

Company: Caerus Operating LLC

Well: Puckett 12C-26-697

Field: Grand Valley

County: Garfield State: Colorado

## Cement Bond Log

## RST Sigma Log

## Gamma Ray - Collar Locator Log

County: Garfield  
Field: Grand Valley  
Location: Mesa F26  
Well: Puckett 12C-26-697  
Company: Caerus Operating LLC

Mesa F26	Location:		Elev.:	K.B.	8352.00 ft
	Permanent Datum: Log Measured From: Drilling Measured From:	Ground Level	Elev.:	G.L.	8322.00 ft
		Kelly Bushing		D.F.	8352.00 ft
API Serial No.	05045233980000	Section: 26	Township: 6S	Range: 97W	

Logging Date 09-May-2018

Run Number One

Depth Driller 8779.00 ft

Schlumberger Depth 8680.00 ft

Bottom Log Interval 8680.00 ft

Top Log Interval 2300.00 ft

Casing Fluid Type 2% KCL Water

Salinity

Density 8.49 lbm/gal

Fluid Level 8.00 ft

BIT/CASING/TUBING STRING

Bit Size 8.75 in

From 2531.00 ft

To 8779.00 ft

Casing/Tubing Size 4.5 in

Weight 11.6 lbm/ft

Grade P110

From 0.00 ft

To 8779.00 ft

Max Recorded Temperatures 226.58 degF

Logger on Bottom 10-May-2018

Unit Number 3046

Recorded By Beatriz Guaita

Witnessed By Ryan Tompkins

## 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.

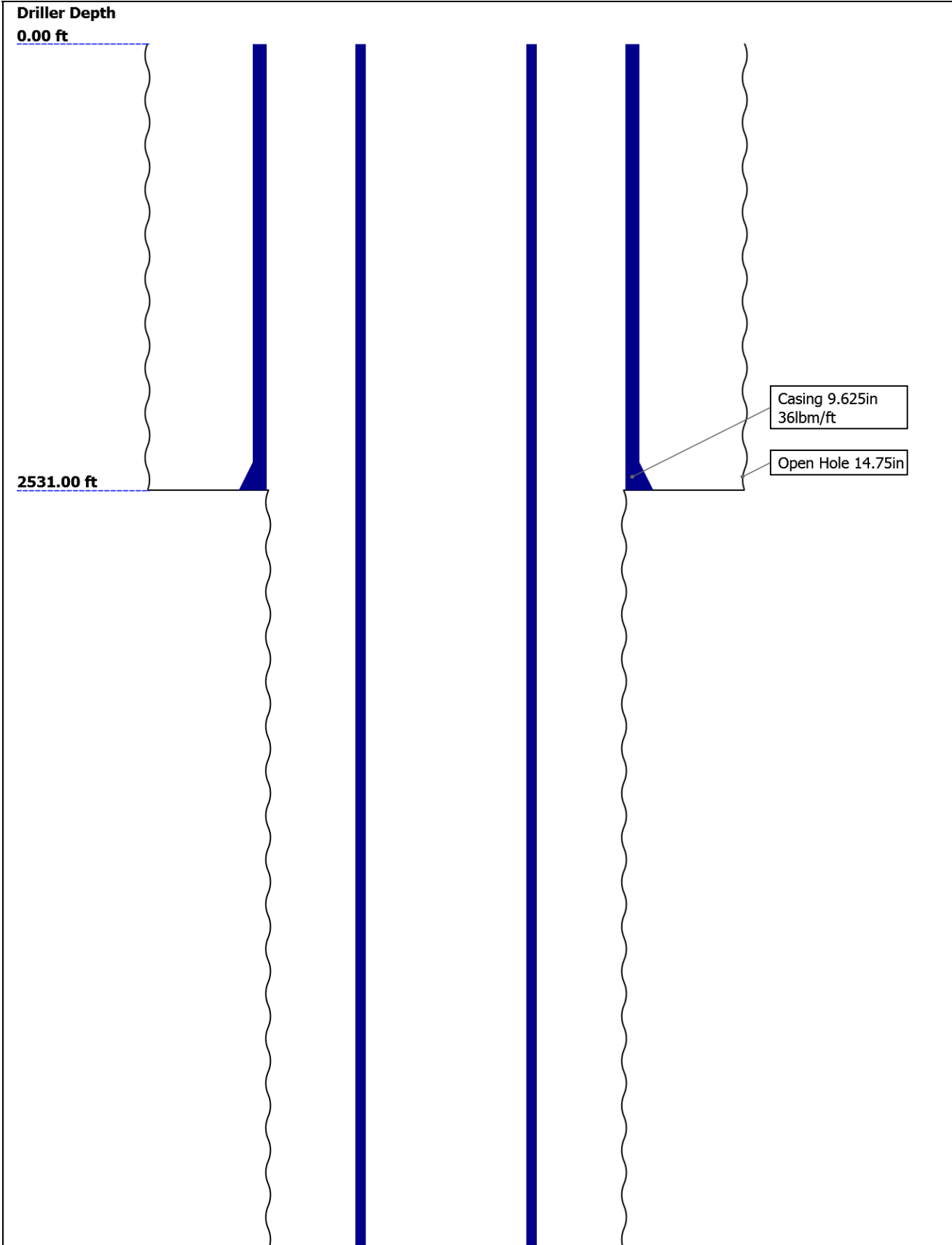
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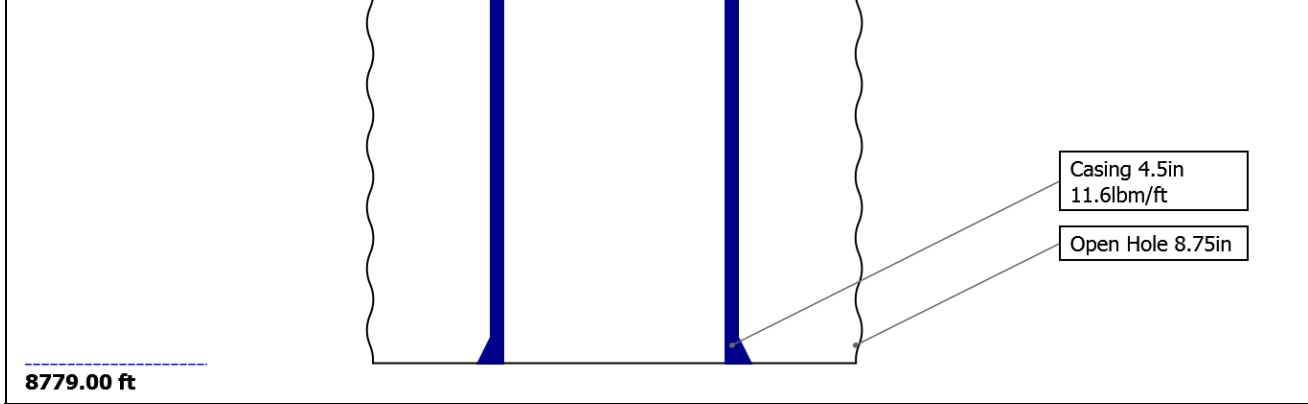
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Well Sketch



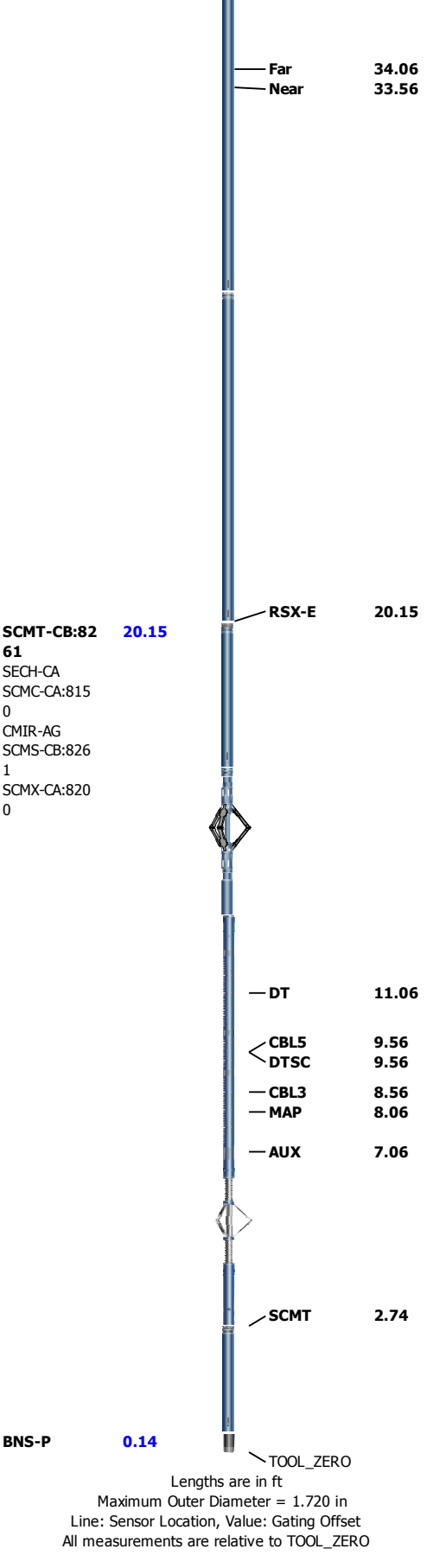


Borehole Size/Casing/Tubing Record

Bit						
Bit Size ( in )	14.75	8.75				
Top Driller ( ft )	0	2531				
Top Logger ( ft )	0	2531				
Bottom Driller ( ft )	2531	8779				
Bottom Logger ( ft )	2531	8779				
Casing						
Size ( in )	9.625	4.5				
Weight ( lbm/ft )	36	11.6				
Inner Diameter ( in )	8.921	4				
Grade	J55	P110				
Top Driller ( ft )	0	0				
Top Logger ( ft )	0	0				
Bottom Driller ( ft )	2531	8779				
Bottom Logger ( ft )	2531	8779				

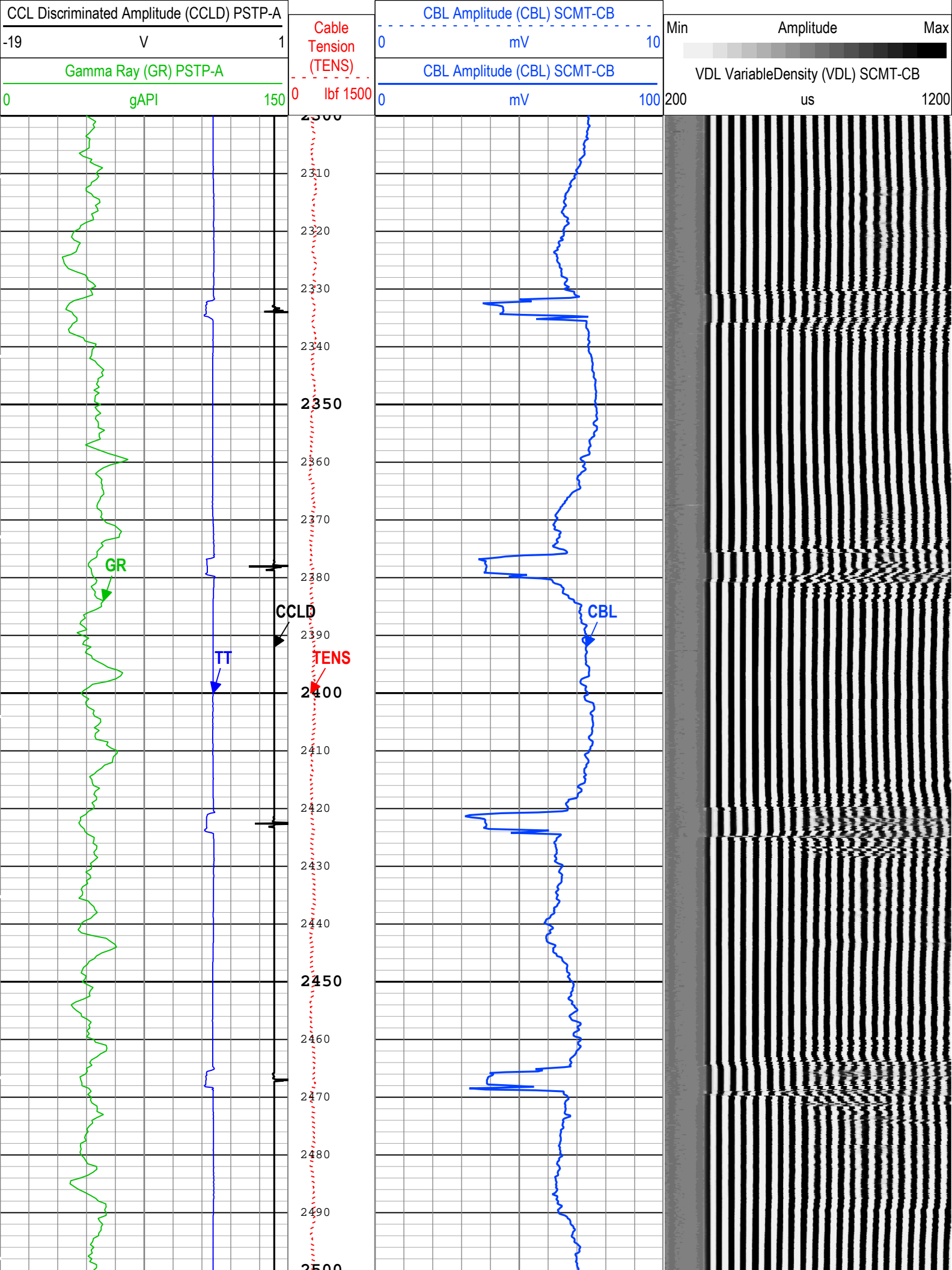
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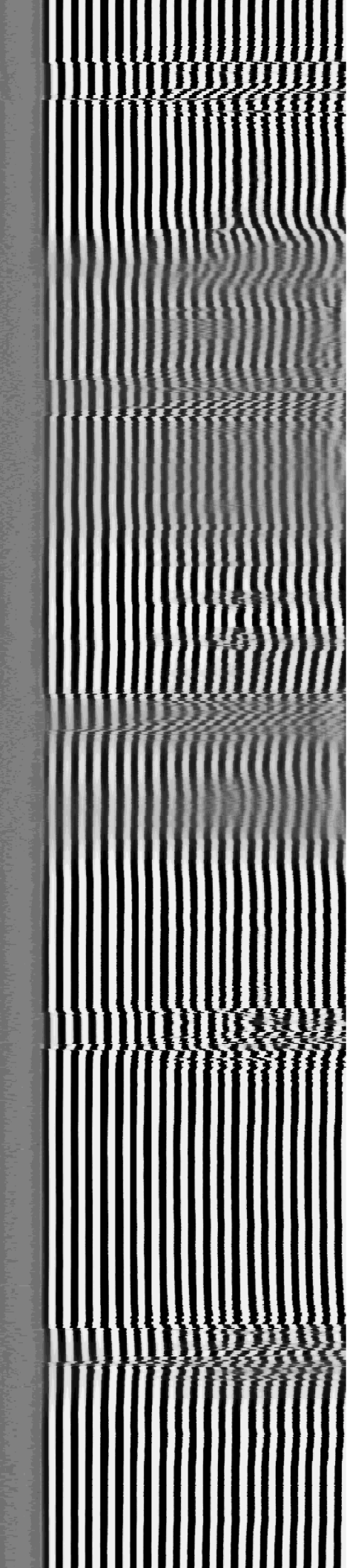
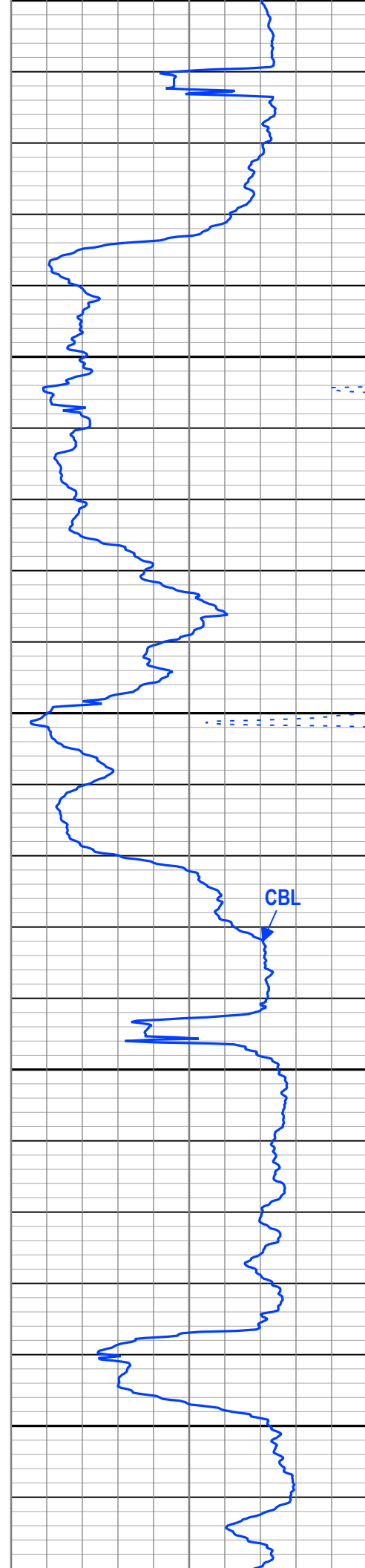
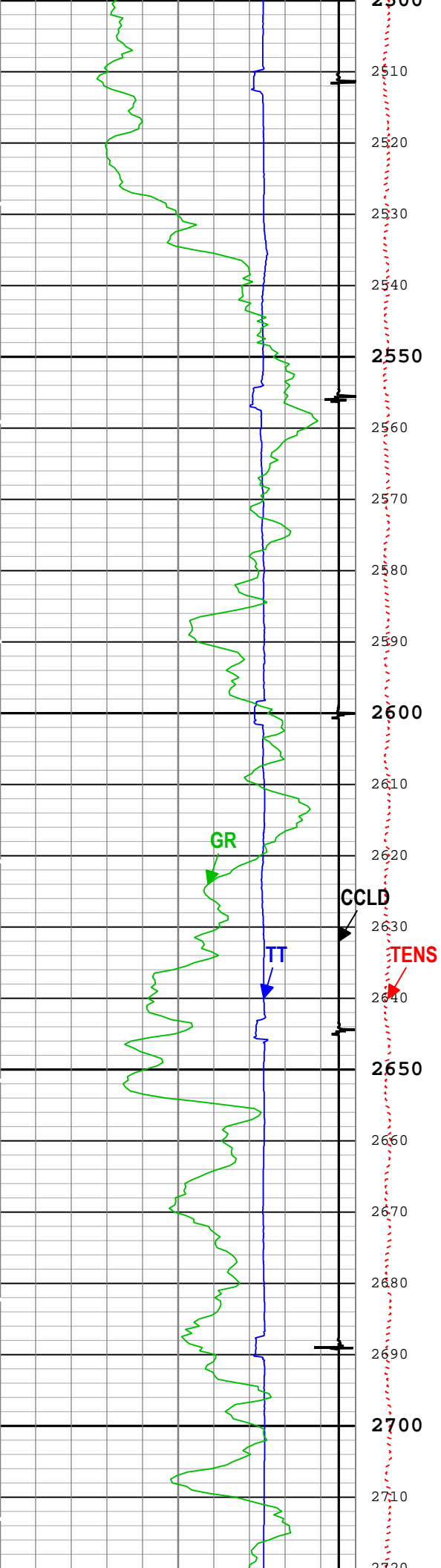
One: Toolstring				One: Remarks
Equip name	Length	MP name	Offset	Tool Ran as per tool Sketch
PEH-E	53.4			3xGemcos used to enhance centralization
				Max temperature 226.58DegF
AH-38	51.72			Schlumberger TD@8680ft
PSTP-A:378	51.44			Cycle Skipping due to Good Quality Cement
1				Thanks for choosing Schlumberger
PSC-A:3781		GR	47.74	
PSTC-A:3781		PSTC	47.44	
PBMS-A:3781		PSTC Tool String Bottom	0.00	
Sapphire 10kP		Temperature	44.65	
SI:33930		Sapphire Pressure	44.54	
		CCL	43.92	
		PBMS	43.17	
RST-C:424	43.17			
RSCH-A:277				
RSC-E:295				
RSS-A:373				
MNTR-F:1258				
RSXH-A:417				
RSX-E:424				
		RSC-E	36.82	



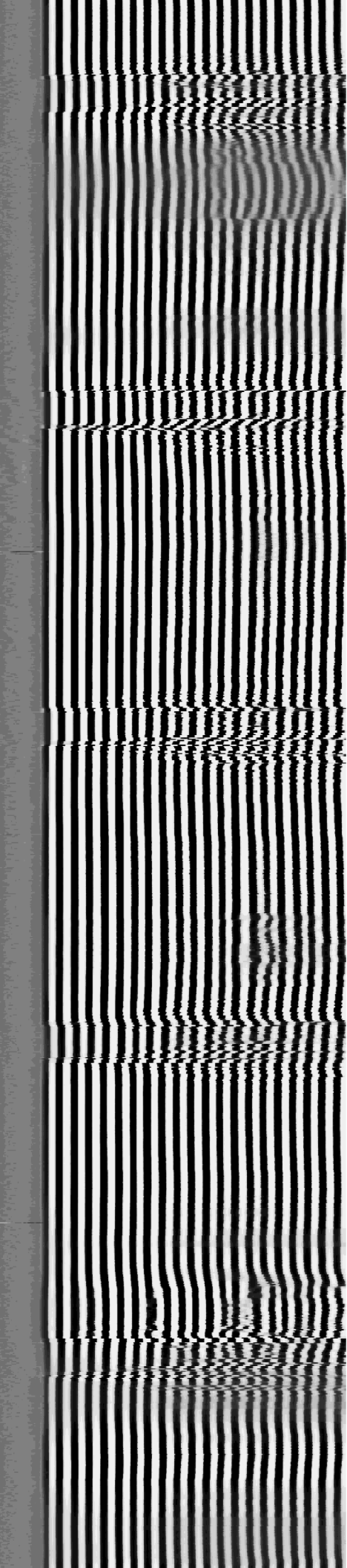
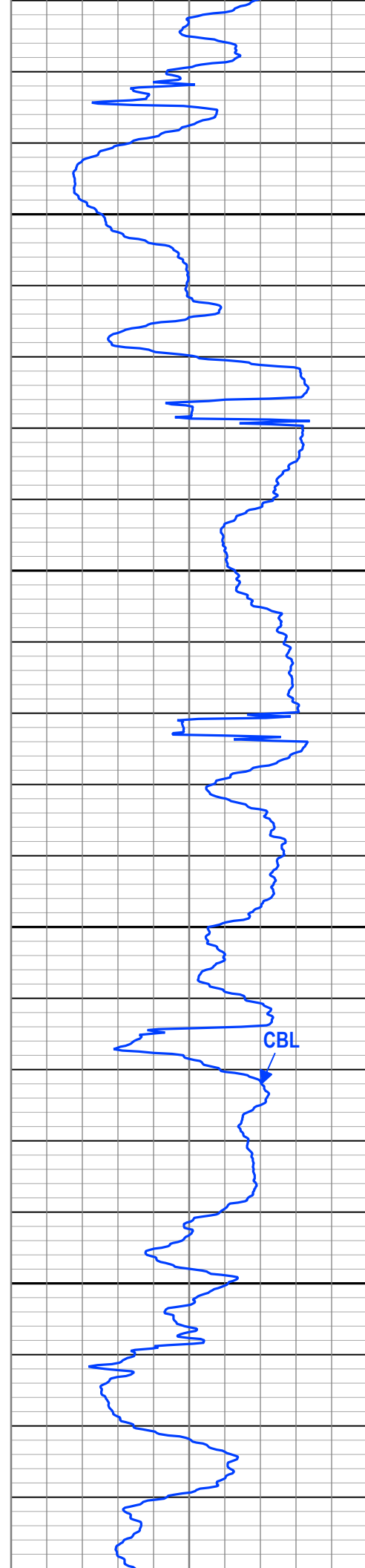
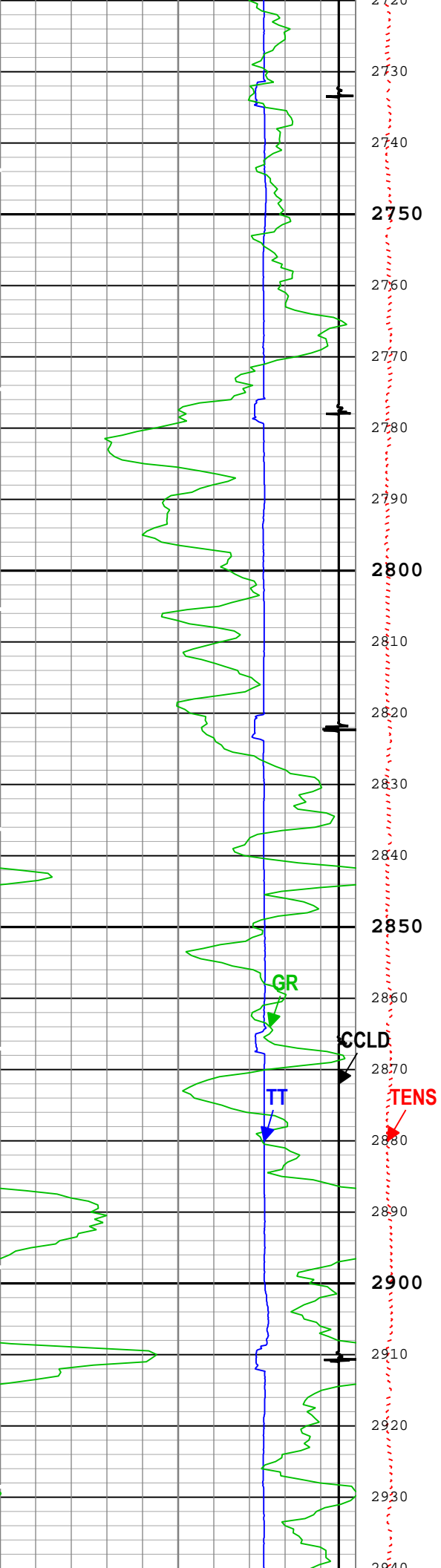
Depth Summary			
One			
Depth Measuring Device			
Type	IDW-B		
Serial Number	6459		
Calibration Date	22-Jan-2018		

400	us	200
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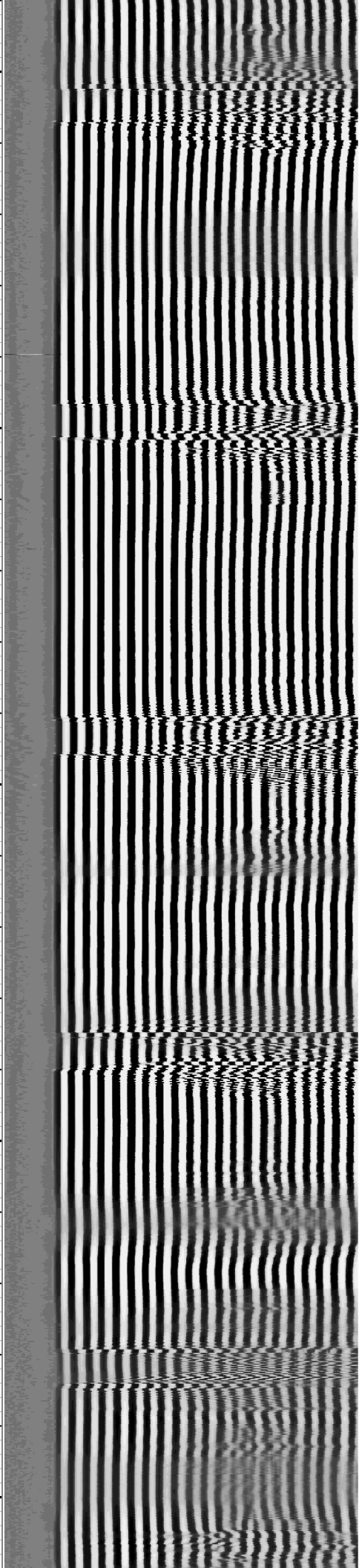
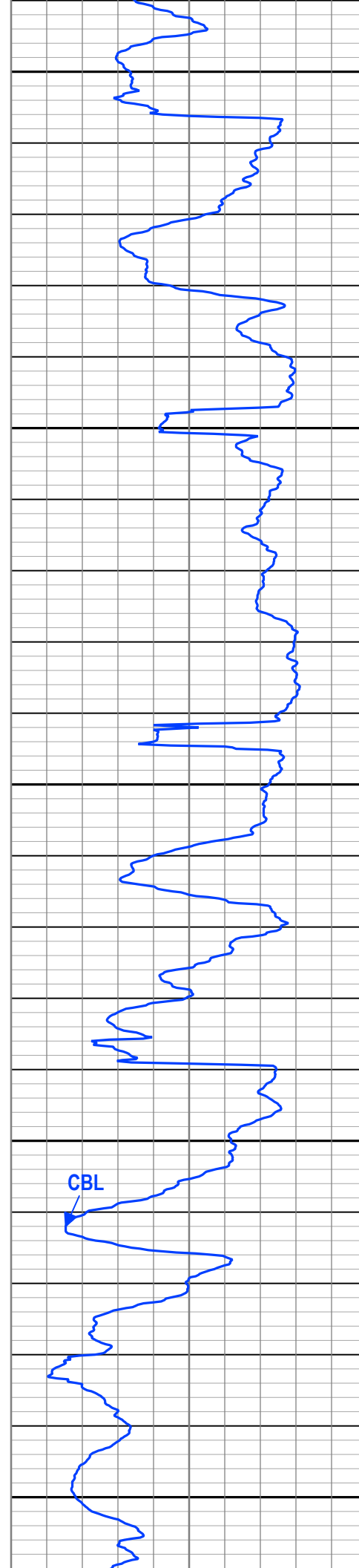
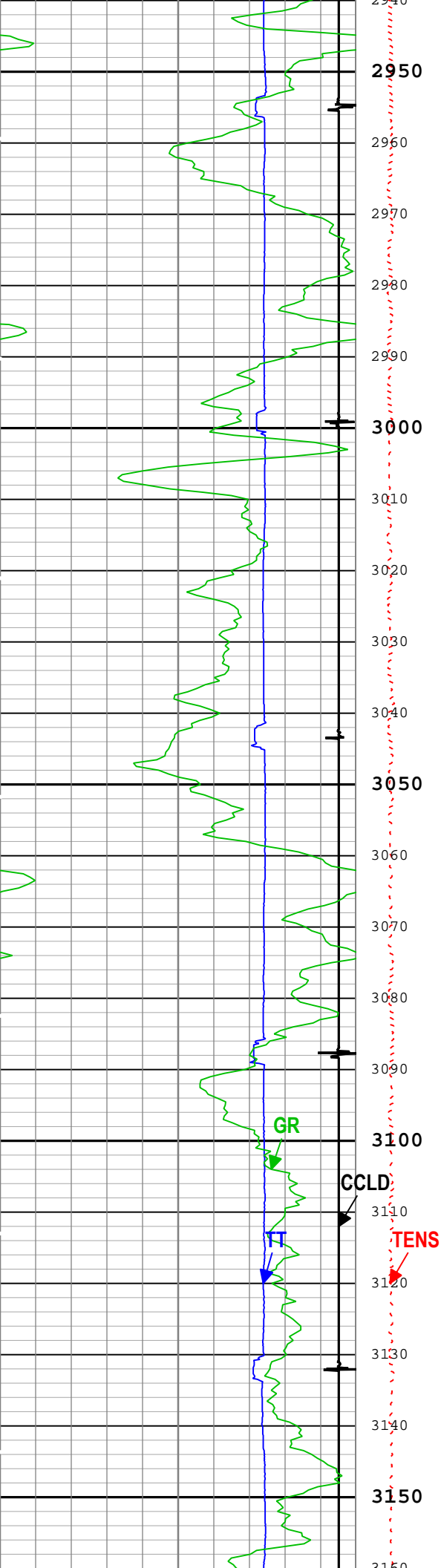


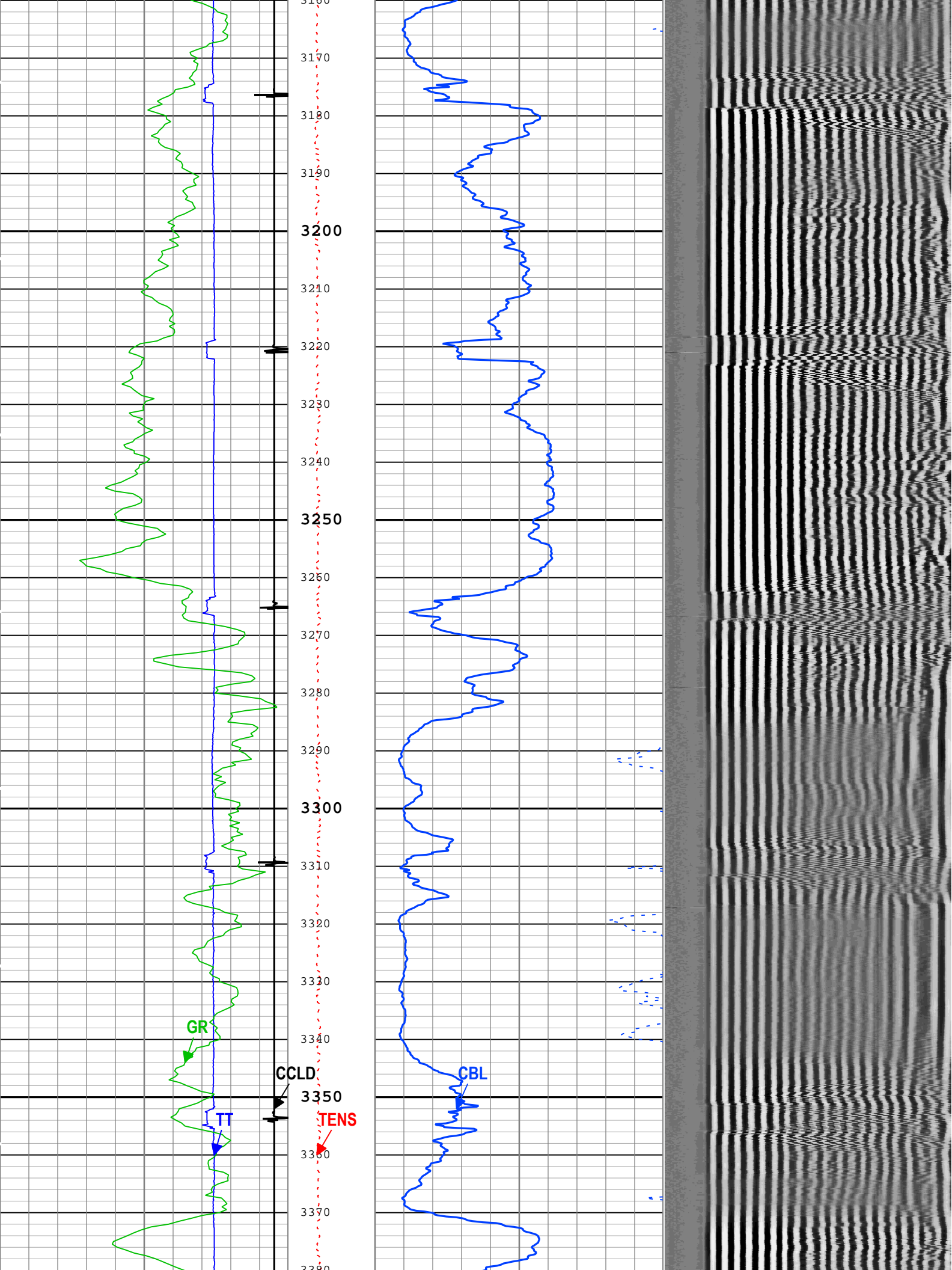


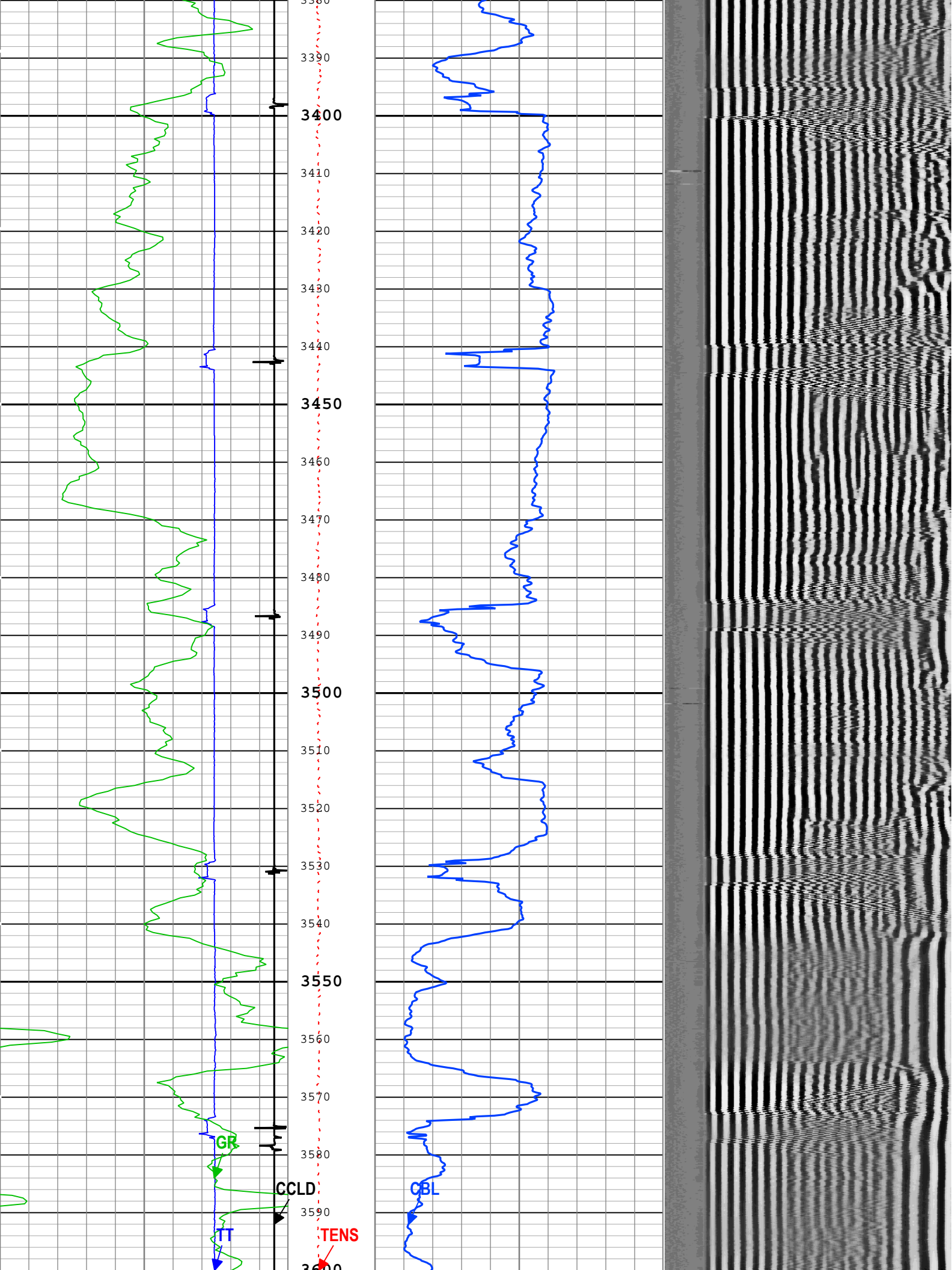




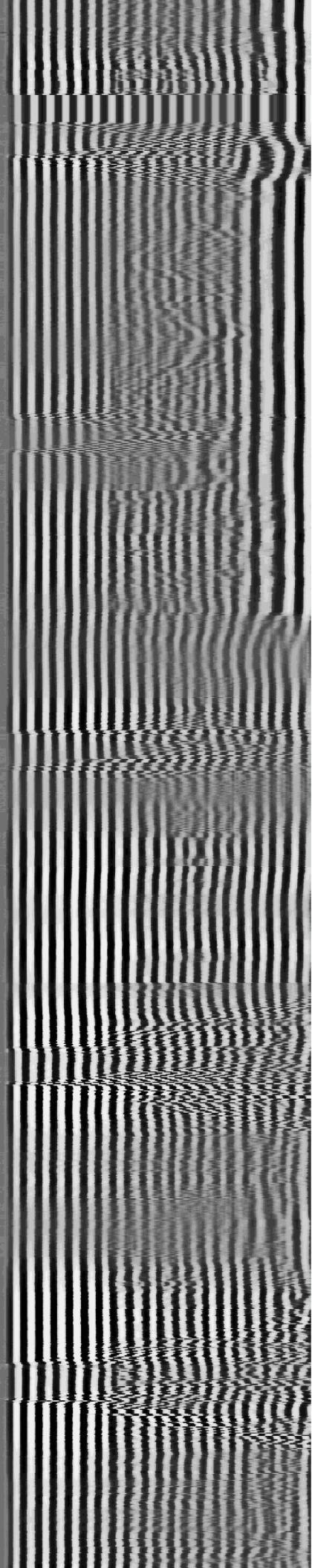
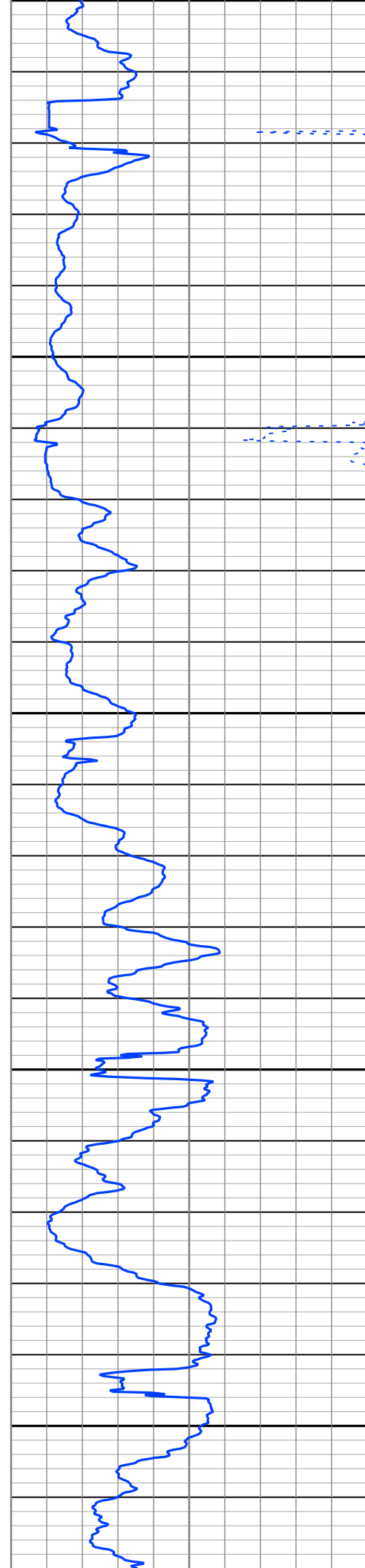
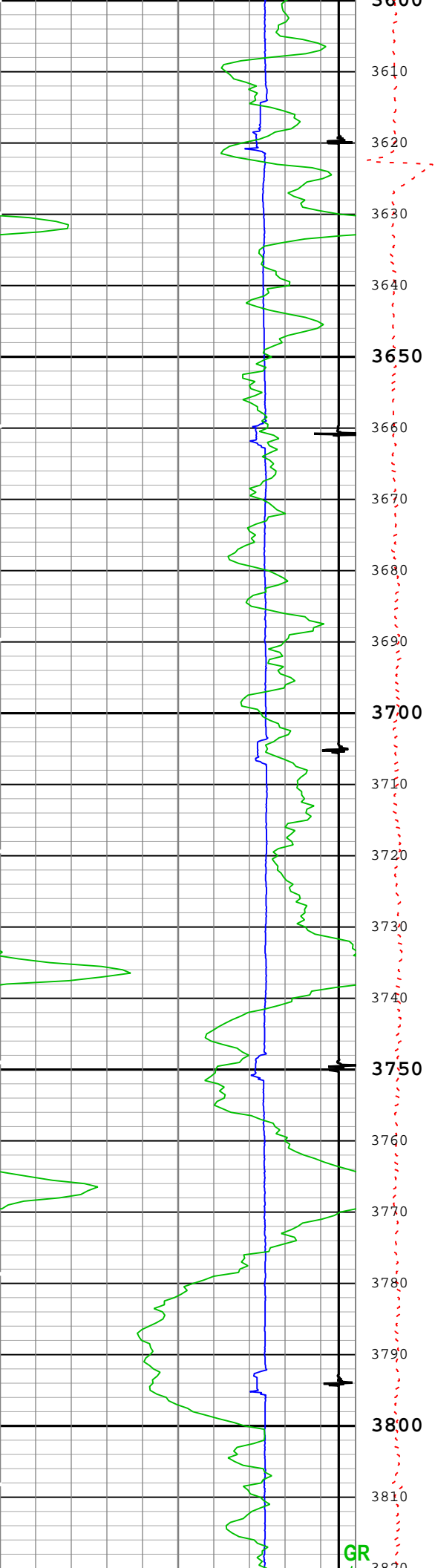


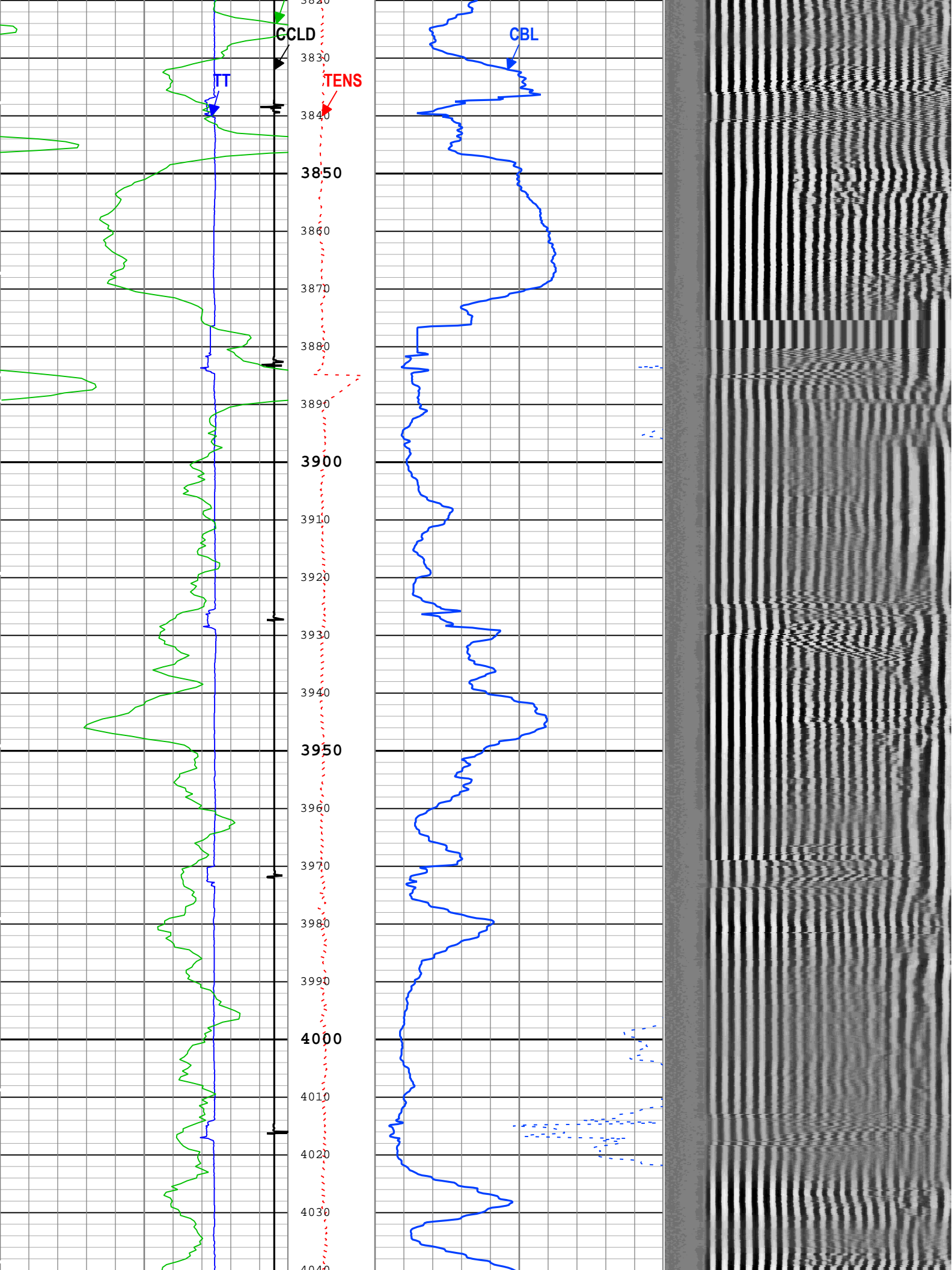


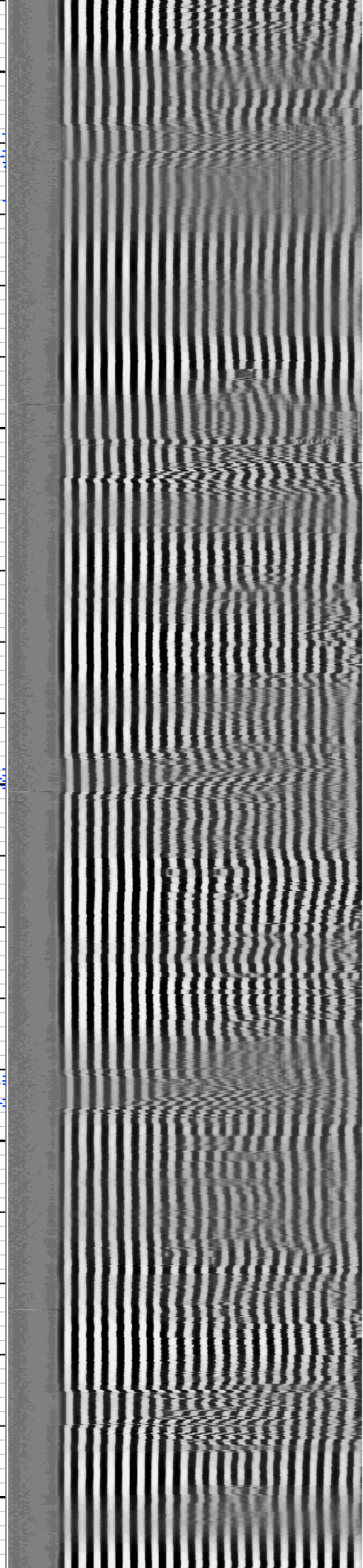
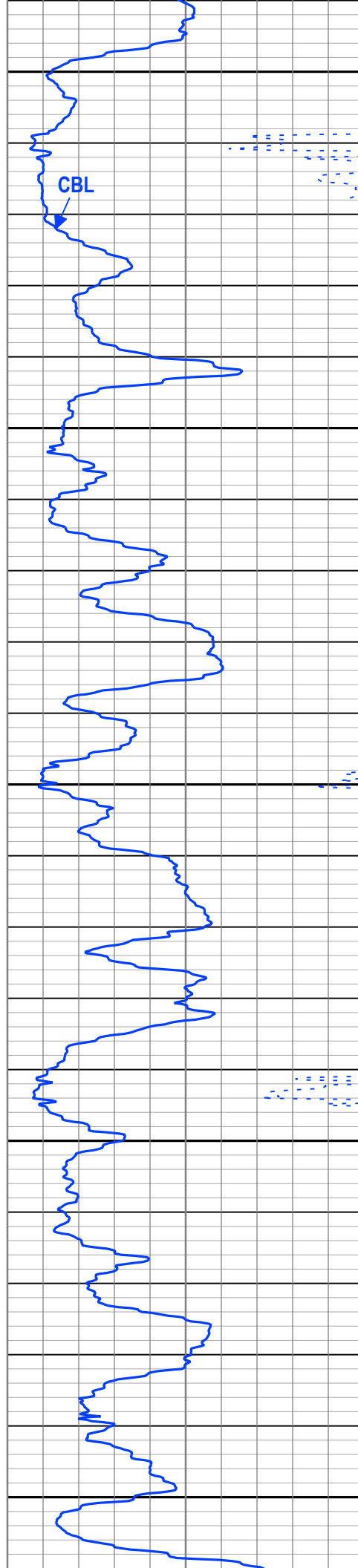
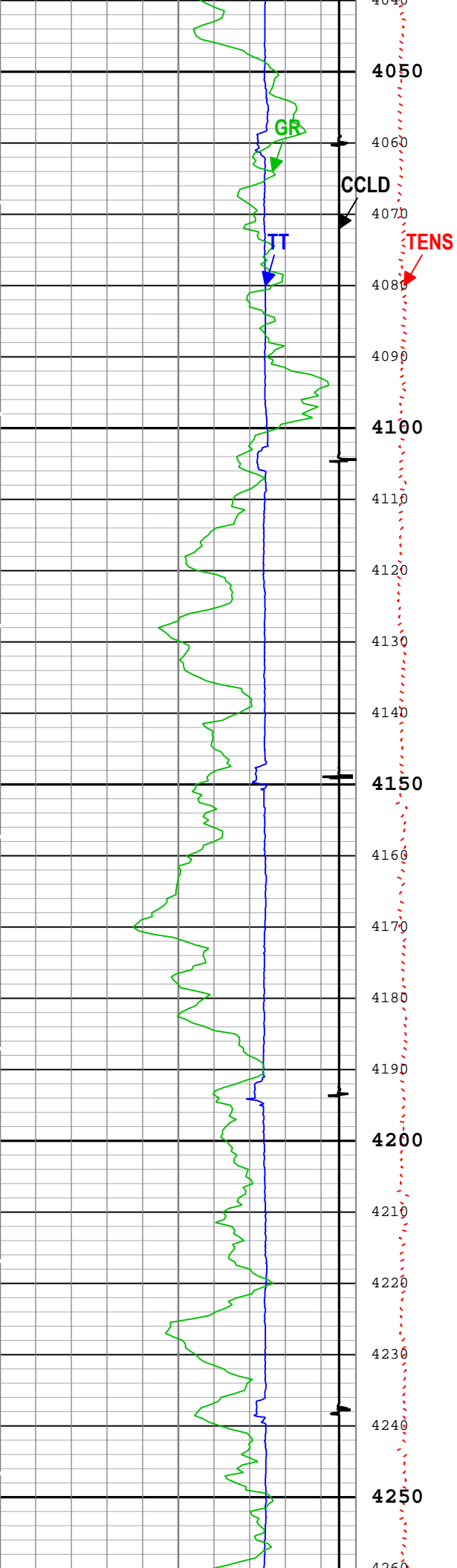




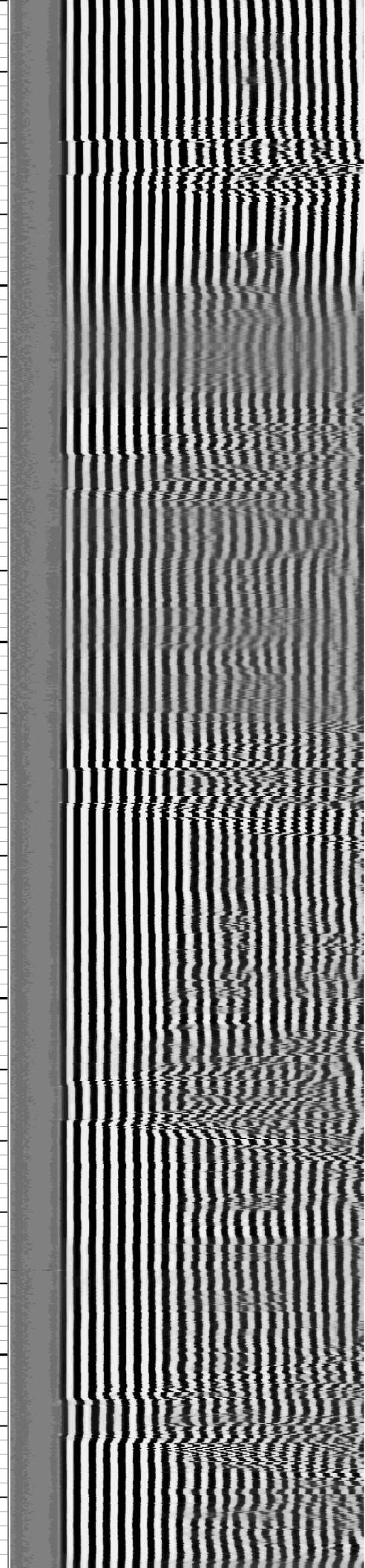
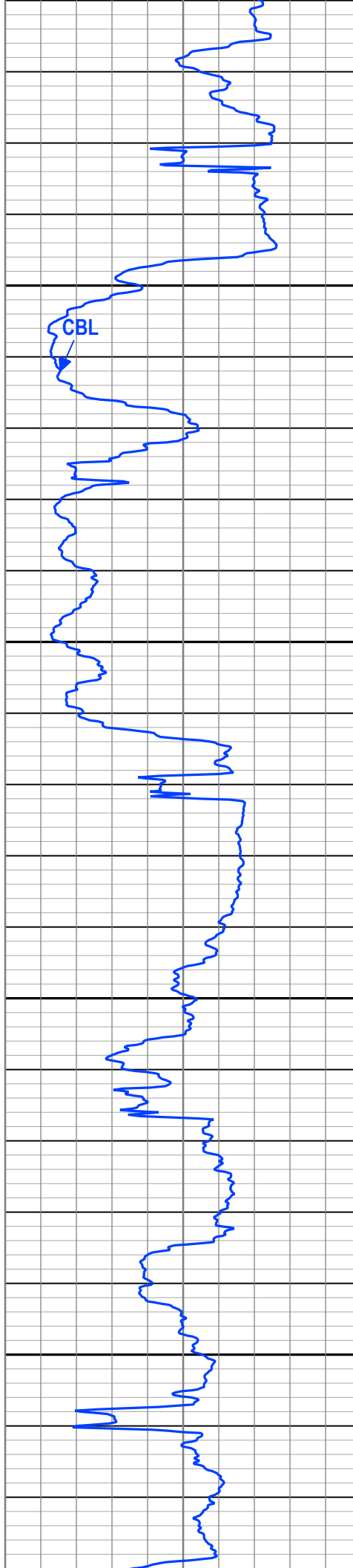
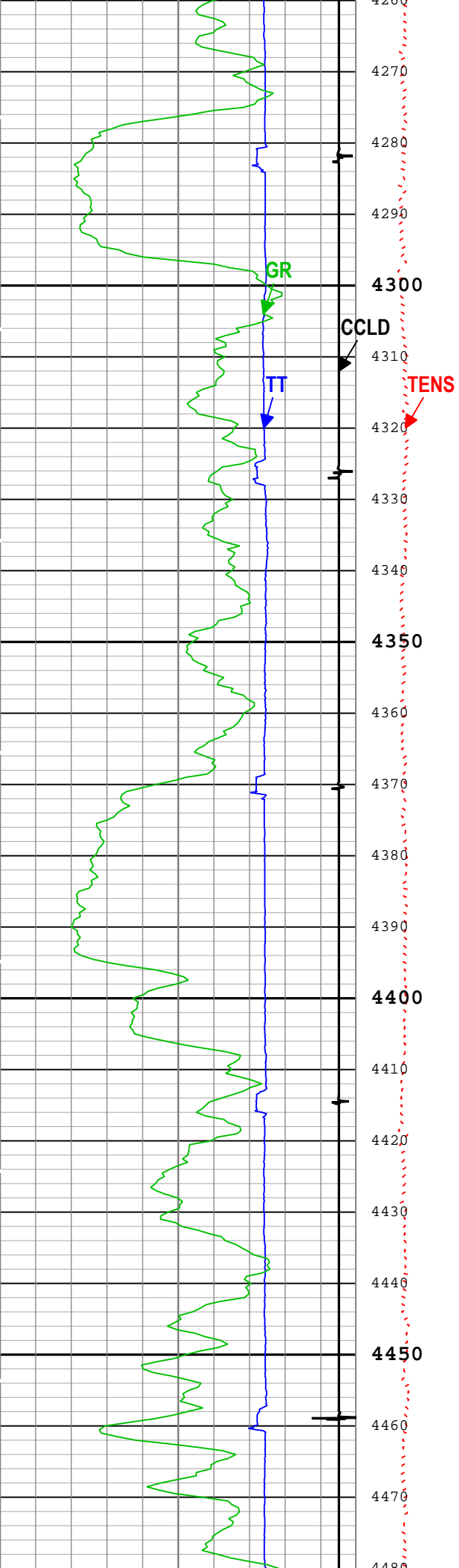




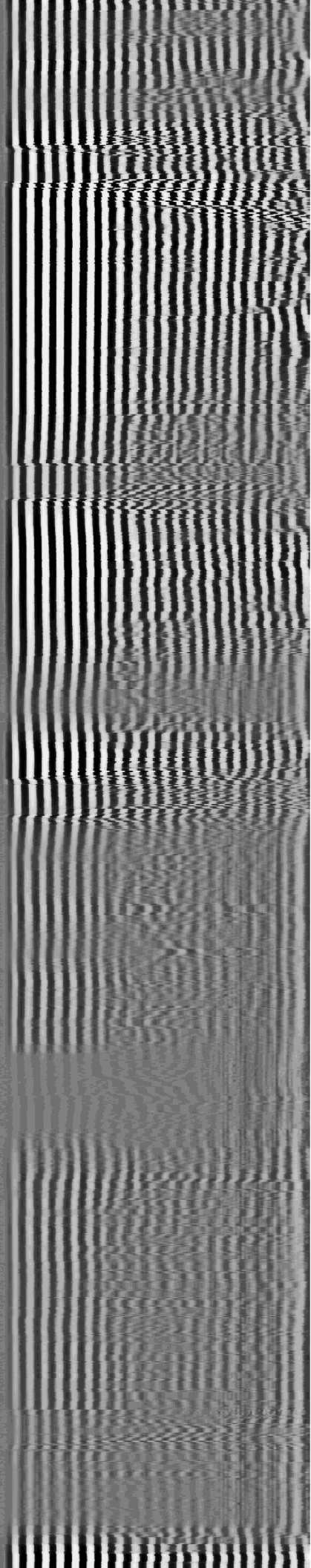
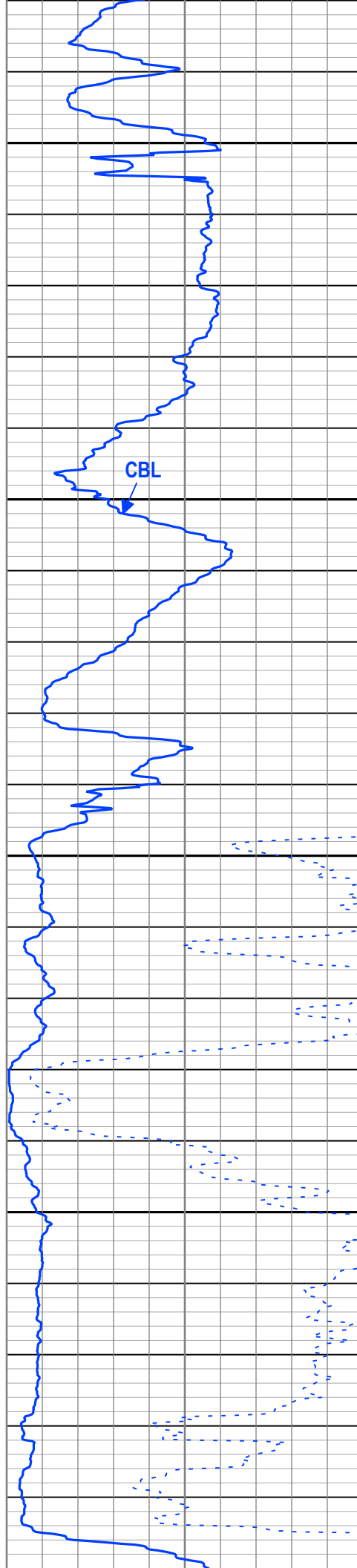
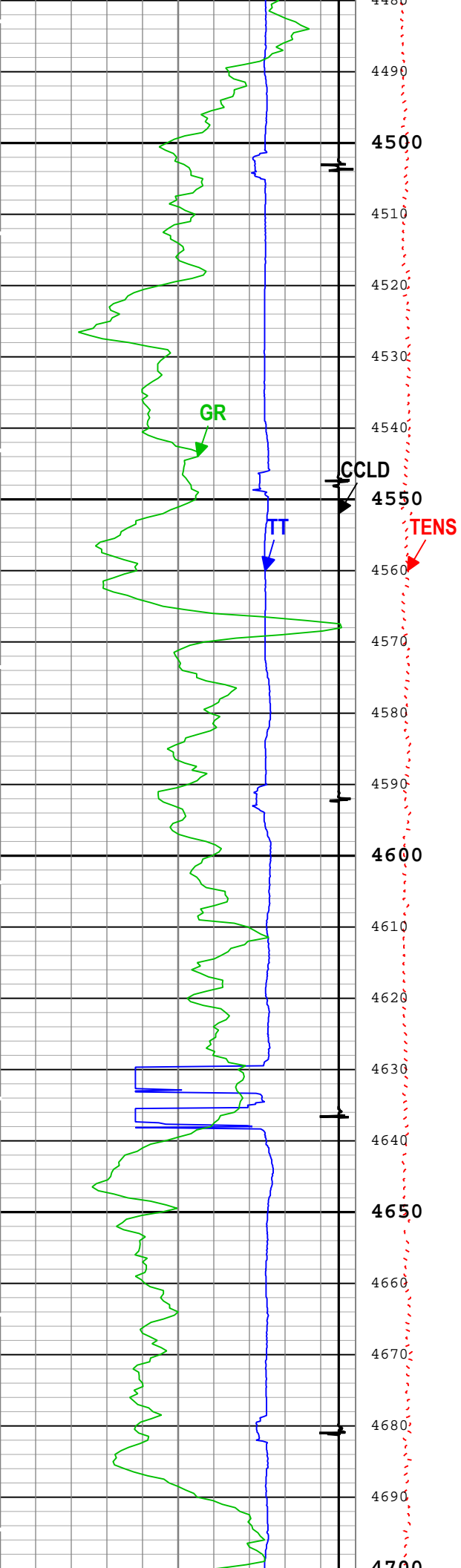


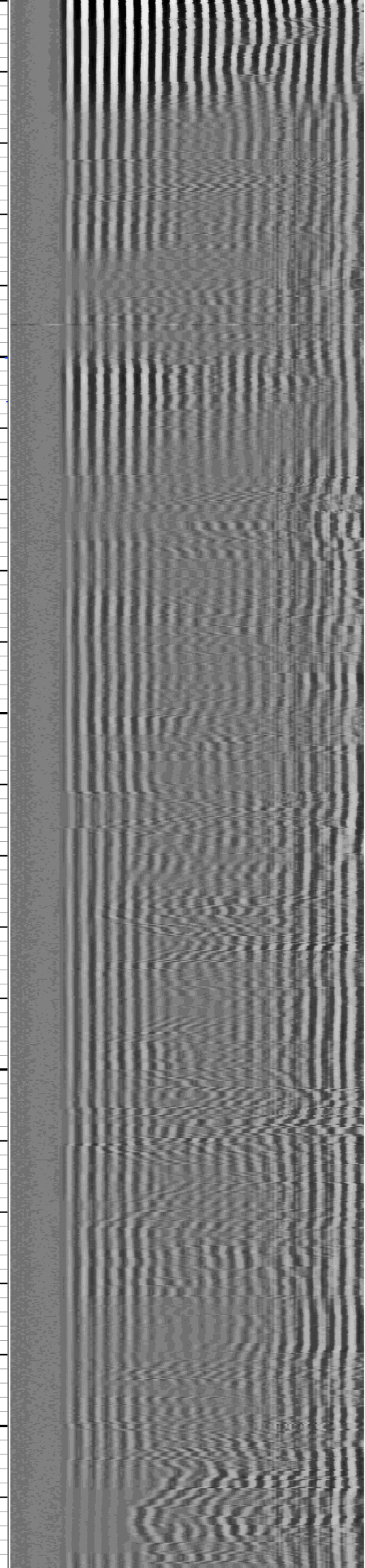
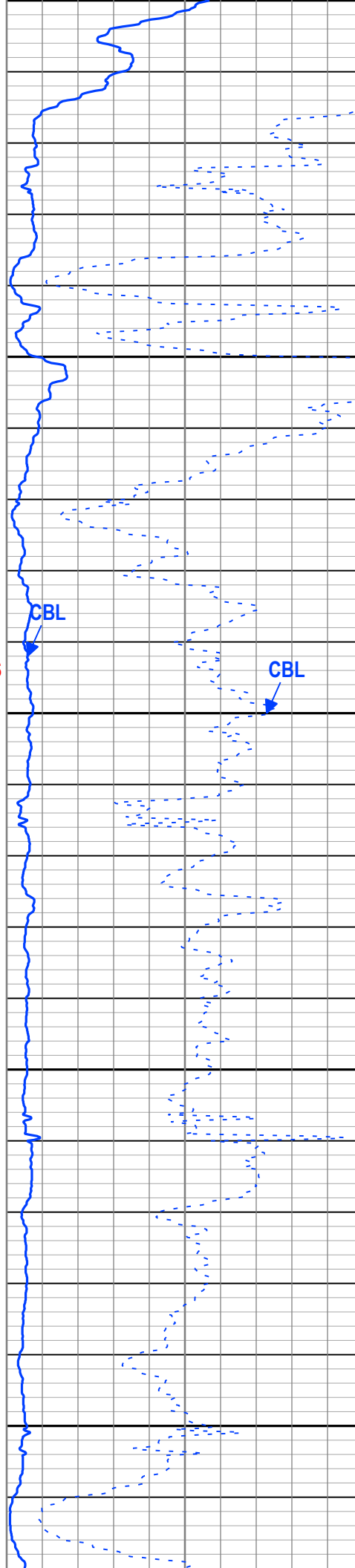
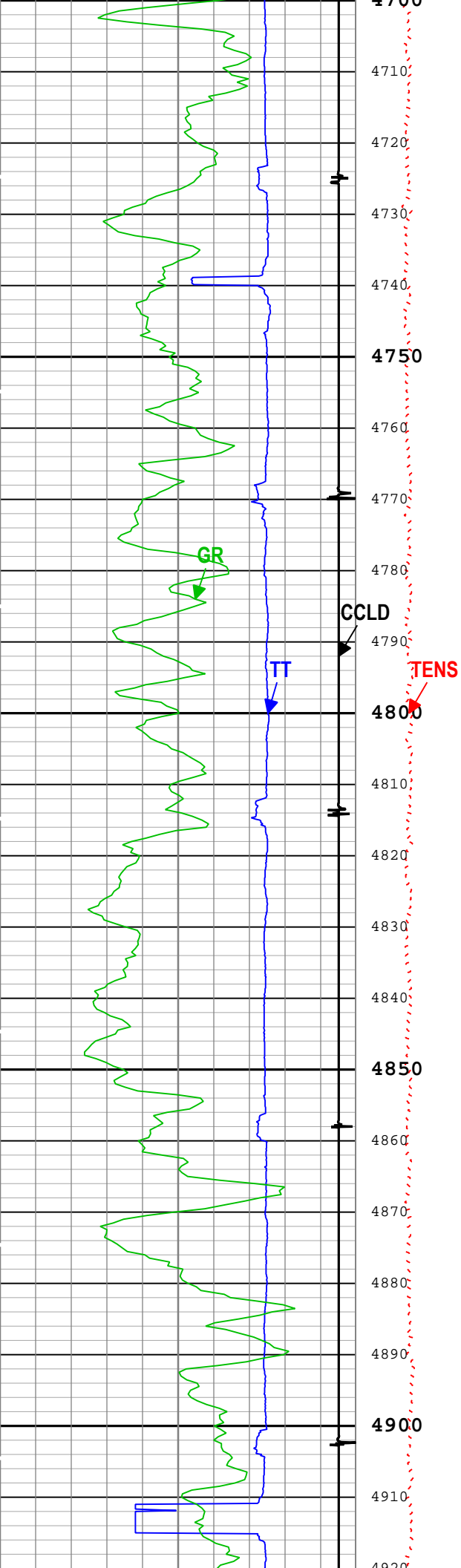


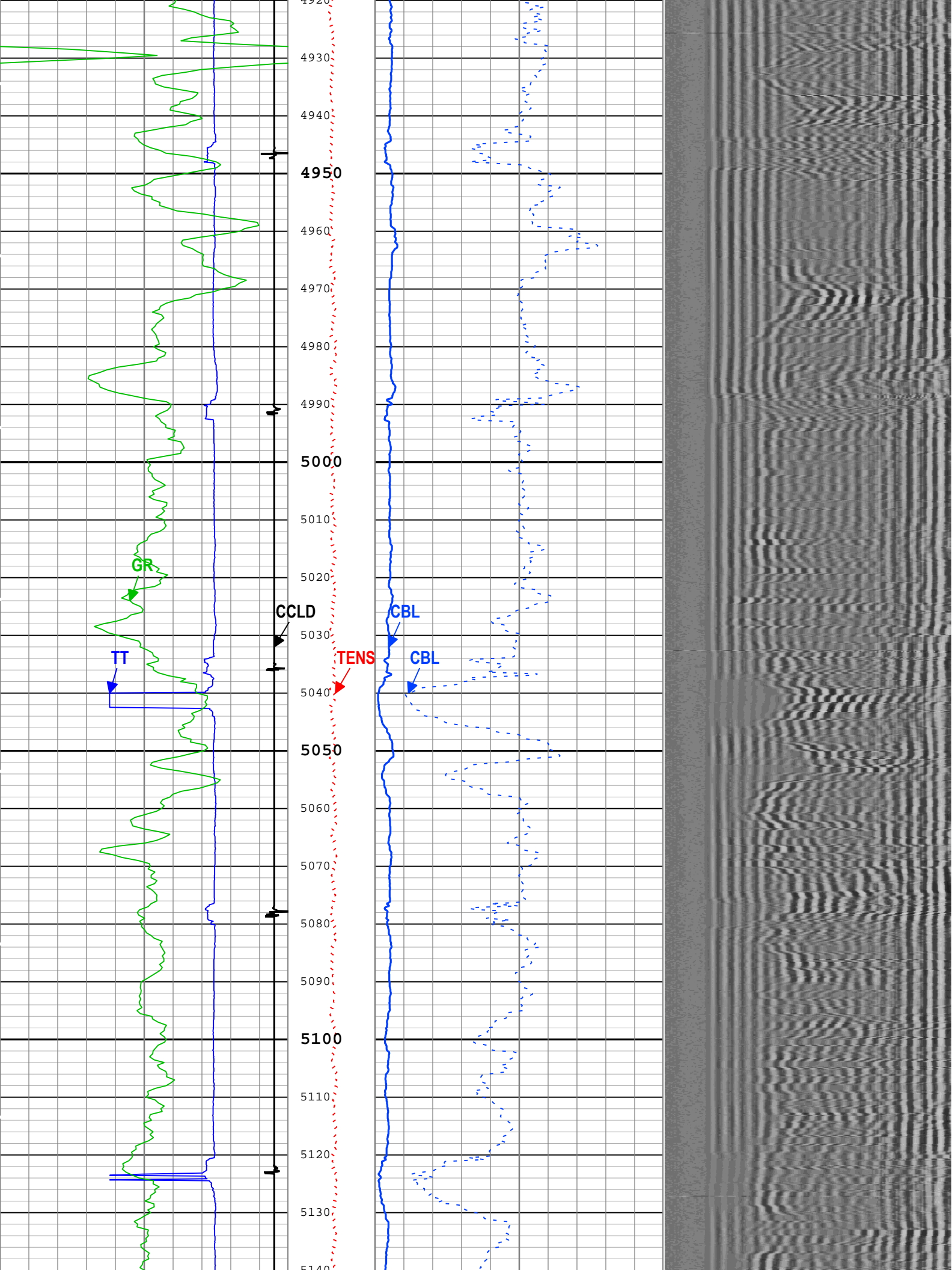




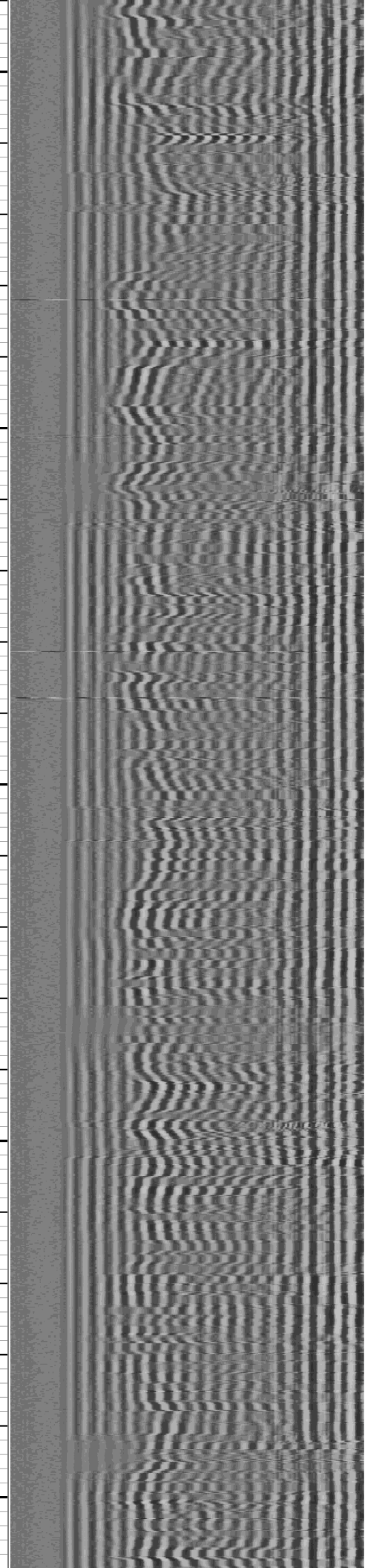
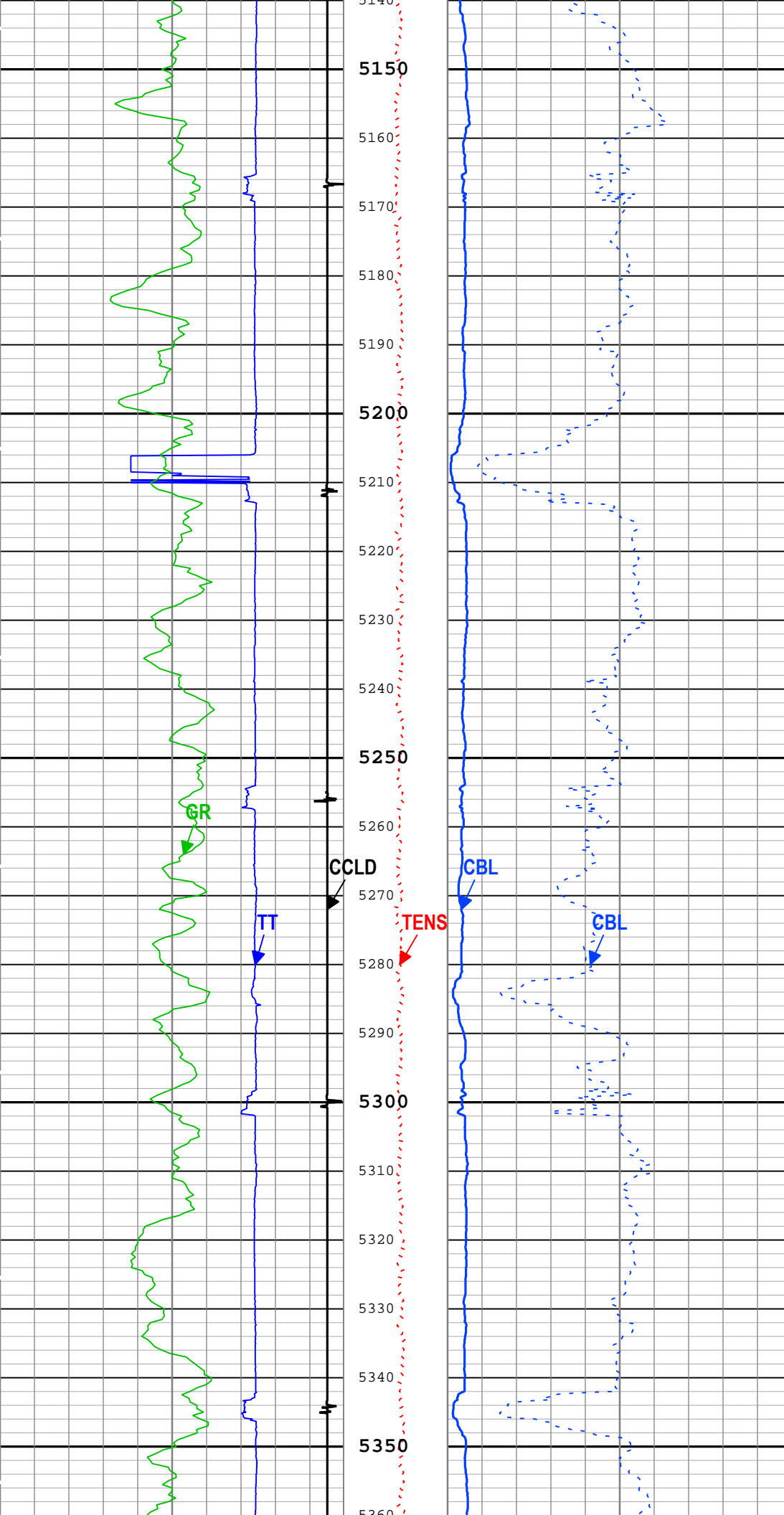


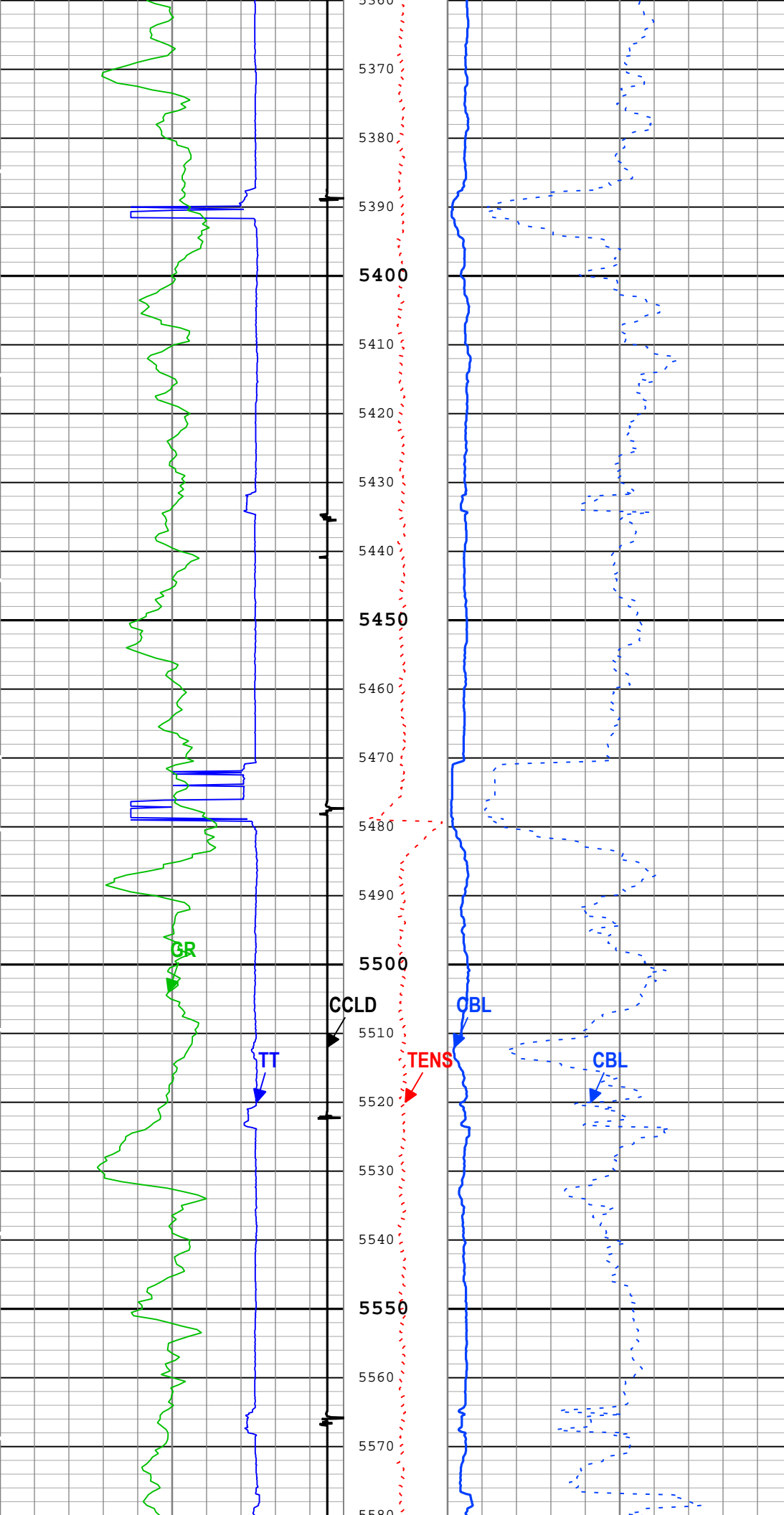


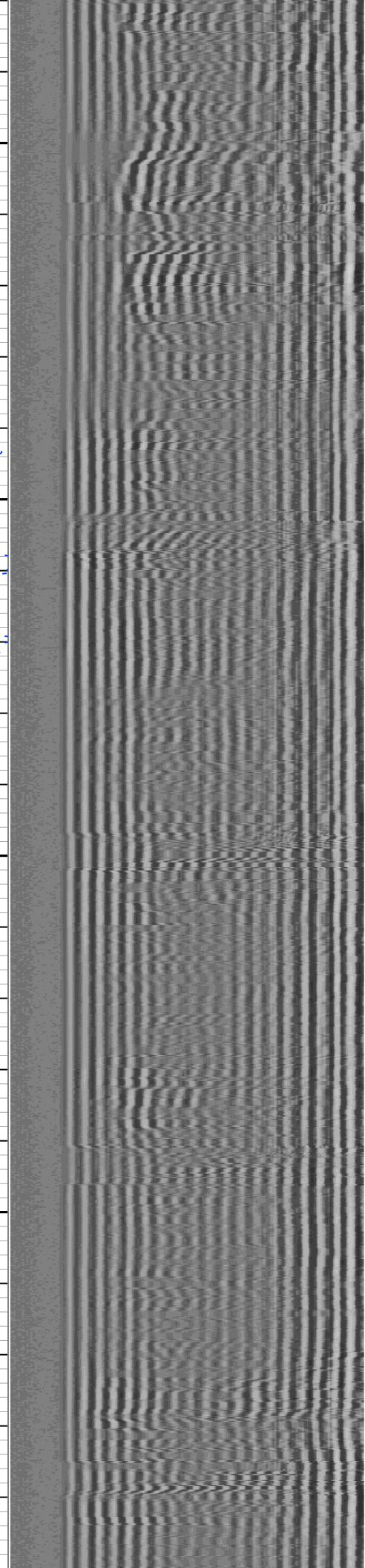
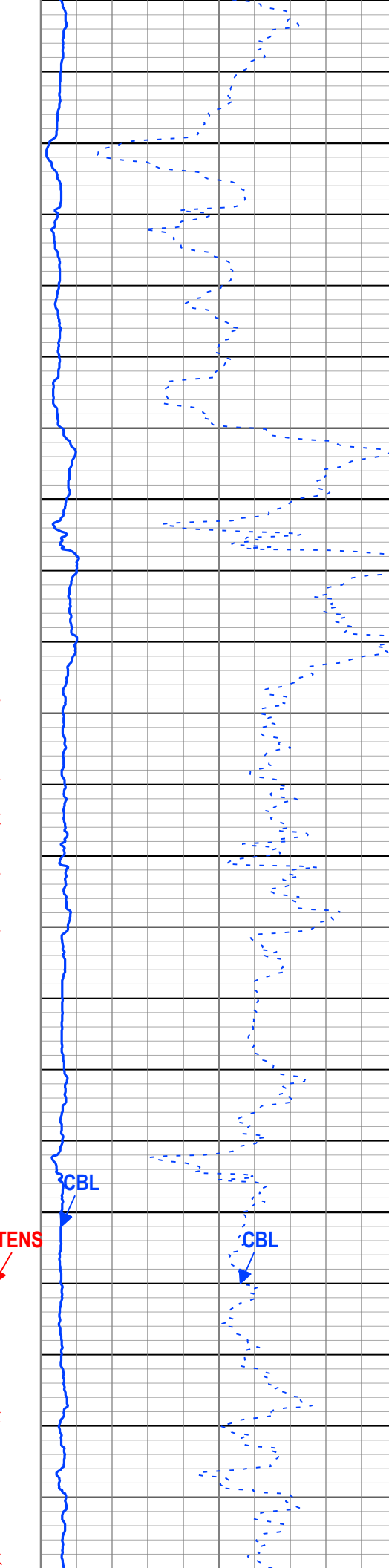
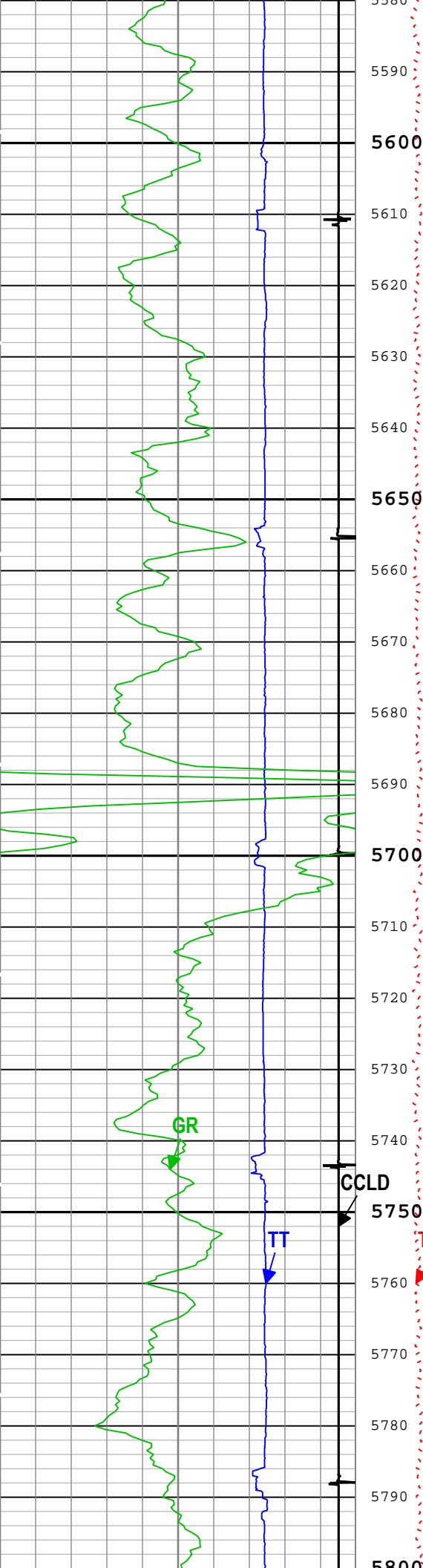




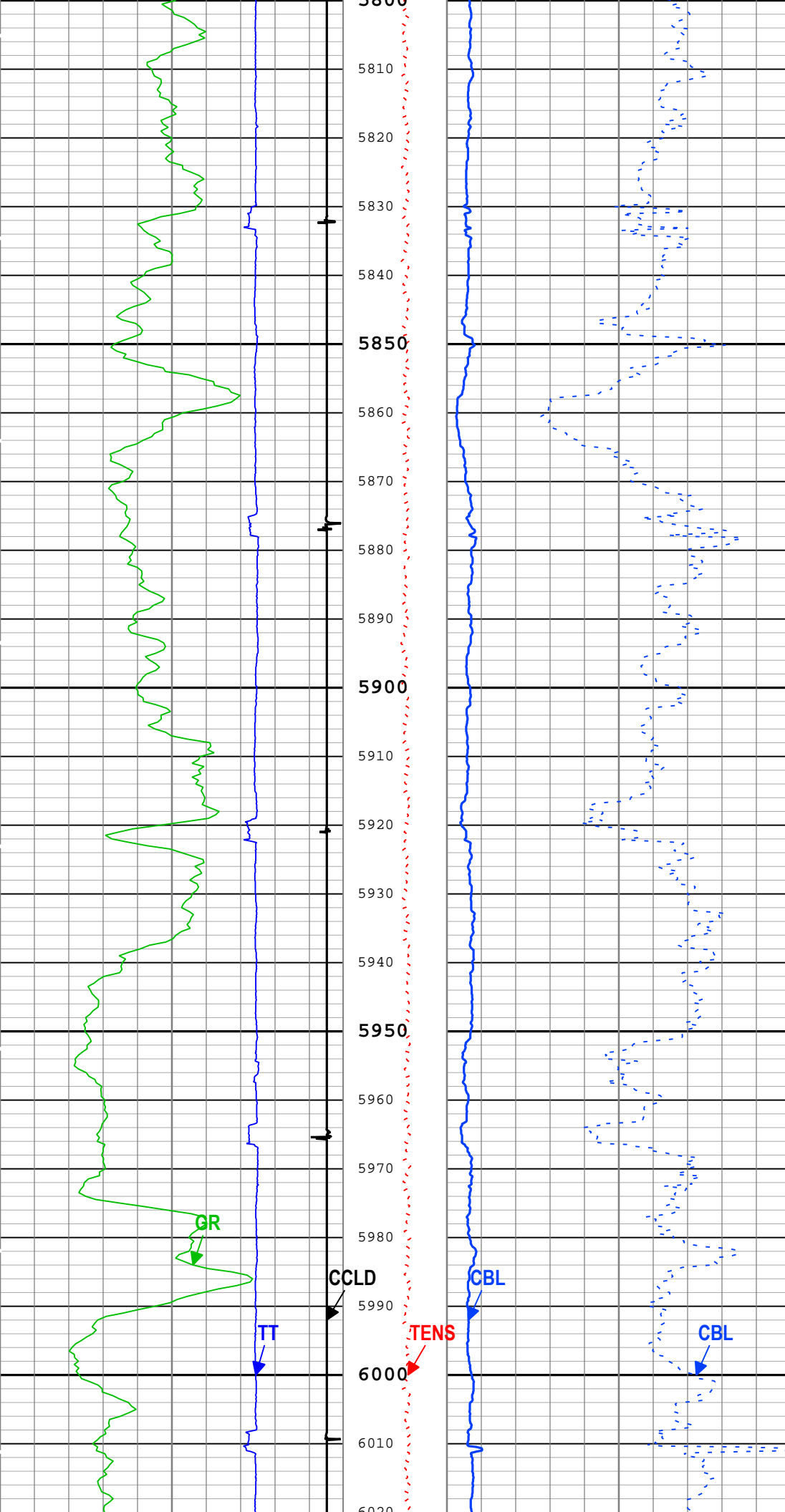




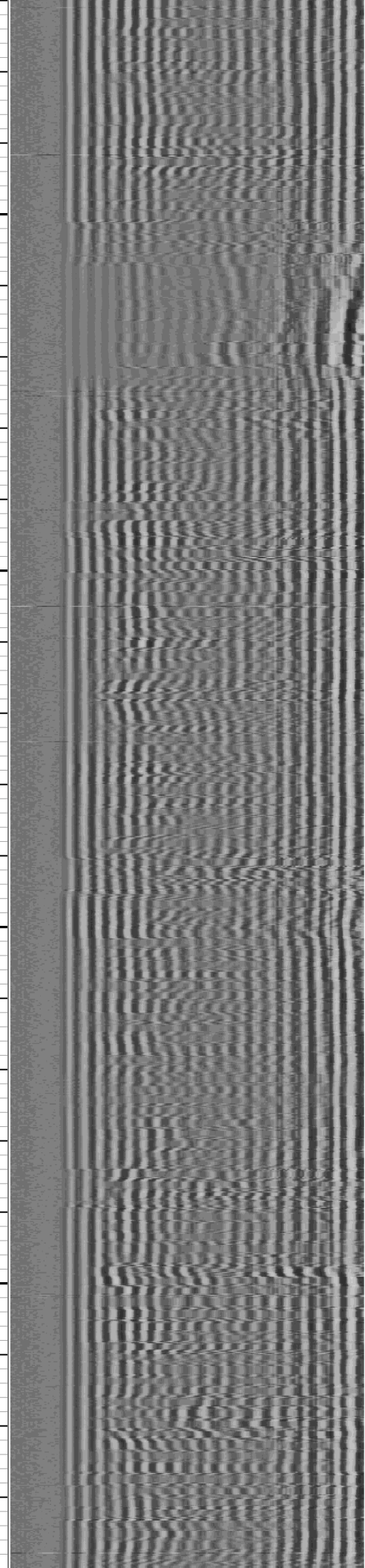
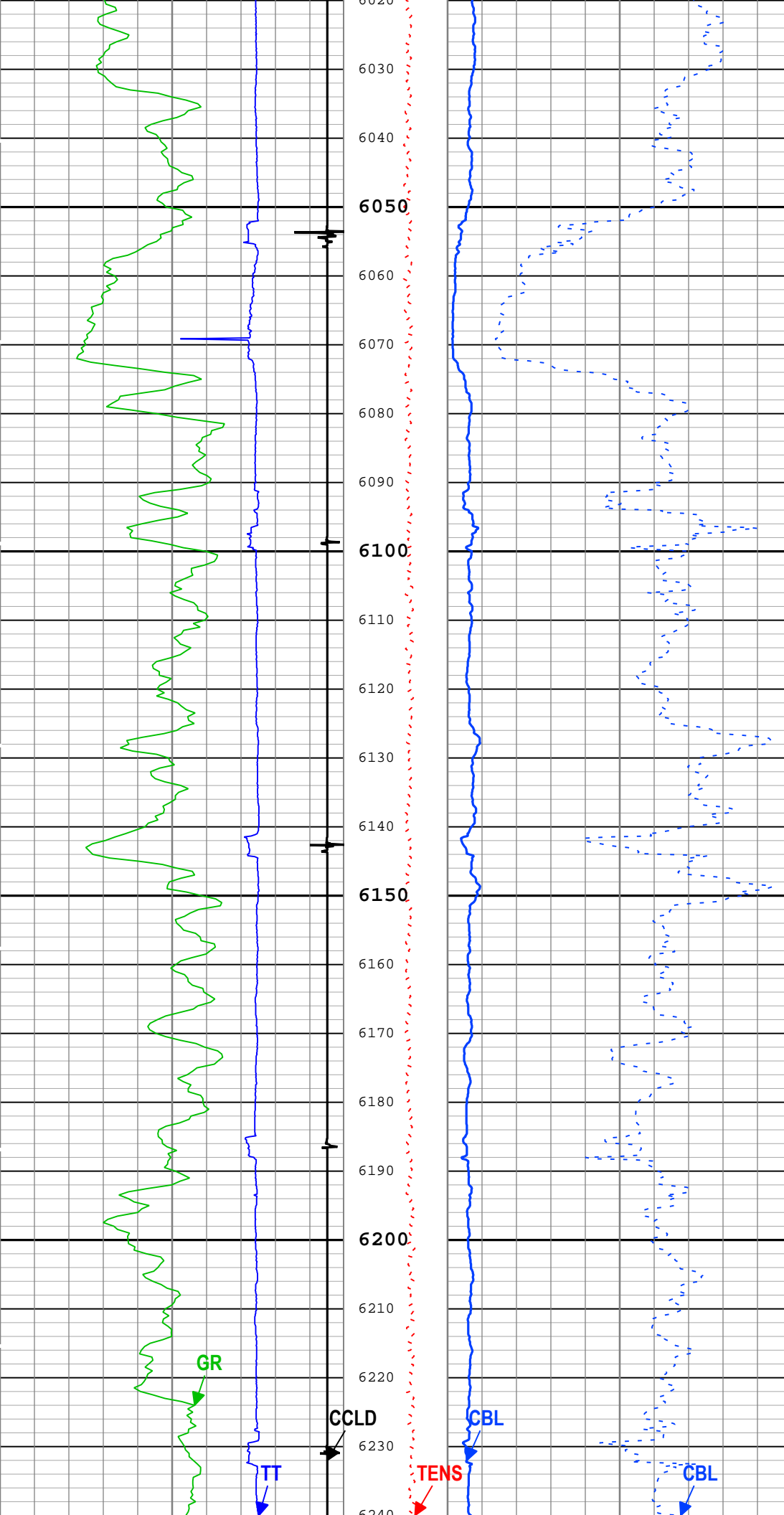


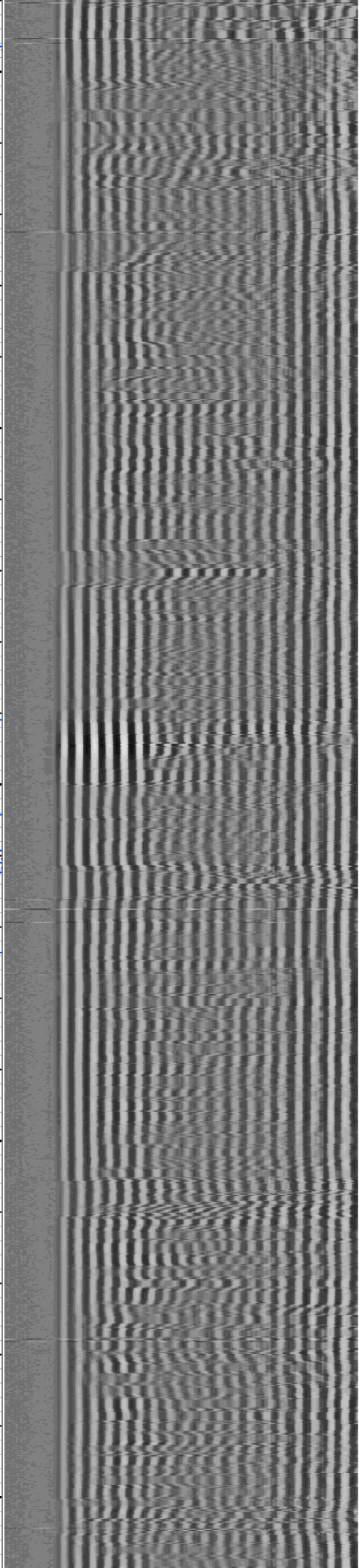
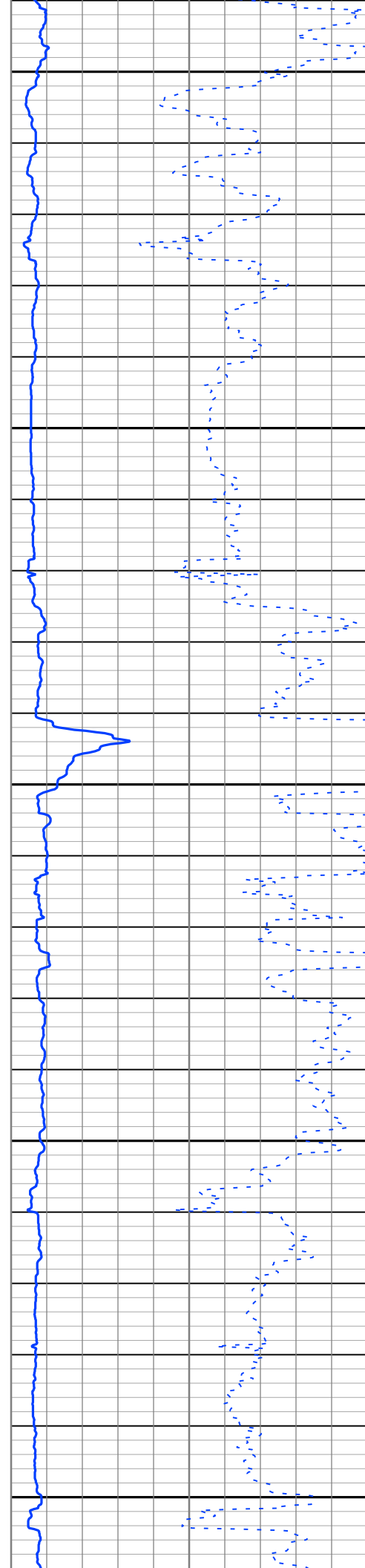
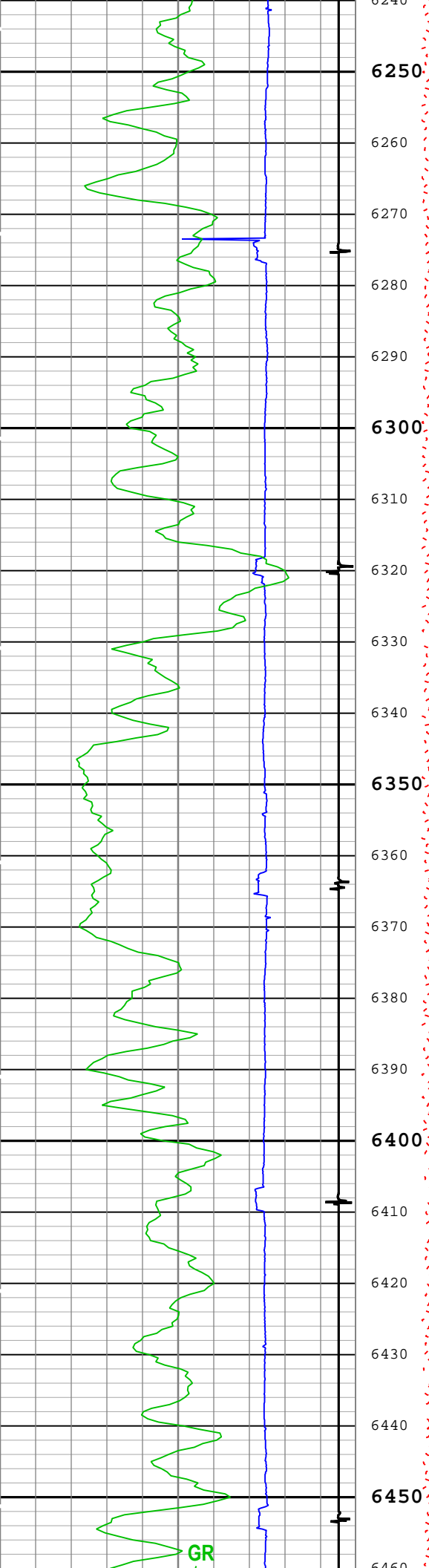


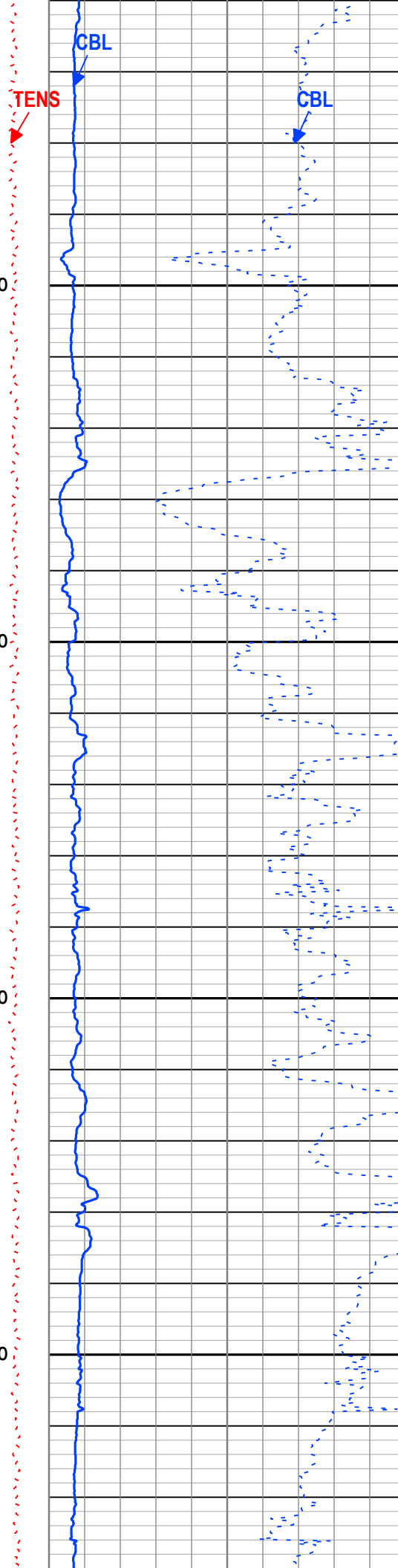
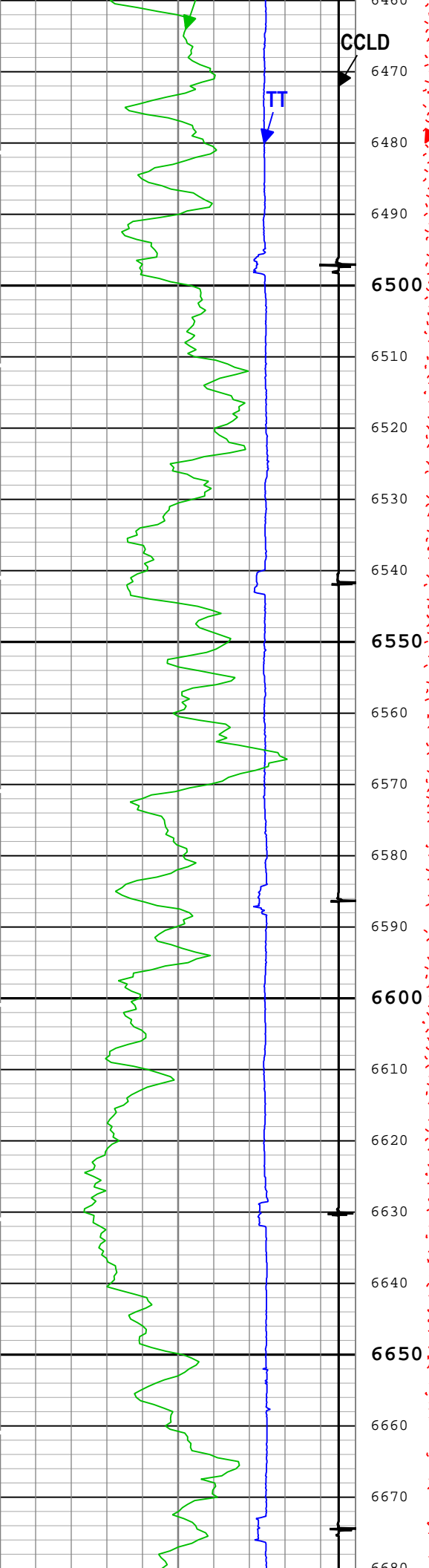




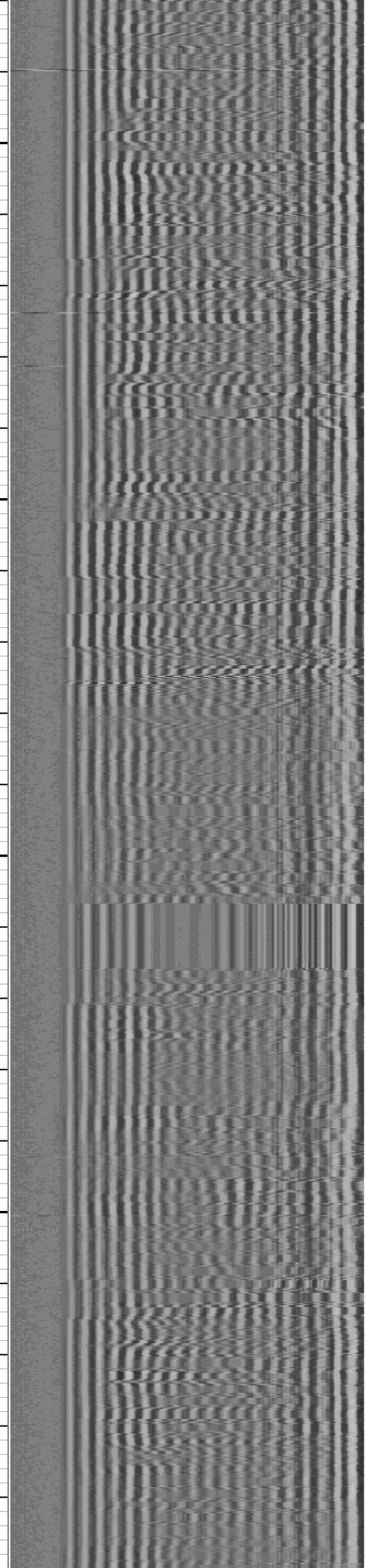
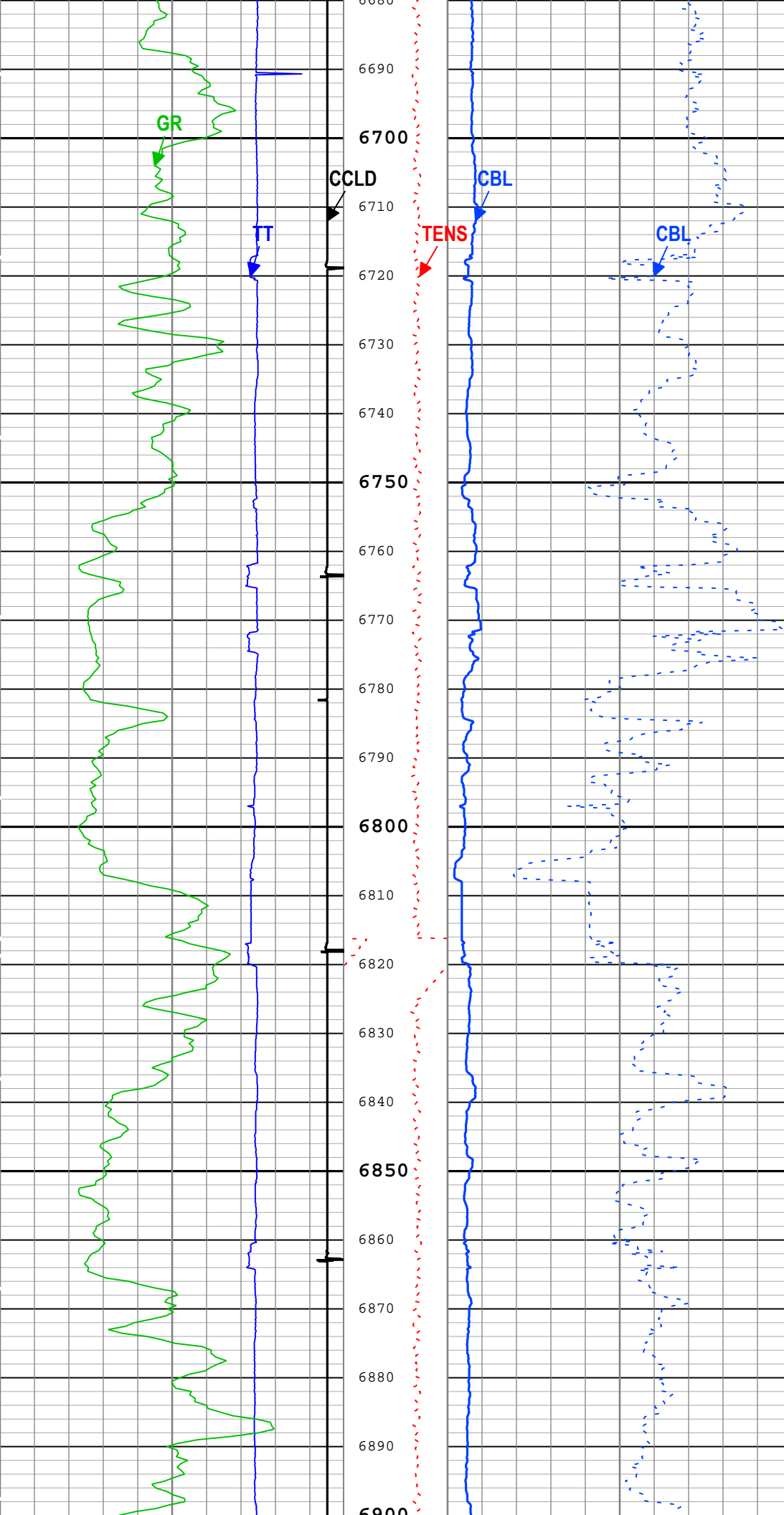


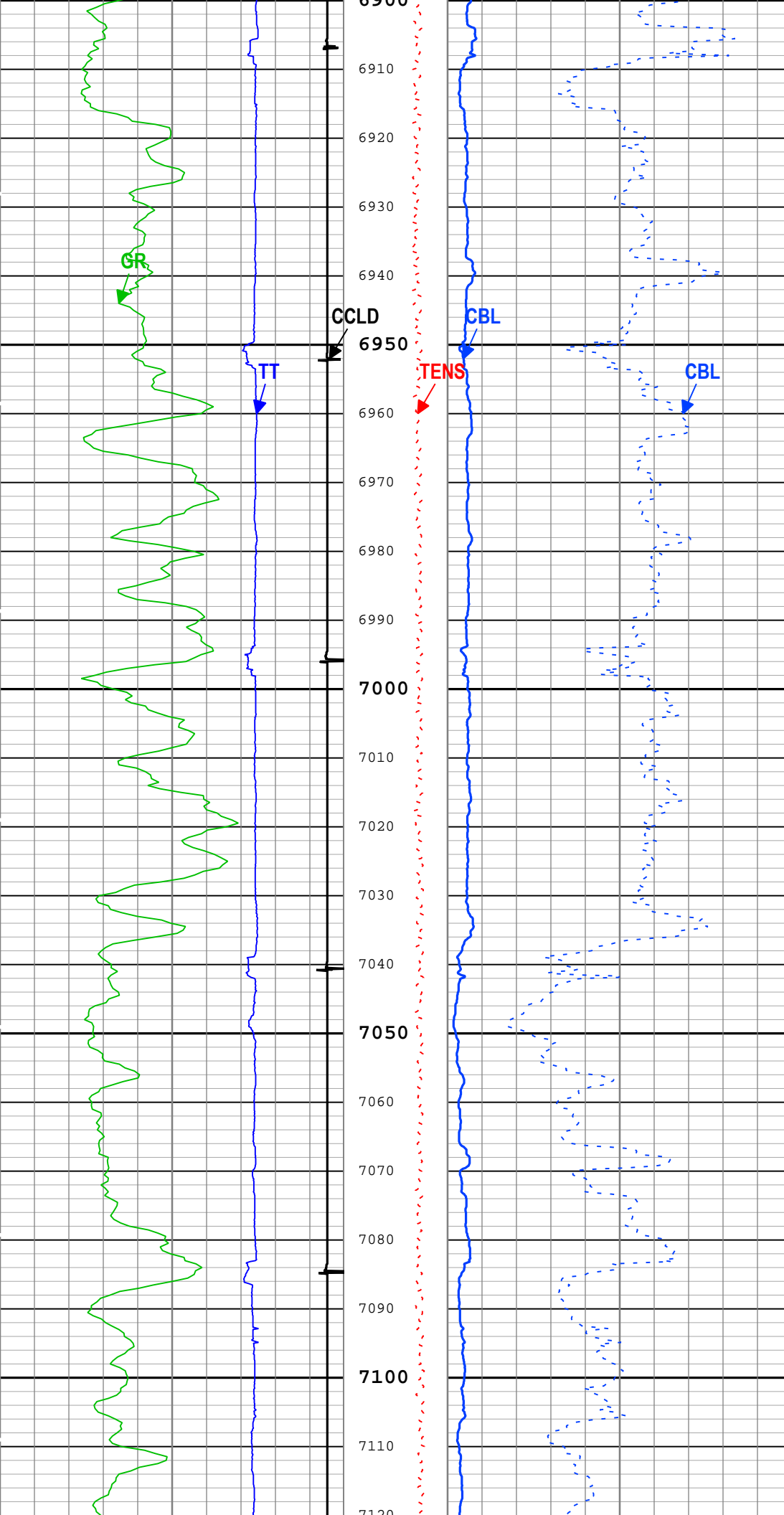


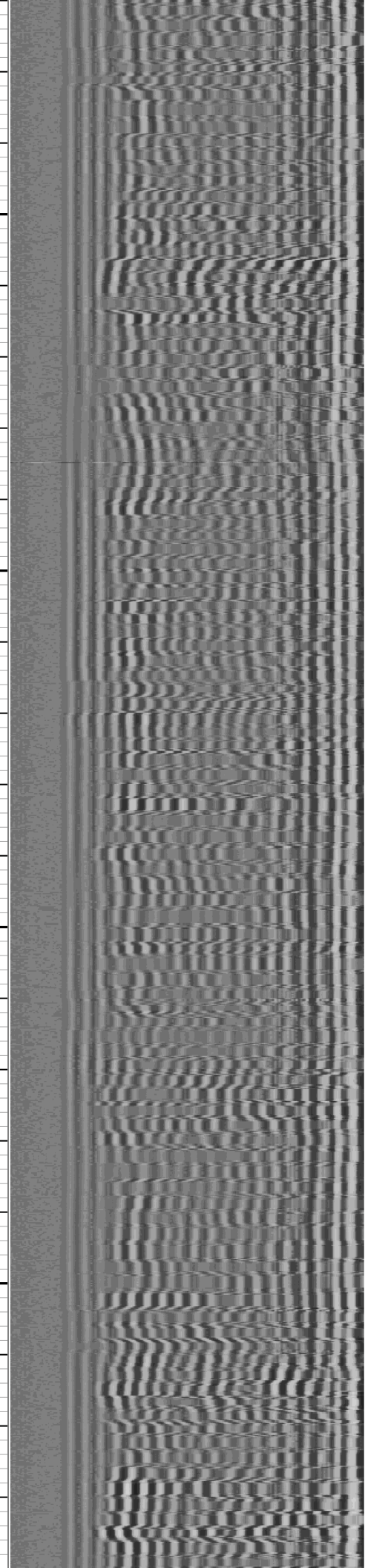
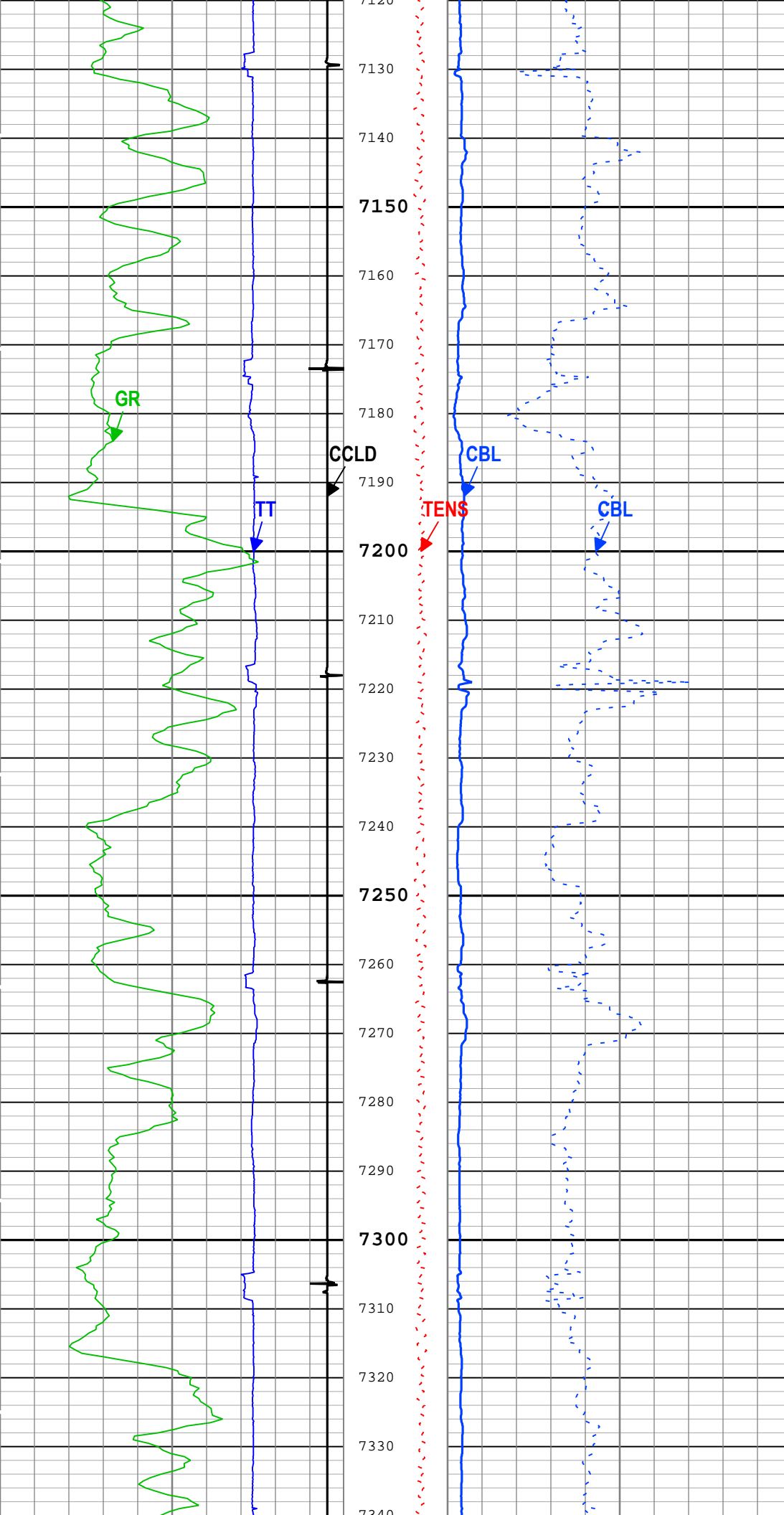


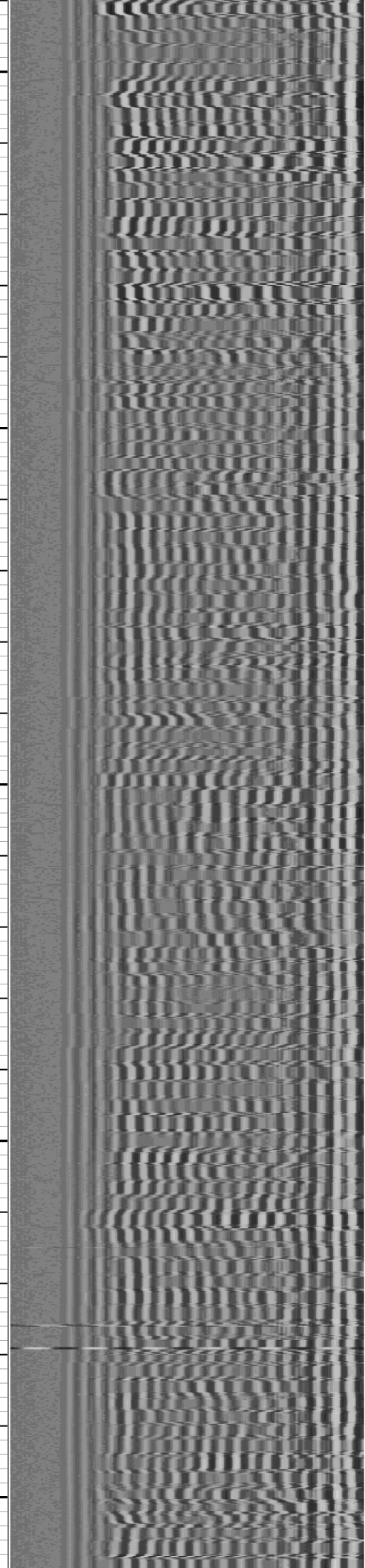
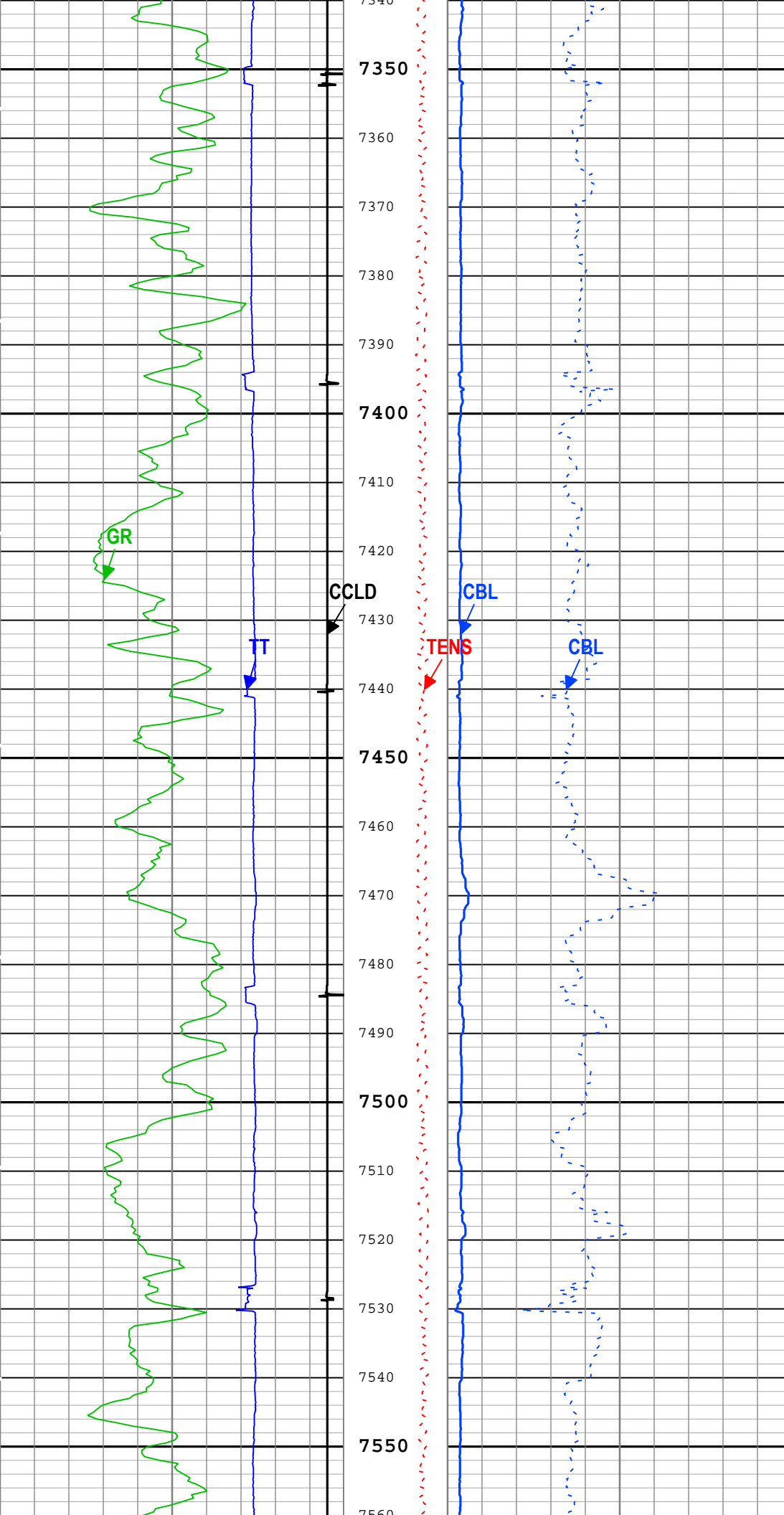




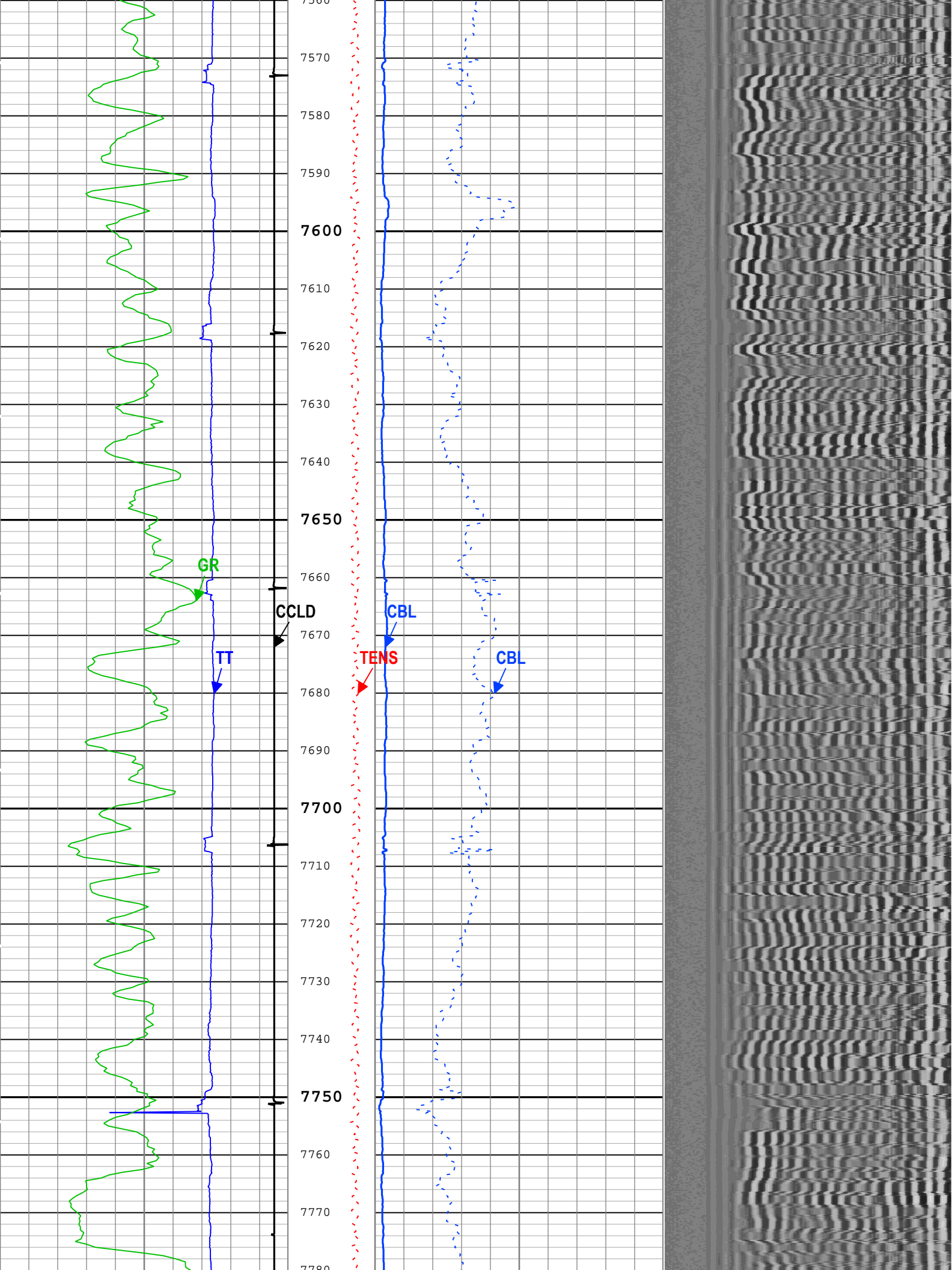


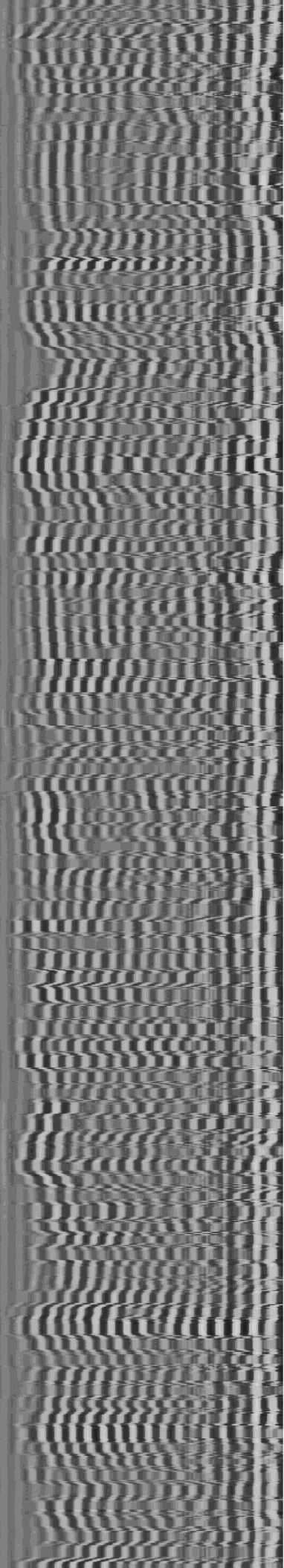
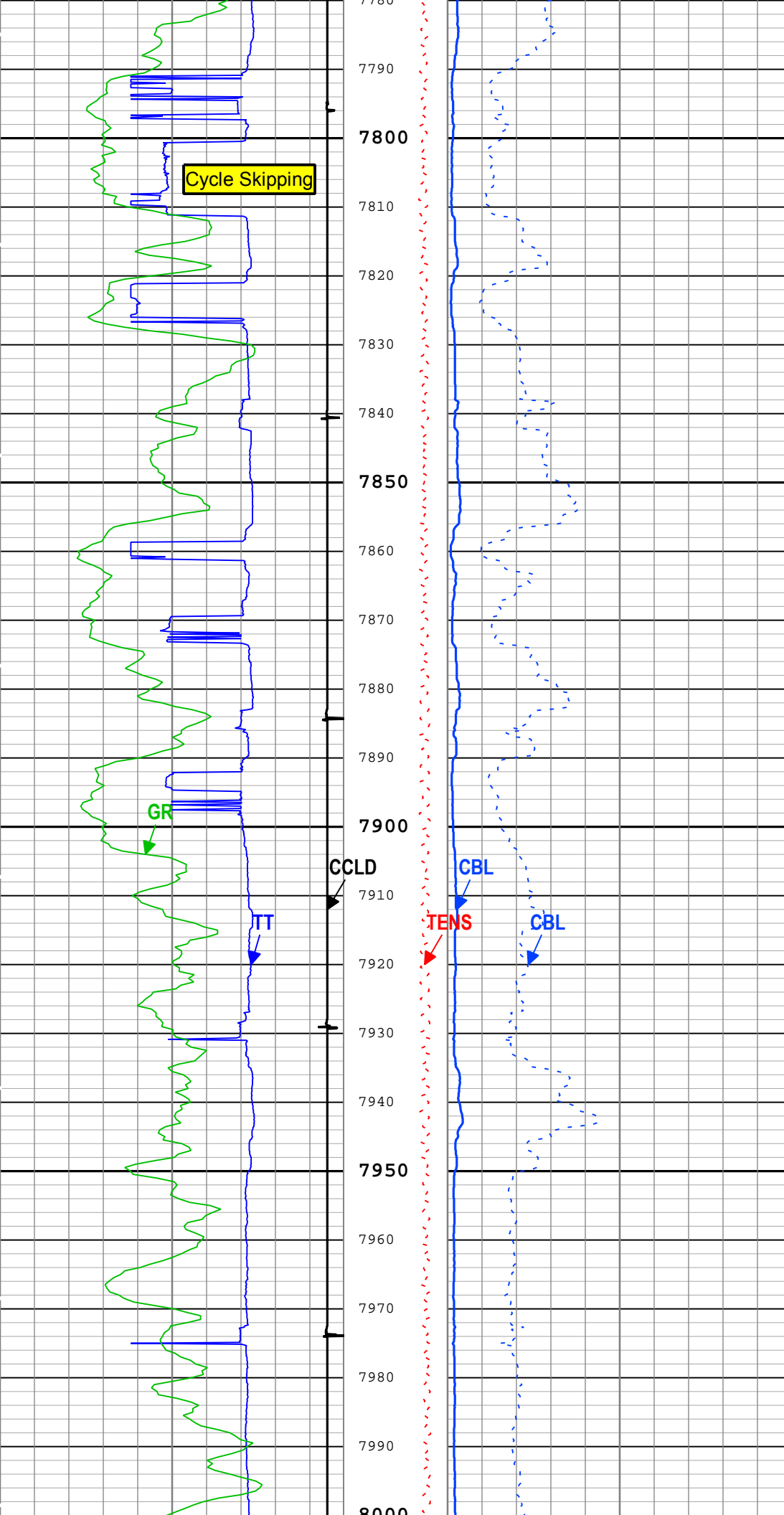


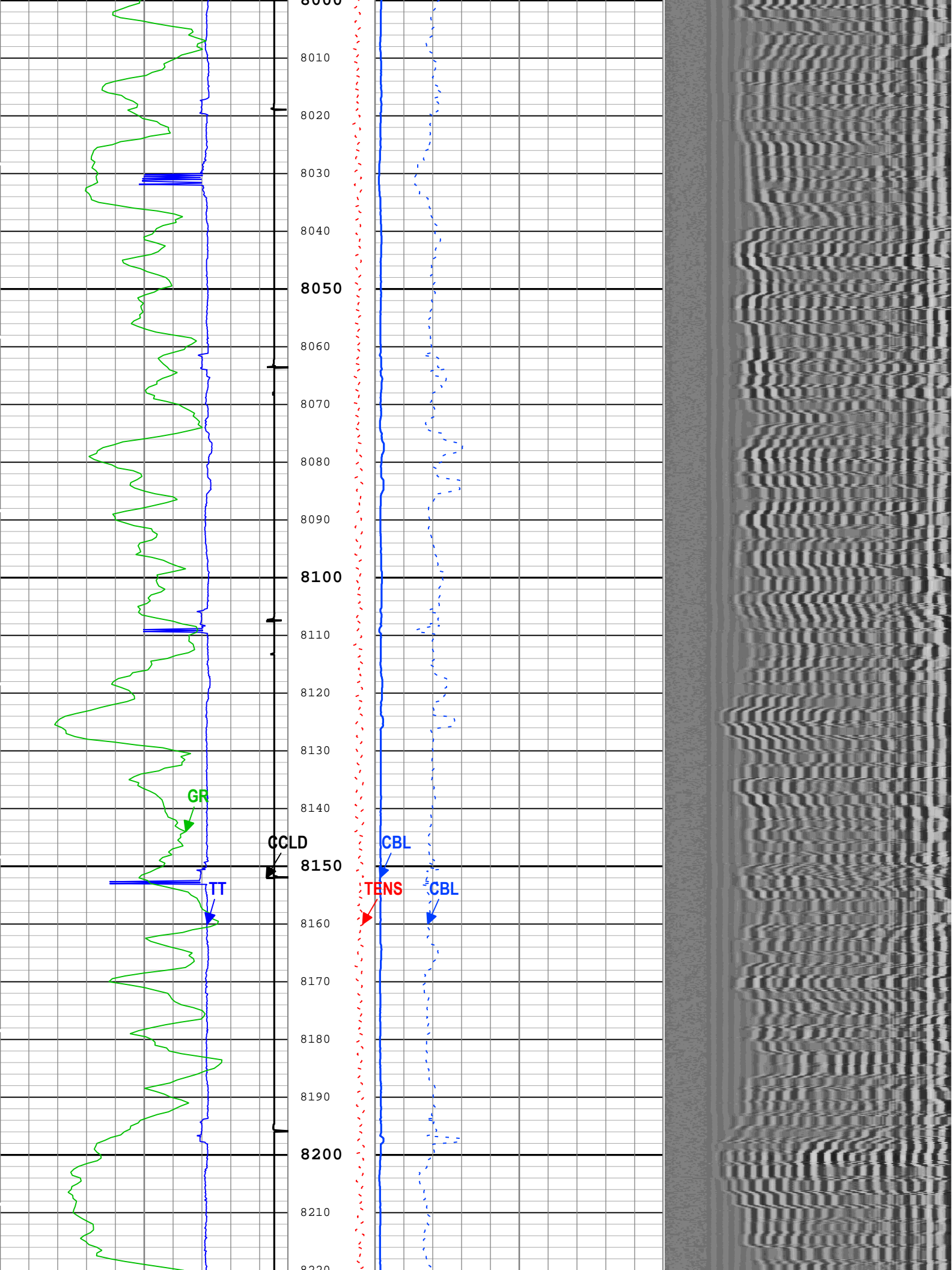




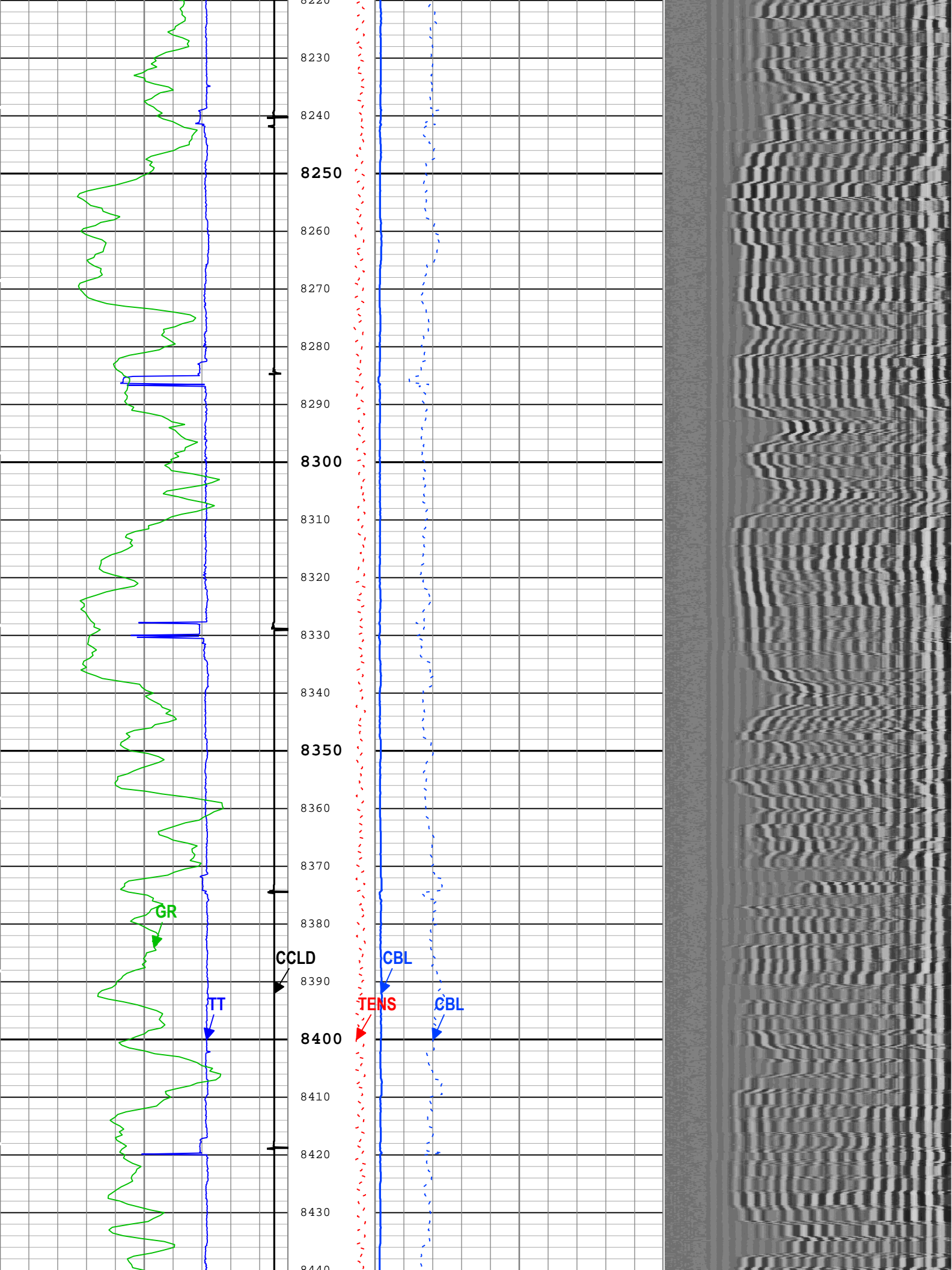


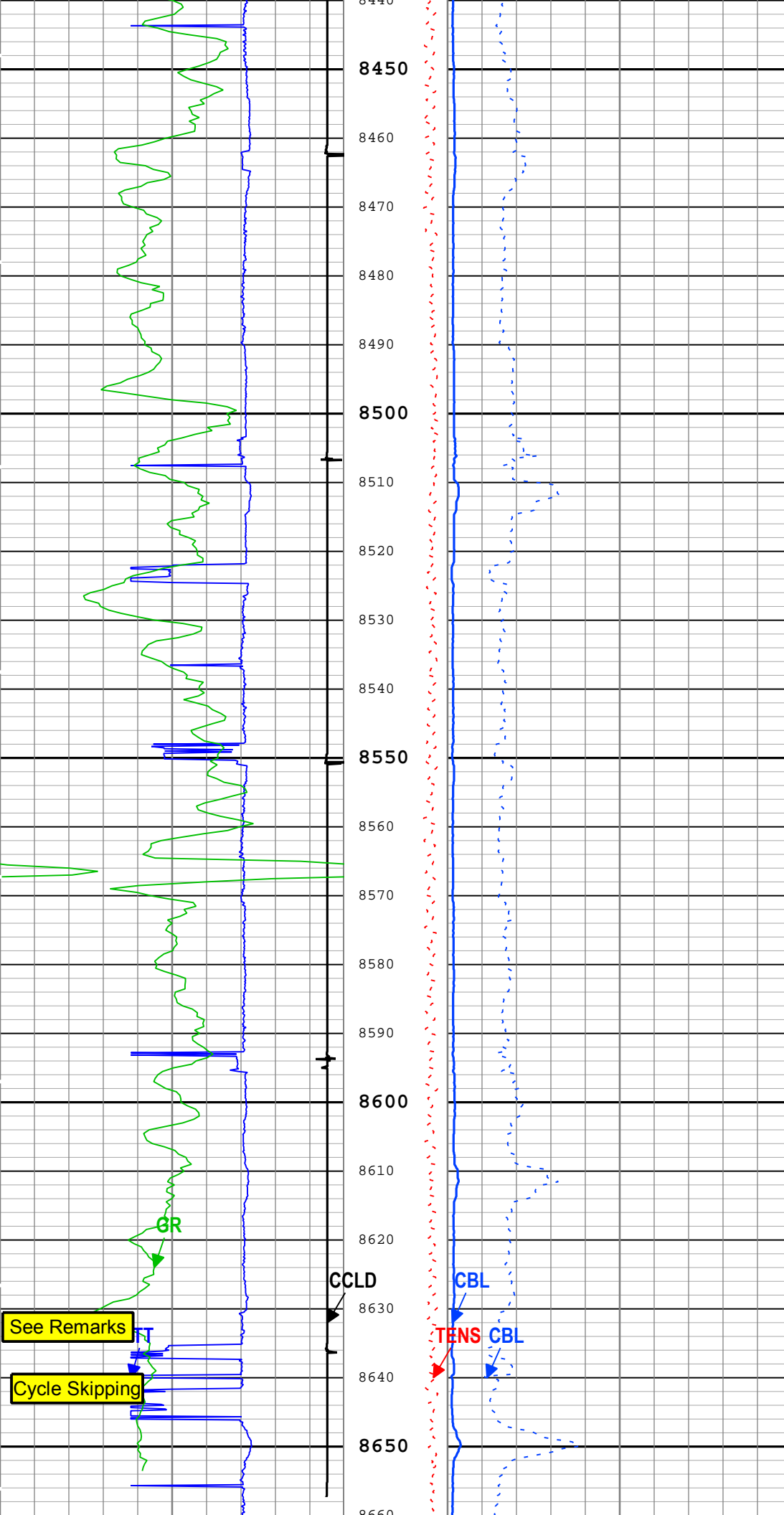


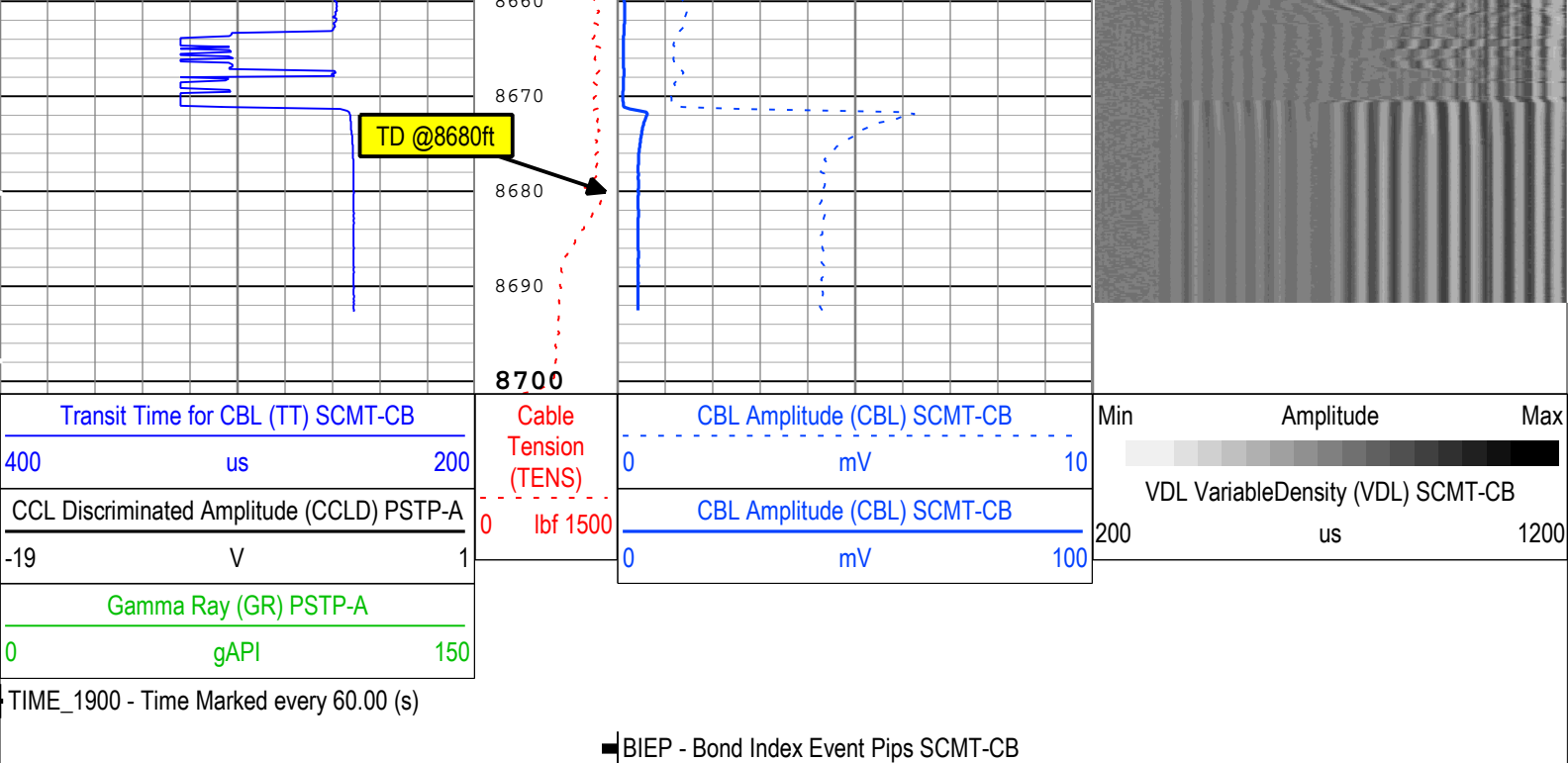












Description: Sonic CBL with VDL    Format: Log ( Sonic CBL with VDL )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 10-May-2018 05:36:57

## Channel Processing Parameters

### One: Parameters

Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	212	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-CB	224	us
CBLG	CBL Gate Width	SCMT-CB	40	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-CB	80	mV
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.25	in
DFD	Drilling Fluid Density	Borehole	8.49	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
EDF	Elevation of Derrick Floor Above Permanent Datum	WLSESSION	30	ft
EPD	Elevation of Permanent Datum (PDAT) above Mean Sea Level	WLSESSION	8322	ft
GGRD	Geothermal Gradient	Borehole	1	0.01 degF/ft
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-CB	1.4	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	GTEM_LINEST(RT)	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-CB	16.92	dB/ft
MCI	Minimum Cemented Interval for Isolation	SCMT-CB	Depth Zoned	ft
MSA	Minimum Sonic Amplitude	SCMT-CB	0.51	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	SCMT-CB	0.51	mV
PDAT	Permanent Datum	WLSESSION	GL	
RUN_SNUM	Run Sequence Number	WSDRUN	1	
SHT	Surface Hole Temperature	Borehole	68	degF

### Depth Zone Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
MCI	14.81	2300	2531
MCI	1.25	2531	8701.33

All depth are actual.

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
CMTM	SCMT Operating Mode	SCMT-CB	Log	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-A	12 dB	

One

CBL-VDL Repeat Pass

Software Version

Acquisition System	Version
Maxwell 2018	8.0.95333.3100
Application Patch	Wireline_NPD-PNX-2018CMZ_8.0.97346

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[11]:Up	Up	8425.08 ft	8763.23 ft	10-May-2018 00:45:27	10-May-2018 00:57:15	ON	8.72 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Caerus Operating LLC      Well:Puckett 12C-26-697

One: Log[11]:Up:S005

Description: Sonic CBL with VDL    Format: Log ( Sonic CBL with VDL )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 10-May-2018 05:37:07

■ BIEP - Bond Index Event Pips SCMT-CB

TIME\_1900 - Time Marked every 60.00 (s)

Transit Time for CBL (TT) SCMT-CB		
400	us	200

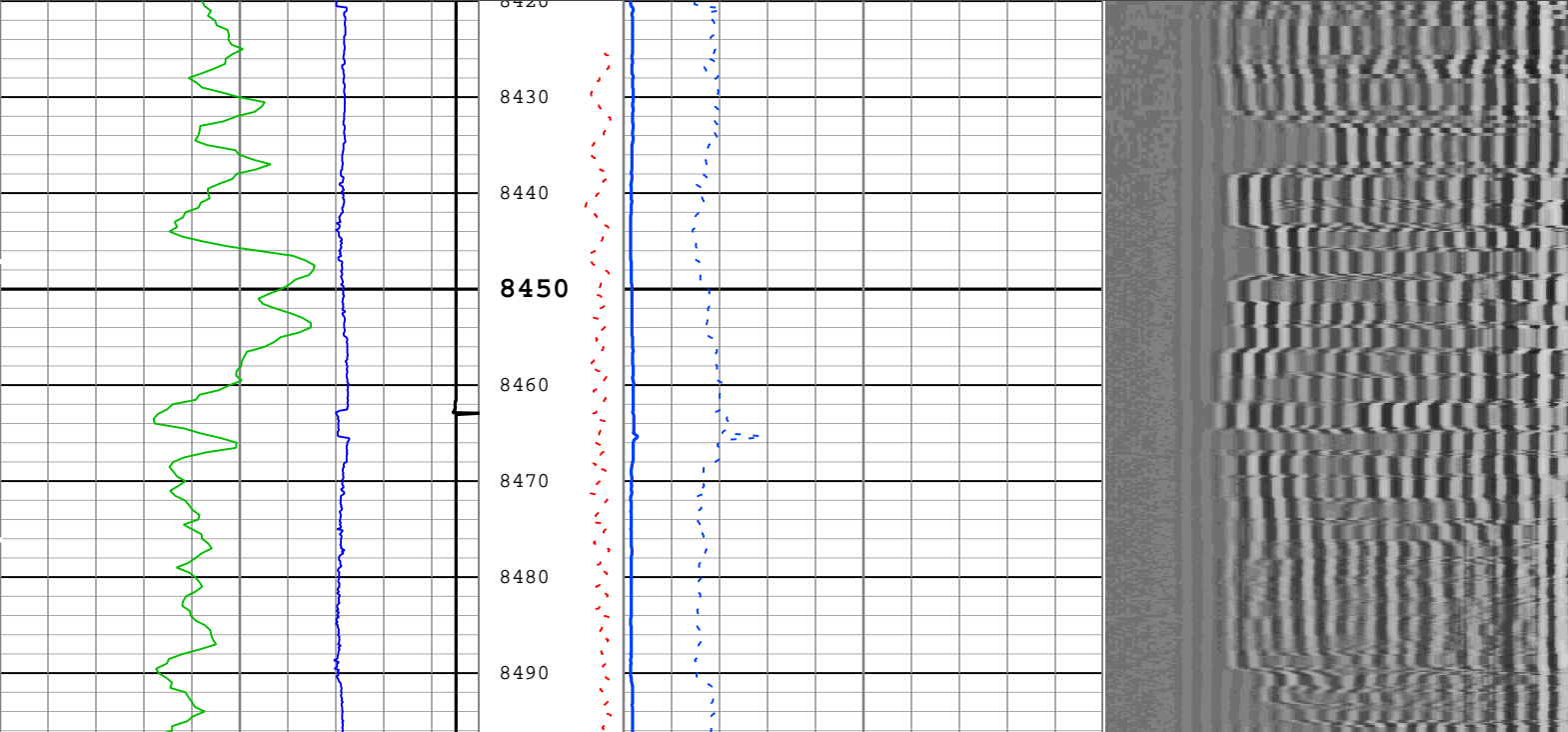
CCL Discriminated Amplitude (CCLD) PSTP-A		
-19	V	1

Gamma Ray (GR) PSTP-A		
0	gAPI	150

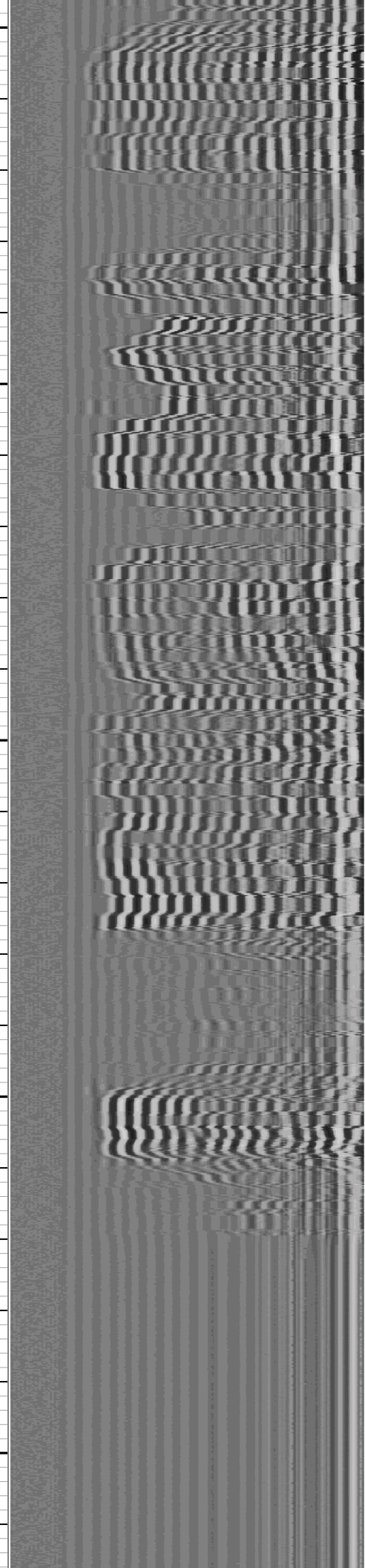
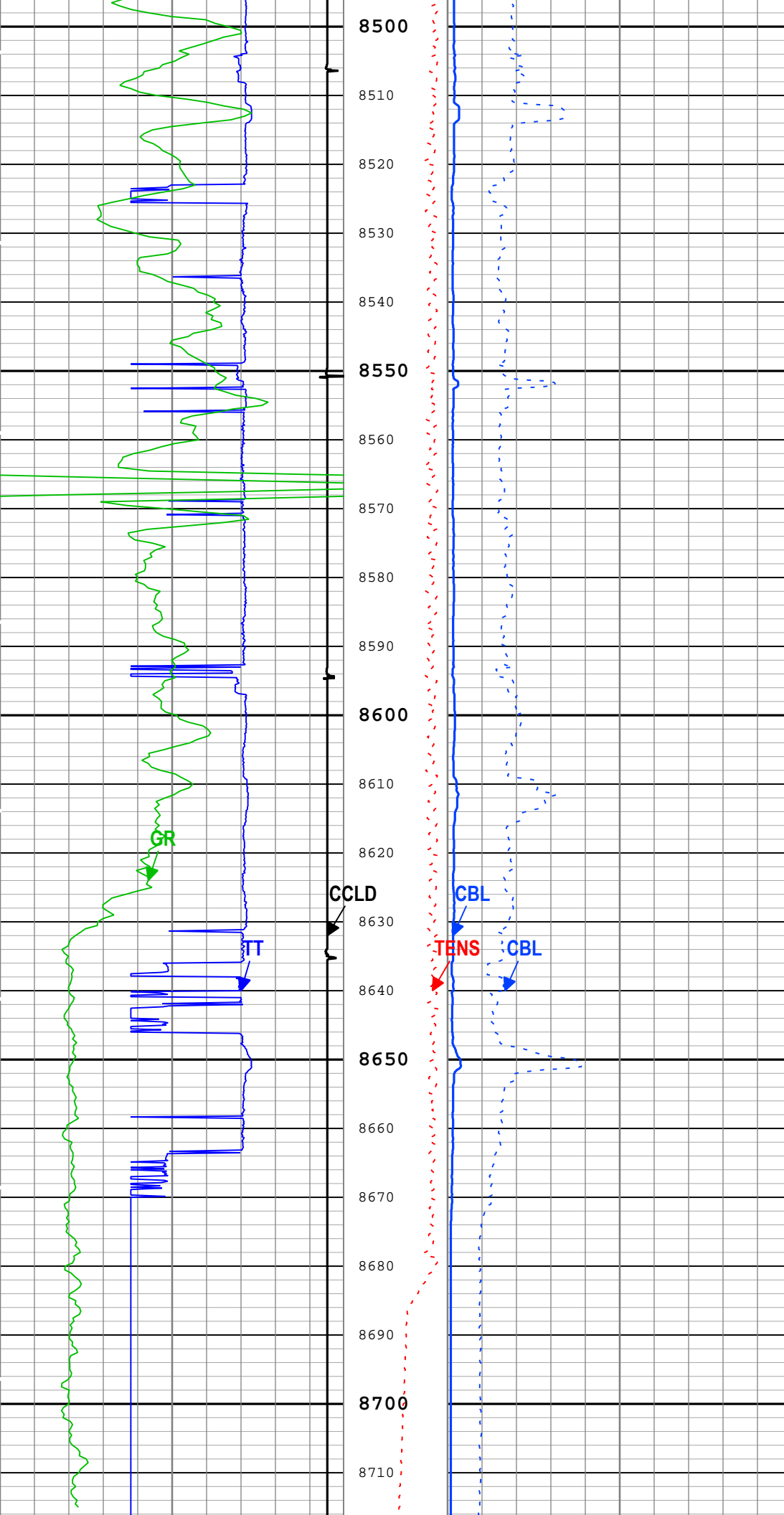
CBL Amplitude (CBL) SCMT-CB		
0	mV	10
CBL Amplitude (CBL) SCMT-CB		
0	mV	100

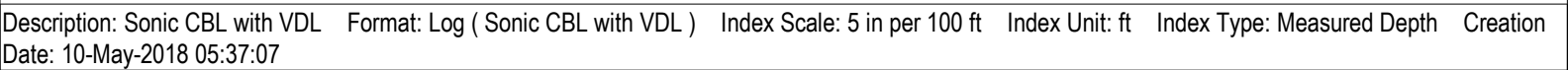
Cable  
Tension  
(TENS)  
- - - - -  
0    lbf 1500

Min                      Amplitude                      Max  
VDL VariableDensity (VDL) SCMT-CB  
200                      us                      1200









Tool Control Parameters				
One: Parameters				
Parameter	Description	Tool	Value	Unit
CMTM	SCMT Operating Mode	SCMT-CB	Log	

SCMT	SCMT Operating Mode	SCMT-CB	Log	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-A	12 dB	

One

CBL-VDL Free pipe

Software Version

Acquisition System	Version
Maxwell 2018	8.0.95333.3100
Application Patch	Wireline_NPD-PNX-2018CMZ_8.0.97346

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[3]:Up	Up	991.86 ft	1133.66 ft	09-May-2018 23:18:20	09-May-2018 23:22:47	ON	0.00 ft	No

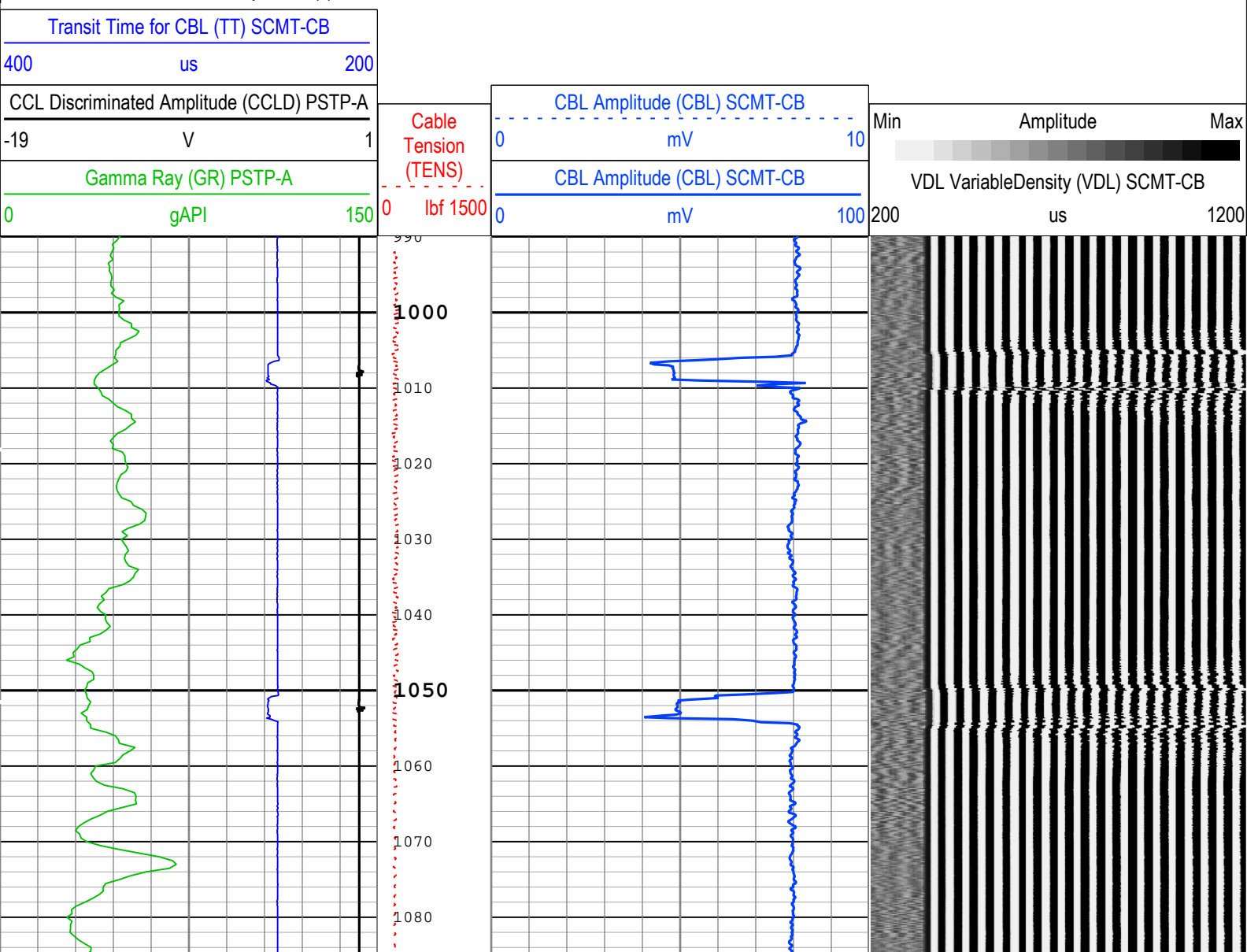
All depths are referenced to toolstring zero

Log	Company:Caerus Operating LLC	Well:Puckett 12C-26-697
		One: Log[3]:Up:S005

Description: Sonic CBL with VDL    Format: Log ( Sonic CBL with VDL )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 10-May-2018 05:37:10

■ BIEP - Bond Index Event Pips SCMT-CB

TIME\_1900 - Time Marked every 60.00 (s)



Parameter	Description	Tool	Value	Unit
CMTM	SCMT Operating Mode	SCMT-CB	Log	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-A	0 dB	



## RST Main pass

## Software Version

Acquisition System	Version
Maxwell 2018	8.0.95333.3100
Application Patch	Wireline_NPD-PNX-2018CMZ_8.0.97346

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[13]:Up	Up	2283.83 ft	8701.30 ft	10-May-2018 01:13:15	10-May-2018 04:58:29	ON	9.51 ft	Yes

All depths are referenced to toolstring zero

## Log

Company:Caerus Operating LLC

Well:Puckett 12C-26-697

One: Log[13]:Up:S005

Description: RST SIGMA Answer Format: Log ( RST SIGMA Answer ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-May-2018 05:37:12

—IHV - Integrated Hole Volume every 10.00 (ft3)

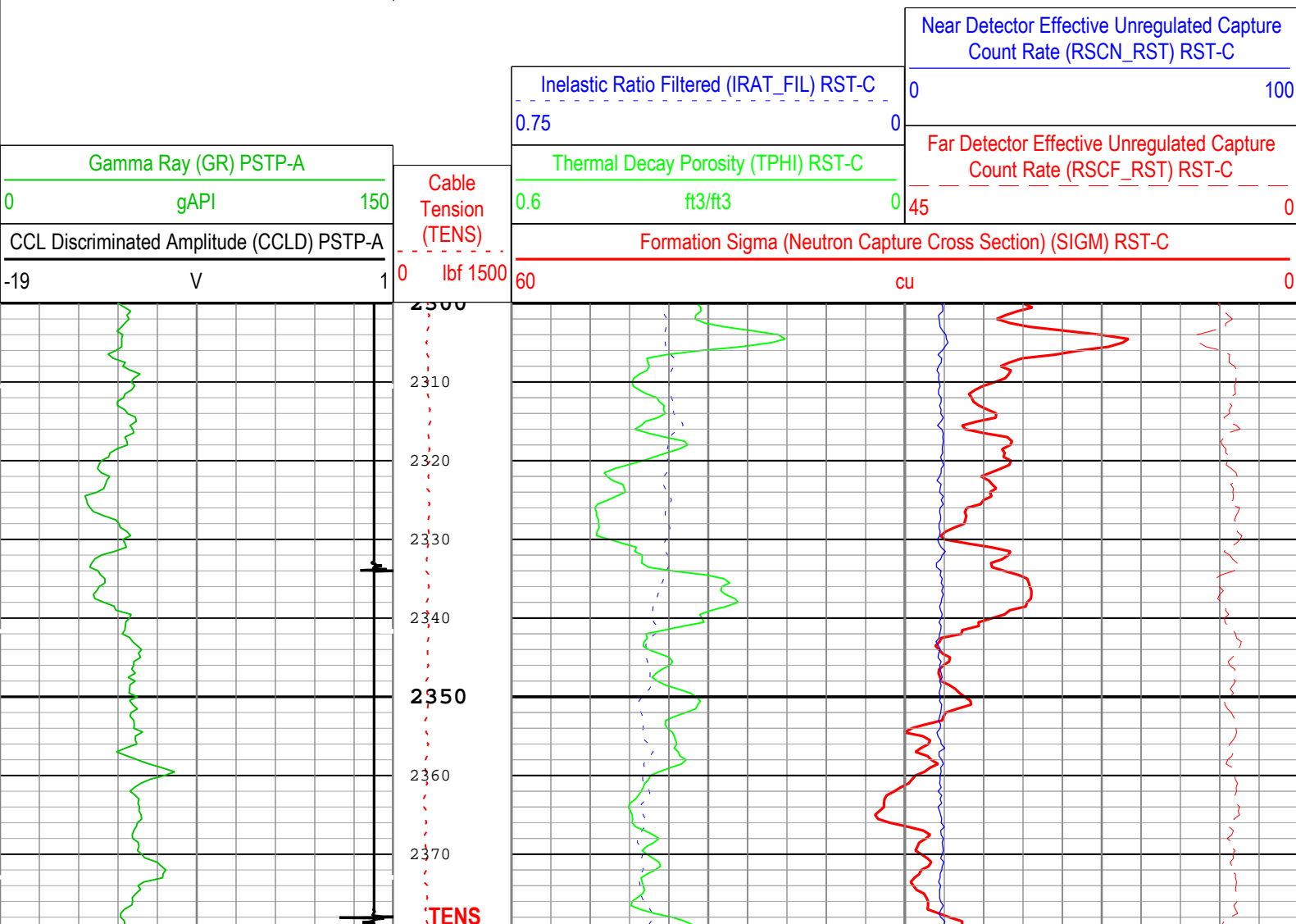
—IHV - Integrated Hole Volume every 100.00 (ft3)

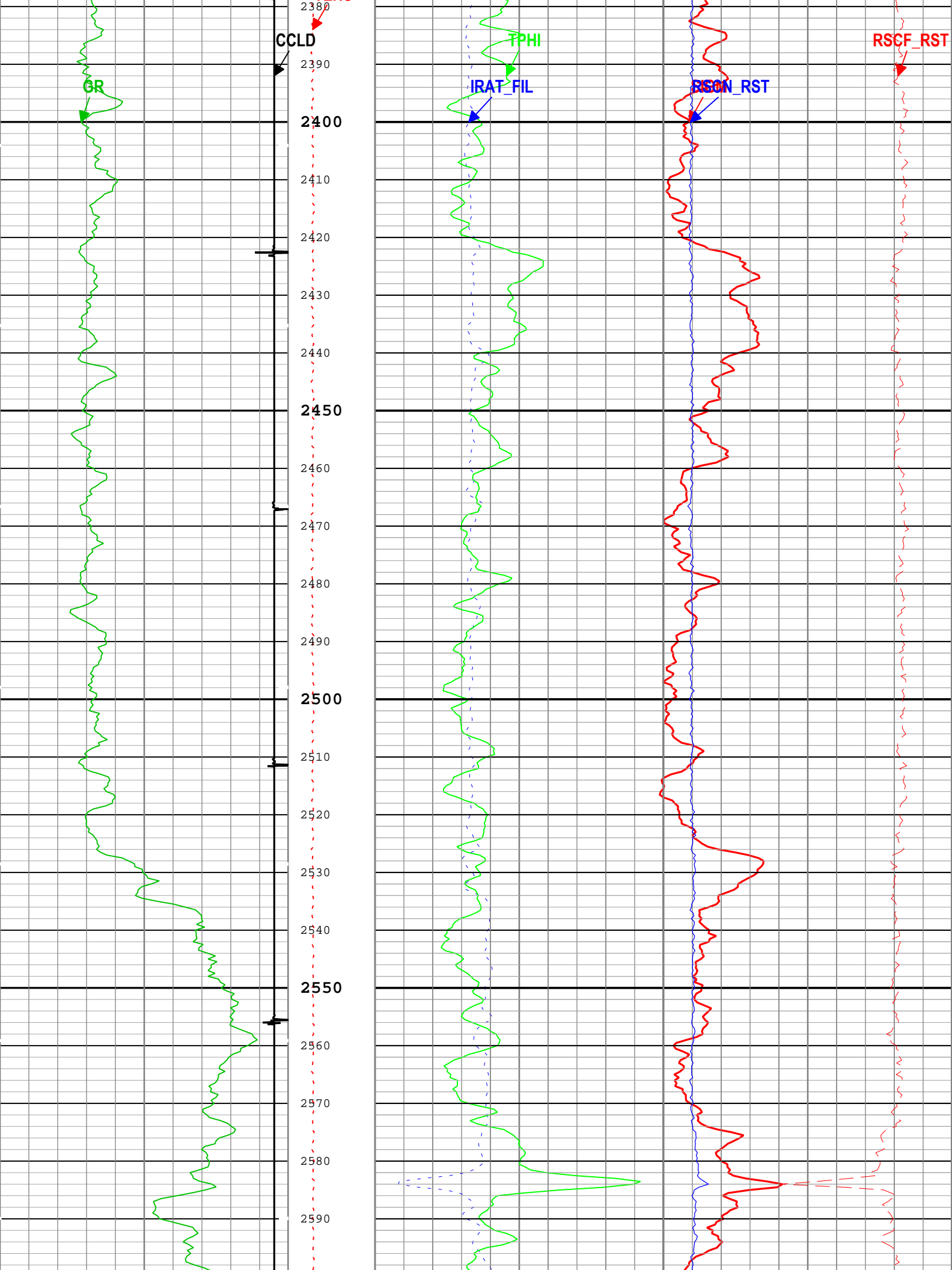
TIME\_1900 - Time Marked every 60.00 (s)

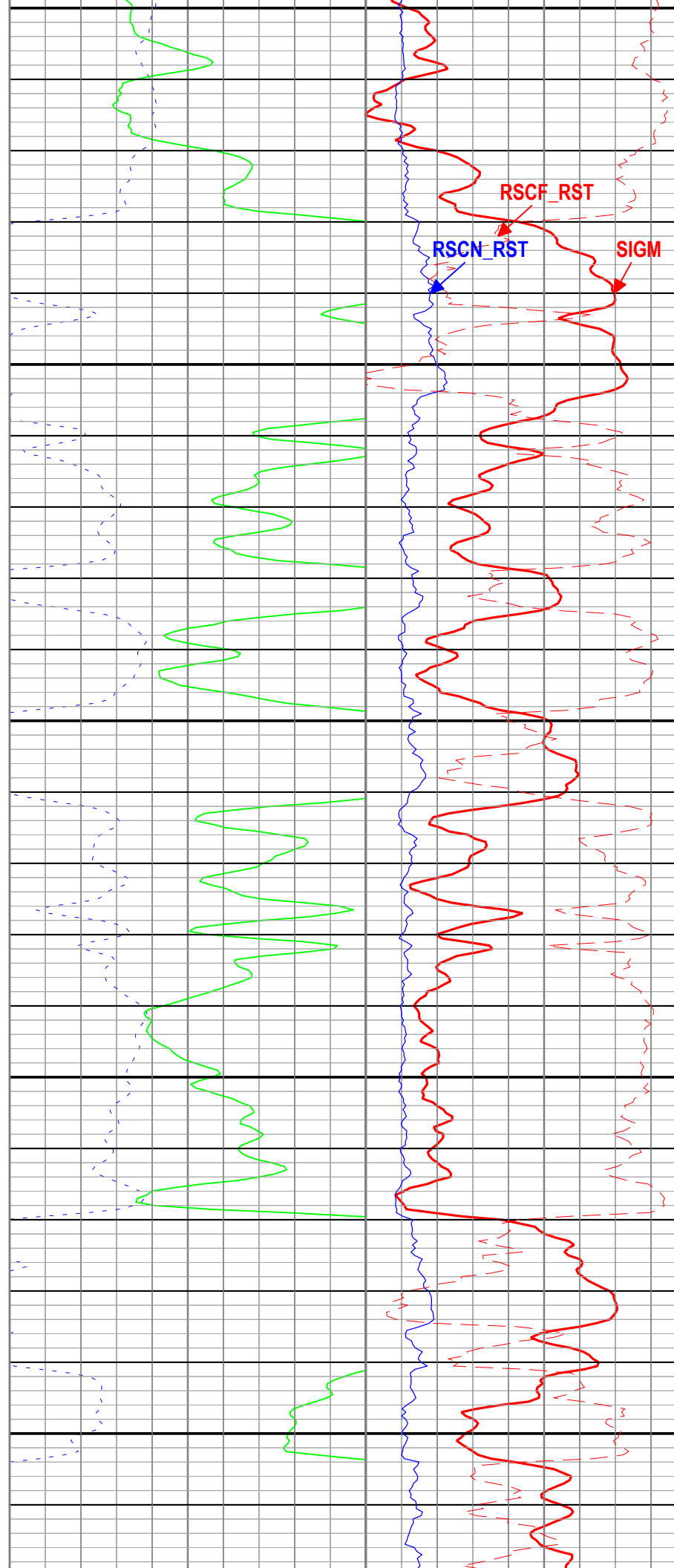
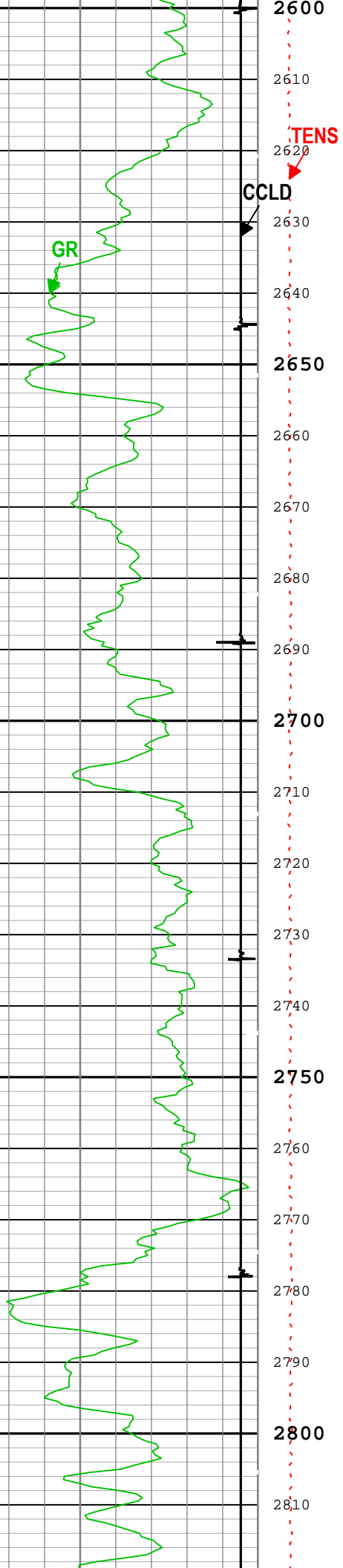
—ICV - Integrated Cement Volume every 10.00 (ft3)

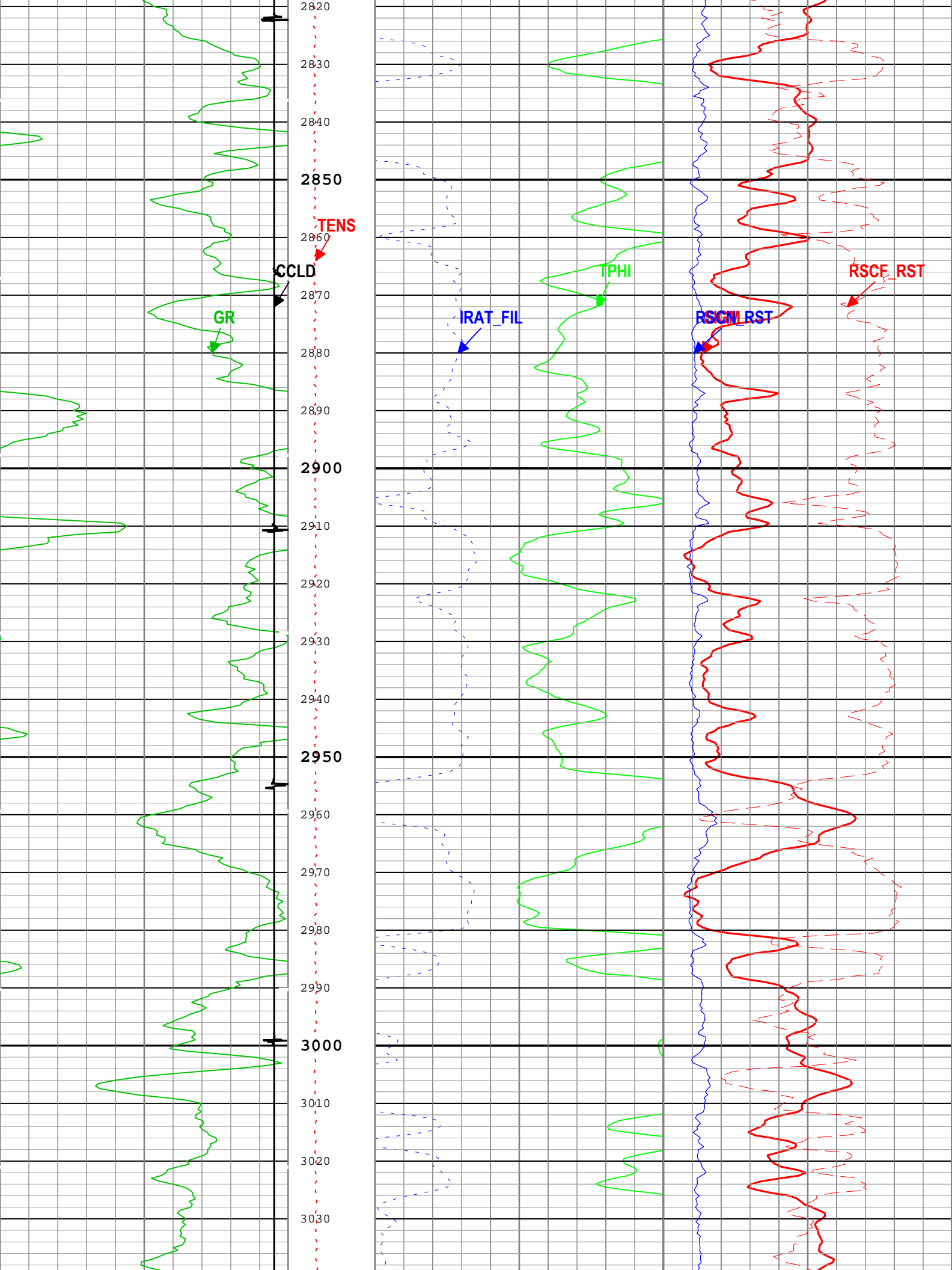
—TIME\_1900 - Elapsed time since midnight, 30 December 1899 every 60.00 (s)

—ICV - Integrated Cement Volume every 100.00 (ft3)

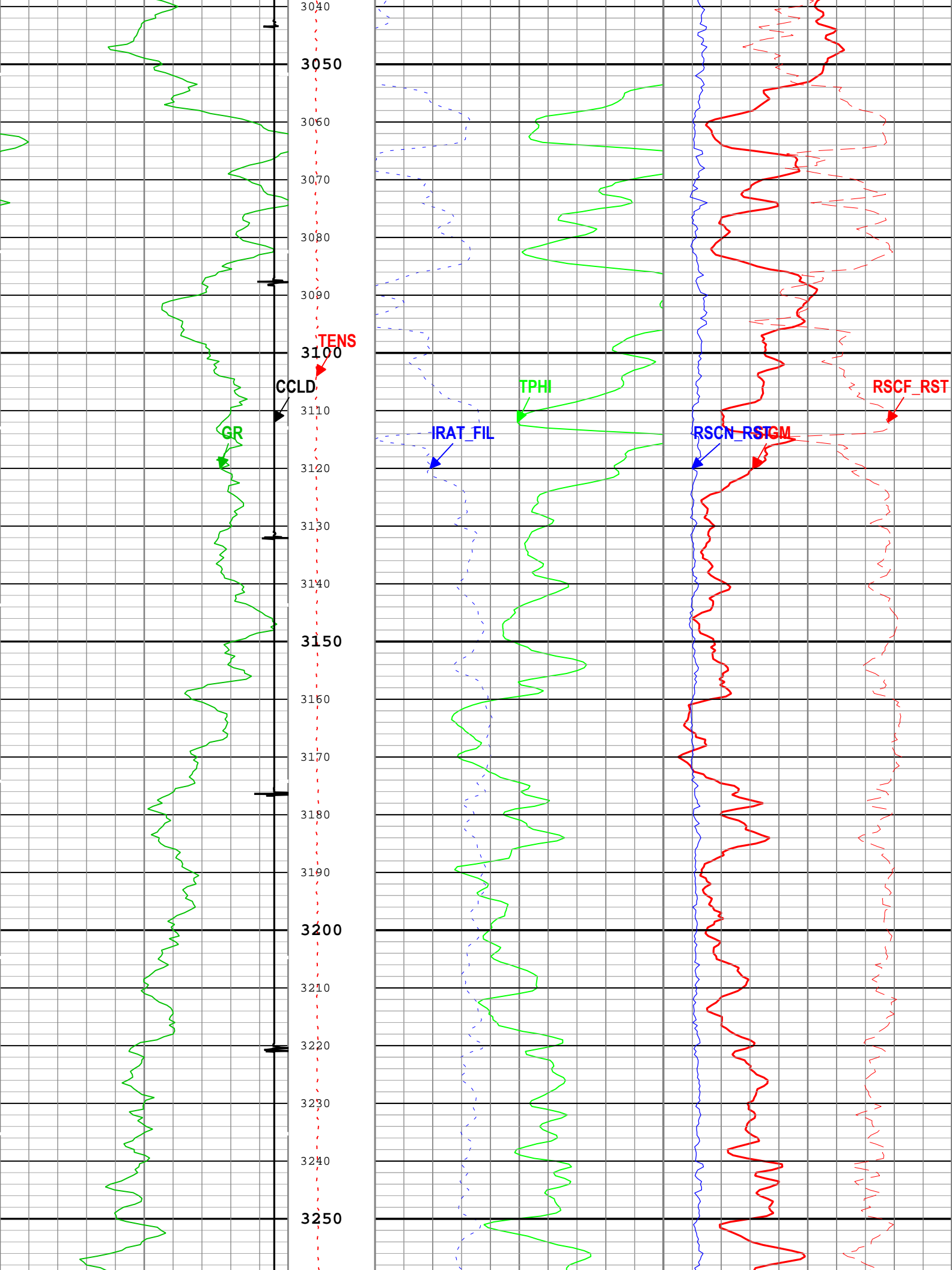


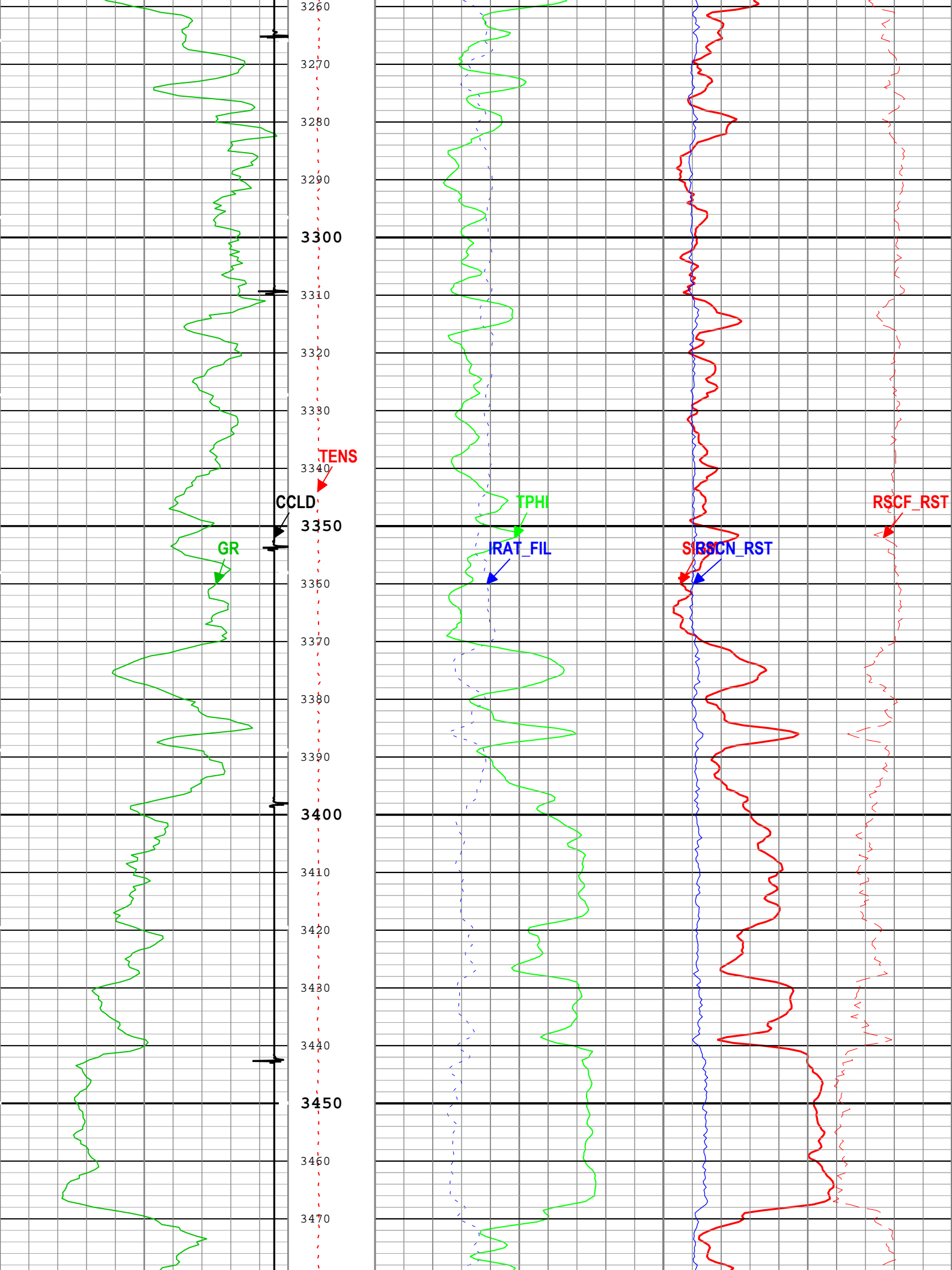


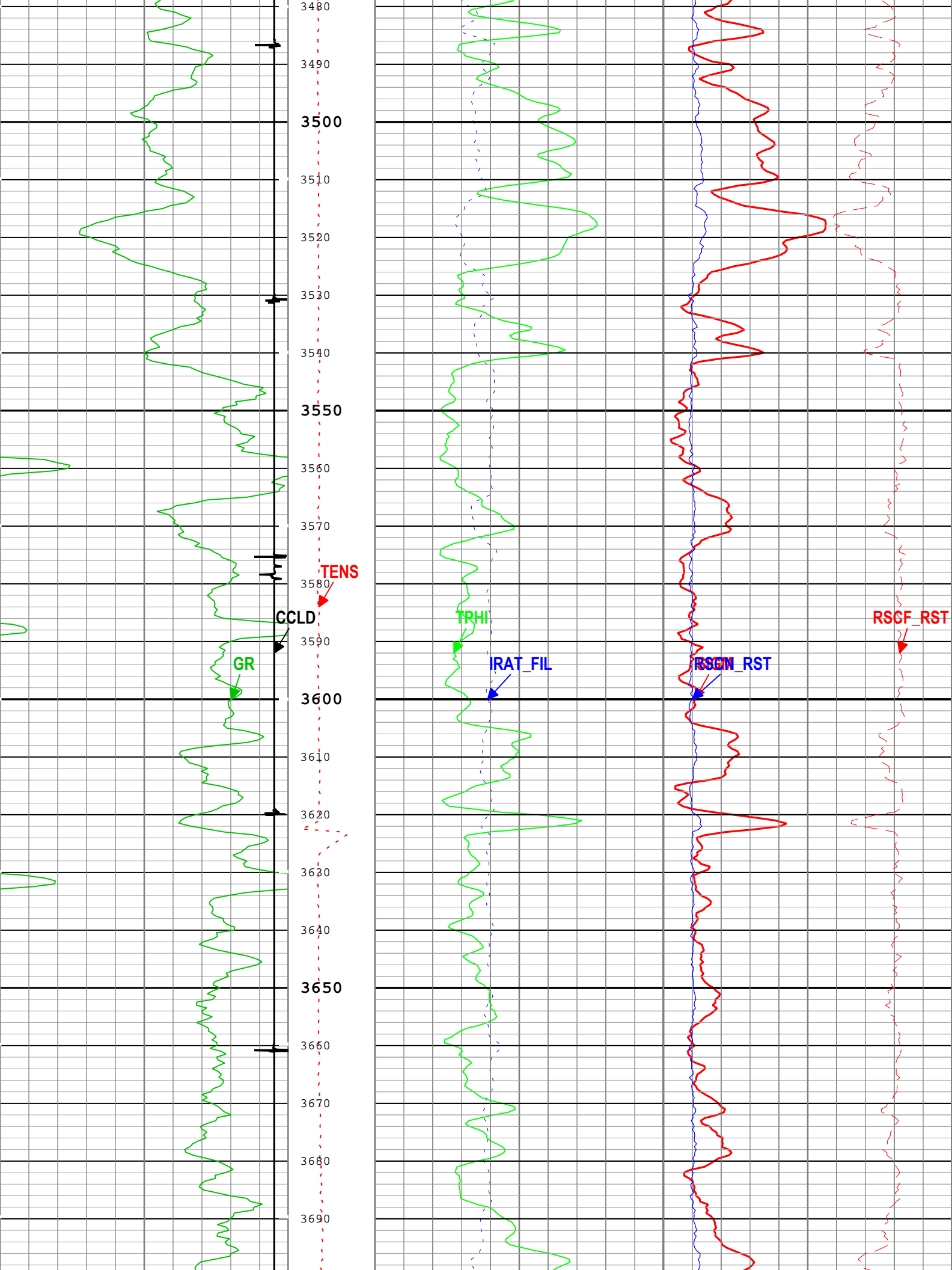


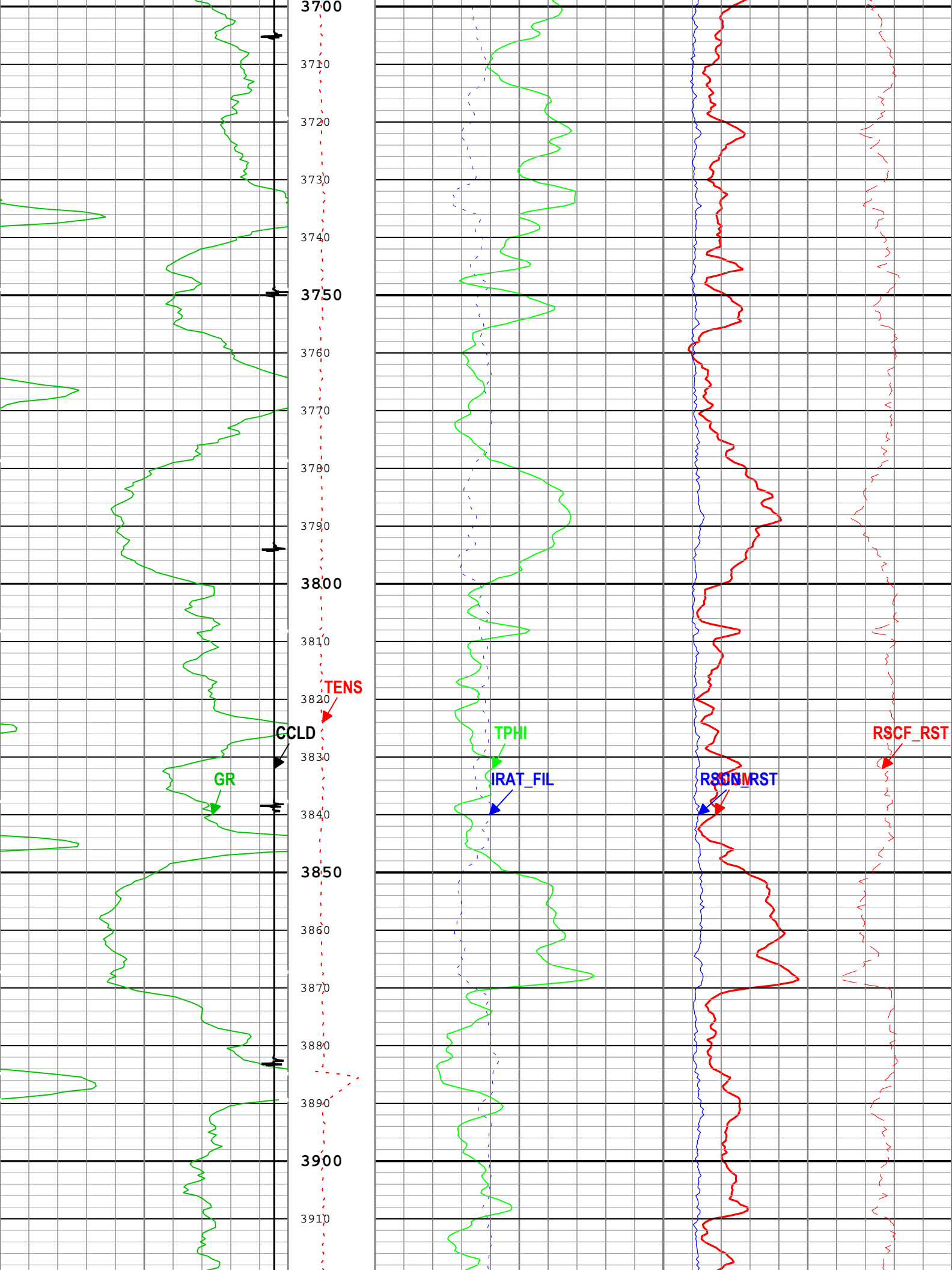




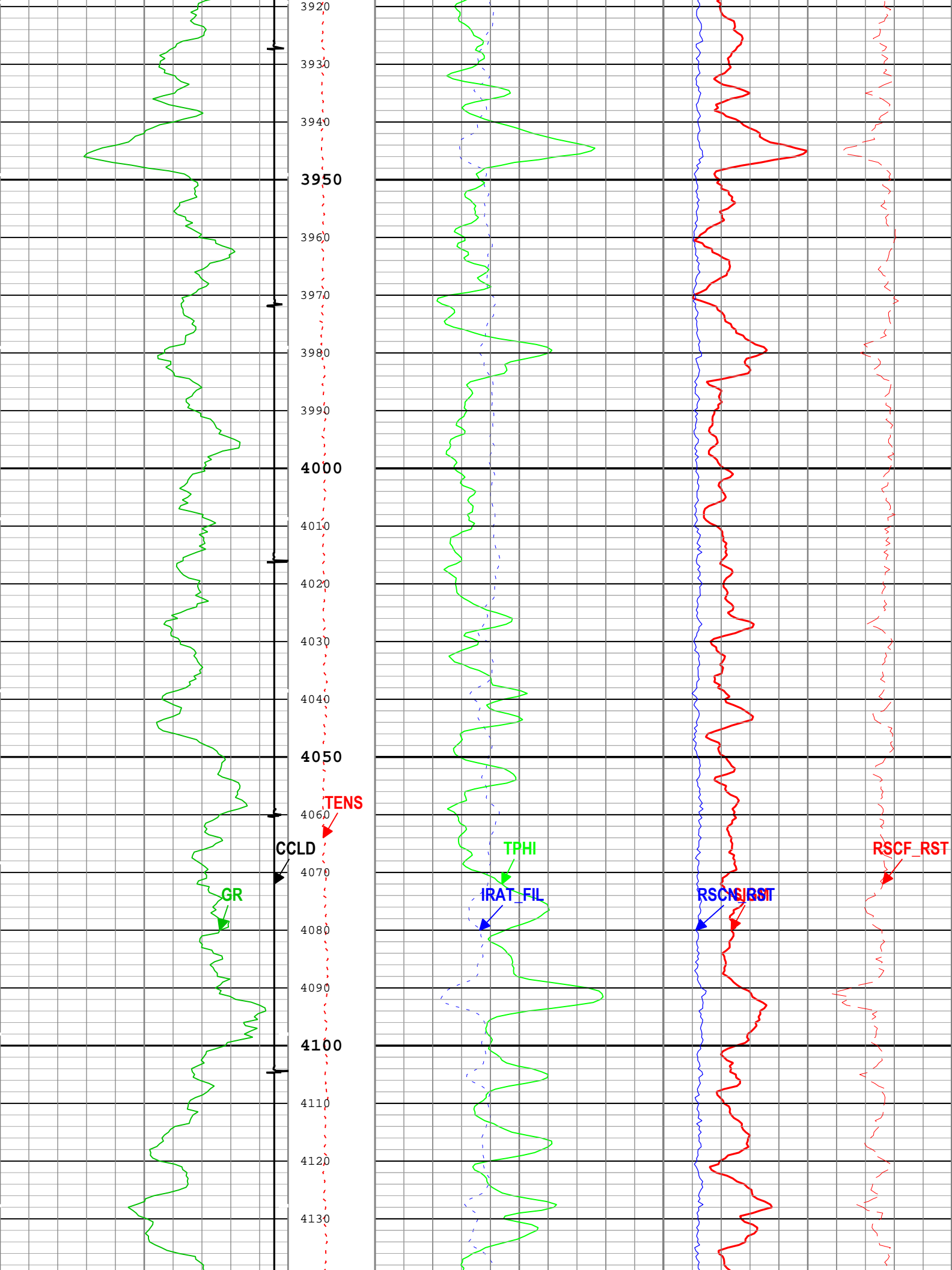


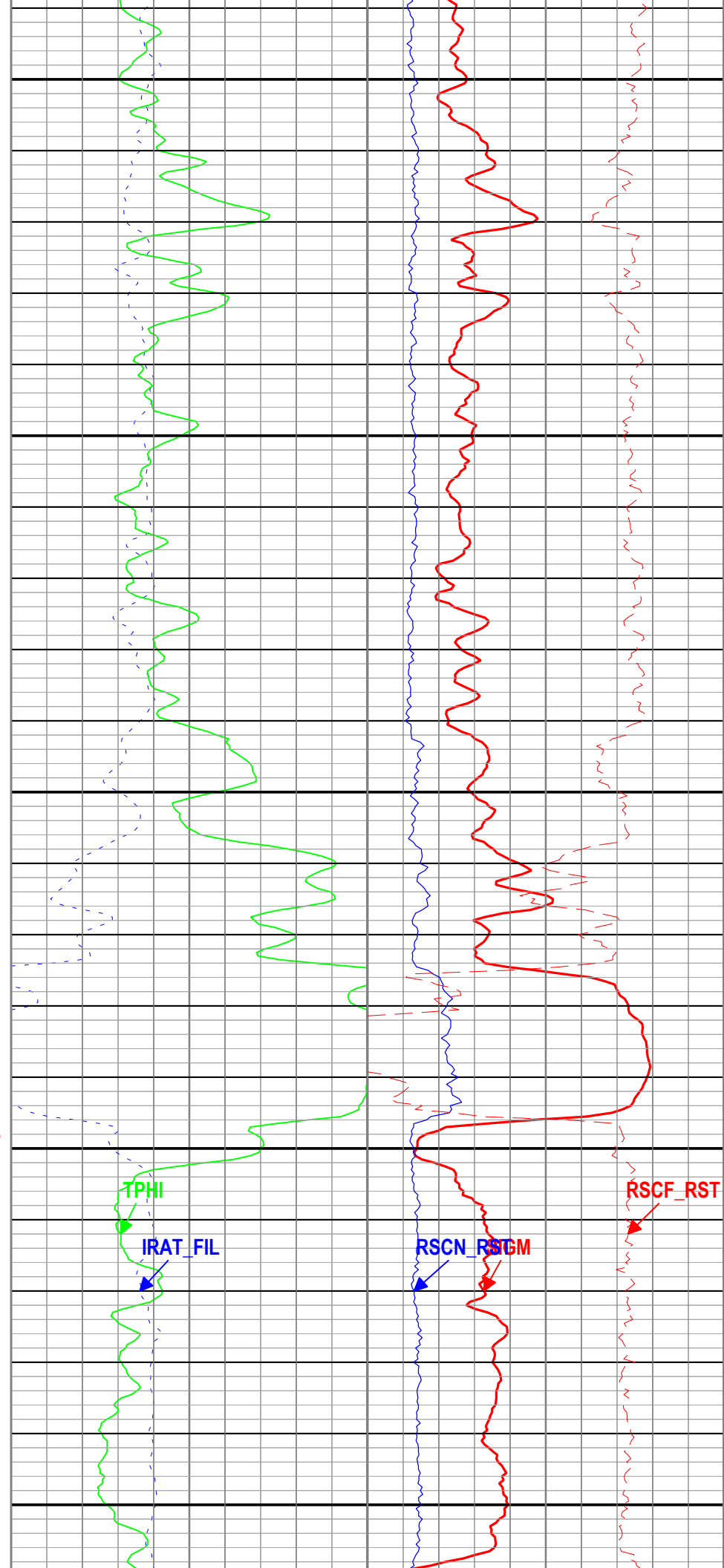
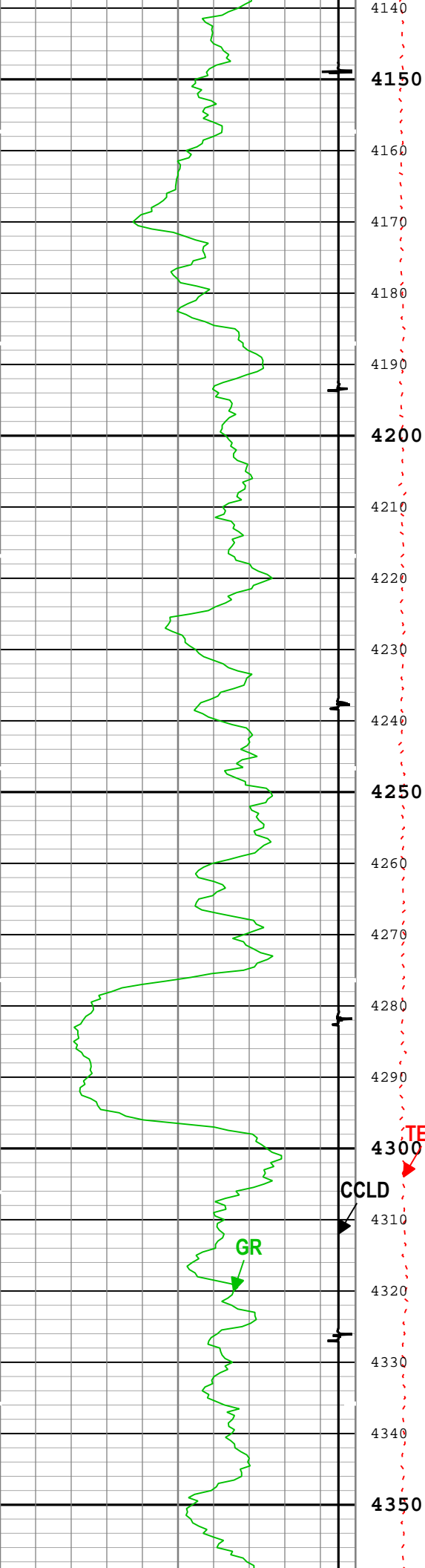


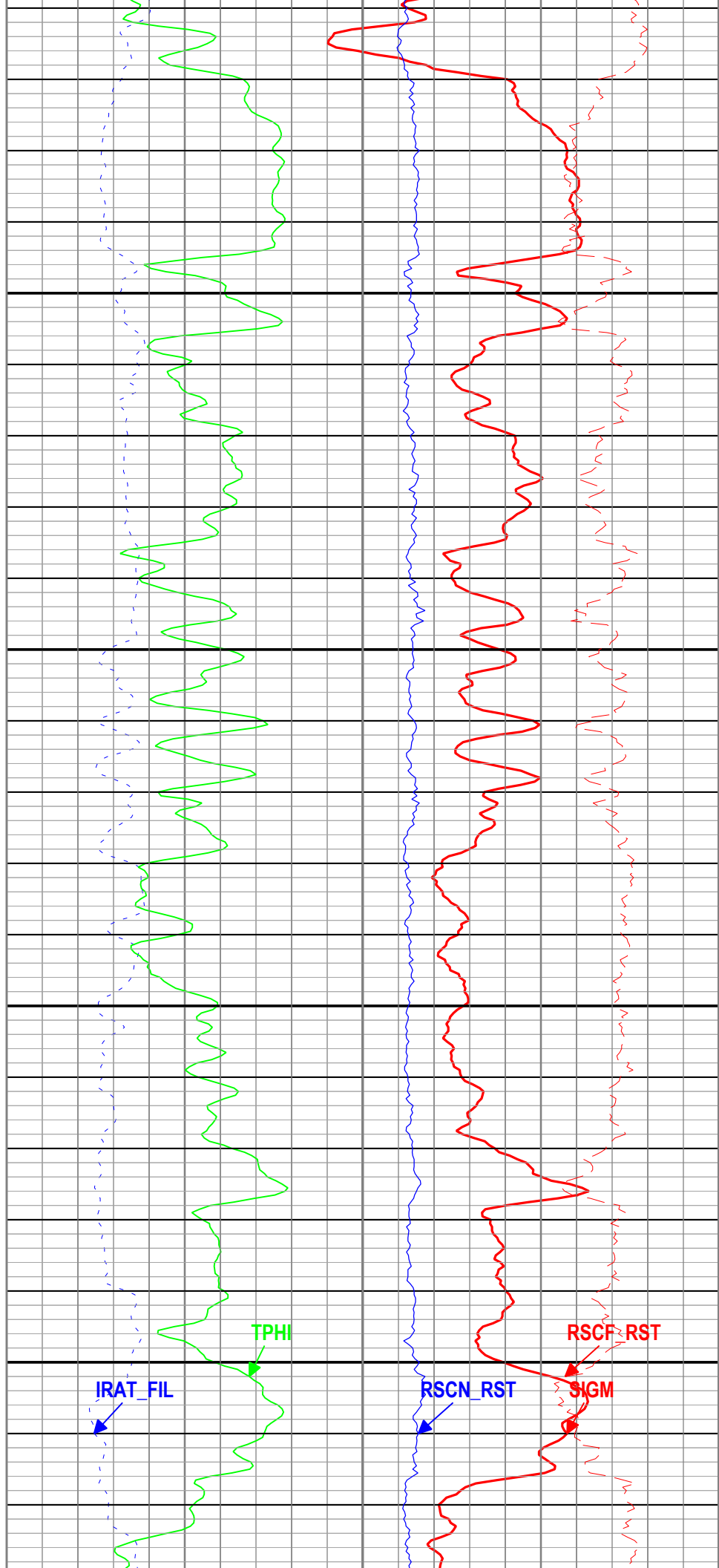
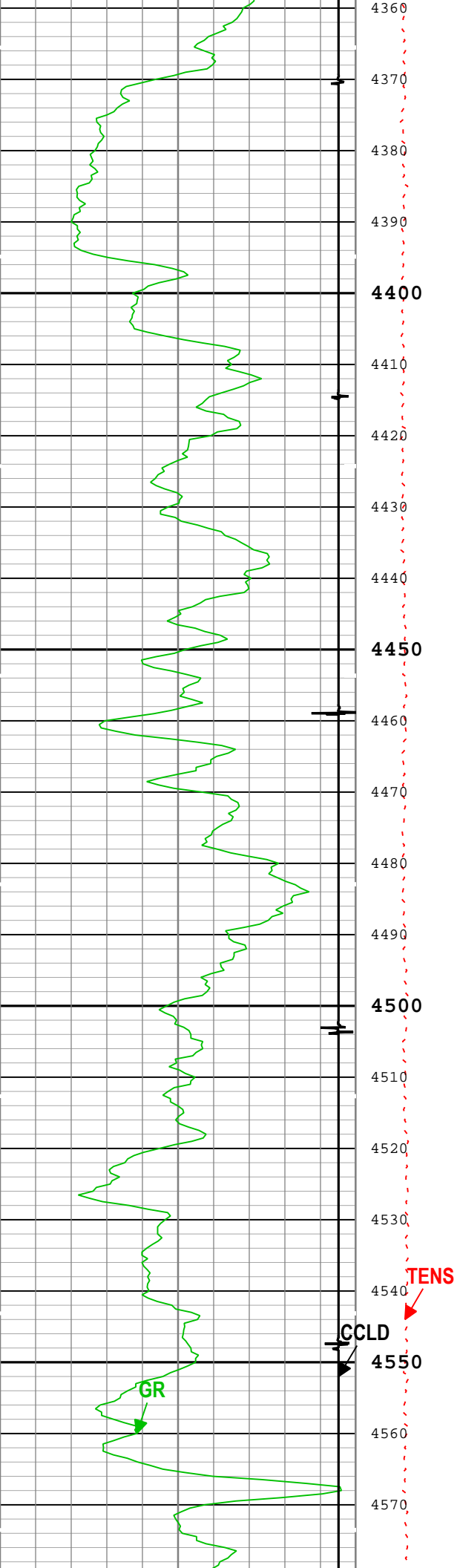


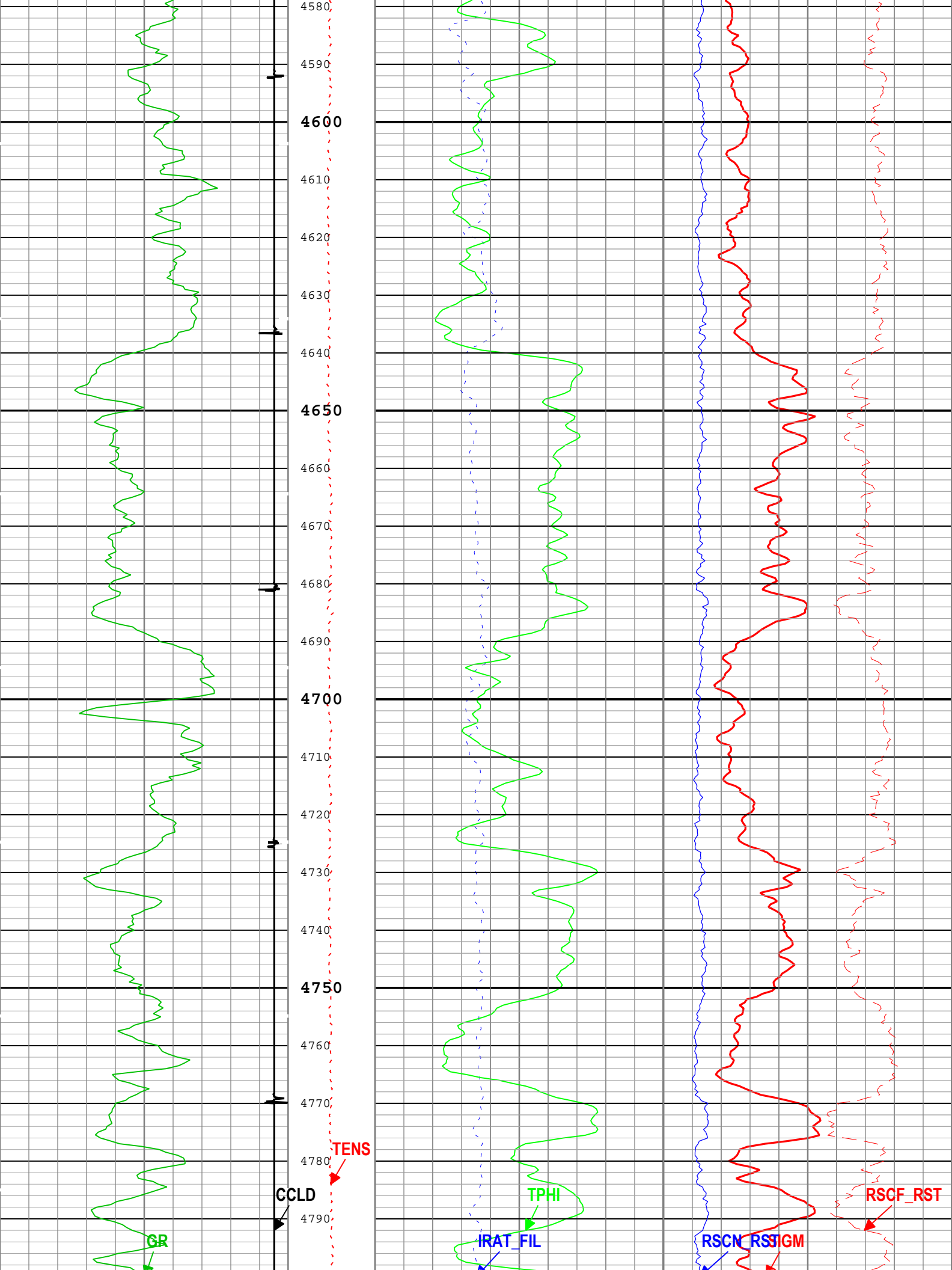




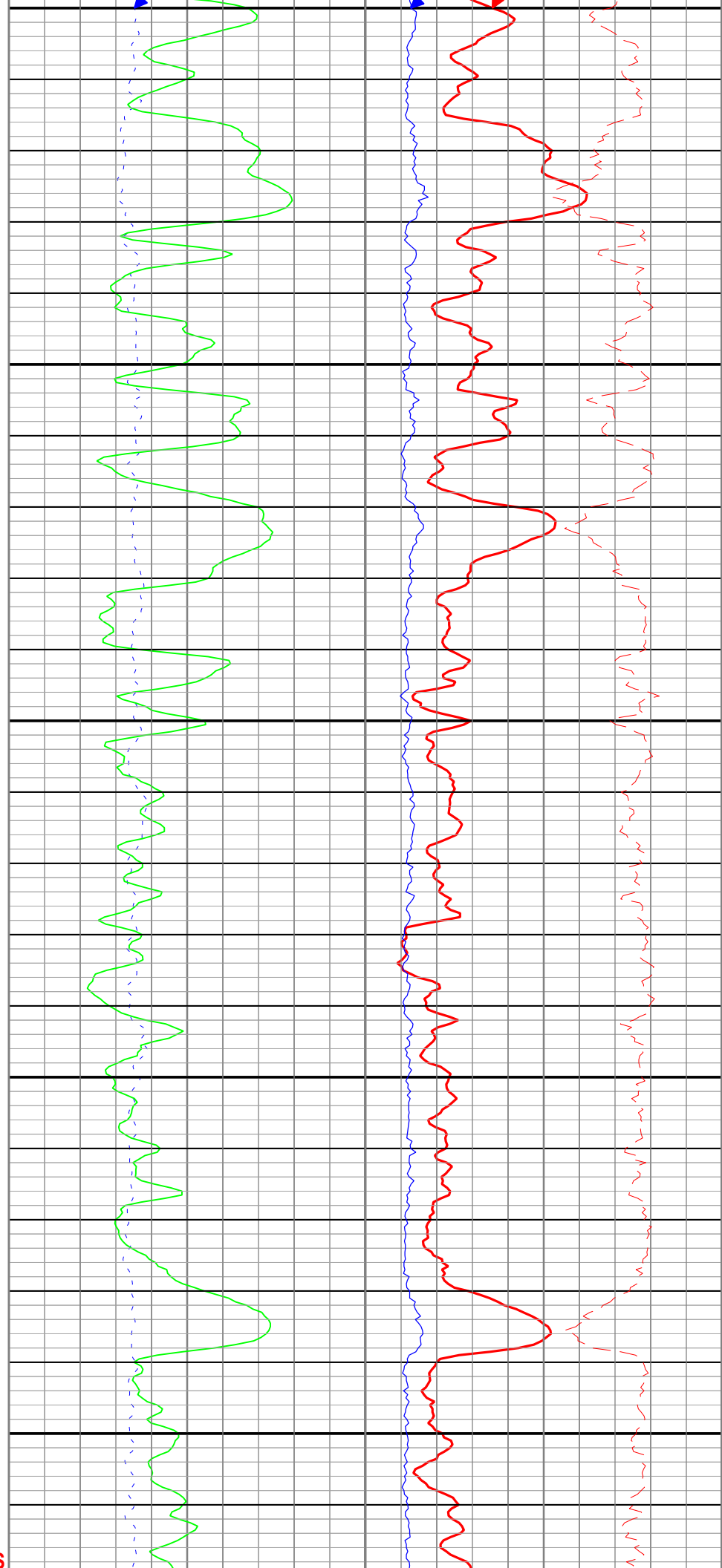
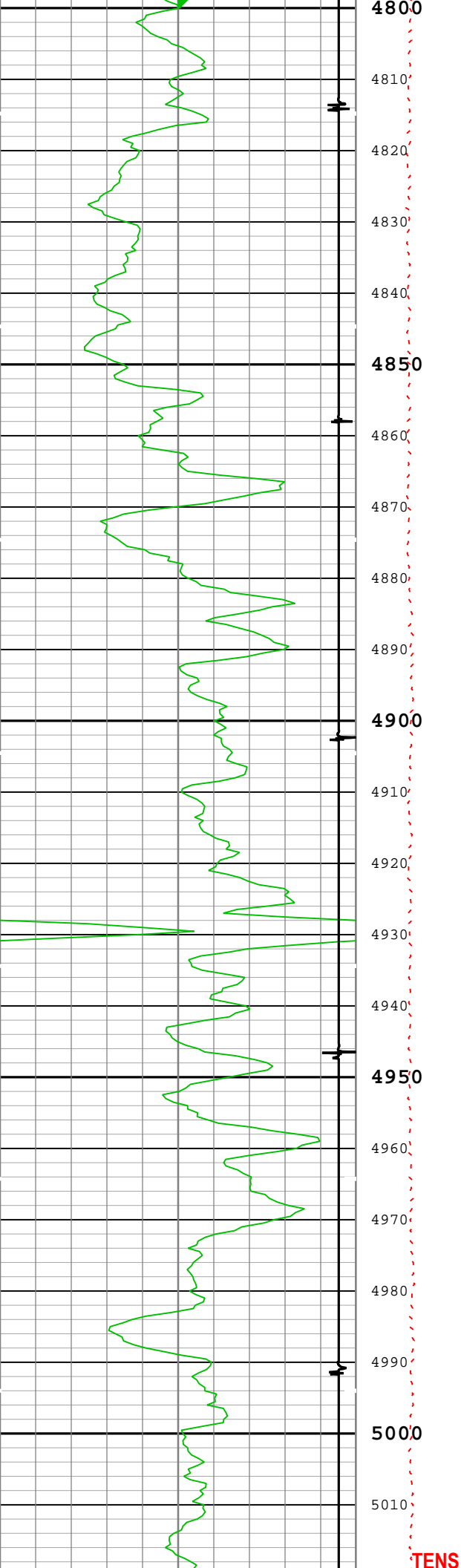


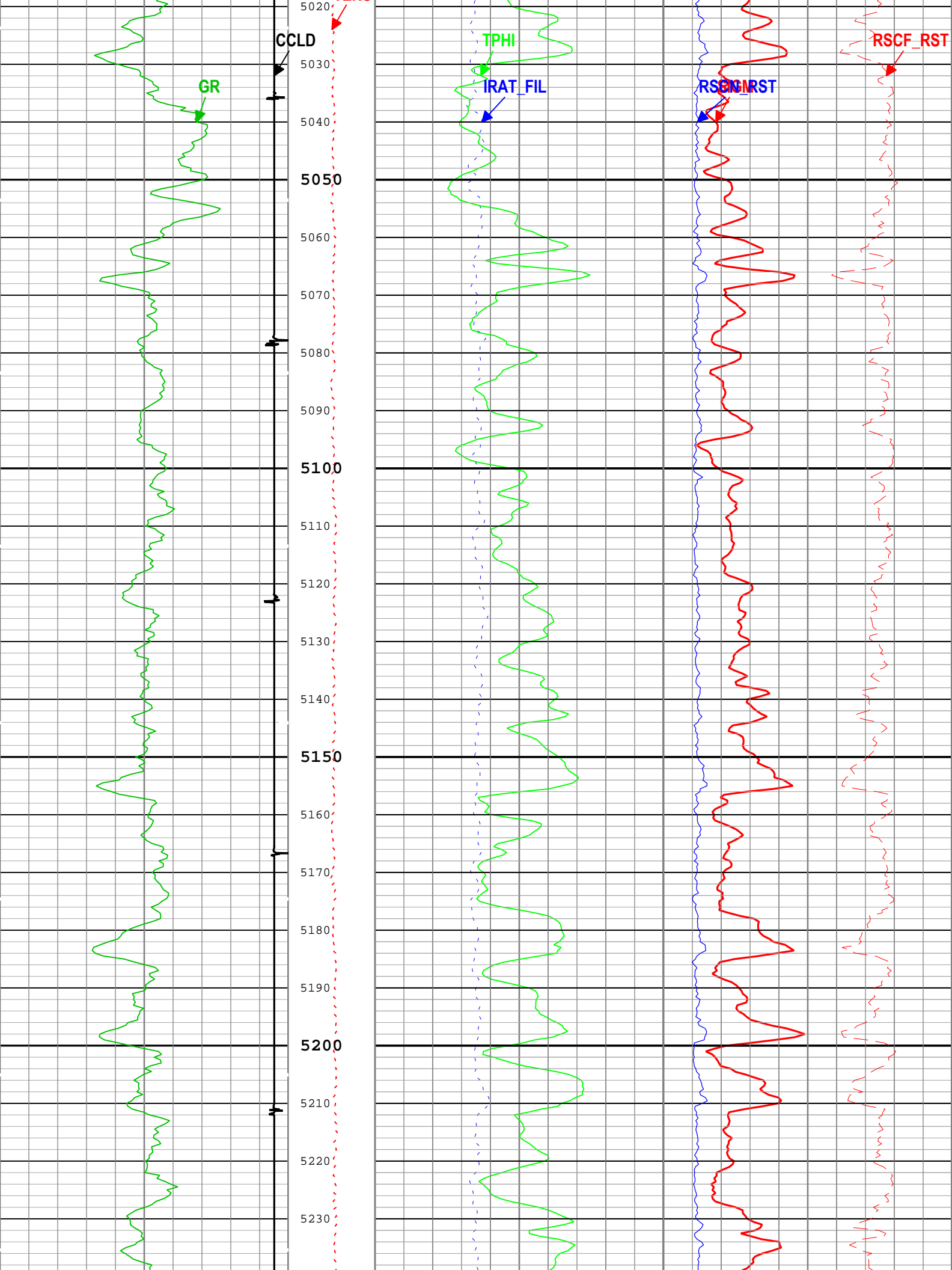


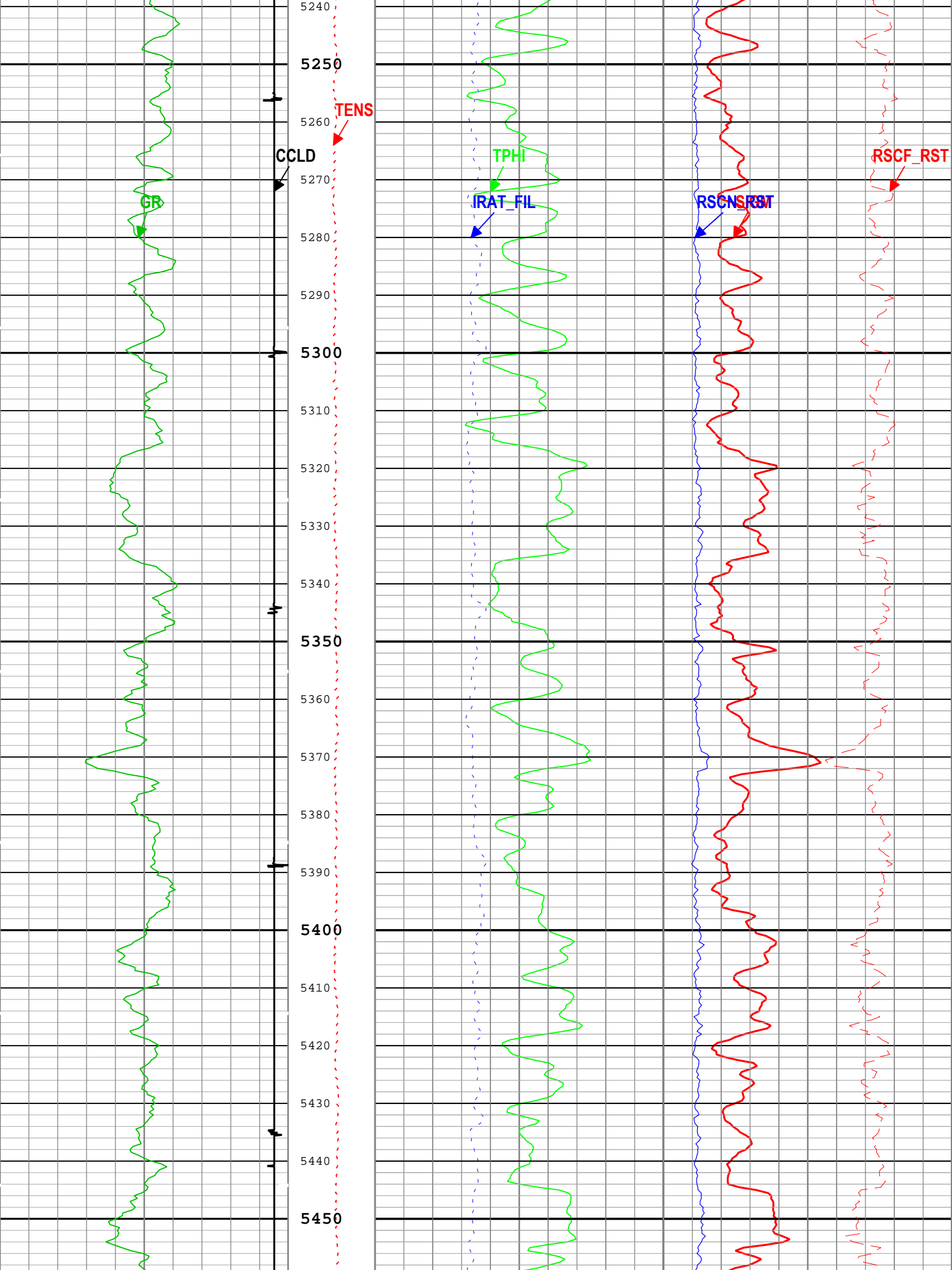


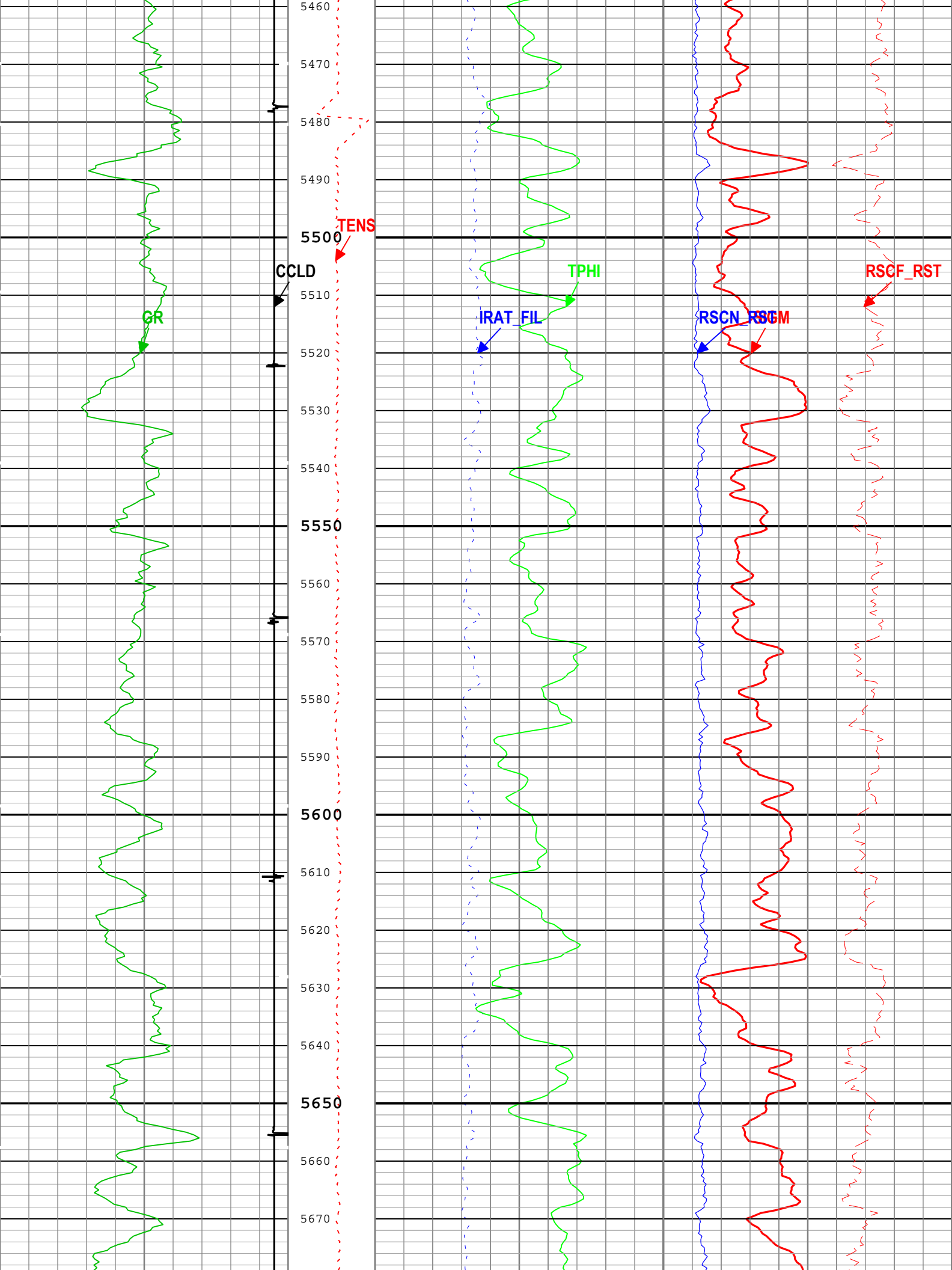




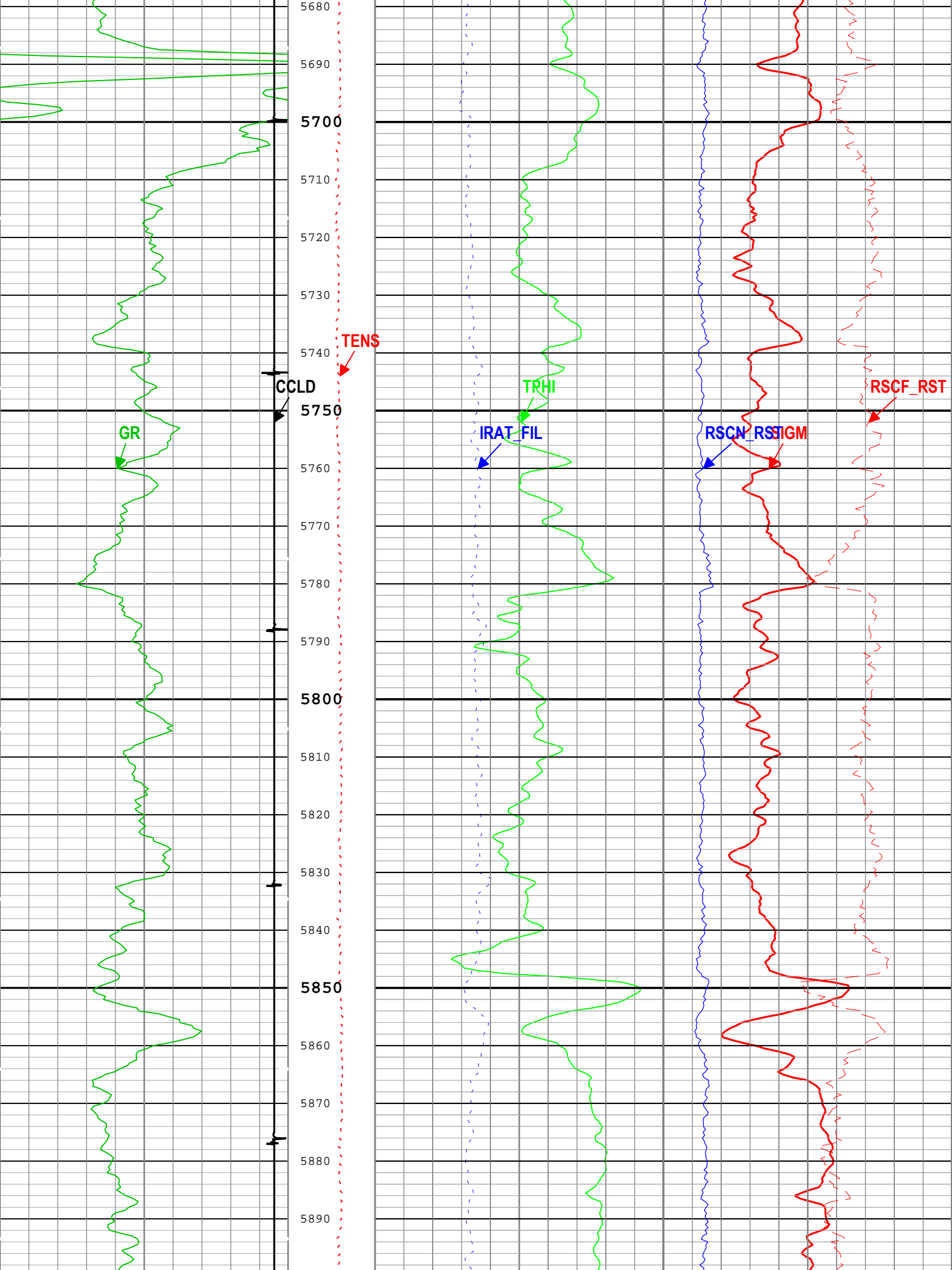


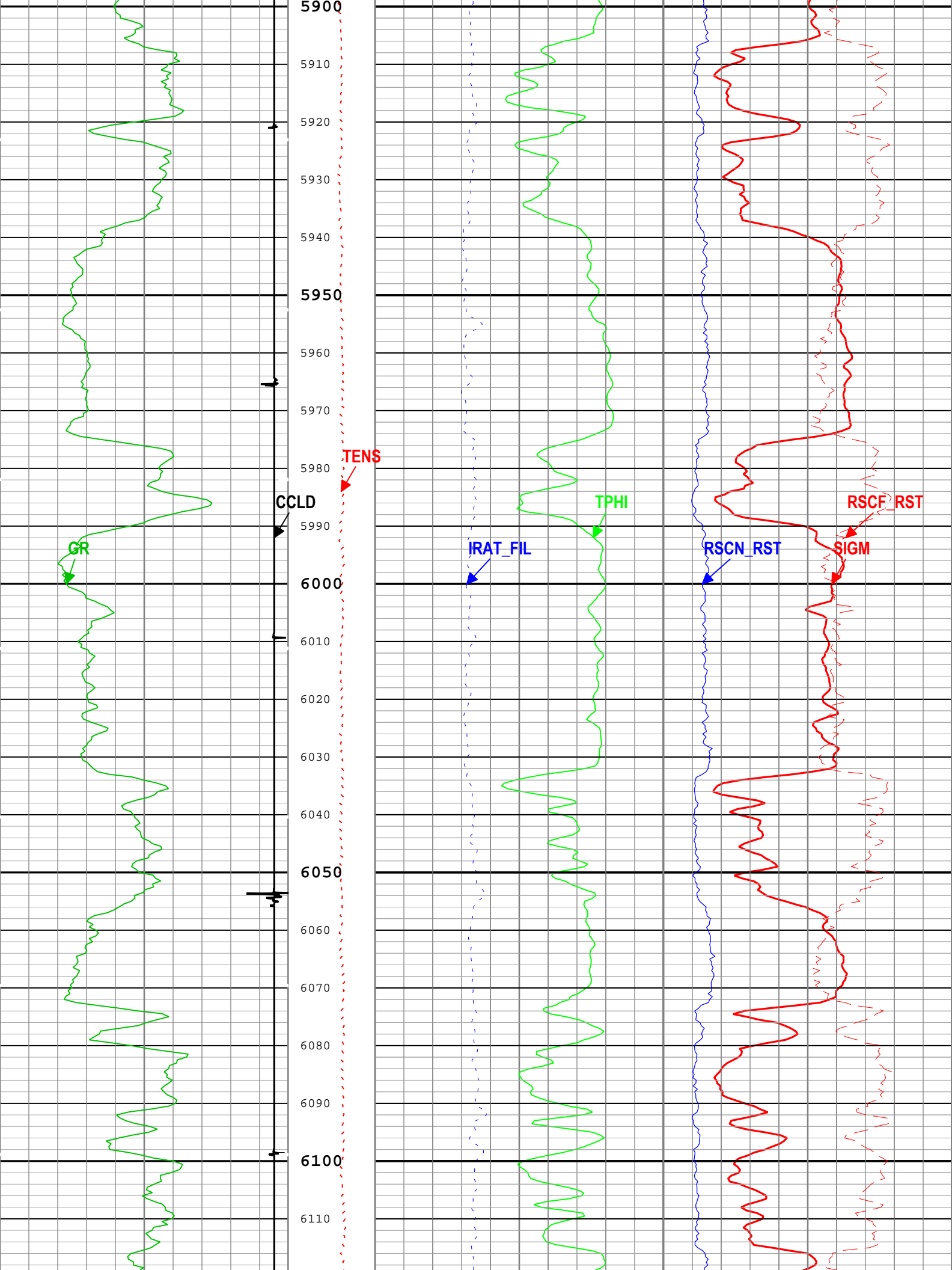


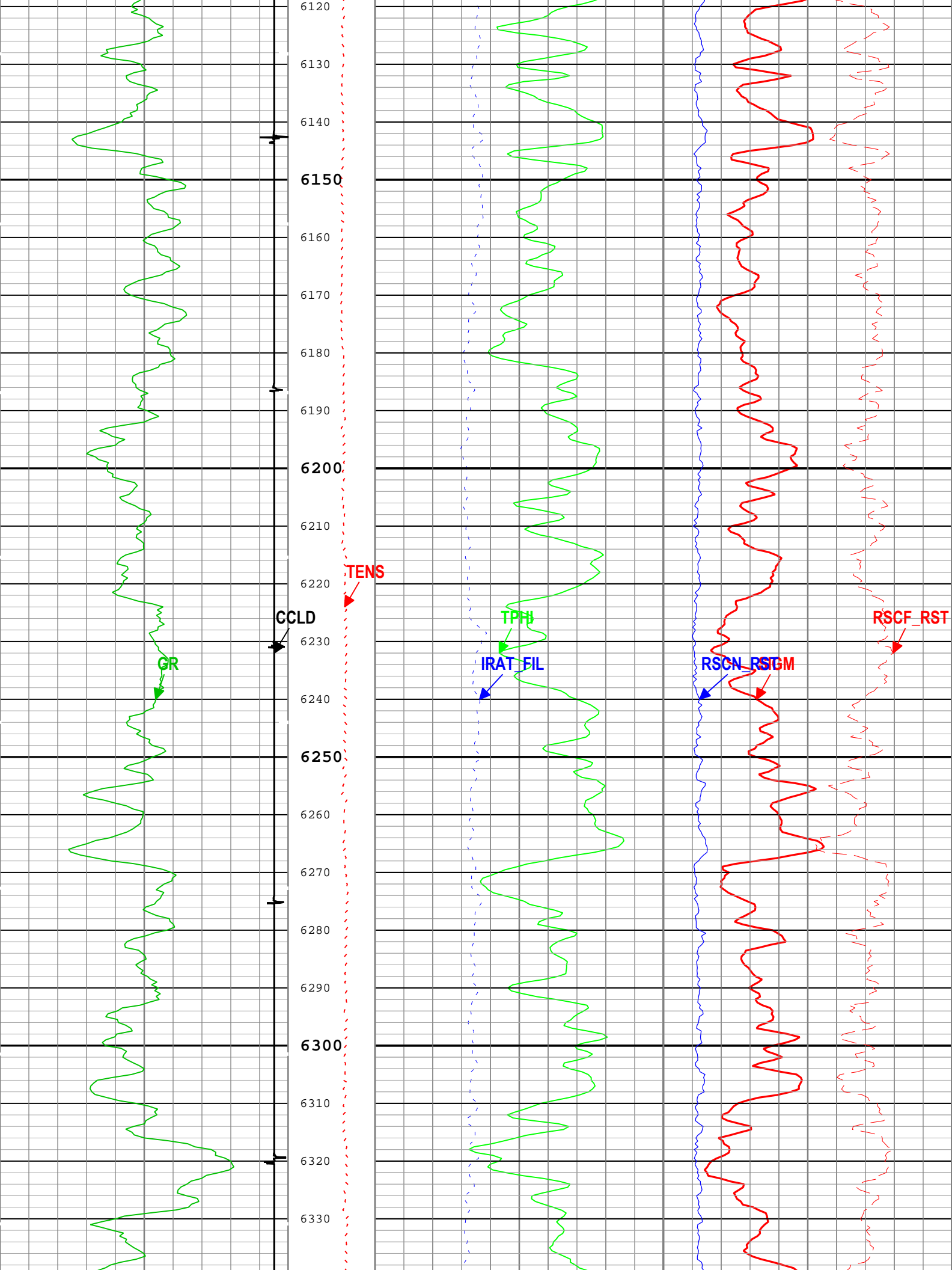


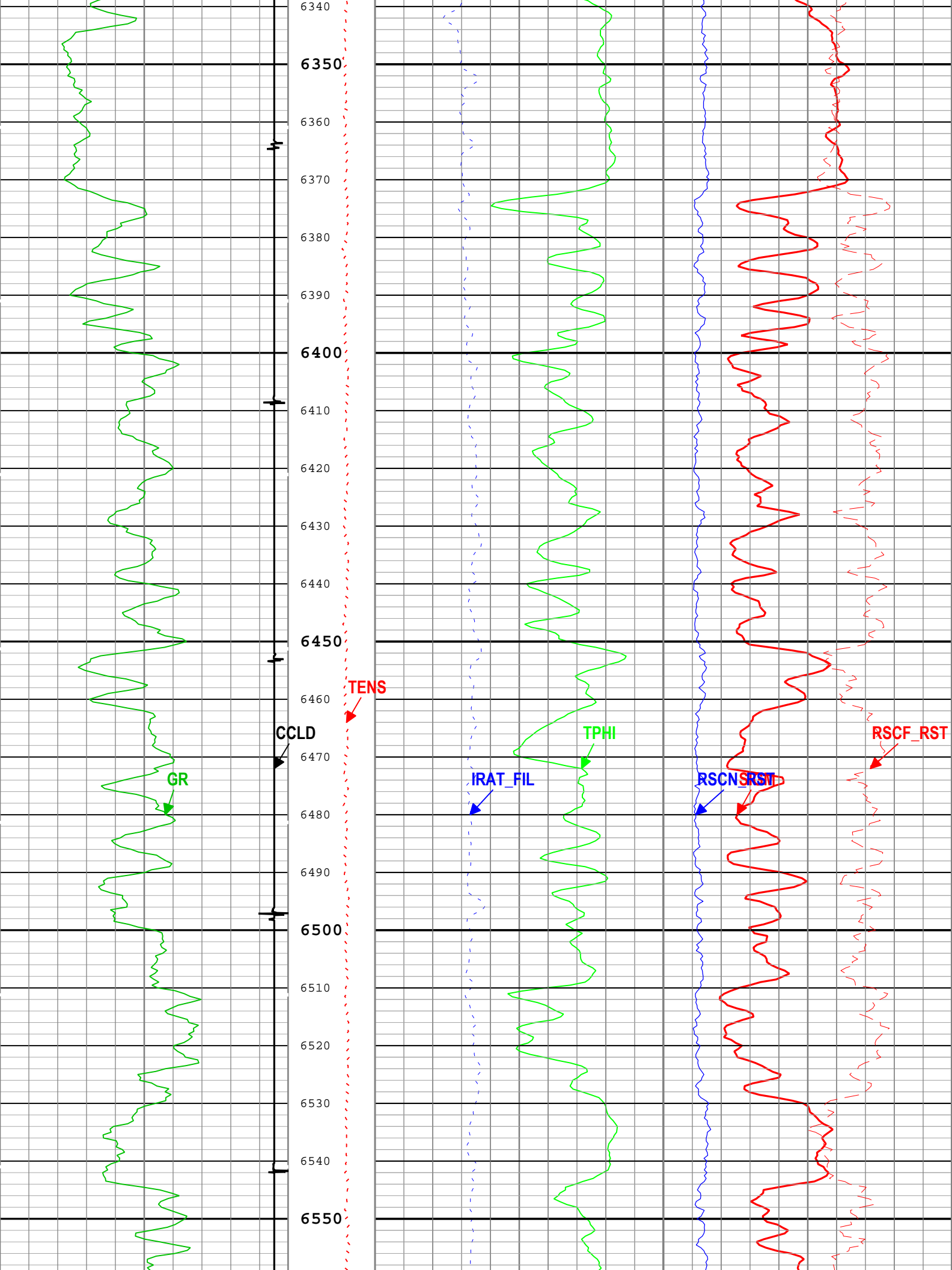




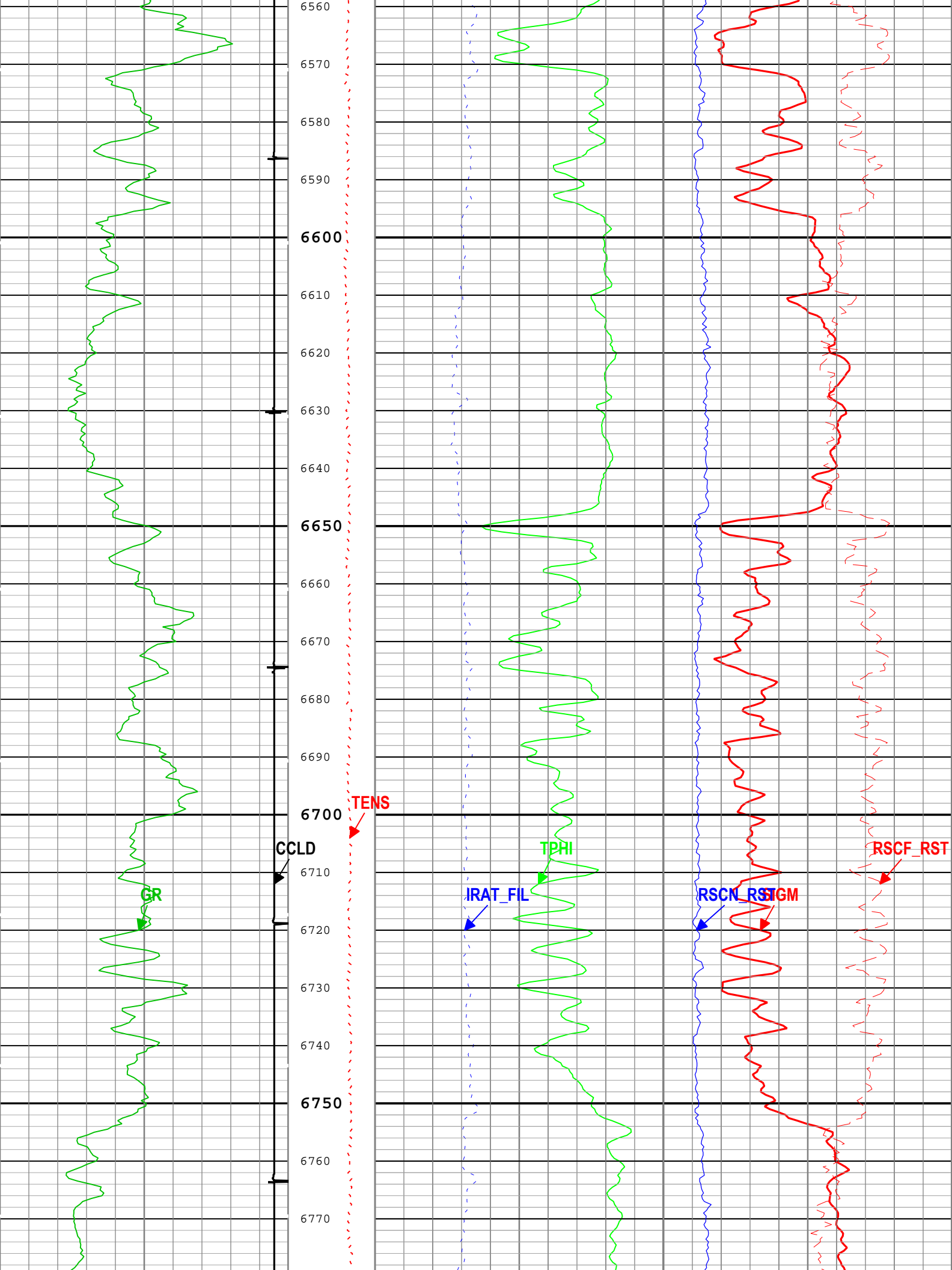


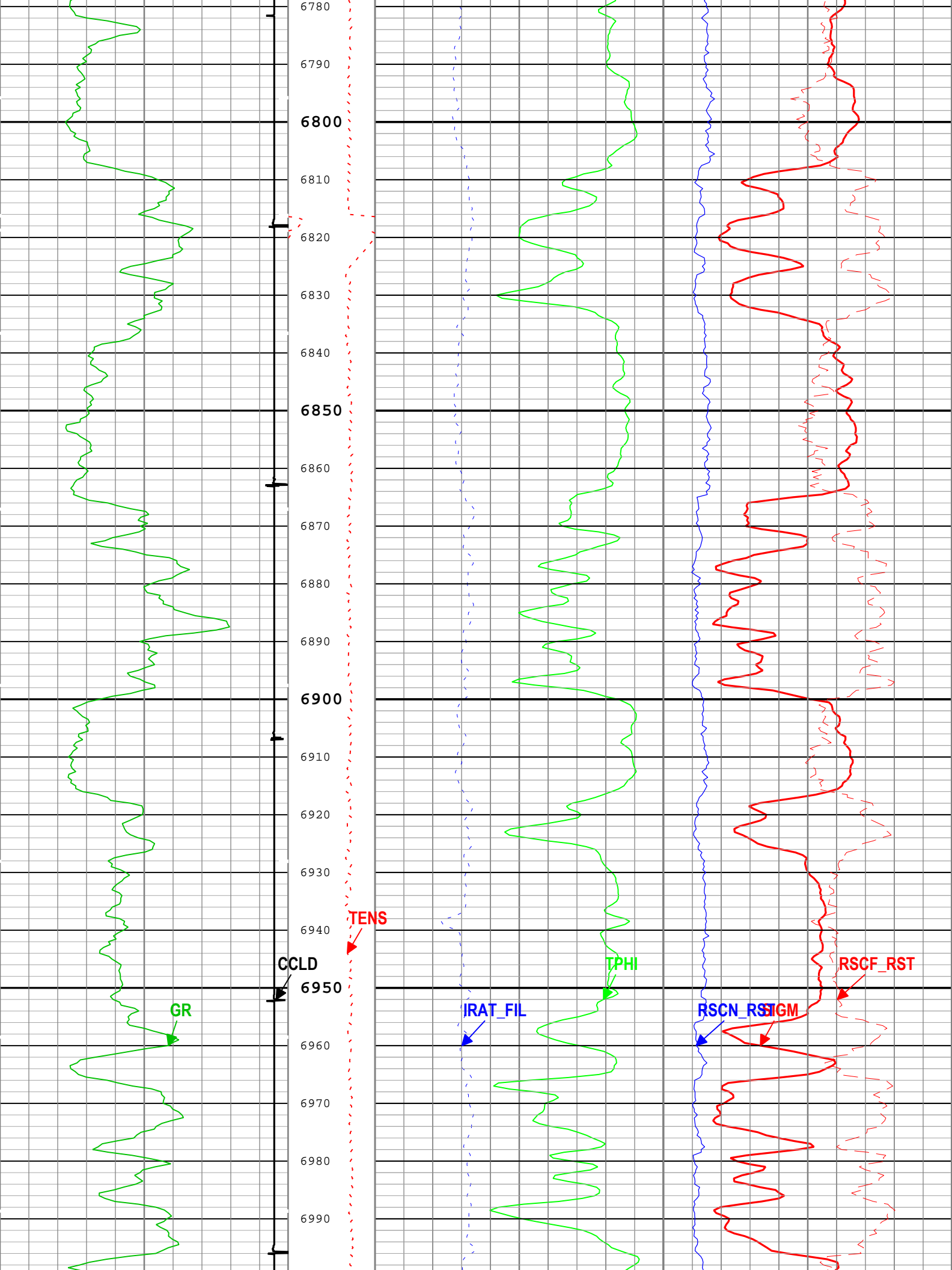


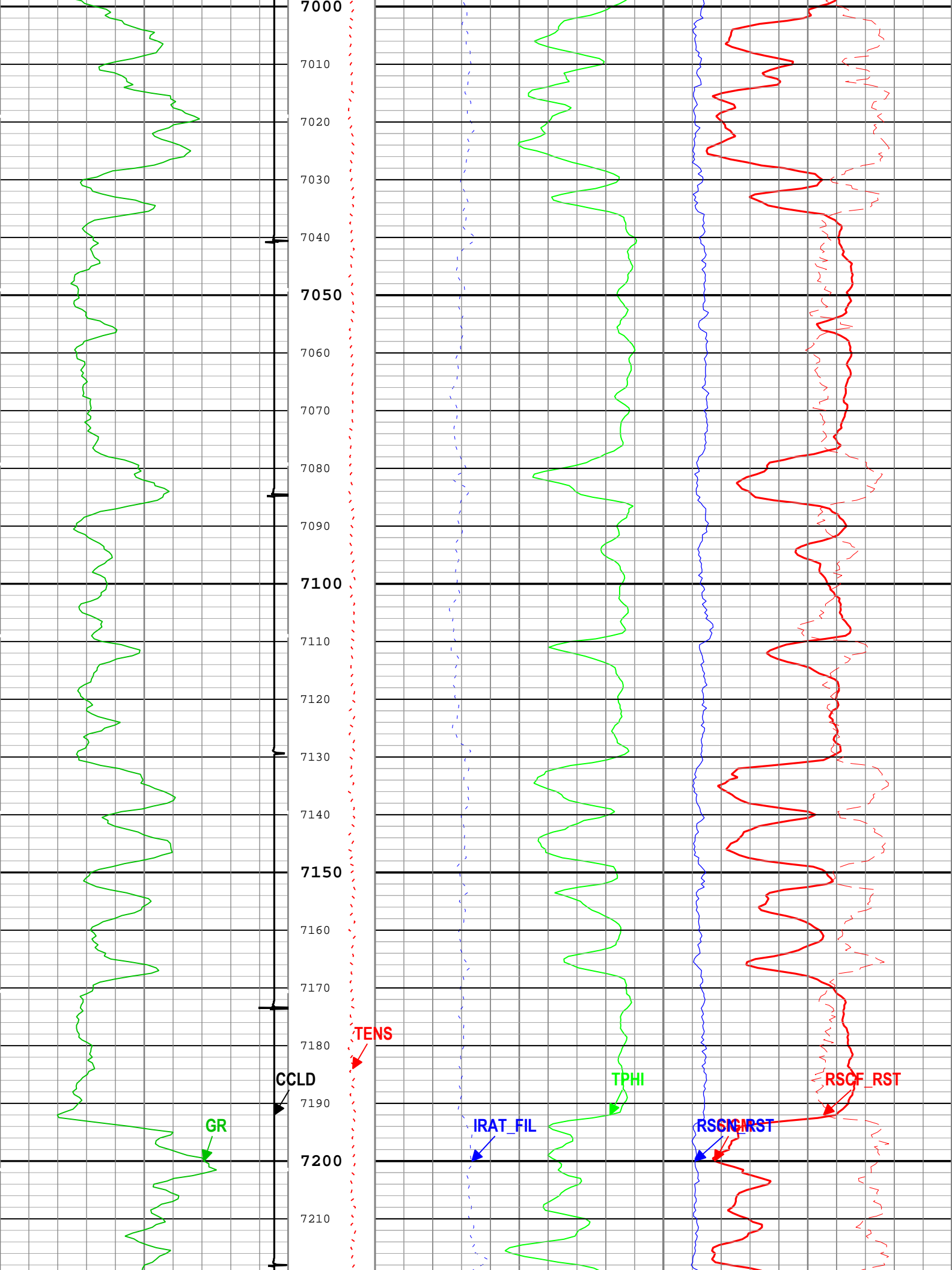


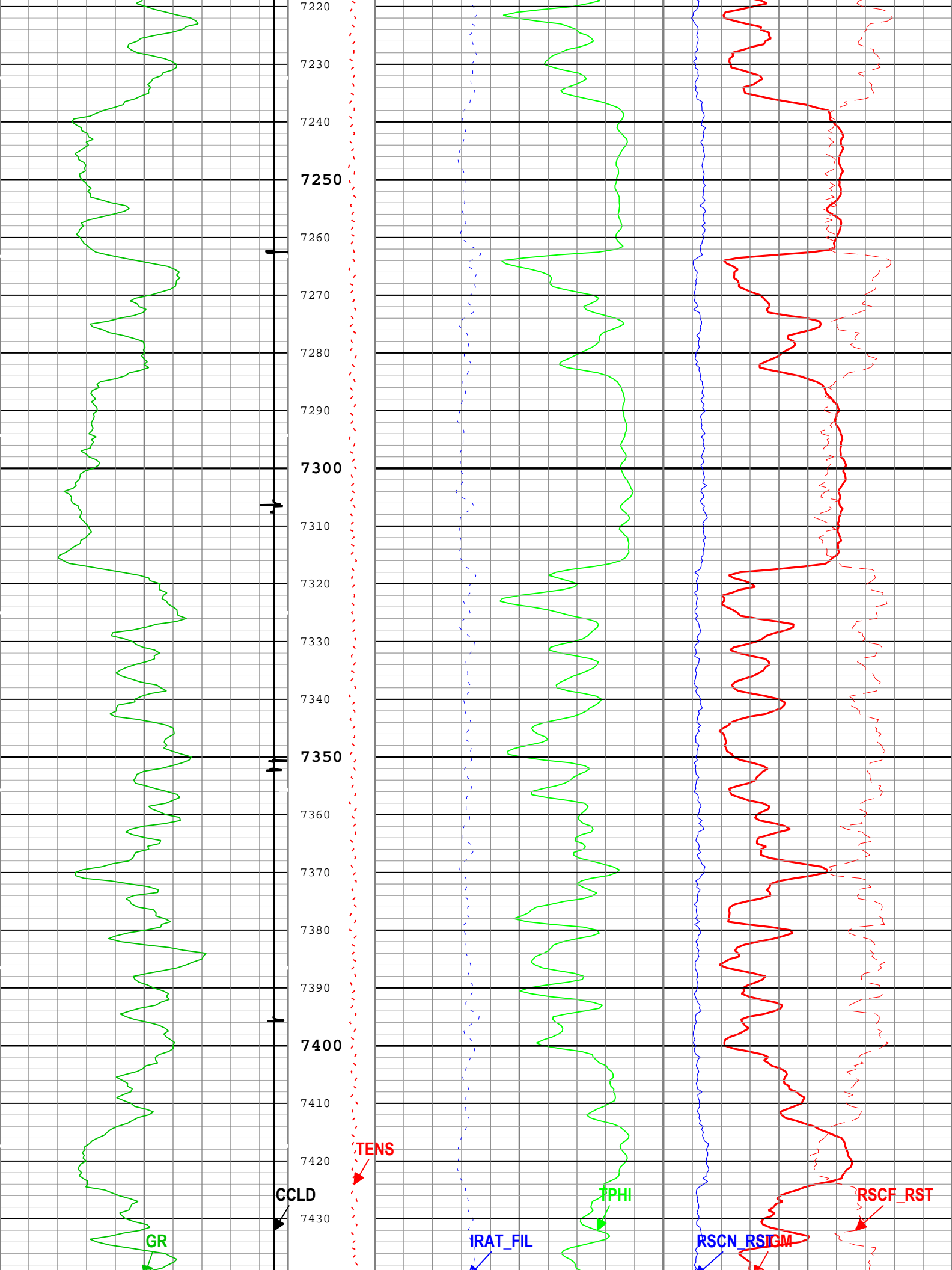


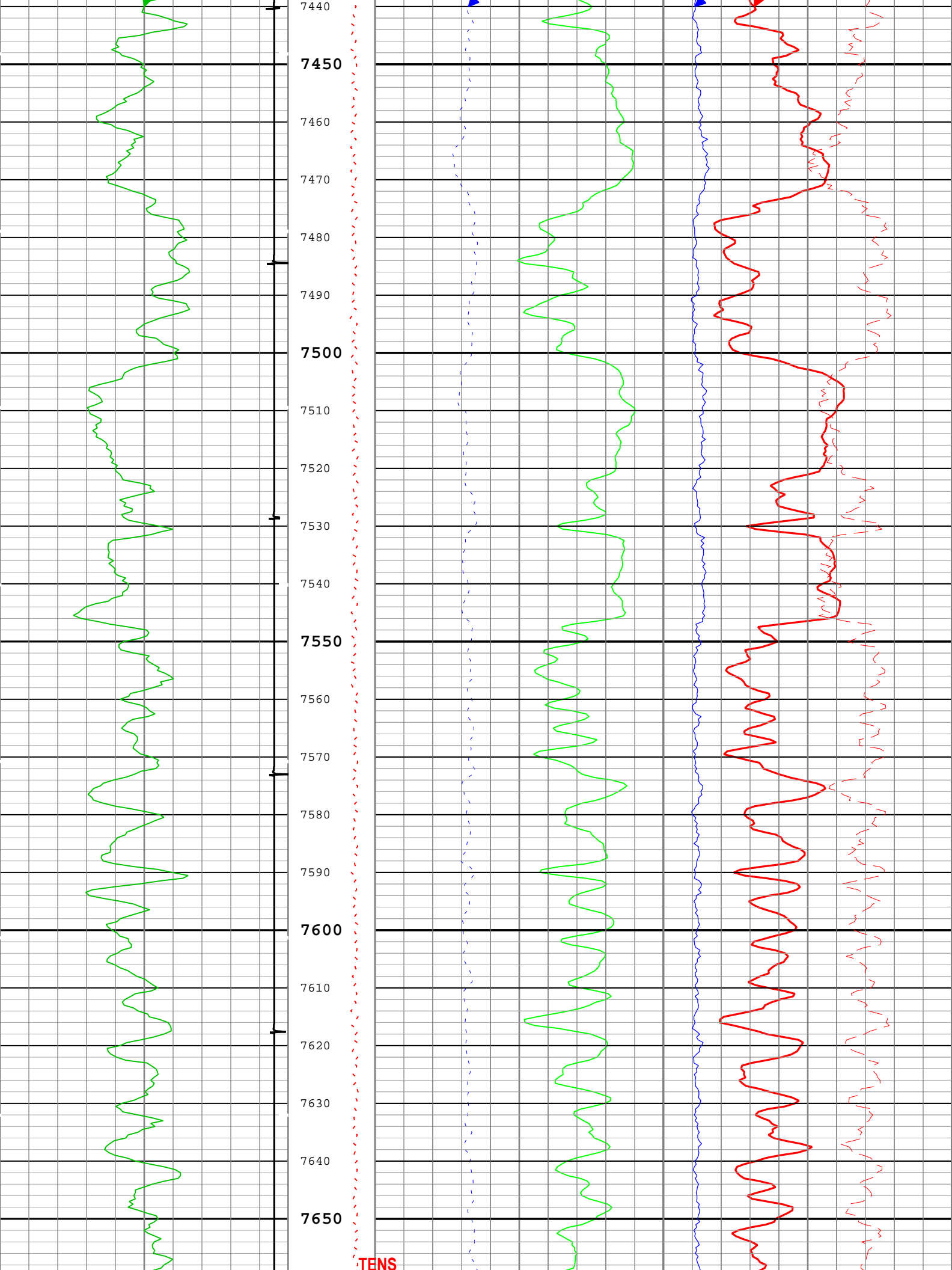




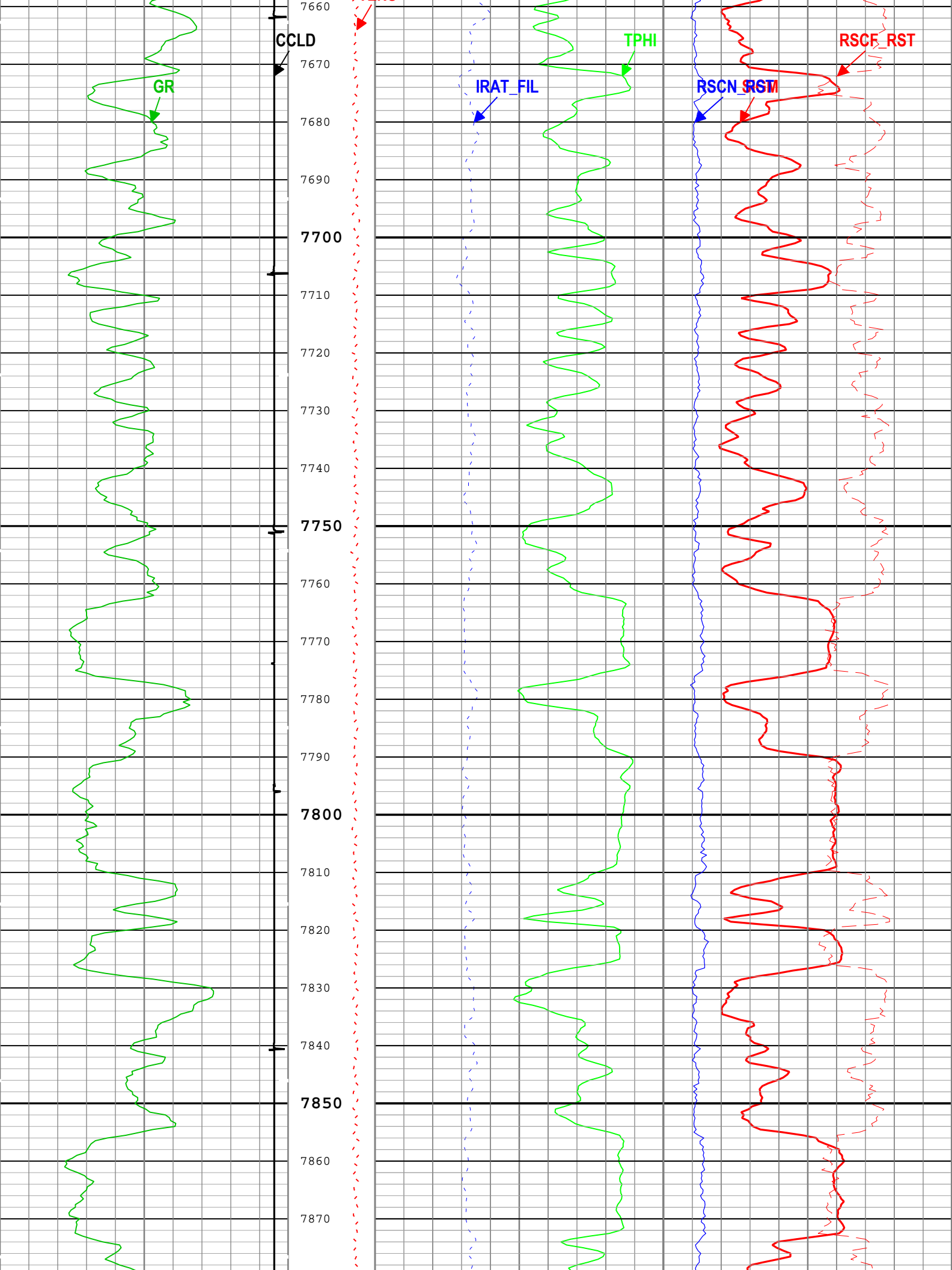


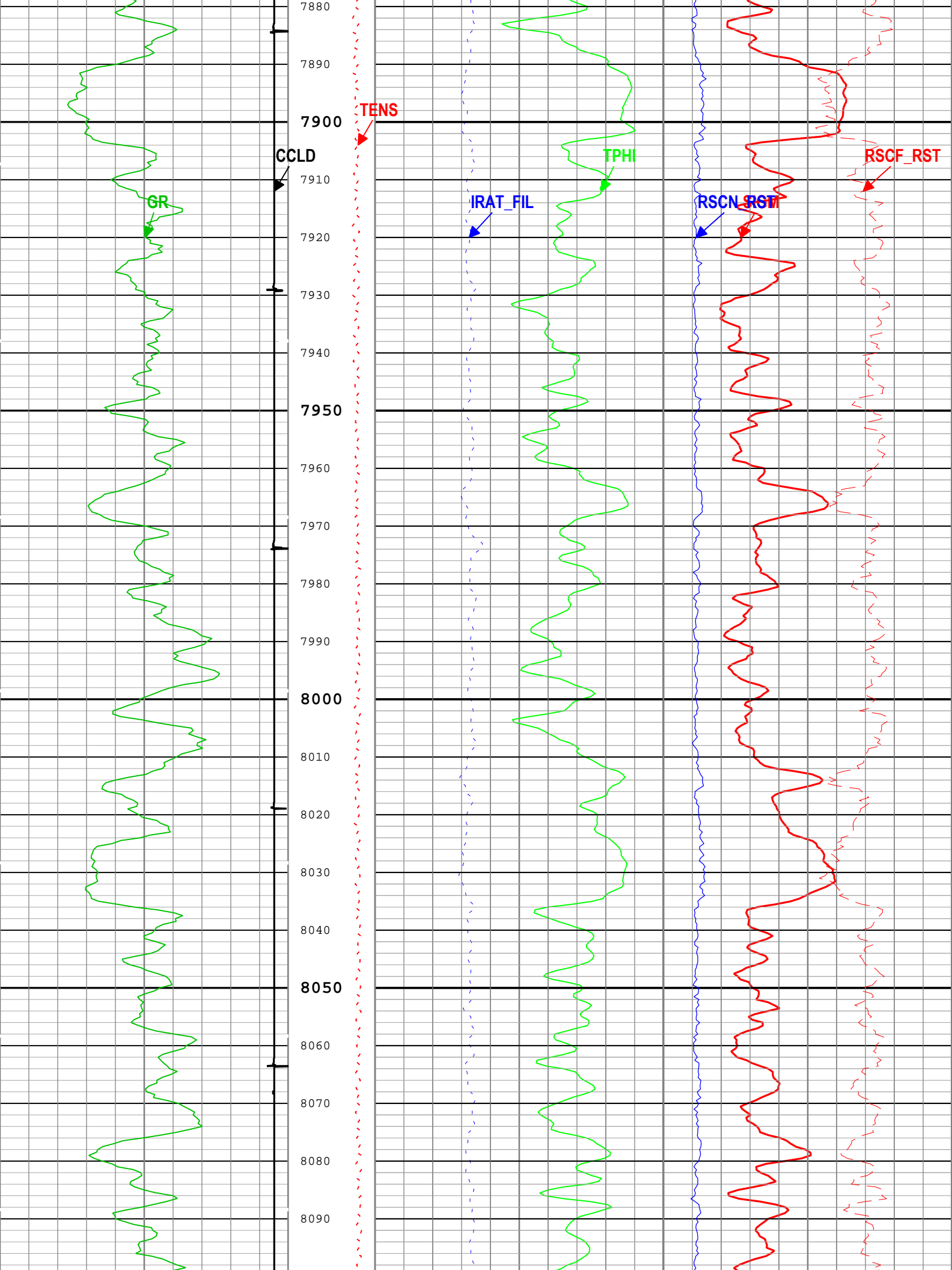


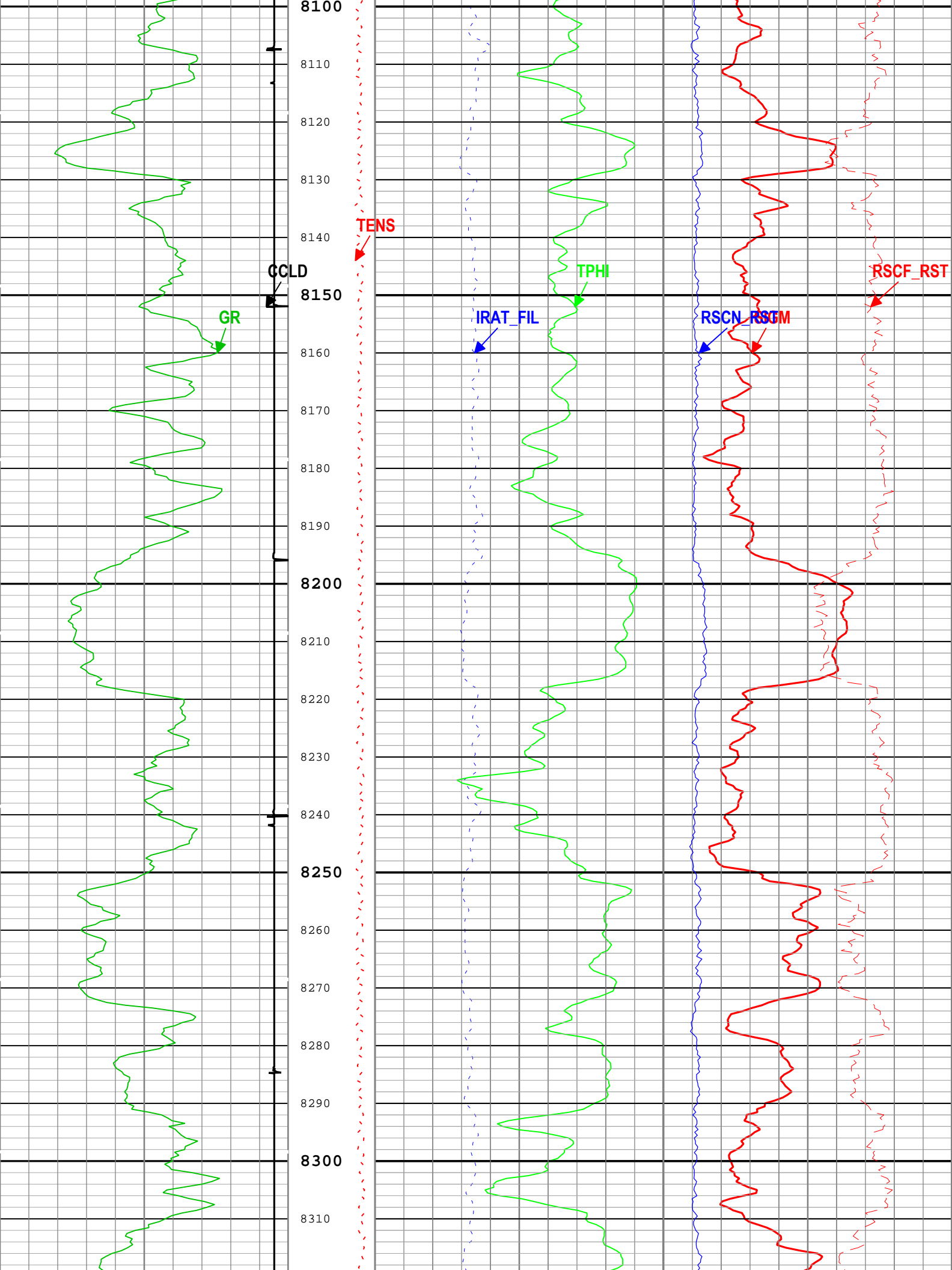


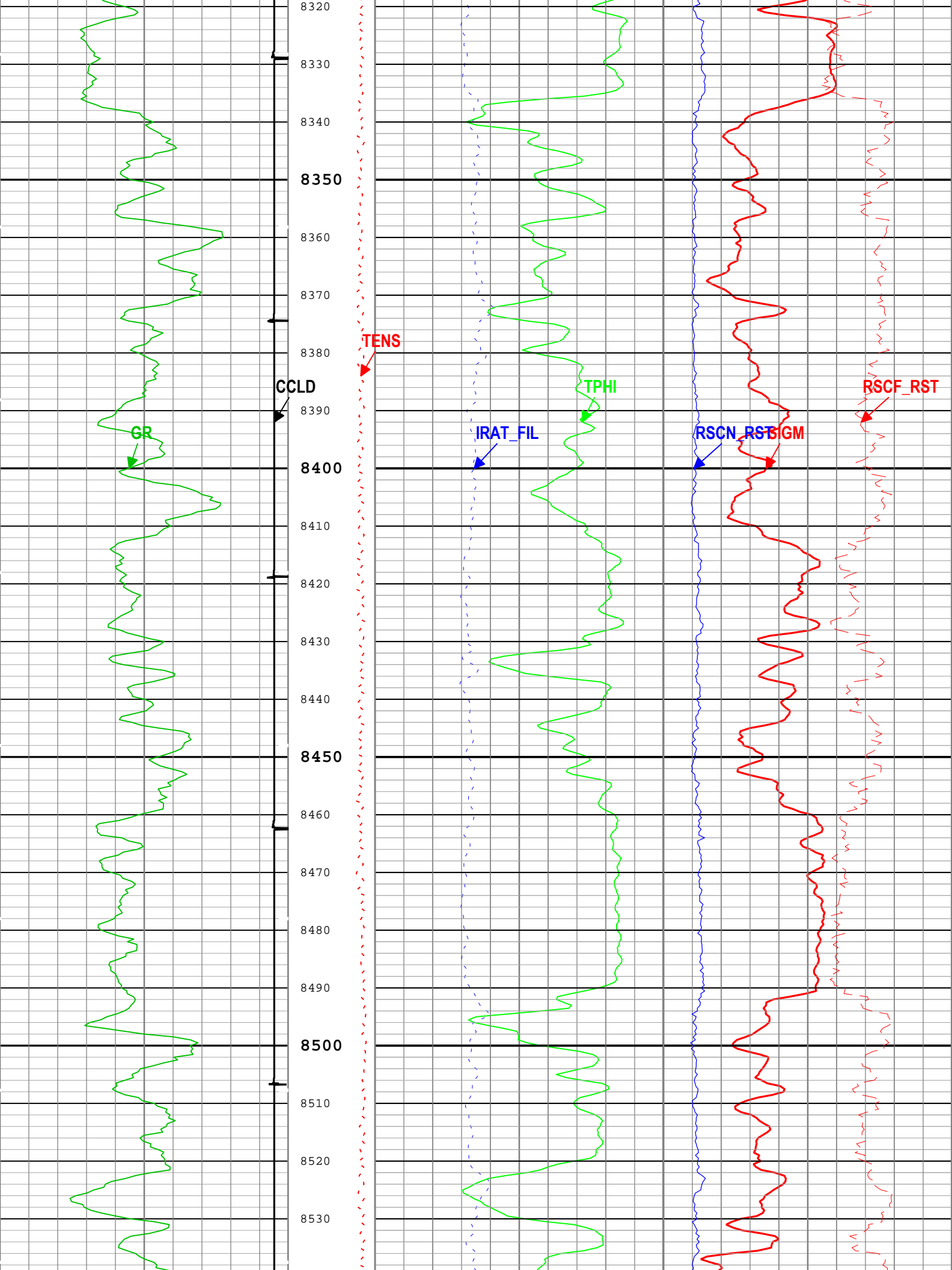


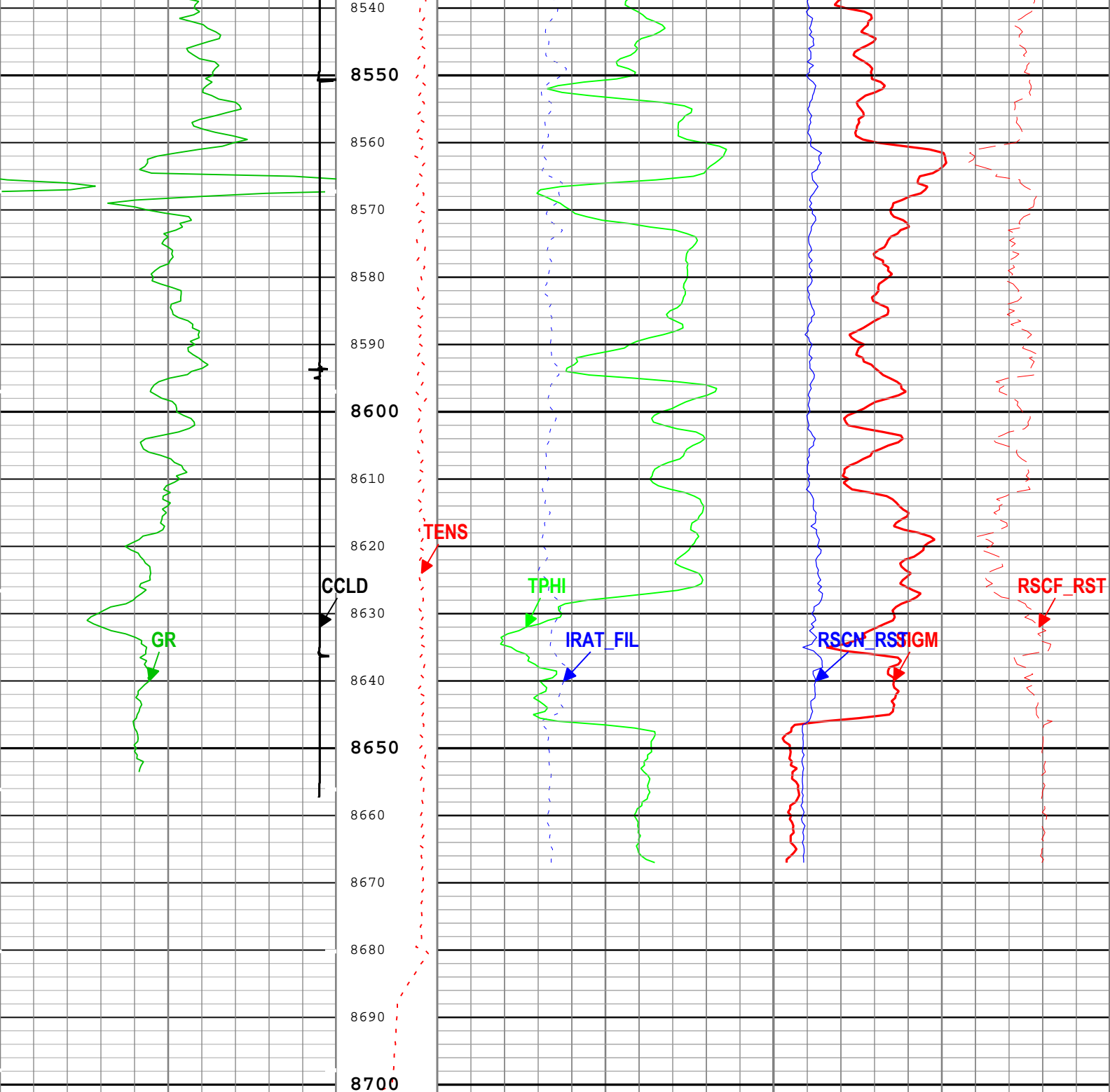












Gamma Ray (GR) PSTP-A		Cable Tension (TENS)	Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C	
0	gAPI 150		60	cu 0
CCL Discriminated Amplitude (CCLD) PSTP-A		0 lbf 1500	Inelastic Ratio Filtered (IRAT_FIL) RST-C	
-19	V 1		0.75	0
Thermal Decay Porosity (TPHI) RST-C			Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C	
0.6	ft3/ft3 0		0	100
			Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C	
			45	0

ICV - Integrated Cement Volume every 100.00 (ft3)

TIME\_1900 - Elapsed time since midnight, 30 December 1899 every 60.00 (s)

ICV - Integrated Cement Volume every 10.00 (ft3)

TIME\_1900 - Time Marked every 60.00 (s)



—IHV - Integrated Hole Volume every 10.00 (ft3)

Channel Processing Parameters	
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## Channel Processing Parameters

## One: Parameters

Parameter	Description	Tool	Value	Unit
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
BSAL	Borehole Salinity	Borehole	0	ppm
BSALOPT	Borehole Salinity Option	RST-C	Unknown	
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	SANDSTONE	

### Depth Zone Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	14.75	2300	2531
BS	8.75	2531	8701.5

All depth are actual.

## Tool Control Parameters

## One: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-A	12 dB	
RST_DLM	Depth Log Mode	RST-C	Sigma	

# One

## RST Repeat Pass

## Software Version

Acquisition System	Version
Maxwell 2018	8.0.95333.3100
Application Patch	Wireline_NPD-PNX-2018CMZ_8.0.97346

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[11]:Up	Up	8425.08 ft	8763.23 ft	10-May-2018 00:45:27	10-May-2018 00:57:15	ON	8.72 ft	Yes

All depths are referenced to toolstring zero

## Log

Company:Caerus Operating LLC

Well:Puckett 12C-26-697

One: Log[11]:Up:S005

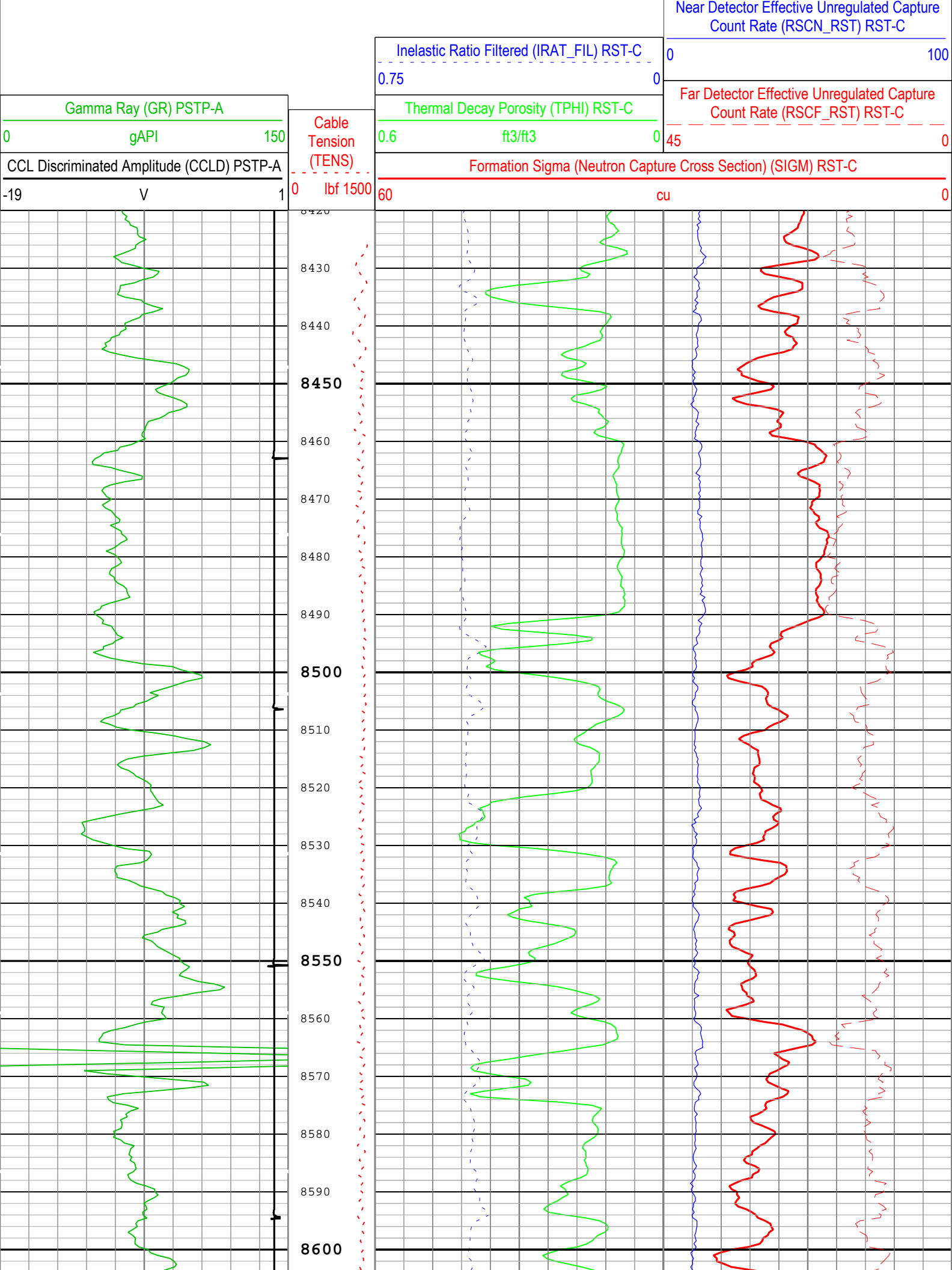
Description: RST SIGMA Answer   Format: Log ( RST SIGMA Answer\_1 )   Index Scale: 5 in per 100 ft   Index Unit: ft   Index Type: Measured Depth  
Creation Date: 10-May-2018 05:37:18

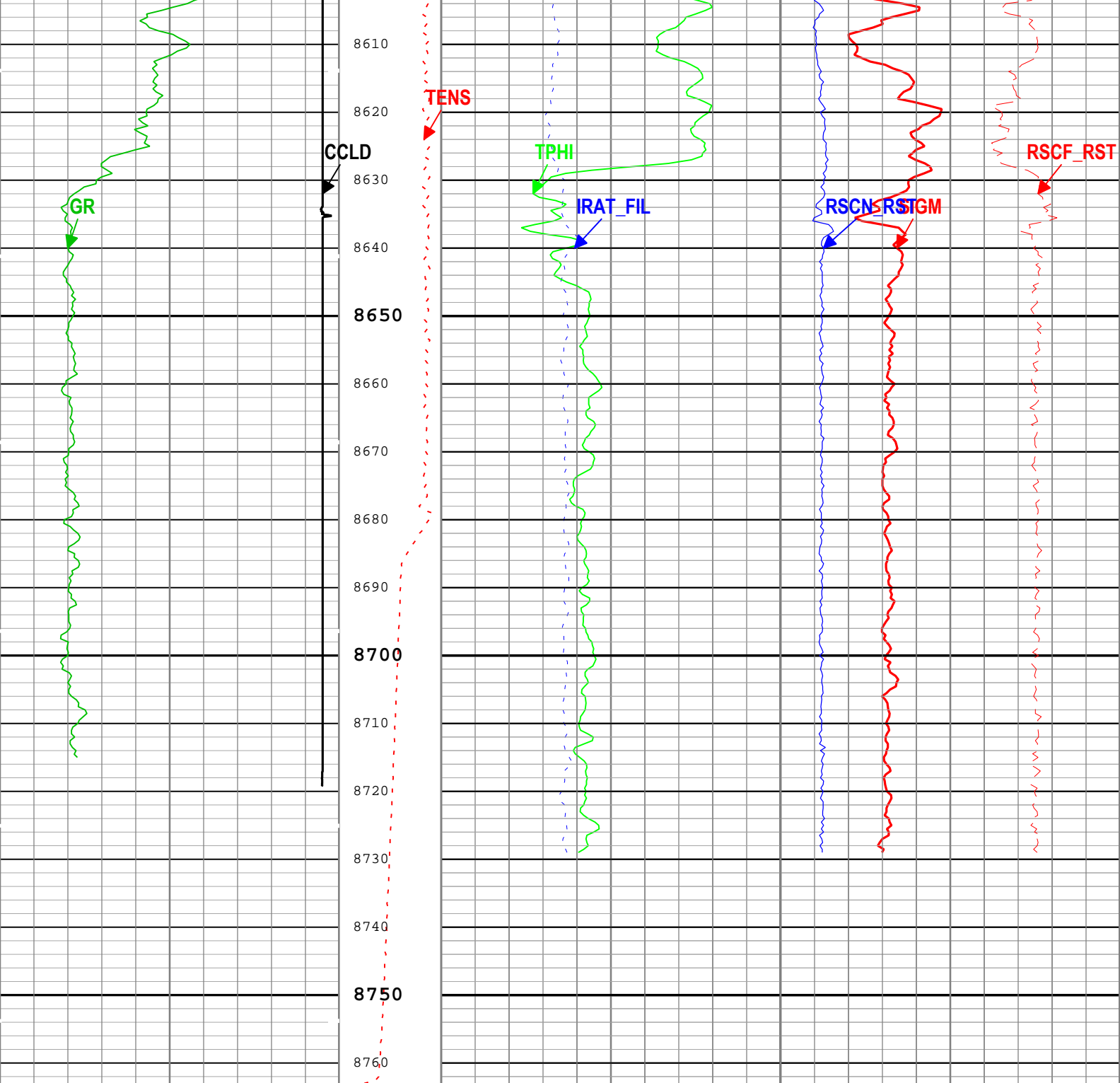
—IHV - Integrated Hole Volume every 100.00 (ft3)

TIME\_1900 - Time Marked every 60.00 (s)

TIME\_1900 - Elapsed time since midnight, 30 December 1899 every 60.00 (s)

— ICV - Integrated Cement Volume every 100.00 (ft3)





Gamma Ray (GR) PSTP-A		Cable Tension (TENS)		Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C	
0	gAPI	150	0	60	cu
CCL Discriminated Amplitude (CCLD) PSTP-A		0	1500	Inelastic Ratio Filtered (IRAT_FIL) RST-C	
-19	V	1		0.75	0
				Thermal Decay Porosity (TPHI) RST-C	
				0.6	ft3/ft3
				Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C	
				0	100
				Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C	
				45	0

—ICV - Integrated Cement Volume every 100.00 (ft3)

—TIME\_1900 - Elapsed time since midnight, 30 December 1899 every 60.00 (s)

—ICV - Integrated Cement Volume every 10.00 (ft3)

TIME\_1900 - Time Marked every 60.00 (s)

—IHV - Integrated Hole Volume every 100.00 (ft3)

Channel Processing Parameters				
One: Parameters				
Parameter	Description	Tool	Value	Unit
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	8.75	in
BSAL	Borehole Salinity	Borehole	0	ppm
BSALOPT	Borehole Salinity Option	RST-C	Unknown	
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	SANDSTONE	

Tool Control Parameters				
One: Parameters				
Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-A	12 dB	
RST_DLM	Depth Log Mode	RST-C	Sigma	

Company:

Caerus Operating LLC

Well:

Puckett 12C-26-697

Field:

Grand Valley

County:

Garfield

State:

Colorado

Schlumberger

Cement Bond Log

RST Sigma Log

Gamma Ray - Collar Locator Log