

Company:

Nighthawk Production LLC

Well:

Big Sky 4-11

Field:

Wildcat

County:

Lincoln

State:

Colorado

Platform Express

Triple Combo

County: Lincoln

Field: Wildcat

Well: Big Sky 4-11

Company: Nighthawk Production LLC

Location:

NWNNW

SHL: 615' FNL X 622' FWL

Elev.: K.B. 5208.00 ft
G.L. 5193.00 ft
D.F. 5207.00 ft

Permanent Datum:

Ground Level

Elev.: 5193.00 f

Log Measured From:

Kelly Bushing

15.00 ft

above Perm.Datum

Drilling Measured From:

Kelly Bushing

API Serial No.

Section:

Township:

Range:

05-073-06523-0000

11

6S

54W

Logging Date

12-May-2013

Run Number

1

Depth Driller

8350.00 ft

Schlumberger Depth

8342.00 ft

Bottom Log Interval

8336.00 ft

Top Log Interval

308.00 ft

Casing Driller Size @ Depth

8.625 in @ 300.00 ft

Casing Schlumberger

309 ft

Bit Size

7.875 in

Type Fluid In Hole

Fresh Water

Density

Viscosity

90 s

Fluid Loss

PH

8 cm3

7.3

Source of Sample

Active Tank

RM @ Meas Temp

0.53 ohm.m

@

60 degF

RMF @ Meas Temp

0.4 ohm.m

@

60 degF

RMC @ Meas Temp

0.81 ohm.m

@

60 degF

Source RMF

RMC

Calculated

Calculated

RM @ BHT

RMF @ BHT

0.18 @ 190

0.14 @ 190

Max Recorded Temperatures

190 degF

Circulation Stopped

Time

11-May-2013

21:00:00

Logger on Bottom

Time

12-May-2013

15:00:00

Unit Number

Location:

2223

Danijl Kholin

Fort Morgan

Recorded By

Anders Elgerd

Disclaimer

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Well Sketch

Driller Depth

0.00 ft

300.00 ft

Casing 8.625in
24lbm/ft

8350.00 ft

Open Hole 7.875in

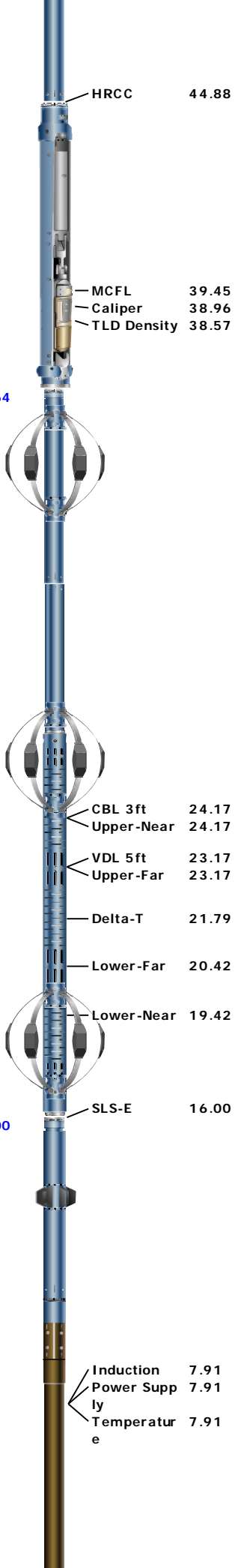
Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	7.875					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	8350					
Bottom Logger (ft)	8342					
Casing						
Size (in)	8.625					
Weight (lbm/ft)	24					
Inner Diameter (in)	8.099					
Grade	N80					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	300					
Bottom Logger (ft)	309					

Remarks and Equipment Summary

1: Toolstring	1: Remarks
<div><div><div>Equip nameLengthMP nameOffset</div><div>LEH-QT:249364.21</div><div>LEH-QT:2493</div><div>DTC-H:1053061.29</div><div>ECH-KC</div><div>DTC-H:10530</div><div>HGNS-H:86358.29</div><div>HGNH:2883</div><div>NSR-F:5069</div><div>NPV-IN</div><div>HACGZ-H:452</div><div>HGNS-H:863</div><div>HMCA-H</div><div>HDRS-H:175448.88</div><div>ECH-MEB:1922</div></div><div><div><div>CNLPorosity</div><div>HGNS</div><div>HMCA</div><div>Accelerometer</div></div><div><div>CTEM</div><div>HV</div><div>GR</div></div></div><div><div>51.21</div><div>48.88</div><div>48.88</div><div>0.00</div><div>58.29</div><div>58.29</div><div>58.26</div><div>57.55</div><div>60.39</div><div>0.00</div></div></div>	Toolstring run as per toolsketch.
	HGNS run without bowspring as per client request due to hole conditions
	Matrix: Limestone, 2.71 g/cc
	Crew: Troy Ocanas, Jay Musgrave

HRCC-H:791
HRMS-H:1754
GPV-Q
Short Spacing
Backscatter
GSR-J:5094
Long Spacing
HRGD-H:1849





SP 0.08
Mud Resistivity 0.00
Head Tension
TOOL_ZERO

Lengths are in ft

Maximum Outer Diameter = 5.000 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL_ZERO

Depth Summary

Depth Control Parameters	1		
Conveyance Type	Wireline		
Log Sequence	This is first run in the hole.		
Stretch Correction (ft)	6.12		
Rig Type	Land		
Depth Remark Parameters	1		
Depth Remark 1	All Schlumberger Depth Control		
Depth Remark 2	IDW used as primary depth control.		
Depth Remark 3	Z-chart used as secondary depth		
Depth Measuring Device	1		
Type	IDW-B		
Serial Number	1918		
Calibration Date	22-Apr-2013		
Calibration Cable Type	7-46 AXS		
Wheel Correction 1	-8		
Wheel Correction 2	-9		
Tension Device	1		
Type	CMTD-B/A		
Serial Number	1274		
Calibration Date	30-apr-2013		
Calibrator Serial Number	78135A		
Calibration Points	10		
Calibration RMS	36		
Calibration Peak Error	77		
Logging Cable	1		
Type	7-46A-XS		
Serial Number	U711126		
Logging Cable Length (ft)	24000.00		

1

5" Triple Combo

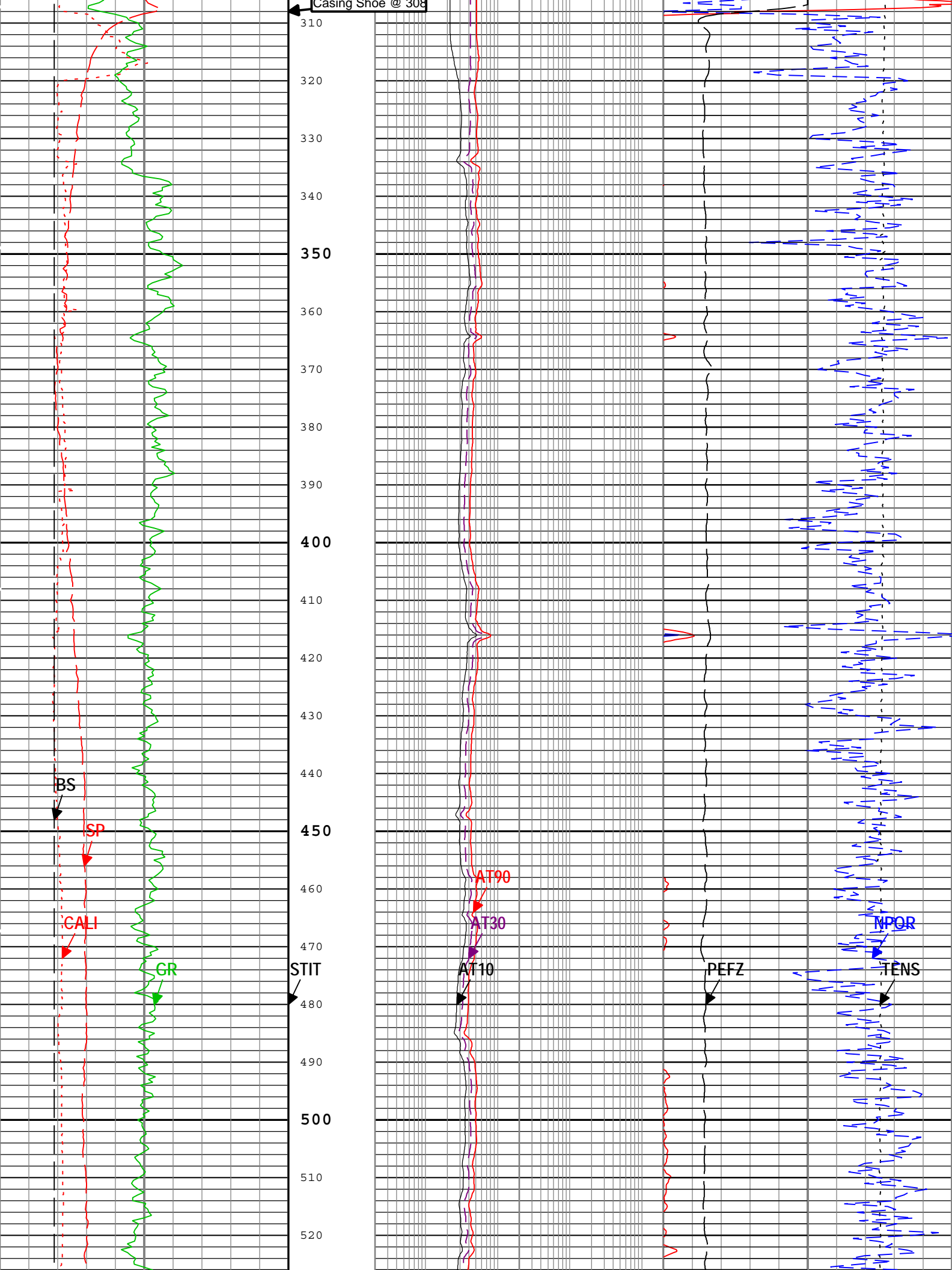
Integration Summary

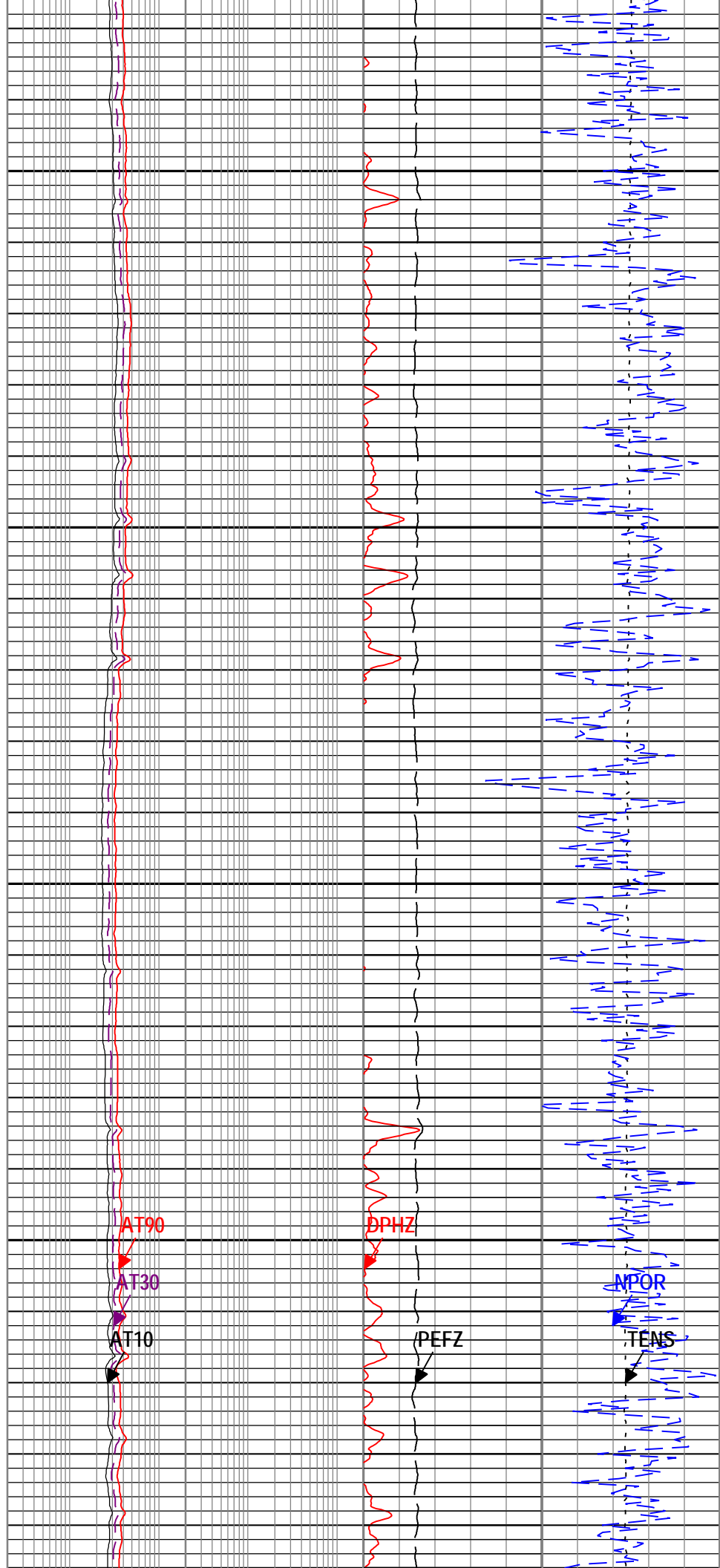
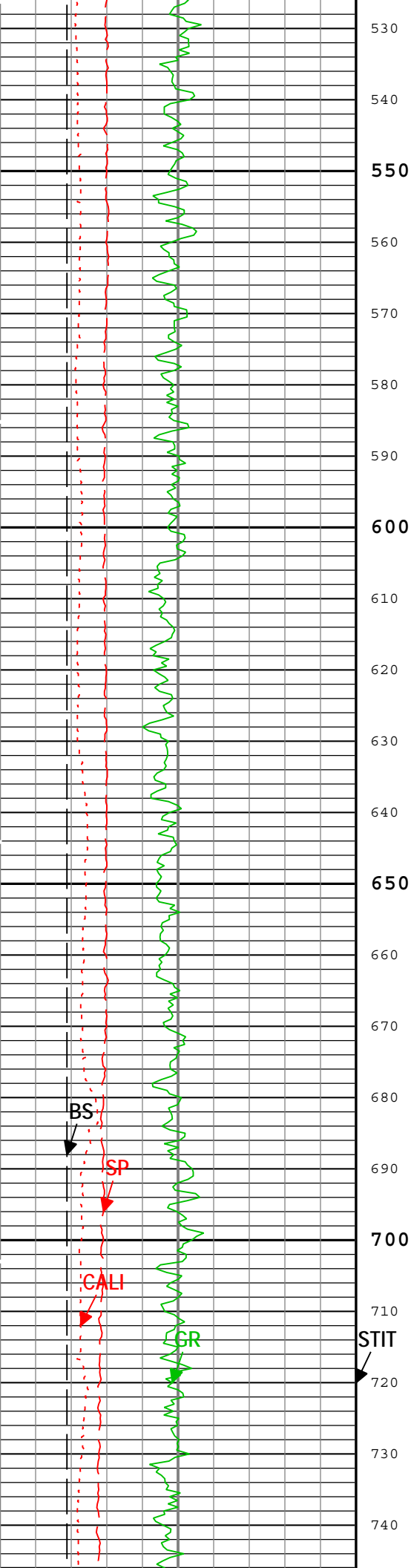
Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
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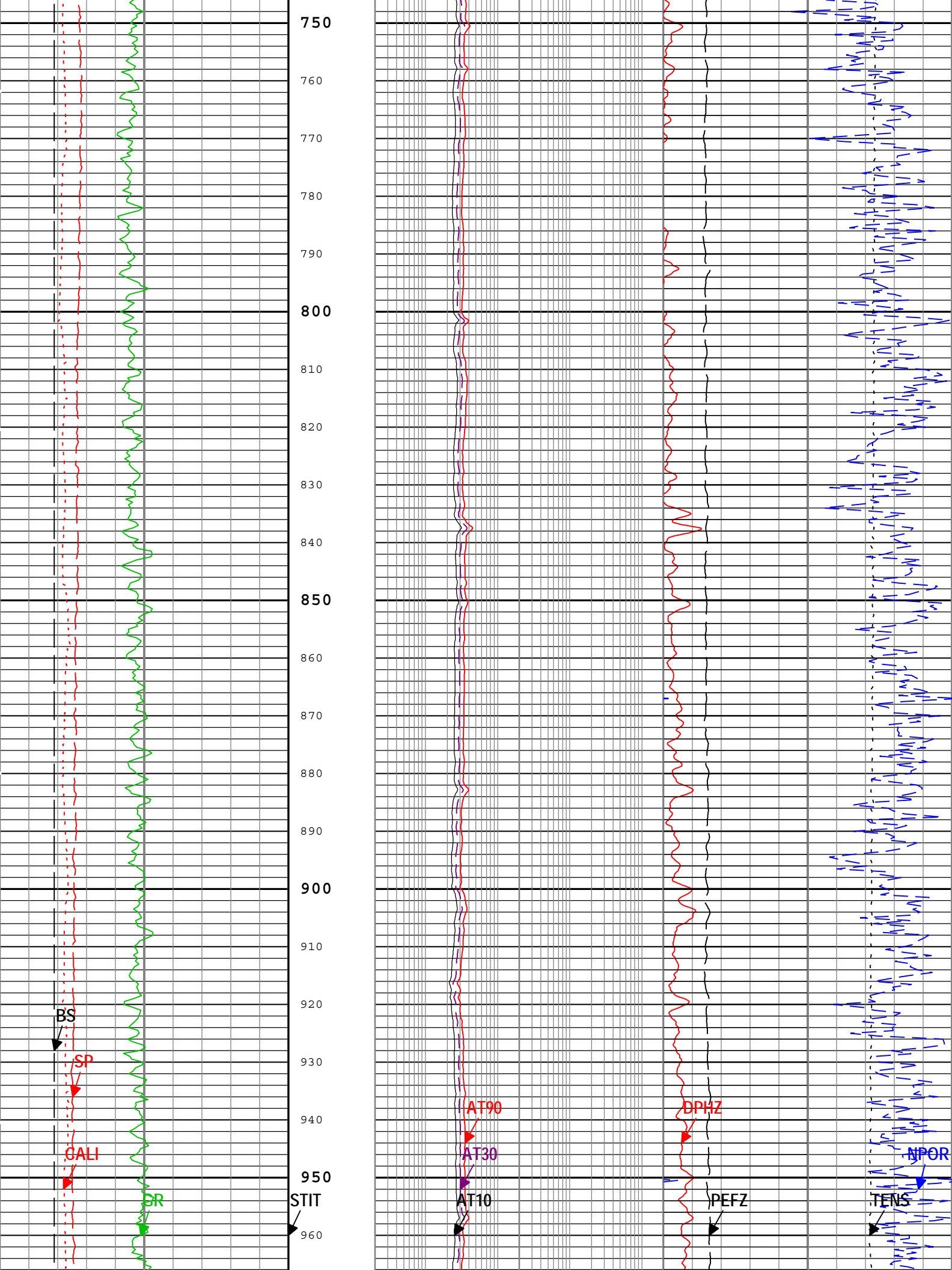
Software Version

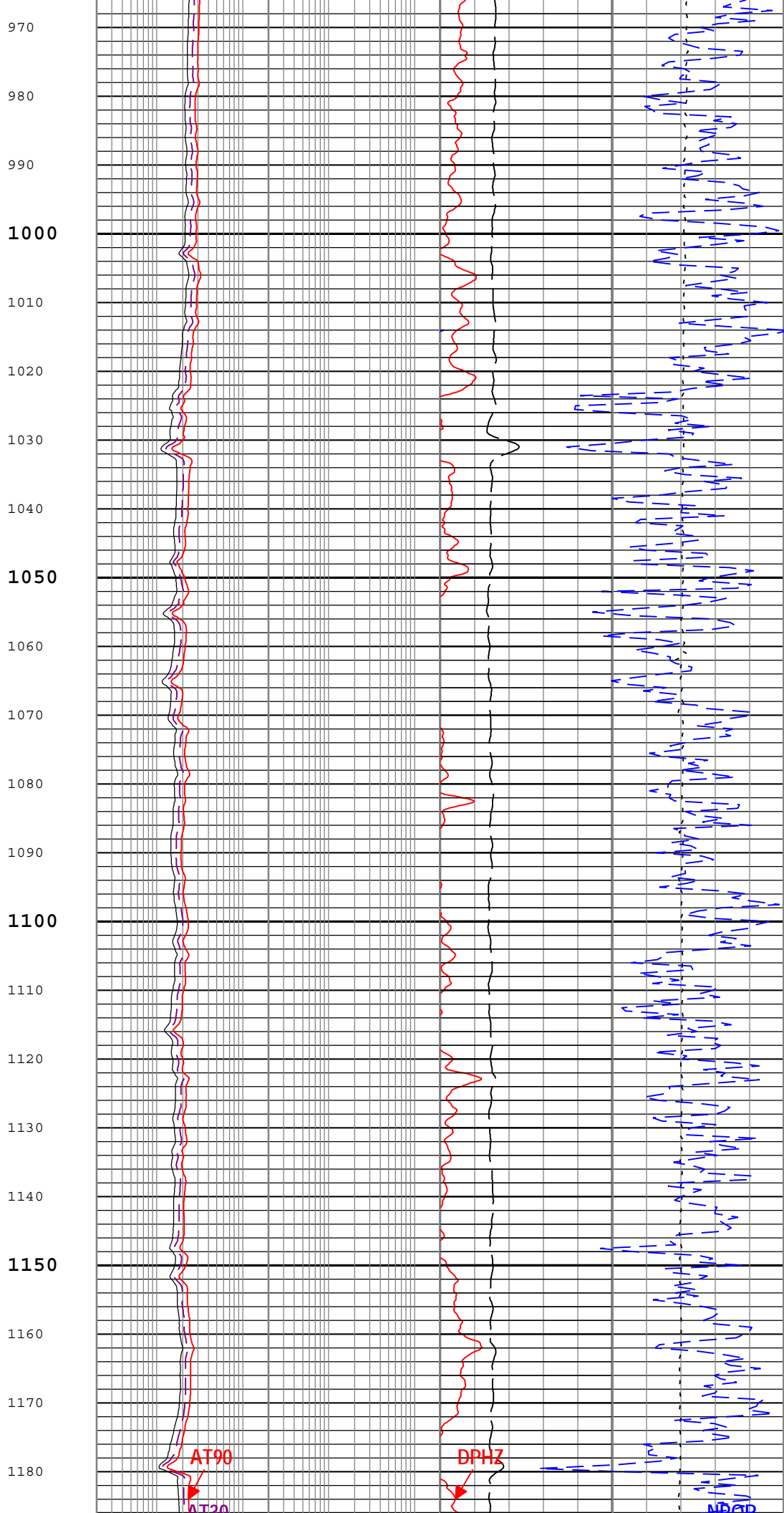
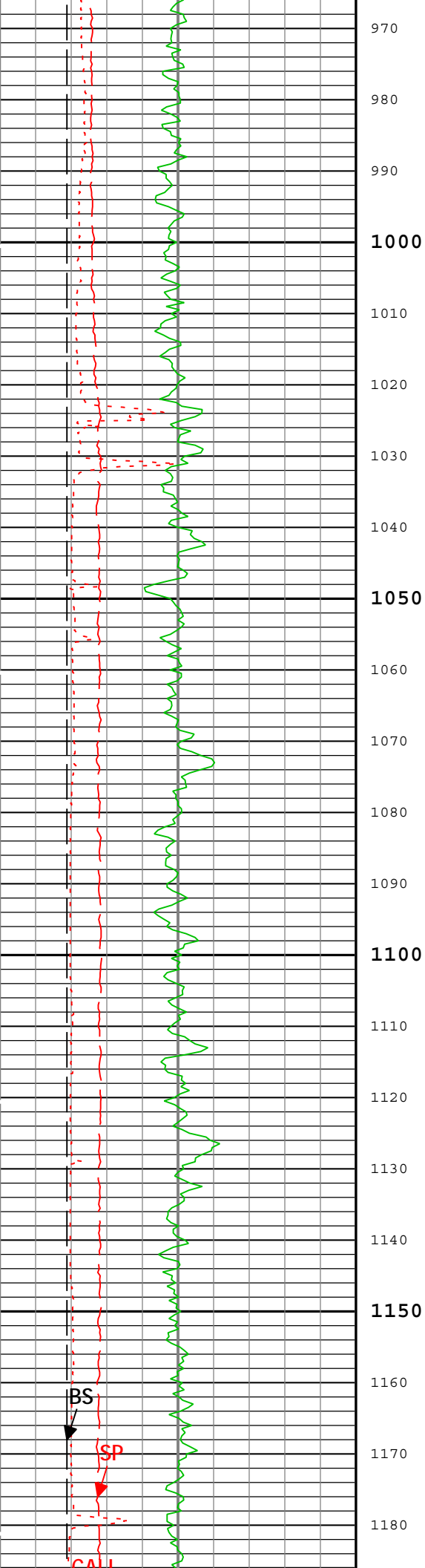
Acquisition System	Version
MaxWell	3.1.9755.0
Application Patch	SP-20121221-3.1.9755.1574

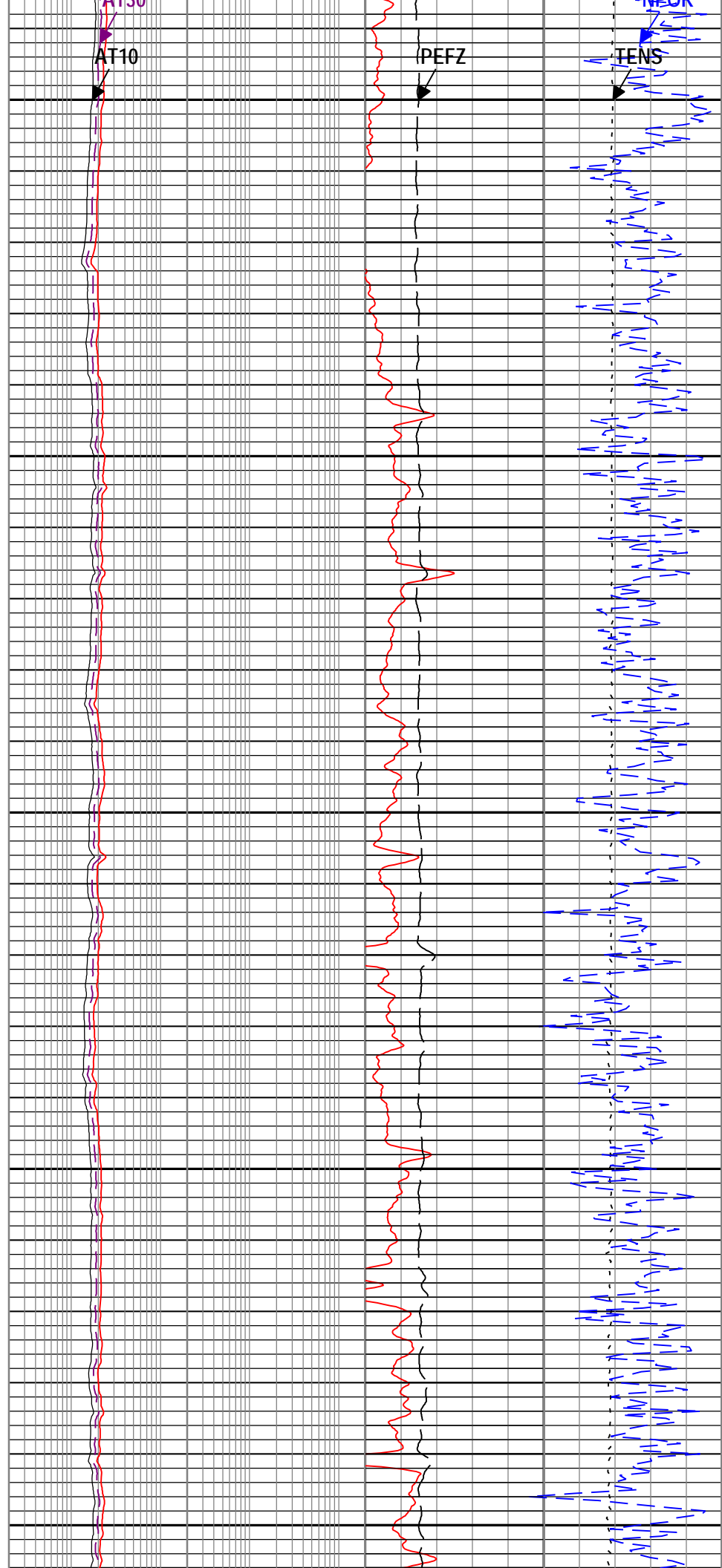
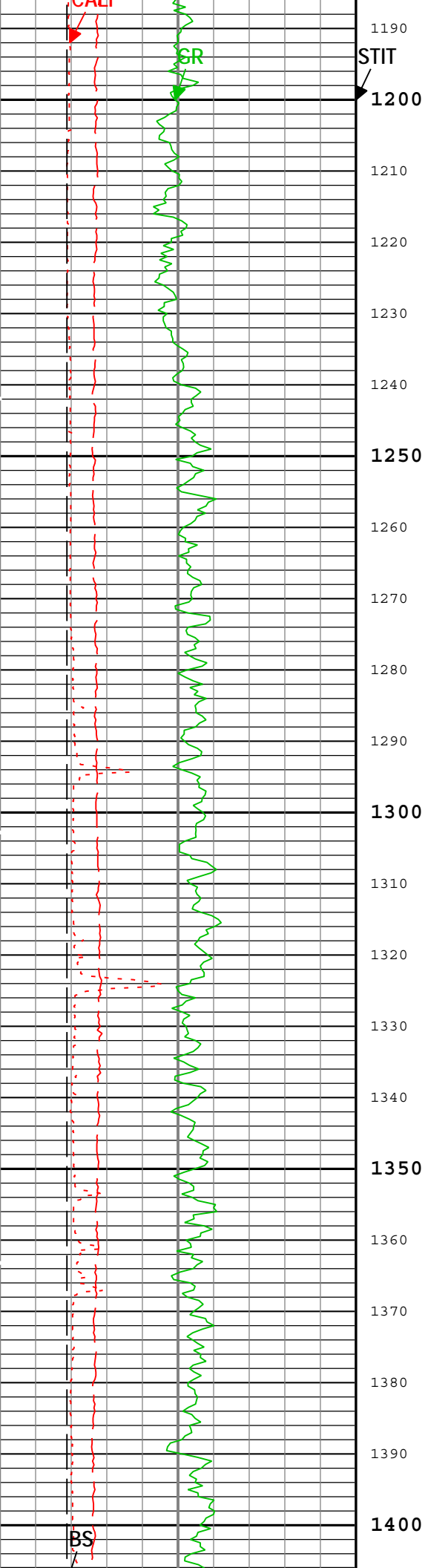
Computation	Description	Version
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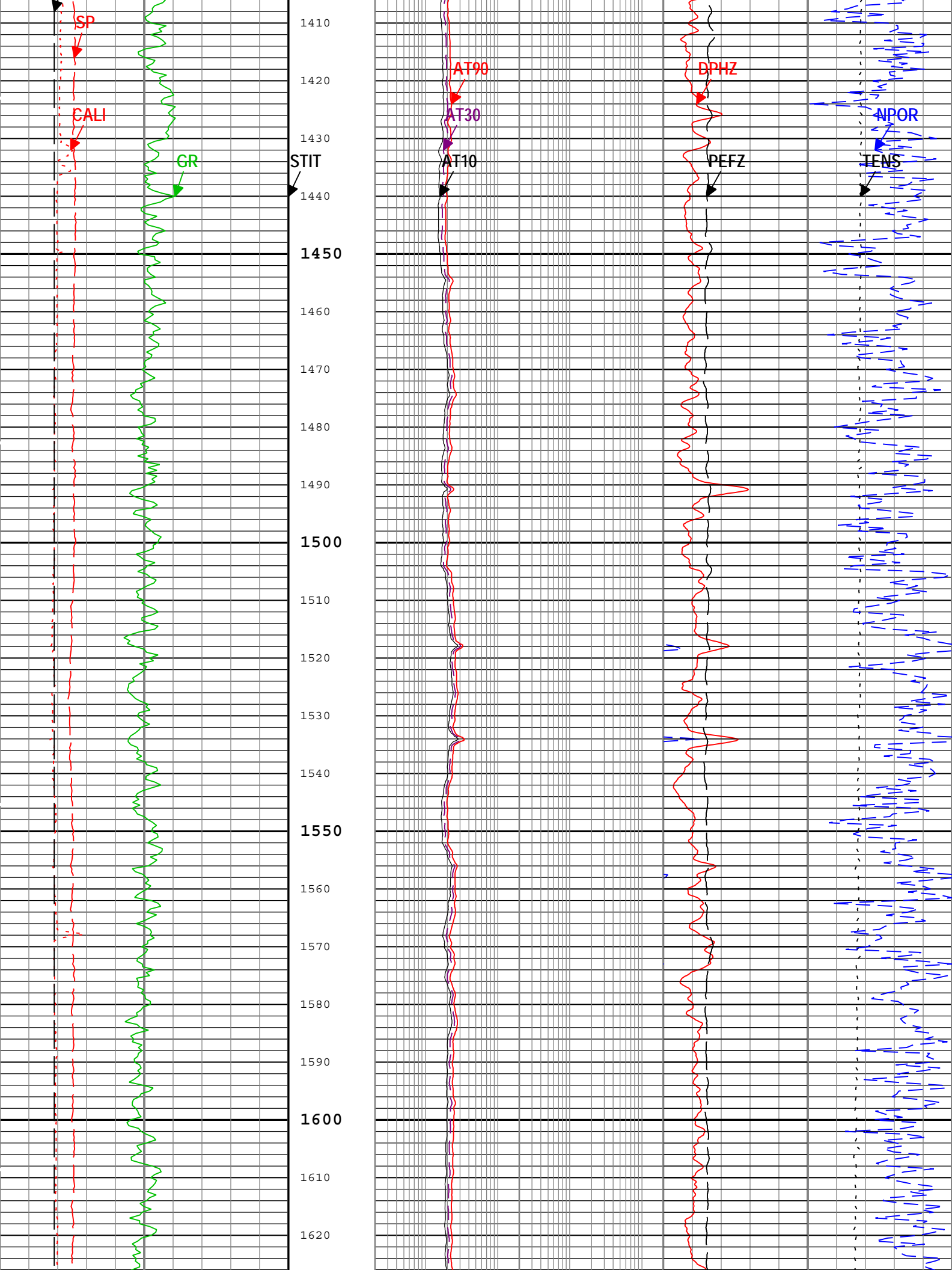


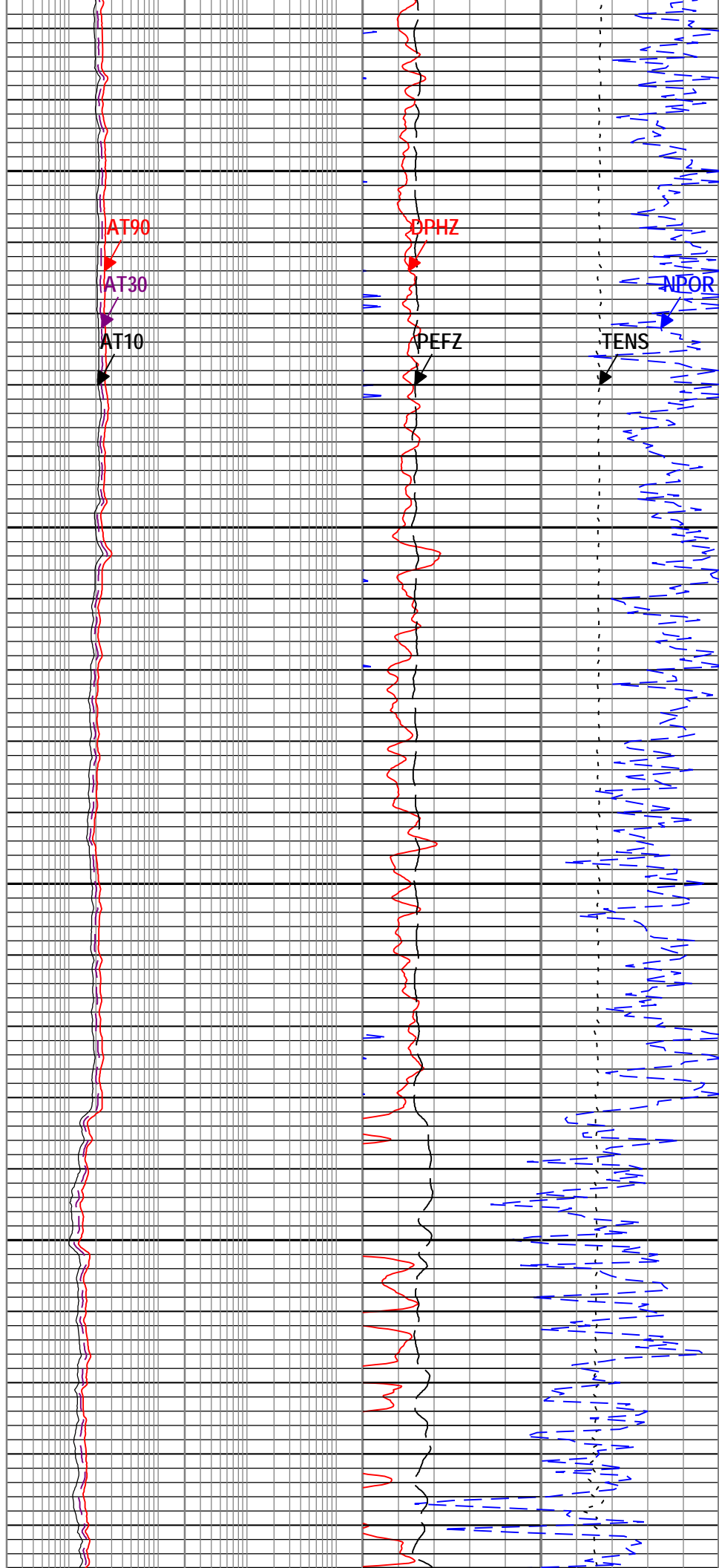
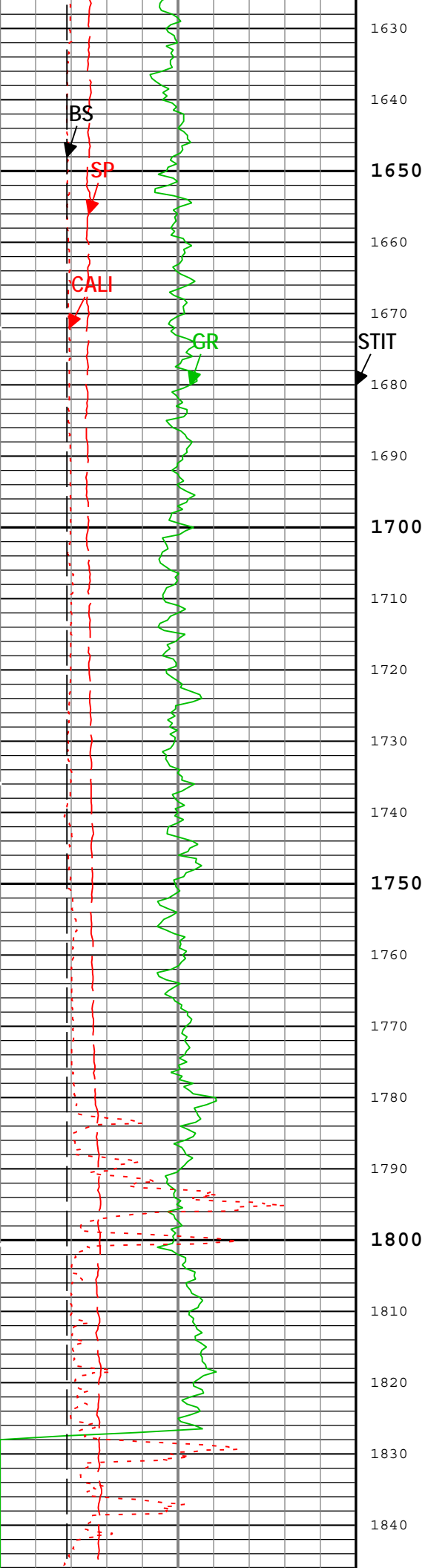


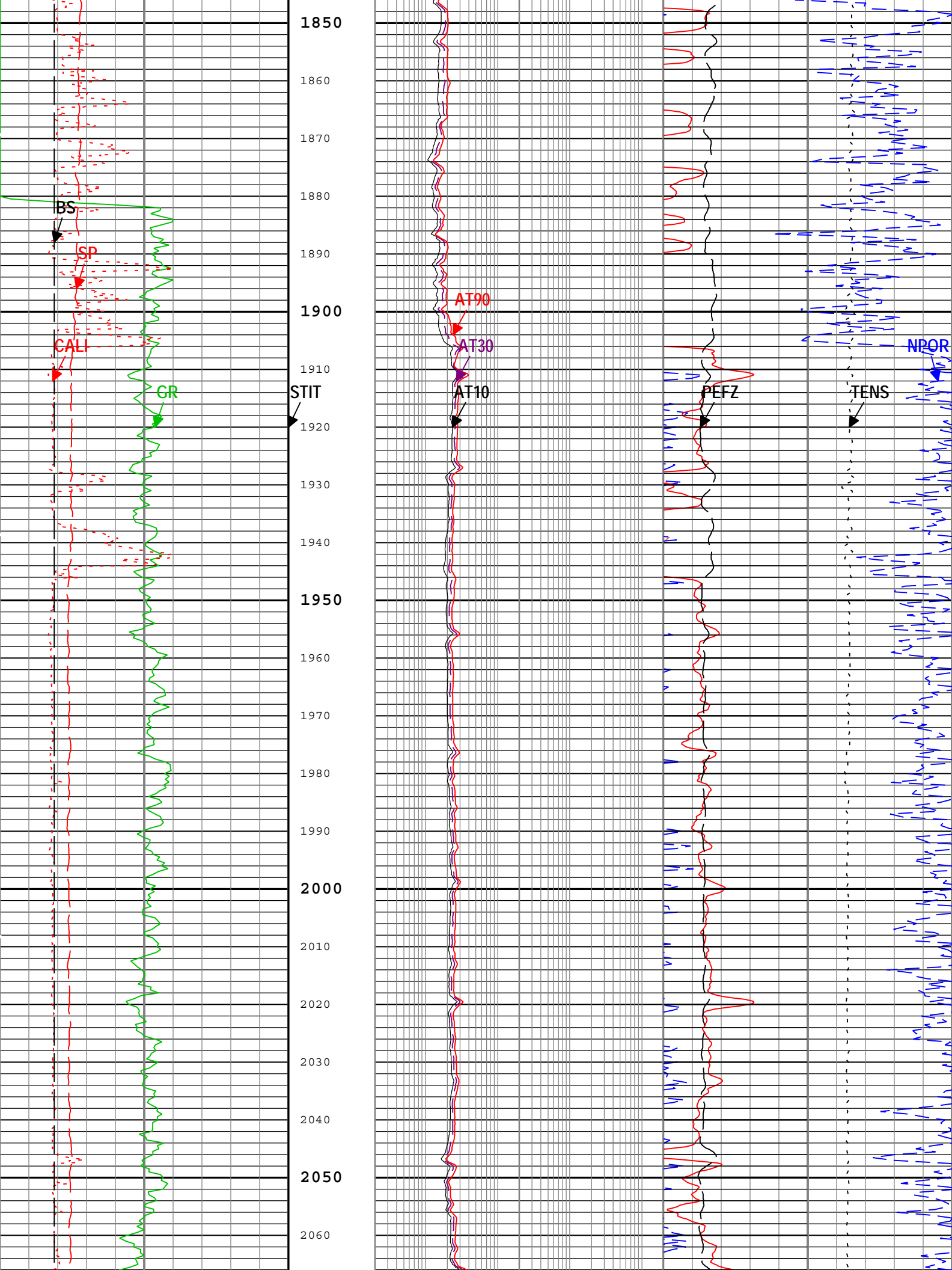


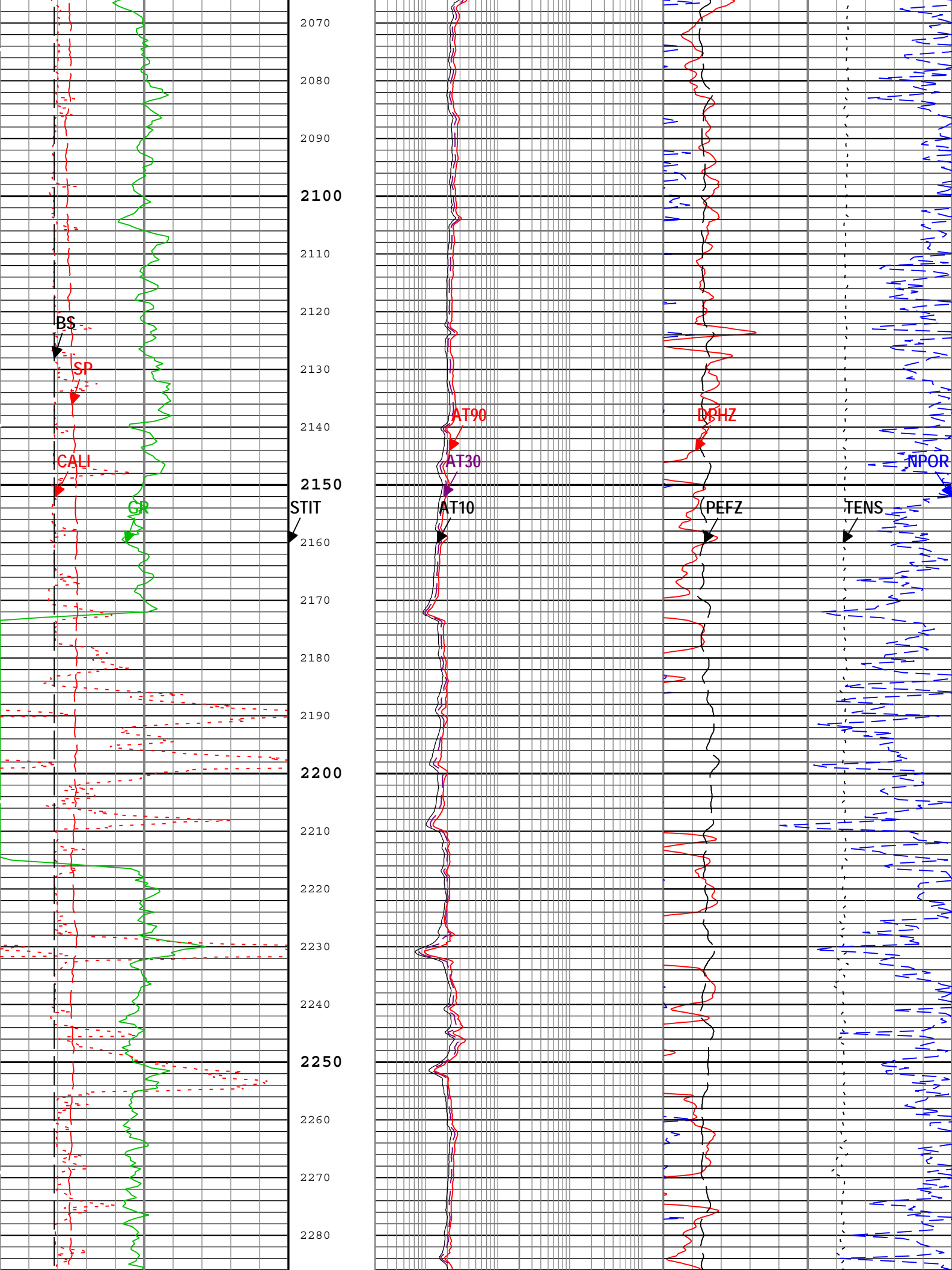


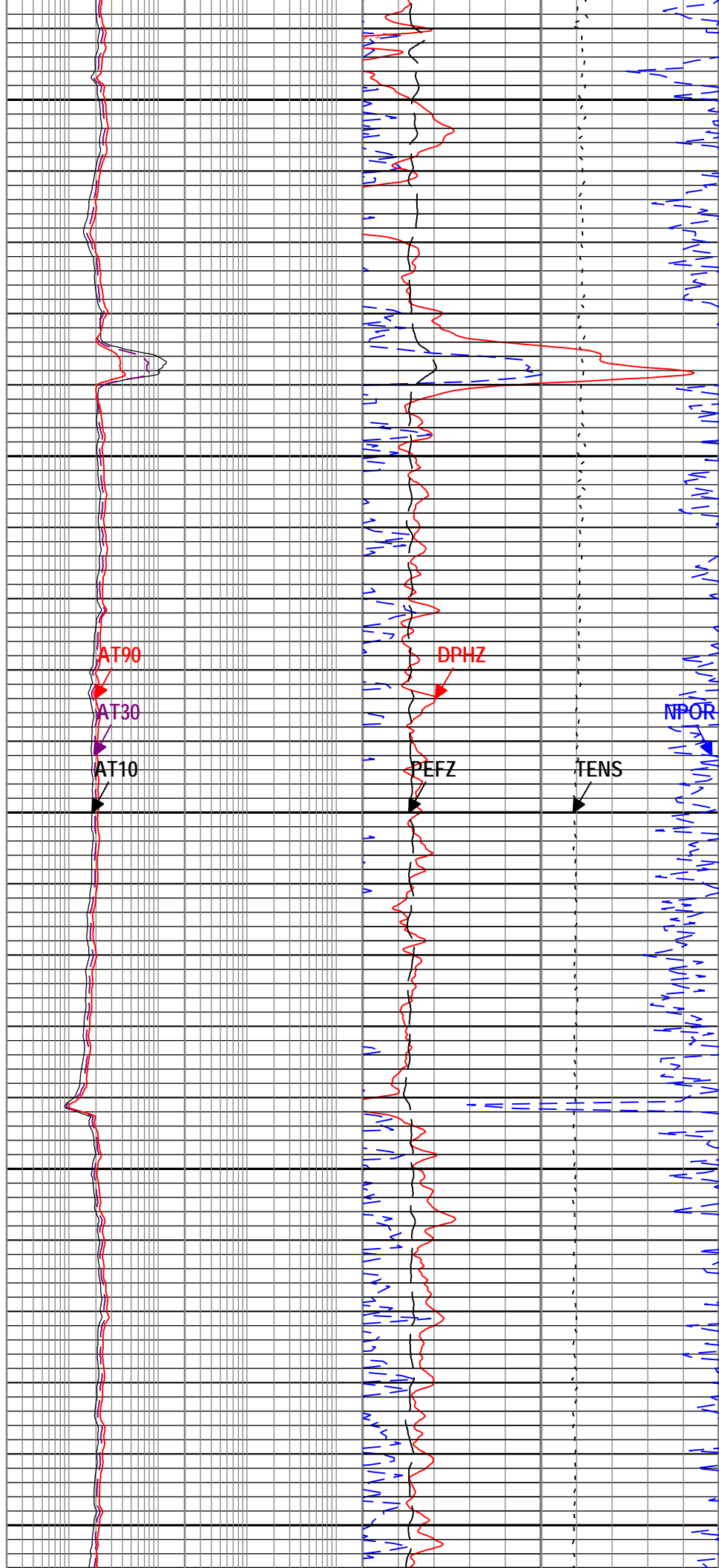
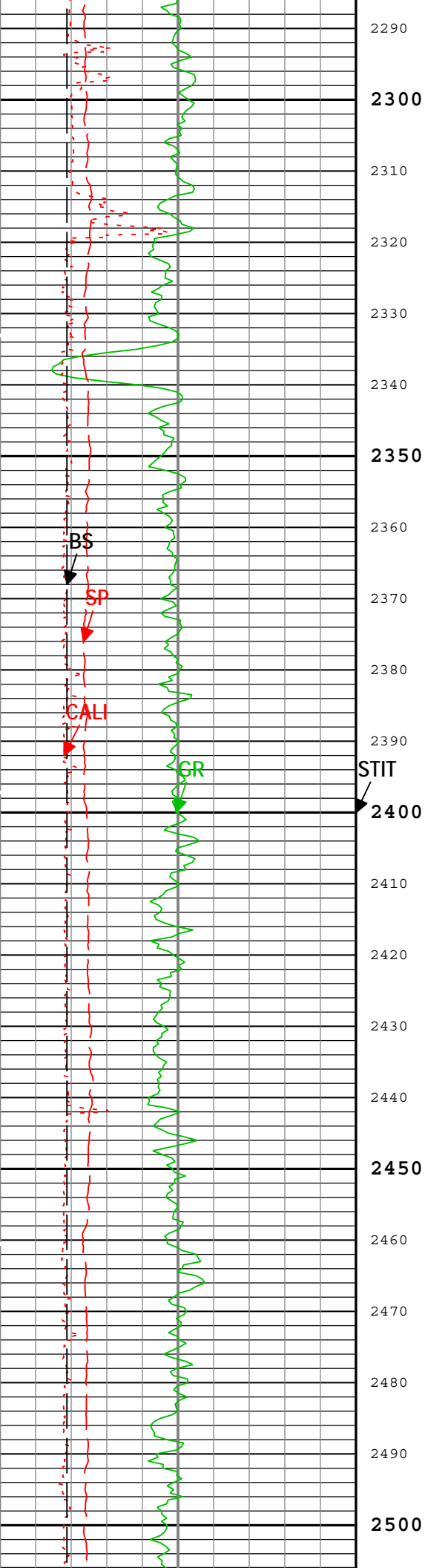


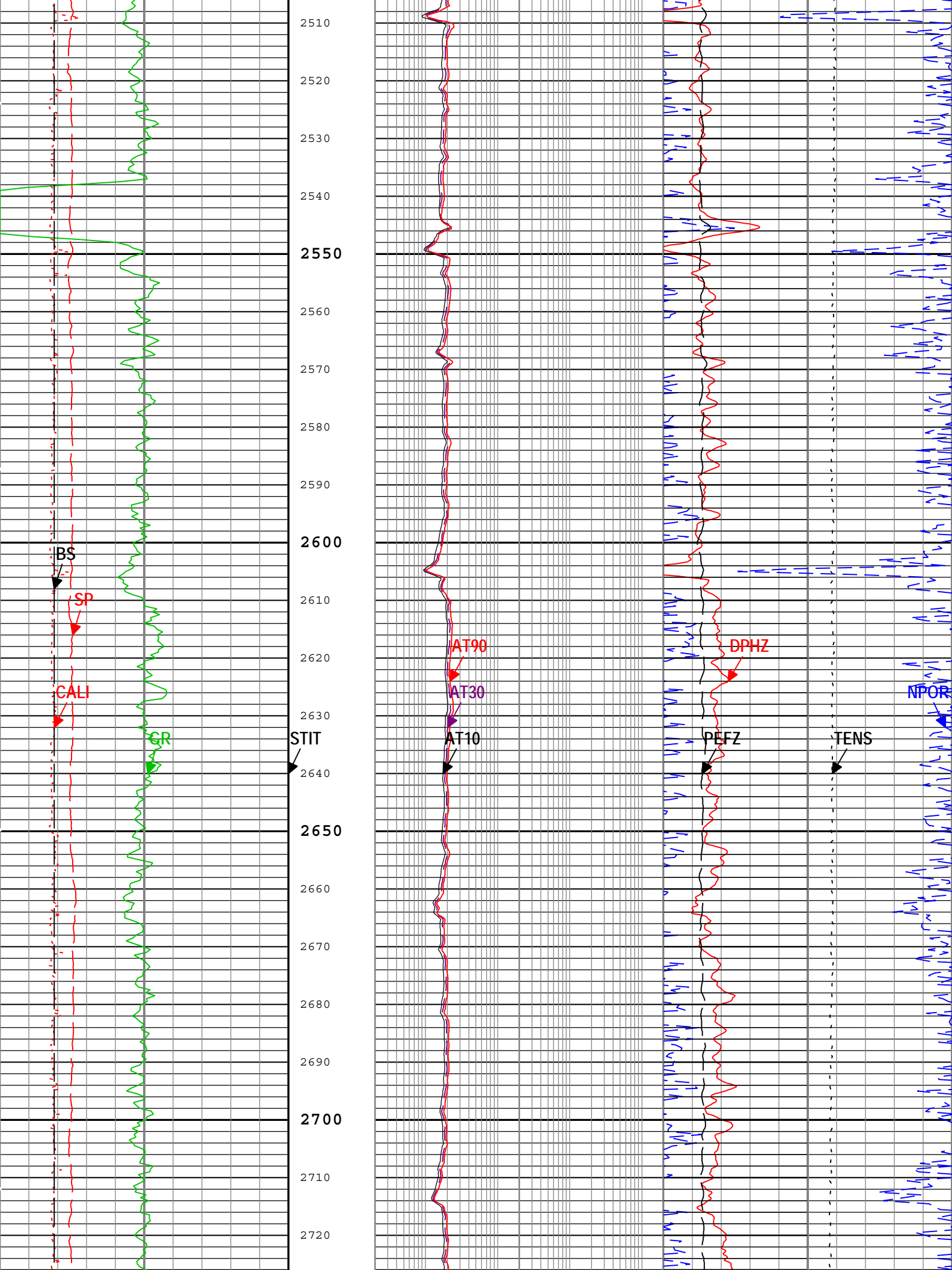


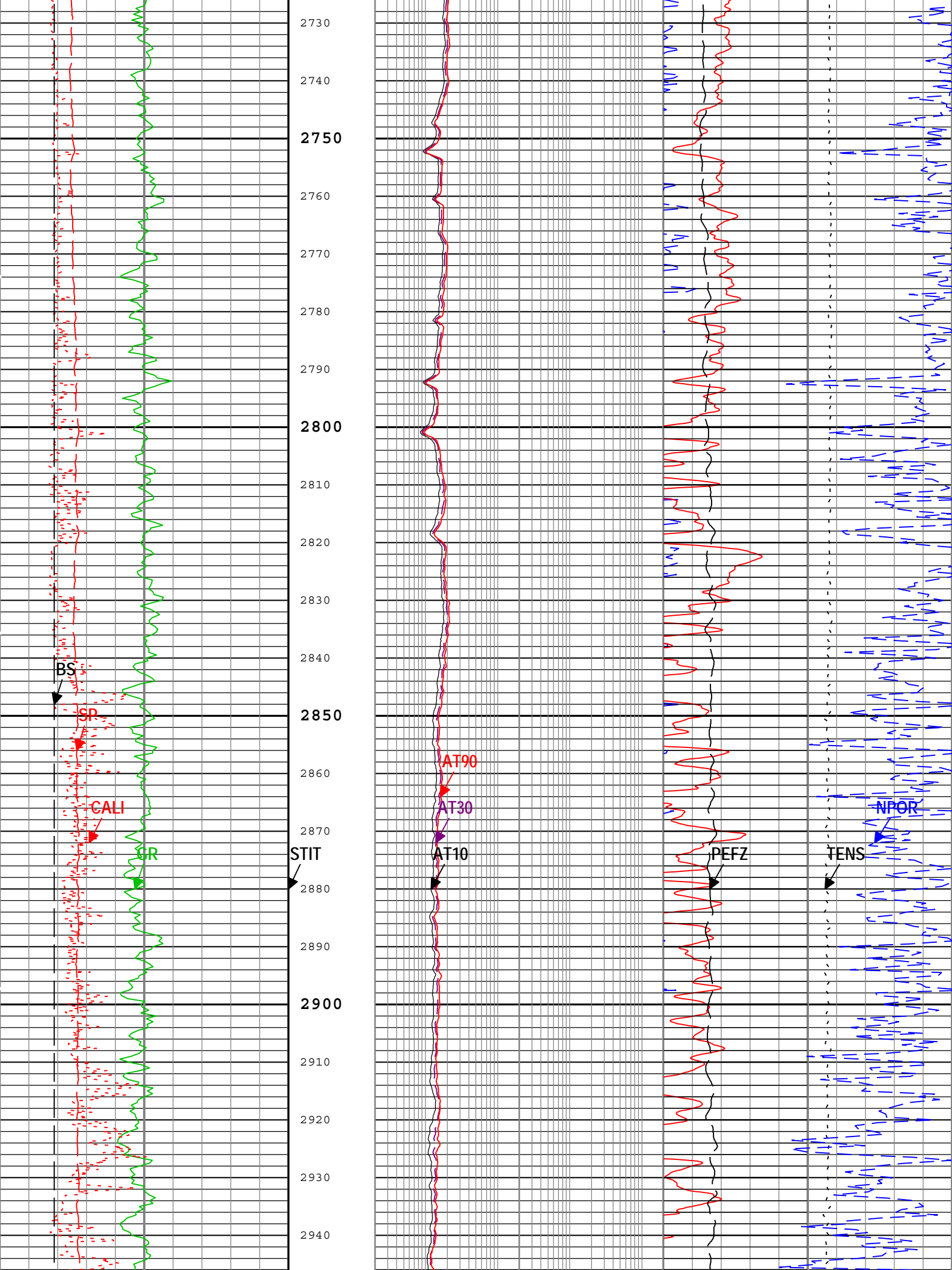


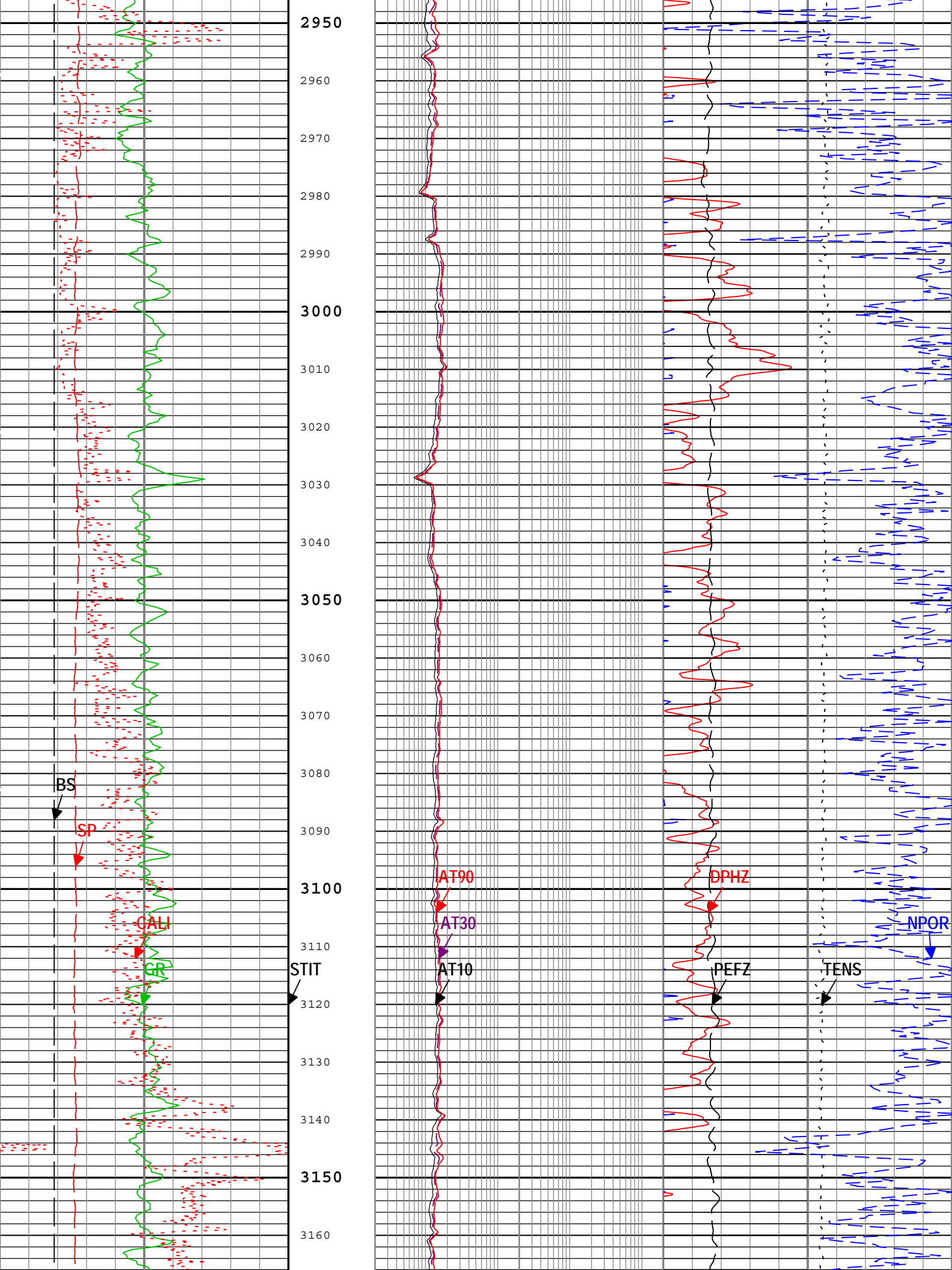


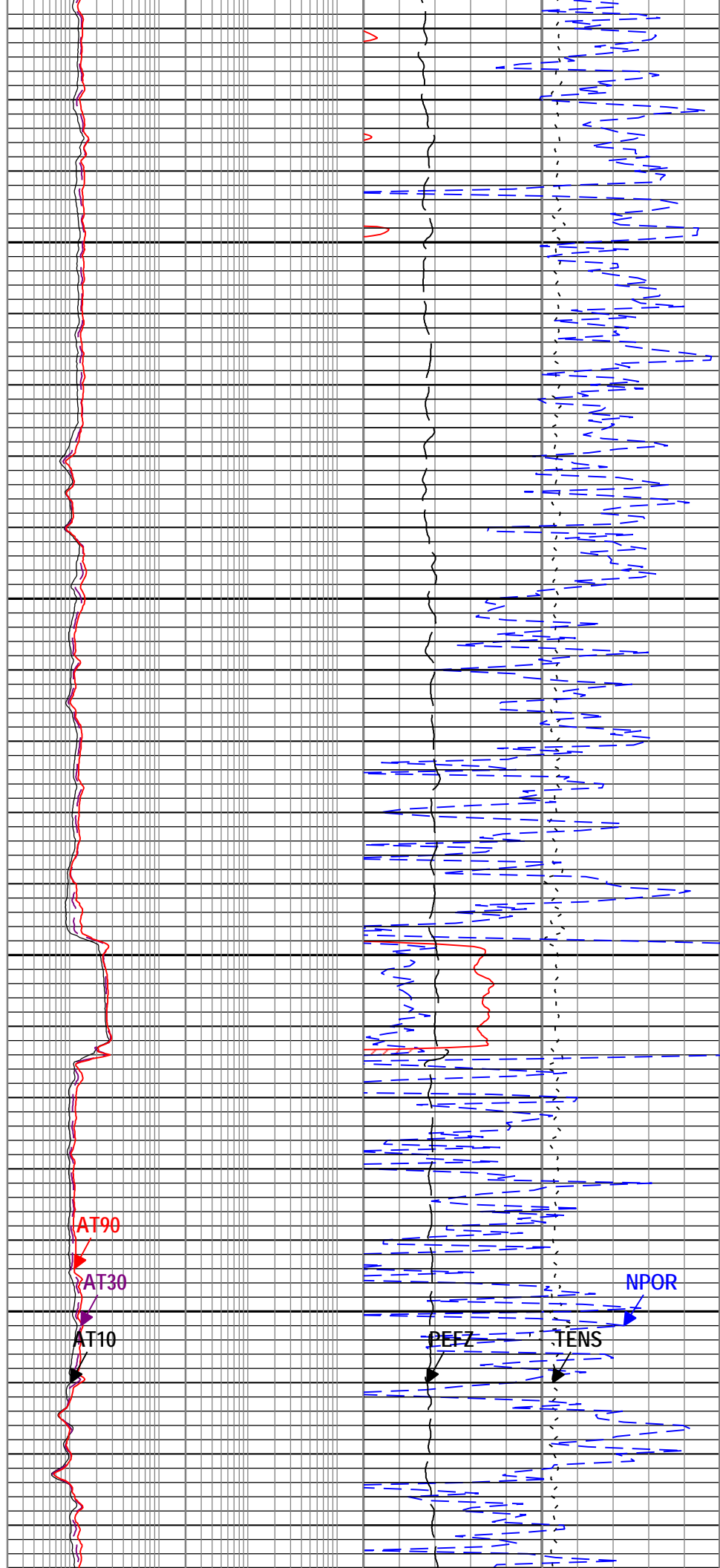
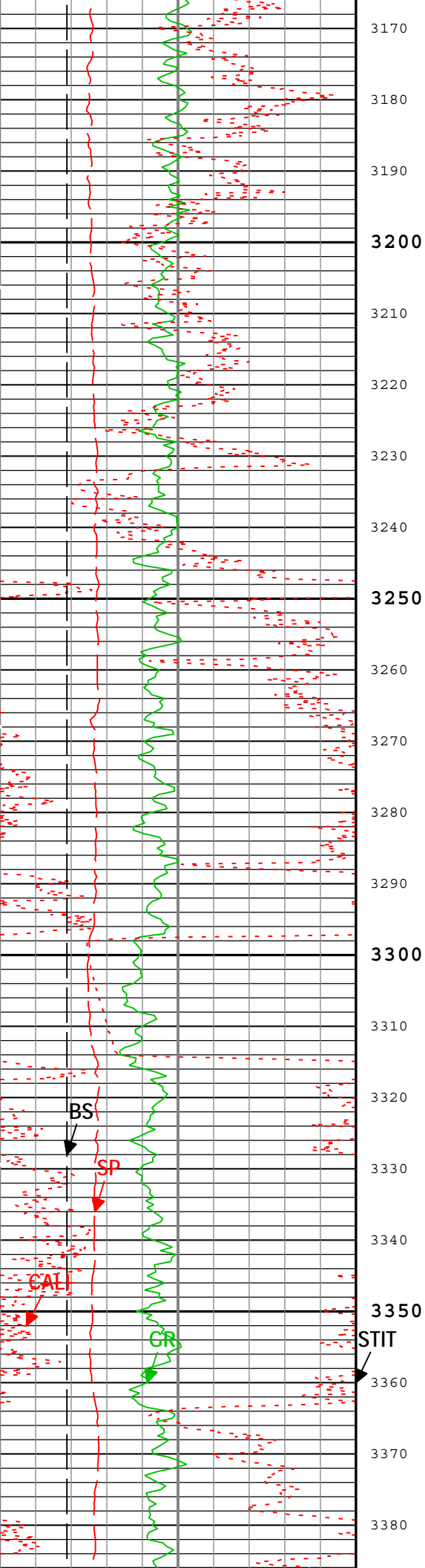


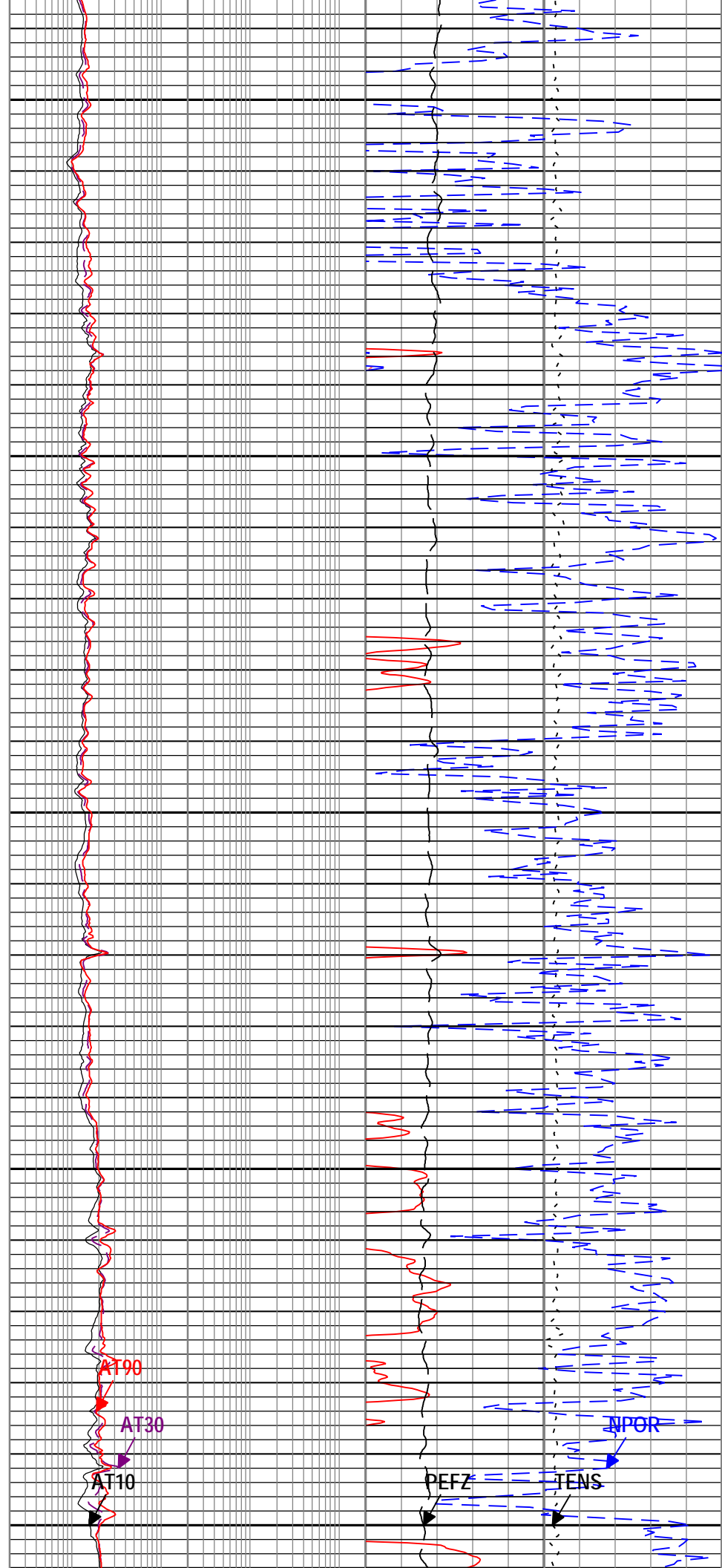
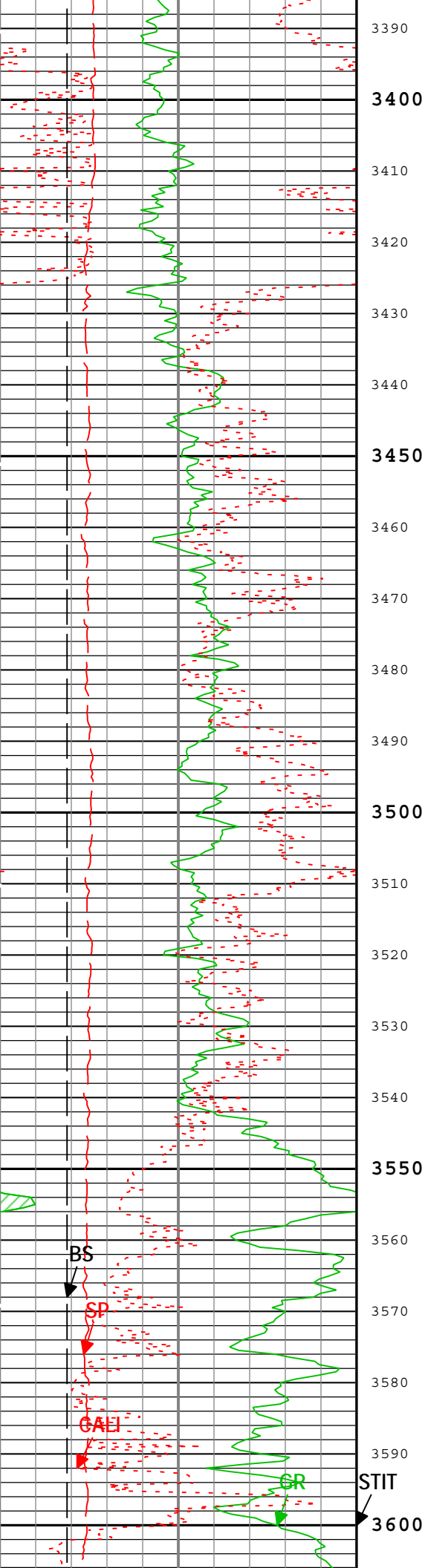


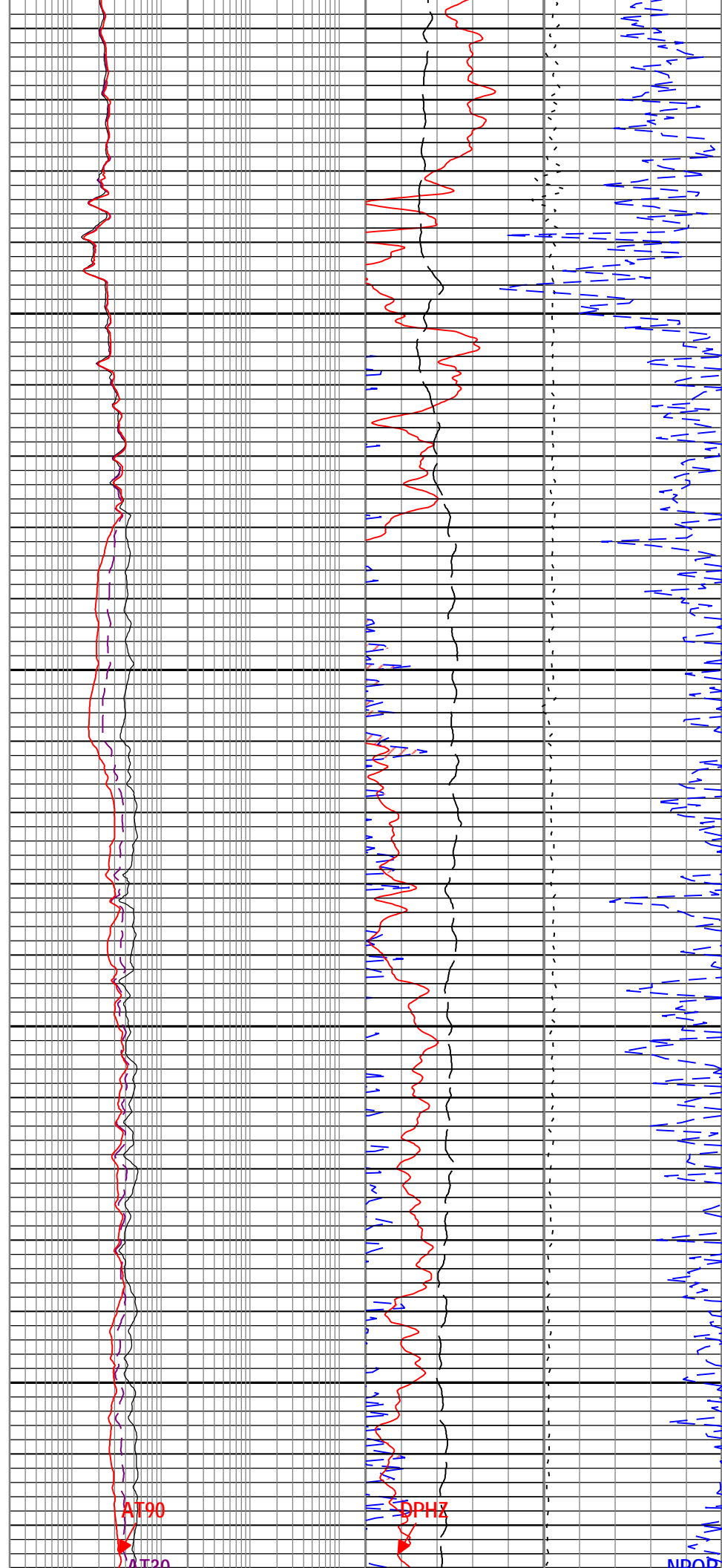
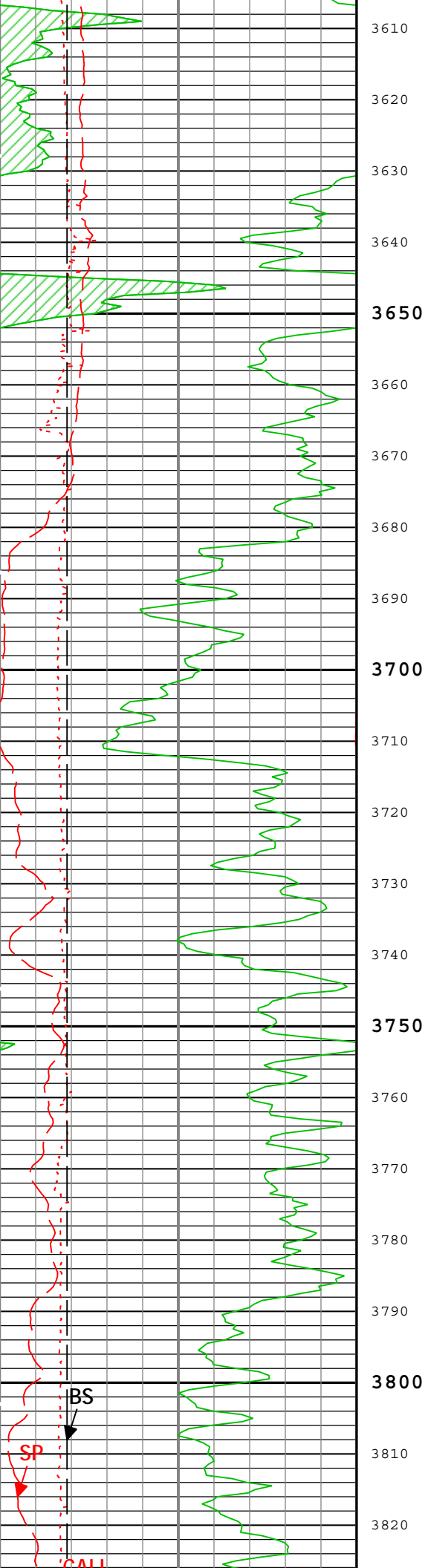


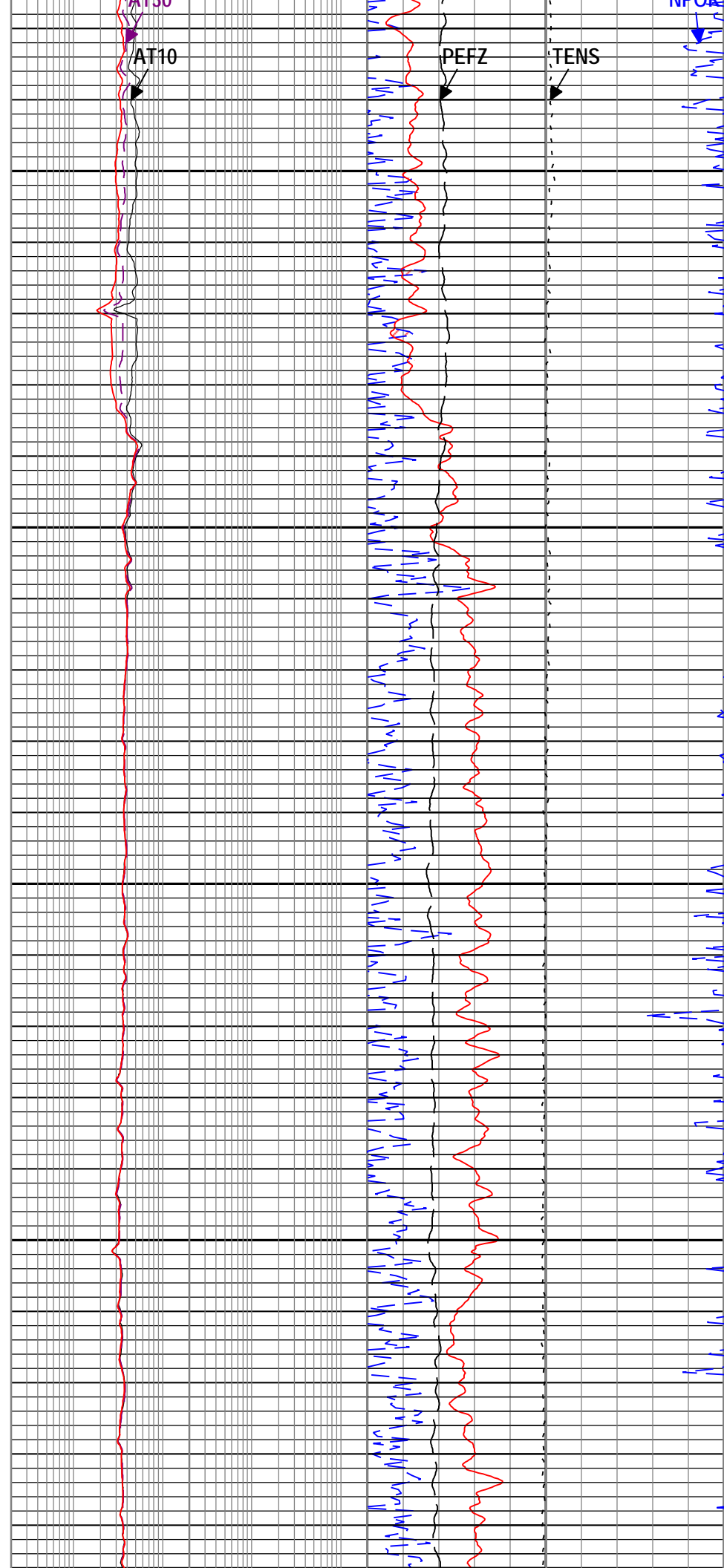
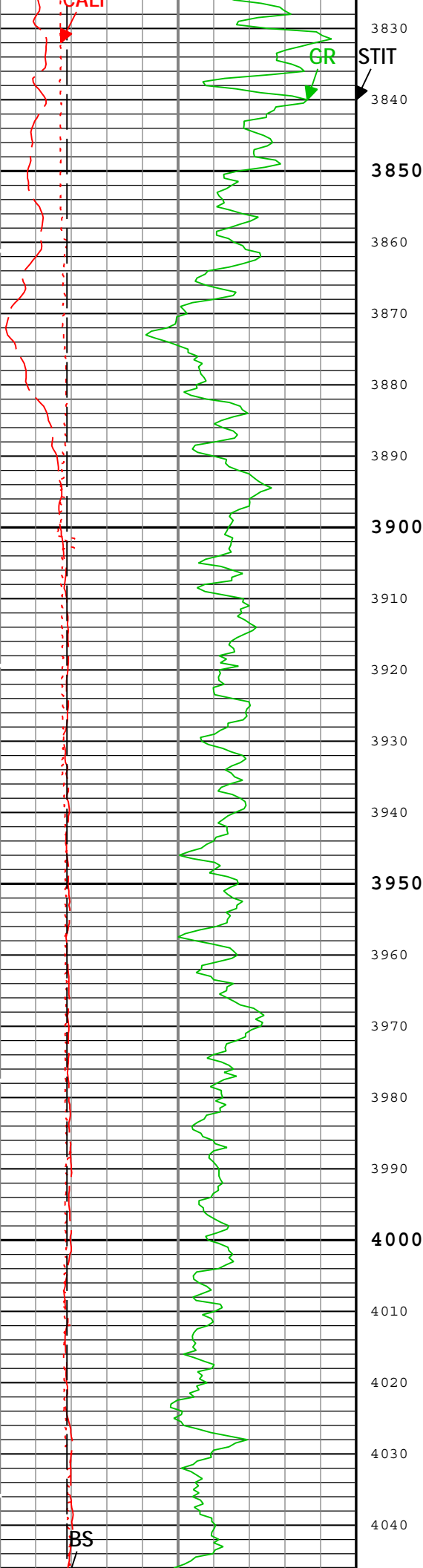


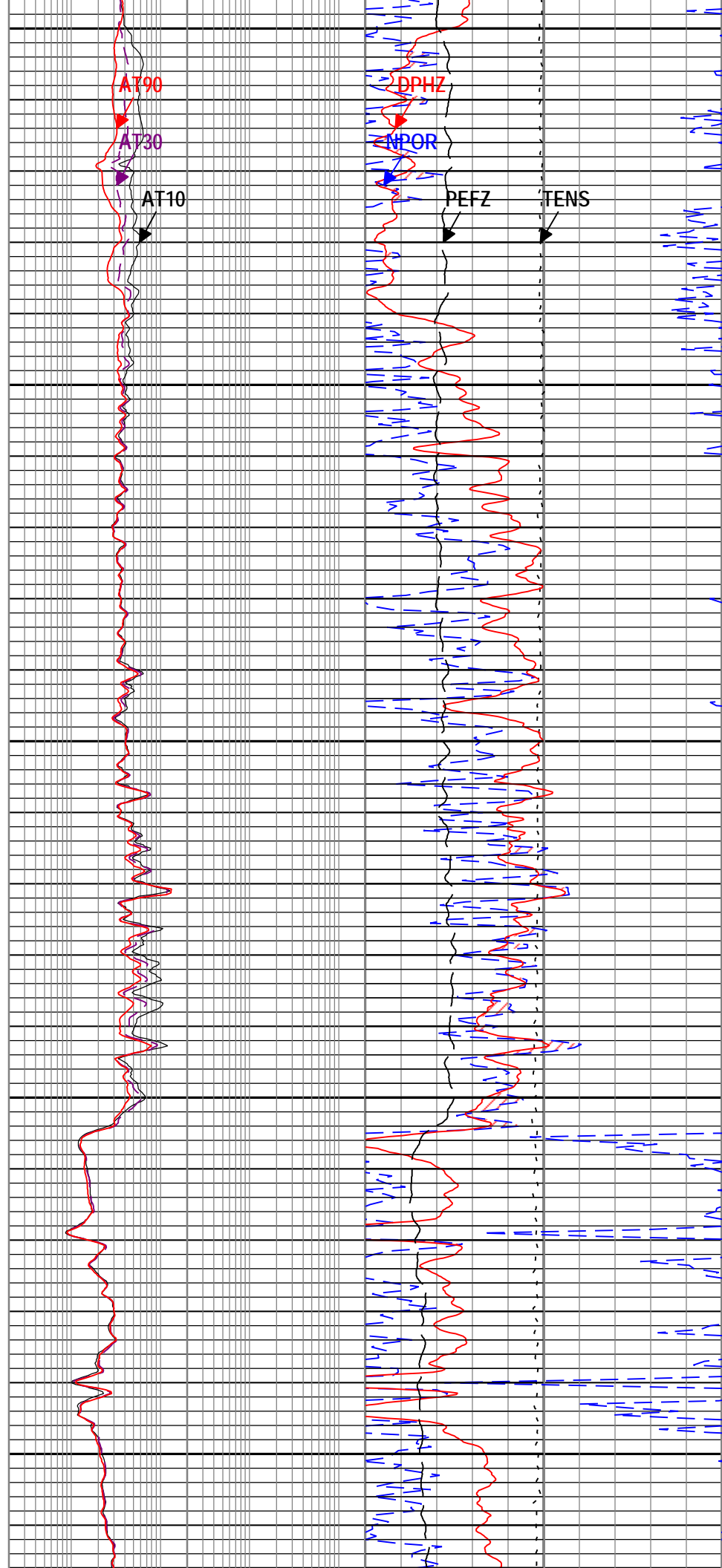
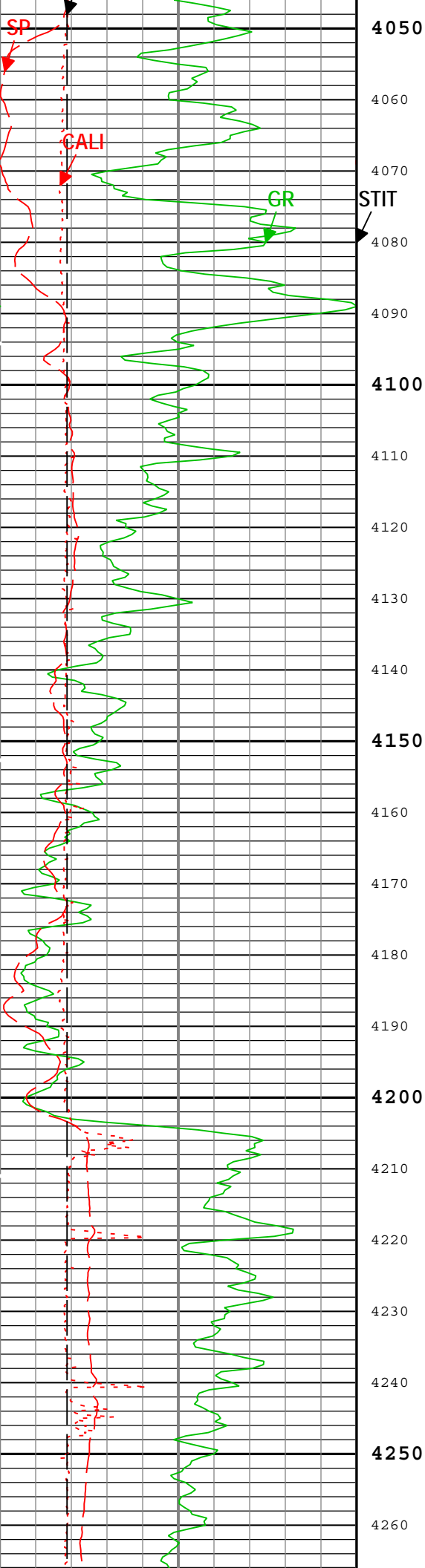


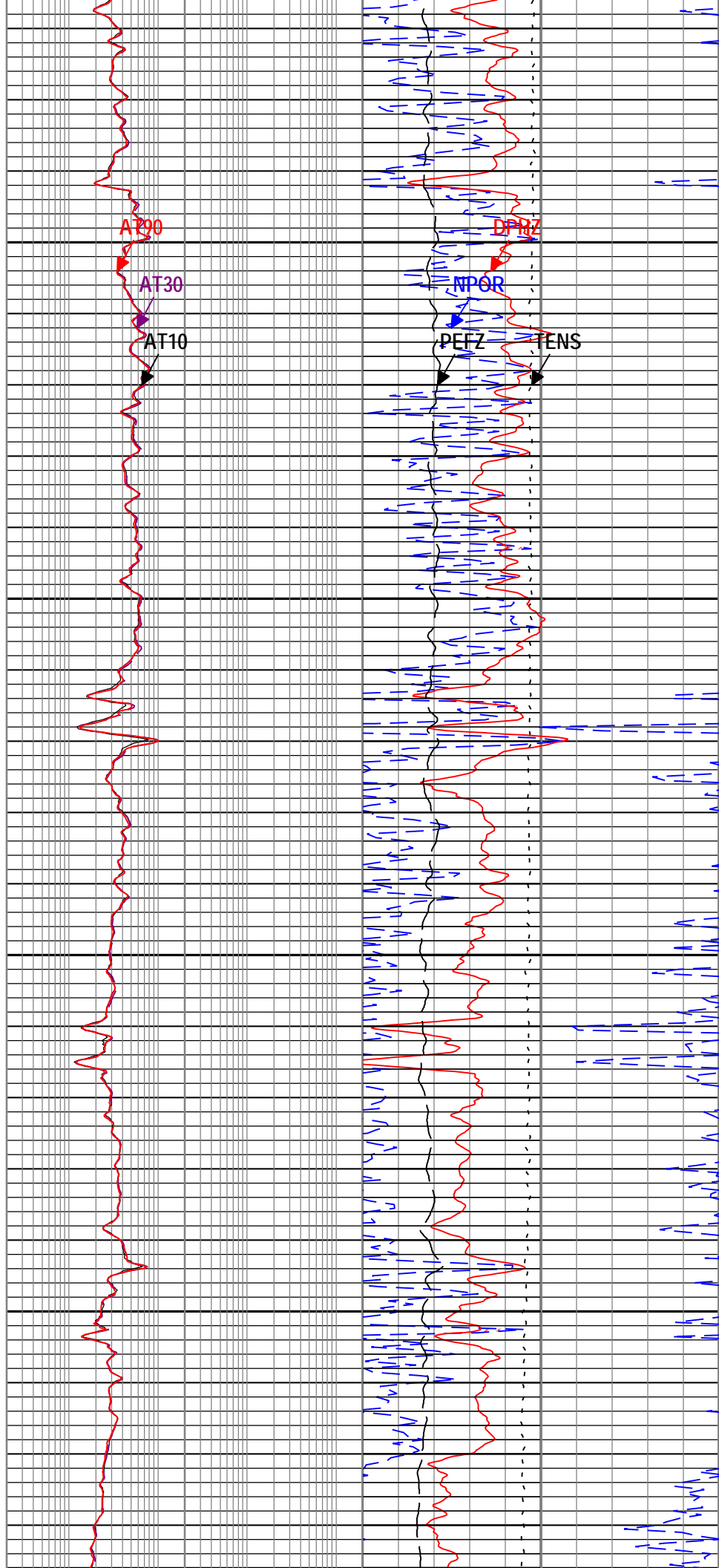
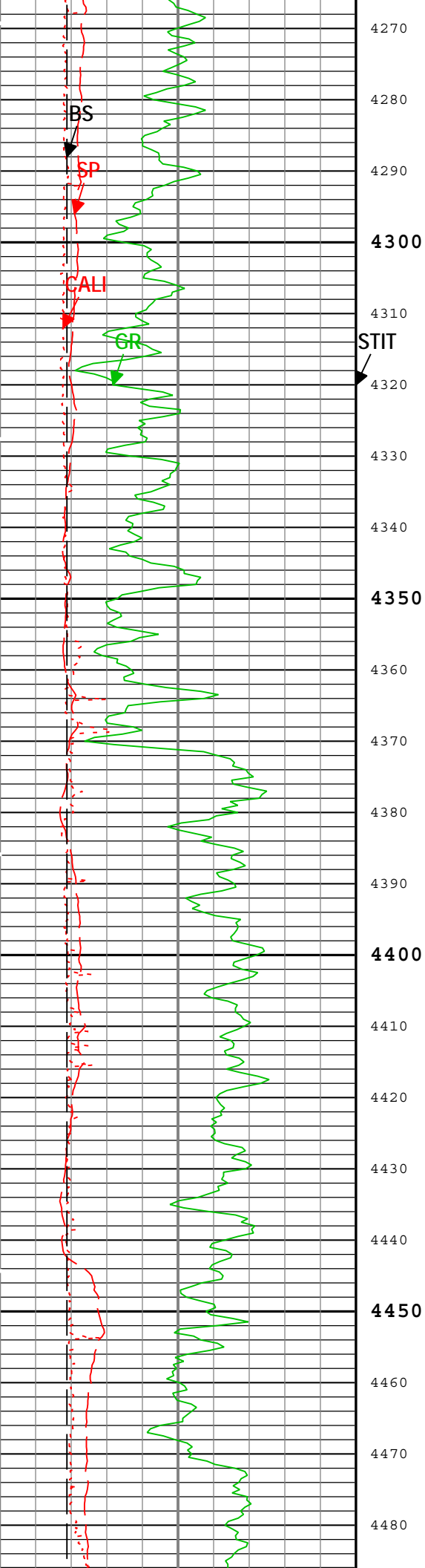


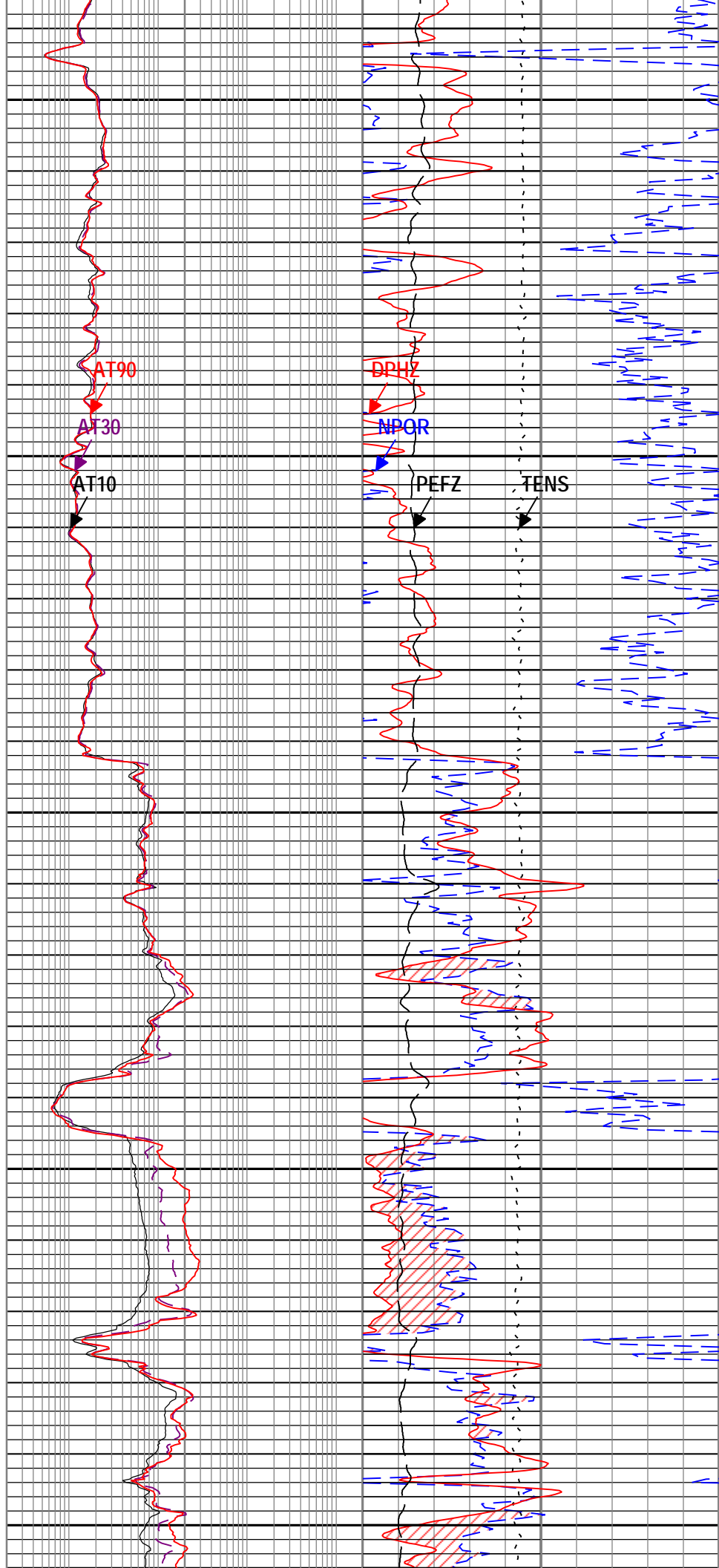
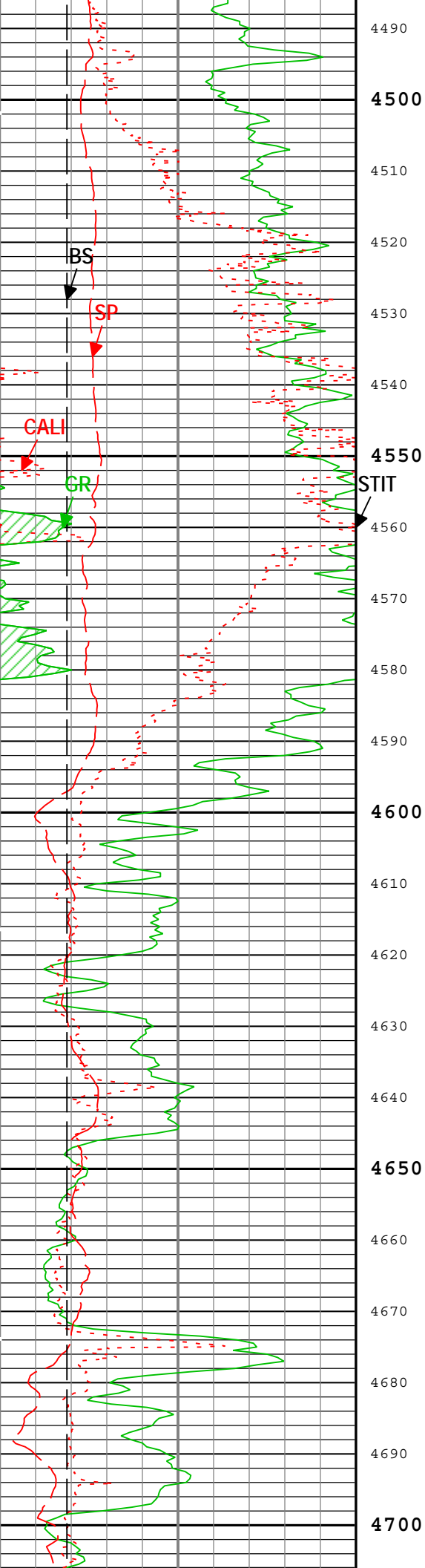


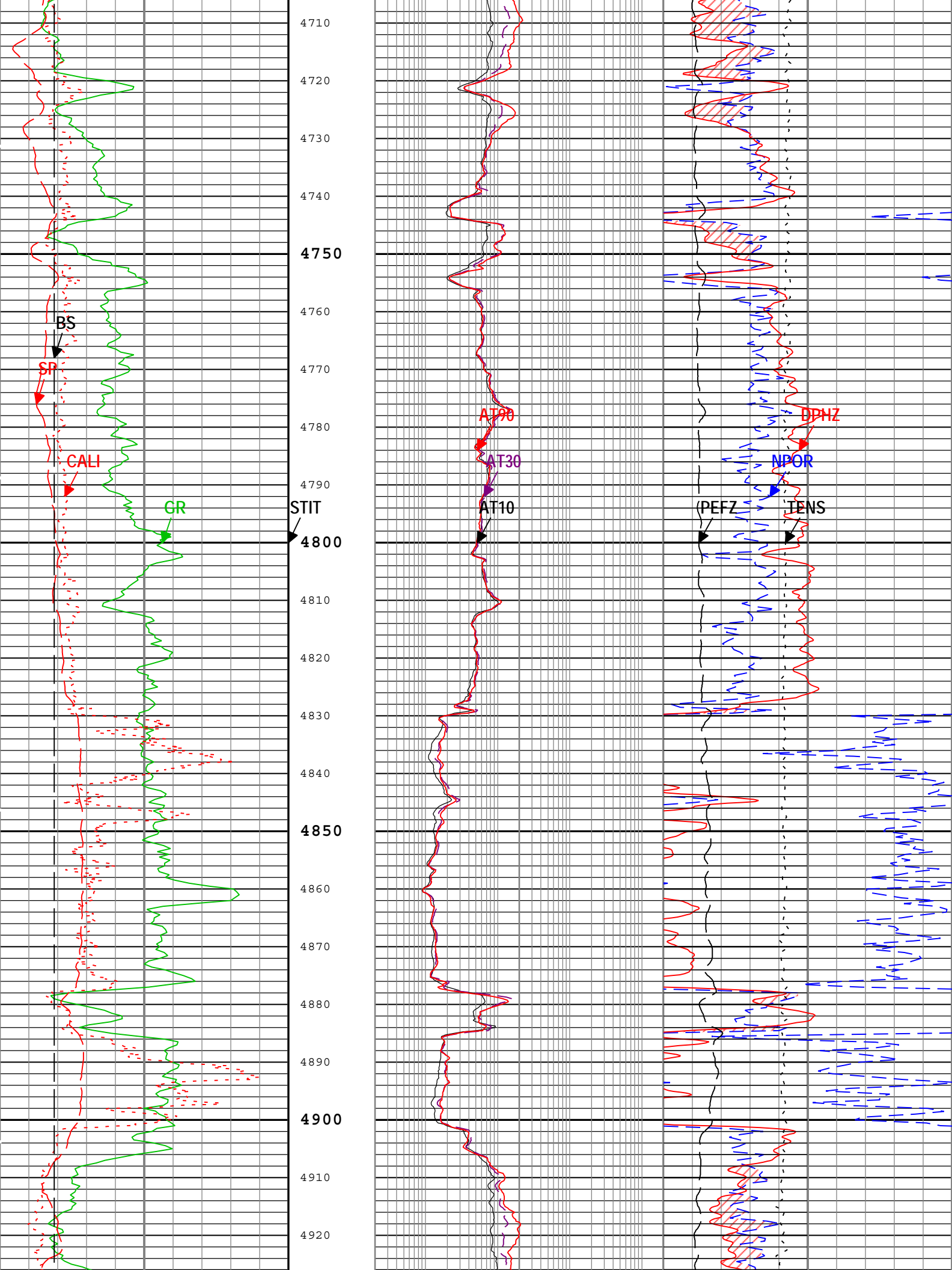


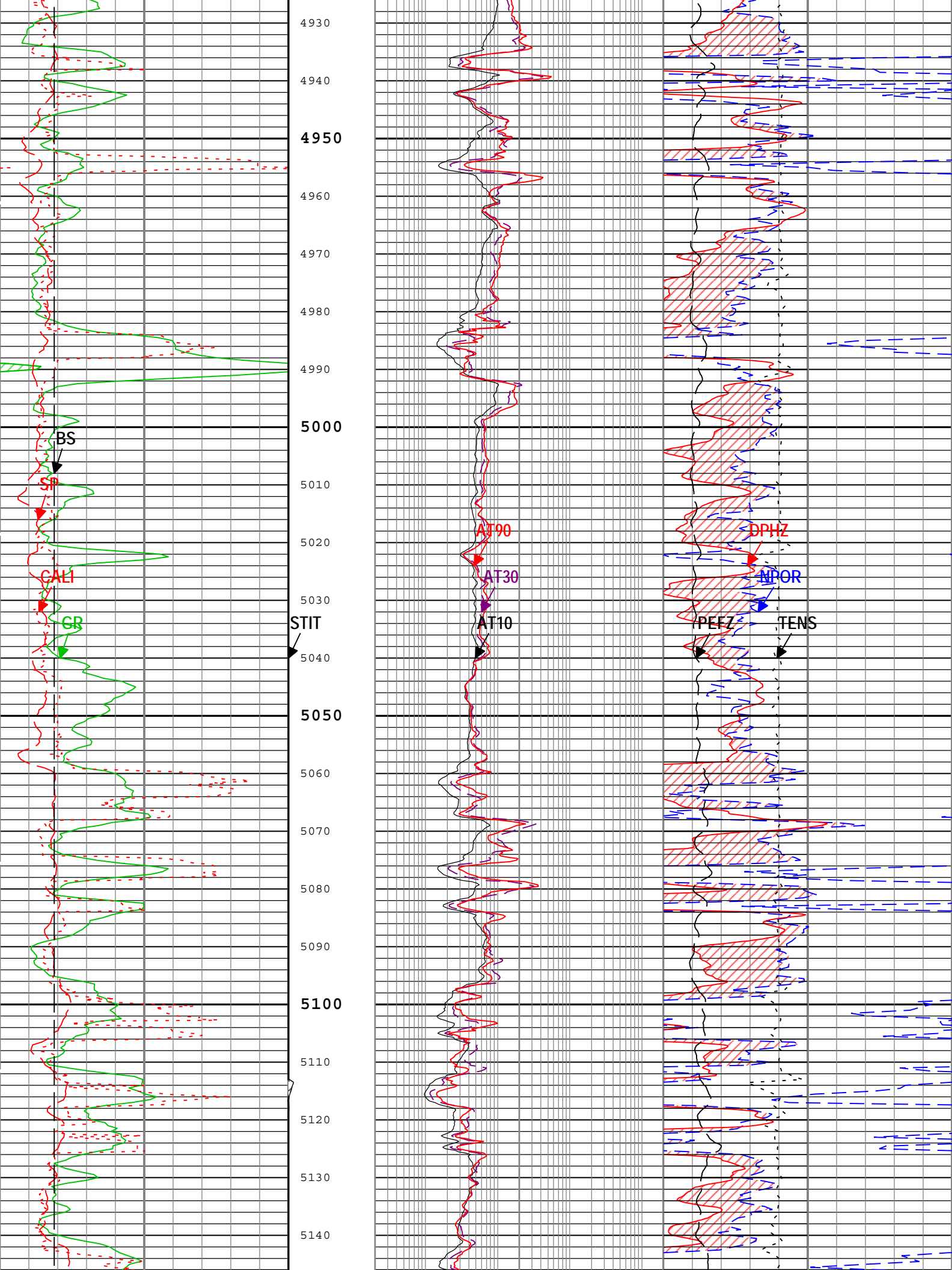


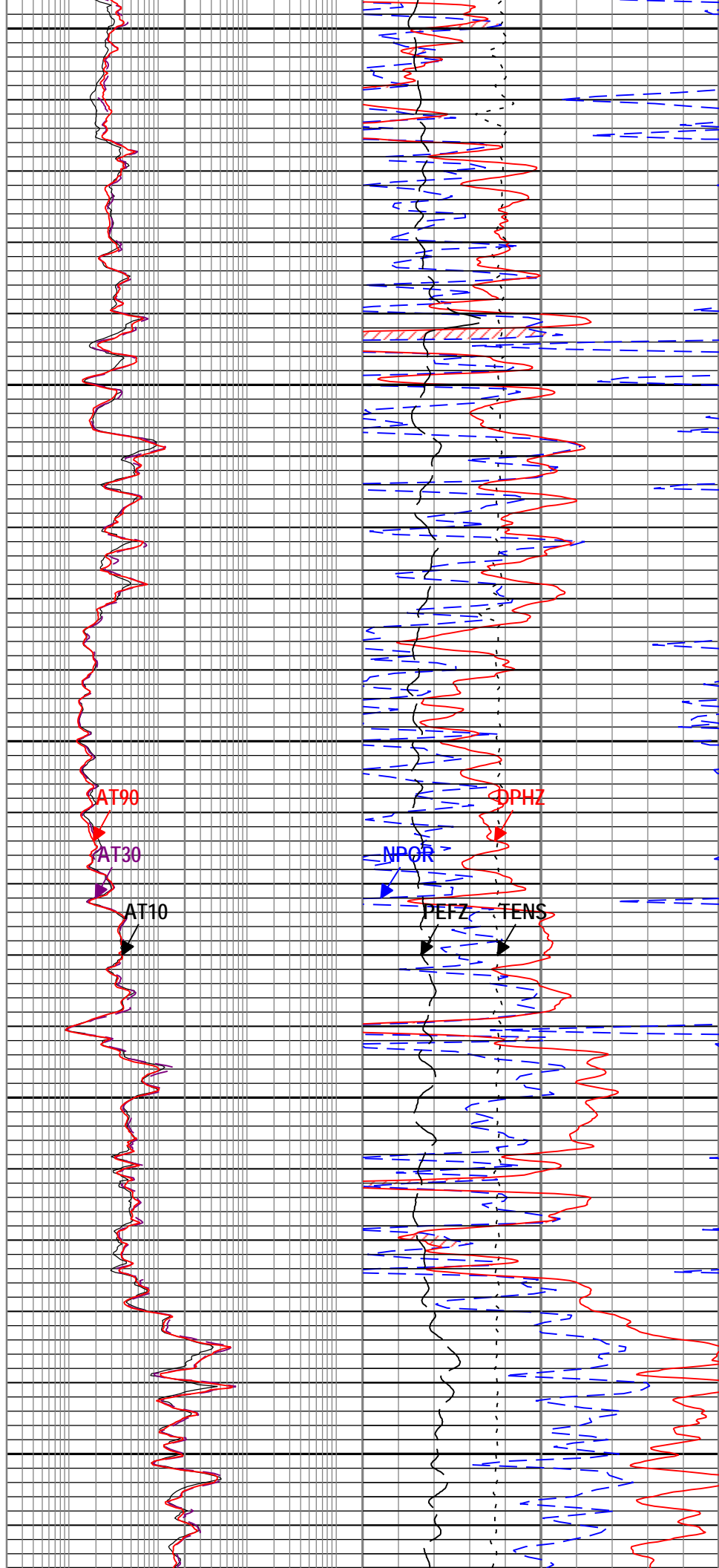
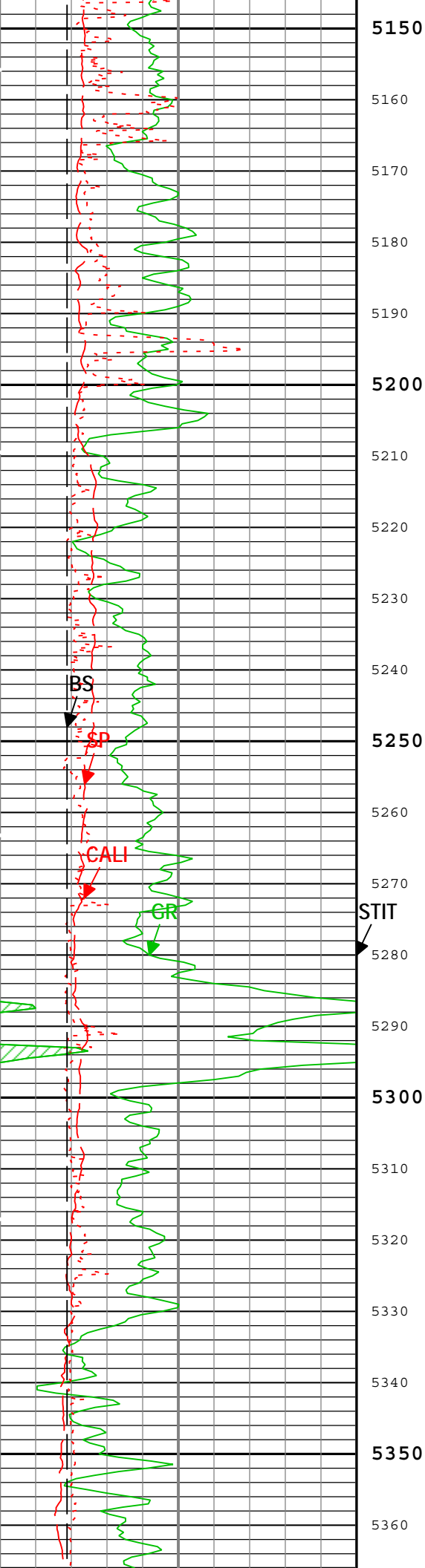


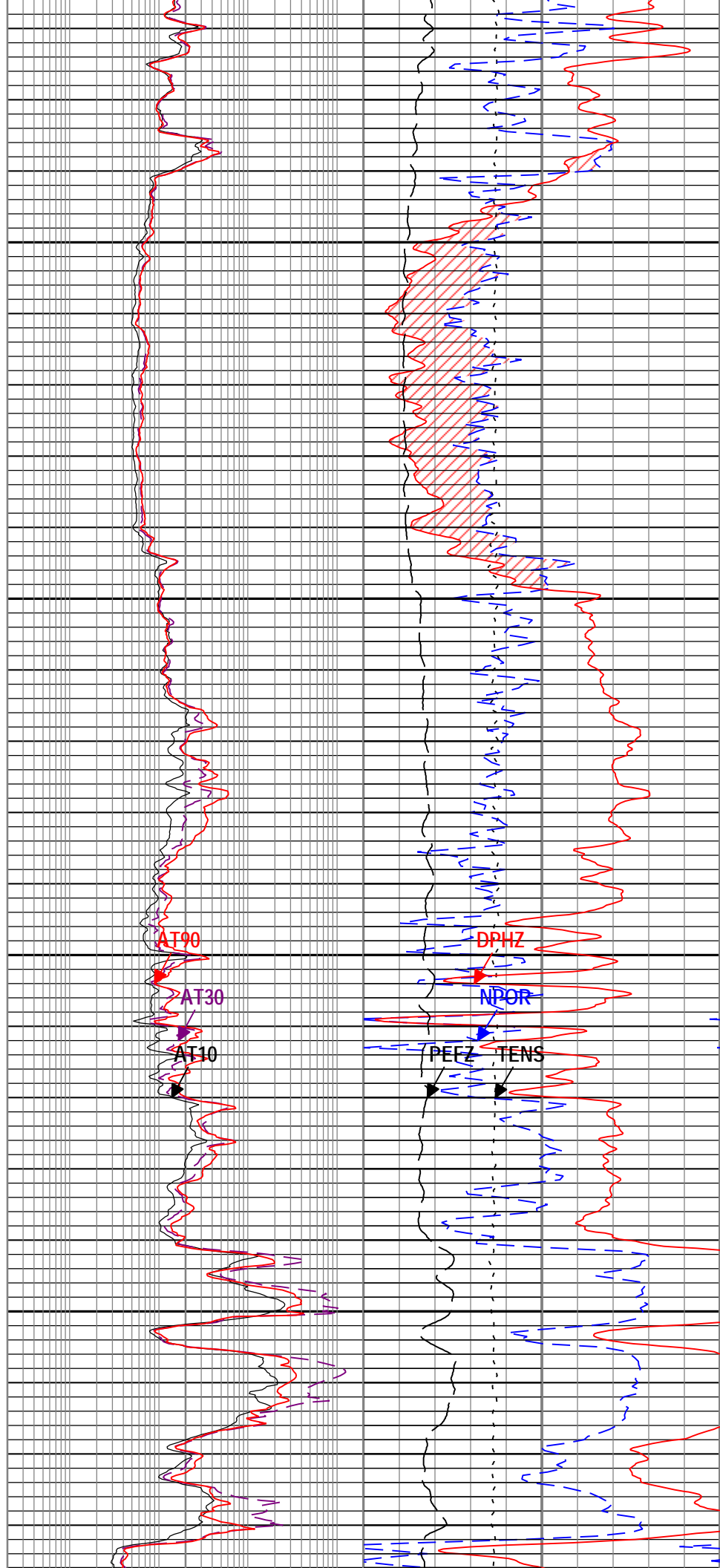
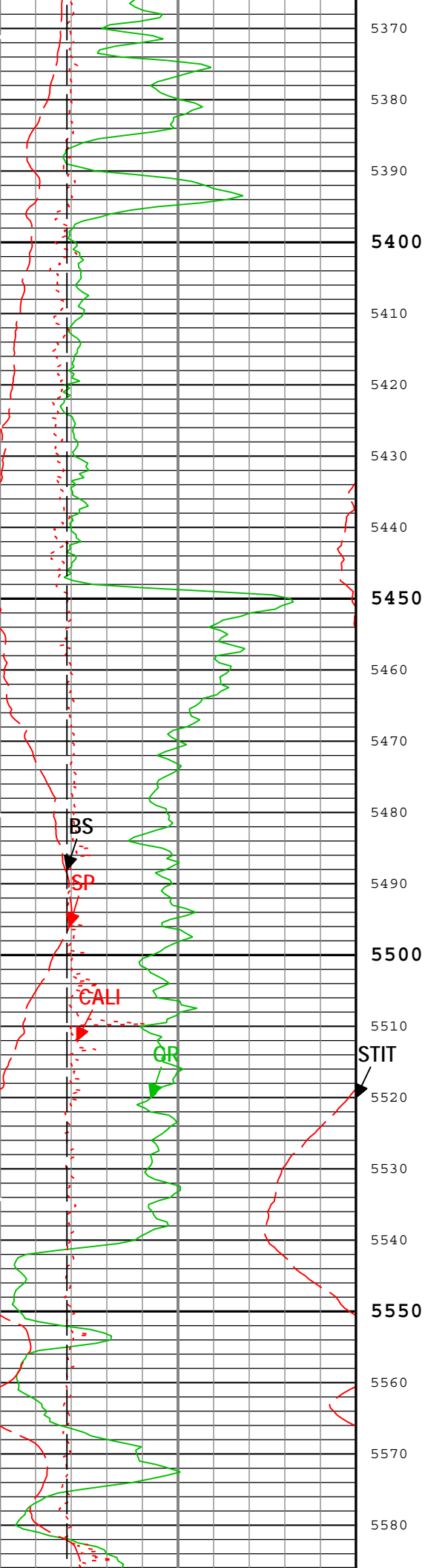


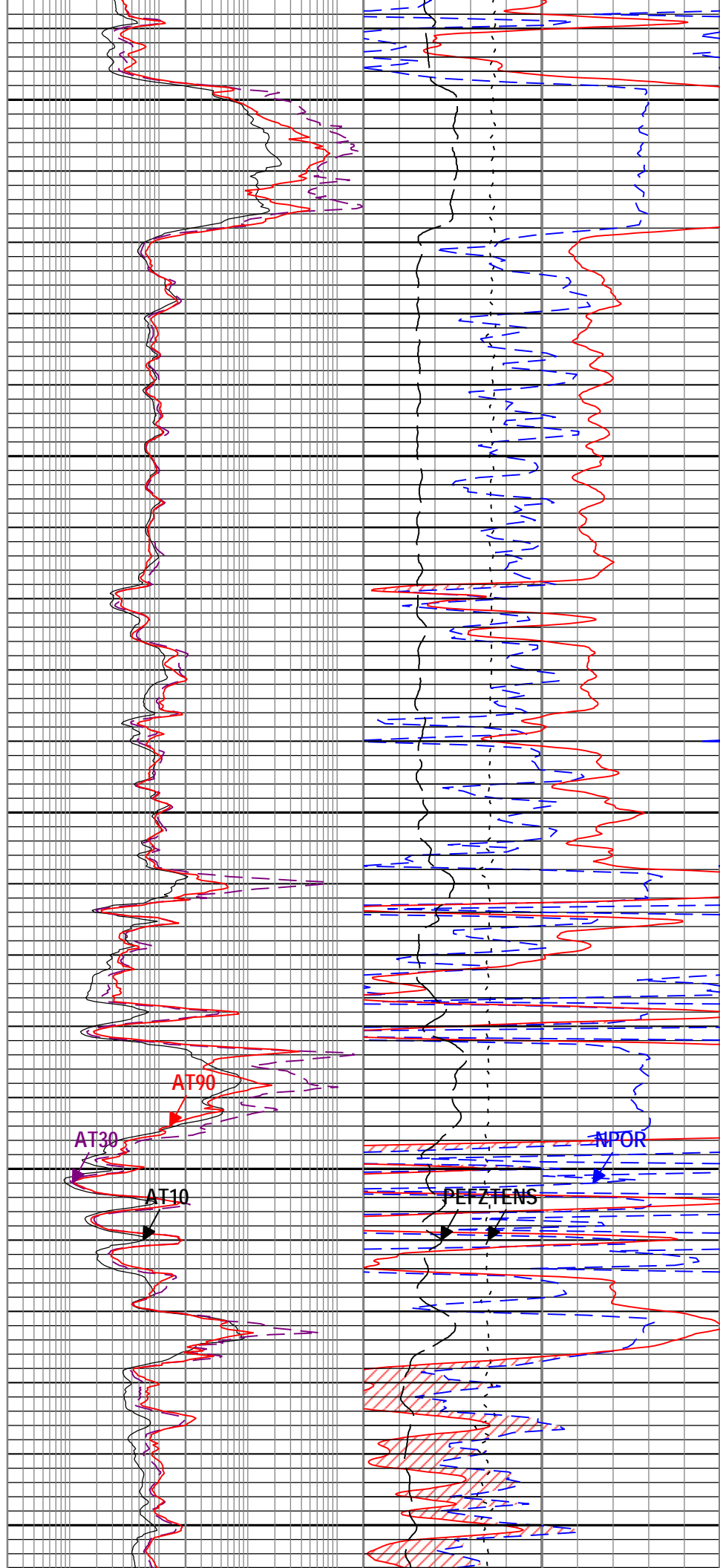
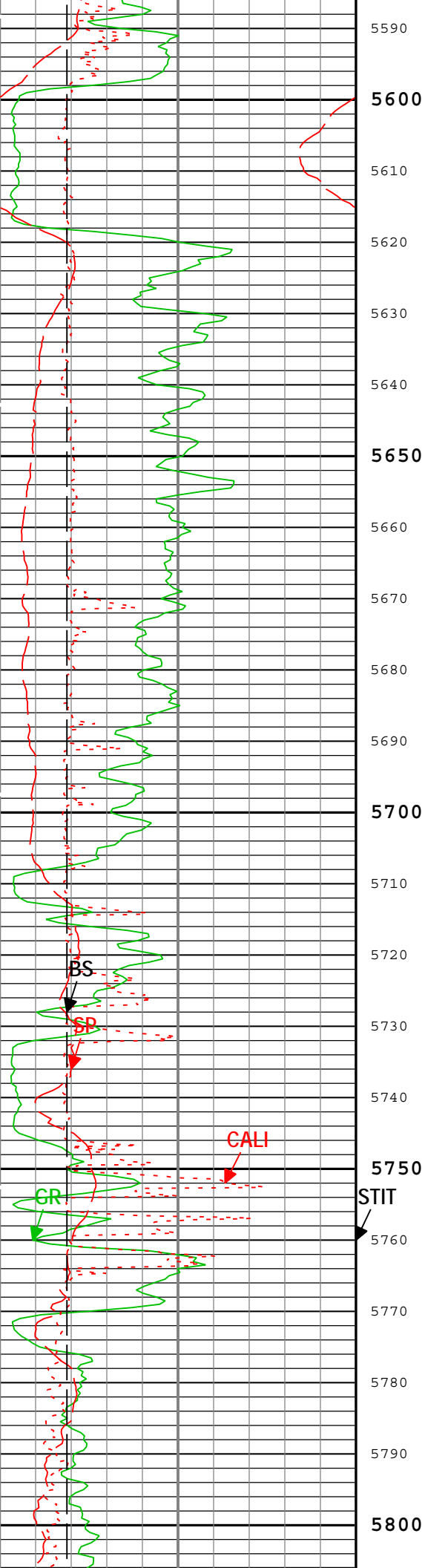


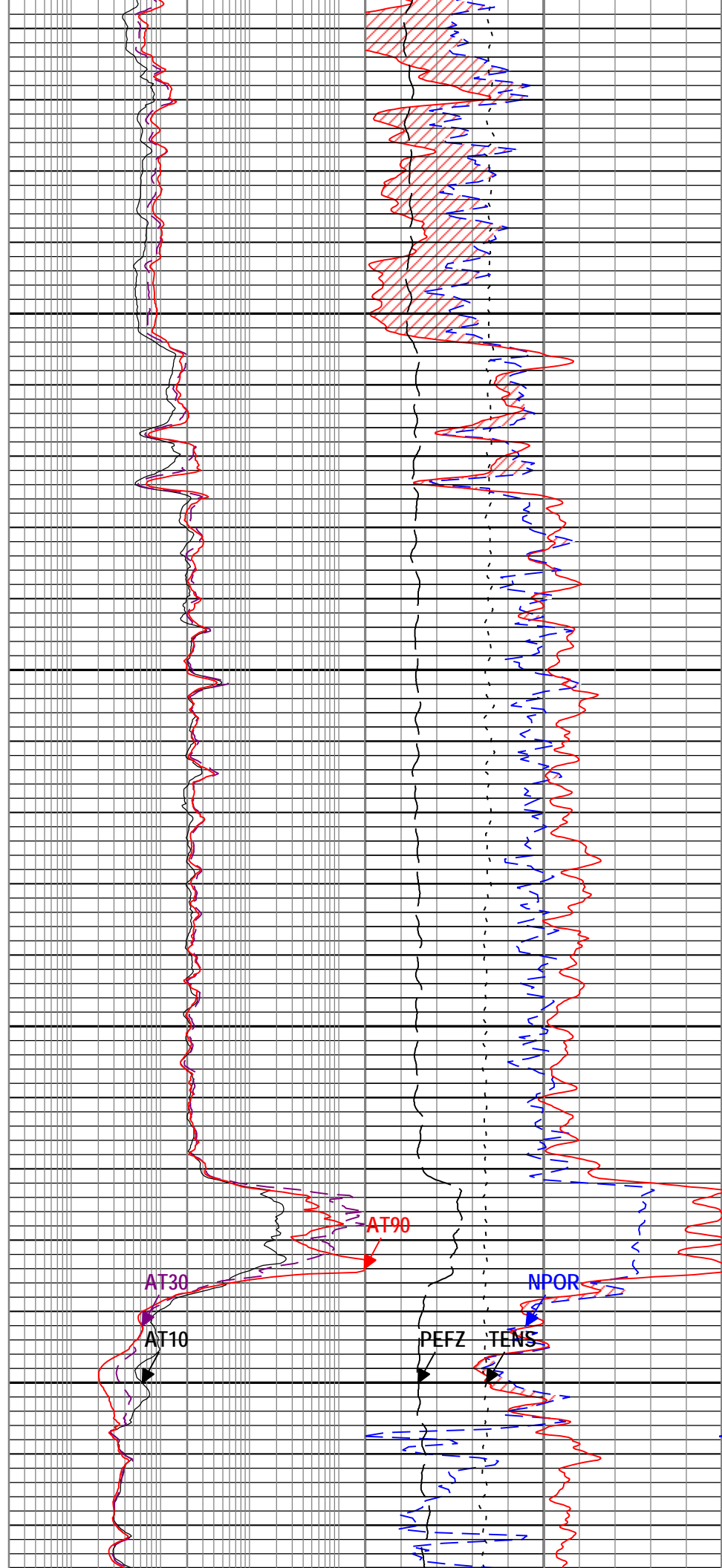
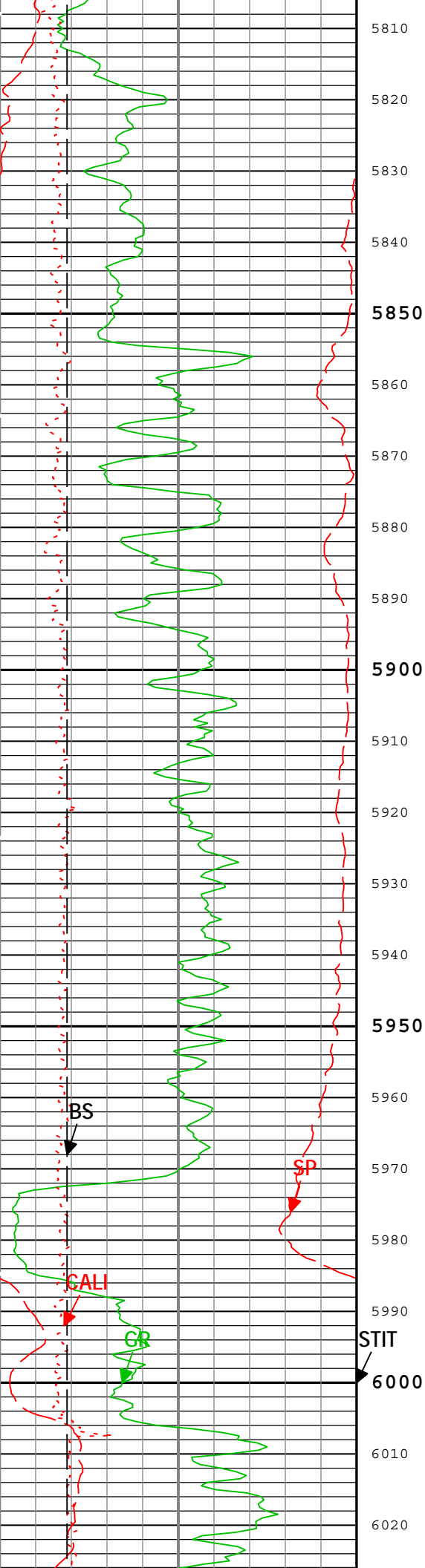


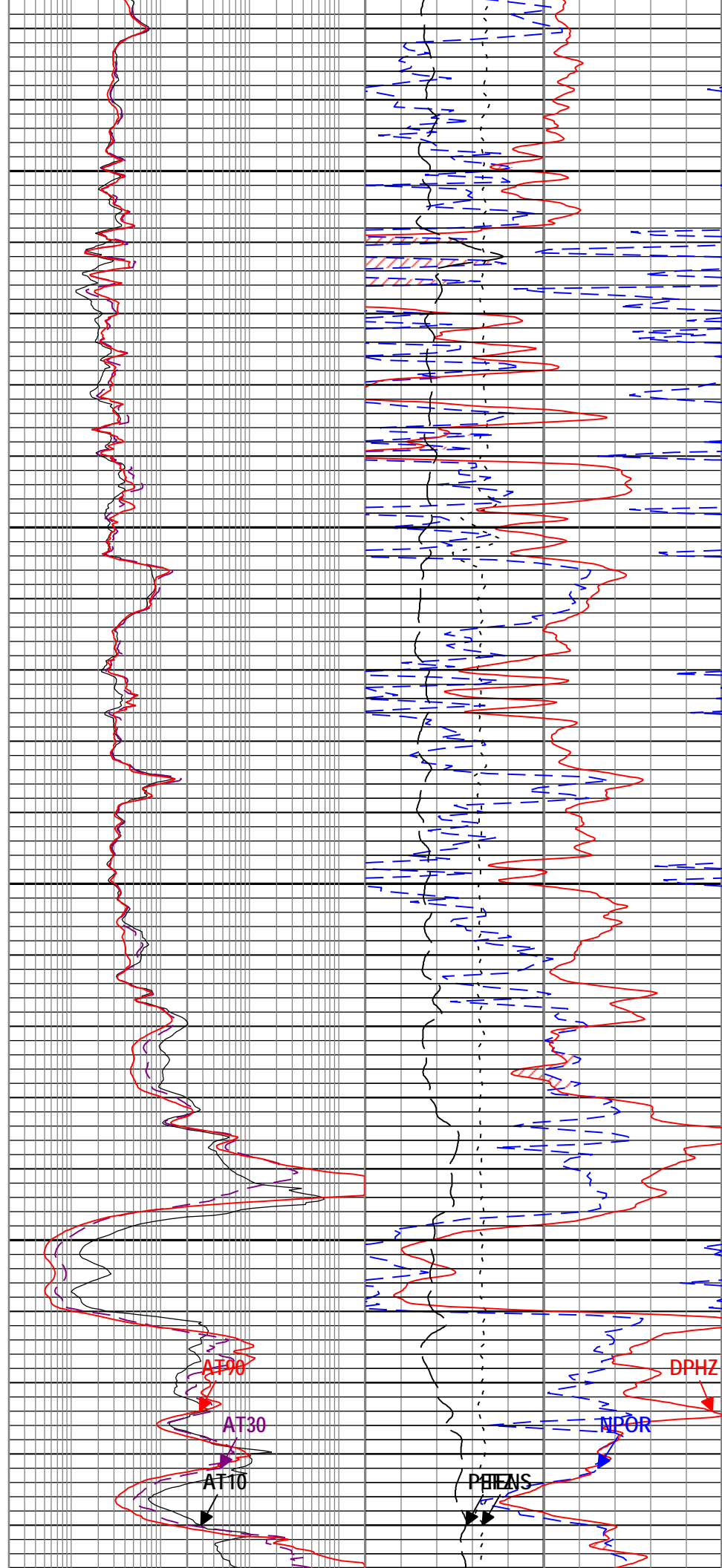
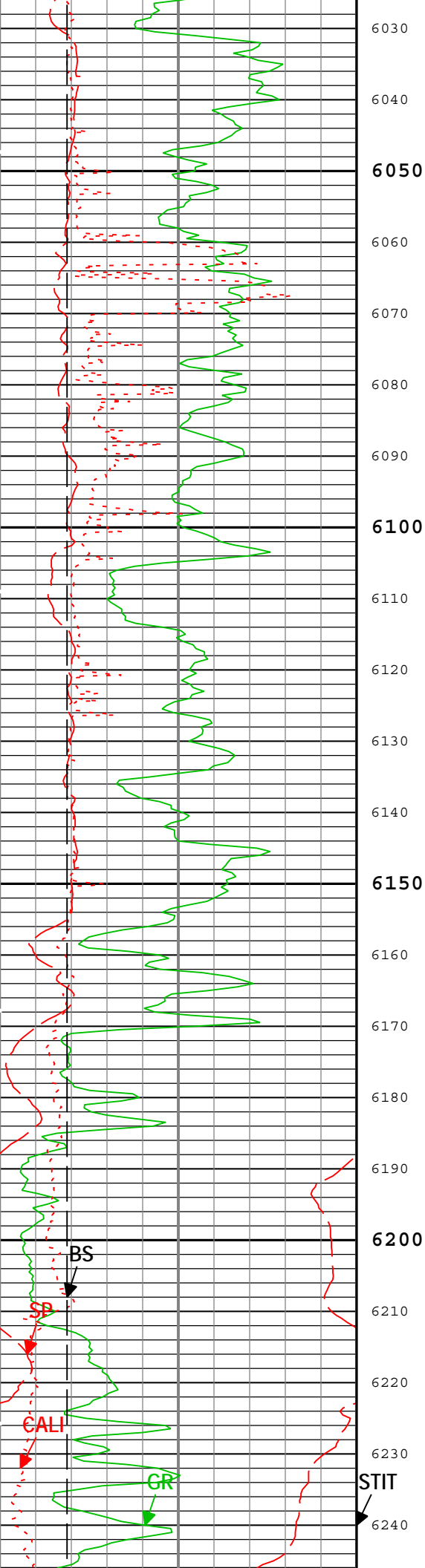


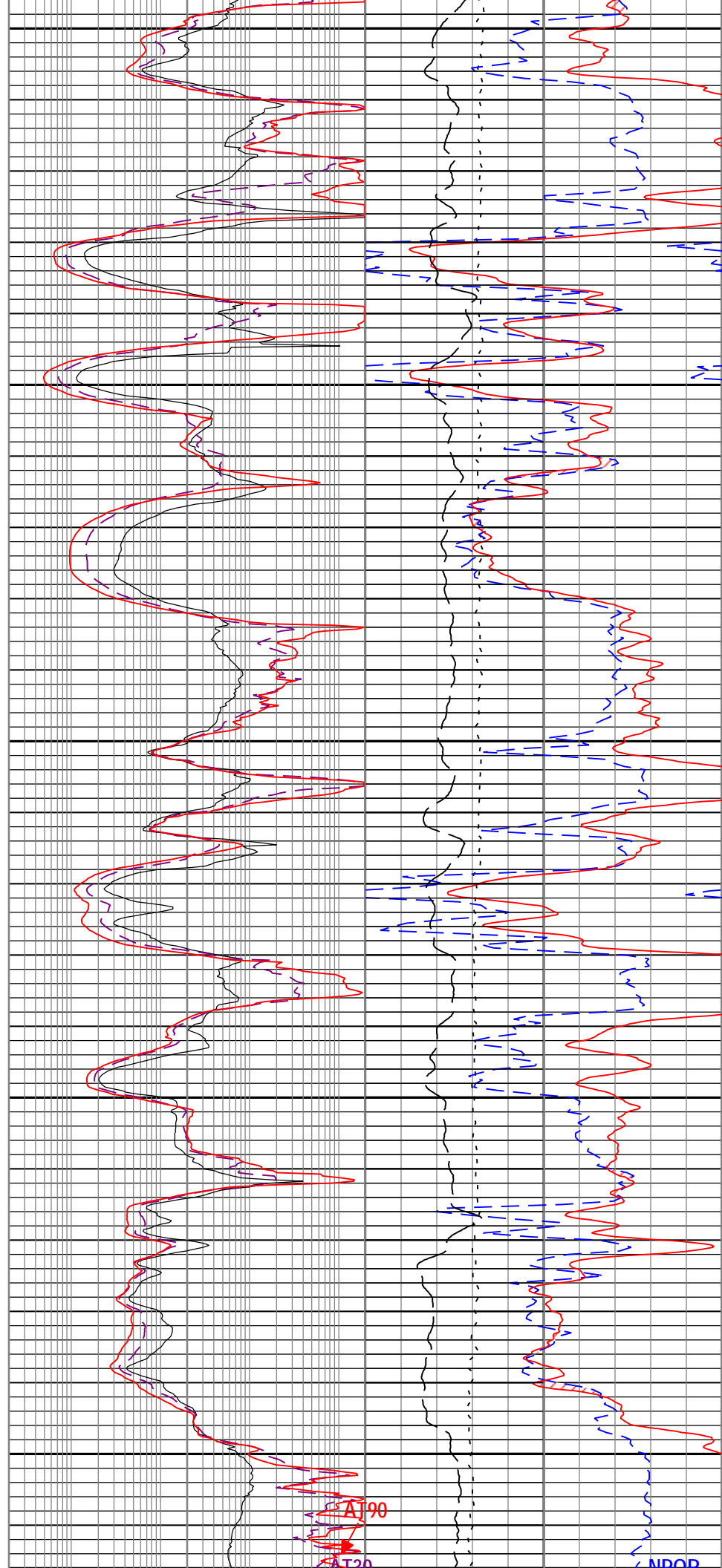
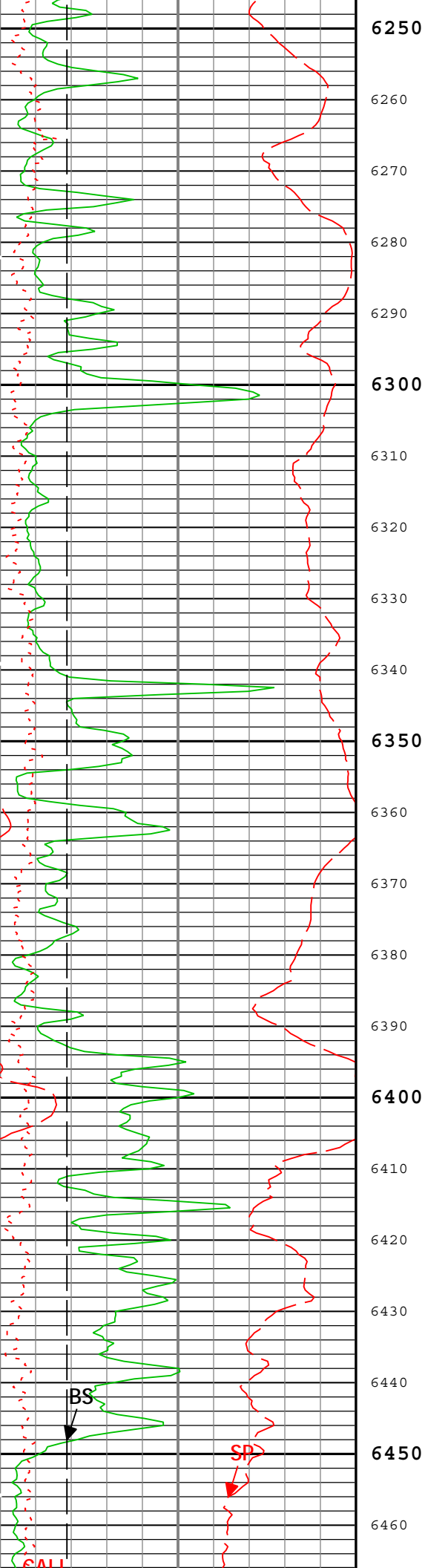


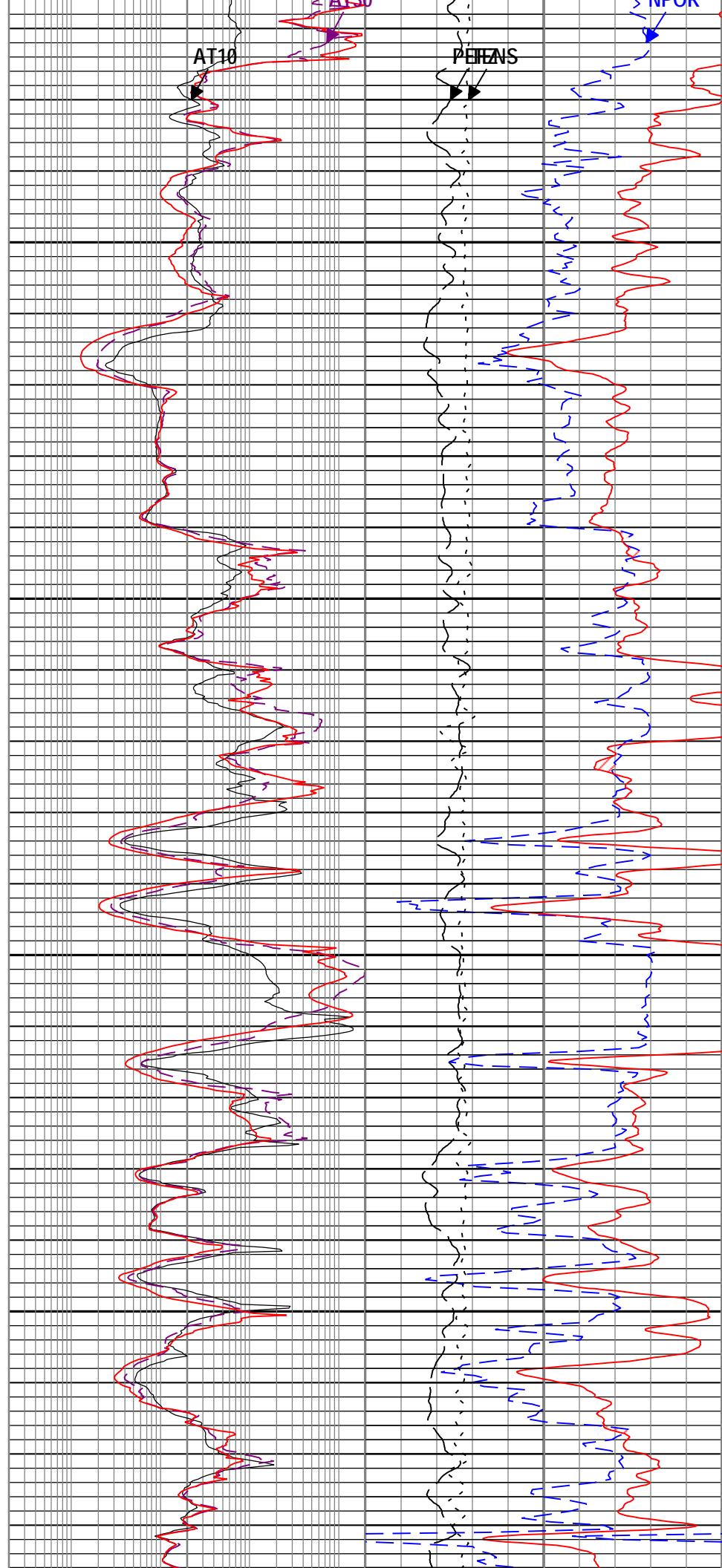
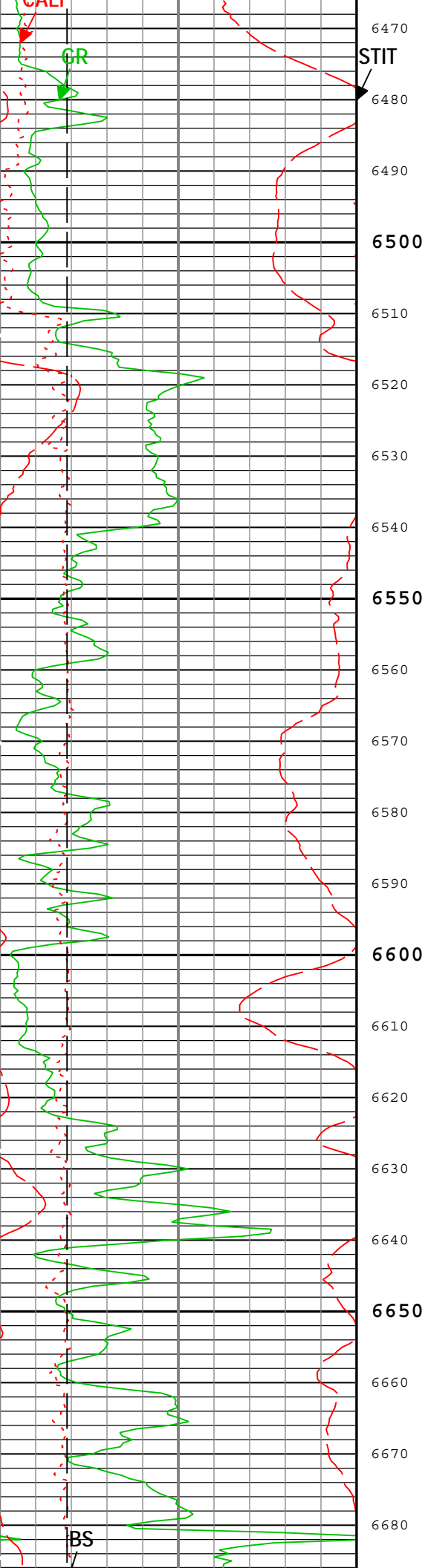


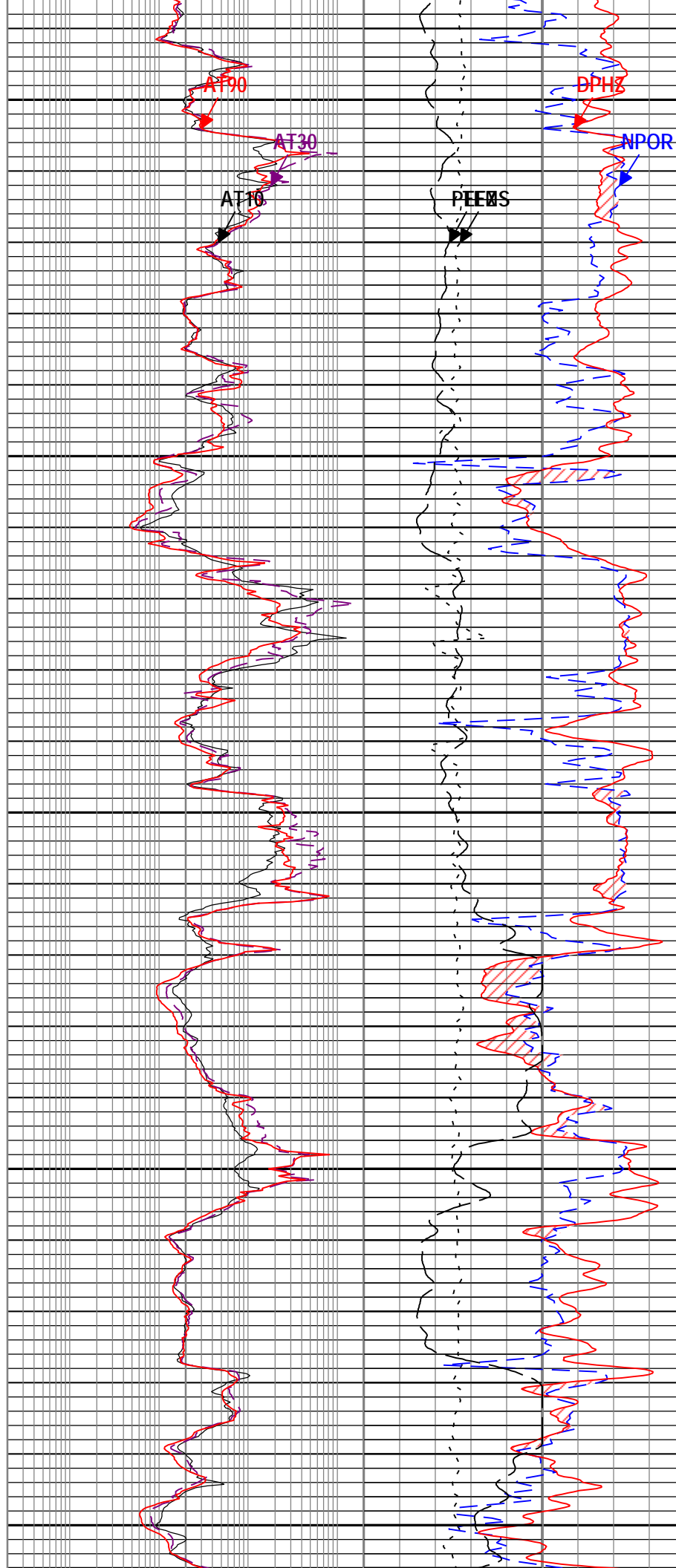
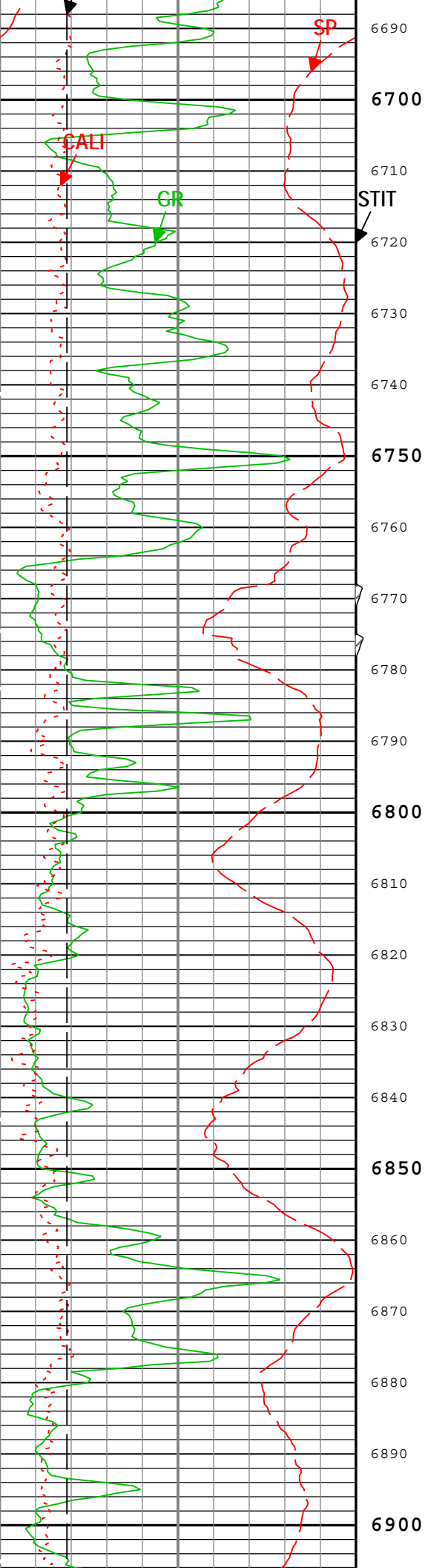


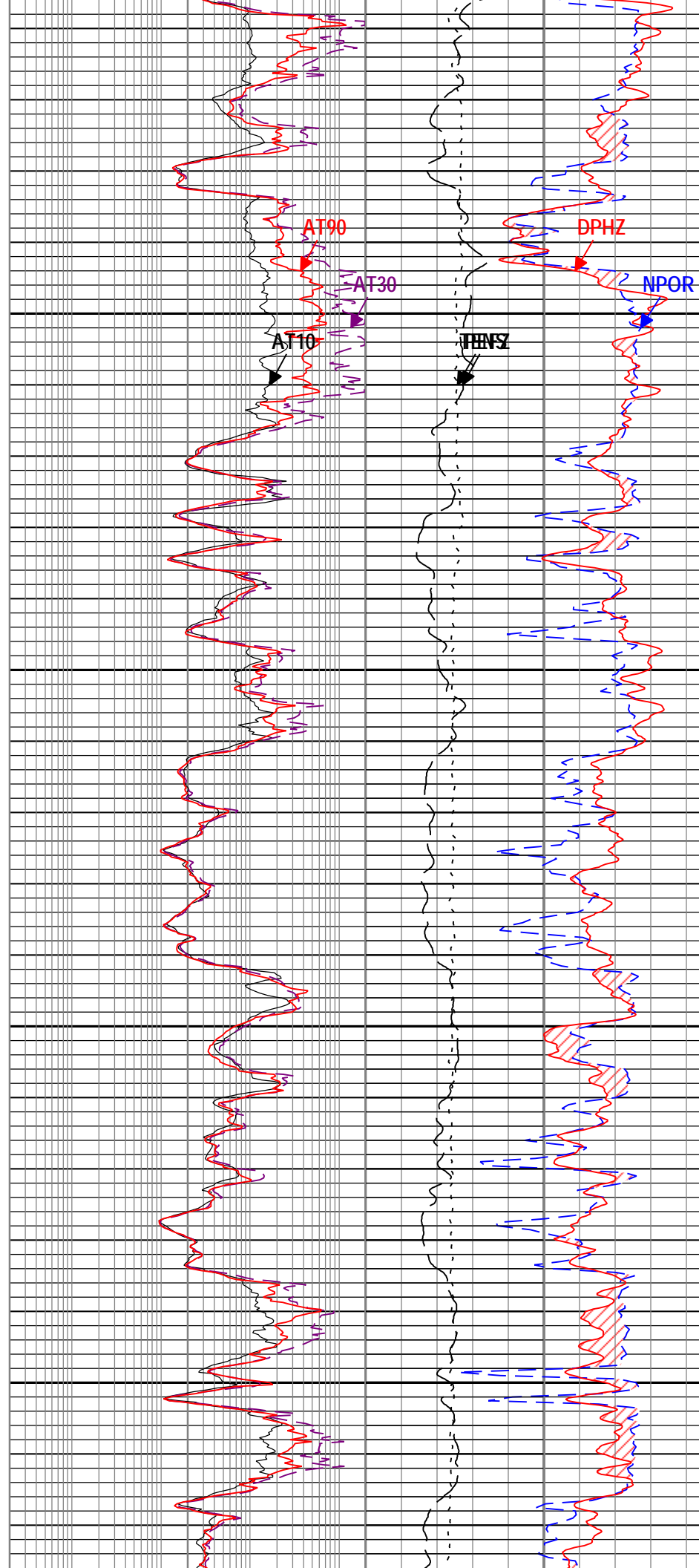
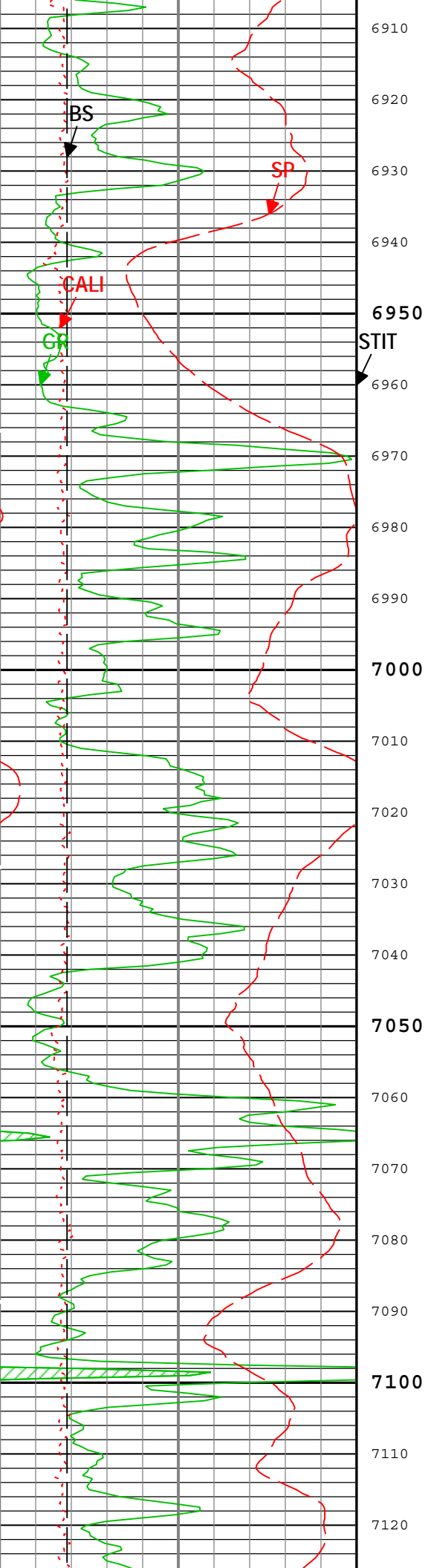


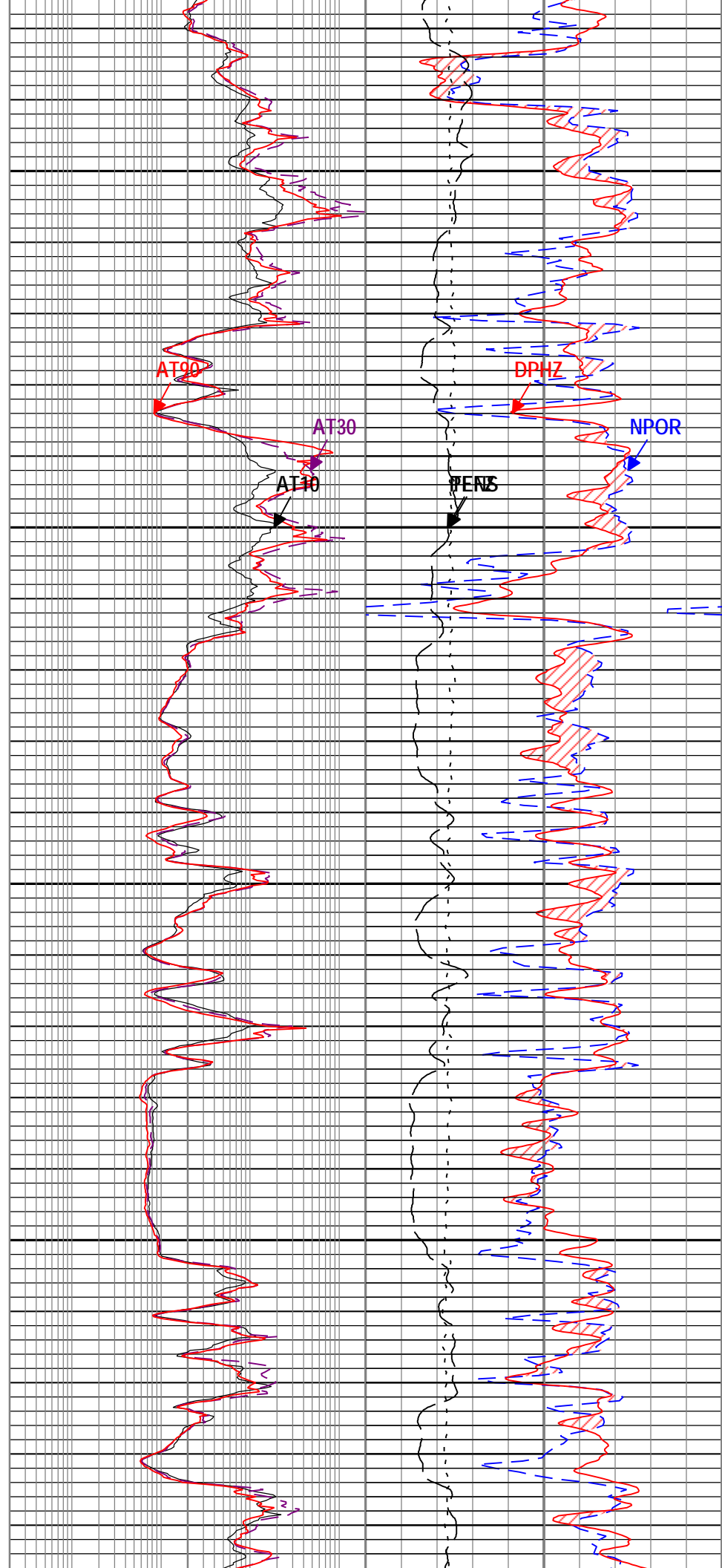
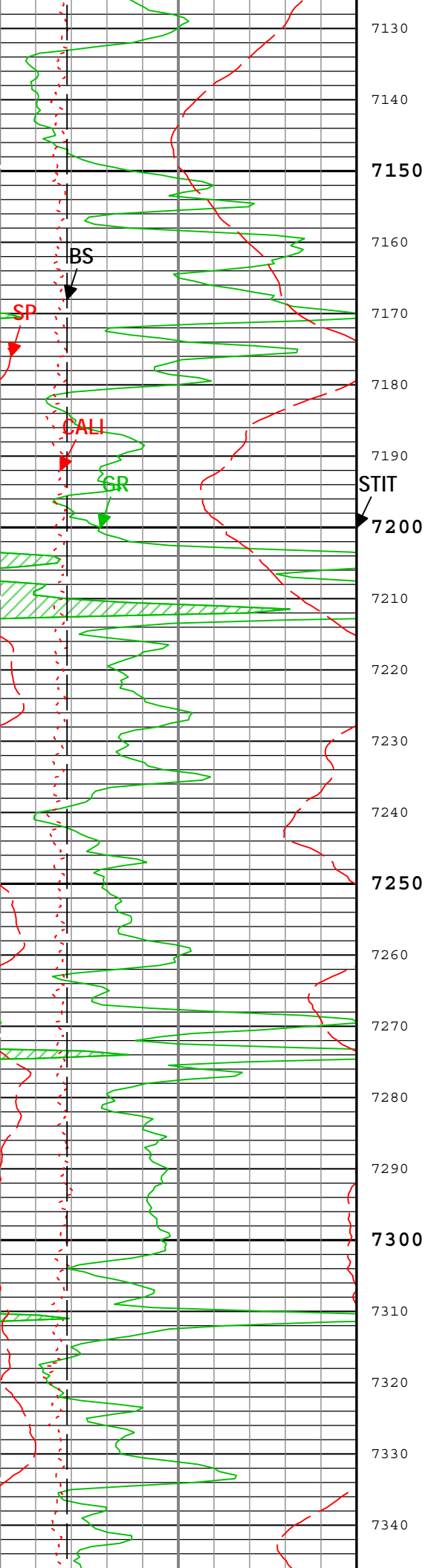


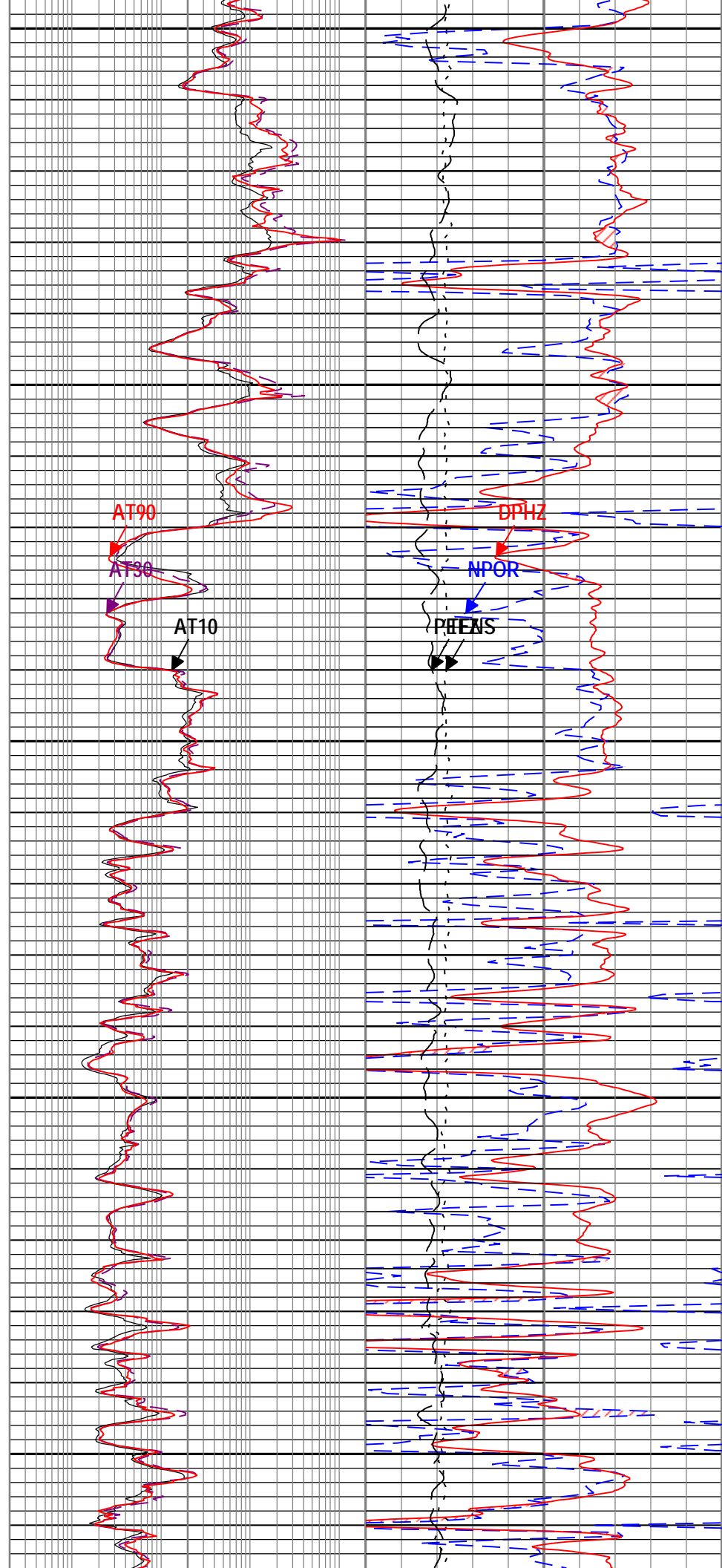
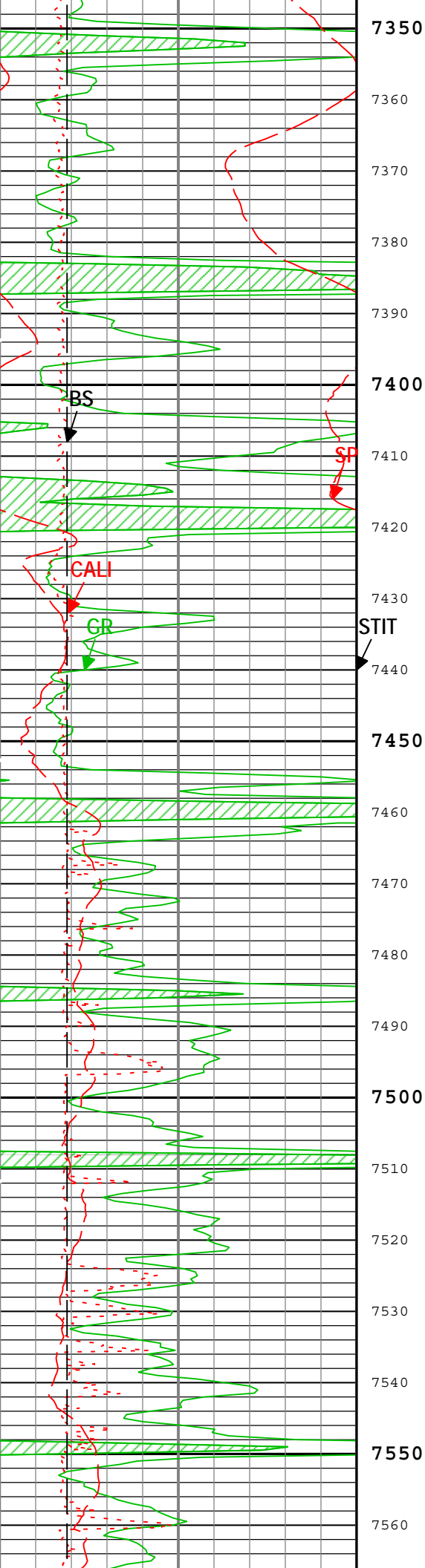


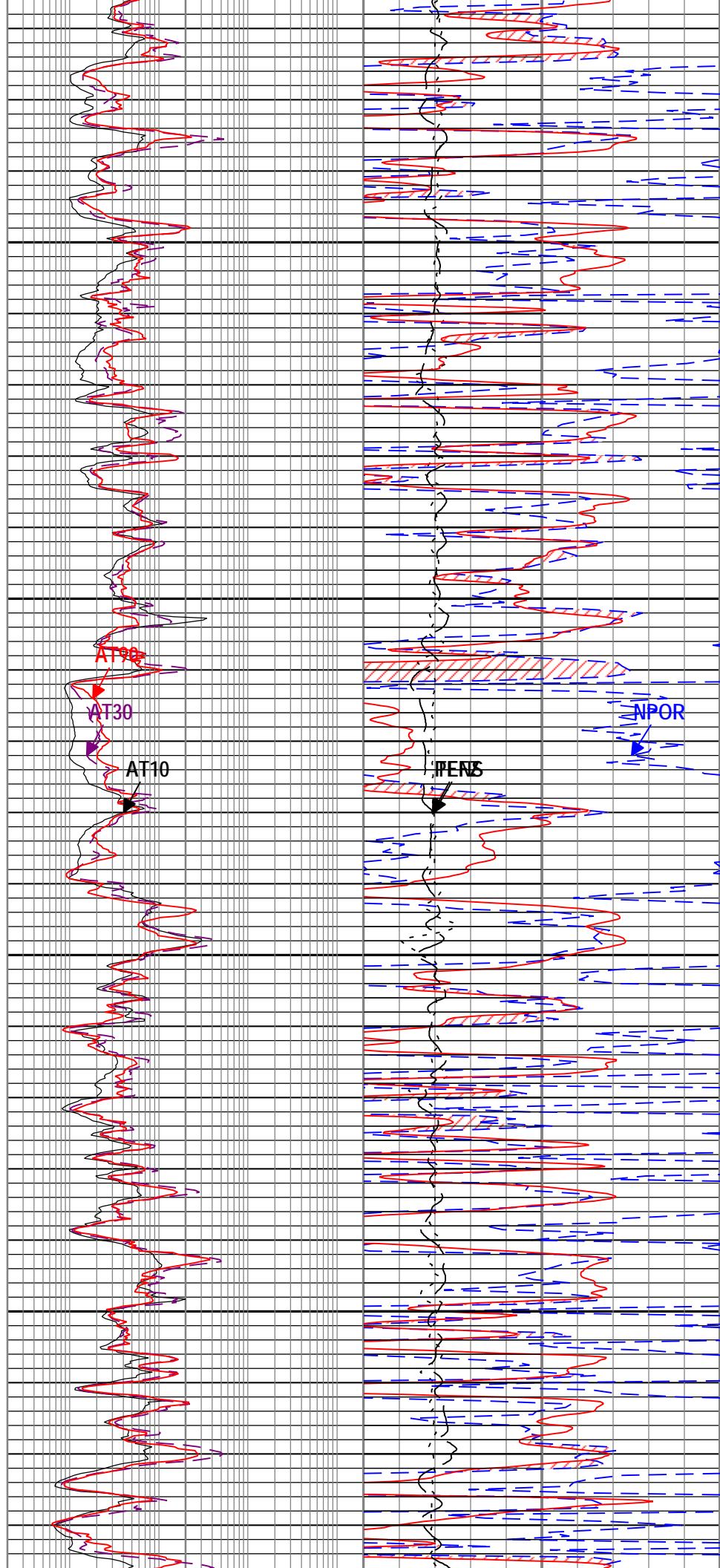
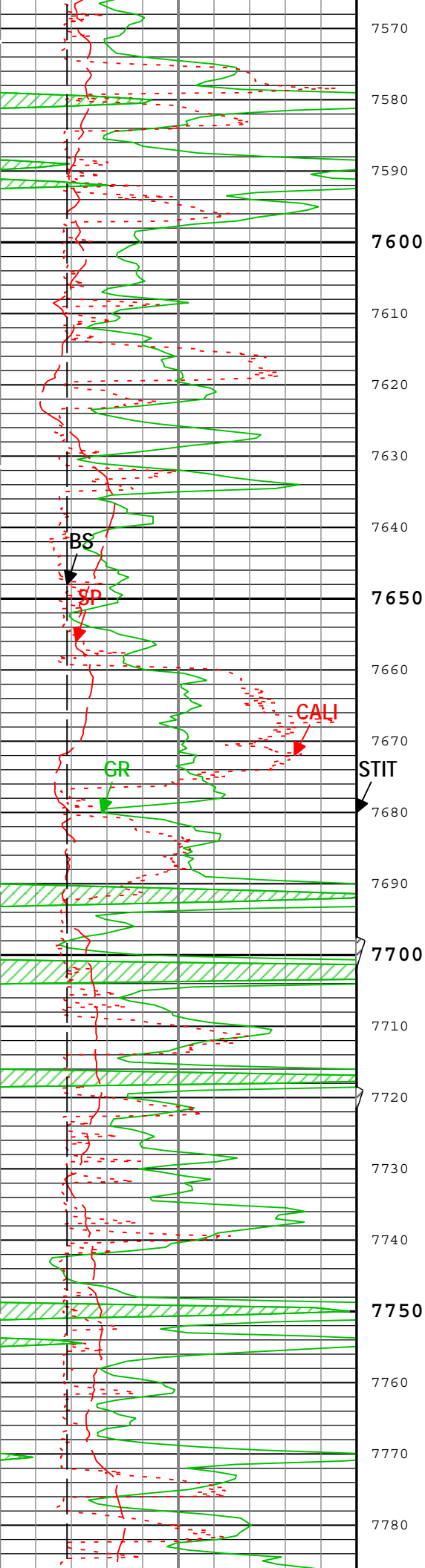


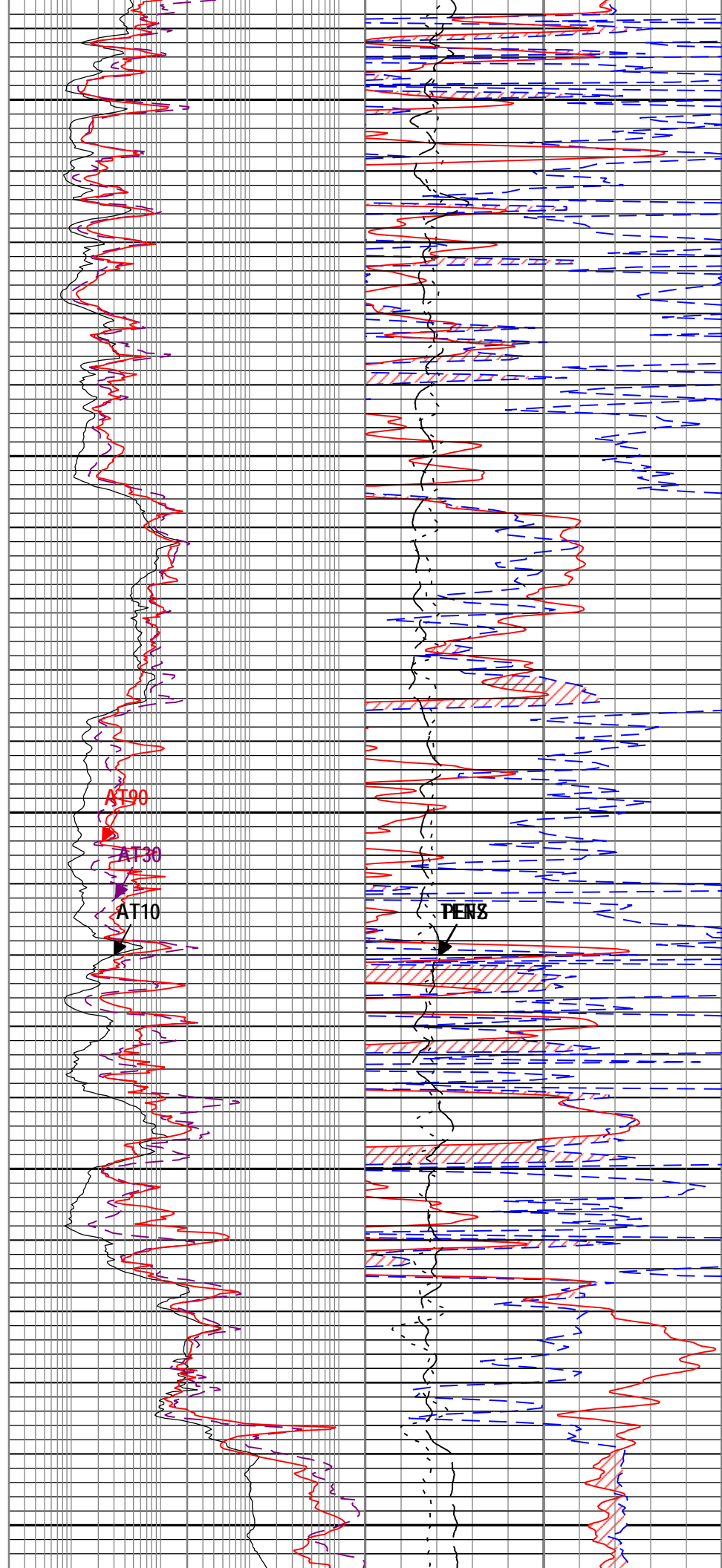
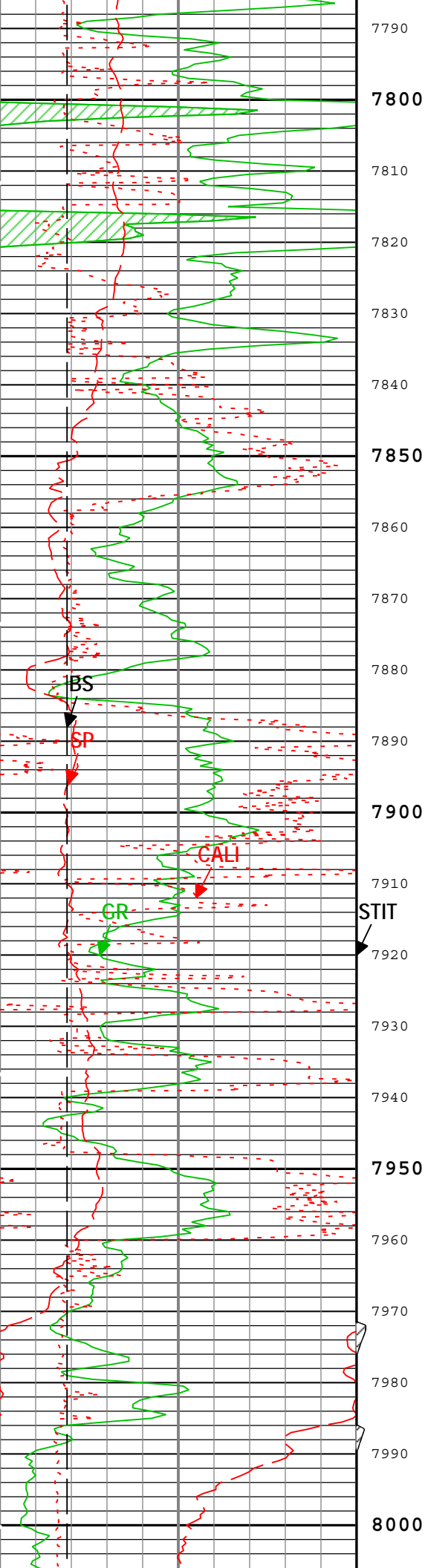


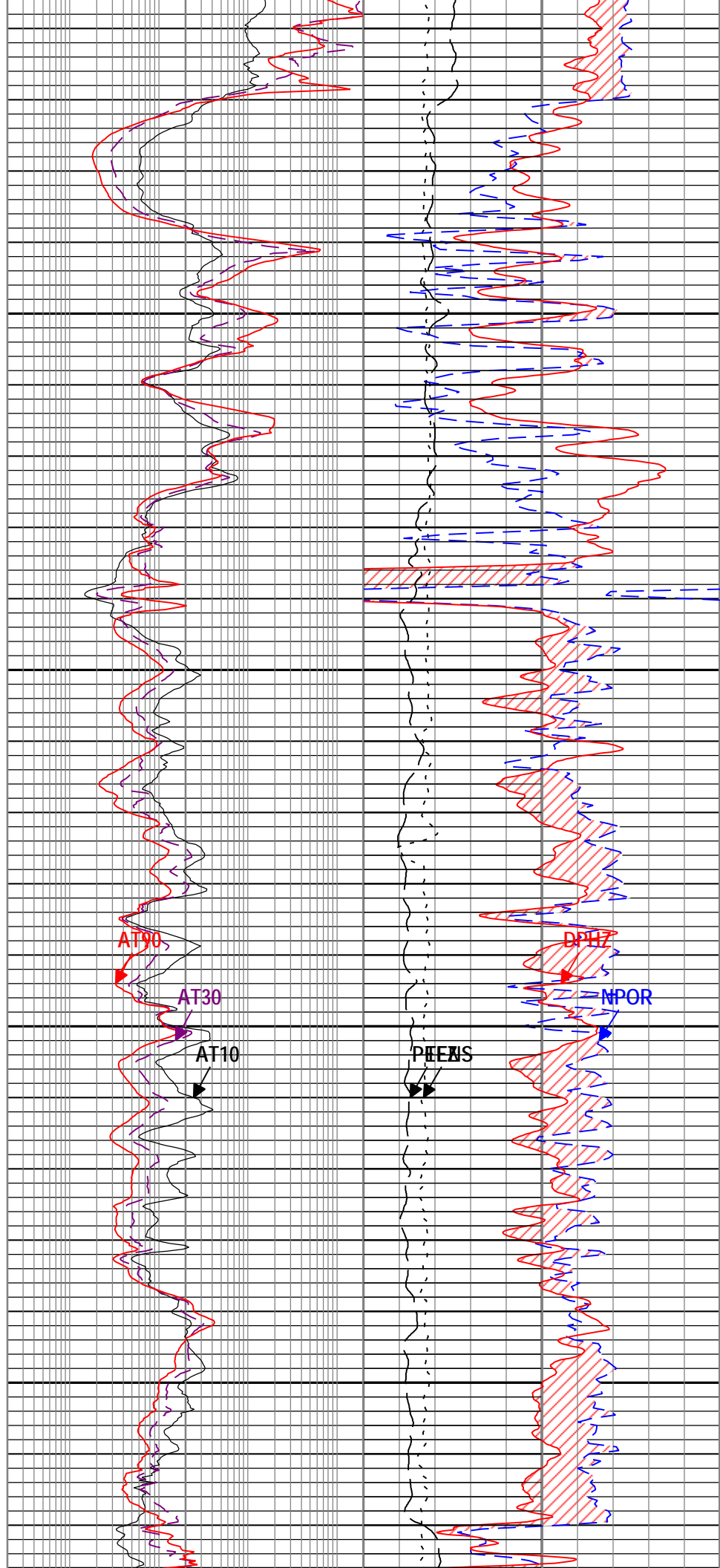
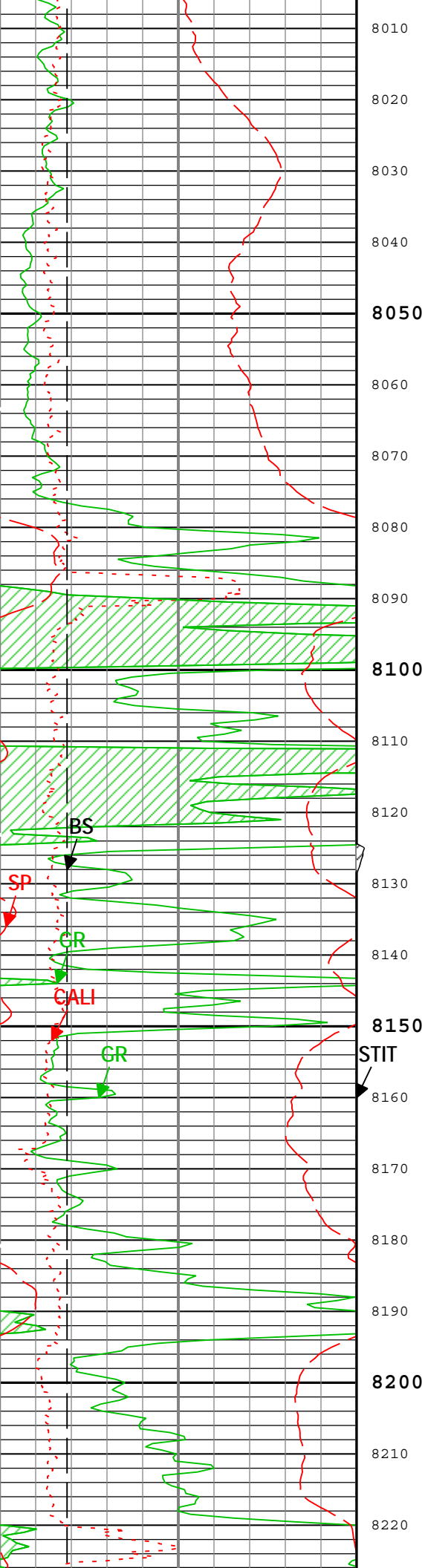


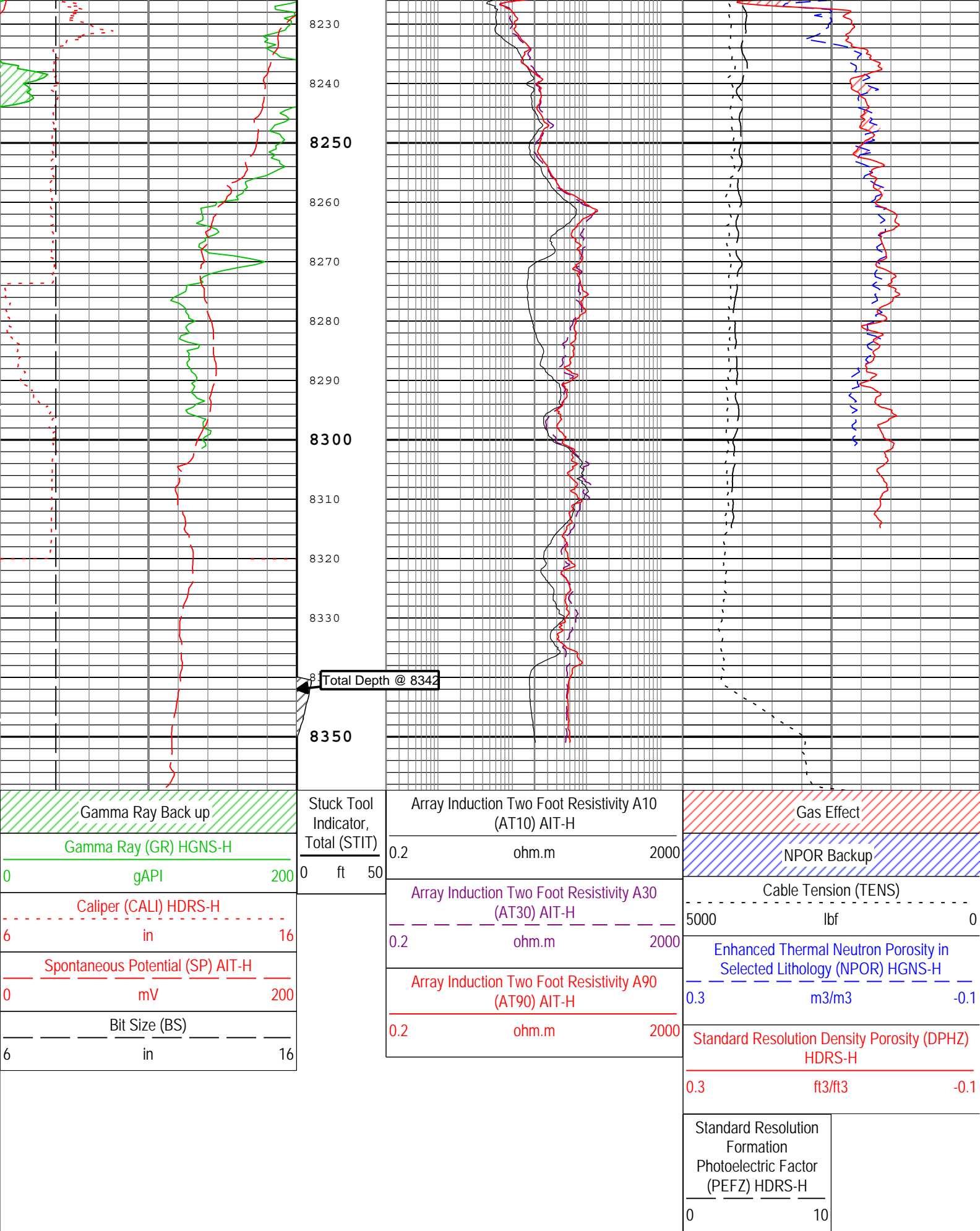












TIME_1900 - Time Marked every 60.00 (s)

Description: HGNS standard resolution porosities for Platform Express Format: Log (Import of KM 5in Triple Combo) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 13-May-2013 10:12:04

Channel Processing Parameters					
Parameter	Description	Tool	Value	Unit	
ABHM	Array Induction Borehole Correction Mode	AIT-H	Compute Standoff		
ABLM	Array Induction Basic Logs Mode	AIT-H	Normal		
ACDE	Array Induction Casing Detection Enable	AIT-H	Yes		
ASTA	Array Induction Tool Standoff	AIT-H	1.125	in	
BARI	Barite Mud Presence Flag	Borehole	No		
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open		
BS	Bit Size	WLSESSION	7.875	in	
BSAL	Borehole Salinity	Borehole	13556.39	ppm	
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0	in	
CBLO	Casing Bottom (Logger)	WLSESSION	309	ft	
CDEN	Cement Density	HGNS-H	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	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	60	degF	
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.4	ohm.m	
SOCO	Standoff Correction Option	HGNS-H	Yes		
SPDR	SP Drift Per Foot	AIT-H	0	mV/ft	
TD	Total Measured Depth	Borehole	8342	ft	

Tool Control Parameters					
Parameter	Description	Tool	Value	Unit	
HMCA_BRD_TYPE	HMCA Board Type	HGNS-H	0		
HRGD_BRD_TYPE	HRGD Board Type	HDRS-H	WITHOUT_HET		
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h	
STSO_HRDD	Temperature Source for the Density Algorithm	HDRS-H	Decaytime algorithm		

Calibration Report							
AIT-H (Array Induction Tool - H) Calibration - Run 1							
Primary Equipment :							
Array Induction Sonde - H		AHIS		398			
Auxiliary Equipment :							
AITH Rm/SP Bottom Nose		AHRM		398			
AIT Sonde Calibration - Test Loop Gain							
Master (EEPROM): 11:33:25 08-Mar-2013							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div></div>
Test Loop Gain - 0		Master	1.000	0.950	1.016	1.050	<div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 0	deg	Master	0	-3.000	0.420	3.000	<div><div></div><div></div><div></div><div></div></div>

Test Loop Gain - 1		Master	1.000	0.950	1.015	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 1	deg	Master	0	-3.000	0.591	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 2		Master	1.000	0.950	1.018	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 2	deg	Master	0	-3.000	0.001	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	0.047	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 4		Master	1.000	0.950	0.998	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 4	deg	Master	0	-3.000	-0.017	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 5		Master	1.000	0.950	0.992	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 5	deg	Master	0	-3.000	-0.183	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 6		Master	1.000	0.950	1.000	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 6	deg	Master	0	-3.000	0.156	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 7		Master	1.000	0.950	1.014	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 7	deg	Master	0	-3.000	-0.218	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>

AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM):		11:33:25 08-Mar-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 0	mS/m	Master	-----	-231.000	-84.646	119.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 0		Master	-----	-2250.000	116.355	2250.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 1	mS/m	Master	-----	114.000	169.146	204.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 1		Master	-----	-625.000	151.070	625.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 2	mS/m	Master	-----	66.000	112.979	156.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 2		Master	-----	-350.000	30.139	350.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 3	mS/m	Master	-----	39.000	59.570	89.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 3		Master	-----	-250.000	41.303	250.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 4	mS/m	Master	-----	15.000	23.093	35.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 4		Master	-----	-63.000	-12.430	63.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 5	mS/m	Master	-----	4.000	13.930	24.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 5		Master	-----	-50.000	1.759	50.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 6	mS/m	Master	-----	5.000	9.620	15.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 6		Master	-----	-30.000	5.363	30.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 7	mS/m	Master	-----	-5.000	-0.801	5.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 7		Master	-----	-30.000	3.431	30.000	<div><div></div><div></div><div></div><div></div><div></div></div>

AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM):		11:33:25 08-Mar-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div></div>
Coarse Gain		Master	1.000	0.800	0.826	1.200	<div><div></div><div></div><div></div><div></div><div></div></div>
Fine Gain		Master	1.000	0.800	0.823	1.200	<div><div></div><div></div><div></div><div></div><div></div></div>

AIT Electronics Check - Thru Calibration Check

Master (EEPROM):		11:33:25 08-Mar-2013	Before (Measured):	01:58:21 05-Jul-2013	After:		
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 0	V	Master	-----	0.363	0.627	0.847	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	0.363	0.626	0.847	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-0.001	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 0	deg	Master	-----	11.000	74.092	131.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	11.000	74.816	131.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.724	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 1	V	Master	-----	0.762	1.284	1.778	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	0.762	1.283	1.778	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-0.001	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 1	deg	Master	-----	10.000	73.071	130.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	10.000	73.799	130.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.728	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 2	V	Master	-----	0.374	0.637	0.872	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	0.374	0.636	0.872	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.001	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>

		Before-Master After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 2	deg	Master	-----	6.000	68.875	126.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	6.000	69.617	126.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.742	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 3	V	Master	-----	0.422	0.723	0.986	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	0.422	0.722	0.986	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-0.001	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 3	deg	Master	-----	5.000	67.972	125.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	5.000	68.716	125.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.744	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 4	V	Master	-----	0.802	1.347	1.872	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	0.802	1.345	1.872	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-0.002	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 4	deg	Master	-----	-1.000	60.999	119.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	-1.000	61.762	119.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.763	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 5	V	Master	-----	1.173	1.946	2.737	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	1.173	1.943	2.737	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-0.003	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 5	deg	Master	-----	-3.000	58.812	117.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	-3.000	59.598	117.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.786	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 6	V	Master	-----	1.173	1.941	2.737	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	1.173	1.939	2.737	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-0.002	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 6	deg	Master	-----	-3.000	58.874	117.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	-3.000	59.661	117.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.787	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 7	V	Master	-----	0.849	1.378	1.981	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	0.849	1.378	1.981	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.000	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 7	deg	Master	-----	-7.000	53.154	113.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	-7.000	54.102	113.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.948	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
SPA Zero	mV	Master		-50.000	-0.032	50.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		-50.000	-0.033	50.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-0.001	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
SPA Plus	mV	Master		941.000	992.378	1040.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		941.000	993.049	1040.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.671	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Temperature Zero	V	Master		-0.050	0.000	0.050	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		-0.050	-0.000	0.050	<div><div></div><div></div><div></div><div></div><div></div></div>

		Before	-----	-----	0.000	0.050	
		Before-Master	-----	-----	0.000	-----	
		After-Before	-----	-----	-----	-----	
Temperature Plus	V	Master		0.870	0.919	0.960	
		Before		0.870	0.920	0.960	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	0.001	-----	
		After-Before	-----	-----	-----	-----	

DSLT-H (Digitizing Sonic Logging Tool - H) Calibration - Run 1

Primary Equipment :

Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL SLS-E

297

CBL Normalization - CBL Accumulations

Master:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Upper Far Amplitude - 0		Master	-----	-----	-----	-----	
Upper Near Raw Amplitude - 0	mV	Master	-----	-----	-----	-----	
Lower Far Amplitude - 0		Master	-----	-----	-----	-----	
Lower Near Raw Amplitude - 0	mV	Master	-----	-----	-----	-----	

CBL Normalization - CBL/VDL Coefficients

Master:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Correction Factor for UT		Master	3.500	2.700	NOT DONE	4.300	
CBL Correction Factor for LT		Master	2.500	1.700	NOT DONE	4.300	
VDL Ratio between UT and LT for CBLB Mode		Master	1.000		NOT DONE		

CBL Free Pipe Adjustment - Free Pipe Measurement

Before:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Amplitude - 0	mV	Before	-----	-----	-----	-----	
CBL Reference Amplitude (CBRA) - 0	mV	Before	-----	-----	-----	-----	
Measurement Depth - 0	ft	Before	-----	-----	-----	-----	

CBL Free Pipe Adjustment - CBL Amplitude Coefficient

Before:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Adjustment Factor		Before	1.000	0.200	NOT DONE	5.000	
Depth of Before Calibration	ft	Before			NOT DONE		

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

Primary Equipment :

HILT High-Resolution Control Cartridge, 150 degC

HRCC-H

791

HILT Resistivity Gamma-Ray Density Device, 150 degC

HRGD-H

1849

Auxiliary Equipment :

HRDD Backscatter Detector

Backscatter

HRDD Long Spacing Detector

Long Spacing

HRDD Short Spacing Detector

Short Spacing

Cesium 137 Gamma-Ray Logging Source

GSR-J

5094

HILT High-Resolution Control Cartridge, 150 degC

HRCC-H

791

HILT High-Resolution Mechanical Sonde, 150 degC

HRMS-H

1754

Calibration Parameter :

Small Ring Size (Caliper Calibration Small Ring)

8.00

Large Ring Size (Caliper Calibration Large Ring)

12.00

HDRS Caliper Calibration - Caliper Accumulations

Before (Measured): 11:52:02 08-May-2013 Expired by 3 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	8.04	10.00	
Large Ring	in	Before	12.00	9.00	12.18	15.00	

Large Ring	in	Before	12.00	9.00	12.16	13.00	
HDRS Density Calibration - Inversion Results							
Master (EEPROM):		12:34:00 24-Apr-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.598	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.687	1.696	
Pe Aluminum		Master	2.570	2.470	2.567	2.670	
Pe Magnesium		Master	2.650	2.550	2.624	2.750	
HDRS Density Calibration - Deviation Summary							
Master (EEPROM):		12:34:00 24-Apr-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.4251	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.9510	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.3236	1.0000	
SS Max Deviation	%	Master	0	-2.5000	1.1867	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.4979	1.5000	
LS Max Deviation	%	Master	0	-3.5000	1.0172	3.5000	
HDRS Density Calibration - Background Summary							
Master (EEPROM):		12:34:00 24-Apr-2013		Before (Measured):		10:00:05 08-May-2013 Expired by 3 days	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000	0.6999	0.7367	0.7735	
		Before	0.7367		0.7370		
		Before-Master	-----		0.0003		-----
BS Window Sum	1/s	Master	1	9005	9479	9953	
		Before	9479		9466		
		Before-Master	-----		-13		-----
SS Window Ratio		Master	1.0000	0.4704	0.4951	0.5199	
		Before	0.4951		0.4949		
		Before-Master	-----		-0.0002		-----
SS Window Sum	1/s	Master	1	8655	9110	9566	
		Before	9110		9098		
		Before-Master	-----		-12		-----
LS Window Ratio		Master	1.0000	0.2840	0.2989	0.3139	
		Before	0.2989		0.2942		
		Before-Master	-----		-0.0047		-----
LS Window Sum	1/s	Master	1	1010	1063	1116	
		Before	1063		1058		
		Before-Master	-----		-5		-----
HDRS Density Calibration - Photo-multiplier High Voltages							
Master (EEPROM):		12:34:00 24-Apr-2013		Before (Measured):		10:00:05 08-May-2013 Expired by 3 days	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1625	2400	
		Before		1000	1608	2400	
		Before-Master		-----	-17	100	
SS PM High Voltage	V	Master		1000	1690	2400	
		Before		1000	1679	2400	
		Before-Master		-----	-11	100	
LS PM High Voltage	V	Master		1000	1599	2400	
		Before		1000	1579	2400	
		Before-Master		-----	-20	100	
HDRS Density Calibration - Crystal Quality Resolutions							
Master (EEPROM):		12:34:00 24-Apr-2013		Before (Measured):		10:00:05 08-May-2013 Expired by 3 days	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	11.81	25.00	
		Before		5.00	11.91	25.00	
		Before-Master		-----	-1.00	1.00	
SS Crystal Resolution	%	Master		5.00	10.21	20.00	
		Before		5.00	10.26	20.00	
		Before-Master		-----	-1.00	1.00	
LS Crystal Resolution	%	Master		5.00	9.63	20.00	
		Before		5.00	9.44	20.00	
		Before-Master		-----	-1.00	1.00	
HDRS MCFL Calibration - MCFL Accumulations							
Before (Measured):		09:56:35 08-May-2013 Expired by 3 days					

Before (Measured):

09:56:55 08-May-2013 Expired by 3 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3829	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3794	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3821	4136	

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

Primary Equipment :

HILT Gamma-Ray and Neutron Sonde, 150 degC

HGNS-H

863

Auxiliary Equipment :

HGNS Accelerometer, 150 degC

HACCZ-H

452

AmBe Neutron Logging Source

NSR-F

5069

Calibration Parameter :

Water Temperature

Housing Size

JIG-BKG (Jig minus background reference)

165

HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured): 13:42:00 09-May-2013 Expired by 2 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	ft/s2	Before	32.2	31.5	31.8	32.8	

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM): 00:00:00 15-Dec-1996

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Accelerometer Manufacturer		Master			Sunstrand		
Accelerometer Reference Temperature	degF	Master		30.2	68.0	122.0	
Accelerometer Coefficients - 0		Master	----	----	51.000	----	
Accelerometer Coefficients - 1		Master	----	----	11.800	----	
Accelerometer Coefficients - 2		Master	----	----	0.011	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	2.182	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	293.400	----	
Accelerometer Coefficients - 9		Master	----	----	0.997	----	

HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM): 10:38:08 25-Feb-2013 Before (Measured): 09:56:40 08-May-2013 Expired by 3 days After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	27.8	40.0	
		Before	0	5.0	27.6	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.2	-0.2	4.2	
		After-Before	----	----	----	----	
Far Zero Measurement	1/s	Master	0	5.0	31.8	40.0	
		Before	0	5.0	30.1	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.8	-1.7	4.8	
		After-Before	----	----	----	----	
Near Plus Measurement - 0	1/s	Master	6031.0	4700.0	4914.0	6900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Plus Measurement - 0	1/s	Master	2793.0	1900.0	2076.0	2900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Near Corrected Plus Measurement - 0	1/s	Master		4700.0	4881.0	6900.0	

		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Corrected Plus Measurement - 0	1/s	Master		1900.0	2041.0	2900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured):		11:48:36 08-May-2013 Expired by 3 days		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	74.9	120.0	
		After	----	----	----	----	
		After-Before	----	----	----	----	
RGR Plus Measurement	gAPI	Before	185.4	157.1	172.3	206.3	
		After	----	----	NOT DONE	----	
		After-Before	----	----	----	----	
GR Calibration Gain		Before	0.89	0.80	0.96	1.05	
		After	----	----	----	----	
		After-Before	----	----	----	----	

LEH-QT (Logging Equipment Head - QT, 3-3/8 inch 31 pin HPHT with Tension Sensor) Calibration - Run 1


Primary Equipment :							
Logging Equipment Head - QT, 3-3/8 inch 31 pin HPHT with Tension Sensor		LEH-QT		2493			

HTEN Master Calibration - HTEN Master Calibration

Master:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HTEN Shop Gain		Master	1.000	0.800	NOT DONE	4.500	
HTEN Shop Offset	lbf	Master	0	-1000.000	NOT DONE	1000.000	

HTEN Before Calibration - HTEN Before Calibration

Before:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RHTE Zero Measurement - 0	lbf	Before	----	----	----	----	
RHTE Plus Measurement - 0	lbf	Before	----	----	----	----	
HTEN Gain - 0		Before	----	----	----	----	
HTEN Offset - 0	lbf	Before	----	----	----	----	

Company:	Nighthawk Production LLC	
Well:	Big Sky 4-11	
Field:	Wildcat	
County:	Lincoln	
State:	Colorado	

Platform Express

Triple Combo