

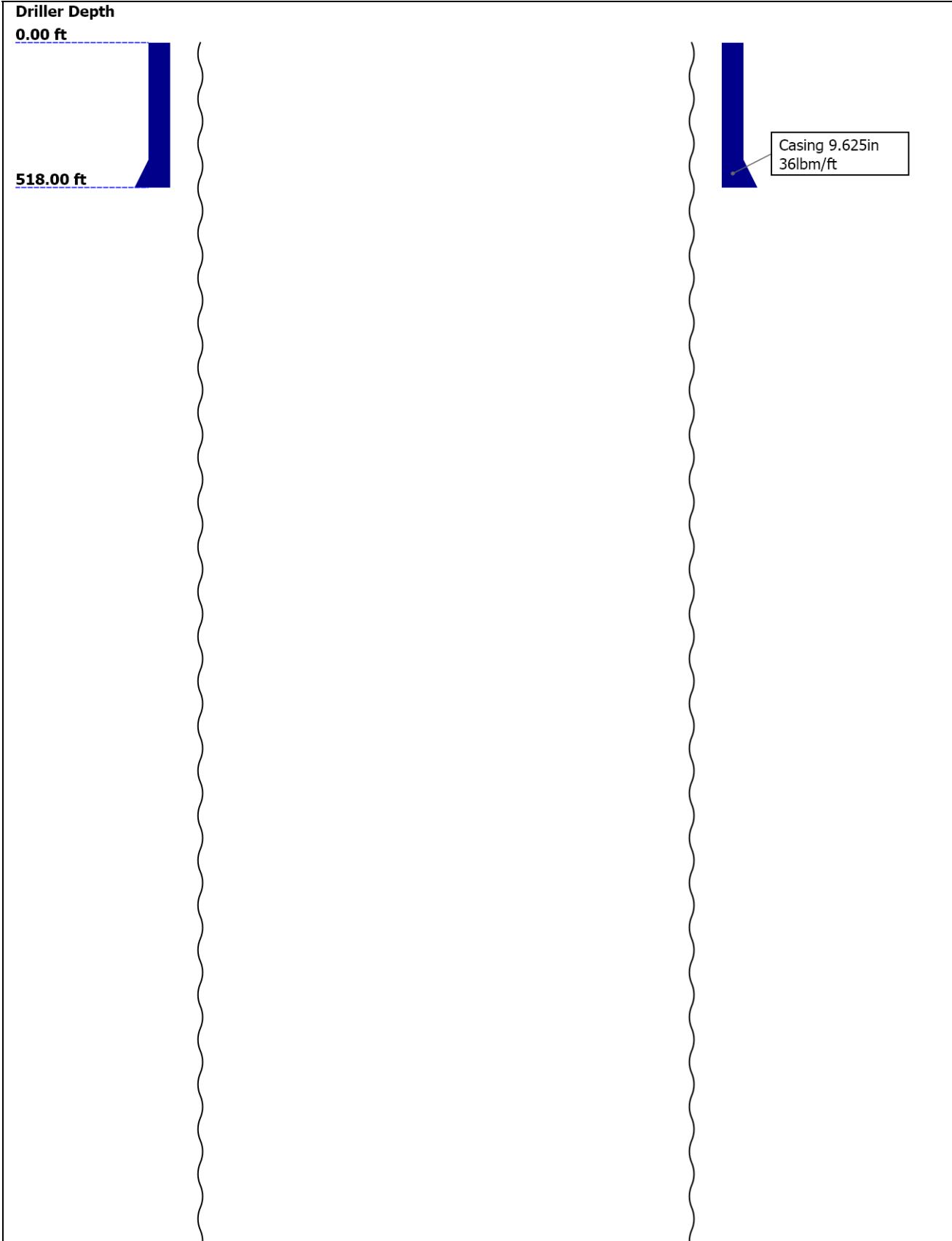
Company:		Cascade Petroleum LLC		Schlumberger			
Well:		Fisher 13-9S-55W-01					
Field:		Wildcat					
County:		Lincoln		State:		Colorado	
Platform Express Triple Combo		Location:					
		Sec 13, T 9S, R 55W SHL: 660' FNL X 1505' FWL NENW		Elev. K.B. 5625.00 ft G.L. 5610.00 ft D.F. 5624.00 ft			
		Permanent Datum:		Ground Level		Elev.: 5610.00 f	
		Log Measured From:		Kelly Bushing		15.00 ft above Perm.Datum	
		Drilling Measured From:		Kelly Bushing			
API Serial No.		Section:		Township:		Range:	
05-073-06492-0000		13		9S		55W	
Logging Date		18-Apr-2013					
Run Number		1					
Depth Driller		7822.00 ft					
Schlumberger Depth		7822.00 ft					
Bottom Log Interval		7659.00 ft					
Top Log Interval		2000.00 ft					
Casing Driller Size @ Depth		9.625 in @ 518.00 ft					
Casing Schlumberger		518 ft					
Bit Size		7.875 in					
Type Fluid In Hole		Chemical Gel					
MUD		Density	Viscosity	8.9 lbm/gal		43 s	
		Fluid Loss	PH	9 cm3		8.25	
Source of Sample		Active Tank					
RM @ Meas Temp		1.53 ohm.m @ 91.2 degF					
RMF @ Meas Temp		1.15 ohm.m @ 91.2 degF					
RMC @ Meas Temp		1.91 ohm.m @ 68 degF					
Source RMF		RMC	Calculated	Calculated			
RM @ BHT		RMF @ BHT	0.74 @ 196.3	0.55 @ 196.3			
Max Recorded Temperatures		196.3 degF					
Circulation Stopped		Time 17-Apr-2013 15:00:00					
Logger on Bottom		Time 18-Apr-2013 23:30:20					
Unit Number		Location:		2135		Fort Morgan, CO	
Recorded By		Philip Grant					
Witnessed By		Reg Bengé					

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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- 11. Calibration Report
- 12. Tail

Well Sketch



7822.00 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 )	7822					
Bottom Logger ( ft )	7822					
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 )	518					
Bottom Logger ( ft )	518					

## Borehole Fluids

Parameter( unit )	1					
Fluid Type	Water					
Fluid Name	Chemical Gel					
Max Recorded Temperatures ( degF )	196.3					
Source of Sample	Active Tank					
Salinity ( ppm )	700					
Density ( lbm/gal )	8.9					
Funnel Viscosity ( s )	43					
Fluid Loss ( cm3 )	9					
PH	8.25					
Date/Time Circulation Stopped	17-Apr-2013 15:00:00					
Date Logger on Bottom	18-Apr-2013					
Time Logger on Bottom	23:30:20					
Source RMF	Calculated					
RMC	Calculated					
RM @ Meas Temp ( ohm.m@degF )	1.53 @ 91.2					
RMF @ Meas Temp ( ohm.m@degF )	1.15 @ 91.2					
RMC @ Meas Temp ( ohm.m@degF )	1.91 @ 68					

## Remarks and Equipment Summary



Adaptor\_Head [2] 76.36

GPIT-F 71.86  
GPIH-B  
GPIC-F  
DHRU-F

Adaptor\_Head [1] 67.86

PPC-B[1]873 59.86  
3  
PPC-B:8733

MAXS 76.36

GPIT-F Incl inometer 70.44

GPIT 0.00

PPC-B Calipers 58.71

AH-184[2] 53.34

HNGS-BA:152 51.34  
HEH-K:149  
HNGS-BA:152

GR 48.35

HNGC-B:250 43.15  
HNGH-A:87  
HNGC-B:250

Tel Status 41.4

AH-184[1] 39.65

HGNS-H:4865 37.65  
HGNH:4817  
NPV-N  
NSR-F:2554  
HGNS-H:4865  
HMCA-H  
HACCZ-H:6991

Temperature 37.62

GR 36.91

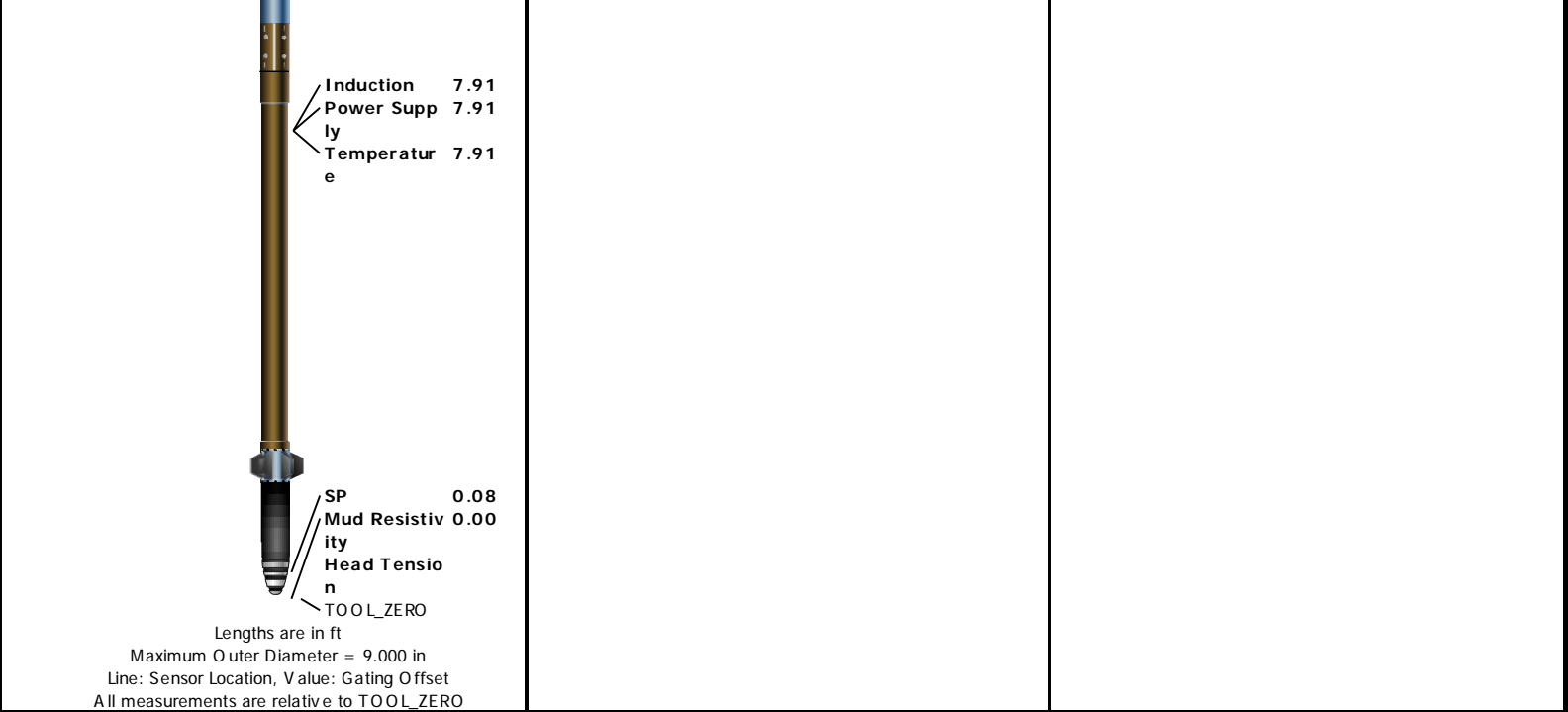
CNL Porosity 30.57  
HMCA 28.24  
HGNS 28.24  
Accelerometer 0.00

HDRS-H:3863 28.24  
ECH-MEB:2898  
HRCC-H:3828  
HRMS-H:3863  
Short Spacing  
HRGD-H:3870  
Long Spacing:28620  
Backscatter  
GSR-J:5471  
GPV-Q

HRCC 24.24

MCFL 18.81  
Caliper 18.33  
TLD Density 17.94

AIT-H:216 16.00  
AHIS:216  
AHRM:216



## Depth Summary

Depth Control Parameters	1		
Conveyance Type	Wireline		
Stretch Correction ( ft )	4.00		
Rig Type	Conventional		
Depth Remark Parameters	1		
Depth Remark 1	This is the first run in hole and primary depth reference.		
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

5" Triple Combo

## Integration Summary

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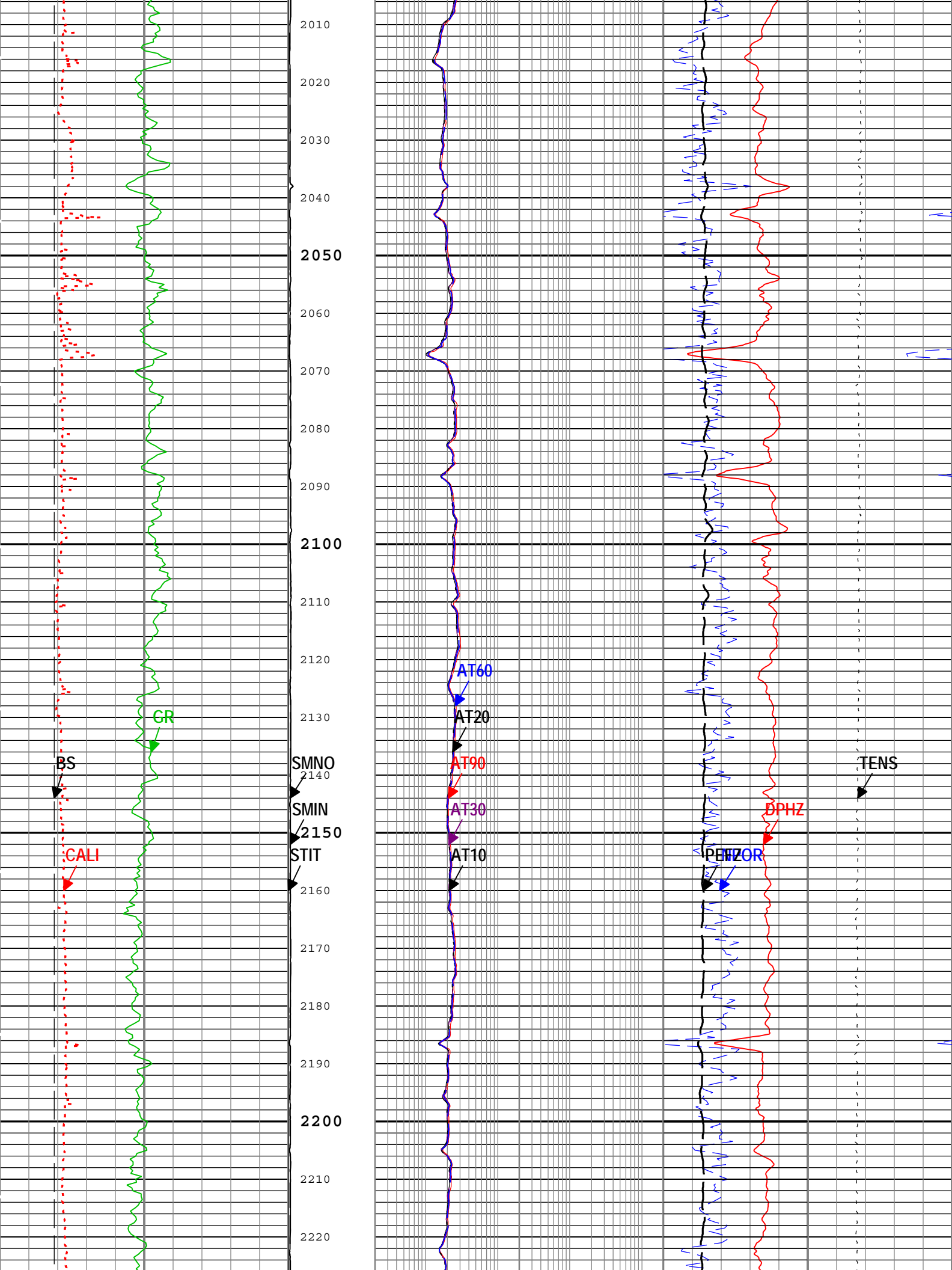
## Software Version

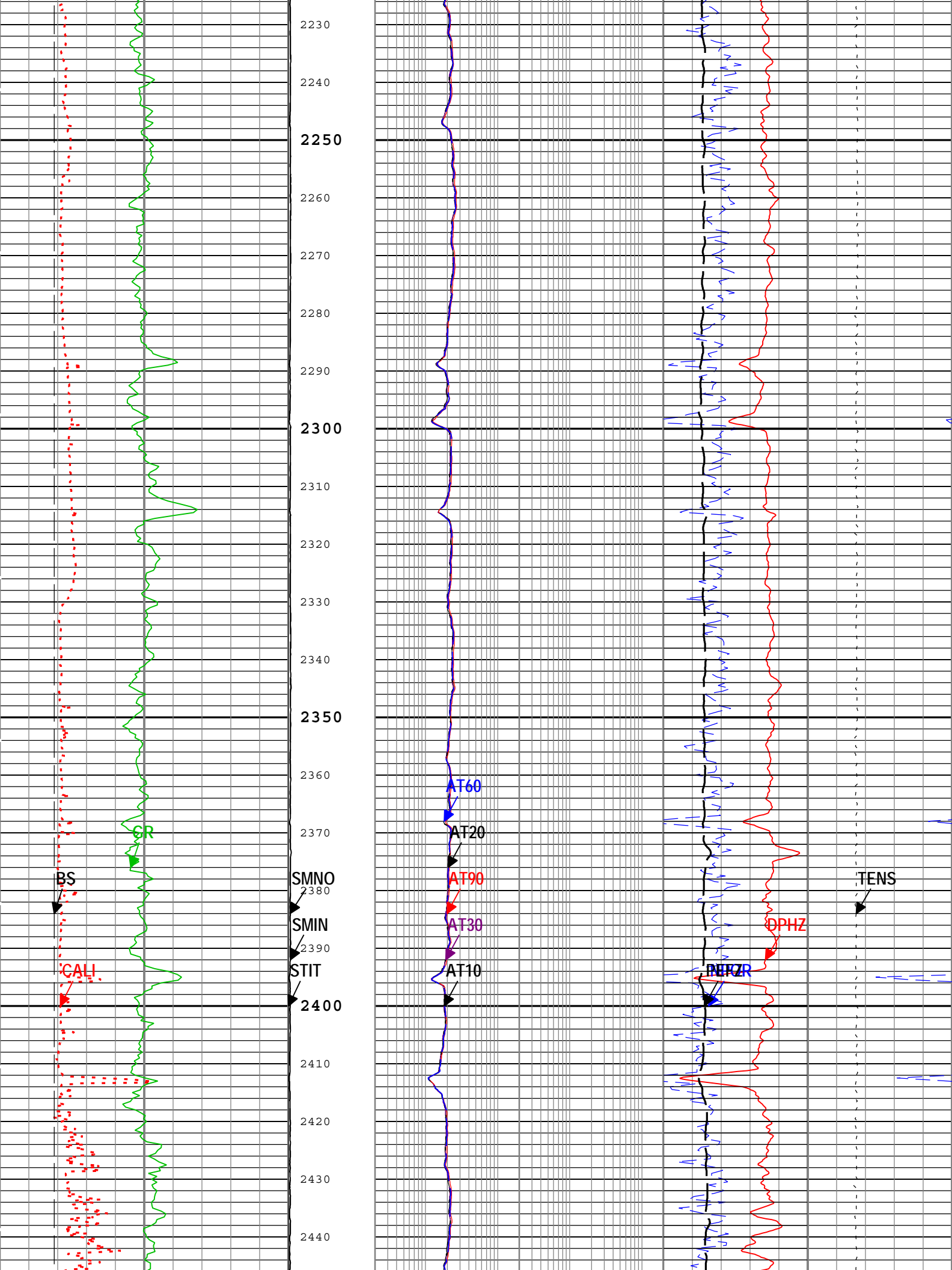
Acquisition System	Version
MaxWell	3.1.9755.0
Application Patch	SP-20130325-3.1.9755.1799

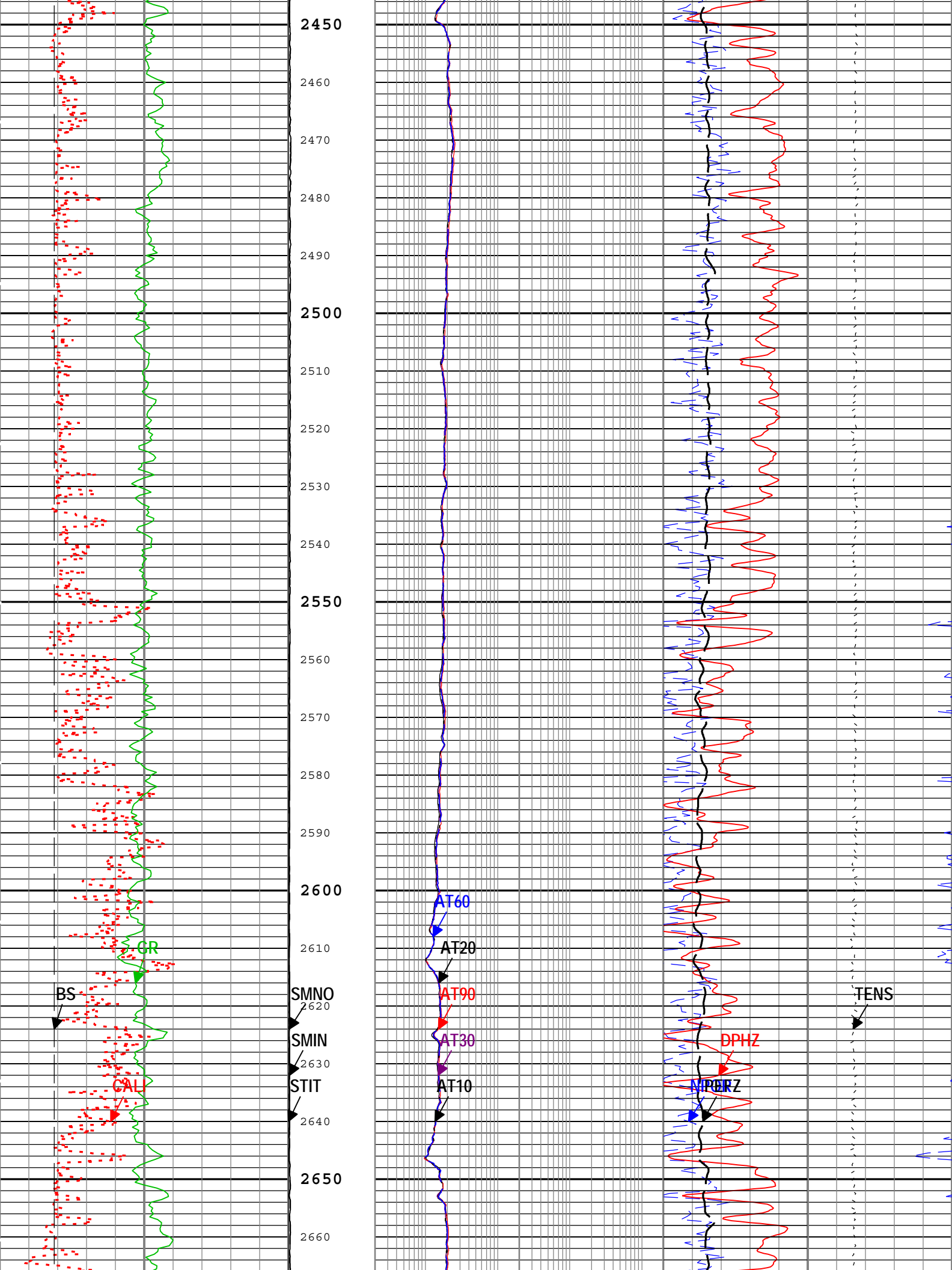
Computation	Description	Version
Borehole	Borehole Ensemble provides common Borehole Parameters and Channels	3.1.9755.1799
HENVIR	Computation Ensemble for the HGNS Neutron environmental corrections	3.1.9755.0
DepthCorrection	DepthCorrection	3.1.9755.1799

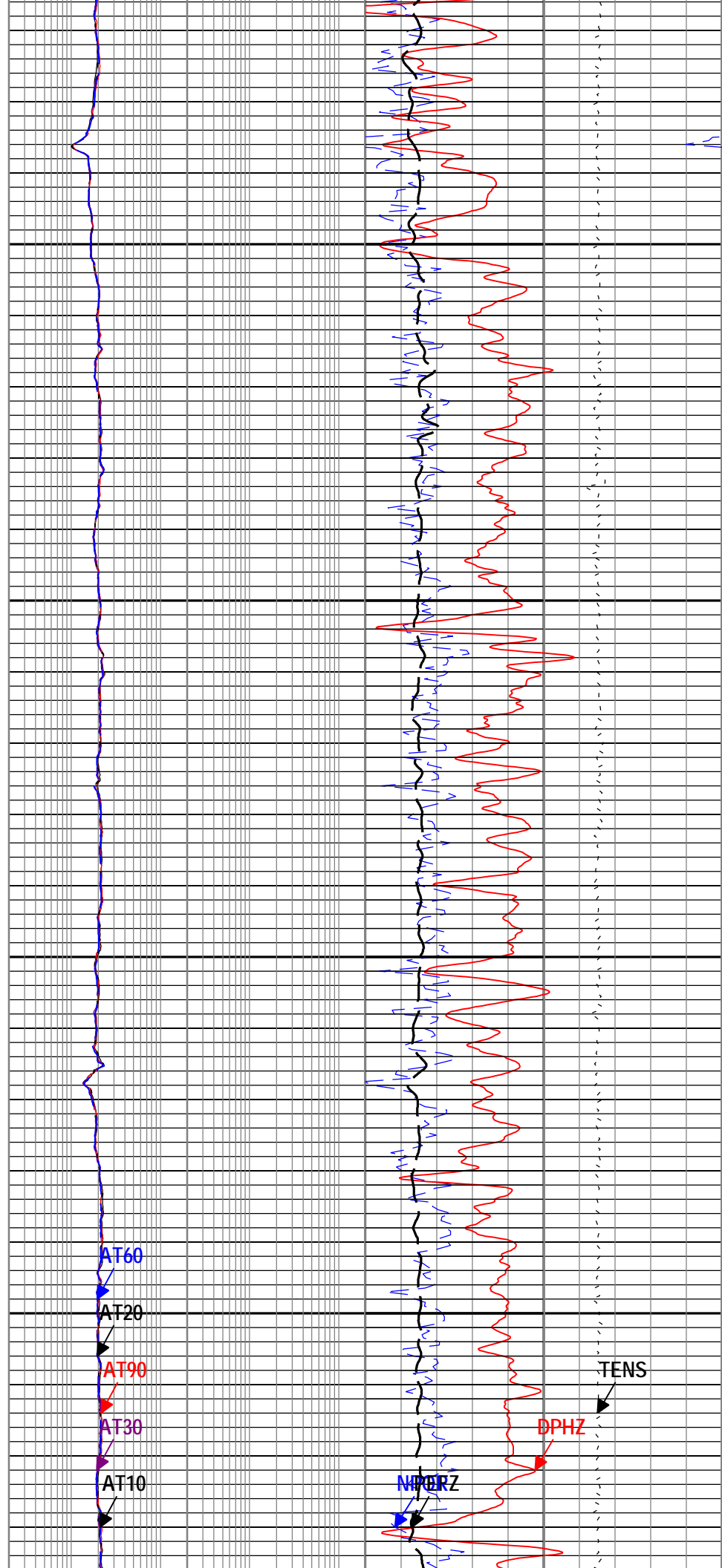
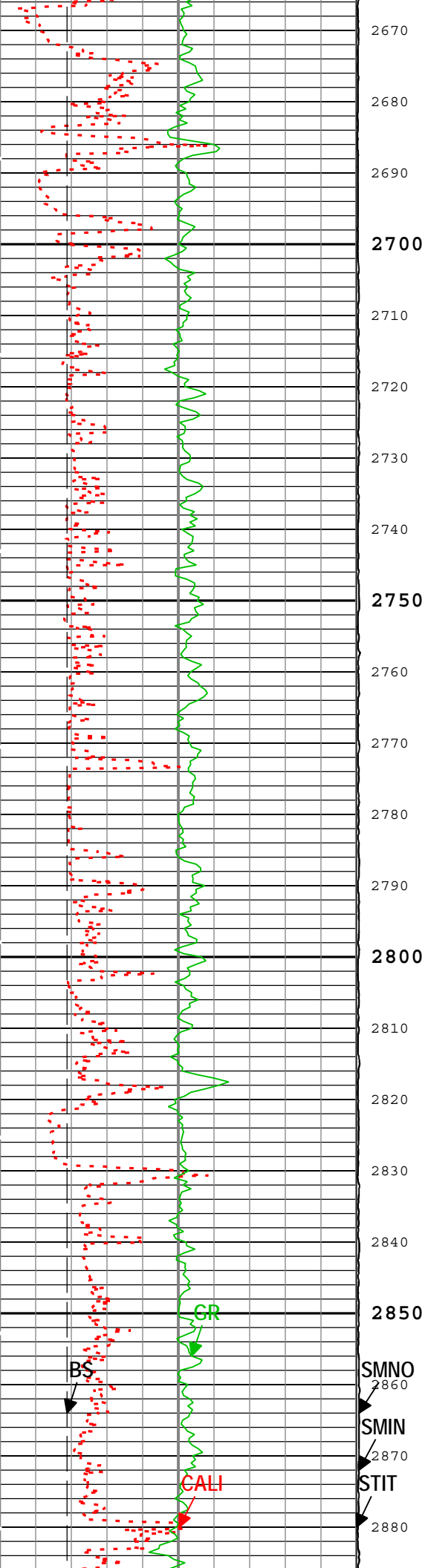
Tool Elements		Description	Software Version			Firmware Version		
HRCC-H		HILT High-Resolution Control Cartridge, 150 degC	3.1.9755.0			2.0		
HGNS-H		HILT Gamma-Ray and Neutron Sonde, 150 degC	3.1.9755.0			2.0		
AHIS		Array Induction Sonde - H	3.1.9755.1799					
HRGD-H		HILT Resistivity Gamma-Ray Density Device, 150 degC	3.1.9755.0			3.0		
Pass Summary								
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
1	Log[5]:Up	Up	432.53 ft	7675.33 ft	18-Apr-2013 10:33:50 PM	19-Apr-2013 3:10:35 AM	0.00 ft	
All depths are referenced to toolstring zero								
Log	1: Log[5]:Up							
Description: HGNS standard resolution porosities for Platform Express    Format: Log ( Import of Kerr McGee 5in Triple Combo )    Index Scale: 5 in per 100 ft Index Unit: ft    Index Type: Measured Depth    Creation Date: 19-Apr-2013 03:55:43								
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					
BS	Borehole		6in					
CALI	HDRS-H:HRCC-H:HRCC-H		1in					
DPHZ	HDRS-H:HRMS-H:HRGD-H		2in					
GR	HGNS-H:HGNS-H:HGNS-H		6in					
NPOR	HGNS-H:HGNS-H:HGNS-H		6in					
PEFZ	HDRS-H:HRMS-H:HRGD-H		2in					
SMIN	HDRS-H:HRMS-H:HRGD-H		2in					
SMNO	HDRS-H:HRMS-H:HRGD-H		2in					
STIT	DepthCorrection		6in					
TENS	WLWorkflow		6in					
TIME_1900	WLWorkflow		0.1in					
TIME_1900 - Time Marked every 60.00 (s)								
			Stuck Tool Indicator, Total (STIT)		Array Induction Two Foot Resistivity A10 (AT10) AIT-H		Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H	
			0    ft    50		0.2    ohm.m    2000			
			Synthetic Micro-Inverse Resistivity (SMIN) HDRS-H		Array Induction Two Foot Resistivity A30 (AT30) AIT-H		0    10	
			0.2    ohm.m    2000		NPOR Backup			
Gamma Ray Back up			0    100 ohm.m		Array Induction Two Foot Resistivity A90 (AT90) AIT-H		Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H	
Caliper (CALI) HDRS-H			6    in    16		0.2    ohm.m    2000		0.45    m3/m3    -0.15	
Bit Size (BS)			Synthetic Micro-Normal Resistivity (SMNO) HDRS-H		Array Induction Two Foot Resistivity A20 (AT20) AIT-H		Standard Resolution Density Porosity (DPHZ) HDRS-H	
6    in    16					0.2    ohm.m    2000			
Gamma Ray (GR) HGNS-H			0    100 ohm.m		Array Induction Two Foot Resistivity A60 (AT60) AIT-H		0.45    ft3/ft3    -0.15	
0    gAPI    200					Cable Tension (TENS)			
			2000		0.2    ohm.m    2000		10000    lbf    0	

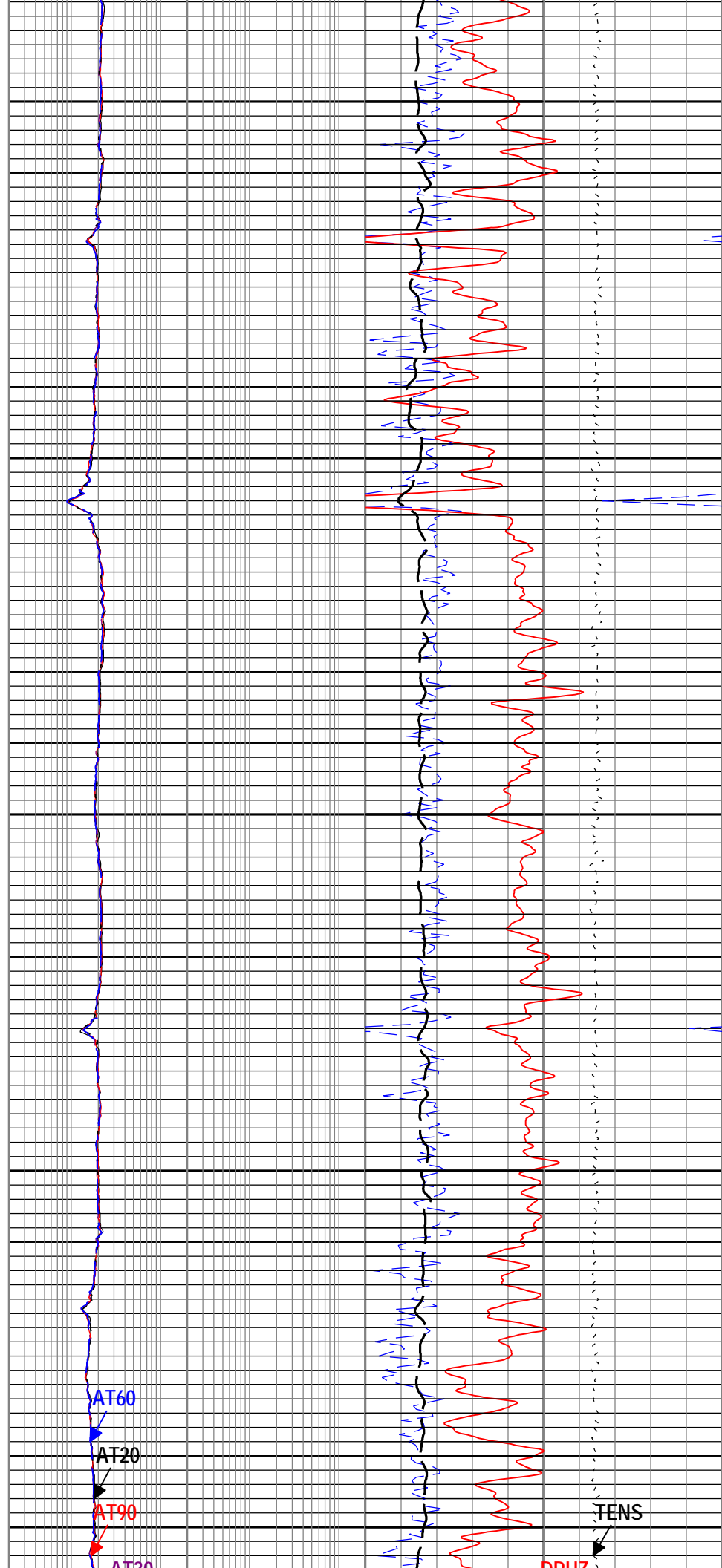
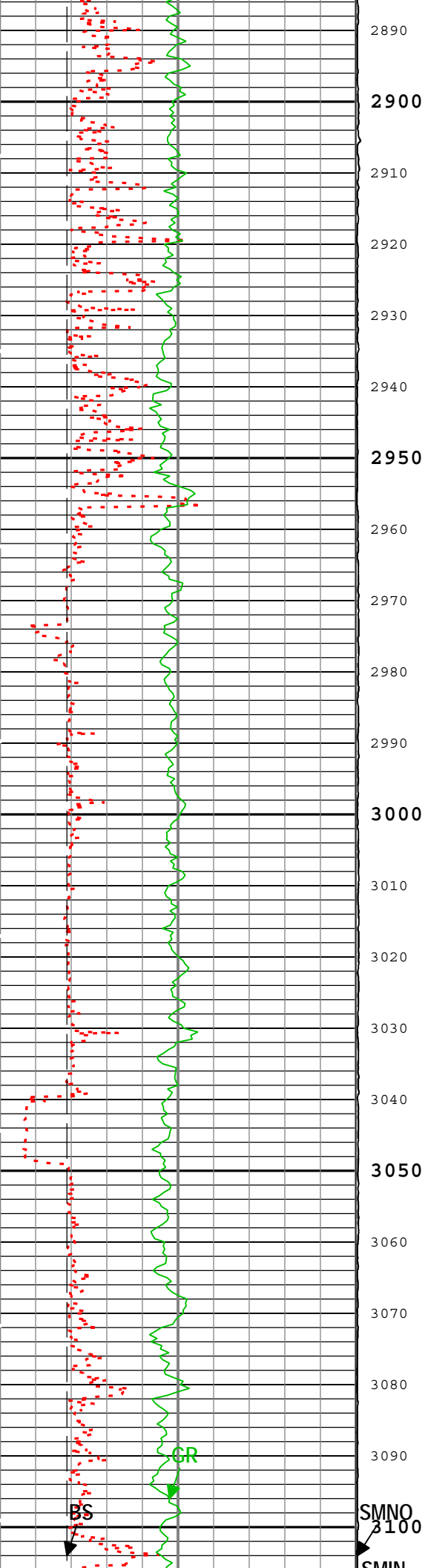


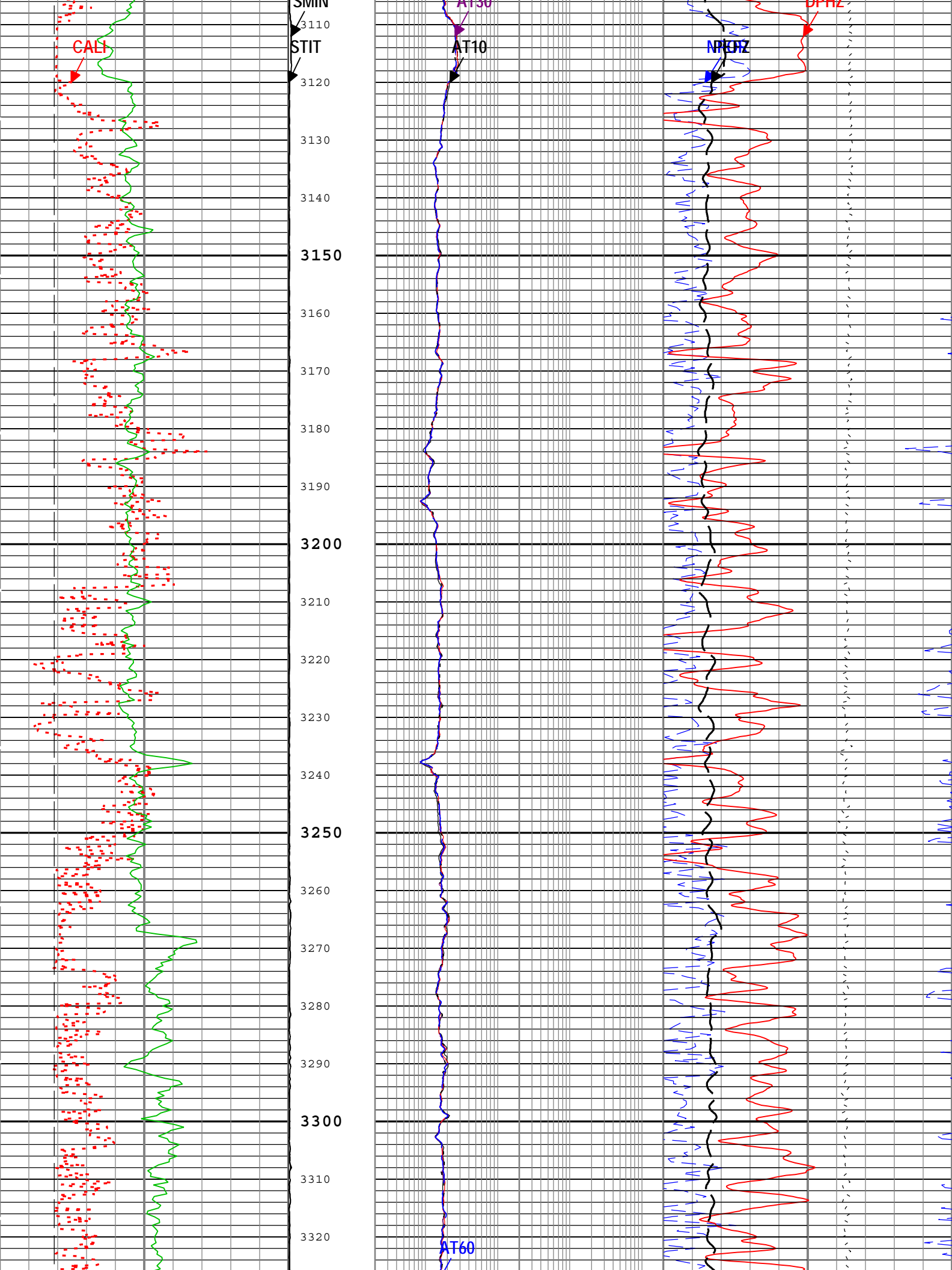


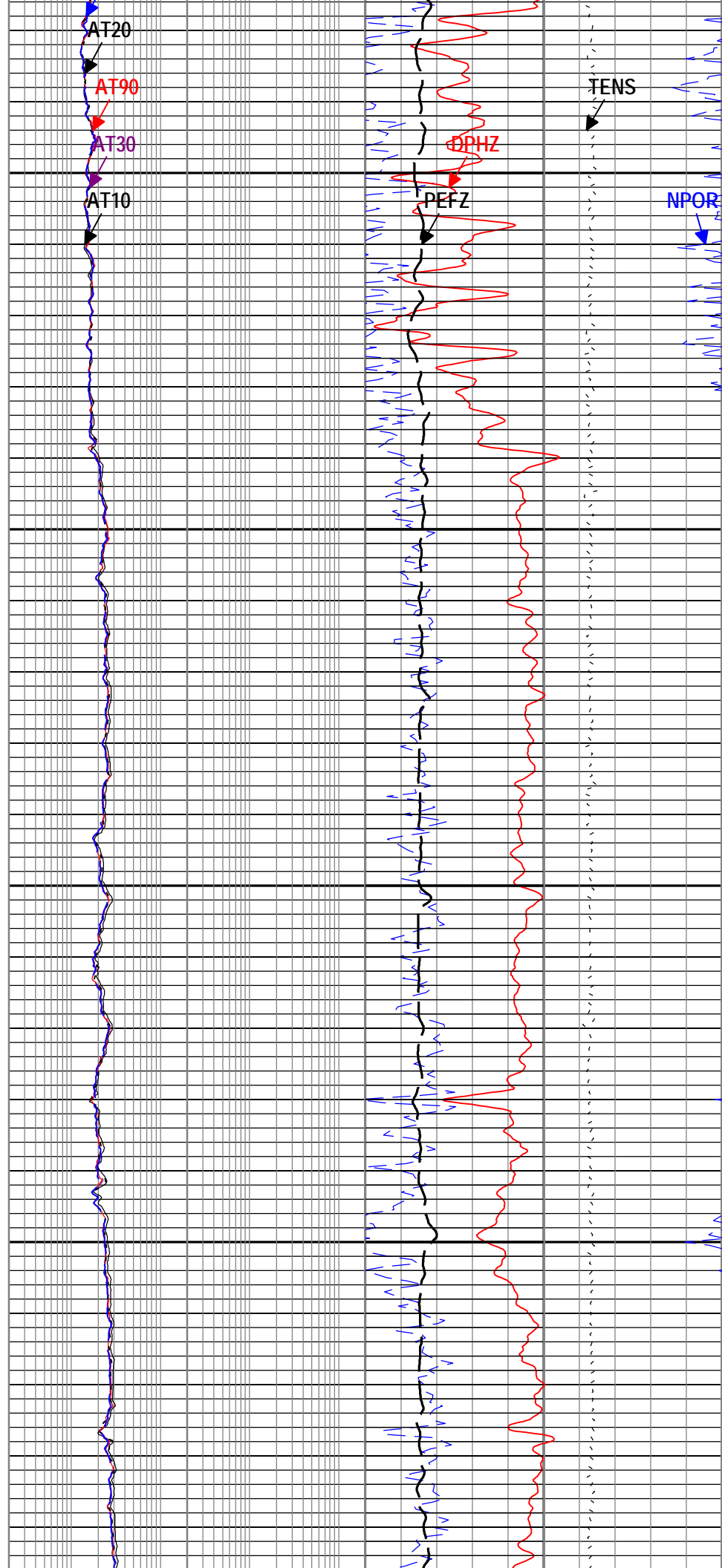
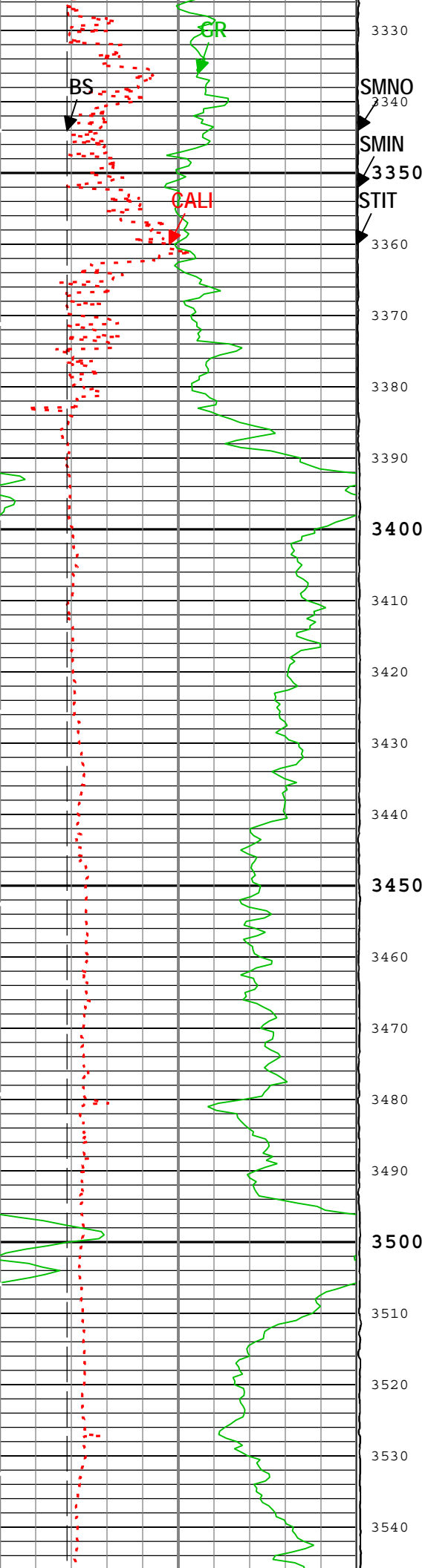


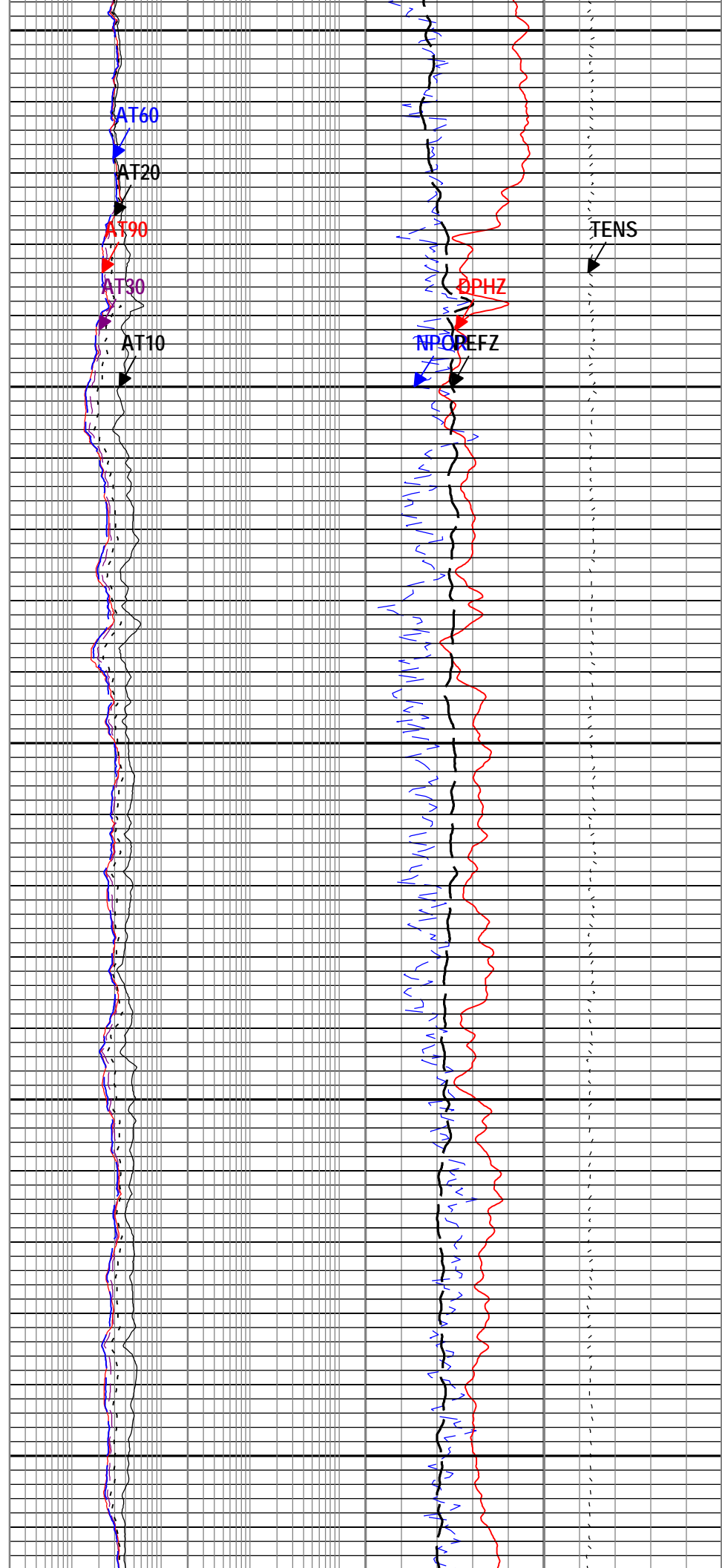
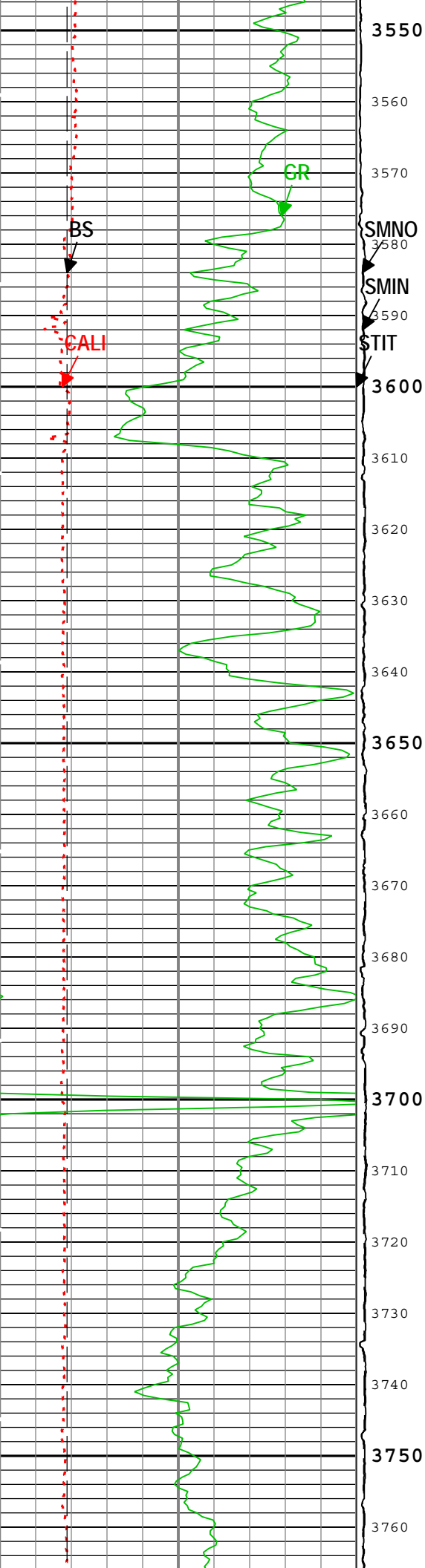




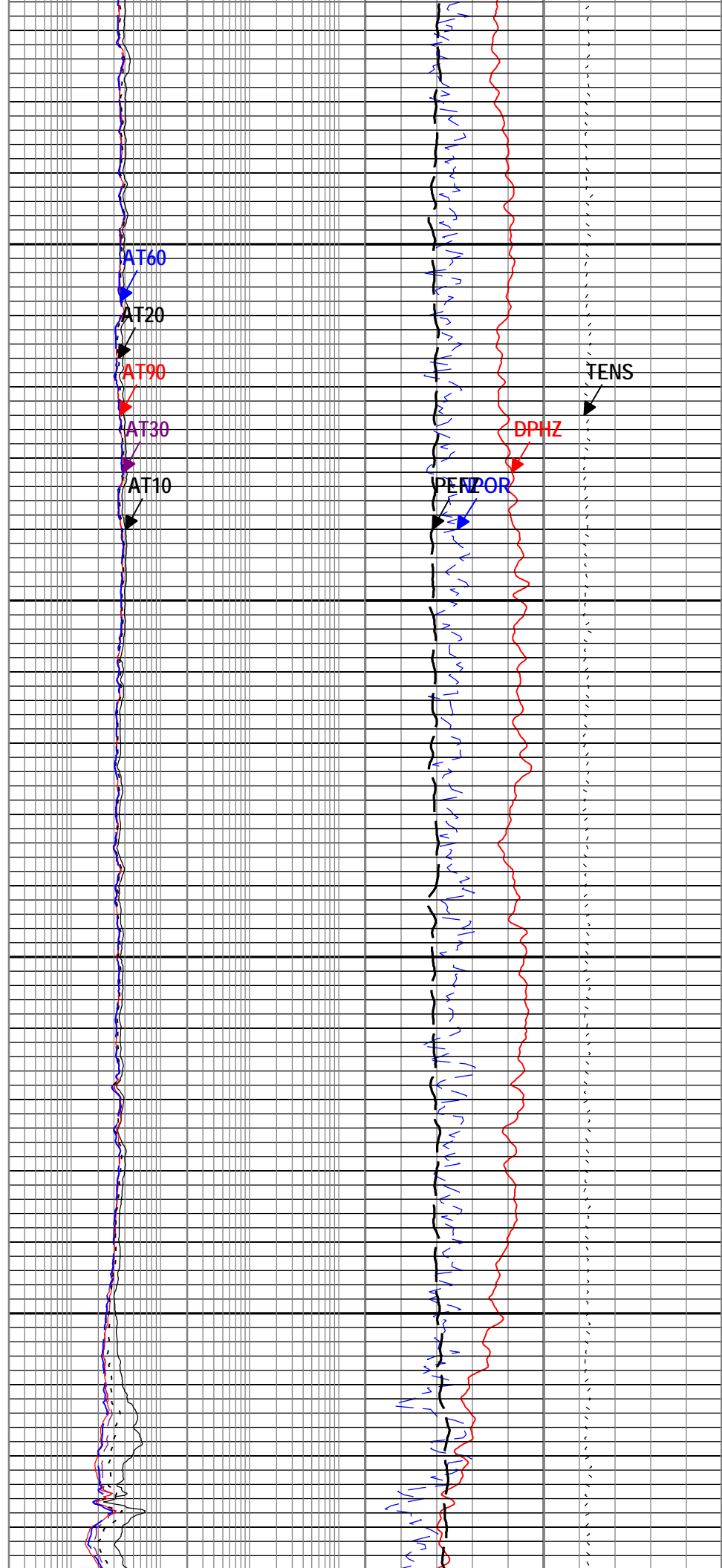
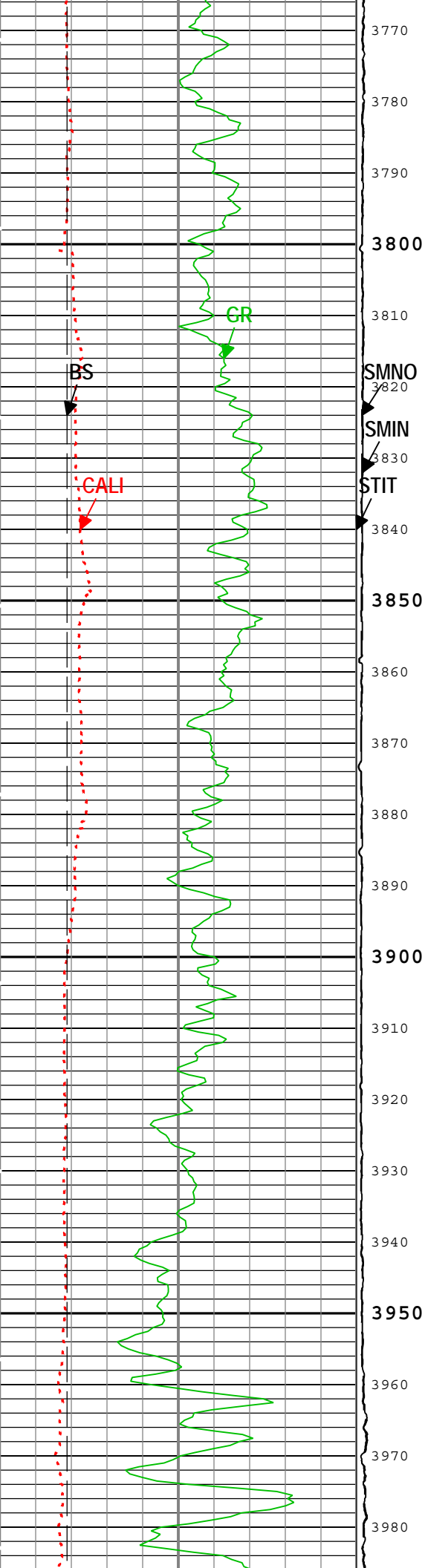


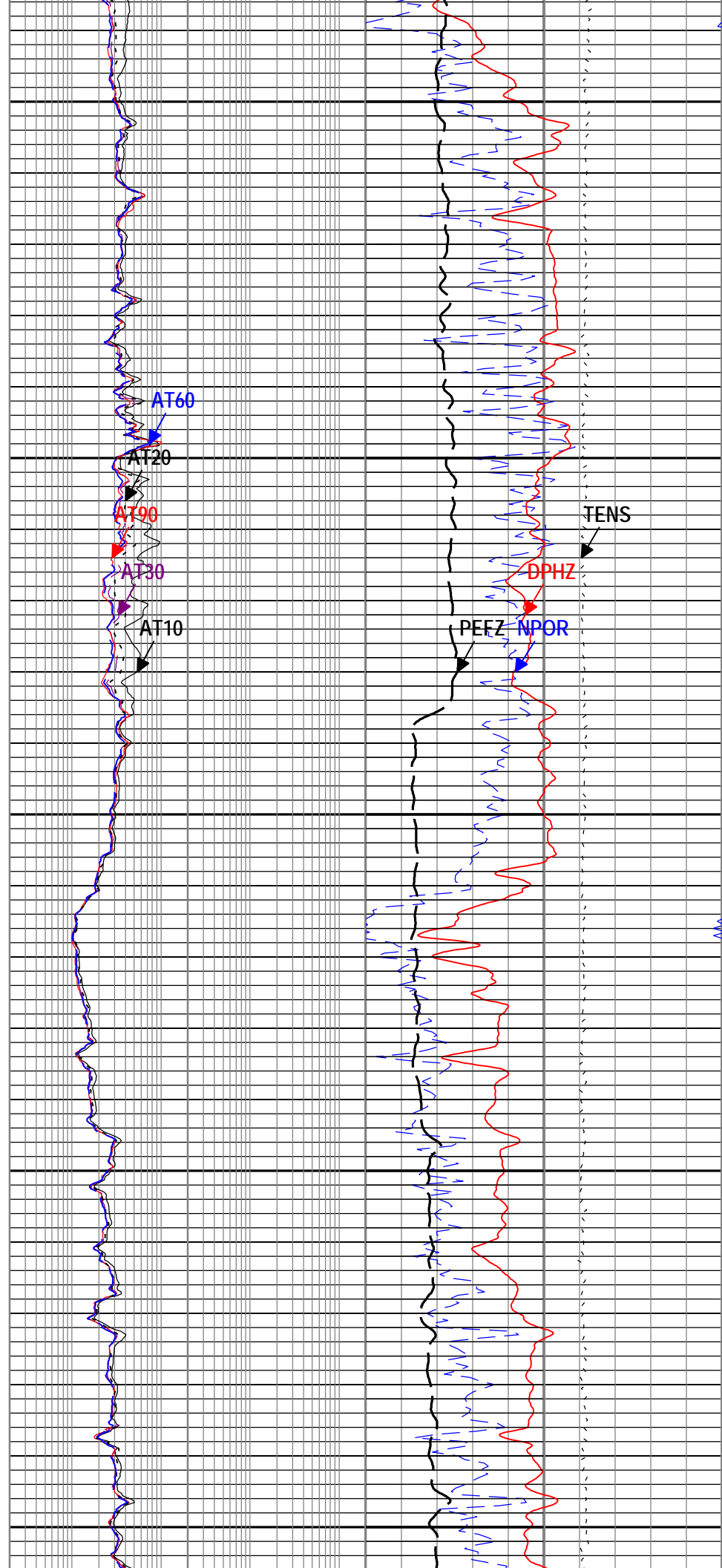
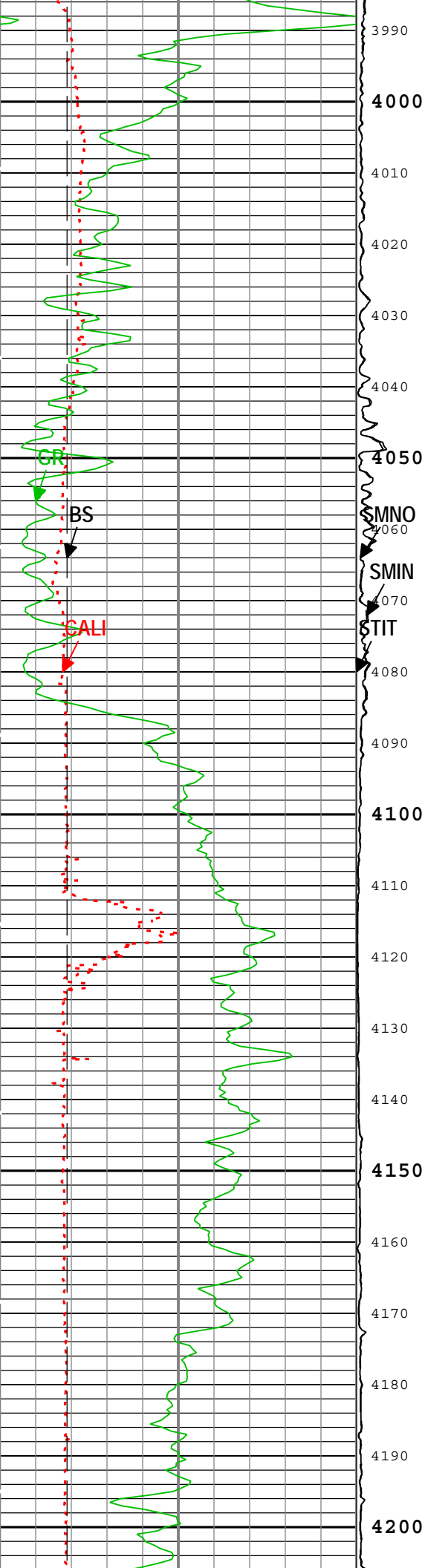


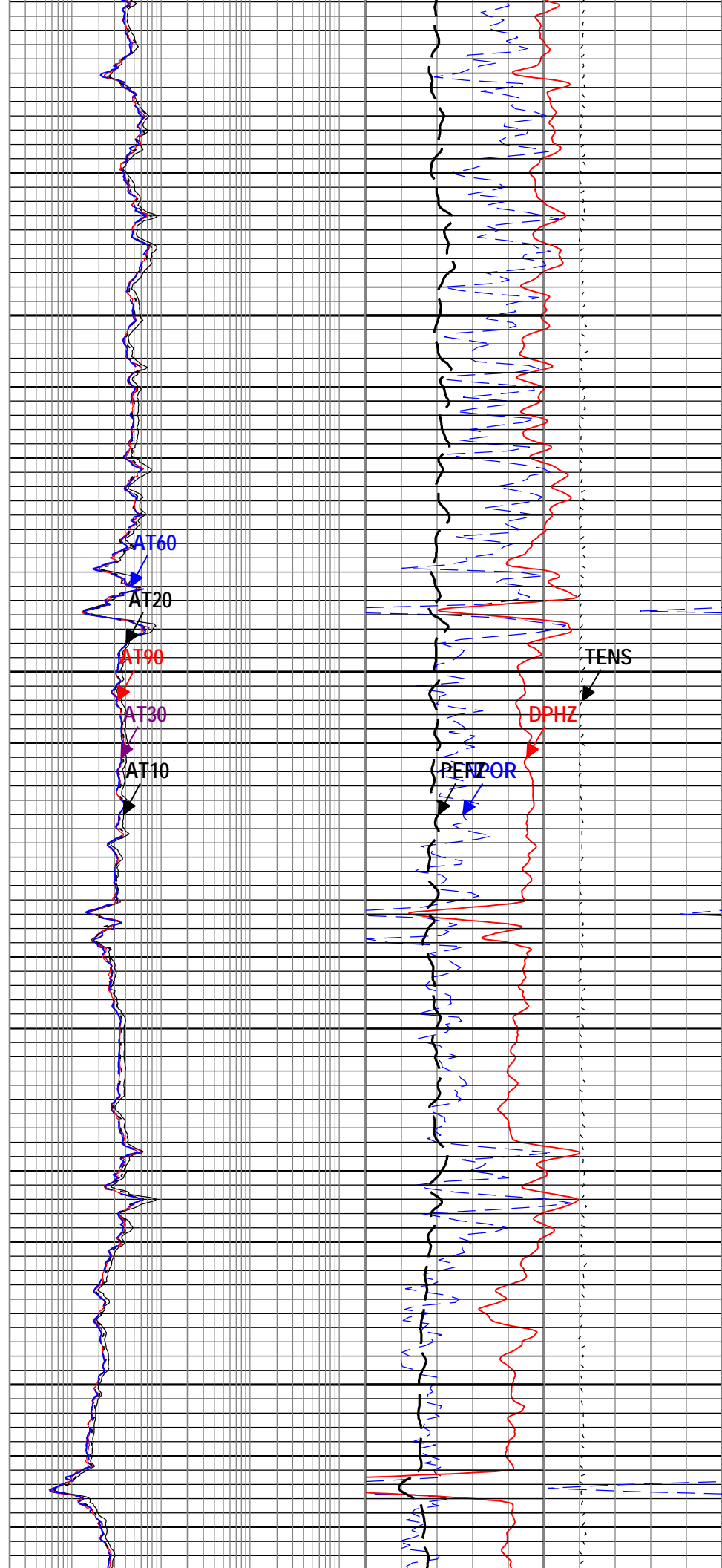
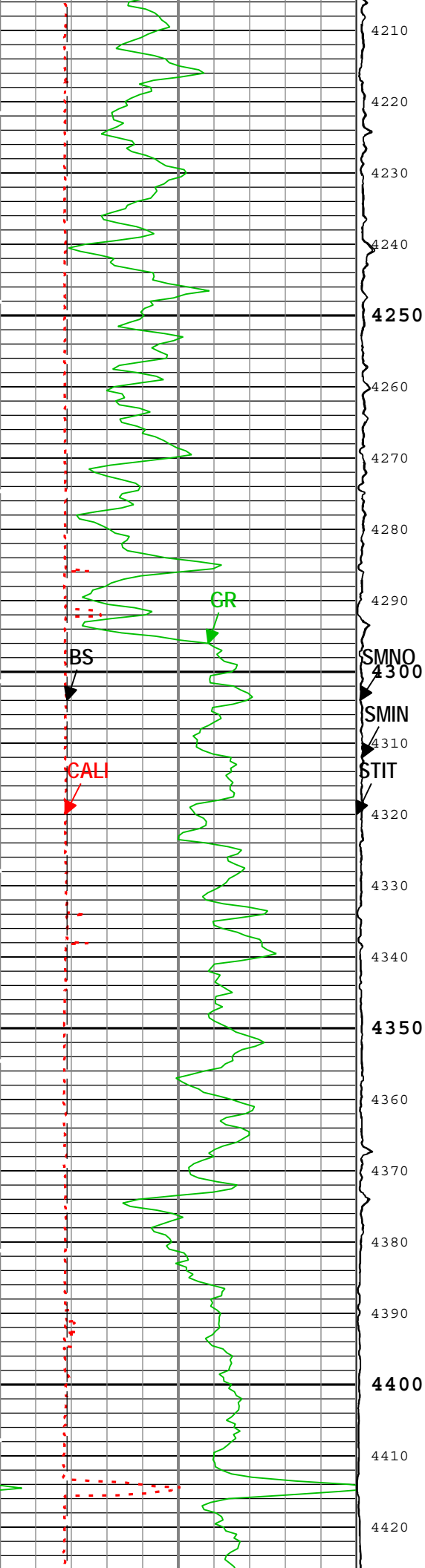


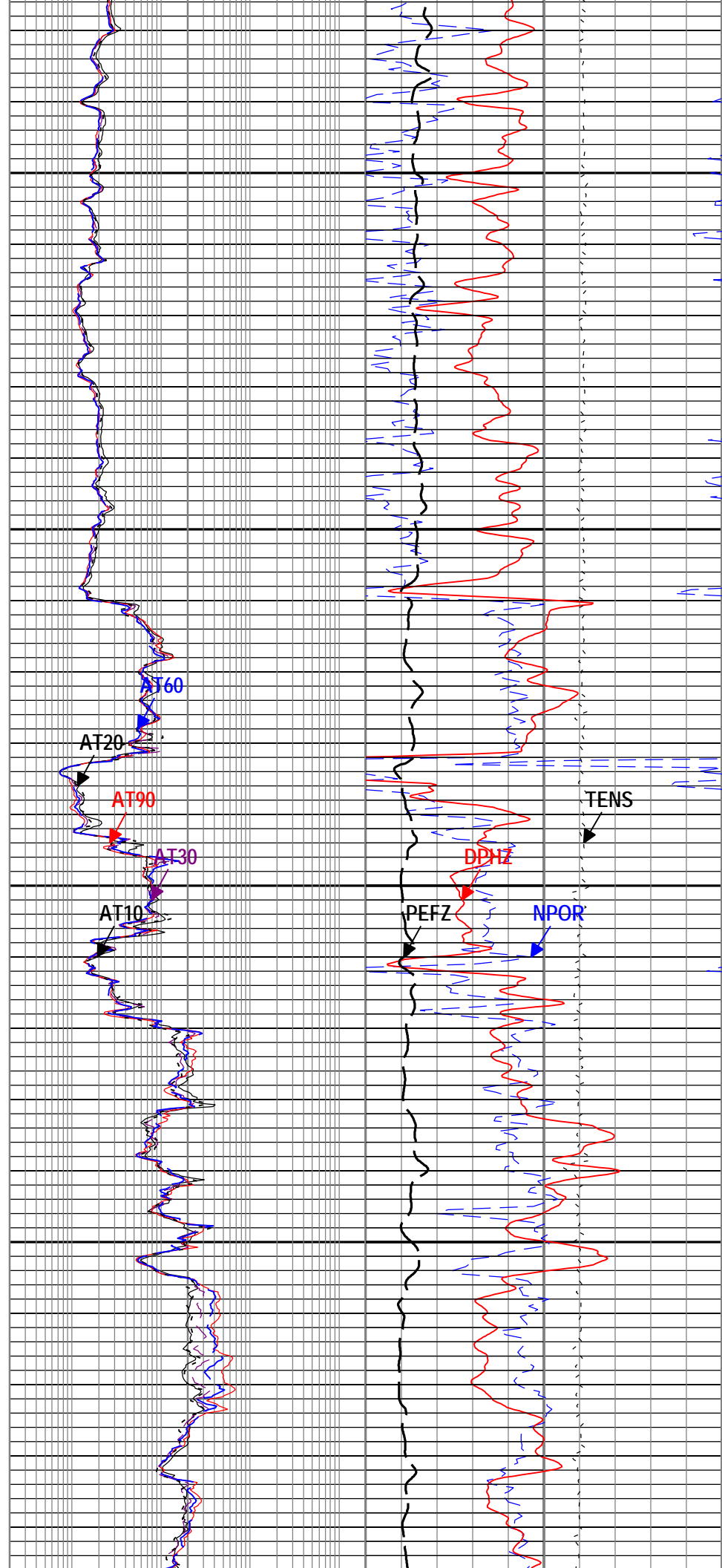
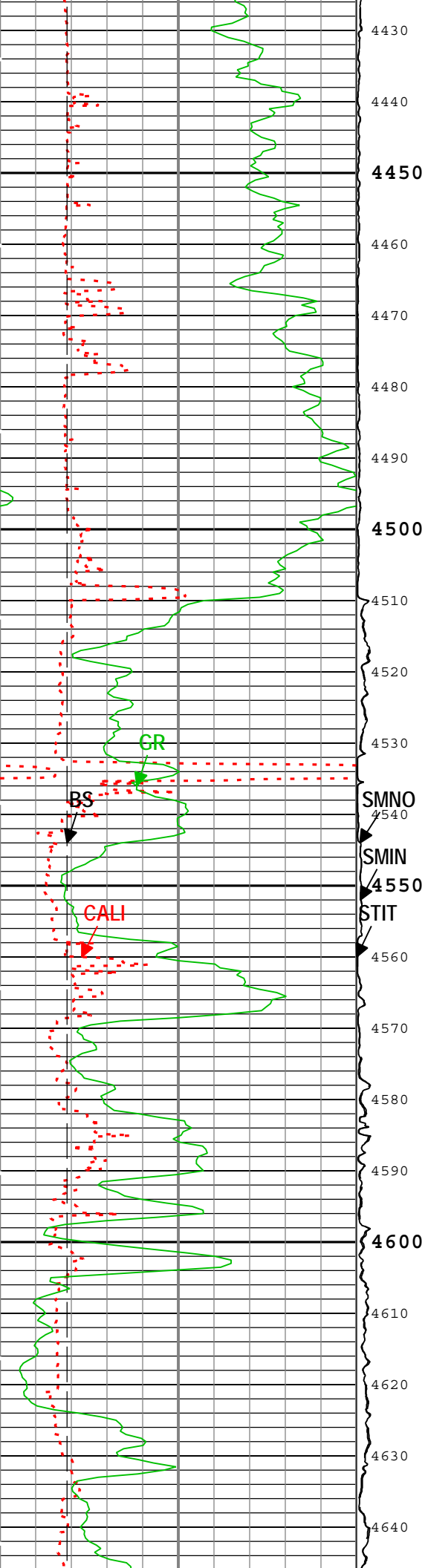


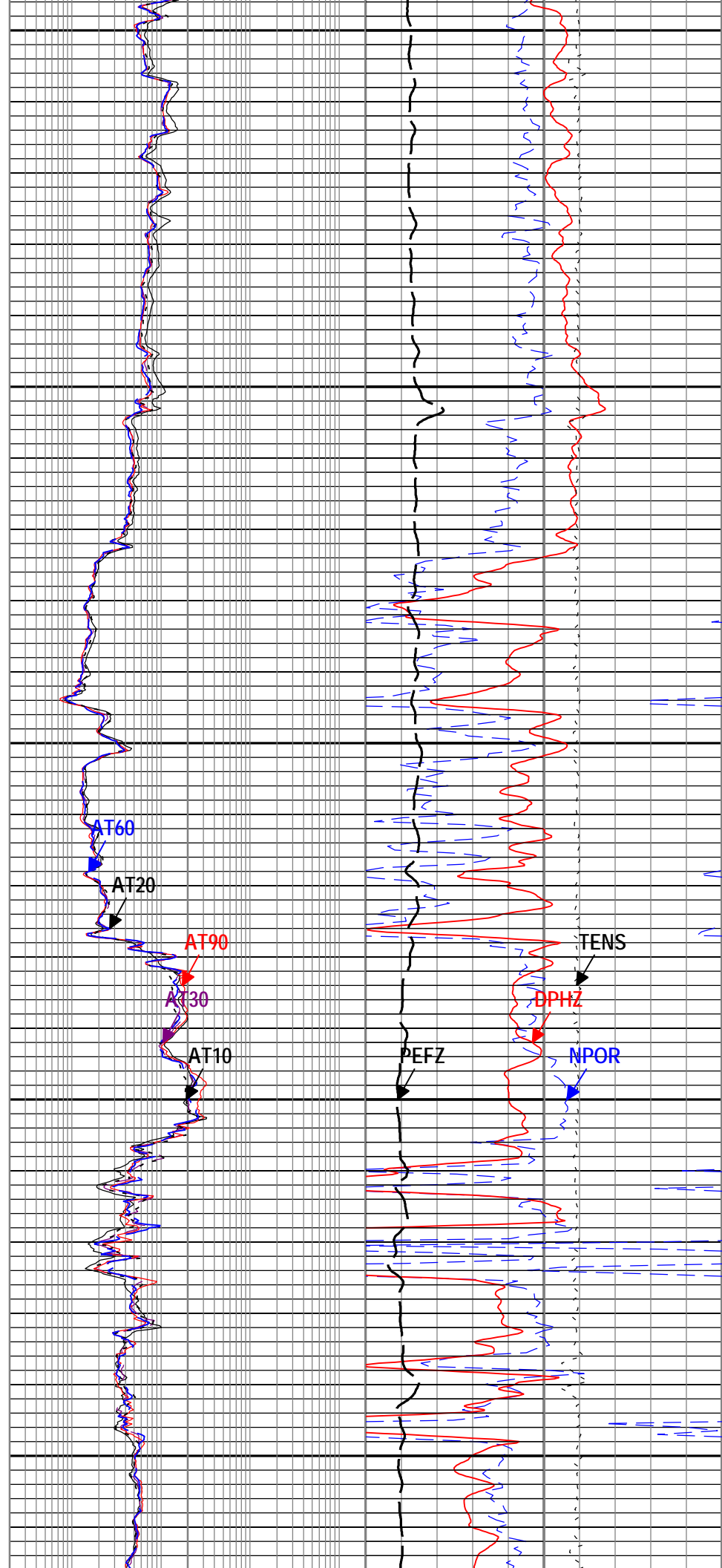
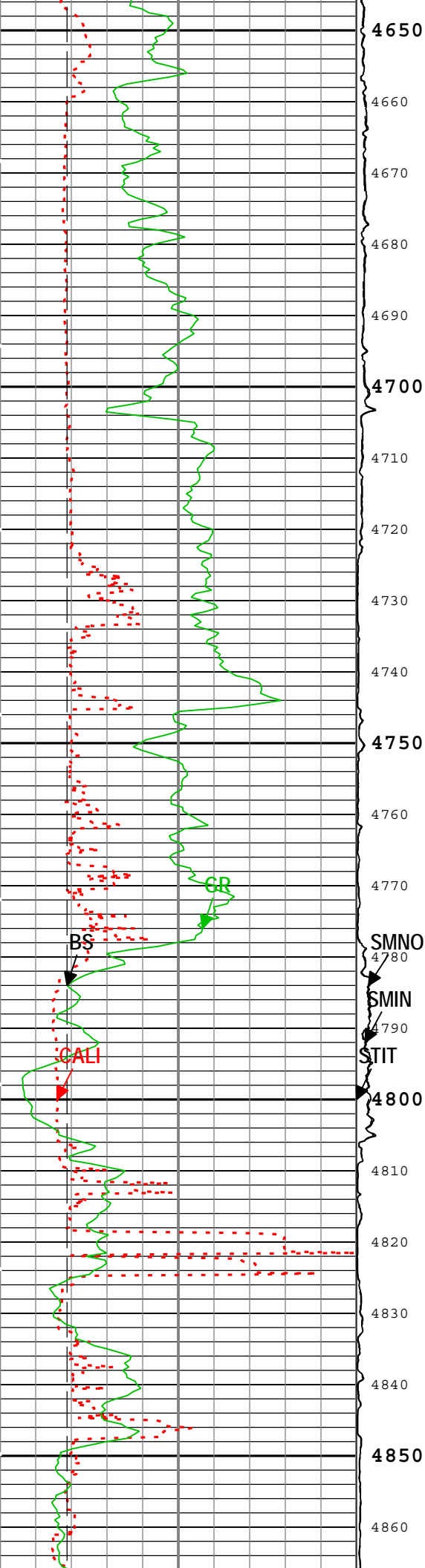


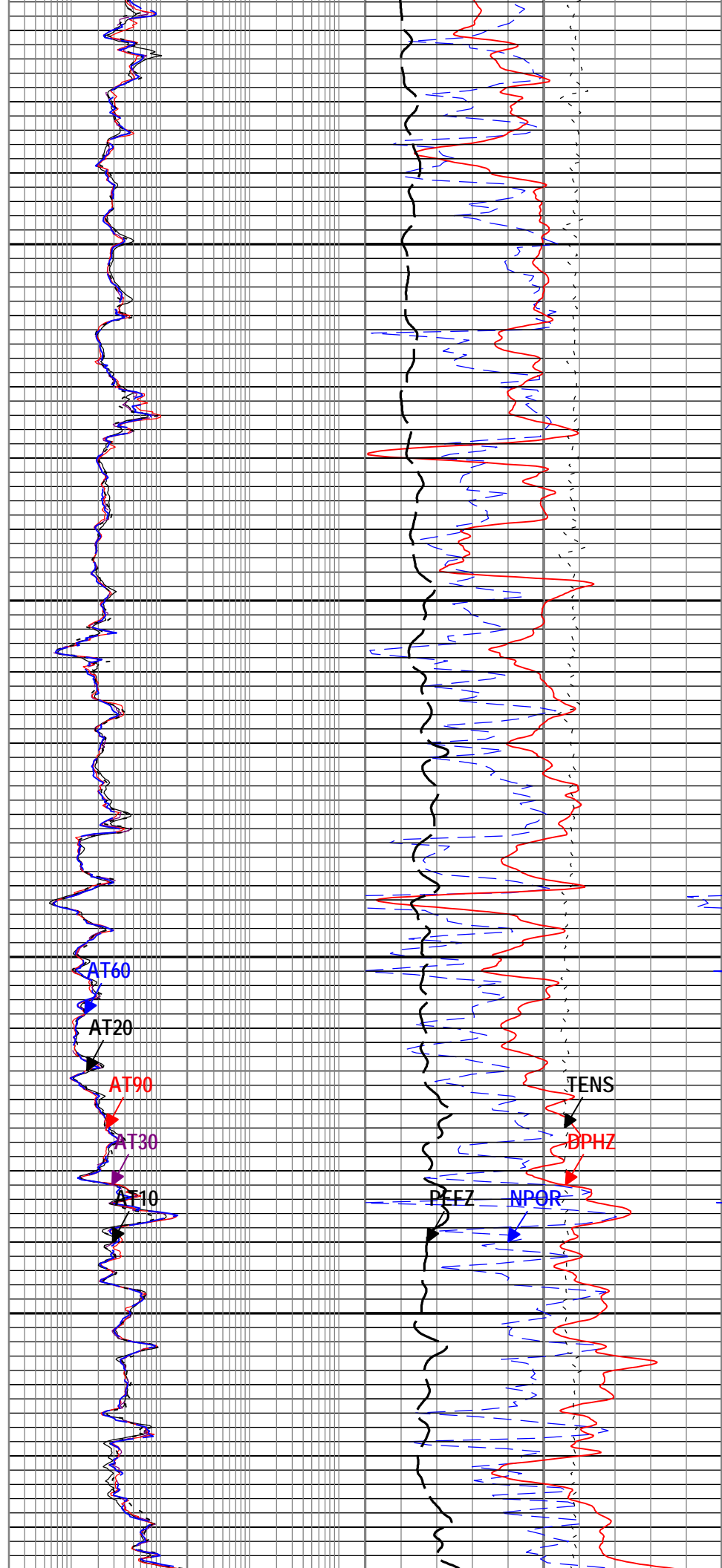
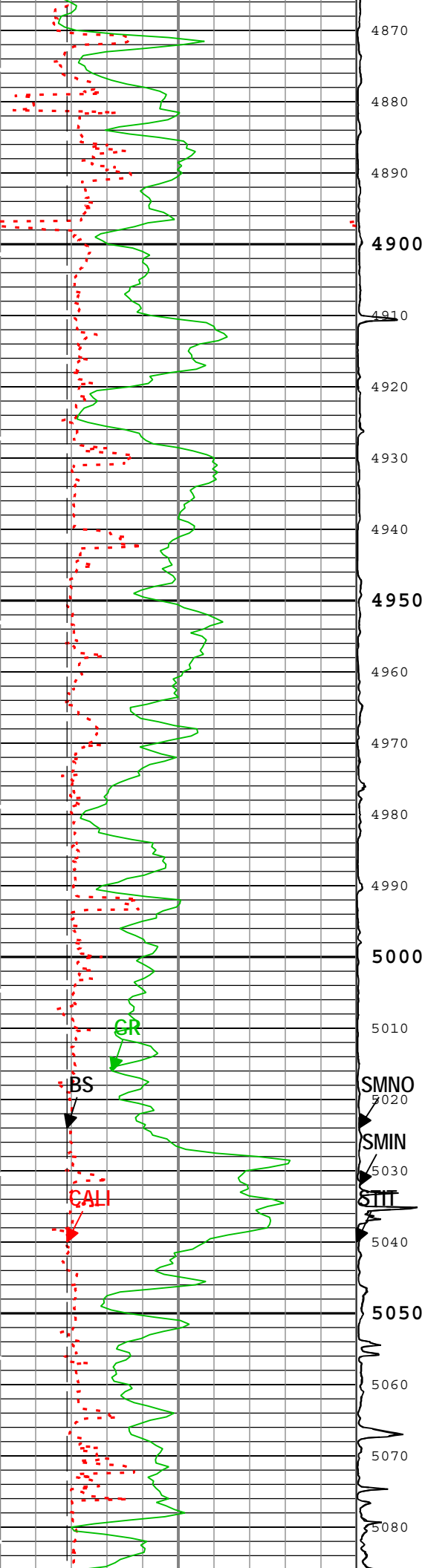


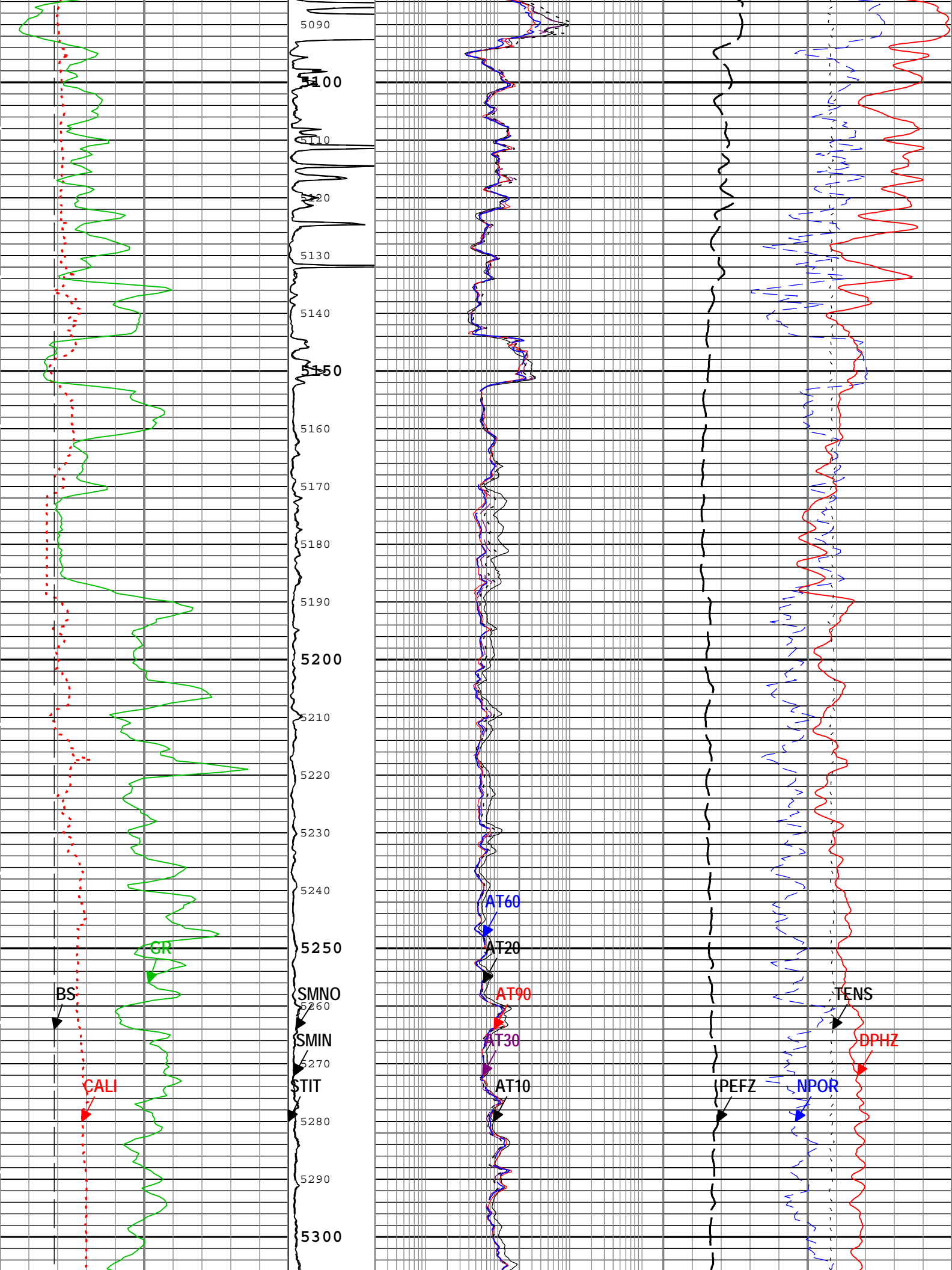


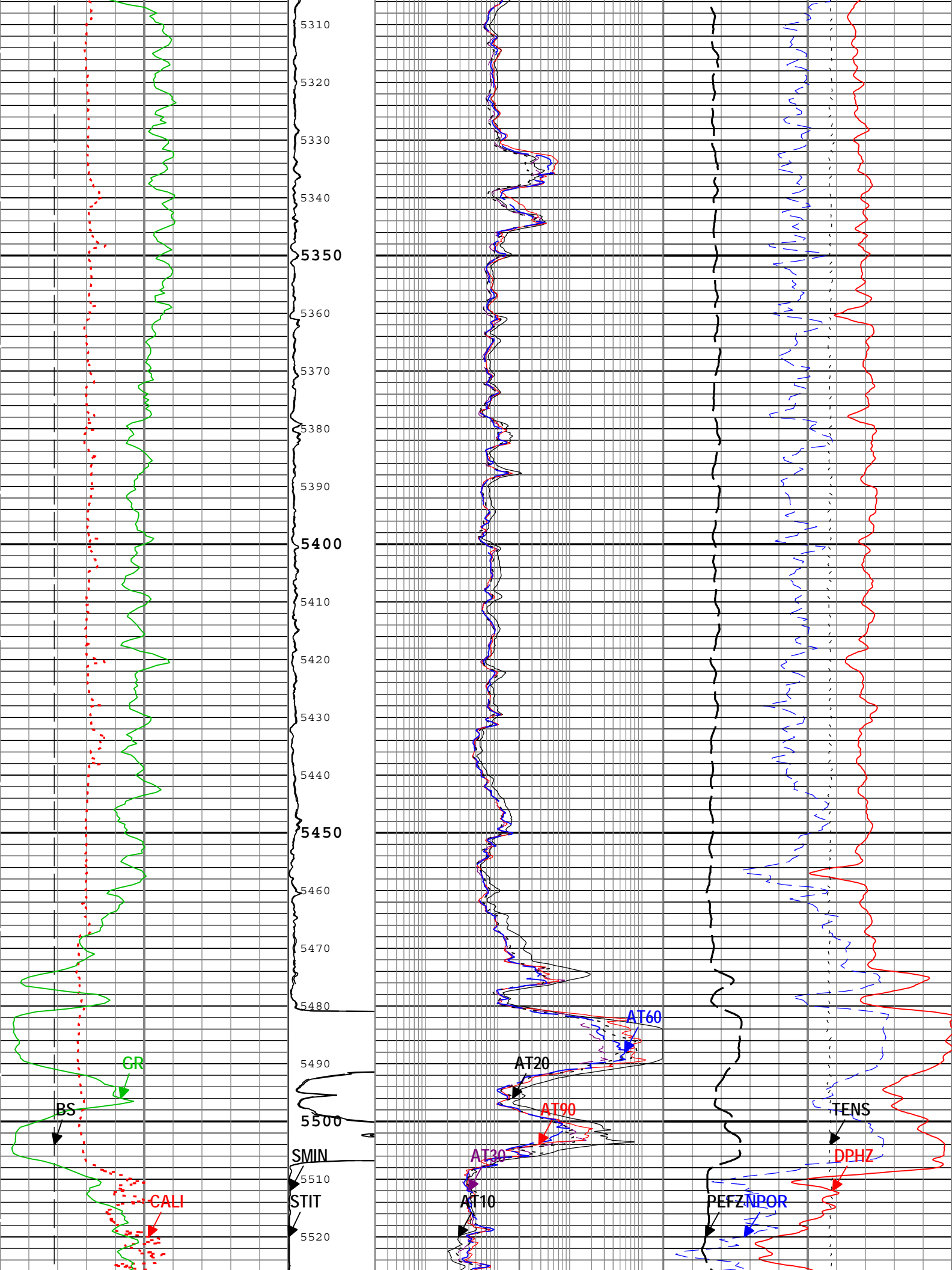




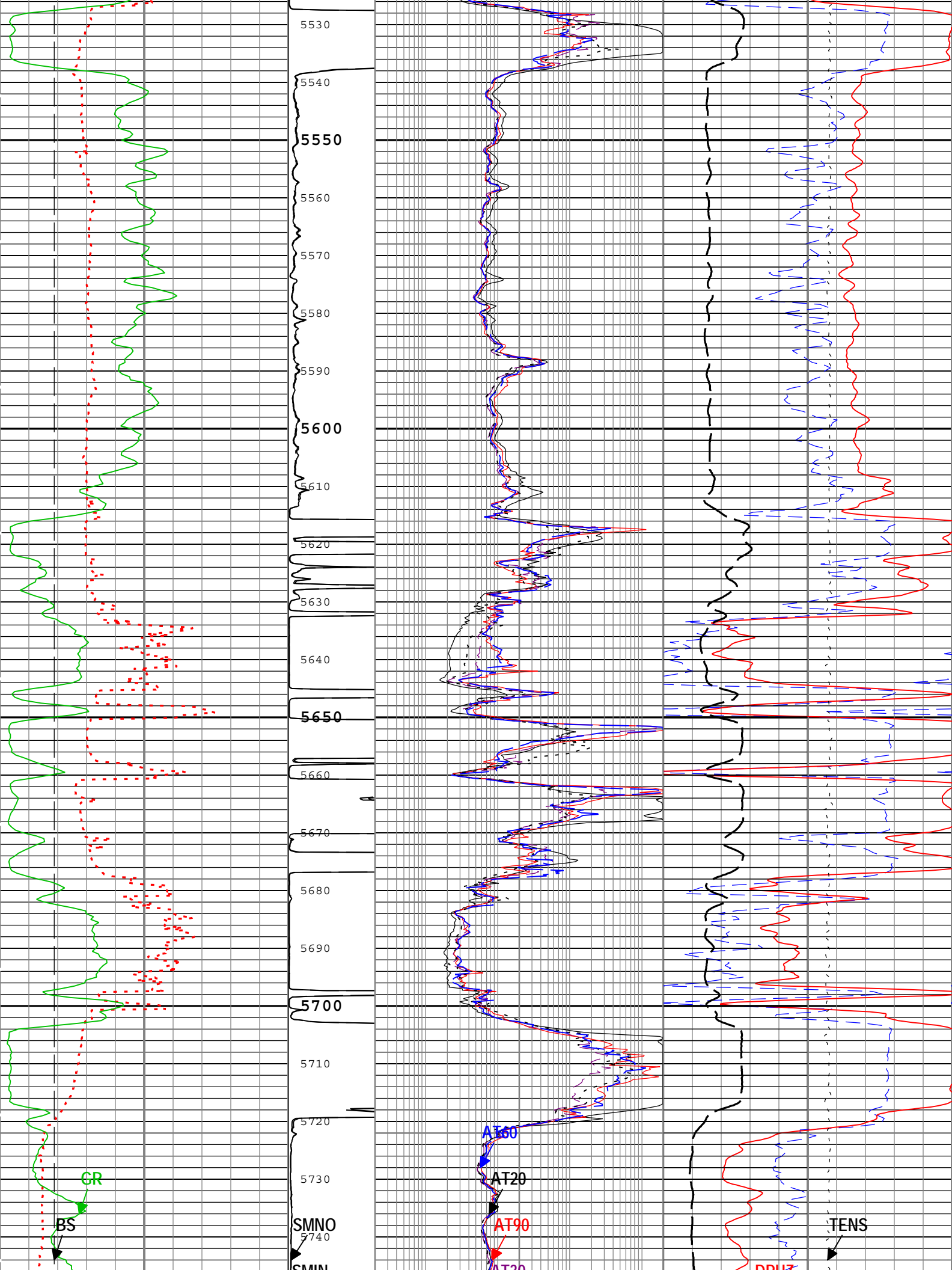


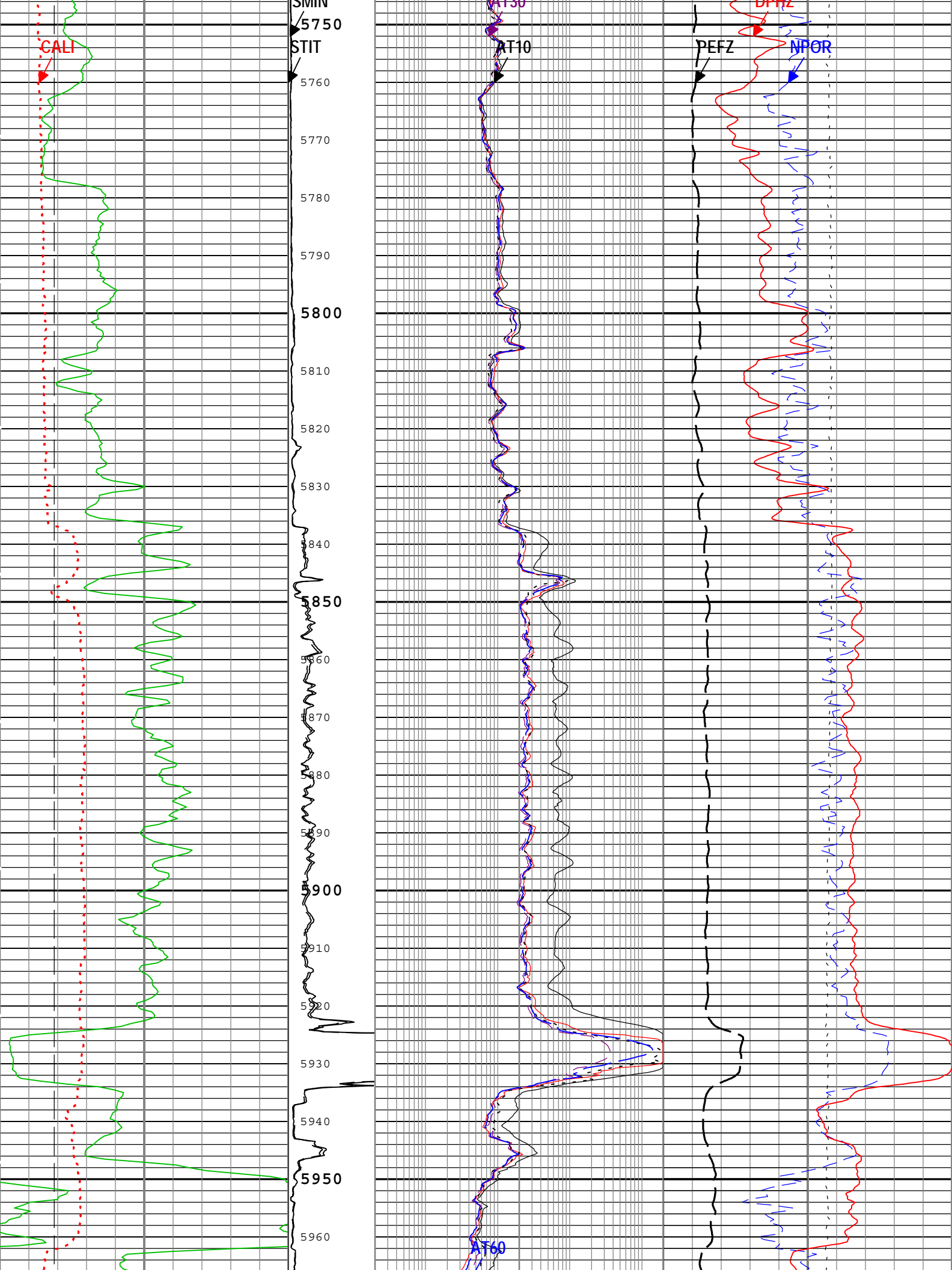


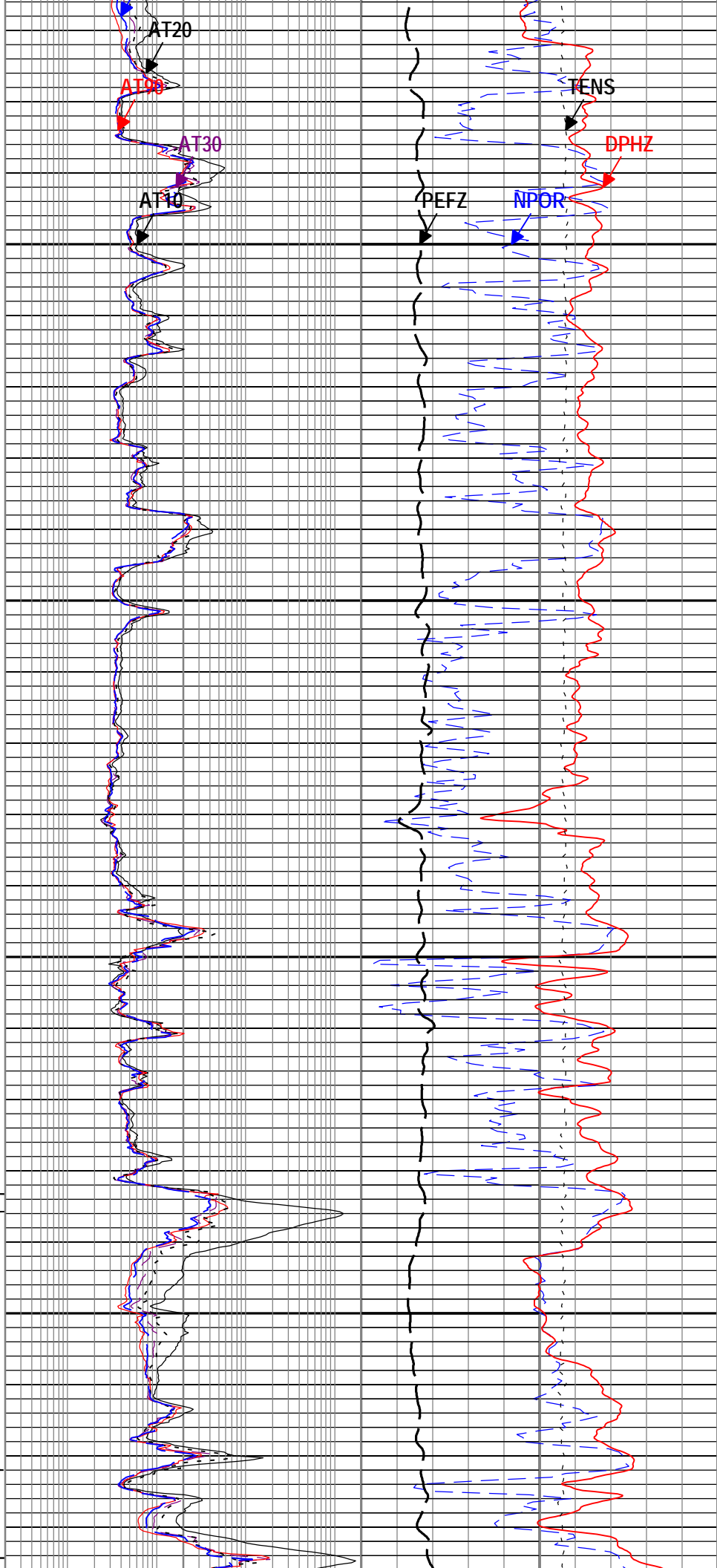
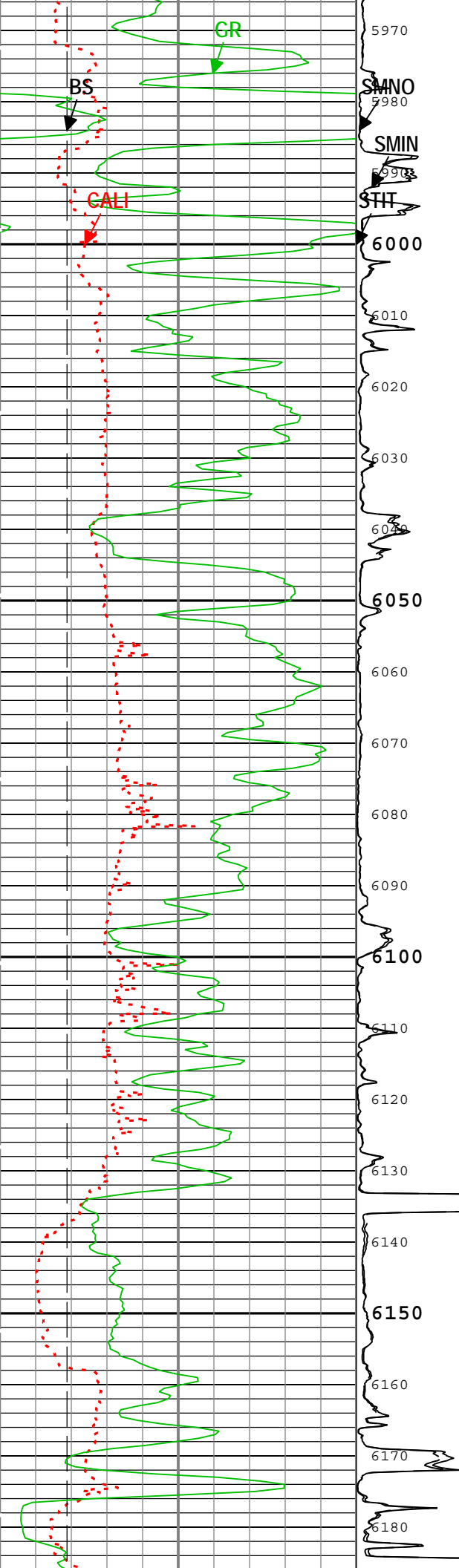


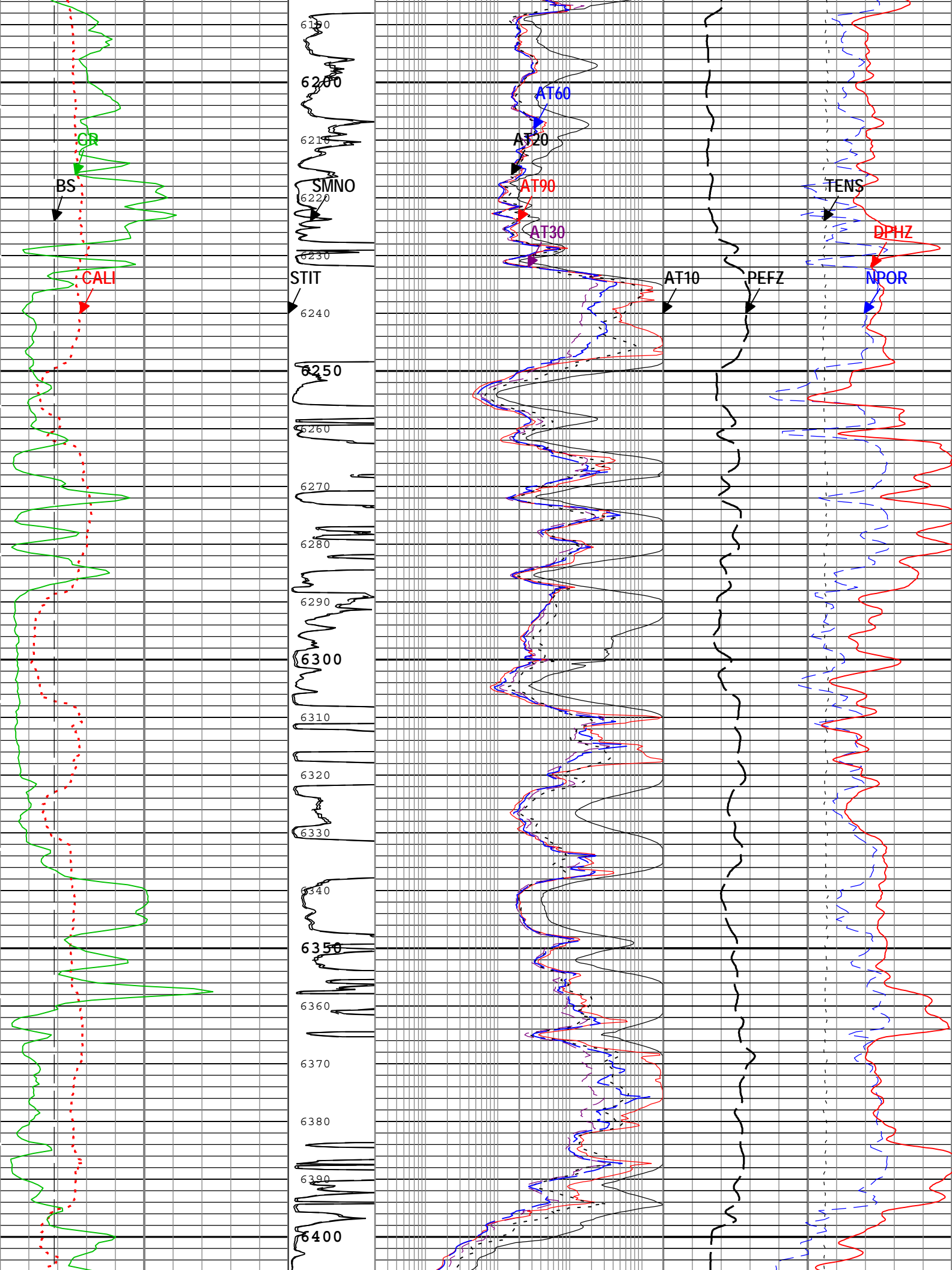


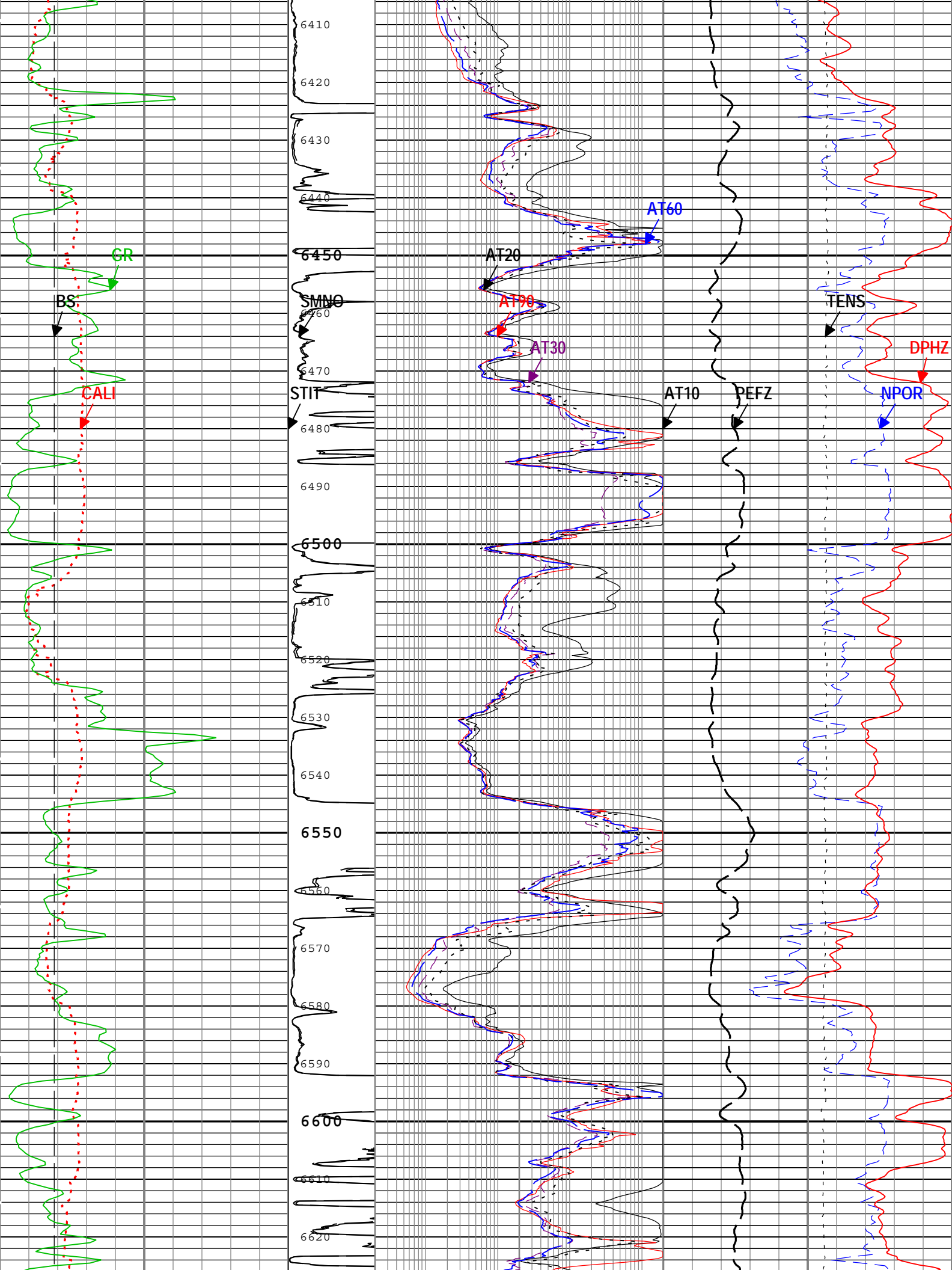


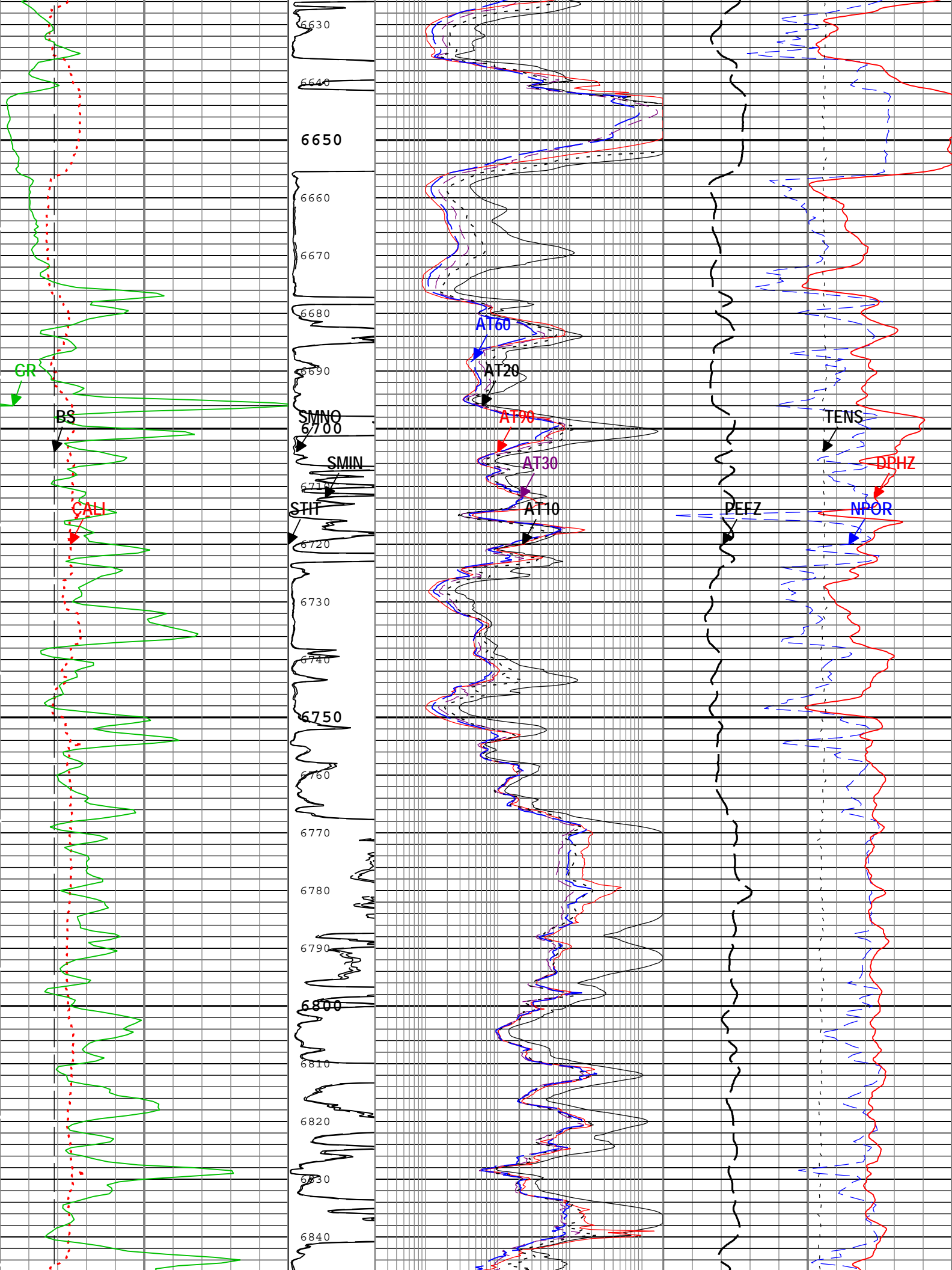


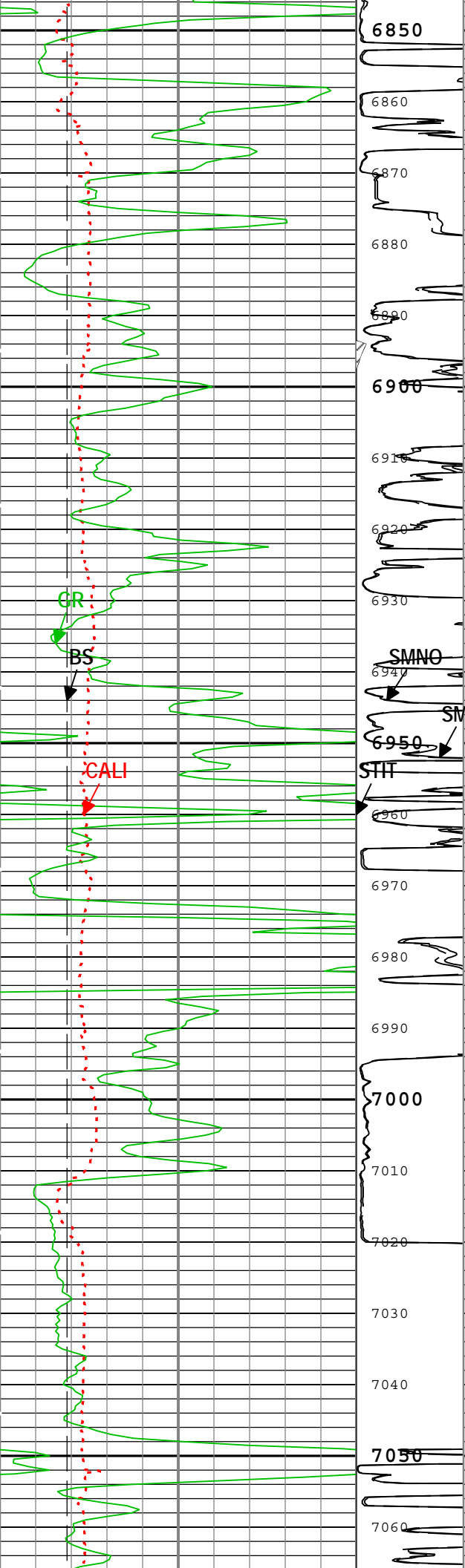












6850

6860

6870

6880

6890

6900

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6930

6940

6950

6960

6970

6980

6990

7000

7010

7020

7030

7040

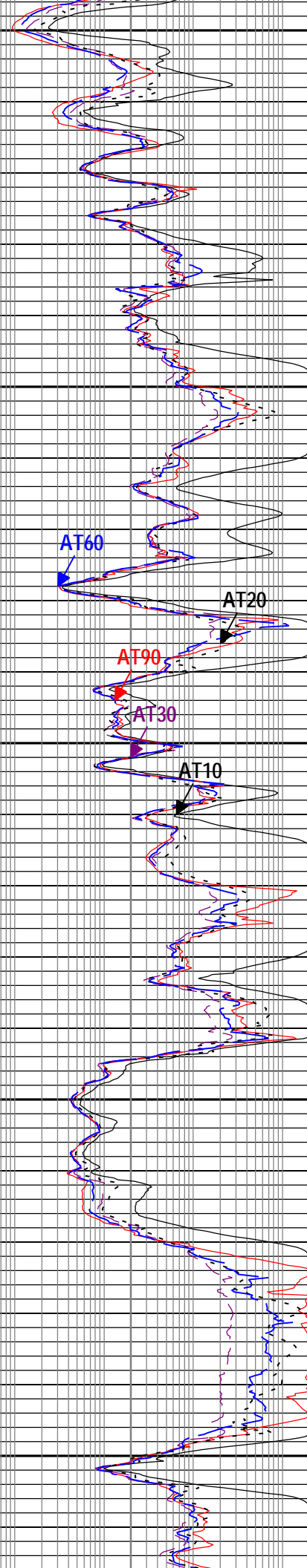
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7060

SMNO

SMHN

STIT



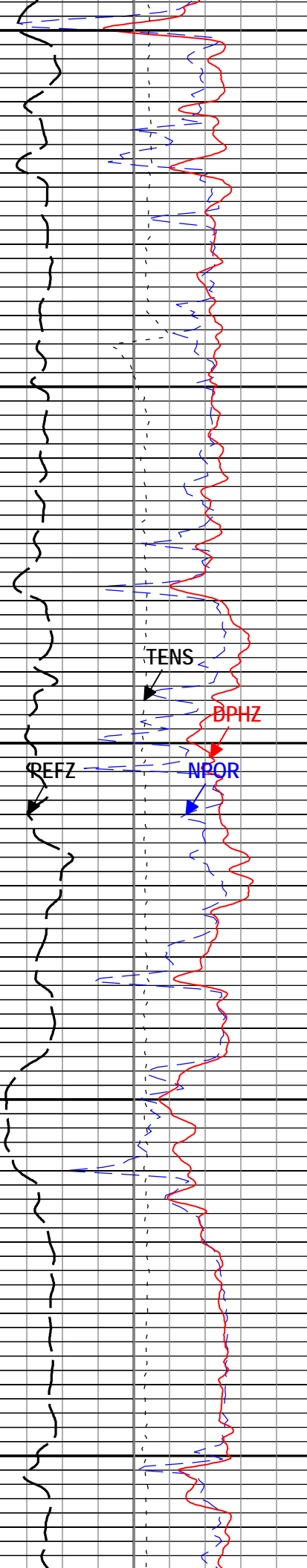
AT60

AT20

AT90

AT30

AT10



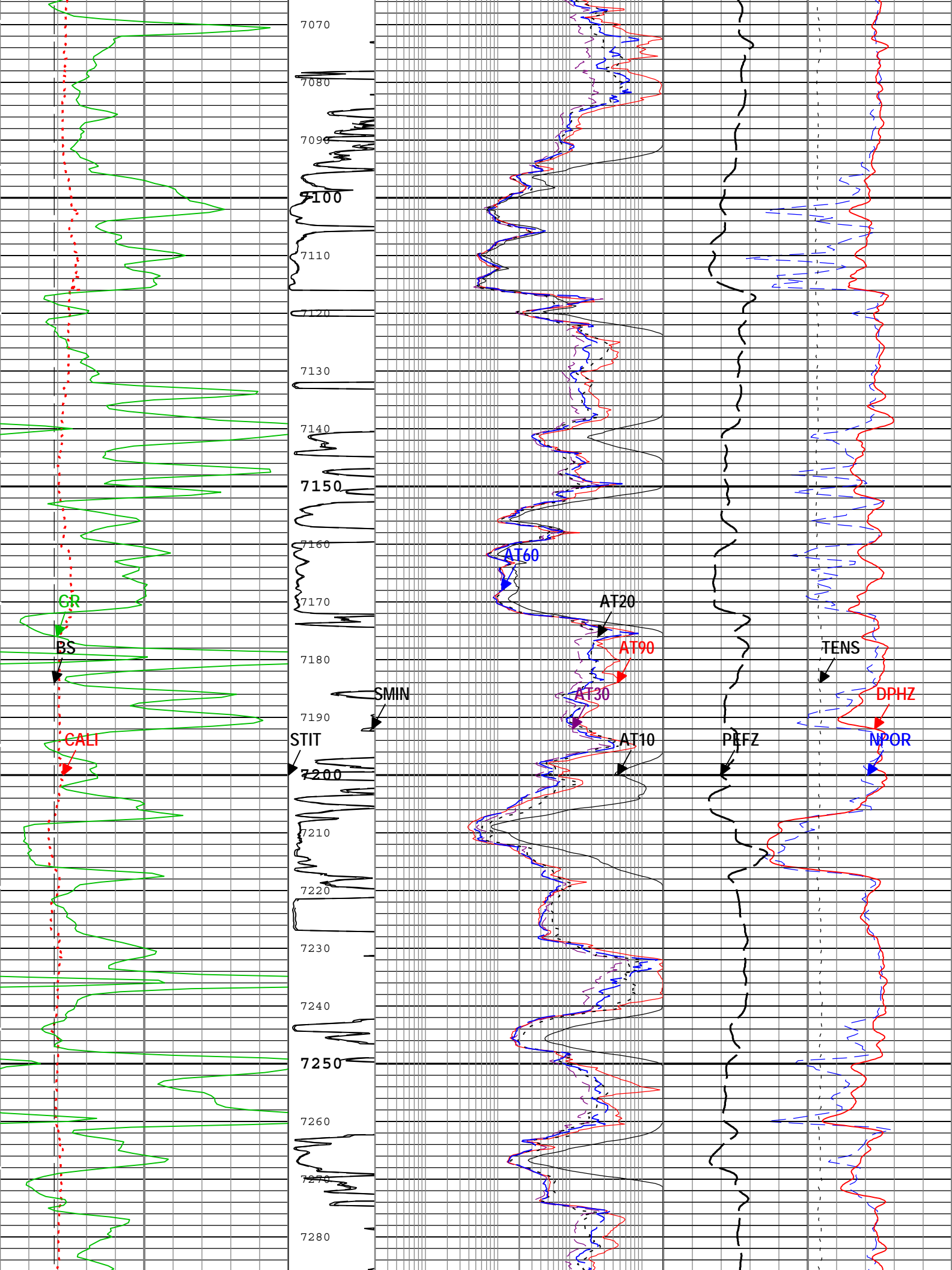
TENS

BPHZ

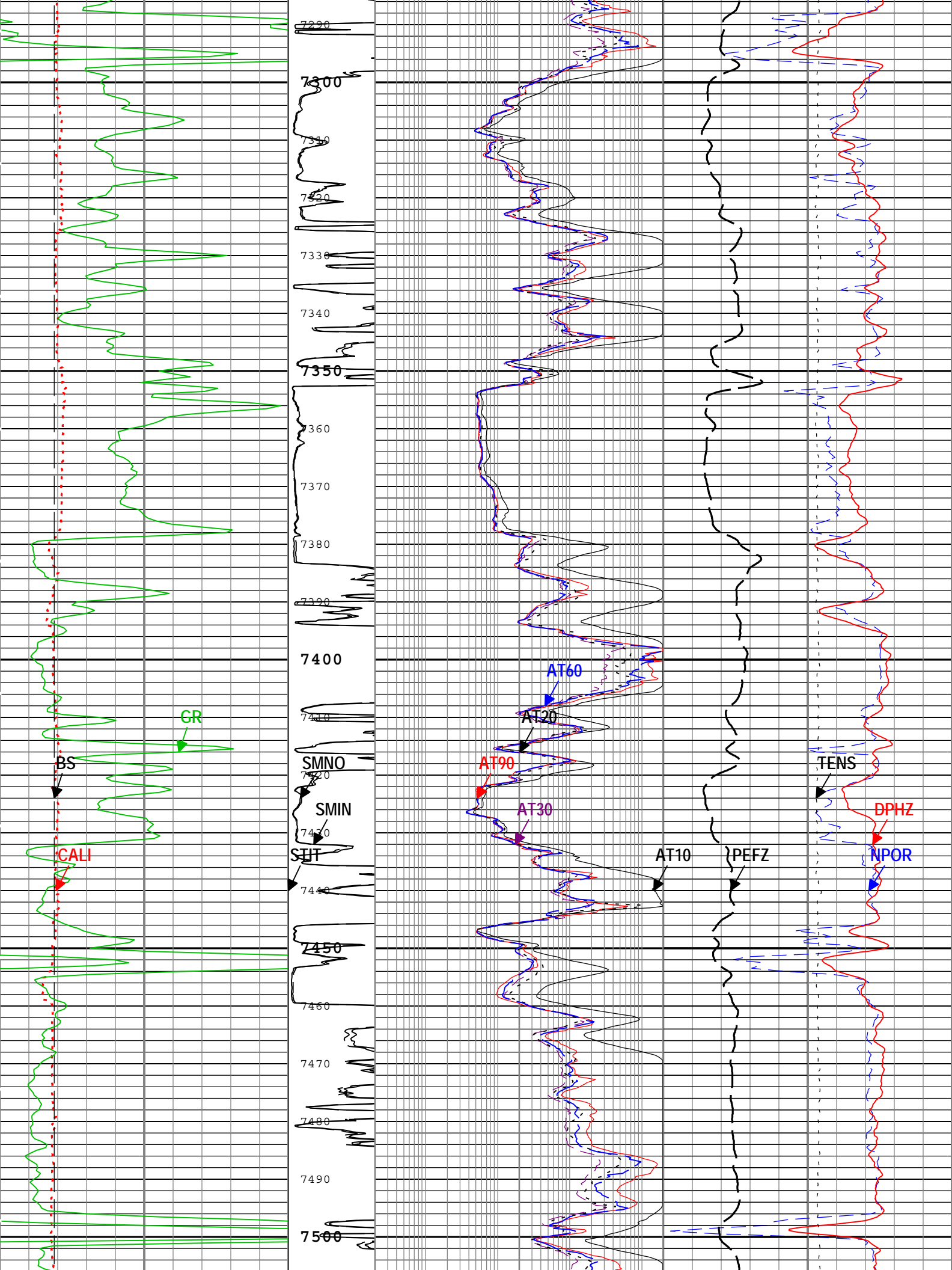
NPOR

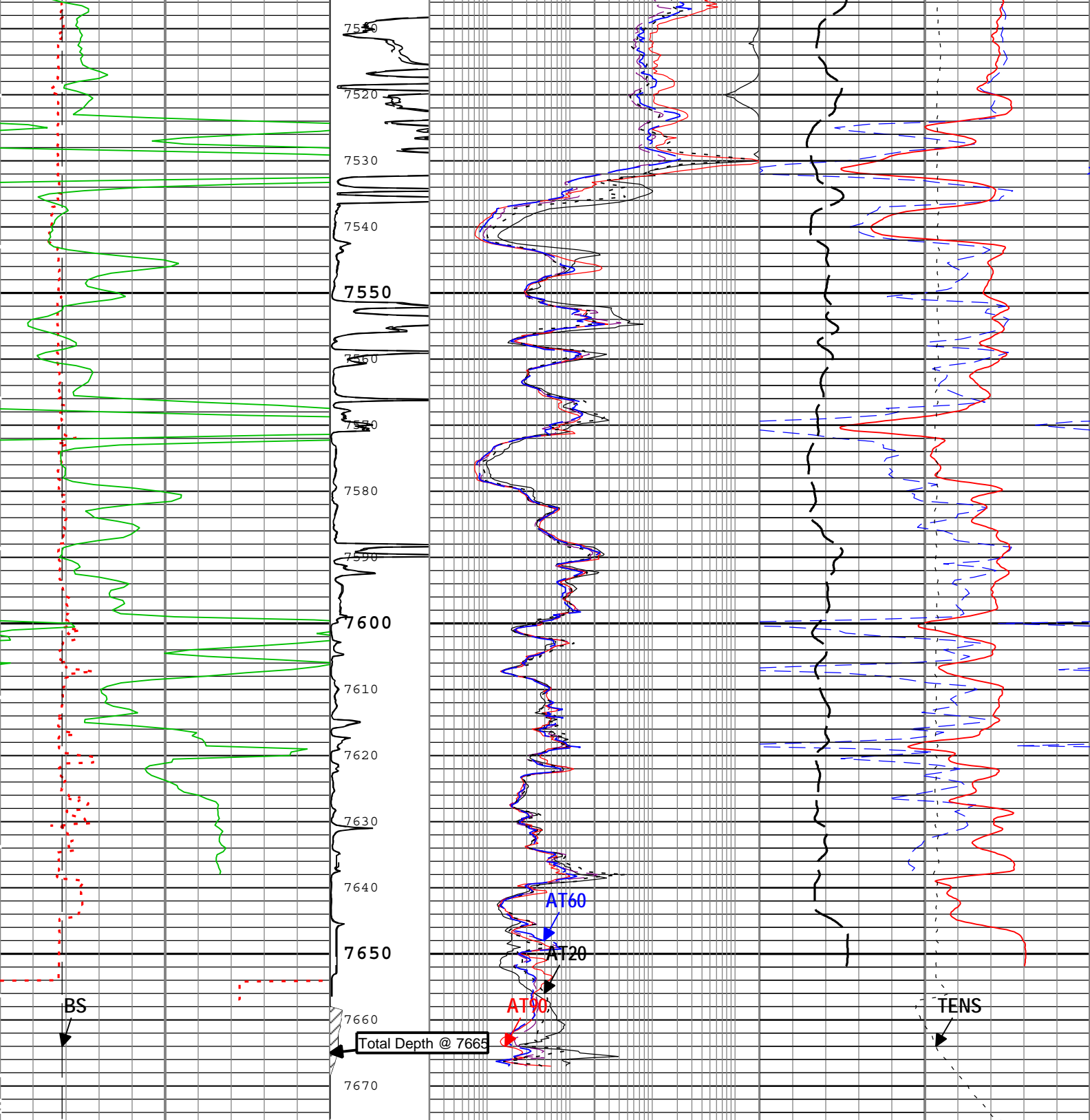
REFZ











Gamma Ray Back up			Stuck Tool Indicator, Total (STIT)	Array Induction Two Foot Resistivity A10 (AT10) AIT-H			NPOR Backup				
Caliper (CALI) HDRS-H				0.2	ohm.m		2000	Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H			
6	in		16	0	ft	50					
Bit Size (BS)			Synthetic Micro-Inverse Resistivity (SMIN) HDRS-H	Array Induction Two Foot Resistivity A30 (AT30) AIT-H			0.45	m3/m3		-0.15	
6	in			16	0.2	ohm.m		2000	Standard Resolution Density Porosity (DPHZ) HDRS-H		
Gamma Ray (GR) HGNS-H				Array Induction Two Foot Resistivity A90 (AT90) AIT-H			0.45	ft3/ft3		-0.15	
0	gAPI			200	0.2	ohm.m		2000	Cable Tension (TENS)		
			0	100	ohm.m		10000	lbf		0	
			Synthetic Micro Normal	Array Induction Two Foot Resistivity A20 (AT20) AIT-H			Standard Resolution				

Micro-Normal Resistivity (SMNO) HDRS-H	(A120) AIT-H			Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		
	0.2	ohm.m	2000			
	0	100				
		Array Induction Two Foot Resistivity A60 (AT60) AIT-H				
		0.2	ohm.m	2000	0	10

TIME\_1900 - Time Marked every 60.00 (s)

Description: HGNS standard resolution porosities for Platform Express    Format: Log ( Import of Kerr McGee 5in Triple Combo )    Index Scale: 5 in per 100 ft  
Index Unit: ft    Index Type: Measured Depth    Creation Date: 19-Apr-2013 03:55:43

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	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	700	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0	in
CBLO	Casing Bottom (Logger)	WLSESSION	518	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	8.9	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DFT_WATER	Drilling Fluid Water Type	Borehole	Chemical Gel	
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	91.2	degF
RMFS	Resistivity of Mud Filtrate Sample	Borehole	1.15	ohm.m
SOCO	Standoff Correction Option	HGNS-H	Yes	

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

Time Zone Parameters					
Parameter	Value	Start Time	Stop Time	Start Depth ( ft )	Stop Depth ( ft )
MAX_LOG_SPEED	1621	18-Apr-2013 22:33:50	18-Apr-2013 22:34:45	7675.32	7673.34
MAX_LOG_SPEED	1746	18-Apr-2013 22:34:45	18-Apr-2013 22:40:53	7673.34	7591.21
MAX_LOG_SPEED	1618	18-Apr-2013 22:40:53	18-Apr-2013 22:47:02	7591.21	7450.47

MAX_LOG_SPEED	1701	18-Apr-2013 22:47:02	18-Apr-2013 22:51:08	7450.47	7356.92
MAX_LOG_SPEED	1615	18-Apr-2013 22:51:08	18-Apr-2013 23:13:41	7356.92	6801.37
MAX_LOG_SPEED	1699	18-Apr-2013 23:13:41	18-Apr-2013 23:16:46	6801.37	6722.42
MAX_LOG_SPEED	1589	18-Apr-2013 23:16:46	18-Apr-2013 23:20:51	6722.42	6617.58
MAX_LOG_SPEED	1704	18-Apr-2013 23:20:51	18-Apr-2013 23:22:55	6617.58	6564.89
MAX_LOG_SPEED	1584	18-Apr-2013 23:22:55	18-Apr-2013 23:34:11	6564.89	6276.92
MAX_LOG_SPEED	1669	18-Apr-2013 23:34:11	18-Apr-2013 23:37:15	6276.92	6197.39
MAX_LOG_SPEED	1800	18-Apr-2013 23:37:15	18-Apr-2013 23:44:24	6197.39	6013.04
MAX_LOG_SPEED	1710	18-Apr-2013 23:44:24	18-Apr-2013 23:47:28	6013.04	5934.93
MAX_LOG_SPEED	1800	18-Apr-2013 23:47:28	18-Apr-2013 23:54:38	5934.93	5753.24
MAX_LOG_SPEED	1708	18-Apr-2013 23:54:38	18-Apr-2013 23:57:41	5753.24	5676.18
MAX_LOG_SPEED	1800	18-Apr-2013 23:57:41	19-Apr-2013 00:01:46	5676.18	5573.42
MAX_LOG_SPEED	1662	19-Apr-2013 00:01:46	19-Apr-2013 00:02:47	5573.42	5547.52
MAX_LOG_SPEED	1754	19-Apr-2013 00:02:47	19-Apr-2013 00:04:50	5547.52	5495.74
MAX_LOG_SPEED	1800	19-Apr-2013 00:04:50	19-Apr-2013 00:56:54	5495.74	4144.19
MAX_LOG_SPEED	1797	19-Apr-2013 00:56:54	19-Apr-2013 00:58:56	4144.19	4090.22
MAX_LOG_SPEED	1800	19-Apr-2013 00:58:56	19-Apr-2013 03:10:35	4090.22	432.53

All depth are at tool zero.

1

Pass Summary								
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
1	Log[4]:Up	Up	7197.98 ft	7673.85 ft	18-Apr-2013 9:58:45 PM	18-Apr-2013 10:22:01 PM	4.04 ft	
1	Log[5]:Up	Up	432.53 ft	7675.33 ft	18-Apr-2013 10:33:50 PM	19-Apr-2013 3:10:35 AM	0.00 ft	

All depths are referenced to toolstring zero

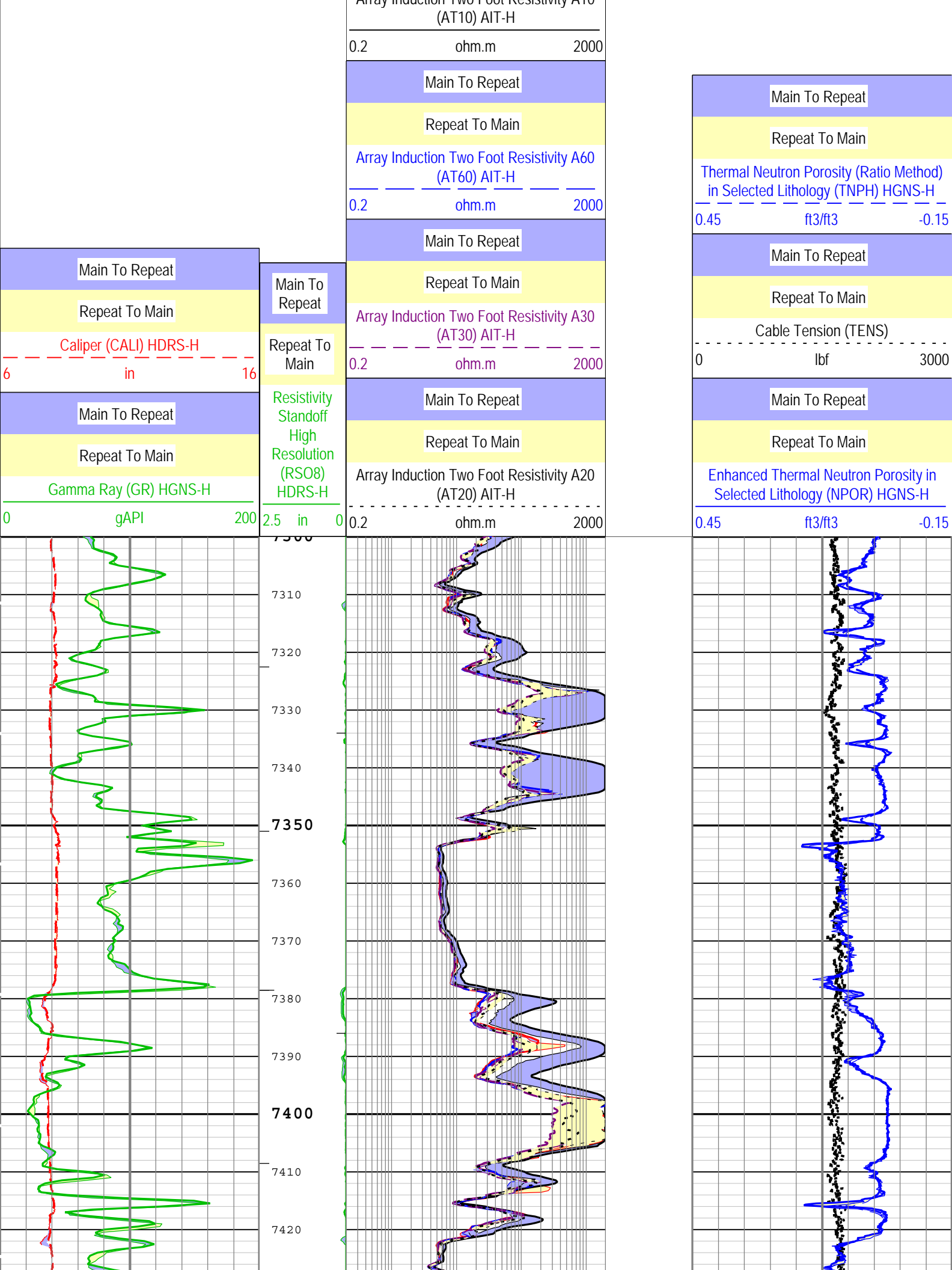
Log	1: Log[4]:Up
-----	--------------

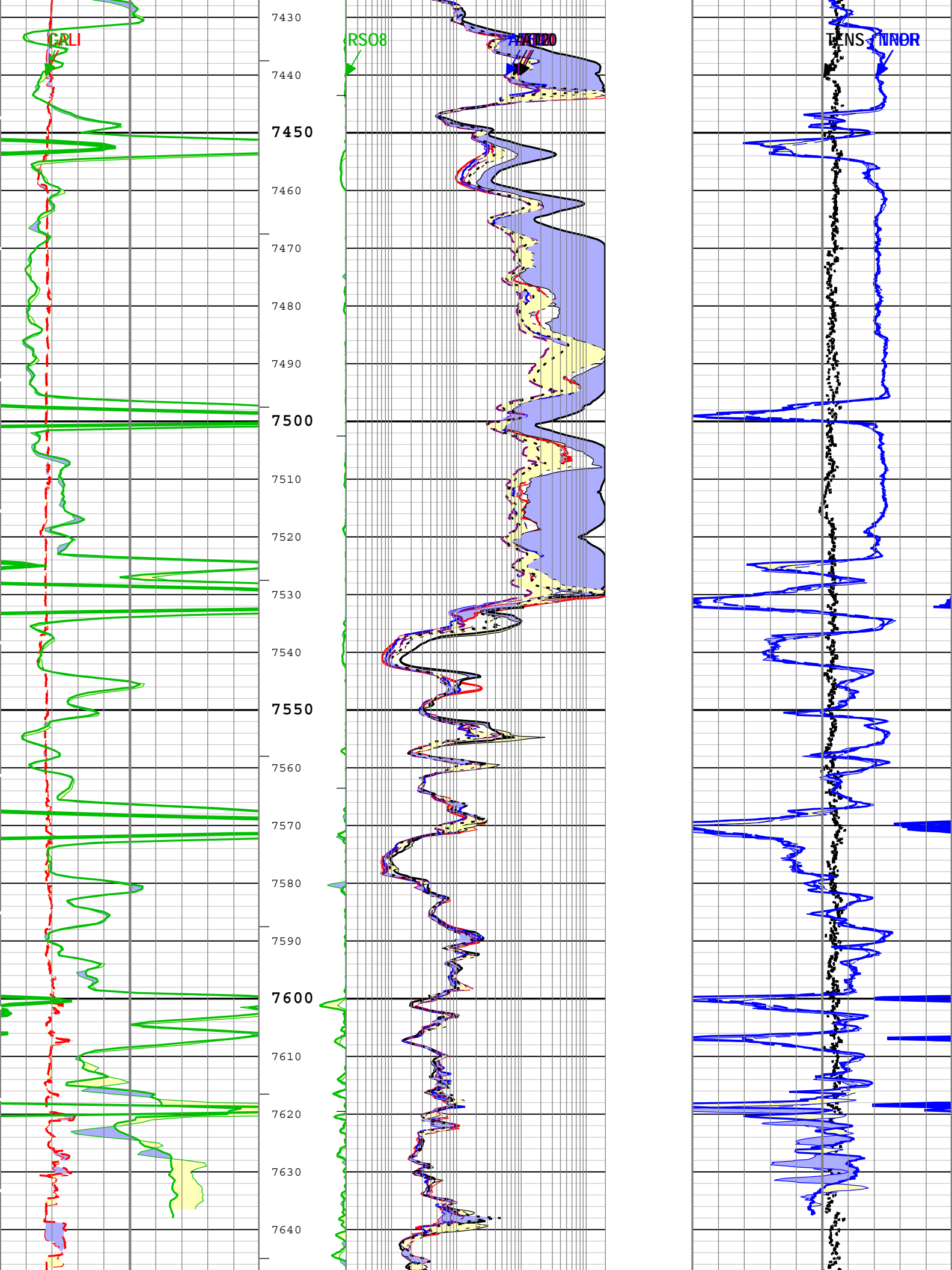
Description: Triple Combo high resolution template for Platform Express    Format: Log ( PEX Triple Combo HiRes RA )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 19-Apr-2013 03:55:48

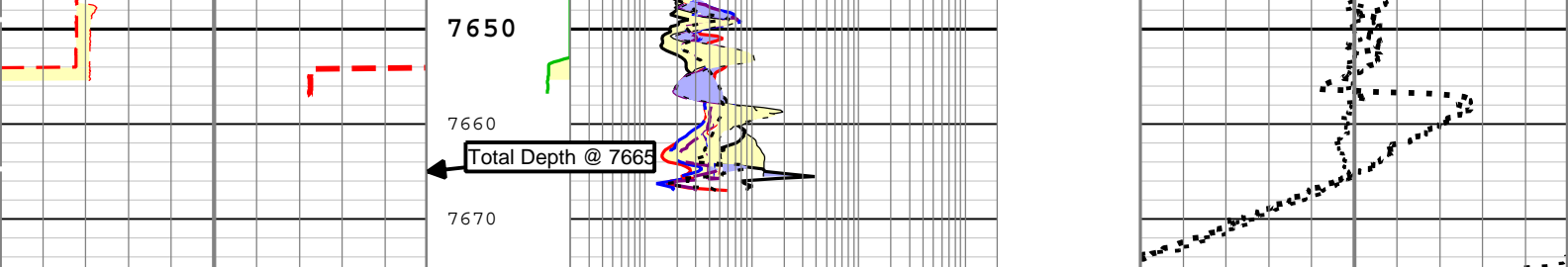
- └─ICV - Integrated Cement Volume every 10.00 (ft3)
- └─ICV - Integrated Cement Volume every 100.00 (ft3)
- └─IHV - Integrated Hole Volume every 10.00 (ft3)
- └─IHV - Integrated Hole Volume every 100.00 (ft3)

TIME\_1900 - Time Marked every 60.00 (s)

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







Main To Repeat		
Repeat To Main		
Caliper (CALI) HDRS-H		
6	in	16
Main To Repeat		
Repeat To Main		
Gamma Ray (GR) HGNS-H		
0	gAPI	200

Main To Repeat		
Repeat To Main		
Resistivity Standoff High Resolution (RSO8) HDRS-H		
2.5	in	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		
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		
Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H		
0.45	ft3/ft3	-0.15
Main To Repeat		
Repeat To Main		
Cable Tension (TENS)		
0	lbf	3000
Main To Repeat		
Repeat To Main		
Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H		
0.45	ft3/ft3	-0.15

TIME\_1900 - Time Marked every 60.00 (s)

— IHV - Integrated Hole Volume every 100.00 (ft3)

— IHV - Integrated Hole Volume every 10.00 (ft3)

— ICV - Integrated Cement Volume every 100.00 (ft3)

— ICV - Integrated Cement Volume every 10.00 (ft3)

Description: Triple Combo high resolution template for Platform Express    Format: Log ( PEX Triple Combo HiRes RA )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 19-Apr-2013 03:55:48

Calibration Report		
AIT-H (Array Induction Tool - H) Calibration - Run 1		
Primary Equipment :		
Array Induction Sonde - H	AHIS	216
Auxiliary Equipment :		



## AIT Sonde Calibration - Test Loop Gain

Master (EEPROM): 12:07:47 14-Mar-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Test Loop Gain - 0		Master	1.000	0.950	1.012	1.050	
Test Loop Phase - 0	deg	Master	0	-3.000	0.562	3.000	
Test Loop Gain - 1		Master	1.000	0.950	1.012	1.050	
Test Loop Phase - 1	deg	Master	0	-3.000	1.066	3.000	
Test Loop Gain - 2		Master	1.000	0.950	1.011	1.050	
Test Loop Phase - 2	deg	Master	0	-3.000	-0.134	3.000	
Test Loop Gain - 3		Master	1.000	0.950	1.012	1.050	
Test Loop Phase - 3	deg	Master	0	-3.000	0.159	3.000	
Test Loop Gain - 4		Master	1.000	0.950	0.995	1.050	
Test Loop Phase - 4	deg	Master	0	-3.000	-0.357	3.000	
Test Loop Gain - 5		Master	1.000	0.950	0.989	1.050	
Test Loop Phase - 5	deg	Master	0	-3.000	-0.252	3.000	
Test Loop Gain - 6		Master	1.000	0.950	0.990	1.050	
Test Loop Phase - 6	deg	Master	0	-3.000	1.211	3.000	
Test Loop Gain - 7		Master	1.000	0.950	0.982	1.050	
Test Loop Phase - 7	deg	Master	0	-3.000	-0.571	3.000	

## AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM): 12:07:47 14-Mar-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Sonde Error Correction Real - 0	mS/m	Master	-----	-231.000	-89.891	119.000	
Sonde Error Correction Quad - 0		Master	-----	-2250.000	-191.401	2250.000	
Sonde Error Correction Real - 1	mS/m	Master	-----	114.000	166.036	204.000	
Sonde Error Correction Quad - 1		Master	-----	-625.000	2.040	625.000	
Sonde Error Correction Real - 2	mS/m	Master	-----	66.000	113.491	156.000	
Sonde Error Correction Quad - 2		Master	-----	-350.000	-171.291	350.000	
Sonde Error Correction Real - 3	mS/m	Master	-----	39.000	59.914	89.000	
Sonde Error Correction Quad - 3		Master	-----	-250.000	-46.880	250.000	
Sonde Error Correction Real - 4	mS/m	Master	-----	15.000	25.904	35.000	
Sonde Error Correction Quad - 4		Master	-----	-63.000	-18.471	63.000	
Sonde Error Correction Real - 5	mS/m	Master	-----	4.000	14.161	24.000	
Sonde Error Correction Quad - 5		Master	-----	-50.000	-16.687	50.000	
Sonde Error Correction Real - 6	mS/m	Master	-----	5.000	10.468	15.000	
Sonde Error Correction Quad - 6		Master	-----	-30.000	-3.050	30.000	
Sonde Error Correction Real - 7	mS/m	Master	-----	-5.000	-3.198	5.000	
Sonde Error Correction Quad - 7		Master	-----	-30.000	-0.651	30.000	

## AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM): 12:07:47 14-Mar-2013




































































Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coarse Gain		Master	1.000	0.800	0.821	1.200	
Fine Gain		Master	1.000	0.800	0.828	1.200	

## AIT Electronics Check - Thru Calibration Check

Master (EEPROM): 12:07:47 14-Mar-2013 Before (Measured): 08:28:14 18-Apr-2013 After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Thru Cal Mag - 0	V	Master	-----	0.363	0.629	0.847	
		Before	-----	0.363	0.629	0.847	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	0.000	-----	
		After-Before	-----	-----	-----	-----	
Thru Cal Phase - 0	deg	Master	-----	11.000	51.962	131.000	
		Before	-----	11.000	51.917	131.000	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	-0.045	-----	
		After-Before	-----	-----	-----	-----	
Thru Cal Mag - 1	V	Master	-----	0.762	1.288	1.778	
		Before	-----	0.762	1.288	1.778	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	0.000	-----	
		After-Before	-----	-----	-----	-----	
Thru Cal Phase - 1	deg	Master	-----	10.000	50.938	130.000	



Thru Cal Phase - 1	deg	Master	----	10.000	30.938	130.000	
		Before	----	10.000	50.895	130.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.043	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 2	V	Master	----	0.374	0.639	0.872	
		Before	----	0.374	0.639	0.872	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 2	deg	Master	----	6.000	47.178	126.000	
		Before	----	6.000	47.134	126.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.044	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 3	V	Master	----	0.422	0.722	0.986	
		Before	----	0.422	0.722	0.986	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 3	deg	Master	----	5.000	46.388	125.000	
		Before	----	5.000	46.345	125.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.043	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 4	V	Master	----	0.802	1.357	1.872	
		Before	----	0.802	1.358	1.872	
		After	----	----	----	----	
		Before-Master	----	----	0.001	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 4	deg	Master	----	-1.000	40.026	119.000	
		Before	----	-1.000	39.982	119.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.044	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 5	V	Master	----	1.173	1.970	2.737	
		Before	----	1.173	1.970	2.737	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 5	deg	Master	----	-3.000	38.130	117.000	
		Before	----	-3.000	38.090	117.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.040	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 6	V	Master	----	1.173	1.969	2.737	
		Before	----	1.173	1.970	2.737	
		After	----	----	----	----	
		Before-Master	----	----	0.001	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 6	deg	Master	----	-3.000	38.121	117.000	
		Before	----	-3.000	38.077	117.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.044	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 7	V	Master	----	0.849	1.409	1.981	
		Before	----	0.849	1.409	1.981	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 7	deg	Master	----	-7.000	34.383	113.000	
		Before	----	-7.000	34.330	113.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.053	----	
		After-Before	----	----	----	----	
SPA Zero	mV	Master	----	-50.000	-0.037	50.000	
		Before	----	-50.000	-0.057	50.000	
		After	----	----	----	----	
		Before-Master	----	----	0.020	----	

		Before-Master After-Before	----- -----	----- -----	-0.020 -----	----- -----	
SPA Plus	mV	Master		941.000	993.677	1040.000	
		Before		941.000	993.675	1040.000	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	-0.002	-----	
		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	0.922	0.960	
		Before		0.870	0.922	0.960	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	0.000	-----	
		After-Before	-----	-----	-----	-----	

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

Primary Equipment :			
	HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	3828
	HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H	3870
Auxiliary Equipment :			
	HRDD Backscatter Detector	Backscatter	
	HRDD Long Spacing Detector	Long Spacing	28620
	HRDD Short Spacing Detector	Short Spacing	
	Cesium 137 Gamma-Ray Logging Source	GSR-J	5471
	HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	3828
	HILT High-Resolution Mechanical Sonde, 150 degC	HRMS-H	3863
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):		12:28:17 17-Apr-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	7.87	10.00	
Large Ring	in	Before	12.00	9.00	12.26	15.00	

## HDRS Density Calibration - Inversion Results

Master (EEPROM):		13:54:40 27-Mar-2013					
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	1.685	1.696	
Pe Aluminum		Master	2.570	2.470	2.515	2.670	
Pe Magnesium		Master	2.650	2.550	2.648	2.750	

## HDRS Density Calibration - Deviation Summary

Master (EEPROM):		13:54:40 27-Mar-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.4991	0.6000	
BS Max Deviation	%	Master	0	-1.6000	1.0083	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.2197	1.0000	
SS Max Deviation	%	Master	0	-2.5000	0.4989	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.6393	1.5000	
LS Max Deviation	%	Master	0	-3.5000	2.5356	3.5000	

## HDRS Density Calibration - Background Summary

Master (EEPROM):		13:54:40 27-Mar-2013		Before (Measured):		12:27:21 17-Apr-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7415		
		Before	0.7415	0.7044	0.7389	0.7785	
		Before-Master	-----	-----	-0.0026	-----	

SS Window Sum	1/s	Master Before Before-Master	1 24640 -----	23408 -----	24640 24382 -258	25872 -----	
SS Window Ratio		Master Before Before-Master	1.0000 0.4903 -----	0.4658 -----	0.4903 0.4912 0.0009	0.5148 -----	
SS Window Sum	1/s	Master Before Before-Master	1 13981 -----	13282 -----	13981 13966 -15	14680 -----	
LS Window Ratio		Master Before Before-Master	1.0000 0.3051 -----	0.2899 -----	0.3051 0.3031 -0.0020	0.3204 -----	
LS Window Sum	1/s	Master Before Before-Master	1 1257 -----	1194 -----	1257 1245 -12	1320 -----	

## HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM): 13:54:40 27-Mar-2013		Before (Measured): 12:27:21 17-Apr-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1655	2400	
		Before		1000	1652	2400	
		Before-Master	-----	-100	-3	100	
SS PM High Voltage	V	Master		1000	1722	2400	
		Before		1000	1711	2400	
		Before-Master	-----	-100	-11	100	
LS PM High Voltage	V	Master		1000	1328	2400	
		Before		1000	1329	2400	
		Before-Master	-----	-100	1	100	

## HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM): 13:54:40 27-Mar-2013		Before (Measured): 12:27:21 17-Apr-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	11.43	25.00	
		Before		5.00	11.47	25.00	
		Before-Master	-----	-1.00	0.04	1.00	
SS Crystal Resolution	%	Master		5.00	10.44	20.00	
		Before		5.00	10.29	20.00	
		Before-Master	-----	-1.00	-0.15	1.00	
LS Crystal Resolution	%	Master		5.00	8.18	20.00	
		Before		5.00	8.25	20.00	
		Before-Master	-----	-1.00	0.07	1.00	

## HDRS MCFL Calibration - MCFL Accumulations

Before (Measured): 12:21:08 17-Apr-2013							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3912	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3858	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3871	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	4865
Auxiliary Equipment :			
HGNS Accelerometer, 150 degC		HACCZ-H	6991
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 (Measured): 08:26:59 18-Apr-2013							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	

## HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM): 00:00:00 15-May-2007

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Accelerometer Manufacturer		Master			QAT_160		
Accelerometer Reference Temperature	degF	Master		30.2	77.0	122.0	
Accelerometer Coefficients - 0		Master	----	----	-4298.000	----	
Accelerometer Coefficients - 1		Master	----	----	50.180	----	
Accelerometer Coefficients - 2		Master	----	----	-0.002	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	2.754	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	300.500	----	
Accelerometer Coefficients - 9		Master	----	----	0.994	----	

## HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM): 22:07:24 05-Feb-2013 Before (Measured): 12:18:56 17-Apr-2013 After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	28.3	40.0	
		Before	0	5.0	27.9	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.2	-0.4	4.2	
		After-Before	----	----	----	----	
Far Zero Measurement	1/s	Master	0	5.0	28.1	40.0	
		Before	0	5.0	27.9	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.2	-0.2	4.2	
		After-Before	----	----	----	----	
Near Plus Measurement - 0	1/s	Master	6031.0	4700.0	5629.0	6900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Plus Measurement - 0	1/s	Master	2793.0	1900.0	2309.0	2900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Near Corrected Plus Measurement - 0	1/s	Master		4700.0	5734.0	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): 12:25:34 17-Apr-2013 After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	116.2	120.0	
		After	----	----	----	----	
		After-Before	----	----	----	----	
RGR Plus Measurement	gAPI	Before	185.4	157.1	174.5	206.3	
		After			NOT DONE		
		After-Before	----	----	----	----	
GR Calibration Gain		Before	0.89	0.80	0.95	1.05	
		After	----	----	----	----	
		After-Before	----	----	----	----	

Well: Fisher 13-9S-55W-01

Field: Wildcat

County: Lincoln

State: Colorado

Platform Express

Triple Combo