

Company: Noble Energy Inc

Well: Longs AC 02-15

Field: Wattenberg

County: Weld State: Colorado

Platform Express
Array Induction
with Linear CorrelationCounty: Weld
Field: Wattenberg
Location: Sec 2, T 7N, R 63W
Well: Longs AC 02-15
Company: Noble Energy Inc

Location:		Elev.		K.B.	
Sec 2, T 7N, R 63W		SHL: 660' FSL X 1920' FEL SWSE		G.L. 4837.00 ft	
Lat/Long: 40.597590/-104.401130		Permanent Datum:		D.F. 4850.00 ft	
Log Measured From:		Ground Level		Elev.: 4837.00 f	
Drilling Measured From:		Drill Floor		13.00 ft above Perm.Datum	
API Serial No.	Section:	Township:		Range:	
05-123-35817-0000	2	7N		63W	

Logging Date 01-Aug-2012

Run Number 1

Depth Driller 8910.00 ft

Schlumberger Depth 8912.00 ft

Bottom Log Interval 8906.00 ft

Top Log Interval 754.00 ft

Casing Driller Size @ Depth 9.625 in @ 754.00 ft

Casing Schlumberger 754 ft

Bit Size 8.75 in

Type Fluid In Hole Fresh Water

Density 9.05 lbm/gal

Viscosity 11 s

Fluid Loss PH 9.6 cm3

MUD 10

Source of Sample Active Tank

RM @ Meas Temp 1.94 ohm.m @ 73.6 degF

RMF @ Meas Temp 1.89 ohm.m @ 73.7 degF

RMC @ Meas Temp 2.43 ohm.m @ 73.6 degF

Source RMF RMC Pressed

RM @ BHT 0.67 @ 227.1 0.65 @ 227.1

Max Recorded Temperatures 227.1 degF

Circulation Stopped 31-Jul-2012 22:00:00

Logger on Bottom 01-Aug-2012 08:15:00

Unit Number 3030

Recorded By Philip Grant

Recorded By Bob Lieber, Roger Foster

Disclaimer

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

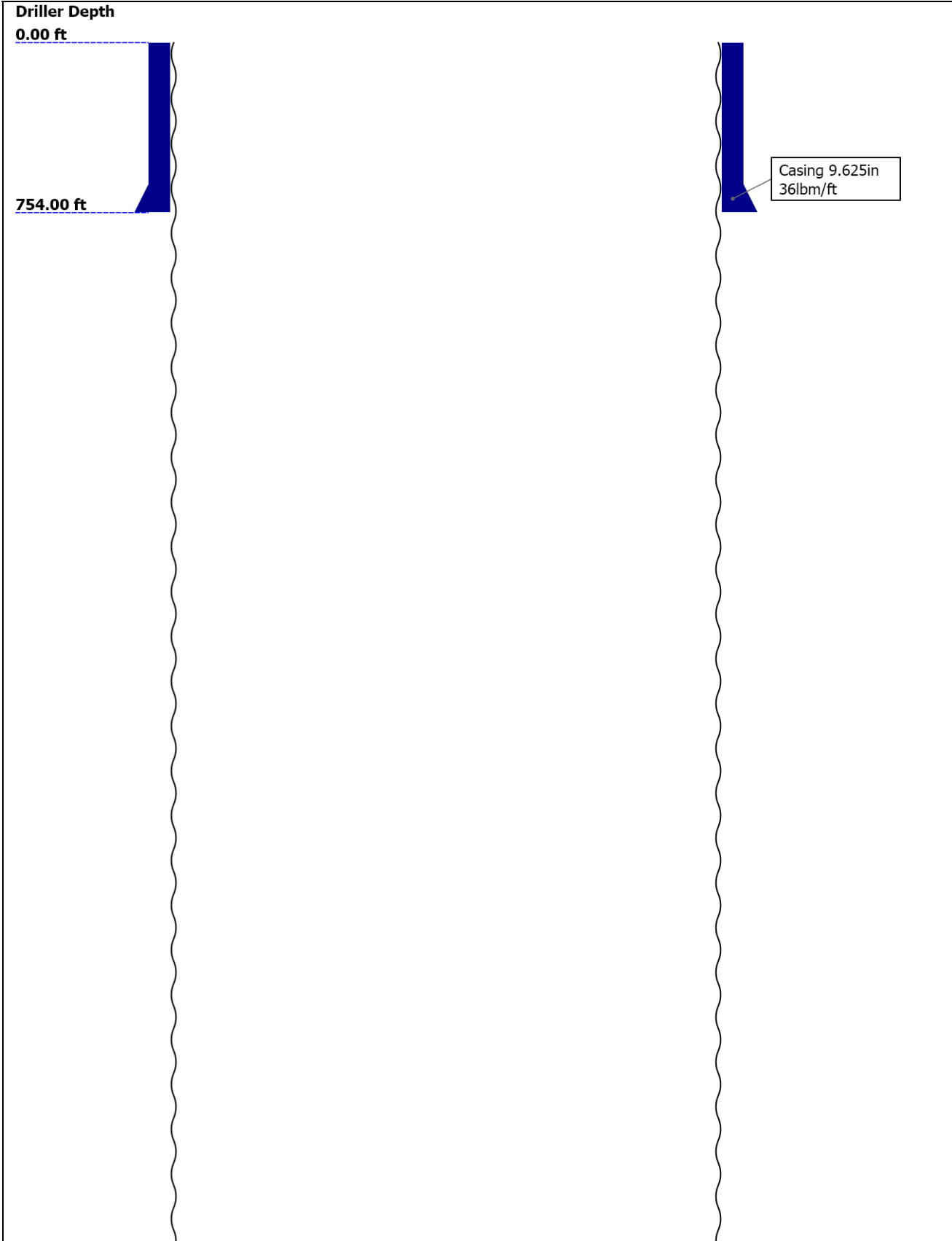
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Well Sketch



8910.00 ft

Open Hole 8.75in

Borehole Size/Casing/Tubing Record

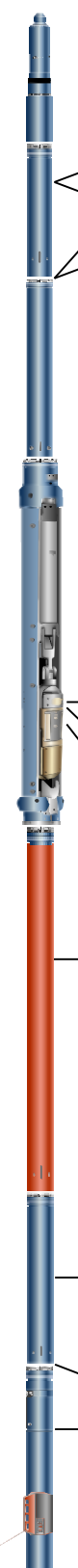
Bit						
Bit Size (in)	8.75					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	8910					
Bottom Logger (ft)	8912					
Casing						
Size (in)	9.625					
Weight (lbm/ft)	36					
Inner Diameter (in)	8.914					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	754					
Bottom Logger (ft)	754					

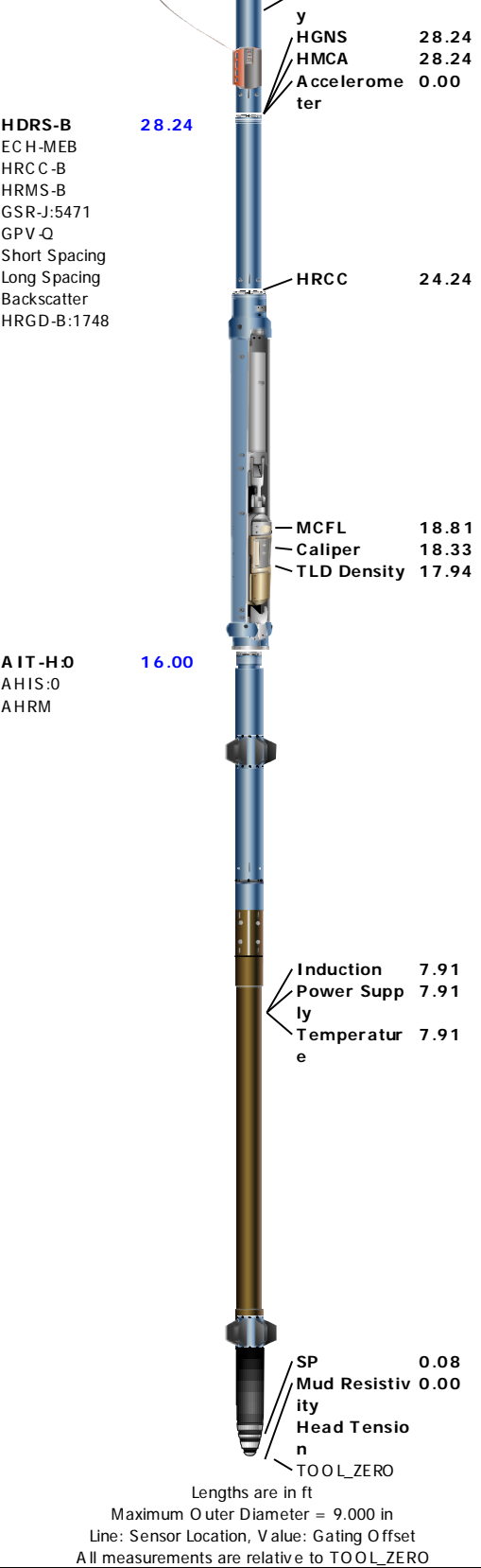
Borehole Fluids

Parameter(unit)	1					
Fluid Type	Water					
Fluid Name	Fresh Water					
Max Recorded Temperatures (degF)	227.1					
Source of Sample	Active Tank					
Salinity (ppm)	1000					
Density (lbm/gal)	9.05					
Funnel Viscosity (s)	11					
Fluid Loss (cm3)	9.6					
PH	10					
Date/Time Circulation Stopped	31-Jul-2012 22:00:00					
Date Logger on Bottom	01-Aug-2012					
Time Logger on Bottom	08:15:00					
Source RMF	Pressed					
RMC	Calculated					
RM @ Meas Temp (ohm.m@degF)	1.94 @ 73.6					
RMF @ Meas Temp (ohm.m@degF)	1.89 @ 73.7					
RMC @ Meas Temp (ohm.m@degF)	2.43 @ 73.6					

RM @ BHT (ohm.m@degF)	0.67 @ 227.1					
RMF @ BHT (ohm.m@degF)	0.65 @ 227.1					
RMC @ BHT (ohm.m@degF)	0.84 @ 227.1					
Total Solid (%)						
High Gravity Solids (%)						

Remarks and Equipment Summary

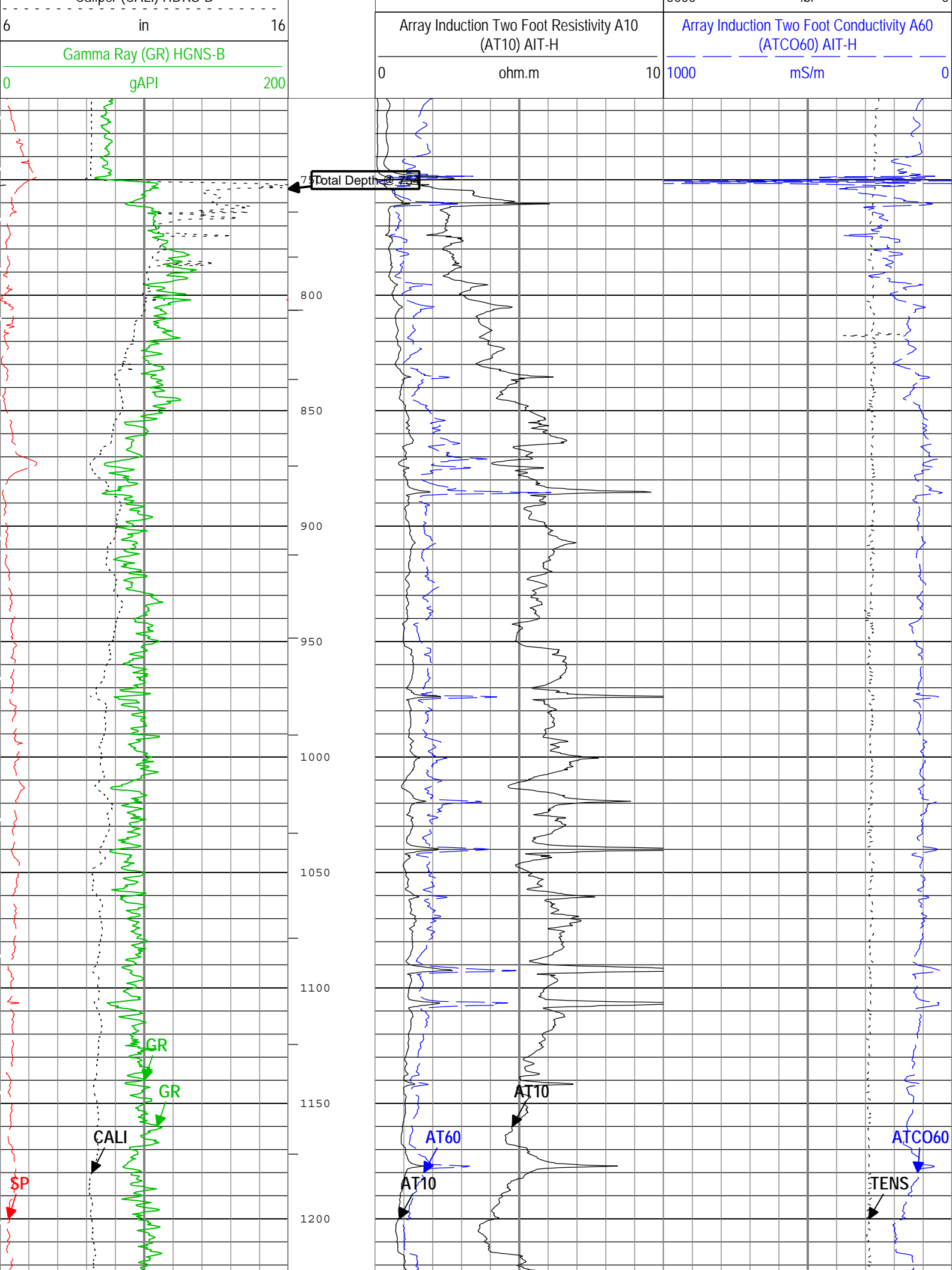
1: Toolstring				1: Remarks
<div> <div> <div>Equip name</div> <div>LEH-QT</div> <div>LEH-QT</div> </div> <div> <div>Length</div> <div>66.79</div> </div> <div> <div>MP name</div> <div></div> </div> <div> <div>Offset</div> <div></div> </div> </div>				<div>This is the first run in hole and primary depth reference.</div> <div>Tool run as per tool sketch.</div> <div>Data may be affected by hole rugosity.</div> <div>Matrix: Limestone 2.71</div> <div>Crew: Derrick Hunter, Jake Jump</div>
<div> <div> <div>DTC-H</div> <div>ECH-KC</div> <div>DTC-H</div> </div> <div> <div>63.87</div> </div> <div> <div>CTEM</div> <div>HV</div> </div> <div> <div>62.97</div> <div>0.00</div> </div> </div>				
<div> <div> <div>A DT-C</div> <div>HECH-KDB</div> <div>ADC-C</div> <div>ADSC</div> <div>ADP-C</div> </div> <div> <div>60.87</div> </div> <div> <div>TelStatus</div> <div>ToolStatus</div> </div> <div> <div>60.87</div> <div>60.87</div> </div> </div>				
<div> <div> <div>S11 Probe</div> <div>Pad</div> <div>Caliper</div> </div> <div> <div>52.01</div> <div>51.91</div> <div>51.53</div> </div> </div>				
<div> <div> <div>HNGS-BA :347</div> <div>HEH-K:347</div> <div>HNGS-BA :347</div> </div> <div> <div>49.34</div> </div> <div> <div>GR</div> </div> <div> <div>46.35</div> </div> </div>				
<div> <div> <div>HNGC-B:605</div> <div>HNGH-A :4089</div> <div>HNGC-B:605</div> </div> <div> <div>41.15</div> </div> <div> <div>Tel Status</div> </div> <div> <div>39.4</div> </div> </div>				
<div> <div> <div>HGNS-B</div> <div>HGNH</div> <div>NSR-F :2554</div> <div>NPV-N</div> <div>HMCA-B</div> <div>HGNS-B</div> <div>HA C C Z-B:452</div> </div> <div> <div>37.65</div> </div> <div> <div>Temperatur</div> <div>e</div> <div>GR</div> </div> <div> <div>37.62</div> <div>36.91</div> </div> </div>				
<div> <div> <div>CNL Porosit</div> </div> <div> <div>30.57</div> </div> </div>				

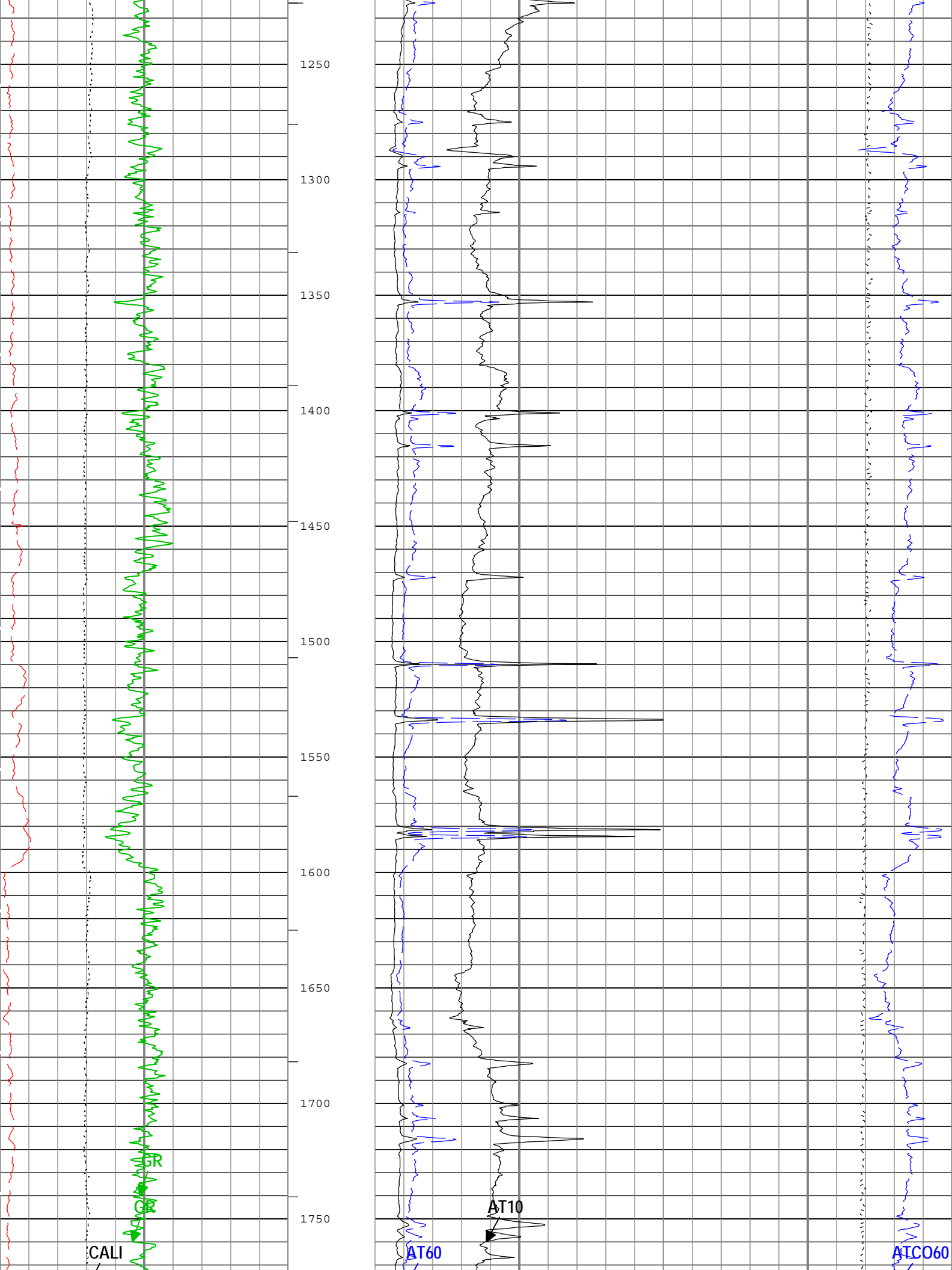


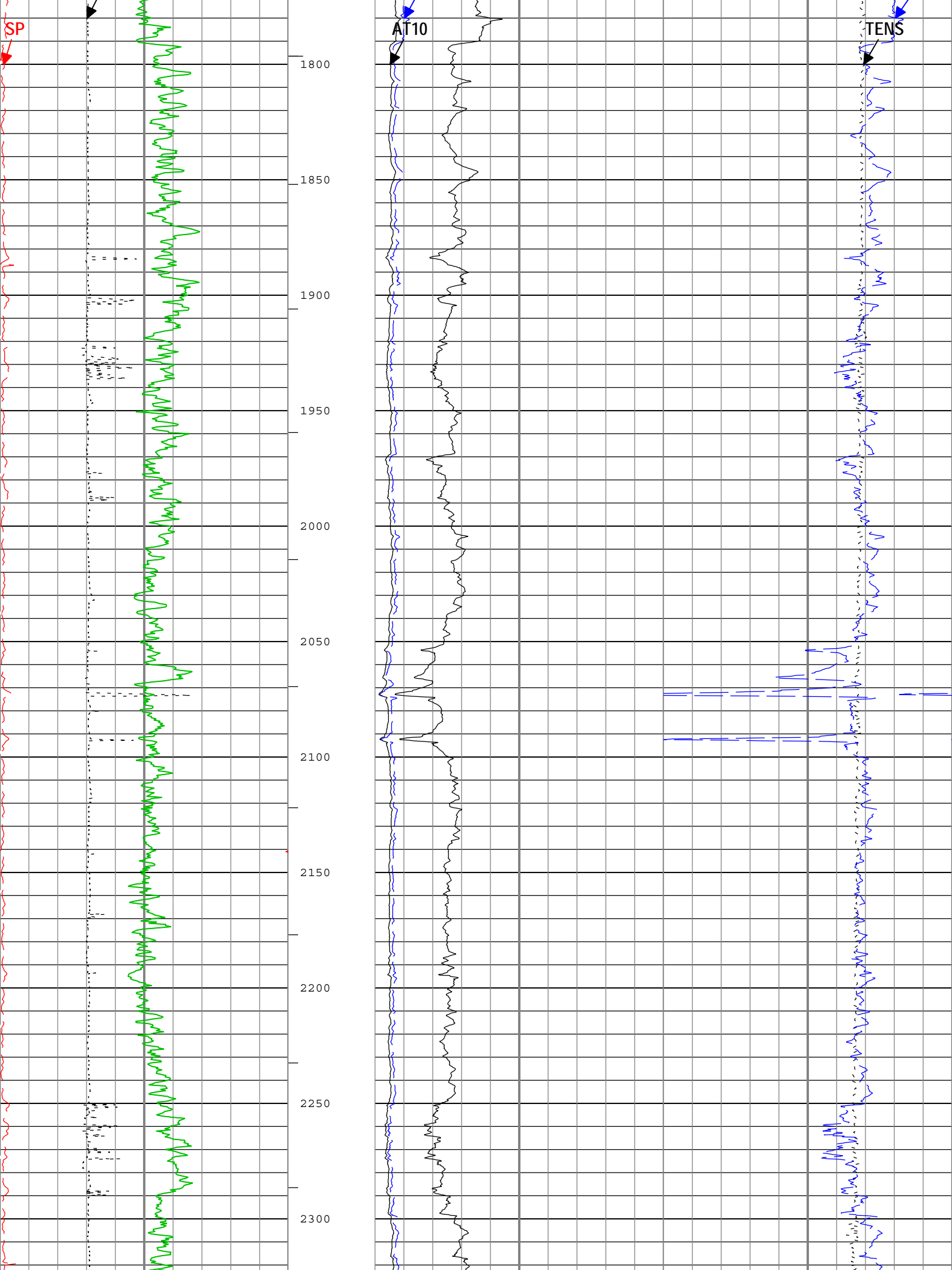
Depth Summary

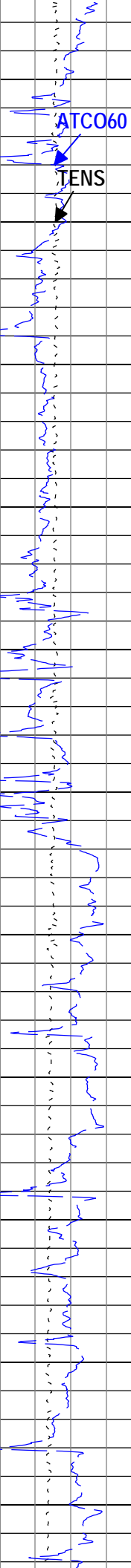
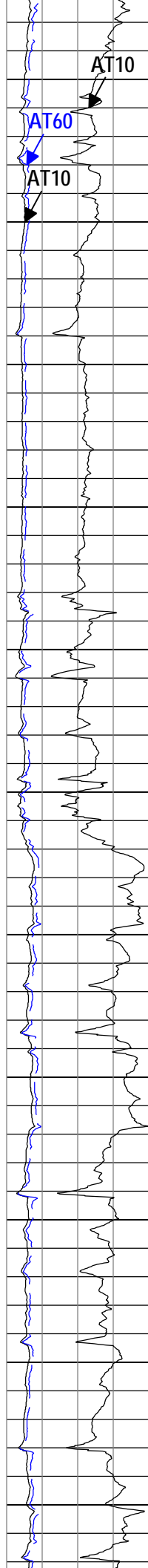
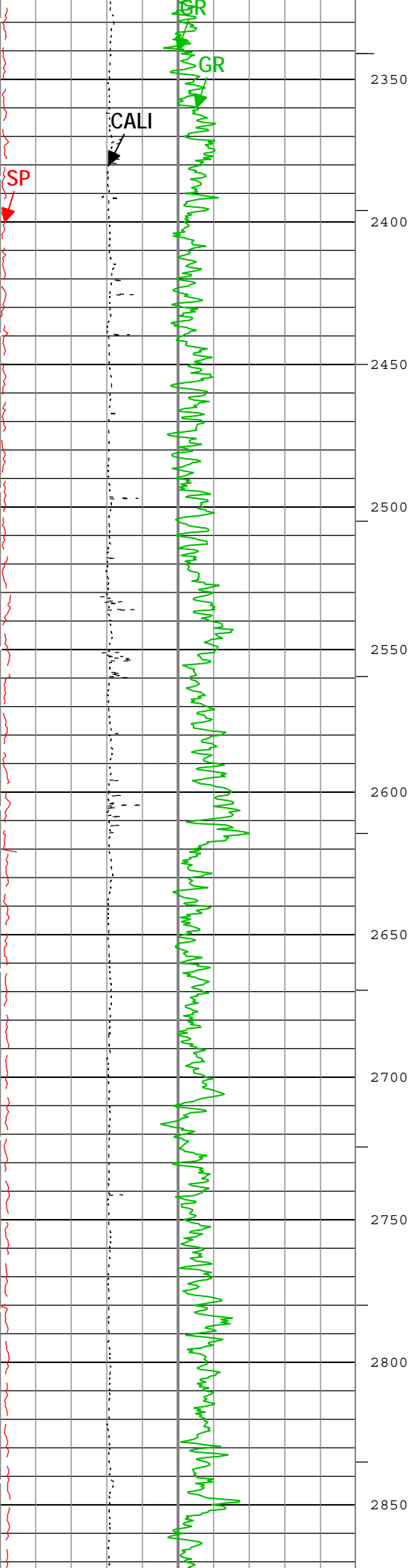
Depth Control Parameters	1		
Conveyance Type	Wireline		
Rig Type	Top Drive		
Depth Measuring Device	1		
Type	IDW-B		
Wheel Correction 1	1		
Wheel Correction 2	0		
Tension Device	1		
Type	CMTD-B/A		

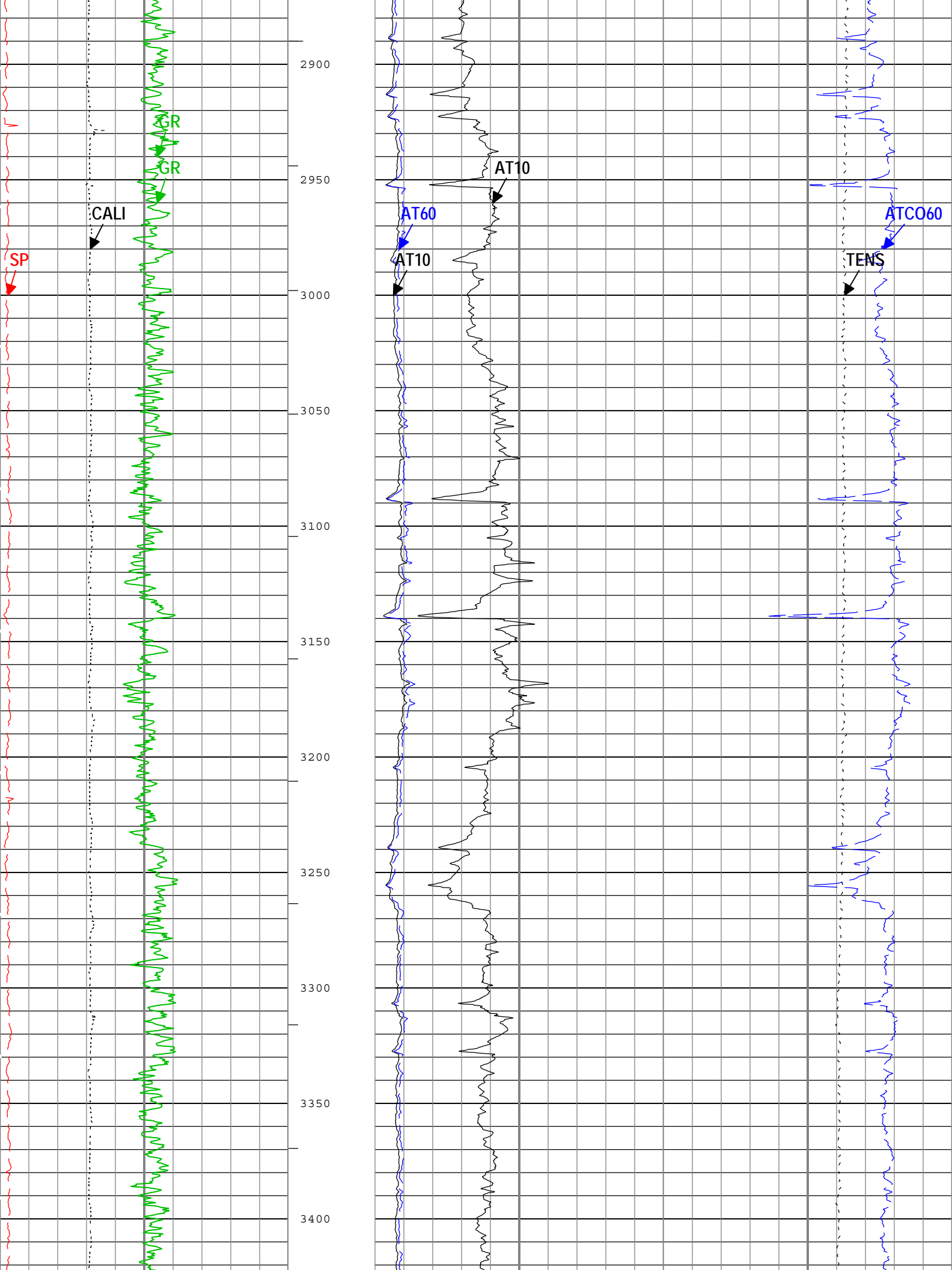
Calibration Points	0							
Logging Cable	1							
Type	7-46NT-XS							
Logging Cable Length (ft)	24000.00							
1								
2" Induction								
Integration Summary								
Output Channel(s)	Output Description	Input Parameter	Output Value	Unit				
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	1527.43	ft3				
Software Version								
Acquisition System		Version						
MaxWell		3.1.9755.0						
Application Patch		SP-20120723-3.1.9755.1112						
Computation	Description			Version				
Borehole	Borehole Ensemble provides common Borehole Parameters and Channels			3.1.9755.0				
Tool Elements	Description	Software Version	Firmware Version					
AHIS	Array Induction Sonde - H	3.1.9755.1112						
HGNS-B	HILT Gamma-Ray and Neutron Sonde, 125 degC	3.1.9755.0	2.0					
HRCC-B	HILT High-Resolution Control Cartridge, 125 degC	3.1.9755.0	2.0					
Pass Summary								
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
1	Log[3]:Up	Up	58.08 ft	8930.71 ft	01-Aug-2012 8:13:39 AM	01-Aug-2012 1:23:11 PM	0.00 ft	
All depths are referenced to toolstring zero								
Log	1: Log[3]:Up							
Description: AIT Basic Log Two Format: Log (Import of Kerr McGee 2in Induction) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured								
Depth Creation Date: 01-Aug-2012 16:40:52								
Channel	Source	Sampling						
AT10	AIT-H:AHIS:AHIS	3in						
AT60	AIT-H:AHIS:AHIS	3in						
ATCO60	AIT-H:AHIS:AHIS	3in						
CALI	HDRS-B:HRCC-B:HRCC-B	1in						
GR	HGNS-B:HGNS-B:HGNS-B	6in						
ICV	Borehole	6in						
SP	AIT-H:AHIS:AHIS	6in						
TENS	WLWorkflow	6in						
TIME_1900	WLWorkflow	0.1in						
TIME_1900 - Time Marked every 60.00 (s)								
— ICV - Integrated Cement Volume every 10.00 (ft3)								
— ICV - Integrated Cement Volume every 100.00 (ft3)								
Gamma Ray Backup		Array Induction Two Foot Resistivity A10 (AT10) AIT-H						
		0	ohm.m					50
Spontaneous Potential (SP) AIT-H		Array Induction Two Foot Resistivity A60 (AT60) AIT-H						
-160 mV 40		0	ohm.m					50
Caliner (CALI) HDRS-B		Cable Tension (TENS)						
		5000 lbf						

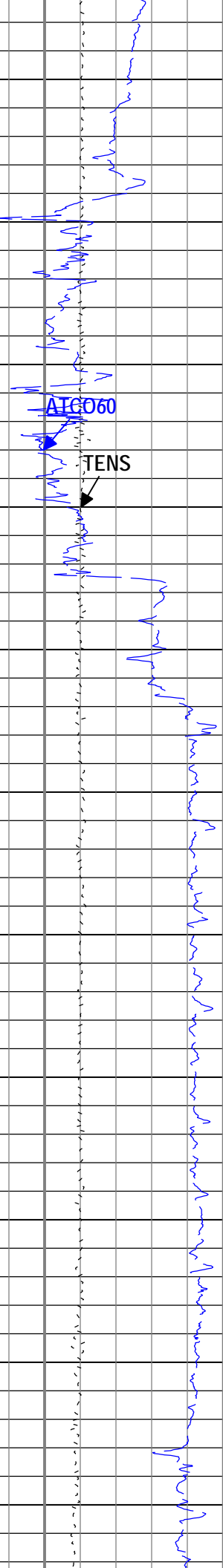
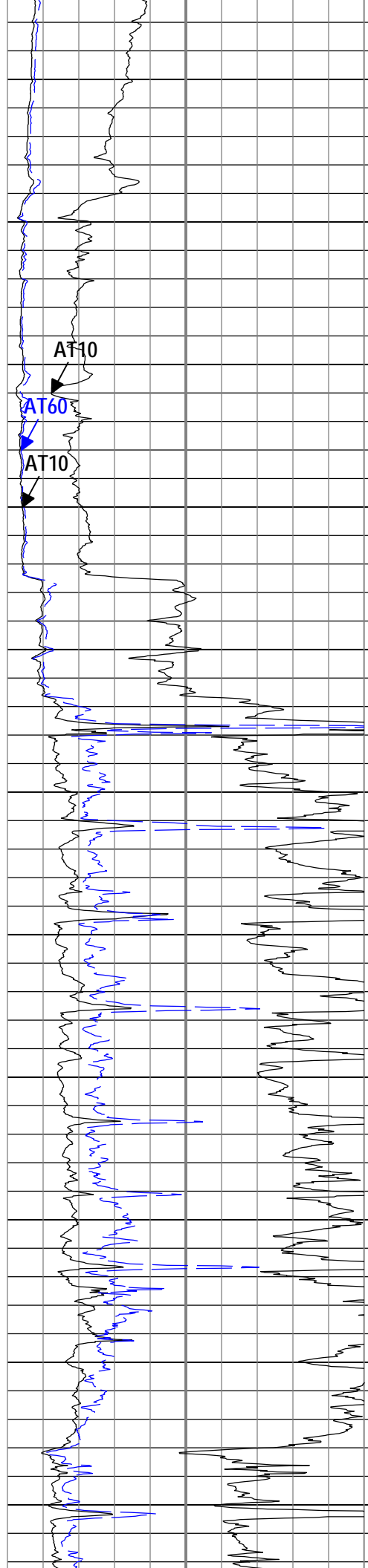
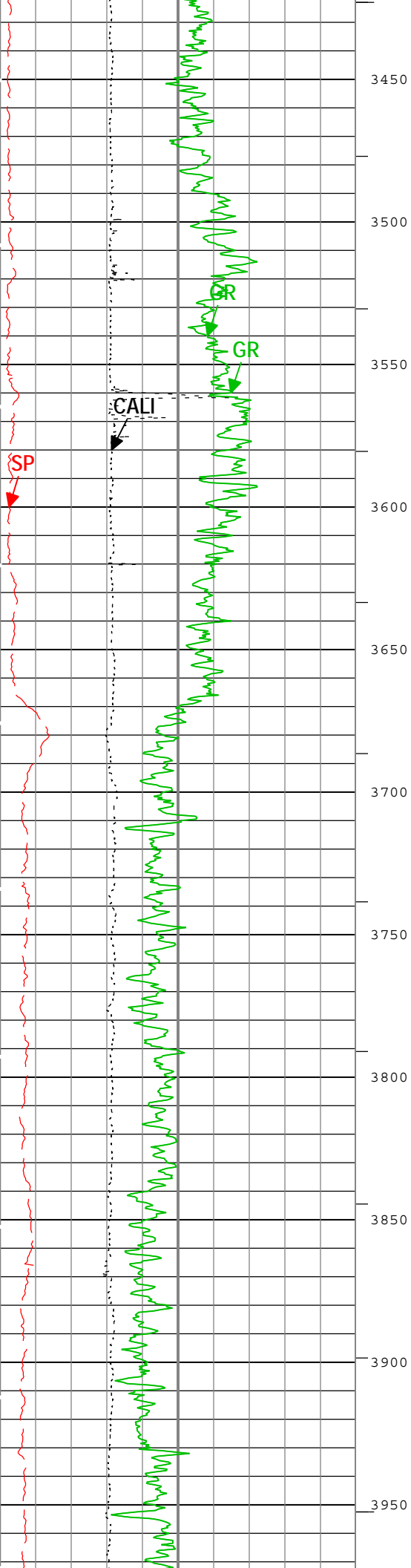


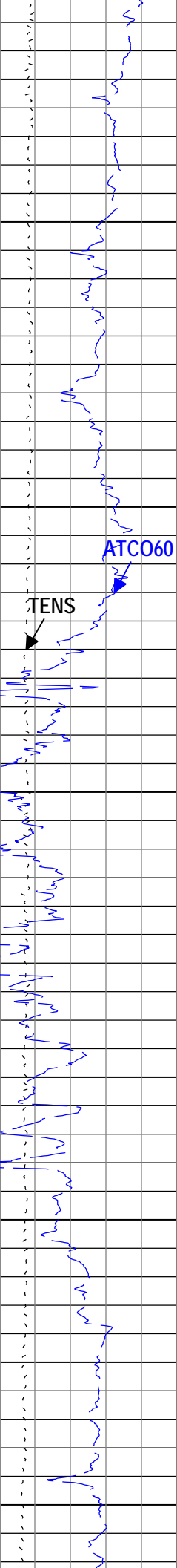
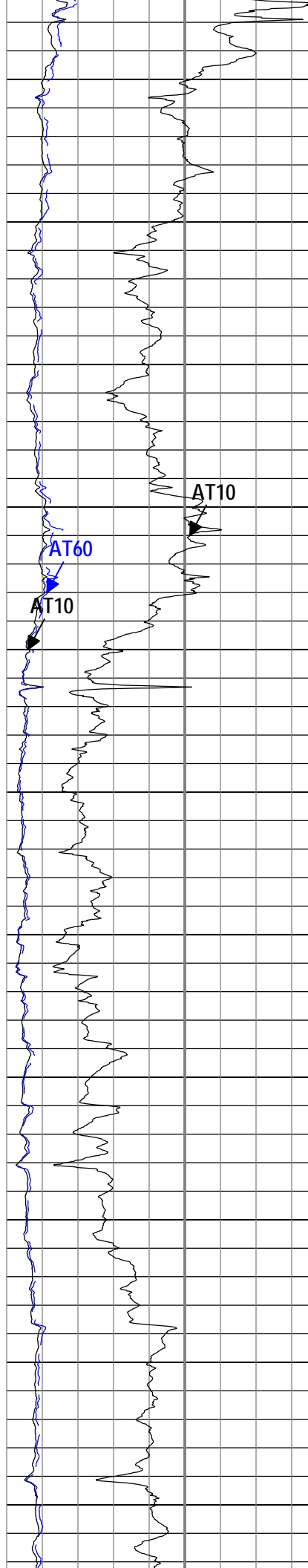
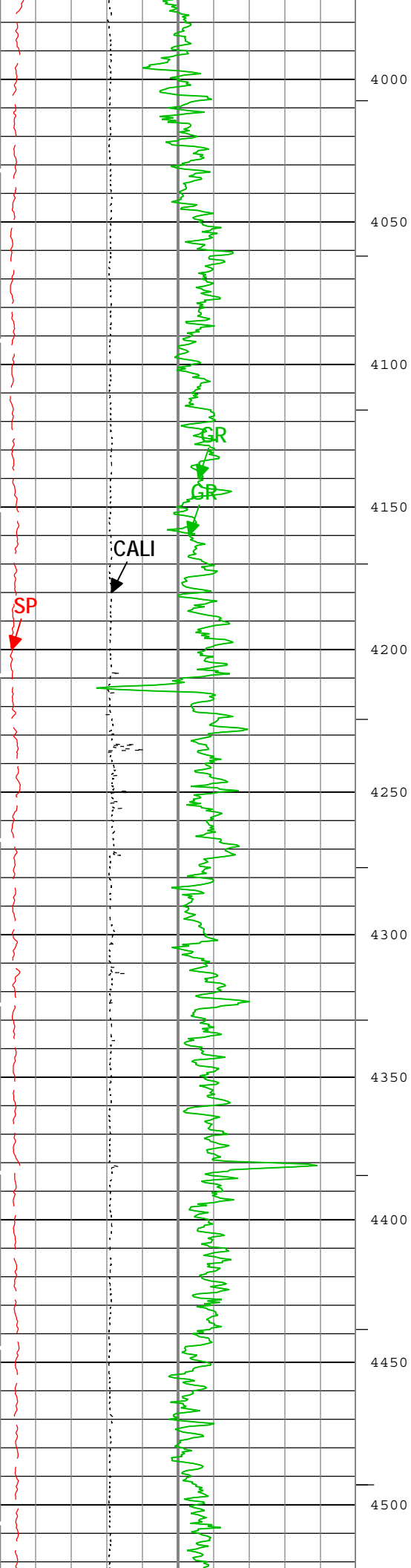


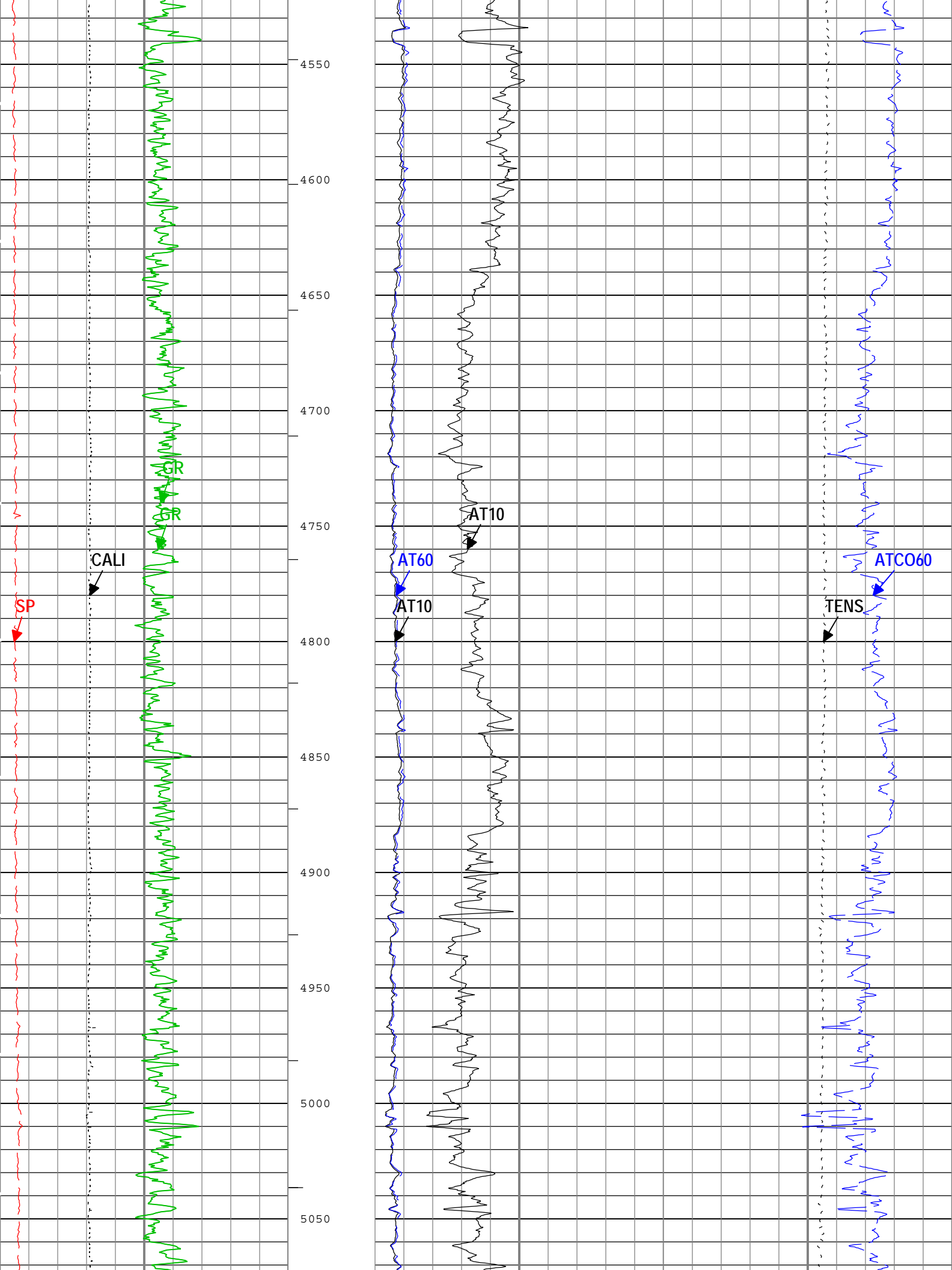


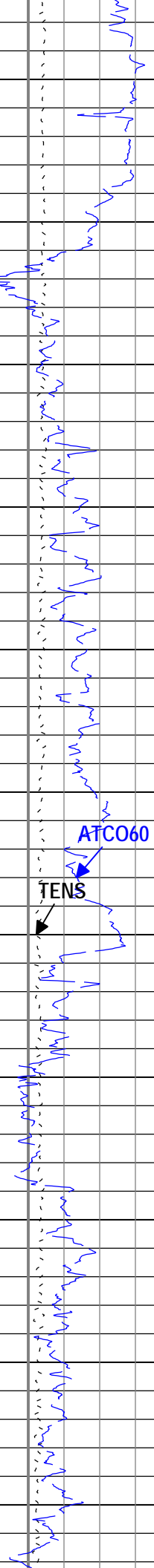
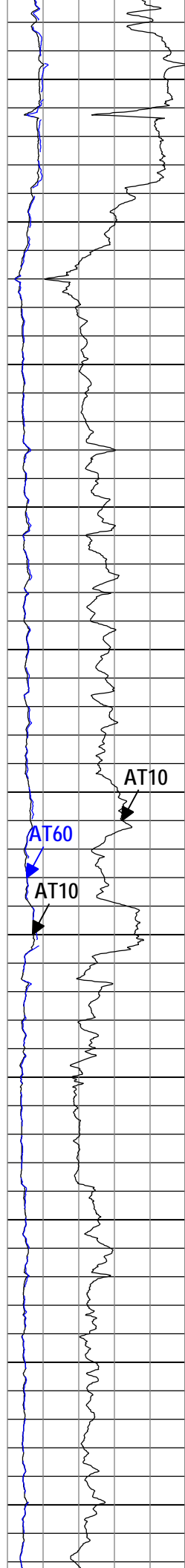
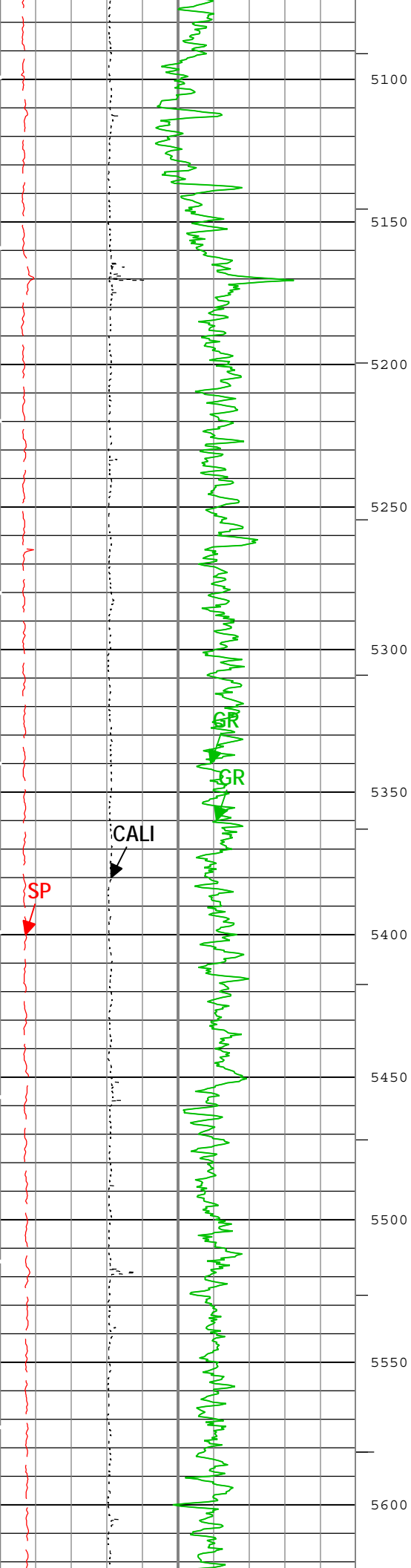


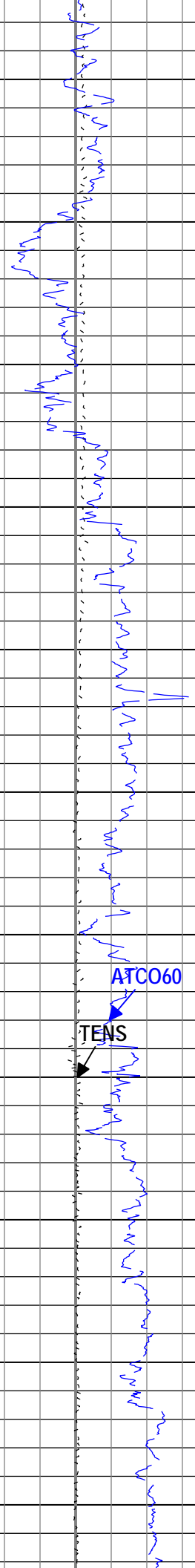
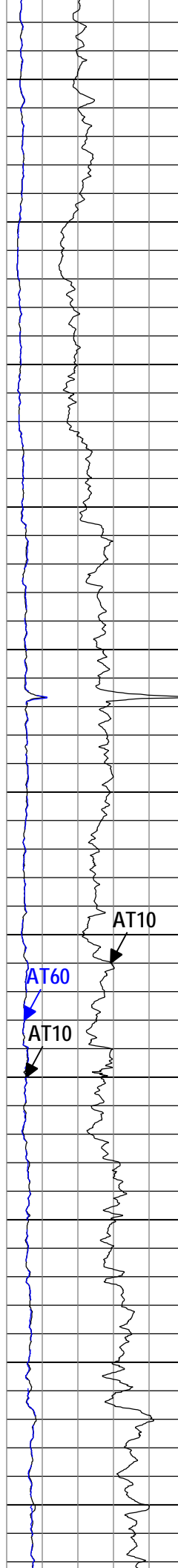
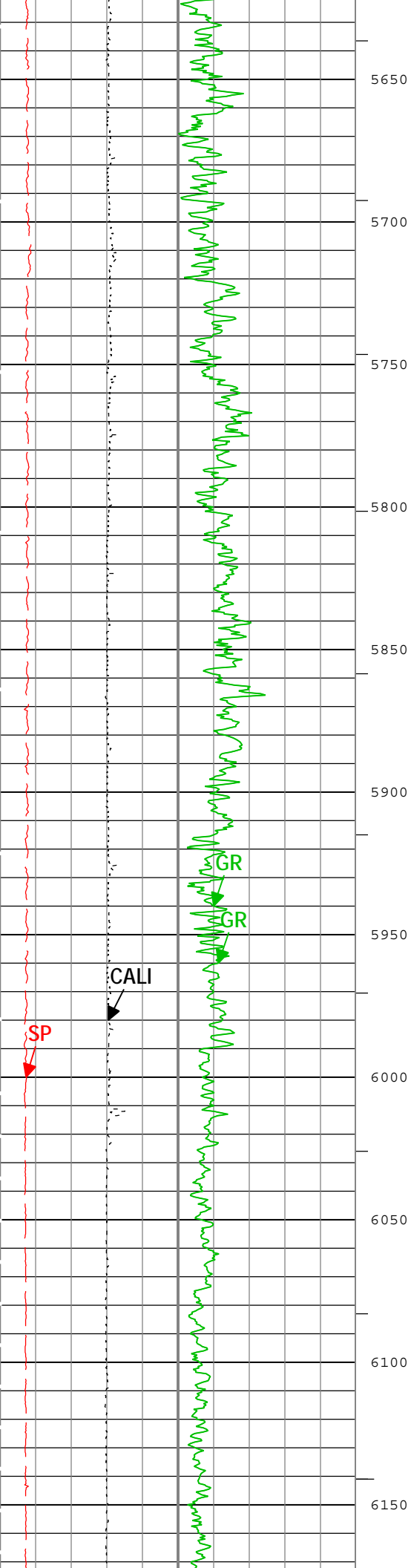


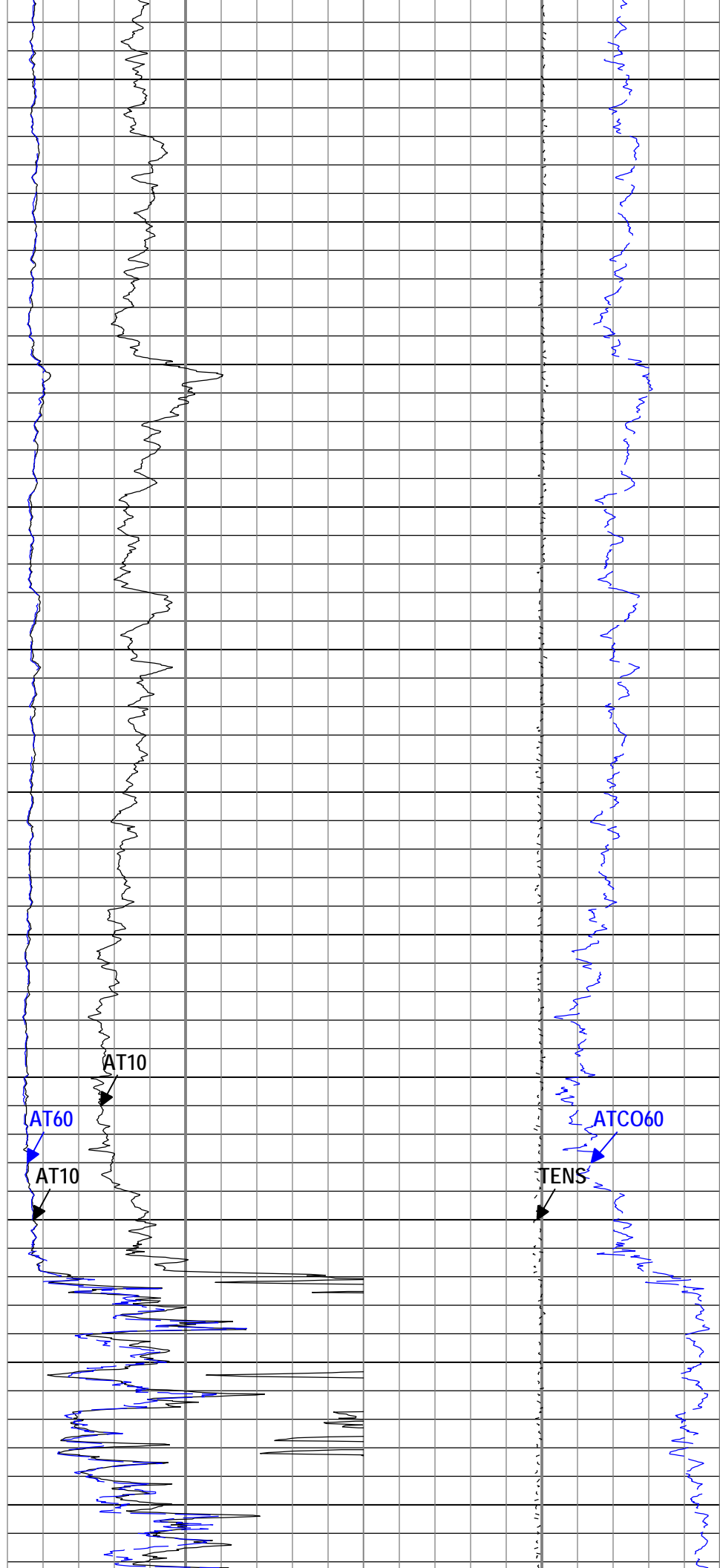
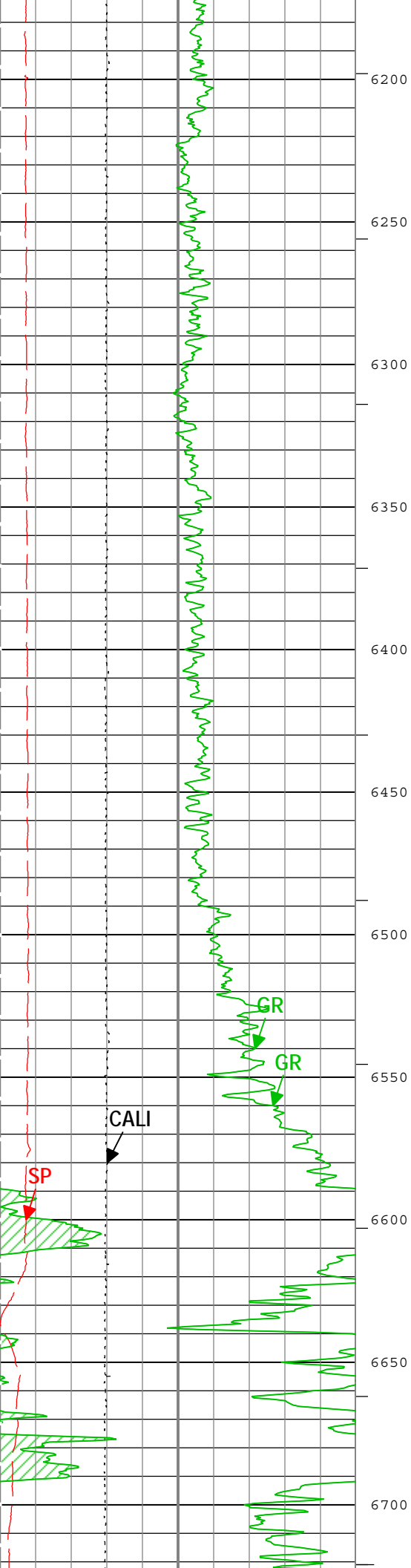


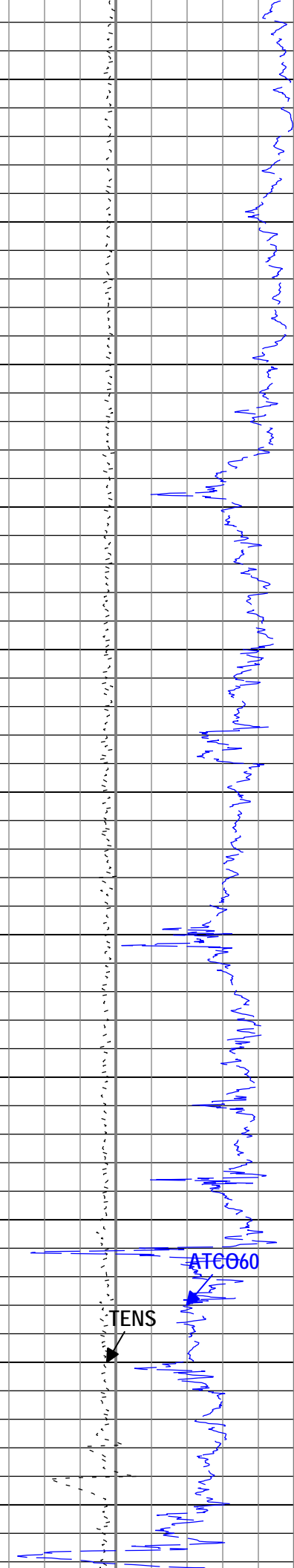
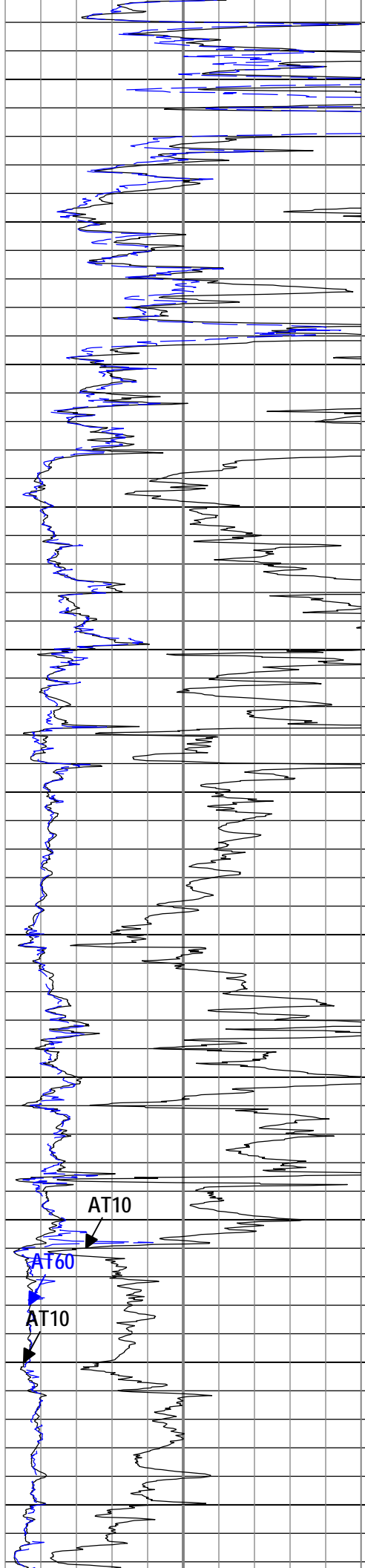
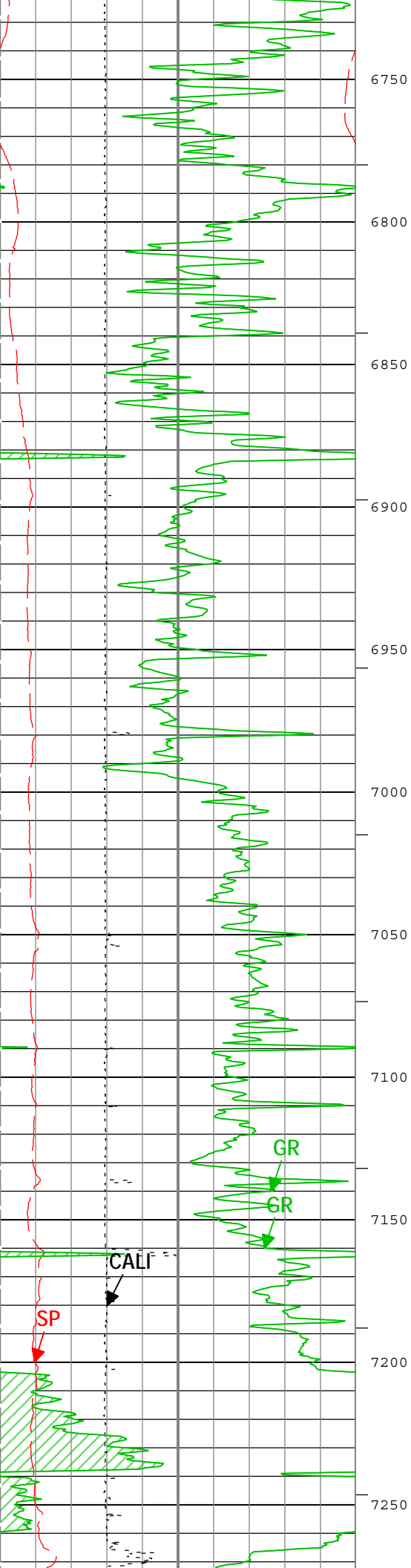


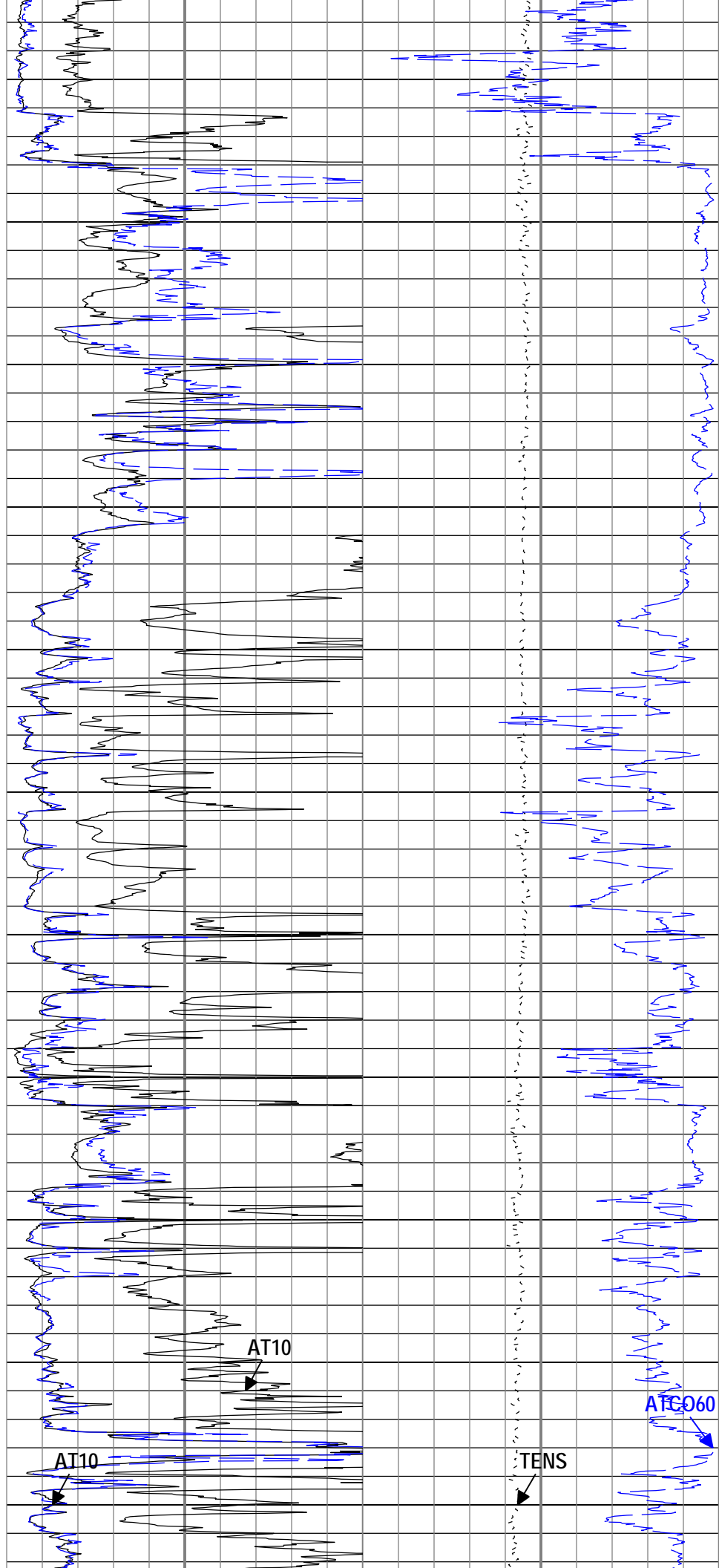
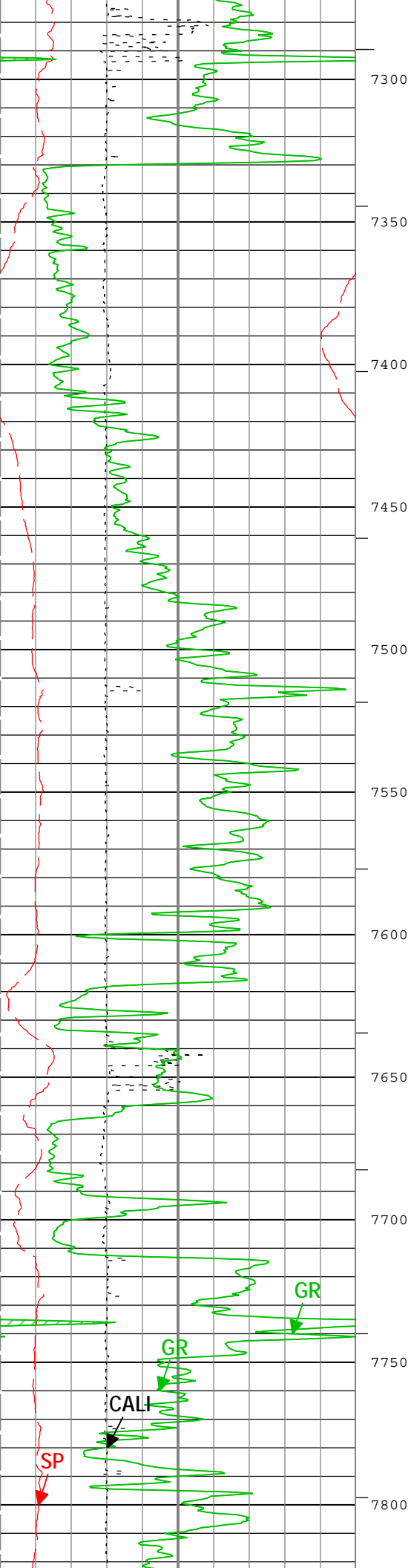


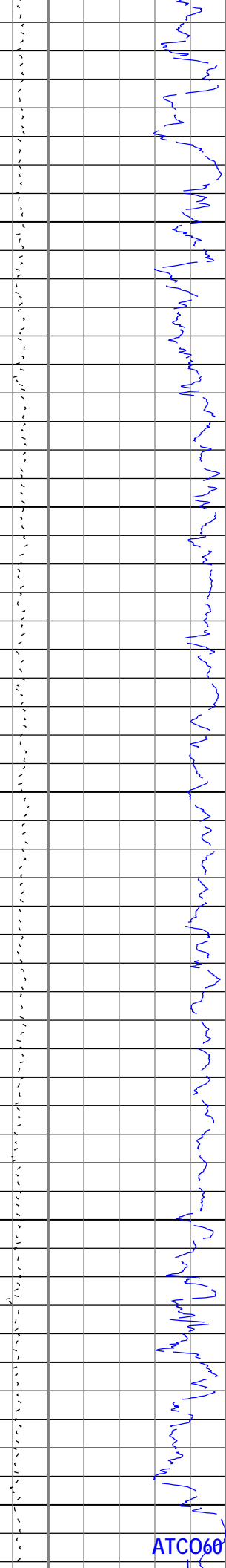
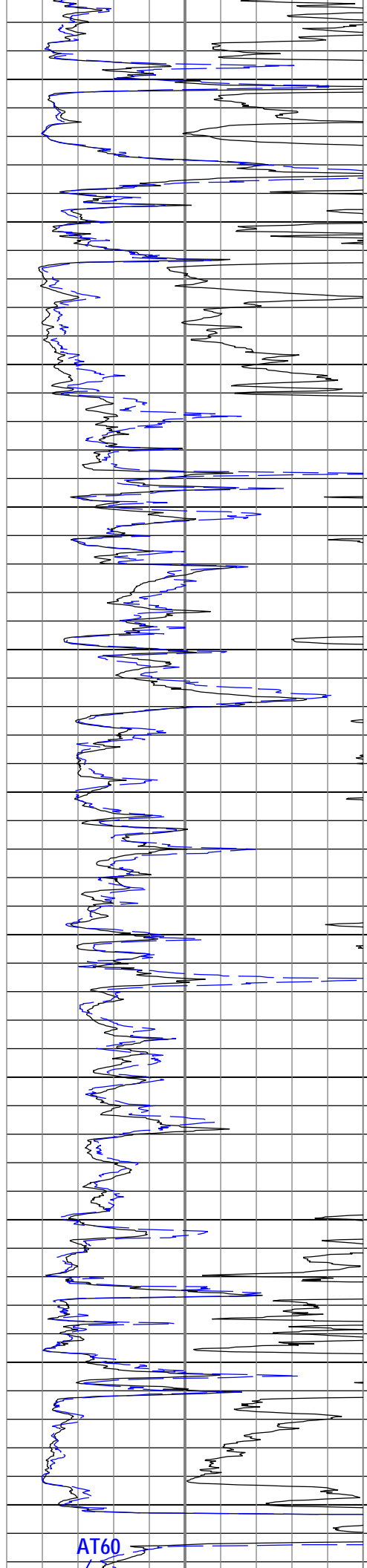
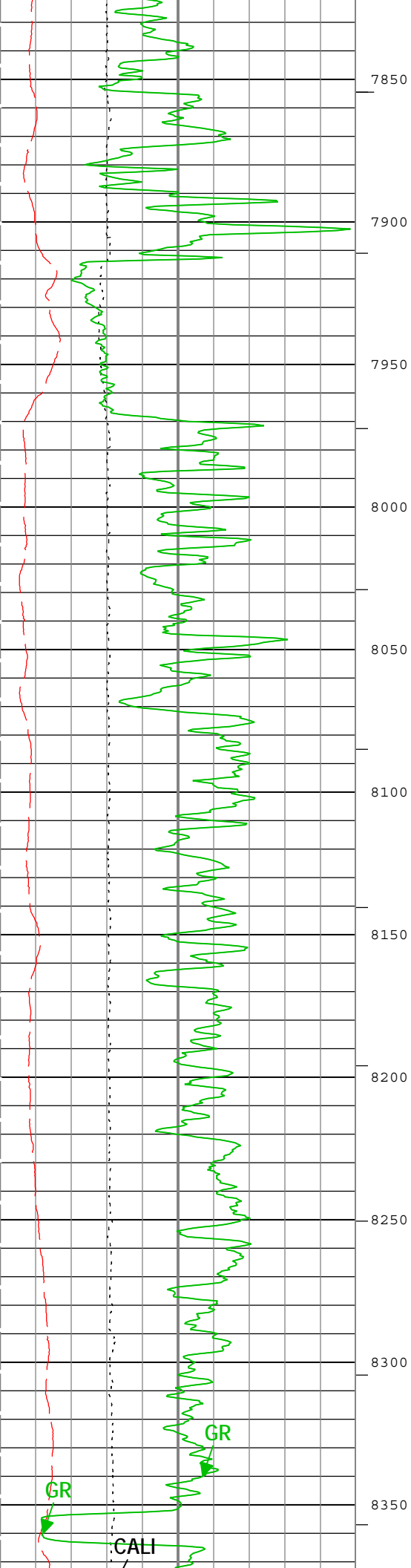


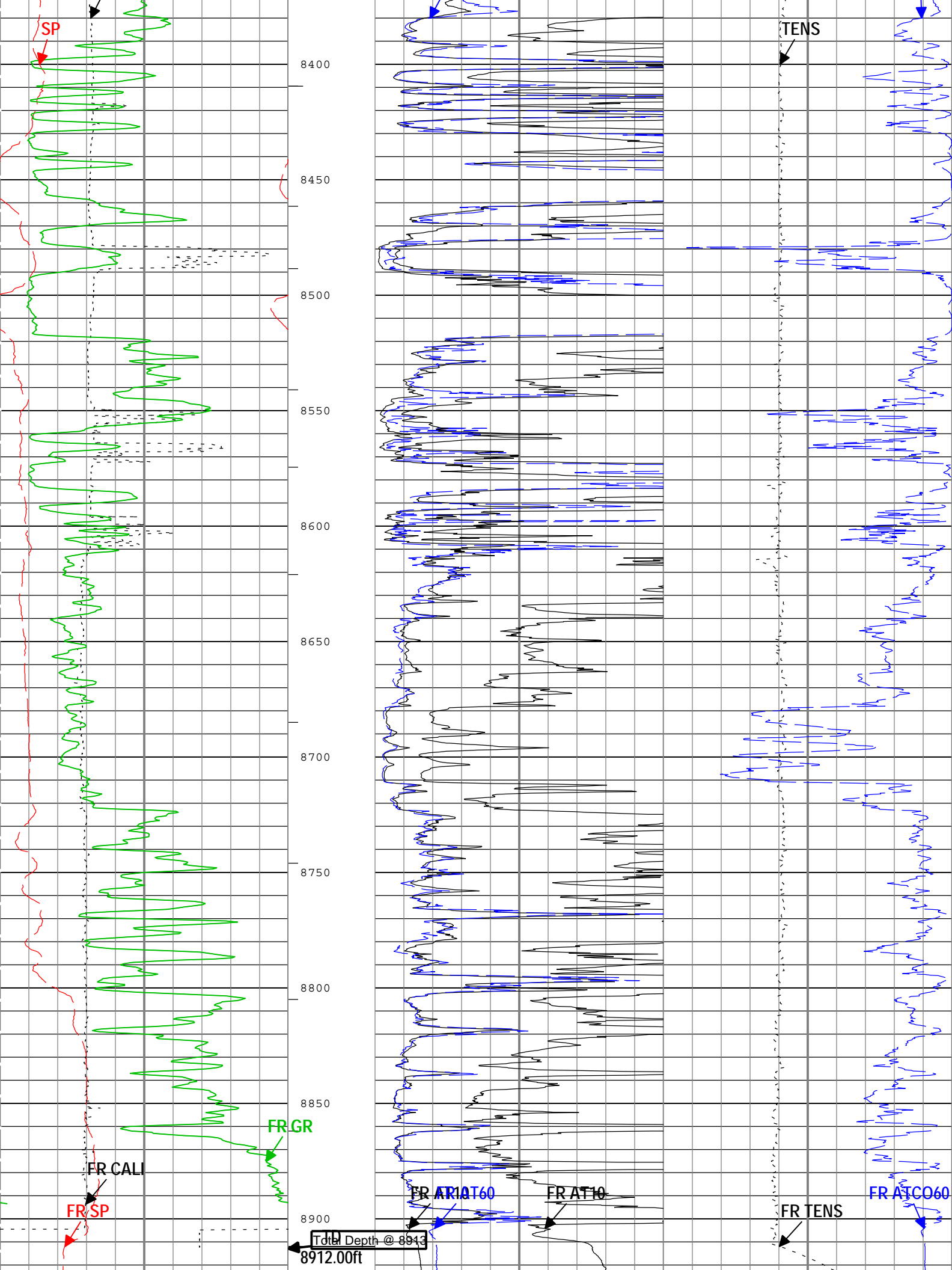






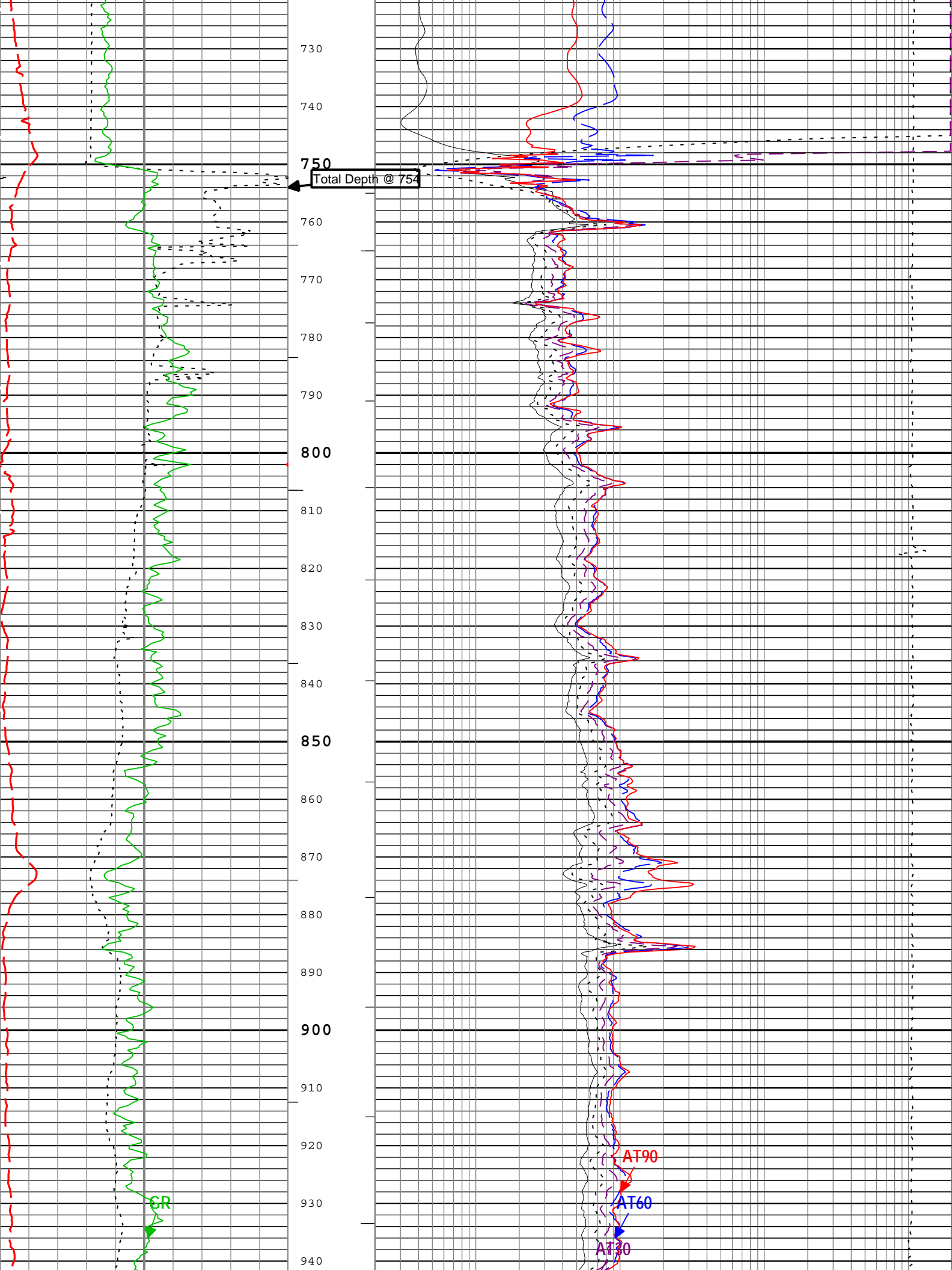


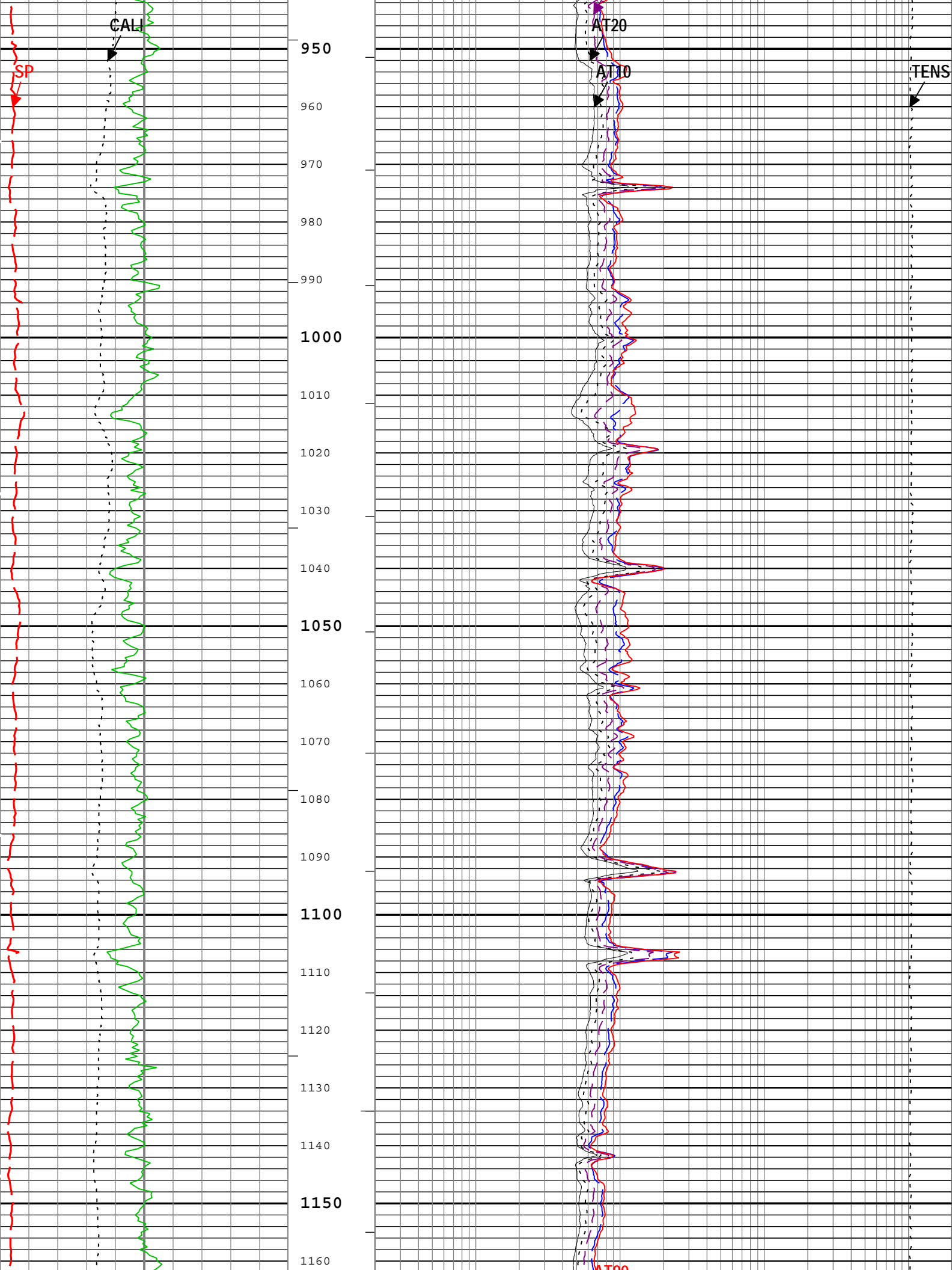


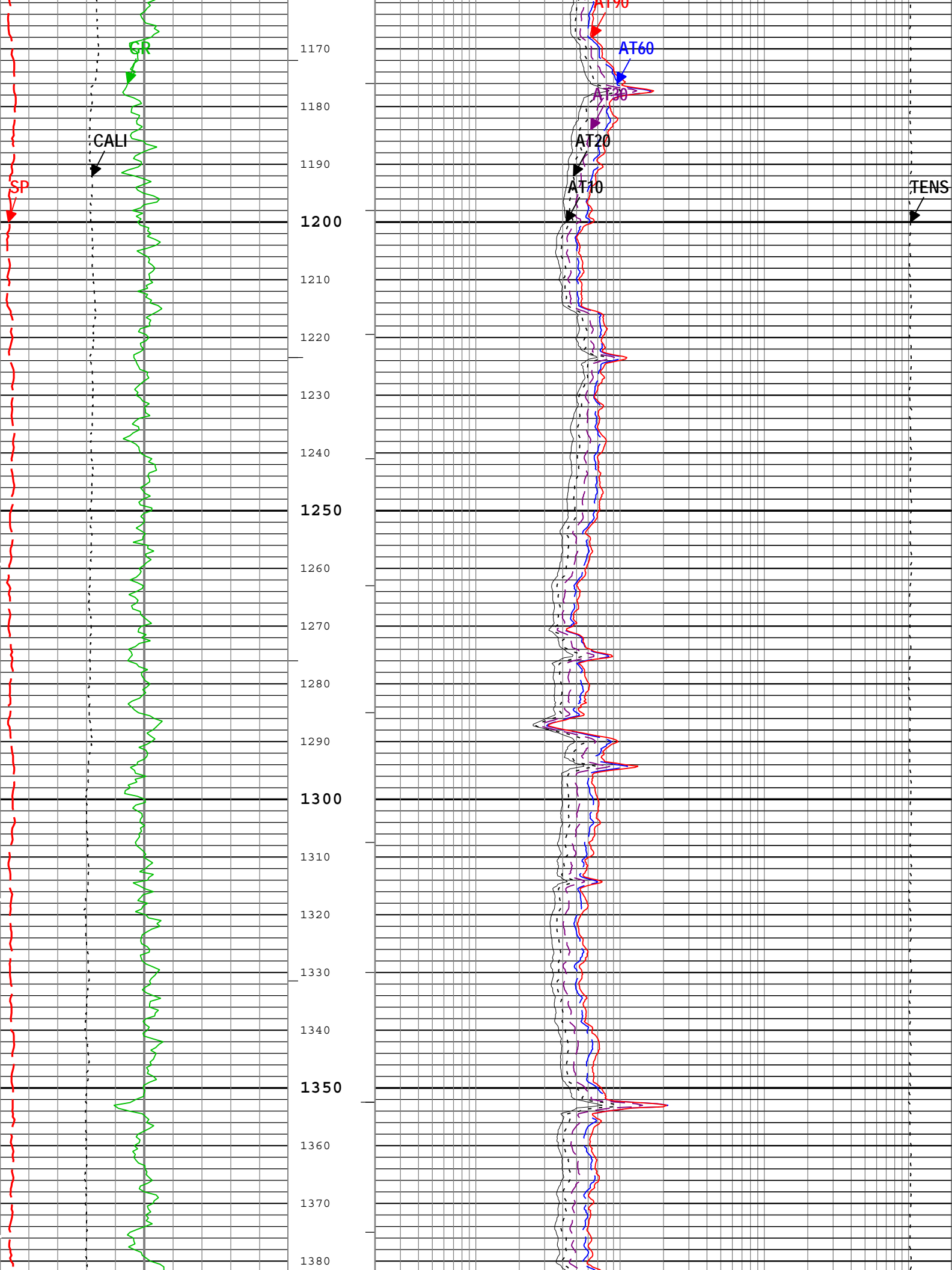


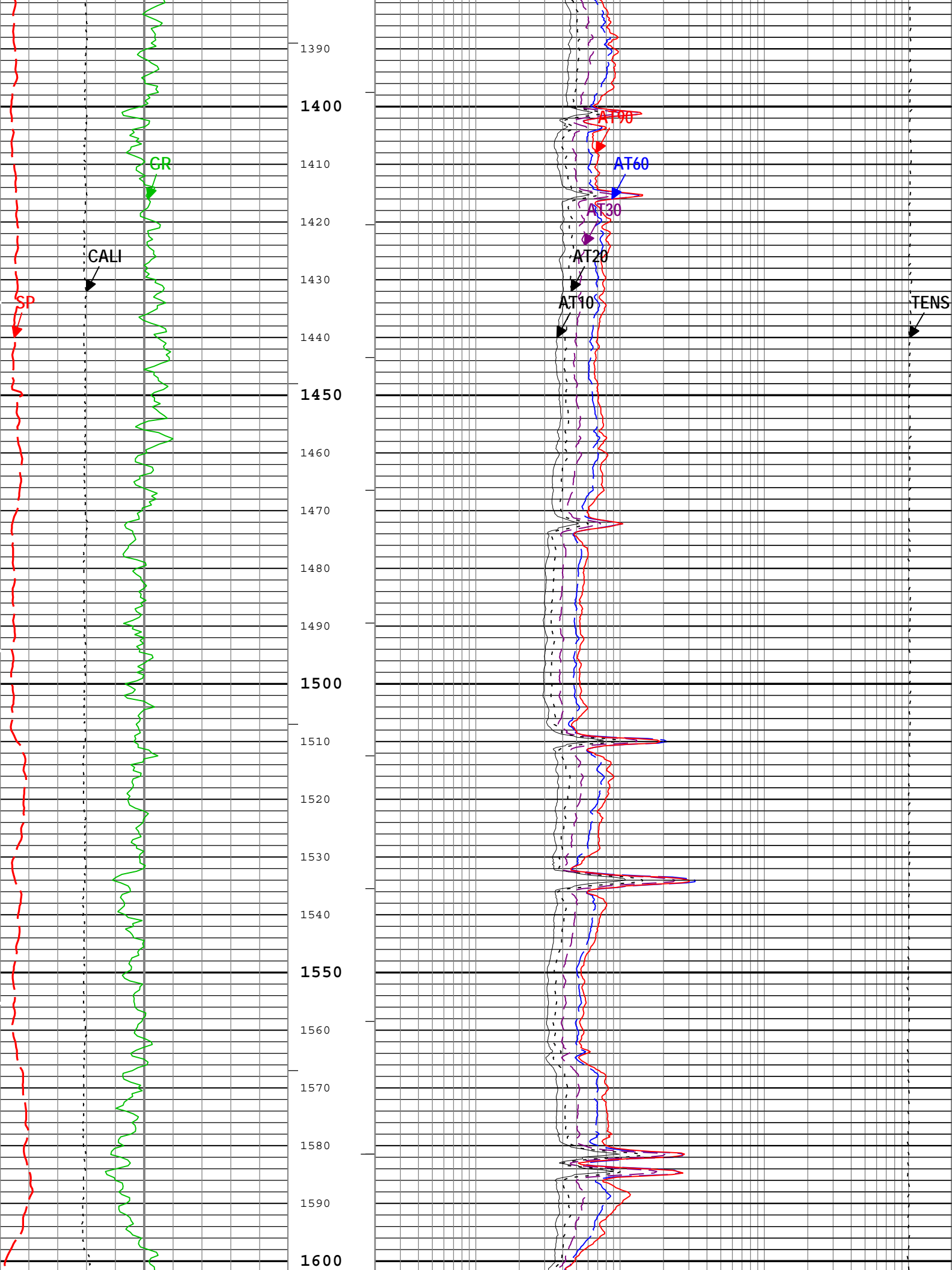
Gamma Ray Backup			Array Induction Two Foot Resistivity A10 (AT10) AIT-H			Cable Tension (TENS)		
Spontaneous Potential (SP) AIT-H			0 ohm.m 50			5000 lbf 0		
-160 mV 40			Array Induction Two Foot Resistivity A60 (AT60) AIT-H			Array Induction Two Foot Conductivity A60 (ATCO60) AIT-H		
Caliper (CALI) HDRS-B			0 ohm.m 50			1000 mS/m 0		
6 in 16			Array Induction Two Foot Resistivity A10 (AT10) AIT-H					
Gamma Ray (GR) HGNS-B			0 ohm.m 10					
0 gAPI 200								
			ICV - Integrated Cement Volume every 100.00 (ft3)					
			ICV - Integrated Cement Volume every 10.00 (ft3)					
TIME_1900 - Time Marked every 60.00 (s)								
Description: AIT Basic Log Two Format: Log (Import of Kerr McGee 2in Induction) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured								
Depth Creation Date: 01-Aug-2012 16:40:52								
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		No		
ASTA		Array Induction Tool Standoff		AIT-H		1		in
BARI		Barite Mud Presence Flag		Borehole		No		
BHS		Borehole Status (Open or Cased Hole)		Borehole		Open		
BS		Bit Size		WLSESSION		8.75		in
CALI_SHIFT		CALI Supplementary Offset		HDRS-B		0		in
CBLO		Casing Bottom (Logger)		WLSESSION		754		ft
CDEN		Cement Density		HGNS-B		2		g/cm3
CSODDRL		Casing Outer Diameter - Zoned along driller depths		WLSESSION		9.625		in
DFD		Drilling Fluid Density		Borehole		9.05		lbm/gal
FCD		Future Casing (Outer) Diameter		WLSESSION		7		in
GCSE_DOWN_PASS		Generalized Caliper Selection for WL Log Down Passes		Borehole		BS		
GCSE_UP_PASS		Generalized Caliper Selection for WL Log Up Passes		Borehole		CALI		
SOCO		Standoff Correction Option		HGNS-B		Yes		
SPDR		SP Drift Per Foot		AIT-H		0		mV/ft
Tool Control Parameters								
Parameter		Description		Tool		Value		Unit
MAX_LOG_SPEED		Toolstring Maximum Logging Speed		WLSESSION		900		ft/h
1								
5" Induction								
Integration Summary								
Output Channel(s)		Output Description		Input Parameter		Output Value		Unit
ICV		Integrated Cement Volume		GCSE_UP_PASS, FCD		1527.43		ft3
IHV		Integrated Hole Volume		GCSE_UP_PASS		3710.93		ft3
Software Version								
Acquisition System					Version			
MaxWell					3.1.9755.0			

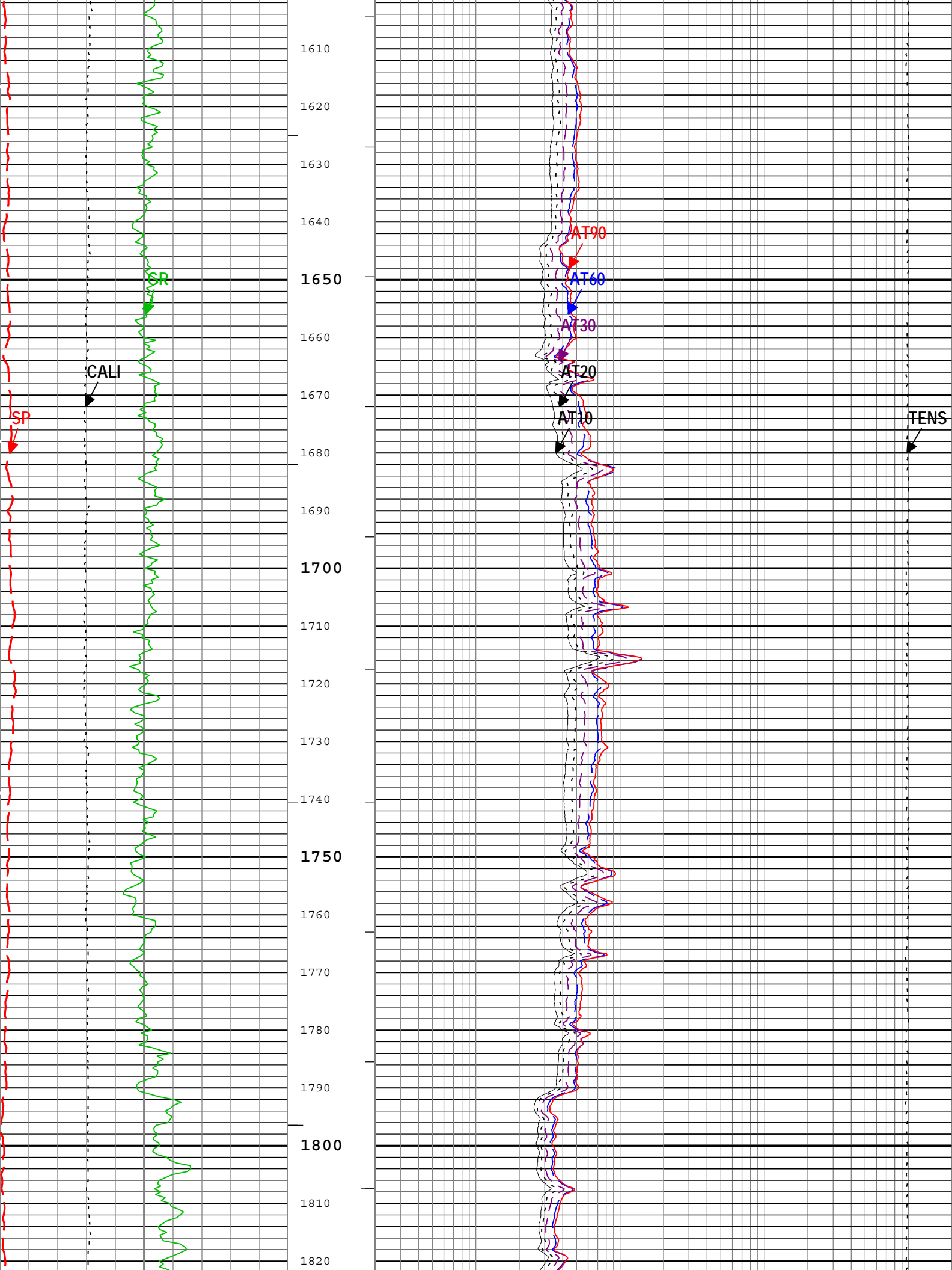
Application Patch						SP-20120723-3.1.9755.1112			
Computation		Description						Version	
Borehole		Borehole Ensemble provides common Borehole Parameters and Channels						3.1.9755.0	
Tool Elements		Description				Software Version		Firmware Version	
AHIS		Array Induction Sonde - H				3.1.9755.1112			
HGNS-B		HILT Gamma-Ray and Neutron Sonde, 125 degC				3.1.9755.0		2.0	
HRCC-B		HILT High-Resolution Control Cartridge, 125 degC				3.1.9755.0		2.0	
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data	
1	Log[3]:Up	Up	58.08 ft	8930.71 ft	01-Aug-2012 8:13:39 AM	01-Aug-2012 1:23:11 PM	0.00 ft		
All depths are referenced to toolstring zero									
Log	1: Log[3]:Up								
Description: AIT Basic Log Two Format: Log (KM 5in Induction) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 01-Aug-2012 16:40:56									
Channel	Source	Sampling							
AT10	AIT-H:AHIS:AHIS	3in							
AT20	AIT-H:AHIS:AHIS	3in							
AT30	AIT-H:AHIS:AHIS	3in							
AT60	AIT-H:AHIS:AHIS	3in							
AT90	AIT-H:AHIS:AHIS	3in							
CALI	HDRS-B:HRCC-B:HRCC-B	1in							
GR	HGNS-B:HGNS-B:HGNS-B	6in							
ICV	Borehole	6in							
IHV	Borehole	6in							
SP	AIT-H:AHIS:AHIS	6in							
TENS	WLWorkflow	6in							
TIME_1900	WLWorkflow	0.1in							
— IHV - Integrated Hole Volume every 10.00 (ft3)									
— IHV - Integrated Hole Volume every 100.00 (ft3)									
TIME_1900 - Time Marked every 60.00 (s)									
— ICV - Integrated Cement Volume every 10.00 (ft3)									
— ICV - Integrated Cement Volume every 100.00 (ft3)									
<div><div>Cable Tension (TENS)</div><div>-----</div><div>10000 lbf 0</div></div>									
<div><div>Array Induction Two Foot Resistivity A10 (AT10) AIT-H</div><div>-----</div><div>0.2 ohm.m 2000</div></div>									
<div><div>Array Induction Two Foot Resistivity A20 (AT20) AIT-H</div><div>-----</div><div>0.2 ohm.m 2000</div></div>									
<div><div>Array Induction Two Foot Resistivity A30 (AT30) AIT-H</div><div>-----</div><div>0.2 ohm.m 2000</div></div>									
<div><div>Array Induction Two Foot Resistivity A60 (AT60) AIT-H</div><div>-----</div><div>0.2 ohm.m 2000</div></div>									
<div><div>Array Induction Two Foot Resistivity A90 (AT90) AIT-H</div><div>-----</div><div>0.2 ohm.m 2000</div></div>									
<div><div>Gamma Ray Backup</div></div>									
<div><div>Spontaneous Potential (SP) AIT-H</div><div>-----</div><div>-160 mV 40</div></div>									
<div><div>Caliper (CALI) HDRS-B</div><div>-----</div><div>6 in 16</div></div>									
<div><div>Gamma Ray (GR) HGNS-B</div><div>-----</div><div>0 gAPI 200</div></div>									
<div><div> 720</div></div>									

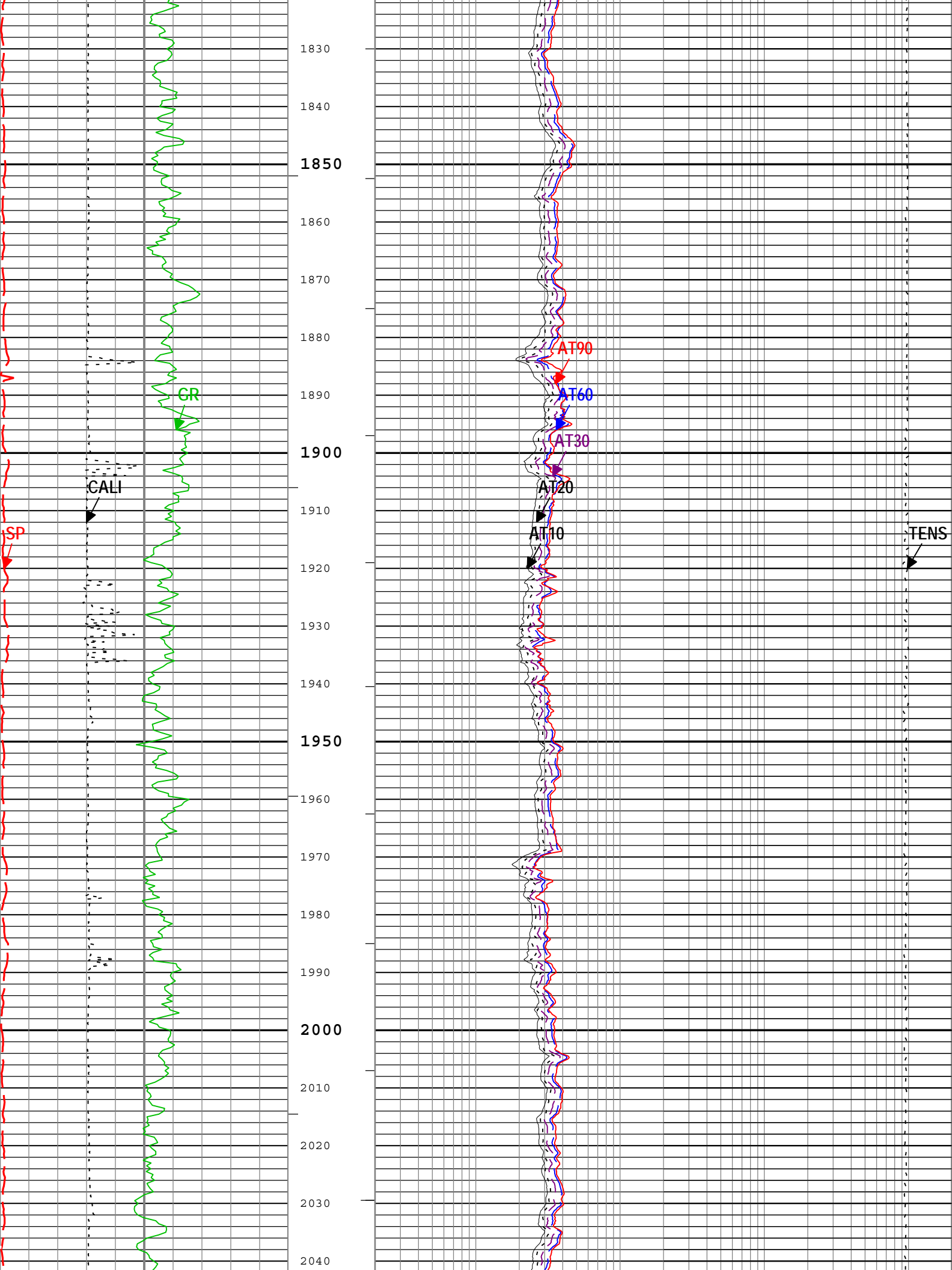


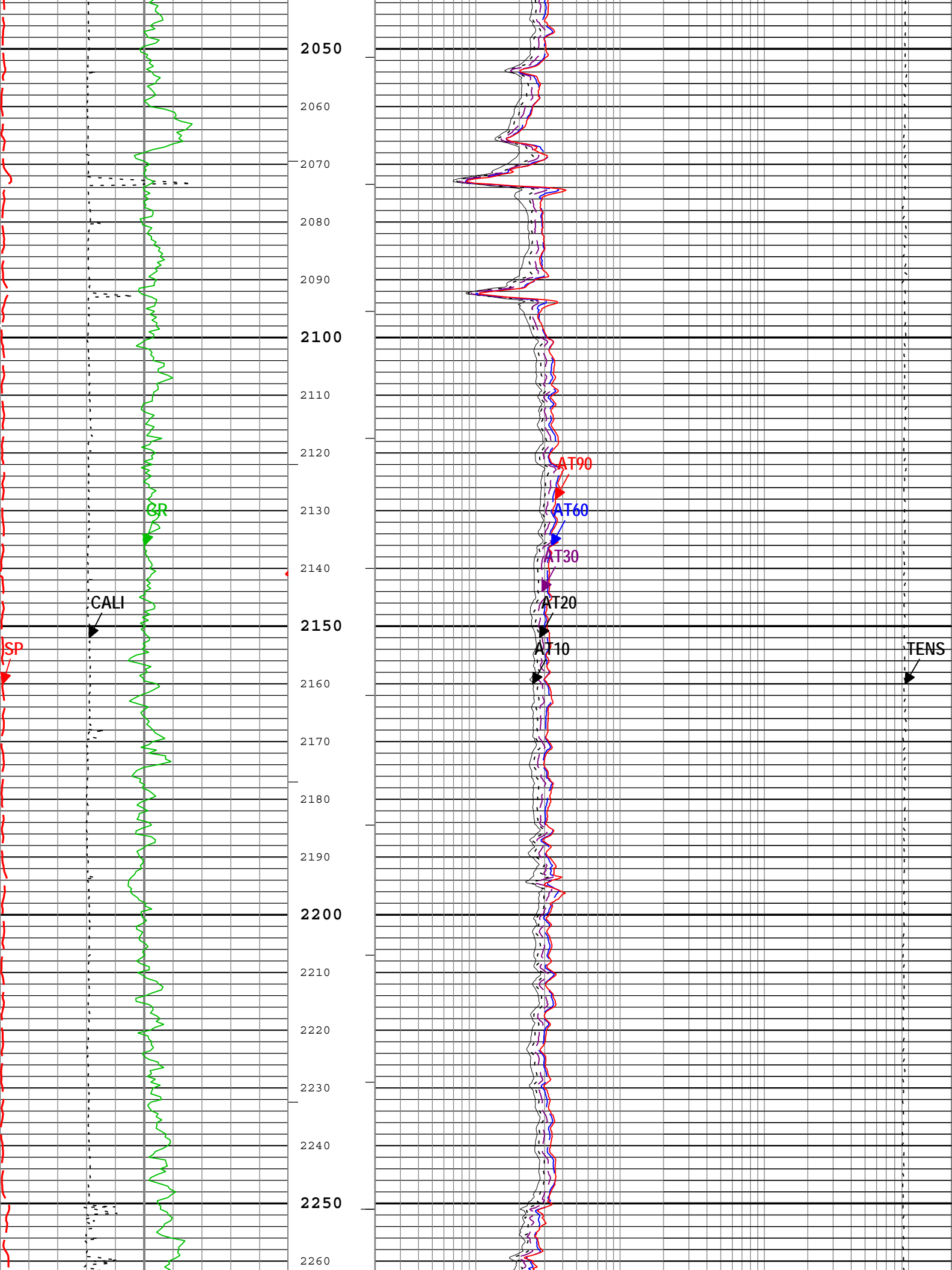


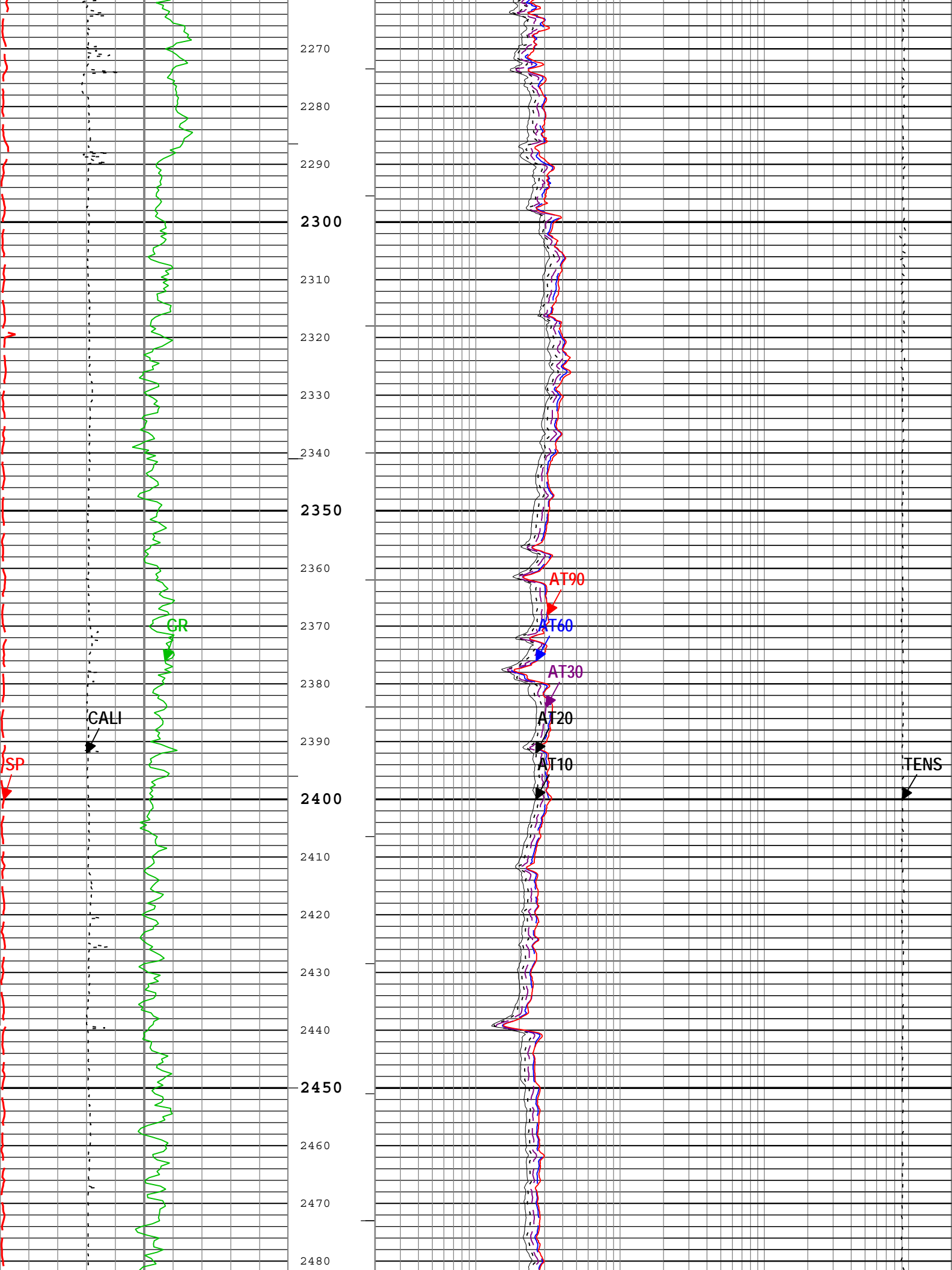


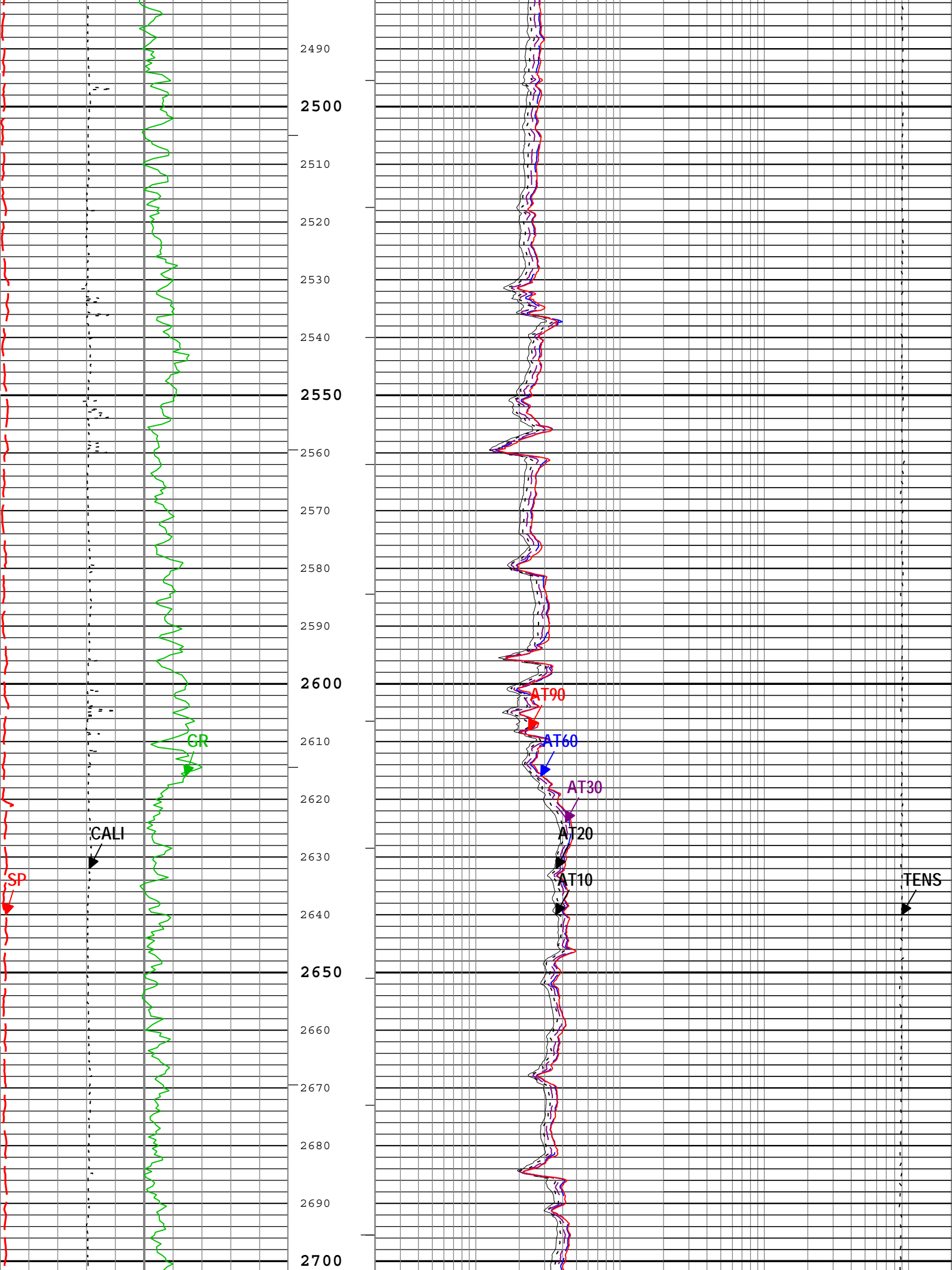


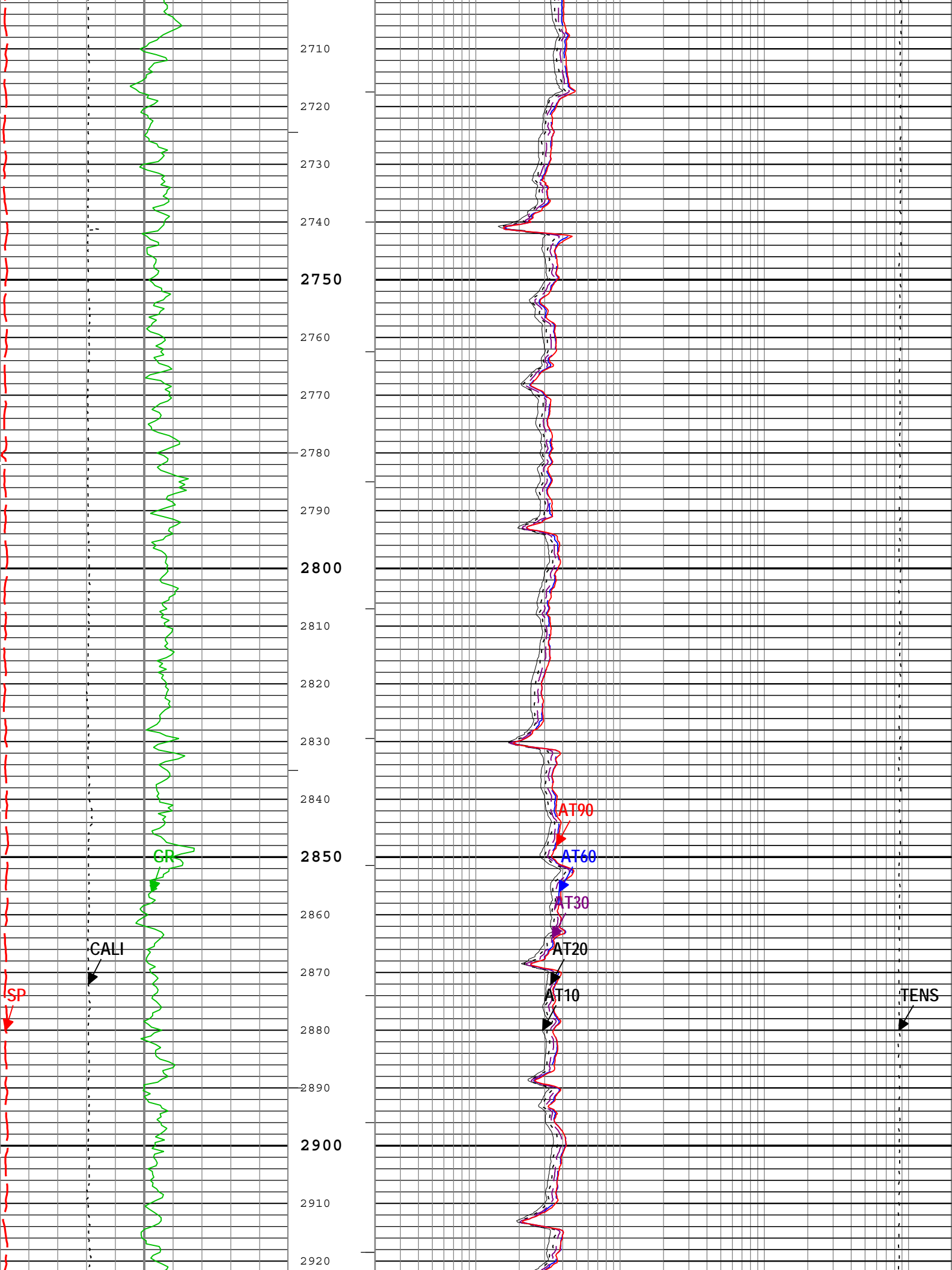


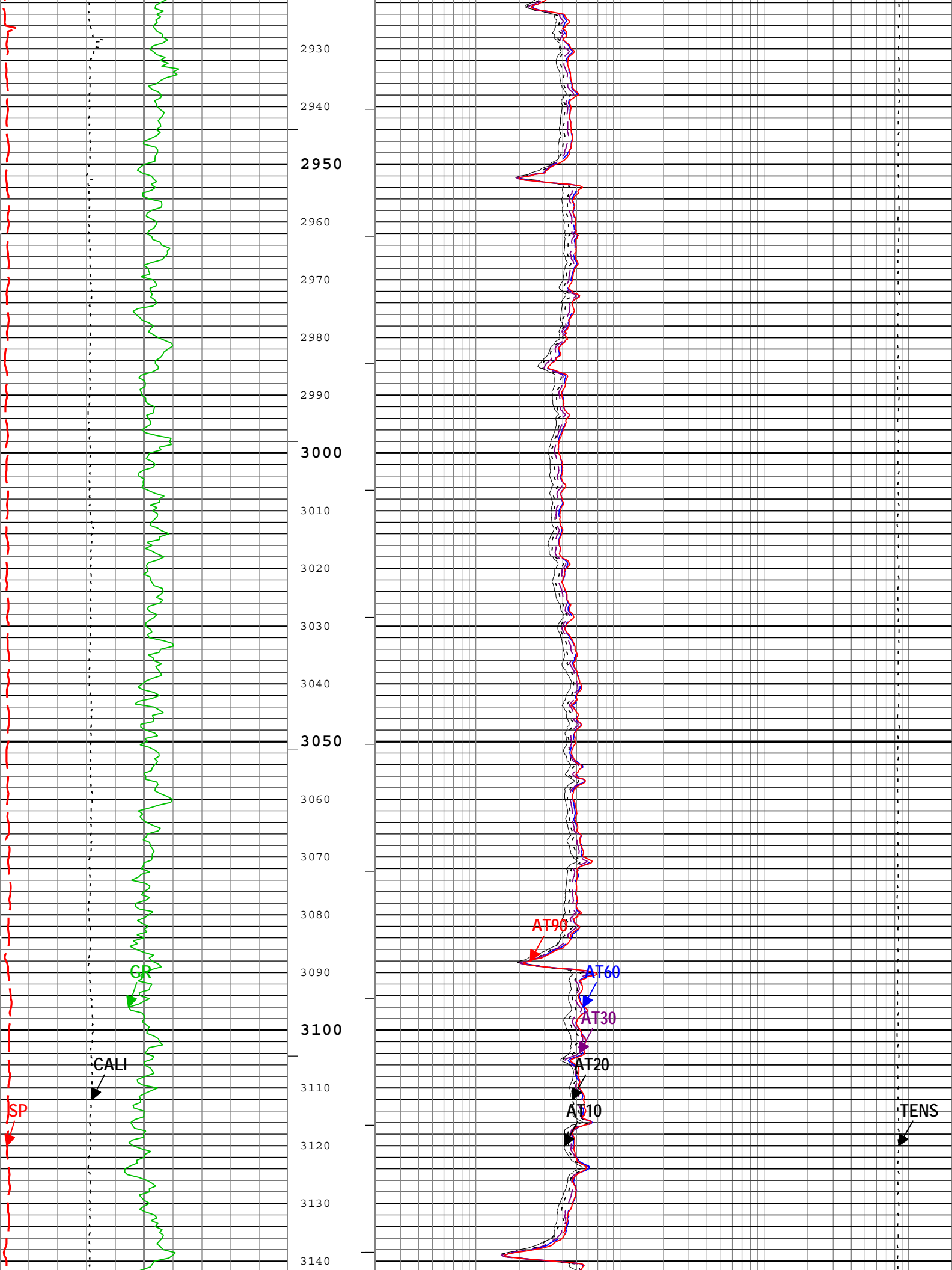


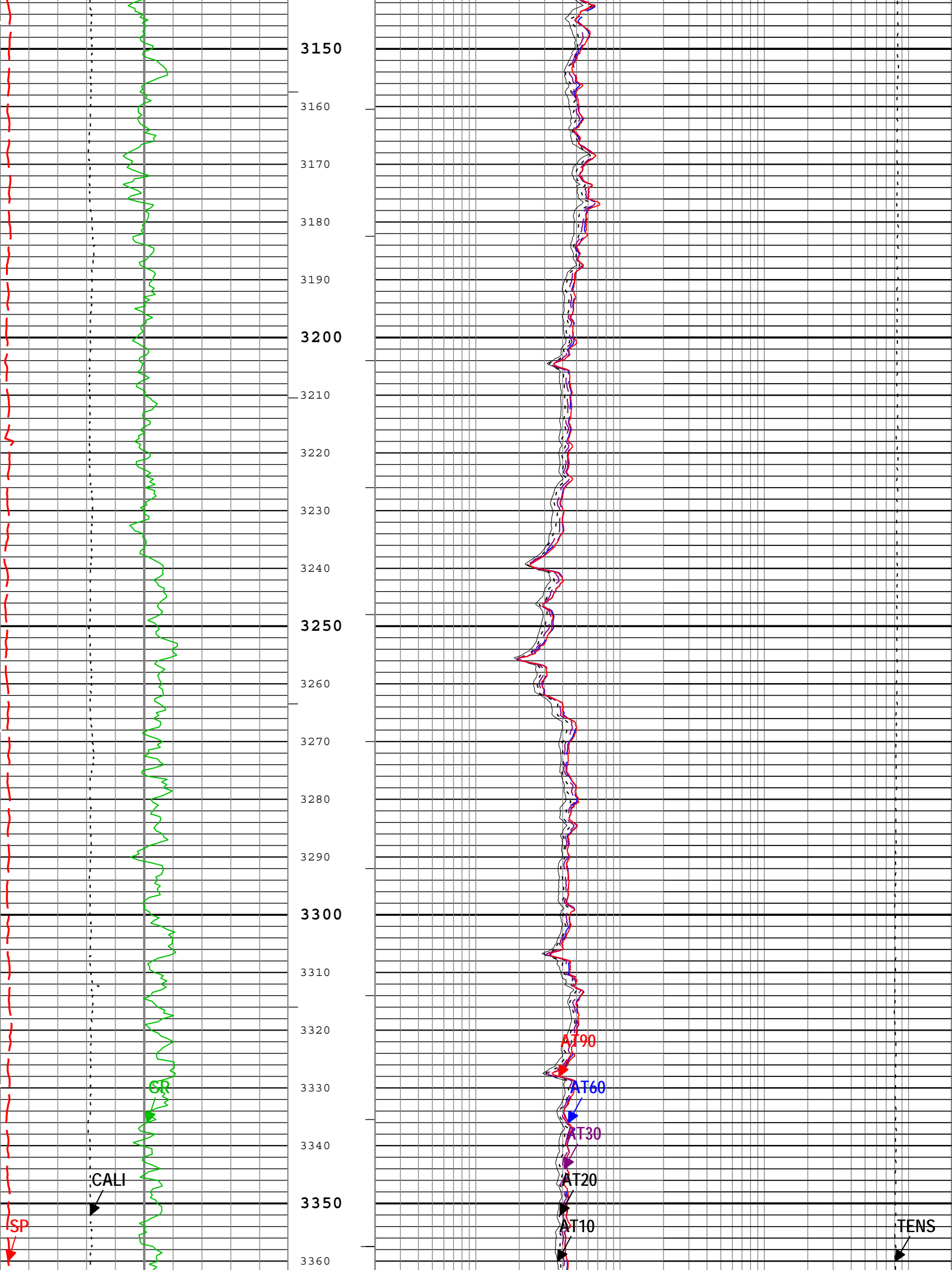


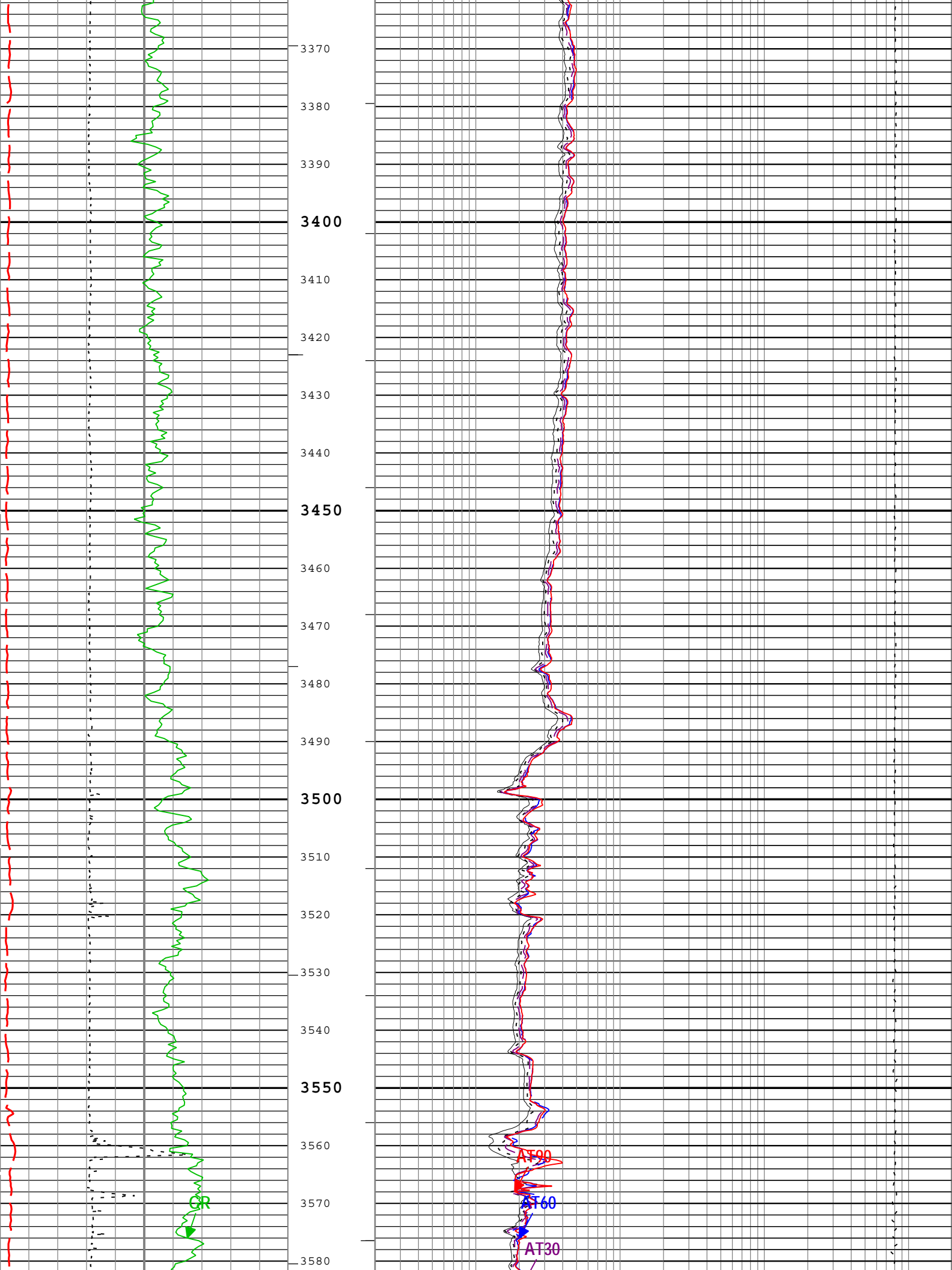


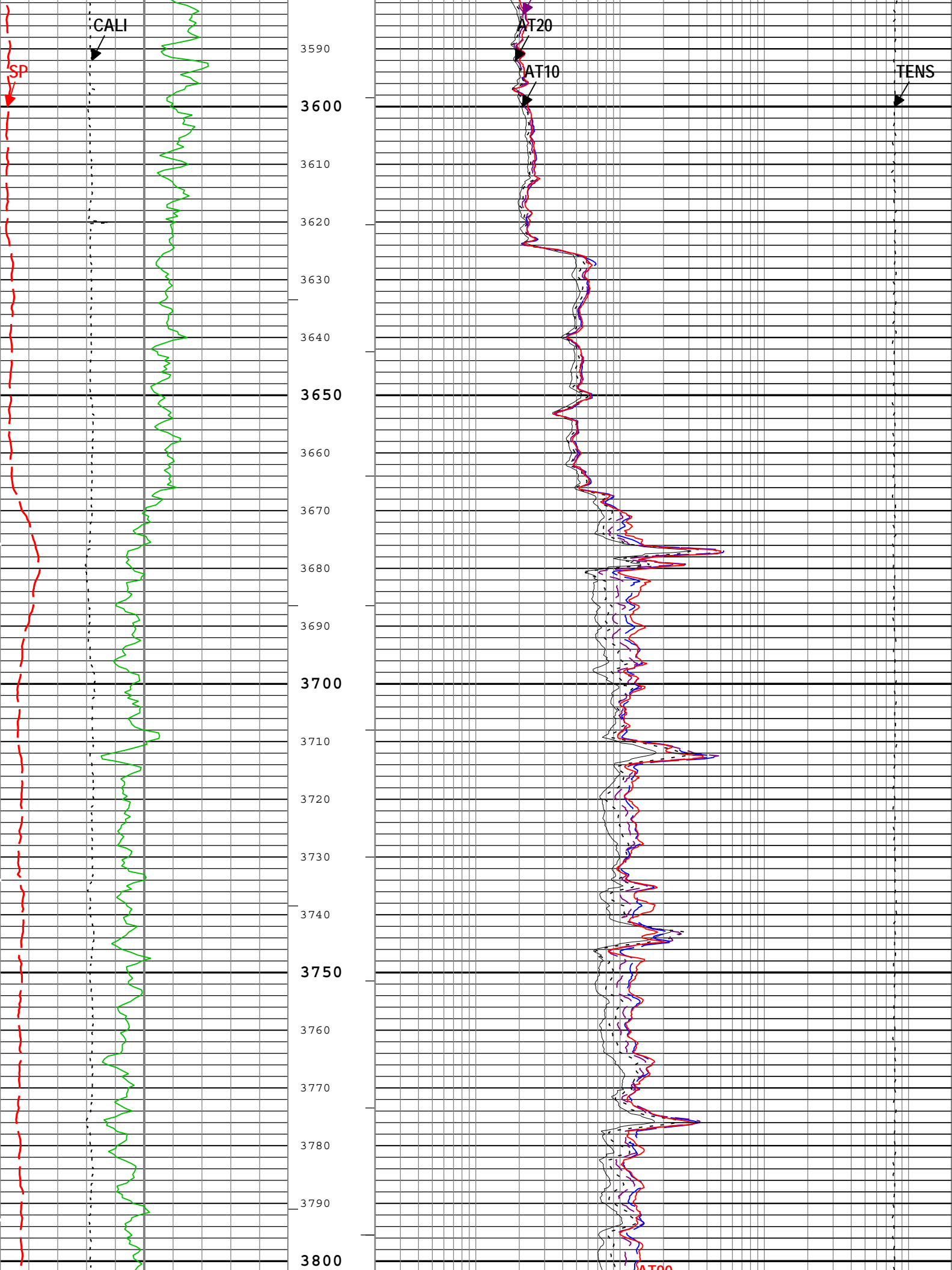


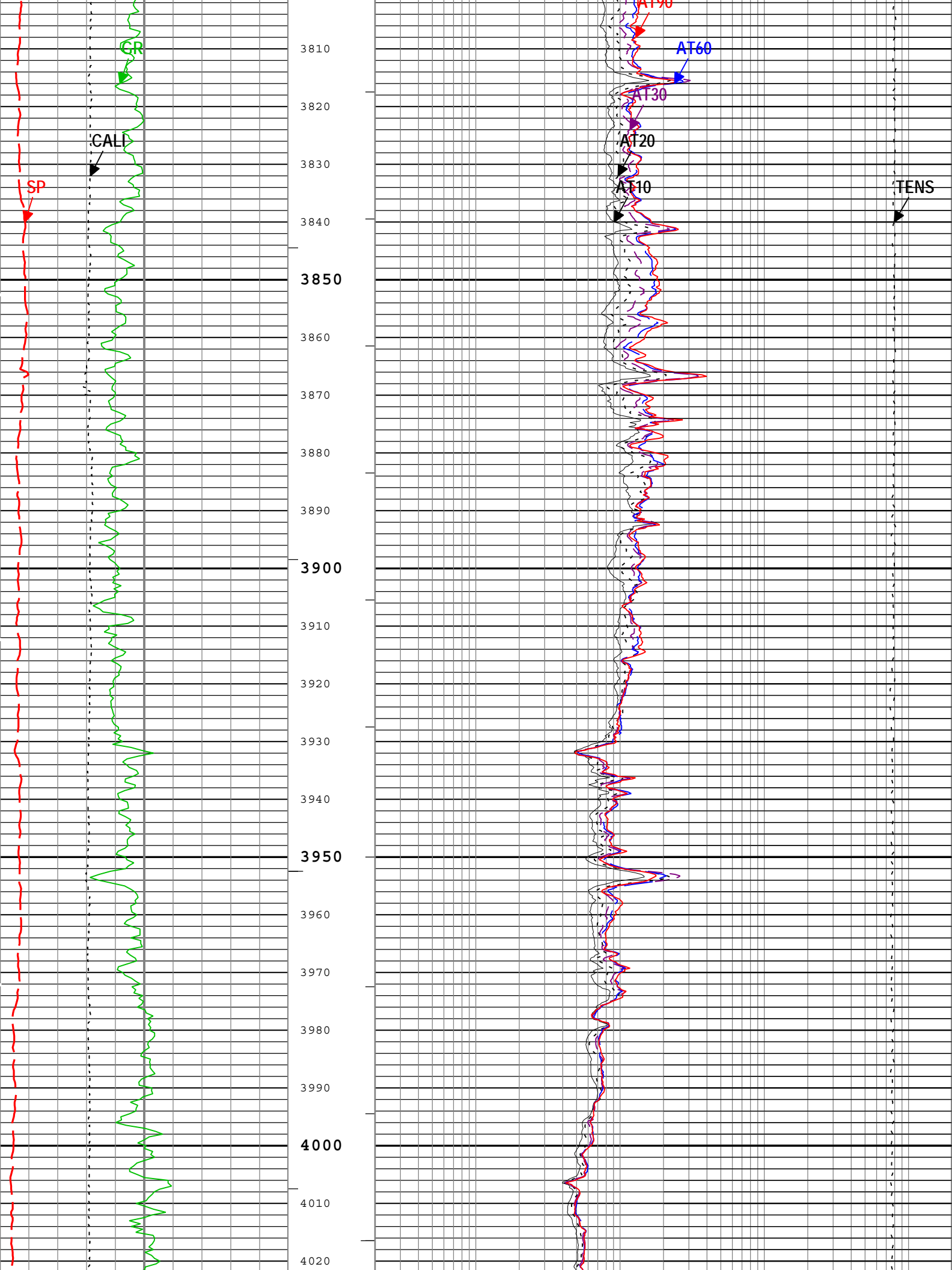


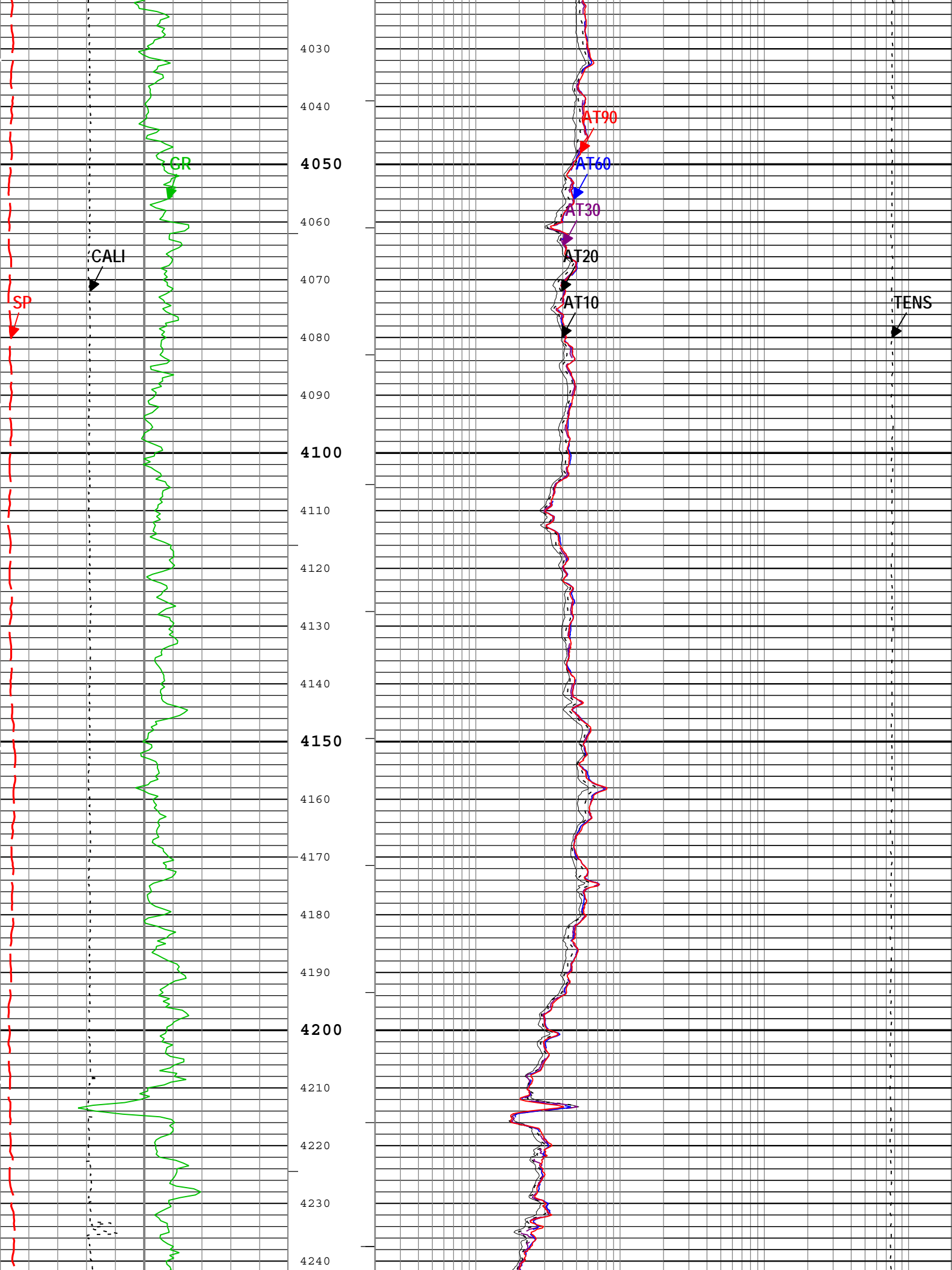


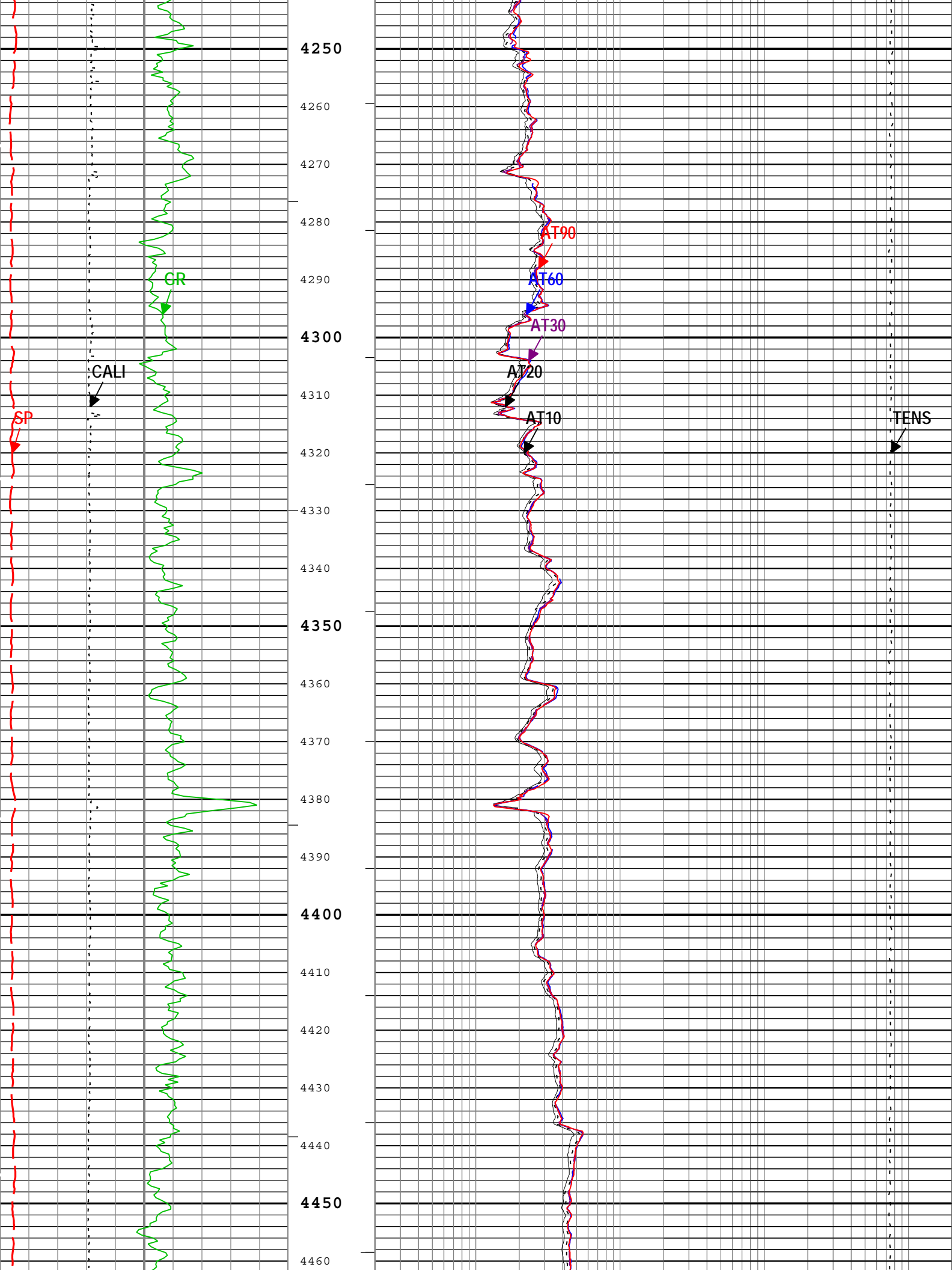


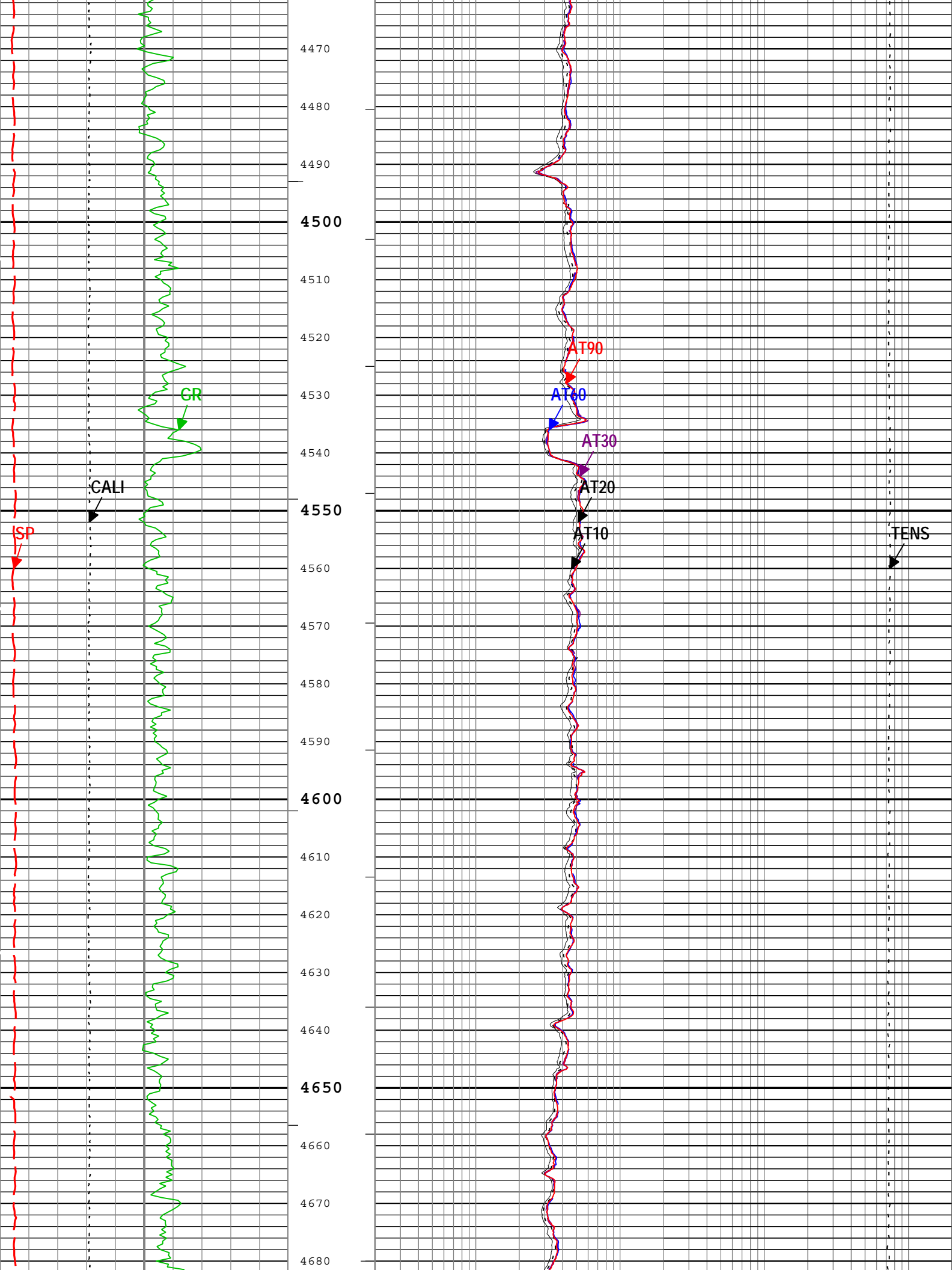


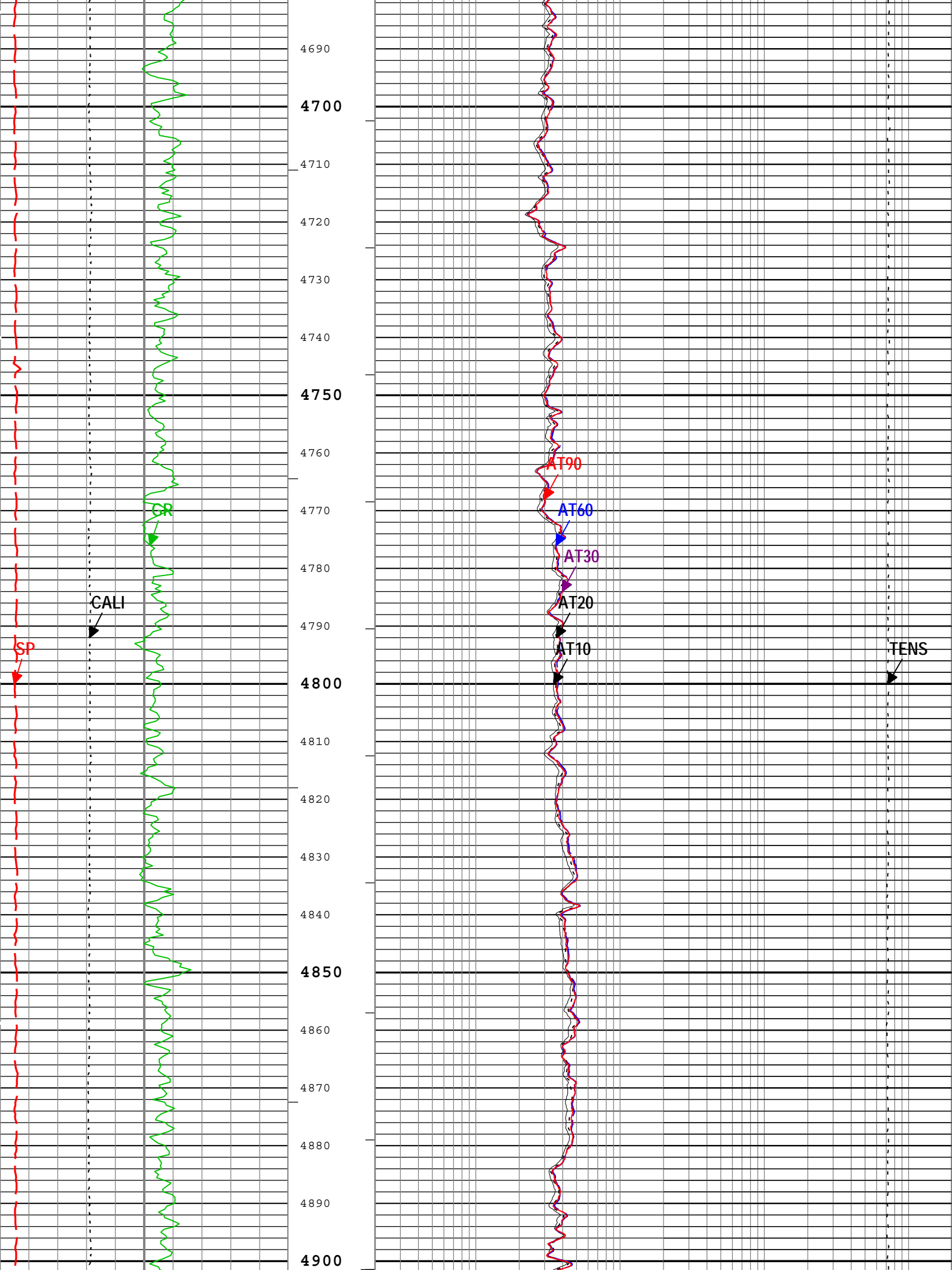


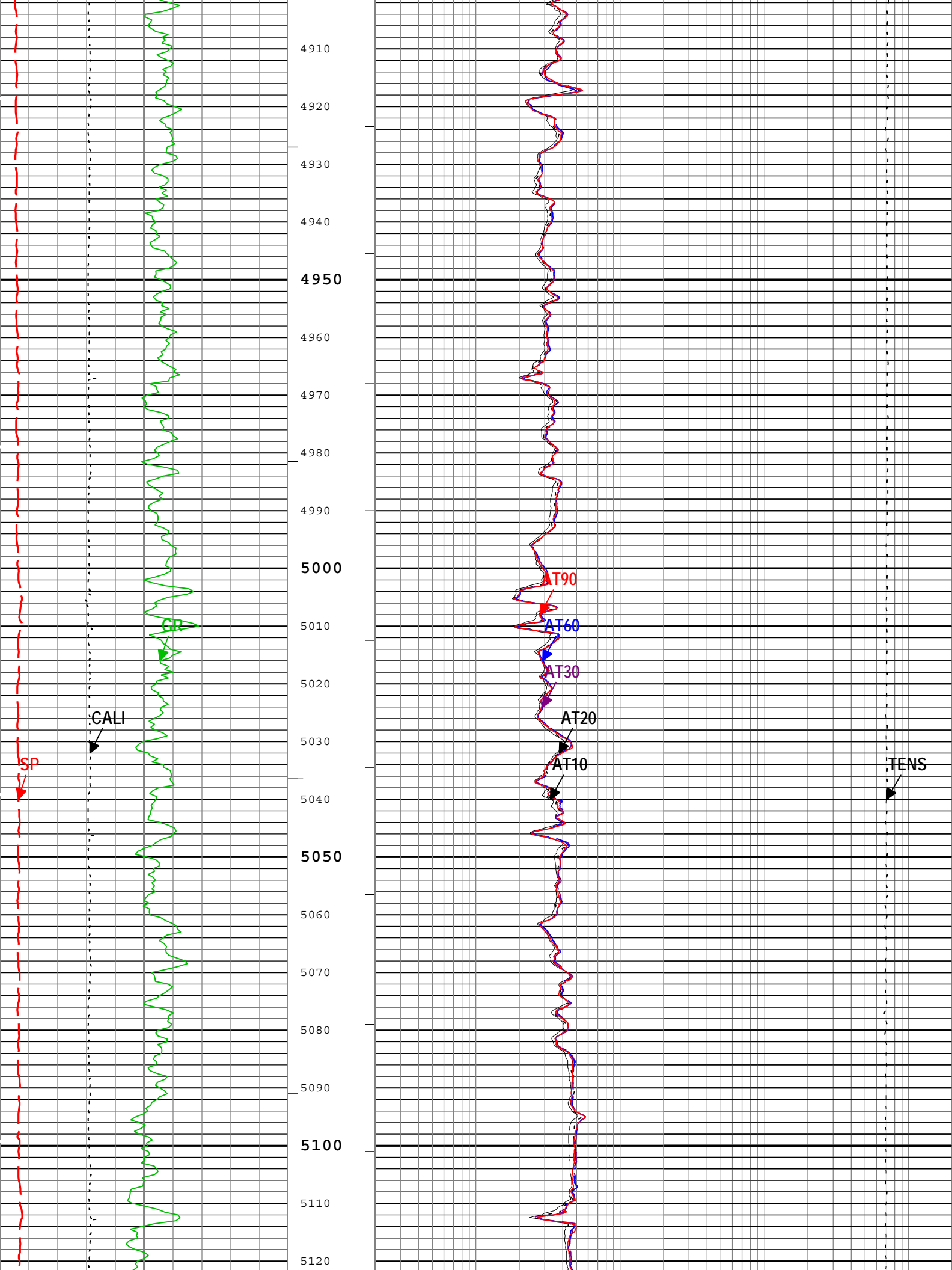


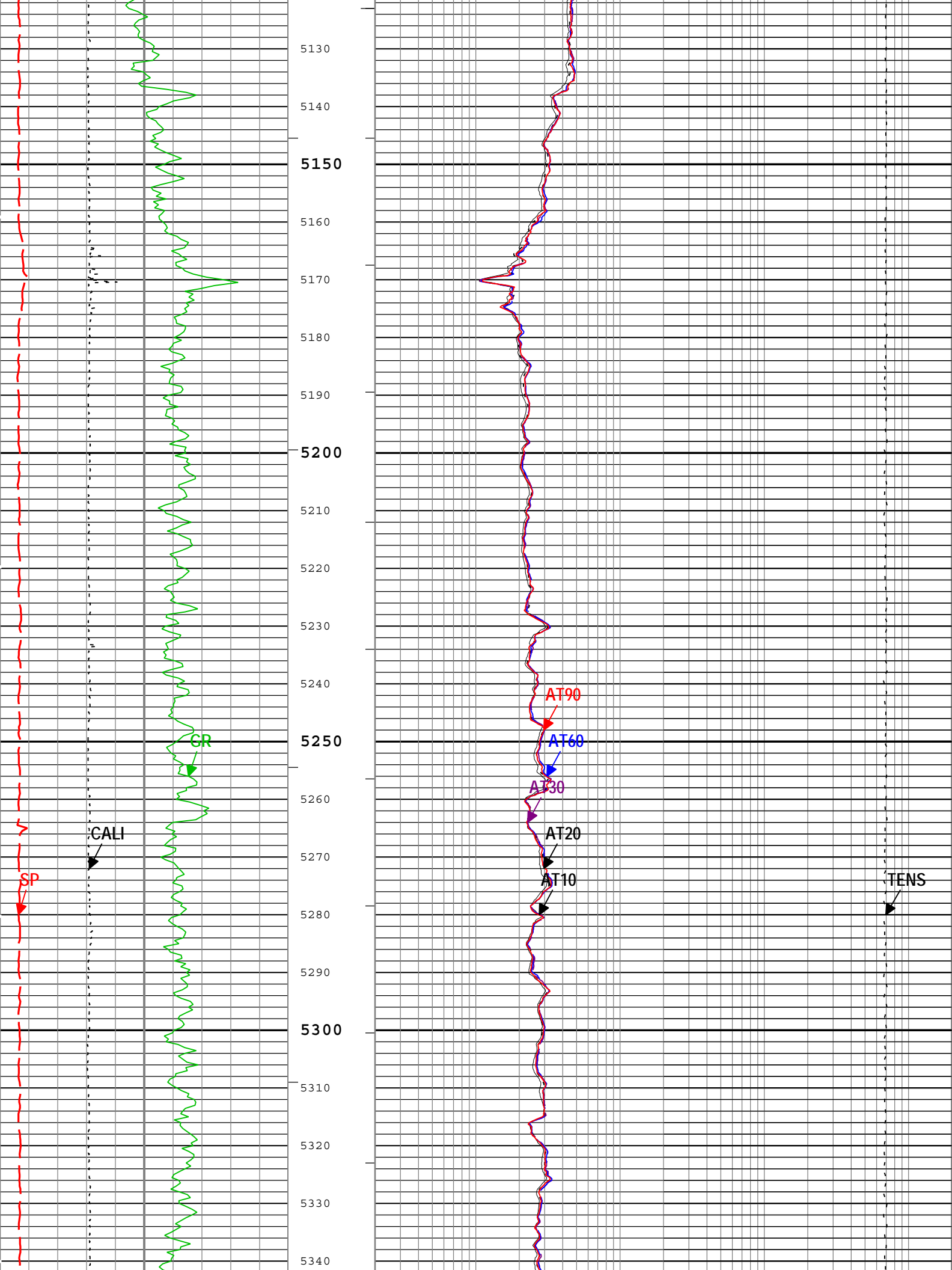


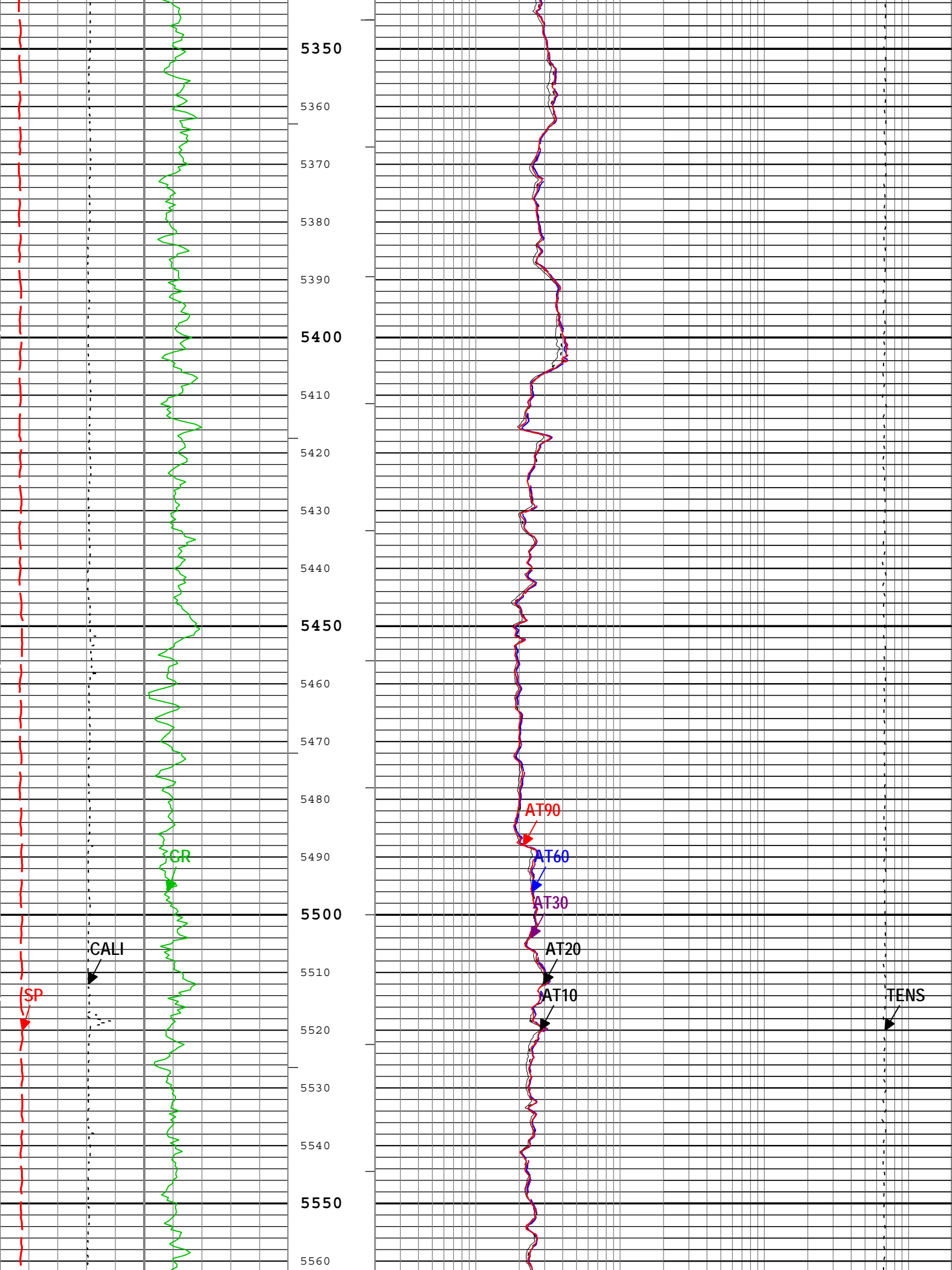


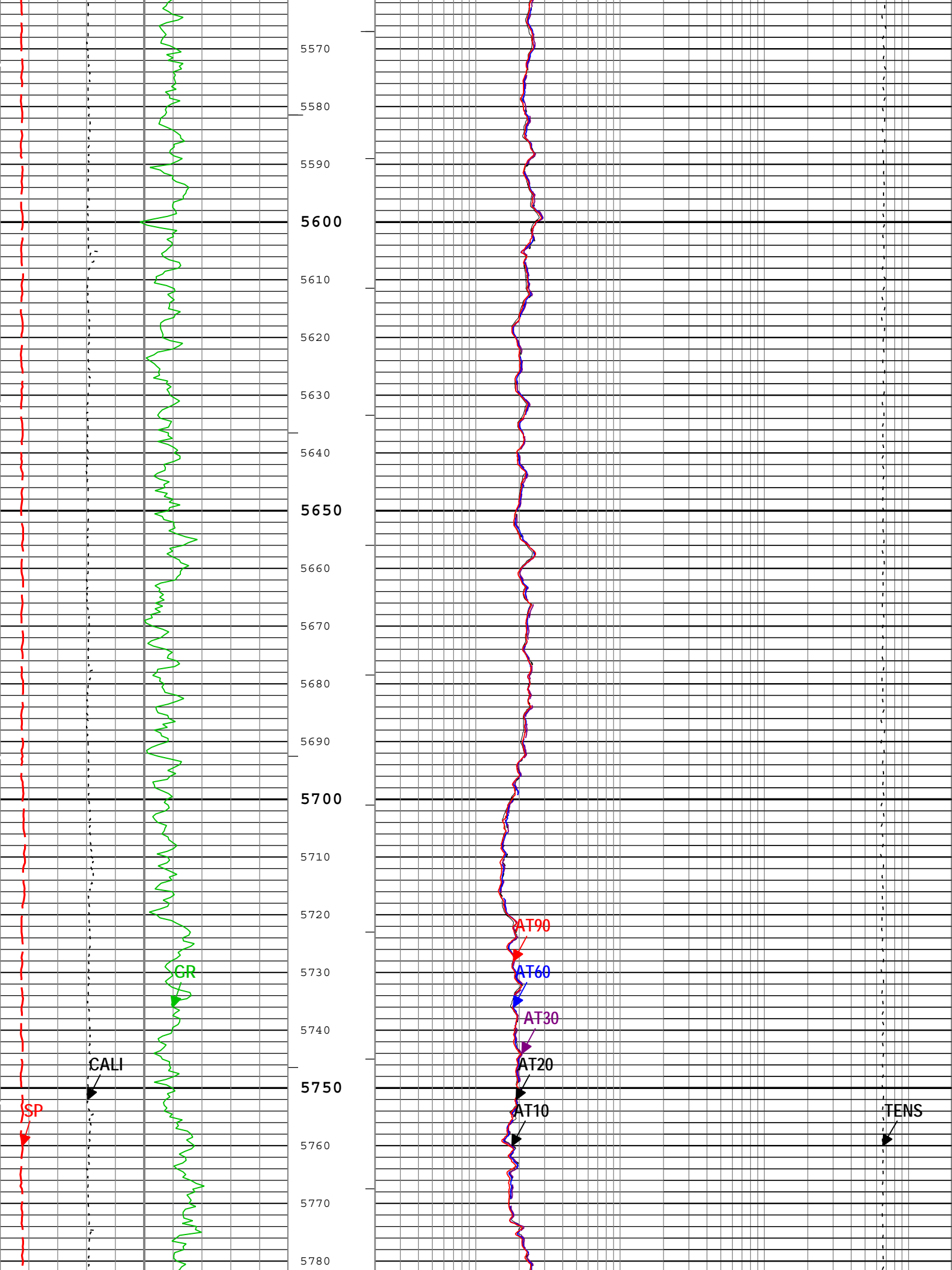


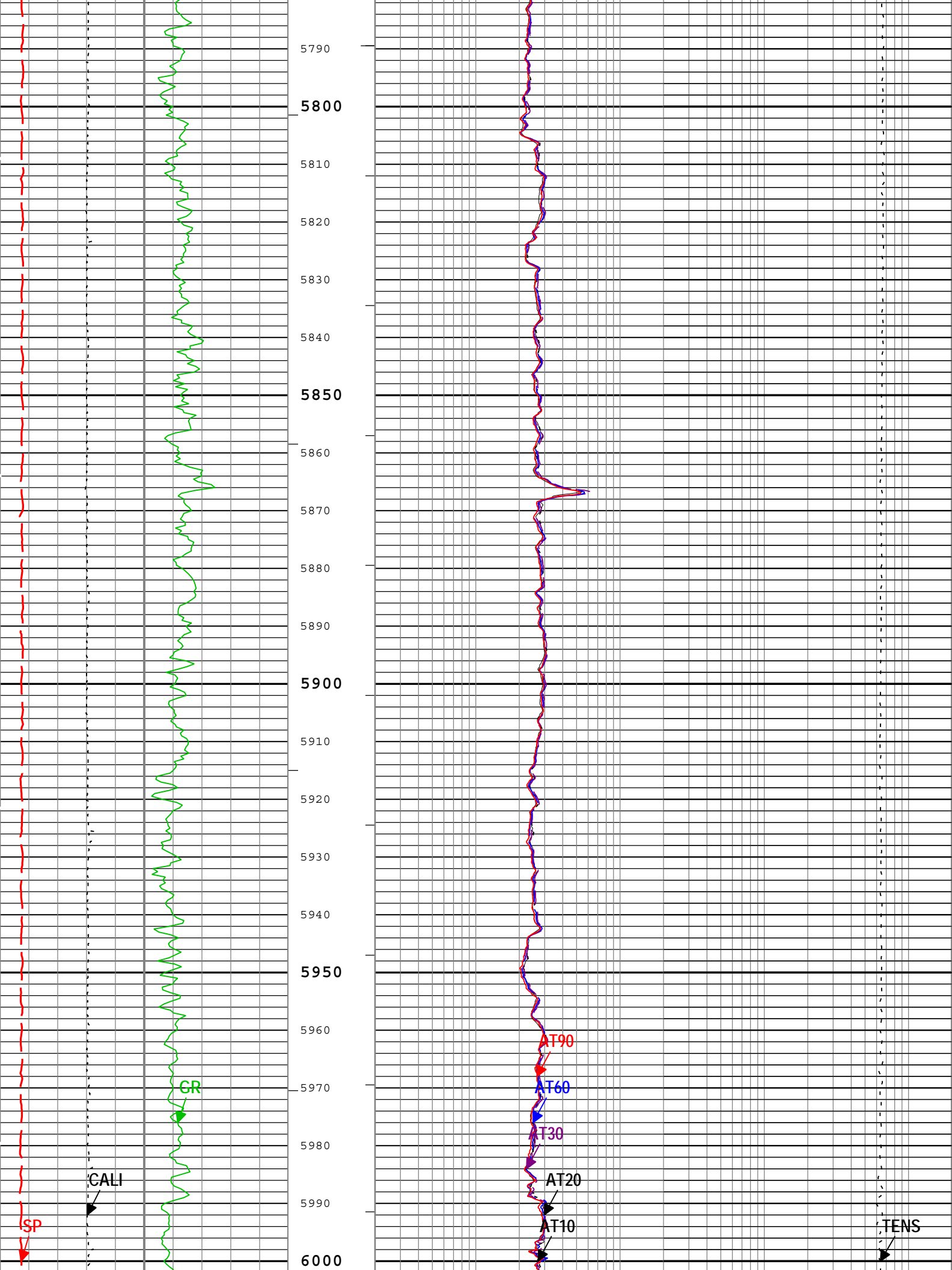


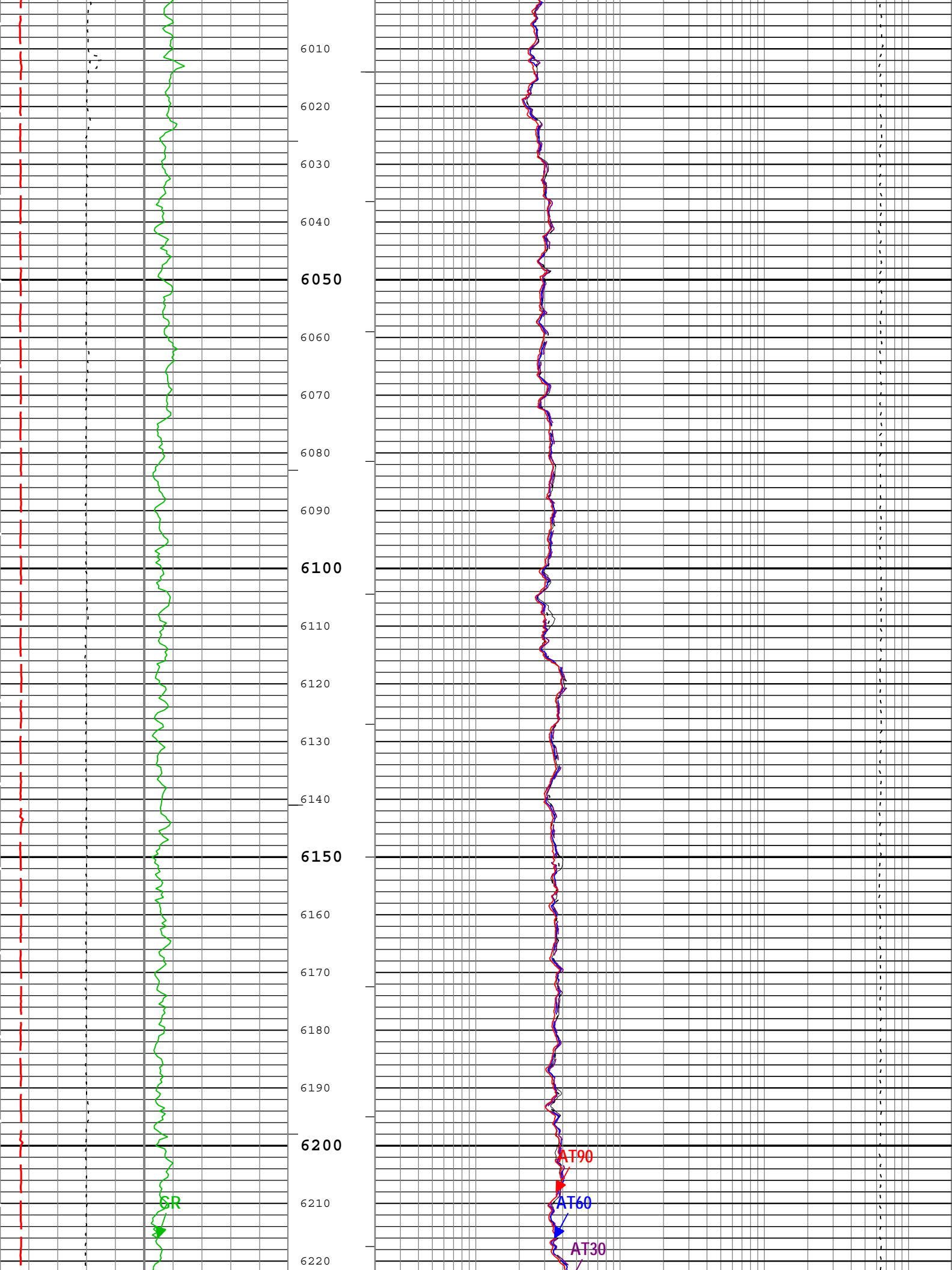


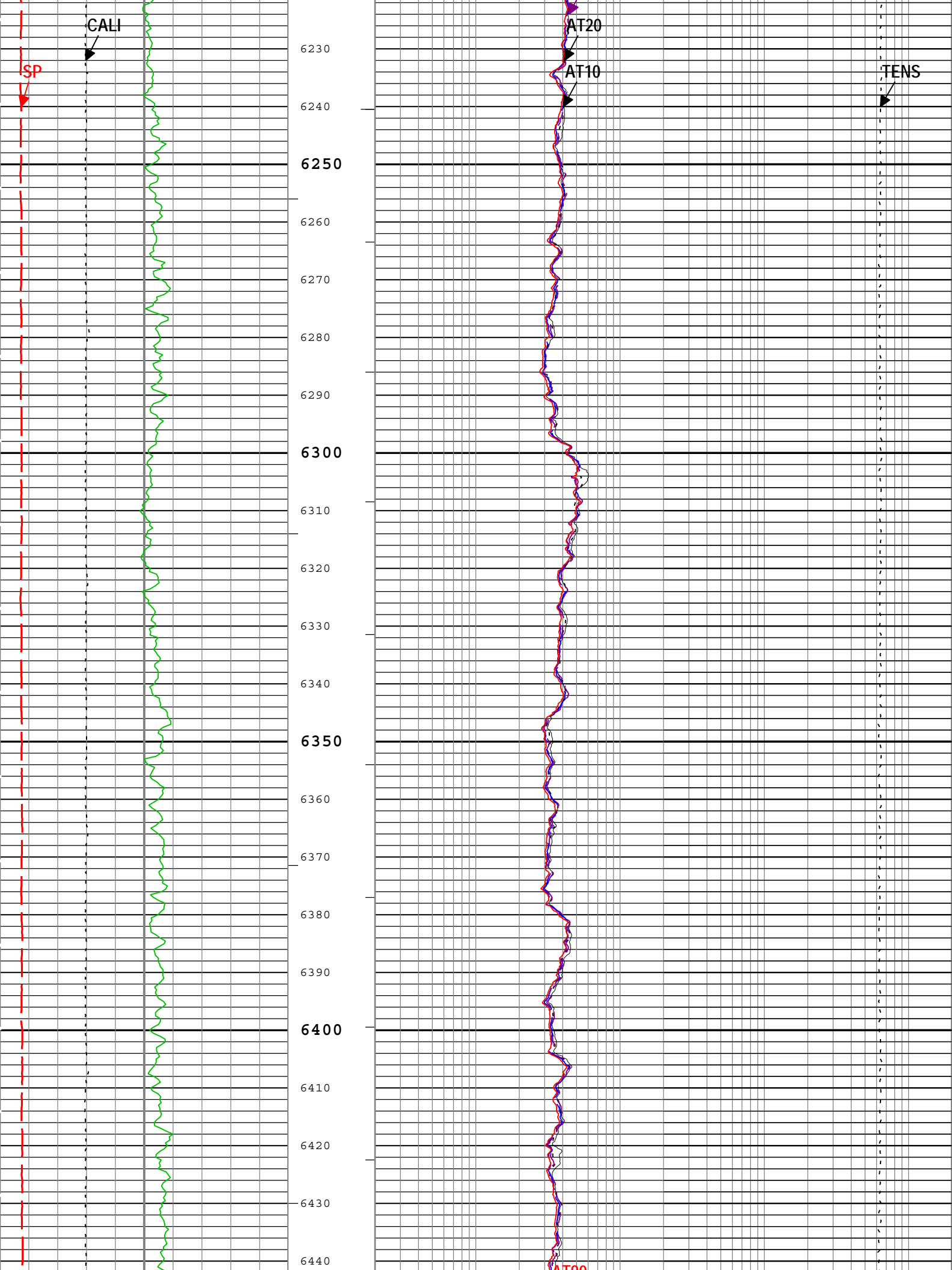


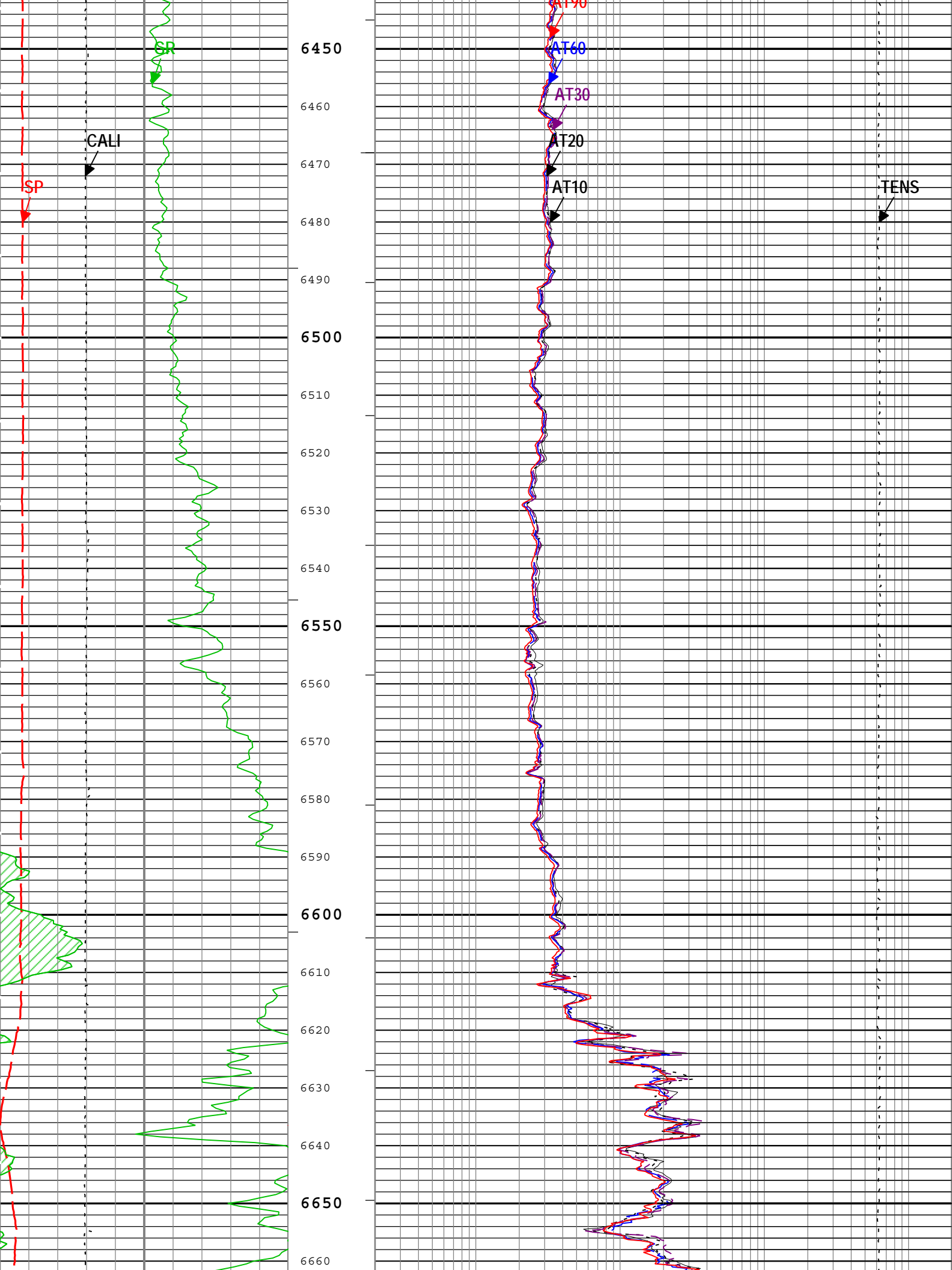


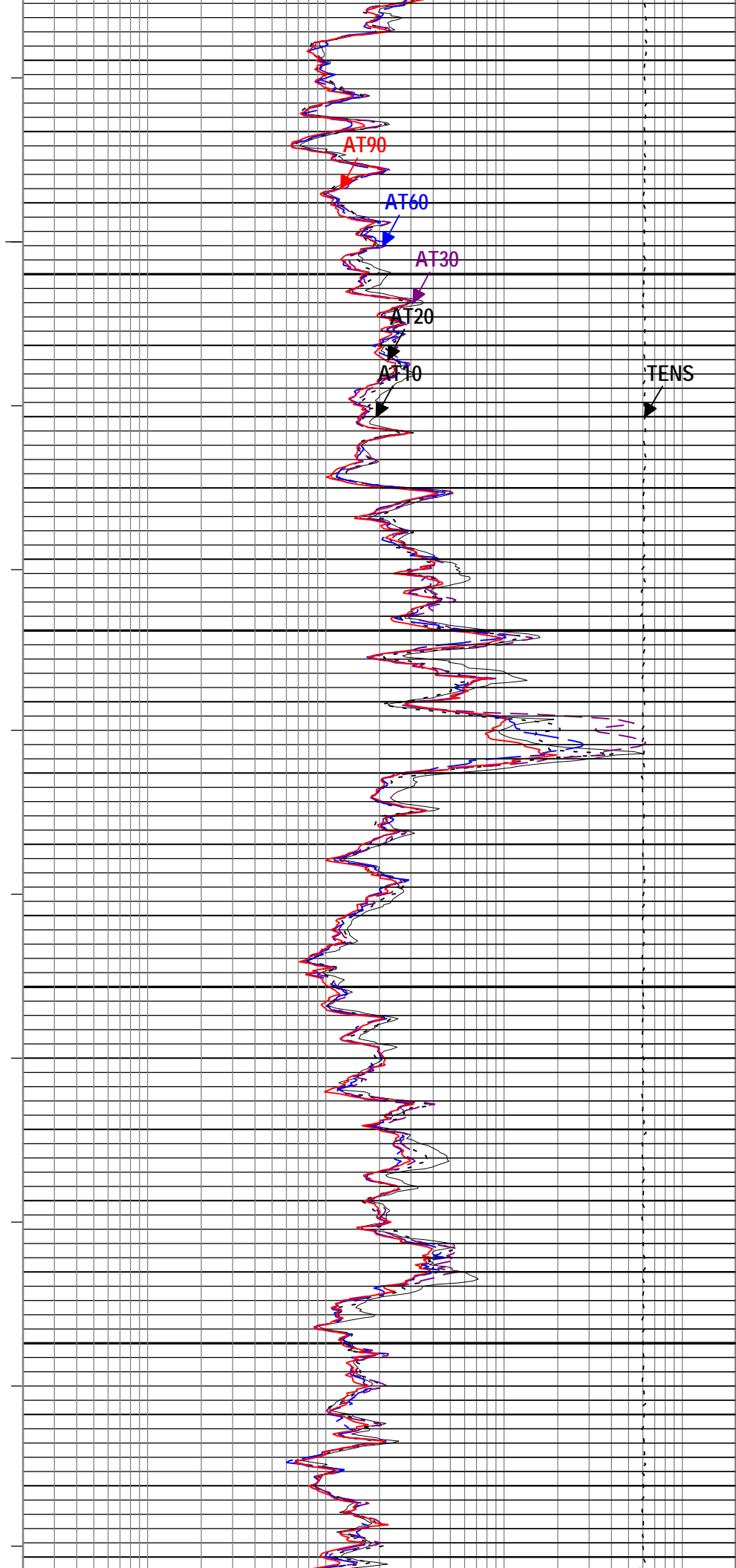
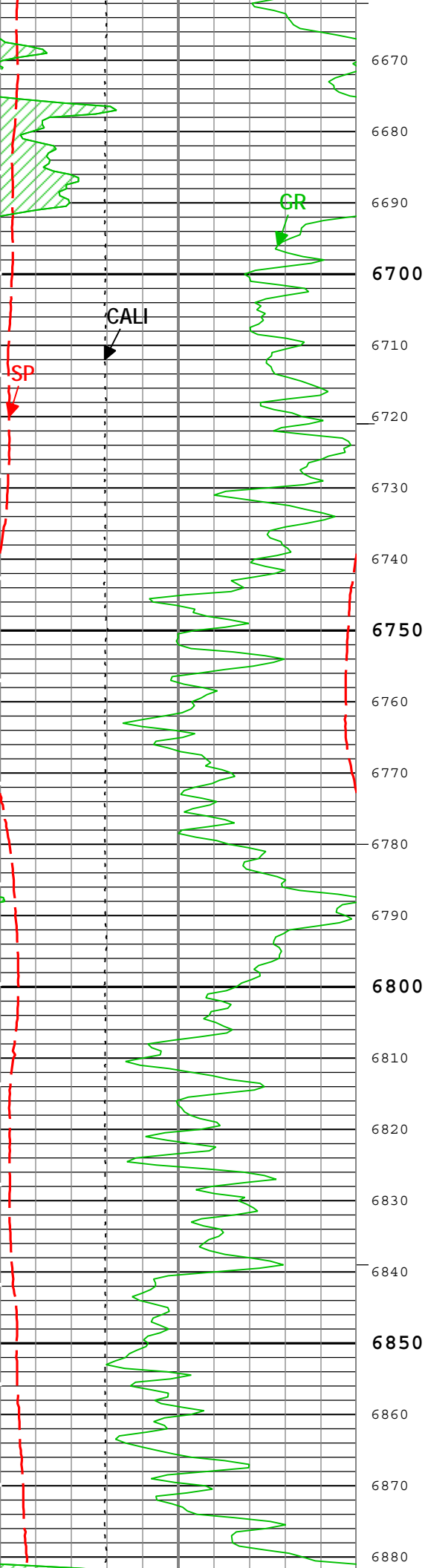


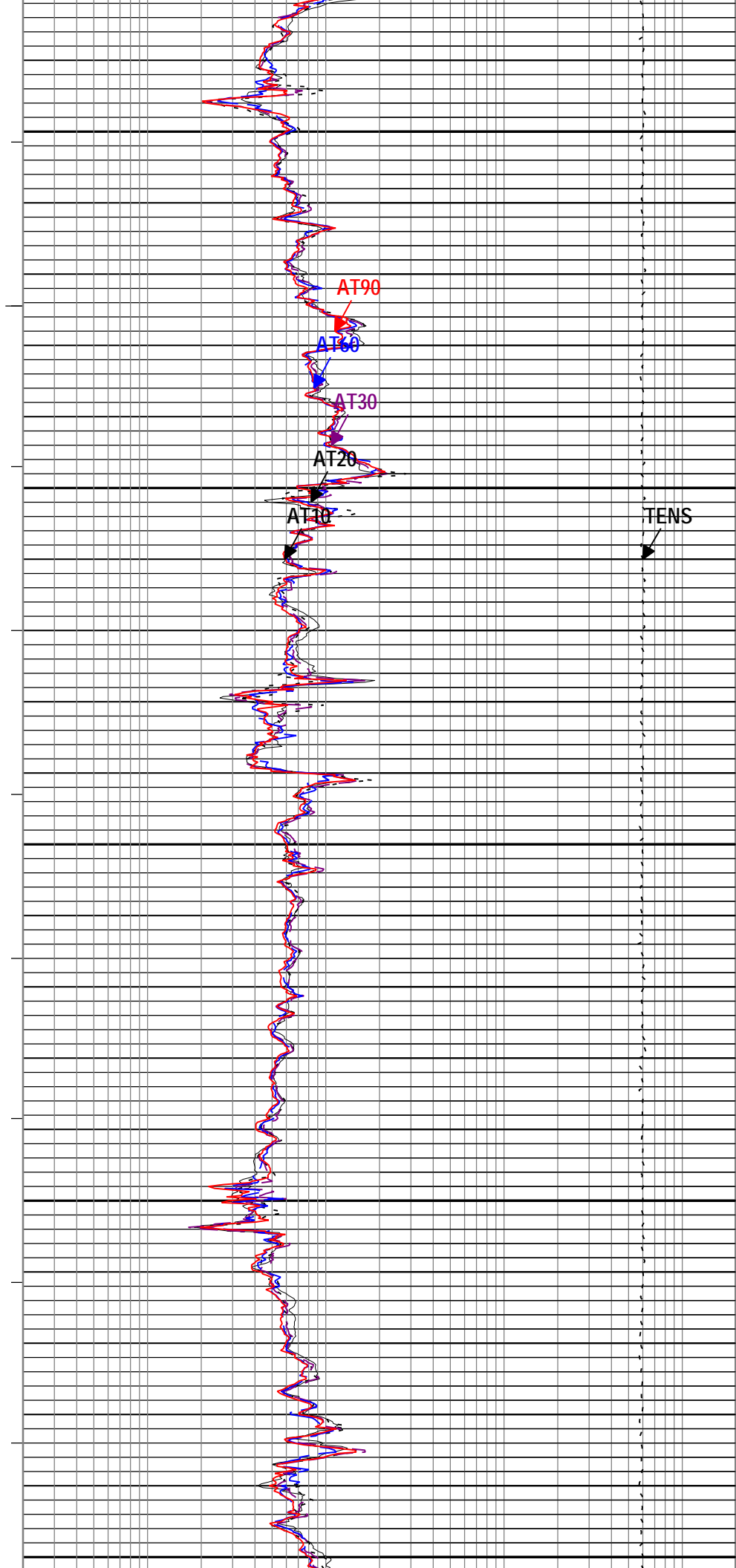
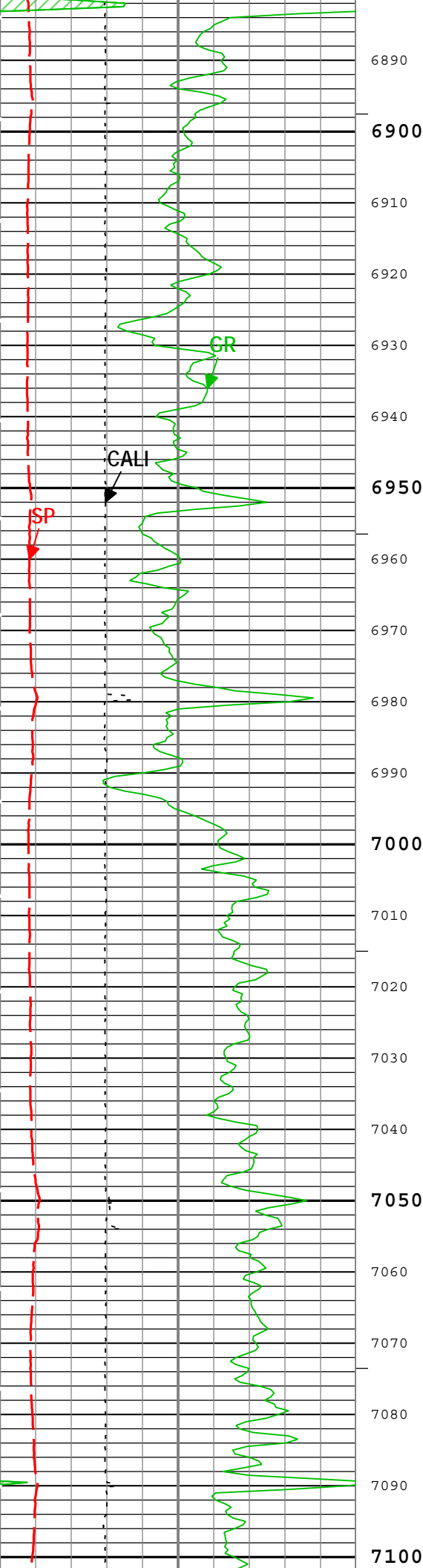


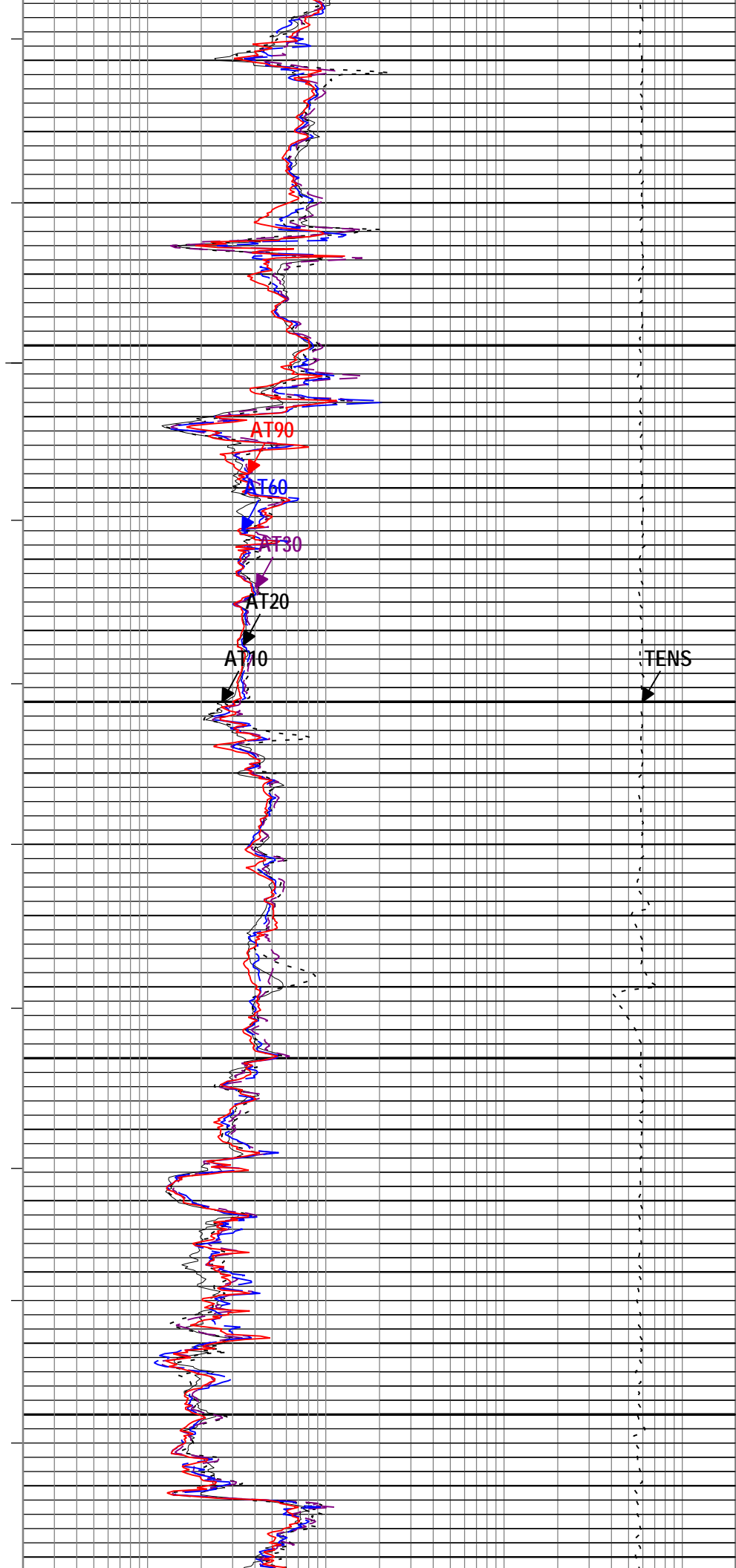
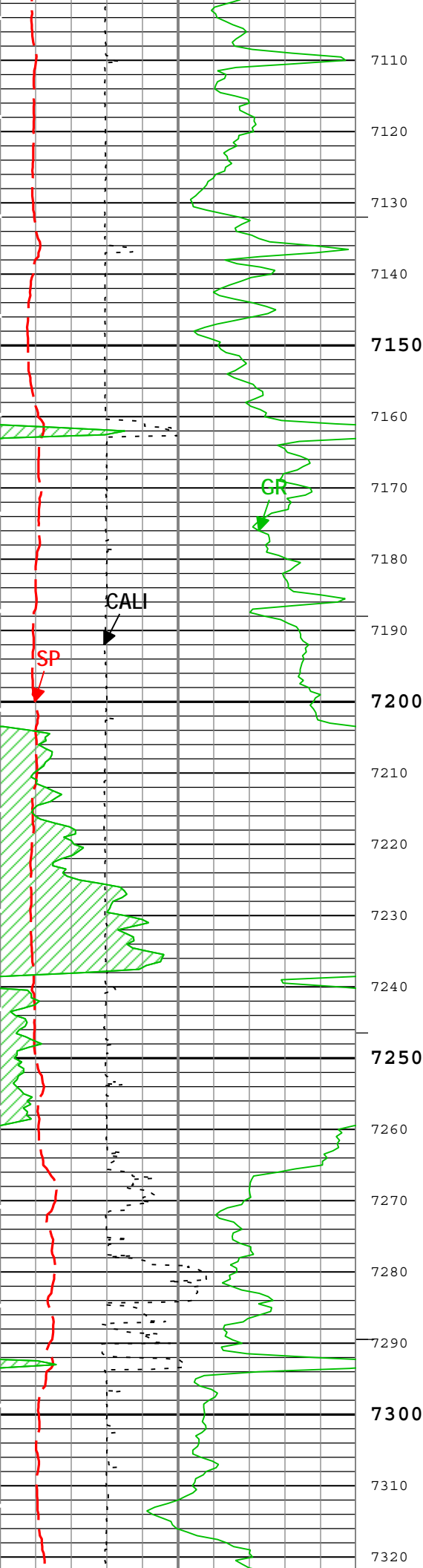


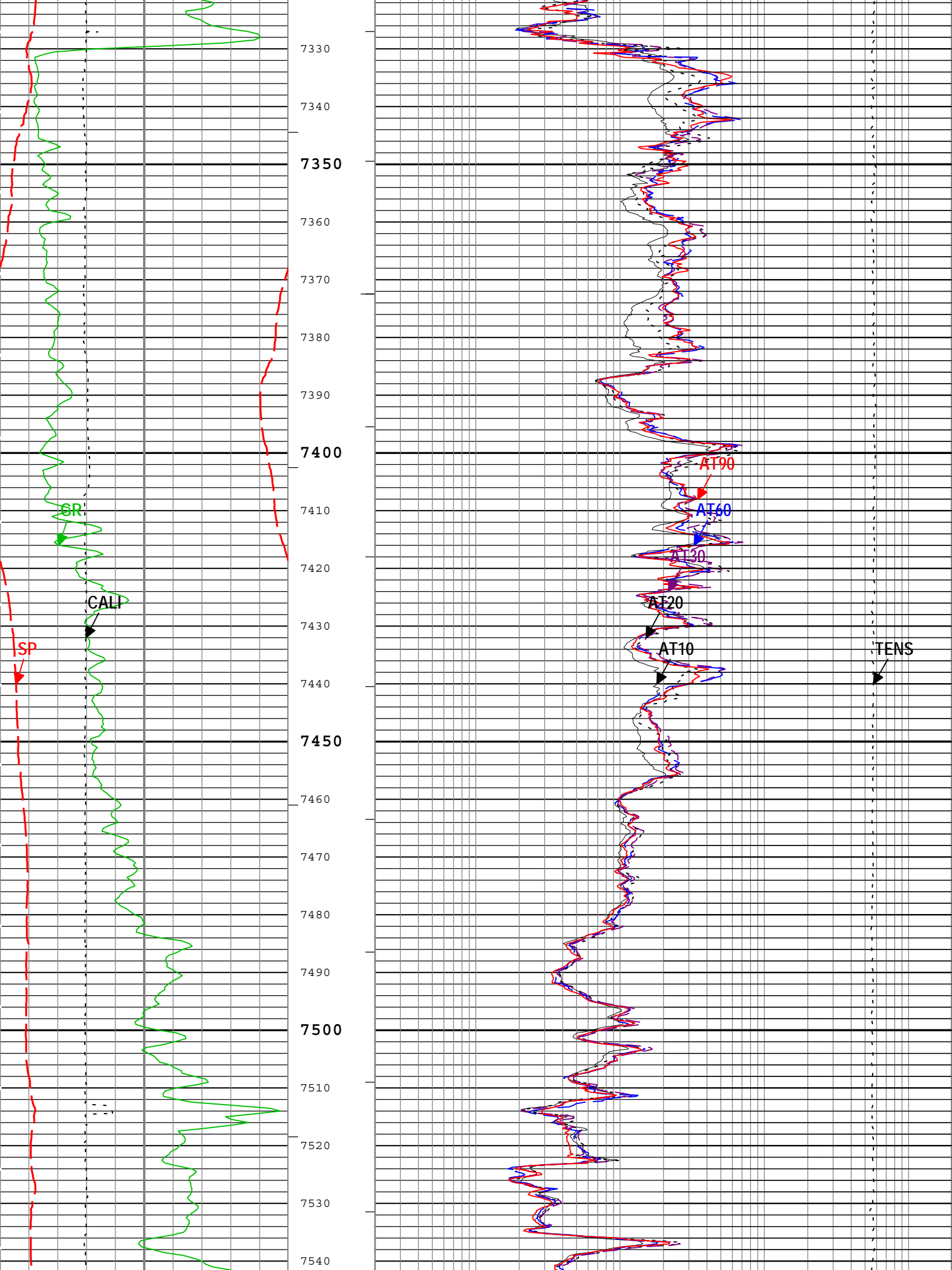


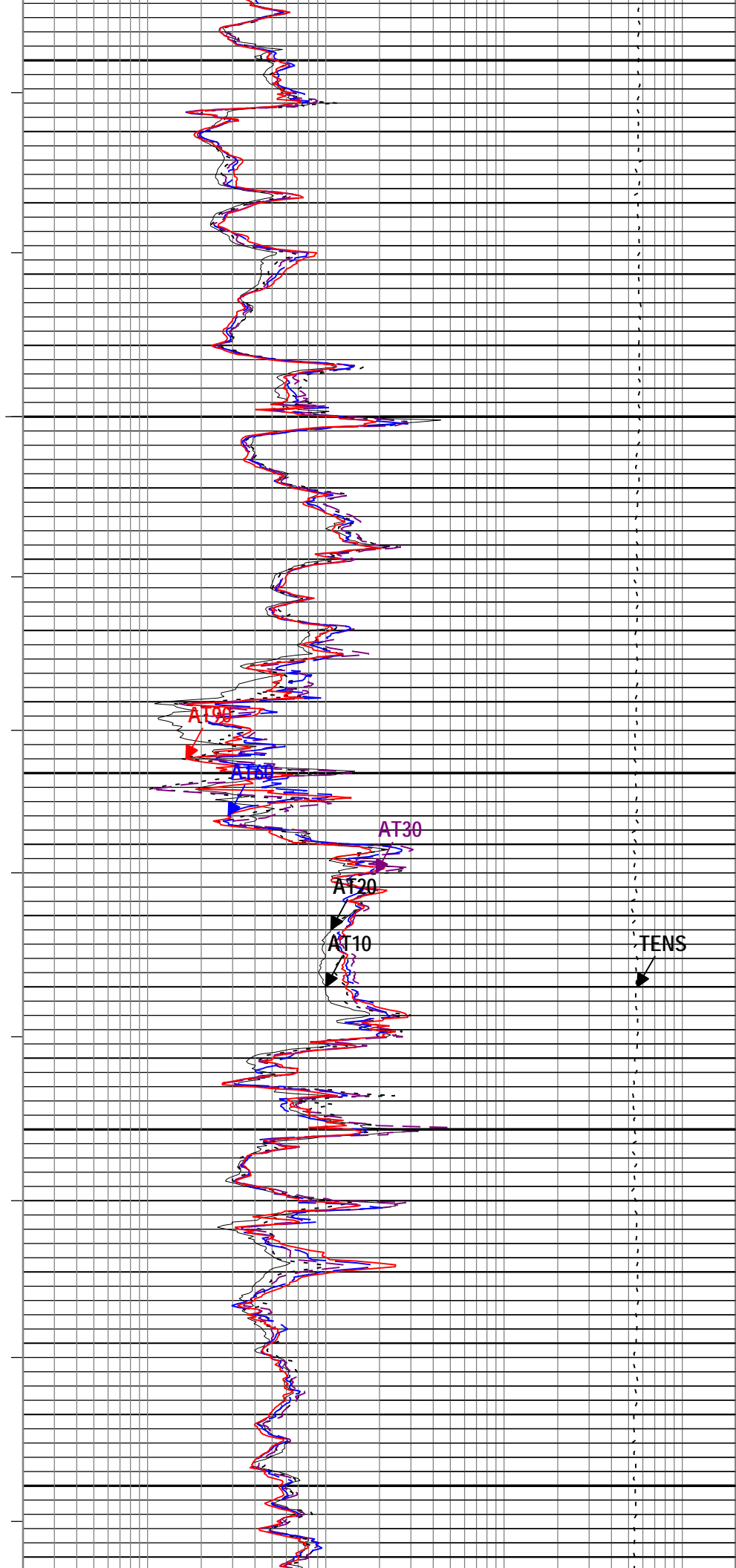
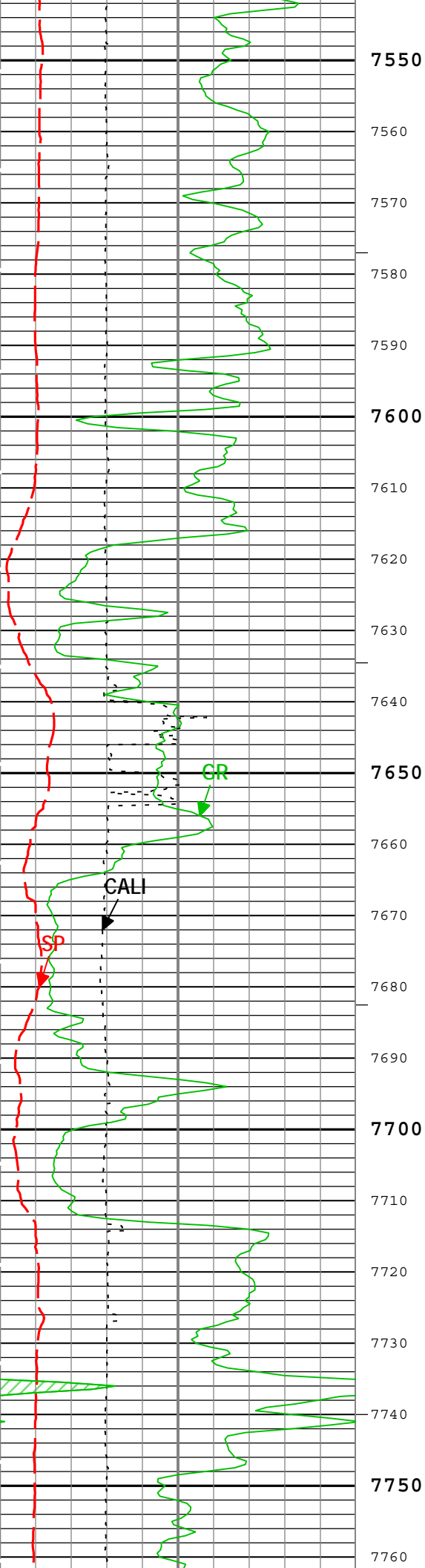


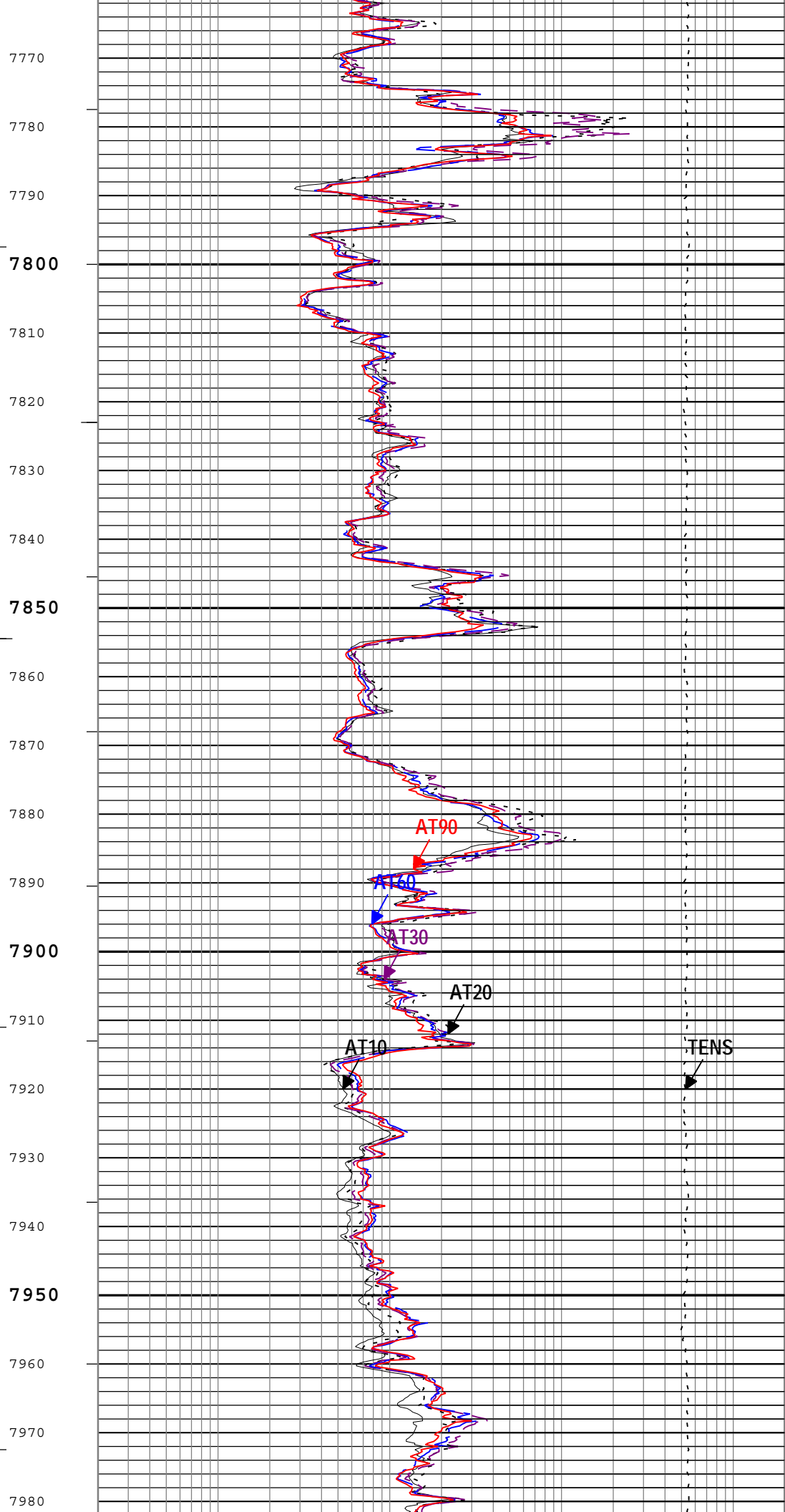
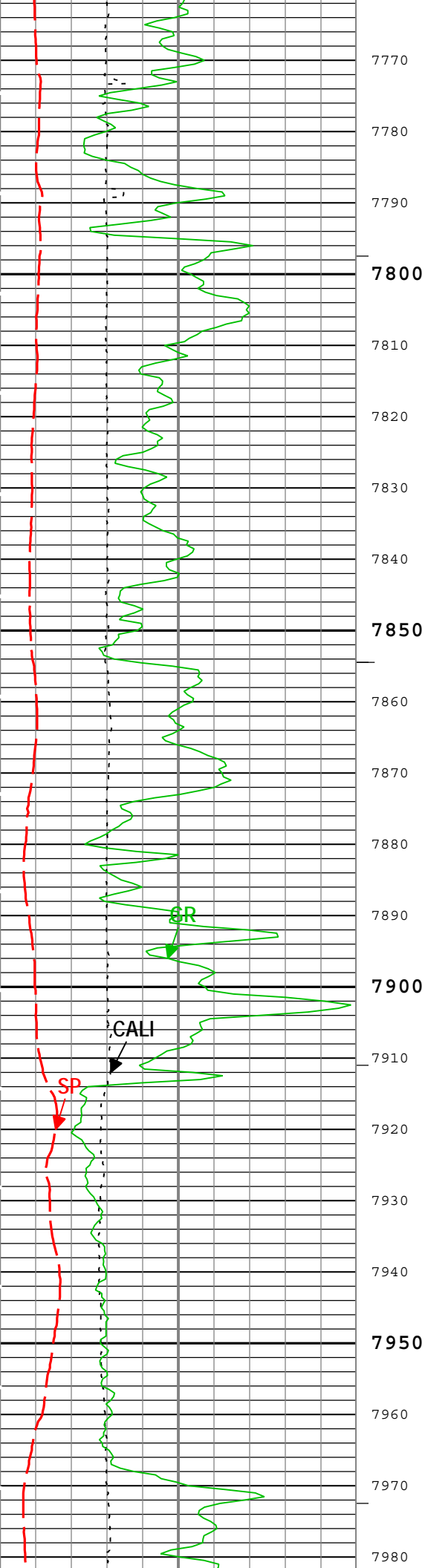


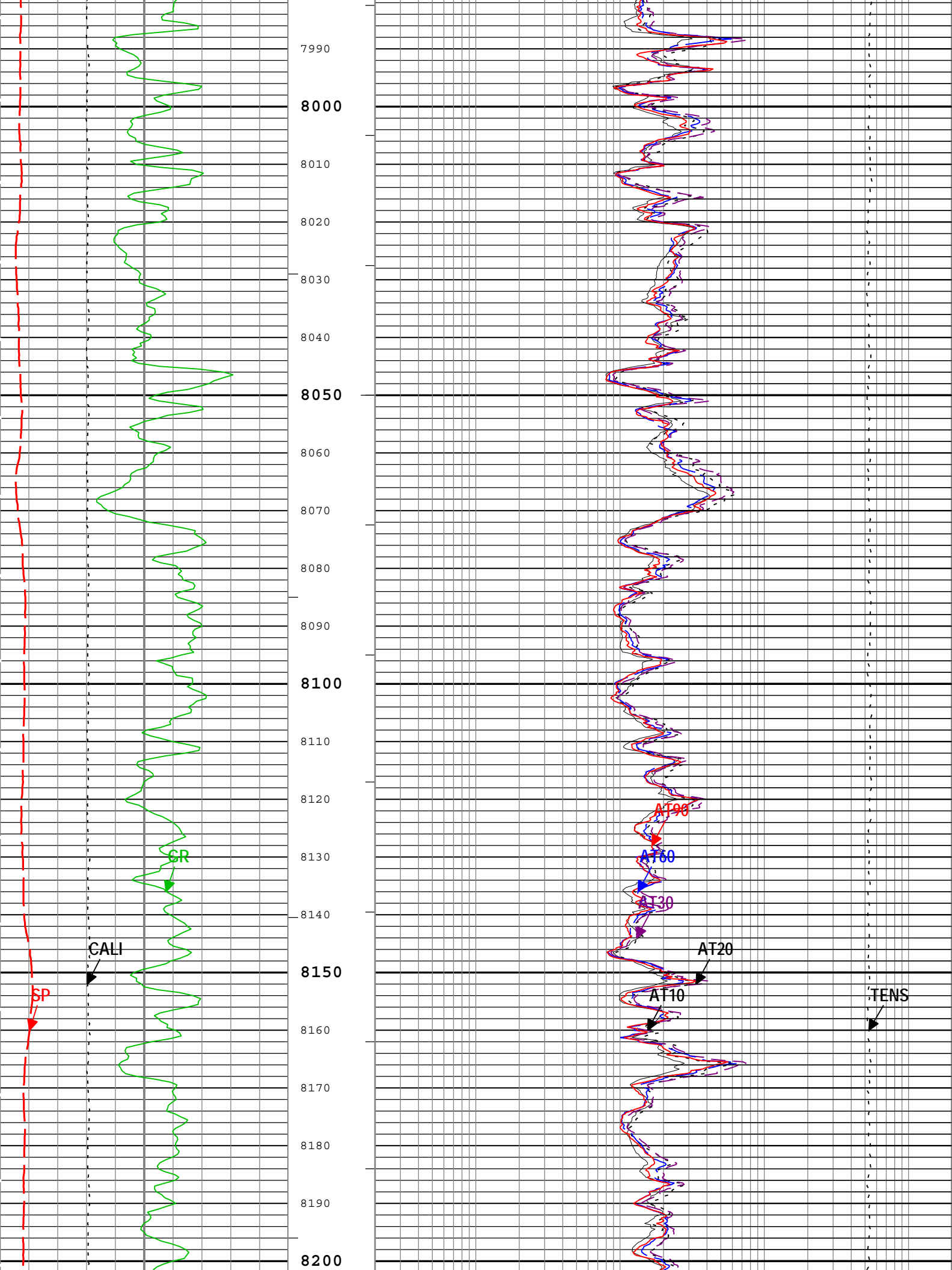


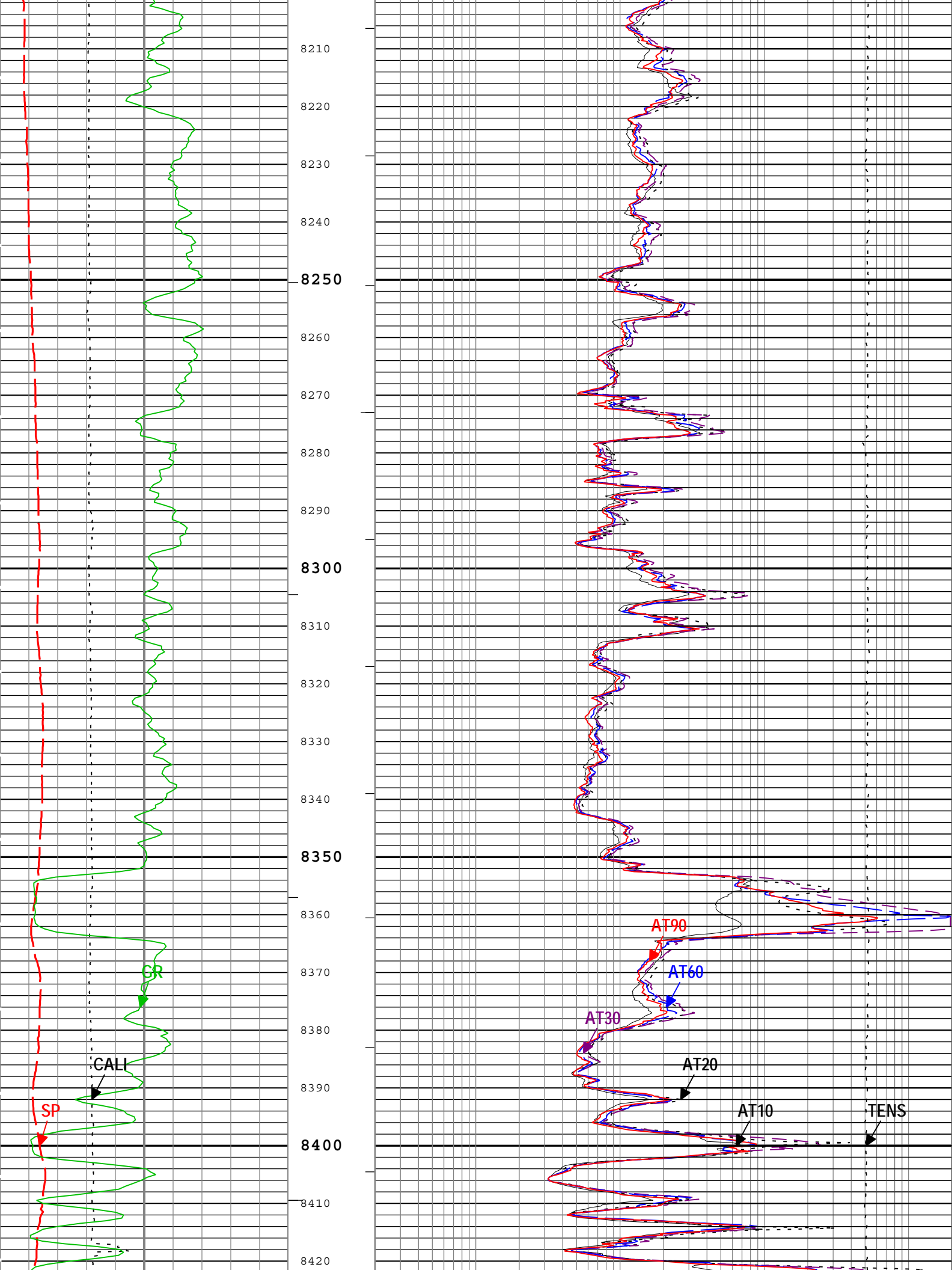


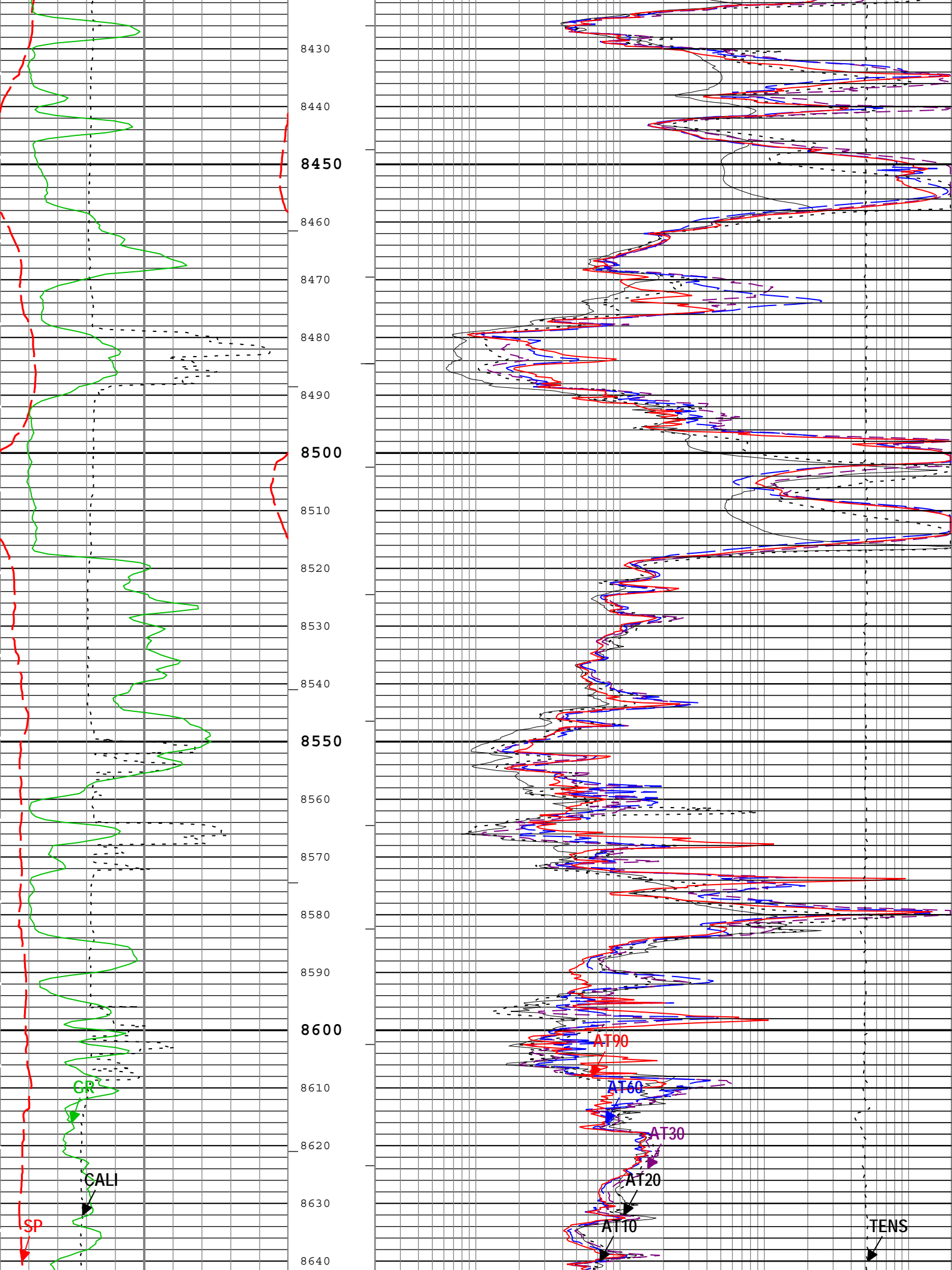


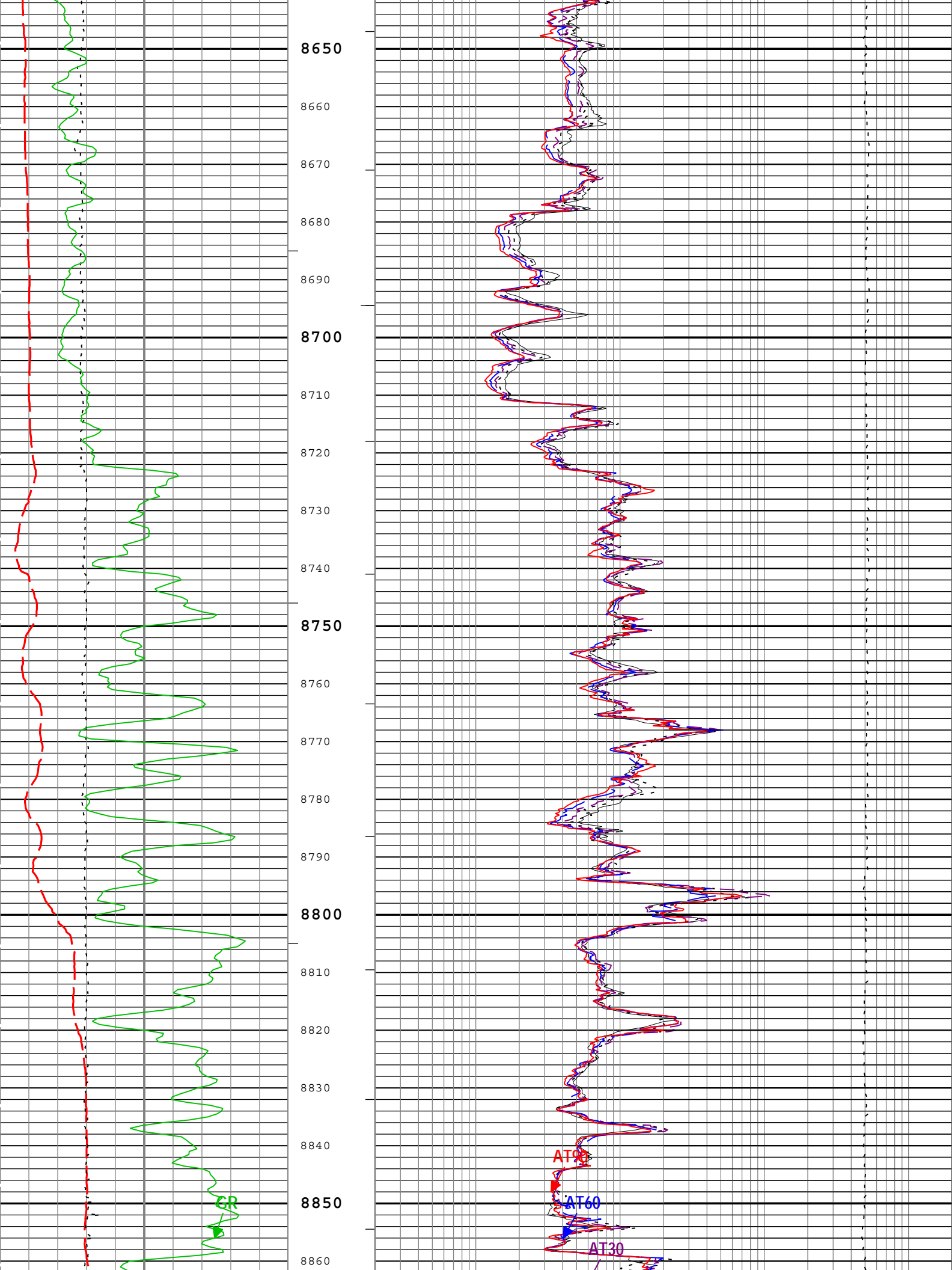


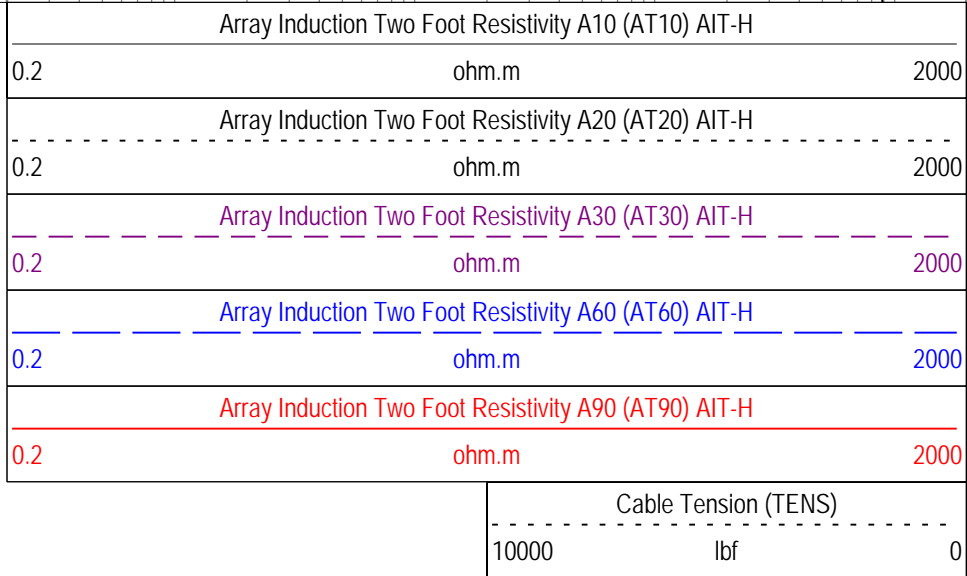
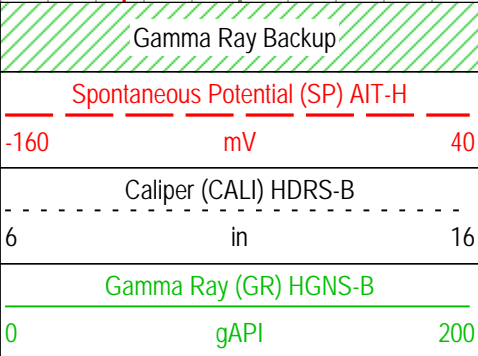
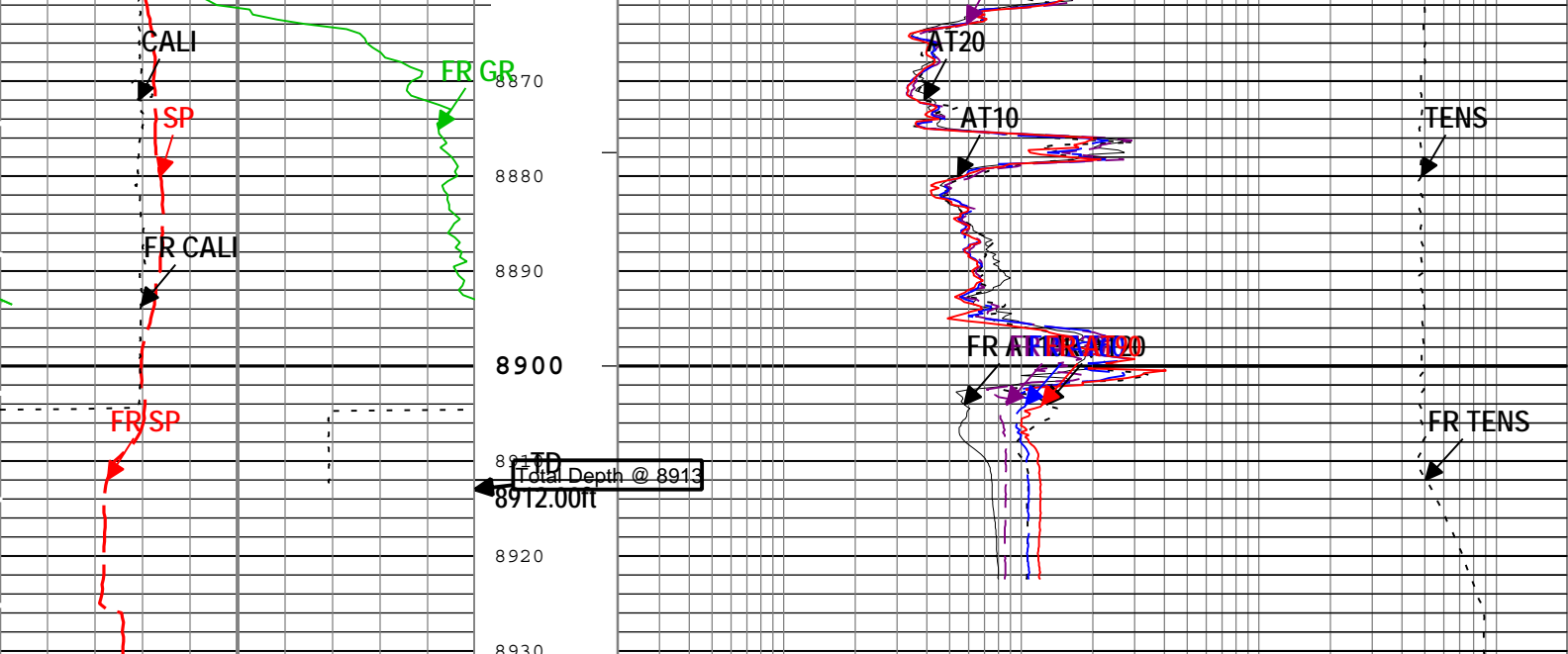












— ICV - Integrated Cement Volume every 100.00 (ft3)
— ICV - Integrated Cement Volume every 10.00 (ft3)
— TIME_1900 - Time Marked every 60.00 (s)
— IHV - Integrated Hole Volume every 100.00 (ft3)
— IHV - Integrated Hole Volume every 10.00 (ft3)

Description: AIT Basic Log Two Format: Log (KM 5in Induction) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 01-Aug-2012 16:40:56

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	No	
ASTA	Array Induction Tool Standoff	AIT-H	1	in
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.75	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-B	0	in
CBLO	Casing Bottom (Logger)	WLSESSION	754	ft
CDEN	Cement Density	HGNS-B	2	g/cm3
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	9.625	in

DFD	Drilling Fluid Density	Borehole	9.05	lbm/gal
FCD	Future Casing (Outer) Diameter	WLSESSION	7	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
SOCO	Standoff Correction Option	HGNS-B	Yes	
SPDR	SP Drift Per Foot	AIT-H	0	mV/ft

Tool Control Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	900	ft/h

1

5" Induction Repeat

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
1	Log[2]:Up	Up	8413.22 ft	8927.35 ft	01-Aug-2012 7:26:31 AM	01-Aug-2012 8:04:31 AM	3.00 ft	
1	Log[3]:Up	Up	58.08 ft	8930.71 ft	01-Aug-2012 8:13:39 AM	01-Aug-2012 1:23:11 PM	0.00 ft	

All depths are referenced to toolstring zero

Log

1: Log[3]:Up

Description: AIT Basic Log Two Format: Log (KM 5in Induction RA) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 01-Aug-2012 16:40:59

Channel	Source	Sampling
ICV	Borehole	6in
IHV	Borehole	6in
TIME_1900	WLWorkflow	0.1in

—|IHV - Integrated Hole Volume every 10.00 (ft3)

—|IHV - Integrated Hole Volume every 100.00 (ft3)

TIME_1900 - Time Marked every 60.00 (s)

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

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

Main To Repeat

Repeat To Main

Cable Tension (TENS)

10000

lbf

0

Main To Repeat

Repeat To Main

Array Induction Two Foot Resistivity A90 (AT90) AIT-H

0.2

ohm.m

2000

Main To Repeat

Repeat To Main

Caliper (CALI) HDRS-B

6

in

16

Main To Repeat

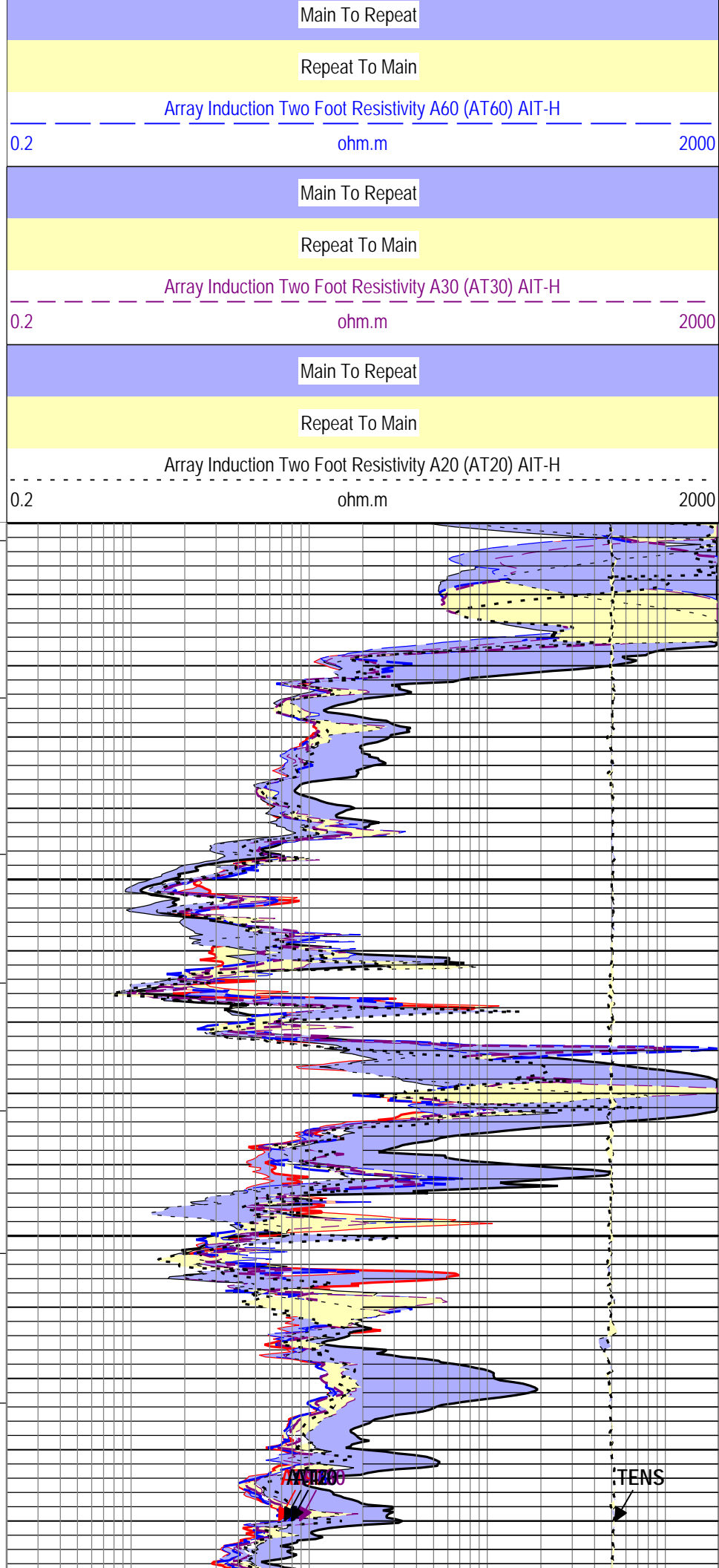
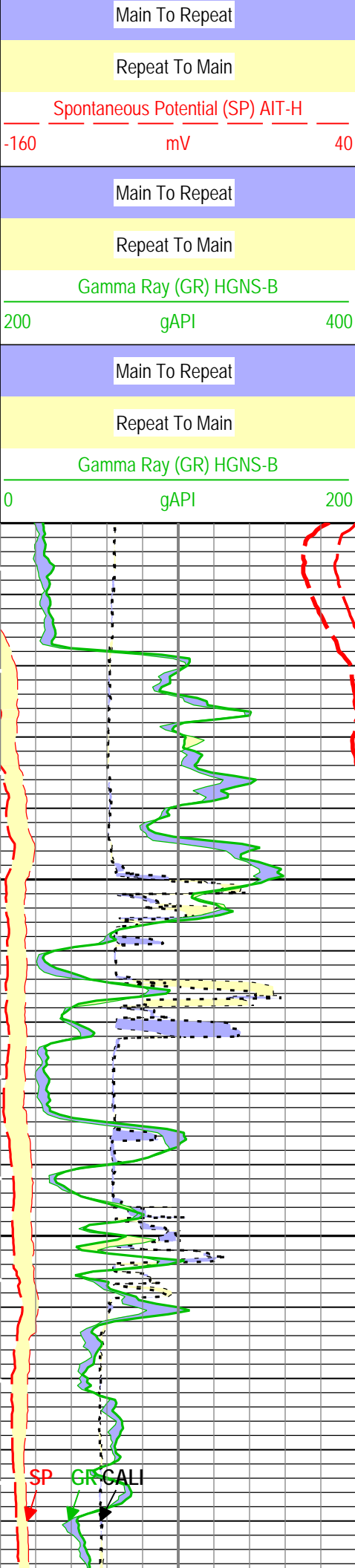
Repeat To Main

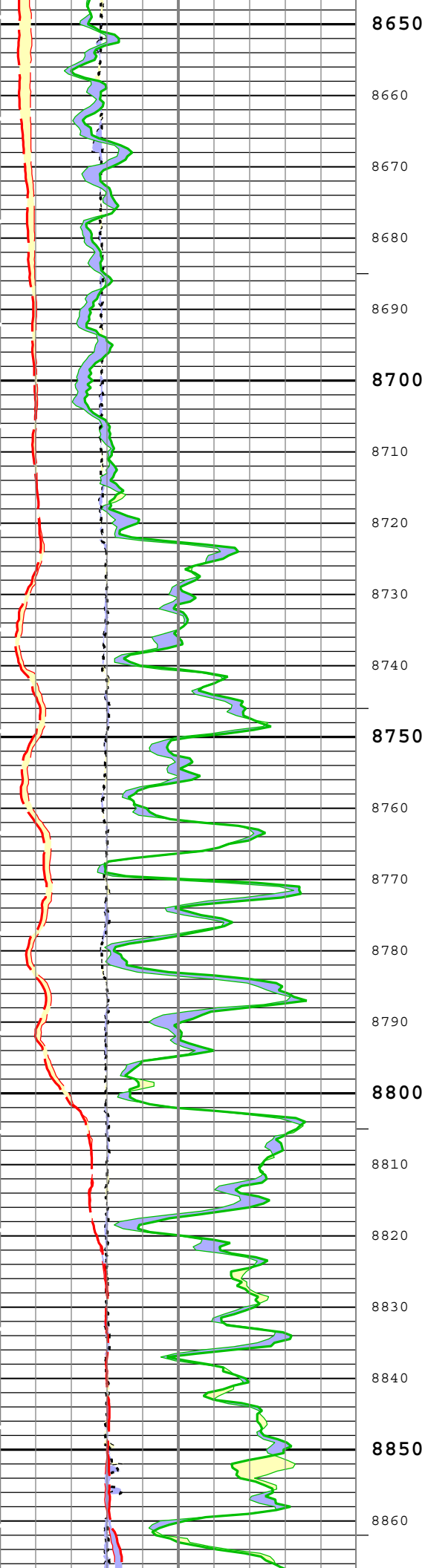
Array Induction Two Foot Resistivity A10 (AT10) AIT-H

0.2

ohm.m

2000





8650

8660

8670

8680

8690

8700

8710

8720

8730

8740

8750

8760

8770

8780

8790

8800

8810

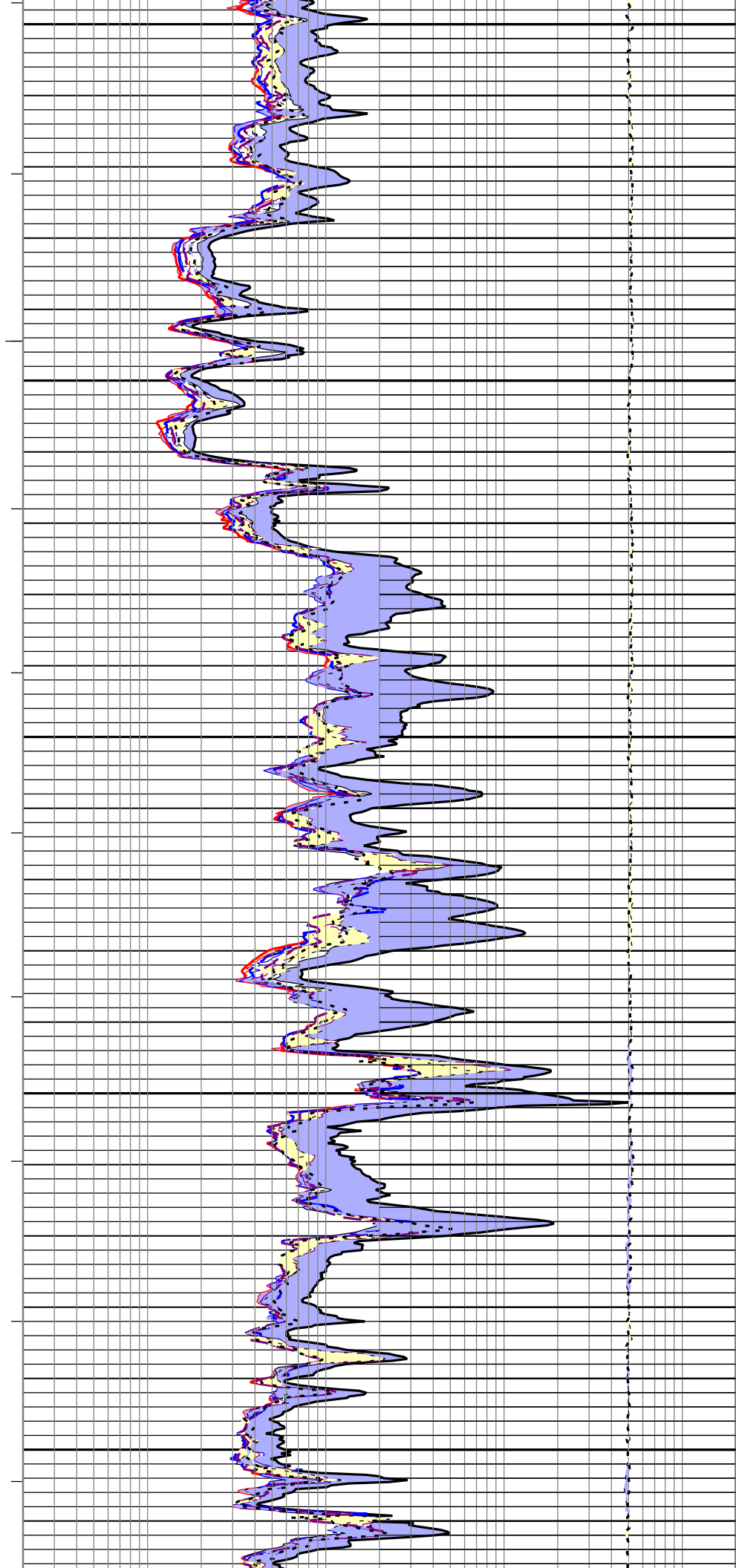
8820

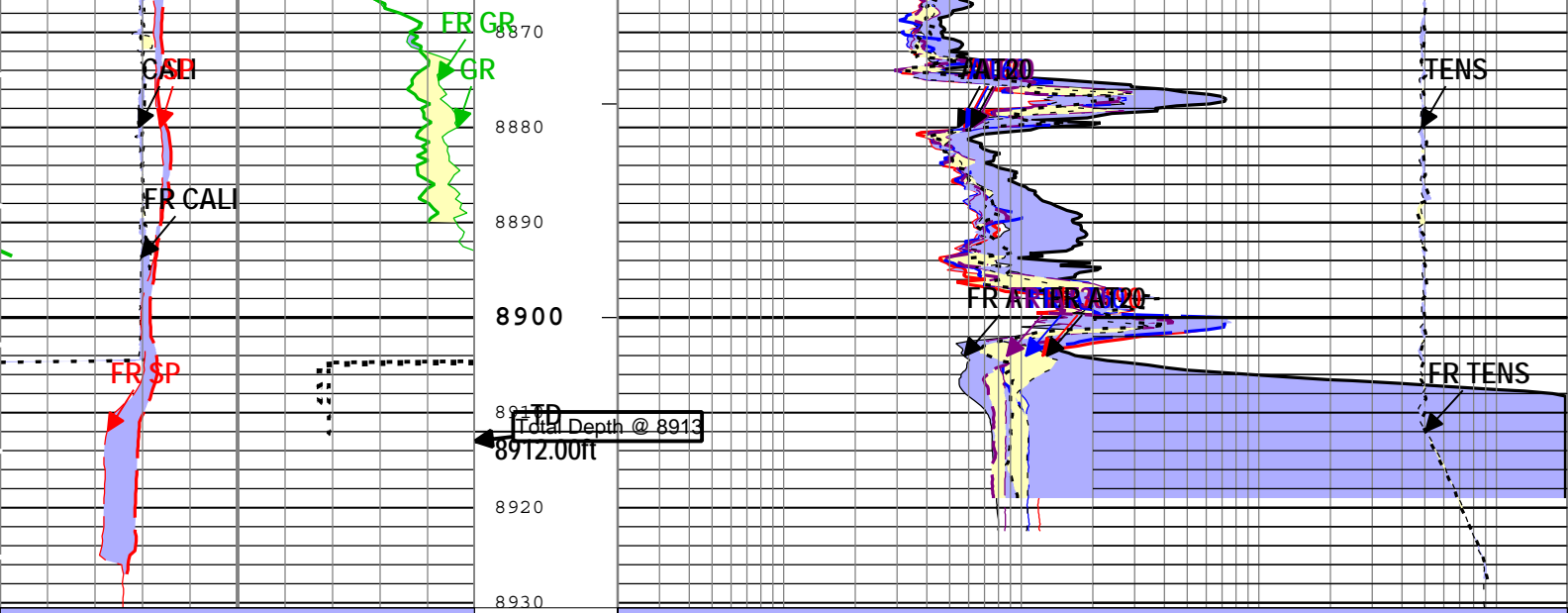
8830

8840

8850

8860





Main To Repeat		
Repeat To Main		
Caliper (CALI) HDRS-B		
6	in	16
Main To Repeat		
Repeat To Main		
Spontaneous Potential (SP) AIT-H		
-160	mV	40
Main To Repeat		
Repeat To Main		
Gamma Ray (GR) HGNS-B		
200	gAPI	400
Main To Repeat		
Repeat To Main		
Gamma Ray (GR) HGNS-B		
0	gAPI	200

Main To Repeat		
Repeat To Main		
Array Induction Two Foot Resistivity A90 (AT90) AIT-H		
0.2	ohm.m	2000
Main To Repeat		
Repeat To Main		
Array Induction Two Foot Resistivity A10 (AT10) AIT-H		
0.2	ohm.m	2000
Main To Repeat		
Repeat To Main		
Array Induction Two Foot Resistivity A60 (AT60) AIT-H		
0.2	ohm.m	2000
Main To Repeat		
Repeat To Main		
Array Induction Two Foot Resistivity A30 (AT30) AIT-H		
0.2	ohm.m	2000
Main To Repeat		
Repeat To Main		
Array Induction Two Foot Resistivity A20 (AT20) AIT-H		
0.2	ohm.m	2000

Main To Repeat		
Repeat To Main		
Cable Tension (TENS)		
10000	lbf	0

ICV - Integrated Cement Volume every 100.00 (ft3)

Calibration Report

AIT-H (Array Induction Tool - H) Calibration - Run 1

Primary Equipment :				AHIS				0			
Auxiliary Equipment :				AITH Rm/SP Bottom Nose				AHRM			

AIT Sonde Calibration - Test Loop Gain

Master (EEPROM):		00:19:39 12-May-2012									
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit					
Test Loop Gain - 0		Master	1.000	0.950	1.033	1.050					
Test Loop Phase - 0	deg	Master	0	-3.000	-2.386	3.000					
Test Loop Gain - 1		Master	1.000	0.950	1.015	1.050					
Test Loop Phase - 1	deg	Master	0	-3.000	-2.995	3.000					
Test Loop Gain - 2		Master	1.000	0.950	1.025	1.050					
Test Loop Phase - 2	deg	Master	0	-3.000	-0.471	3.000					
Test Loop Gain - 3		Master	1.000	0.950	1.017	1.050					
Test Loop Phase - 3	deg	Master	0	-3.000	1.700	3.000					
Test Loop Gain - 4		Master	1.000	0.950	1.000	1.050					
Test Loop Phase - 4	deg	Master	0	-3.000	1.712	3.000					
Test Loop Gain - 5		Master	1.000	0.950	0.988	1.050					
Test Loop Phase - 5	deg	Master	0	-3.000	0.302	3.000					
Test Loop Gain - 6		Master	1.000	0.950	0.995	1.050					
Test Loop Phase - 6	deg	Master	0	-3.000	0.488	3.000					
Test Loop Gain - 7		Master	1.000	0.950	0.991	1.050					
Test Loop Phase - 7	deg	Master	0	-3.000	-0.138	3.000					

AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM):		00:19:39 12-May-2012									
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit					
Sonde Error Correction Real - 0	mS/m	Master	-----	-231.000	-103.990	119.000					
Sonde Error Correction Quad - 0		Master	-----	-2250.000	-400.437	2250.000					
Sonde Error Correction Real - 1	mS/m	Master	-----	114.000	179.469	204.000					
Sonde Error Correction Quad - 1		Master	-----	-625.000	-101.430	625.000					
Sonde Error Correction Real - 2	mS/m	Master	-----	66.000	105.845	156.000					
Sonde Error Correction Quad - 2		Master	-----	-350.000	-125.620	350.000					
Sonde Error Correction Real - 3	mS/m	Master	-----	39.000	60.290	89.000					
Sonde Error Correction Quad - 3		Master	-----	-250.000	69.692	250.000					
Sonde Error Correction Real - 4	mS/m	Master	-----	15.000	25.327	35.000					
Sonde Error Correction Quad - 4		Master	-----	-63.000	-41.419	63.000					
Sonde Error Correction Real - 5	mS/m	Master	-----	4.000	11.614	24.000					
Sonde Error Correction Quad - 5		Master	-----	-50.000	5.348	50.000					
Sonde Error Correction Real - 6	mS/m	Master	-----	5.000	8.715	15.000					
Sonde Error Correction Quad - 6		Master	-----	-30.000	-7.499	30.000					
Sonde Error Correction Real - 7	mS/m	Master	-----	-5.000	-2.017	5.000					
Sonde Error Correction Quad - 7		Master	-----	-30.000	-6.156	30.000					

AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM):		00:19:39 12-May-2012									
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit					
Coarse Gain		Master	1.000	0.800	0.940	1.200					
Fine Gain		Master	1.000	0.800	0.928	1.200					

AIT Electronics Check - Thru Calibration Check

Fine Gain		Master	1.000	0.800	0.928	1.200	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>
AIT Electronics Check - Thru Calibration Check							
Master (EEPROM):		00:19:39 12-May-2012	Before (Measured):		20:51:38 31-Jul-2012	After:	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Mac - 0	V	Master	----	0.363	0.616	0.847	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>

Cal Mag - 0		Before		0.363	0.624	0.847	
		After		----	----	----	
		Before-Master		----	0.008	----	
		After-Before		----	----	----	
Thru Cal Phase - 0	deg	Master	----	11.000	72.849	131.000	
		Before	----	11.000	72.922	131.000	
		After	----	----	----	----	
		Before-Master	----	----	0.073	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 1	V	Master	----	0.762	1.260	1.778	
		Before	----	0.762	1.276	1.778	
		After	----	----	----	----	
		Before-Master	----	----	0.016	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 1	deg	Master	----	10.000	71.746	130.000	
		Before	----	10.000	71.805	130.000	
		After	----	----	----	----	
		Before-Master	----	----	0.059	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 2	V	Master	----	0.374	0.629	0.872	
		Before	----	0.374	0.637	0.872	
		After	----	----	----	----	
		Before-Master	----	----	0.008	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 2	deg	Master	----	6.000	68.021	126.000	
		Before	----	6.000	68.054	126.000	
		After	----	----	----	----	
		Before-Master	----	----	0.033	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 3	V	Master	----	0.422	0.711	0.986	
		Before	----	0.422	0.720	0.986	
		After	----	----	----	----	
		Before-Master	----	----	0.009	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 3	deg	Master	----	5.000	67.233	125.000	
		Before	----	5.000	67.264	125.000	
		After	----	----	----	----	
		Before-Master	----	----	0.031	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 4	V	Master	----	0.802	1.324	1.872	
		Before	----	0.802	1.341	1.872	
		After	----	----	----	----	
		Before-Master	----	----	0.017	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 4	deg	Master	----	-1.000	60.986	119.000	
		Before	----	-1.000	60.963	119.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.023	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 5	V	Master	----	1.173	1.929	2.737	
		Before	----	1.173	1.953	2.737	
		After	----	----	----	----	
		Before-Master	----	----	0.024	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 5	deg	Master	----	-3.000	59.101	117.000	
		Before	----	-3.000	59.042	117.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.059	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 6	V	Master	----	1.173	1.928	2.737	
		Before	----	1.173	1.952	2.737	
		After	----	----	----	----	
		Before-Master	----	----	0.024	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 6	deg	Master	----	-3.000	59.114	117.000	
		Before	----	-3.000	59.055	117.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.059	----	

		Before-Master	-----	-----	0.000	-----	
Thru Cal Mag - 7	V	Master	-----	0.849	1.379	1.981	
		Before	-----	0.849	1.393	1.981	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	0.014	-----	
		After-Before	-----	-----	-----	-----	
Thru Cal Phase - 7	deg	Master	-----	-7.000	55.741	113.000	
		Before	-----	-7.000	55.363	113.000	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	-0.378	-----	
		After-Before	-----	-----	-----	-----	
SPA Zero	mV	Master		-50.000	0.052	50.000	
		Before		-50.000	0.095	50.000	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	0.043	-----	
		After-Before	-----	-----	-----	-----	
SPA Plus	mV	Master		941.000	993.937	1040.000	
		Before		941.000	993.050	1040.000	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	-0.887	-----	
		After-Before	-----	-----	-----	-----	
Temperature Zero	V	Master		-0.050	0.000	0.050	
		Before		-0.050	0.000	0.050	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	0.000	-----	
		After-Before	-----	-----	-----	-----	
Temperature Plus	V	Master		0.870	0.921	0.960	
		Before		0.870	0.920	0.960	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	-0.001	-----	
		After-Before	-----	-----	-----	-----	

HDRS-B (HILT Density and Rxo Sonde, 125 degC) Calibration - Run 1

Primary Equipment :			
	HILT High-Resolution Control Cartridge, 125 degC	HRCC-B	
	HILT Resistivity Gamma-Ray Density Device, 125 degC	HRGD-B	1748
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	5471
	HILT High-Resolution Control Cartridge, 125 degC	HRCC-B	
	HILT High-Resolution Mechanical Sonde, 125 degC	HRMS-B	
Calibration Parameter :			
	Small Ring Size (Caliper Calibration Small Ring)	6.00	
	Large Ring Size (Caliper Calibration Large Ring)	12.00	

HDRS Caliper Calibration - Caliper Accumulations

Before (Measured):		21:09:42 31-Jul-2012					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	6.00	4.50	7.09	7.50	
Large Ring	in	Before	12.00	9.00	13.50	15.00	

HDRS Density Calibration - Inversion Results

Master (EEPROM):		16:10:40 12-Jul-2012					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.599	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.686	1.696	
Pe Aluminum		Master	2.570	2.470	2.561	2.670	
Pe Magnesium		Master	2.650	2.550	2.636	2.750	

HDRS Density Calibration - Deviation Summary

Master (EEPROM):		16:10:40 12-Jul-2012					
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Master (EEPROM):

16:10:40 12-Jul-2012

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.4249	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.9113	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.1710	1.0000	
SS Max Deviation	%	Master	0	-2.5000	0.7045	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.4102	1.5000	
LS Max Deviation	%	Master	0	-3.5000	1.0564	3.5000	

HDRS Density Calibration - Background Summary

Master (EEPROM):		16:10:40 12-Jul-2012		Before (Measured):		20:53:02 31-Jul-2012	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000	0.6939	0.7304	0.7669	
		Before	0.7304		0.7301		
		Before-Master	----		-0.0003		
BS Window Sum	1/s	Master	1	8909	9378	9847	
		Before	9378		9359		
		Before-Master	----		-19		
SS Window Ratio		Master	1.0000	0.4532	0.4771	0.5009	
		Before	0.4771		0.4756		
		Before-Master	----		-0.0015		
SS Window Sum	1/s	Master	1	8816	9280	9744	
		Before	9280		9257		
		Before-Master	----		-23		
LS Window Ratio		Master	1.0000	0.2776	0.2922	0.3068	
		Before	0.2922		0.2888		
		Before-Master	----		-0.0034		
LS Window Sum	1/s	Master	1	973	1025	1076	
		Before	1025		1016		
		Before-Master	----		-9		

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM):		16:10:40 12-Jul-2012		Before (Measured):		20:53:02 31-Jul-2012	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1687	2400	
		Before		1000	1688	2400	
		Before-Master	-----	-100	1	100	
SS PM High Voltage	V	Master		1000	1448	2400	
		Before		1000	1454	2400	
		Before-Master	-----	-100	6	100	
LS PM High Voltage	V	Master		1000	1529	2400	
		Before		1000	1528	2400	
		Before-Master	-----	-100	-1	100	

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM):		16:10:40 12-Jul-2012		Before (Measured):		20:53:02 31-Jul-2012	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div></div>
BS Crystal Resolution	%	Master		5.00	11.73	25.00	<div><div></div><div></div></div>
		Before		5.00	11.74	25.00	<div><div></div><div></div></div>
		Before-Master	----	-1.00	0.01	1.00	<div><div></div><div></div></div>
SS Crystal Resolution	%	Master		5.00	9.92	20.00	<div><div></div><div></div></div>
		Before		5.00	10.01	20.00	<div><div></div><div></div></div>
		Before-Master	----	-1.00	0.09	1.00	<div><div></div><div></div></div>
LS Crystal Resolution	%	Master		5.00	8.86	20.00	<div><div></div><div></div></div>
		Before		5.00	9.00	20.00	<div><div></div><div></div></div>
		Before-Master	----	-1.00	0.14	1.00	<div><div></div><div></div></div>

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured):			20:53:31 31-Jul-2012				
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3869	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3804	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3800	4136	

HGNS-B (HILT Gamma-Ray and Neutron Sonde, 125 degC) Calibration - Run 1

Primary Equipment :							
HILT Gamma-Ray and Neutron Sonde, 125 degC			HGNS-B				

Auxiliary Equipment :			
HGNS Accelerometer, 125 degC		HACCZ-B	452
AmBe Neutron Logging Source		NSR-F	2554
Calibration Parameter :			
Water Temperature			
Housing Size			
JIG-BKG (Jig minus background reference)		165	

HGNS Accelerometer Calibration - Accelerometer Accumulations

Before:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement - 0	ft/s2	Before	-----	-----	-----	-----	

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):		13:39:40 31-May-2012		Before (Measured):		20:51:23 31-Jul-2012		After:	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit			
Near Zero Measurement	1/s	Master	0	5.0	28.8	40.0			
		Before	0	5.0	28.4	40.0			
		After	-----	-----	-----	-----			
		Before-Master	-----	-4.3	-0.4	4.3			
		After-Before	-----	-----	-----	-----			
Far Zero Measurement	1/s	Master	0	5.0	30.4	40.0			
		Before	0	5.0	31.6	40.0			
		After	-----	-----	-----	-----			
		Before-Master	-----	-4.6	1.2	4.6			
		After-Before	-----	-----	-----	-----			
Near Plus Measurement - 0	1/s	Master	6031.0	4700.0	5681.0	6900.0			
		Before	-----	-----	-----	-----			
		After	-----	-----	-----	-----			
		Before-Master	-----	-----	-----	-----			
		After-Before	-----	-----	-----	-----			
Far Plus Measurement - 0	1/s	Master	2793.0	1900.0	2423.0	2900.0			
		Before	-----	-----	-----	-----			
		After	-----	-----	-----	-----			
		Before-Master	-----	-----	-----	-----			
		After-Before	-----	-----	-----	-----			
Near Corrected Plus Measurement - 0	1/s	Master		4700.0	5618.0	6900.0			
		Before	-----	-----	-----	-----			
		After	-----	-----	-----	-----			
		Before-Master	-----	-----	-----	-----			
		After-Before	-----	-----	-----	-----			
Far Corrected Plus Measurement - 0	1/s	Master		1900.0	2366.0	2900.0			
		Before	-----	-----	-----	-----			
		After	-----	-----	-----	-----			
		Before-Master	-----	-----	-----	-----			
		After-Before	-----	-----	-----	-----			

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured):		20:57:32 31-Jul-2012		After:	
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Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before After After-Before	30.0 ----- -----	0 ----- -----	78.5 ----- -----	120.0 ----- -----	<div><div></div></div>
RGR Plus Measurement	gAPI	Before After After-Before	185.4 ----- -----	157.1 ----- -----	176.2 NOT DONE -----	206.3 ----- -----	<div><div></div></div>
GR Calibration Gain		Before After After-Before	0.89 ----- -----	0.80 ----- -----	0.94 ----- -----	1.05 ----- -----	<div><div></div></div>

HNGS-BA (Hostile-environment Natural Gamma-ray Sonde) Calibration - Run 1			
Primary Equipment :			
HNGS Sonde Element	HNGS-BA	347	
Auxiliary Equipment :			
Hostile Natural Gamma Ray Cartridge	HNGC-B	605	
HNGS Housing Element	HEH-K	347	
		0	
Housing for the HNGC	HNGH-A	4089	

HNGS Background and Na22 Set Point Determination - Detector 1 Check							
Master (EEPROM): 23:07:53 16-Jul-2012		Before (Measured): 20:59:40 31-Jul-2012		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Location		Master Before After Before-Master After-Before	40.000 ----- ----- ----- -----	37.500 ----- ----- ----- -----	39.565 39.720 ----- 0.155 -----	42.500 ----- ----- ----- -----	<div><div></div></div>
Na 511 Peak Resolution	%	Master Before After Before-Master After-Before	15.500 ----- ----- ----- -----	12.000 ----- ----- ----- -----	14.403 15.532 ----- 1.129 -----	19.000 ----- ----- ----- -----	<div><div></div></div>
High Voltage DAC Value	V	Master Before After Before-Master After-Before	1150.000 ----- ----- ----- -----	850.000 ----- ----- ----- -----	0.000 963.461 ----- 963.461 -----	1600.000 ----- ----- ----- -----	<div><div></div></div>
Na 1785 Peak Location		Master Before After Before-Master After-Before	142.650 ----- ----- ----- -----	135.000 ----- ----- ----- -----	142.444 142.289 ----- -0.155 -----	150.300 ----- ----- ----- -----	<div><div></div></div>
Na 1785 Peak Resolution	%	Master Before After Before-Master After-Before	8.500 ----- ----- ----- -----	7.000 ----- ----- ----- -----	8.351 7.915 ----- -0.436 -----	11.000 ----- ----- ----- -----	<div><div></div></div>
Temperature	degF	Master Before After Before-Master After-Before	----- 59.900 ----- ----- -----	----- -20.002 ----- ----- -----	----- 114.401 ----- ----- -----	----- 140.000 ----- ----- -----	<div><div></div></div>
Na Count Rate	CPS	Master Before After Before-Master After-Before	45.000 45.000 ----- ----- -----	10.000 10.000 ----- ----- -----	42.745 43.524 ----- 0.779 -----	100.000 100.000 ----- ----- -----	<div><div></div></div>

HNGS Background and Na22 Set Point Determination - Detector 2 Check							
Master (EEPROM): 23:07:53 16-Jul-2012		Before (Measured): 20:59:40 31-Jul-2012		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Location		Master Before After	40.000 ----- -----	37.500 ----- -----	39.707 39.627 -----	42.500 ----- -----	<div><div></div></div>

		After Before-Master After-Before	----- ----- -----	----- ----- -----	-0.080 ----- -----	----- ----- -----	<div><div></div><div></div><div></div></div>
Na 511 Peak Resolution	%	Master Before After Before-Master After-Before	15.500 ----- ----- ----- -----	12.000 ----- ----- ----- -----	15.736 16.984 ----- 1.248 -----	19.000 ----- ----- ----- -----	<div><div></div><div></div><div></div></div>
High Voltage DAC Value	V	Master Before After Before-Master After-Before	1150.000 ----- ----- ----- -----	850.000 ----- ----- ----- -----	0.000 1020.215 ----- 1020.215 -----	1600.000 ----- ----- ----- -----	<div><div></div><div></div><div></div></div>
Na 1785 Peak Location		Master Before After Before-Master After-Before	142.650 ----- ----- ----- -----	135.000 ----- ----- ----- -----	142.447 142.736 ----- 0.289 -----	150.300 ----- ----- ----- -----	<div><div></div><div></div><div></div></div>
Na 1785 Peak Resolution	%	Master Before After Before-Master After-Before	8.500 ----- ----- ----- -----	7.000 ----- ----- ----- -----	8.632 9.602 ----- 0.970 -----	11.000 ----- ----- ----- -----	<div><div></div><div></div><div></div></div>
Temperature	degF	Master Before After Before-Master After-Before	----- 59.900 ----- ----- -----	----- -20.002 ----- ----- -----	----- 114.558 ----- ----- -----	----- 140.000 ----- ----- -----	<div><div></div><div></div><div></div></div>
Na Count Rate	CPS	Master Before After Before-Master After-Before	45.000 45.000 ----- ----- -----	10.000 10.000 ----- ----- -----	42.671 43.605 ----- 0.934 -----	100.000 100.000 ----- ----- -----	<div><div></div><div></div><div></div></div>

HNGS Background and Na22 Set Point Determination - Ratio of Detector 1 to Detector 2

Master (EEPROM): 23:07:53 16-Jul-2012		Before (Measured): 20:59:40 31-Jul-2012		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div></div>
Coincidence Count Rate Ratio		Master			0.000		<div><div></div><div></div><div></div></div>
		Before	1.000	0.950	0.999	1.050	<div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.999	-----	<div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>

HNGS Background and Na22 Set Point Determination - Detector 1 Calibration

Master (EEPROM): 23:07:53 16-Jul-2012		Before (Measured): 20:59:40 31-Jul-2012		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div></div>
Th Peak Location - 0		Master	209.630	201.000	207.865	218.250	<div><div></div><div></div><div></div></div>
		Before	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
Th Peak Resolution - 0	%	Master	7.000	5.000	6.840	9.000	<div><div></div><div></div><div></div></div>
		Before	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
Background Count Rate	CPS	Master			0.000		<div><div></div><div></div><div></div></div>
		Before	142.500	10.000	216.812	265.000	<div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	216.812	-----	<div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
Gain Ratio - 0		Master	1.000	0.940	0.999	1.060	<div><div></div><div></div><div></div></div>
		Before	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div></div>

HNGS Background and Na22 Set Point Determination - Detector 2 Calibration

Master (EEPROM): 23:07:53 16-Jul-2012		Before (Measured): 20:59:40 31-Jul-2012		After:			
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Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Th Peak Location - 0		Master	209.630	201.000	211.143	218.250	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Th Peak Resolution - 0	%	Master	7.000	5.000	7.890	9.000	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Background Count Rate	CPS	Master			0.000		
		Before	142.500	10.000	208.687	265.000	
		After	----	----	----	----	
		Before-Master	----	----	208.687	----	
		After-Before	----	----	----	----	
Gain Ratio - 0		Master	1.000	0.940	1.012	1.060	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

HNGS Background and Na22 Set Point Determination - Detector 1 Calibration

Master (EEPROM): 23:07:53 16-Jul-2012		Before (Measured): 20:59:40 31-Jul-2012		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Set Point - 0		Master	40.000	38.000	41.000	43.500	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

HNGS Background and Na22 Set Point Determination - Detector 2 Calibration

Master (EEPROM): 23:07:53 16-Jul-2012		Before (Measured): 20:59:40 31-Jul-2012		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Set Point - 0		Master	40.000	38.000	41.000	43.500	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

ADT-C (Dielectric Scanner) Calibration - Run 1

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): 20:56:56 31-Jul-2012							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring RCAL	in	Before	8.00	4.00	8.15	12.00	
Large Ring RCAL	in	Before	12.00	6.00	12.32	18.00	

Company:	Noble Energy Inc	Schlumberger					
Well:	Longs AC 02-15						
Field:	Wattenberg						
County:	Weld						
State:	Colorado						

Platform Express
Array Induction
with Linear Correlation