

Company: Caerus Operating LLC

Well: Puckett 15B-23 697

Field: Grand Valley

County: Garfield State: Colorado

Cement Bond Log  
RST Sigma Log  
Gamma Ray Collar LogCounty: Garfield  
Field: Grand Valley  
Location:  
Well: Puckett 15B-23 697  
Company: Caerus Operating LLC

Location:		Elev.:	K.B.	8462.00 ft
Permanent Datum:	Ground Level	Elev.:	G.L.	8432.00 ft
Log Measured From:	Kelly Bushing	30.00 ft	D.F.	8462.00 ft
Drilling Measured From:	Kelly Bushing			above Perm.Datum
API Serial No.	Section:	Township:	Range:	
05045233800000	23	6S	97W	

Logging Date 19-Dec-2017

Run Number 1

Depth Driller 9181.00 ft

Schlumberger Depth 9181.00 ft

Bottom Log Interval 9181.00 ft

Top Log Interval 2500.00 ft

Casing Fluid Type Water

Salinity

Density 10 lbm/gal

Fluid Level 8.00 ft

BIT/CASING/TUBING STRING

Bit Size 8.50 in

From 30.00 ft

To 9181.00 ft

Casing/Tubing Size 4.5 in

Weight 11.5 lbm/ft

Grade P110

From 30.00 ft

To 9181.00 ft

Max Recorded Temperatures 236 degF

Logger on Bottom 19-Dec-2017 09:00:00

Unit Number 3003 Location: Evanston Wyoming

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.

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- 1 Main Pass
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9. 1 Free Pipe Pass

9.1 Integration Summary

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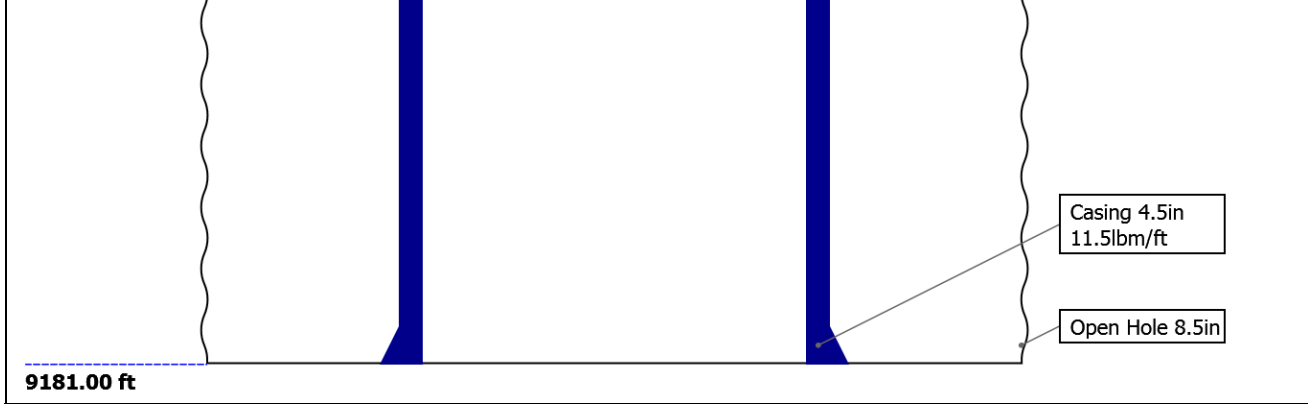
9.5 Parameter Listing

Well Sketch

Driller Depth

30.00 ft



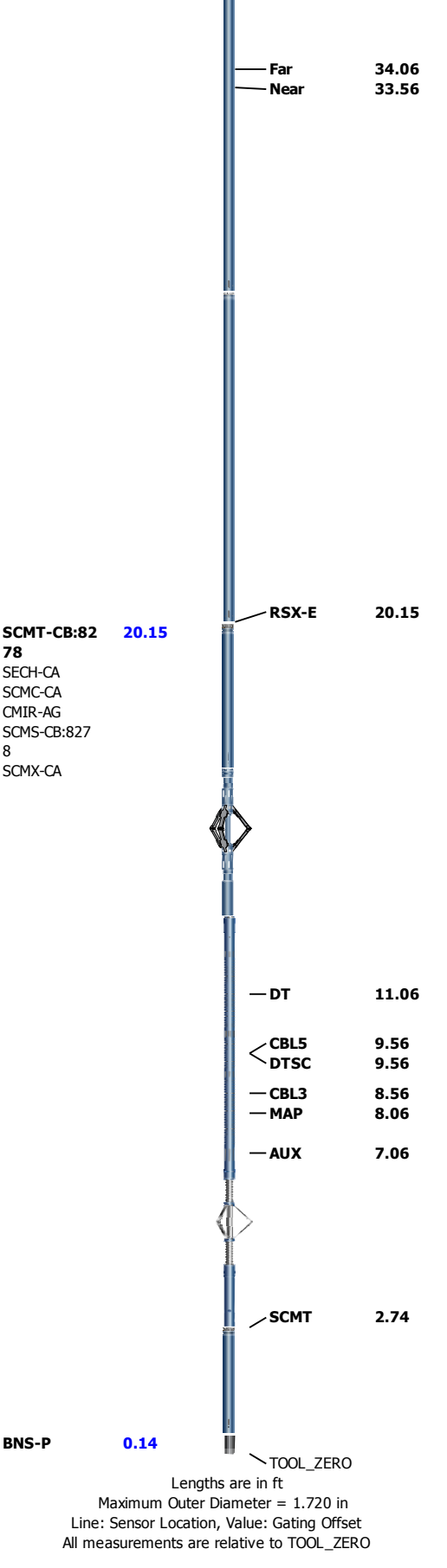


## Borehole Size/Casing/Tubing Record

Bit						
Bit Size ( in )	8.5					
Top Driller ( ft )	30					
Top Logger ( ft )	30					
Bottom Driller ( ft )	9181					
Bottom Logger ( ft )	9181					
Casing						
Size ( in )	4.5					
Weight ( lbm/ft )	11.5					
Inner Diameter ( in )	4.005					
Grade	P110					
Top Driller ( ft )	30					
Top Logger ( ft )	30					
Bottom Driller ( ft )	9181					
Bottom Logger ( ft )	9181					

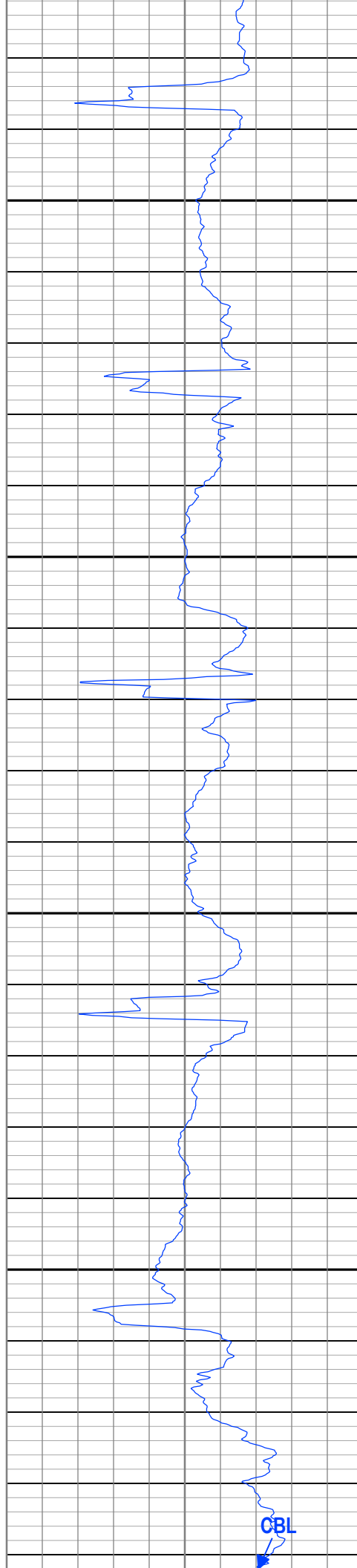
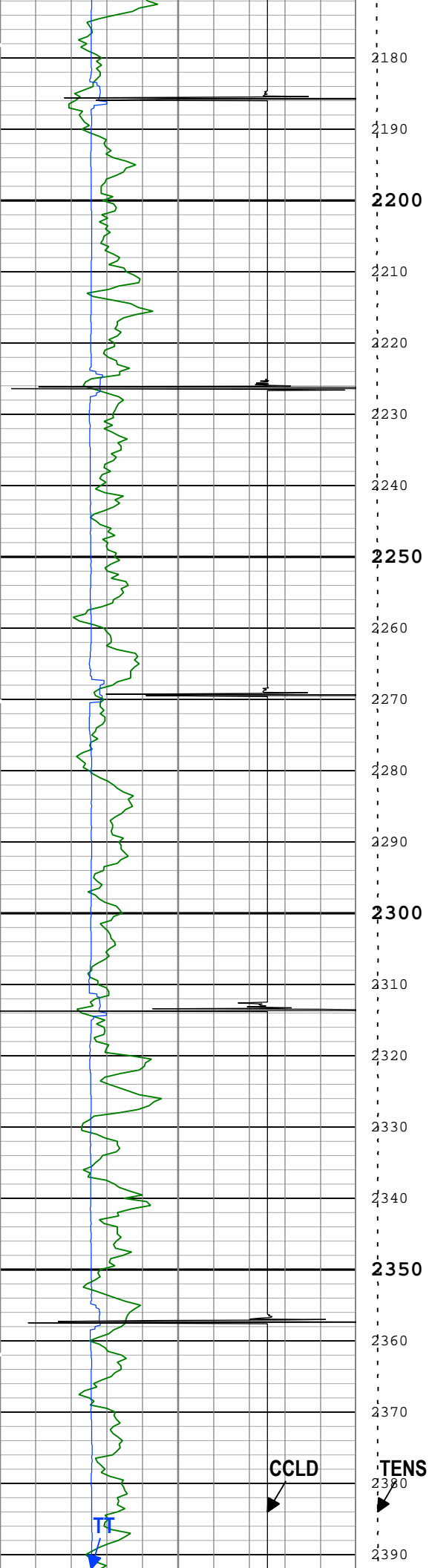
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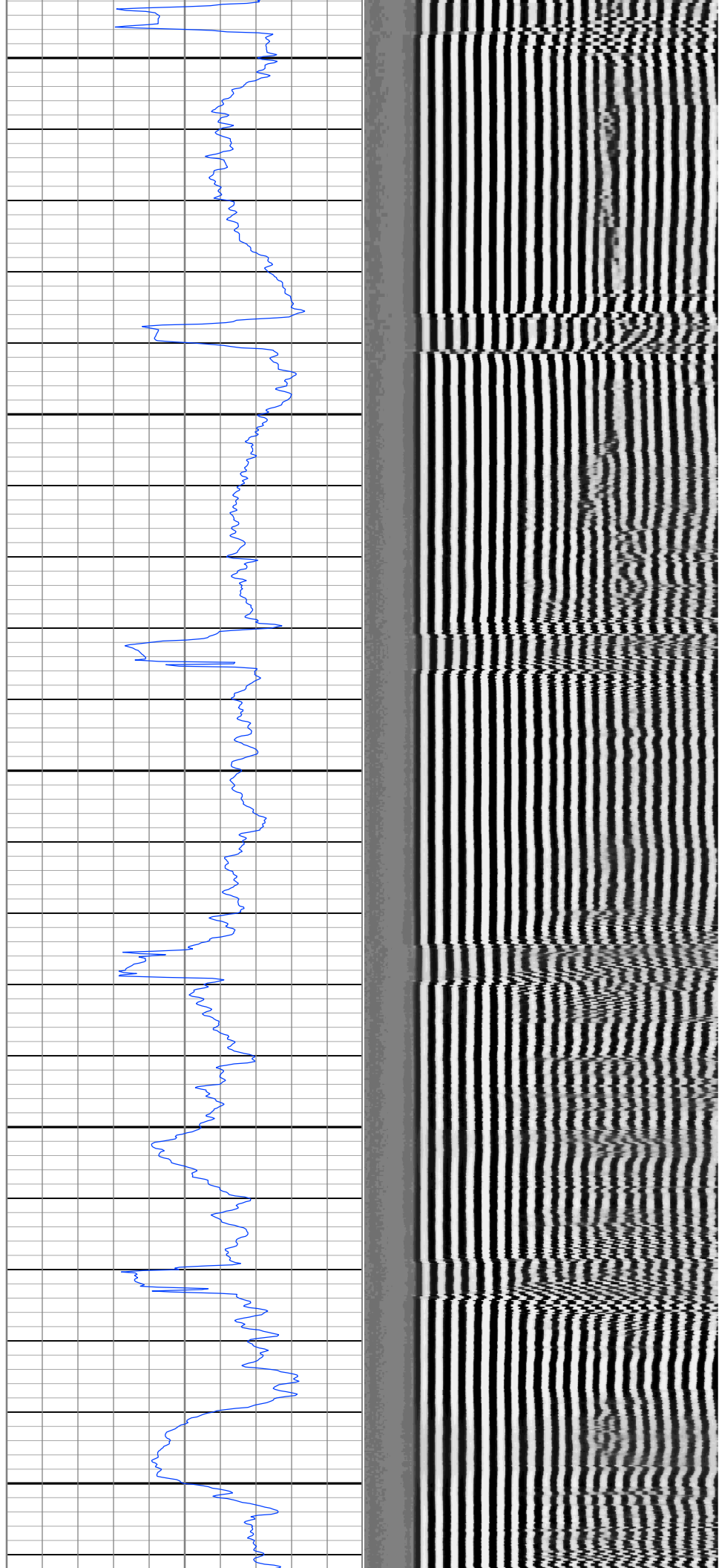
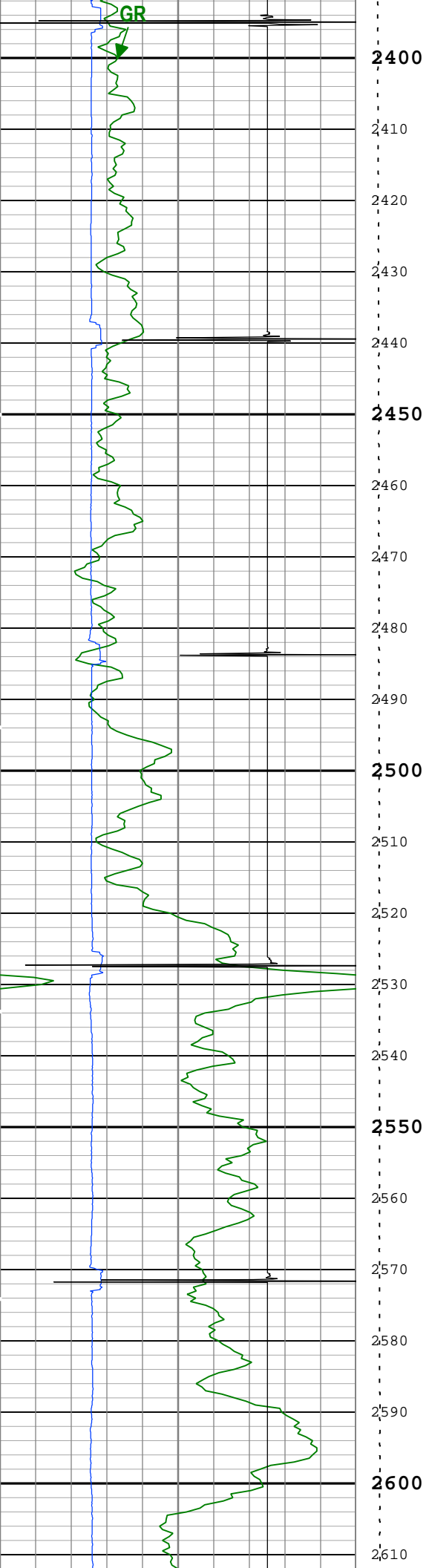
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<b>Equip name</b>	<b>Length</b>	<b>MP name</b>	<b>Offset</b>	Tool ran as per tool sketch
PEH-E	53.4			Max Temp of 236 def F
				Max Pressure of 3799 psi
<b>AH-38</b>	<b>51.72</b>			Log correlated with the down log
<b>PSTP-B:282</b>	<b>51.44</b>			TD Tagged at 9181 FT
PSC-A				Short Joints at 6834 - 6844 FT
PSTC-A				Thank you for choosing Schlumberger
PBMS-B:2826				
		<b>GR</b>	<b>47.74</b>	
		<b>PSTC</b>	<b>47.44</b>	
		<b>PSTC Tool String Bottom</b>	<b>0.00</b>	
		<b>Temperature</b>	<b>44.69</b>	
		<b>CQG Pressure</b>	<b>44.34</b>	
		<b>CCL</b>	<b>43.92</b>	
		<b>PBMS</b>	<b>43.17</b>	
<b>RST-C:437</b>	<b>43.17</b>			
RSCH-A:478				
RSC-E:478				
RSS-A:354				
MNTR-F:1429				
-51068				
RSXH-A:437				
RSX-E:437				
		<b>RSC-E</b>	<b>36.82</b>	



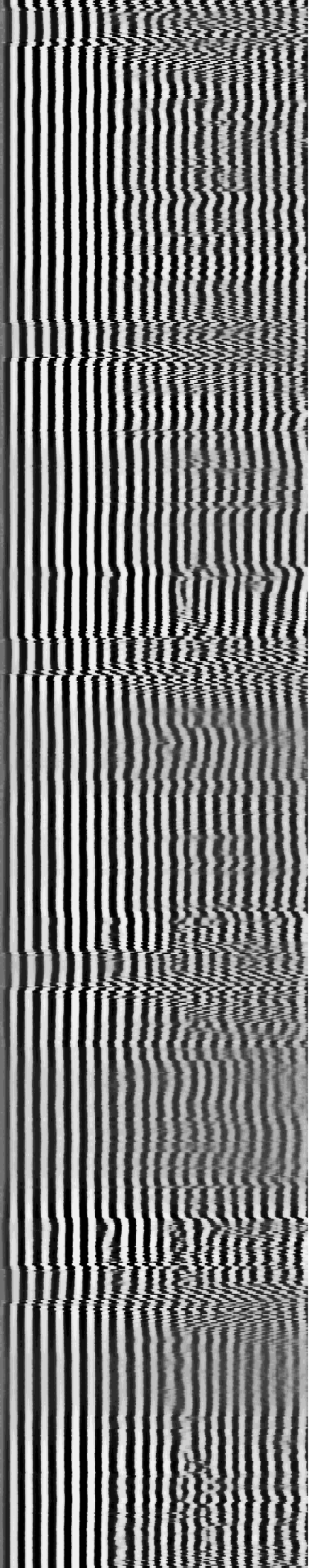
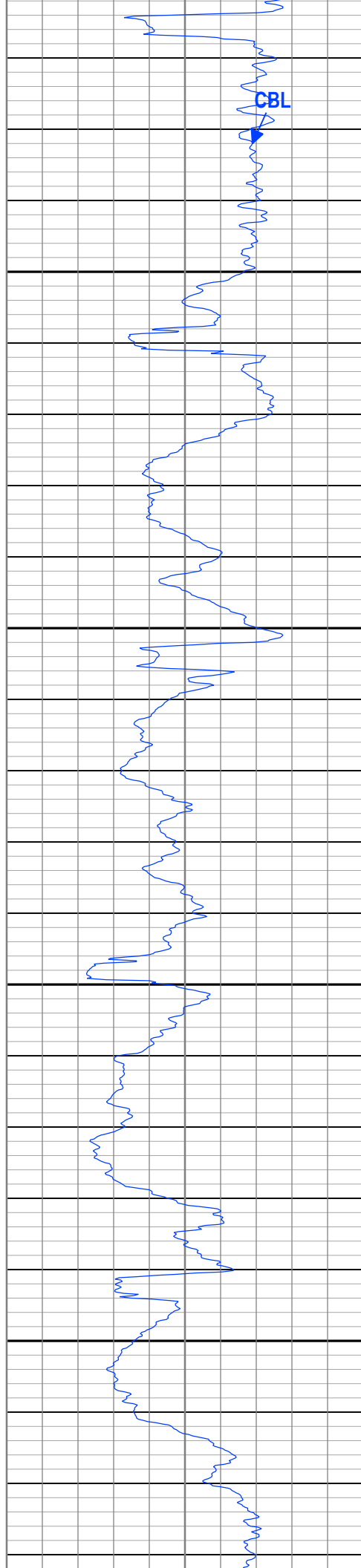
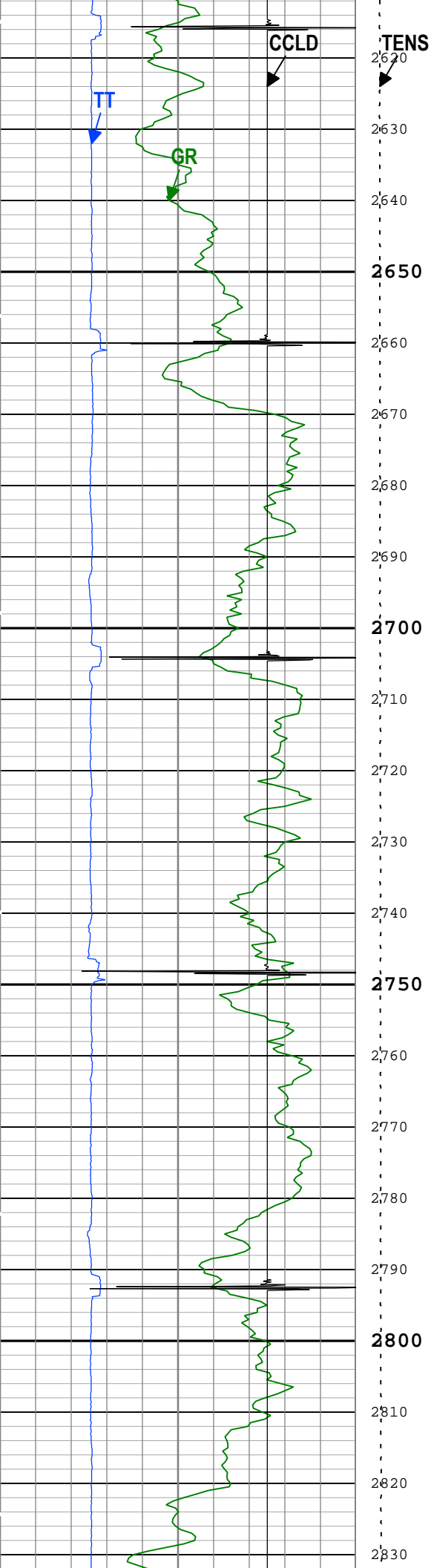
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Main Pass	
Software Version	
Acquisition System	Version
Maxwell 2017 SP3	7.3.92069.3100



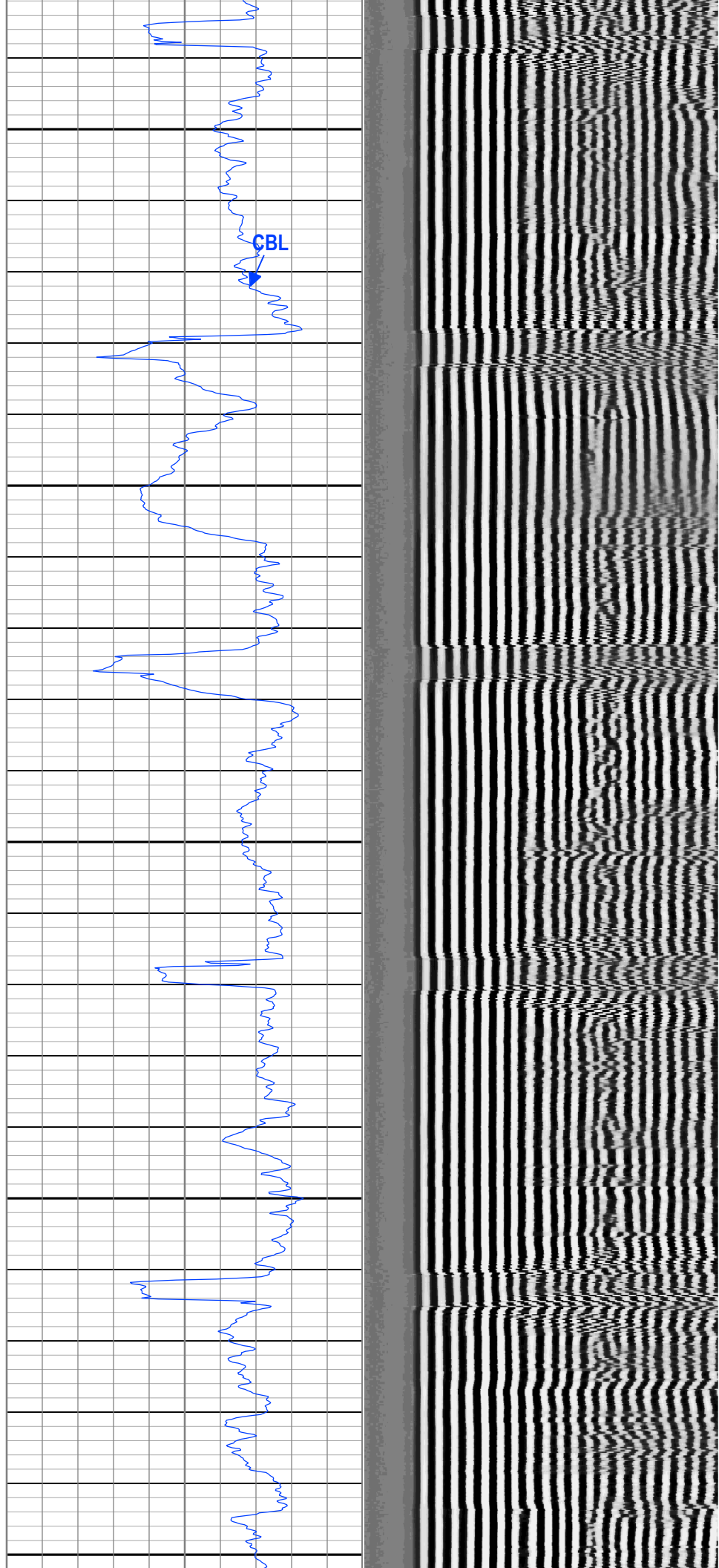
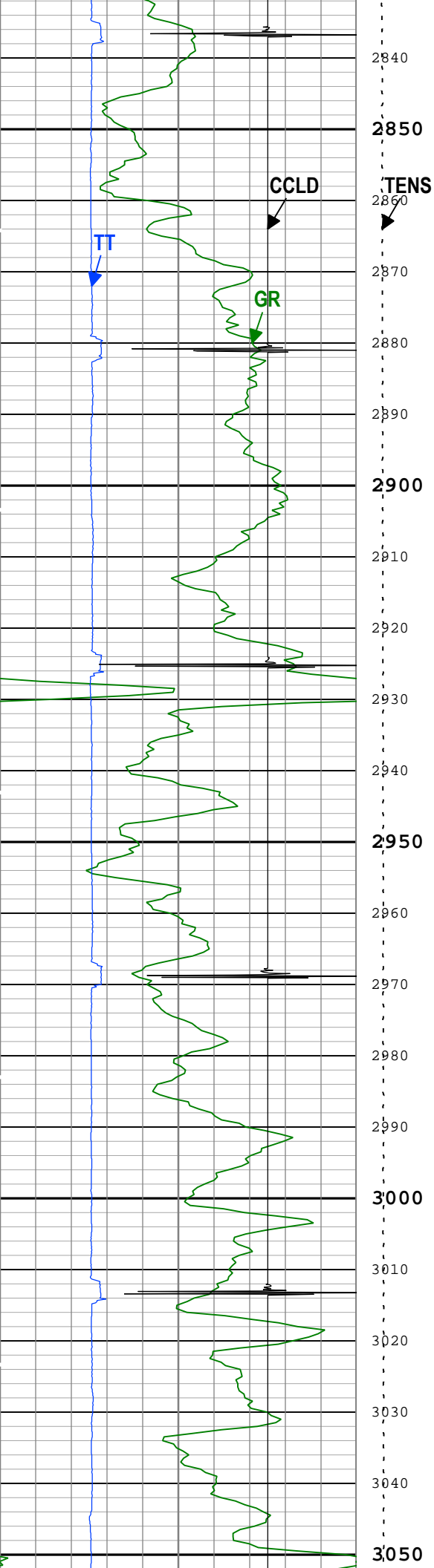


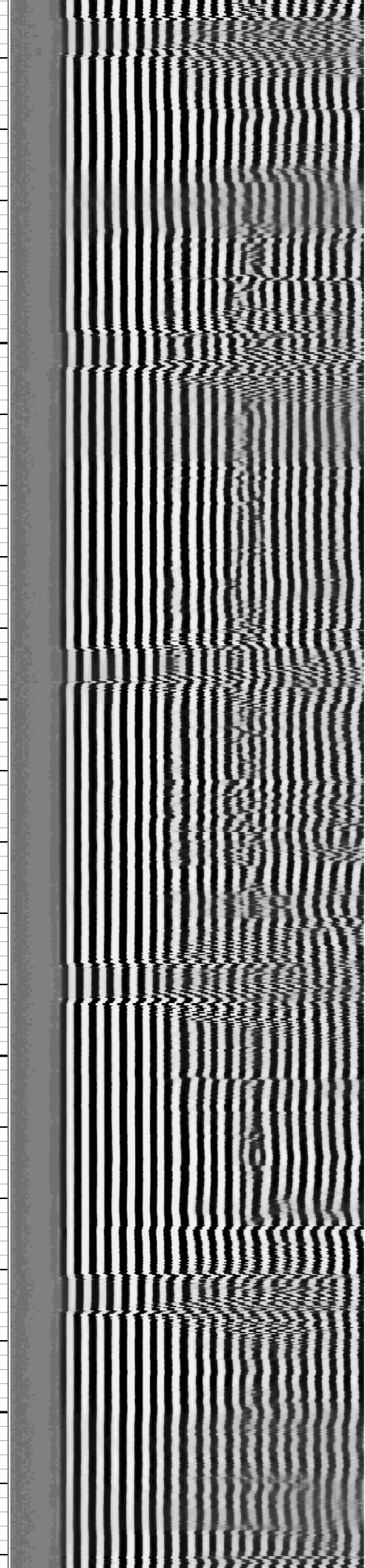
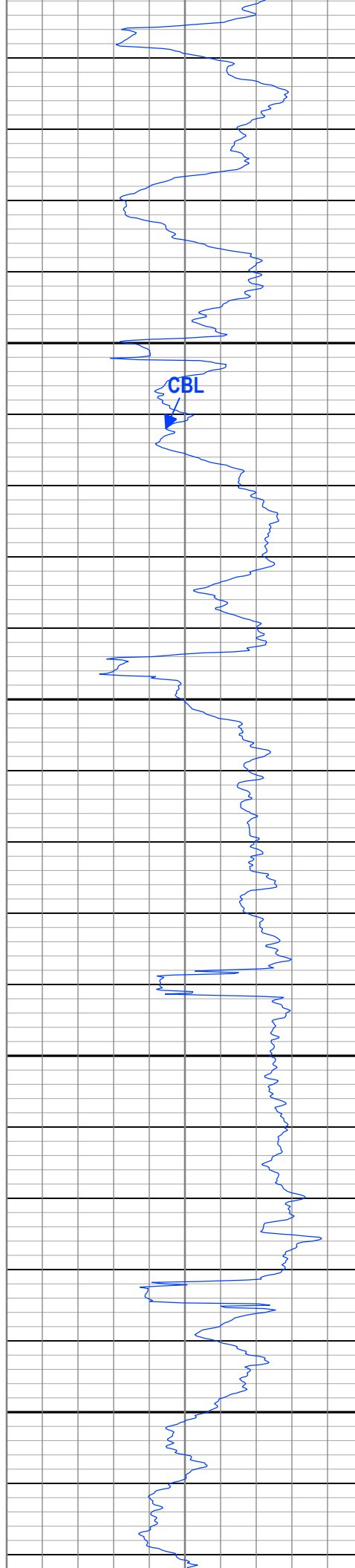
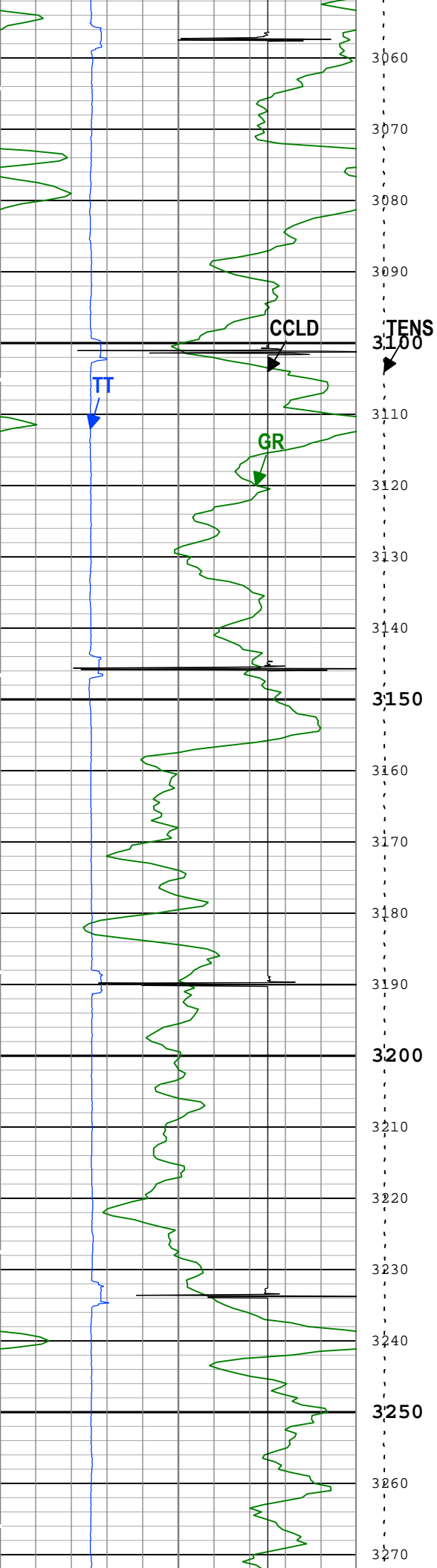


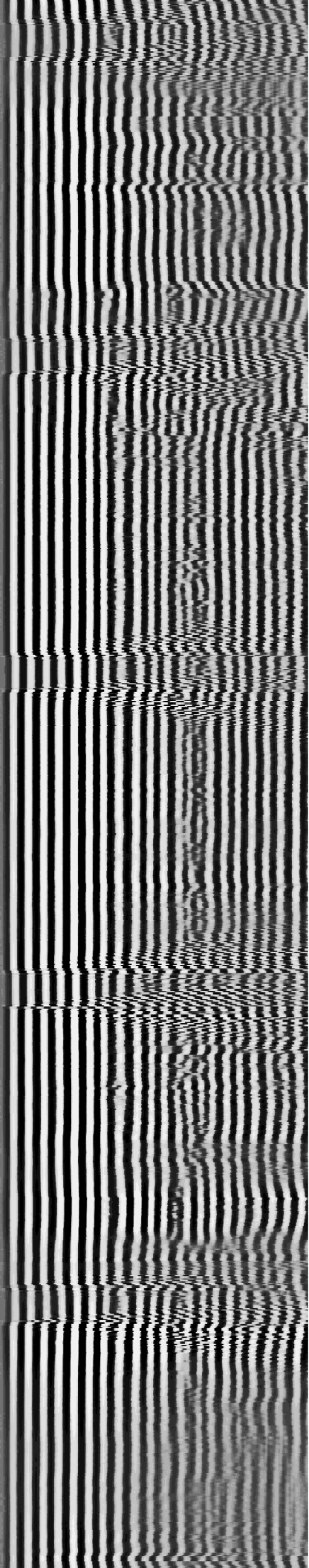
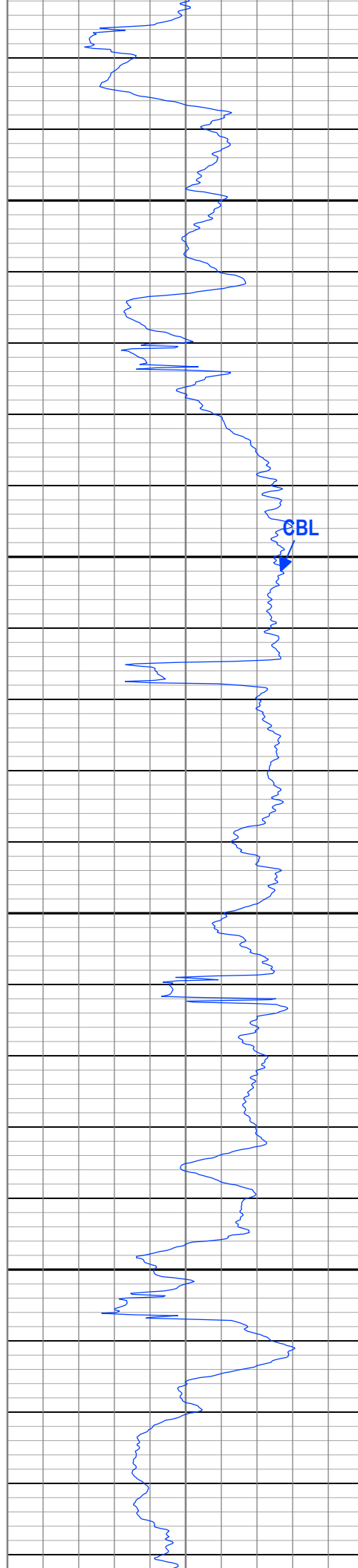
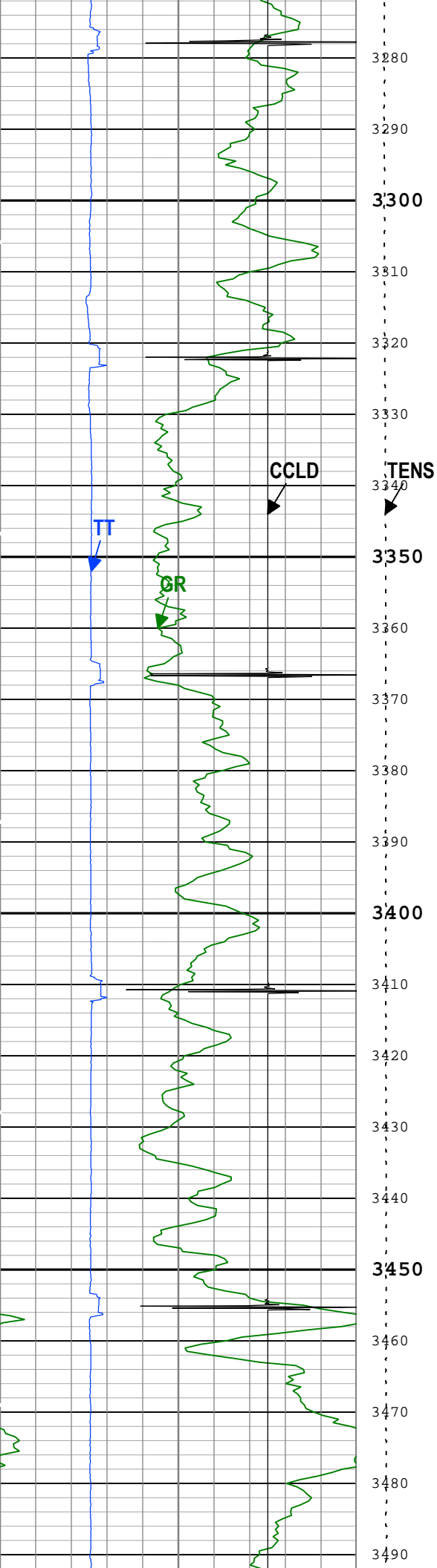




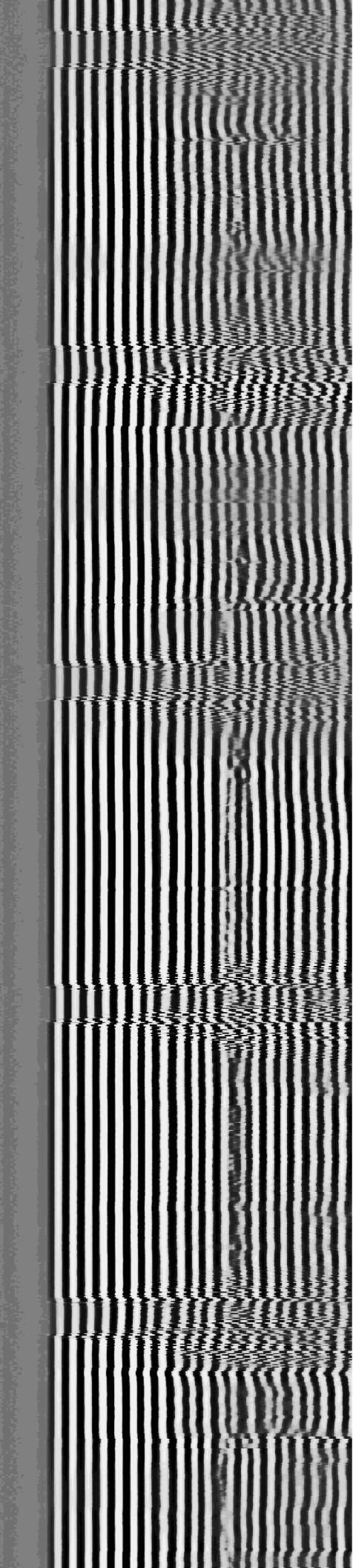
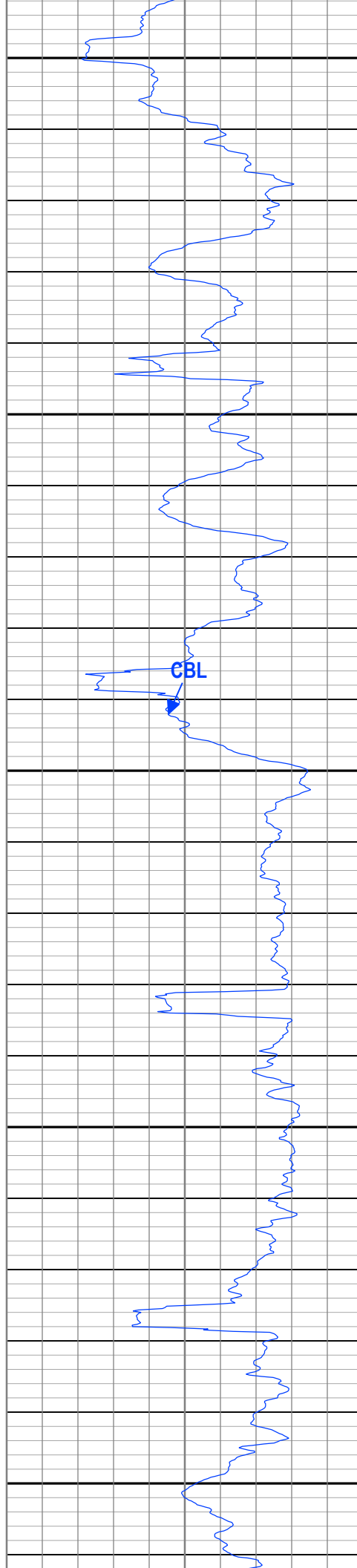
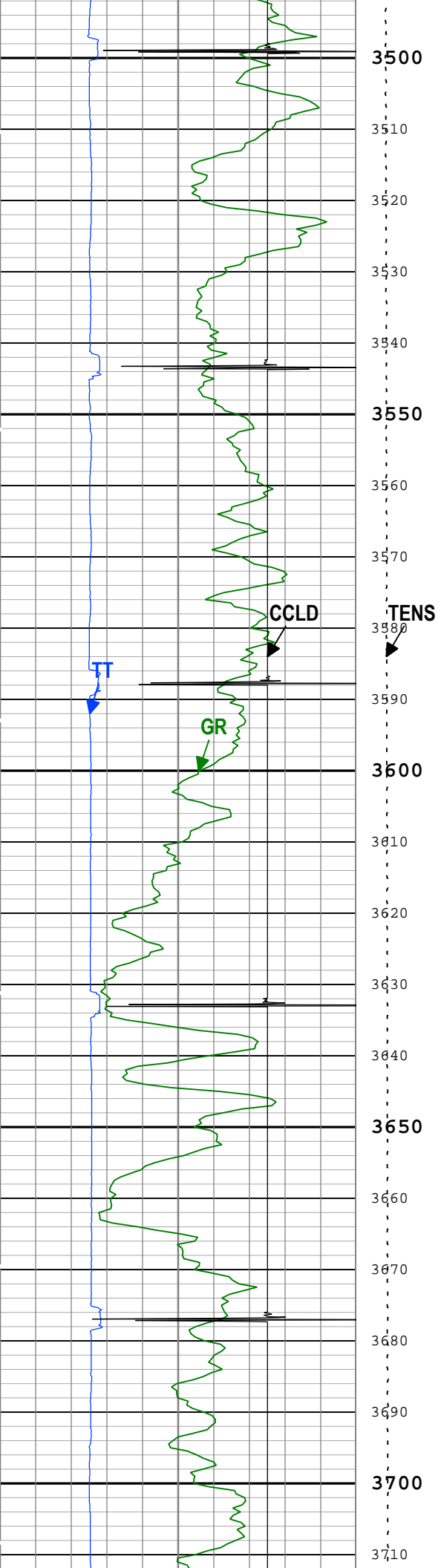


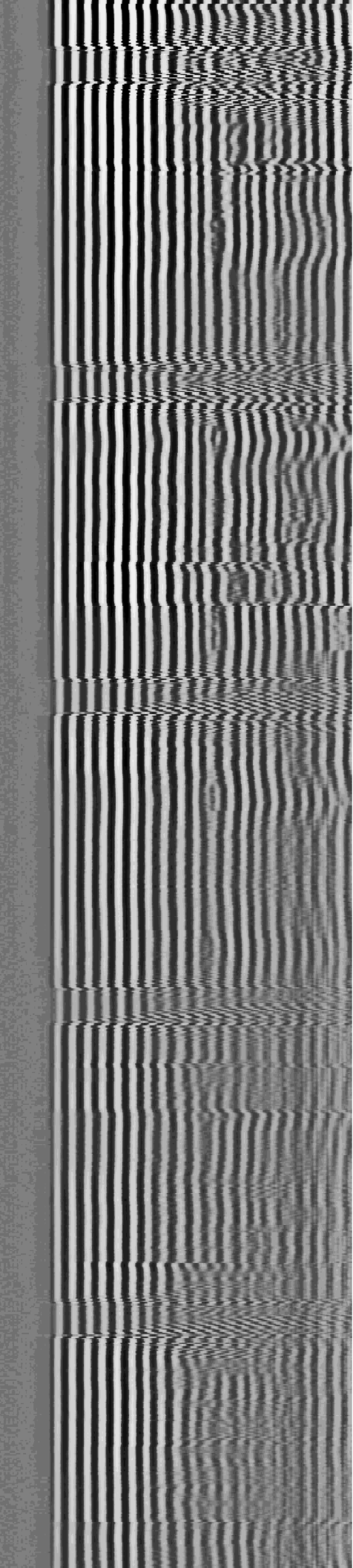
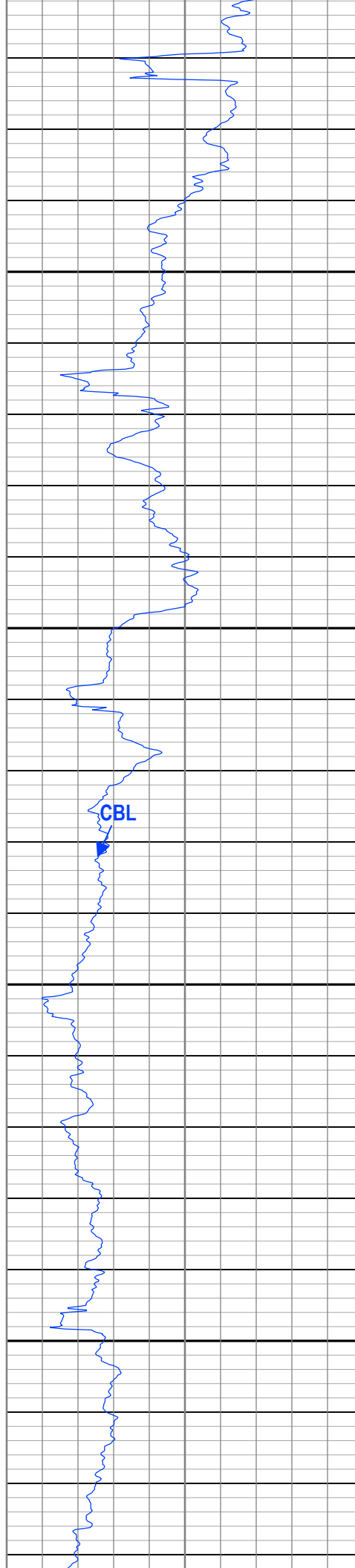
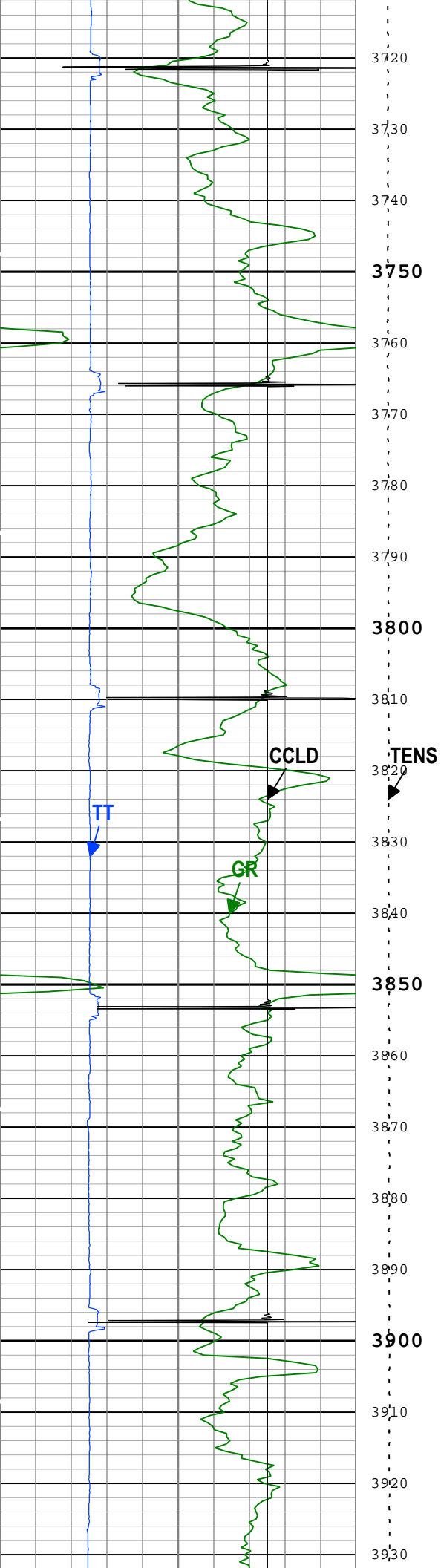


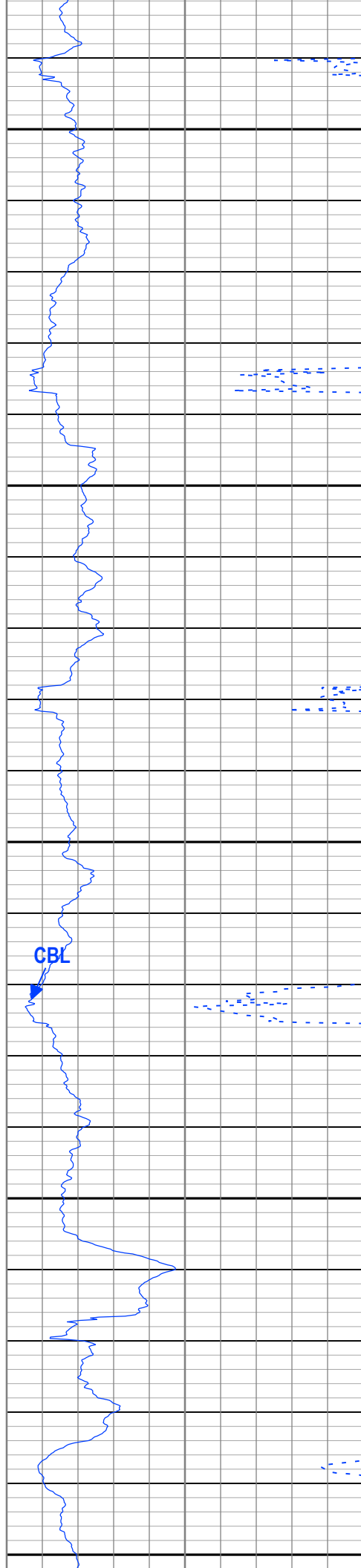
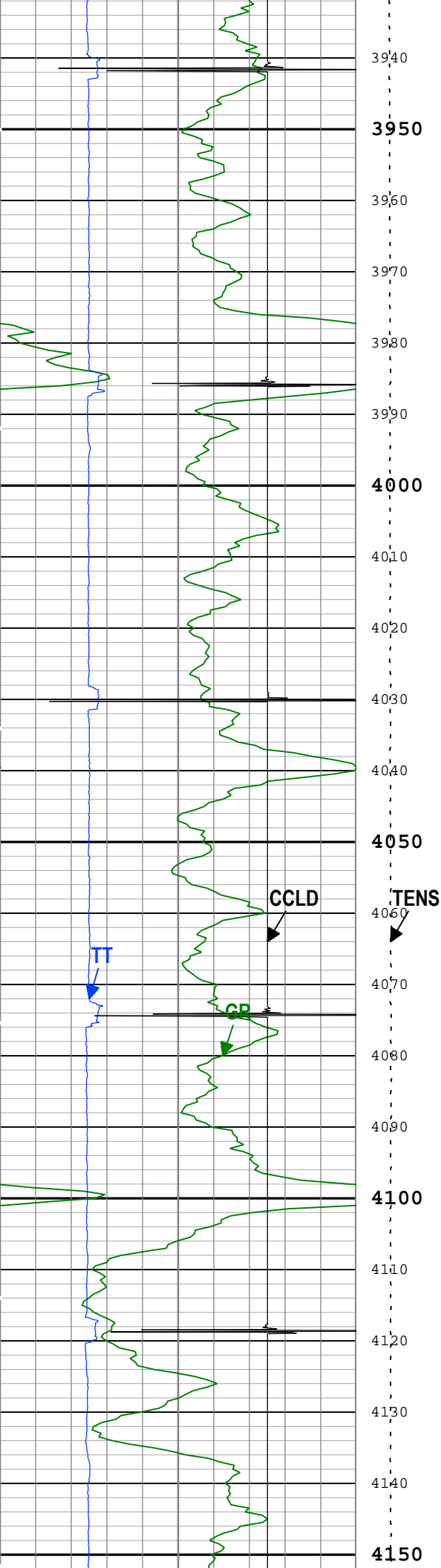


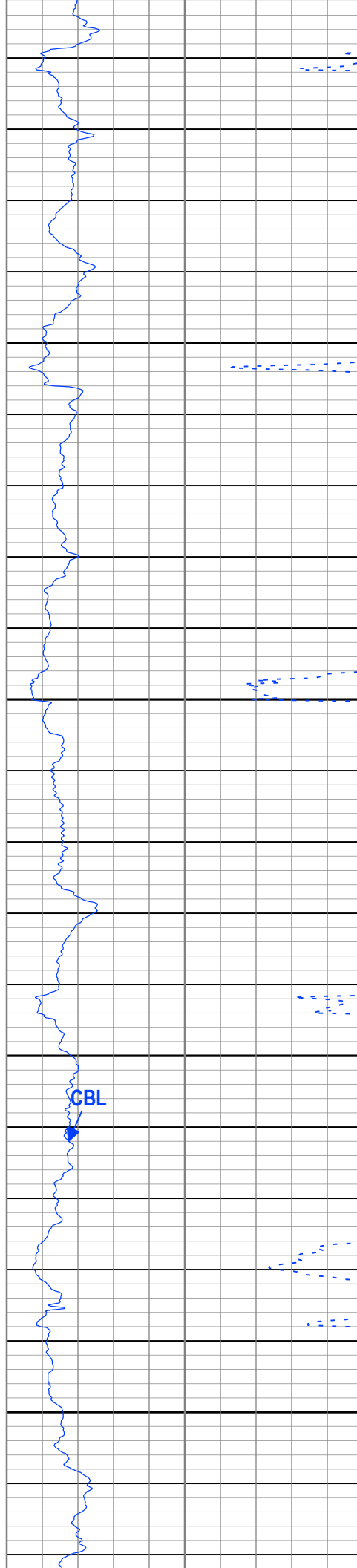
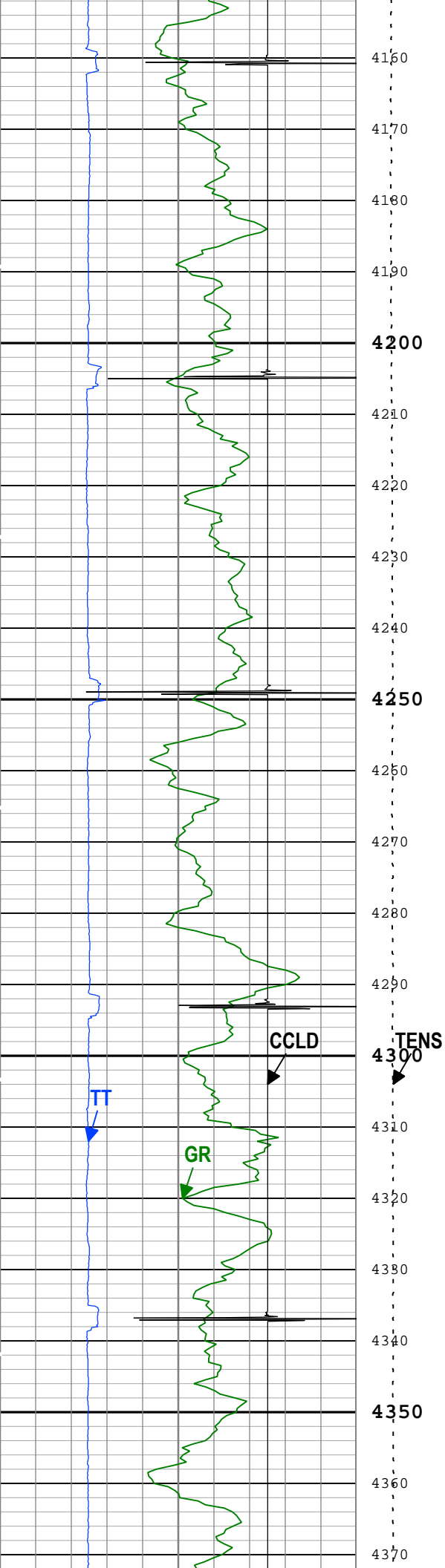




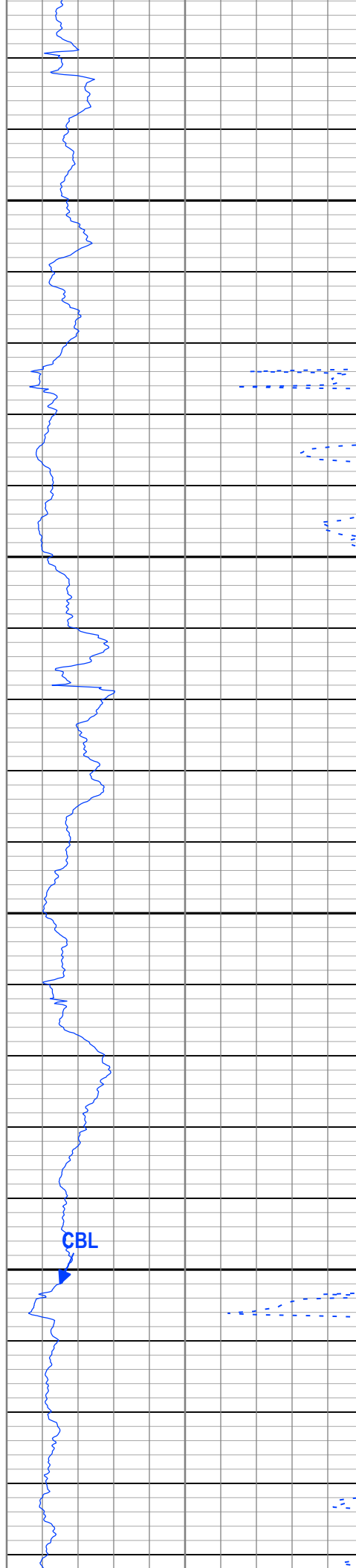
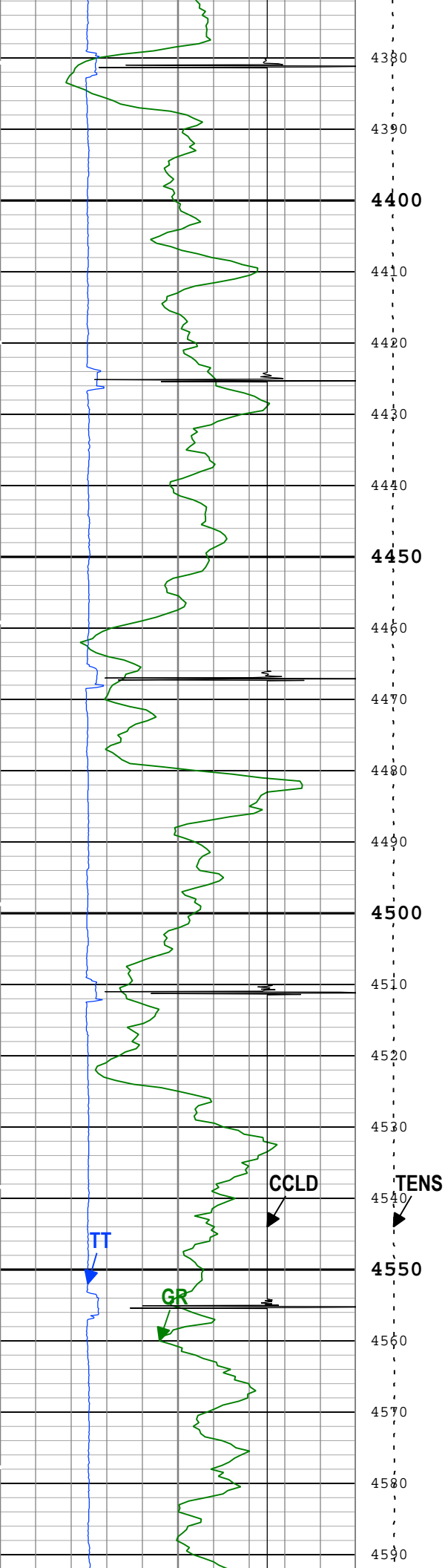


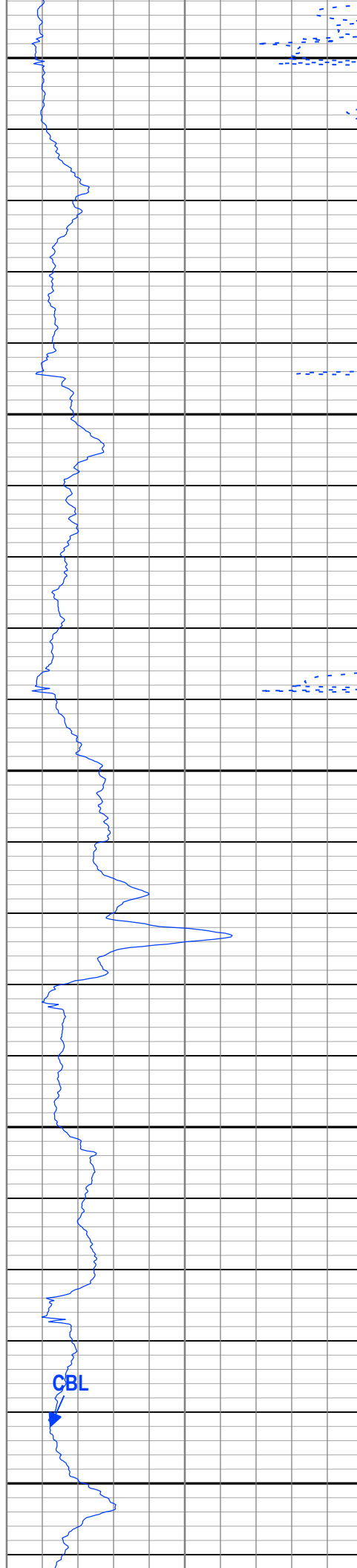
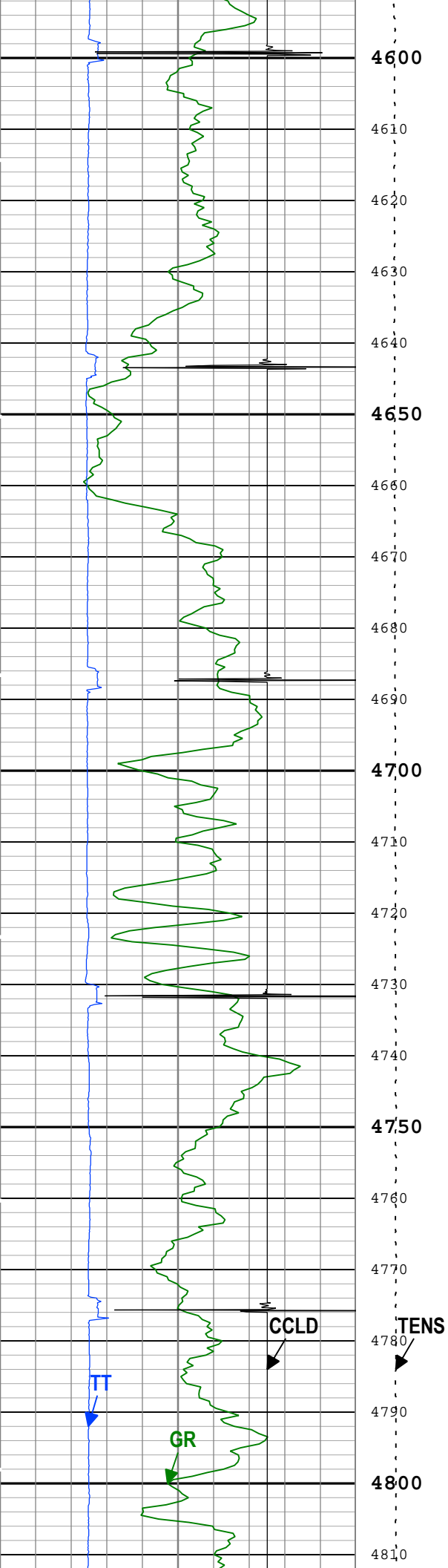


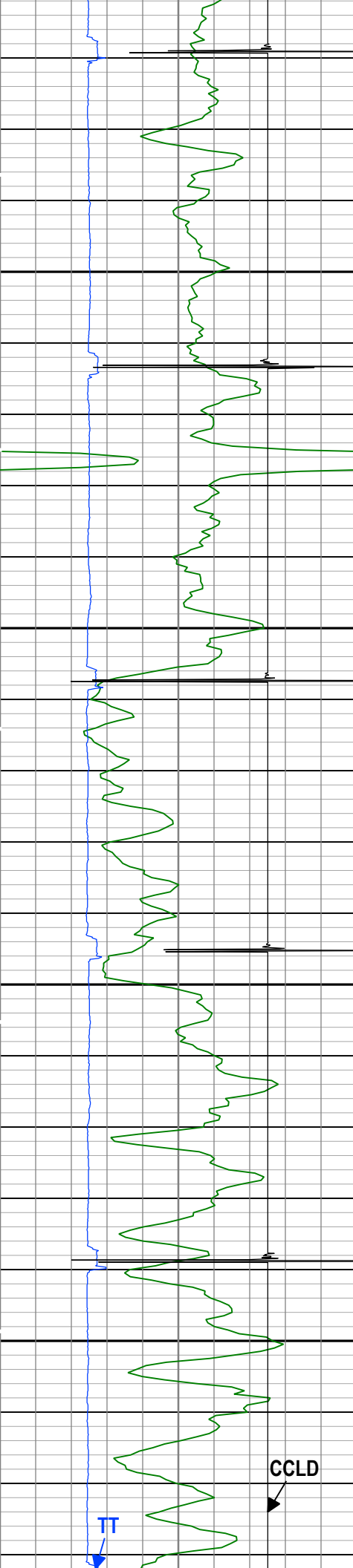










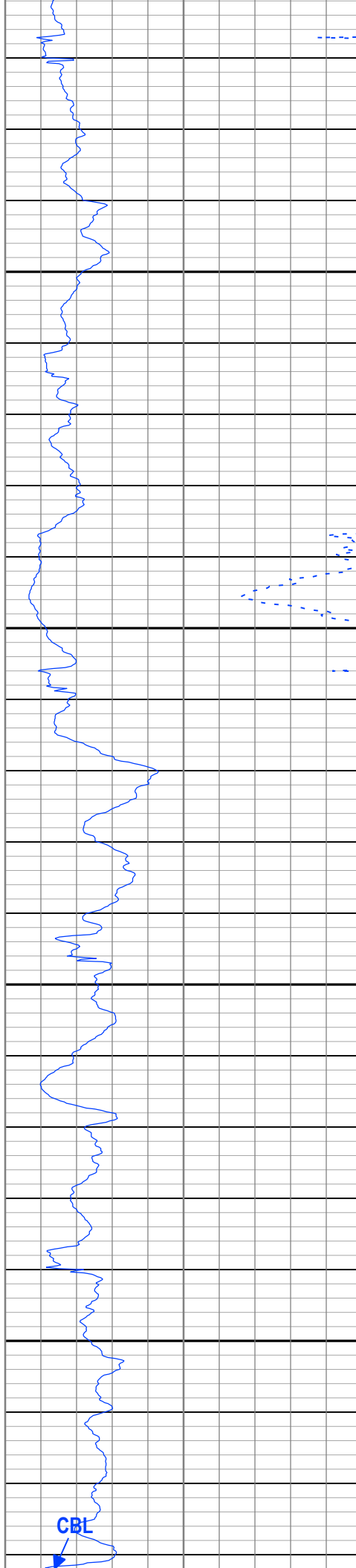


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CCLD

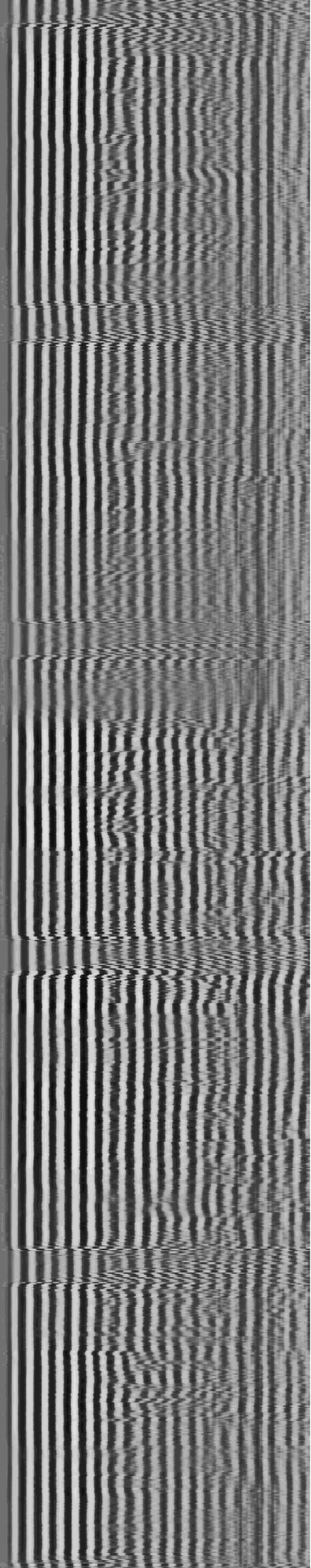
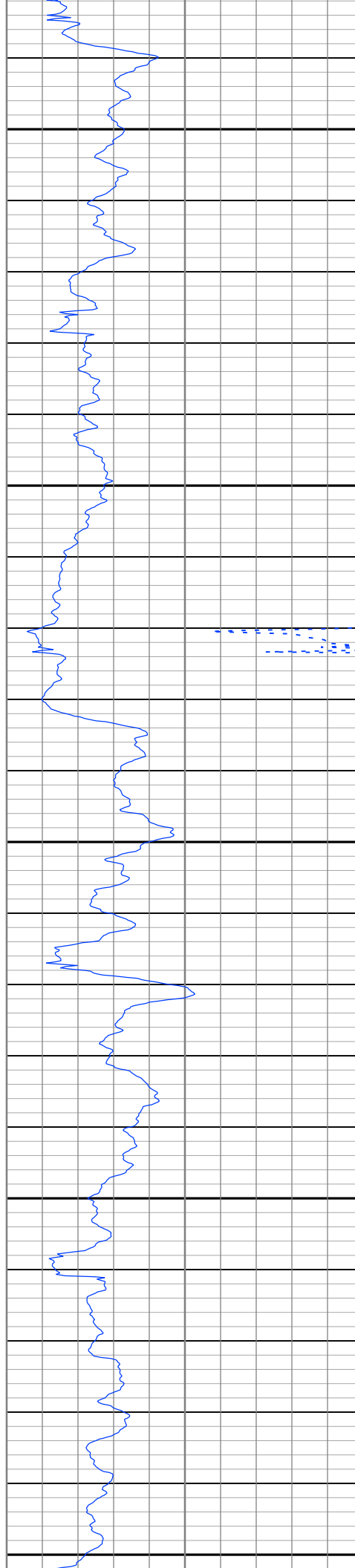
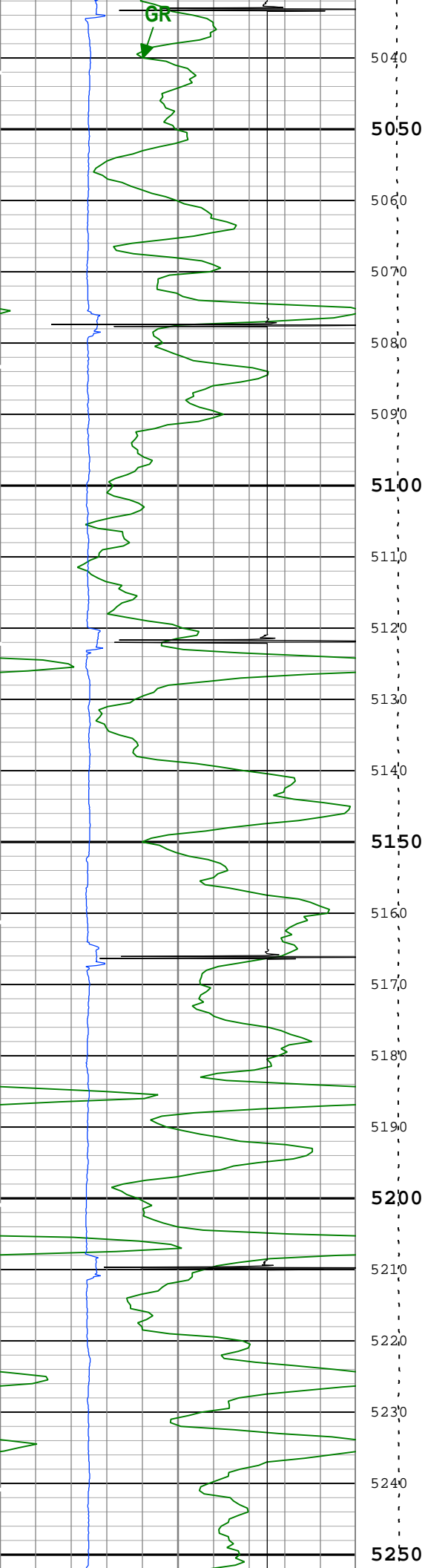
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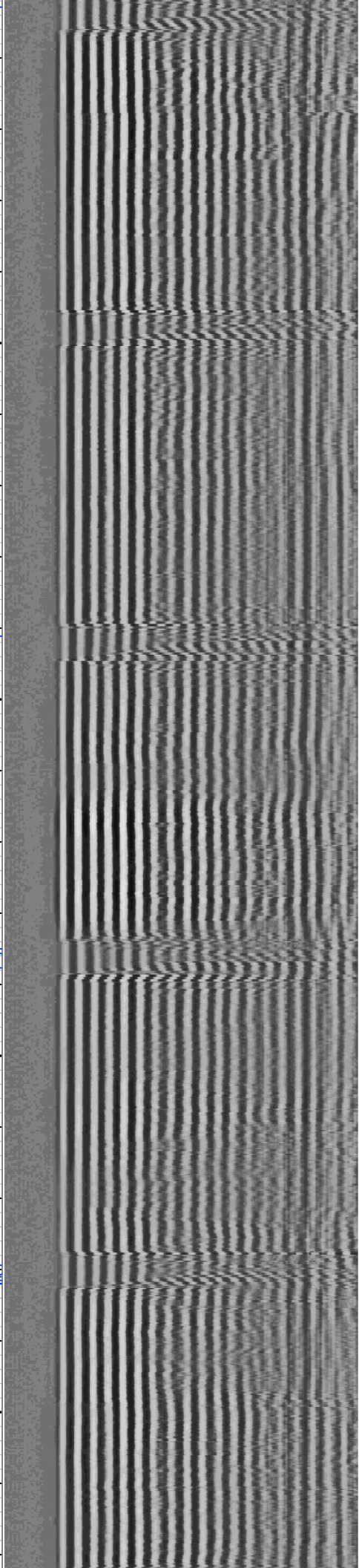
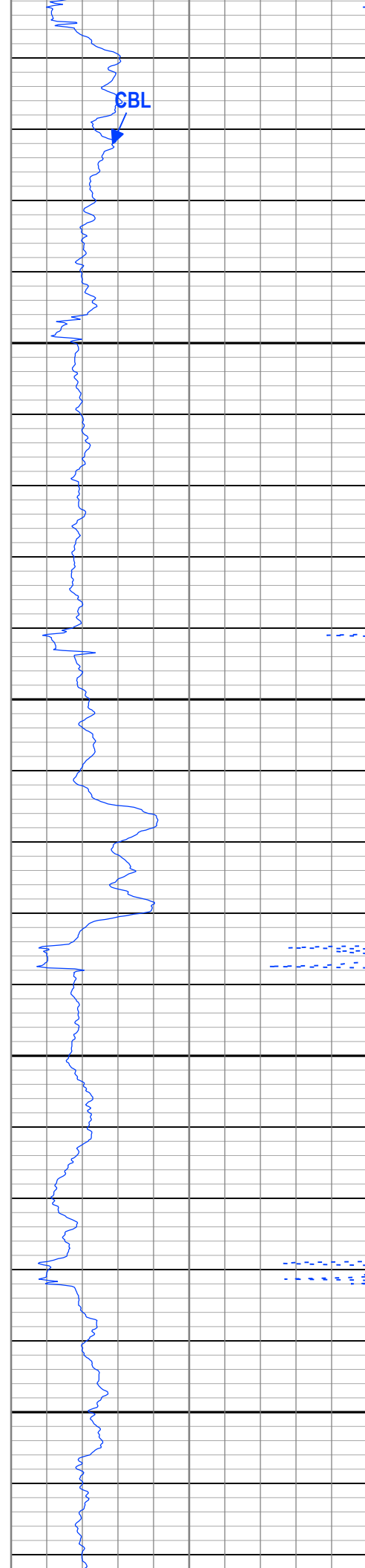
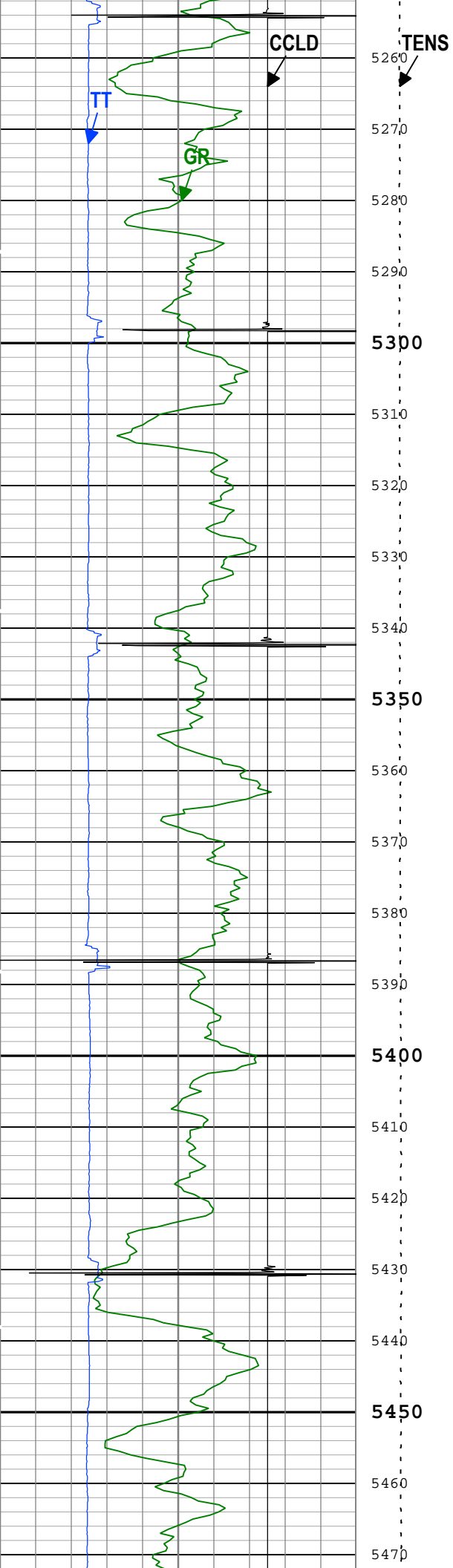
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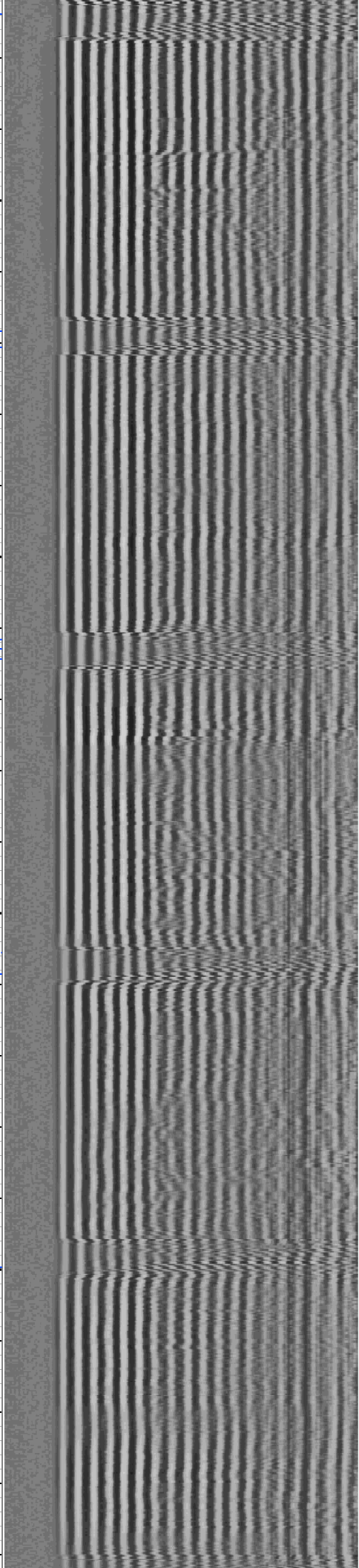
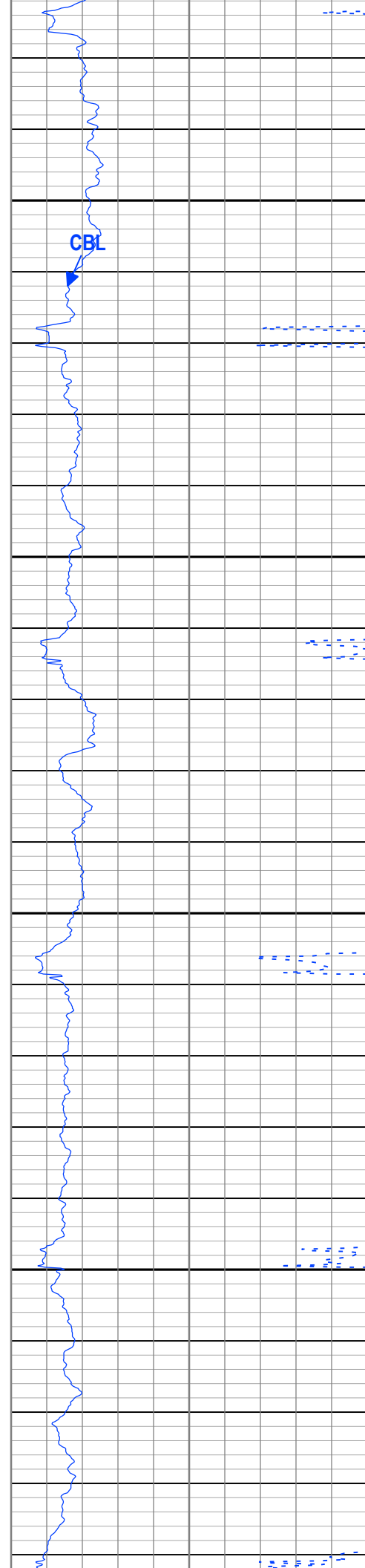
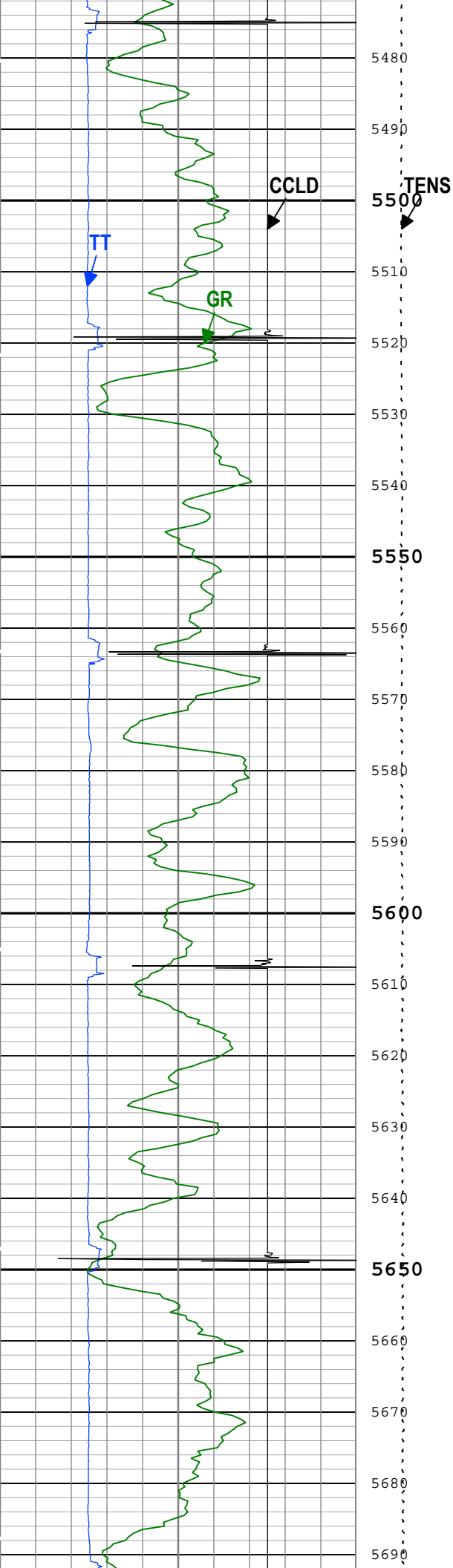


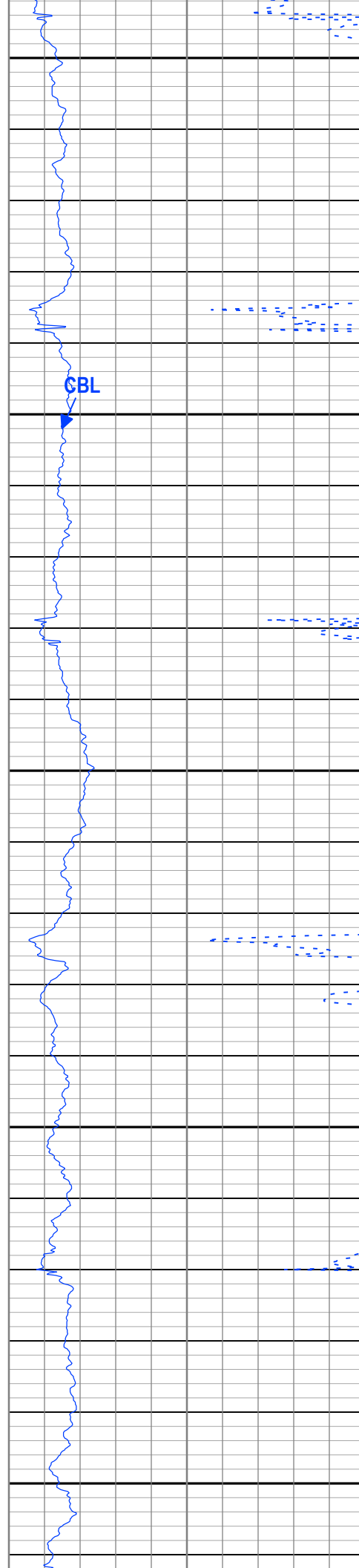
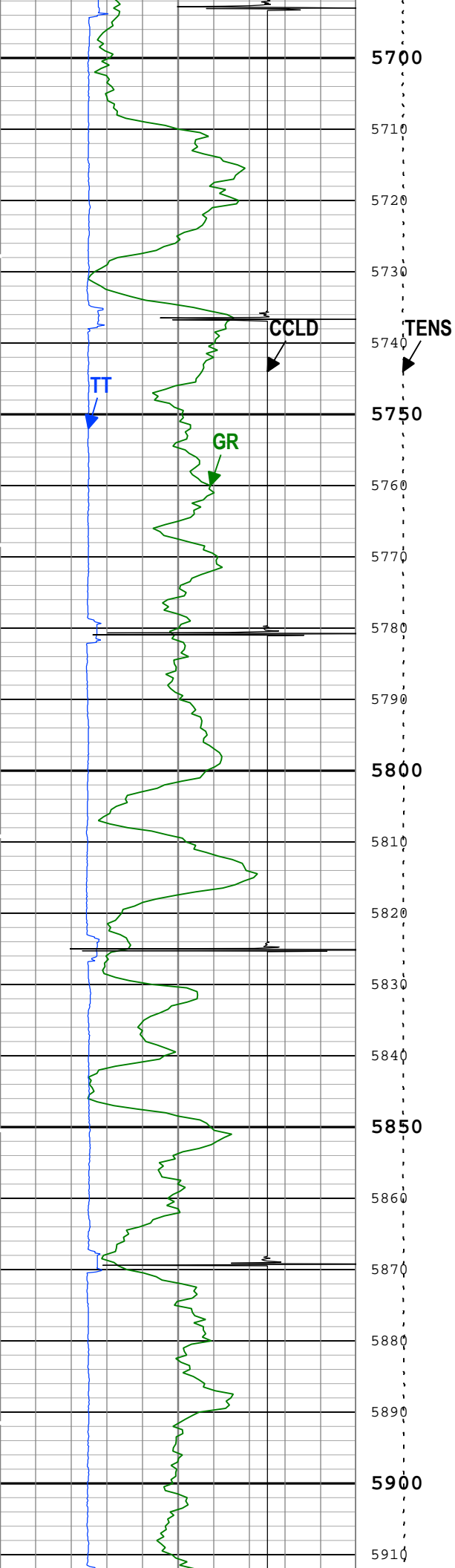
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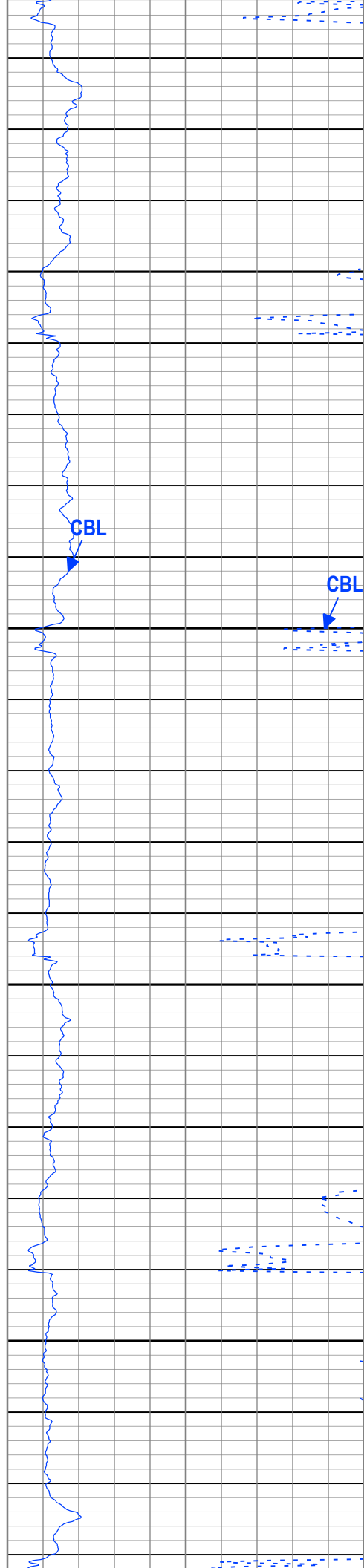
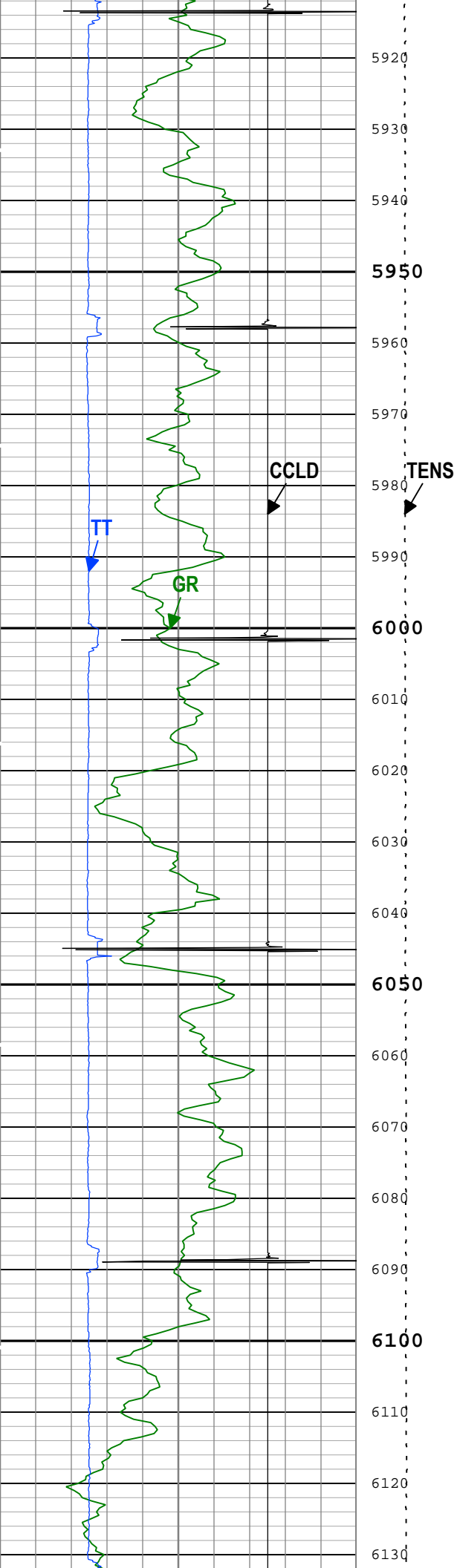


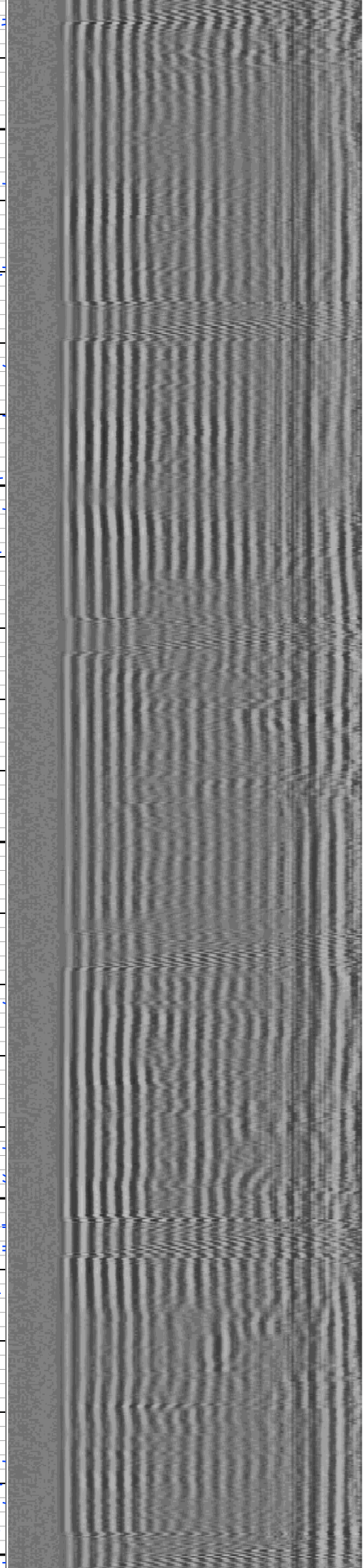
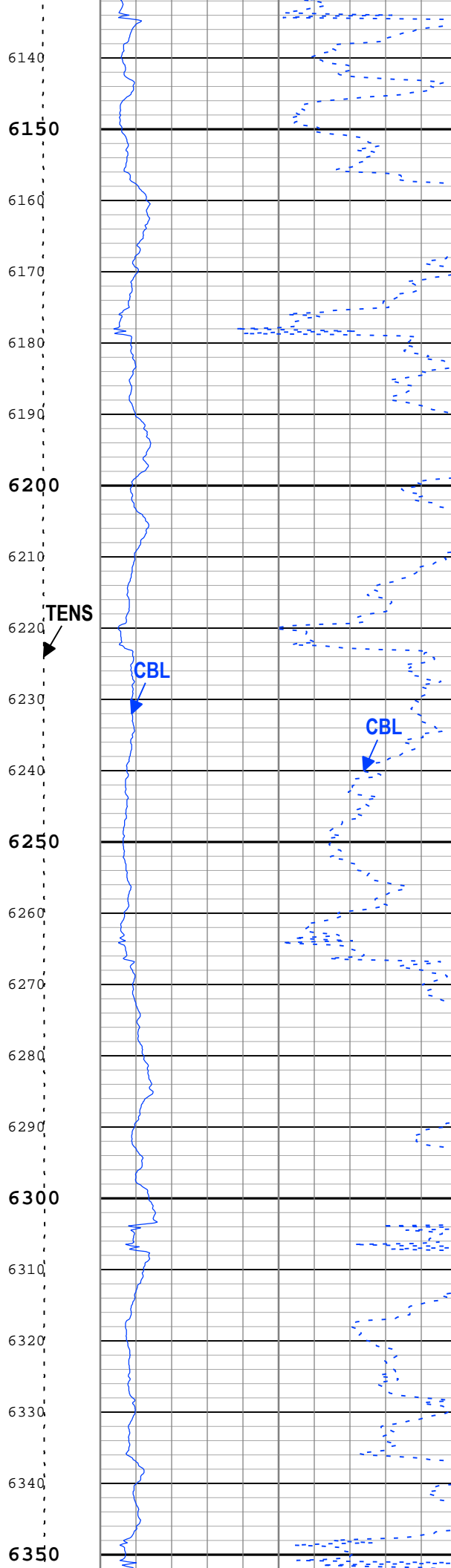
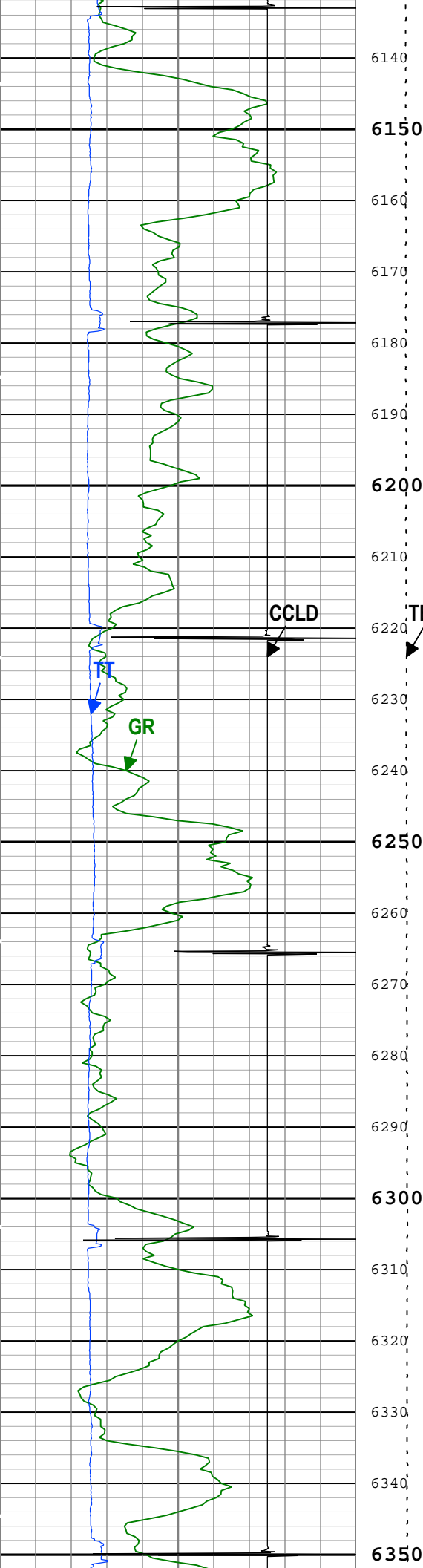


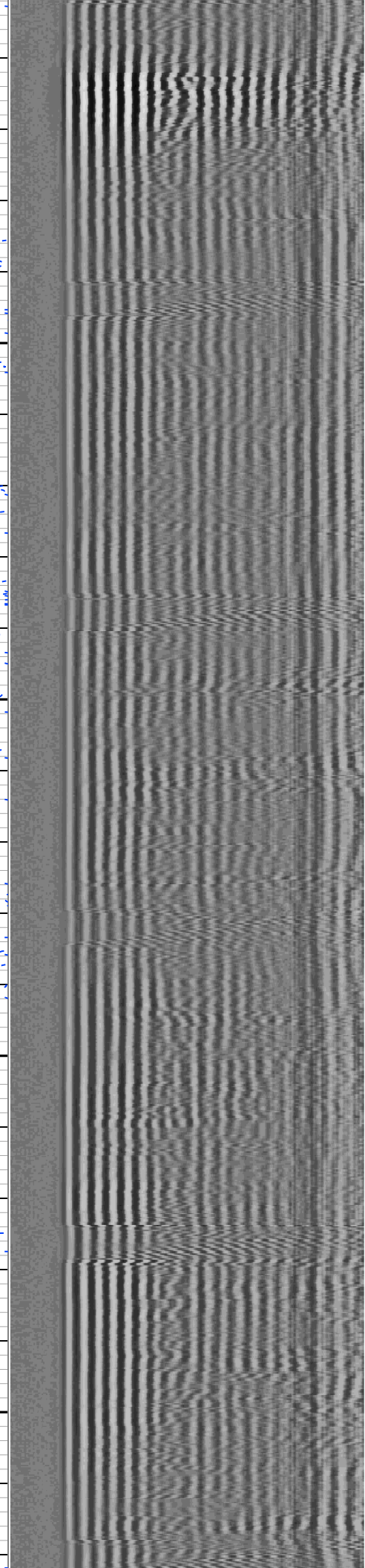
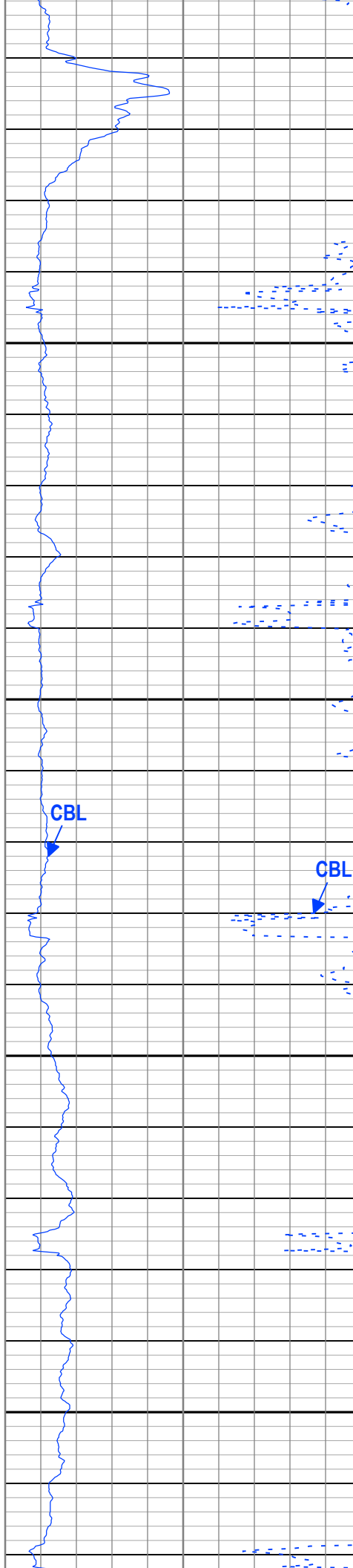
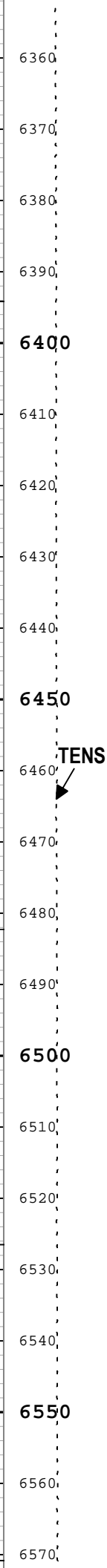
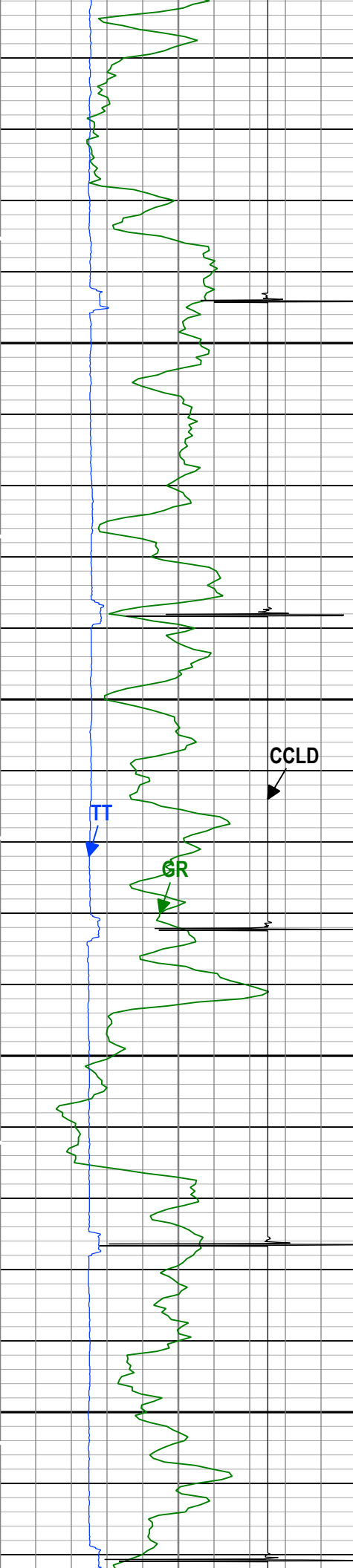


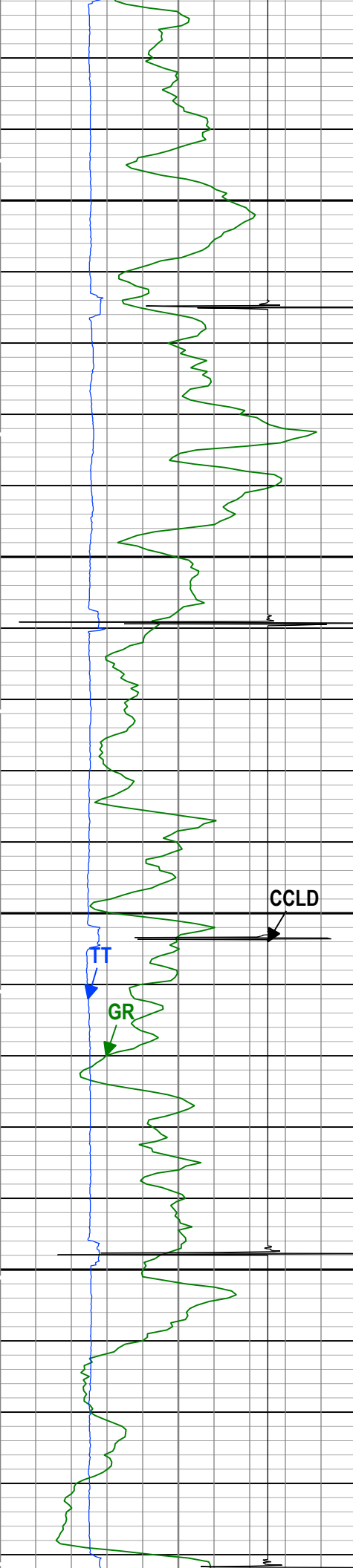




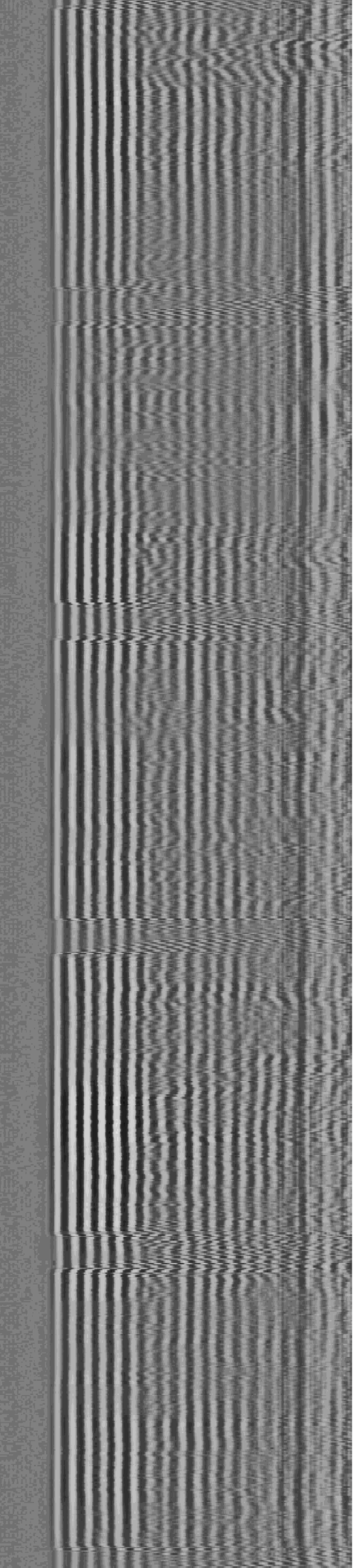
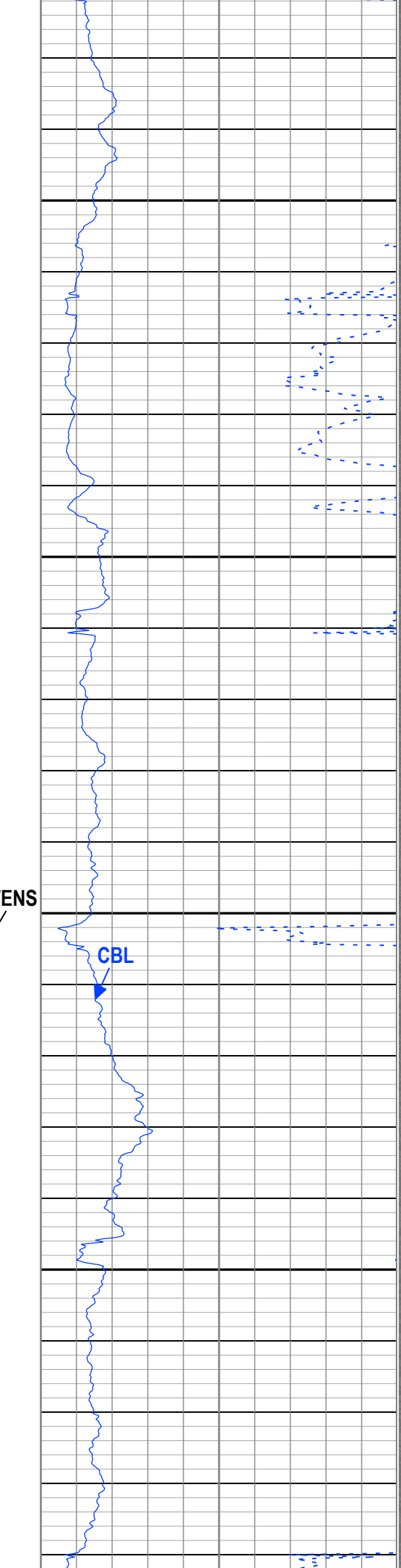




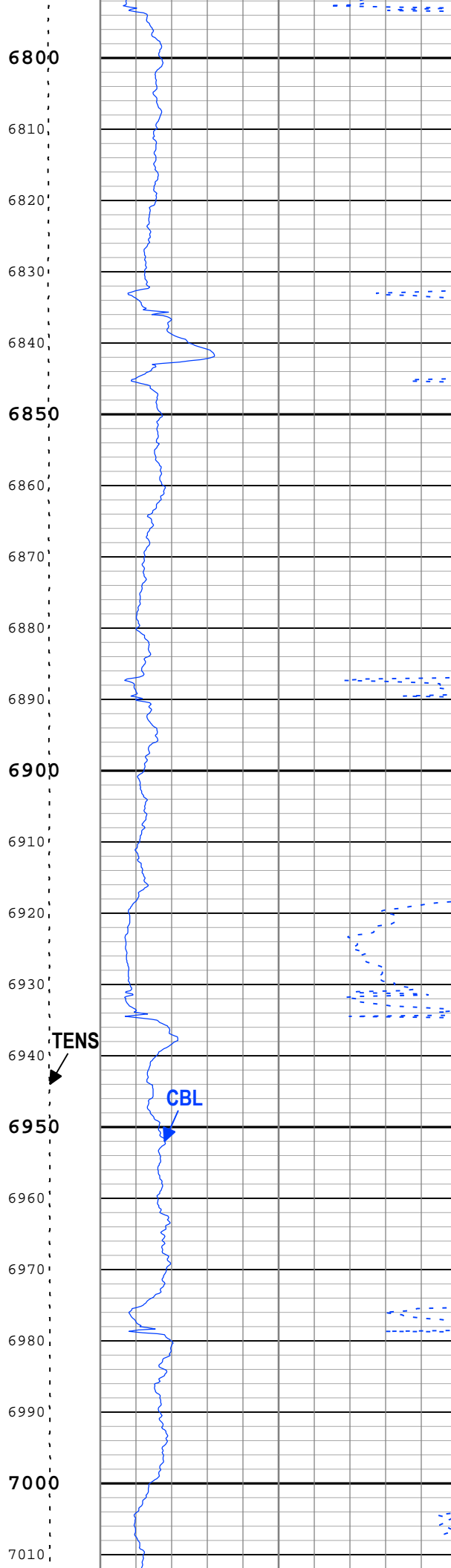
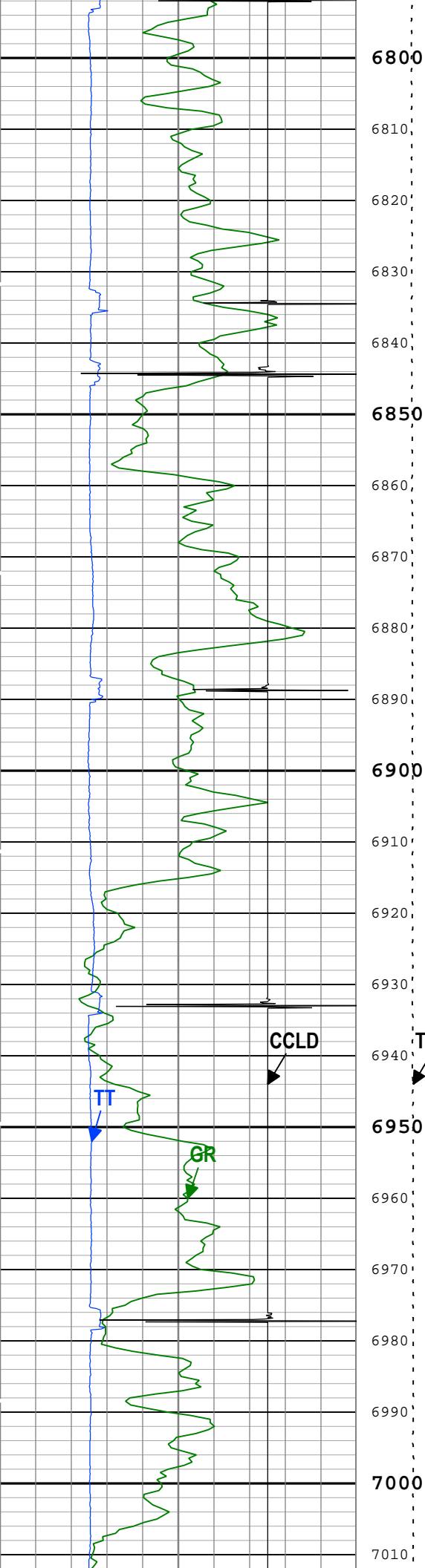


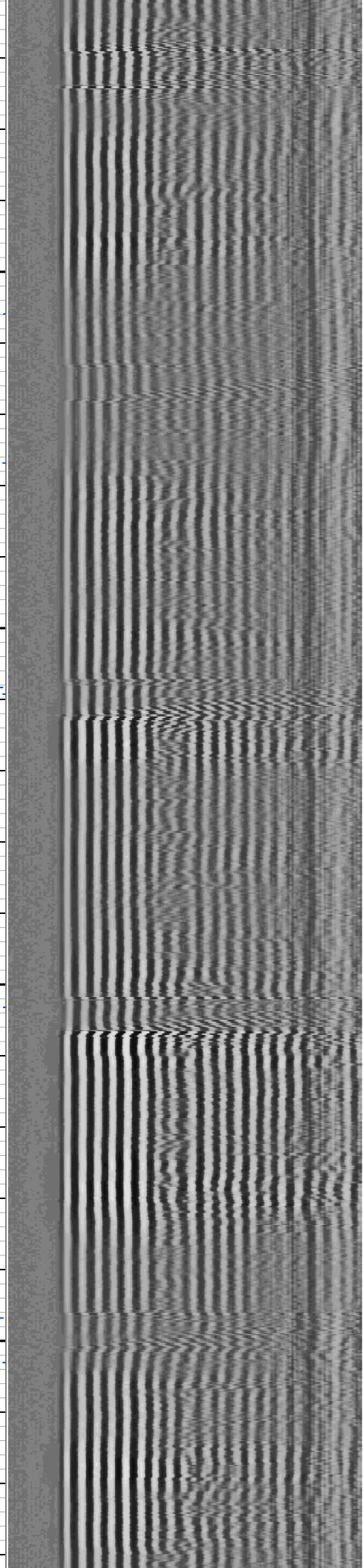
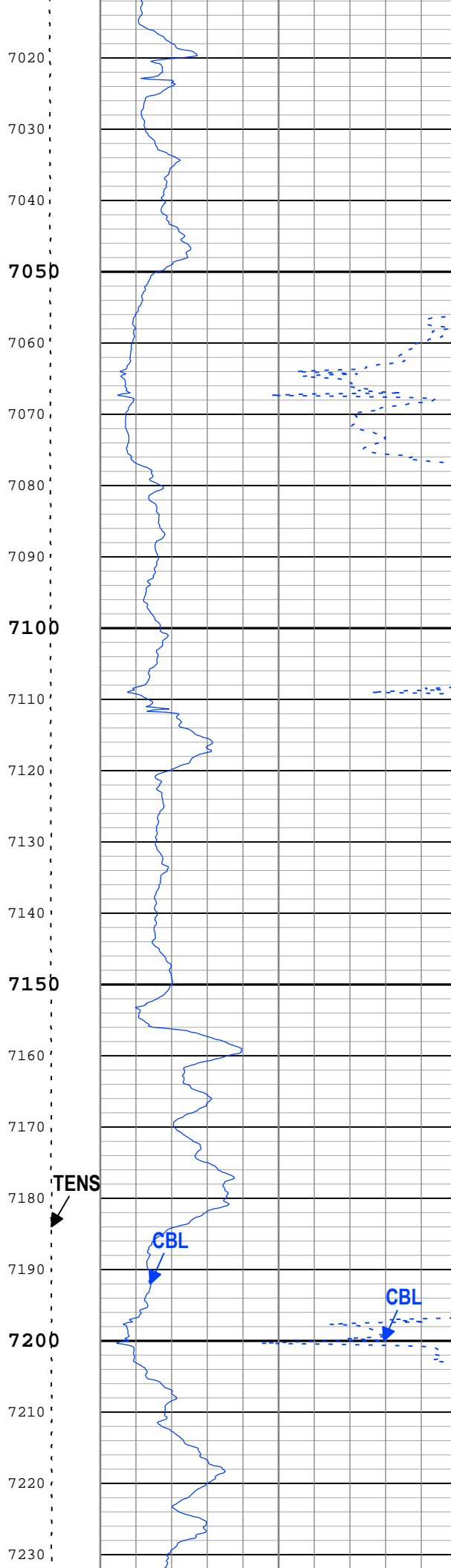
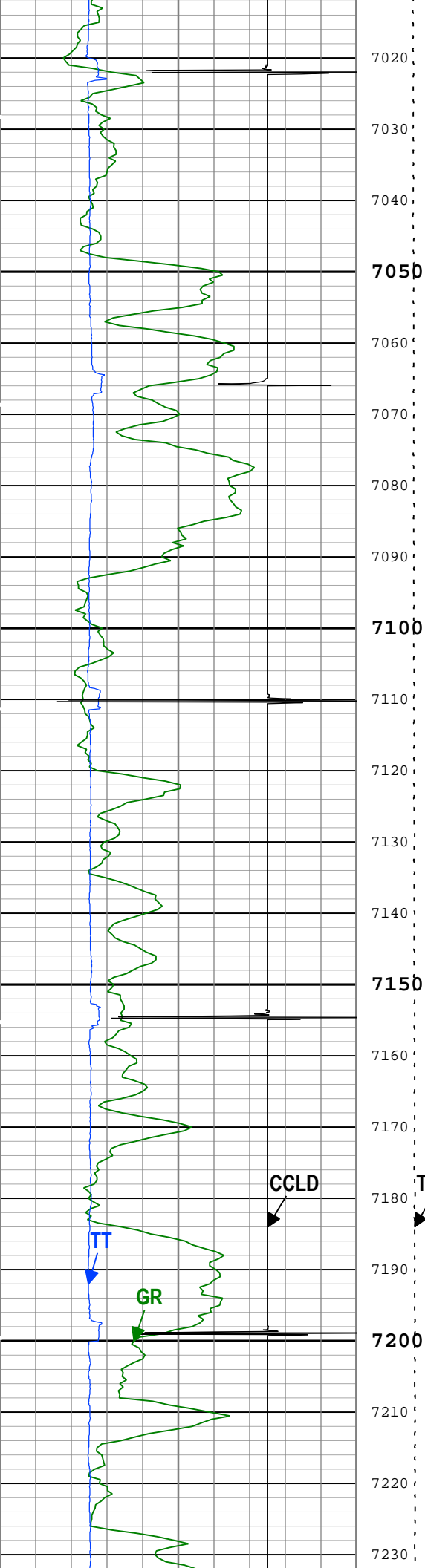


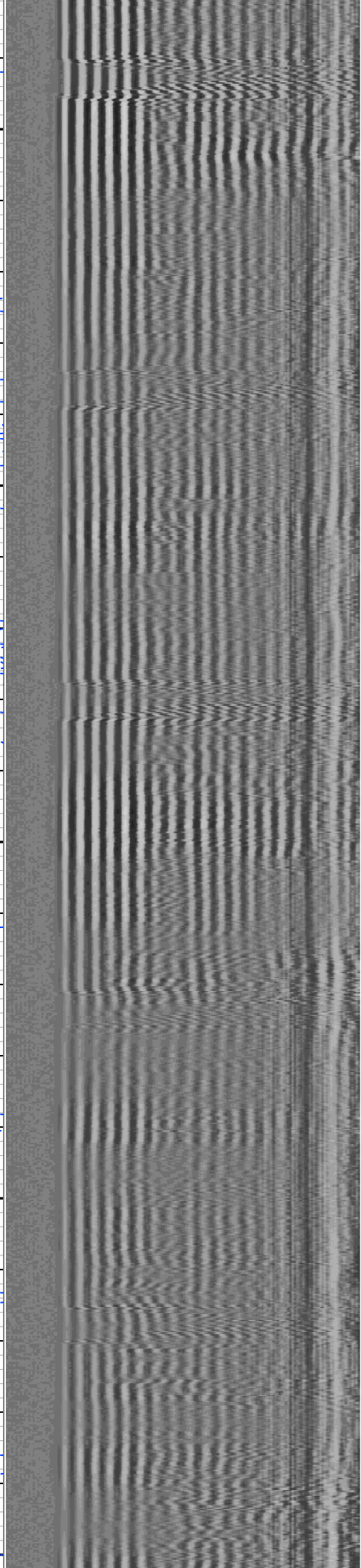
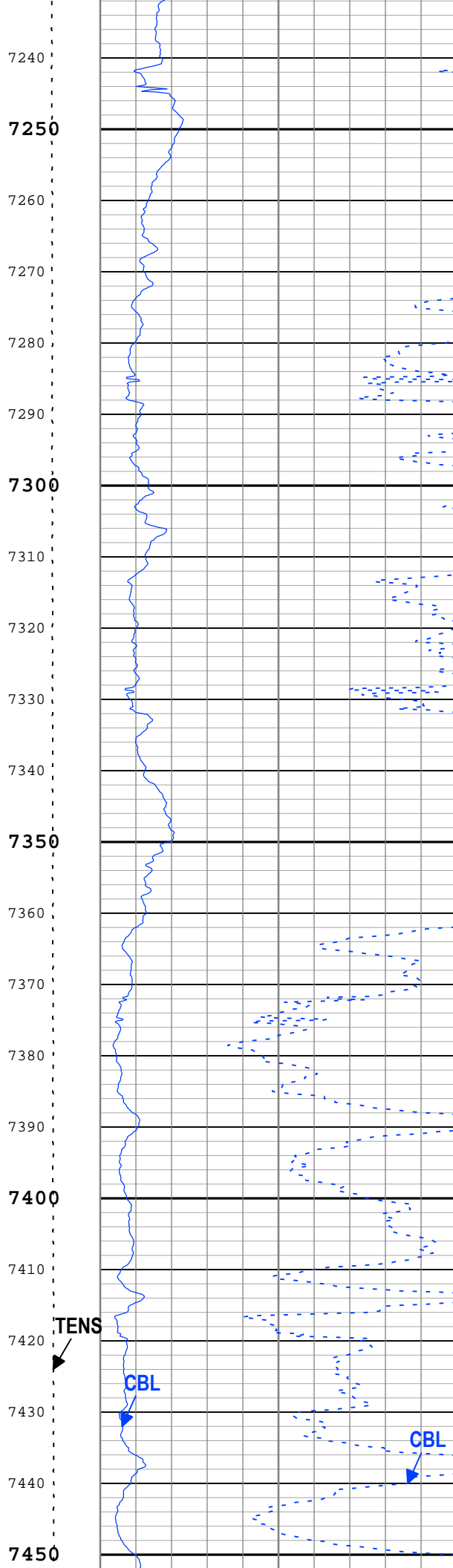
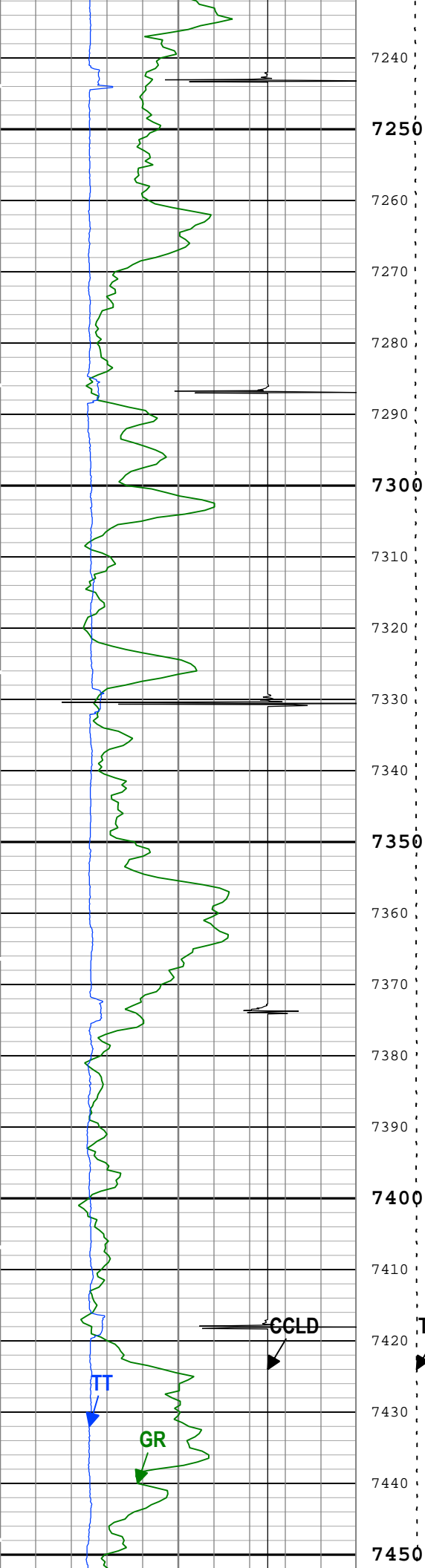
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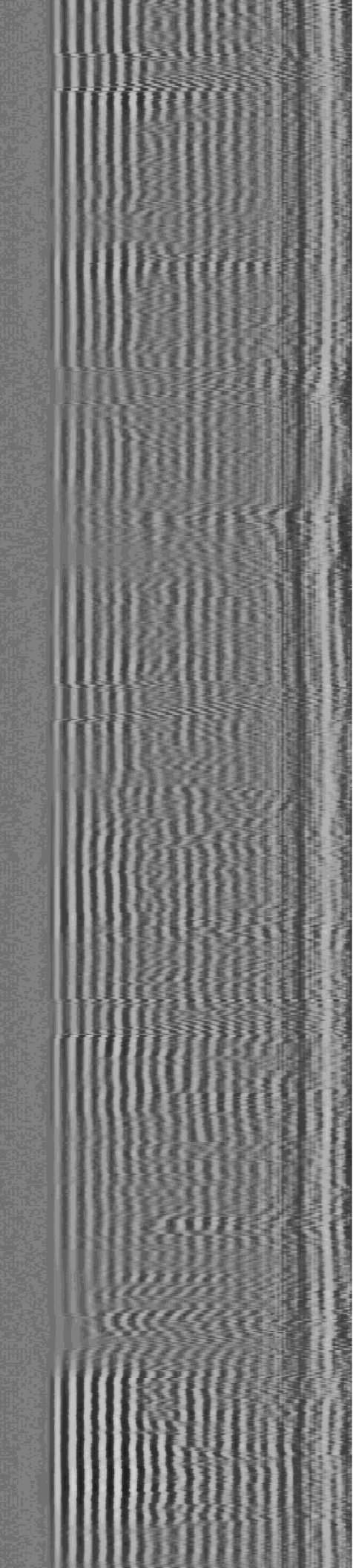
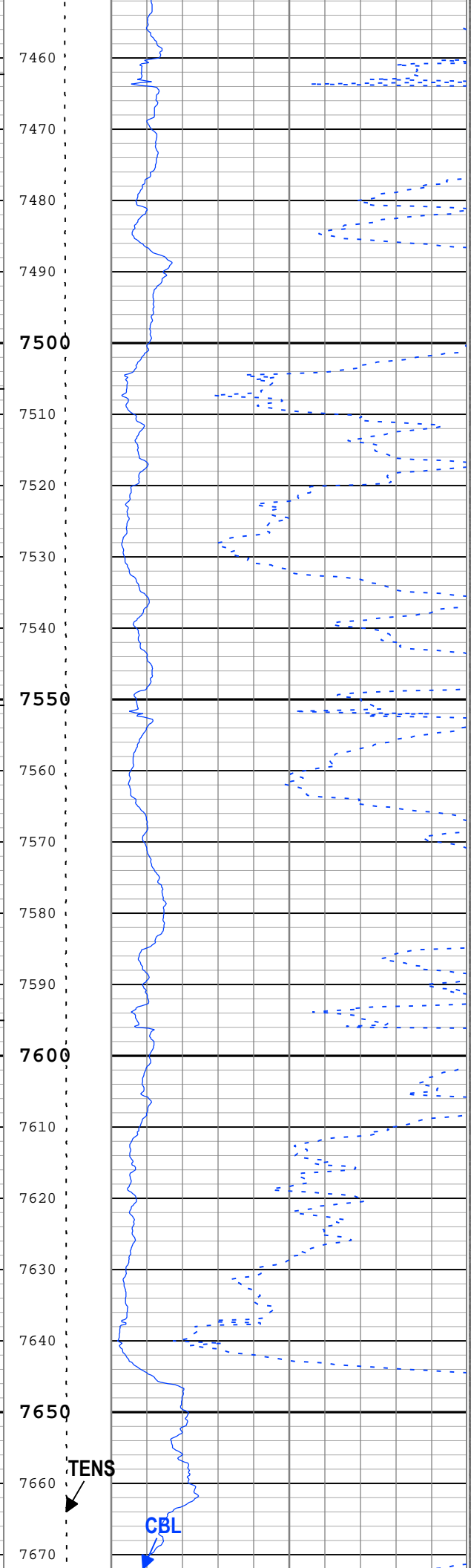
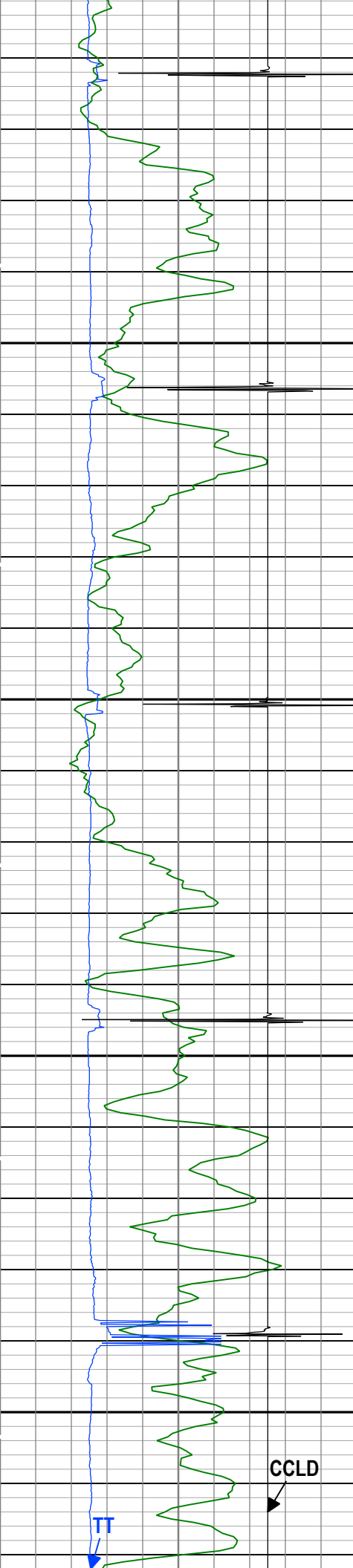


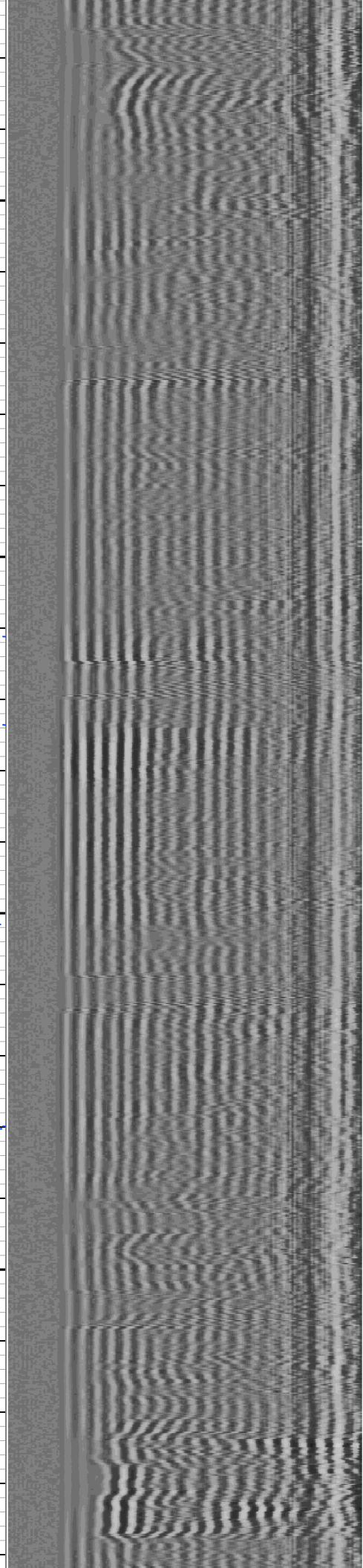
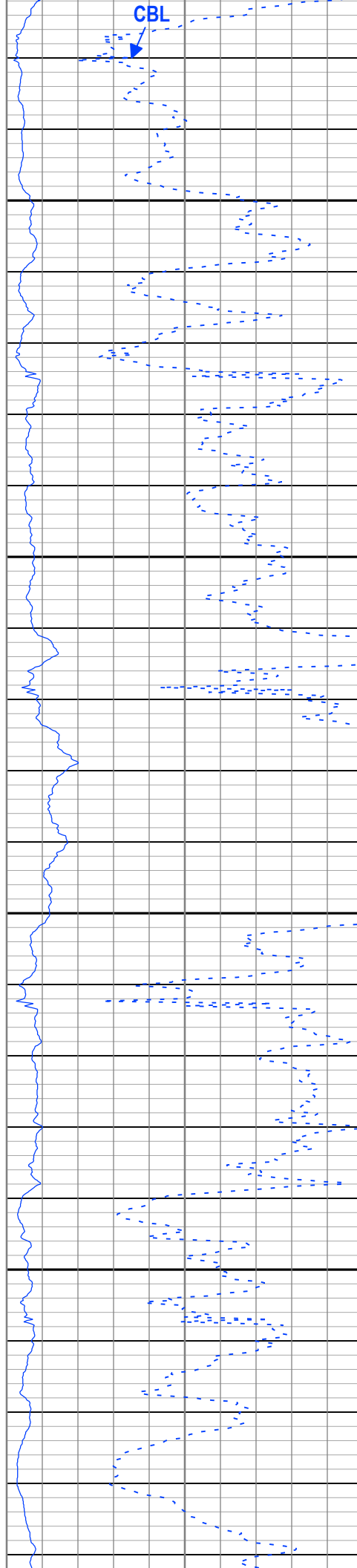
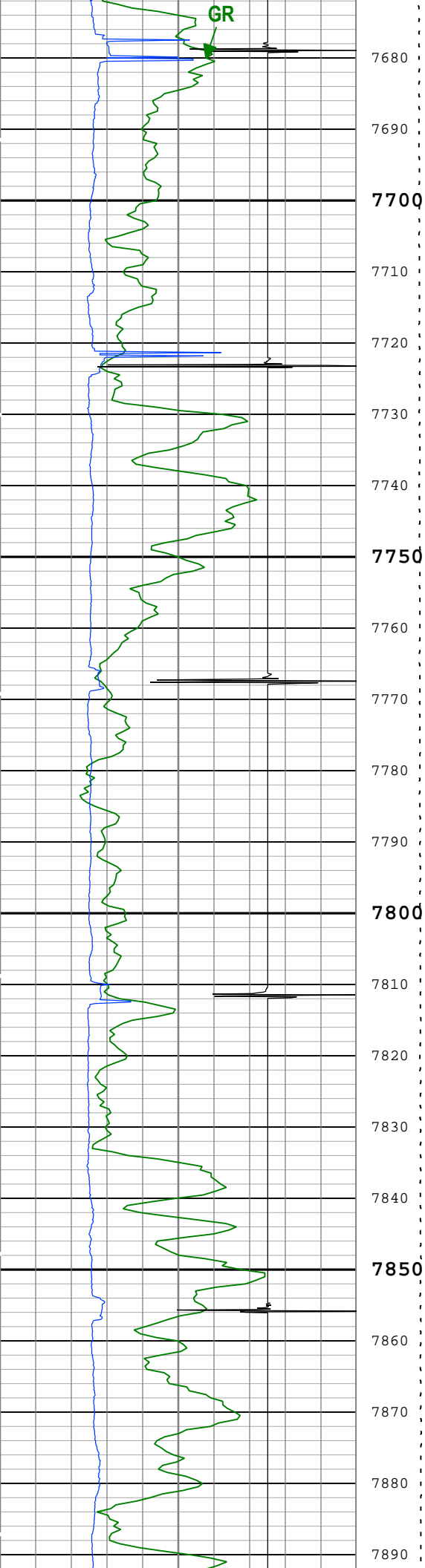


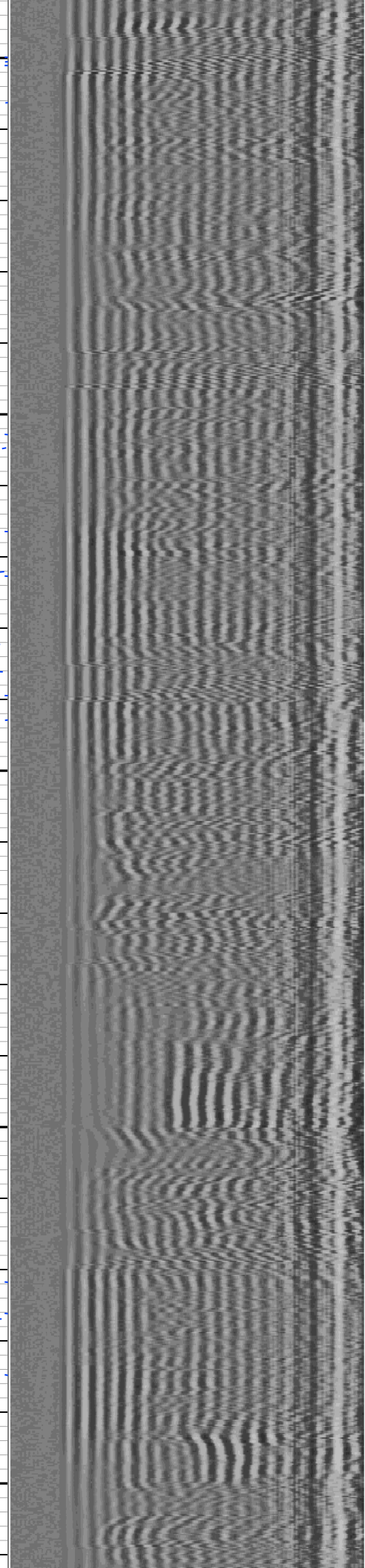
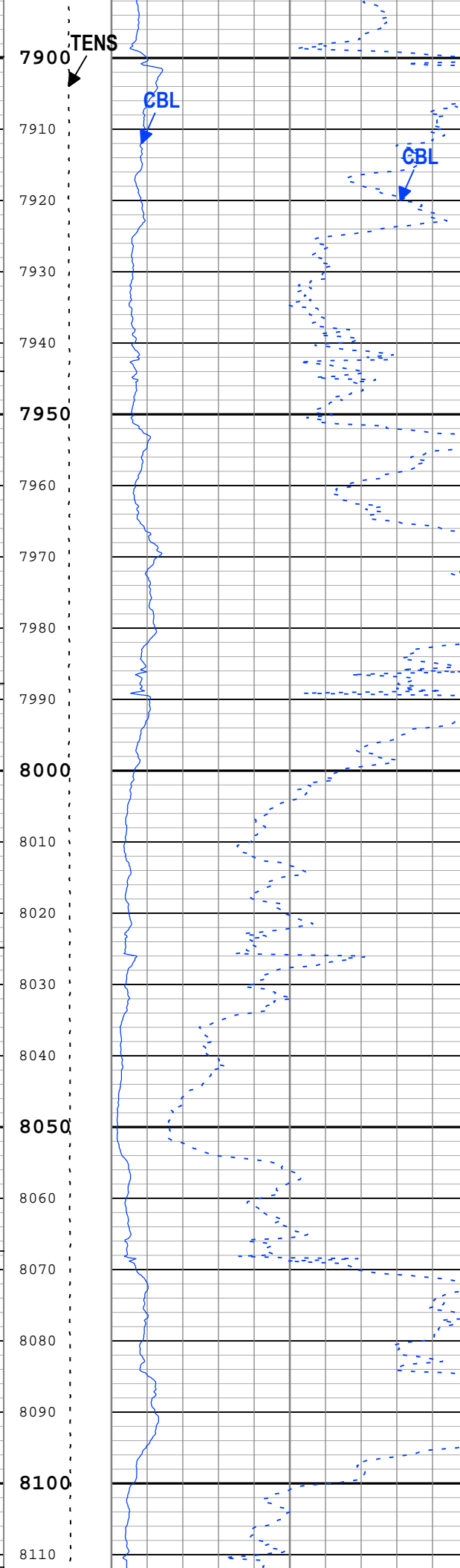
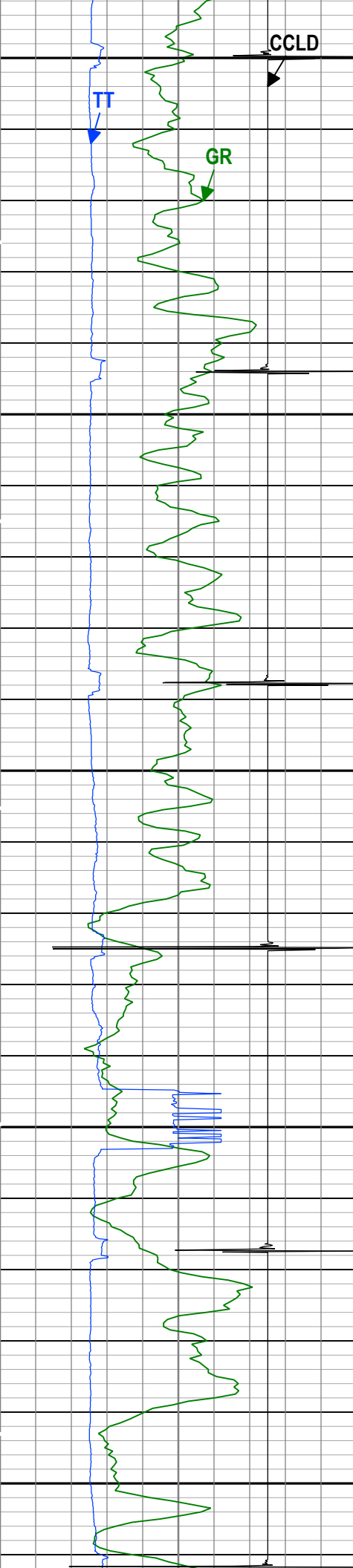




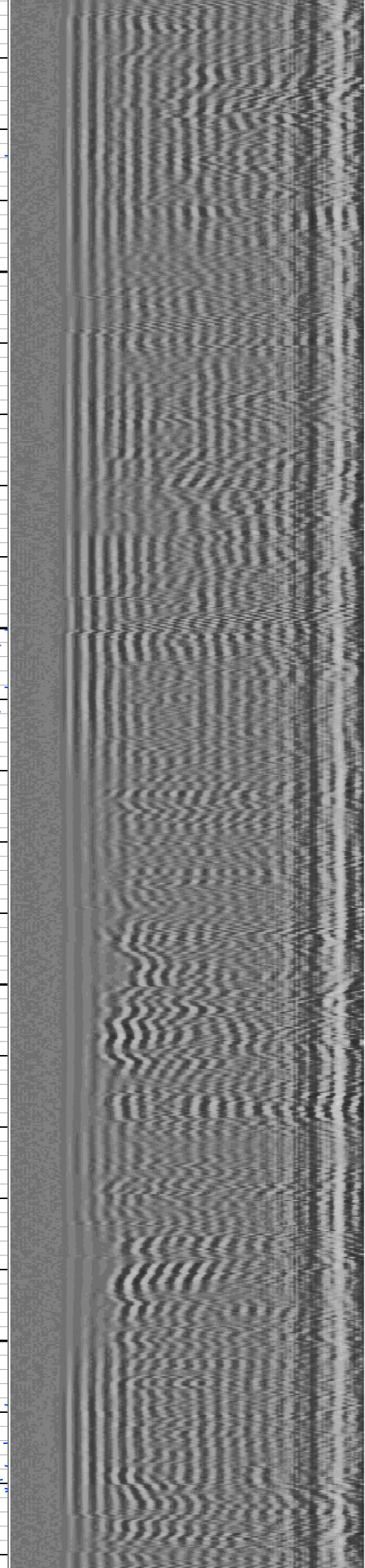
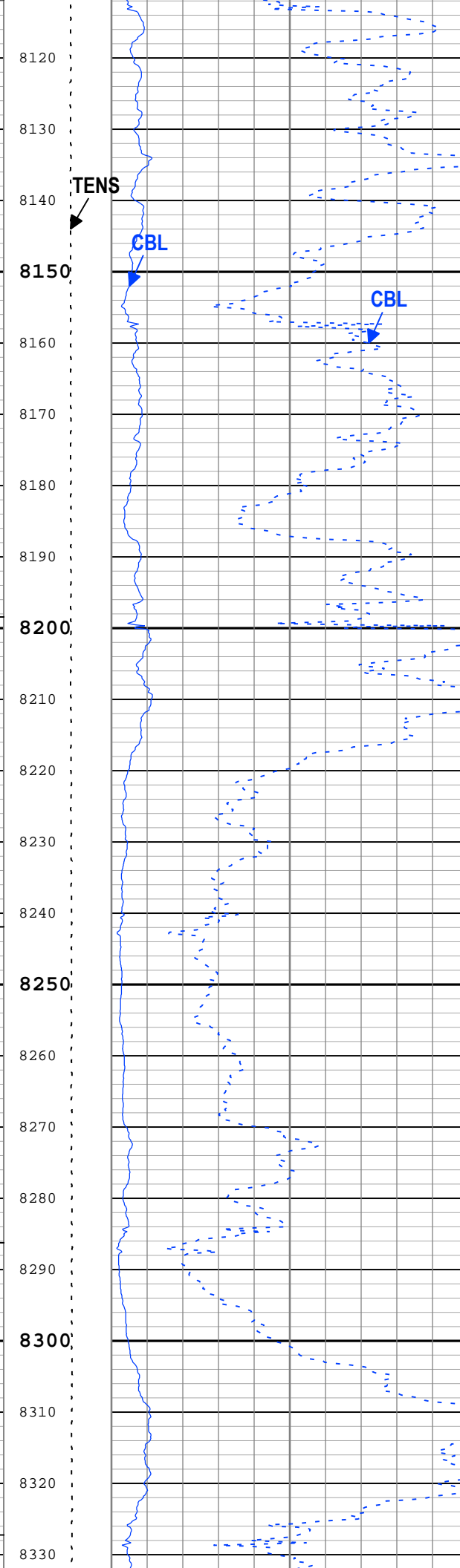
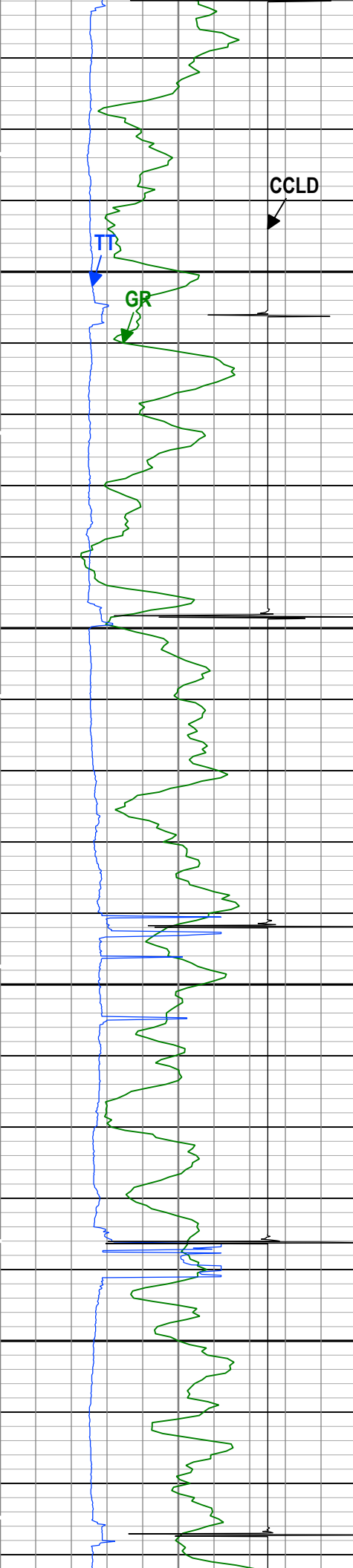




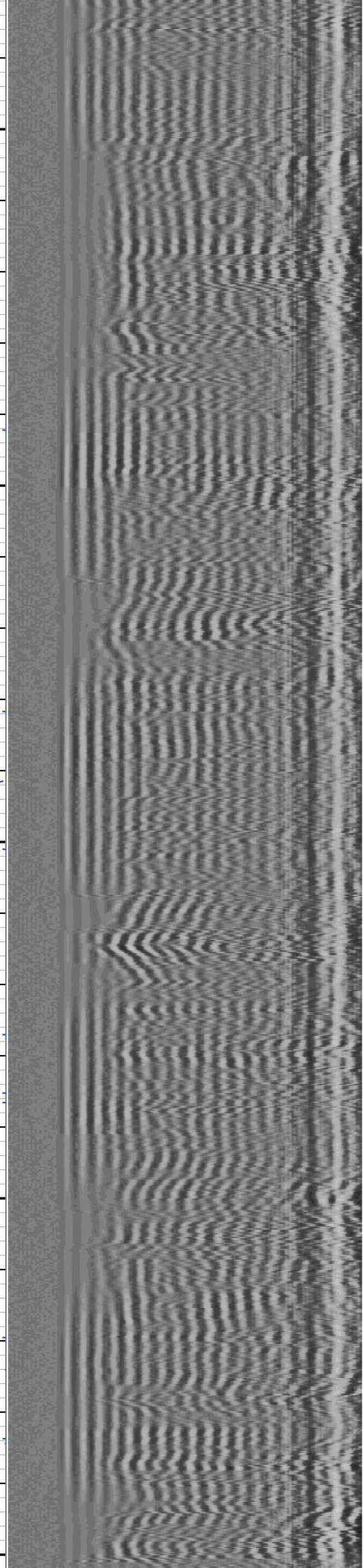
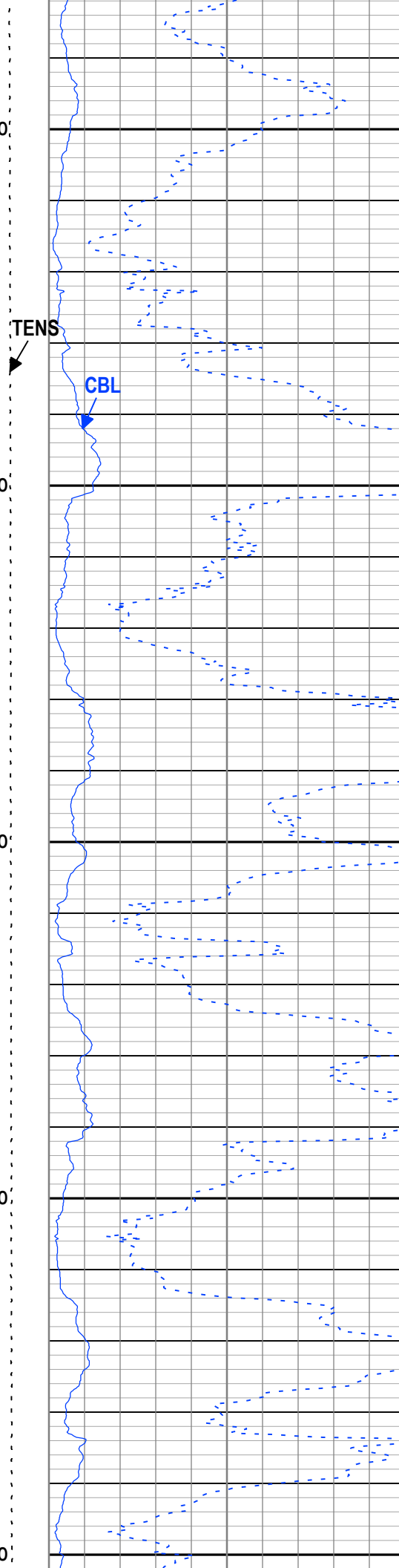
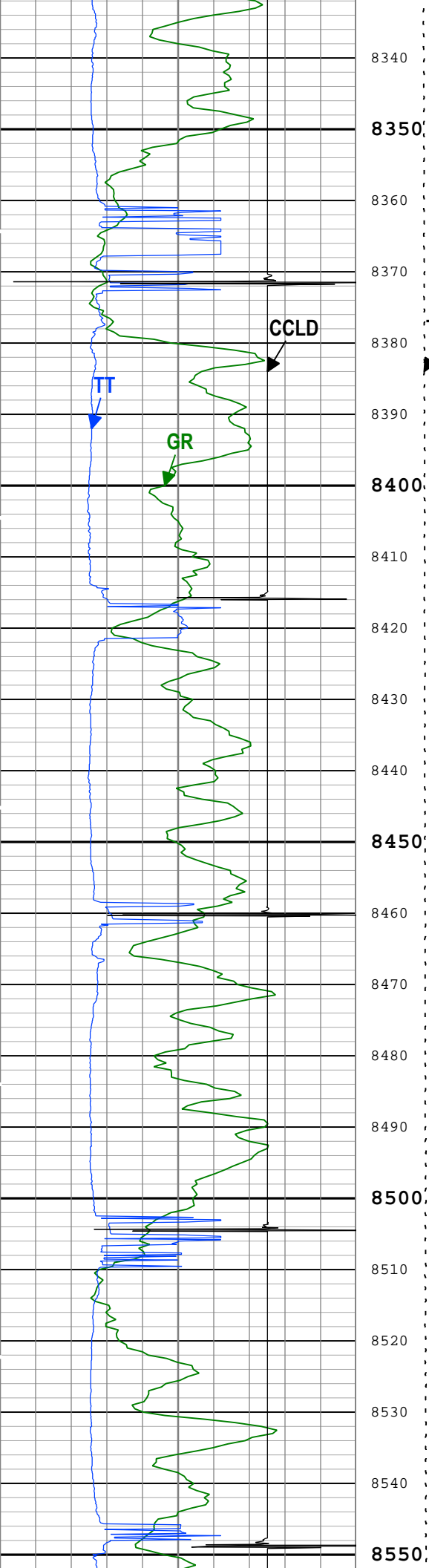


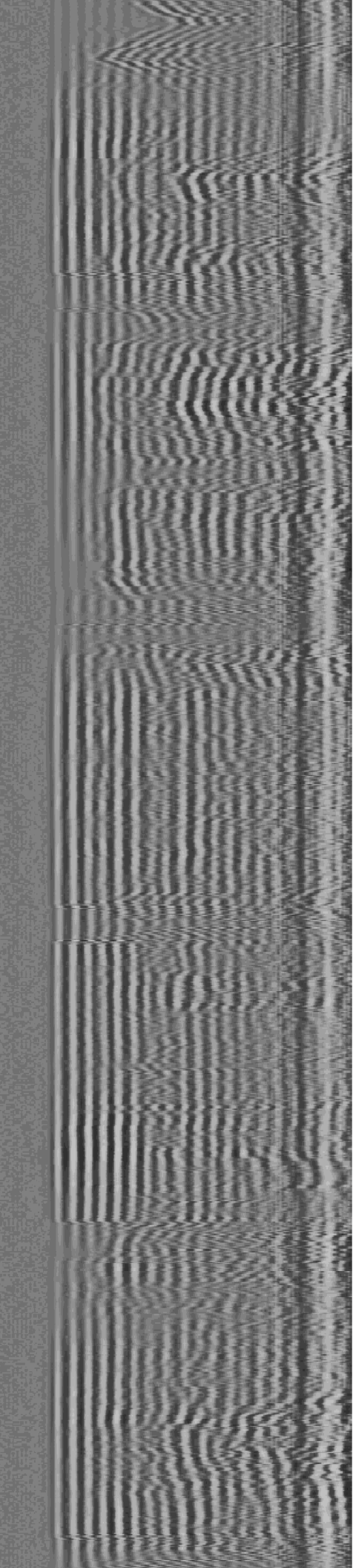
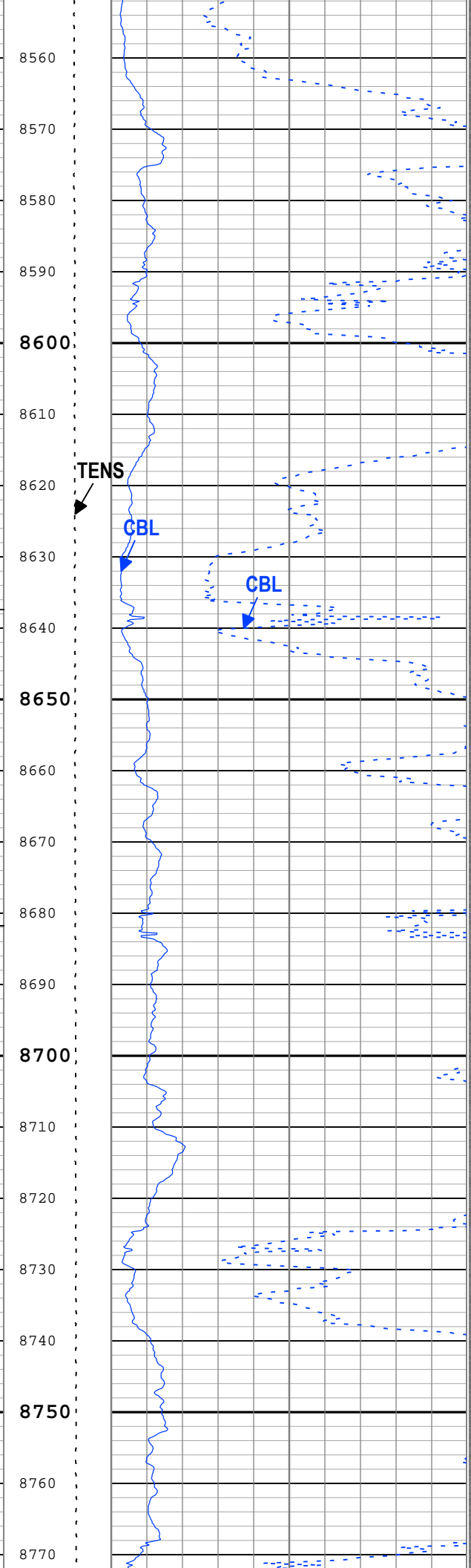
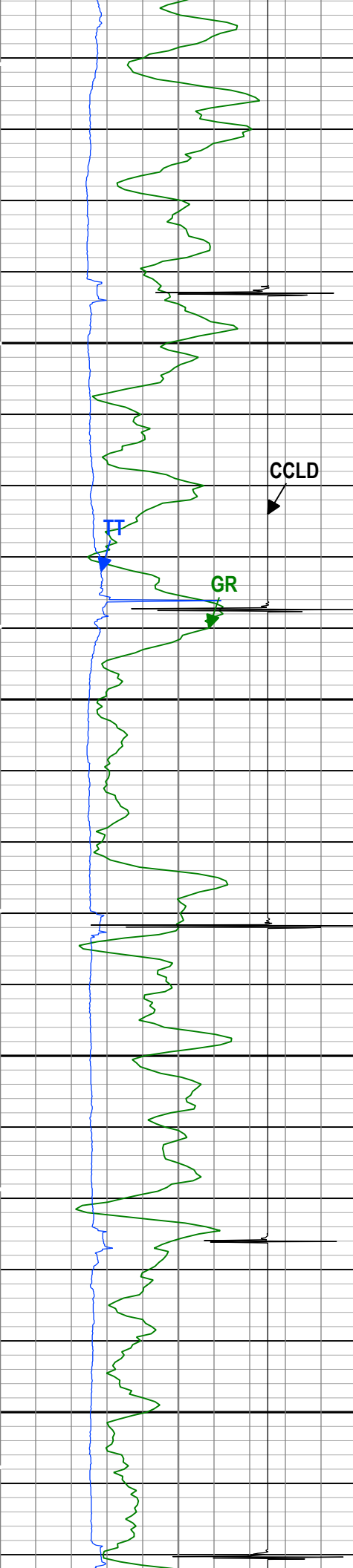


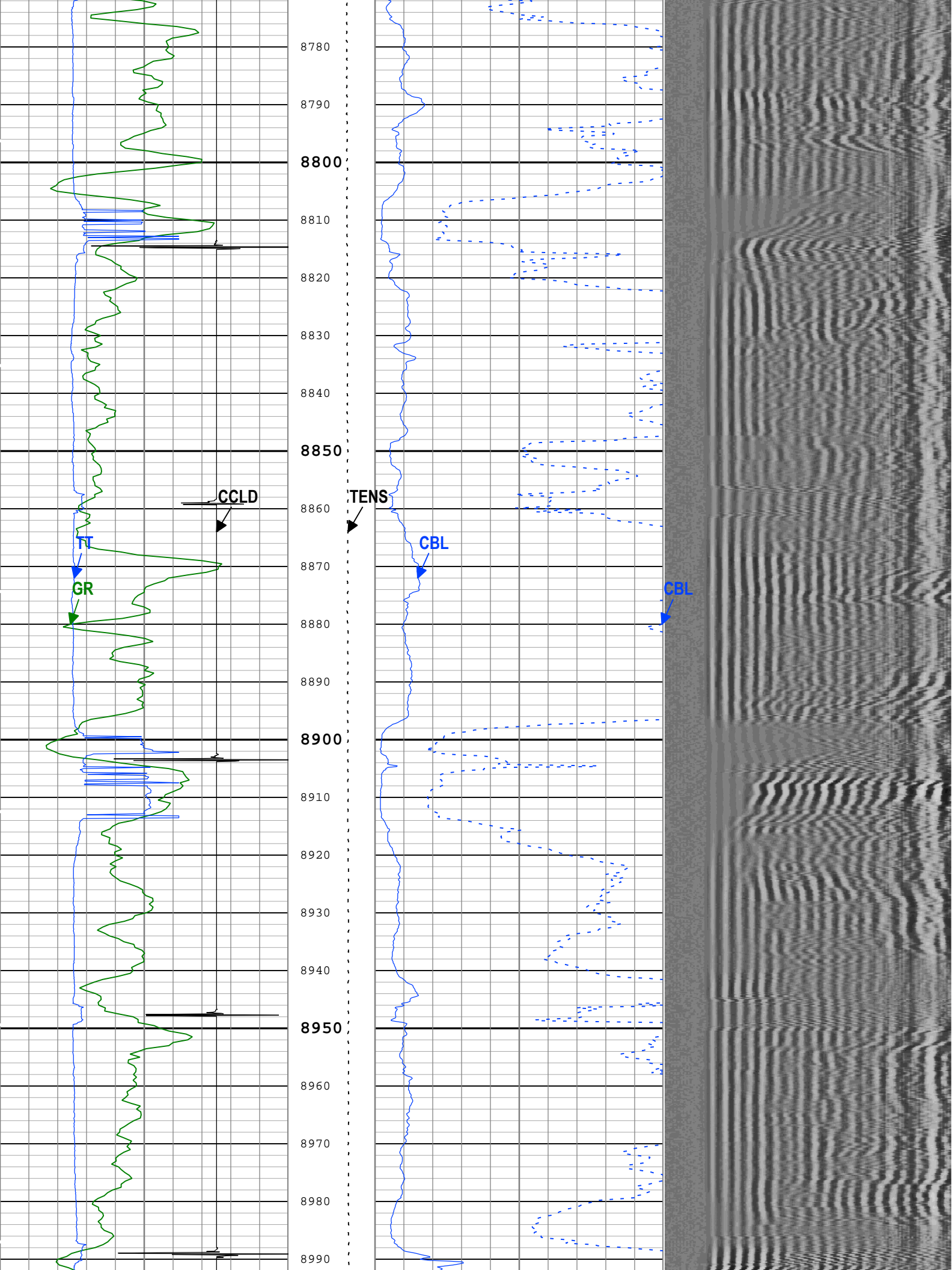


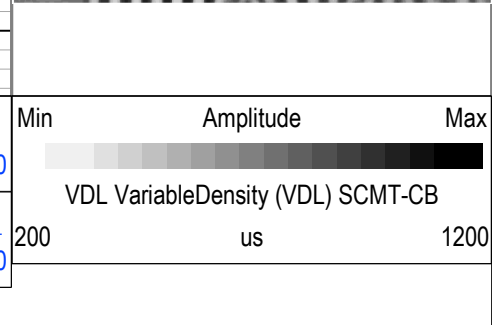
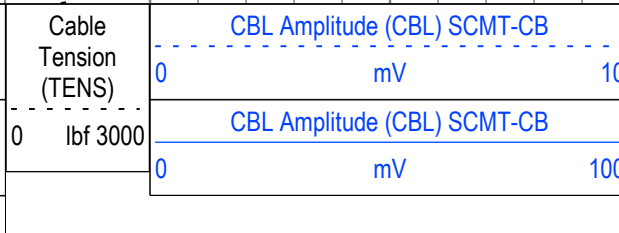
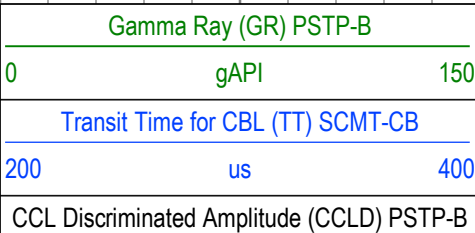














TIME\_1900 - Time Marked every 60.00 (s)

Description: 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 10:26:11

Channel Processing Parameters

1: 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	Depth Zoned	mV
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
EDF	Elevation of Derrick Floor Above Permanent Datum	WLSESSION	30	ft
EPD	Elevation of Permanent Datum (PDAT) above Mean Sea Level	WLSESSION	8432	ft
FCF	CBL Fluid Compensation Factor	SCMT-CB	1	
GGRD	Geothermal Gradient	Borehole	1	0.01 degF/ft
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-CB	Depth Zoned	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	GTEM_LINEST(RT)	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-CB	Depth Zoned	dB/ft
MCI	Minimum Cemented Interval for Isolation	SCMT-CB	Depth Zoned	ft
MSA	Minimum Sonic Amplitude	SCMT-CB	Depth Zoned	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	SCMT-CB	Depth Zoned	mV
PDAT	Permanent Datum	WLSESSION	GL	
RUN_SNUM	Run Sequence Number	WSDRUN	1	
SHT	Surface Hole Temperature	Borehole	68	degF

Depth Zone Parameters

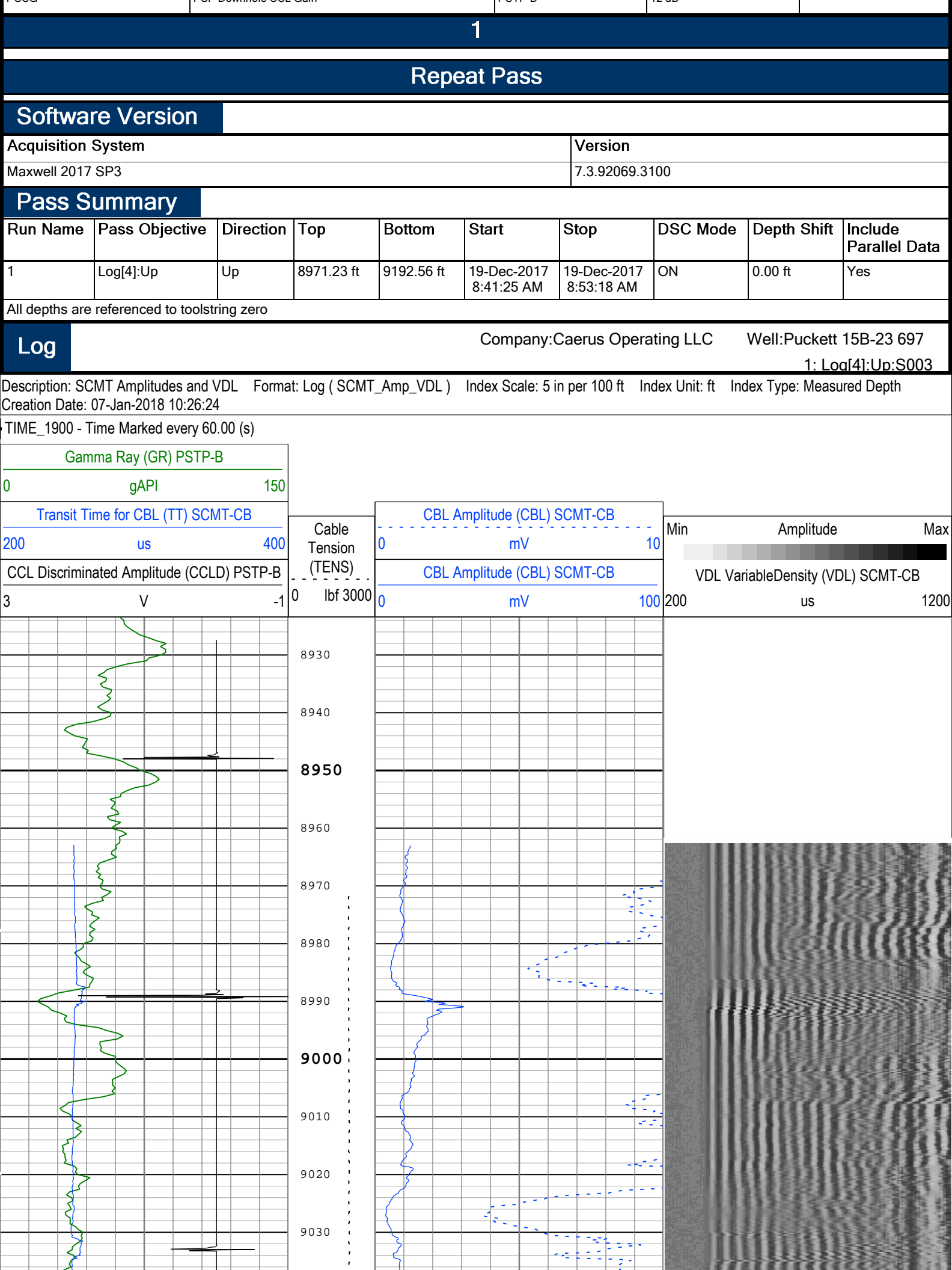
Parameter	Value	Start ( ft )	Stop ( ft )
CBRA	80	2025.5	9181
CBRA	0	9181	9186.83
GOBO_CURR	1.34	2025.5	9181
GOBO_CURR	0	9181	9186.83
MATT_CURR	17.09	2025.5	9181
MATT_CURR	0	9181	9186.83
MCI	1.25	2025.5	9181
MCI	0	9181	9186.83
MSA	0.48	2025.5	9181
MSA	0	9181	9186.83
MSA_CURR	0.48	2025.5	9181
MSA_CURR	0	9181	9186.83

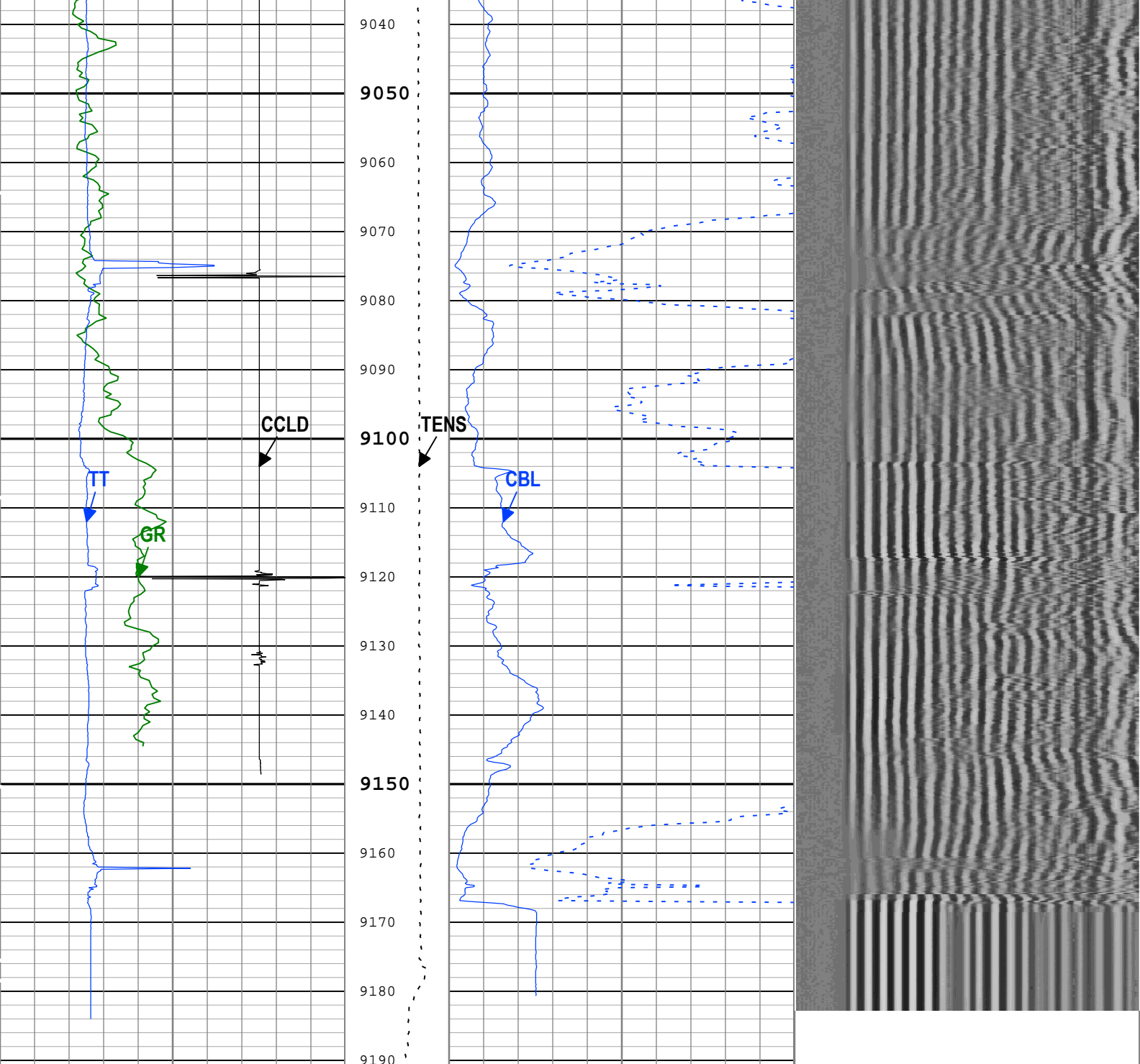
All depth are actual.

Tool Control Parameters

1: 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-R	12 dB	





Gamma Ray (GR) PSTP-B	Cable Tension (TENS)	CBL Amplitude (CBL) SCMT-CB	Min	Amplitude	Max
0 gAPI 150	0 lbf 3000	0 mV 10			
Transit Time for CBL (TT) SCMT-CB		CBL Amplitude (CBL) SCMT-CB	200	us	1200
200 us 400		0 mV 100			
CCL Discriminated Amplitude (CCLD) PSTP-B					
3 V -1					

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 10:26:24

## Channel Processing Parameters

### 1: Parameters

Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	212	degF





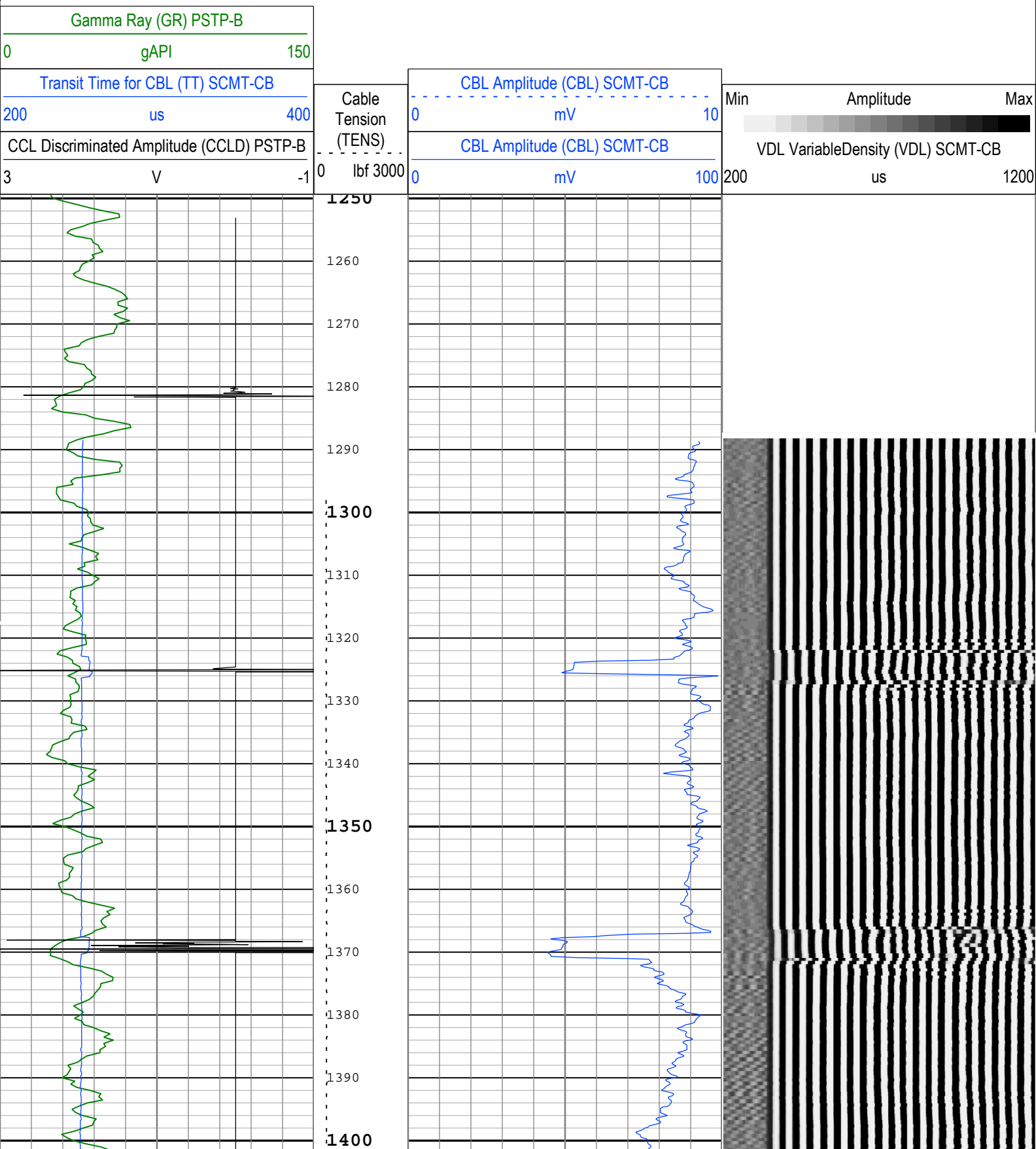
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1	Log[3]:Up	Up	1296.89 ft	1665.93 ft	19-Dec-2017 8:14:35 AM	19-Dec-2017 8:41:18 AM	ON	0.00 ft	Yes

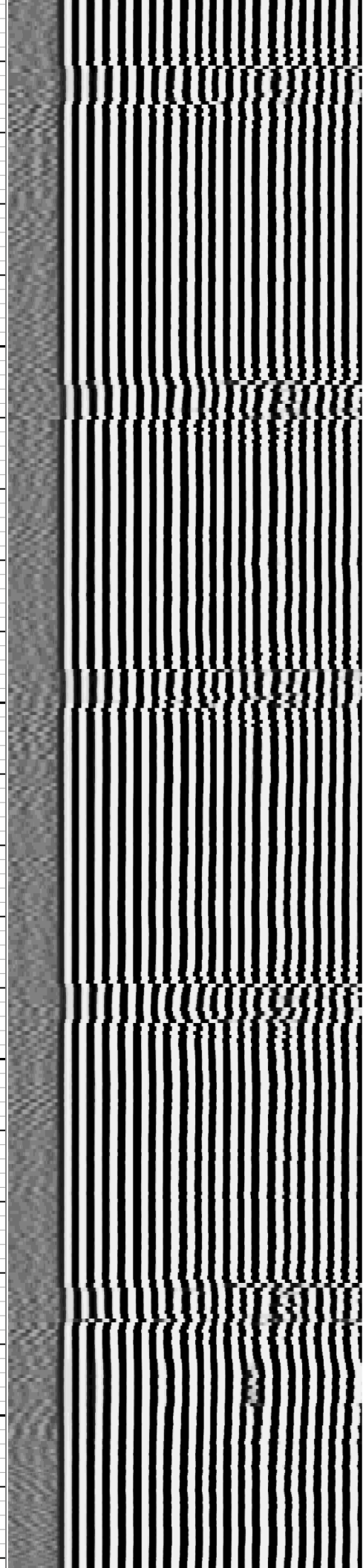
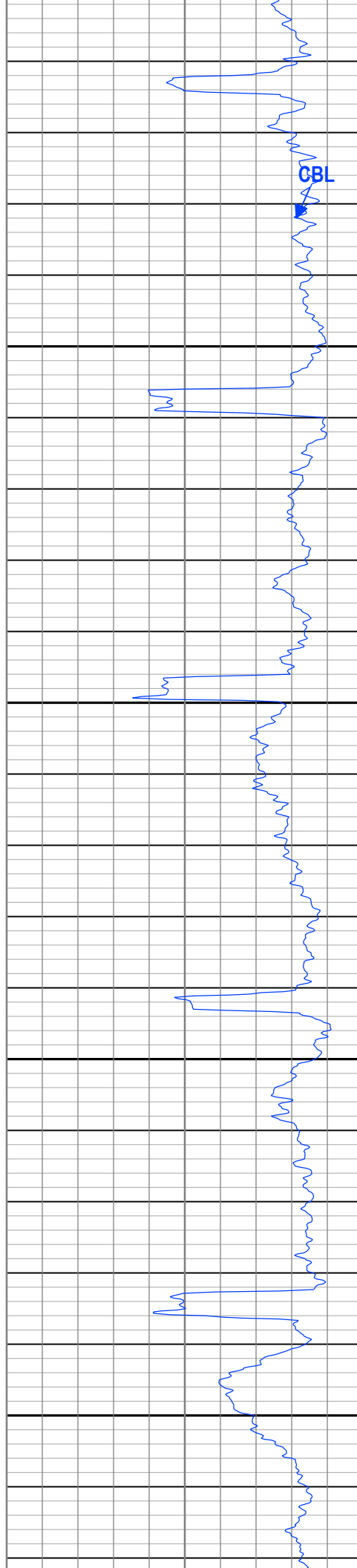
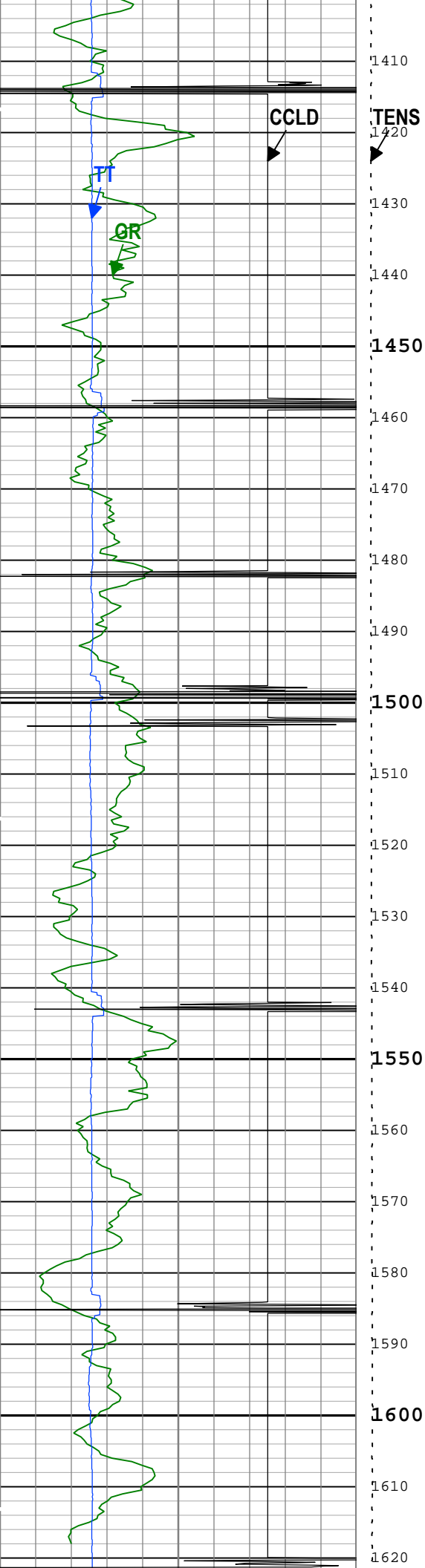
All depths are referenced to toolstring zero

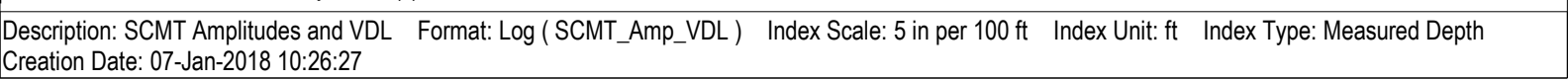
Log	Company:Caerus Operating LLC	Well:Puckett 15B-23 697
		1: Log[3]:Up:S003

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 10:26:27

TIME\_1900 - Time Marked every 60.00 (s)





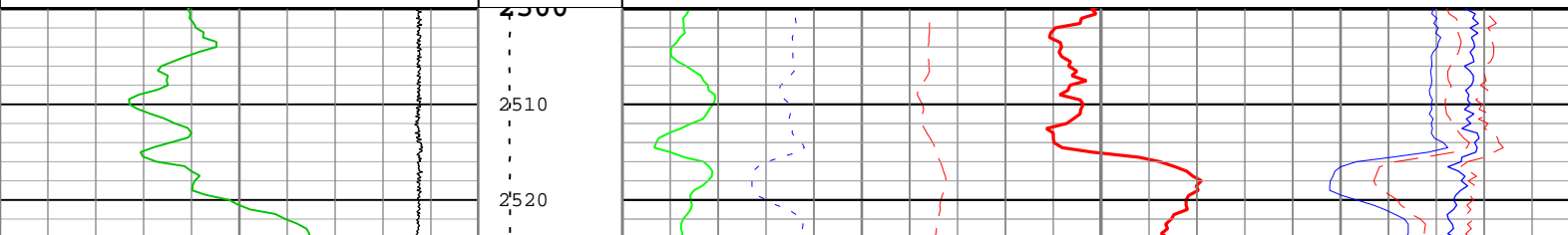


## 1: Parameters

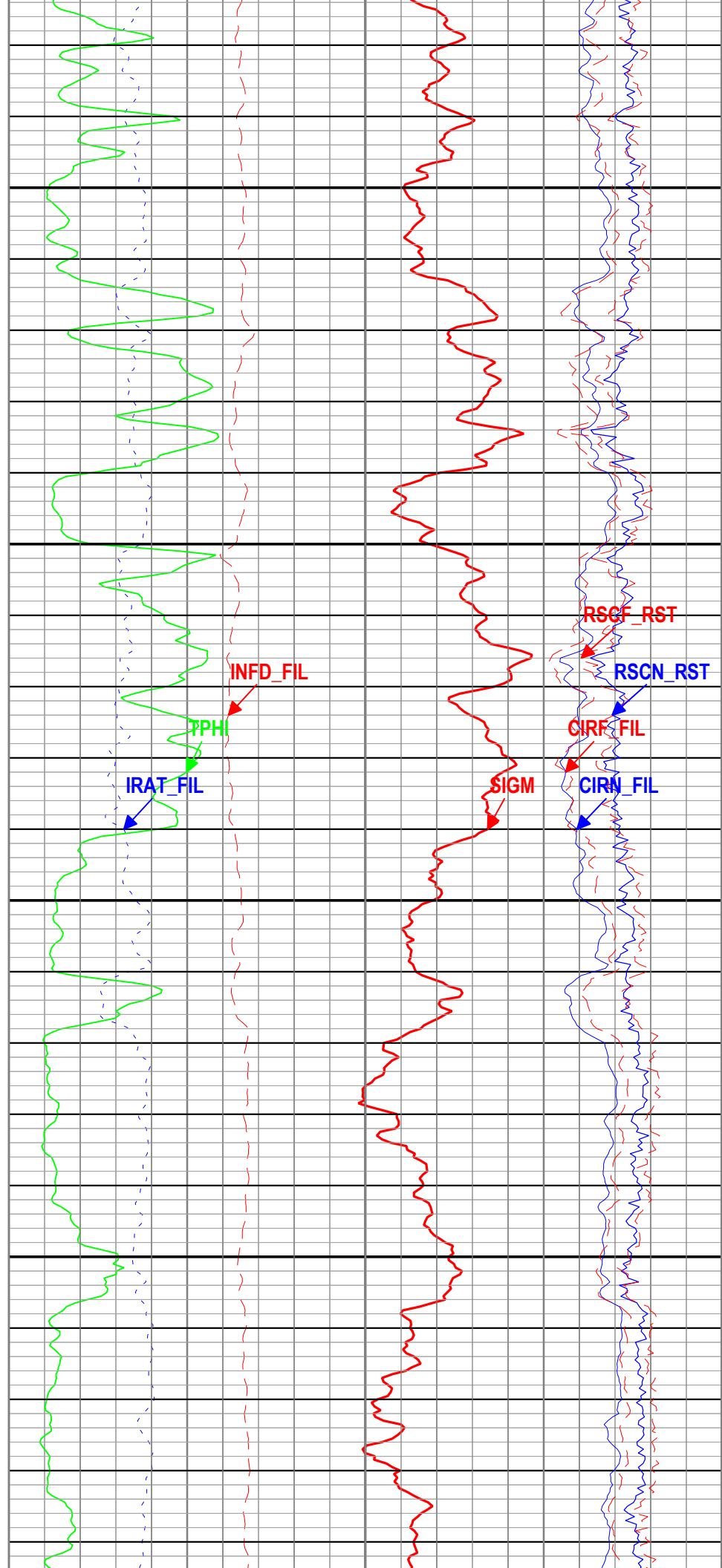
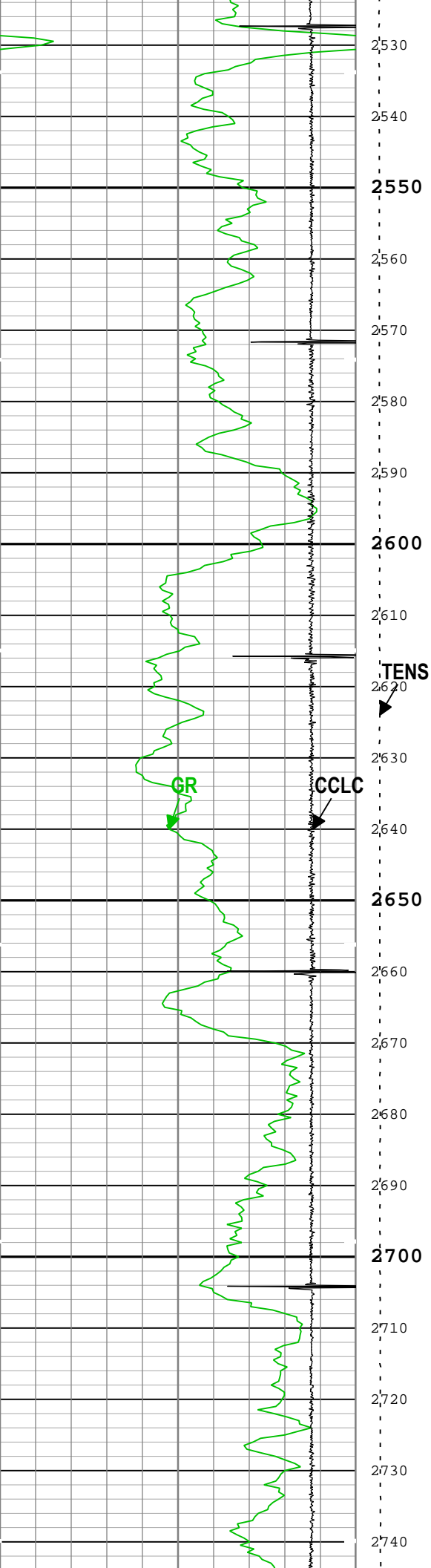
Tool Control Parameters	
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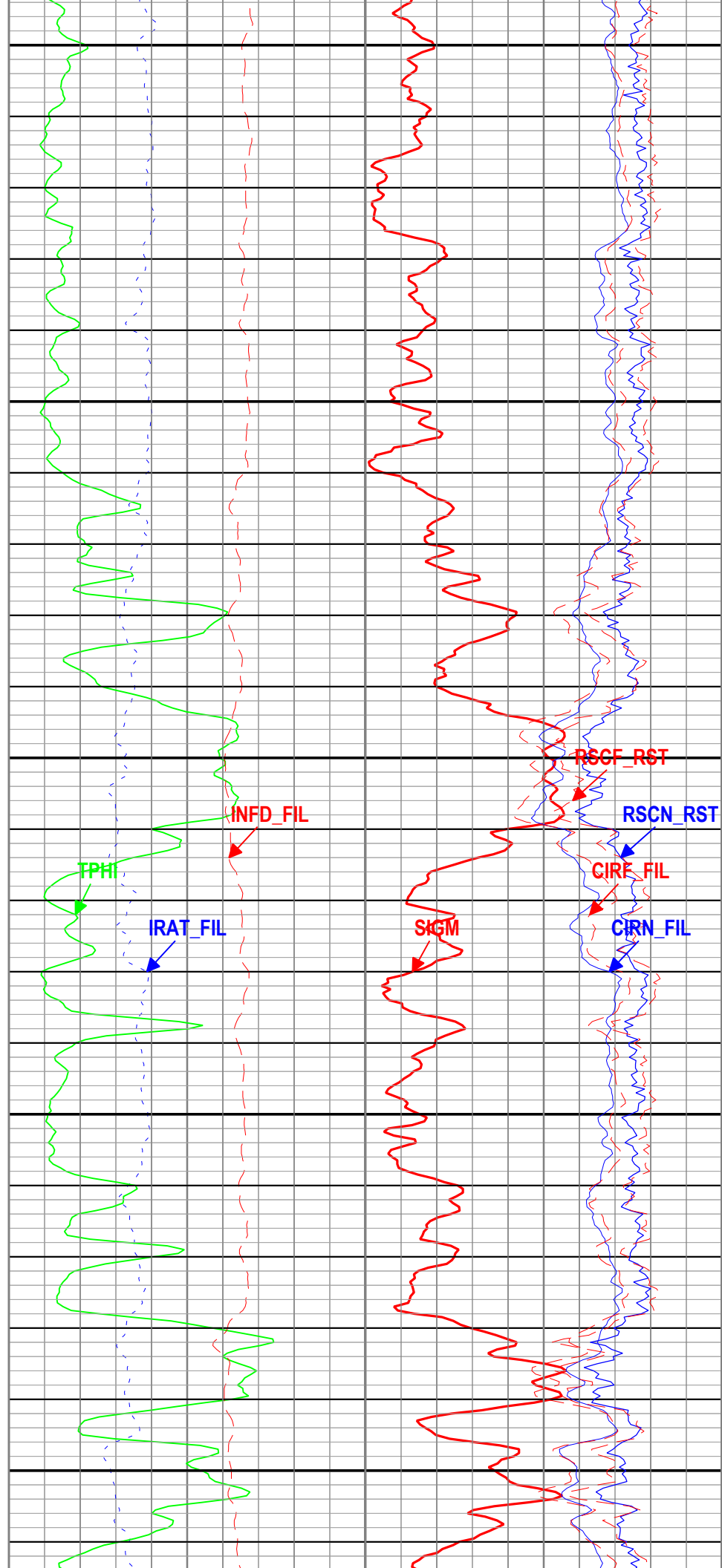
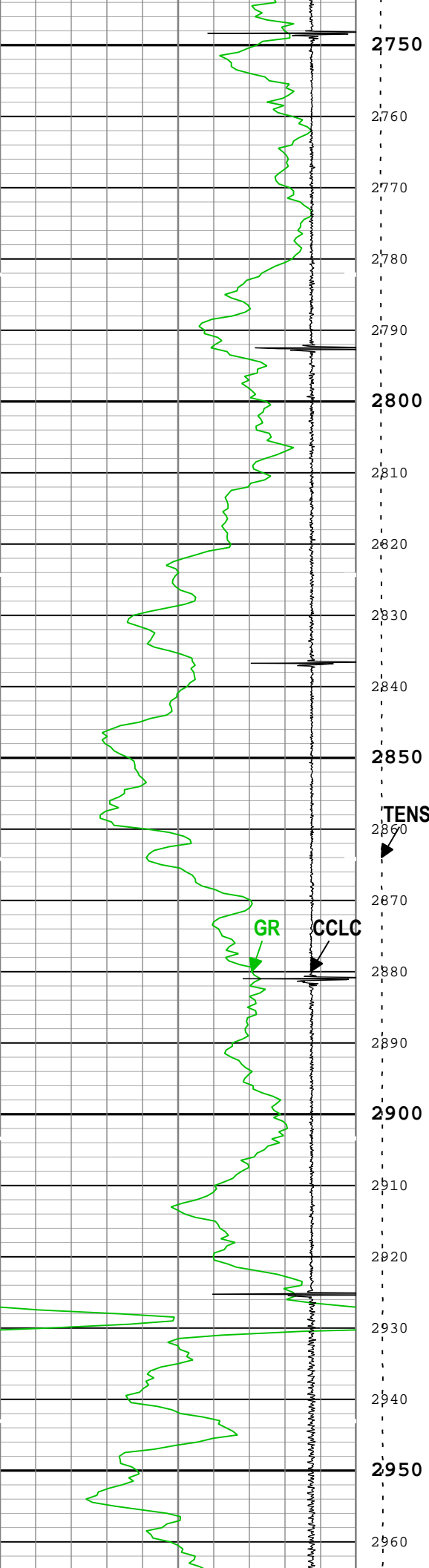
## 1: Parameters

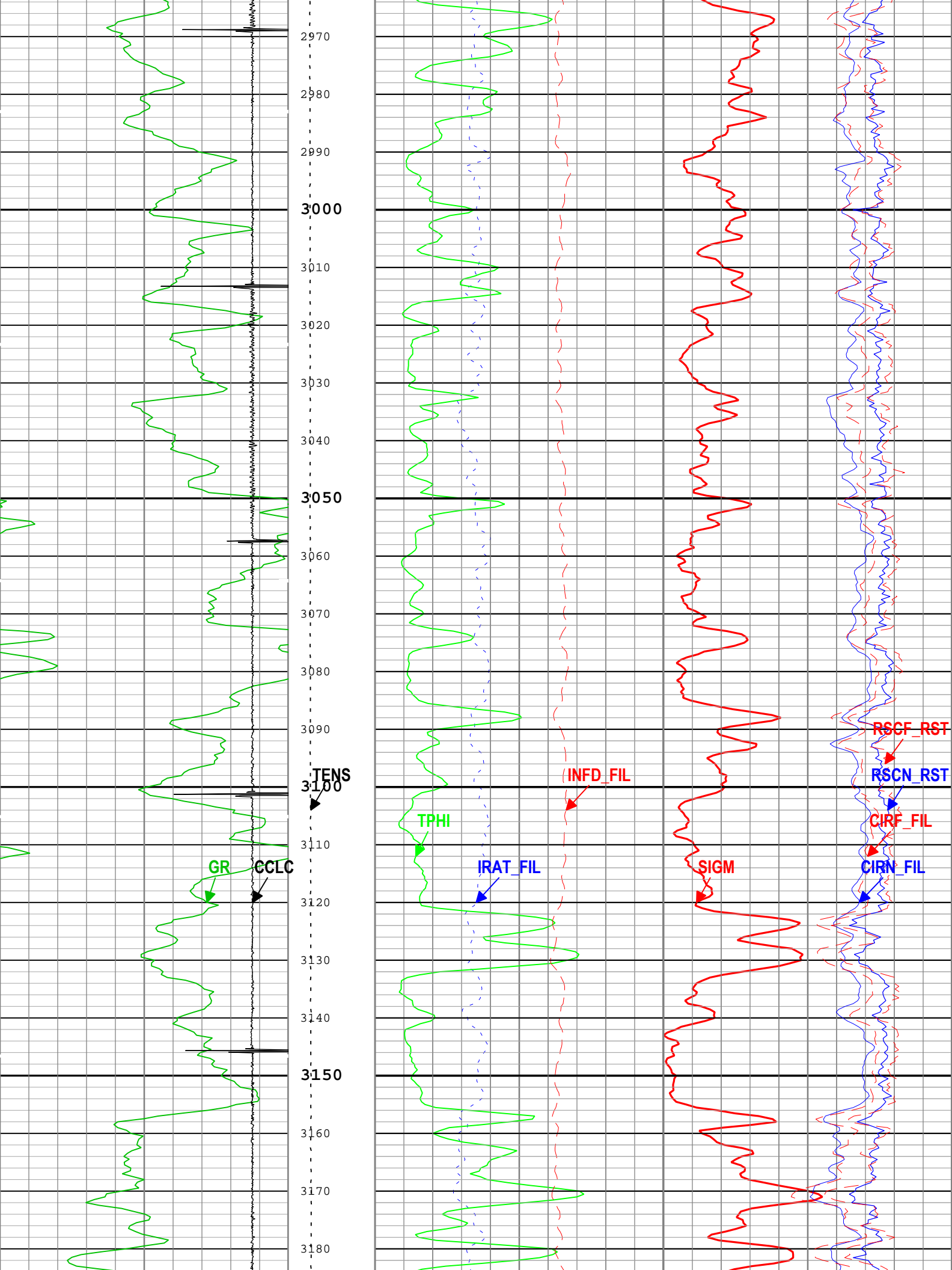
Parameter	Description	Tool	Value	Unit
CMTM	SCMT Operating Mode	SCMT-CB	Log	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h

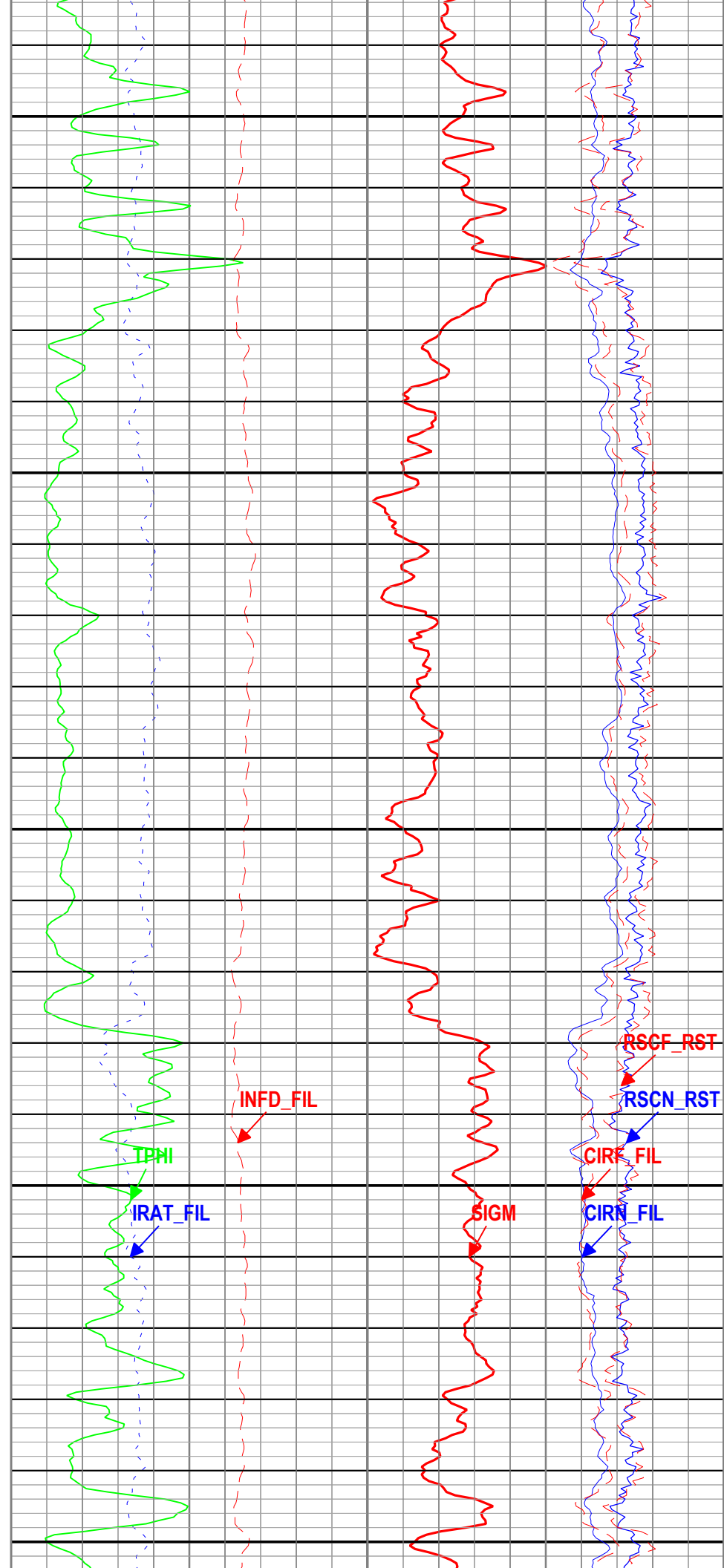
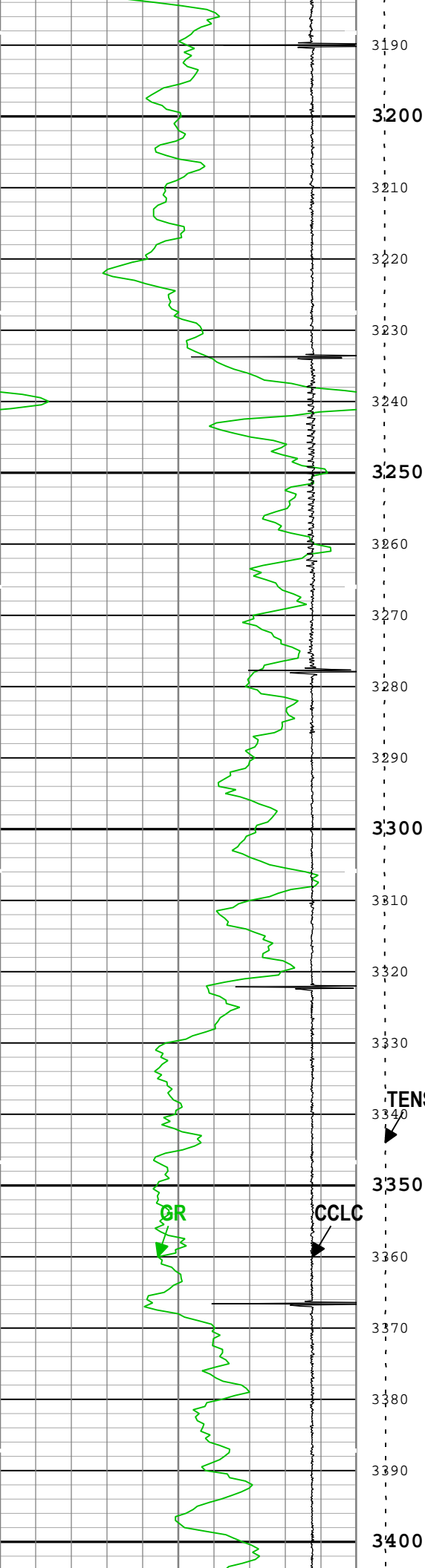




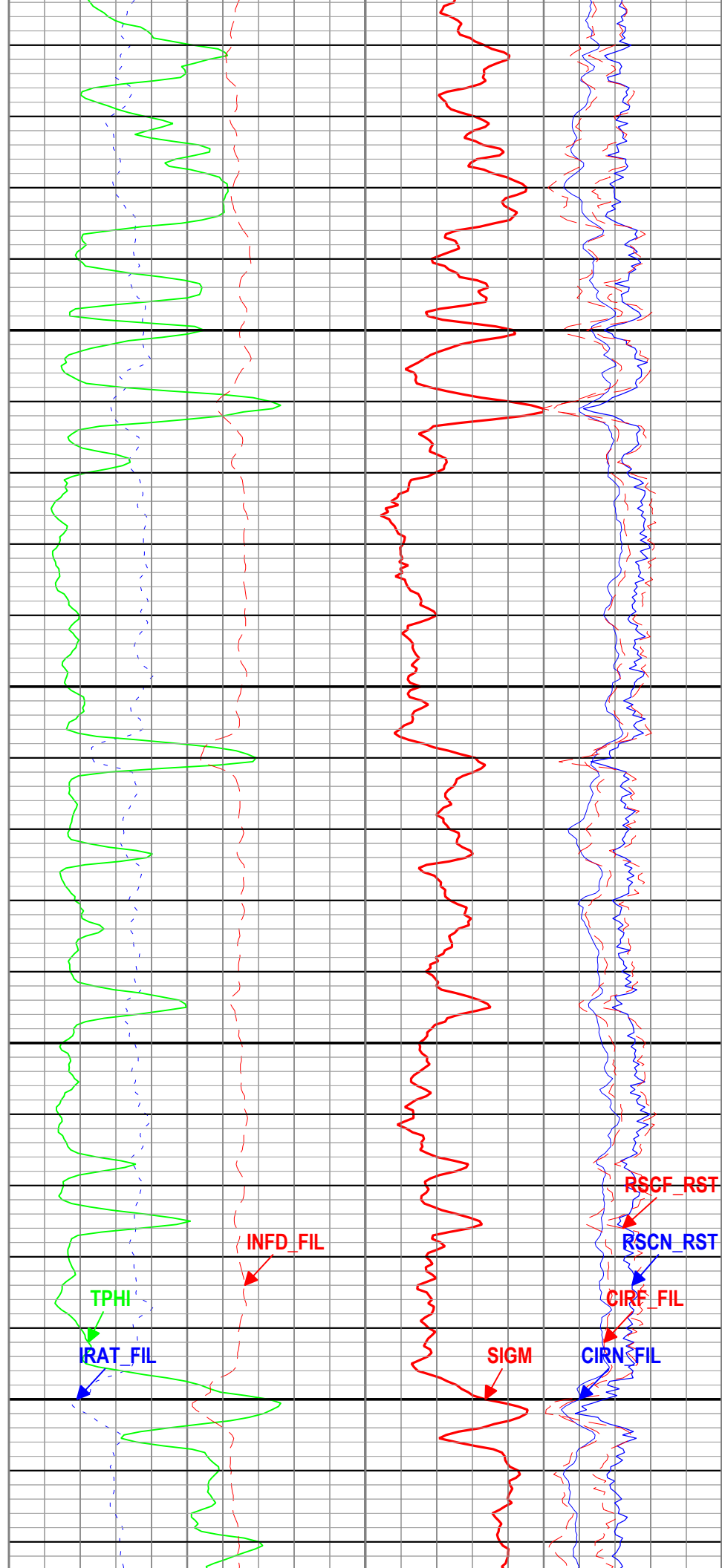
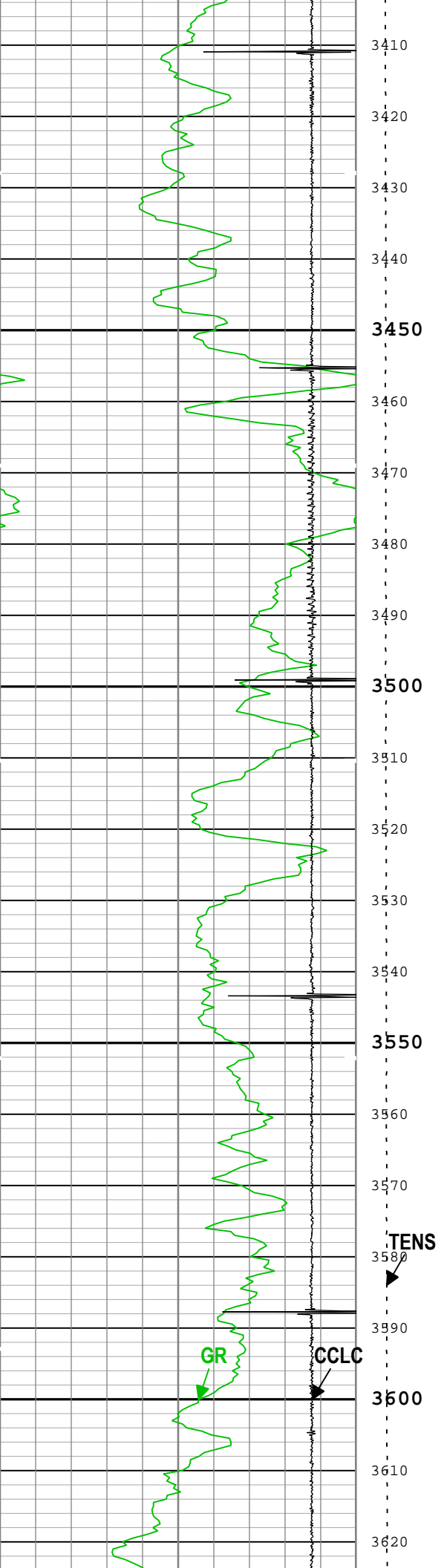


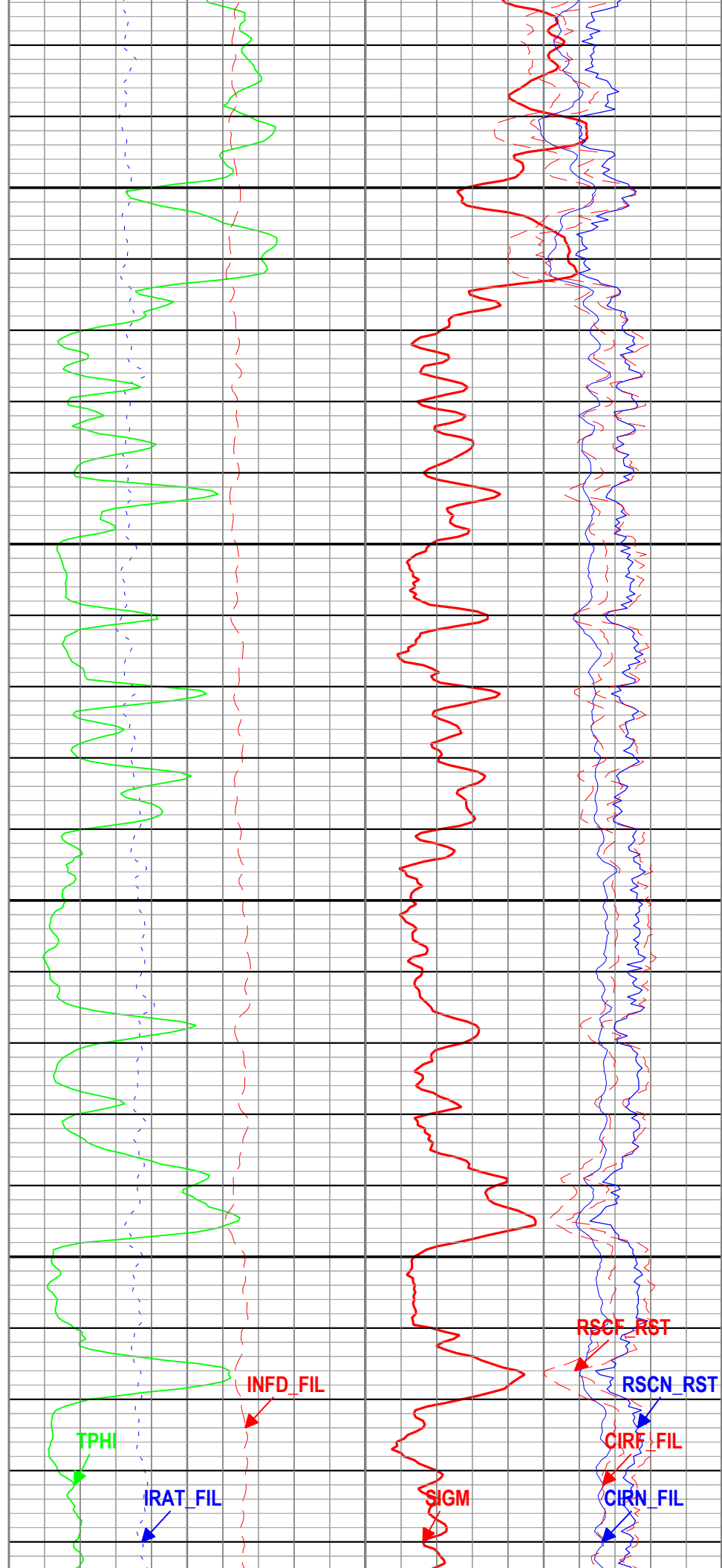
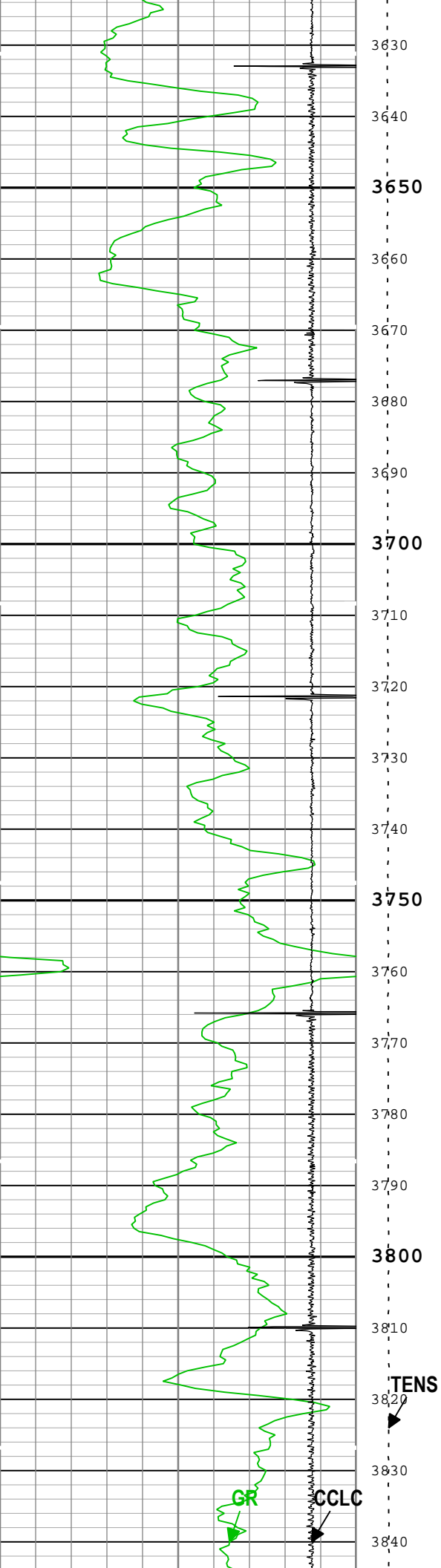


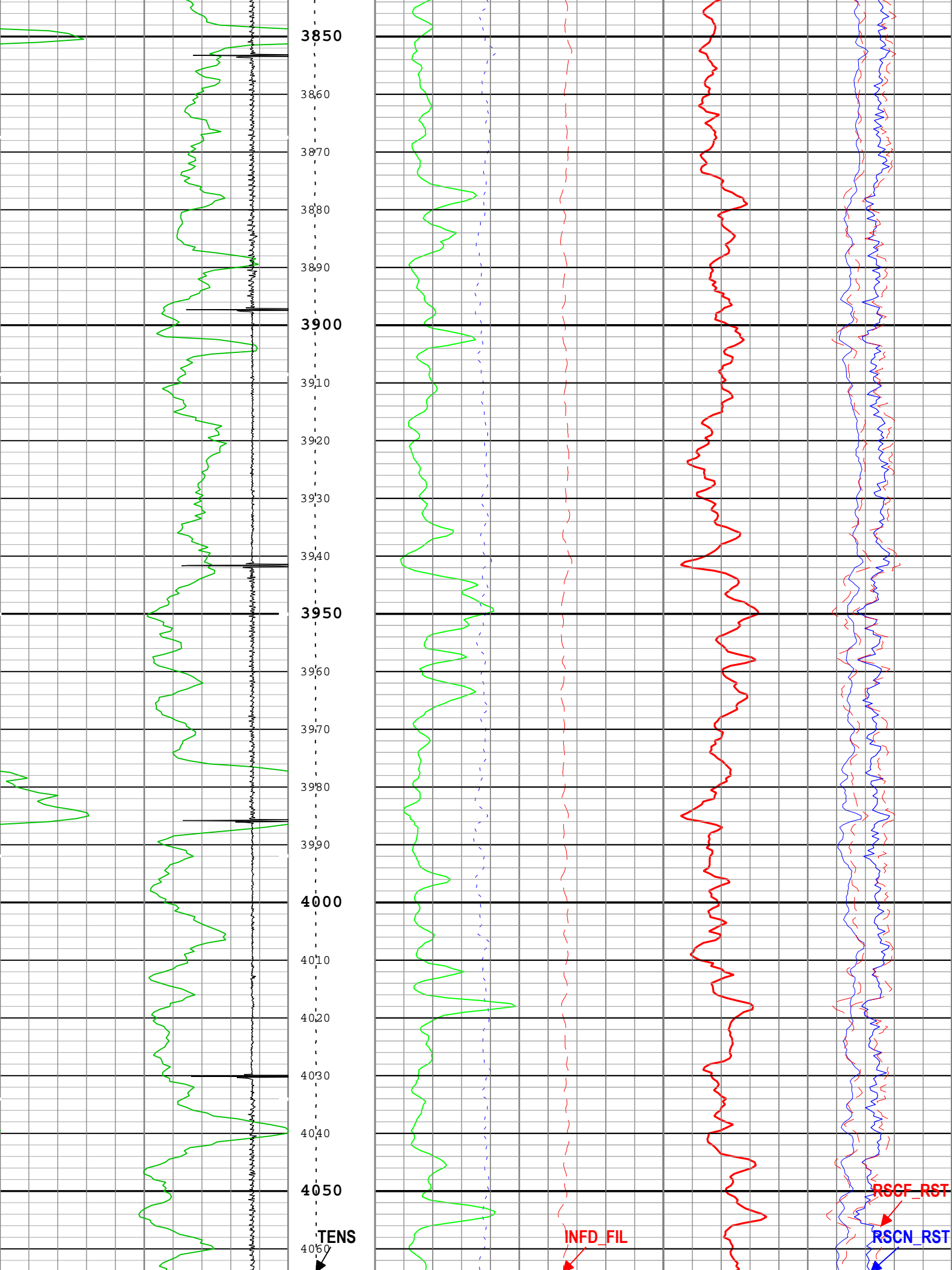


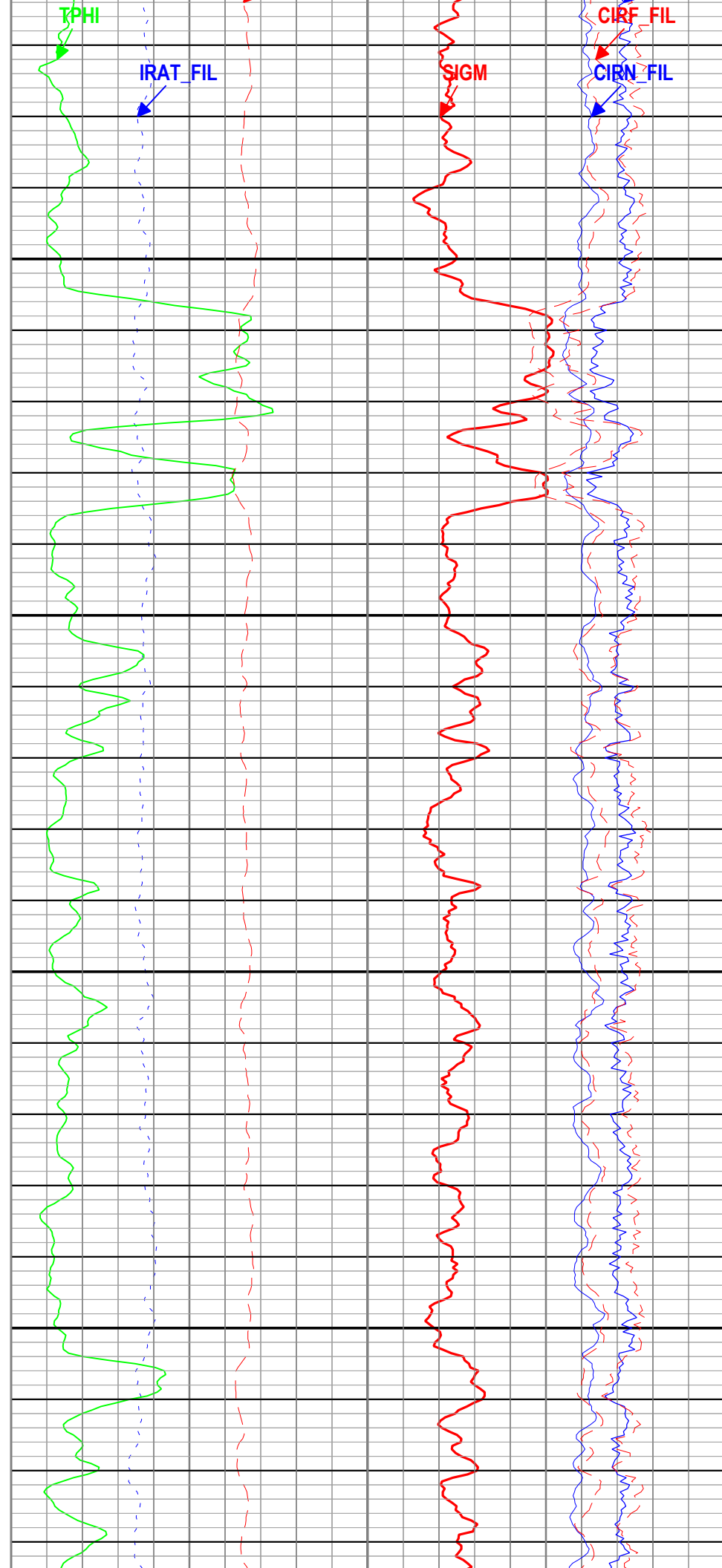
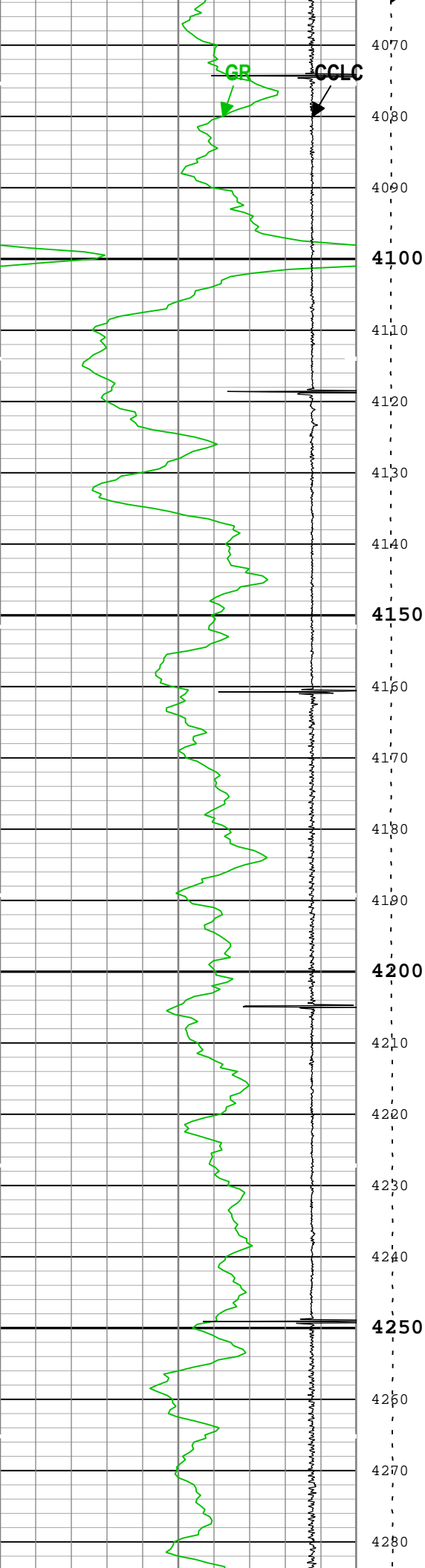


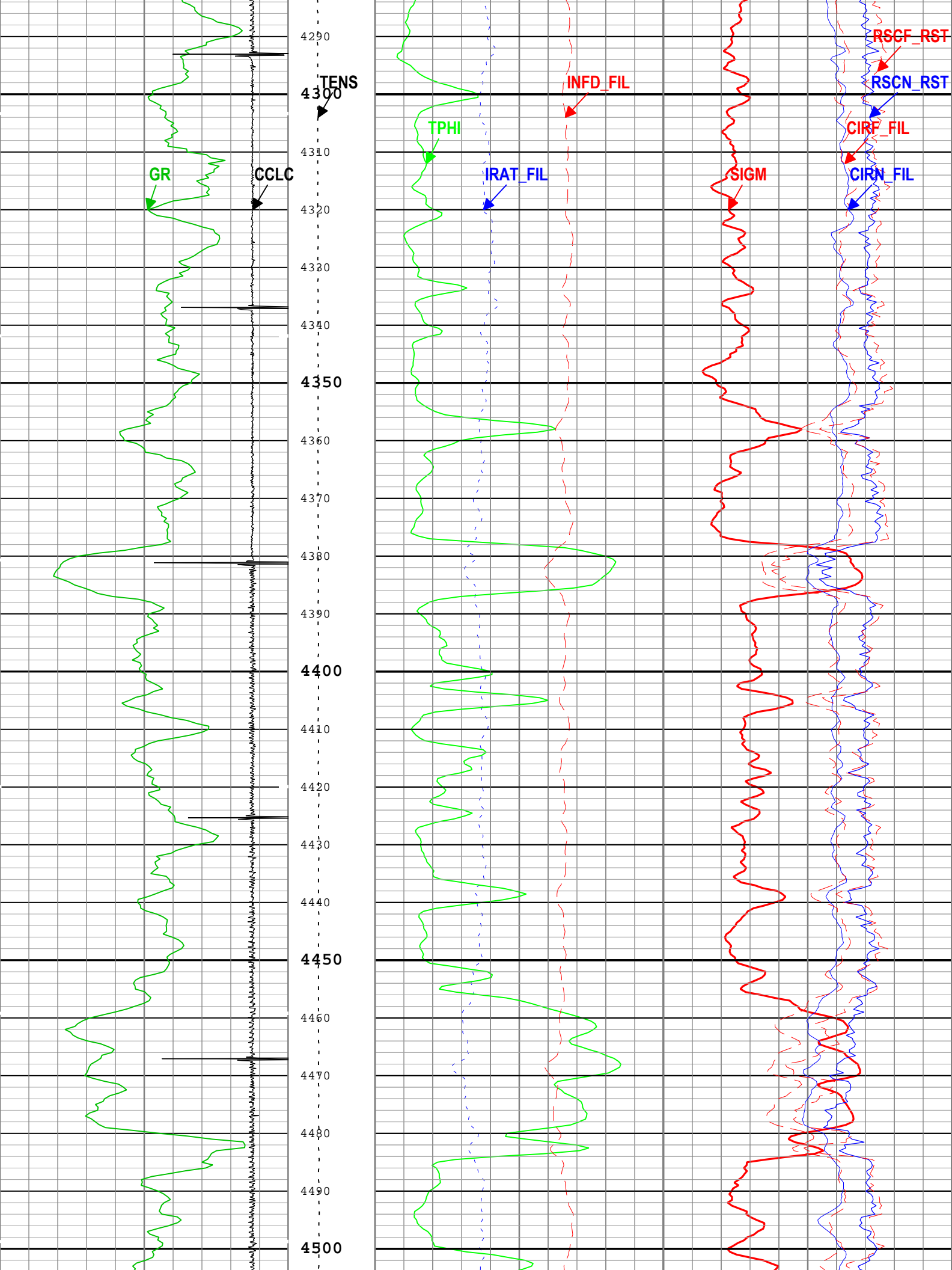




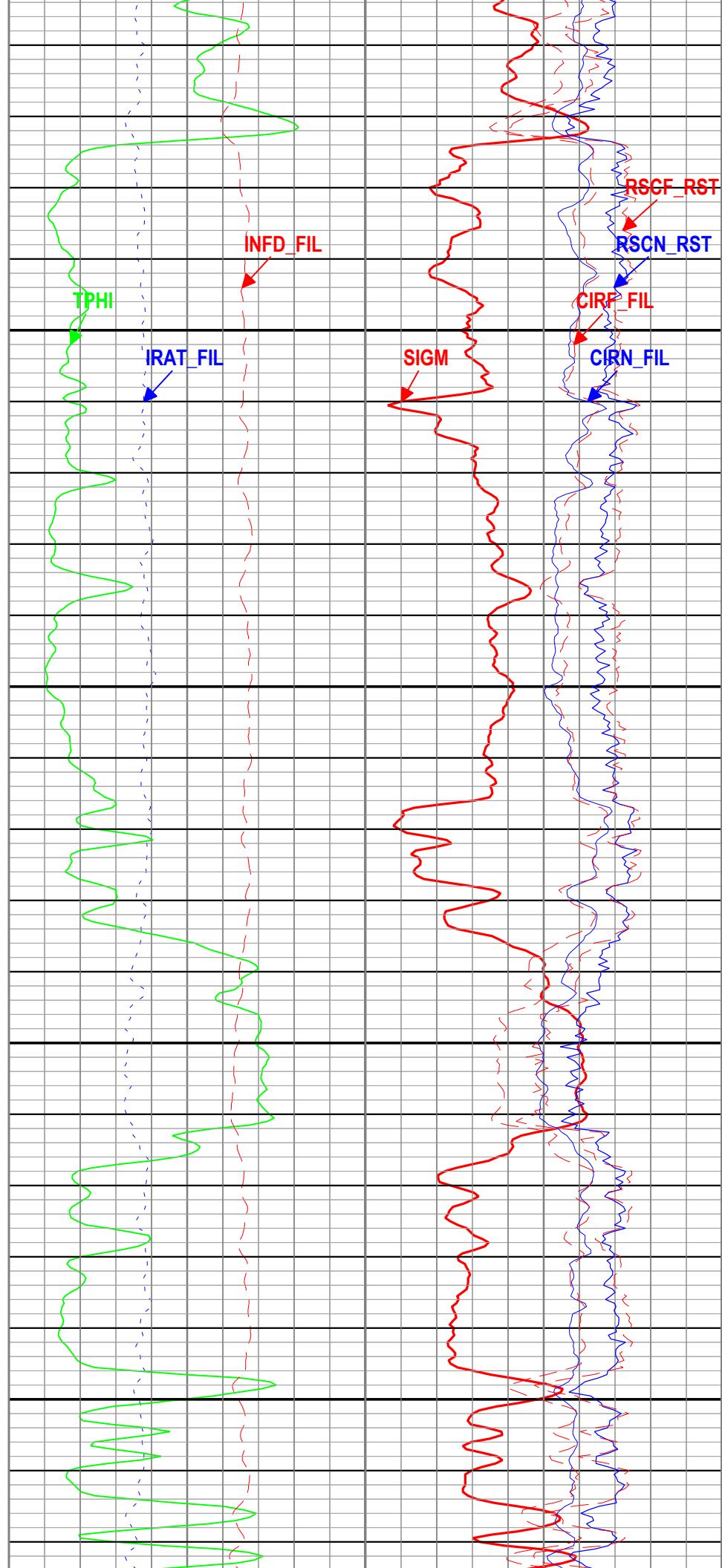
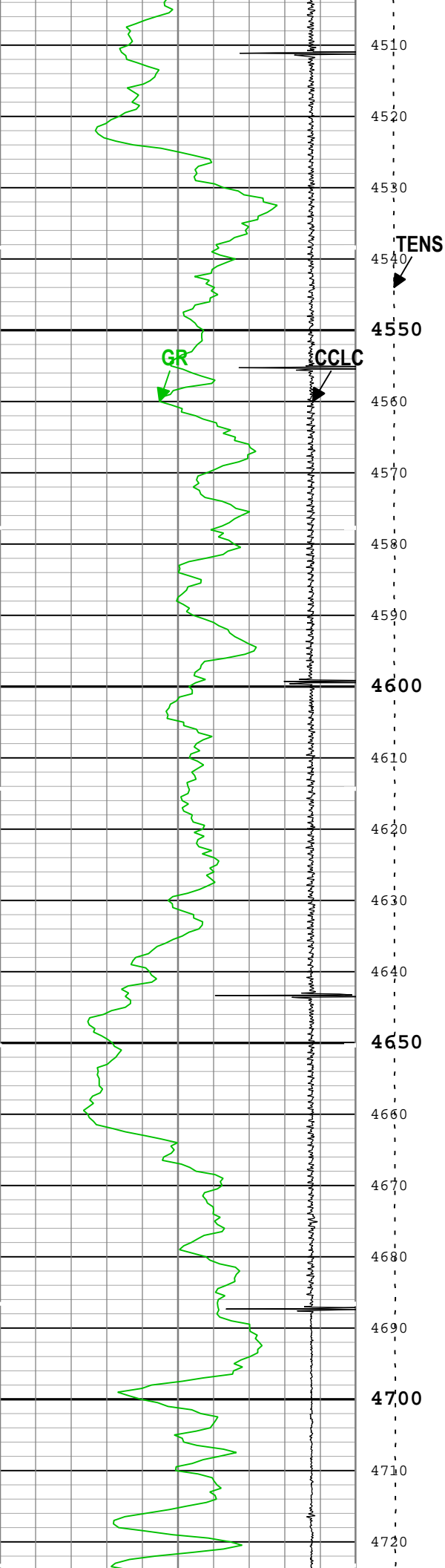


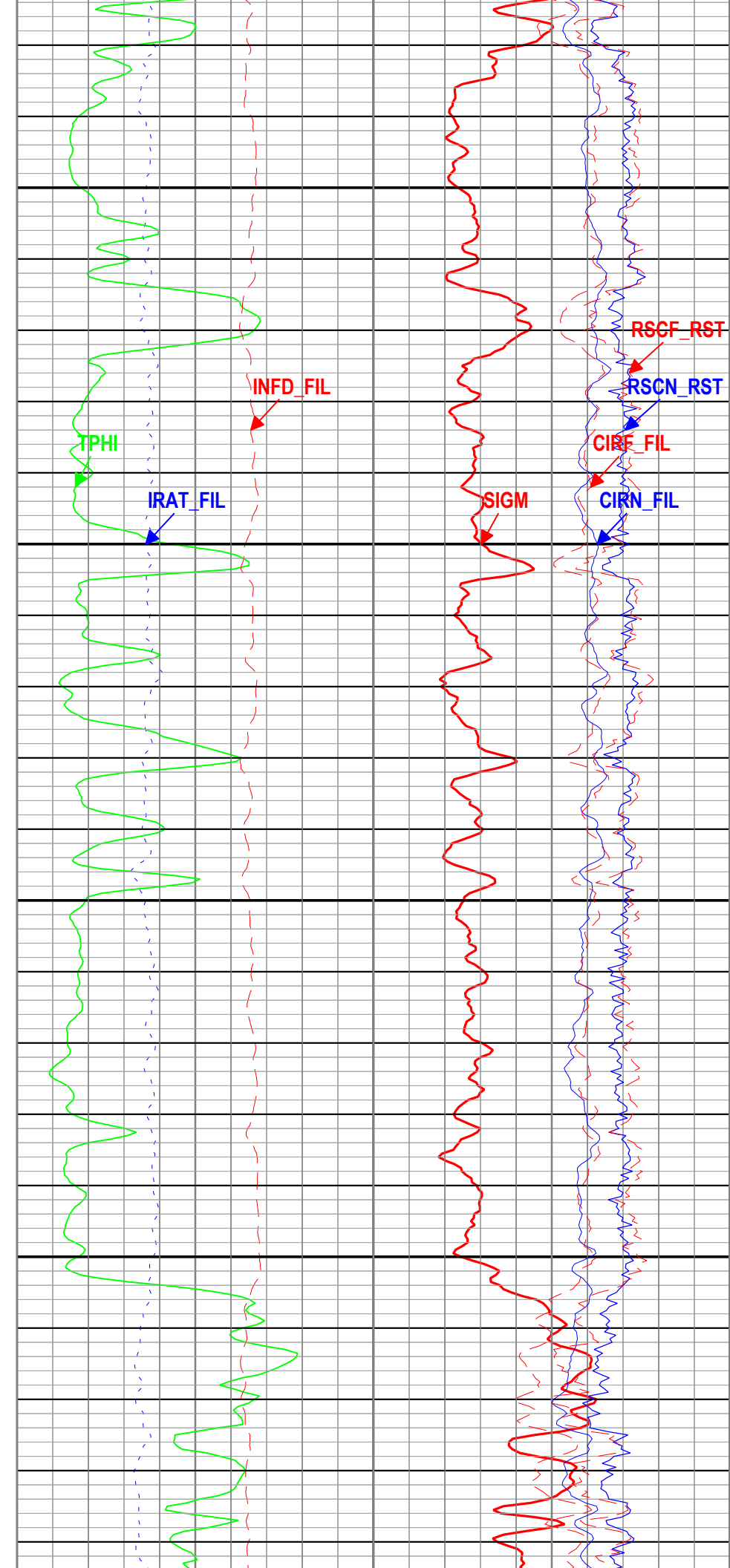
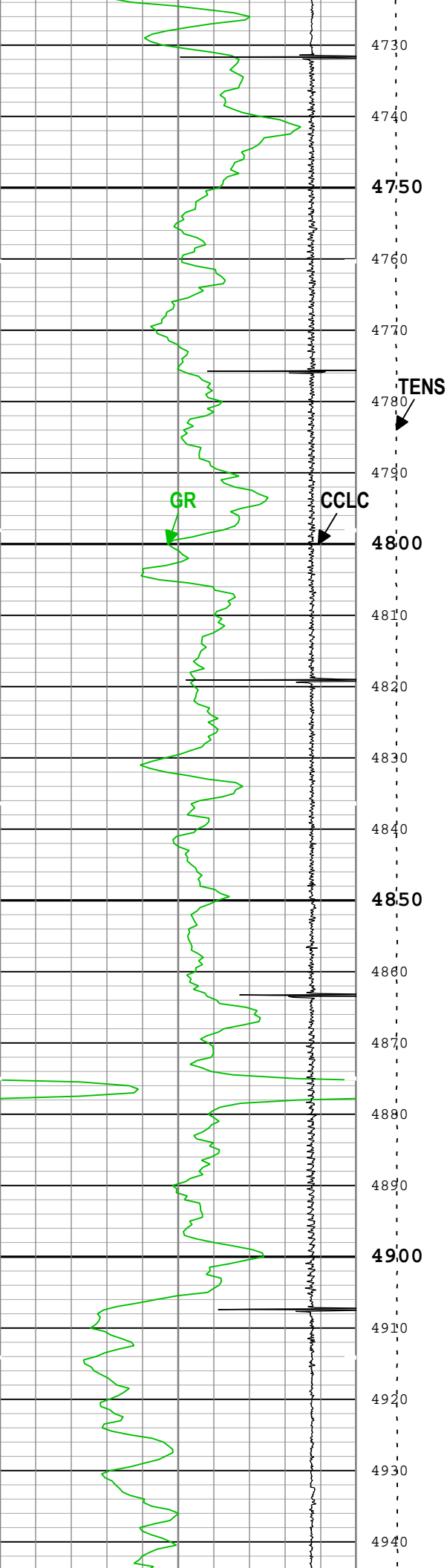


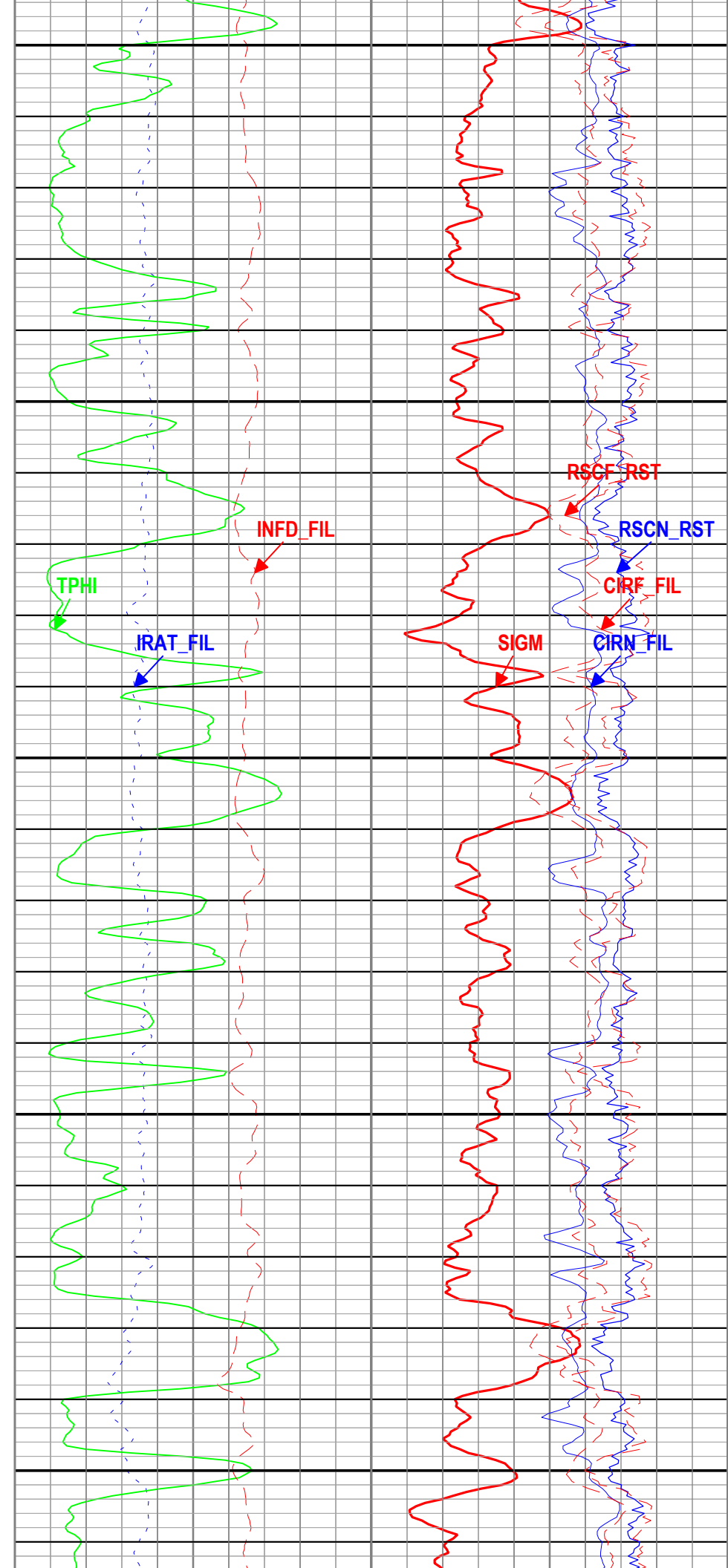
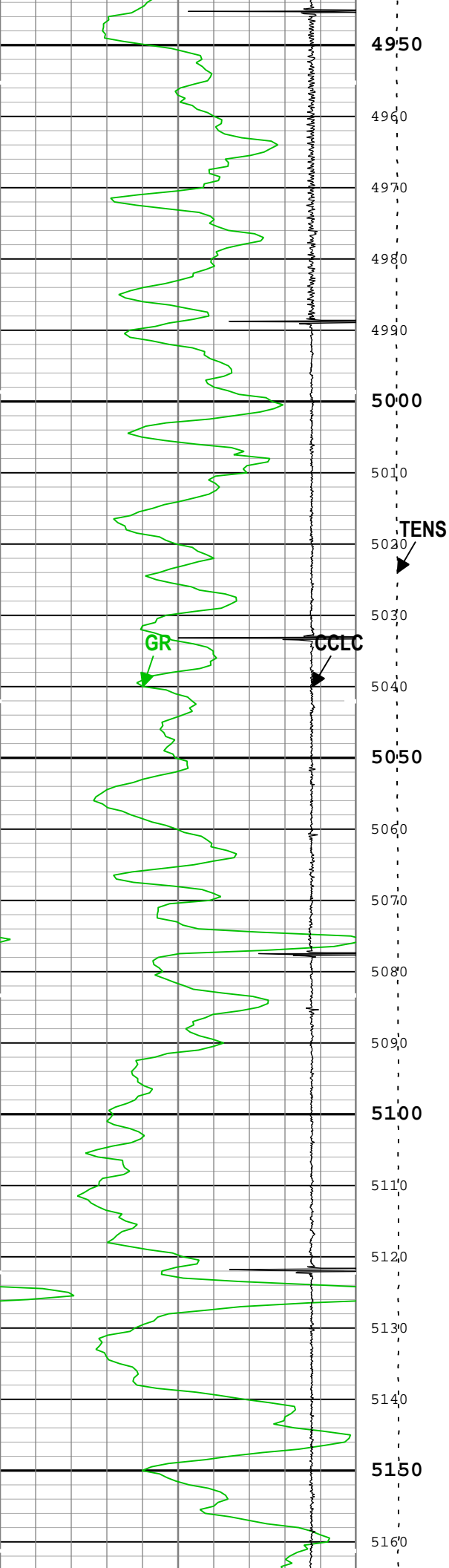


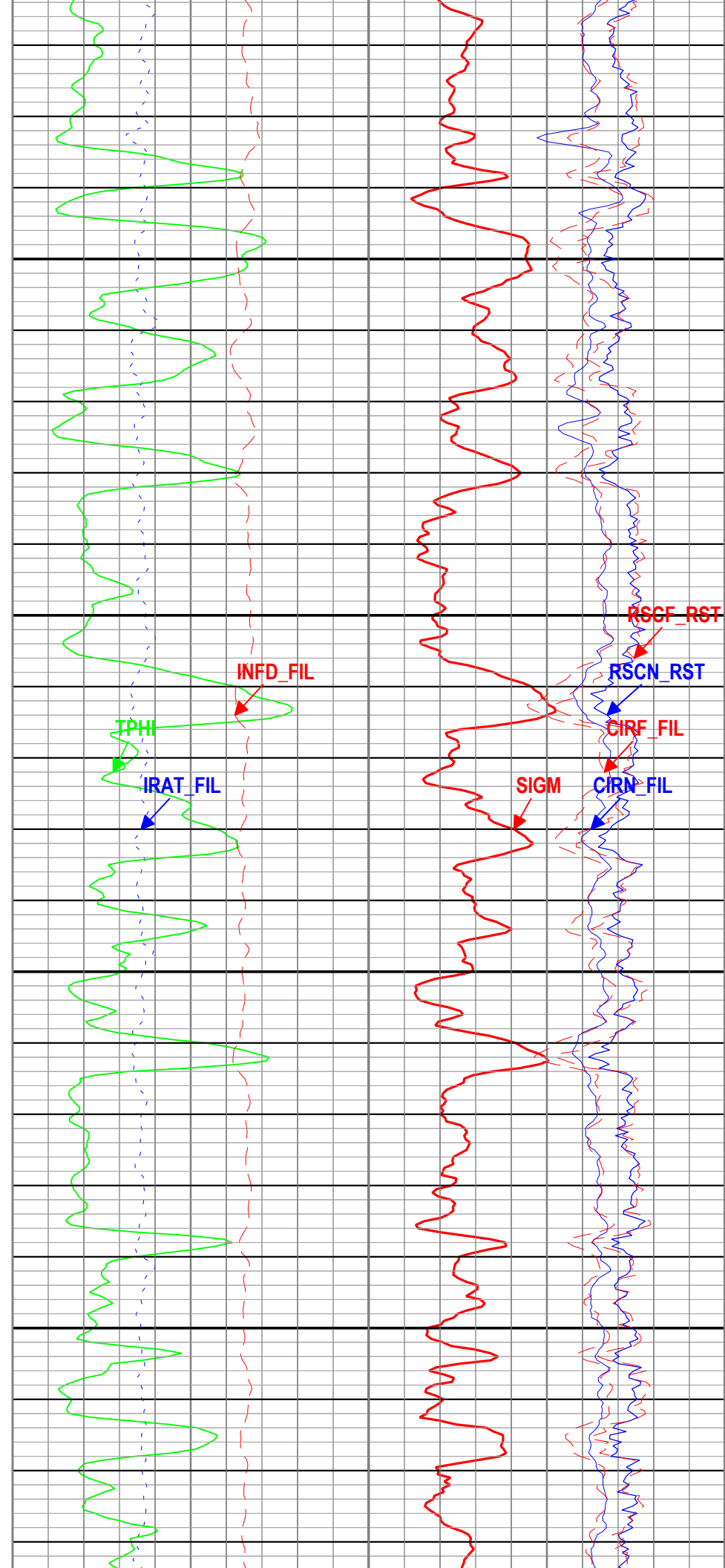
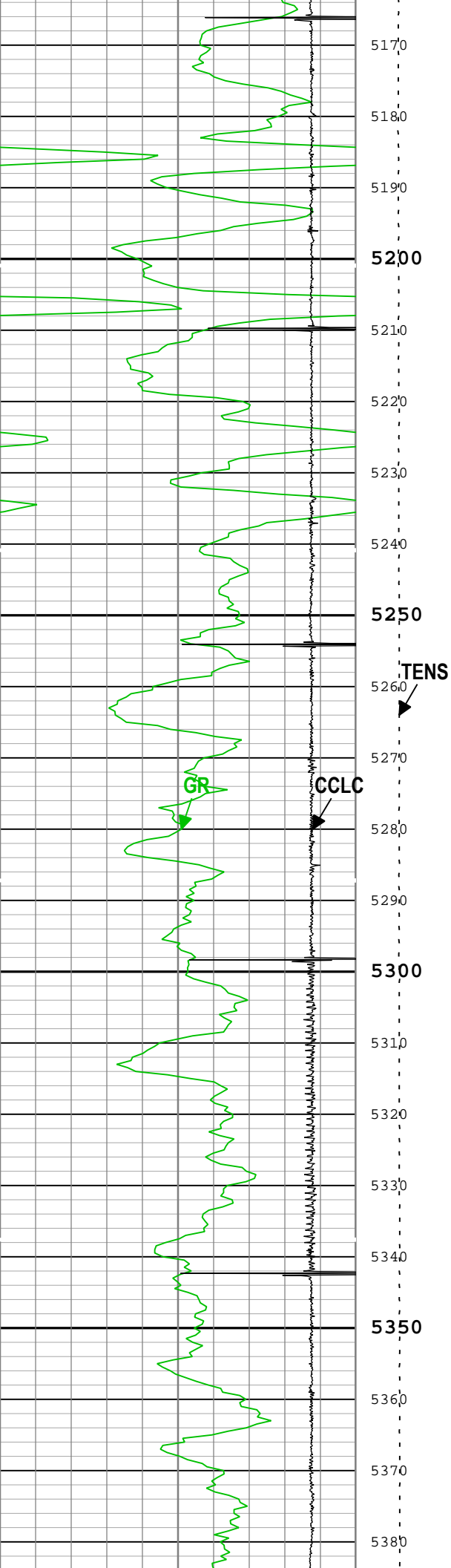


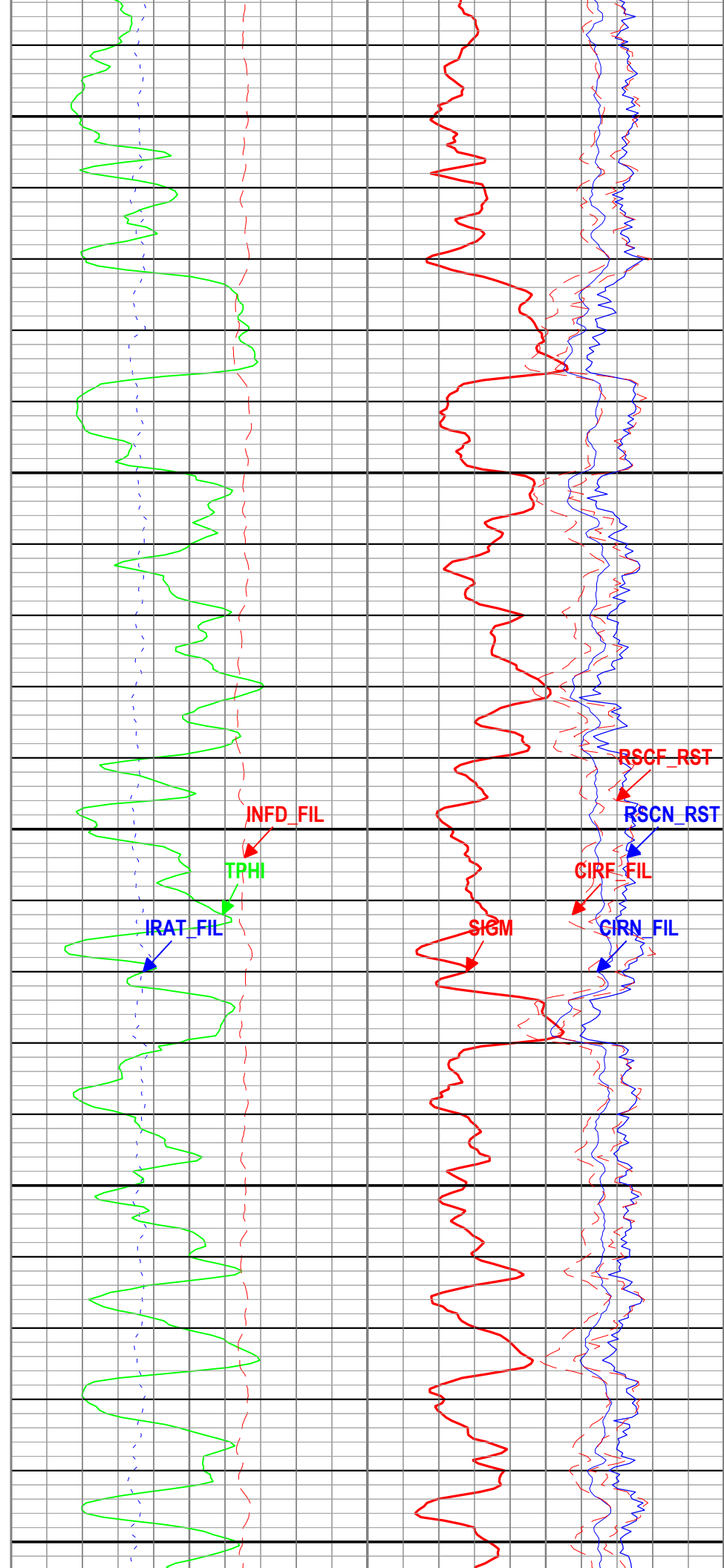
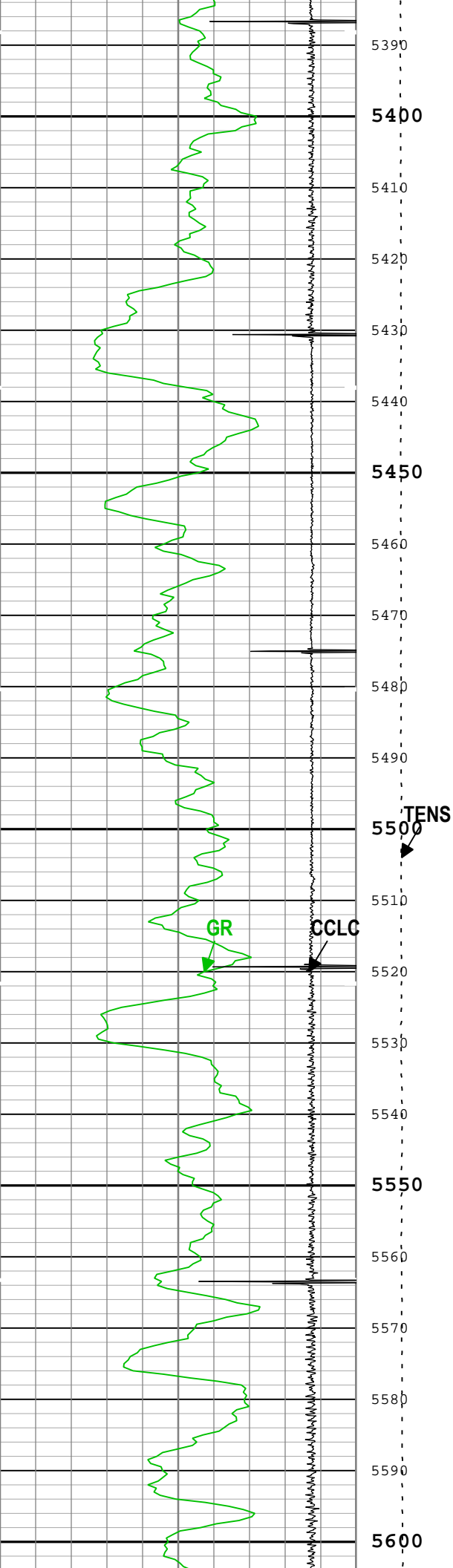




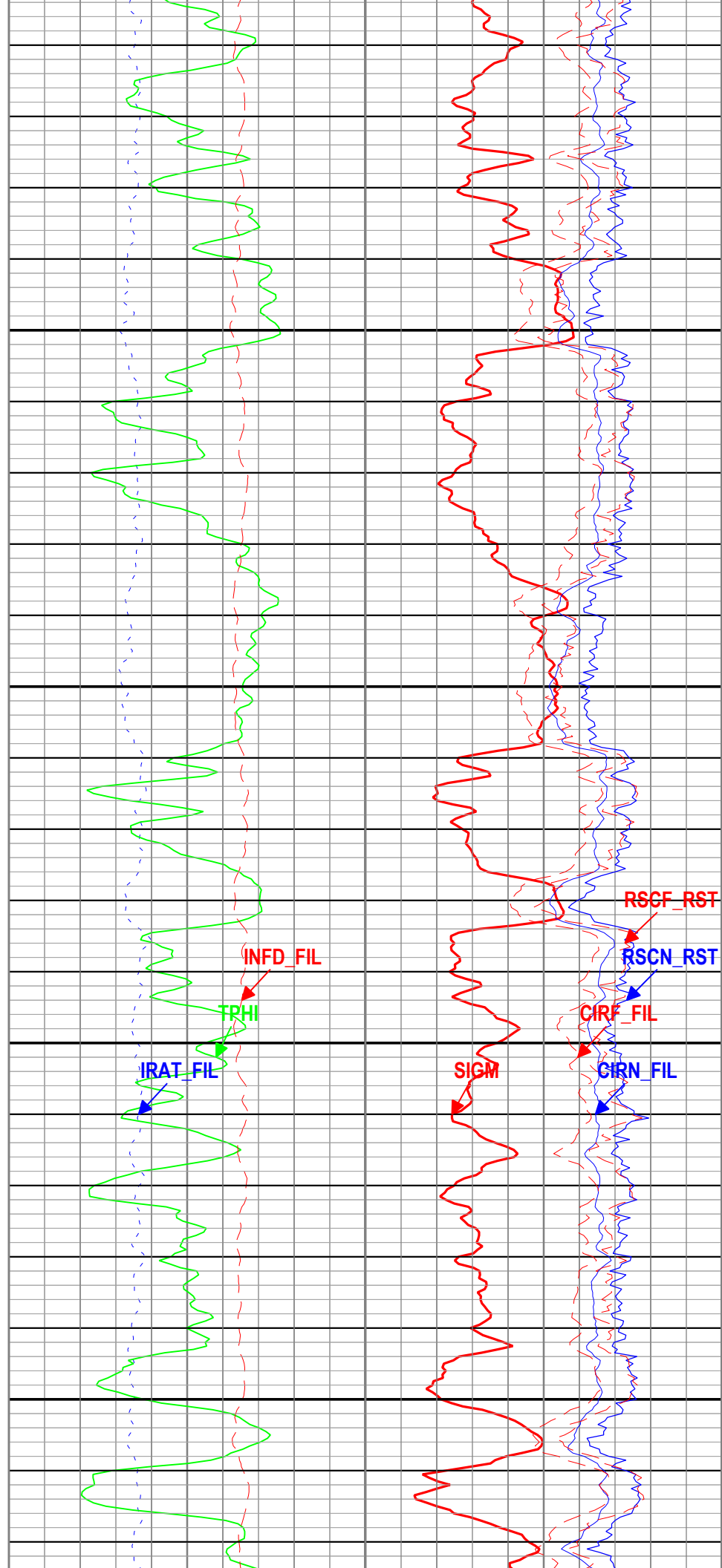
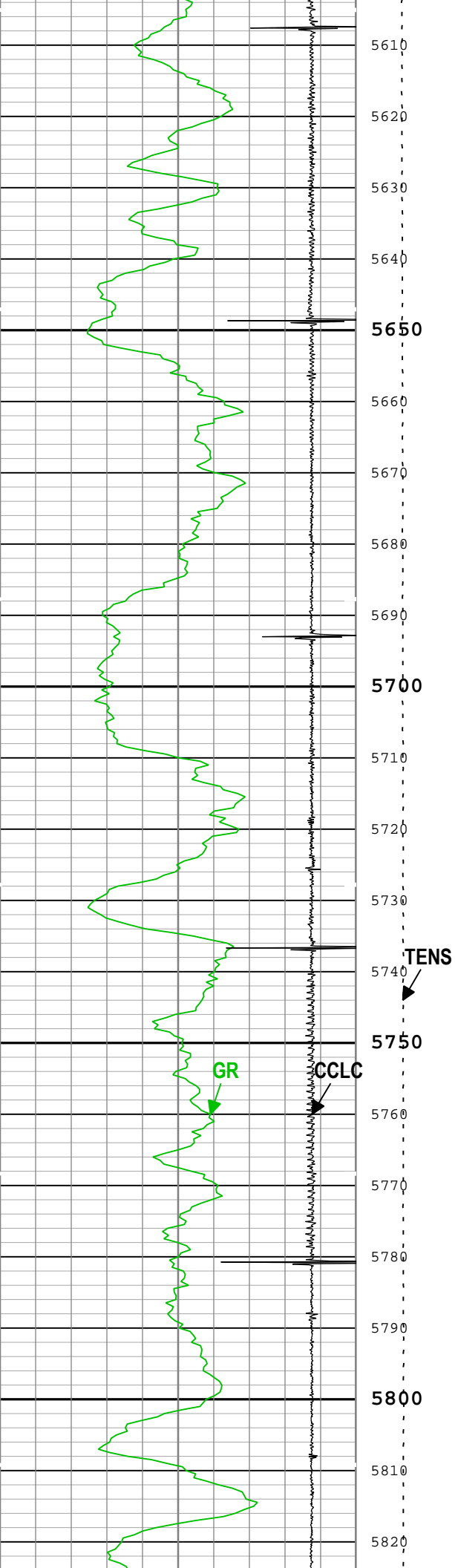


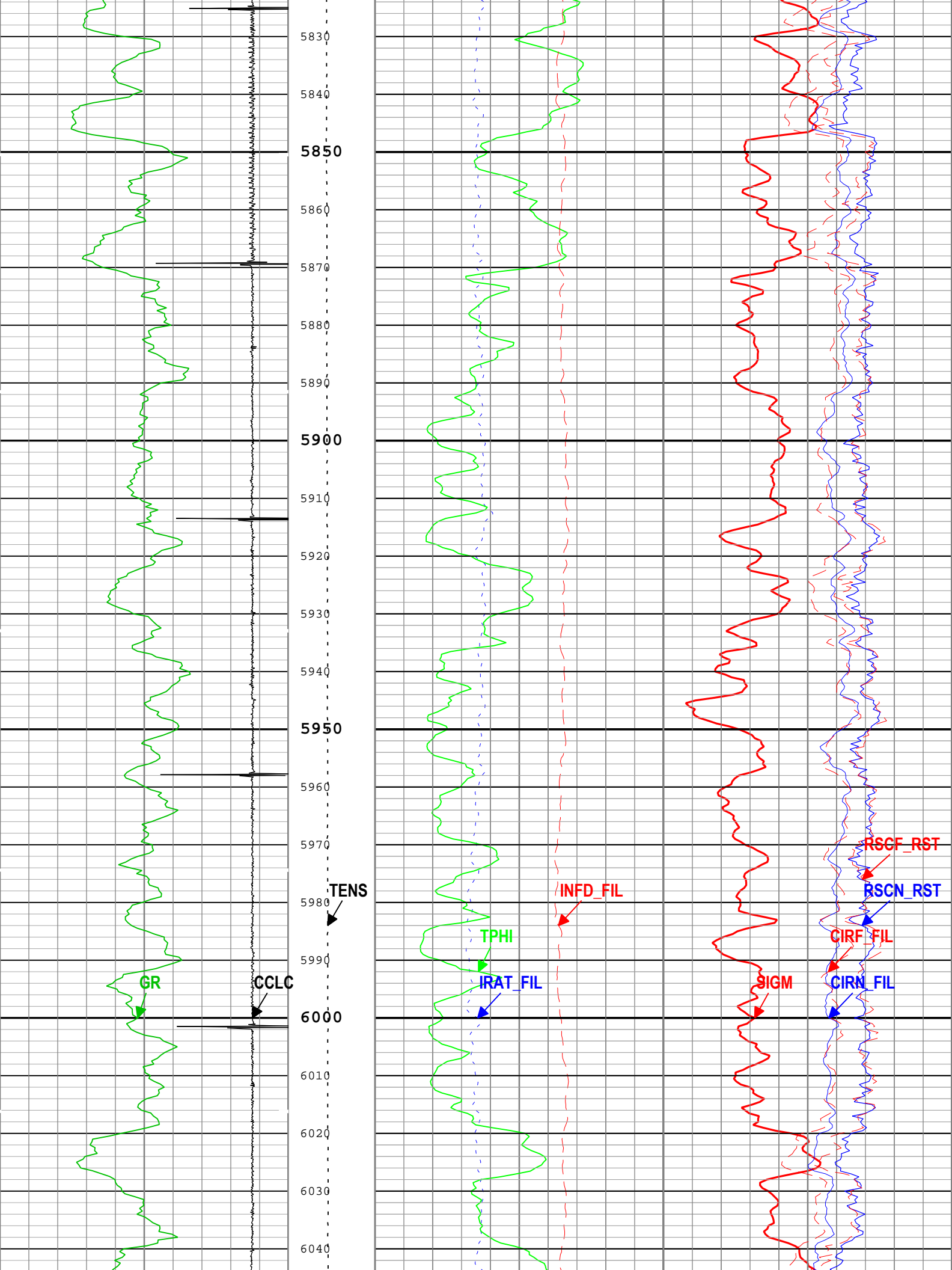


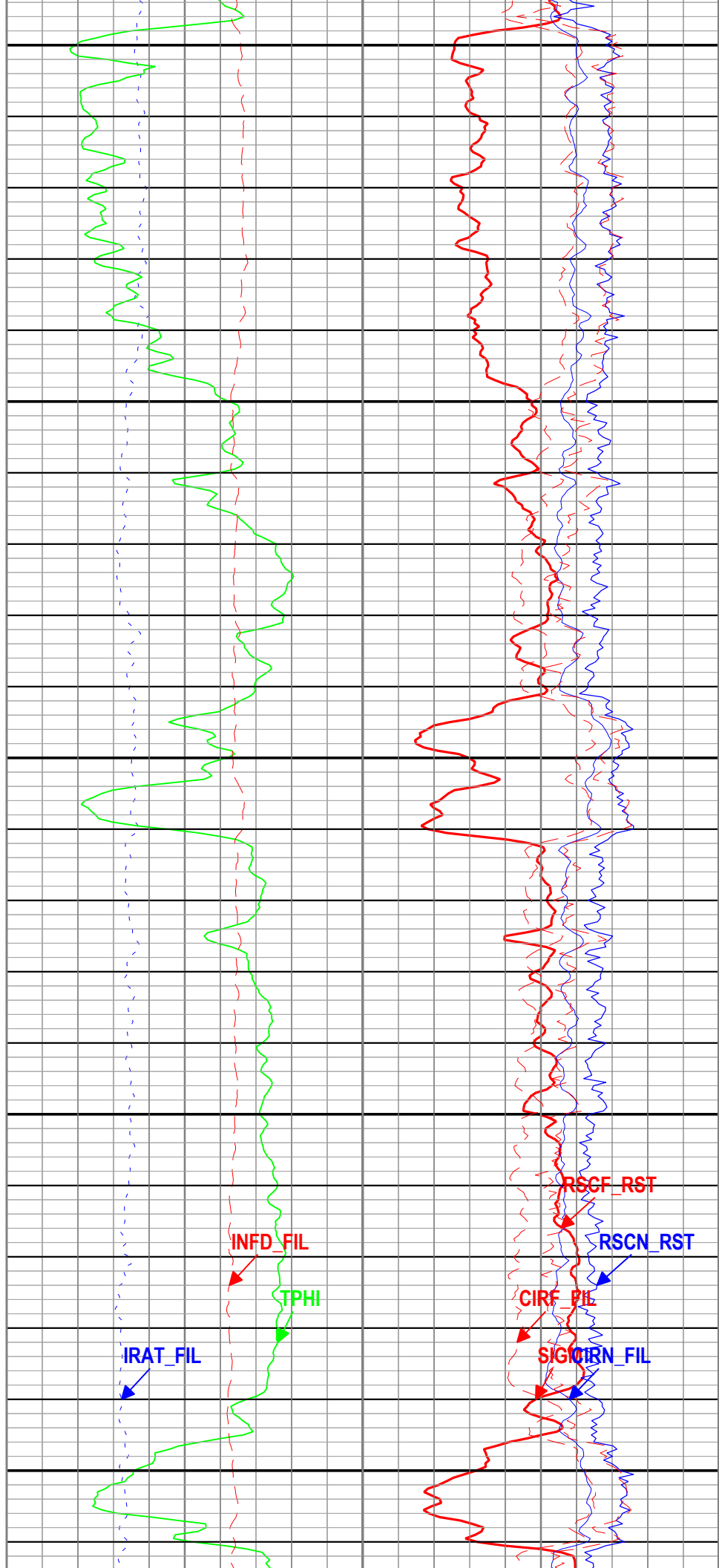
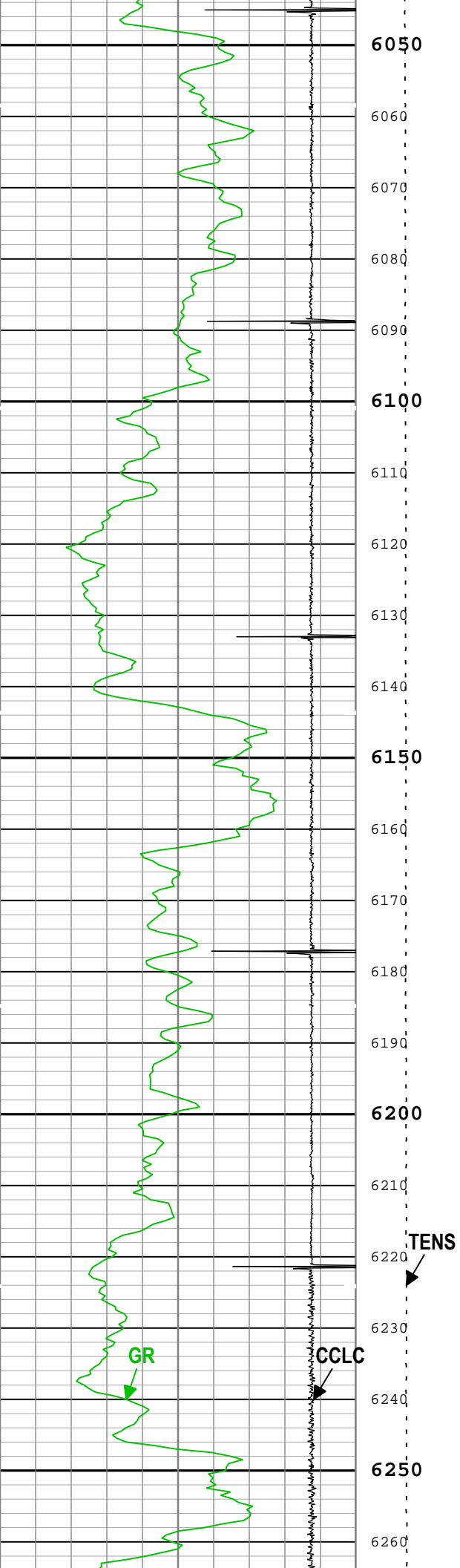


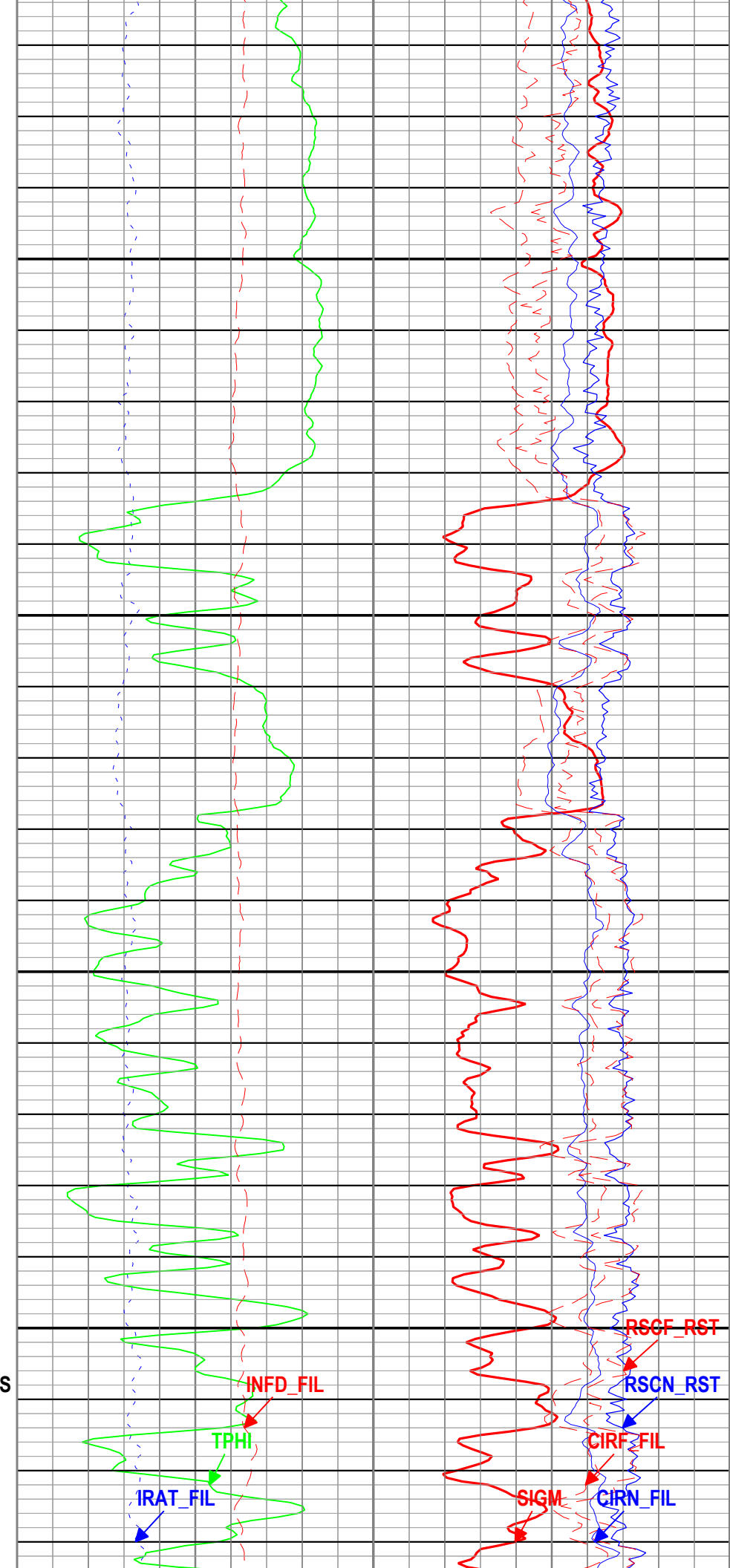
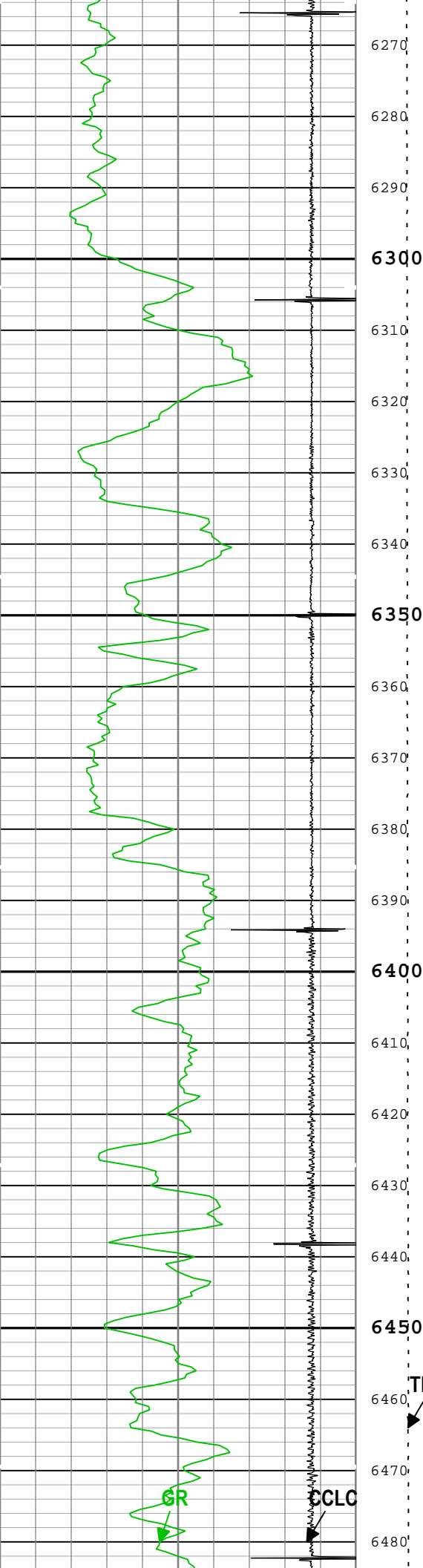


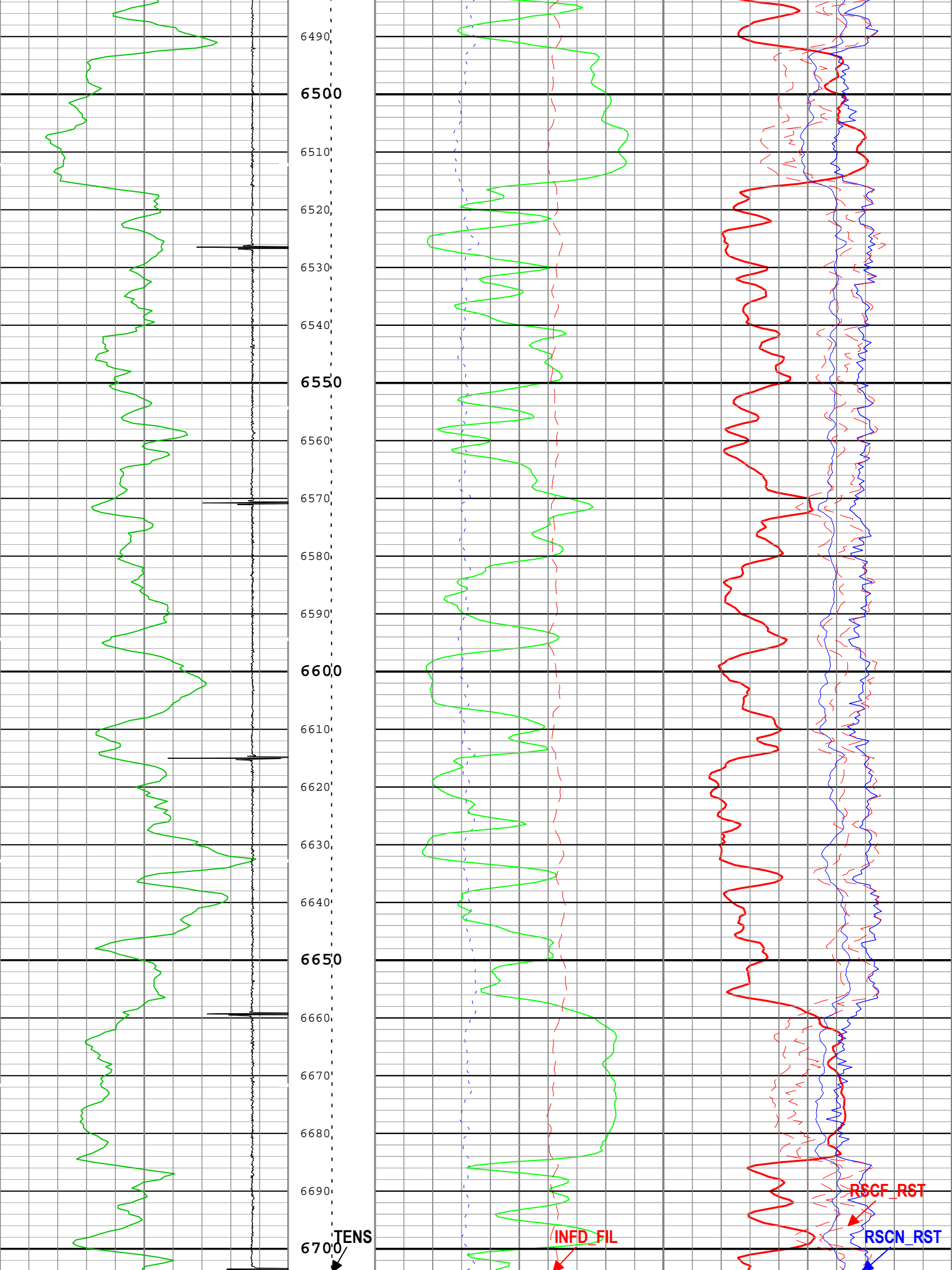




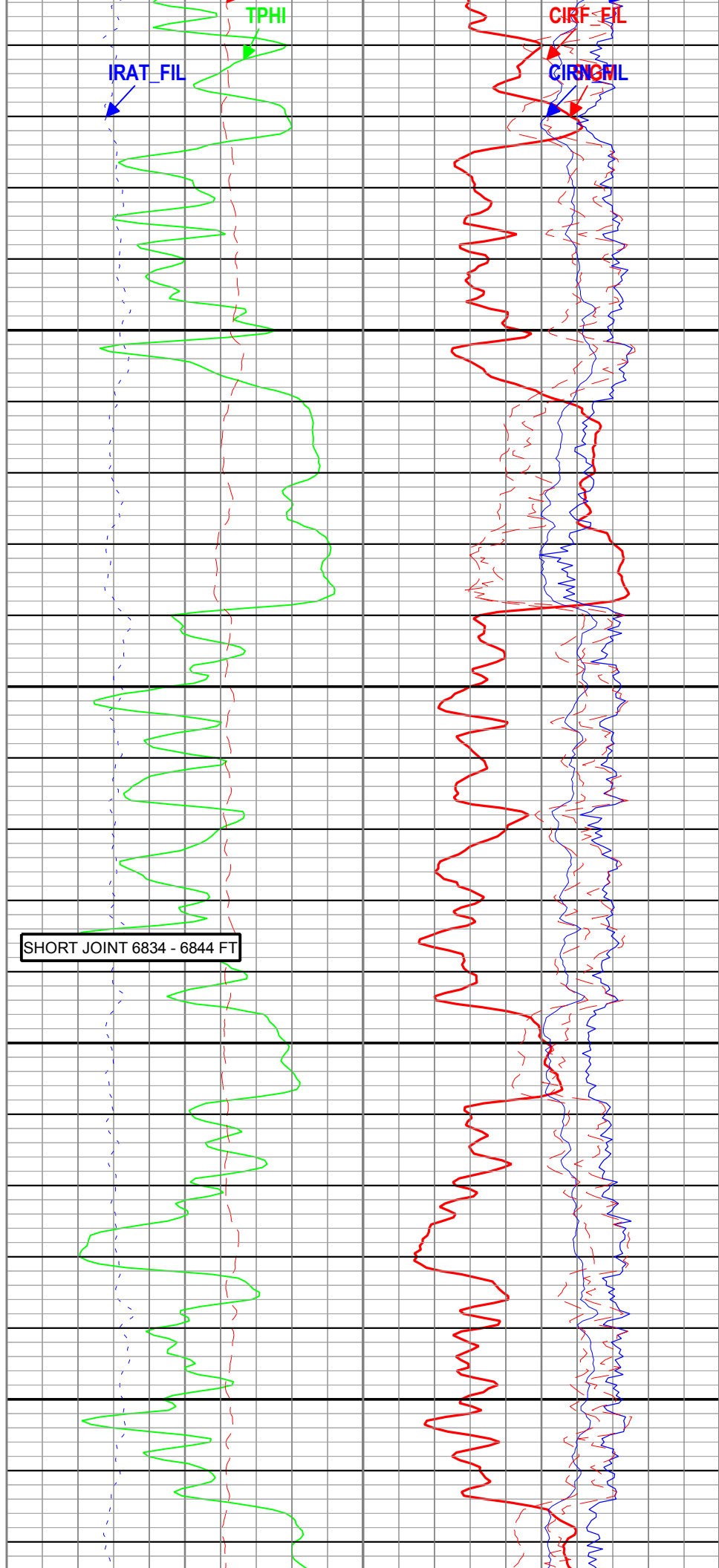
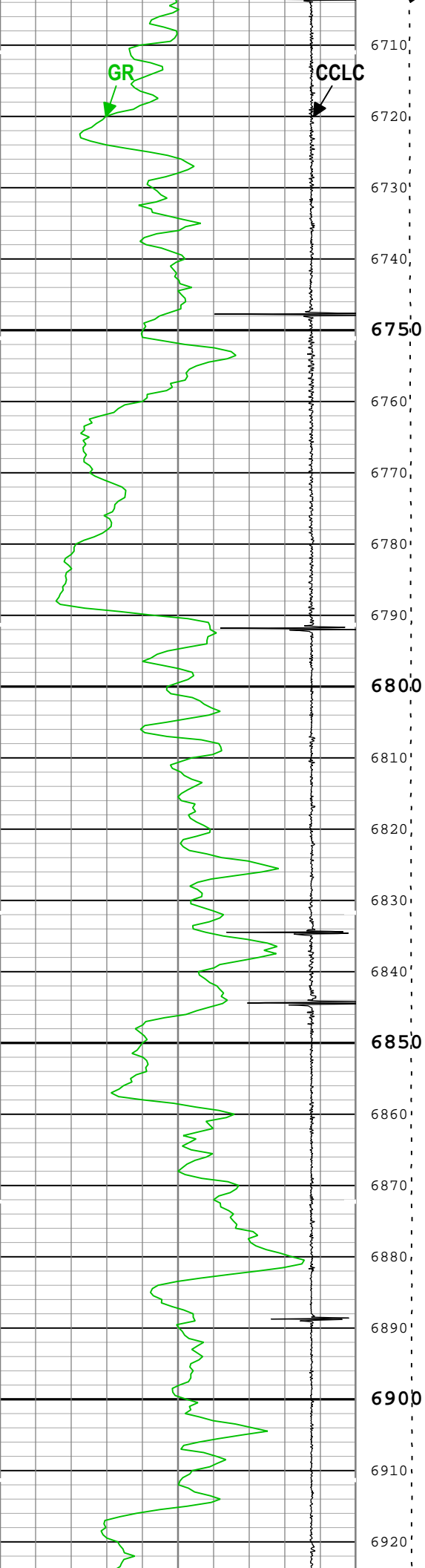


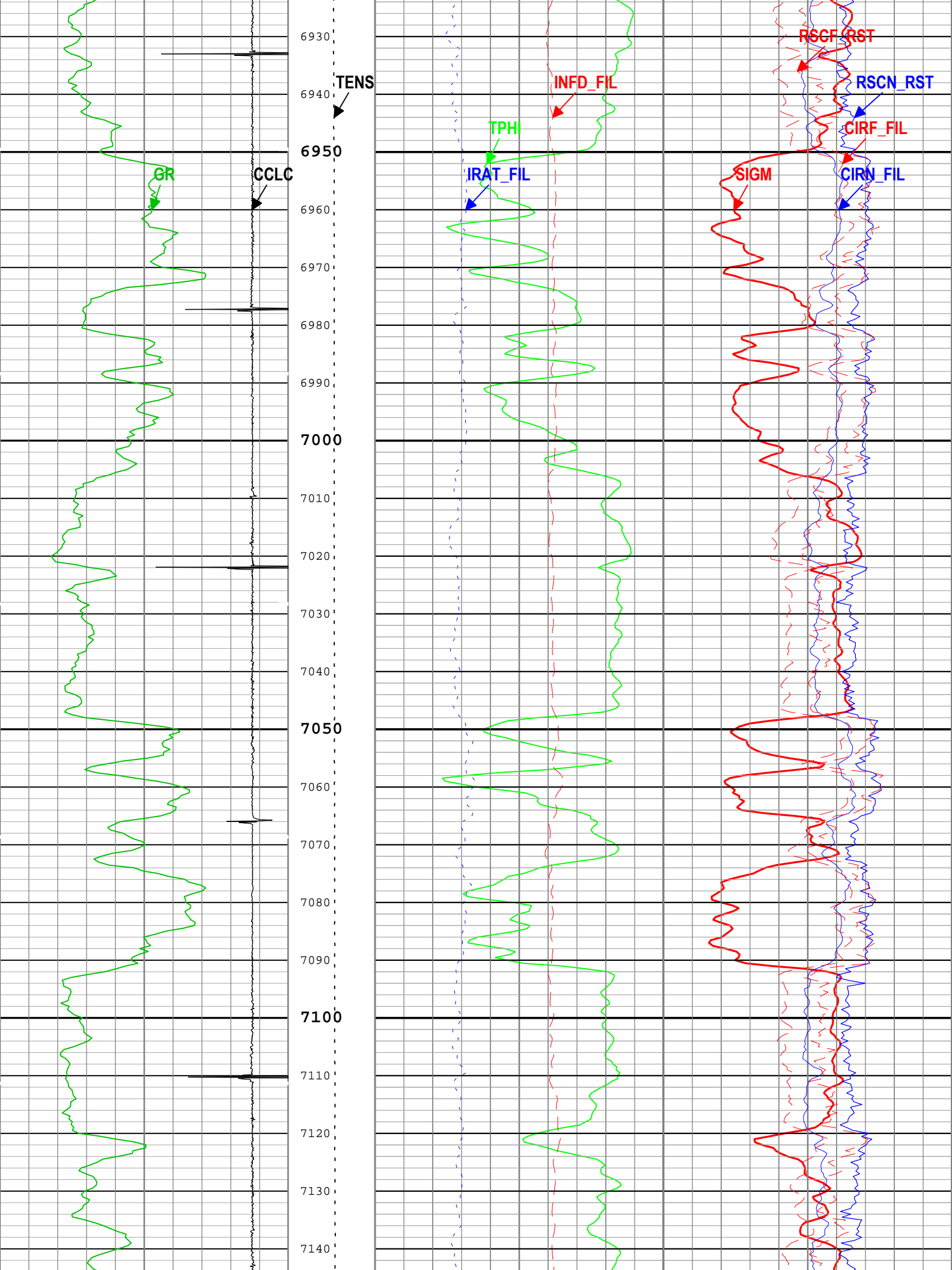


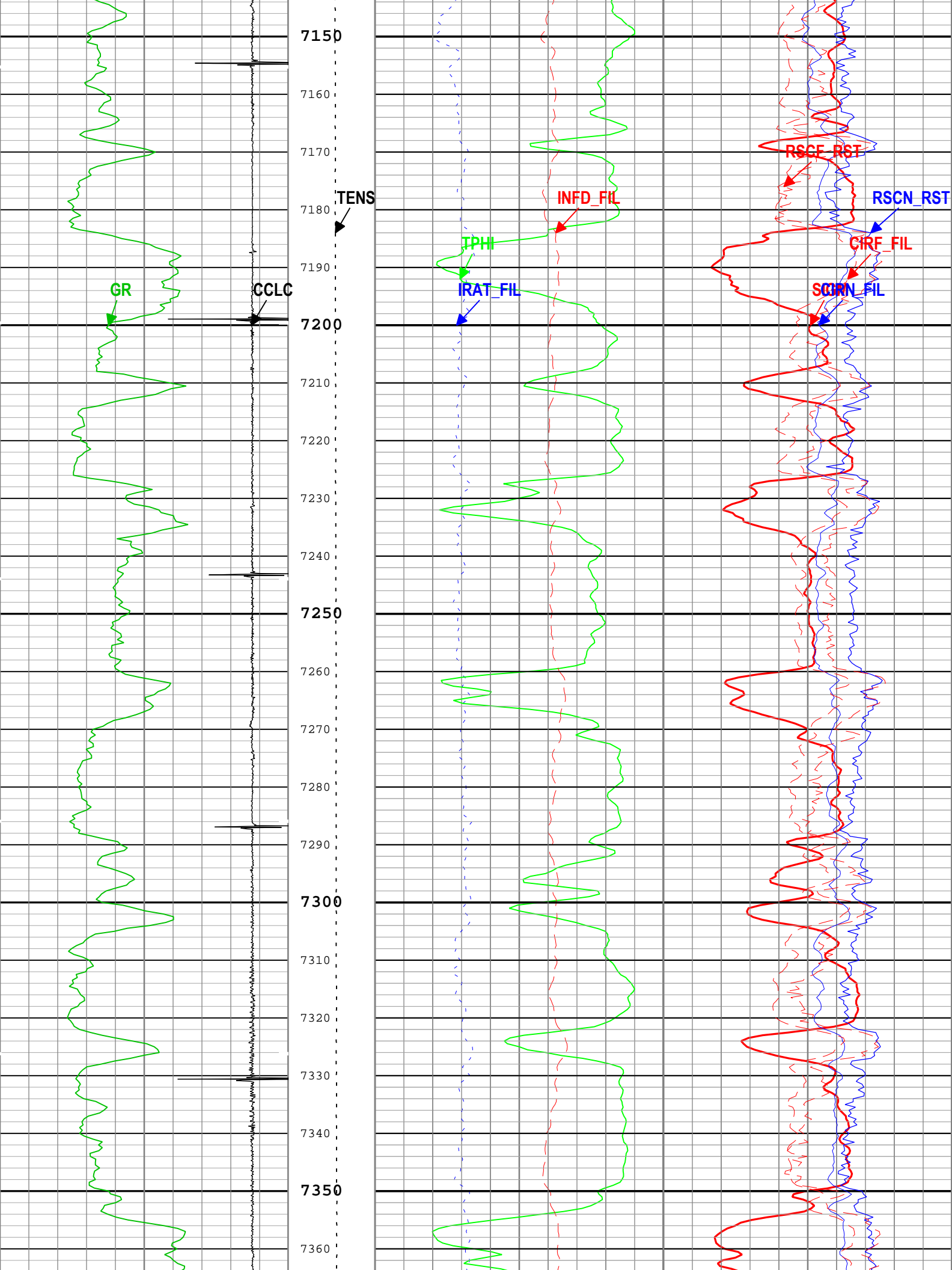


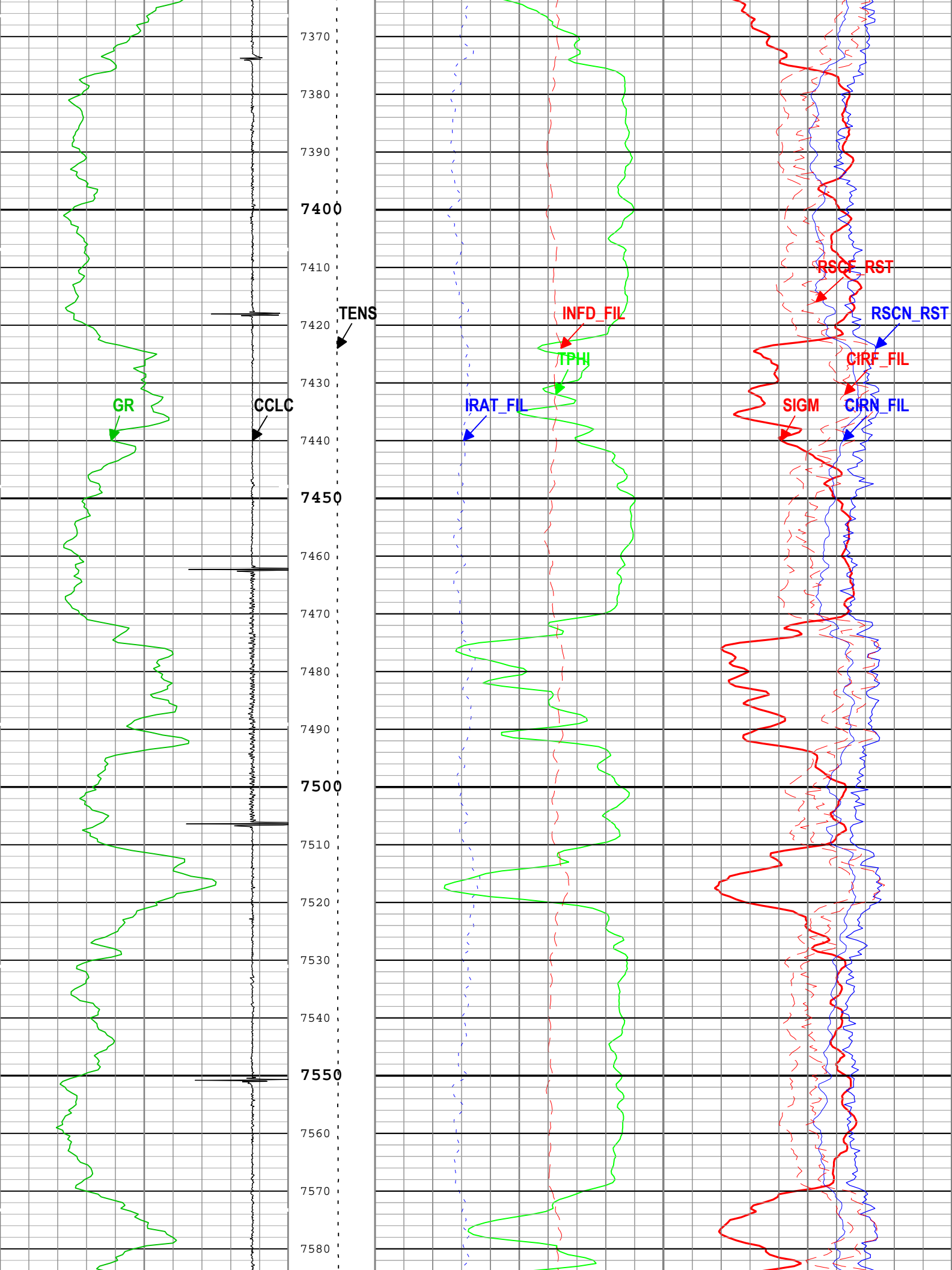


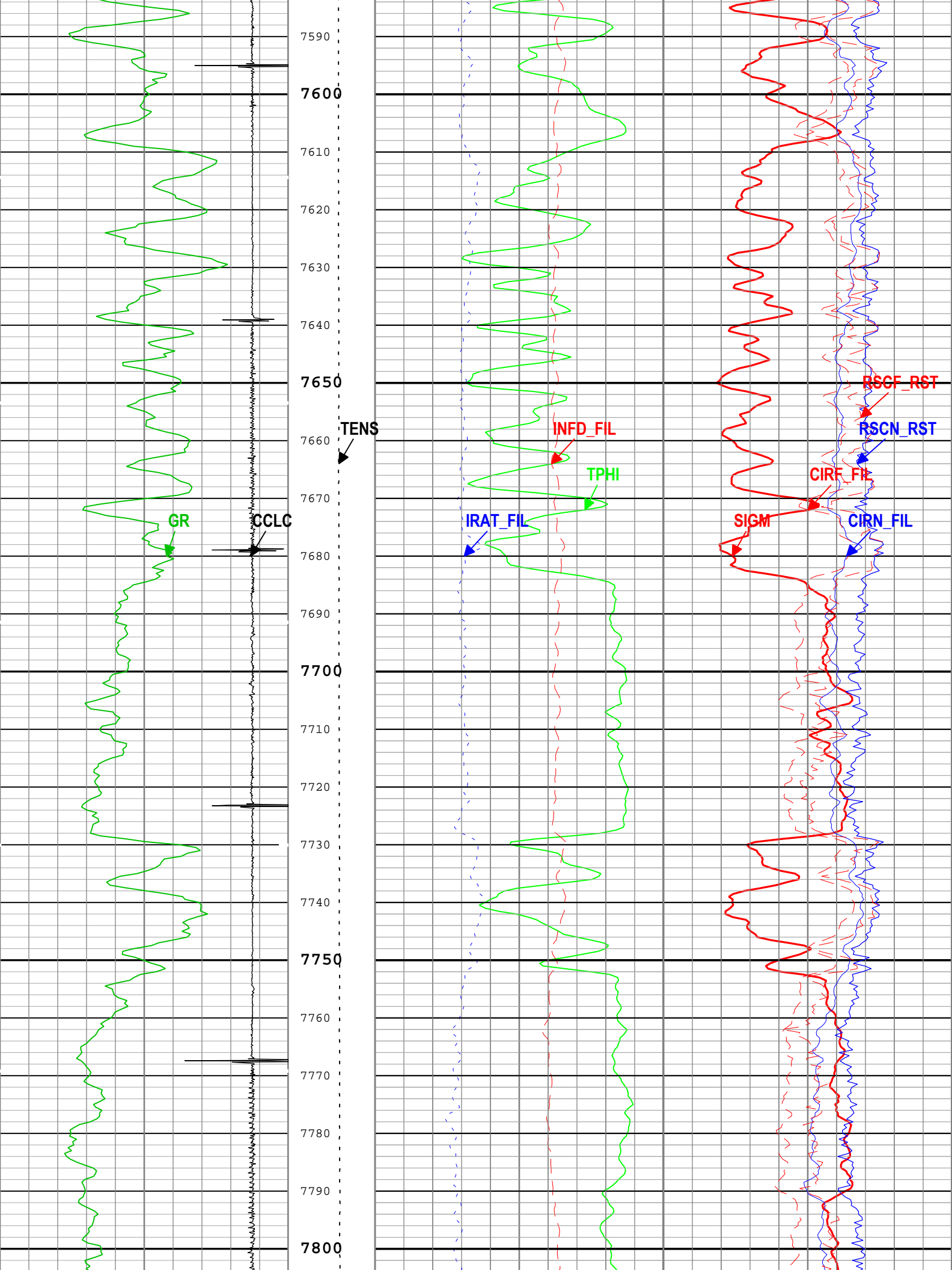




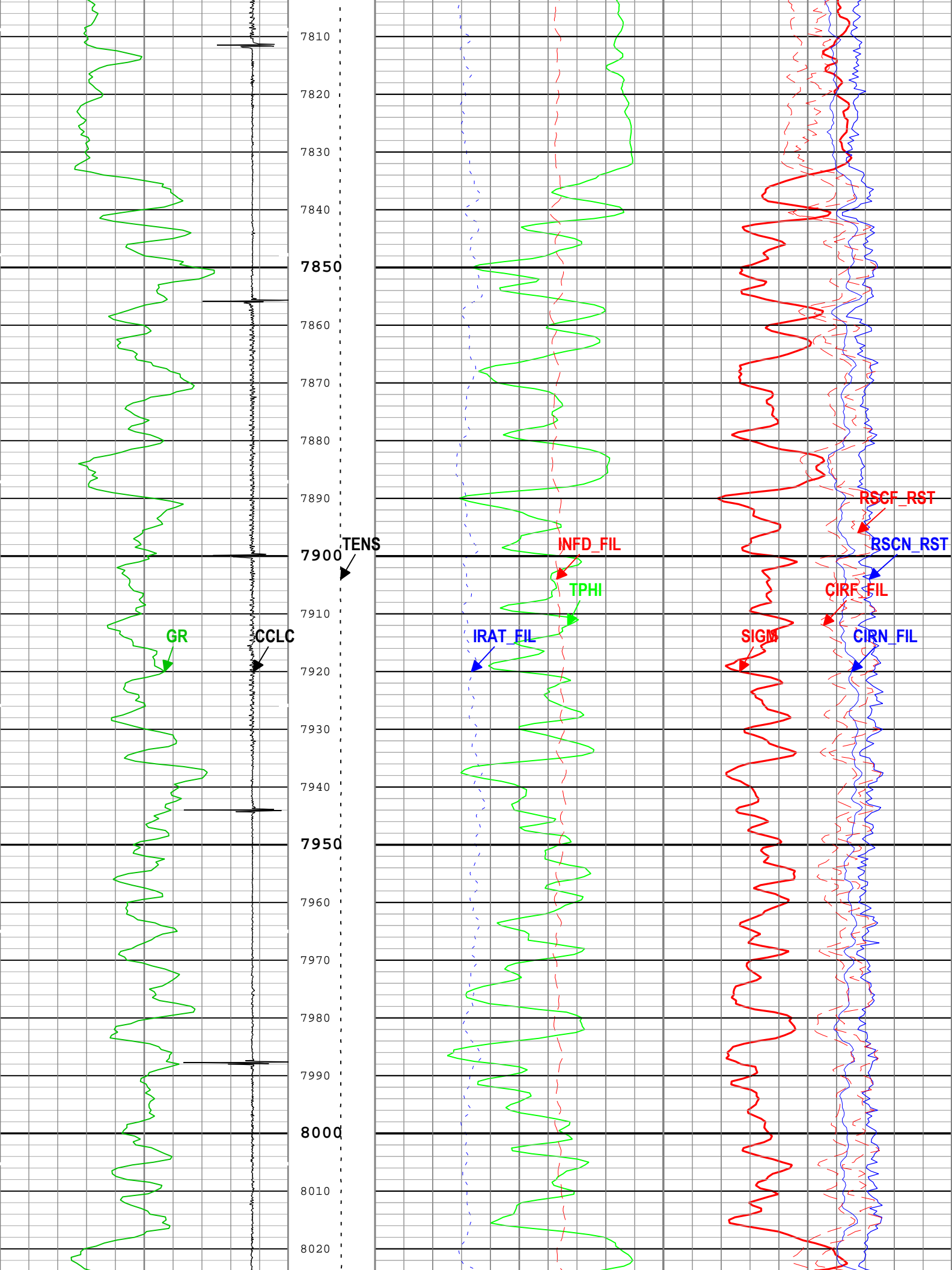


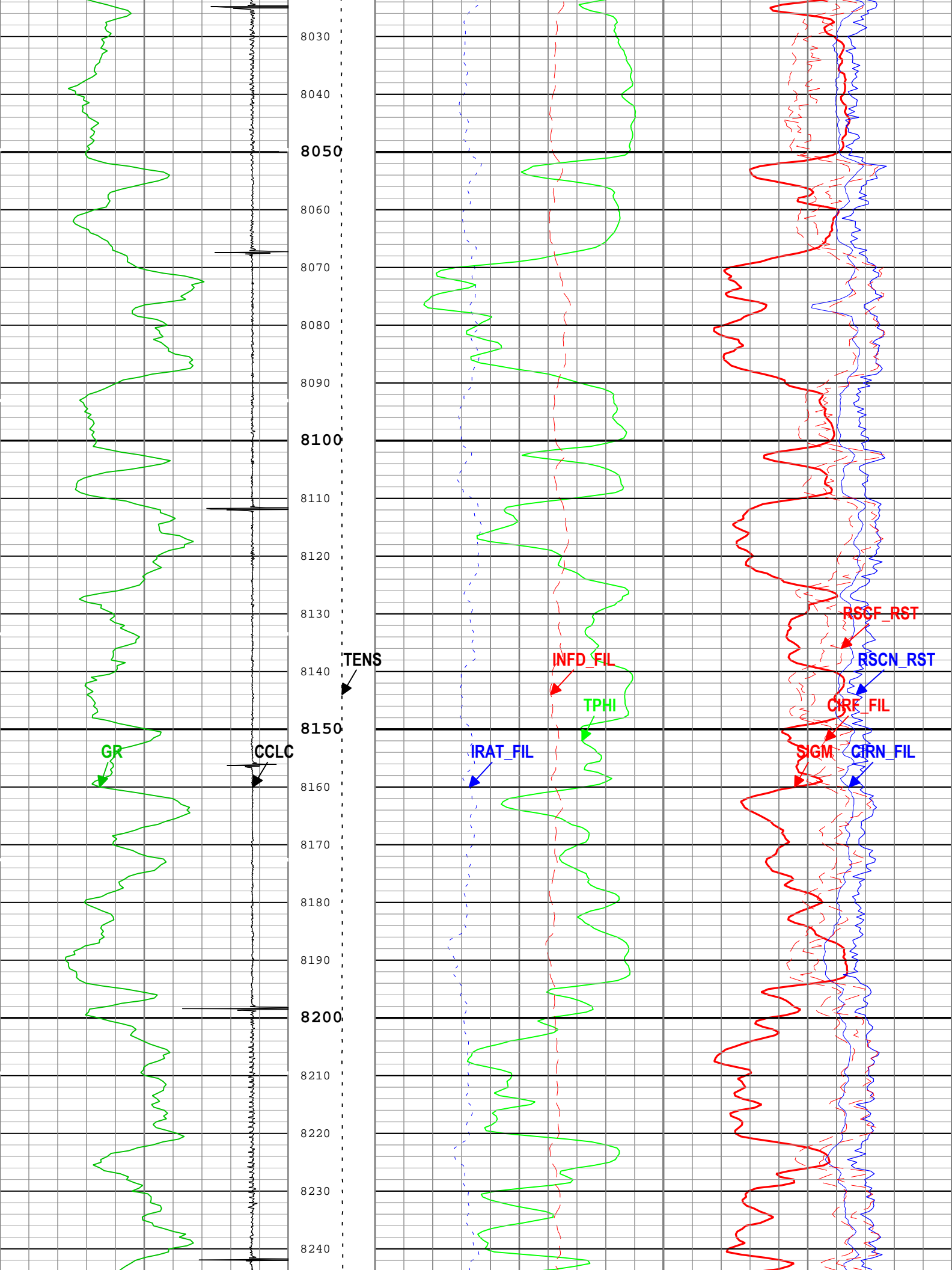


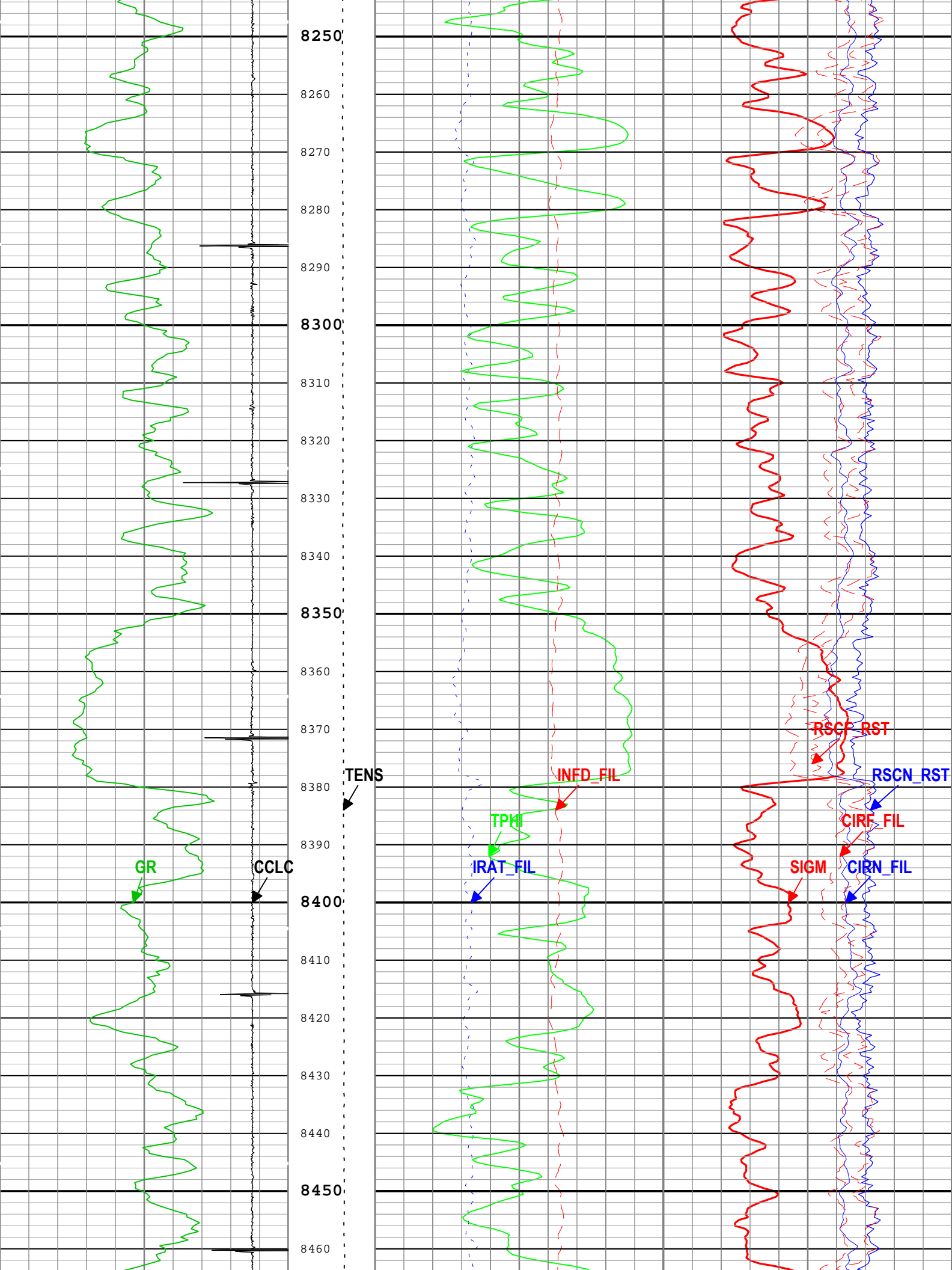


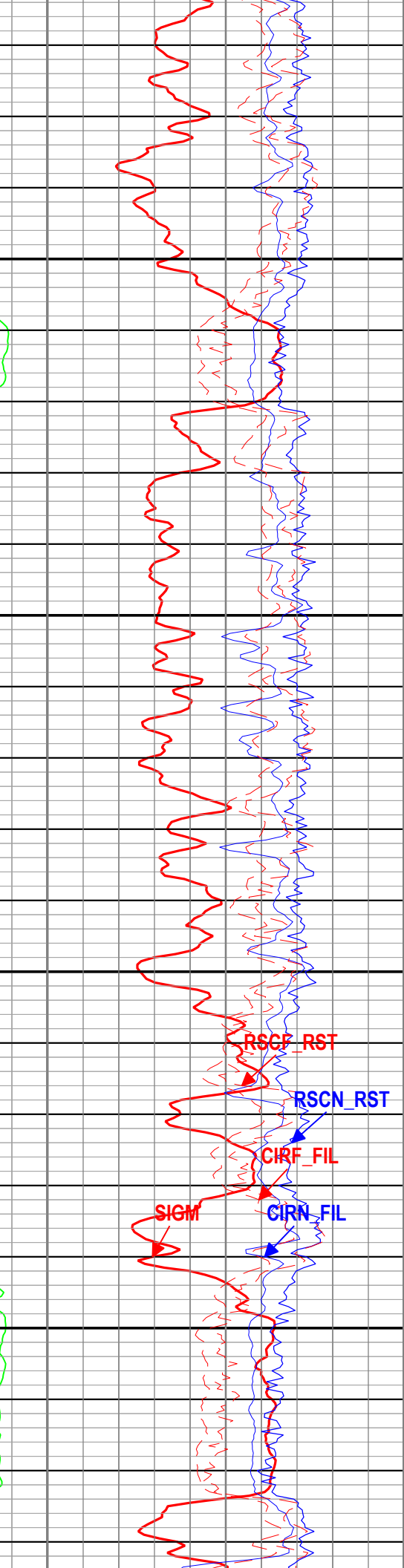
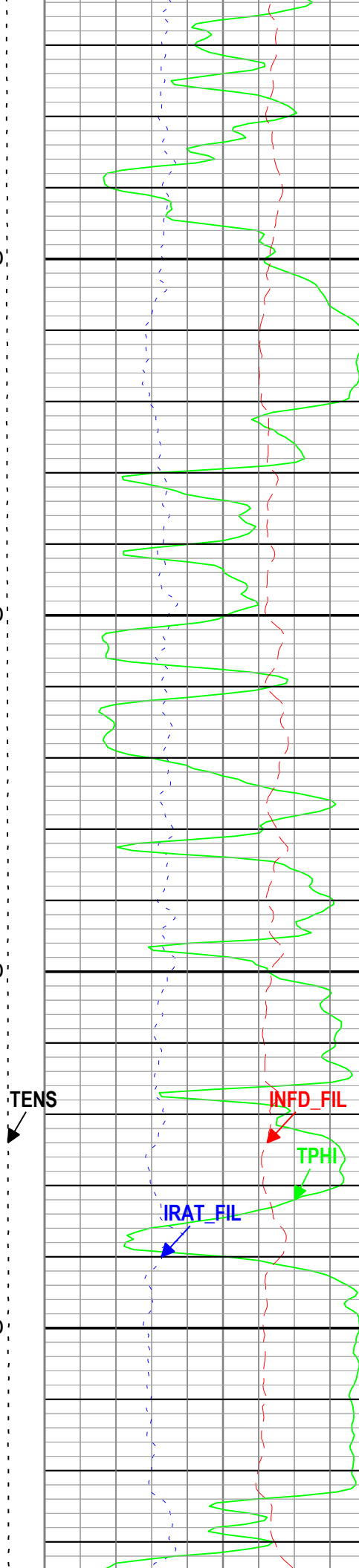
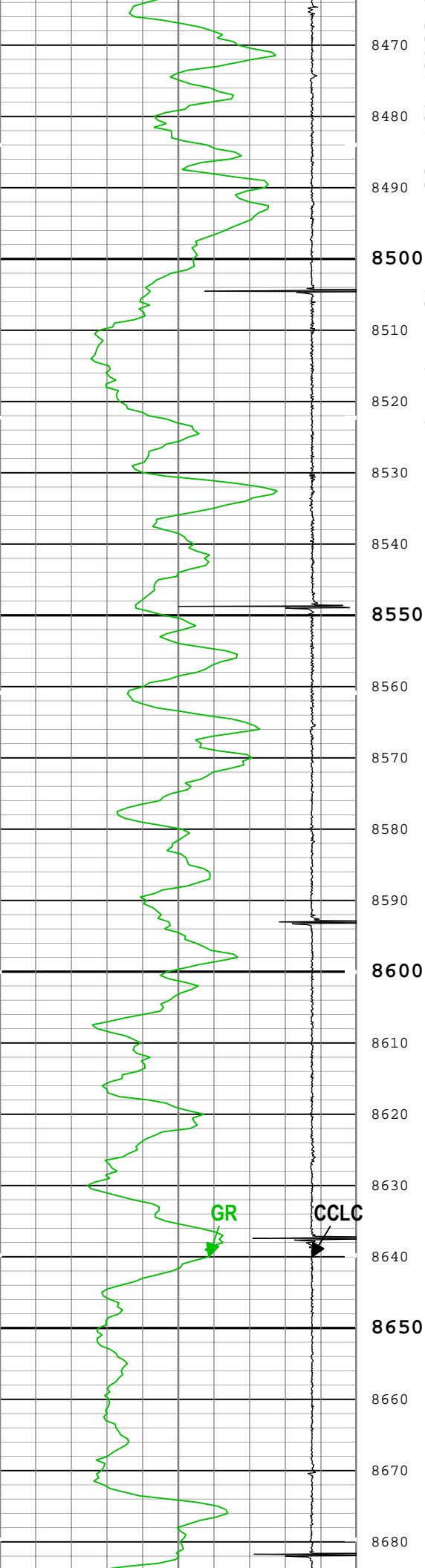


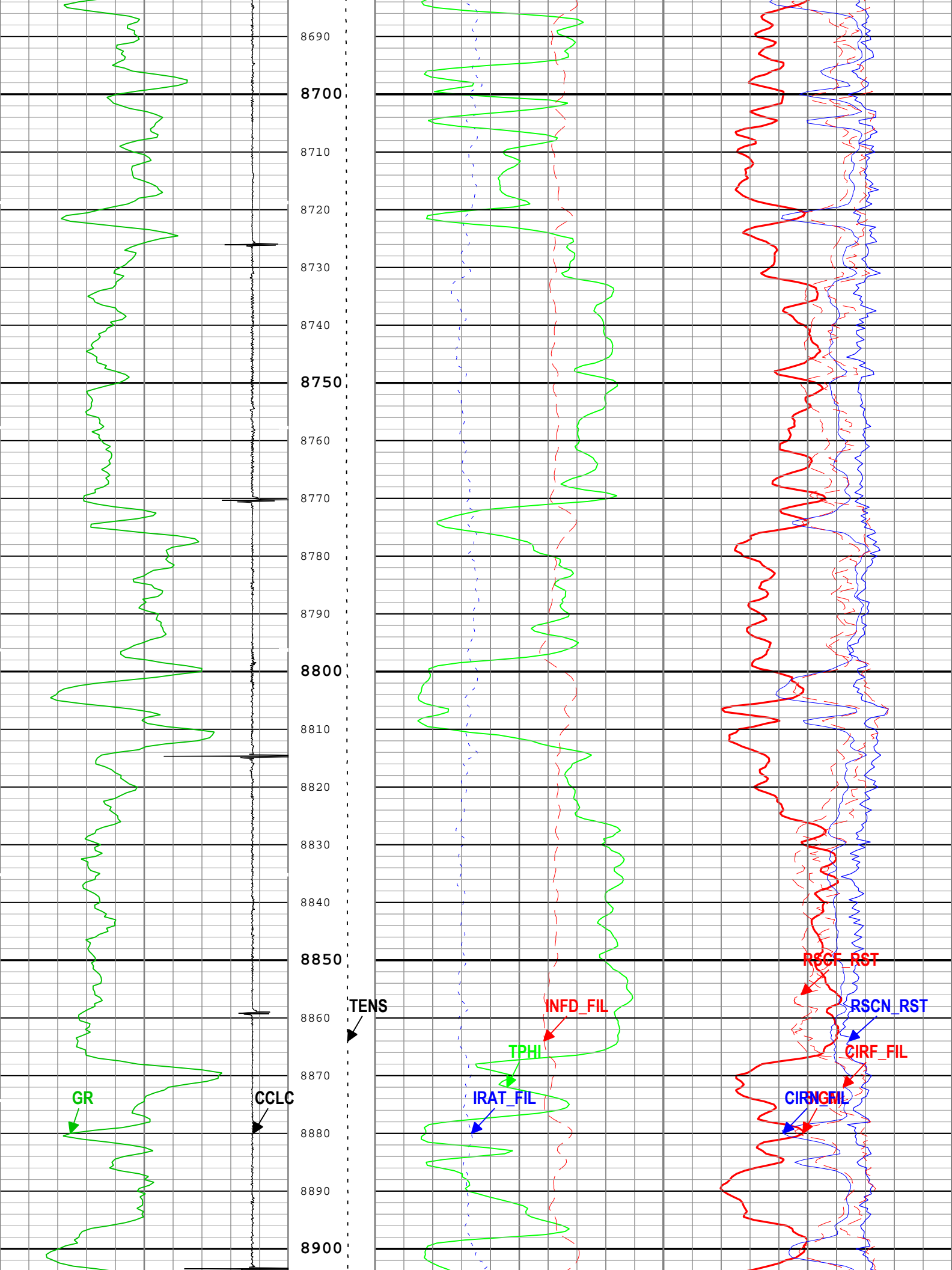




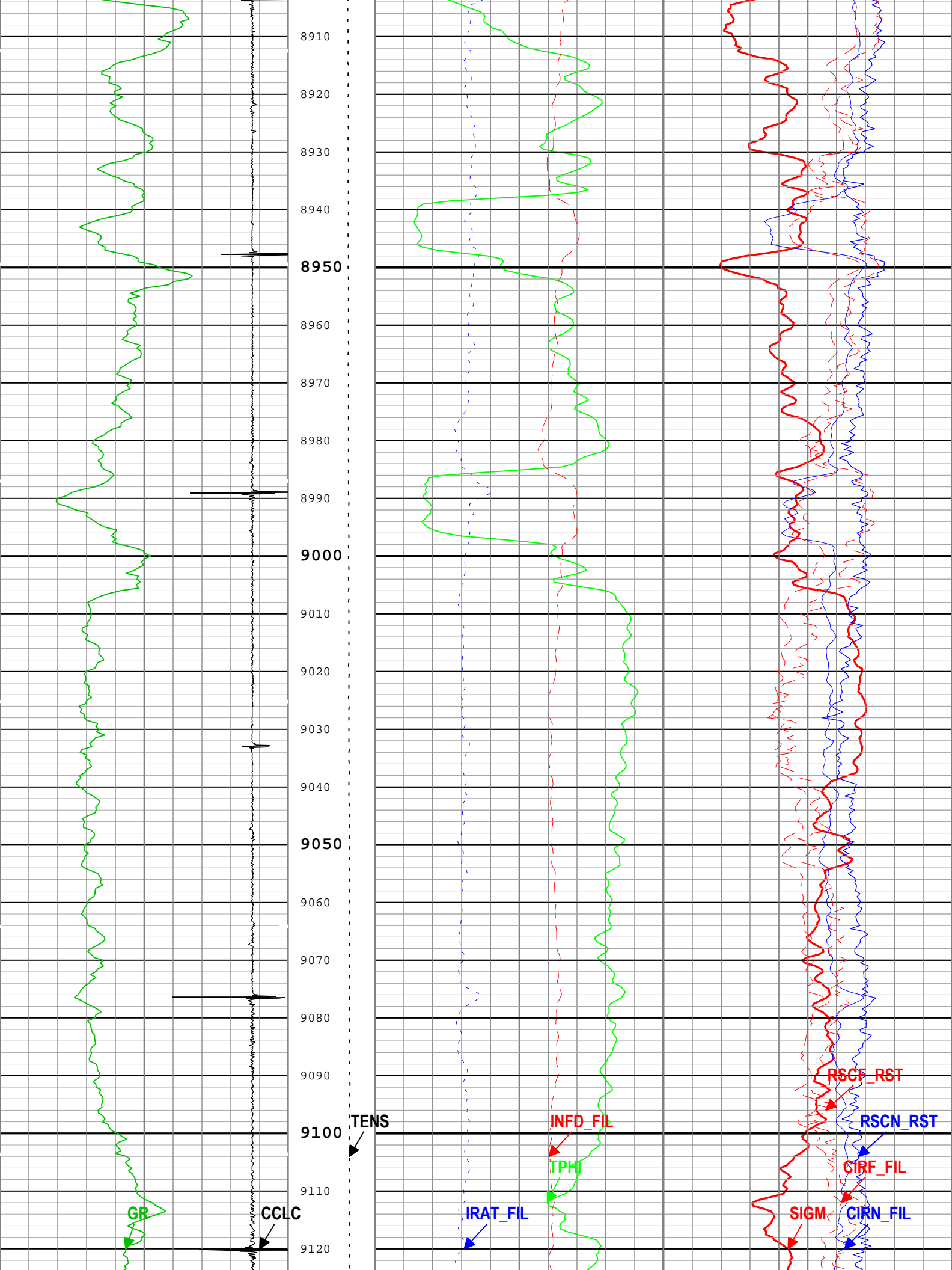


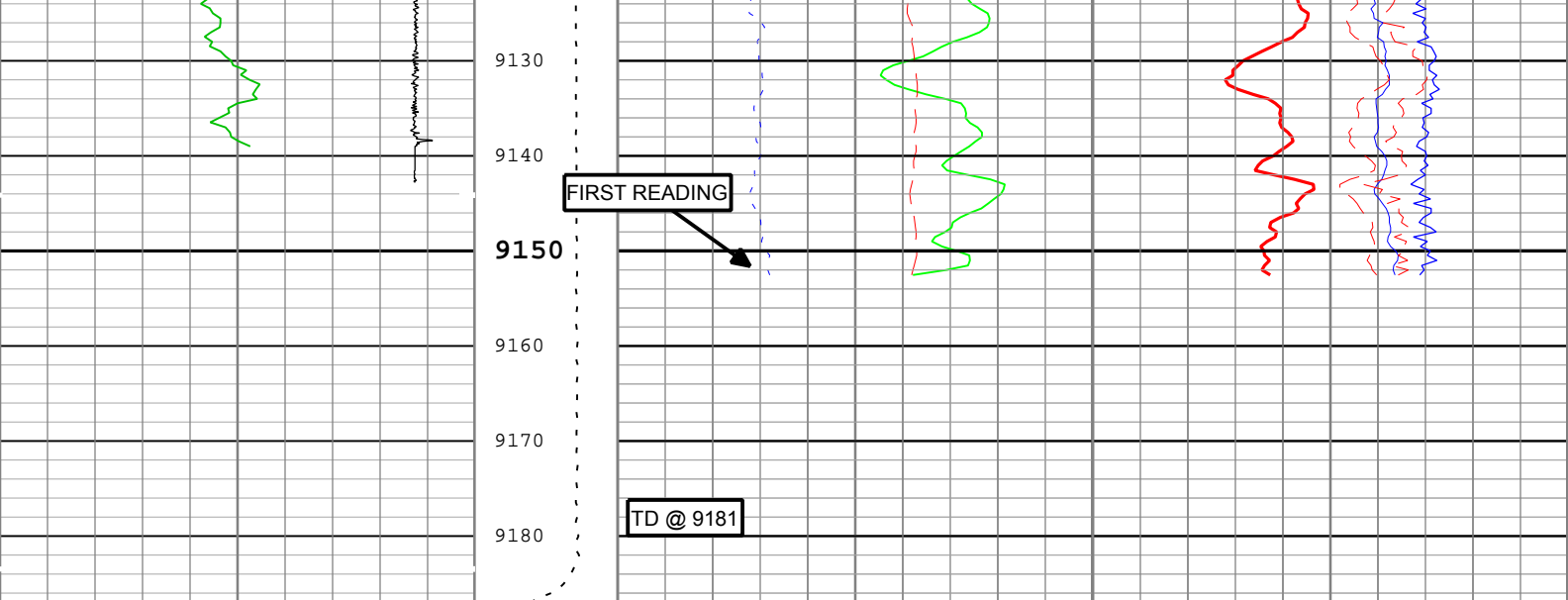












Gamma Ray (GR) PSTP-B			Cable Tension (TENS)	Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C			
0	gAPI	150		60	cu	0	
CCL Computed Amplitude (CCLC) PSTP-B			0 lbf 3000	Inelastic Ratio Filtered (IRAT_FIL) RST-C		Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C	
-3 V 1				0.75	0	2.5	0
				Thermal Decay Porosity (TPHI) RST-C		Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C	
				0.6	ft3/ft3 0		
				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	5	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)
- IHV - Integrated Hole Volume every 10.00 (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 10:26:30

Channel Processing Parameters				
1: Parameters				
Parameter	Description	Tool	Value	Unit
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.5	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	LIMESTONE	

Tool Control Parameters				
1: Parameters				
Parameter	Description	Tool	Value	Unit

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	

1

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
1	Log[4]:Up	Up	8971.23 ft	9192.56 ft	19-Dec-2017 8:41:25 AM	19-Dec-2017 8:53:18 AM	ON	0.00 ft	Yes

All depths are referenced to toolstring zero

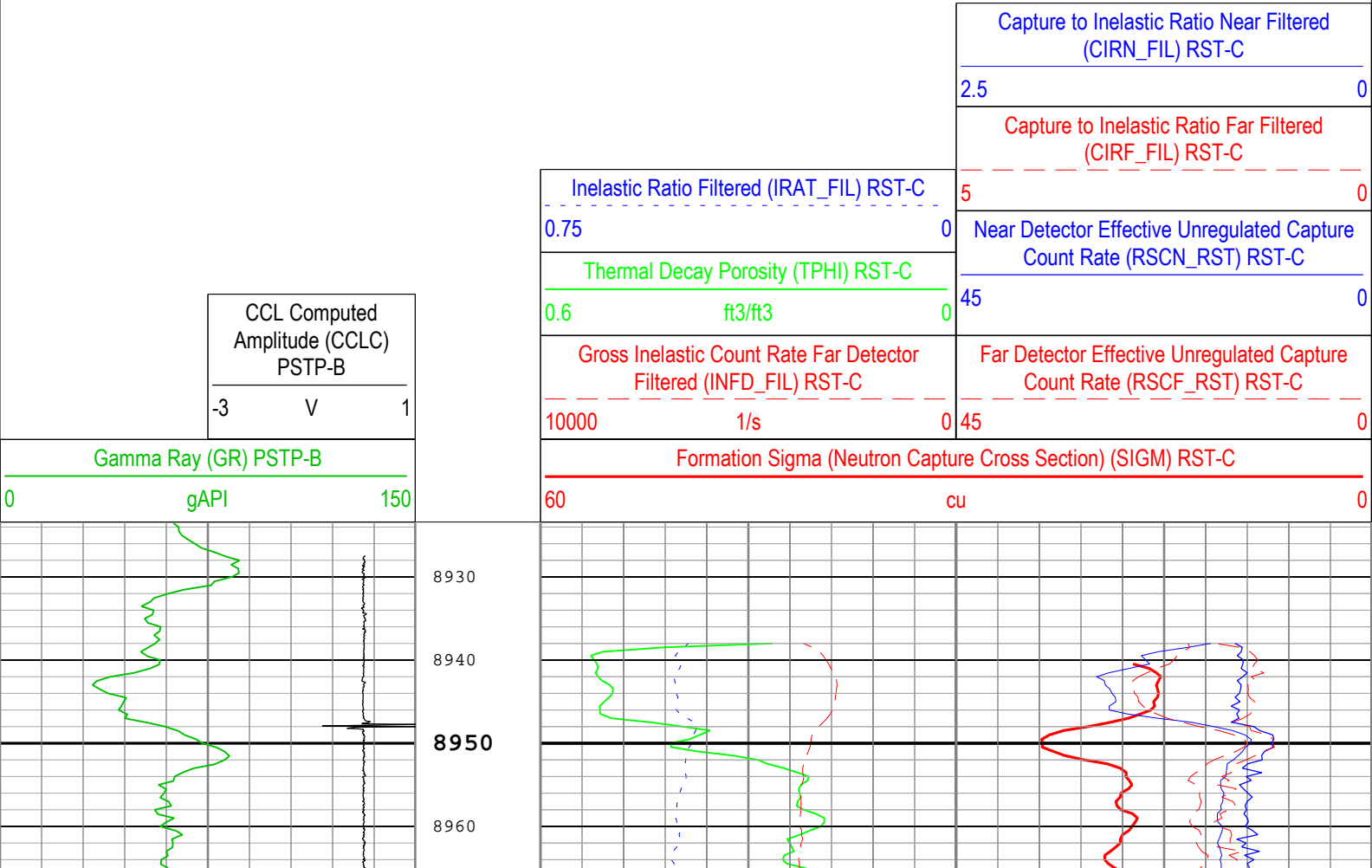
Log

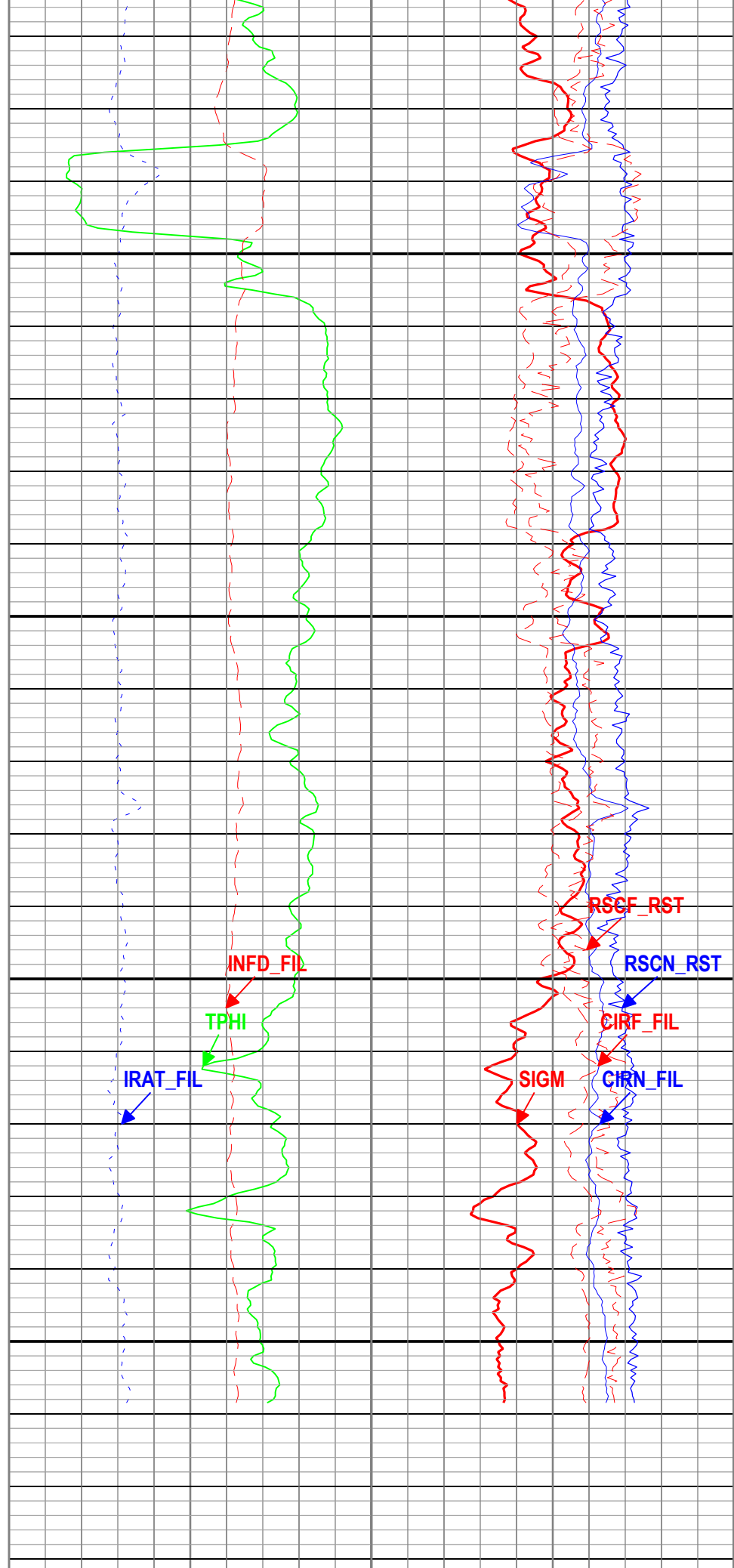
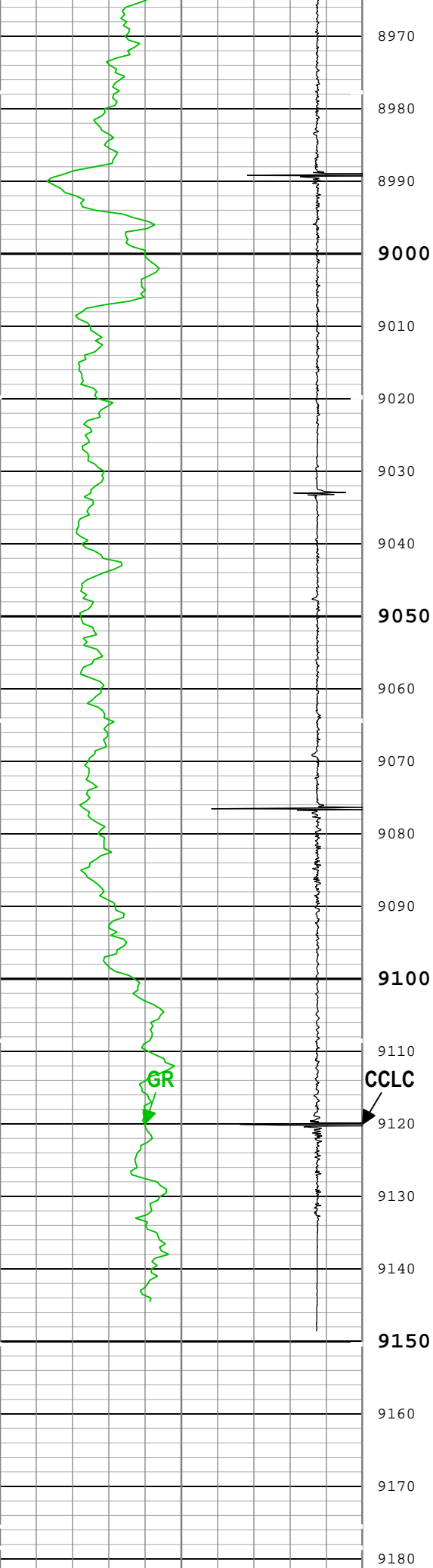
Company:Caerus Operating LLC      Well:Puckett 15B-23 697  
1: Log[4]:Up:S003

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 10:26:37

- IHV - Integrated Hole Volume every 10.00 (ft3)
- IHV - Integrated Hole Volume every 100.00 (ft3)
- 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)

TIME\_1900 - Time Marked every 60.00 (s)









Company:	Caerus Operating LLC	Schlumberger
Well:	Puckett 15B-23 697	
Field:	Grand Valley	
County:	Garfield	
State:	Colorado	
Cement Bond Log		
RST Sigma Log		
Gamma Ray Collar Log		