

Company: Whiting Oil and Gas Corporation

Well: Horsetail 19N-1924M

Field: Wildcat

County: Weld State: Colorado

Platform Express

Micro Log

Location:		SWSE, Sec. 19, T10N, R57W		Elev.:	K.B.	4466.50 ft
		SHL: 660' FSL x 2656' FEL			G.L.	4448.00 ft
		Lat/Long: 40.818861/-103.79425			D.F.	4465.50 ft
Permanent Datum:	Ground Level	Elev.:		4448.00 f		
Log Measured From:	Kelly Bushing	18.50 ft		above Perm.Datum		
Drilling Measured From:	Kelly Bushing					
API Serial No.	Section:	Township:	Range:			
05-123-39885-0000	19	10N	57W			

County: Weld

Field: Wildcat

Location: SWSE, Sec. 19, T10N, R57W

Well: Horsetail 19N-1924M

Company: Whiting Oil and Gas Corporation

Logging Date	17-Aug-2014		
Run Number	One		
Depth Driller	9370.00 ft		
Schlumberger Depth	9370.00 ft		
Bottom Log Interval	7485.00 ft		
Top Log Interval	18.00 ft		
Casing Driller Size @ Depth	9.625 in @ 1563.70 ft		
Casing Schlumberger	1564 ft		
Bit Size	8.75 in		
Type Fluid In Hole	Polymer		
Density	Viscosity	45 s	
Fluid Loss	PH	9.7	
Source of Sample	Active Tank		
RM @ Meas Temp	1.6 ohm.m	@ 80 degF	
RMF @ Meas Temp	1.2 ohm.m	@ 80 degF	
RMC @ Meas Temp	2 ohm.m	@ 80 degF	
Source RMF	RMC	Calculated	
RM @ BHT	0.56 @ 240	0.42 @ 240	
Max Recorded Temperatures	240 degF		
Circulation Stopped	17-Aug-2014 00:00:00		
Logger on Bottom	Time	17-Aug-2014 10:00:30	
Unit Number	Location:	2135	
Recorded By	Elizabeth Wilson		
Witnessed By	Randy Guerra		

Disclaimer

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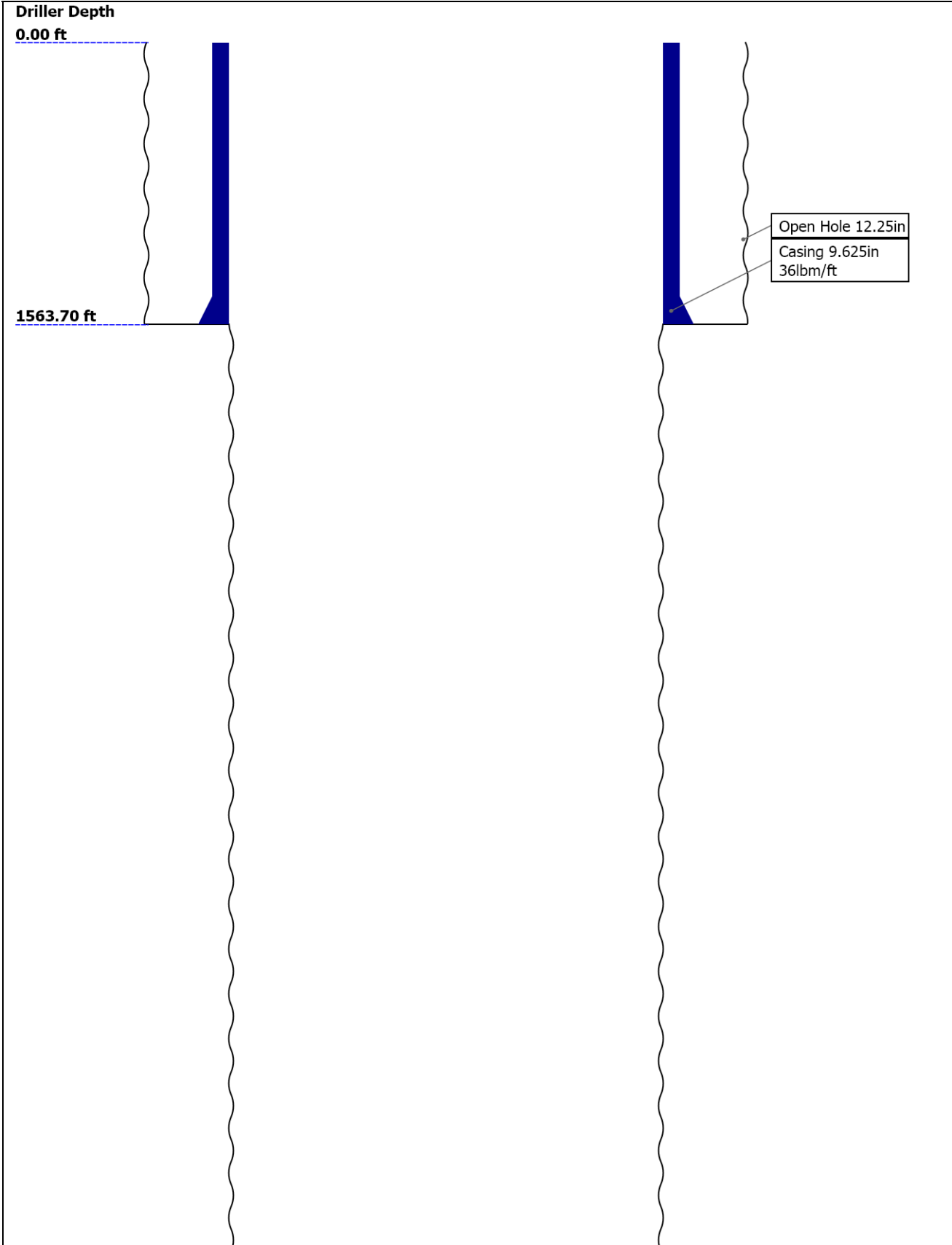
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Well Sketch



9370.00 ft

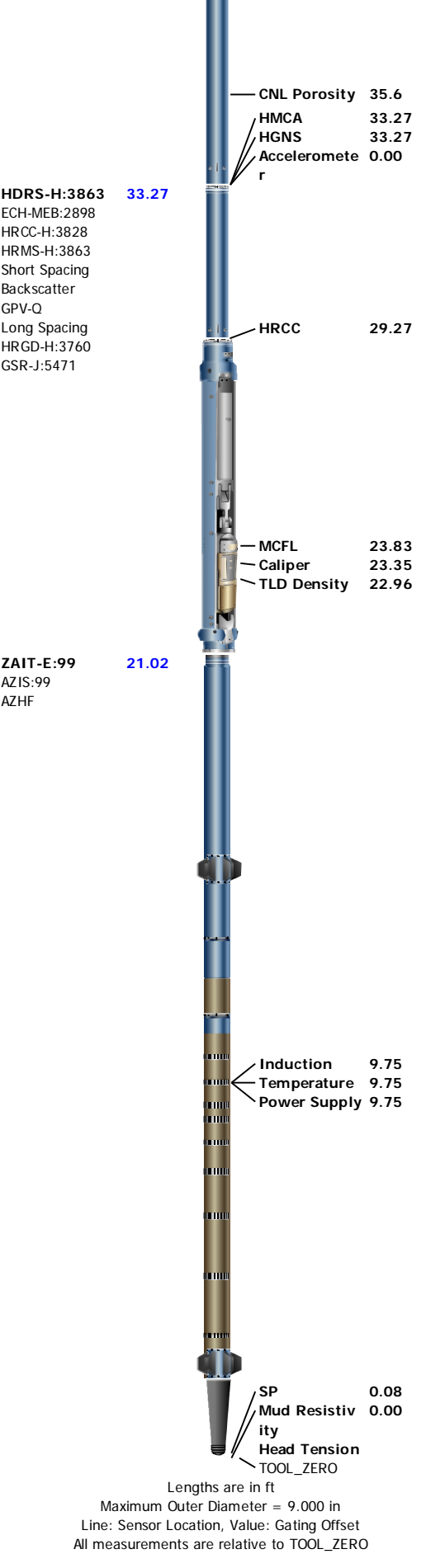
Open Hole 8.75in

Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	12.25	8.75				
Top Driller (ft)	0	1563.7				
Top Logger (ft)	0	1563.7				
Bottom Driller (ft)	1563.7	9370				
Bottom Logger (ft)	1563.7	9370				
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)	1563.7					
Bottom Logger (ft)	1564					

Borehole Fluids

Parameter(unit)	One					
Fluid Type	Water					
Fluid Name	Polymer					
Max Recorded Temperatures (degF)	240					
Source of Sample	Active Tank					
Salinity (ppm)	1100					
Density (lbm/gal)	9.7					
Funnel Viscosity (s)	45					
Fluid Loss (cm3)						
PH	9.7					
Date/Time Circulation Stopped	17-Aug-2014 00:00:00					
Date Logger on Bottom	17-Aug-2014					
Time Logger on Bottom	10:00:30					
Source RMF	Calculated					
RMC	Calculated					
RM @ Meas Temp (ohm.m@degF)	1.6 @ 80					
RMF @ Meas Temp (ohm.m@degF)	1.2 @ 80					

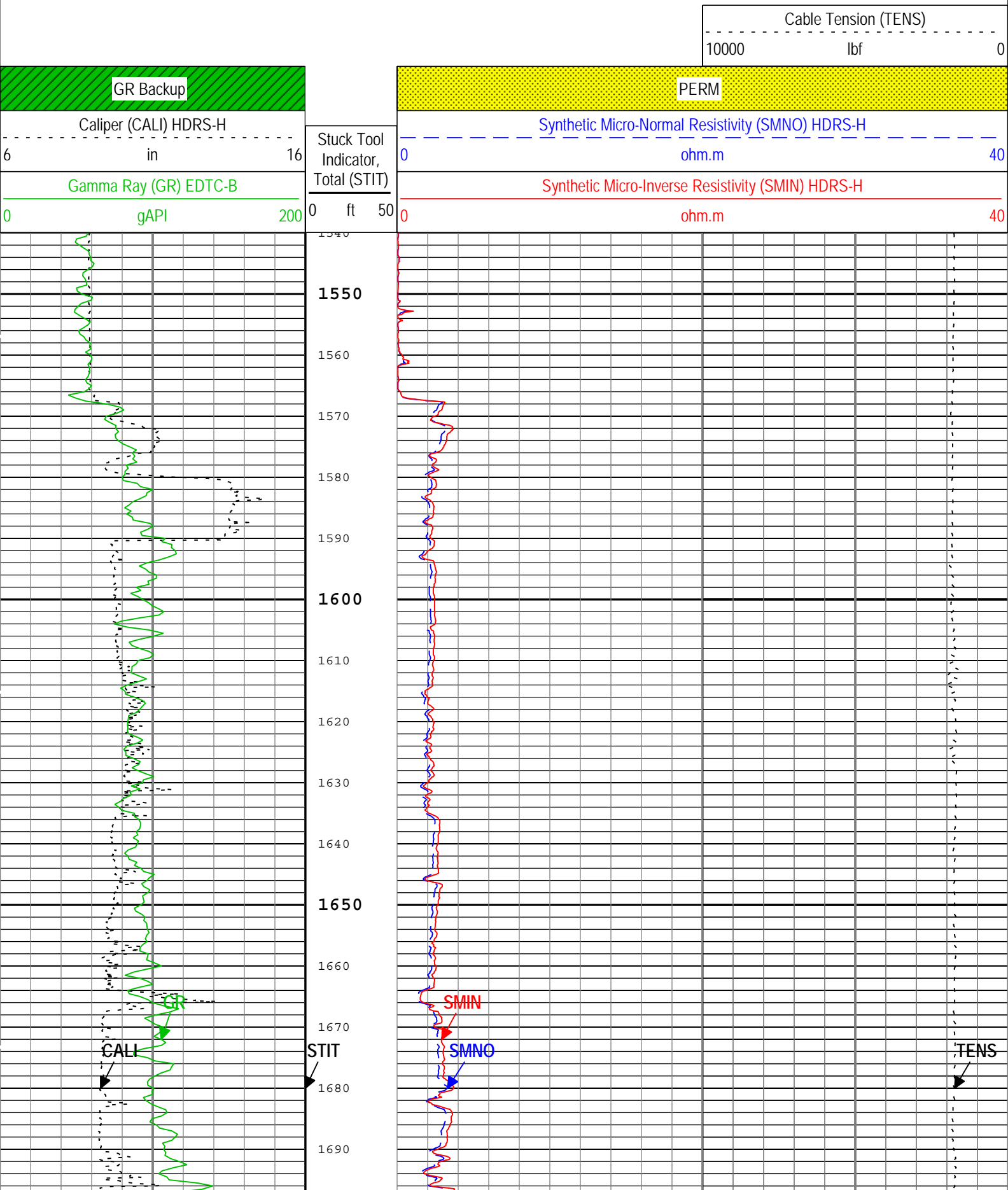


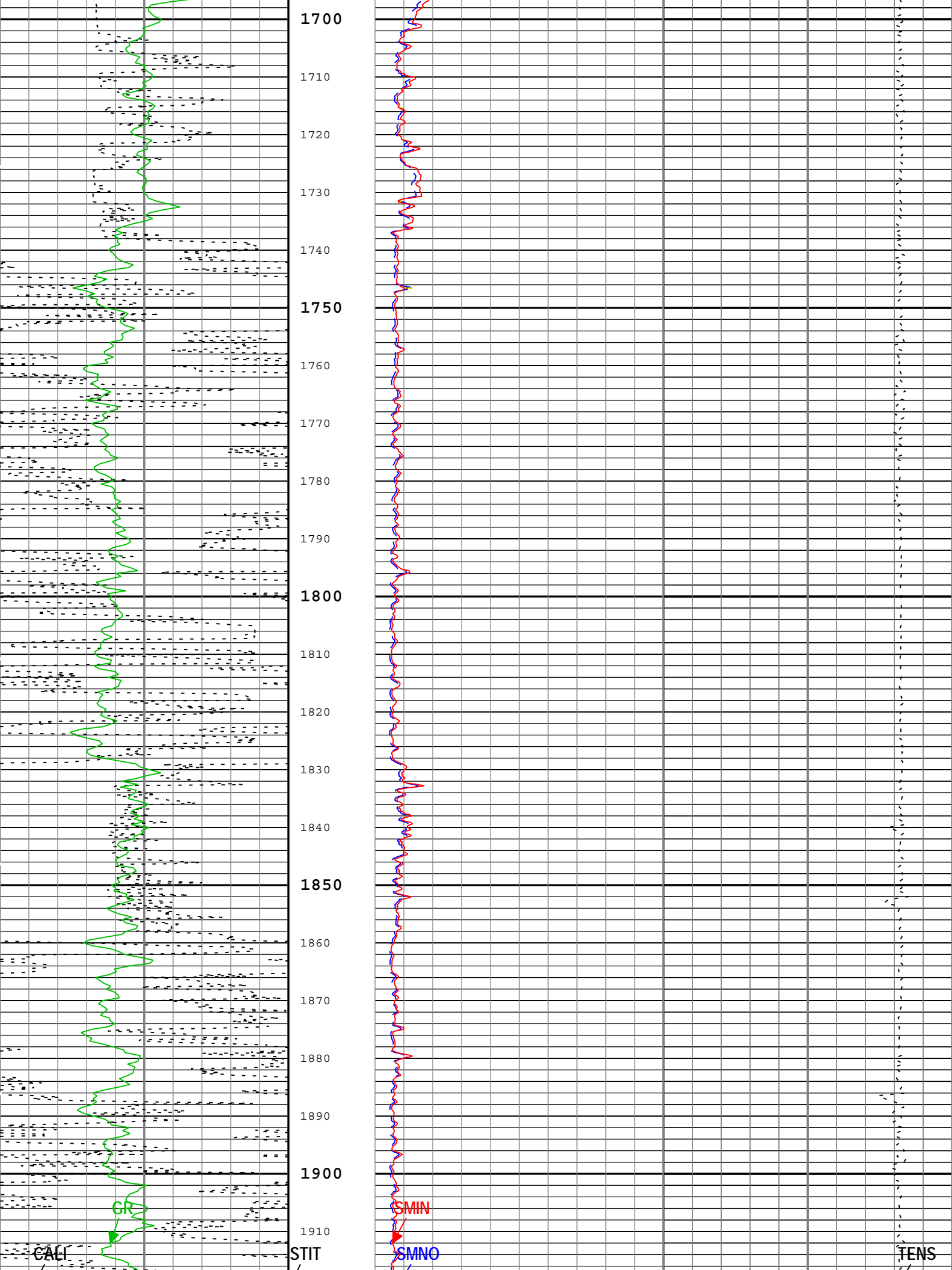
Depth Summary			
		One	
Depth Measuring Device			
Type	IDW-JA		
Serial Number	5916		

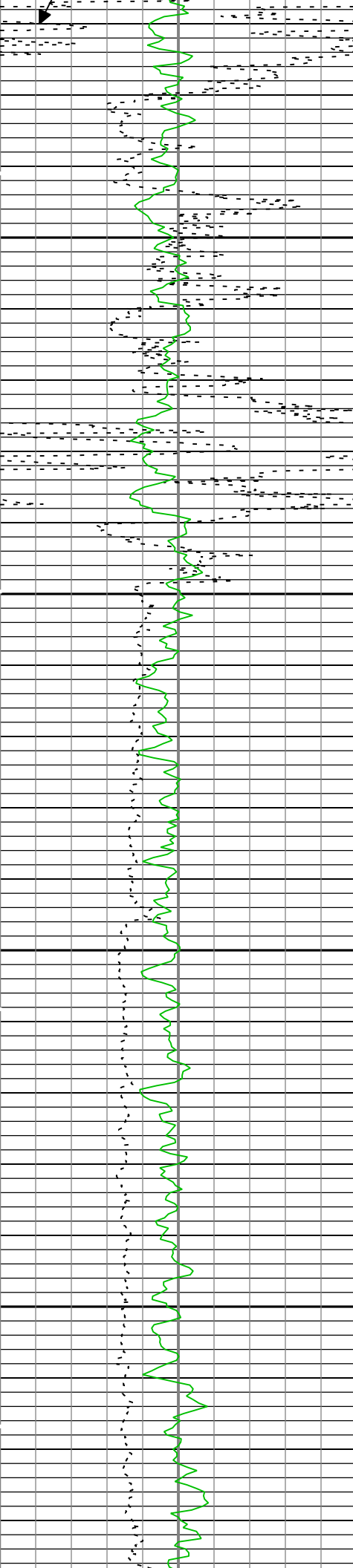
Calibration Date	24-Mar-2014								
Calibrator Serial Number									
Calibration Cable Type	7-46 PXS								
Wheel Correction 1	-6								
Wheel Correction 2	-3								
Tension Device									
Type	CMTD-B/A								
Serial Number	1919								
Calibration Date	28-Jul-2014								
Calibrator Serial Number	78135A								
Number of Calibration Points	10								
Calibration Root Mean Square Error	17								
Calibration Peak Error	26								
Logging Cable									
Type	7-46P-XS								
Serial Number	U711142								
Length	18500.00 ft								
Conveyance Type	Wireline								
Rig Type	Land								
One :Depth Control Parameters		Depth Control Remarks							
Log Sequence	Subsequent Trip To the Well	All Schlumberger depth policies and procedures followed							
Reference Log Name		IDW used as primary depth reference							
Reference Log Run Number		Z-chart used as secondary depth reference							
Reference Log Date									
Subsequent Trip Down Log Correction									
One									
5" Micro Log									
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						
HRGD-H	HILT Resistivity Gamma-Ray Density Device, 150 degC	4.0.9385.3000	3.0						
EDTC-B	Enhanced Digital Telemetry Cartridge - B	4.0.9433.3000							
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[2]:Up	Up	70.30 ft	7499.92 ft	17-Aug-2014 10:02:34 AM	17-Aug-2014 12:03:57 PM	ON	6.00 ft	No
All depths are referenced to toolstring zero									
Log	Company:Whiting Oil and Gas Corporation			Well:Horsetail 19N-1924M					
One : Log[2]:Up:S013									
Description: MCFL processing for Platform Express Format: Log (KM 5in Micro Log) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured									
Depth Creation Date: 18-Aug-2014 05:18:16									
Channel	Source	Sampling							
CALI	HDRS-H:HRCC-H:HRCC-H	1in							
GR	EDTC-B:EDTC-B:EDTC-B	6in							
GRIN	HDRS-H:HRCC-H:HRCC-H	1in							

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

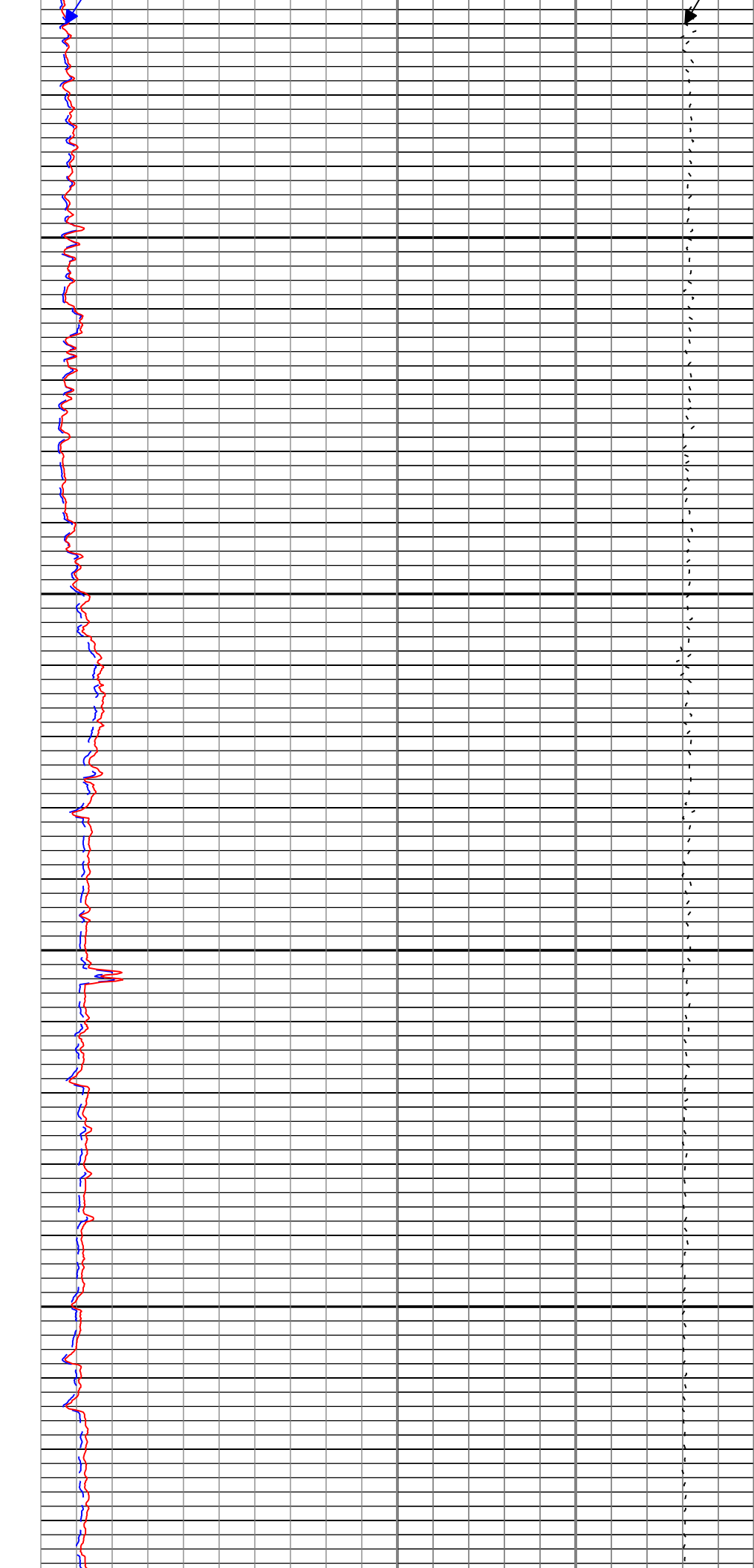
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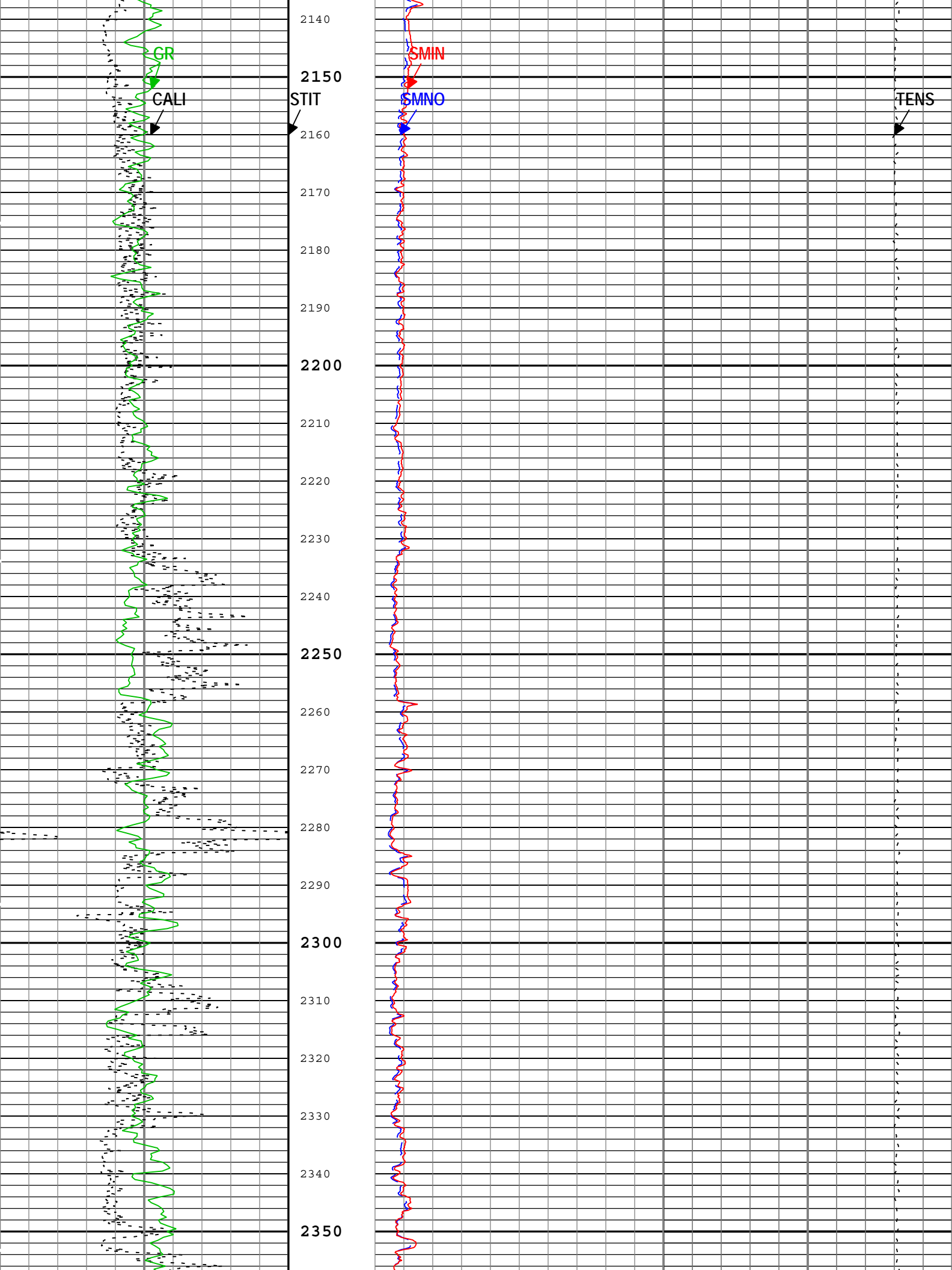


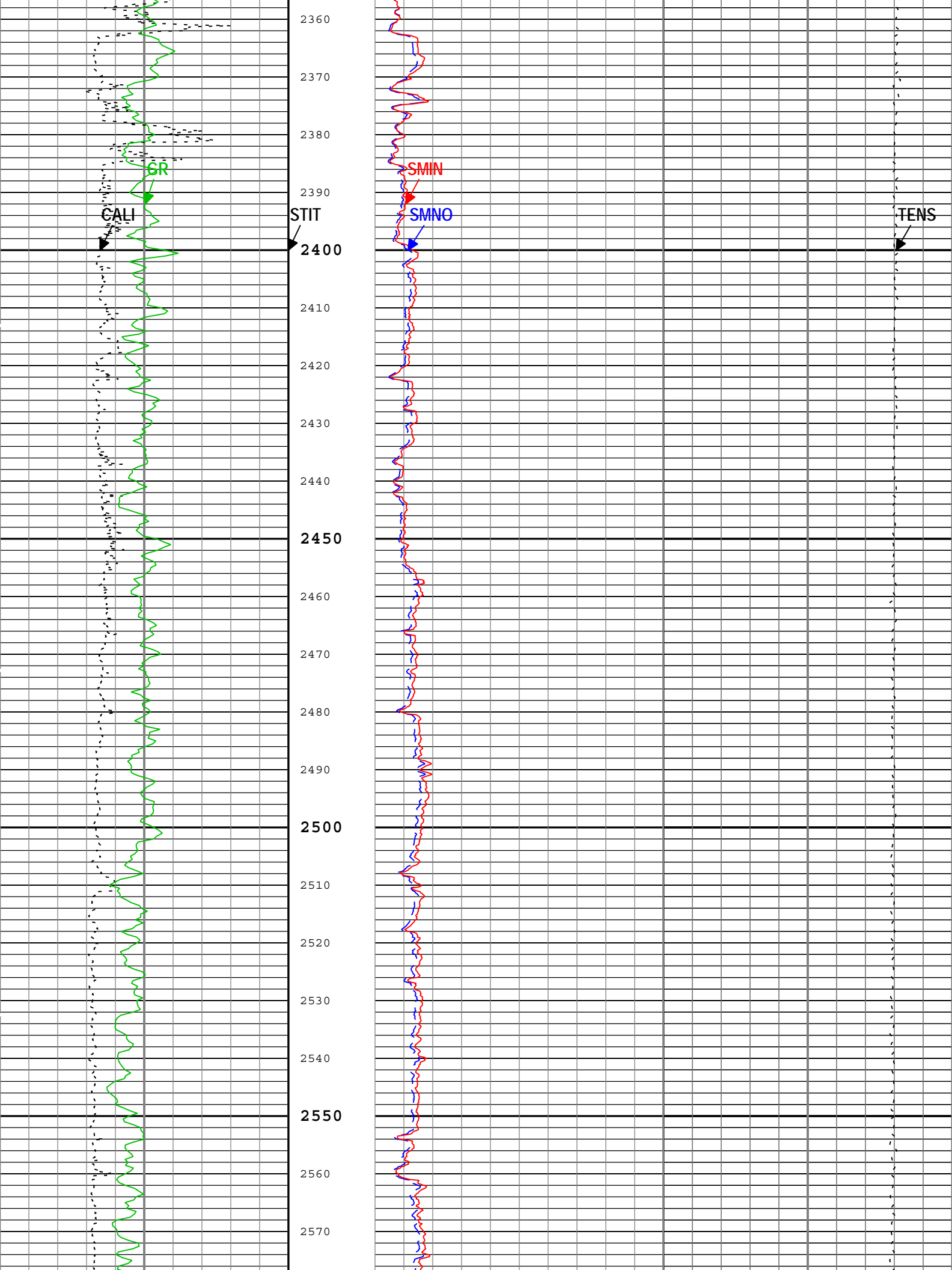


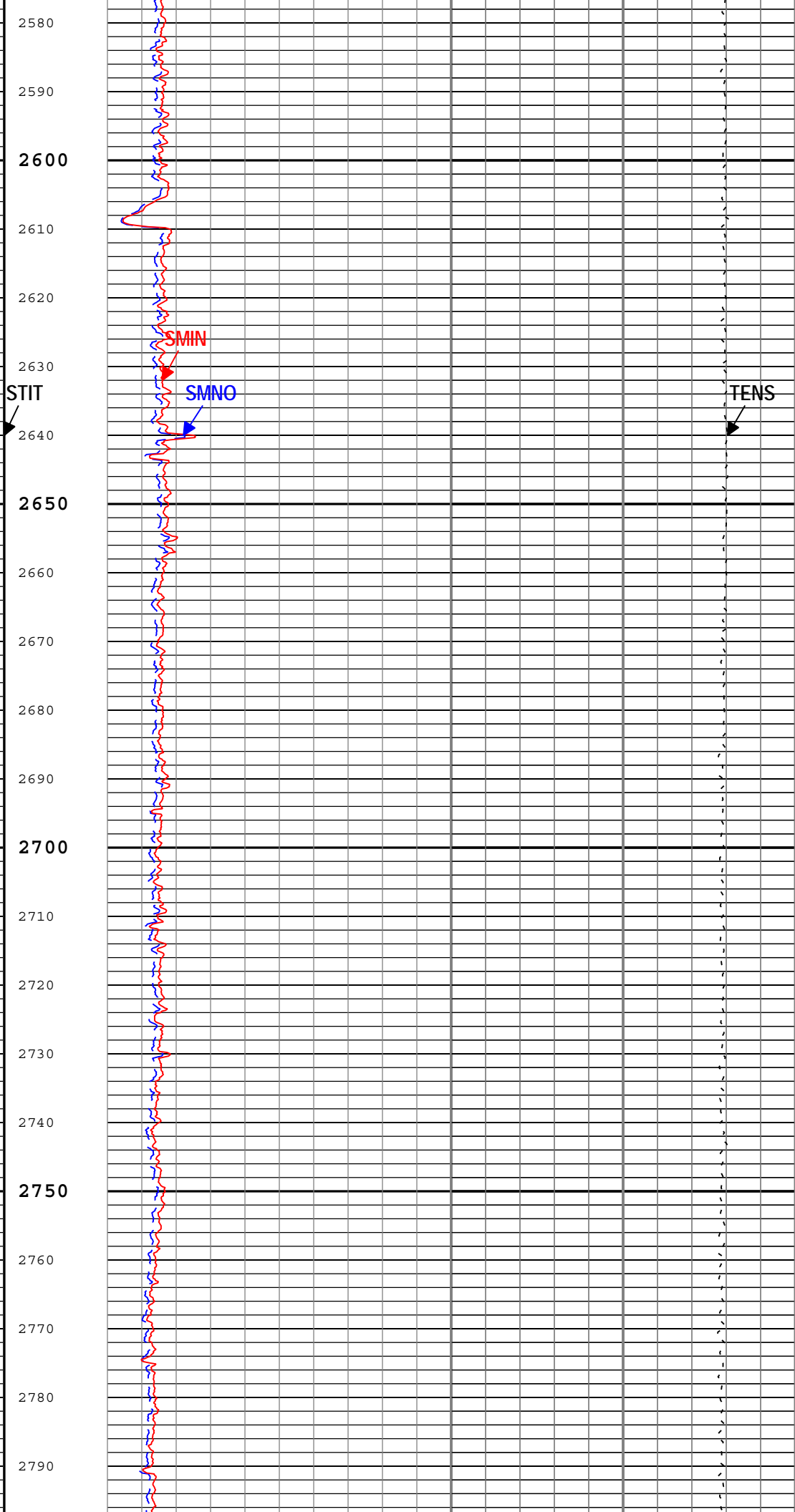
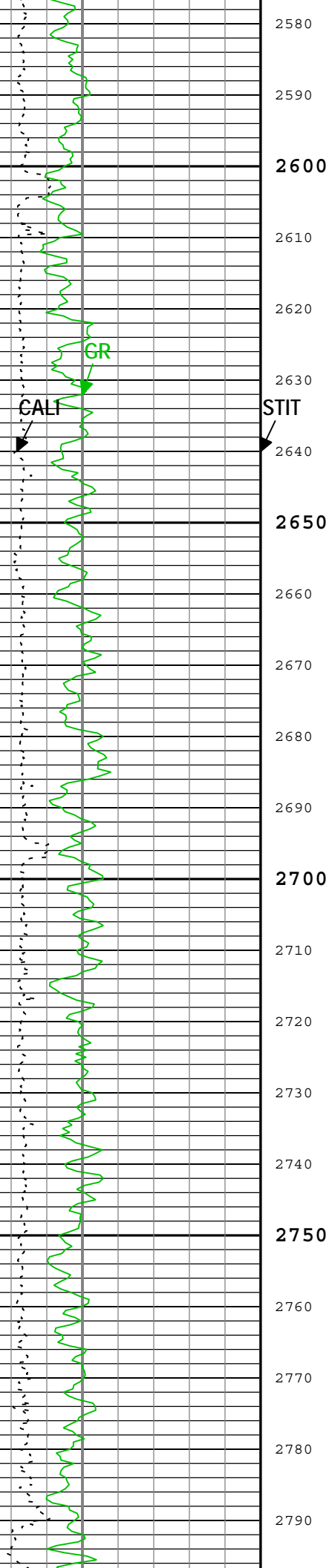


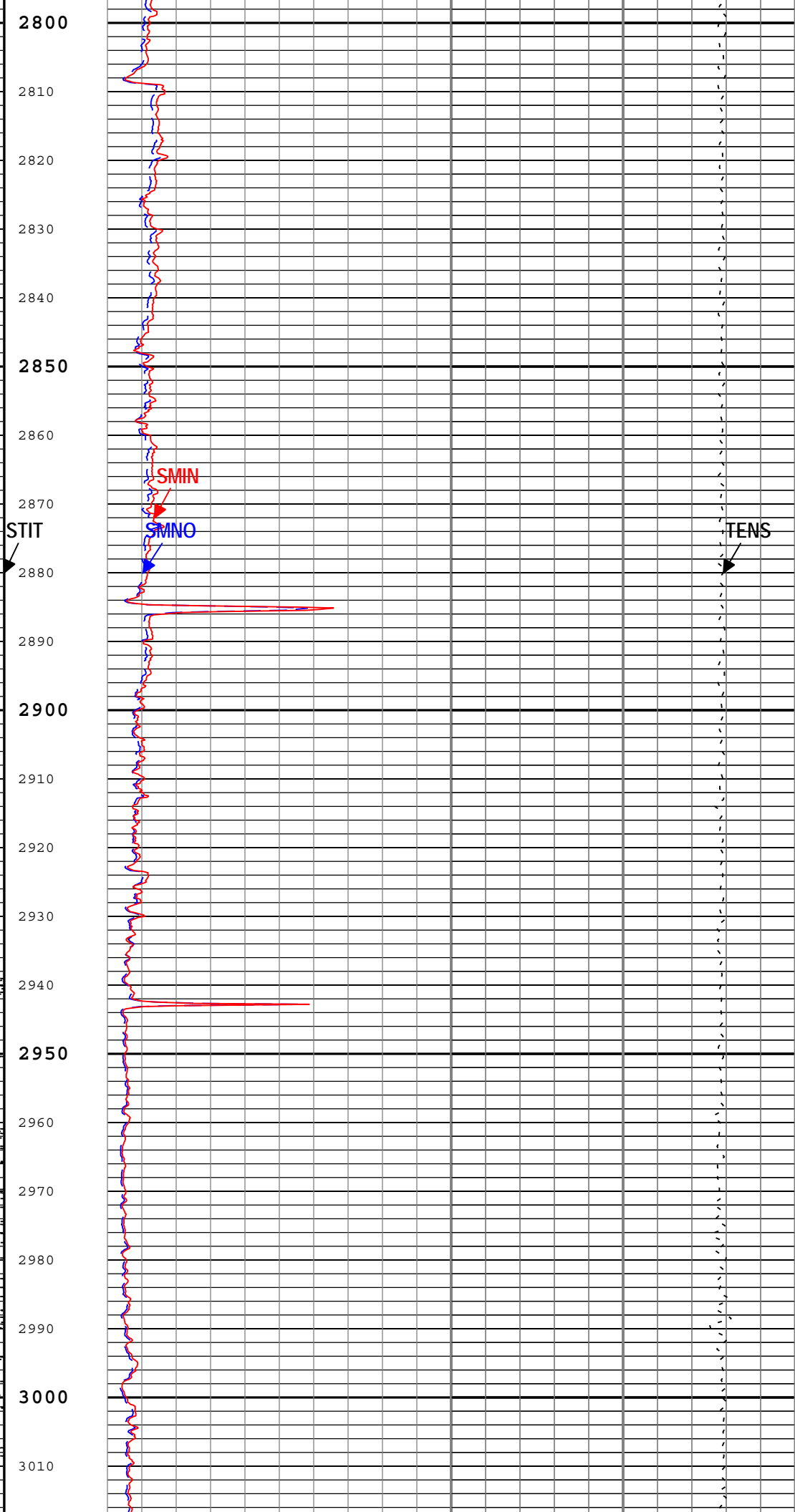
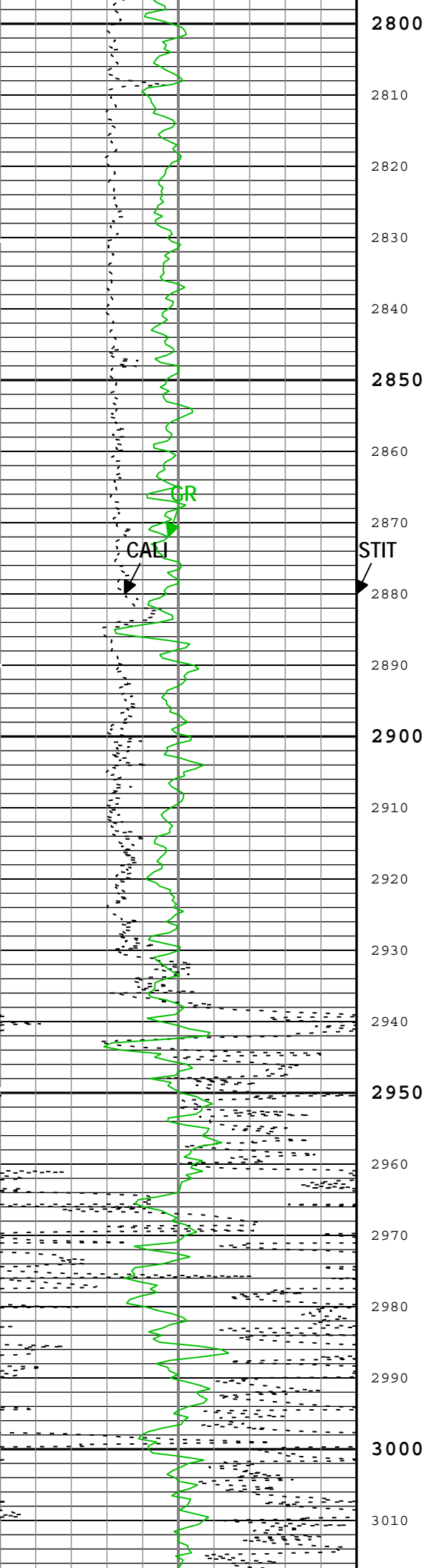
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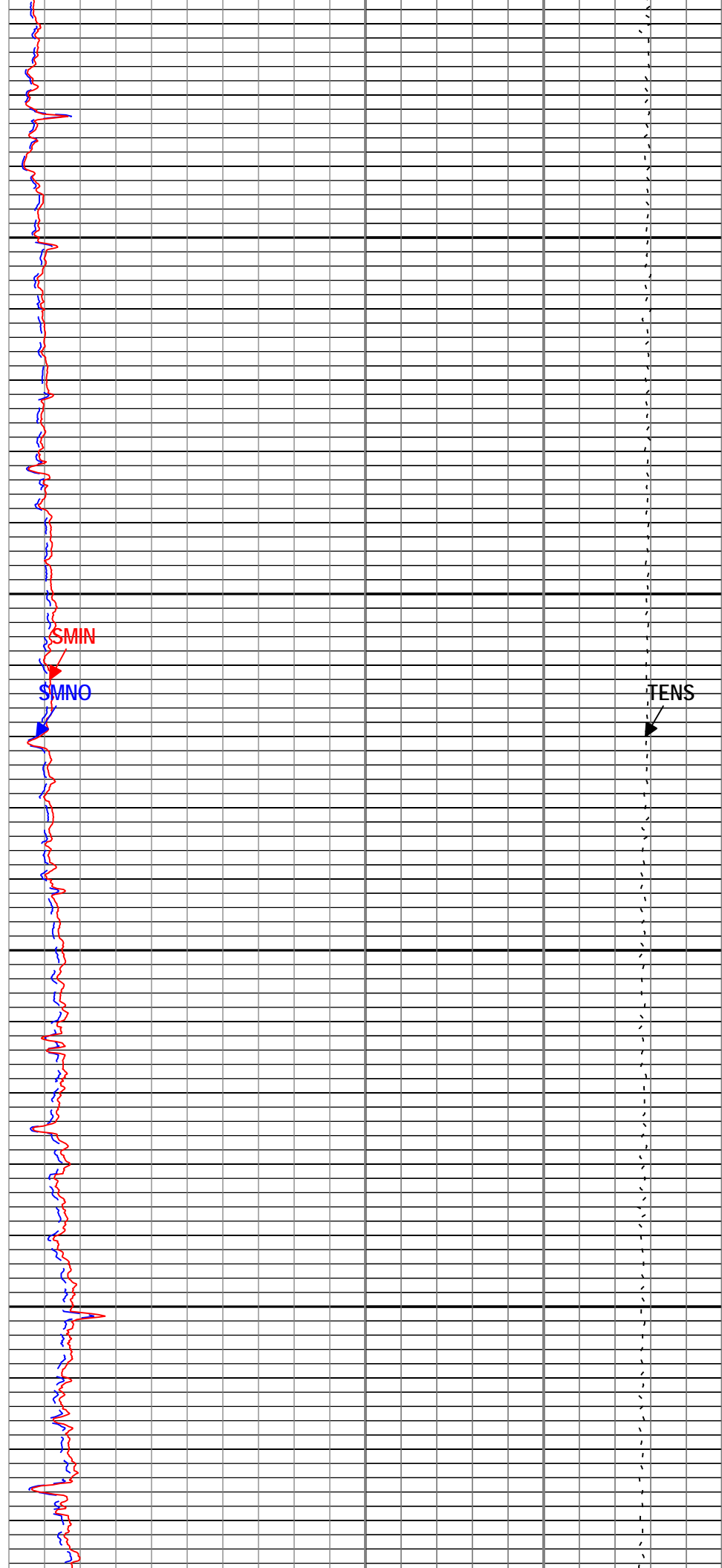
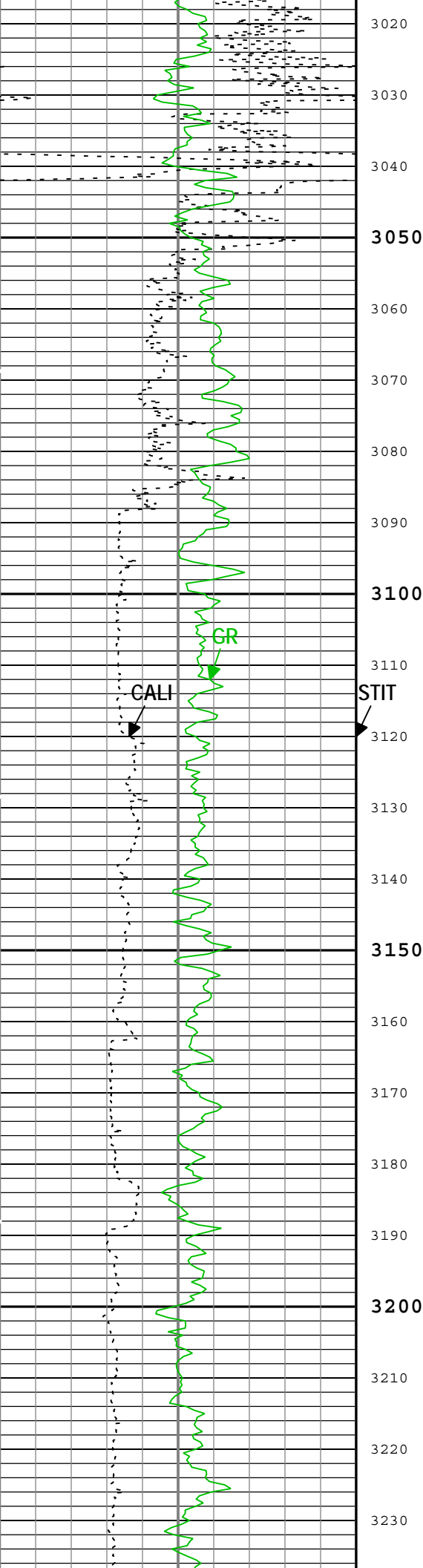


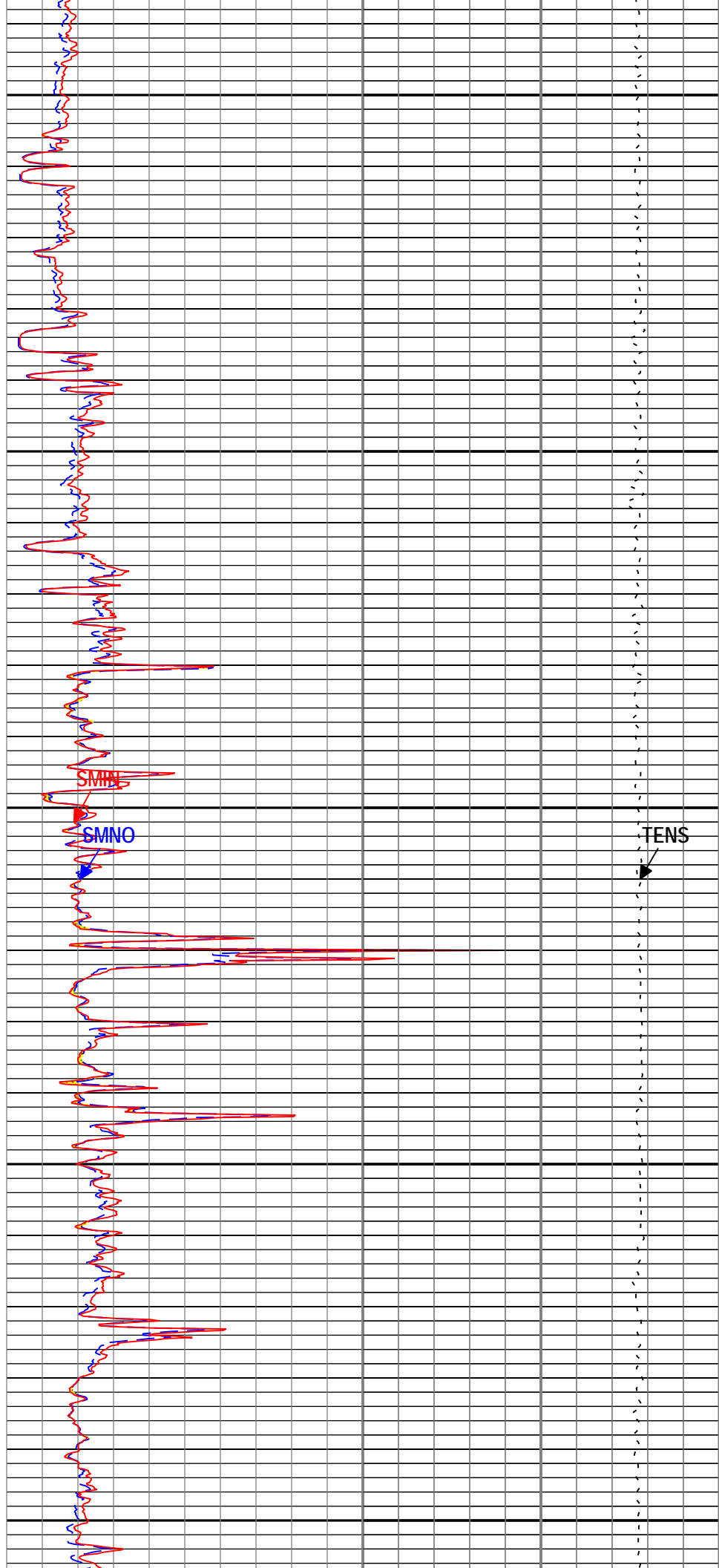
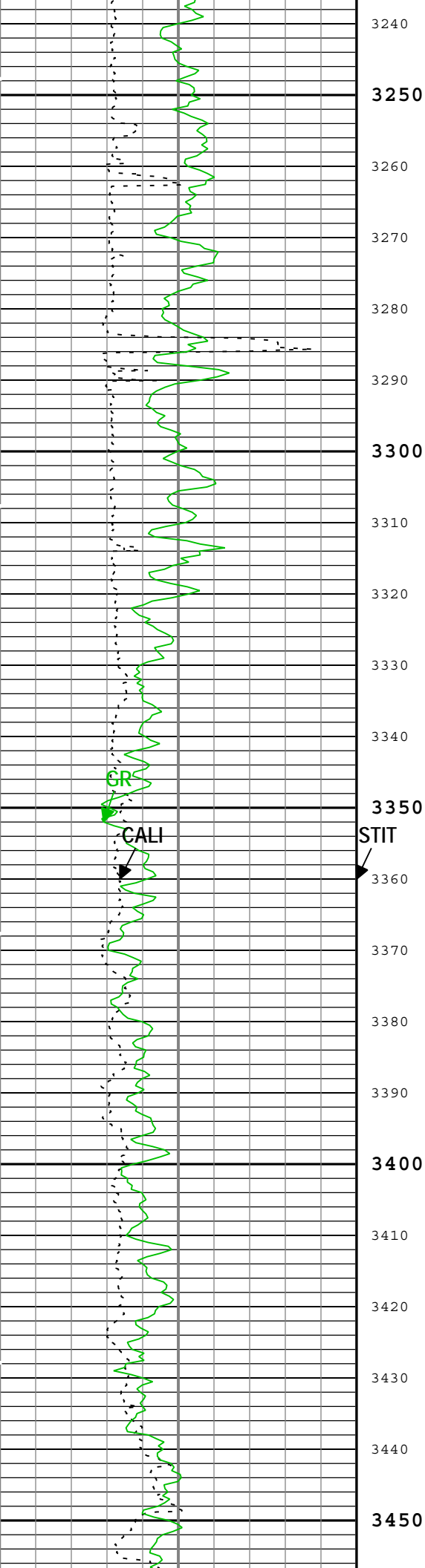






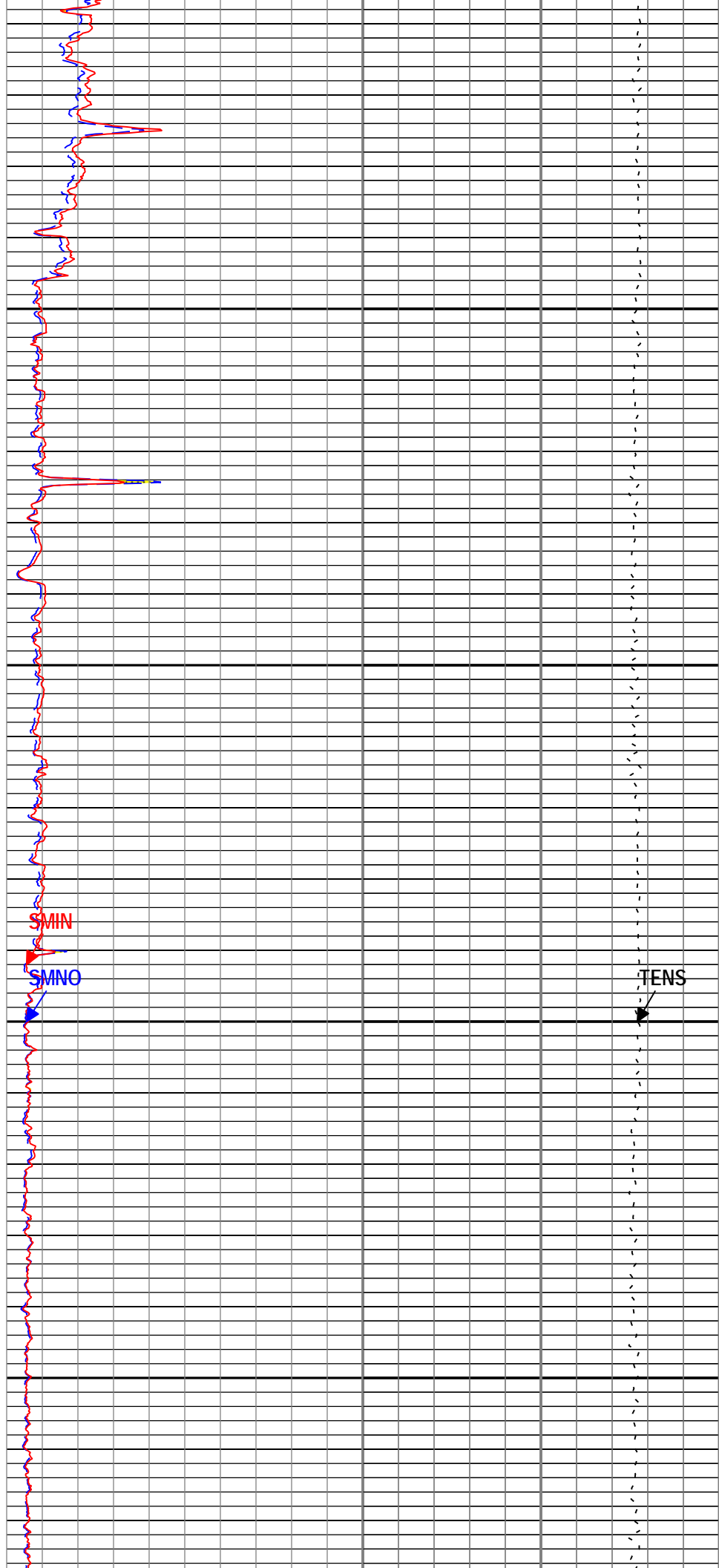
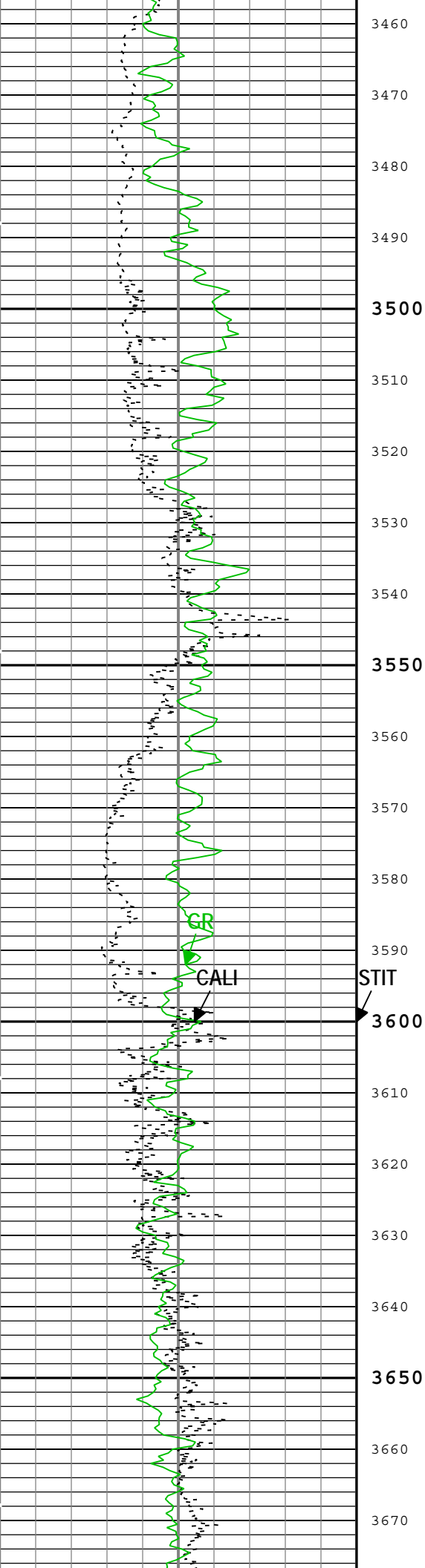


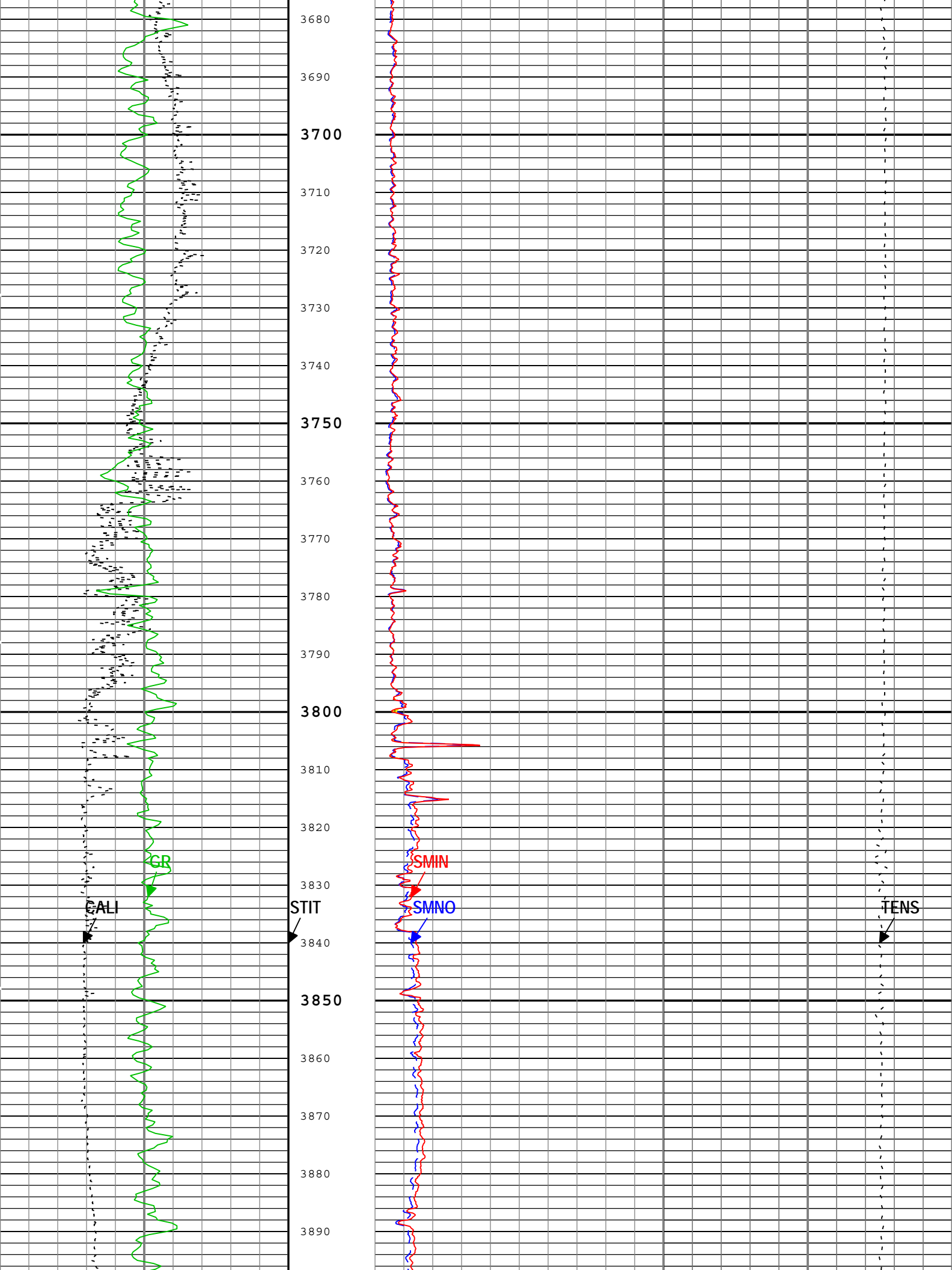


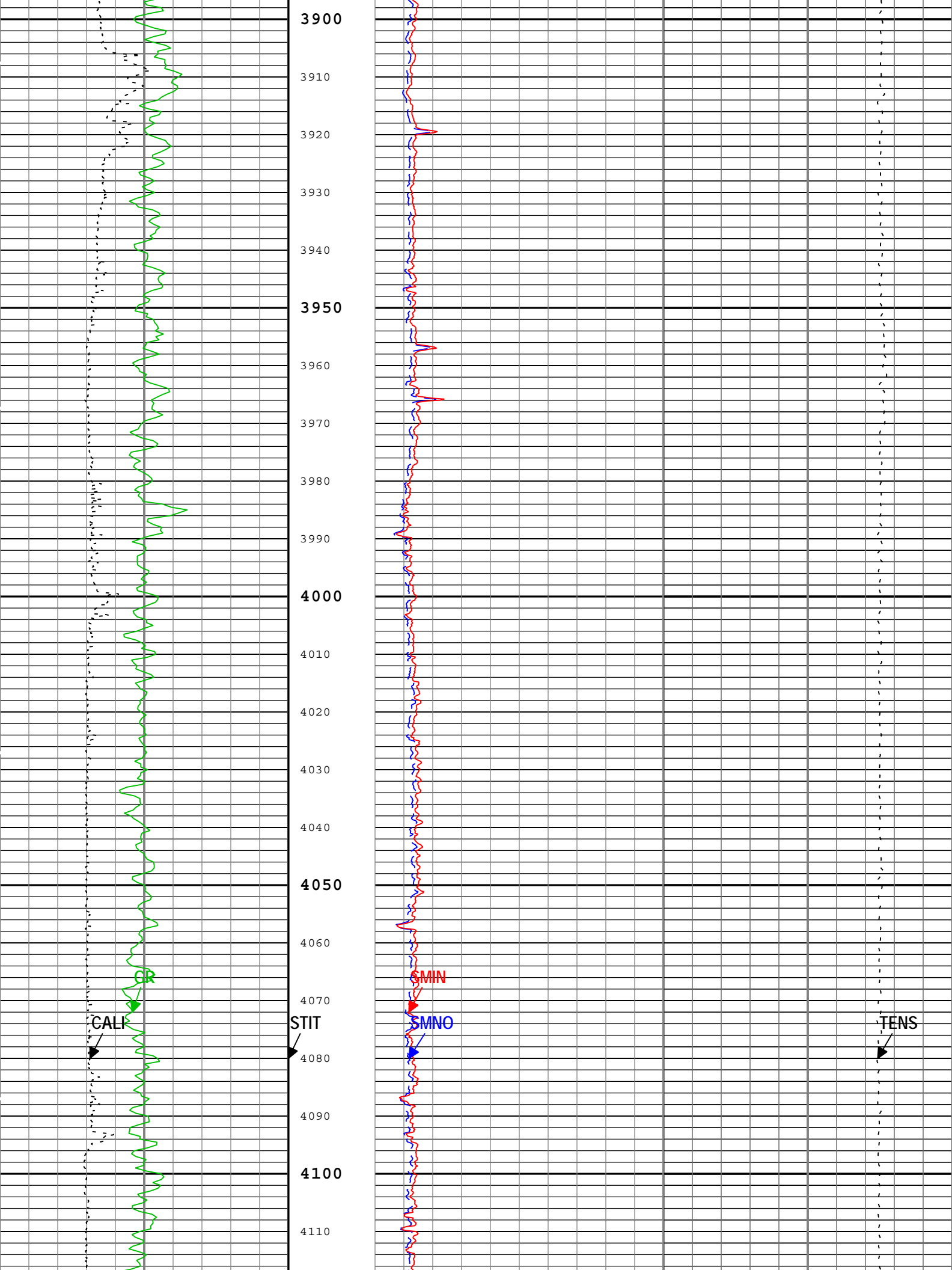


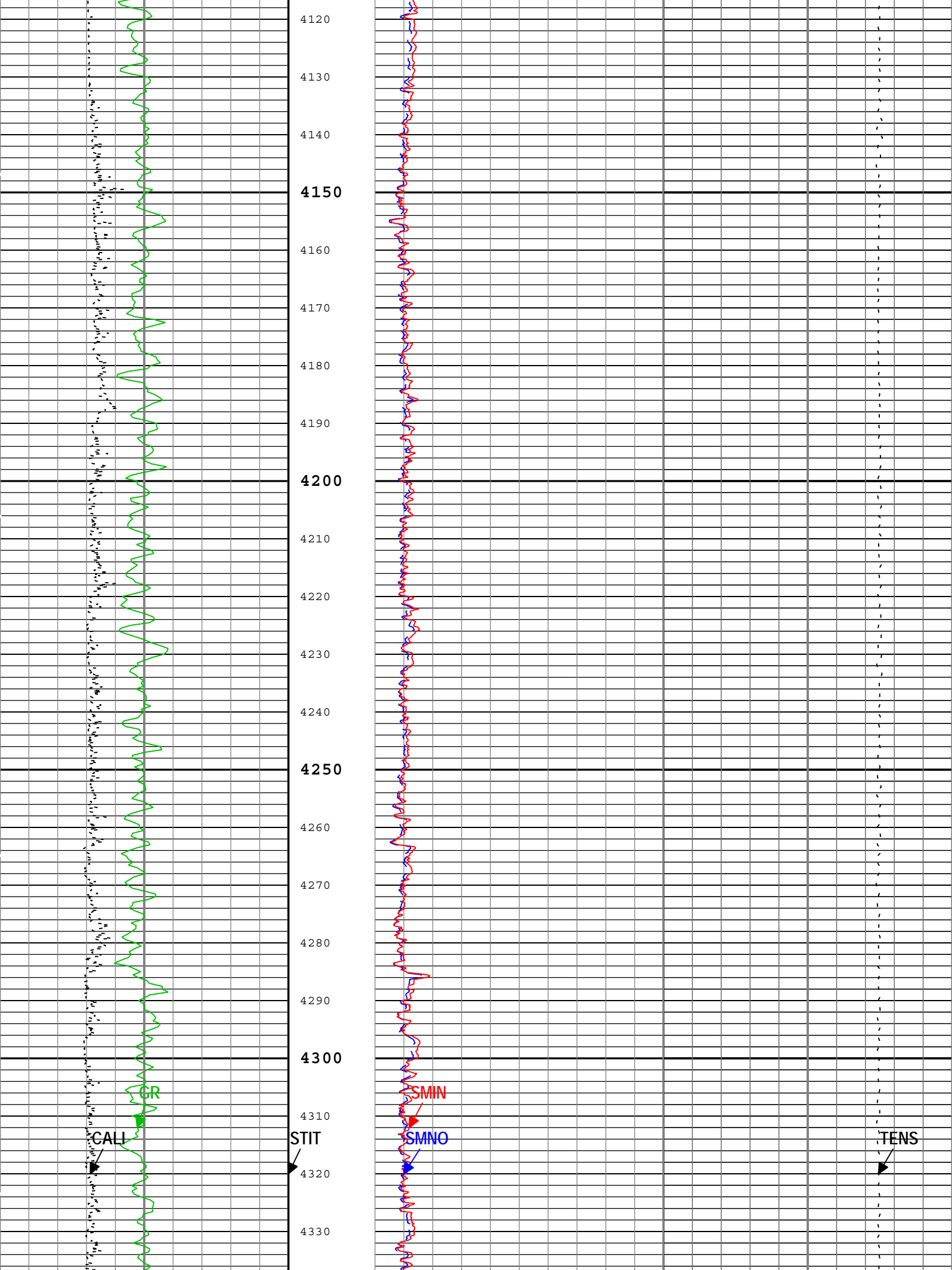
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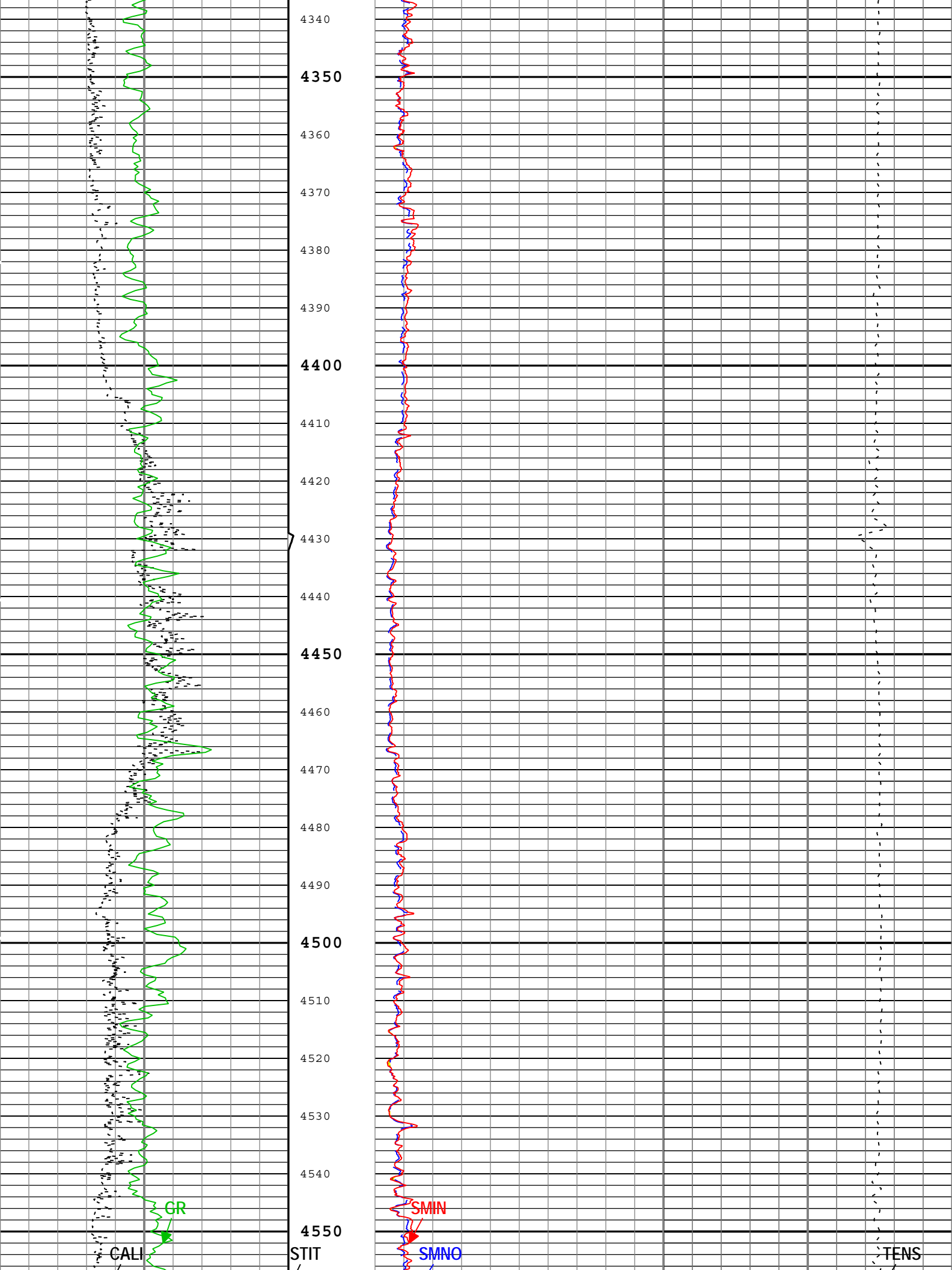
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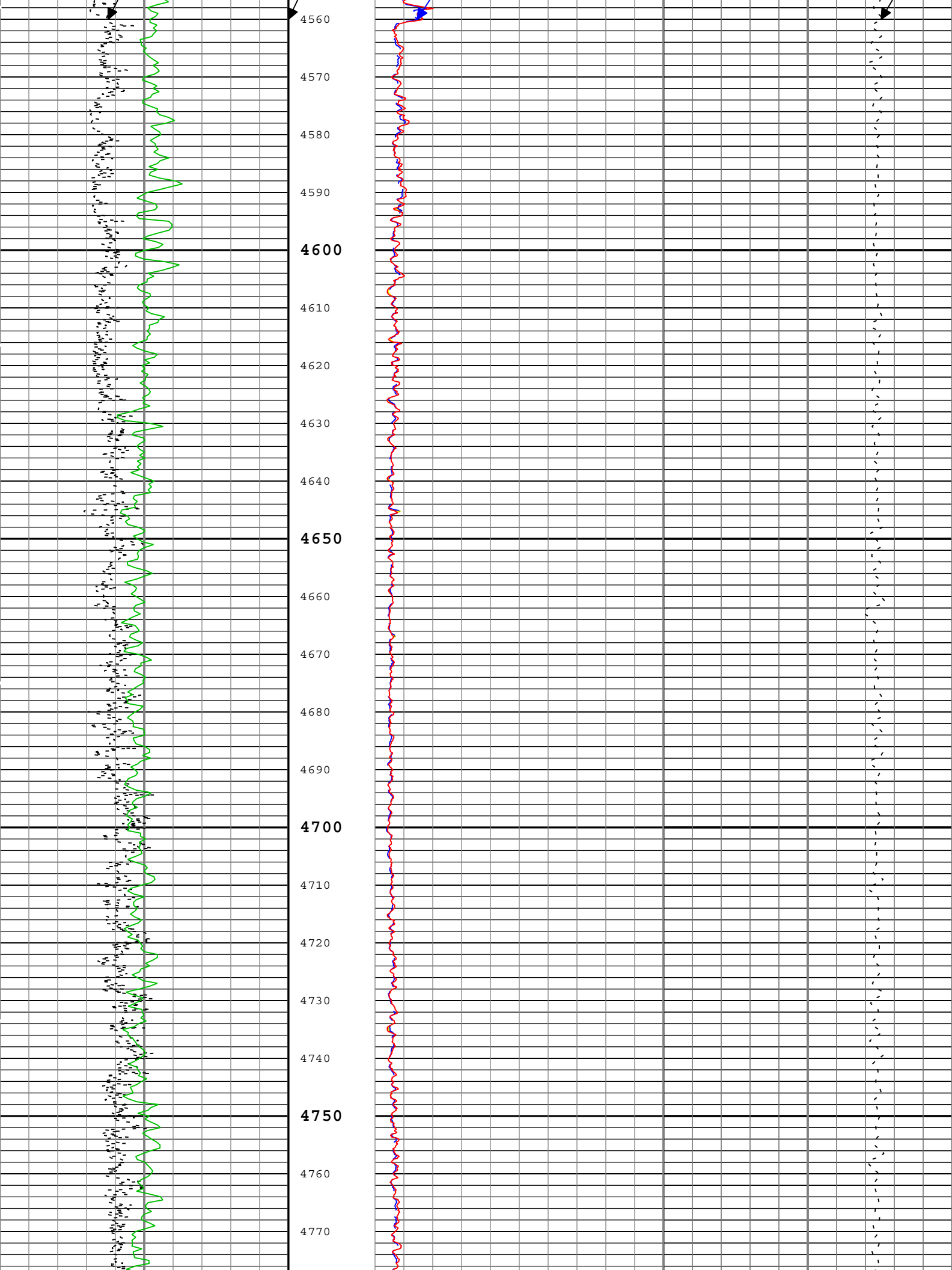


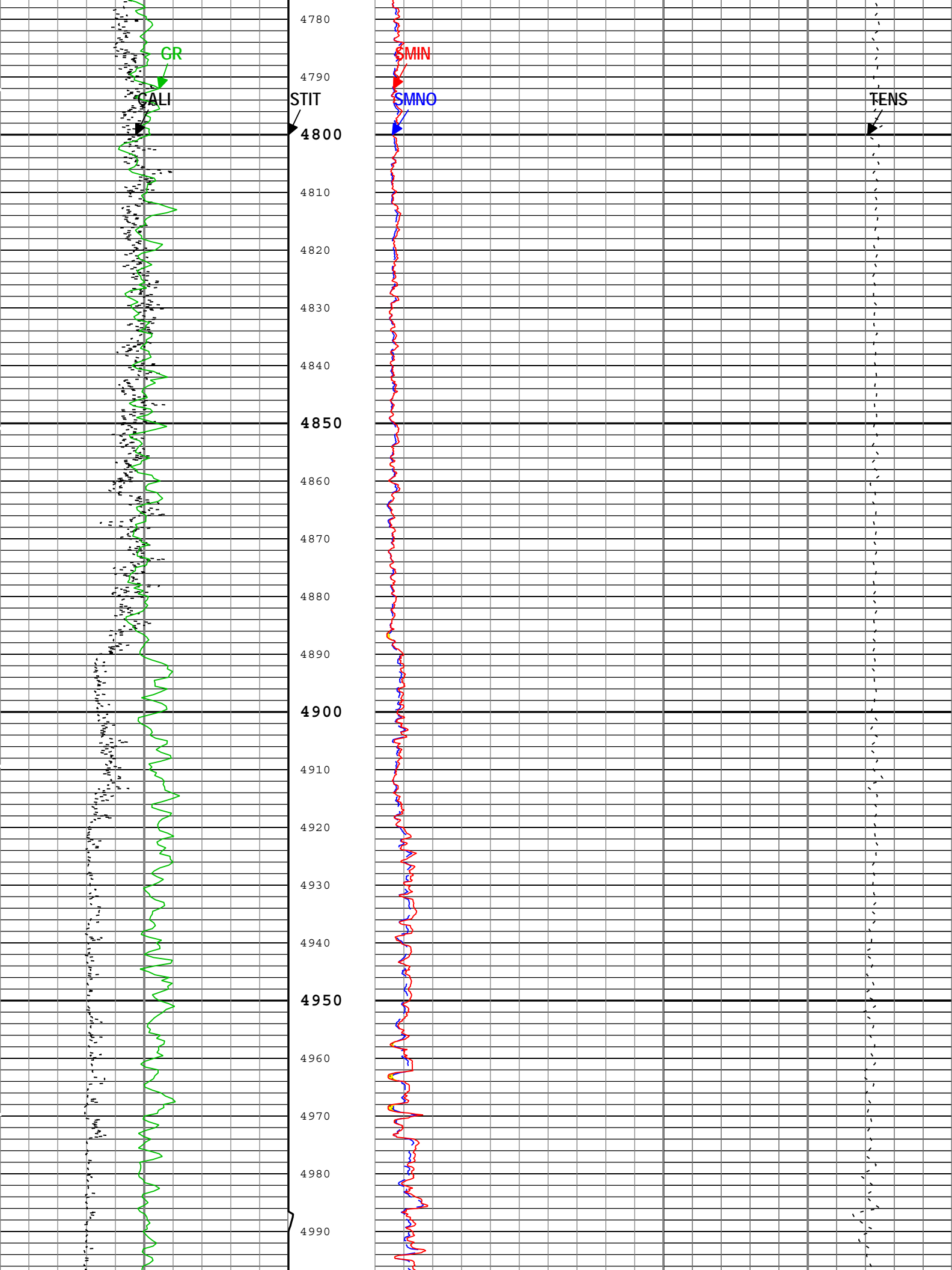


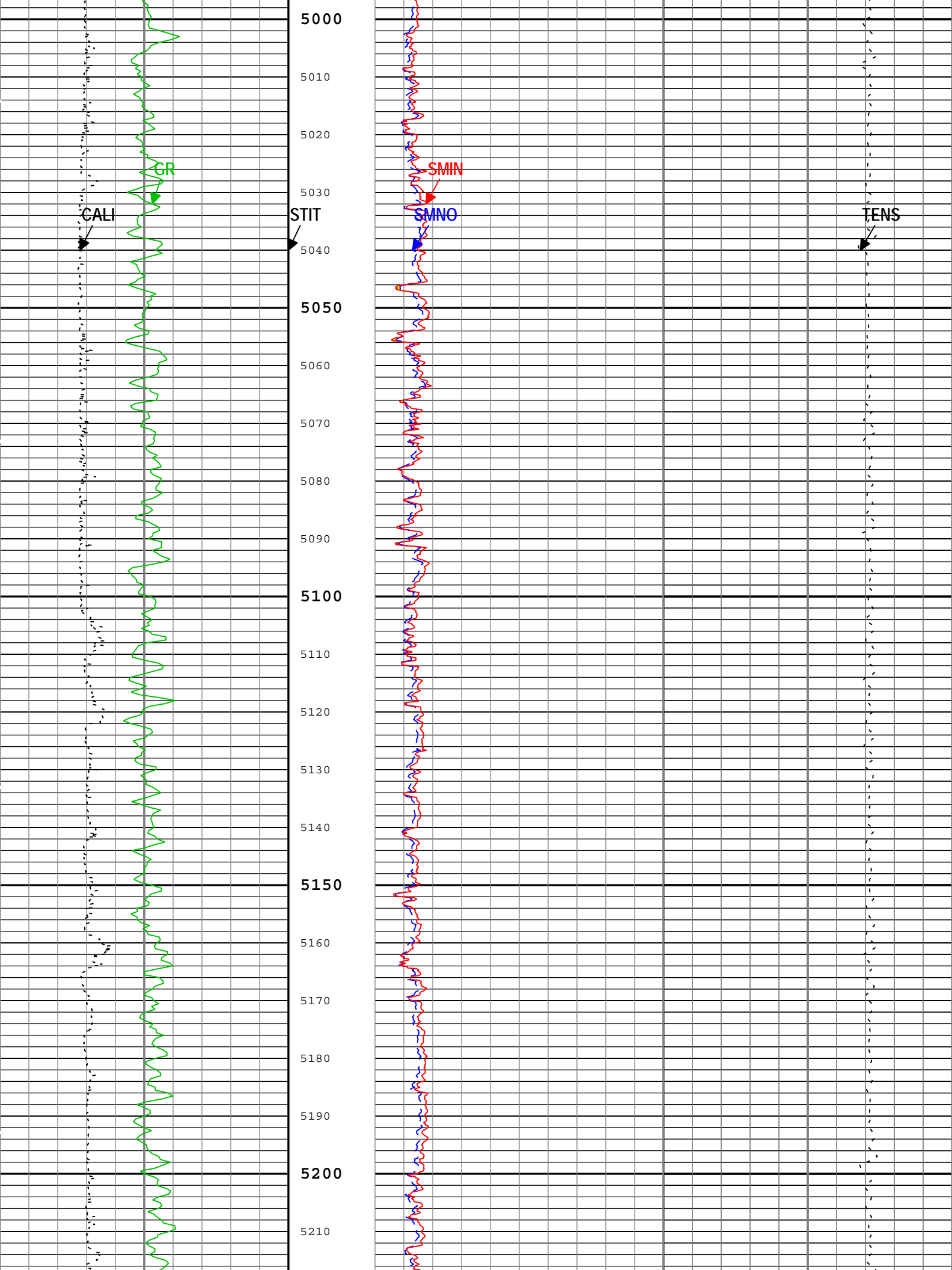


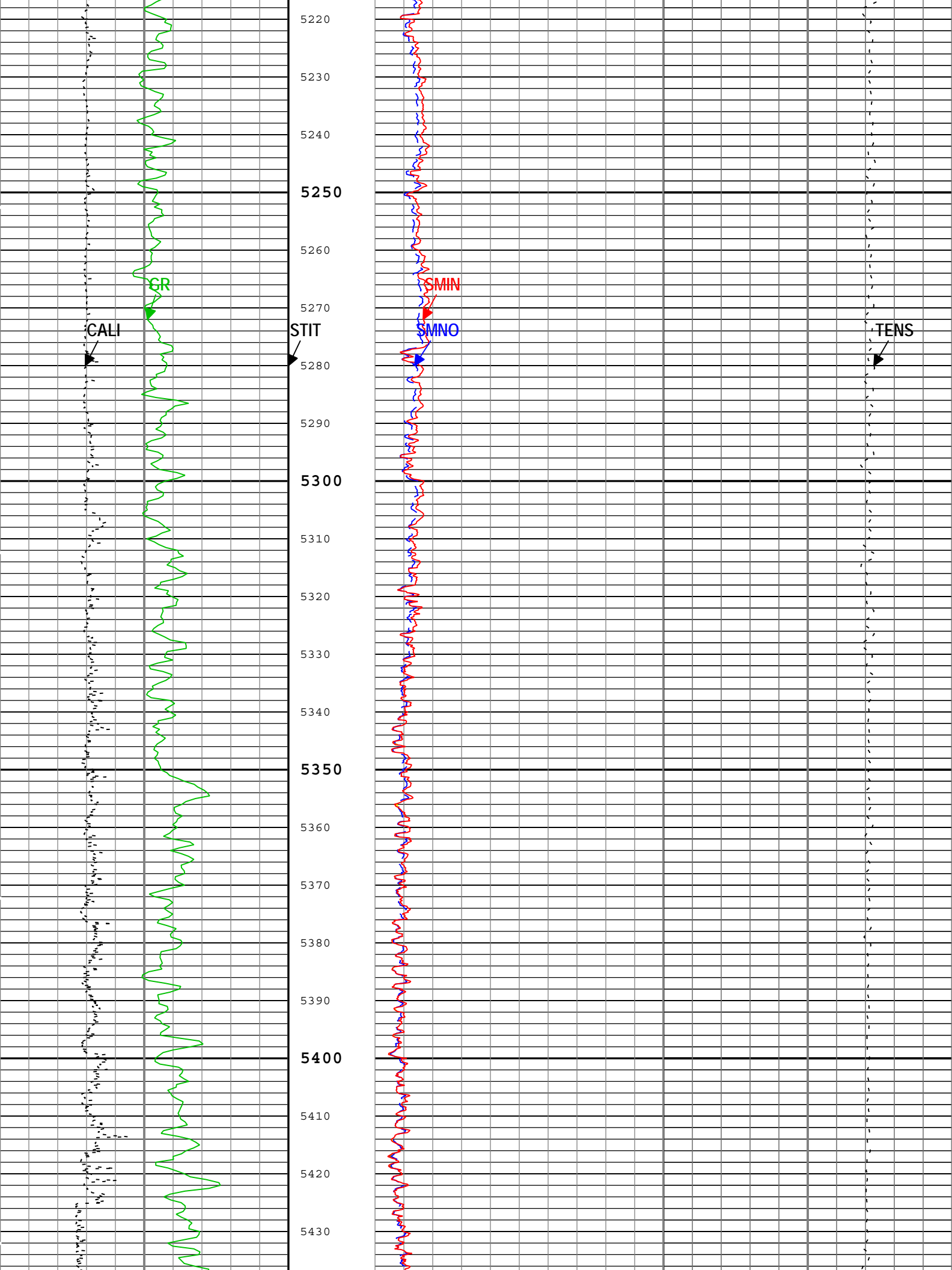


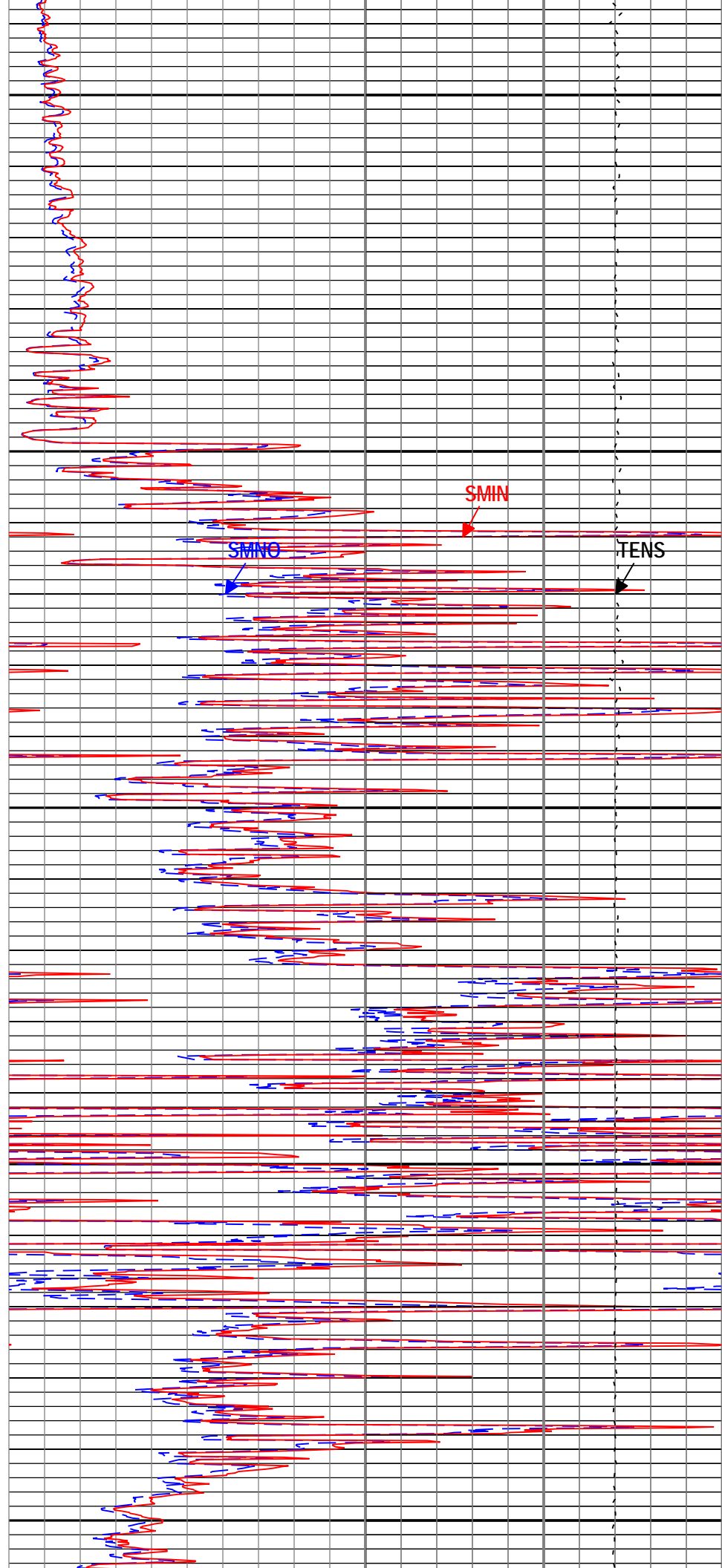
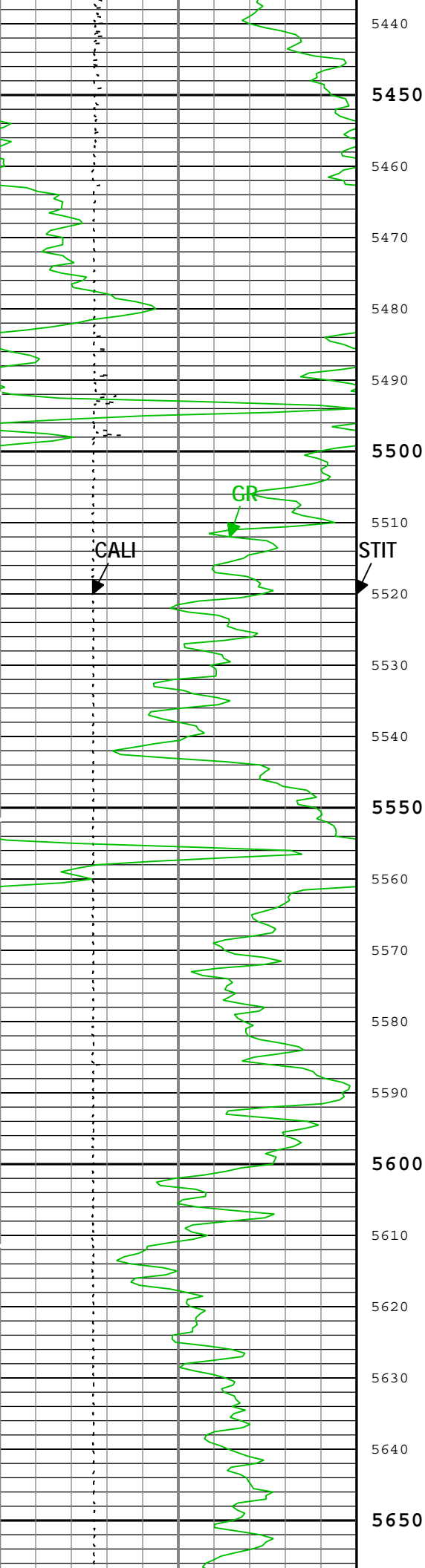


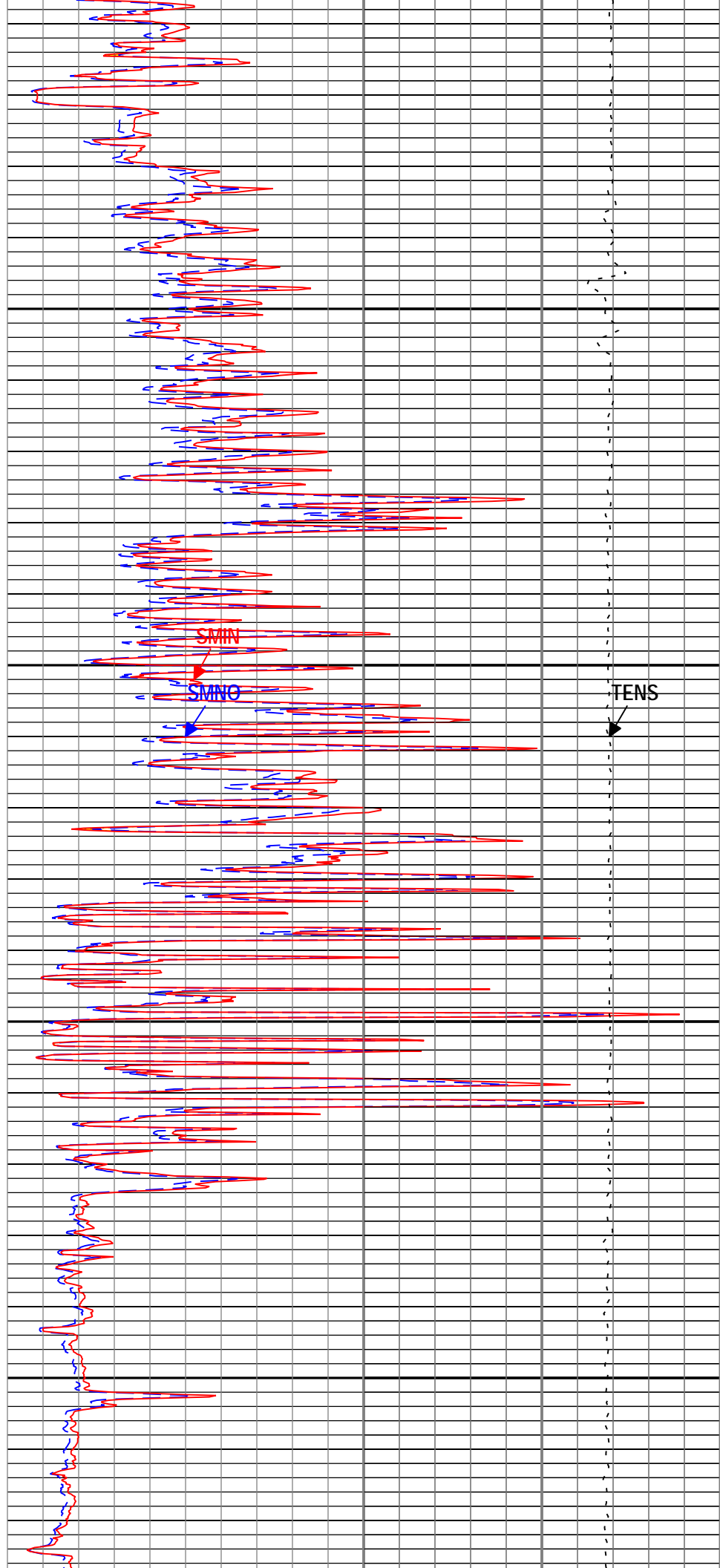
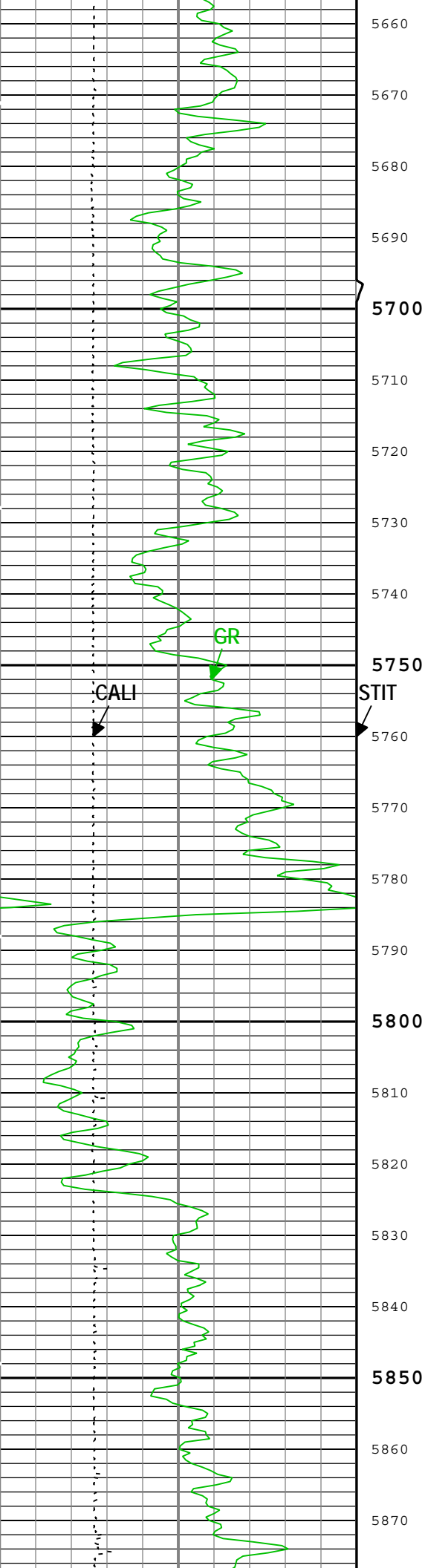


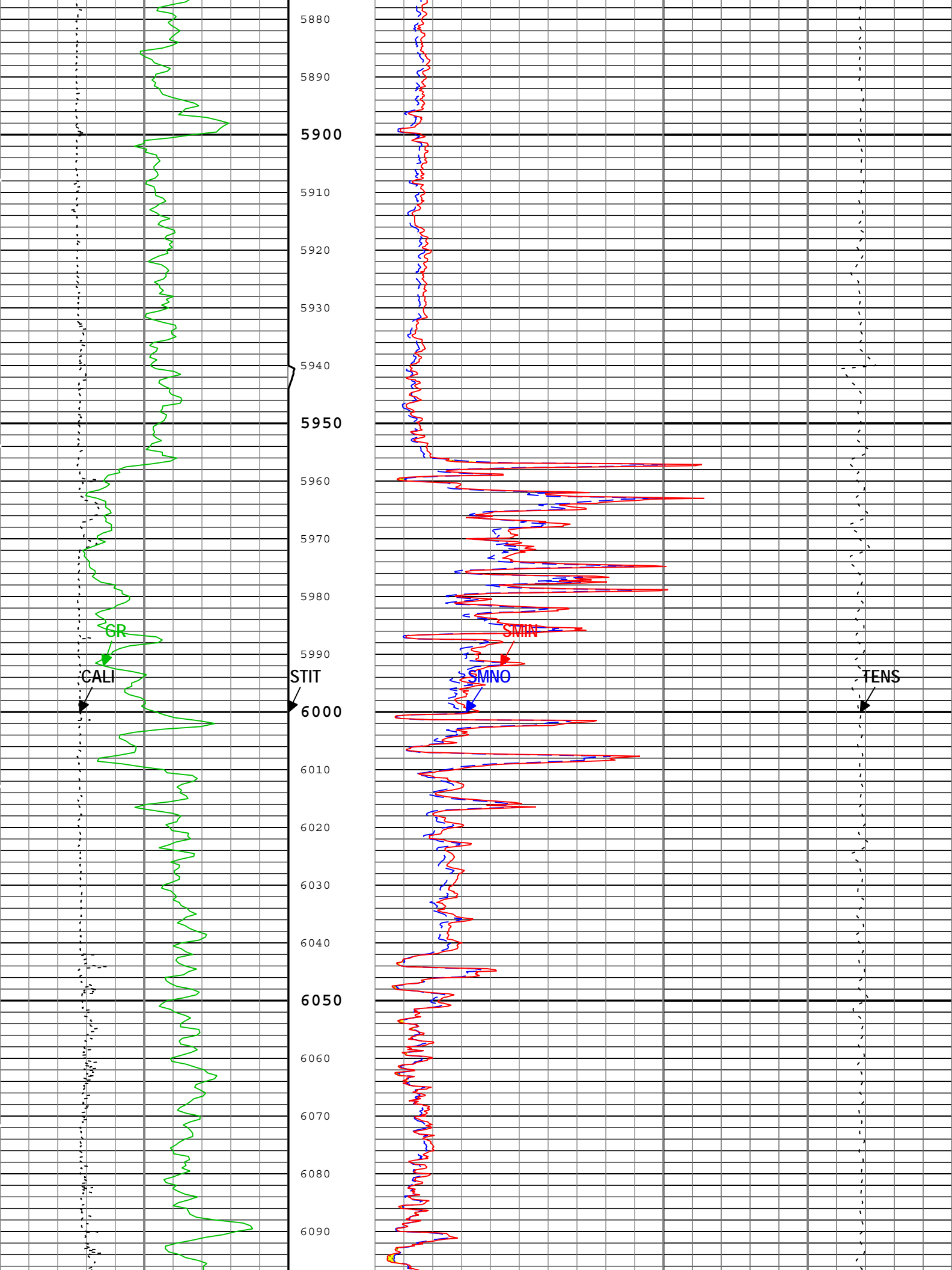


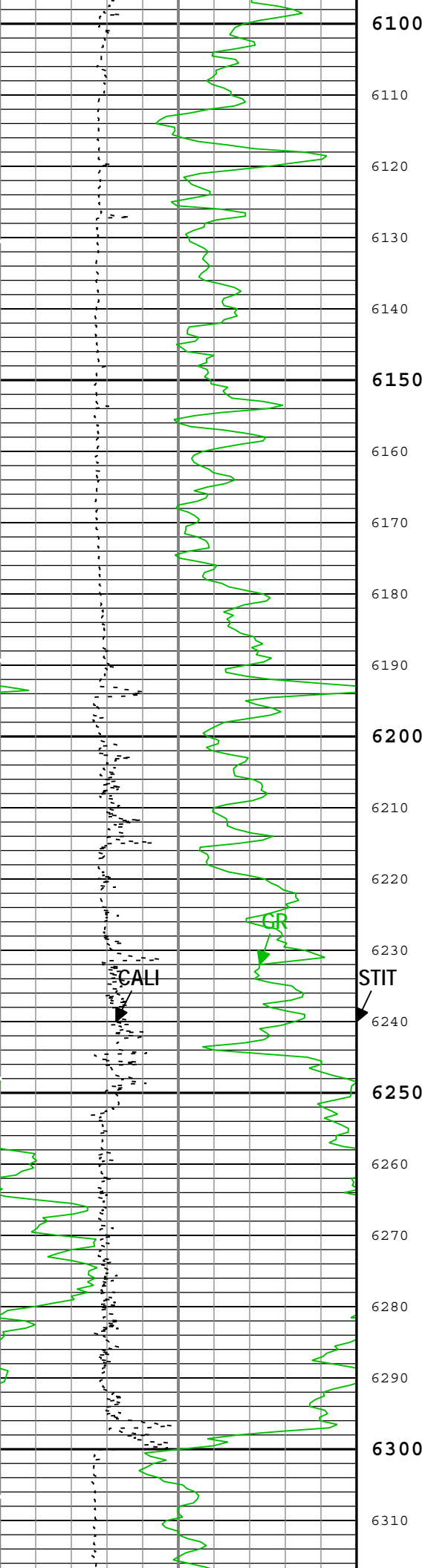












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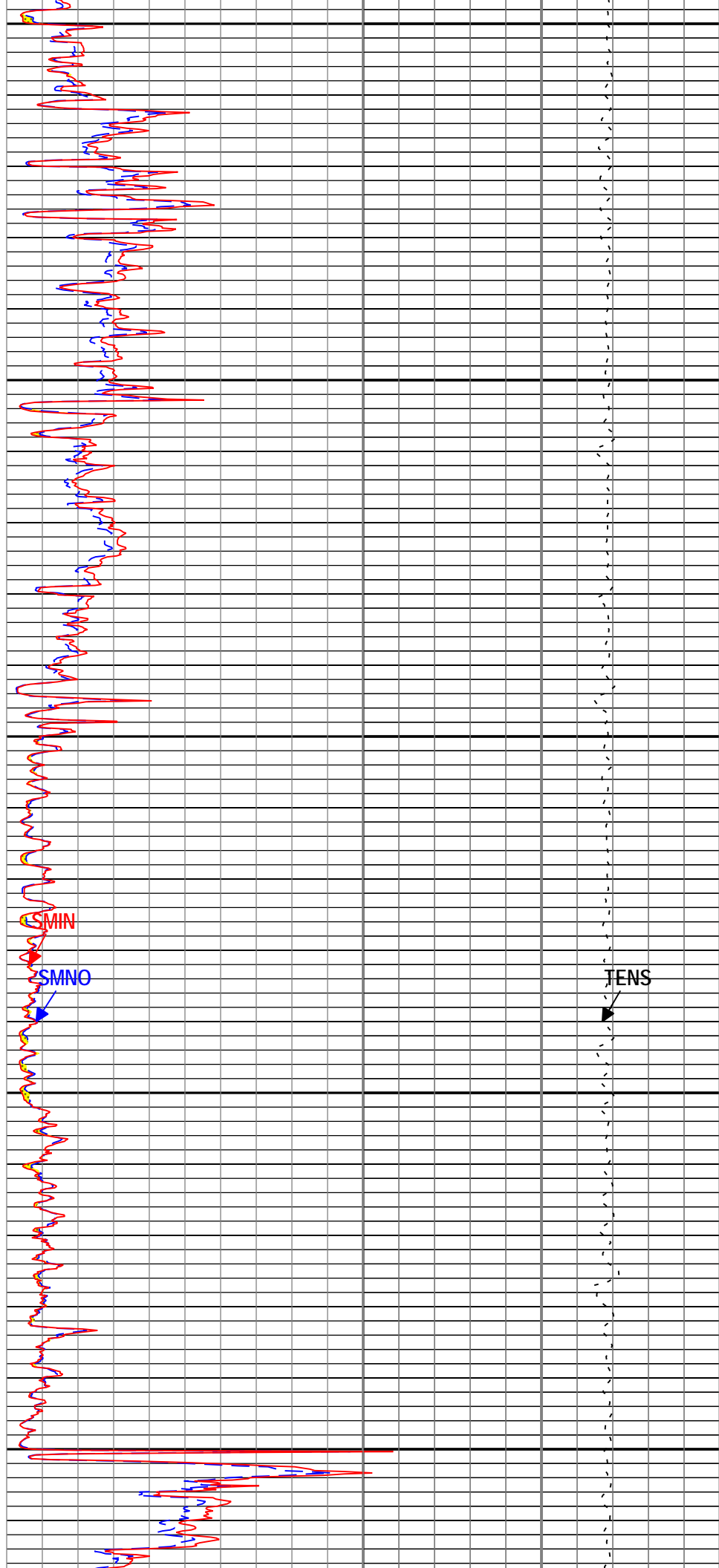
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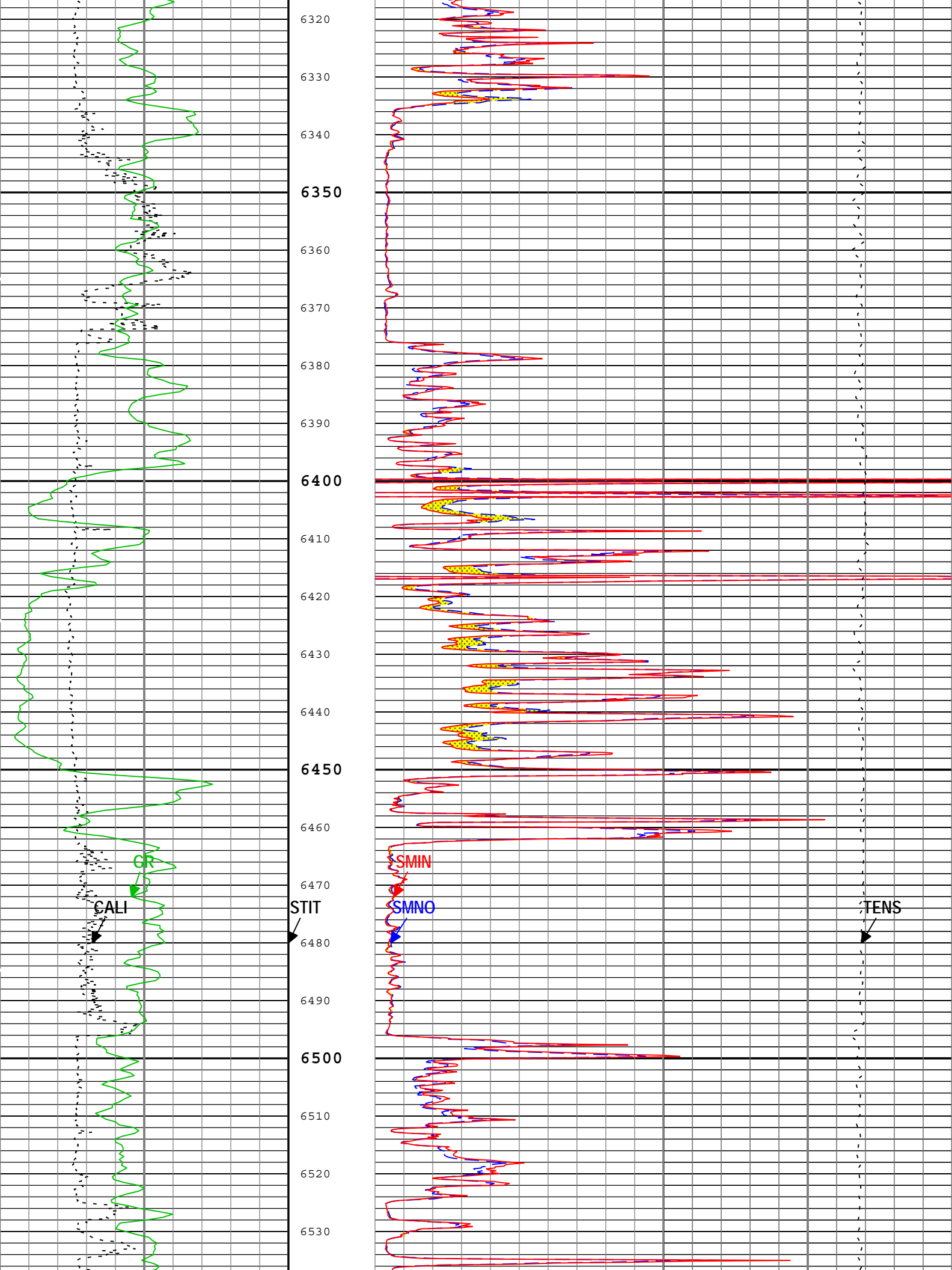
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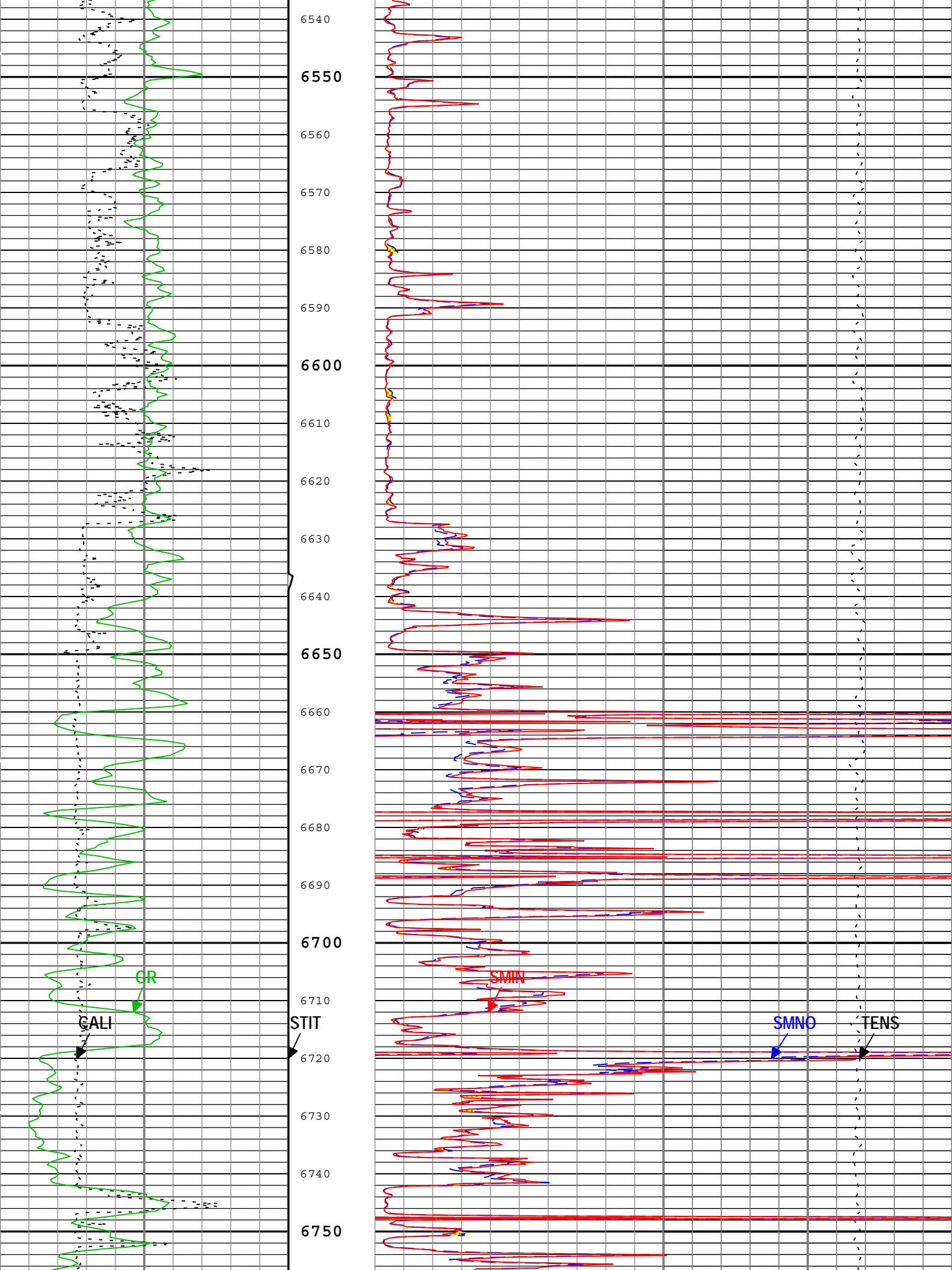
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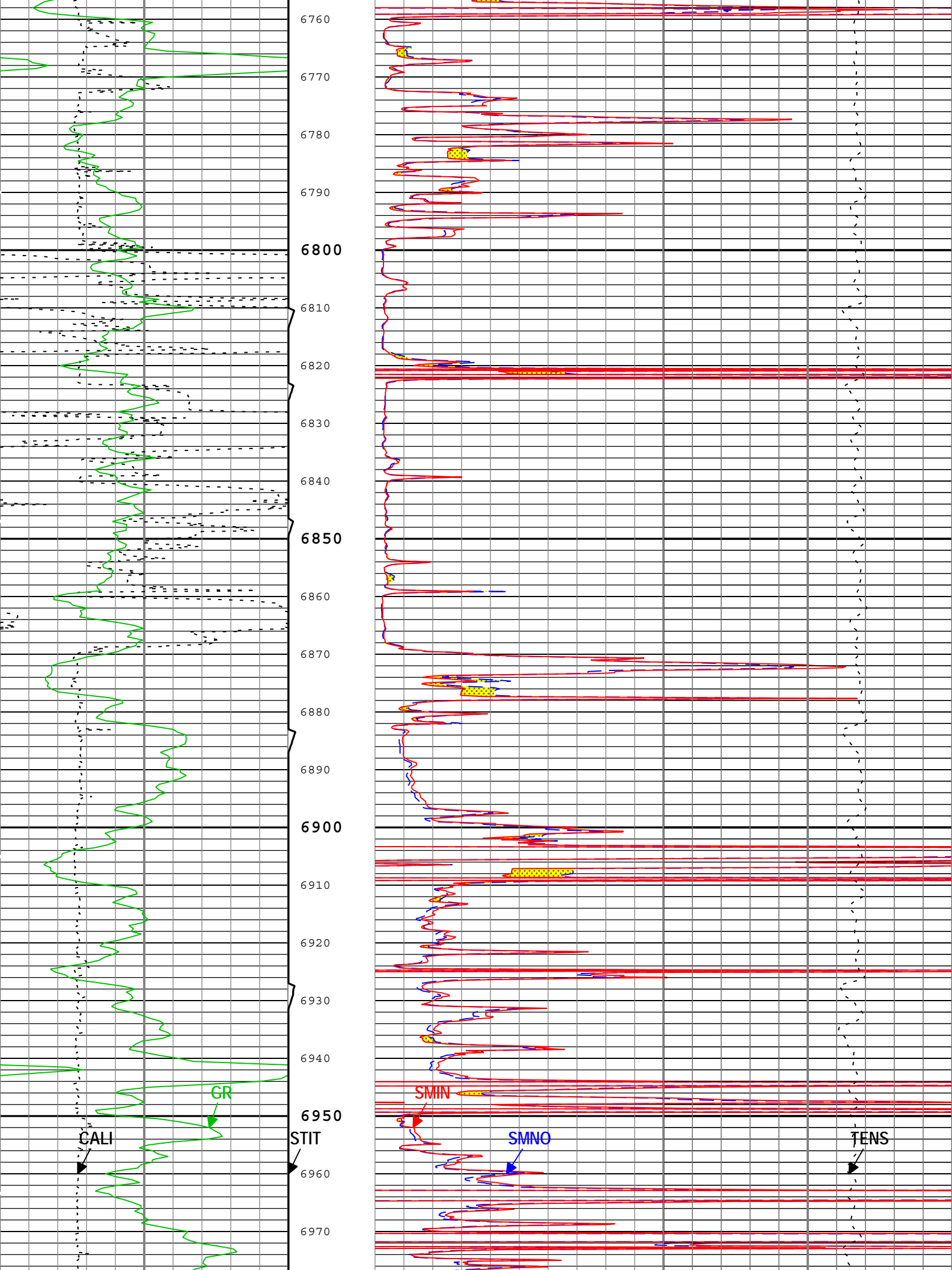
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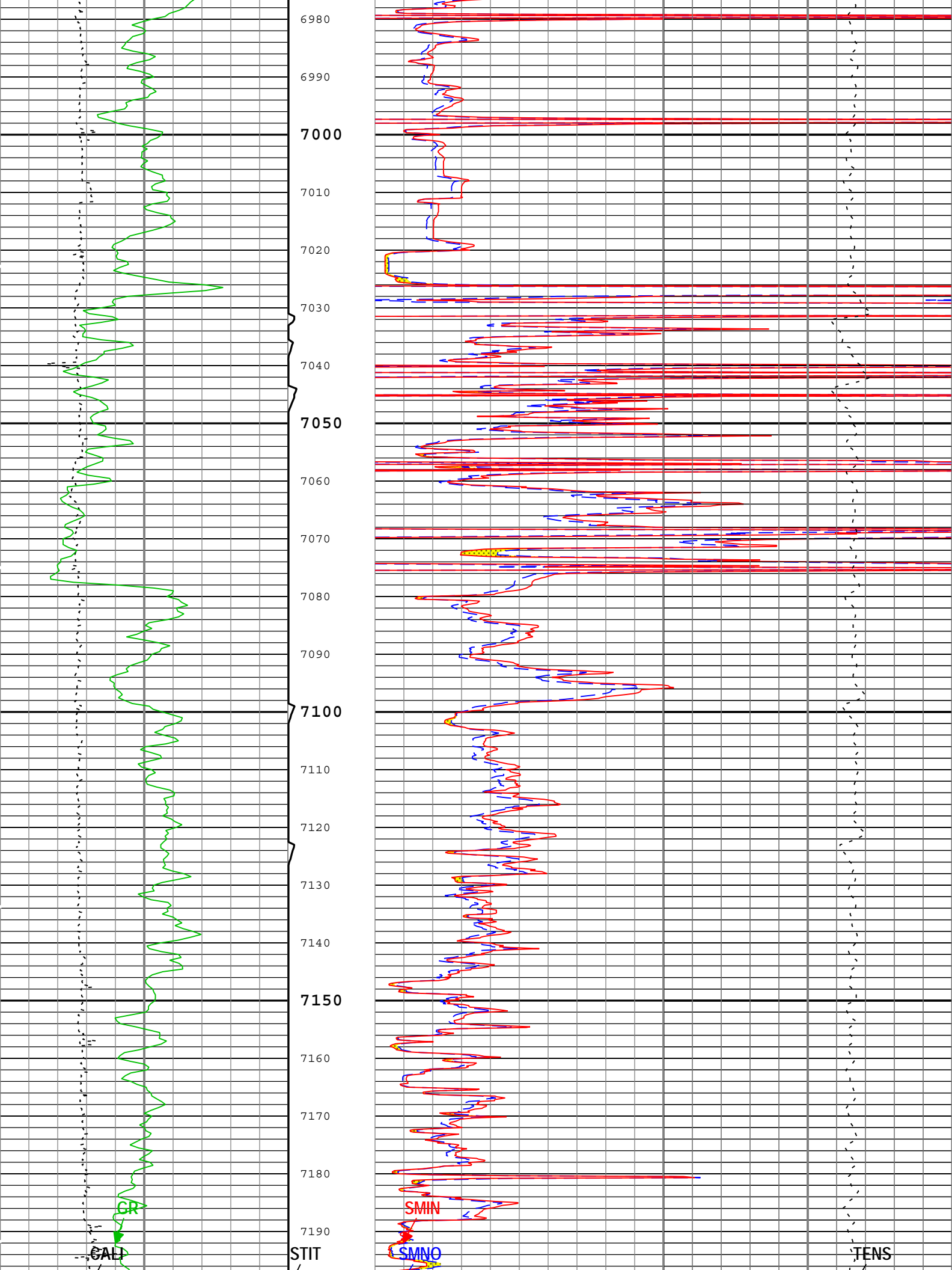
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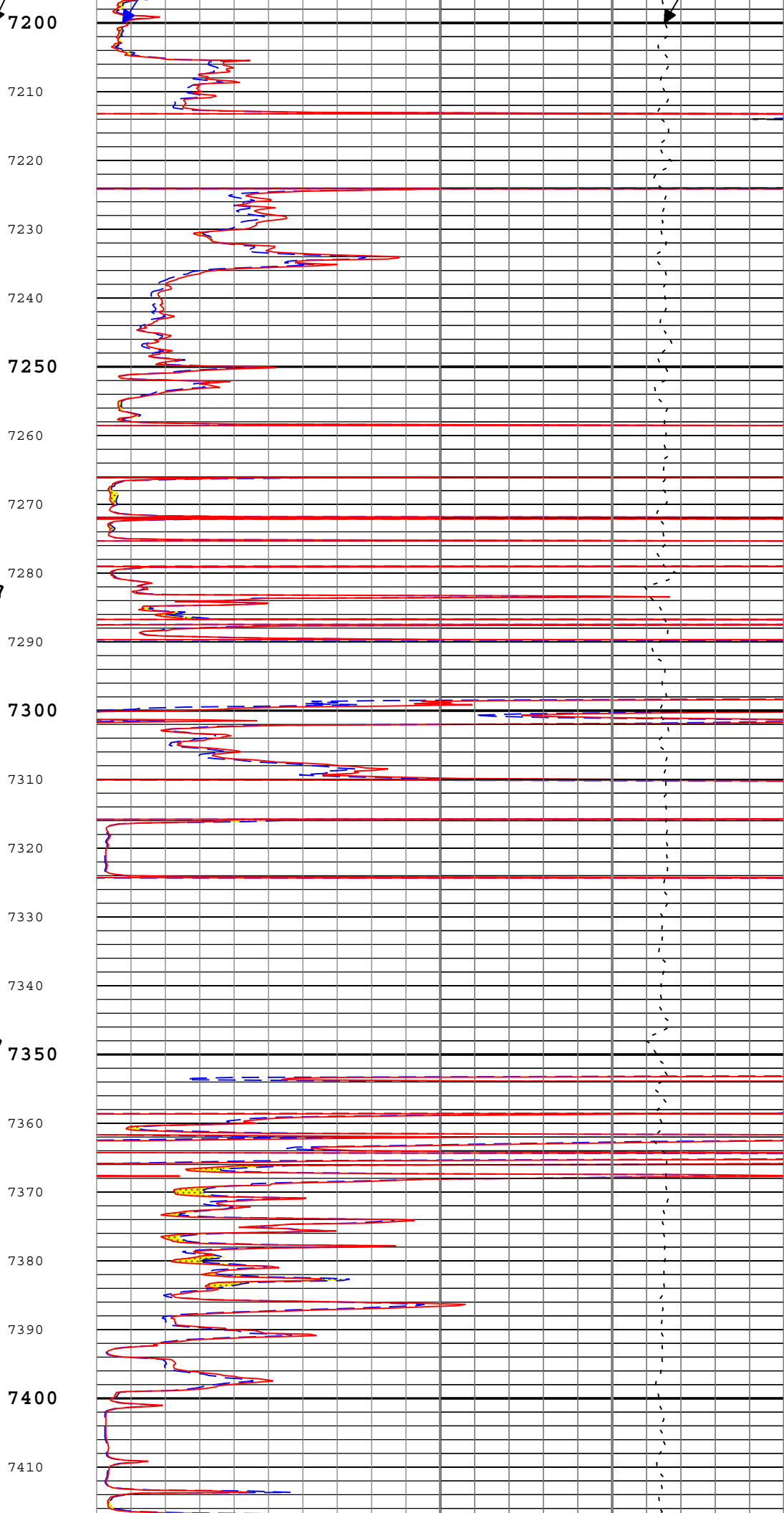
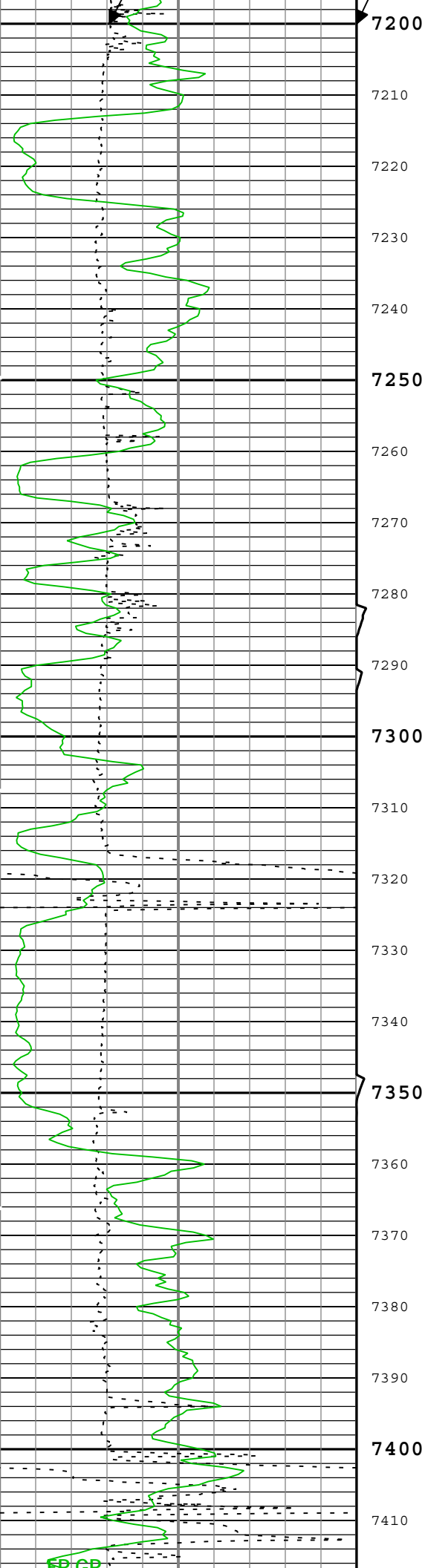
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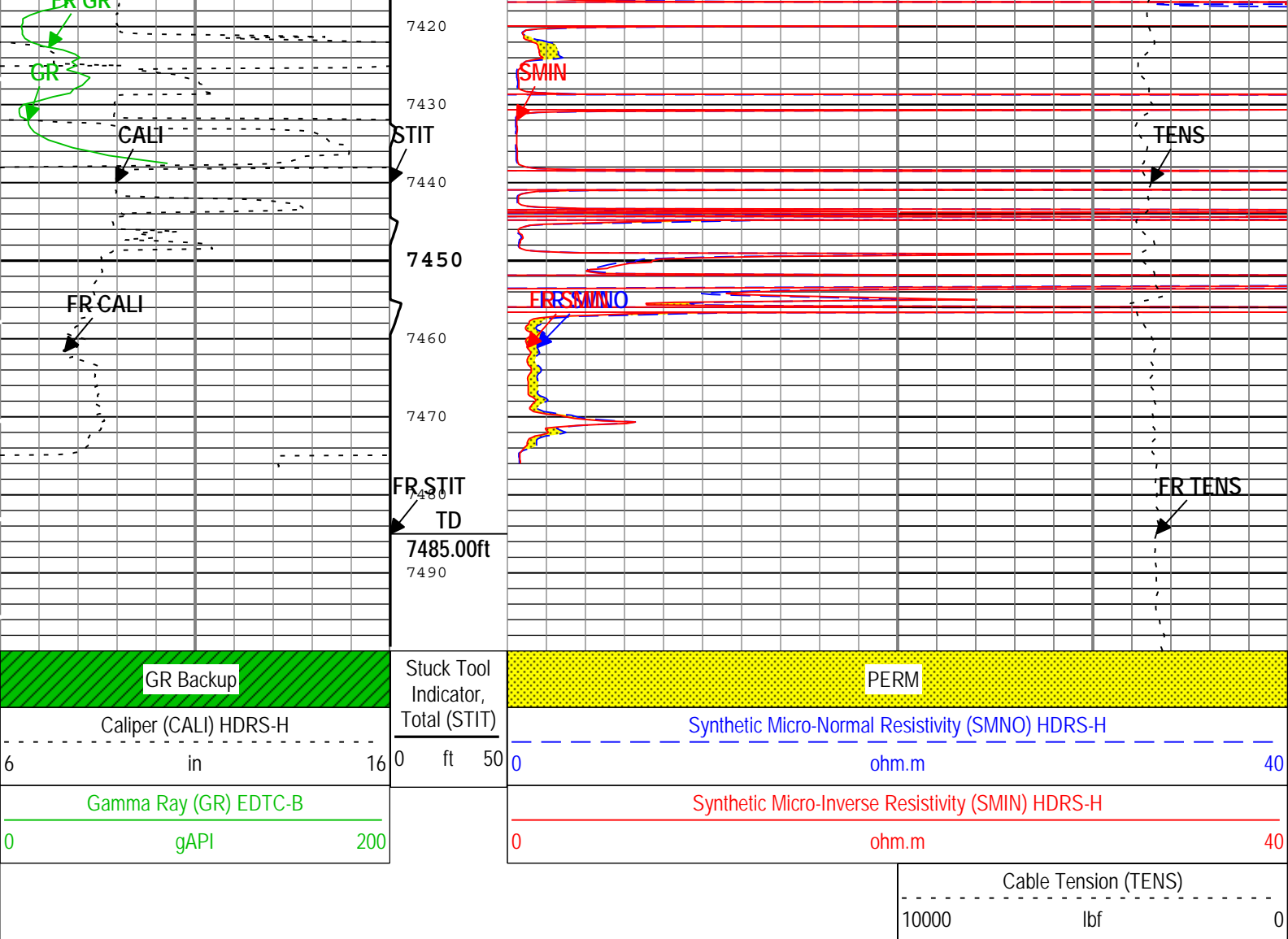












TIME_1900 - Time Marked every 60.00 (s)

Description: MCFL processing for Platform Express Format: Log (KM 5in Micro Log) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured
 Depth Creation Date: 18-Aug-2014 05:18:16

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.2	in
CBLO	Casing Bottom (Logger)	WLSESSION	1564	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9.7	lbm/gal
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	
TD	Total Measured Depth	Borehole	7485	ft

Depth Zone Parameters			
Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	1540	1563.7
BS	8.75	1563.7	7500

All depth are actual.

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				
HDRS-H (HILT Density and Rxo Sonde, 150 degC) Calibration - Run One				
Primary Equipment :				
	HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	3828	
	HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H	3760	
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, 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):		15:34:46 11-Aug-2014 Expired by 4 days						
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Small Ring	in	Before	8.00	6.00	8.01	10.00		
Large Ring	in	Before	12.00	9.00	12.32	15.00		

HDRS Density Calibration - Inversion Results								
Master (EEPROM):		19:57:24 07-Aug-2014						
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Rho Aluminum	g/cm3	Master	2.596	2.586	2.597	2.606		
Rho Magnesium	g/cm3	Master	1.686	1.676	1.686	1.696		
Pe Aluminum		Master	2.570	2.470	2.573	2.670		
Pe Magnesium		Master	2.650	2.550	2.612	2.750		

HDRS Density Calibration - Deviation Summary								
Master (EEPROM):		19:57:24 07-Aug-2014						
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
BS Average Deviation	%	Master	0	-0.6000	0.3581	0.6000		
BS Max Deviation	%	Master	0	-1.6000	0.7597	1.6000		
SS Average Deviation	%	Master	0	-1.0000	0.2058	1.0000		
SS Max Deviation	%	Master	0	-2.5000	0.5896	2.5000		
LS Average Deviation	%	Master	0	-1.5000	0.8070	1.5000		
LS Max Deviation	%	Master	0	-3.5000	1.9199	3.5000		

HDRS Density Calibration - Background Summary								
Master (EEPROM):		19:57:24 07-Aug-2014		Before (Measured):		15:35:23 11-Aug-2014 Expired by 4 days		
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
BS Window Ratio		Master	1.0000		0.7352			
		Before	0.7352	0.6985	0.7324	0.7720		
		Before-Master	-----	-----	-0.0028	-----		
BS Window Sum	1/s	Master	1		23918			
		Before	23918	22723	23920	25114		
		Before-Master	-----	-----	2	-----		
SS Window Ratio		Master	1.0000		0.4821			
		Before	0.4821	0.4580	0.4858	0.5062		
		Before-Master	-----	-----	0.0037	-----		
SS Window Sum	1/s	Master	1		9772			
		Before	9772	9284	9766	10261		
		Before-Master	-----	-----	-6	-----		

		Before Before-Master	0.2994 -----	0.2845 -----	0.2998 0.0004	0.3144 -----	<div><div></div><div></div><div></div><div></div></div>
LS Window Sum	1/s	Master Before Before-Master	1 1176 -----	1117 -----	1176 1175 -1	1235 -----	<div><div></div><div></div><div></div><div></div></div>

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM): 19:57:24 07-Aug-2014		Before (Measured): 15:35:23 11-Aug-2014 Expired by 4 days					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div></div>
BS PM High Voltage	V	Master		1000	1375	2400	<div><div></div><div></div><div></div><div></div></div>
		Before		1000	1371	2400	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-100	-4	100	<div><div></div><div></div><div></div><div></div></div>
SS PM High Voltage	V	Master		1000	1632	2400	<div><div></div><div></div><div></div><div></div></div>
		Before		1000	1643	2400	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-100	11	100	<div><div></div><div></div><div></div><div></div></div>
LS PM High Voltage	V	Master		1000	1188	2400	<div><div></div><div></div><div></div><div></div></div>
		Before		1000	1194	2400	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-100	6	100	<div><div></div><div></div><div></div><div></div></div>

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM): 19:57:24 07-Aug-2014		Before (Measured): 15:35:23 11-Aug-2014 Expired by 4 days					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div></div>
BS Crystal Resolution	%	Master		5.00	10.72	25.00	<div><div></div><div></div><div></div><div></div></div>
		Before		5.00	10.63	25.00	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-1.00	-0.09	1.00	<div><div></div><div></div><div></div><div></div></div>
SS Crystal Resolution	%	Master		5.00	9.28	20.00	<div><div></div><div></div><div></div><div></div></div>
		Before		5.00	9.40	20.00	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-1.00	0.12	1.00	<div><div></div><div></div><div></div><div></div></div>
LS Crystal Resolution	%	Master		5.00	8.42	20.00	<div><div></div><div></div><div></div><div></div></div>
		Before		5.00	8.45	20.00	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-1.00	0.03	1.00	<div><div></div><div></div><div></div><div></div></div>

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured): 15:37:11 11-Aug-2014 Expired by 4 days							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div></div>
Main Resistivity	ohm.m	Before	3875	3565	3861	4185	<div><div></div><div></div><div></div><div></div></div>
Deep Resistivity	ohm.m	Before	3830	3524	3800	4136	<div><div></div><div></div><div></div><div></div></div>
Shallow Resistivity	ohm.m	Before	3830	3524	3817	4136	<div><div></div><div></div><div></div><div></div></div>

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

Primary Equipment :			
EDTC-B		EDTC-B	8593
Calibration Parameter :			
Plus Reference (Jig minus background reference)		165	

EDTC-B Accelerometer Calibration - EDTC-B Accelerometer Calibration

Before (Measured): 09:18:13 17-Aug-2014							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div></div>
AZ Vertical Measurement	ft/s2	Before	32.19	31.53	32.12	32.84	<div><div></div><div></div><div></div><div></div></div>

EDTC-B Memory Data - EDTC-B Memory Data

Master (EEPROM): 12:05:34 17-Aug-2014							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div></div>
Initial PMT HV	V	Master			1482.000		<div><div></div><div></div><div></div><div></div></div>
Accelerometer Serial Number		Master			696		<div><div></div><div></div><div></div><div></div></div>
Accelerometer Coefficients - 0		Master	-----	-----	2.987	-----	<div><div></div><div></div><div></div><div></div></div>
Accelerometer Coefficients - 1		Master	-----	-----	0.000	-----	<div><div></div><div></div><div></div><div></div></div>
Accelerometer Coefficients - 2		Master	-----	-----	0.000	-----	<div><div></div><div></div><div></div><div></div></div>
Accelerometer Coefficients - 3		Master	-----	-----	0.000	-----	<div><div></div><div></div><div></div><div></div></div>
Accelerometer Coefficients - 4		Master	-----	-----	0.000	-----	<div><div></div><div></div><div></div><div></div></div>
Accelerometer Coefficients - 5		Master	-----	-----	0.000	-----	<div><div></div><div></div><div></div><div></div></div>
Accelerometer Coefficients - 6		Master	-----	-----	0.000	-----	<div><div></div><div></div><div></div><div></div></div>
Accelerometer Coefficients - 7		Master	-----	-----	-0.007	-----	<div><div></div><div></div><div></div><div></div></div>
Accelerometer Coefficients - 8		Master	-----	-----	0.000	-----	<div><div></div><div></div><div></div><div></div></div>
Accelerometer Coefficients - 9		Master	-----	-----	0.000	-----	<div><div></div><div></div><div></div><div></div></div>
Accelerometer Coefficients - 10		Master	-----	-----	0.000	-----	<div><div></div><div></div><div></div><div></div></div>

Accelerometer Coefficients - 11		Master	-----	-----	0.000	-----	<div></div>
Gamma-Ray Detector Serial Number		Master			7792		<div></div>
EDTC-B Gamma-Ray Calibration - Gamma Ray Coefficients							
Before (Measured): 14:03:39 11-Aug-2014							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div></div>
Gamma Ray Gain		Before	1.000	0.900	1.079	1.100	<div></div>
EDTC-B Gamma-Ray Calibration - Gamma Ray Accumulations							
Before (Measured): 14:03:39 11-Aug-2014							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div></div>
RGR Zero Measurement	gAPI	Before		0	86.537	120.000	<div></div>
RGR Plus Measurement	gAPI	Before	165.000	150.000	152.970	180.000	<div></div>

Company:	Whiting Oil and Gas Corporation	Schlumberger
Well:	Horsetail 19N-1924M	
Field:	Wildcat	
County:	Weld	
State:	Colorado	
Platform Express		
Micro Log		