

Company: Caerus Operating LLC

Well: Puckett 23D-23 697

Field: Grand Valley

County: Garfield State: Colorado

County: Garfield
Field: Grand Valley
Location: Lat. 39.30' 07.76" N Long. 108.11' 18.38" W
Well: Puckett 23D-23 697
Company: Caerus Operating LLC

Cement Bond Log
RST Sigma Log
Gamma Ray CCL Log

Location:		Lat. 39.30' 07.76" N Long. 108.11' 18.38" W	Elev.:	K.B.	8462.00 ft
Permanent Datum:				G.L.	8432.00 ft
Log Measured From:		Ground Level			
Drilling Measured From:		Kelly Bushing	30.00 ft		above Perm.Datum
API Serial No.	Section:	Township:	Range:		
5045233870000	23	6S	97W		

Logging Date 19-Dec-2017

Run Number one

Depth Driller 9170.00 ft

Schlumberger Depth 9170.00 ft

Bottom Log Interval 9102.00 ft

Top Log Interval 2500.00 ft

Casing Fluid Type Water

Salinity

Density 8.6 lbm/gal

Fluid Level 8.00 ft

BIT/CASING/TUBING STRING

Bit Size 8.75 in

From 2530.00 ft

To 9170.00 ft

Casing/Tubing Size 4.5 in

Weight 11.6 lbm/ft

Grade P110

From 30.00 ft

To 9159.20 ft

Max Recorded Temperatures 239.8 degF

Logger on Bottom 19-Dec-2017

Unit Number 3003

Recorded By John Emery

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.

Contents

- Header
- Disclaimer
- Contents
- Well Sketch
- Borehole Size/Casing/Tubing Record
- Remarks and Equipment Summary
- one Main Pass
 - Integration Summary
 - Software Version
 - Composite Summary
 - Log (SCMT_Amp_VDL)
 - Parameter Listing
- one Repeat Pass
 - Integration Summary
 - Software Version
 - Composite Summary
 - Log (SCMT_Amp_VDL)

- one Main Pass
 - Integration Summary
 - Software Version
 - Composite Summary
 - Log (RST SIGMA Answer)
 - Parameter Listing
- one Repeat Pass
 - Integration Summary
 - Software Version
 - Composite Summary
 - Log (RST SIGMA Answer)
 - Parameter Listing
- Tail

8.5 Parameter Listing

9. one Free Pipe Pass

9.1 Integration Summary

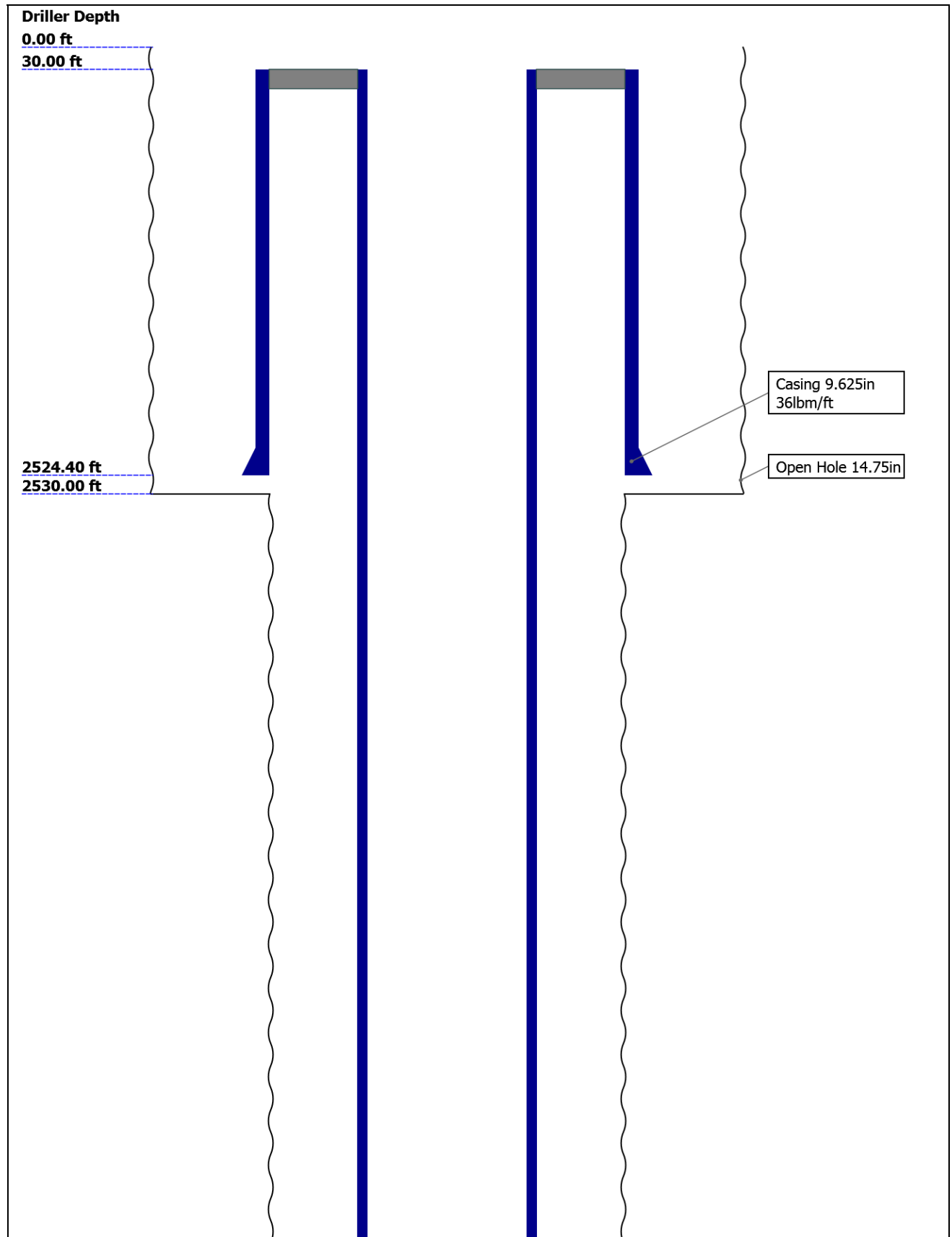
9.2 Software Version

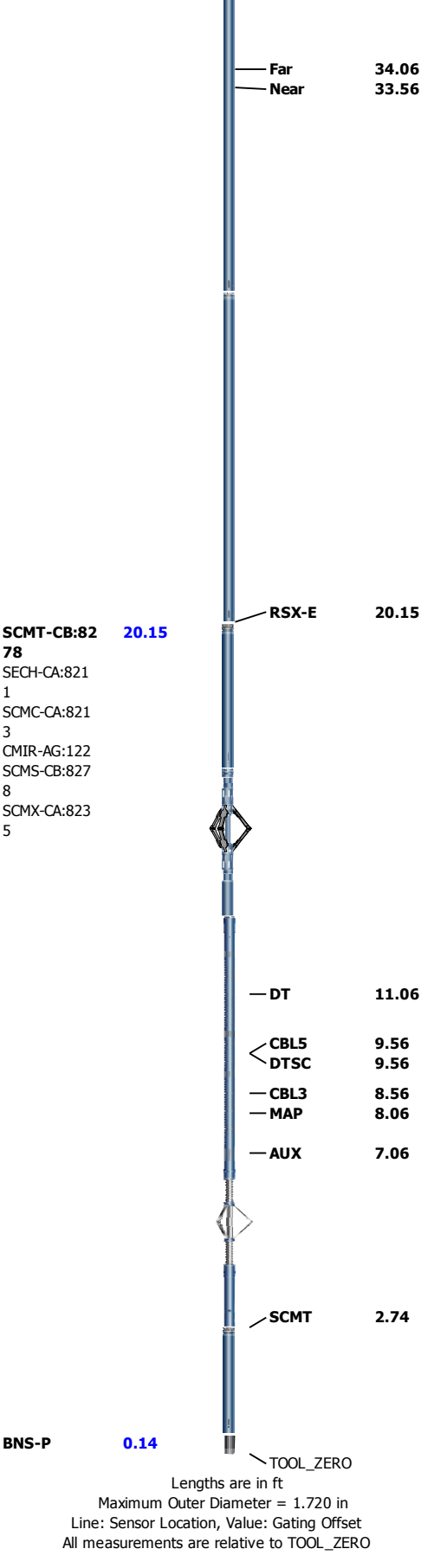
9.3 Composite Summary

9.4 Log (SCMT_Amp_VDL)

9.5 Parameter Listing

Well Sketch





one	
Main Pass	
Software Version	
Acquisition System	Version
Maxwell 2017 SP3	7.3.92069.3100

Pass Summary

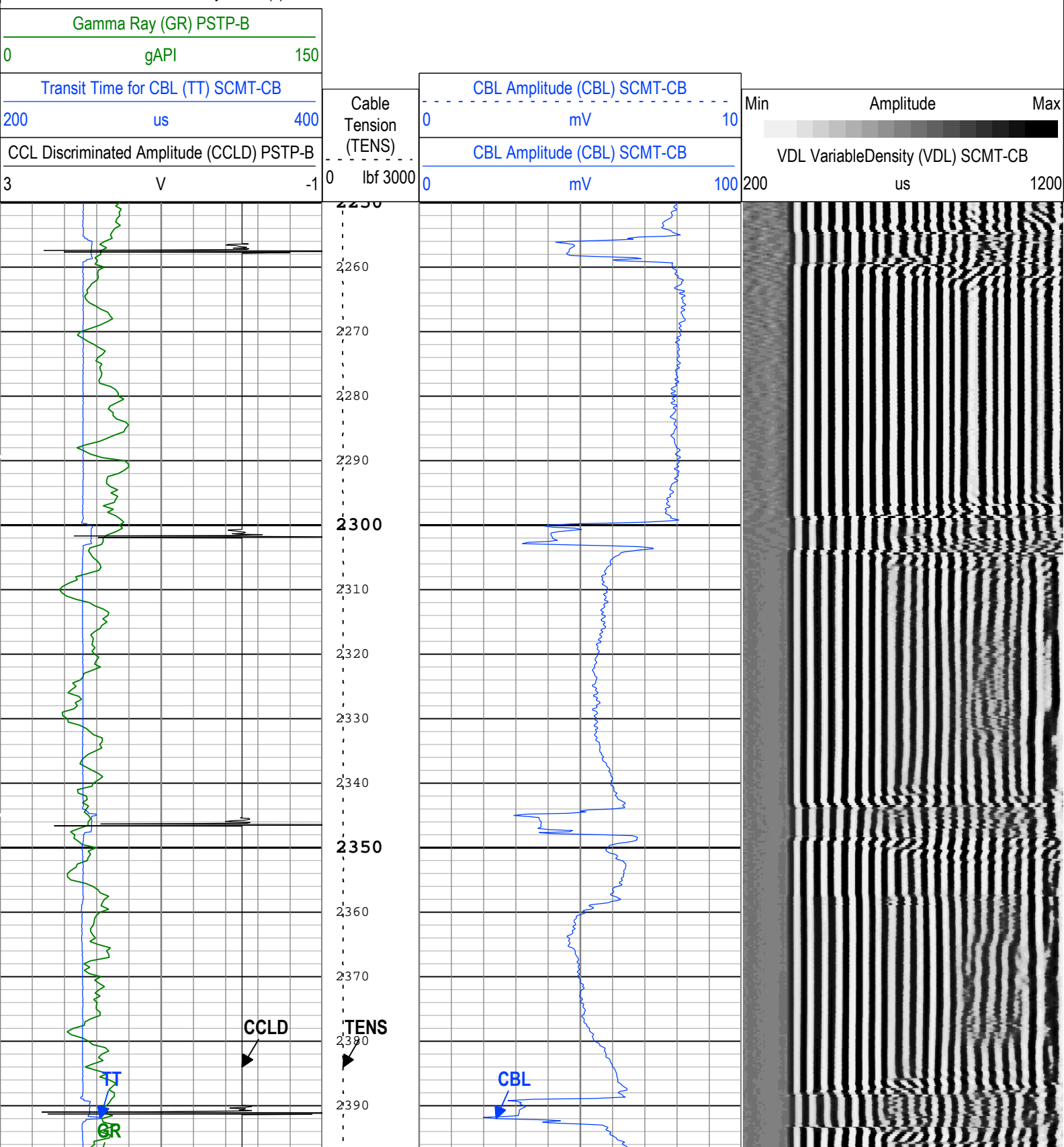
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
one	Log[3]:Up	Up	2163.38 ft	9112.88 ft	19-Dec-2017 1:06:59 PM	19-Dec-2017 3:44:16 PM	ON	0.00 ft	No

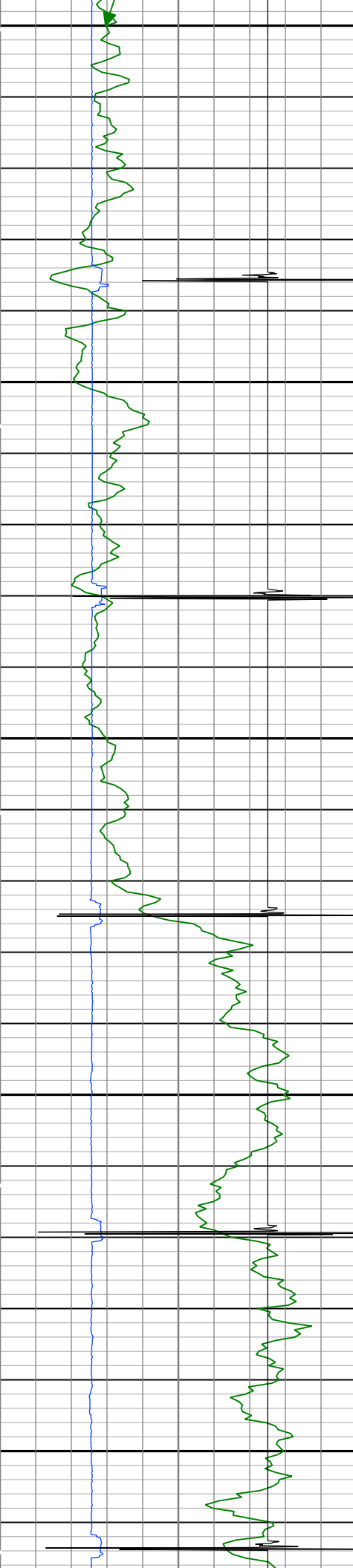
All depths are referenced to toolstring zero

Log	Company:Caerus Operating LLC	Well:Puckett 23D-23 697
		one: Log[3]:Up:S004

Description: SCMT Amplitudes and VDL Format: Log (SCMT_Amp_VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 07-Jan-2018 10:30:46

TIME_1900 - Time Marked every 60.00 (s)





2400

2410

2420

2430

2440

2450

2460

2470

2480

2490

2500

2510

2520

2530

2540

2550

2560

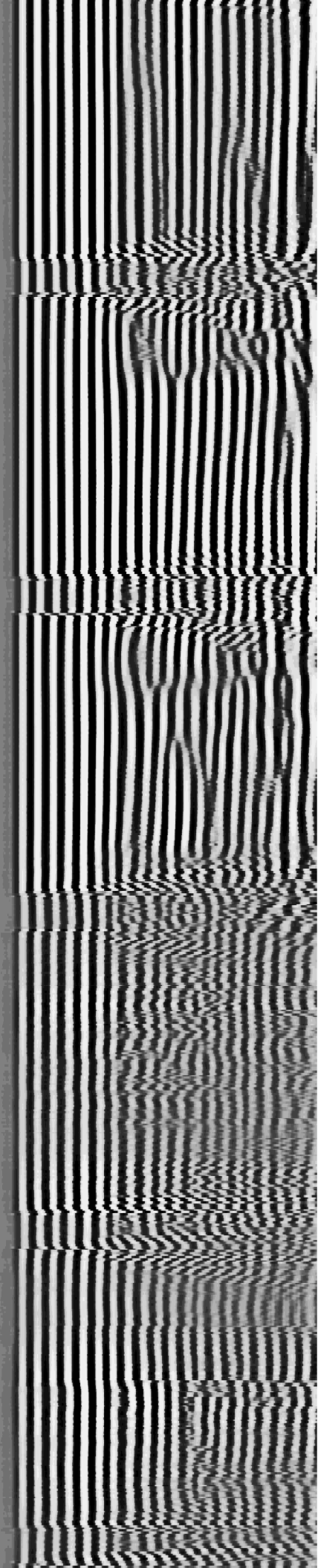
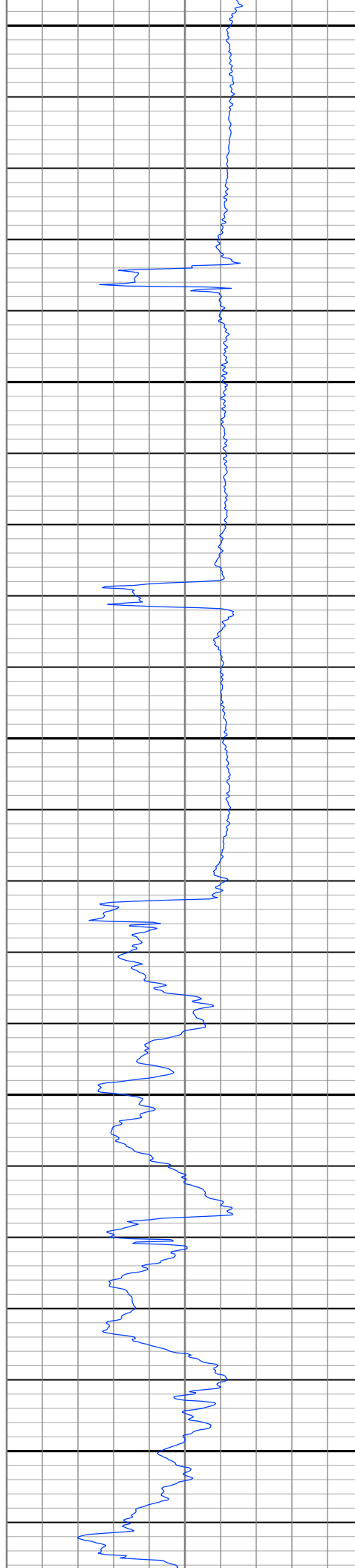
2570

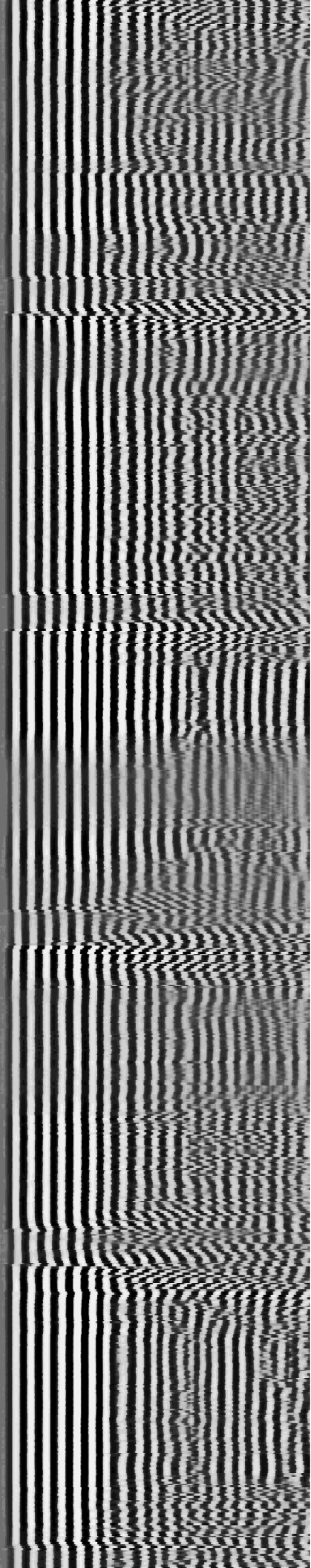
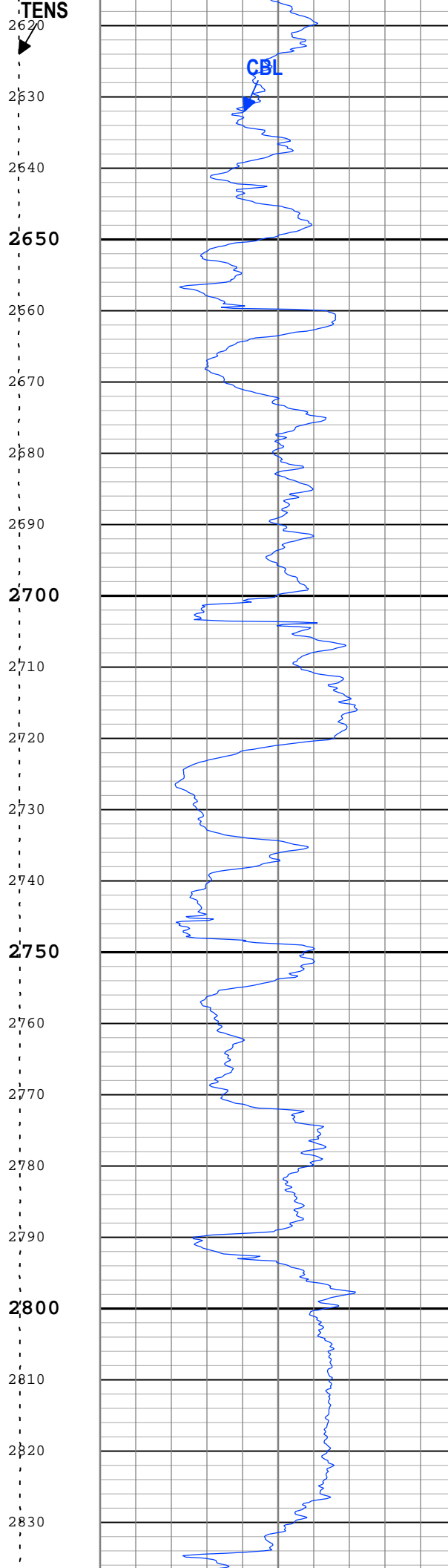
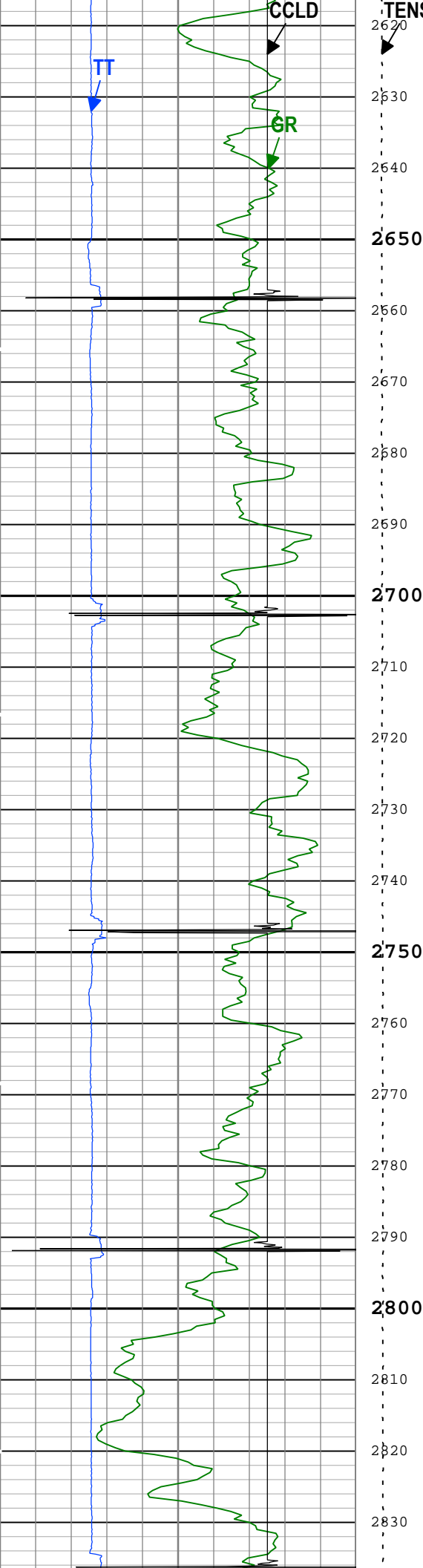
2580

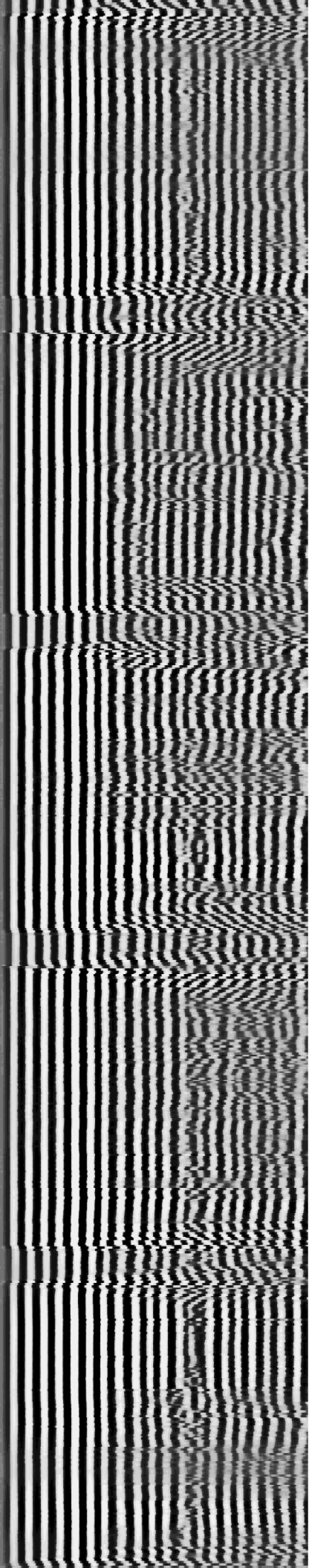
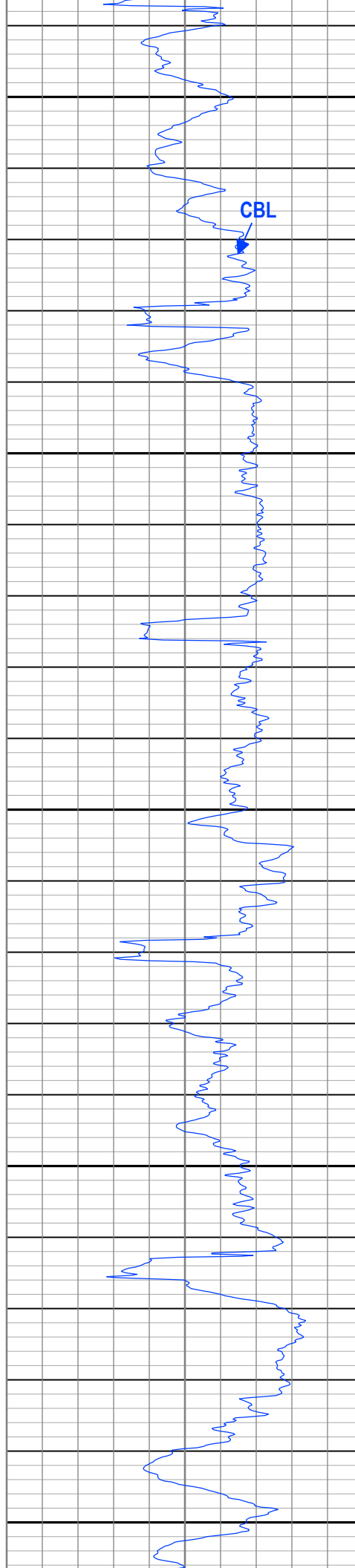
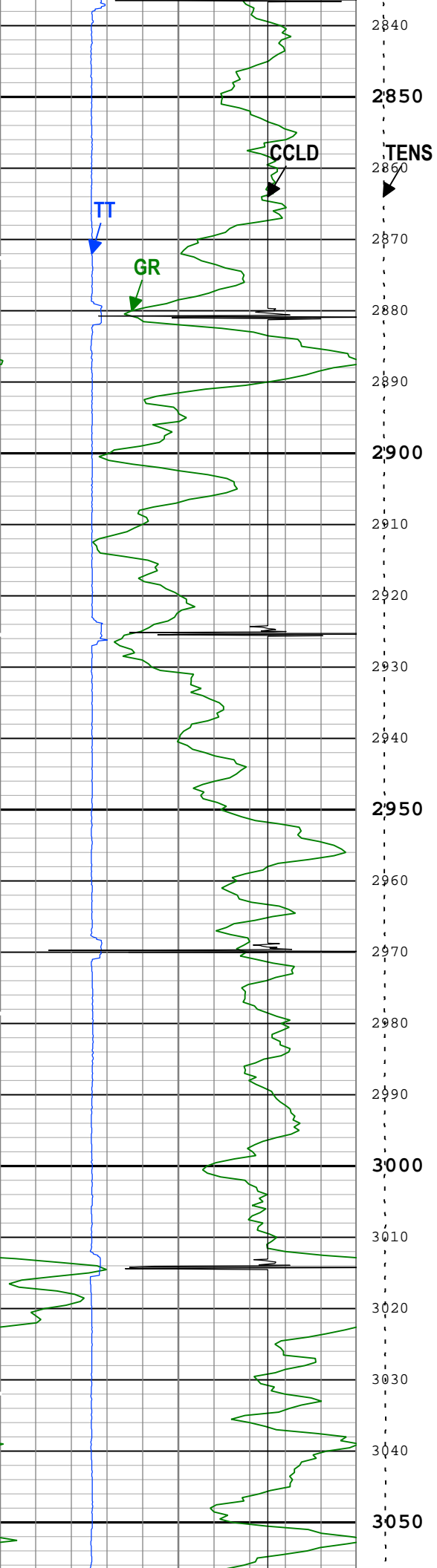
2590

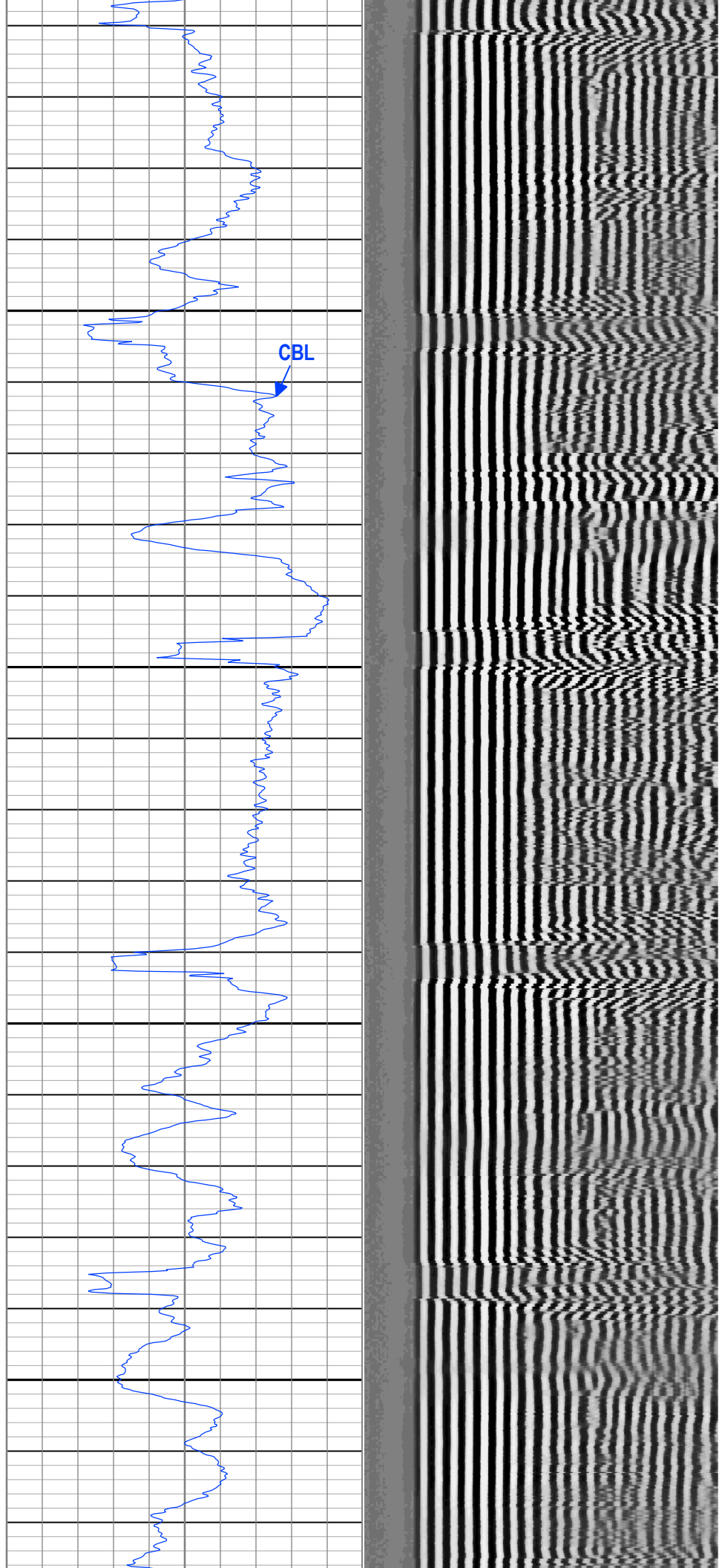
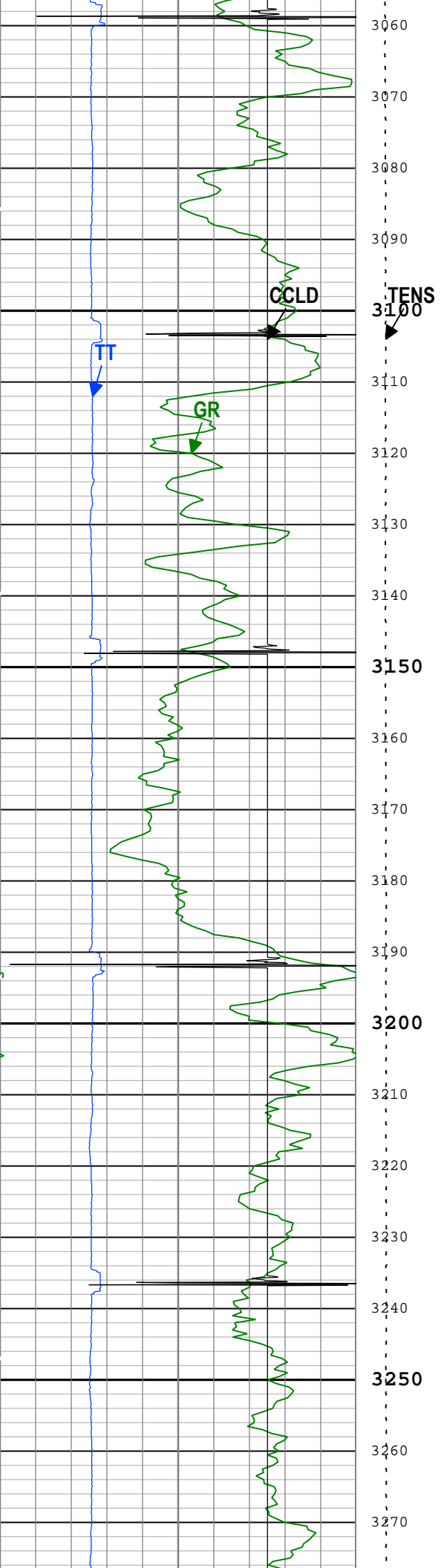
2600

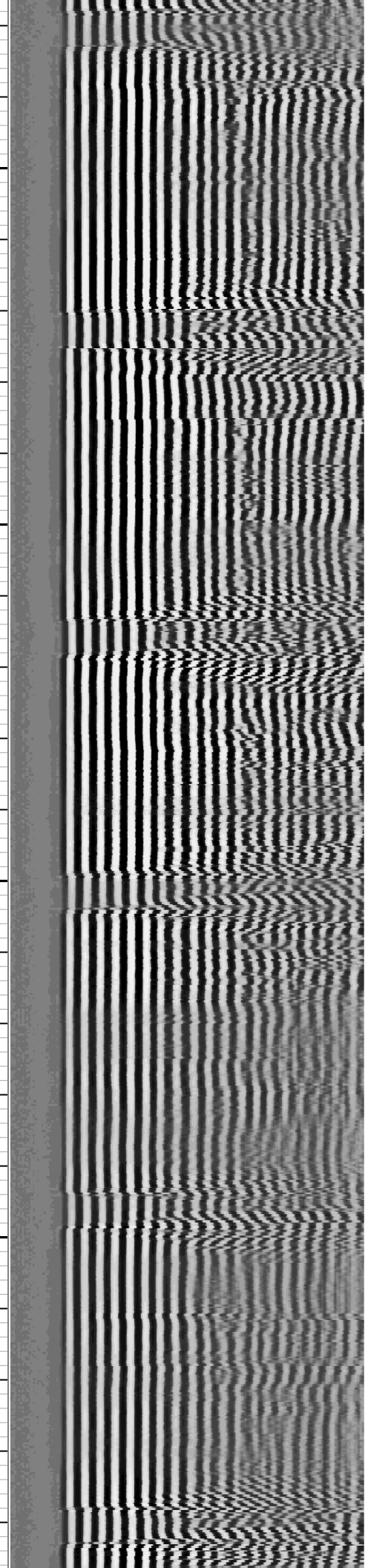
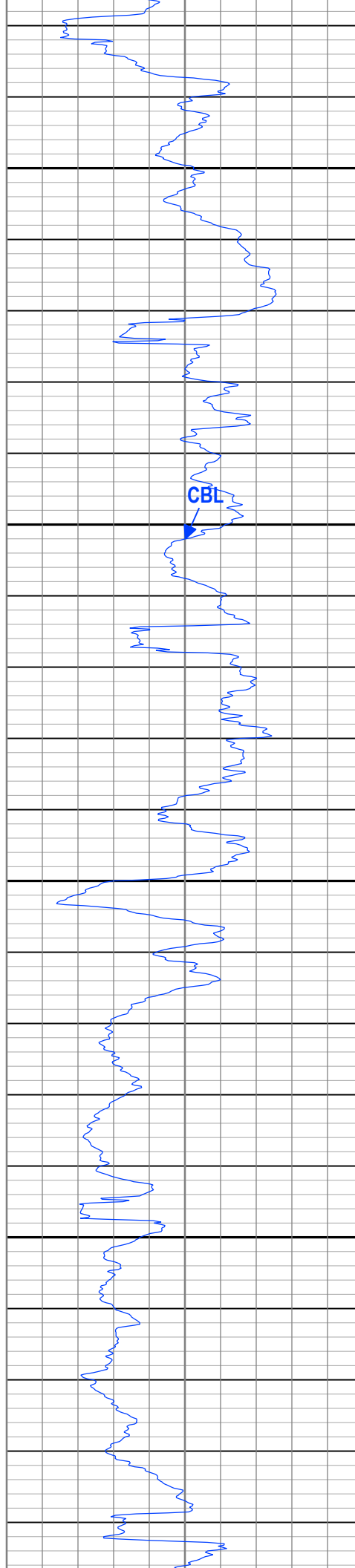
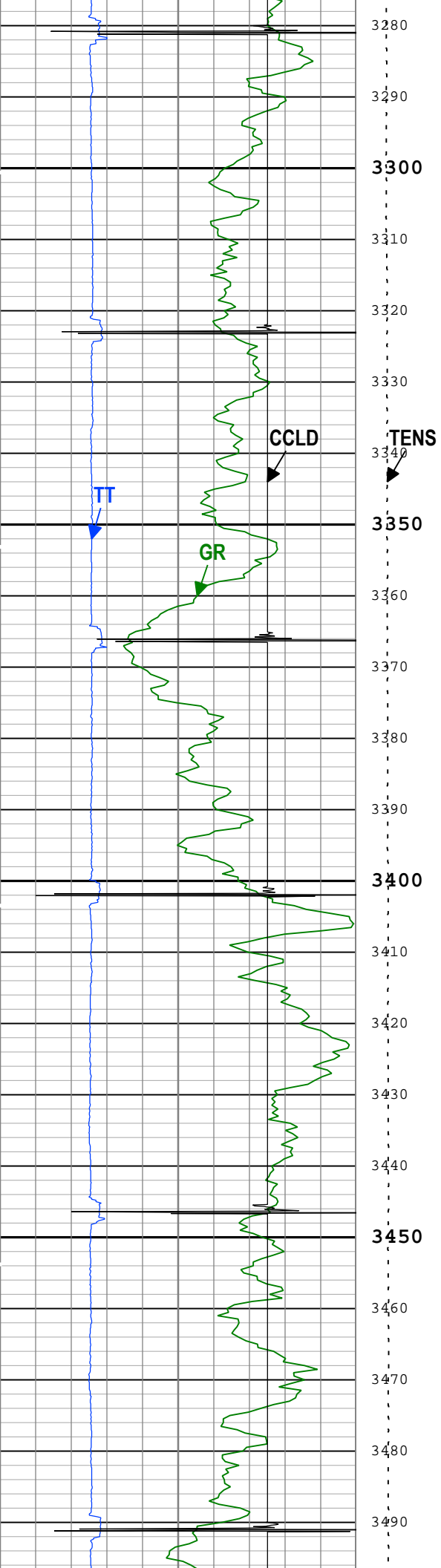
2610

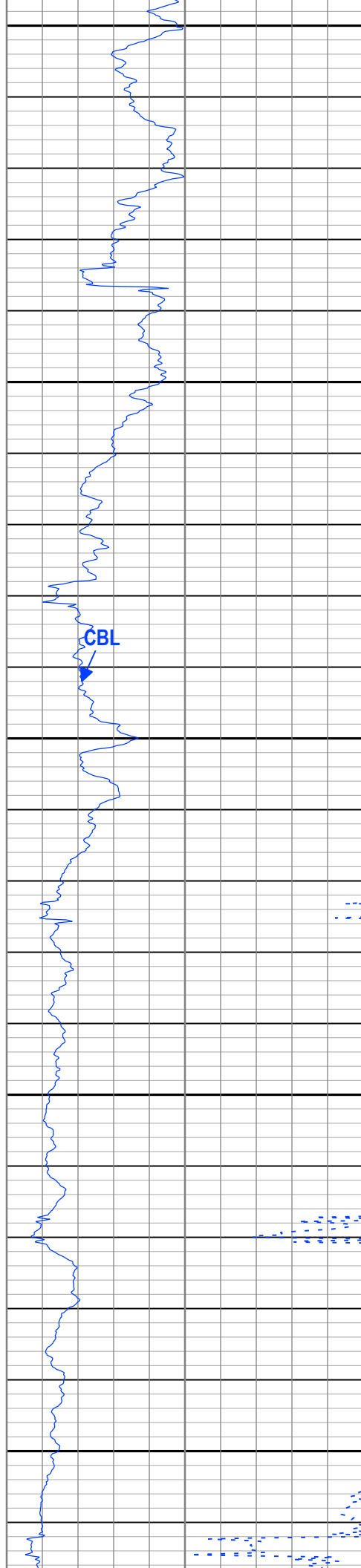
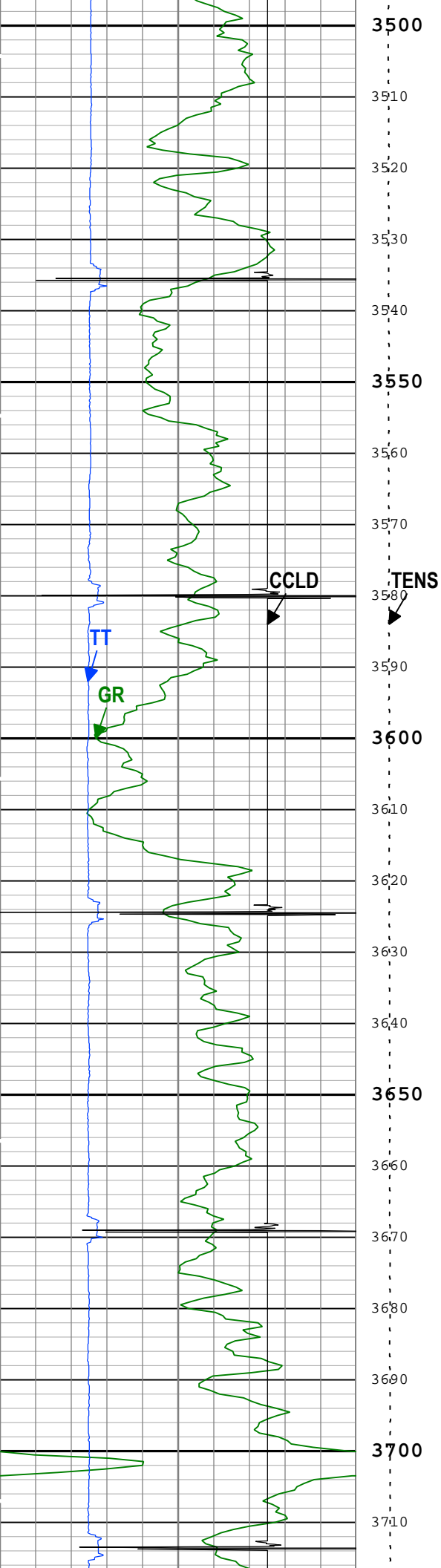


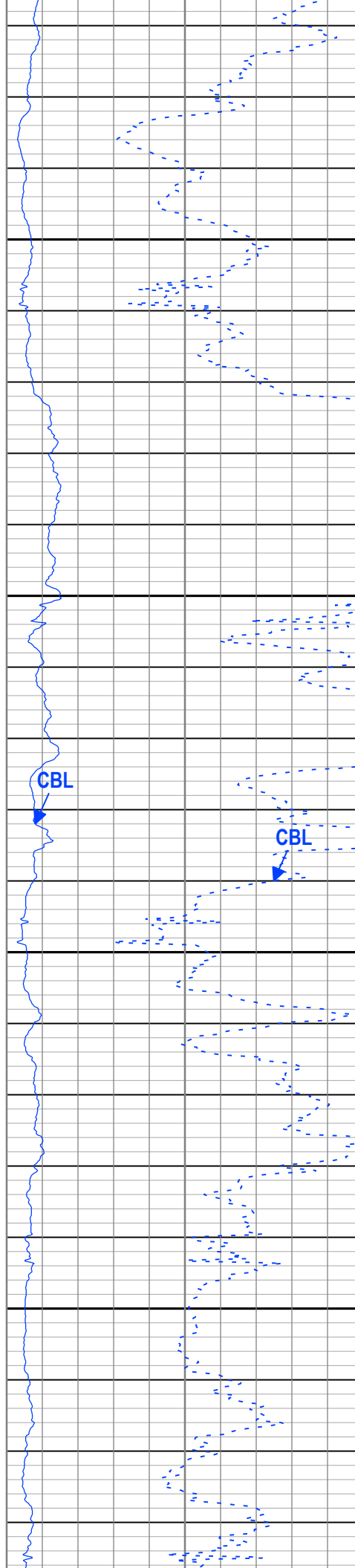
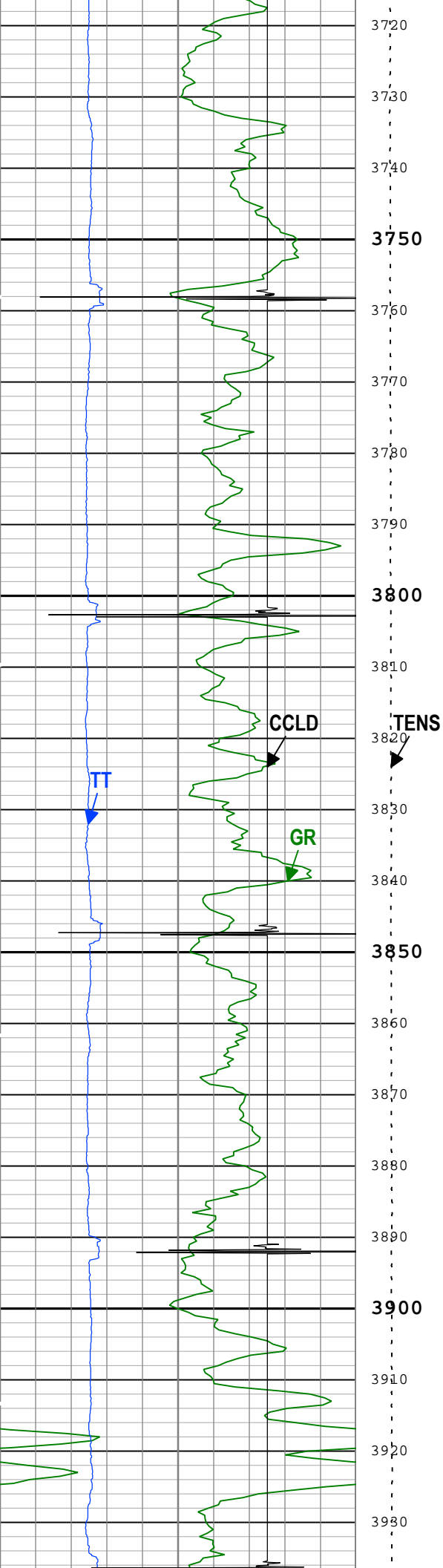


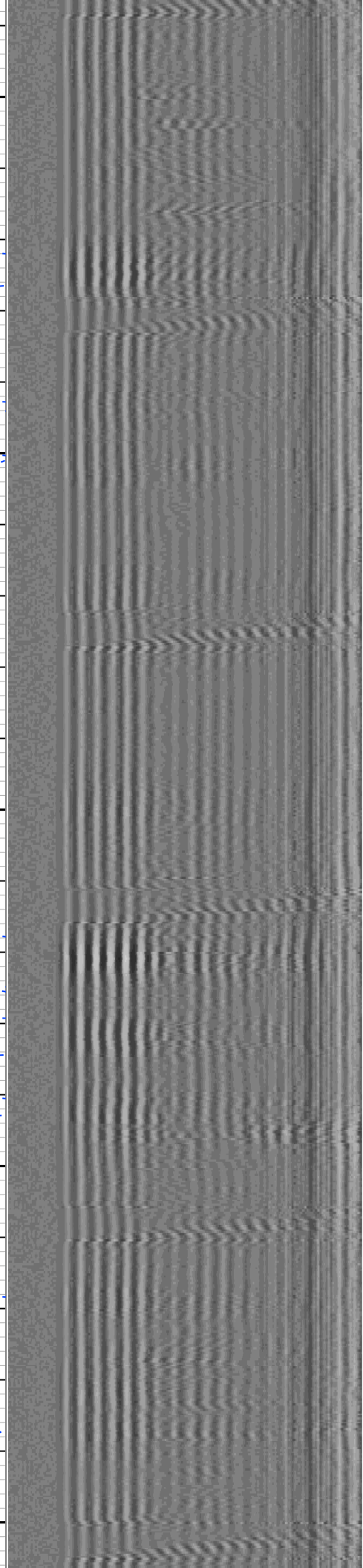
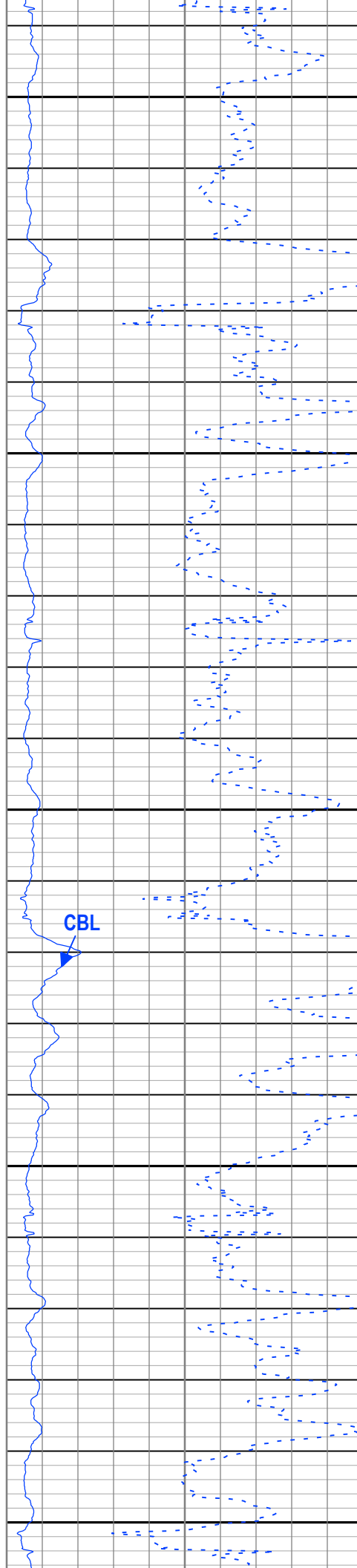
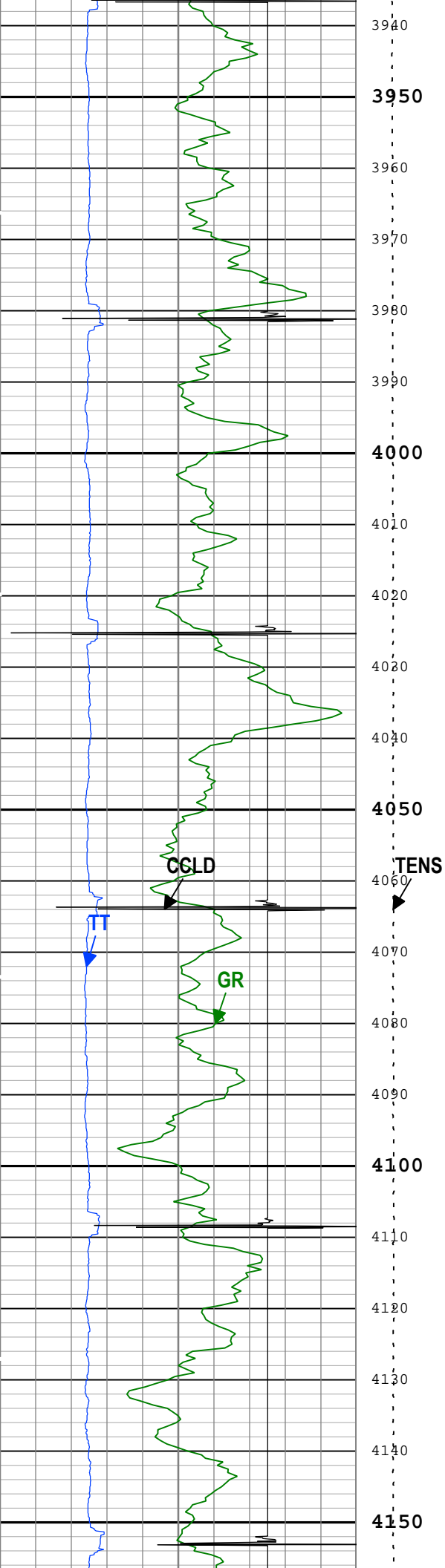


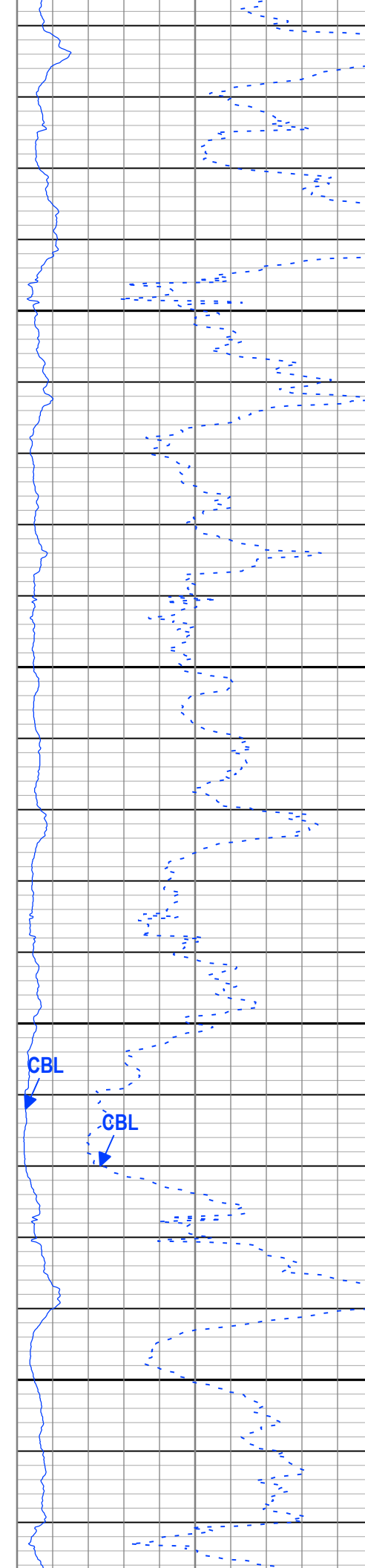
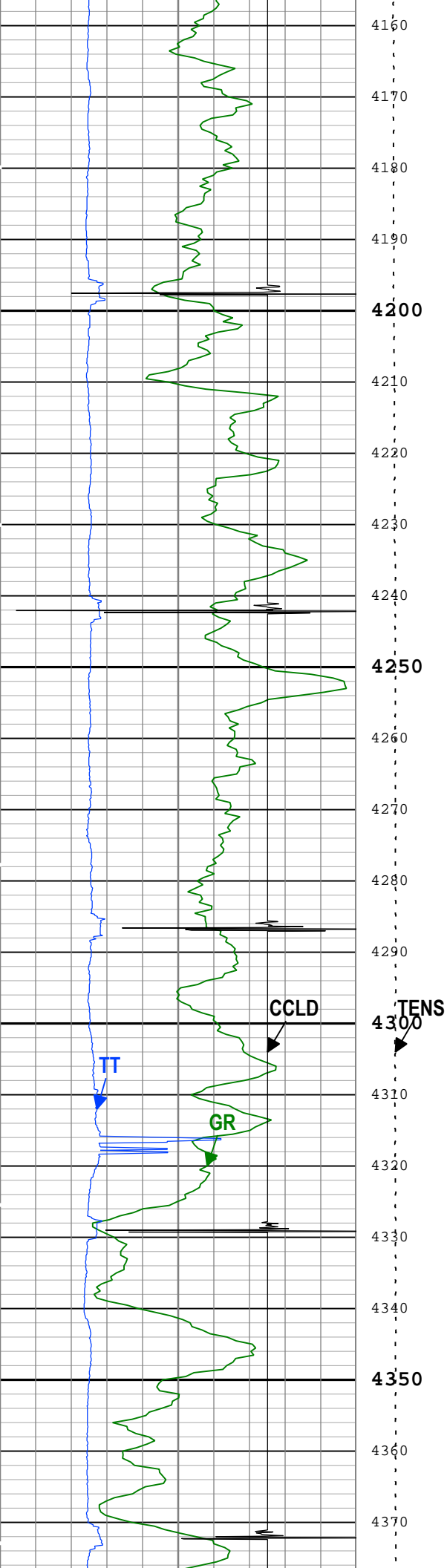


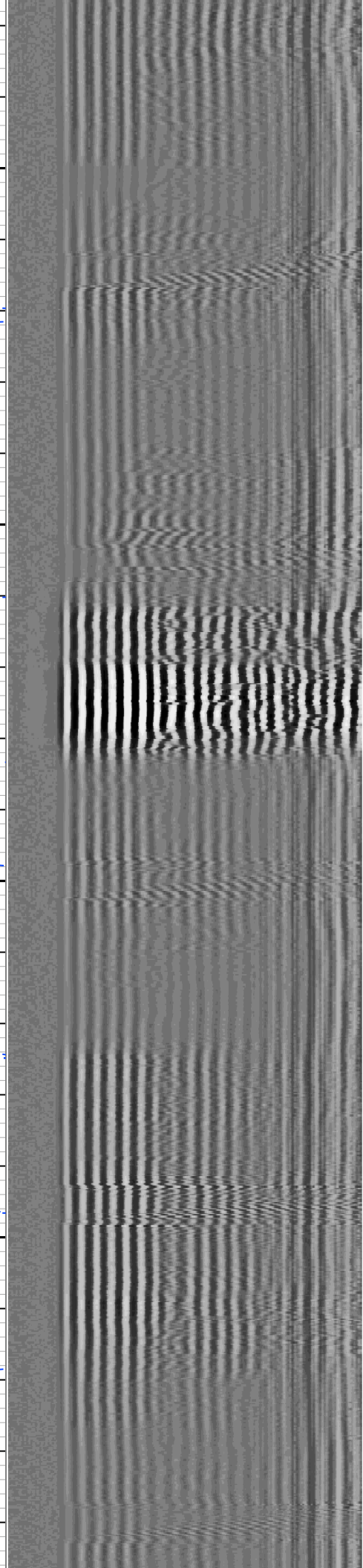
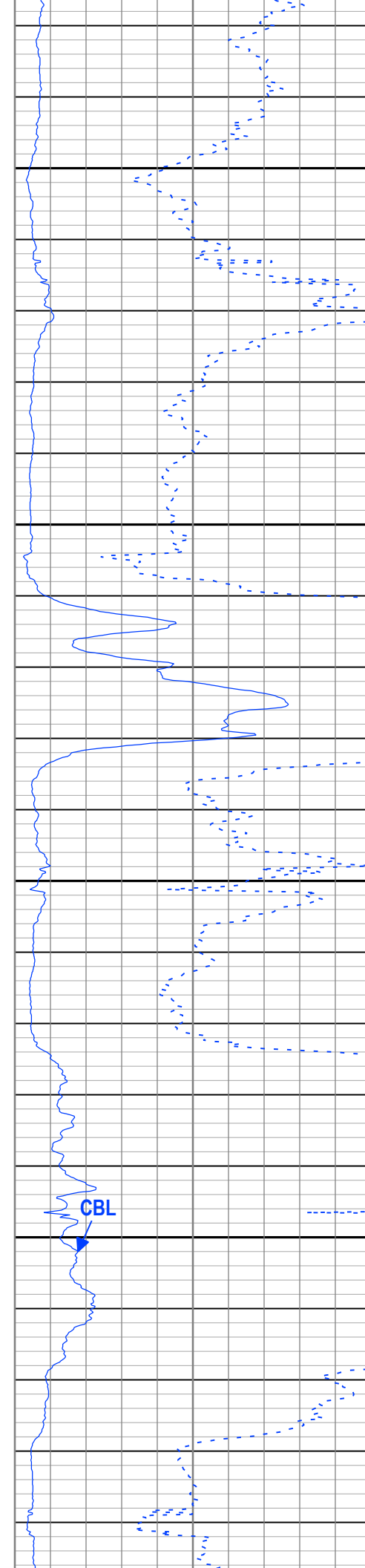
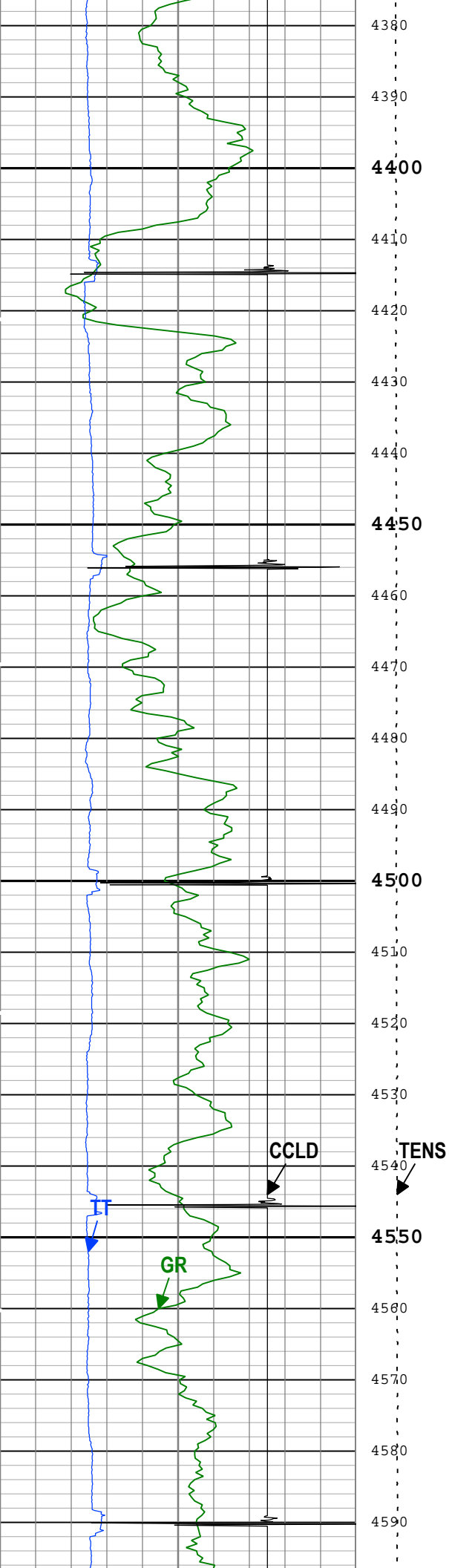


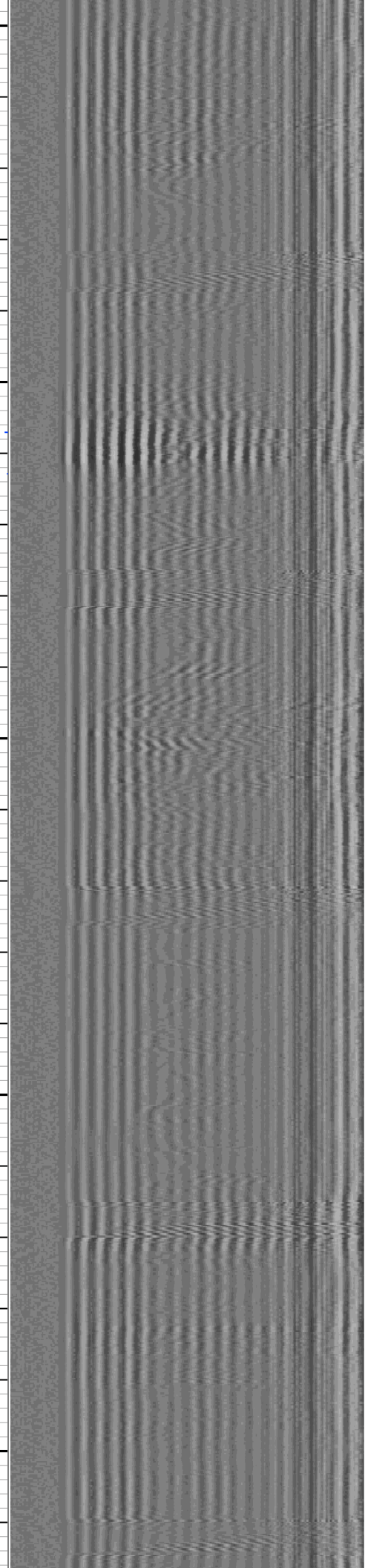
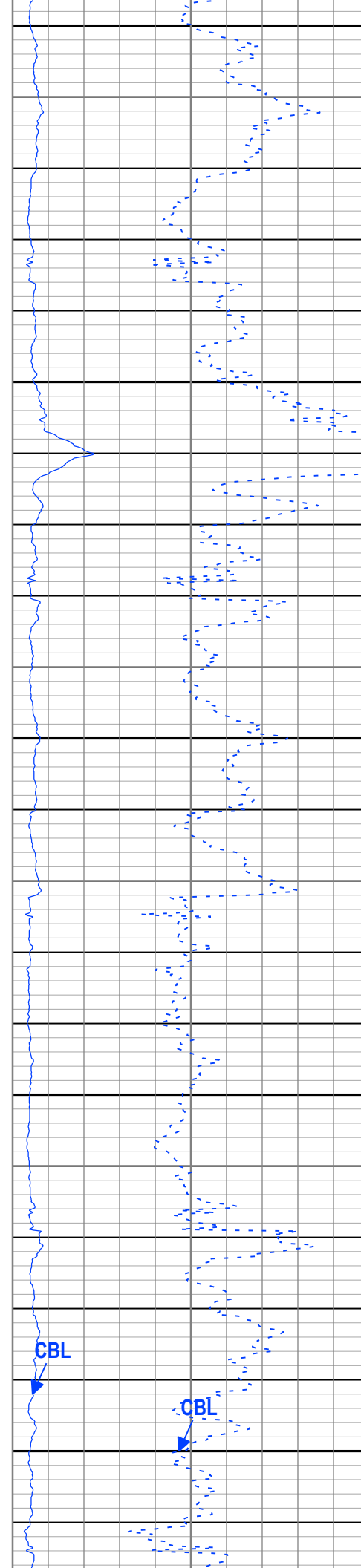
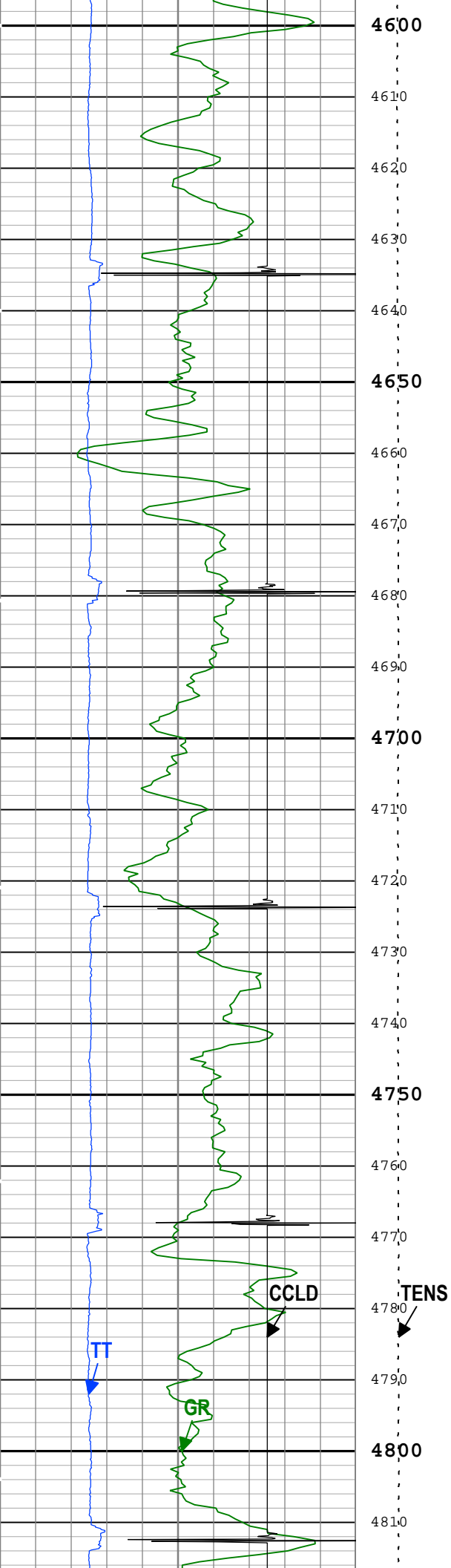


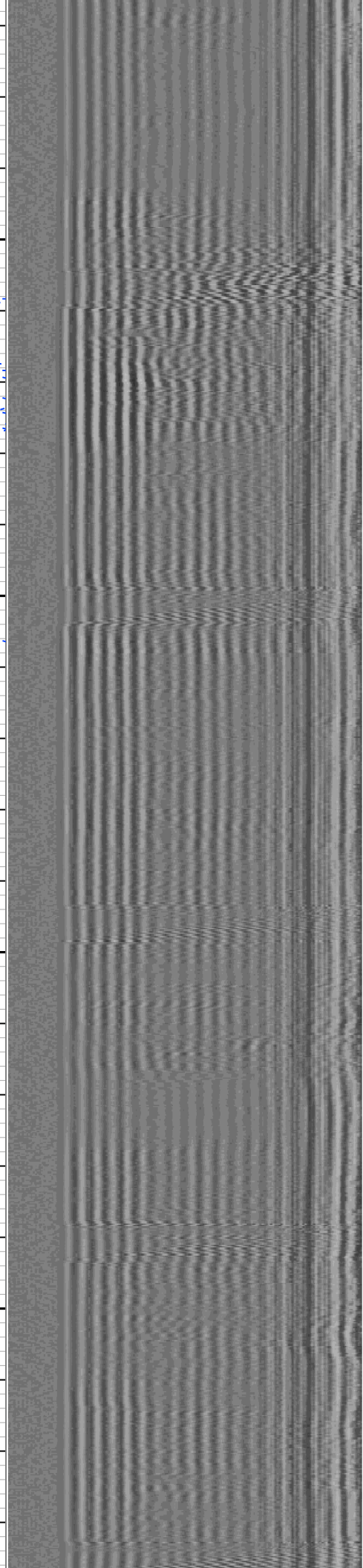
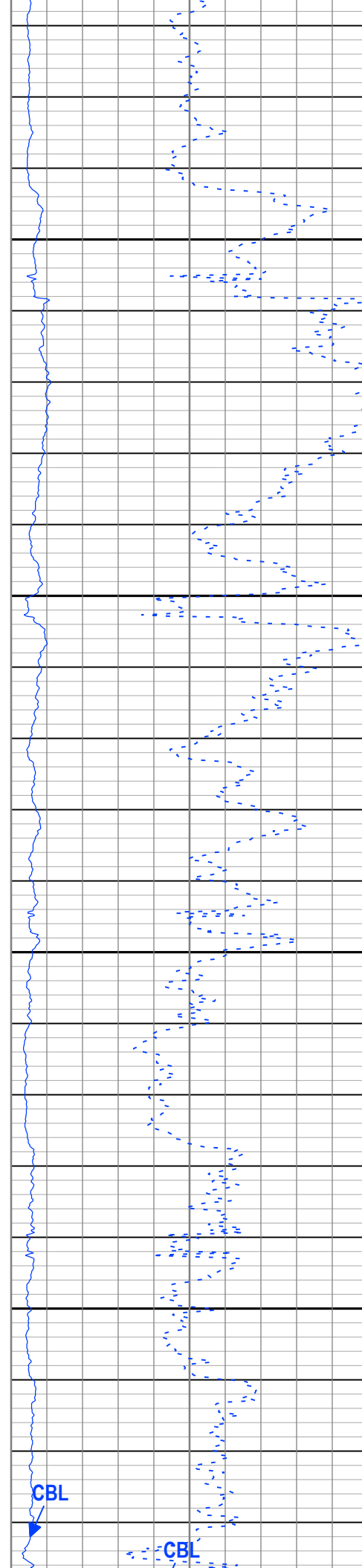
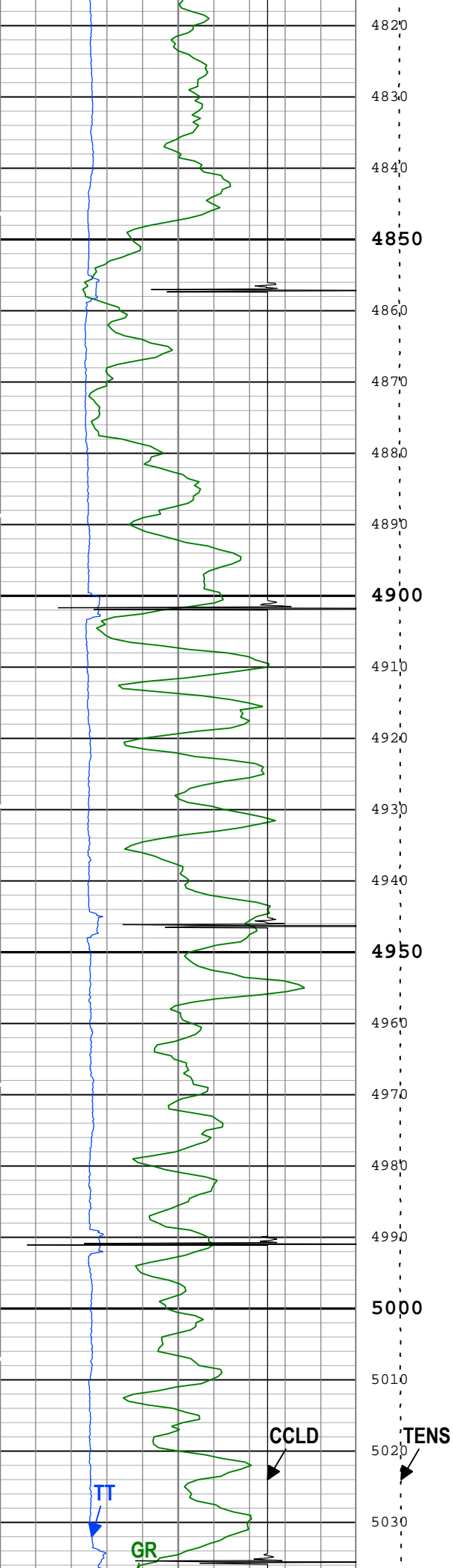


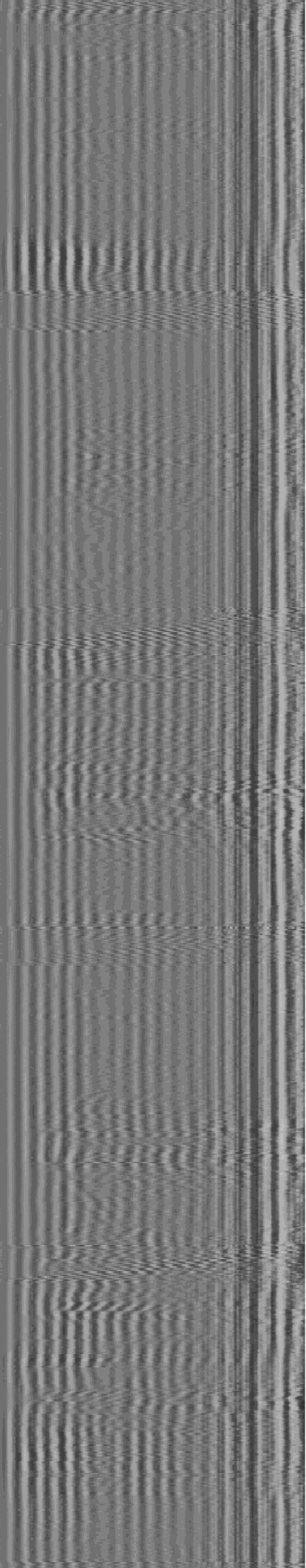
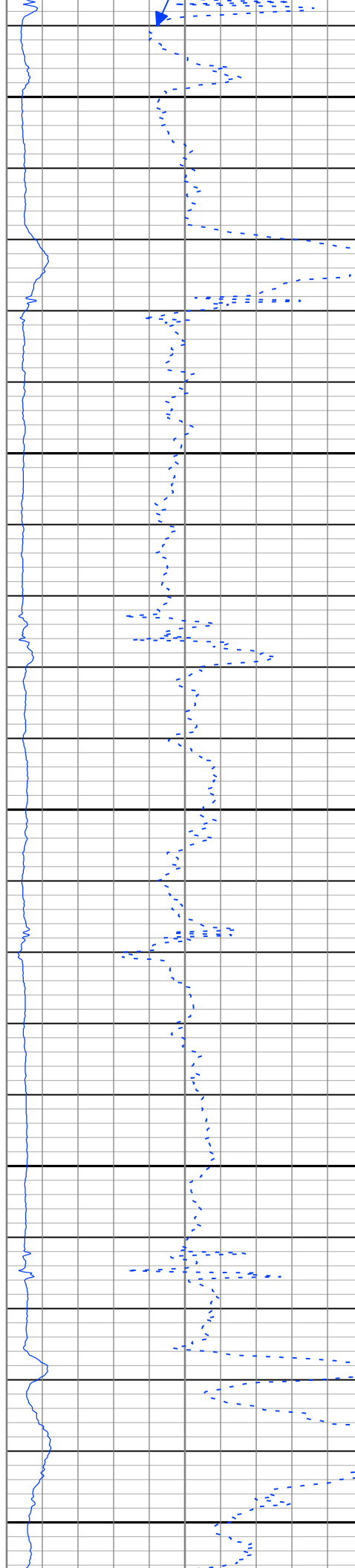
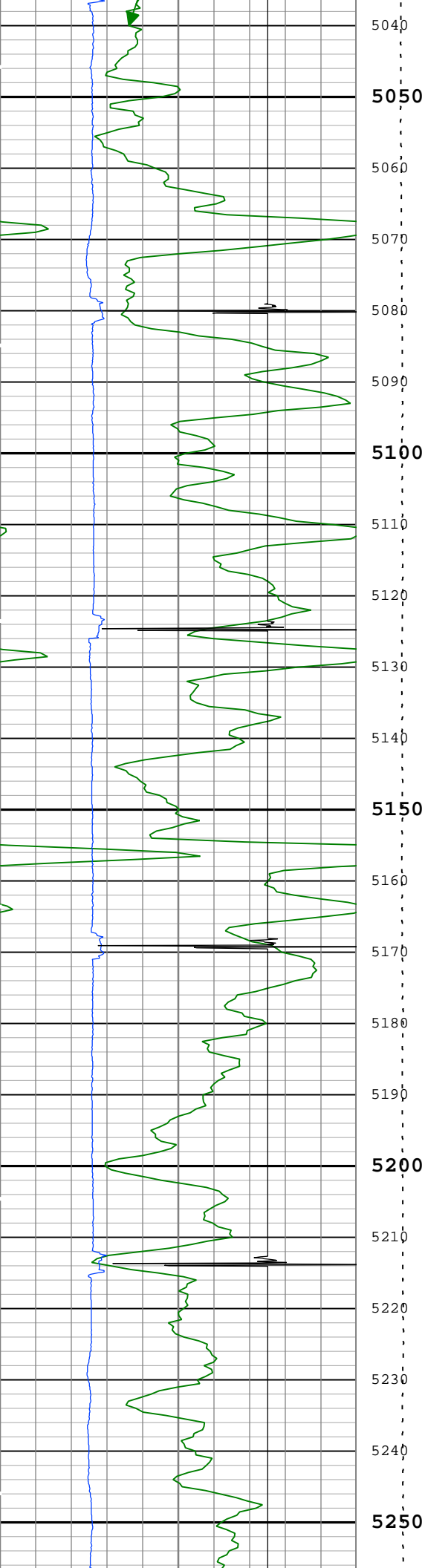


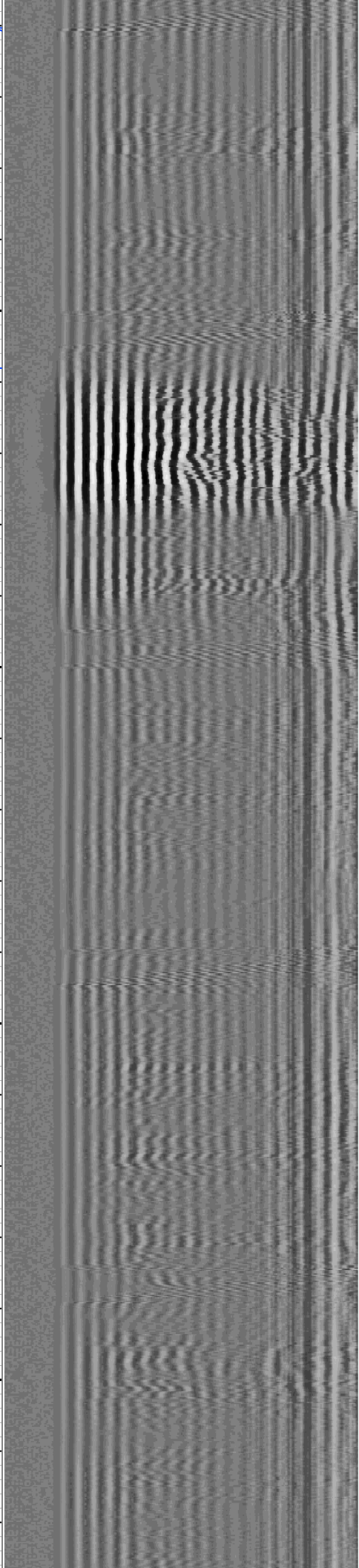
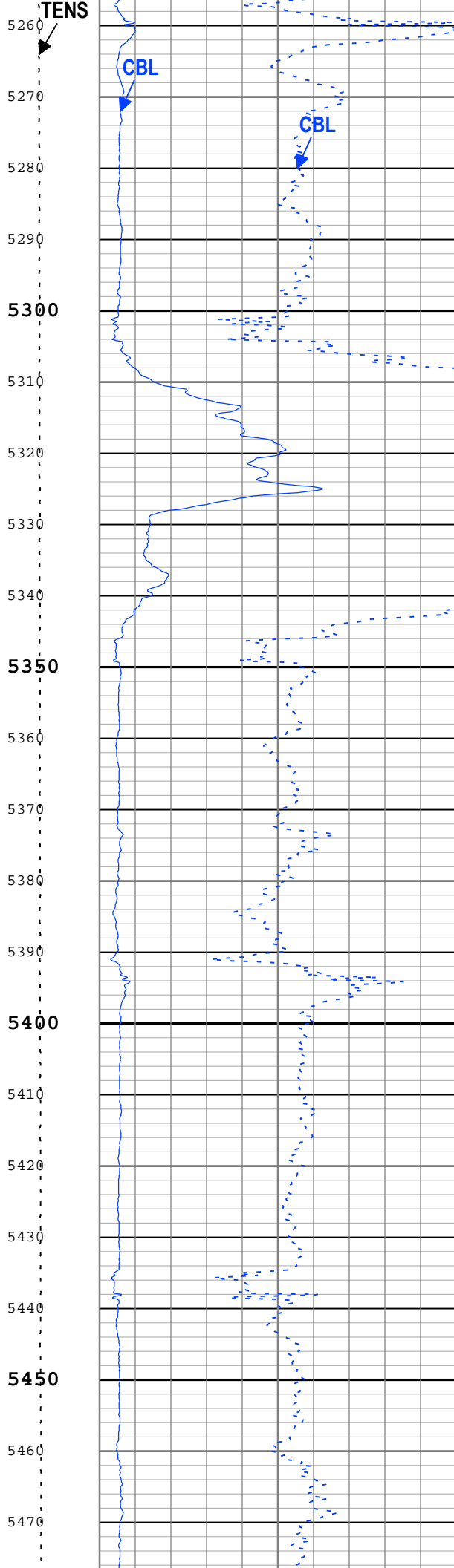
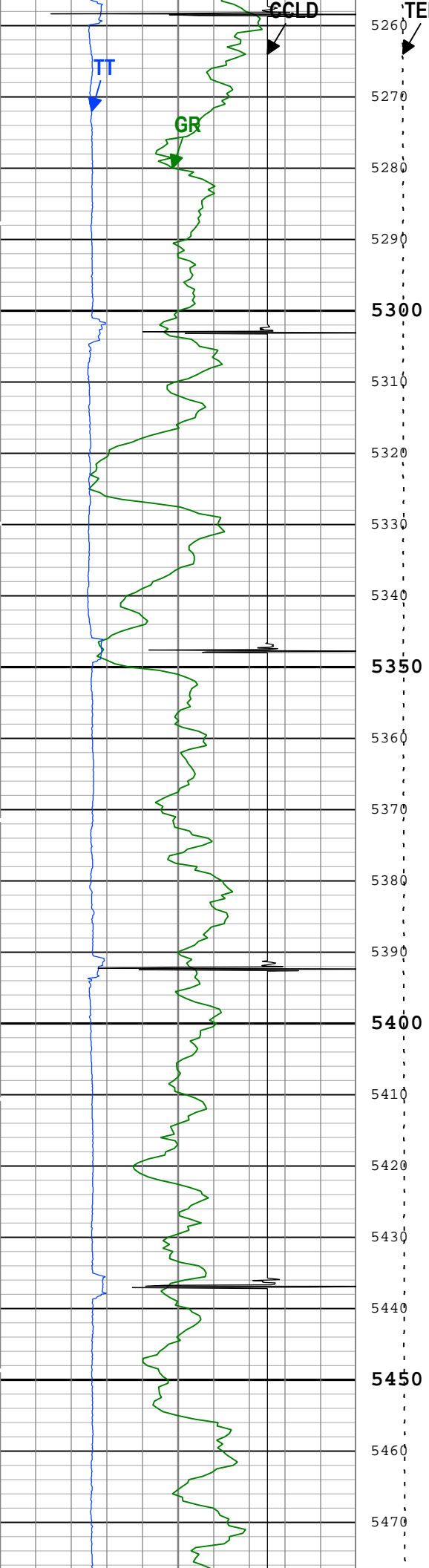


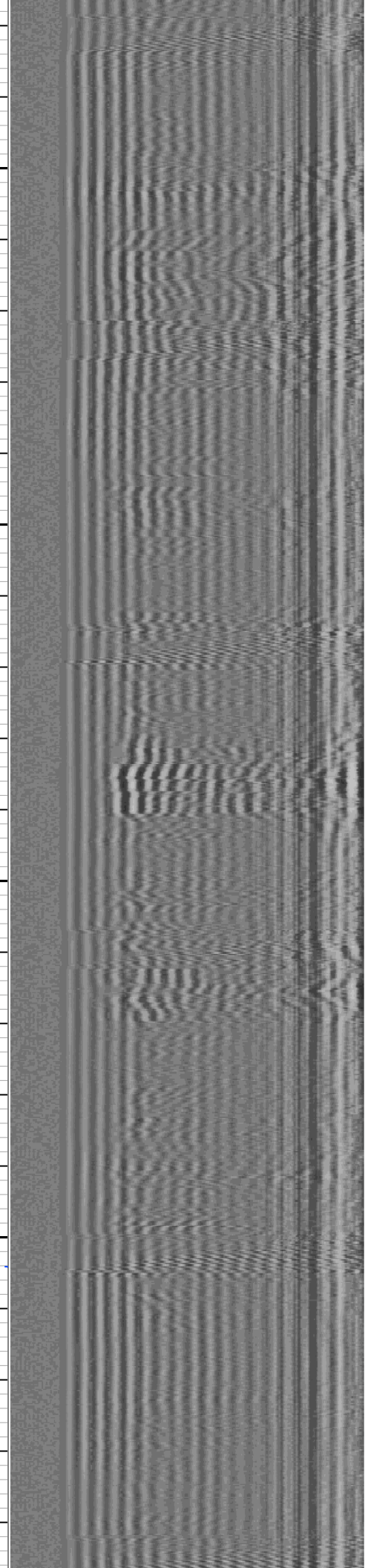
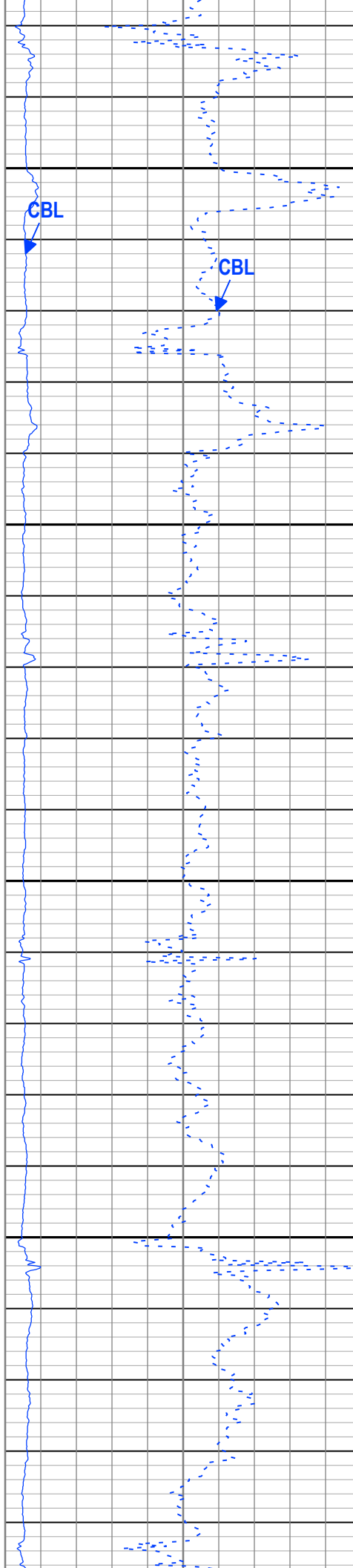
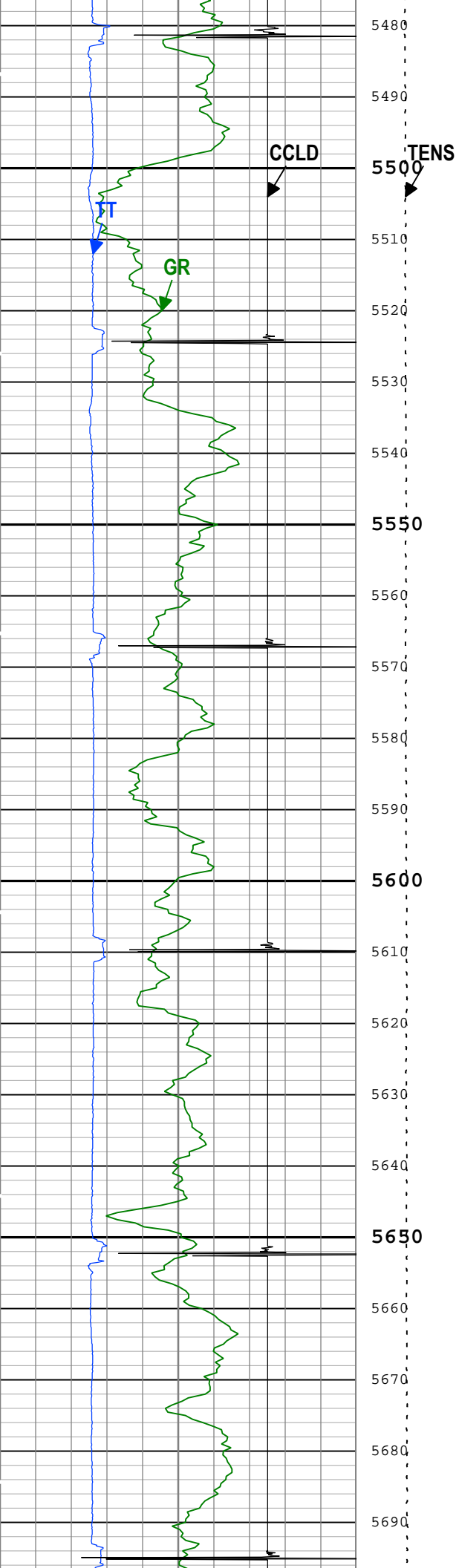


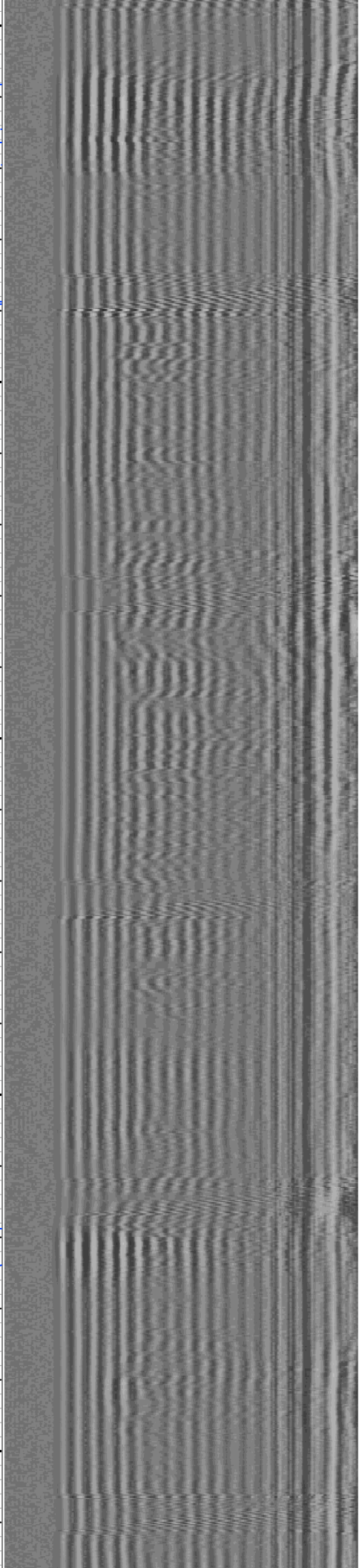
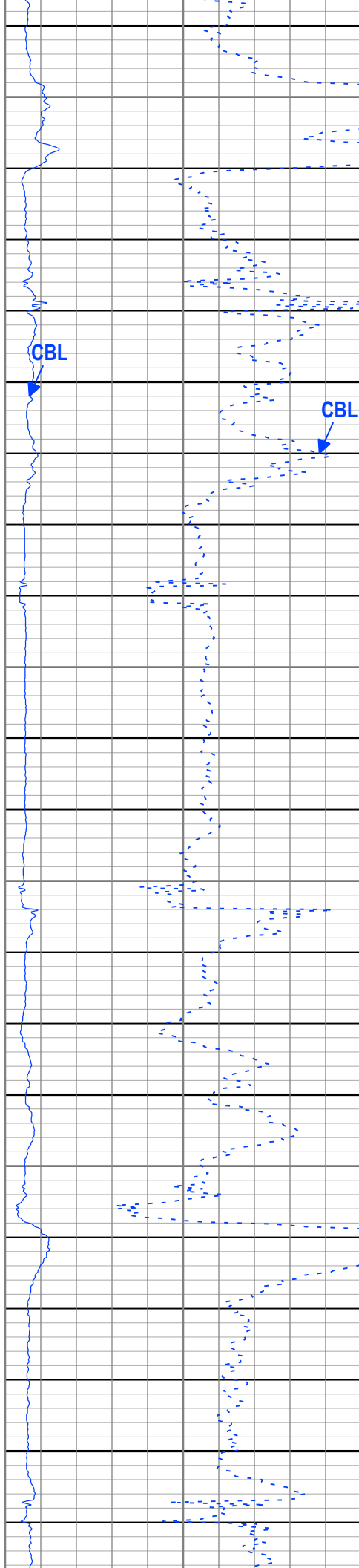
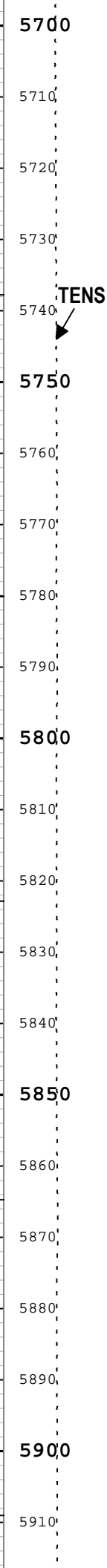
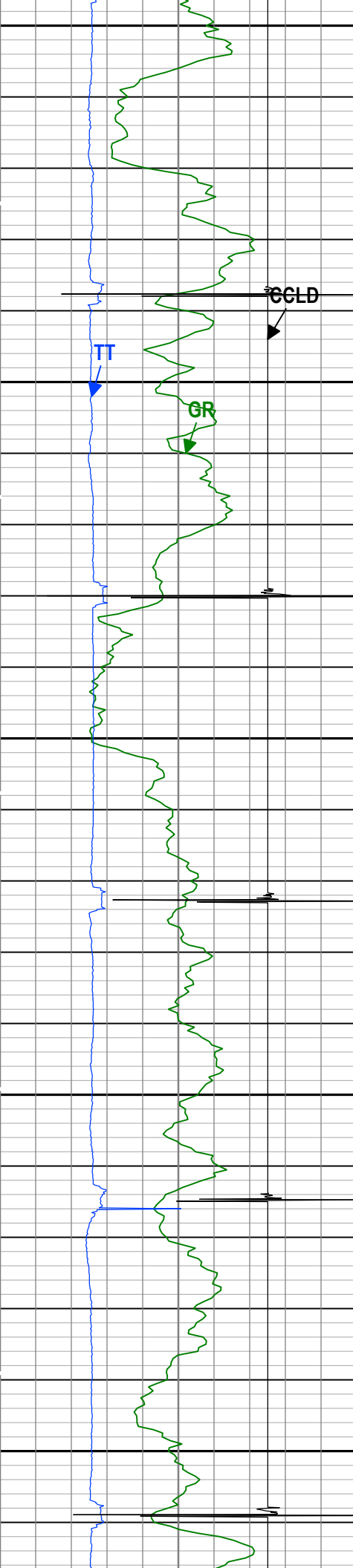


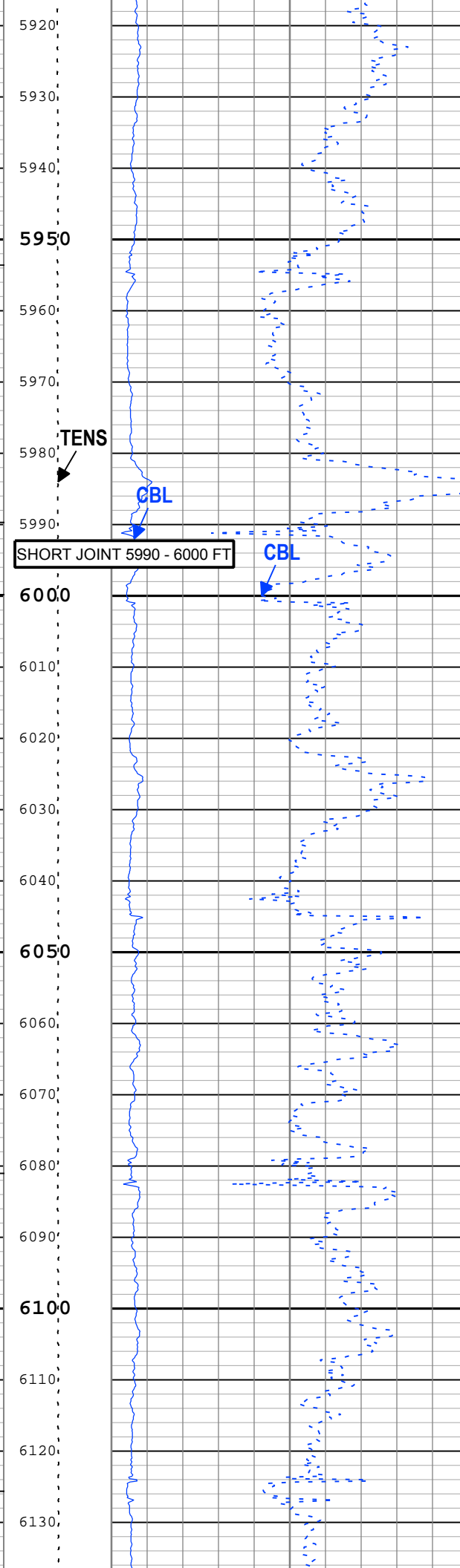
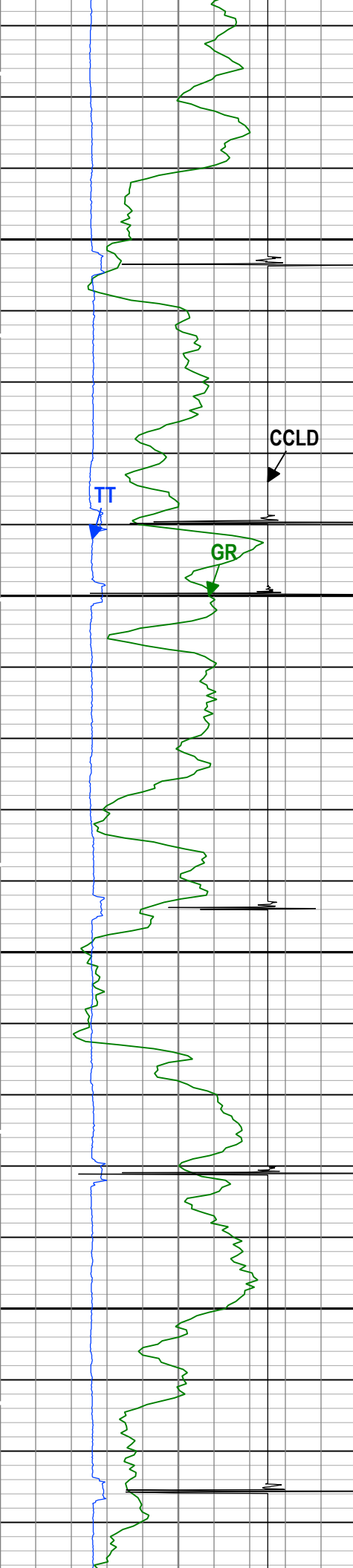


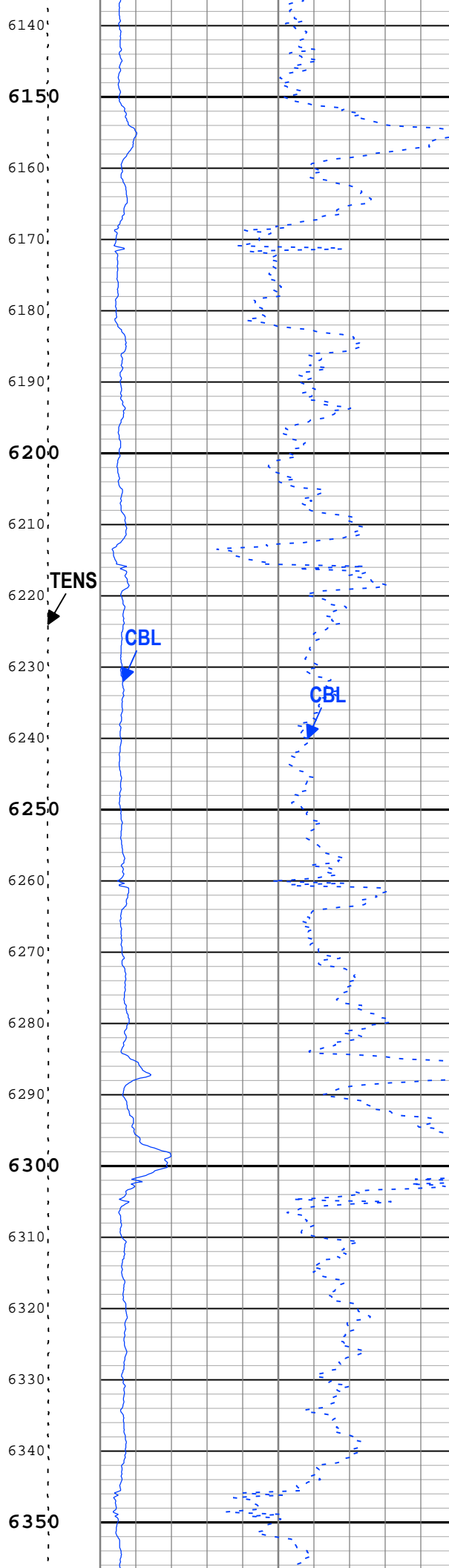
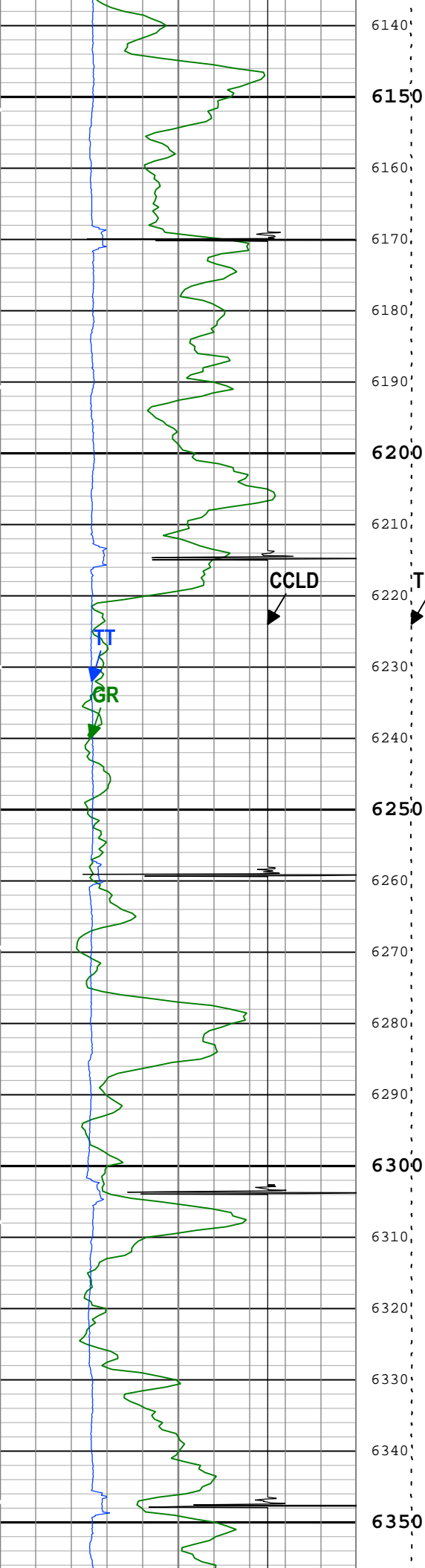


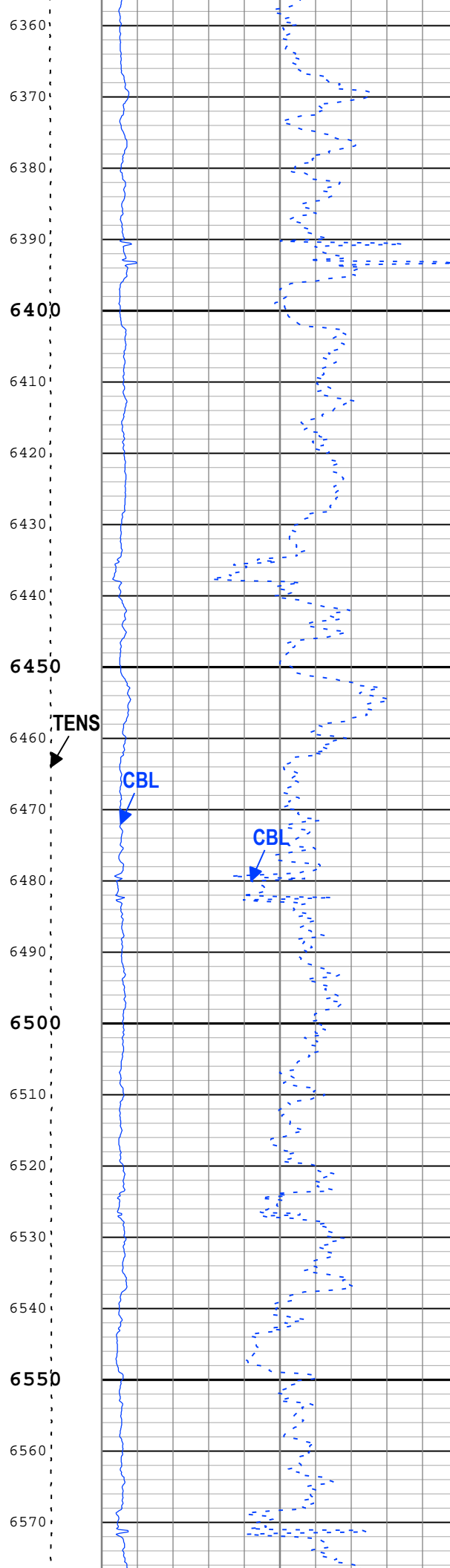
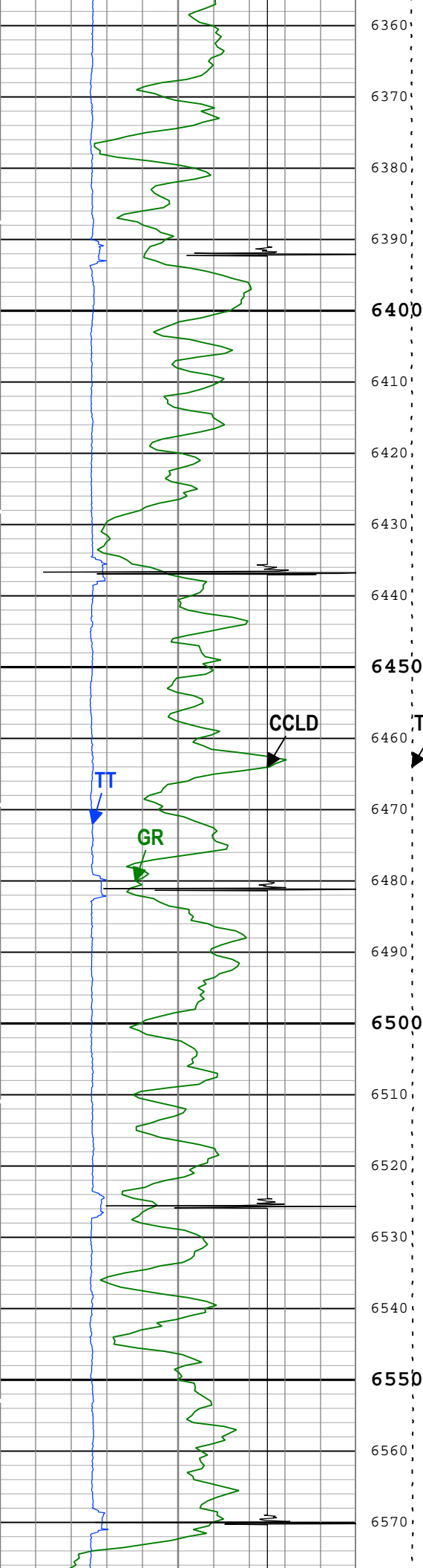


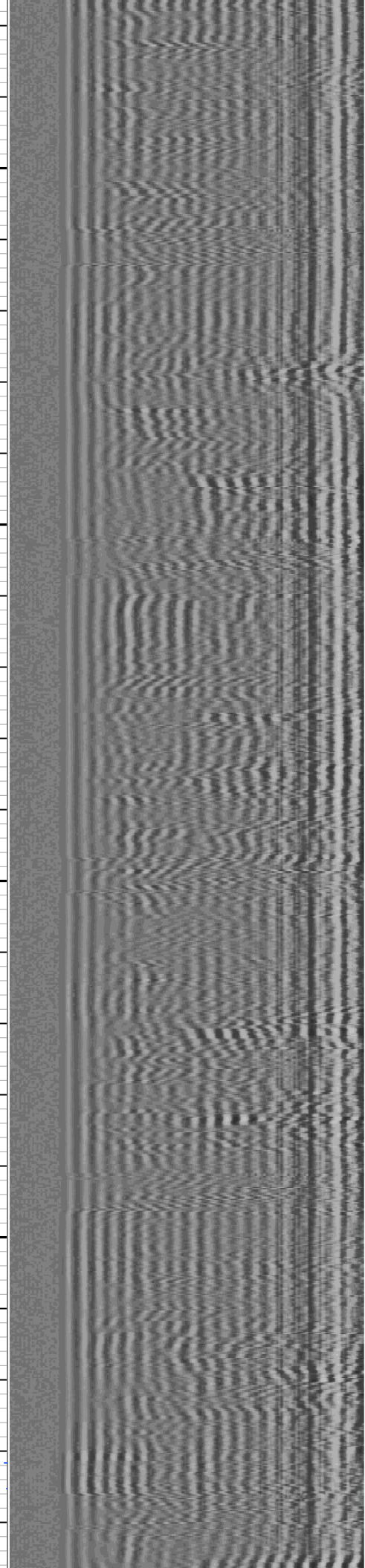
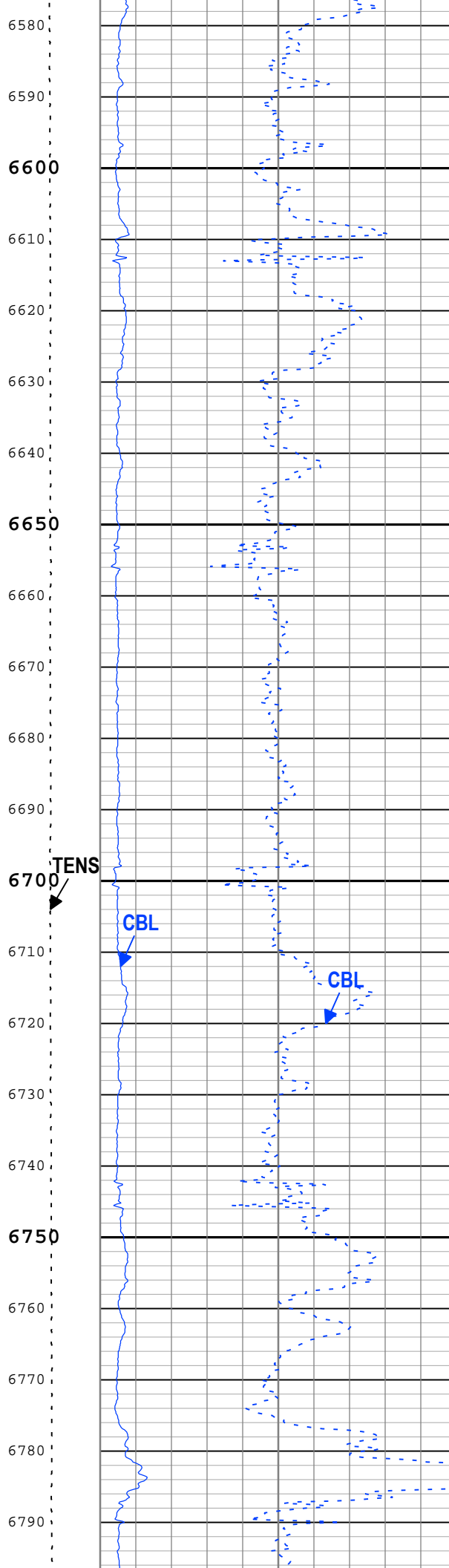
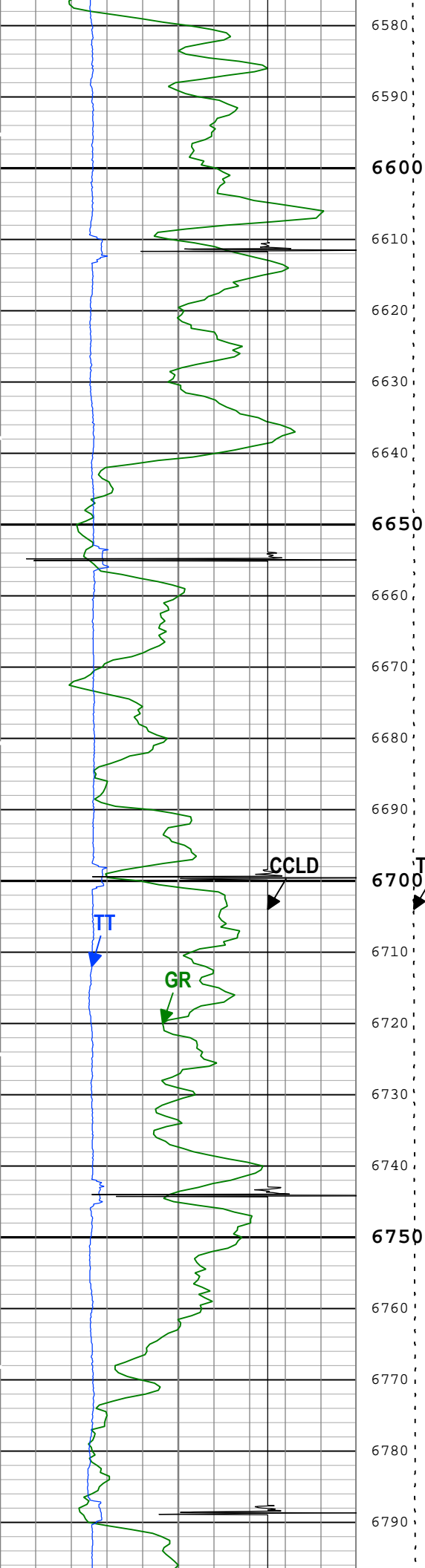


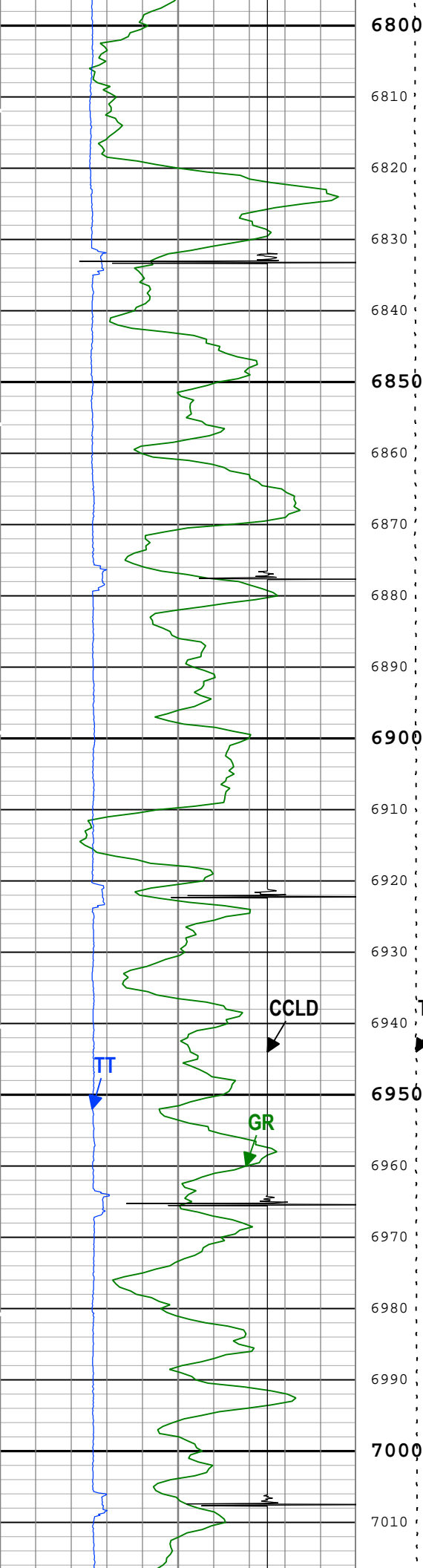












6800

6810

6820

6830

6840

6850

6860

6870

6880

6890

6900

6910

6920

6930

6940

6950

6960

6970

6980

6990

7000

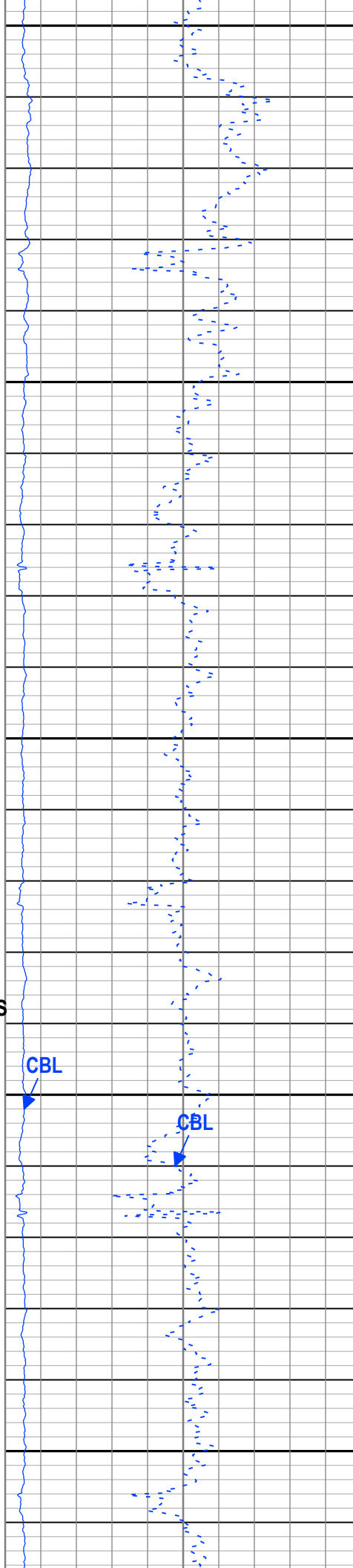
7010

TENS

TT

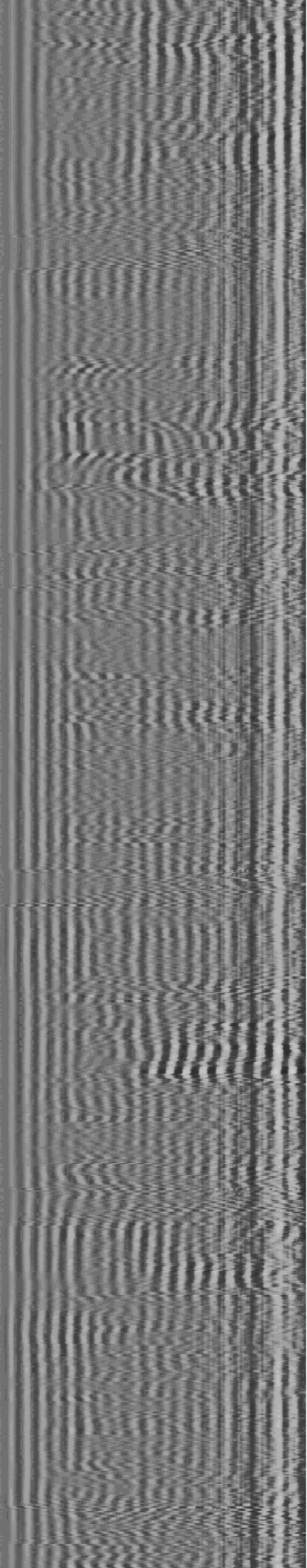
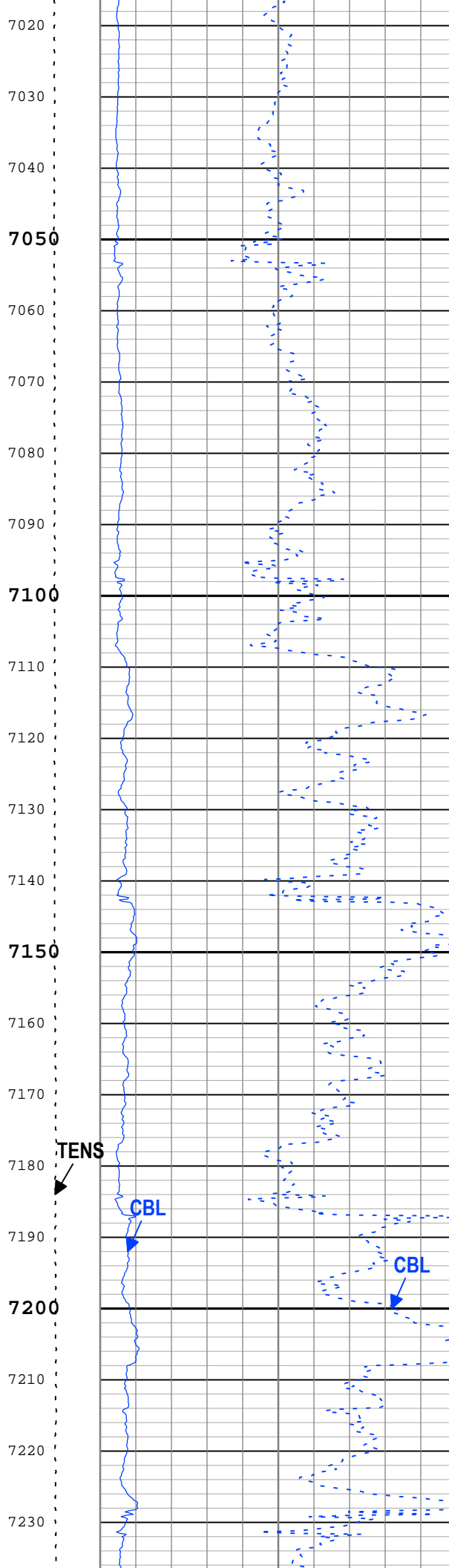
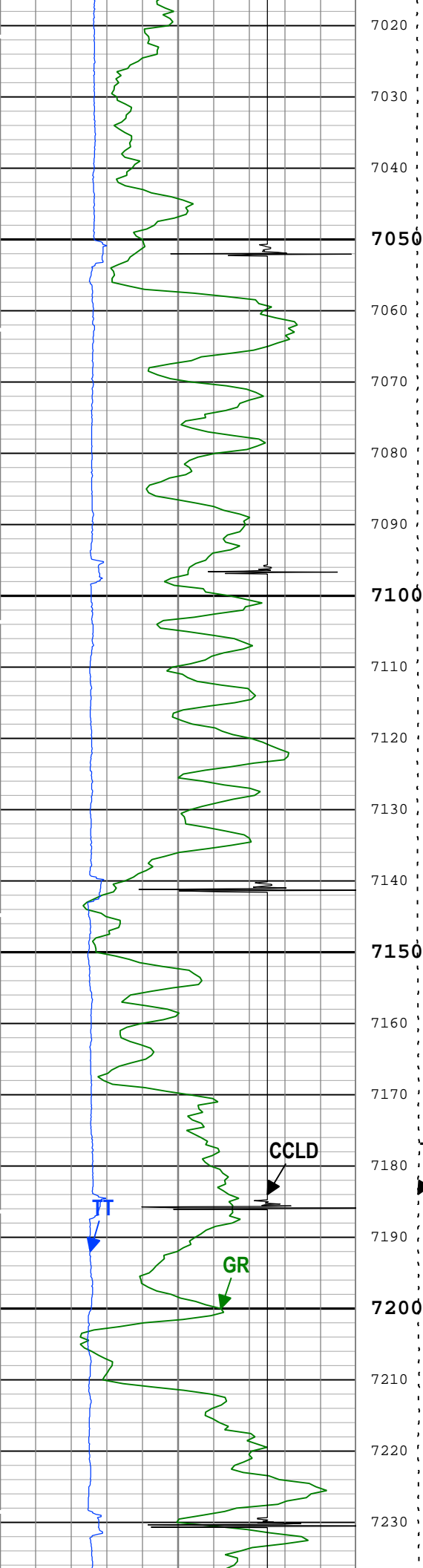
GR

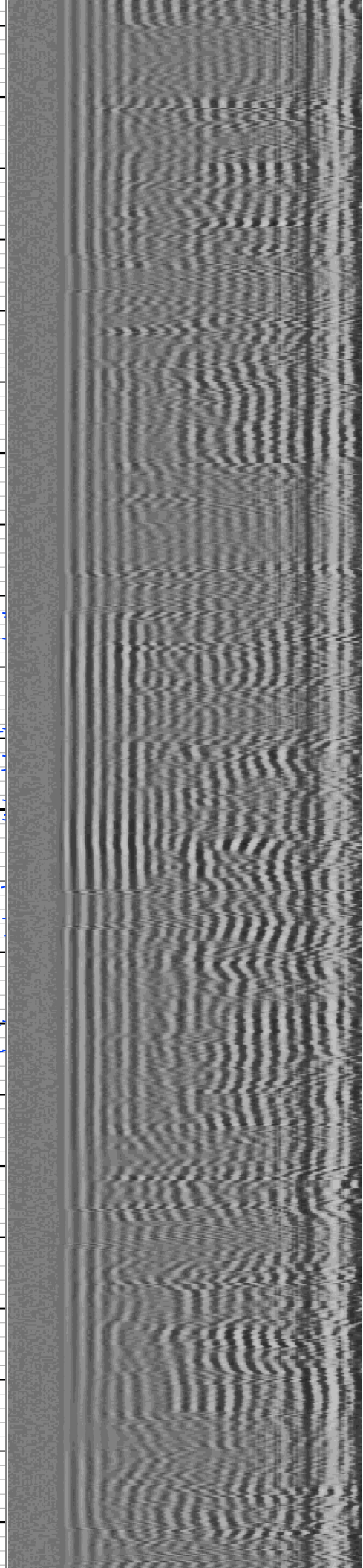
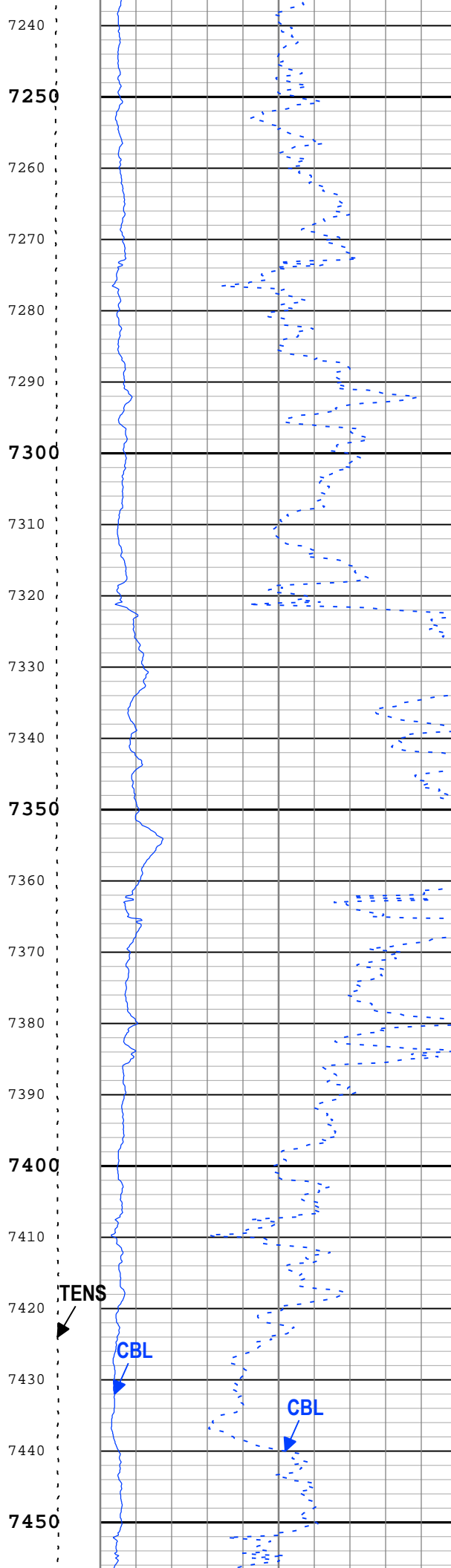
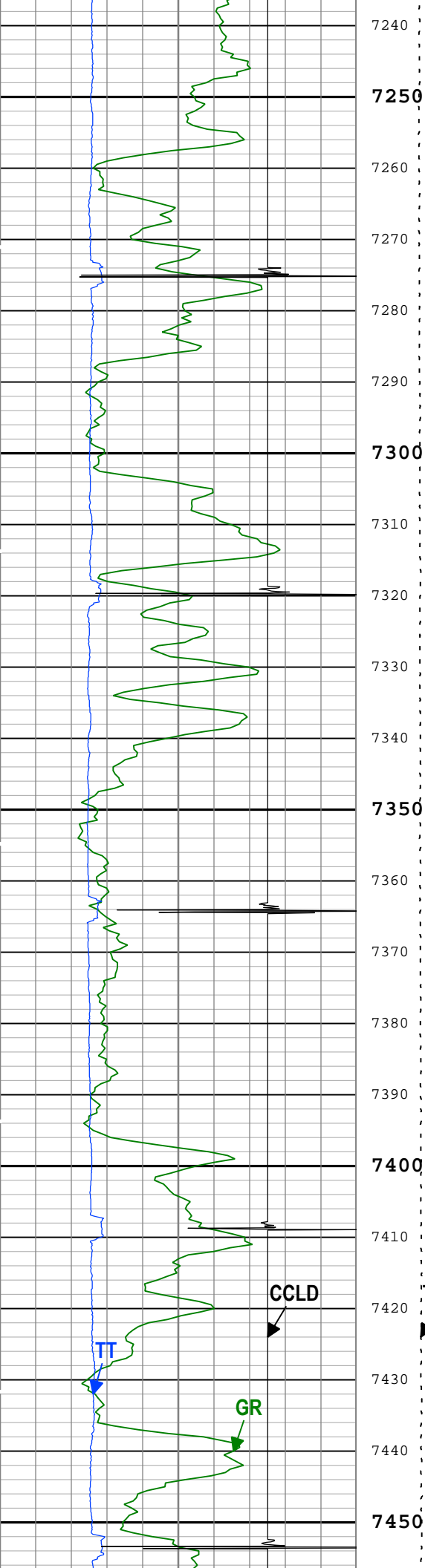
CCLD

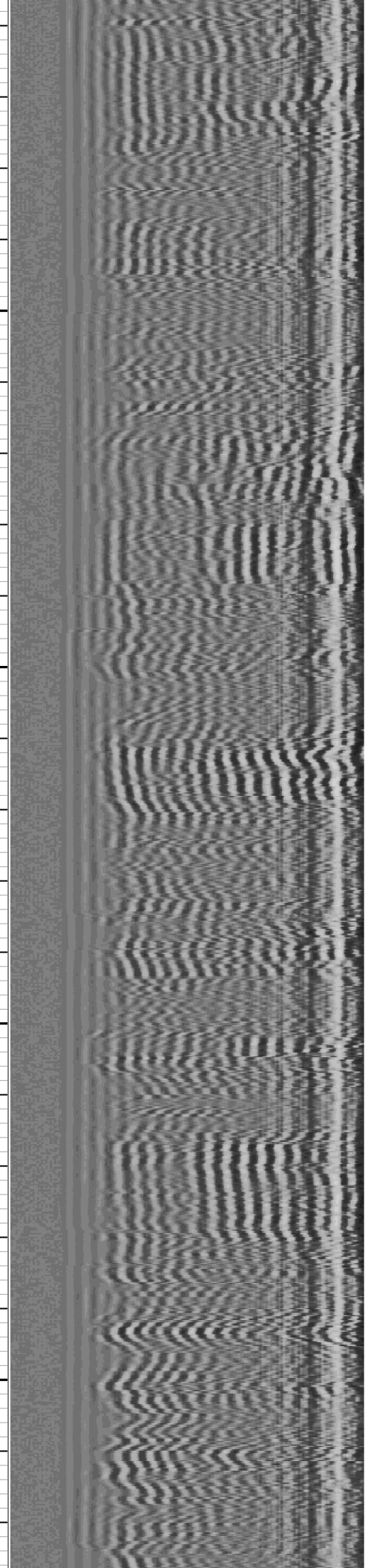
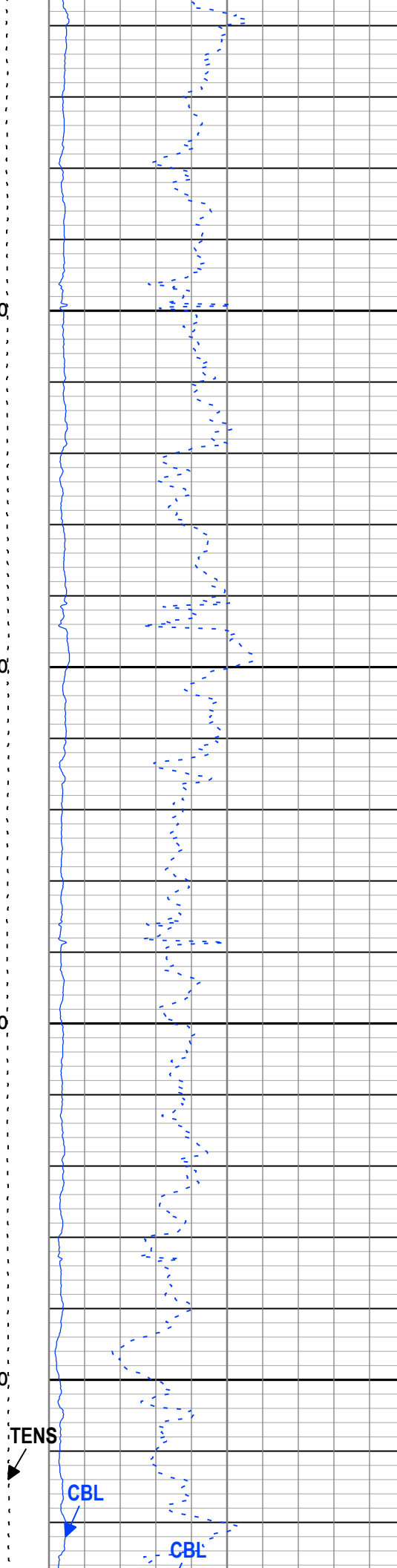
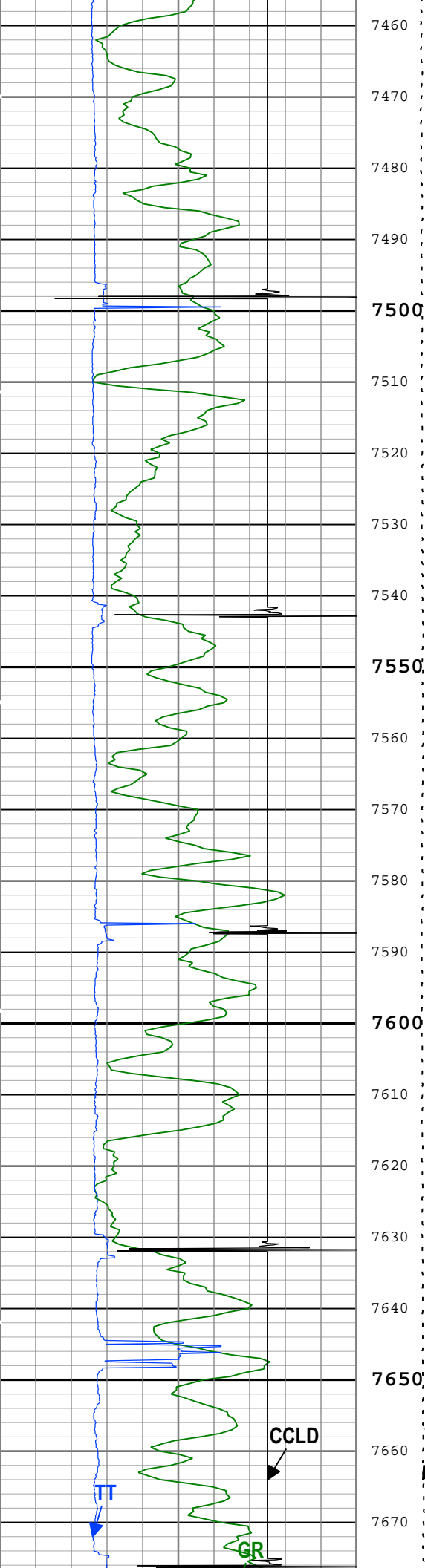


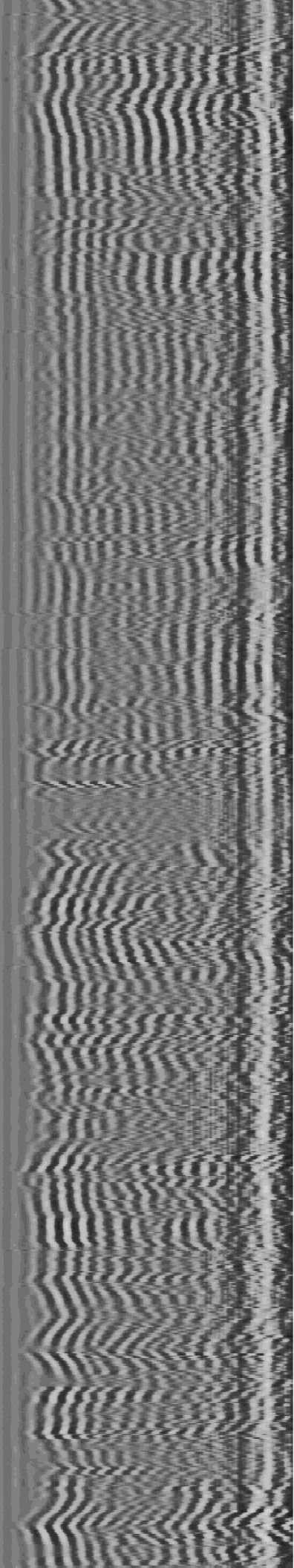
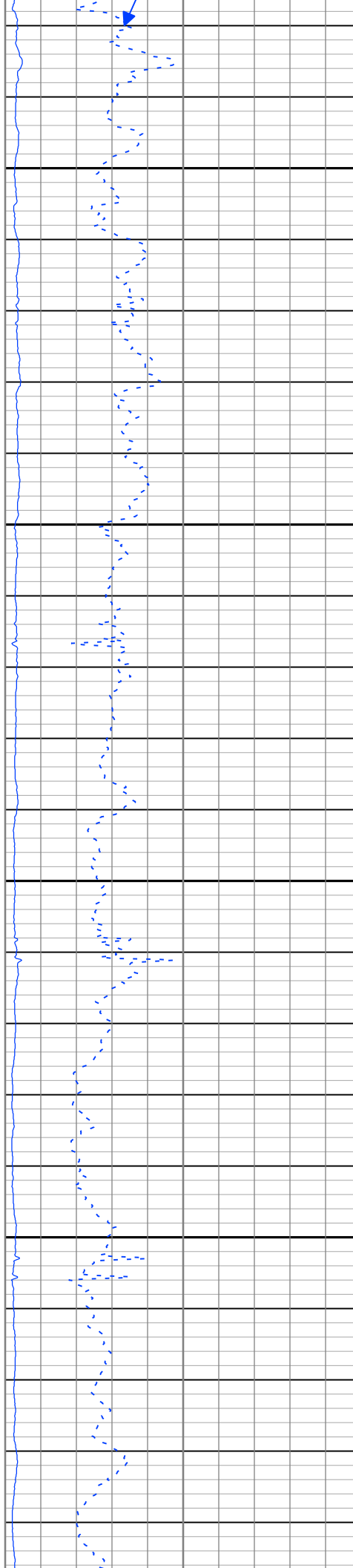
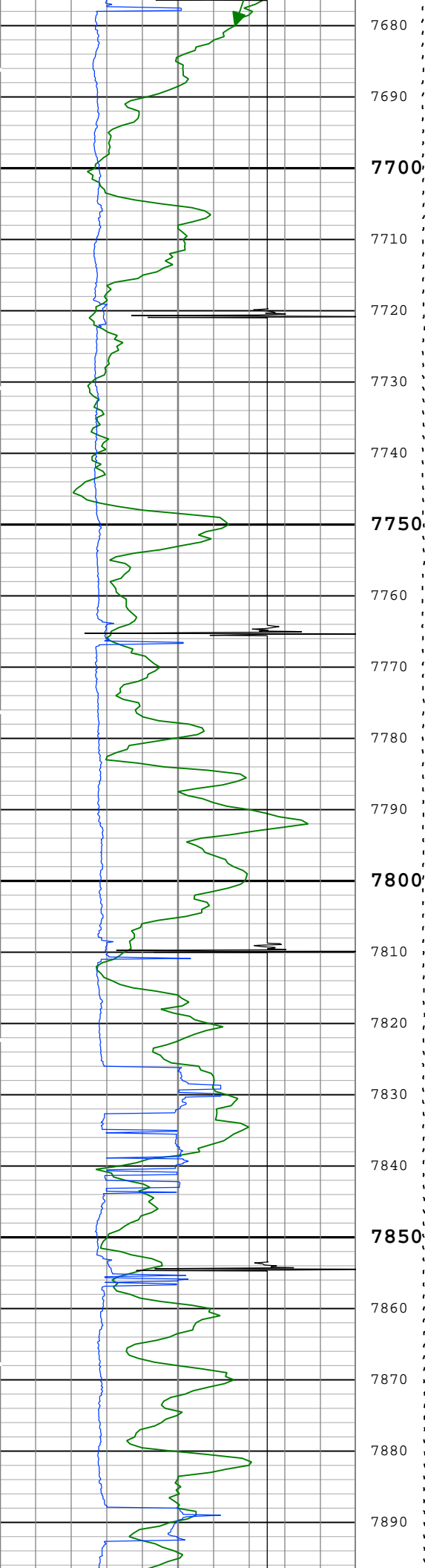
CBL

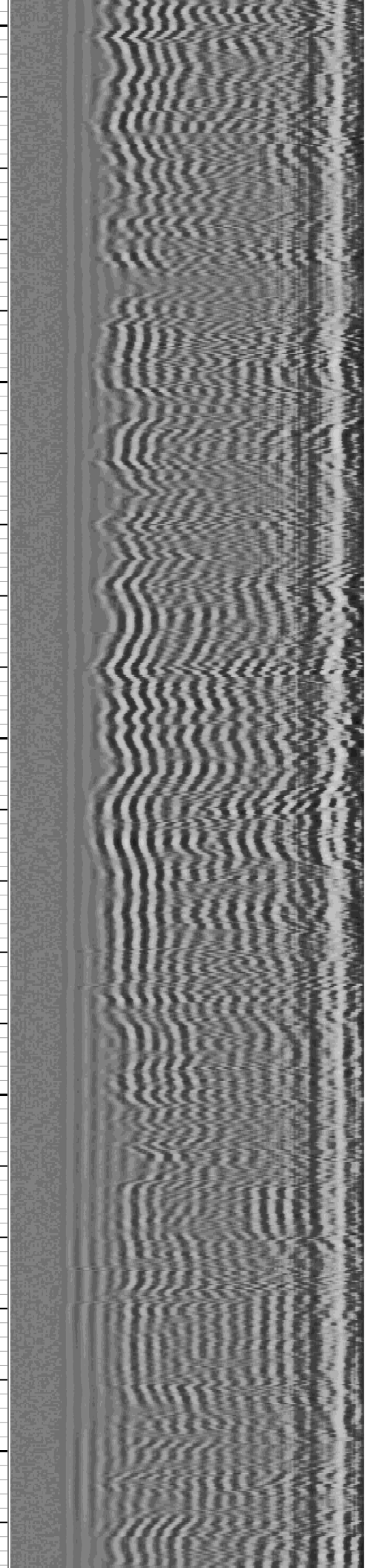
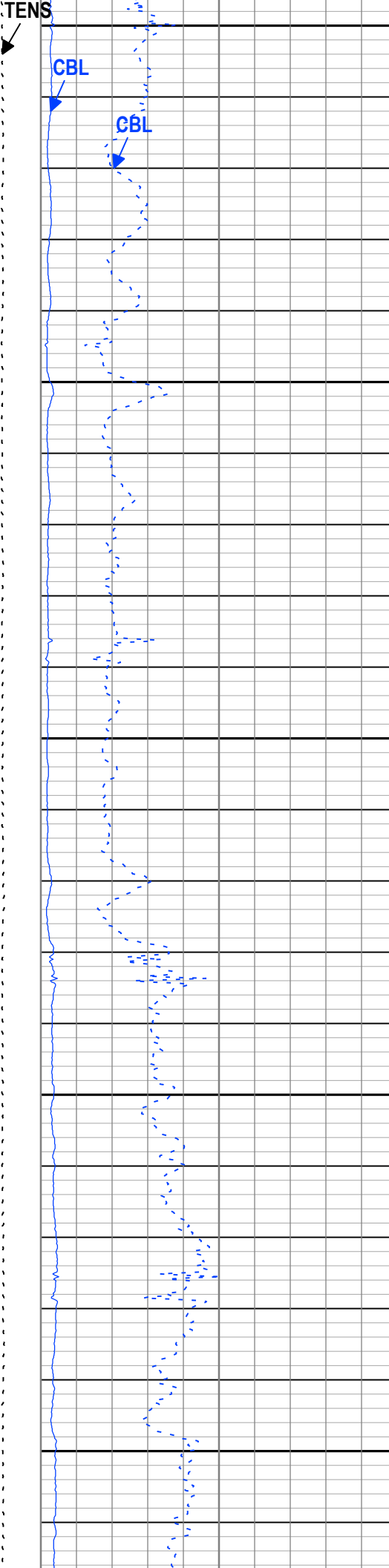
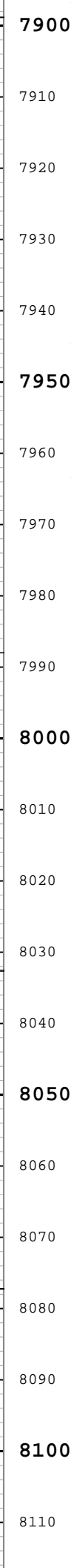
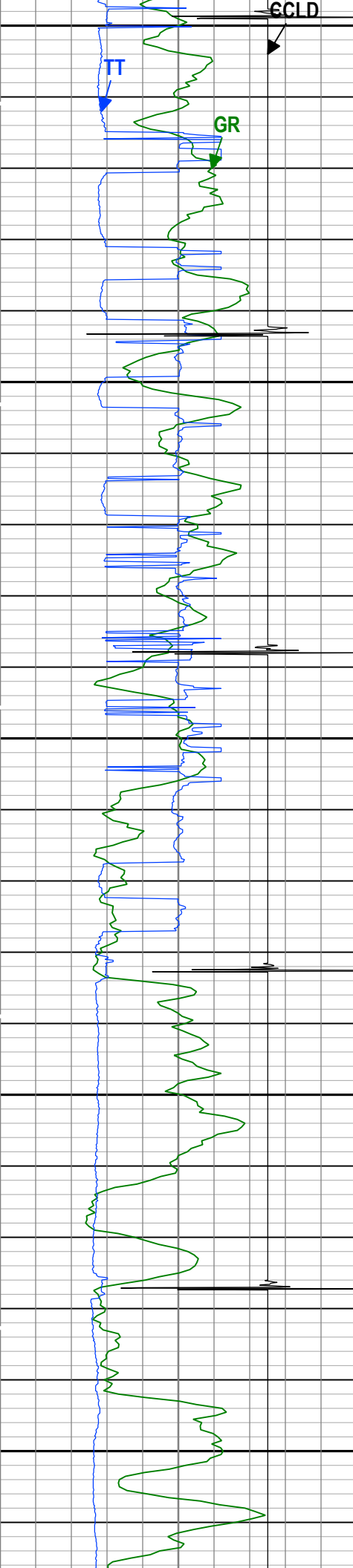
CBL

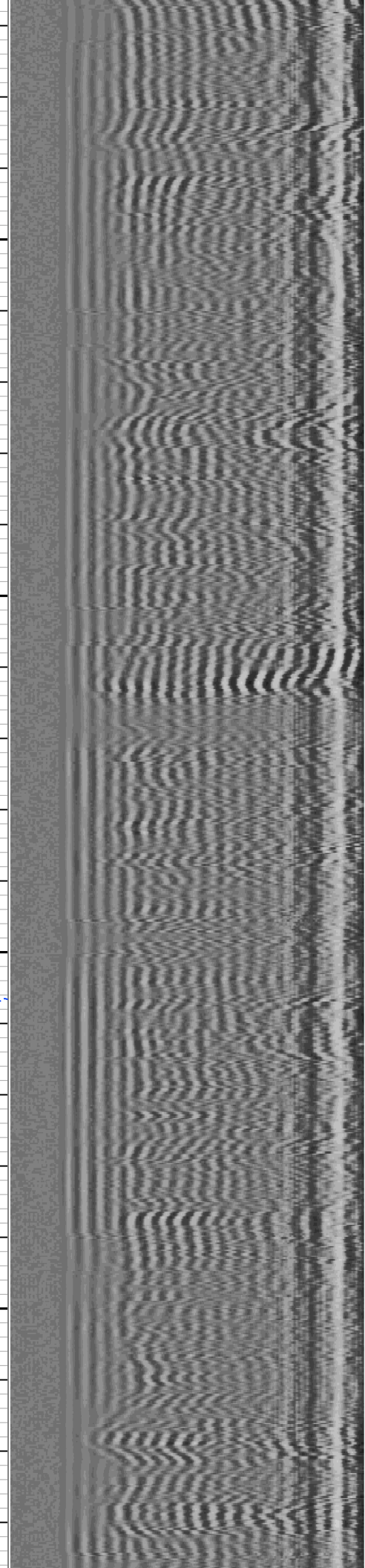
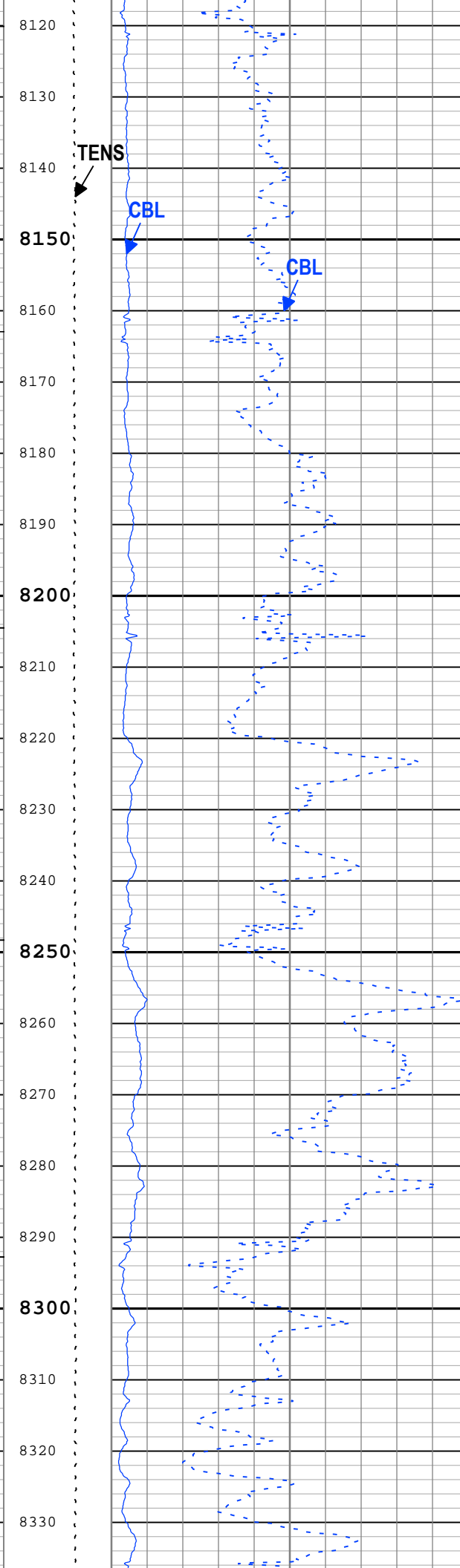
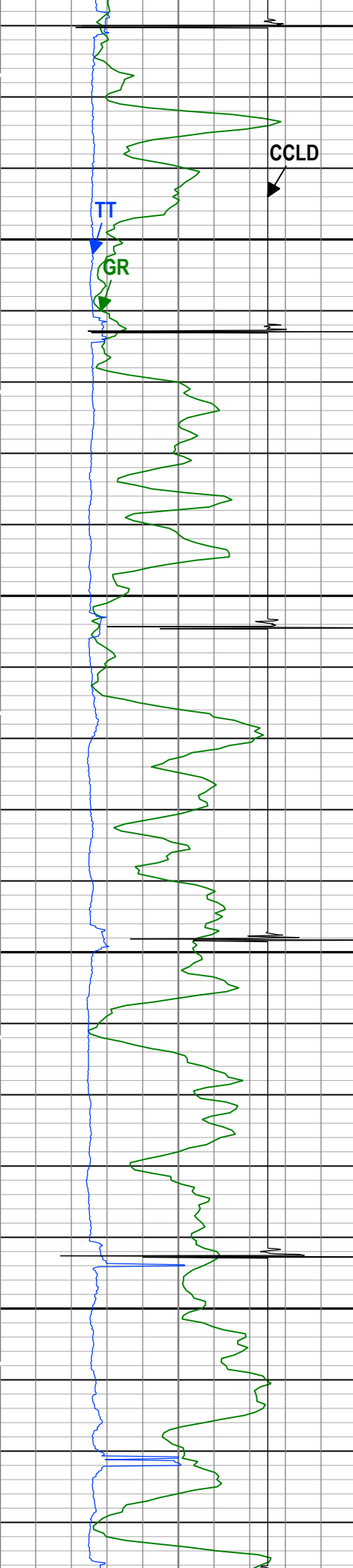


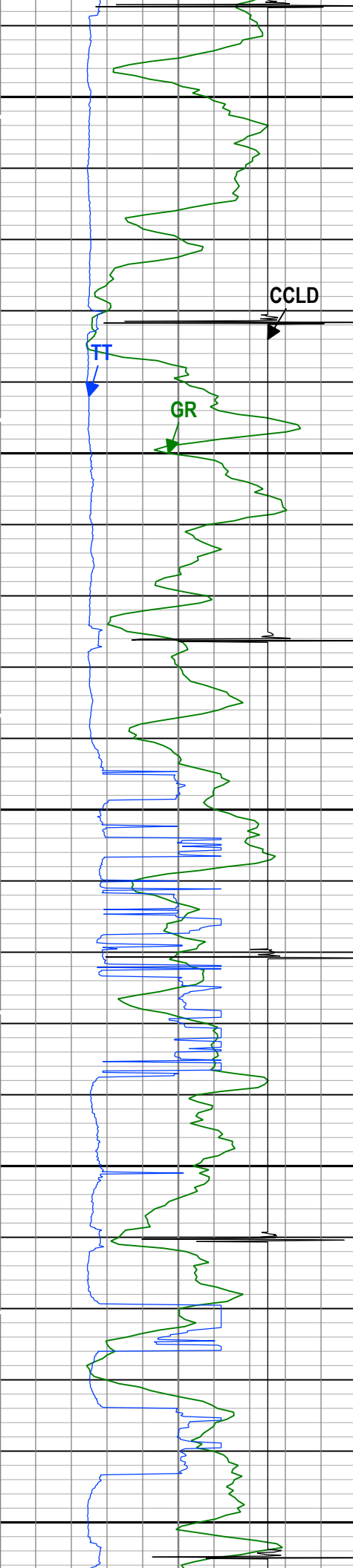




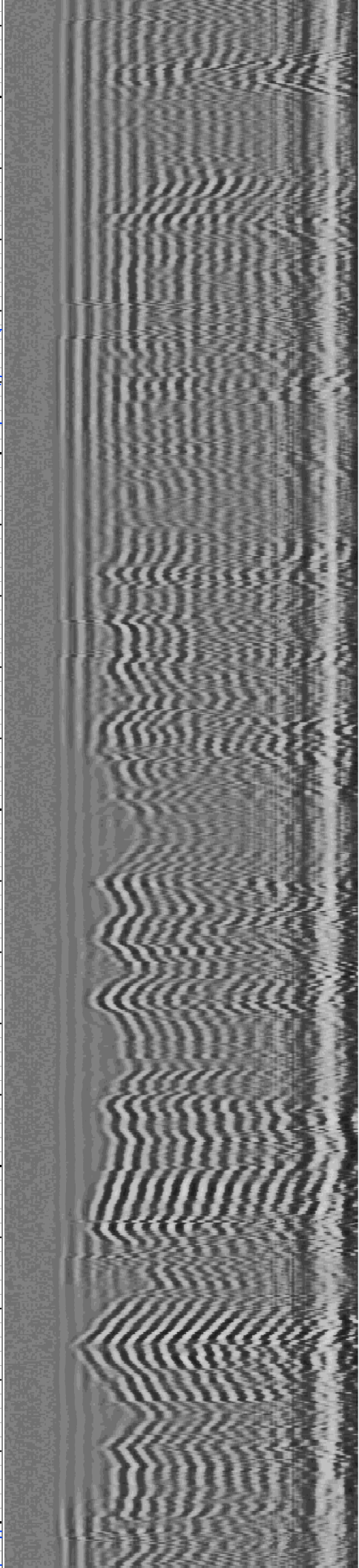
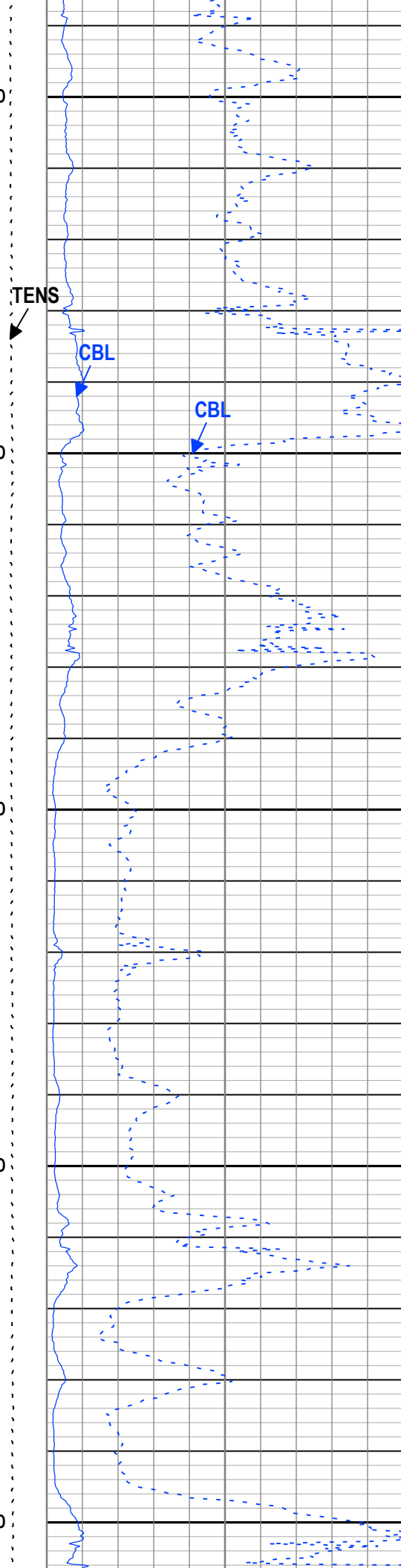


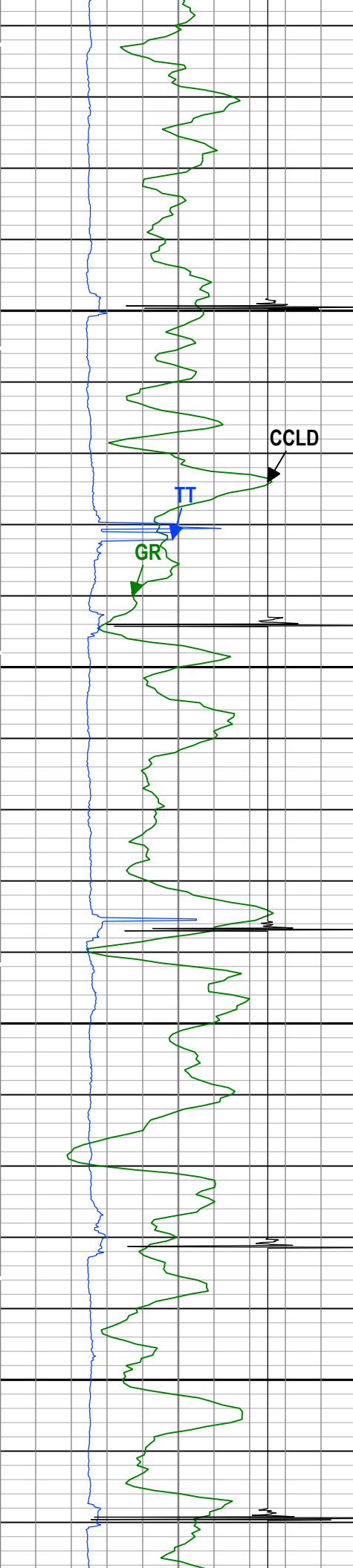




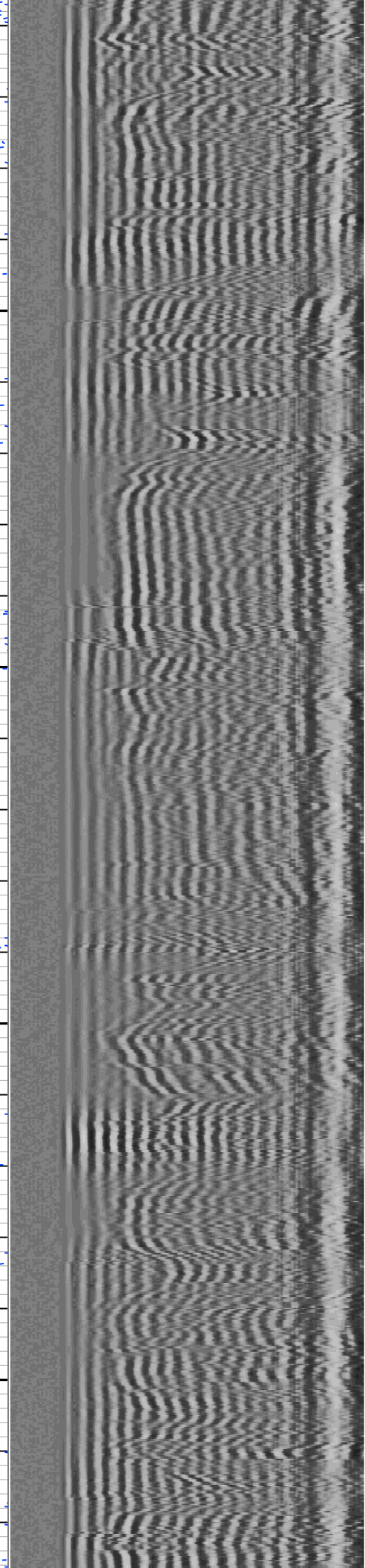
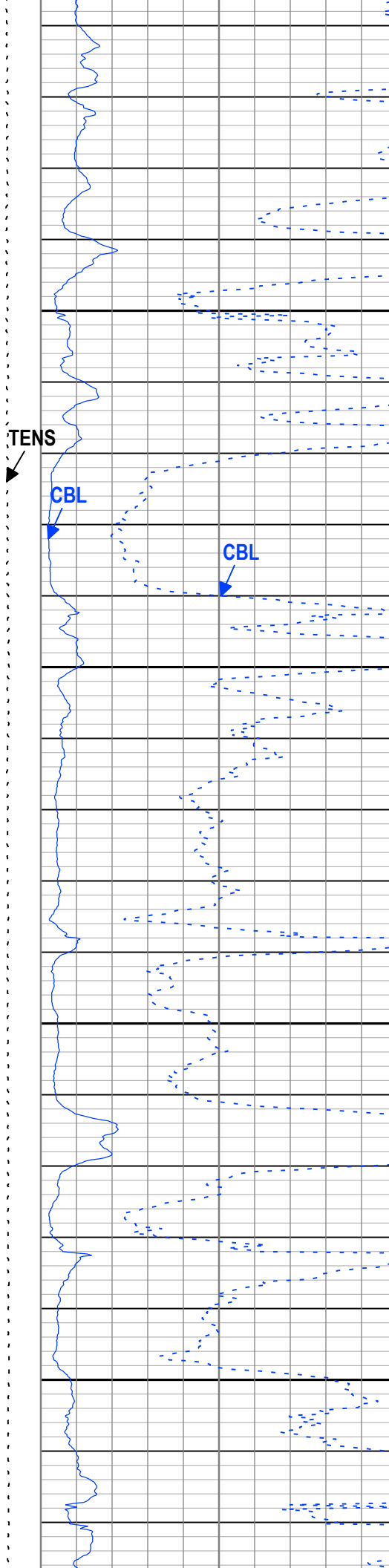


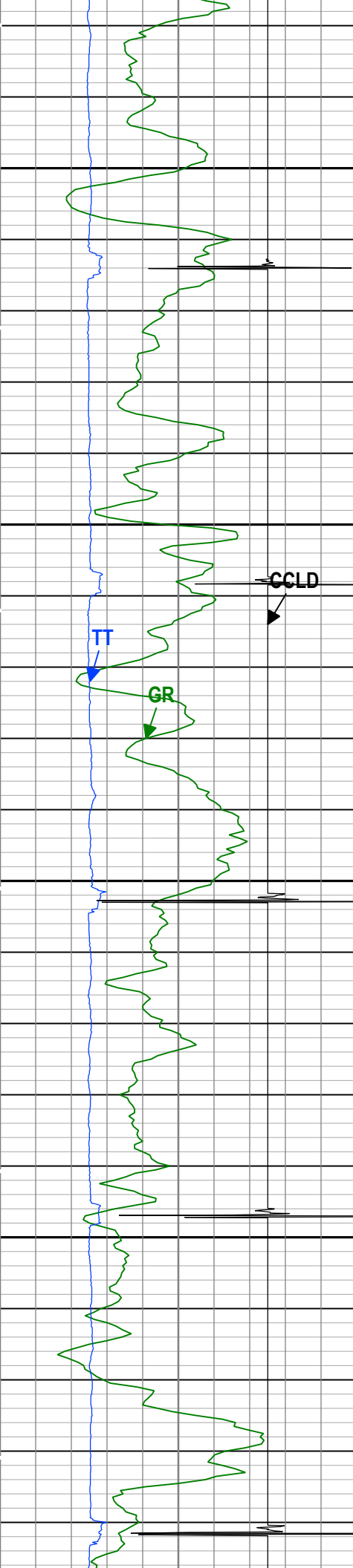
8340
8350
8360
8370
8380
8390
8400
8410
8420
8430
8440
8450
8460
8470
8480
8490
8500
8510
8520
8530
8540
8550



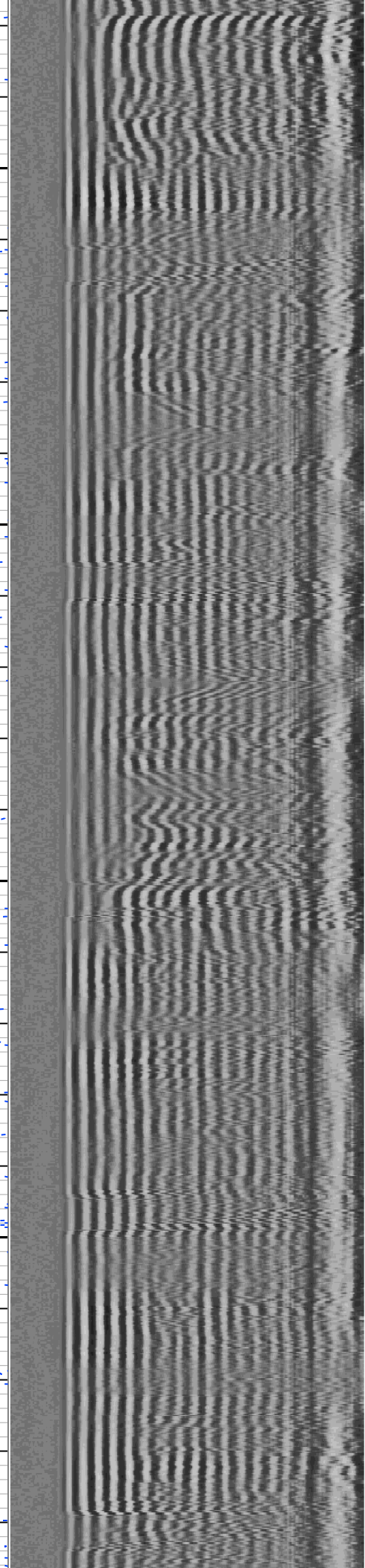
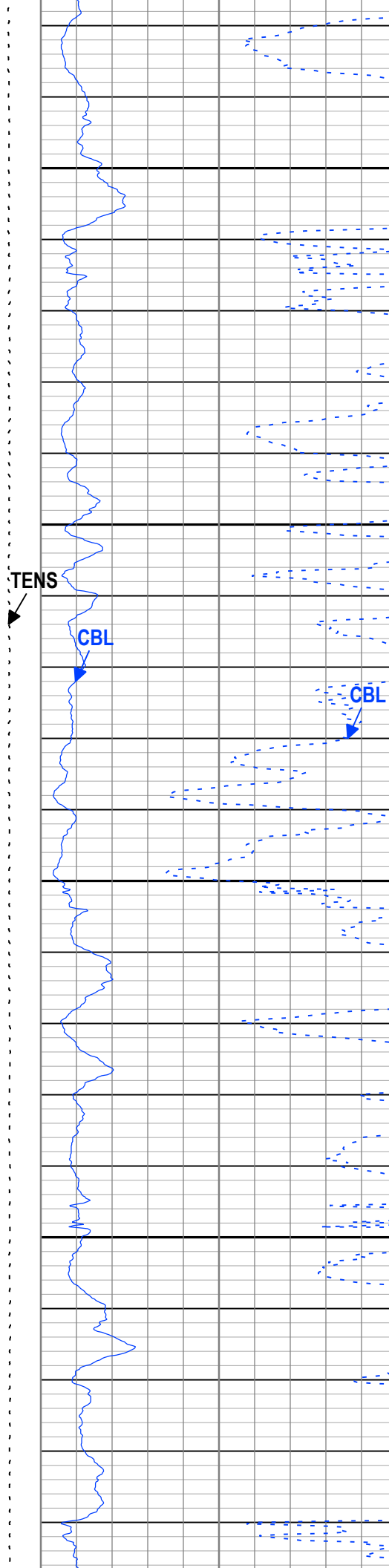


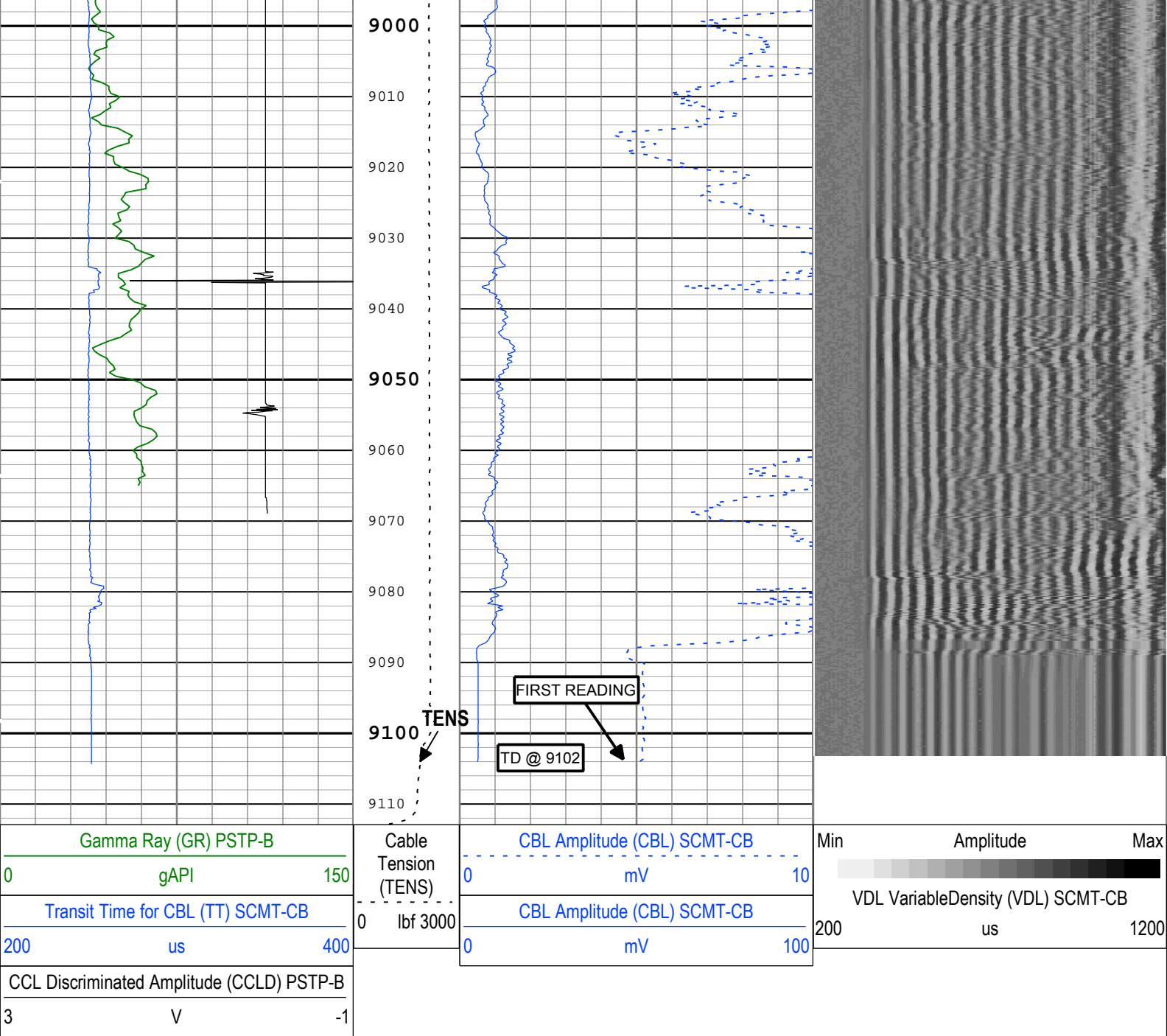
8560
8570
8580
8590
8600
8610
8620
8630
8640
8650
8660
8670
8680
8690
8700
8710
8720
8730
8740
8750
8760
8770





8780
8790
8800
8810
8820
8830
8840
8850
8860
8870
8880
8890
8900
8910
8920
8930
8940
8950
8960
8970
8980
8990





Description: SCMT Amplitudes and VDL Format: Log (SCMT_Amp_VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 07-Jan-2018 10:30:46

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
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	8.6	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	8432	ft
GGRD	Geothermal Gradient	Borehole	1	0.01 degF/ft
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	GTEM_LINEST(RT)	
MSA	Minimum Sonic Amplitude	SCMT-CB	0.51	mV
PDAT	Permanent Datum	WLSESSION	GL	
RUN_SNUM	Run Sequence Number	WSDRUN	1	
SHT	Surface Hole Temperature	Borehole	68	degF

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-B	12 dB	

one

Repeat Pass

Software Version

Acquisition System	Version
Maxwell 2017 SP3	7.3.92069.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
one	Log[2]:Up	Up	8879.32 ft	9116.22 ft	19-Dec-2017 12:42:52 PM	19-Dec-2017 1:00:06 PM	ON	0.00 ft	No

All depths are referenced to toolstring zero

Log

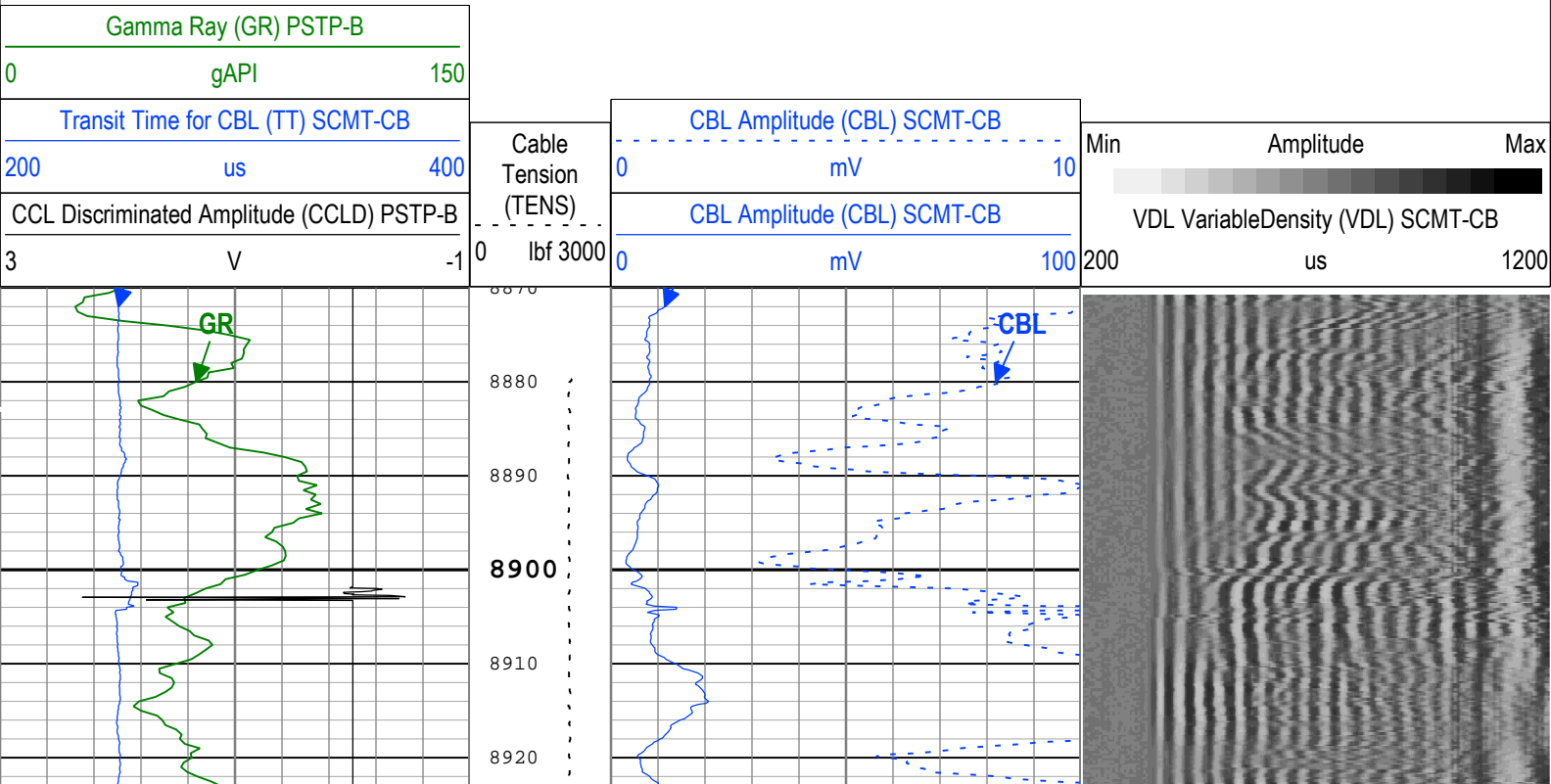
Company:Caerus Operating LLC Well:Puckett 23D-23 697

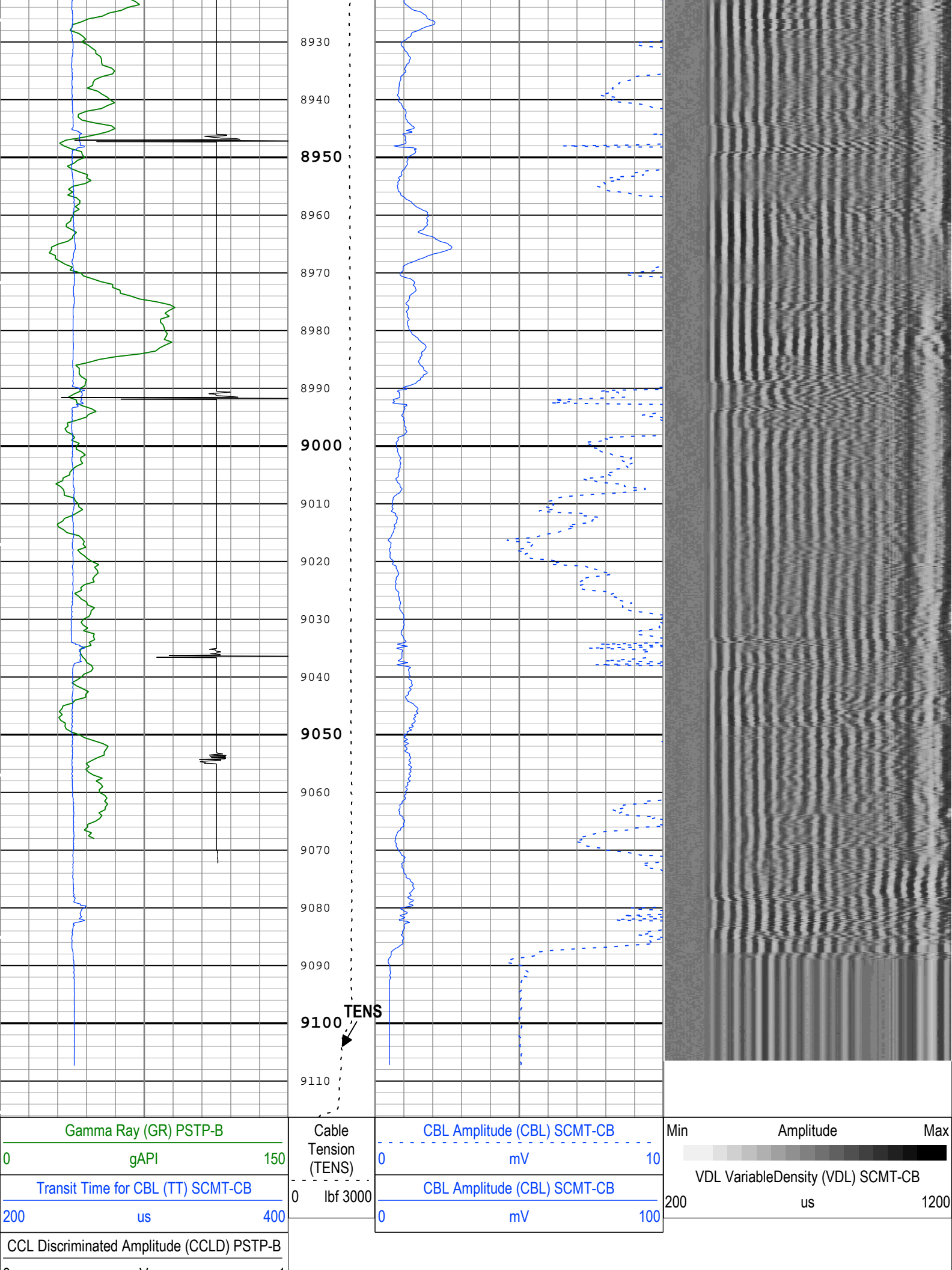
one: Log[2]:Up:S004

Description: SCMT Amplitudes and VDL Format: Log (SCMT_Amp_VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth

Creation Date: 07-Jan-2018 10:30:58

TIME_1900 - Time Marked every 60.00 (s)





Description: SCMT Amplitudes and VDL Format: Log (SCMT_Amp_VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 07-Jan-2018 10:30:58

one: Parameters

Tool Control Parameters

one: Parameters

one

Free Pipe Pass

Software Version

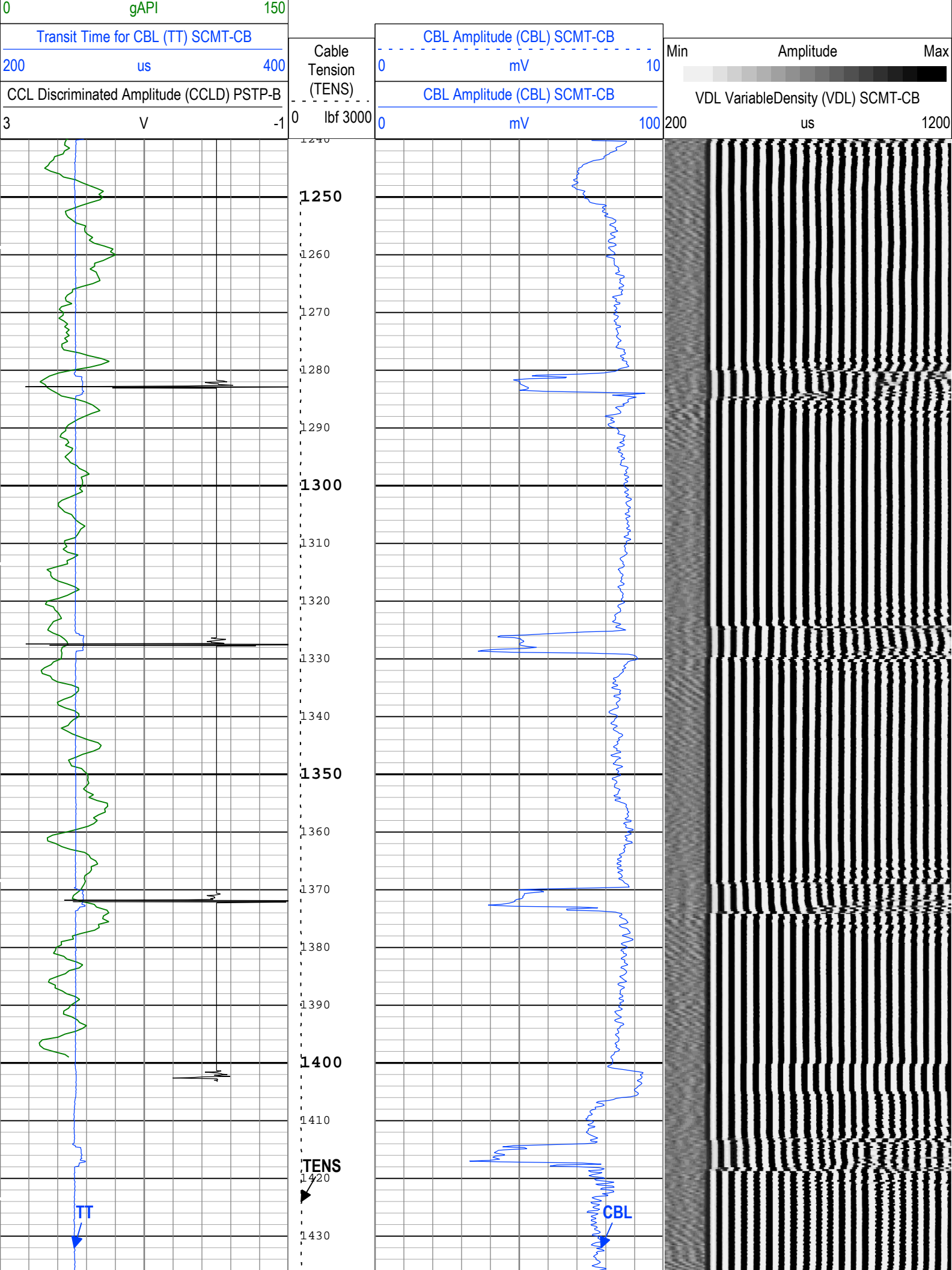
Pass Summary

All depths are referenced to toolstring zero

Log

one: Log[1]:Up:S004

Gamma Ray (GR) PSTP-B

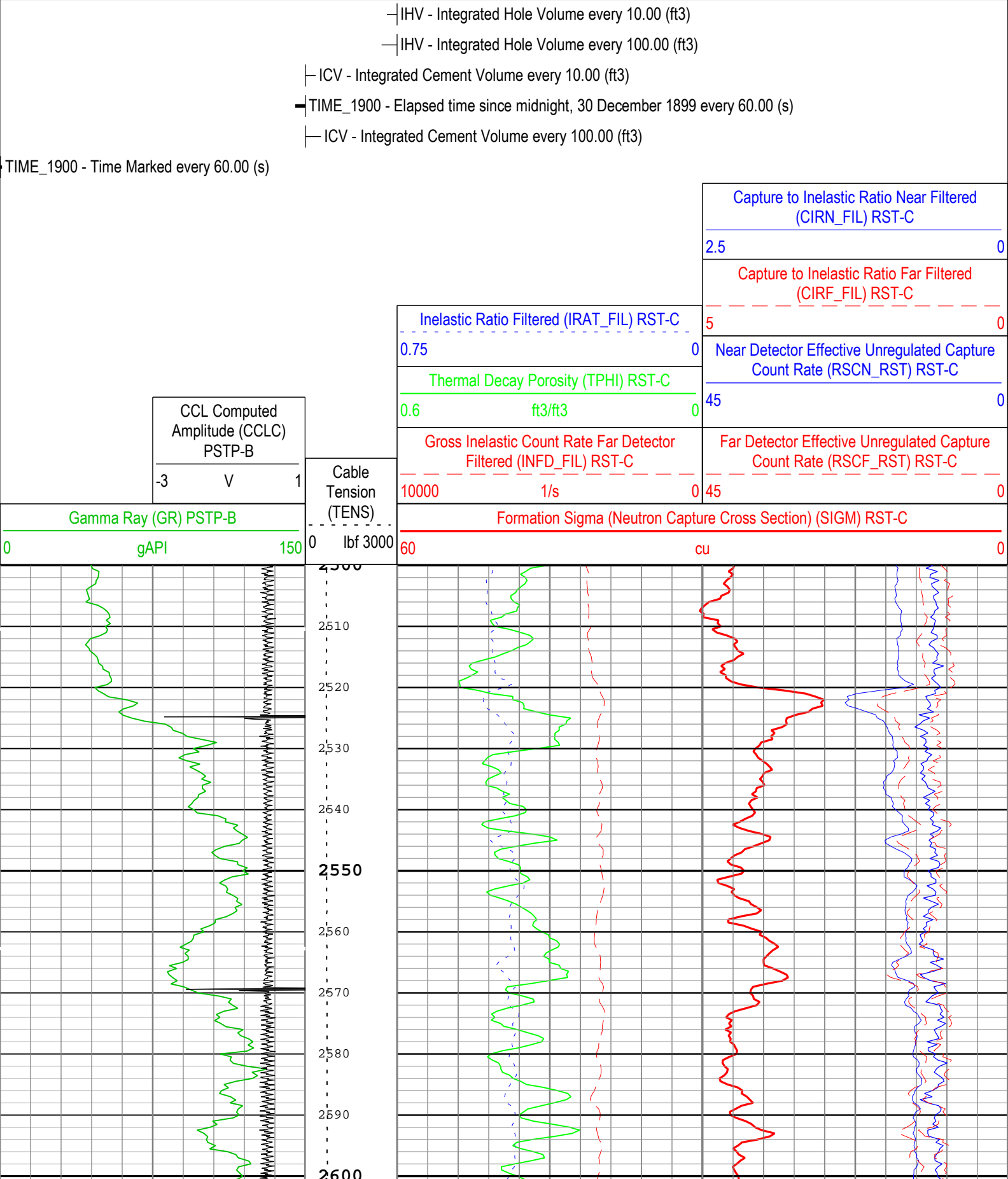


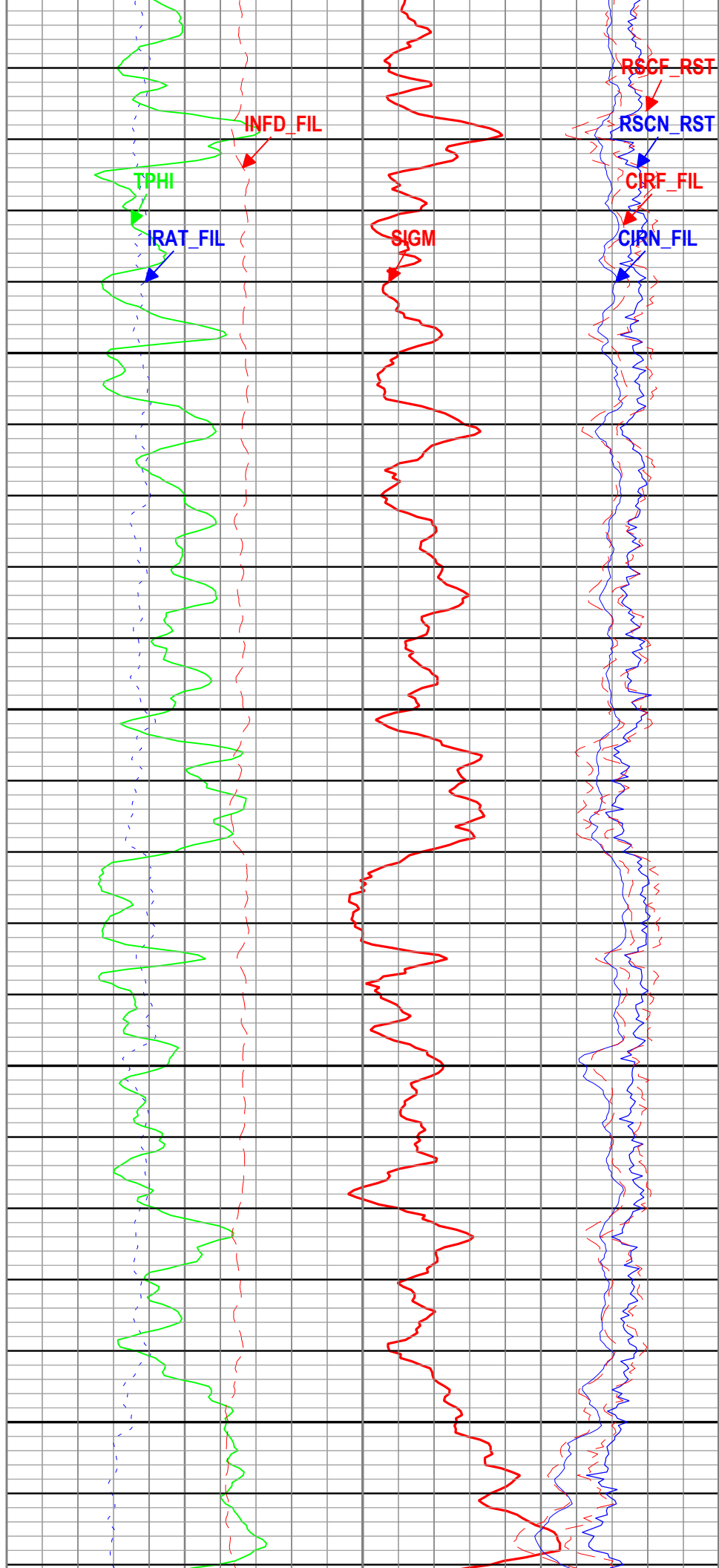
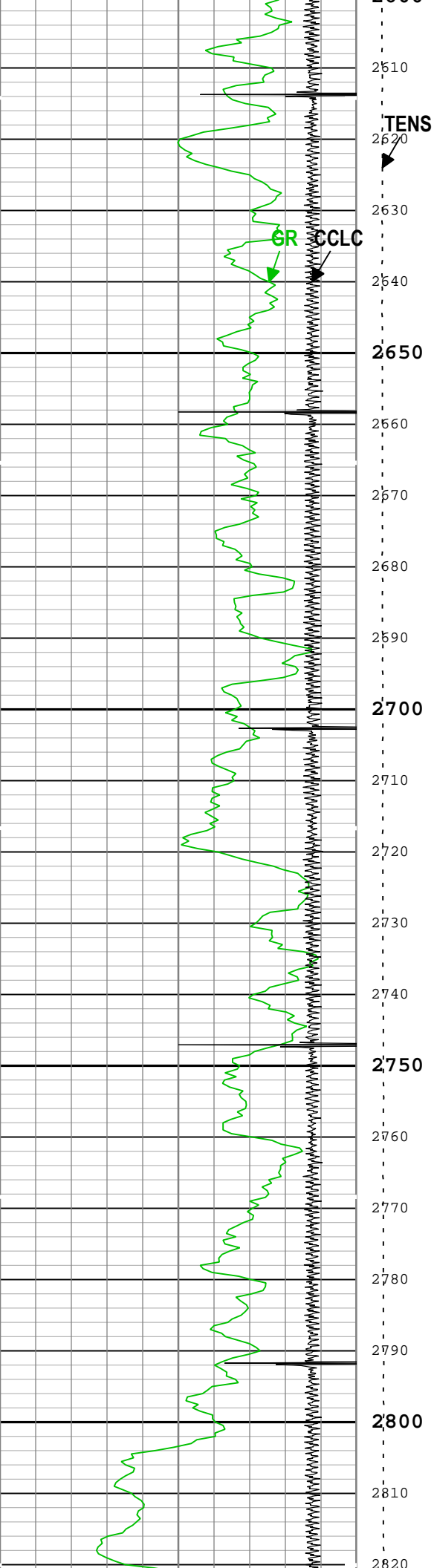
one	Log[3]:Up	Up	2163.38 ft	9112.88 ft	19-Dec-2017 1:06:59 PM	19-Dec-2017 3:44:16 PM	ON	0.00 ft	No
-----	-----------	----	------------	------------	------------------------	------------------------	----	---------	----

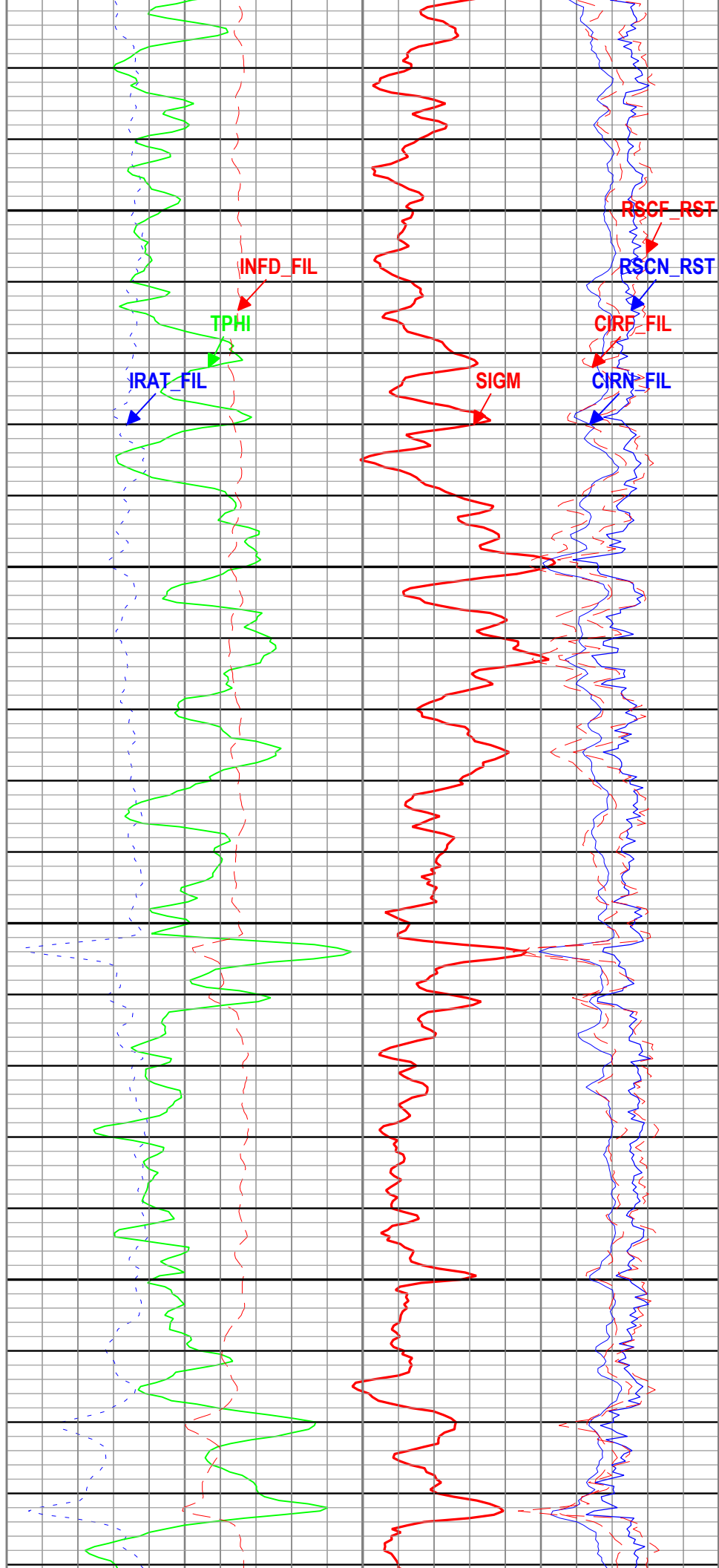
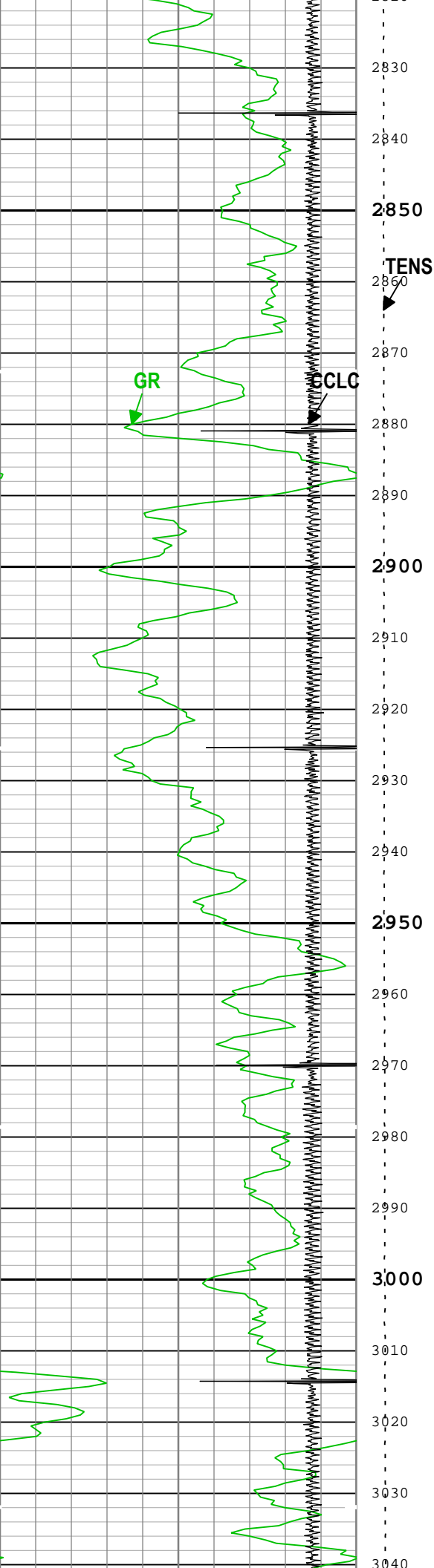
All depths are referenced to toolstring zero

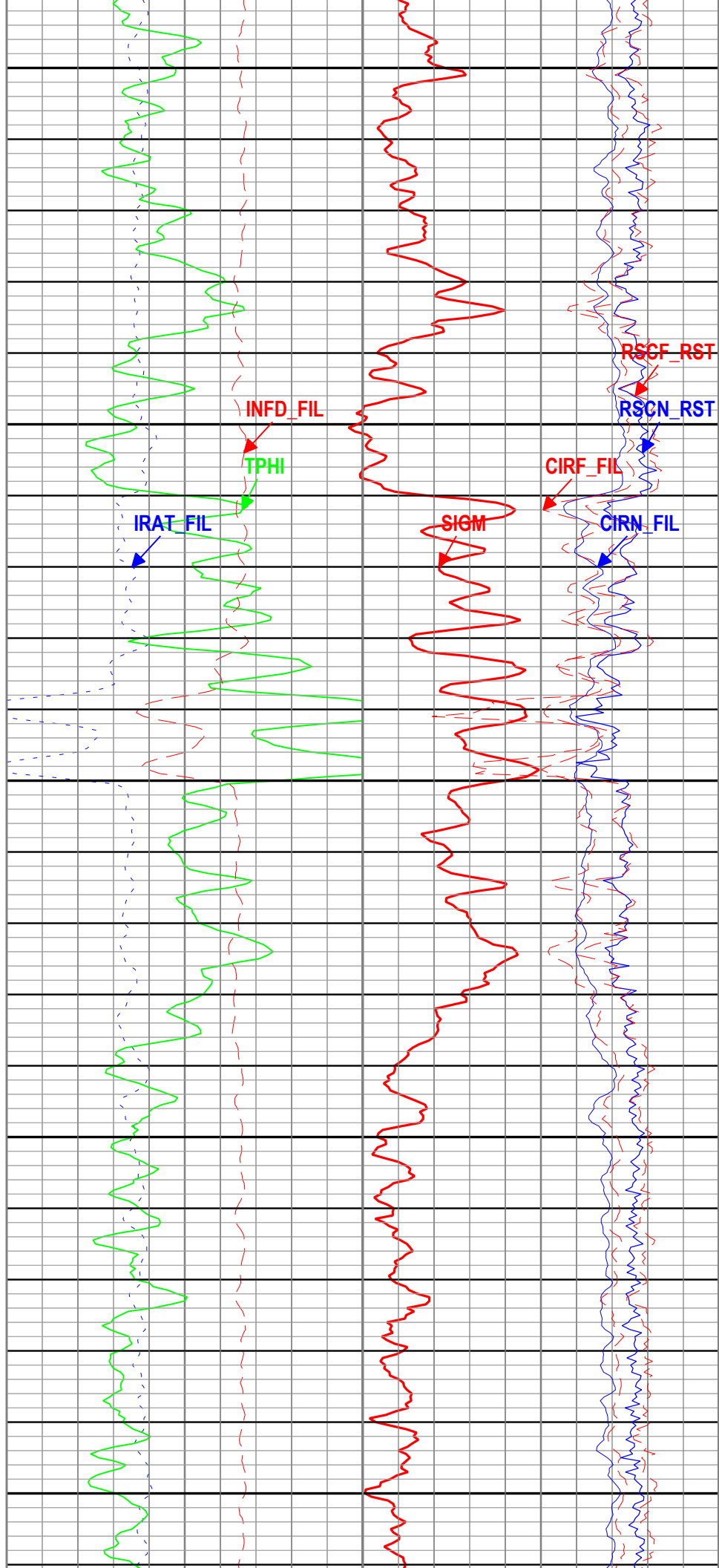
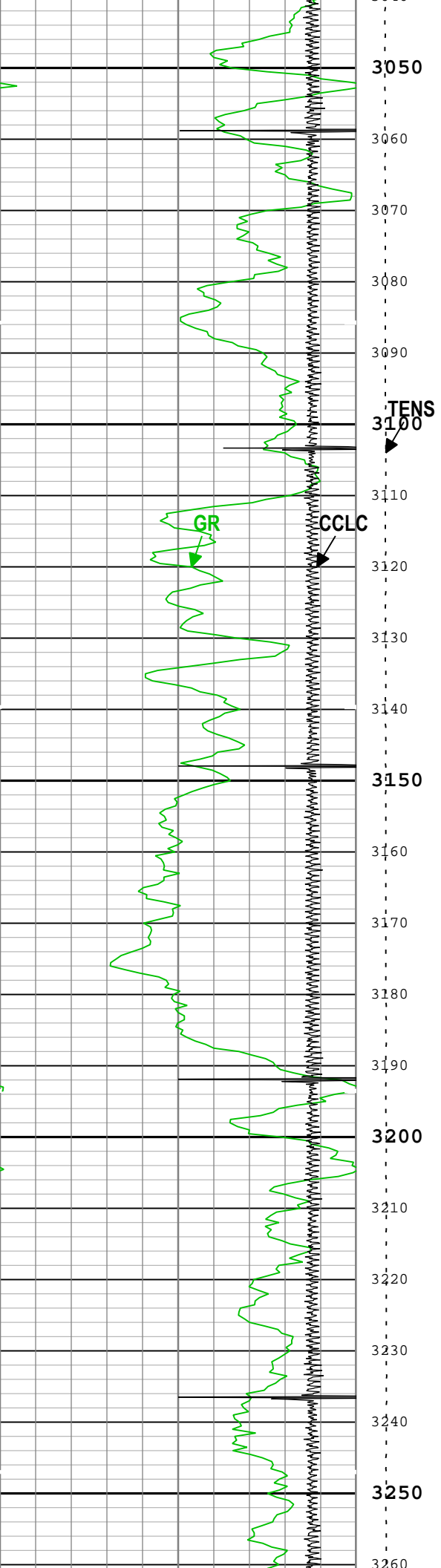
Log	Company:Caerus Operating LLC	Well:Puckett 23D-23 697
		one: Log[3]:Up:S004

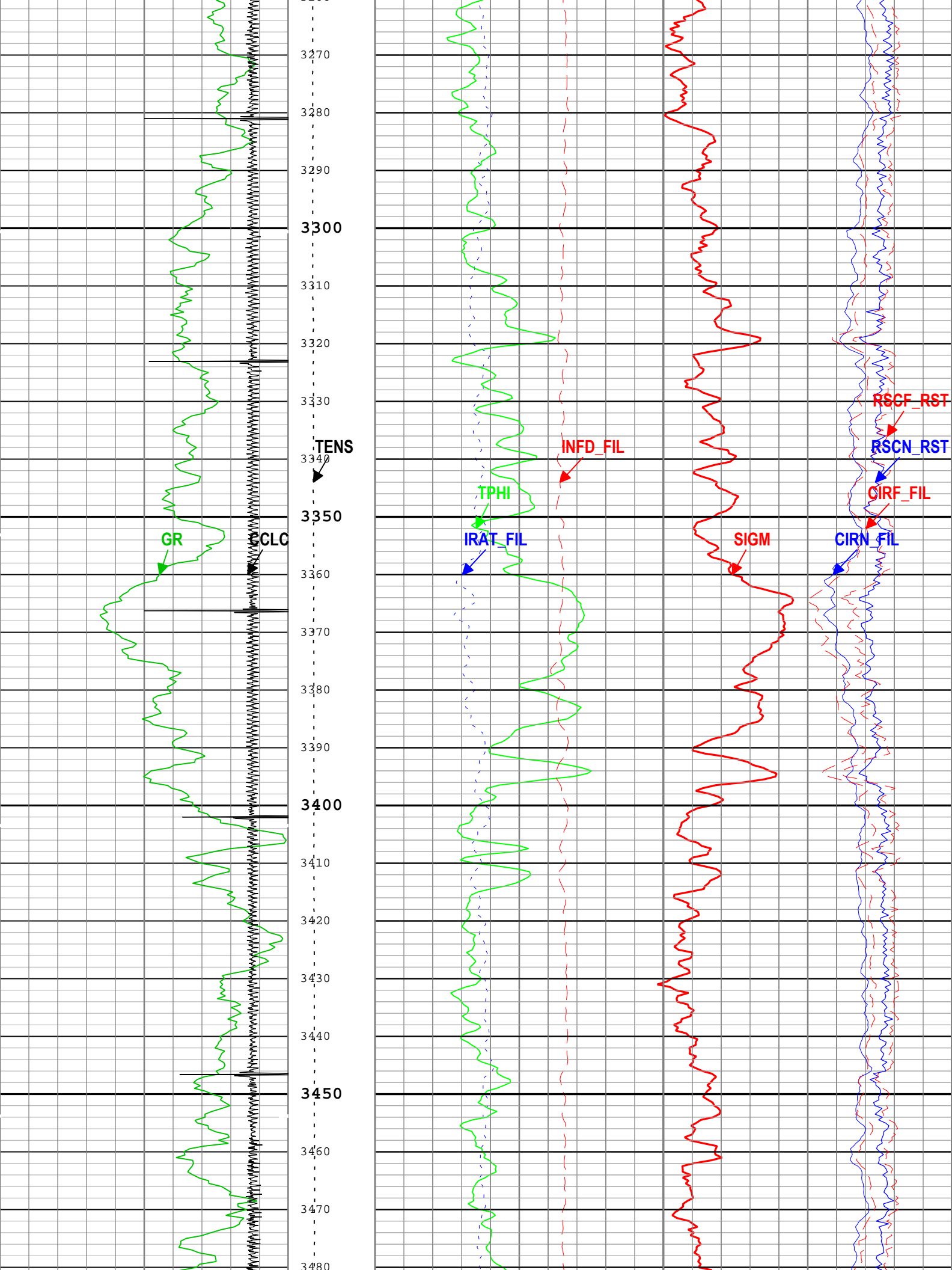
Description: RST SIGMA Answer Format: Log (RST SIGMA Answer) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 07-Jan-2018 10:31:04

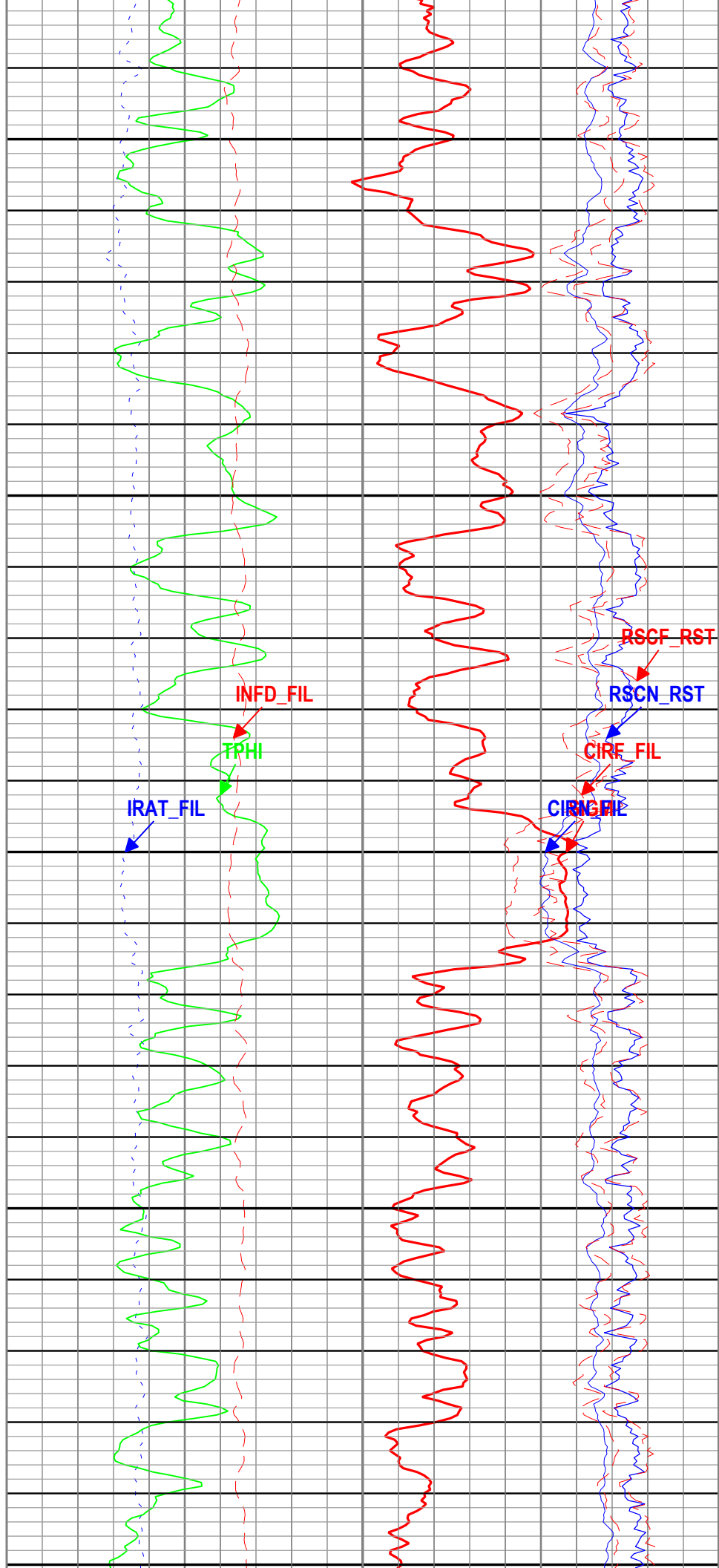
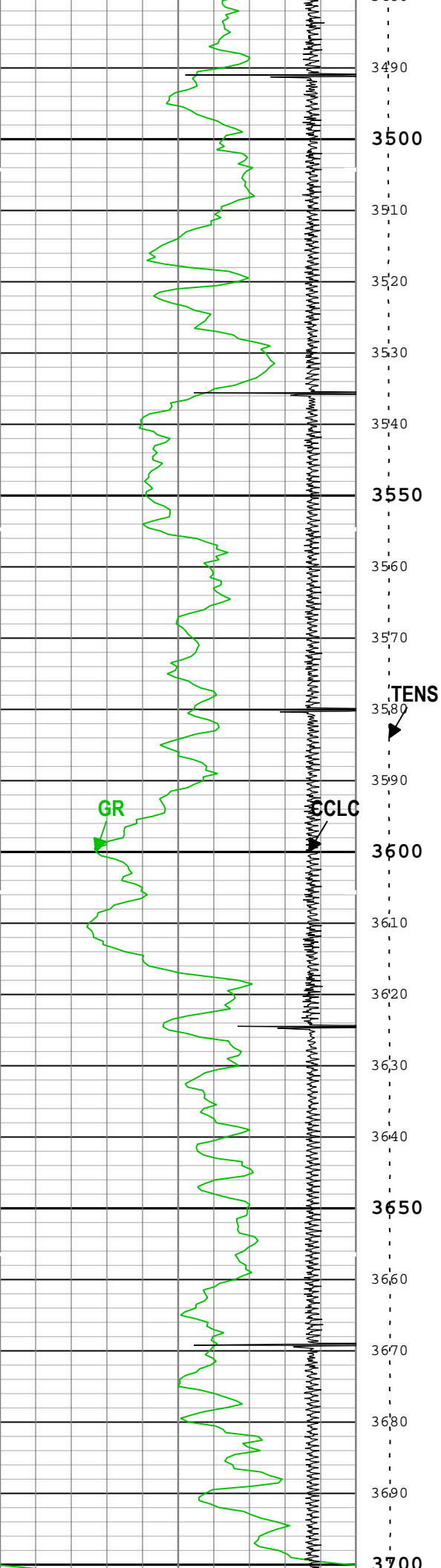


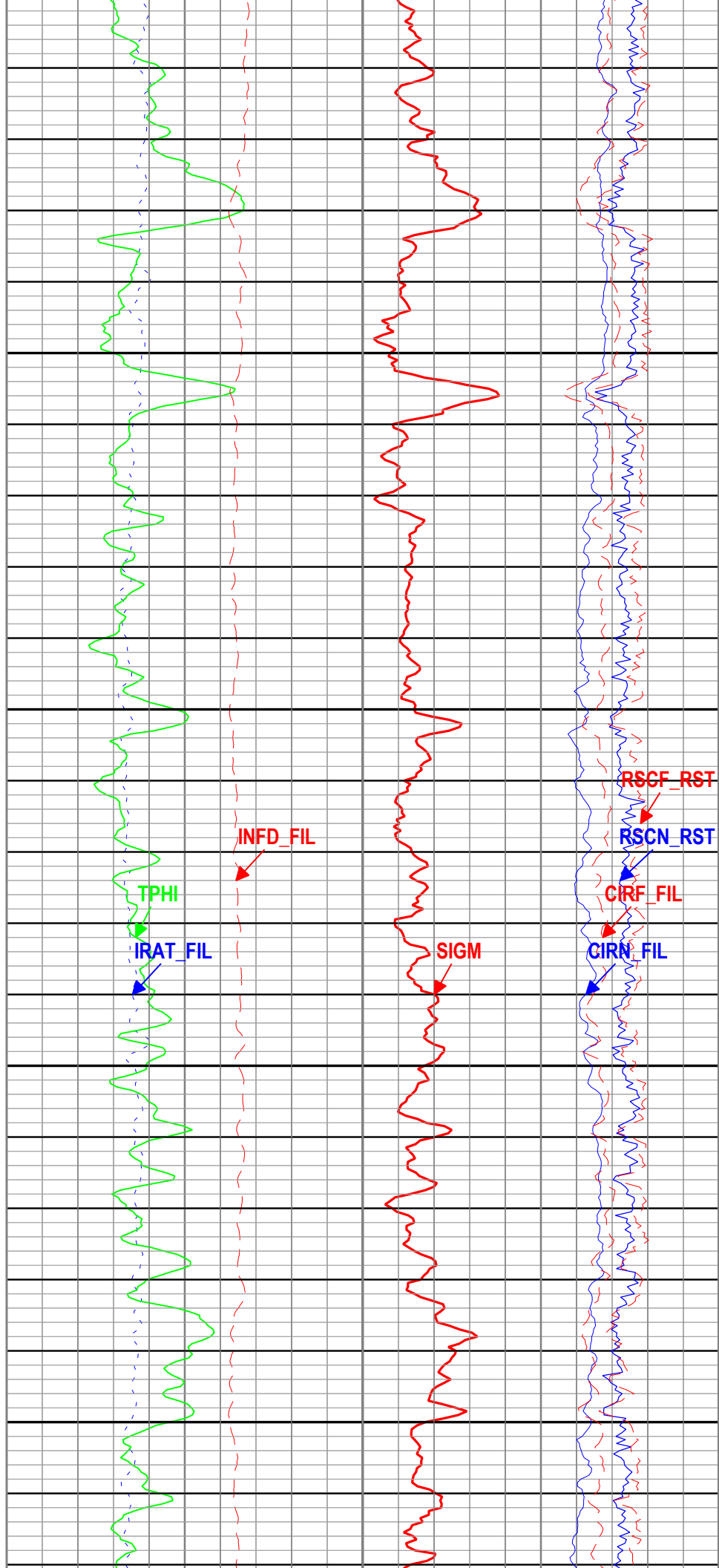
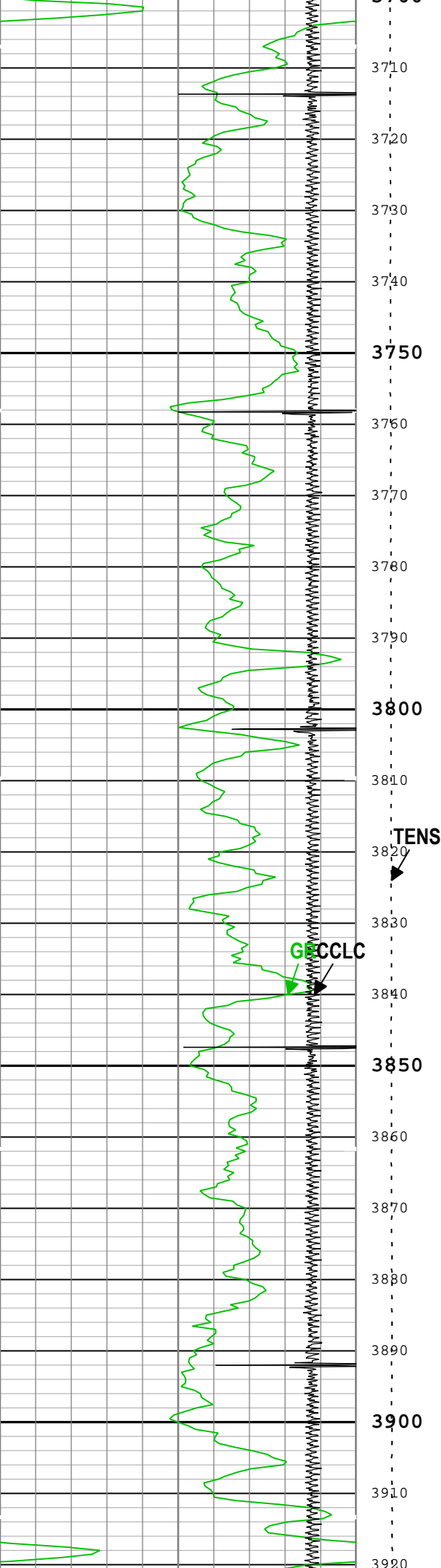


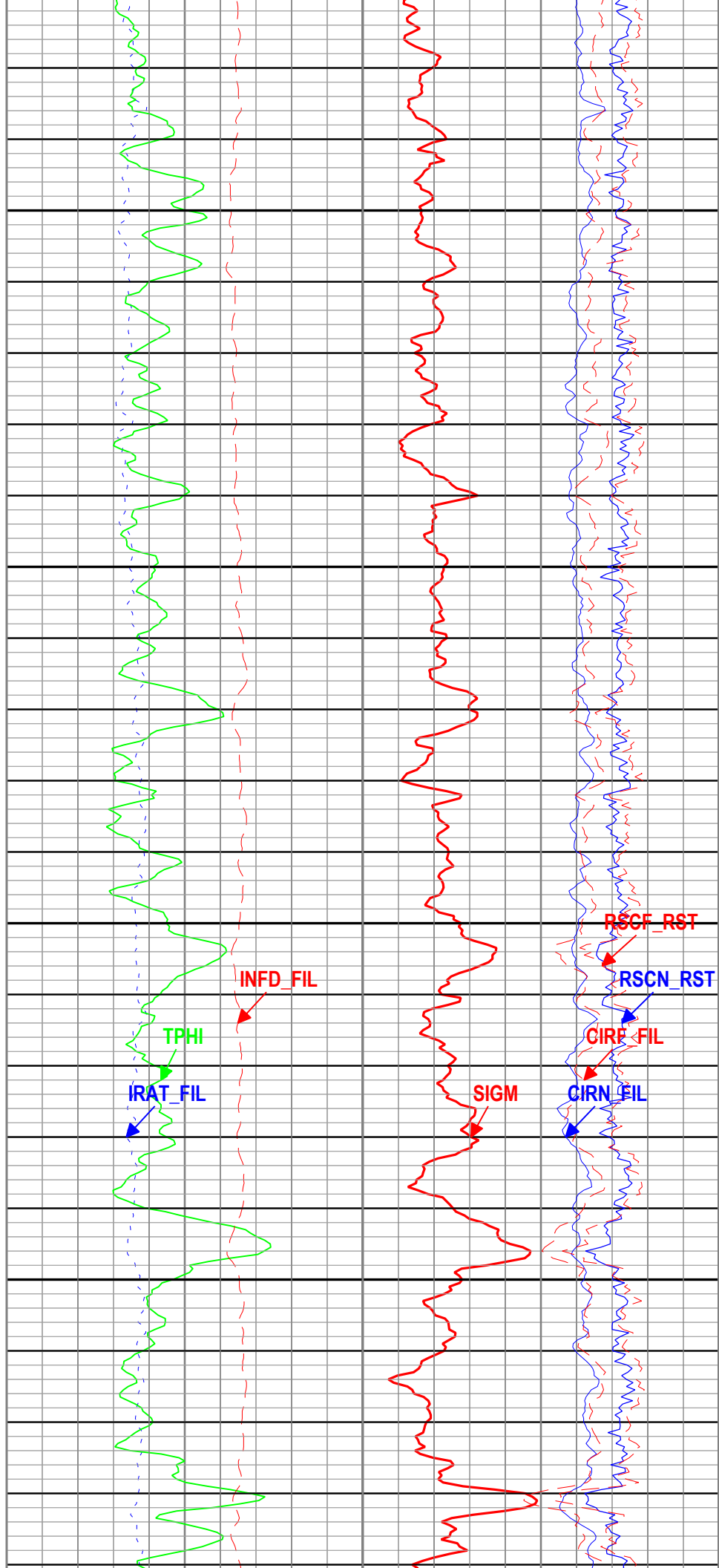
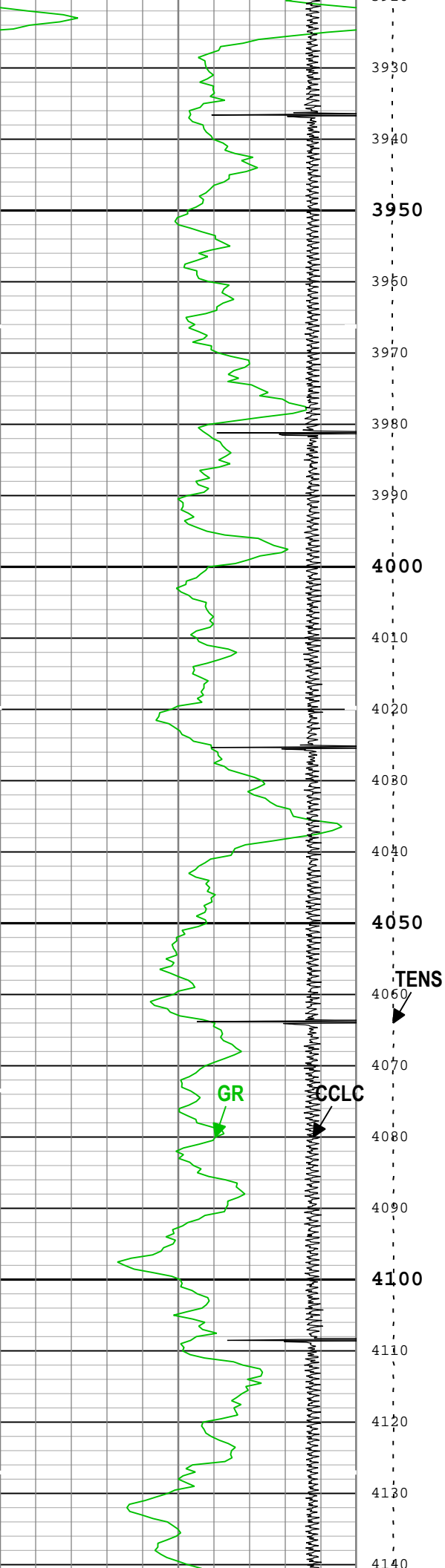


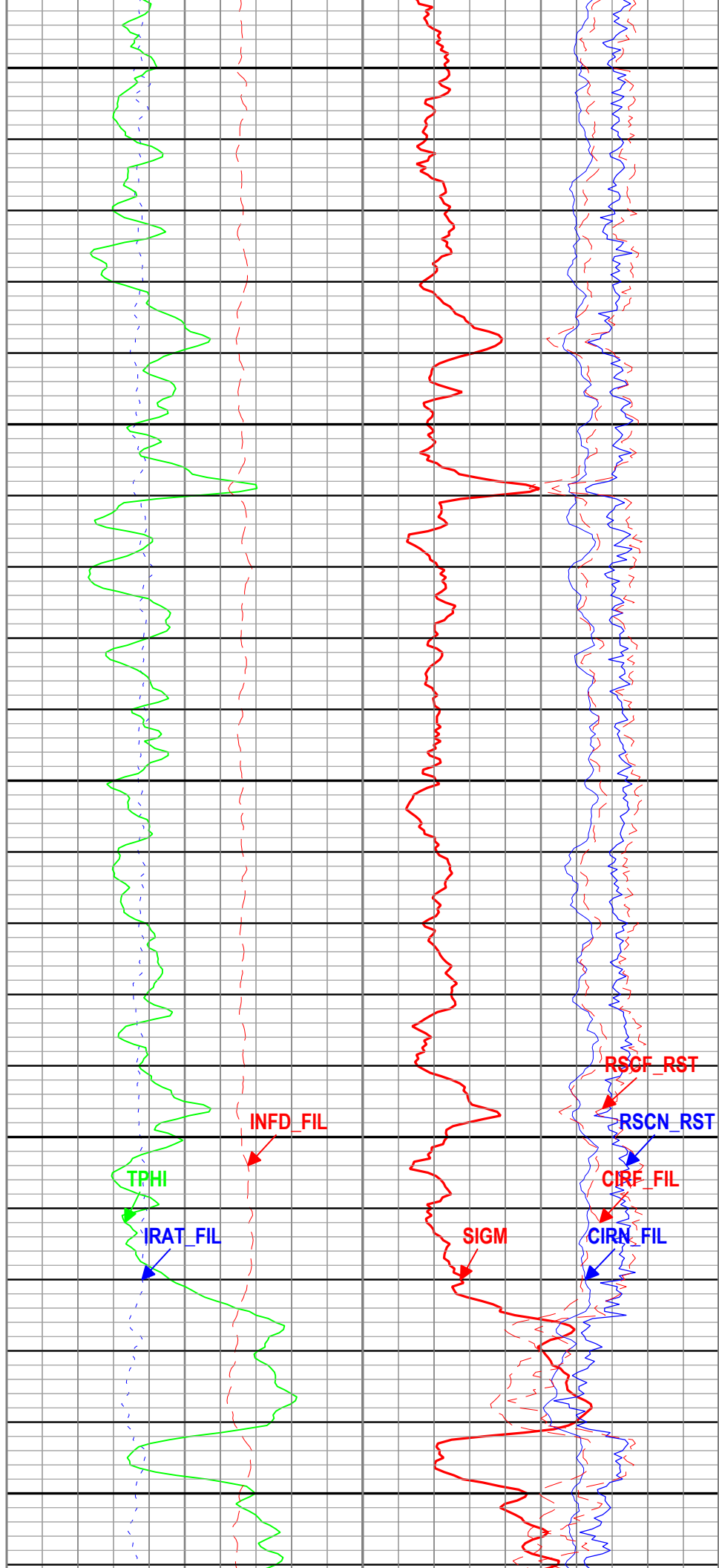
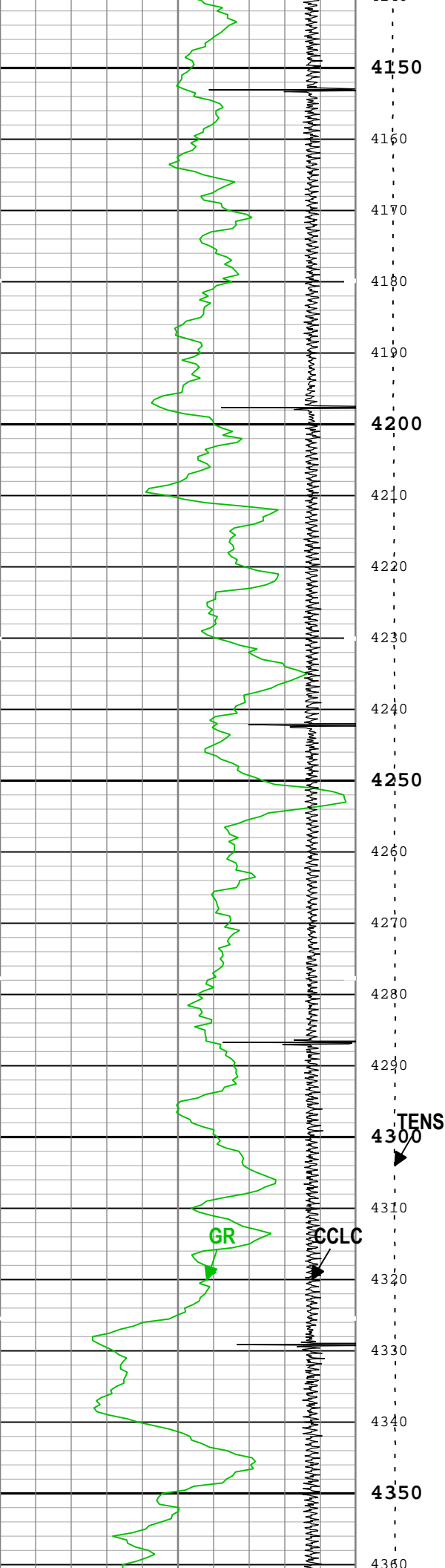


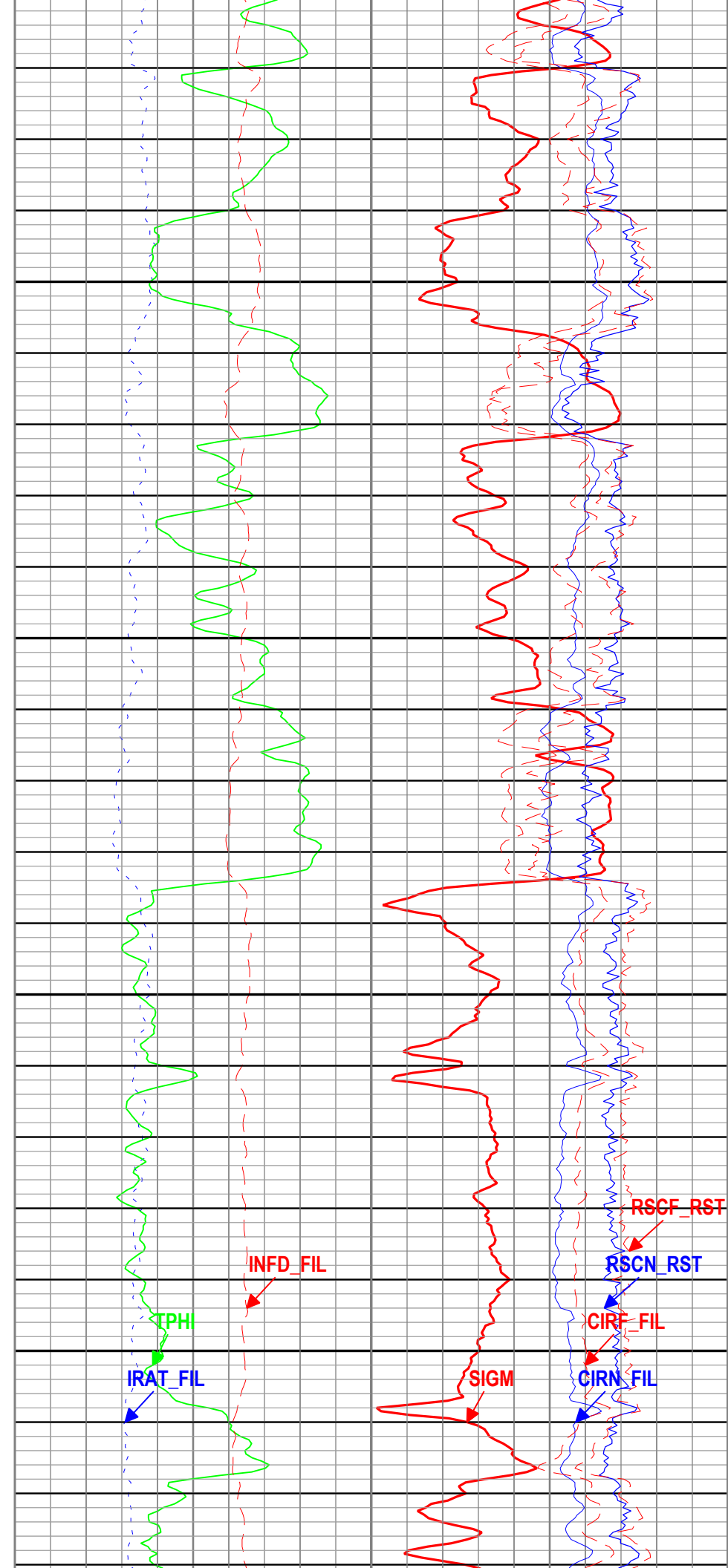
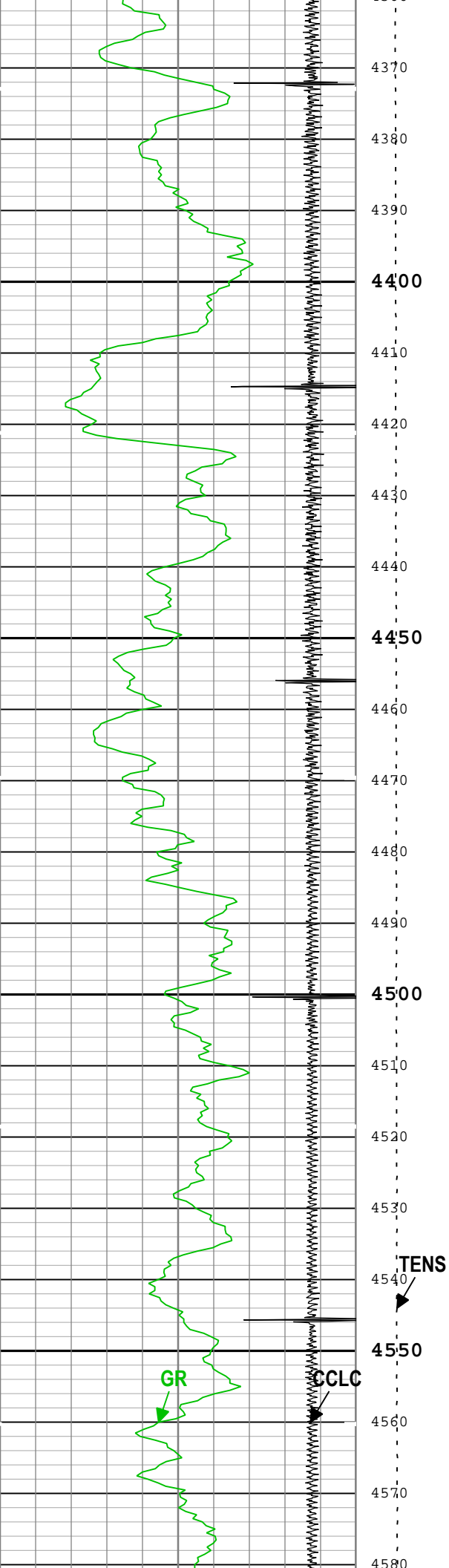


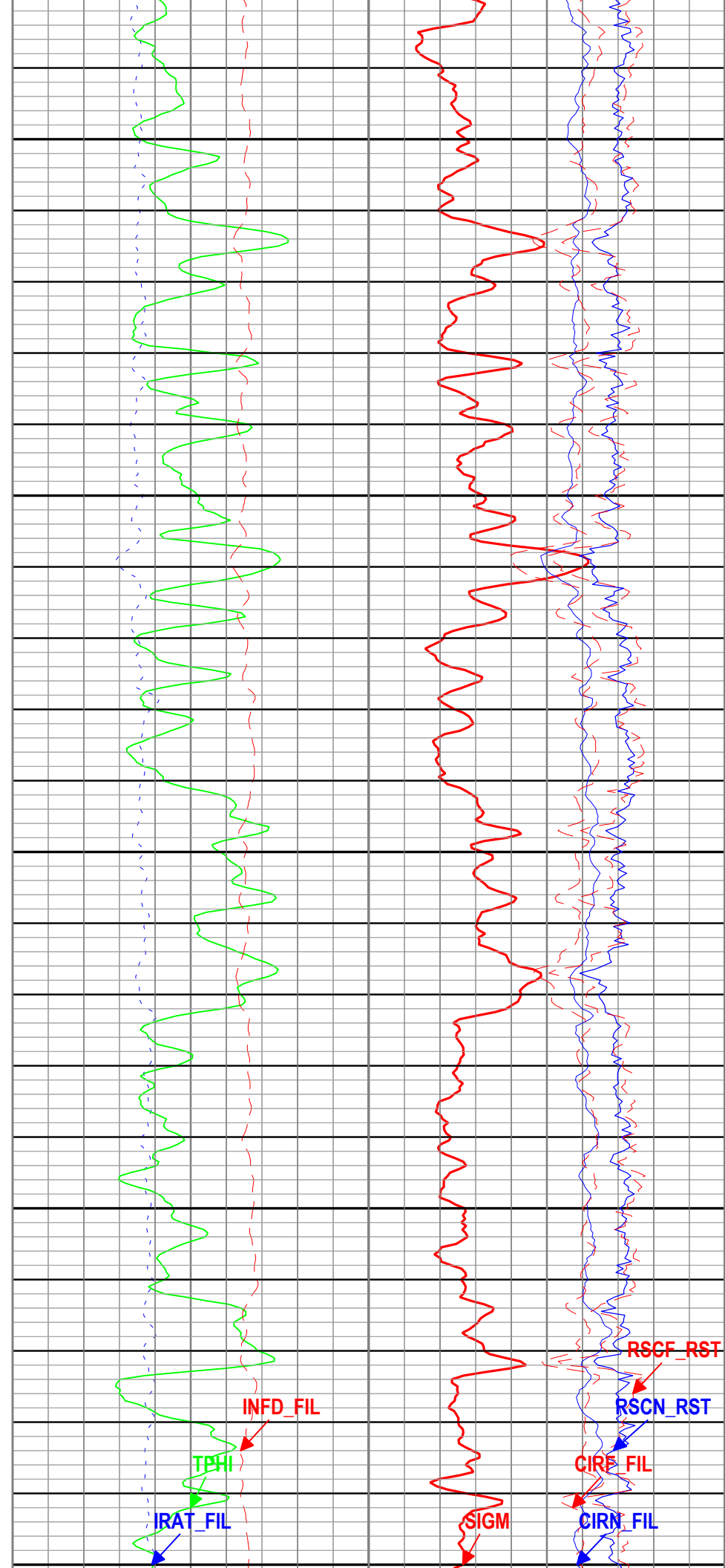
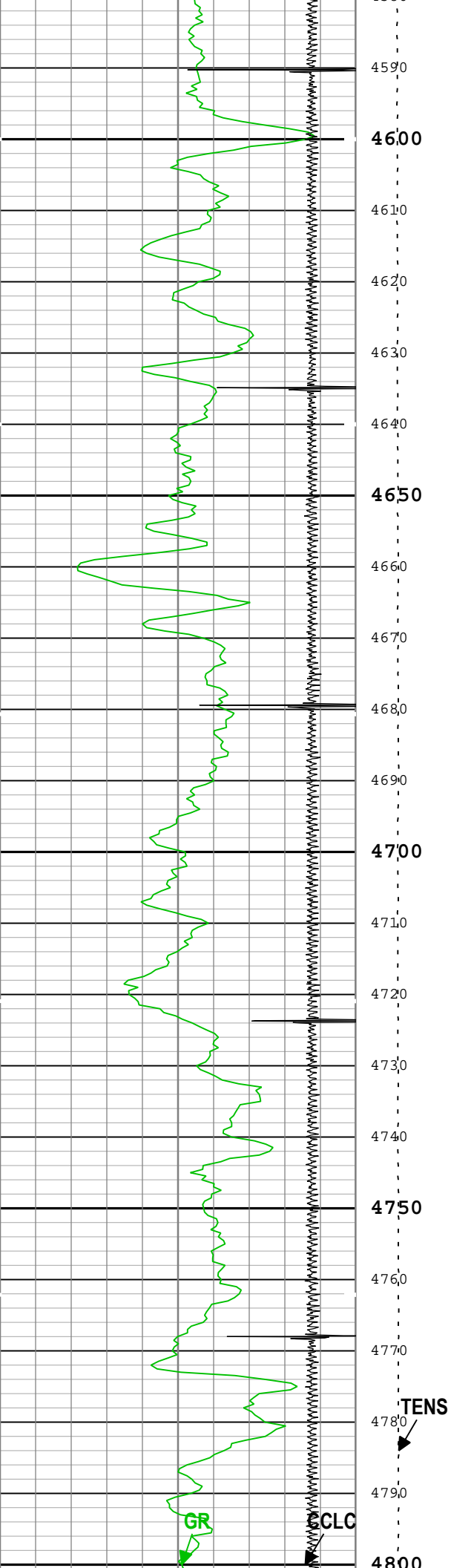


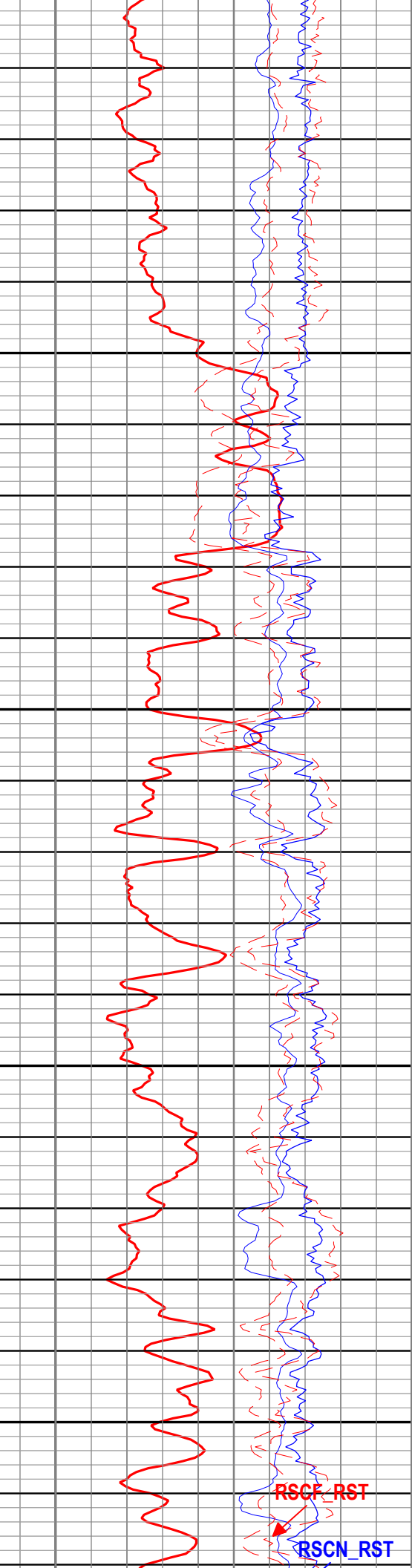
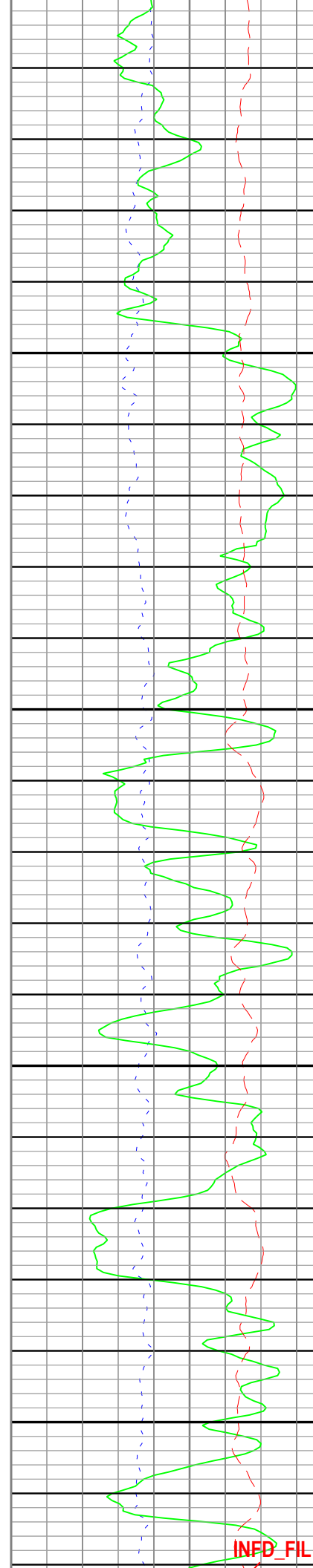
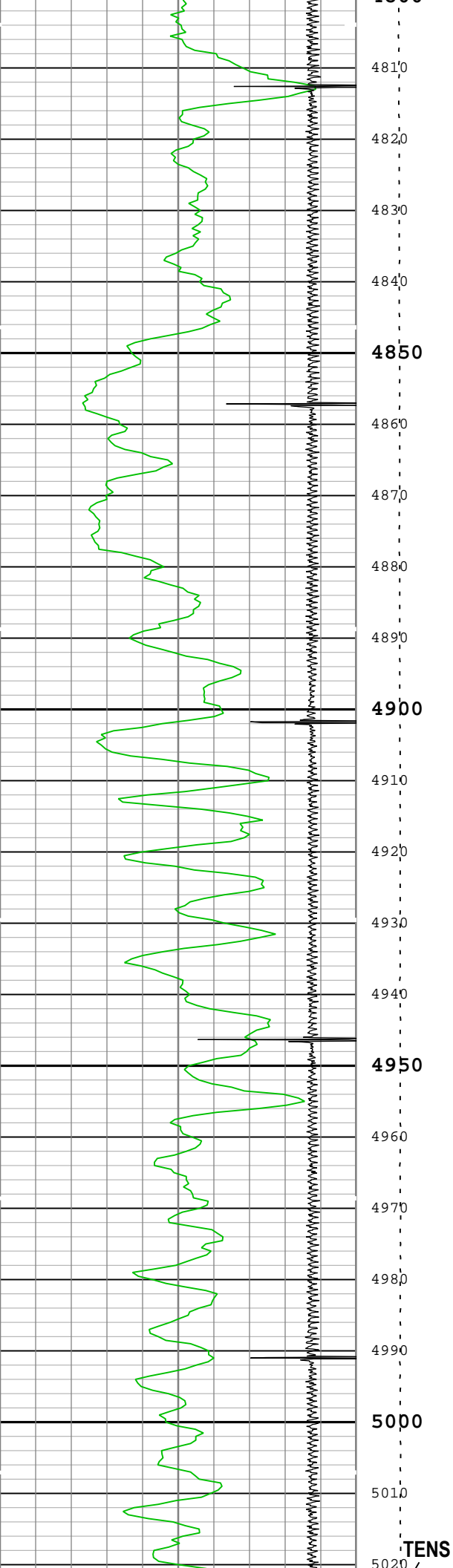


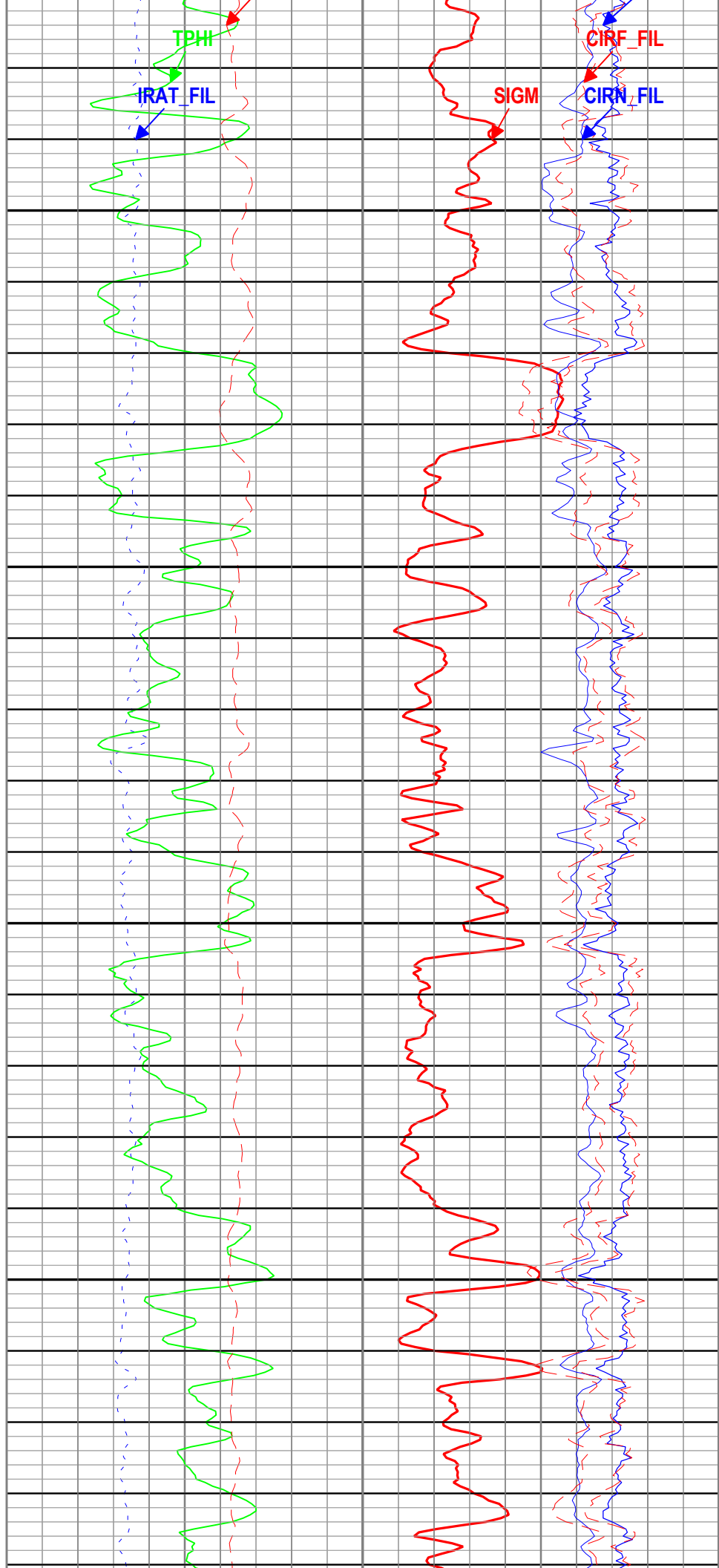
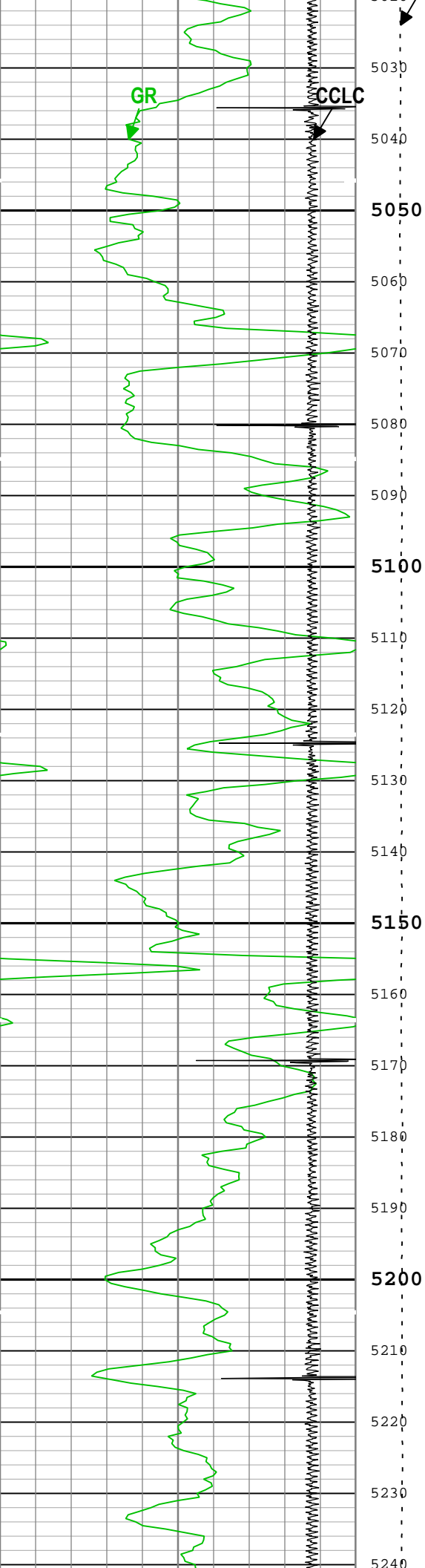


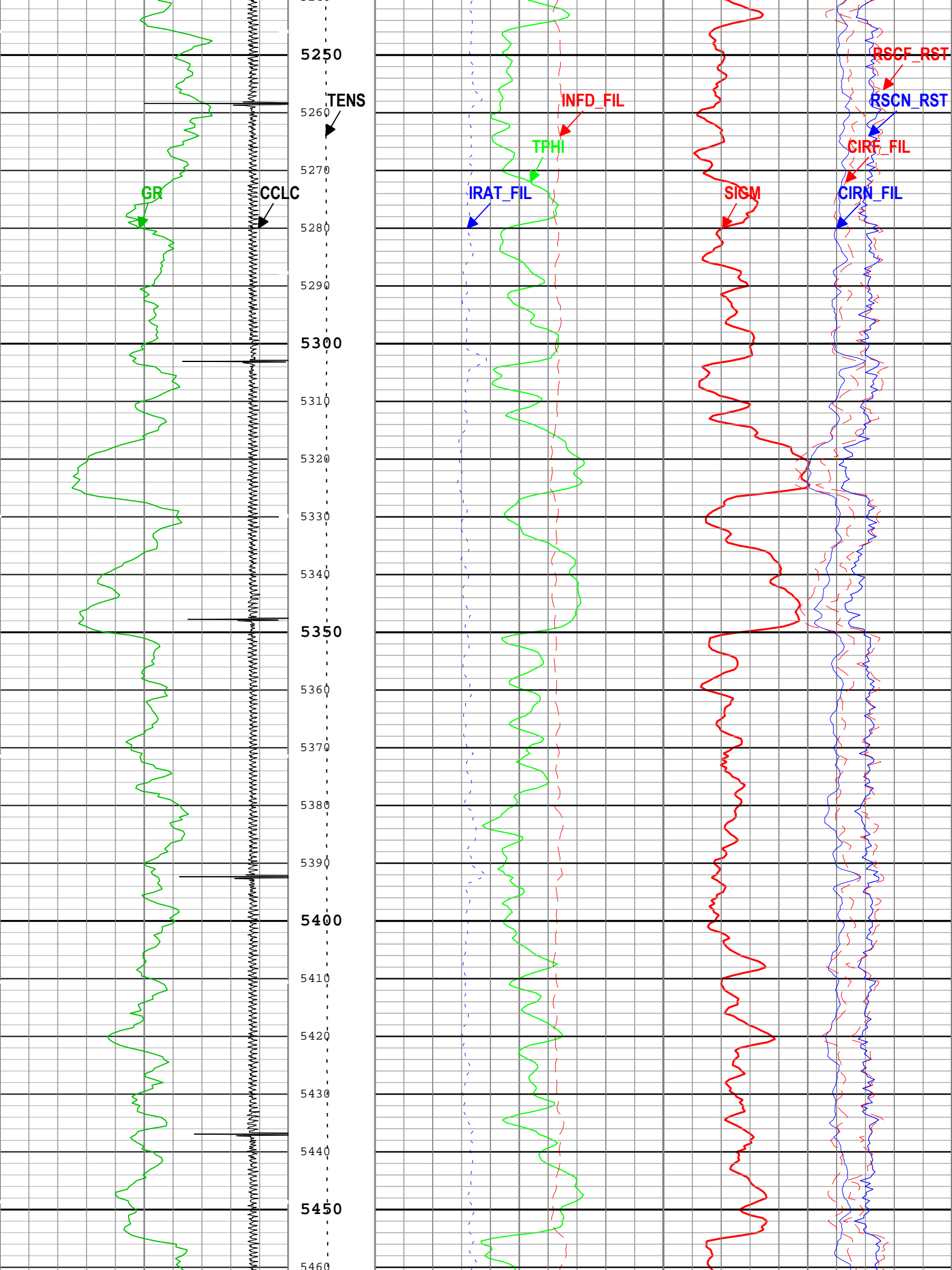


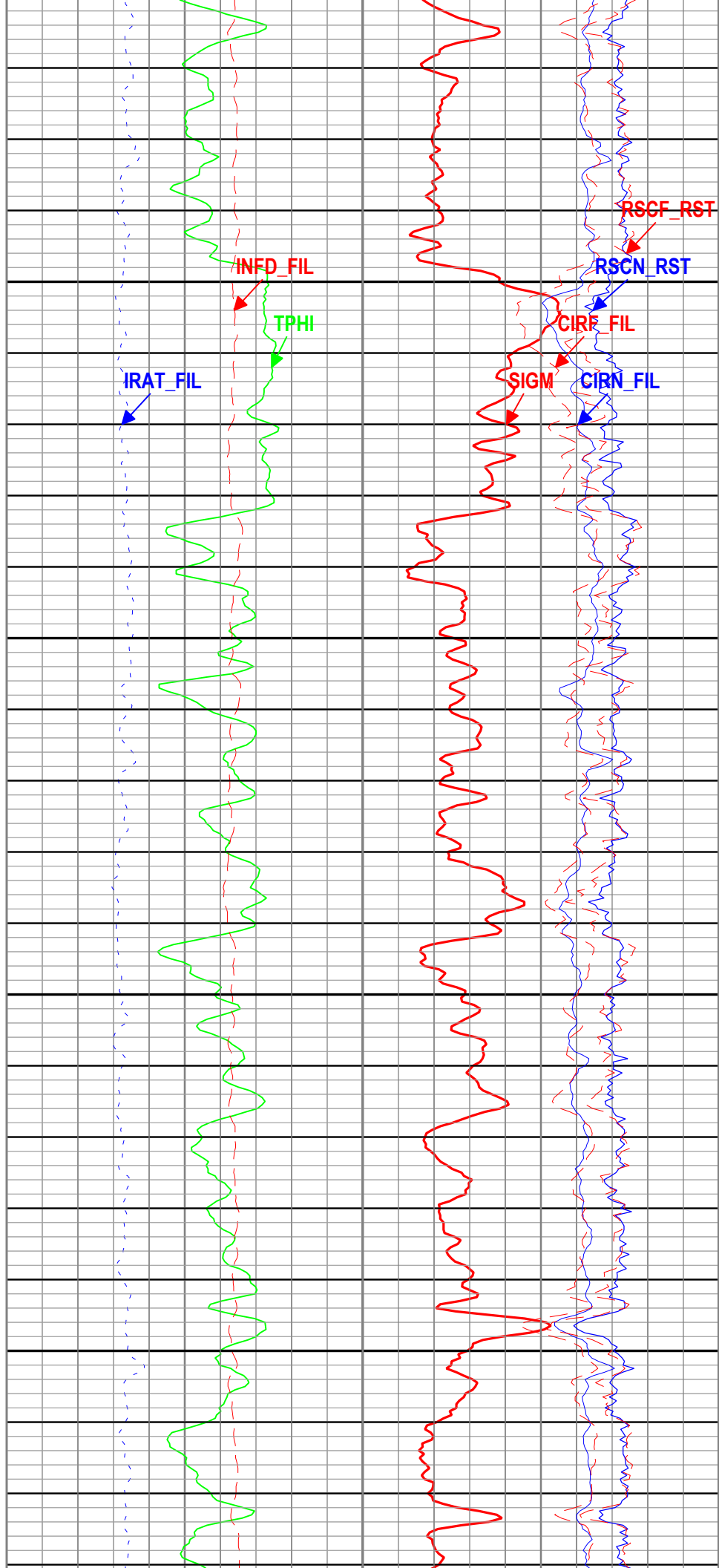
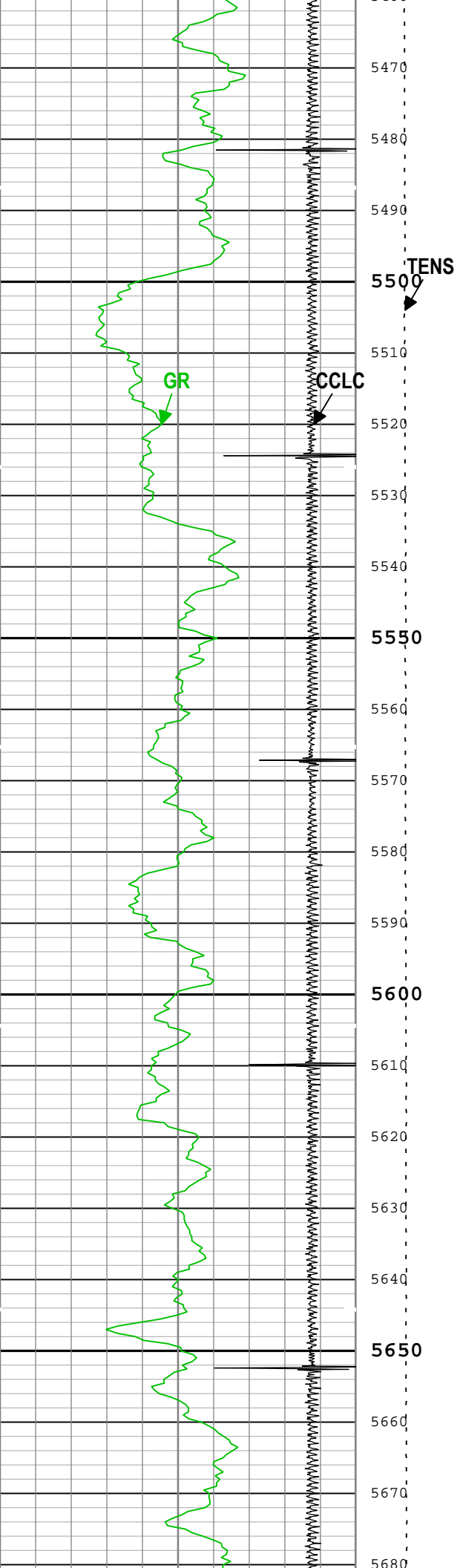


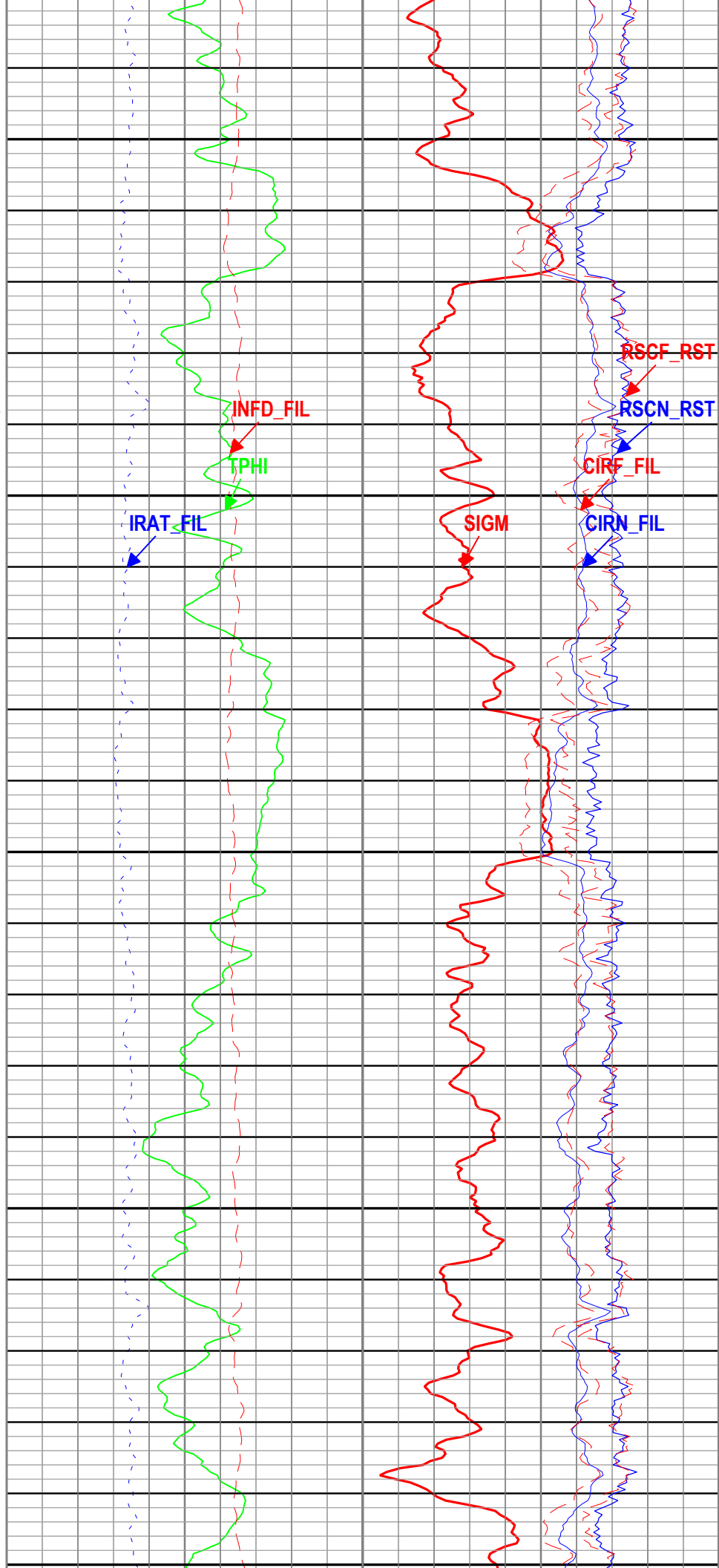
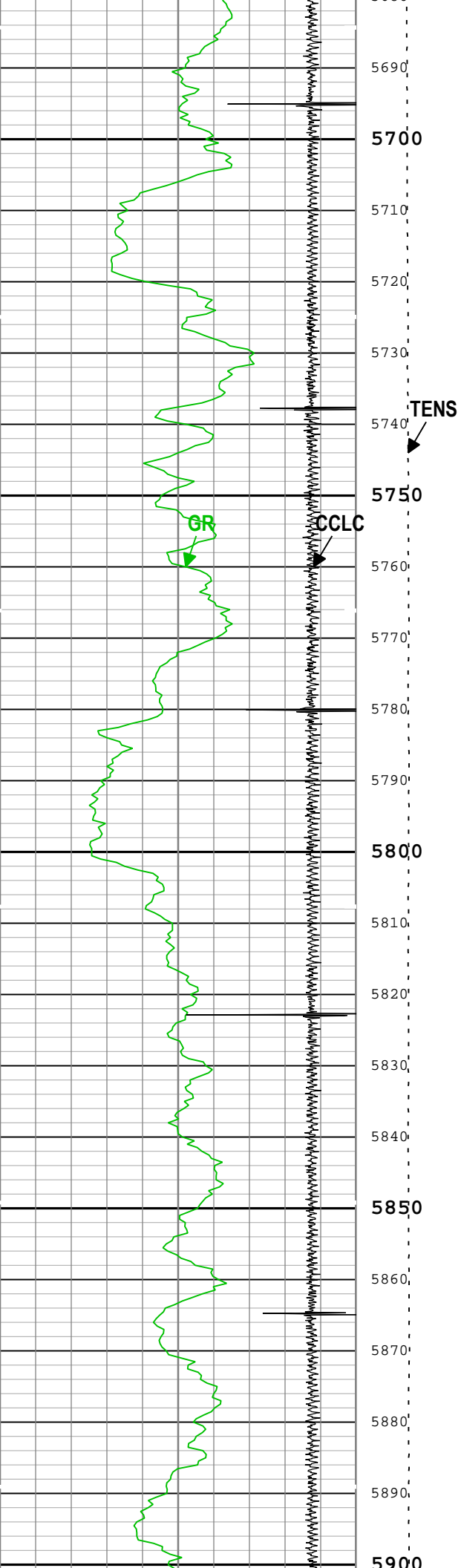


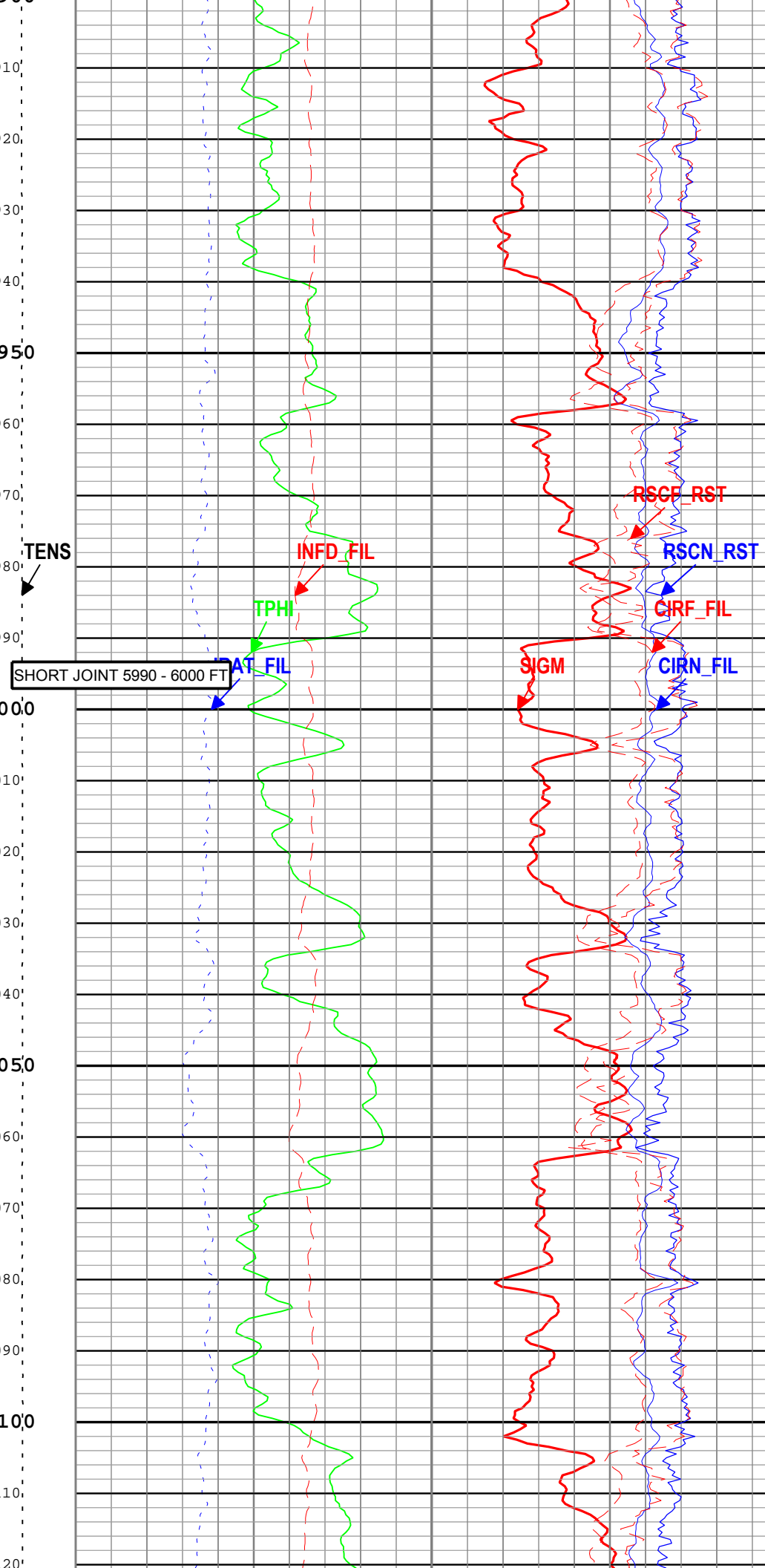
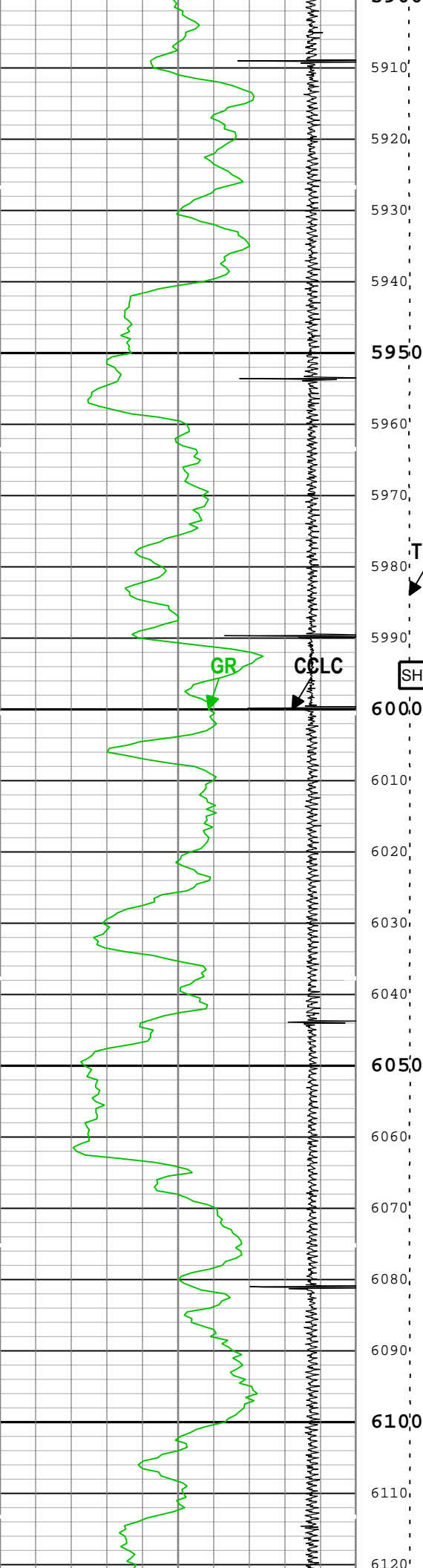


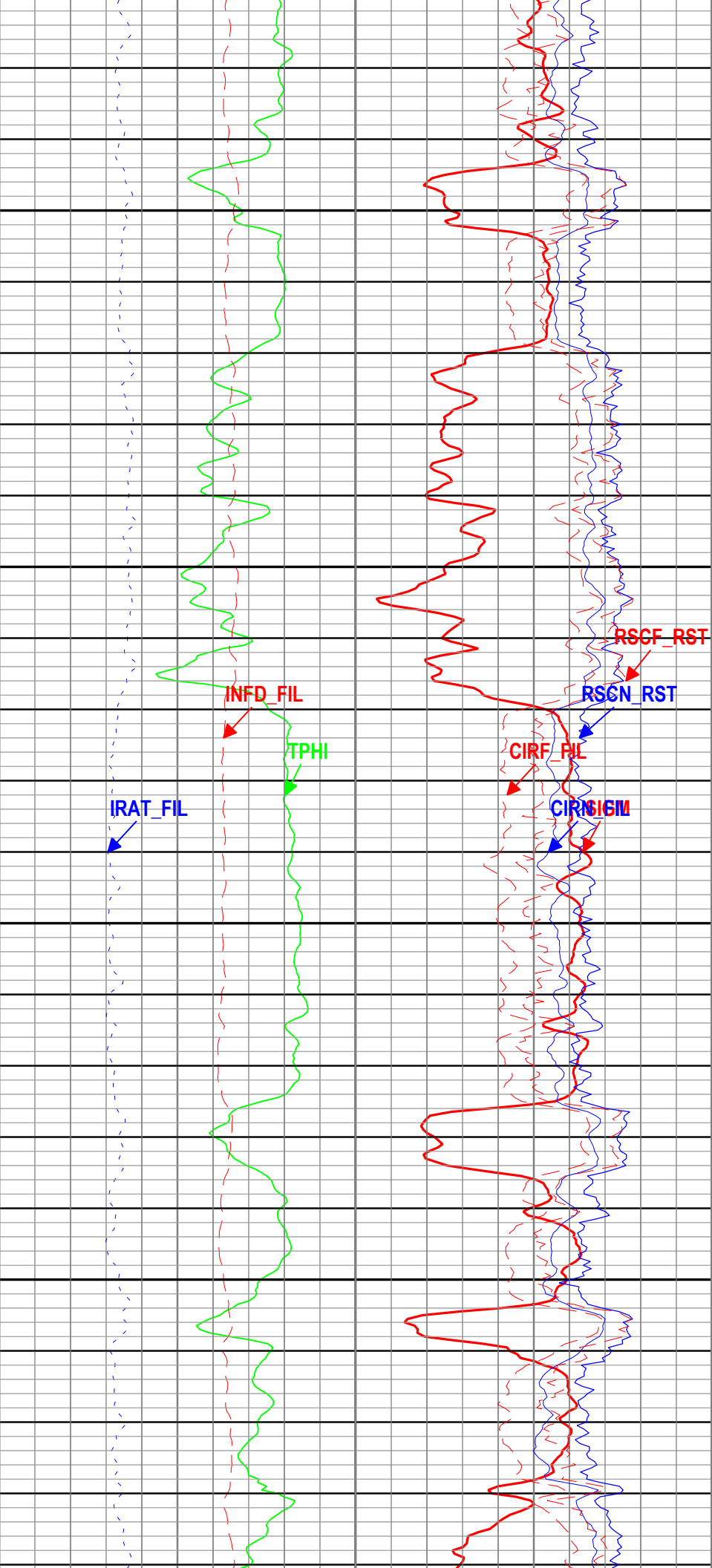
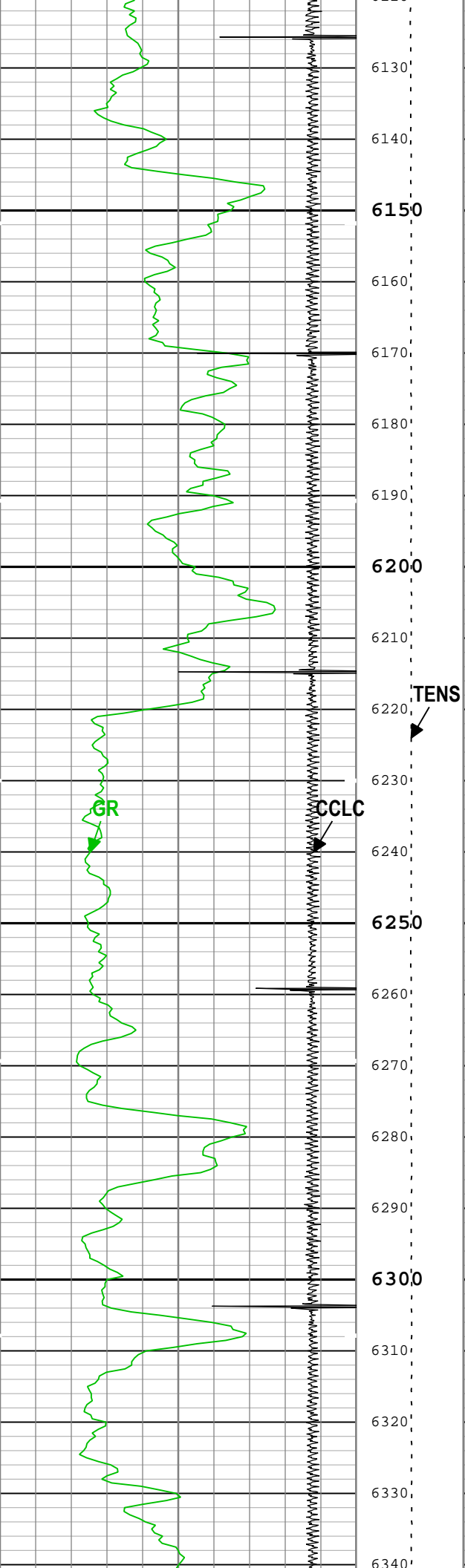


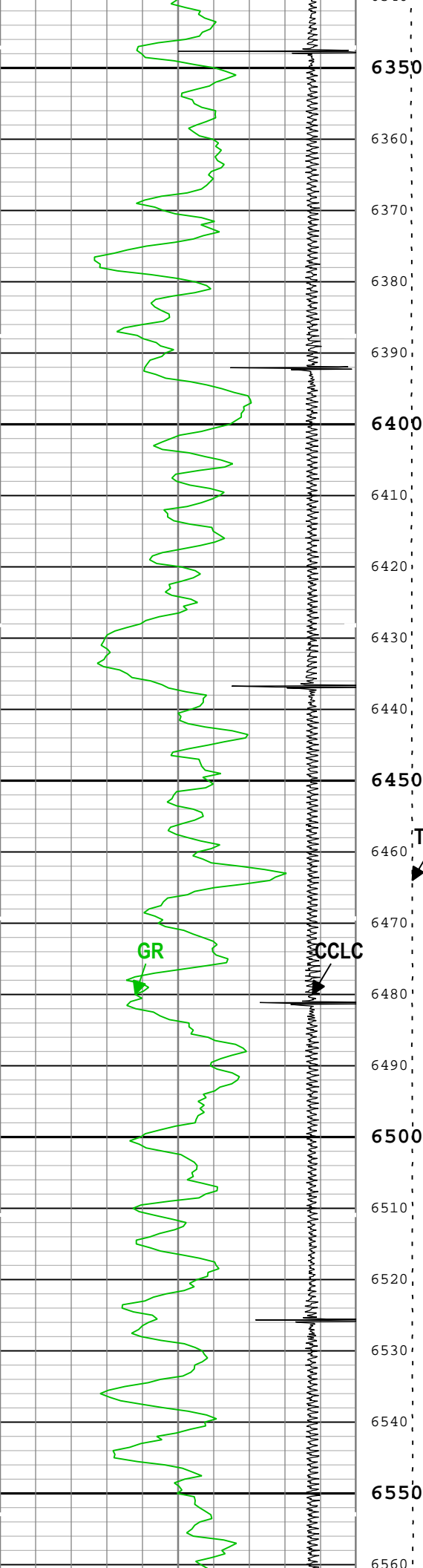




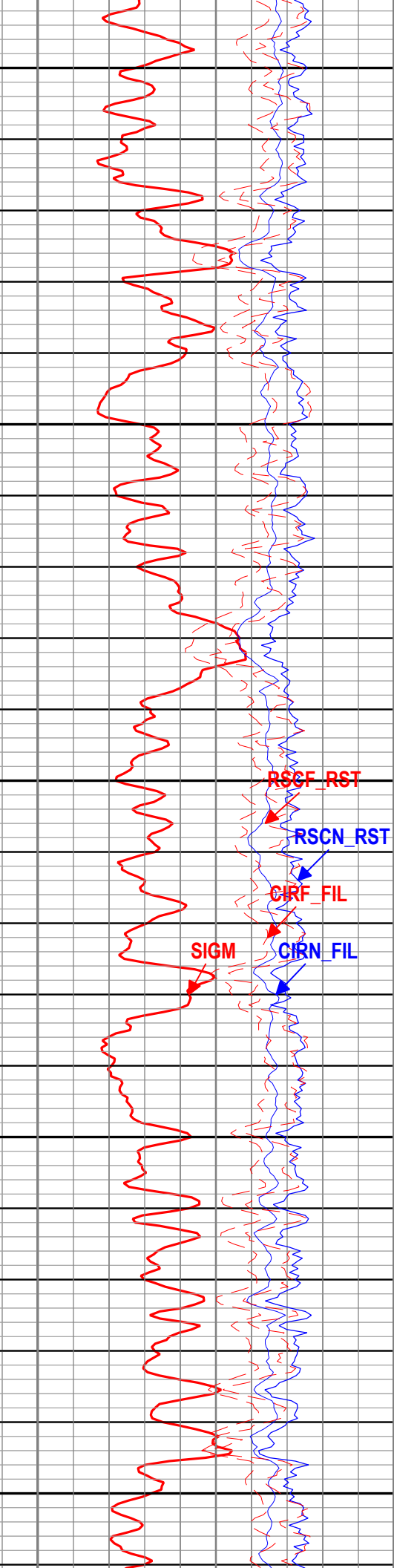
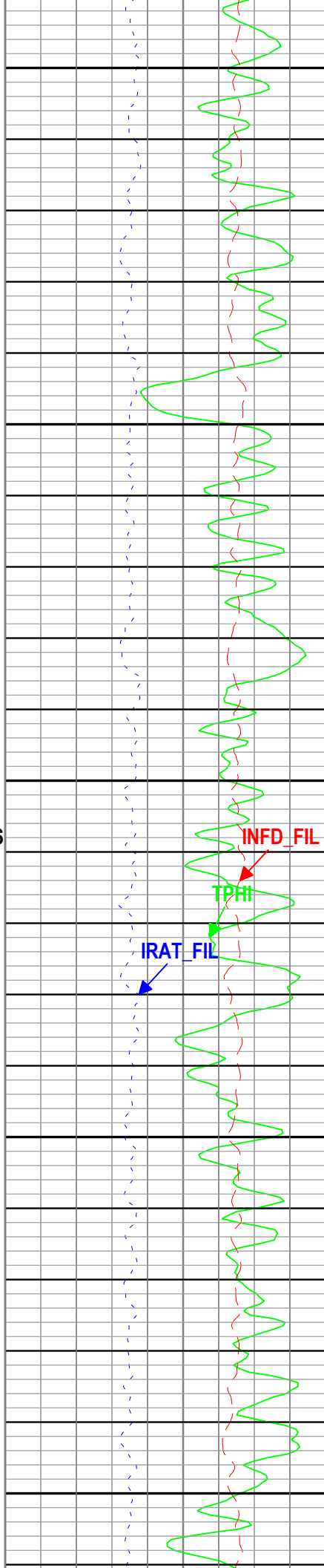


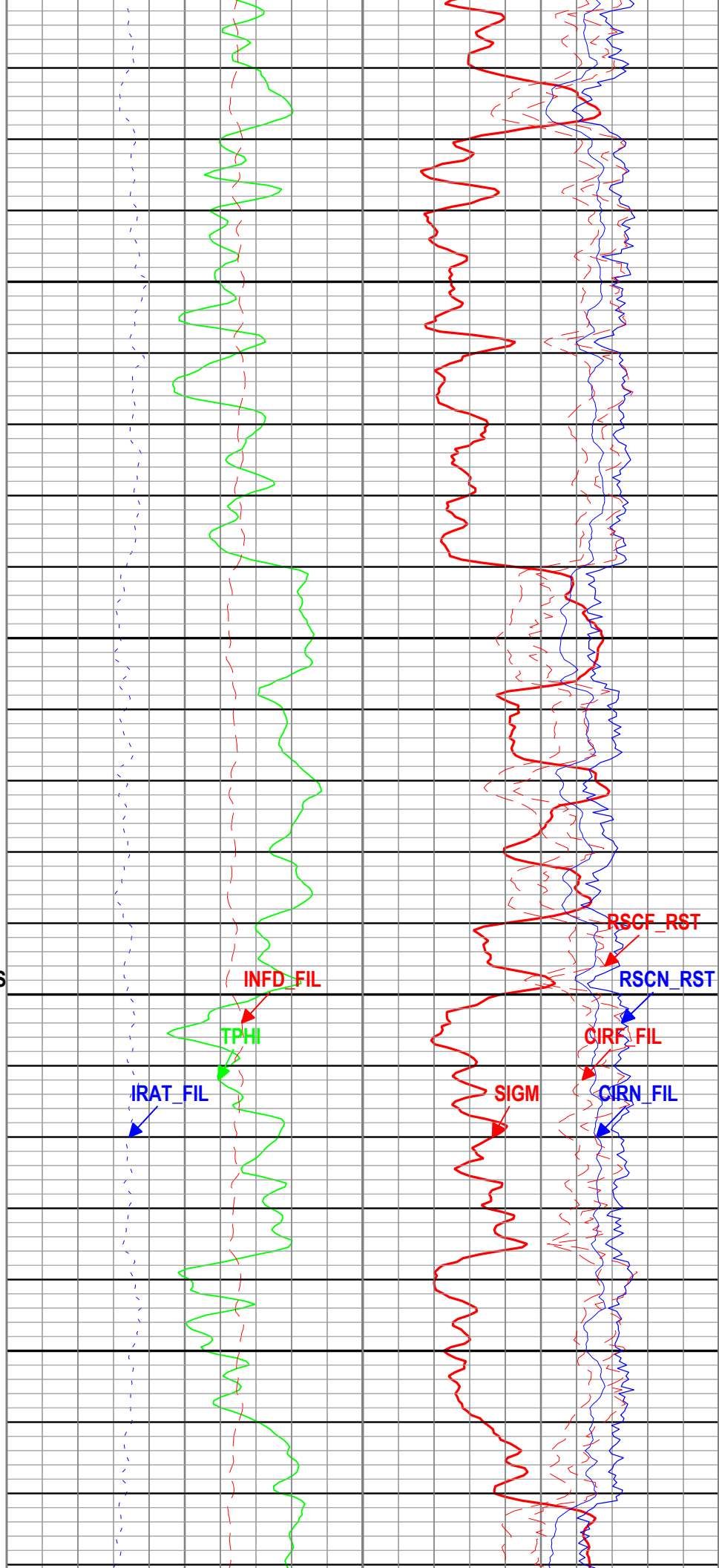
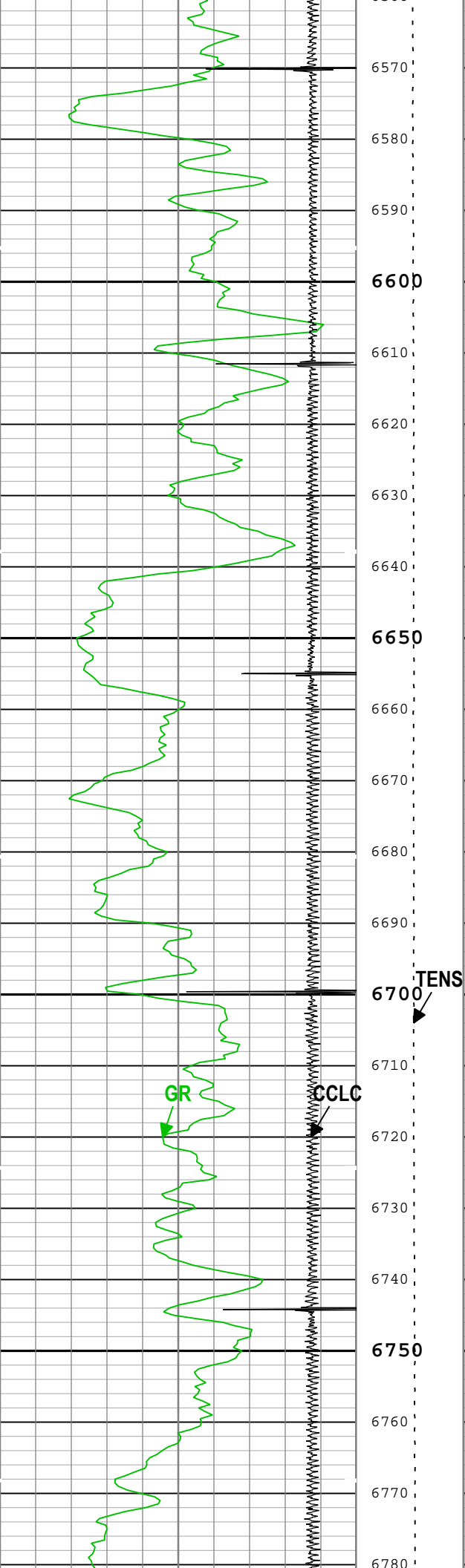


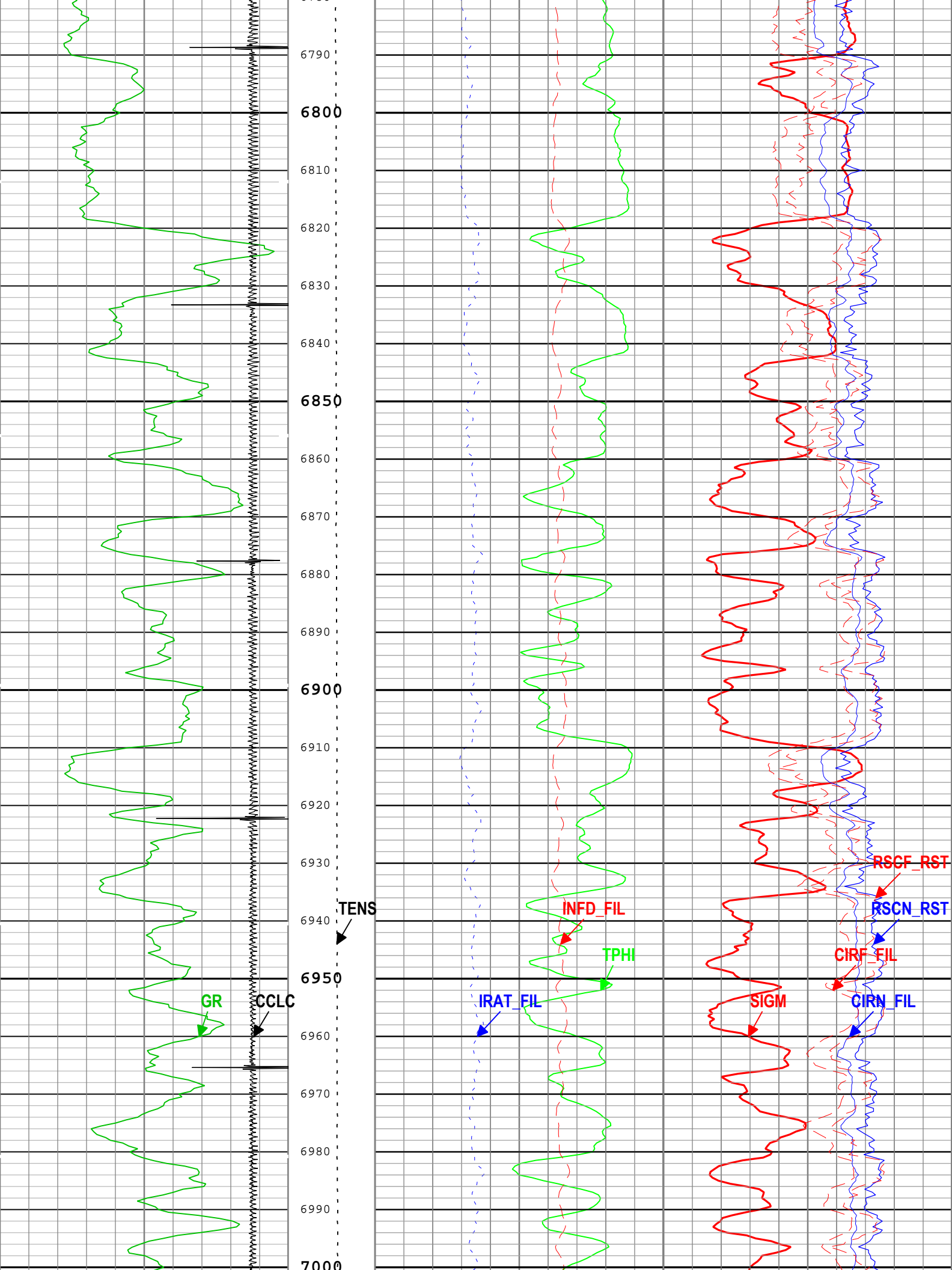


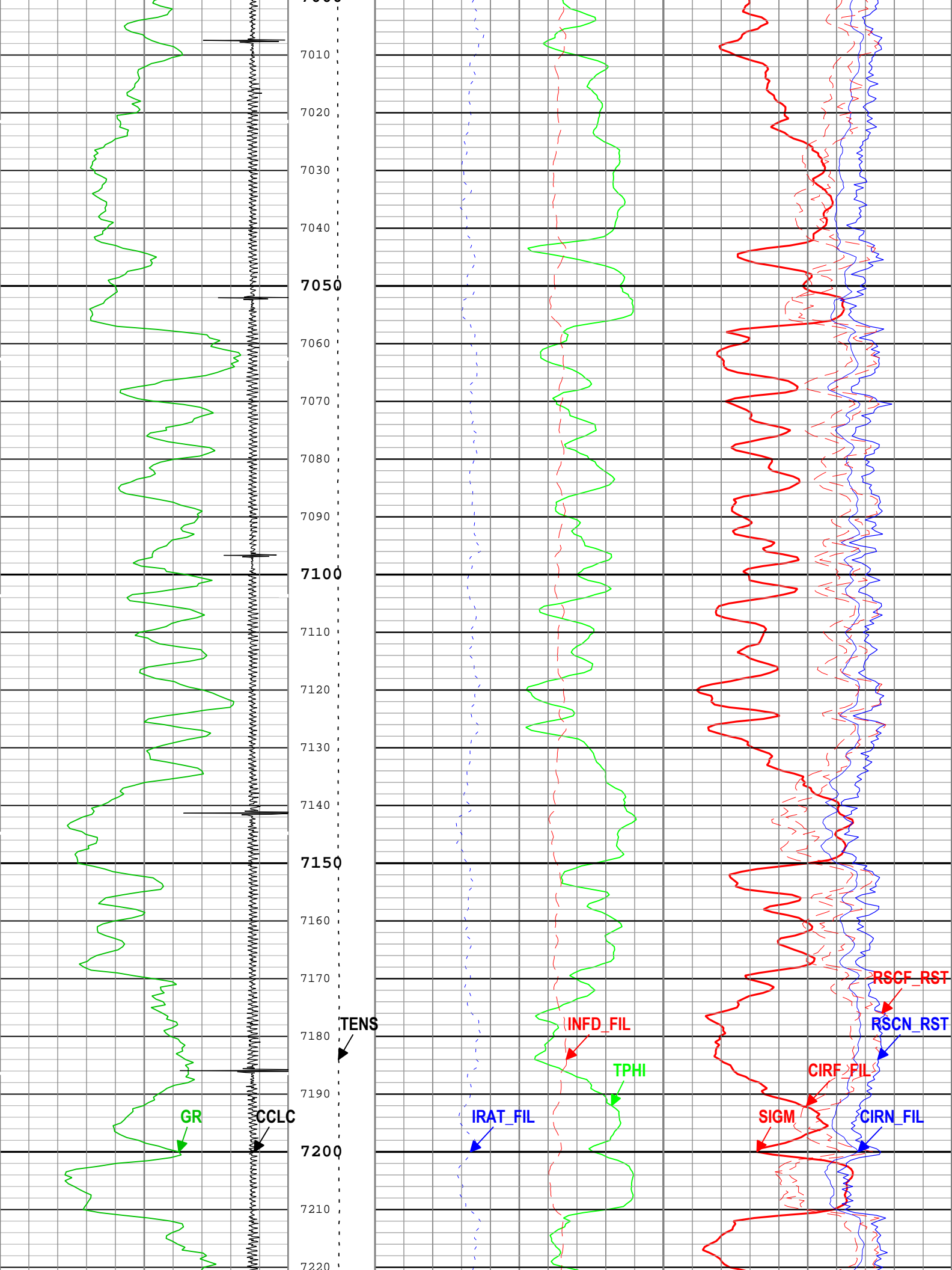


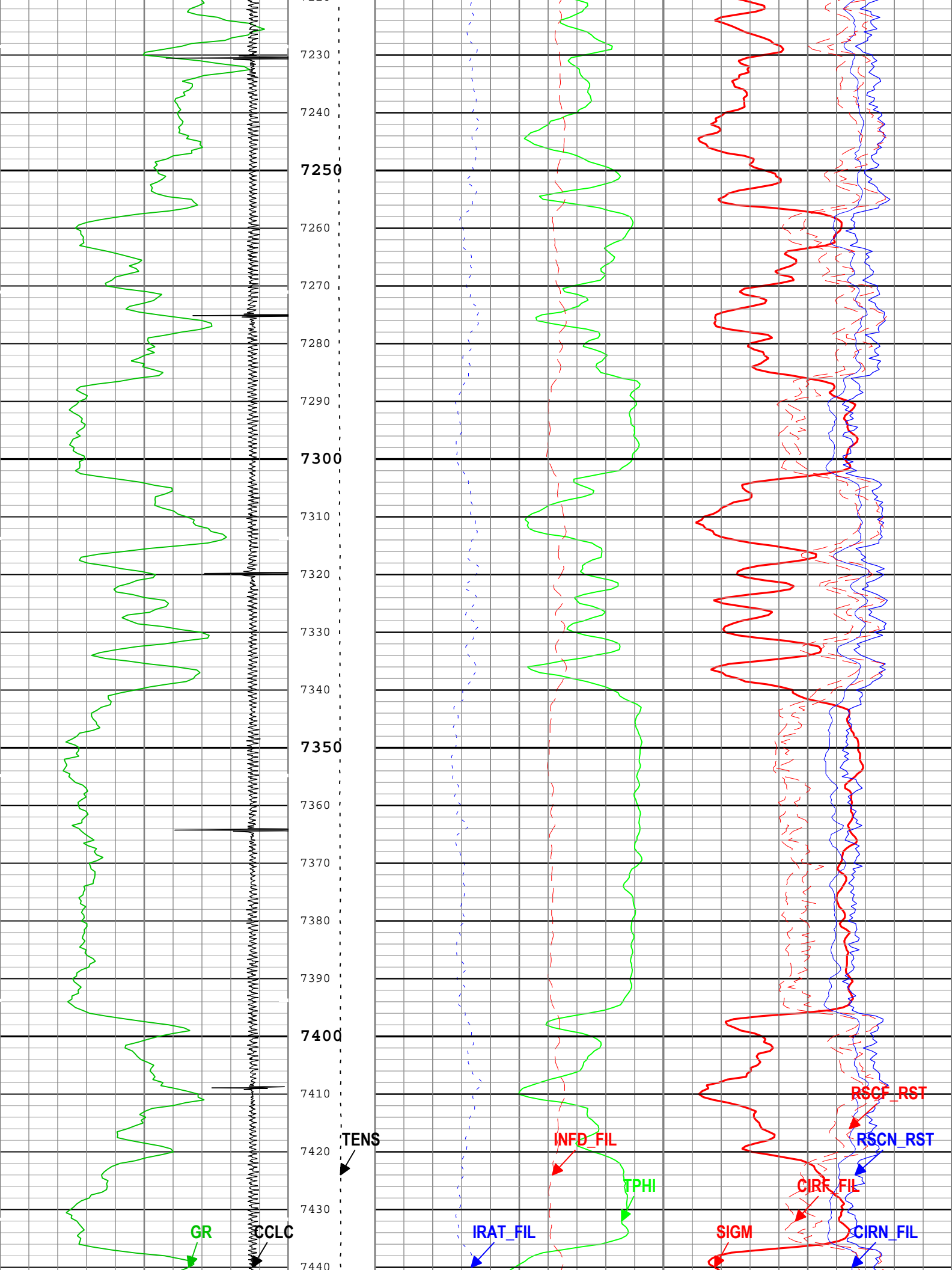
TENS

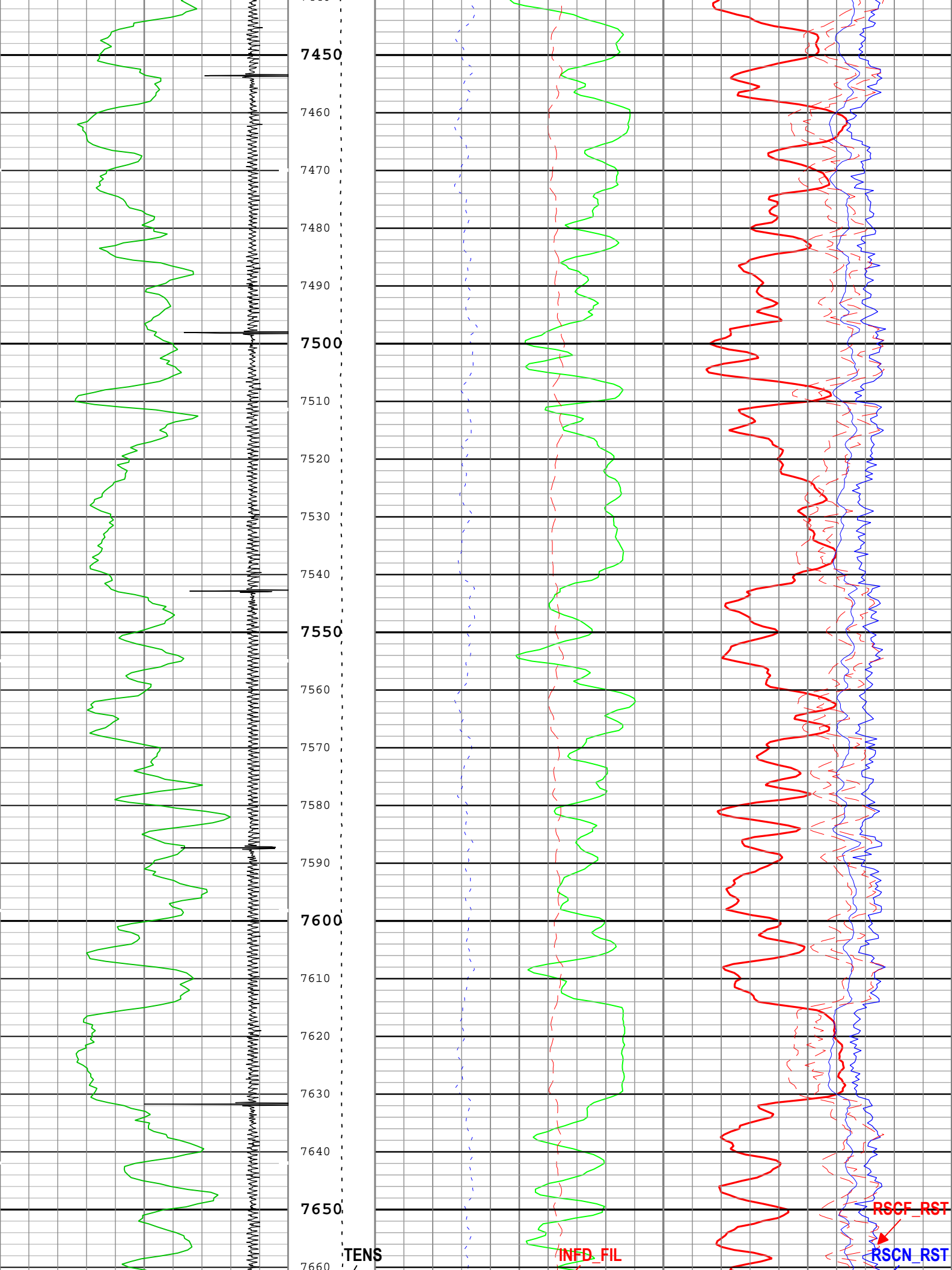


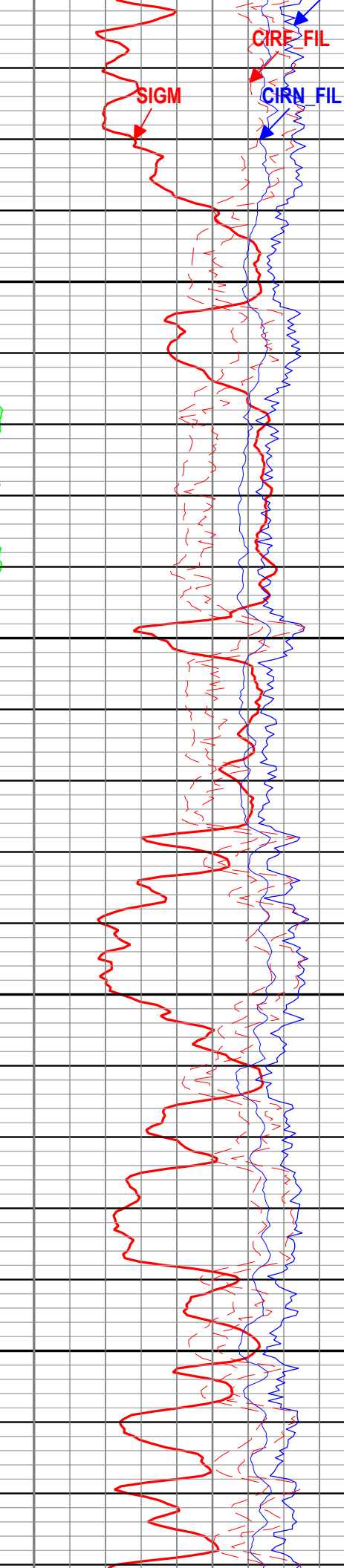
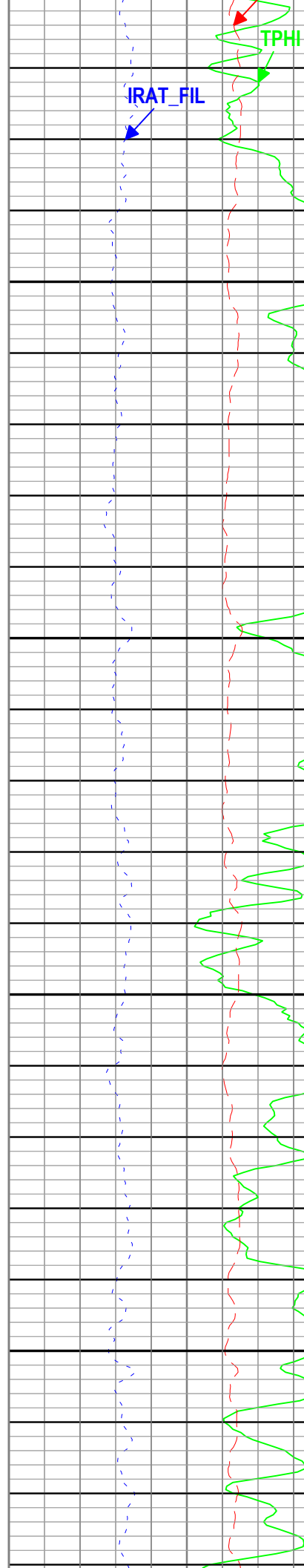
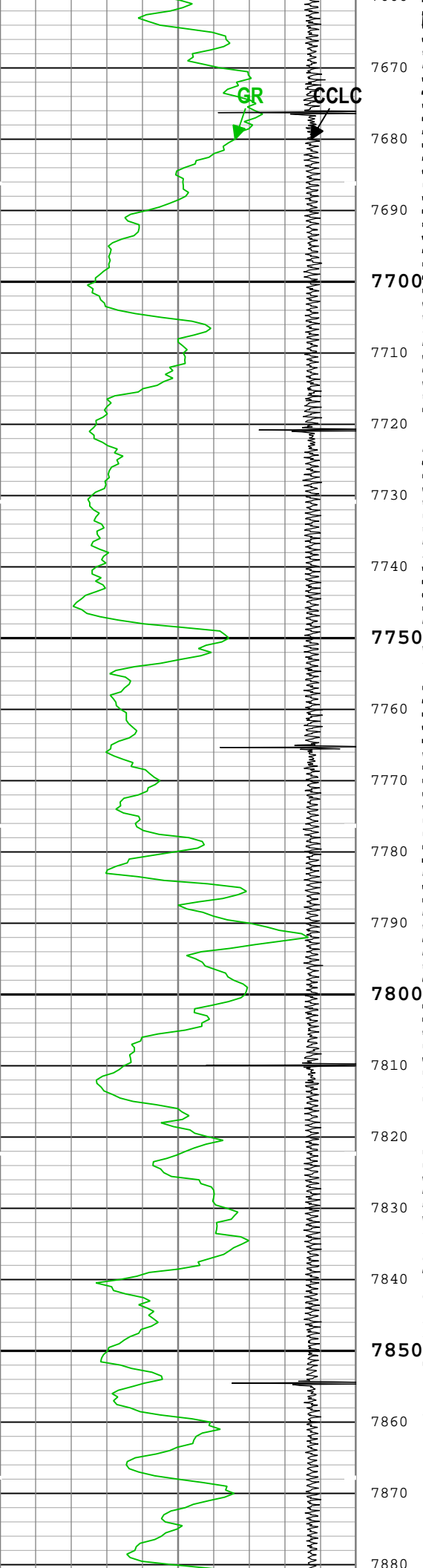


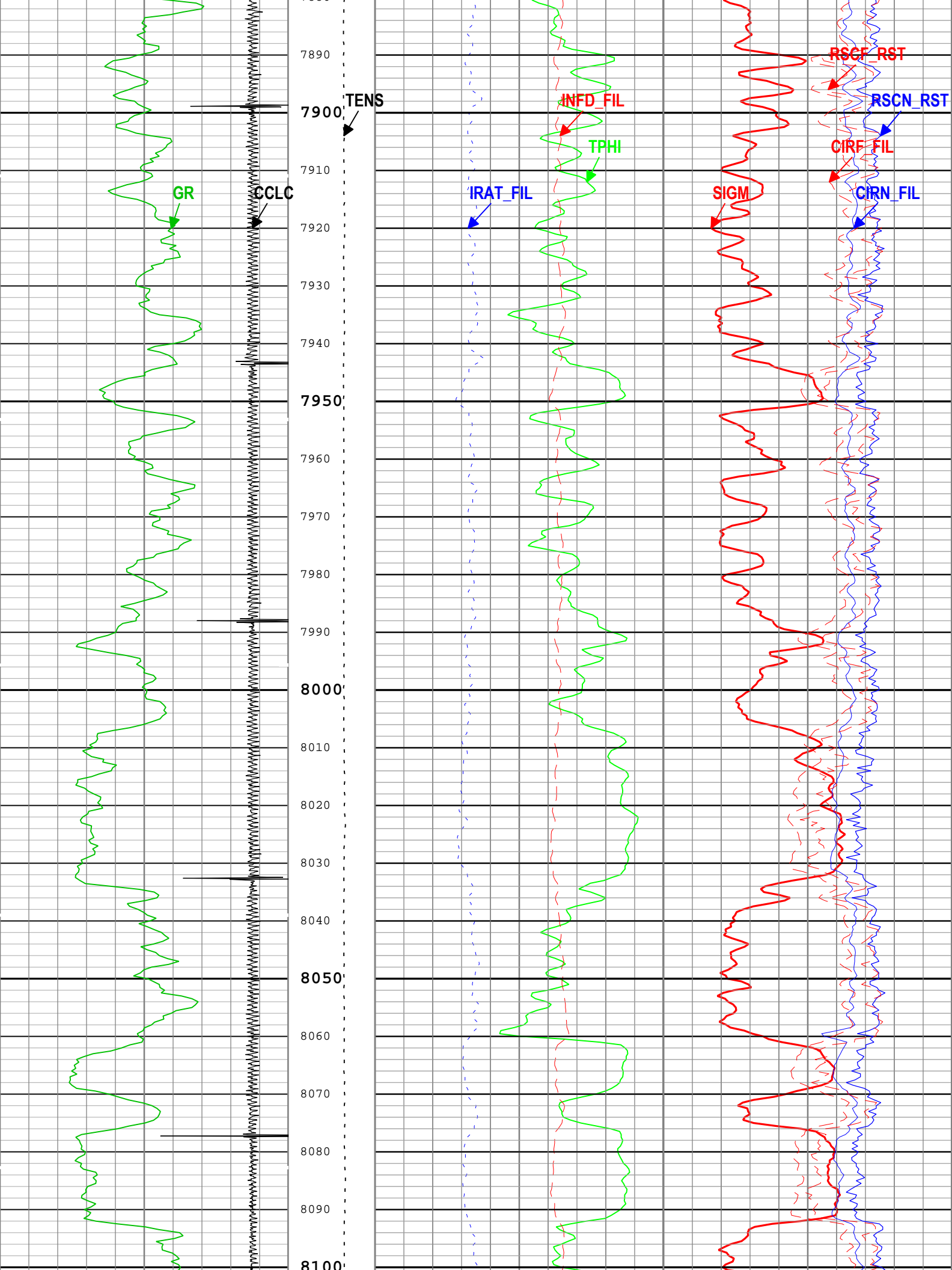


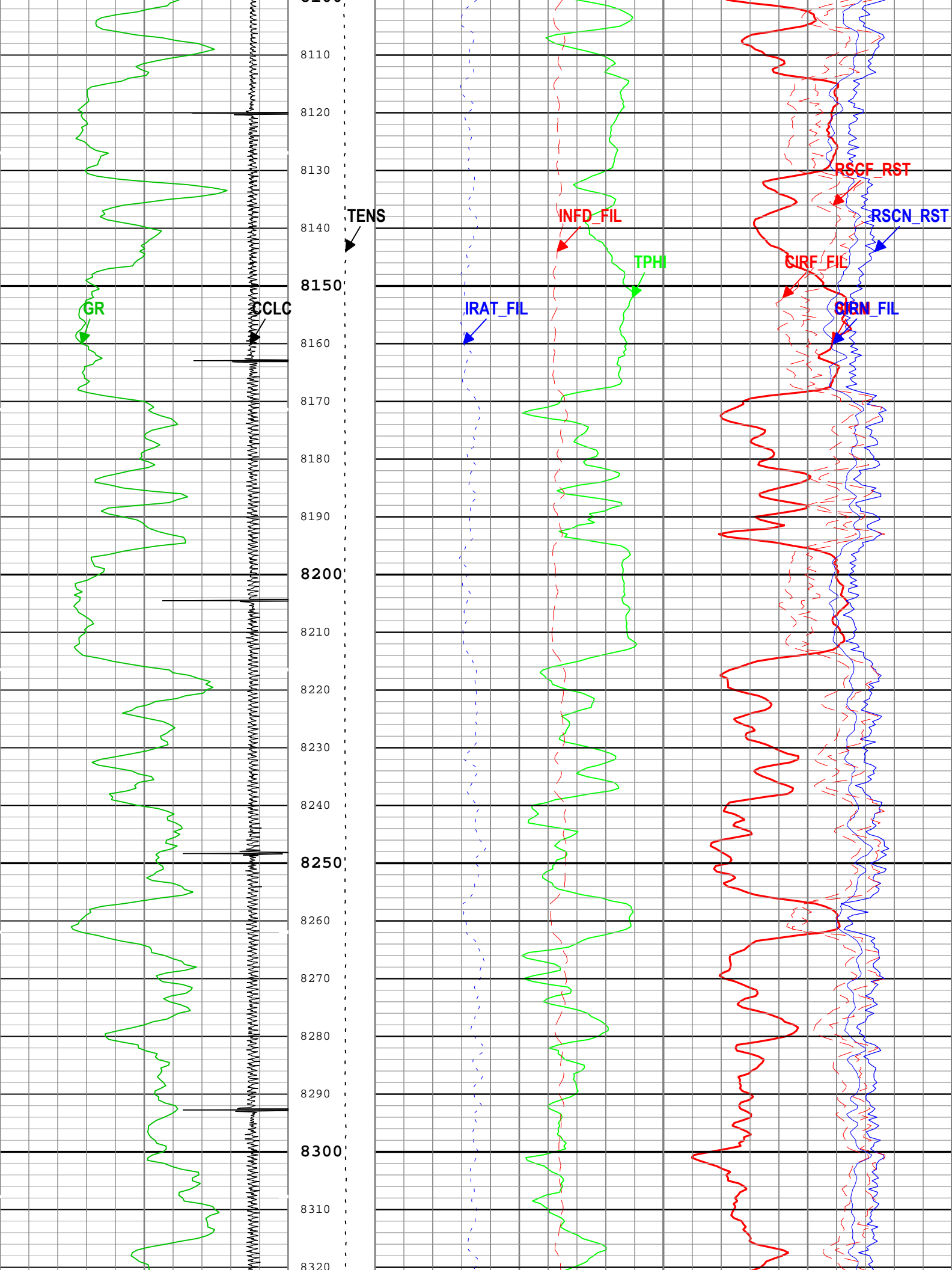


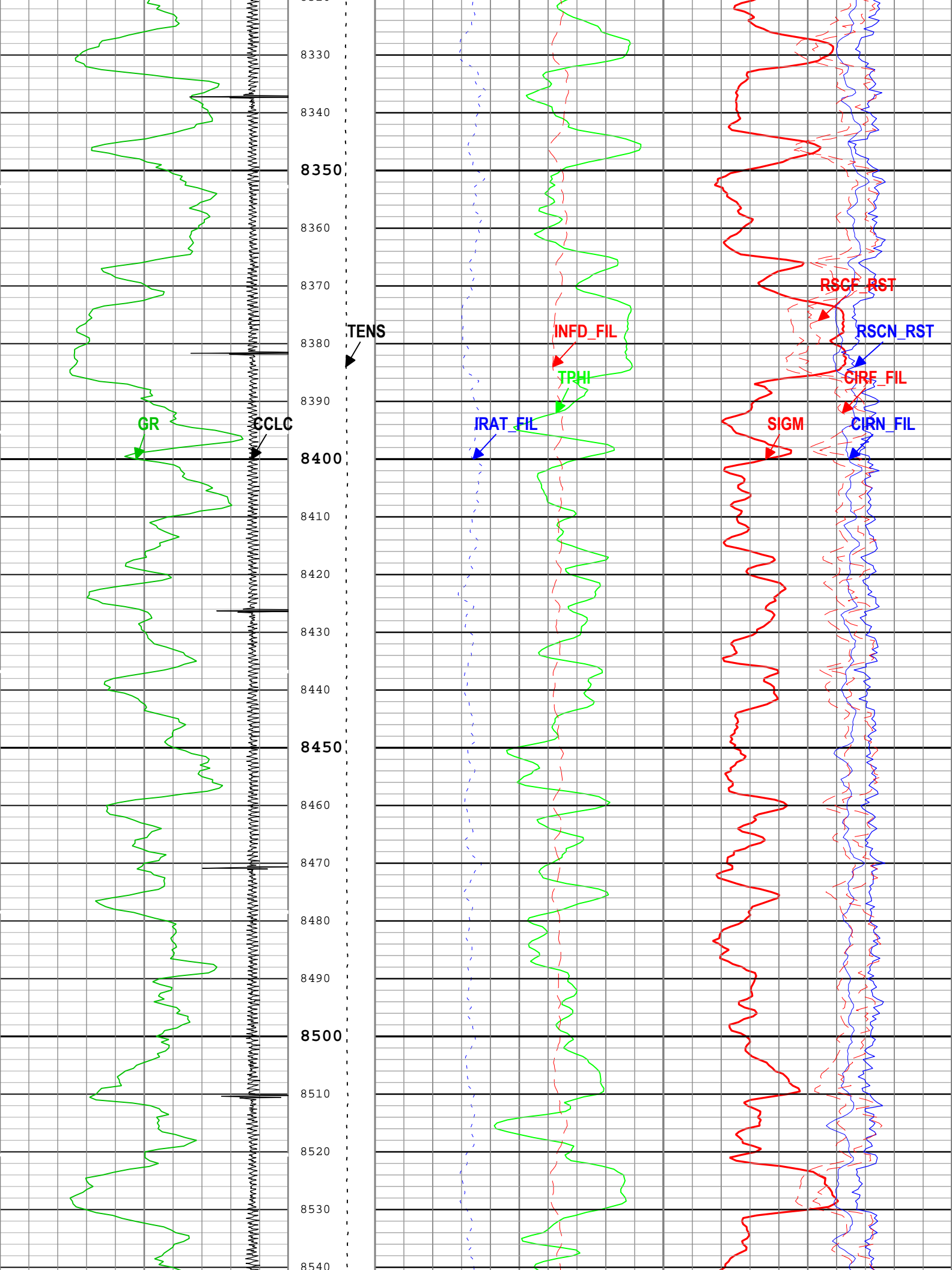


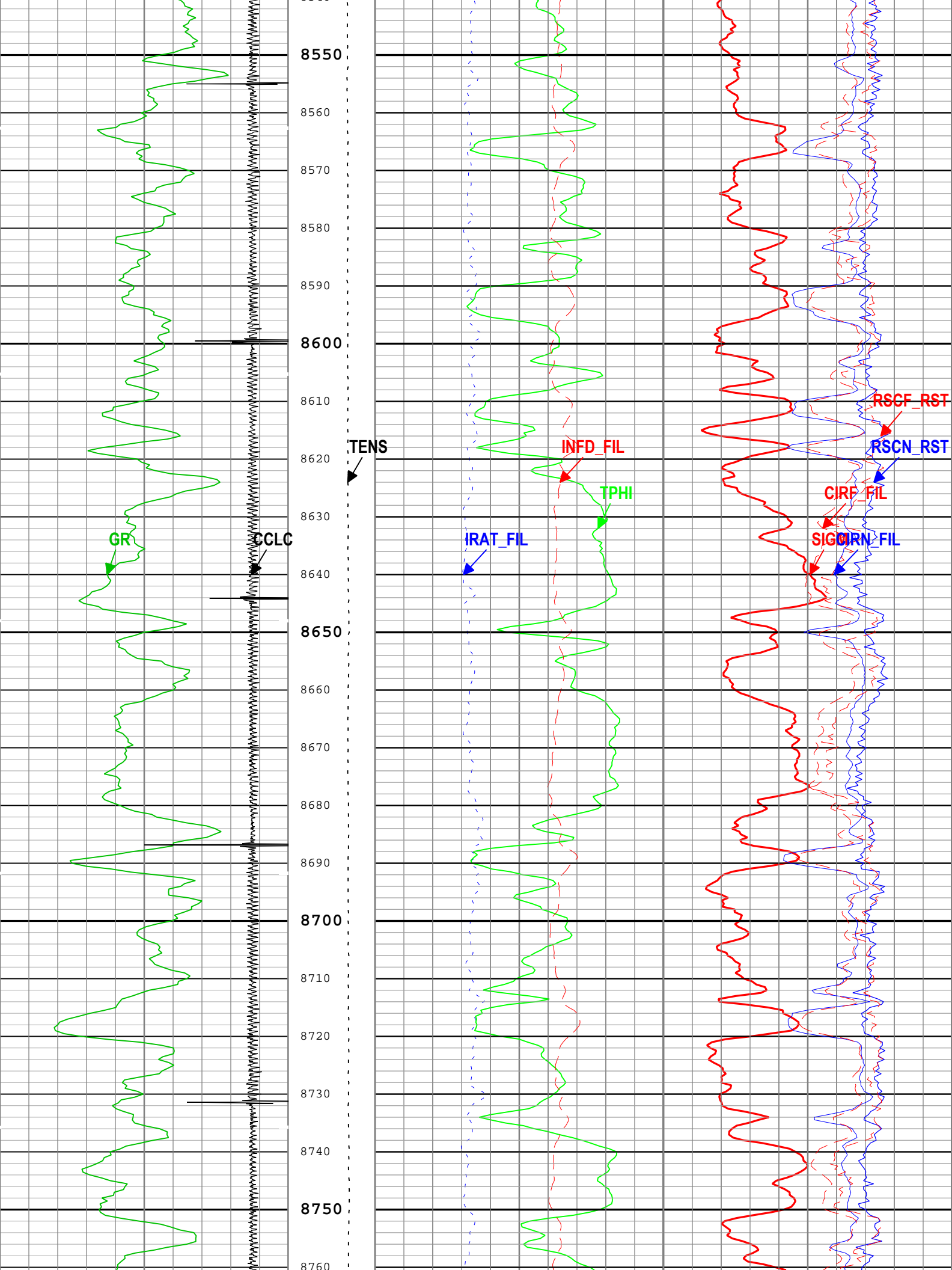


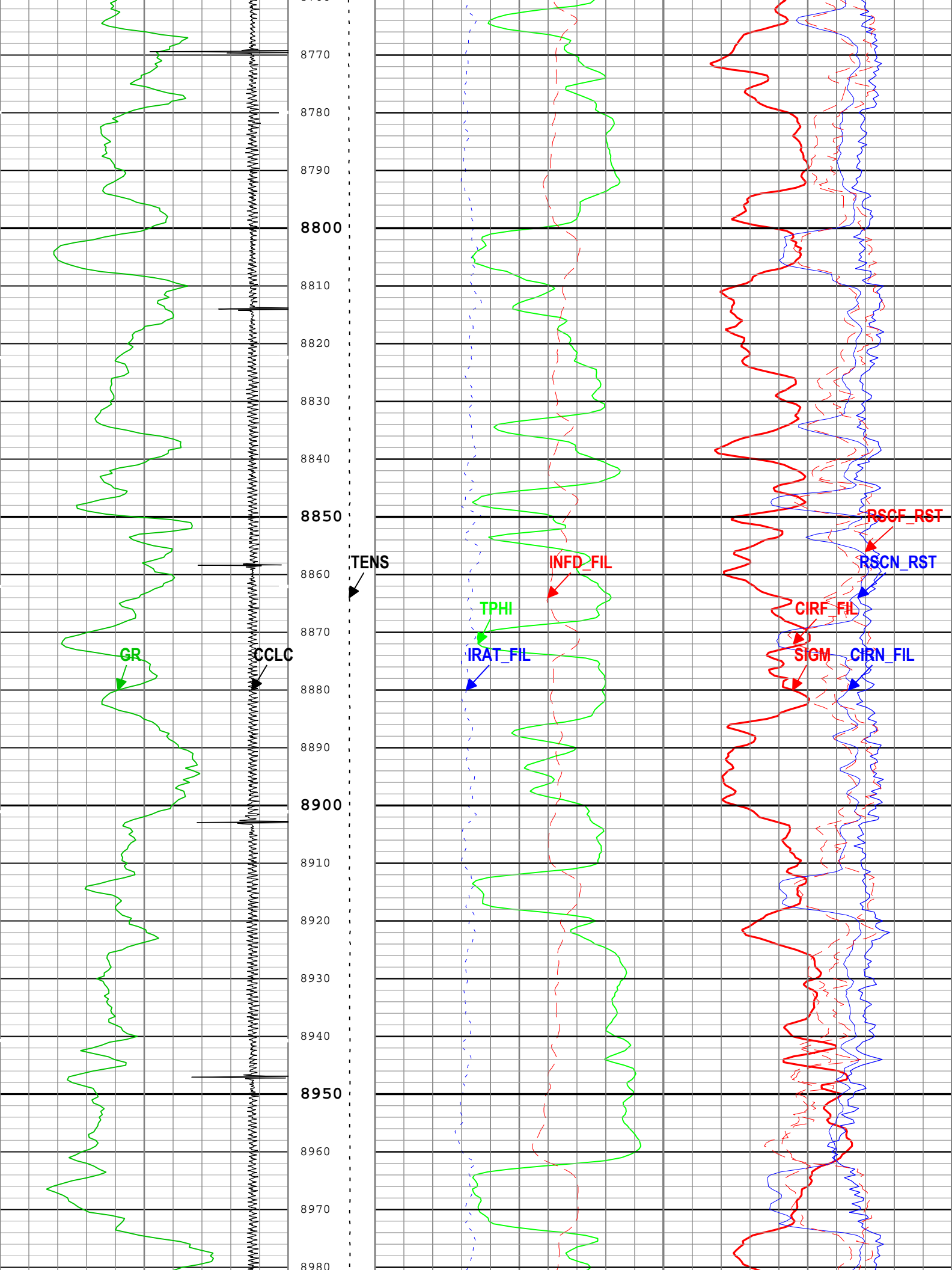


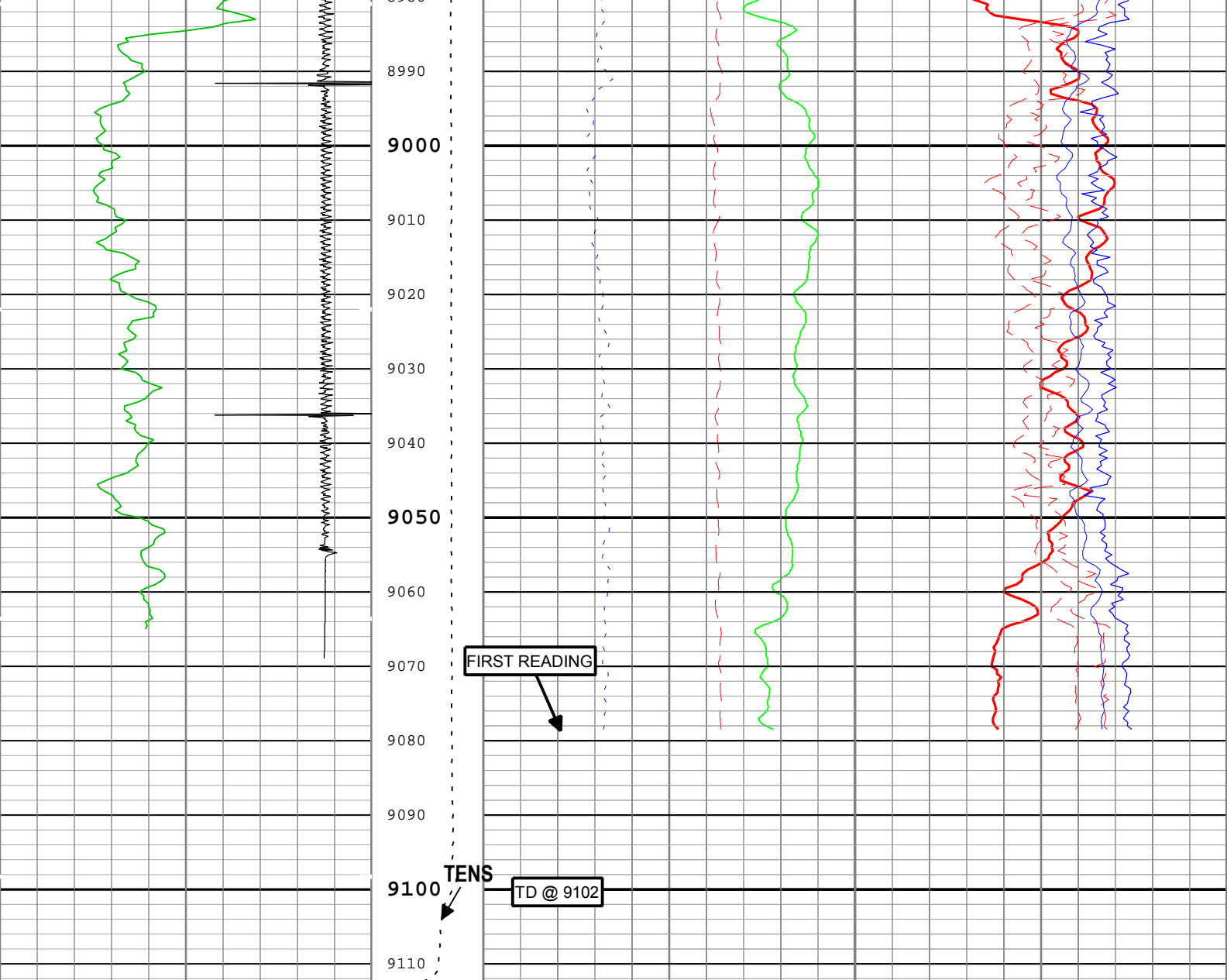












Gamma Ray (GR) PSTP-B		Cable Tension (TENS)	Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C			
0	gAPI		60	cu	0	
CCL Computed Amplitude (CCLC) PSTP-B		0 lbf 3000	Inelastic Ratio Filtered (IRAT_FIL) RST-C		Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C	
-3 V 1			0.75	0	2.5	0
			Thermal Decay Porosity (TPHI) RST-C		Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C	
			0.6 ft3/ft3	0	5	0
			Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C		Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C	
			10000 1/s	0	45	0
					Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C	
					45	0

TIME_1900 - Time Marked every 60.00 (s)

—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)

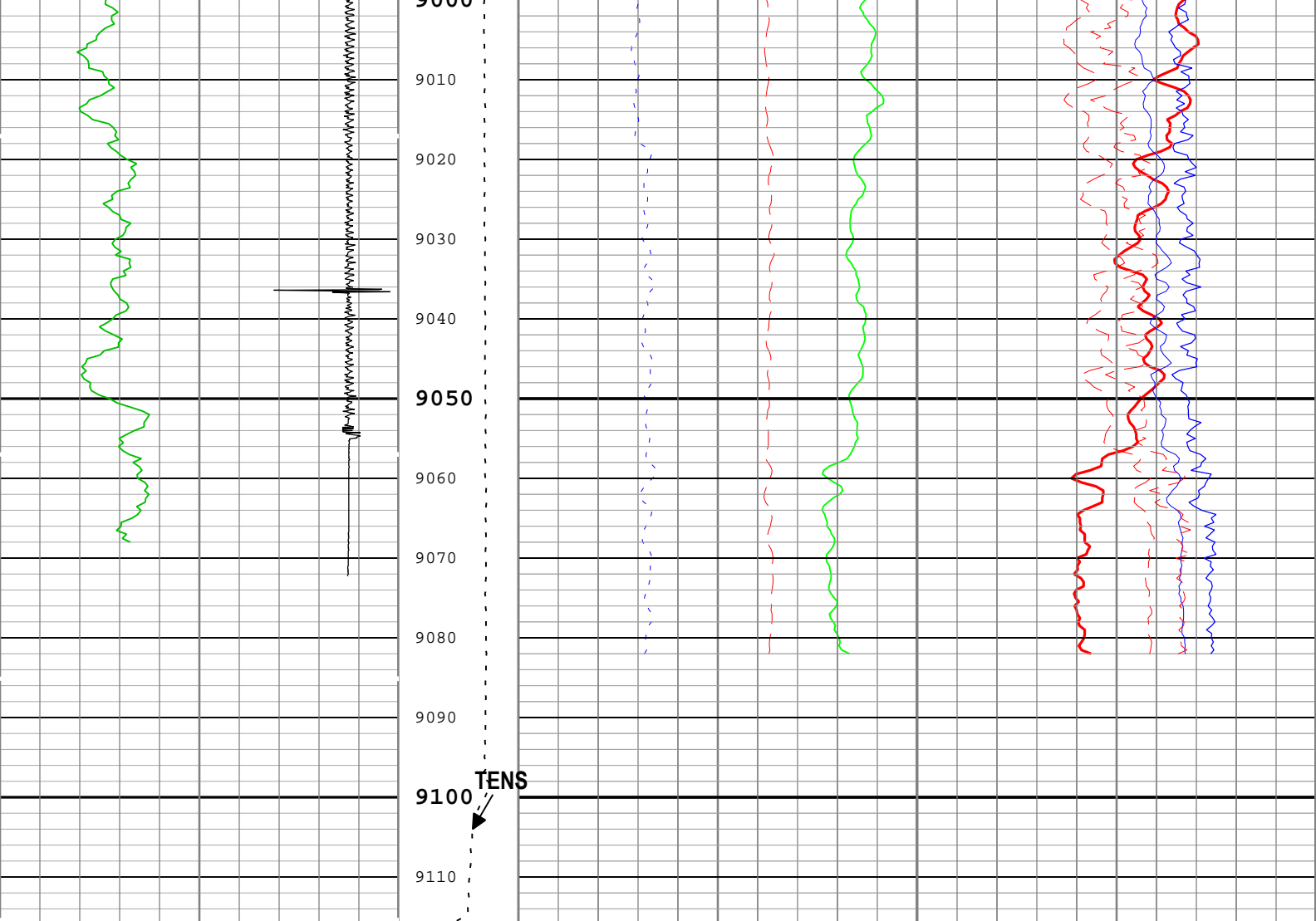
—IHV - Integrated Hole Volume every 100.00 (ft3)

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: 07-Jan-2018 10:31:04
-------------------------------	----------------------------------	------------------------------	----------------	----------------------------	-------------------------------------

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	

25

CCL Computed Amplitude (CCLC) PSTP-B			Cable Tension (TENS)	Inelastic Ratio Filtered (IRAT_FIL) RST-C		Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C	
-3	V	1		0.75	0	5	0
Gamma Ray (GR) PSTP-B				Thermal Decay Porosity (TPHI) RST-C		Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C	
0	gAPI	150		0.6	ft3/ft3	0	45
				Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C		Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C	
			10000	1/s	0	45	0
			Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C				
			60	cu			0



Gamma Ray (GR) PSTP-B		Cable Tension (TENS)	Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C	
0	gAPI 150		60	cu 0
<div>CCL Computed Amplitude (CCLC) PSTP-B</div> <div>-3 V 1</div>		0 lbf 3000	<div>Inelastic Ratio Filtered (IRAT_FIL) RST-C</div> <div>0.75 0</div>	<div>Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C</div> <div>2.5 0</div>
			<div>Thermal Decay Porosity (TPHI) RST-C</div> <div>0.6 ft3/ft3 0</div>	<div>Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C</div> <div>5 0</div>
			<div>Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C</div> <div>10000 1/s 0</div>	<div>Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C</div> <div>45 0</div>
				<div>Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C</div> <div>45 0</div>

- 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)
- IHV - Integrated Hole Volume every 10.00 (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-B	12 dB	
RST_DLM	Depth Log Mode	RST-C	Sigma	

Company: Caerus Operating LLC

Schlumberger

Well: Puckett 23D-23 697

Field: Grand Valley

County: Garfield

Cement Bond Log

RST Sigma Log

Gamma Ray CCL Log