

Company: CAERUS OIL & GAS LLC

Well: NPR 15D-11

Field: NPR

County: GARFIELD State: COLORADO

CEMENT BOND LOG

RST SIGMA LOG

GAMMA RAY - COLLAR LOCATOR LOG

County: GARFIELD
Field: NPR
Location: WELL PAD H15
Well: NPR 15D-11
Company: CAERUS OIL & GAS LLC

Location:	WELL PAD H15	Elev.:	K.B.	6458.00 ft
	SE 1/4, SECTION 15, T5S, R96W, 6TH P.M.		G.L.	6428.00 ft
			D.F.	6458.00 ft
	Permanent Datum:	Ground Level	Elev.:	6428.00 f
Log Measured From:		Kelly Bushing	30.00 ft	above Perm.Datum
Drilling Measured From:		Kelly Bushing		
API Serial No.	Section:	Township:	Range:	
5045238550000	15	5S	96W	

Logging Date 15-Dec-2018

Run Number ONE

Depth Driller 10145.00 ft

Schlumberger Depth 10022.00 ft

Bottom Log Interval 10022.00 ft

Top Log Interval 1900.00 ft

Casing Fluid Type Water

Salinity

Density 8.4 lbm/gal

Fluid Level 8.00 ft

BIT/CASING/TUBING STRING

Bit Size 8.50 in

From 7996.00 ft

To 10145.00 ft

Casing/Tubing Size 4.5 in

Weight 11.6 lbm/ft

Grade P110

From 0.00 ft

To 10145.00 ft

Max Recorded Temperatures 274.72 degF

Logger on Bottom 15-Dec-2018 16:07:00

Unit Number 3007 Location: Evanson,Wy

Recorded By ALI AL RAMADHAN

Witnessed By TRAVIS KOLISCH

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
- Depth Summary
- ONE CBL-VDL MAIN PASS [5:100]
 - Integration Summary
 - Software Version
 - Composite Summary
 - Log (Sonic CBL with VDL)
 - Parameter Listing
- ONE RST SIGMA MAIN PASS [5:100]
 - Integration Summary
 - Software Version
 - Composite Summary

- Parameter Listing
- ONE RST SIGMA REPEAT PASS [5:100]
 - Integration Summary
 - Software Version
 - Composite Summary
 - Log (RST SIGMA Answer)
 - Parameter Listing
- Tail

9.4 Log (RST SIGMA Answer)

9.5 Parameter Listing

10. ONE CBL-VDL REPEAT PASS [5:100]

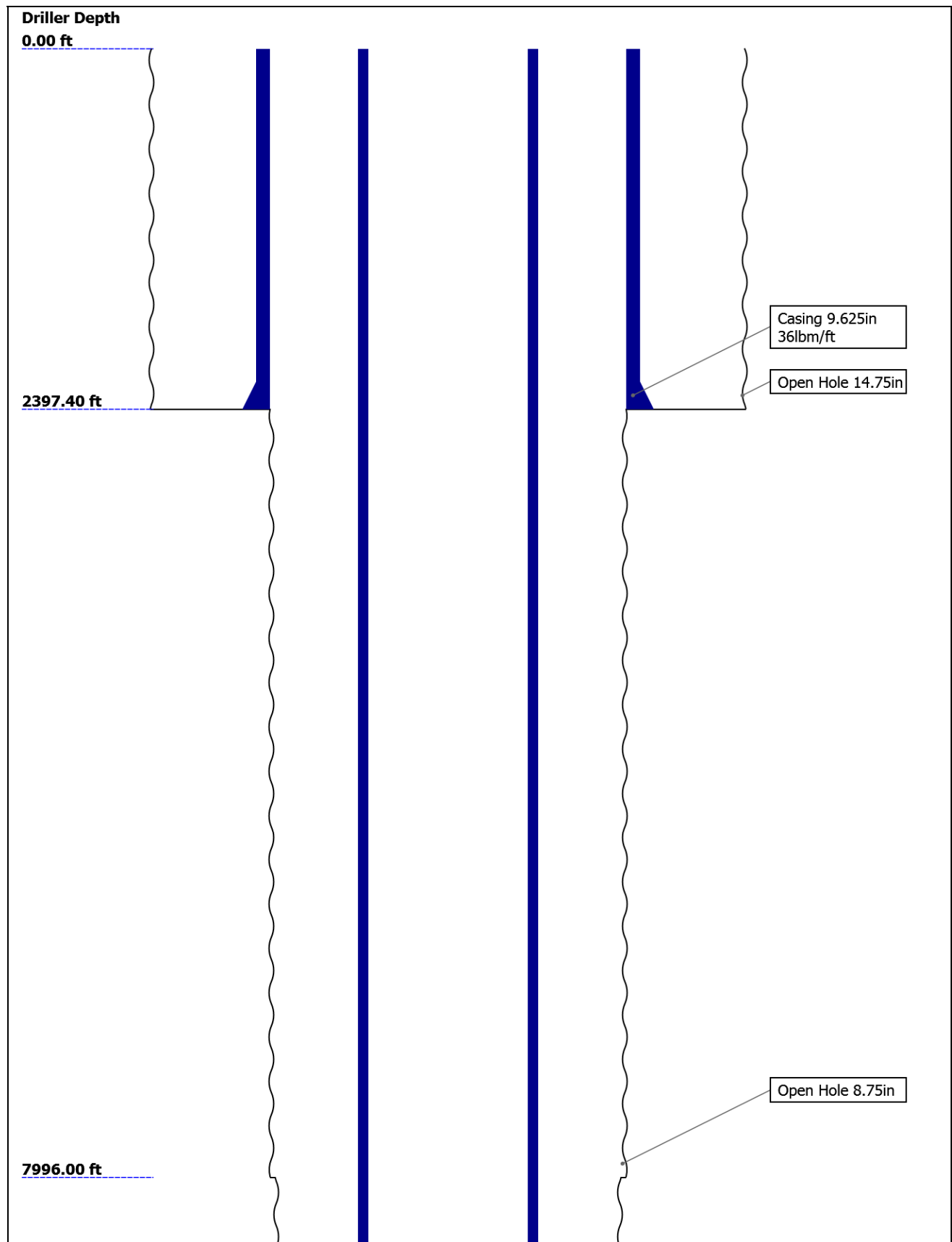
10.1 Integration Summary

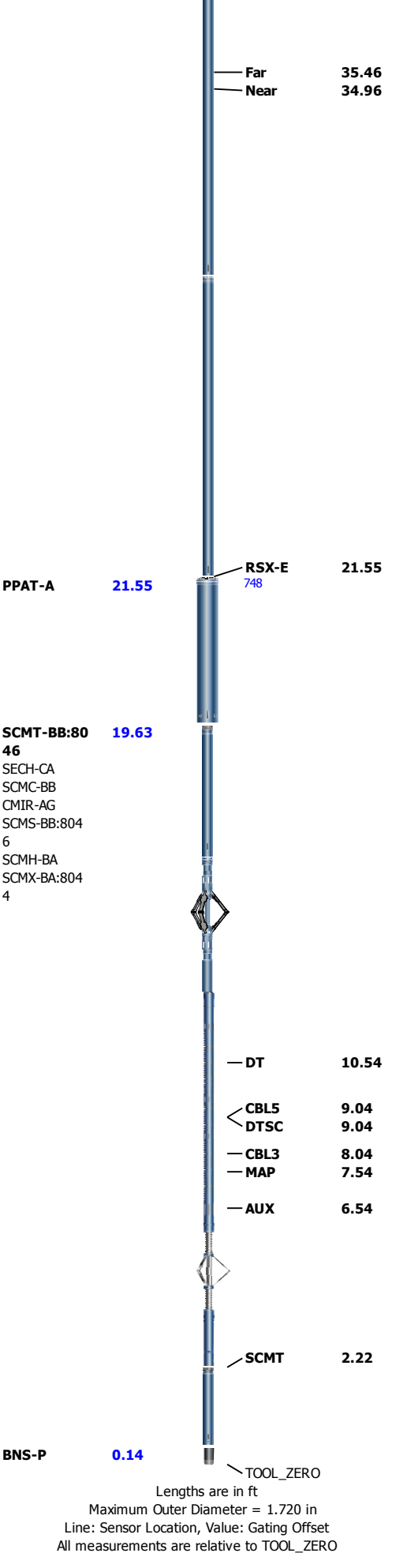
10.2 Software Version

10.3 Composite Summary

10.4 Log (Sonic CBL with VDL)

Well Sketch





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

Log Sequence	First Log In the Well	Depth Control Remarks
Rig Up Length At Surface		ALL SCHLUMBERGER DEPTH CONTROL POLICES AND PROCEDURES FOLLOWED.
Rig Up Length At Bottom		IDW USED AS PRIMARY DEPTH CONTROL.
Rig Up Length Correction		Z-CHART USED AS SECONDARY DEPTH CONTROL.
Stretch Correction		LOGS CORRELATED TO DOWN LOG.
Tool Zero Check At Surface		

ONE

CBL-VDL MAIN PASS [5:100]

Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Pass Summary

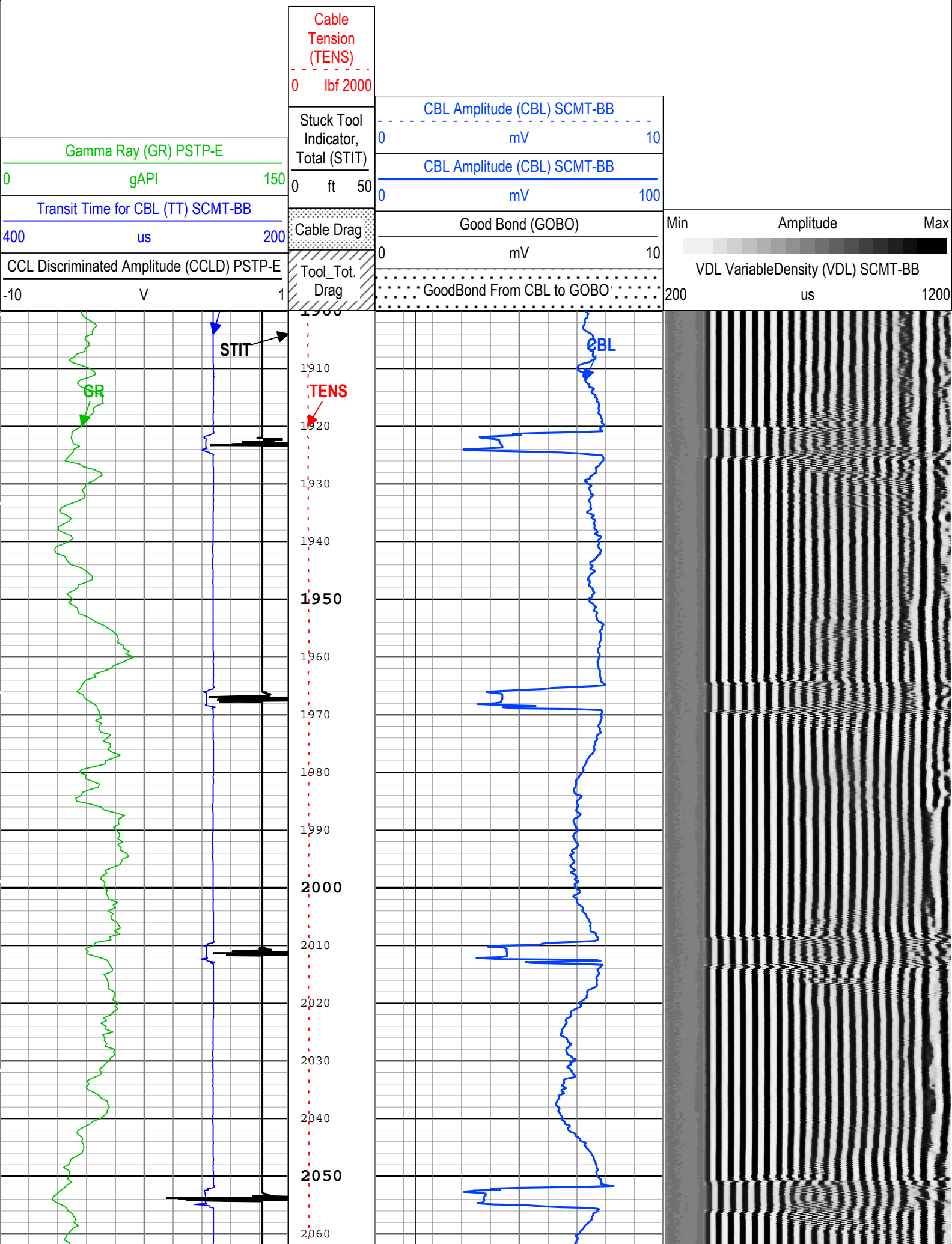
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[2]:Up	Up	1882.25 ft	10037.39 ft	15-Dec-2018 4:07:42 PM	15-Dec-2018 8:32:51 PM	ON	6.25 ft	No

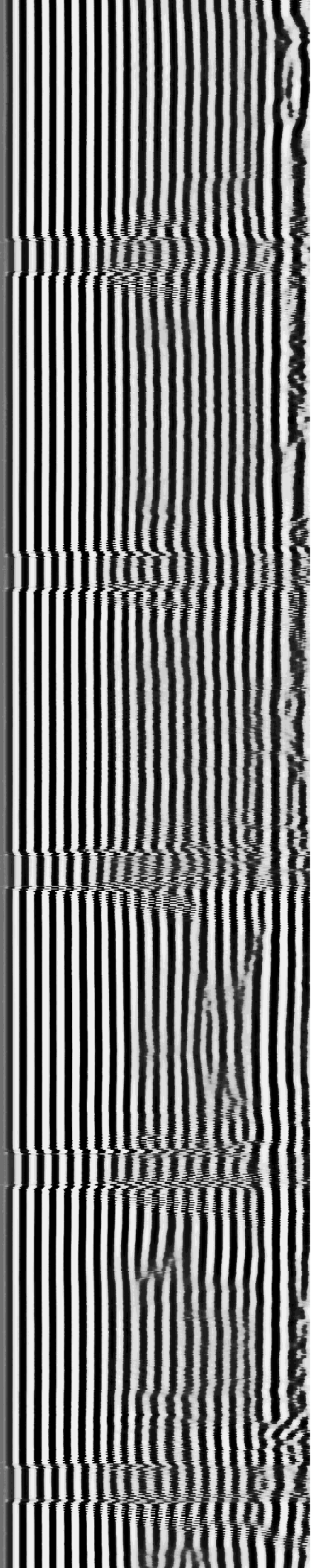
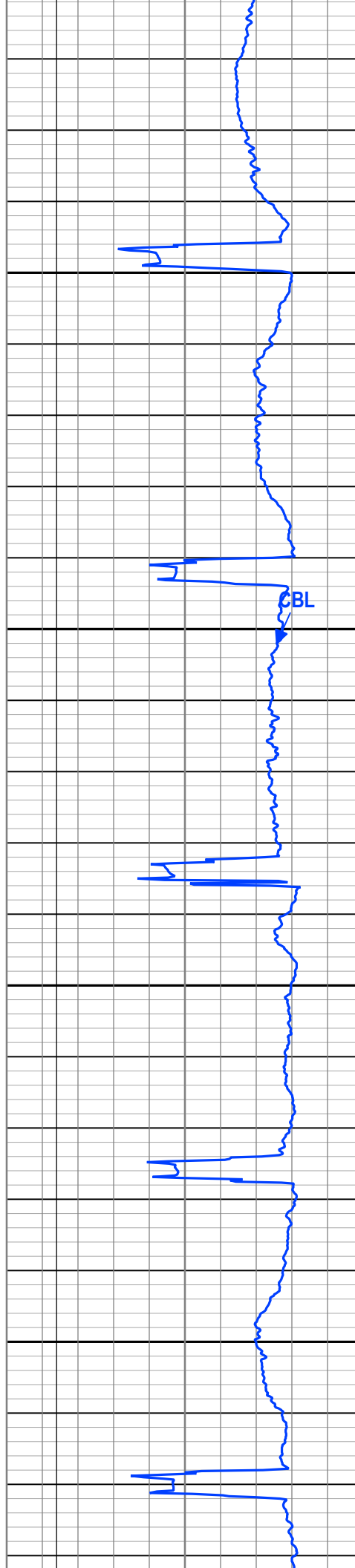
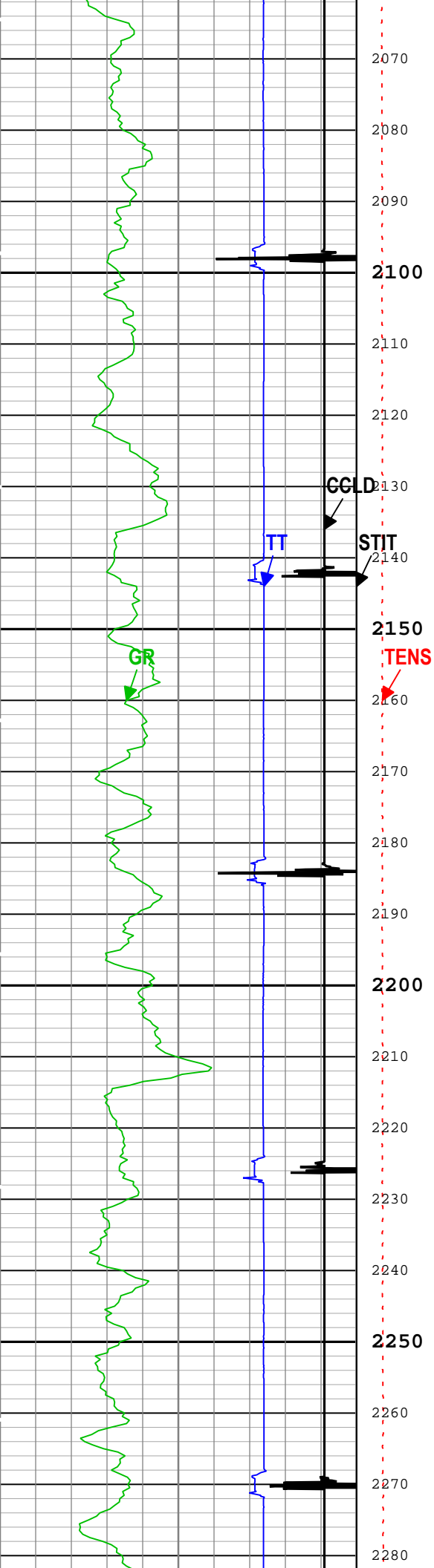
All depths are referenced to toolstring zero

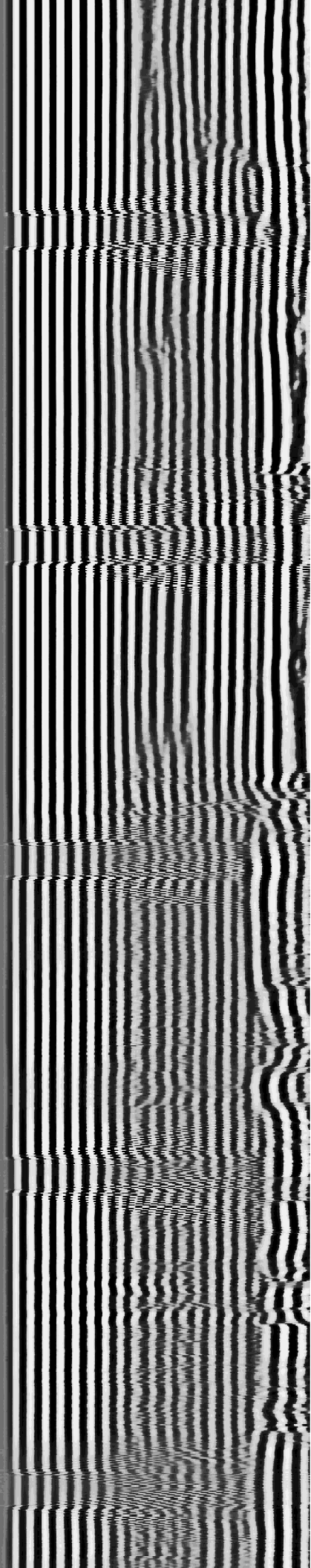
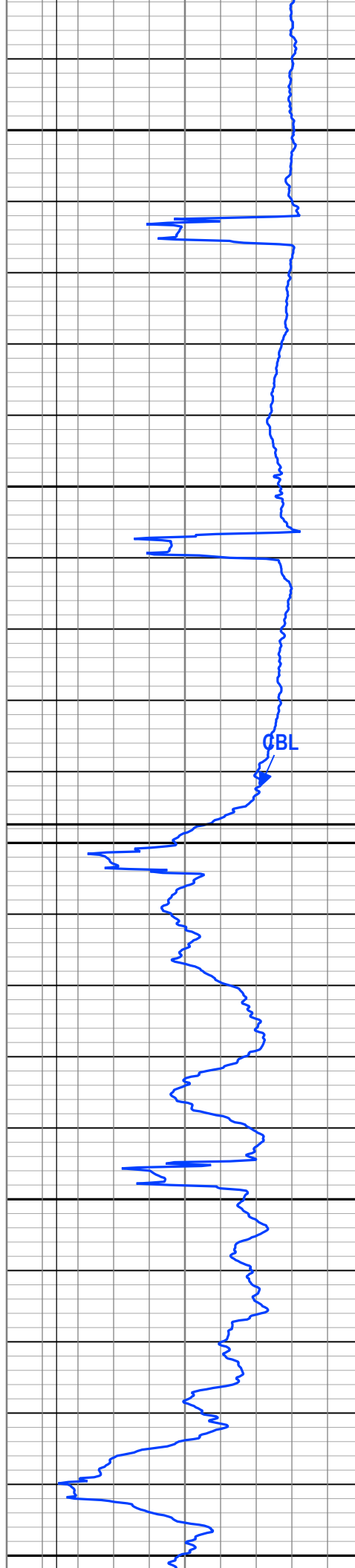
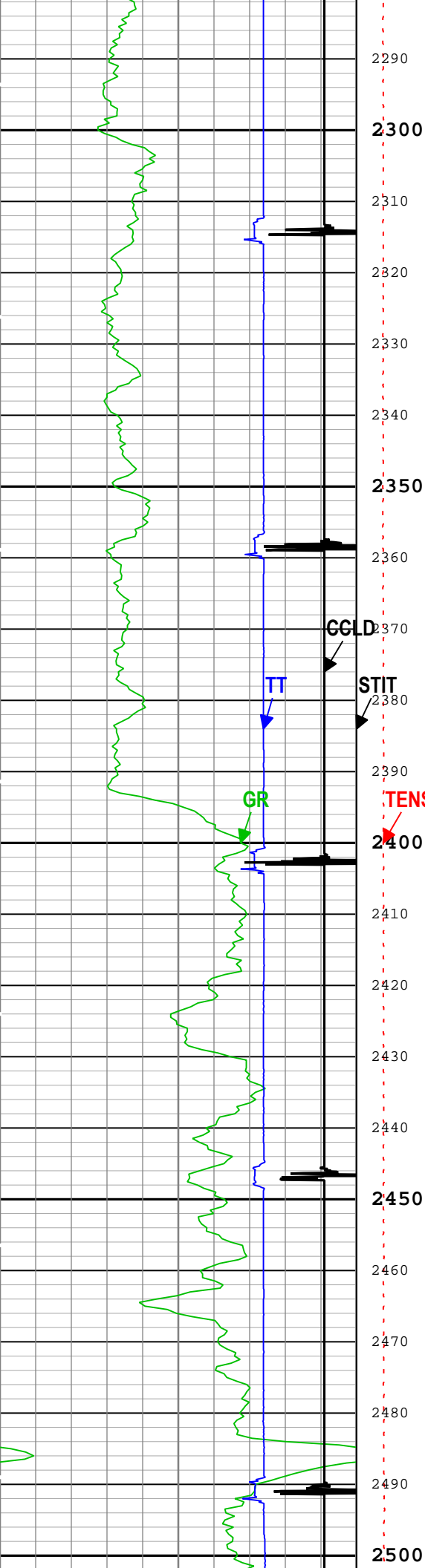
Log	Company:CAERUS OIL & GAS LLC Well:NPR 15D-11 ONE: Log[2]:Up:S003
-----	--

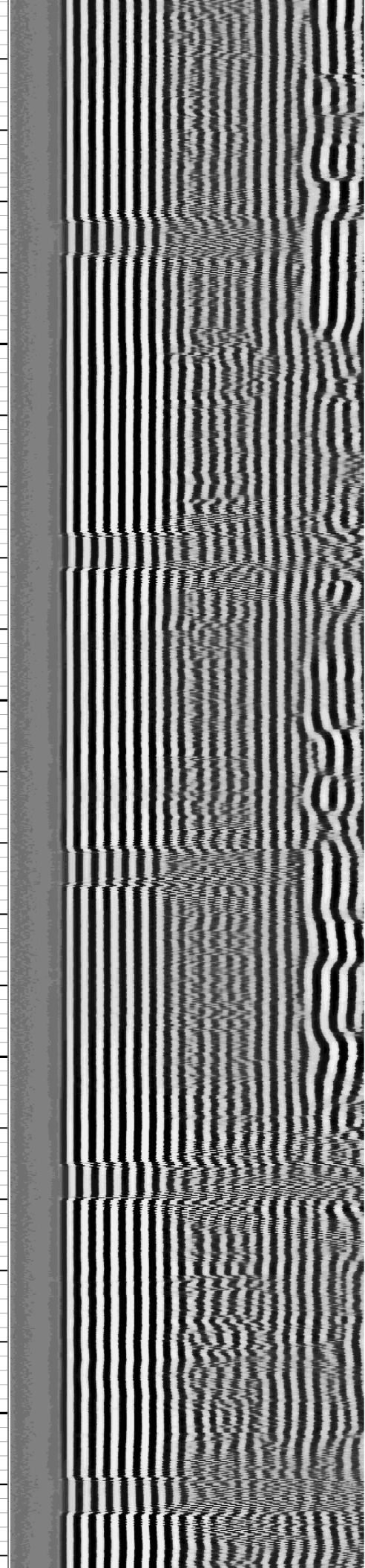
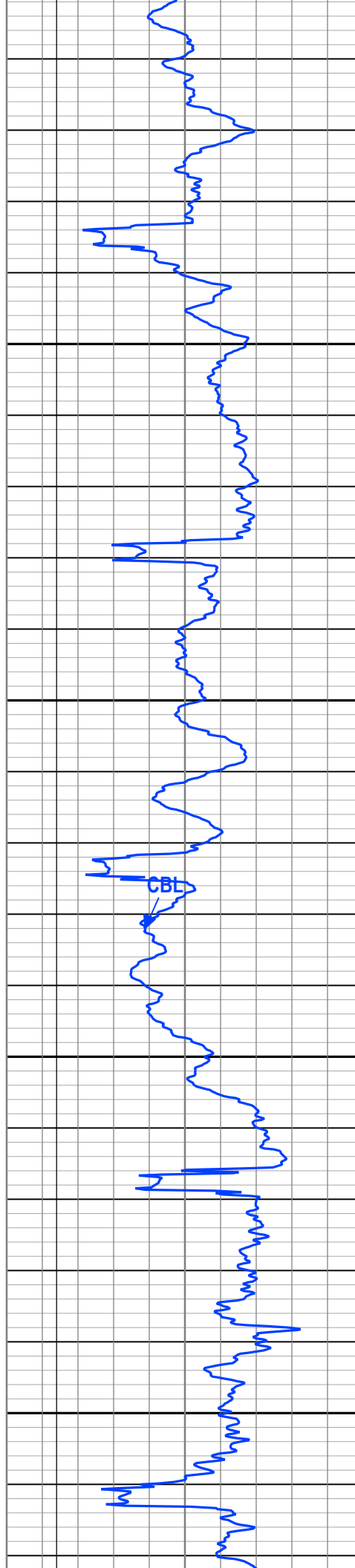
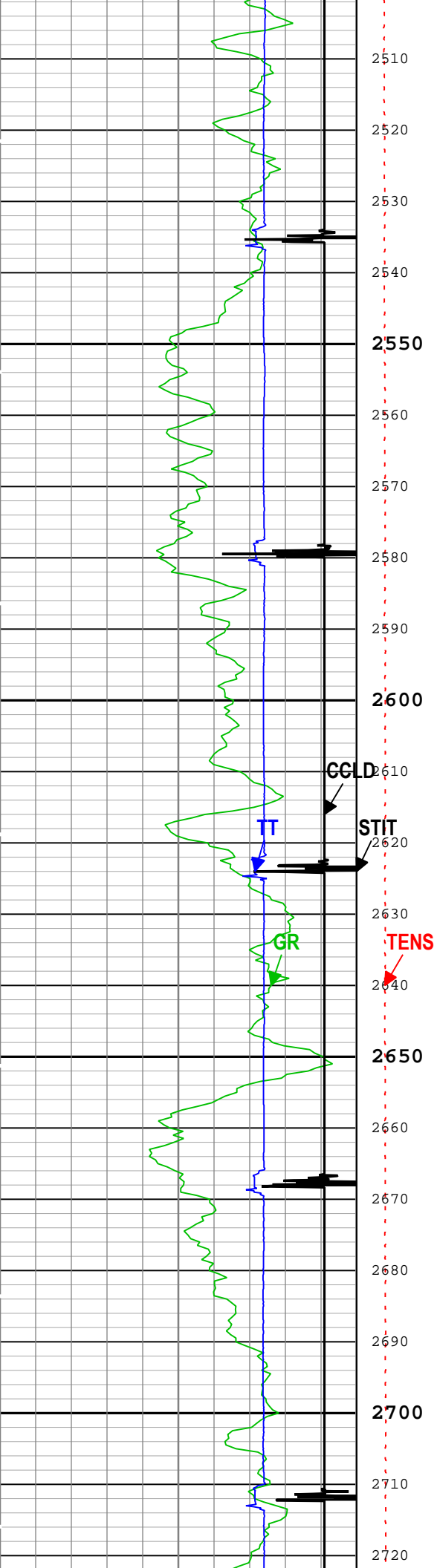
Description: Sonic CBL with VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 15-Dec-2018 21:36:04

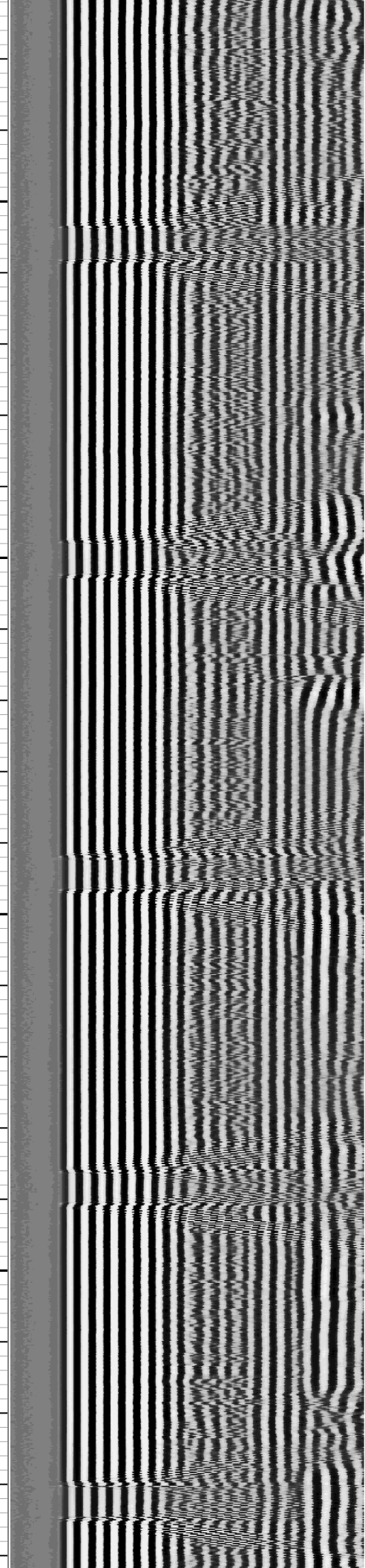
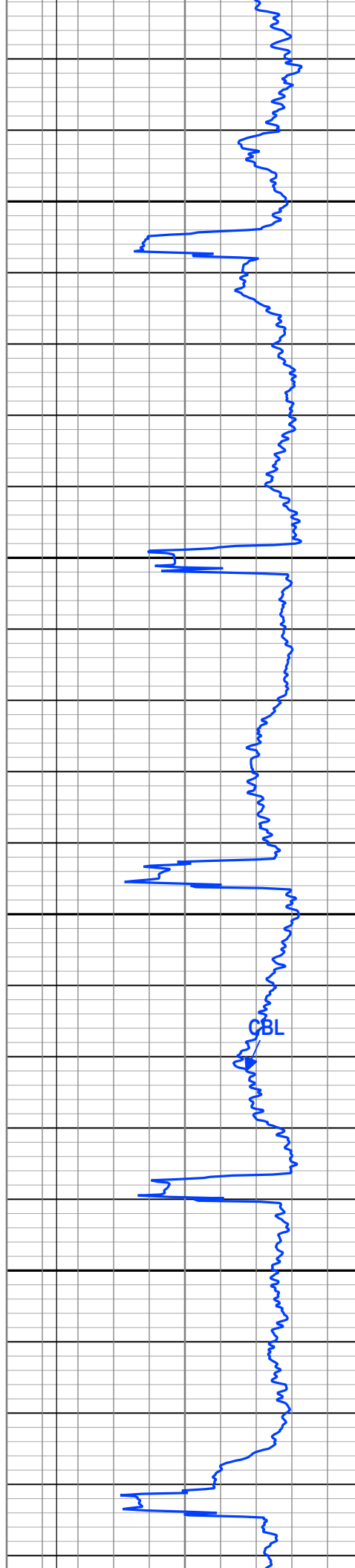
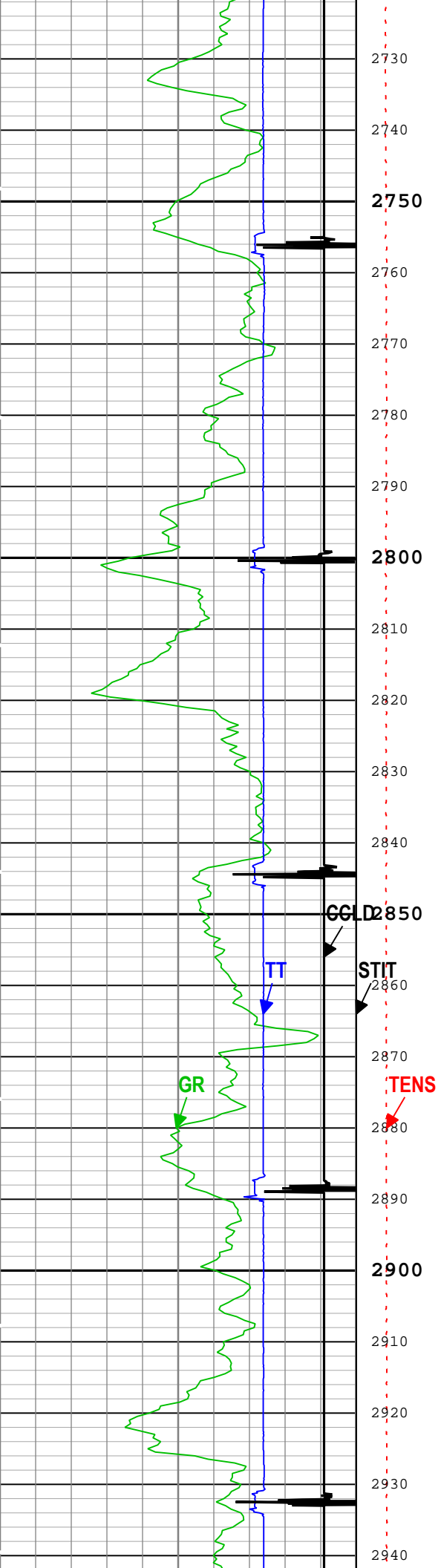
TIME_1900 - Time Marked every 60.00 (s)

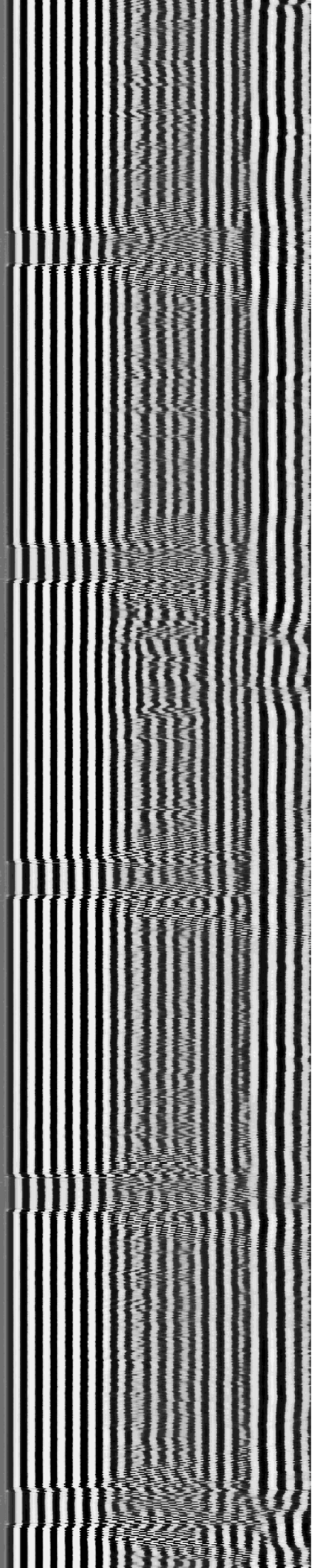
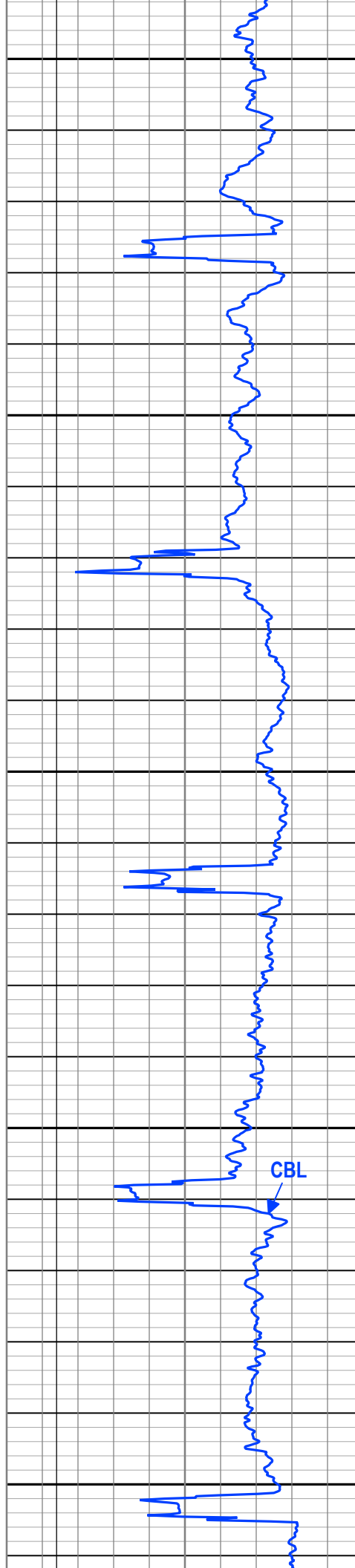
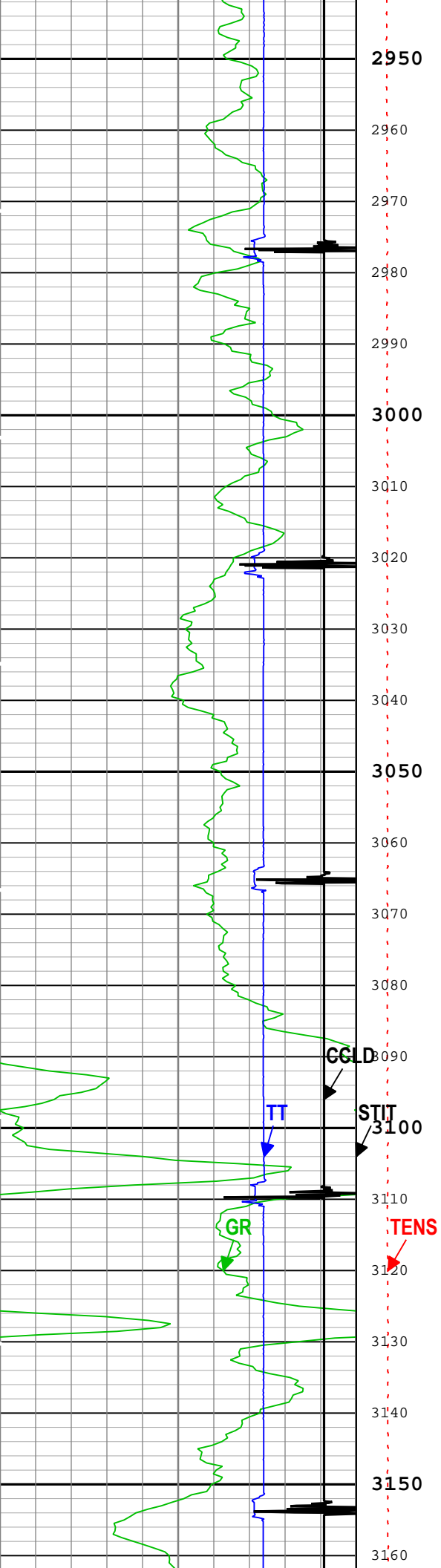


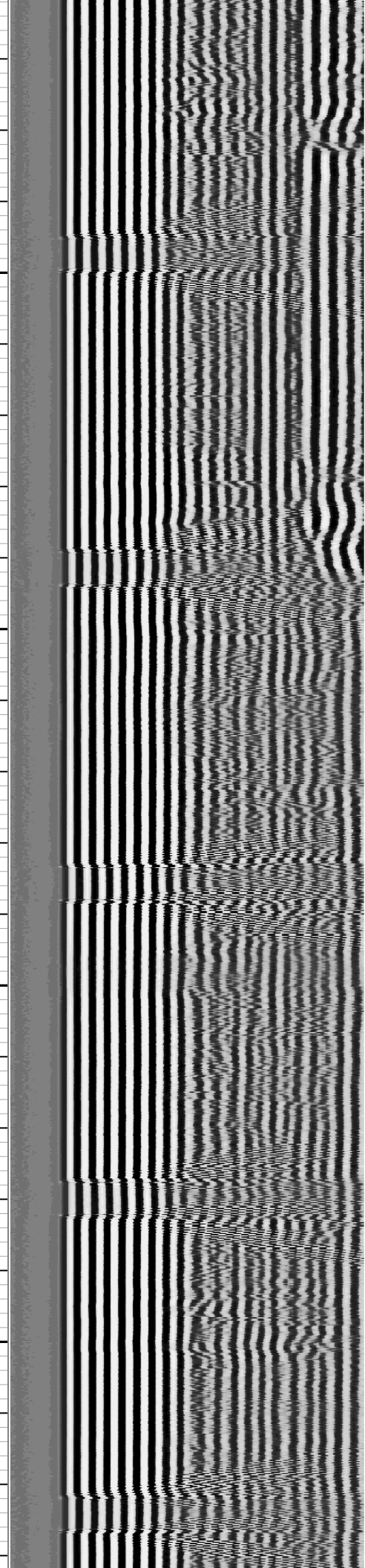
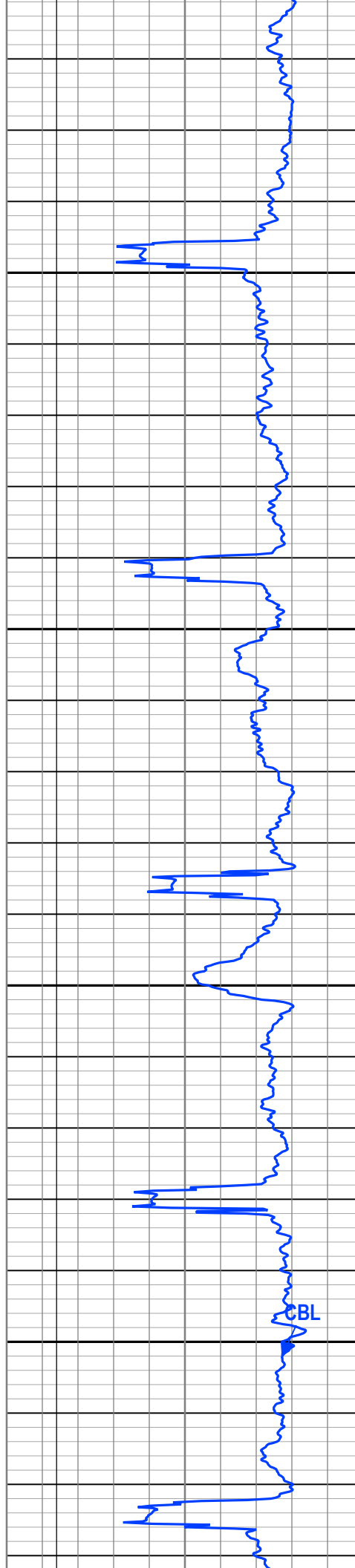
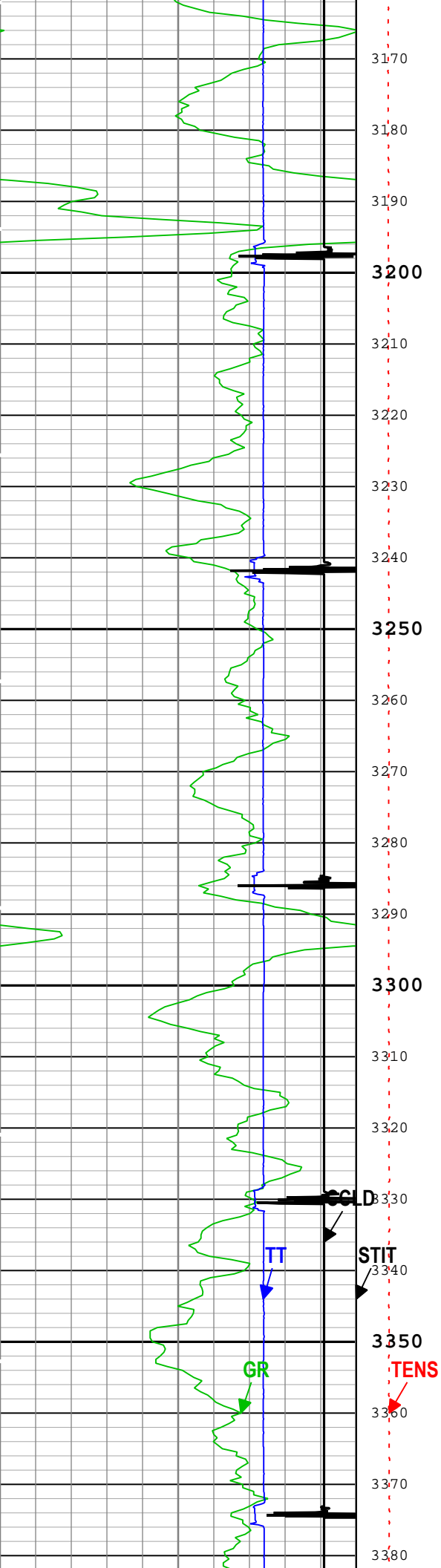


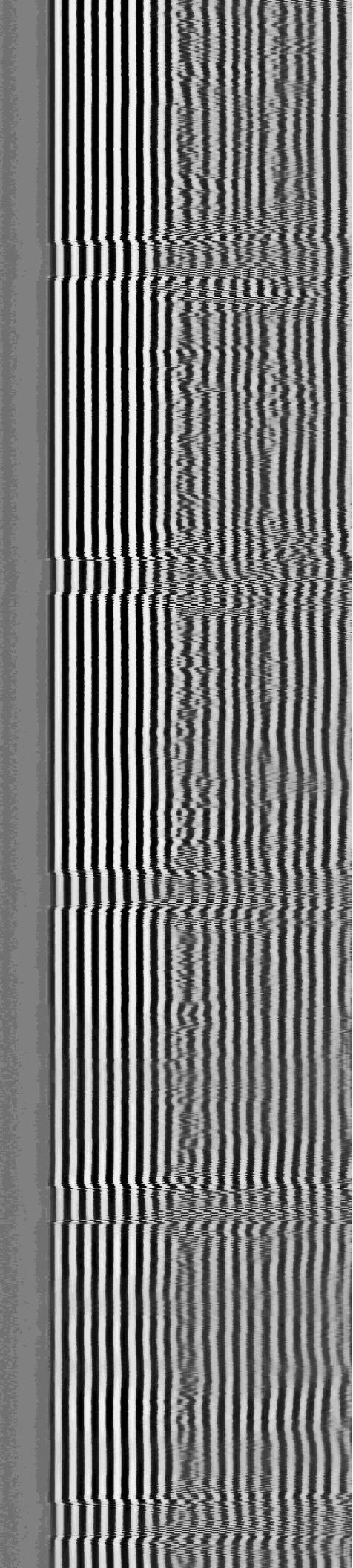
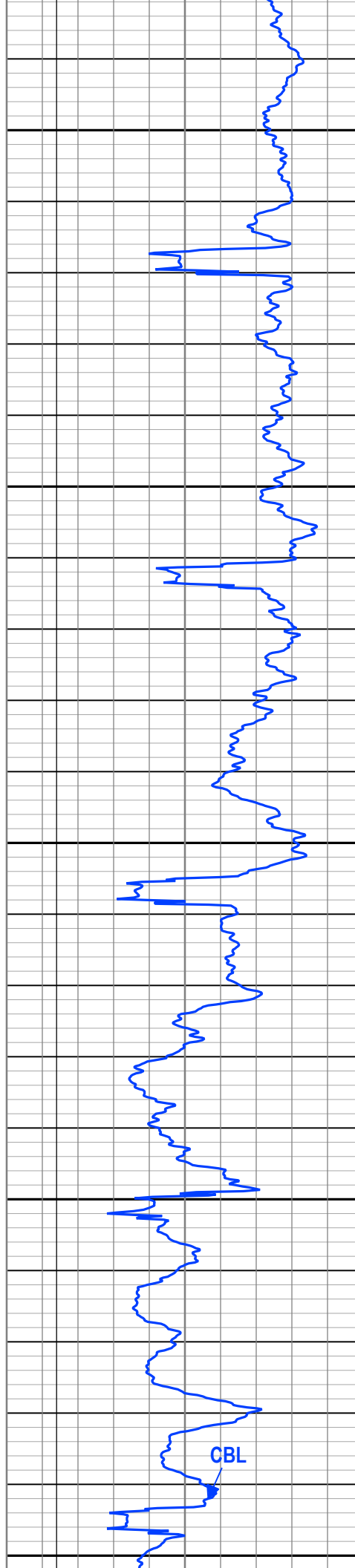
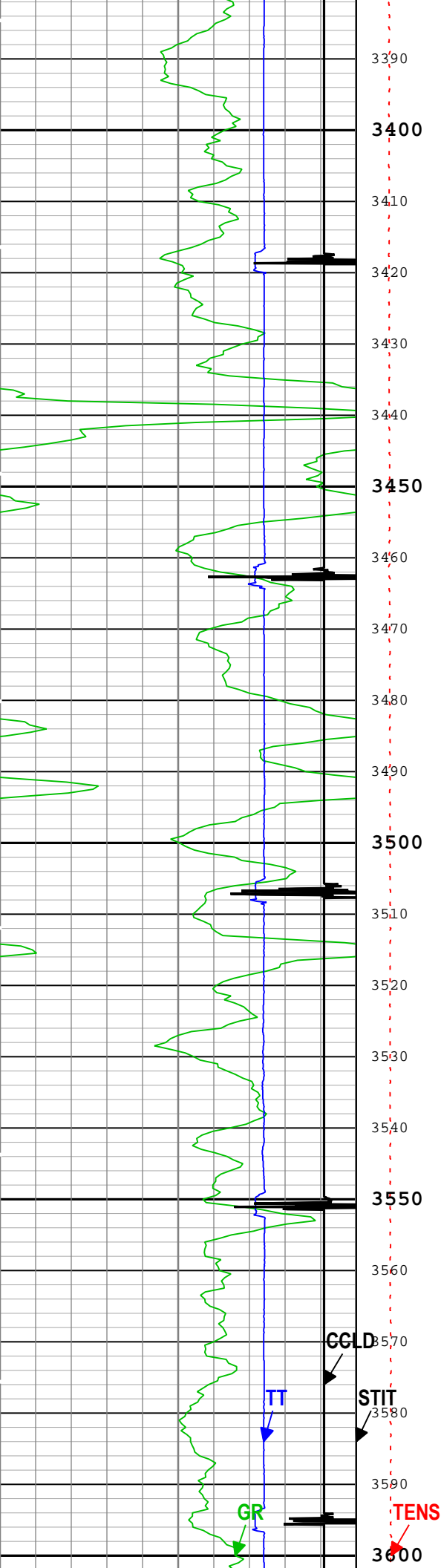


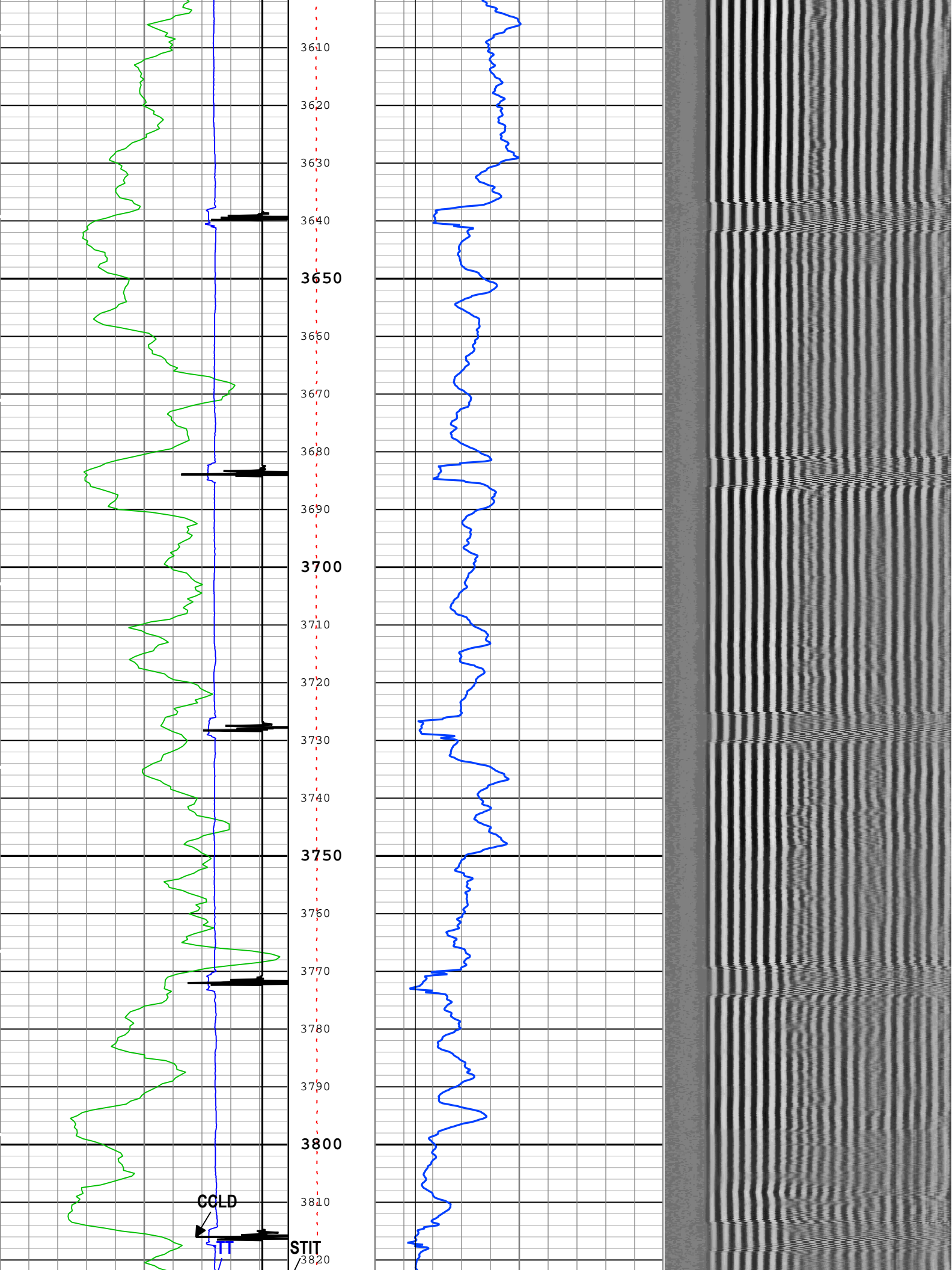


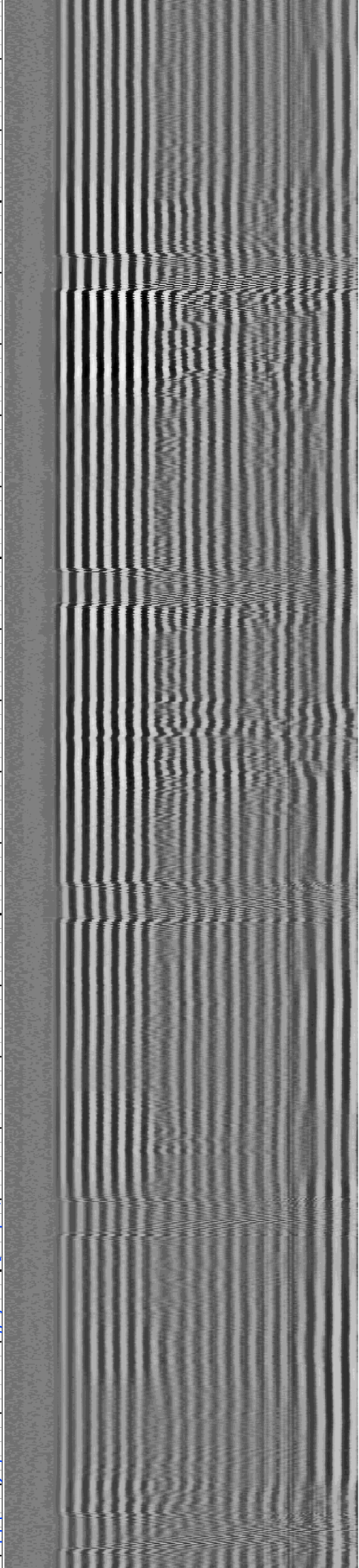
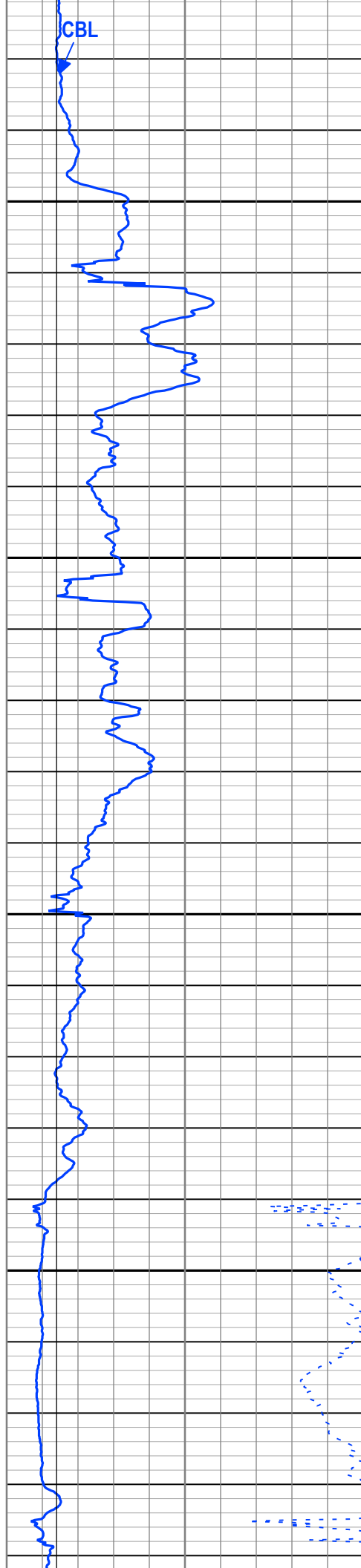
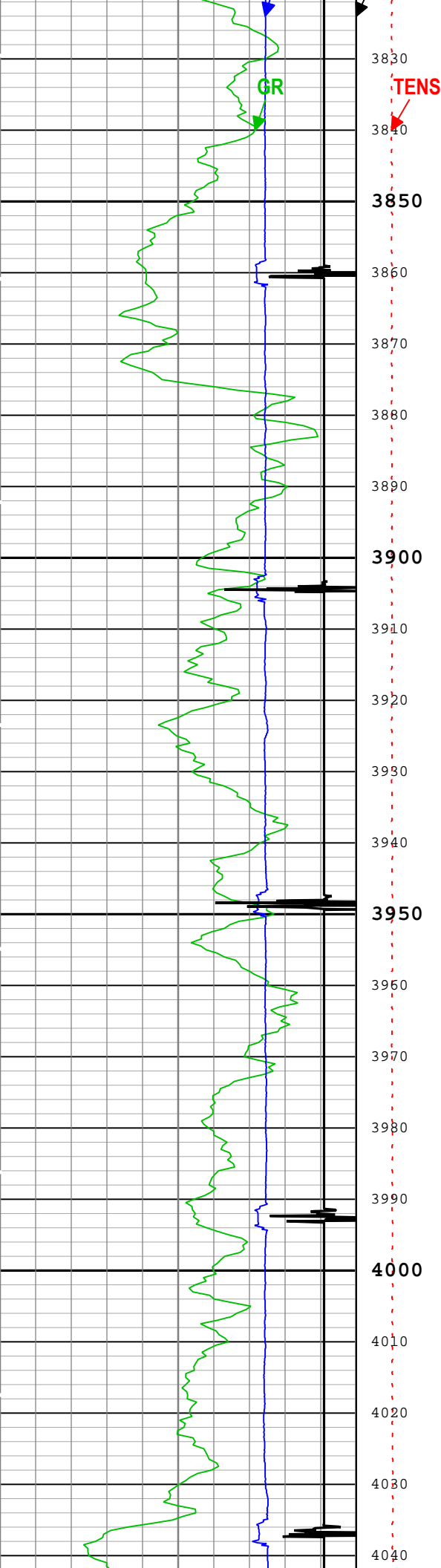


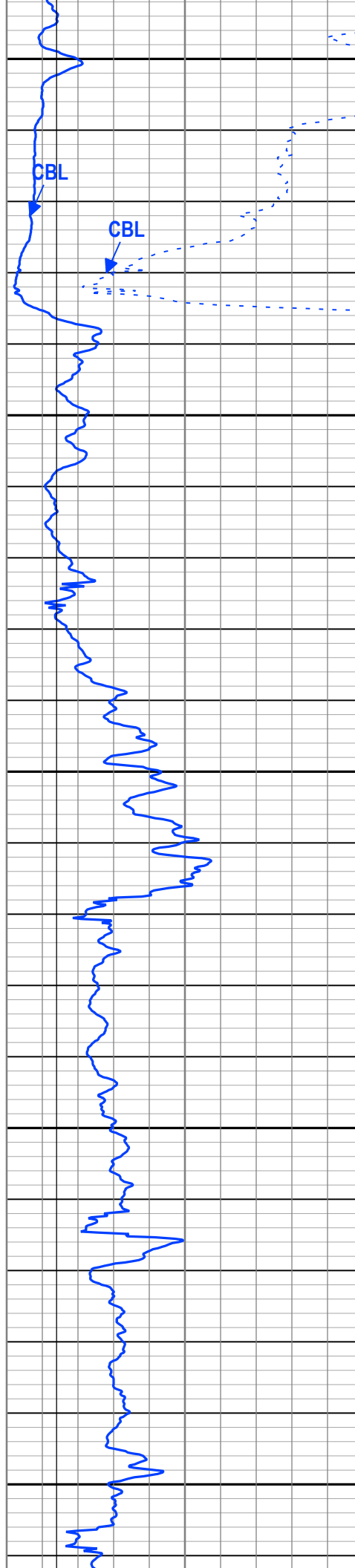
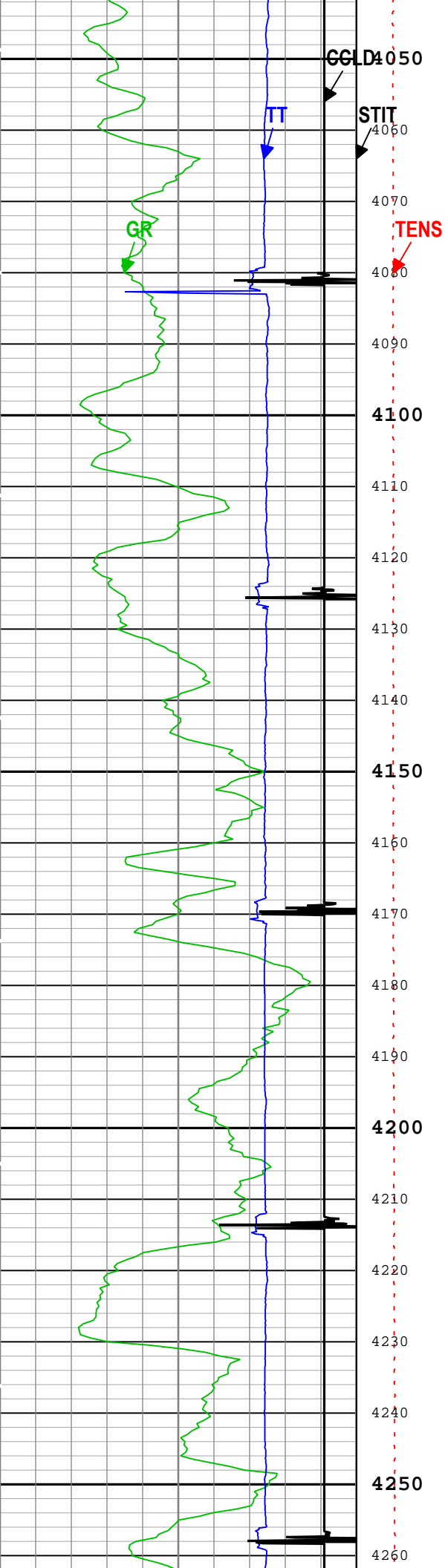


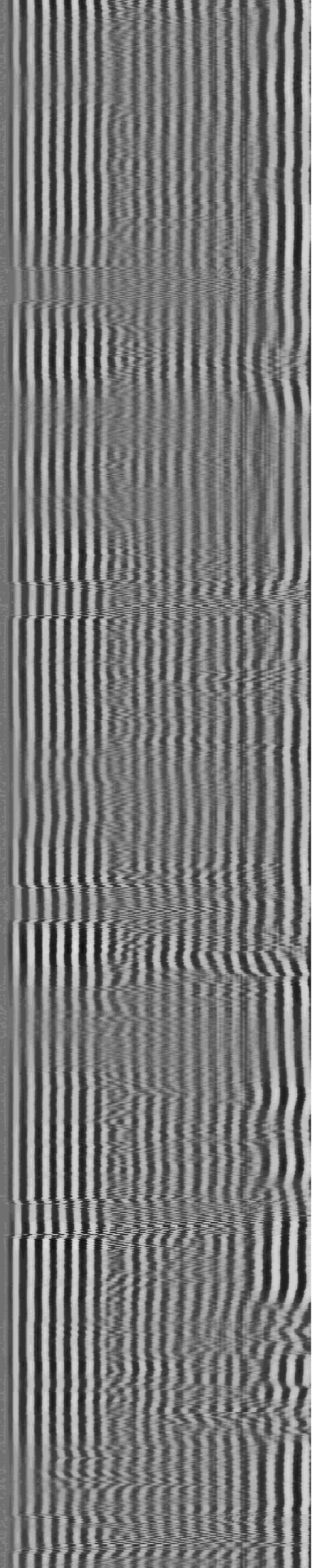
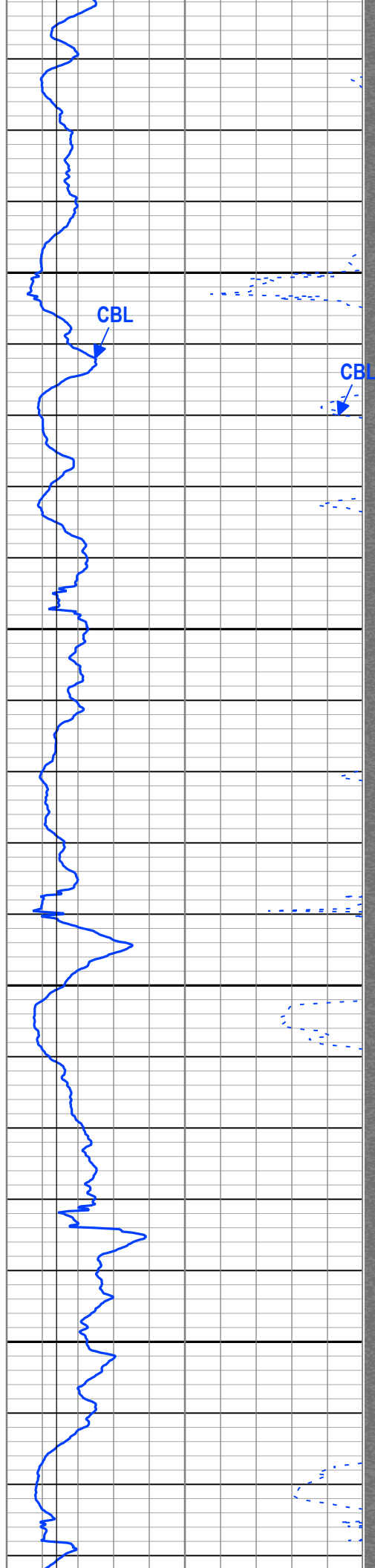
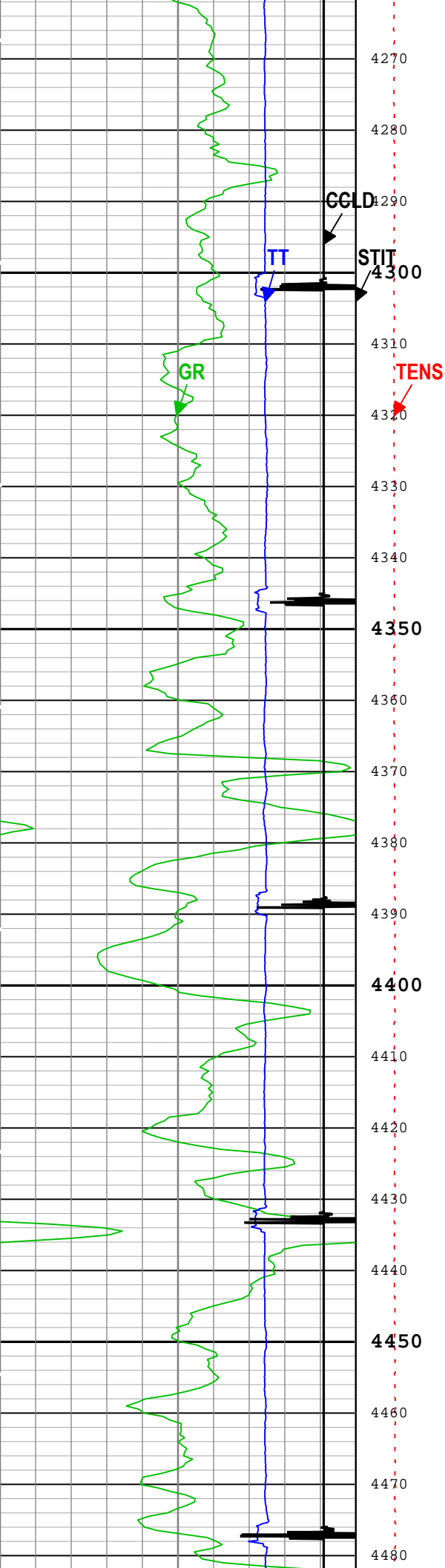


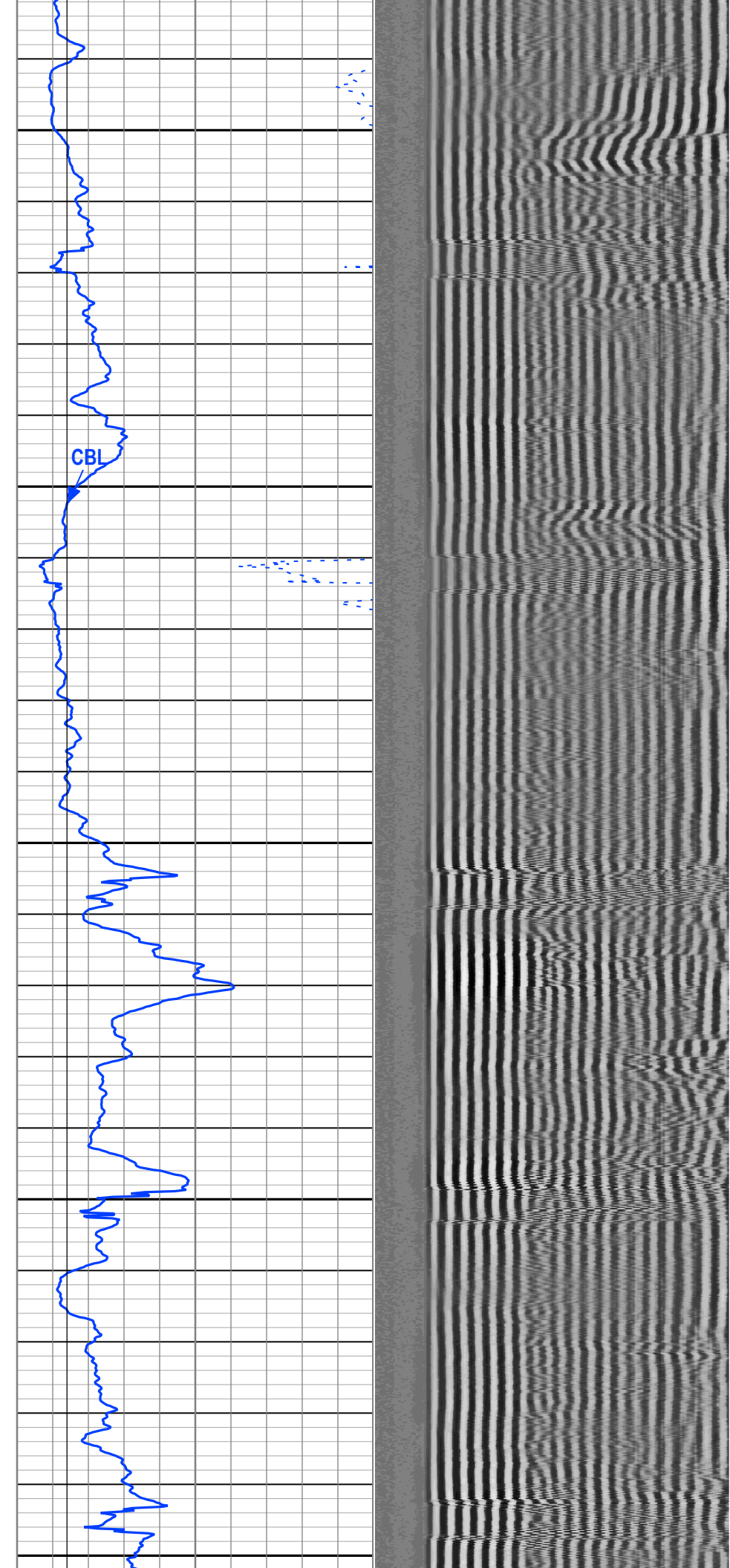
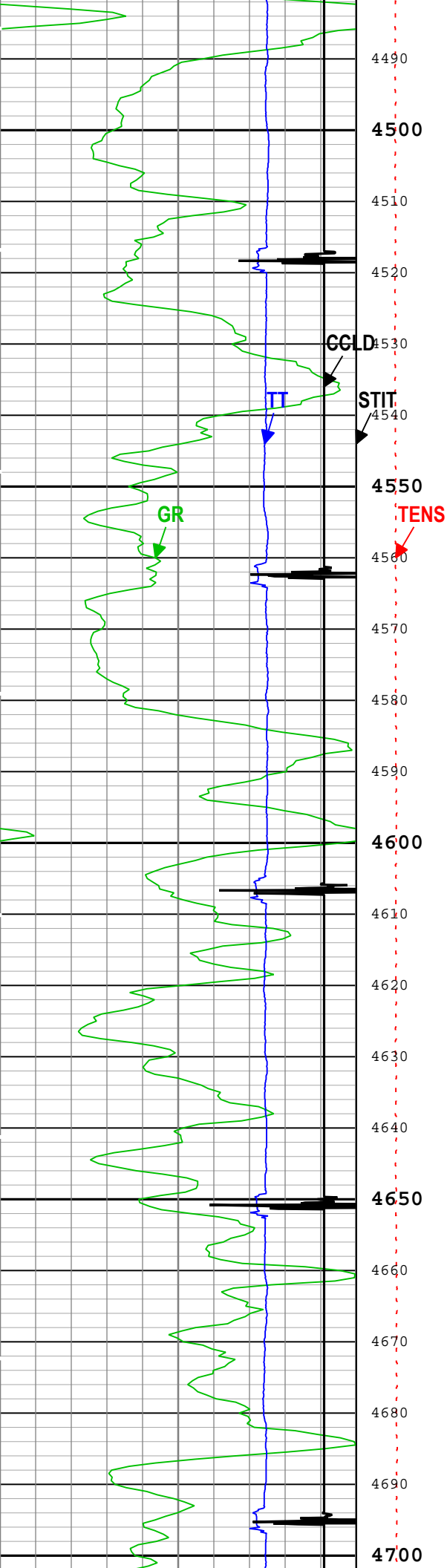


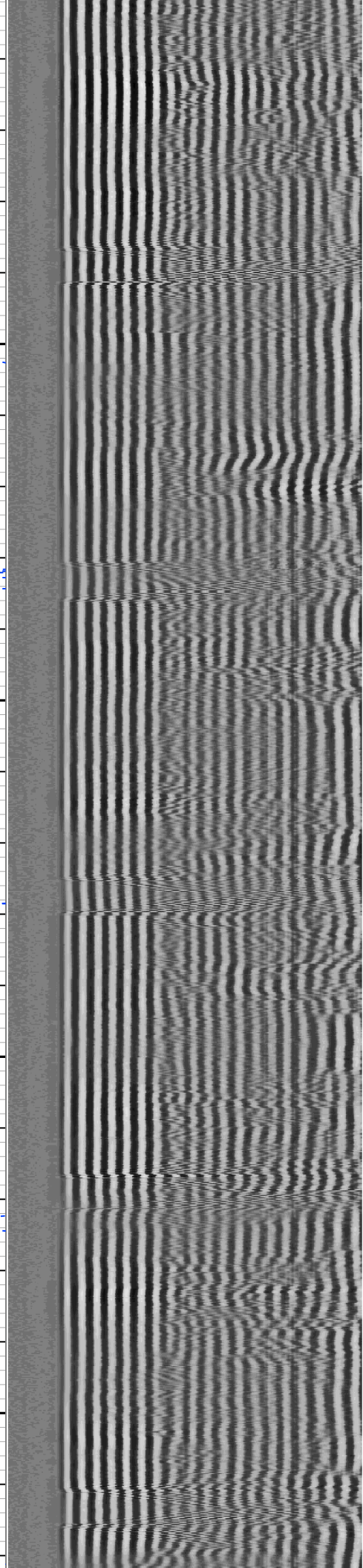
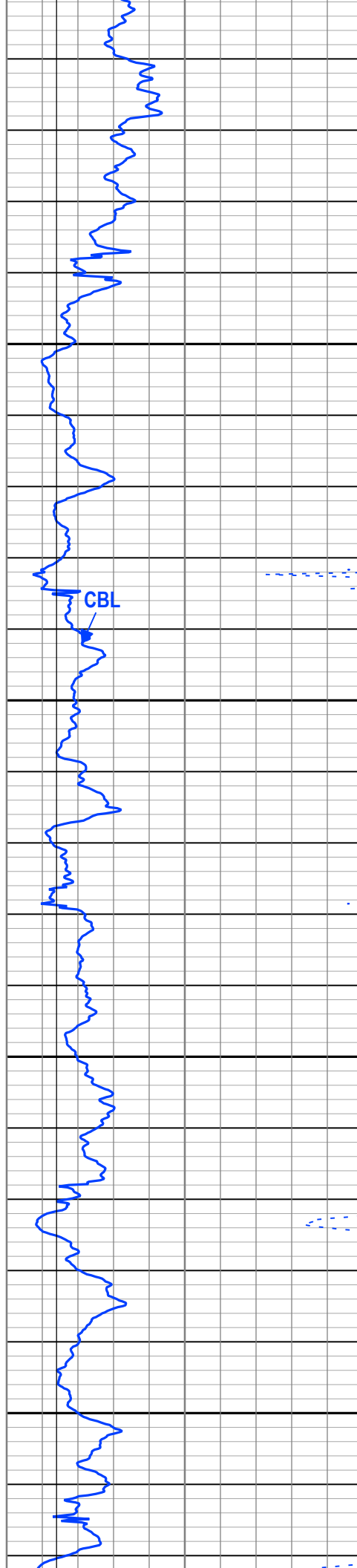
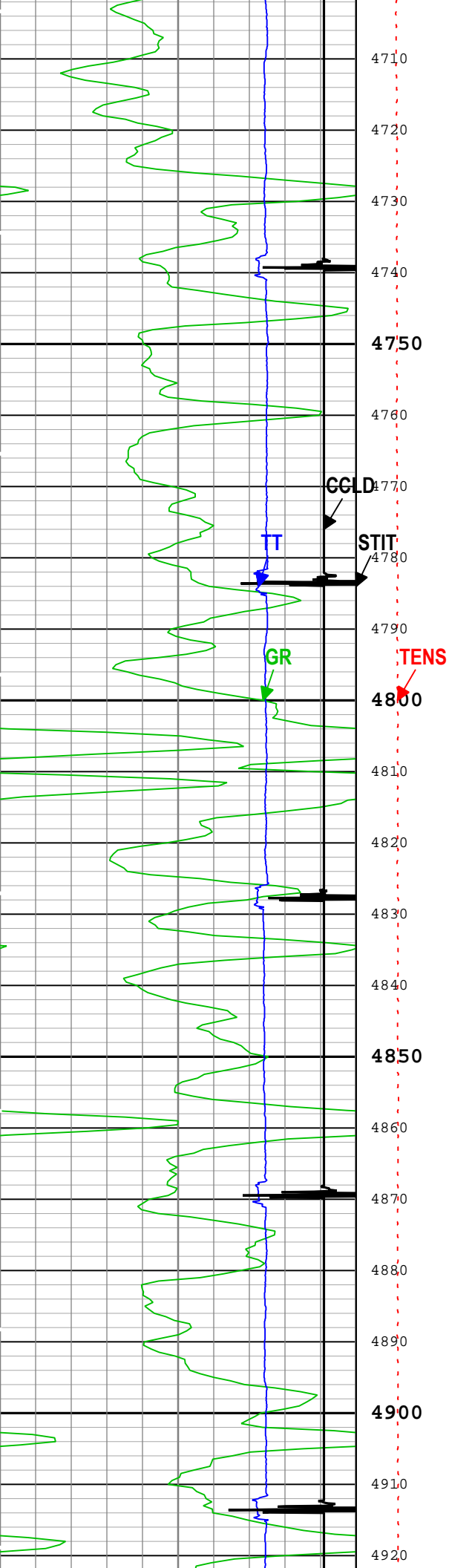


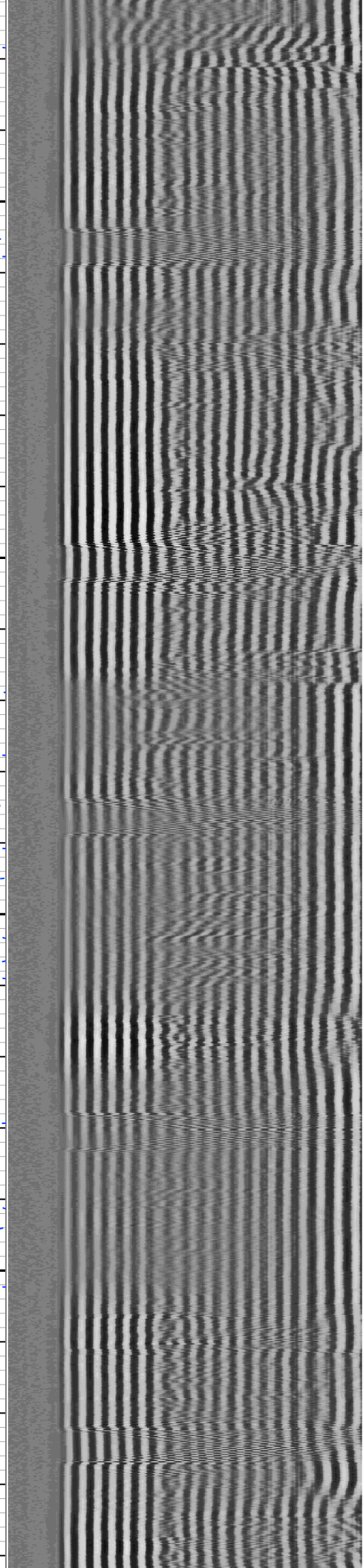
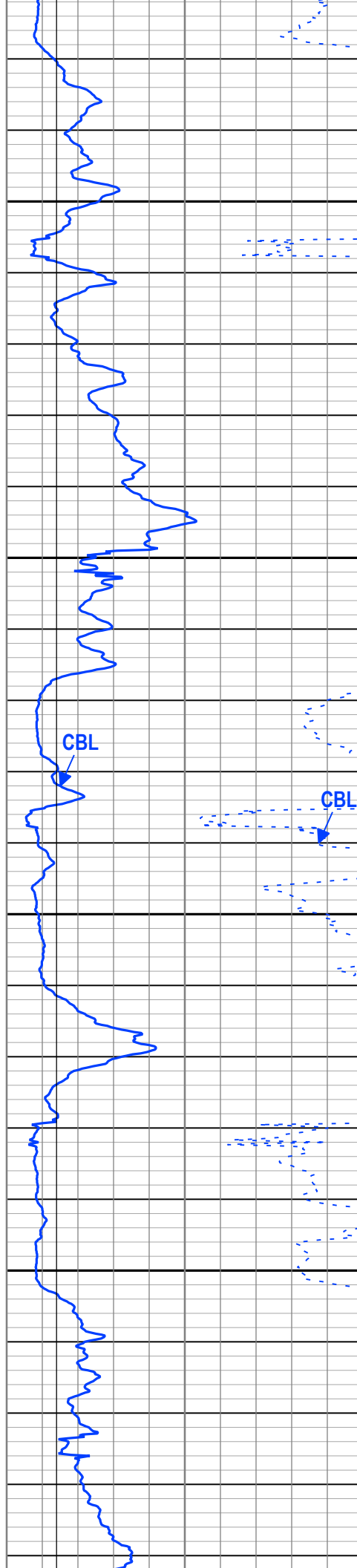
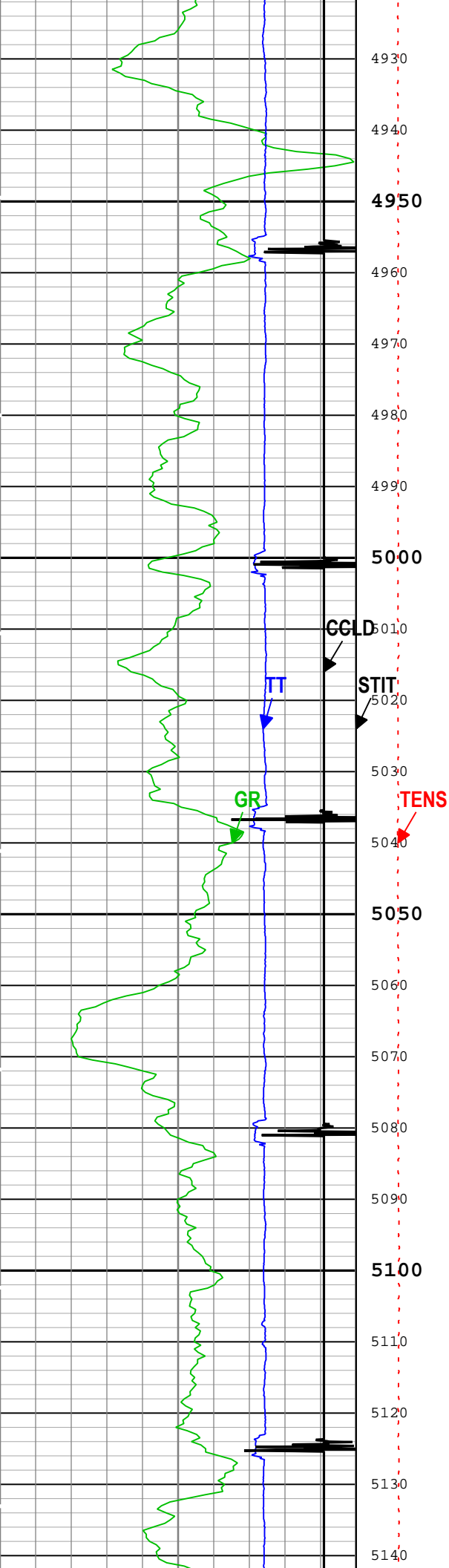


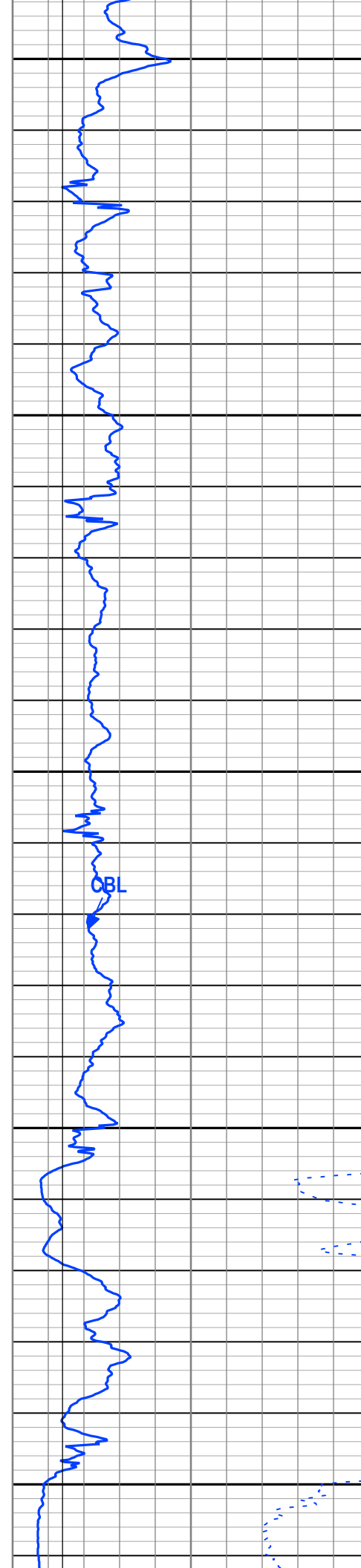
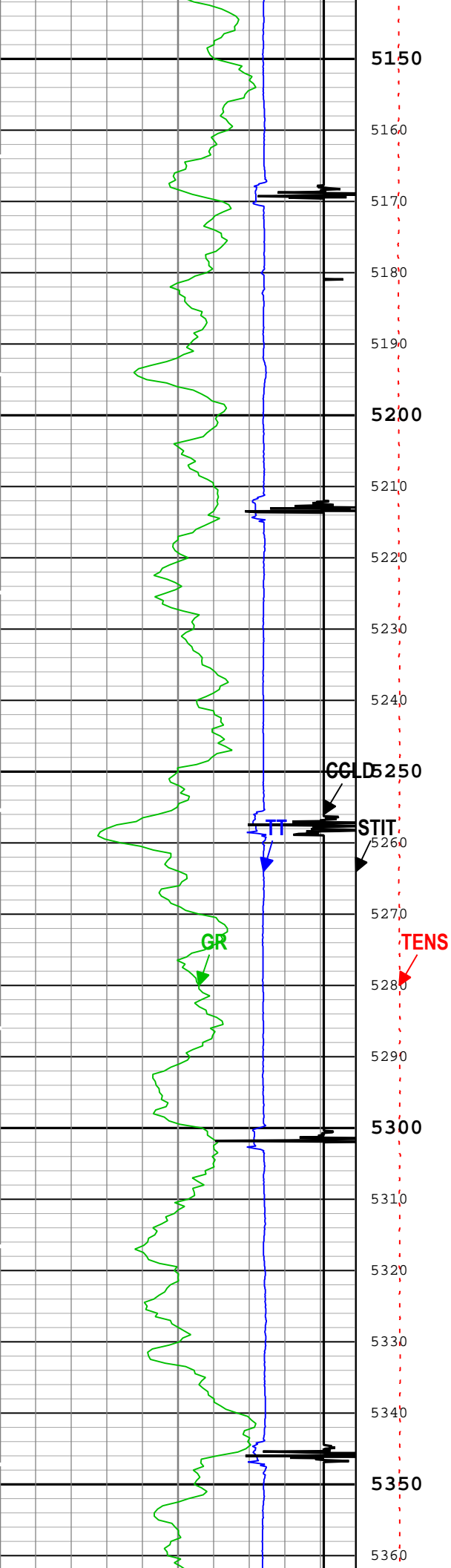


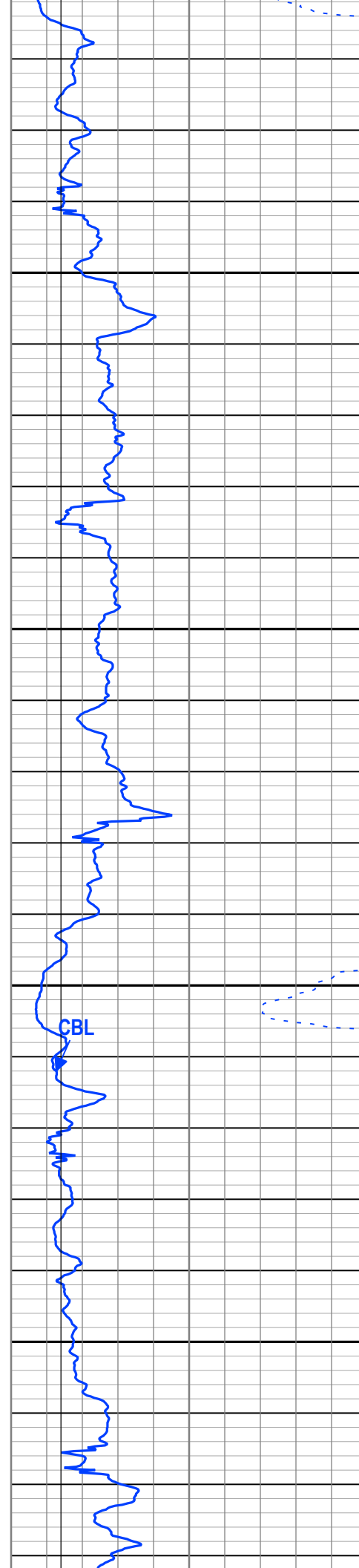
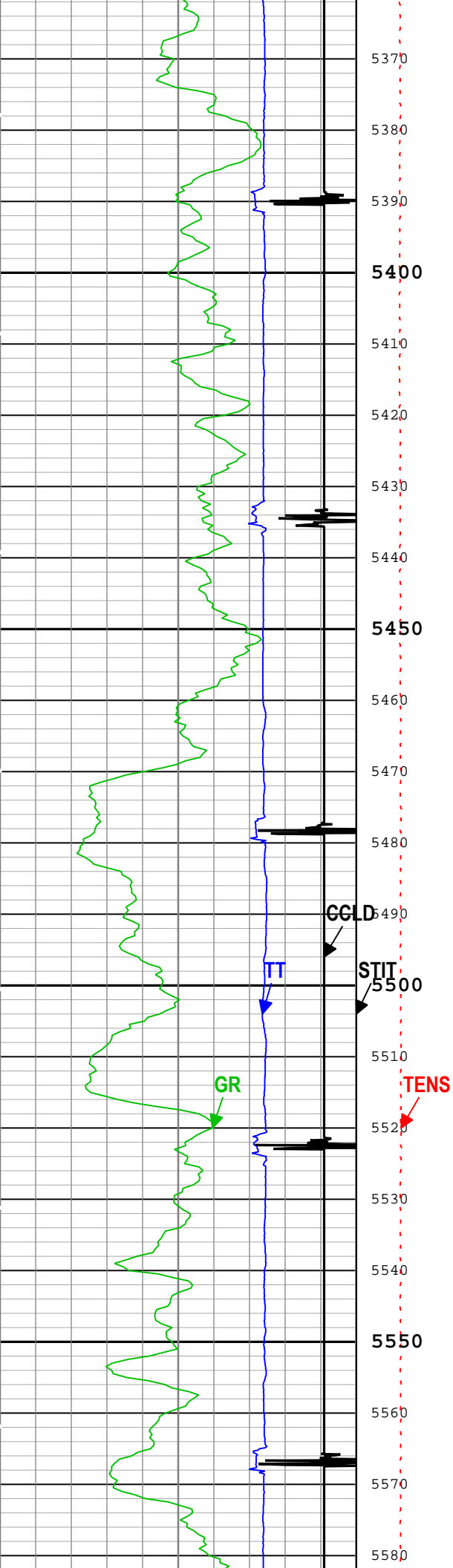


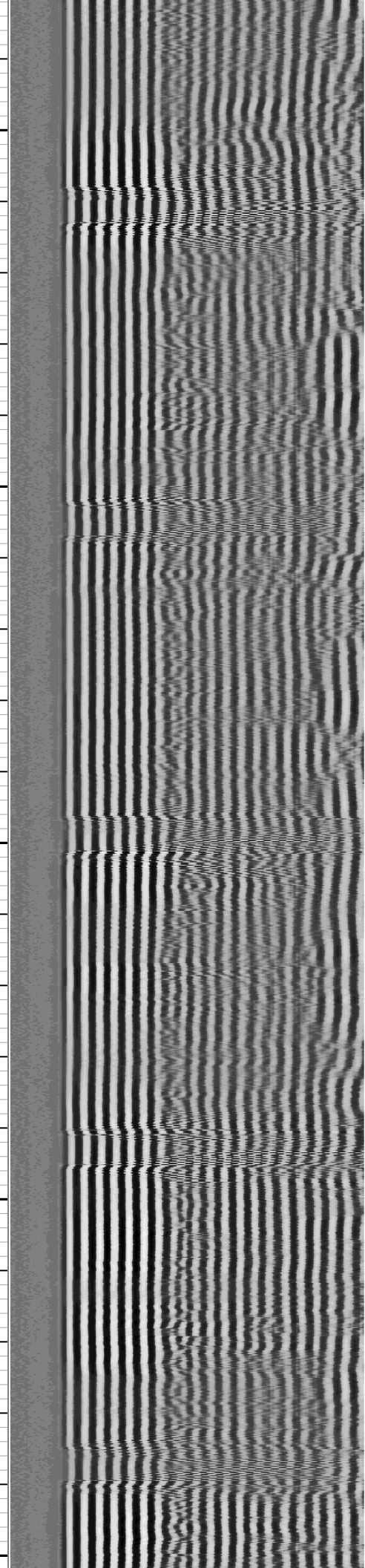
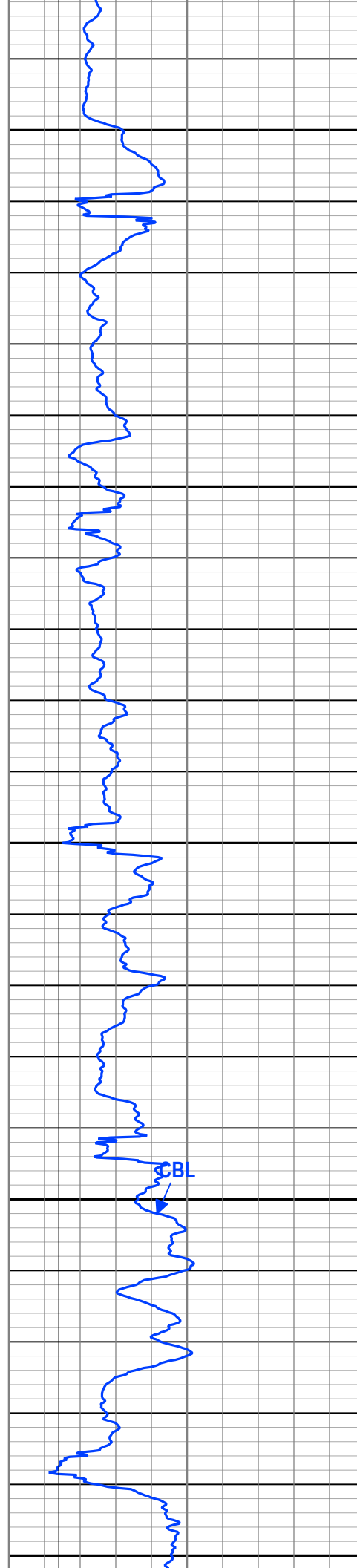
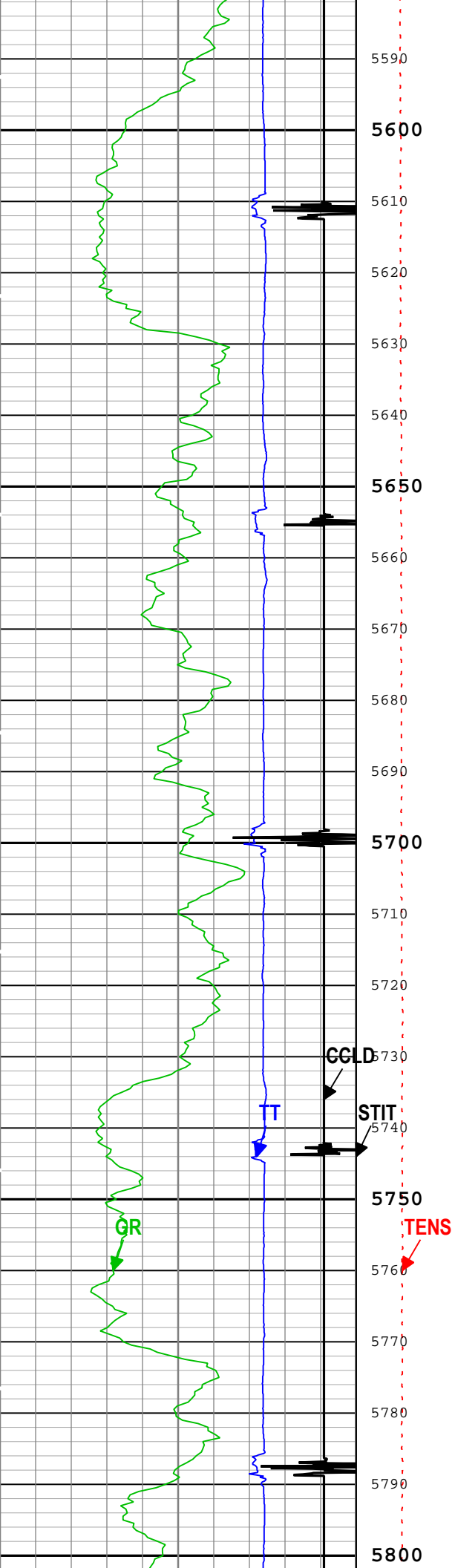


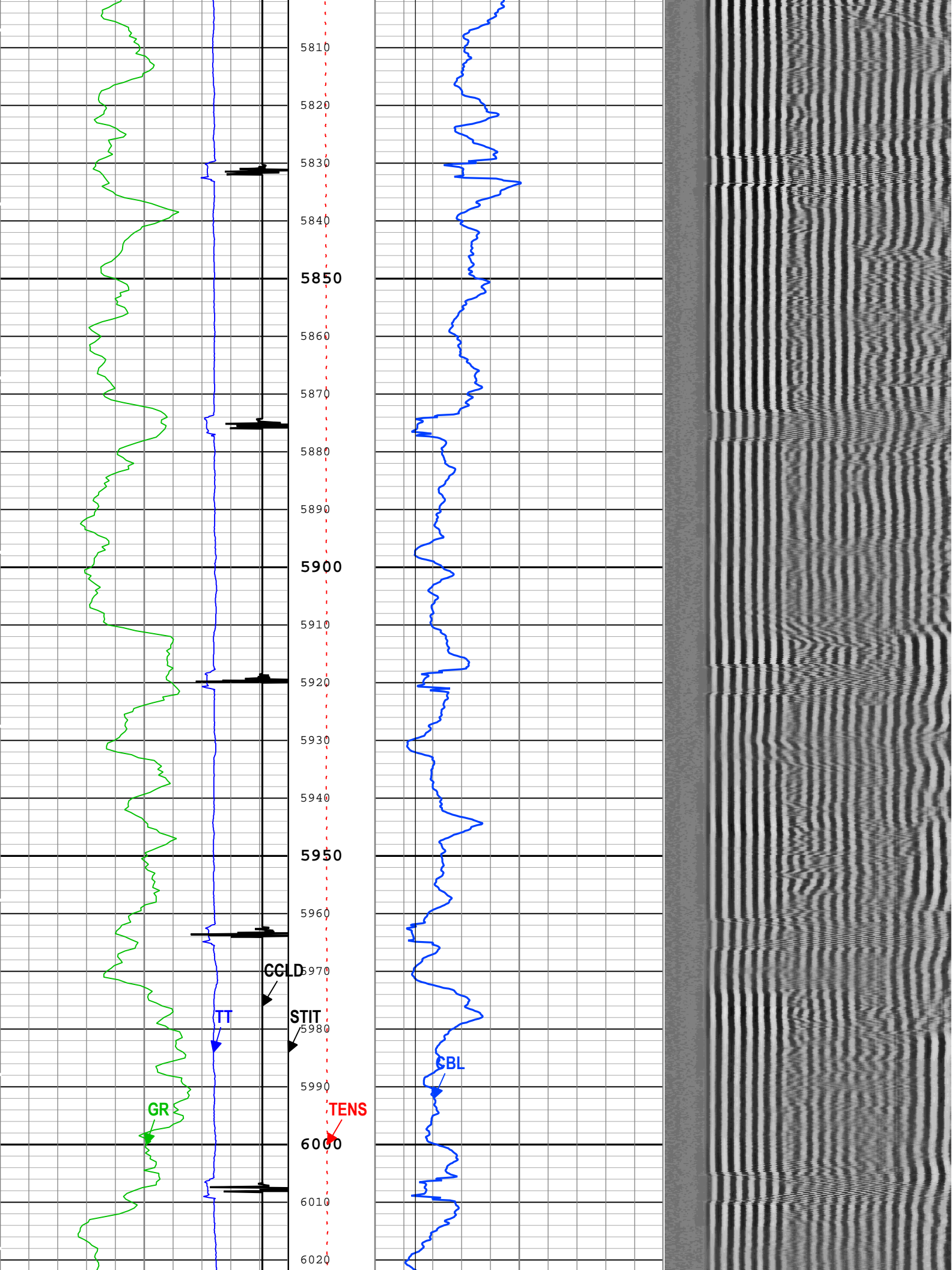


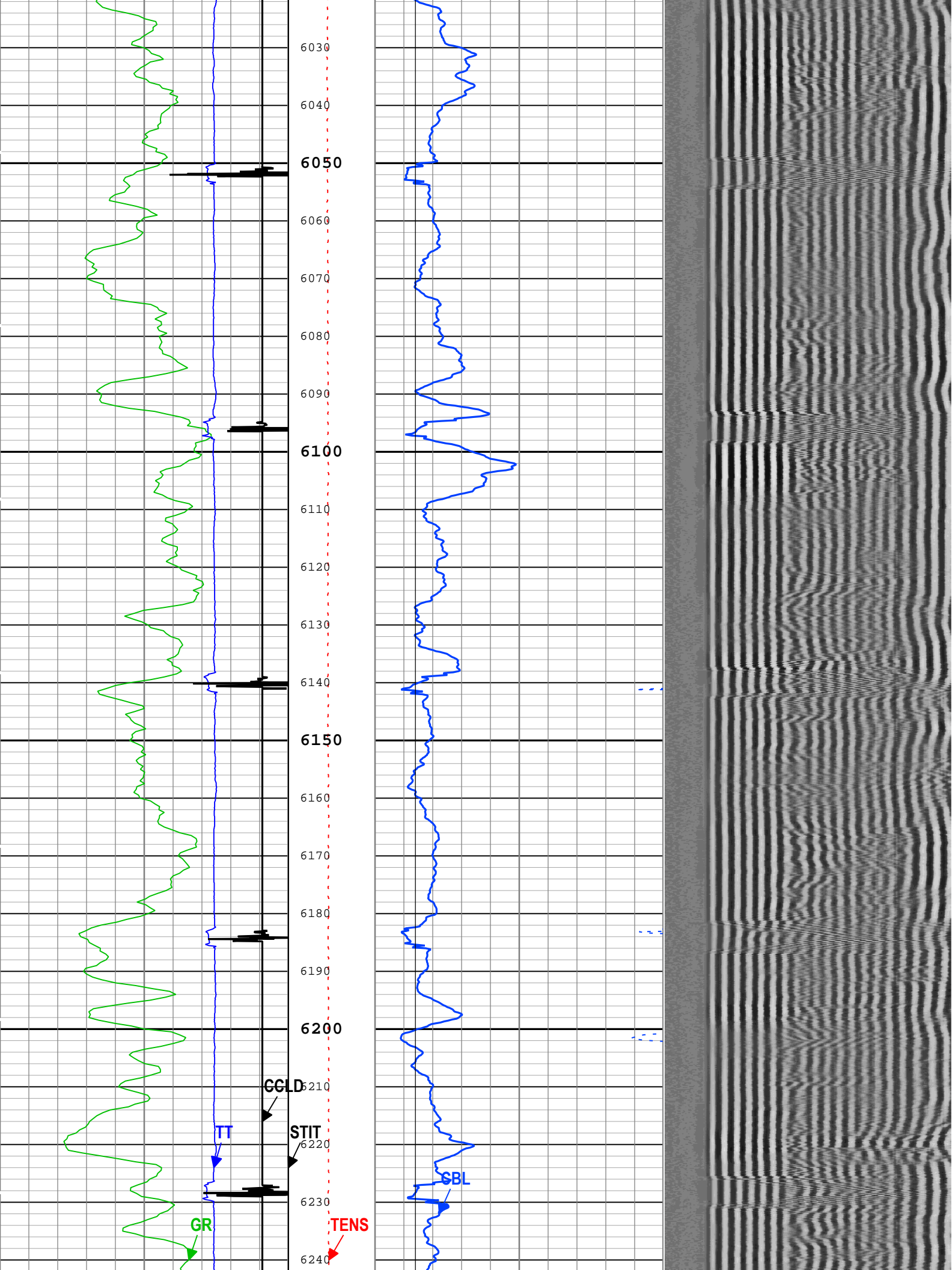


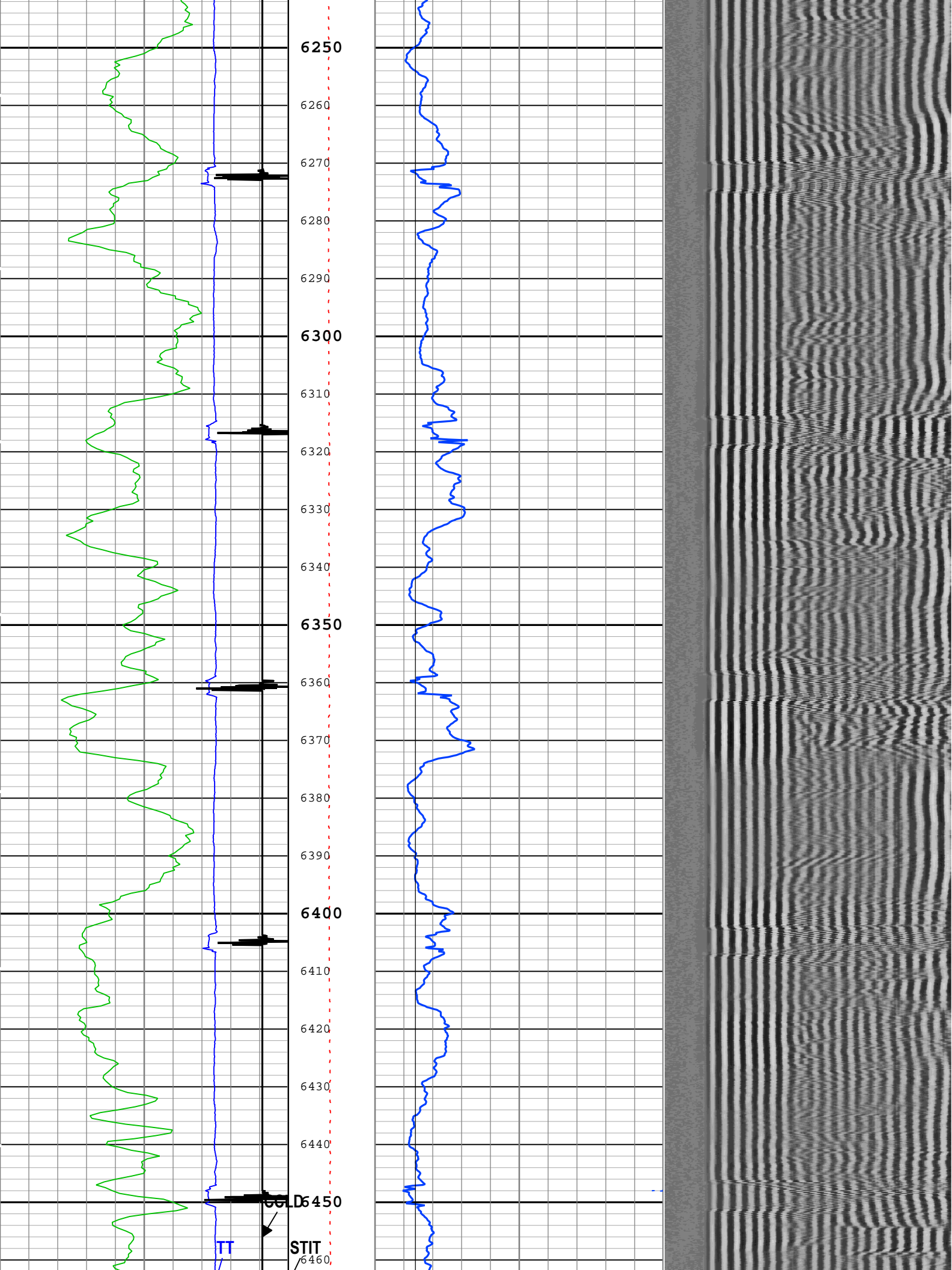


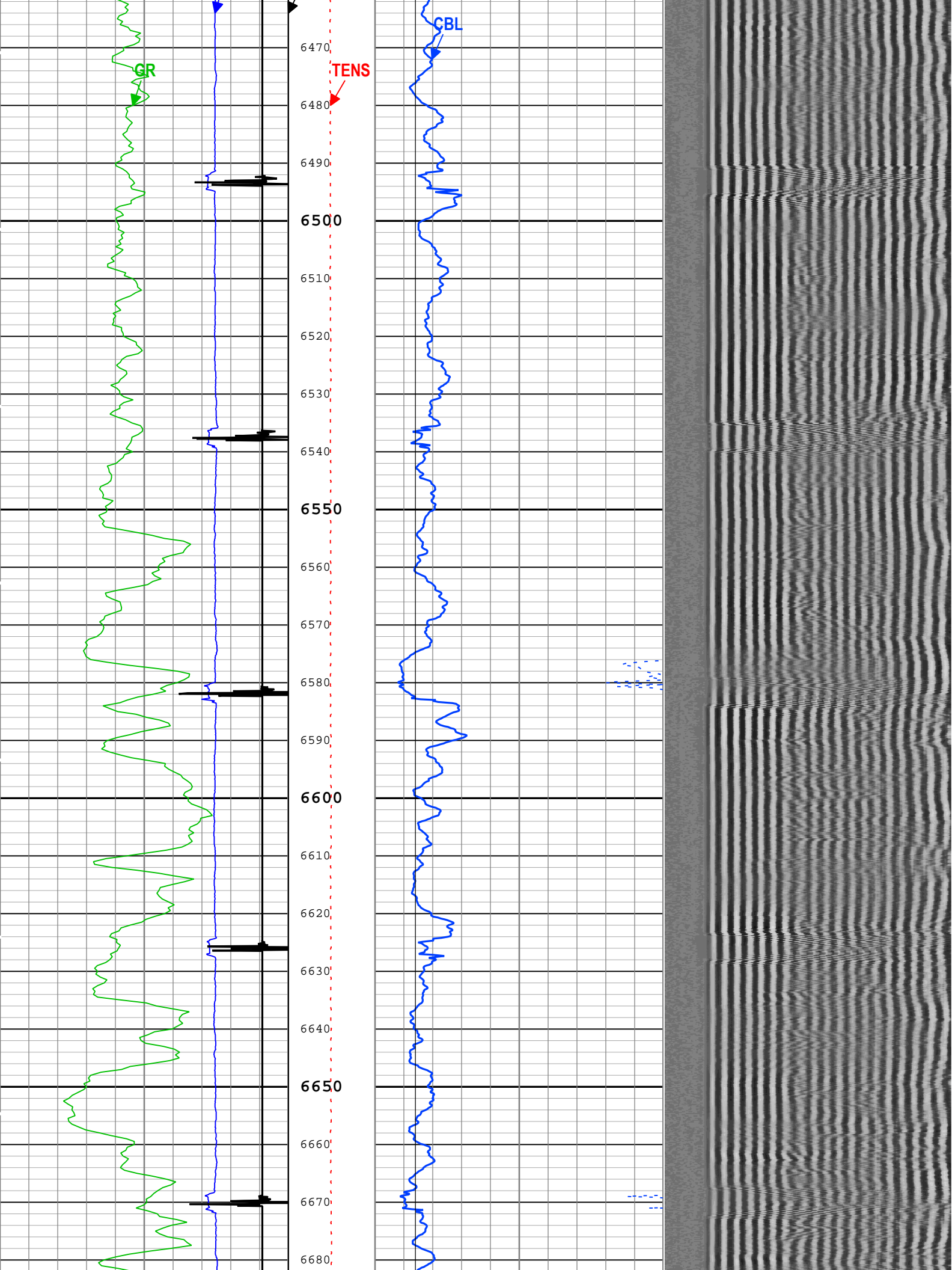


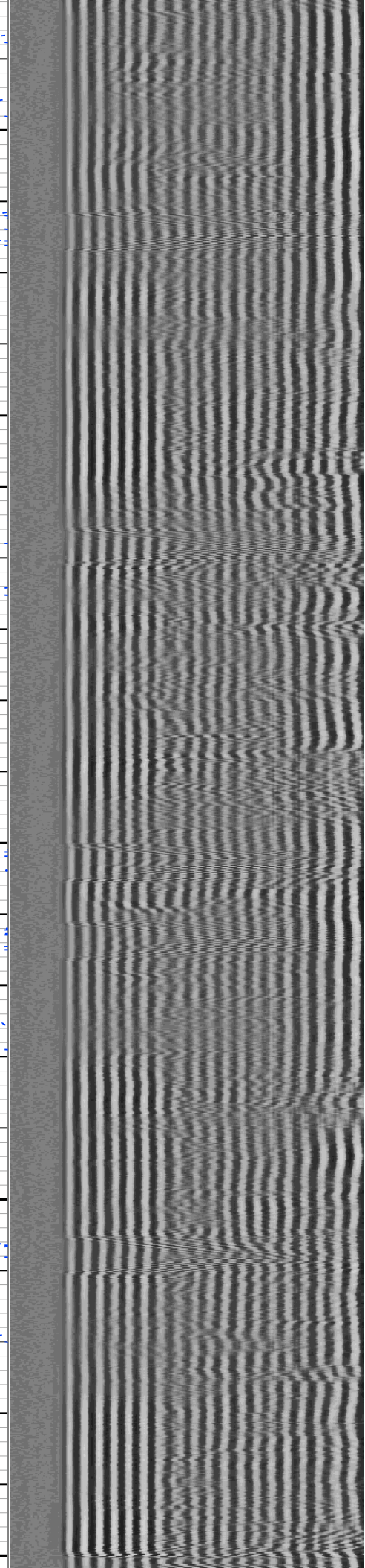
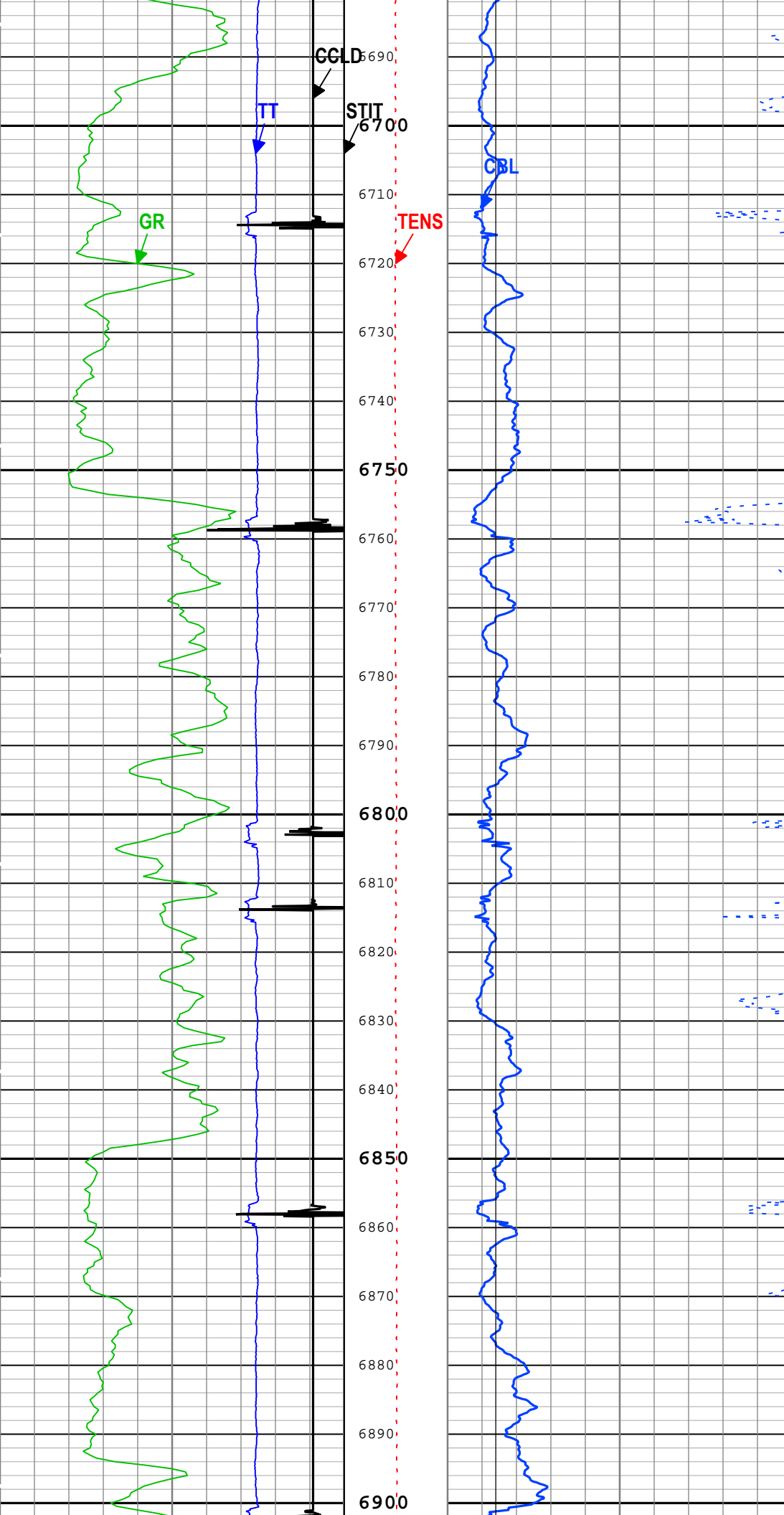


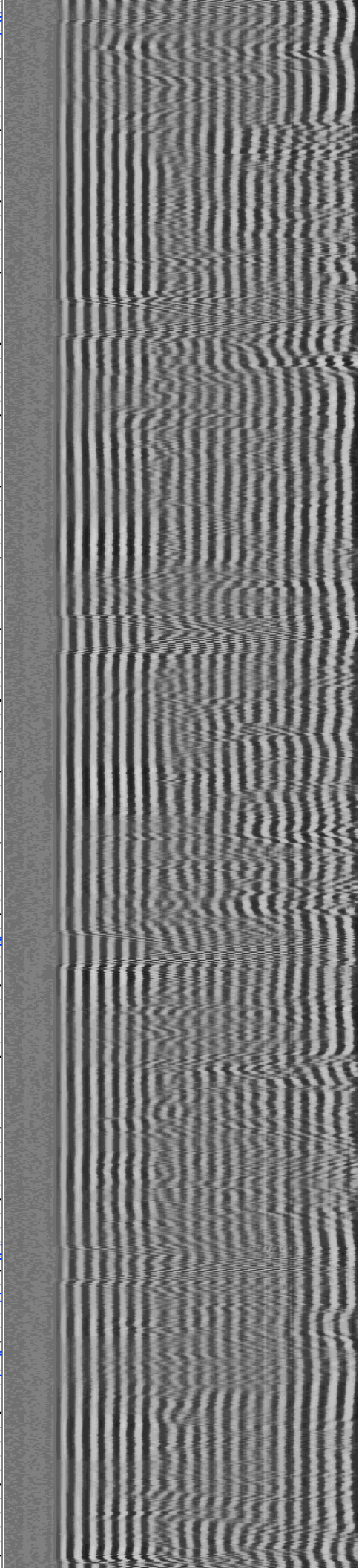
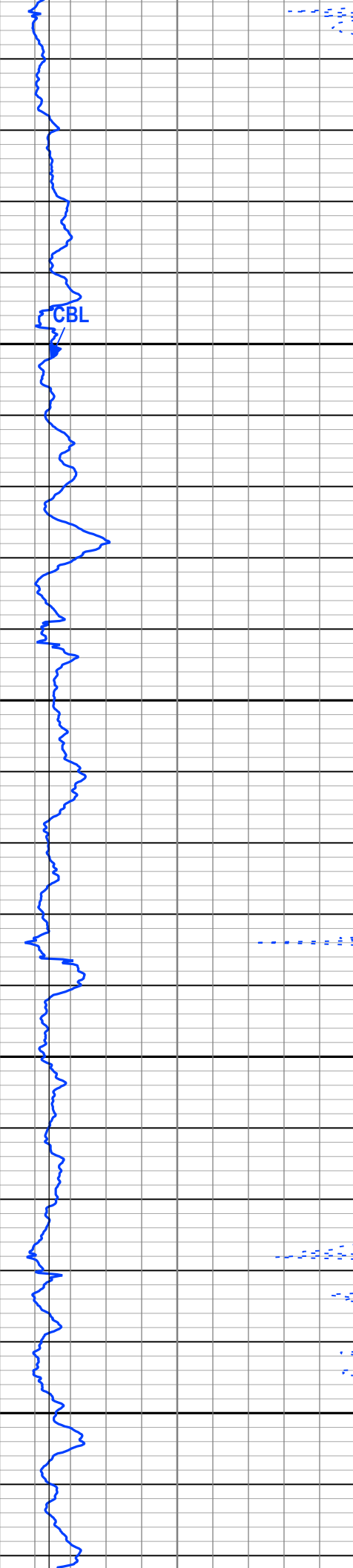
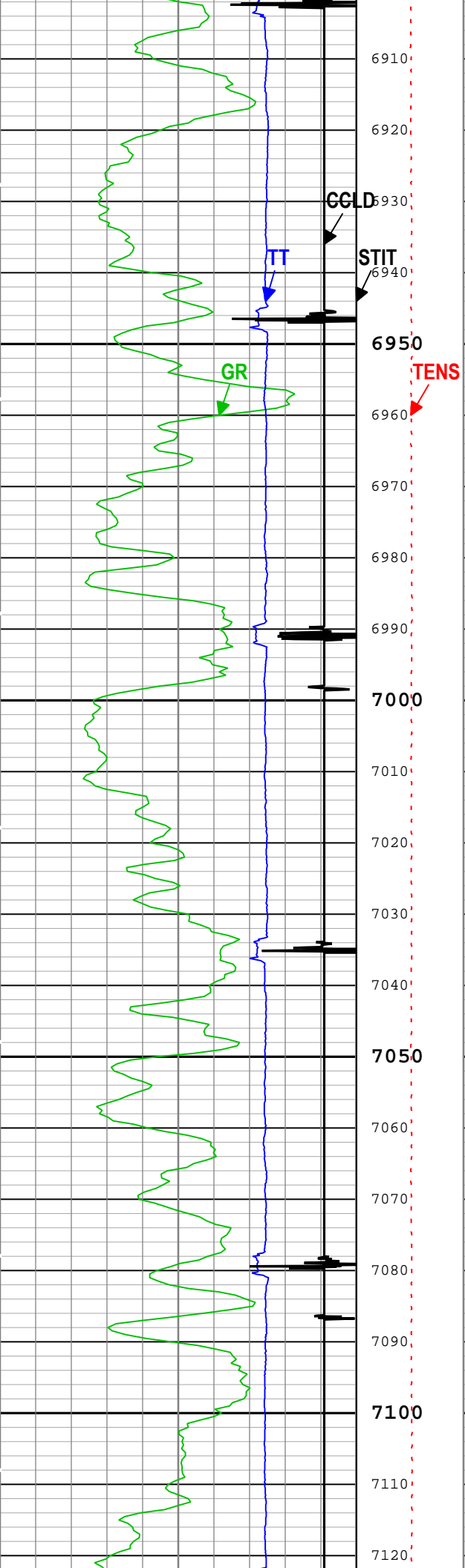


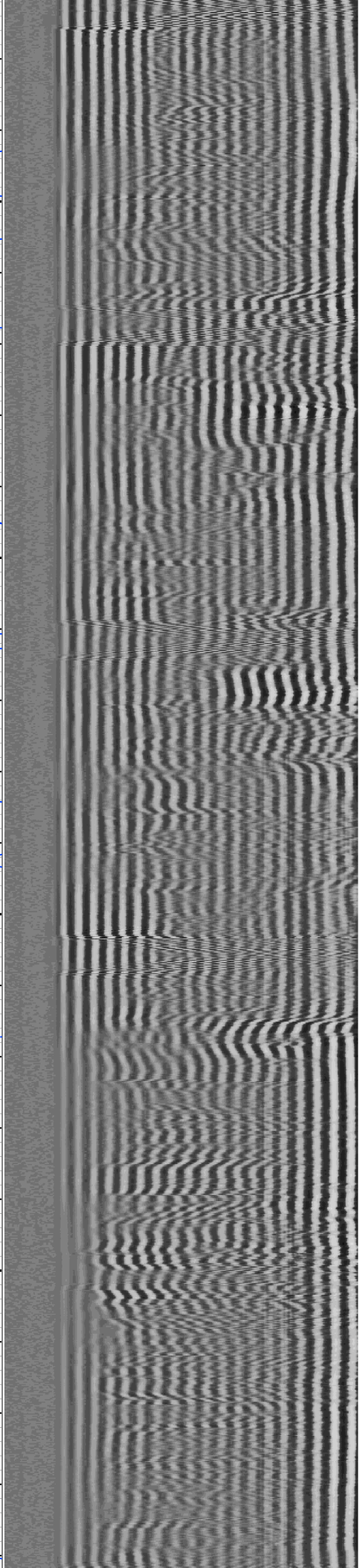
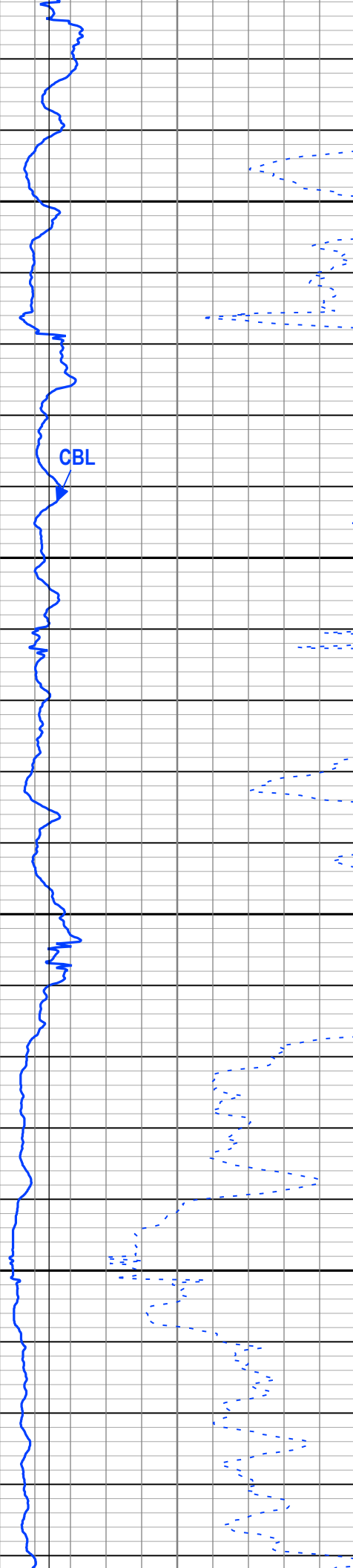
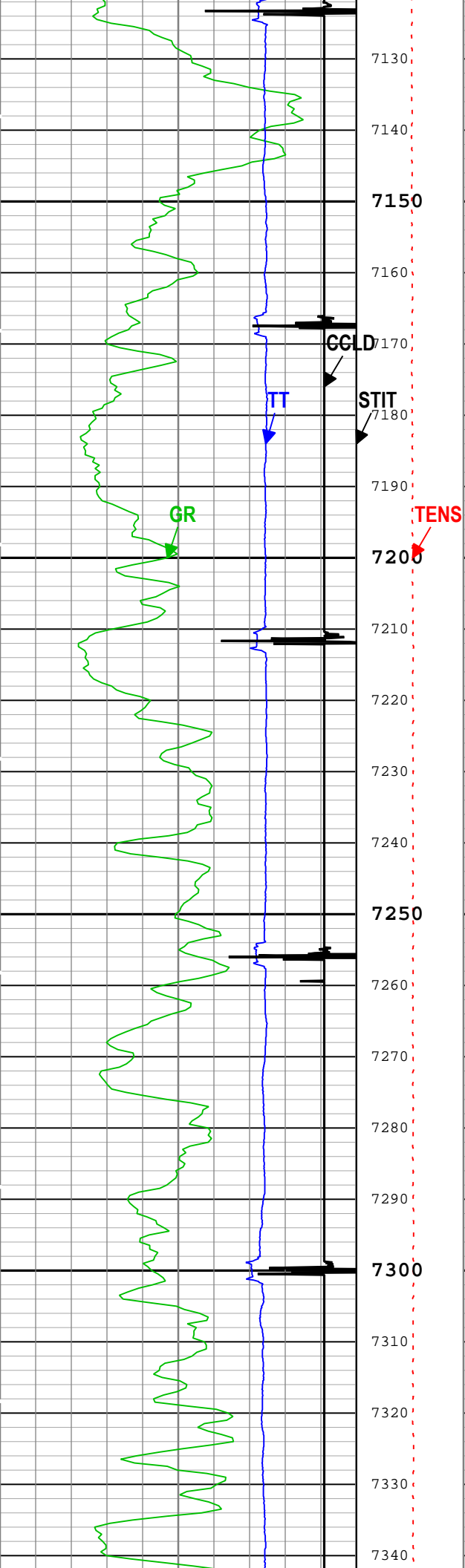


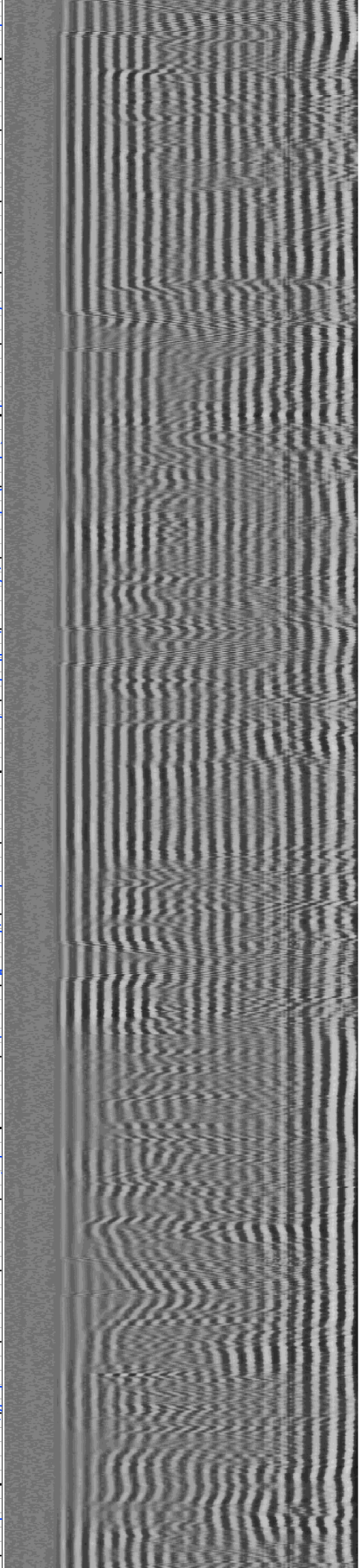
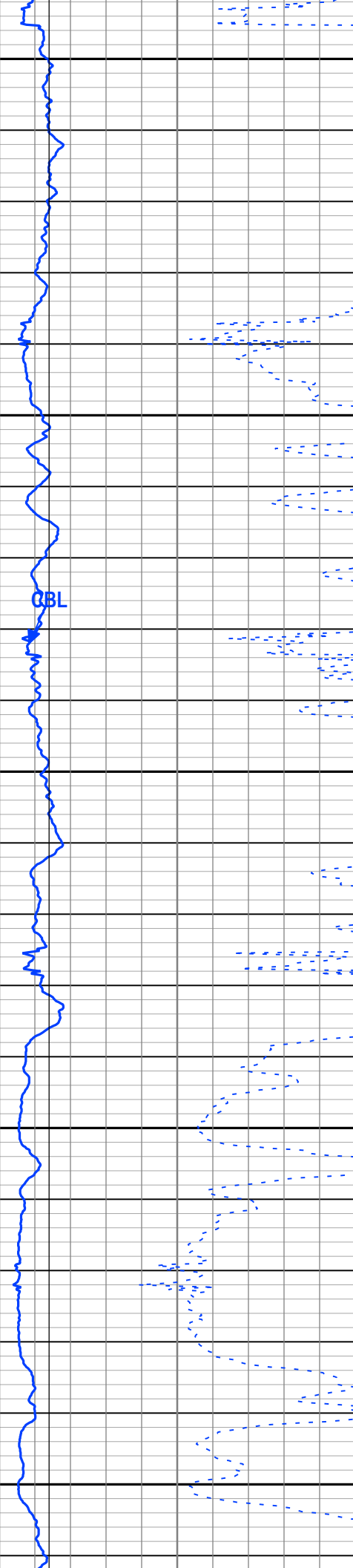
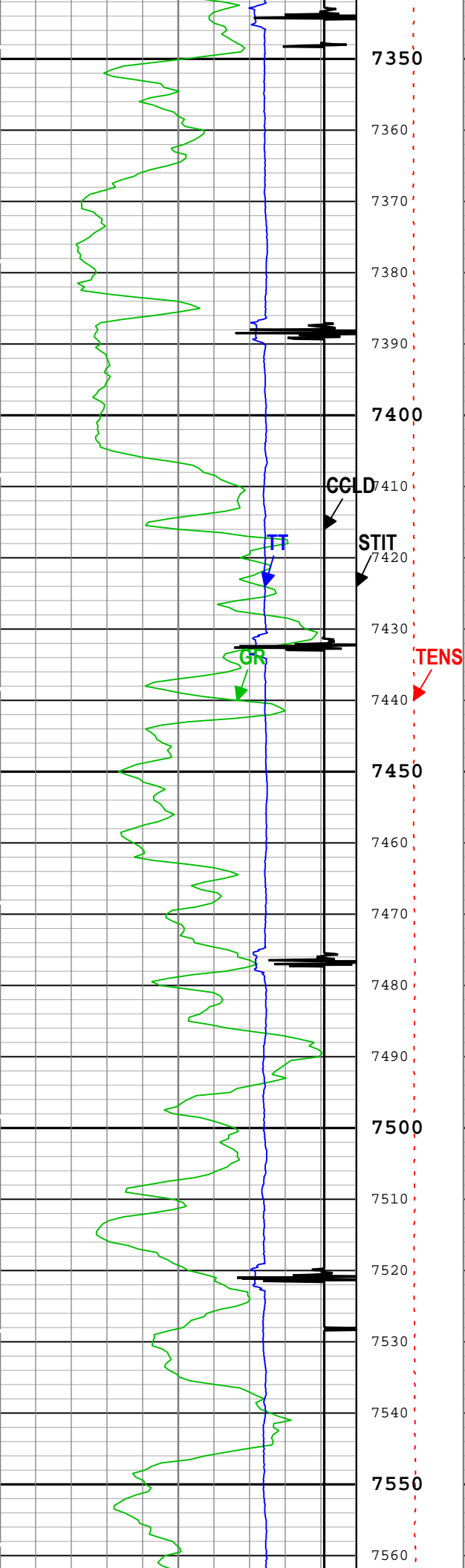


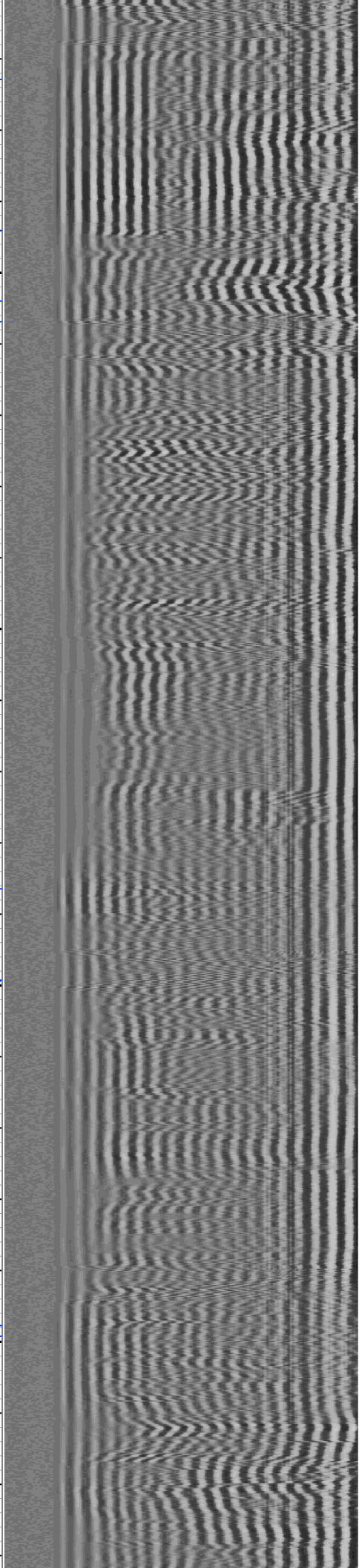
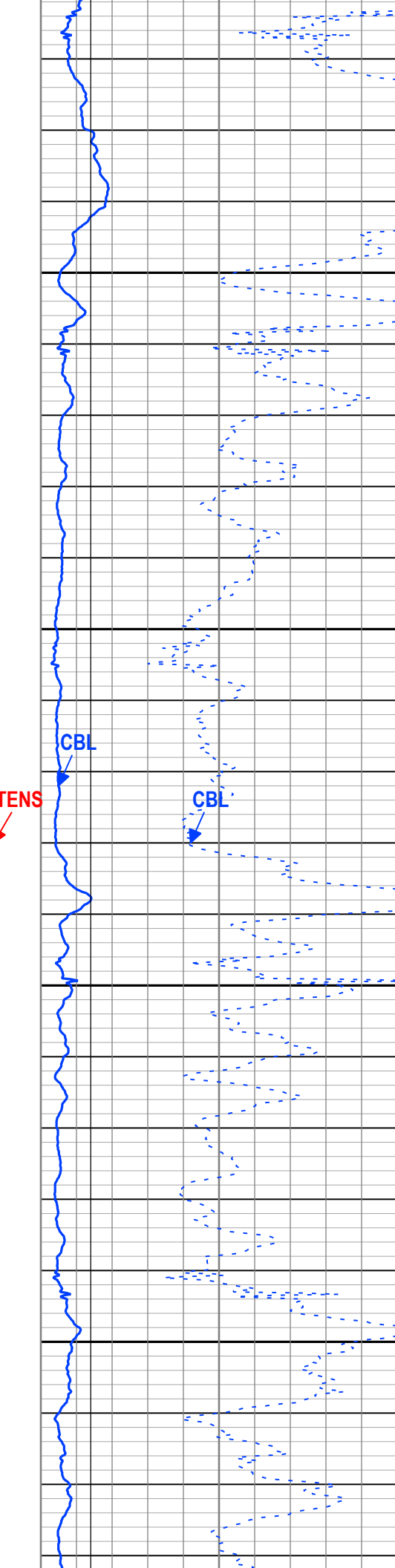
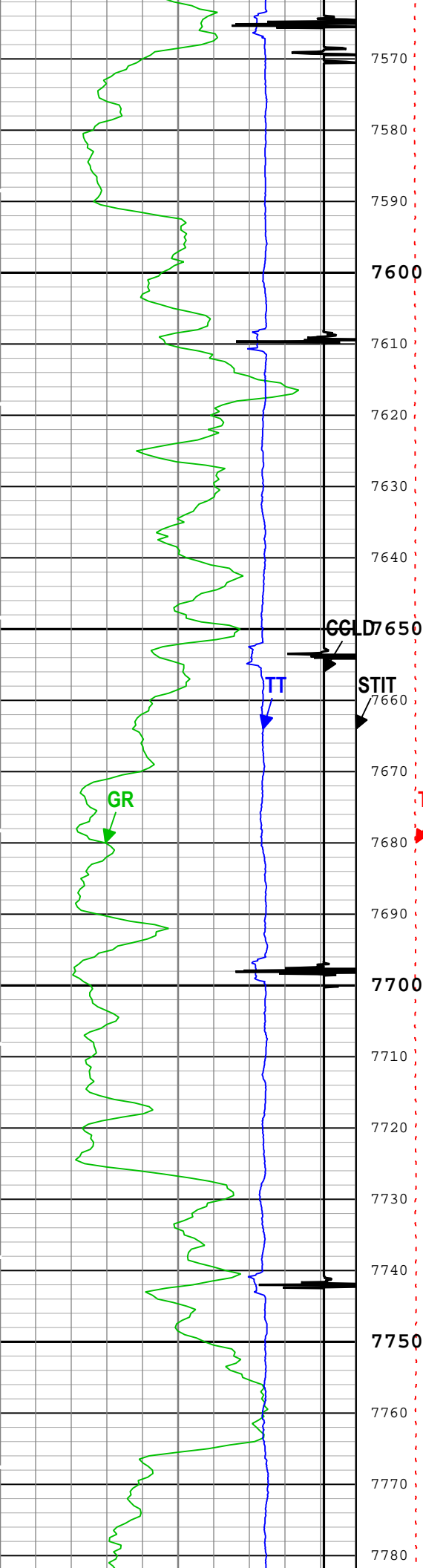


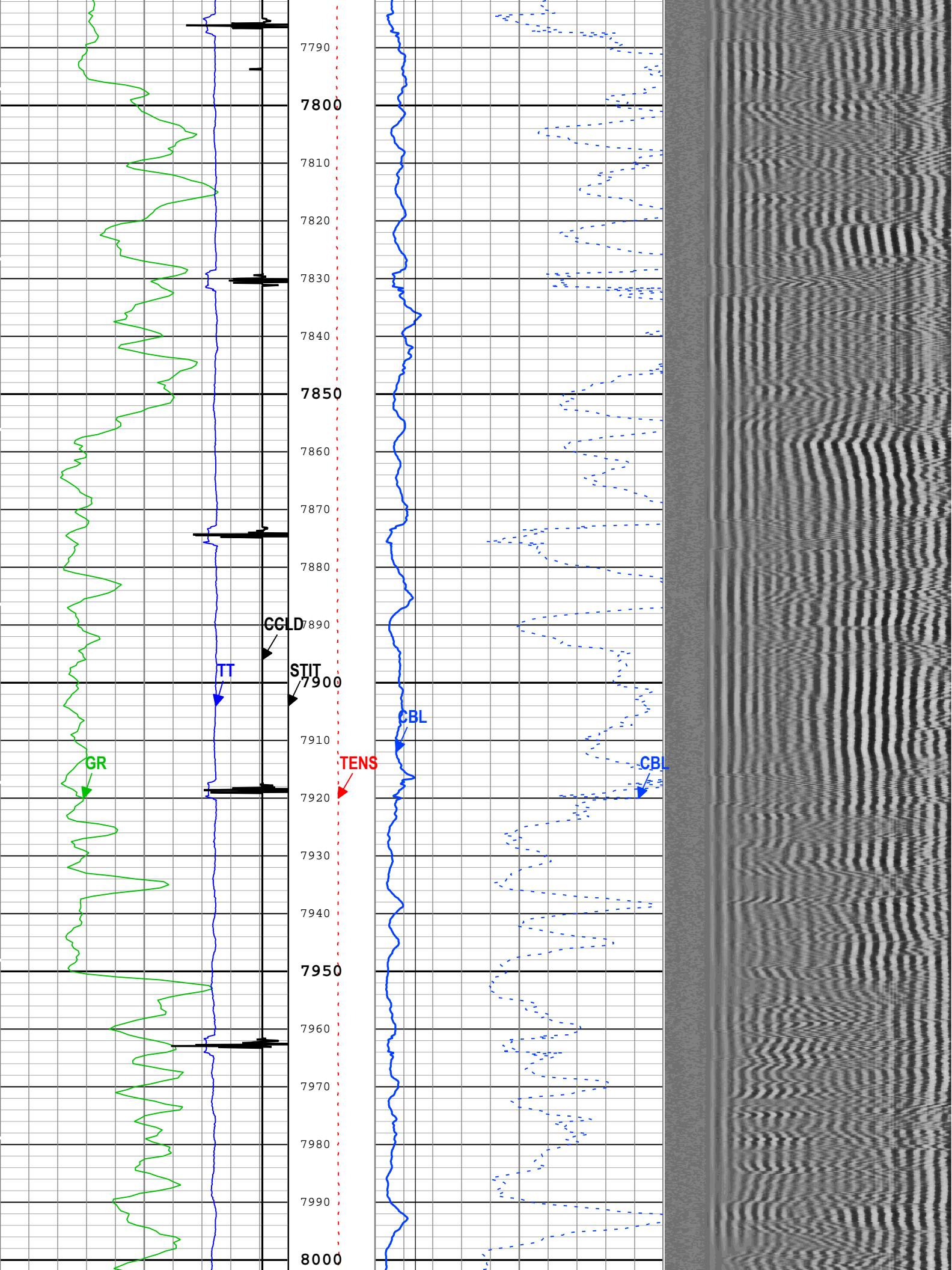


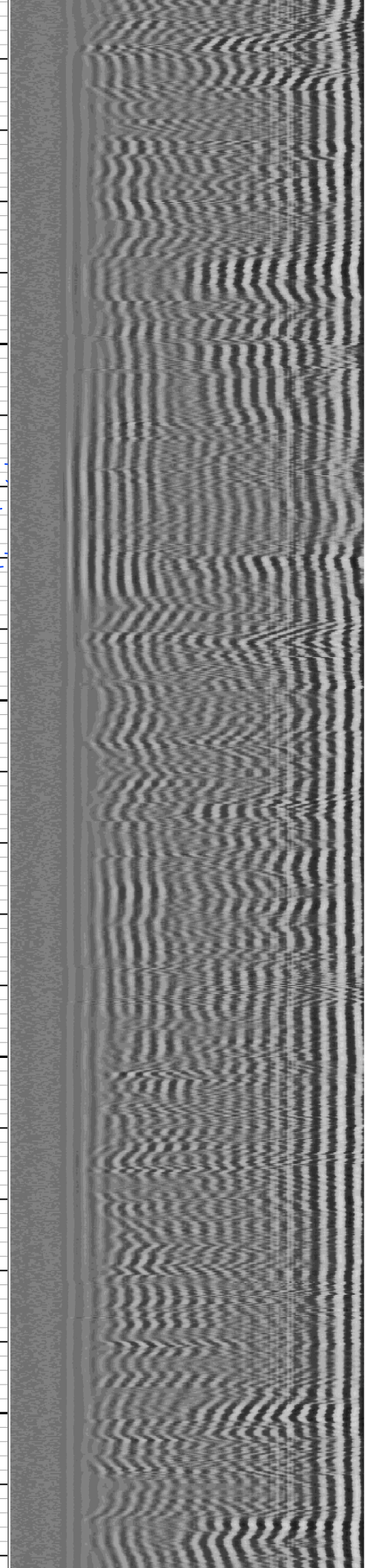
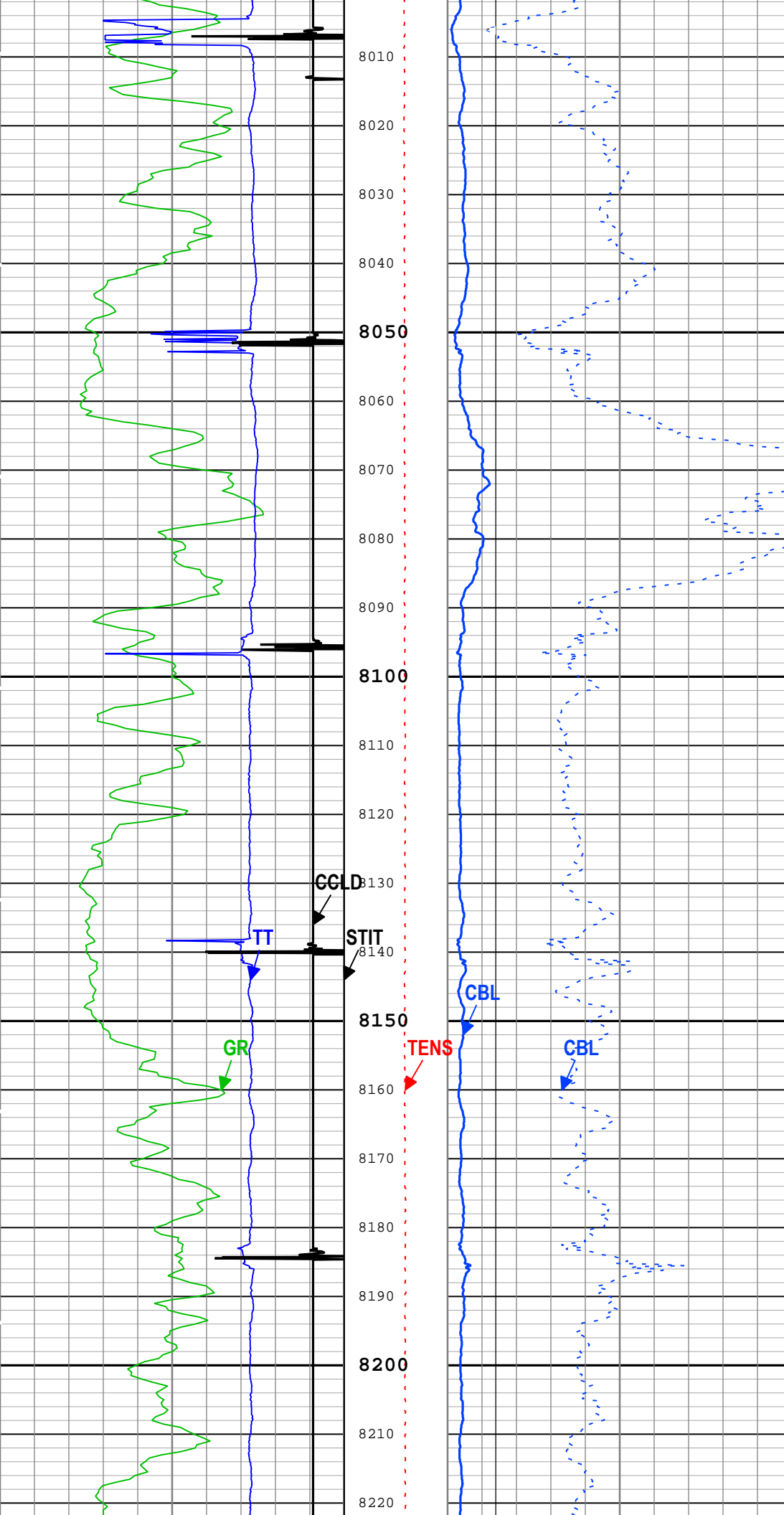


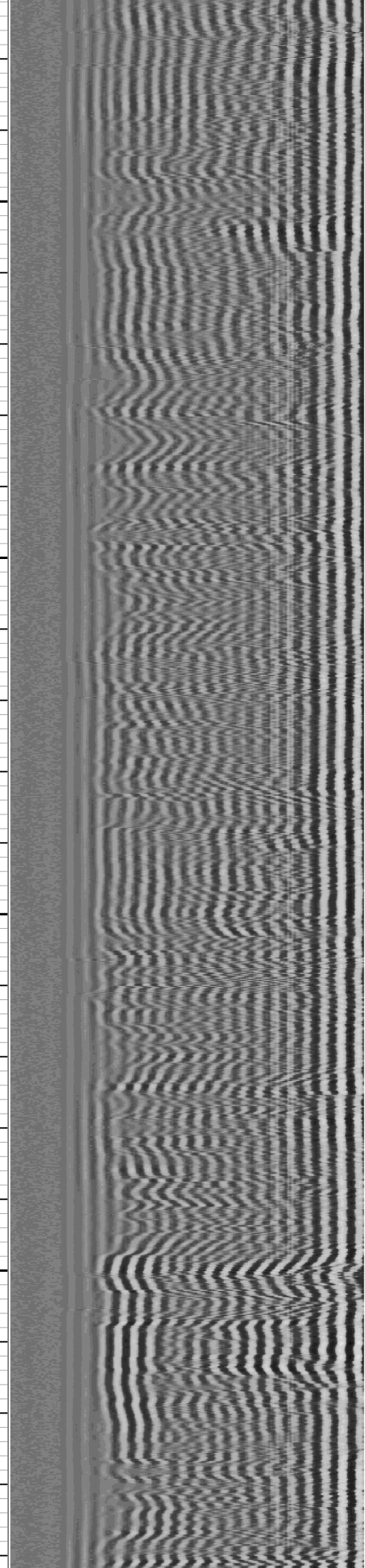
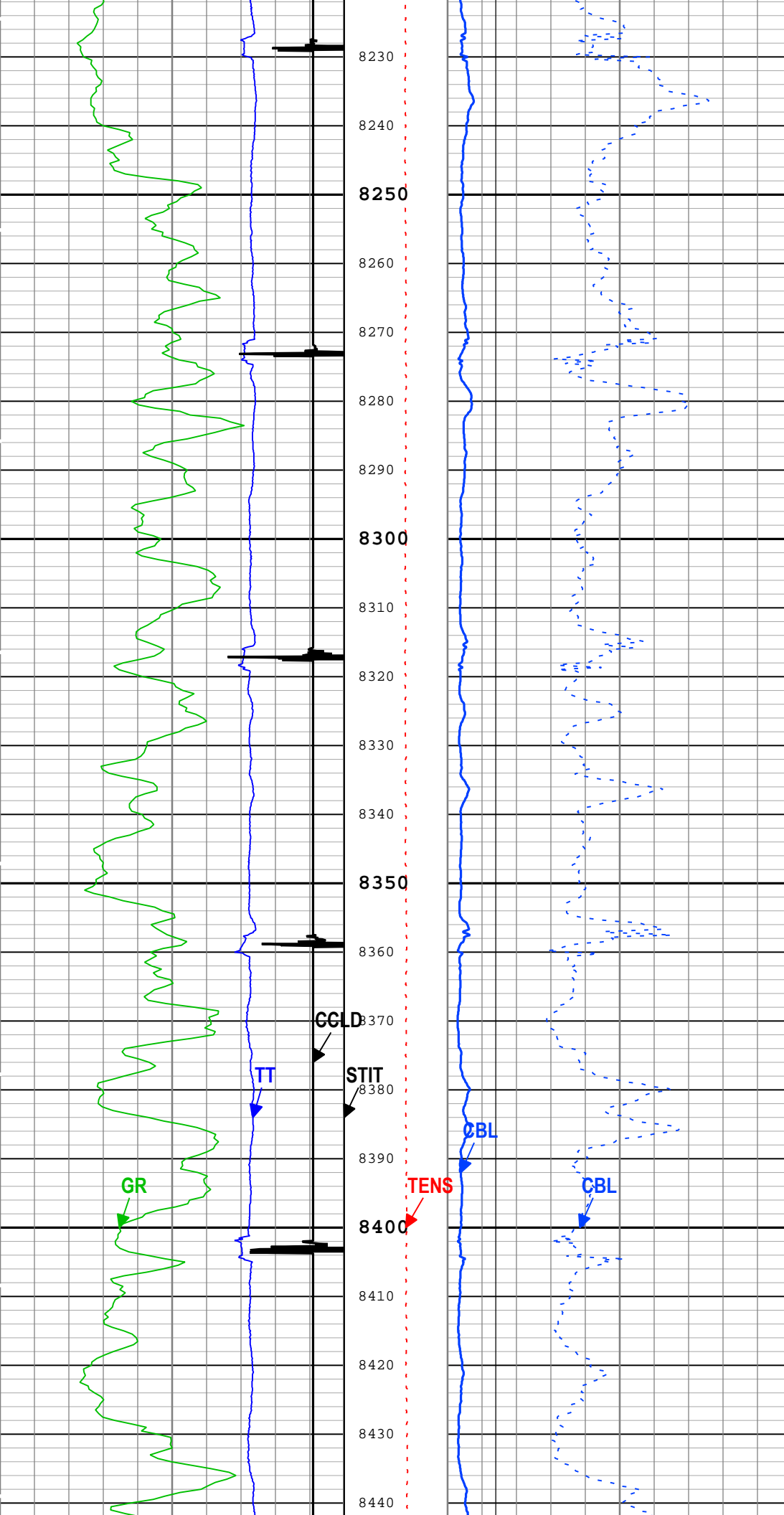


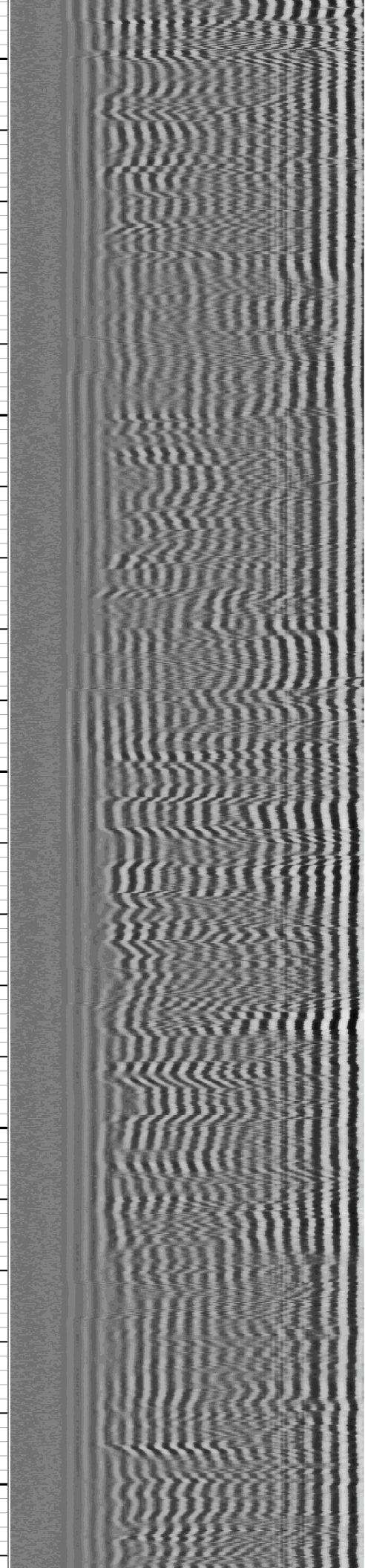
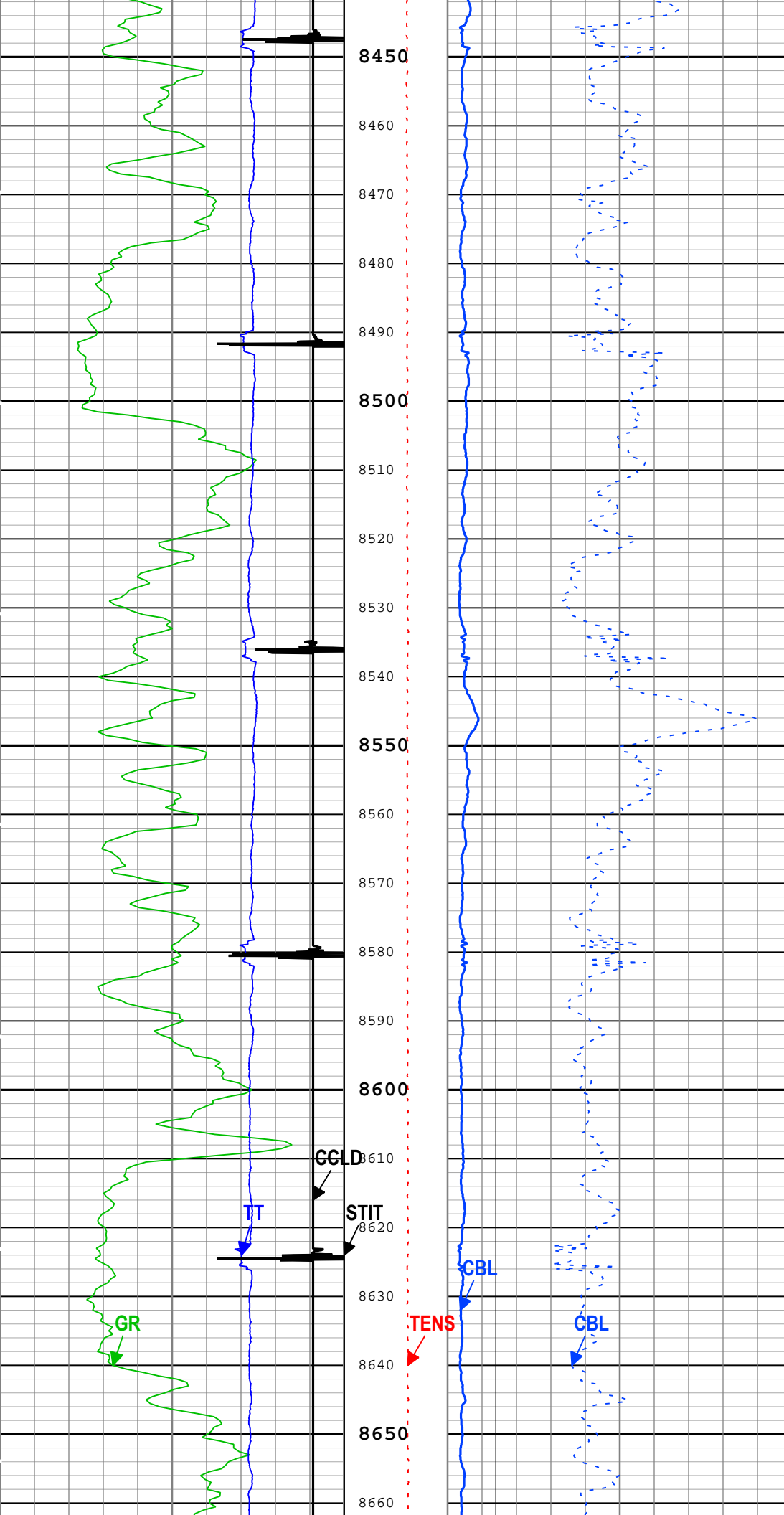


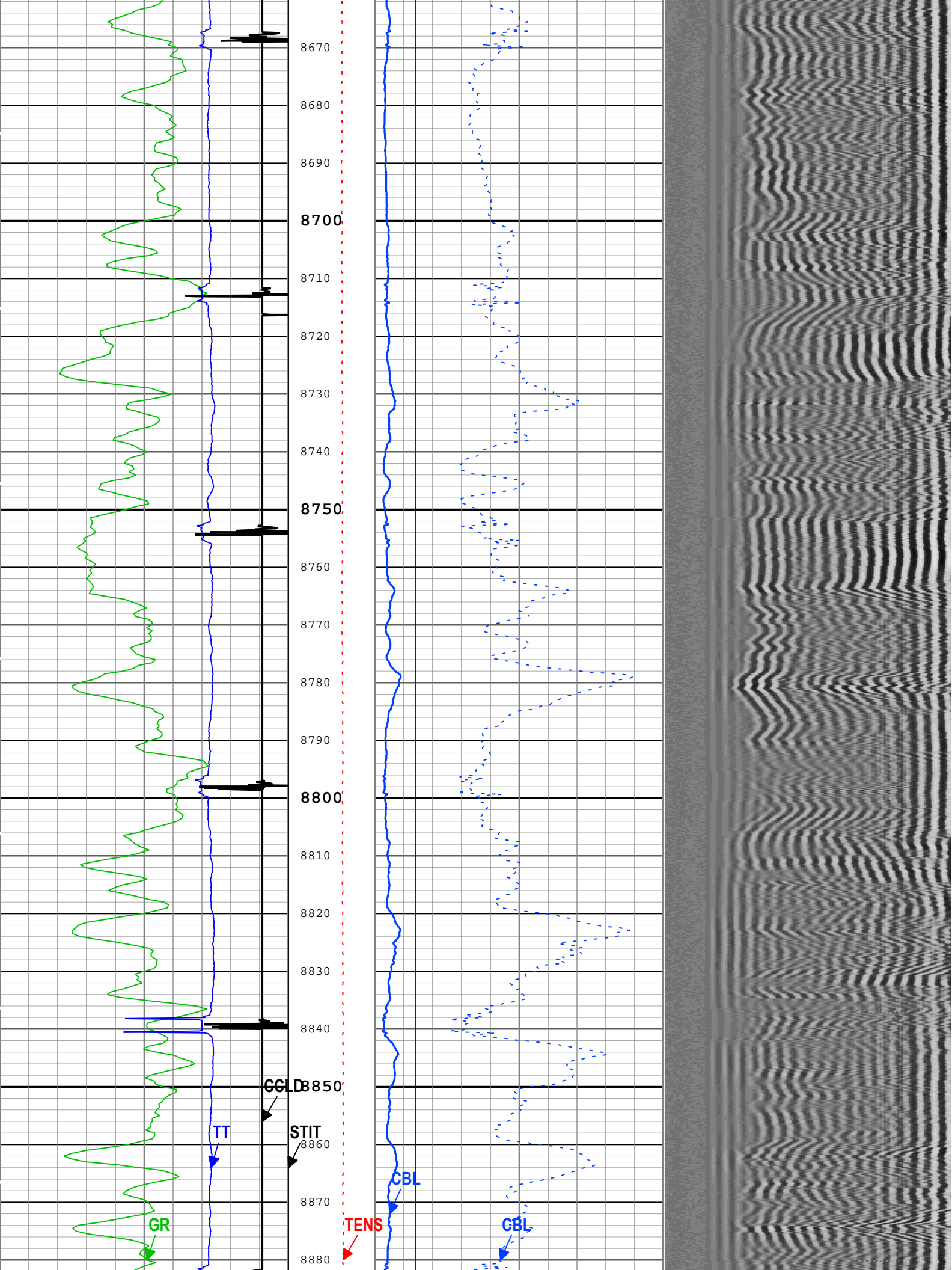


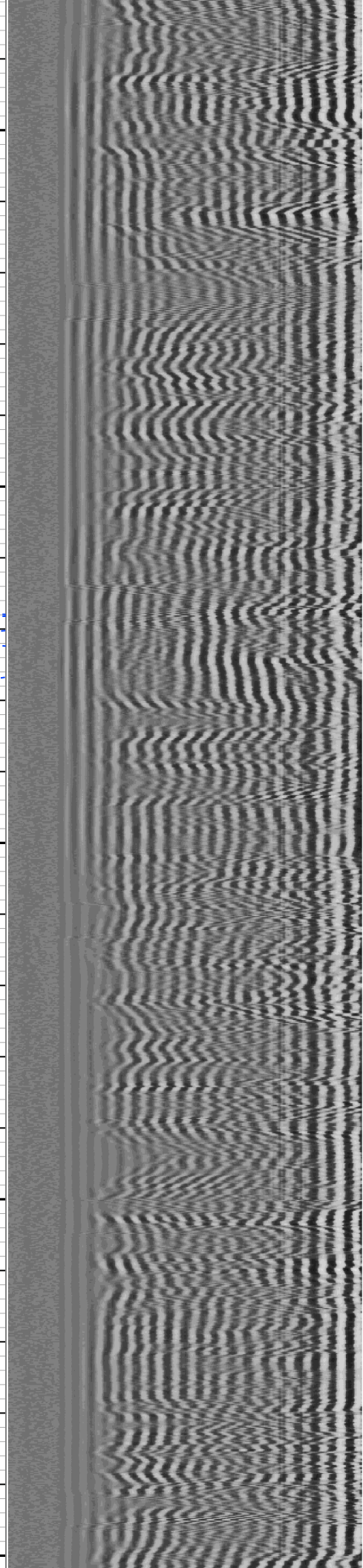
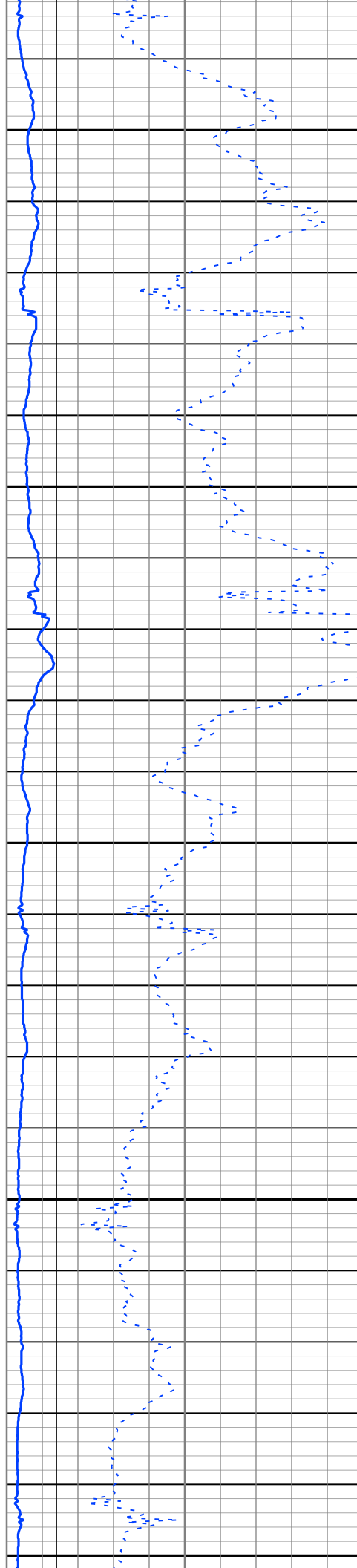
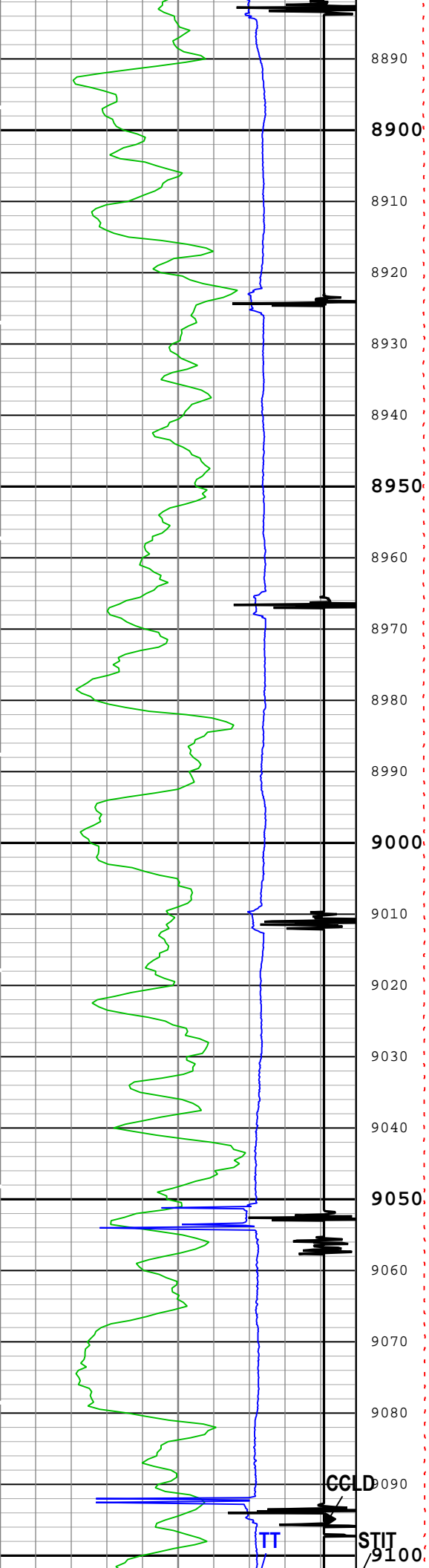


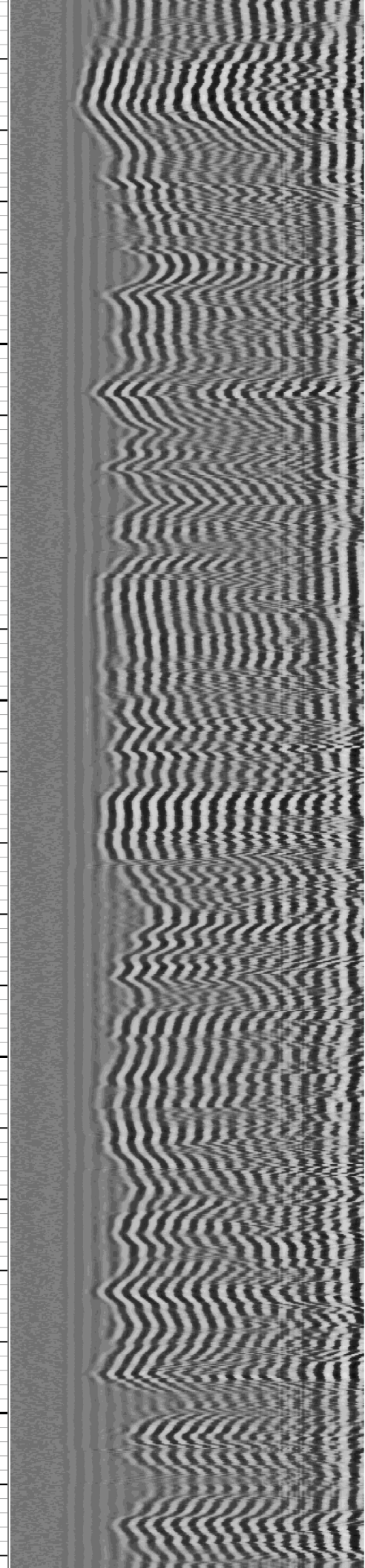
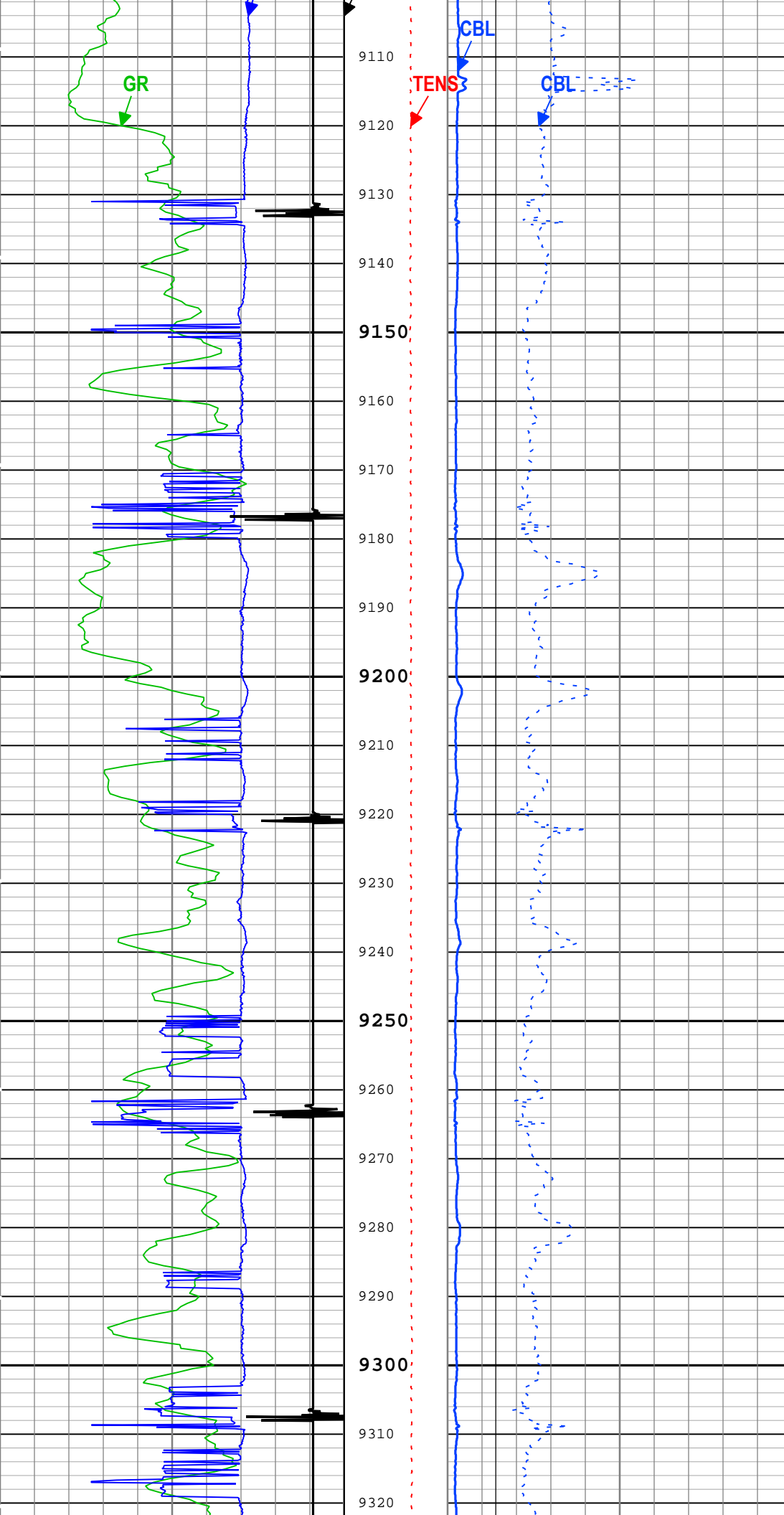


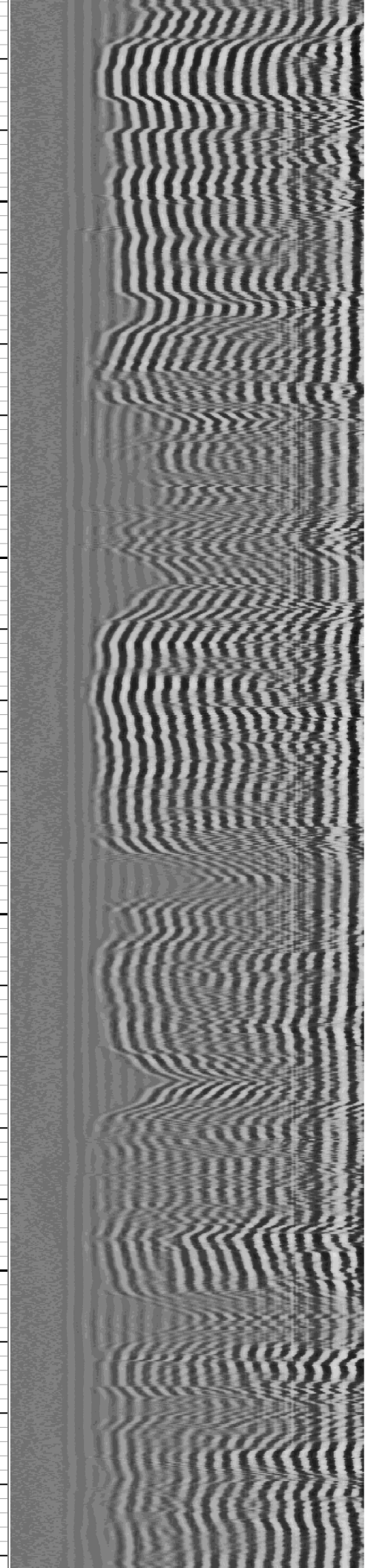
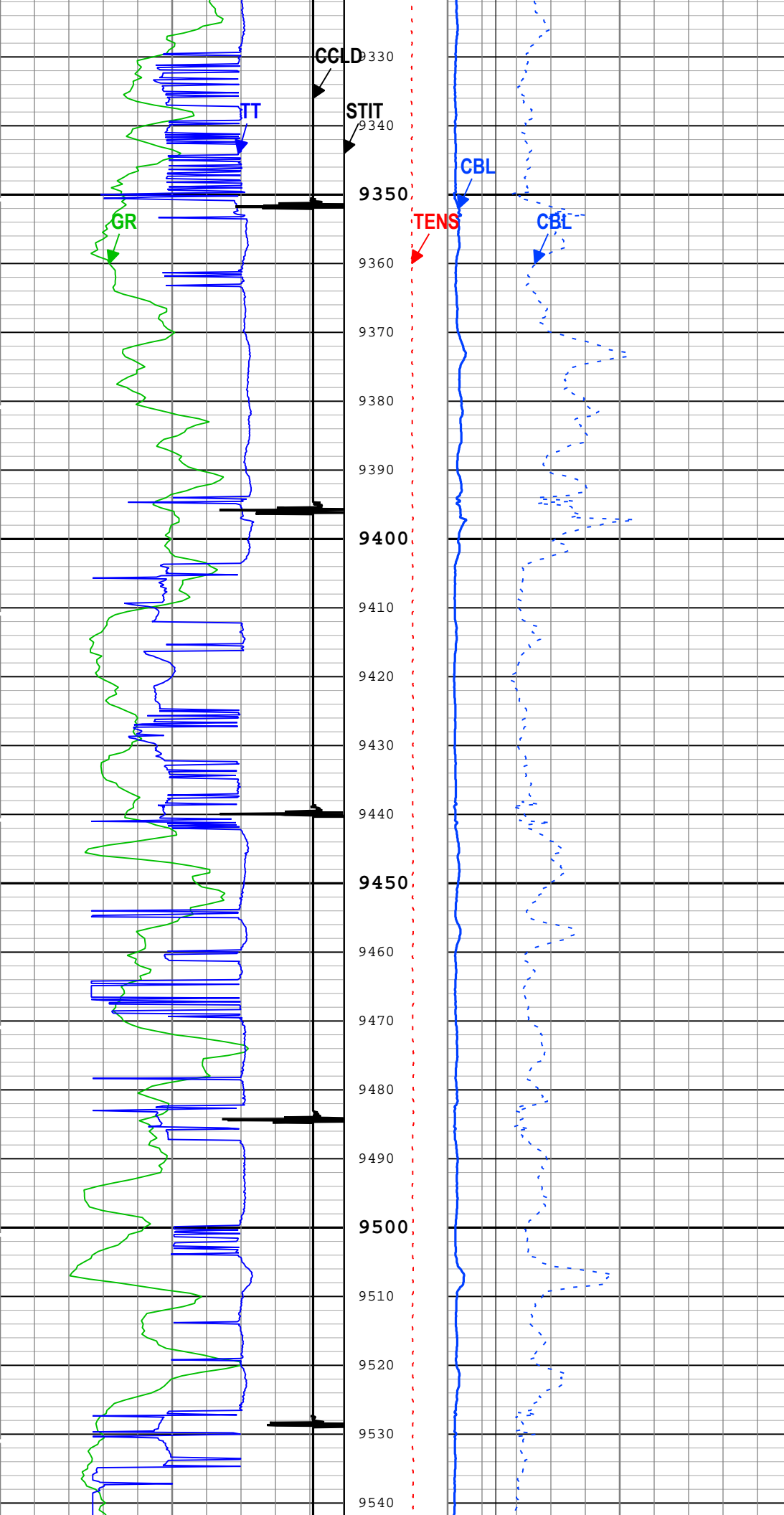


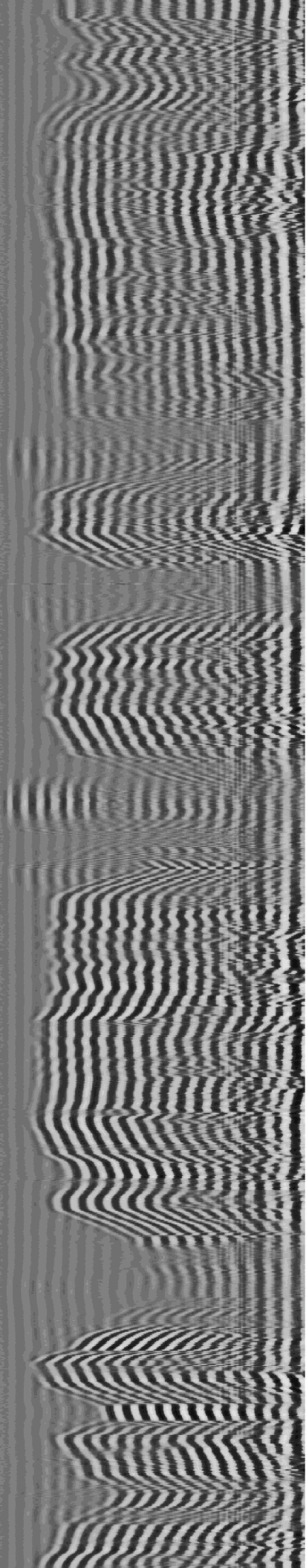
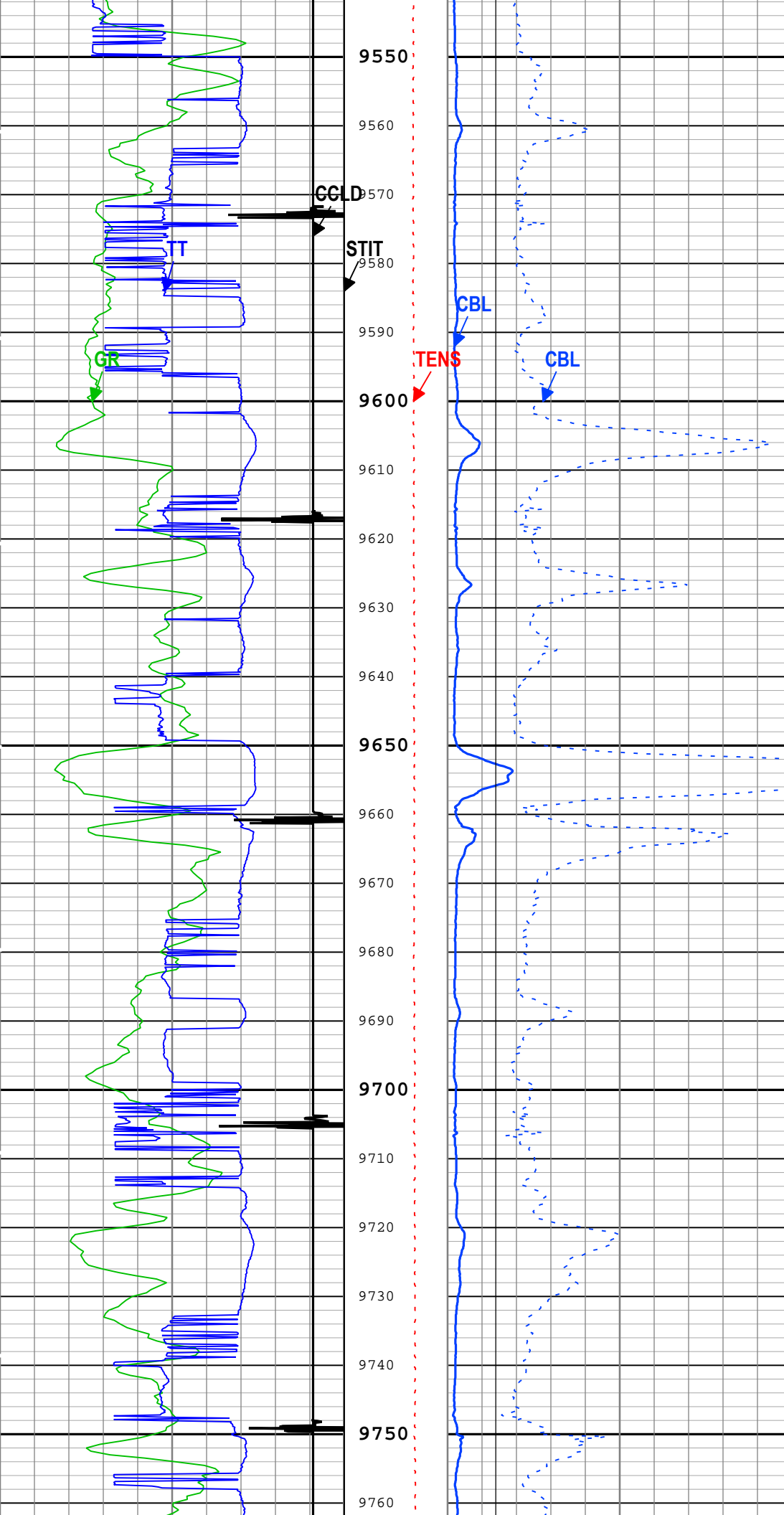


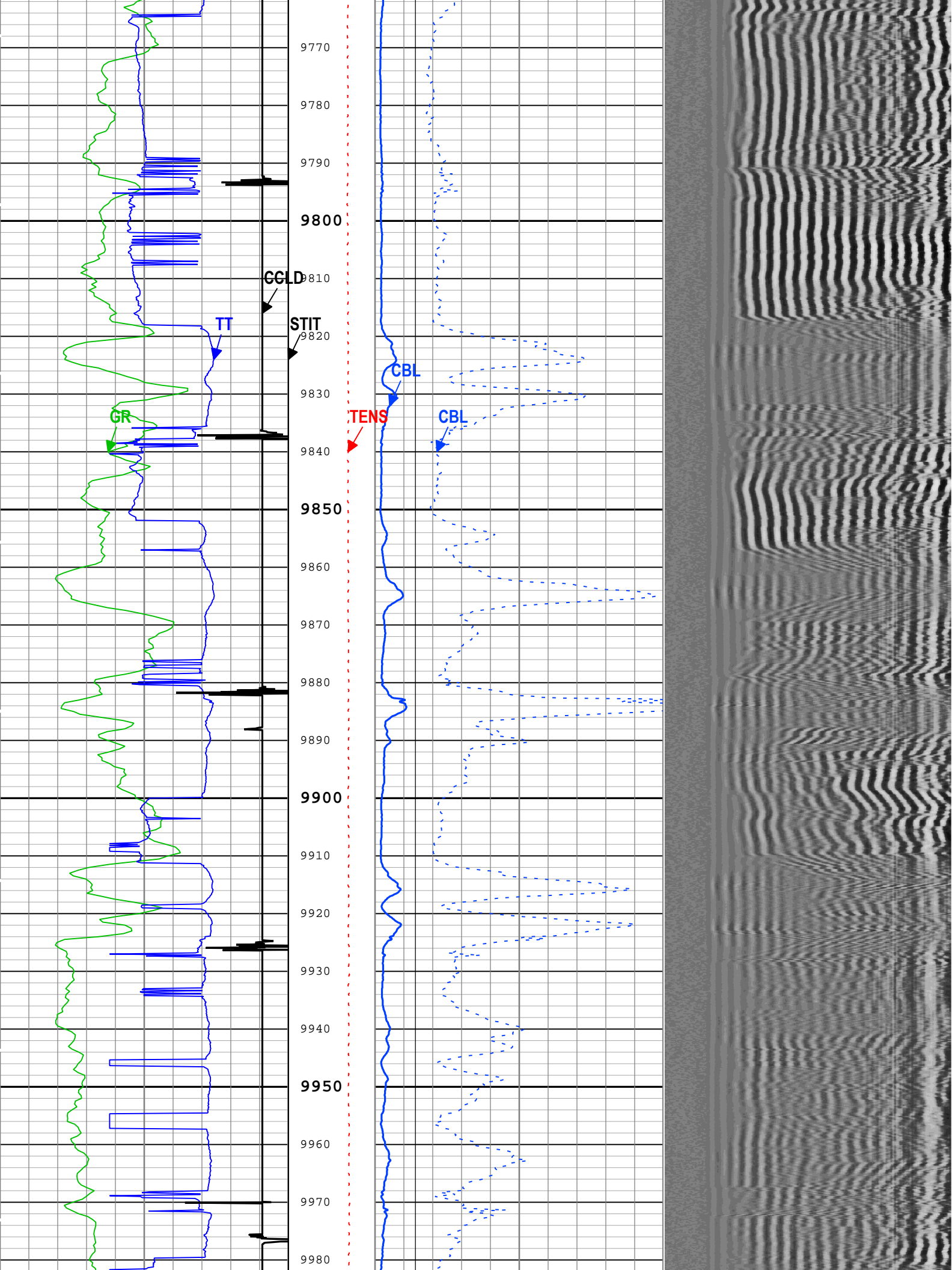


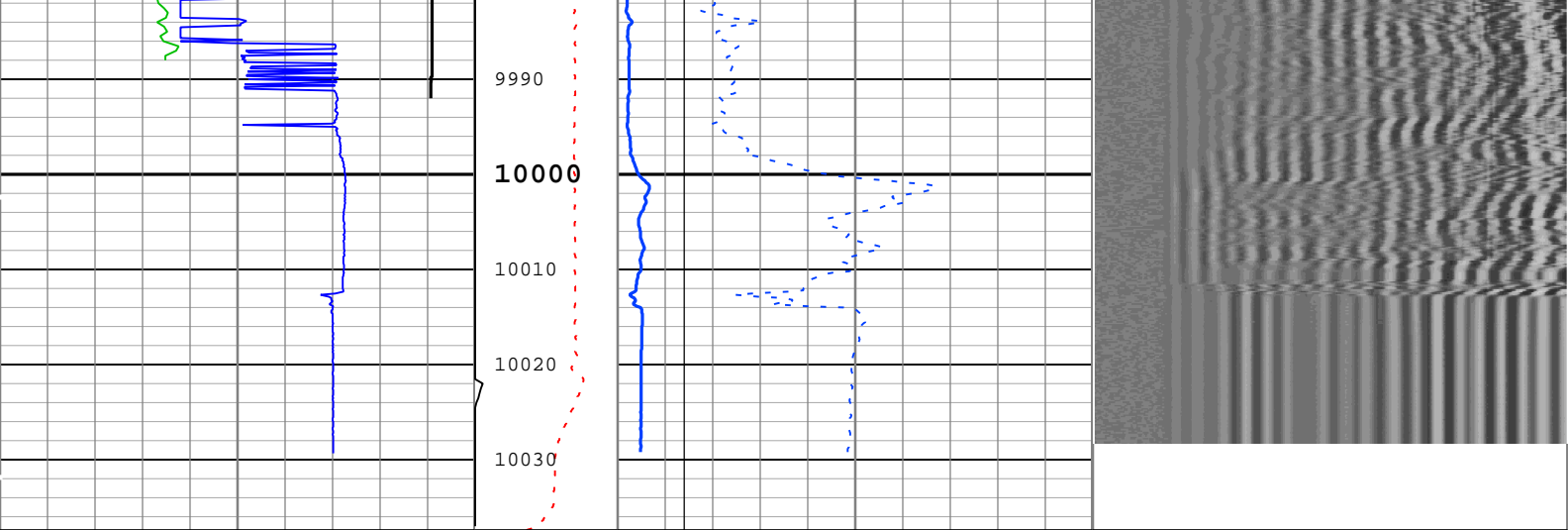












Gamma Ray (GR) PSTP-E	Cable Tension (TENS)	CBL Amplitude (CBL) SCMT-BB	Min	Amplitude	Max
0 gAPI 150	0 lbf 2000	0 mV 10			
Transit Time for CBL (TT) SCMT-BB	Stuck Tool Indicator, Total (STIT)	CBL Amplitude (CBL) SCMT-BB		VDL VariableDensity (VDL) SCMT-BB	
400 us 200	0 ft 50	0 mV 100	200	us	1200
CCL Discriminated Amplitude (CCLD) PSTP-E	Cable Drag	Good Bond (GOBO)			
-10 V 1	Tool_Tot. Drag	0 mV 10			
		GoodBond From CBL to GOBO			

TIME_1900 - Time Marked every 60.00 (s)

■ BIEP - Bond Index Event Pips SCMT-BB

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: 15-Dec-2018 21:36:04

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	267.6	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-BB	Time Zoned	us
CBLG	CBL Gate Width	SCMT-BB	Time Zoned	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-BB	80	mV
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.25	in
DFD	Drilling Fluid Density	Borehole	8.4	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	6428	ft
FCF	CBL Fluid Compensation Factor	SCMT-BB	1	
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

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
MCI	14.81	1900	2397.4
MCI	1.25	2397.4	10037.42

All depth are actual.

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
CB3G	224	15-Dec-2018 16:07:42	15-Dec-2018 16:15:36	10037.39	9808.77
CB3G	233.49	15-Dec-2018 16:15:36	15-Dec-2018 16:22:20	9808.77	9610.36
CB3G	239.95	15-Dec-2018 16:22:20	15-Dec-2018 16:23:39	9610.36	9571.3
CB3G	242.31	15-Dec-2018 16:23:39	15-Dec-2018 16:23:58	9571.3	9561.45
CB3G	246.58	15-Dec-2018 16:23:58	15-Dec-2018 16:40:10	9561.45	9073
CB3G	244.6	15-Dec-2018 16:40:10	15-Dec-2018 16:43:07	9073	8983.66
CB3G	239.69	15-Dec-2018 16:43:07	15-Dec-2018 20:32:51	8983.66	1882.25
CBLG	40	15-Dec-2018 16:07:42	15-Dec-2018 16:09:06	10037.39	9999.14
CBLG	61	15-Dec-2018 16:09:06	15-Dec-2018 16:09:17	9999.14	9993.58
CBLG	100	15-Dec-2018 16:09:17	15-Dec-2018 16:09:22	9993.58	9991.15
CBLG	52	15-Dec-2018 16:09:22	15-Dec-2018 16:09:27	9991.15	9988.72
CBLG	63	15-Dec-2018 16:09:27	15-Dec-2018 16:09:45	9988.72	9979.97
CBLG	50	15-Dec-2018 16:09:45	15-Dec-2018 16:11:57	9979.97	9915.39
CBLG	65	15-Dec-2018 16:11:57	15-Dec-2018 16:12:21	9915.39	9903.89
CBLG	64	15-Dec-2018 16:12:21	15-Dec-2018 16:12:29	9903.89	9899.71
CBLG	69	15-Dec-2018 16:12:29	15-Dec-2018 16:12:56	9899.71	9886.78
CBLG	61	15-Dec-2018 16:12:56	15-Dec-2018 16:12:58	9886.78	9885.42
CBLG	60	15-Dec-2018 16:12:58	15-Dec-2018 16:13:55	9885.42	9857.67
CBLG	53	15-Dec-2018 16:13:55	15-Dec-2018 16:14:44	9857.67	9834.03
CBLG	42	15-Dec-2018 16:14:44	15-Dec-2018 16:16:03	9834.03	9795.31
CBLG	45	15-Dec-2018 16:16:03	15-Dec-2018 16:40:14	9795.31	9071.38
CBLG	42	15-Dec-2018 16:40:14	15-Dec-2018 16:40:17	9071.38	9069.88
CBLG	37	15-Dec-2018 16:40:17	15-Dec-2018 20:32:51	9069.88	1882.25

All depth are at tool zero.

Tool Control Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
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	12 dB	

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[2]:Up	Up	1882.25 ft	10037.39 ft	15-Dec-2018 4:07:42 PM	15-Dec-2018 8:32:51 PM	ON	6.25 ft	No

All depths are referenced to toolstring zero

Log

Company:CAERUS OIL & GAS LLC Well:NPR 15D-11

ONE: Log[2]: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: 15-Dec-2018 21:36:15

TIME_1900 - Elapsed time since midnight, 30 December 1899 every 60.00 (s)

TIME_1900 - Time Marked every 60.00 (s)

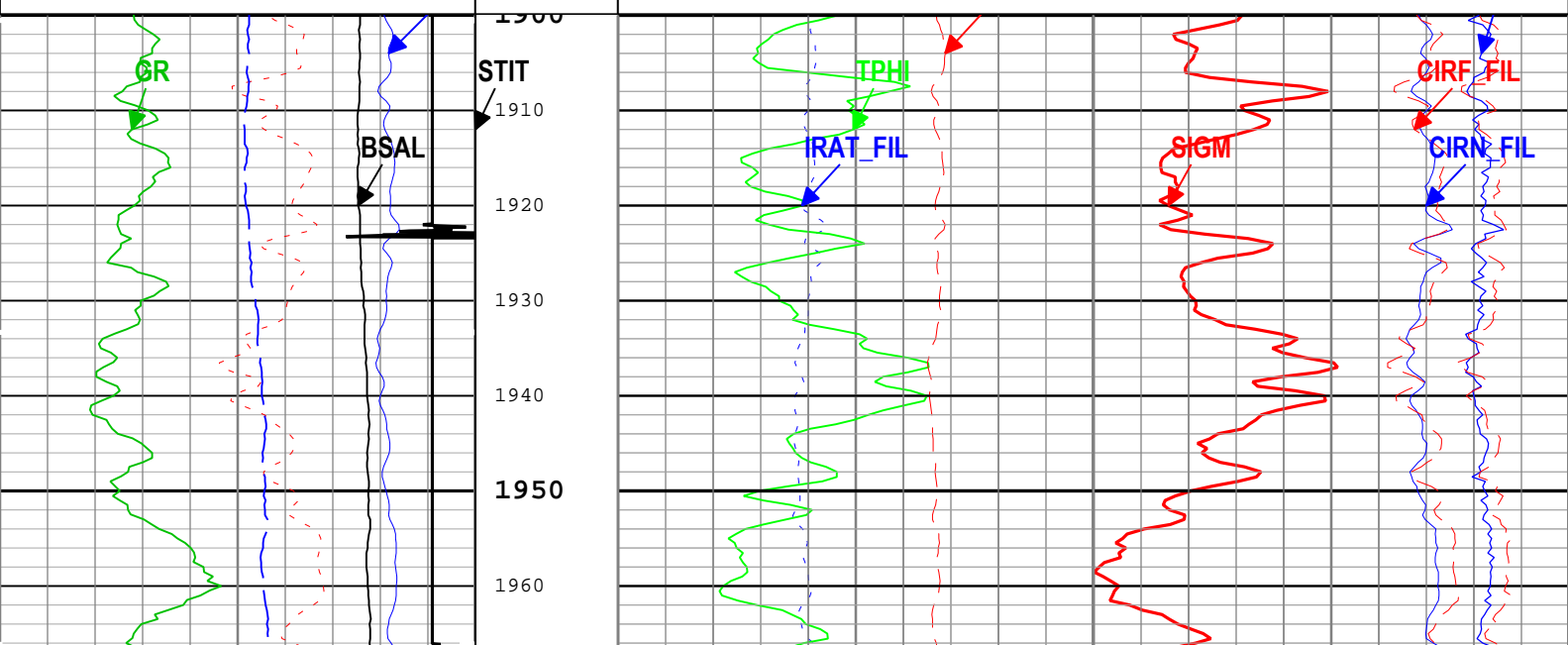
IHV - Integrated Hole Volume every 10.00 (ft3)

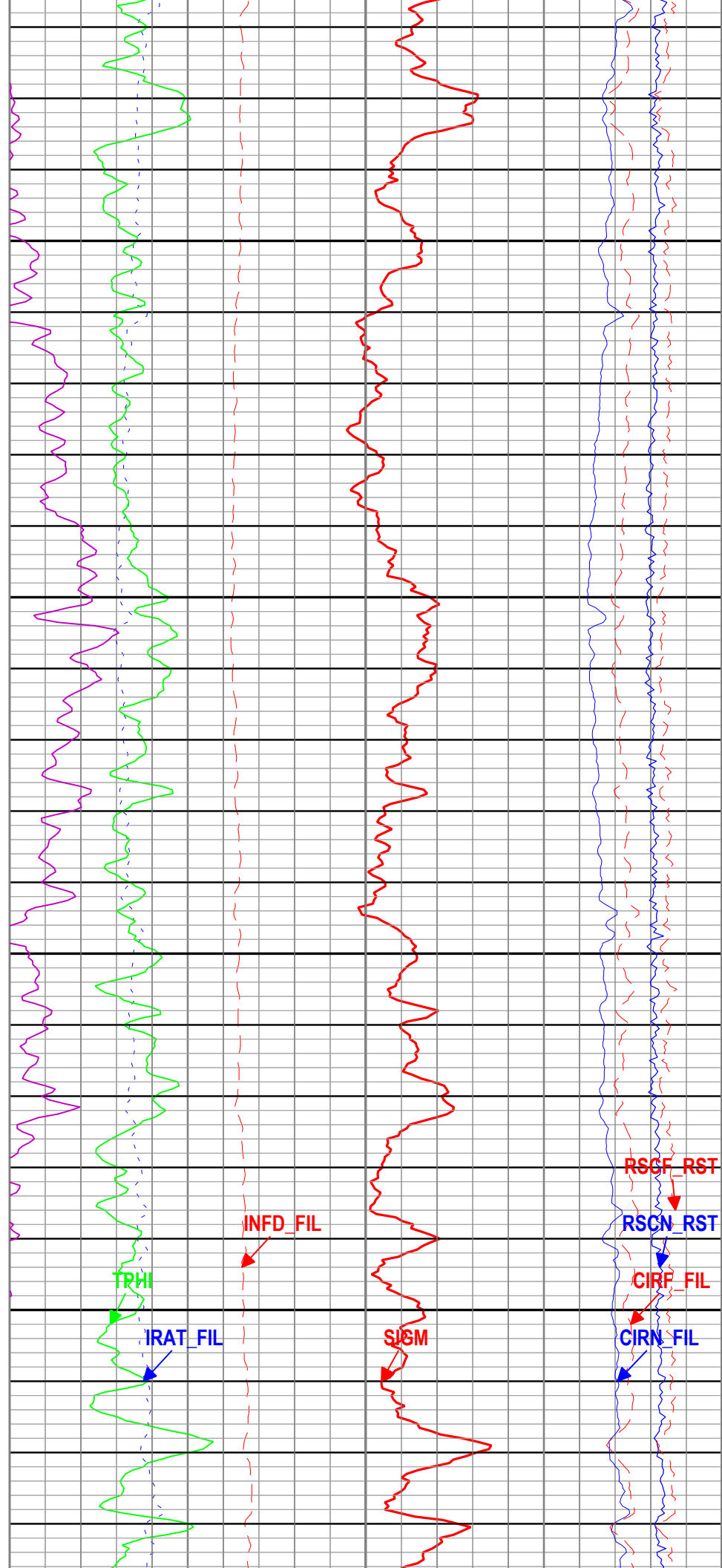
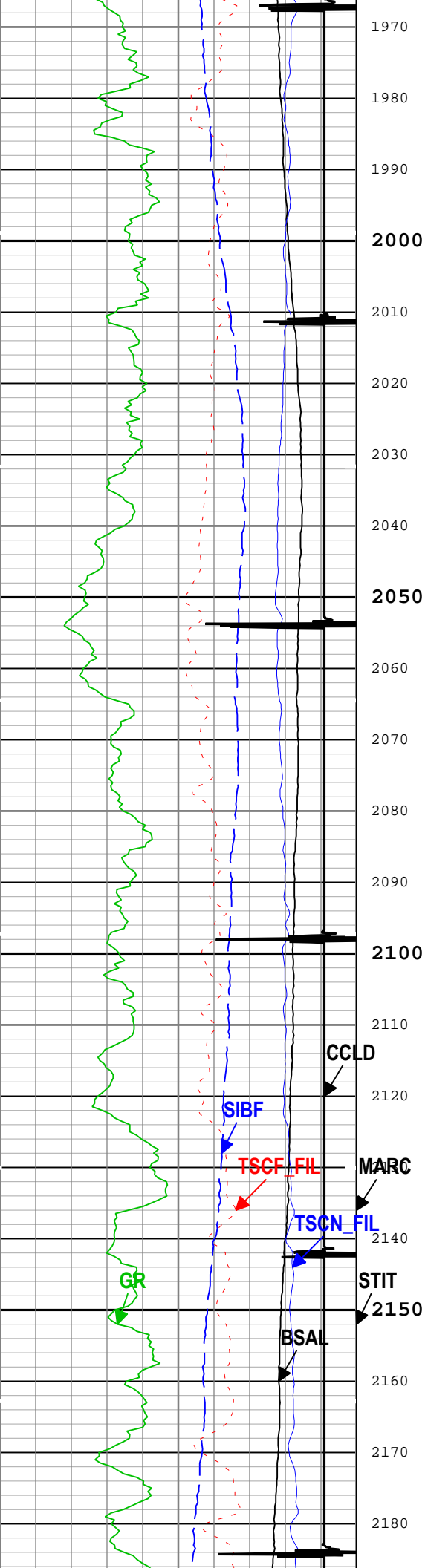
IHV - Integrated Hole Volume every 100.00 (ft3)

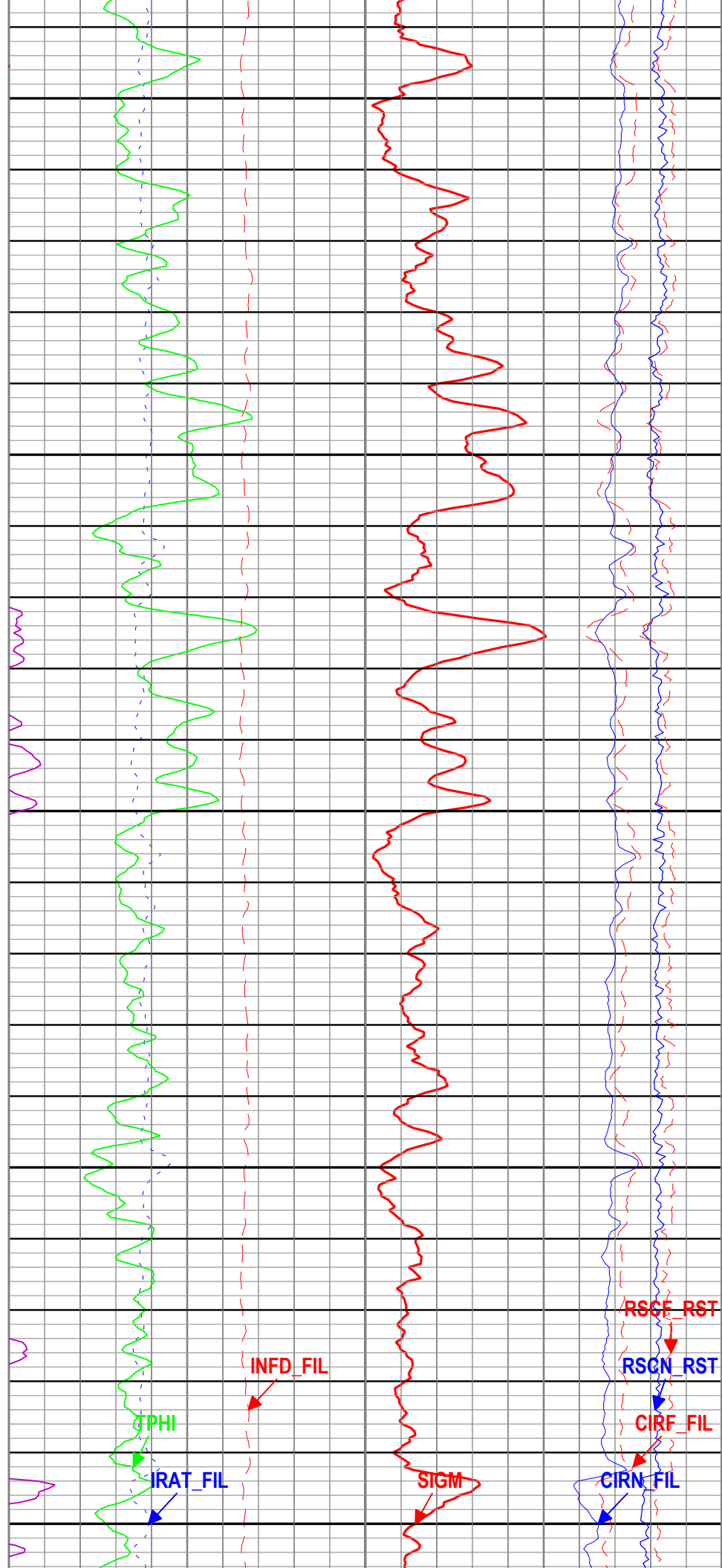
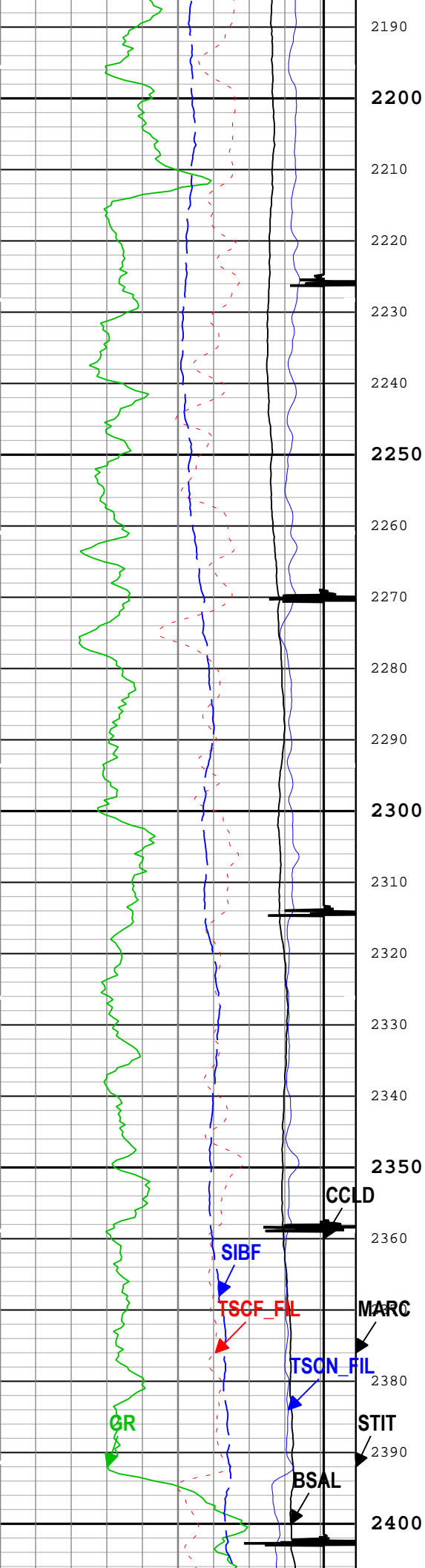
ICV - Integrated Cement Volume every 10.00 (ft3)

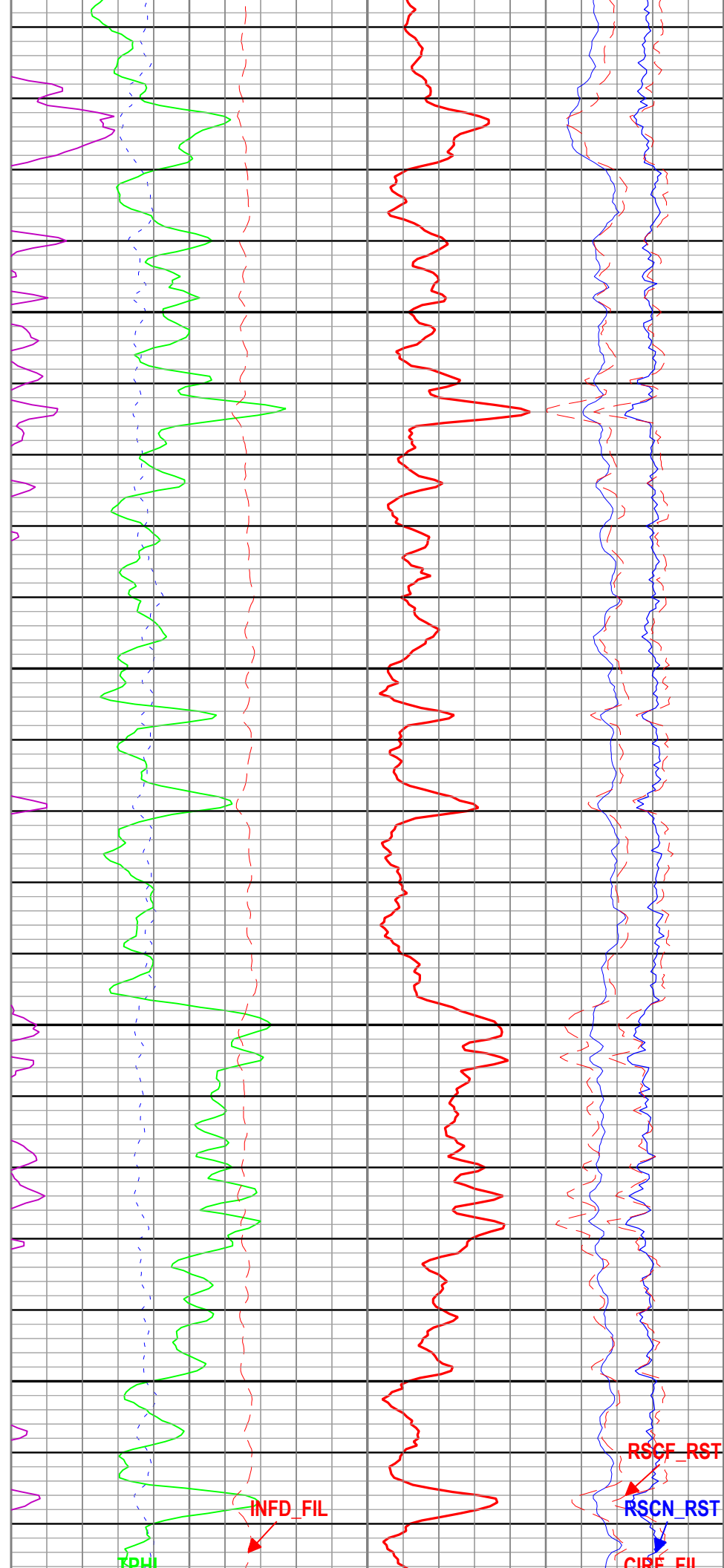
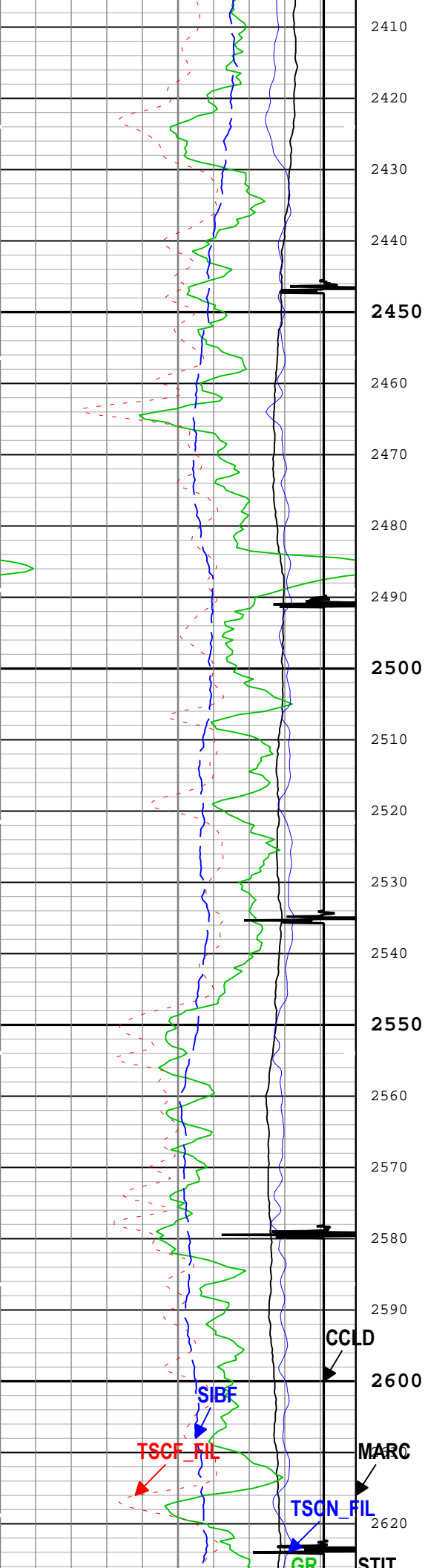
ICV - Integrated Cement Volume every 100.00 (ft3)

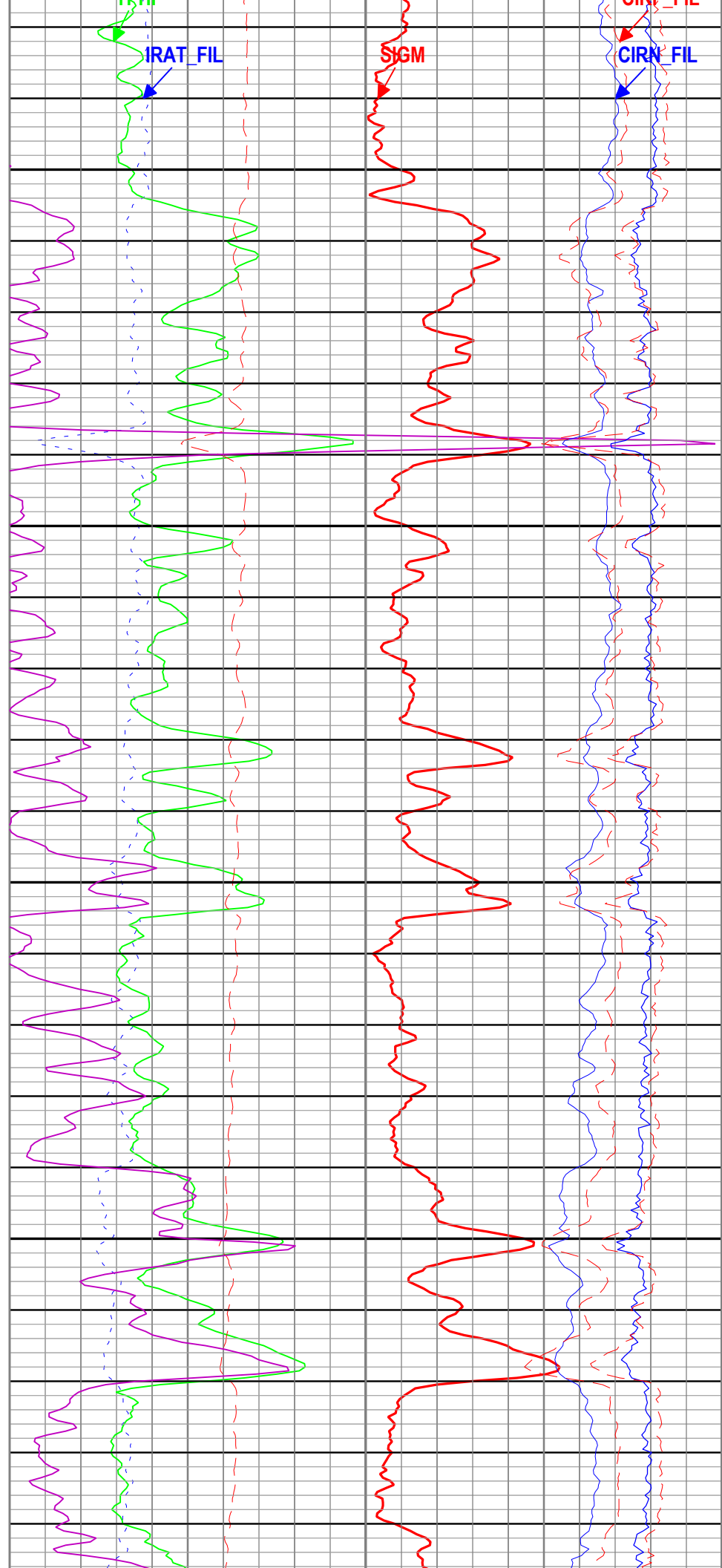
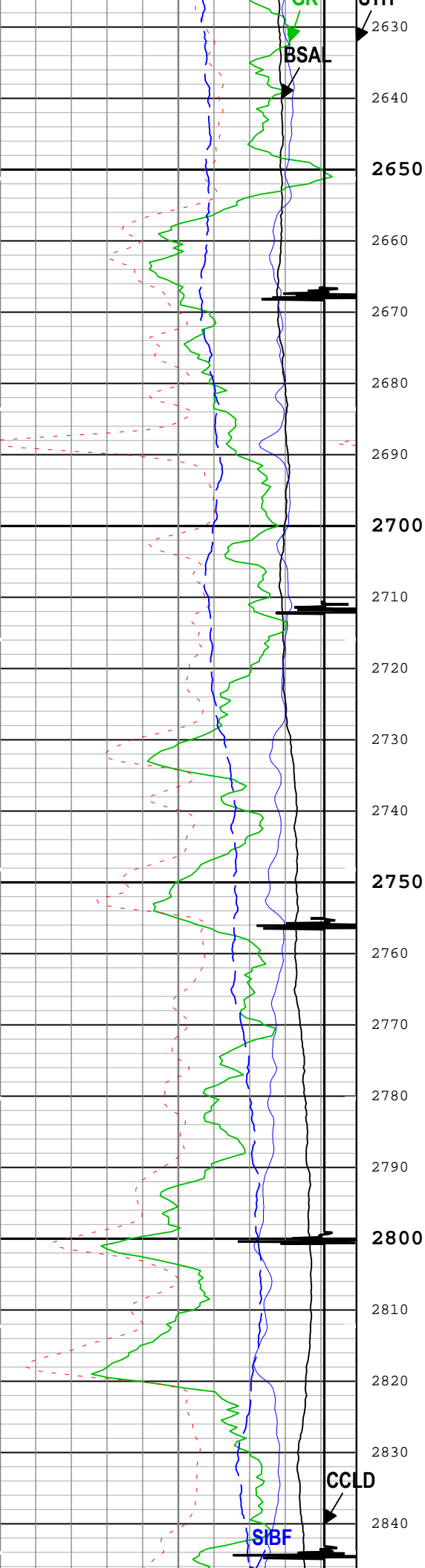
Borehole Salinity (BSAL) RST-C			Stuck Tool Indicator, Total (STIT)	Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C	
450	ppk	-50		2.5	0
Gamma Ray (GR) PSTP-E			Cable Drag From STIA to STIT	Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C	
0	gAPI	150			
Total Selected Count Rate Near Detector Filtered (TSCN_FIL) RST-C			Tool Tot. Drag From D3T to STIT	Inelastic Ratio Filtered (IRAT_FIL) RST-C	
30000	1/s	0		0.75	0
Total Selected Count Rate Far Detector Filtered (TSCF_FIL) RST-C			Minitron Arc Count (MARC) RST-C	Thermal Decay Porosity (TPHI) RST-C	
12000	1/s	0		0.6	0
Sigma Borehole Fluid (SIBF) RST-C				Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C	
100	cu	0		10000	1/s
CCL Discriminated Amplitude (CCLD) PSTP-E				Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C	
-10	V	1		45	0
				Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C	
				60	cu
				Weighted Inelastic Ratio (WINR_RST) RST-C	
				0	0.4

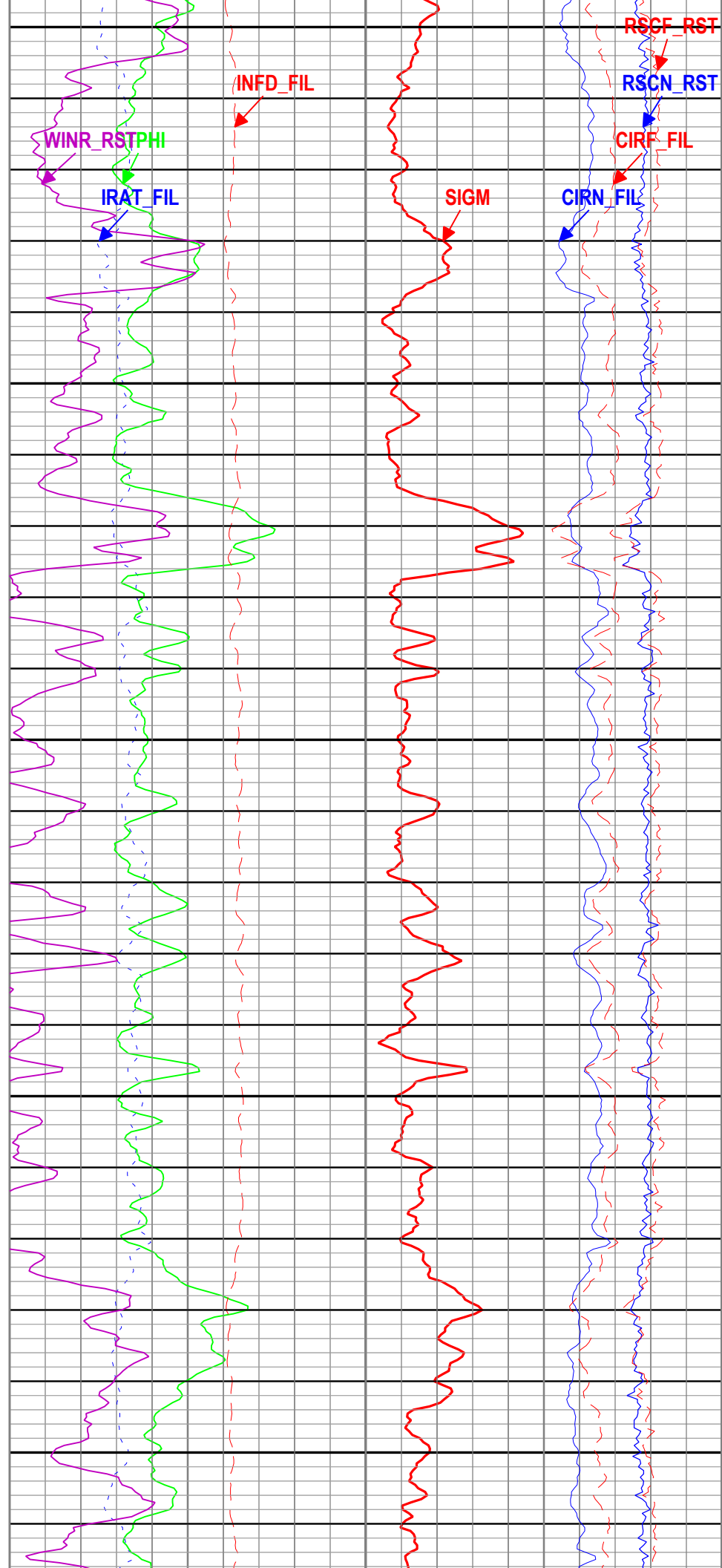
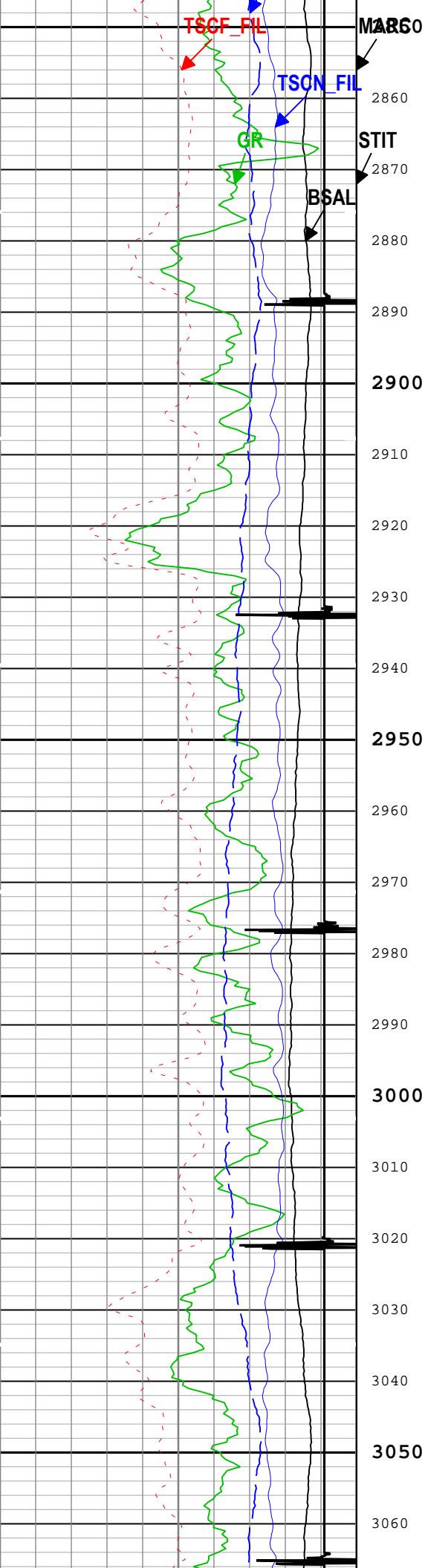


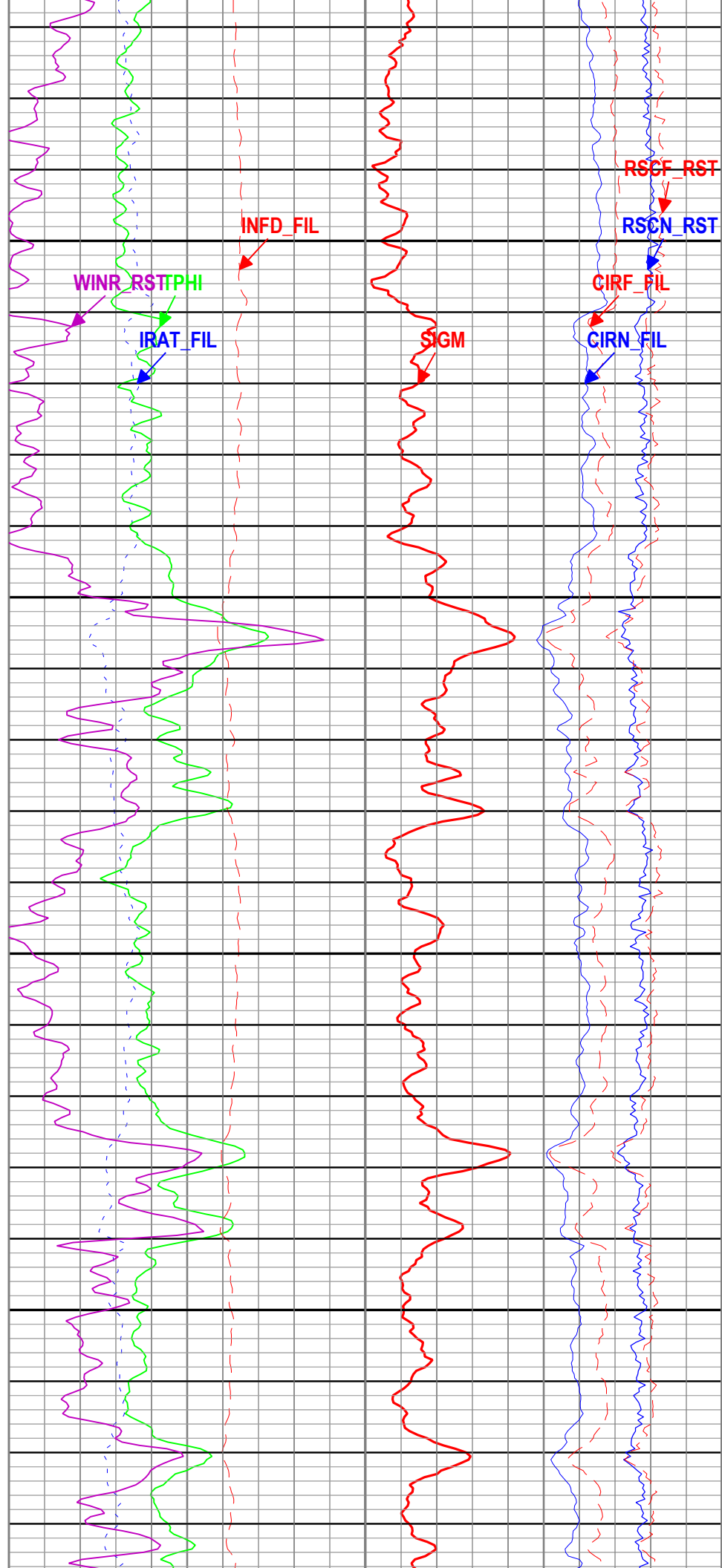
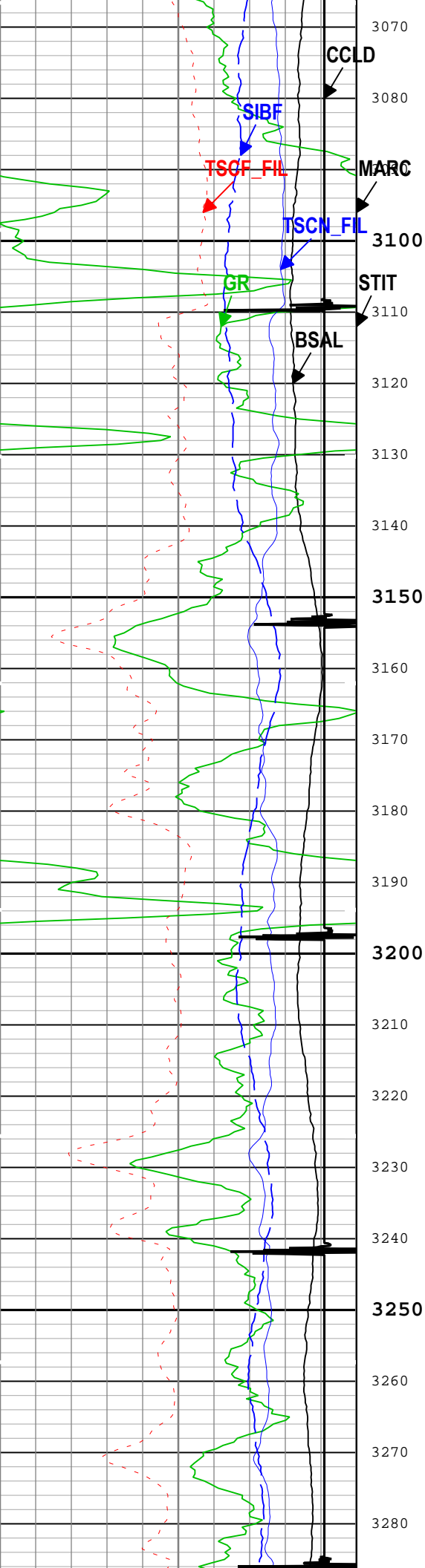


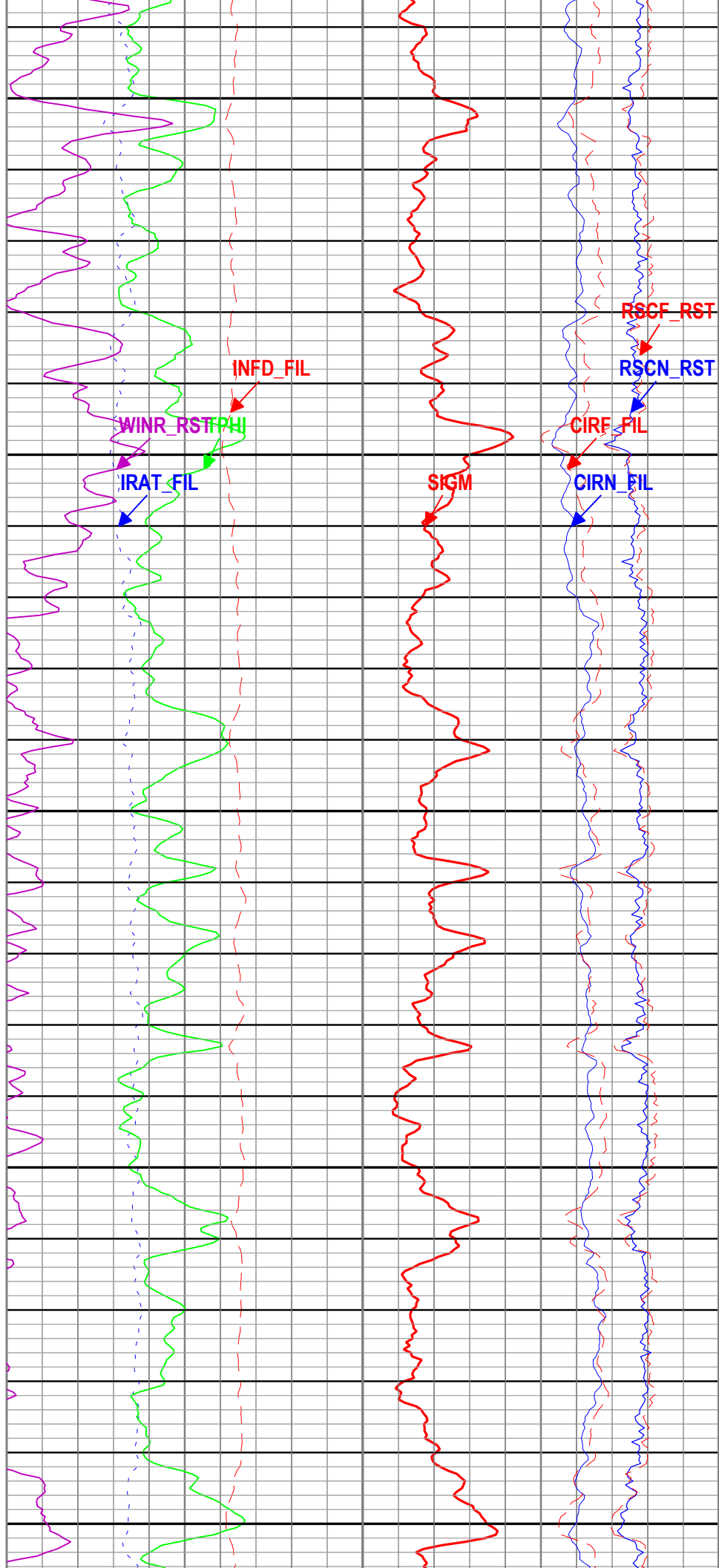
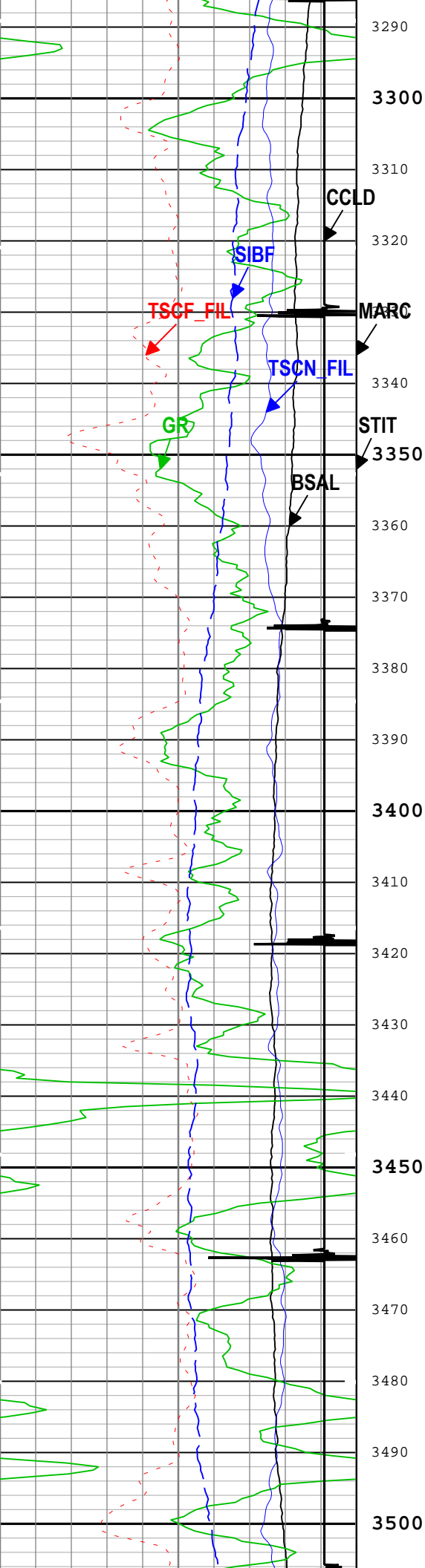


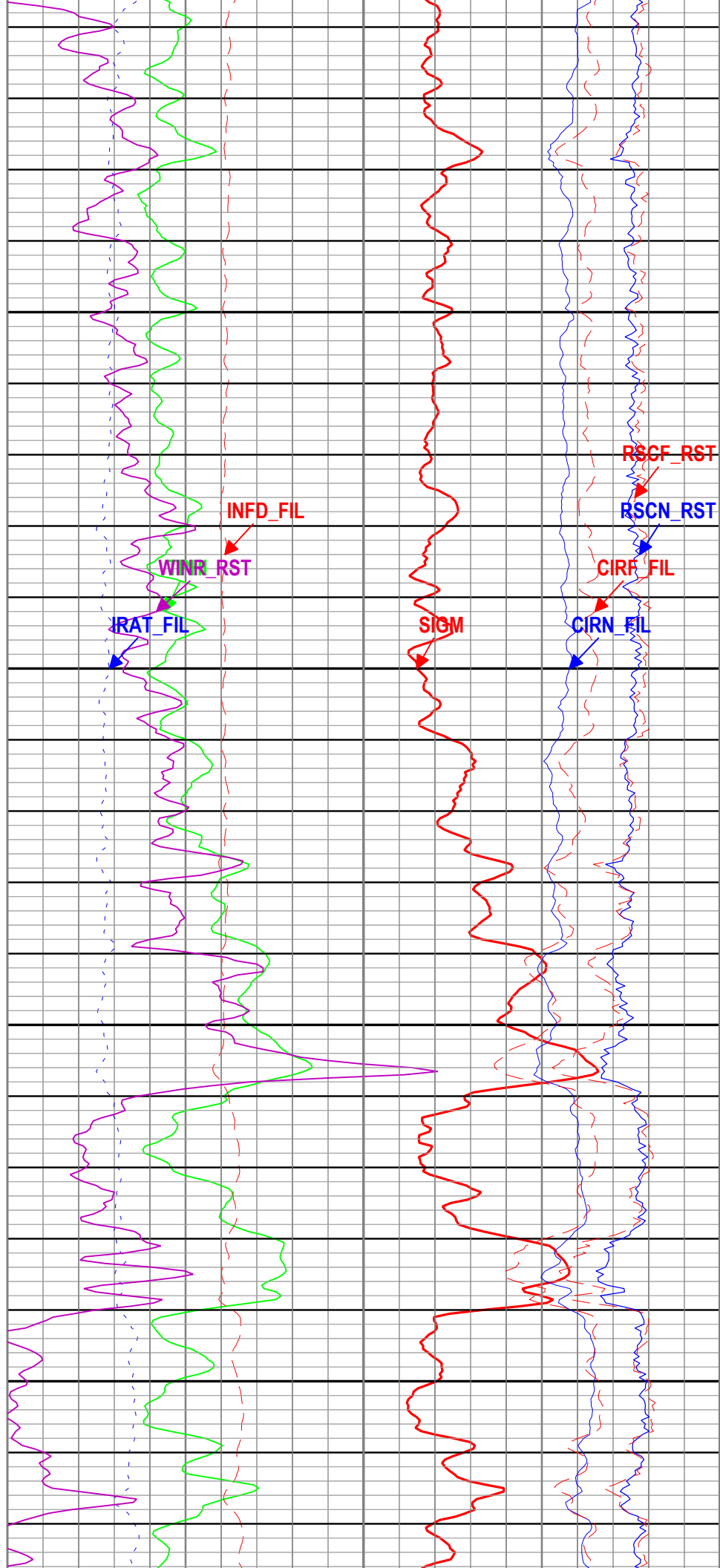
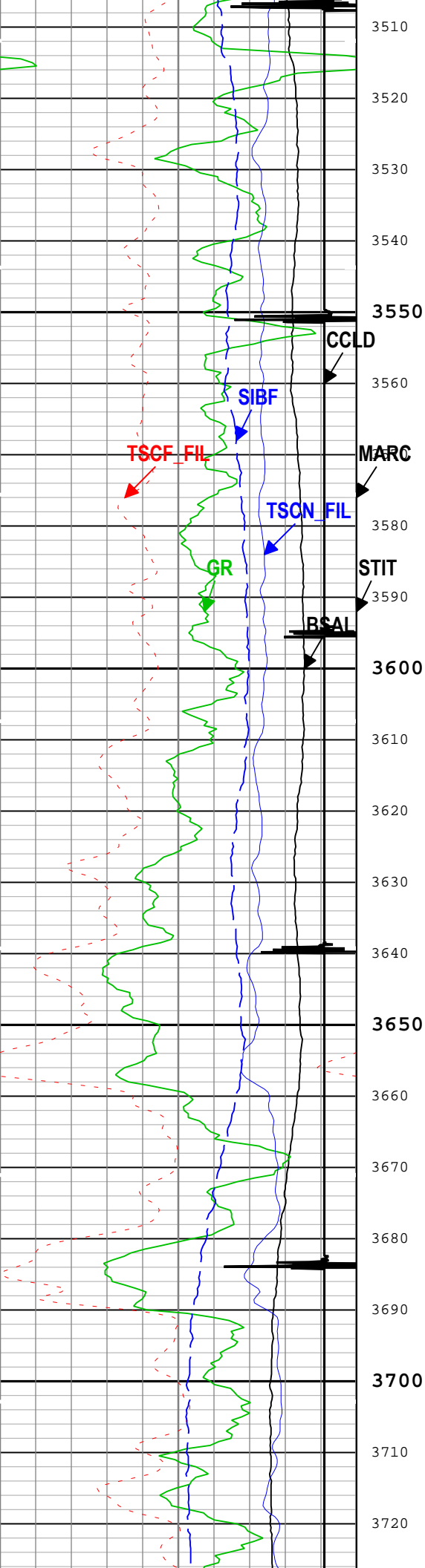


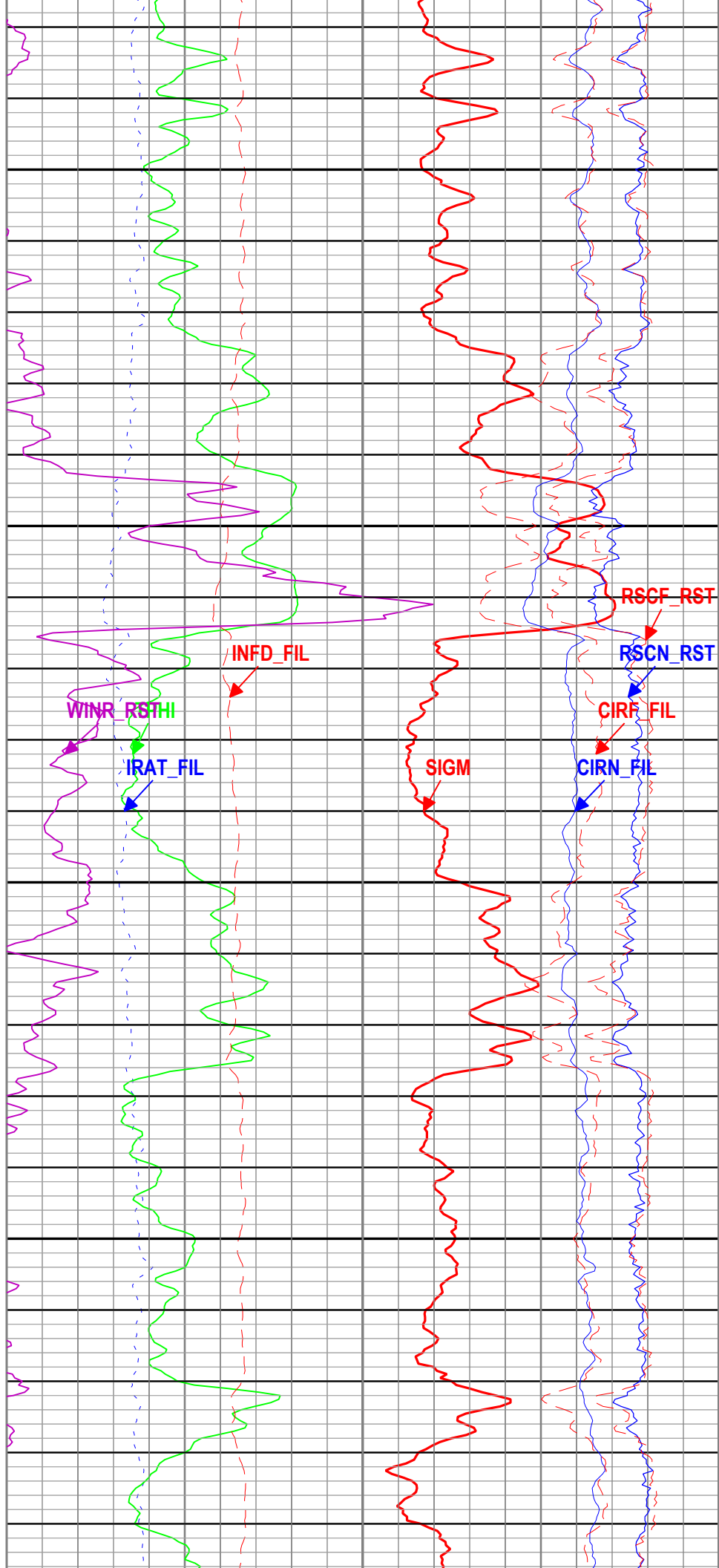
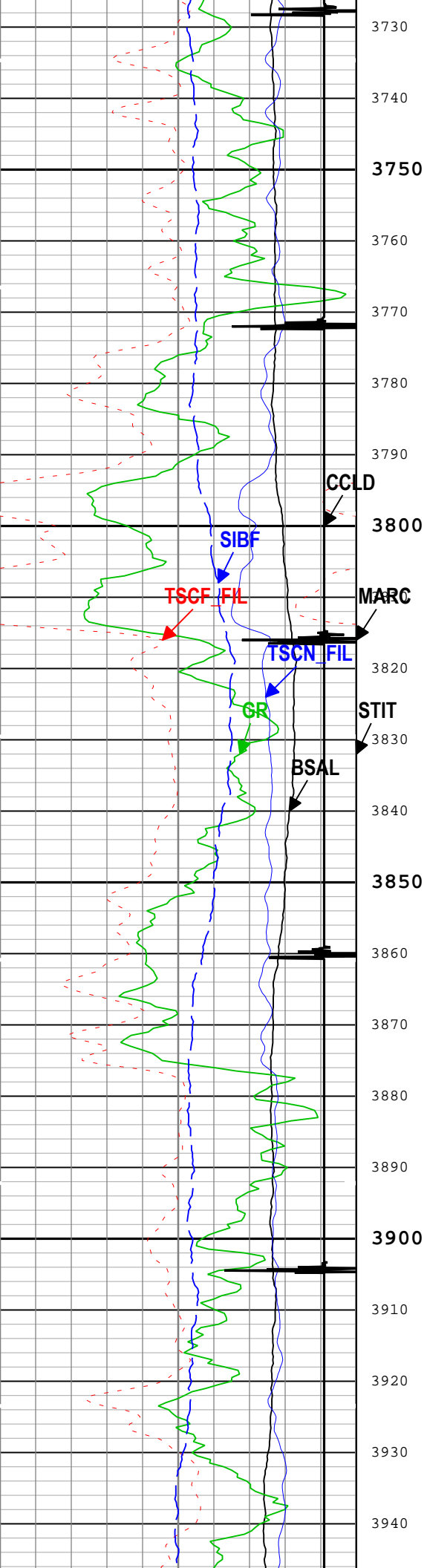


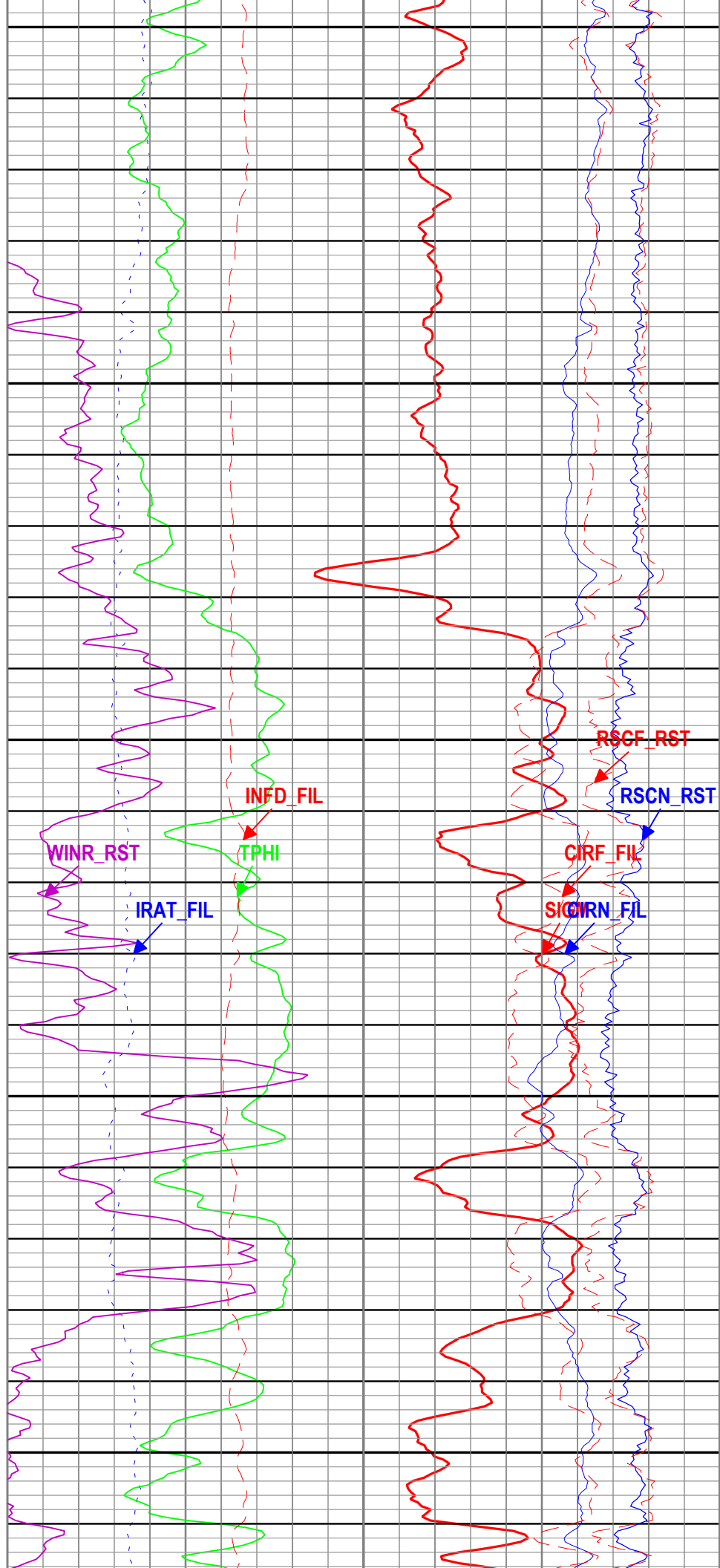
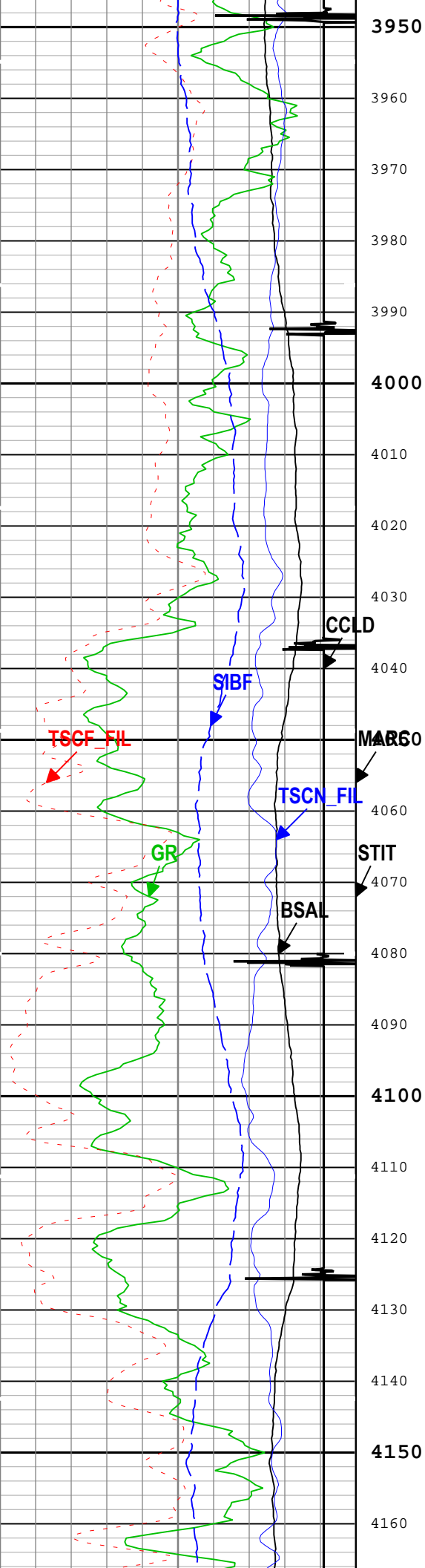


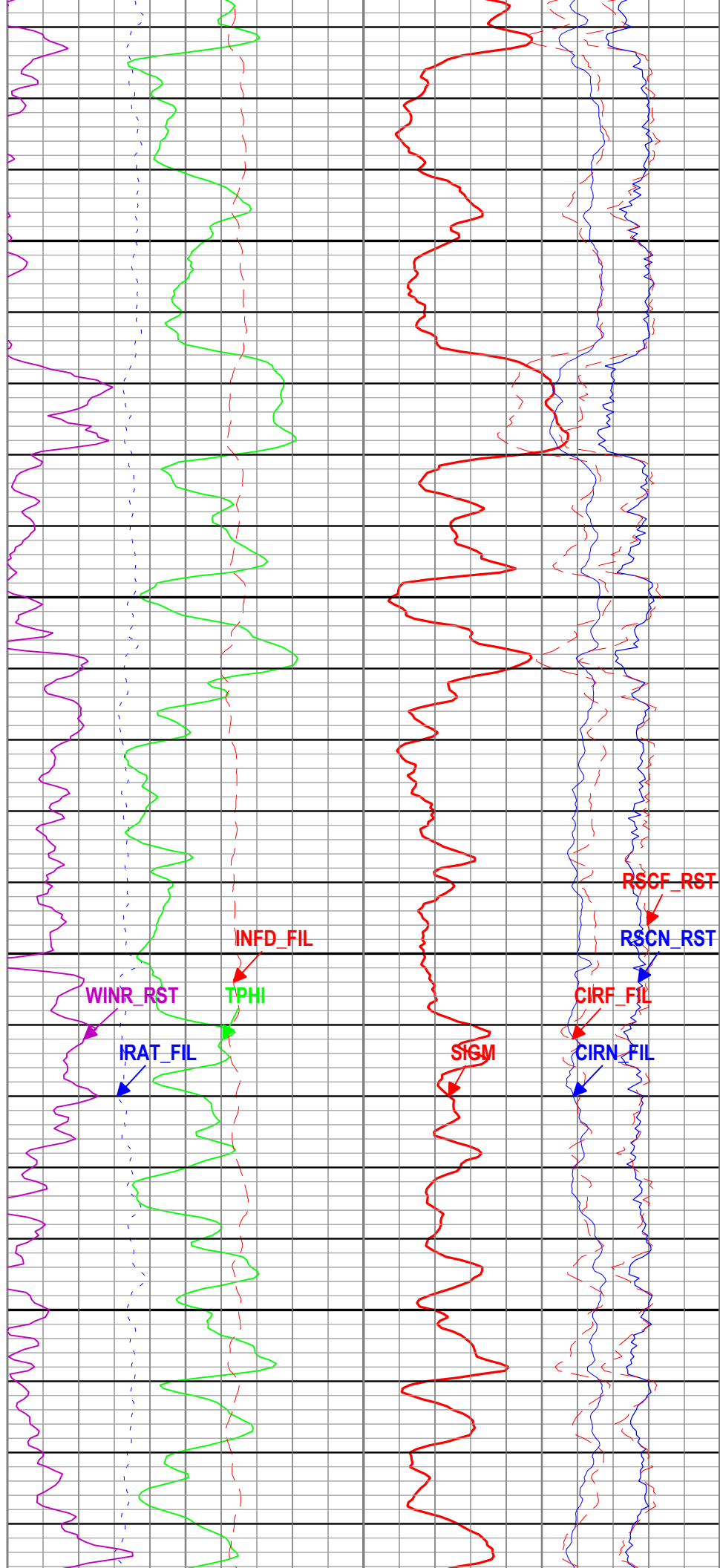
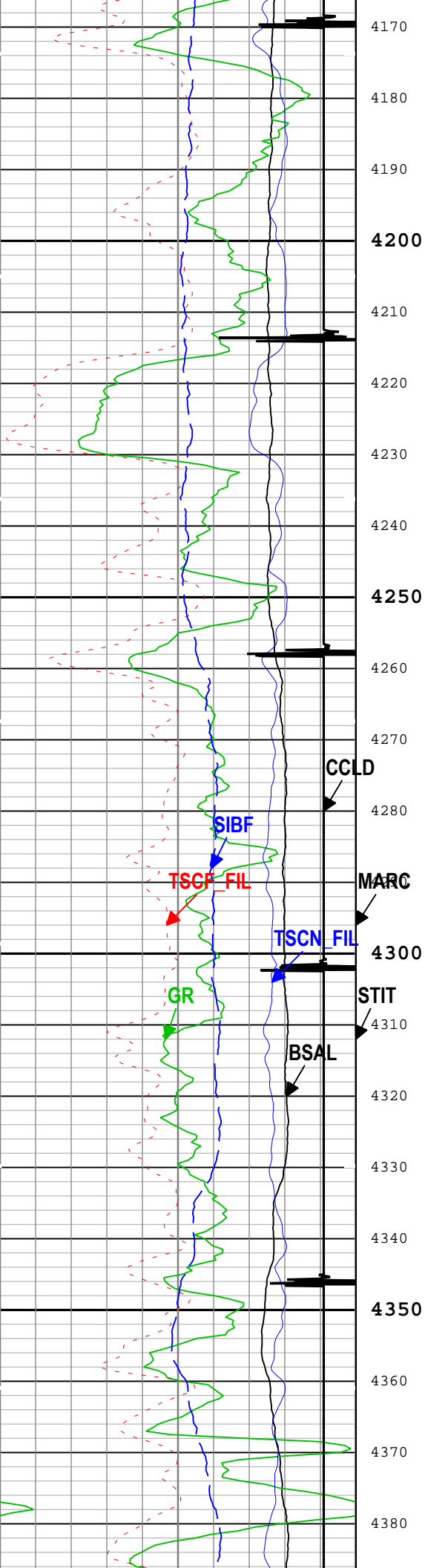


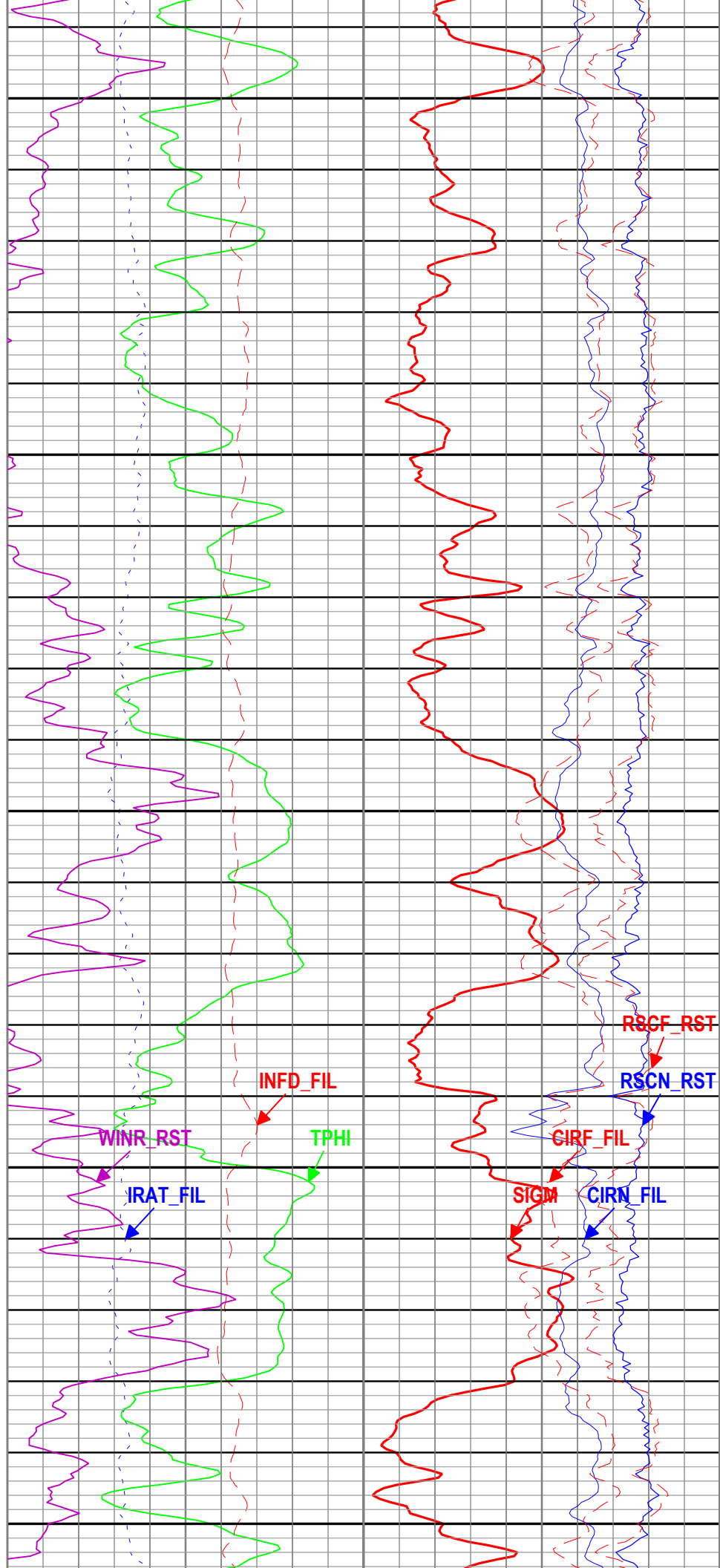
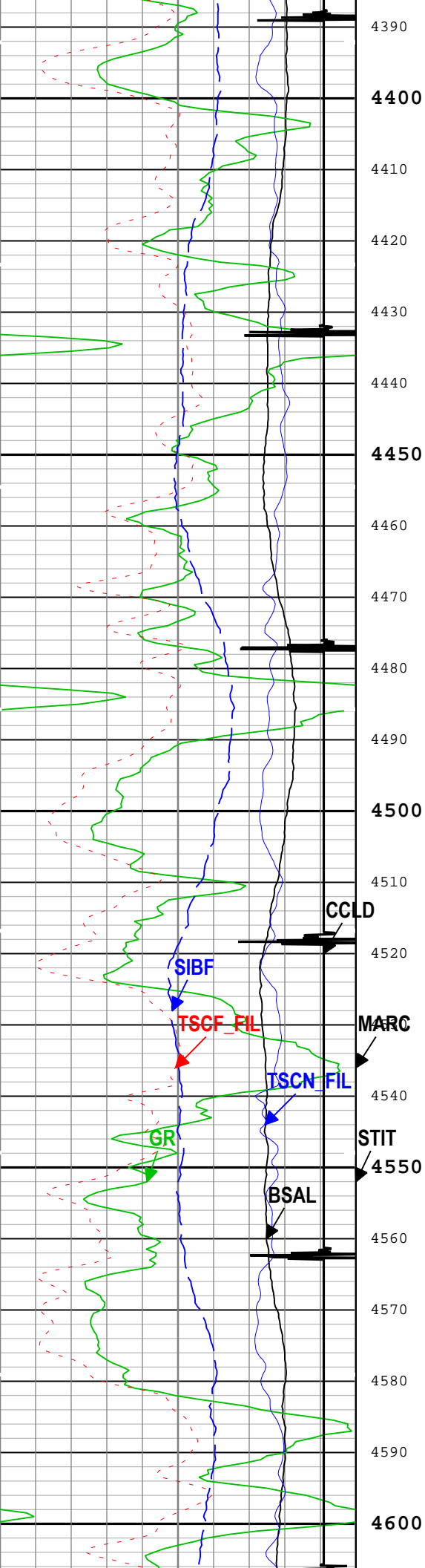


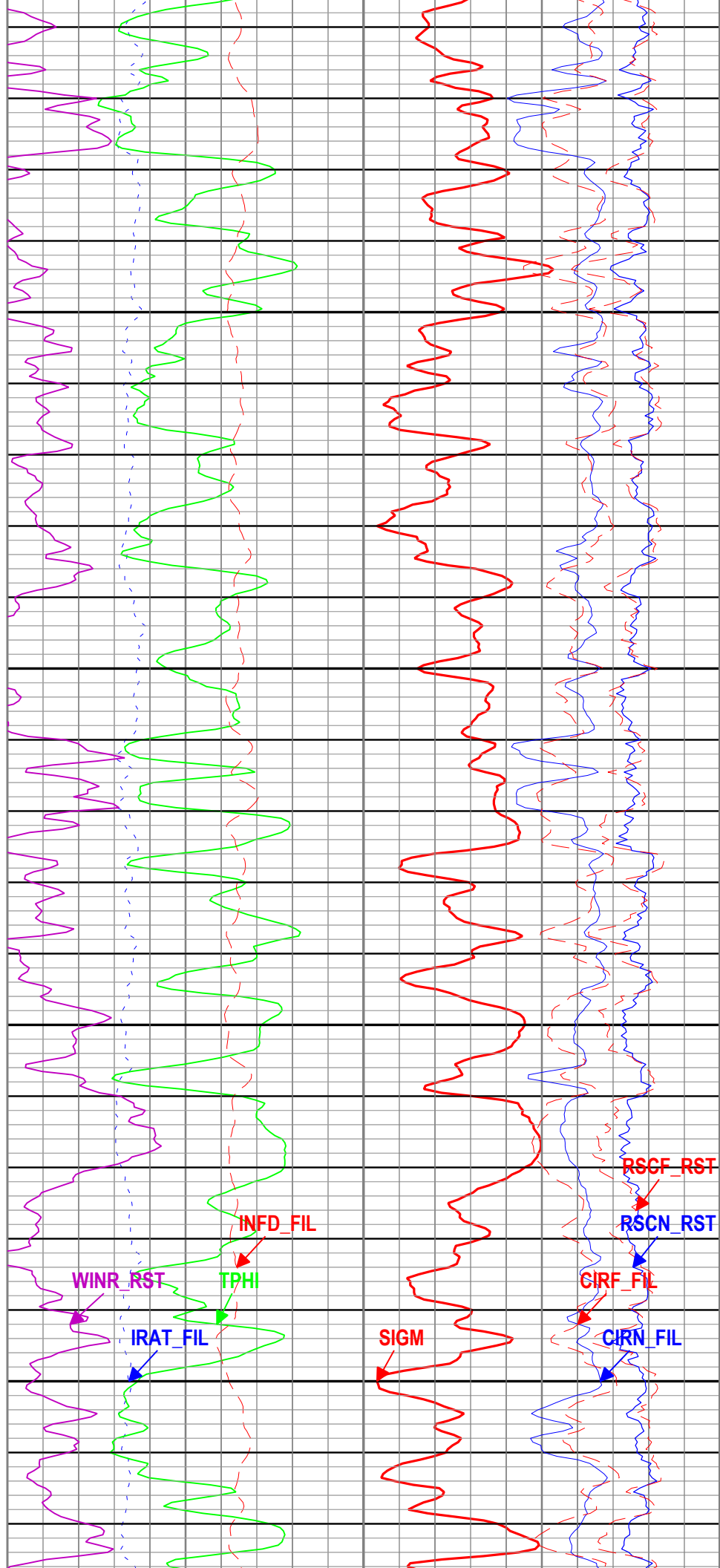
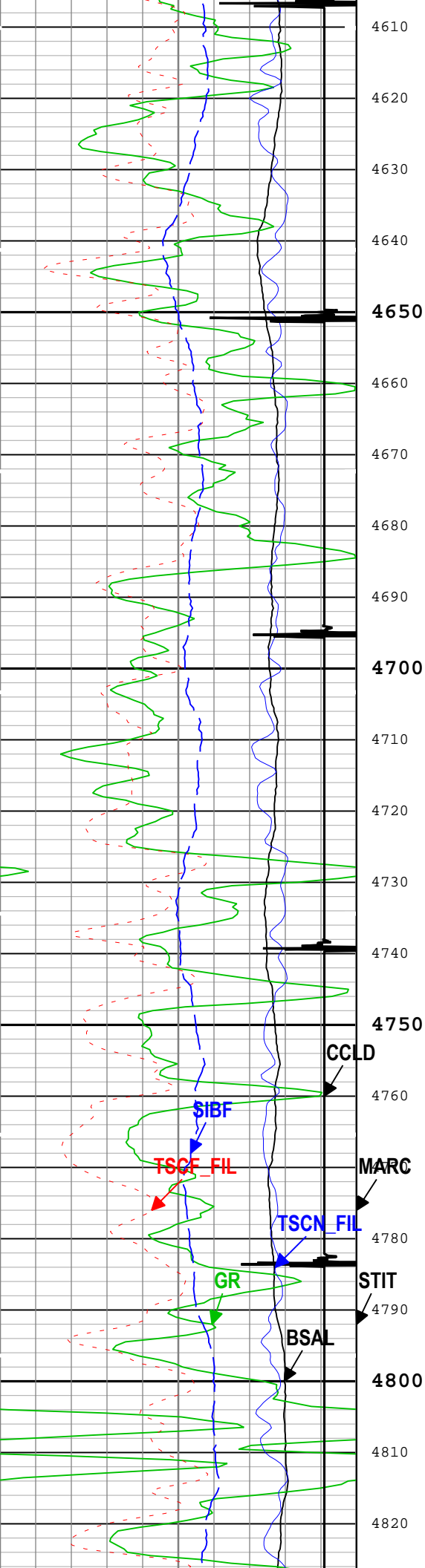


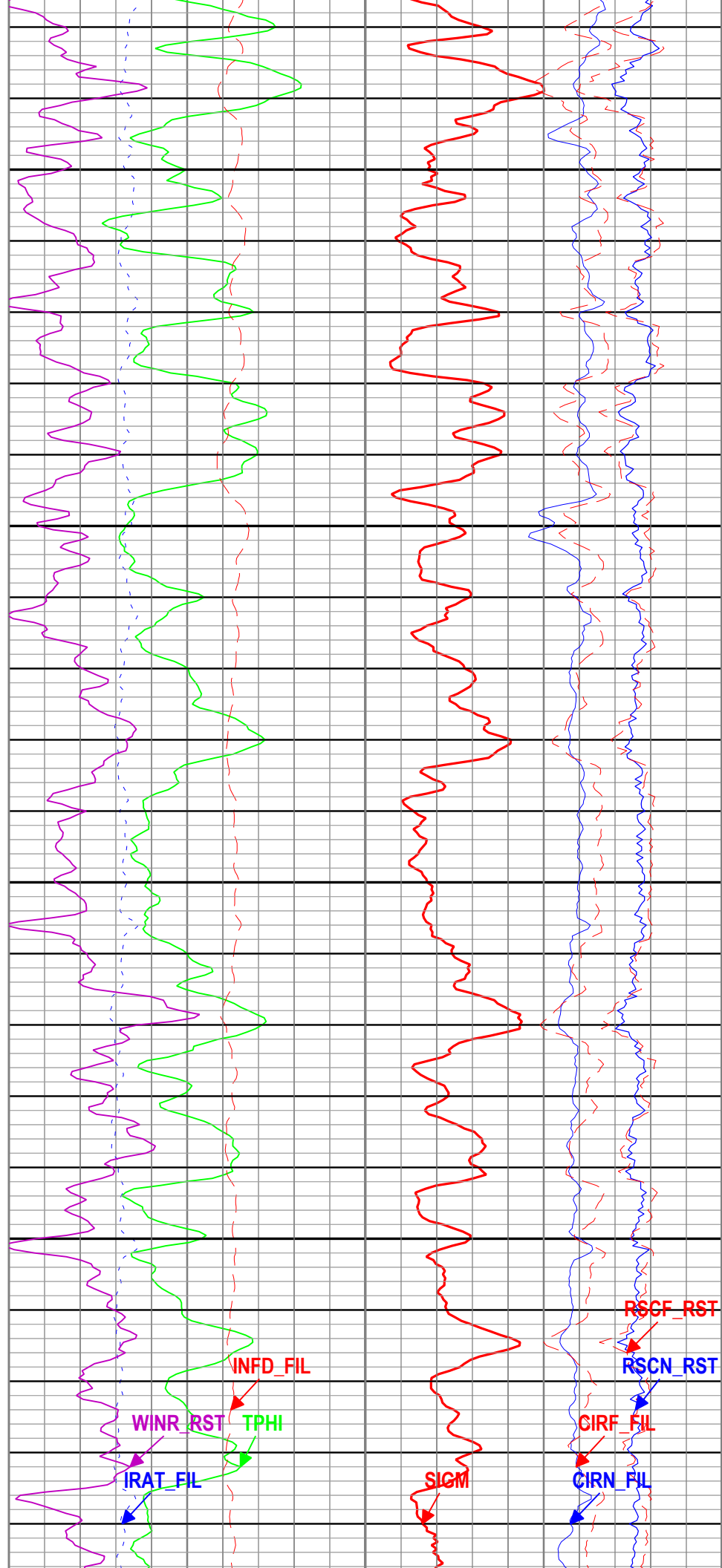
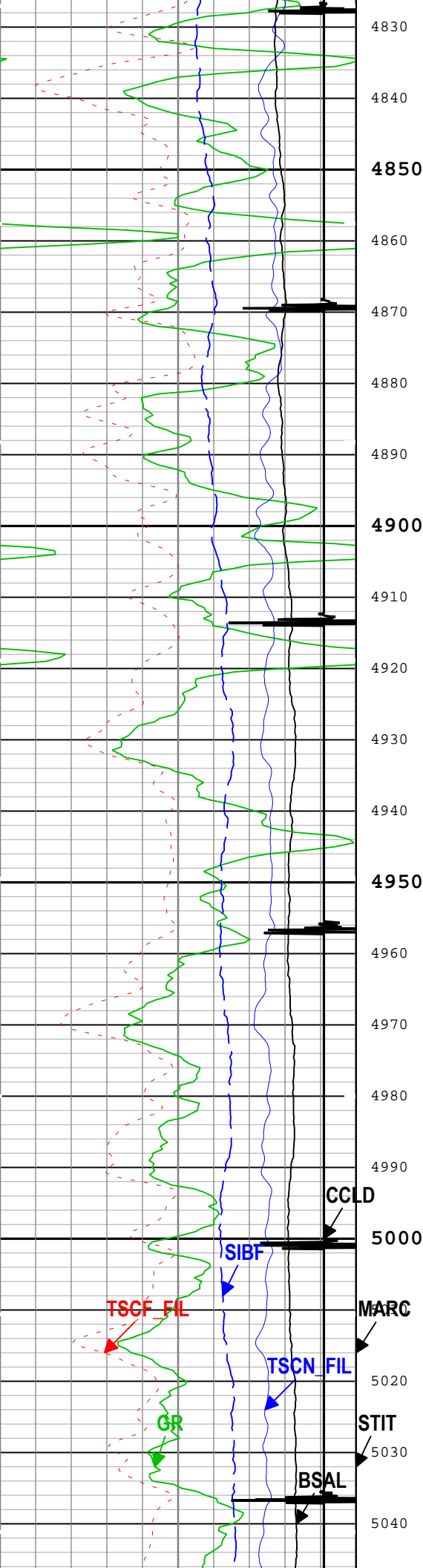


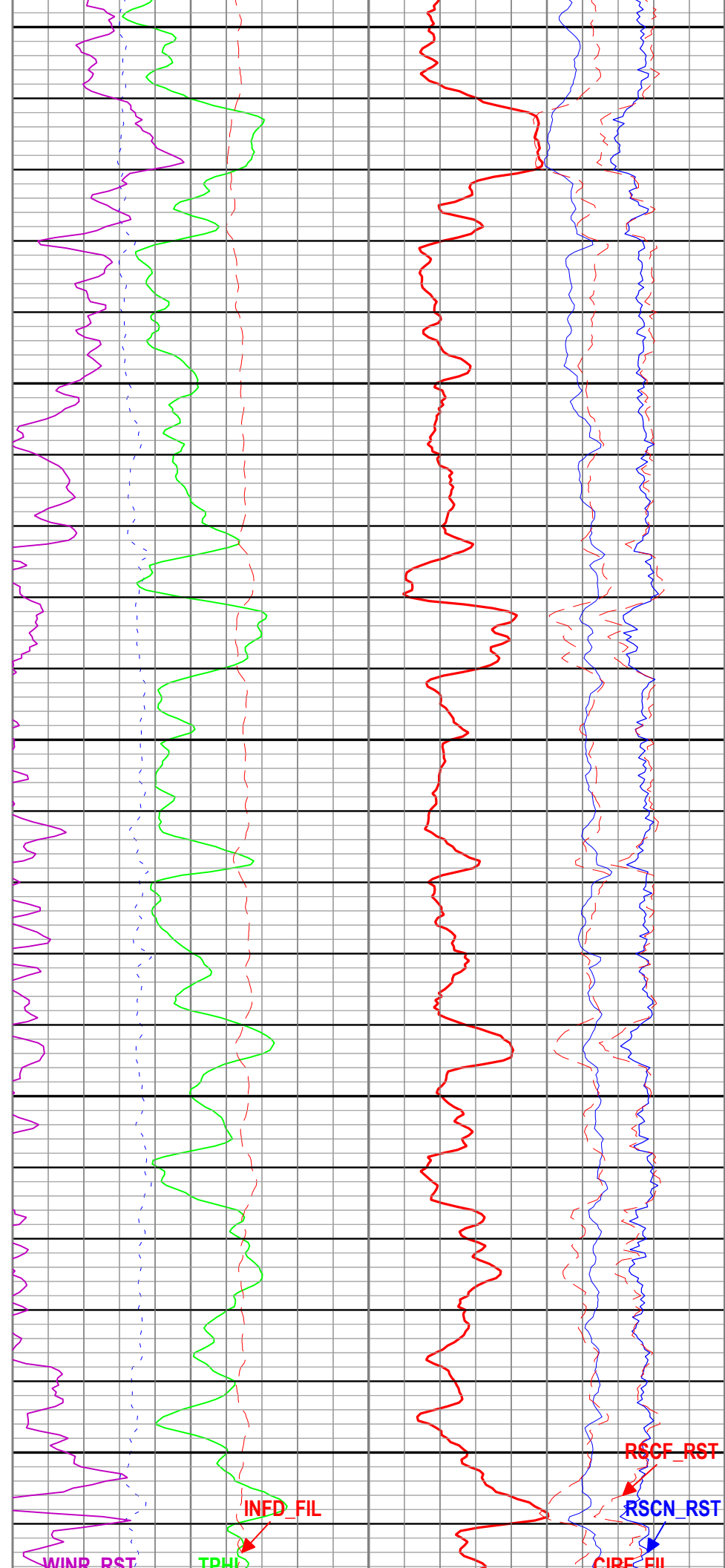
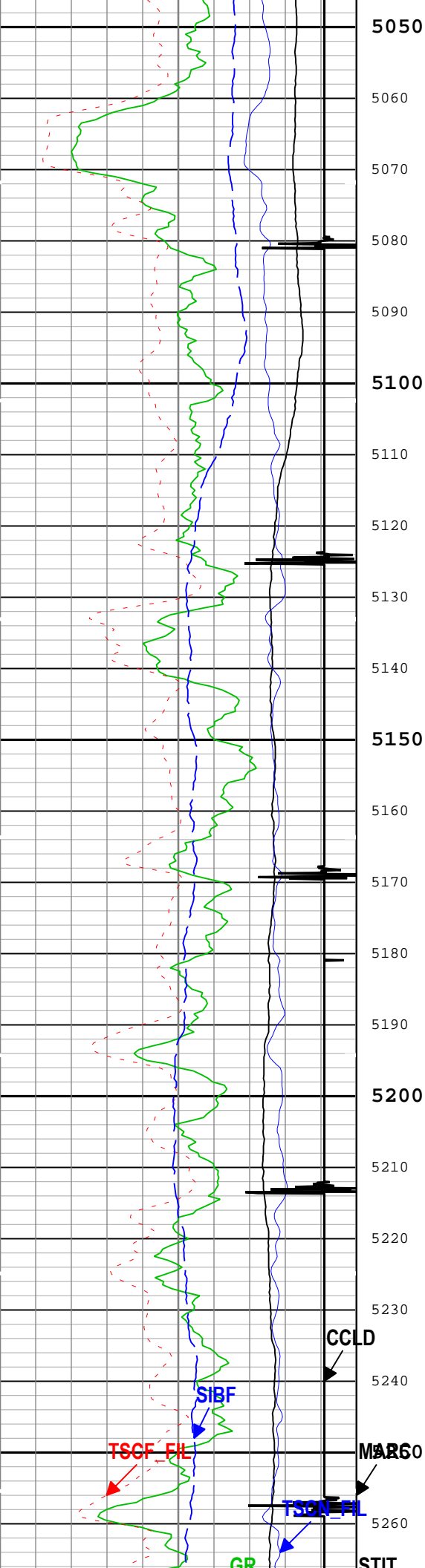


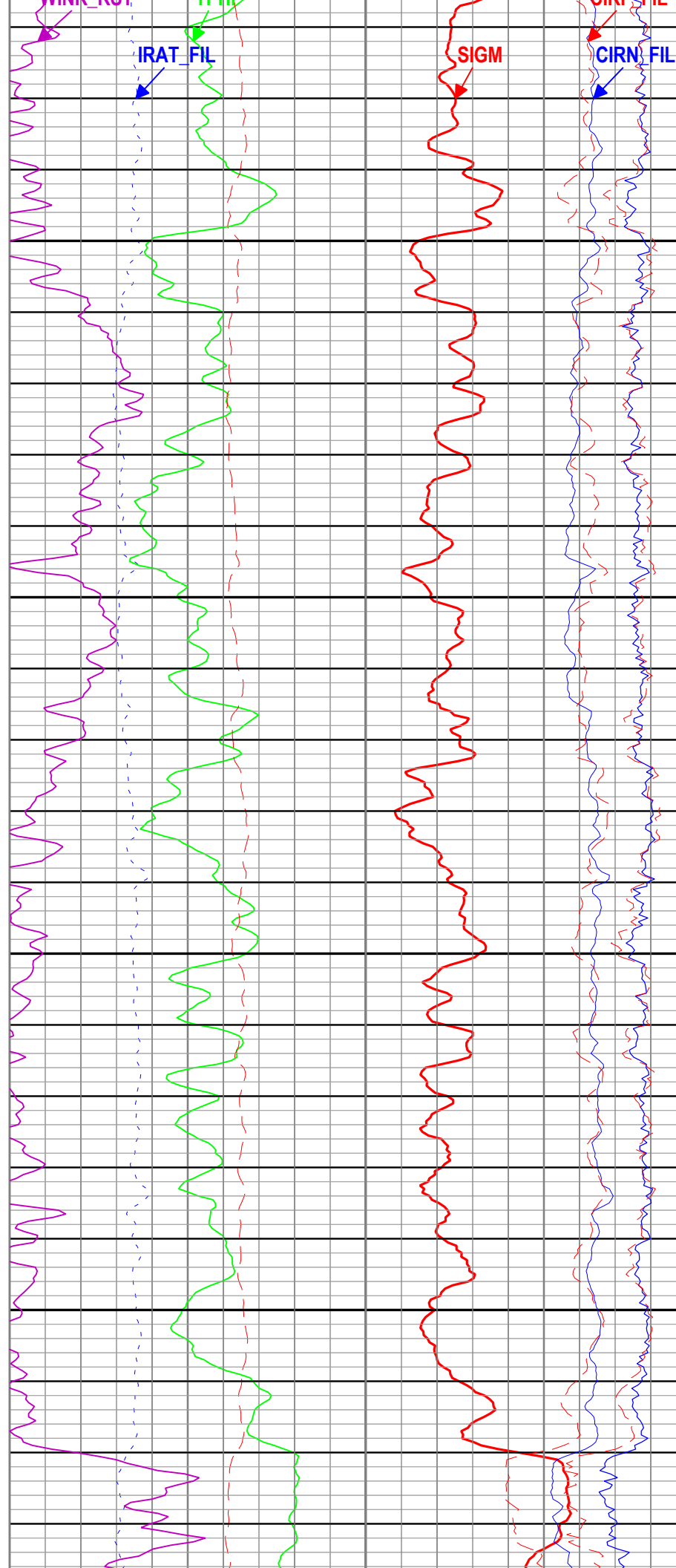
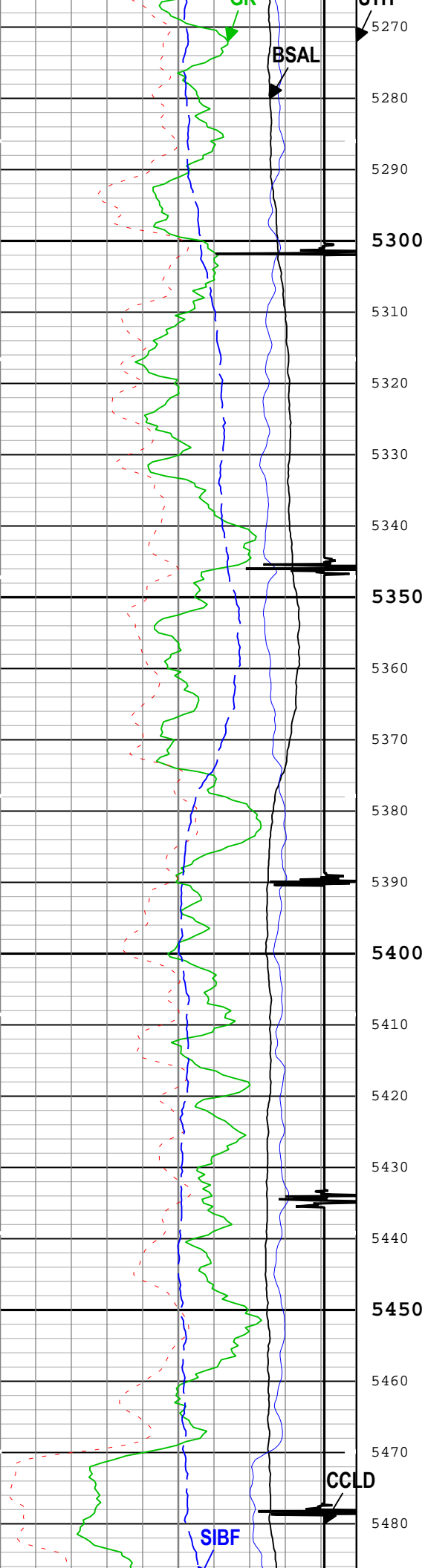


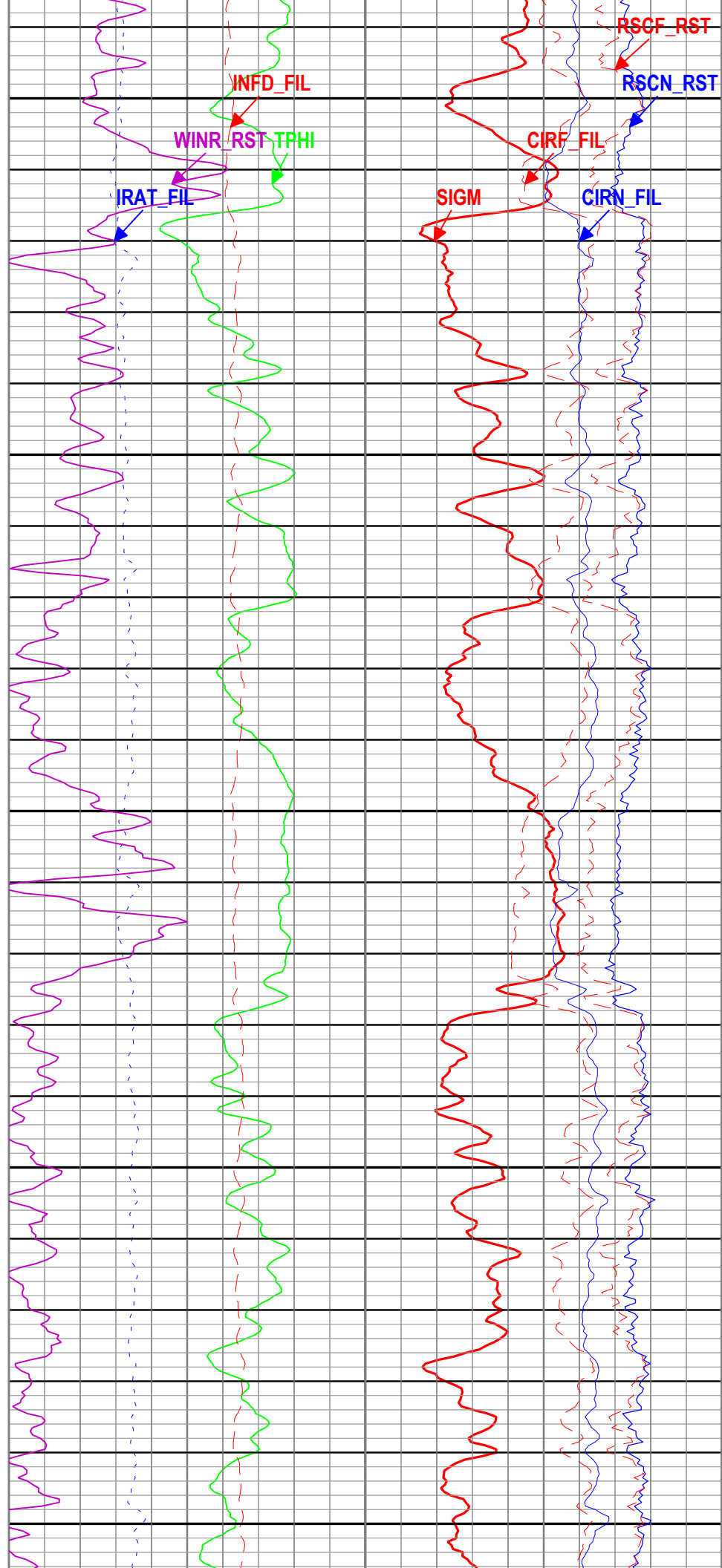
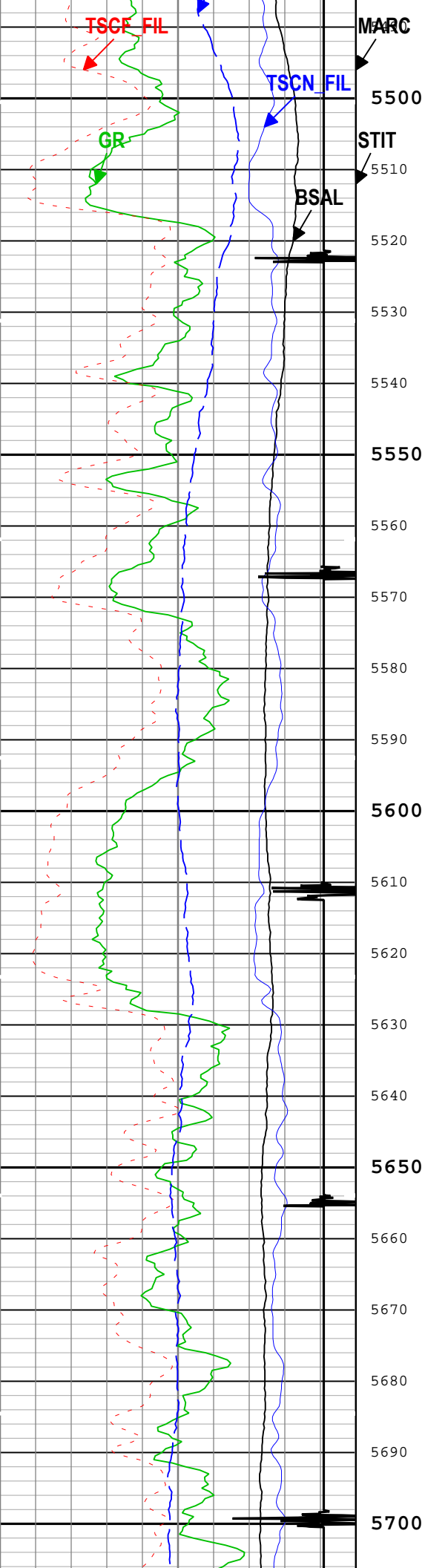


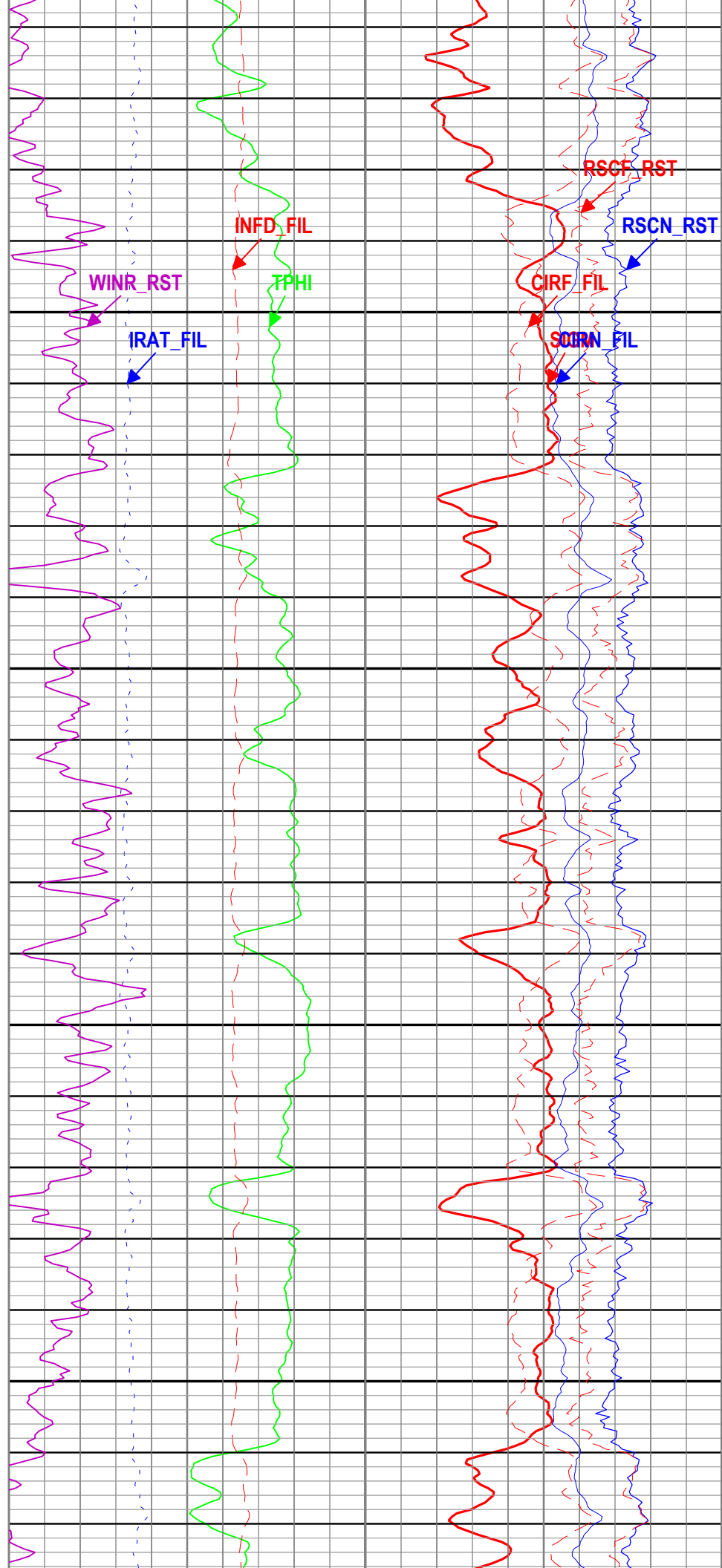
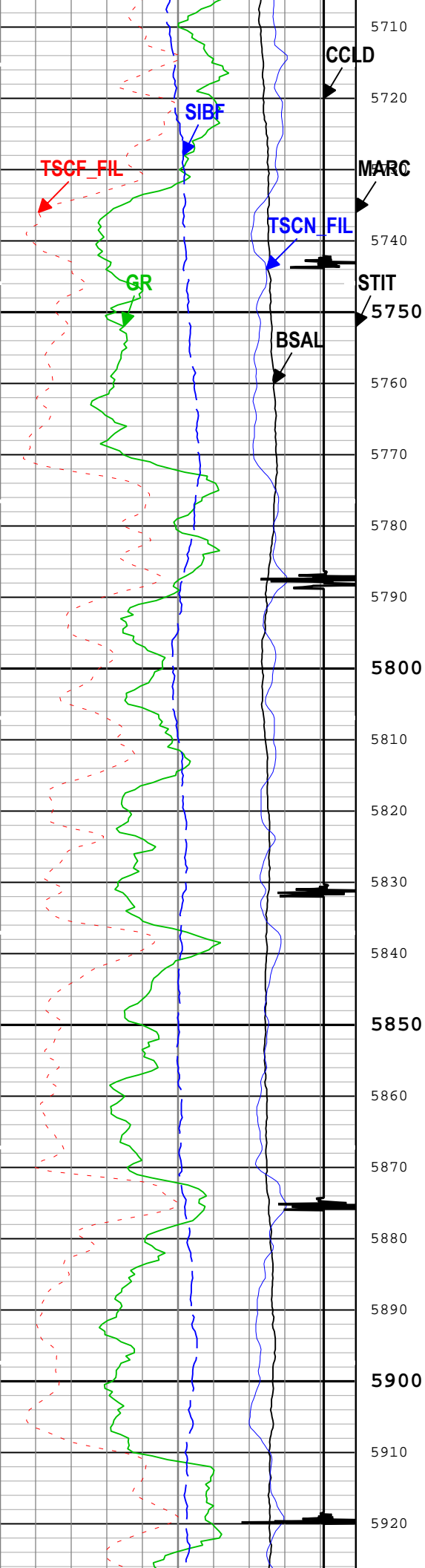


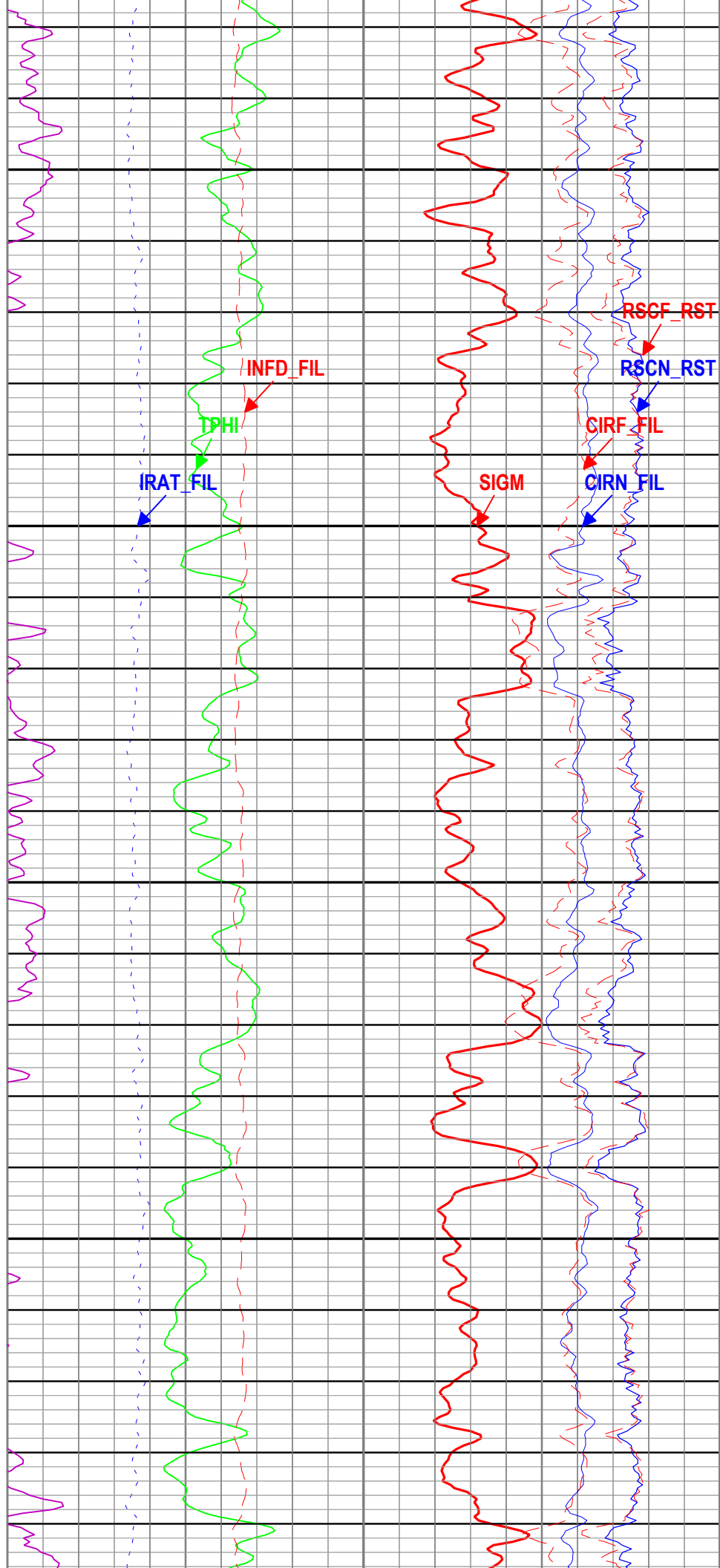
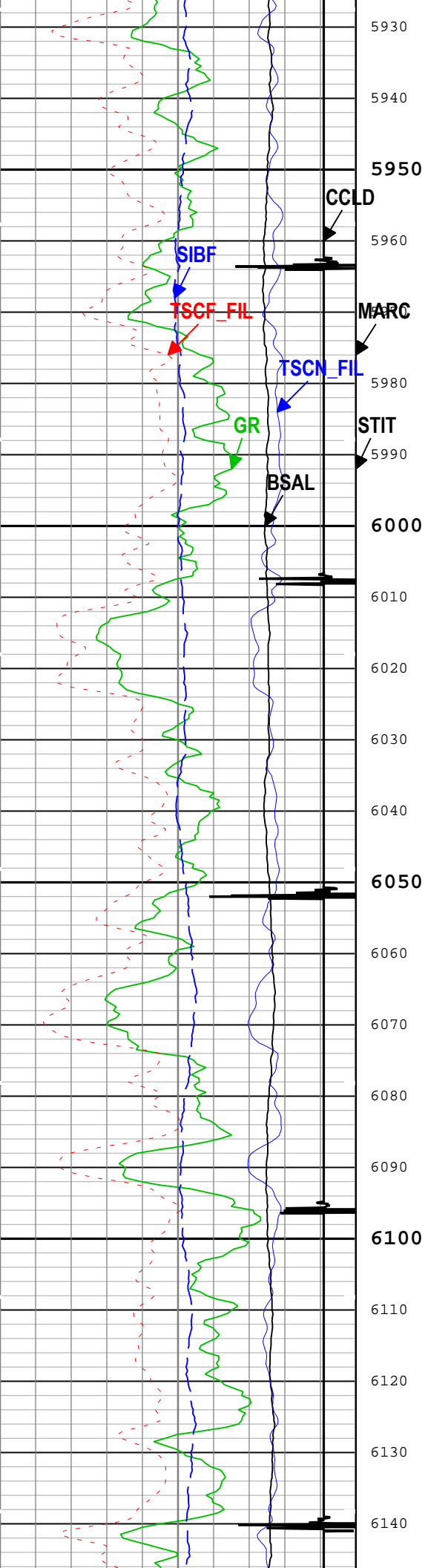


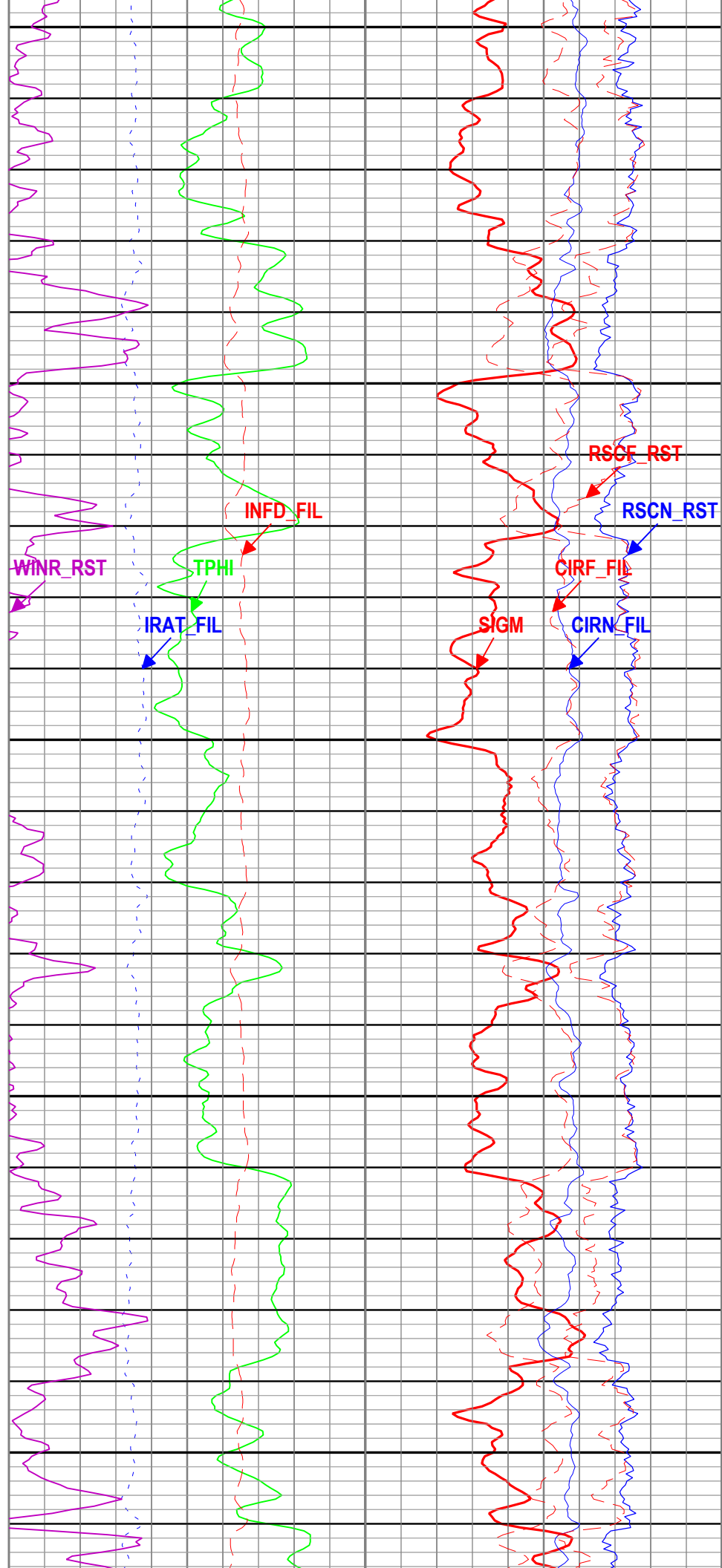
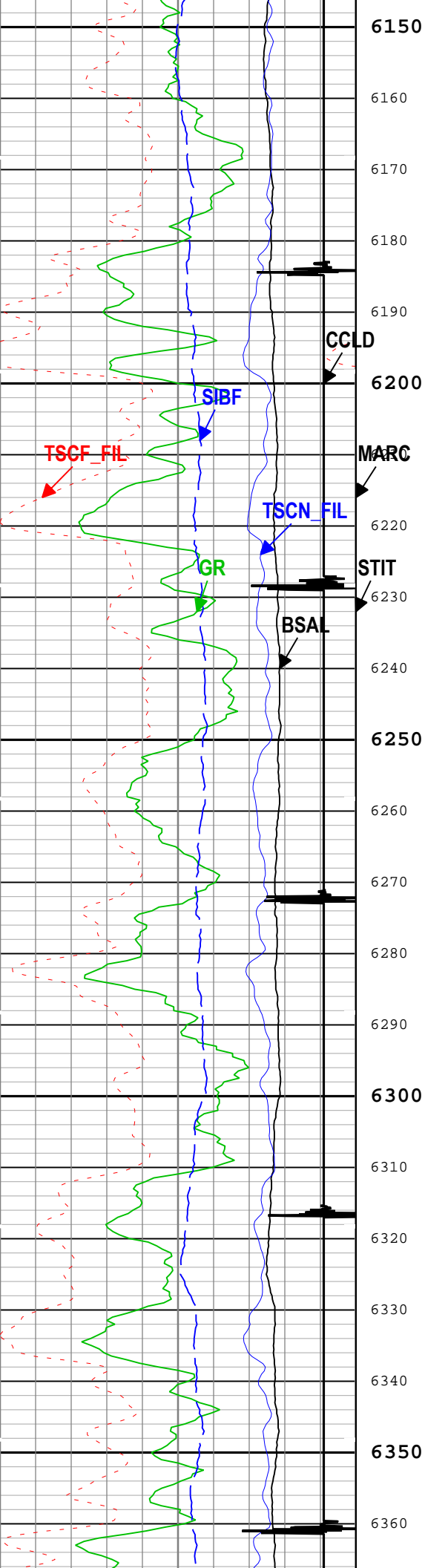


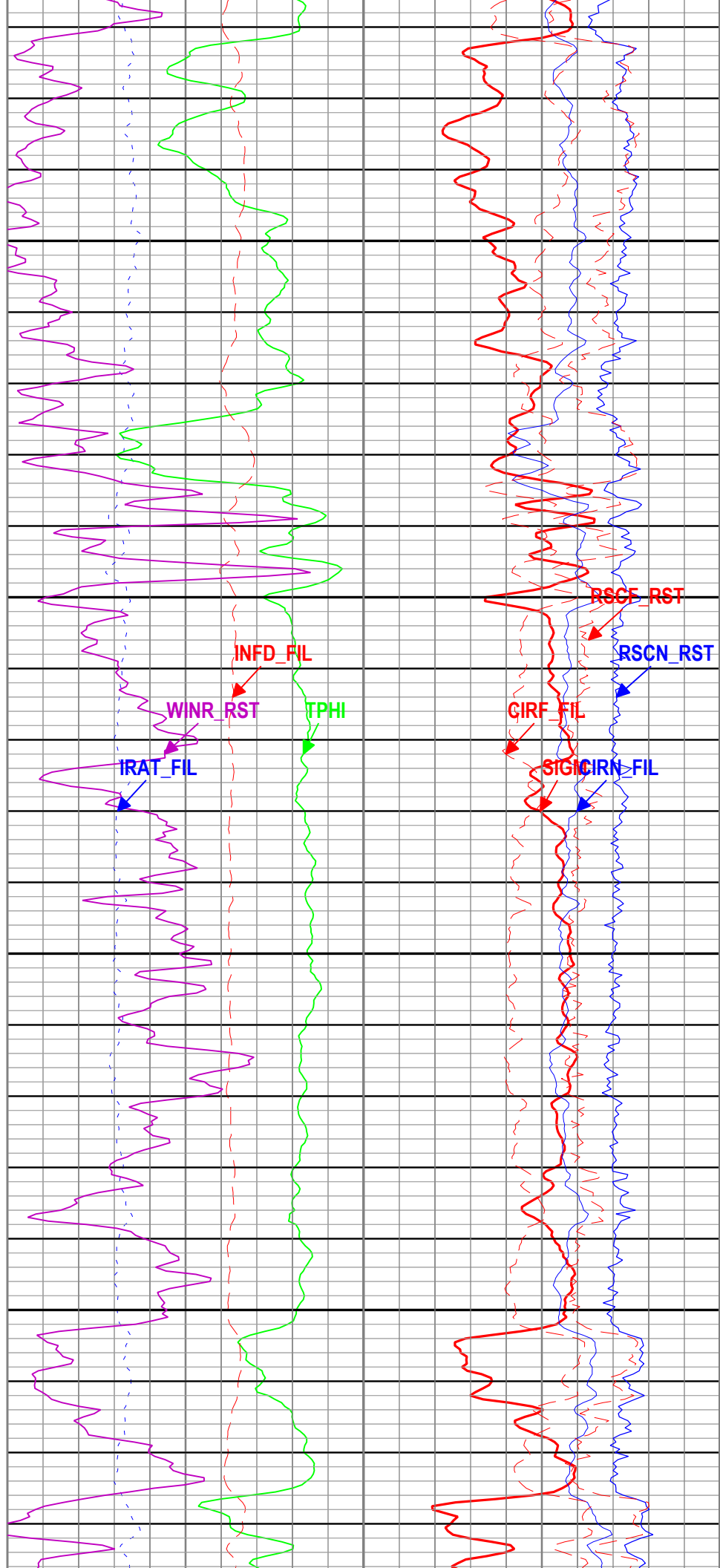
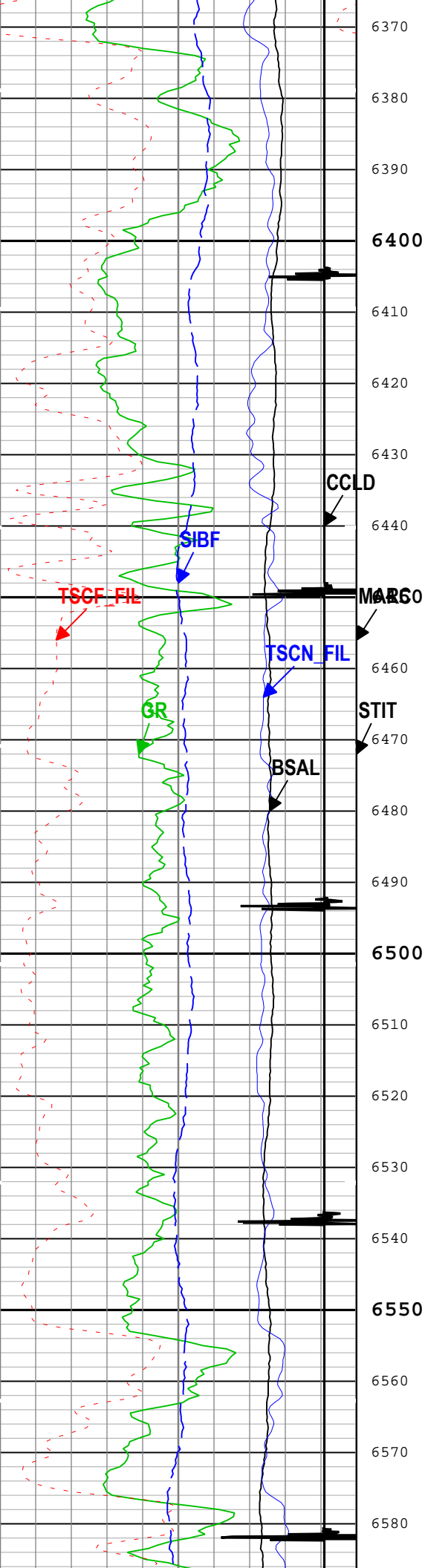


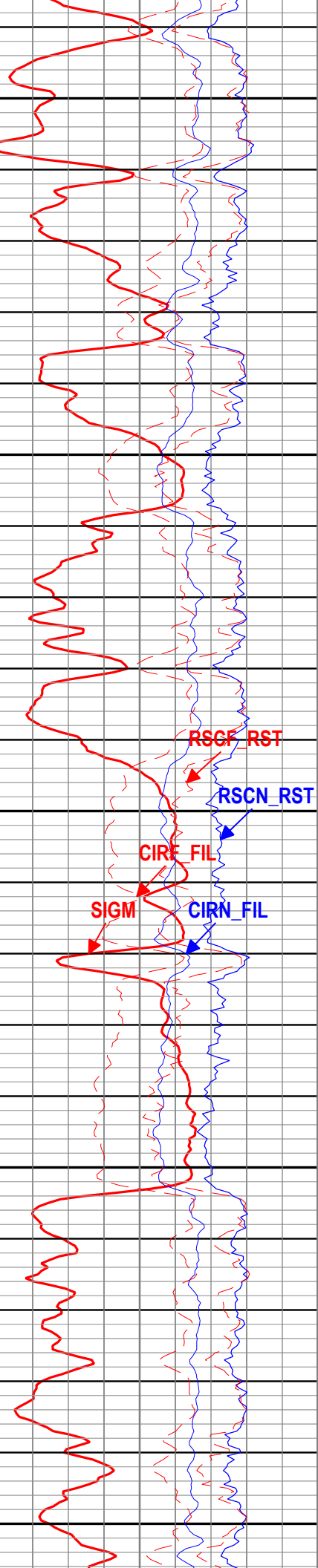
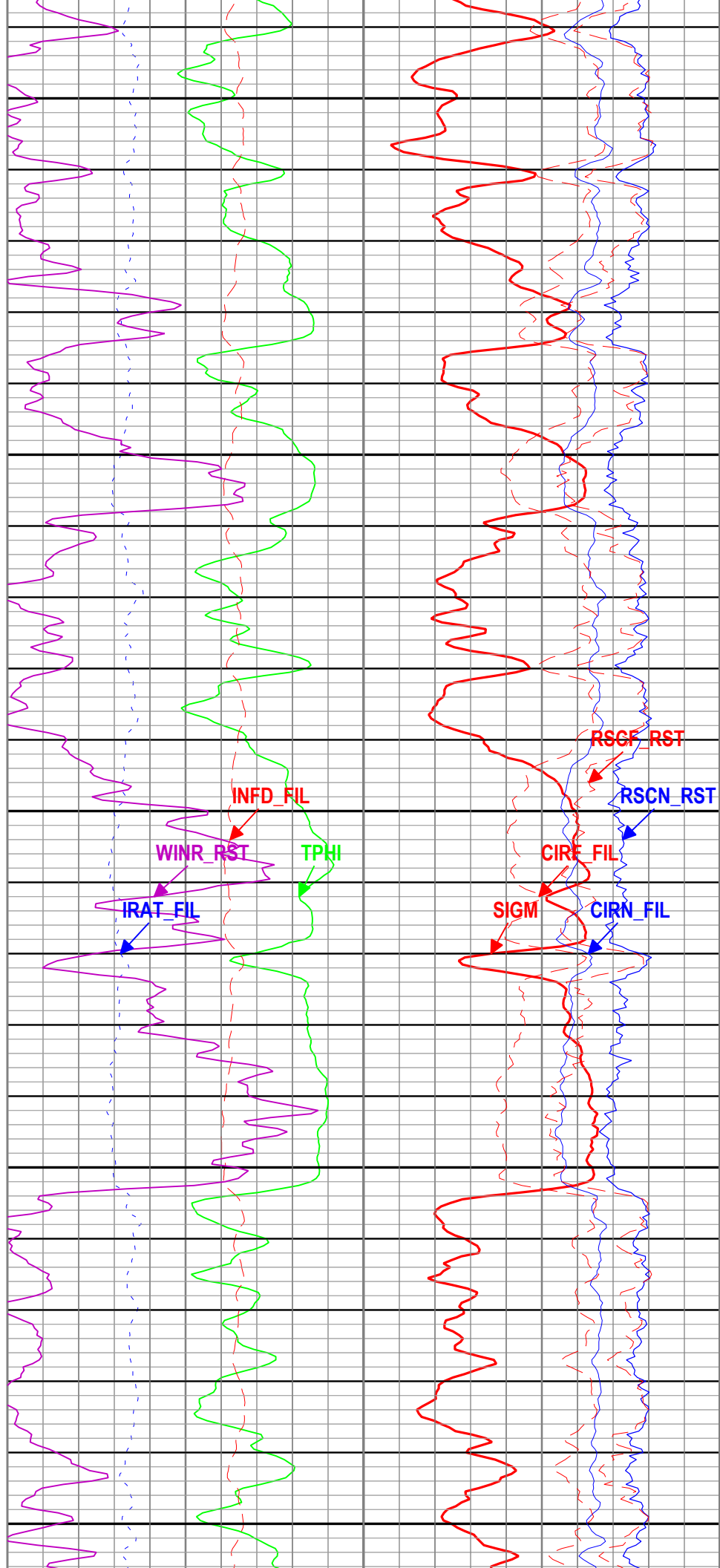
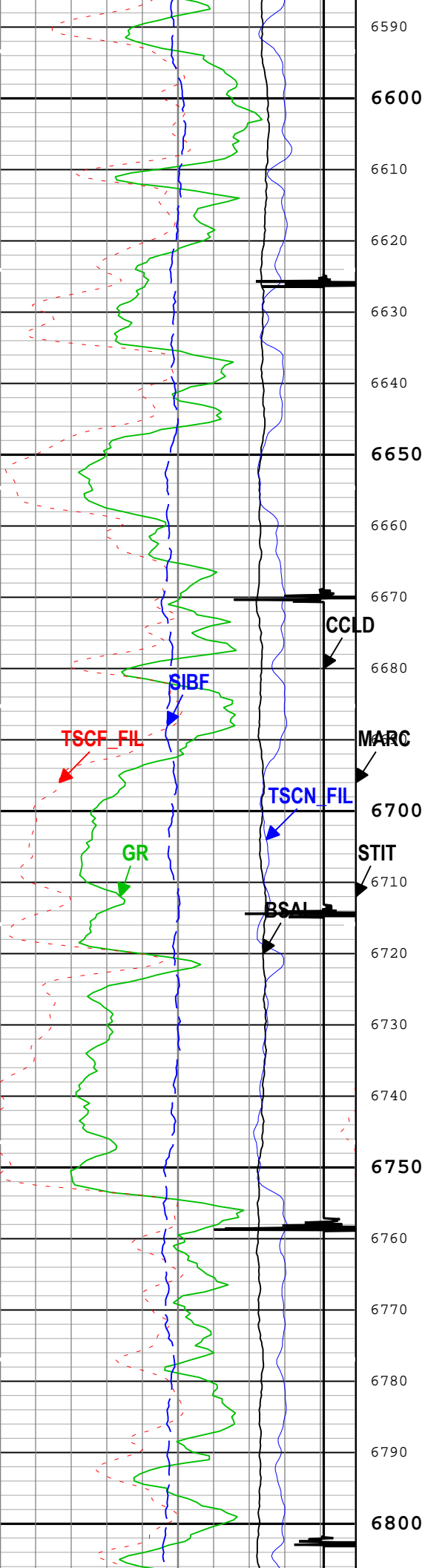


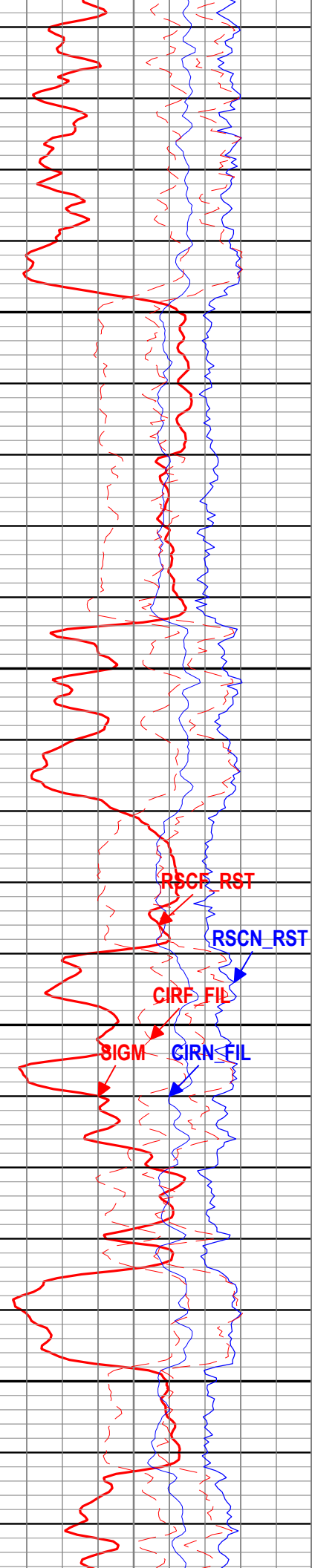
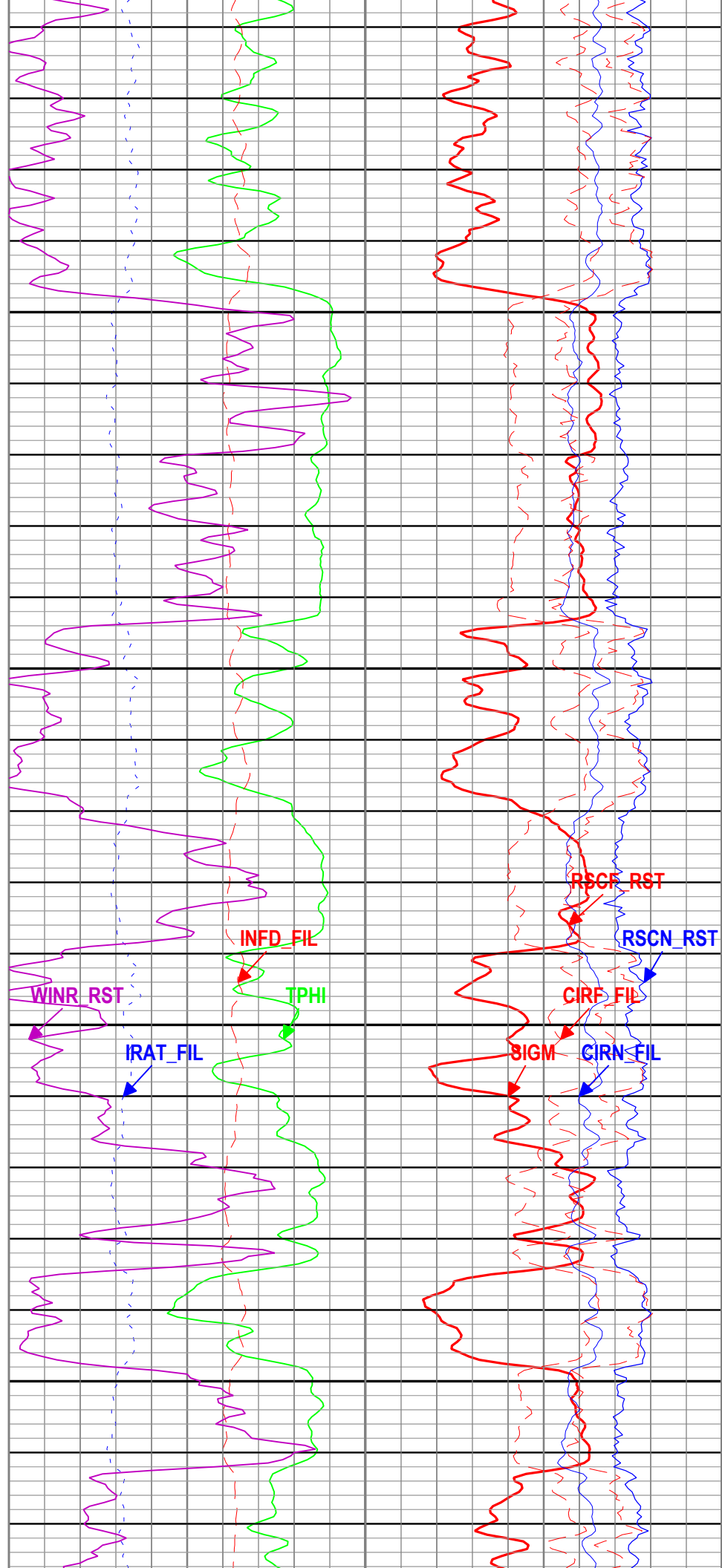
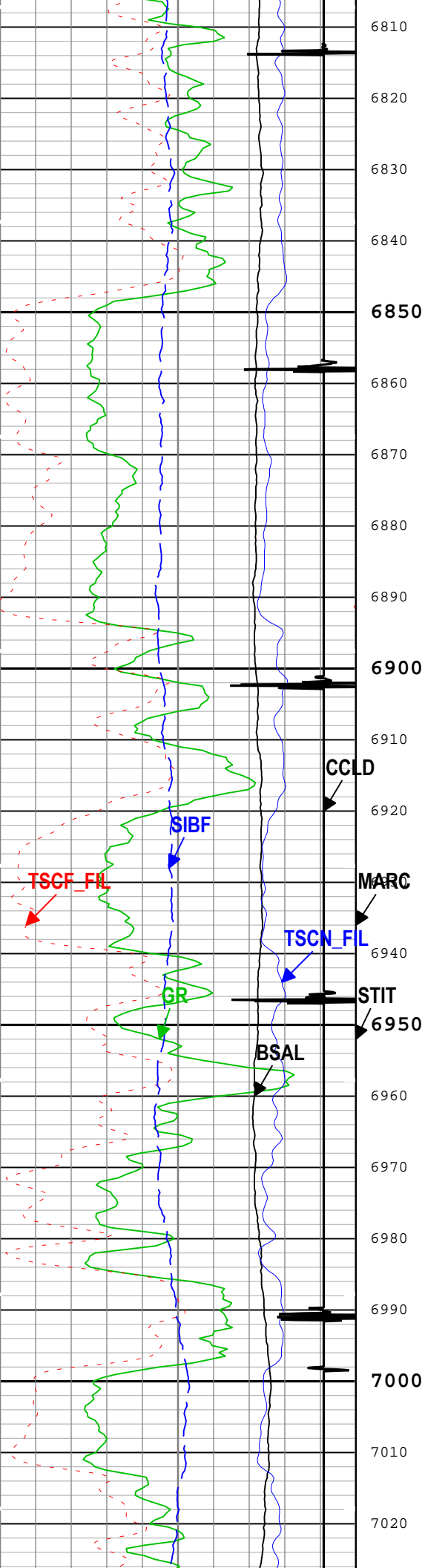


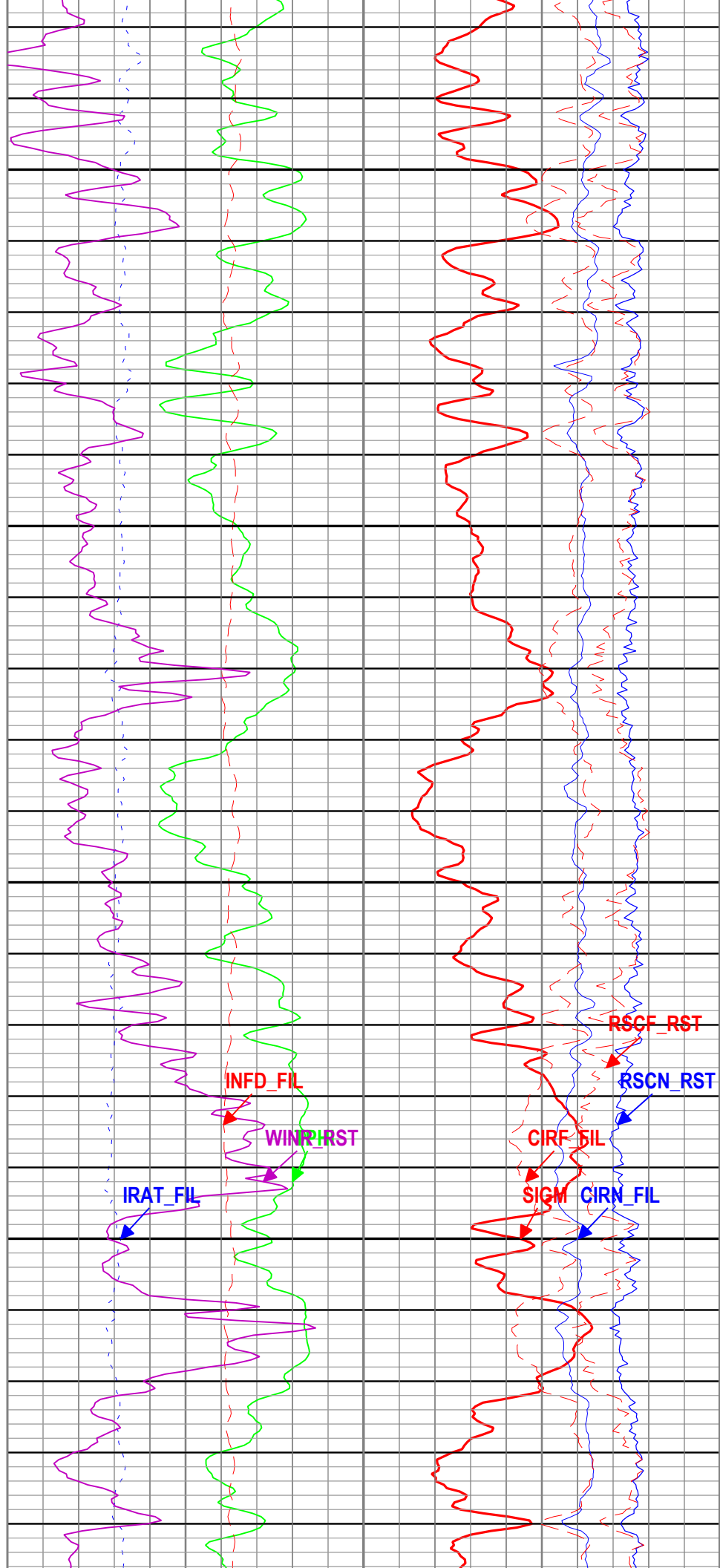
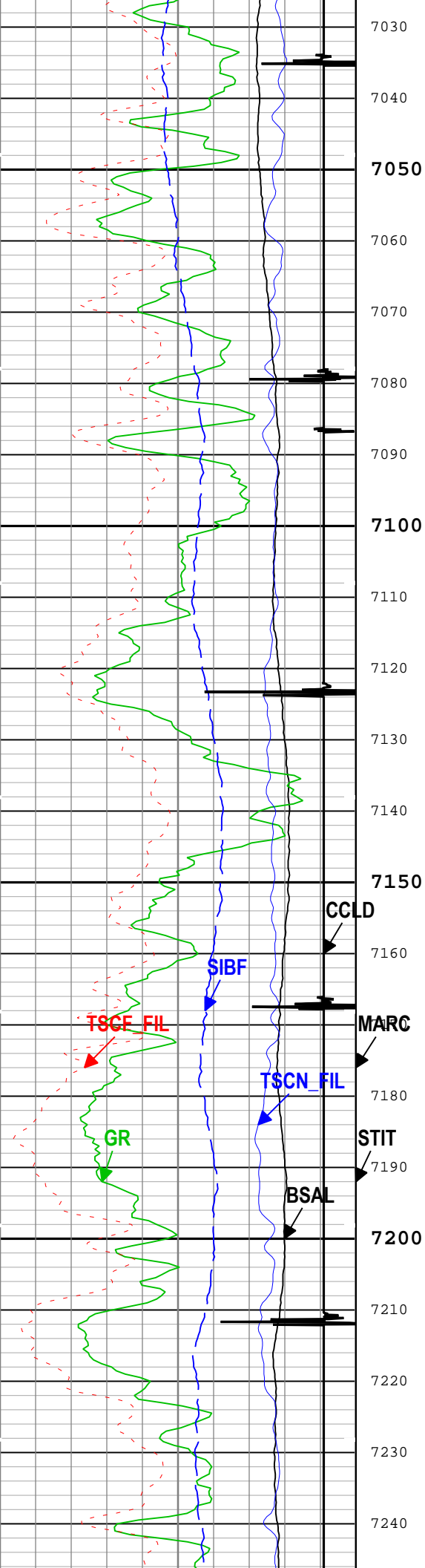


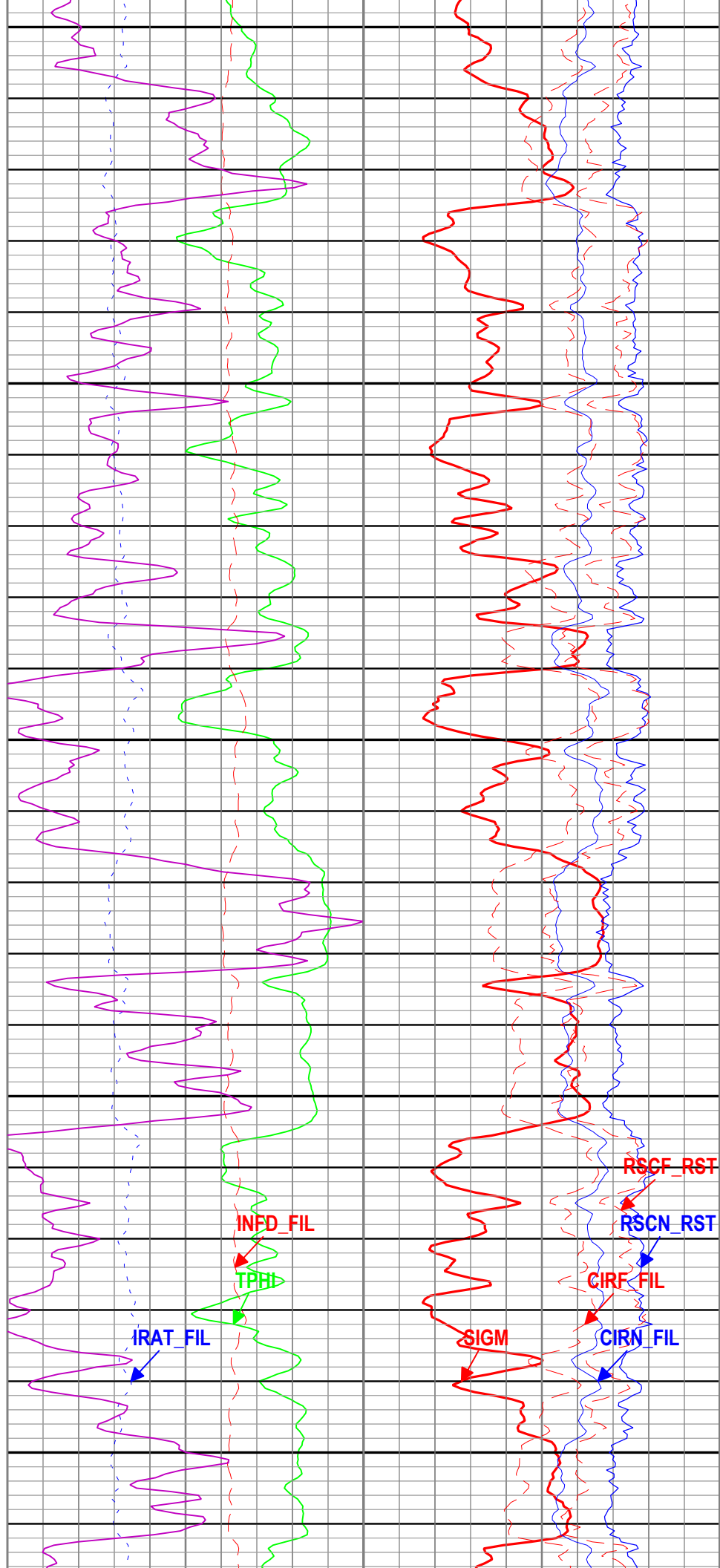
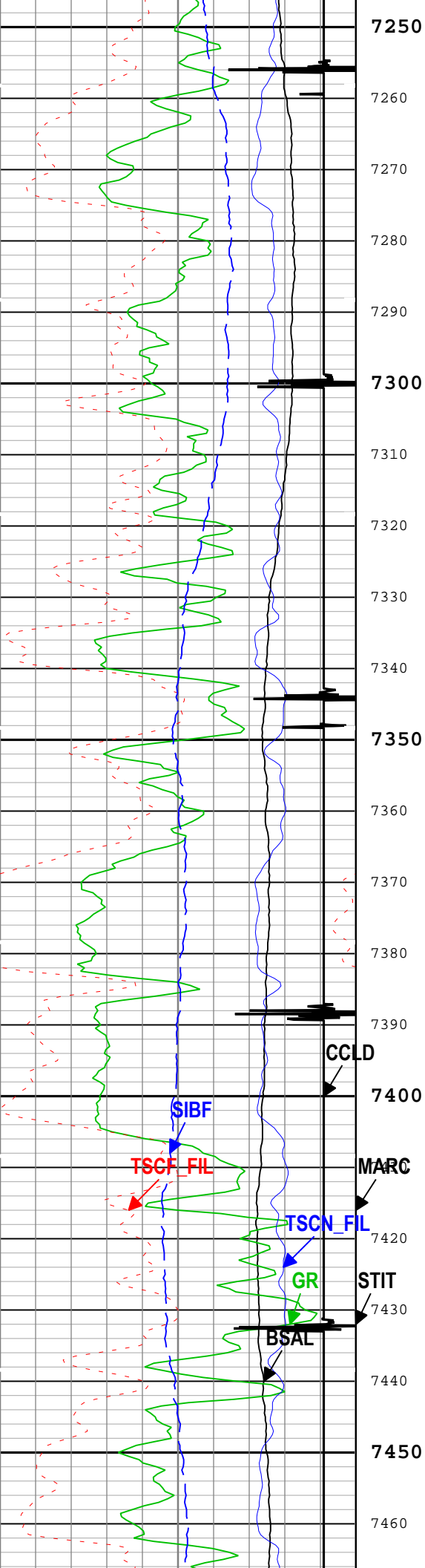


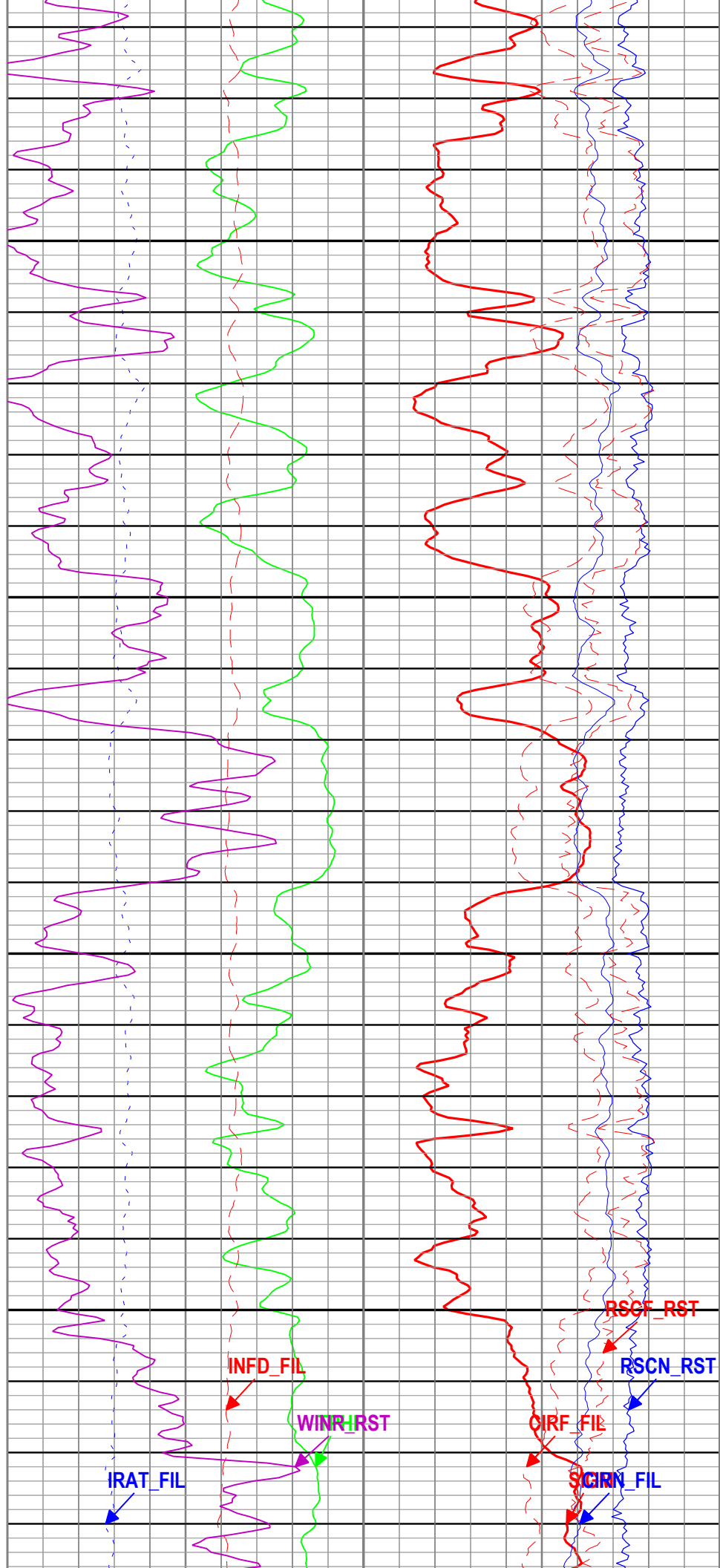
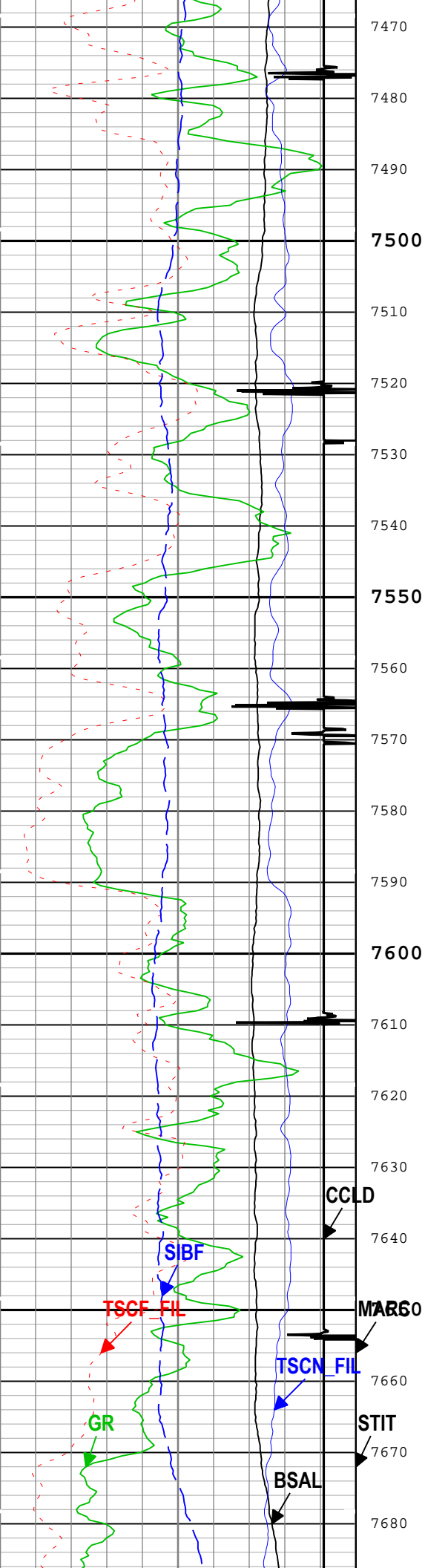


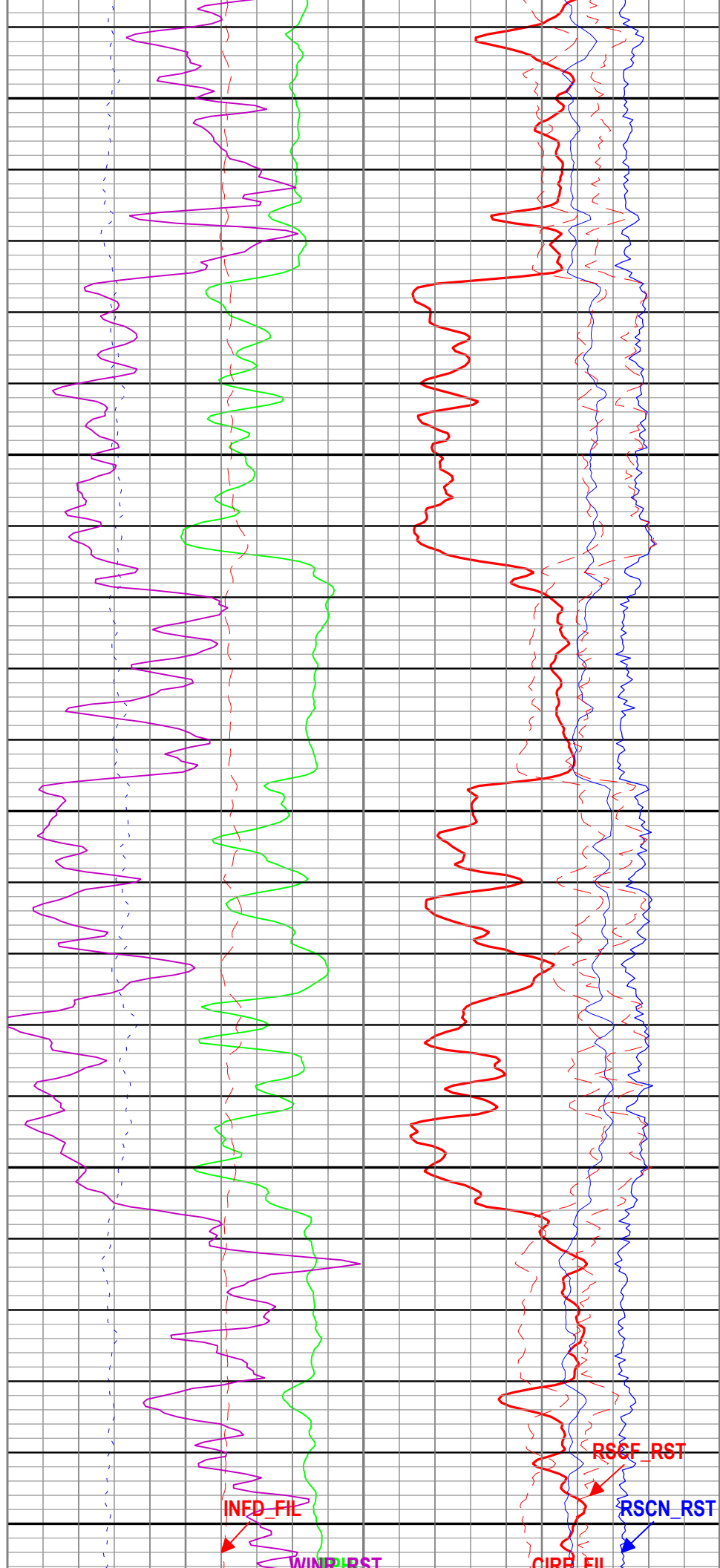
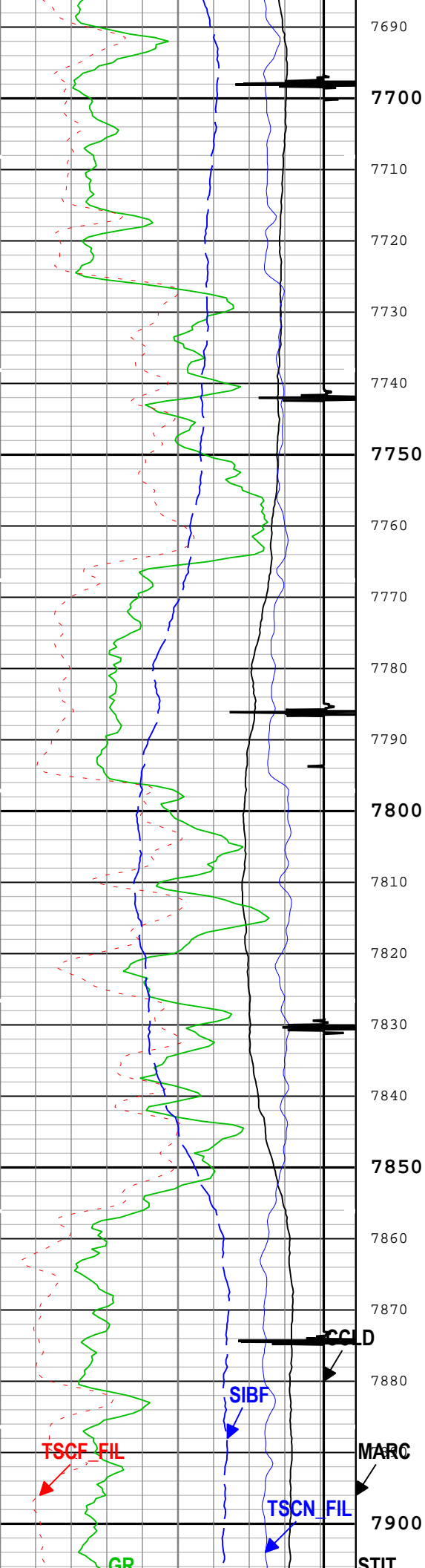


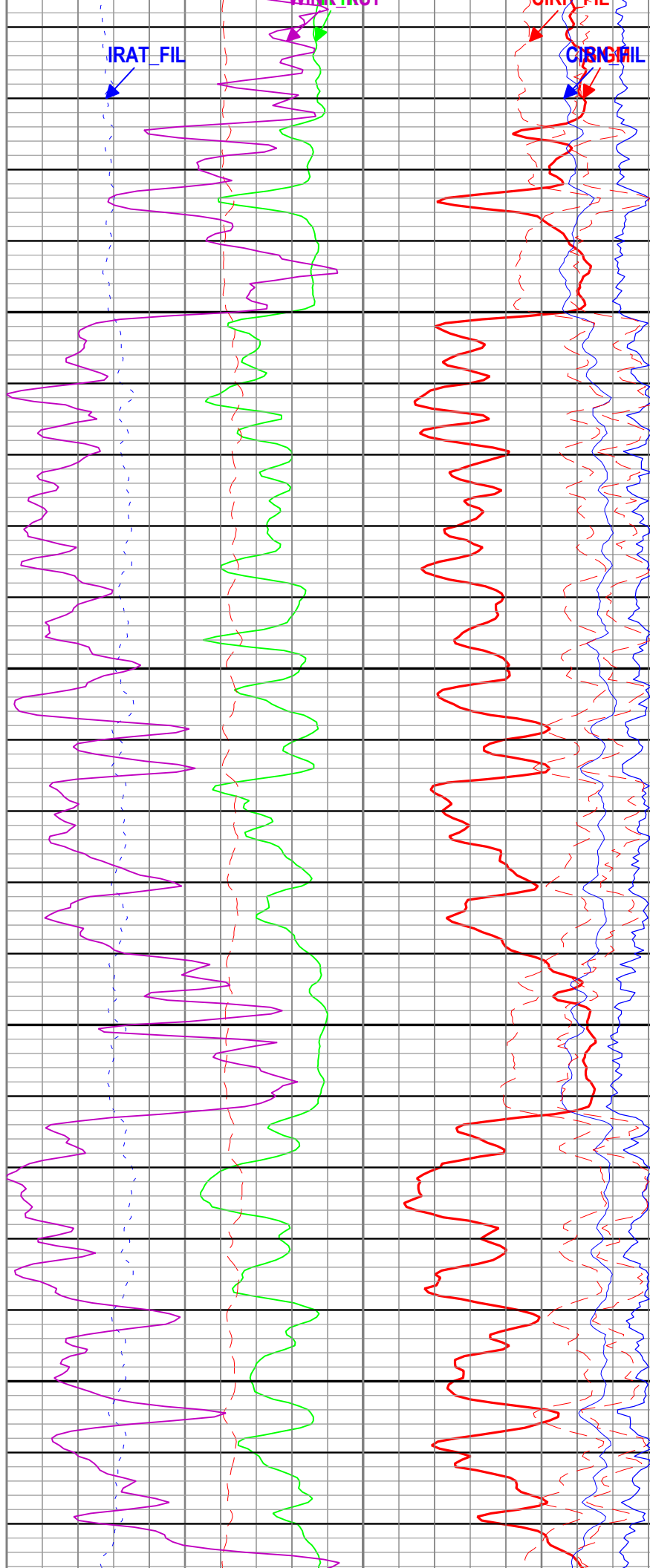
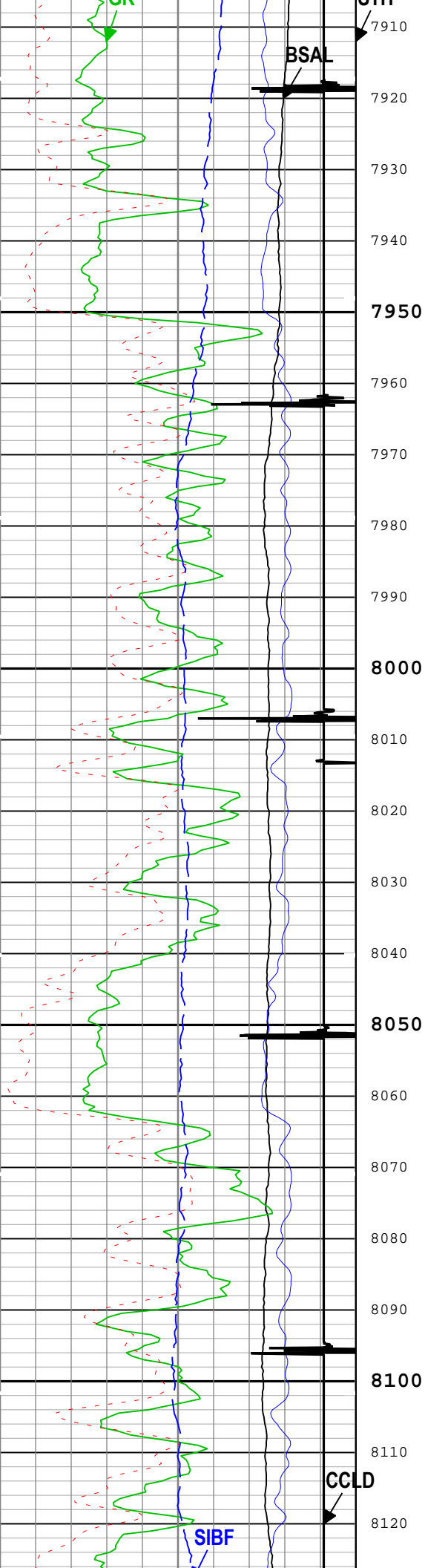


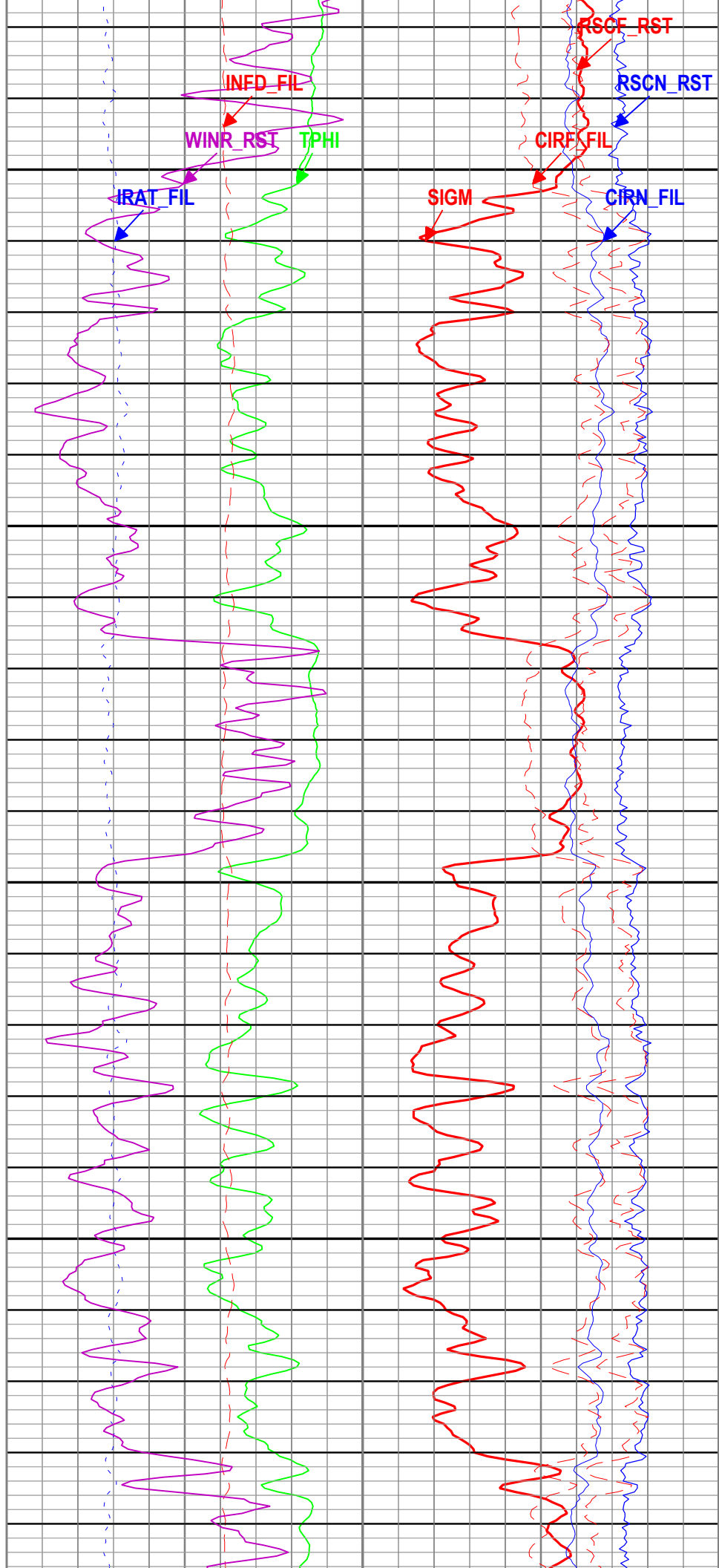
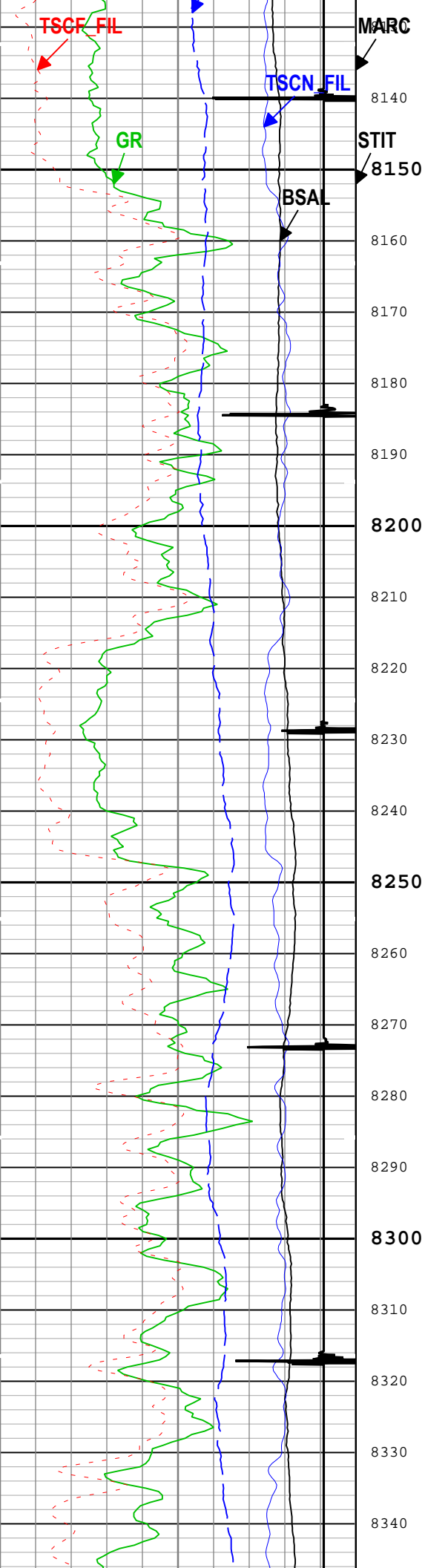


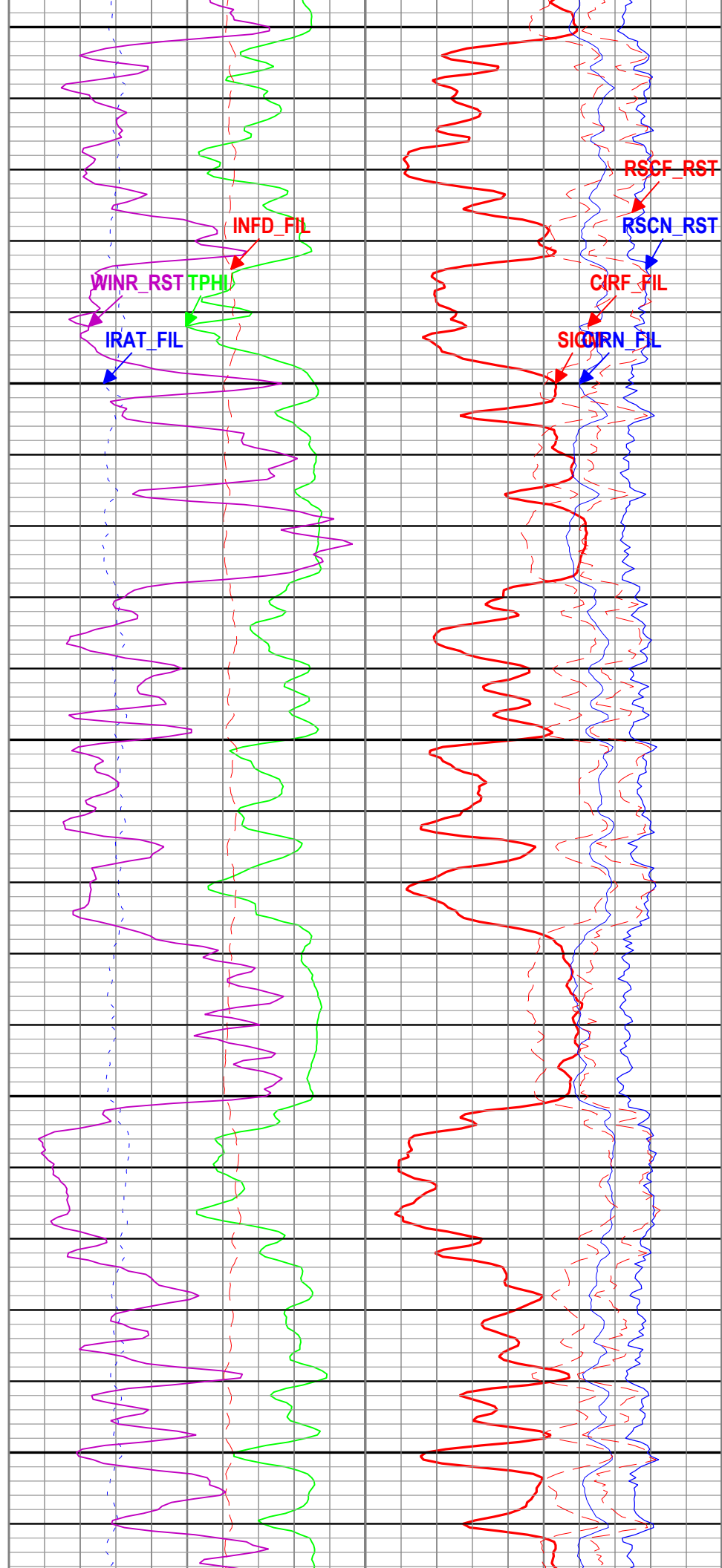
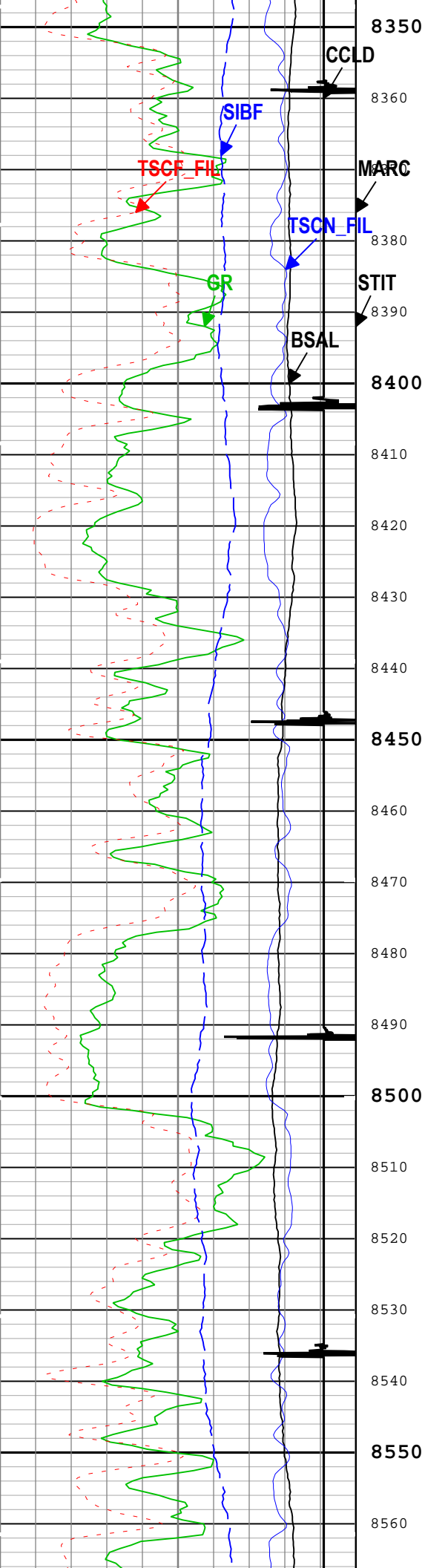


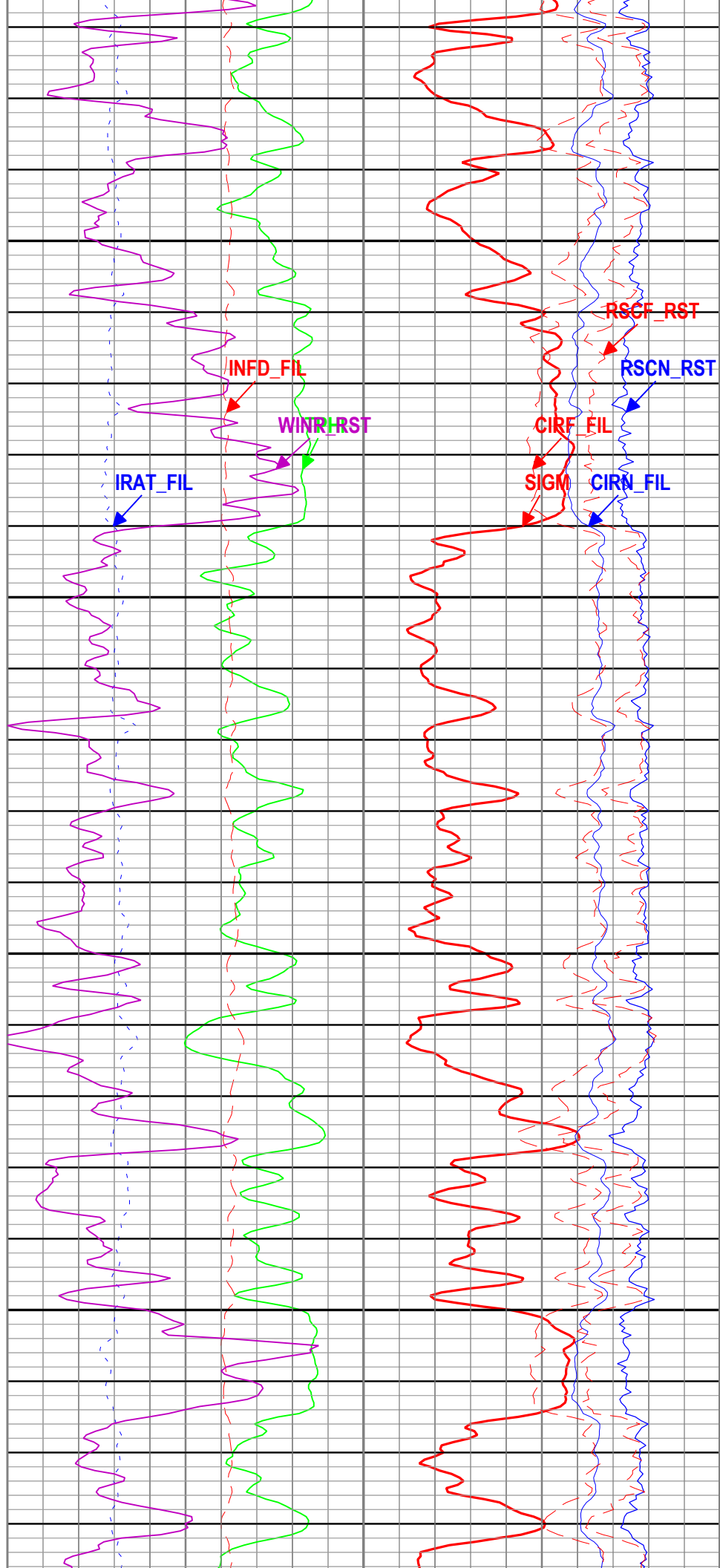
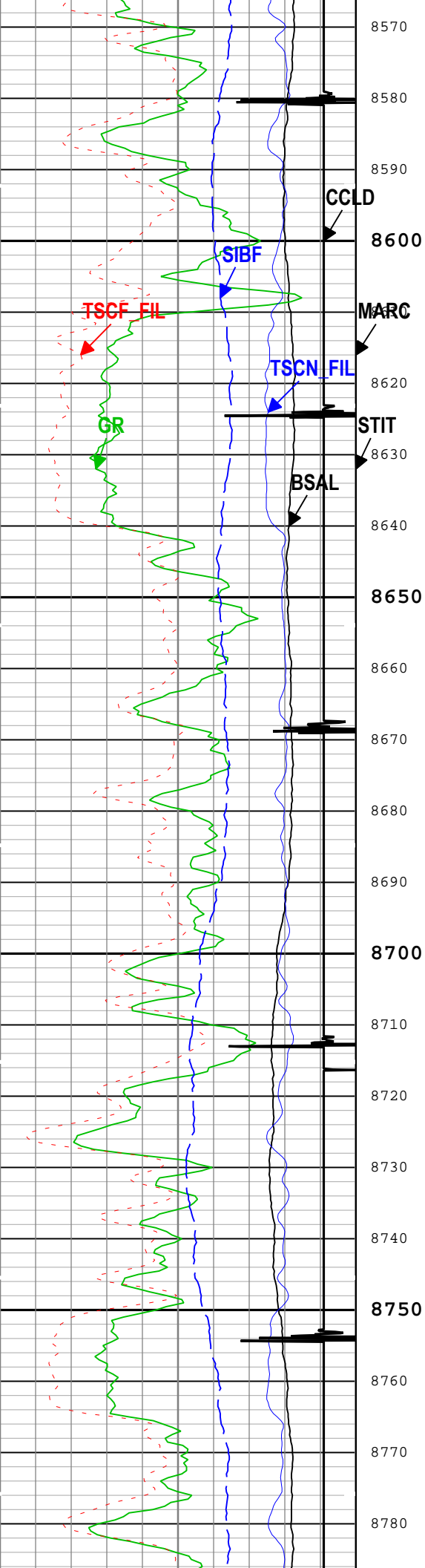


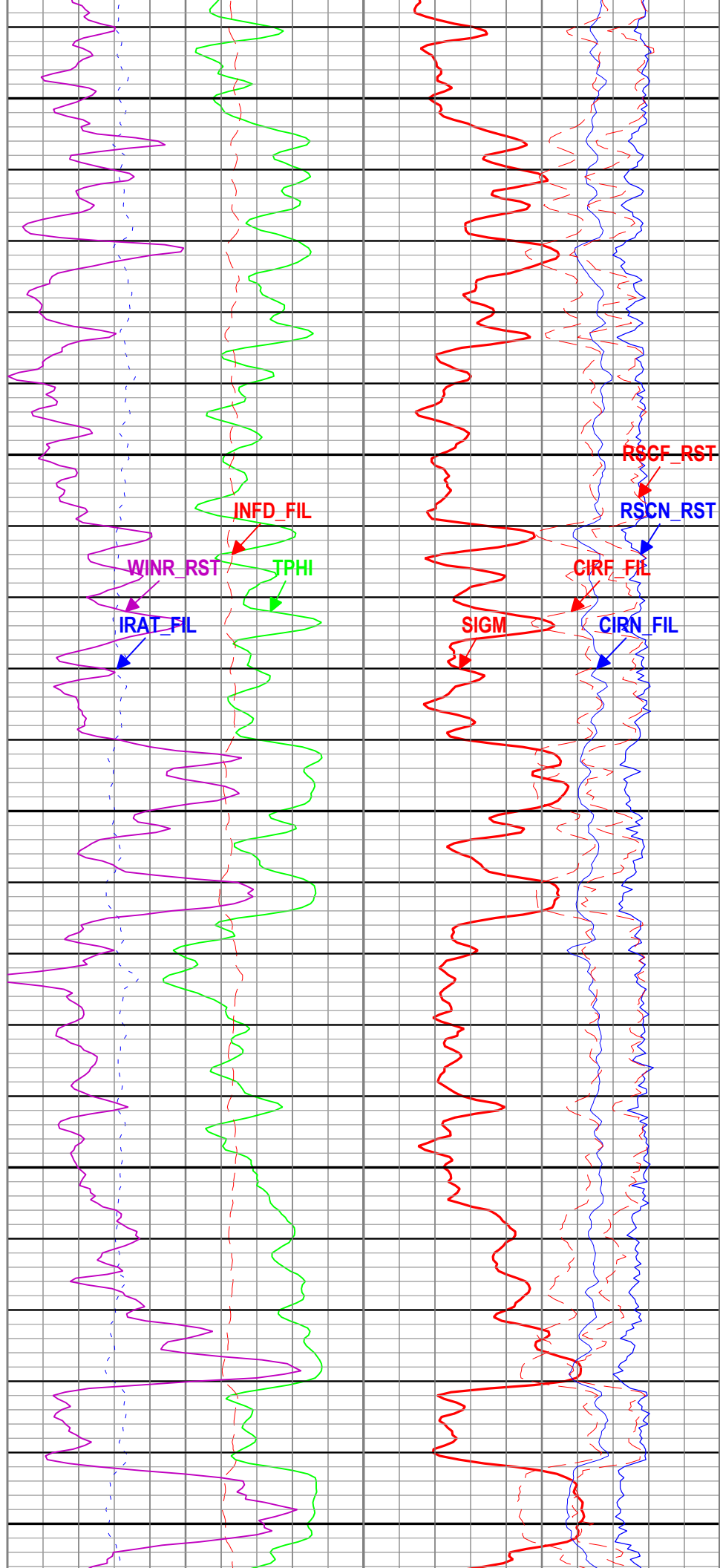
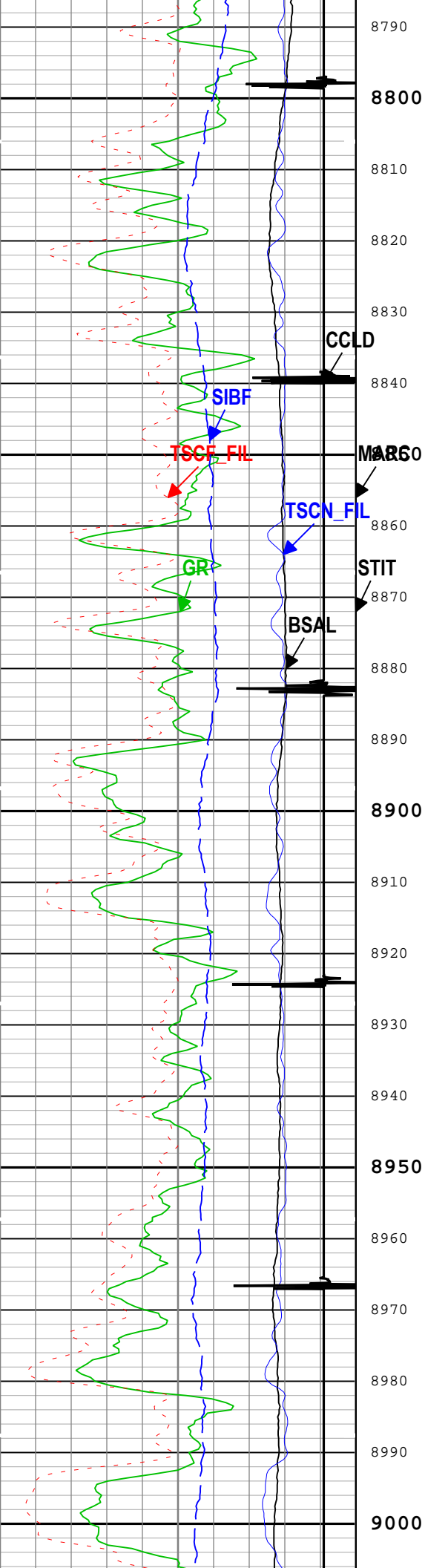


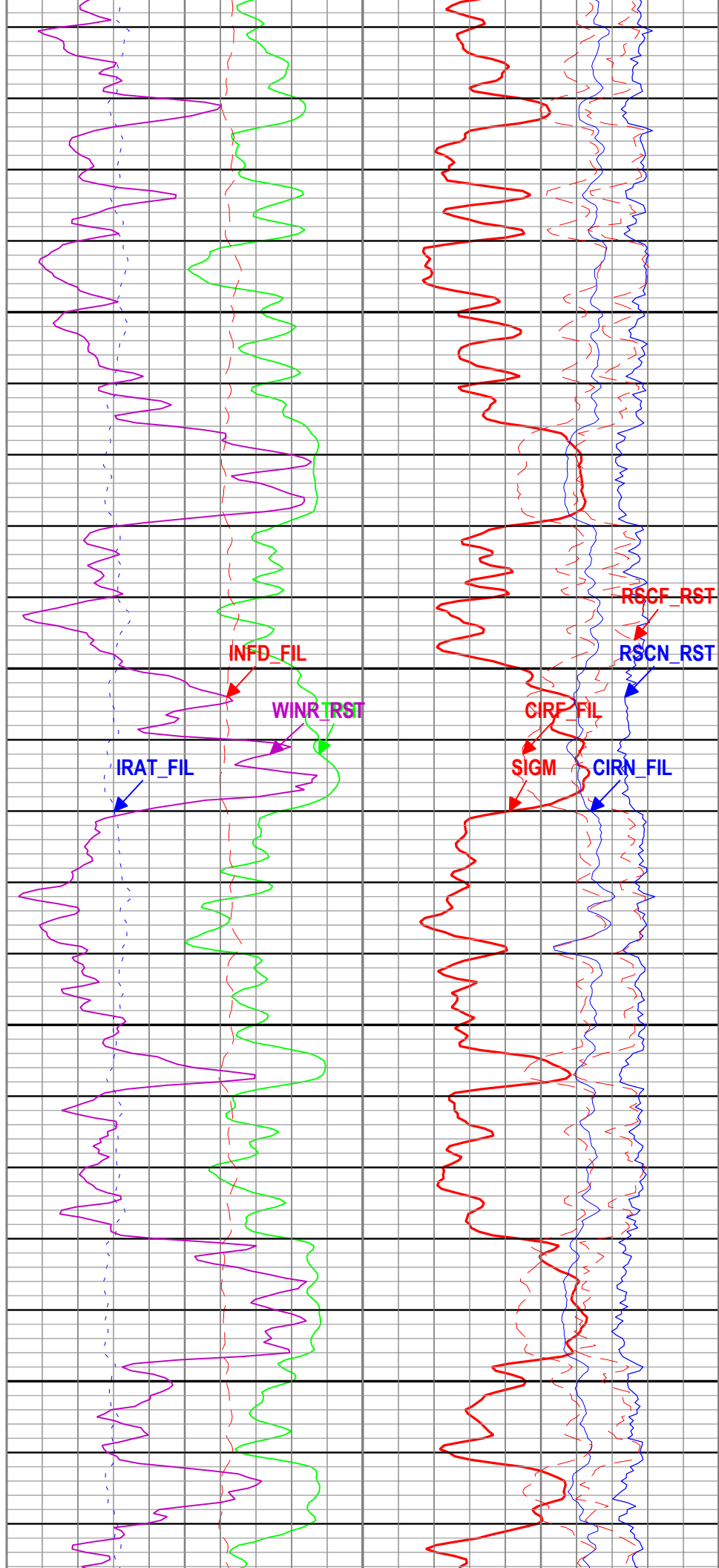
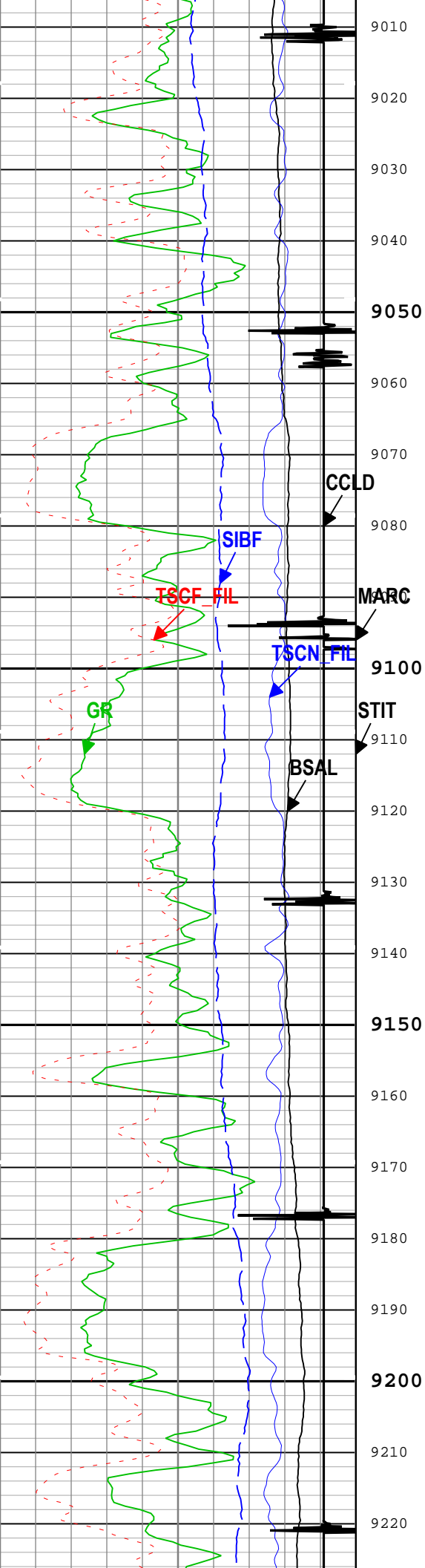


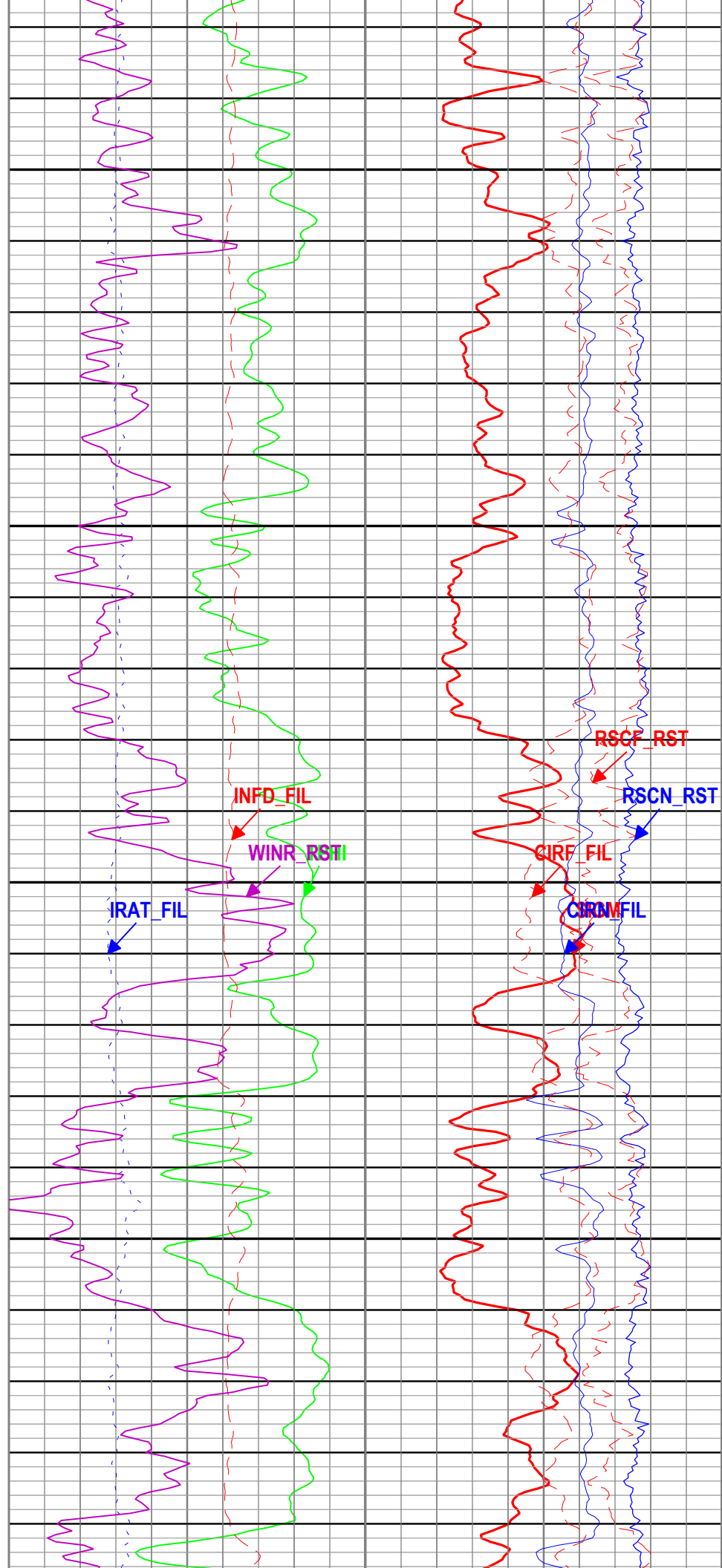
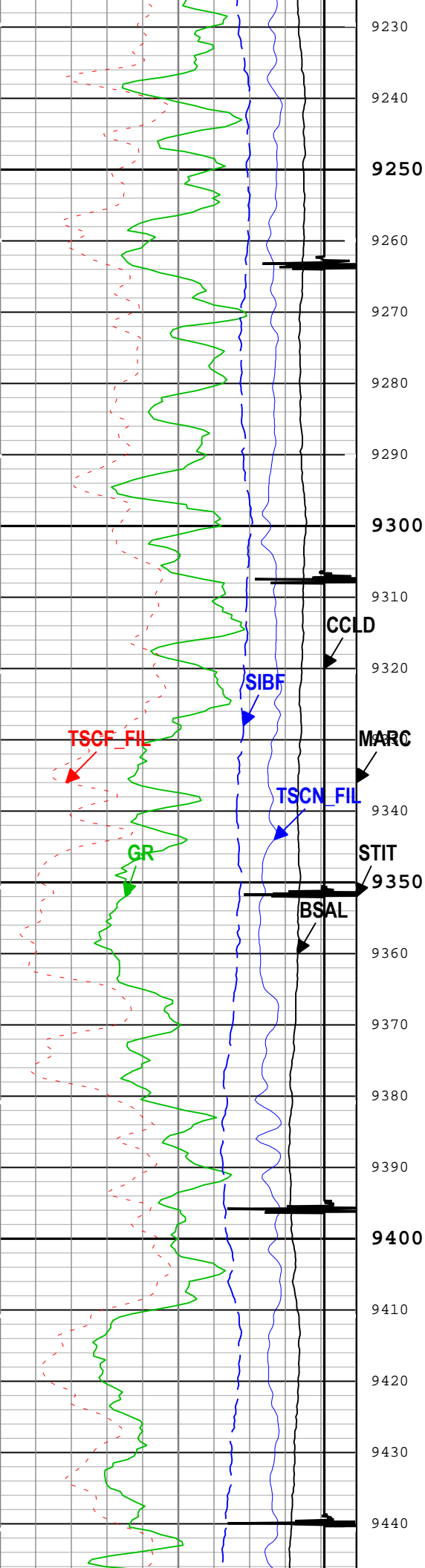


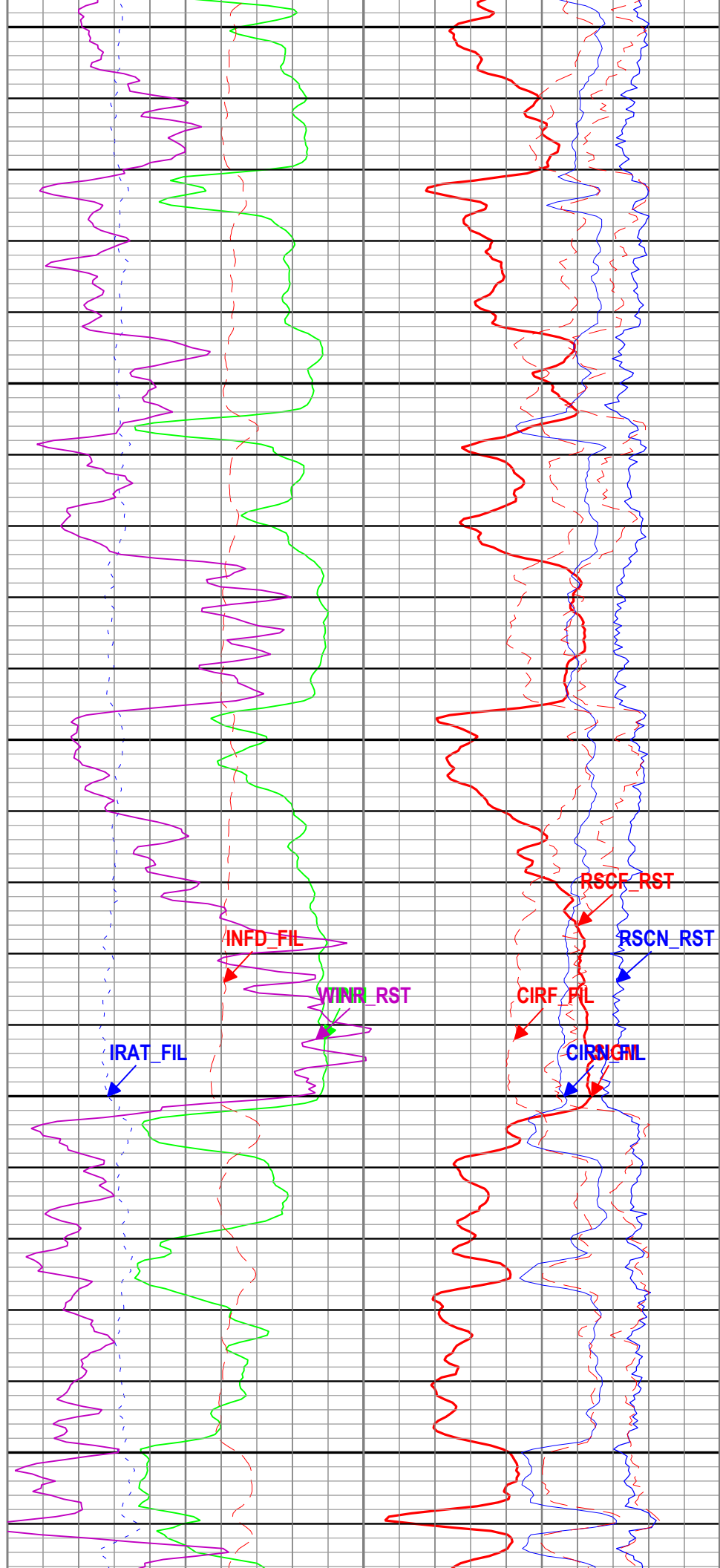
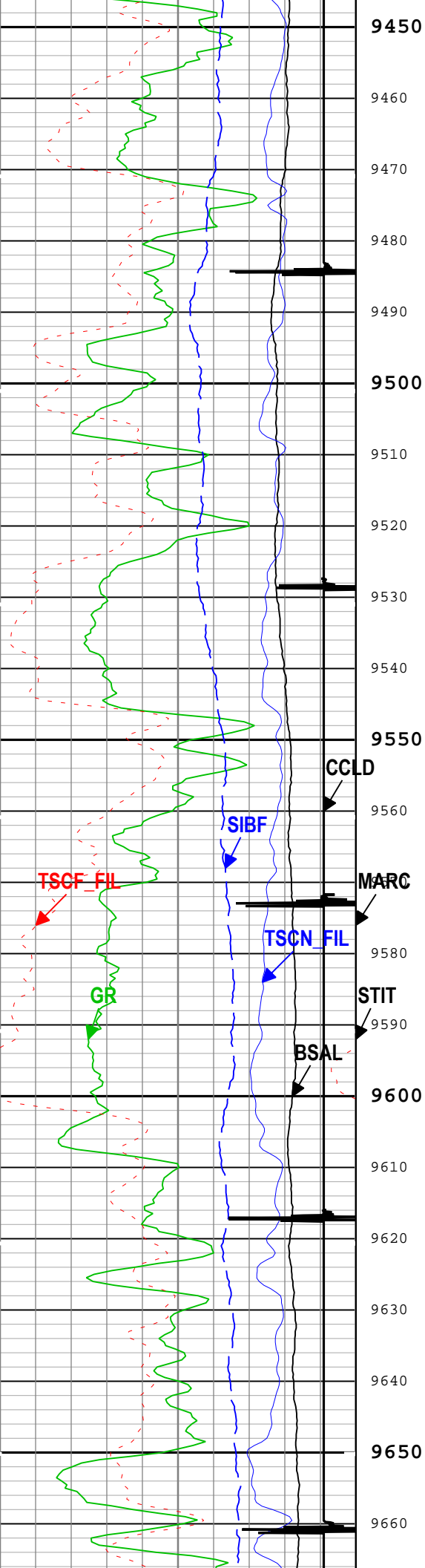


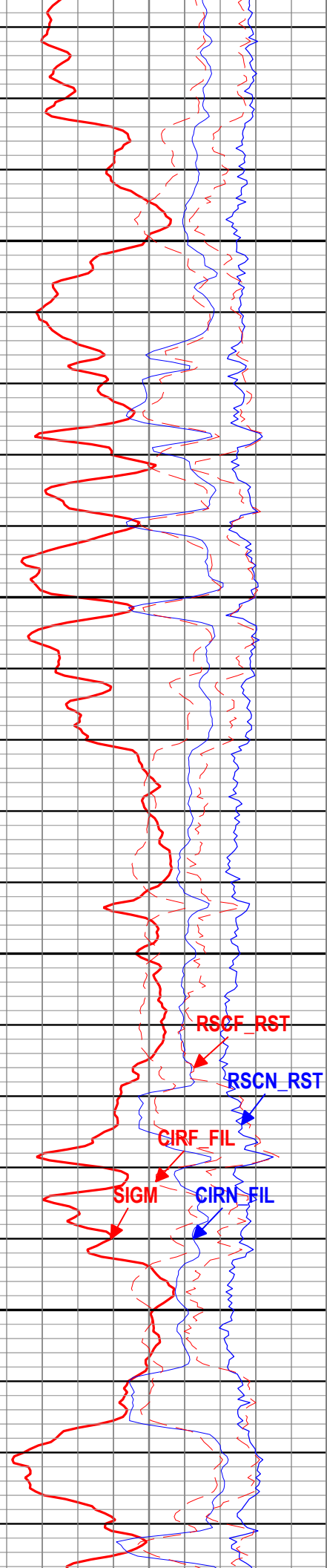
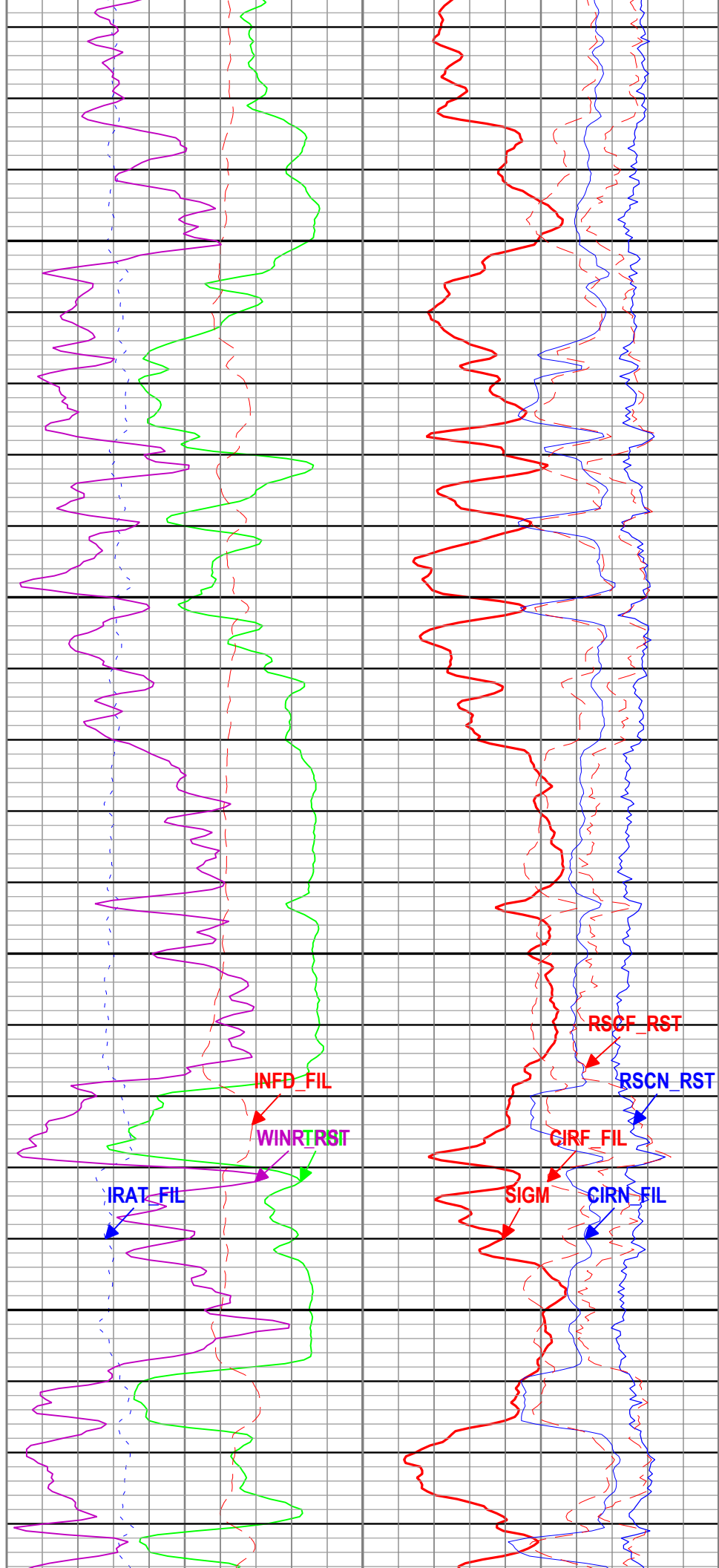
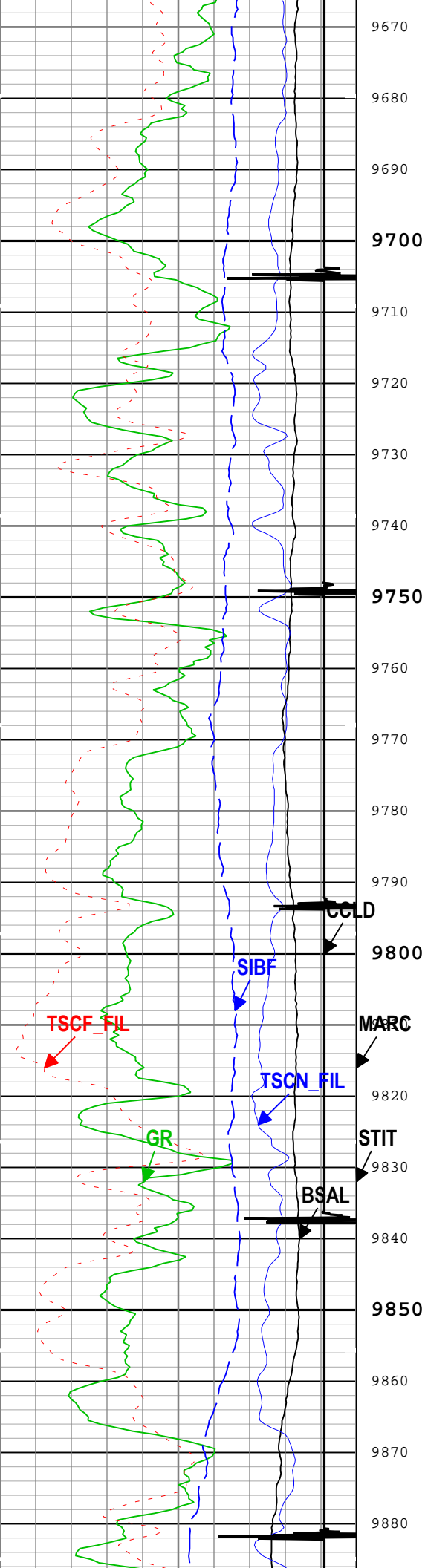


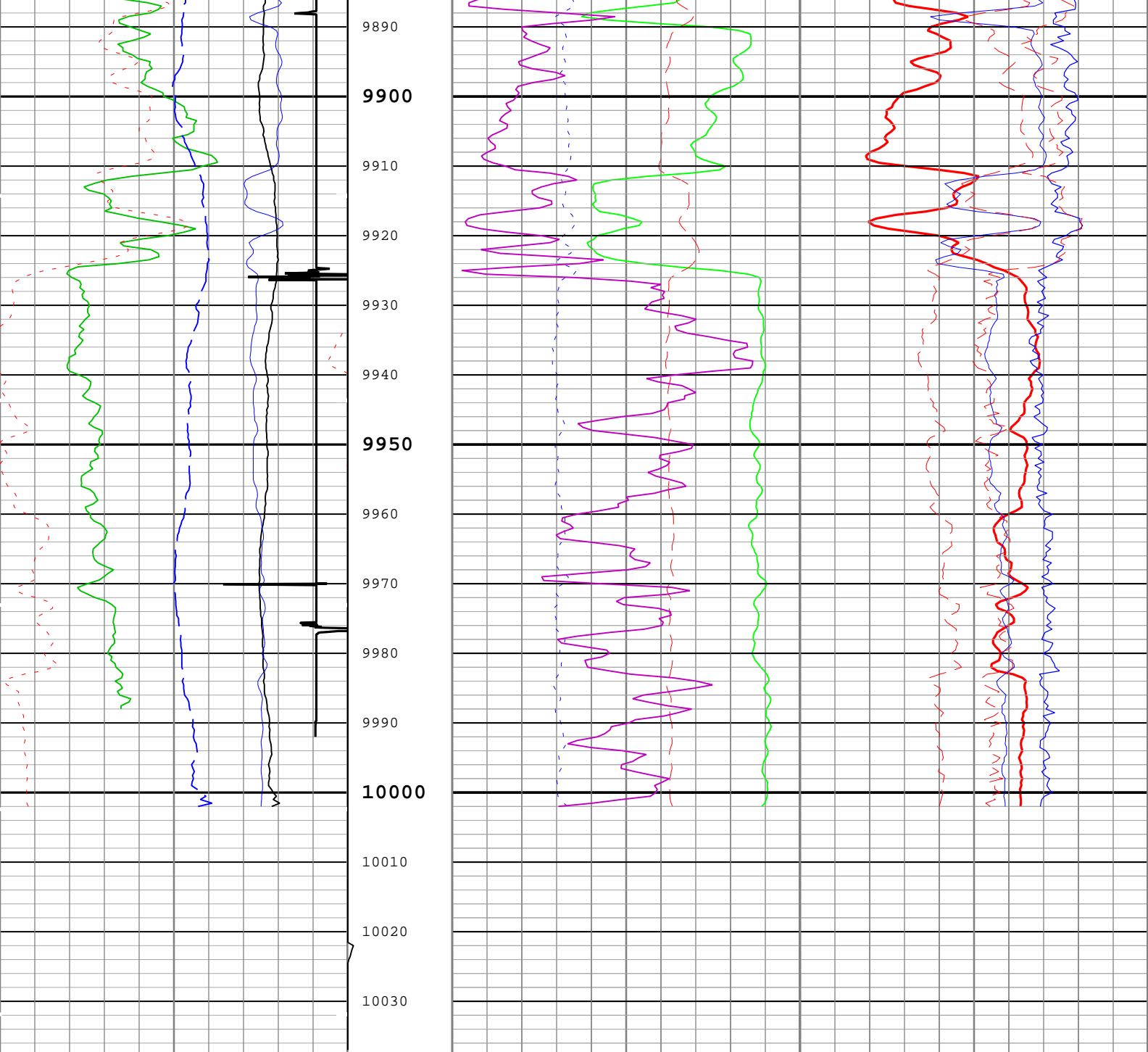












Borehole Salinity (BSAL) RST-C			Stuck Tool Indicator, Total (STIT)	Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C		
450	ppk	-50		60	cu	0
Gamma Ray (GR) PSTP-E			0 ft 50	Weighted Inelastic Ratio (WINR_RST) RST-C		
0	gAPI	150		0		0.4
Total Selected Count Rate Near Detector Filtered (TSCN_FIL) RST-C			Cable Drag From STIA to STIT	Inelastic Ratio Filtered (IRAT_FIL) RST-C	Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C	
30000	1/s	0		0.75	0	2.5
Total Selected Count Rate Far Detector Filtered (TSCF_FIL) RST-C			Tool_Tot. Drag From D3T to STIT	Thermal Decay Porosity (TPHI) RST-C	Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C	
12000	1/s	0		0.6	ft3/ft3	0
Sigma Borehole Fluid (SIBF) RST-C			Minitron Arc Count (MARC) RST-C	Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C		5
100	cu	0		10000	1/s	0
CCL Discriminated Amplitude (CCLD) PSTP-E						Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C
-10	V	1				45
						Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C

—IHV - Integrated Hole Volume every 10.00 (ft3)

TIME_1900 - Elapsed time since midnight, 30 December 1899 every 60.00 (s)

Channel Processing 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	

Parameter	Value	Start (ft)	Stop (ft)
BS	14.75	1900	2397.4
BS	8.75	2397.4	7996
BS	8.5	7996	10037.39

Tool Control Parameters	
-------------------------	--

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

CBL-VDL REPEAT PASS [5:100]

Software Version	
------------------	--

Pass Summary	
1	100%
2	100%
3	100%
4	100%
5	100%
6	100%
7	100%
8	100%
9	100%
10	100%
11	100%
12	100%
13	100%
14	100%
15	100%
16	100%
17	100%
18	100%
19	100%
20	100%
21	100%
22	100%
23	100%
24	100%
25	100%
26	100%
27	100%
28	100%
29	100%
30	100%
31	100%
32	100%
33	100%
34	100%
35	100%
36	100%
37	100%
38	100%
39	100%
40	100%
41	100%
42	100%
43	100%
44	100%
45	100%
46	100%
47	100%
48	100%
49	100%
50	100%
51	100%
52	100%
53	100%
54	100%
55	100%
56	100%
57	100%
58	100%
59	100%
60	100%
61	100%
62	100%
63	100%
64	100%
65	100%
66	100%
67	100%
68	100%
69	100%
70	100%
71	100%
72	100%
73	100%
74	100%
75	100%
76	100%
77	100%
78	100%
79	100%
80	100%
81	100%
82	100%
83	100%
84	100%
85	100%
86	100%
87	100%
88	100%
89	100%
90	100%
91	100%
92	100%
93	100%
94	100%
95	100%
96	100%
97	100%
98	100%
99	100%
100	100%

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
----------	----------------	-----------	-----	--------	-------	------	----------	-------------	-----------------------

All depths are referenced to toolstring zero

Log

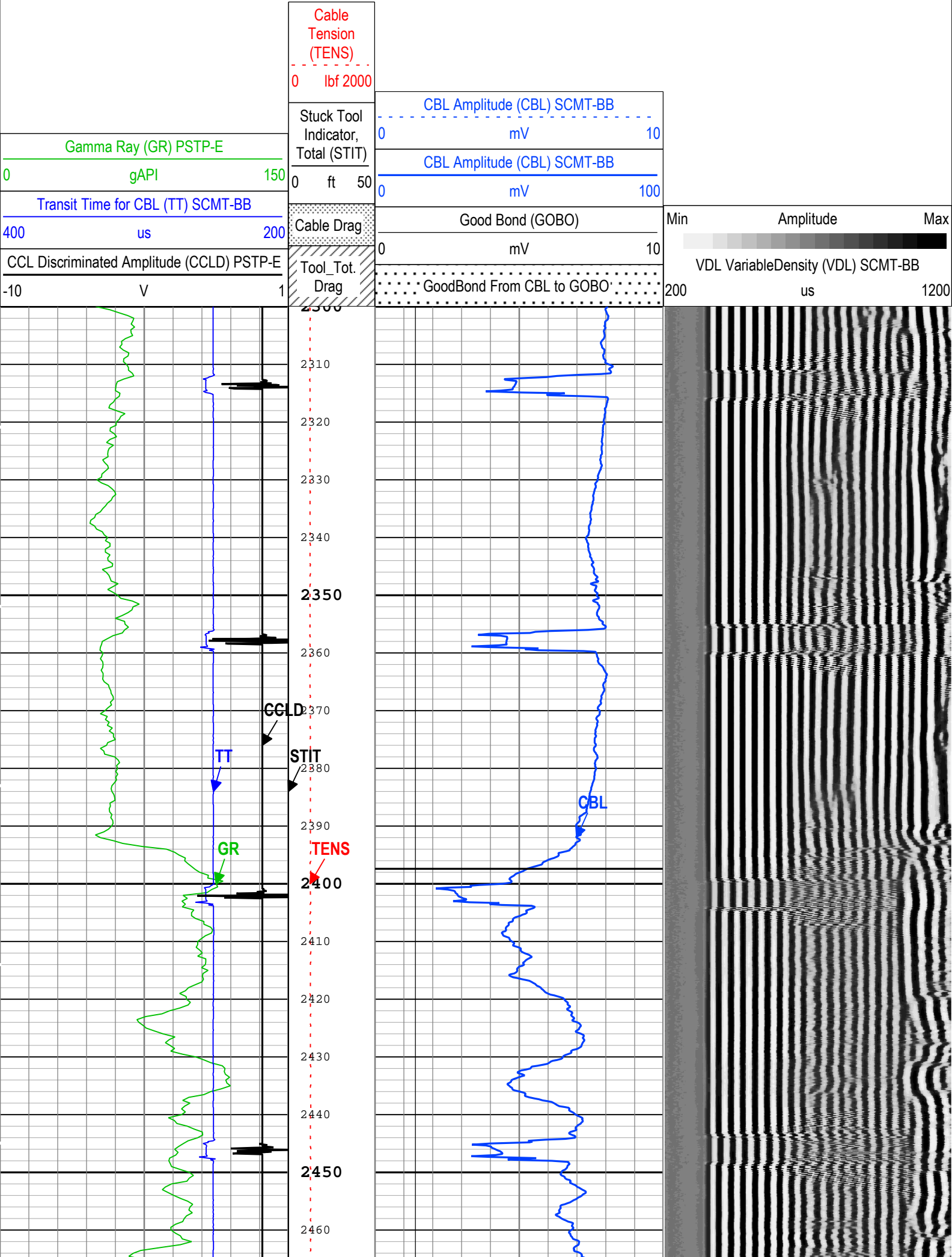
Company:CAERUS OIL & GAS LLC Well:NPR 15D-11

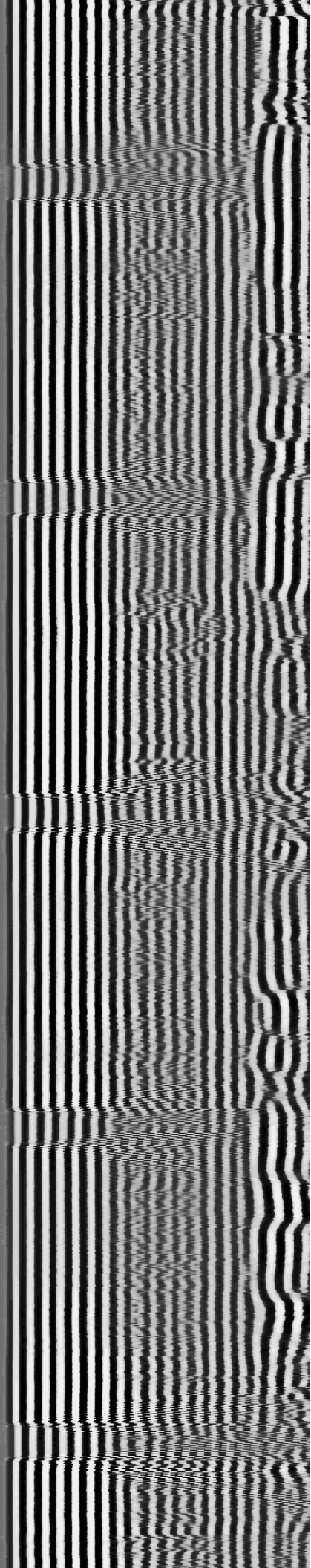
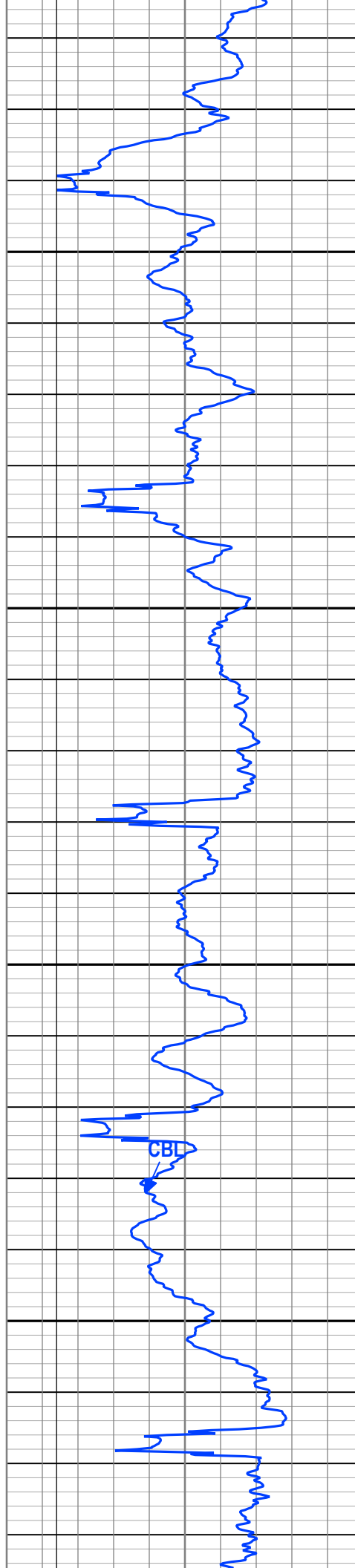
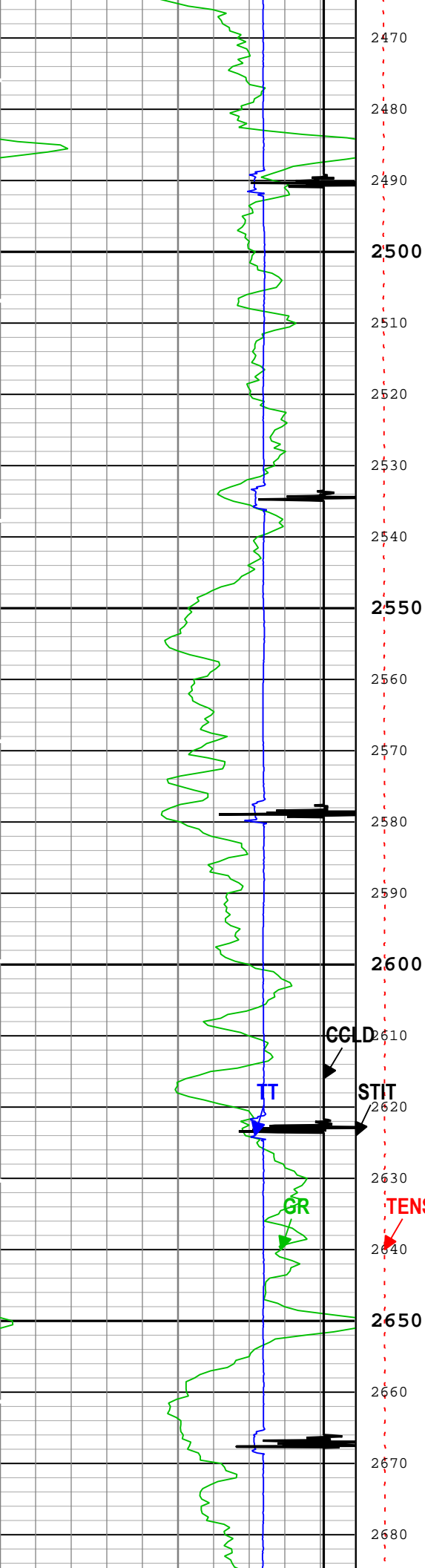
ONE: Log[3]:Up:S003

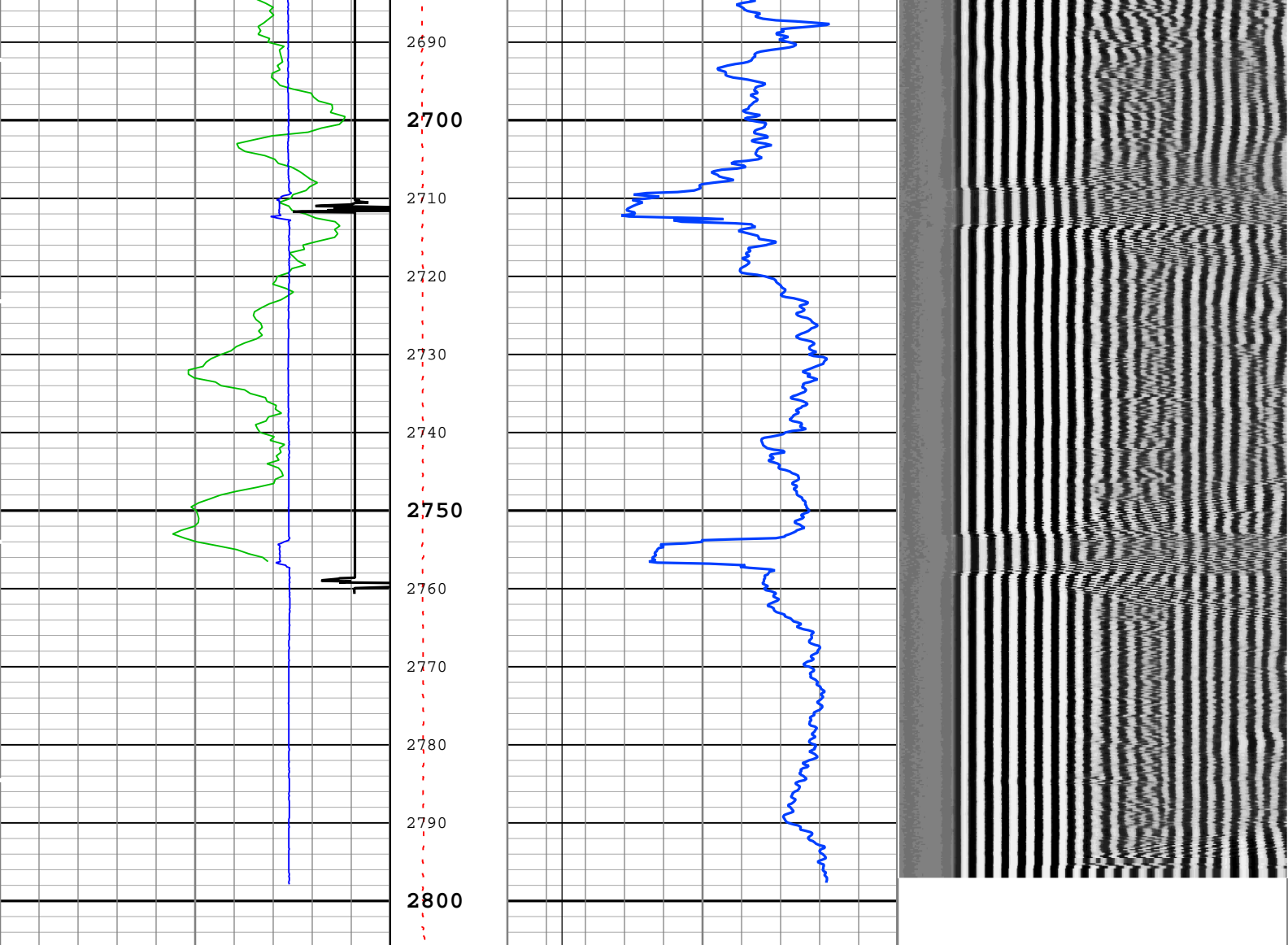
- BIEP - Bond Index Event Pips SCMT-BB

TIME 1900 - Time Marked every 60.00 (s)

TIME_1500 - Time Marked every 00.00 (s)







Gamma Ray (GR) PSTP-E	Cable Tension (TENS)	CBL Amplitude (CBL) SCMT-BB	Min	Amplitude	Max
0 gAPI 150	0 lbf 2000	0 mV 10			
Transit Time for CBL (TT) SCMT-BB		CBL Amplitude (CBL) SCMT-BB		VDL VariableDensity (VDL) SCMT-BB	
400 us 200		0 mV 100	200	us	1200

CCL Discriminated Amplitude (CCLD) PSTP-E	Stuck Tool Indicator, Total (STIT)	Good Bond (GOBO)	
-10 V 1	0 ft 50	0 mV 10	
	Cable Drag	GoodBond From CBL to GOBO	
	Tool_Tot. Drag		

TIME_1900 - Time Marked every 60.00 (s)

■ BIEP - Bond Index Event Pips SCMT-BB

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: 15-Dec-2018 21:36:20

Channel Processing Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	267.6	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-BB	239.69	us
CBLG	CBL Gate Width	SCMT-BB	37	us

CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-BB	80	mV
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.25	in
DFD	Drilling Fluid Density	Borehole	8.4	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	6428	ft
FCF	CBL Fluid Compensation Factor	SCMT-BB	1	
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

Depth Zone Parameters			
Parameter	Value	Start (ft)	Stop (ft)
MCI	14.81	2300	2397.4
MCI	1.25	2397.4	2806.08
All depth are actual.			

Tool Control Parameters	
-------------------------	--

ONE: Parameters				
Parameter	Description	Tool	Value	Unit
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	12 dB	

ONE
RST SIGMA 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[3]:Up	Up	2296.13 ft	2806.07 ft	15-Dec-2018 8:37:41 PM	15-Dec-2018 8:57:31 PM	ON	6.25 ft	No
All depths are referenced to toolstring zero									

Log	Company:CAERUS OIL & GAS LLC Well:NPR 15D-11 ONE: Log[3]: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: 15-Dec-2018 21:36:22

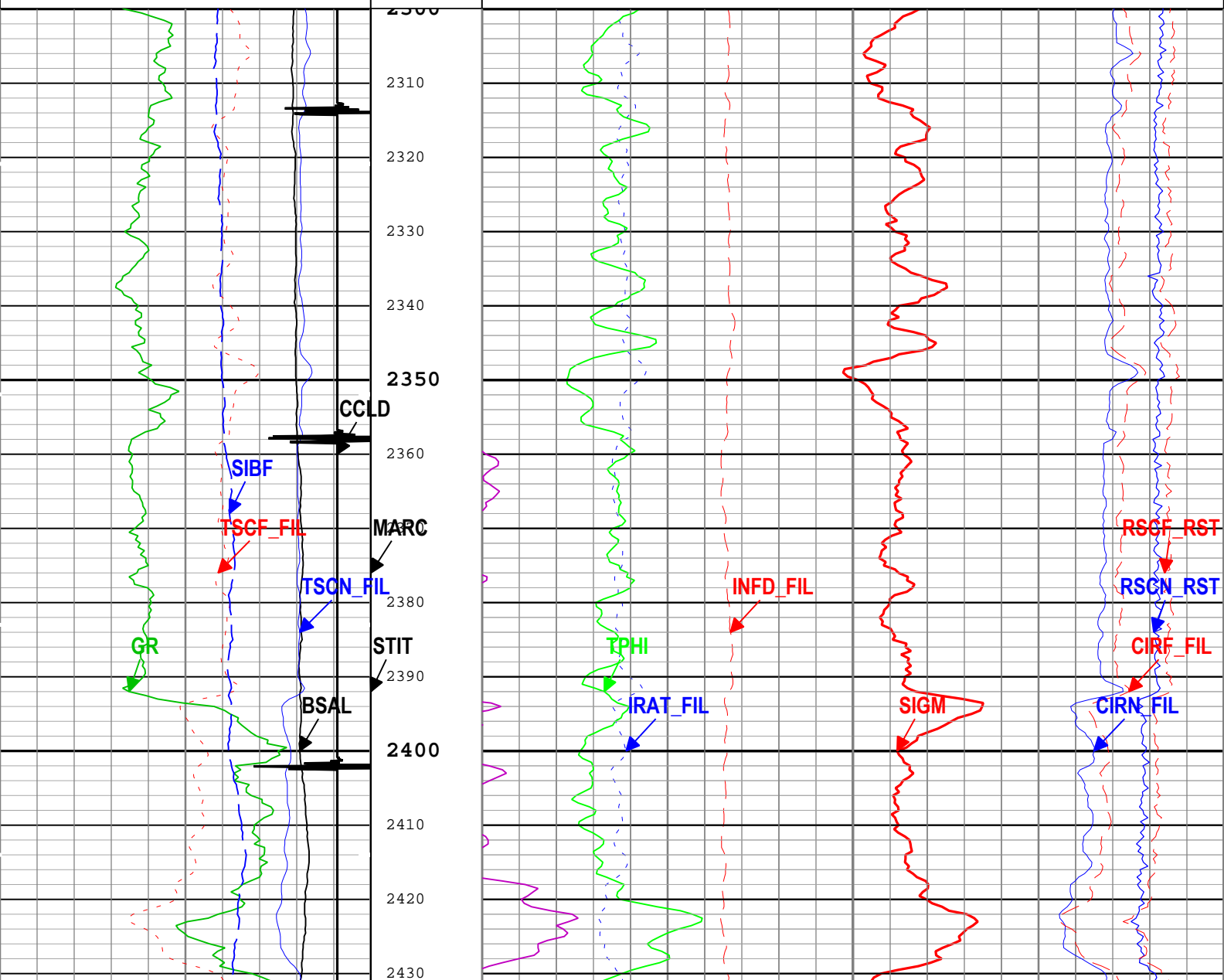
<div> <div>TIME_1900 - Elapsed time since midnight, 30 December 1899 every 60.00 (s)</div> <div>IHV - Integrated Hole Volume every 10.00 (ft3)</div> <div>TIME 1900 - Time Marked every 60.00 (s)</div> </div>
--

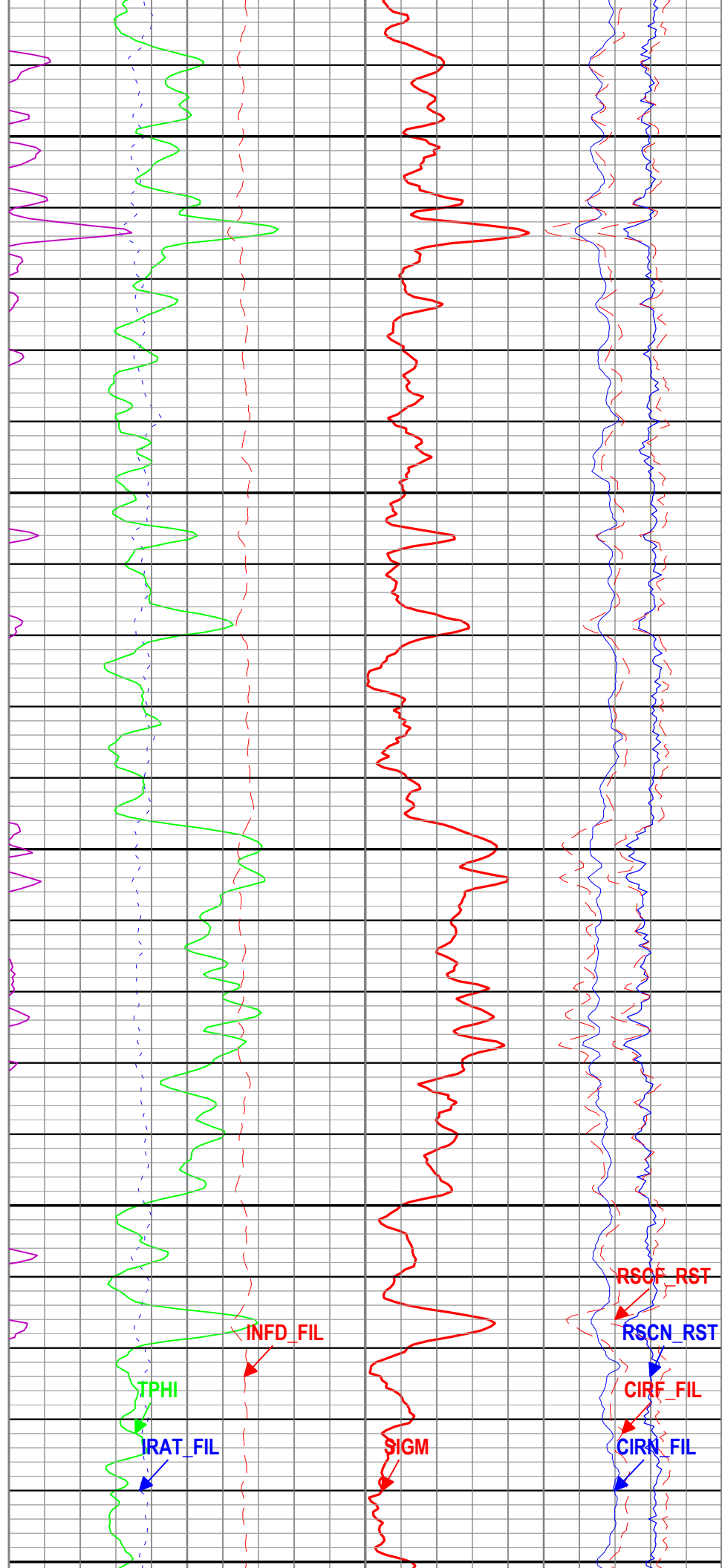
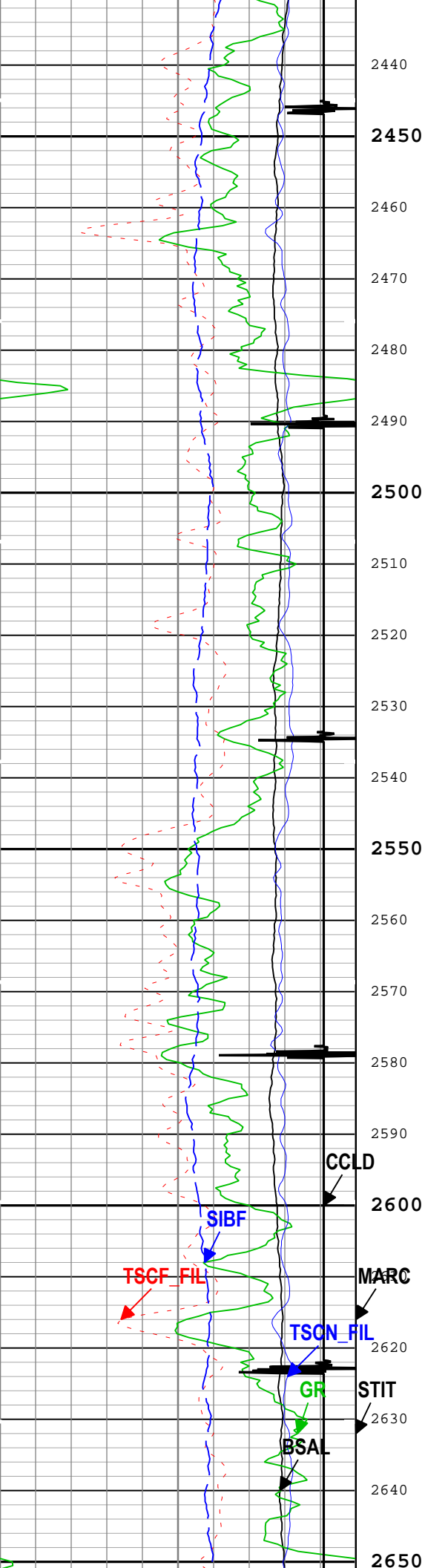
—|IHV - Integrated Hole Volume every 100.00 (ft3)

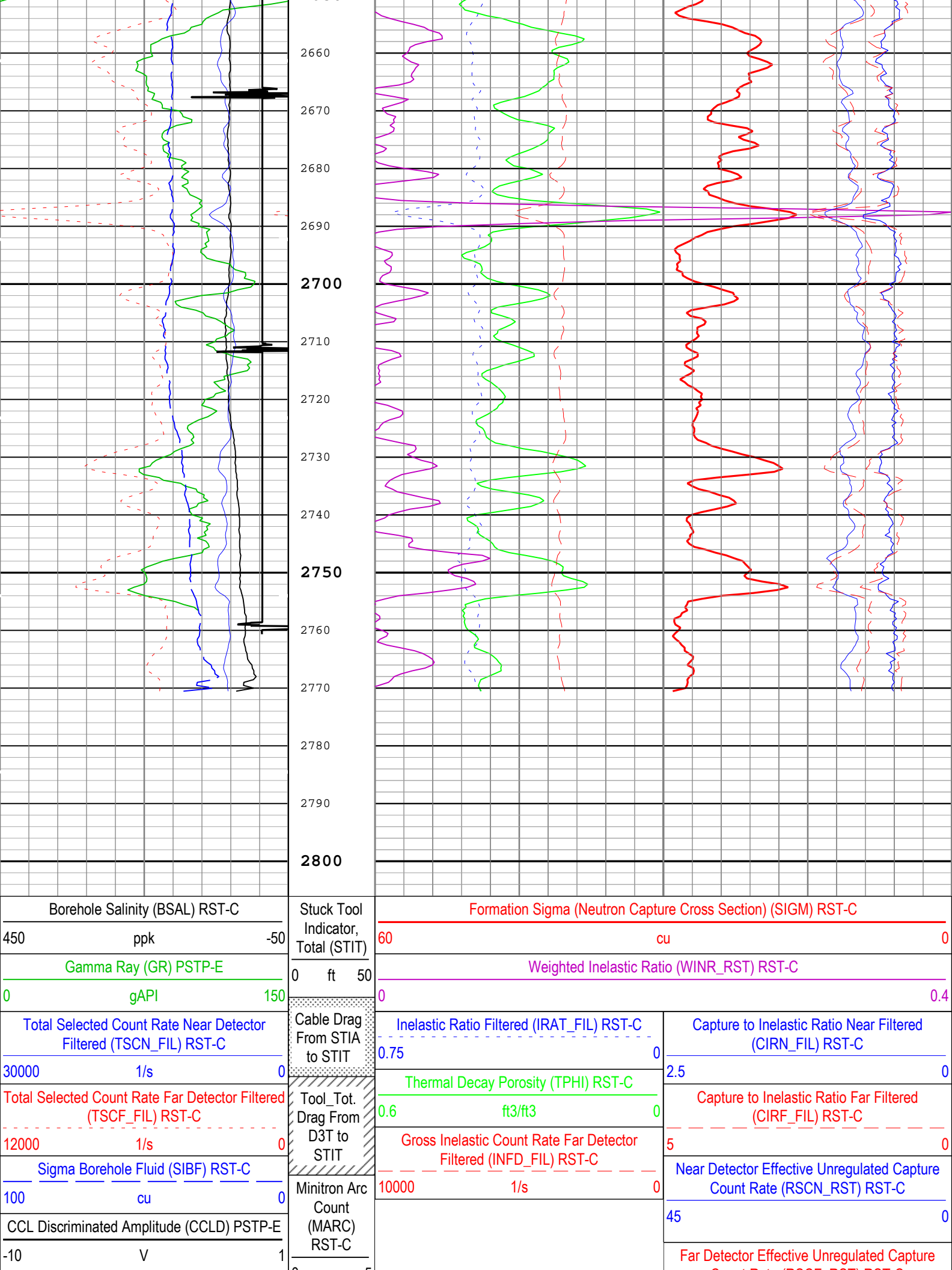
—|ICV - Integrated Cement Volume every 10.00 (ft3)

—|ICV - Integrated Cement Volume every 100.00 (ft3)

			Stuck Tool Indicator, Total (STIT)	Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C		
Borehole Salinity (BSAL) RST-C				2.50		
450	ppk	-50	0 ft 50	Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C		
Gamma Ray (GR) PSTP-E			Cable Drag From STIA to STIT	Inelastic Ratio Filtered (IRAT_FIL) RST-C		
0	gAPI	150		0.750		
Total Selected Count Rate Near Detector Filtered (TSCN_FIL) RST-C			Tool_Tot. Drag From D3T to STIT	Thermal Decay Porosity (TPHI) RST-C		
30000	1/s	0		0.6 ft3/ft30		
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/s0		
Sigma Borehole Fluid (SIBF) RST-C				Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C		
100	cu	0		60cu0		
CCL Discriminated Amplitude (CCLD) PSTP-E				Weighted Inelastic Ratio (WINR_RST) RST-C		
-10	V	1	0 5	00.4		







Borehole Salinity (BSAL) RST-C		
450	ppk	-50
Gamma Ray (GR) PSTP-E		
0	gAPI	150
Total Selected Count Rate Near Detector Filtered (TSCN_FIL) RST-C		
30000	1/s	0
Total Selected Count Rate Far Detector Filtered (TSCF_FIL) RST-C		
12000	1/s	0
Sigma Borehole Fluid (SIBF) RST-C		
100	cu	0
CCL Discriminated Amplitude (CCLD) PSTP-E		
-10	V	1

Stuck Tool Indicator, Total (STIT)		
0	ft	50
Cable Drag From STIA to STIT		
Tool Tot. Drag From D3T to STIT		
Minitron Arc Count (MARC) RST-C		
0	1/s	5000

Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C	
60	cu
0	
Weighted Inelastic Ratio (WINR_RST) RST-C	
0	0.4
Inelastic Ratio Filtered (IRAT_FIL) RST-C	
0.75	0
Thermal Decay Porosity (TPHI) RST-C	
0.6	ft3/ft3
0	
Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C	
10000	1/s
0	
Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C	
2.5	0
Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C	
5	0
Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C	
45	0
Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C	
100	0

— ICV - Integrated Cement Volume every 100.00 (ft3)

ICV - Integrated Cement Volume every 10.00 (ft3)

—IHV - Integrated Hole Volume every 100.00 (ft3)

TIME_1900 - Time Marked every 60.00 (s)

—IHV - Integrated Hole Volume every 10.00 (ft3)

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: 15-Dec-2018 21:36:22
-------------------------------	----------------------------------	------------------------------	----------------	----------------------------	-------------------------------------

Channel Processing Parameters

ONE: Parameters

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

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	14.75	2300	2397.4
BS	8.75	2397.4	2806.07

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	12 dB	
RST_DLM	Depth Log Mode	RST-C	Sigma	

Company:	CAERUS OIL & GAS LLC	
Well:	NPR 15D-11	
Field:	NPR	
County:	GARFIELD	
State:	COLORADO	

CEMENT BOND LOG
RST SIGMA LOG

