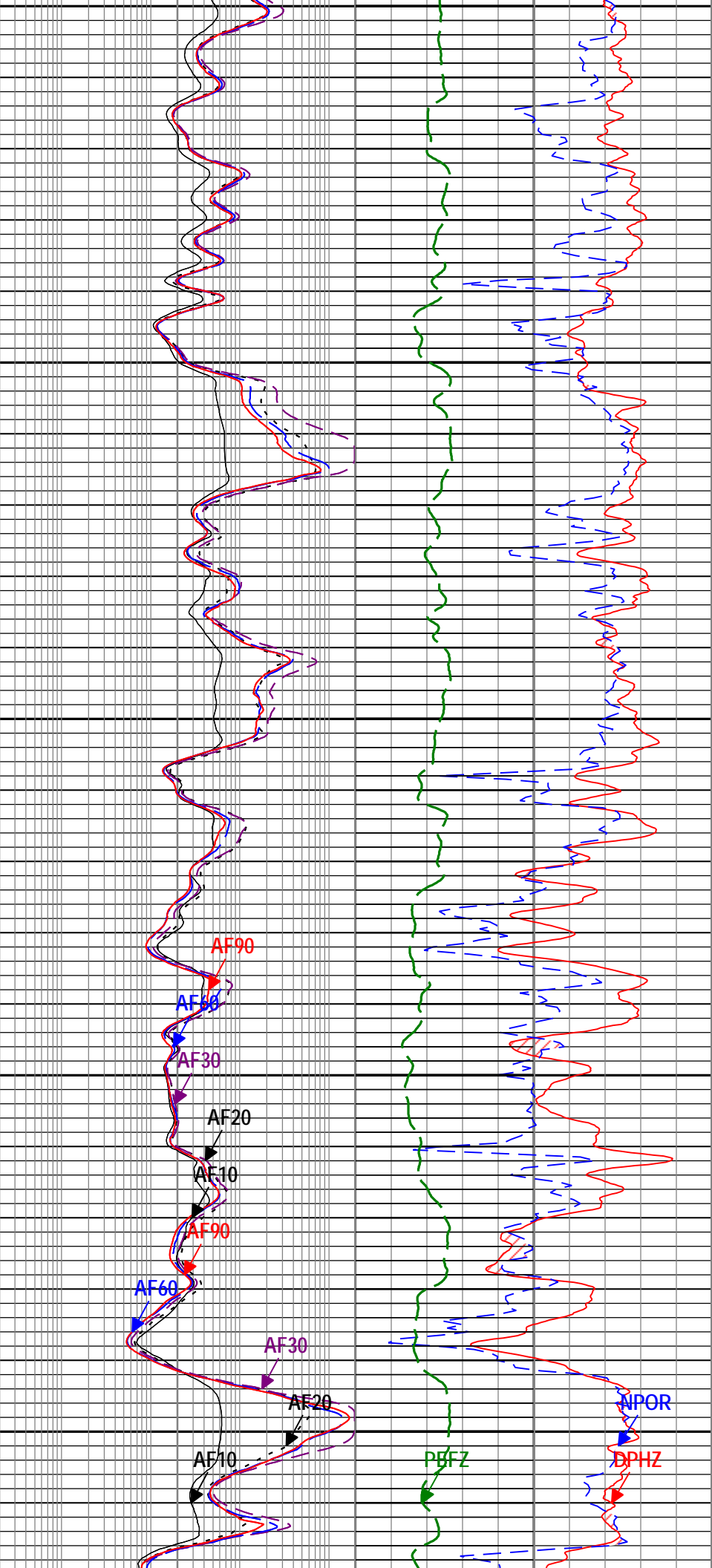
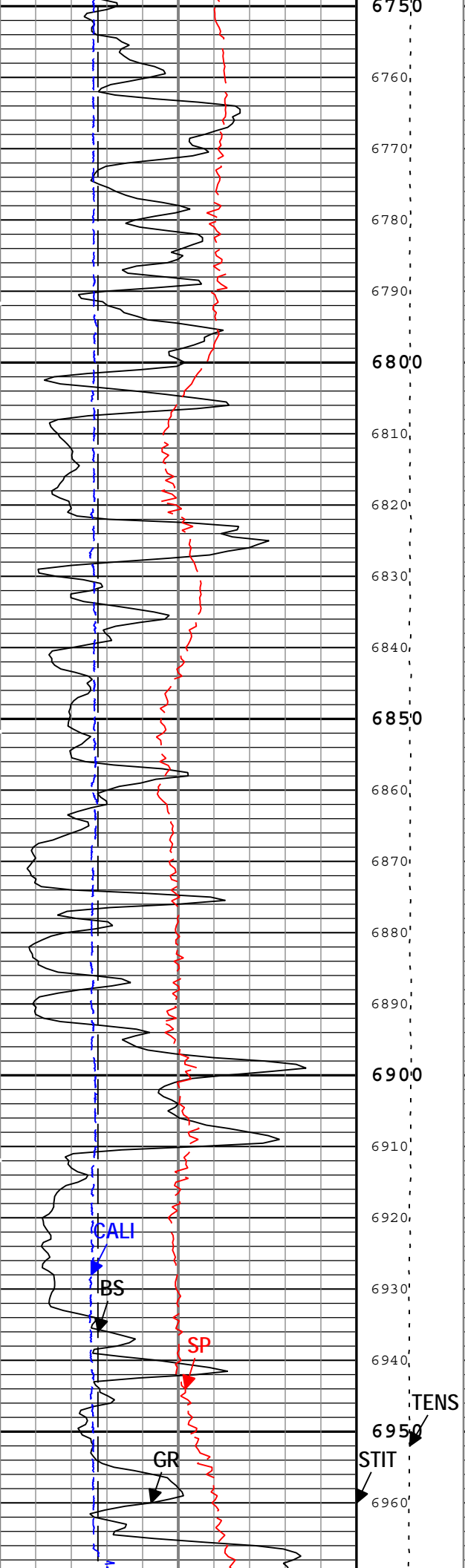


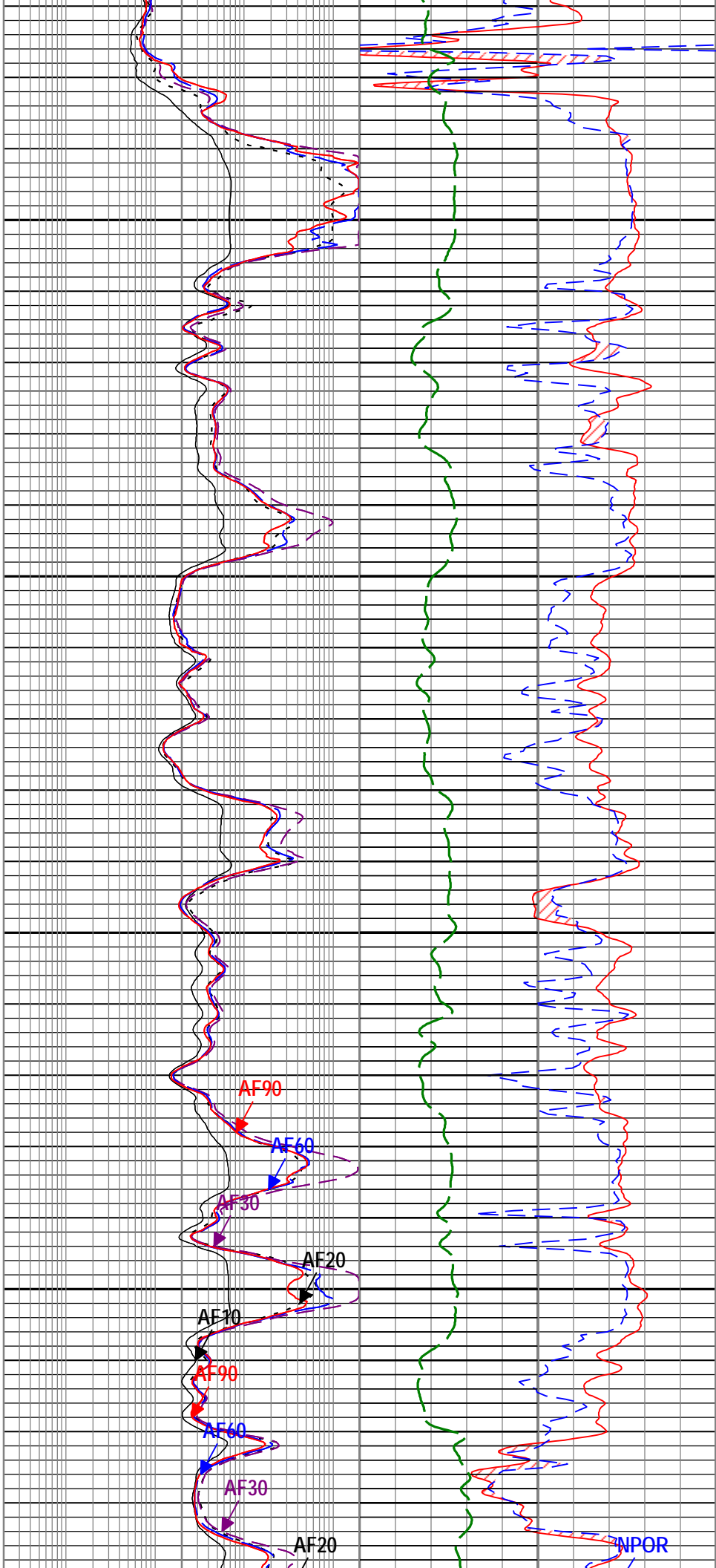
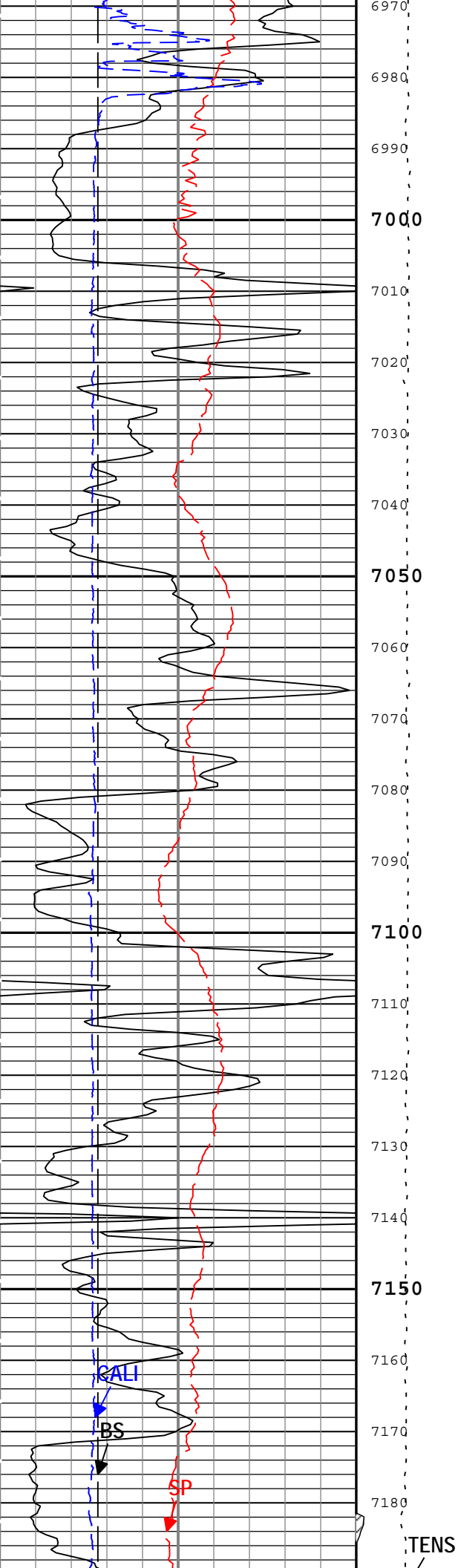


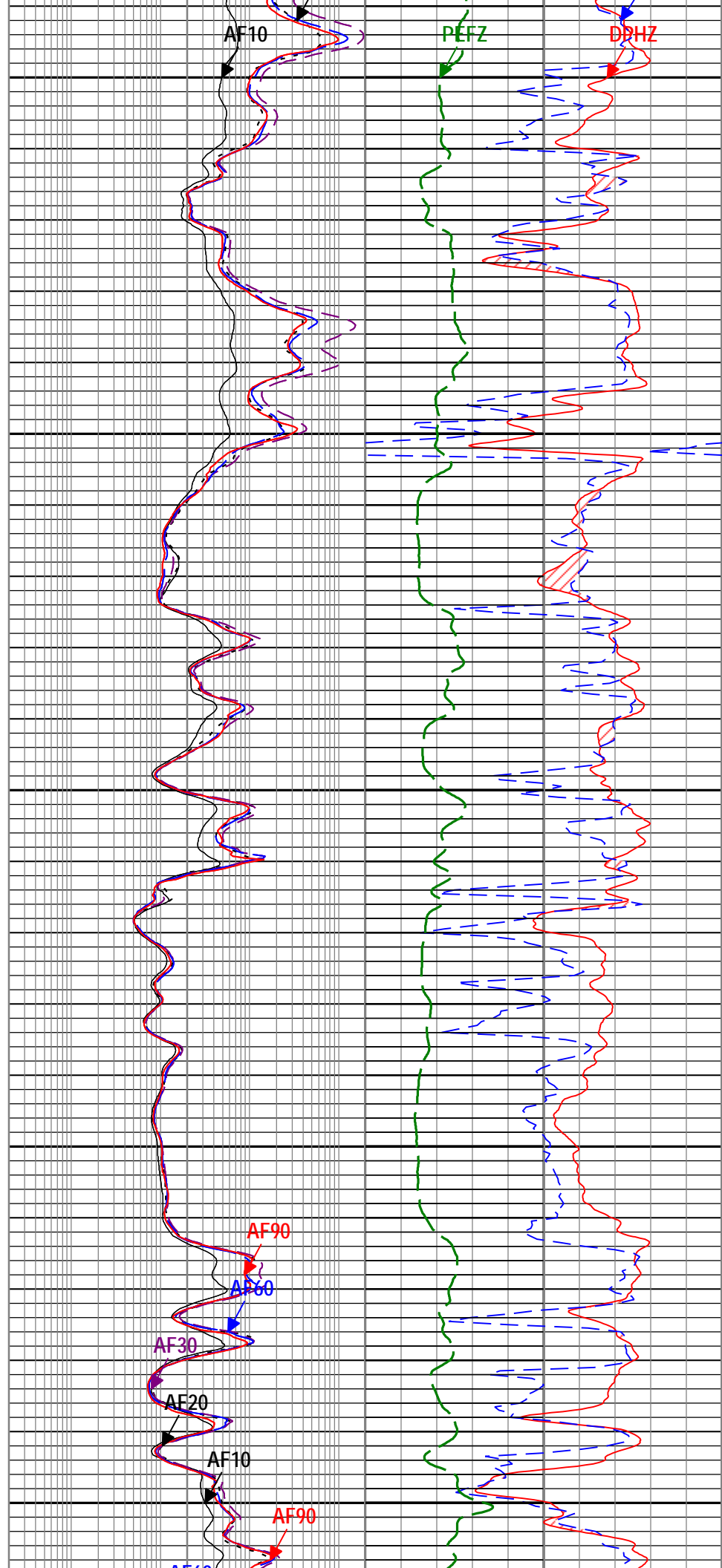
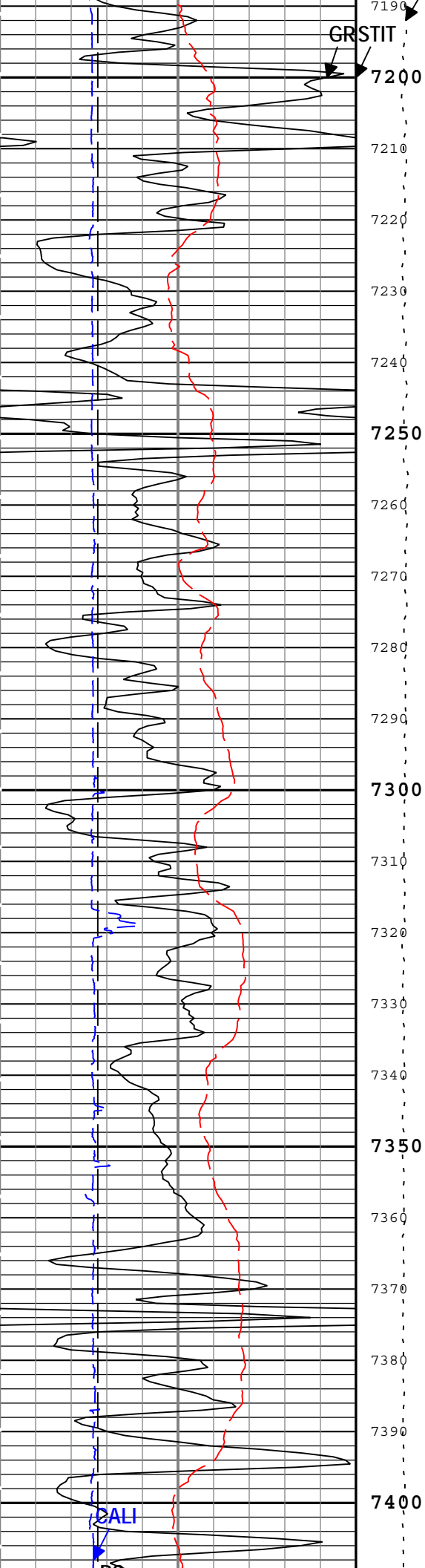


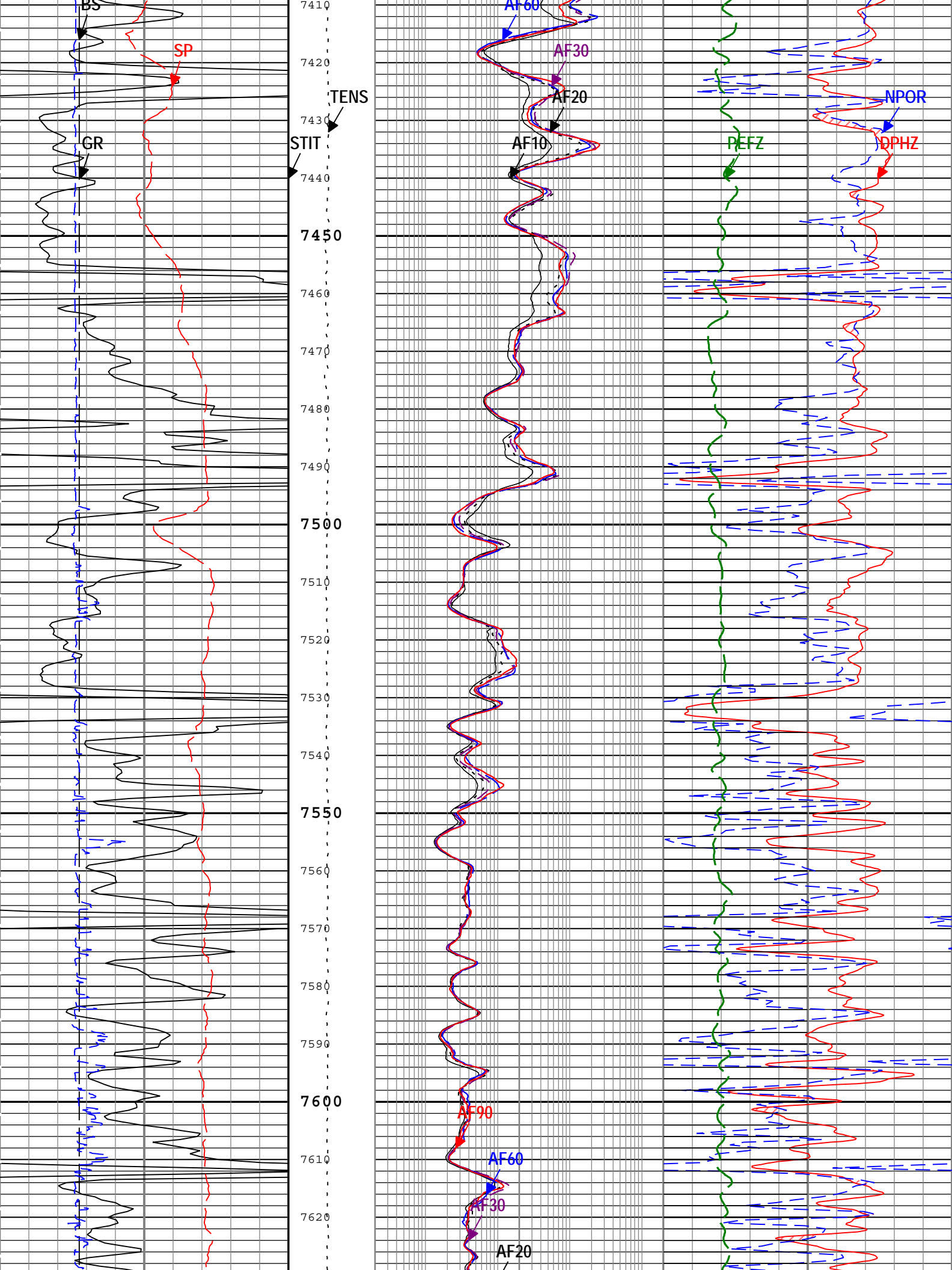


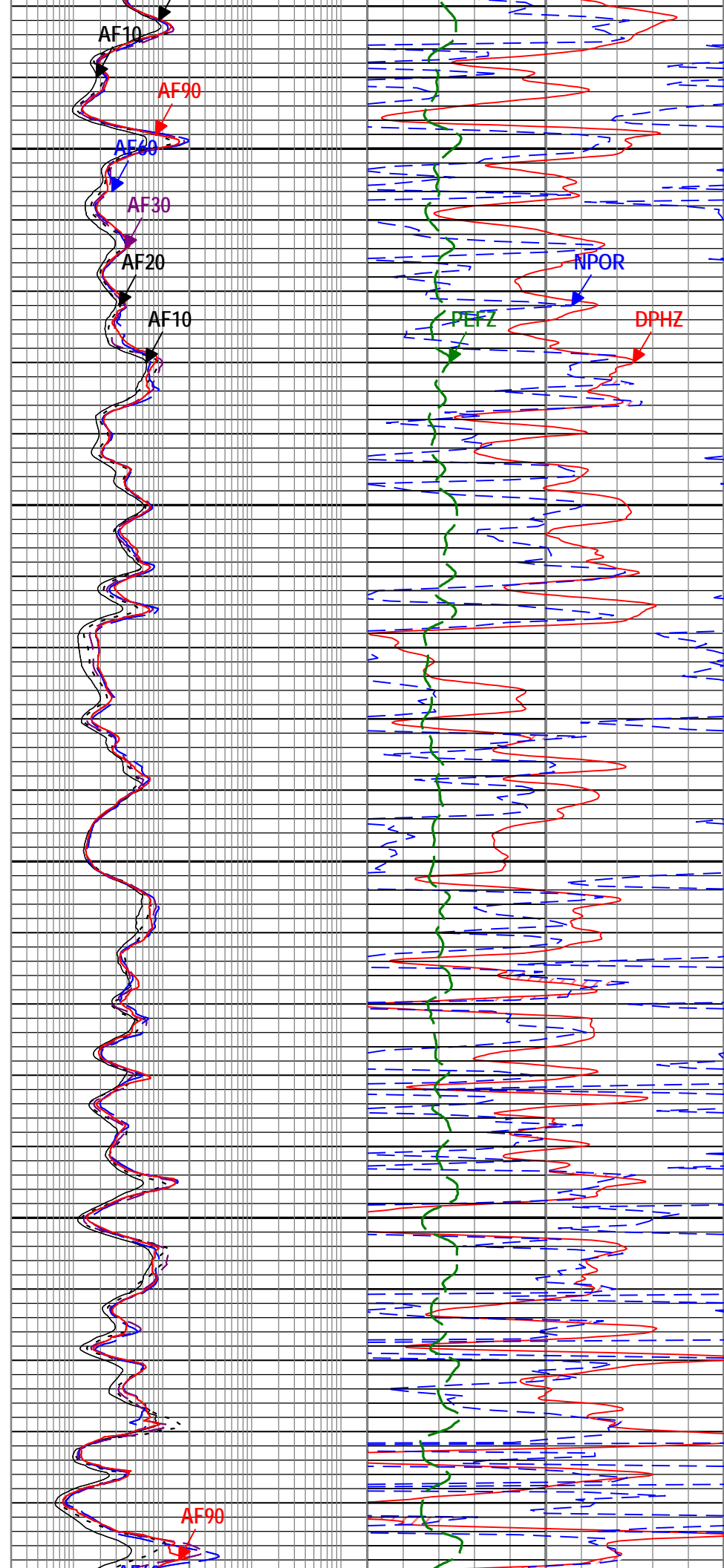
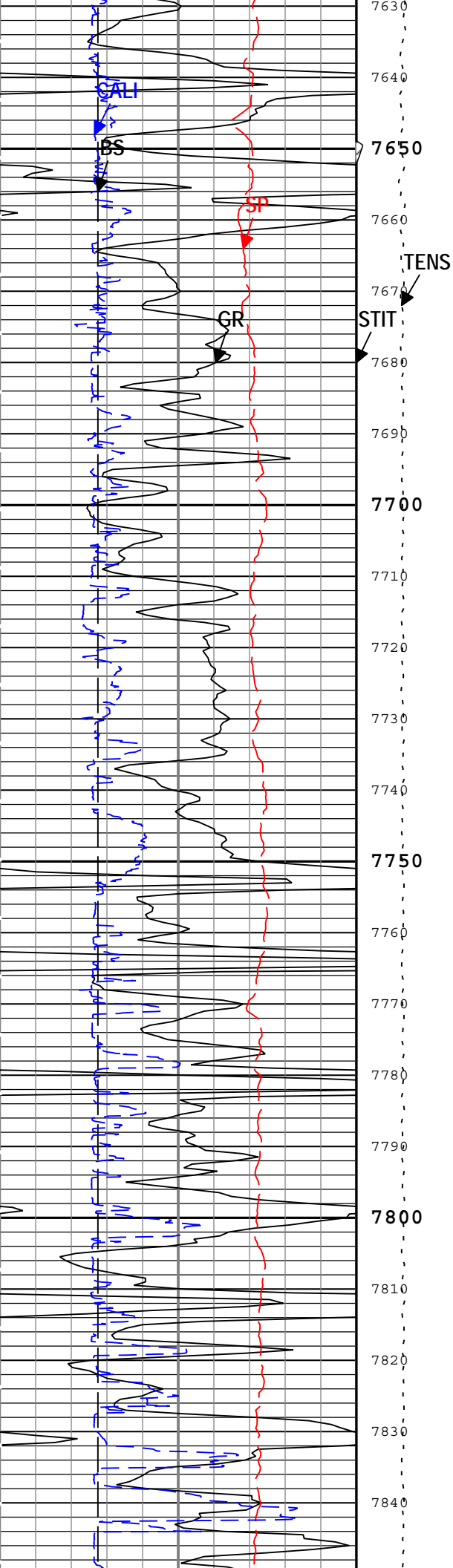


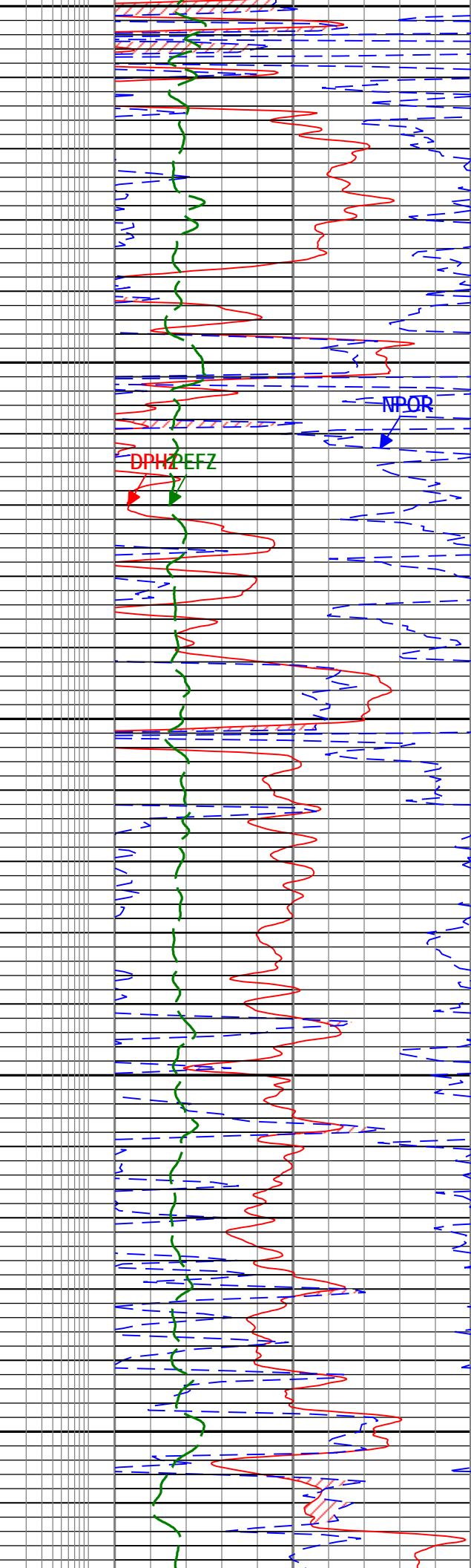
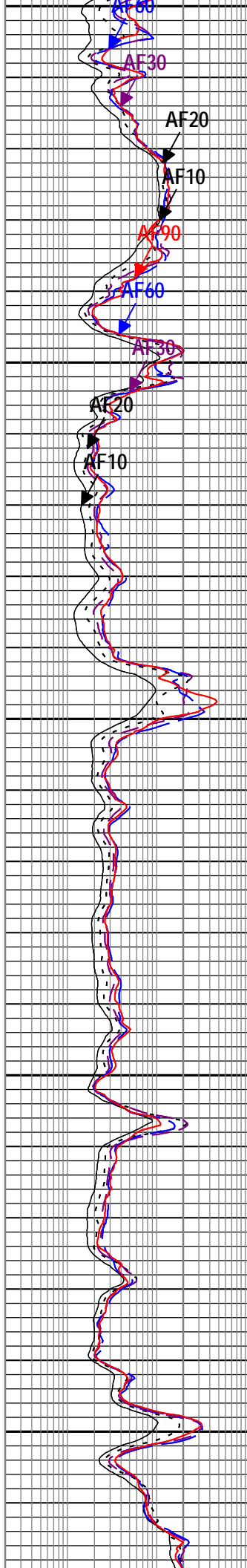
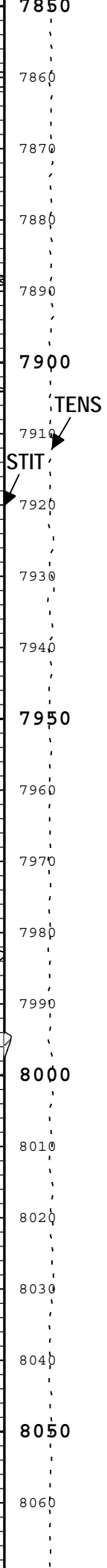
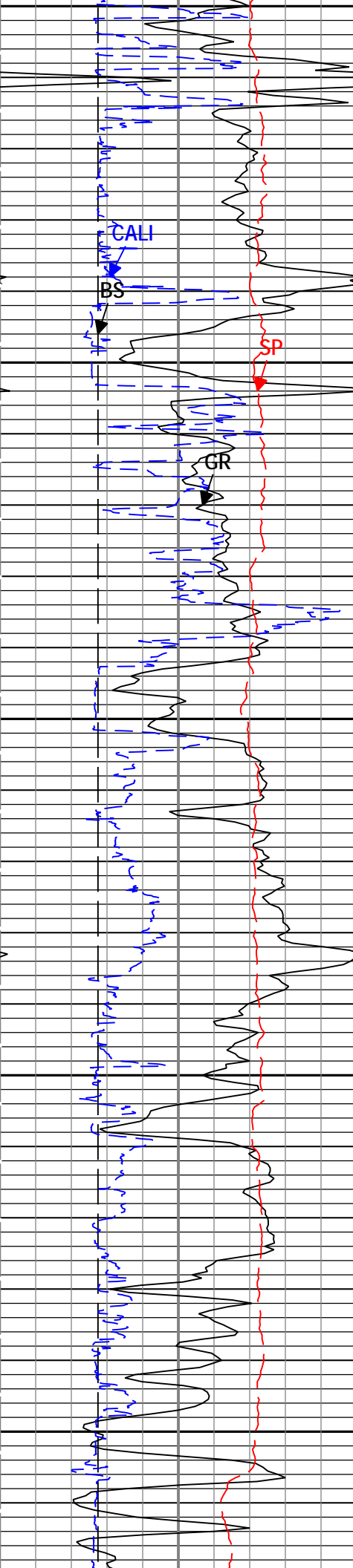


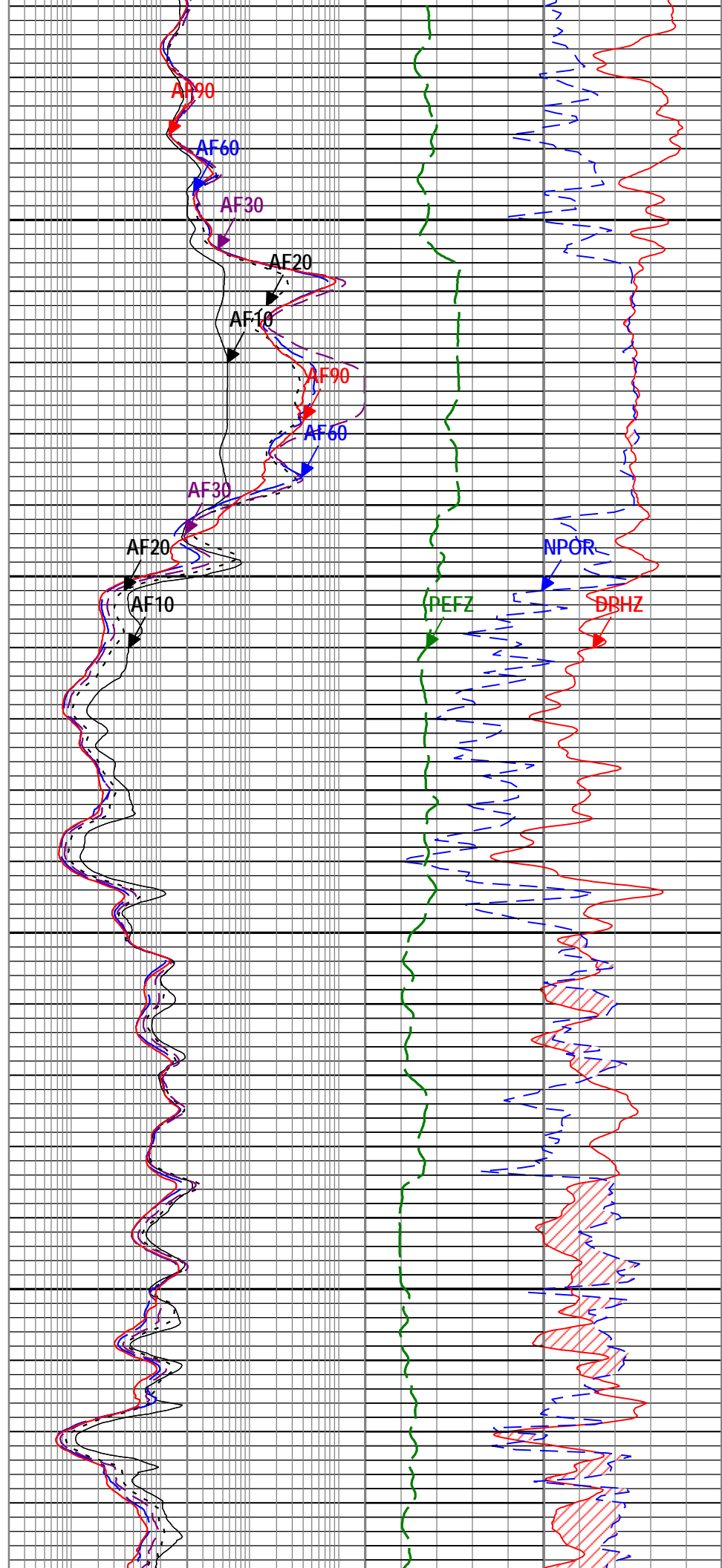
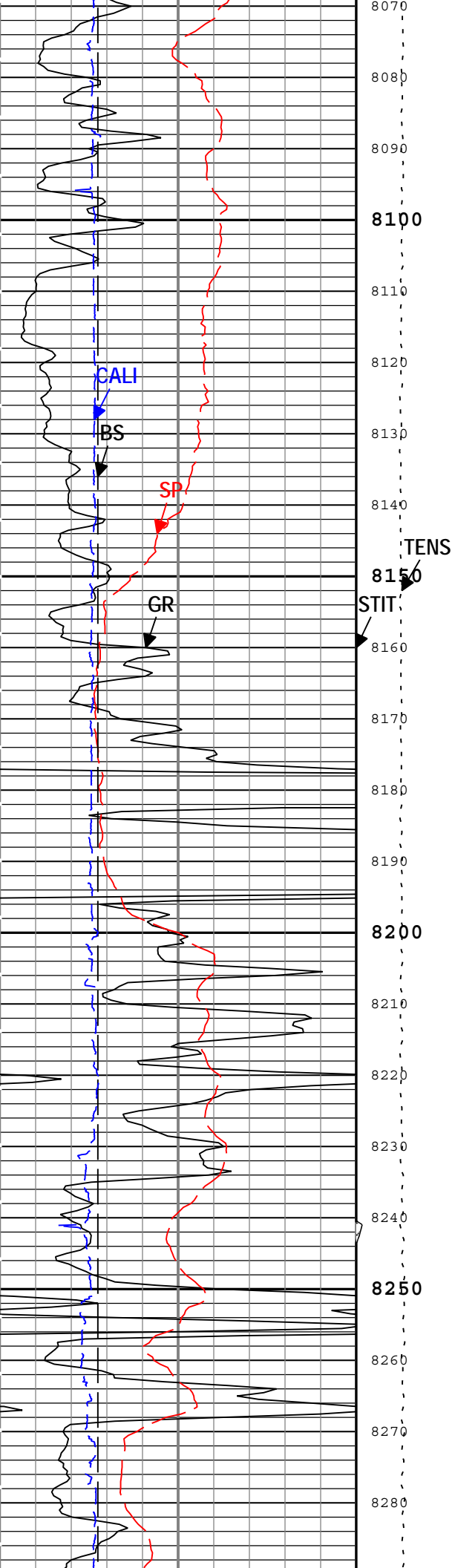


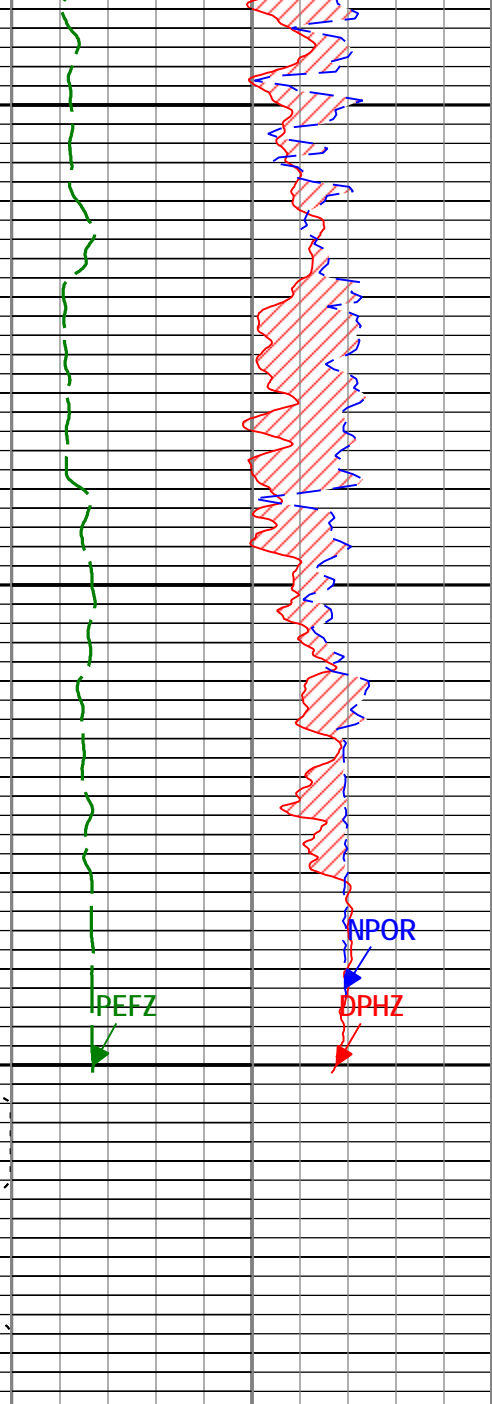
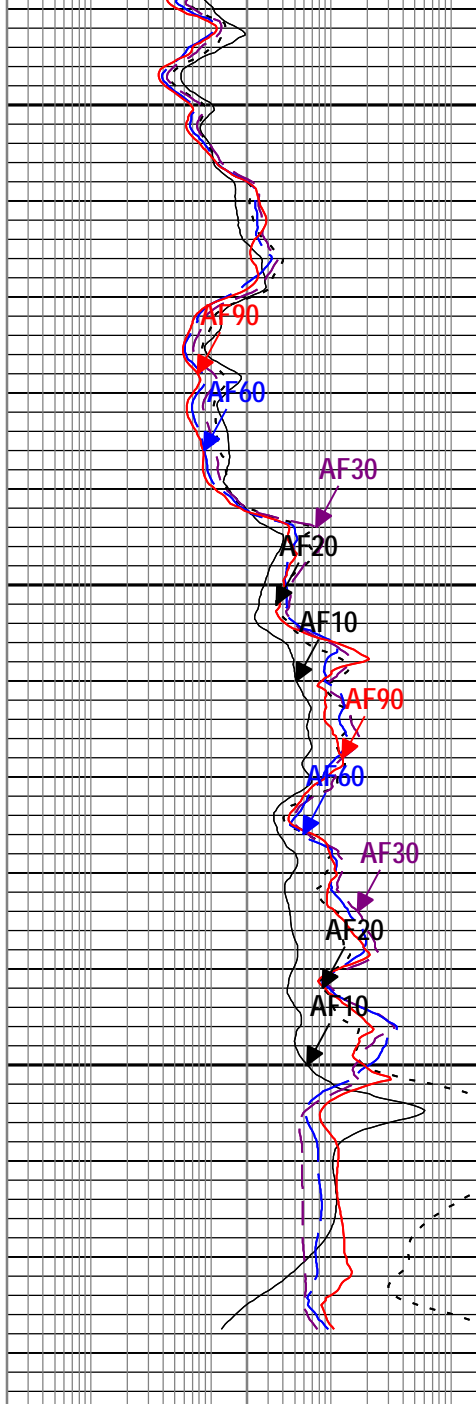
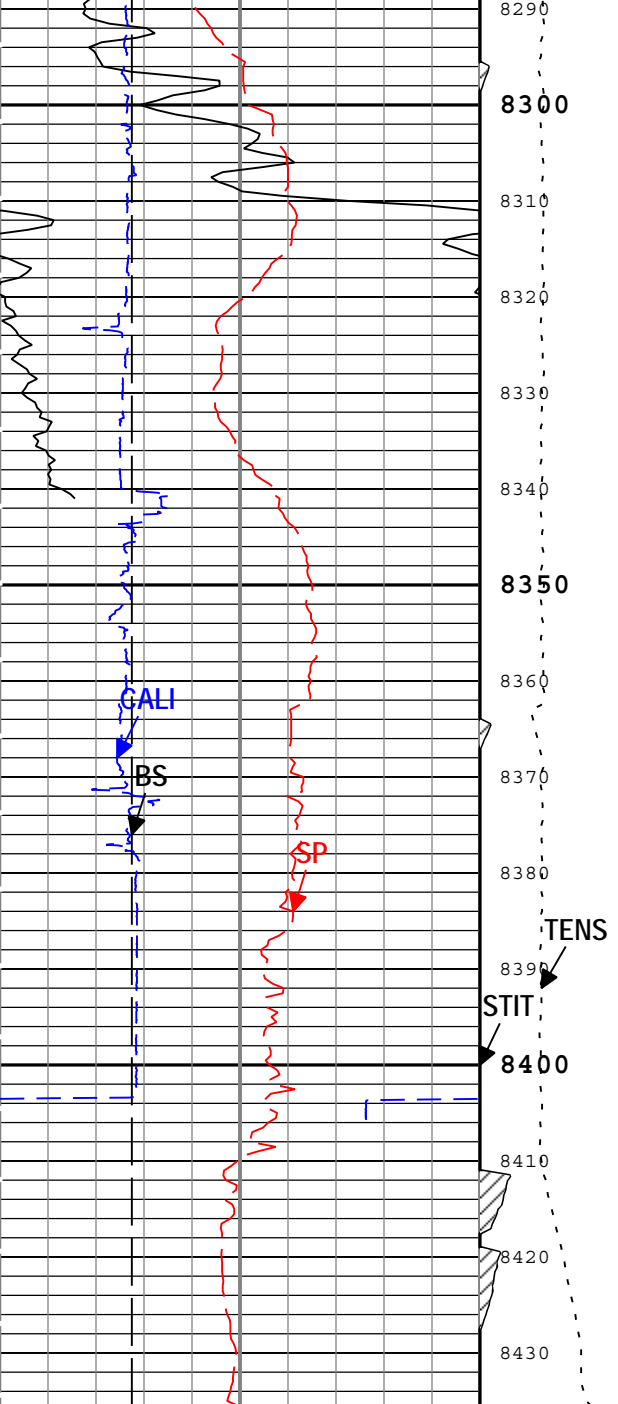












Gamma Ray Back up	
Gamma Ray (GR) EDTC-B	
0	200
gAPI	
0	200
Spontaneous Potential (SP) AIT-M	
-100	200
mV	
6	16
Bit Size (BS)	
6	16
in	
6	16
Caliper (CALI) HDRS-H	
6	16
in	
6	16

Array Induction Four Foot Resistivity A10 (AF10) AIT-M		
0.2	ohm.m	2000
Array Induction Four Foot Resistivity A20 (AF20) AIT-M		
0.2	ohm.m	2000
Array Induction Four Foot Resistivity A30 (AF30) AIT-M		
0.2	ohm.m	2000
Array Induction Four Foot Resistivity A60 (AF60) AIT-M		
0.2	ohm.m	2000
Array Induction Four Foot Resistivity A90 (AF90) AIT-M		
0.2	ohm.m	2000

Gas Effect		
NPOR Backup		
Standard Resolution Density Porosity (DPHZ) HDRS-H		
0.3	ft3/ft3	-0.1
Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H		
0.3	m3/m3	-0.1

Array Induction Four Foot Resistivity A10 (AF10) AIT-M		
0.2	ohm.m	2000
Array Induction Four Foot Resistivity A20 (AF20) AIT-M		
0.2	ohm.m	2000
Array Induction Four Foot Resistivity A30 (AF30) AIT-M		
0.2	ohm.m	2000
Array Induction Four Foot Resistivity A60 (AF60) AIT-M		
0.2	ohm.m	2000
Array Induction Four Foot Resistivity A90 (AF90) AIT-M		
0.2	ohm.m	2000

Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		
0	10	

Array Induction Four Foot Resistivity A10 (AF10) AIT-M		
0.2	ohm.m	2000
Array Induction Four Foot Resistivity A20 (AF20) AIT-M		
0.2	ohm.m	2000
Array Induction Four Foot Resistivity A30 (AF30) AIT-M		
0.2	ohm.m	2000
Array Induction Four Foot Resistivity A60 (AF60) AIT-M		
0.2	ohm.m	2000
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: 12-Oct-2014 15:52:57

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	
ASTA	Array Induction Tool Standoff	AIT-M	1.125	in
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BHT	Bottom Hole Temperature	Borehole	212	degF
BS	Bit Size	WLSESSION	8.75	in
BSAL	Borehole Salinity	Borehole	1500	ppm
CALI_SHIFT.1	CALI Supplementary Offset	HDRS-H	0.185	in
CALI_SHIFT.2	CALI Supplementary Offset	ADT-C	0	in
CBLO	Casing Bottom (Logger)	WLSESSION	347	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9.2	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DFT_WATER	Drilling Fluid Water Type	Borehole	WBM	
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	75	degF

RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.95	ohm.m
SPDR	SP Drift Per Foot	AIT-M	0	mV/ft
TD	Total Measured Depth	Borehole	8410	ft

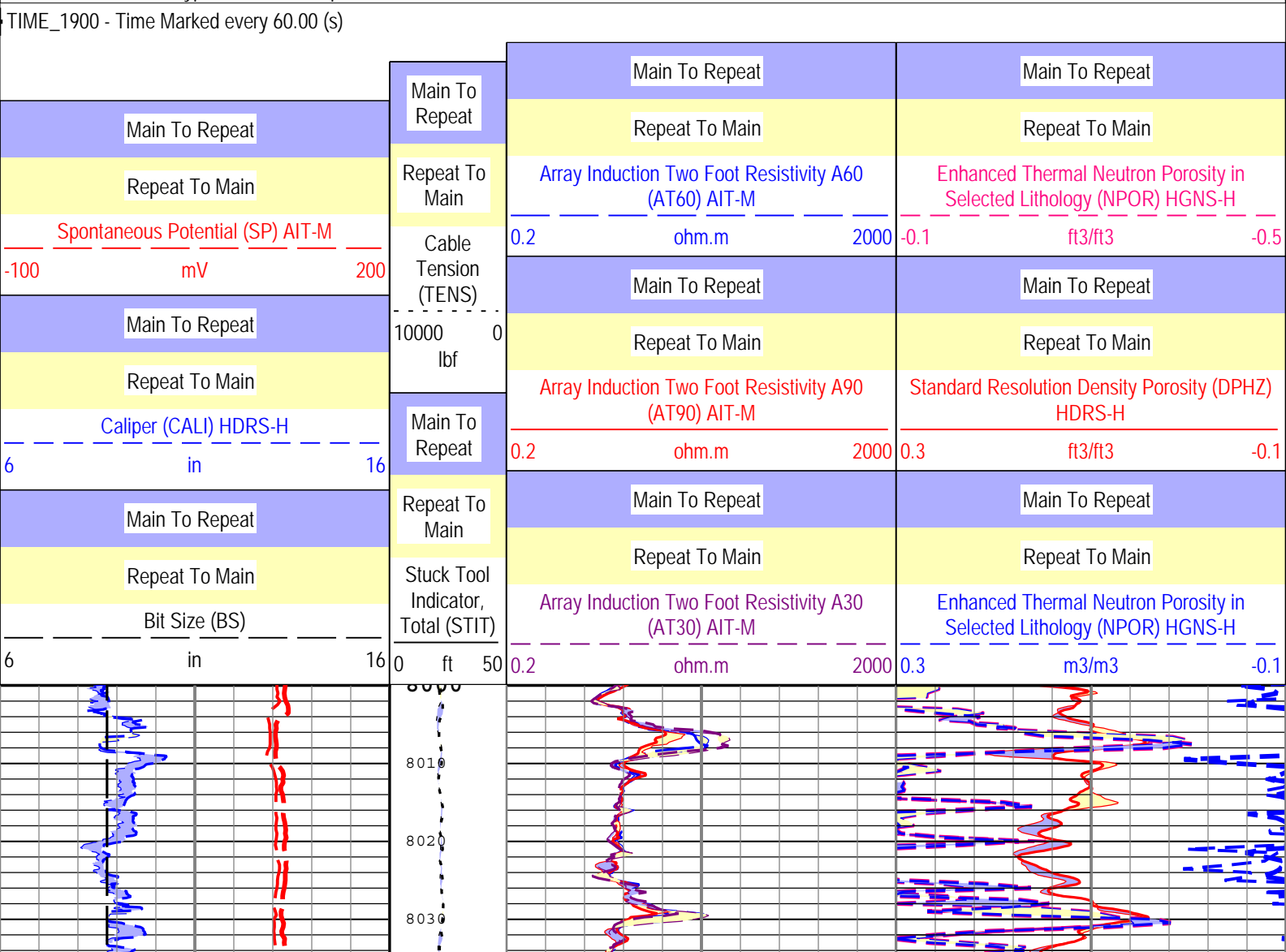
Tool Control Parameters				
Parameter	Description	Tool	Value	Unit
HMCA_BRD_TYPE	HMCA Board Type	HGNS-H	1	
HRGD_BRD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	600	ft/h

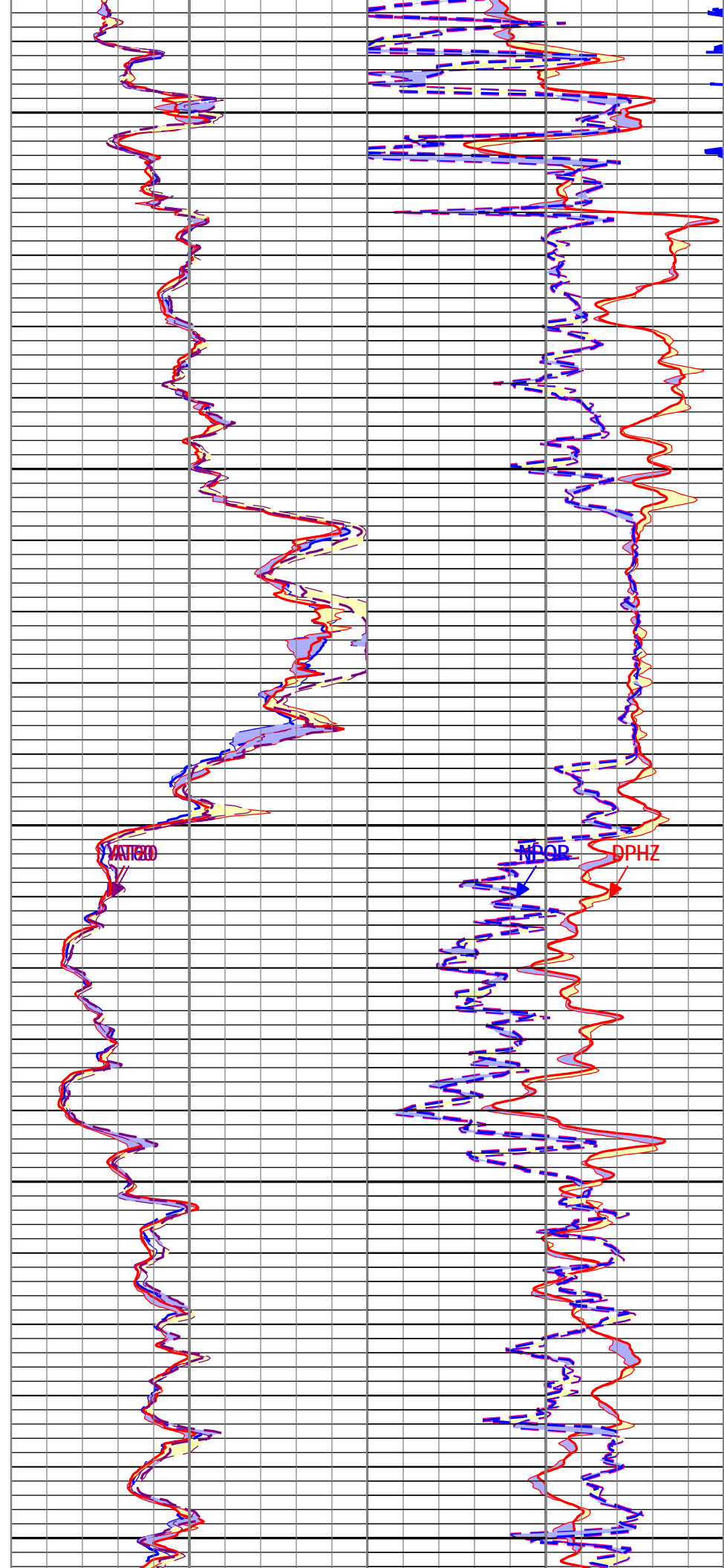
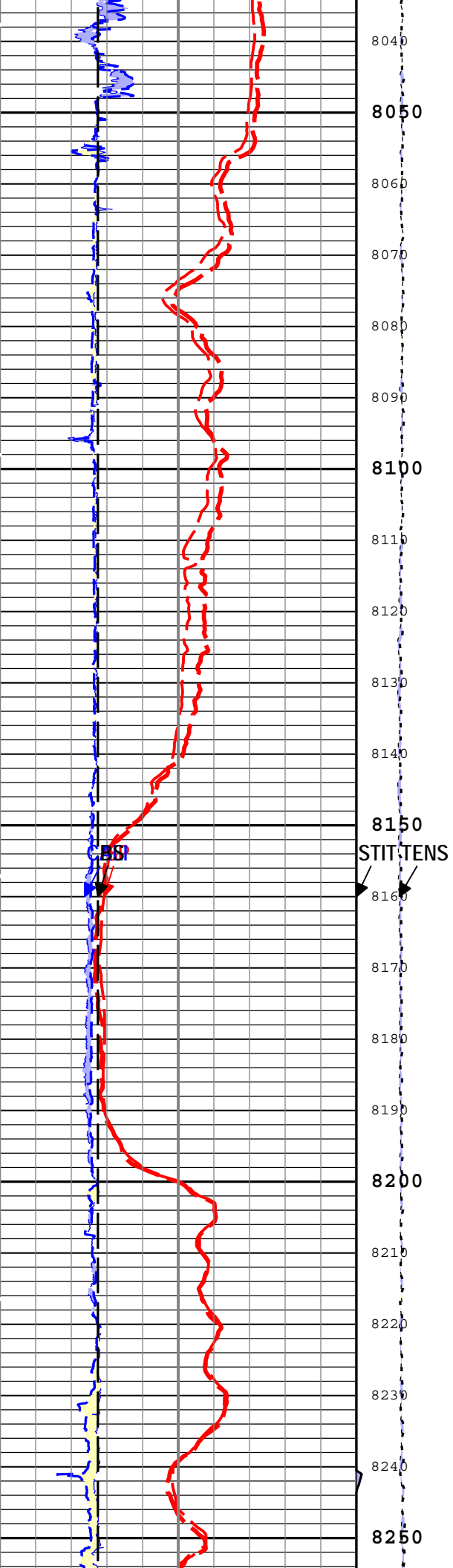
ONE									
5" Repeat Anaylsis									

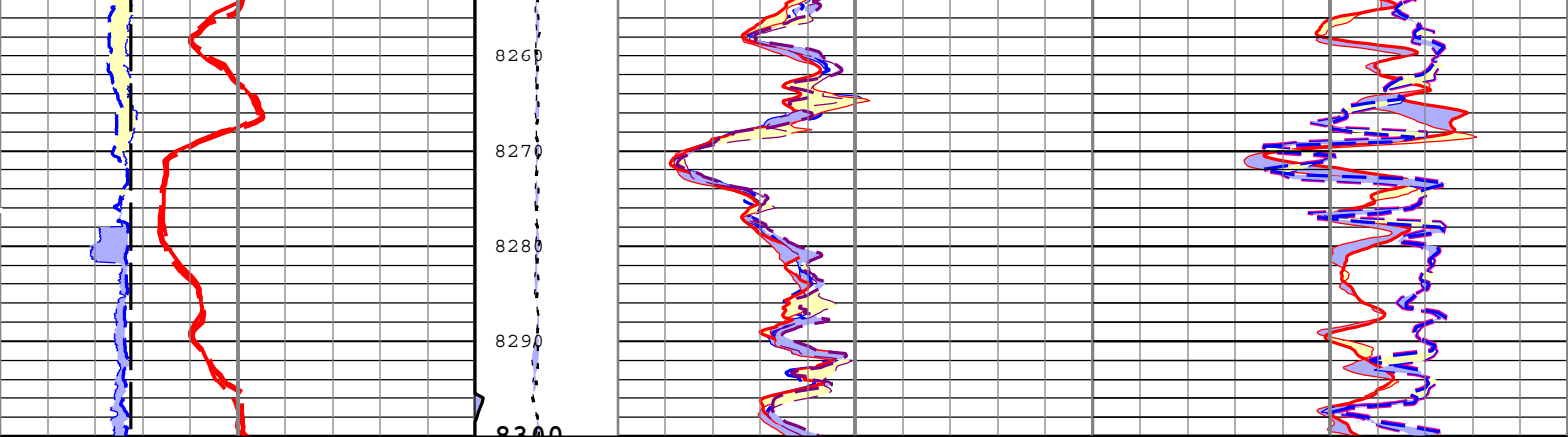
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[6]:Up	Up	6968.24 ft	8442.18 ft	12-Oct-2014 7:53:02 AM	12-Oct-2014 8:21:25 AM	ON	12.21 ft	No
ONE	Log[7]:Up	Up	100.21 ft	8435.65 ft	12-Oct-2014 9:22:21 AM	12-Oct-2014 2:32:29 PM	ON	14.65 ft	No

All depths are referenced to toolstring zero									
Log		Company:Nighthawk Production LLC				Well:Snowbird 16-15			
						ONE: Log[6]:Up:S010			

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: 12-Oct-2014 15:53:01







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

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: 12-Oct-2014 15:53:01

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 :

AITM Rm/SP Bottom Nose 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	
Test Loop Phase - 0	deg	Master	0	-3.000	1.805	3.000	
Test Loop Gain - 1		Master	1.000	0.950	1.017	1.050	
Test Loop Phase - 1	deg	Master	0	-3.000	0.902	3.000	
Test Loop Gain - 2		Master	1.000	0.950	1.017	1.050	
Test Loop Phase - 2	deg	Master	0	-3.000	0.392	3.000	
Test Loop Gain - 3		Master	1.000	0.950	1.016	1.050	
Test Loop Phase - 3	deg	Master	0	-3.000	0.089	3.000	
Test Loop Gain - 4		Master	1.000	0.950	1.009	1.050	
Test Loop Phase - 4	deg	Master	0	-3.000	0.141	3.000	
Test Loop Gain - 5		Master	1.000	0.950	0.991	1.050	
Test Loop Phase - 5	deg	Master	0	-3.000	-0.110	3.000	

Test Loop Phase - 6	deg	Master	1.000	0.950	0.998	1.050	
Test Loop Phase - 6	deg	Master	0	-3.000	0.235	3.000	
Test Loop Gain - 7		Master	1.000	0.950	1.010	1.050	
Test Loop Phase - 7	deg	Master	0	-3.000	-0.080	3.000	

AIT Sonde Calibration - Sonde Error Correction


Master (EEPROM):		23:01:59 22-Sep-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Sonde Error Correction Real - 0	mS/m	Master	-----	-231.000	-113.093	119.000	
Sonde Error Correction Quad - 0		Master	-----	-2250.000	114.931	2250.000	
Sonde Error Correction Real - 1	mS/m	Master	-----	114.000	157.599	204.000	
Sonde Error Correction Quad - 1		Master	-----	-625.000	-170.942	625.000	
Sonde Error Correction Real - 2	mS/m	Master	-----	66.000	115.105	156.000	
Sonde Error Correction Quad - 2		Master	-----	-350.000	-99.364	350.000	
Sonde Error Correction Real - 3	mS/m	Master	-----	39.000	49.447	89.000	
Sonde Error Correction Quad - 3		Master	-----	-250.000	2.279	250.000	
Sonde Error Correction Real - 4	mS/m	Master	-----	15.000	26.217	35.000	
Sonde Error Correction Quad - 4		Master	-----	-63.000	-3.708	63.000	
Sonde Error Correction Real - 5	mS/m	Master	-----	4.000	10.870	24.000	
Sonde Error Correction Quad - 5		Master	-----	-50.000	21.802	50.000	
Sonde Error Correction Real - 6	mS/m	Master	-----	5.000	9.914	15.000	
Sonde Error Correction Quad - 6		Master	-----	-30.000	2.857	30.000	
Sonde Error Correction Real - 7	mS/m	Master	-----	-5.000	-1.286	5.000	
Sonde Error Correction Quad - 7		Master	-----	-30.000	1.530	30.000	

AIT Mud Calibration - Mud Calibration Gain

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	
Fine Gain		Master	1.000	0.800	0.846	1.200	

AIT Electronics Check - Thru Calibration Check

Master (EEPROM):		23:01:59 22-Sep-2014		Before (Measured):		13:32:09 11-Oct-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Thru Cal Mag - 0	V	Master	-----	0.366	0.575	0.854	
		Before	-----	0.366	0.575	0.854	
		Before-Master	-----	-----	0.000	-----	
Thru Cal Phase - 0	deg	Master	-----	137.000	-169.442	-103.000	
		Before	-----	137.000	-168.555	-103.000	
		Before-Master	-----	-----	0.887	-----	
Thru Cal Mag - 1	V	Master	-----	0.762	1.178	1.778	
		Before	-----	0.762	1.178	1.778	
		Before-Master	-----	-----	0.000	-----	
Thru Cal Phase - 1	deg	Master	-----	136.000	-170.544	-104.000	
		Before	-----	136.000	-169.656	-104.000	
		Before-Master	-----	-----	0.888	-----	
Thru Cal Mag - 2	V	Master	-----	0.372	0.584	0.868	
		Before	-----	0.372	0.585	0.868	
		Before-Master	-----	-----	0.001	-----	
Thru Cal Phase - 2	deg	Master	-----	132.000	-174.186	-108.000	
		Before	-----	132.000	-173.298	-108.000	
		Before-Master	-----	-----	0.888	-----	
Thru Cal Mag - 3	V	Master	-----	0.420	0.660	0.980	
		Before	-----	0.420	0.660	0.980	
		Before-Master	-----	-----	0.000	-----	
Thru Cal Phase - 3	deg	Master	-----	131.000	-174.965	-109.000	
		Before	-----	131.000	-174.075	-109.000	
		Before-Master	-----	-----	0.890	-----	
Thru Cal Mag - 4	V	Master	-----	0.804	1.233	1.876	
		Before	-----	0.804	1.233	1.876	
		Before-Master	-----	-----	0.000	-----	
Thru Cal Phase - 4	deg	Master	-----	125.000	178.761	-115.000	
		Before	-----	125.000	179.655	-115.000	
		Before-Master	-----	-----	0.894	-----	
Thru Cal Mag - 5	V	Master	-----	1.176	1.795	2.744	
		Before	-----	1.176	1.795	2.744	
		Before-Master	-----	-----	0.000	-----	

Thru Cal Phase - 5	deg	Master	-----	122.000	177.104	-118.000	
		Before	-----	122.000	178.001	-118.000	
		Before-Master	-----	-----	0.897	-----	
Thru Cal Mag - 6	V	Master	-----	1.176	1.794	2.744	
		Before	-----	1.176	1.794	2.744	
		Before-Master	-----	-----	0.000	-----	
Thru Cal Phase - 6	deg	Master	-----	121.000	177.111	-119.000	
		Before	-----	121.000	178.011	-119.000	
		Before-Master	-----	-----	0.900	-----	
Thru Cal Mag - 7	V	Master	-----	0.846	1.294	1.974	
		Before	-----	0.846	1.294	1.974	
		Before-Master	-----	-----	0.000	-----	
Thru Cal Phase - 7	deg	Master	-----	115.000	176.348	-125.000	
		Before	-----	115.000	177.307	-125.000	
		Before-Master	-----	-----	0.959	-----	
SPA Zero	mV	Master		-50.000	0.145	50.000	
		Before		-50.000	0.137	50.000	
		Before-Master	-----	-----	-0.008	-----	
SPA Plus	mV	Master		941.000	992.483	1040.000	
		Before		941.000	992.297	1040.000	
		Before-Master	-----	-----	-0.186	-----	
Temperature Zero	V	Master		-0.050	0.000	0.050	
		Before		-0.050	0.000	0.050	
		Before-Master	-----	-----	0.000	-----	
Temperature Plus	V	Master		0.870	0.919	0.960	
		Before		0.870	0.919	0.960	
		Before-Master	-----	-----	0.000	-----	

ADT-C (Dielectric Scanner) Calibration - Run ONE

Primary Equipment :

ADT Pad Element

ADP-C

Calibration Parameter :

Small Ring Size (Caliper Calibration Small Ring)

8.00

Large Ring Size (Caliper Calibration Large Ring)

12.00

ADT Caliper Calibration - Caliper Accumulations

Before (Measured):	13:51:20 11-Oct-2014
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Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring RCAL	in	Before	8.00	4.00	7.41	12.00	
Large Ring RCAL	in	Before	12.00	6.00	11.07	18.00	

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

Primary Equipment :

HILT High-Resolution Control Cartridge, 150 degC

HRCC-H

HILT Resistivity Gamma-Ray Density Device, 150 degC

HRGD-H

3933

Auxiliary Equipment :

HRDD Backscatter Detector

Backscatter

28736

HRDD Long Spacing Detector

Long Spacing

28736

HRDD Short Spacing Detector

Short Spacing

28736

Cesium 137 Gamma-Ray Logo

GSR-J

5094

HILT High-Resolution Control Cartridge, 15

HRCC-

HILT High-Resolution Mechanical Sonde, 150 degC

HRMS-H

3933

ter :

Small Ring Size (Caliper Calibration Small Ring)

8.00

Large Ring Size (Caliper Calibration Large Ring)

12.00

HDRS Caliper Calibration - Caliper Accumulations

Before (Measured):	13:49:09 11-Oct-2014
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Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	7.59	10.00	

Small Ring	in	Before	12.00	9.00	11.81	15.00	
Large Ring	in	Before	12.00	9.00	11.81	15.00	

HDRS Density Calibration - Inversion Results

Master (EEPROM):		14:54:08 08-Oct-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.597	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.688	1.696	
Pe Aluminum		Master	2.570	2.470	2.548	2.670	
Pe Magnesium		Master	2.650	2.550	2.608	2.750	

HDRS Density Calibration - Deviation Summary

Master (EEPROM):		14:54:08 08-Oct-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.4397	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.7778	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.3482	1.0000	
SS Max Deviation	%	Master	0	-2.5000	0.9926	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.5574	1.5000	
LS Max Deviation	%	Master	0	-3.5000	2.1649	3.5000	

HDRS Density Calibration - Background Summary

Master (EEPROM):		14:54:08 08-Oct-2014		Before (Measured):		14:49:18 11-Oct-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7487		
		Before	0.7487	0.7113	0.7486	0.7861	
		Before-Master	-----	-----	-0.0001	-----	
BS Window Sum	1/s	Master	1		23347		
		Before	23347	22180	23380	24514	
		Before-Master	-----	-----	33	-----	
SS Window Ratio		Master	1.0000		0.4886		
		Before	0.4886	0.4641	0.4880	0.5130	
		Before-Master	-----	-----	-0.0006	-----	
SS Window Sum	1/s	Master	1		10944		
		Before	10944	10397	10935	11492	
		Before-Master	-----	-----	-9	-----	
LS Window Ratio		Master	1.0000		0.3037		
		Before	0.3037	0.2885	0.2994	0.3189	
		Before-Master	-----	-----	-0.0043	-----	
LS Window Sum	1/s	Master	1		1196		
		Before	1196	1136	1194	1256	
		Before-Master	-----	-----	-2	-----	

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM):		14:54:08 08-Oct-2014		Before (Measured):		14:49:18 11-Oct-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1603	2400	
		Before		1000	1618	2400	
		Before-Master	-----	-100	15	100	
SS PM High Voltage	V	Master		1000	1482	2400	
		Before		1000	1486	2400	
		Before-Master	-----	-100	4	100	
LS PM High Voltage	V	Master		1000	1273	2400	
		Before		1000	1275	2400	
		Before-Master	-----	-100	2	100	

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM):		14:54:08 08-Oct-2014		Before (Measured):		14:49:18 11-Oct-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	10.79	25.00	
		Before		5.00	10.82	25.00	
		Before-Master	-----	-1.00	0.03	1.00	
SS Crystal Resolution	%	Master		5.00	9.65	20.00	
		Before		5.00	9.63	20.00	
		Before-Master	-----	-1.00	-0.02	1.00	
LS Crystal Resolution	%	Master		5.00	8.21	20.00	
		Before		5.00	8.04	20.00	
		Before-Master	-----	-1.00	-0.17	1.00	

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured):		13:48:24 11-Oct-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3878	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3813	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3823	4136	

HGNS-H (HILT Gamma-Ray and Neutron Sonde, 150 degC) Calibration - Run ONE			
Primary Equipment :			
HILT Gamma-Ray and Neutron Sonde, 150 degC		HGNS-H	
Auxiliary Equipment :			
HGNS Accelerometer, 150 degC		HACCZ-H	4269
AmBe Neutron Logging Source		NSR-F	5068
Calibration Parameter :			
Water Temperature			
Housing Size			
JIG-BKG (Jig minus background reference)		165	

HGNS Accelerometer Calibration - Accelerometer Accumulations							
Before (Measured):		06:08:30 12-Oct-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	ft/s2	Before	32.2	31.5	32.1	32.8	

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read							
Master (EEPROM):		00:00:00 15-Aug-2005					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Accelerometer Manufacturer		Master			QAT_160		
Accelerometer Reference Temperature	degF	Master		30.2	77.0	122.0	
Accelerometer Coefficients - 0		Master	-----	-----	336.900	-----	
Accelerometer Coefficients - 1		Master	-----	-----	37.580	-----	
Accelerometer Coefficients - 2		Master	-----	-----	-0.019	-----	
Accelerometer Coefficients - 3		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 4		Master	-----	-----	2.730	-----	
Accelerometer Coefficients - 5		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 6		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 7		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 8		Master	-----	-----	299.000	-----	
Accelerometer Coefficients - 9		Master	-----	-----	1.007	-----	

HGNS Neutron Calibration - HGNS Neutron Accumulations							
Master (EEPROM):		12:34:00 25-Aug-2014		Before (Measured):		13:31:43 11-Oct-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	26.0	40.0	
		Before	0	5.0	26.2	40.0	
		Before-Master	-----	-3.9	0.2	3.9	
Far Zero Measurement	1/s	Master	0	5.0	26.2	40.0	
		Before	0	5.0	25.4	40.0	
		Before-Master	-----	-3.9	-0.8	3.9	
Near Plus Measurement	1/s	Master	6031.0	4700.0	5167.0	6900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
Far Plus Measurement	1/s	Master	2793.0	1900.0	2206.0	2900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
Near Corrected Plus Measurement	1/s	Master		4700.0	5098.0	6900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
Far Corrected Plus Measurement	1/s	Master		1900.0	2150.0	2900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations							
Before (Measured):		13:49:39 11-Oct-2014					

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	83.0	120.0	
RGR Plus Measurement	gAPI	Before	185.4	157.1	180.8	206.3	
GR Calibration Gain		Before	0.89	0.80	0.91	1.05	

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

Primary Equipment :

EDTC-B

EDTC-B

Calibration Parameter :

Plus Reference (Jig minus background reference)

165

EDTC-B Accelerometer Calibration - EDTC-B Accelerometer Calibration

Before (Measured): 06:08:39 12-Oct-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

Master (EEPROM): 05:43:21 12-Oct-2014

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): 13:49:32 11-Oct-2014

After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Gain		Before	1.000	0.900	1.099	1.100	
		After	----	----	----	----	
		After-Before	----	----	----	----	

EDTC-B Gamma-Ray Calibration - Gamma Ray Accumulations

Before (Measured): 13:49:32 11-Oct-2014

After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before		0	78.920	120.000	
		After	----	----	----	----	
		After-Before	----	----	----	----	
RGR Plus Measurement	gAPI	Before	165.000	150.000	150.081	180.000	
		After			NOT DONE		
		After-Before	----	----	----	----	

Company:	Nighthawk Production LLC	Schlumberger
Well:	Snowbird 16-15	
Field:	Arikaree Creek	
County:	Lincoln	
Country:	USA	
Platform Express Field Print		
Triple Combo		
Induction & Nuclear		