

Company: Encana Oil & Gas

Well: State 23-16

Field: Wattenberg

County: Weld State: Colorado

Platform Express	
Caliper	
Cement Volume	
County: Weld	
Field: Wattenberg	
Location: SHL: SENW 2441' FNL & 1461' FWL	
Well: State 23-16	
Company: Encana Oil & Gas	
Location:	
SHL: SENW 2441' FNL & 1461' FWL	Elev. K.B. 5086.00 ft
Sec: 16, T:3N, R:68W	G.L. 5073.00 ft
Lat: 40.226410, Long: -105.012120	D.F. 5085.00 ft
Permanent Datum:	Ground Level
Log Measured From:	Kelly Bushing
Drilling Measured From:	Kelly Bushing
API Serial No. 051233680600	Section: 16
	Township: 3N
	Range: 68W
Logging Date	08-Apr-2013

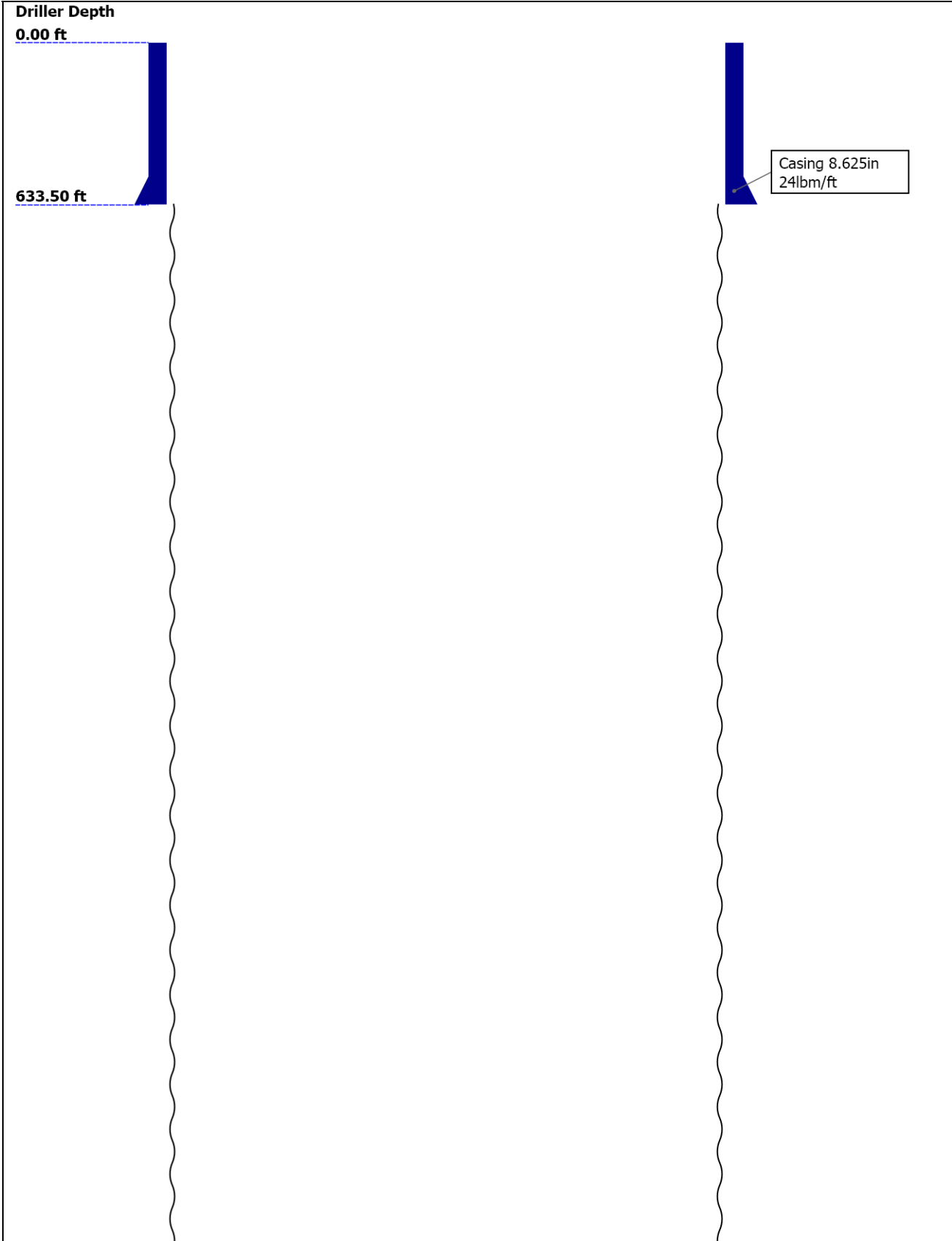
Run Number	Run One
Depth Driller	8028.00 ft
Schlumberger Depth	8032.50 ft
Bottom Log Interval	8032.50 ft
Top Log Interval	632.00 ft
Casing Driller Size @ Depth	8.625 in @ 633.50 ft
Casing Schlumberger	632 ft
Bit Size	7.875 in
Type Fluid In Hole	Water
Density	9.7 lbm/gal
Fluid Loss	PH
Source of Sample	Active Tank
RM @ Meas Temp	0.25 ohm.m @ 53.4 degF
RMF @ Meas Temp	0.19 ohm.m @ 53.4 degF
RMC @ Meas Temp	0.31 ohm.m @ 53.4 degF
Source RMF	Calculated
RM @ BHT	0.07 @ 204
RMF @ BHT	0.05 @ 204
Max Recorded Temperatures	204 degF
Circulation Stopped	08-Apr-2013 18:00:00
Logger on Bottom	09-Apr-2013 01:45:58
Unit Number	3030
Recorded By	Max Pace
Witnessed By	Roy Hunt/Wess Harrison

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.

Contents	
1. Header	
2. Disclaimer	
3. Contents	
4. Well Sketch	
5. Borehole Size/Casing/Tubing Record	
6. Borehole Fluids	
7. Remarks and Equipment Summary	
8. Depth Summary	
9. Run One	
9.1 Integration Summary	
9.2 Software Version	
9.3 Composite Summary	
9.4 Log (Noble East Caliper)	
9.5 Parameter Listing	
10. Calibration Report	
11. Tail	

Well Sketch



8028.00 ft

Open Hole 7.875in

Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	7.875					
Top Driller (ft)	633.5					
Top Logger (ft)	633.5					
Bottom Driller (ft)	8028					
Bottom Logger (ft)	8032.5					
Casing						
Size (in)	8.625					
Weight (lbm/ft)	24					
Inner Diameter (in)	8.099					
Grade	N/A					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	633.5					
Bottom Logger (ft)	632					

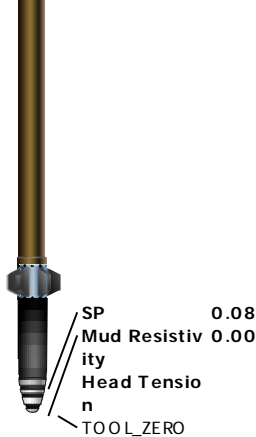
Borehole Fluids

Parameter(unit)	Run One					
Fluid Type	Water					
Max Recorded Temperatures (degF)	204					
Source of Sample	Active Tank					
Salinity (ppm)	34058.5					
Density (lbm/gal)	9.7					
Funnel Viscosity (s)	50					
Fluid Loss (cm3)						
PH	8					
Date/Time Circulation Stopped	08-Apr-2013 18:00:00					
Date Logger on Bottom	09-Apr-2013					
Time Logger on Bottom	01:45:58					
Source RMF	Calculated					
RMC	Calculated					
RM @ Meas Temp (ohm.m@degF)	0.25 @ 53.4					
RMF @ Meas Temp (ohm.m@degF)	0.19 @ 53.4					
RMC @ Meas Temp (ohm.m@degF)	0.31 @ 53.4					

RM @ BHT (ohm.m@degF)	0.07 @ 204					
RMF @ BHT (ohm.m@degF)	0.05 @ 204					
RMC @ BHT (ohm.m@degF)	0.09 @ 204					
Total Solid (%)	10.3					
High Gravity Solids (%)						

Remarks and Equipment Summary

Run One: Toolstring				Run One: Remarks
Equip name	Length	MP name	Offset	All Schlumberger depth control procedures followed. IDW used as primary depth reference. Z Chart used as secondarty depth reference. Crew: Derrick Hunter, Tyler Riter, Max Pace
LEH-QT	43.57			
LEH-QT				
DTC-H:9469	40.65			
ECH-KC:10530		CTEM	39.75	
DTC-H:9469		HV	0.00	
		TelStatus	37.65	
		ToolStatus	37.65	
HGNS-B:863	37.65	Temperature	37.62	
HGNH:2883				
NPV-N		GR	36.91	
NSR-F:5069				
HACCZ-B:452				
HGNS-B:863				
HMCA-B				
		CNL Porosit	30.57	
		y		
		HGNS	28.24	
		HMCA	28.24	
		Accelerome	0.00	
		ter		
HDRS-B:1754	28.24			
ECH-MEB				
HRCC-B:791				
HRMS-B:1754				
Backscatter				
Long Spacing				
Short Spacing				
HRGD-B:1849		HRCC	24.24	
GPV-Q				
GSR-J:5094				
		MCFL	18.81	
		Caliper	18.33	
		TLD Density	17.94	
AIT-H:398	16.00			
AHIS:398				
AHRM:398				
		Power Supp	7.91	
		ly		
		Induction	7.91	
		Temperature	7.91	
		e		



Lengths are in ft
Maximum Outer Diameter = 5.000 in
Line: Sensor Location, V value: Gating Offset
All measurements are relative to TOOL_ZERO

Depth Summary

Depth Control Parameters	Run One		
Conveyance Type	Wireline		
Rig Type	Land		
Depth Measuring Device	Run One		
Type	IDW-B		
Calibration Cable Type	7-39PLXS		
Wheel Correction 1	1		
Wheel Correction 2	0		
Tension Device	Run One		
Type	CMTD-B/A		
Serial Number	2858		
Calibration Date	01-Apr-2013		
Calibrator Serial Number	78135A		
Calibration Points	10		
Calibration RMS	8		
Calibration Peak Error	17		
Logging Cable	Run One		
Type	7-39P-LXS		
Serial Number	U710242		
Logging Cable Length (ft)	16200.00		

Run One

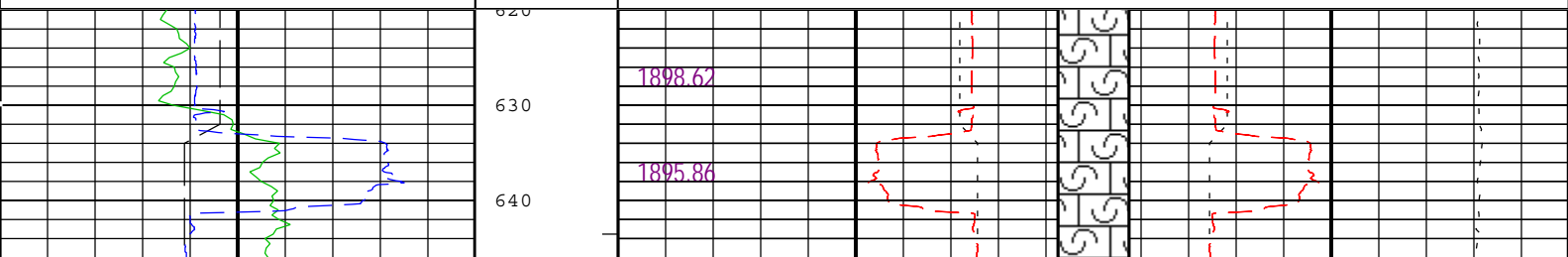
Integration Summary

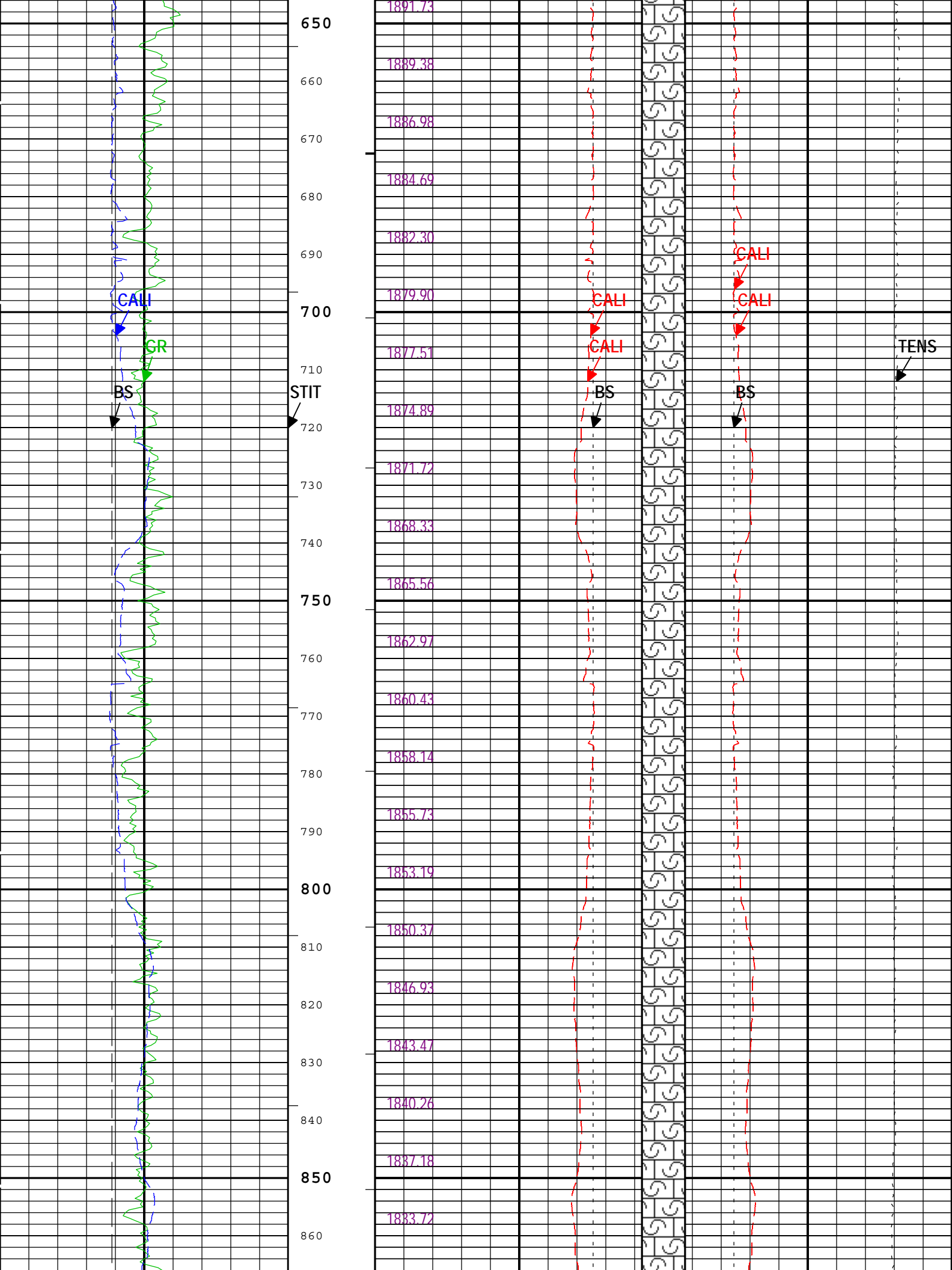
Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	1898.51	ft3
IHV	Integrated Hole Volume	GCSE_UP_PASS	2717.3	ft3

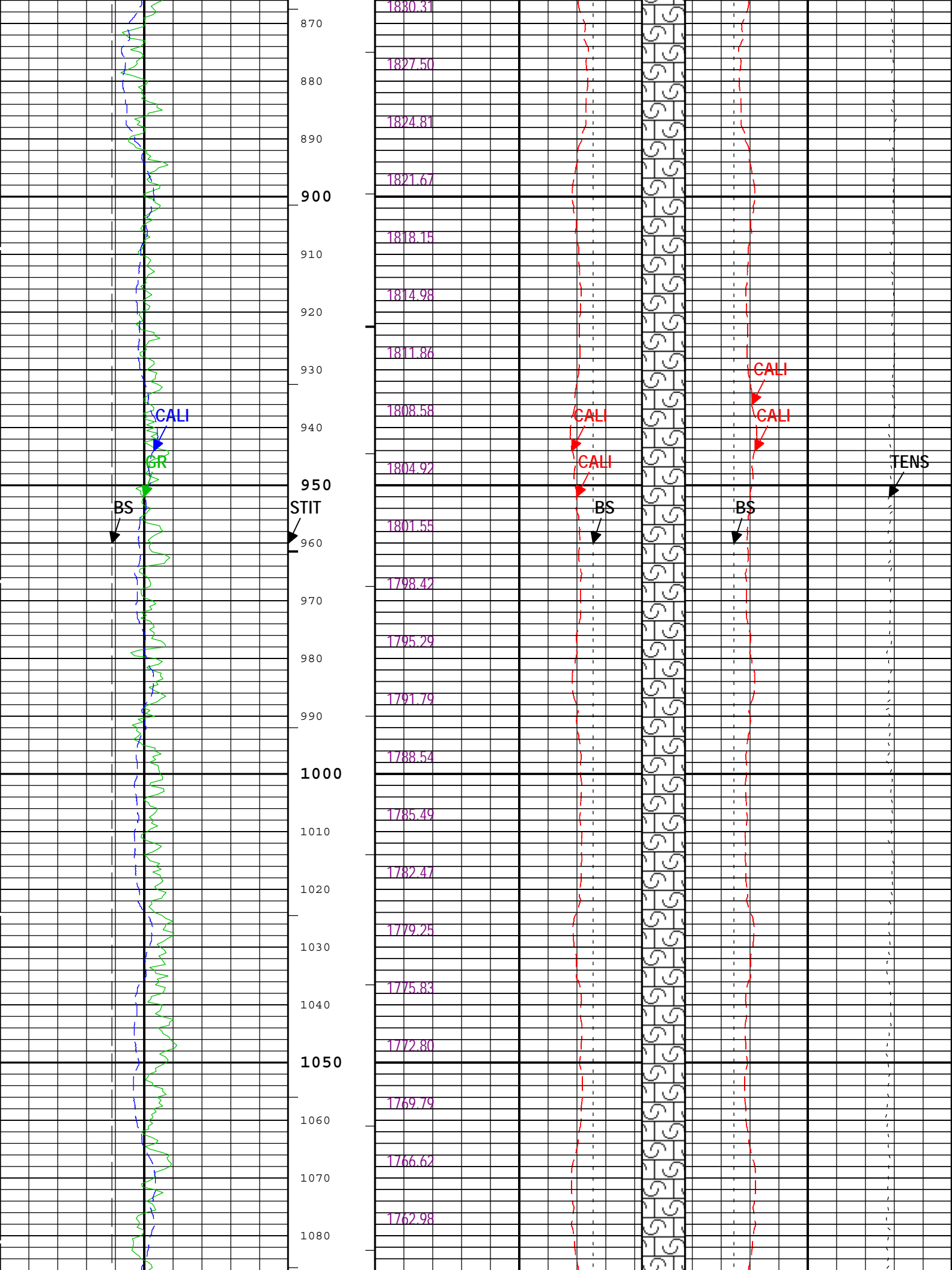
Software Version

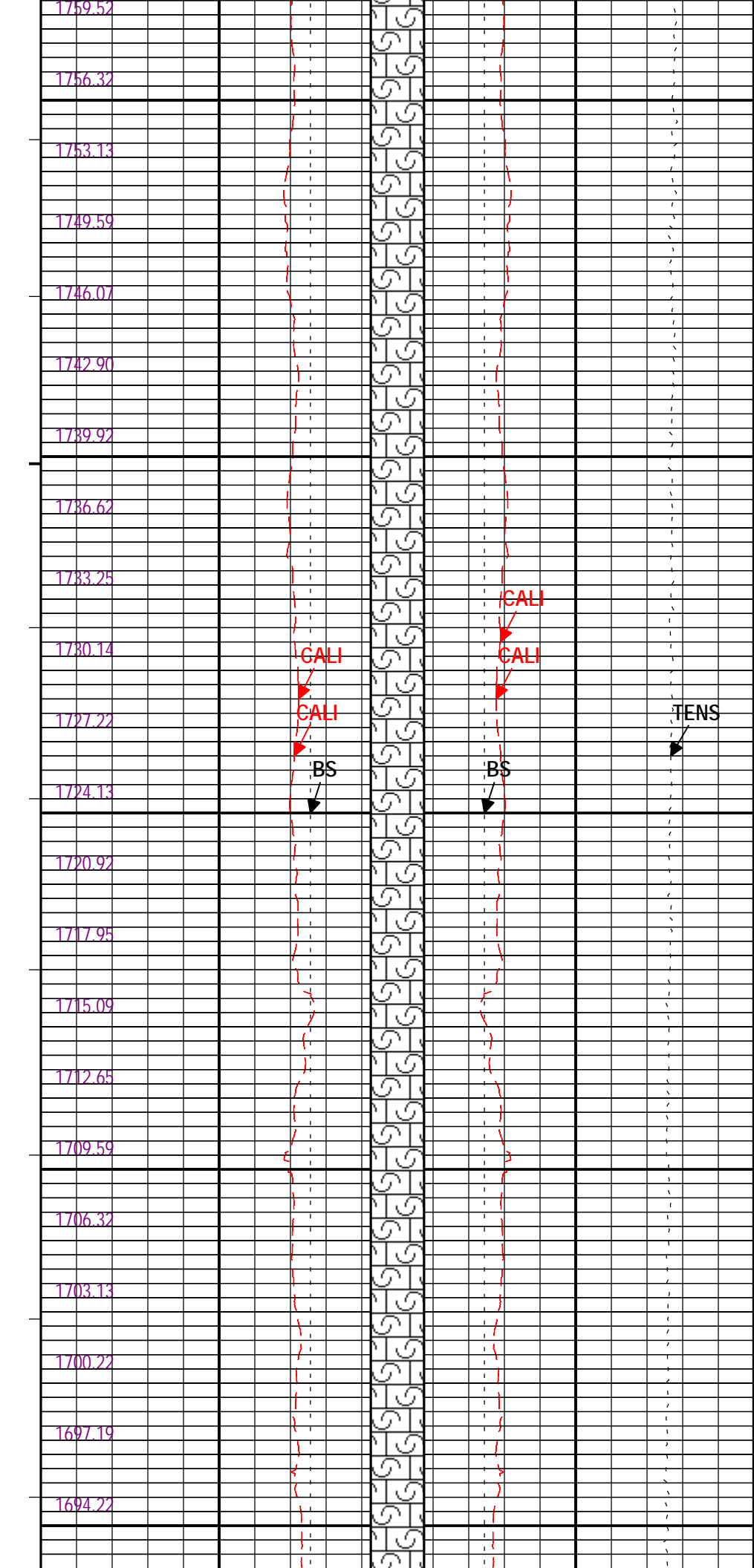
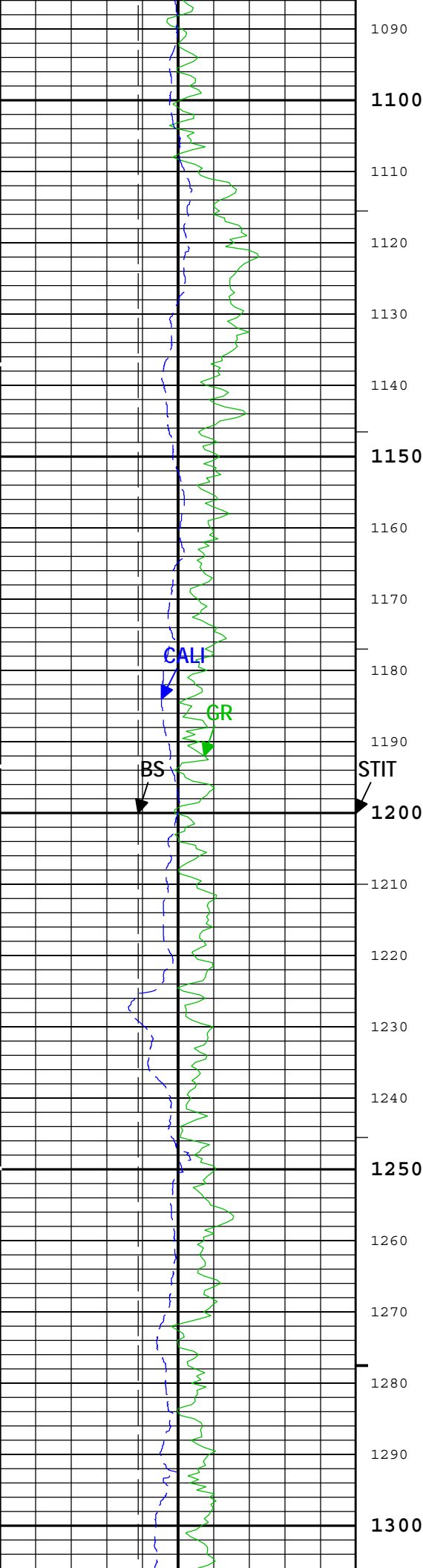
Acquisition System	Version
MaxWell	3.1.9755.0
Application Patch	SP-20120723-3.1.9755.1112
	EXP_APL-MASTAXIS-3.1.9755.1221

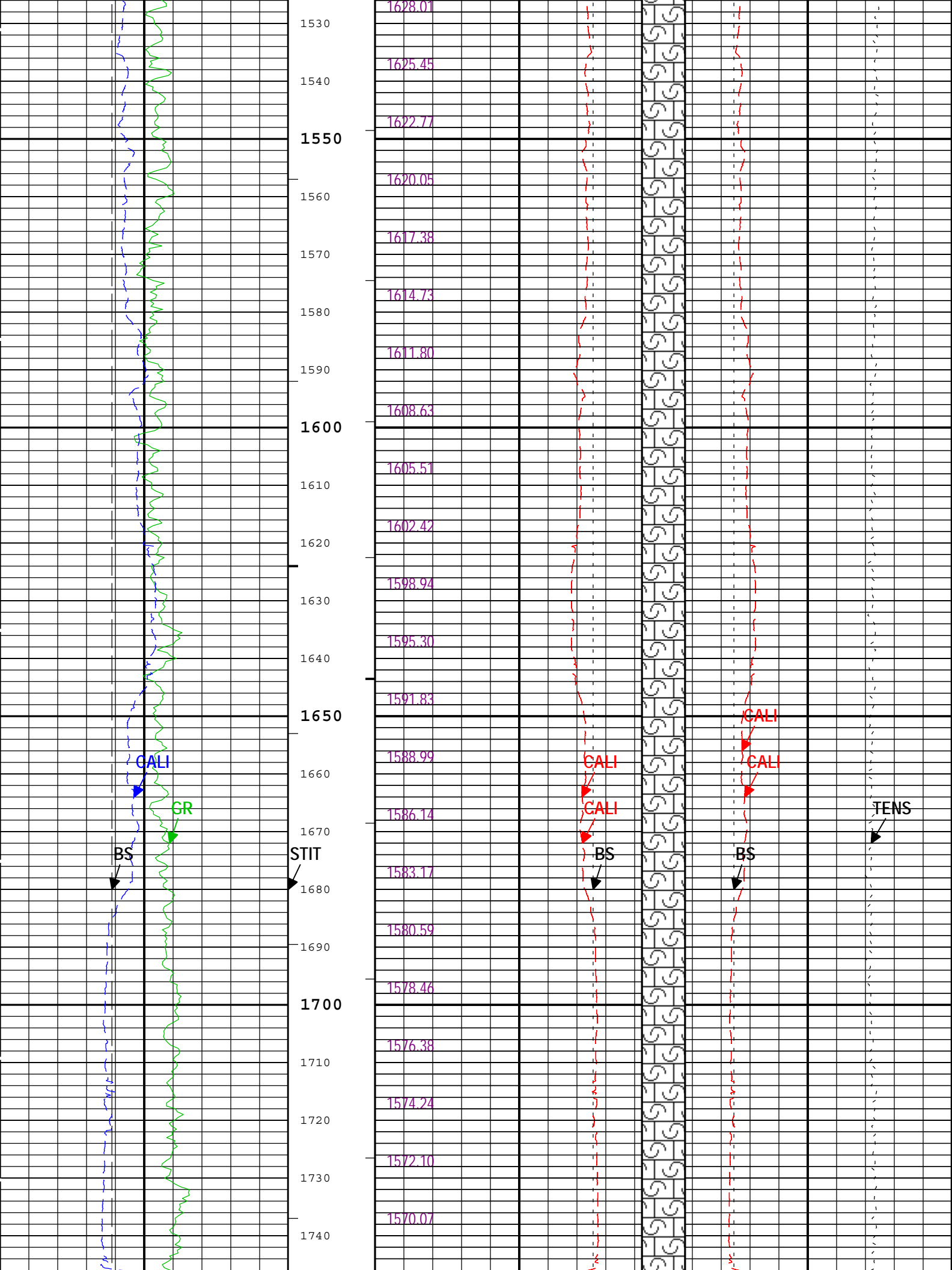
Computation	Description	Version
Borehole	Borehole Ensemble provides common Borehole Parameters and Channels	3.1.9755.0

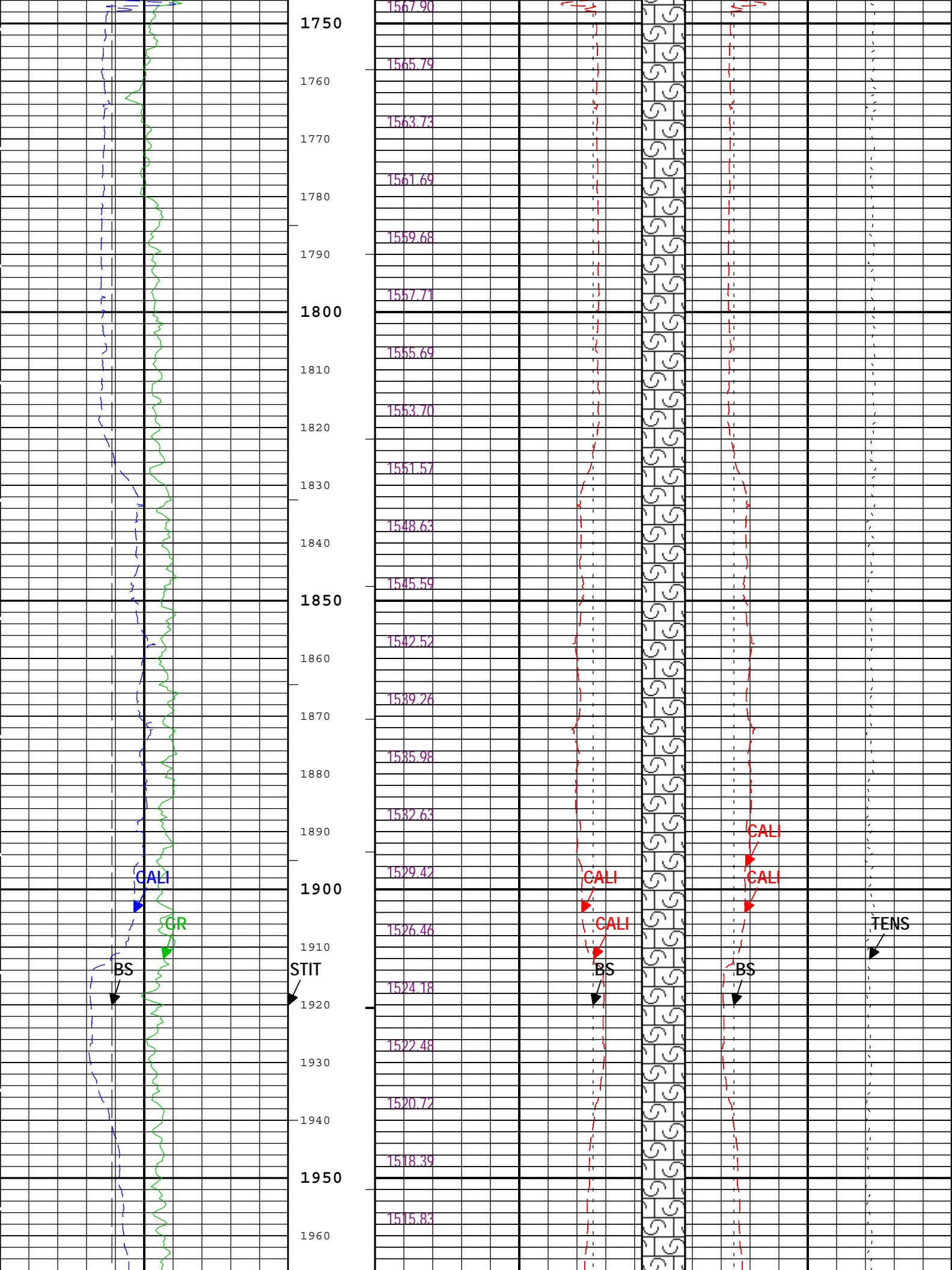


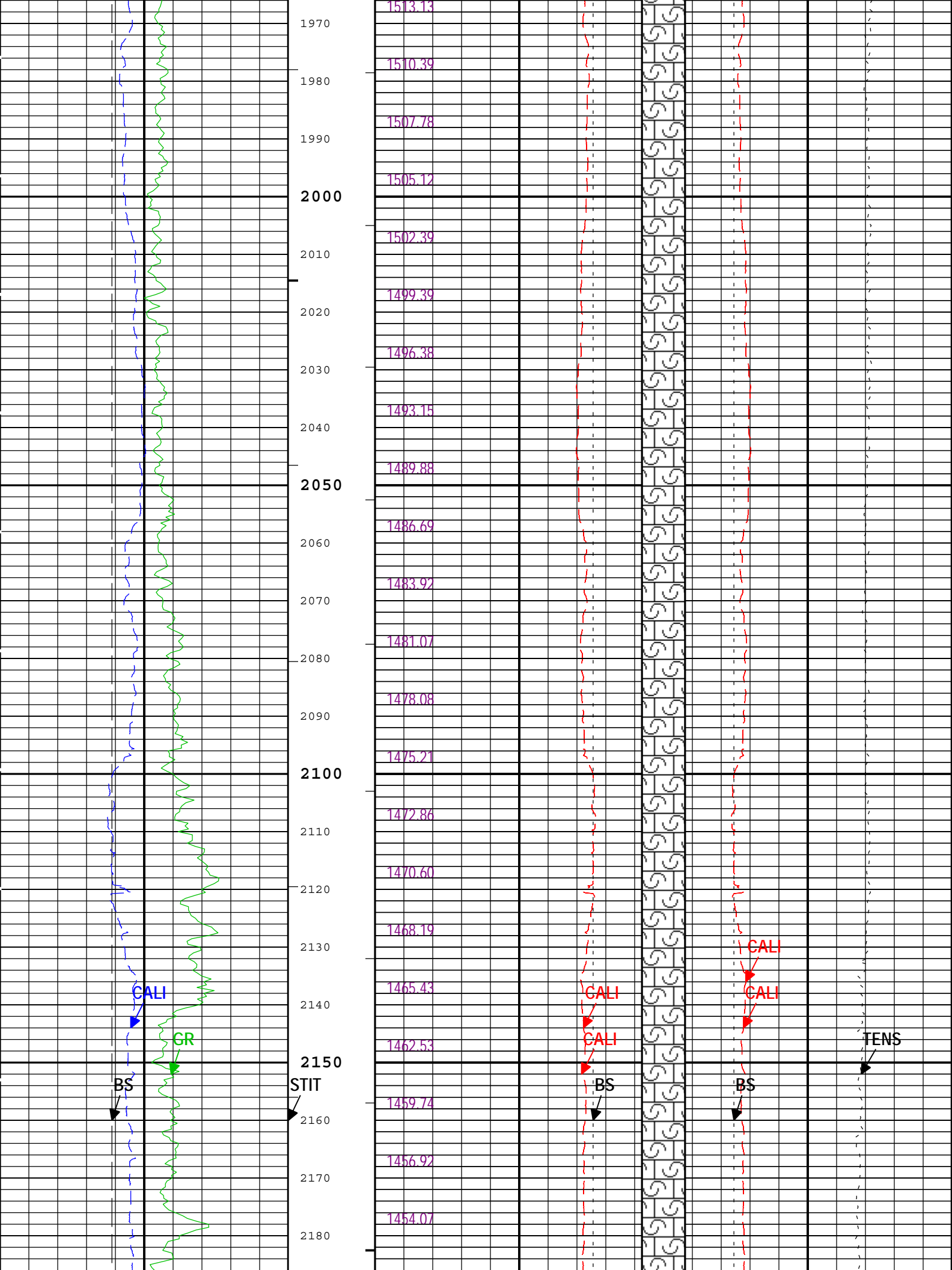


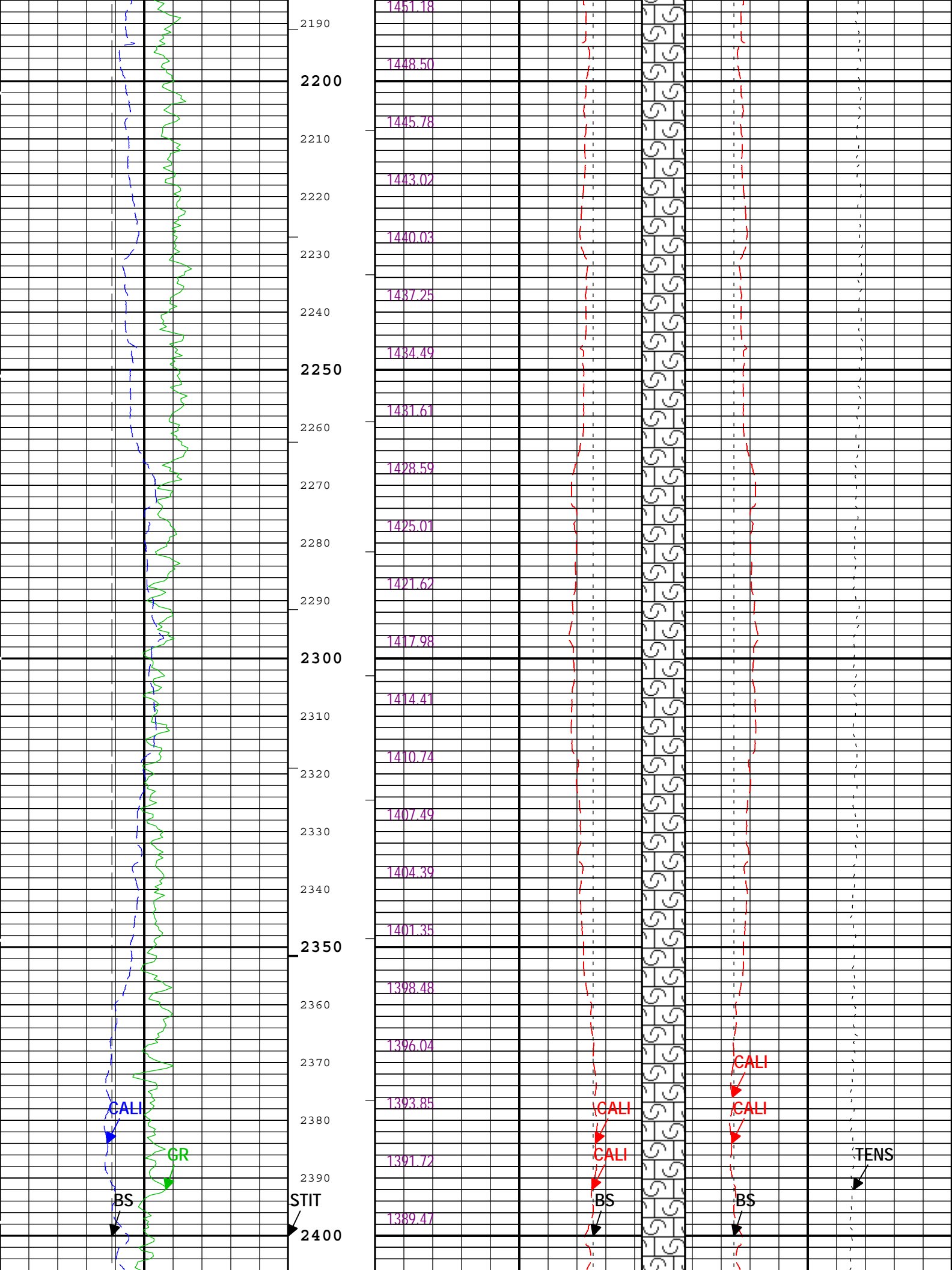


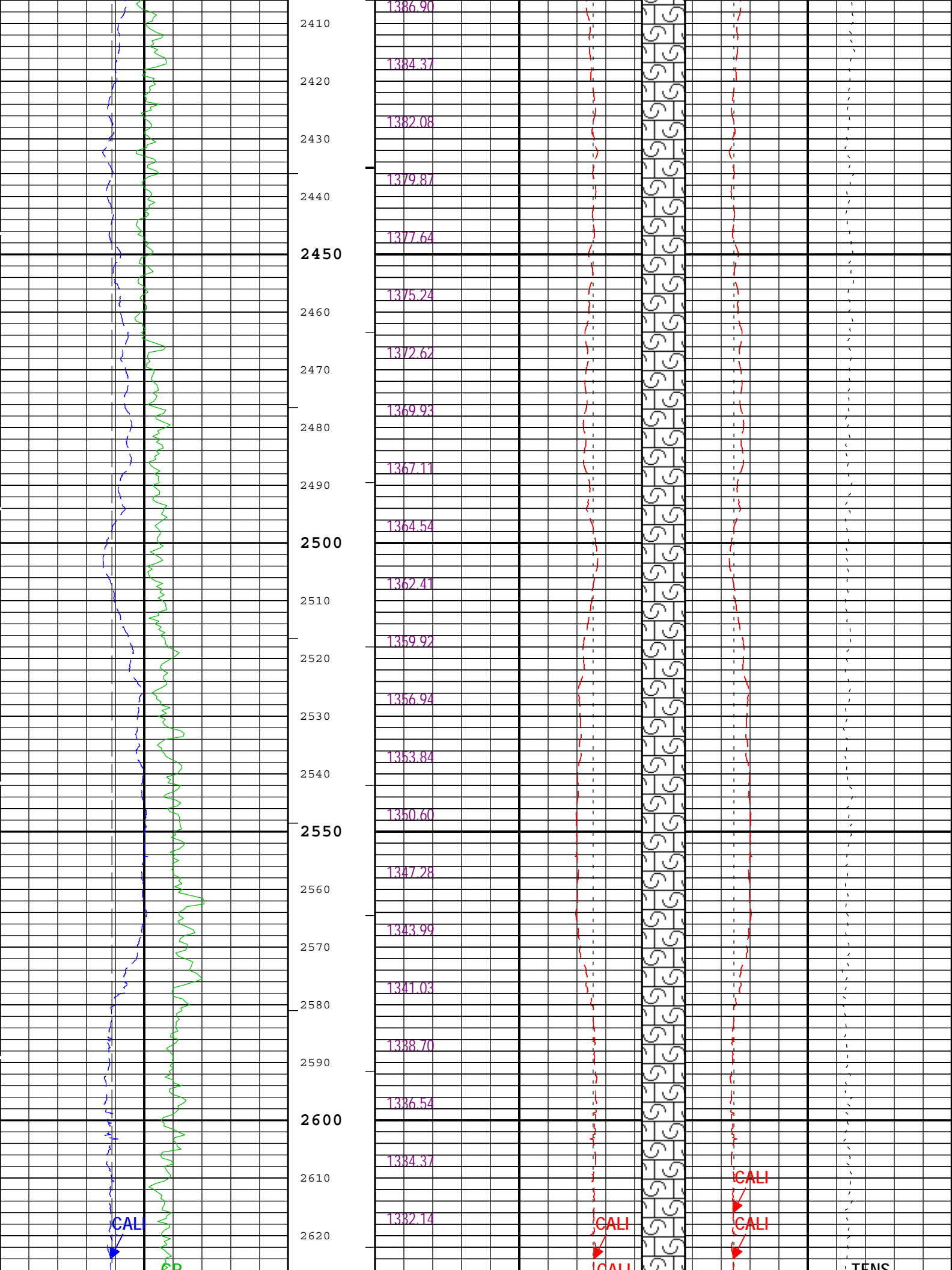


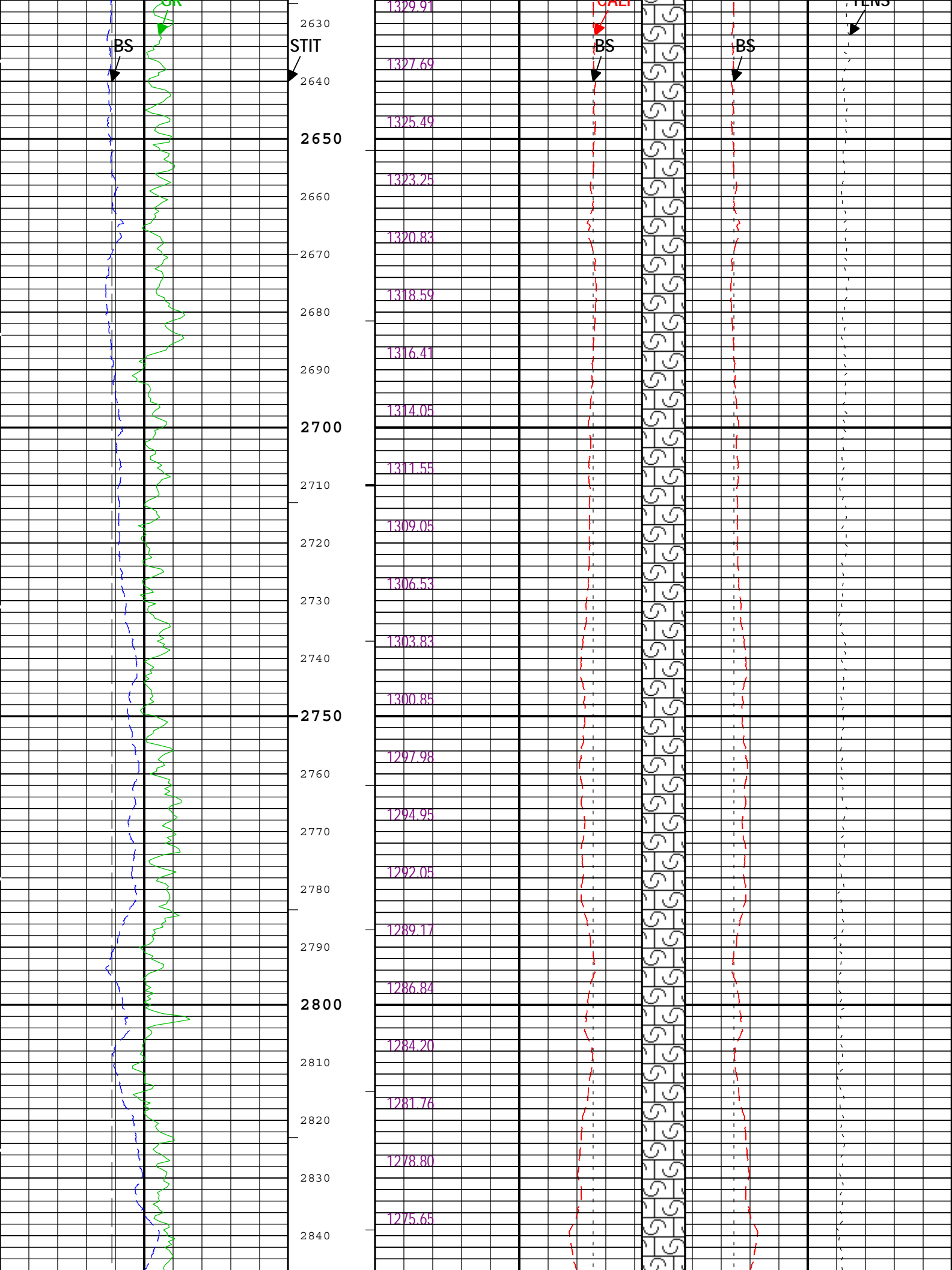


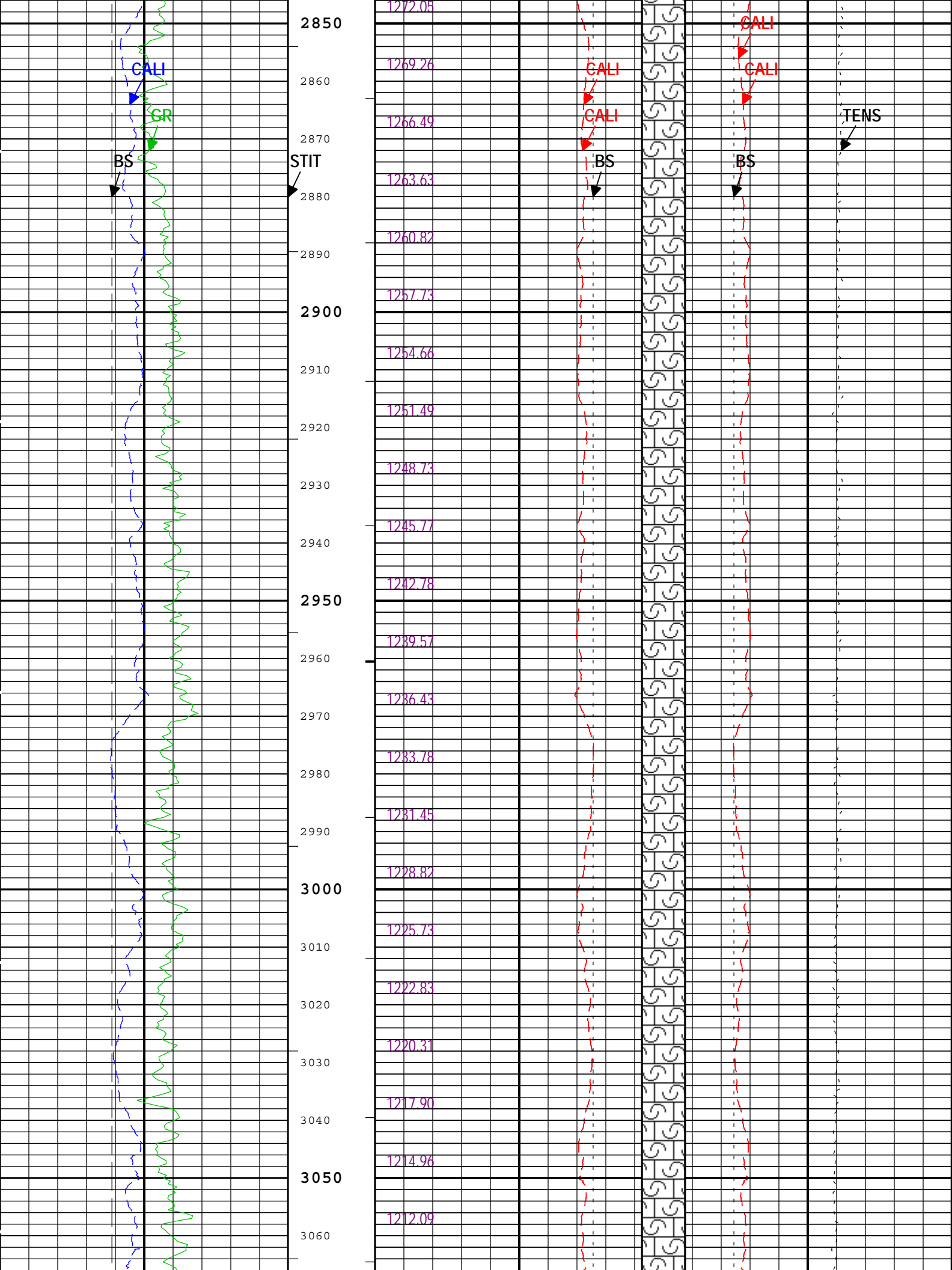


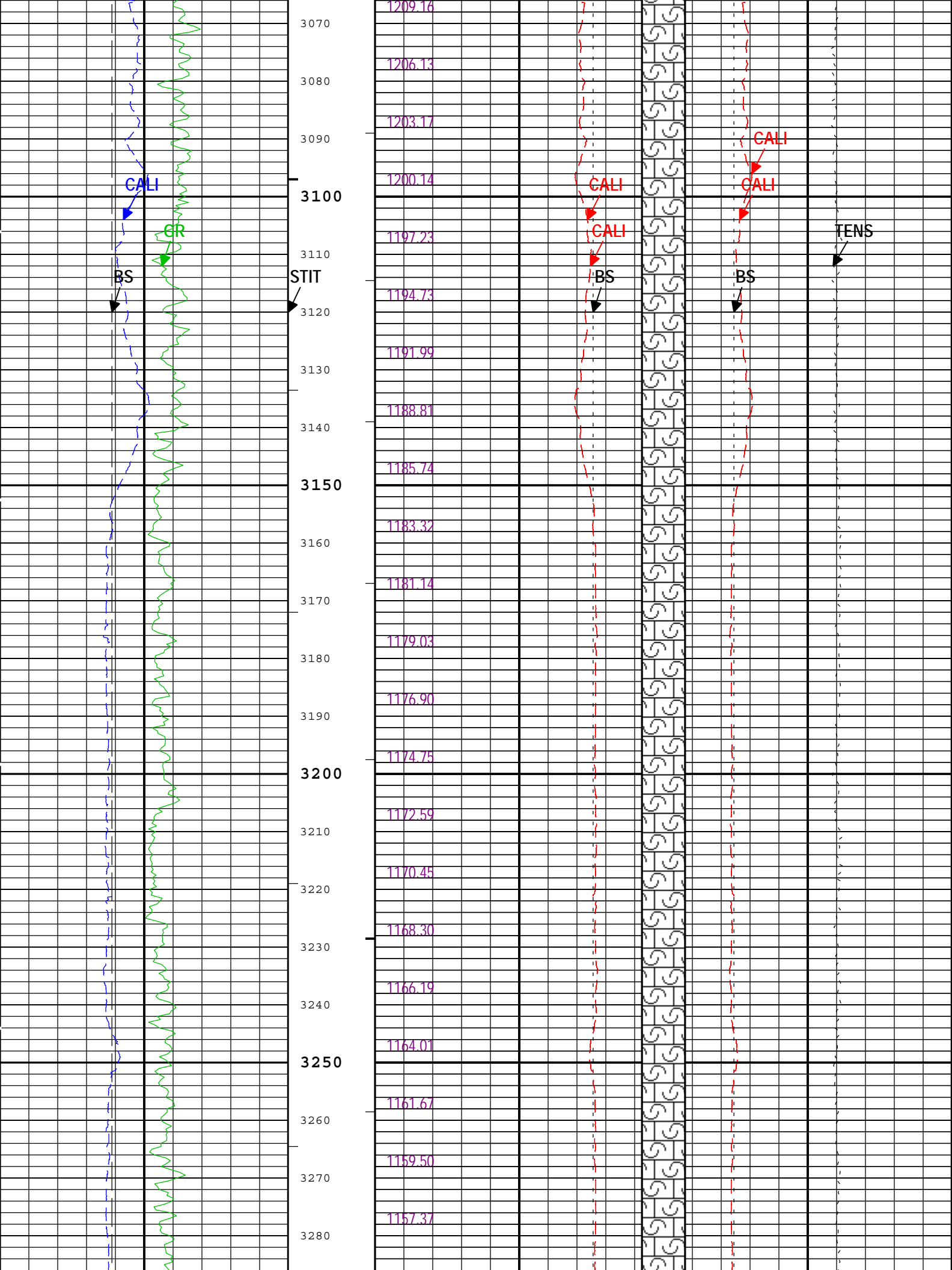


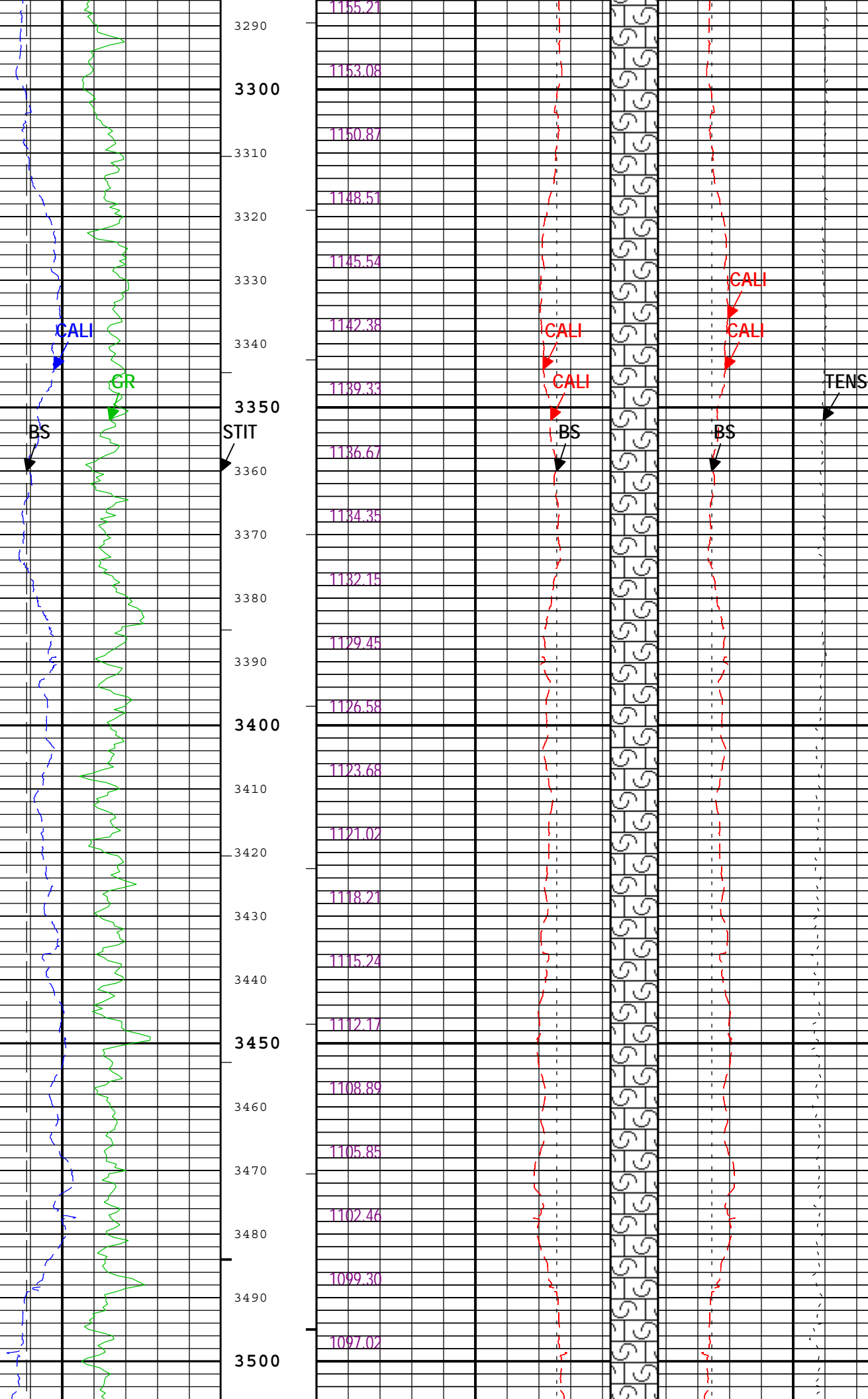


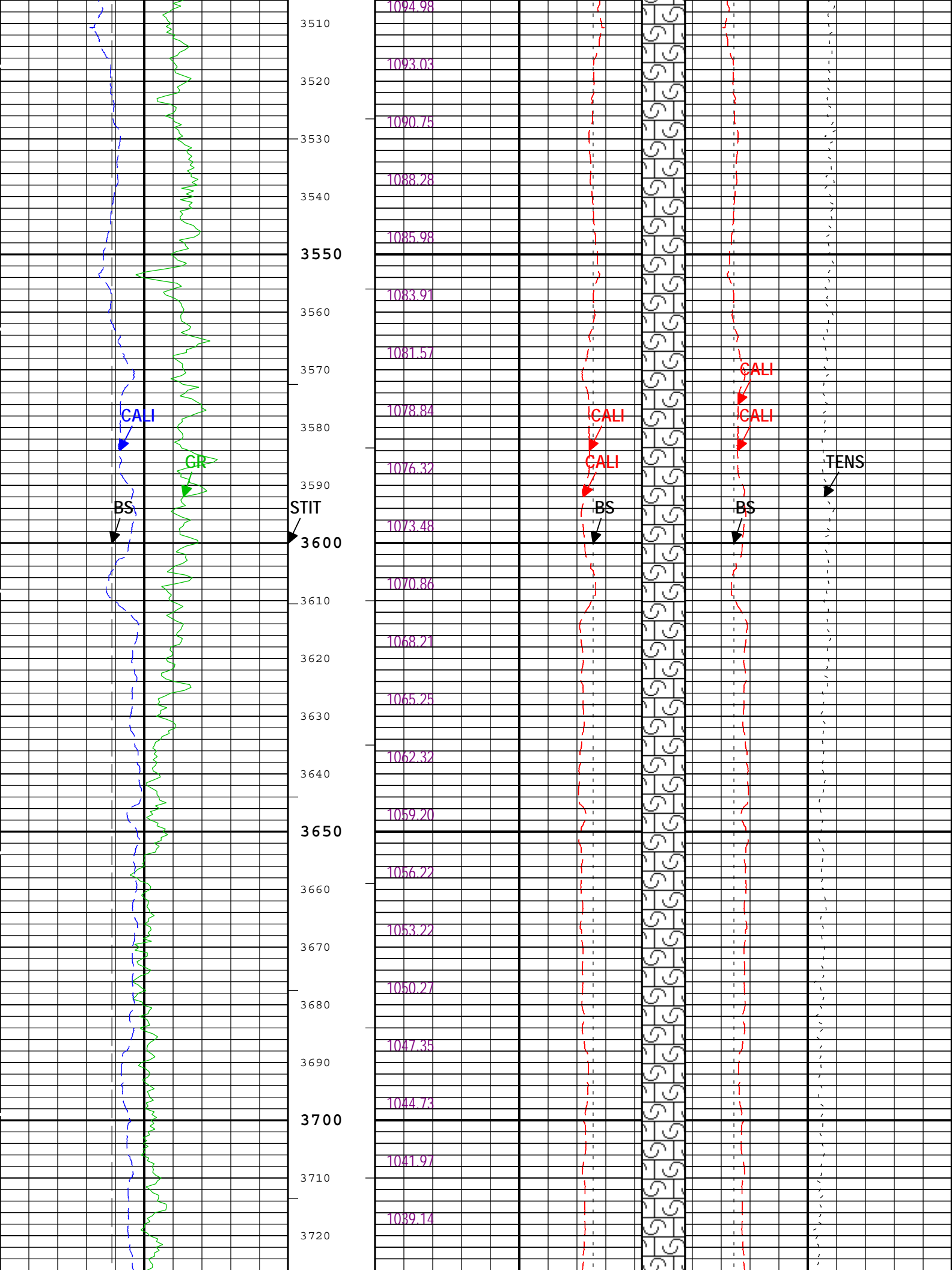


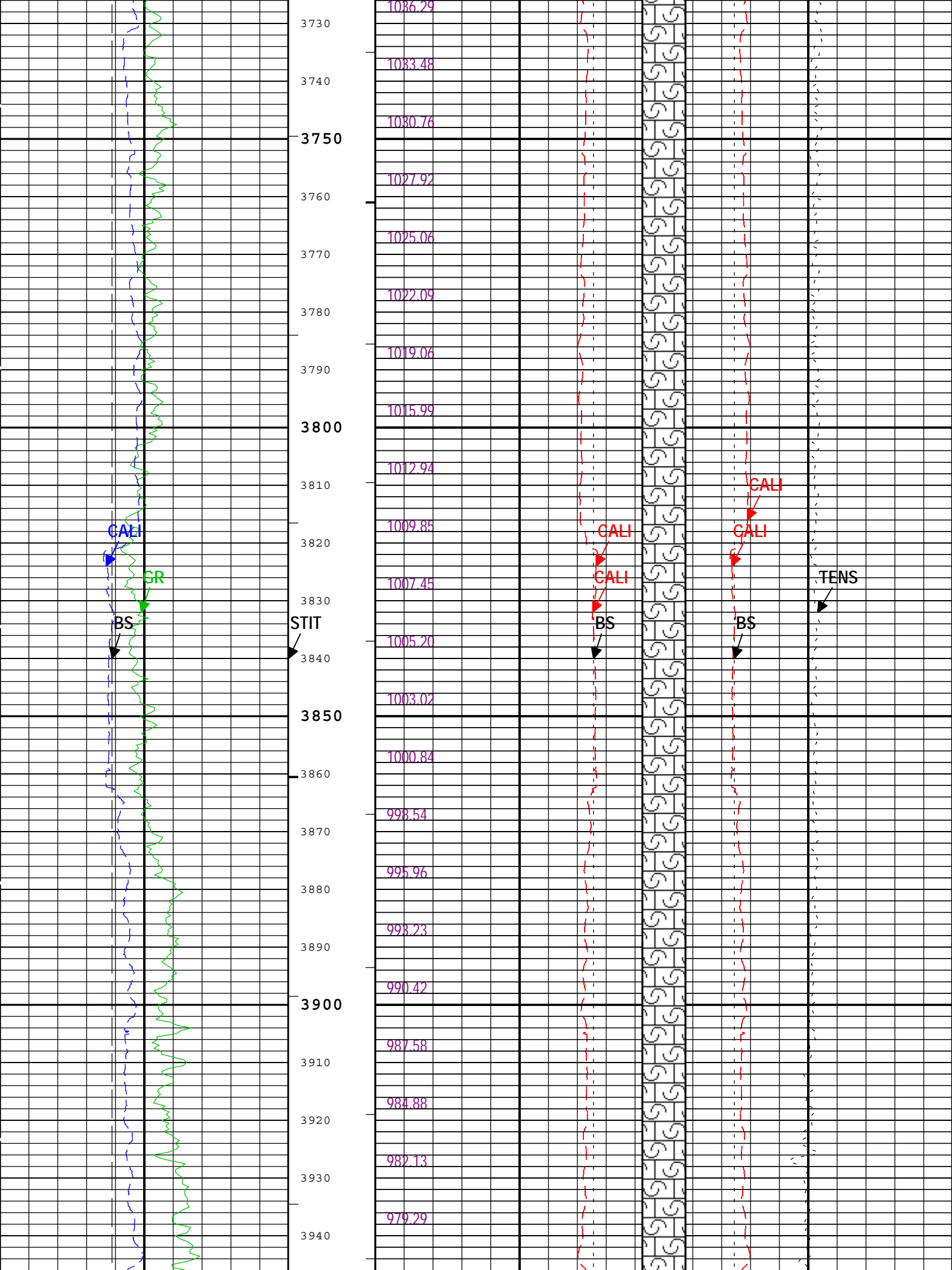


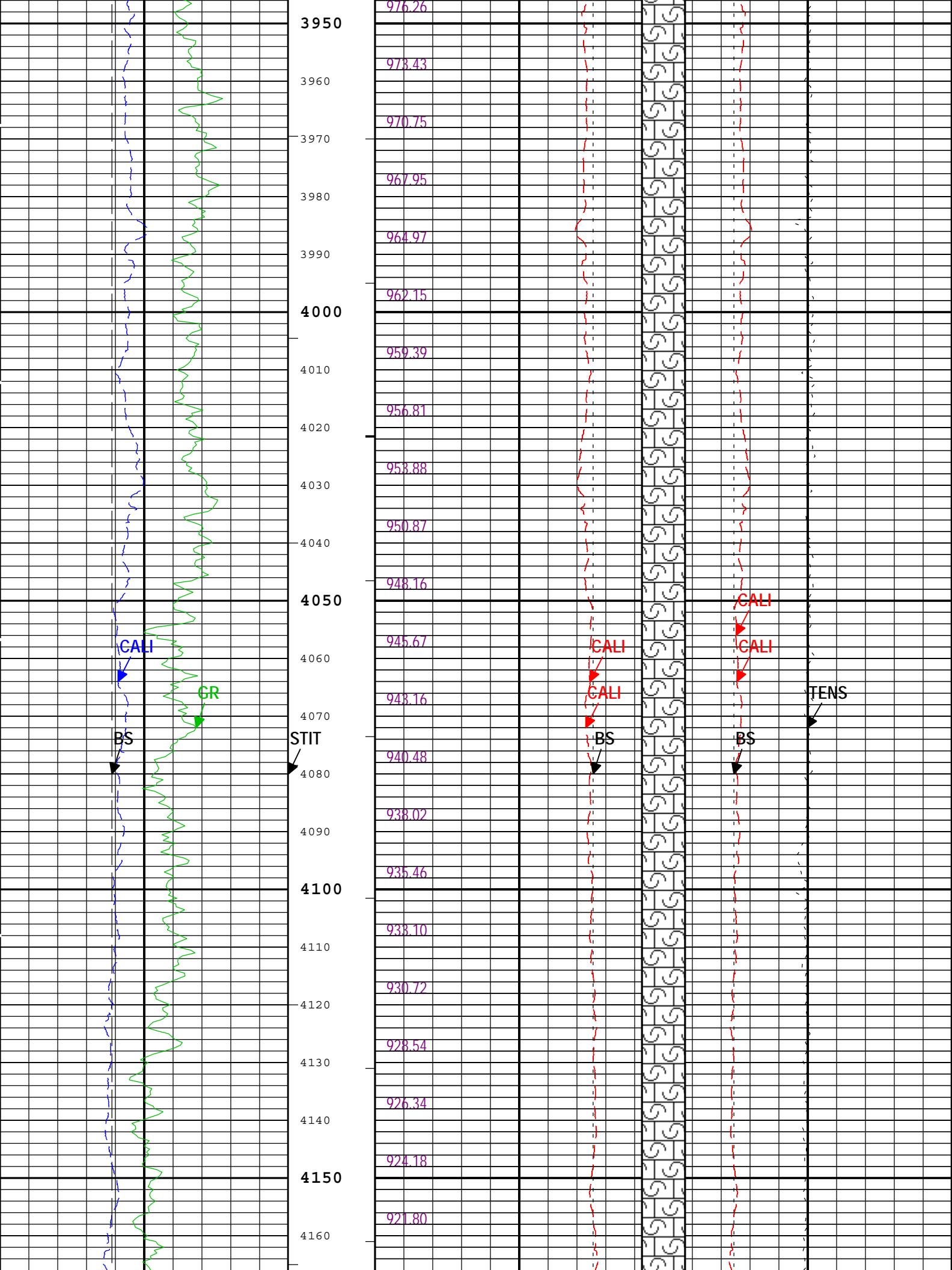


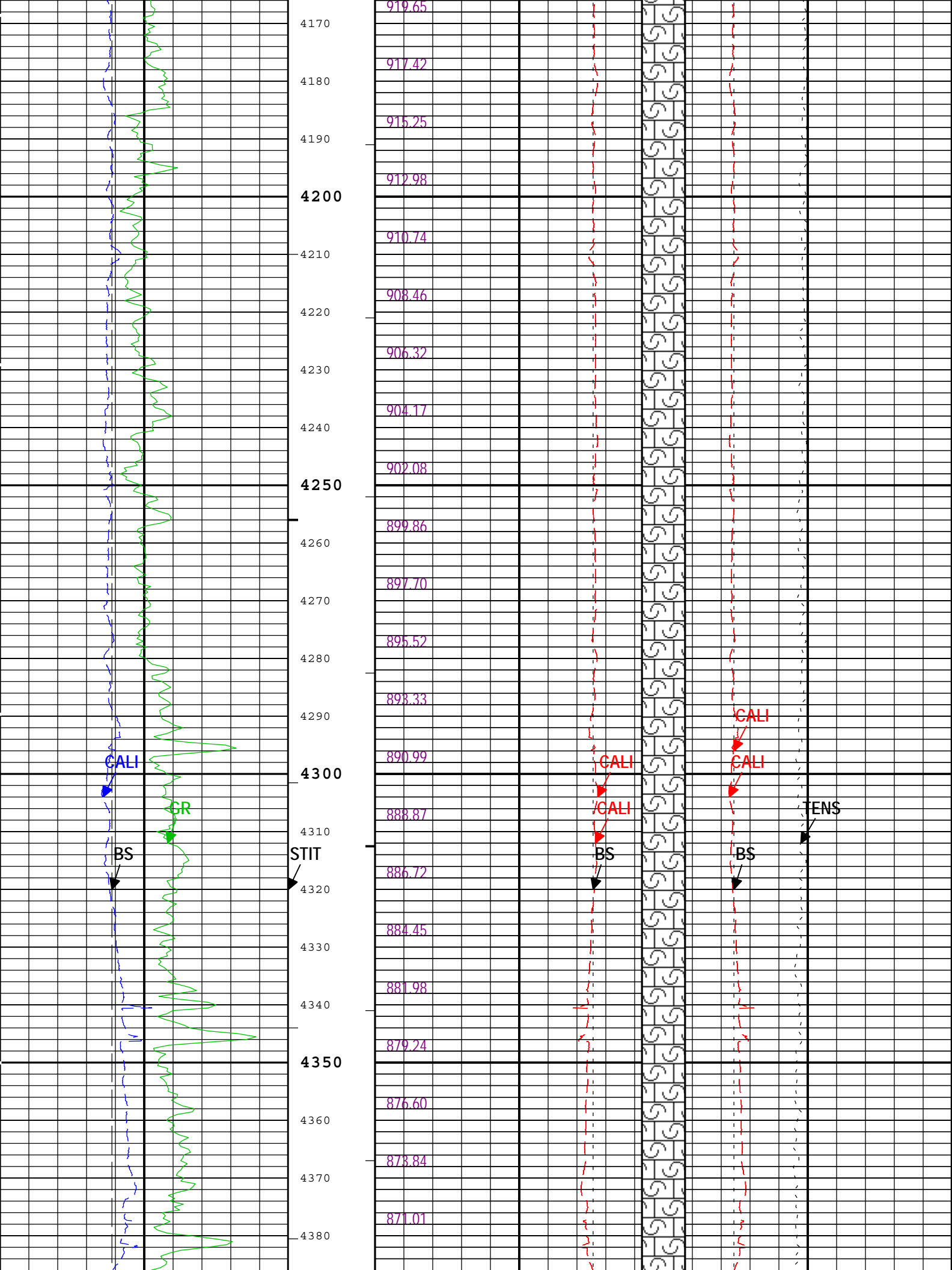


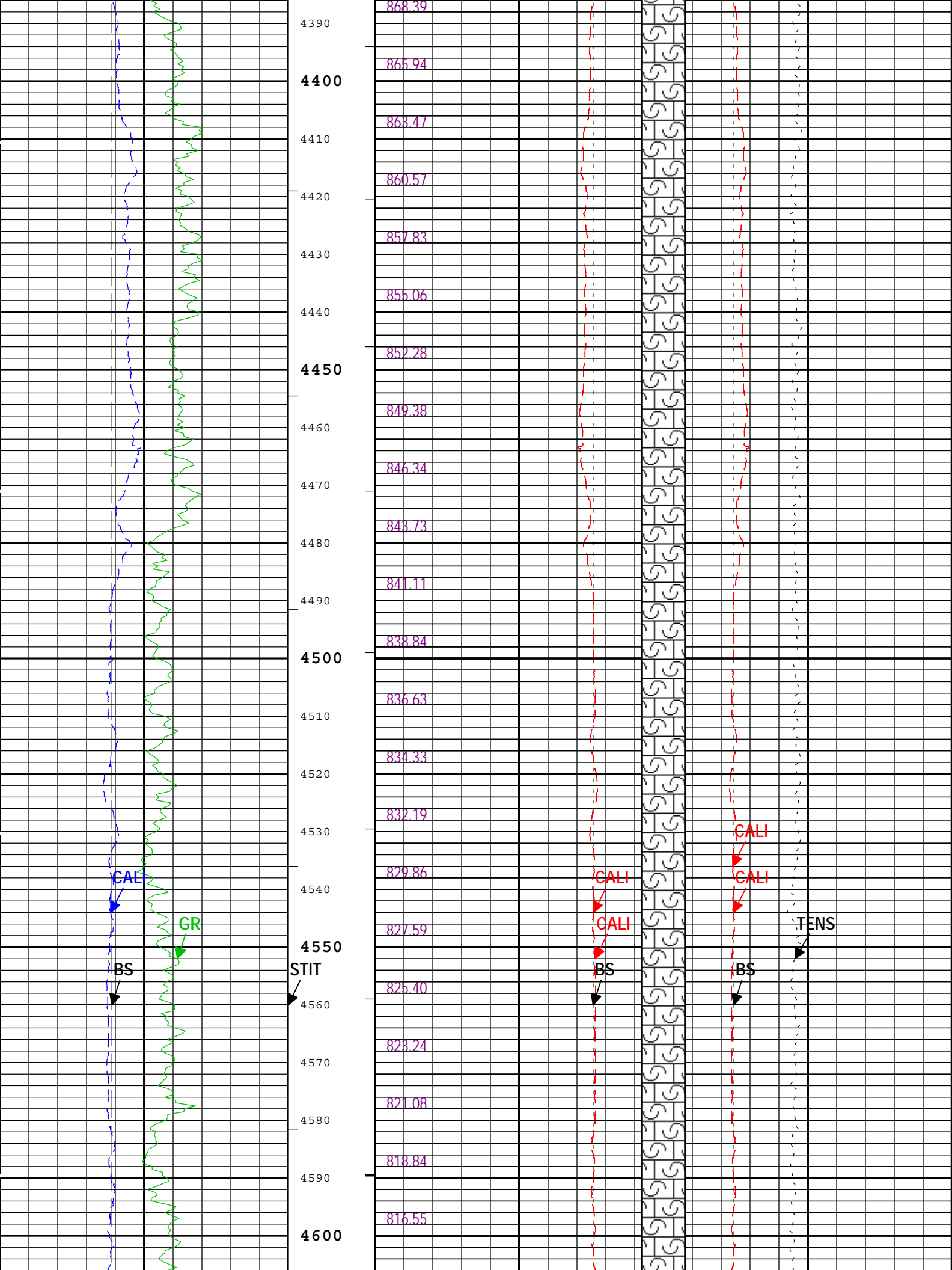


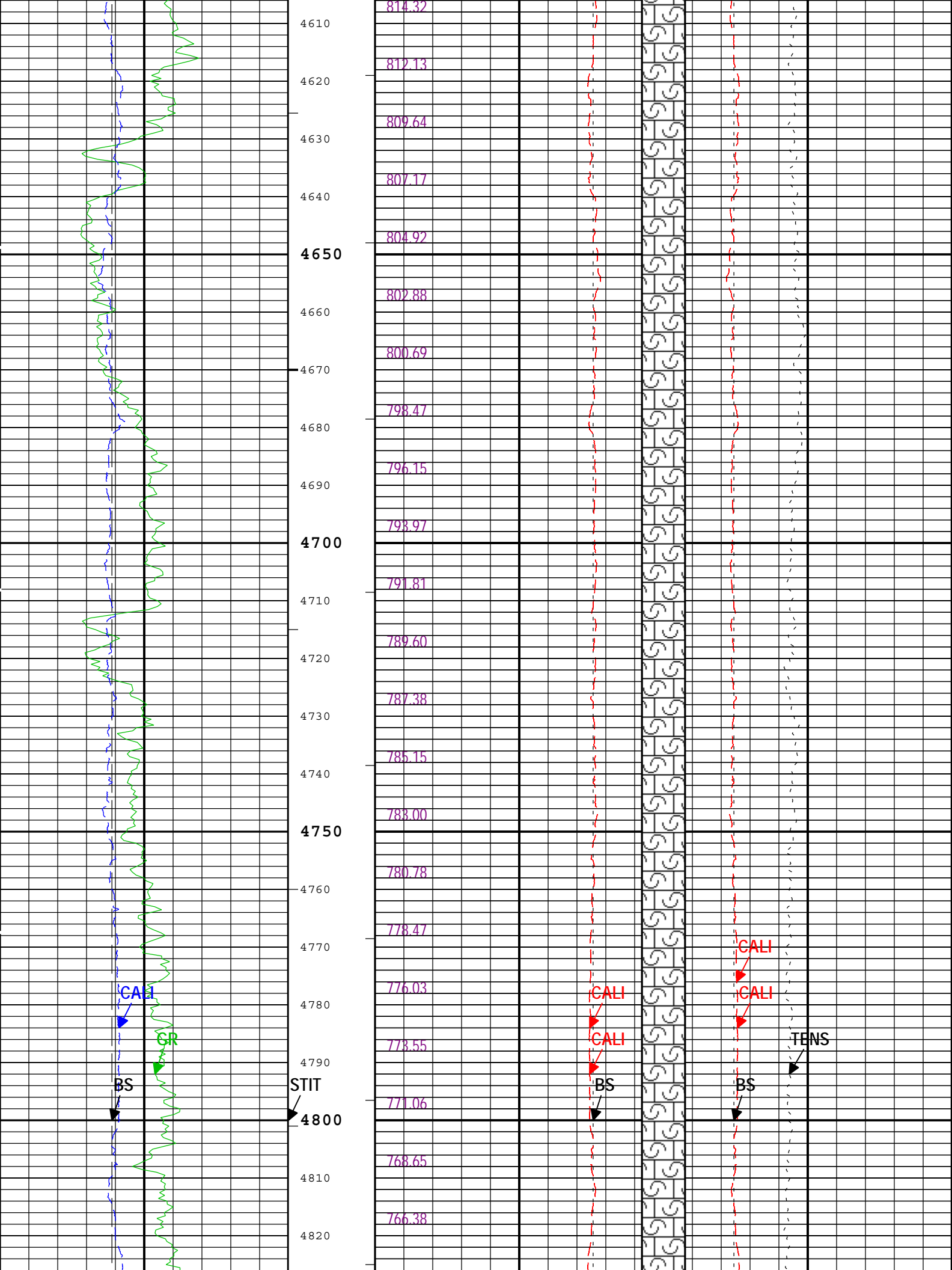


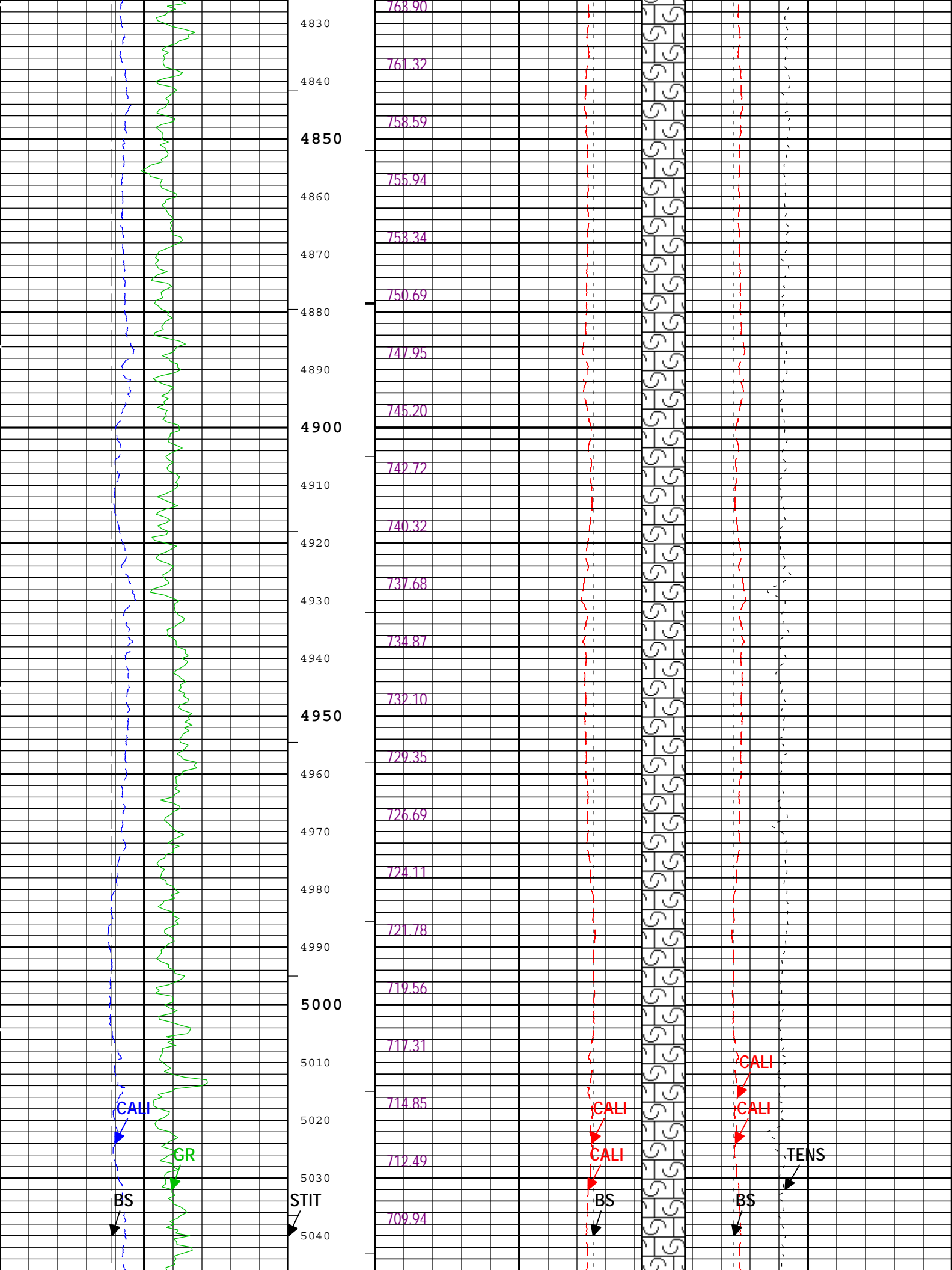


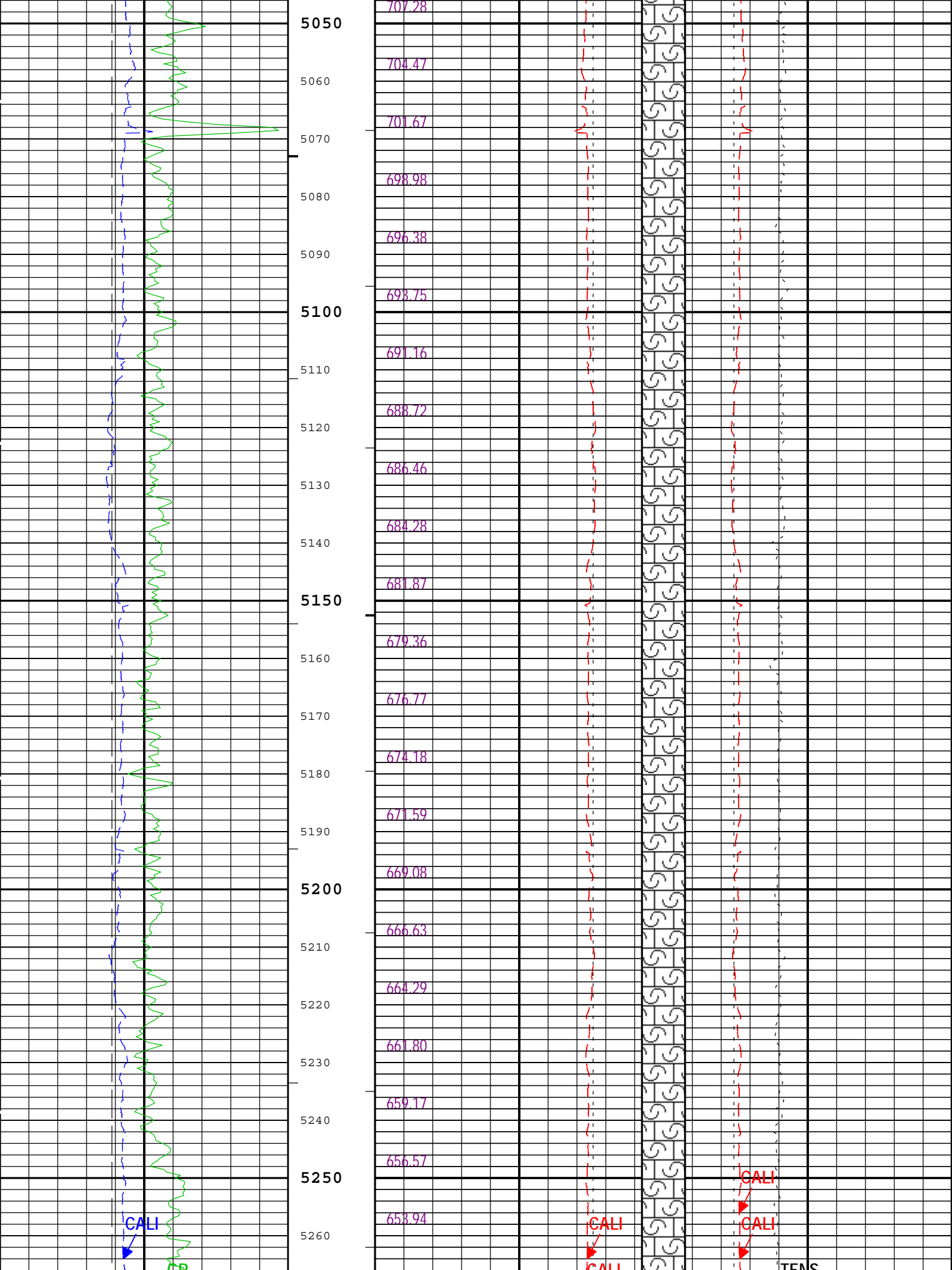


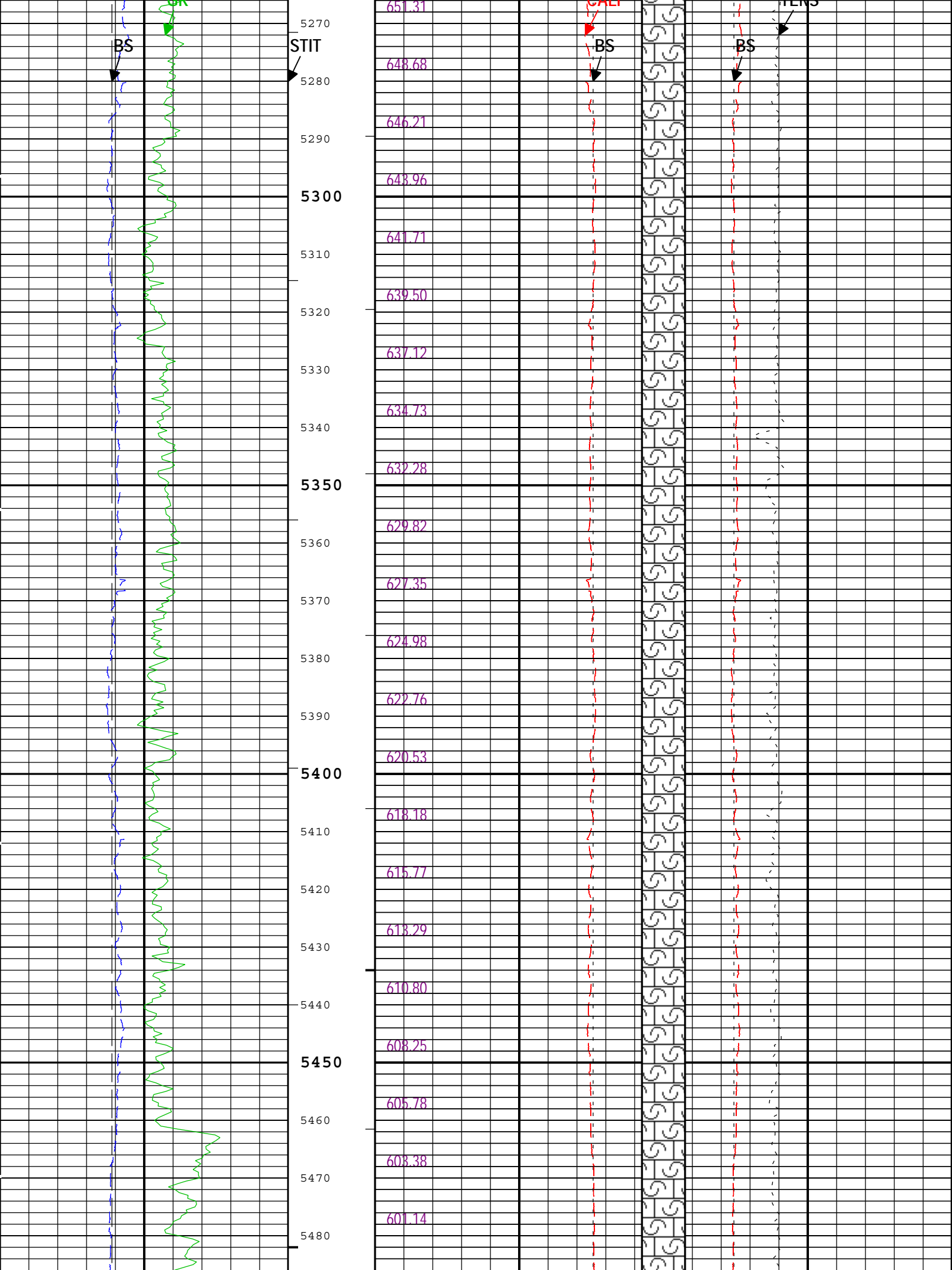


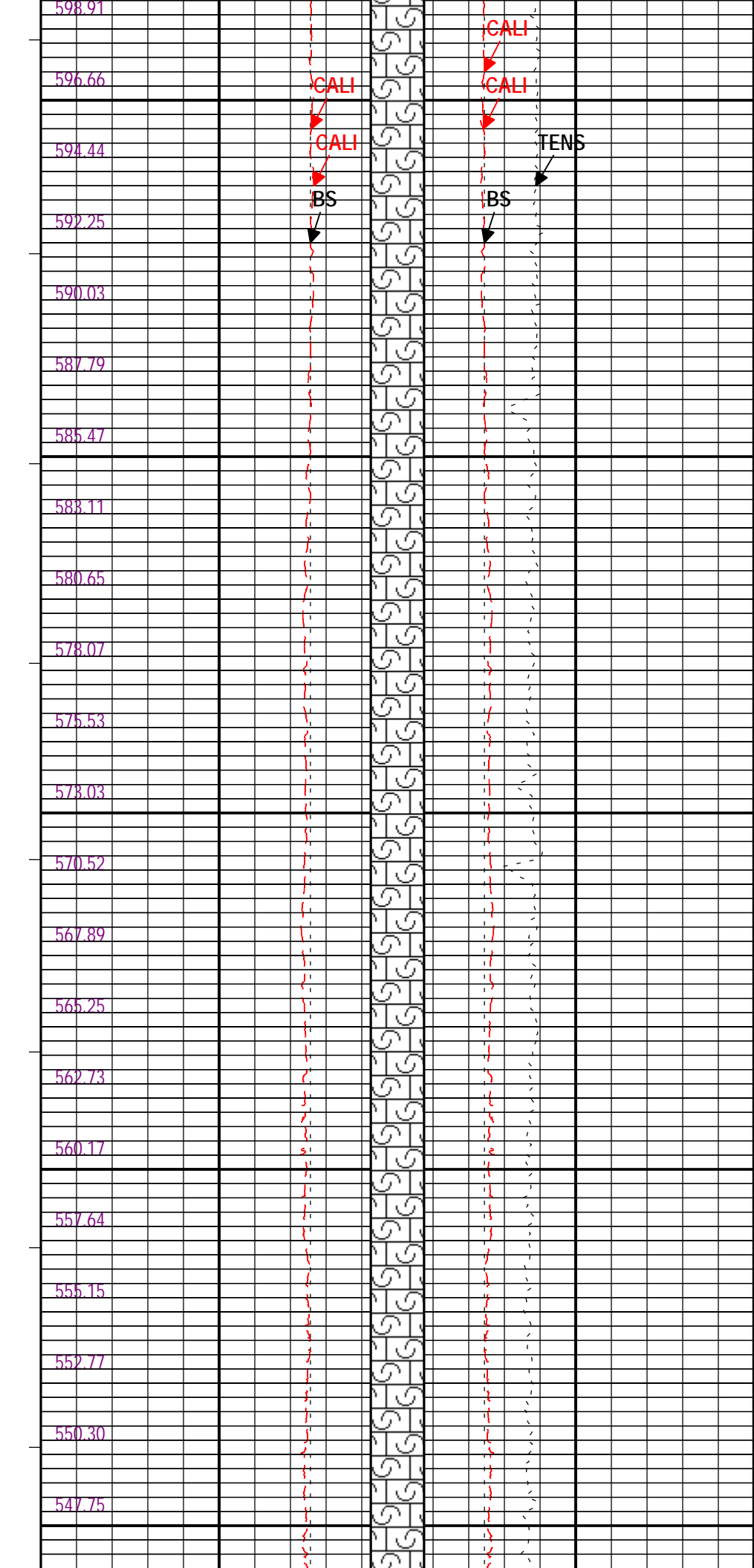
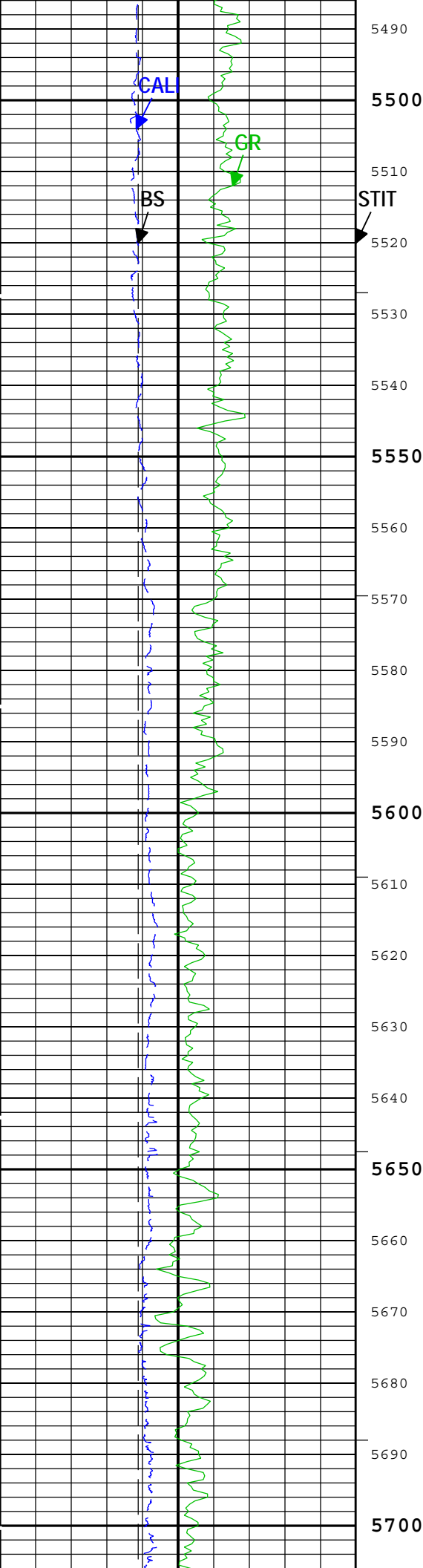


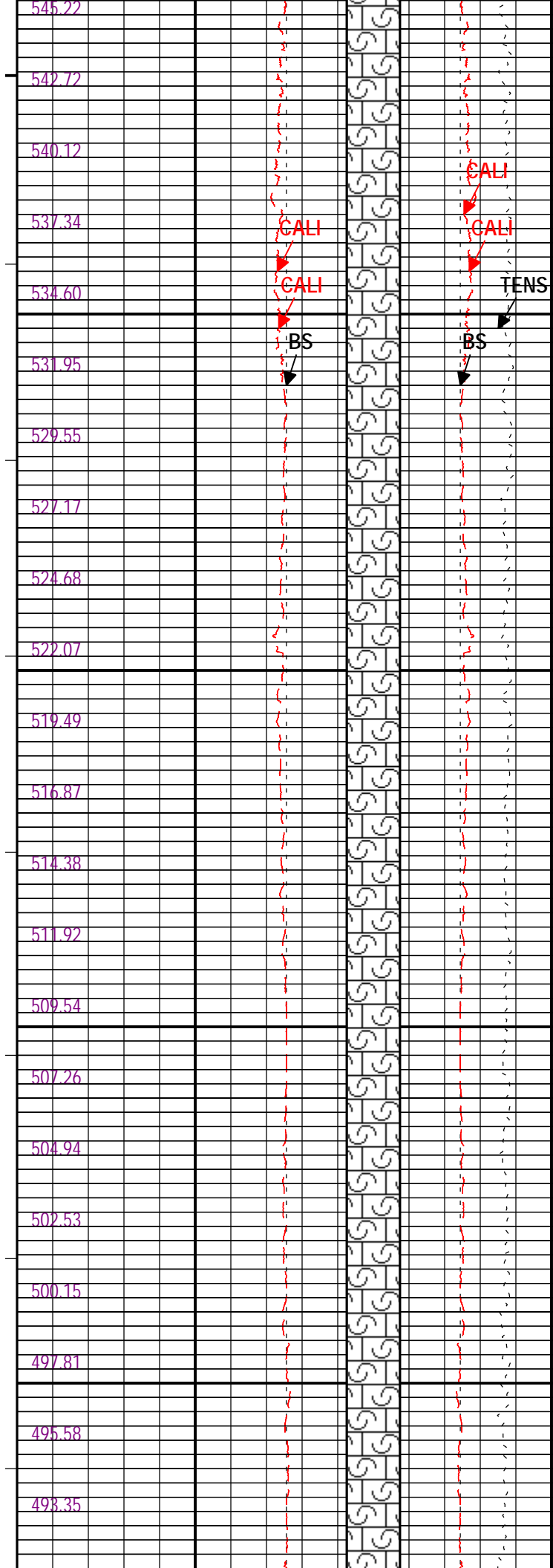
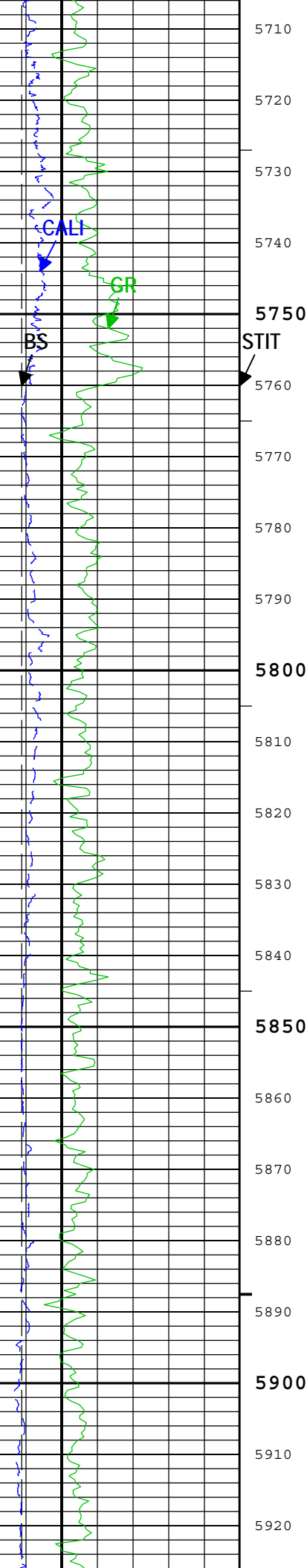


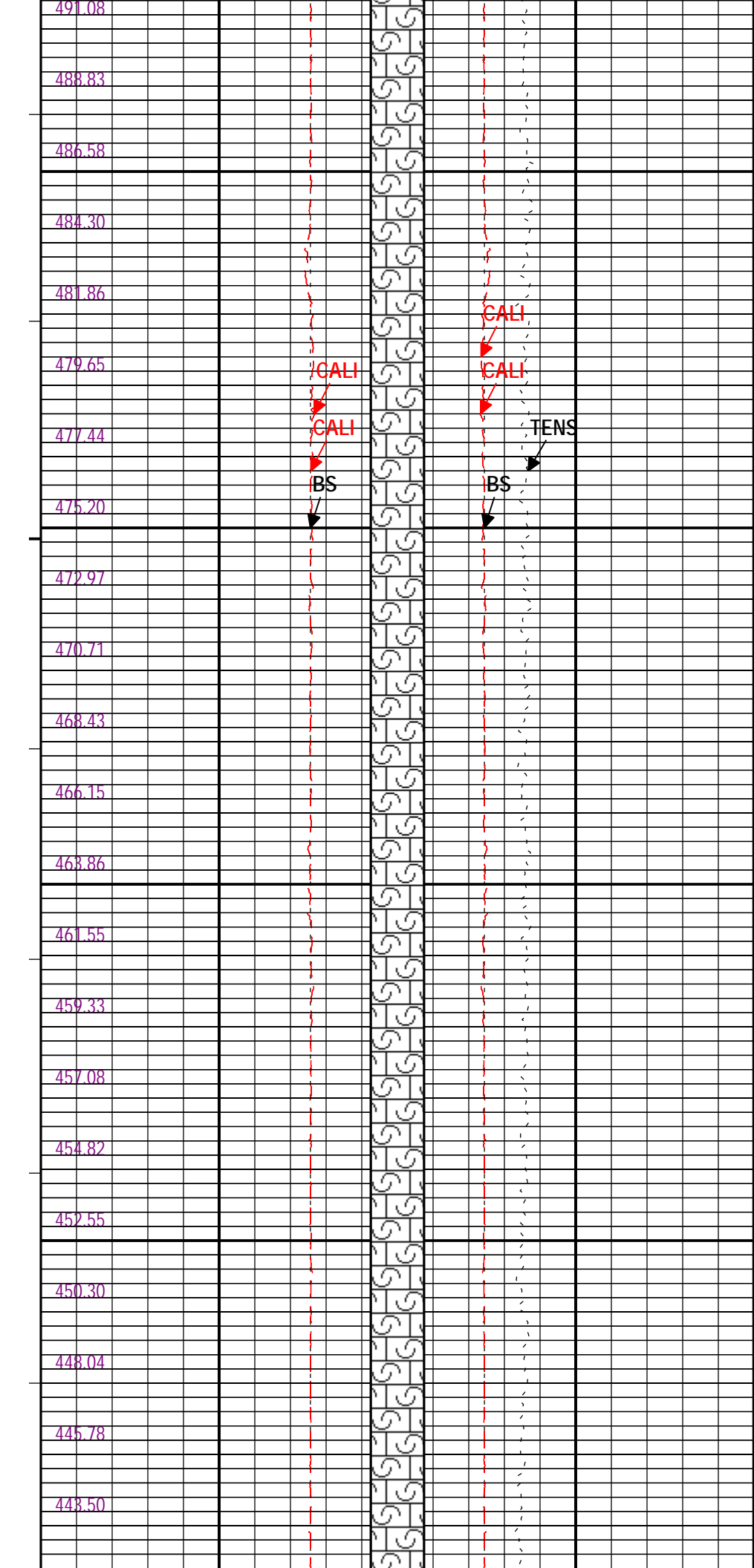
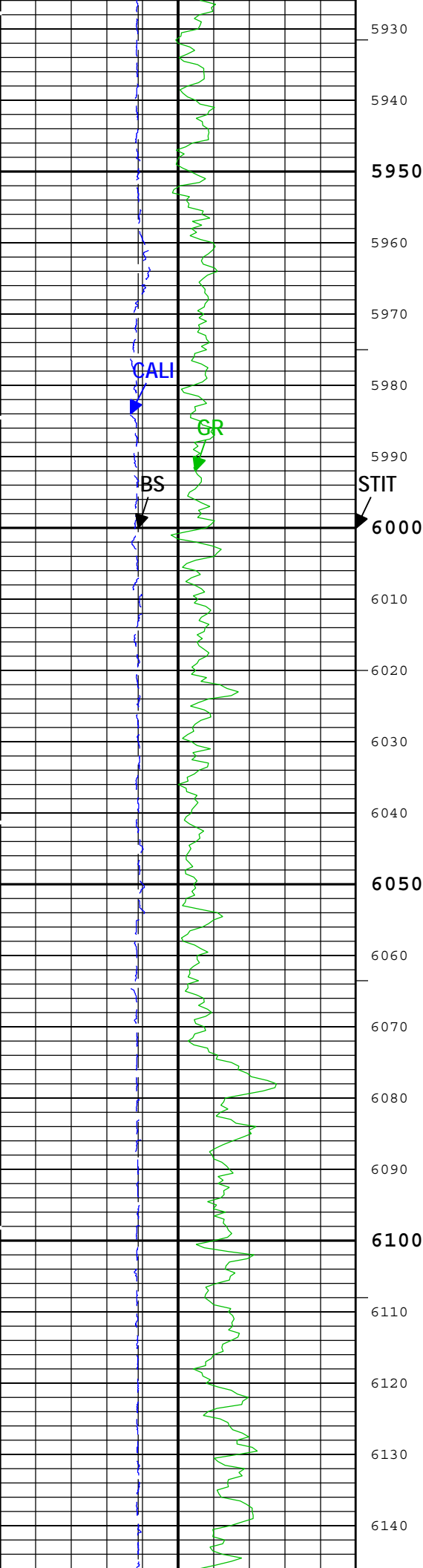


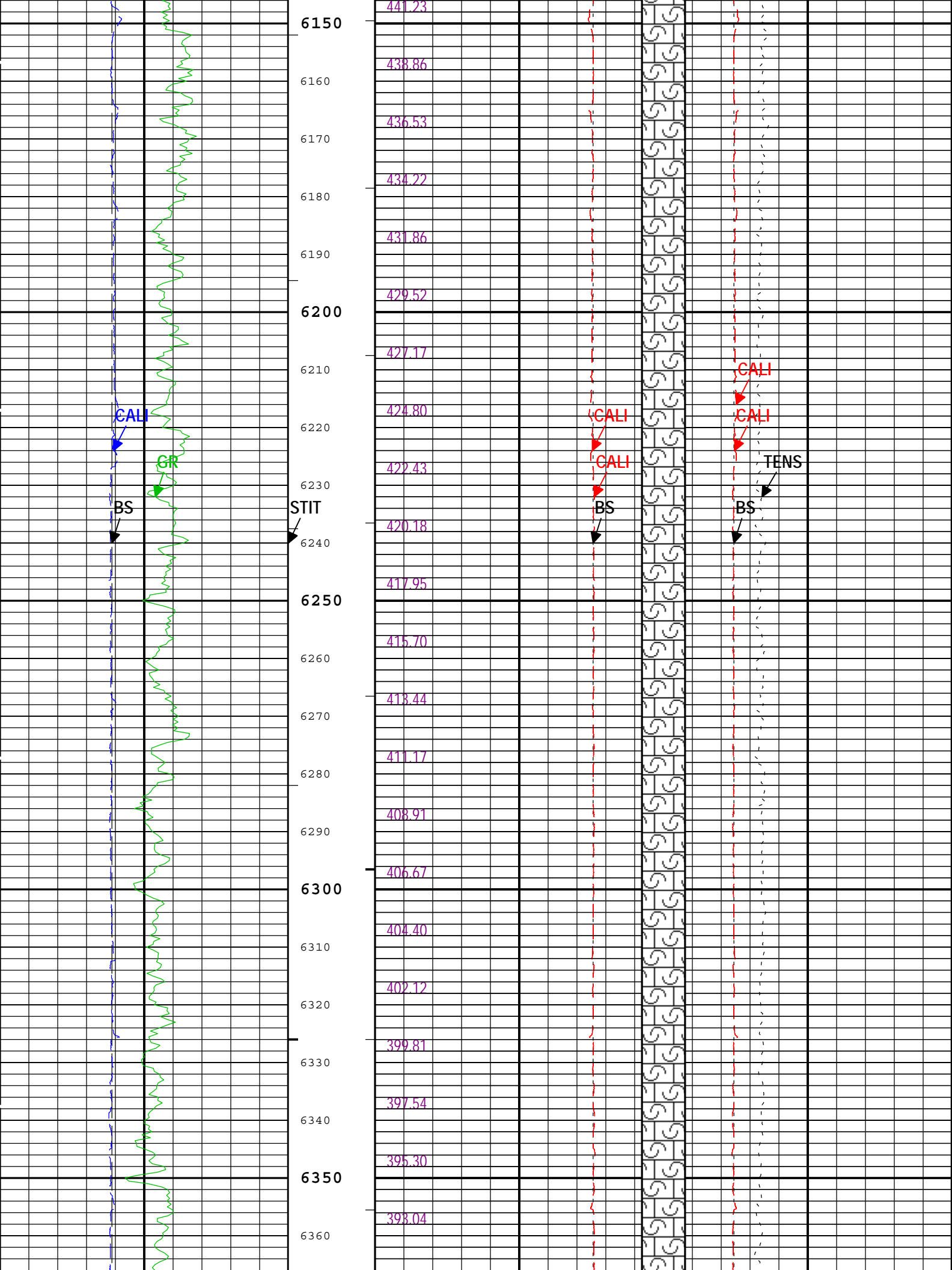


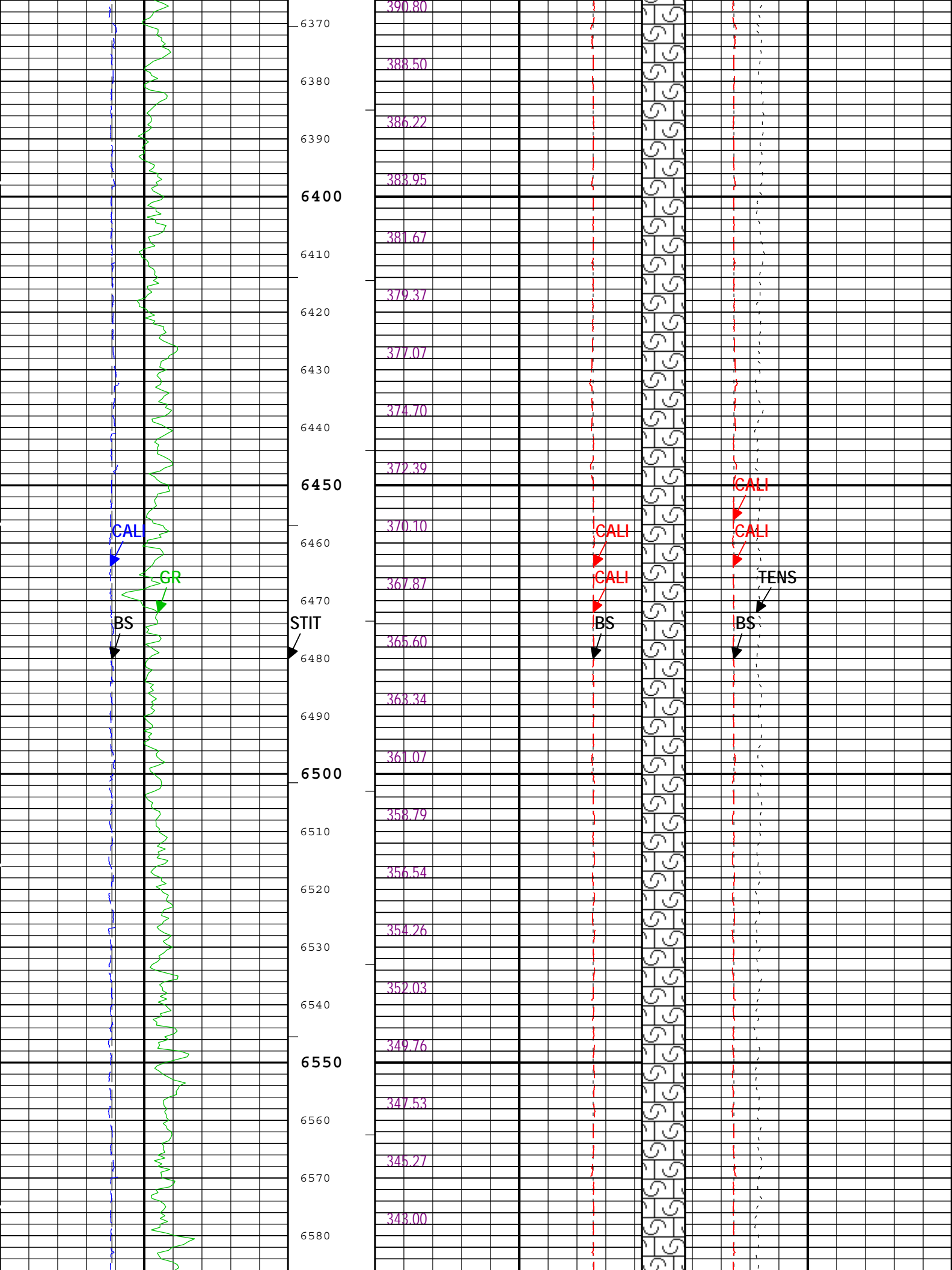


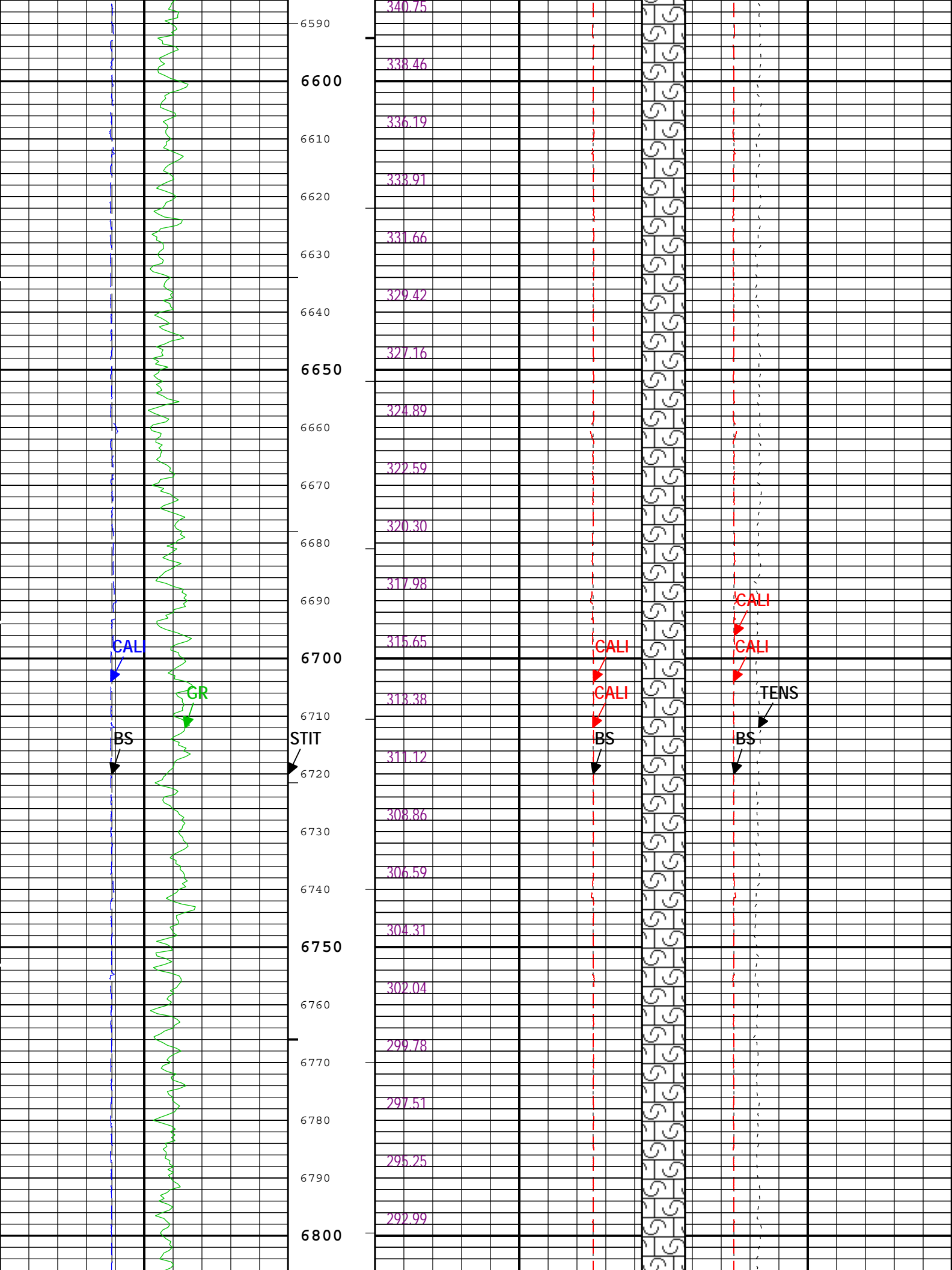


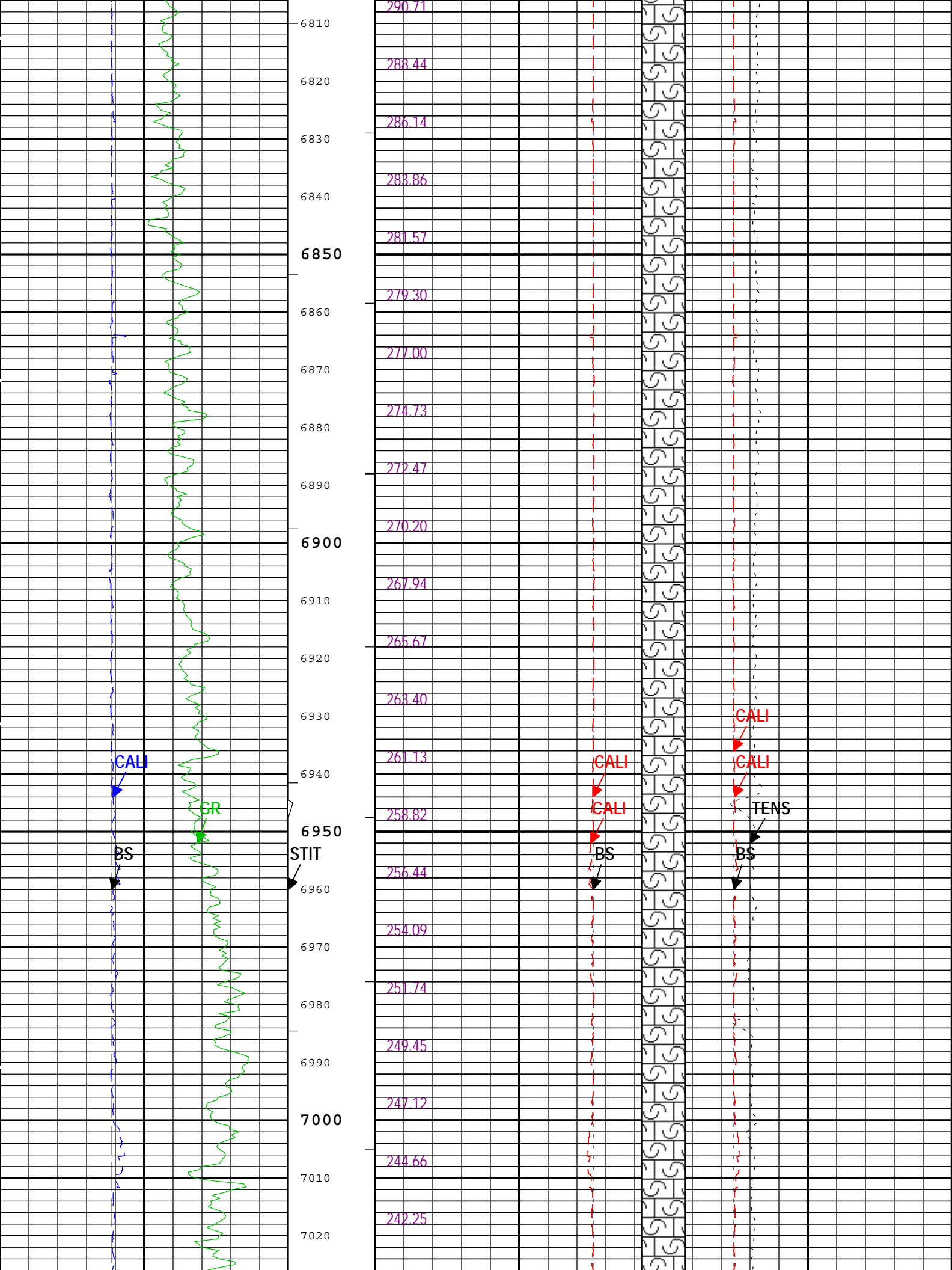


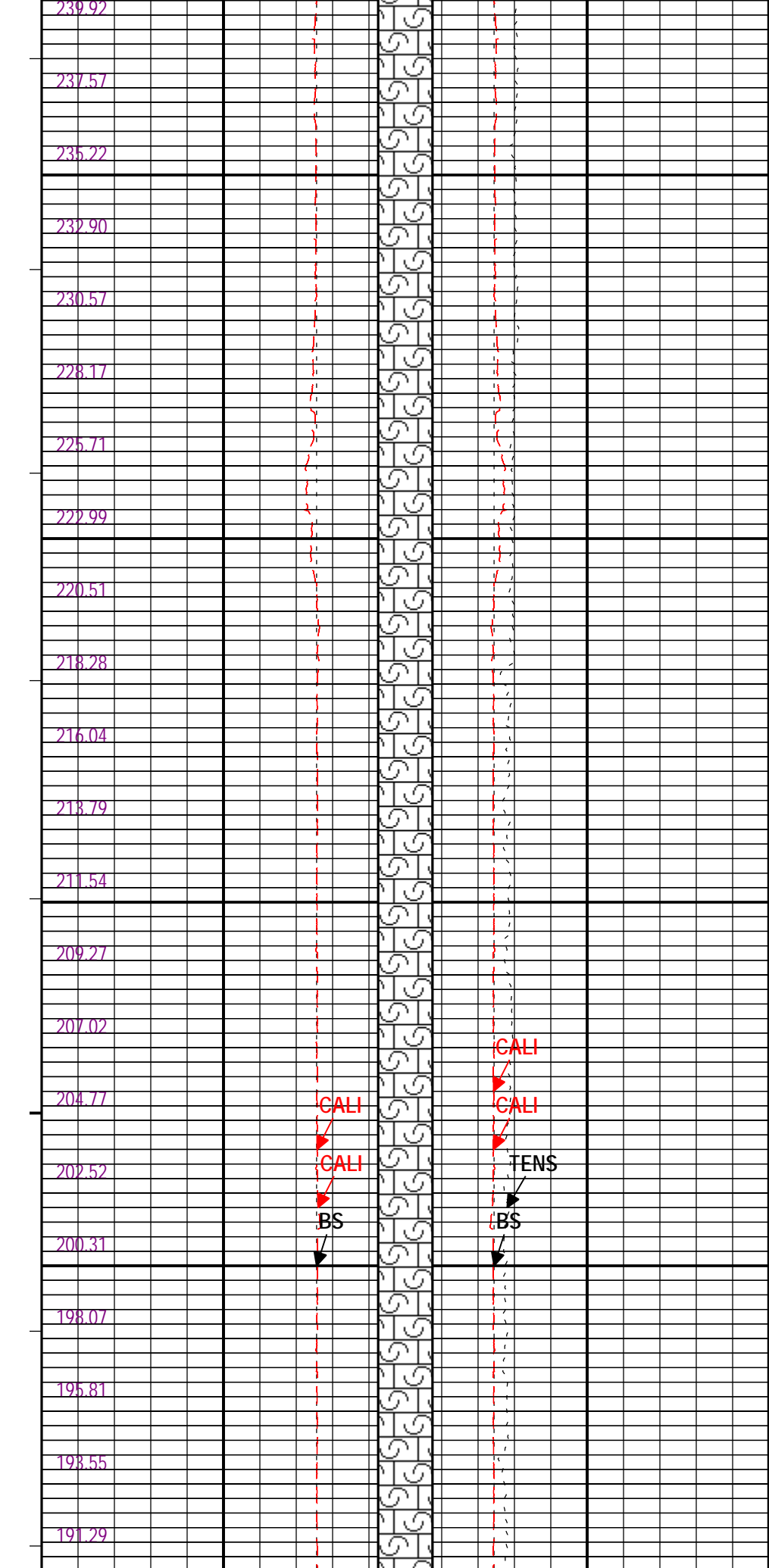
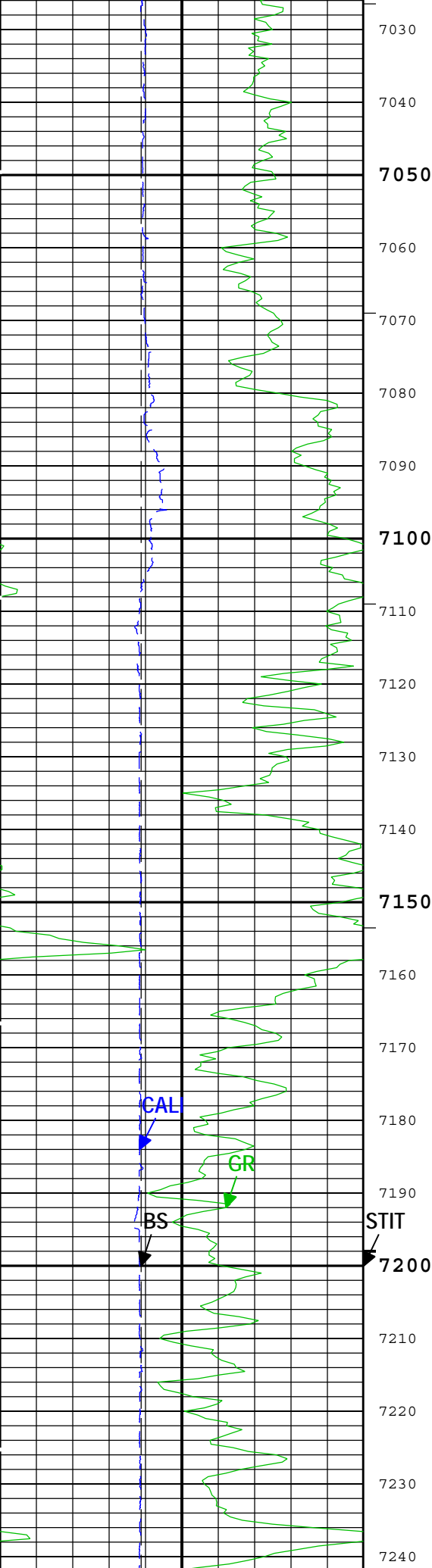


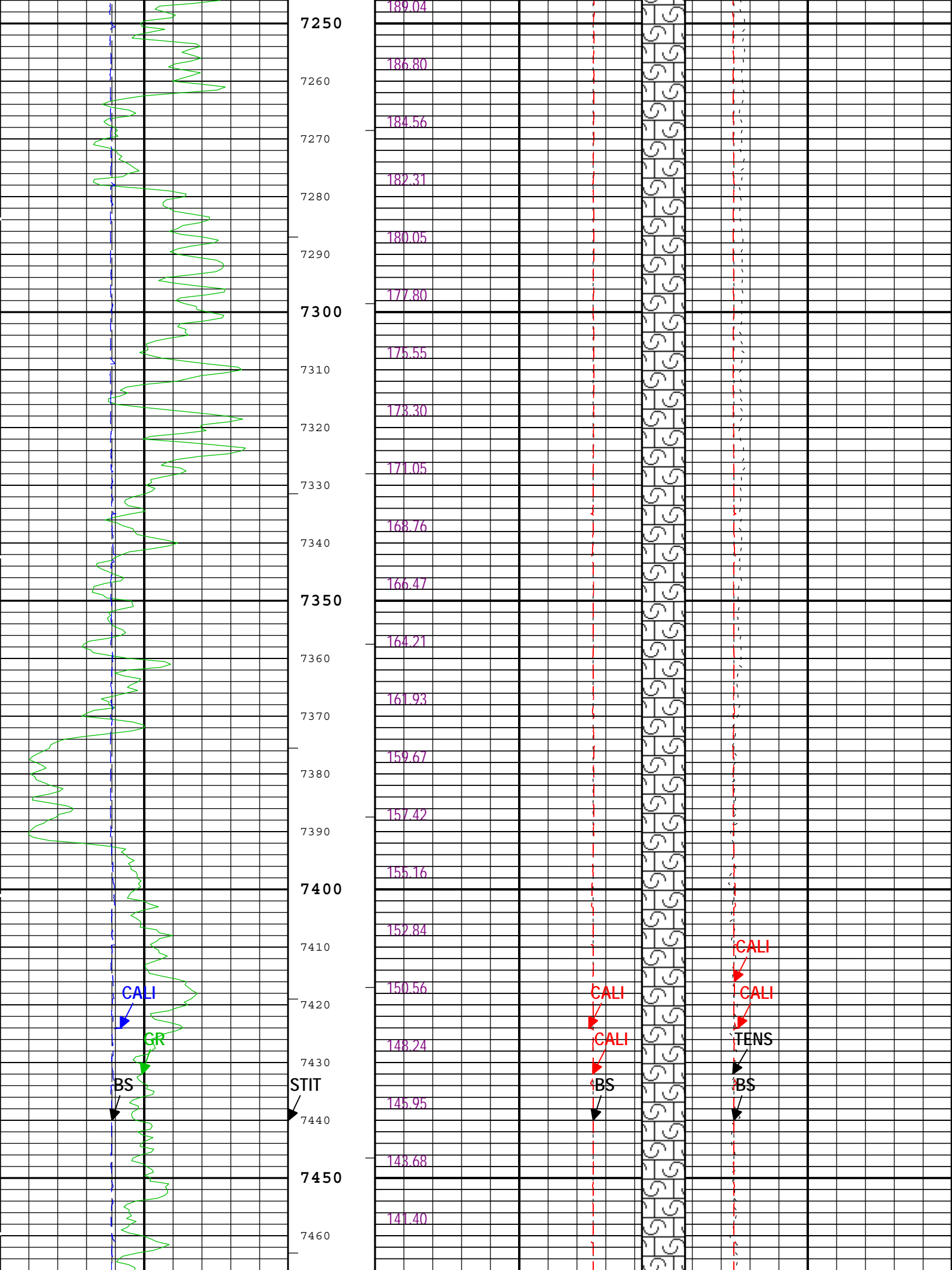


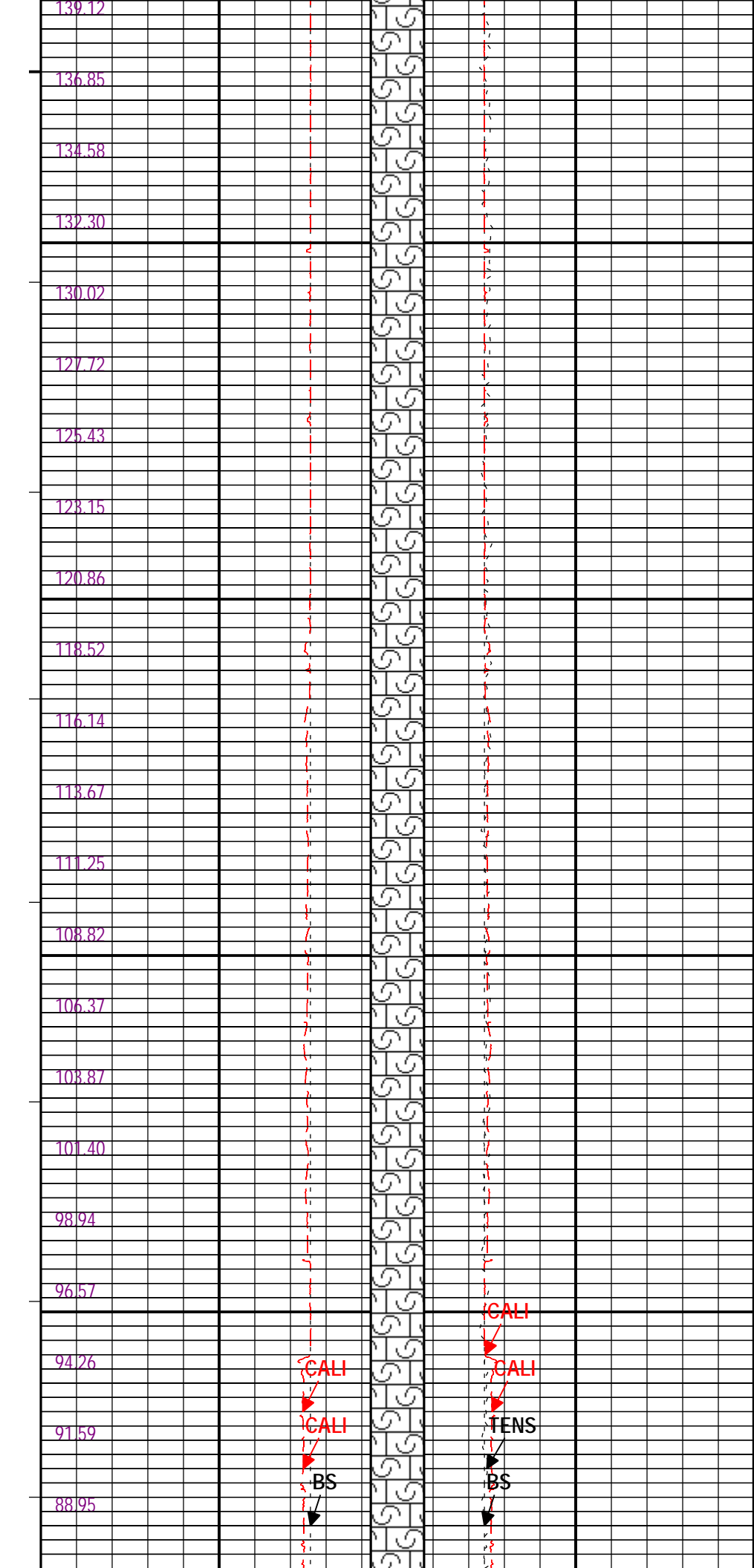
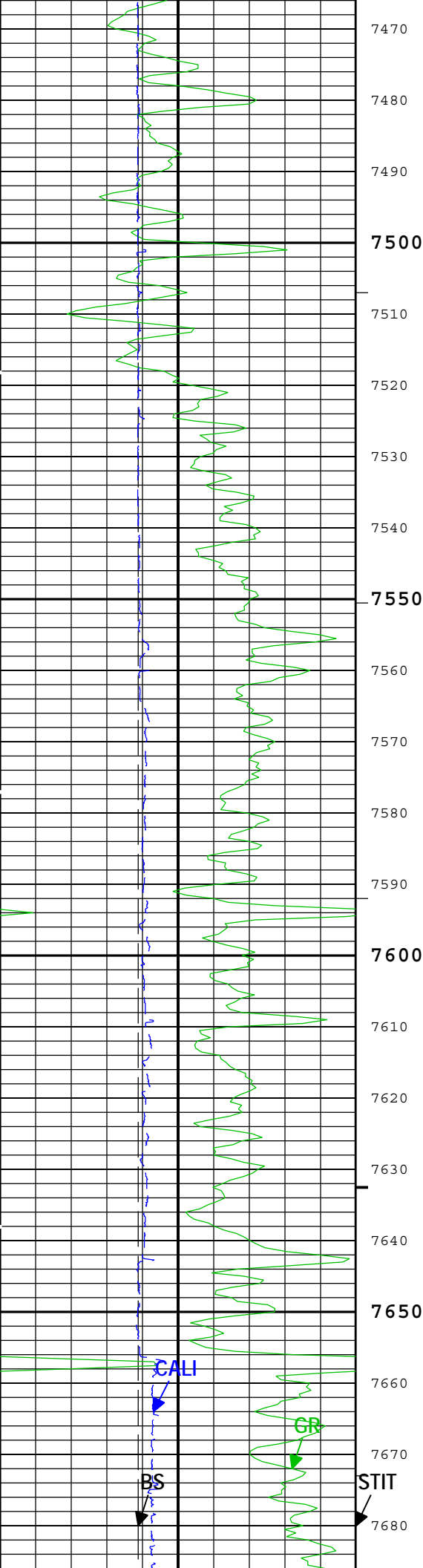


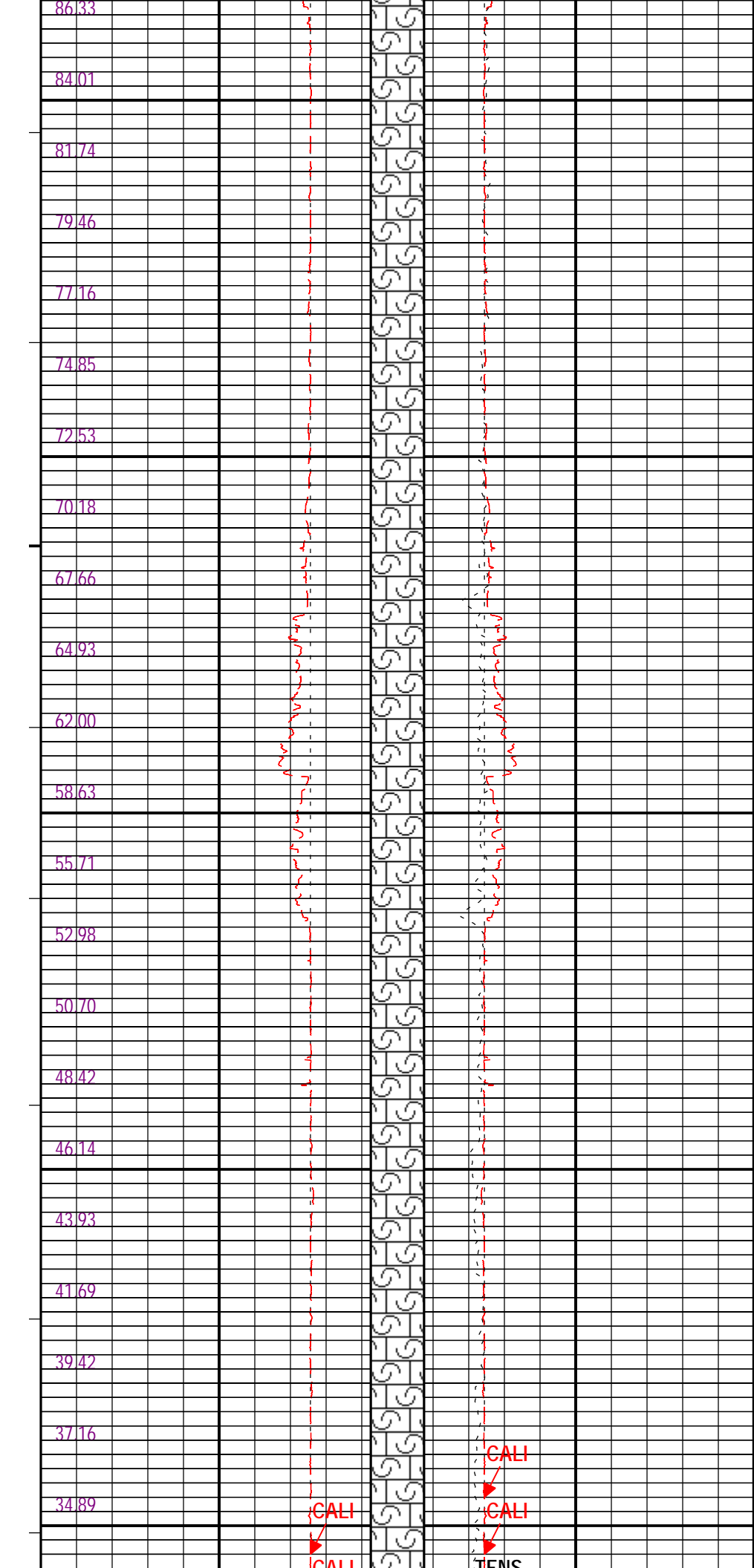
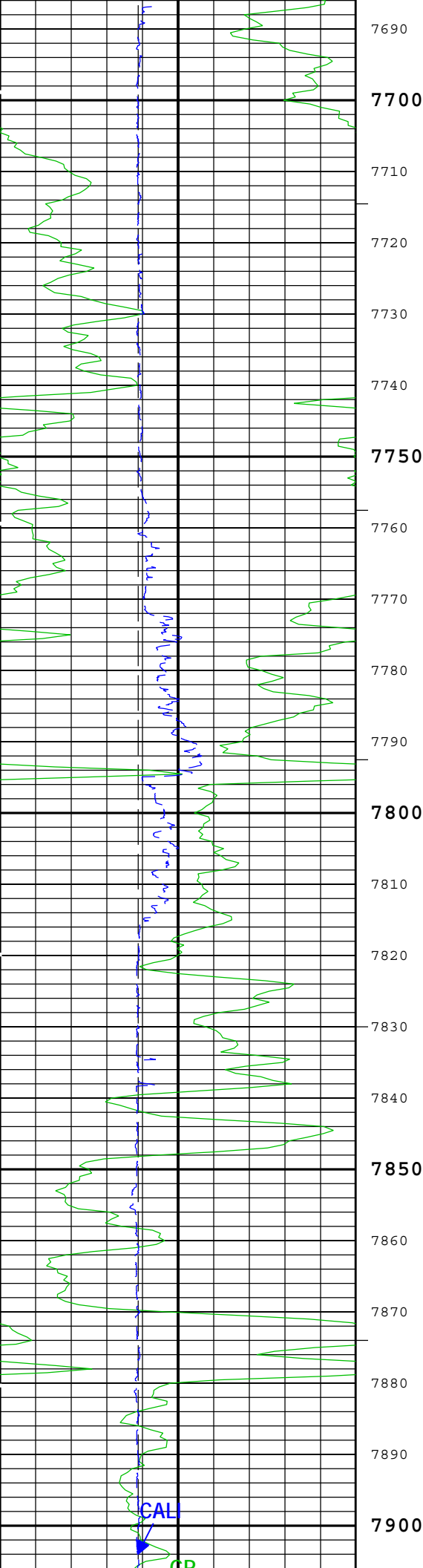


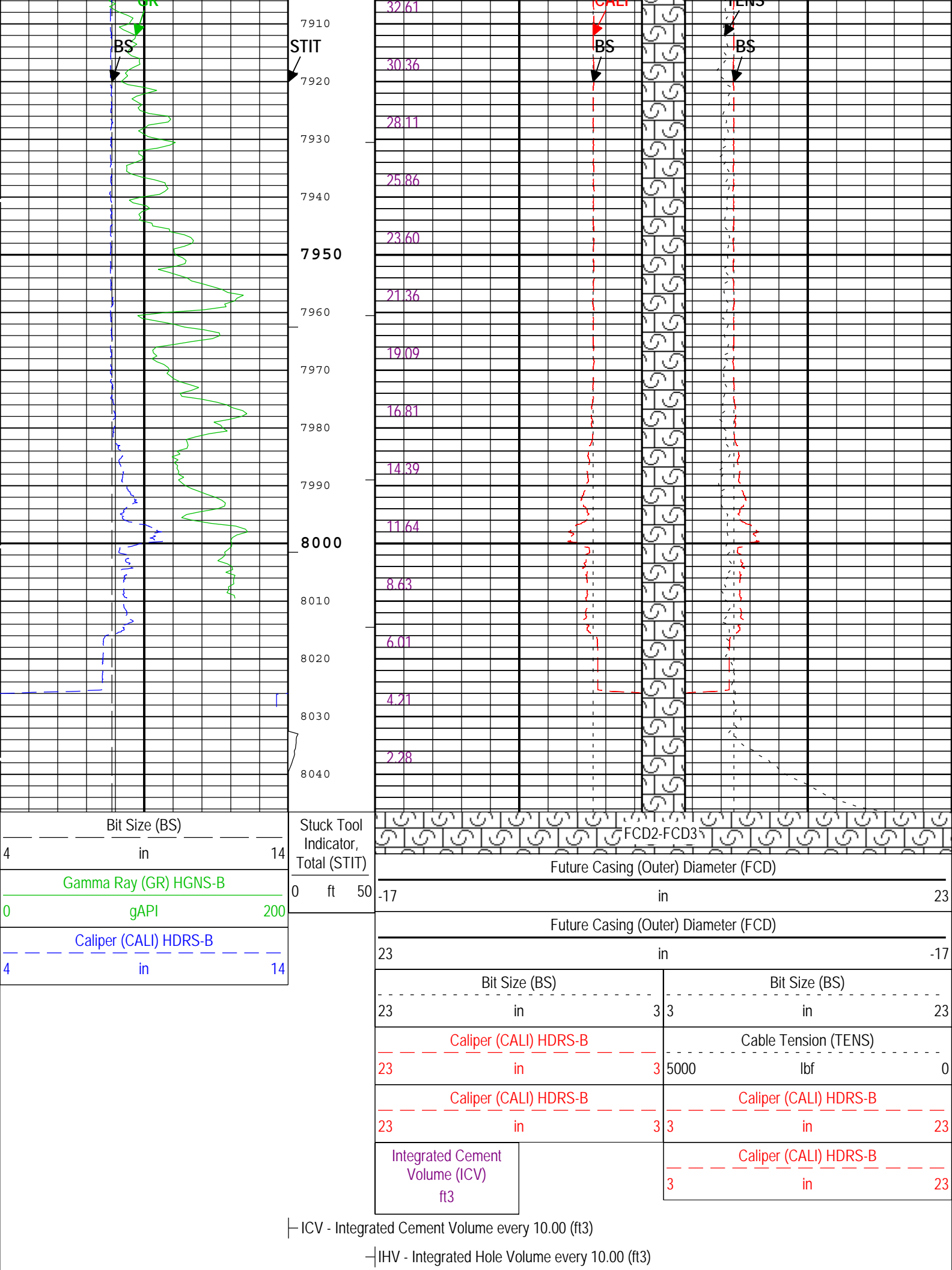












TIME_1900 - Time Marked every 60.00 (s)														
<div> <div>ICV - Integrated Cement Volume every 100.00 (ft3)</div> <div>IHV - Integrated Hole Volume every 100.00 (ft3)</div> </div>														
Description: Format: Log (Noble East Caliper) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 08-Apr-2013 05:49:18														
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-B	0		in							
CBLO	Casing Bottom (Logger)			WLSESSION	632		ft							
CDEN	Cement Density			HGNS-B	2		g/cm3							
CSODDRL	Casing Outer Diameter - Zoned along driller depths			WLSESSION	8.625		in							
DFD	Drilling Fluid Density			Borehole	9.7		lbm/gal							
FCD	Future Casing (Outer) Diameter			WLSESSION	4.5		in							
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes			Borehole	BS									
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes			Borehole	CALI									
SOCO	Standoff Correction Option			HGNS-B	Yes									
TD	Total Measured Depth			Borehole	8028		ft							
Depth Zone Parameters														
Parameter	Value		Start (ft)		Stop (ft)									
BS	0		620		633.5									
BS	7.875		633.5		8046.5									
All depth are actual.														
Tool Control Parameters														
Parameter	Description			Tool	Value		Unit							
MAX_LOG_SPEED	Toolstring Maximum Logging Speed			WLSESSION	3600		ft/h							
Calibration Report														
HDRS-B (HILT Density and Rxo Sonde, 125 degC) Calibration - Run Run One														
Primary Equipment :														
HILT High-Resolution Control Cartridge, 125 degC				HRCC-B	791									
HILT Resistivity Gamma-Ray Density Device, 125 degC				HRGD-B	1849									
Auxiliary Equipment :														
HRDD Backscatter Detector				Backscatter										
HRDD Long Spacing Detector				Long Spacing										
HRDD Short Spacing Detector				Short Spacing										
Cesium 137 Gamma-Ray Logging Source				GSR-J	5094									
HILT High-Resolution Control Cartridge, 125 degC				HRCC-B	791									
HILT High-Resolution Mechanical Sonde, 125 degC				HRMS-B	1754									
Calibration Parameter :														
Small Ring Size (Caliper Calibration Small Ring)				8.00										
Large Ring Size (Caliper Calibration Large Ring)				12.00										
HDRS Caliper Calibration - Caliper Accumulations														
Before (Measured):		10:49:20 07-Apr-2013												
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit								
Small Ring	in	Before	8.00	6.00	7.95</									

HDRS Density Calibration - Deviation Summary

Master (EEPROM):		13:27:08 26-Mar-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.600	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.687	1.696	
Pe Aluminum		Master	2.570	2.470	2.548	2.670	
Pe Magnesium		Master	2.650	2.550	2.624	2.750	

HDRS Density Calibration - Deviation Summary

Master (EEPROM):		13:27:08 26-Mar-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.5105	0.6000	
BS Max Deviation	%	Master	0	-1.6000	1.0204	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.3297	1.0000	
SS Max Deviation	%	Master	0	-2.5000	1.4755	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.3430	1.5000	
LS Max Deviation	%	Master	0	-3.5000	0.7854	3.5000	

HDRS Density Calibration - Background Summary

Master (EEPROM):		13:27:08 26-Mar-2013		Before (Measured):		10:52:16 07-Apr-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7337		
		Before	0.7337	0.6970	0.7378	0.7704	
		Before-Master	-----	-----	0.0041	-----	
BS Window Sum	1/s	Master	1		9471		
		Before	9471	8998	9489	9945	
		Before-Master	-----	-----	18	-----	
SS Window Ratio		Master	1.0000		0.4949		
		Before	0.4949	0.4701	0.4942	0.5196	
		Before-Master	-----	-----	-0.0007	-----	
SS Window Sum	1/s	Master	1		9122		
		Before	9122	8666	9090	9578	
		Before-Master	-----	-----	-32	-----	
LS Window Ratio		Master	1.0000		0.2973		
		Before	0.2973	0.2825	0.2927	0.3122	
		Before-Master	-----	-----	-0.0046	-----	
LS Window Sum	1/s	Master	1		1064		
		Before	1064	1010	1062	1117	
		Before-Master	-----	-----	-2	-----	

HDRS Density Calibration - Photo-multiplier High Voltages




Master (EEPROM):		13:27:08 26-Mar-2013		Before (Measured):		10:52:16 07-Apr-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1613	2400	
		Before		1000	1608	2400	
		Before-Master	-----	-100	-5	100	
SS PM High Voltage	V	Master		1000	1636	2400	
		Before		1000	1675	2400	
		Before-Master	-----	-100	39	100	
LS PM High Voltage	V	Master		1000	1577	2400	
		Before		1000	1585	2400	
		Before-Master	-----	-100	8	100	

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM):		13:27:08 26-Mar-2013		Before (Measured):		10:52:16 07-Apr-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	11.98	25.00	
		Before		5.00	11.98	25.00	
		Before-Master	-----	-1.00	0.00	1.00	
SS Crystal Resolution	%	Master		5.00	9.64	20.00	
		Before		5.00	10.28	20.00	
		Before-Master	-----	-1.00	0.64	1.00	
LS Crystal Resolution	%	Master		5.00	9.66	20.00	
		Before		5.00	9.46	20.00	
		Before-Master	-----	-1.00	-0.20	1.00	

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured):		10:52:41 07-Apr-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	

Main Resistivity	ohm.m	Before	3875	3565	3830	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3793	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3817	4136	

Company:	Encana Oil & Gas	Schlumberger
Well:	State 23-16	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	
Platform Express		
Caliper		
Cement Volume		