

Company: Kerr McGee Oil & Gas Onshore LP

Well: Banded 37C-27HZ

Field: Wattenberg

County: Weld State: Colorado

Platform Express

Compensated Neutron Log

LithoDensity

County:	Weld
Field:	Wattenberg
Location:	SHL: 300' FSL & 916' FEL
Well:	Banded 37C-27HZ
Company:	Kerr McGee Oil & Gas Onshore LP
Location:	
SHL: 300' FSL & 916' FEL	Elev.: K.B. 5002.00 ft G.L. 4977.00 ft D.F. 5001.00 ft
Permanent Datum:	Ground Level
Log Measured From:	Kelly Bushing
Drilling Measured From:	Kelly Bushing
API Serial No.	Section: 27
05-123-39303-00	Township: 2N
	Range: 67W

Logging Date	08-Aug-2014
Run Number	Two
Depth Driller	7045.00 ft
Schlumberger Depth	7042.00 ft
Bottom Log Interval	7055.00 ft
Top Log Interval	1762.00 ft
Casing Driller Size @ Depth	9.625 in @ 1771.00 ft
Casing Schlumberger	1762 ft
Bit Size	8.75 in
Type Fluid In Hole	WBM
Density	10.2 lbm/gal
Fluid Loss	PH
Source of Sample	Active Tank
RM @ Meas Temp	1.13 ohm.m @ 75 degF
RMF @ Meas Temp	1.15 ohm.m @ 75 degF
RMC @ Meas Temp	1.37 ohm.m @ 75 degF
Source RMF	Calculated
RM @ BHT	0.55 @ 160
RMF @ BHT	0.56 @ 160
Max Recorded Temperatures	160 degF
Circulation Stopped	07-Aug-2014 23:00:00
Logger on Bottom	08-Aug-2014 04:00:00
Unit Number	2135
Recorded By	Nolan Welsh
Witnessed By	Steve Wilson

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

**Driller Depth**

**0.00 ft**

**1771.00 ft**

Casing 9.625in  
36lbm/ft



Borehole Size/Casing/Tubing Record						
------------------------------------	--	--	--	--	--	--

Bit						
Bit Size ( in )	8.75					
Top Driller ( ft )	0					
Top Logger ( ft )	0					
Bottom Driller ( ft )	7045					
Bottom Logger ( ft )	7042					
Casing						
Size ( in )	9.625					
Weight ( lbm/ft )	36					
Inner Diameter ( in )	8.921					
Grade	N/A					
Top Driller ( ft )	0					
Top Logger ( ft )	0					
Bottom Driller ( ft )	1771					
Bottom Logger ( ft )	1762					

Operational Run Summary						
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Parameter ( unit )	Two					
Date Log Started	08-Aug-2014					
Time Log Started	03:12:32					
Date Log Finished	08-Aug-2014					
Time Log Finished	06:14:00					
Top Log Interval ( ft )	1762.00					
Bottom Log Interval ( ft )	7055.00					
Total Depth ( ft )	7055.00					
Max Hole Deviation ( deg )	19.00					
Azimuth of Max Deviation ( deg )	0.00					
Bit Size ( in )	8.750					
Logging Unit Number	2135					
Logging Unit Location	Fort Morgan					
Recorded By	Nolan Welsh					
Witnessed By	Steve Wilson					
Service Order Number	CYBX-00021					

Service Order Number		CATX-00021					
Borehole Fluids							
Parameter( unit )	Two						
Fluid Type	Water						
Fluid Name	WBM						
Max Recorded Temperatures ( degF )	160						
Source of Sample	Active Tank						
Salinity ( ppm )	0						
Density ( lbm/gal )	10.2						
Funnel Viscosity ( s )	41						
Fluid Loss ( cm3 )							
PH	9.5						
Date/Time Circulation Stopped	07-Aug-2014 23:00:00						
Date Logger on Bottom	08-Aug-2014						
Time Logger on Bottom	04:00:00						
Source RMF	Calculated						
RMC	Calculated						
RM @ Meas Temp ( ohm.m@degF )	1.13 @ 75						
RMF @ Meas Temp ( ohm.m@degF )	1.15 @ 75						
RMC @ Meas Temp ( ohm.m@degF )	1.37 @ 75						
RM @ BHT ( ohm.m@degF )	0.55 @ 160						
RMF @ BHT ( ohm.m@degF )	0.56 @ 160						
RMC @ BHT ( ohm.m@degF )	0.67 @ 160						
Total Solid ( % )							
High Gravity Solids ( % )							
Remarks and Equipment Summary							
Two: Toolstring				Two: Remarks			
Equip name	Length	MP name	Offset	Thank you for choosing schlumberger			
LEH-QT	53.58			Rig: H&P 311			
LEH-QT				AIT ran in compute standoff mode`			
EDTC-B:8315	50.67			HGNS ran without bowspring			
EDTH-B:8336				HGNS eccentered using PPC caliper with one arm powered.			
EDTG-B:77213				Logging interval from TD to Casing Shoe.			
EDTC-B:8315				Repeat analysis done 200 ft. below casing shoe due to bottom hole conditions.			
		CTEM	47.17	Crew: Kevin Crow, Troy Ocanas, Alonzo Carrera			
		ACCZ	0.00				
		HV	0.00				
		Gamma Ray	45.3				
		TelStatus	44.17				
PPC-B:8193	44.17						
PPC-B:8193		PPC-B Caliper	43.02				
		s					

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

Temperature 37.62  
GR 36.91

CNL Porosity 30.57  
HGNS 28.24  
HMCA 28.24  
Acceleromete 0.00  
r

HDRS-H:3863 28.24  
ECH-MEB:2898  
HRCC-H:3828  
HRMS-H:3863  
GPV-Q  
Short Spacing  
Long Spacing  
GSR-J:5471  
Backscatter  
HRGD-H:3760

HRCC 24.24

MCFL 18.81  
Caliper 18.33  
TLD Density 17.94

AIT-M:181 16.00  
AMIS:181  
AMRM:181

Power Supply 7.91  
Temperature 7.91  
Induction 7.91

SP 0.08  
Mud Resistivity 0.00  
Head Tension  
TOOL\_ZERO

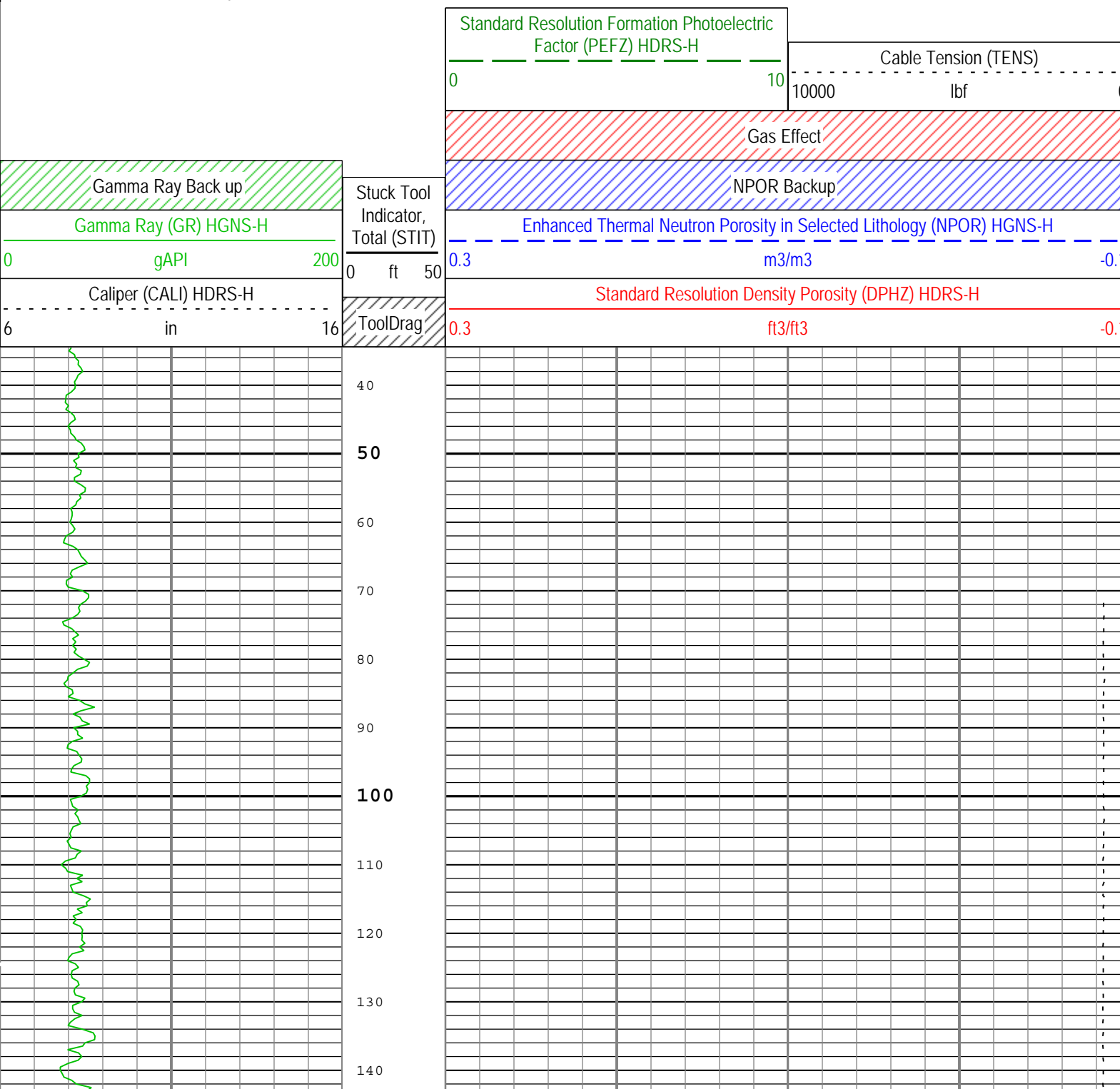
Lengths are in ft  
Maximum Outer Diameter = 9.000 in  
Line: Sensor Location, Value: Gating Offset  
All measurements are relative to TOOL\_ZERO

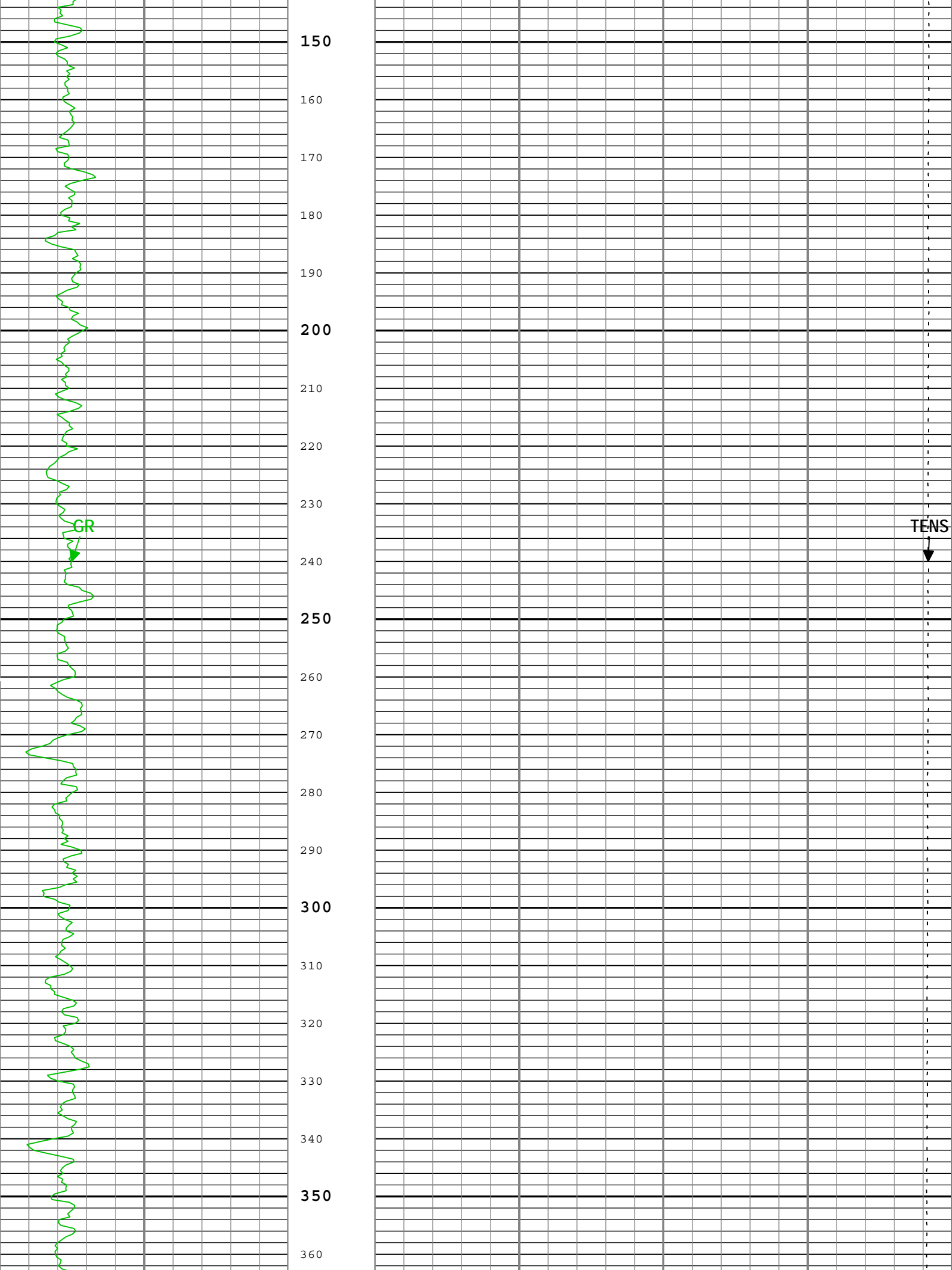


Description: HGNS standard resolution porosities for Platform Express    Format: Log ( KM 5in Porosity )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 08-Aug-2014 06:49:53

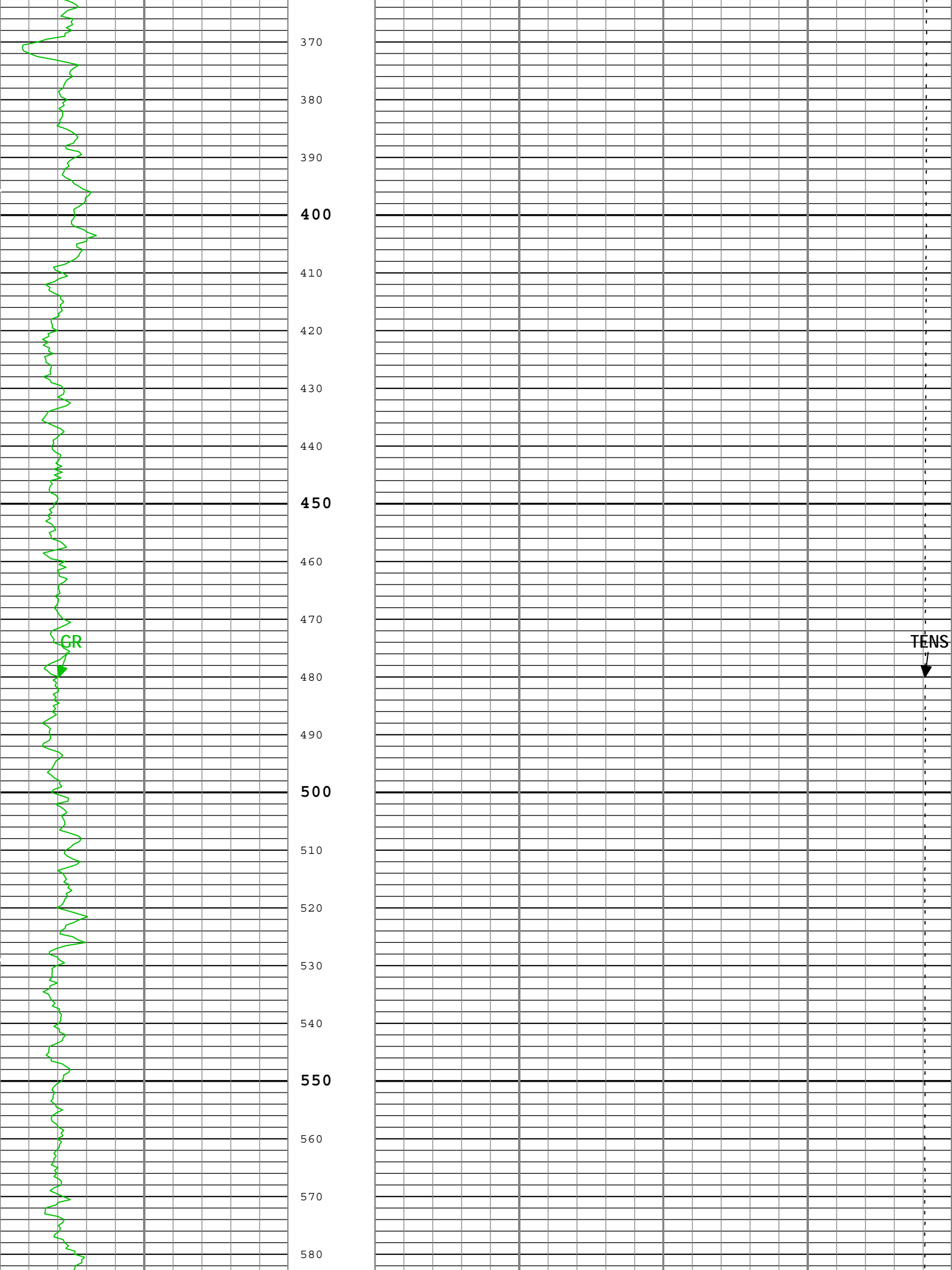
Channel	Source	Sampling
CALI	HDRS-H:HRCC-H:HRCC-H	1in
DPHZ	HDRS-H:HRMS-H:HRGD-H	2in
GR	HGNS-H:HGNS-H:HGNS-H	6in
NPOR	HGNS-H:HGNS-H:HGNS-H	6in
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in
STIT	DepthCorrection	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

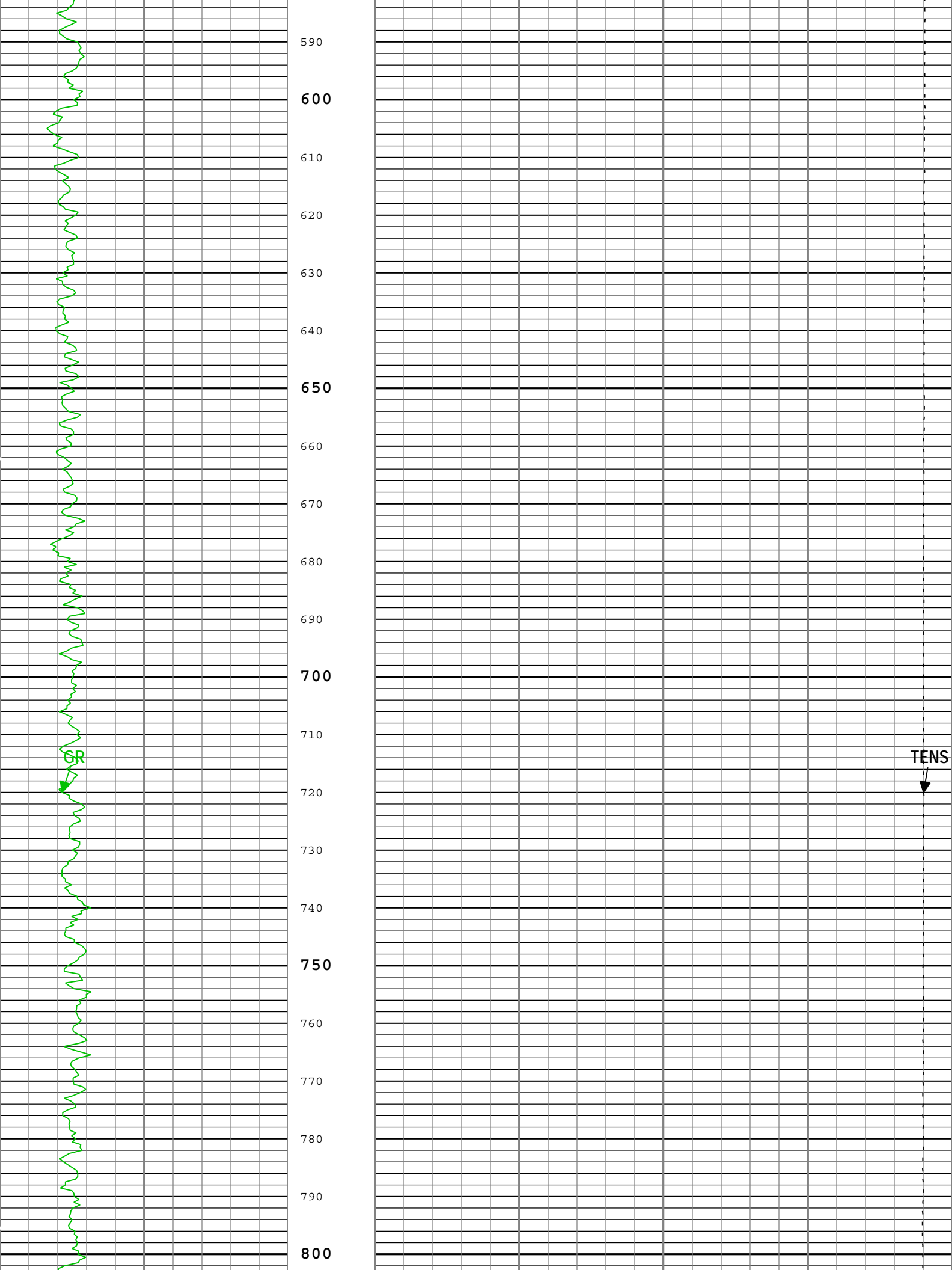
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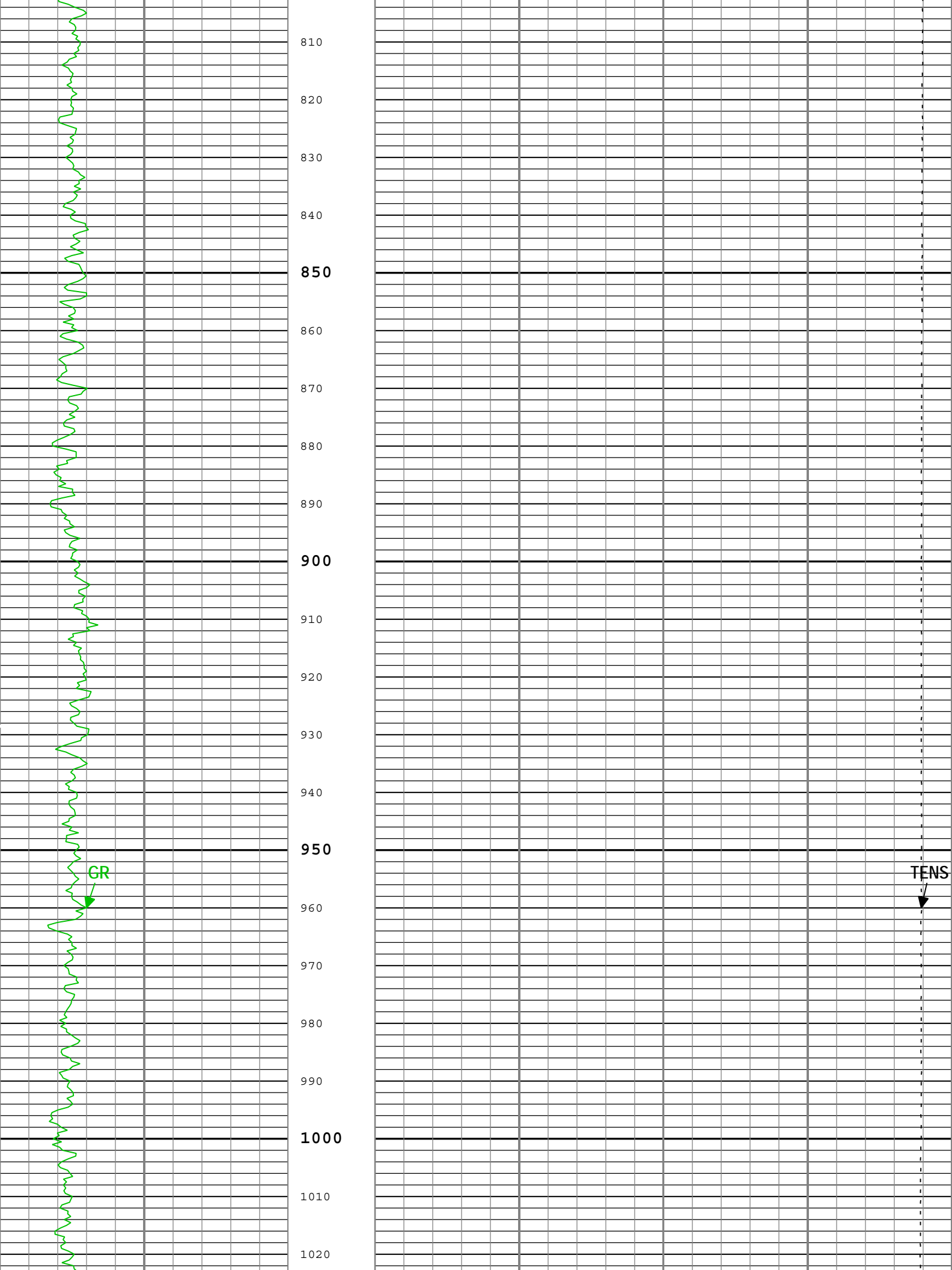


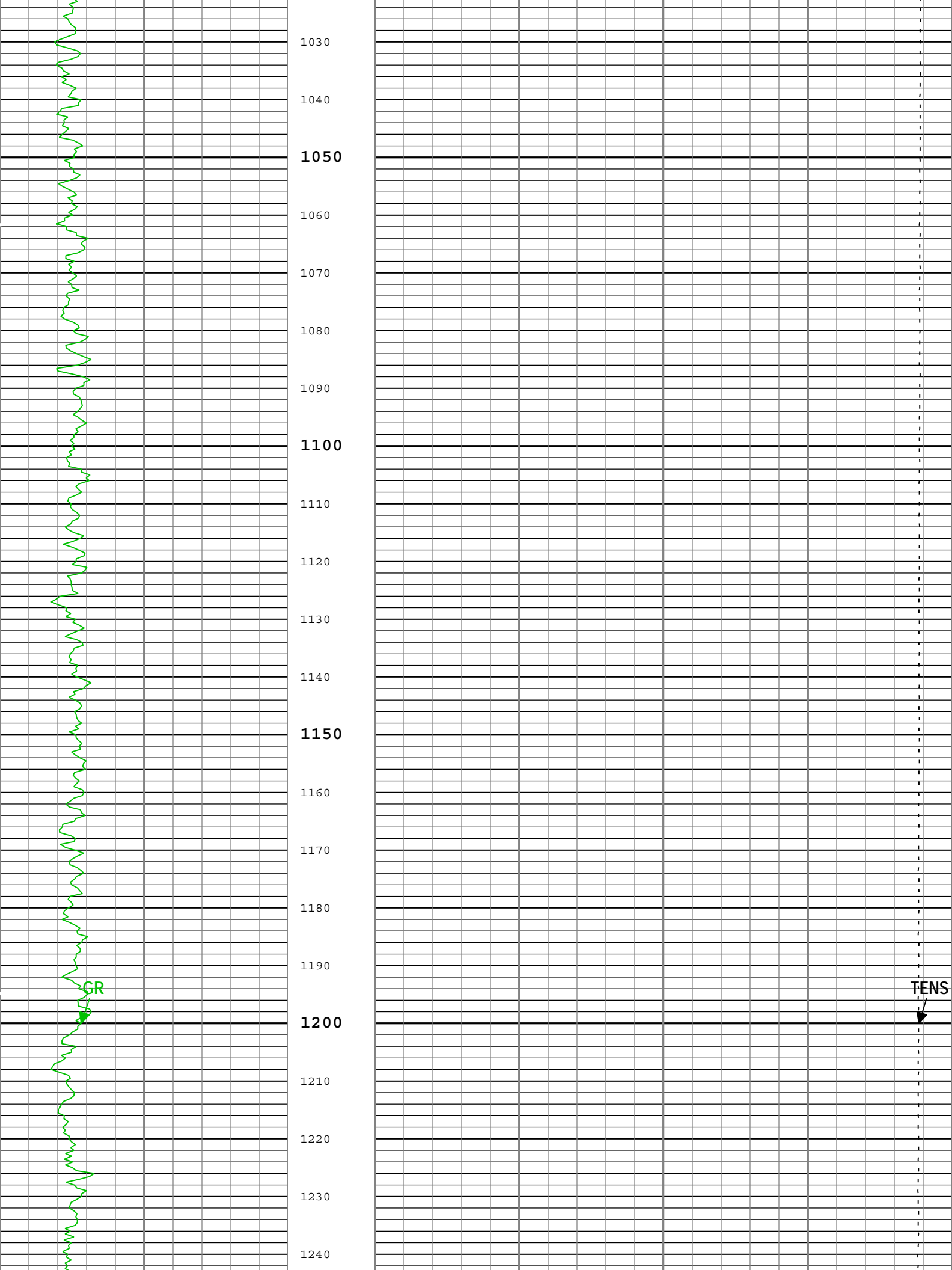


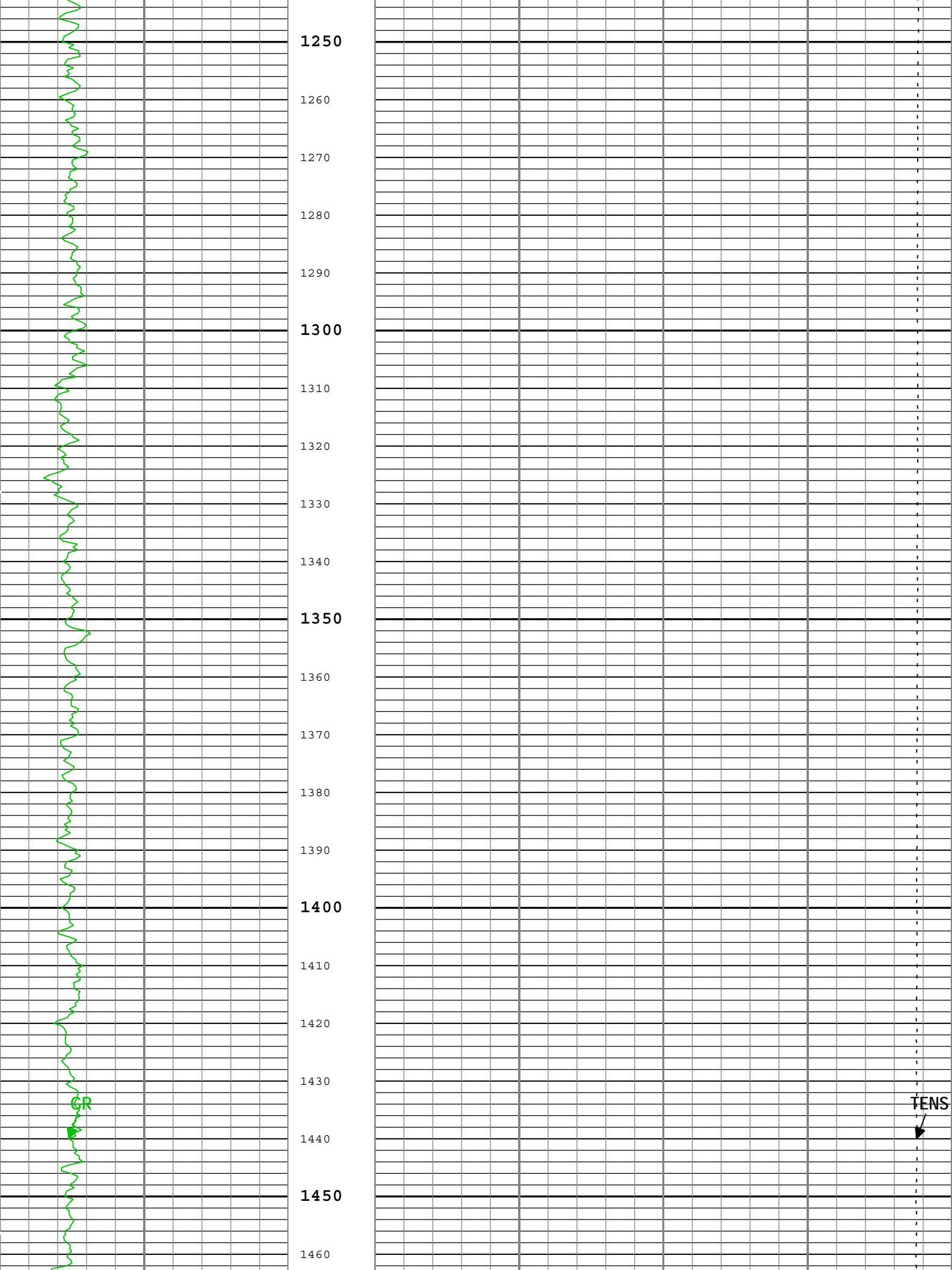


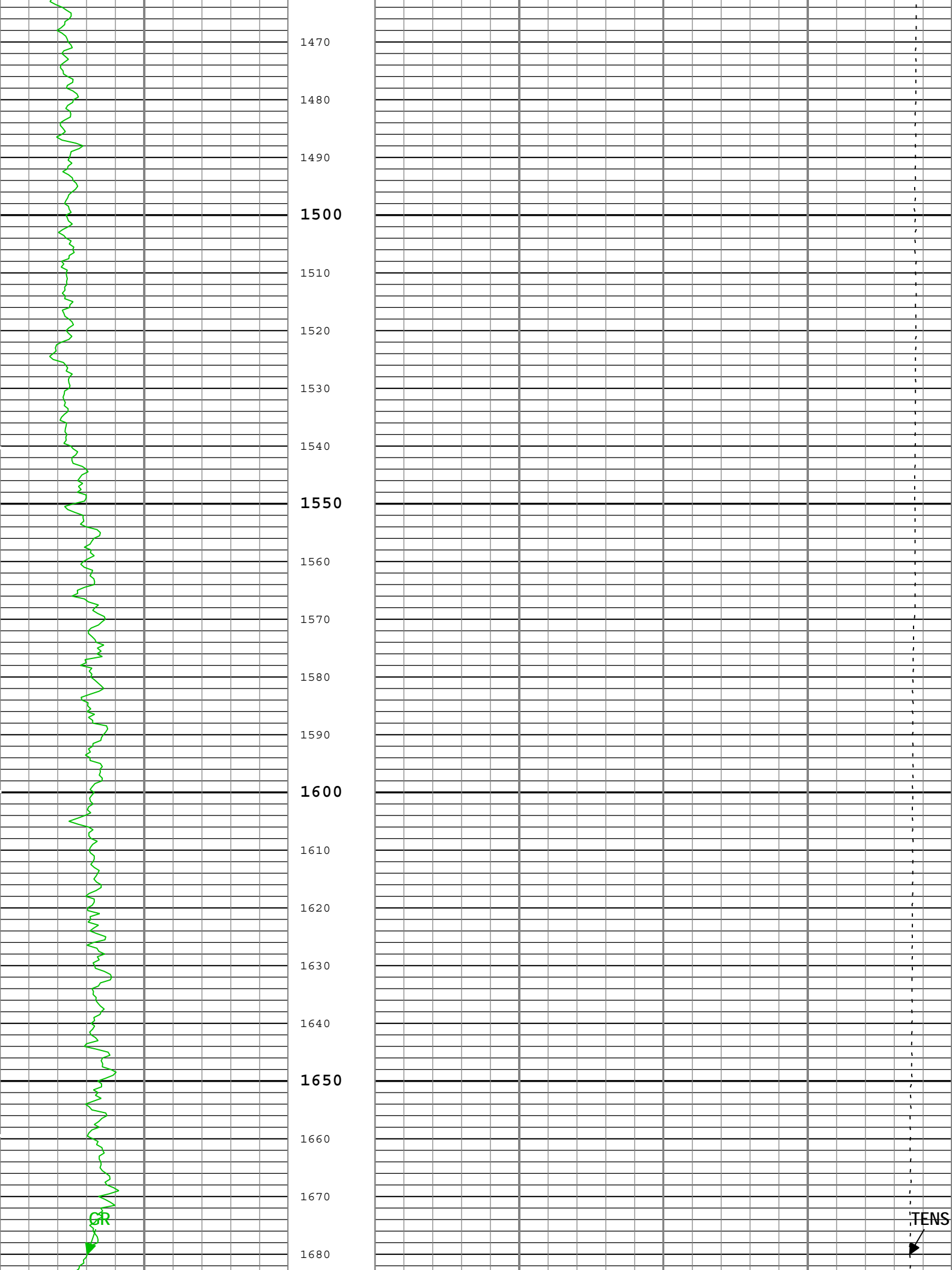


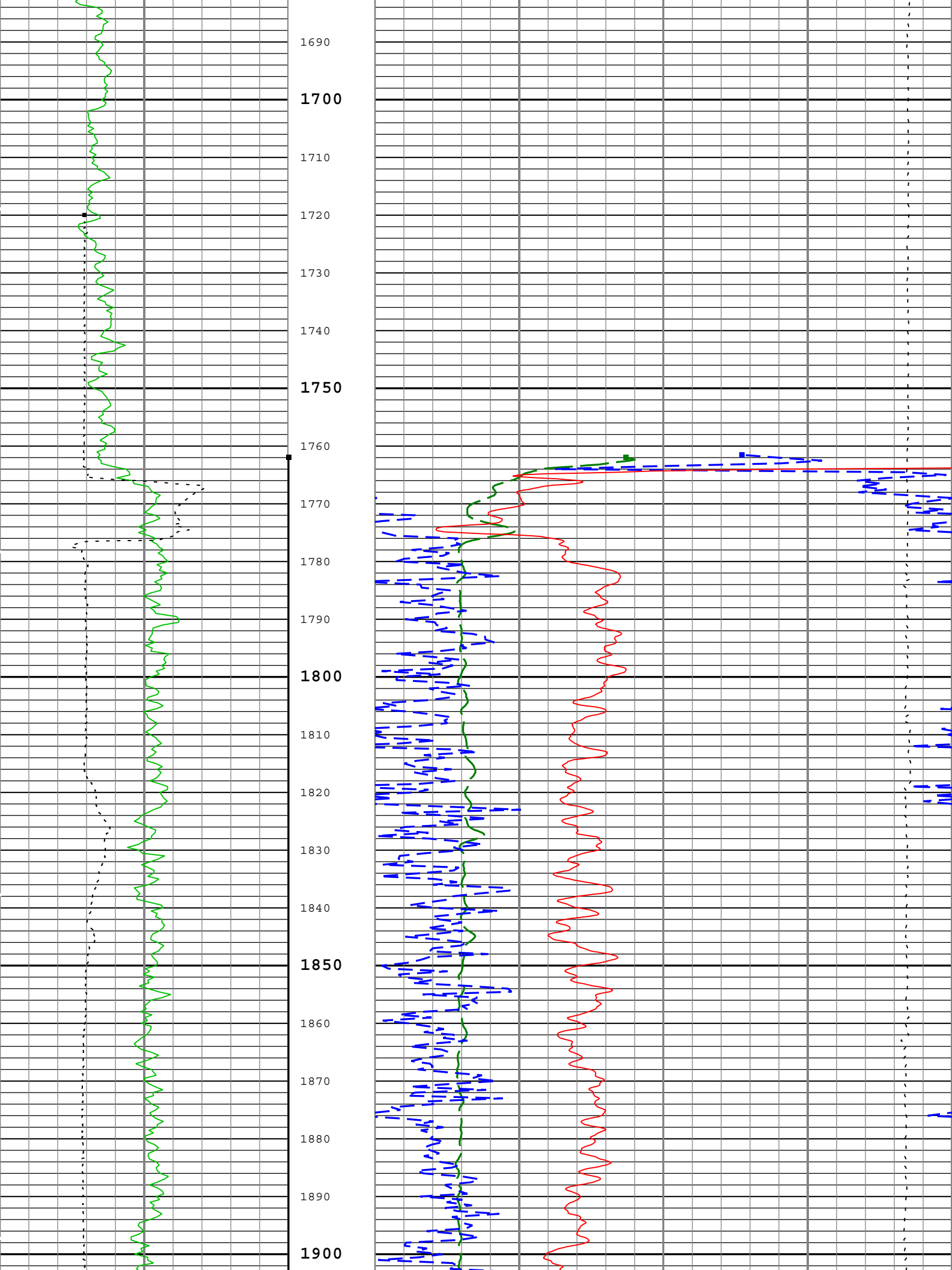


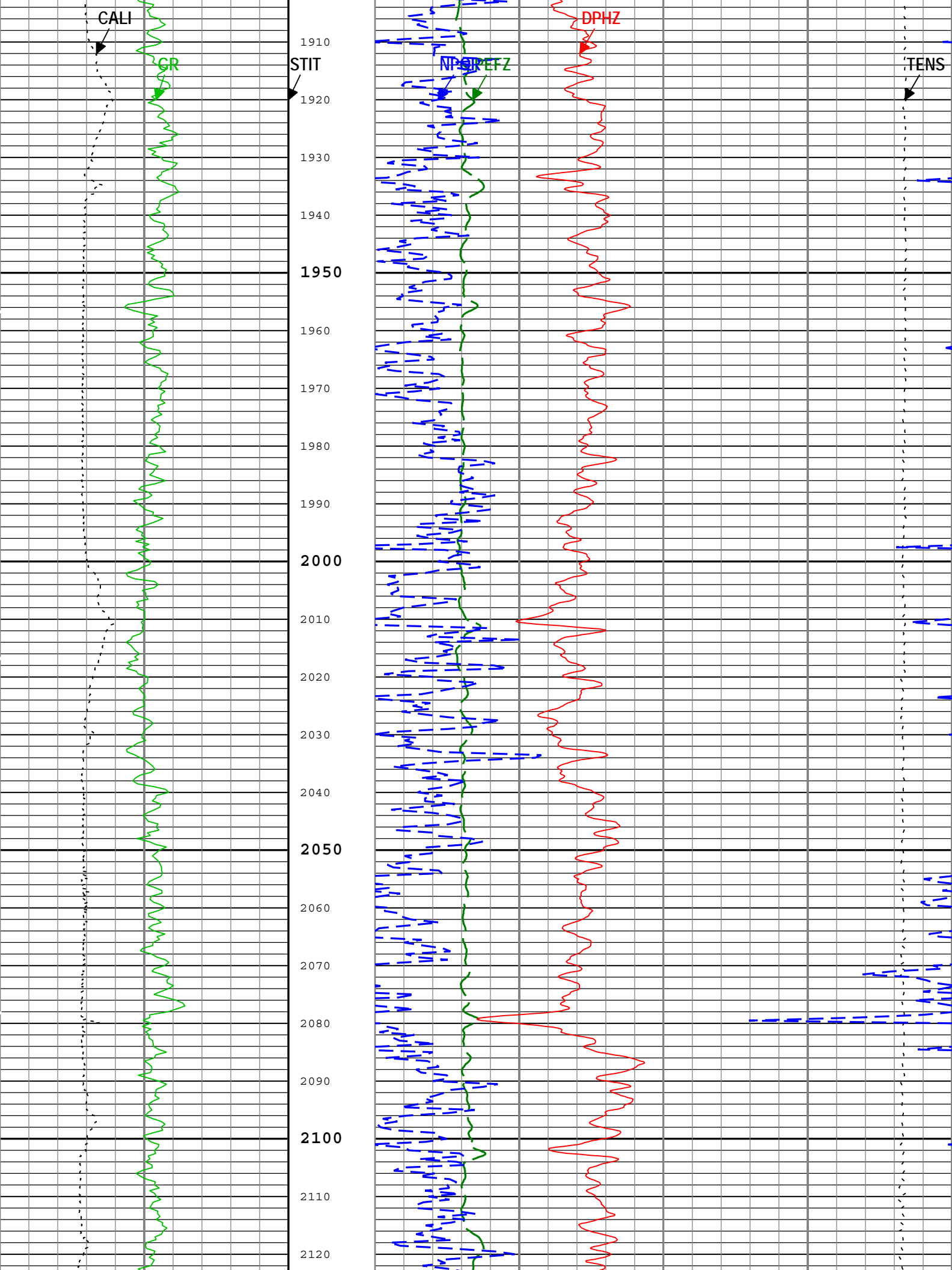




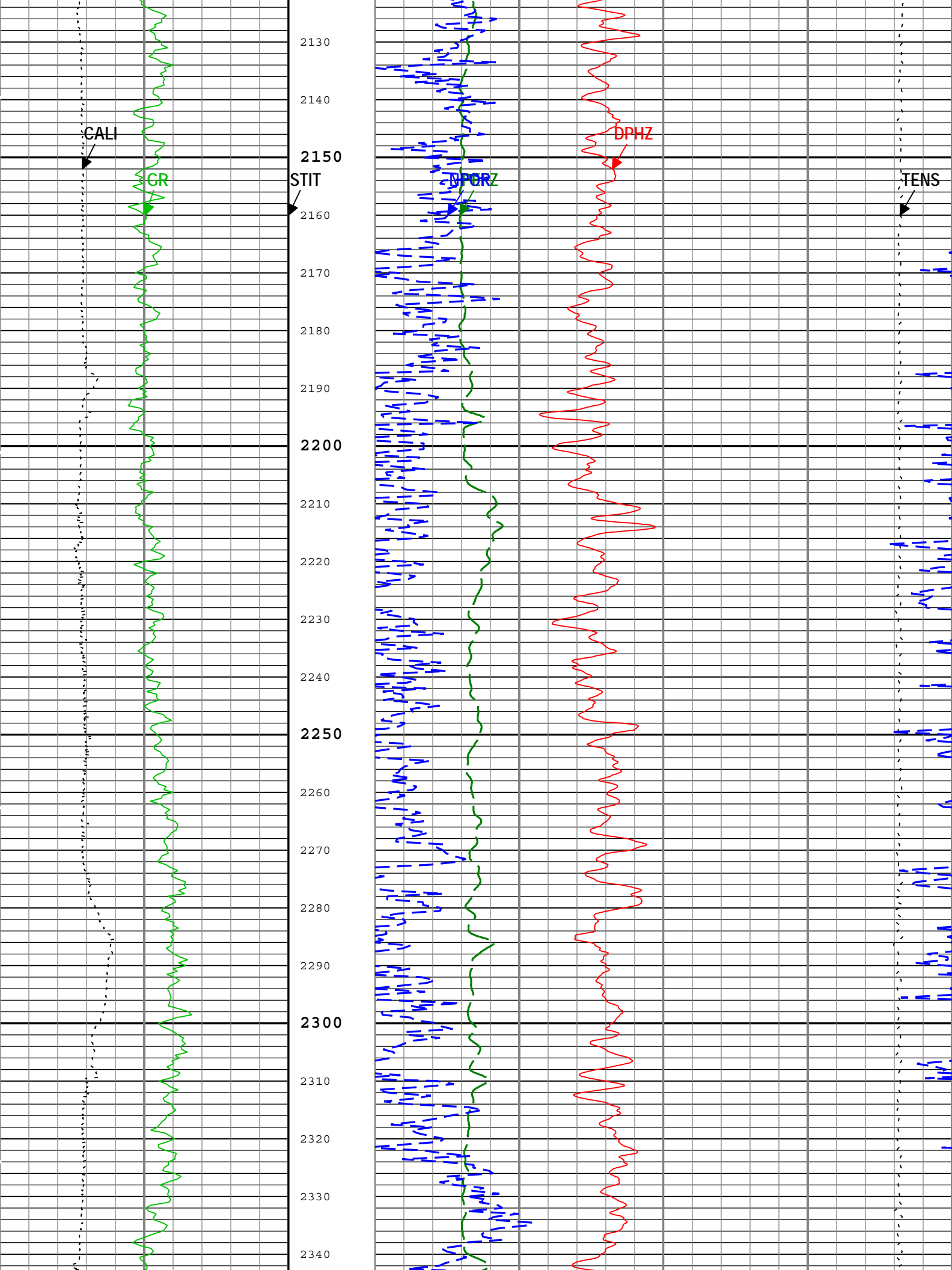


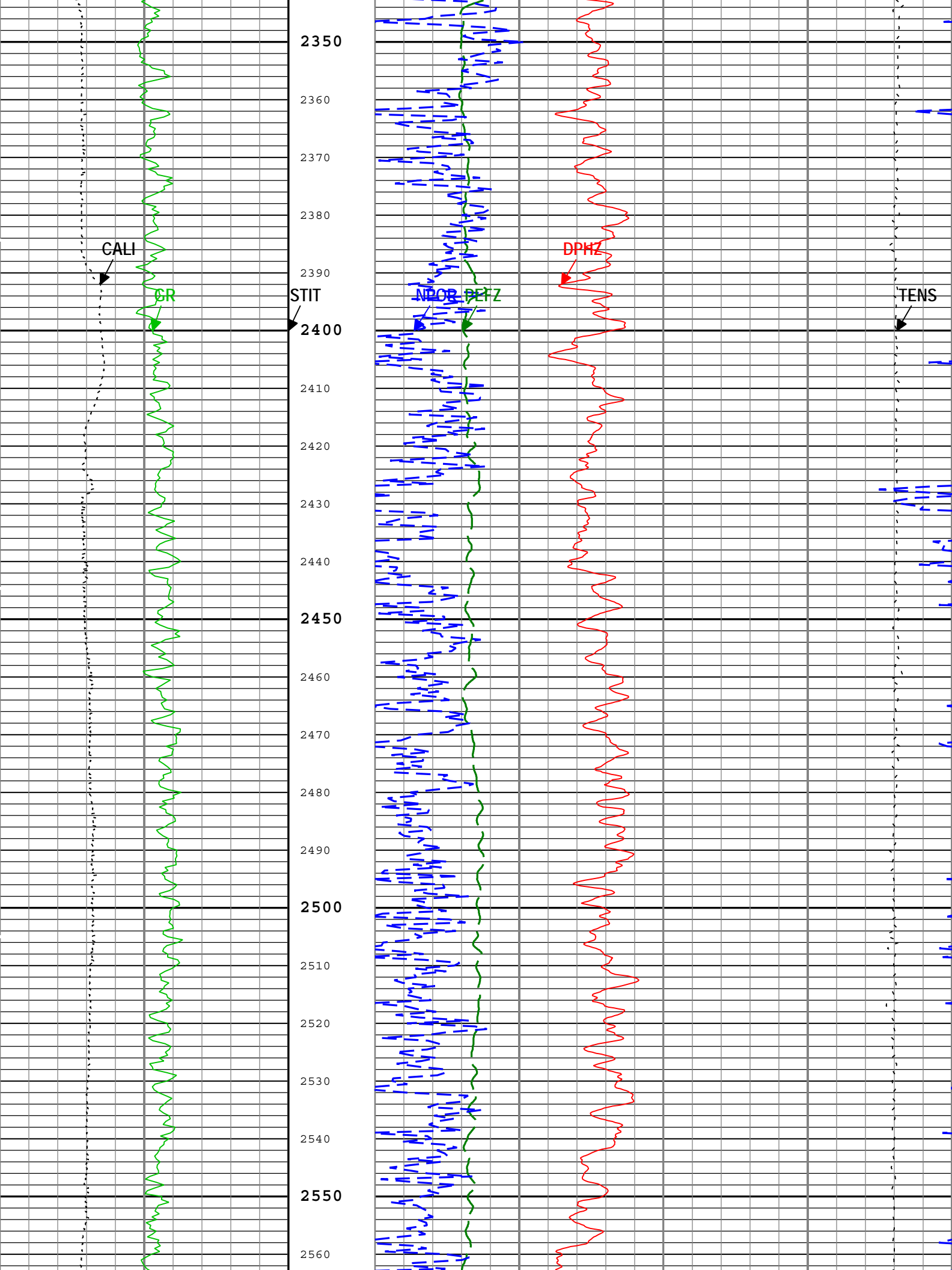


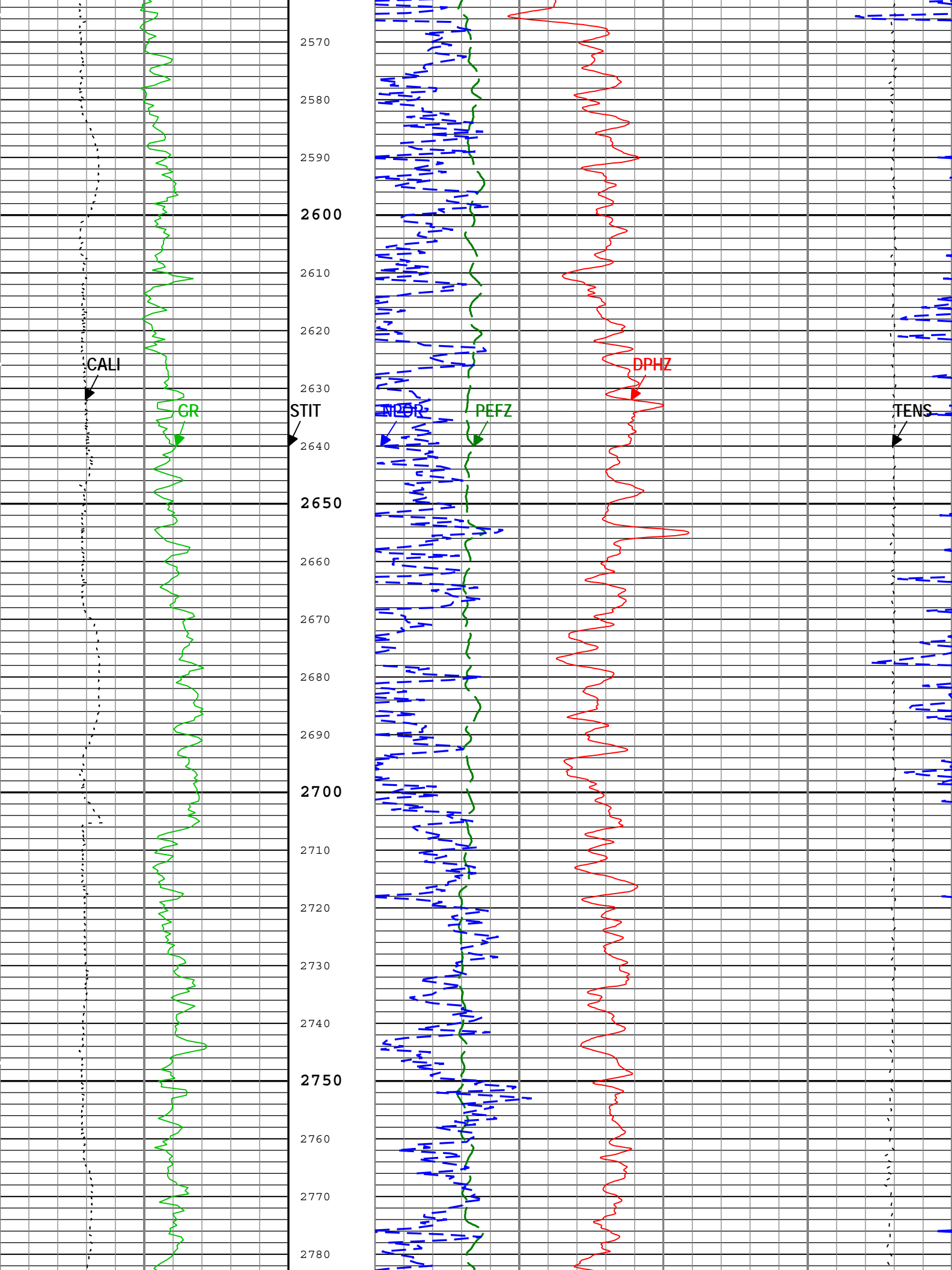


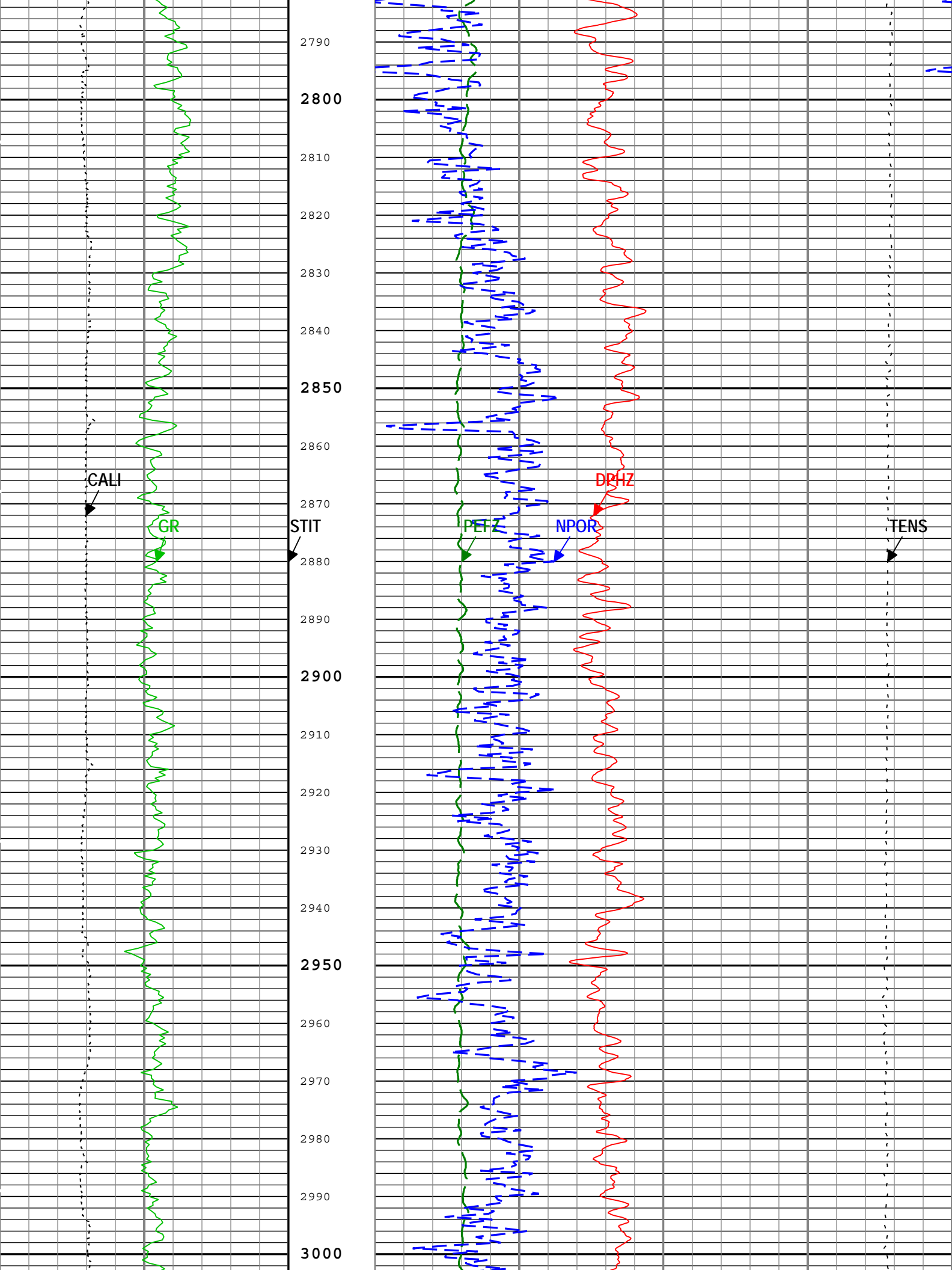


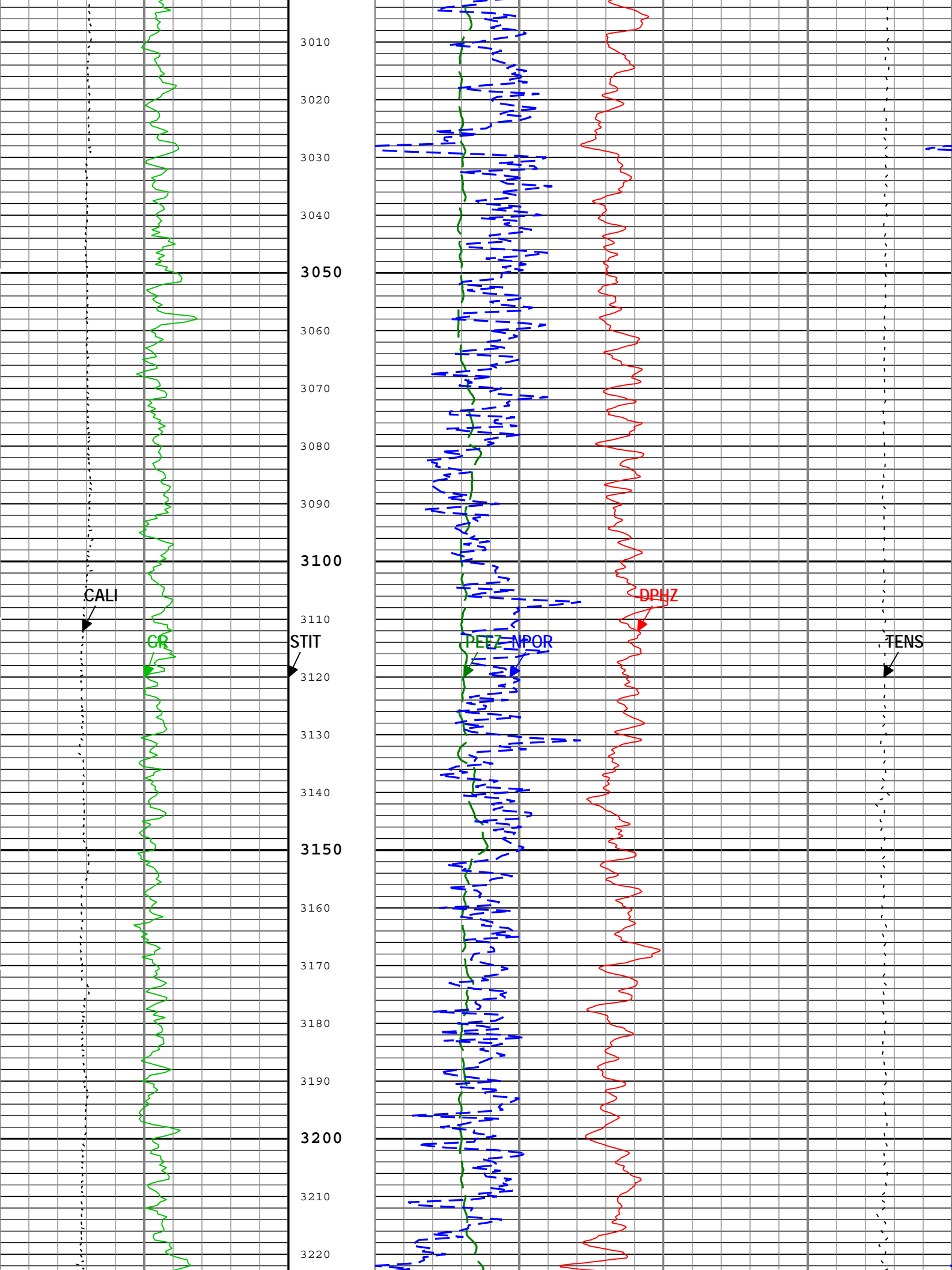


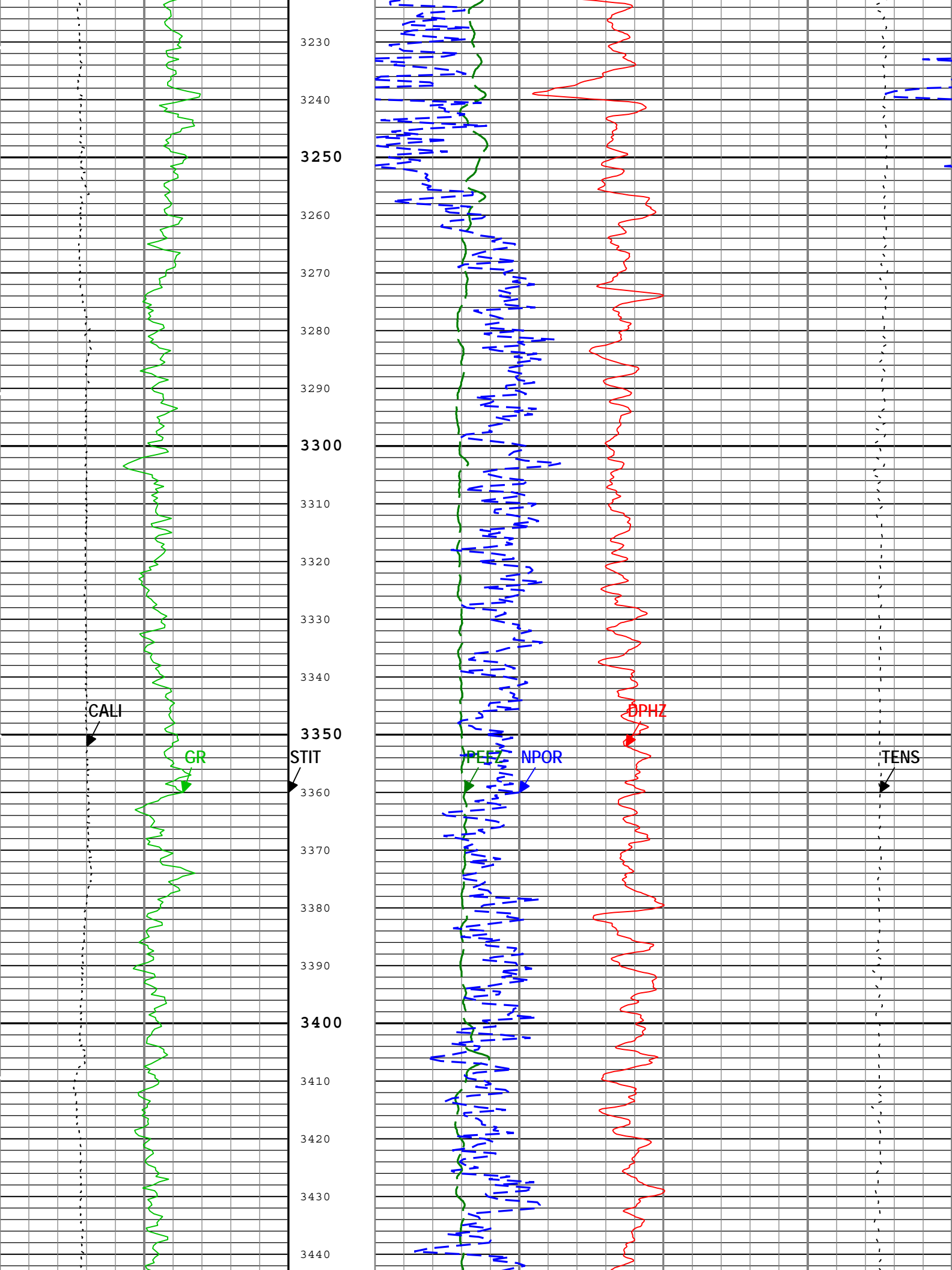


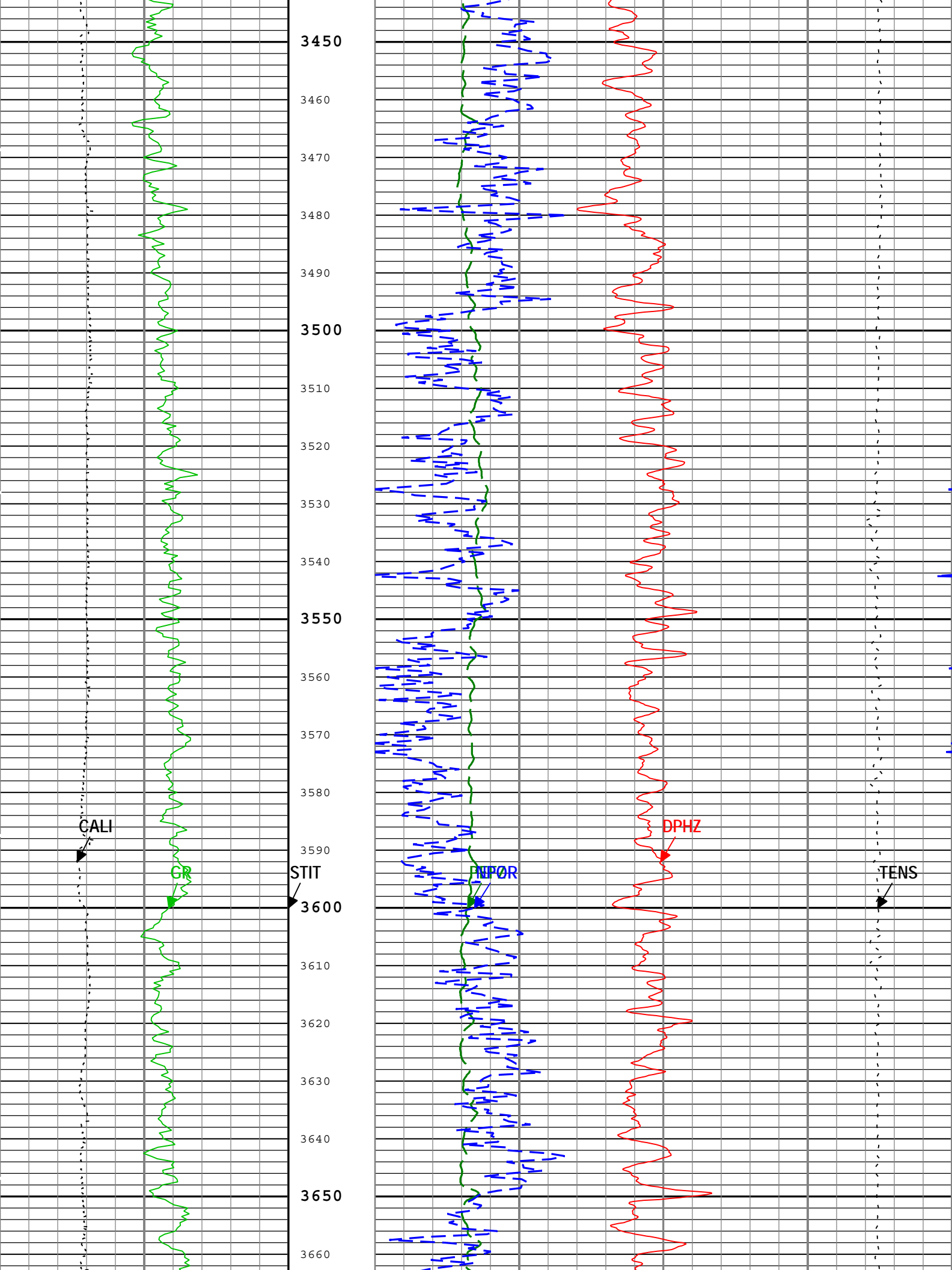


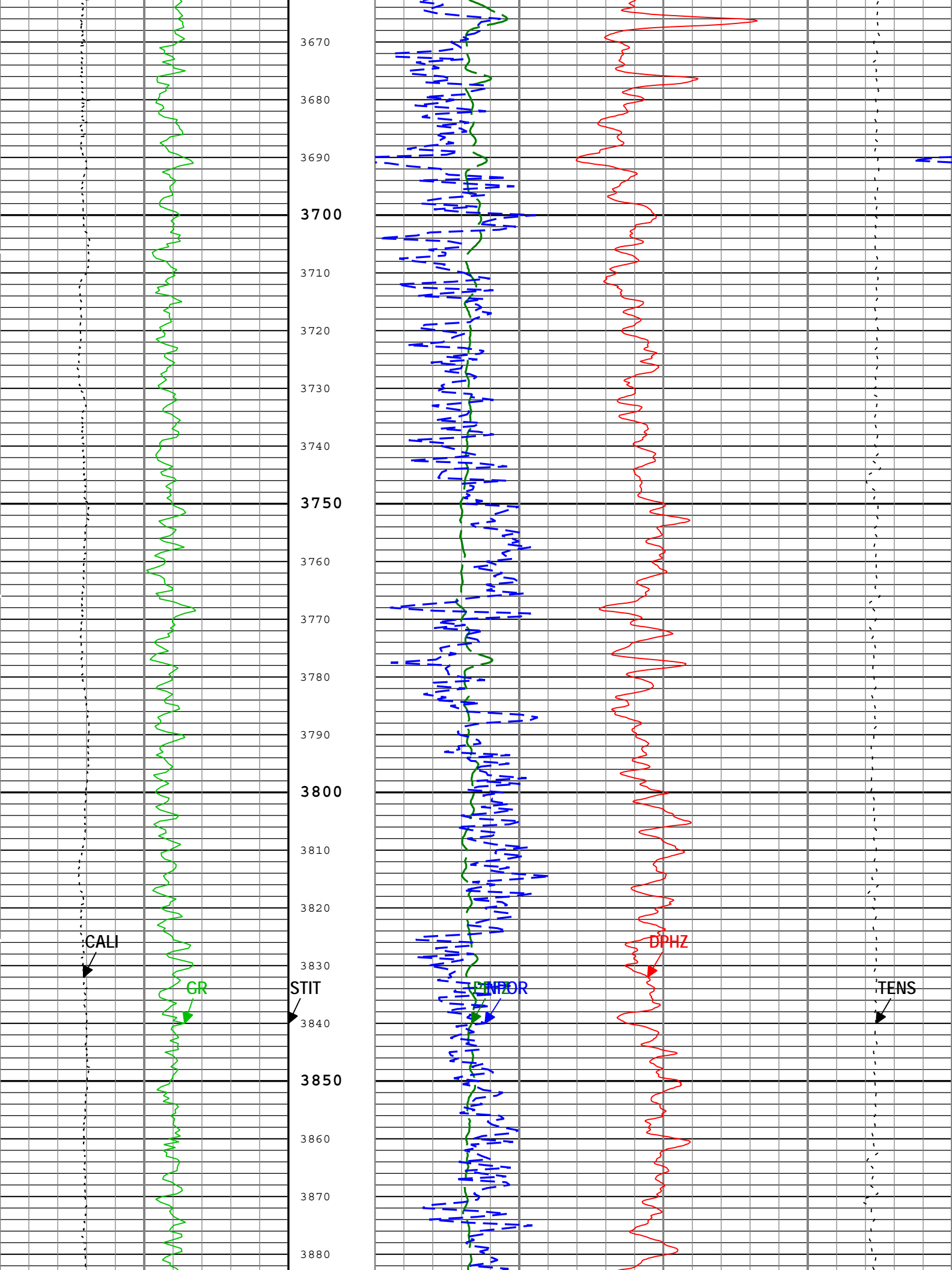




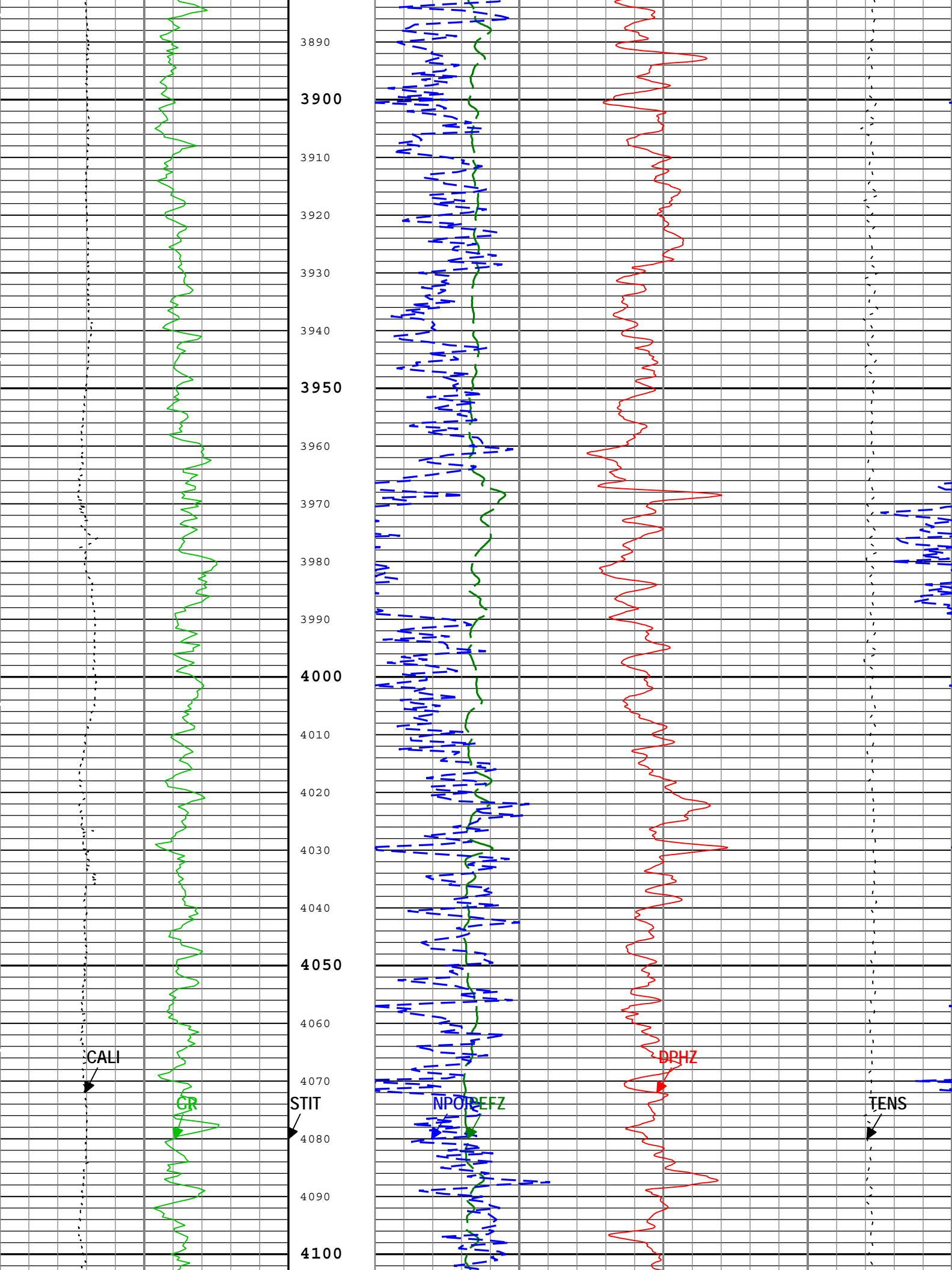


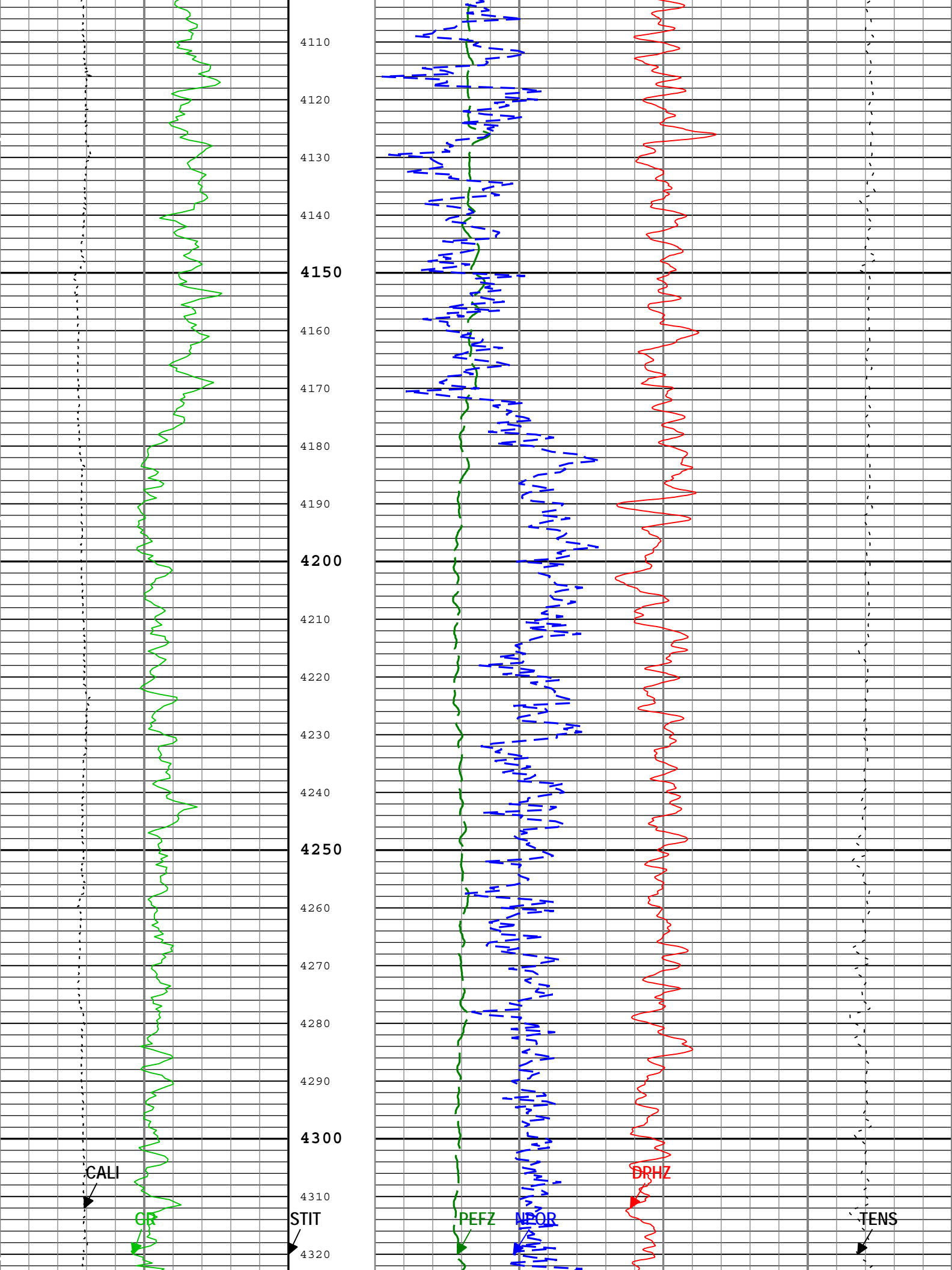


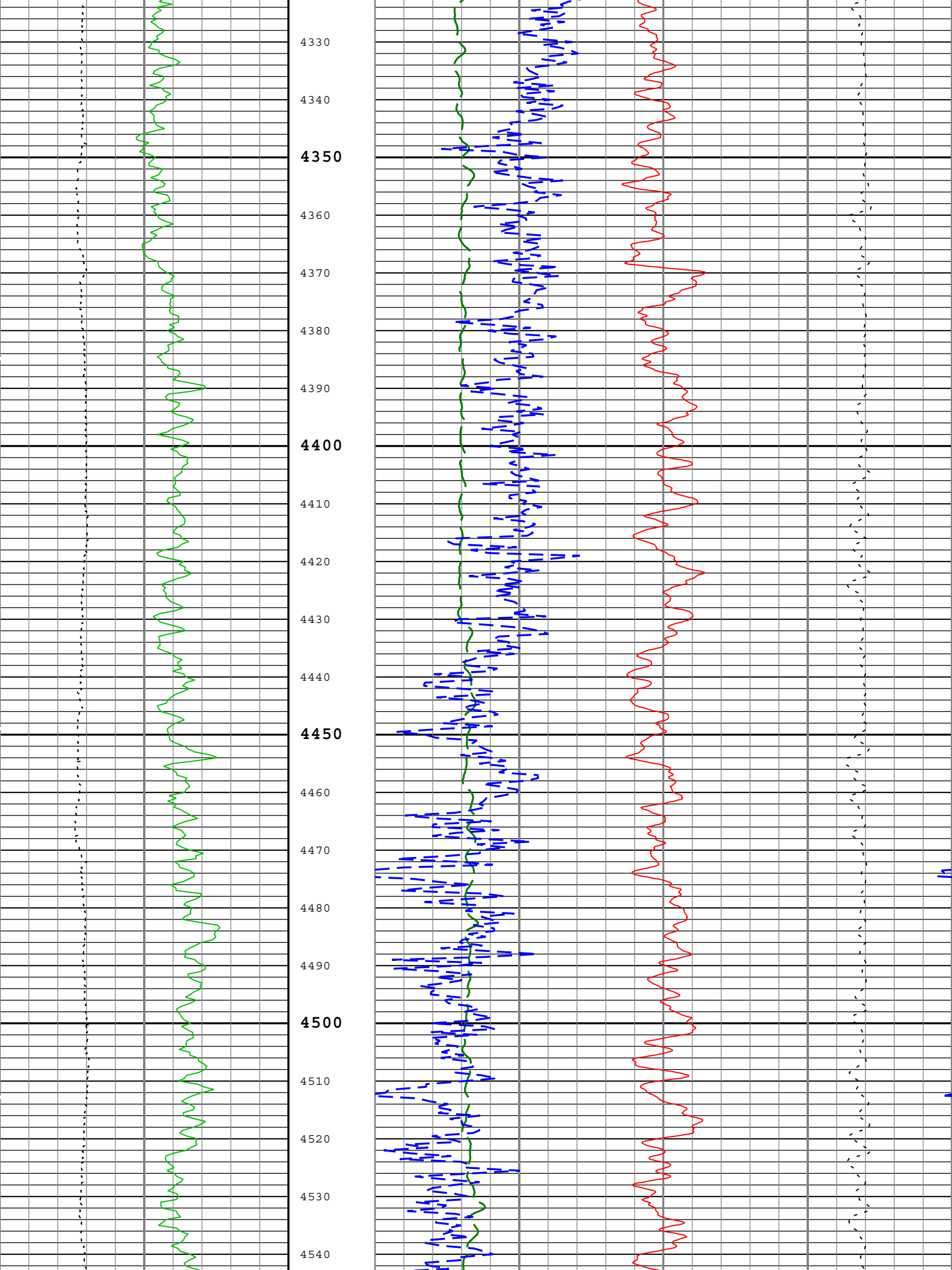


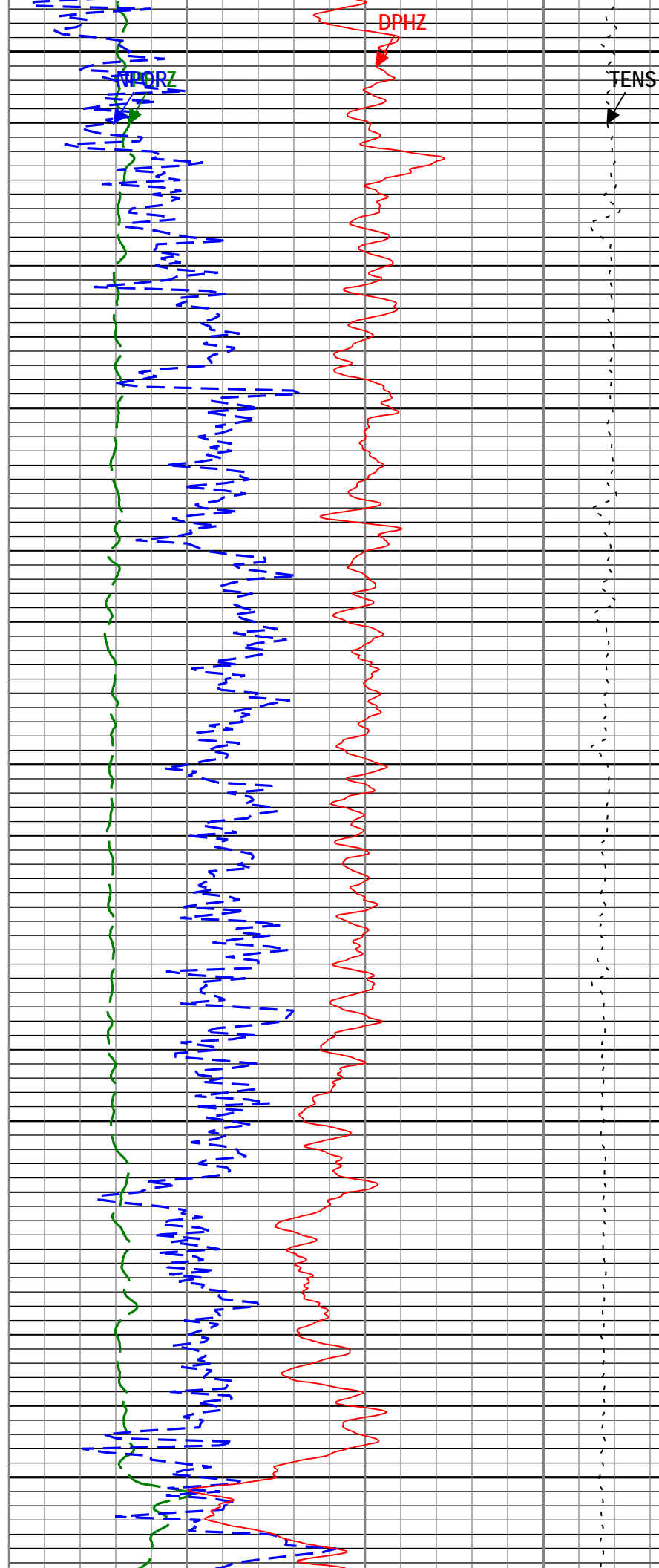
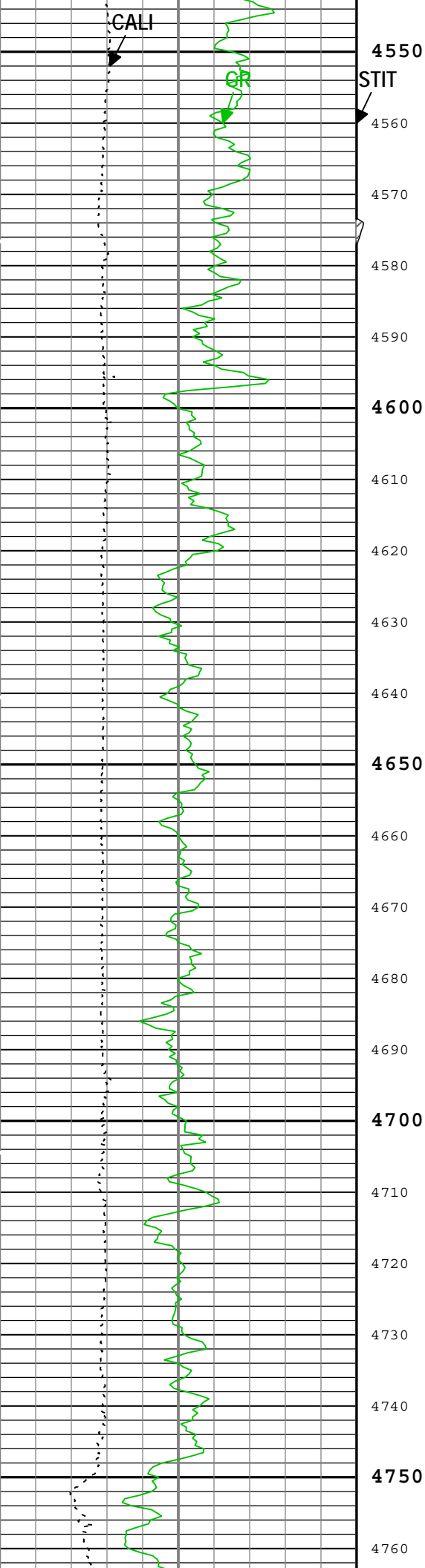


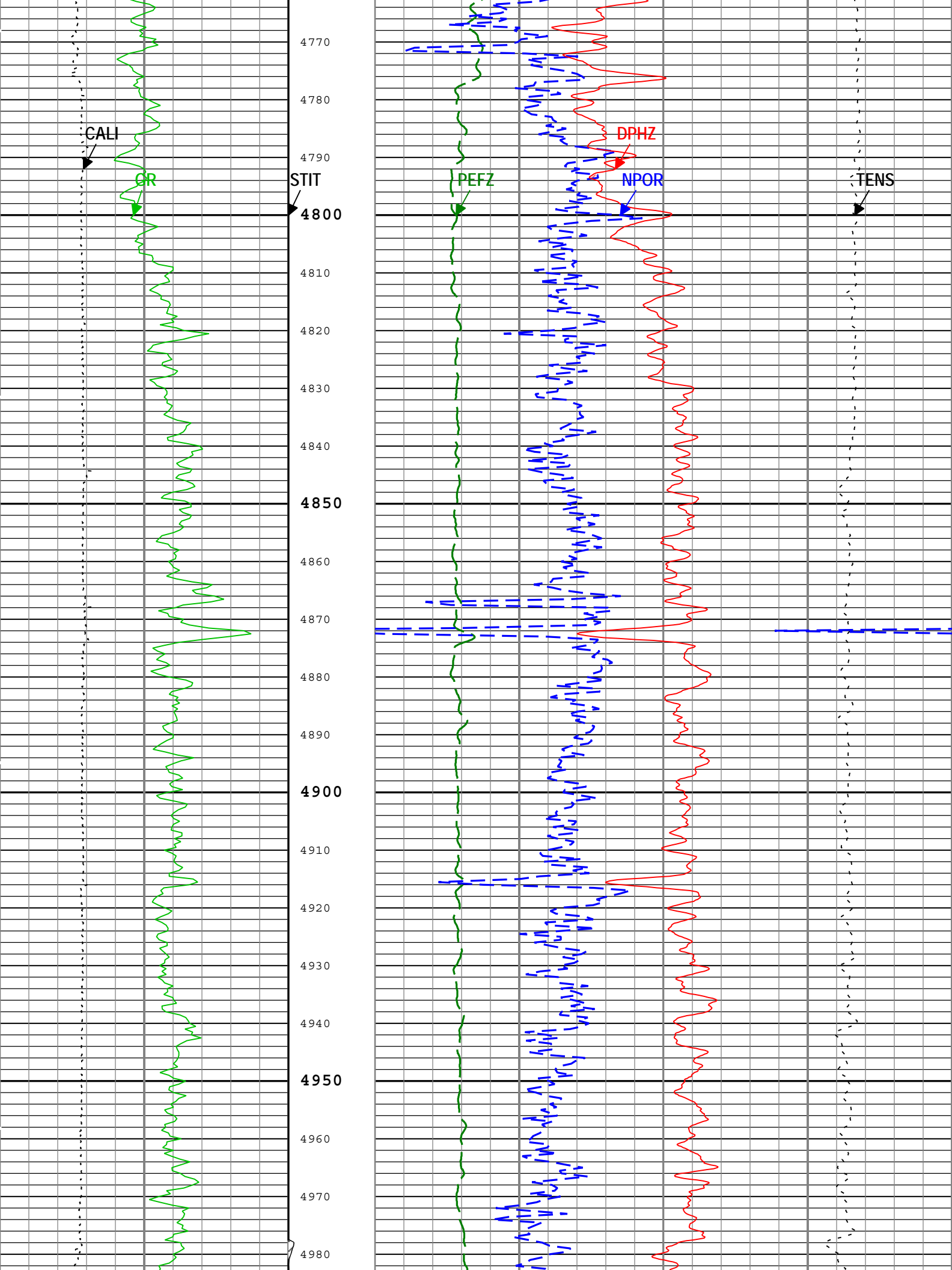


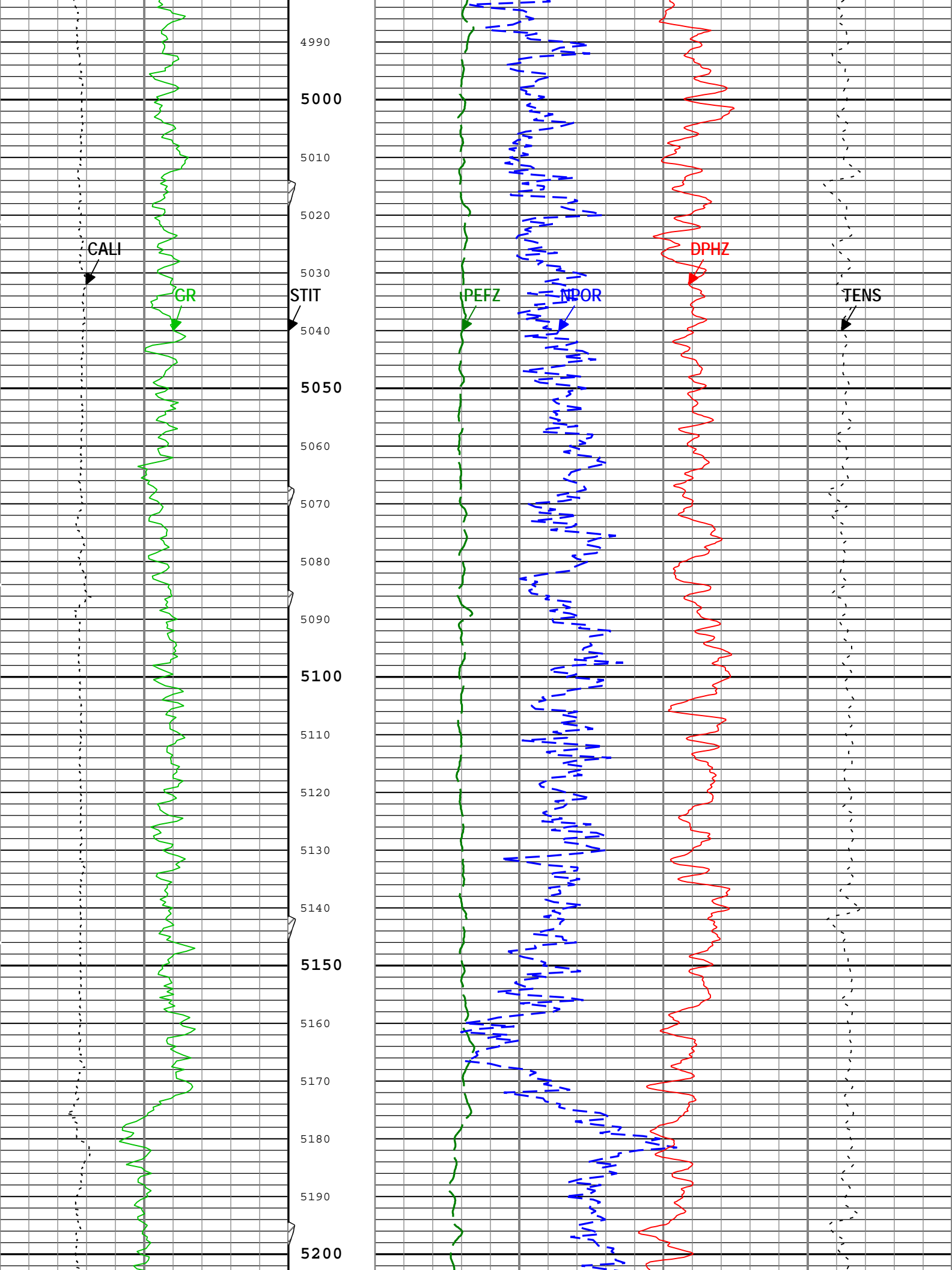


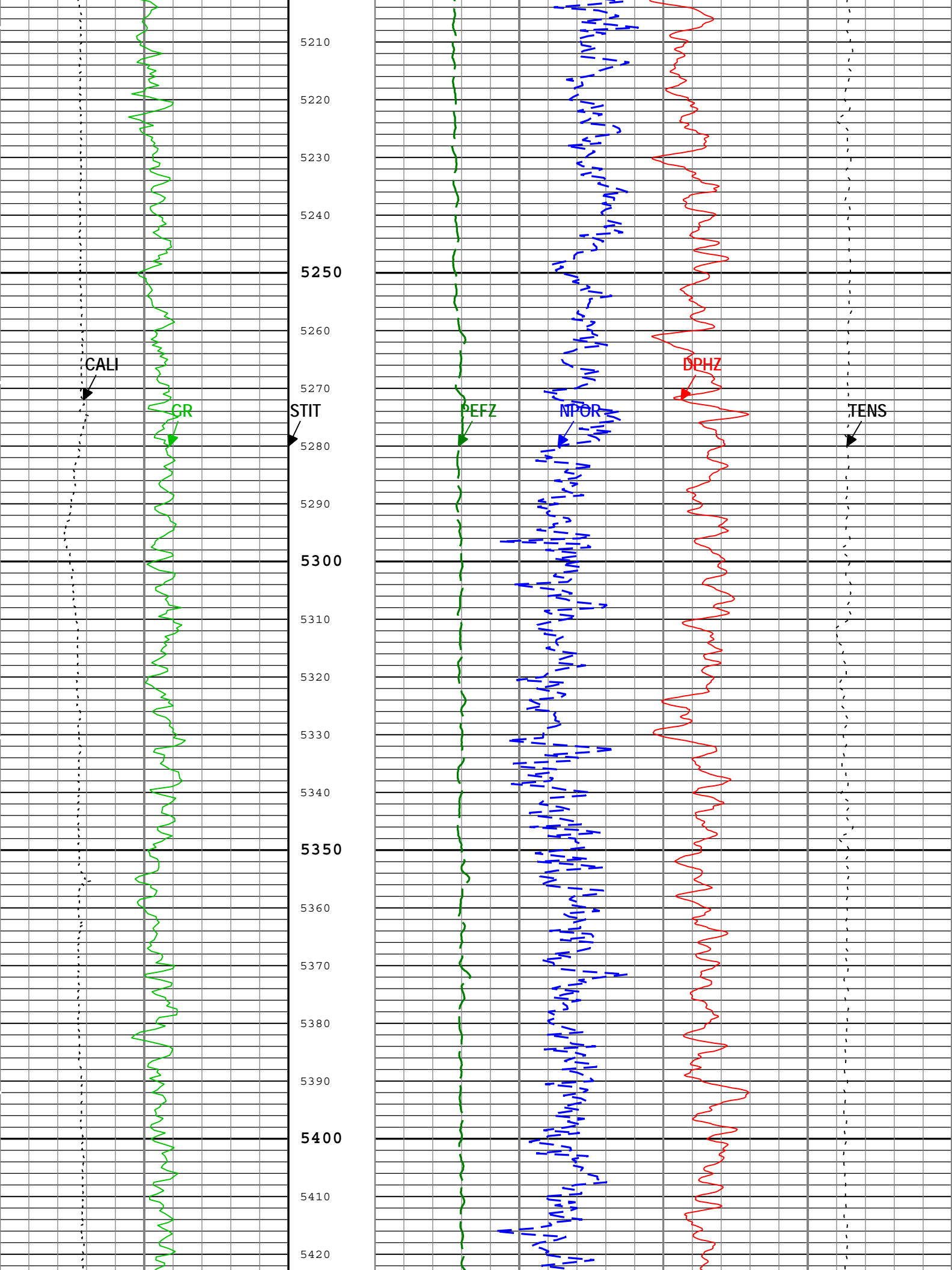


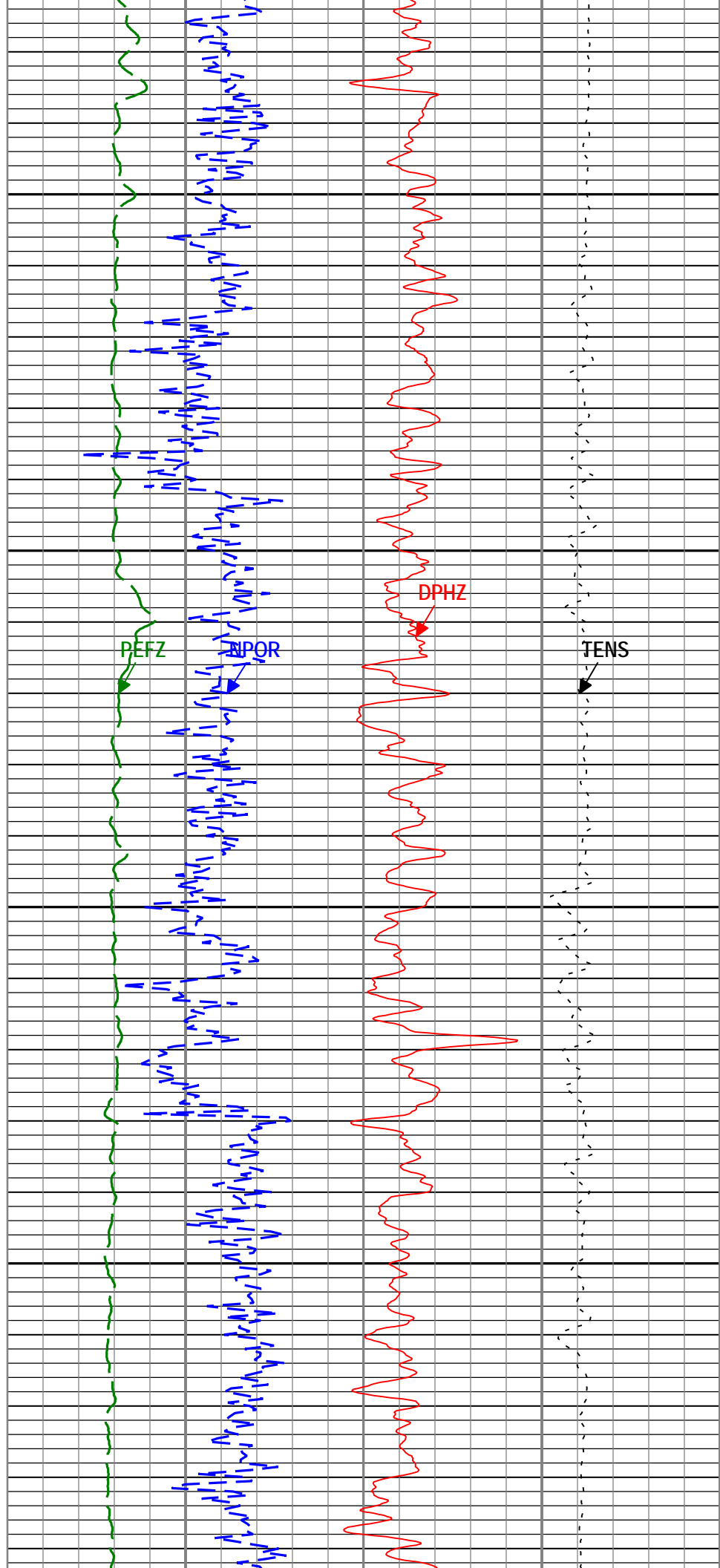
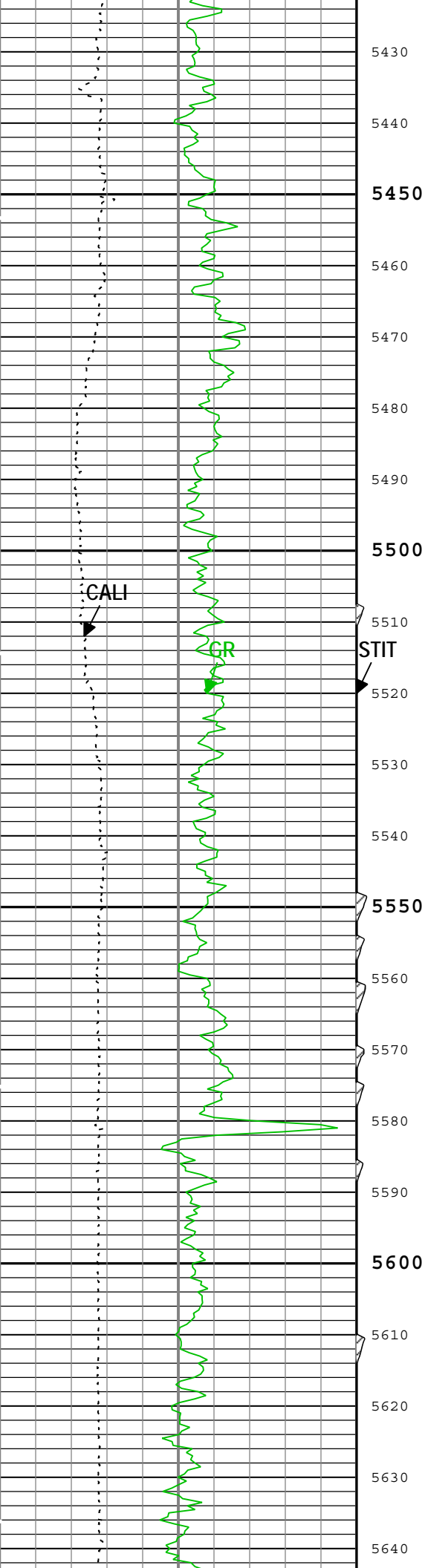




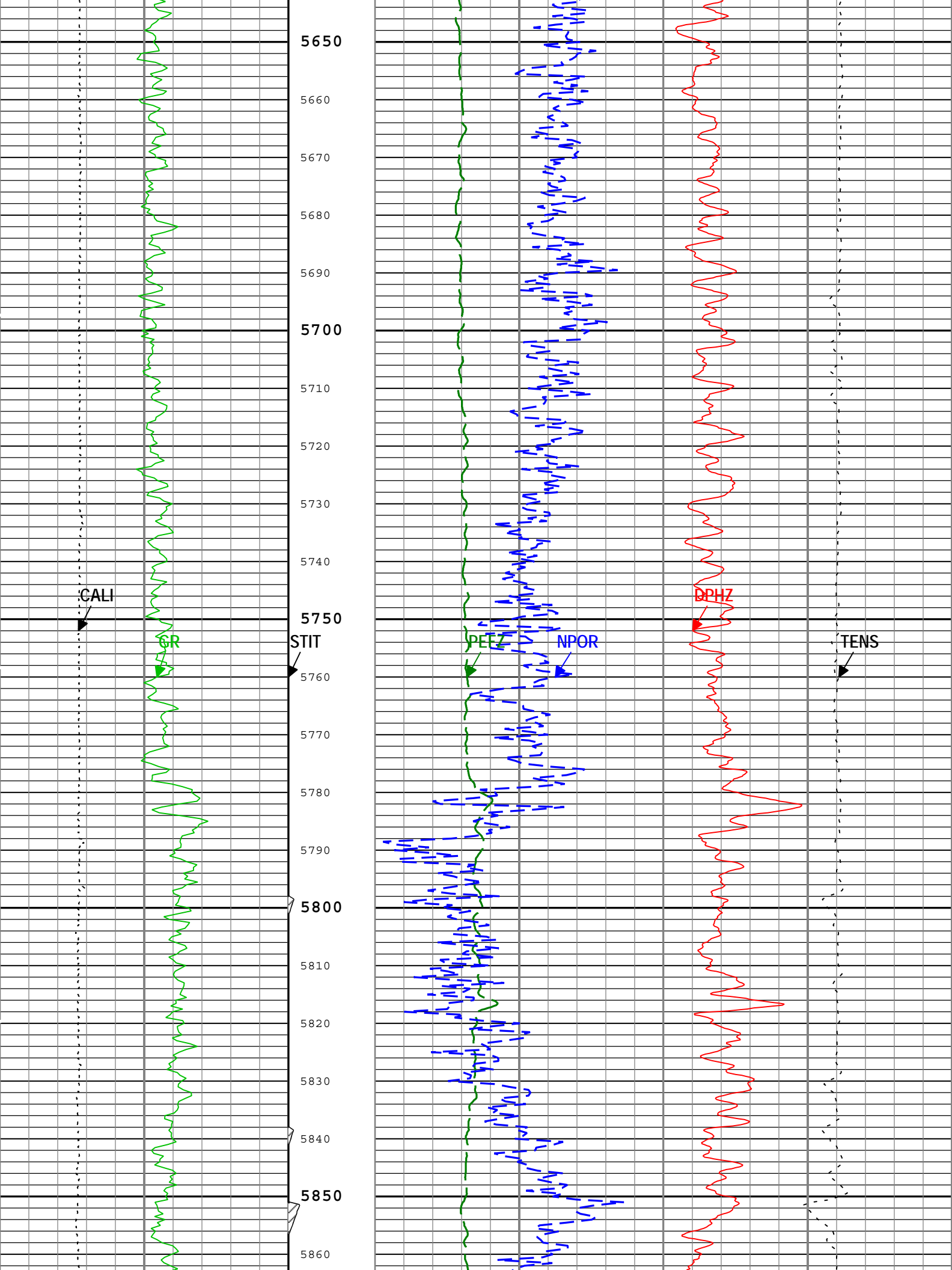


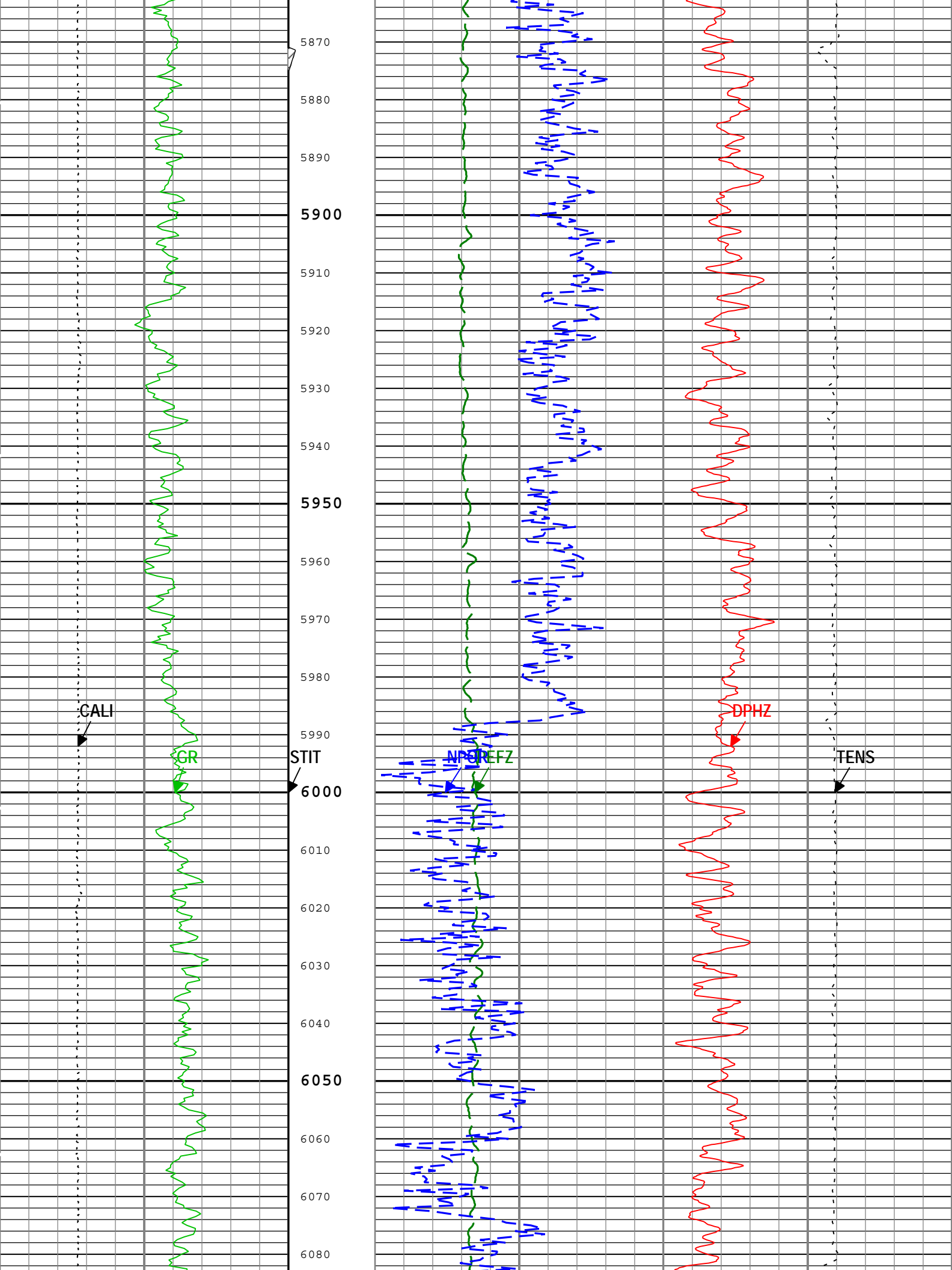


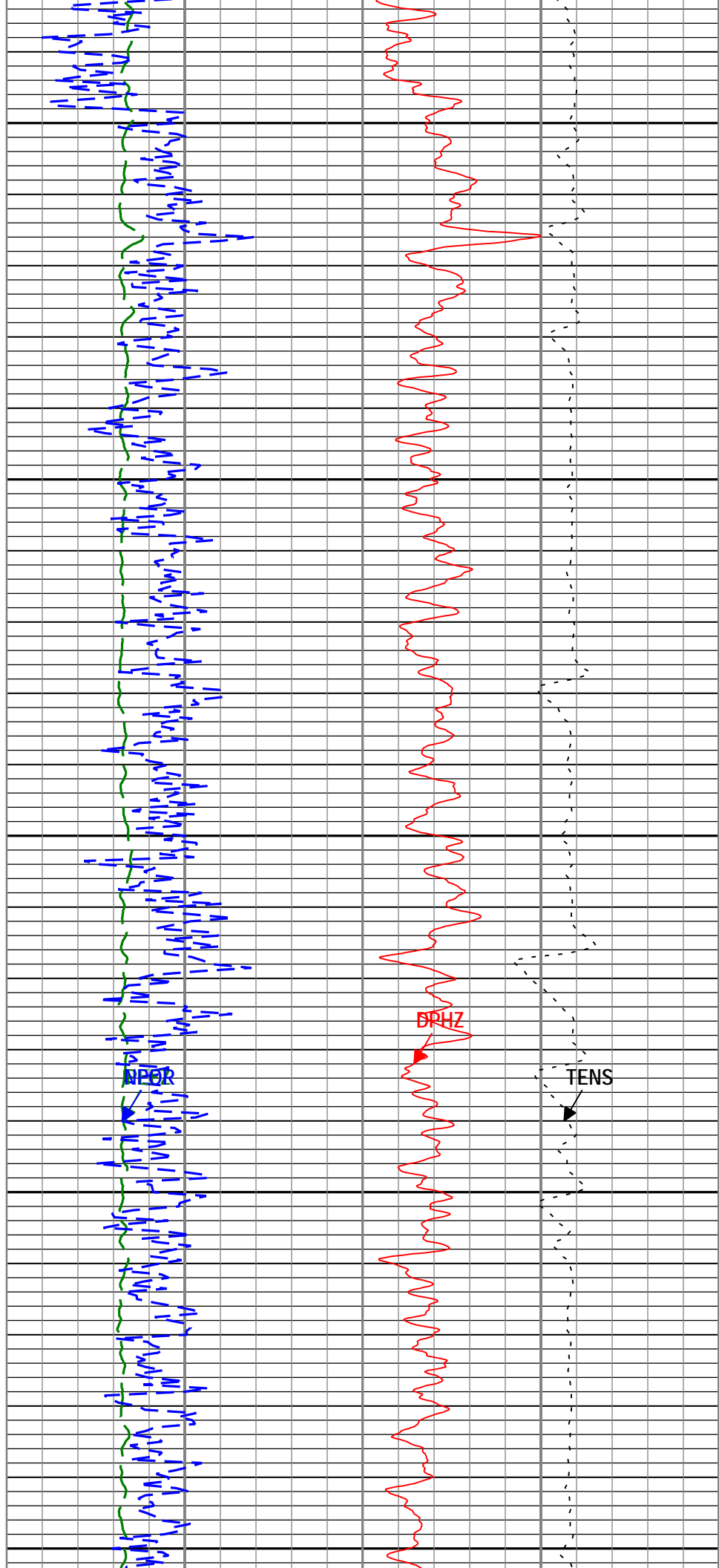
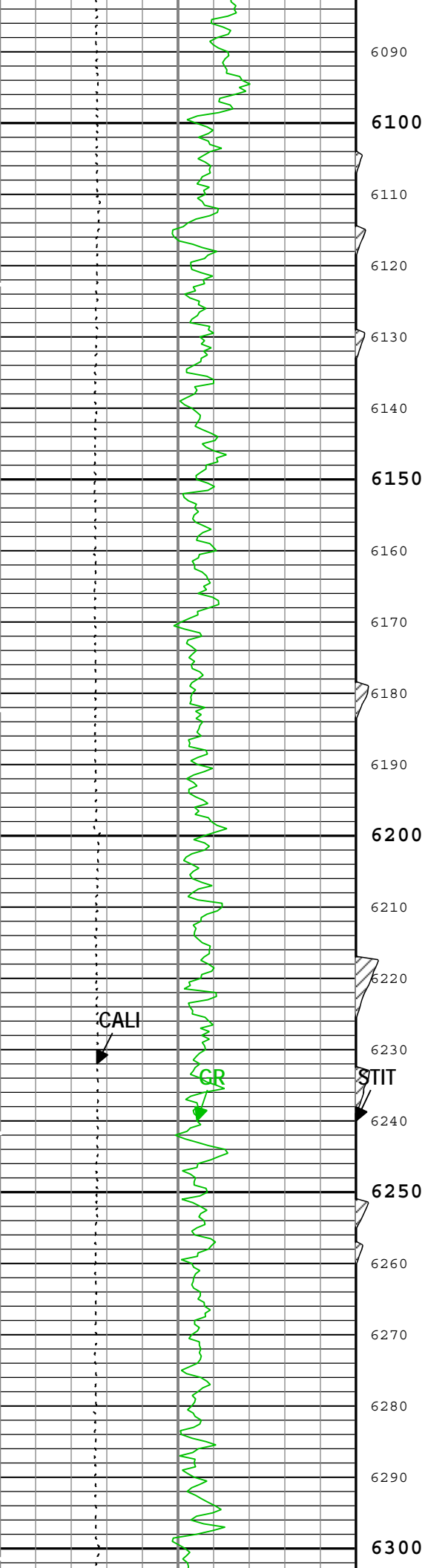


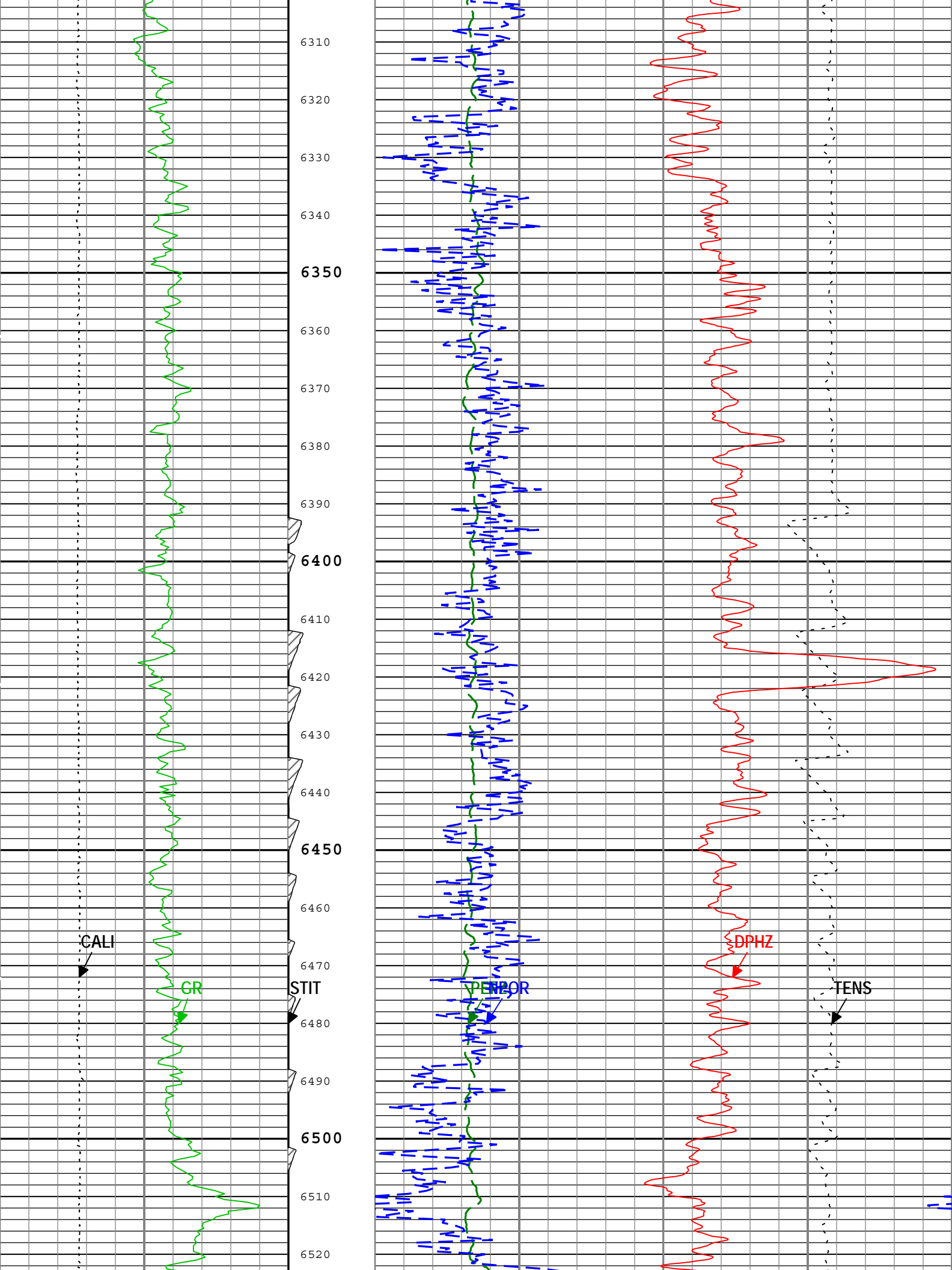


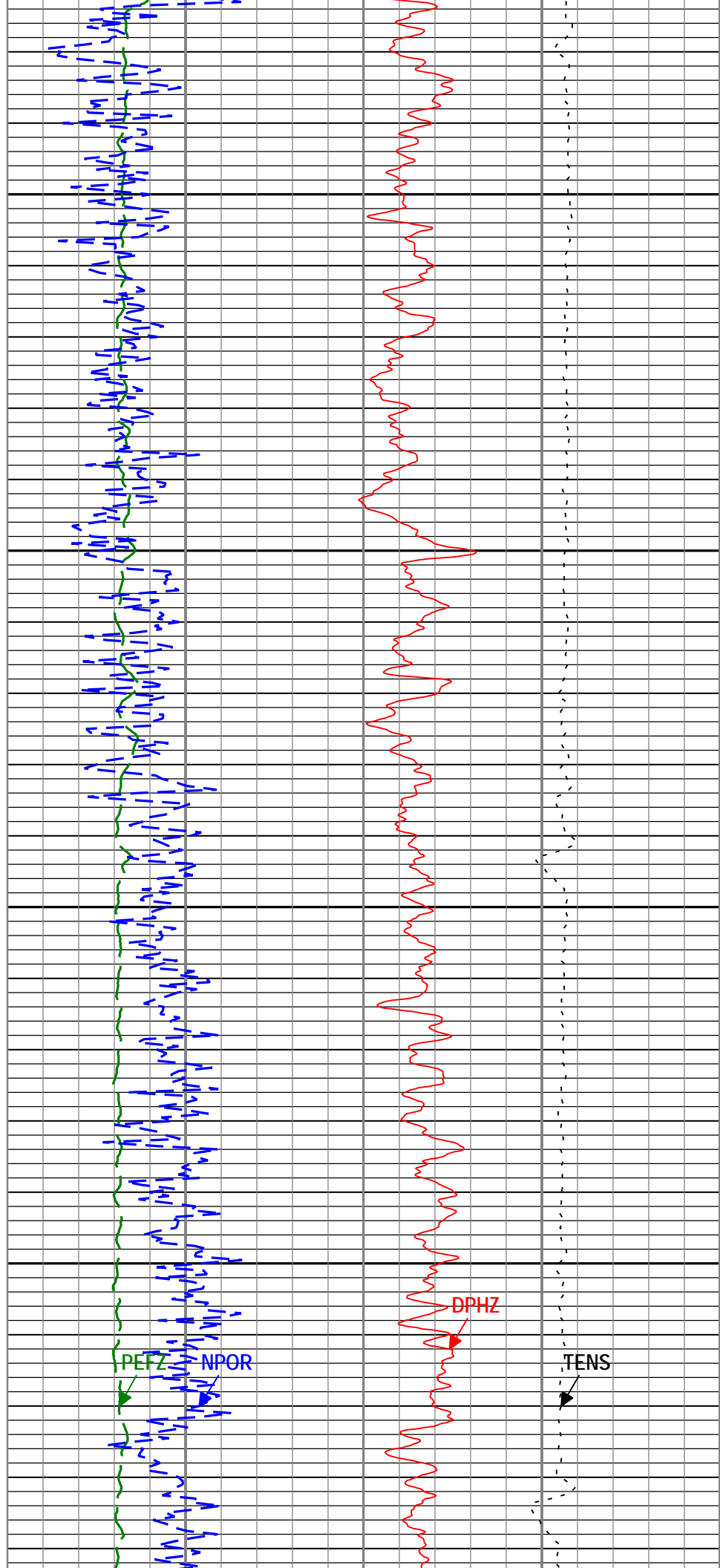
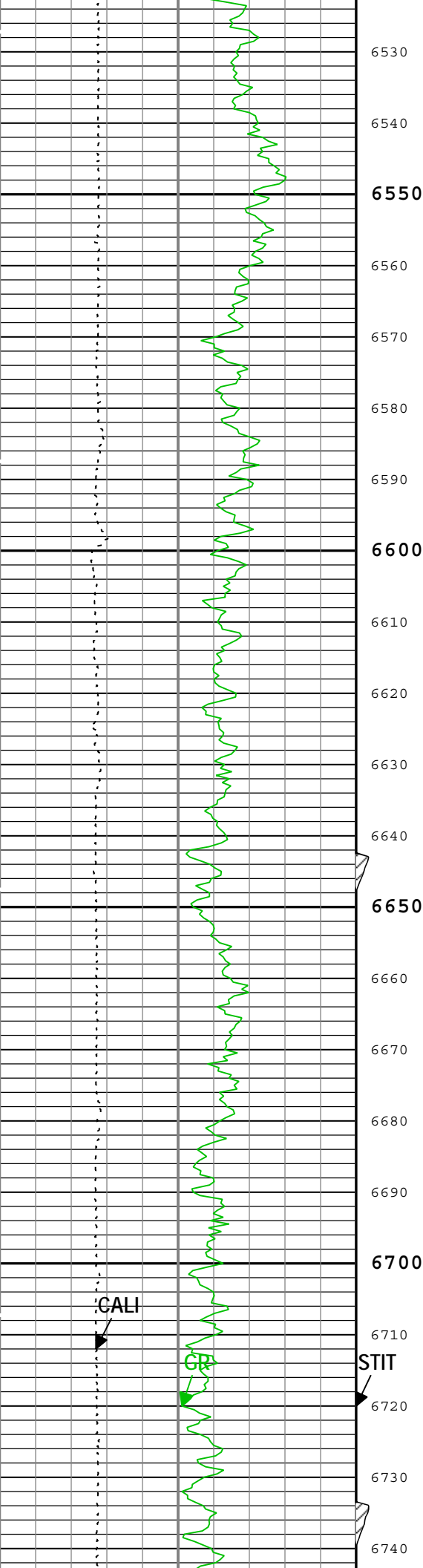


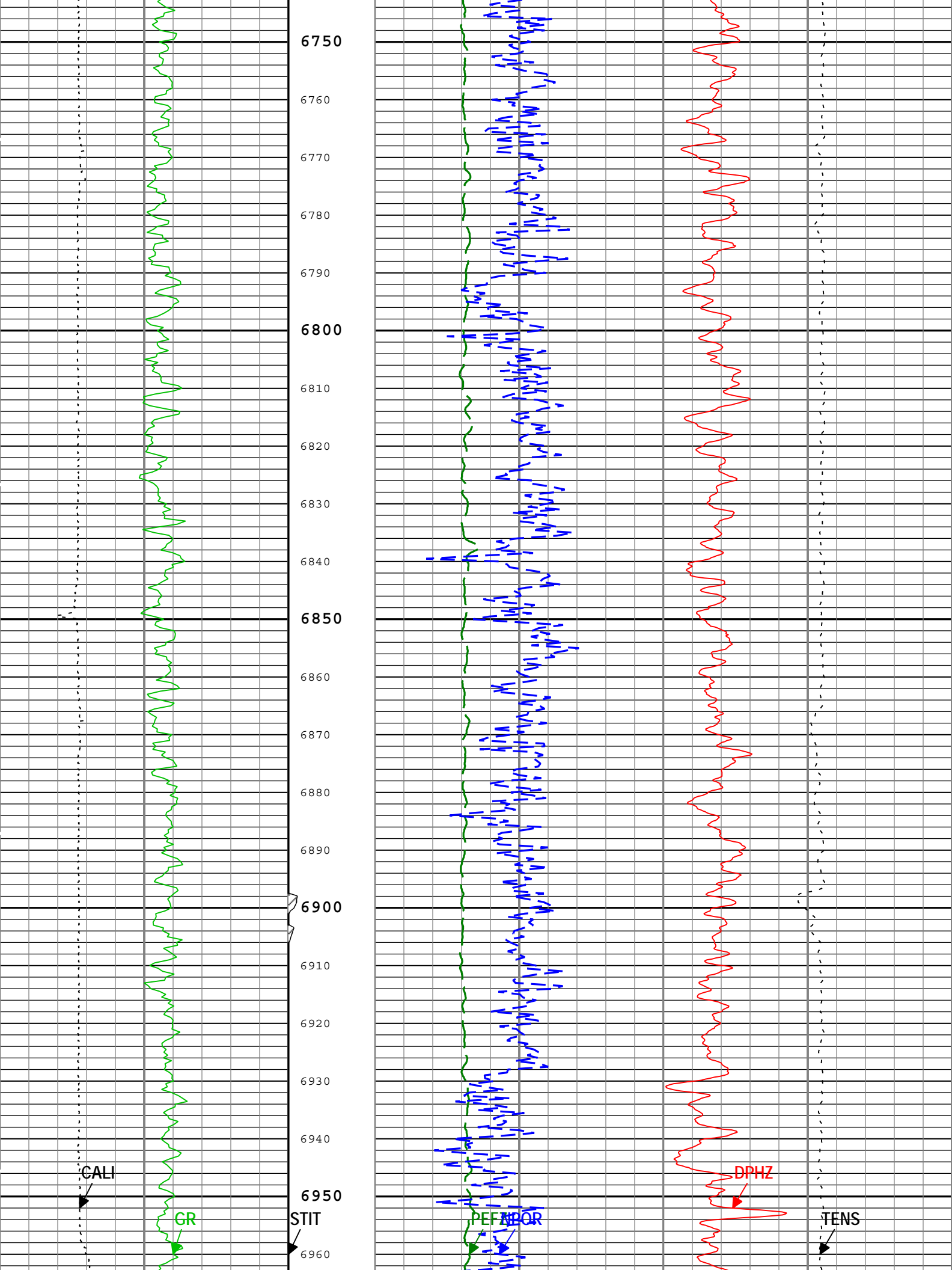


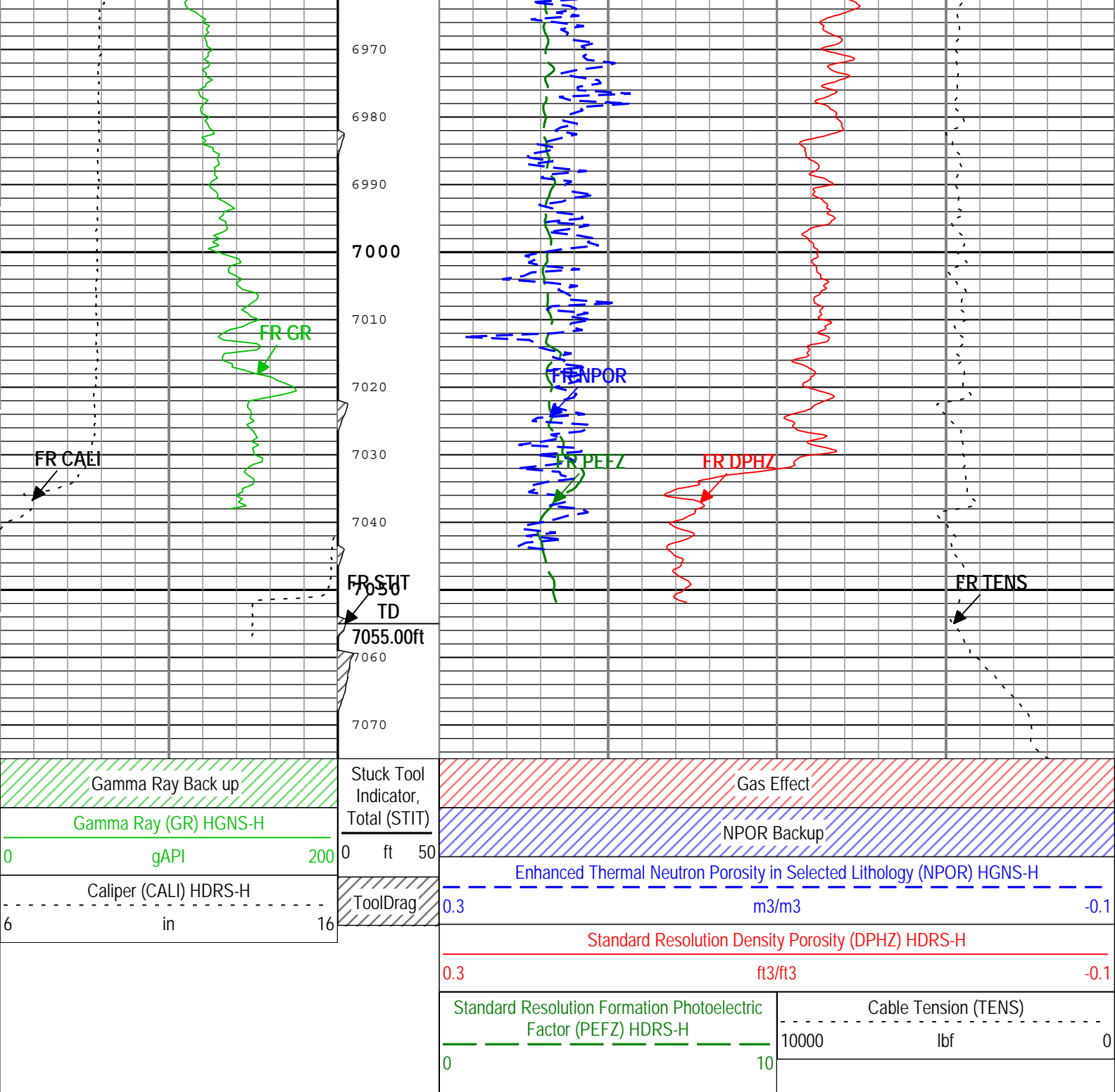












## Channel Processing Parameters

Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	Yes	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BHT	Bottom Hole Temperature	Borehole	160	degF
BS	Bit Size	WLSESSION	8.75	in
BSAL	Borehole Salinity	Borehole	0	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.068	in
CBLO	Casing Bottom (Logger)	WLSESSION	1762	ft
CDEN	Cement Density	HGNS-H	2	g/cm3

DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	10.2	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DFT_WATER	Drilling Fluid Water Type	Borehole	WBM	
DHC	Density Hole Correction	HDRS-H	Bit Size	
FD	Fluid Density	Borehole	1	g/cm3
FSAL	Formation Salinity	Borehole	0	ppm
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	LIMESTONE	
MDEN	Matrix Density for Density Porosity	Borehole	2.71	g/cm3
MFST	Mud Filtrate Sample Temperature	Borehole	75	degF
RMFS	Resistivity of Mud Filtrate Sample	Borehole	1.15	ohm.m
SOCO	Standoff Correction Option	HGNS-H	Yes	
TD	Total Measured Depth	Borehole	7055	ft

Tool Control Parameters				
Parameter	Description	Tool	Value	Unit
HMCA_BRD_TYPE	HMCA Board Type	HGNS-H	1	
HRGD_BRD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

Two									
5" Porosity RA									

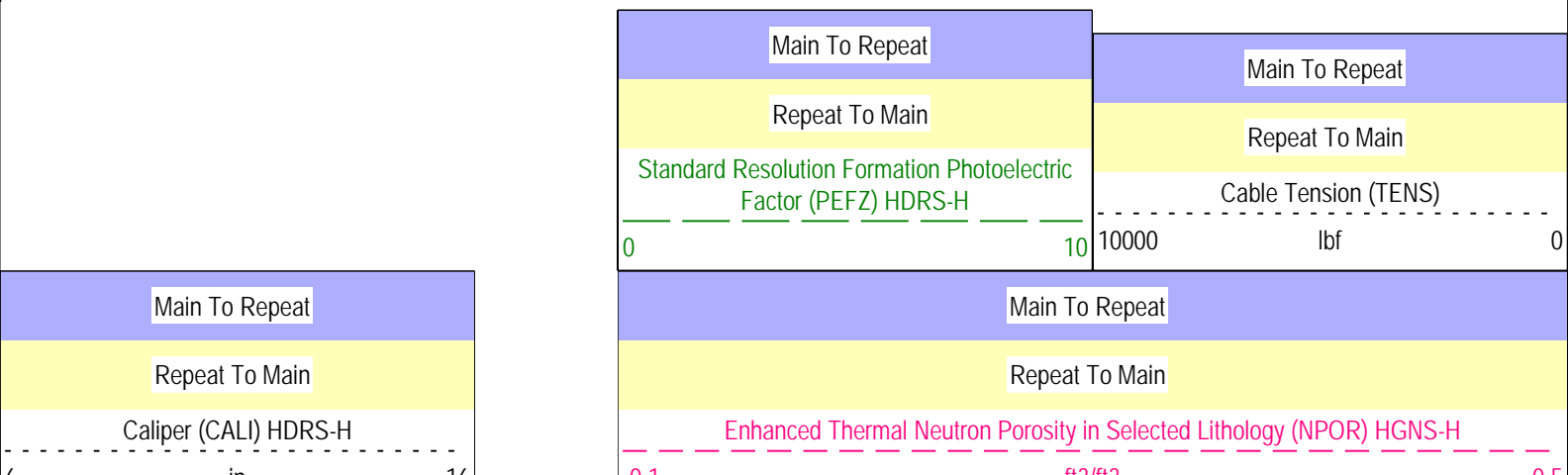
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Two	Log[2]:Up	Up	71.32 ft	7075.21 ft	08-Aug-2014 4:00:16 AM	08-Aug-2014 5:44:41 AM	ON	13.25 ft	Yes
Two	Repeat[3]:Up	Up	1613.30 ft	2066.56 ft	08-Aug-2014 5:52:42 AM	08-Aug-2014 6:01:17 AM	ON	13.78 ft	Yes

All depths are referenced to toolstring zero

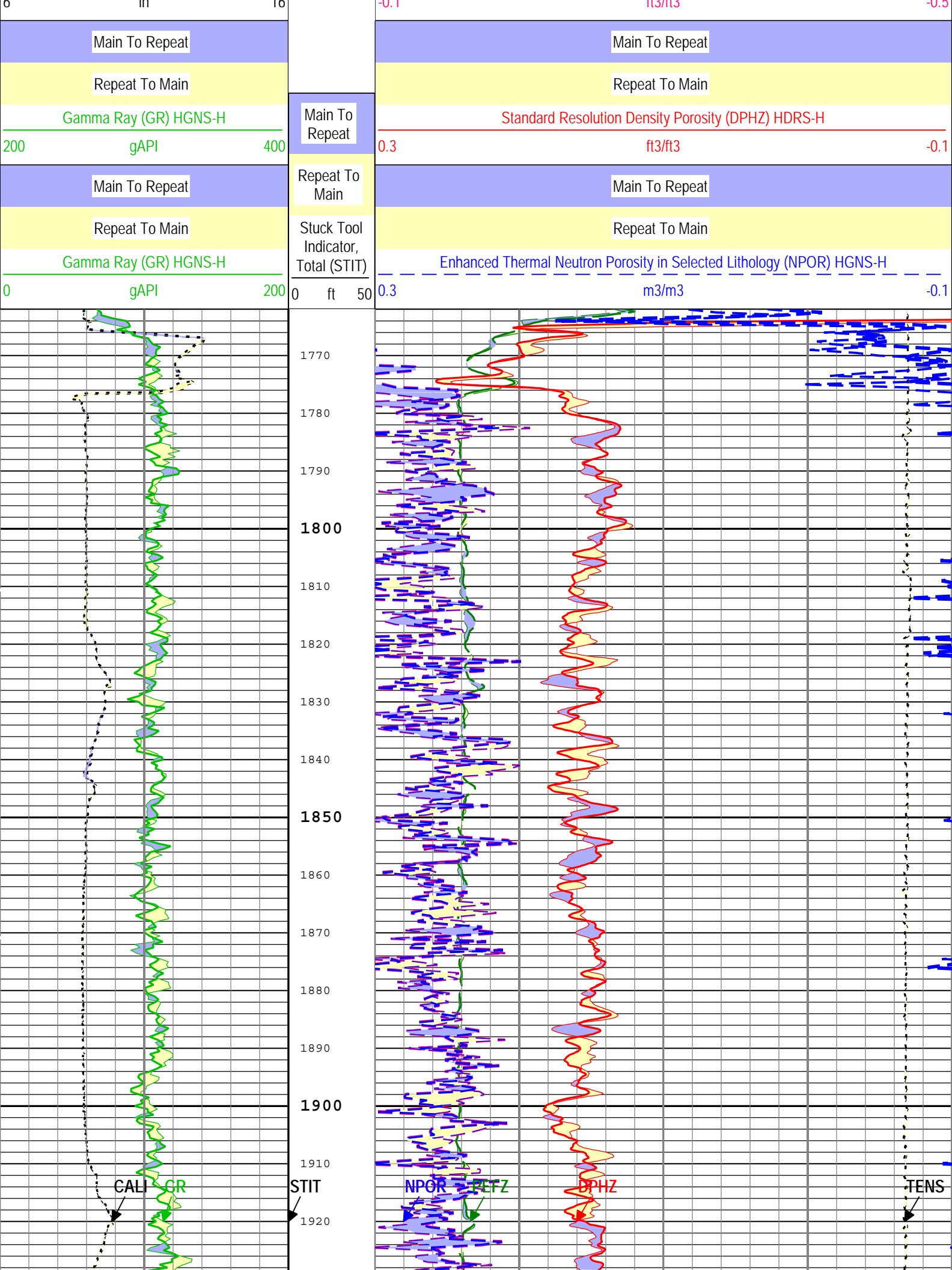
Log	Company:Kerr McGee Oil & Gas Onshore LP	Well:Banded 37C-27HZ
	Two: Repeat[3]:Up:S010	

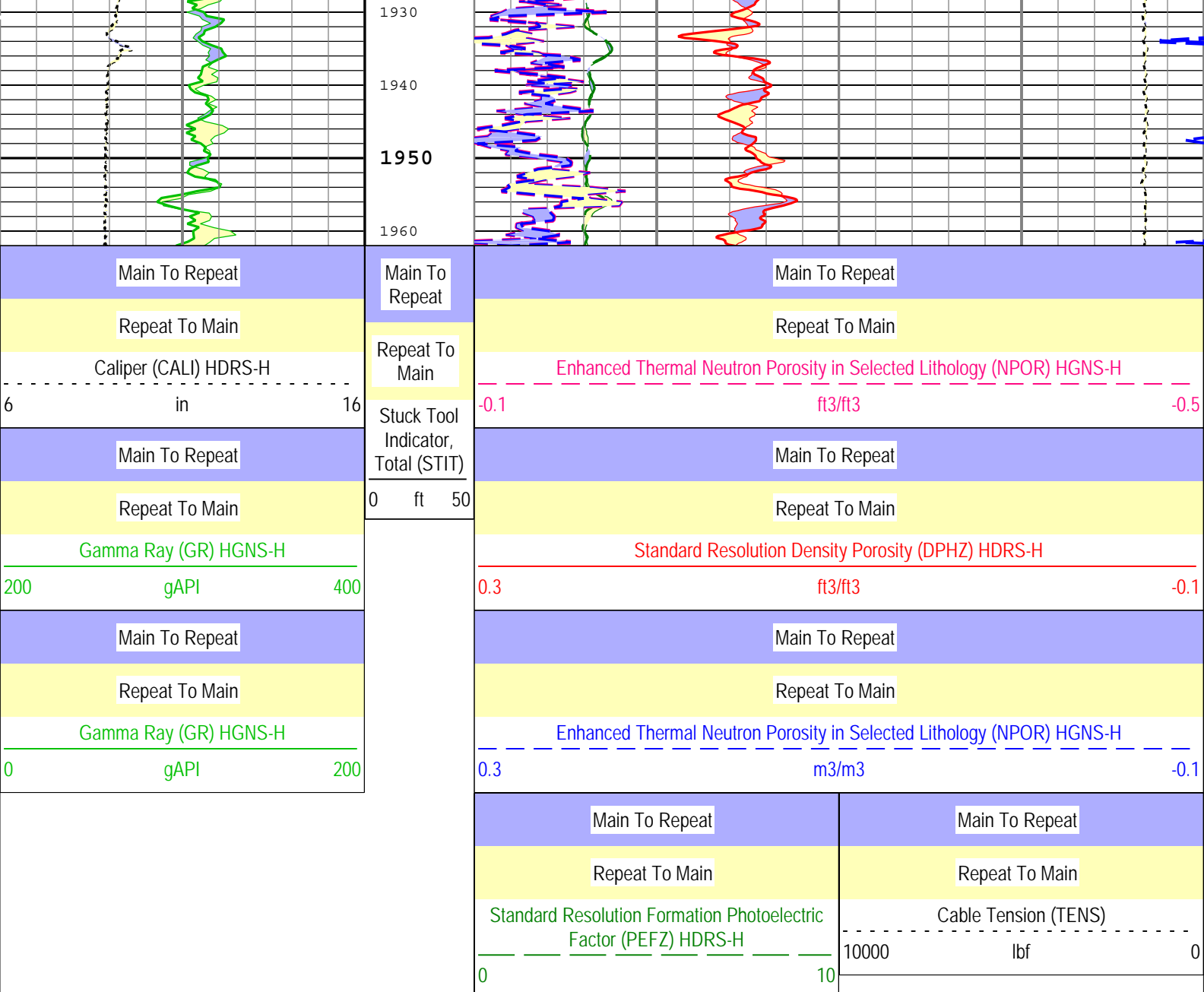
Description: HGNS standard resolution porosities for Platform Express    Format: Log ( KM 5in Porosity RA )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 08-Aug-2014 06:49:56

TIME\_1900 - Time Marked every 60.00 (s)









TIME\_1900 - Time Marked every 60.00 (s)

Description: HGNS standard resolution porosities for Platform Express    Format: Log ( KM 5in Porosity RA )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 08-Aug-2014 06:49:56

Two			
5" Density			
Software Version			
Acquisition System		Version	
MaxWell		4.0.9163.3000	
Application Patch		Patch-SP-10767_18214-4.0.9163.3001	
		Patch-Hotfix_Task_Tree_GDI_SP2-20806-4.0.9434.3002	
Computation	Description		Version
DepthCorrection	DepthCorrection		4.0.9433.3000
Tool Elements	Description	Software Version	Firmware Version
HRCC-H	HILT High-Resolution Control Cartridge, 150 degC	4.0.9385.3000	2.0
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	4.0.9385.3000	2.0
HRGD-H	HILT Resistivity Gamma-Ray Density Device, 150 degC	4.0.9385.3000	3.0

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Two	Log[2]:Up	Up	71.32 ft	7075.21 ft	08-Aug-2014 4:00:16 AM	08-Aug-2014 5:44:41 AM	ON	13.25 ft	Yes

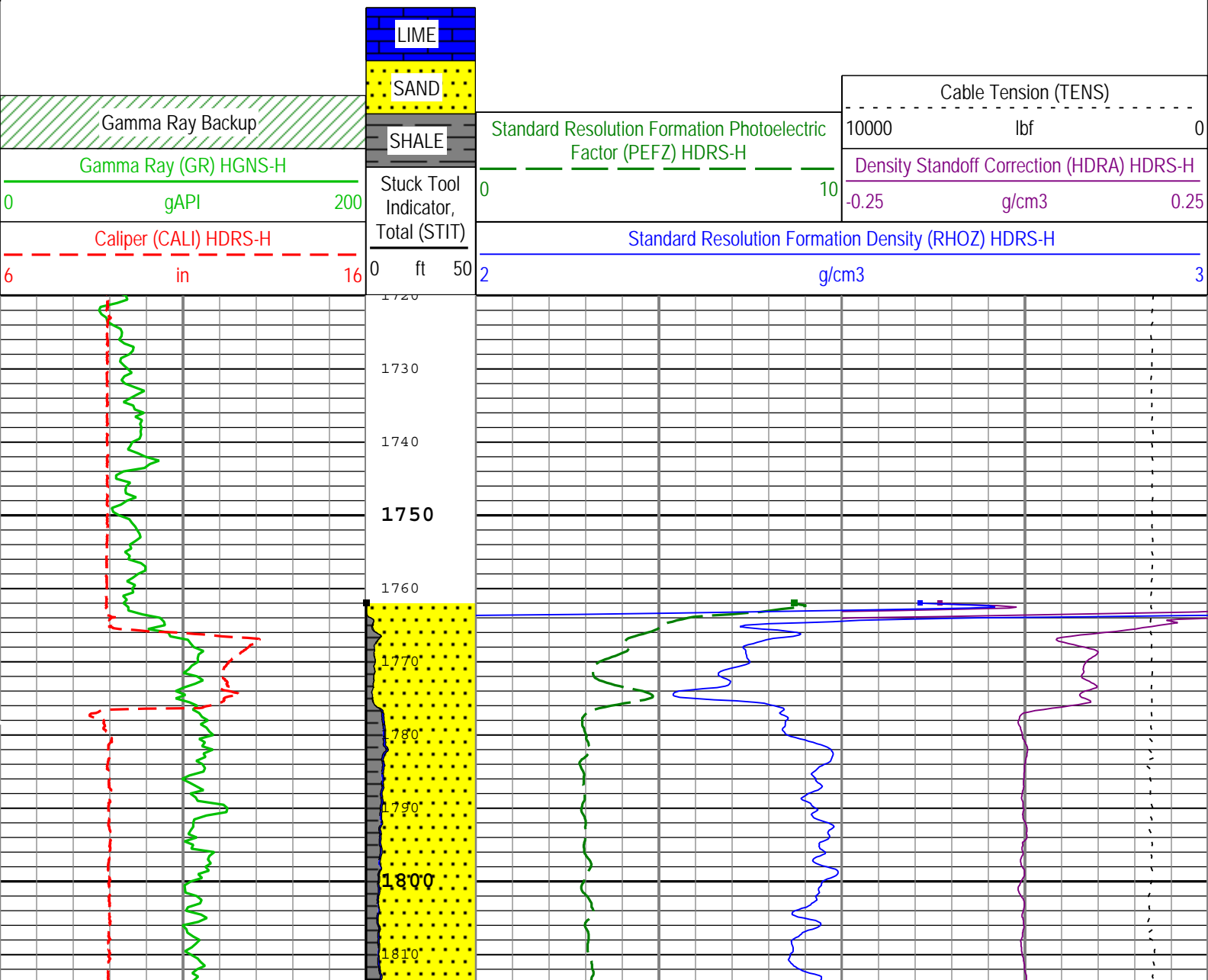
All depths are referenced to toolstring zero

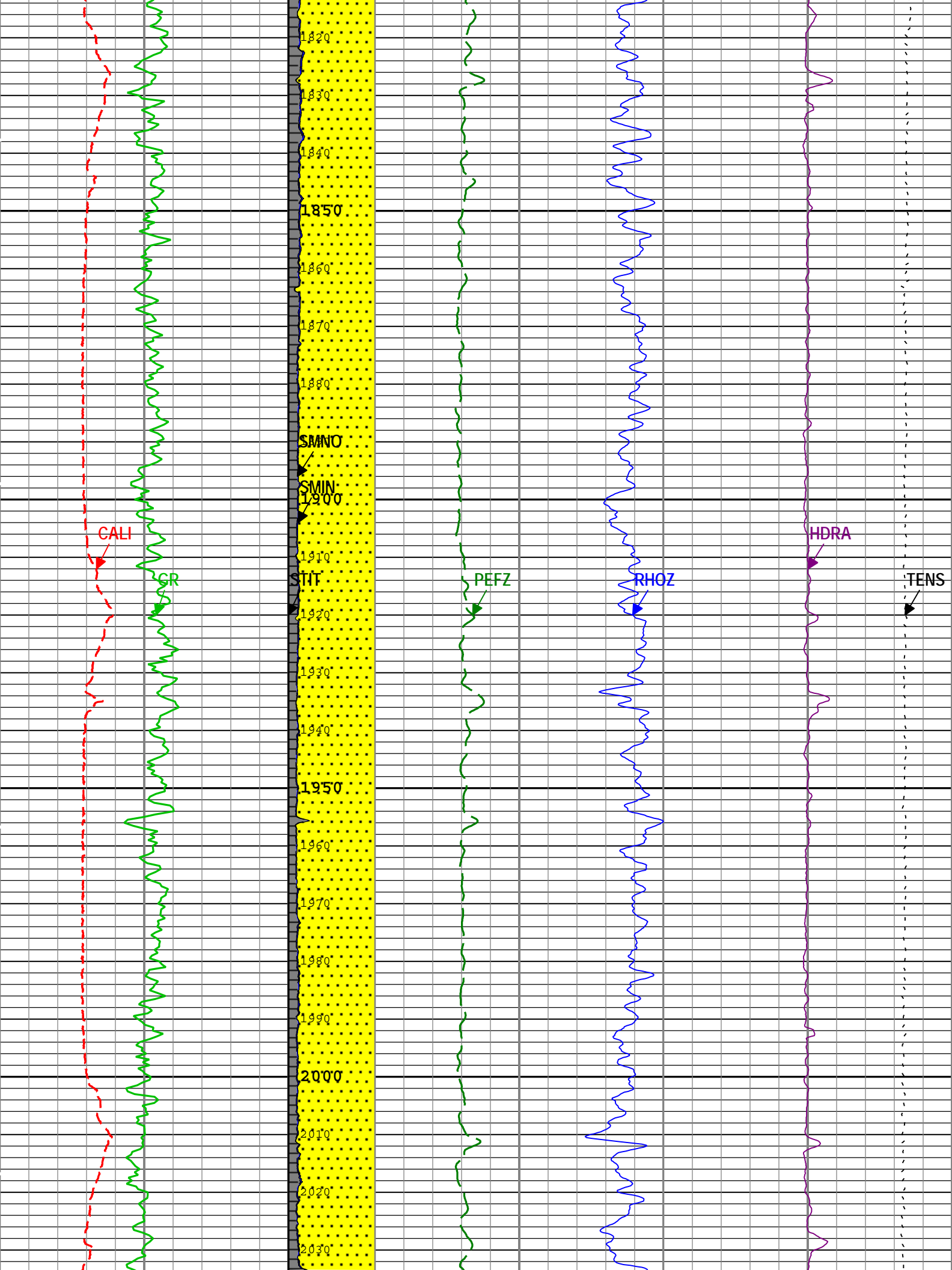
Log	Company:Kerr McGee Oil & Gas Onshore LP	Well:Banded 37C-27HZ
		Two: Log[2]:Up:S010

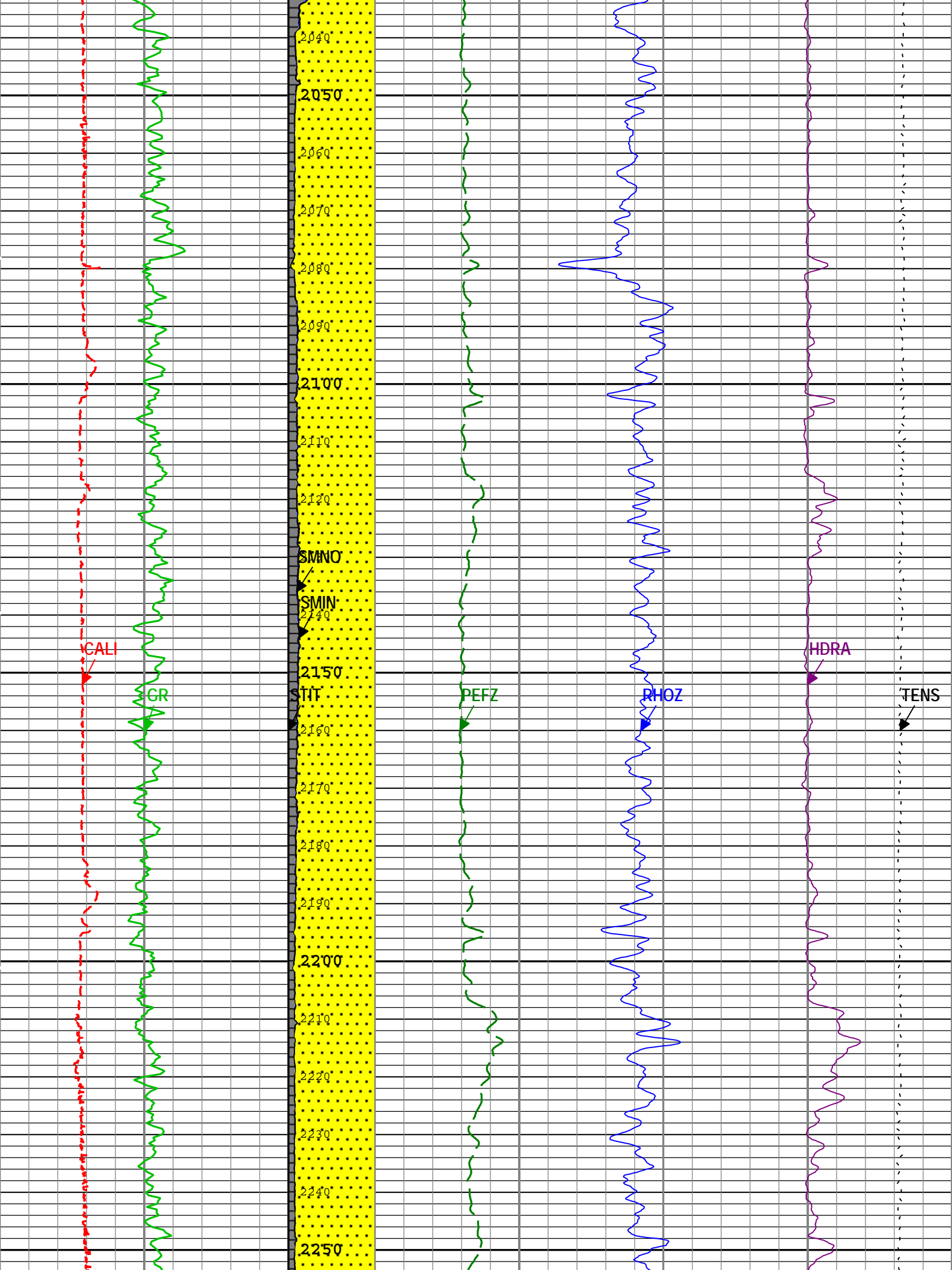
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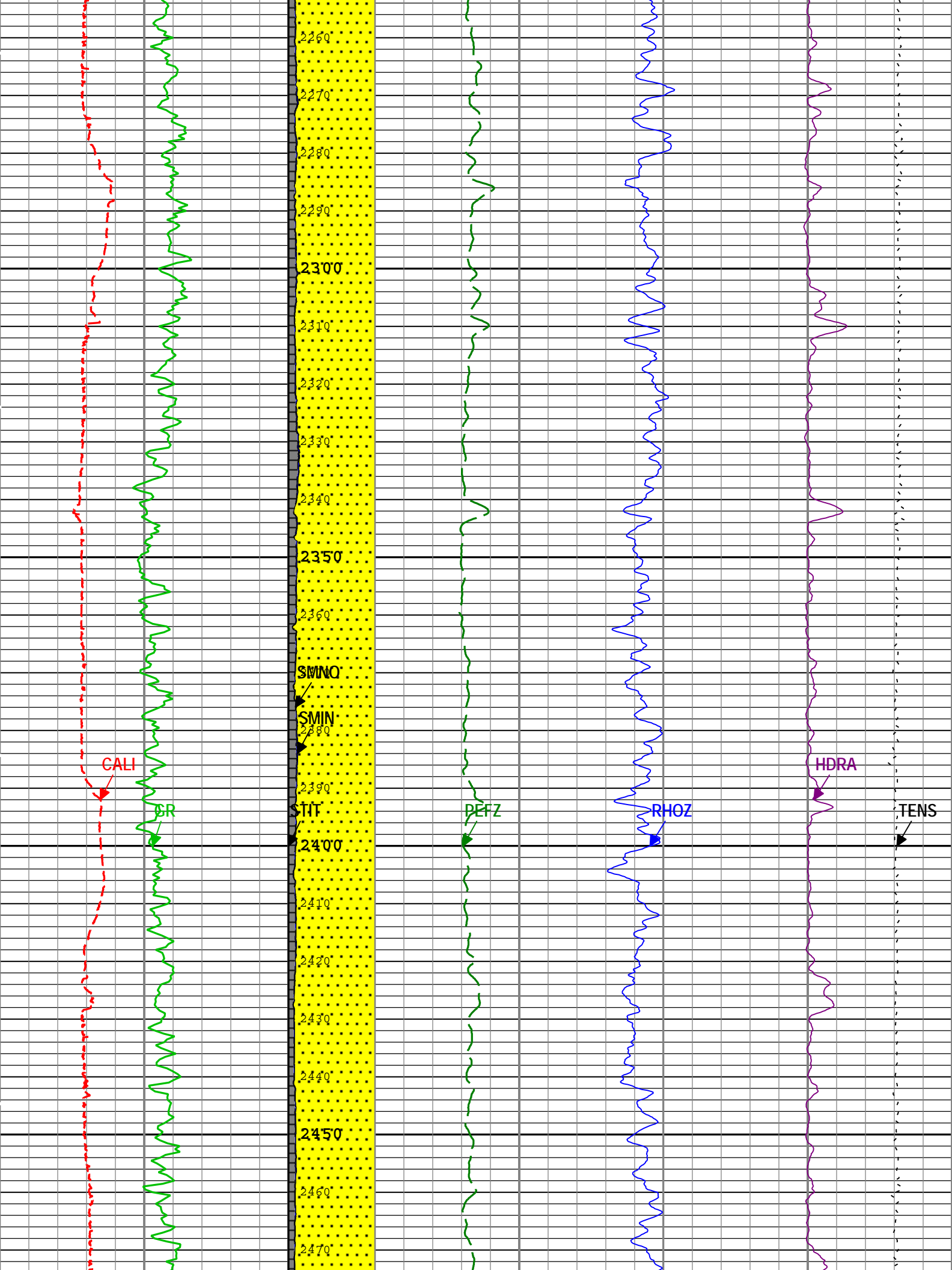
Channel	Source	Sampling
CALI	HDRS-H:HRCC-H:HRCC-H	1in
GR	HGNS-H:HGNS-H:HGNS-H	6in
HDRA	HDRS-H:HRMS-H:HRGD-H	2in
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in
RHOZ	HDRS-H:HRMS-H:HRGD-H	2in
SMIN	HDRS-H:HRMS-H:HRGD-H	2in
SMNO	HDRS-H:HRMS-H:HRGD-H	2in
STIT	DepthCorrection	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

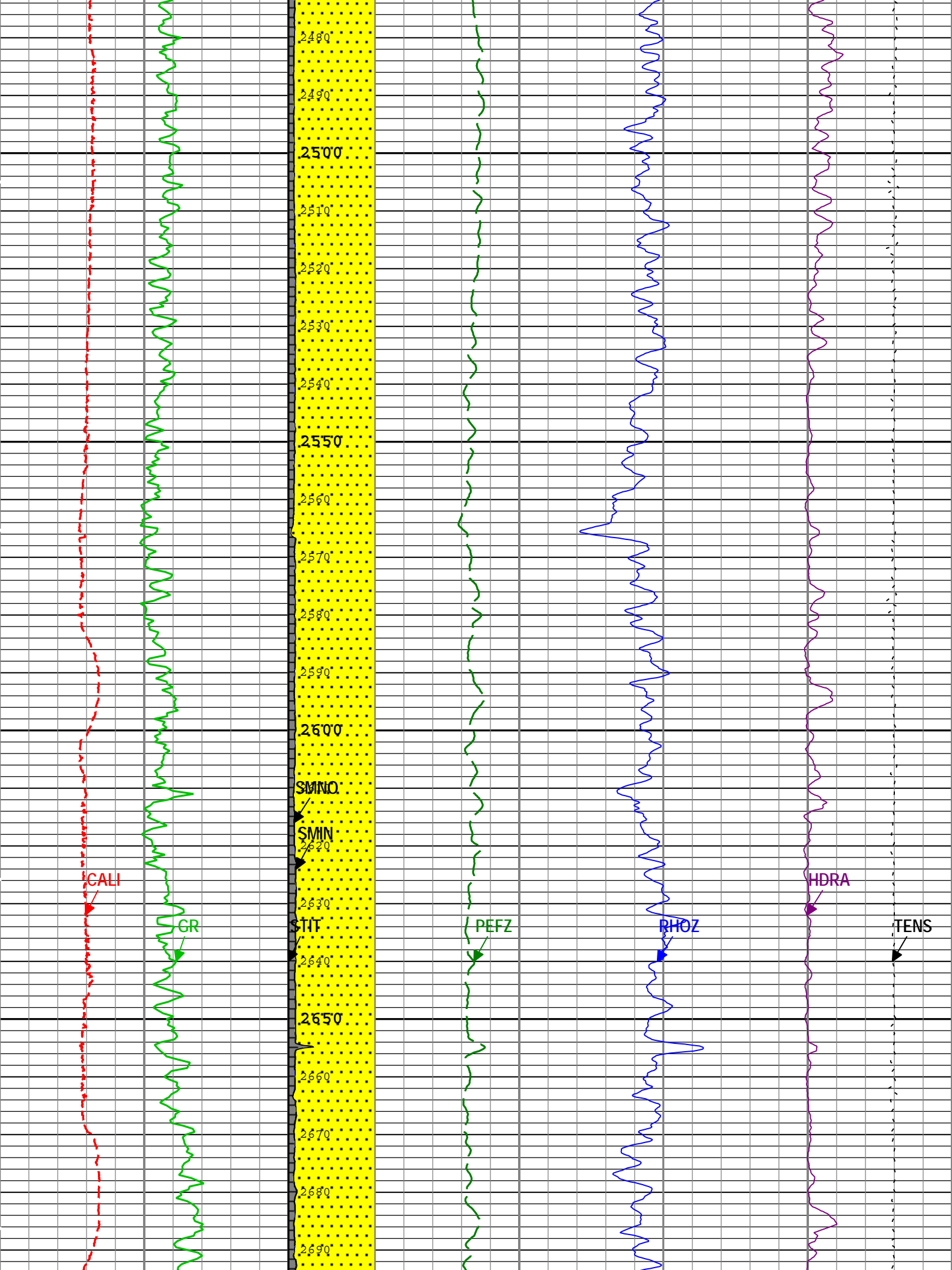
TIME\_1900 - Time Marked every 60.00 (s)

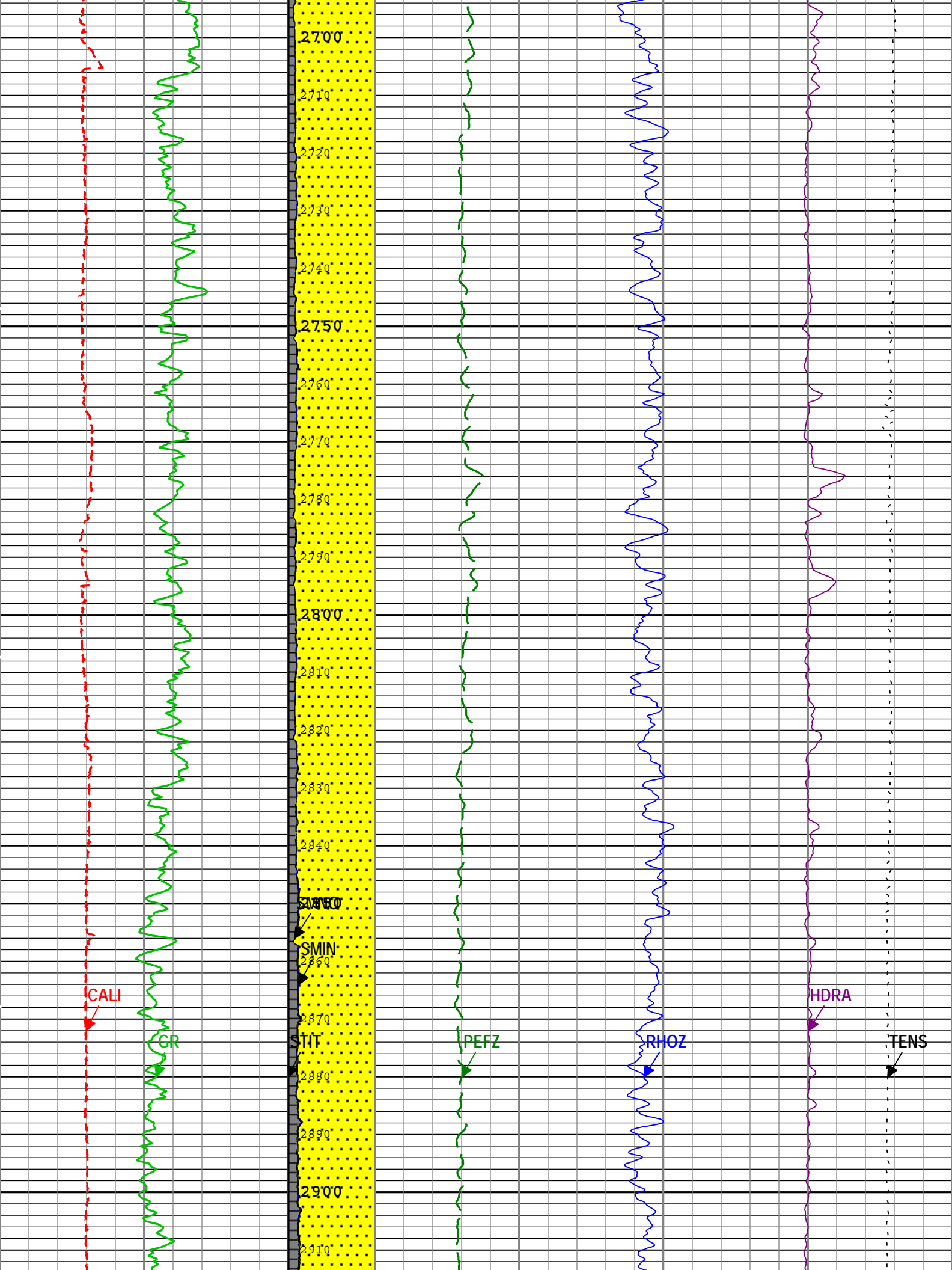




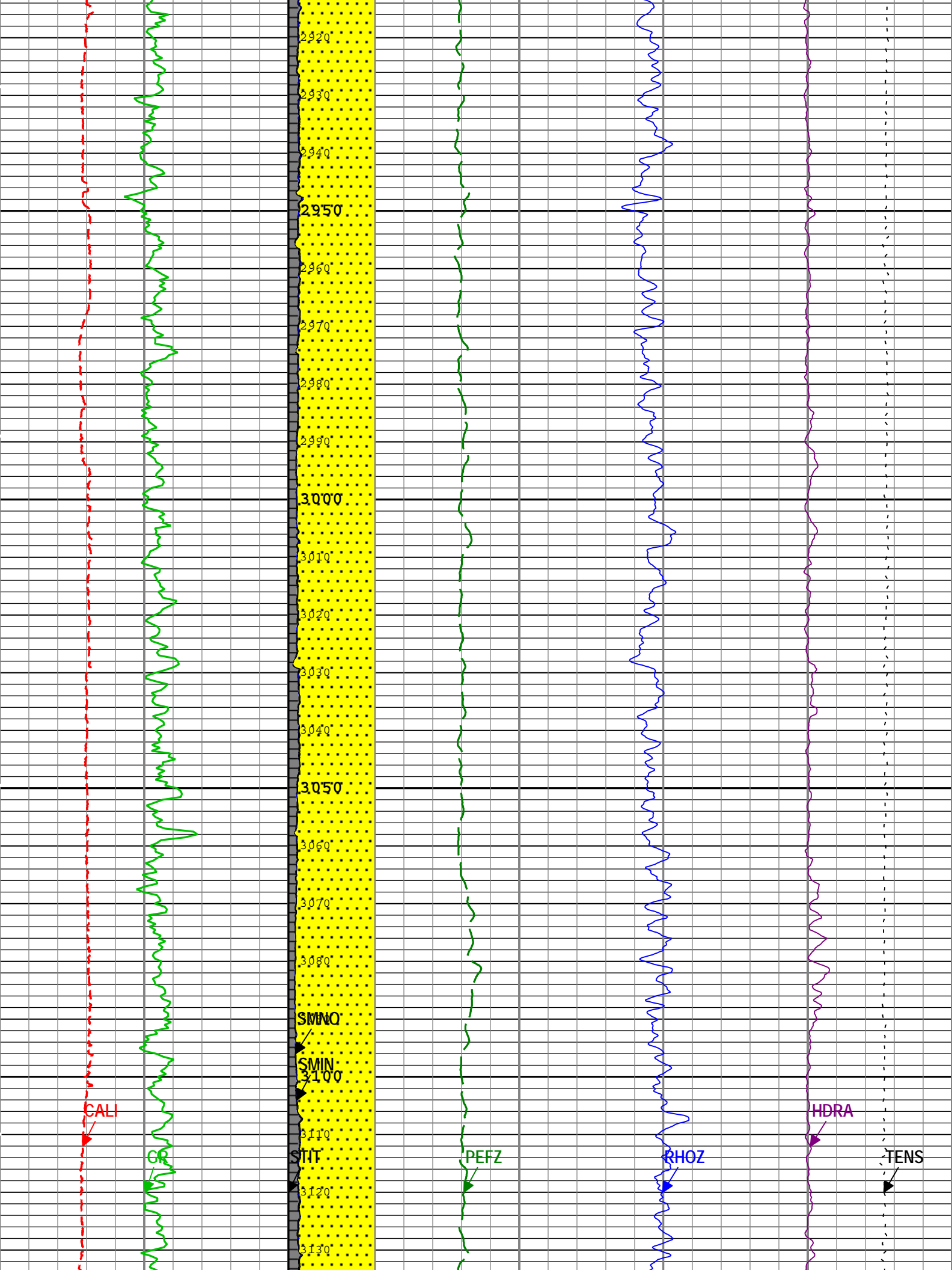


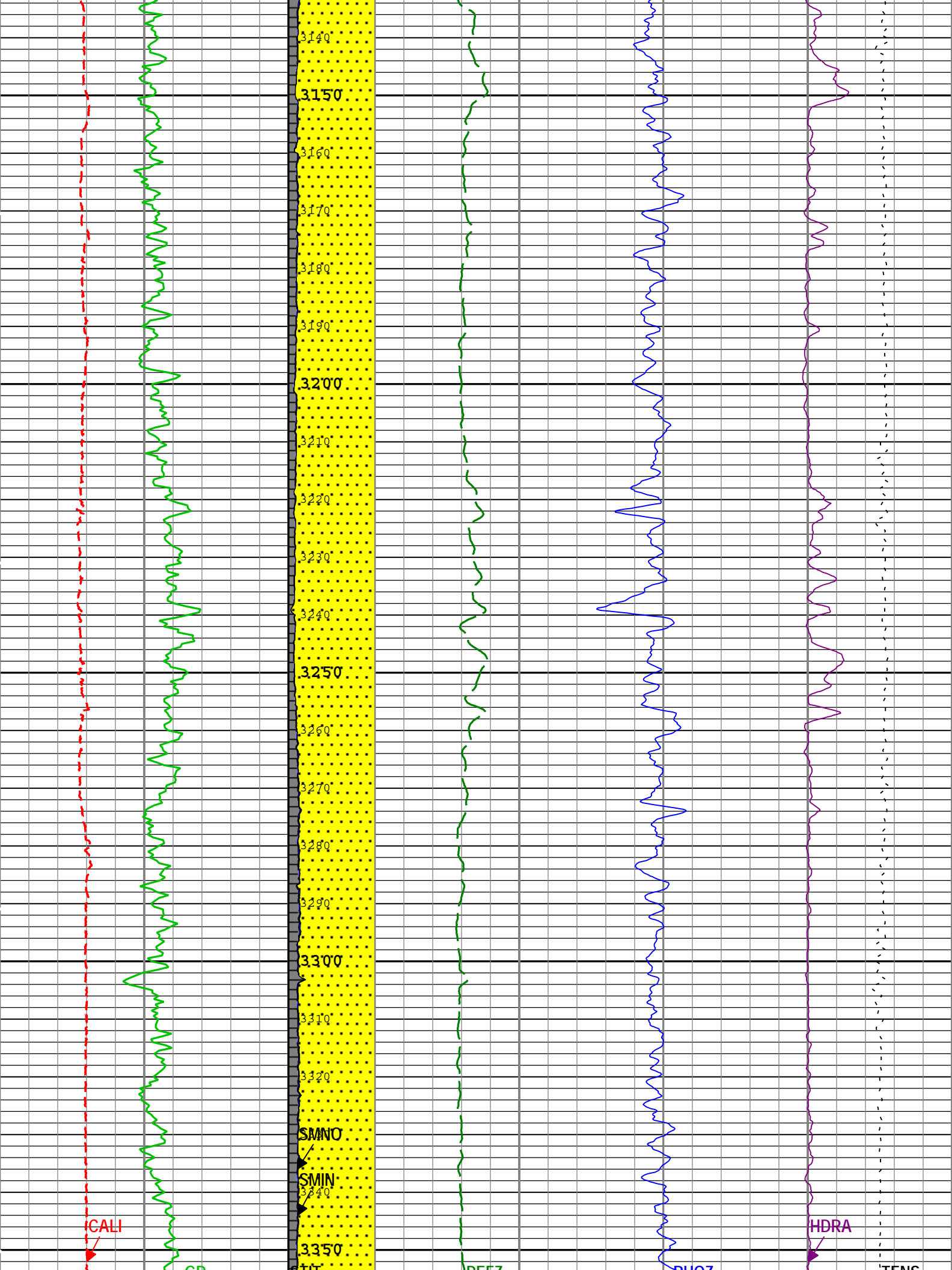


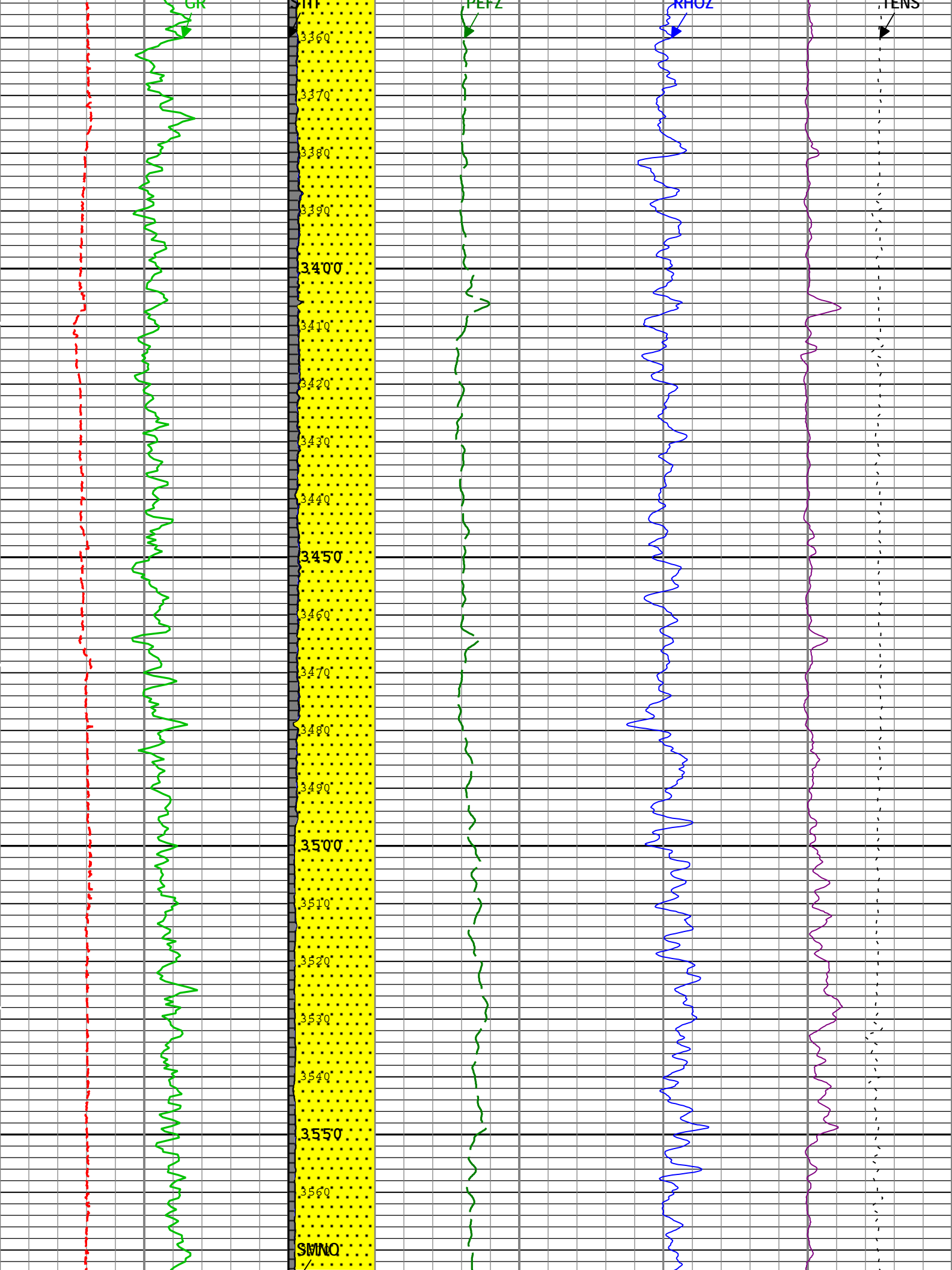


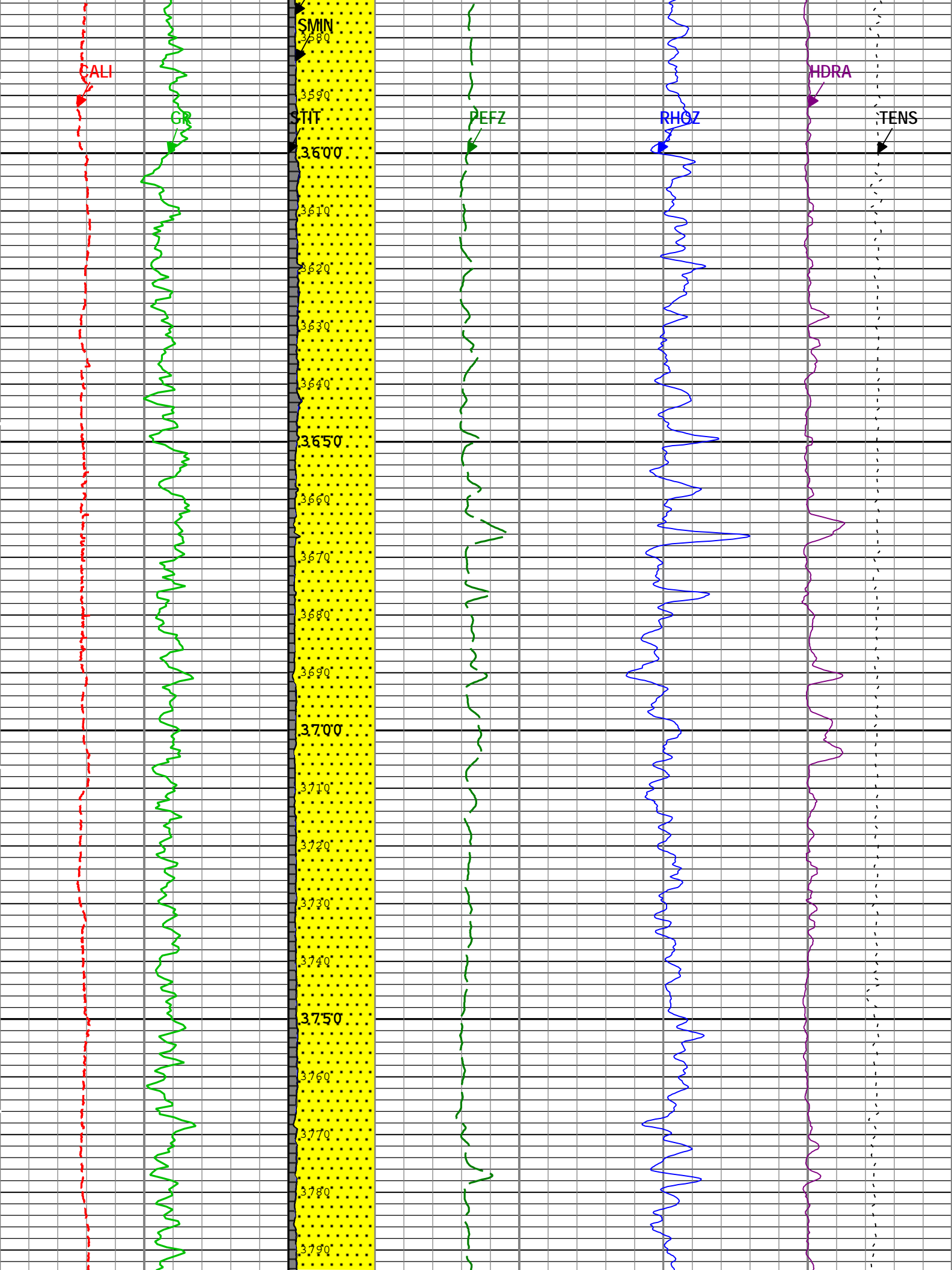


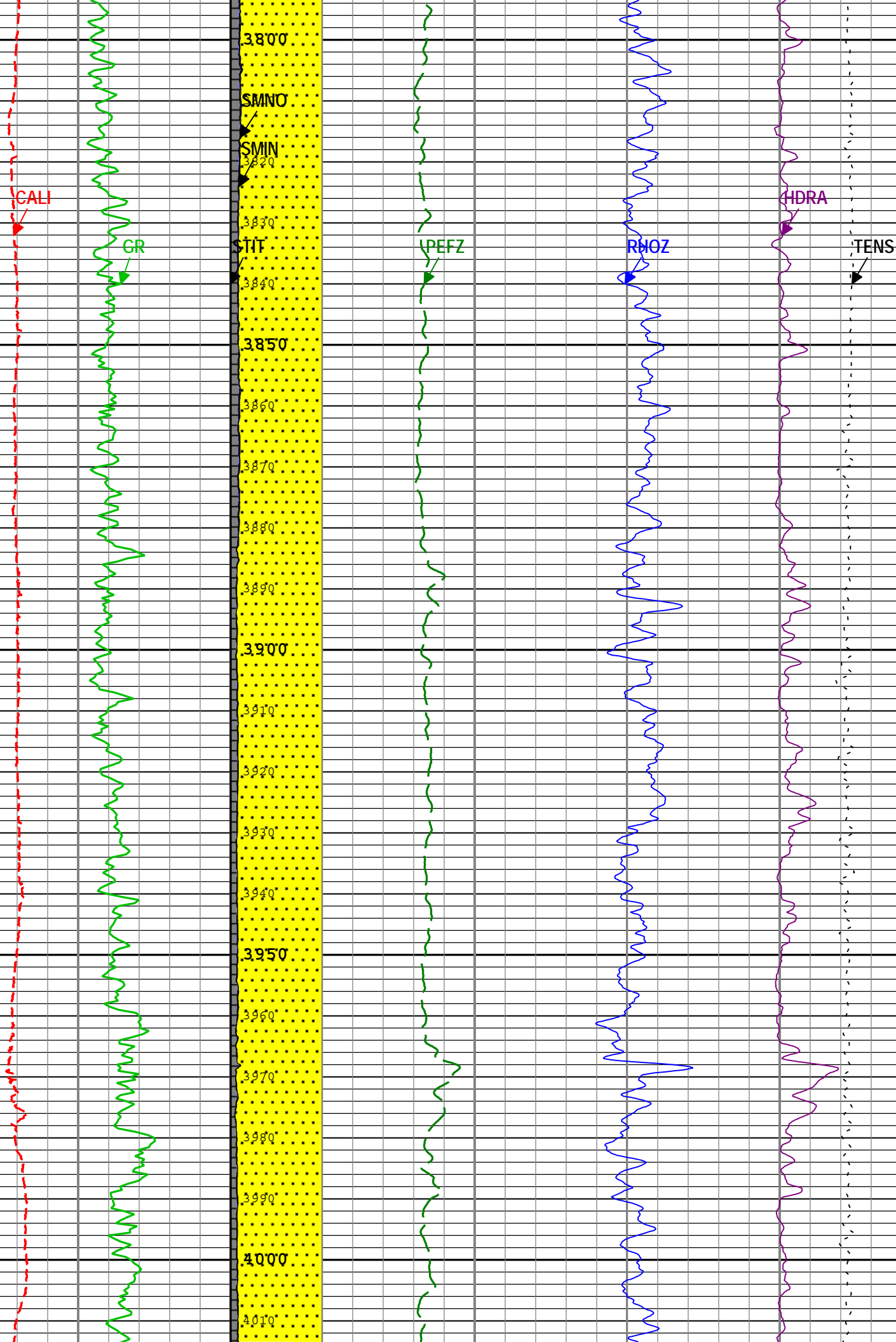


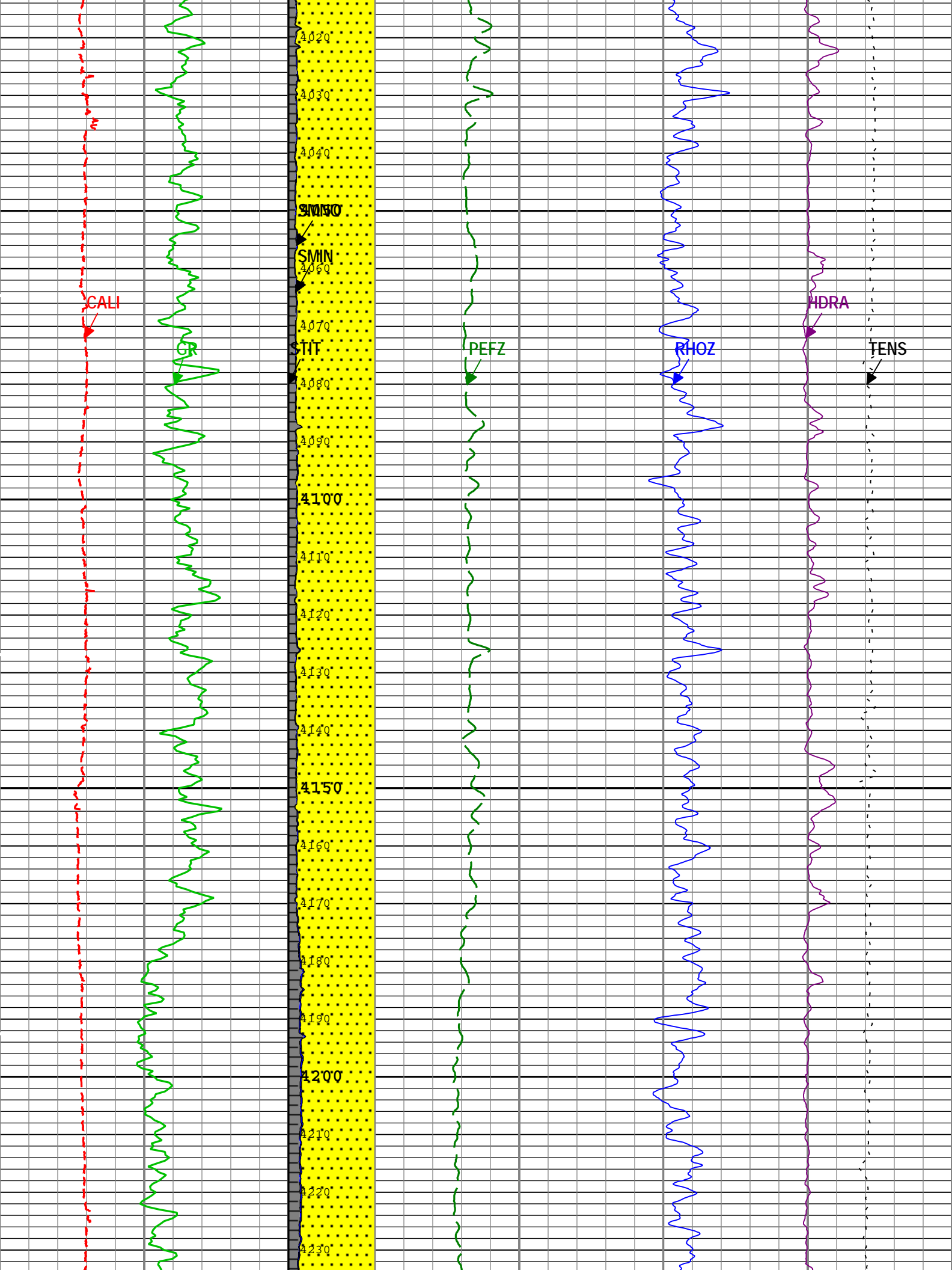


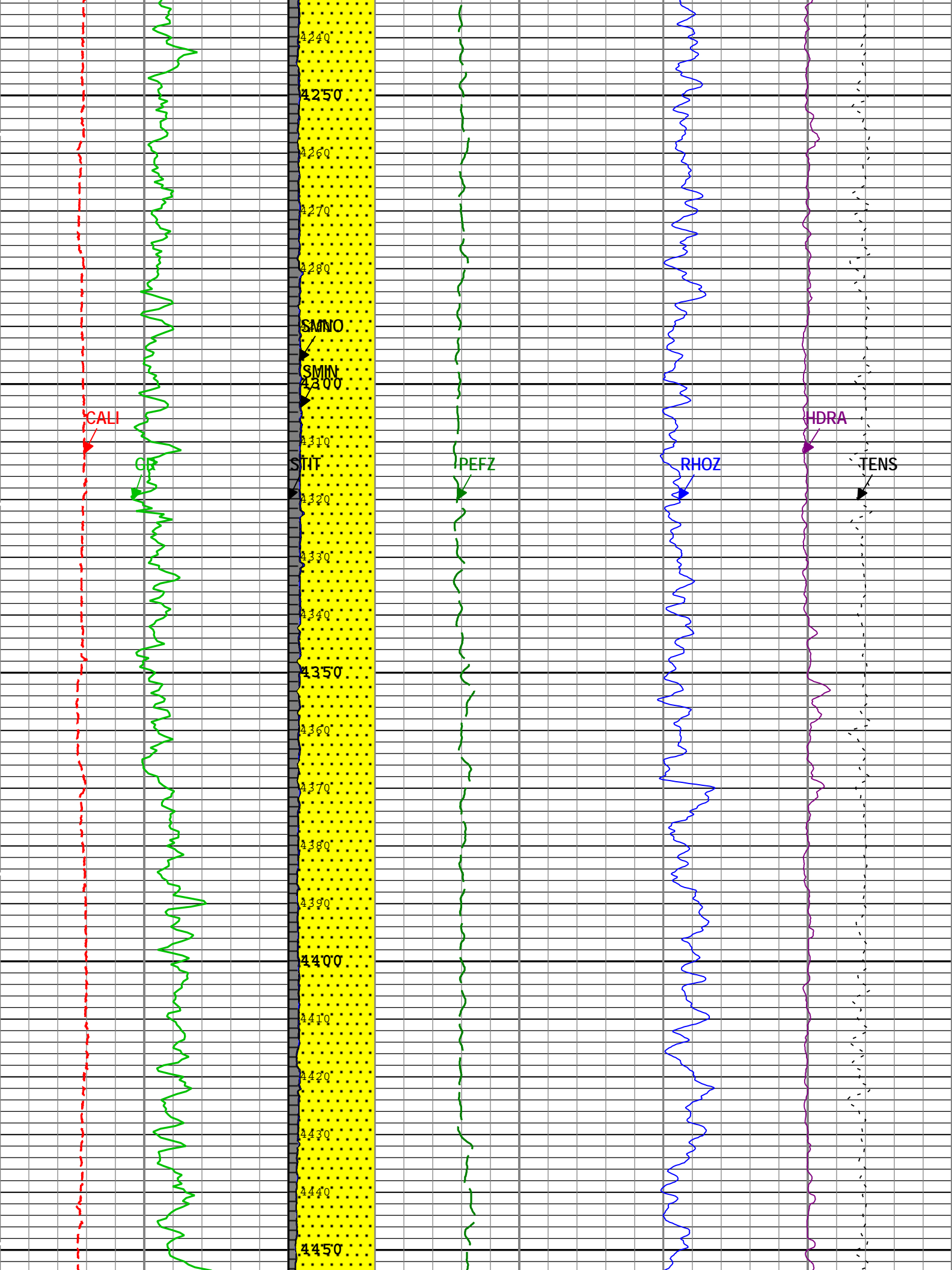


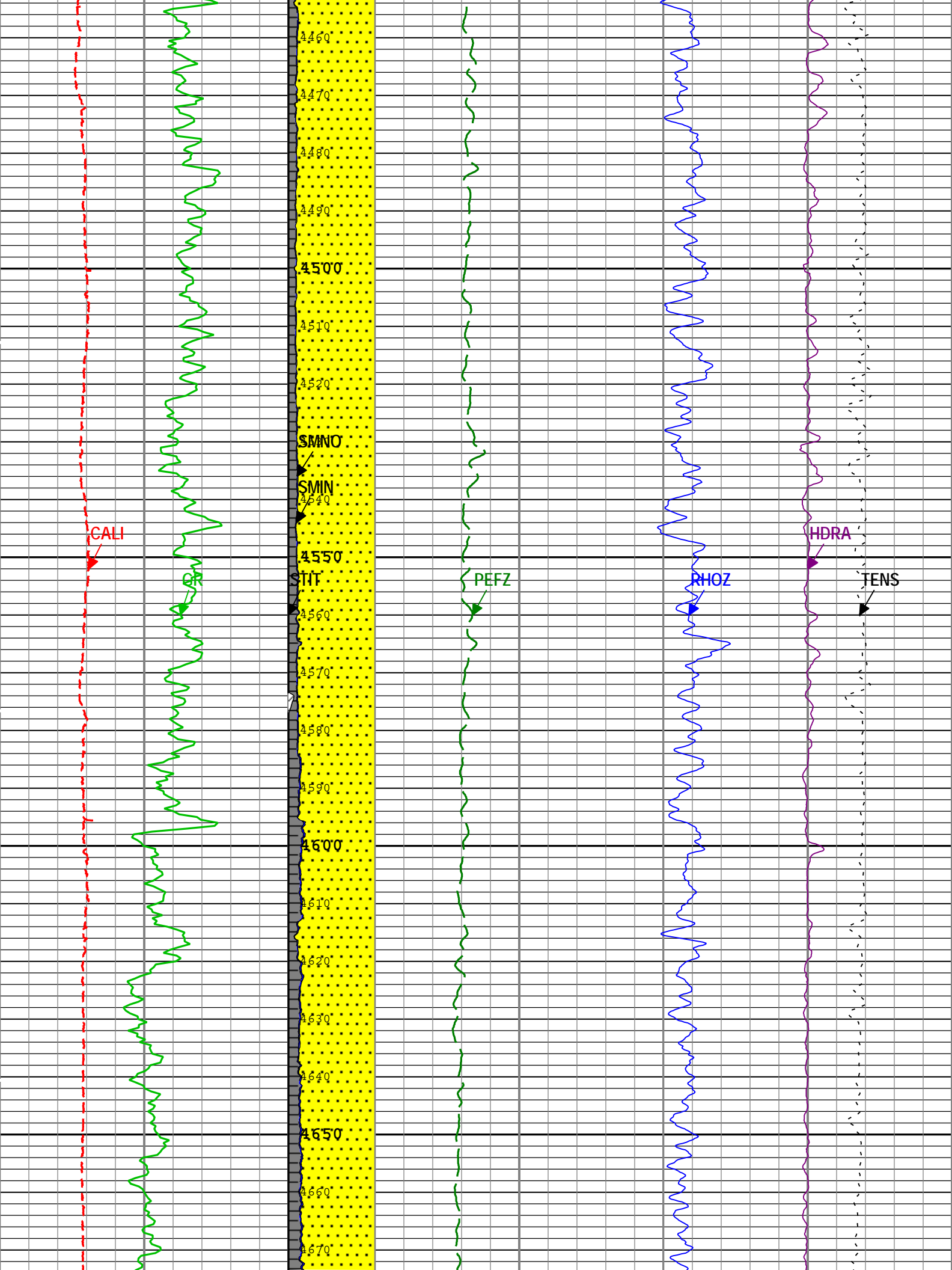




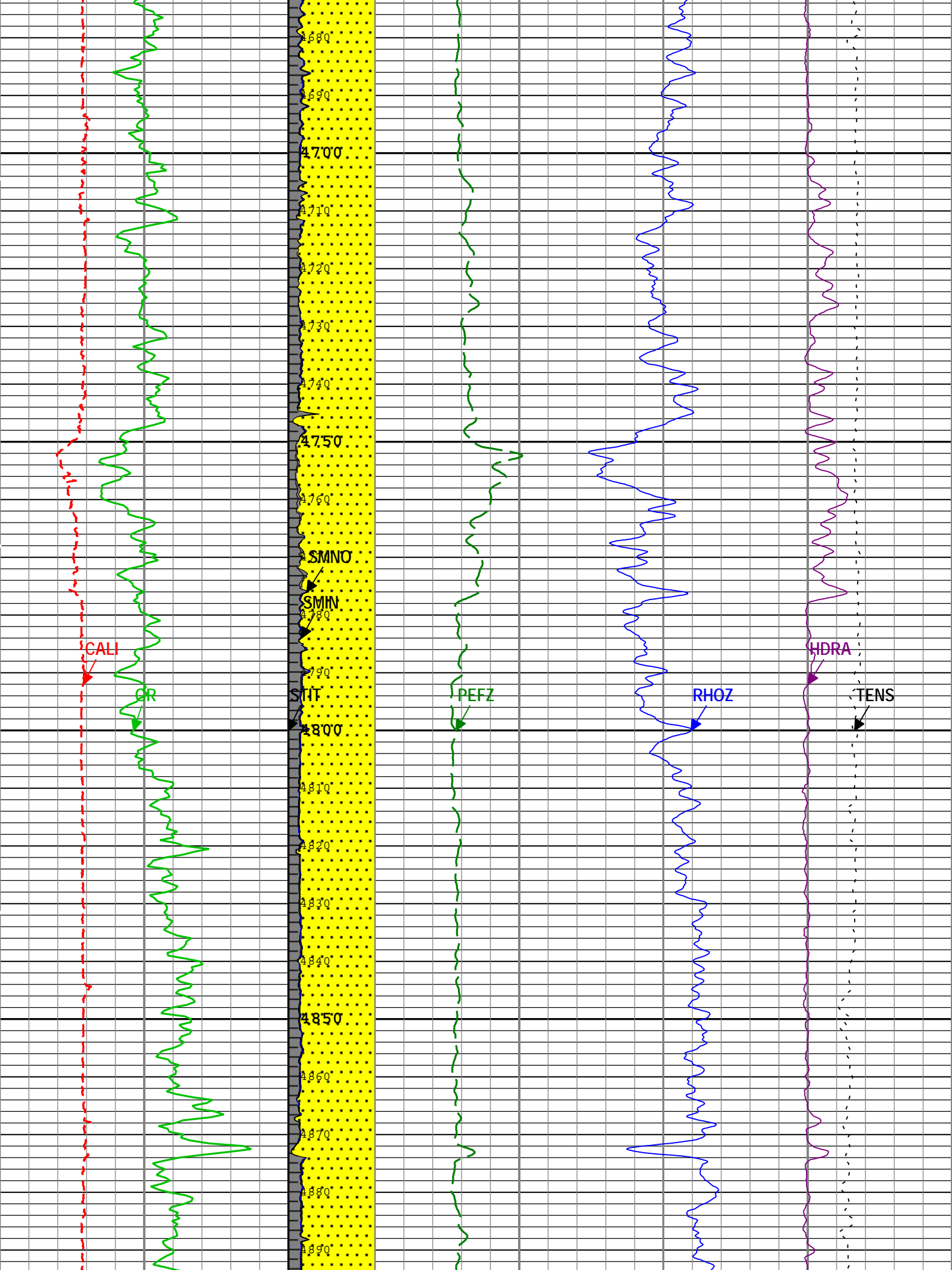


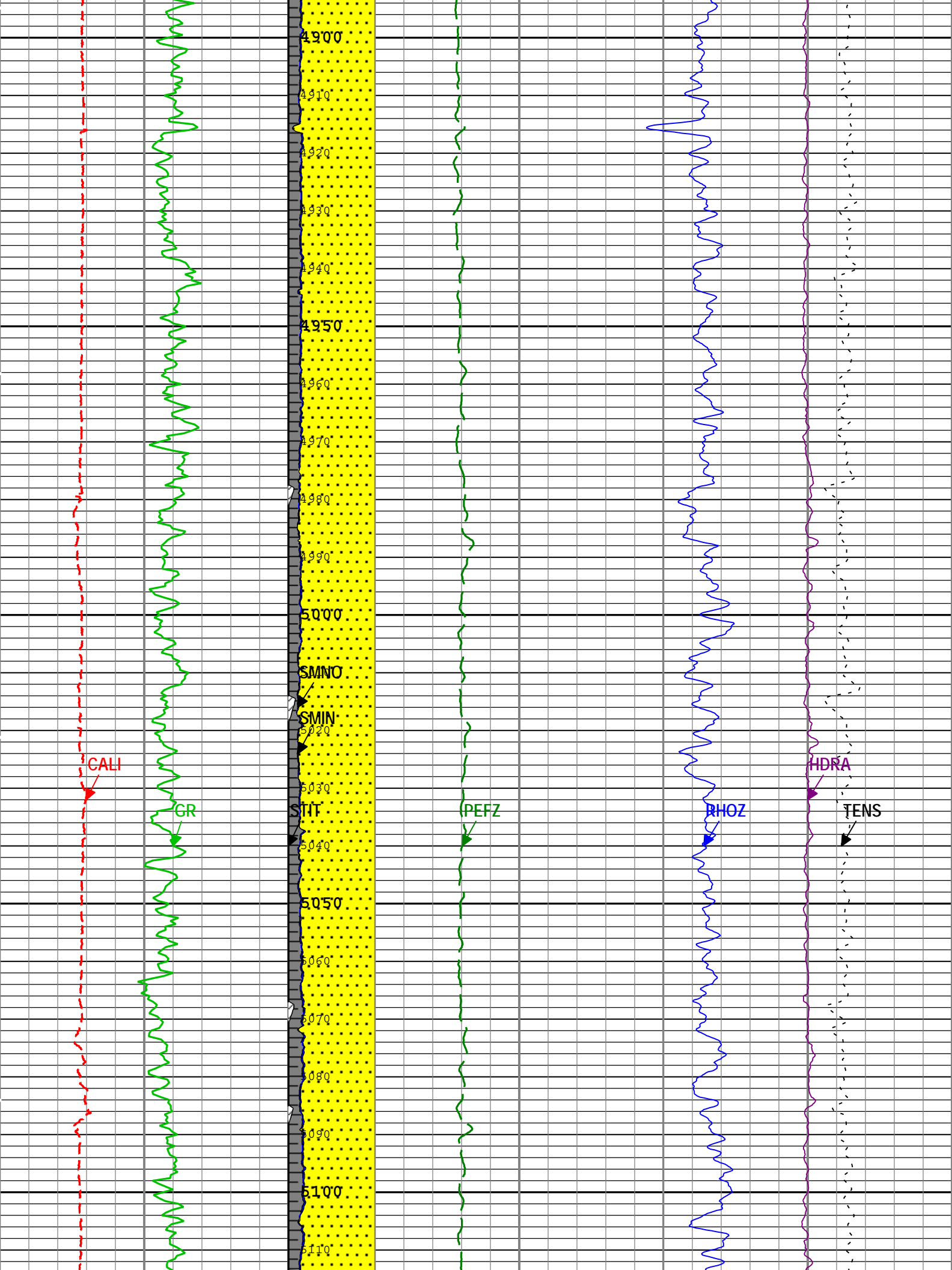


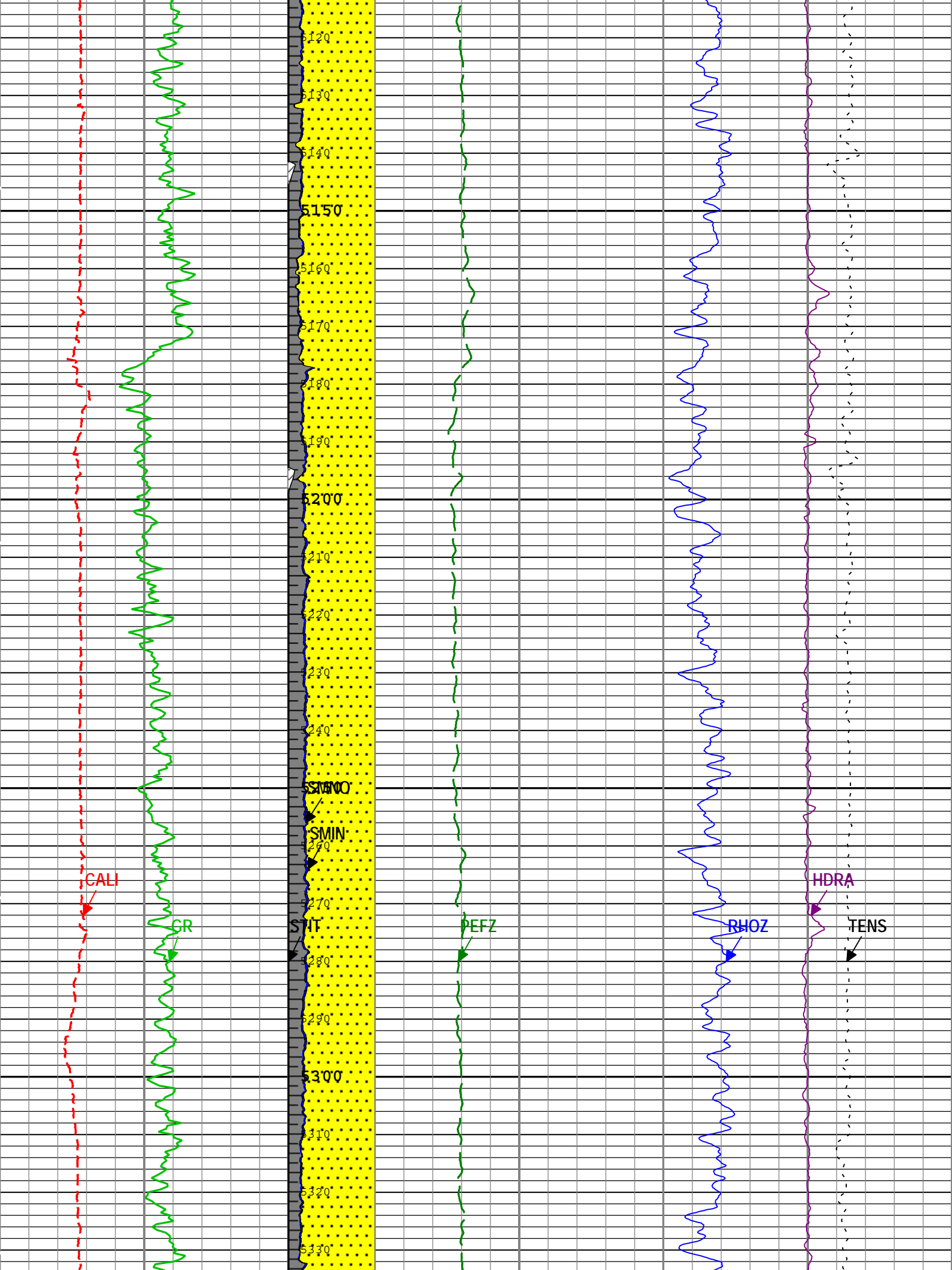


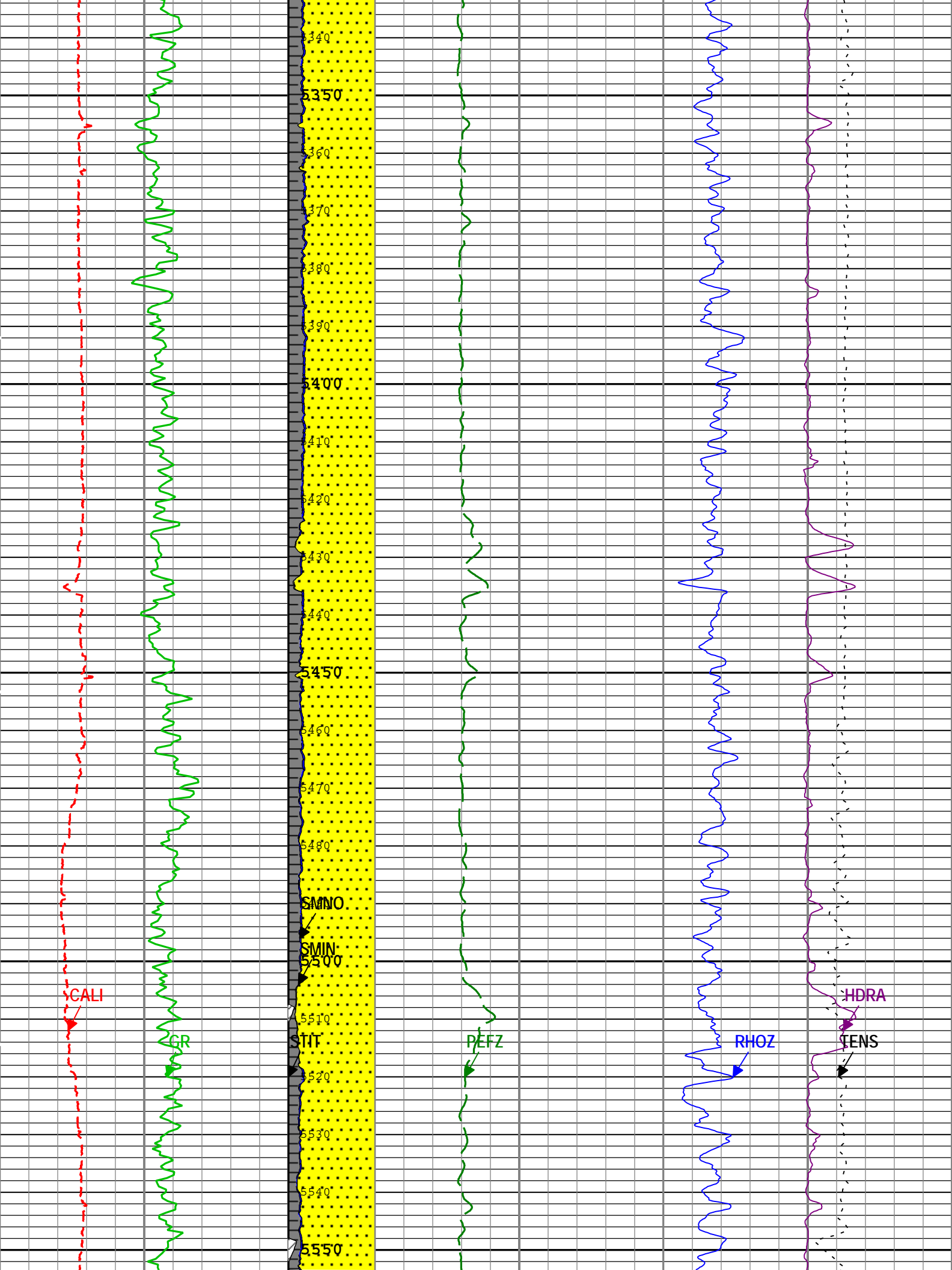


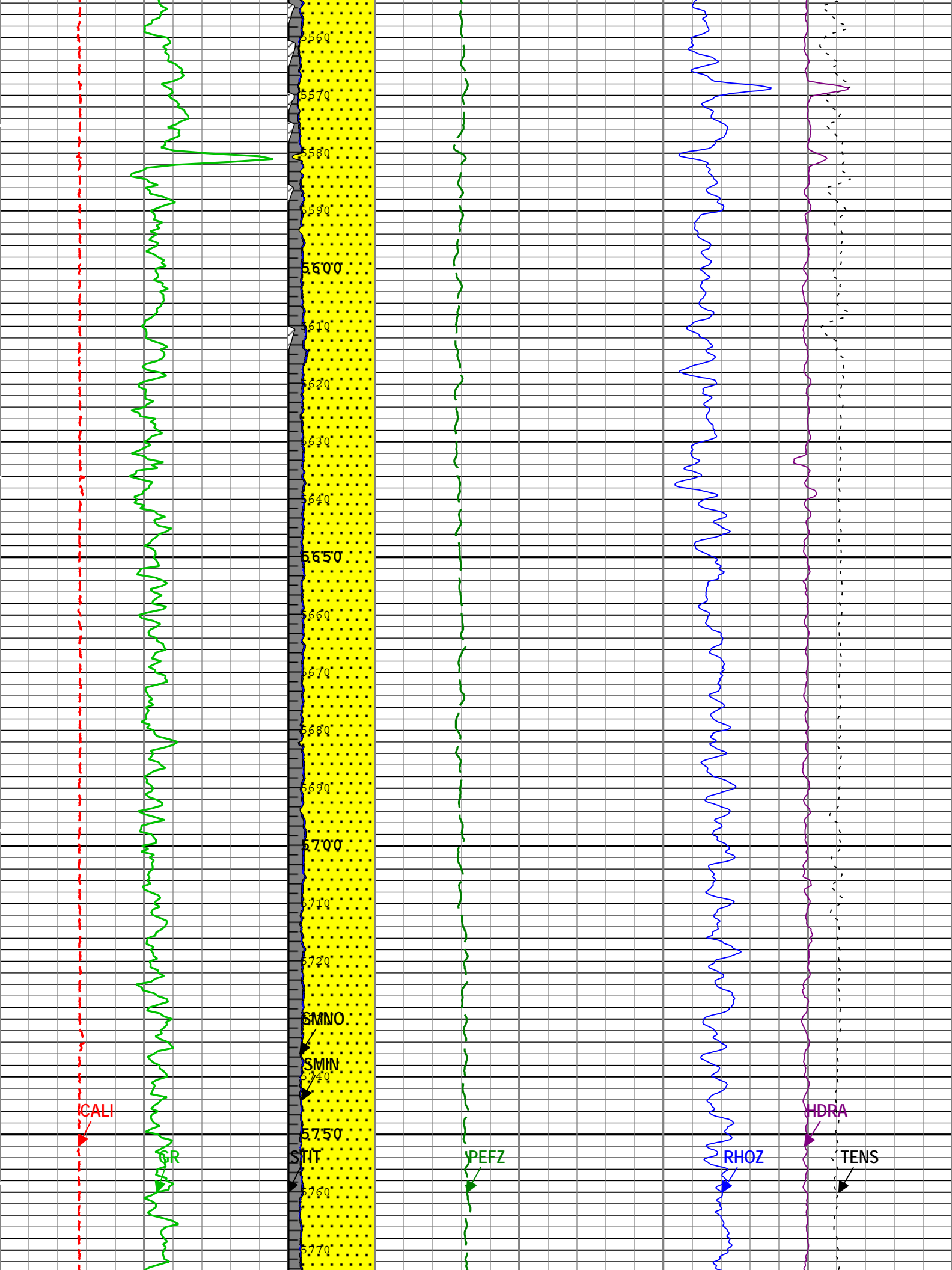


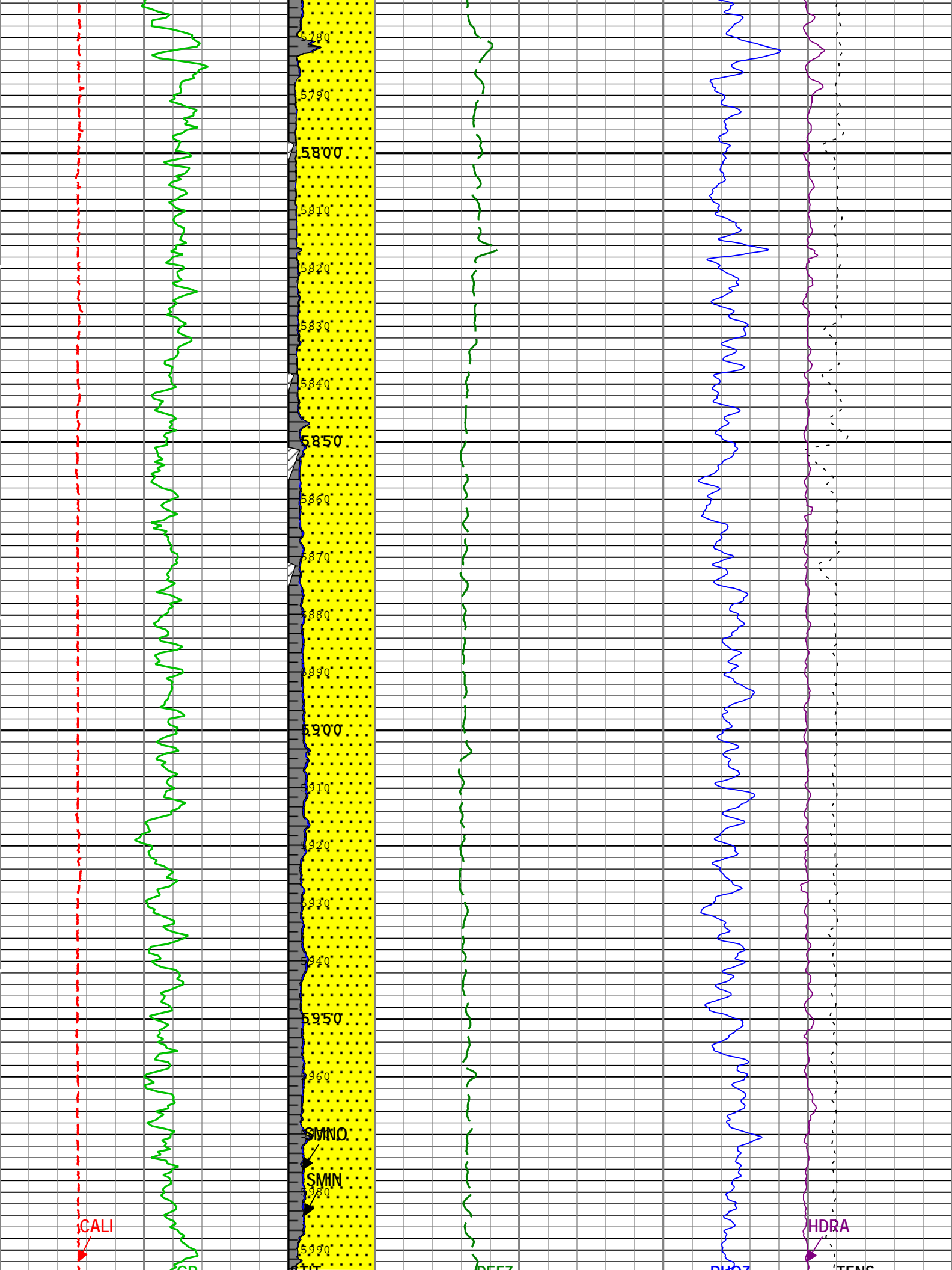


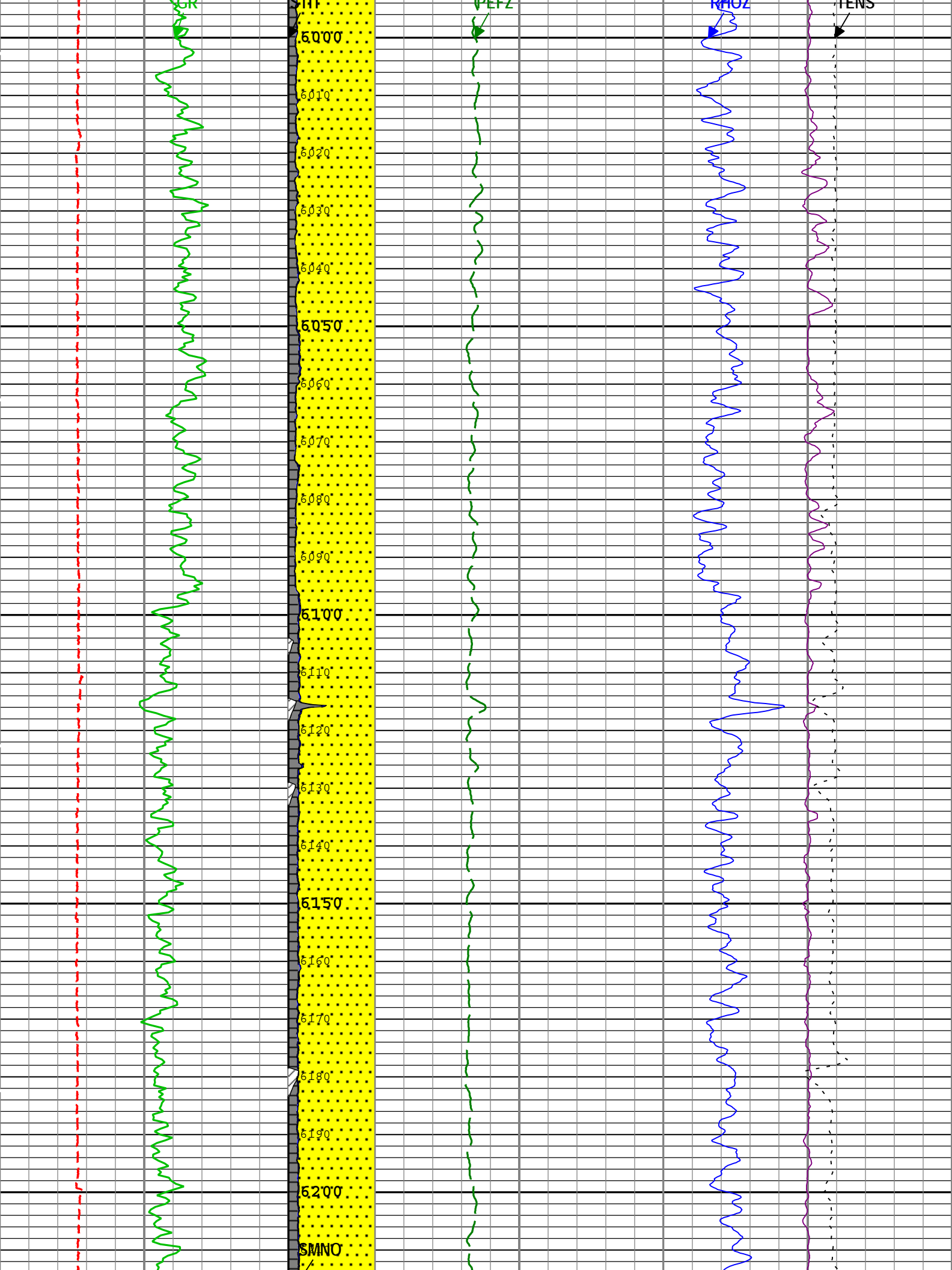


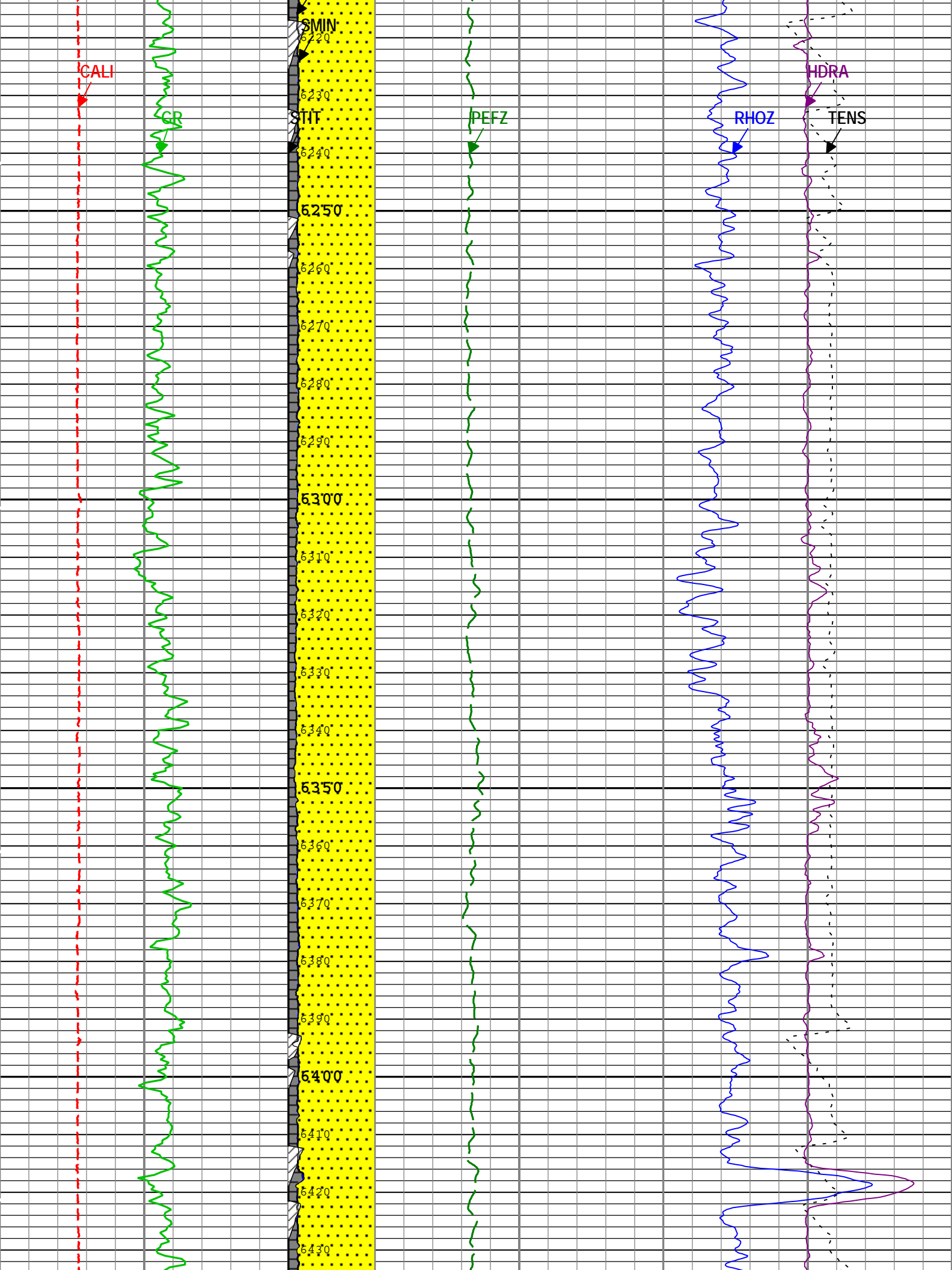




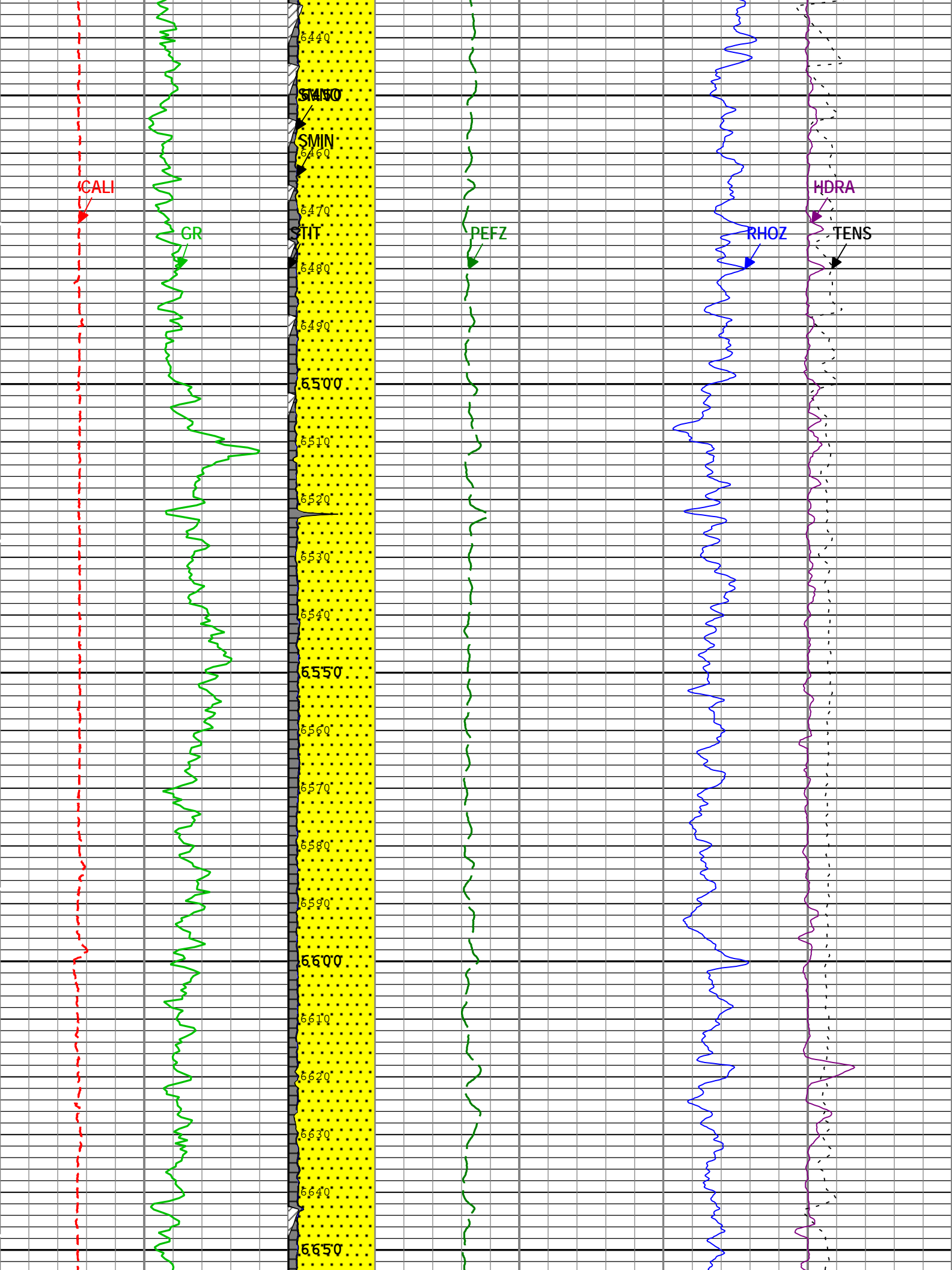


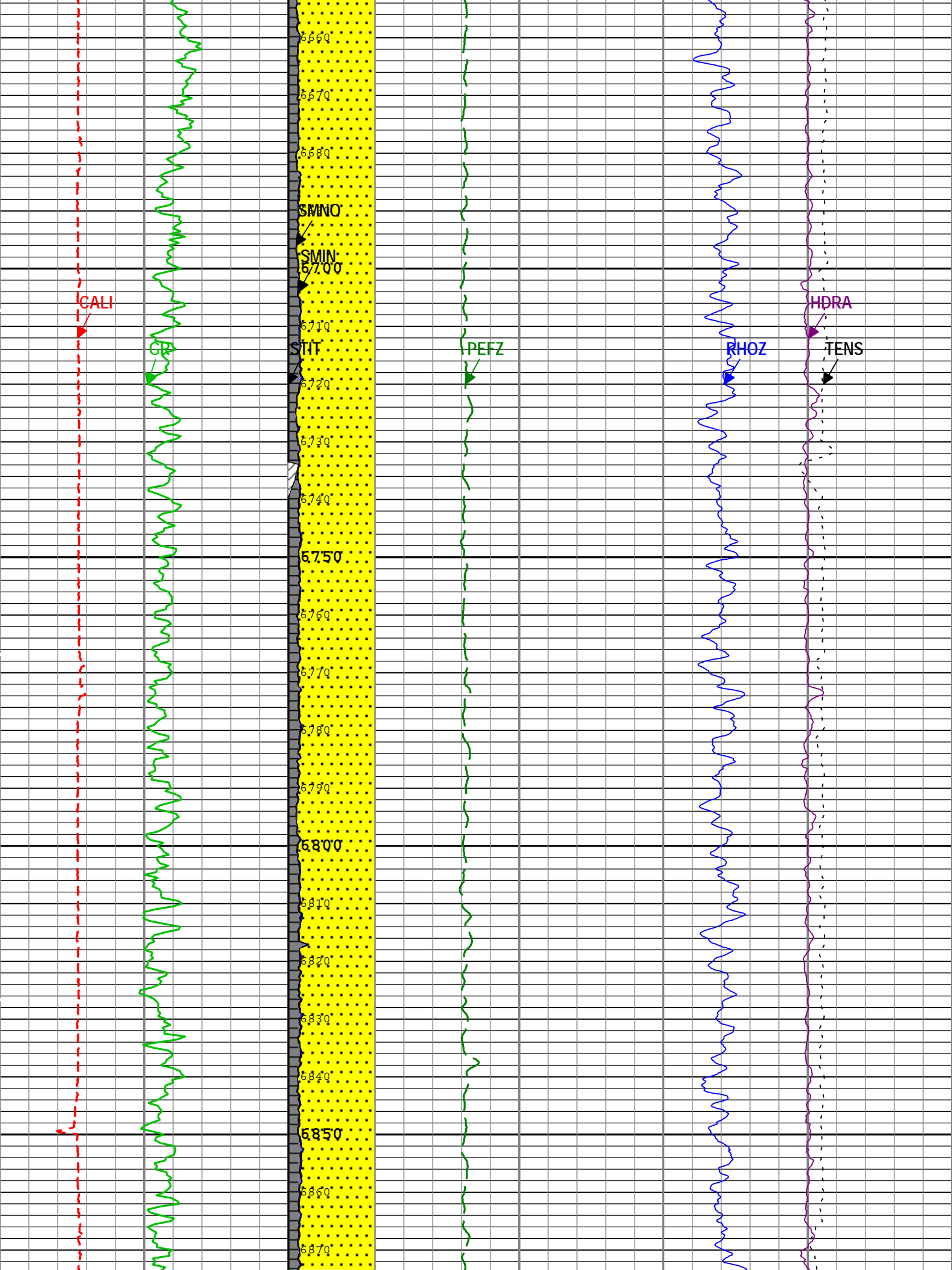


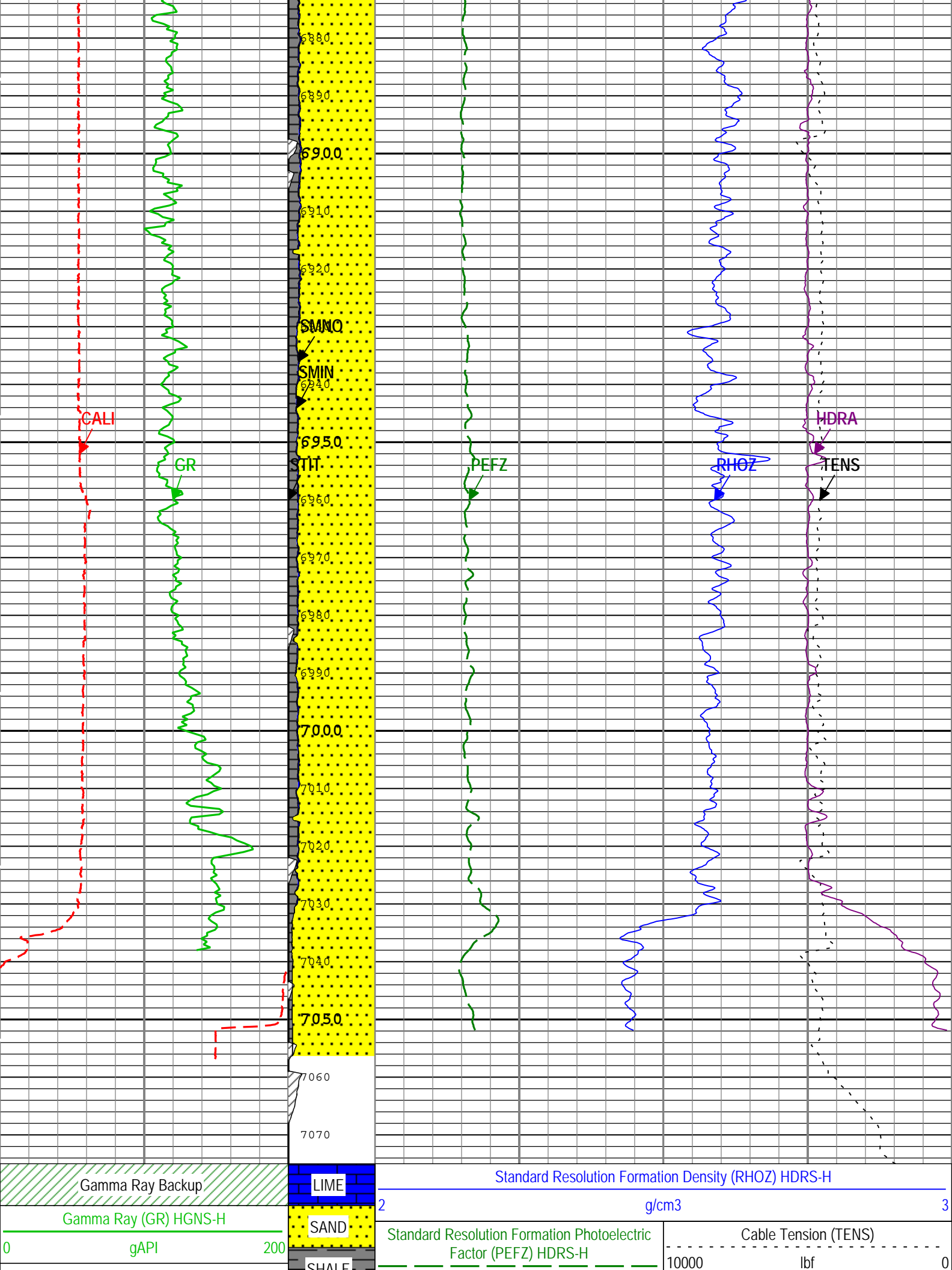













Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	Yes	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.75	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.068	in
CBLO	Casing Bottom (Logger)	WLSESSION	1762	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	10.2	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DHC	Density Hole Correction	HDRS-H	Bit Size	
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	
SOCO	Standoff Correction Option	HGNS-H	Yes	
TD	Total Measured Depth	Borehole	7055	ft















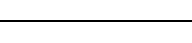


Tool Control Parameters				
Parameter	Description	Tool	Value	Unit
HRGD_BRD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

Calibration Report			
AIT-M (Array Induction Tool - M) Calibration - Run Two			
Primary Equipment :			
File code for AIT-MA Sonde Tool Element	AMIS	181	
Auxiliary Equipment :			
File code for AIT Bottom Nose Tool Element	AMRM	181	




AIT Sonde Calibration - Test Loop Gain							
Master (EEPROM):		15:52:07 18-Jun-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Test Loop Gain - 0		Master	1.000	0.950	1.016	1.050	
Test Loop Phase - 0	deg	Master	0	-3.000	-0.873	3.000	
Test Loop Gain - 1		Master	1.000	0.950	1.016	1.050	
Test Loop Phase - 1	deg	Master	0	-3.000	-0.523	3.000	
Test Loop Gain - 2		Master	1.000	0.950	1.020	1.050	
Test Loop Phase - 2	deg	Master	0	-3.000	-0.285	3.000	
Test Loop Gain - 3		Master	1.000	0.950	1.017	1.050	
Test Loop Phase - 3	deg	Master	0	-3.000	-0.364	3.000	
Test Loop Gain - 4		Master	1.000	0.950	0.996	1.050	
Test Loop Phase - 4	deg	Master	0	-3.000	0.047	3.000	
Test Loop Gain - 5		Master	1.000	0.950	0.992	1.050	
Test Loop Phase - 5	deg	Master	0	-3.000	-0.306	3.000	
Test Loop Gain - 6		Master	1.000	0.950	0.998	1.050	
Test Loop Phase - 6	deg	Master	0	-3.000	-0.014	3.000	
Test Loop Gain - 7		Master	1.000	0.950	1.012	1.050	

Test Loop Phase - 7	deg	Master	0	-3.000	-0.171	3.000	
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## AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM):		15:52:07 18-Jun-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Sonde Error Correction Real - 0	mS/m	Master	----	-231.000	-105.375	119.000	
Sonde Error Correction Quad - 0		Master	----	-2250.000	128.249	2250.000	
Sonde Error Correction Real - 1	mS/m	Master	----	114.000	154.526	204.000	
Sonde Error Correction Quad - 1		Master	----	-625.000	-120.438	625.000	
Sonde Error Correction Real - 2	mS/m	Master	----	66.000	113.010	156.000	
Sonde Error Correction Quad - 2		Master	----	-350.000	-106.668	350.000	
Sonde Error Correction Real - 3	mS/m	Master	----	39.000	49.722	89.000	
Sonde Error Correction Quad - 3		Master	----	-250.000	-9.512	250.000	
Sonde Error Correction Real - 4	mS/m	Master	----	15.000	25.368	35.000	
Sonde Error Correction Quad - 4		Master	----	-63.000	-11.301	63.000	
Sonde Error Correction Real - 5	mS/m	Master	----	4.000	10.767	24.000	
Sonde Error Correction Quad - 5		Master	----	-50.000	19.041	50.000	
Sonde Error Correction Real - 6	mS/m	Master	----	5.000	9.775	15.000	
Sonde Error Correction Quad - 6		Master	----	-30.000	0.982	30.000	
Sonde Error Correction Real - 7	mS/m	Master	----	-5.000	-1.211	5.000	
Sonde Error Correction Quad - 7		Master	----	-30.000	1.407	30.000	

## AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM):		15:52:07 18-Jun-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coarse Gain		Master	1.000	0.800	0.903	1.200	
Fine Gain		Master	1.000	0.800	0.900	1.200	

## AIT Electronics Check - Thru Calibration Check

Master (EEPROM):		15:52:07 18-Jun-2014		Before (Measured):		20:28:46 07-Aug-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Thru Cal Mag - 0	V	Master	----	0.366	0.576	0.854	
		Before	----	0.366	0.575	0.854	
		Before-Master	----	----	-0.001	----	
Thru Cal Phase - 0	deg	Master	----	137.000	-169.574	-103.000	
		Before	----	137.000	-169.066	-103.000	
		Before-Master	----	----	0.508	----	
Thru Cal Mag - 1	V	Master	----	0.762	1.179	1.778	
		Before	----	0.762	1.178	1.778	
		Before-Master	----	----	-0.001	----	
Thru Cal Phase - 1	deg	Master	----	136.000	-170.676	-104.000	
		Before	----	136.000	-170.166	-104.000	
		Before-Master	----	----	0.510	----	
Thru Cal Mag - 2	V	Master	----	0.372	0.585	0.868	
		Before	----	0.372	0.585	0.868	
		Before-Master	----	----	0.000	----	
Thru Cal Phase - 2	deg	Master	----	132.000	-174.320	-108.000	
		Before	----	132.000	-173.810	-108.000	
		Before-Master	----	----	0.510	----	
Thru Cal Mag - 3	V	Master	----	0.420	0.661	0.980	
		Before	----	0.420	0.660	0.980	
		Before-Master	----	----	-0.001	----	
Thru Cal Phase - 3	deg	Master	----	131.000	-175.098	-109.000	
		Before	----	131.000	-174.588	-109.000	
		Before-Master	----	----	0.510	----	
Thru Cal Mag - 4	V	Master	----	0.804	1.234	1.876	
		Before	----	0.804	1.233	1.876	
		Before-Master	----	----	-0.001	----	
Thru Cal Phase - 4	deg	Master	----	125.000	178.625	-115.000	
		Before	----	125.000	179.142	-115.000	
		Before-Master	----	----	0.517	----	
Thru Cal Mag - 5	V	Master	----	1.176	1.797	2.744	
		Before	----	1.176	1.795	2.744	
		Before-Master	----	----	-0.002	----	
Thru Cal Phase - 5	deg	Master	----	122.000	176.963	-118.000	
		Before	----	122.000	177.486	-118.000	
		Before-Master	----	----	0.523	----	

Thru Cal Mag - 6	V	Master	----	1.176	1.796	2.744	
		Before	----	1.176	1.795	2.744	
		Before-Master	----	----	-0.001	----	
Thru Cal Phase - 6	deg	Master	----	121.000	176.970	-119.000	
		Before	----	121.000	177.492	-119.000	
		Before-Master	----	----	0.522	----	
Thru Cal Mag - 7	V	Master	----	0.846	1.295	1.974	
		Before	----	0.846	1.295	1.974	
		Before-Master	----	----	0.000	----	
Thru Cal Phase - 7	deg	Master	----	115.000	176.186	-125.000	
		Before	----	115.000	176.764	-125.000	
		Before-Master	----	----	0.578	----	
SPA Zero	mV	Master		-50.000	0.159	50.000	
		Before		-50.000	0.143	50.000	
		Before-Master	----	----	-0.016	----	
SPA Plus	mV	Master		941.000	992.540	1040.000	
		Before		941.000	992.398	1040.000	
		Before-Master	----	----	-0.142	----	
Temperature Zero	V	Master		-0.050	0.000	0.050	
		Before		-0.050	0.000	0.050	
		Before-Master	----	----	0.000	----	
Temperature Plus	V	Master		0.870	0.919	0.960	
		Before		0.870	0.919	0.960	
		Before-Master	----	----	0.000	----	

## Primary Equipment :

**Auxiliary Equipment :**

Calibration Parameter :

## HDRS Caliper Calibration - Caliper Accumulations

## HDRS Density Calibration - Inversion Results

## HDRS Density Calibration - Deviation Summary

ES Max Deviation	%	Master	0	-3.5000	1.9199	3.5000	
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## HDRS Density Calibration - Background Summary

Master (EEPROM):		19:57:24 07-Aug-2014		Before (Measured):		20:43:07 07-Aug-2014			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit			
BS Window Ratio		Master	1.0000		0.7352				
		Before	0.7352	0.6985	0.7345	0.7720			
		Before-Master	-----	-----	-0.0007	-----			
BS Window Sum	1/s	Master	1		23918				
		Before	23918	22723	23916	25114			
		Before-Master	-----	-----	-2	-----			
SS Window Ratio		Master	1.0000		0.4821				
		Before	0.4821	0.4580	0.4863	0.5062			
		Before-Master	-----	-----	0.0042	-----			
SS Window Sum	1/s	Master	1		9772				
		Before	9772	9284	9770	10261			
		Before-Master	-----	-----	-2	-----			
LS Window Ratio		Master	1.0000		0.2994				
		Before	0.2994	0.2845	0.3012	0.3144			
		Before-Master	-----	-----	0.0018	-----			
LS Window Sum	1/s	Master	1		1176				
		Before	1176	1117	1178	1235			
		Before-Master	-----	-----	2	-----			

## HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM):		19:57:24 07-Aug-2014		Before (Measured):		20:43:07 07-Aug-2014			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit			
BS PM High Voltage	V	Master		1000	1375	2400			
		Before		1000	1379	2400			
		Before-Master	----	-100	4	100			
SS PM High Voltage	V	Master		1000	1632	2400			
		Before		1000	1647	2400			
		Before-Master	----	-100	15	100			
LS PM High Voltage	V	Master		1000	1188	2400			
		Before		1000	1194	2400			
		Before-Master	----	-100	6	100			

## HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM):		19:57:24 07-Aug-2014		Before (Measured):		20:43:07 07-Aug-2014			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit			
BS Crystal Resolution	%	Master		5.00	10.72	25.00			
		Before		5.00	10.64	25.00			
		Before-Master	-----	-1.00	-0.08	1.00			
SS Crystal Resolution	%	Master		5.00	9.28	20.00			
		Before		5.00	9.43	20.00			
		Before-Master	-----	-1.00	0.15	1.00			
LS Crystal Resolution	%	Master		5.00	8.42	20.00			
		Before		5.00	8.45	20.00			
		Before-Master	-----	-1.00	0.03	1.00			

## HDRS MCFL Calibration - MCFL Accumulations

Before (Measured): 20:39:36 07-Aug-2014							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3860	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3800	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3815	4136	

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

<b>Primary Equipment :</b>			
	HILT Gamma-Ray and Neutron Sonde, 150 degC	HGNS-H	4865
<b>Auxiliary Equipment :</b>			
	HGNS Accelerometer, 150 degC	HACCZ-H	6991
	AmBe Neutron Logging Source	NSR-F	2554
<b>Calibration Parameter :</b>			
	Water Temperature		

## HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured): 03:13:55 08-Aug-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	ft/s2	Before	32.2	31.5	32.1	32.8	

## HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM): 00:00:00 15-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): 14:29:32 23-Jul-2014

Before (Measured):

20:28:17 07-Aug-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	27.5	40.0	
		Before	0	5.0	26.6	40.0	
		Before-Master	----	-4.1	-0.9	4.1	
Far Zero Measurement	1/s	Master	0	5.0	28.9	40.0	
		Before	0	5.0	27.6	40.0	
		Before-Master	----	-4.3	-1.3	4.3	
Near Plus Measurement	1/s	Master	6031.0	4700.0	5764.0	6900.0	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Far Plus Measurement	1/s	Master	2793.0	1900.0	2396.0	2900.0	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Near Corrected Plus Measurement	1/s	Master		4700.0	5720.0	6900.0	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Far Corrected Plus Measurement	1/s	Master		1900.0	2356.0	2900.0	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	

## HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured): 20:30:52 07-Aug-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	73.3	120.0	
RGR Plus Measurement	gAPI	Before	185.4	157.1	174.9	206.3	
GR Calibration Gain		Before	0.89	0.80	0.94	1.05	



Company:	Kerr McGee Oil & Gas Onshore LP	<b>Schlumberger</b>
Well:	Banded 37C-27HZ	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	
Platform Express		
Compensated Neutron Log		
LithoDensity		