

Company: CAERUS OIL & GAS LLC

Well: NPR 12B-14-596

Field: GRAND VALLEY

County: GARFIELD State: COLORADO

CEMENT BOND LOG

RST SIGMA LOG

GAMMA RAY - COLLAR LOCATOR LOG

County: GARFIELD
Field: GRAND VALLEY
Location: SENE 15-5S-96W
Well: NPR 12B-14-596
Company: CAERUS OIL & GAS LLC

Location:		SENE 15-5S-96W	Elev.:	K.B.	6453.00 ft
Permanent Datum:				G.L.	6429.00 ft
Log Measured From:				D.F.	6453.00 ft
Drilling Measured From:					
API Serial No.	Section:	Township:	Range:		
05-045-23849	15	5S	96W		

Logging Date 27-Dec-2018

Run Number ONE

Depth Driller 9675.00 ft

Schlumberger Depth 9597.00 ft

Bottom Log Interval 9589.00 ft

Top Log Interval 1814.00 ft

Casing Fluid Type Water

Salinity

Density 8.4 lbm/gal

Fluid Level 102.00 ft

BIT/CASING/TUBING STRING

Bit Size 8.75 in

From 2388.00 ft

To 9597.00 ft

Casing/Tubing Size 4.5 in

Weight 11.6 lbm/ft

Grade N/A

From 0.00 ft

To 9675.00 ft

Max Recorded Temperatures 274 degF

Logger on Bottom 27-Dec-2018 17:12:00

Unit Number MSLC-AR2 3007 FT MORGAN

Recorded By L. AWALT/J. LAHODA

Witnessed By TRAVIS KOLISCH

Disclaimer

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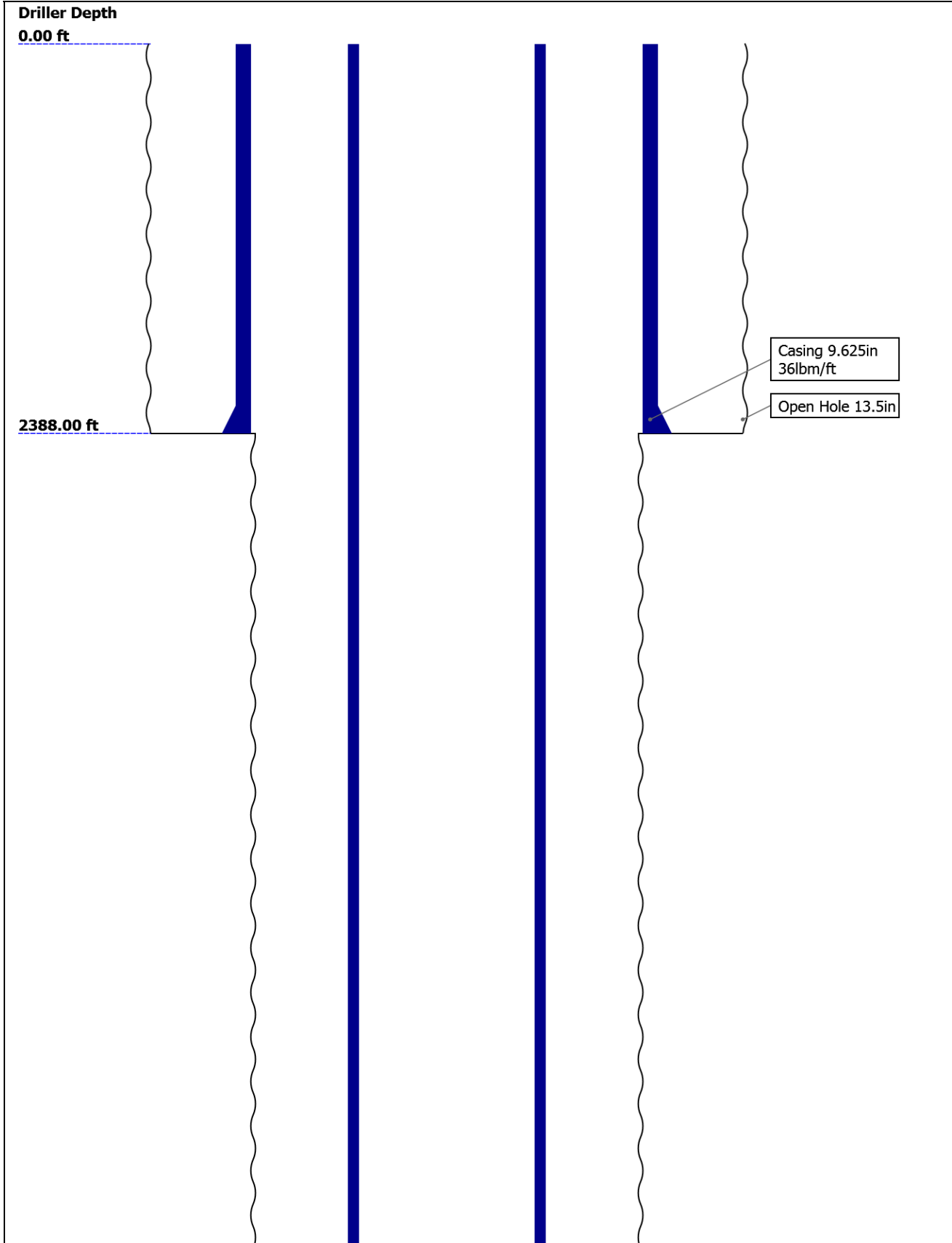
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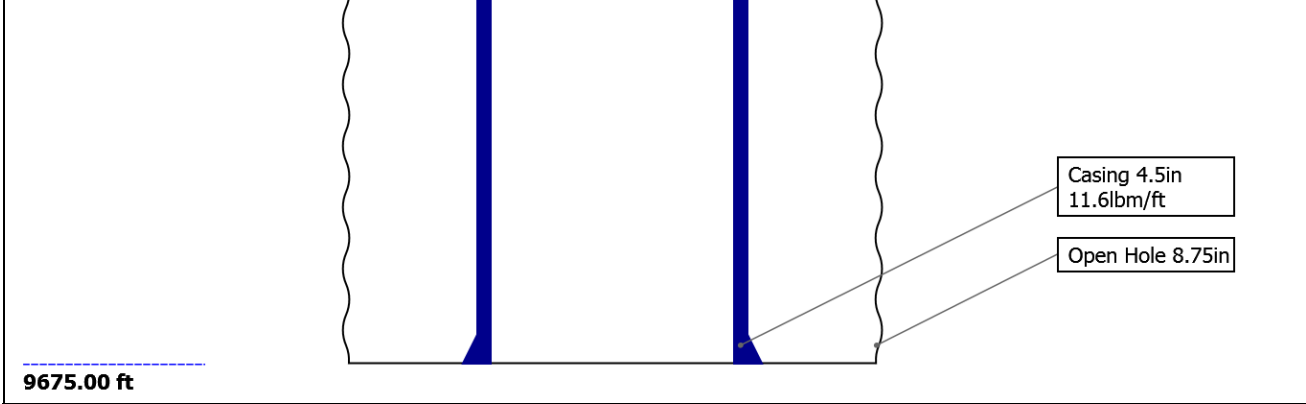
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Well Sketch





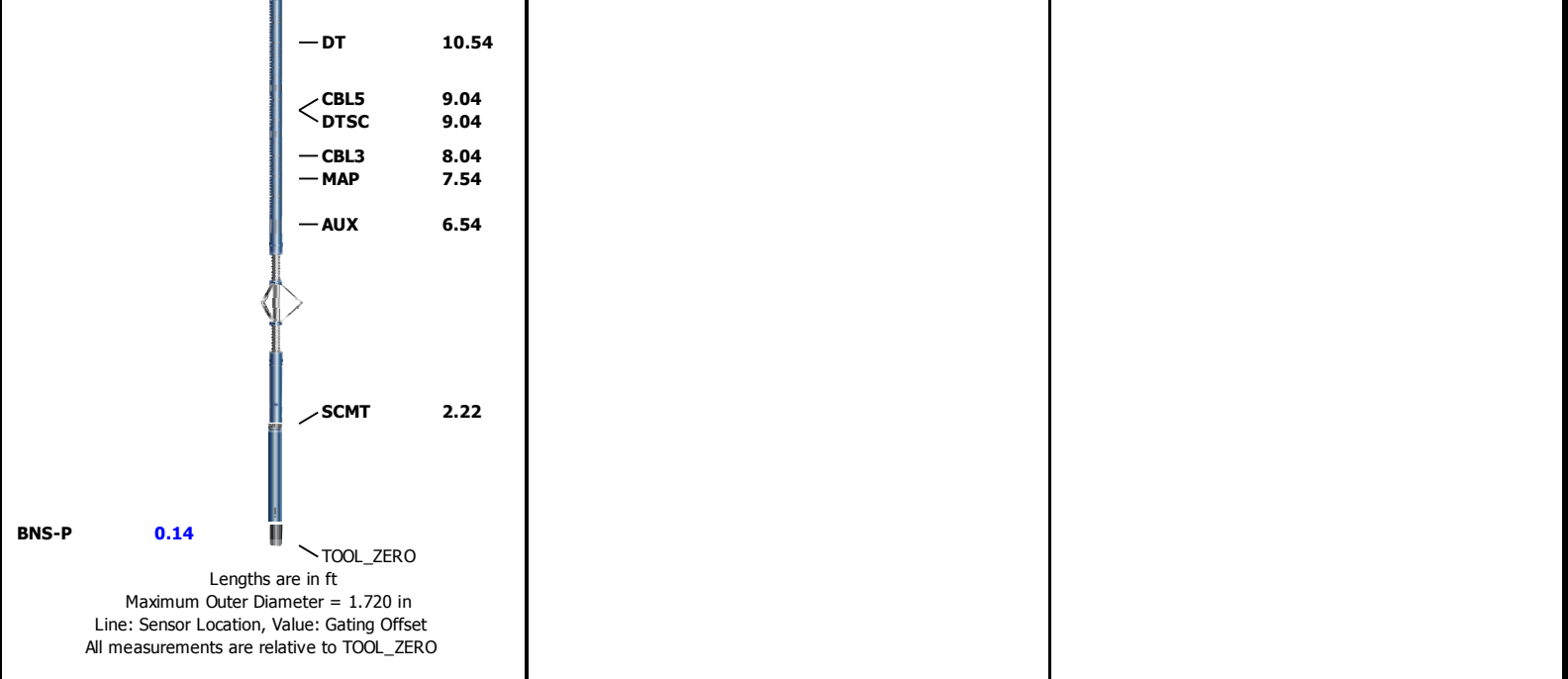
Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	13.5	8.75				
Top Driller (ft)	0	2388				
Top Logger (ft)	0	2388				
Bottom Driller (ft)	2388	9675				
Bottom Logger (ft)	2388	9597				
Casing						
Size (in)	9.625	4.5				
Weight (lbm/ft)	36	11.6				
Inner Diameter (in)	8.921	4				
Grade	N/A	N/A				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	2388	9675				
Bottom Logger (ft)	2388	9675				

Operational Run Summary

Parameter (unit)	ONE					
Date Log Started	27-Dec-2018					
Time Log Started	15:22:34					
Date Log Finished	27-Dec-2018					
Time Log Finished	22:15:43					
Top Log Interval (ft)	1814.00					
Bottom Log Interval (ft)	9589.00					
Total Depth (ft)						
Max Hole Deviation (deg)	0.00					
Azimuth of Max Deviation (deg)	0.00					
Bit Size (in)	8.750					
Logging Unit Number	MSLC-AR2 3007					
Logging Unit Location	FT MORGAN					
Recorded By	L. AWALT/J. LAHODA					

[illegible]



Depth Summary			
	ONE		
Depth Measuring Device			
Type	IDW-JA		
Serial Number	6241		
Calibration Date	16-NOV-2018		
Calibrator Serial Number	6241		
Calibration Cable Type	2-23KA-MP		
Wheel Correction 1	-3		
Wheel Correction 2	-3		
Tension Device			
Type	CMTD-B/A		
Serial Number	5036		
Calibration Date	18-NOV-2018		
Calibrator Serial Number	112544		
Number of Calibration Points	10		
Calibration Root Mean Square Error	6		
Calibration Peak Error	12		
Logging Cable			
Type	2-23KA-MP		
Serial Number	5233		
Length	19000.00 ft		
Conveyance Type	Wireline		
Rig Type			
ONE:Depth Control Parameters		Depth Control Remarks	
Log Sequence	First Log In the Well		
Rig Up Length At Surface			
Rig Up Length At Bottom			
Rig Up Length Correction			

ONE

CBL-VDL MAIN PASS [5:100]

Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	1860.31 ft	9603.13 ft	27-Dec-2018 5:12:42 PM	27-Dec-2018 9:19:19 PM	ON	0.00 ft	Yes

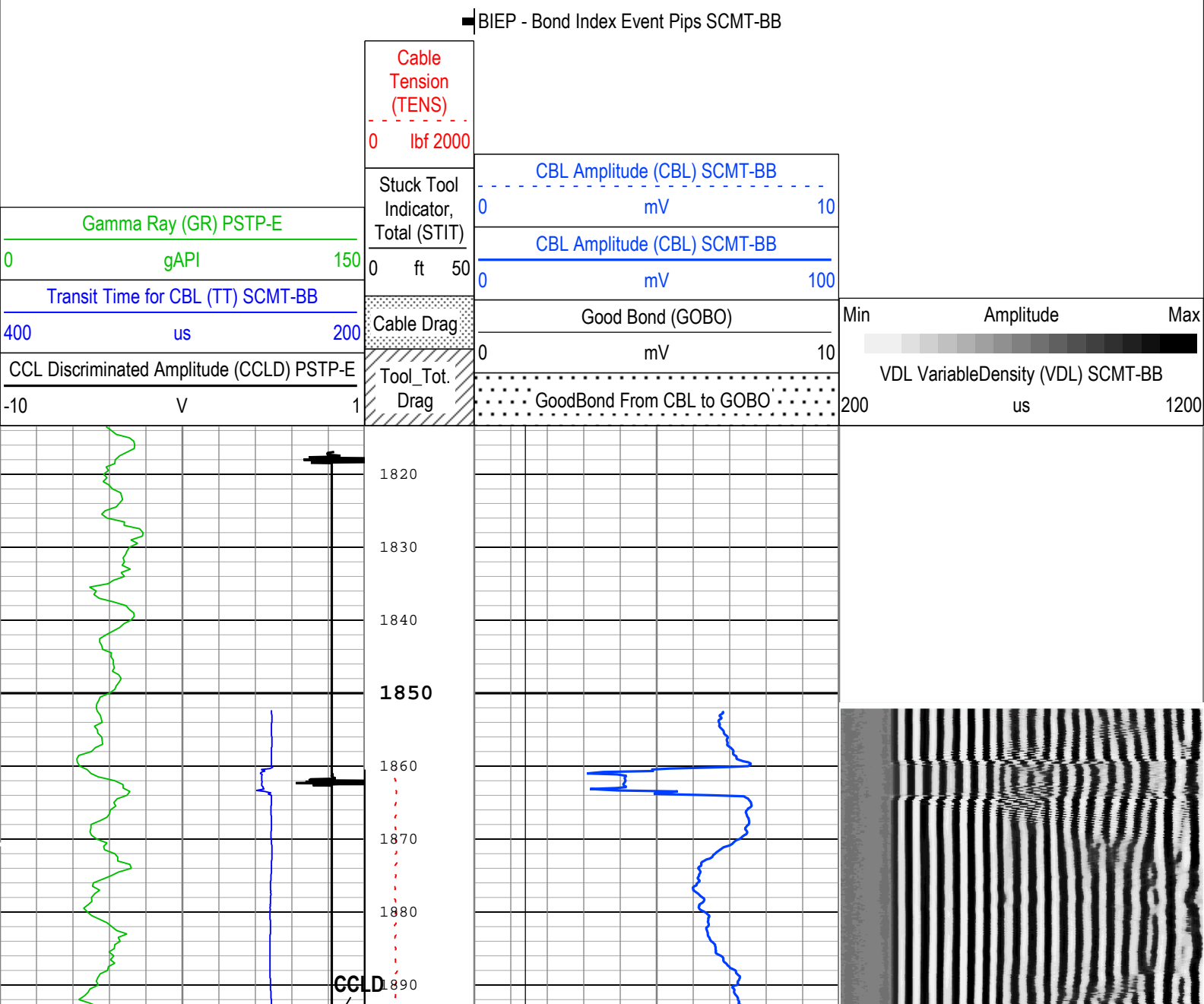
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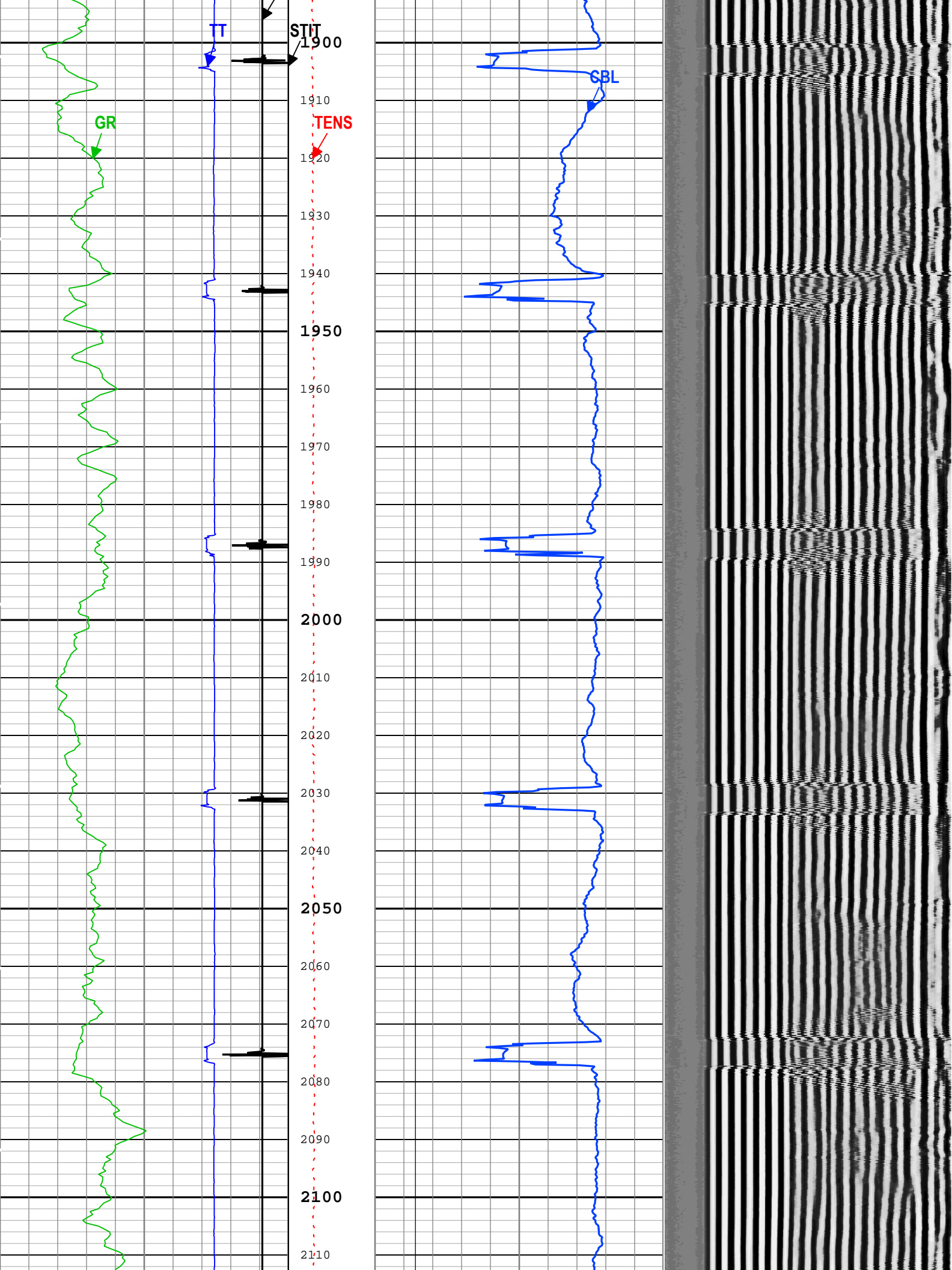
Log

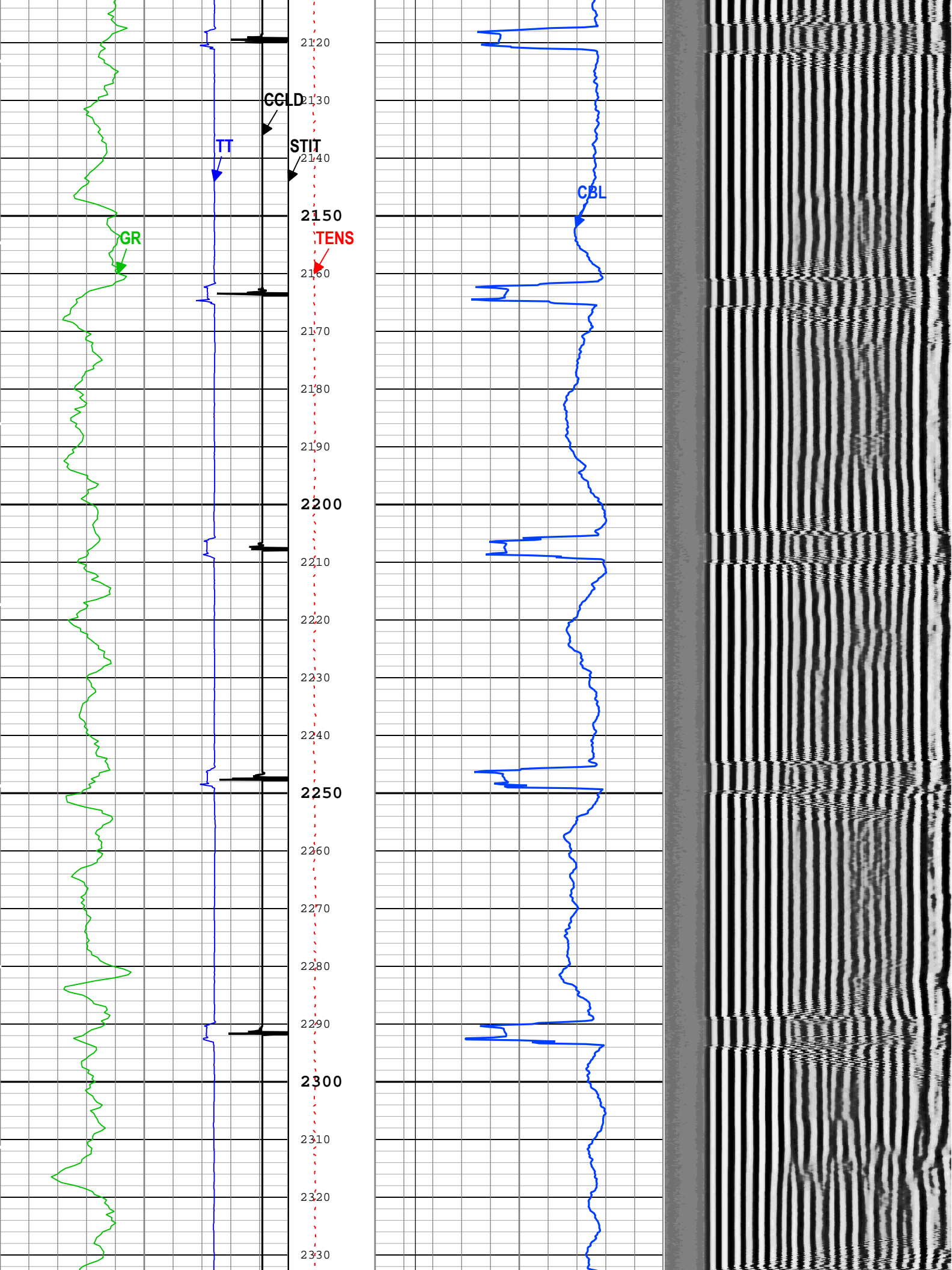
Company:CAERUS OIL & GAS LLCWell:NPR 12B-14-596ONE: Log[4]:Up:S006

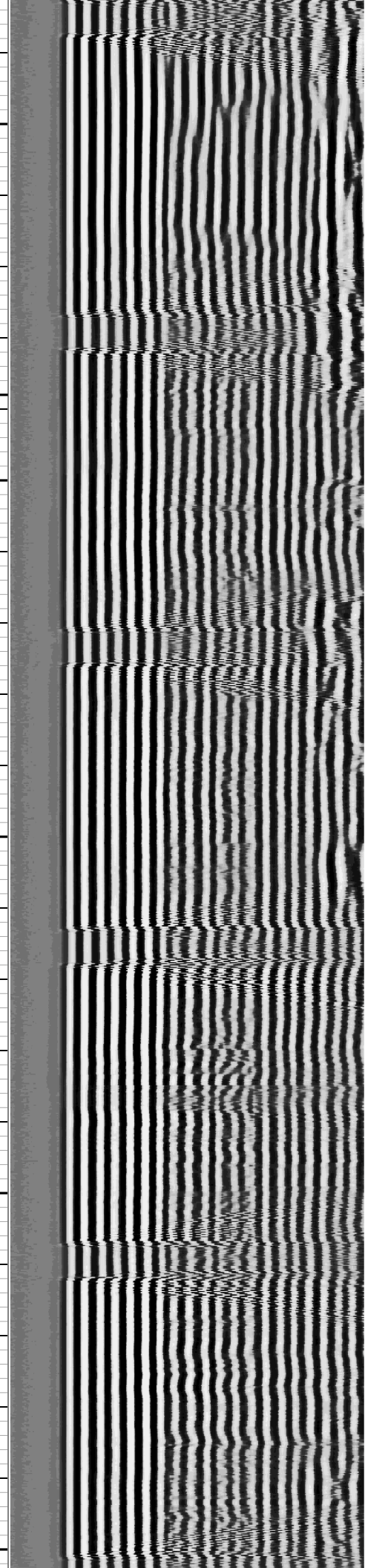
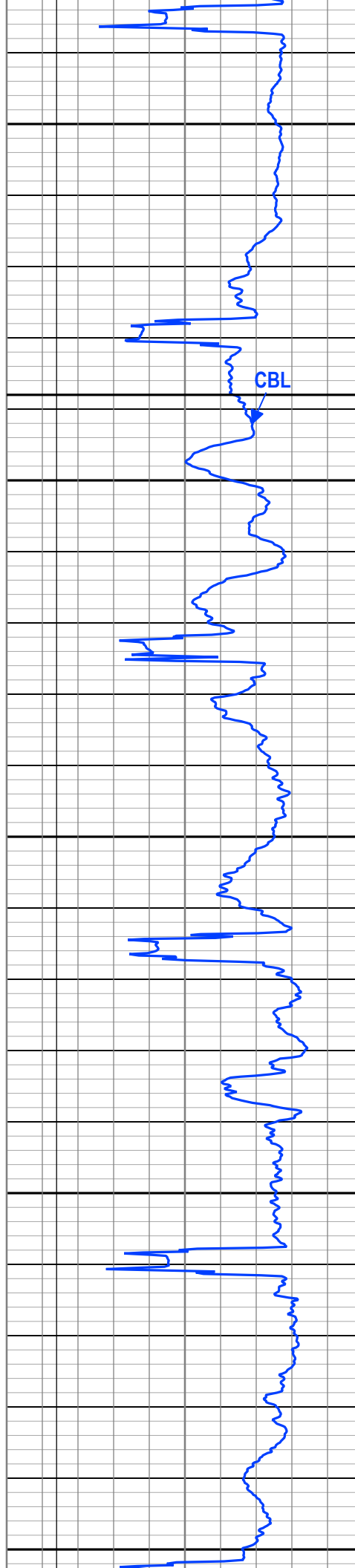
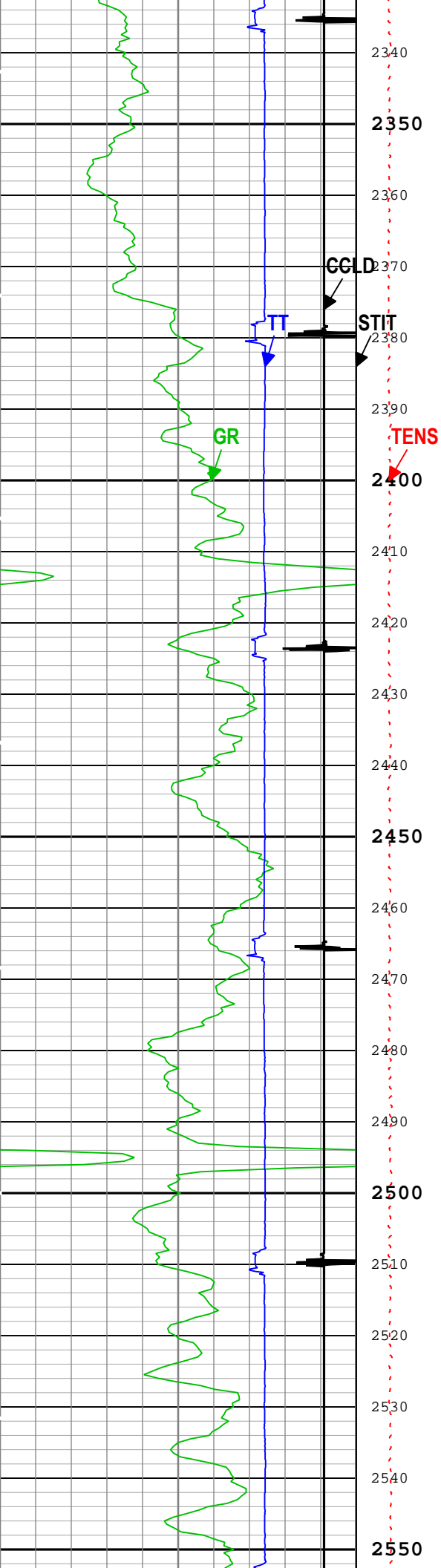
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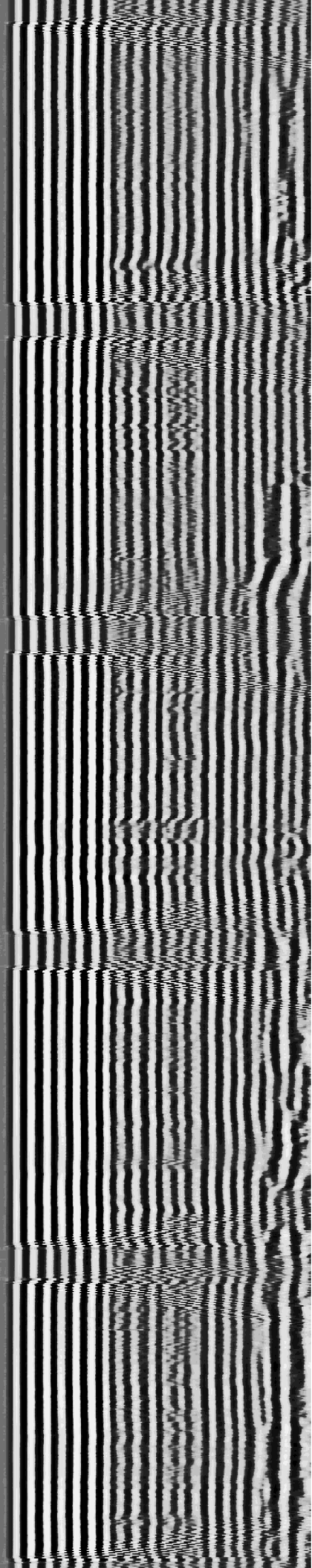
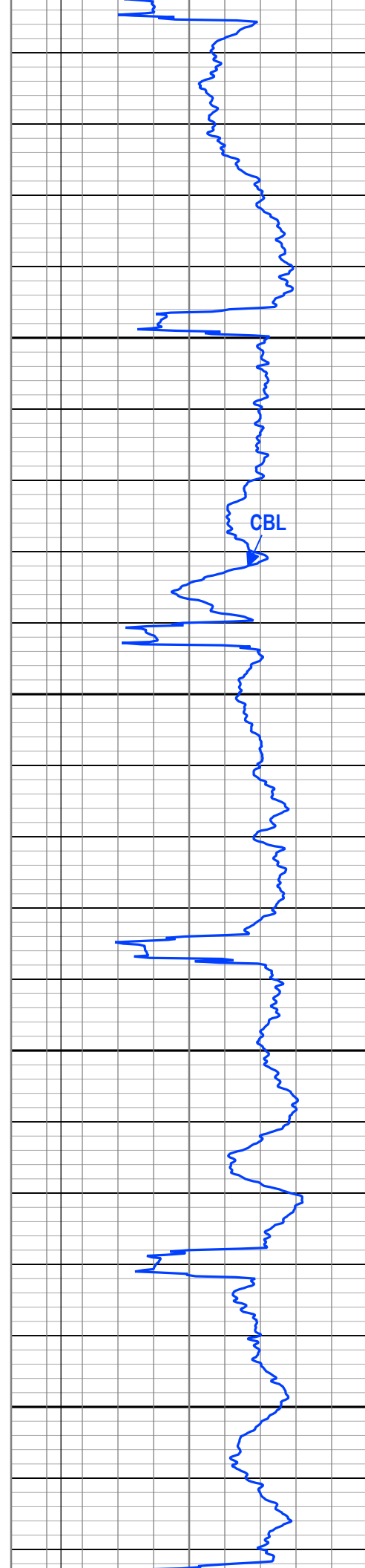
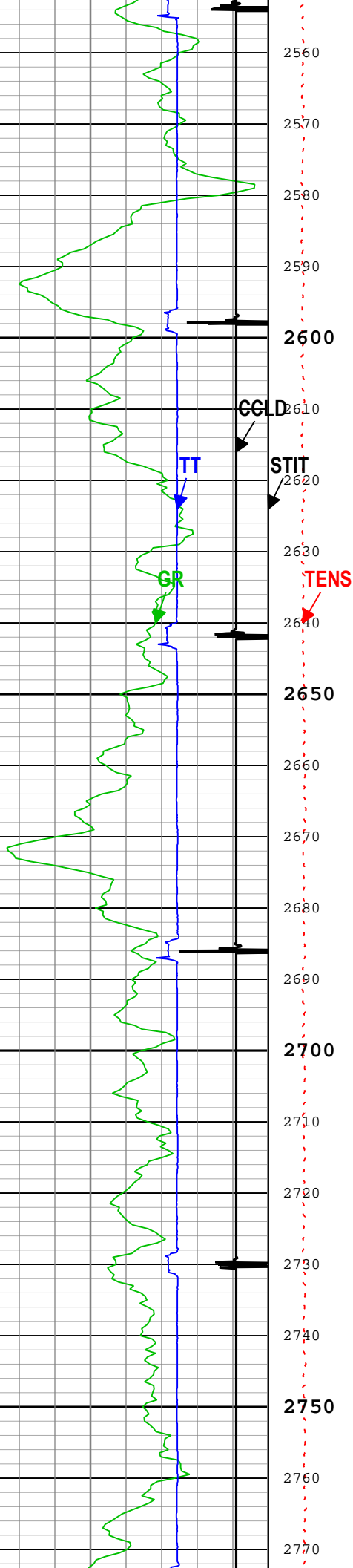
TIME_1900 - Time Marked every 60.00 (s)

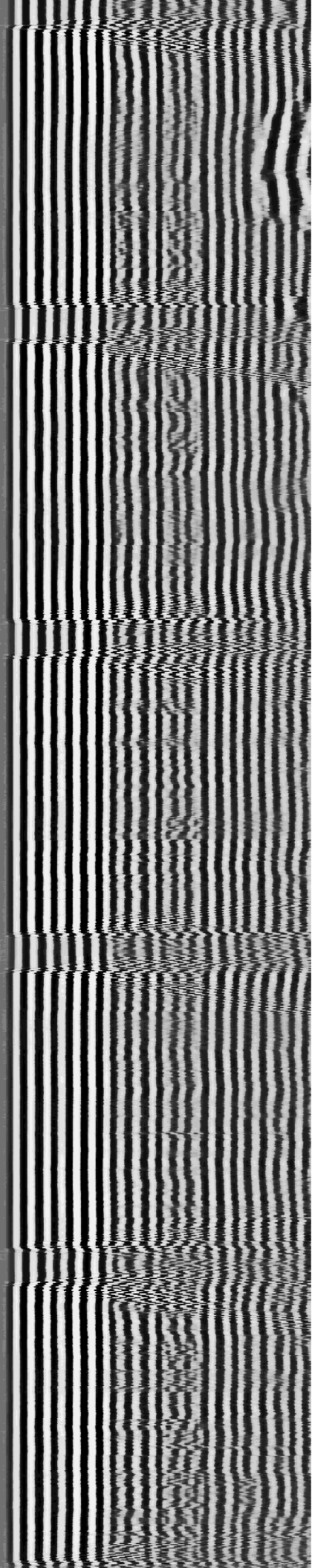
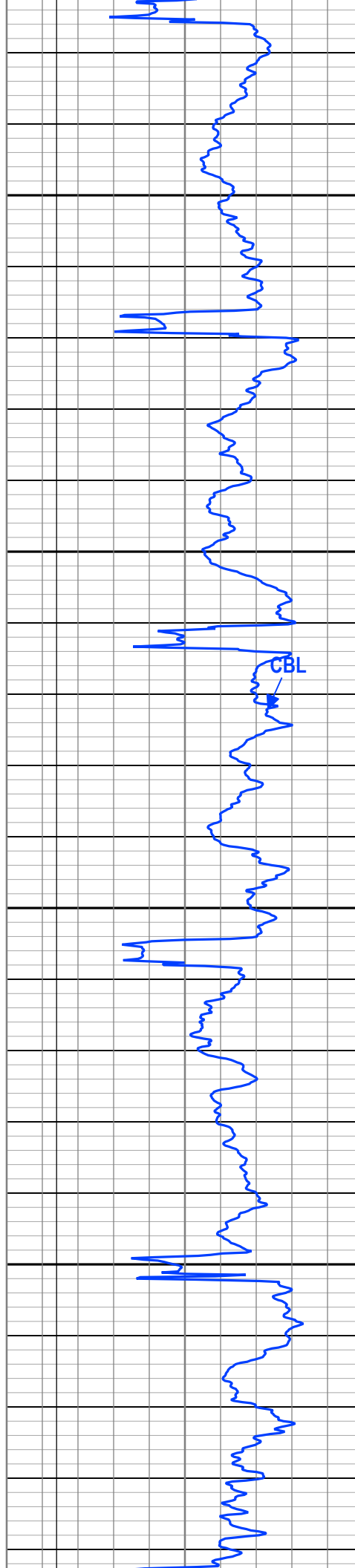
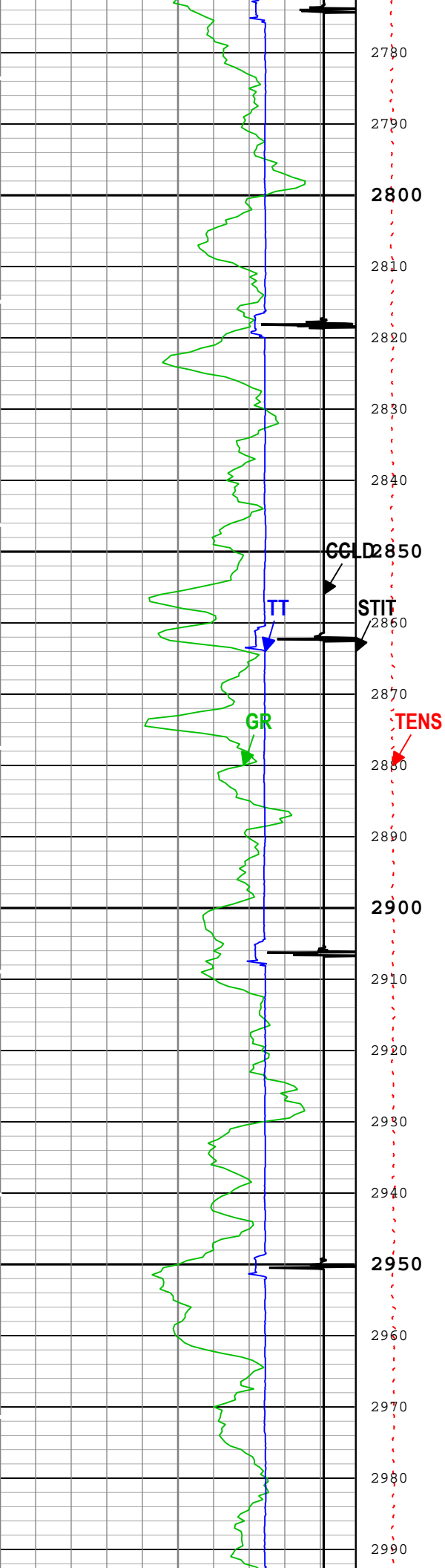


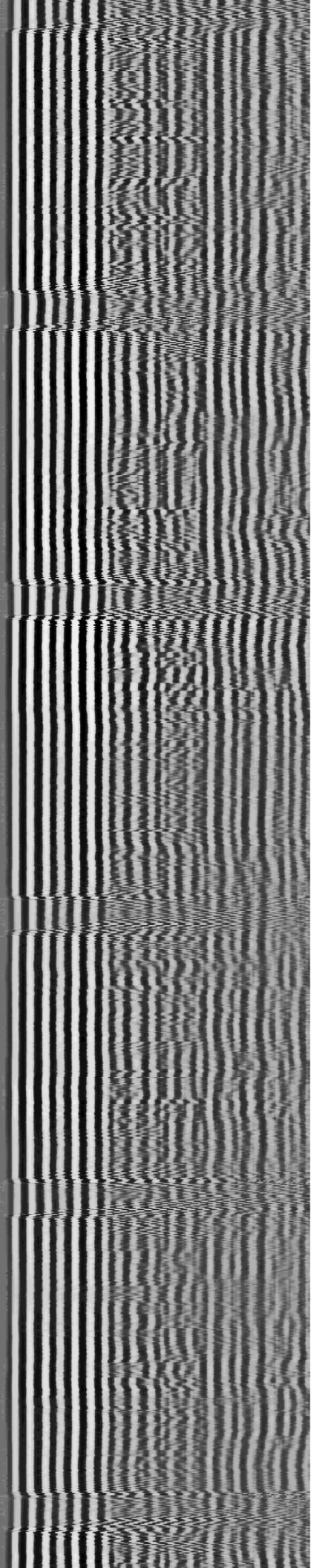
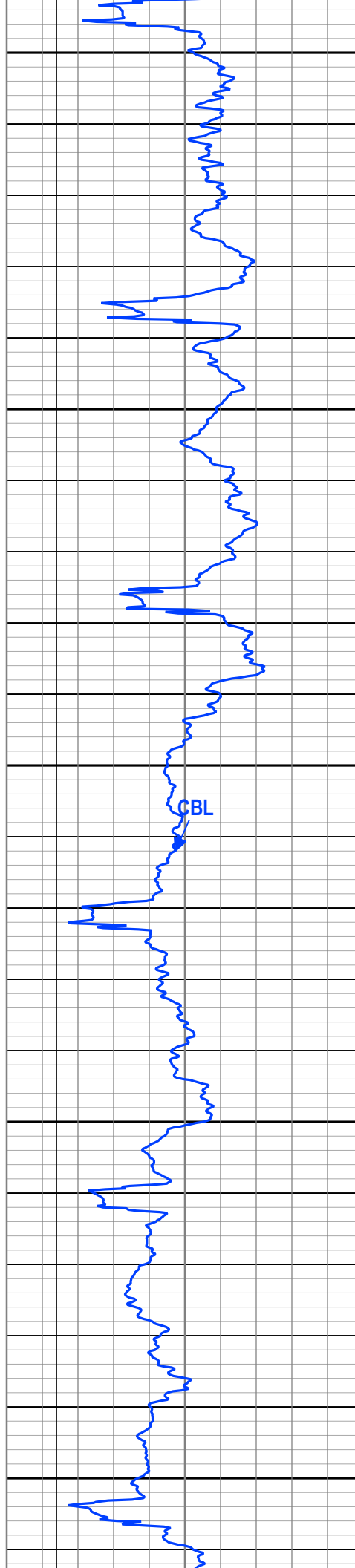
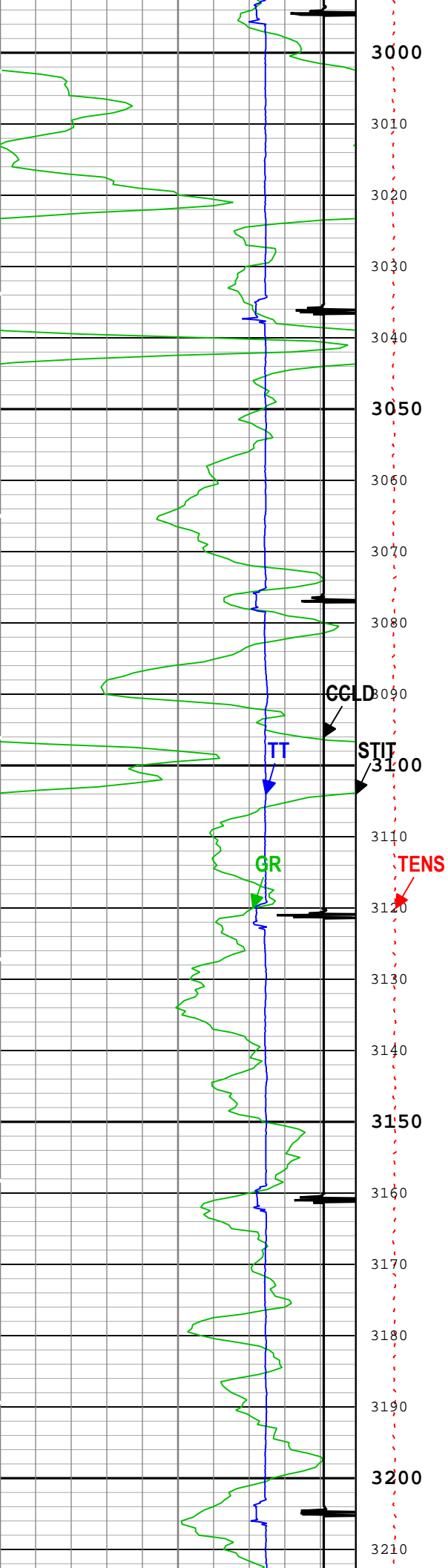


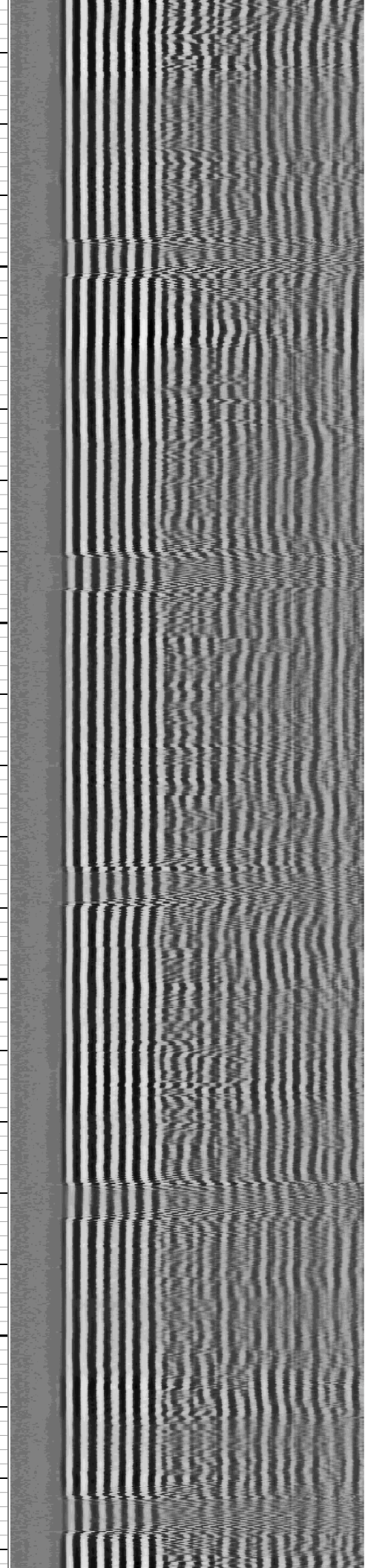
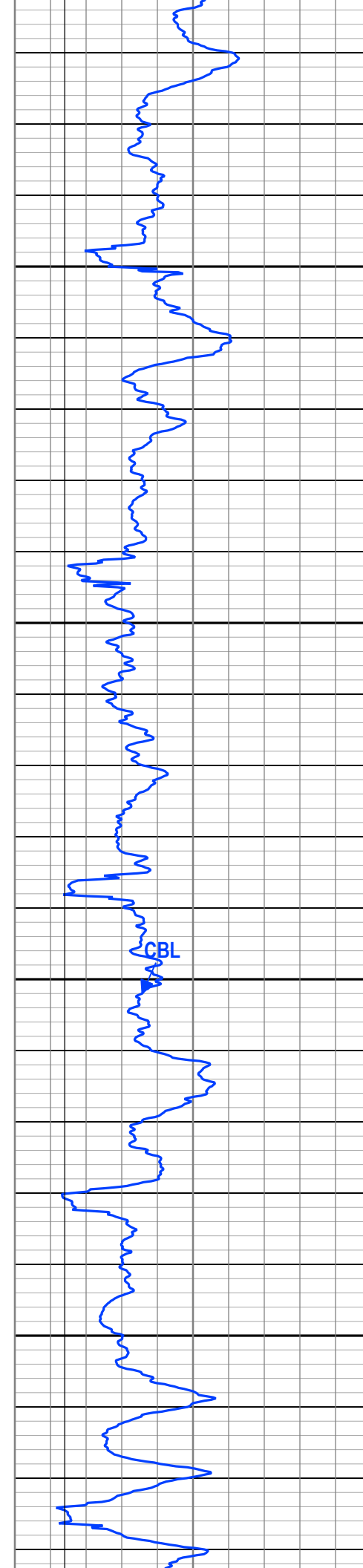
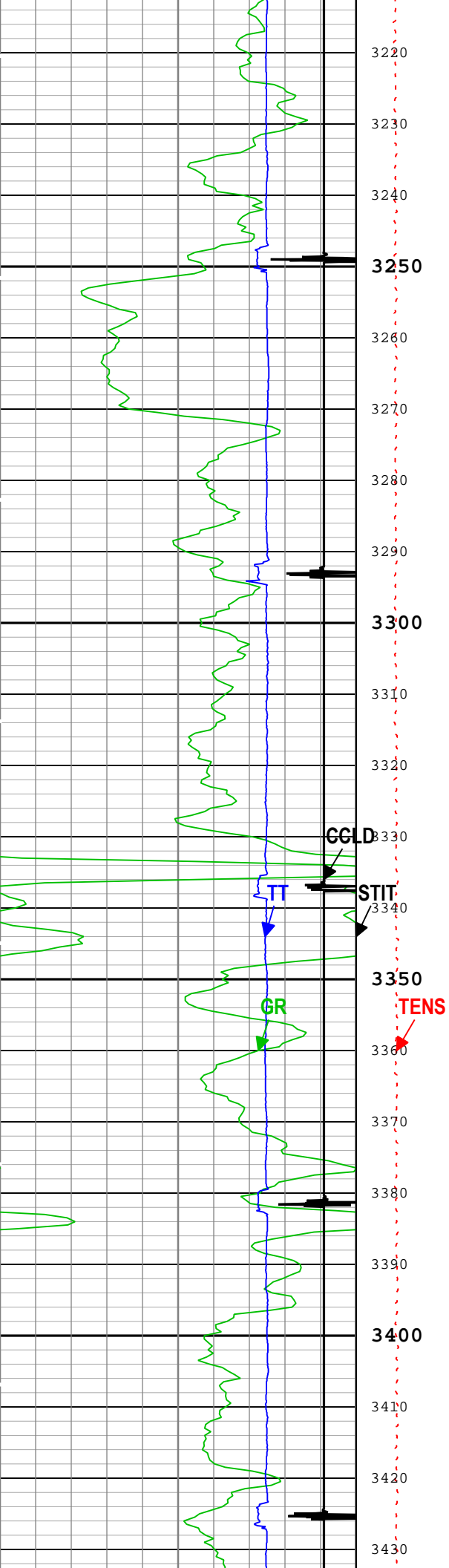


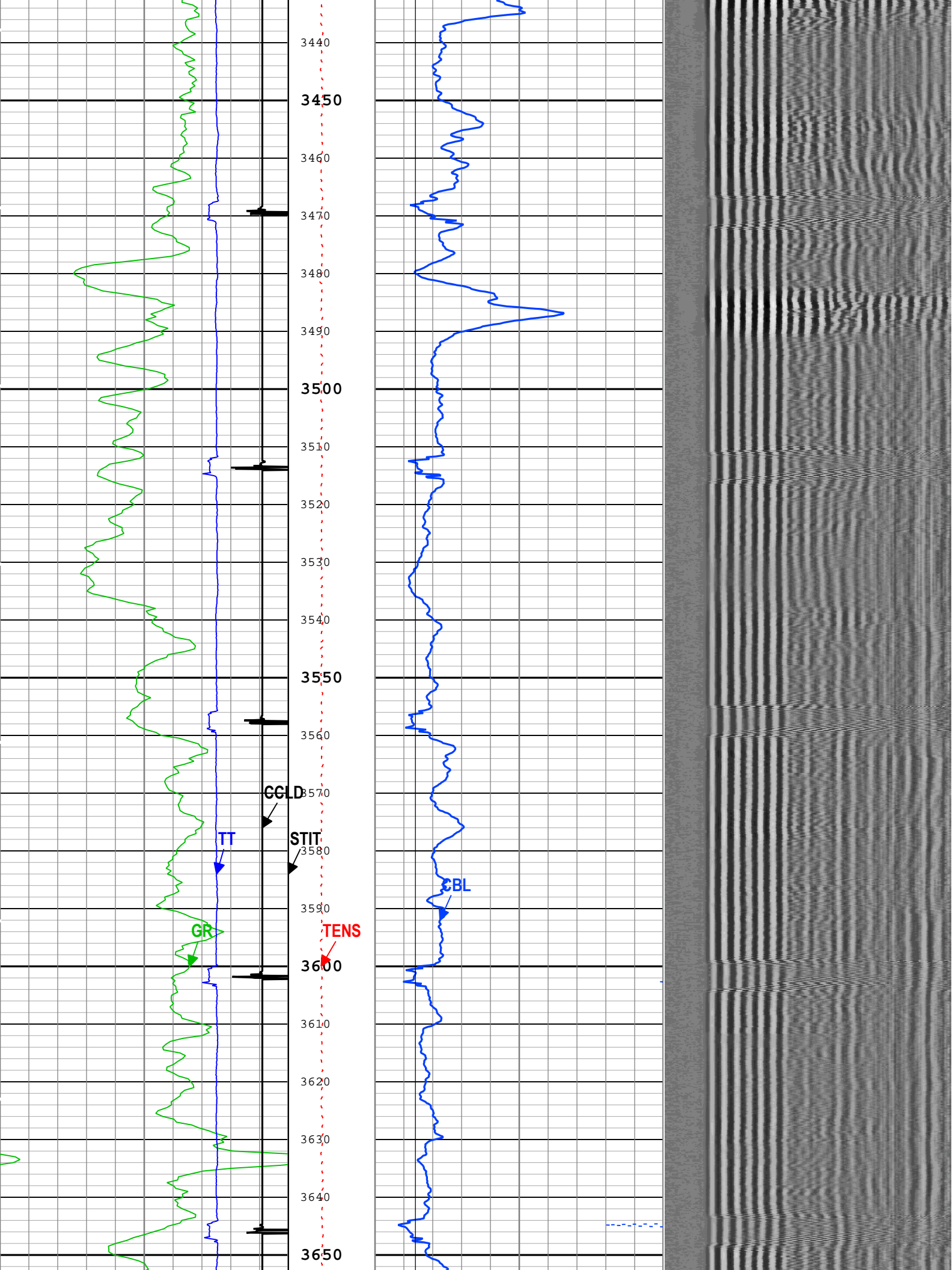


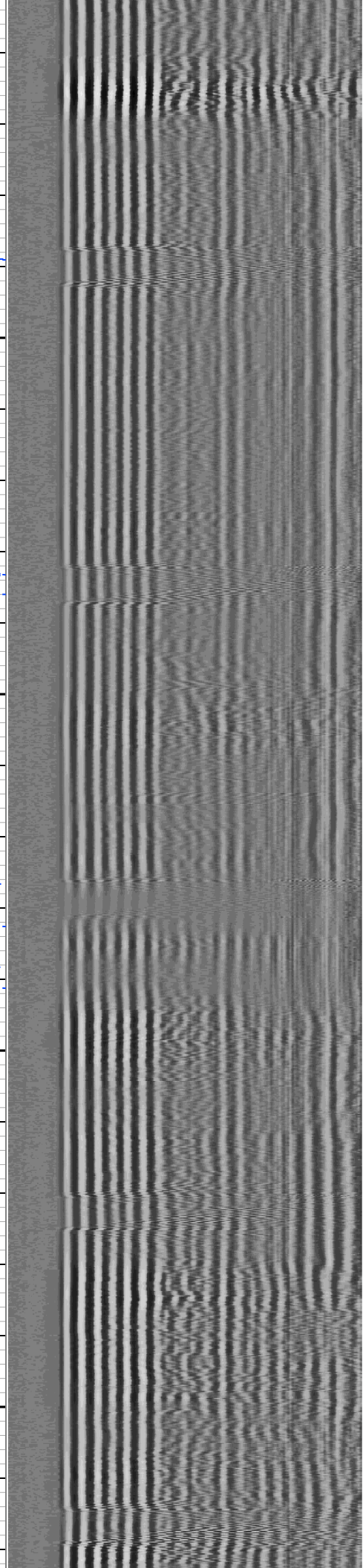
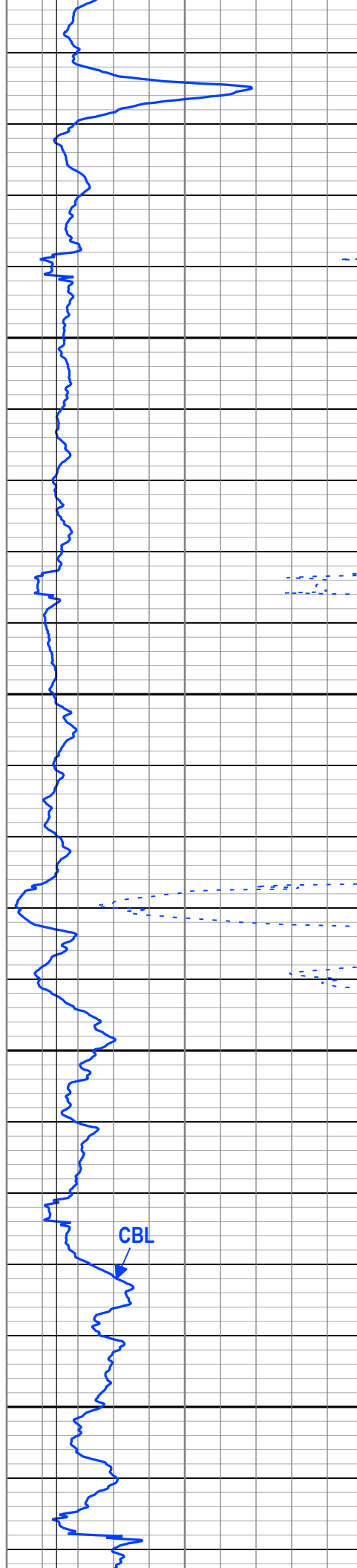
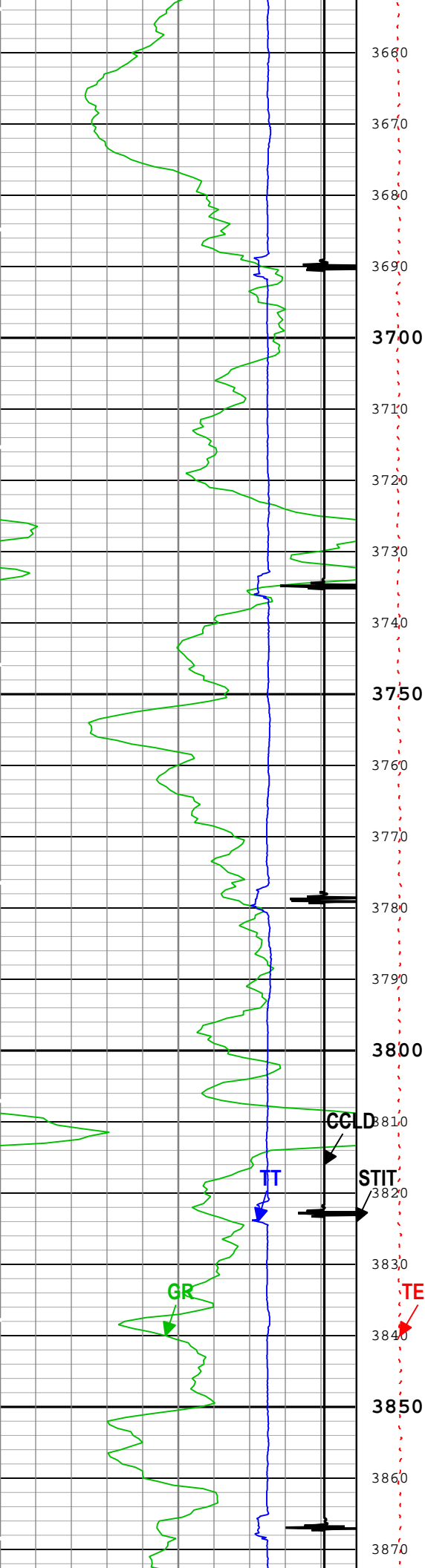


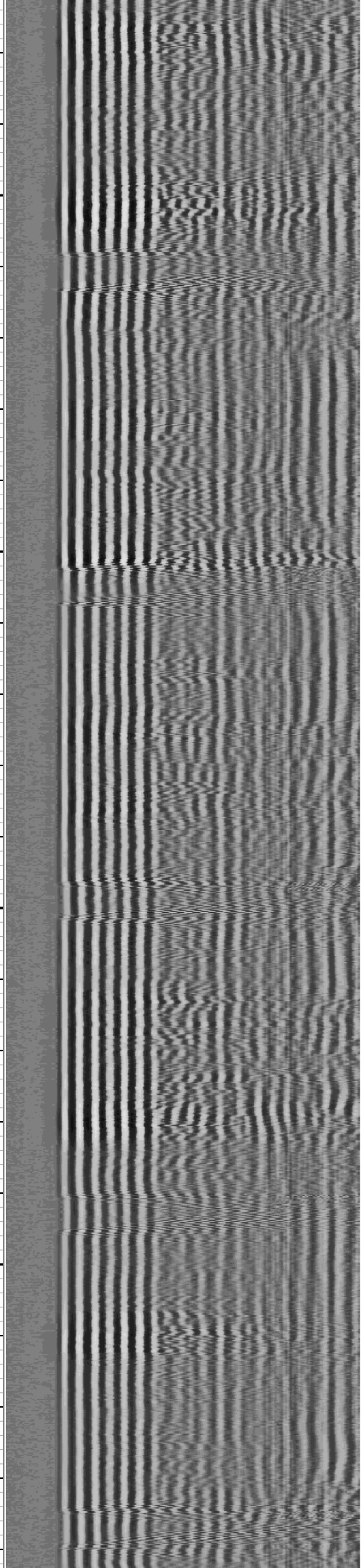
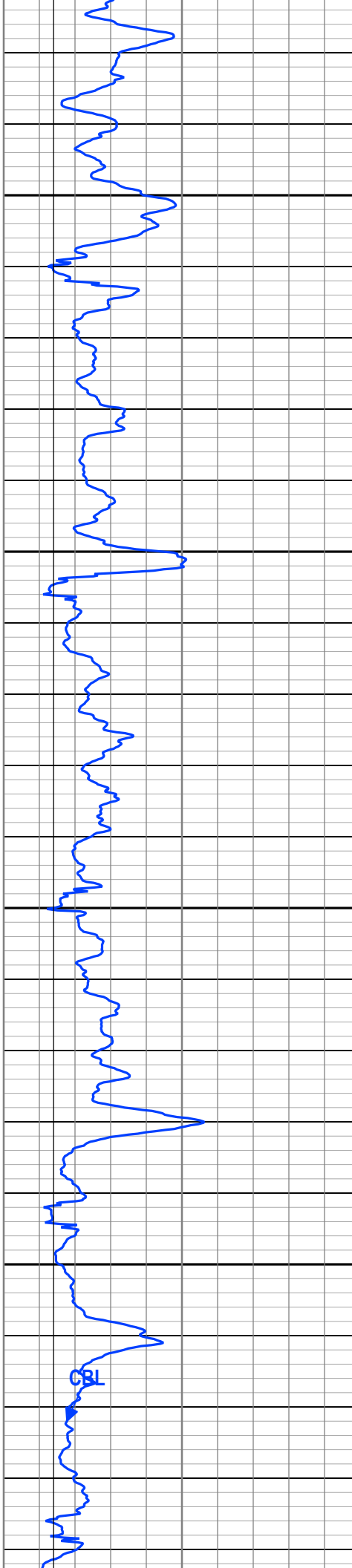
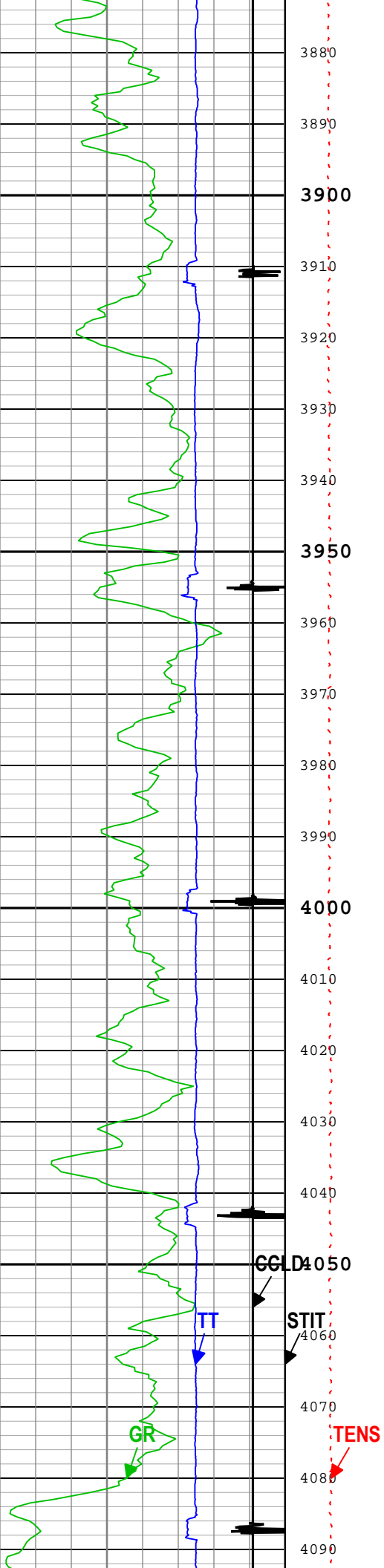


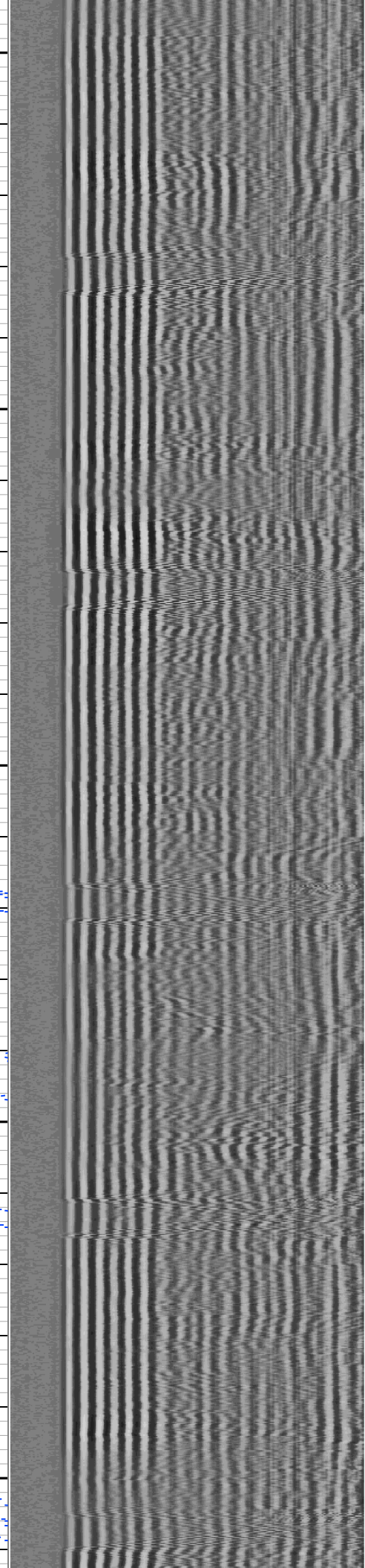
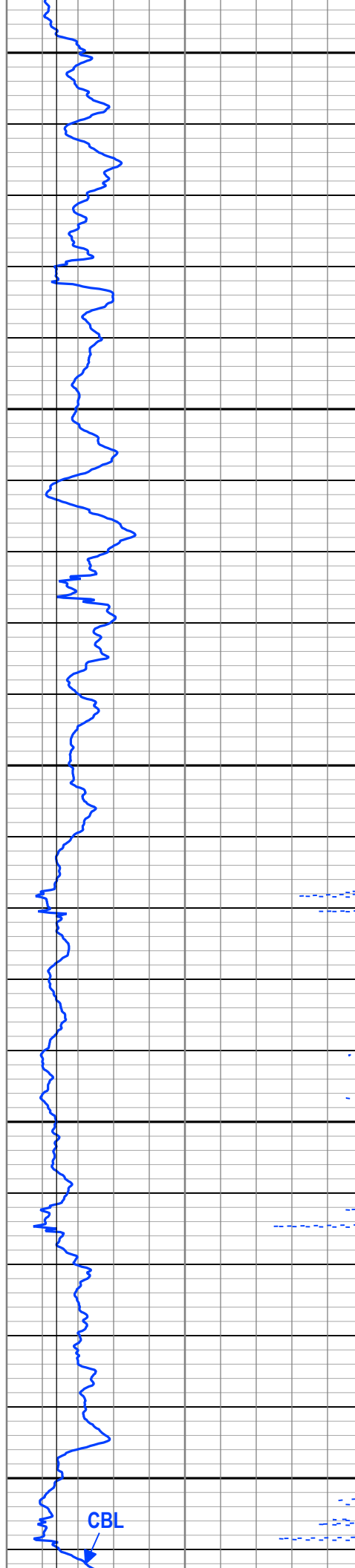
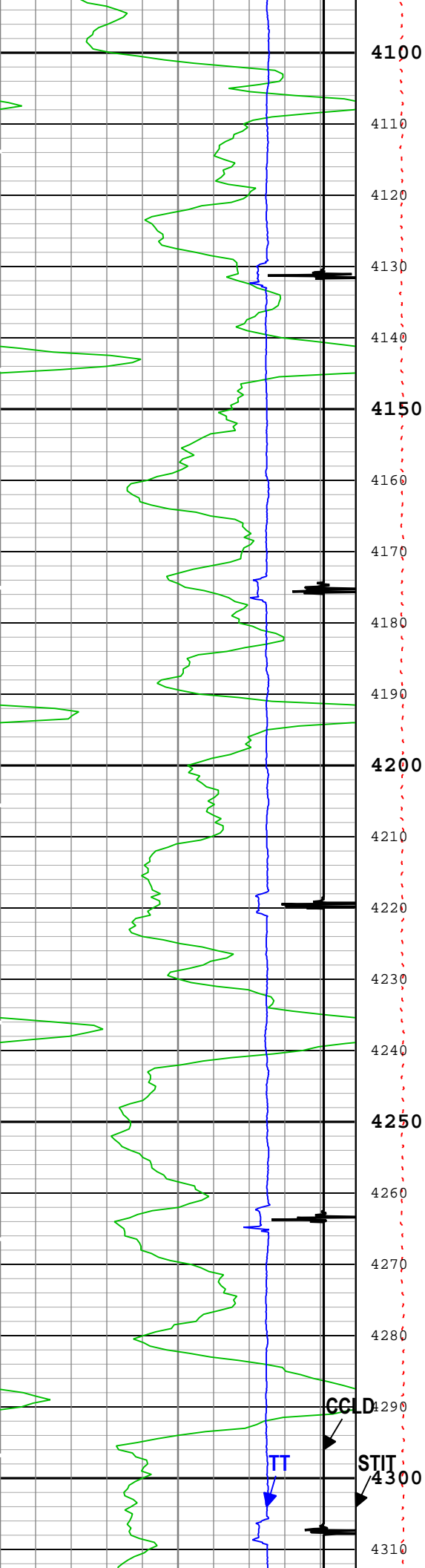


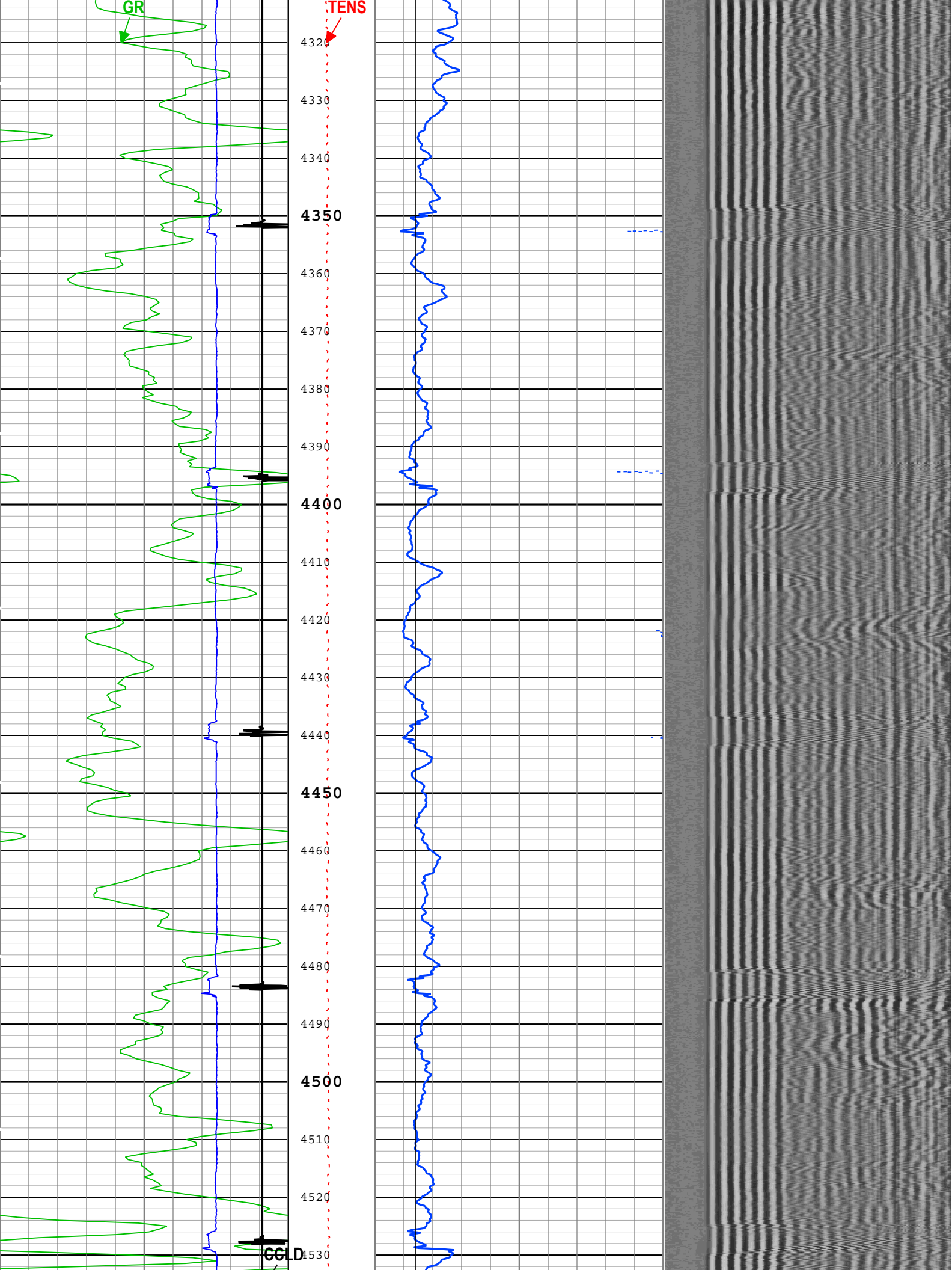


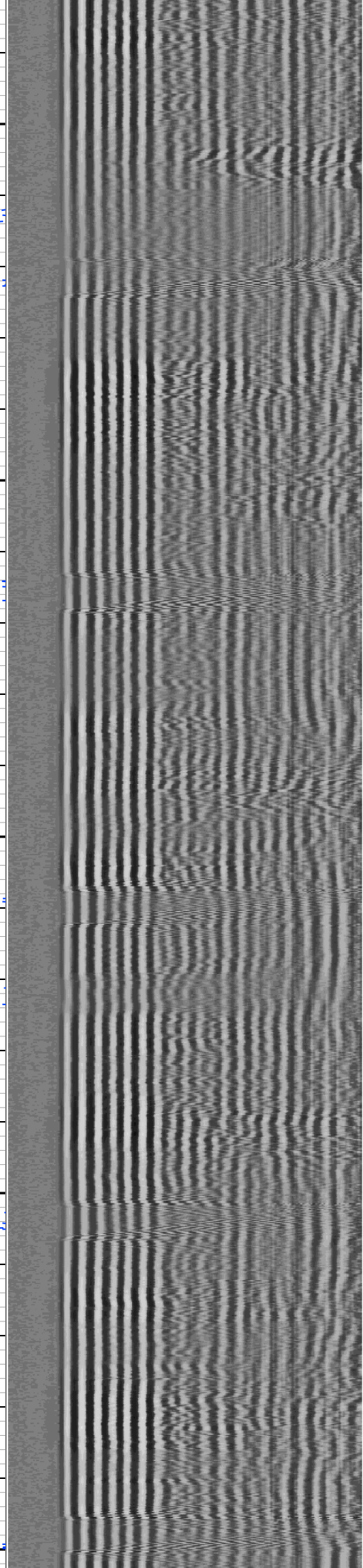
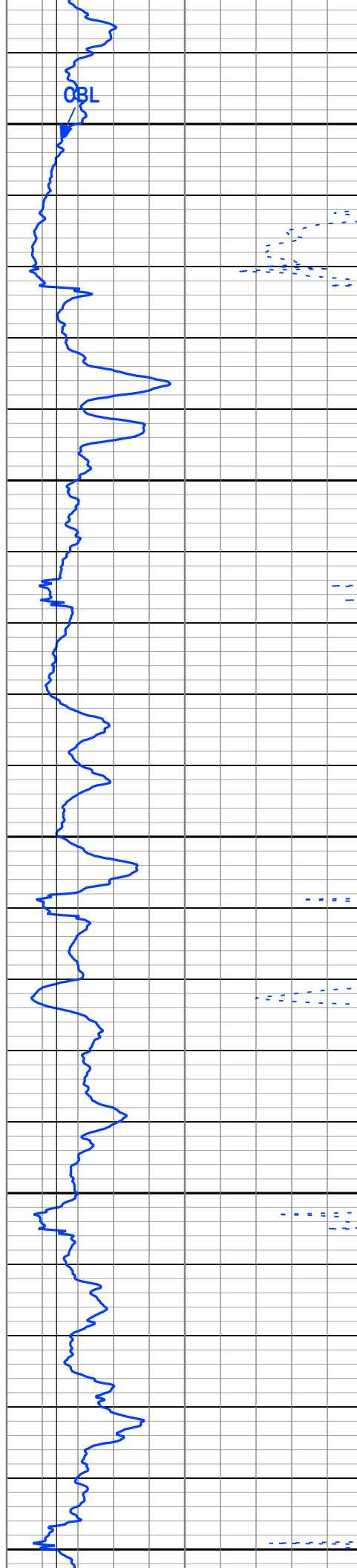
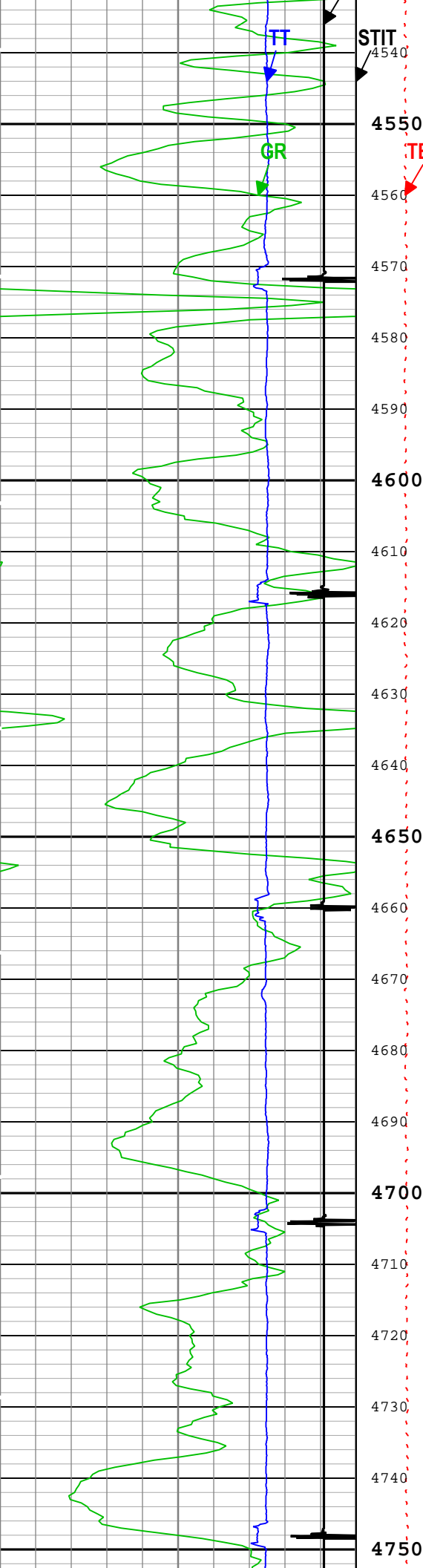


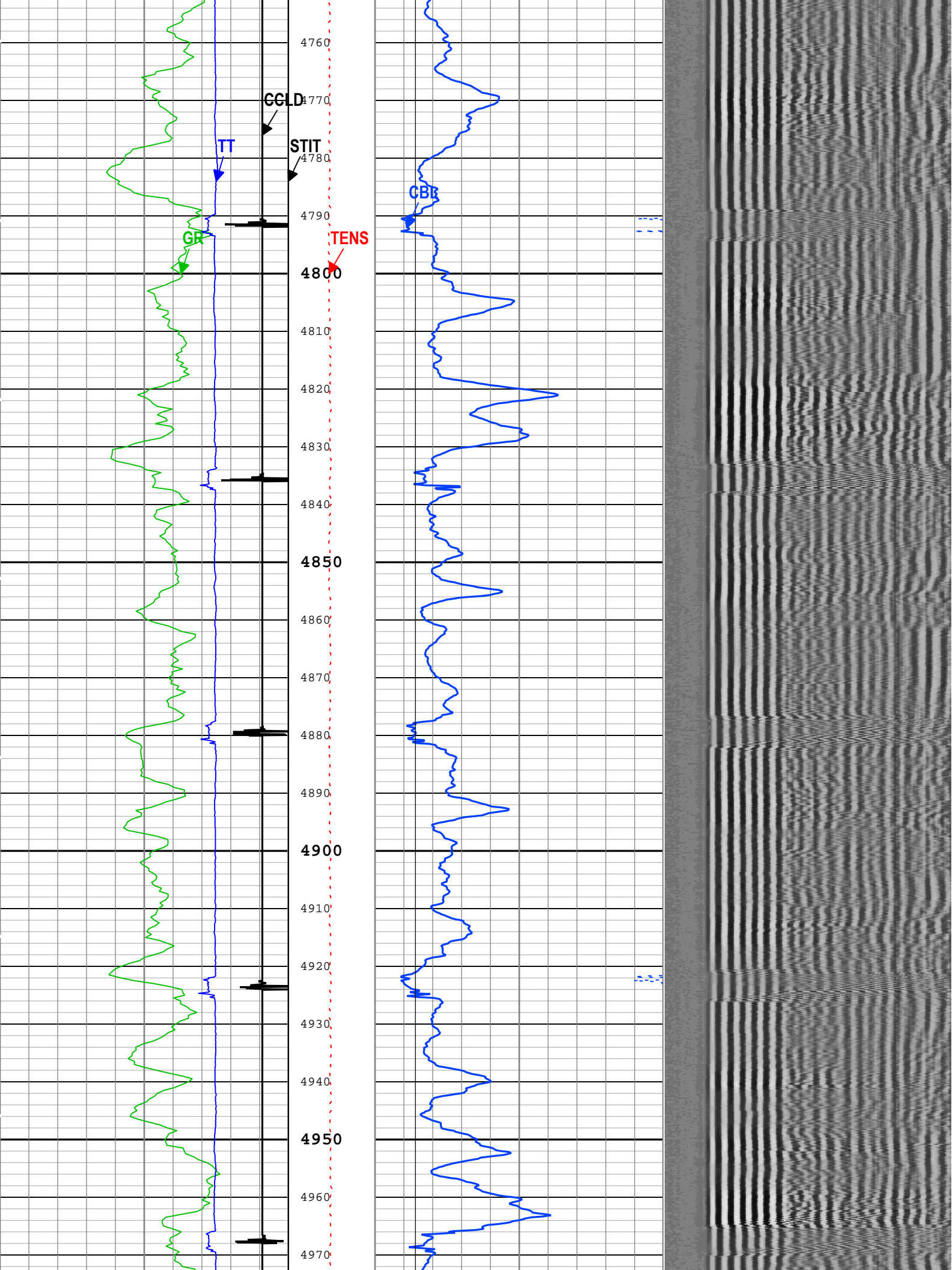


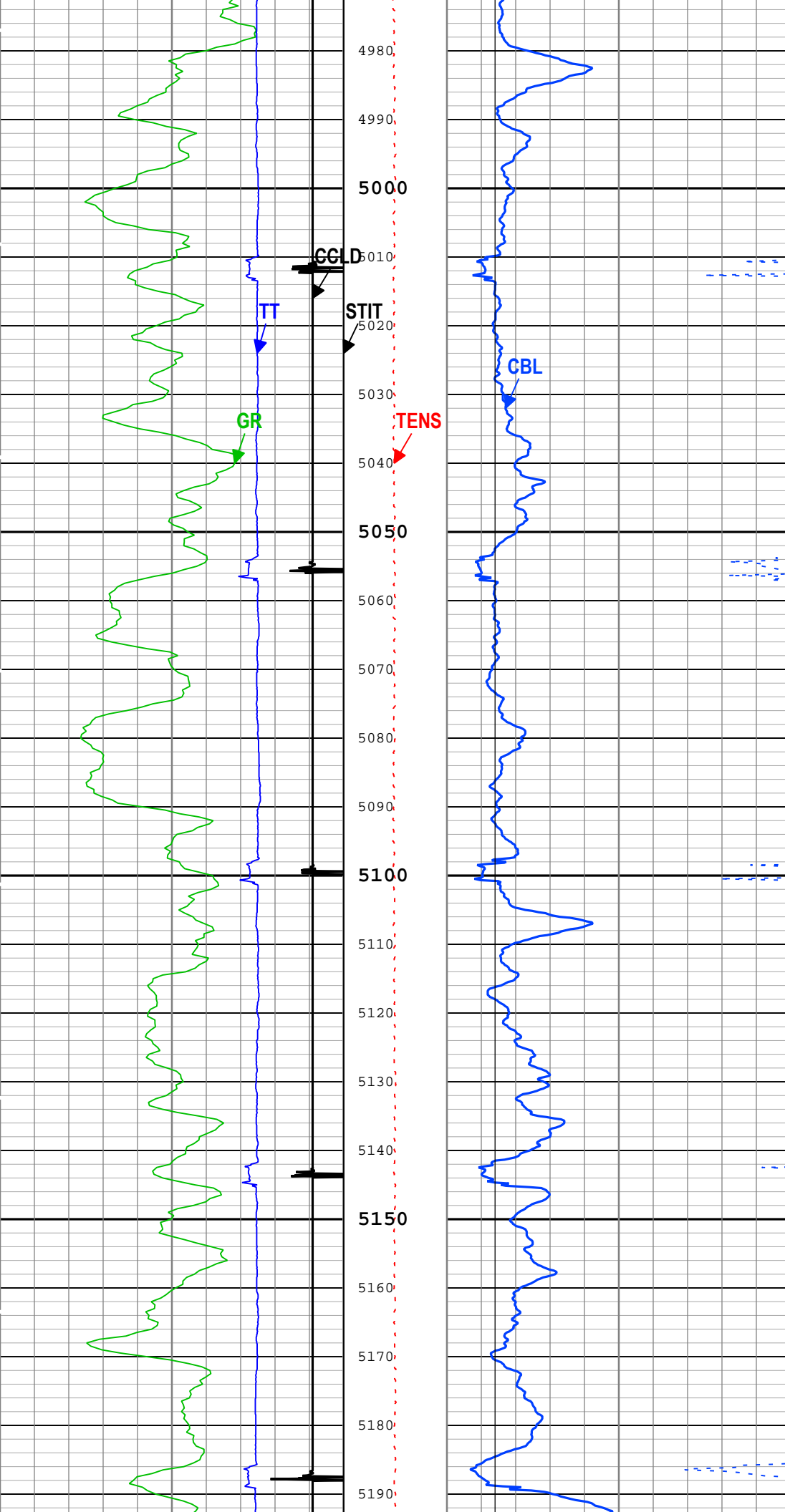


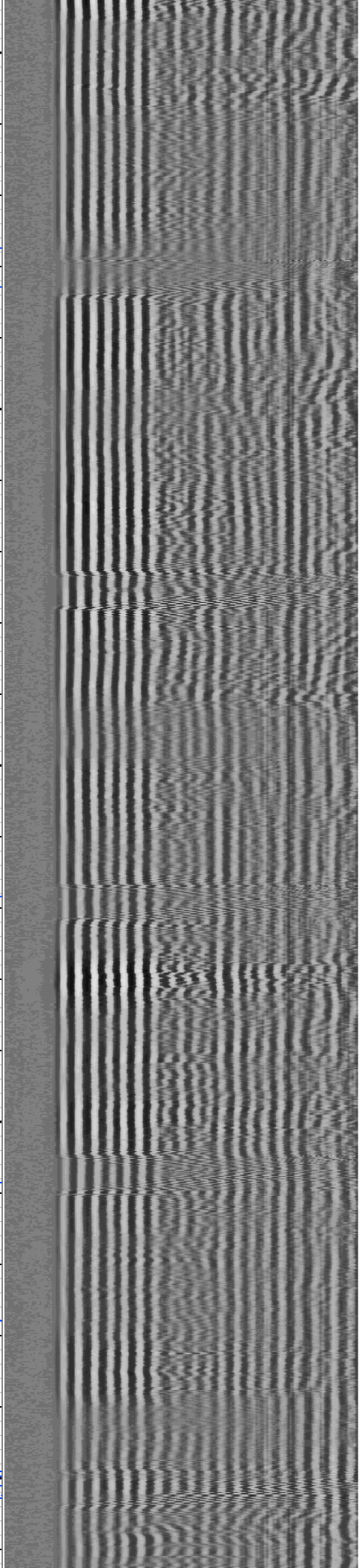
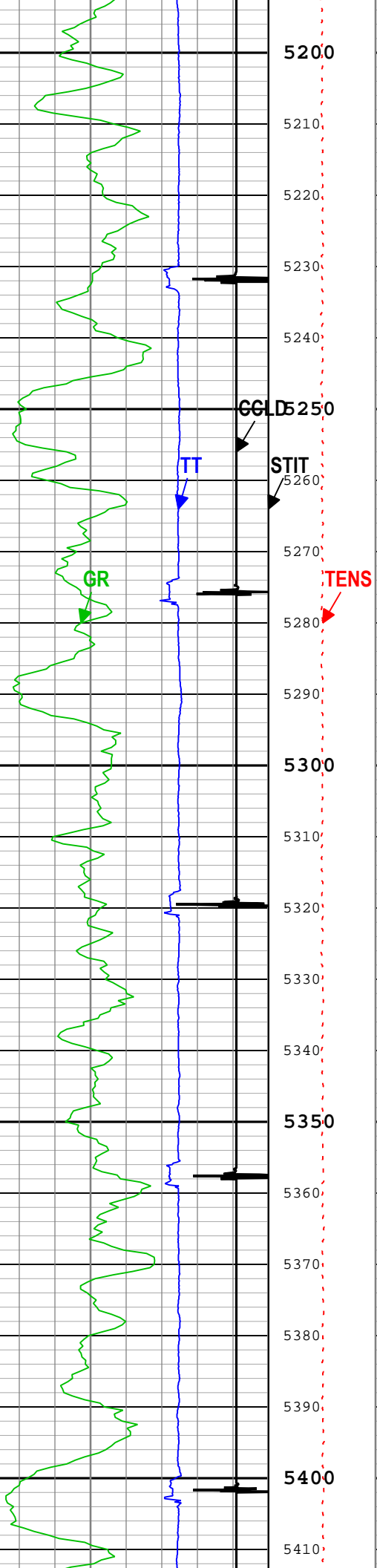


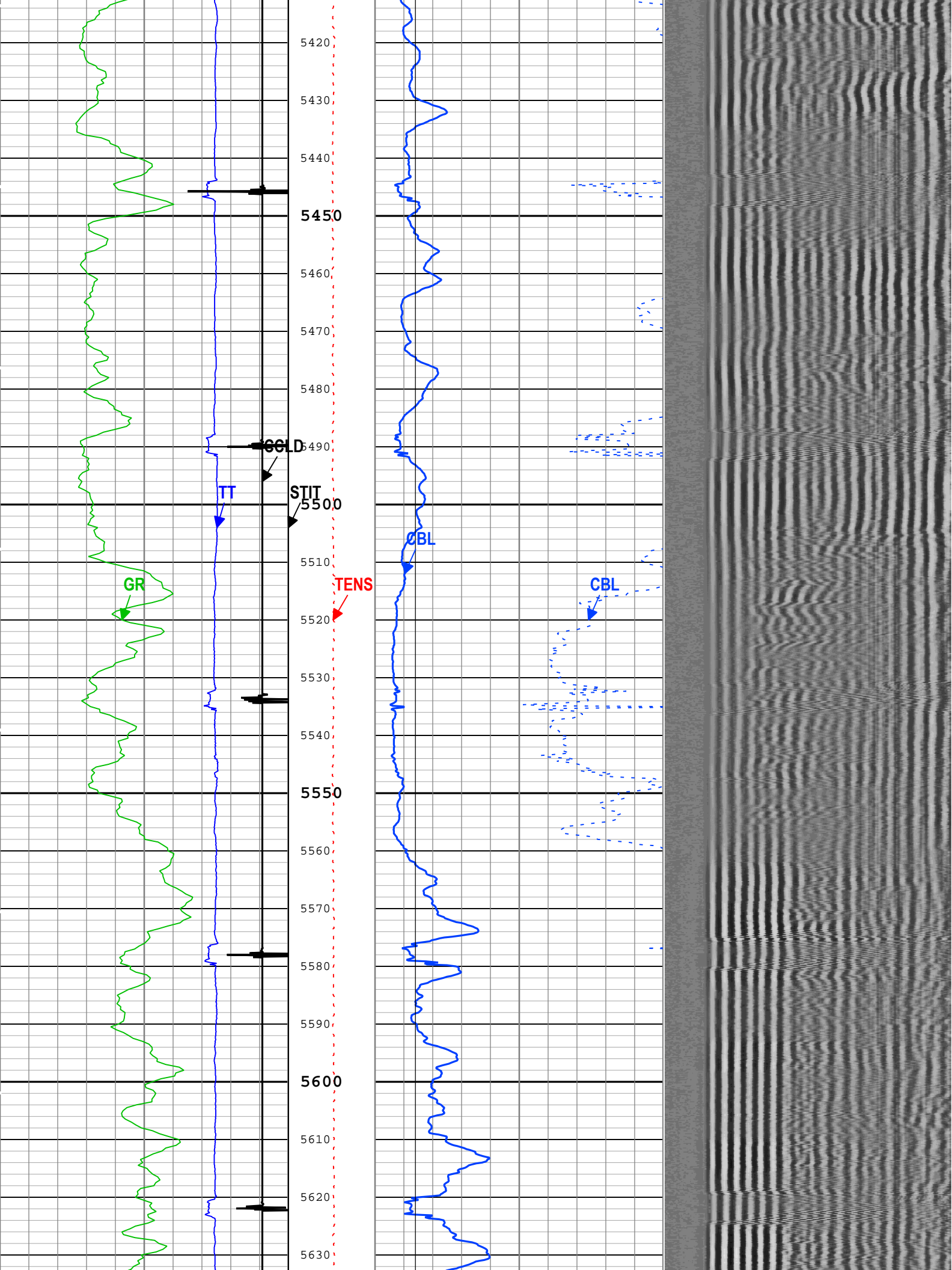


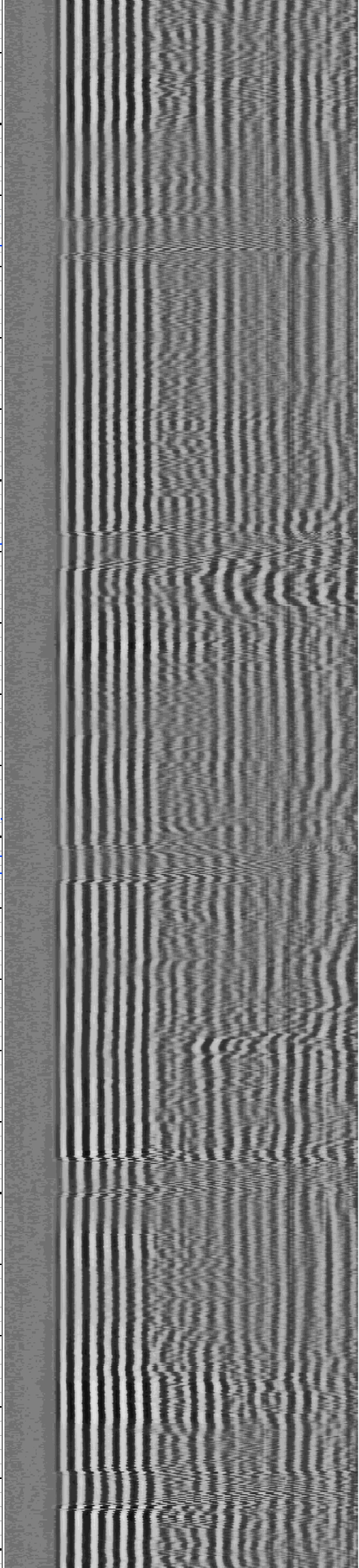
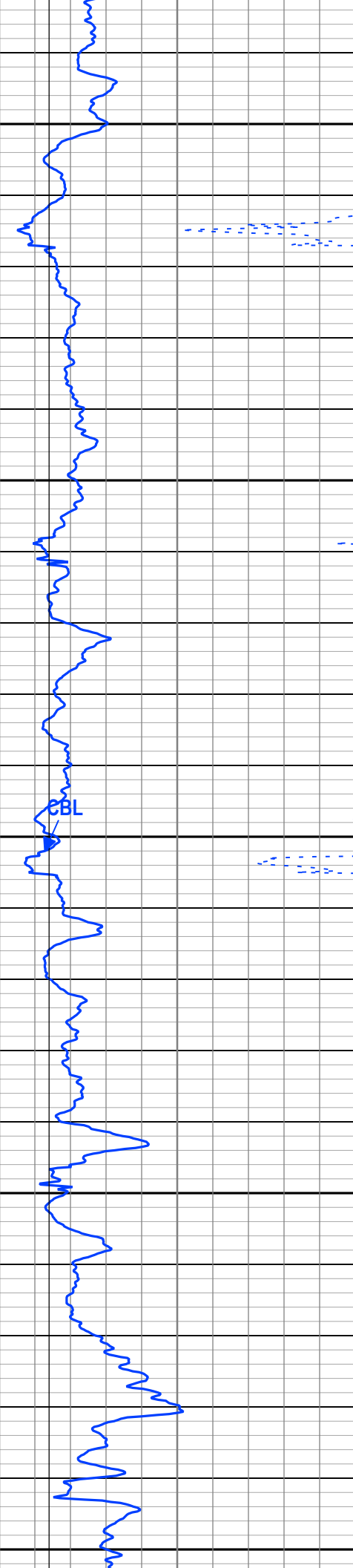
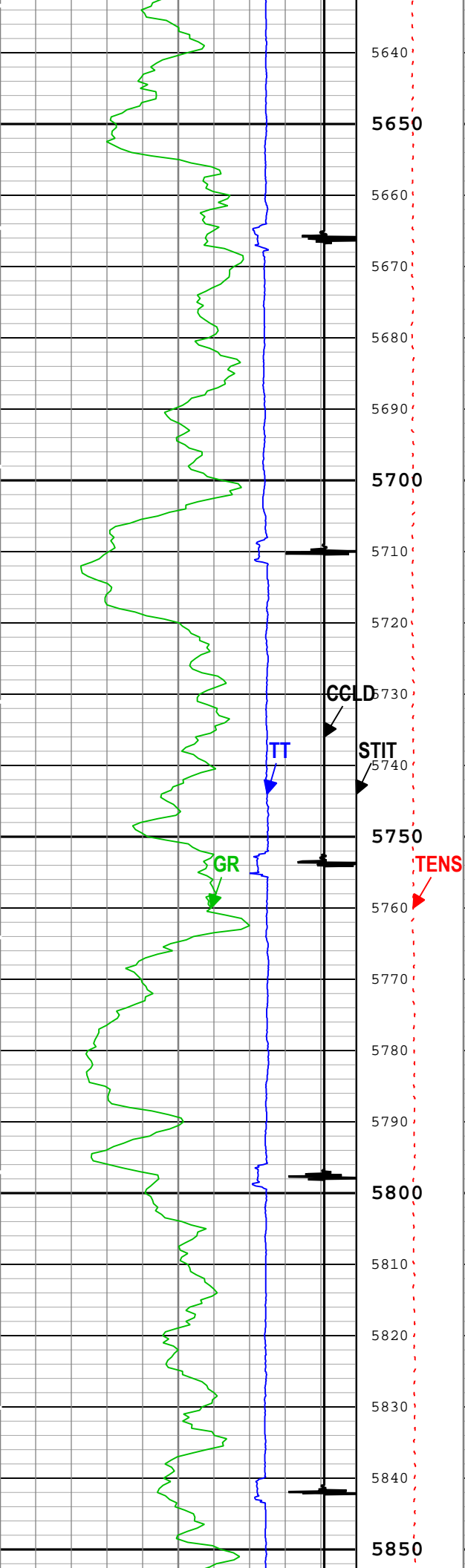


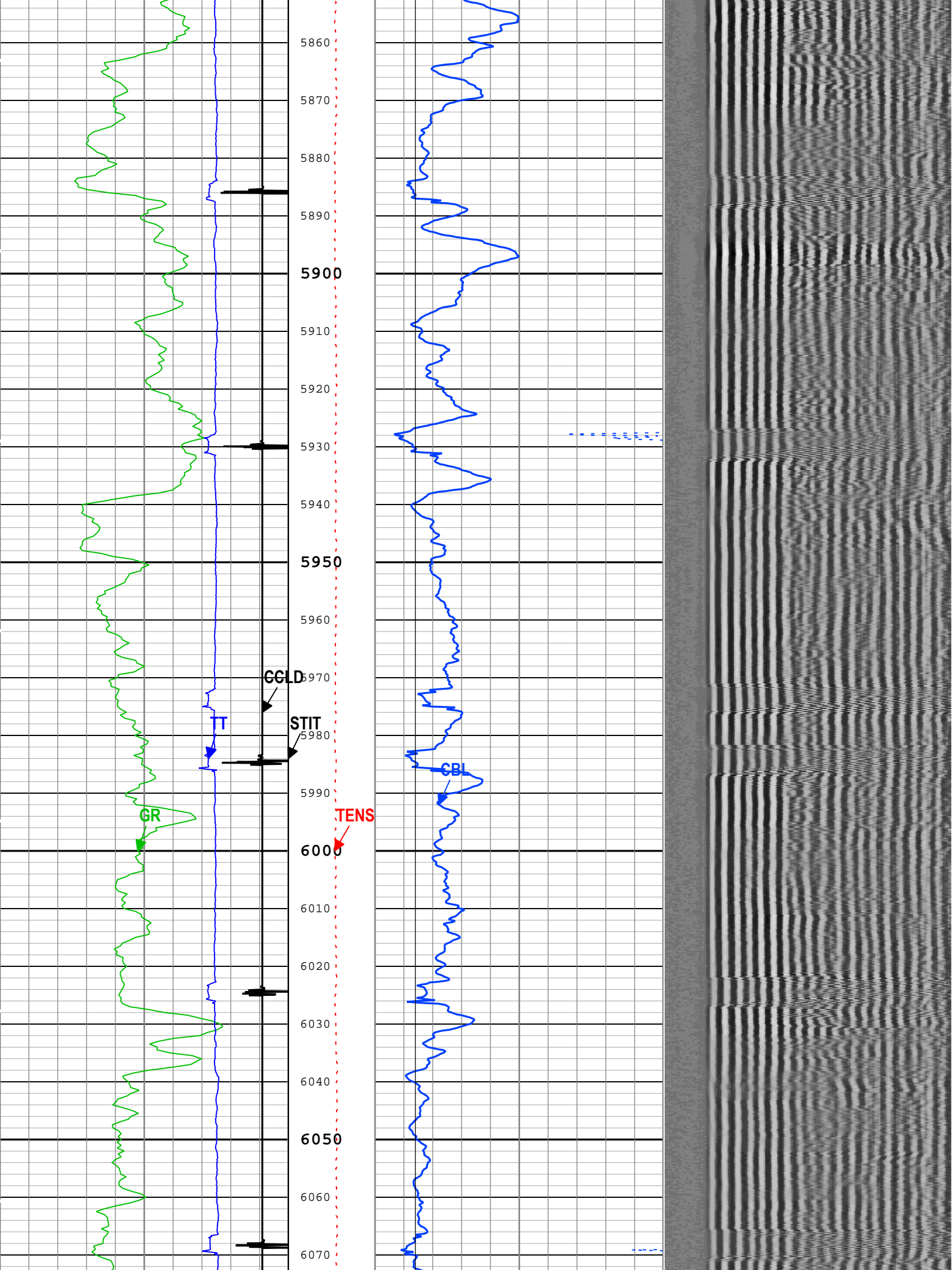


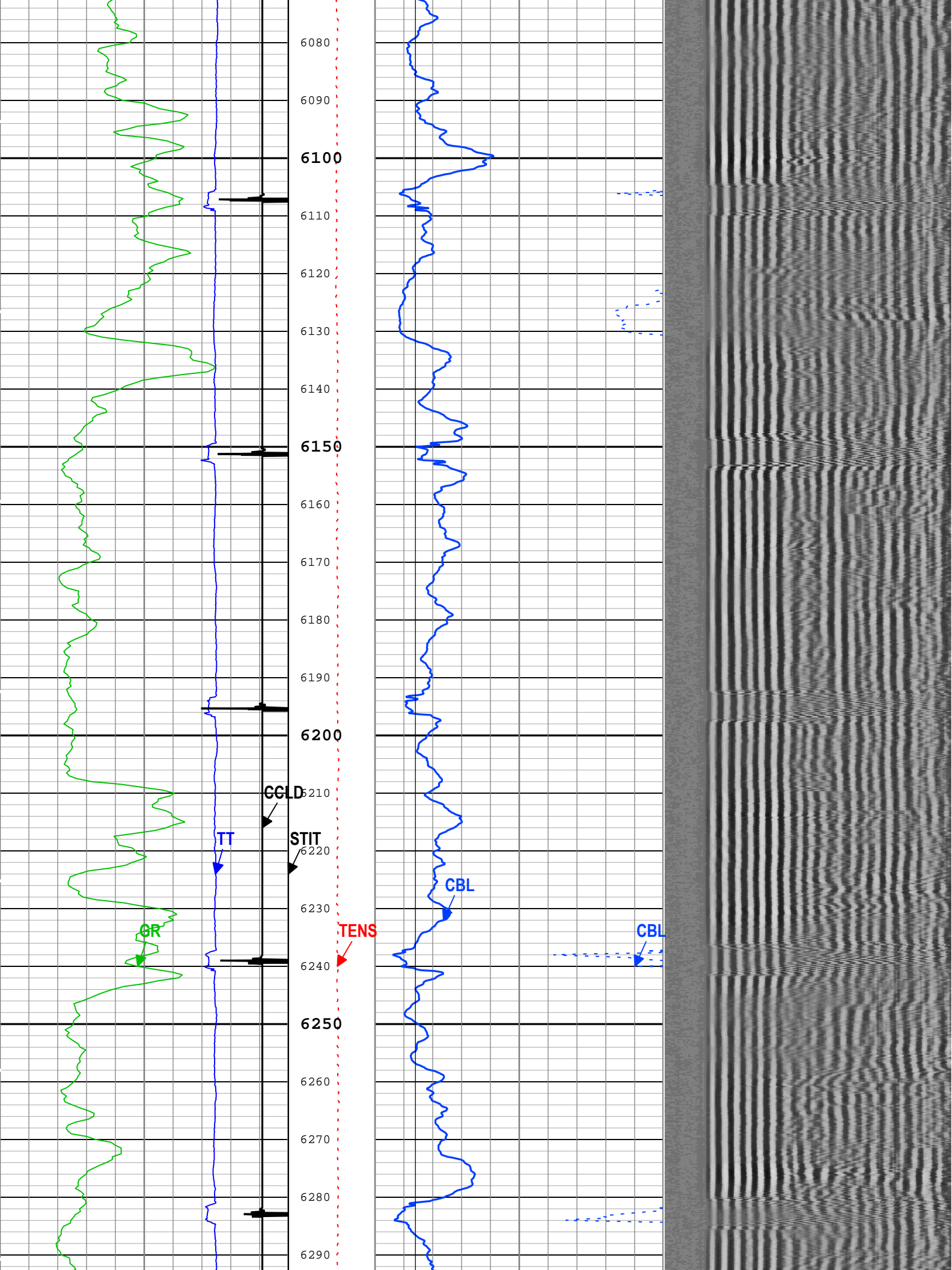


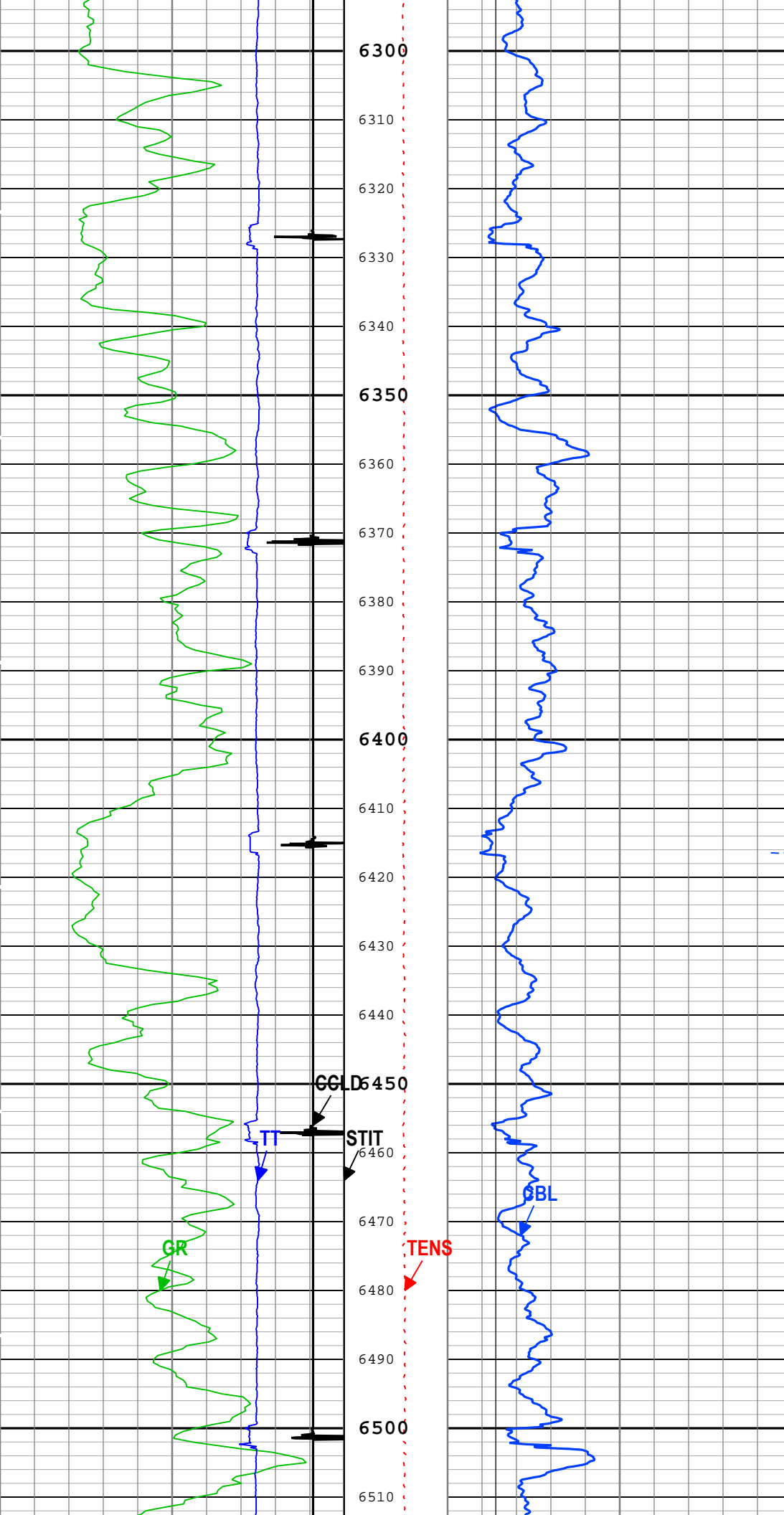


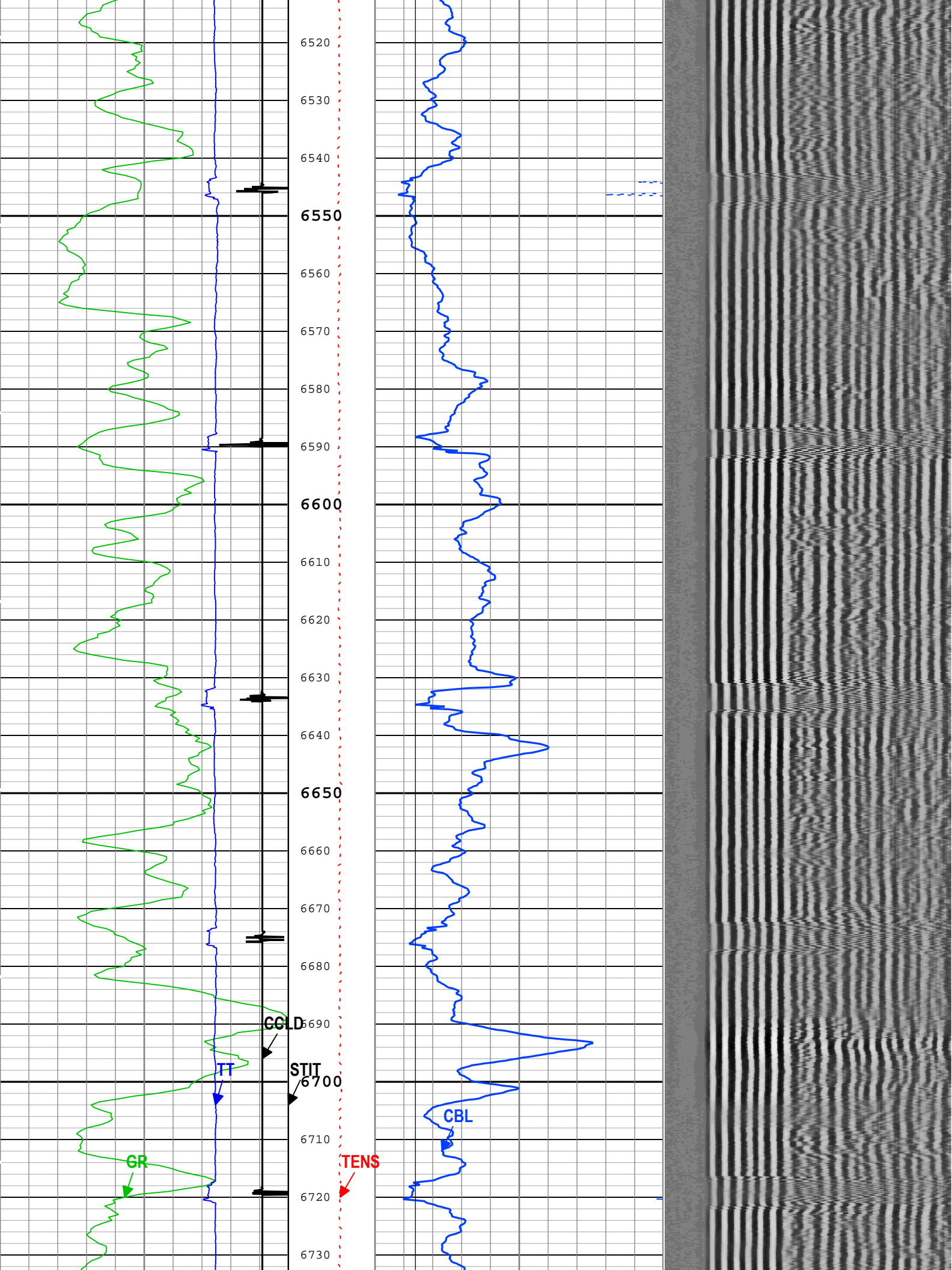


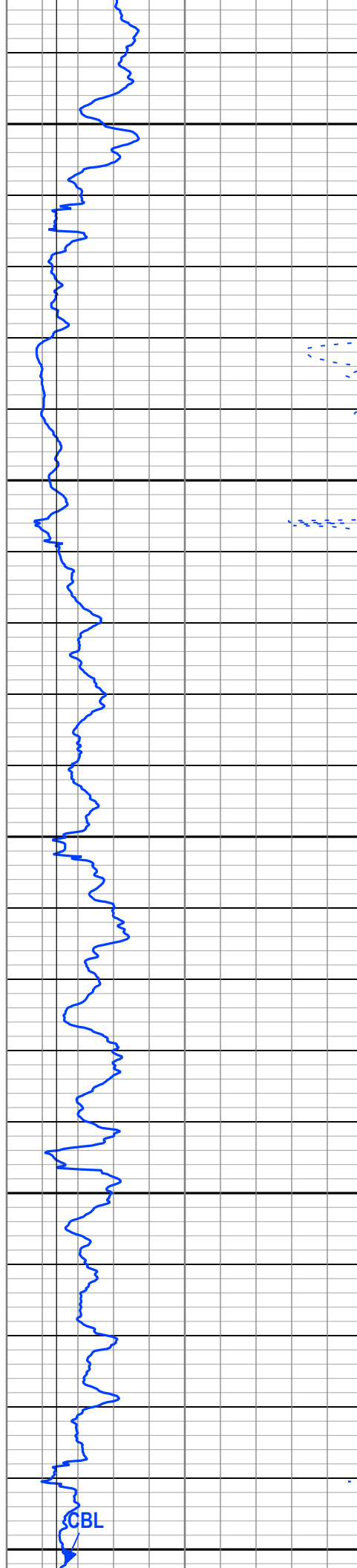
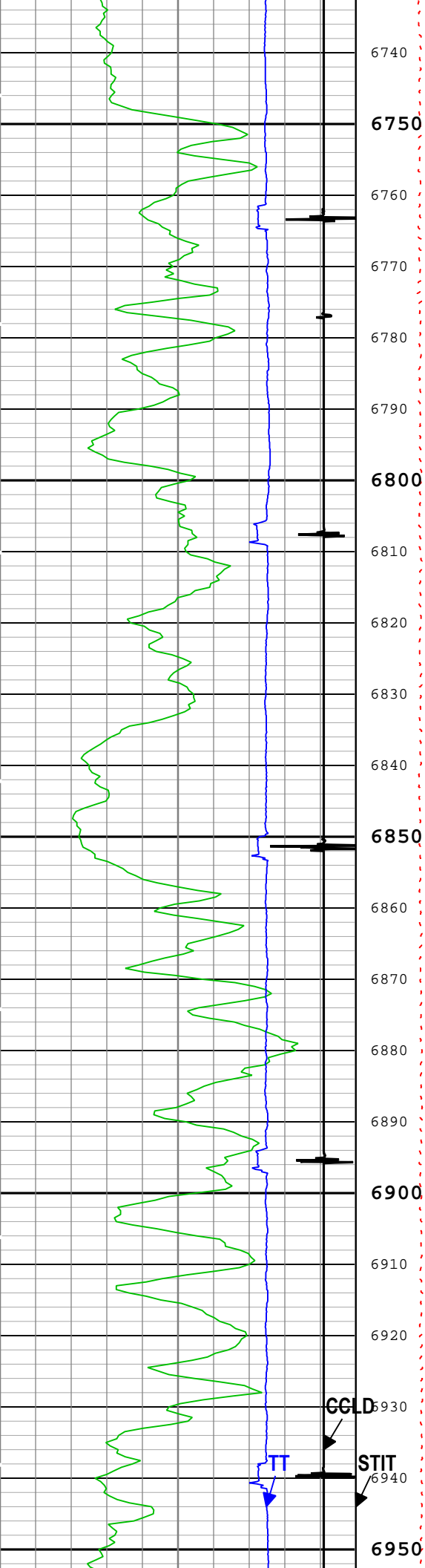


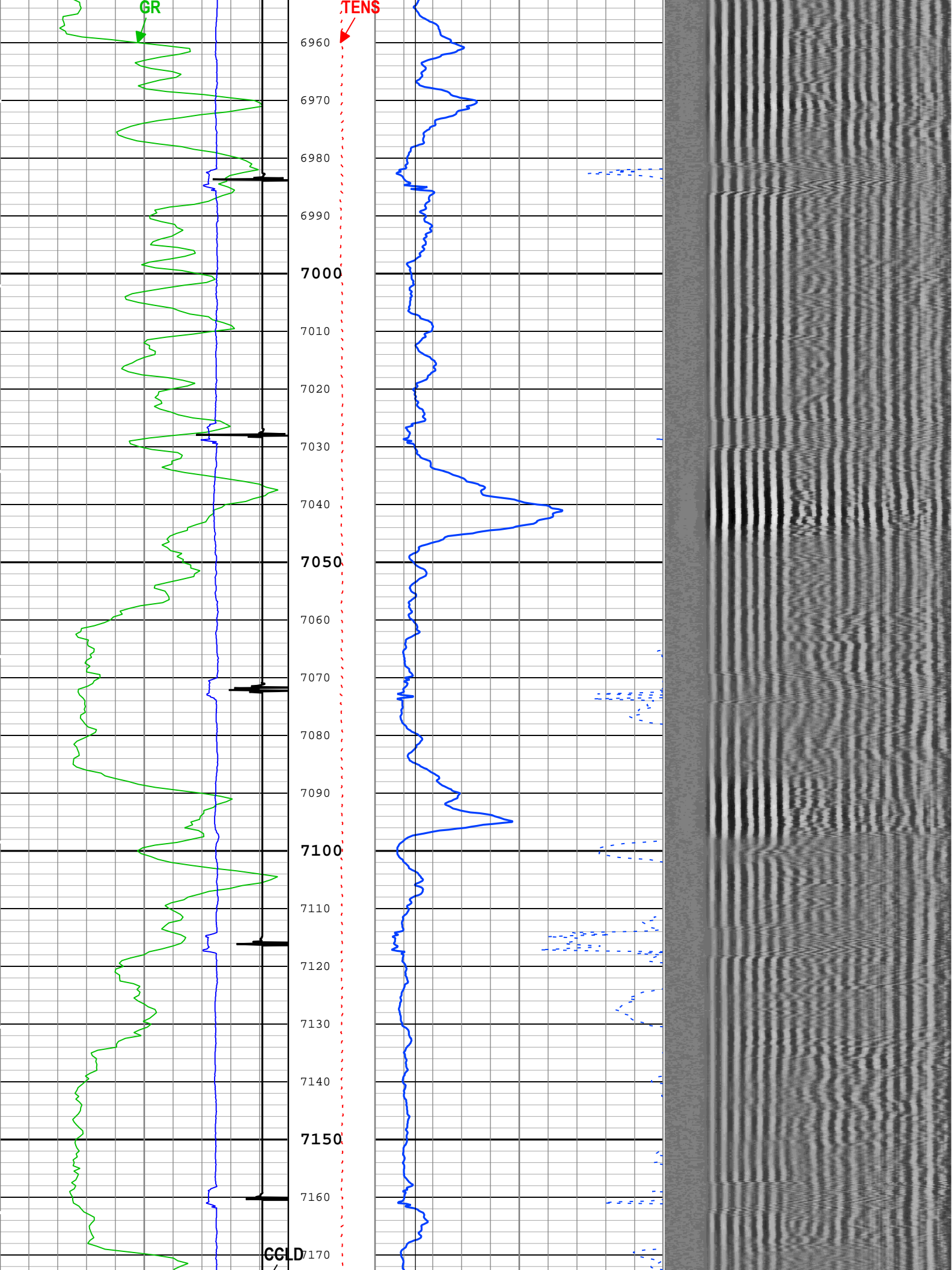


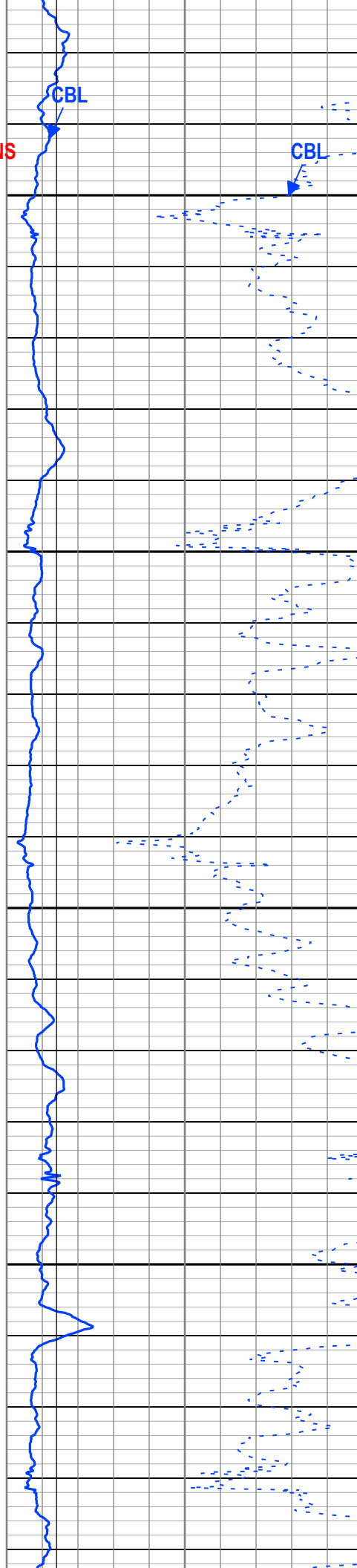
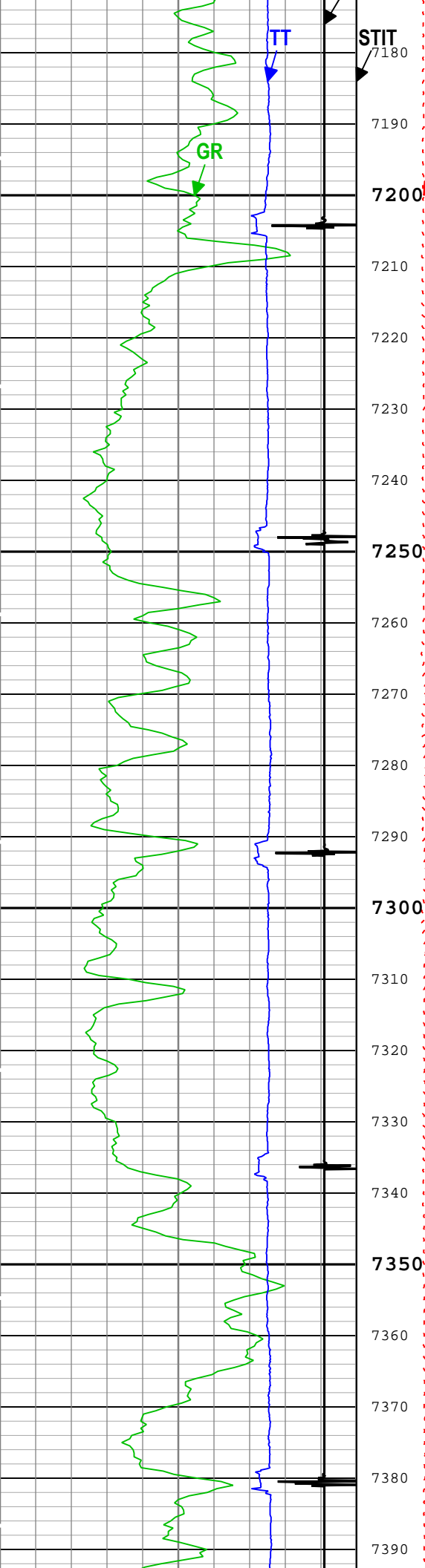


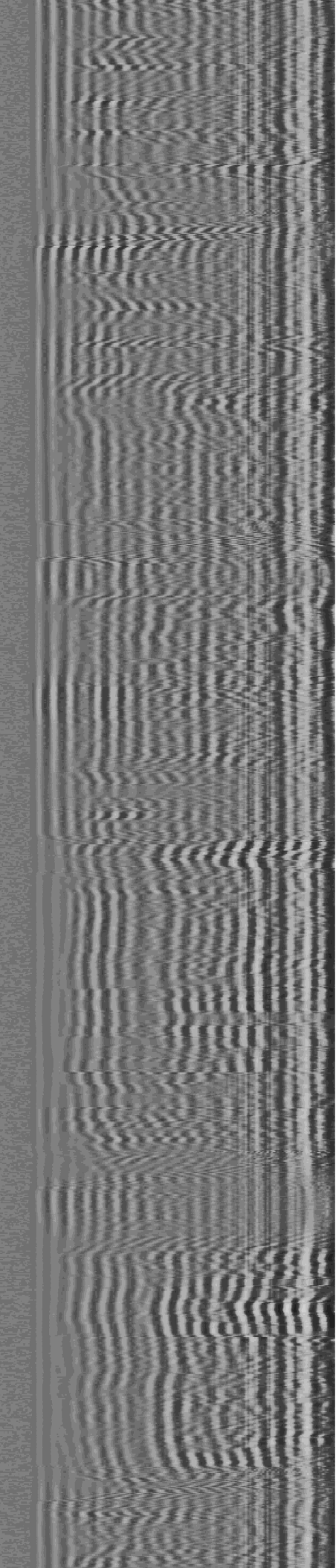
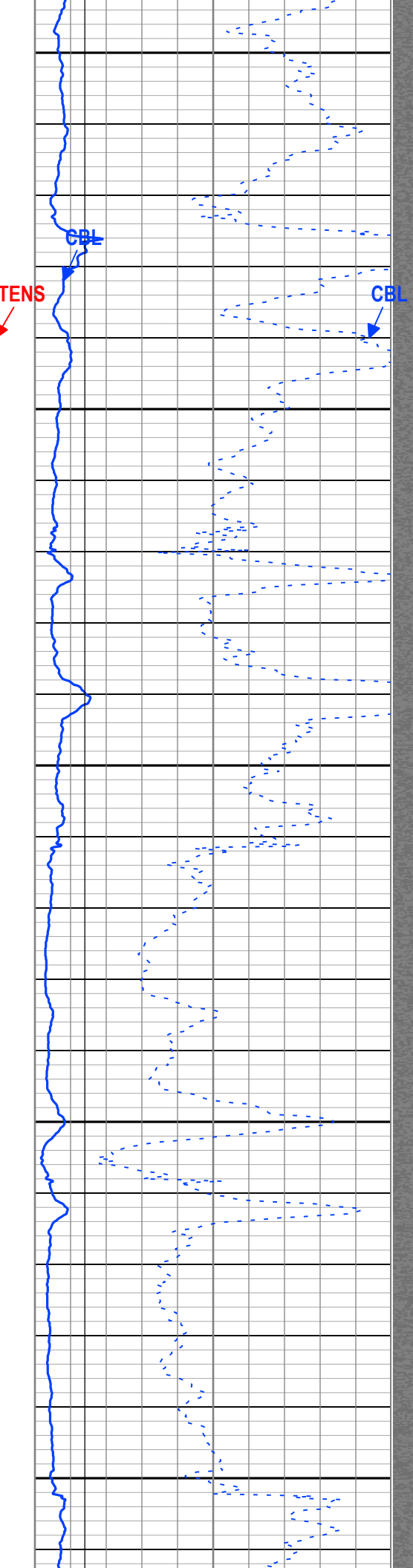
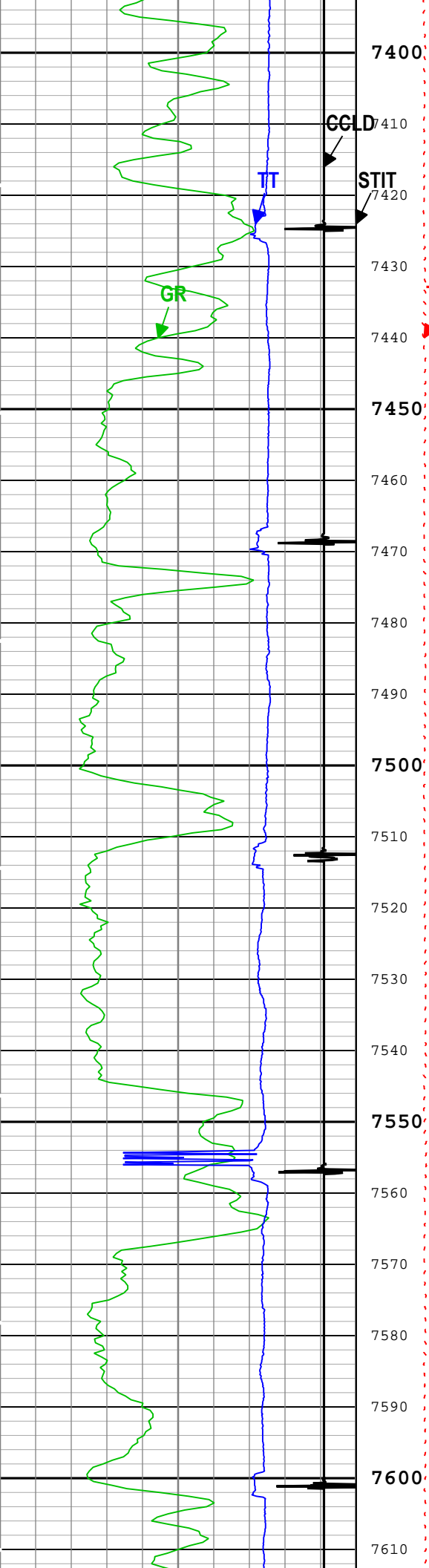


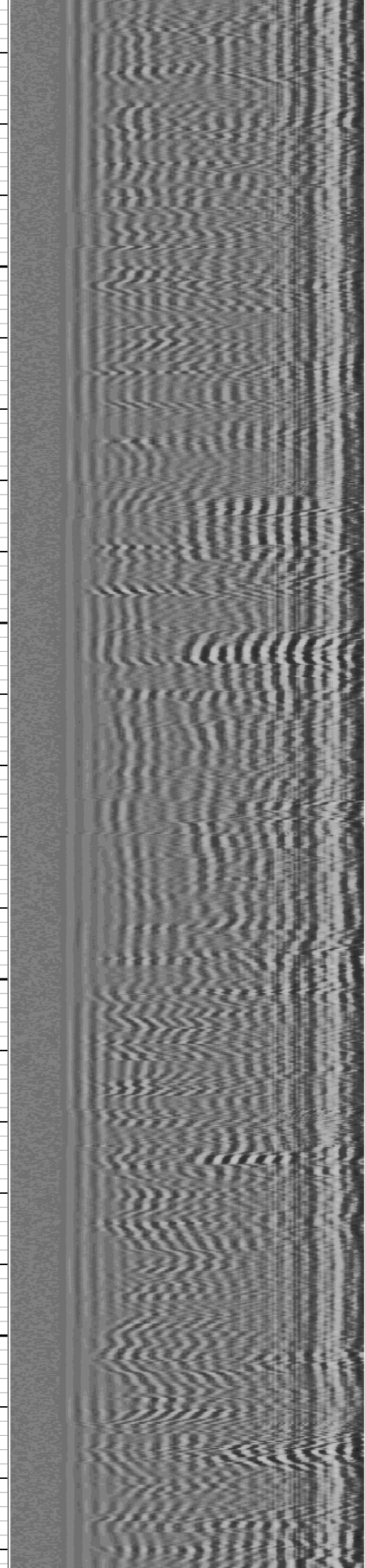
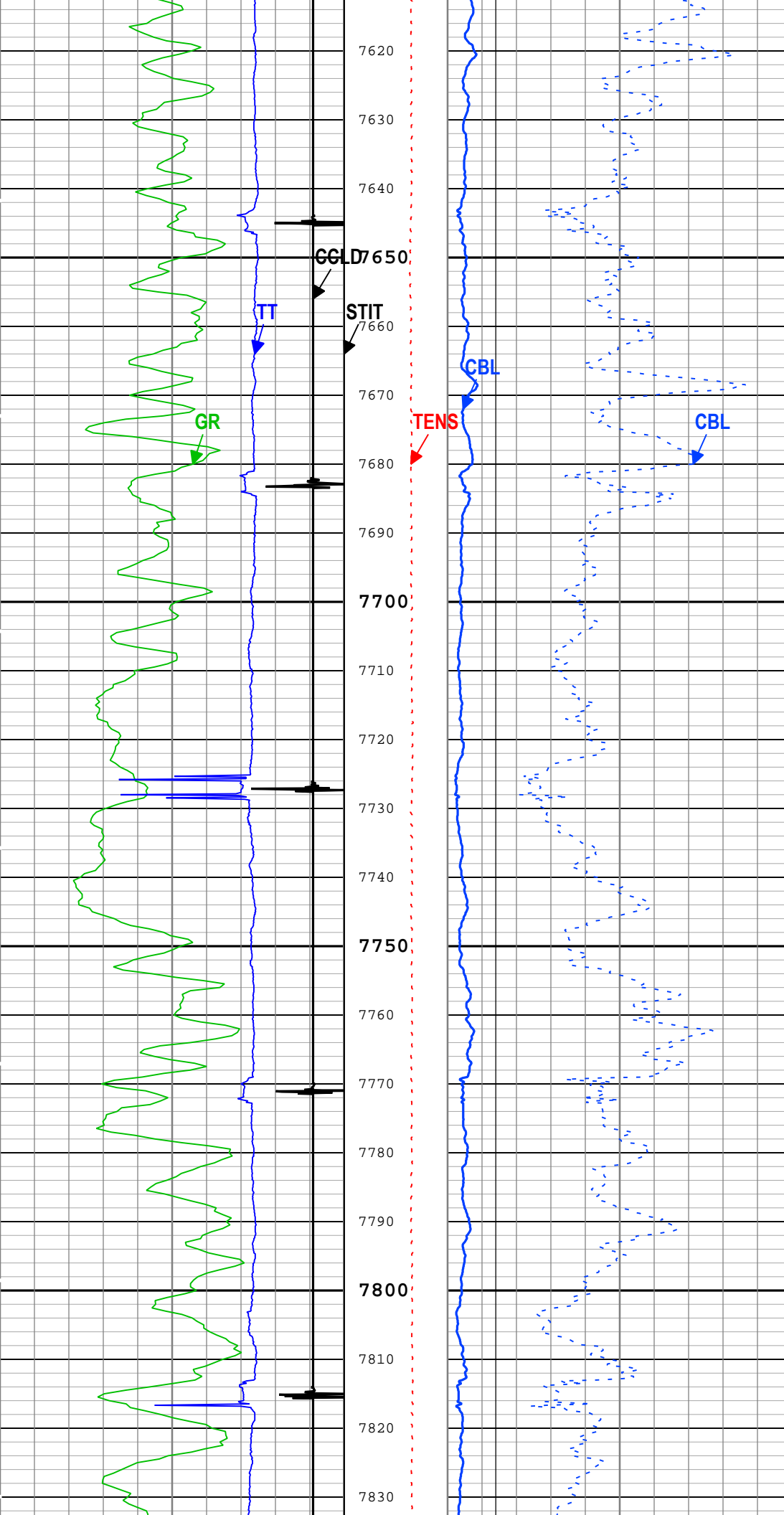


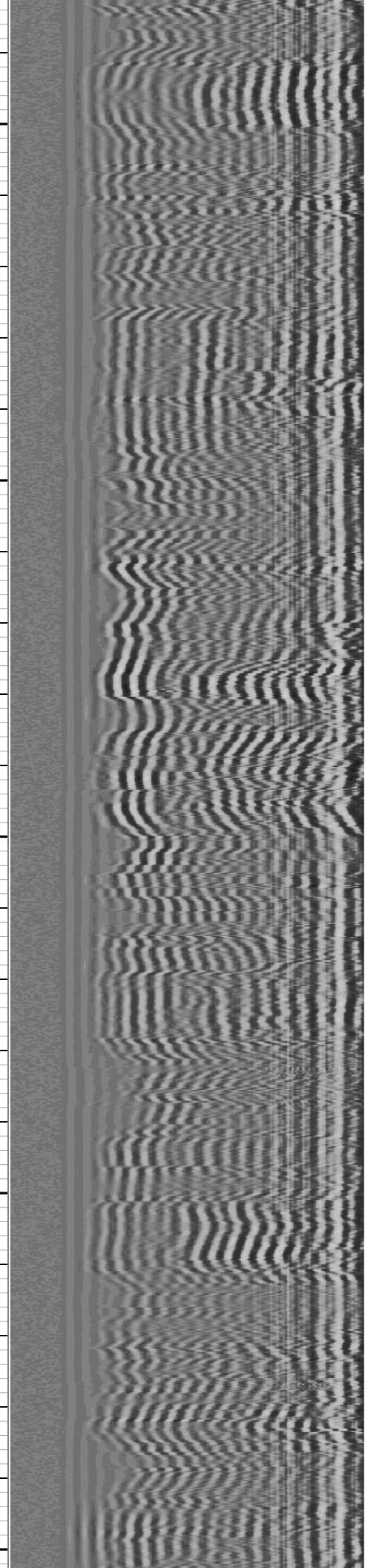
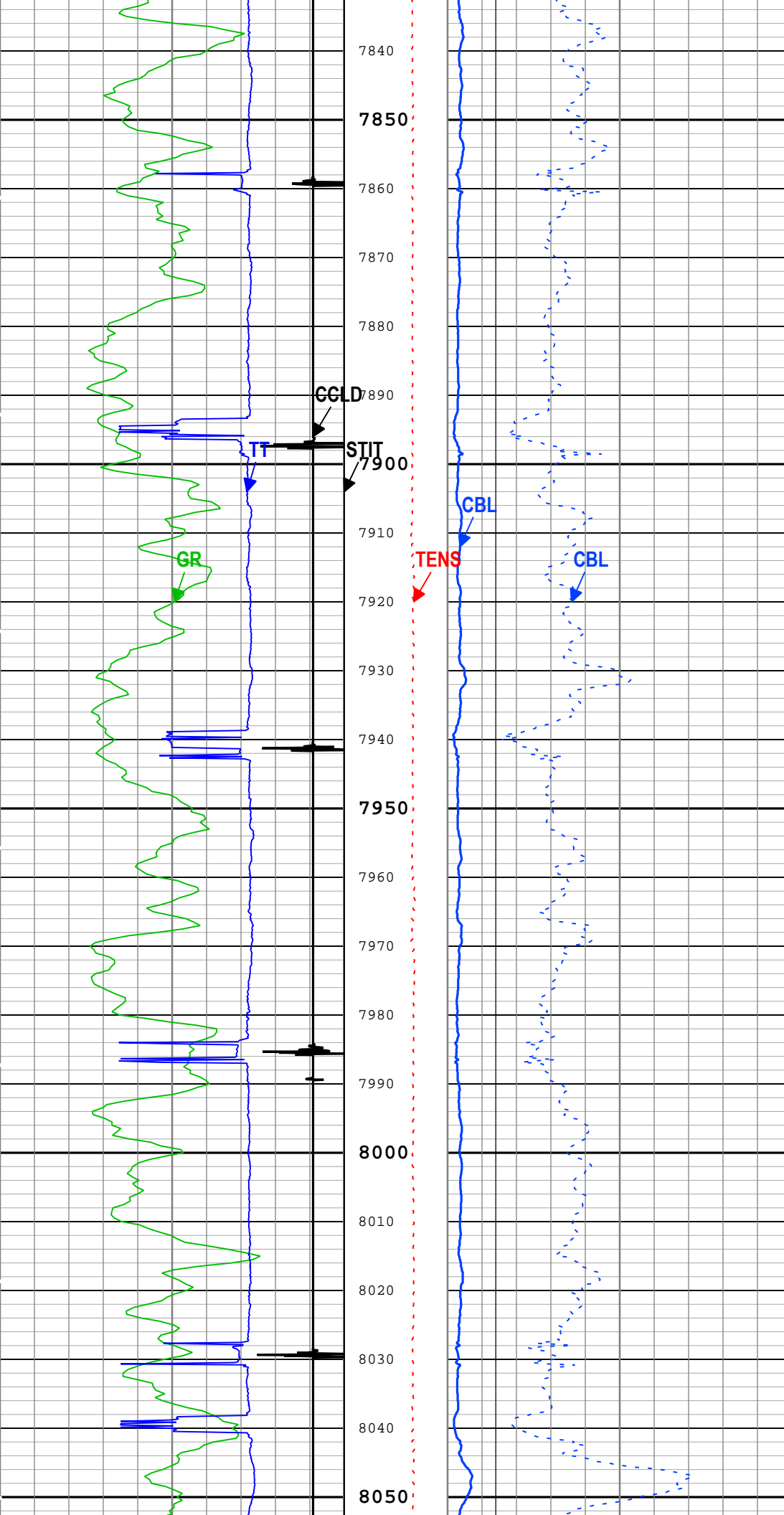


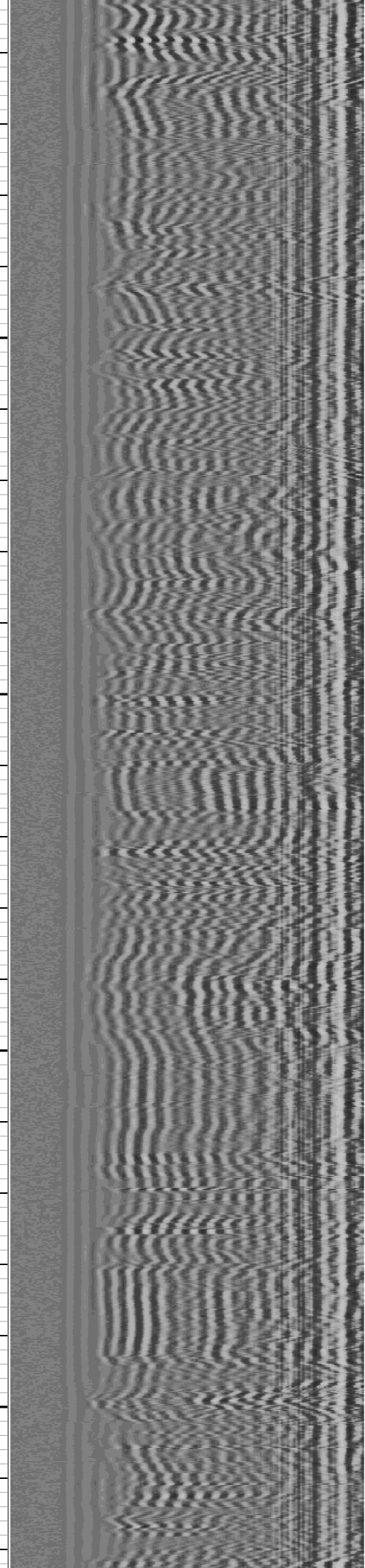
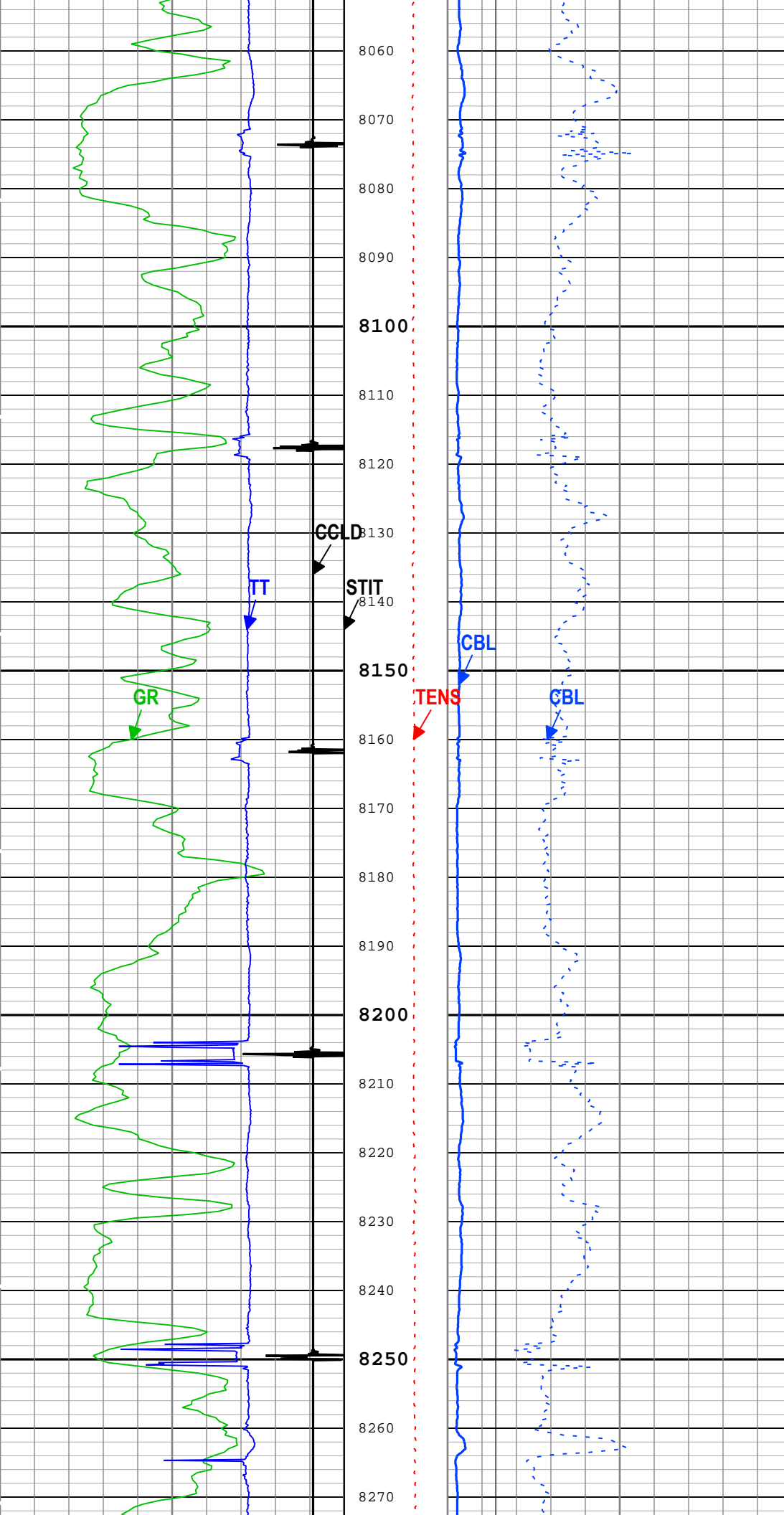


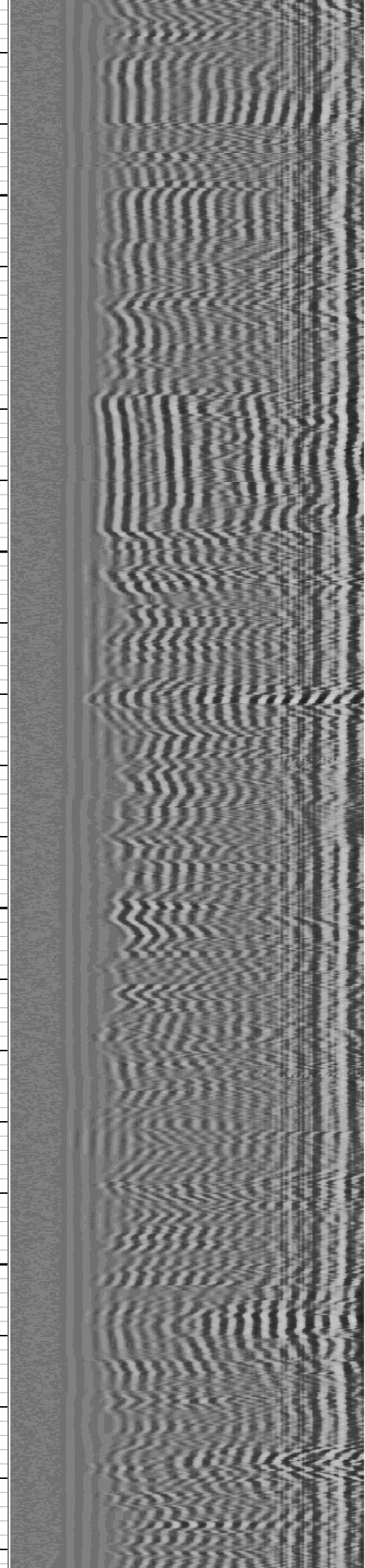
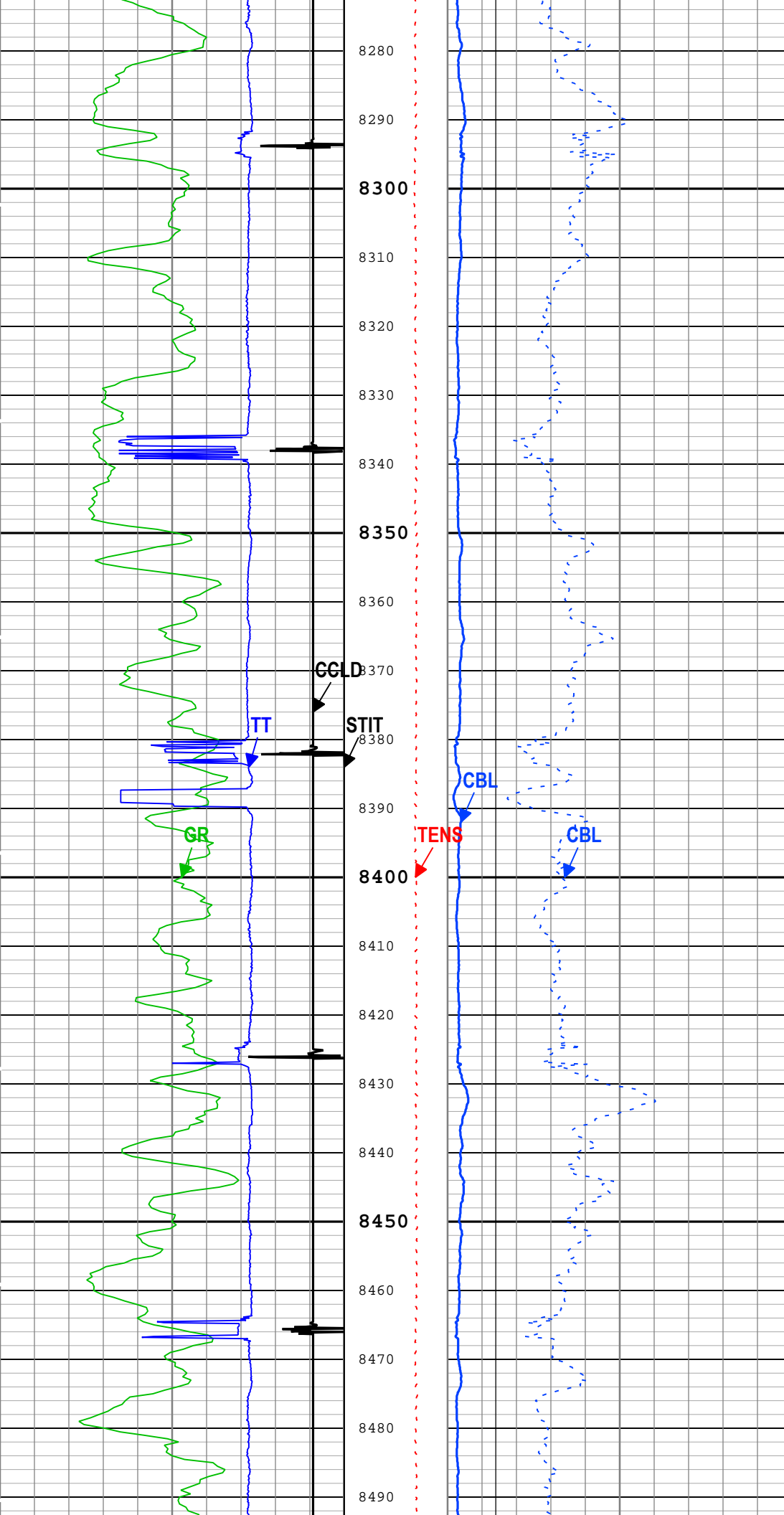


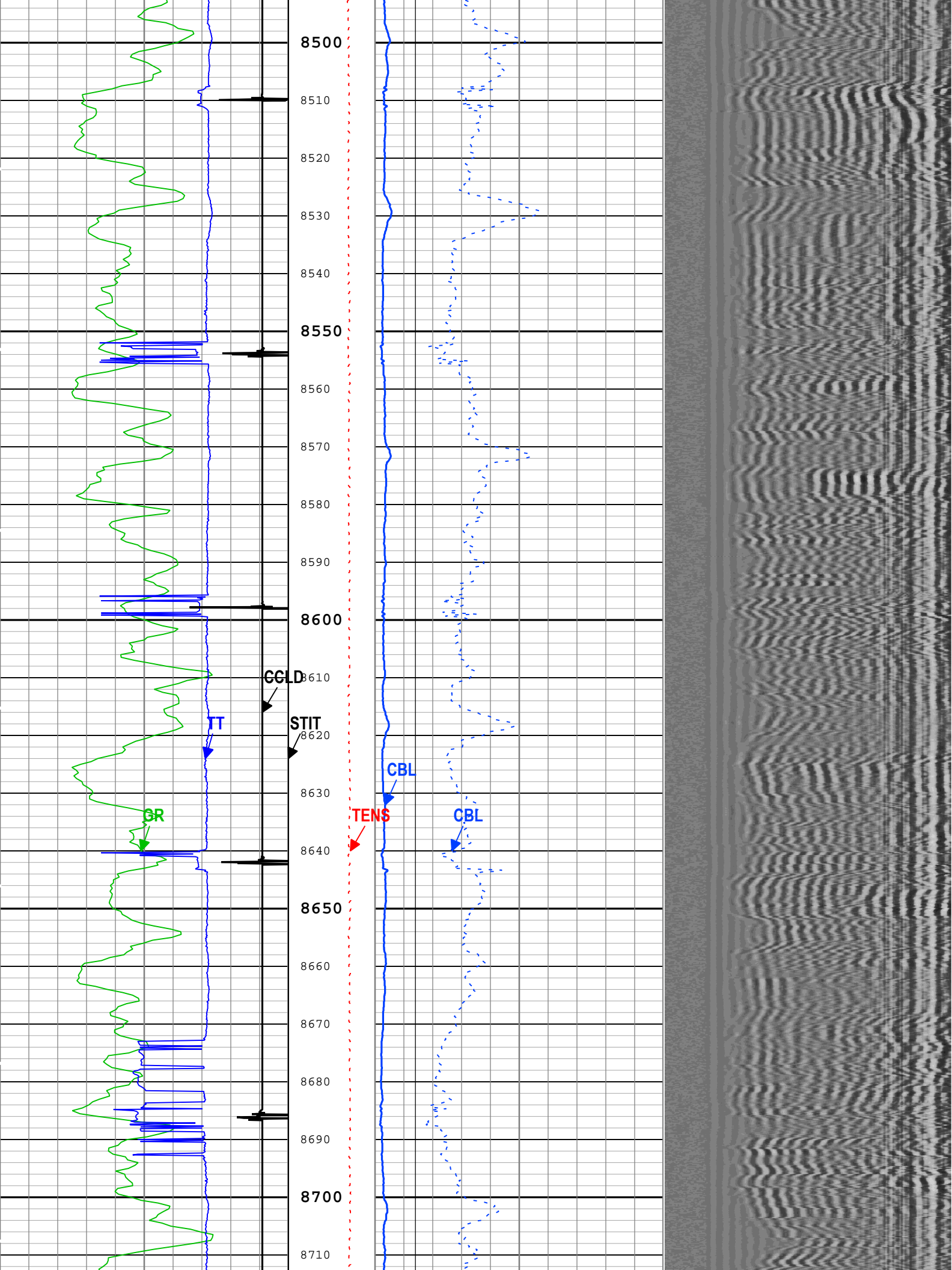


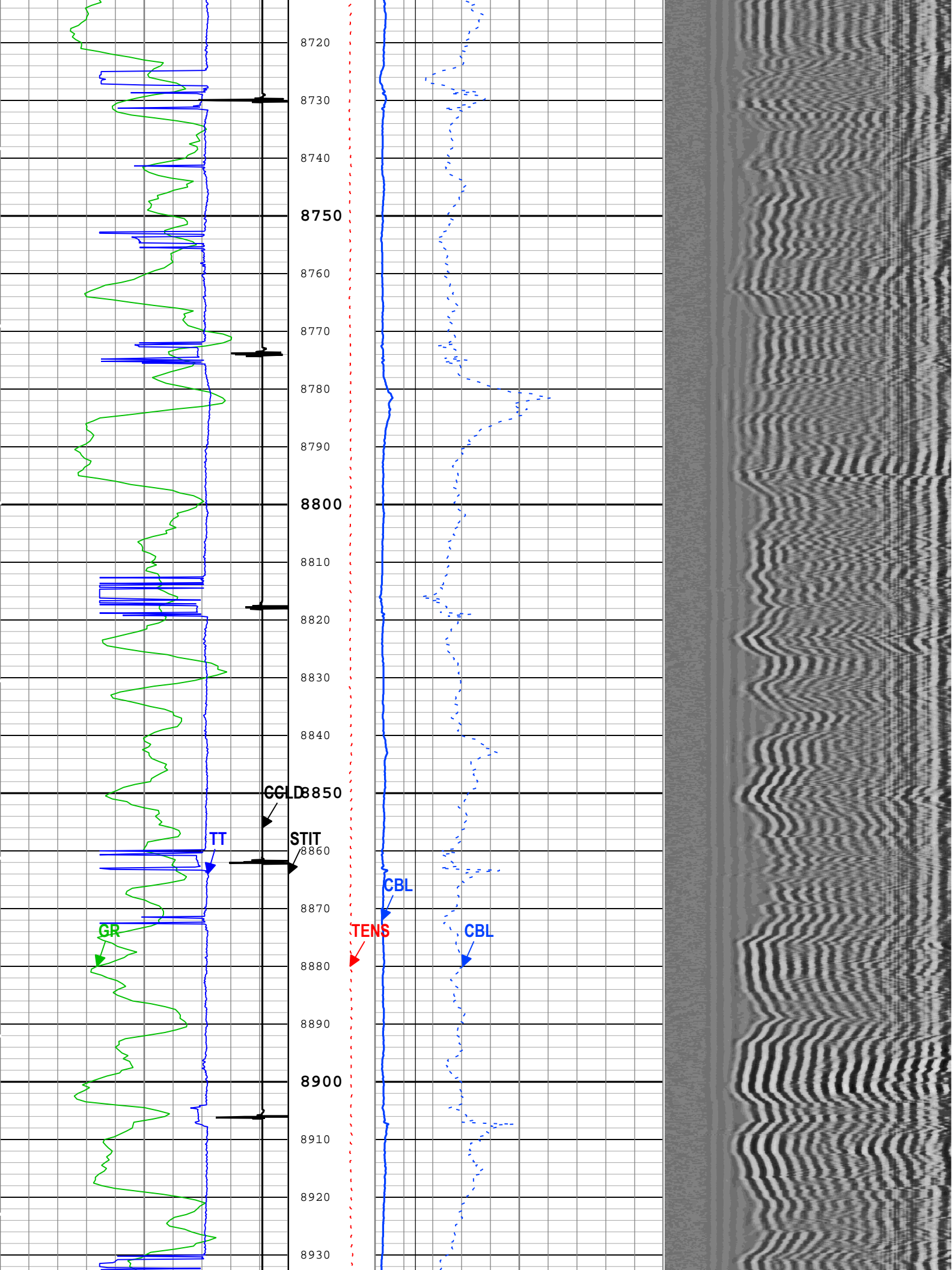


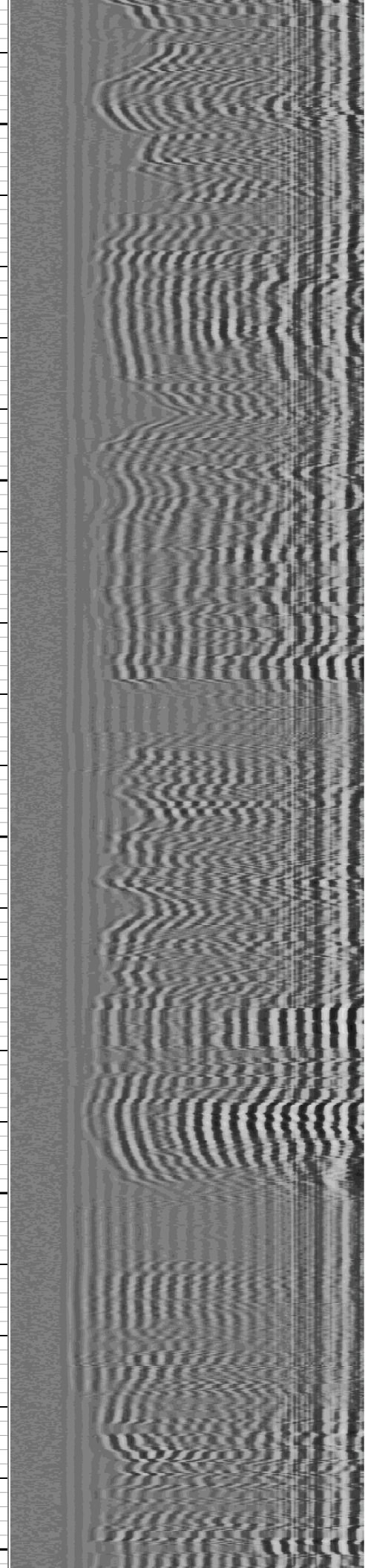
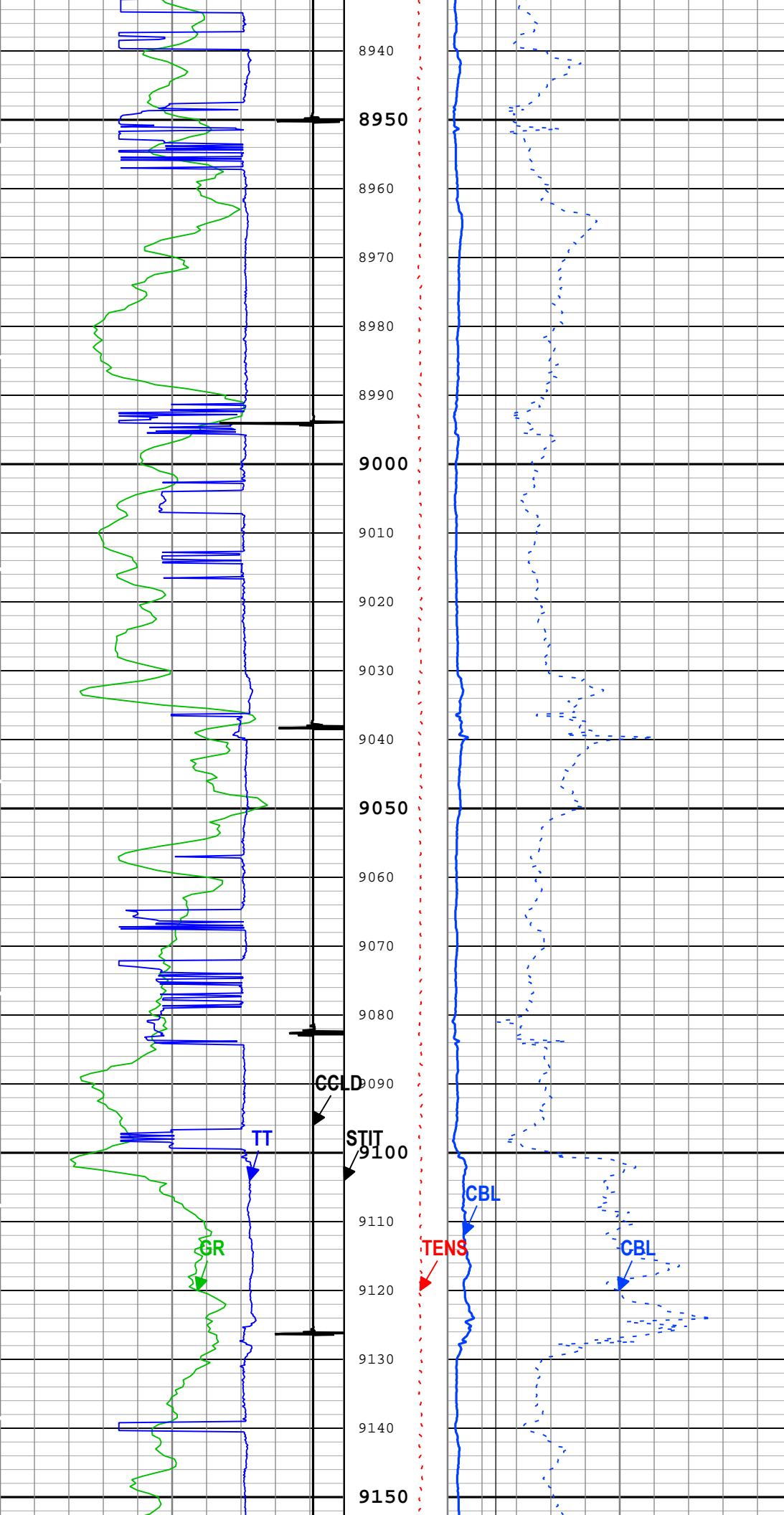


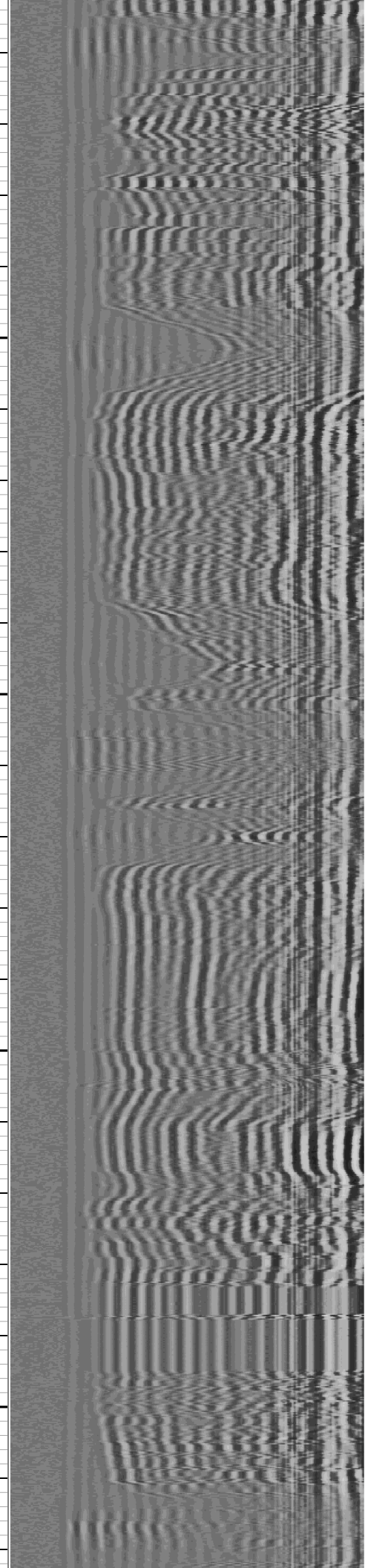
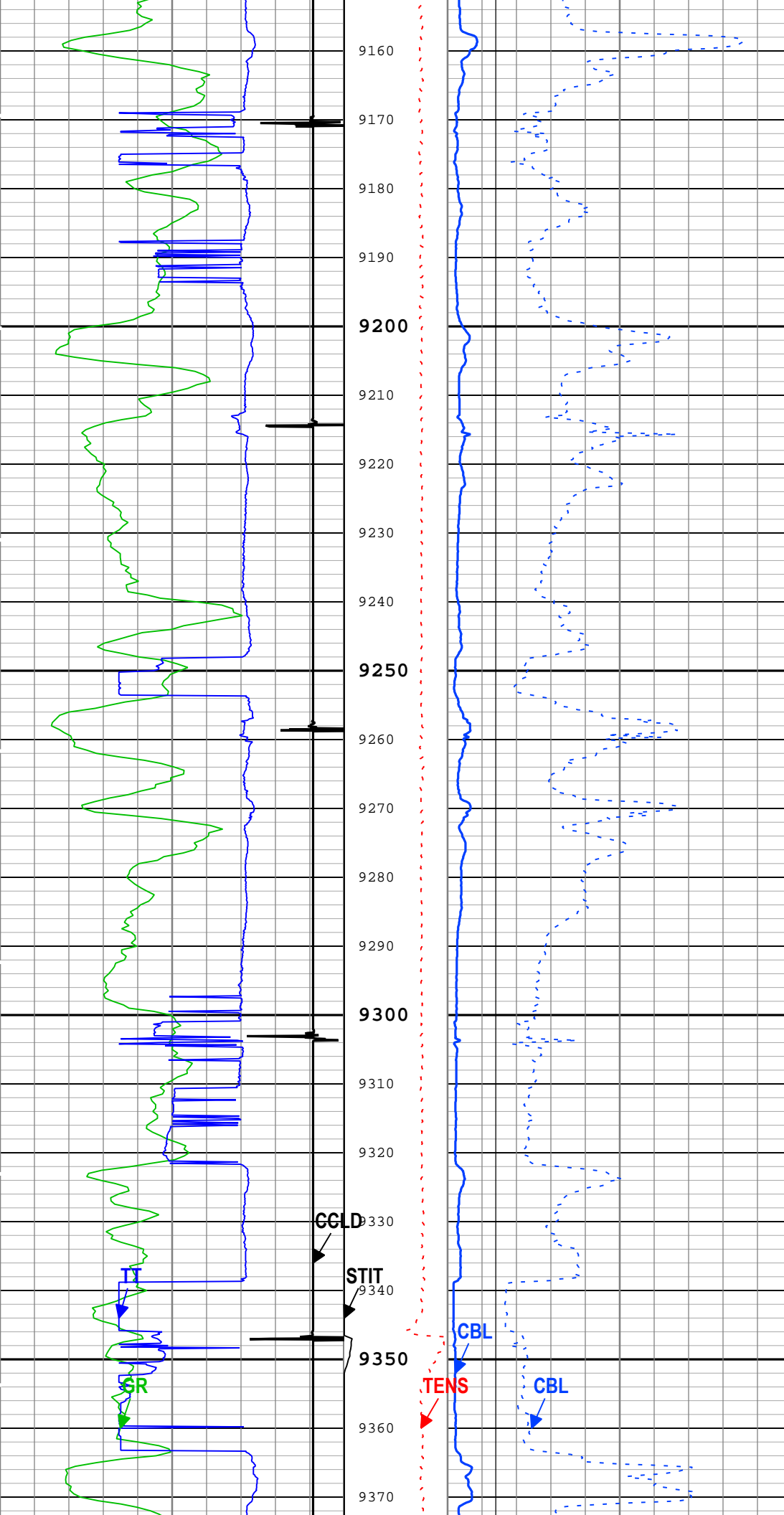


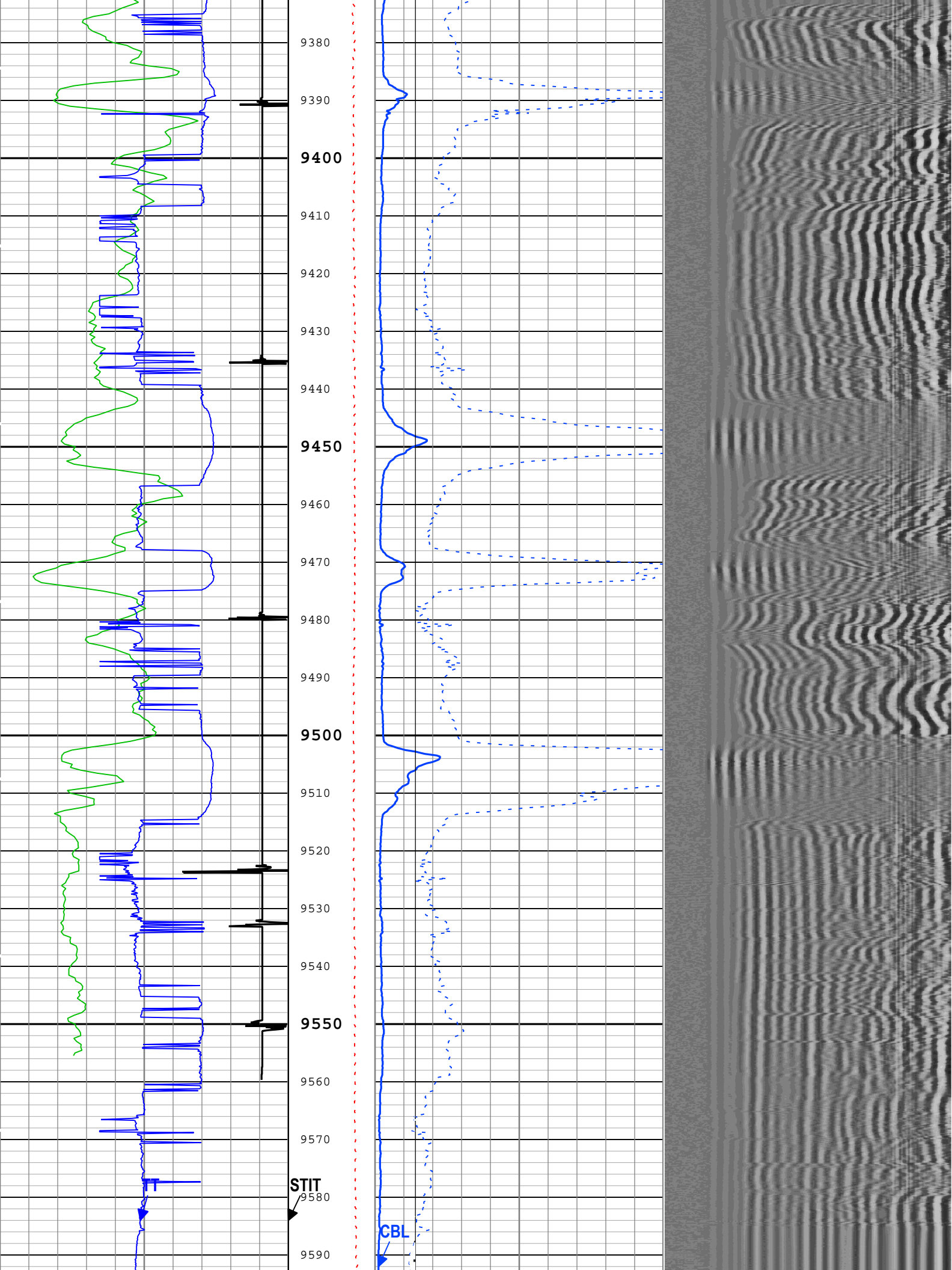












CMTM	SCMT Operating Mode	SCMT-BB	Log	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-E	Time Zoned	

Time Zone Parameters					
Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
PCCG	0 dB	27-Dec-2018 17:12:42	27-Dec-2018 17:13:08	9603.12	9594.32
PCCG	12 dB	27-Dec-2018 17:13:08	27-Dec-2018 17:14:15	9594.32	9560.54
PCCG	0 dB	27-Dec-2018 17:14:15	27-Dec-2018 21:19:19	9560.54	1860.31

All depths are at tool zero.					
ONE					
RST SIGMA MAIN PASS [5:100]					

Software Version	
Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	1860.31 ft	9603.13 ft	27-Dec-2018 5:12:42 PM	27-Dec-2018 9:19:19 PM	ON	0.00 ft	Yes

All depths are referenced to toolstring zero									
Log	<div> <div>Company:CAERUS OIL & GAS LLC</div> <div>Well:NPR 12B-14-596</div> <div>ONE: Log[4]:Up:S006</div> </div>								

Description: RST SIGMA Answer

Format: Log (RST SIGMA Answer)

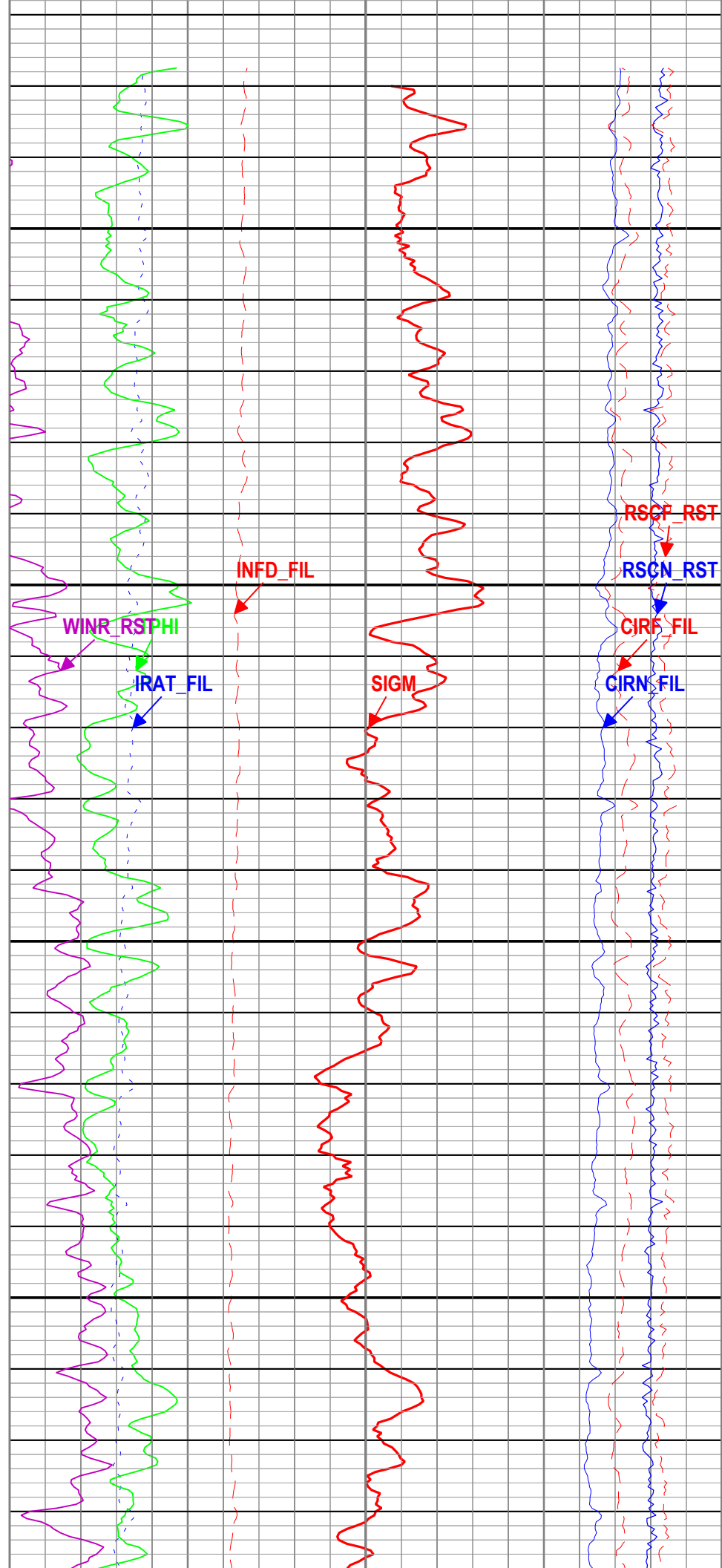
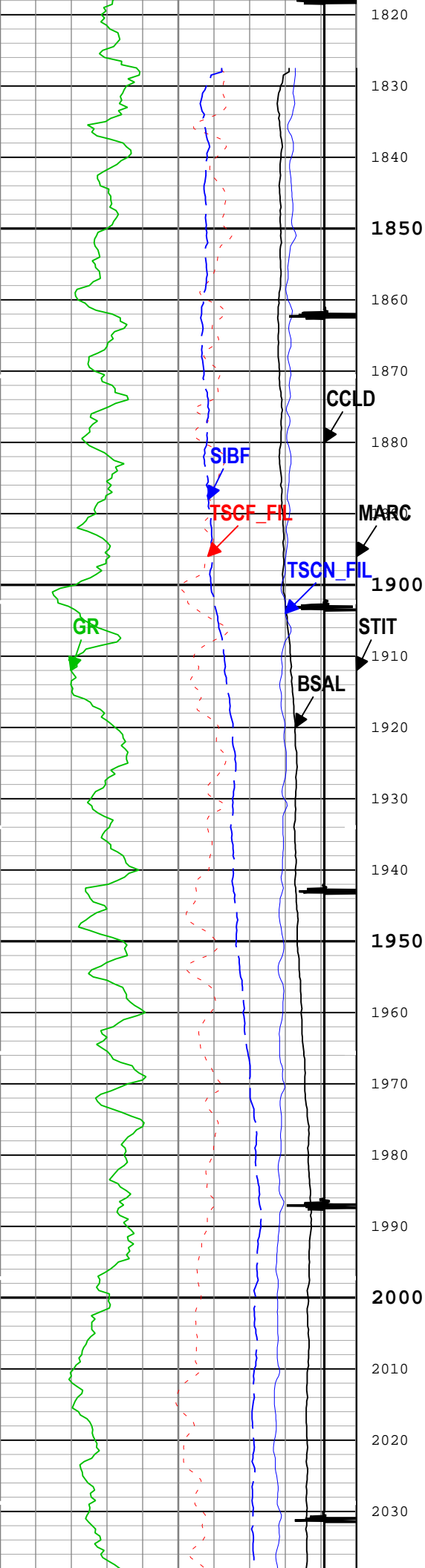
Index Scale: 5 in per 100 ft

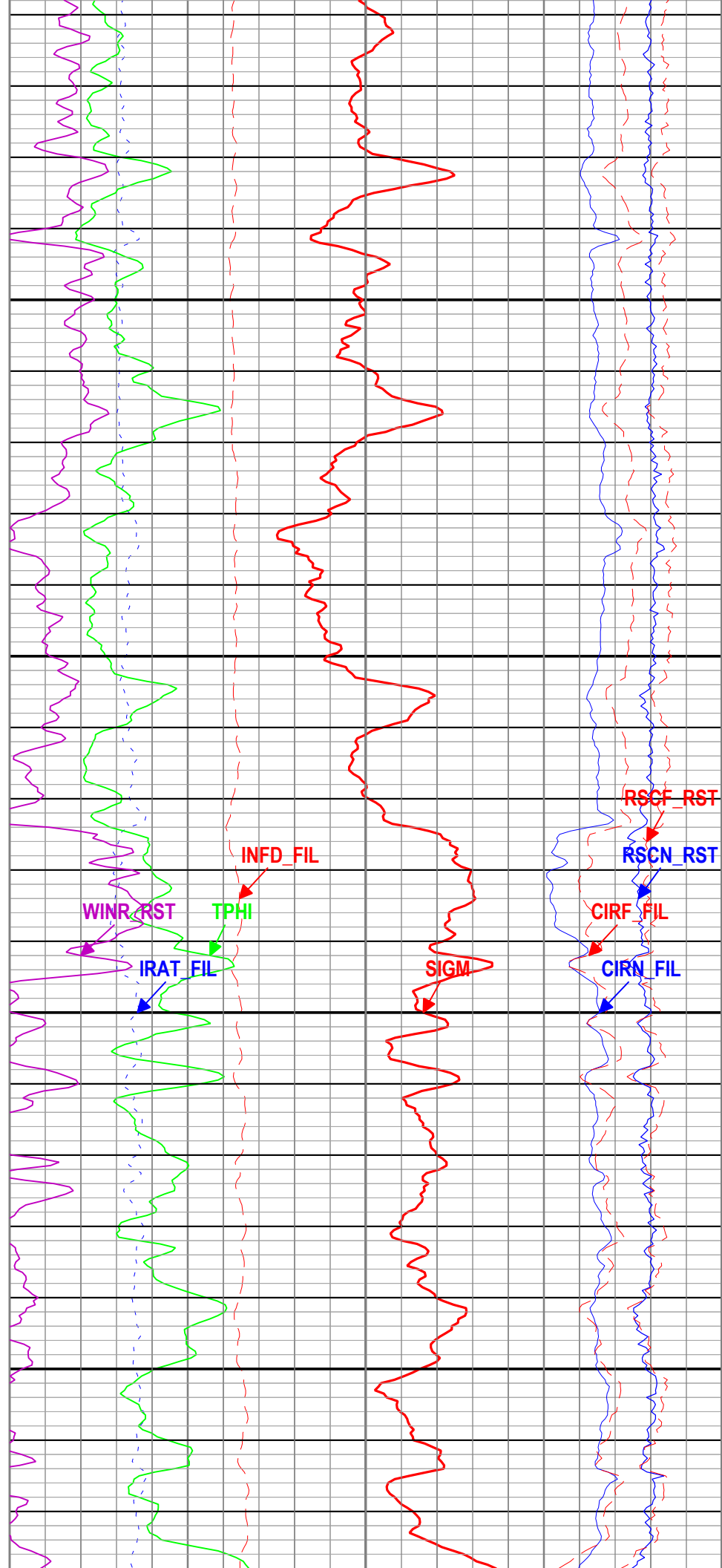
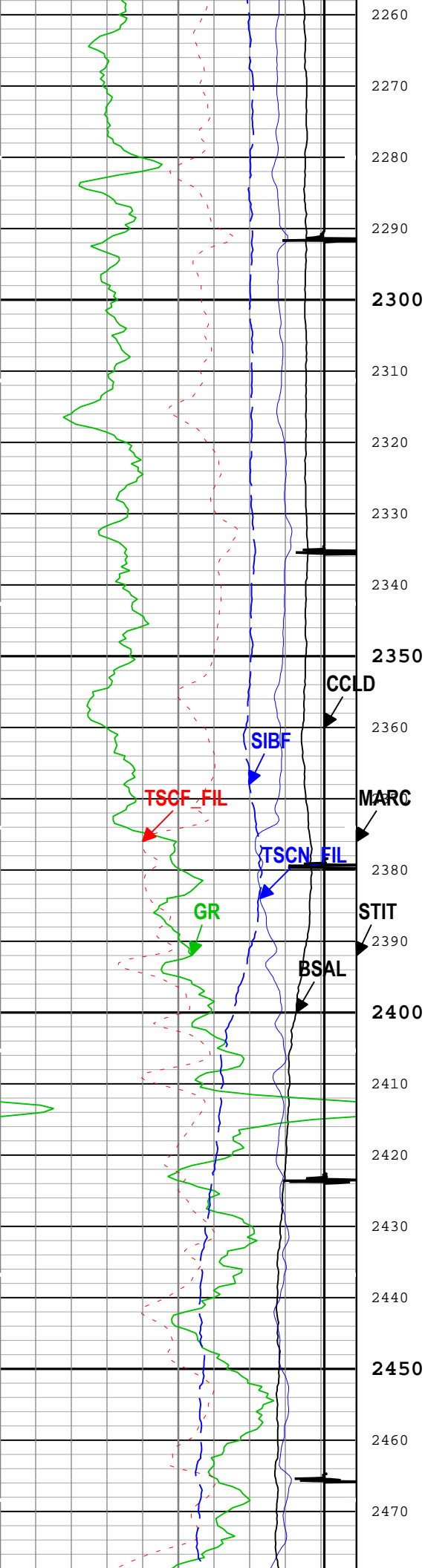
Index Unit: ft

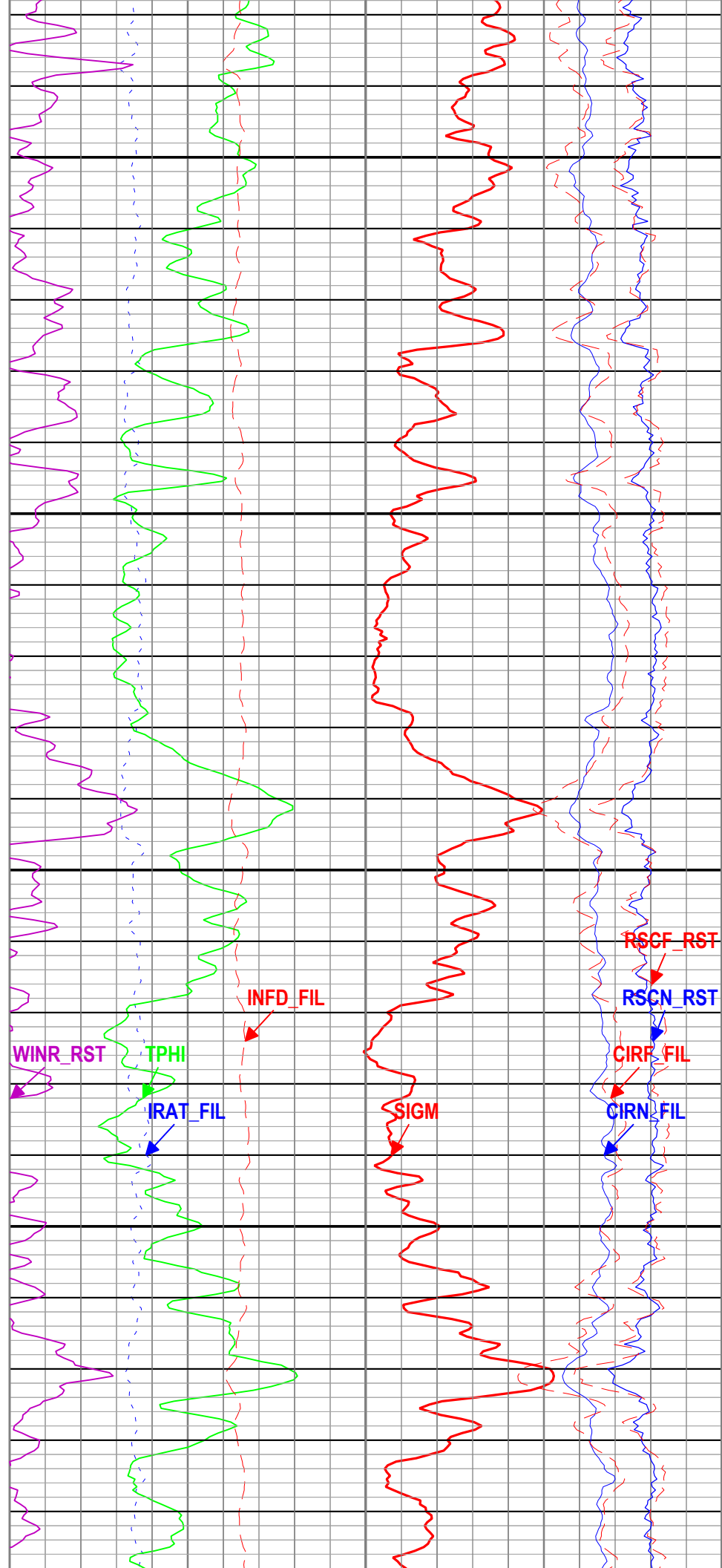
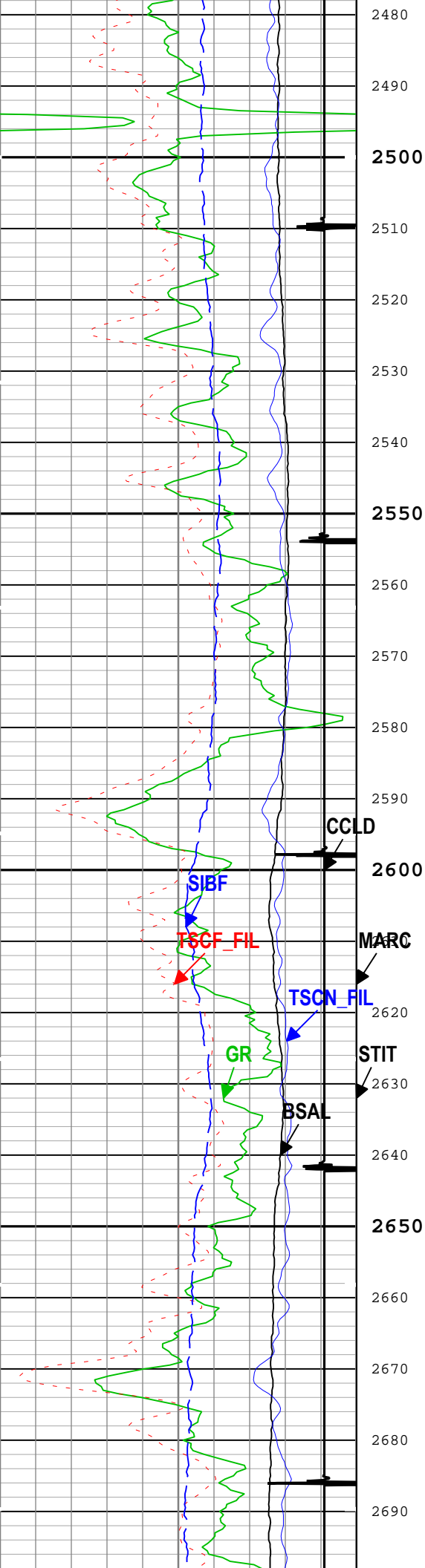
Index Type: Measured Depth

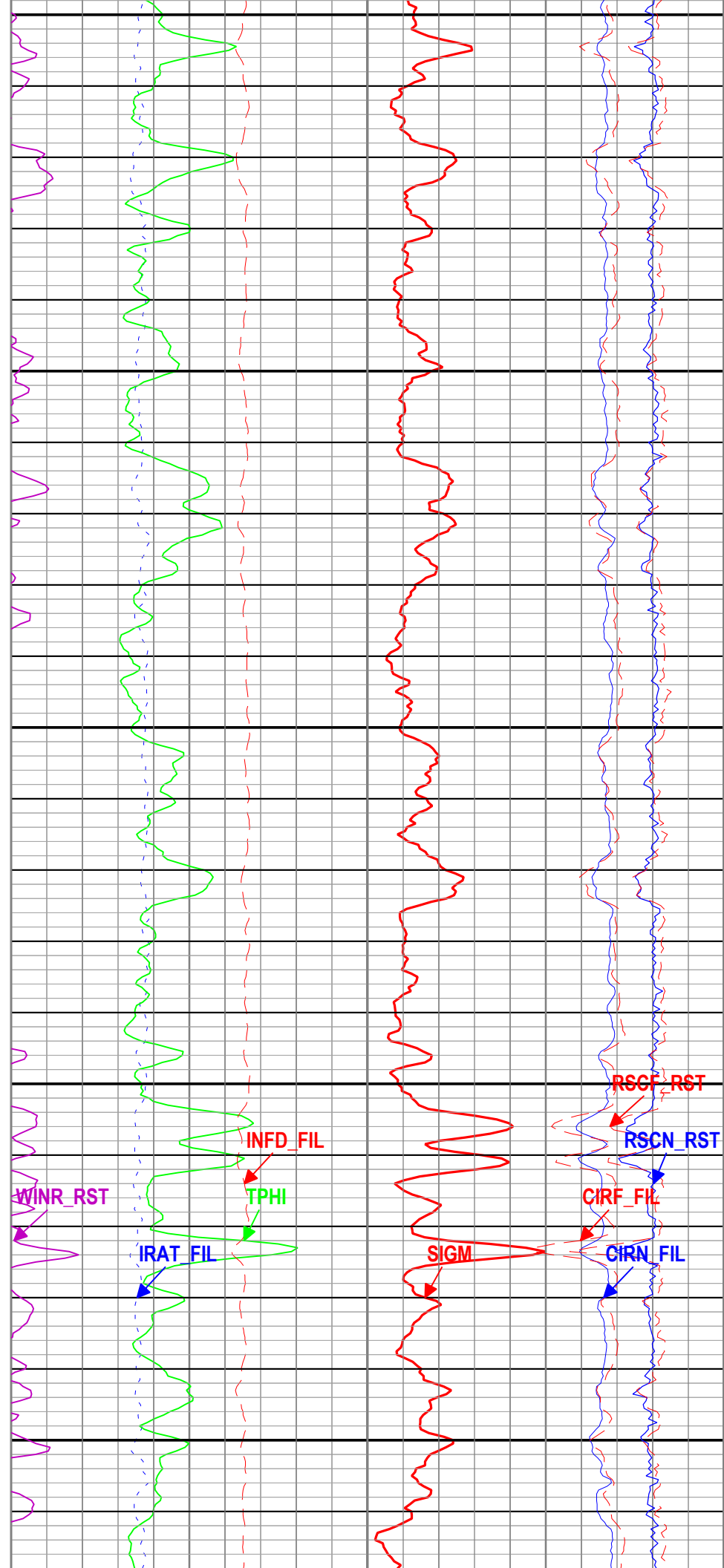
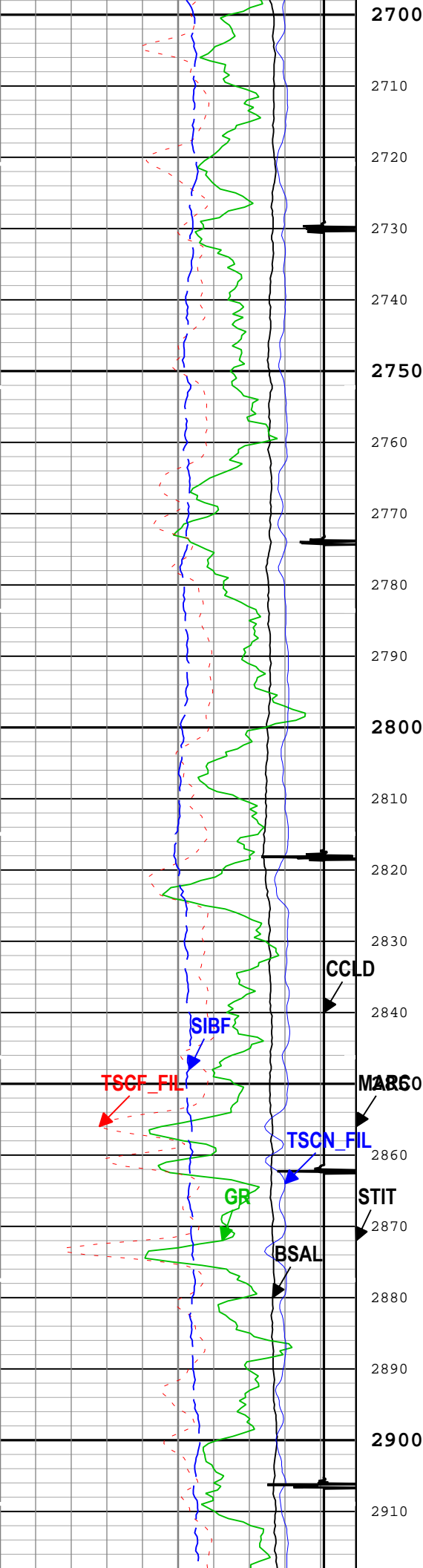
Creation Date: 28-Dec-2018 10:46:17

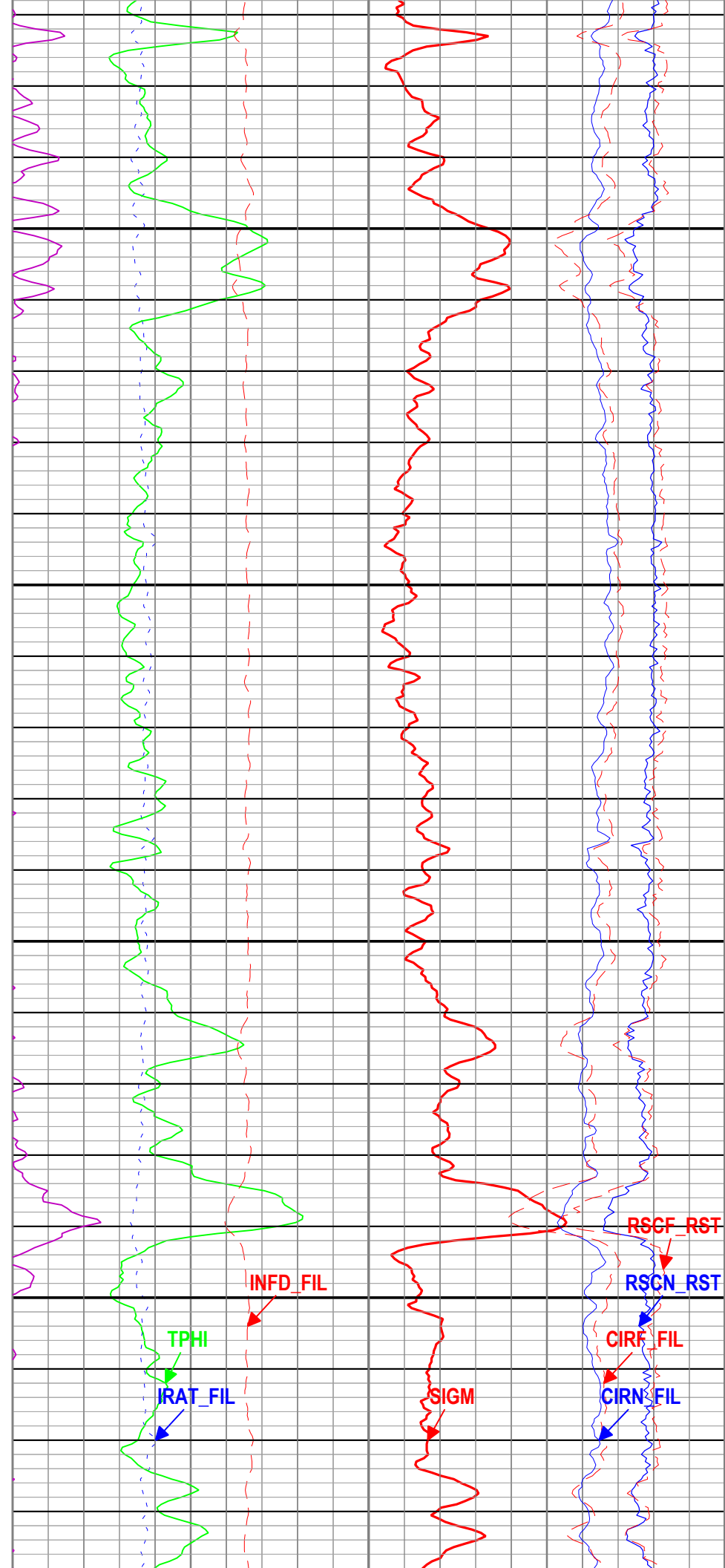
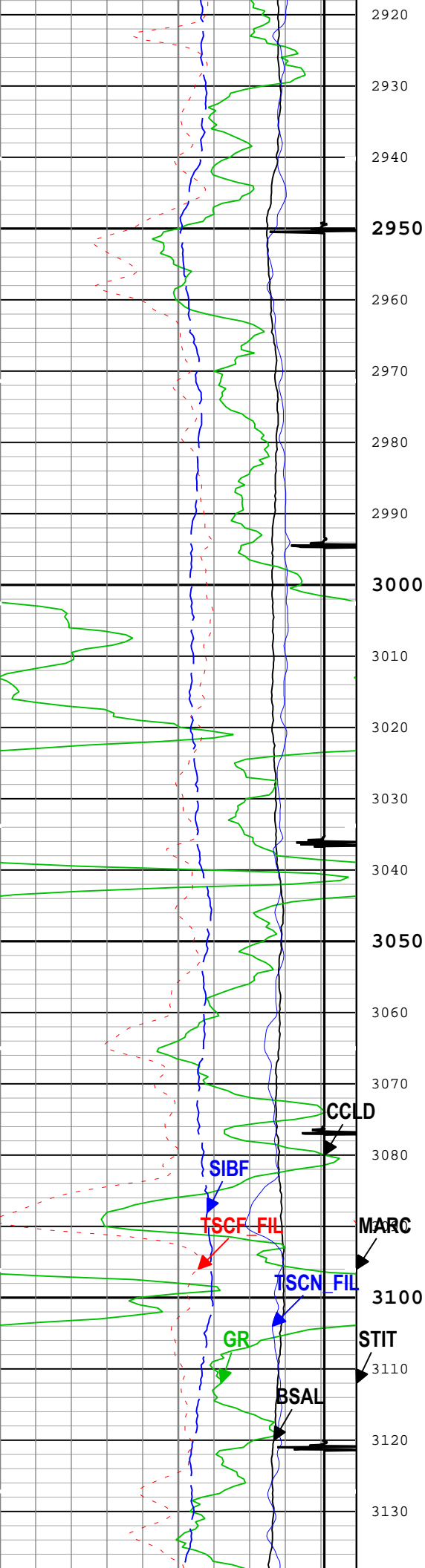
TIME_1900 - Elapsed time since midnight, 30 December 1899 every 60.00 (s)									
TIME_1900 - Time Marked every 60.00 (s)									
IHV - Integrated Hole Volume every 10.00 (ft3)									
IHV - Integrated Hole Volume every 100.00 (ft3)									
ICV - Integrated Cement Volume every 10.00 (ft3)									
ICV - Integrated Cement Volume every 100.00 (ft3)									
Borehole Salinity (BSAL) RST-C			Stuck Tool Indicator, Total (STIT)	Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C					
450	ppk	-50		2.5	0				
Gamma Ray (GR) PSTP-E			0 ft 50	Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C					
0	gAPI	150	Cable Drag From STIA to STIT	Inelastic Ratio Filtered (IRAT_FIL) RST-C					
Total Selected Count Rate Near Detector Filtered (TSCN_FIL) RST-C				0.75	0				
Total Selected Count Rate Far Detector Filtered (TSCF_FIL) RST-C			Tool_Tot. Drag From D3T to STIT	Thermal Decay Porosity (TPHI) RST-C					
30000	1/s	0		0.6	ft3/ft3	0	45		
Total Selected Count Rate Far Detector Filtered (TSCF_FIL) RST-C			Minitron Arc Count (MARC) RST-C	Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C					
12000	1/s	0		10000	1/s	0	45		
Sigma Borehole Fluid (SIBF) RST-C			CCL Discriminated Amplitude (CCLD) PSTP-E	Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C					
100	cu	0		60	cu				
CCL Discriminated Amplitude (CCLD) PSTP-E				Weighted Inelastic Ratio (WINR_RST) RST-C					
-10	V	1		0	0				

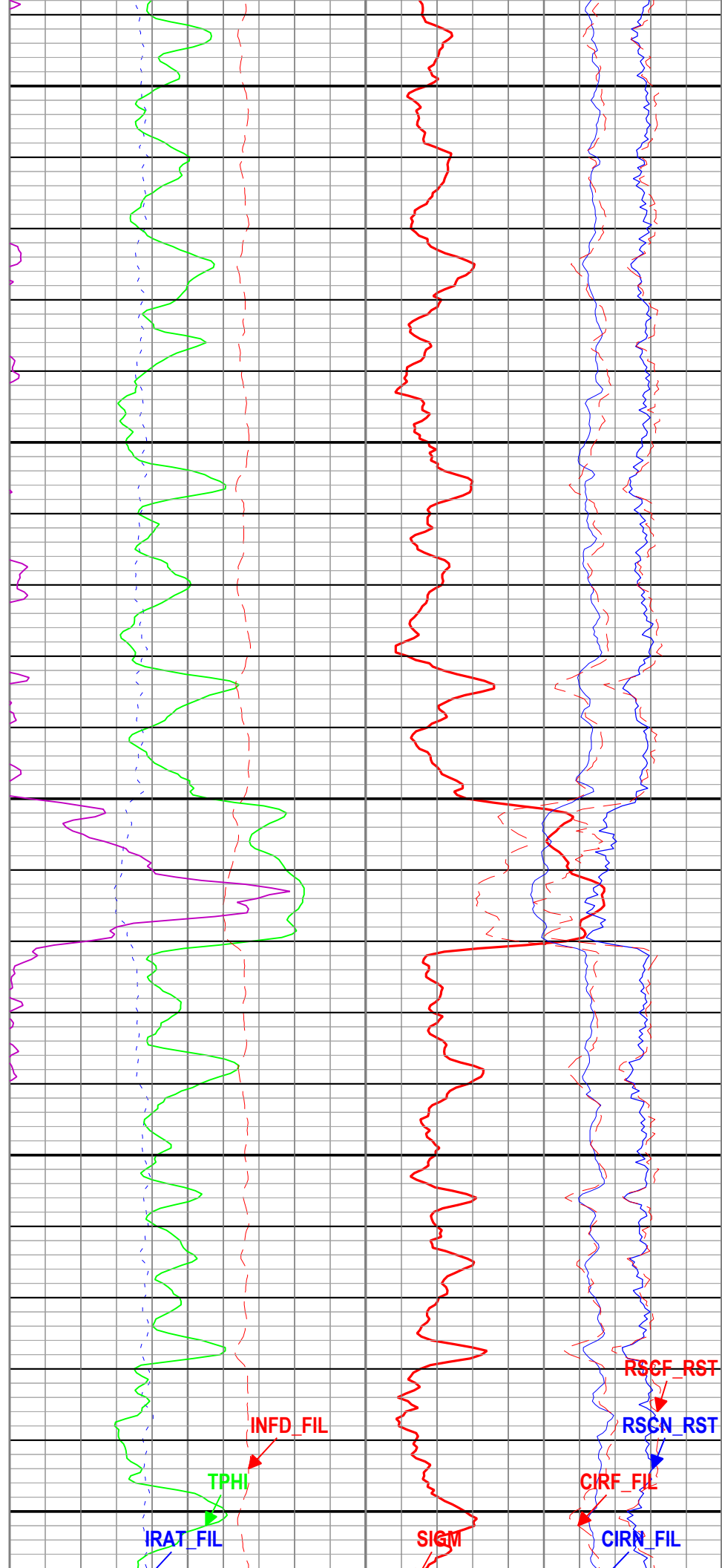
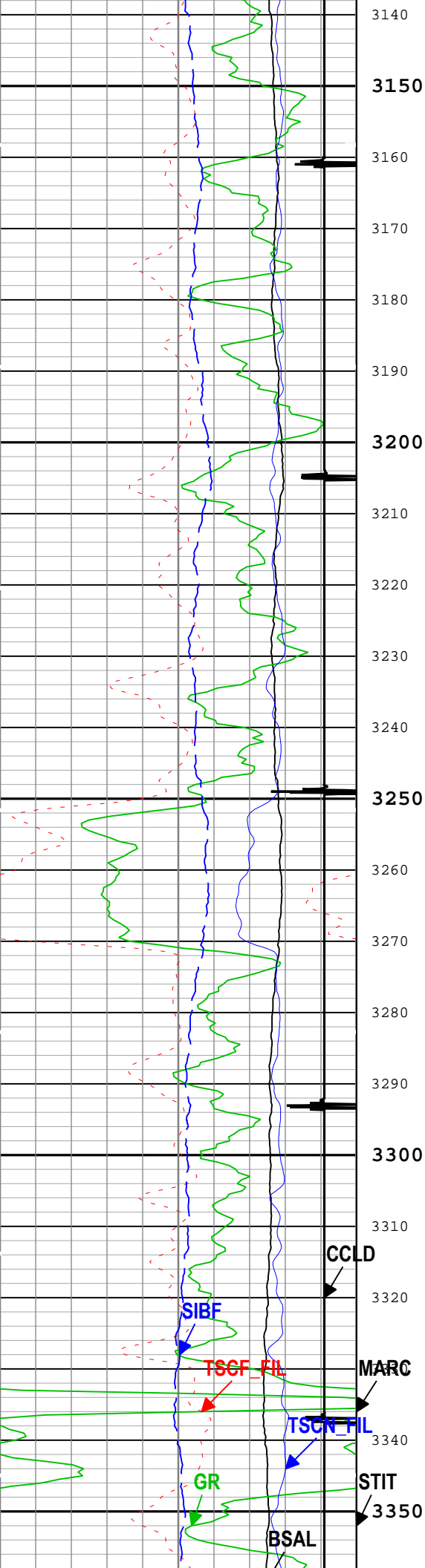


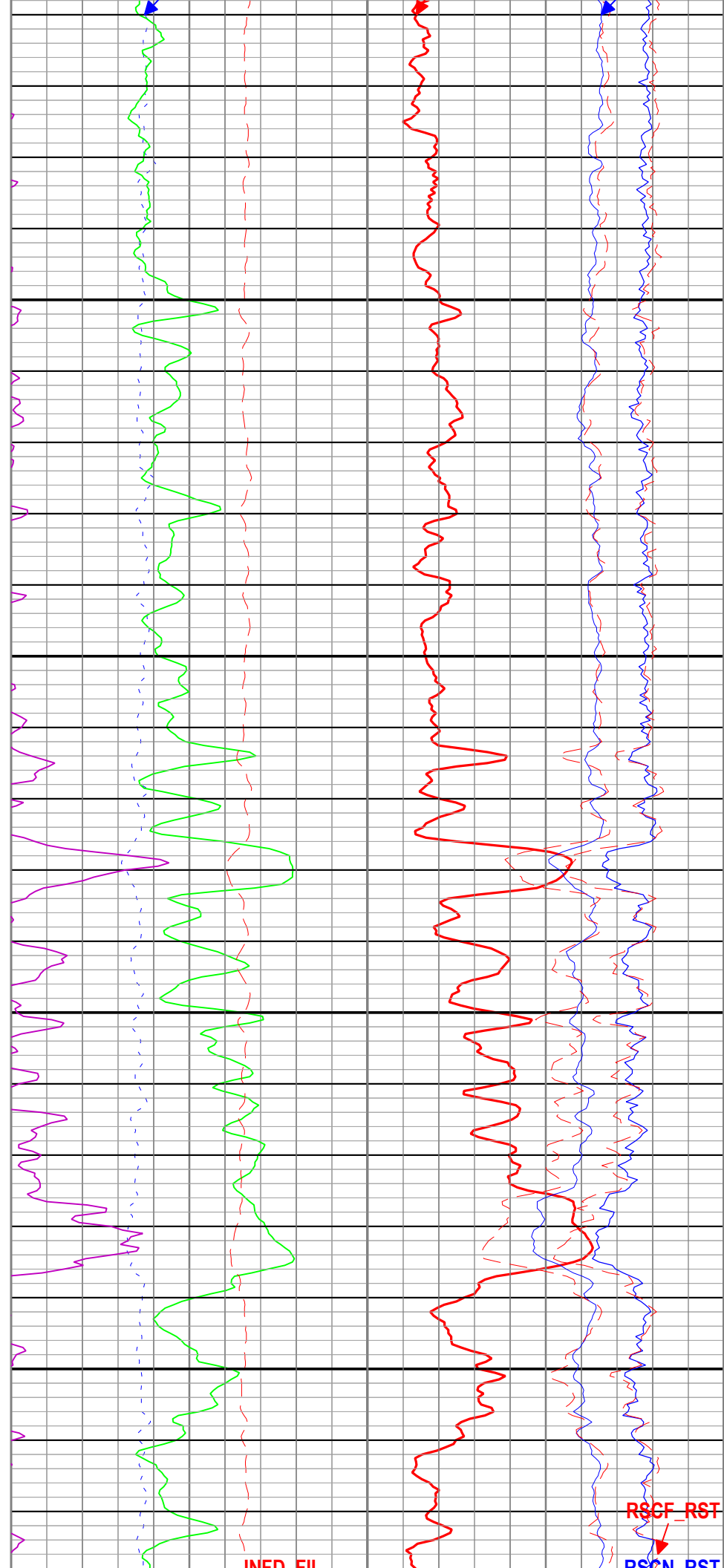
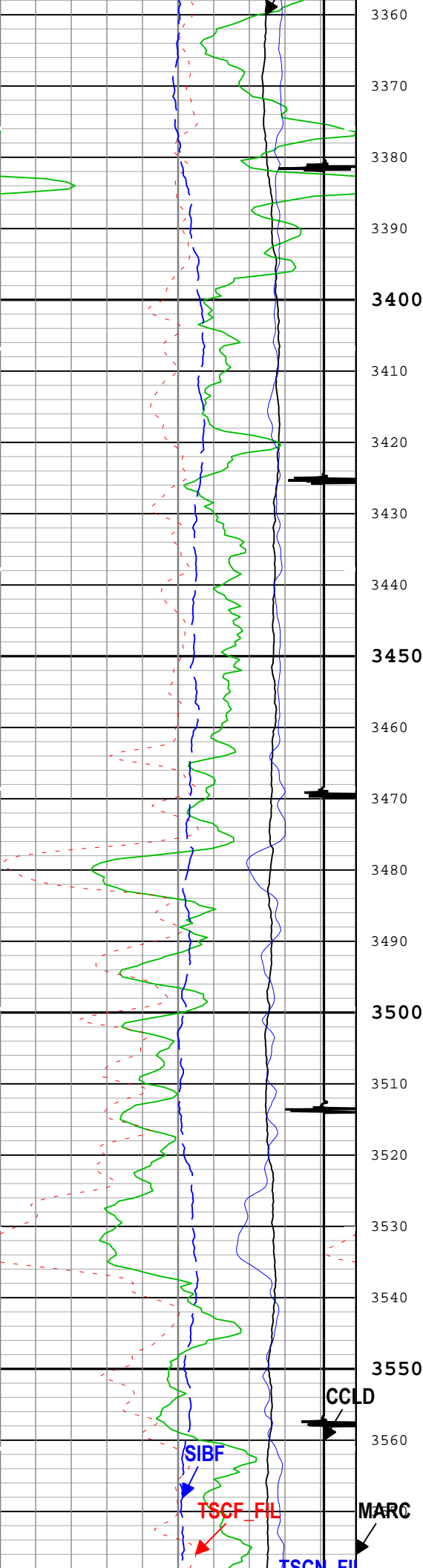


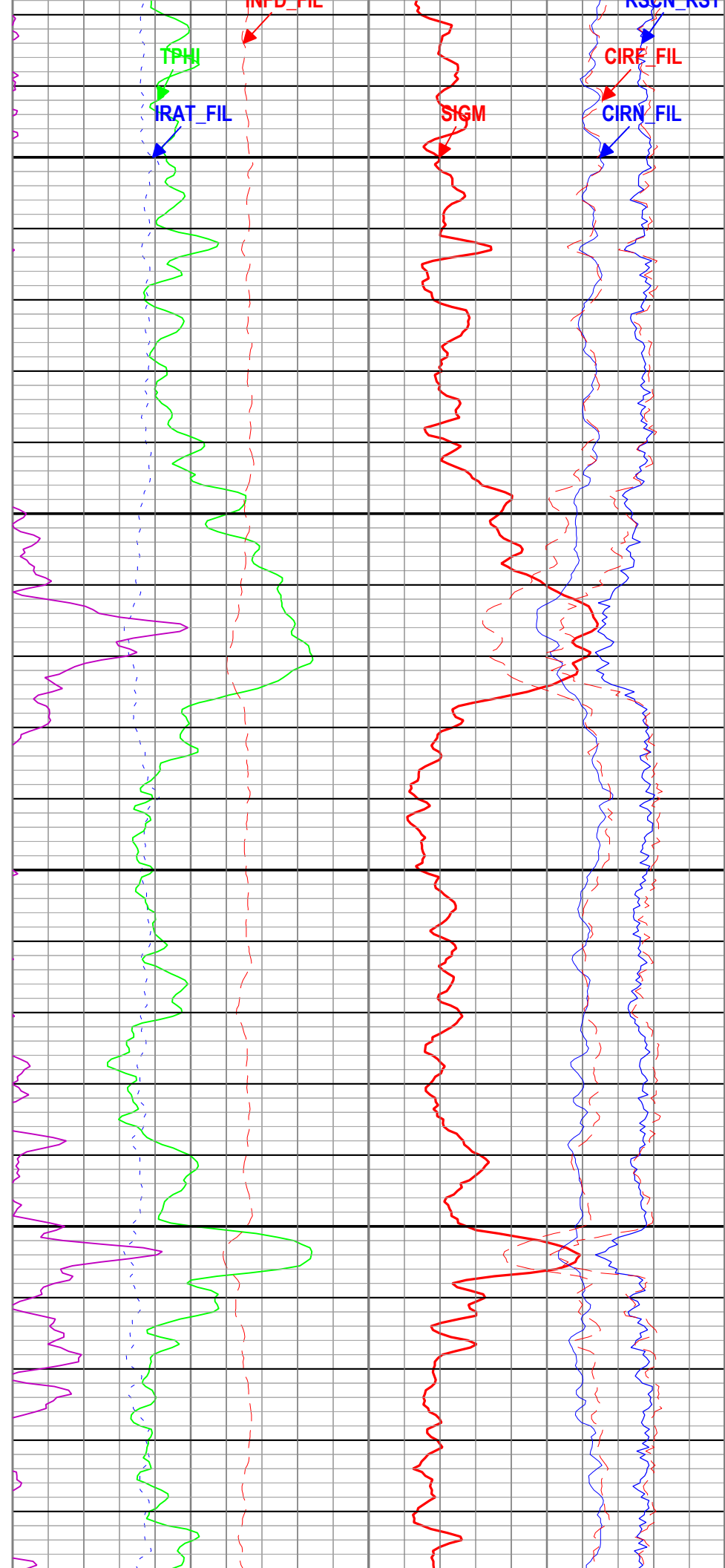
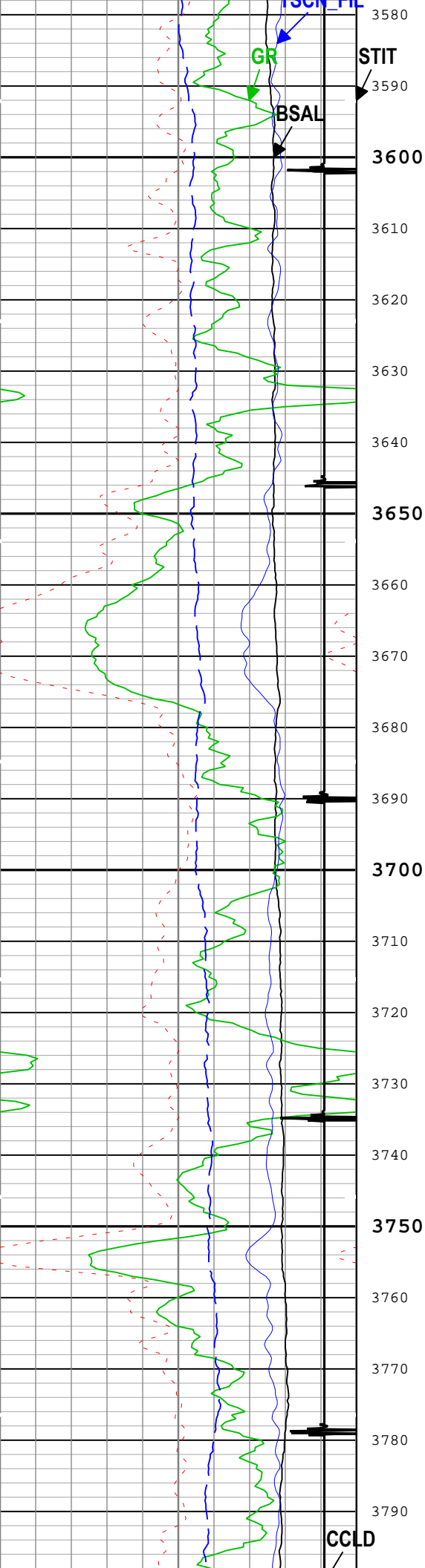


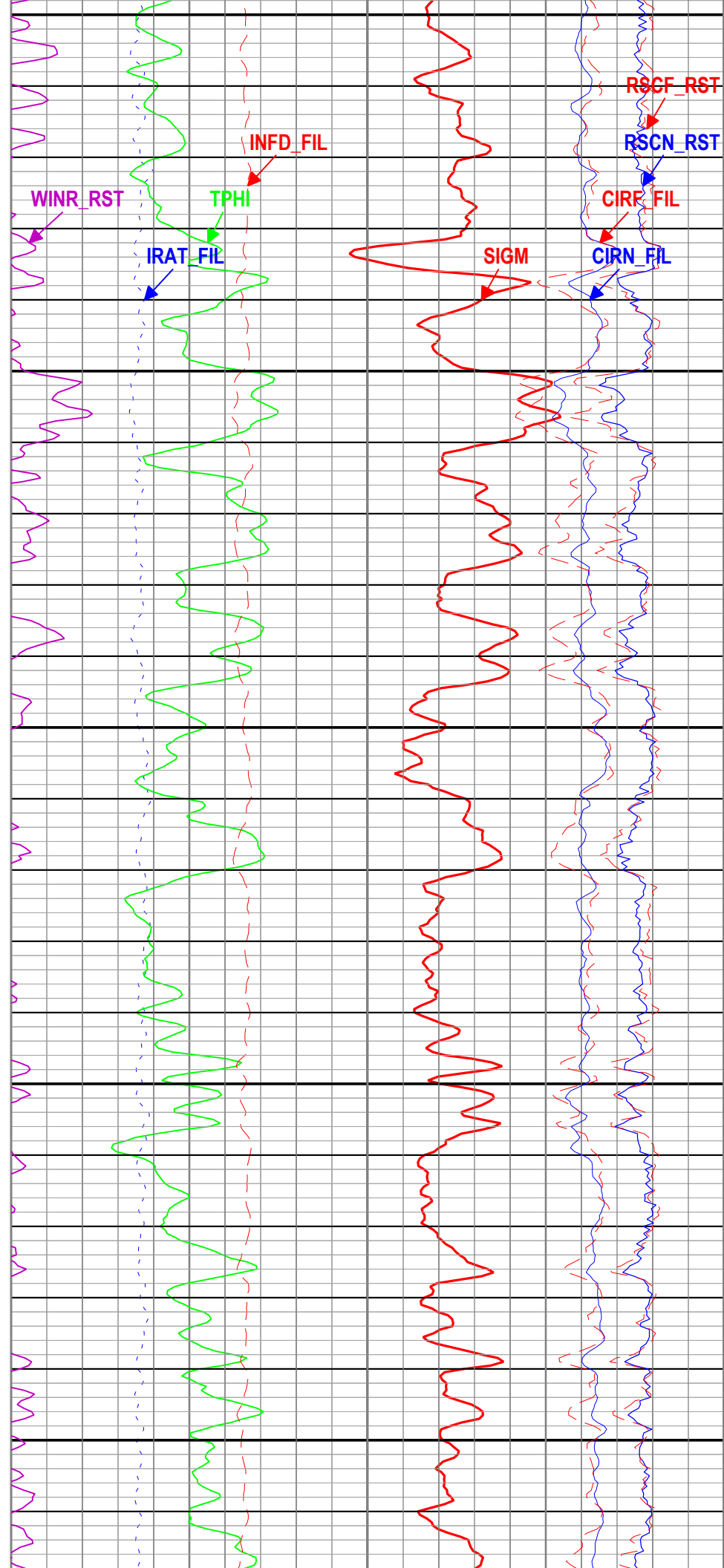
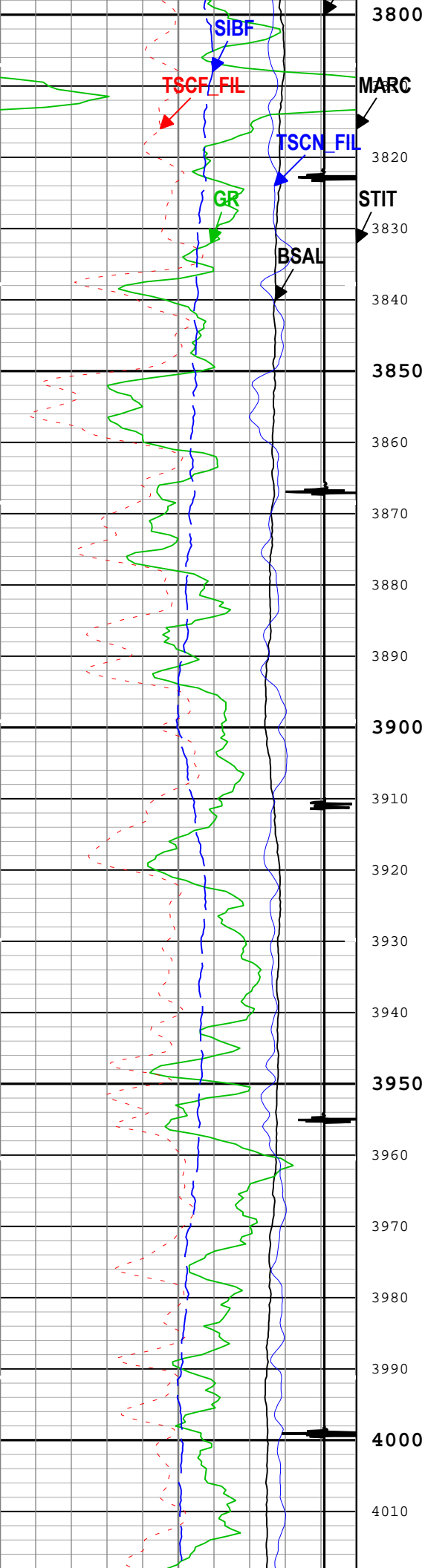


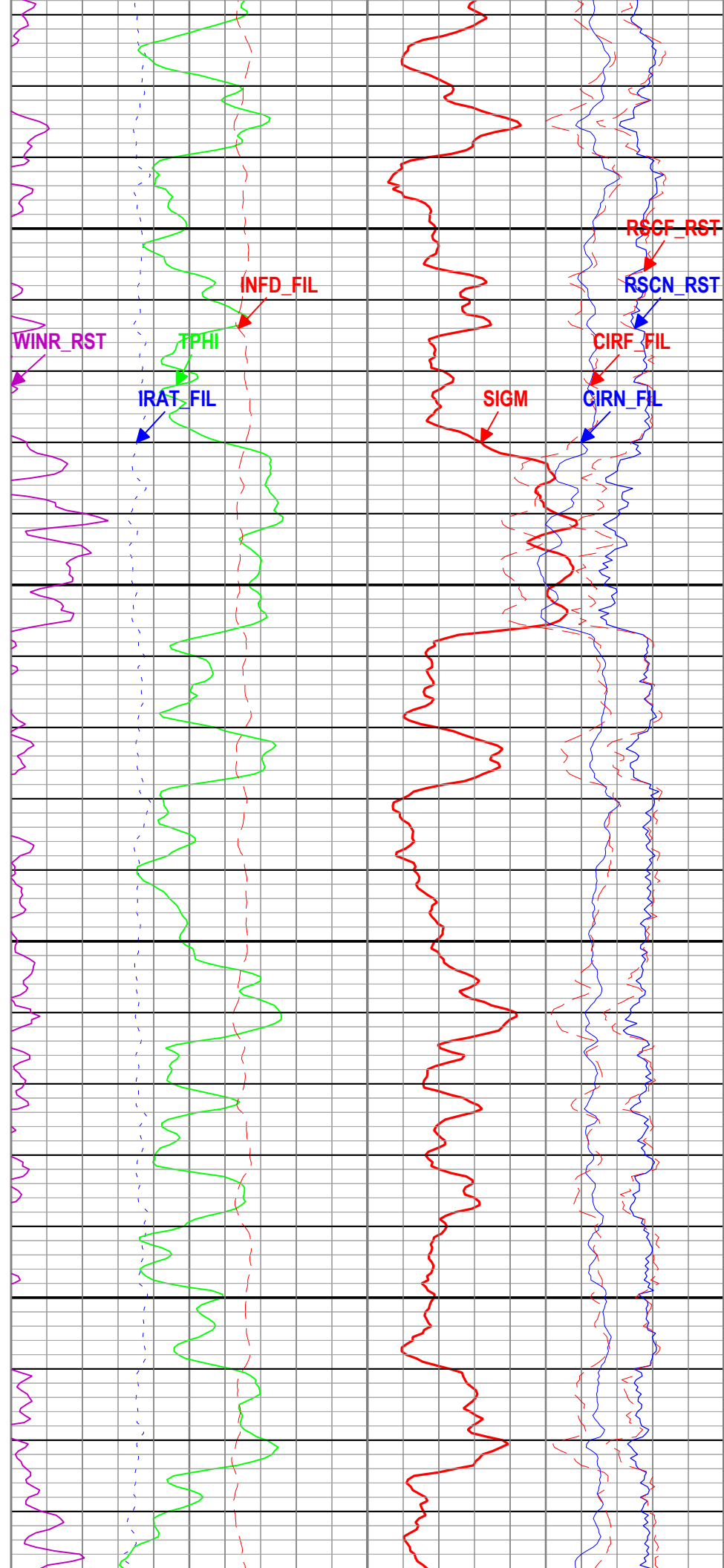
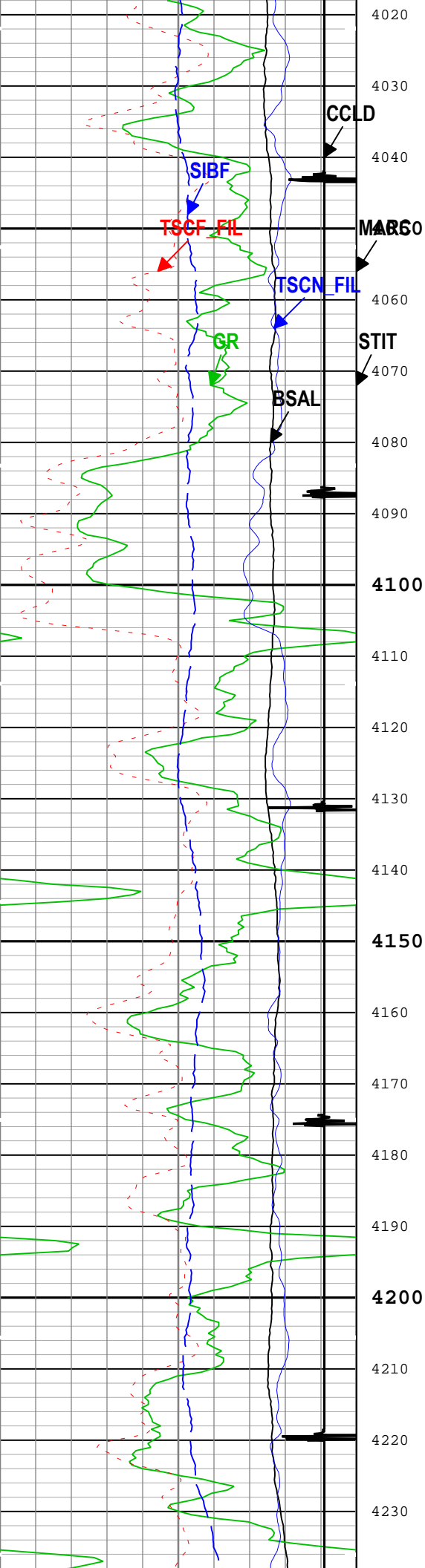


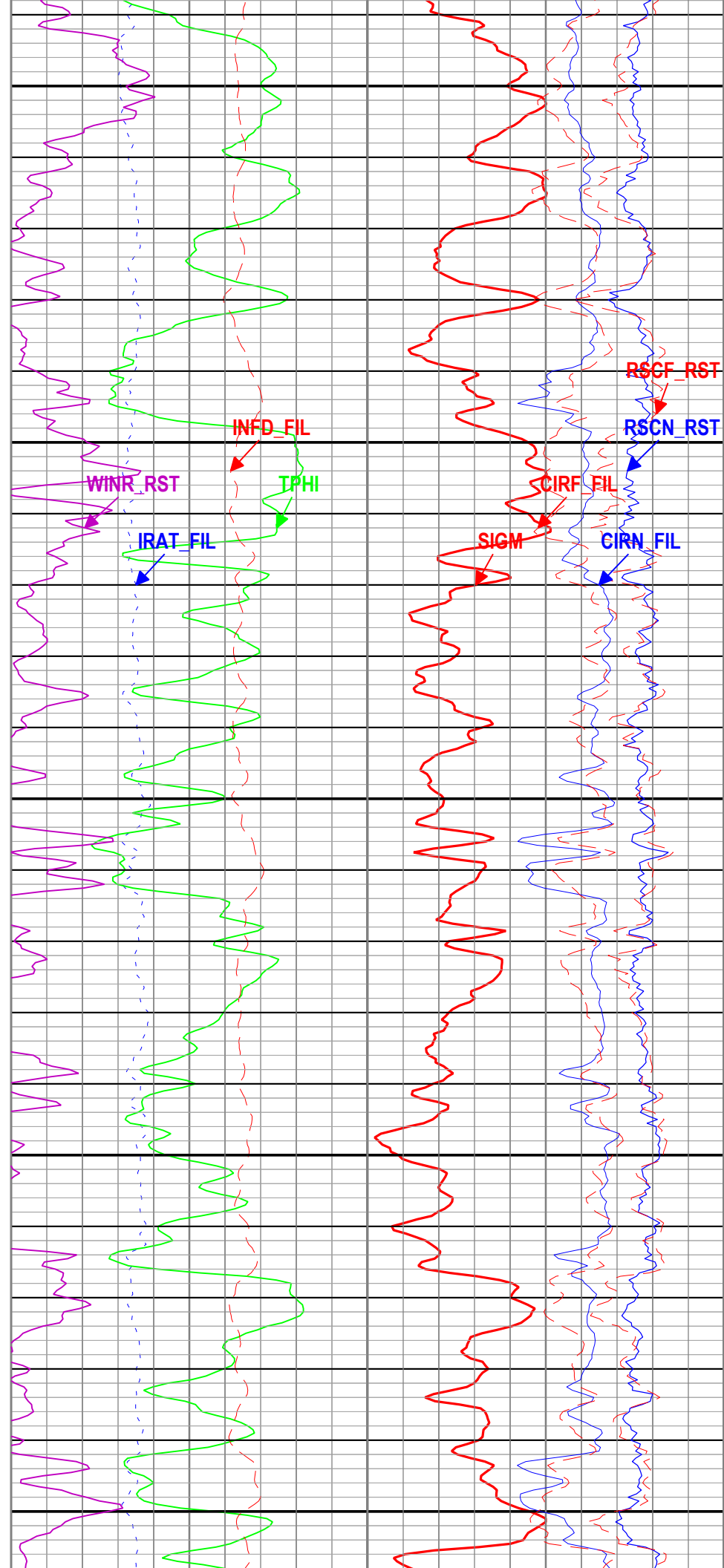
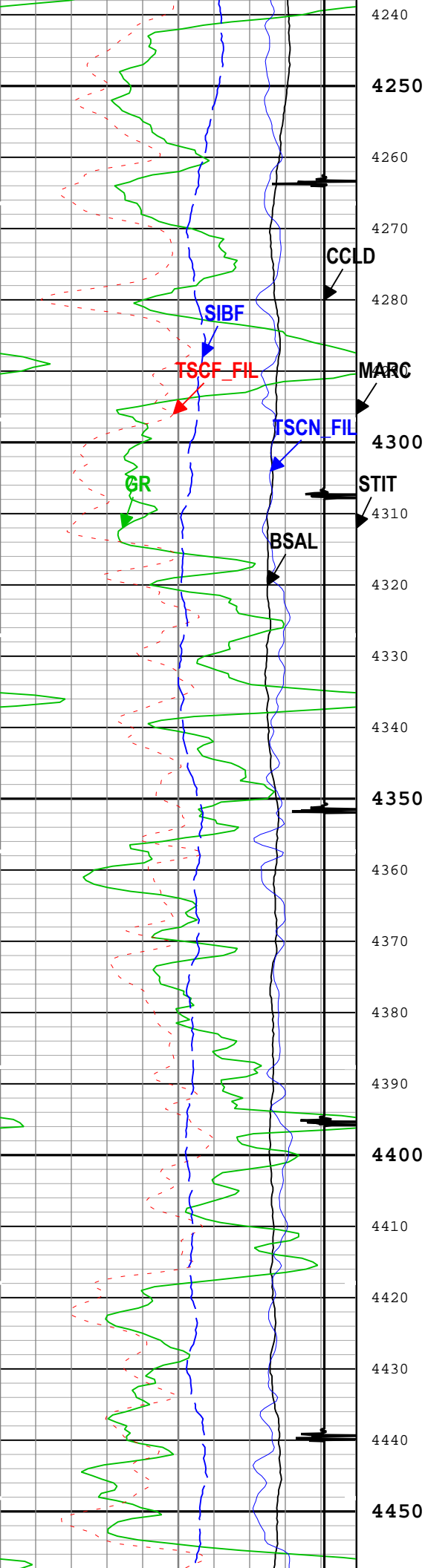


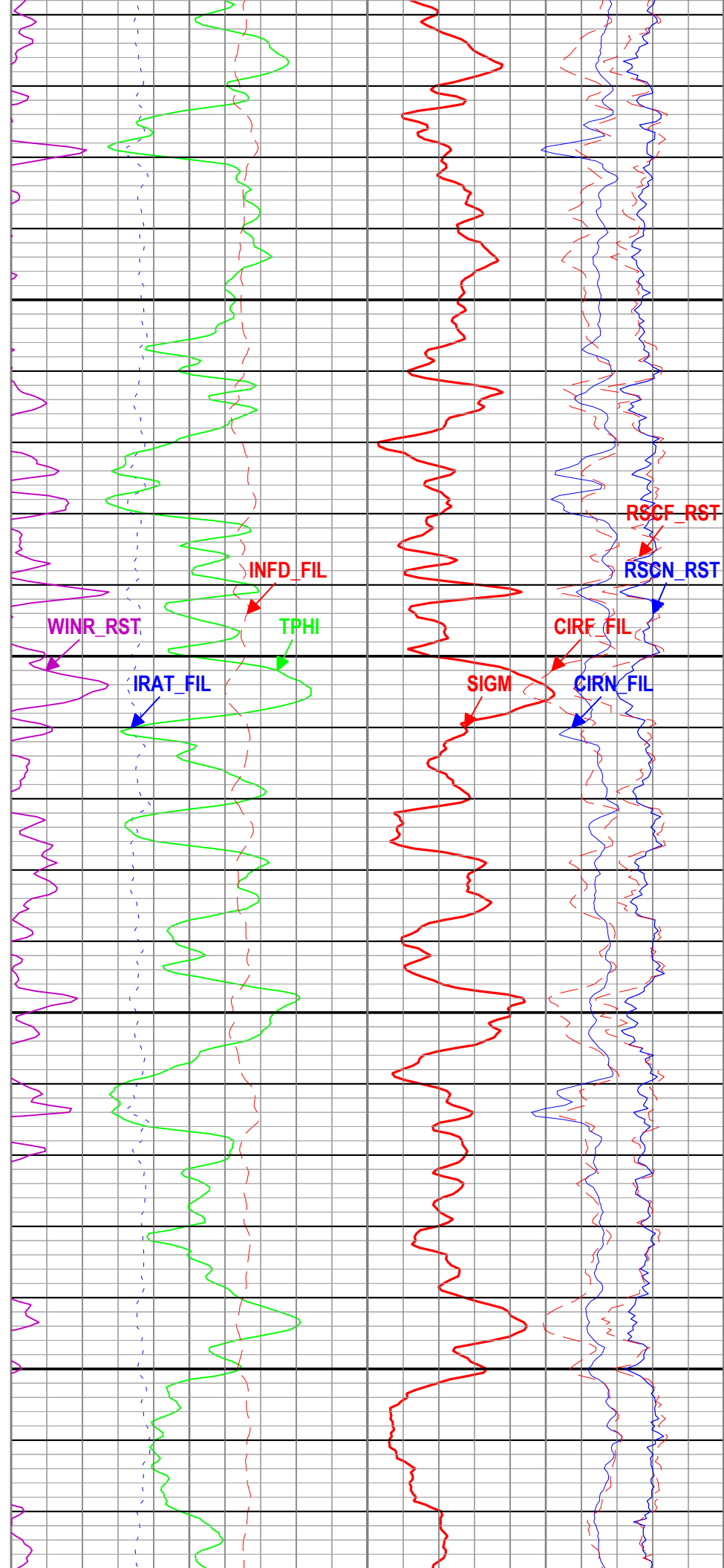
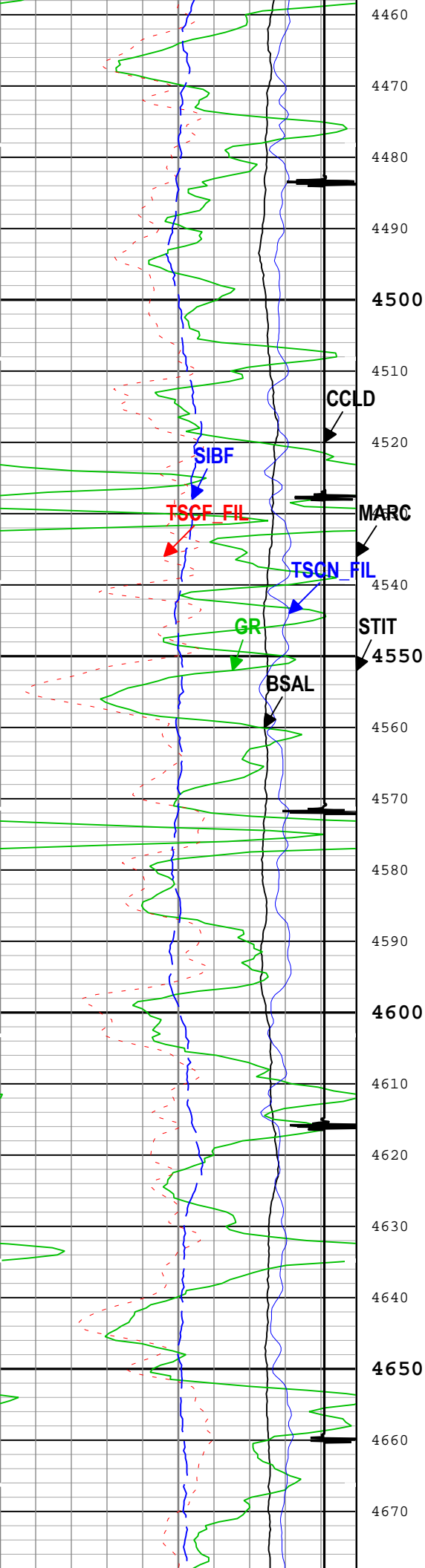


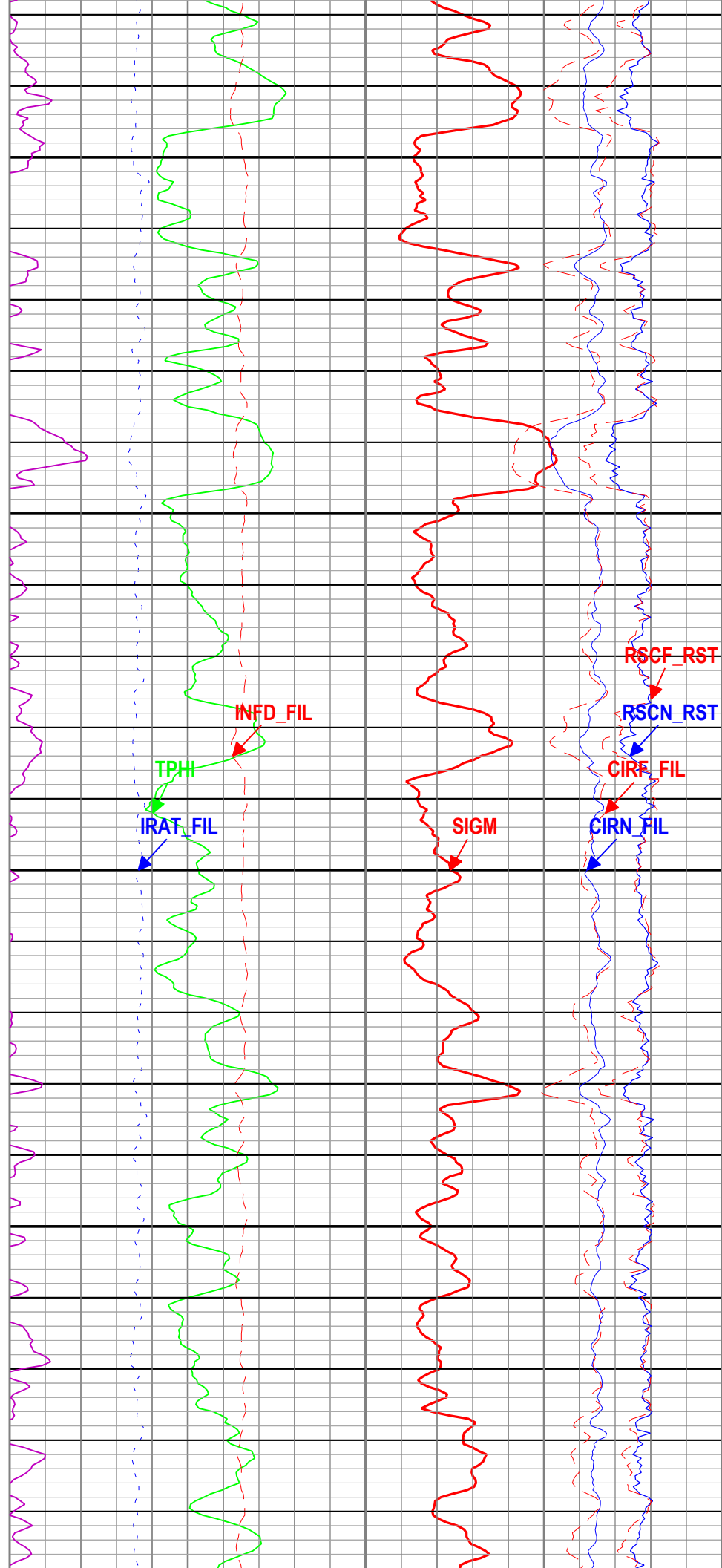
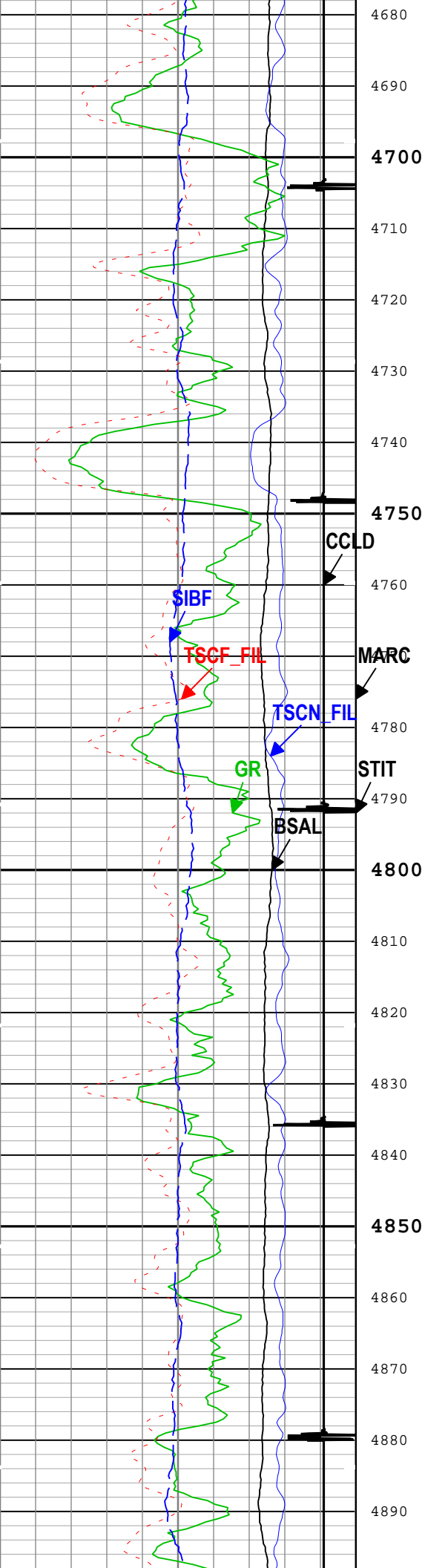


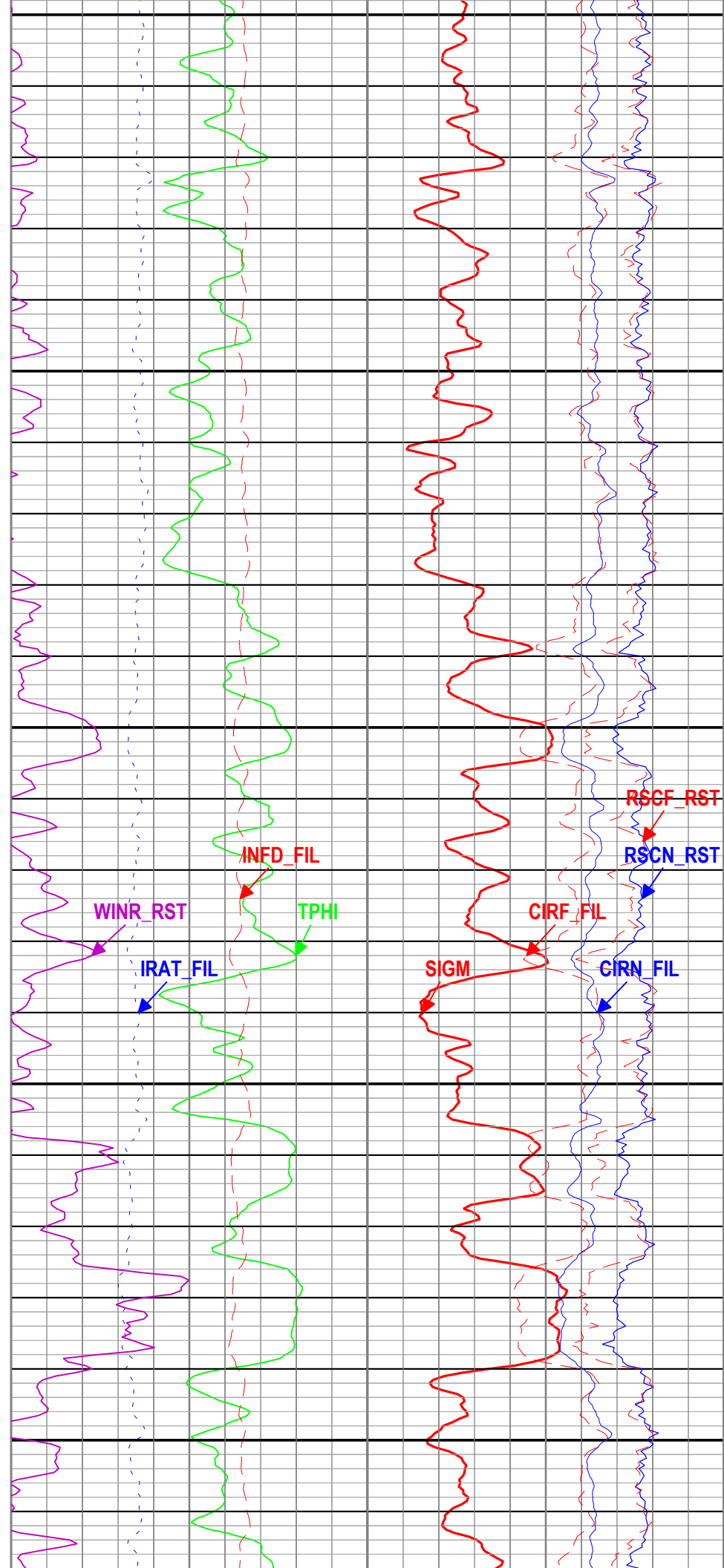
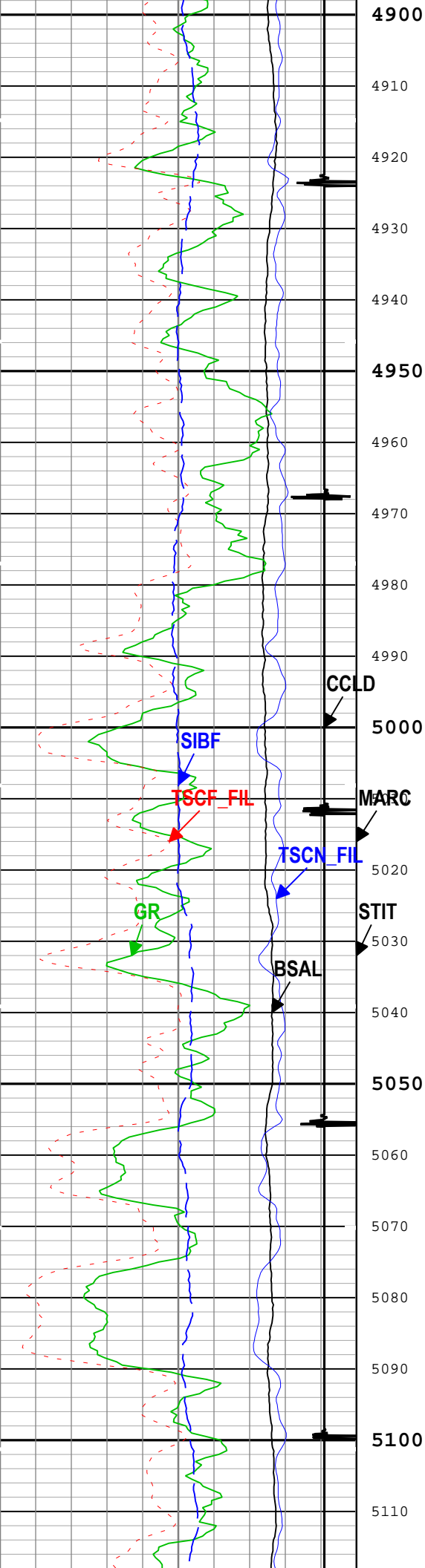


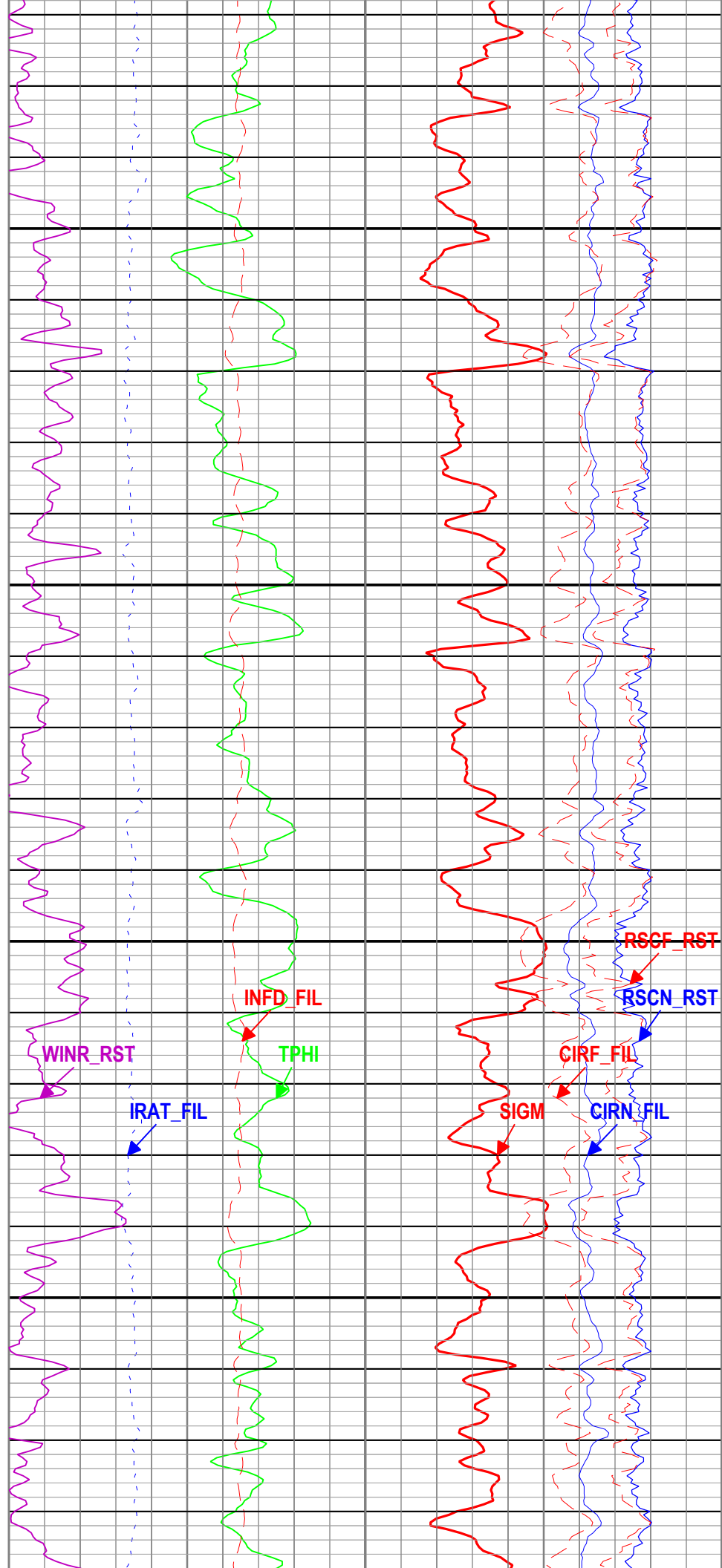
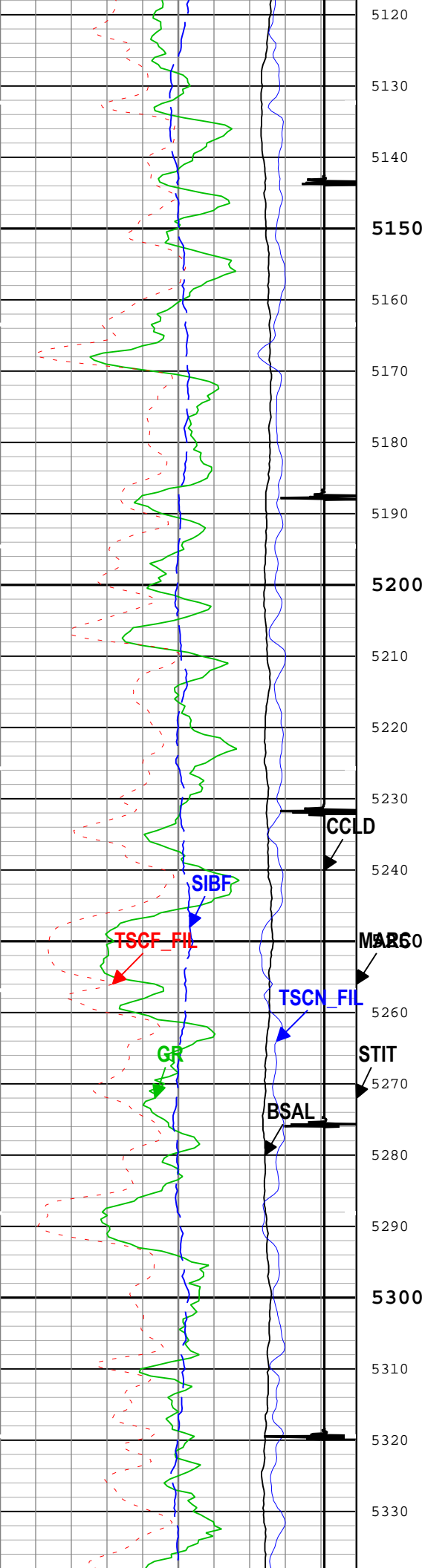


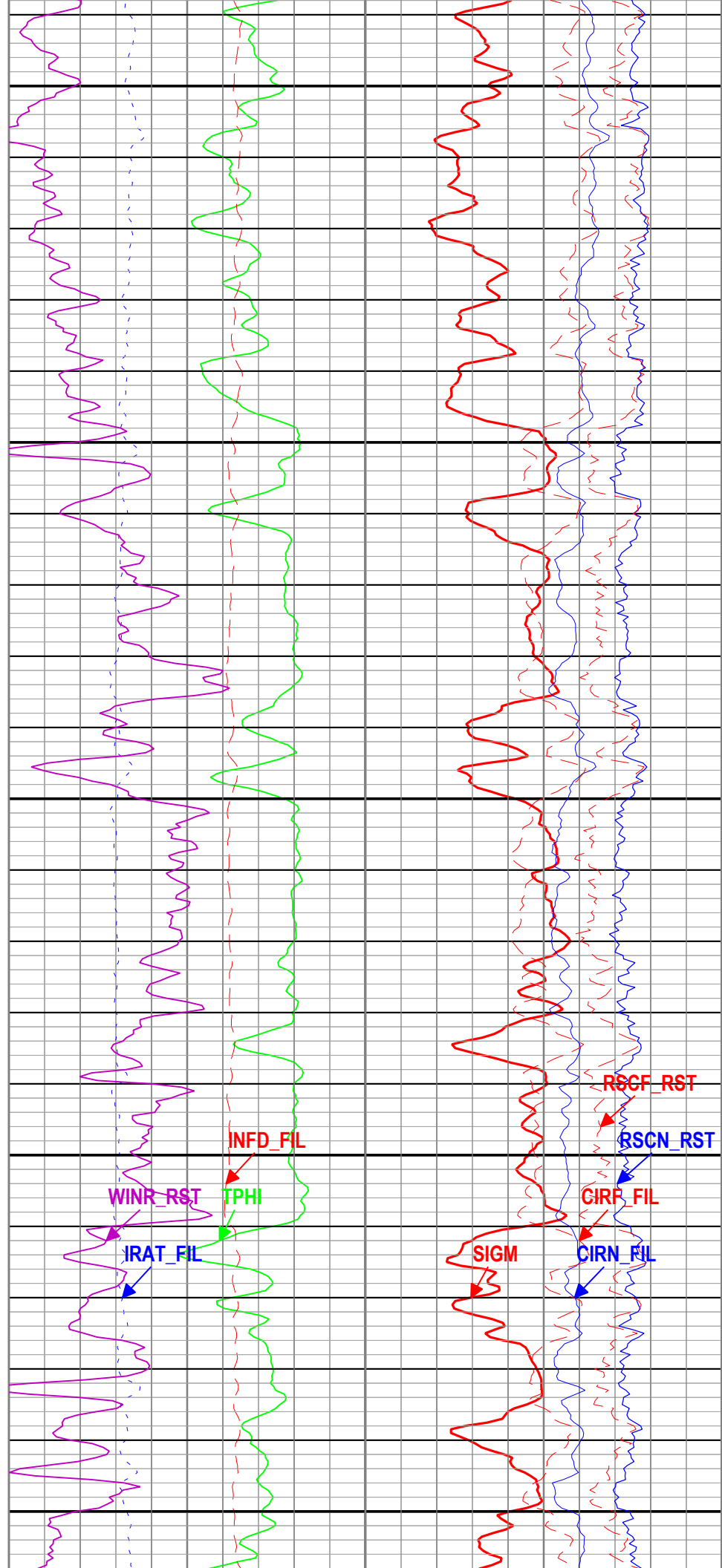
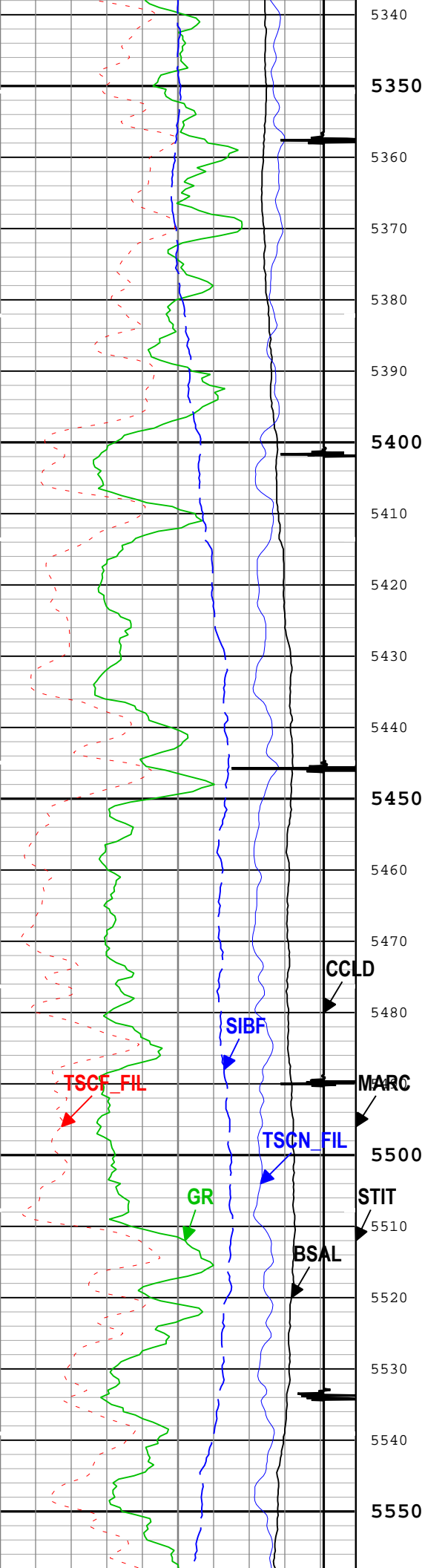


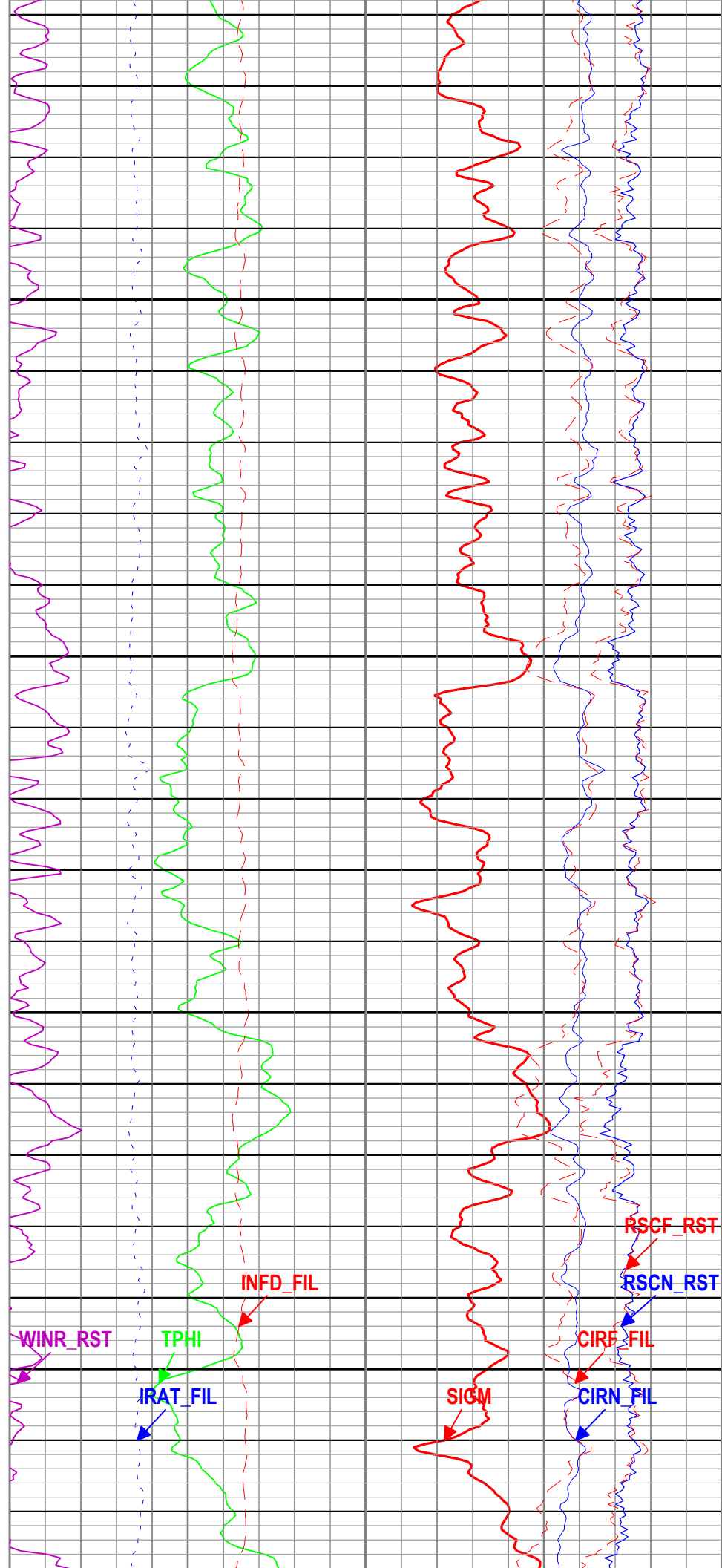
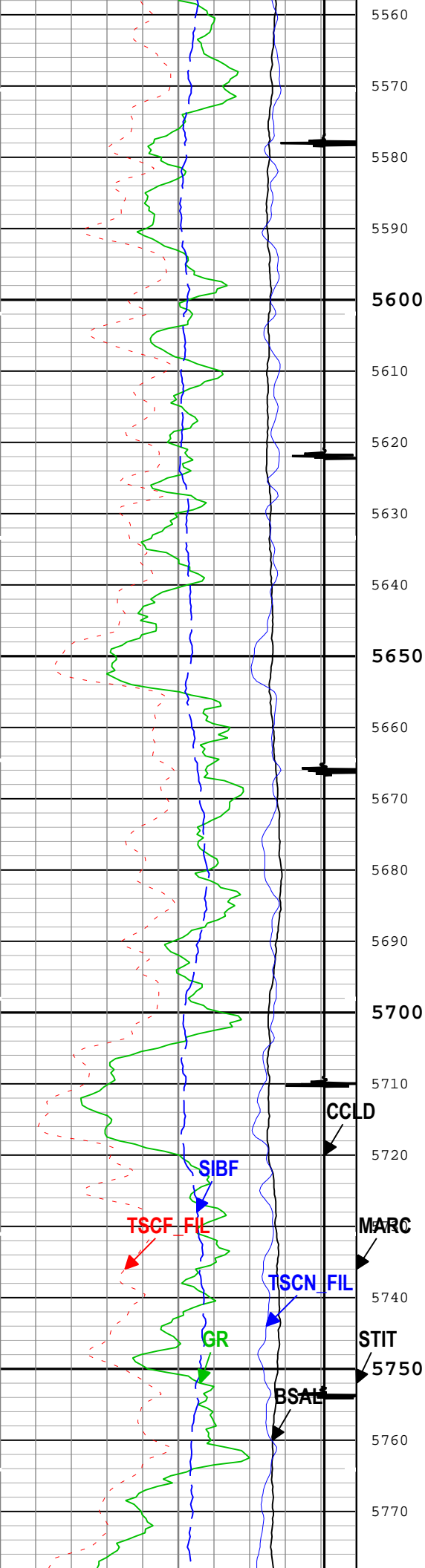


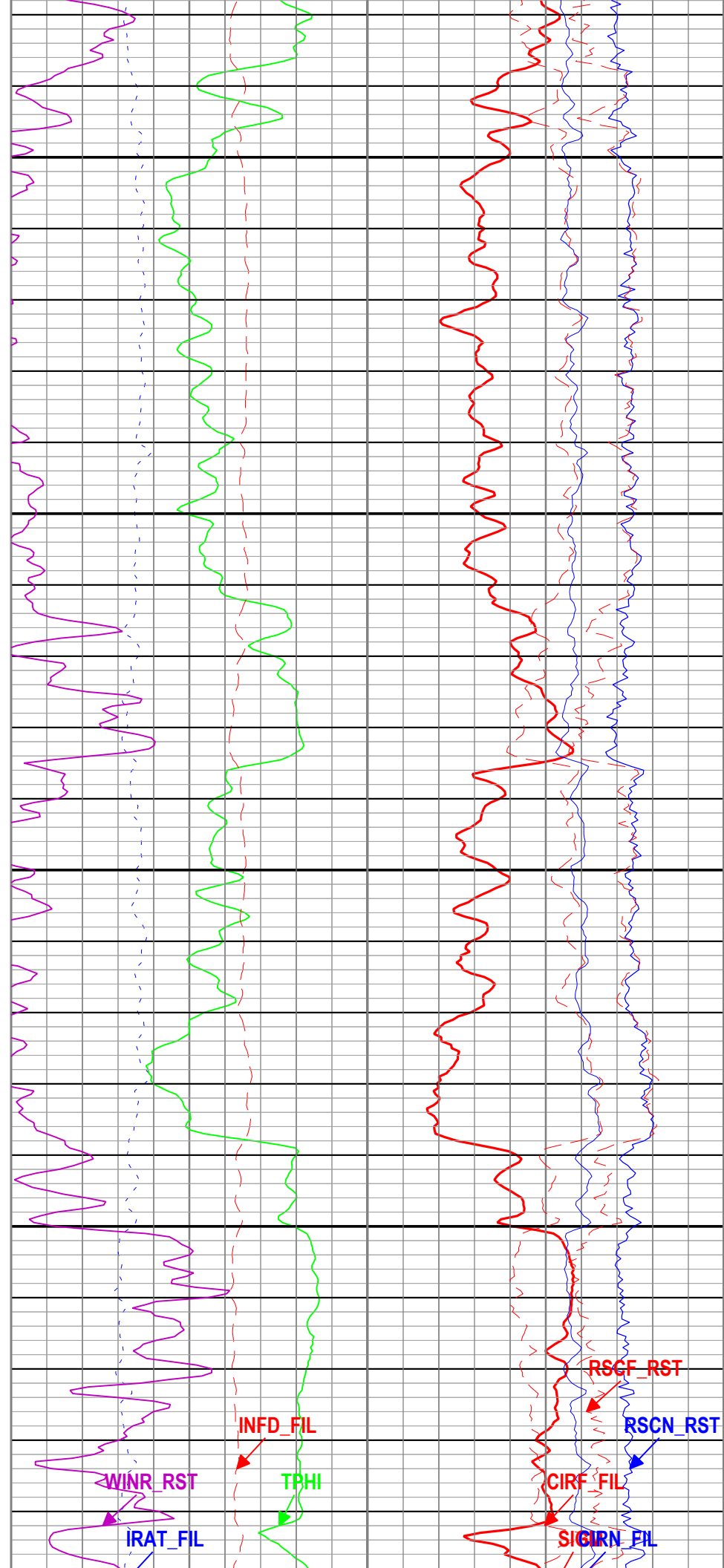
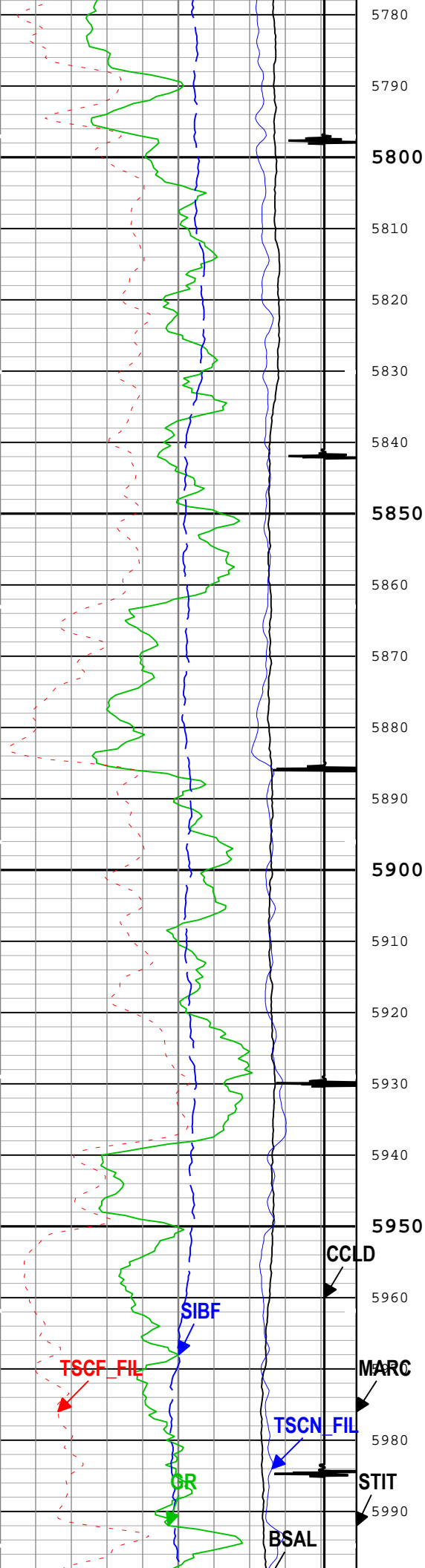


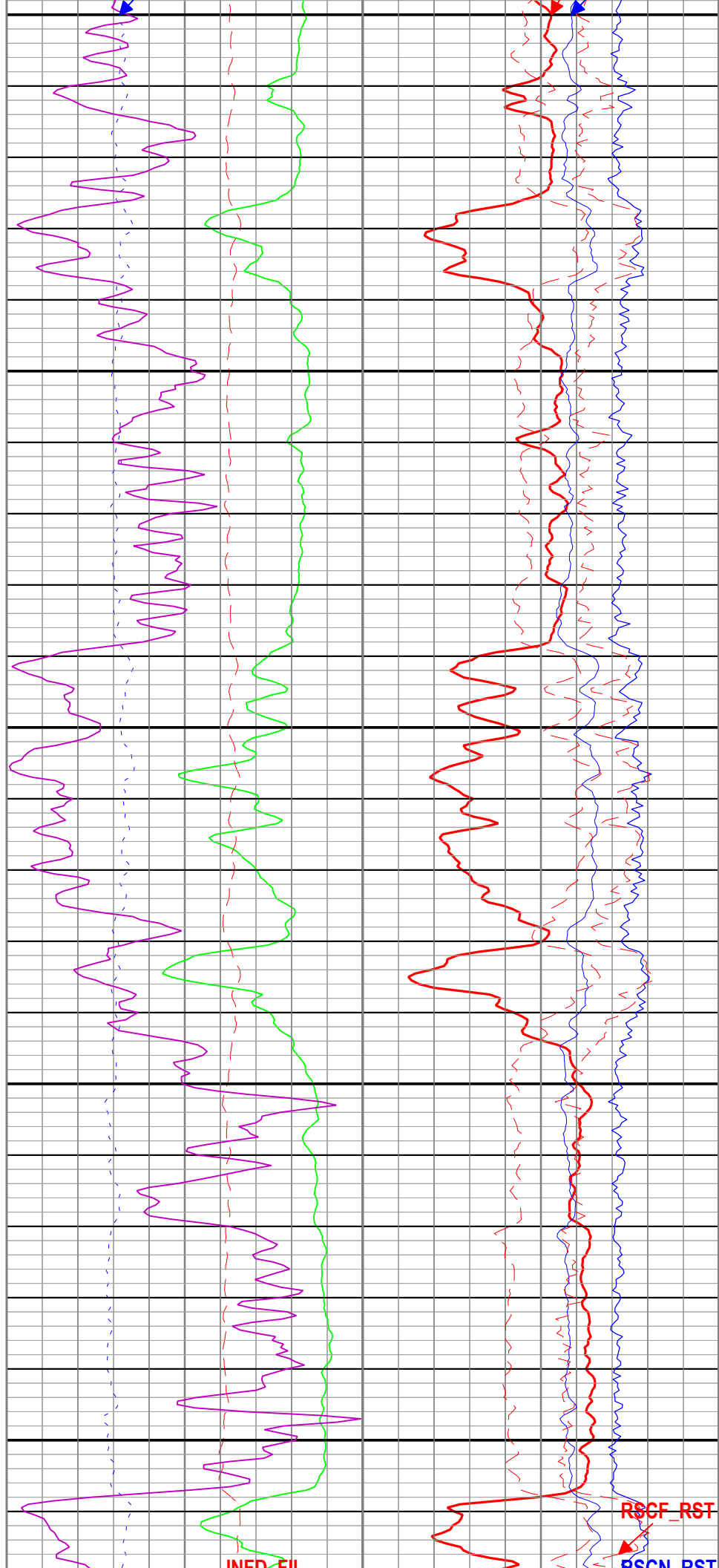
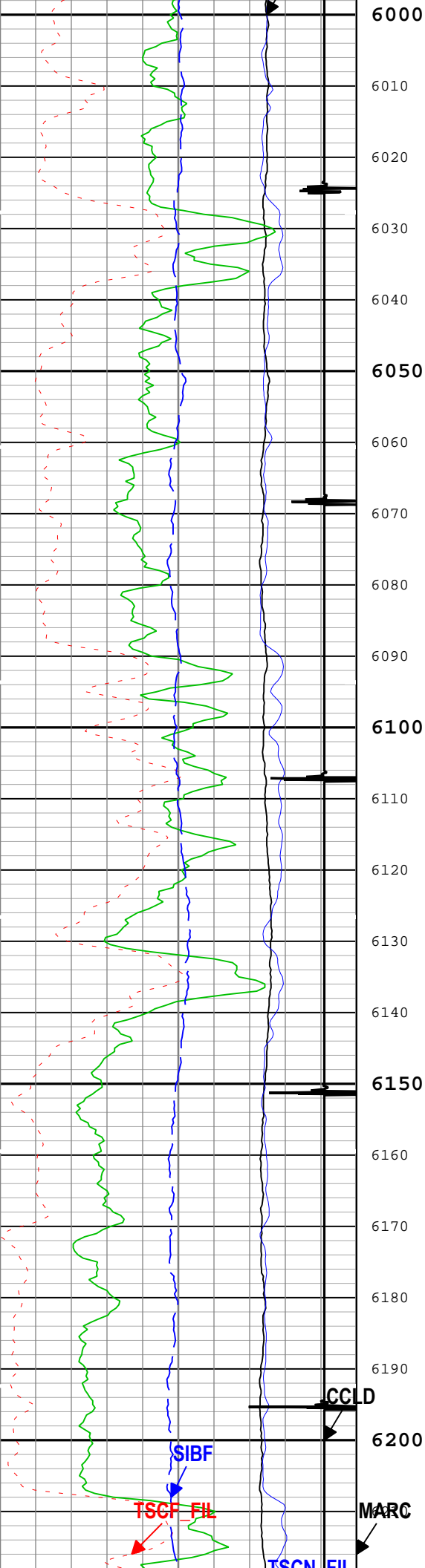


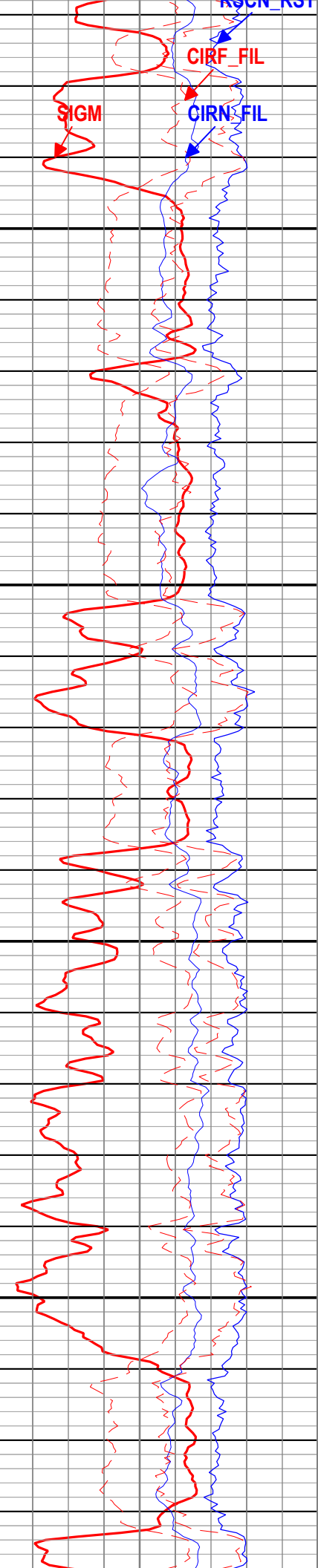
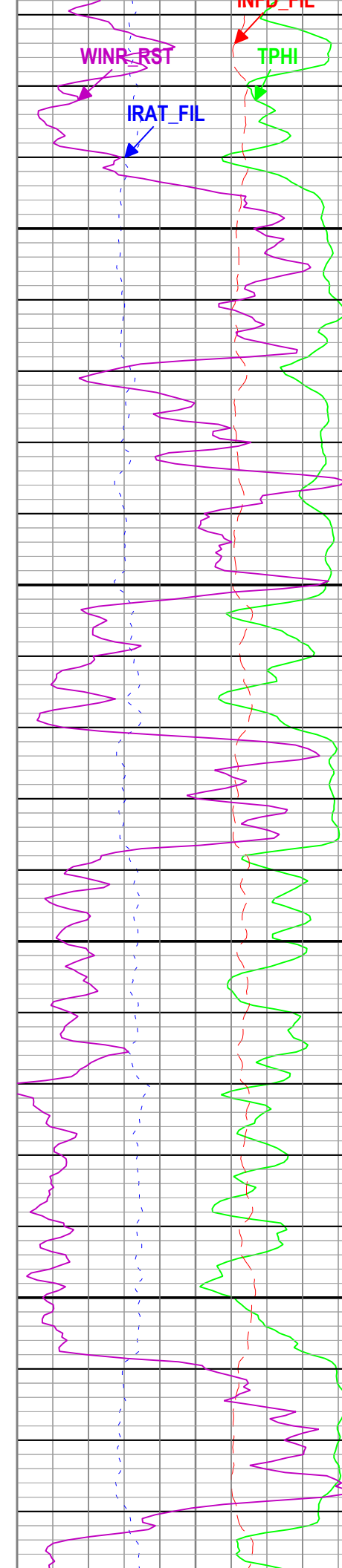
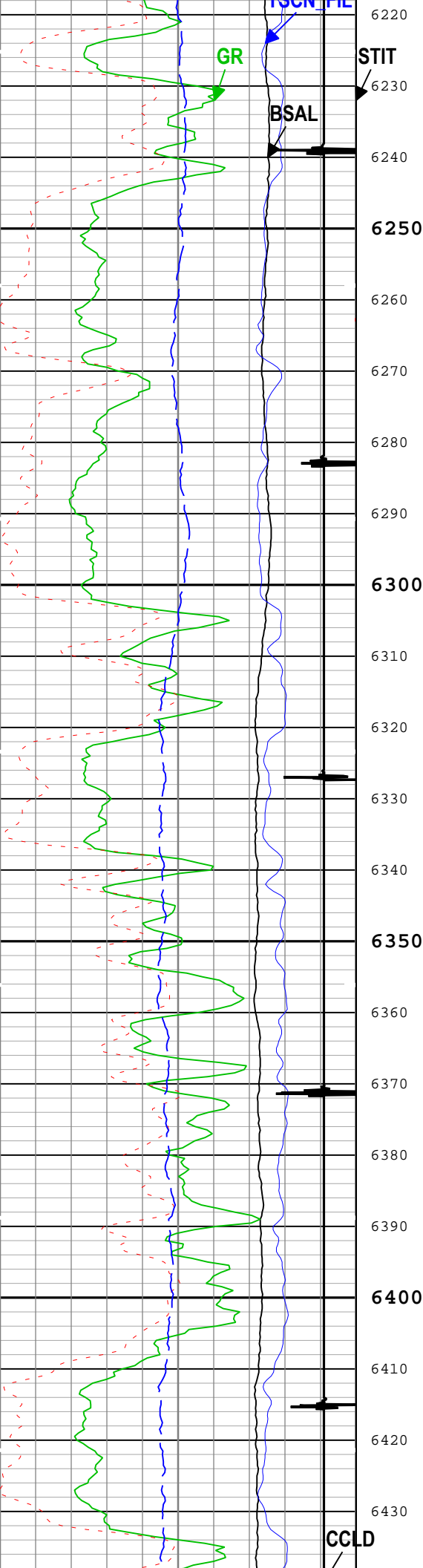


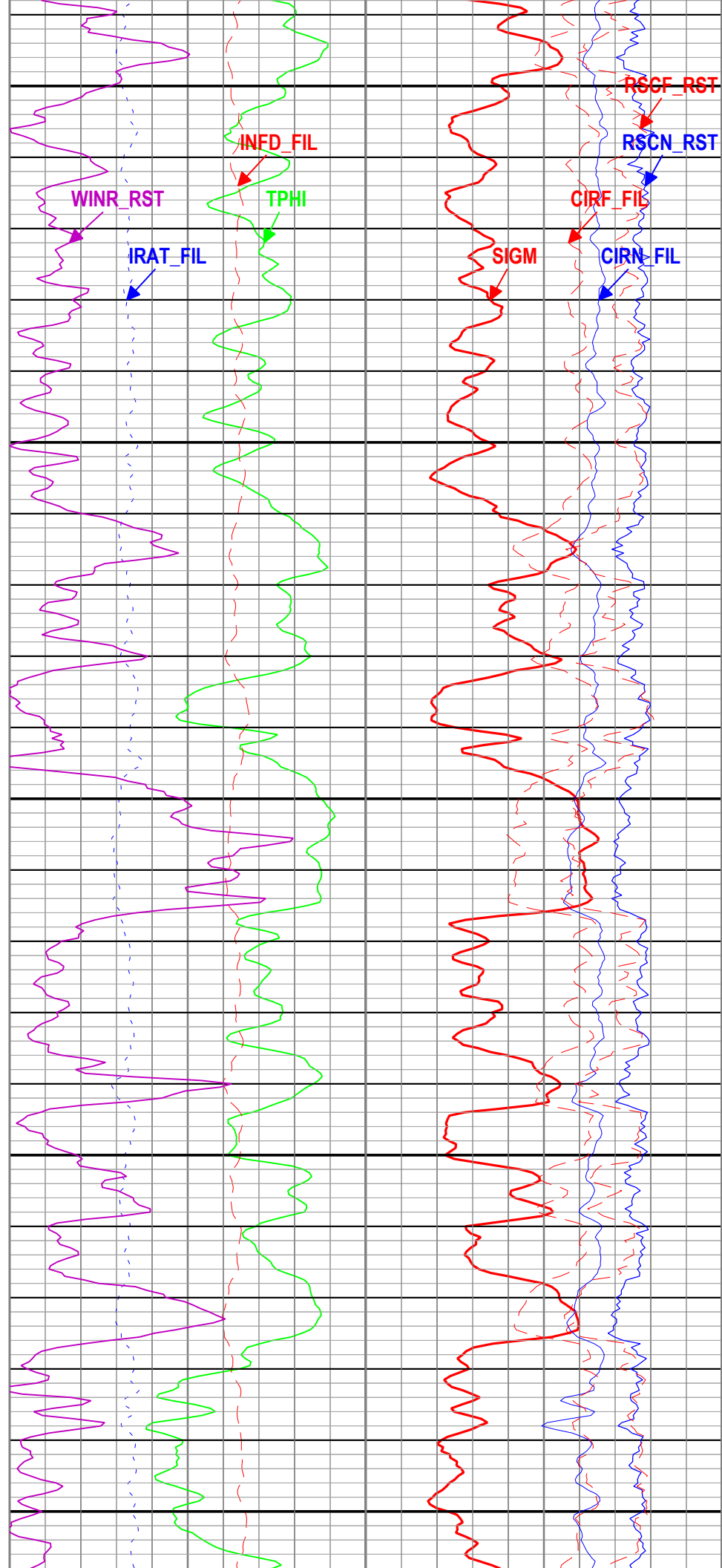
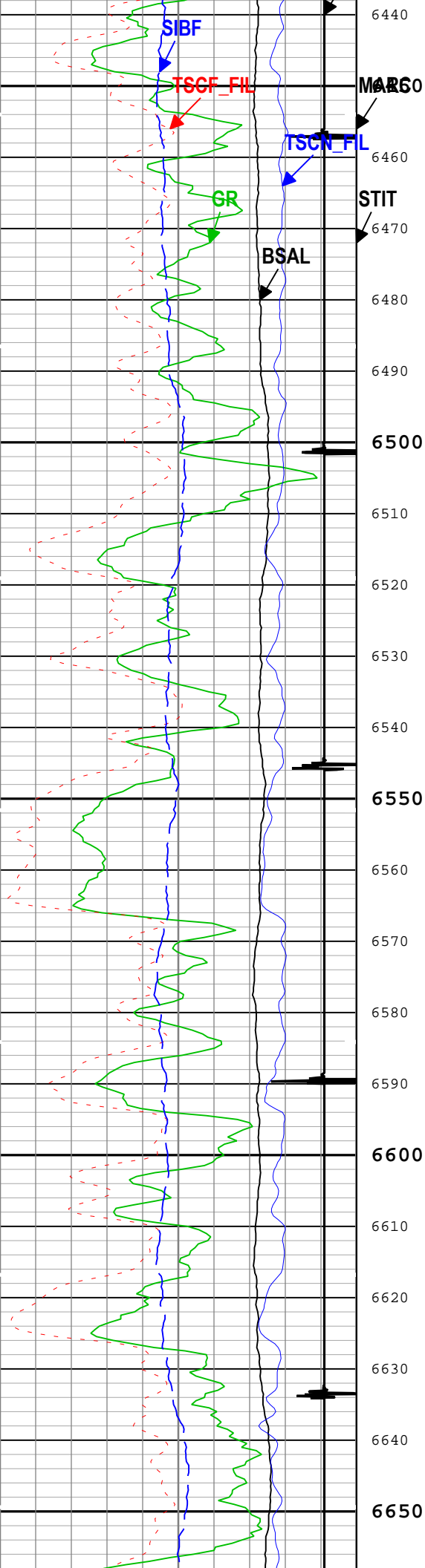


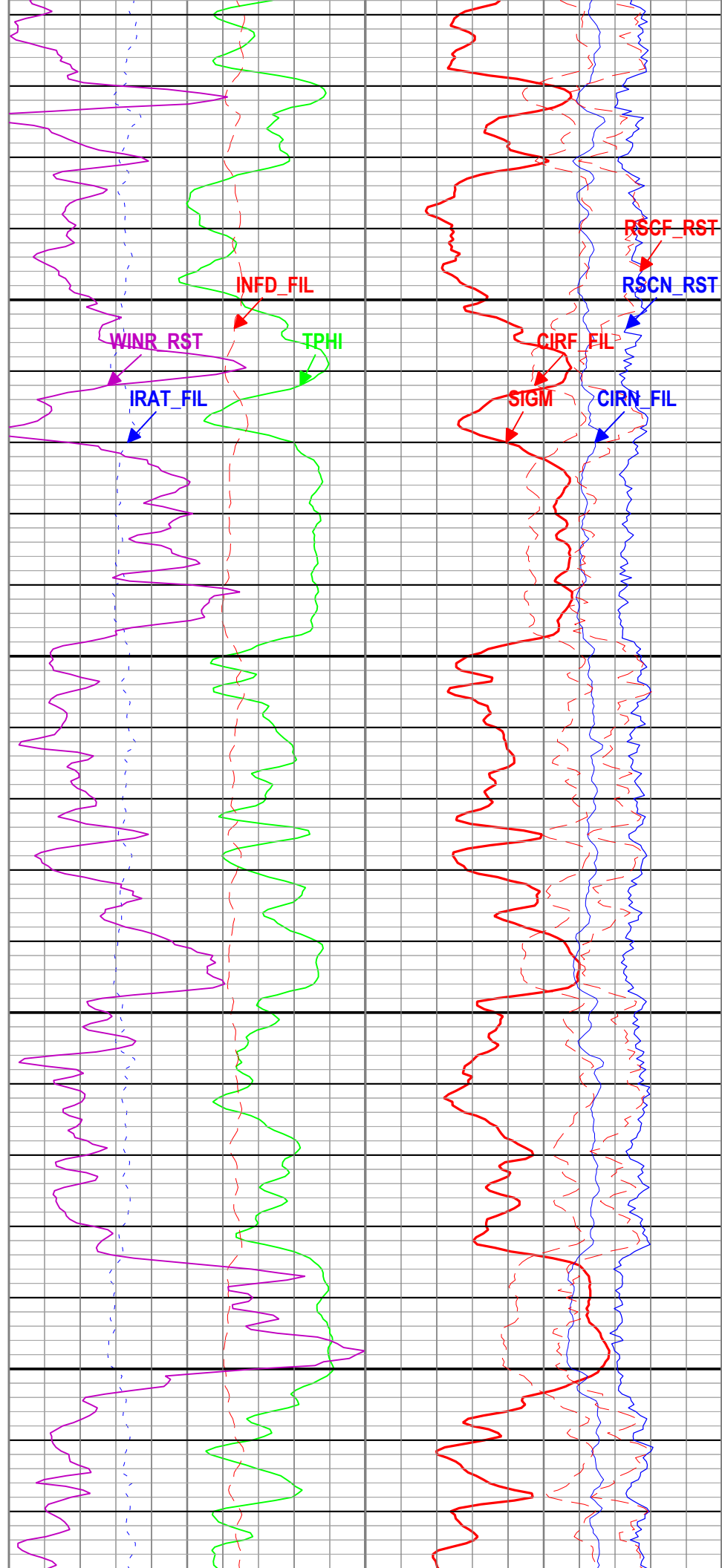
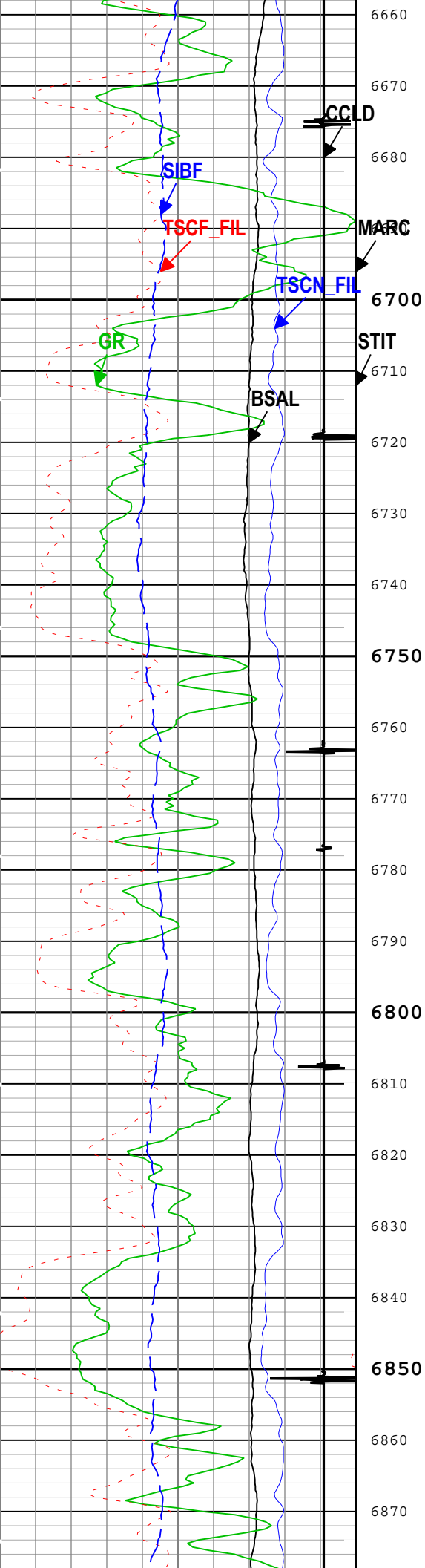


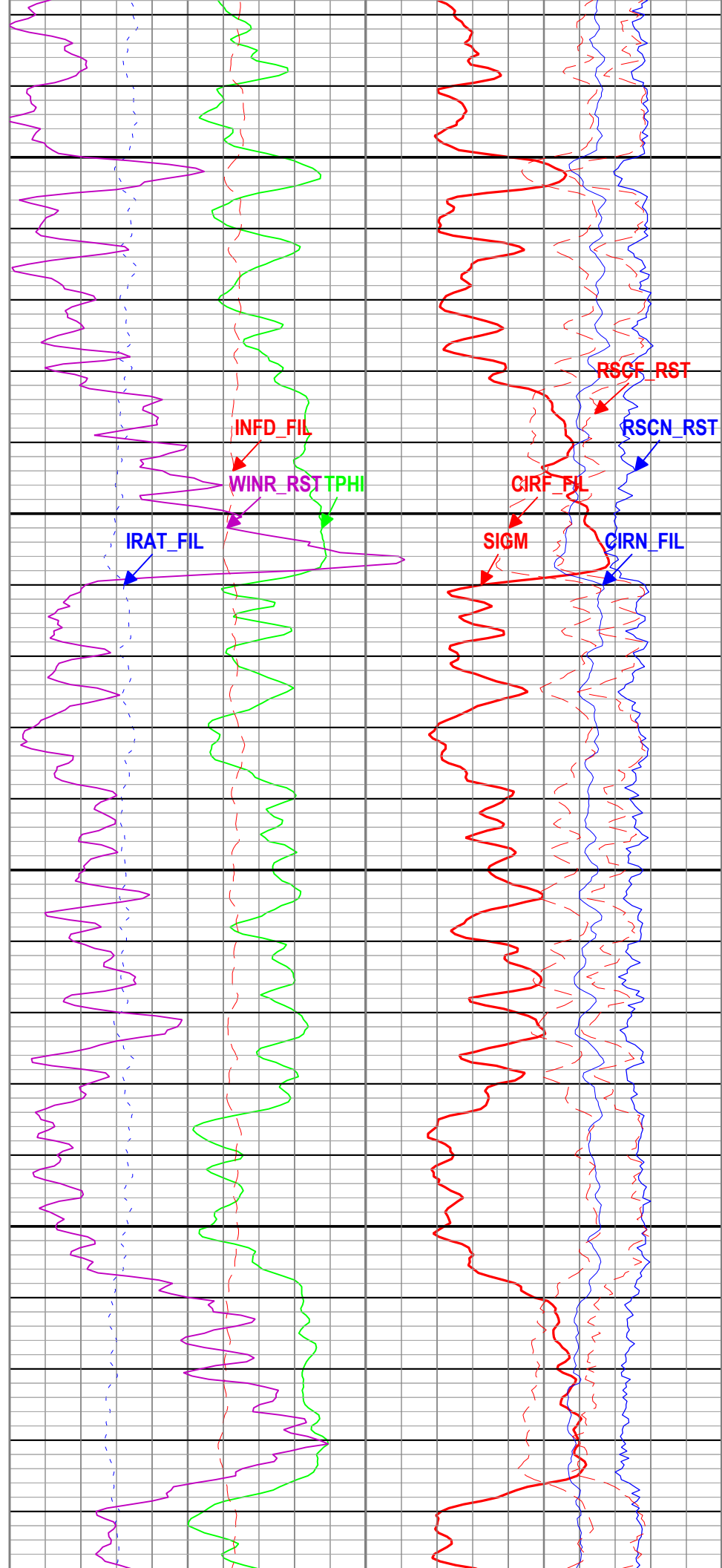
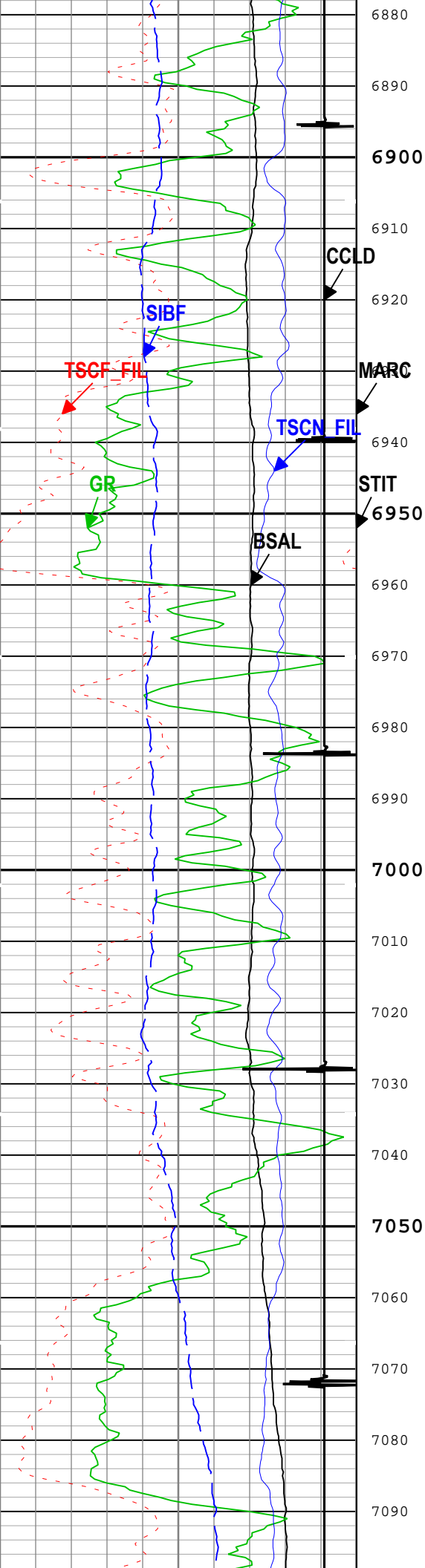


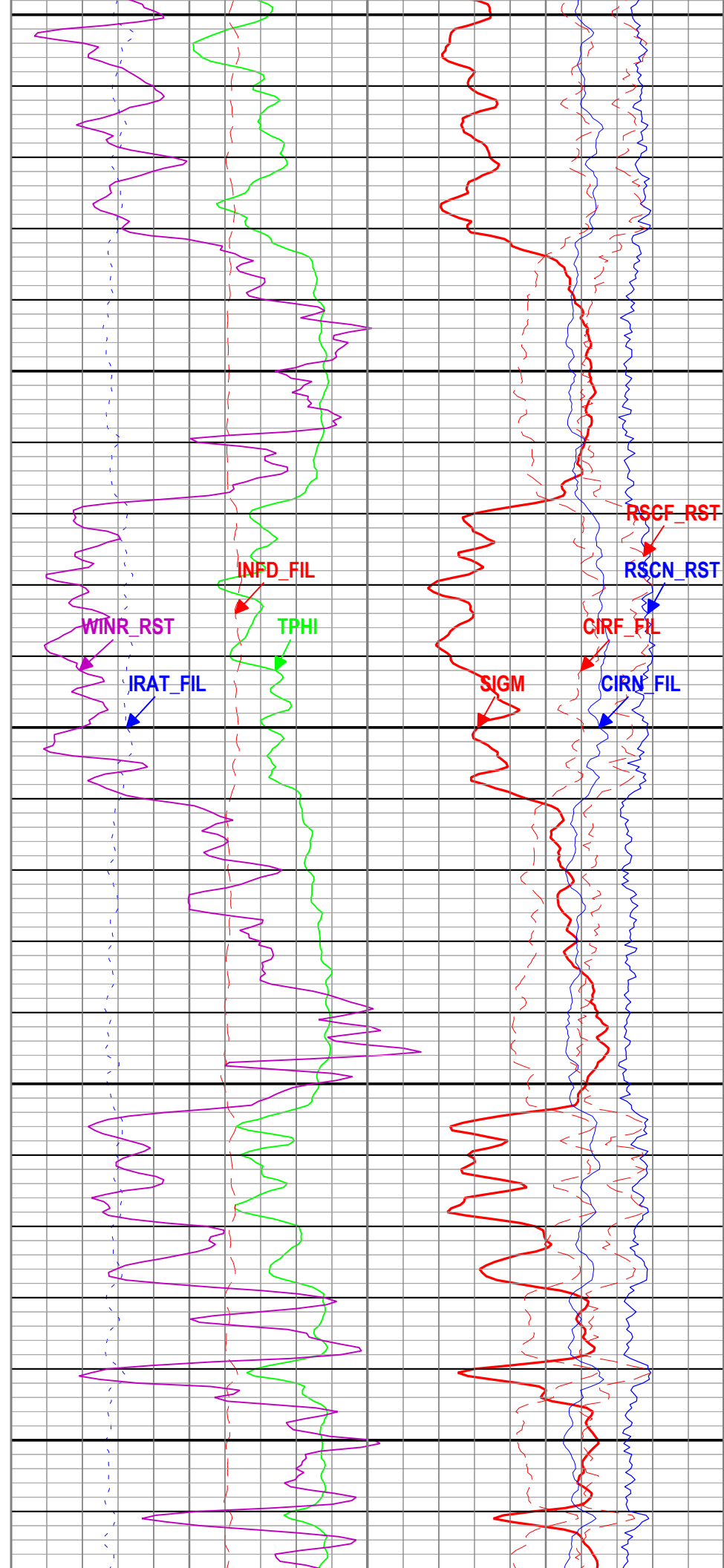
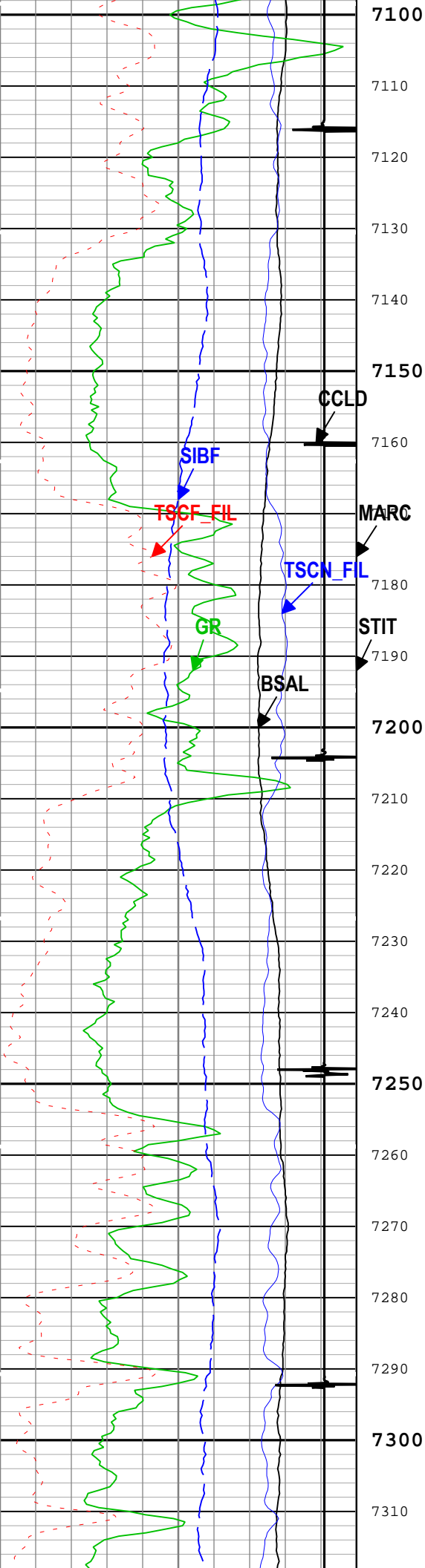


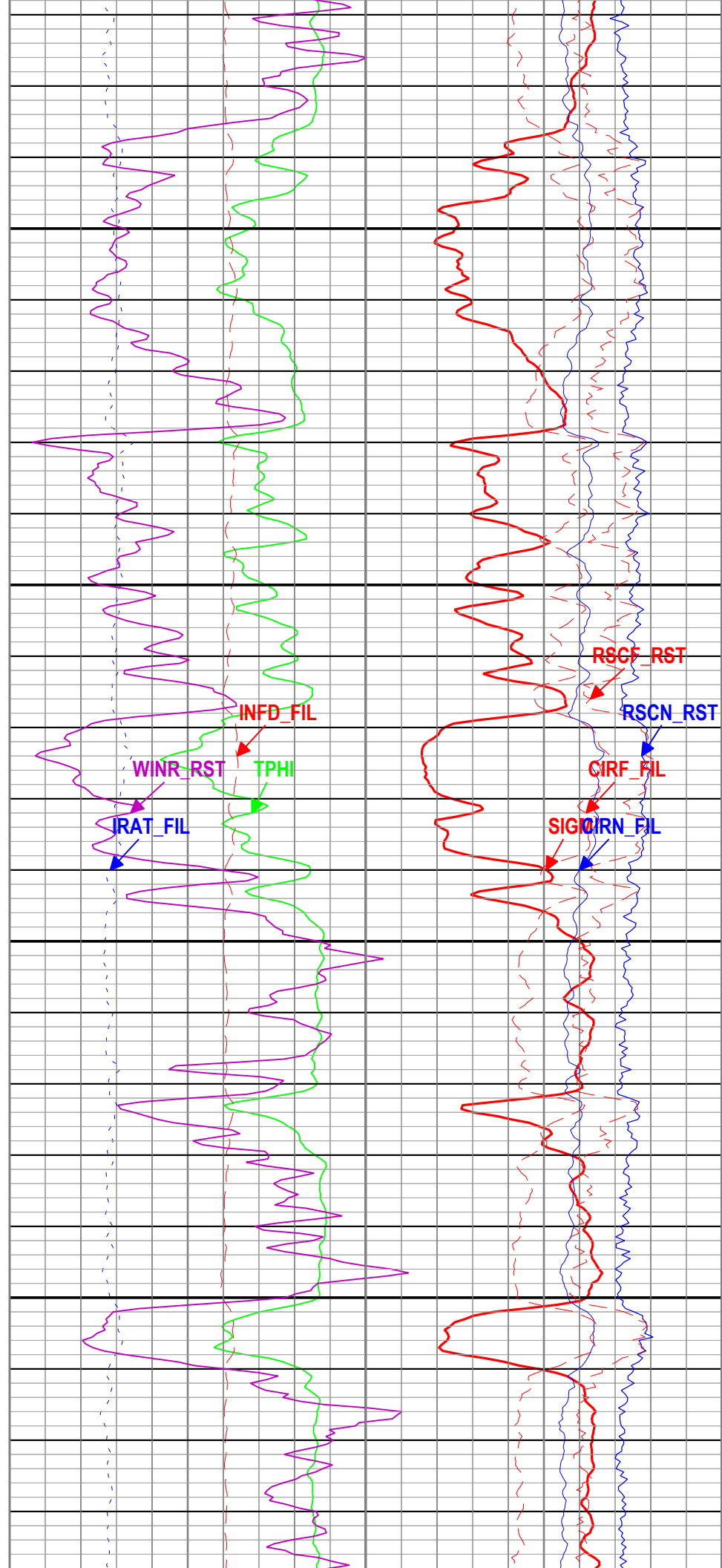
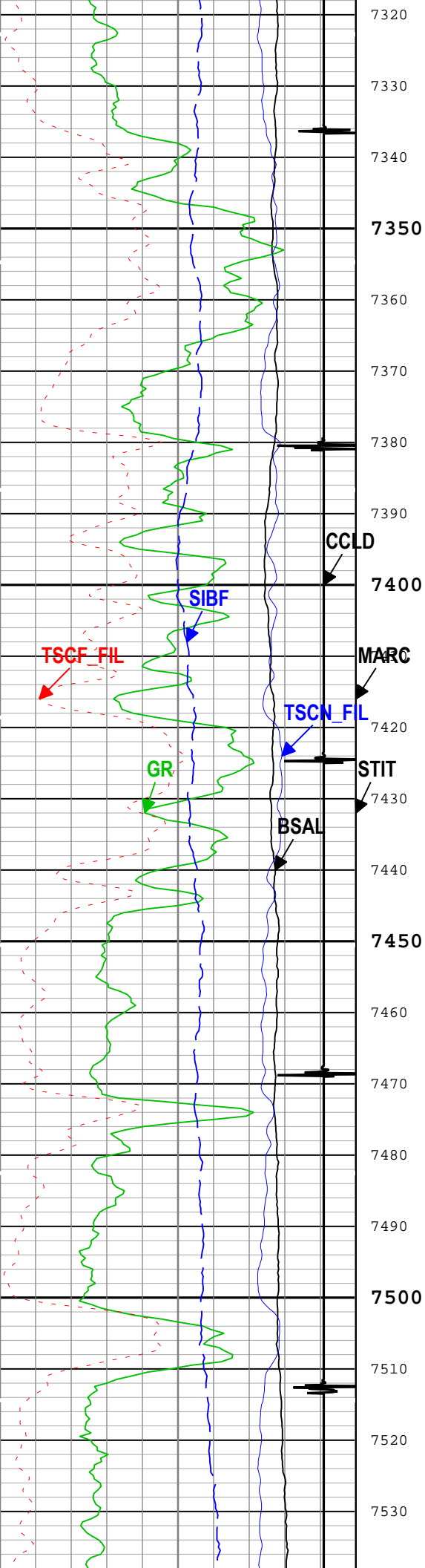


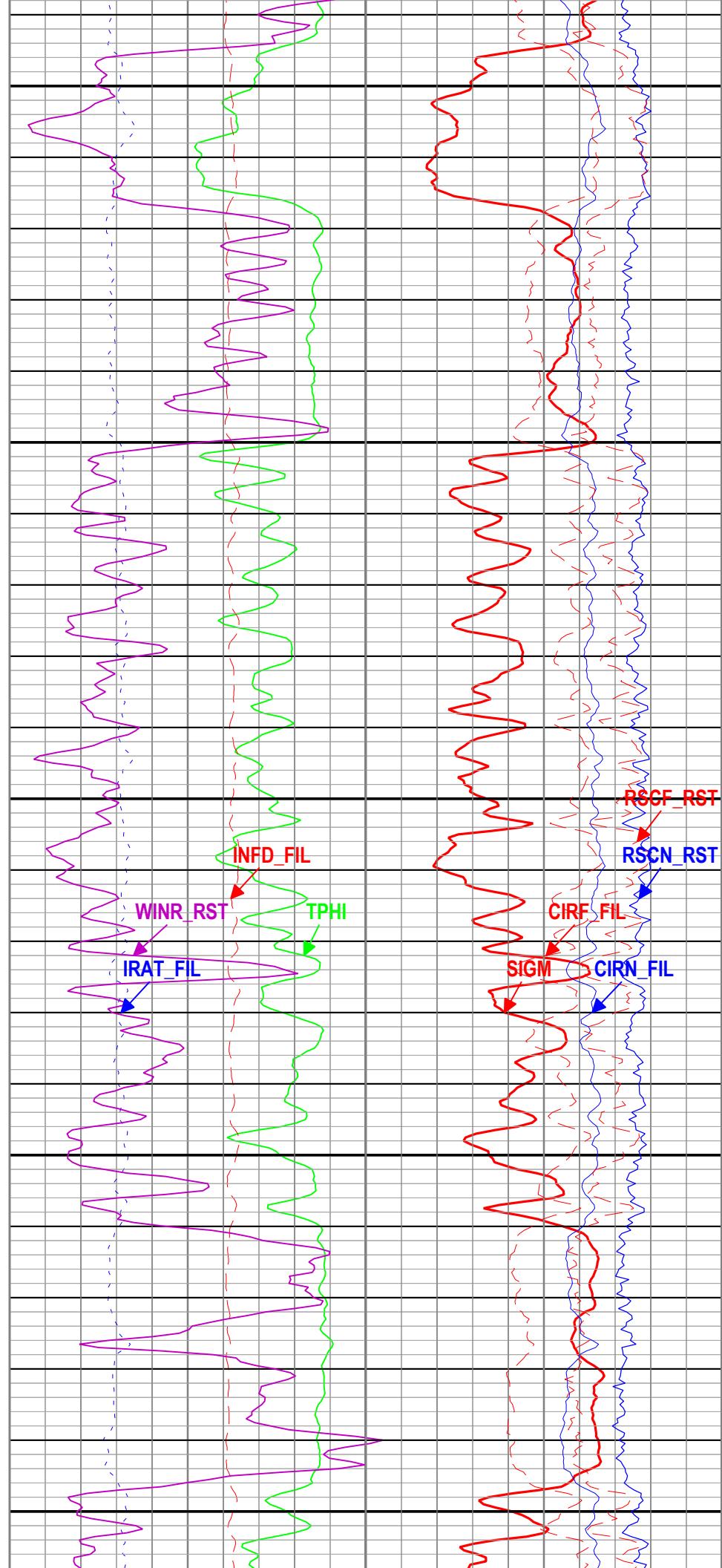
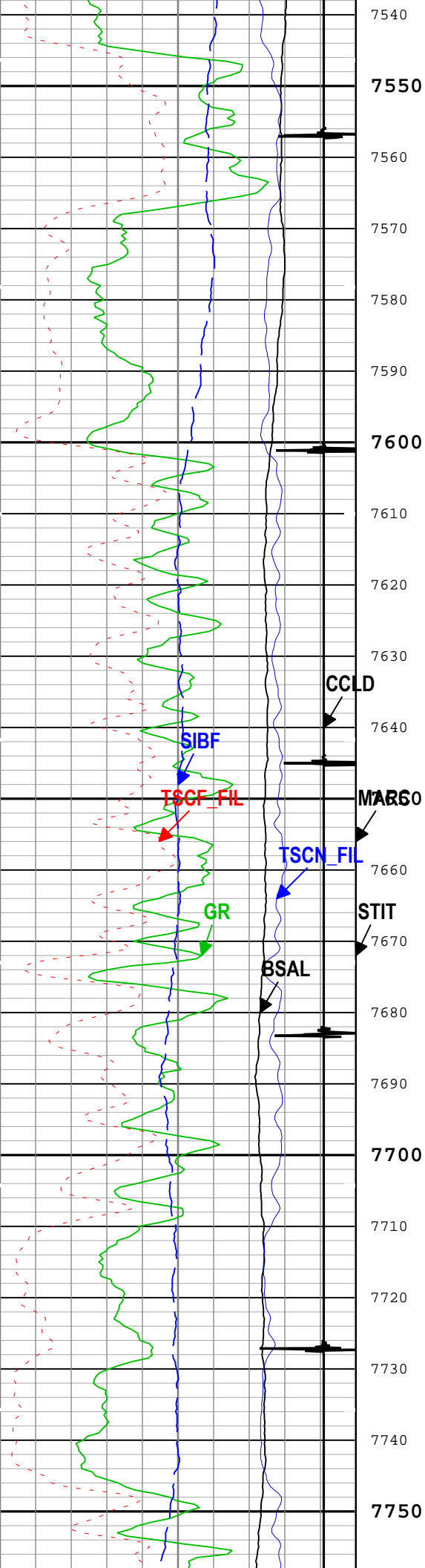


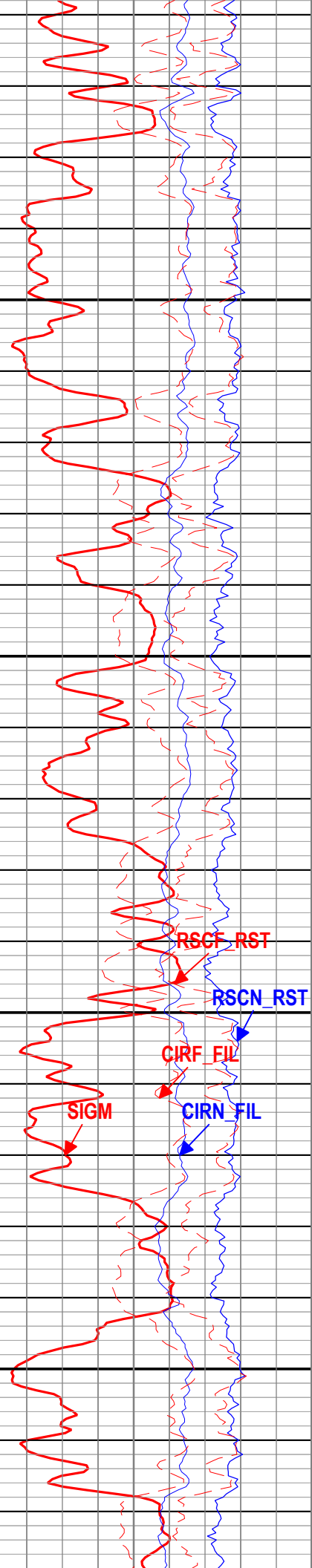
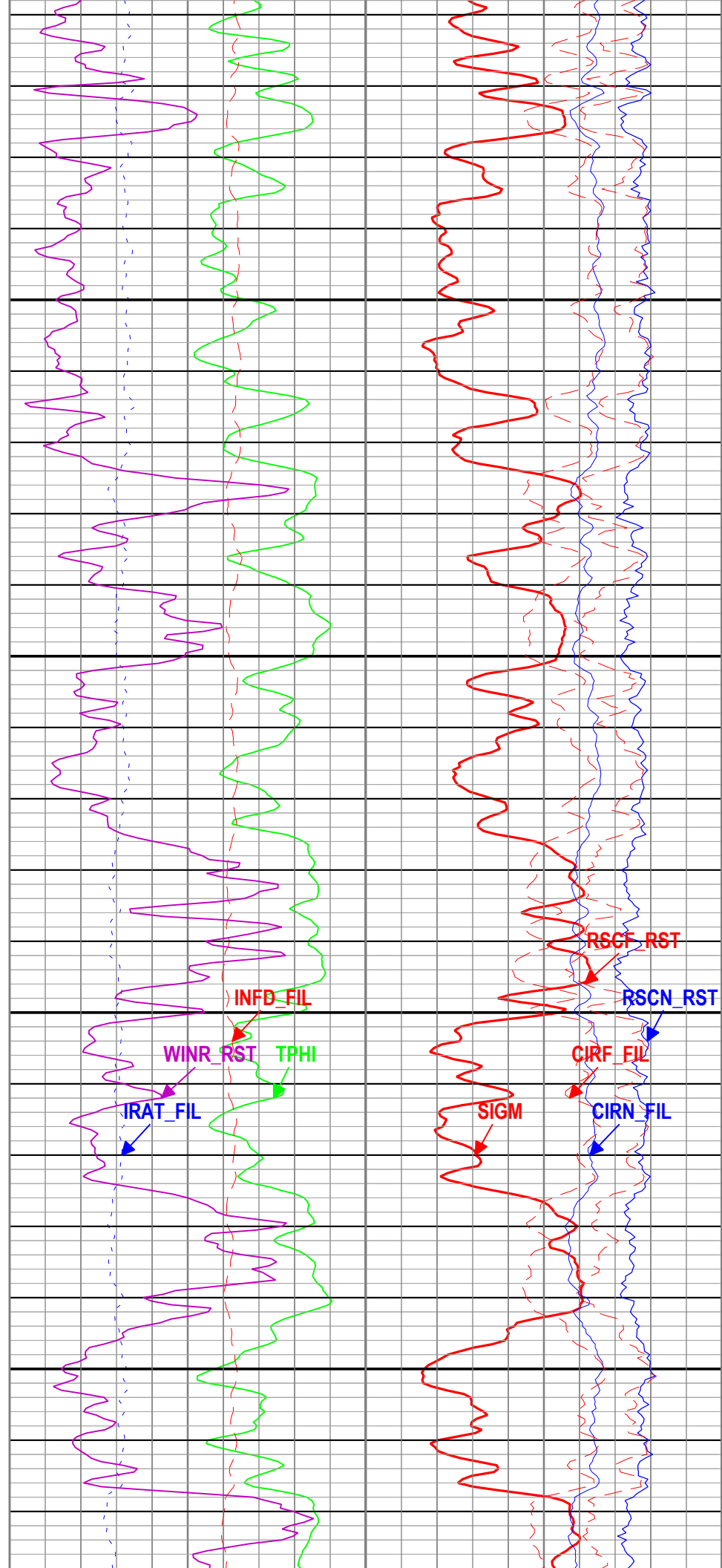
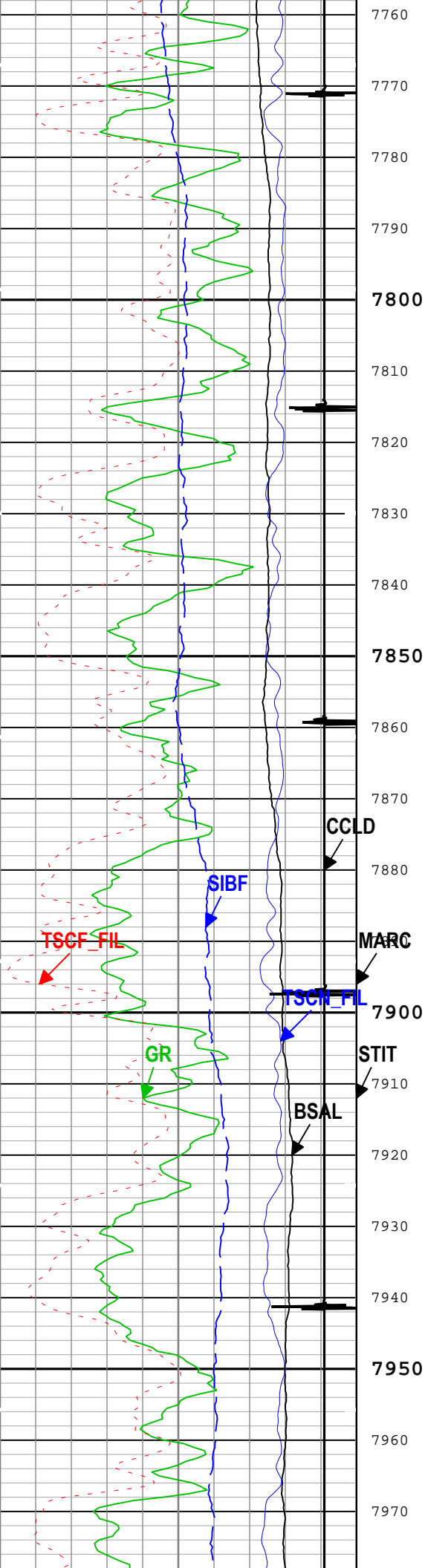


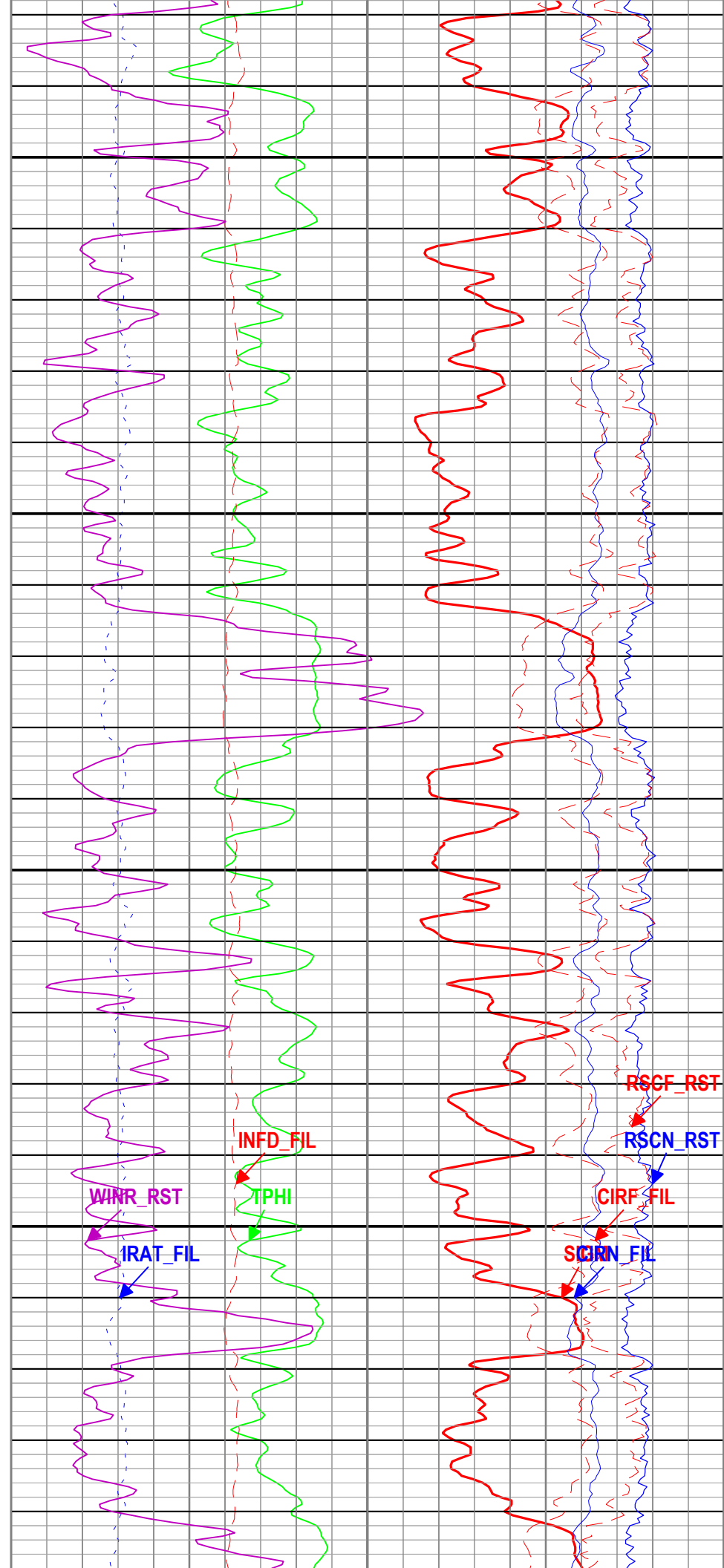
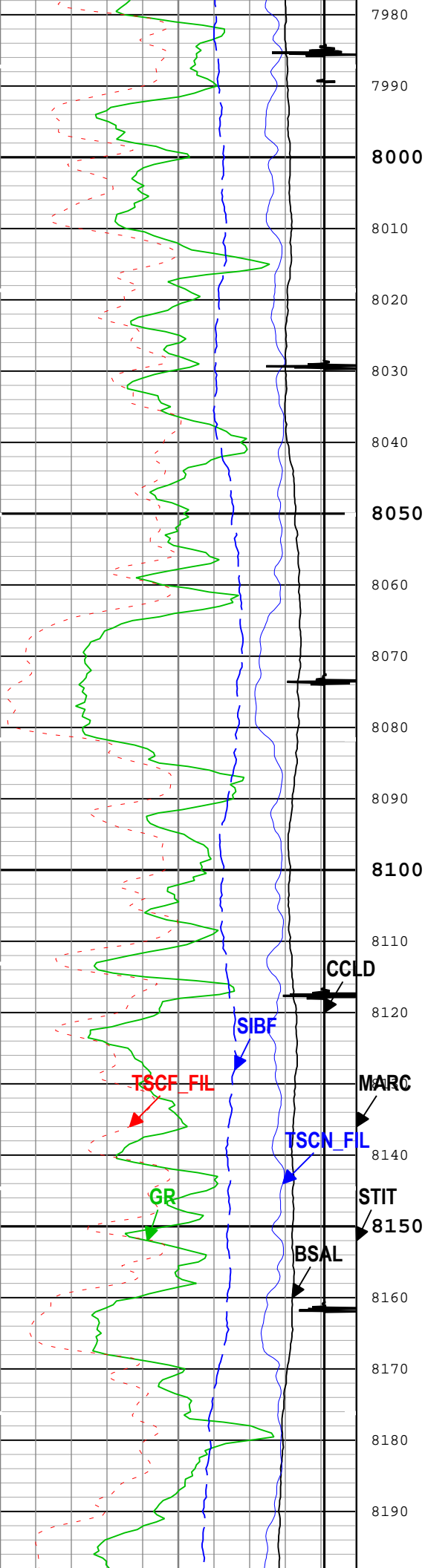


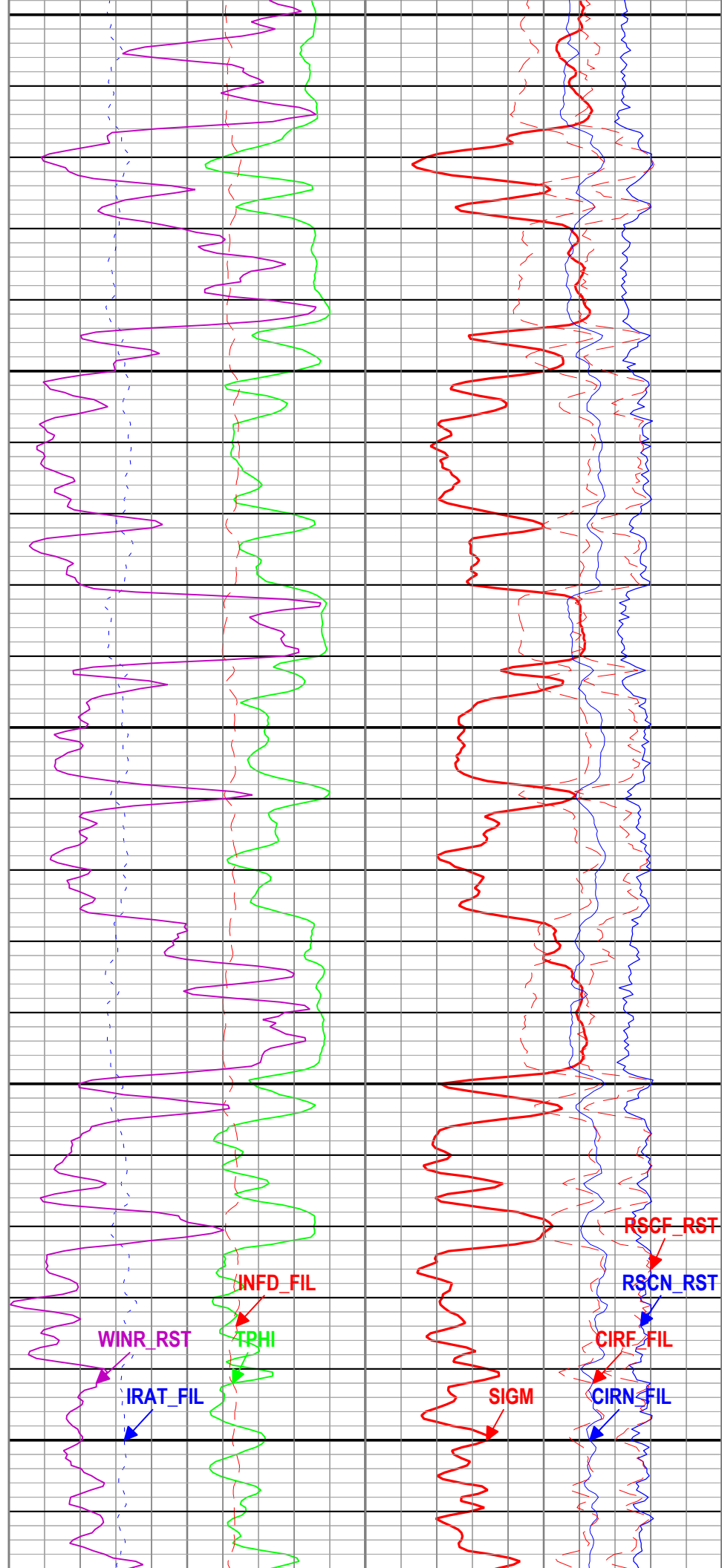
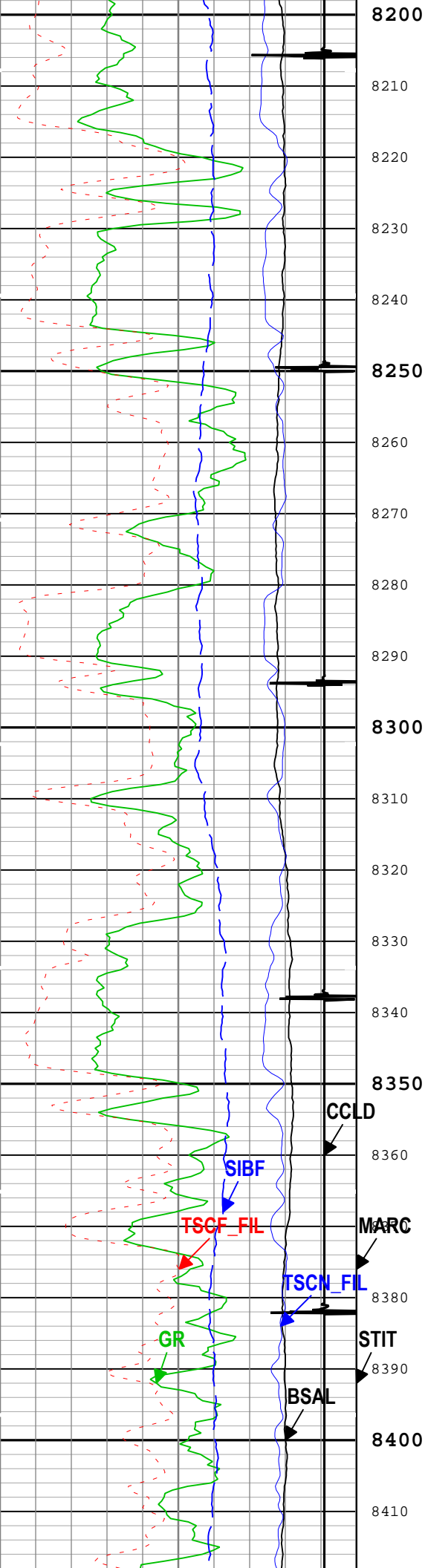


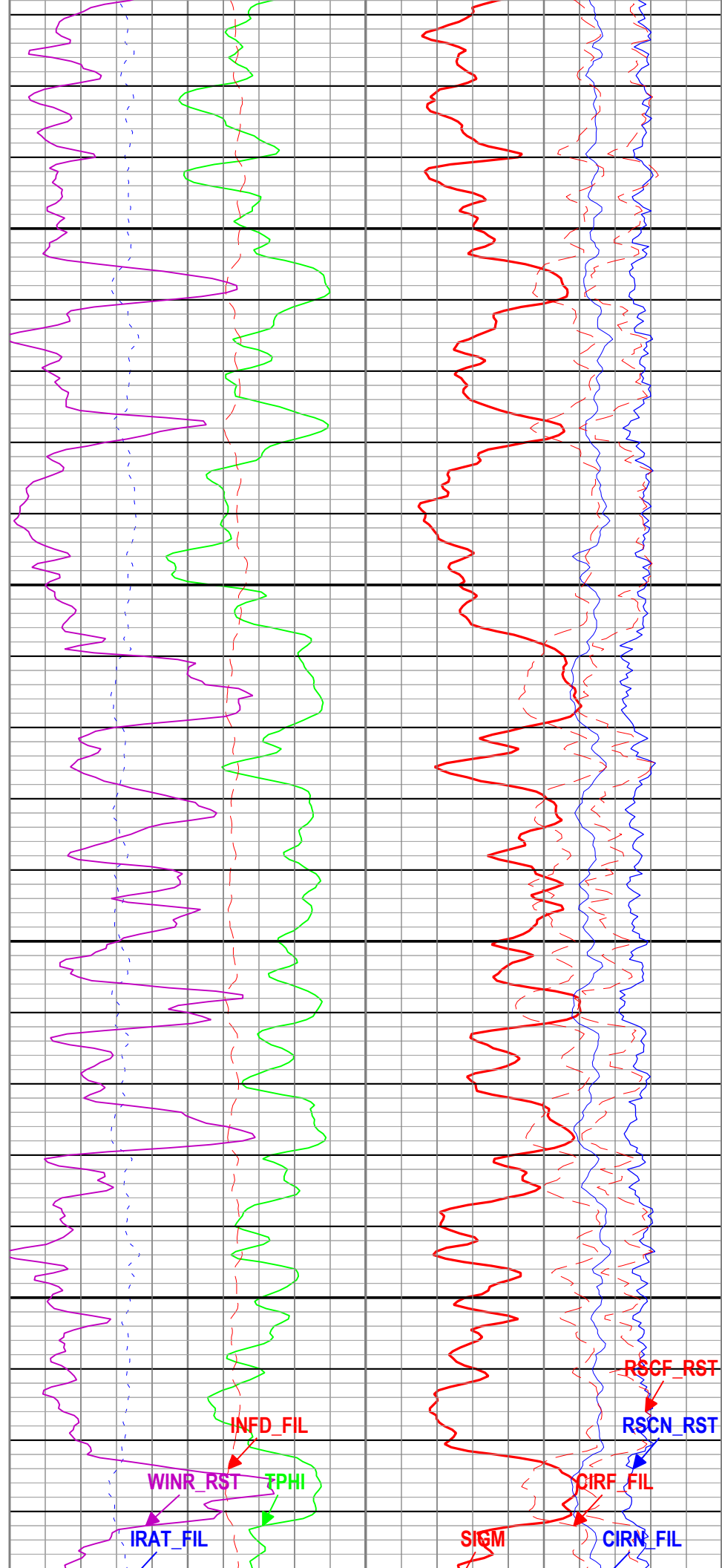
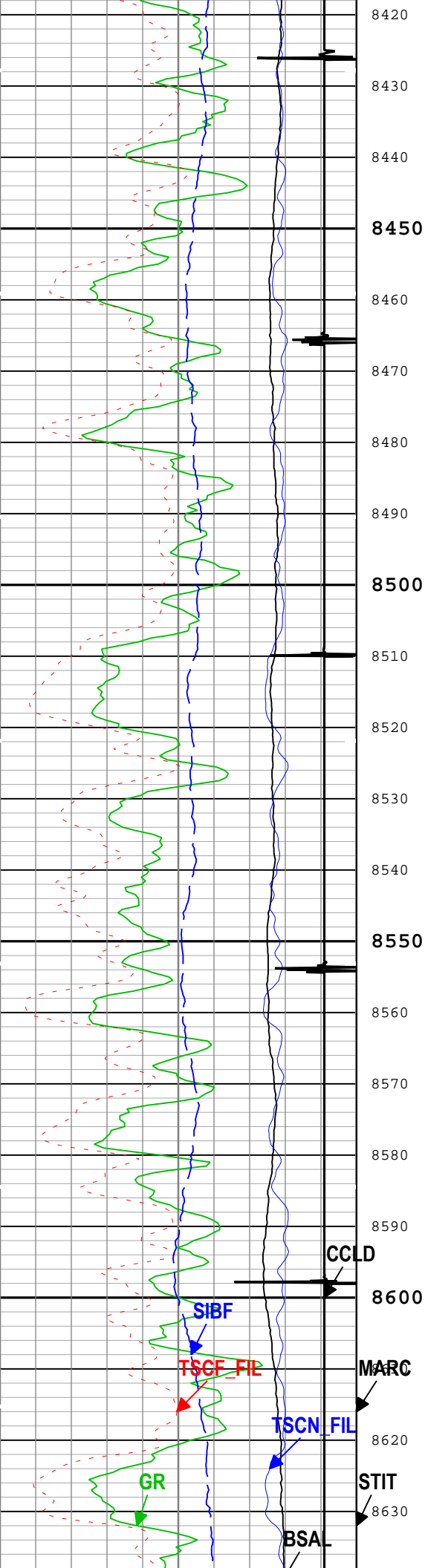


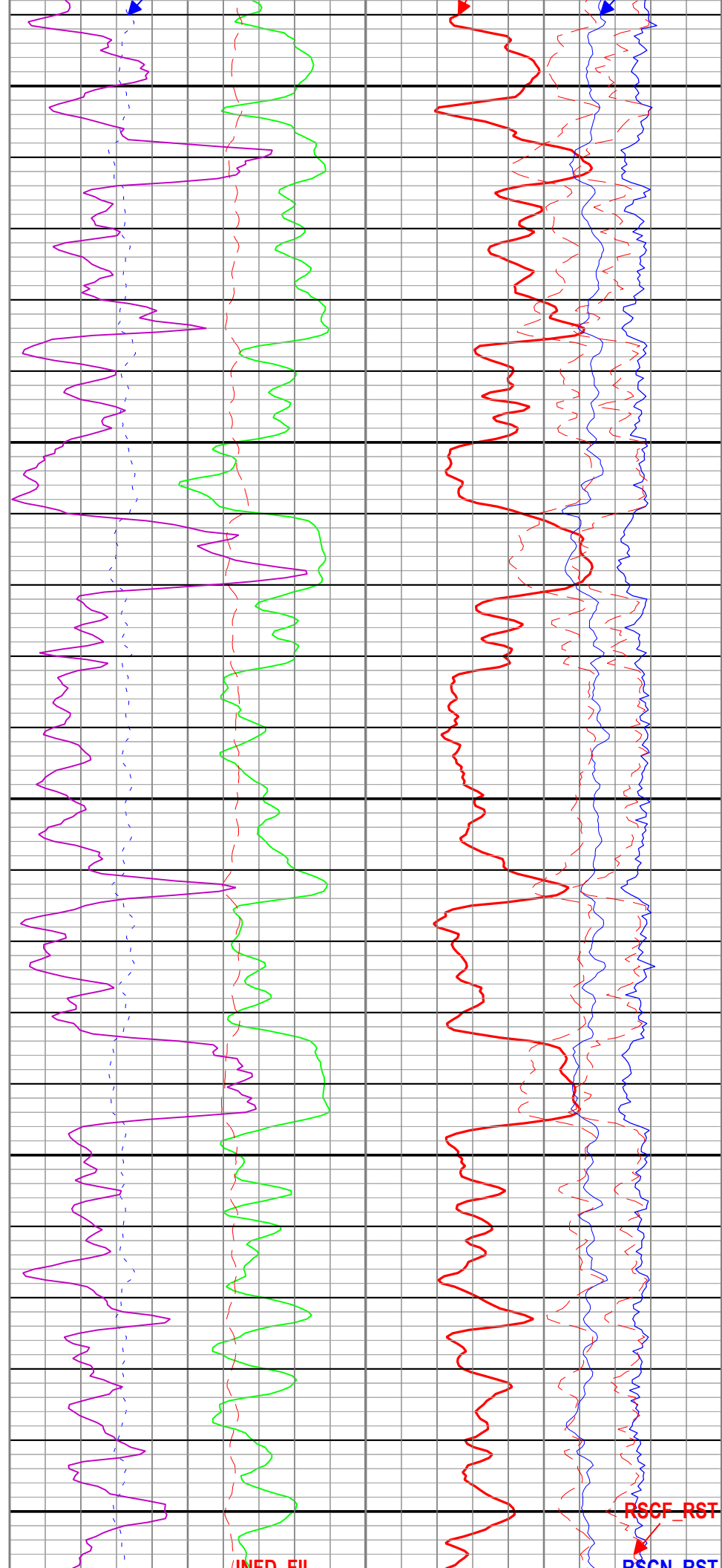
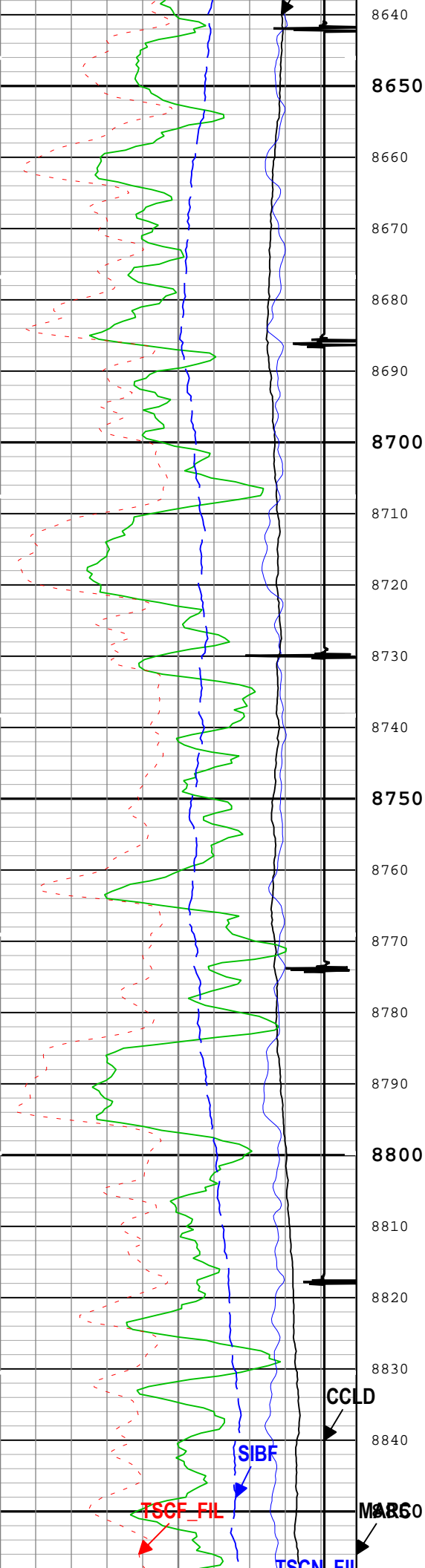


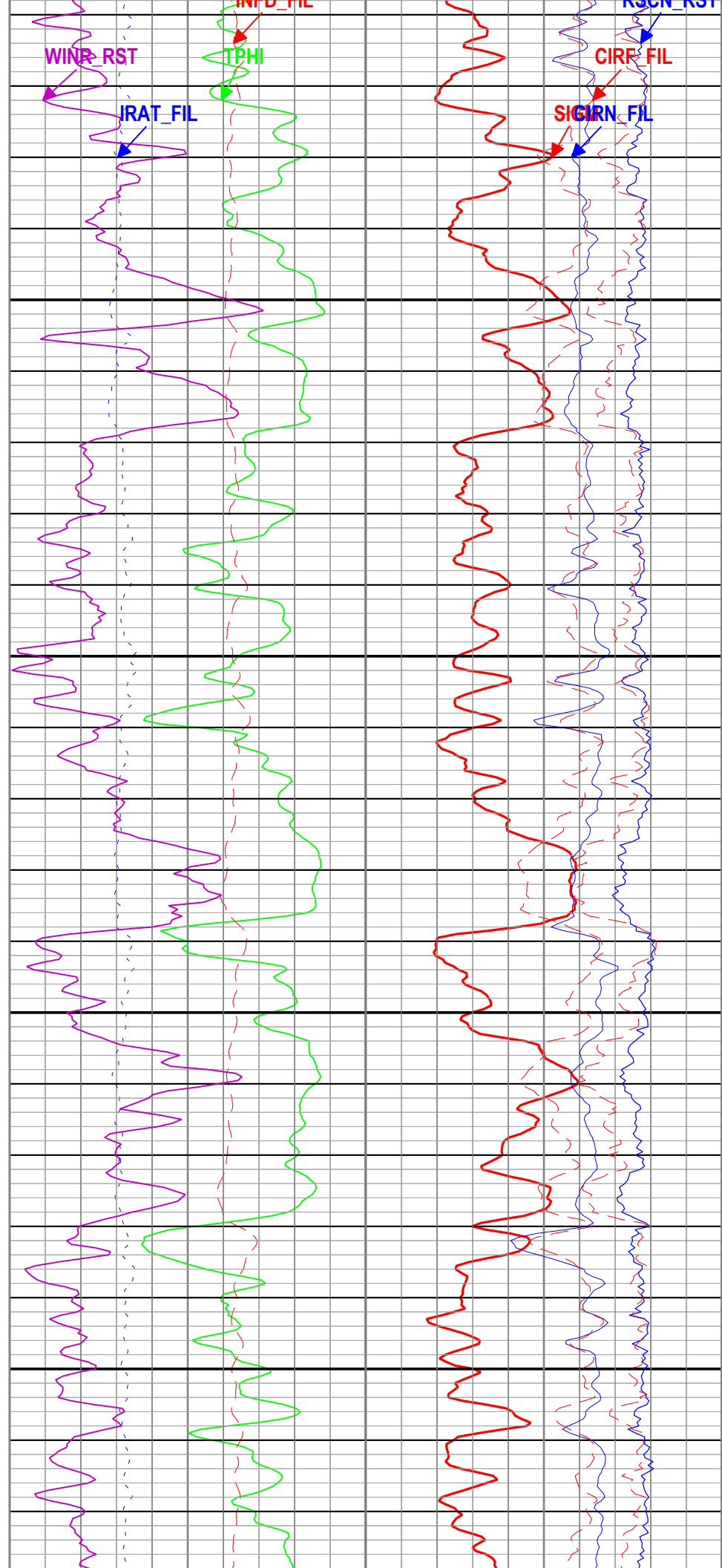
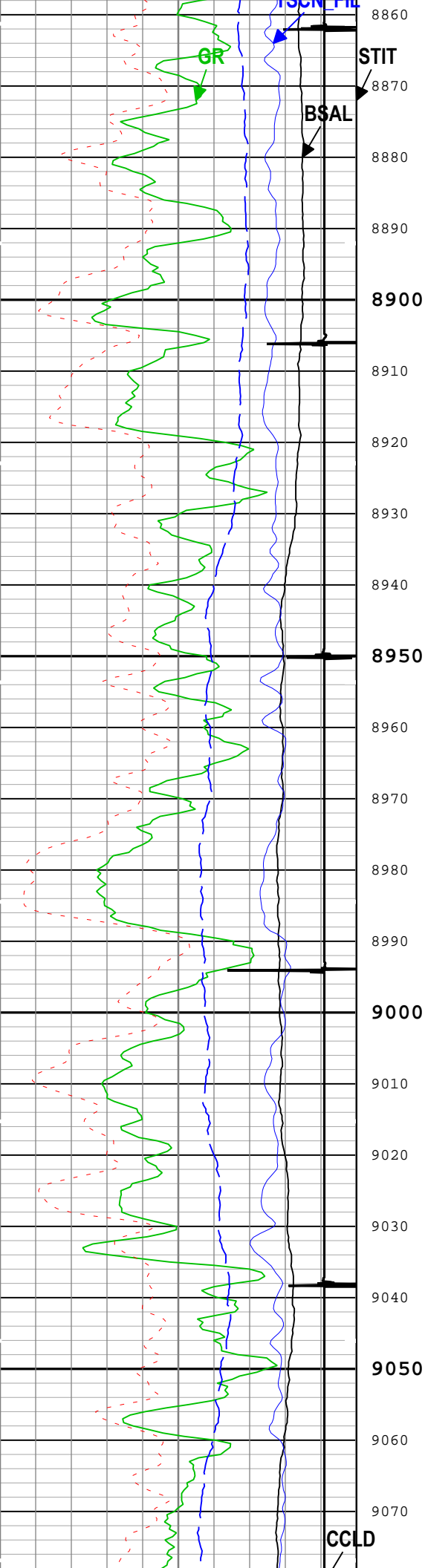


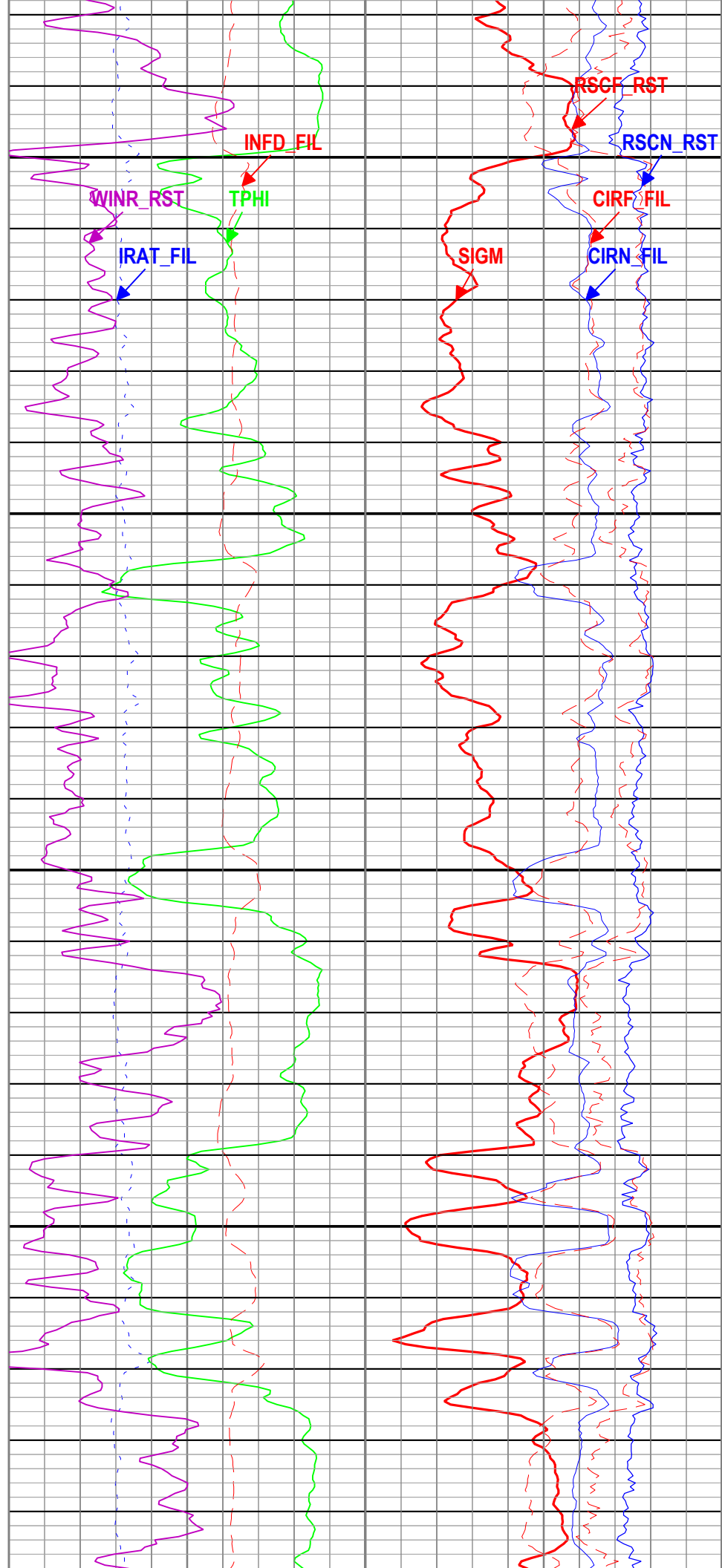
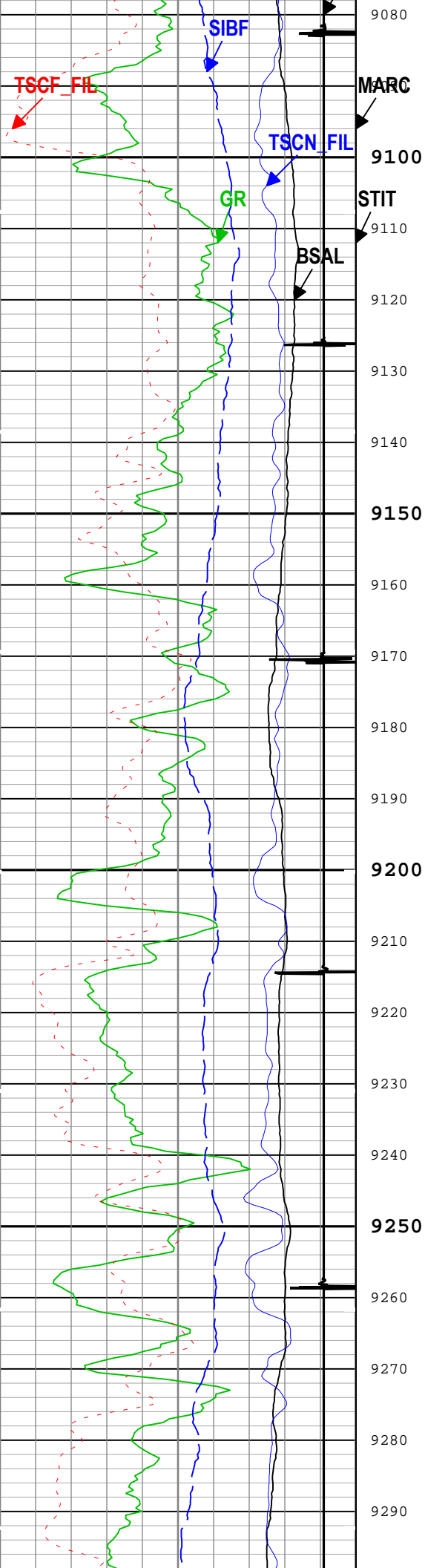


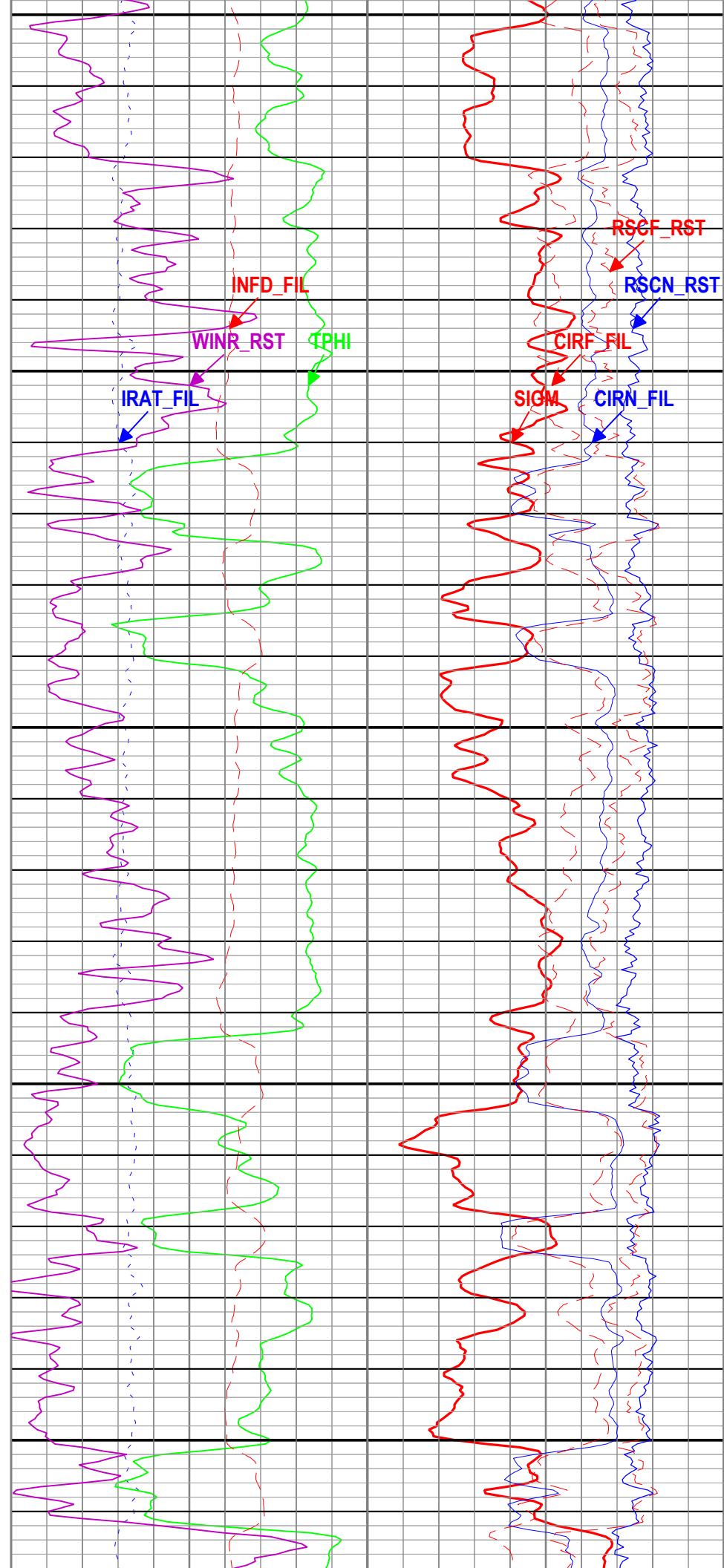
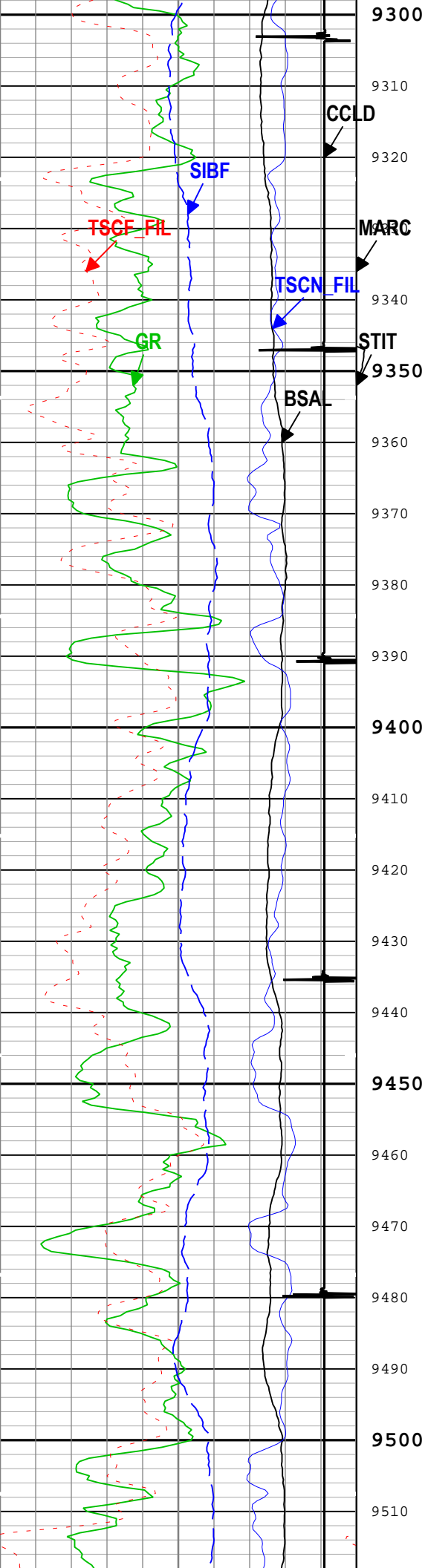


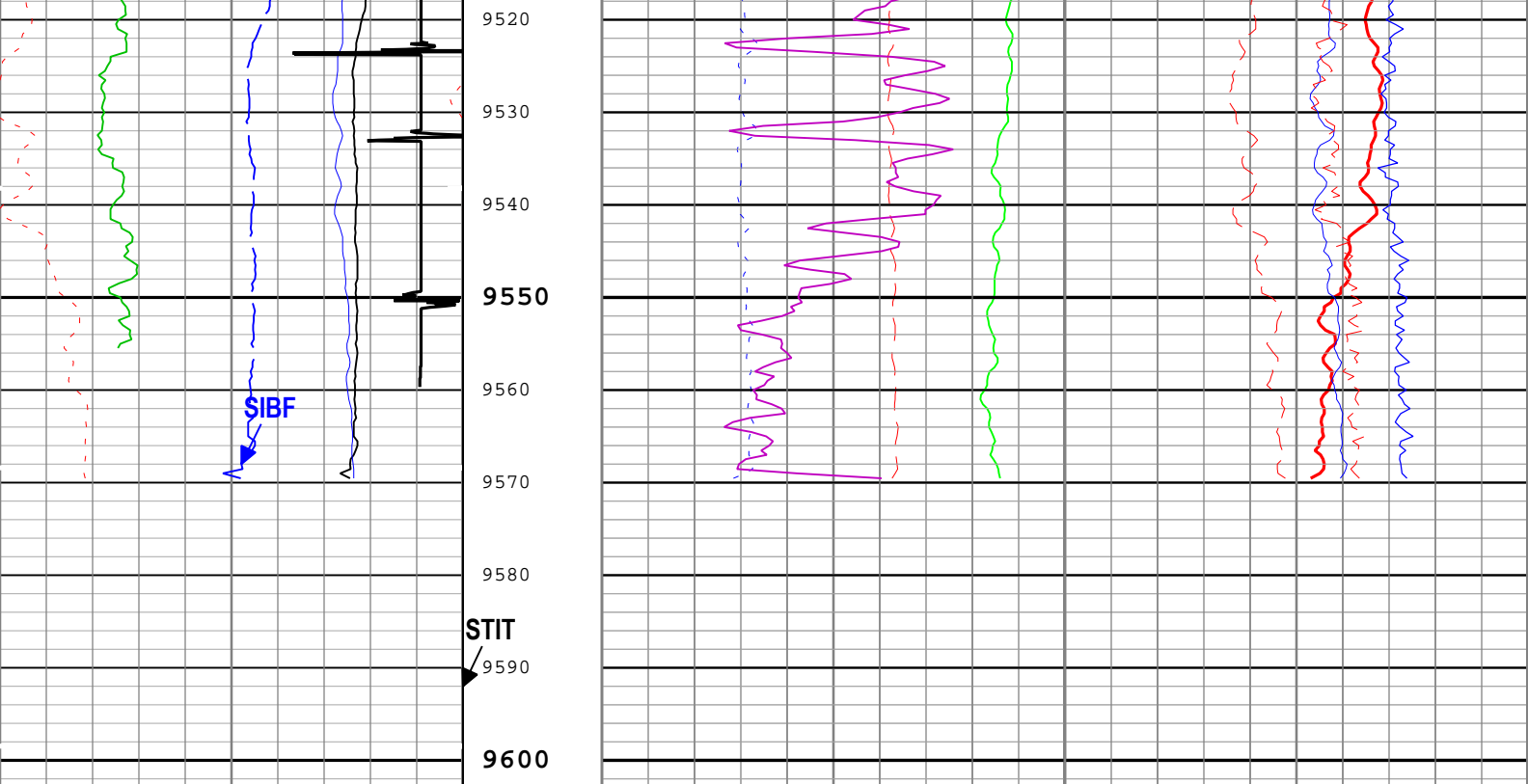












Borehole Salinity (BSAL) RST-C			Stuck Tool Indicator, Total (STIT)			Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C		
450	ppk	-50	60	cu	0	Weighted Inelastic Ratio (WINR_RST) RST-C		
Gamma Ray (GR) PSTP-E			0	ft	50	0		
gAPI			0			0.4		
Total Selected Count Rate Near Detector Filtered (TSCN_FIL) RST-C			Cable Drag From STIA to STIT			Inelastic Ratio Filtered (IRAT_FIL) RST-C		
30000	1/s	0	0.75			Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C		
Total Selected Count Rate Far Detector Filtered (TSCF_FIL) RST-C			Tool_Tot. Drag From D3T to STIT			2.5		
12000	1/s	0	0.6			Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C		
Sigma Borehole Fluid (SIBF) RST-C			Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C			5		
100	cu	0	10000			Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C		
CCL Discriminated Amplitude (CCLD) PSTP-E			Minitron Arc Count (MARC) RST-C			45		
-10	V	1	0			Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C		
			5			45		

- ICV - Integrated Cement Volume every 100.00 (ft3)
- ICV - Integrated Cement Volume every 10.00 (ft3)
- IHV - Integrated Hole Volume every 100.00 (ft3)
- IHV - Integrated Hole Volume every 10.00 (ft3)
- TIME_1900 - Time Marked every 60.00 (s)
- TIME_1900 - Elapsed time since midnight, 30 December 1899 every 60.00 (s)

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: 28-Dec-2018 10:46:17

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	13.5	1813.5	2388
BS	8.75	2388	9597

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-E	Time Zoned	
RST_DLM	Depth Log Mode	RST-C	Sigma	

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
PCCG	0 dB	27-Dec-2018 17:12:42	27-Dec-2018 17:13:08	9603.12	9594.32
PCCG	12 dB	27-Dec-2018 17:13:08	27-Dec-2018 17:14:15	9594.32	9560.54
PCCG	0 dB	27-Dec-2018 17:14:15	27-Dec-2018 21:19:19	9560.54	1860.31

All depth are at tool zero.

ONE

CBL-VDL REPEAT PASS [5:100]

Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Pass Summary

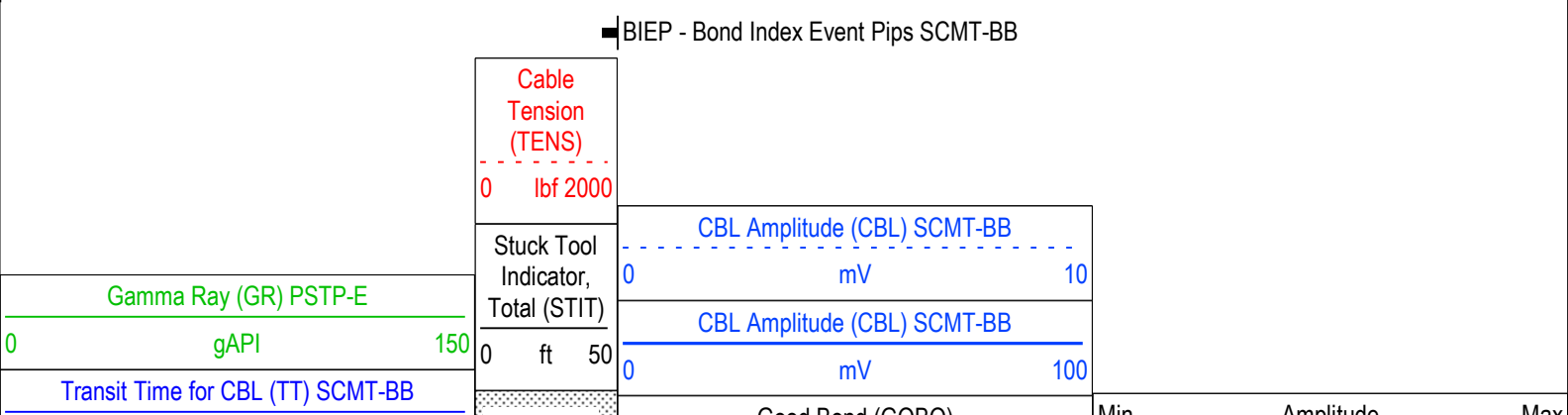
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[1]:Up	Up	2328.74 ft	2529.15 ft	27-Dec-2018 4:16:39 PM	27-Dec-2018 4:23:17 PM	ON	-9.30 ft	Yes

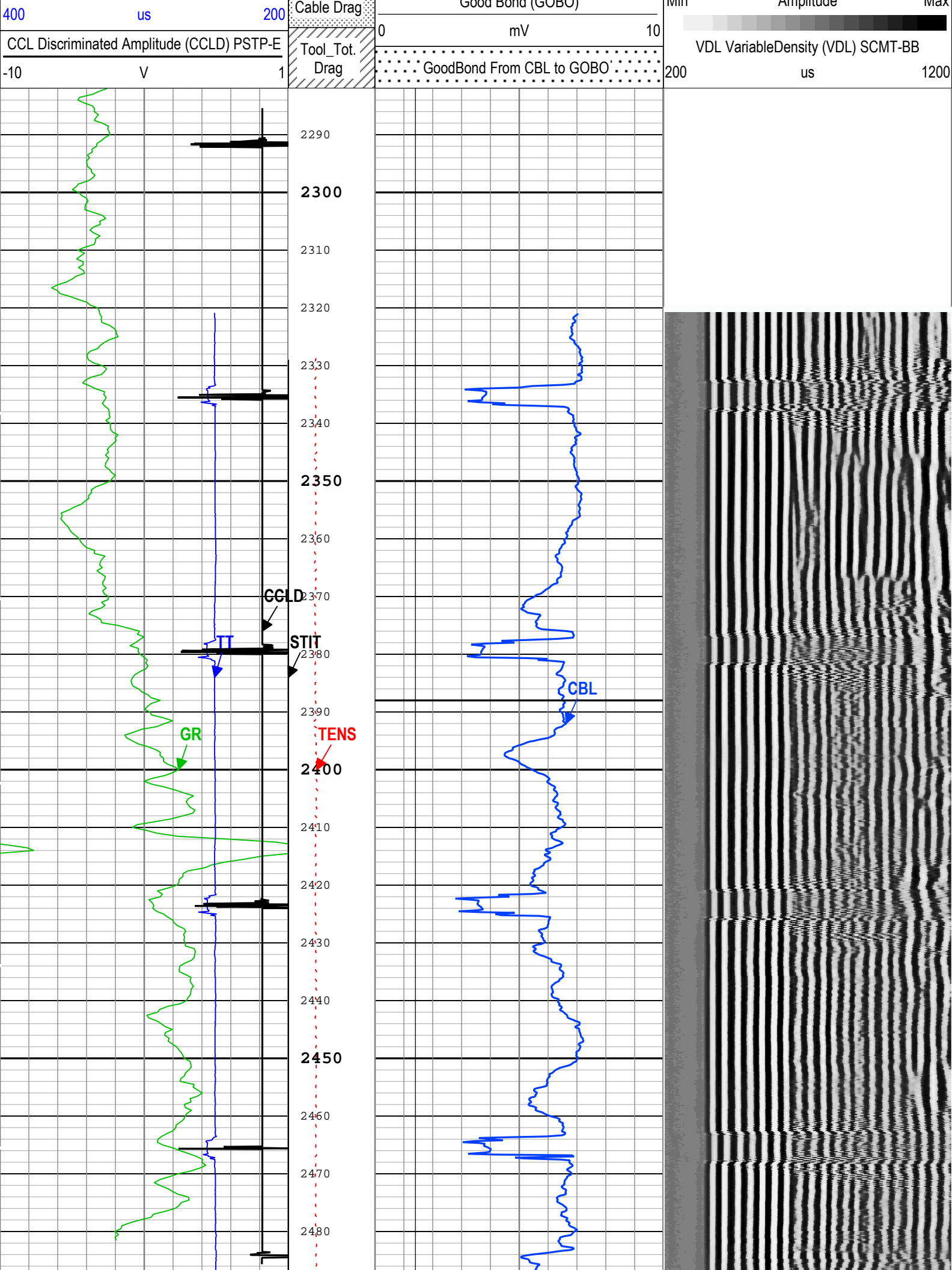
All depths are referenced to toolstring zero

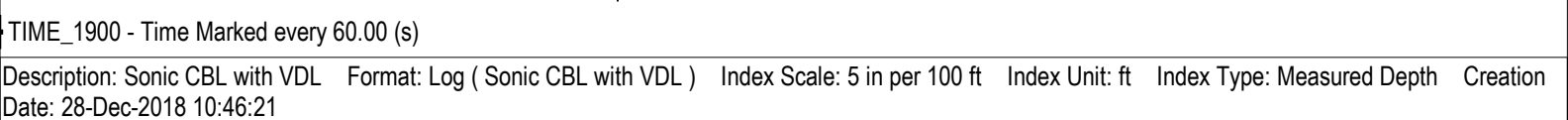
Log	Company:CAERUS OIL & GAS LLC Well:NPR 12B-14-596 ONE: Log[1]:Up:S006
-----	--

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: 28-Dec-2018 10:46:21

TIME_1900 - Time Marked every 60.00 (s)

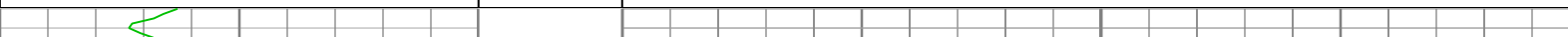


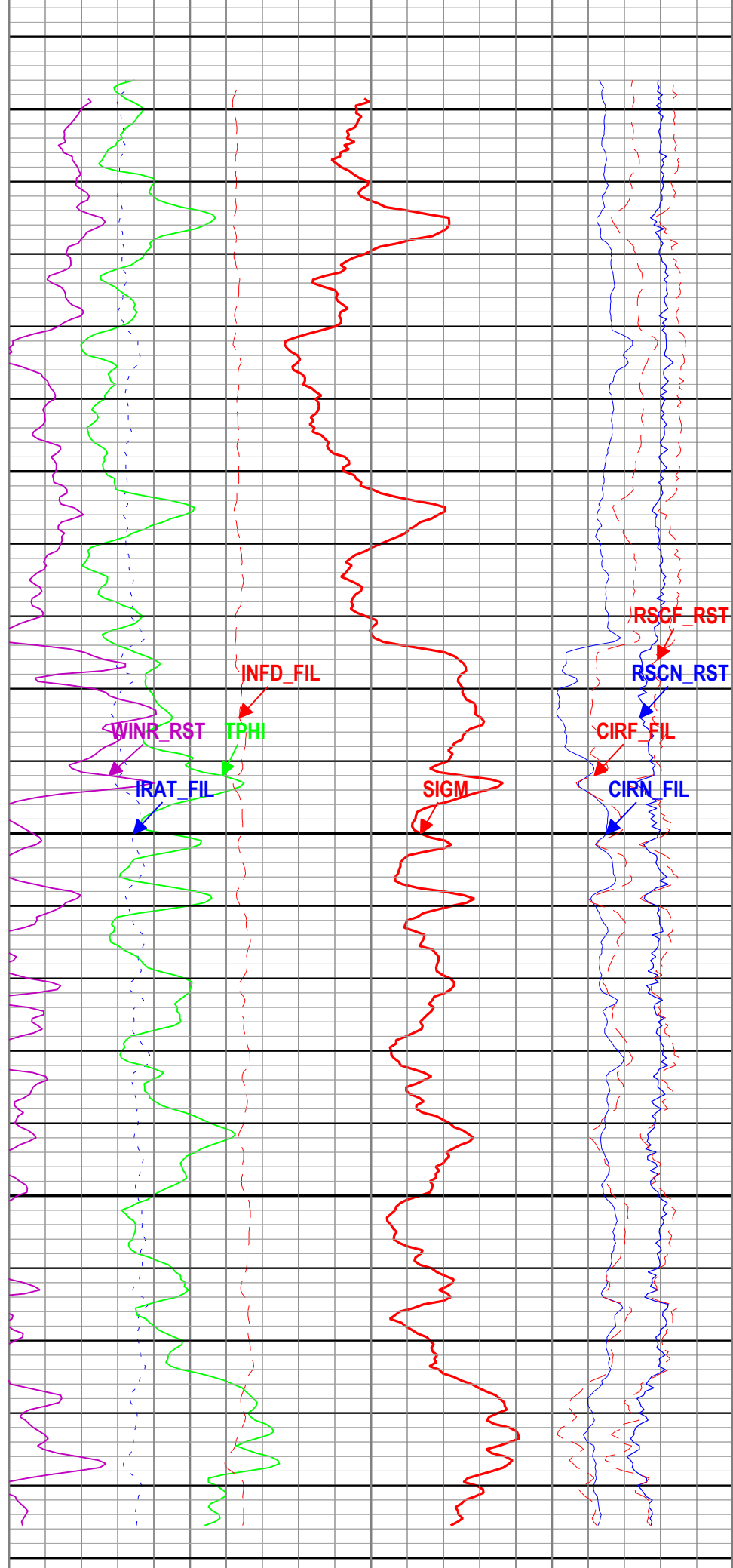
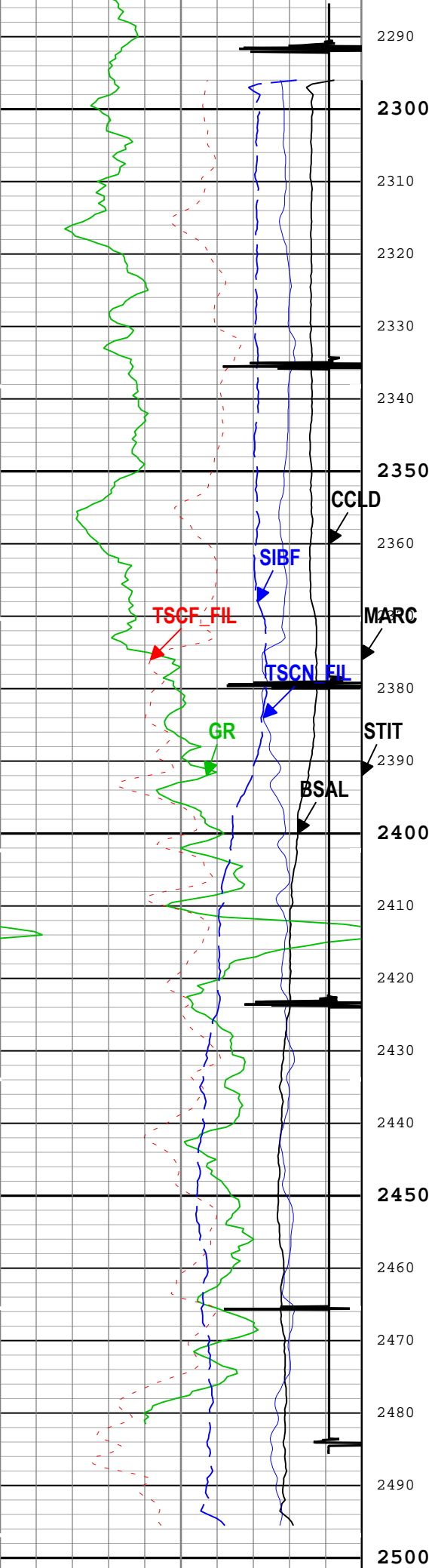




ONE: Parameters				
Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	212	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-BB	230.42	us
CBLG	CBL Gate Width	SCMT-BB	40	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-BB	80	mV
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
EDF	Elevation of Derrick Floor Above Permanent Datum	WLSESSION	24	ft
EPD	Elevation of Permanent Datum (PDAT) above Mean Sea Level	WLSESSION	6429	ft
GGRD	Geothermal Gradient	Borehole	1	0.01 degF/ft
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-BB	1.4	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	GTEM_LINEST(RT)	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-BB	16.92	dB/ft
MCI	Minimum Cemented Interval for Isolation	SCMT-BB	Depth Zoned	ft
MSA	Minimum Sonic Amplitude	SCMT-BB	0.51	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	SCMT-BB	0.51	mV
PDAT	Permanent Datum	WLSESSION	GL	
RUN_SNUM	Run Sequence Number	WSDRUN	1	
SHT	Surface Hole Temperature	Borehole	68	degF

Parameter	Value	Start (ft)	Stop (ft)
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[illegible]

MAX_LOG_SPEED	Hoisting Maximum Logging Speed	WLSESSION	150	101
PCCG	PSP Downhole CCL Gain	PSTP-E	12 dB	
RST_DLM	Depth Log Mode	RST-C	Sigma	

Company: CAERUS OIL & GAS LLC

Schlumberger

Well: NPR 12B-14-596

Field: GRAND VALLEY

County: GARFIELD

State: COLORADO

CEMENT BOND LOG

RST SIGMA LOG

GAMMA RAY - COLLAR LOCATOR LOG