

Company: Extraction Oil & Gas LLC

Well: Troutd 5

Field: Wattenberg

County: Weld State: Colorado

Slim Cement Mapping Tool

Variable Density Log

Variable Density Log				
Location:		SHL: SESE 537' FSL & 1063' FEL Section 32, Township 2N, Range 67W Lat: 40.089066, Long: -104.909115		
Permanent Datum:		Ground Level	Elev.:	K.B. 5099.00 ft
Log Measured From:		Kelly Bushing	20.00 ft	G.L. 5079.00 ft
Drilling Measured From:		Kelly Bushing		D.F. 5098.00 ft
API Serial No.	Section:	Township:	Range:	
05-123-41434-00	32	2N	67W	

Logging Date	17-Sep-2015			
Run Number	Run 1			
Depth Driller	17492.00 ft			
Schlumberger Depth	17492.00 ft			
Bottom Log Interval	7500.00 ft			
Top Log Interval	50.00 ft			
Casing Fluid Type	Diesel			
Salinity				
Density	8.4 lbm/gal			
Fluid Level	8.00 ft			
BIT/CASING/TUBING STRING				
Bit Size	7.88 in			
From	0.00 ft			
To	17492.00 ft			
Casing/Tubing Size	5.5 in			
Weight	20 lbm/ft			
Grade	P110			
From	0.00 ft			
To	17492.00 ft			
Max Recorded Temperatures				
Logger on Bottom	Time			
Unit Number	Location:			
Recorded By				
Witnessed By				

Disclaimer

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

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Well Sketch

Driller Depth
0.00 ft





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	7.875					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	17492					
Bottom Logger (ft)	17492					
Casing						
Size (in)	5.5					
Weight (lbm/ft)	20					
Inner Diameter (in)	4.778					
Grade	P110					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	17492					
Bottom Logger (ft)	17492					

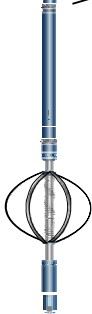
Borehole Fluids

Parameter(unit)	Run 1					
Fluid Type	Oil					
Fluid Name	Diesel					
Max Recorded Temperatures (degF)	223					
Source of Sample	Active Tank					
Salinity (ppm)	0					
Density (lbm/gal)	8.4					
Funnel Viscosity (s)						
Fluid Loss (cm3)						
PH						
Date/Time Circulation Stopped	NaN					
Date Logger on Bottom	17-Sep-2015					
Time Logger on Bottom	18:20:00					
Source RMF						
RMC	Pressed					
RM @ Meas Temp (ohm.m@degF)	N/A					
RME @ Meas Temp	N/A					

RMC @ Meas Temp (ohm.m@degF)	N/A					
RMC @ Meas Temp (ohm.m@degF)	N/A					
RM @ BHT (ohm.m@degF)	N/A					
RMF @ BHT (ohm.m@degF)	N/A					
RMC @ BHT (ohm.m@degF)	N/A					
Electricity Stability (V)						
Oil/Water						
Total Solid (%)						
High Gravity Solids (%)						

Remarks and Equipment Summary

Run 1: Toolstring				Run 1: Remarks	
Equip name	Length		MP name	Offset	This is the first run in hole All Schlumberger depth control procedures followed IDW used as primary depth reference Z Chart use as secondary depth reference Tool string run as per tool sketch
LEH-QT	38.83				
LEH-QT					
AH-63	35.91				
AH-79	35.6				
HBMS-B:2	34.76				
949					
HUDH-A					
PSC-A					
HSTC-A					
HBMC-A:37					
116					
HTPS-A:29					
49					
			GR	29.77	
			CCL	27.37	
			PSTC	25.98	
			HSTC To ol String Bottom	0.00	
			CQG Pre ssure	24.56	
			Tempera ture	24.56	
SCMT-CB:	23.64				
8212					
SECH-CA:8					
291					
SCMC-CA:					
8293					
CMIR-AG					
SCMS-CB:8					
212					
SCMX-CA:8					
175					
AH-278					
TTG-C					
			DT	14.55	
			CBL5	13.05	
			DTSC	13.05	
			CBL3	12.05	
			MAP	11.55	
			AUX	10.55	
			SCMT	6.23	



BNS-S

0.22

TOOL_ZERO

Lengths are in ft

Maximum Outer Diameter = 3.375 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL_ZERO

Depth Summary

Run 1

Depth Measuring Device

Type	IDW-B
Serial Number	
Calibration Date	
Calibrator Serial Number	
Calibration Cable Type	
Wheel Correction 1	0
Wheel Correction 2	0

Tension Device

Type	CMTD-B/A
Serial Number	
Calibration Date	
Calibrator Serial Number	
Number of Calibration Points	0

Logging Cable

Type	7-46A-XS
Serial Number	
Length	16500.00 ft
Conveyance Type	Wireline
Rig Type	

Run 1: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	
Stretch Correction	
Tool Zero Check At Surface	

Run 1

Software Version

Acquisition System

Maxwell 2016

Version

6.0.47569.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Run 1	Main[6]:Up	Up	53.34 ft	7506.72 ft	17-Sep-2015 6:28:22 PM	17-Sep-2015 10:41:01 PM	ON	5.52 ft	Yes

All depths are referenced to toolstring zero

Log

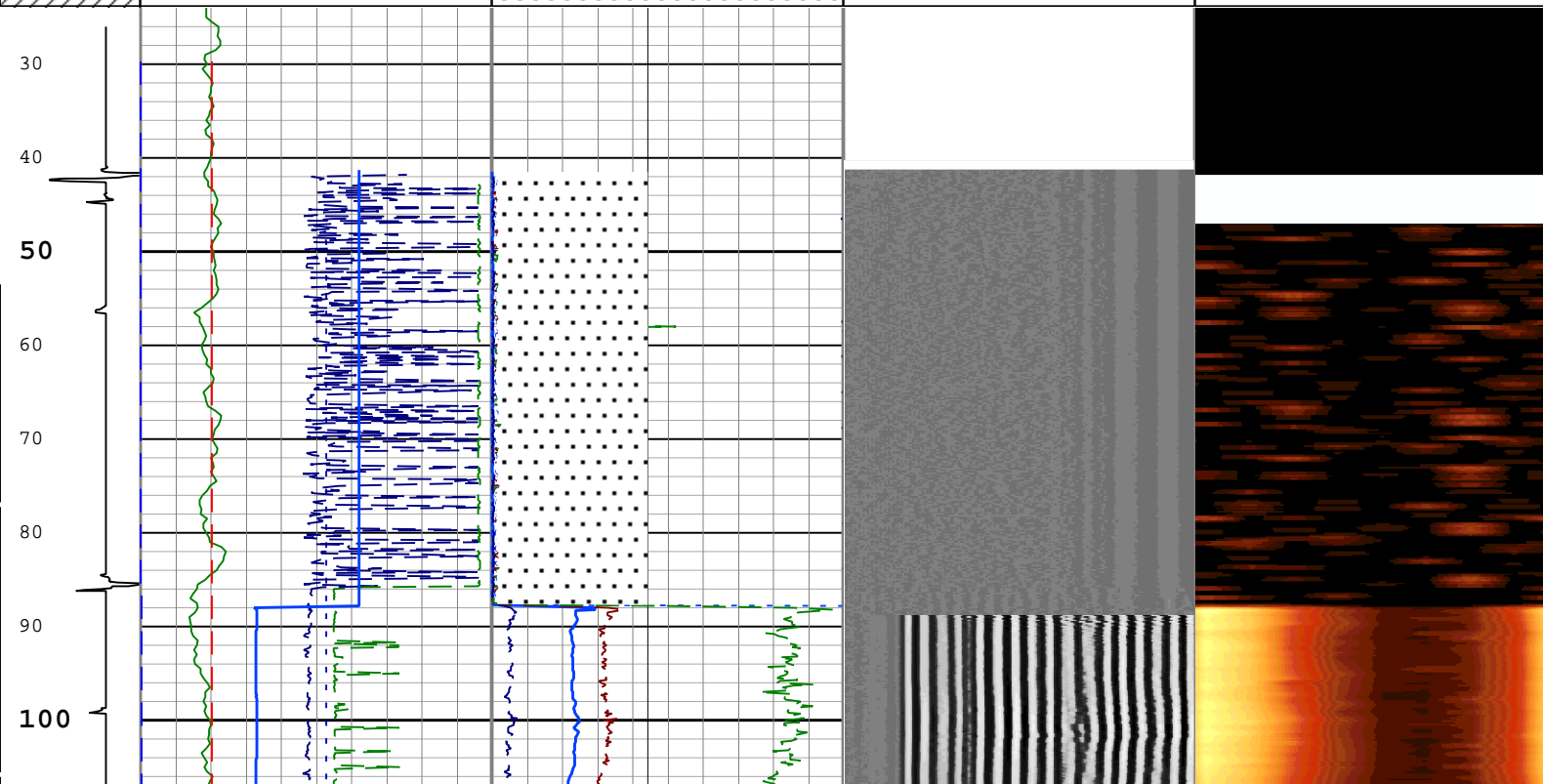
Company:Extraction Oil & Gas LLC Well:Troudt 5

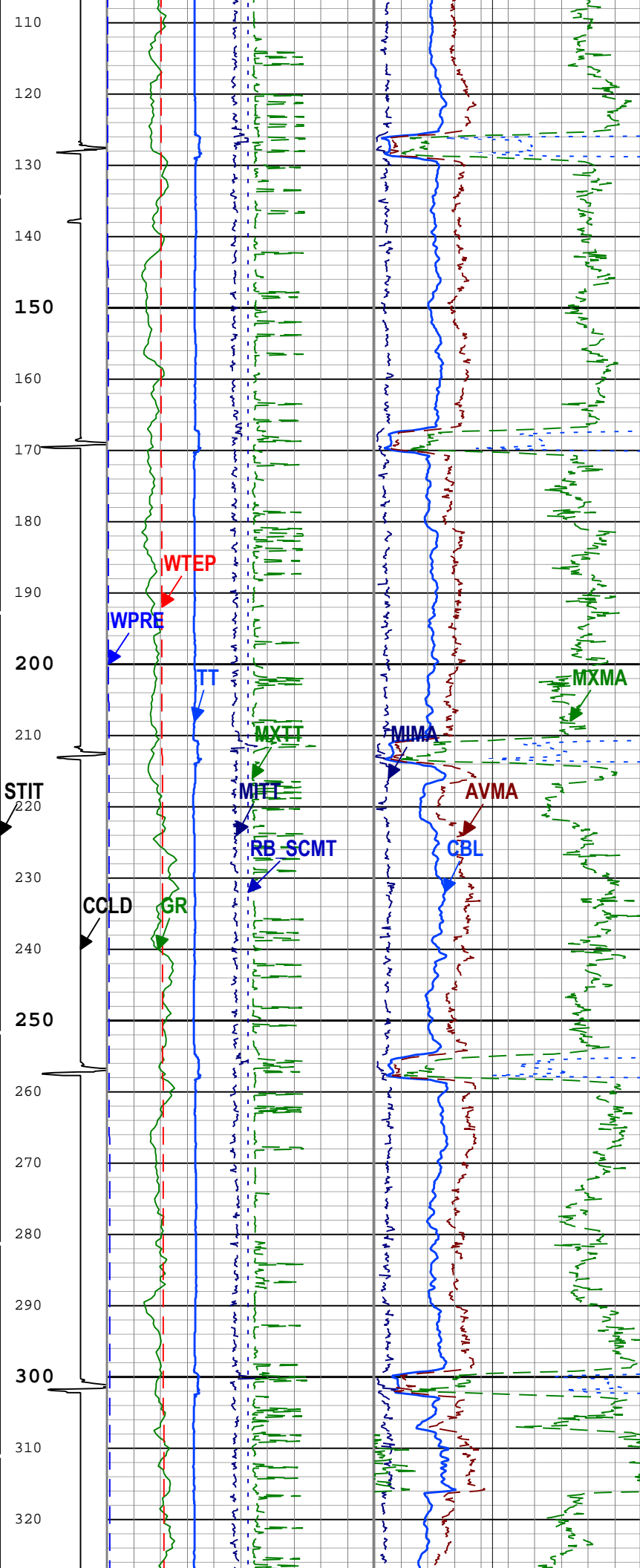
Run 1: Main[6]:Up:S005

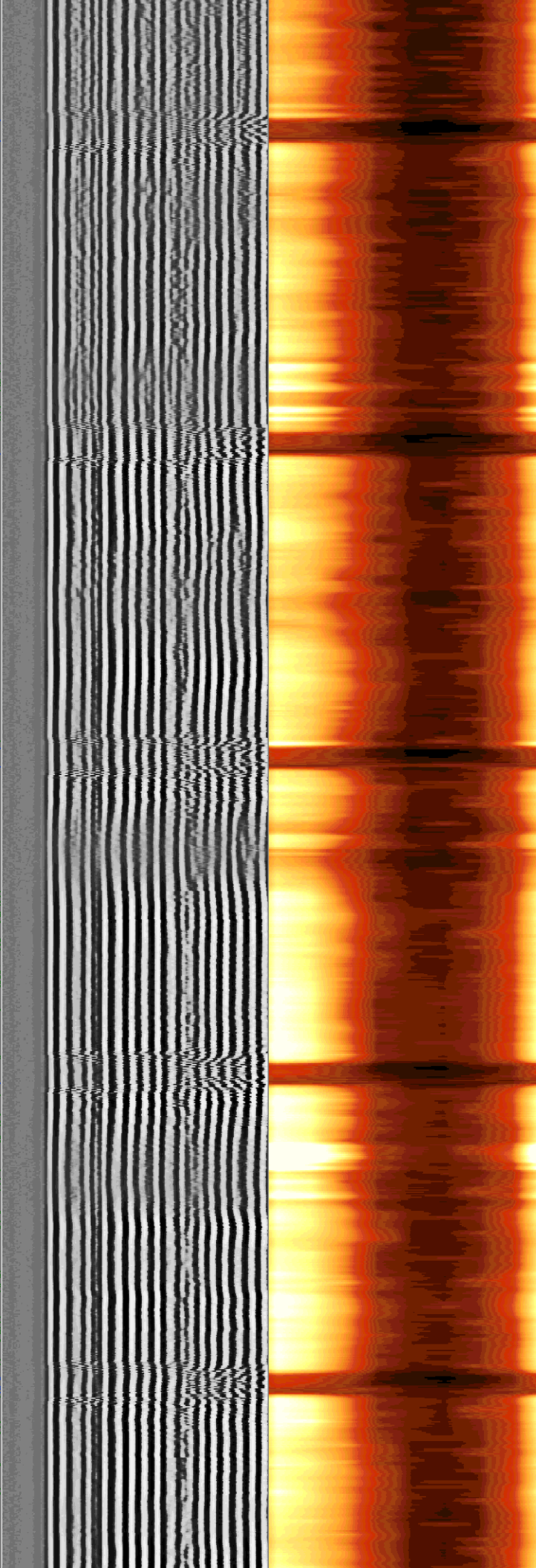
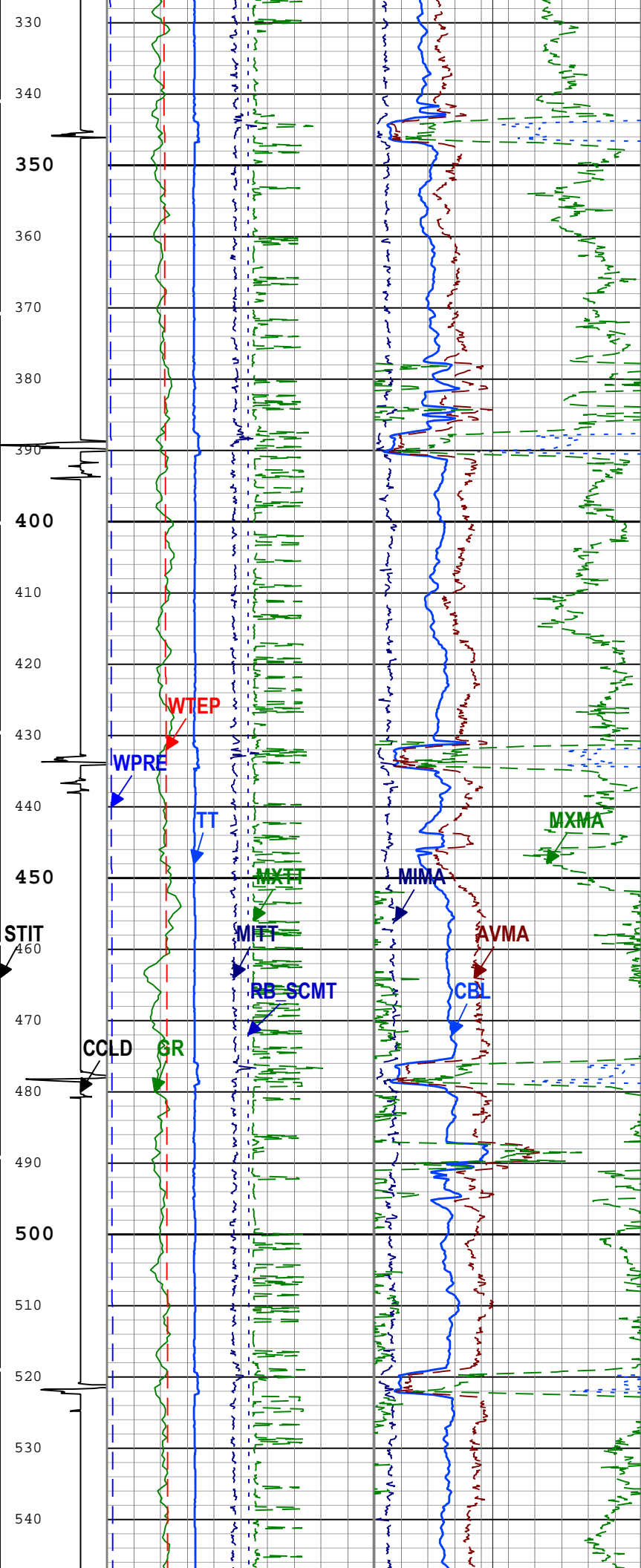
Description: SCMT VDL Image Format: Log (SCMT_VDL_Image) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 18-Sep-2015 17:05:12

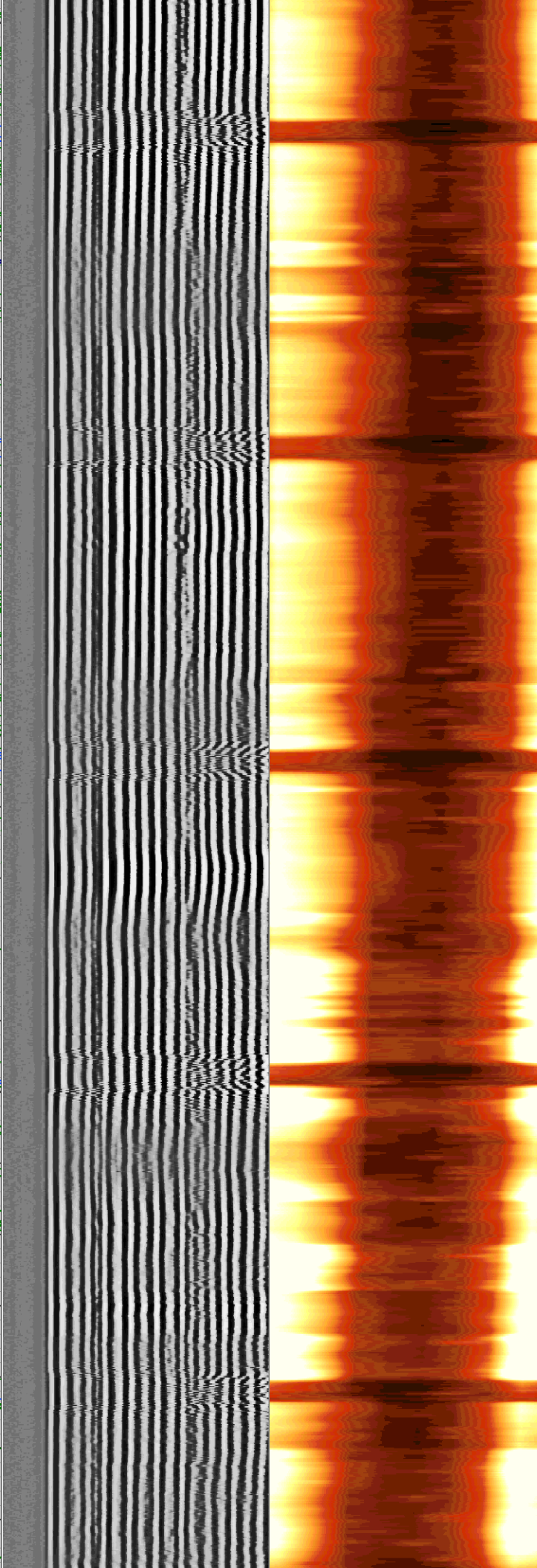
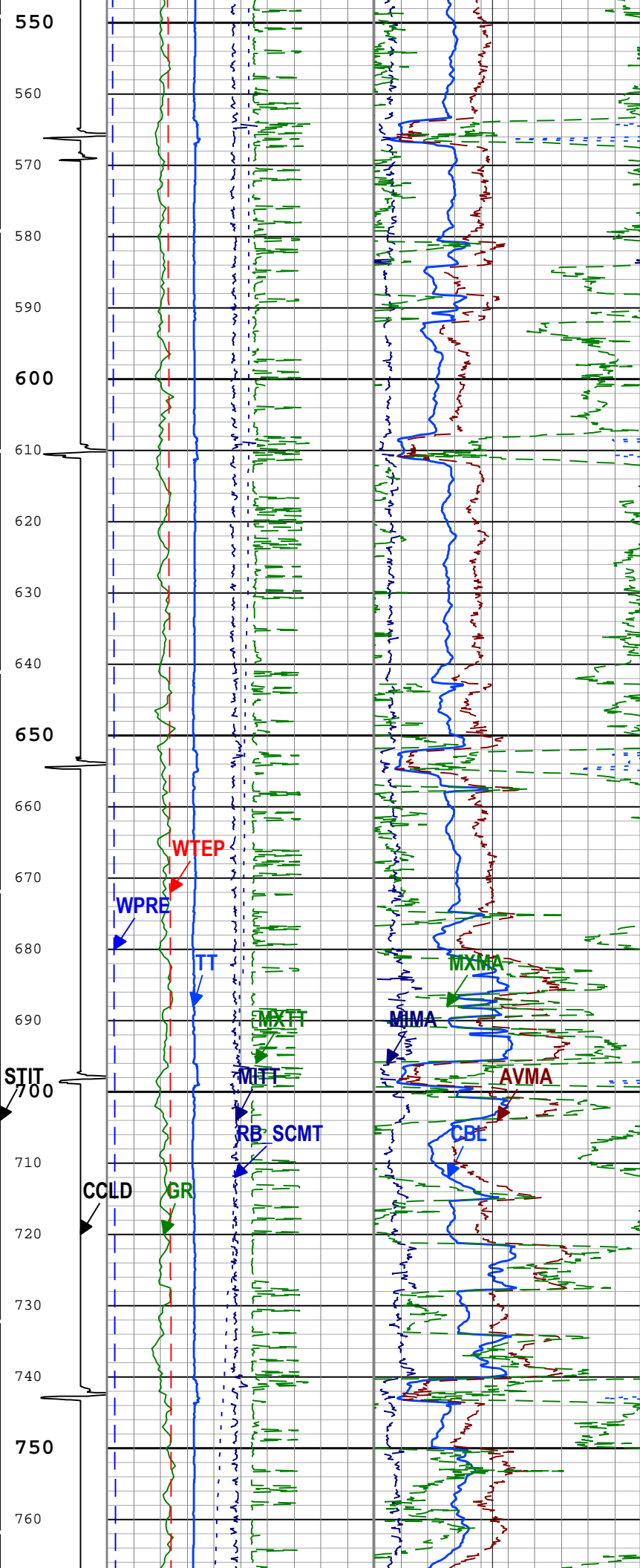
TIME_1900 - Time Marked every 60.00 (s)

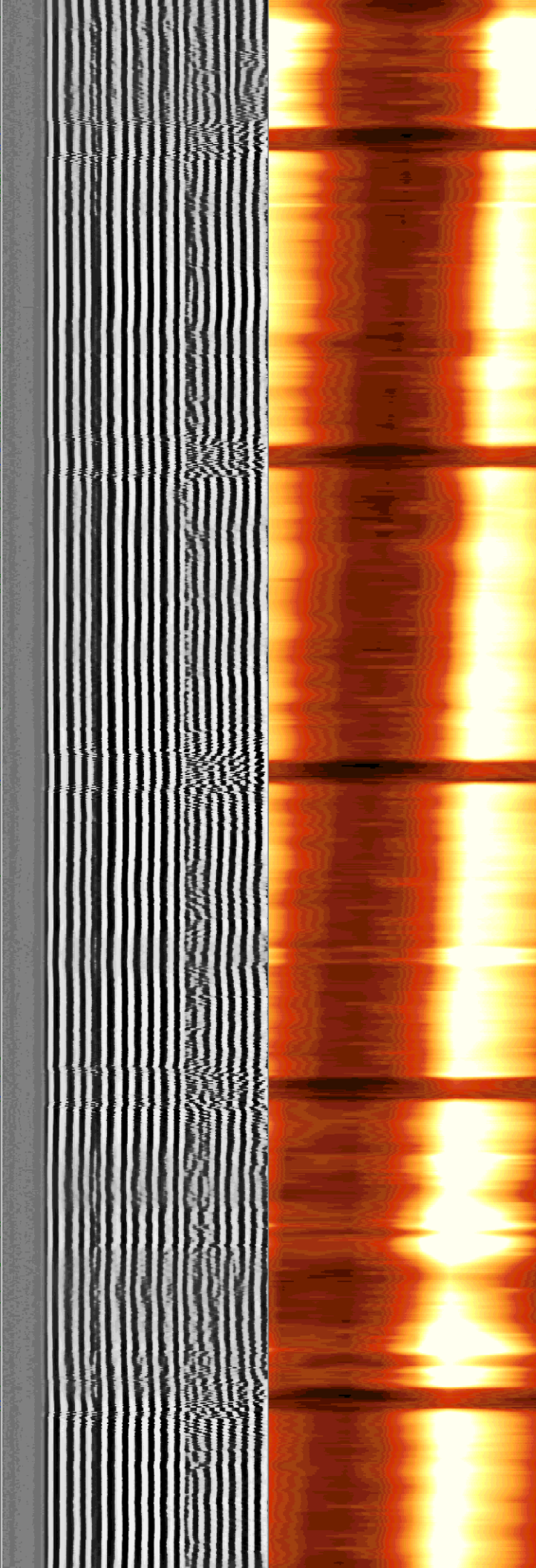
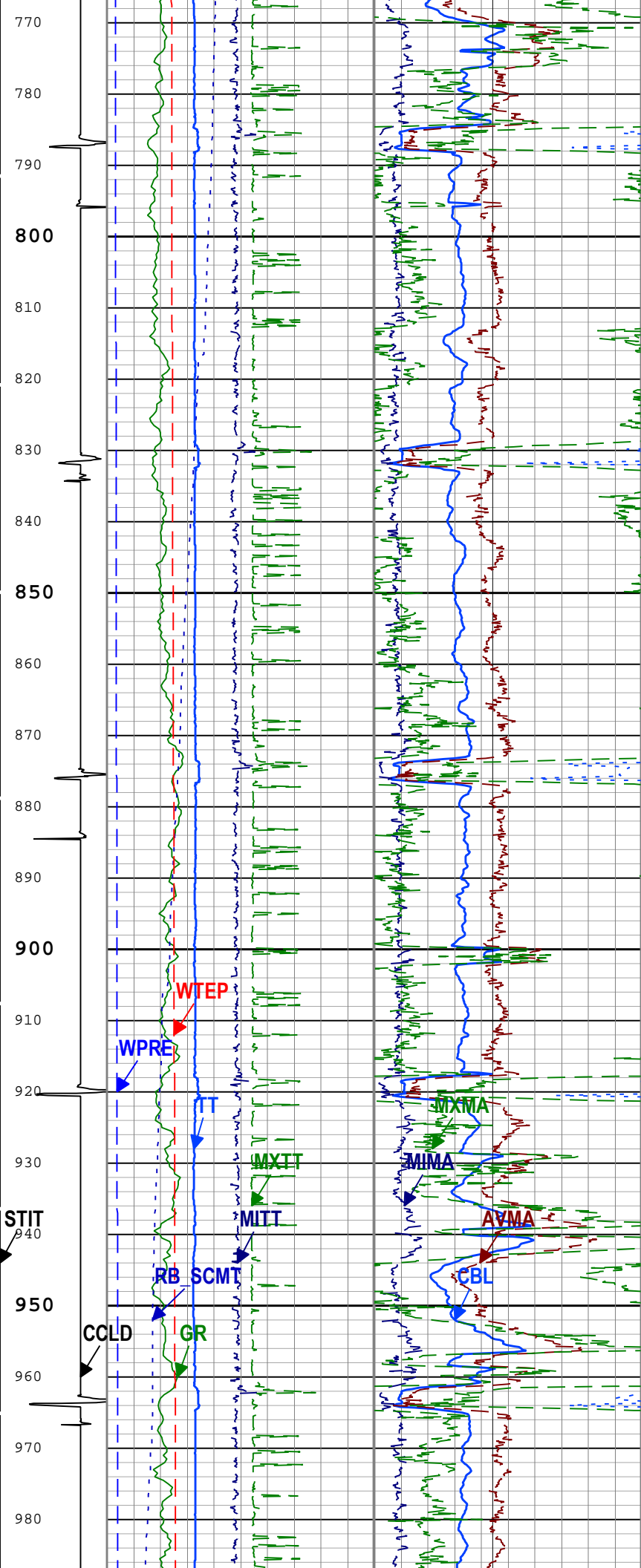
Gamma Ray (GR) HBMS-B		CBL Amplitude (CBL) SCMT-CB	
0	gAPI 150	0	mV 10
Relative Bearing (RB_SCMT) SCMT-CB		CBL Amplitude (CBL) SCMT-CB	
0	deg 360	0	mV 100
Minimum MAP Transit Time (MITT) SCMT-CB		Good Bond (GOBO)	
100	us 300	0	mV 10
Maximum MAP Transit Time (MXTT) SCMT-CB		Normalized Average MAP Amplitude (AVMA) SCMT-CB	
100	us 300	0	mV 100
Transit Time for CBL (TT) SCMT-CB		Normalized Minimum MAP Amplitude (MIMA) SCMT-CB	
200	us 400	0	mV 100
Well Pressure (WPRES) HBMS-B		Normalized Maximum MAP Amplitude (MXMA) SCMT-CB	
0	psi 10000	0	mV 100
Well Temperature (WTEP) HBMS-B		GoodBond From CBL to GOBO	
0	degF 300	200	us 1200

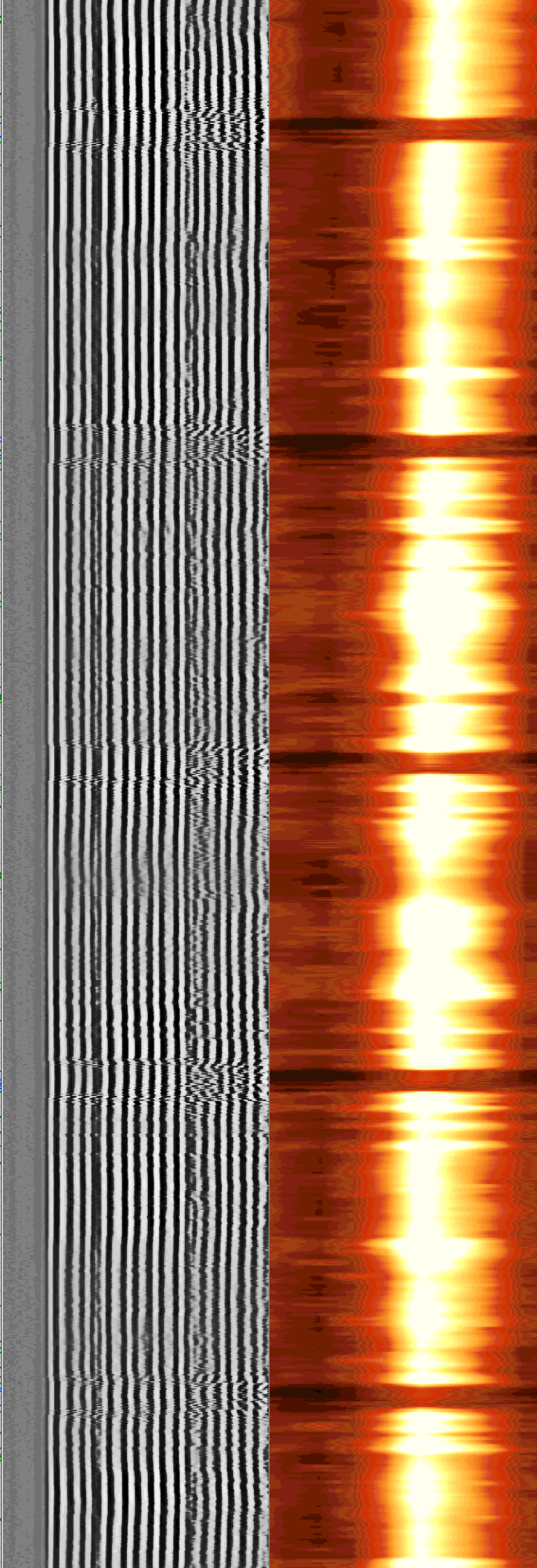
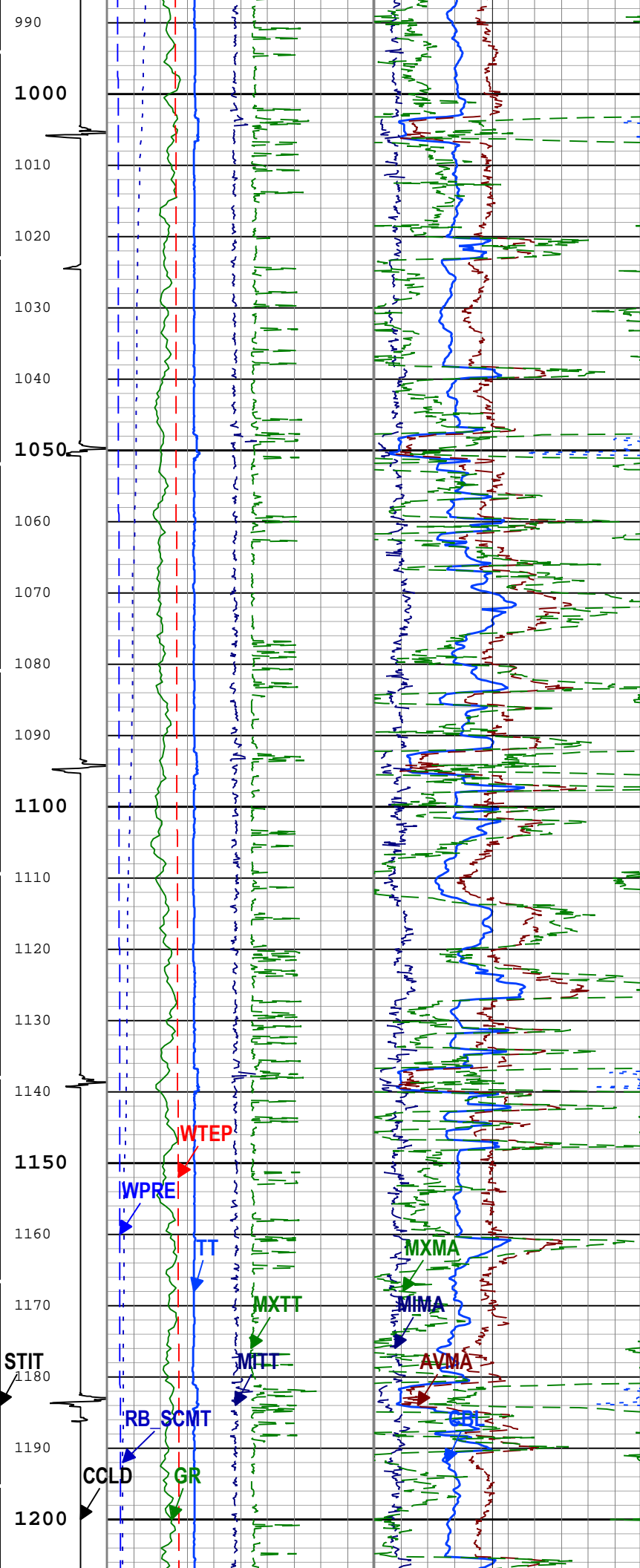


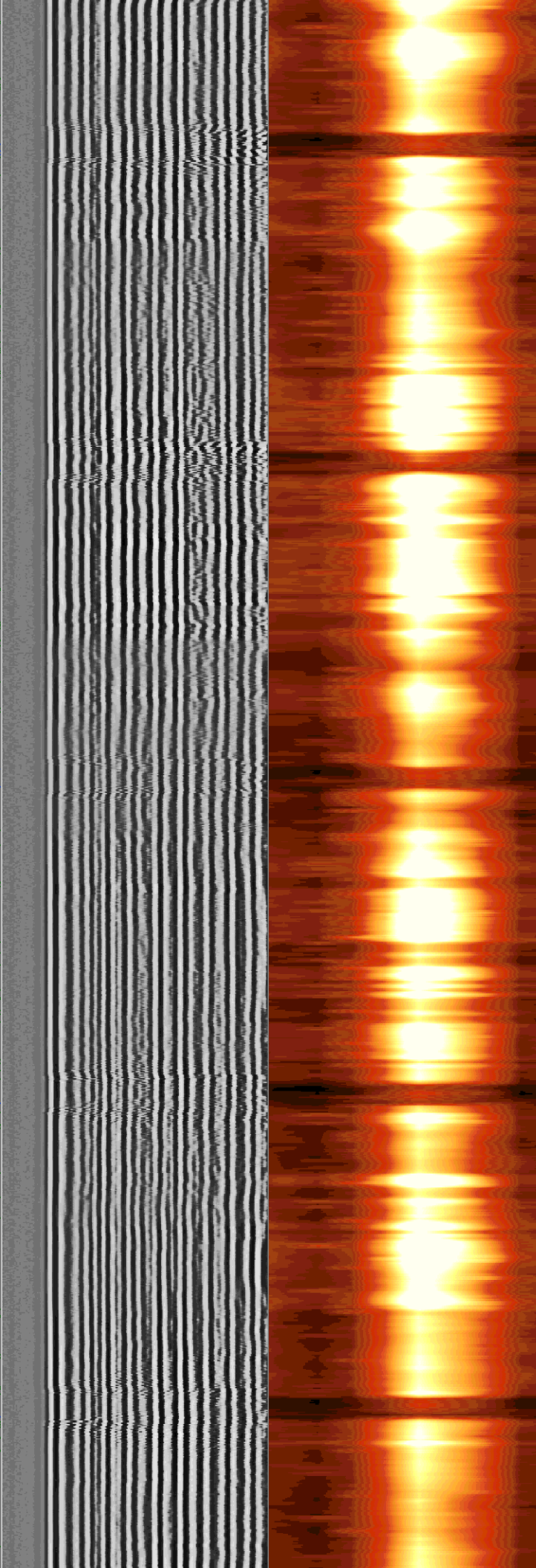
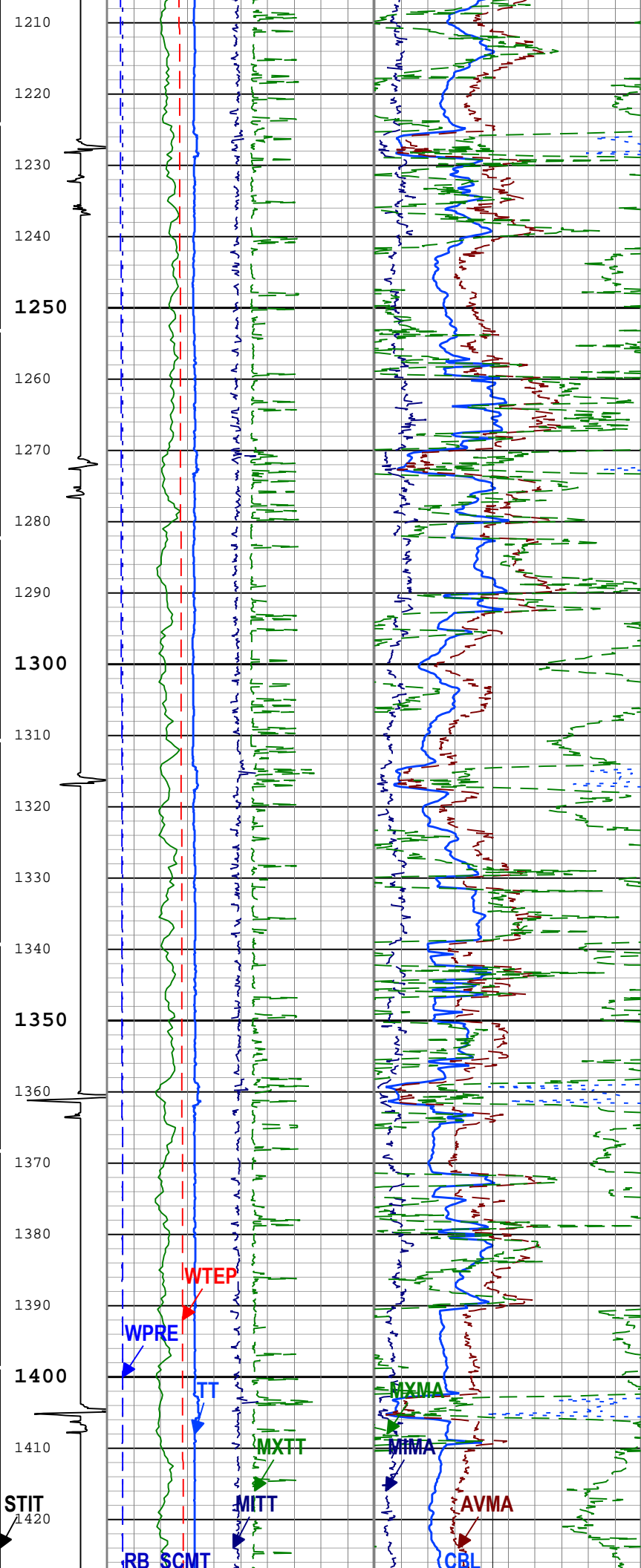


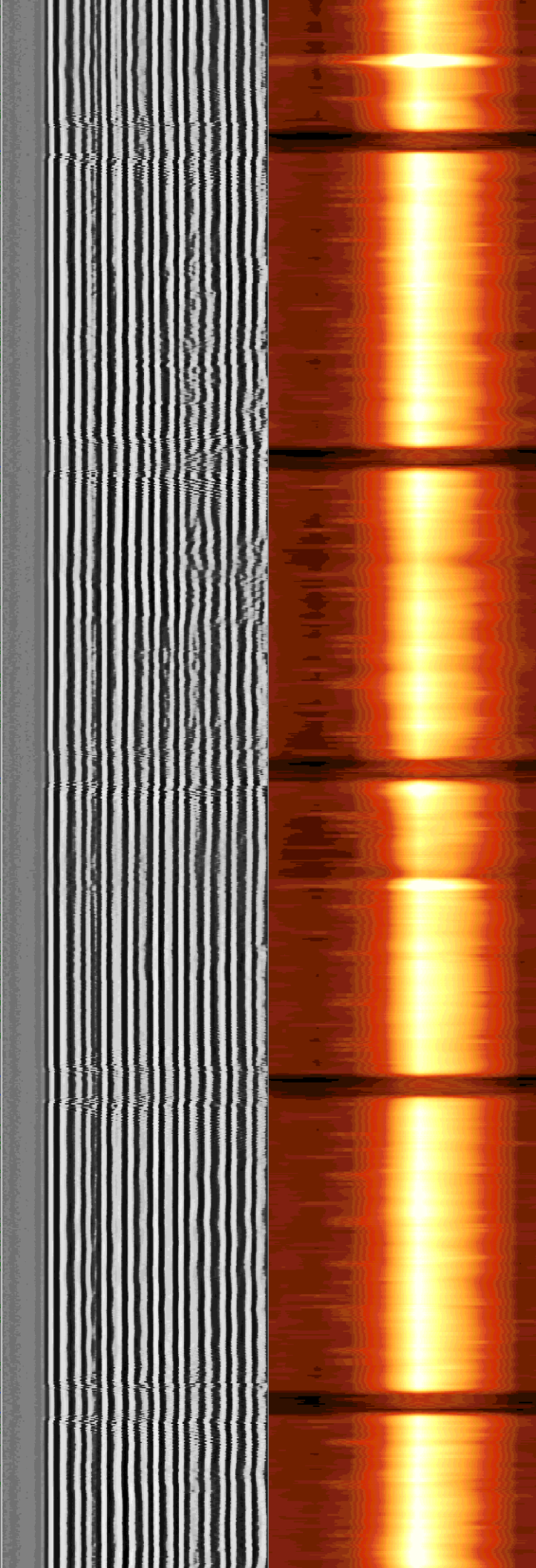
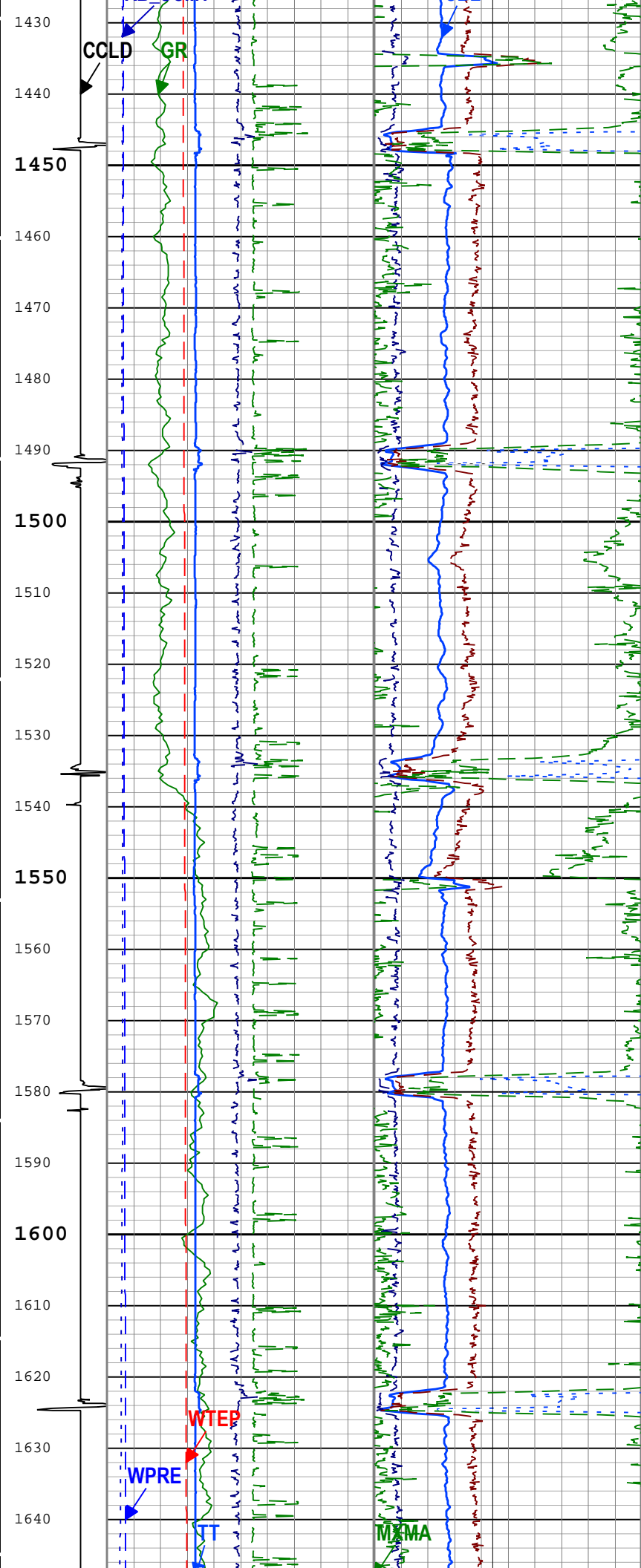


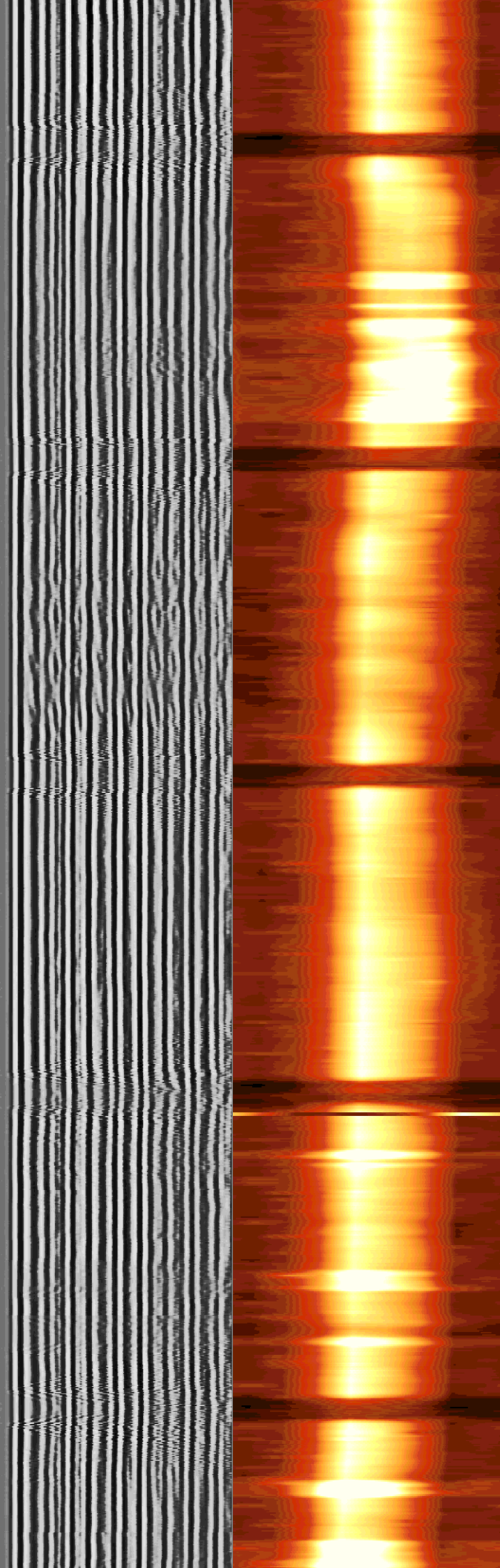
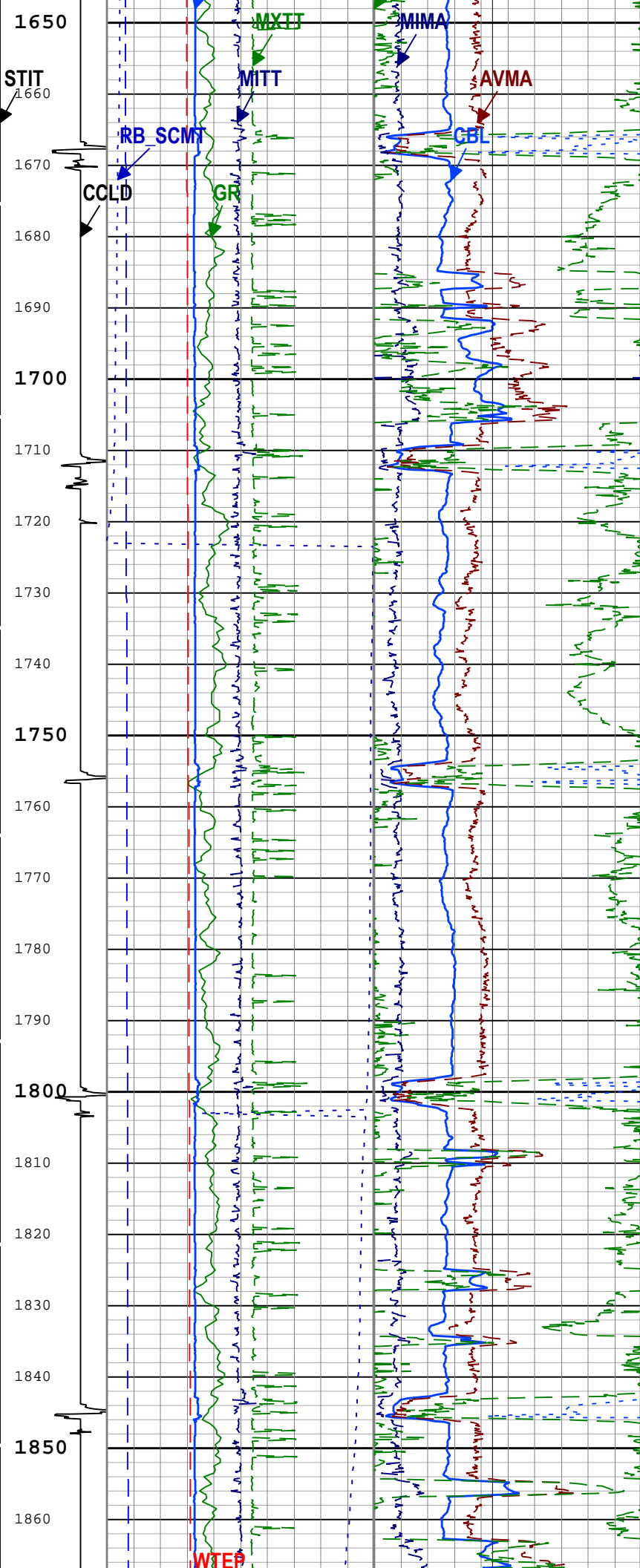


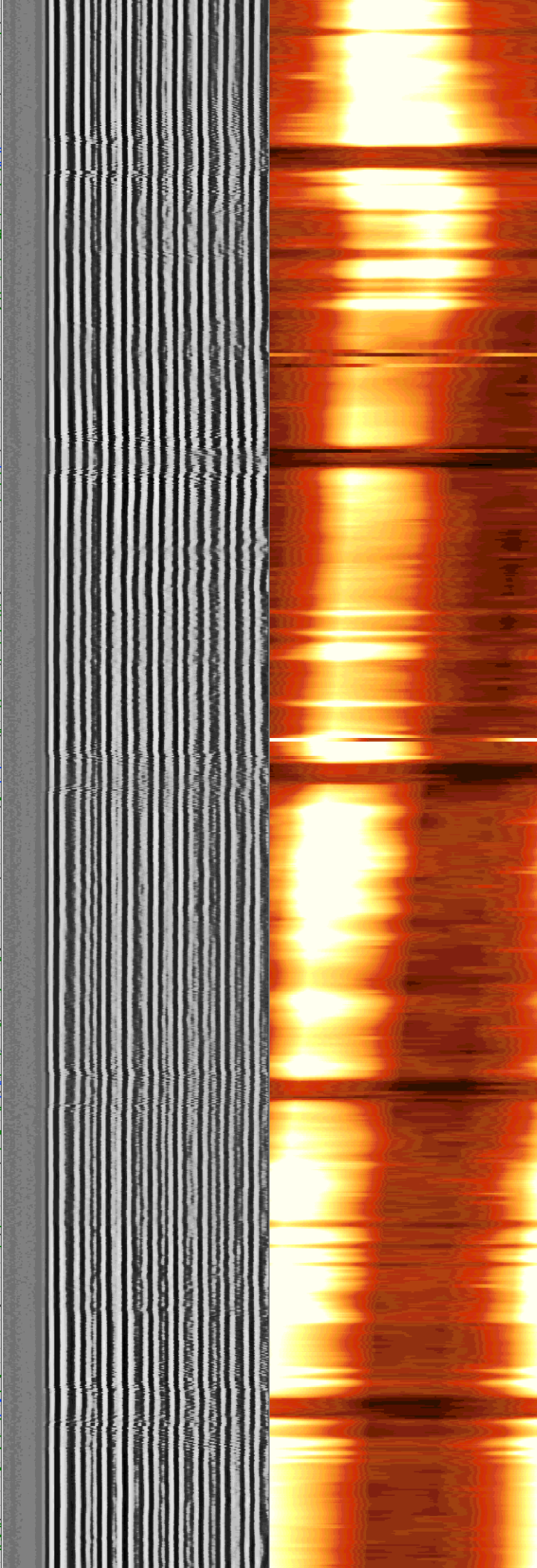
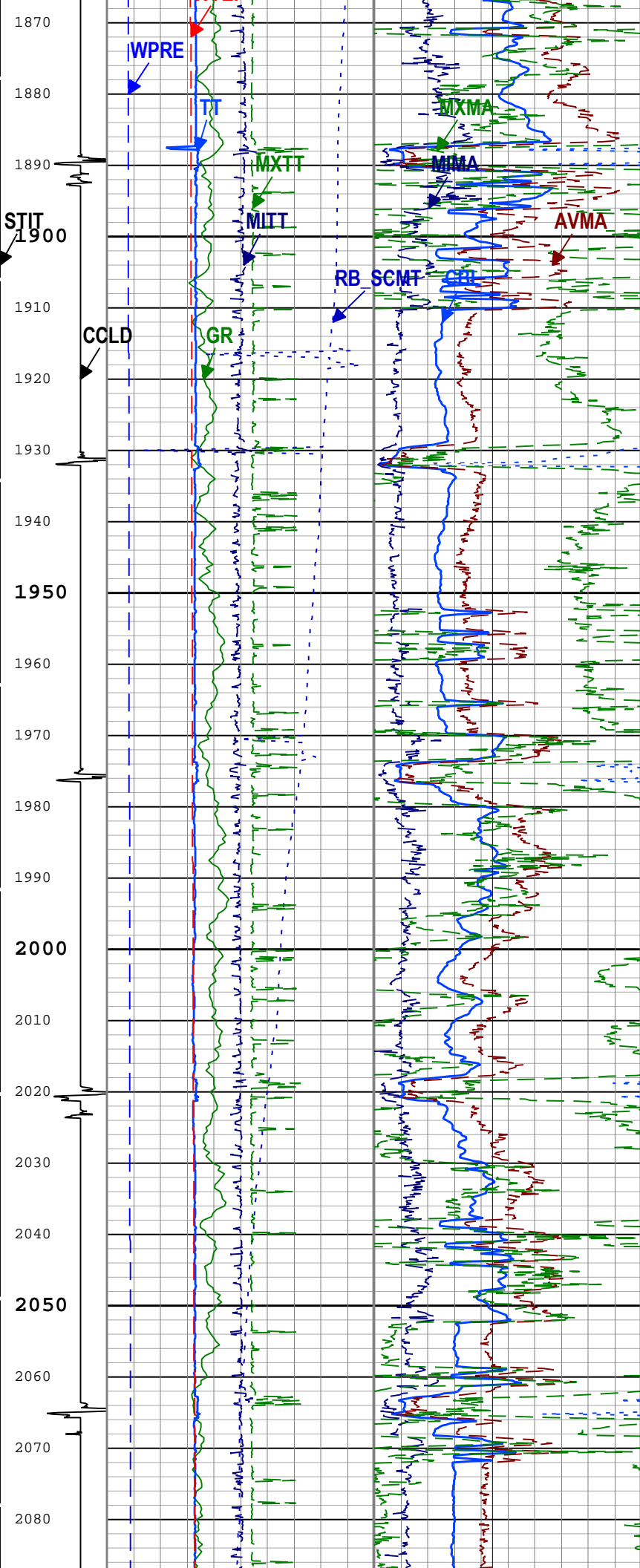


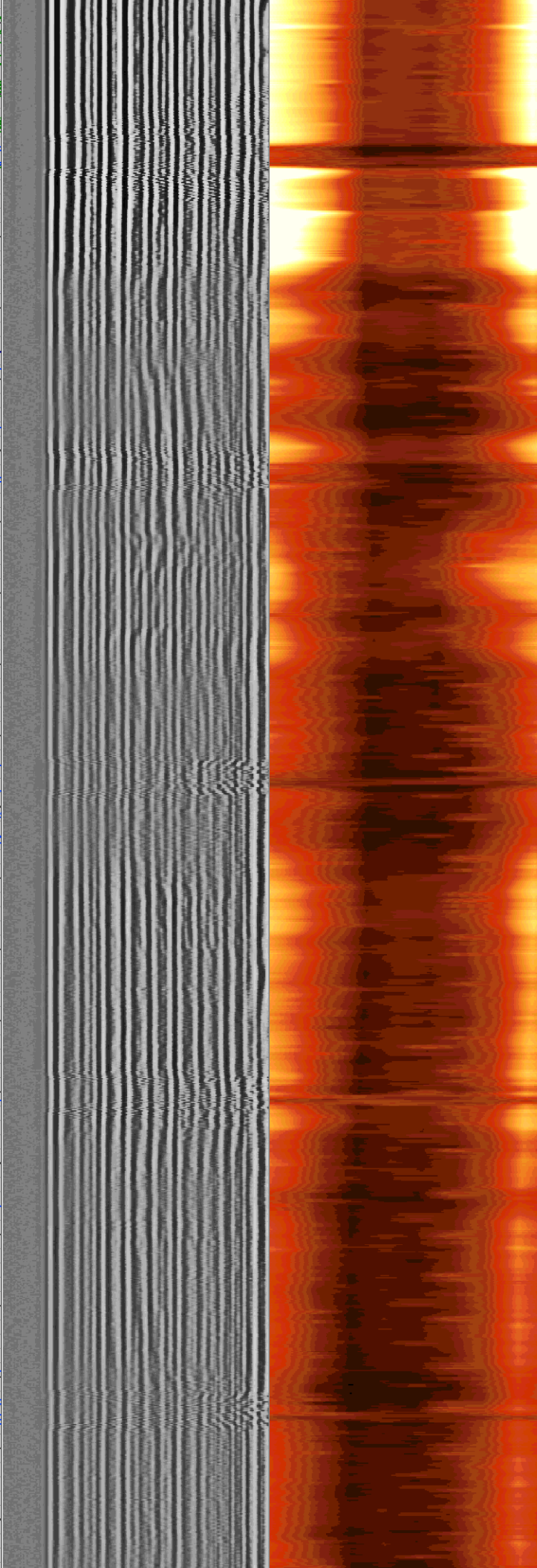
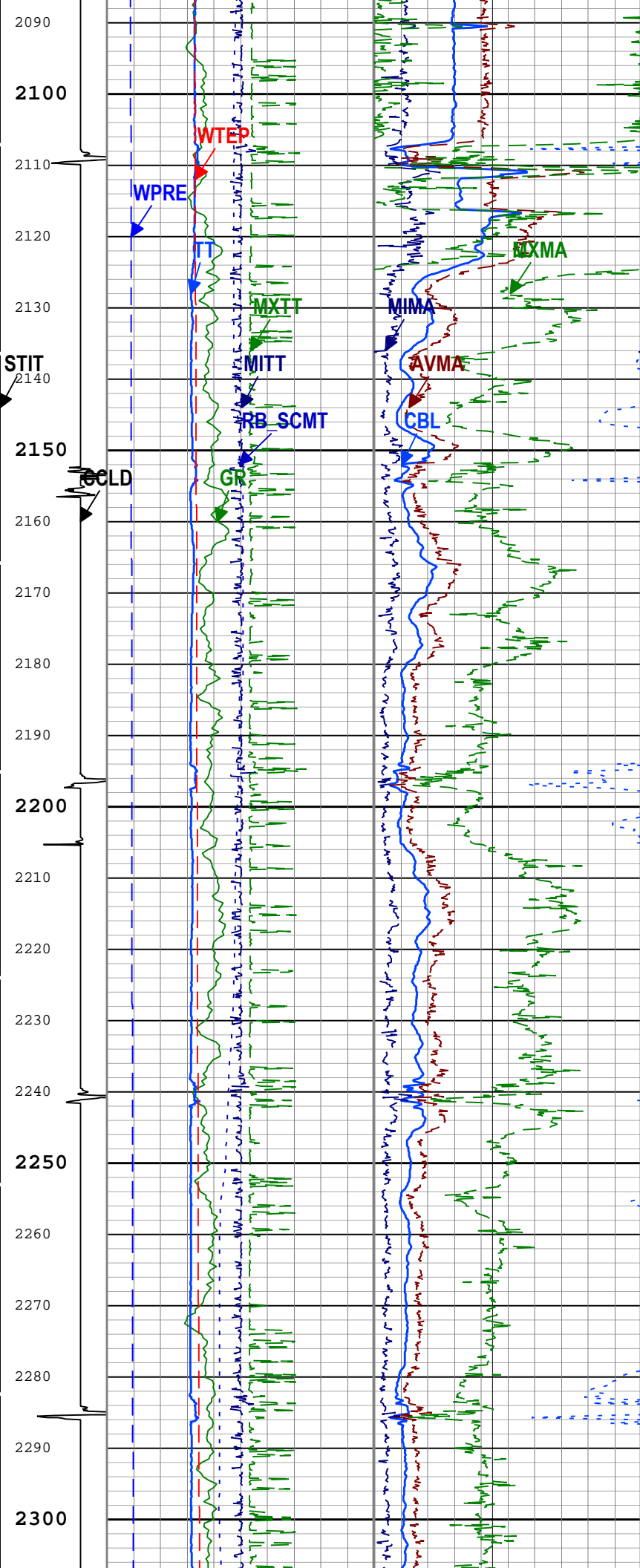


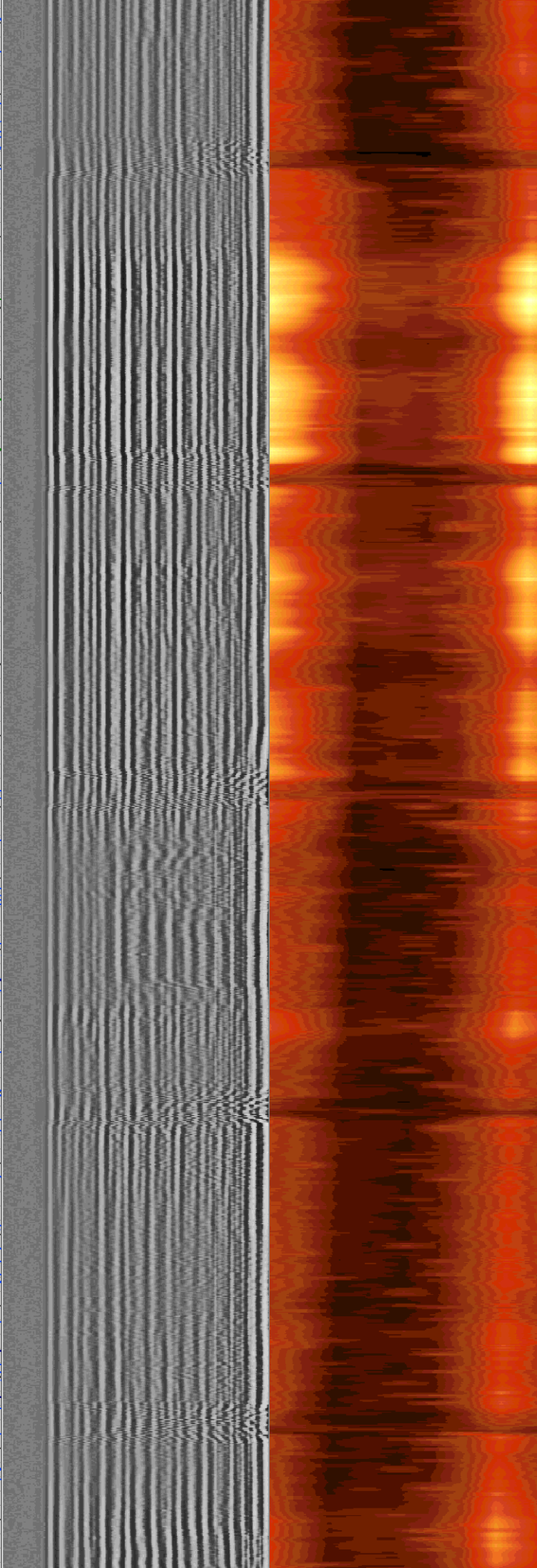
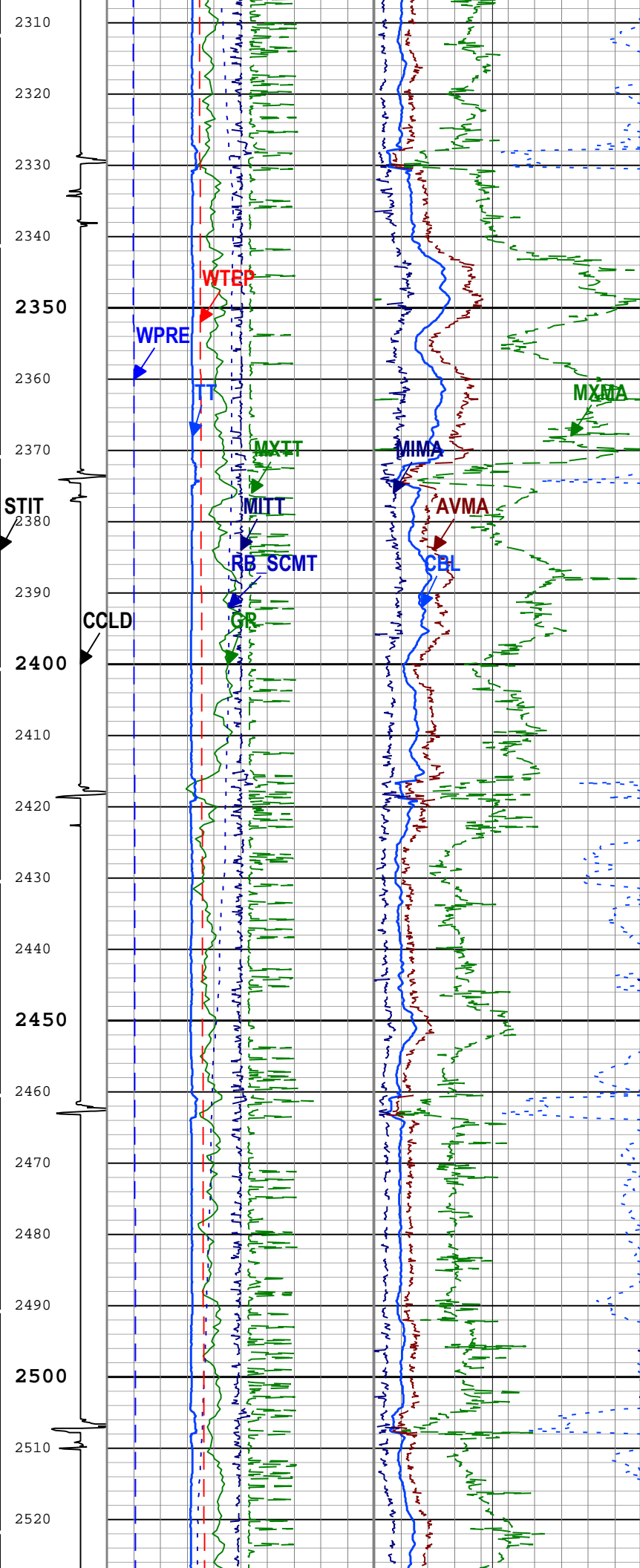


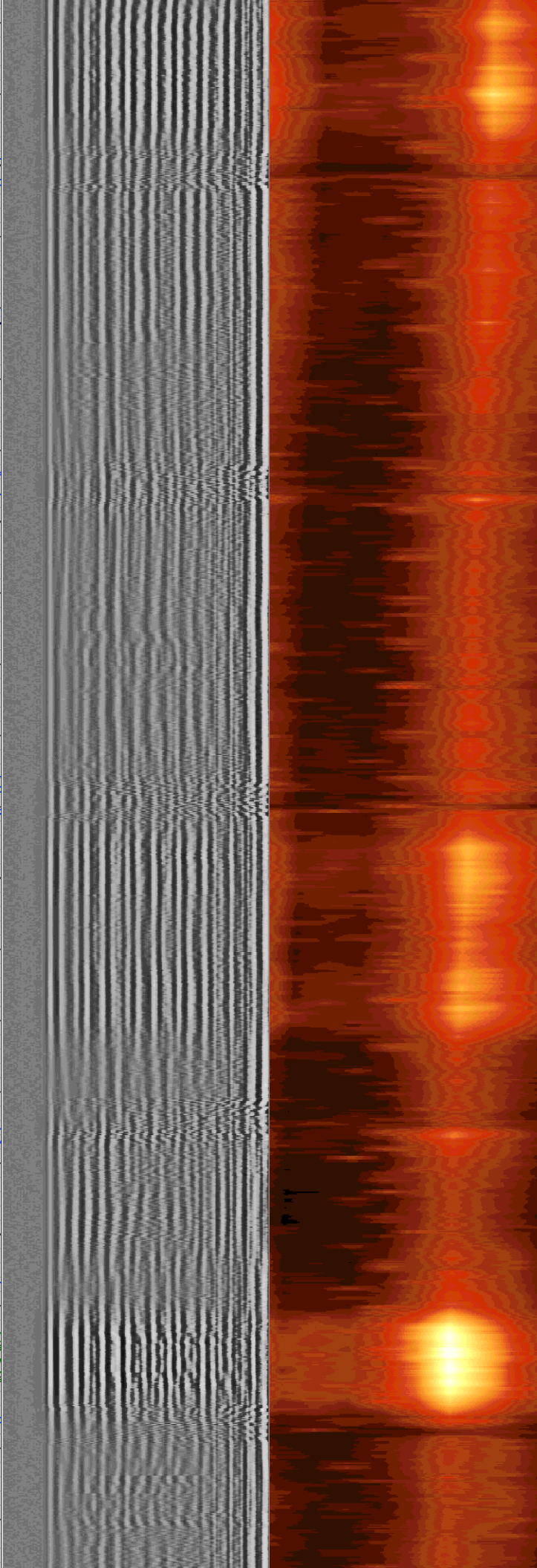
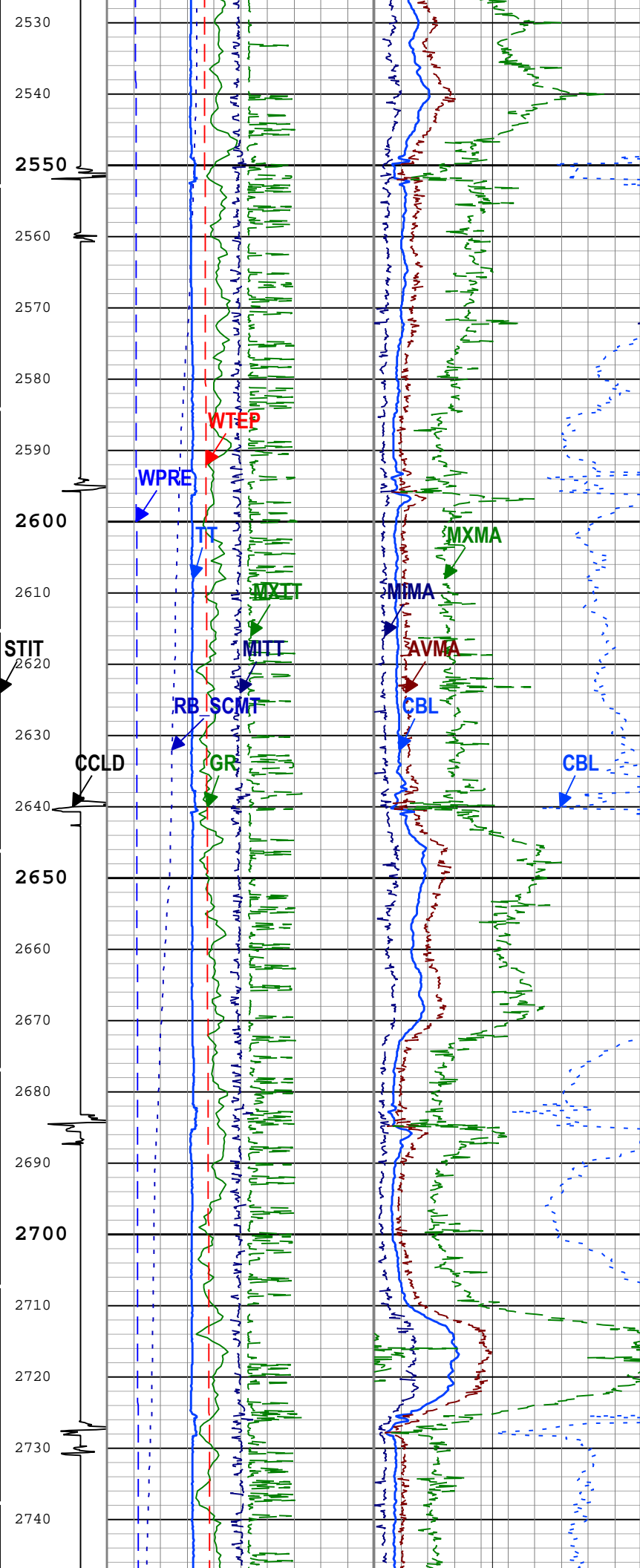


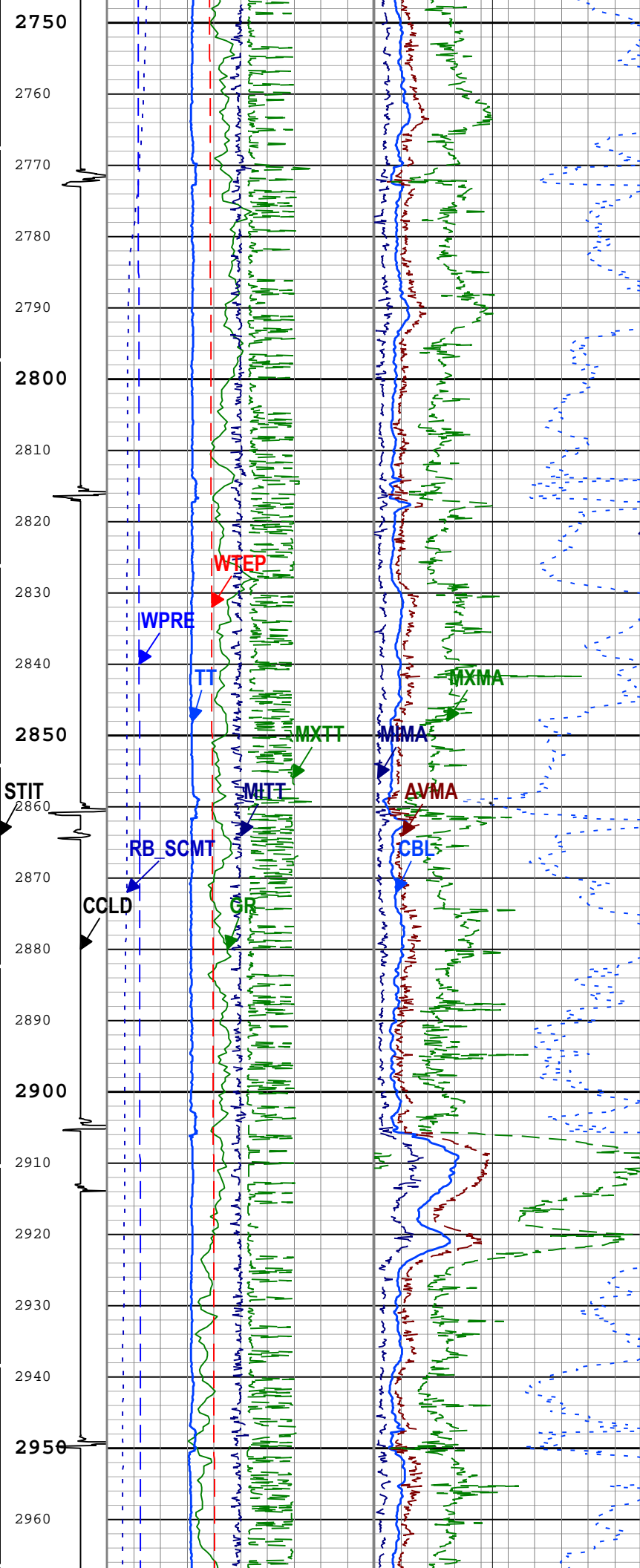


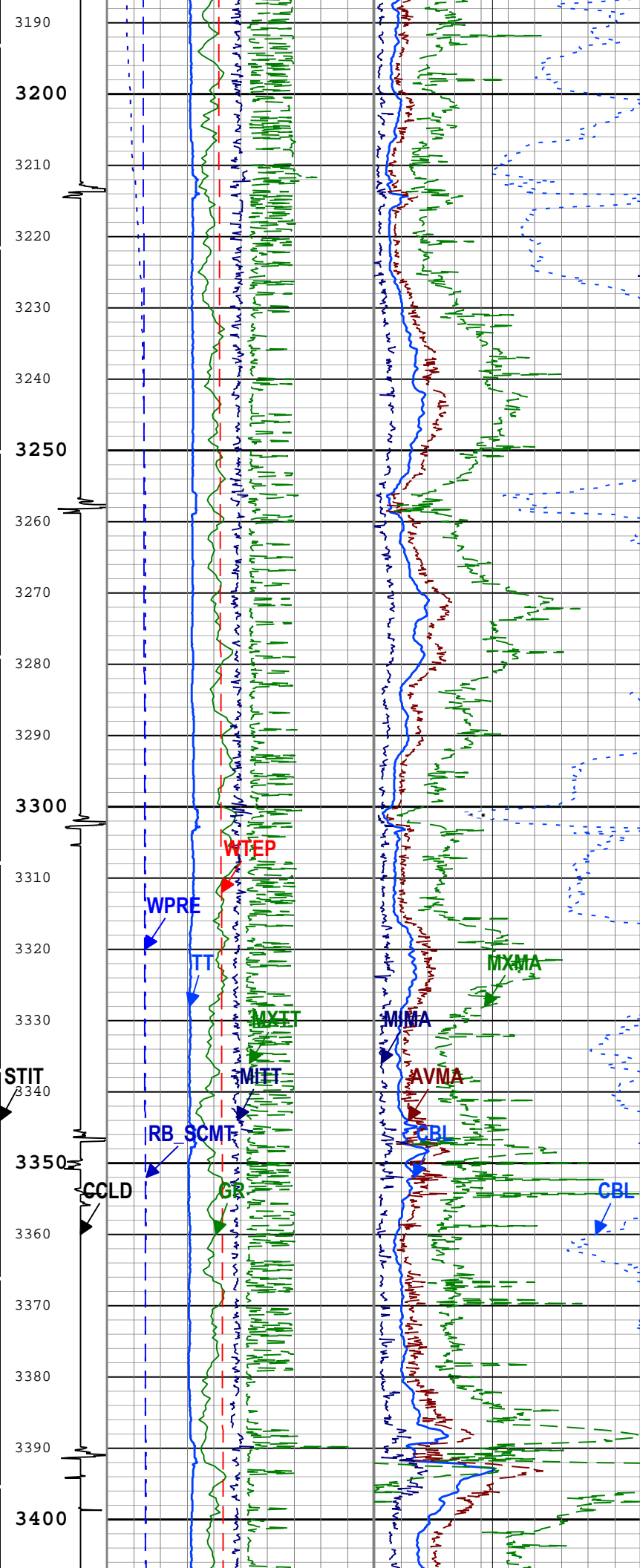


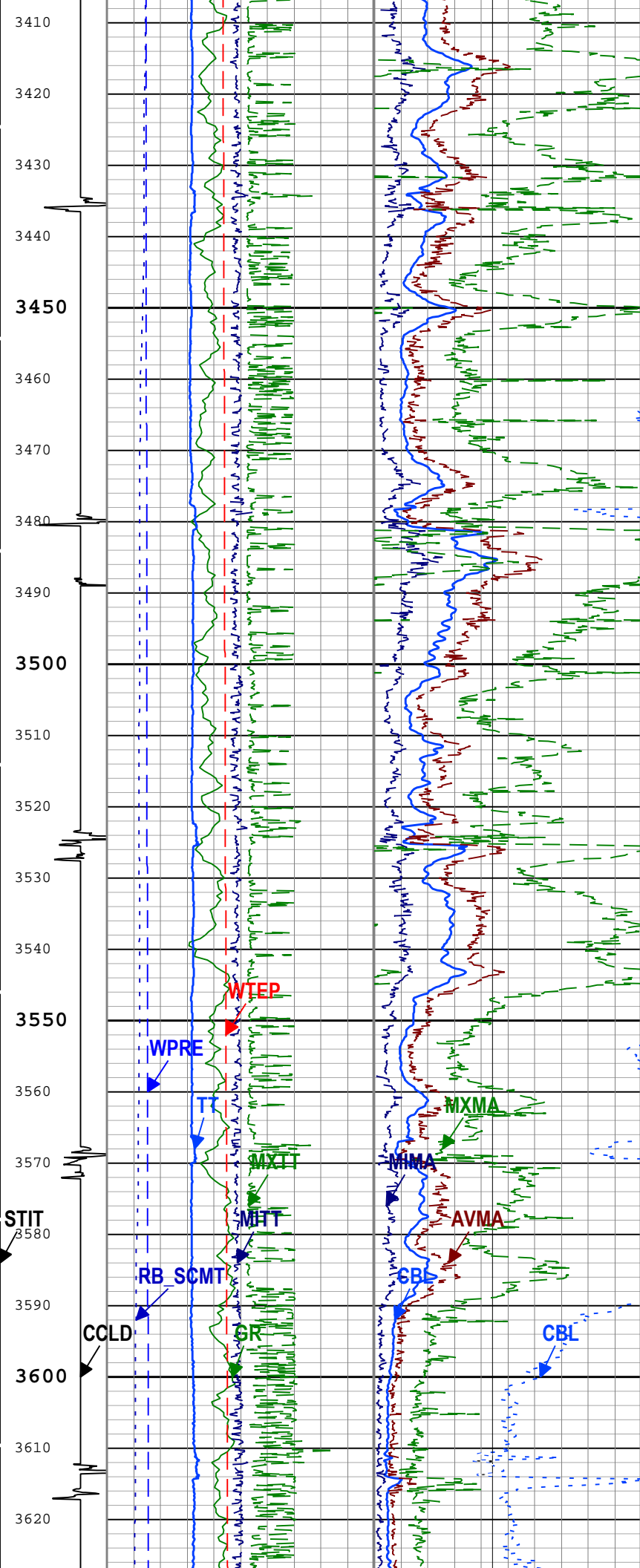


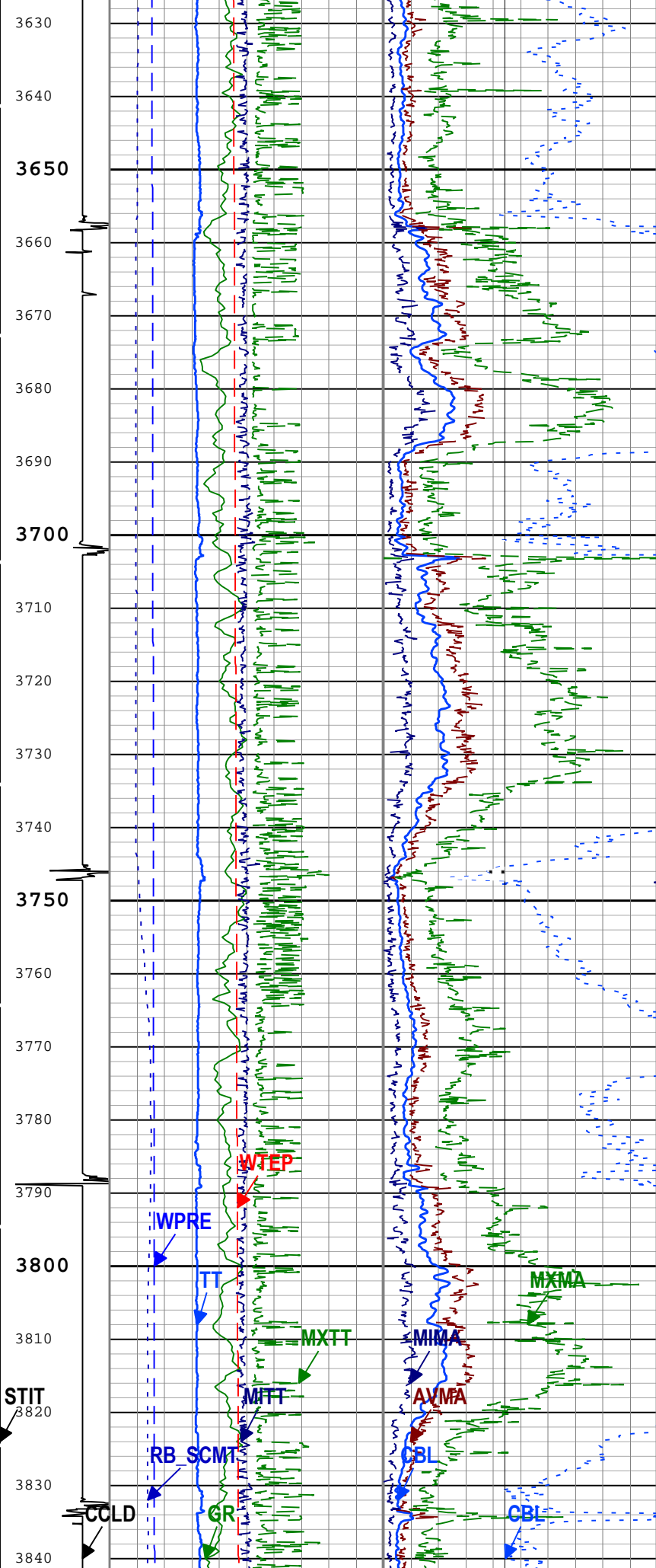


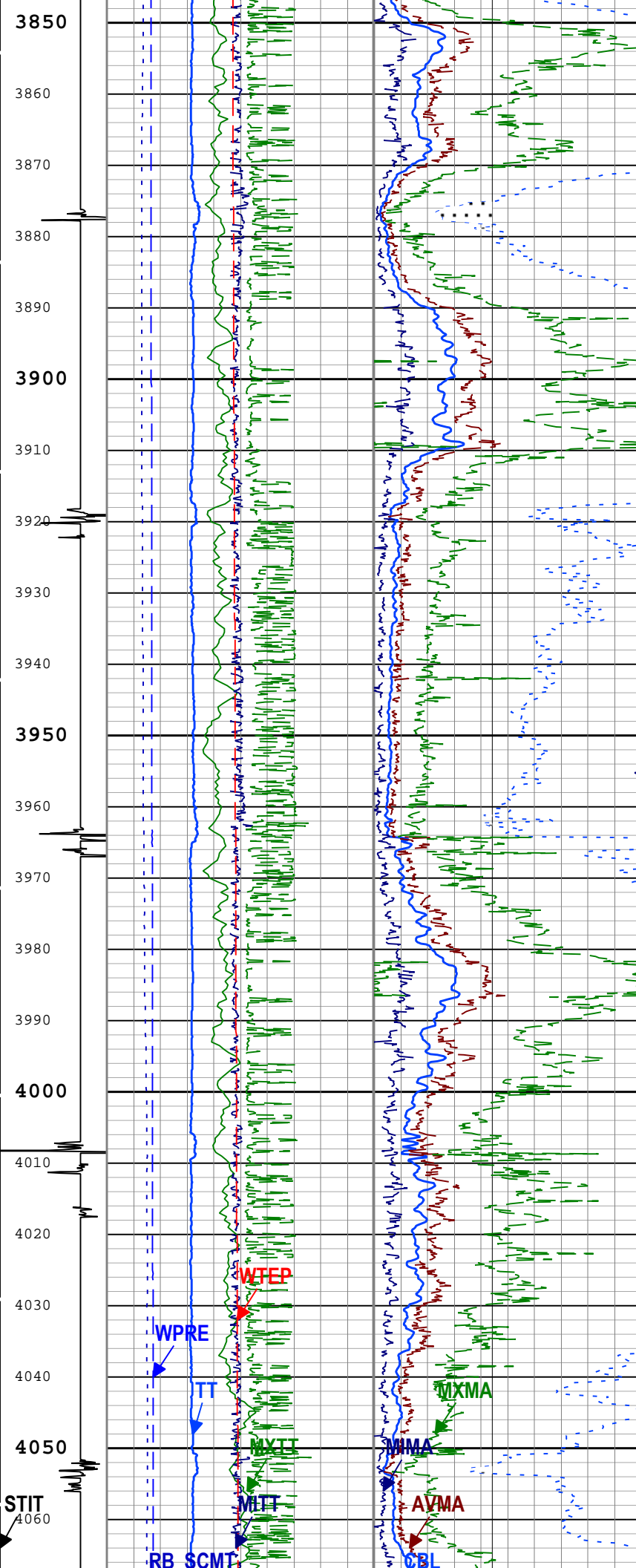


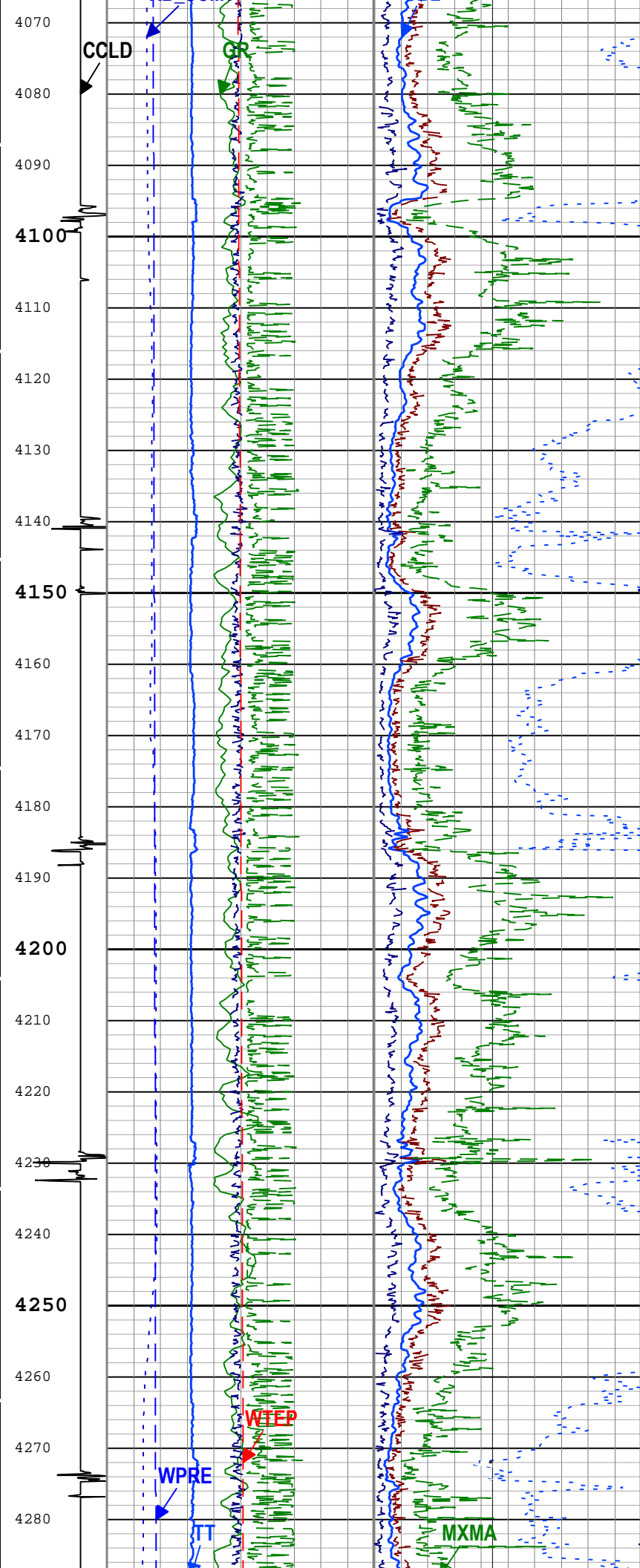


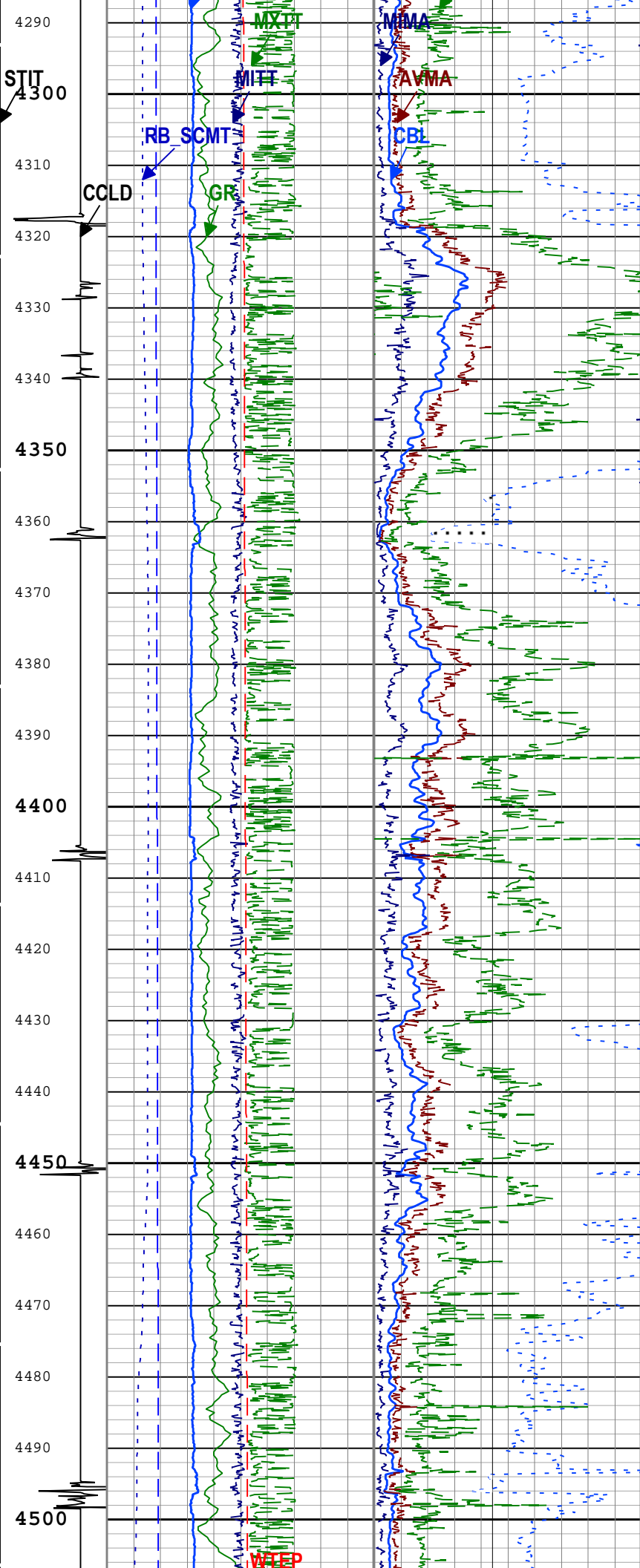


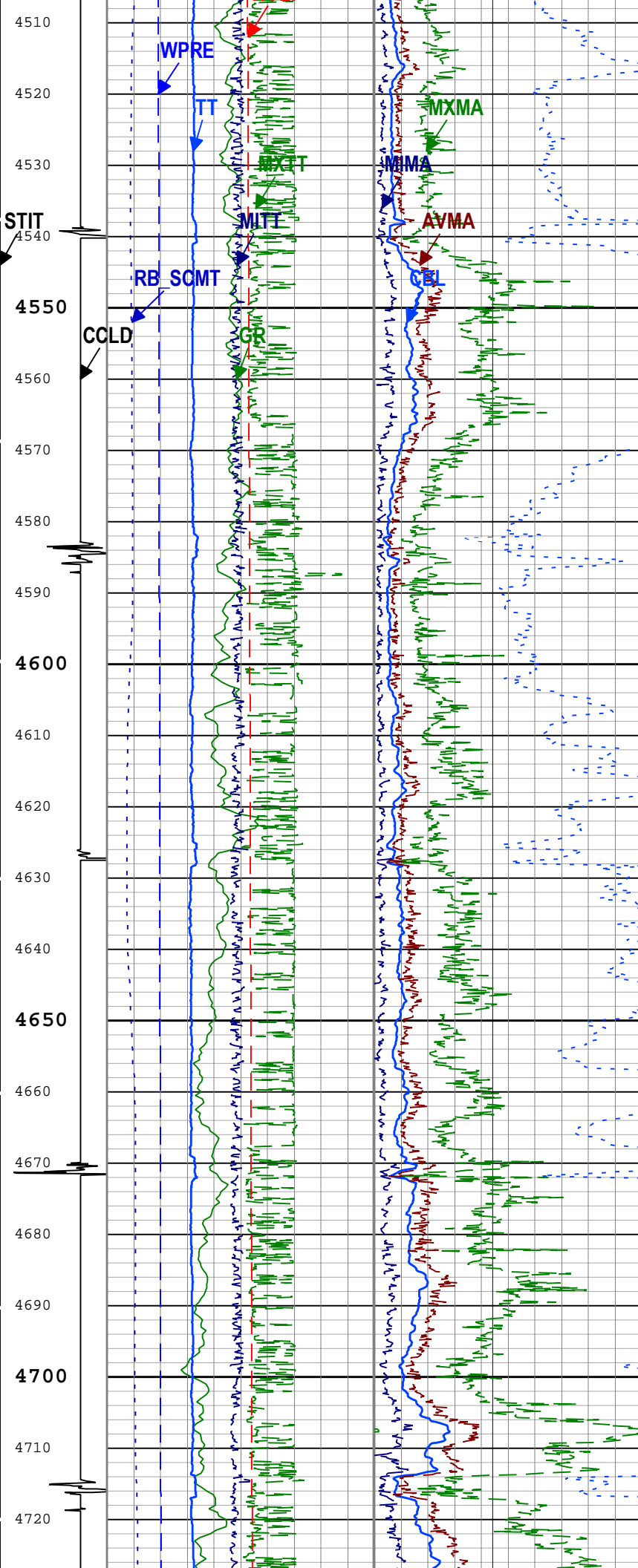


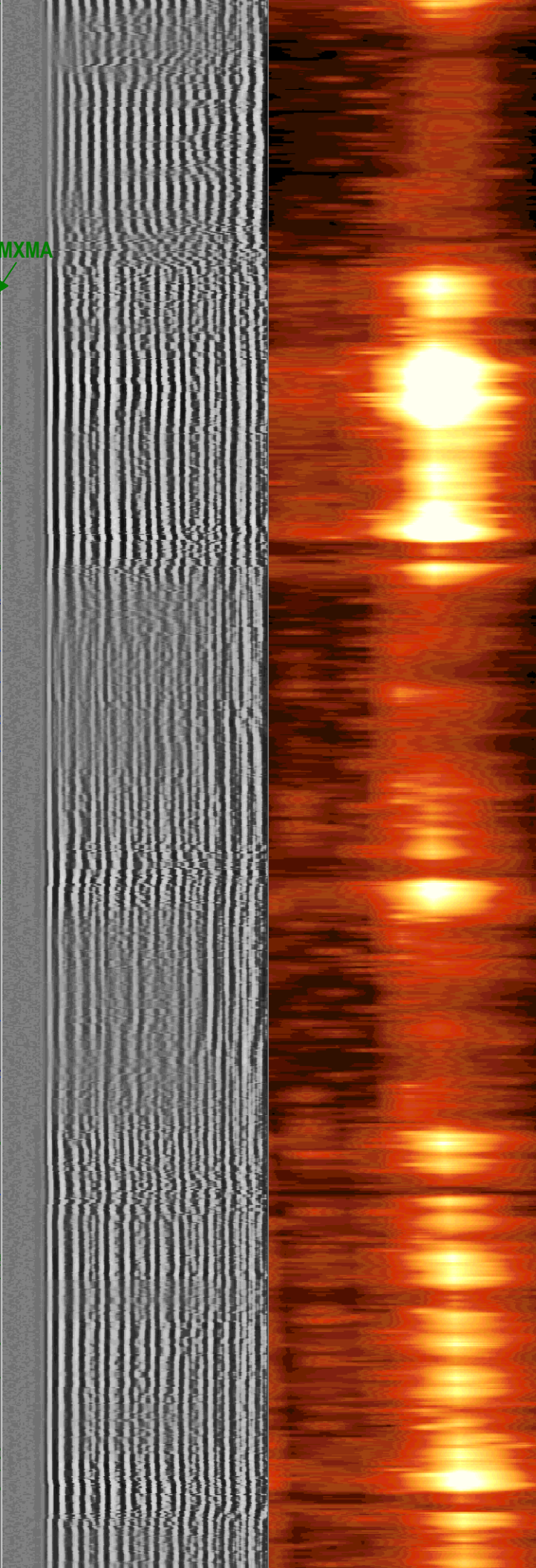
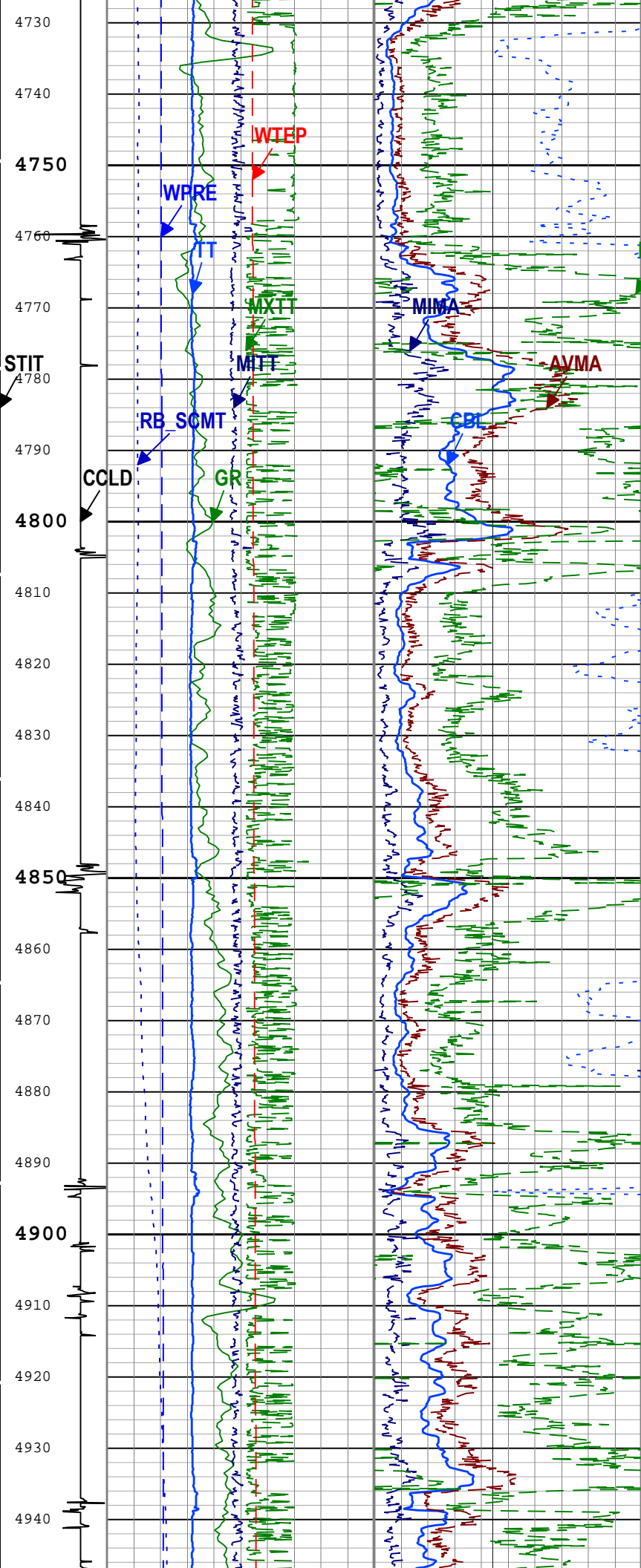


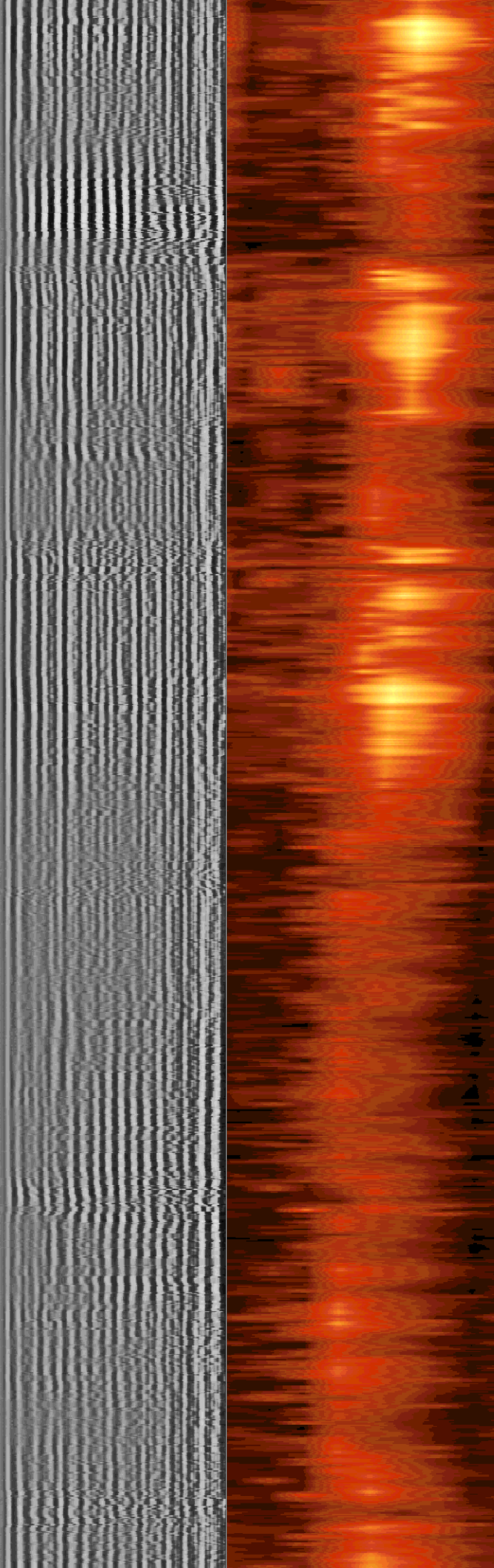
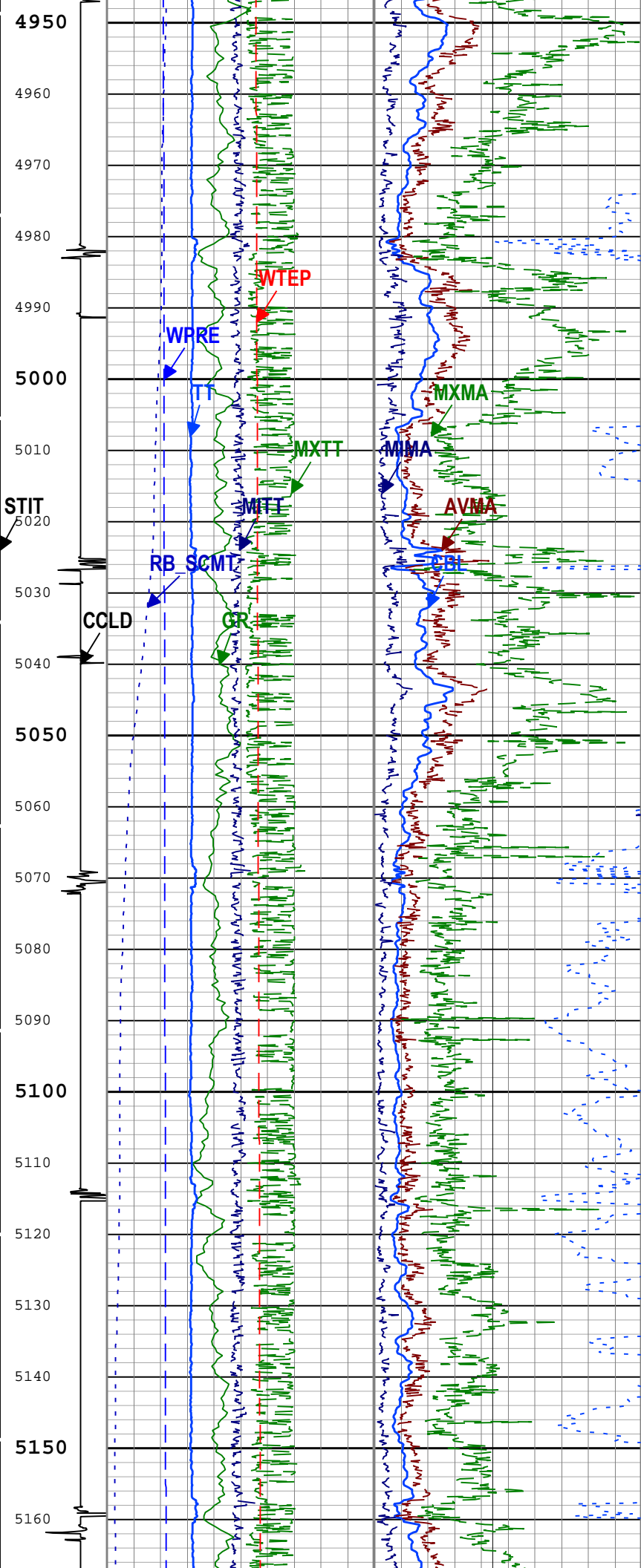


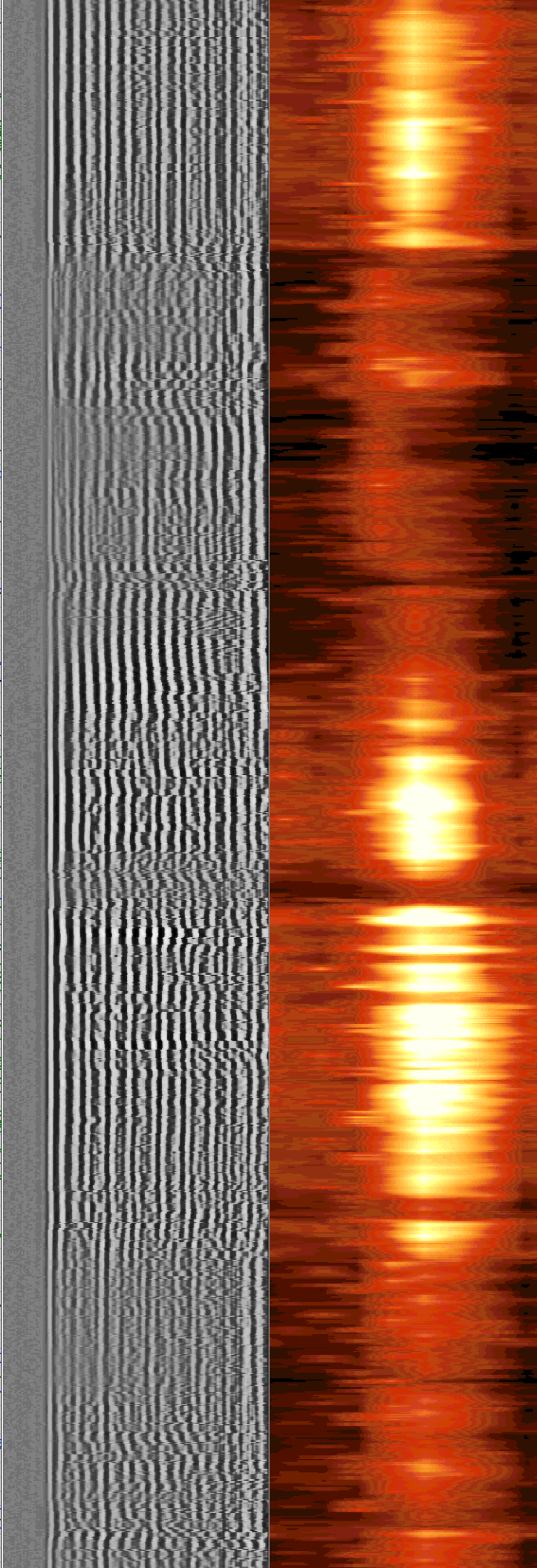
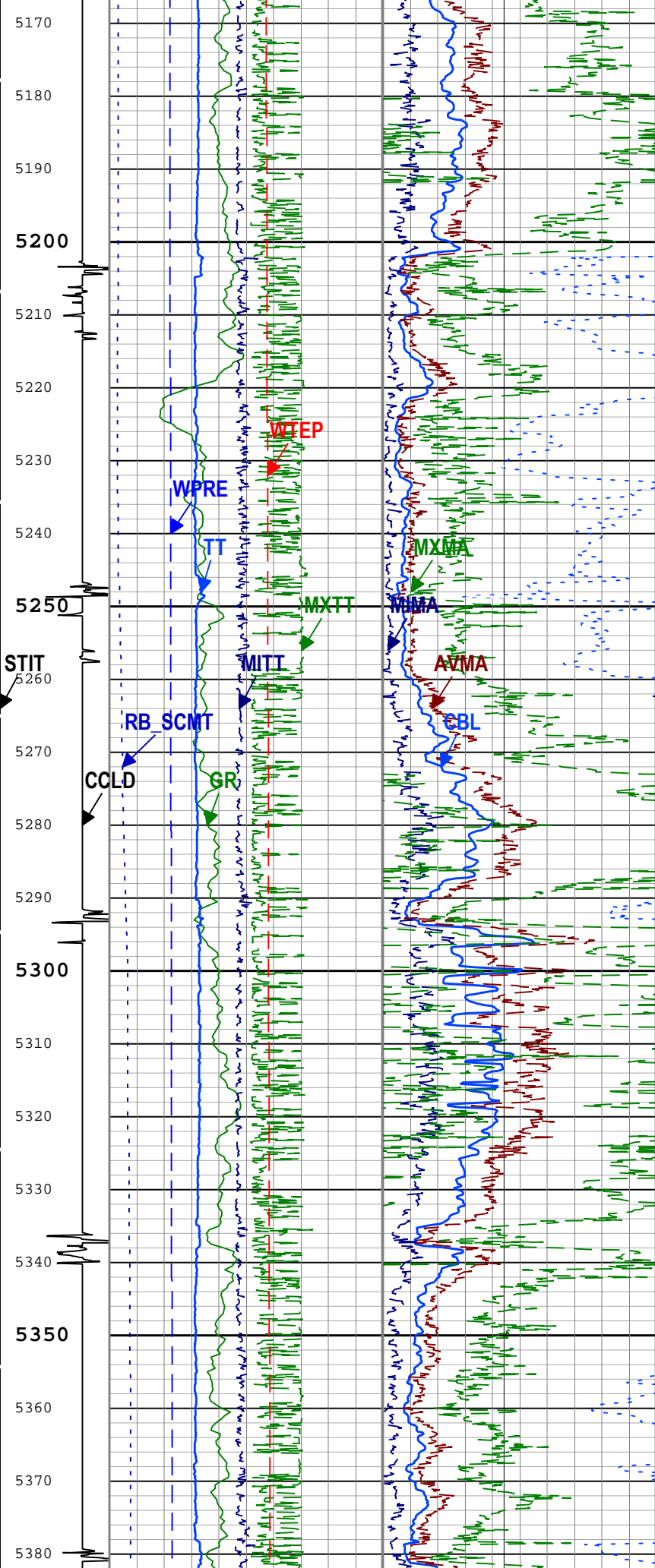


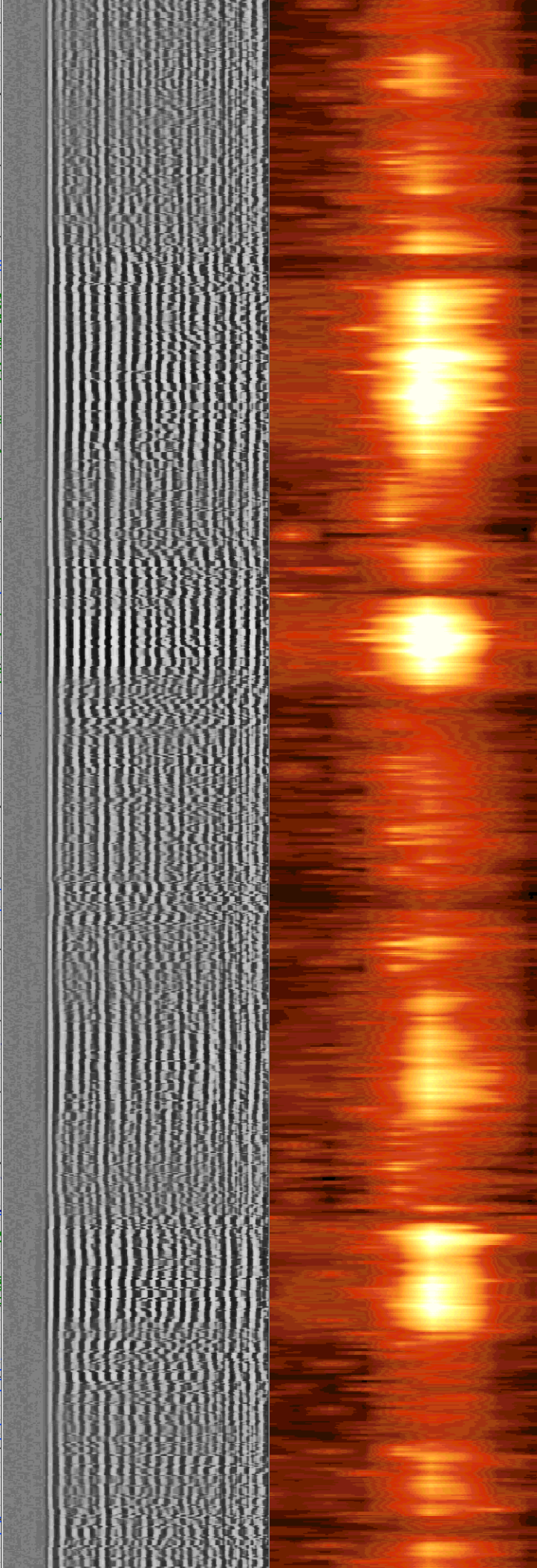
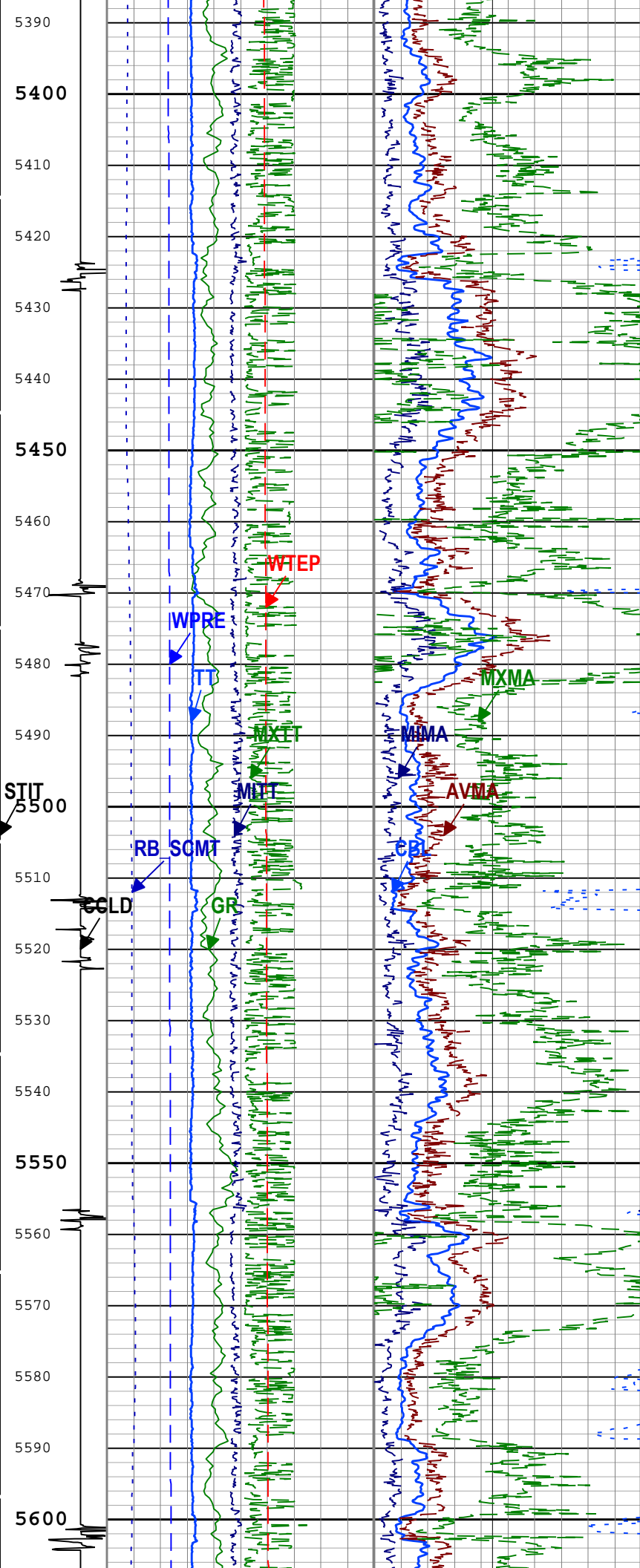


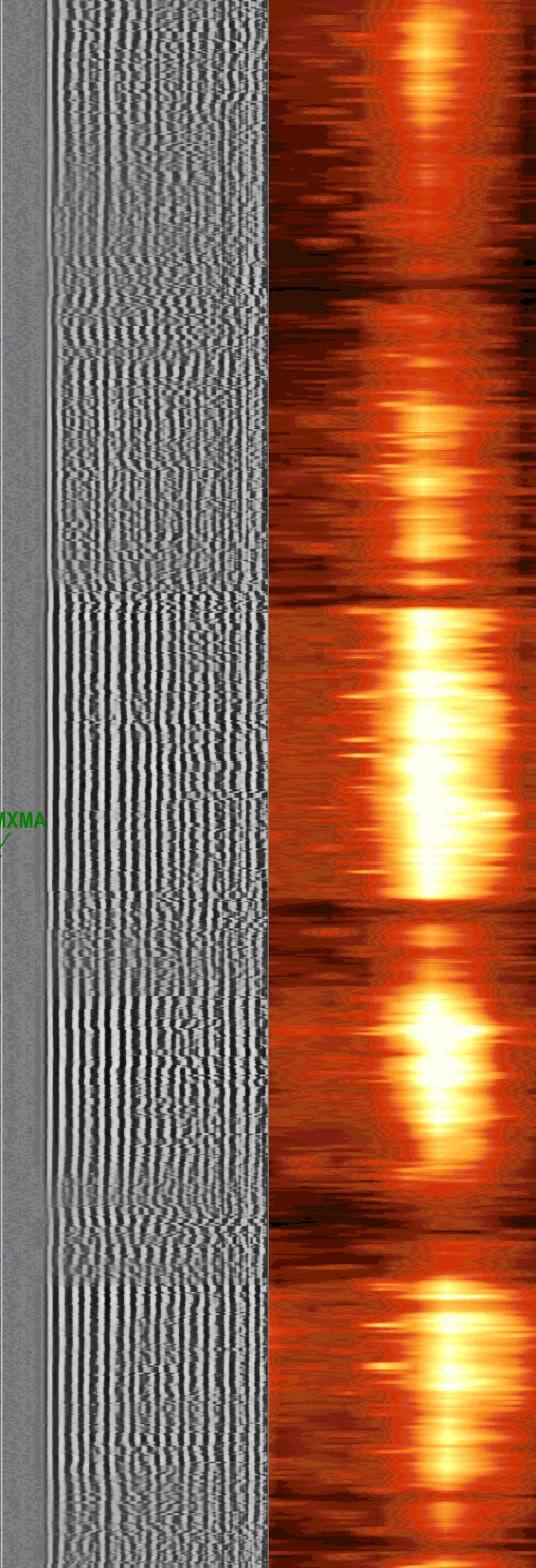
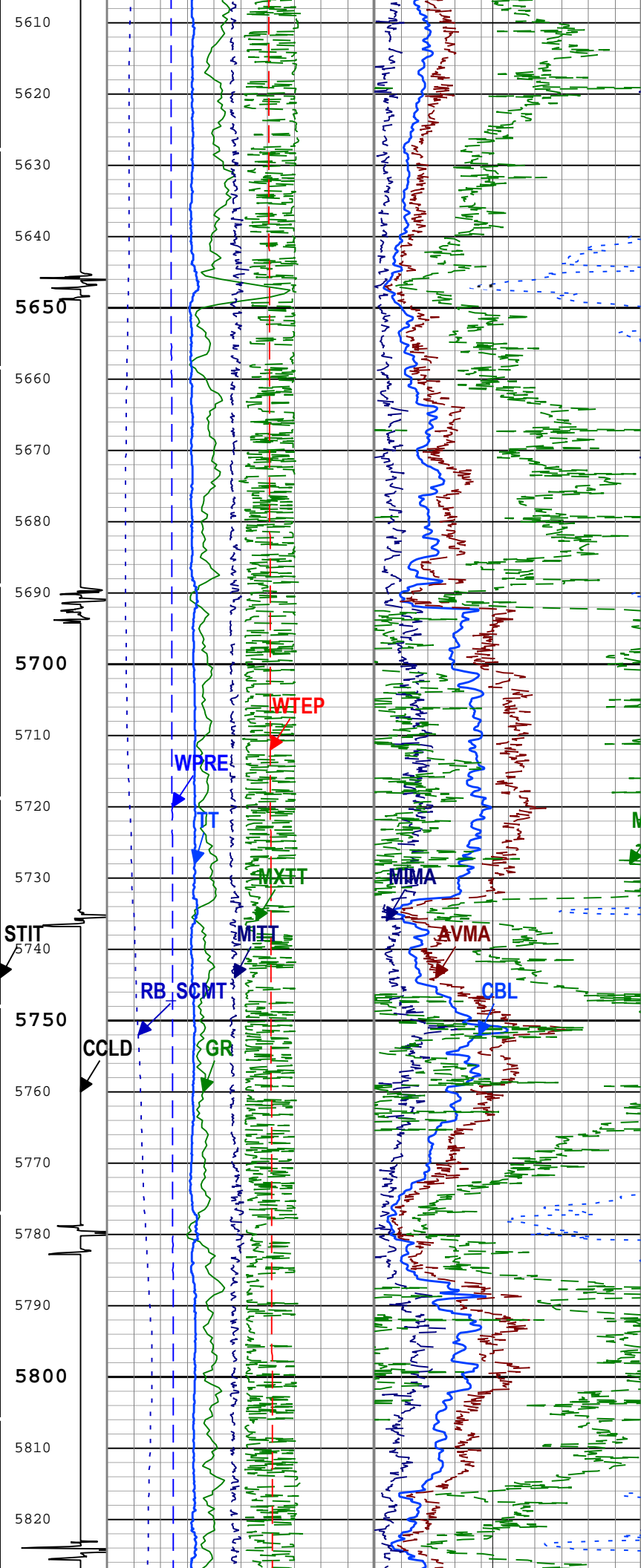


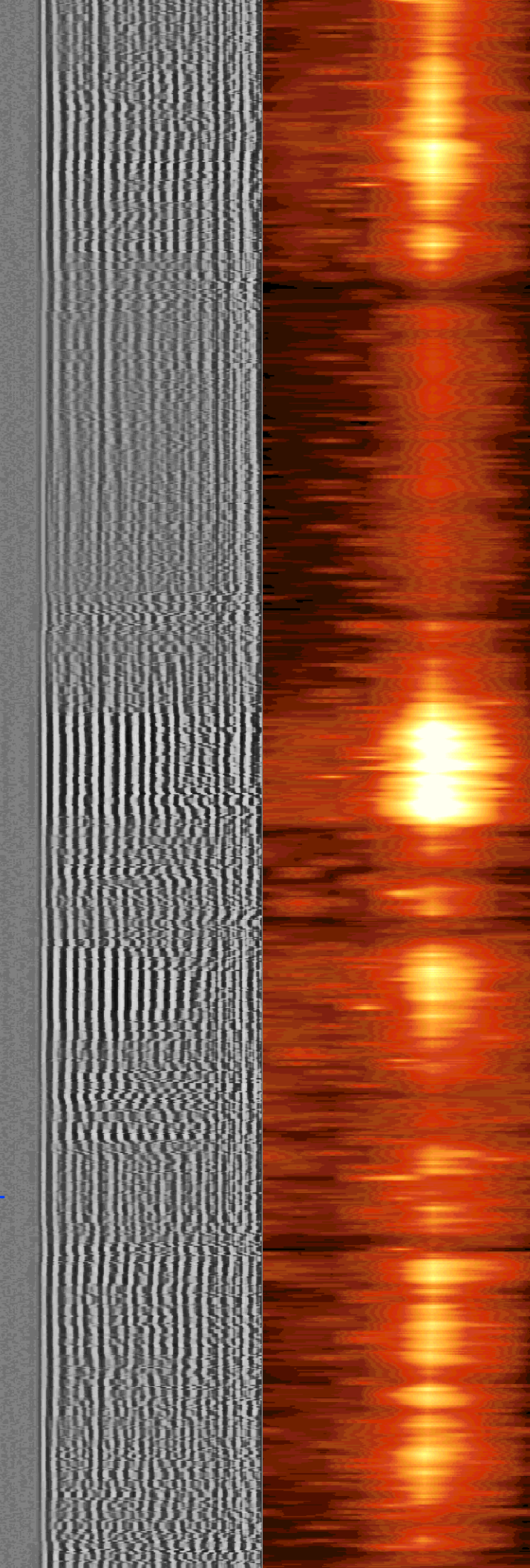
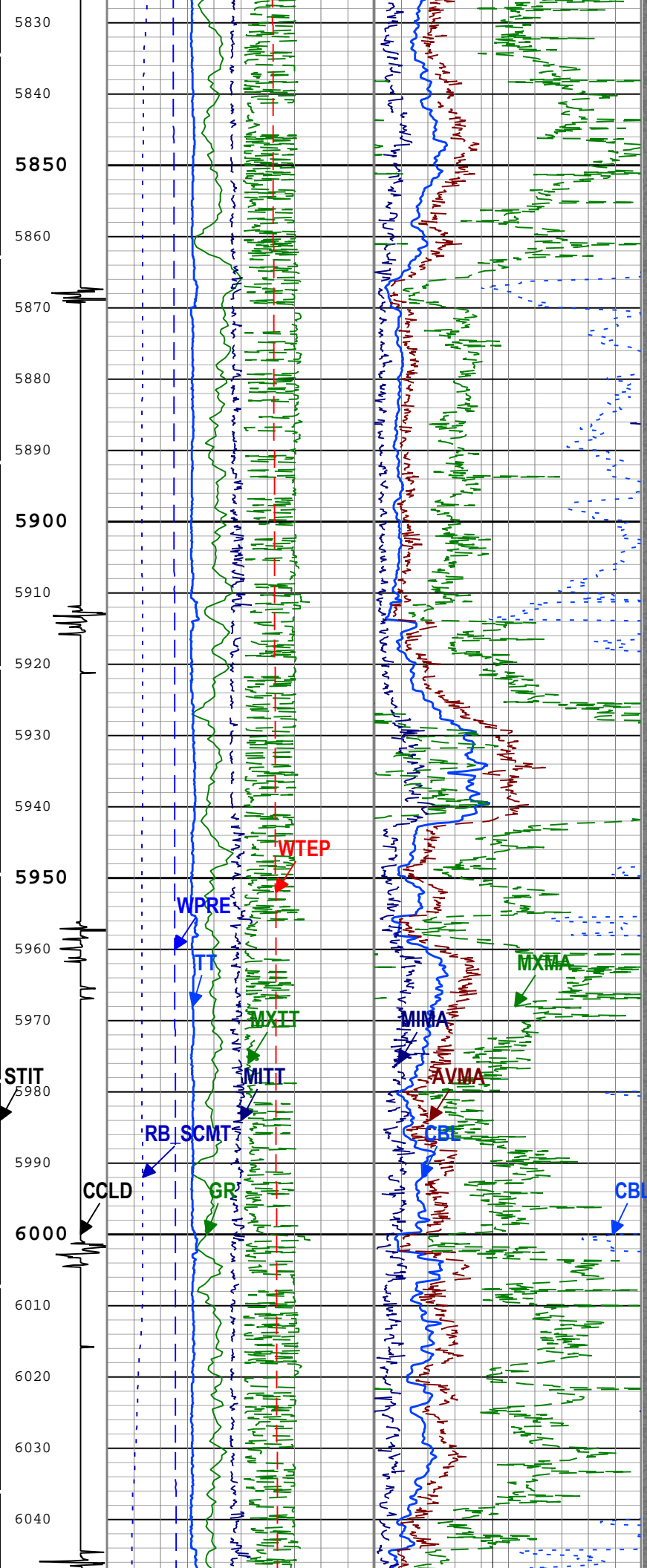


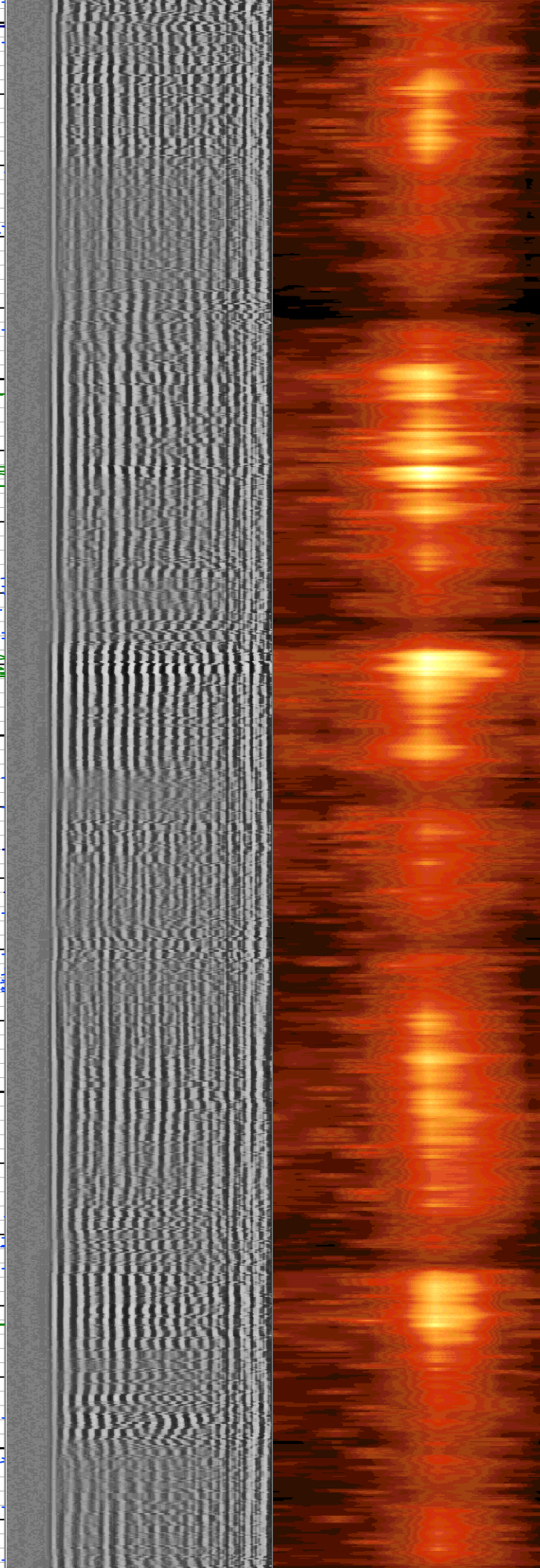
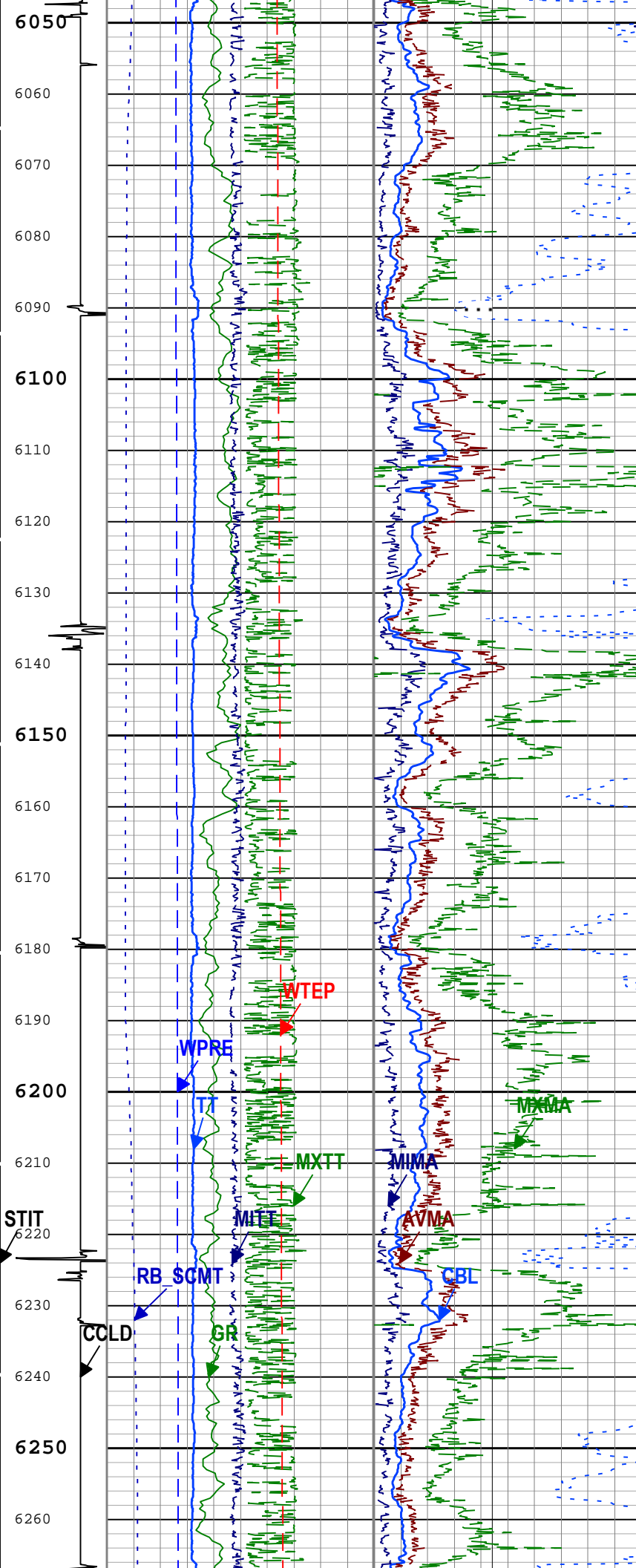


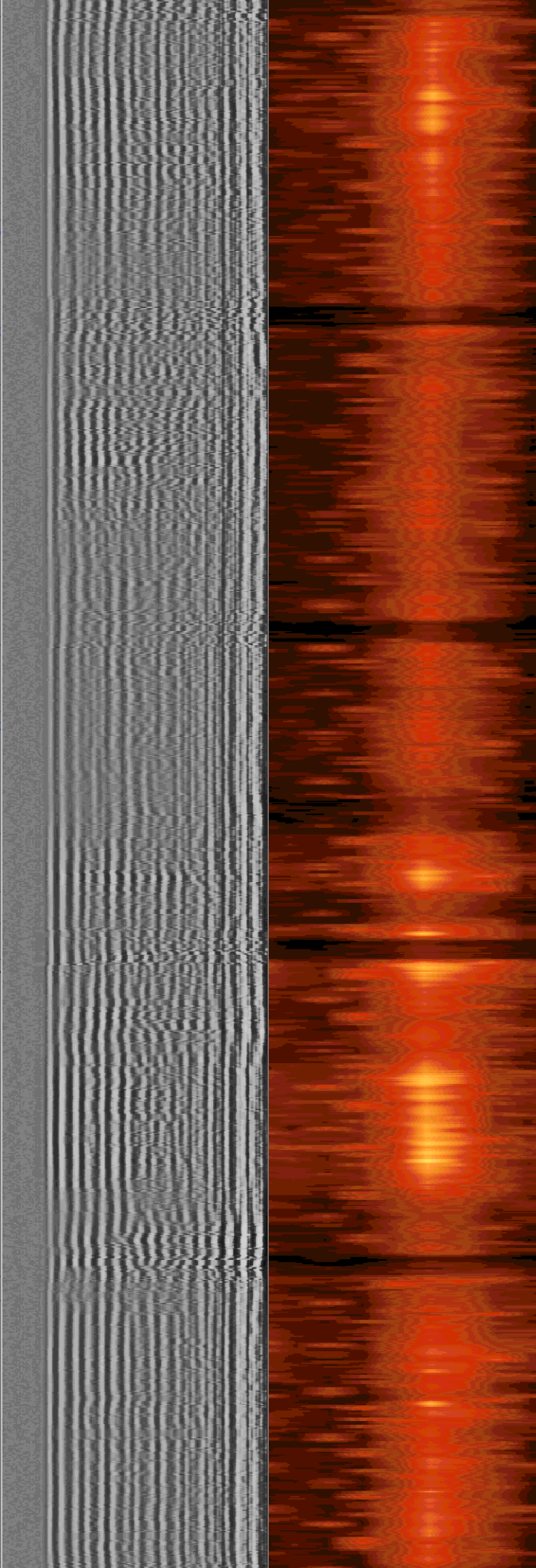
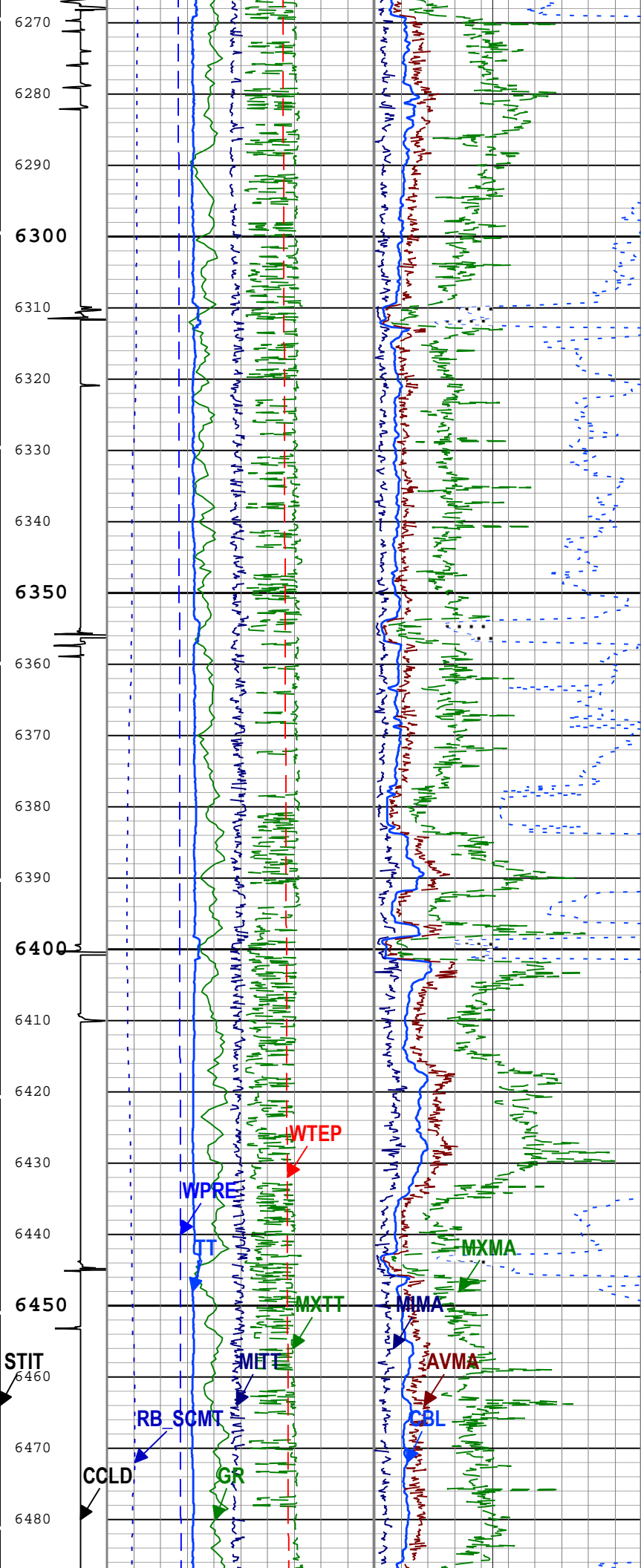


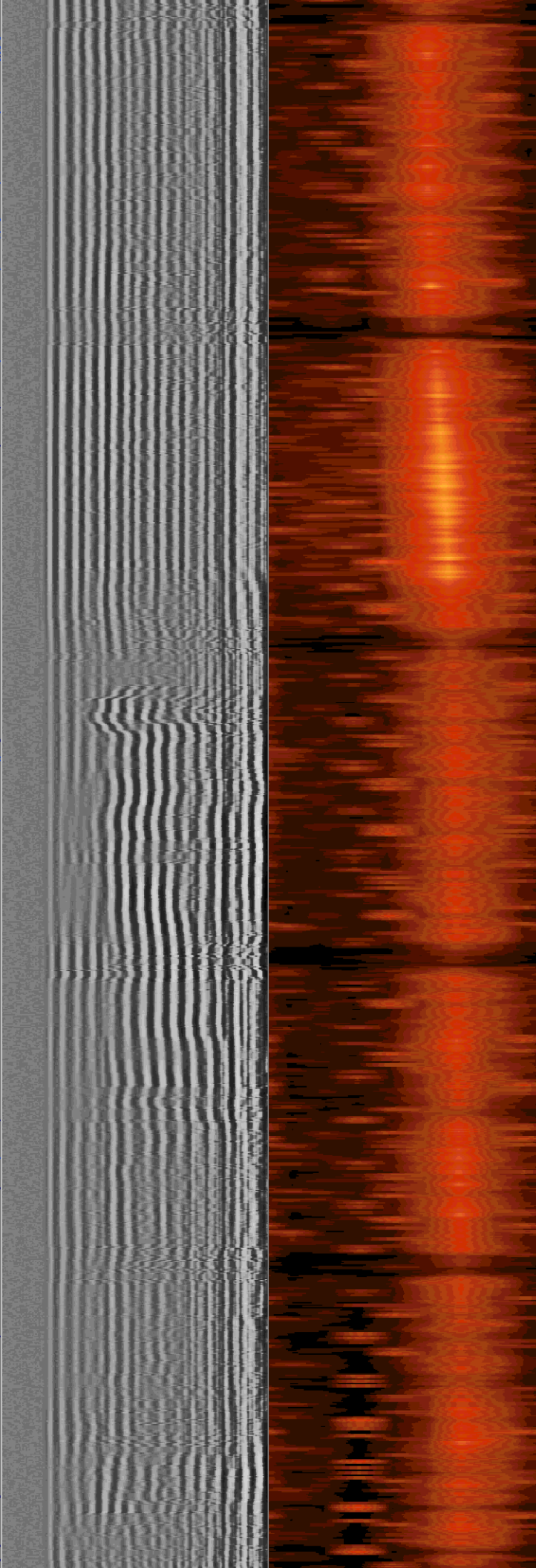
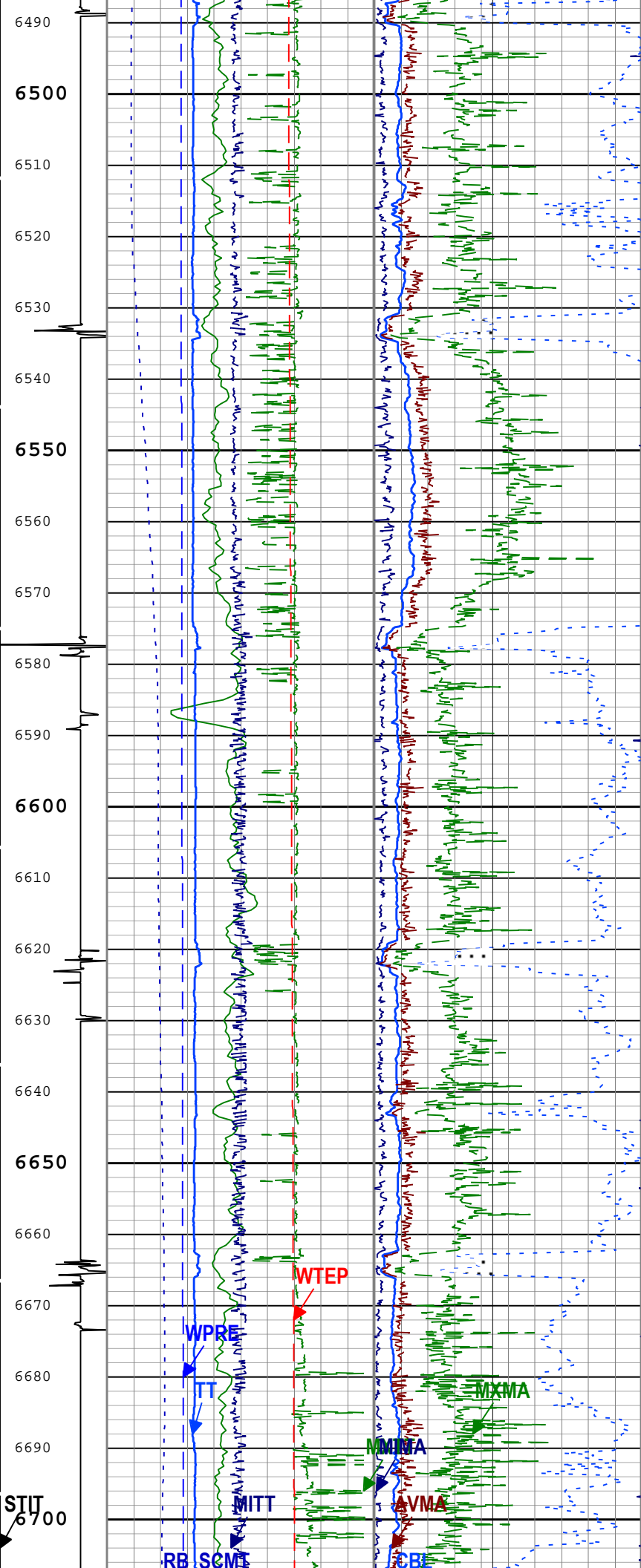


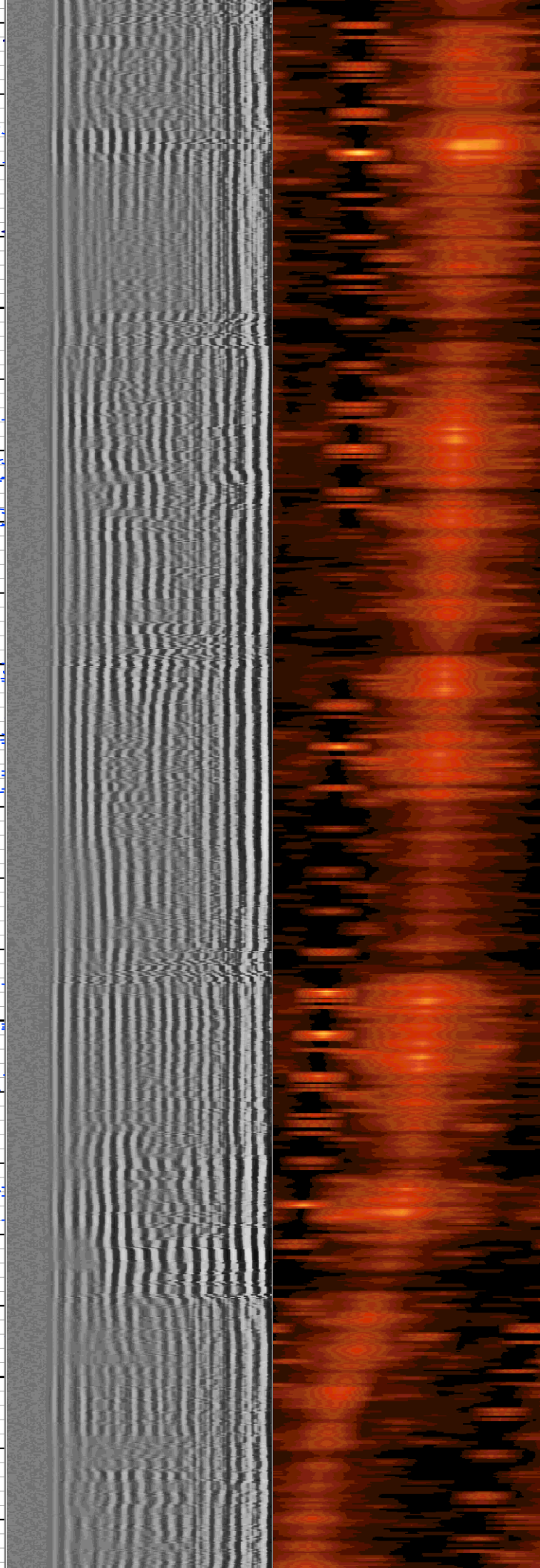
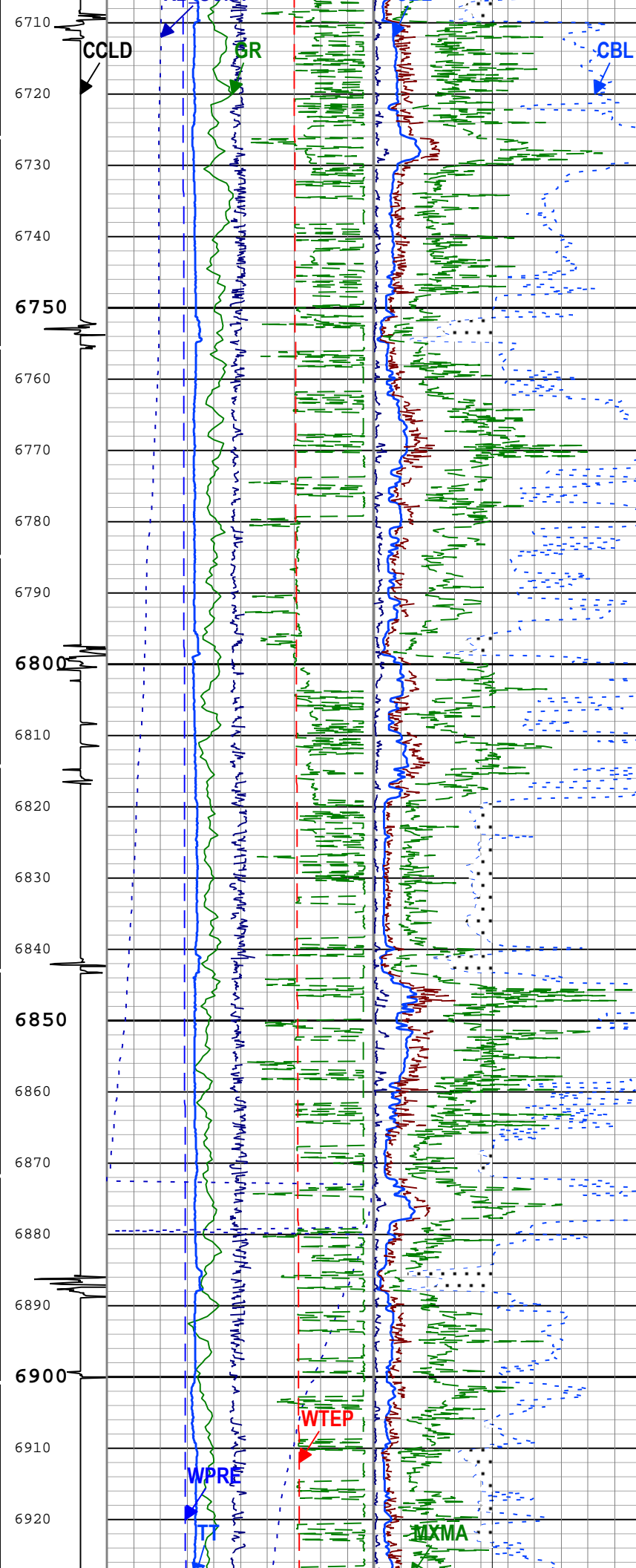


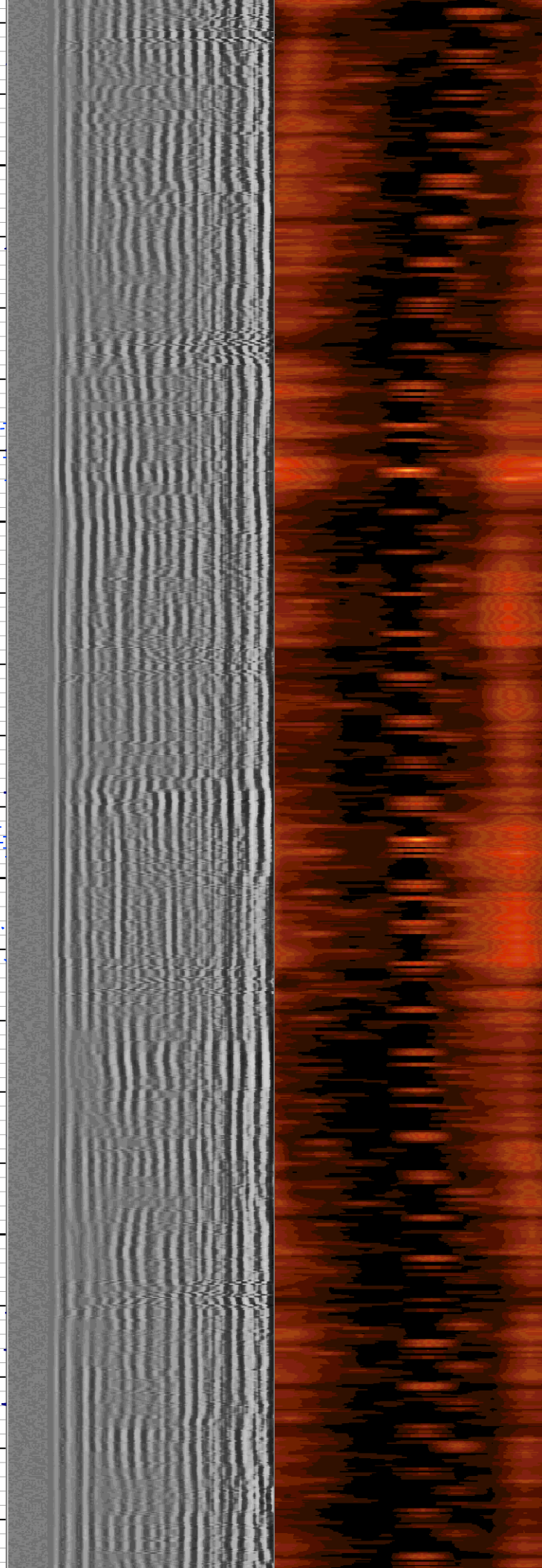
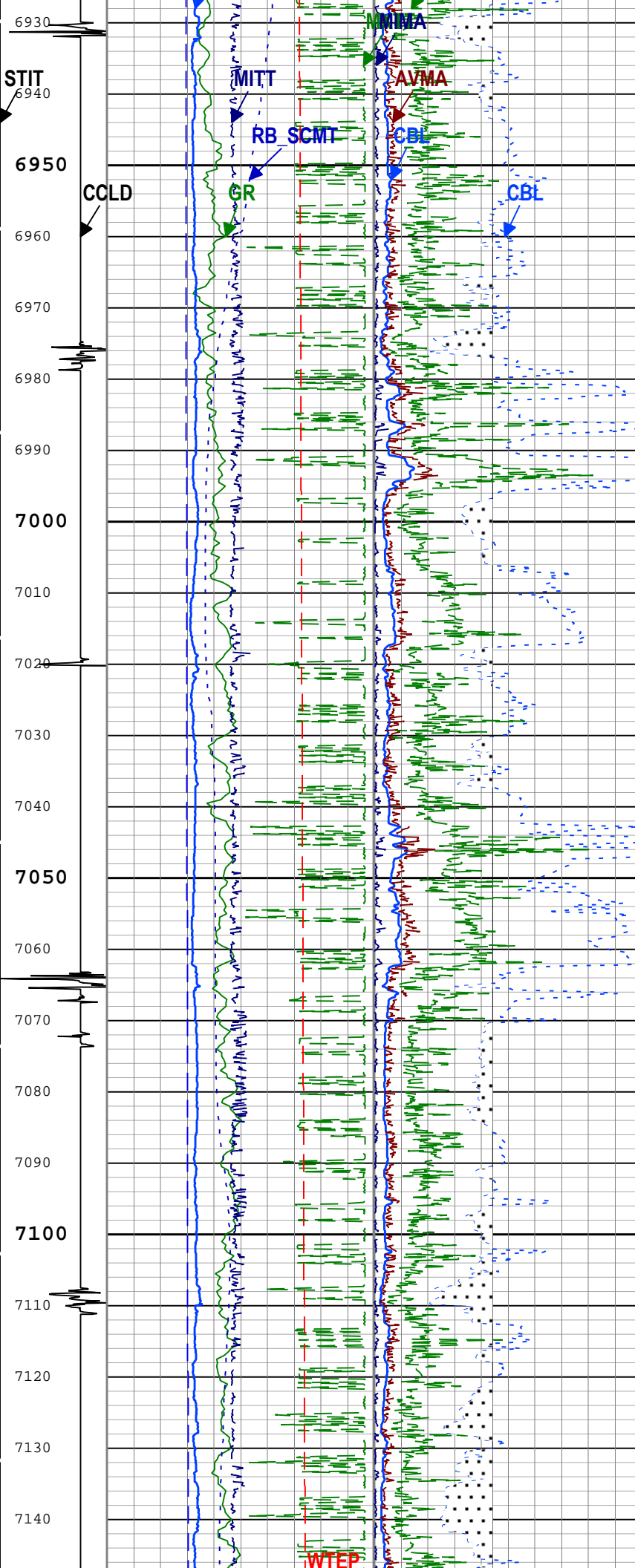


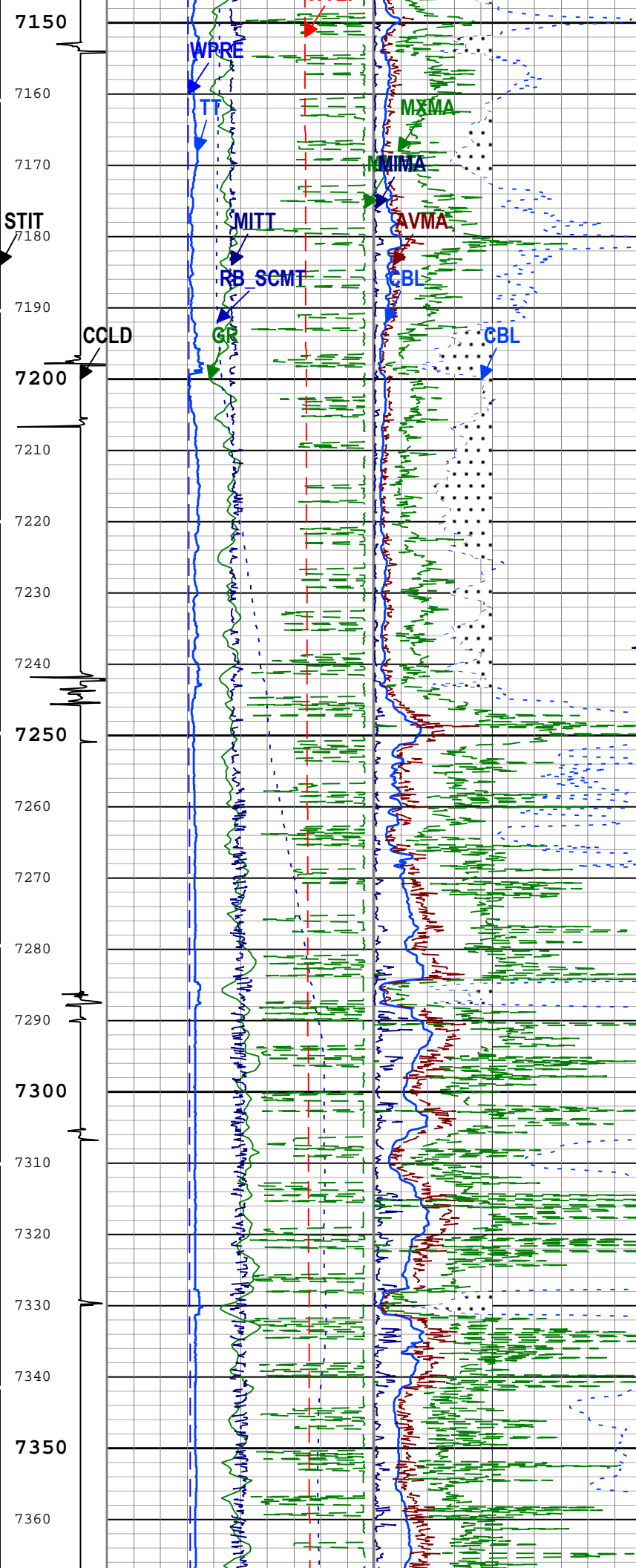


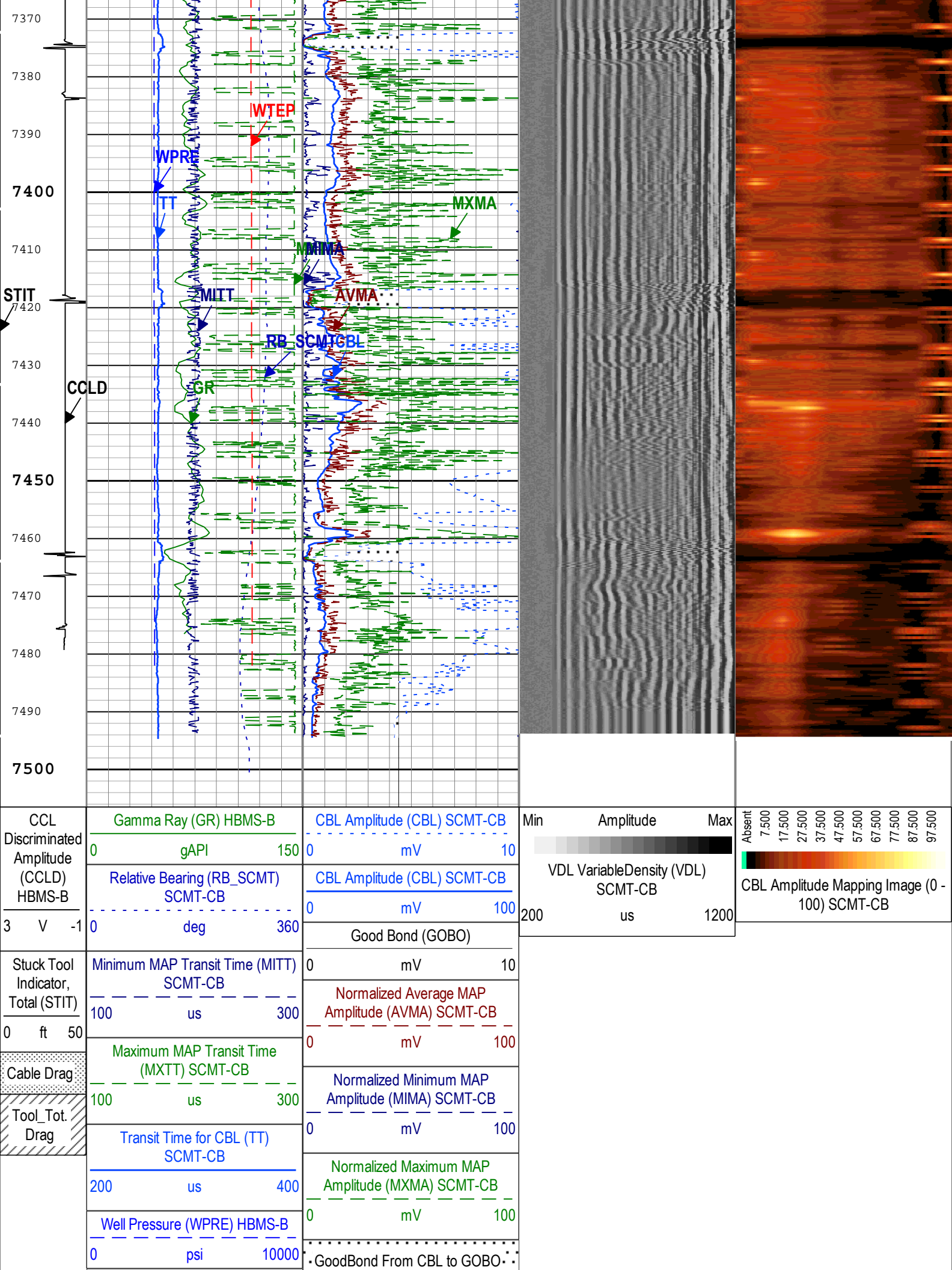












Well Temperature (WTEP) HBMS-B

0 degF 300

TIME_1900 - Time Marked every 60.00 (s)

Description: SCMT_VDL_Image Format: Log (SCMT_VDL_Image) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 18-Sep-2015 17:05:12

Channel Processing Parameters

Run 1: Parameters

Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	223	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-CB	224	us
CBLG		SCMT-CB	44	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-CB	72	mV
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT	Drilling Fluid Type	Borehole	Oil	
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-CB	4.44	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	WTEP	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	SCMT-CB	192.15	us
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-CB	11.85	dB/ft
MCI	Minimum Cemented Interval for Isolation	SCMT-CB	4.75	ft
MMSA	MAP Minimum Sonic Amplitude	SCMT-CB	10.96	mV
MSA	Minimum Sonic Amplitude	SCMT-CB	2.21	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	SCMT-CB	2.21	mV
RUN_SNUM	Run Sequence Number	WSDRUN	2	

Tool Control Parameters

Run 1: Parameters

Parameter	Description	Tool	Value	Unit
CMTM	SCMT Operating Mode	SCMT-CB	Log	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	1800	ft/h

Run 1

Software Version

Acquisition System	Version
Maxwell 2016	6.0.47569.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Run 1	Main[6]:Up	Up	53.34 ft	7506.72 ft	17-Sep-2015 6:28:22 PM	17-Sep-2015 10:41:01 PM	ON	5.52 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Extraction Oil & Gas LLC Well:Troudt 5

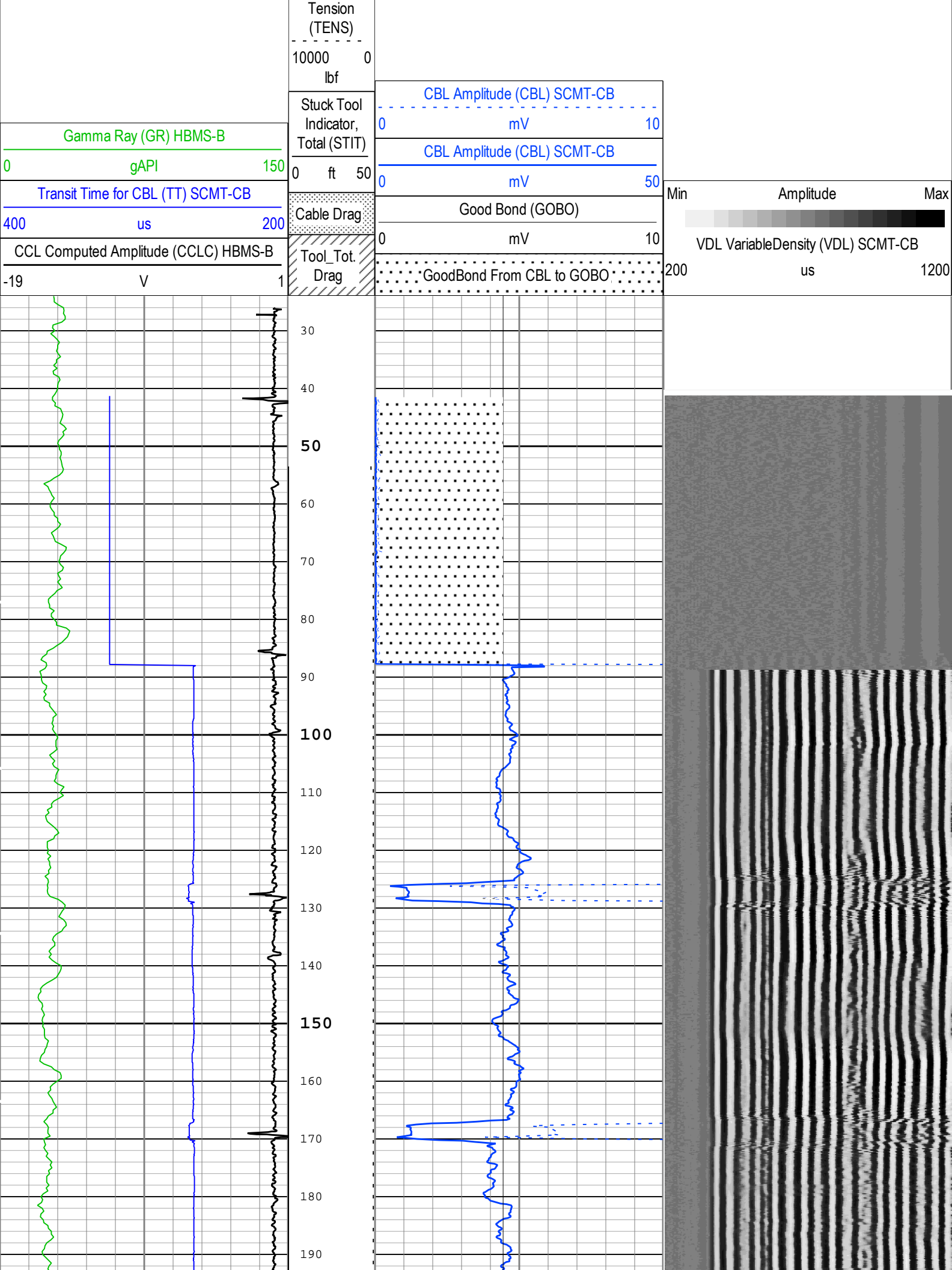
Run 1: Main[6]:Up:S005

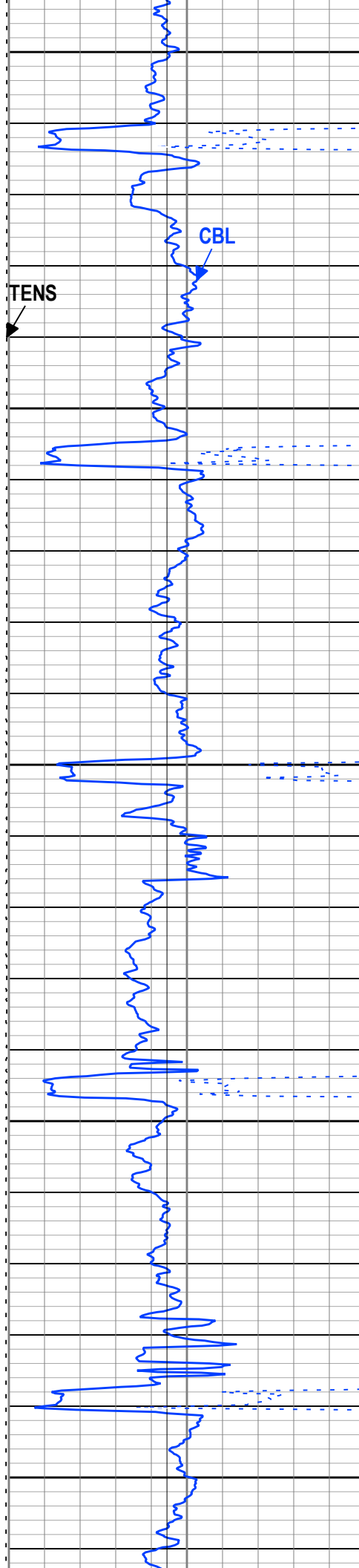
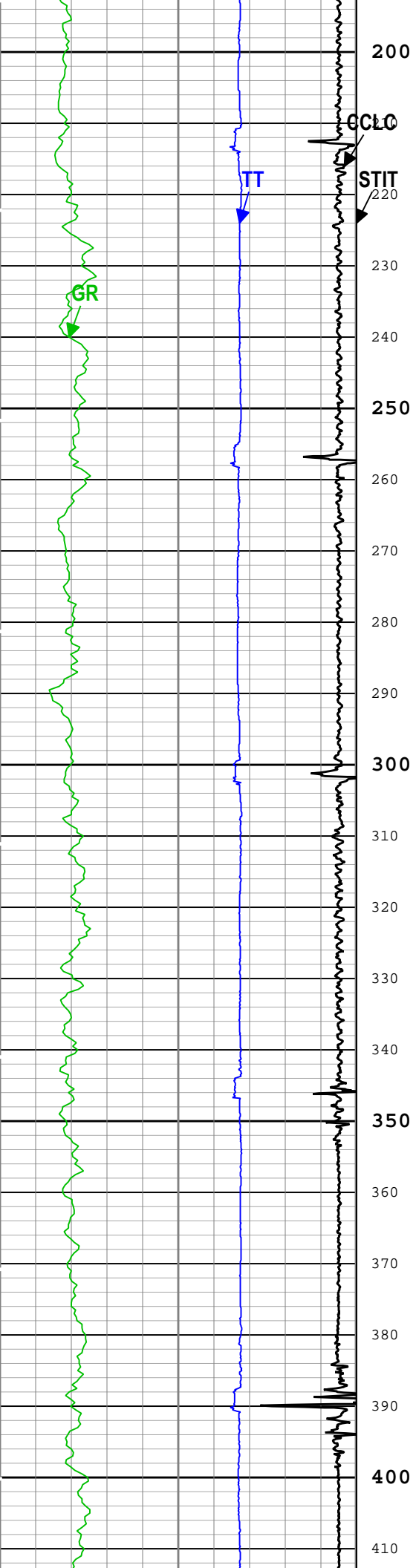
Description: Sonic CBL with VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 18-Sep-2015 17:05:20

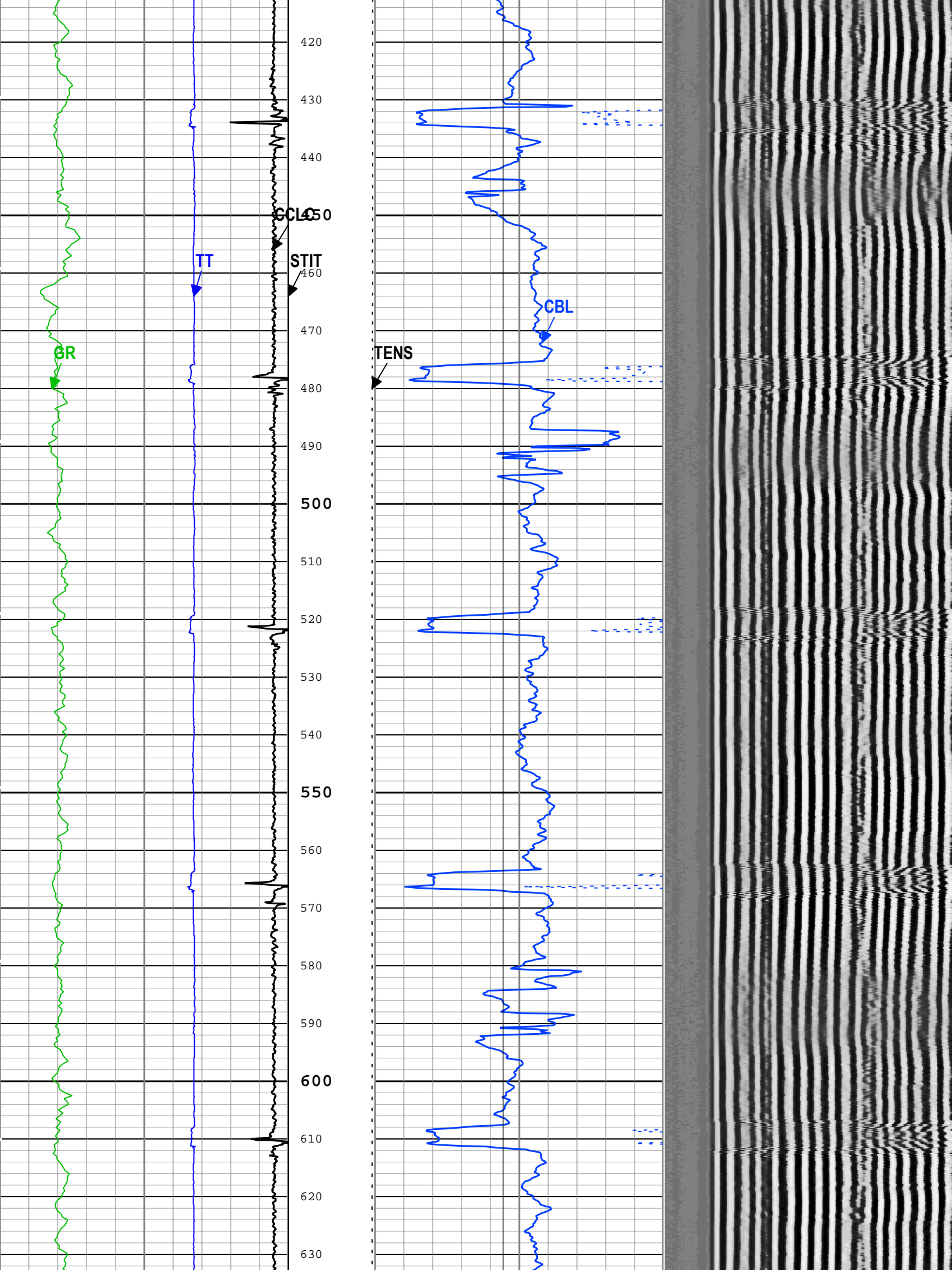
TIME_1900 - Time Marked every 60.00 (s)

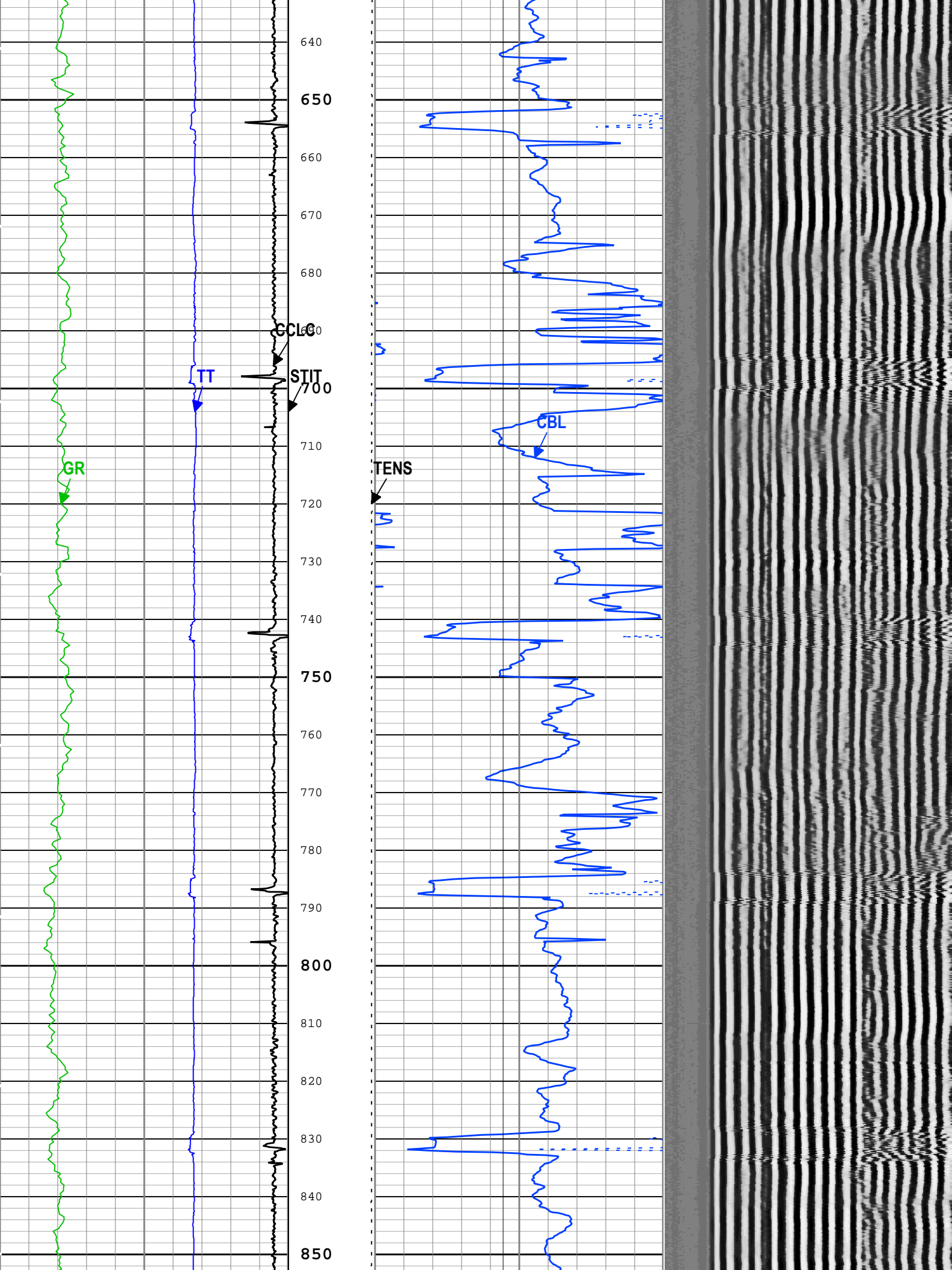
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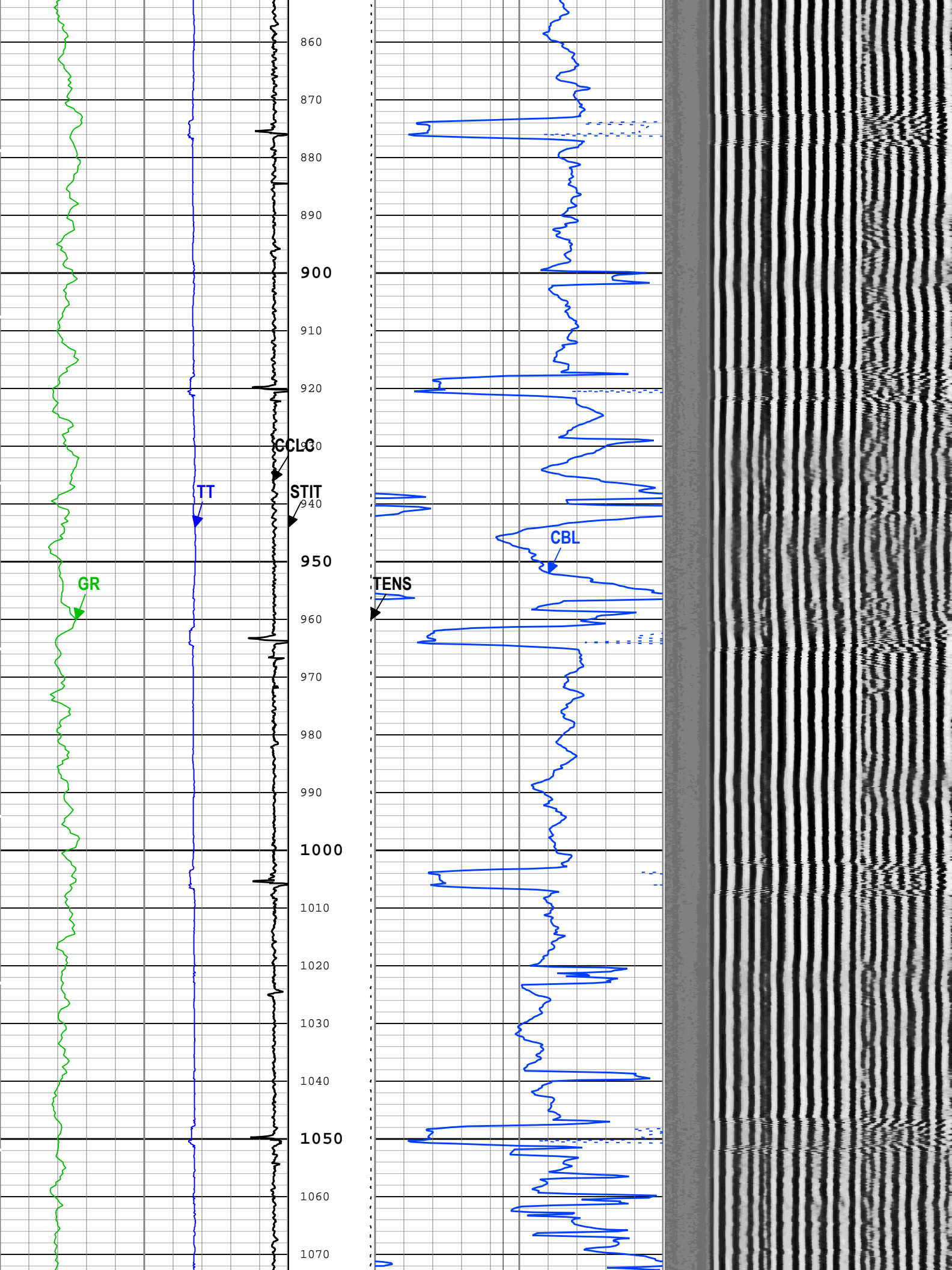
Cable

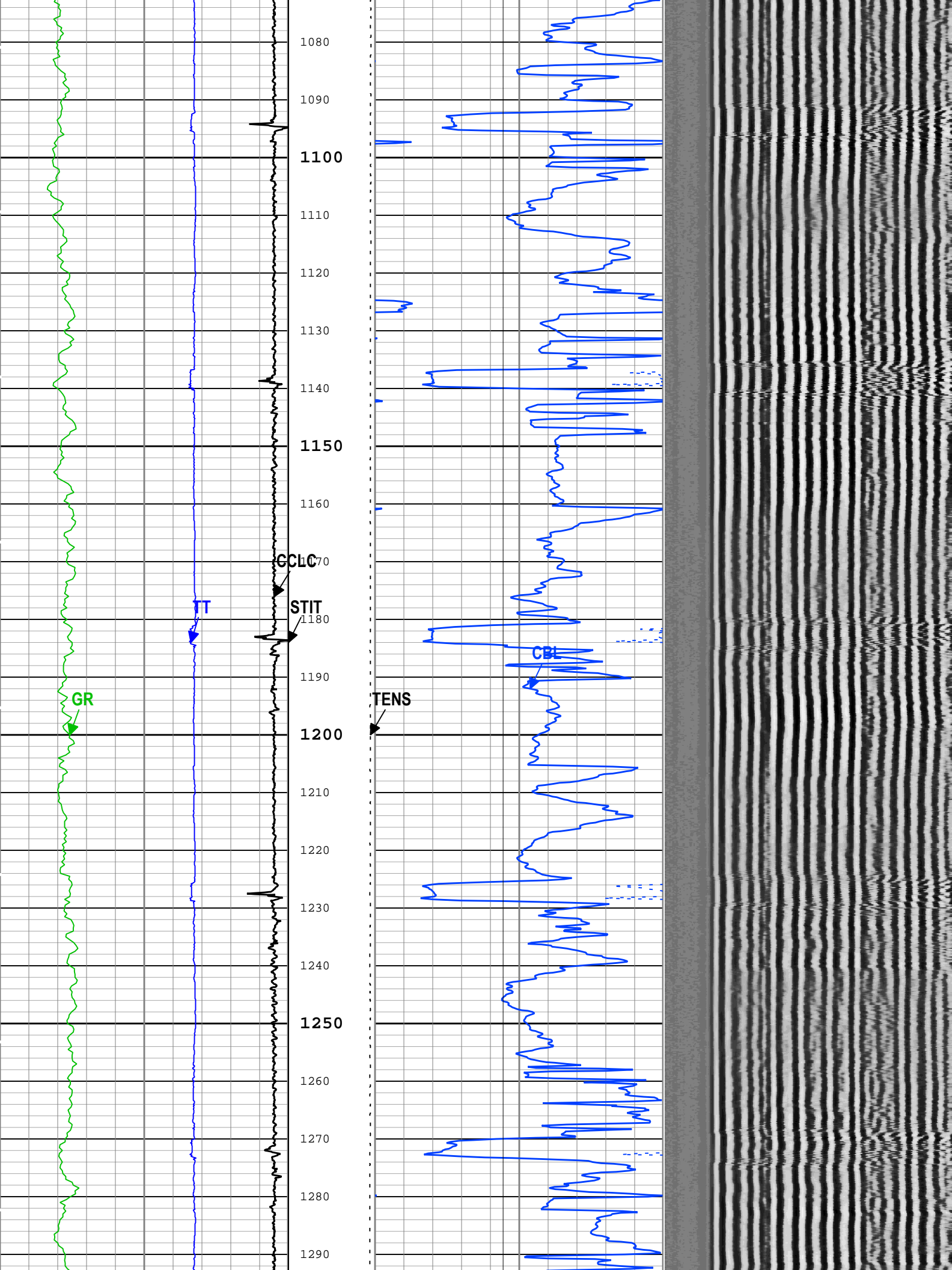


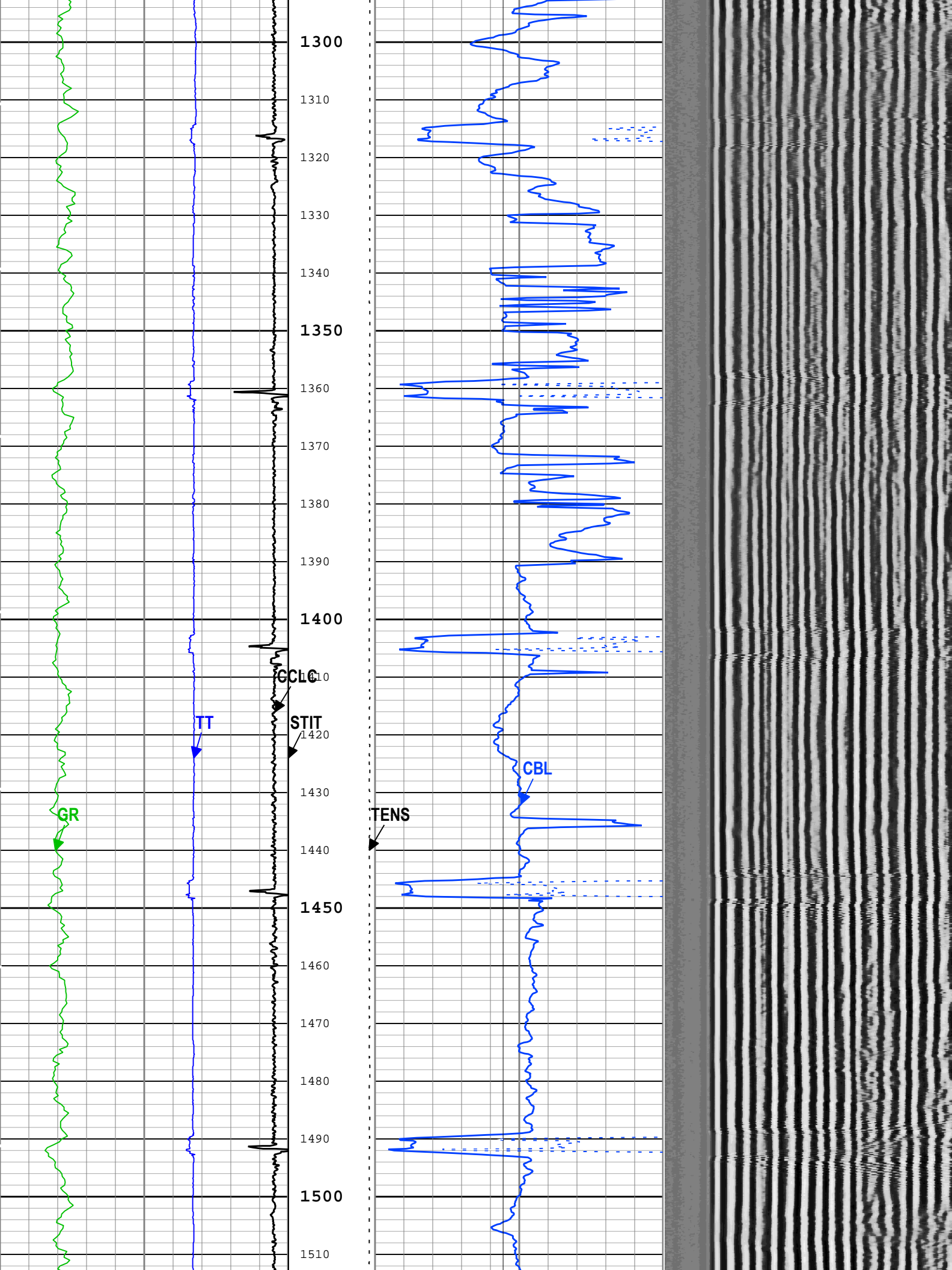


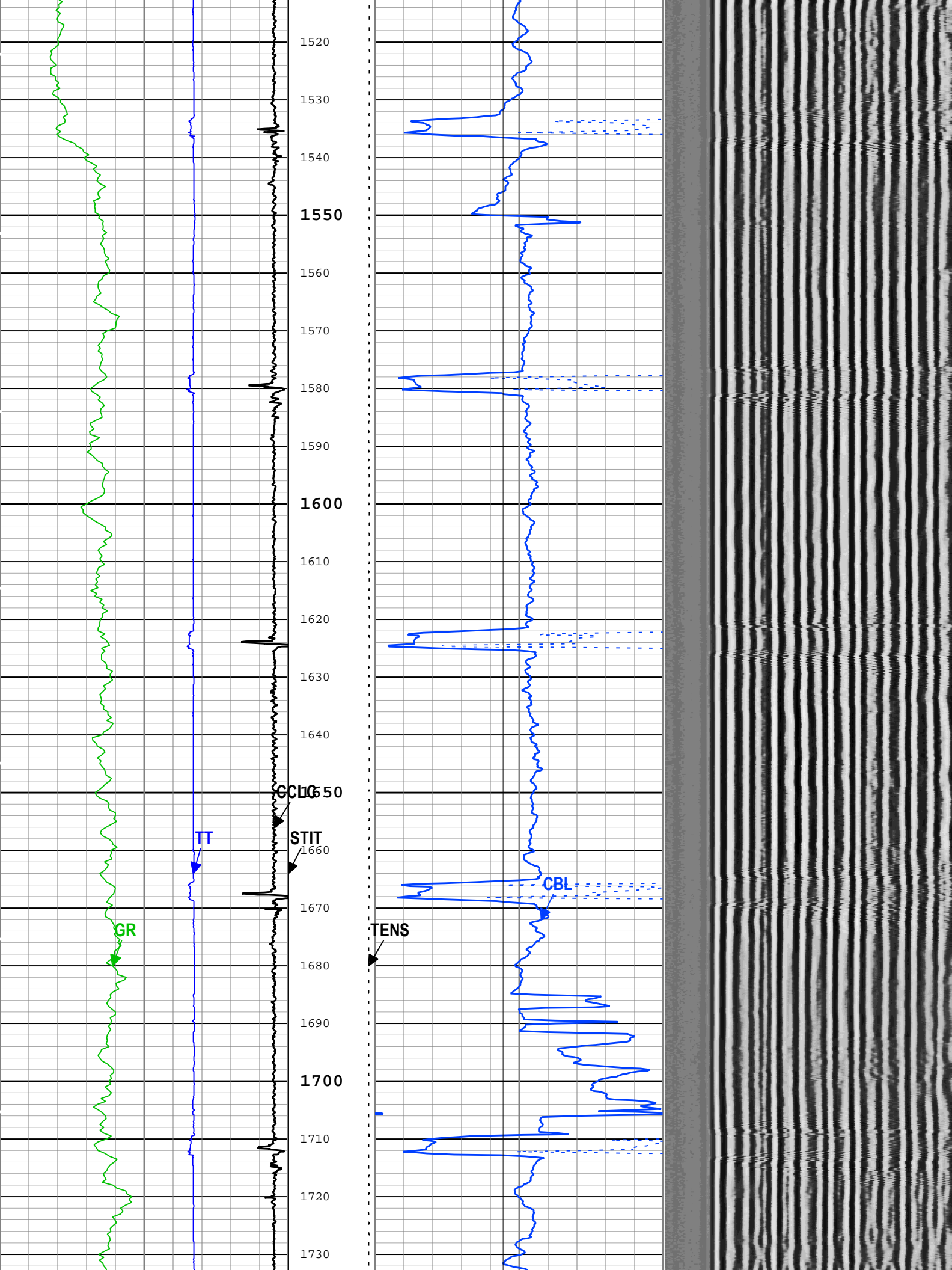


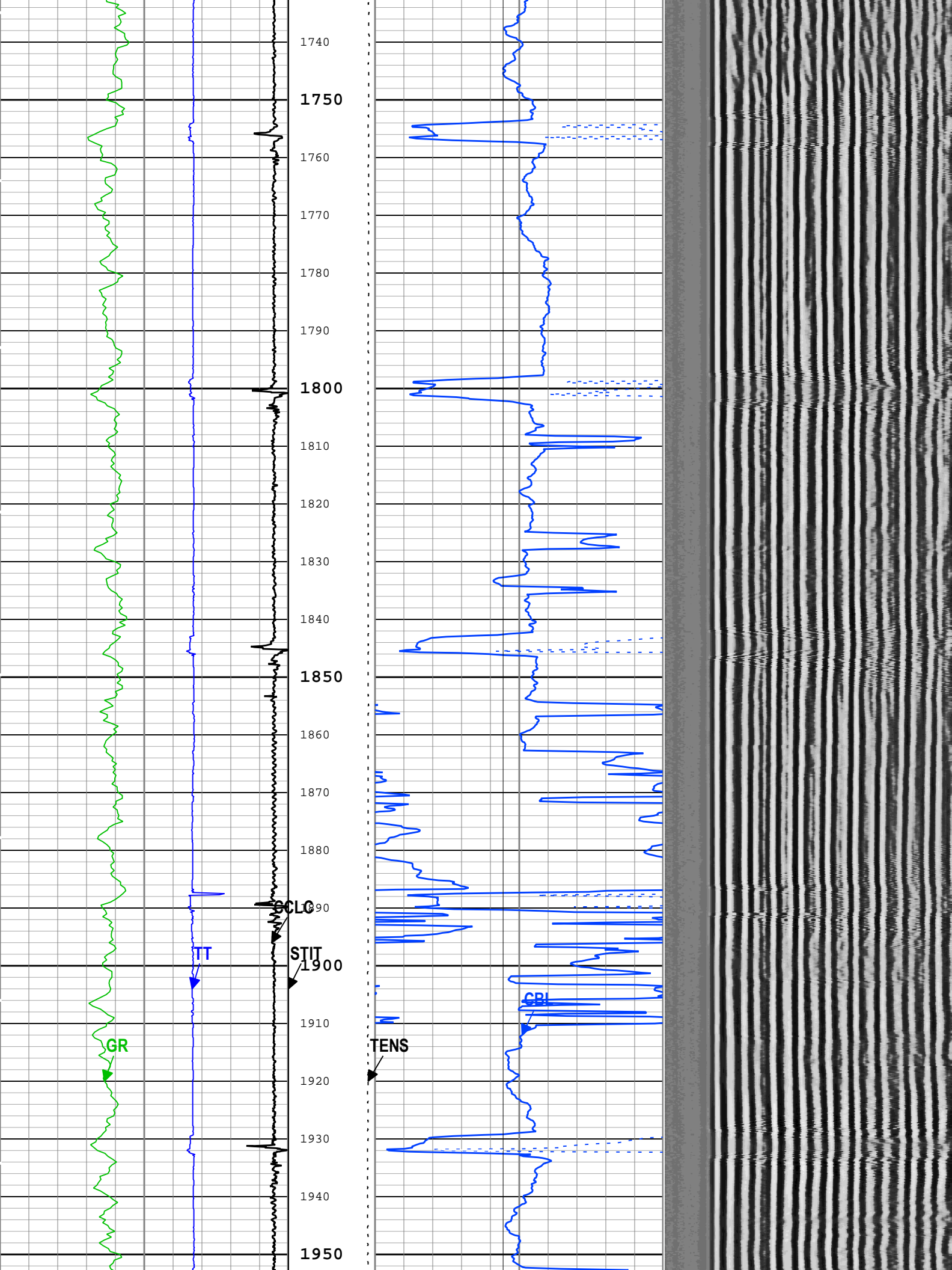


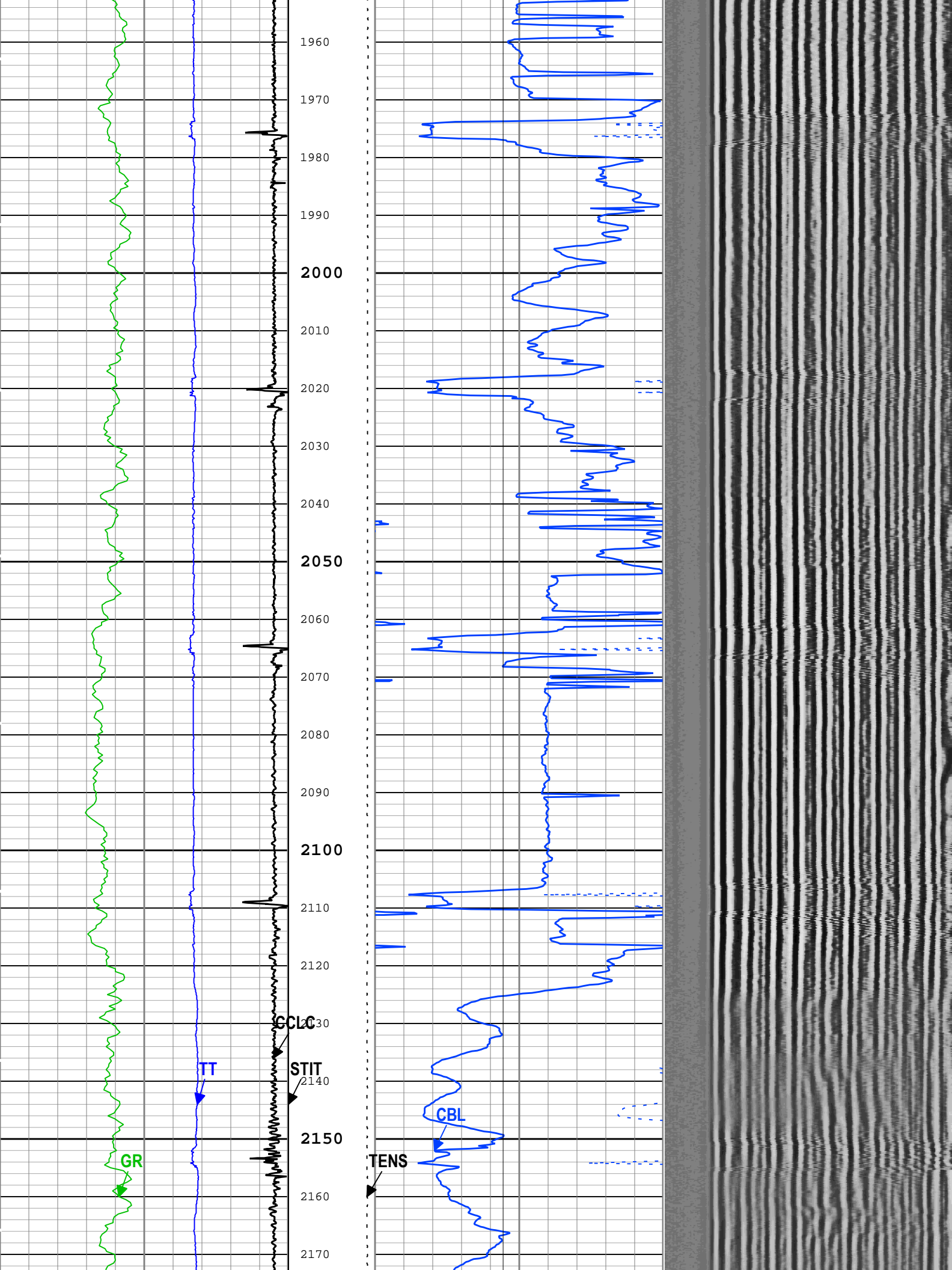


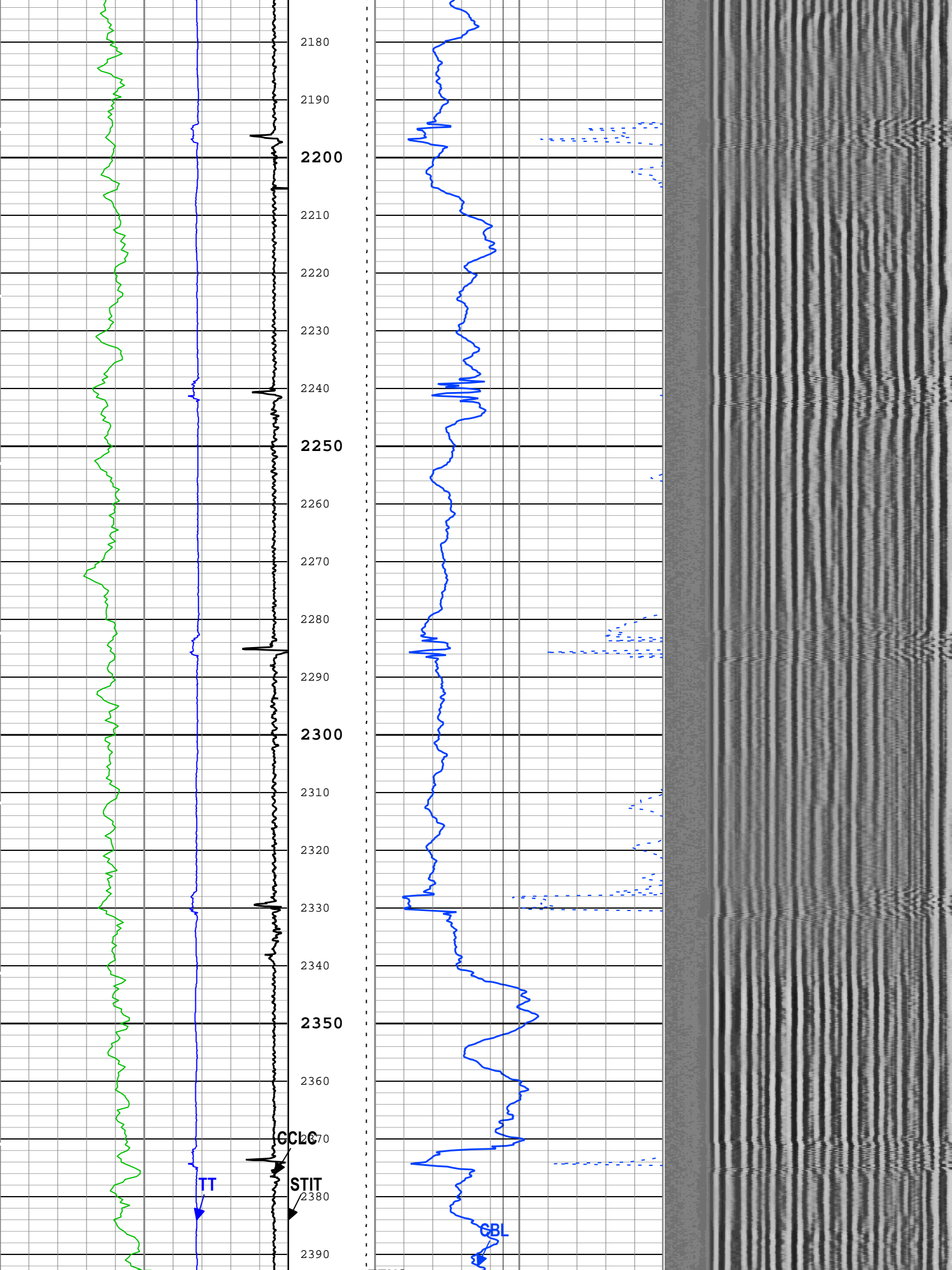


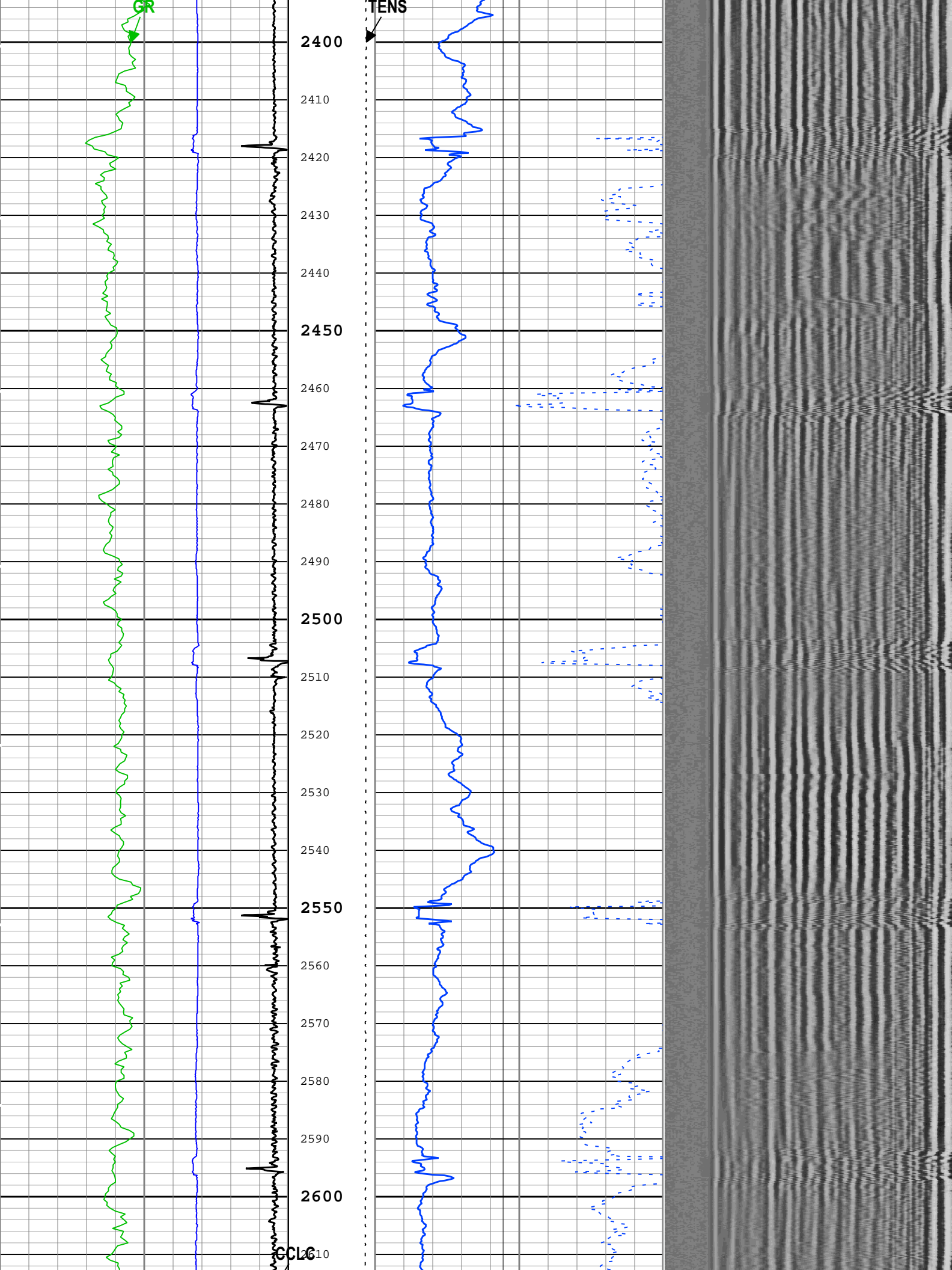


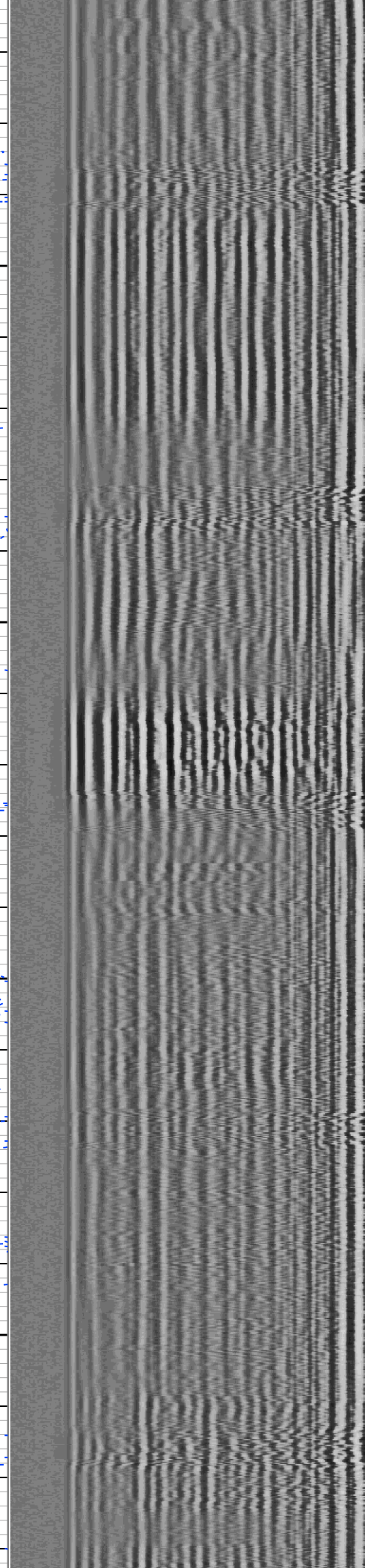
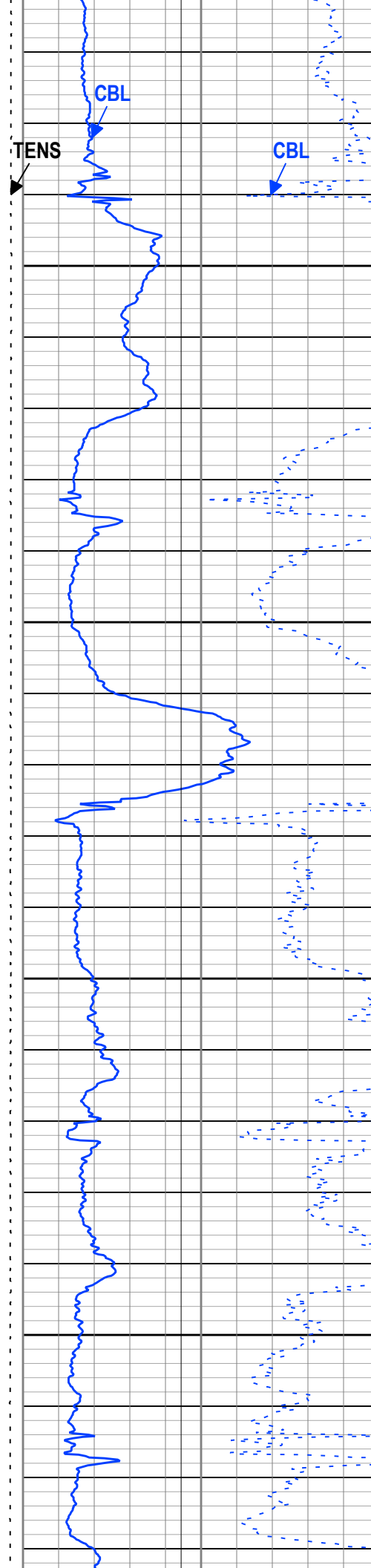
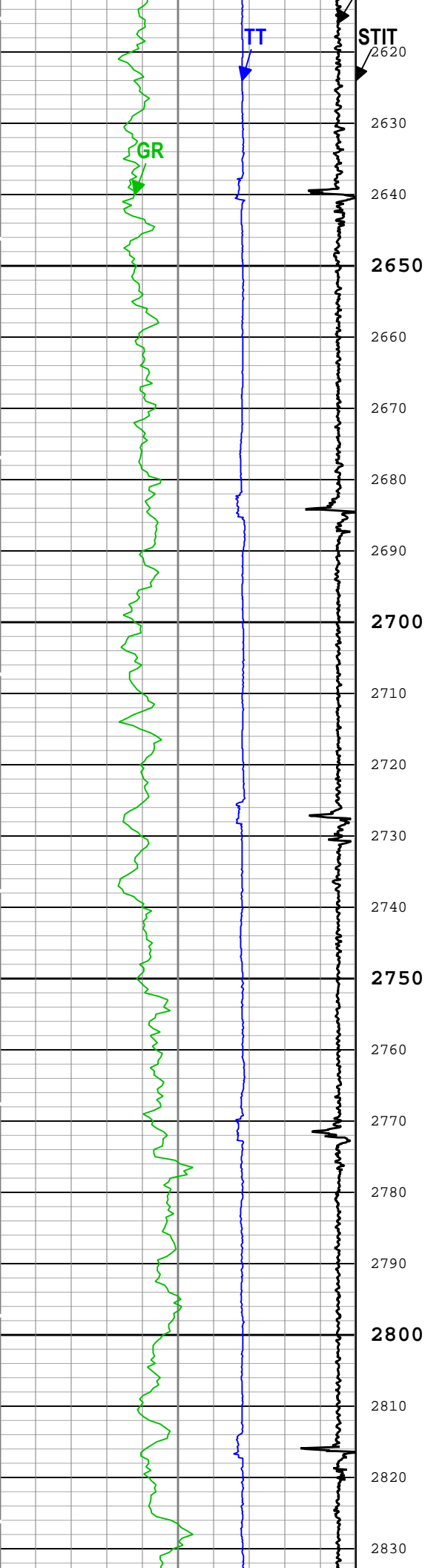


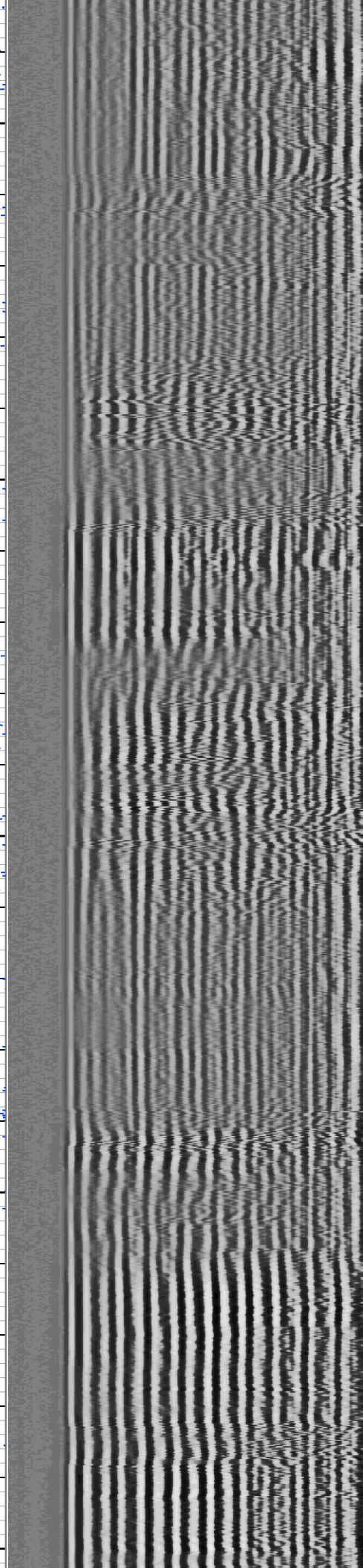
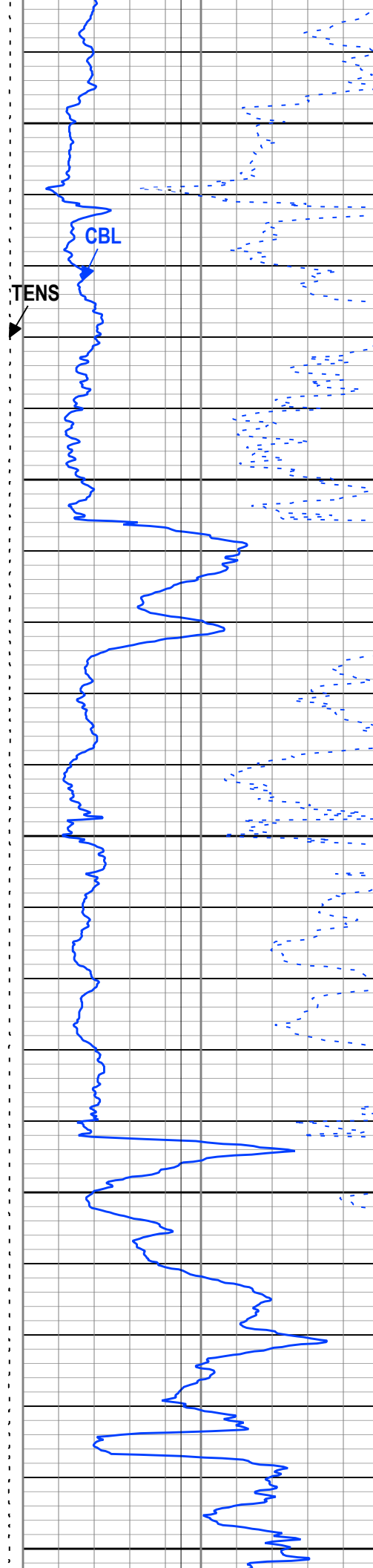
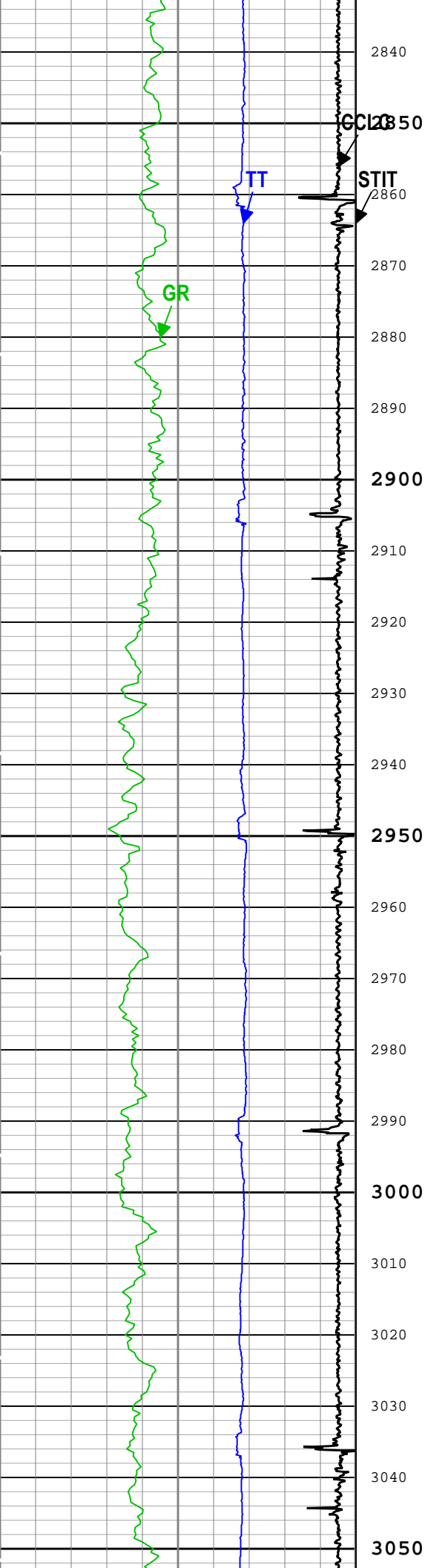


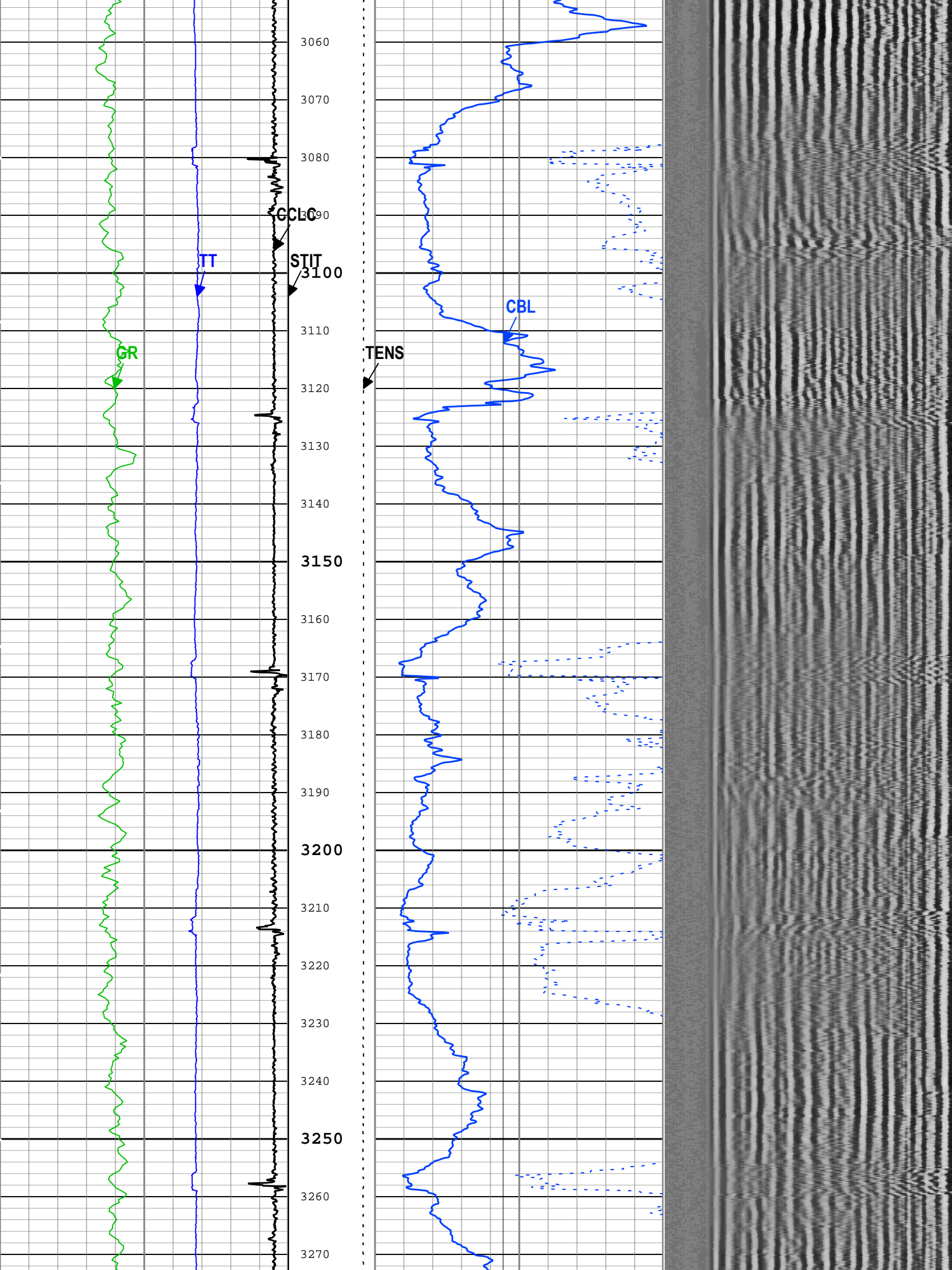


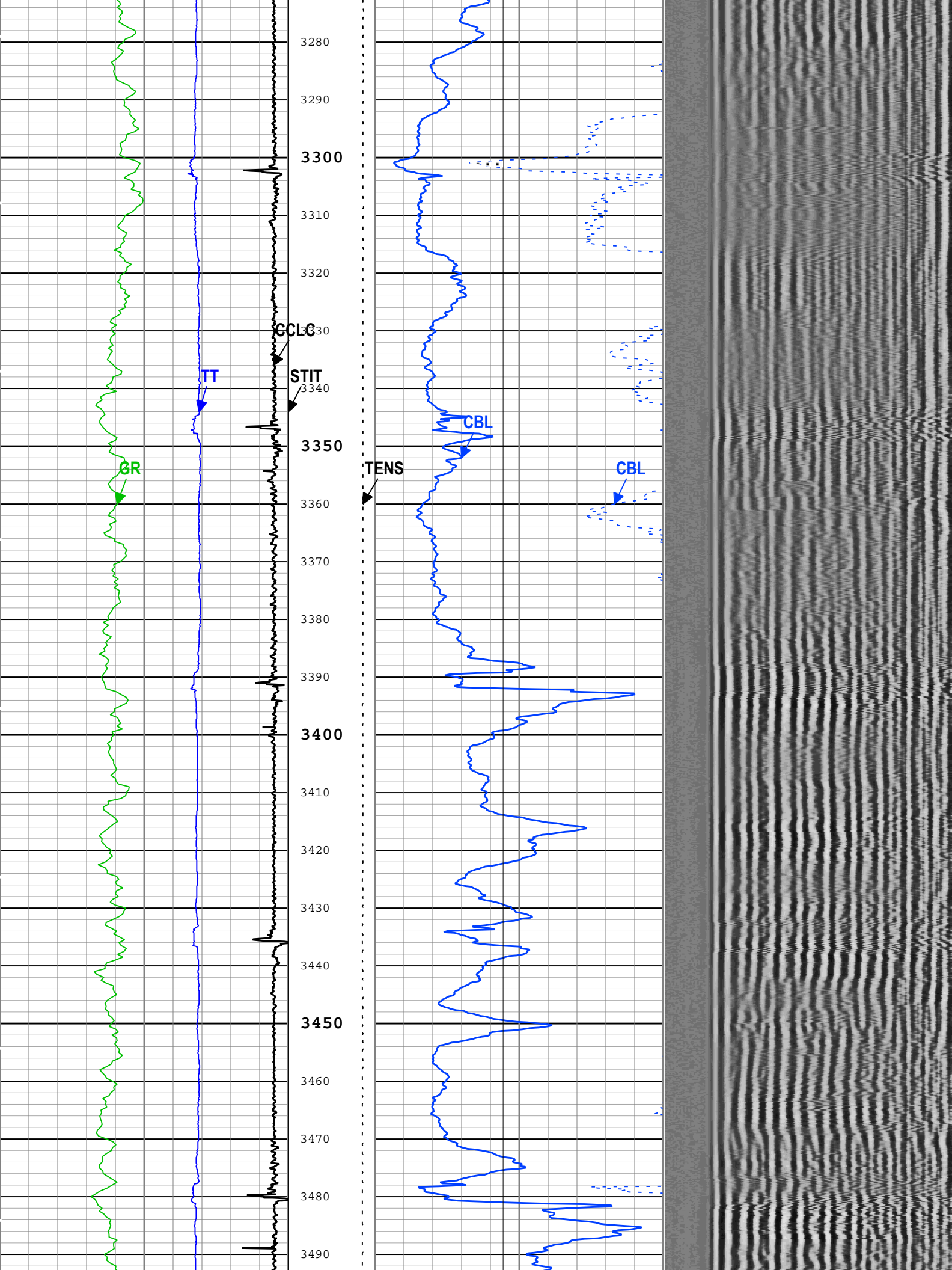


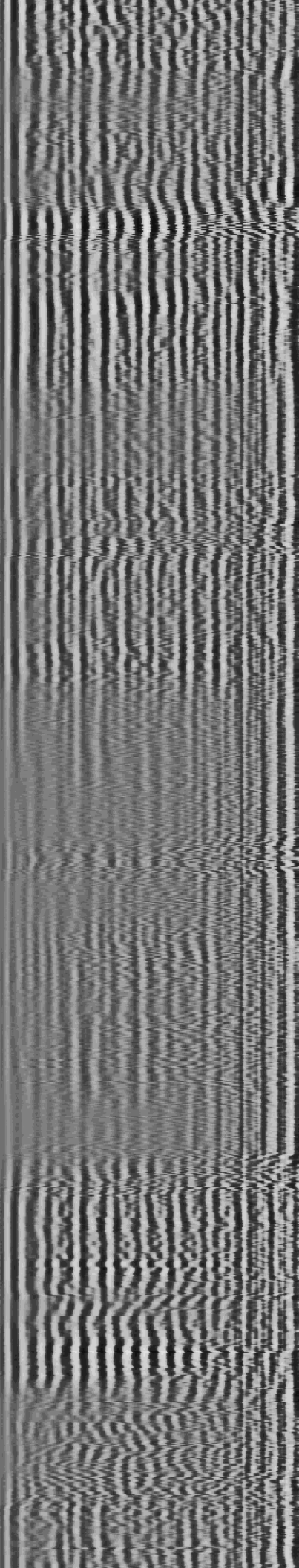
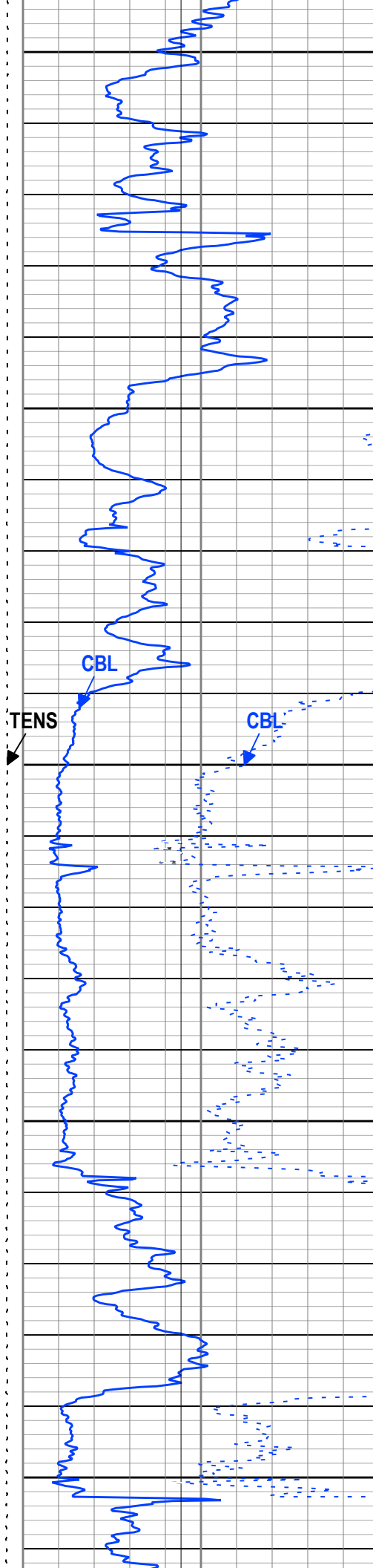
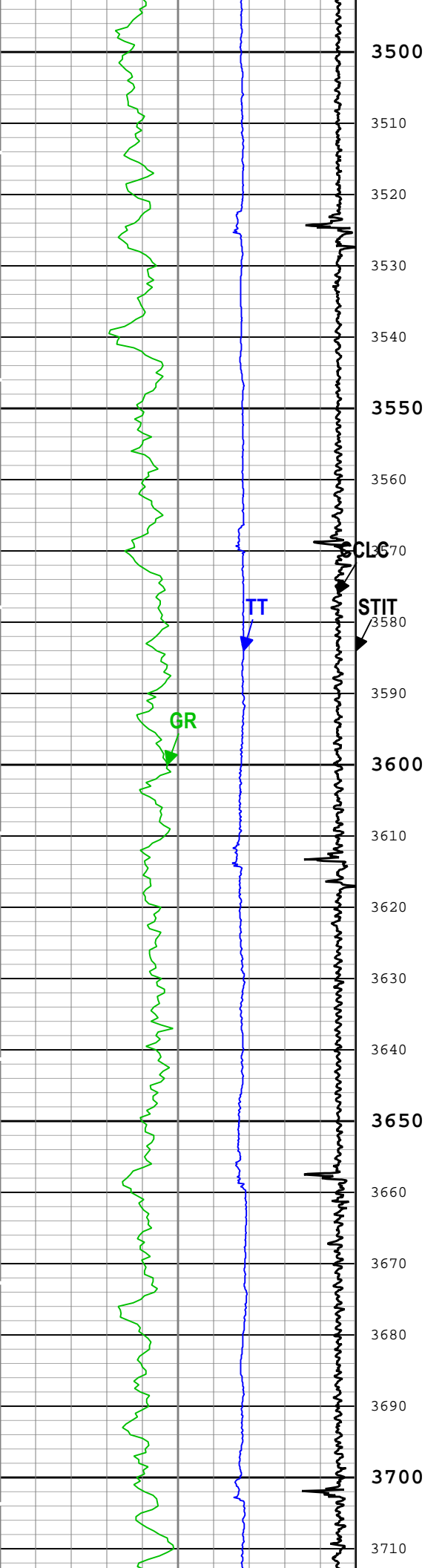


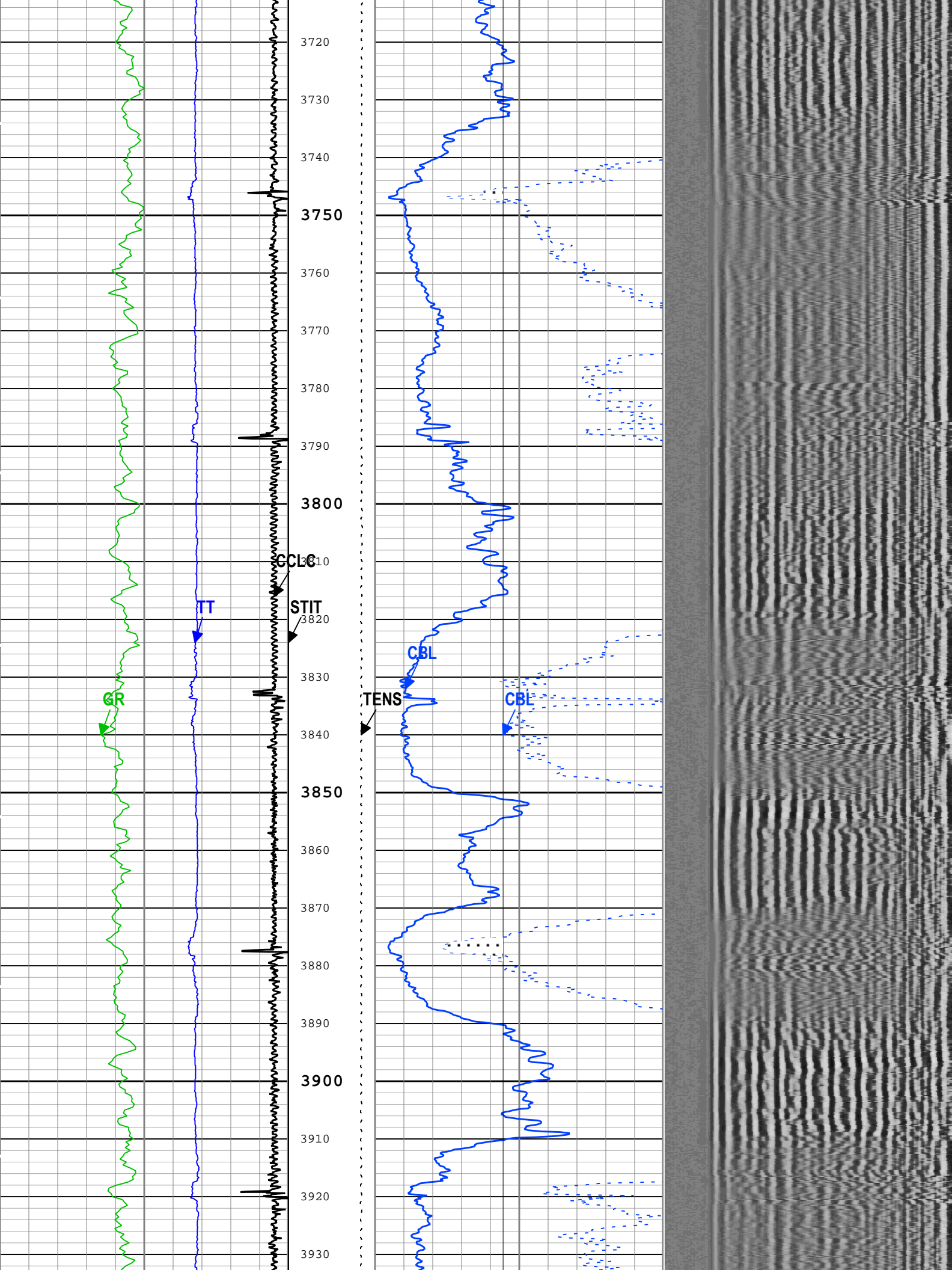


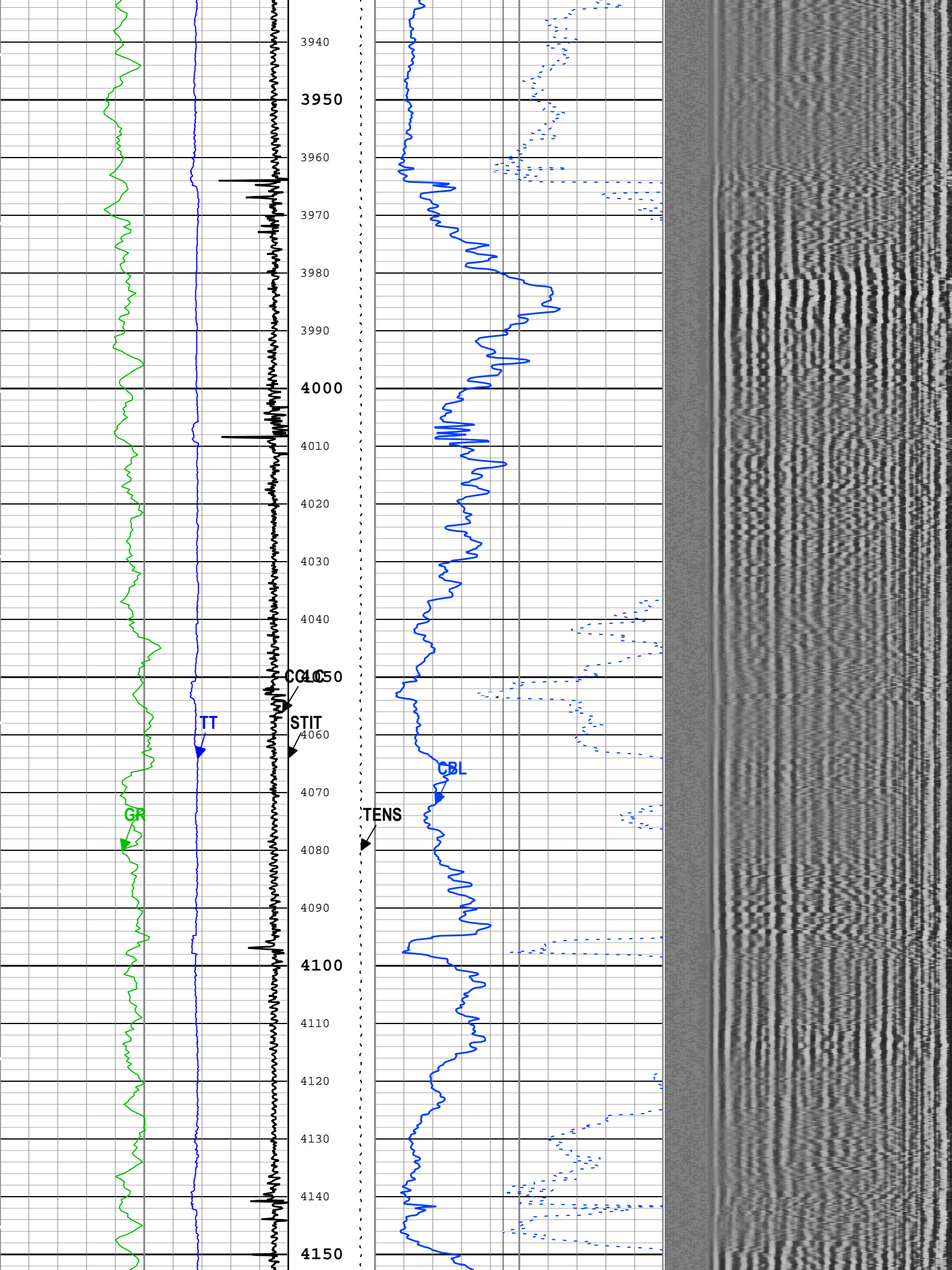


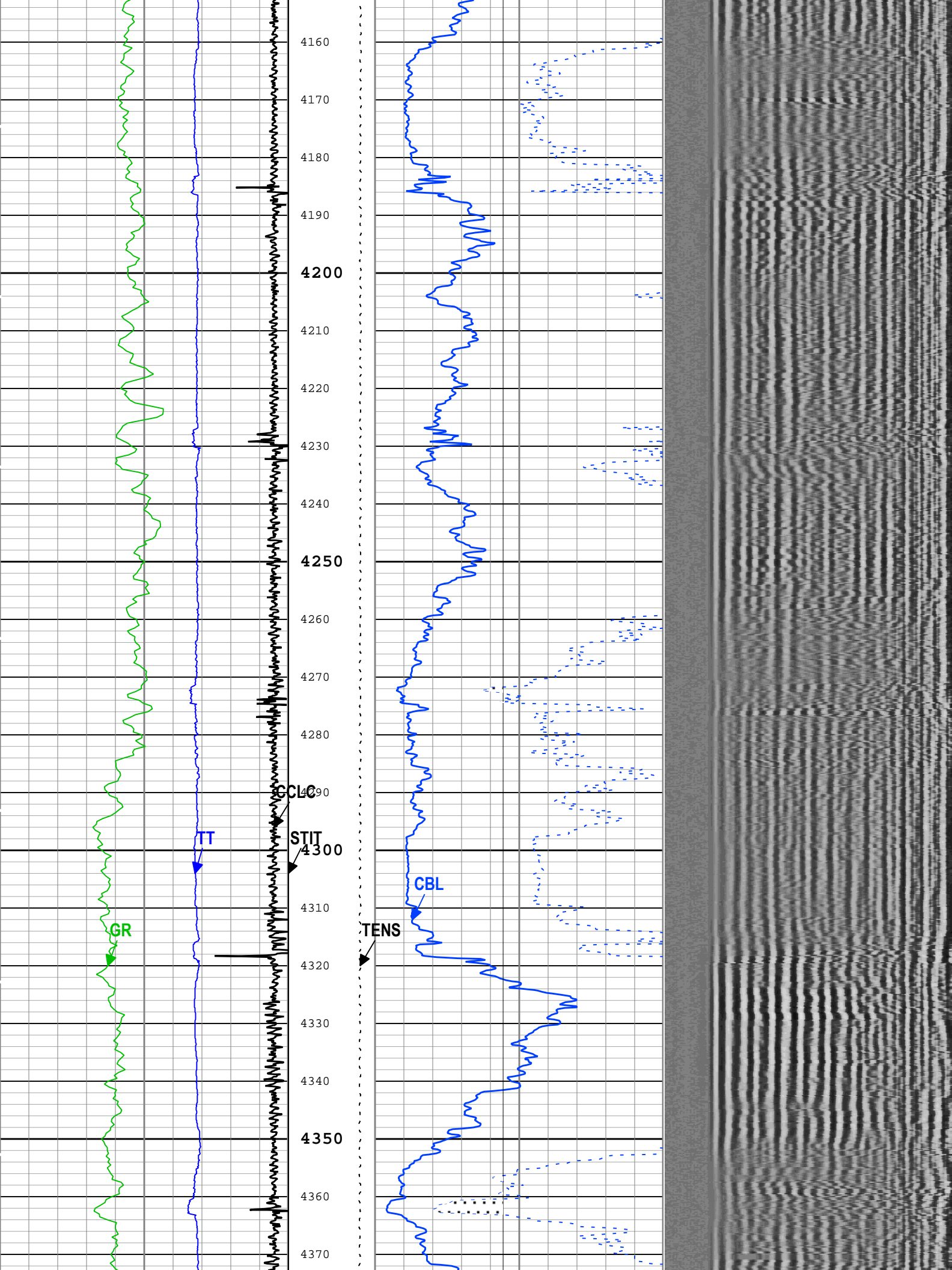


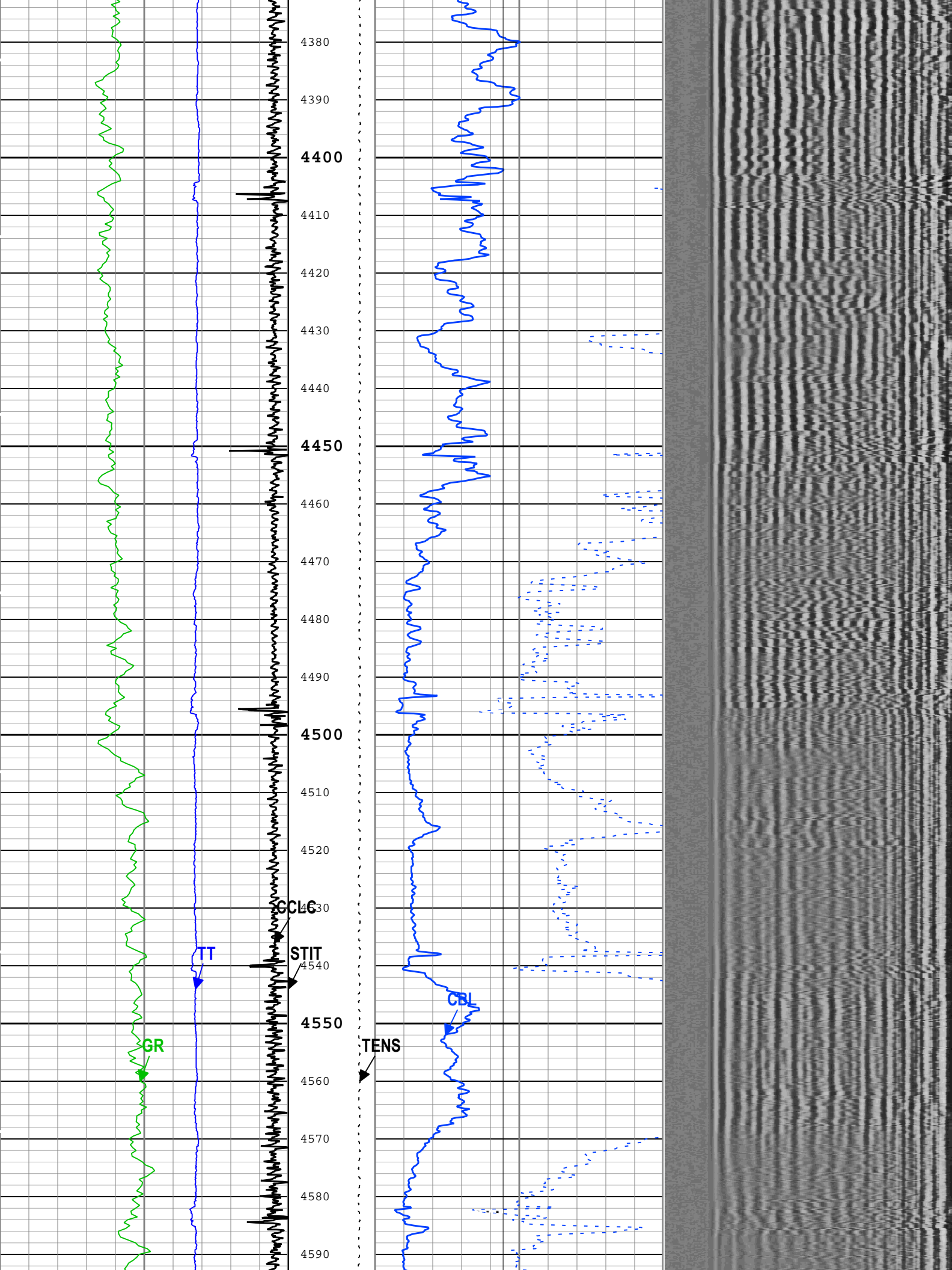


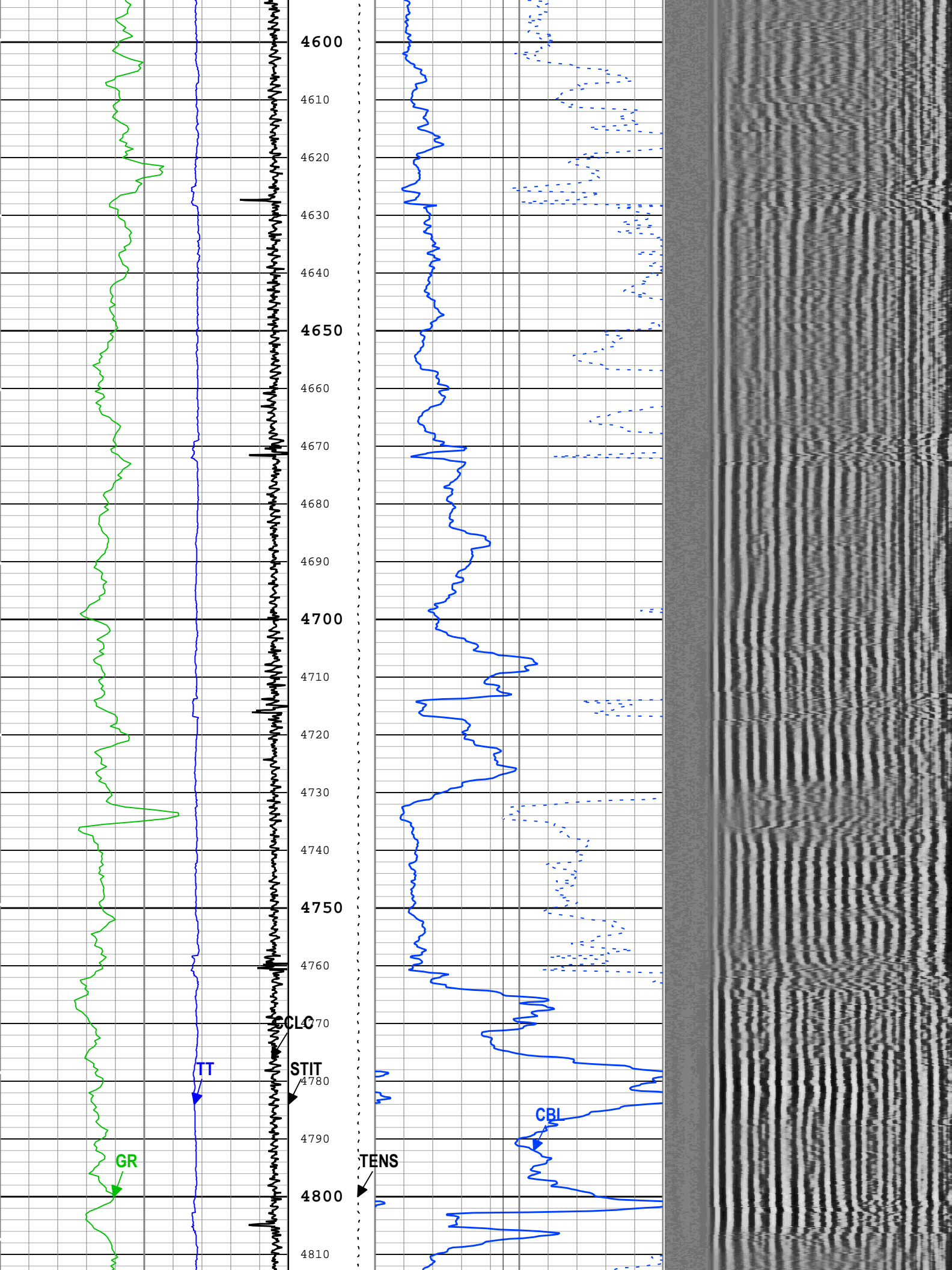


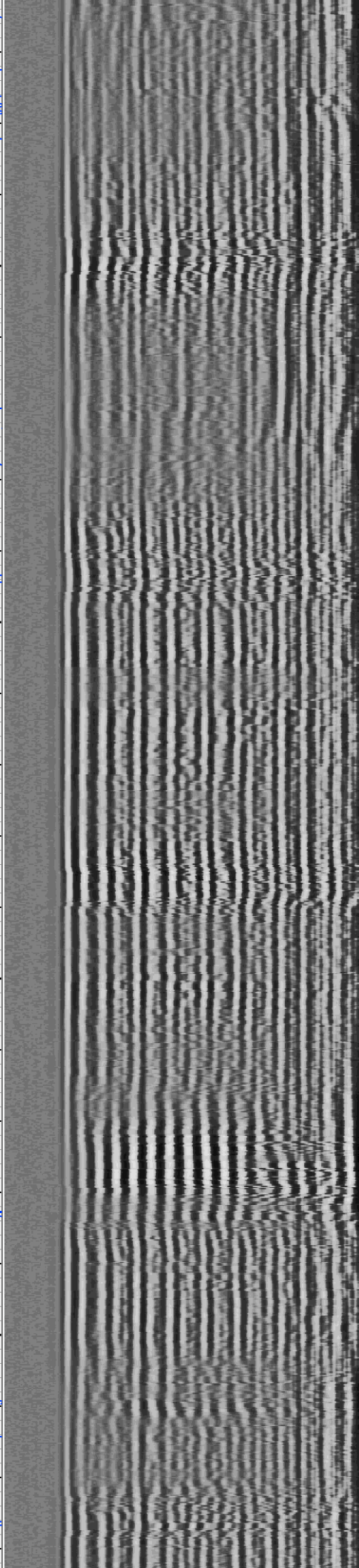
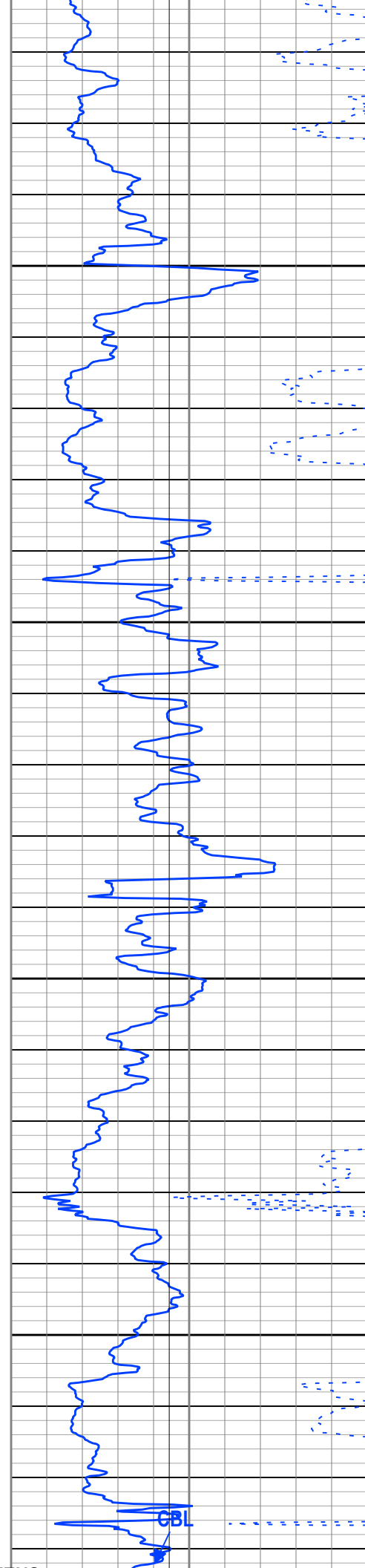
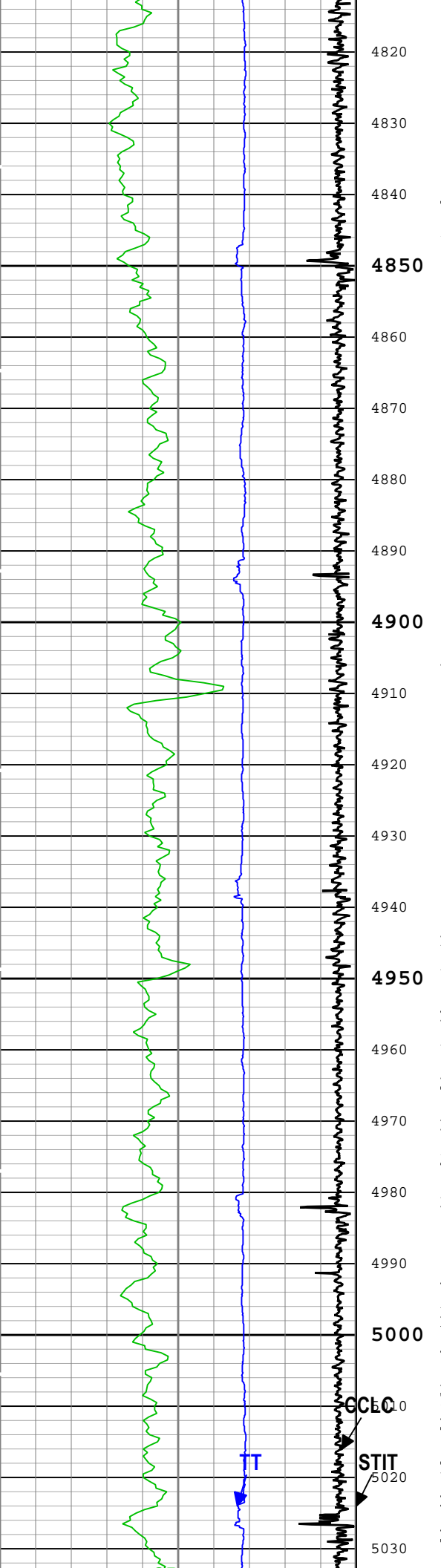


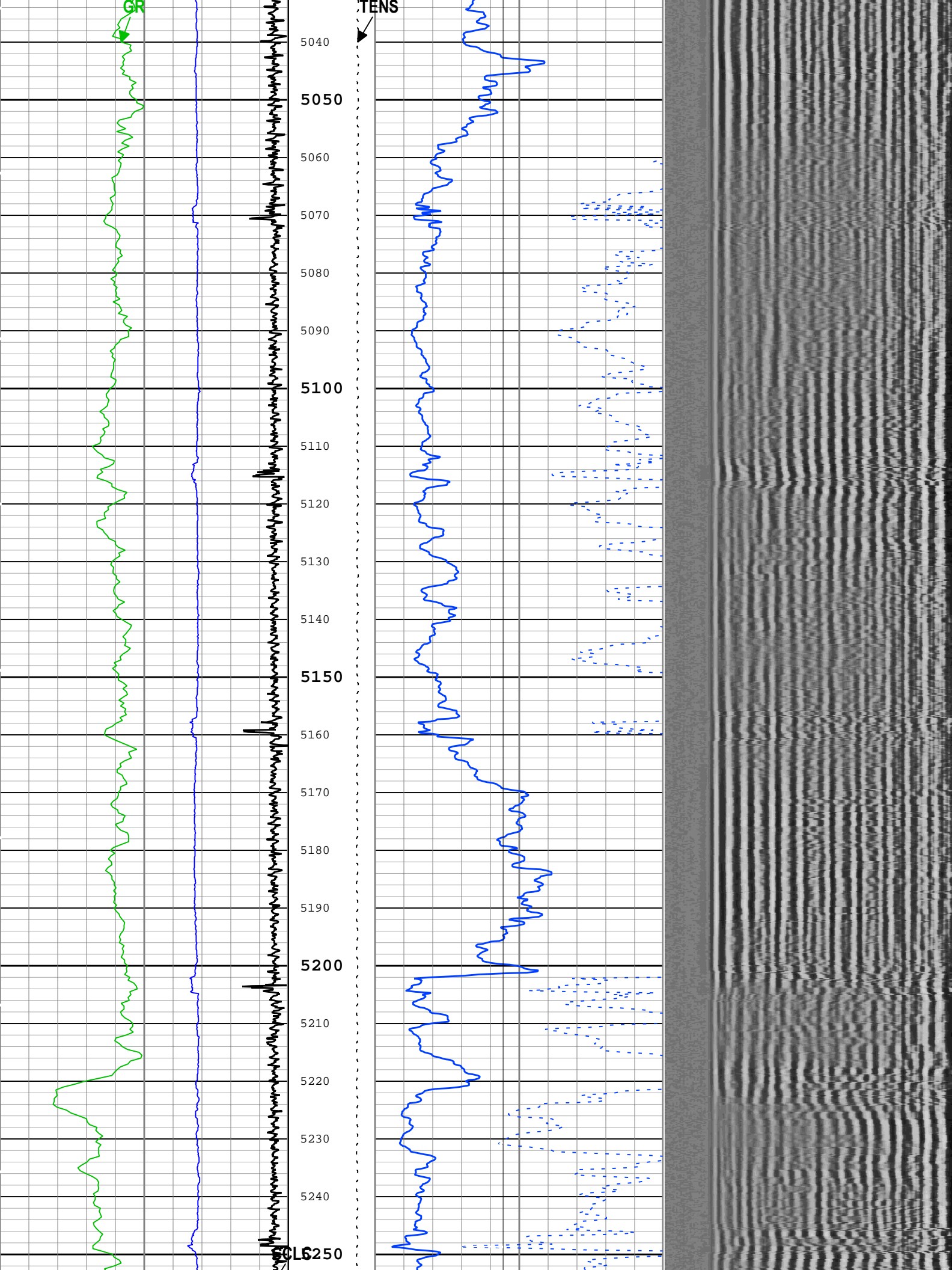


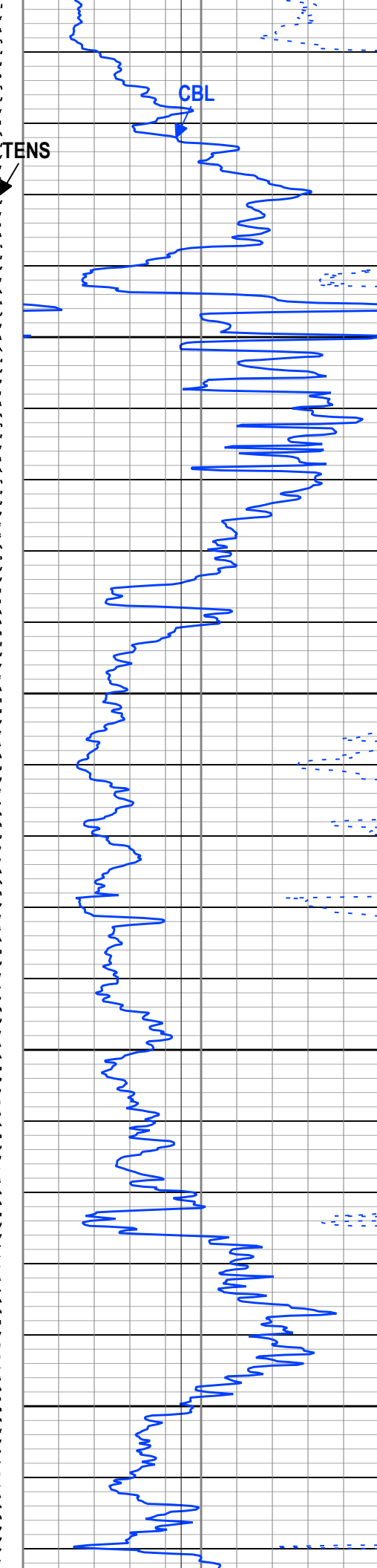
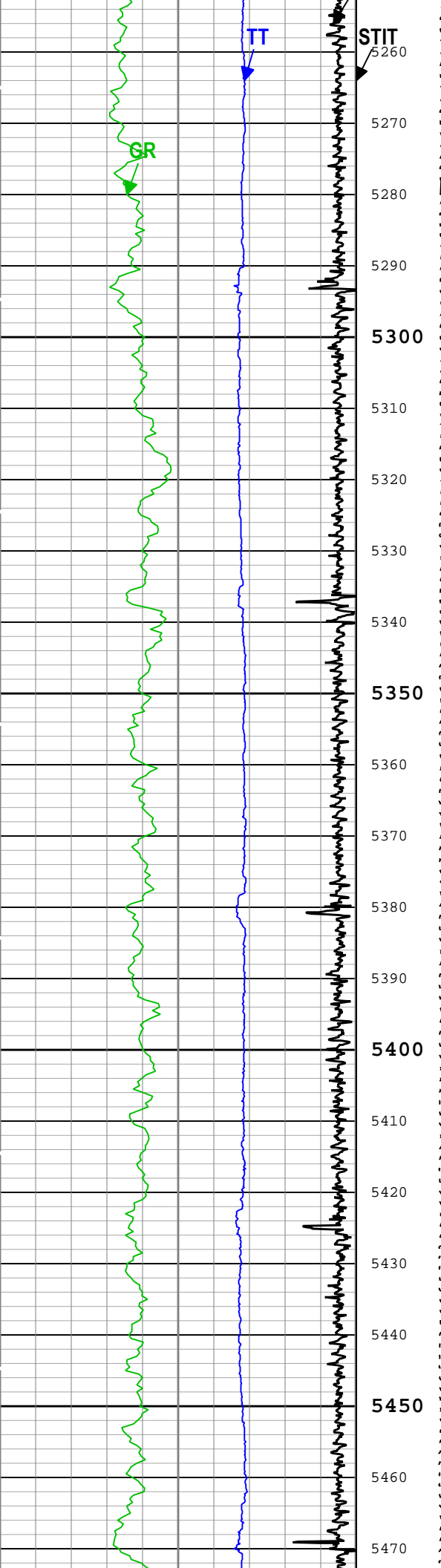


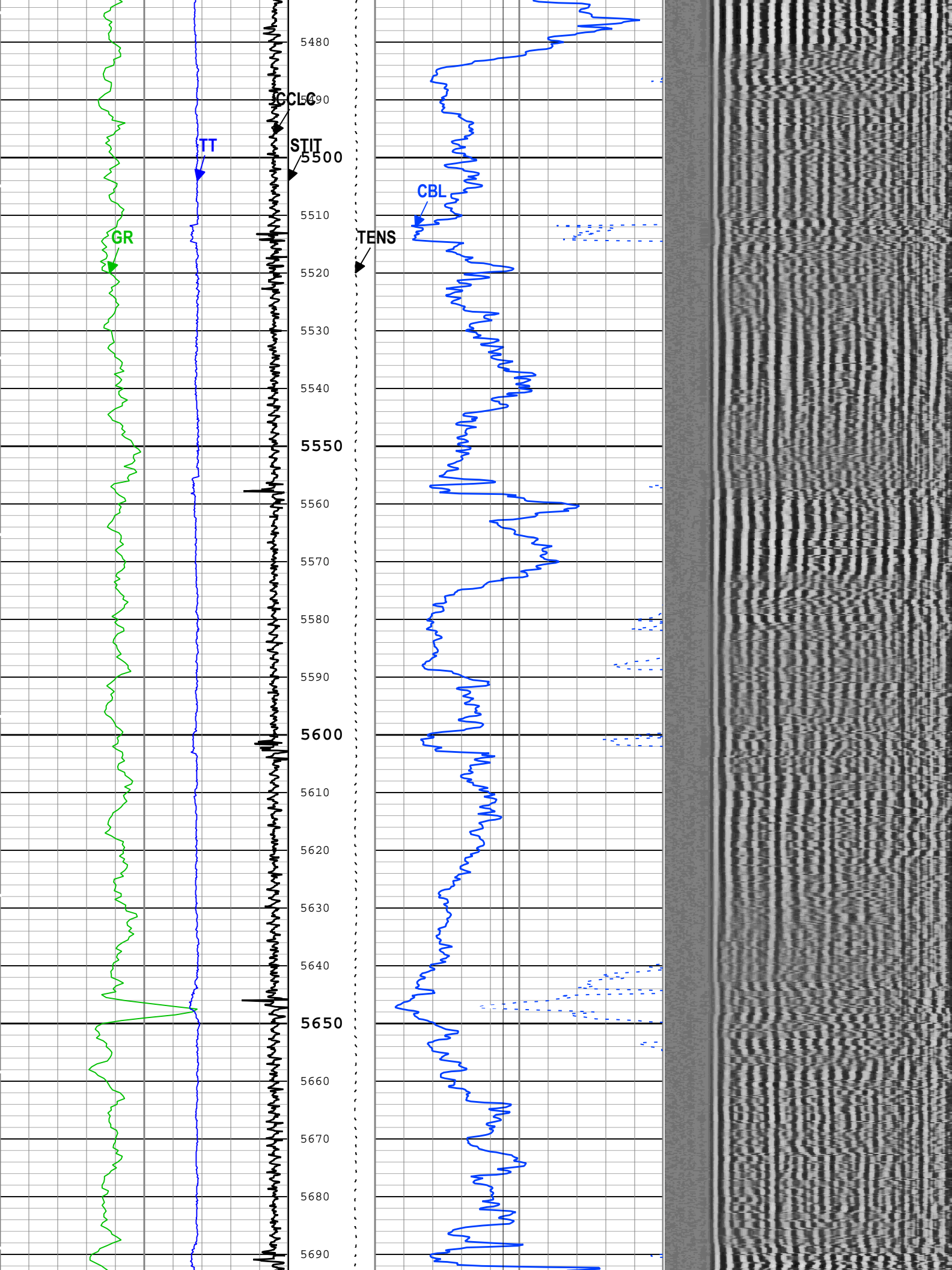


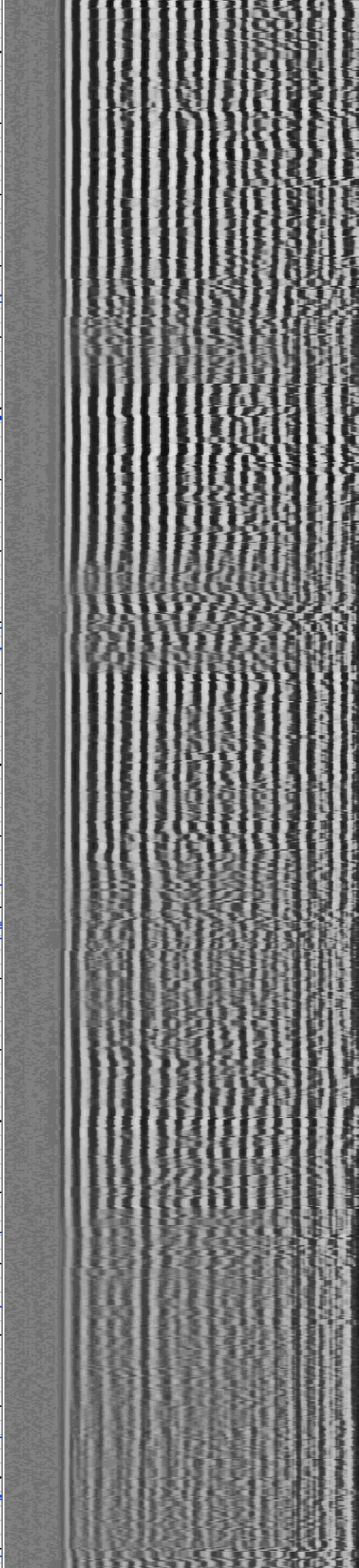
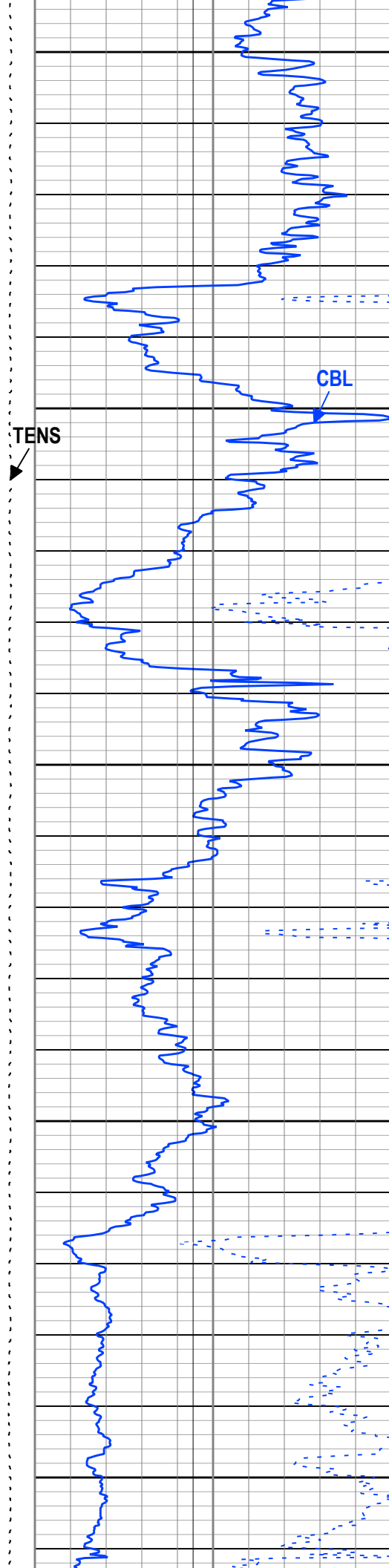
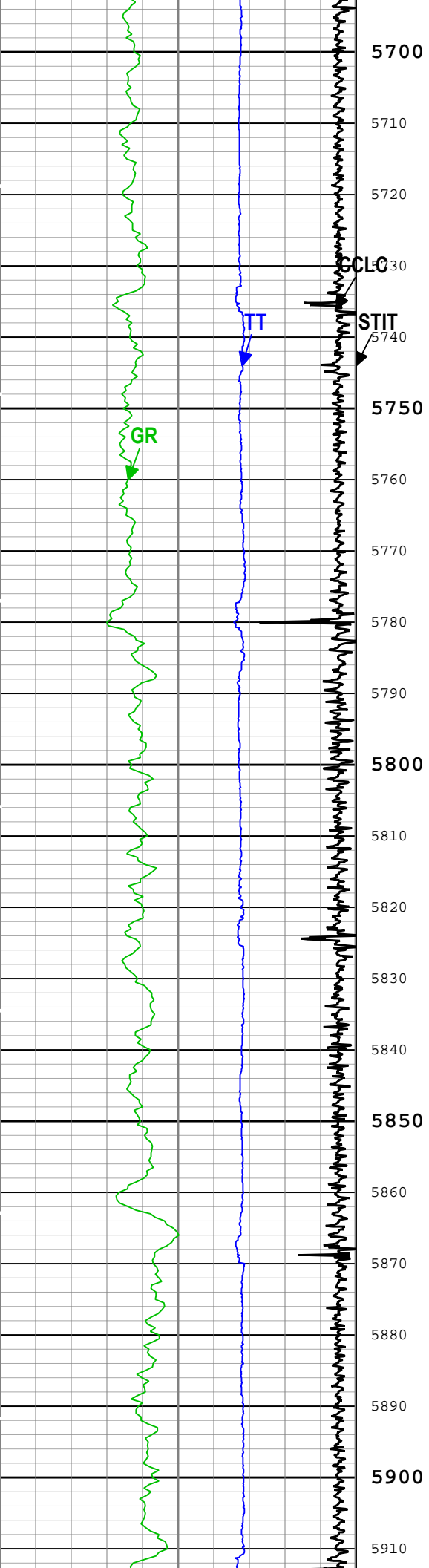


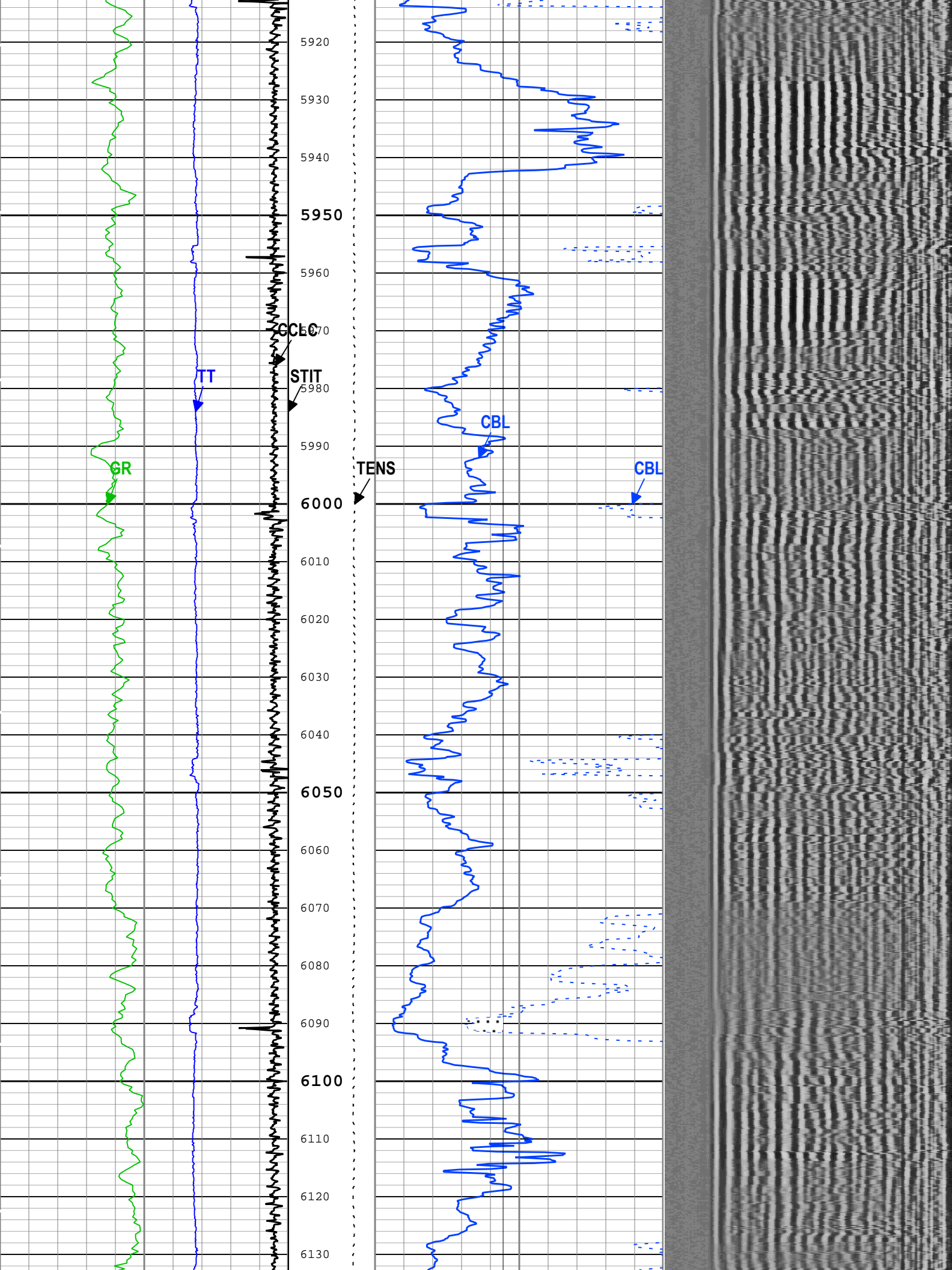


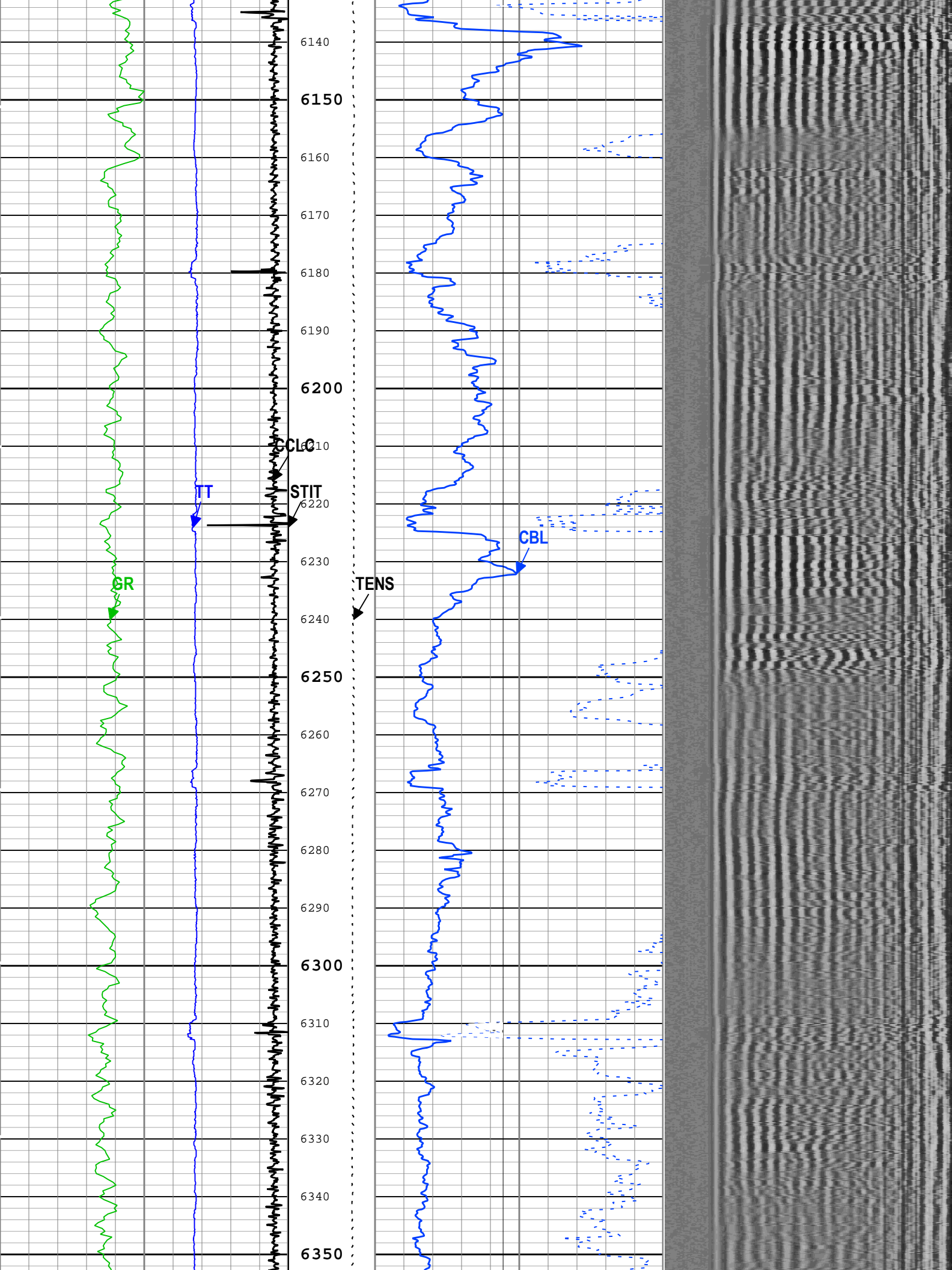


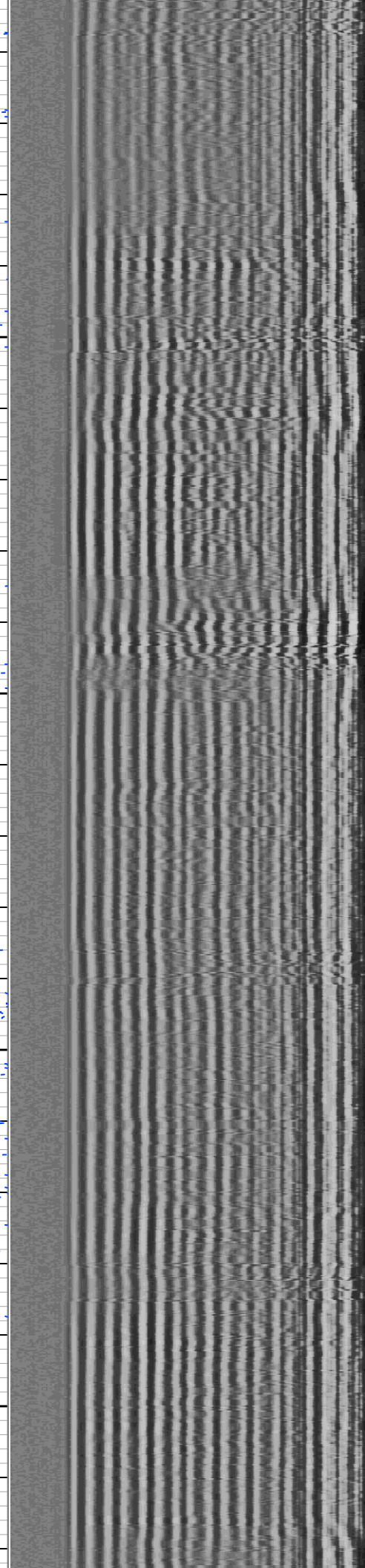
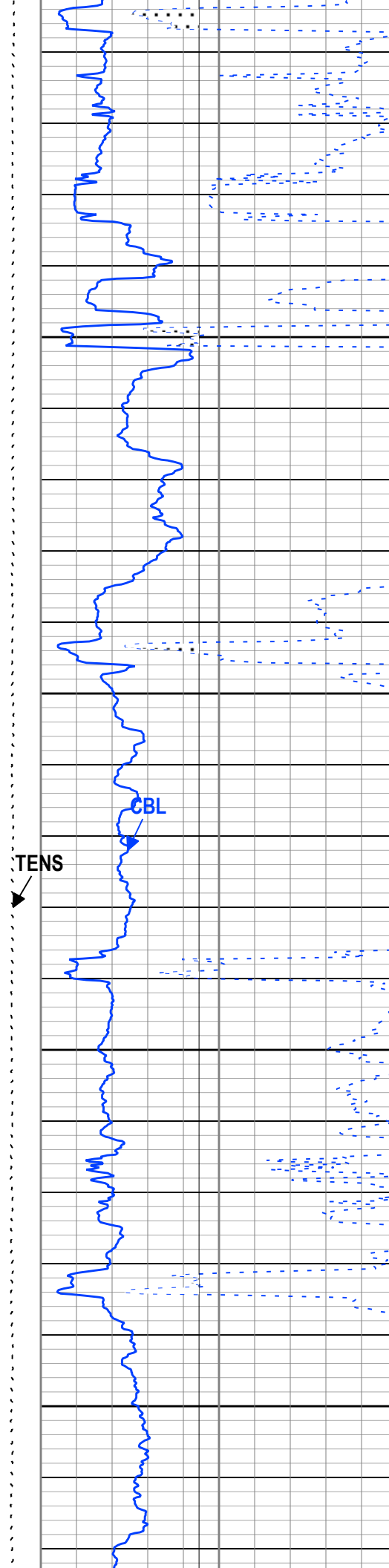
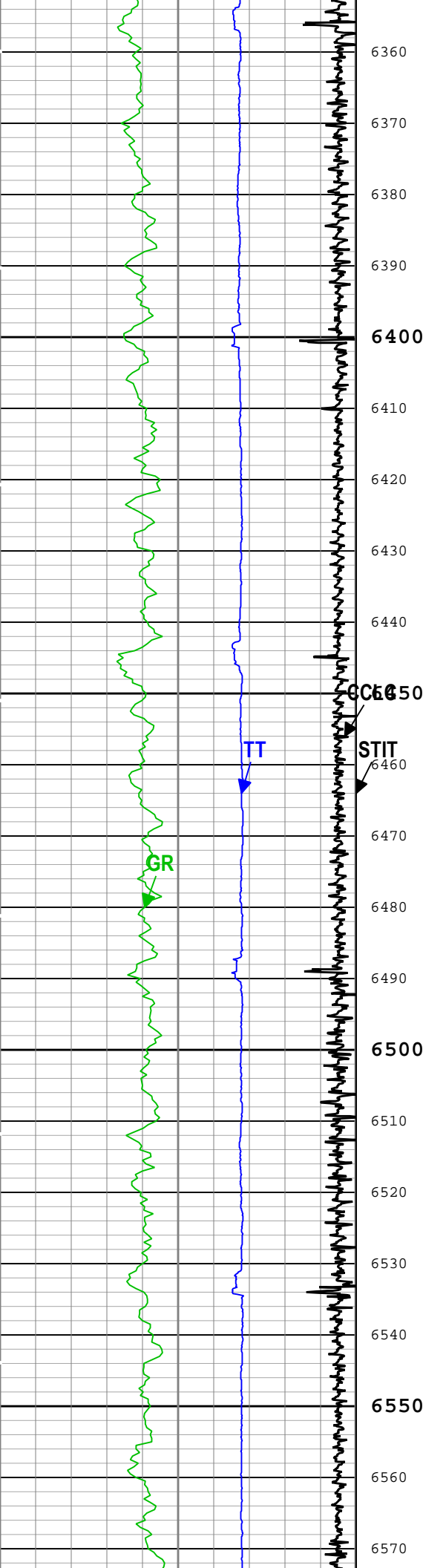


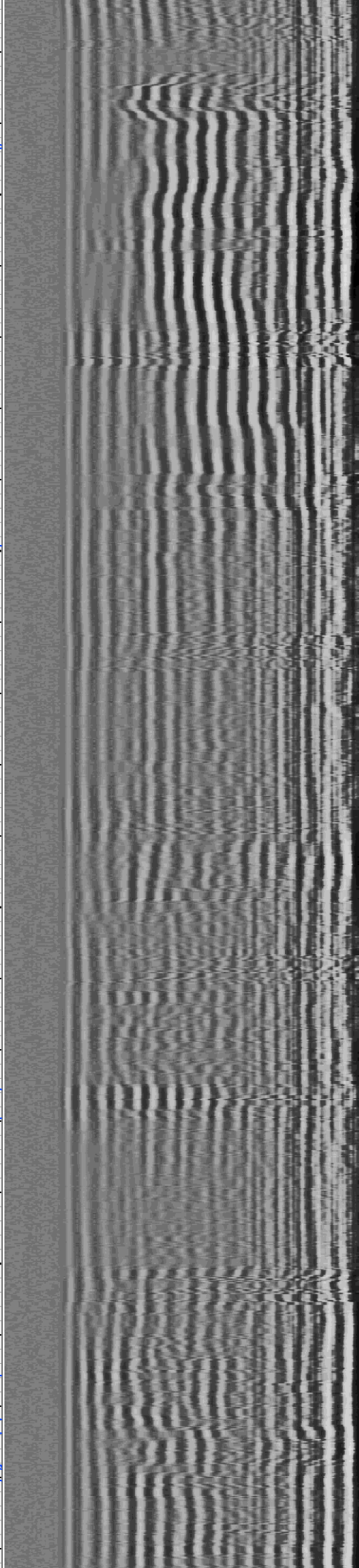
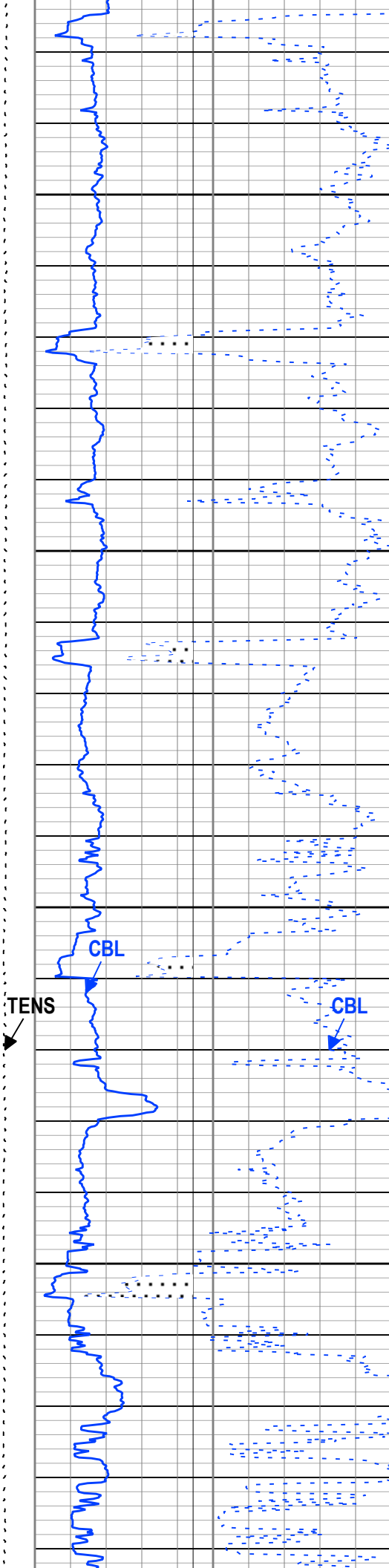
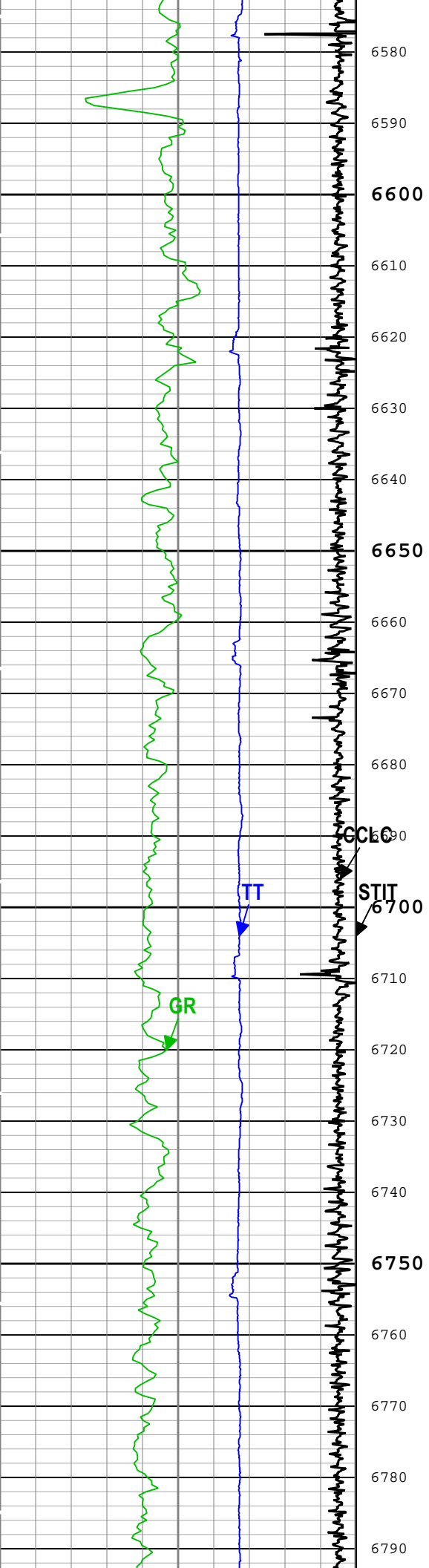


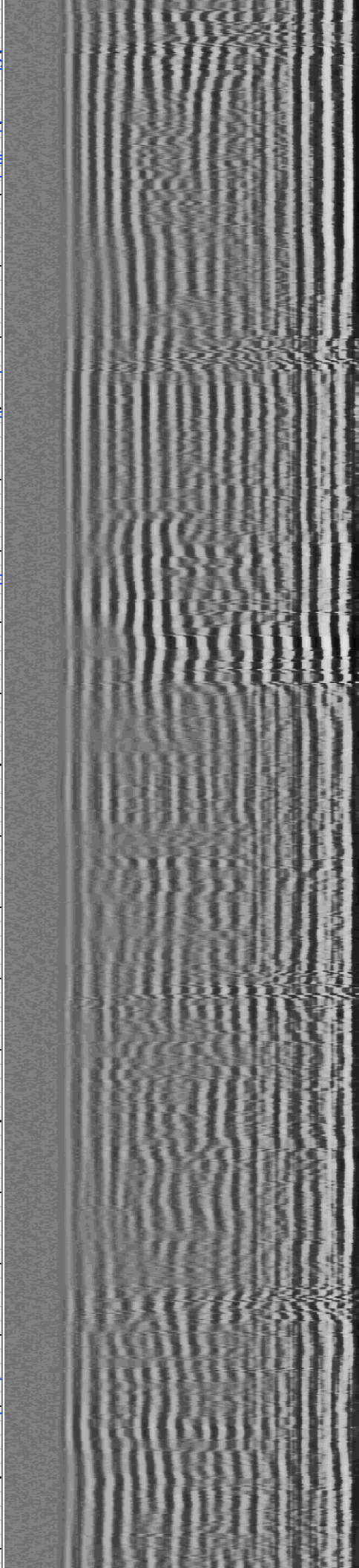
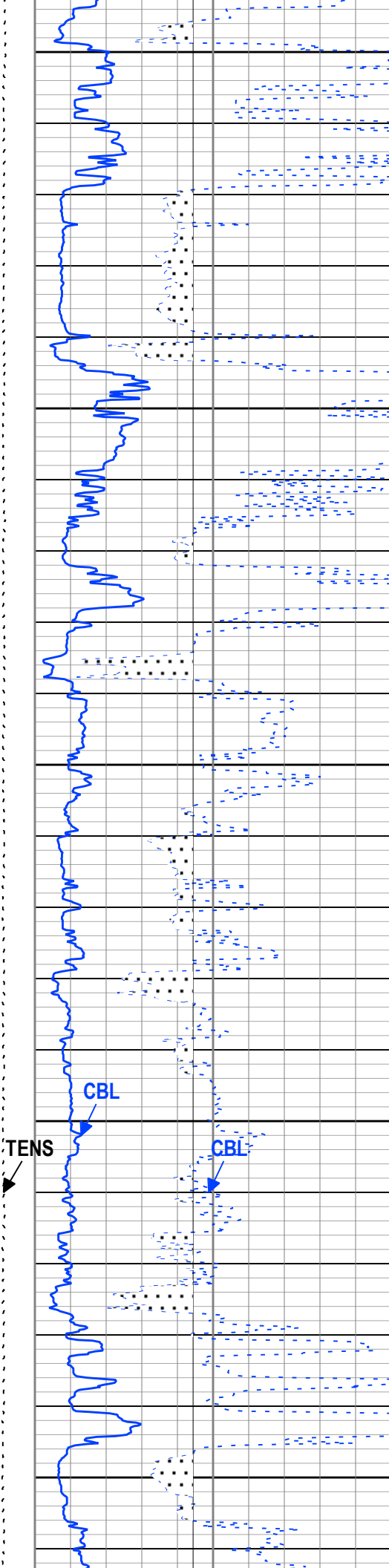
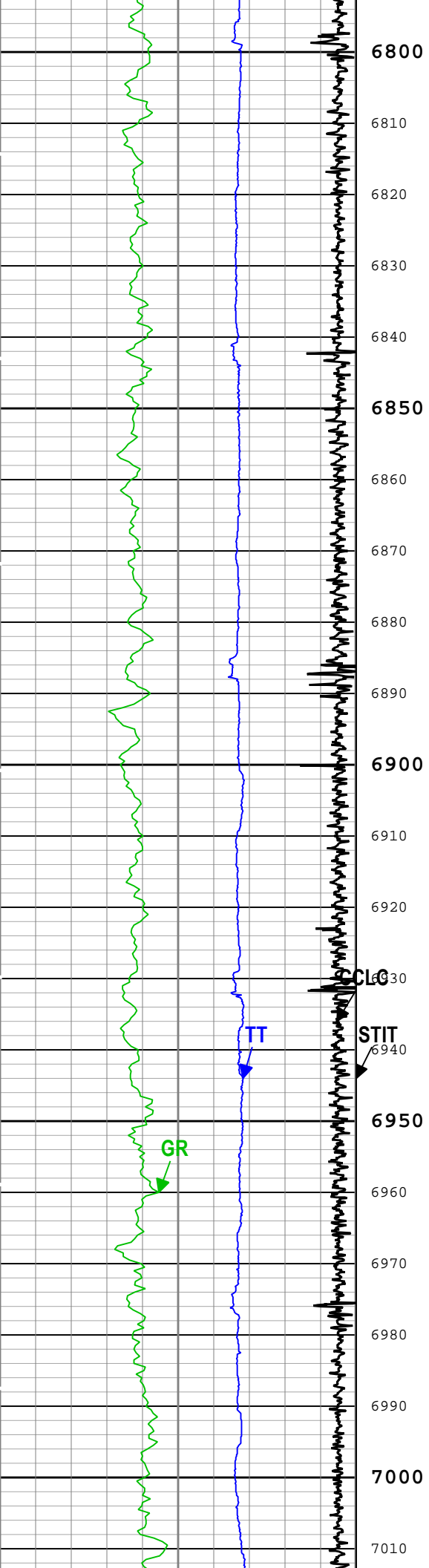


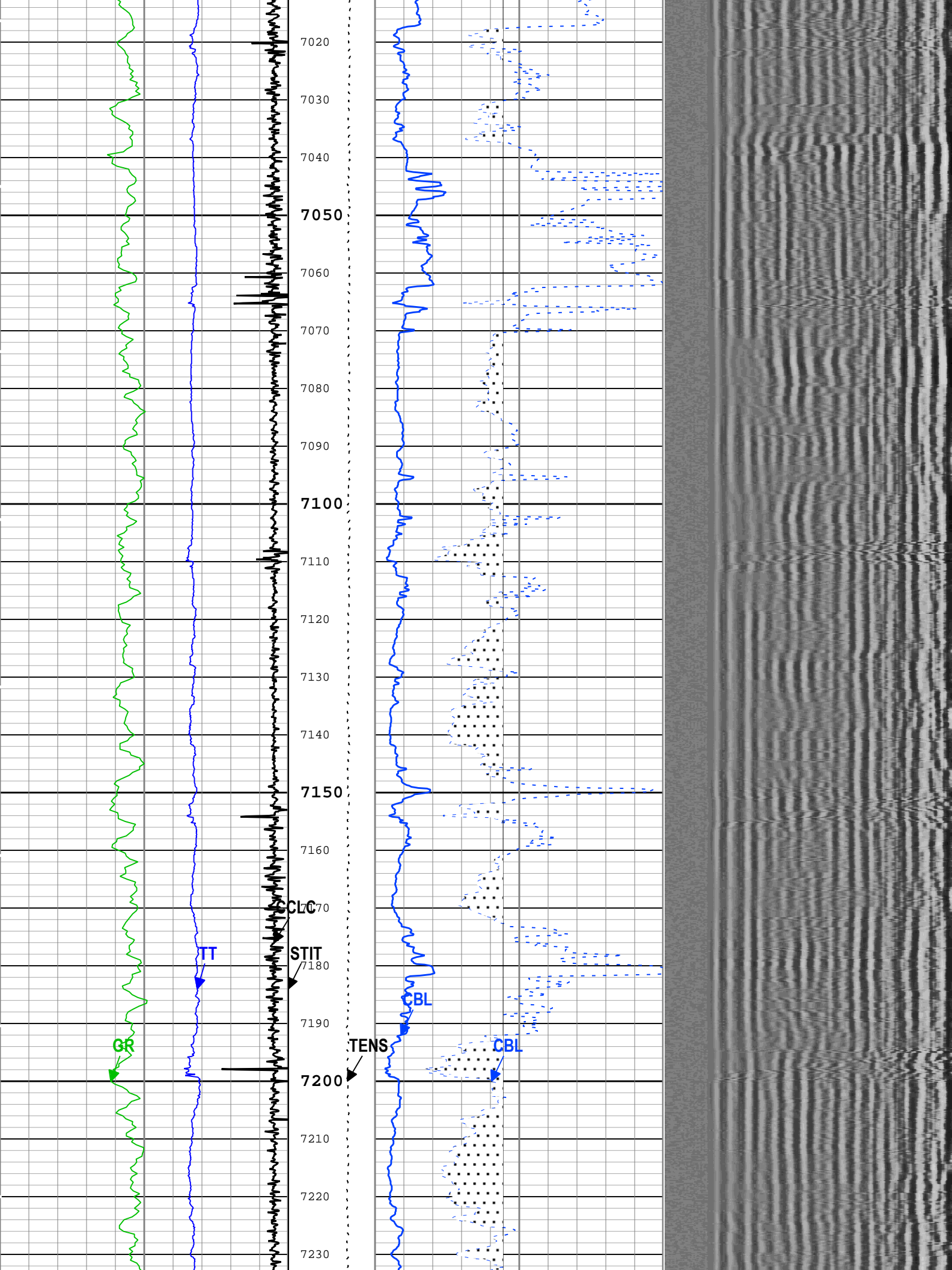


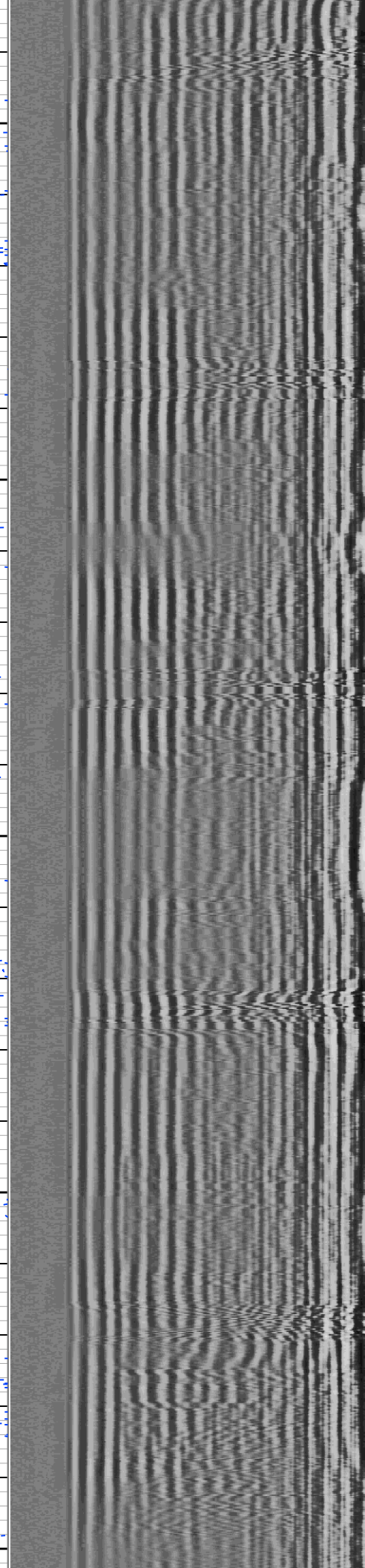
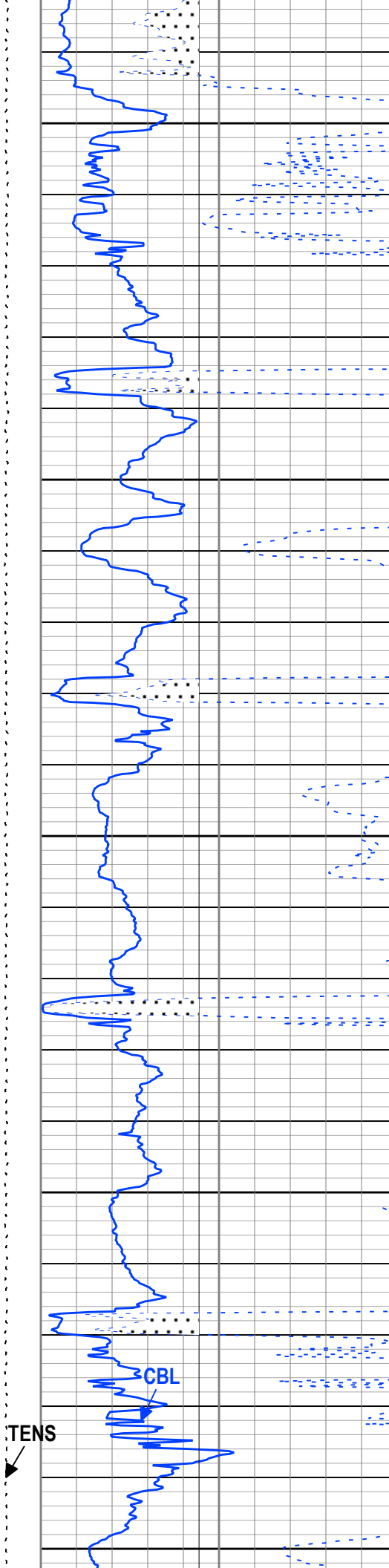
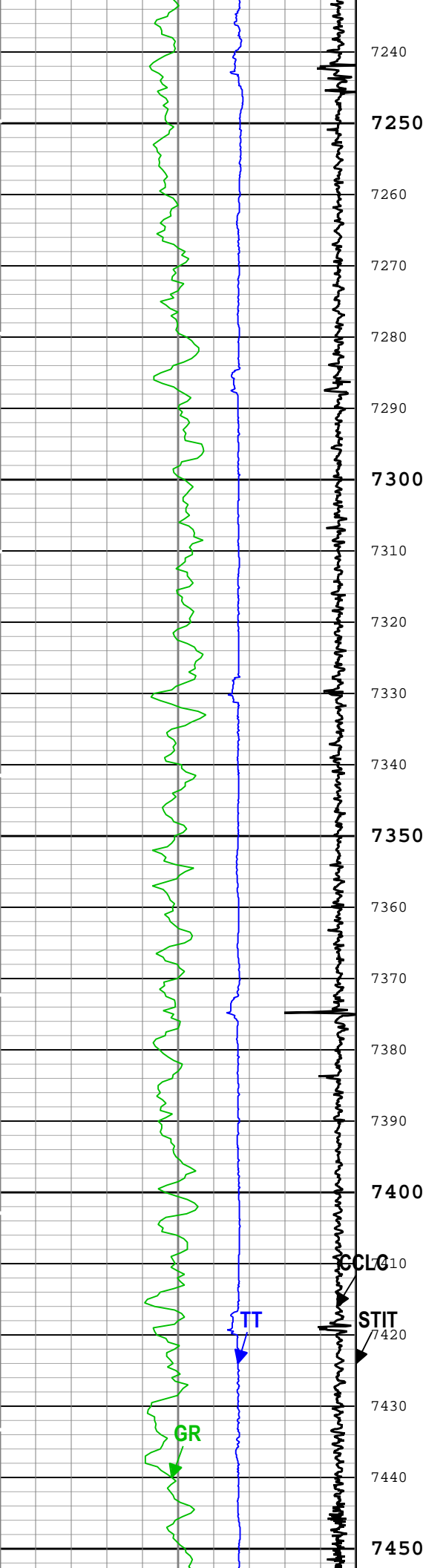


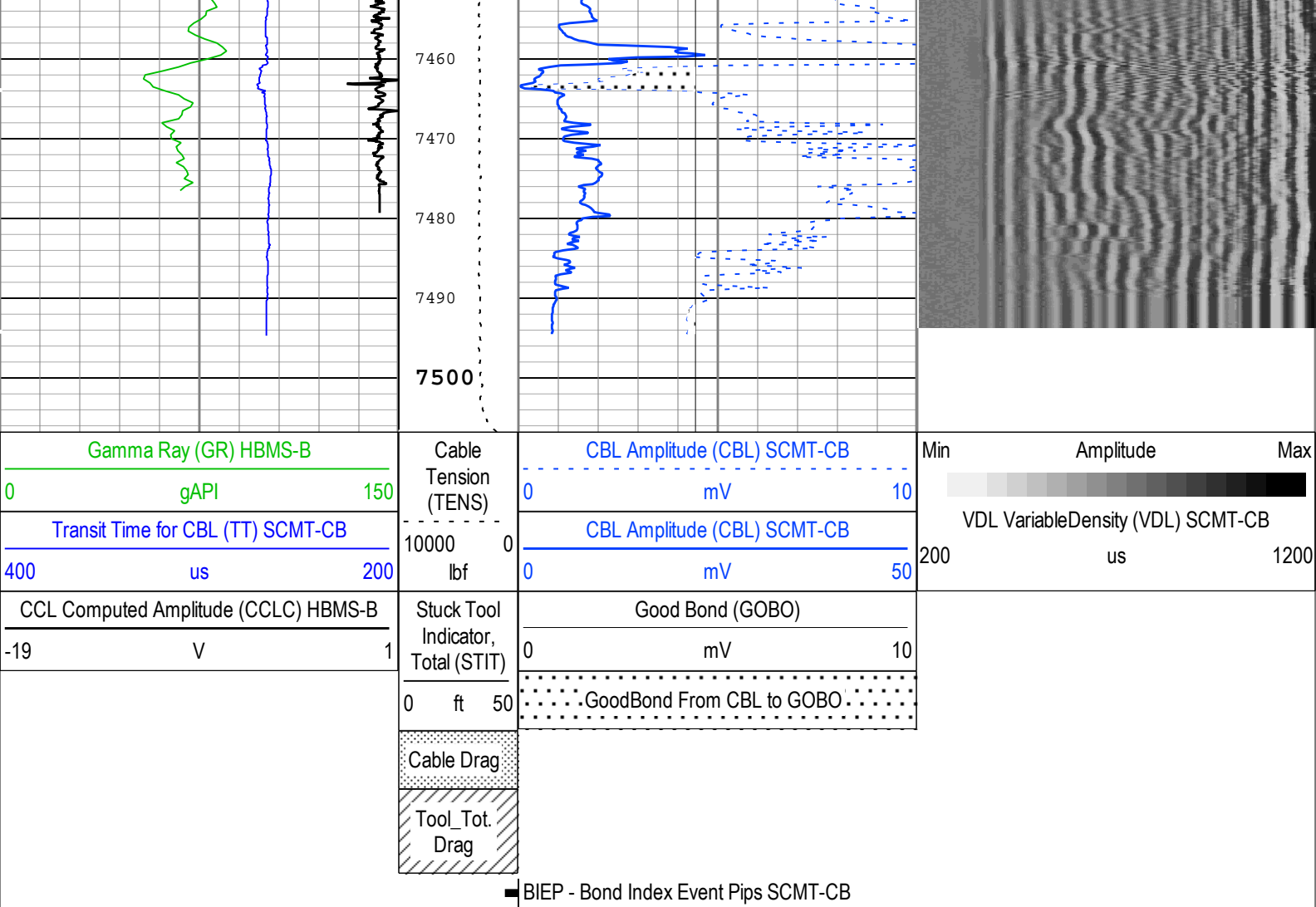












TIME_1900 - Time Marked every 60.00 (s)

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: 18-Sep-2015 17:05:20

Channel Processing Parameters				
Run 1: Parameters				
Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	223	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-CB	224	us
CBLG	CBL Gate Width	SCMT-CB	44	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-CB	72	mV
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT	Drilling Fluid Type	Borehole	Oil	
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-CB	4.44	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	WTEP	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-CB	11.85	dB/ft
MCI	Minimum Cemented Interval for Isolation	SCMT-CB	4.75	ft
MSA	Minimum Sonic Amplitude	SCMT-CB	2.21	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	SCMT-CB	2.21	mV
RUN_SNUM	Run Sequence Number	WSDRUN	2	

Tool Control Parameters				
Run 1: Parameters				
Parameter	Description	Tool	Value	Unit

Parameter	Description	Tool	Value	Unit
CMTM	SCMT Operating Mode	SCMT-CB	Log	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	1800	ft/h

Calibration Report

SCMT-CB (Slim Cement Mapping Tool, 1-11/16 OD) Calibration - Run 1

Primary Equipment :	Slim Cement Mapping Sonde	SCMS-CB	8212
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CBL and MAP Amplitude Normalization - Measurements

Master (File):	16:25:58 17-Sep-2015
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Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL 3 ft Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 1 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 2 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 3 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 4 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 5 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 6 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 7 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 8 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
CBL 3 ft Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 1 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 2 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 3 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 4 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 5 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 6 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 7 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 8 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
CBL 3 ft Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 1 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 2 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 3 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 4 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 5 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 6 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 7 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 8 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
CBL 3 ft Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 1 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	

MAP 2 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 3 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 4 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 5 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 6 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 7 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 8 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	

CBL and MAP Amplitude Normalization - Coefficients

Master (File):		16:25:58 17-Sep-2015					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Normalization Temperature in SFT Tube	degF	Master			71.96		
CBL Correction Factor		Master	0		0.070		
MAP 1 Correction Factor		Master	0		0.083		
MAP 2 Correction Factor		Master	0		0.090		
MAP 3 Correction Factor		Master	0		0.120		
MAP 4 Correction Factor		Master	0		0.119		
MAP 5 Correction Factor		Master	0		0.122		
MAP 6 Correction Factor		Master	0		0.096		
MAP 7 Correction Factor		Master	0		0.124		
MAP 8 Correction Factor		Master	0		0.110		

HBMS-B (PSP HBMS-B Tool) Calibration - Run 1

Primary Equipment :			
HBMC		HBMC-A	37116
HTPS		HTPS-A	2949
Calibration Parameter :			
JIG-BKGD			

PBMS Gamma Ray Check - HBMS Gamma Ray Accumulations

Before:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
GR Zero Average - 0	gAPI	Before	-----	-----	-----	-----	
GR Zero Standard Deviation - 0	gAPI	Before	-----	-----	-----	-----	
GR Zero Accumulation - 0	gAPI	Before	-----	-----	-----	-----	
GR Plus Average - 0	gAPI	Before	-----	-----	-----	-----	
GR Plus Standard Deviation - 0	gAPI	Before	-----	-----	-----	-----	
GR Plus Max Deviation - 0	gAPI	Before	-----	-----	-----	-----	
Jig-Background	gAPI	Before			NOT DONE		

Company:	Extraction Oil & Gas LLC	Schlumberger
Well:	Troudt 5	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	
Slim Cement Mapping Tool		
Variable Density Log		