

Company: Extraction Oil & Gas LLC

Well: Troutd 2

Field: Wattenberg

County: Weld State: Colorado

Cement Bond Log

Variable Density Log

County:	Weld			
Field:	Wattenberg			
Location:	SHL: SESE 537' FSL & 979' FEL			
Well:	Troutd 2			
Company:	Extraction Oil & Gas LLC			
Location:	SHL: SESE 537' FSL & 979' FEL	Elev.: K.B. 5097.00 ft		
	Section 32, Township 2N, Range 67W	G.L. 5077.00 ft		
	Lat: 40.089065, Long: -104.908815	D.F. 5096.00 ft		
	Permanent Datum:	Ground Level	Elev.: 5077.00 f	
	Log Measured From:	Kelly Bushing	20.00 ft	above Perm.Datum
Drilling Measured From:		Kelly Bushing		
	API Serial No.	Section: 32	Township: 2N	Range: 67W
	05-123-41432-00			
Logging Date	20-Sep-2015			

Run Number	Run 1		
Depth Driller	18182.00 ft		
Schlumberger Depth	18182.00 ft		
Bottom Log Interval	7500.00 ft		
Top Log Interval	50.00 ft		
Casing Fluid Type	Water		
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	18182.00 ft		
Casing/Tubing Size	5.5 in		
Weight	20 lbm/ft		
Grade	P110		
From	0.00 ft		
To	18182.00 ft		
Max Recorded Temperatures	220 degF		
Logger on Bottom	20-Sep-2015	10:51:00	
Unit Number	9108	Fort Morgan, CO	
Recorded By	B. Panepucci/M. Pace		
Witnessed By	Larry Seigel		

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 )	18182					
Bottom Logger ( ft )	18182					
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 )	18182					
Bottom Logger ( ft )	18182					

## Borehole Fluids

Parameter( unit )	Run 1					
Fluid Type	Water					
Max Recorded Temperatures ( degF )	220					
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	20-Sep-2015					
Time Logger on Bottom	10:51:00					
Source RMF						
RMC	Pressed					
RM @ Meas Temp ( ohm.m@degF )	0.2 @ 68					
RMF @ Meas Temp ( ohm.m@degF )	0.15 @ 68					

RMC @ Meas Temp ( ohm.m@degF )						
RM @ BHT ( ohm.m@degF )	0.07 @ 220					
RMF @ BHT ( ohm.m@degF )	0.05 @ 220					
RMC @ BHT ( ohm.m@degF )	NaN @ 220					
Total Solid ( % )						
High Gravity Solids ( % )						

## Remarks and Equipment Summary

Run 1: Toolstring		Run 1: Remarks	
<b>Equip name</b> <b>LEH-QT</b> LEH-QT	<b>Length</b> <b>38.83</b>	<b>MP name</b> GR	<b>Offset</b> 29.77
<b>AH-63</b> <b>AH-79</b>	<b>35.91</b> <b>35.6</b>		
<b>HBMS-B:2</b> <b>949</b> HUDH-A PSC-A HSTC-A HBMC-A:37 116 HTPS-A:29 49	<b>34.76</b>	<b>CCL</b> <b>PSTC</b> <b>HSTC To</b> <b>ol String</b> <b>Bottom</b> <b>CQG Pre</b> <b>ssure</b> <b>Tempera</b> <b>ture</b>	27.37 25.98 0.00 24.56 24.56
<b>SCMT-CB:</b> <b>8212</b> SECH-CA:8 291 SCMC-CA: 8293 CMIR-AG SCMS-CB:8 212 SCMX-CA:8 175 AH-278 TTG-C	<b>23.64</b>	<b>DT</b> <b>CBL5</b> <b>DTSC</b> <b>CBL3</b> <b>MAP</b> <b>AUX</b> <b>SCMT</b>	14.55 13.05 13.05 12.05 11.55 10.55 6.23





Run 1	Main[4]:Up	Up	56.30 ft	7509.39 ft	20-Sep-2015 11:17:44 AM	20-Sep-2015 3:26:31 PM	ON	8.54 ft	No
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All depths are referenced to toolstring zero

Log

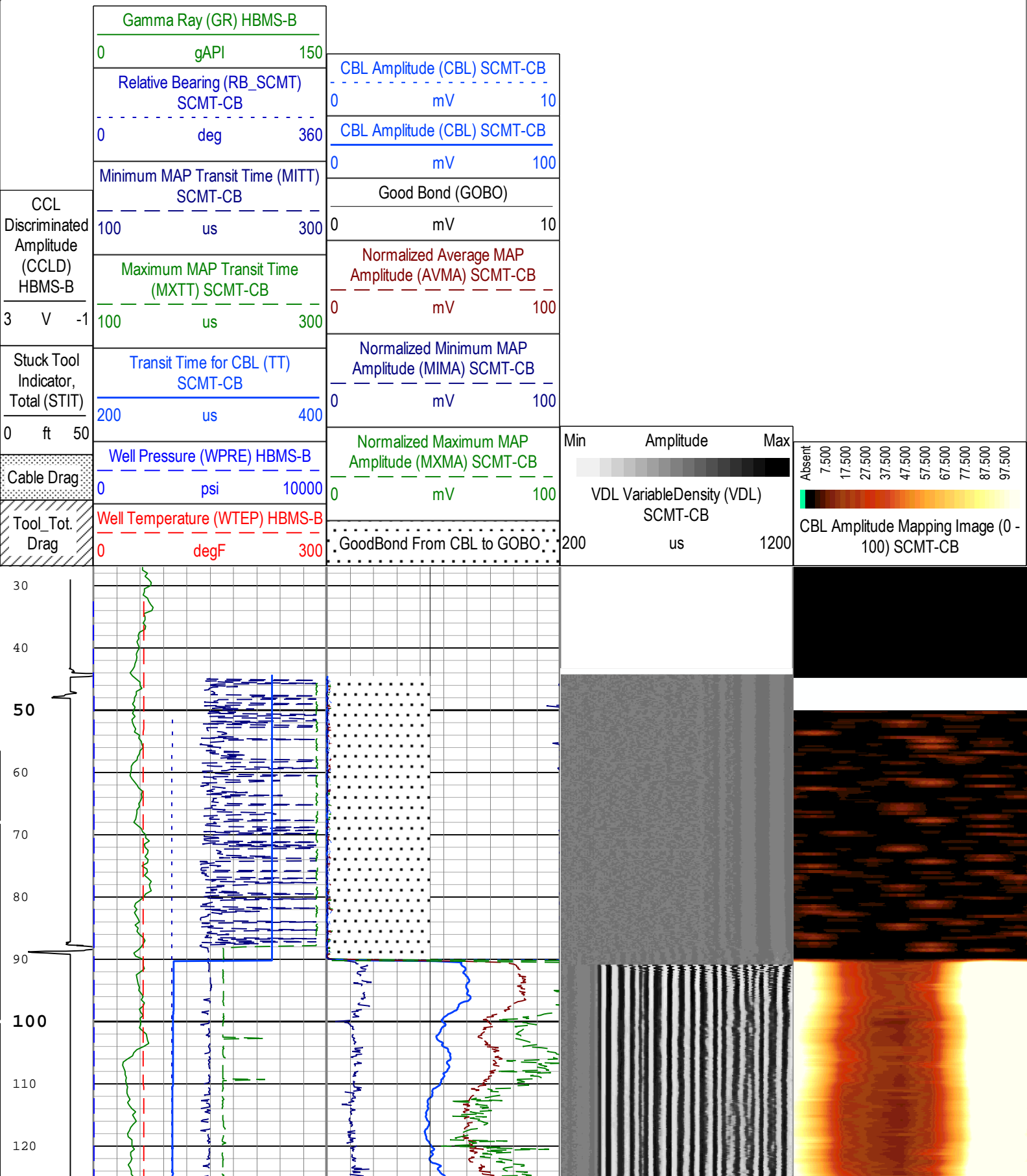
Company:Extraction Oil & Gas LLC

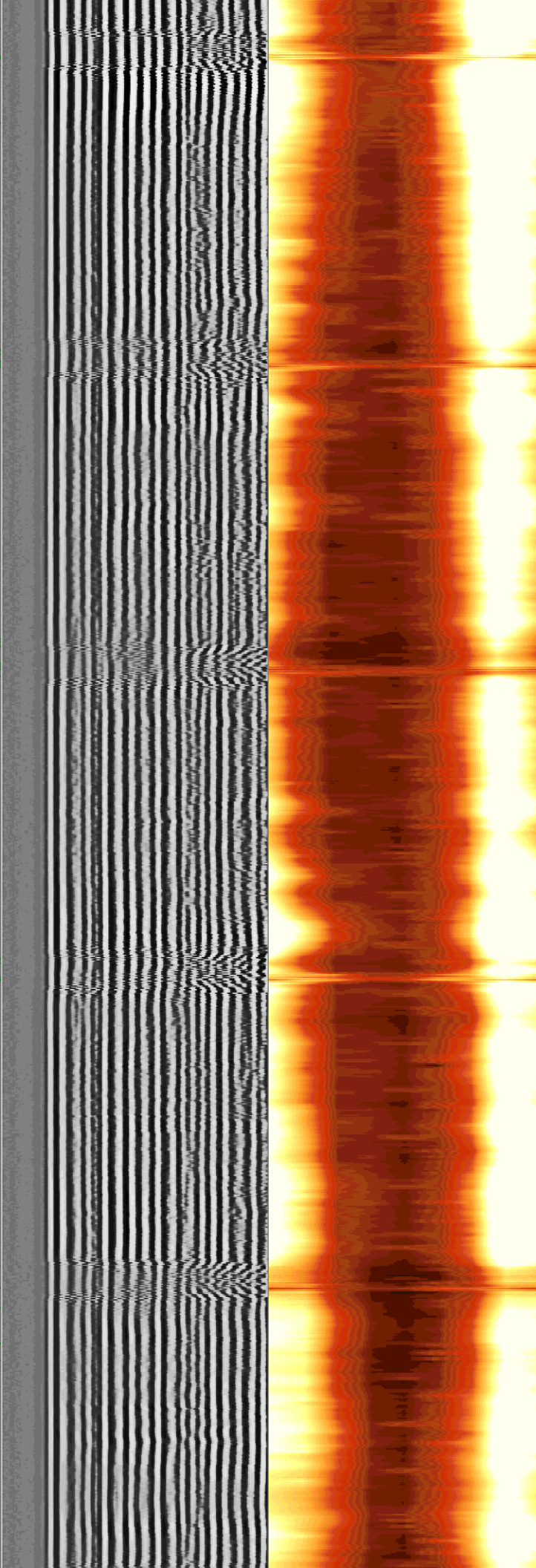
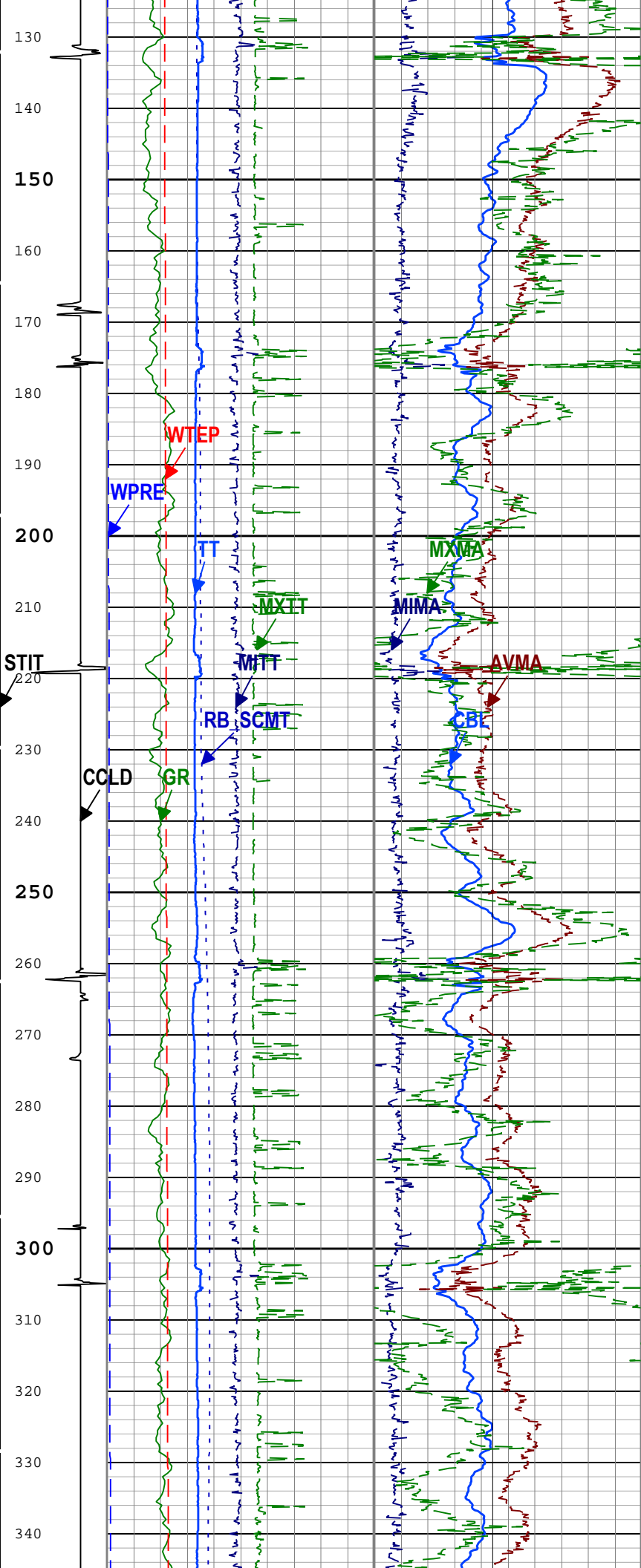
Well:Troudt 2

Run 1: Main[4]:Up:S002

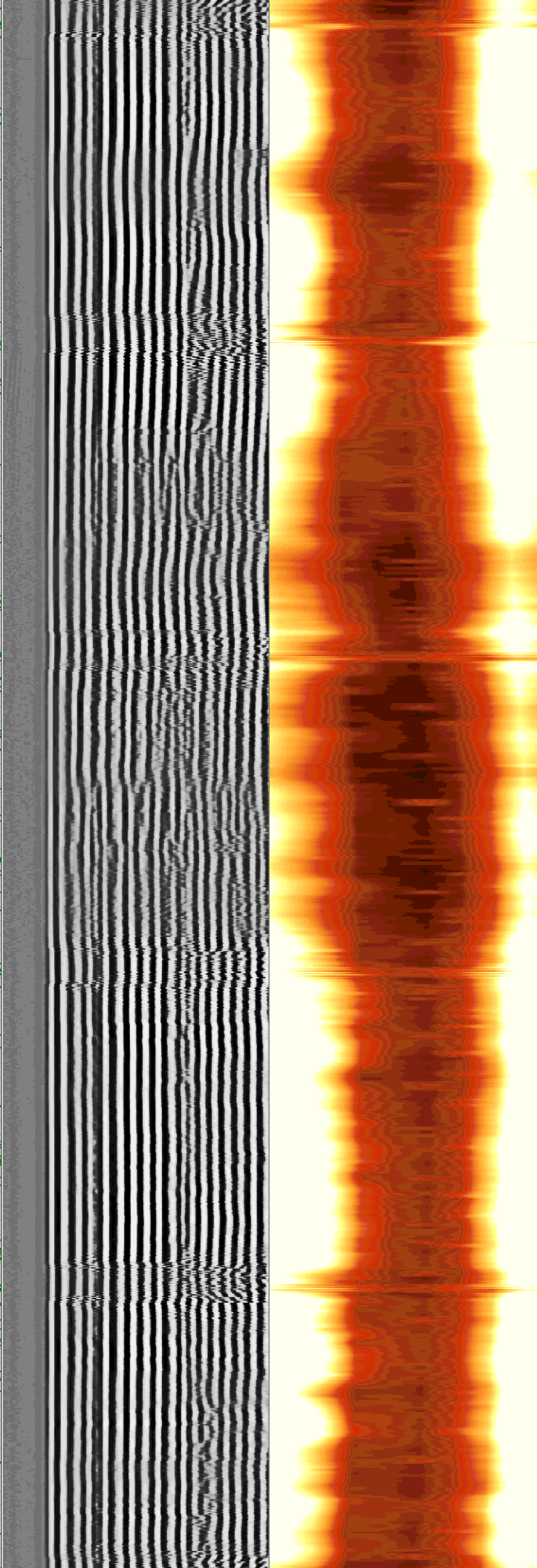
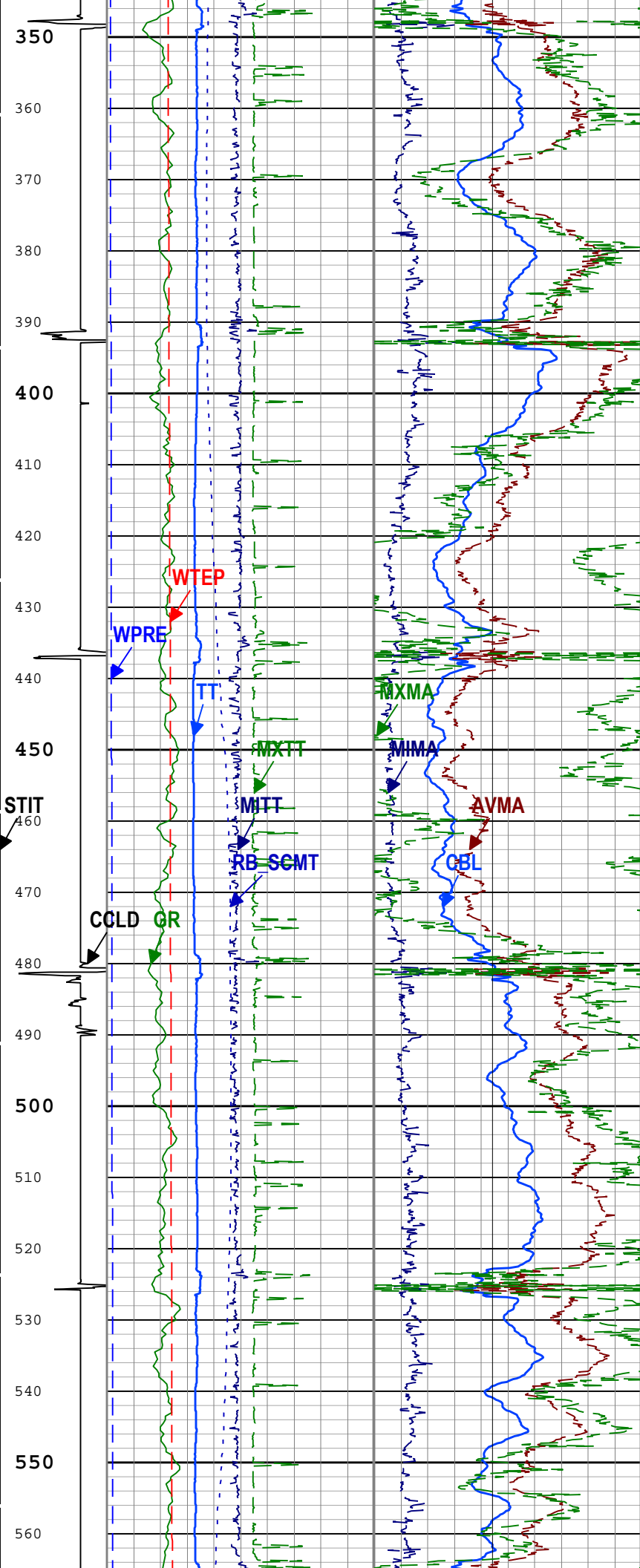
Description: SCMT VDL Image
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 Index Unit: ft
 Index Type: Measured Depth
 Creation Date: 20-Sep-2015 15:51:54

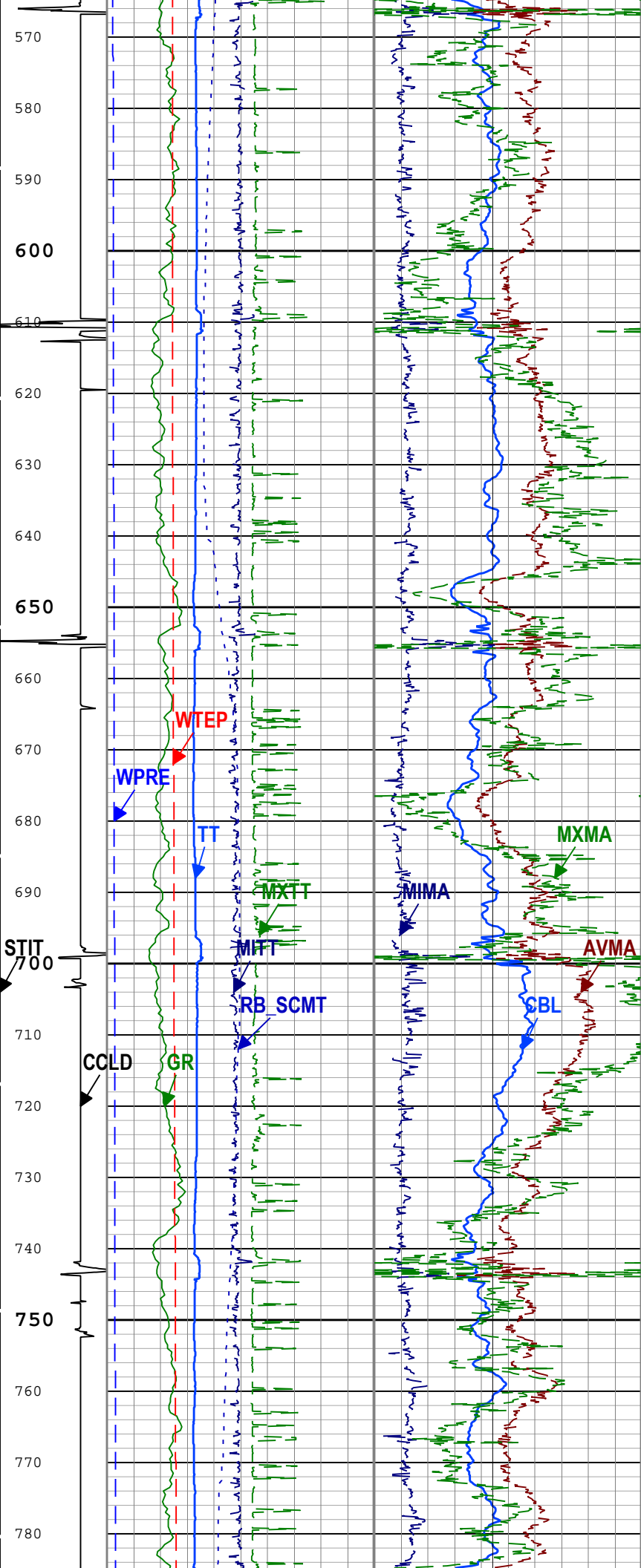
TIME\_1900 - Time Marked every 60.00 (s)



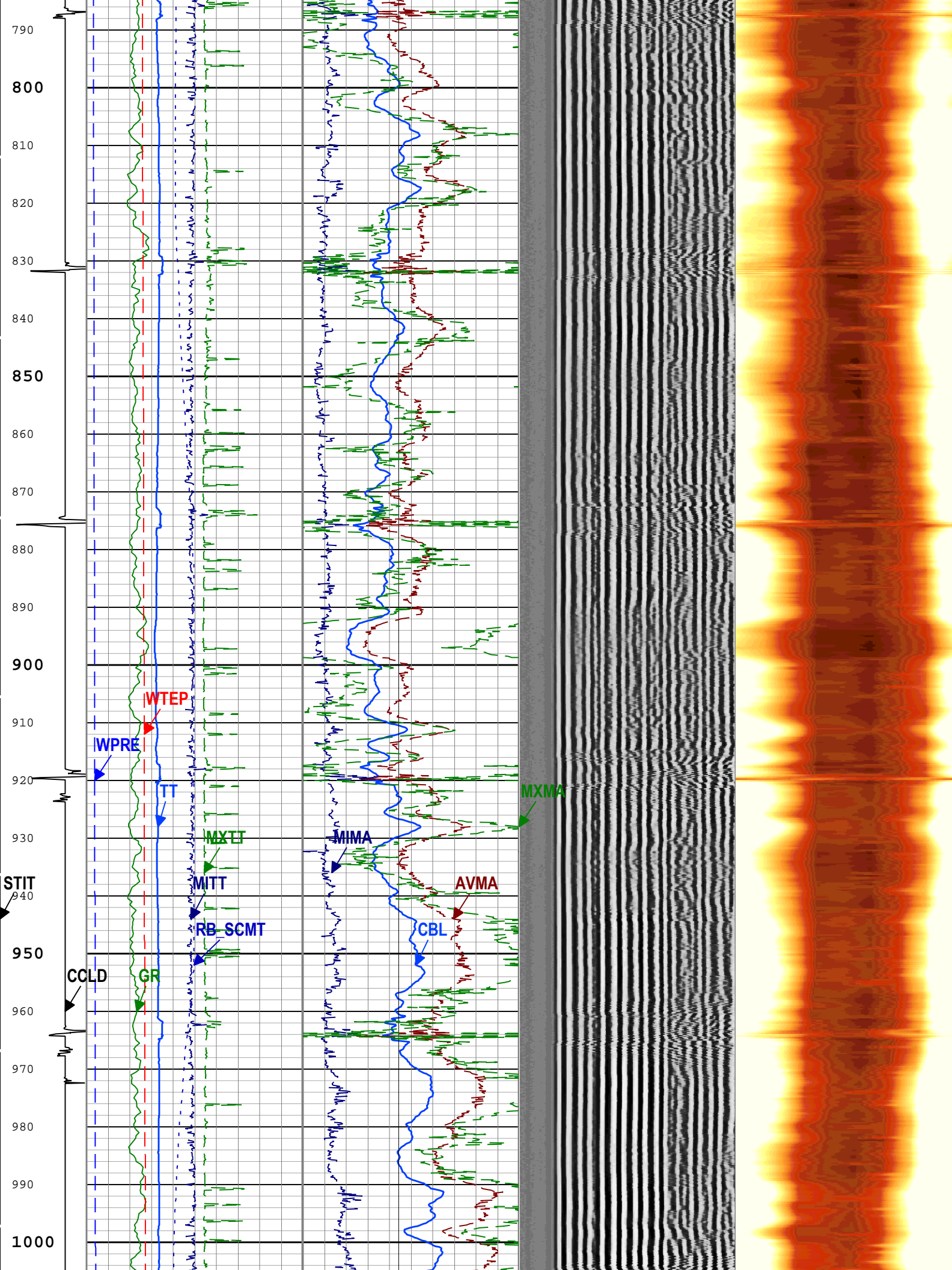


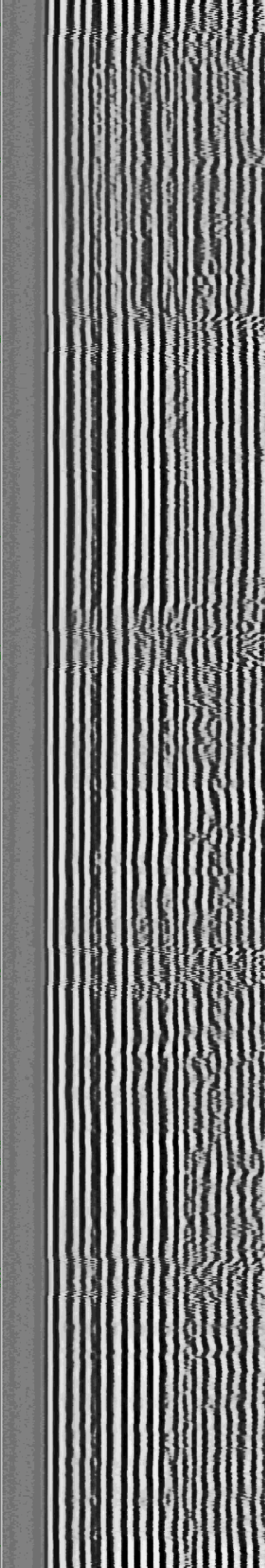
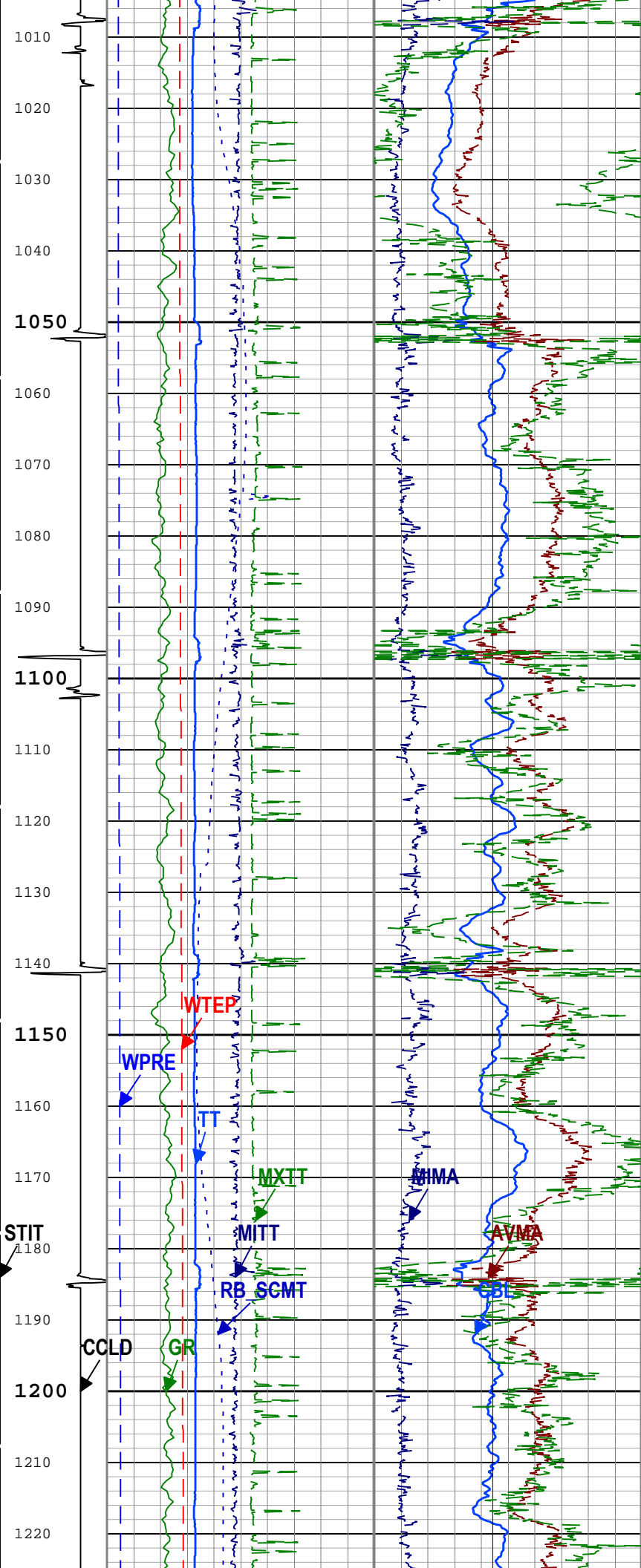




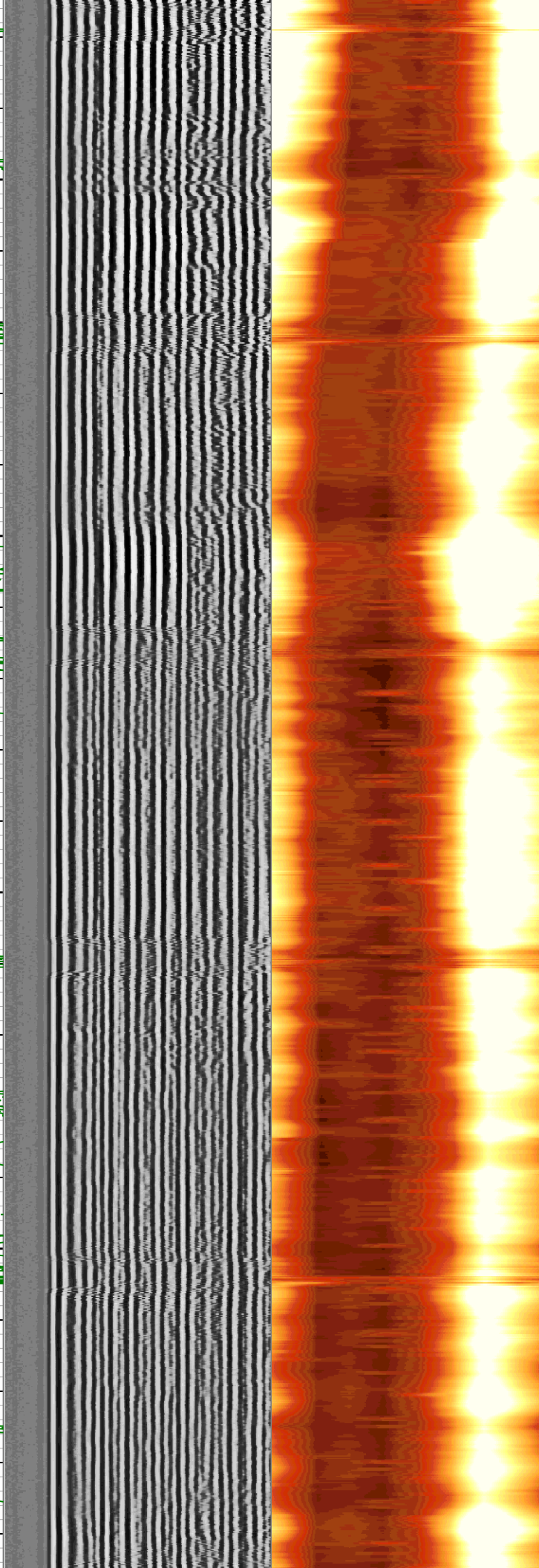
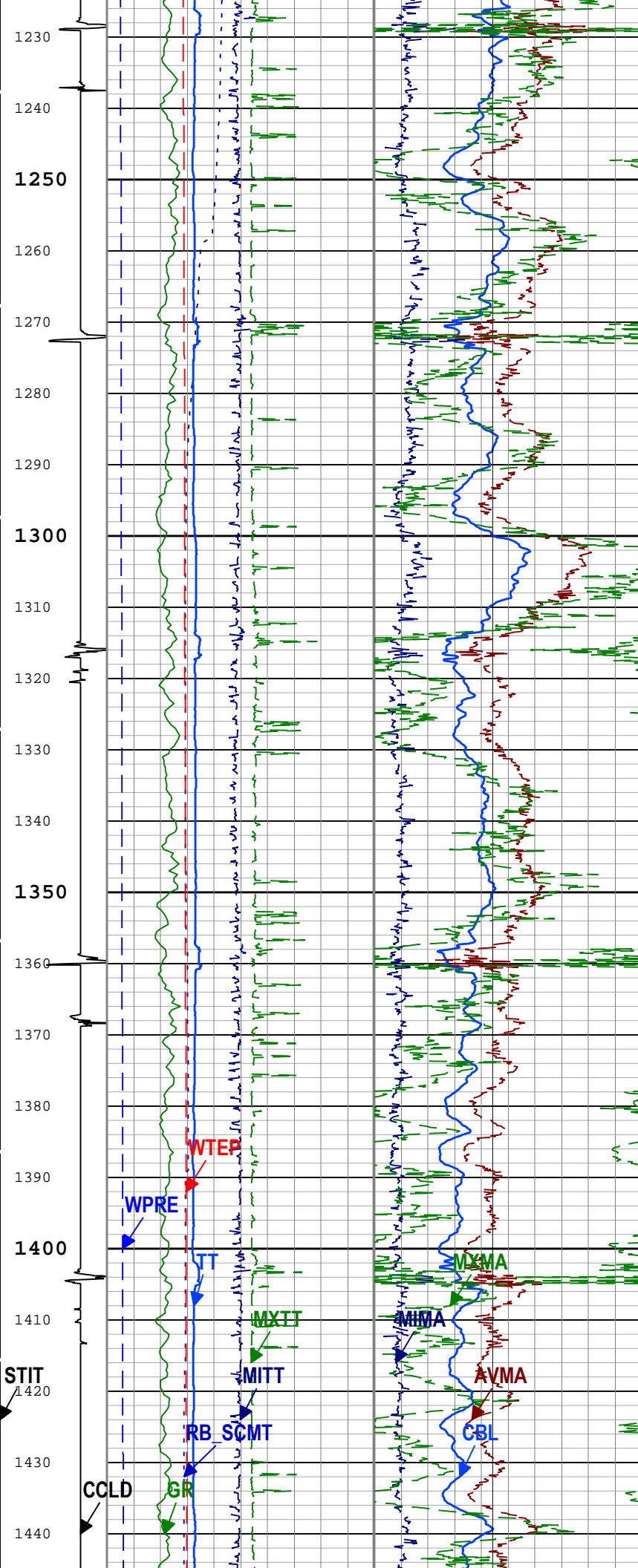




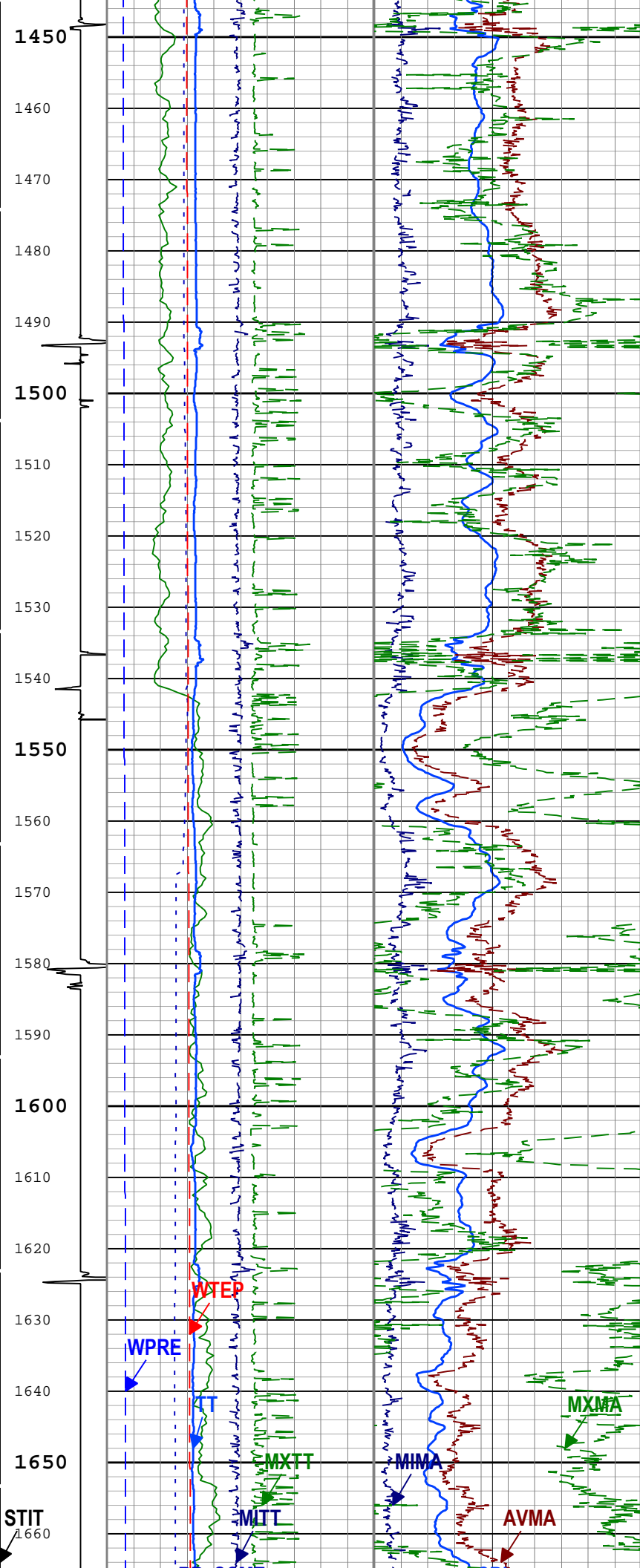


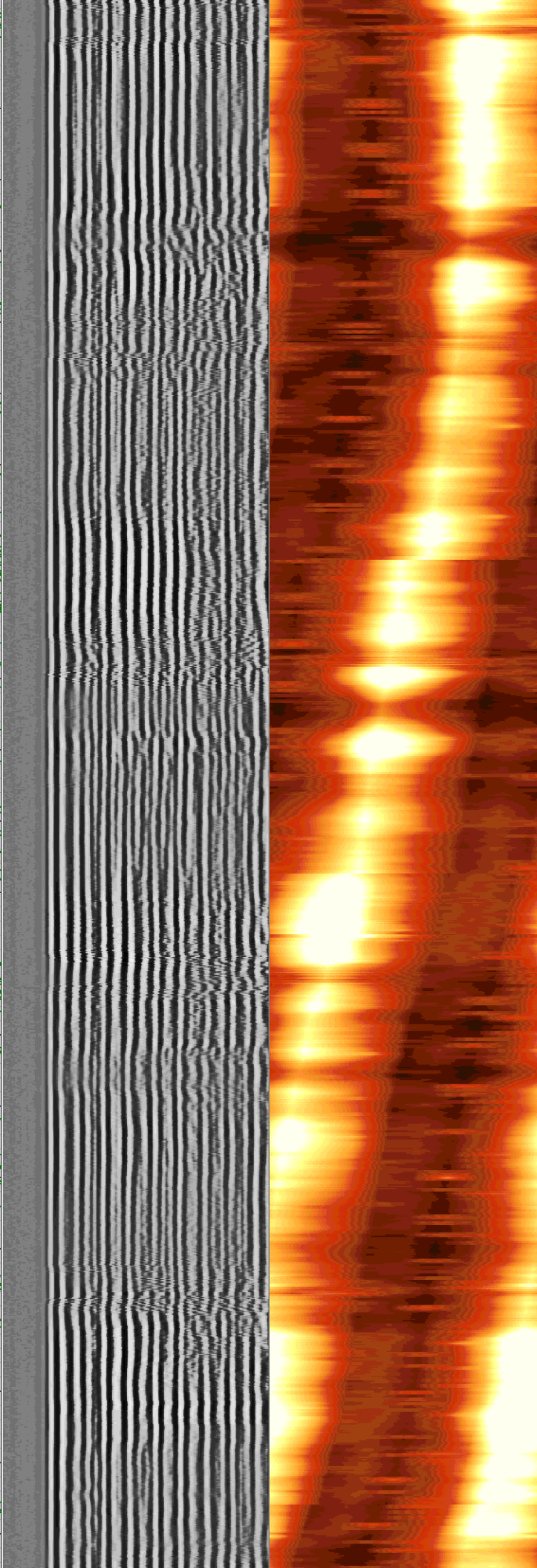
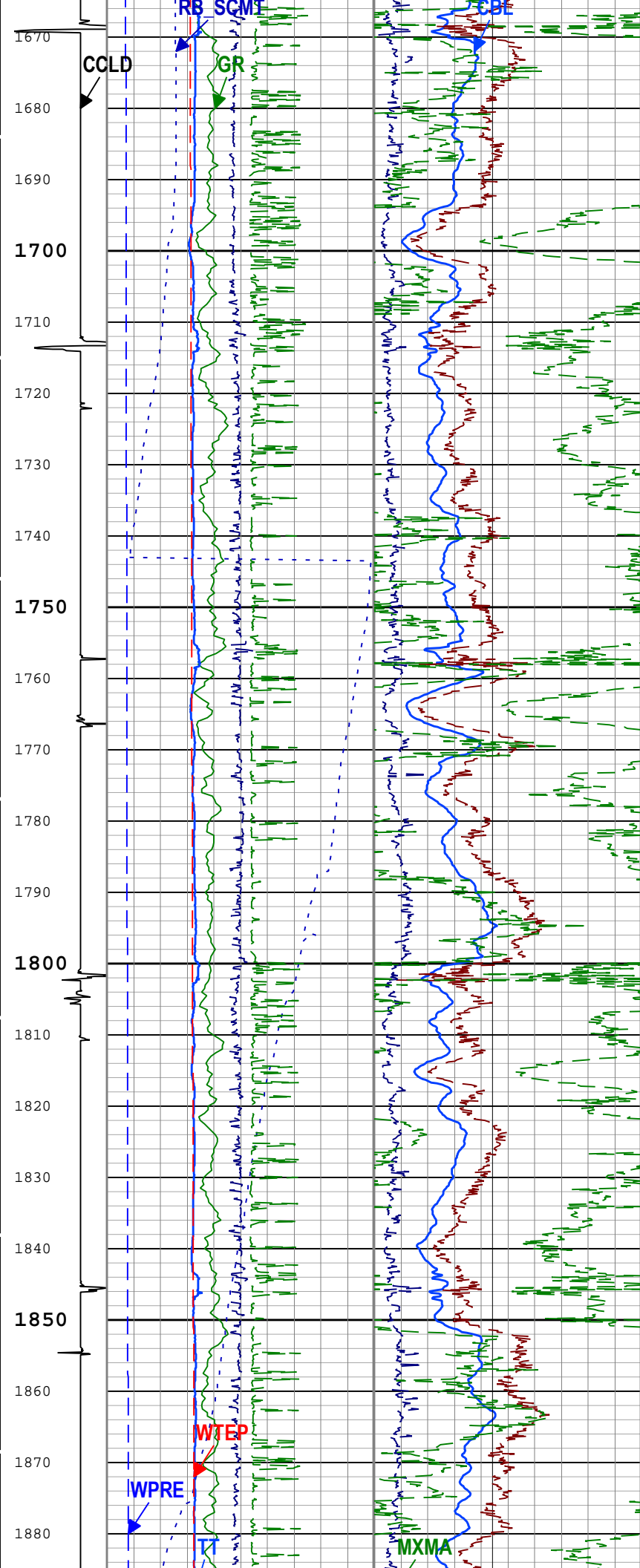




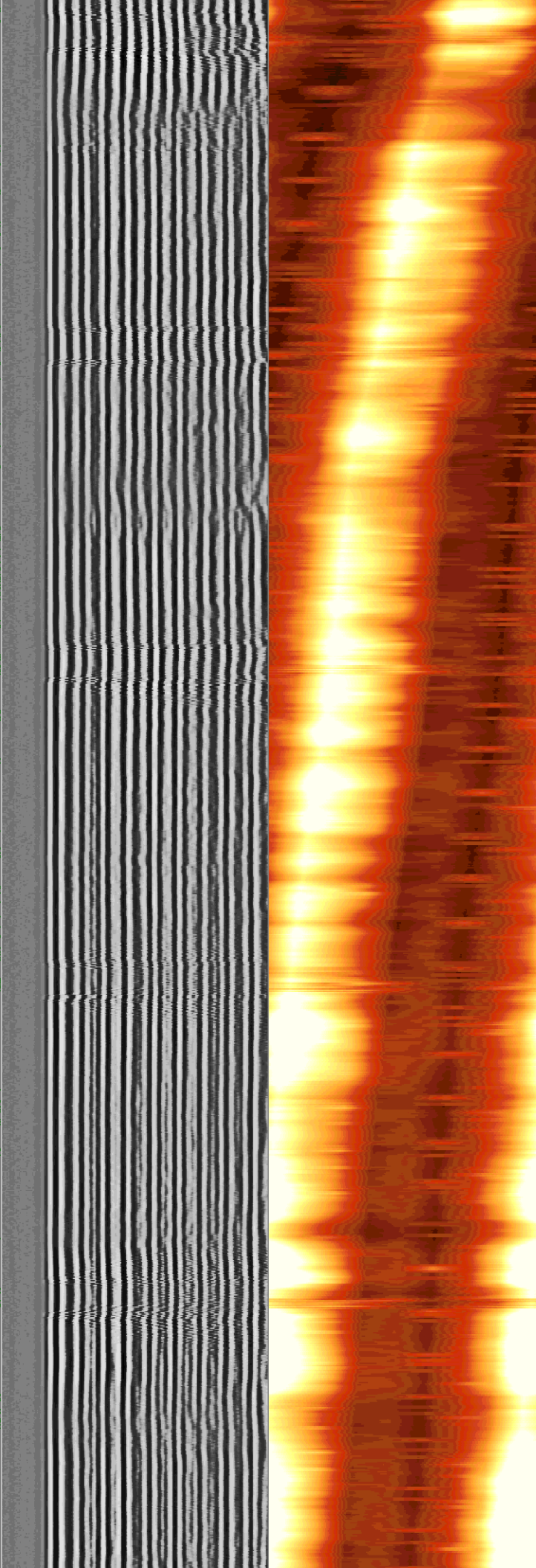
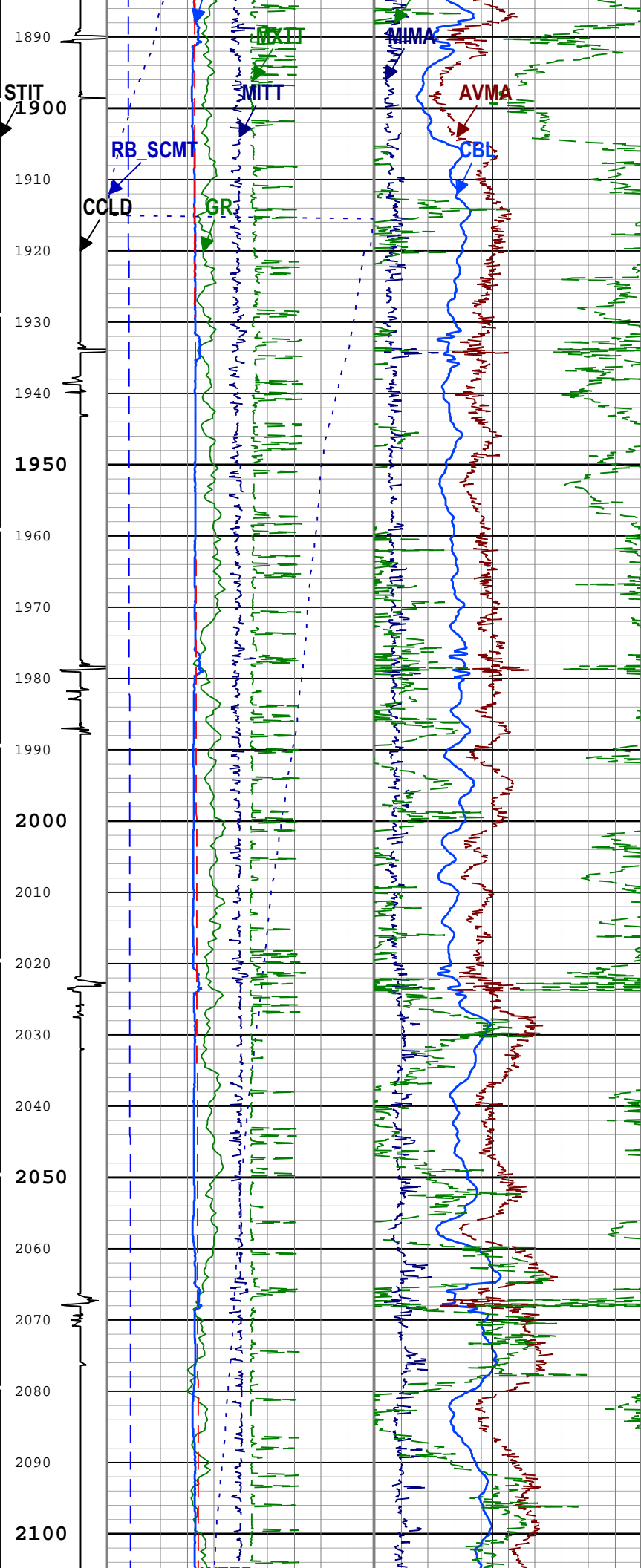


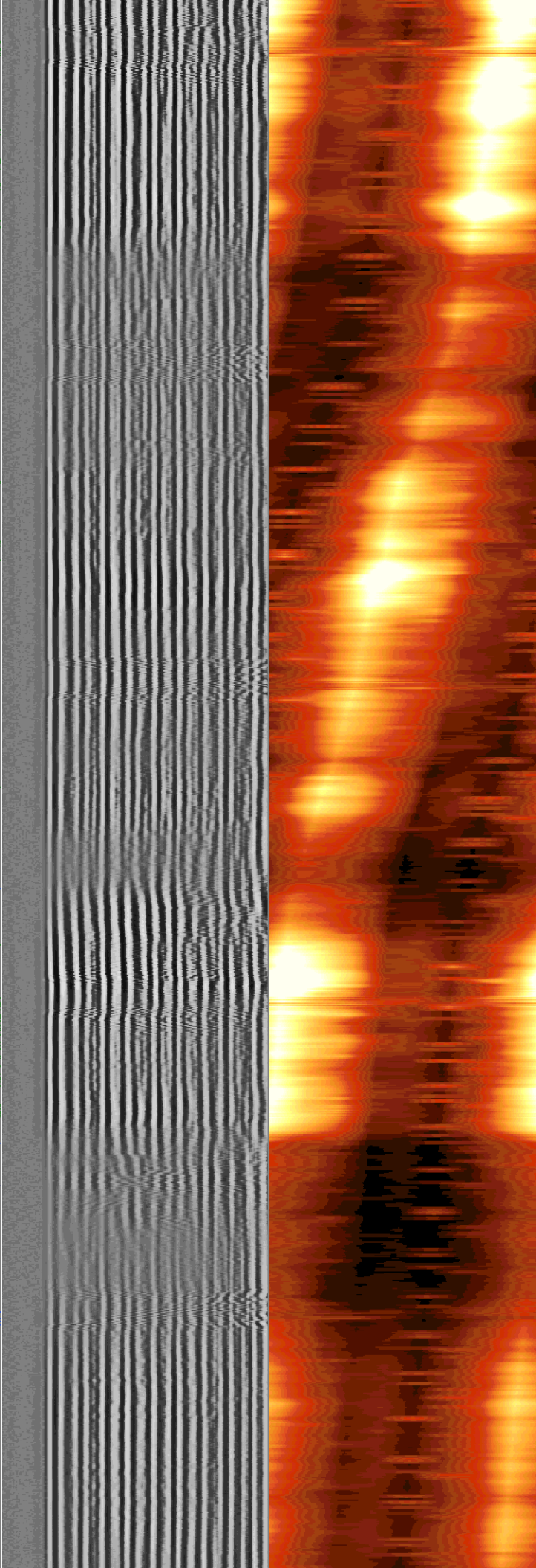
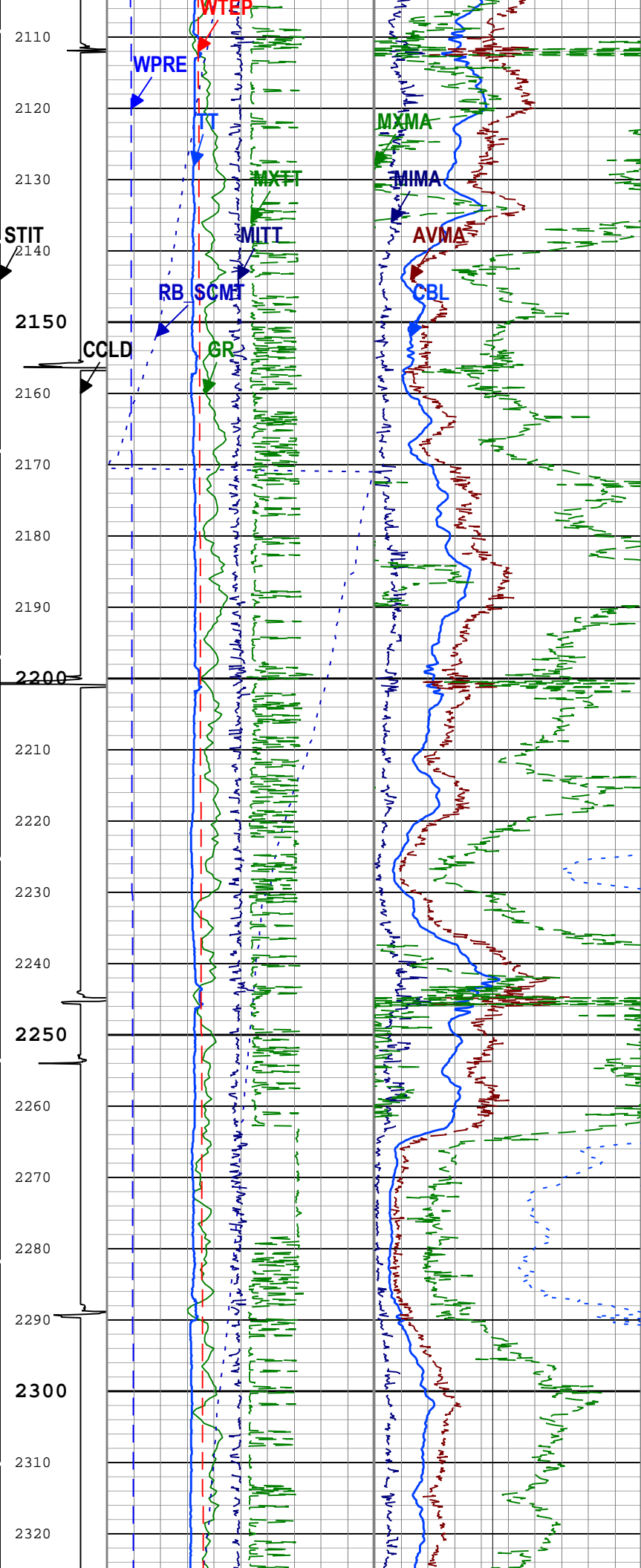




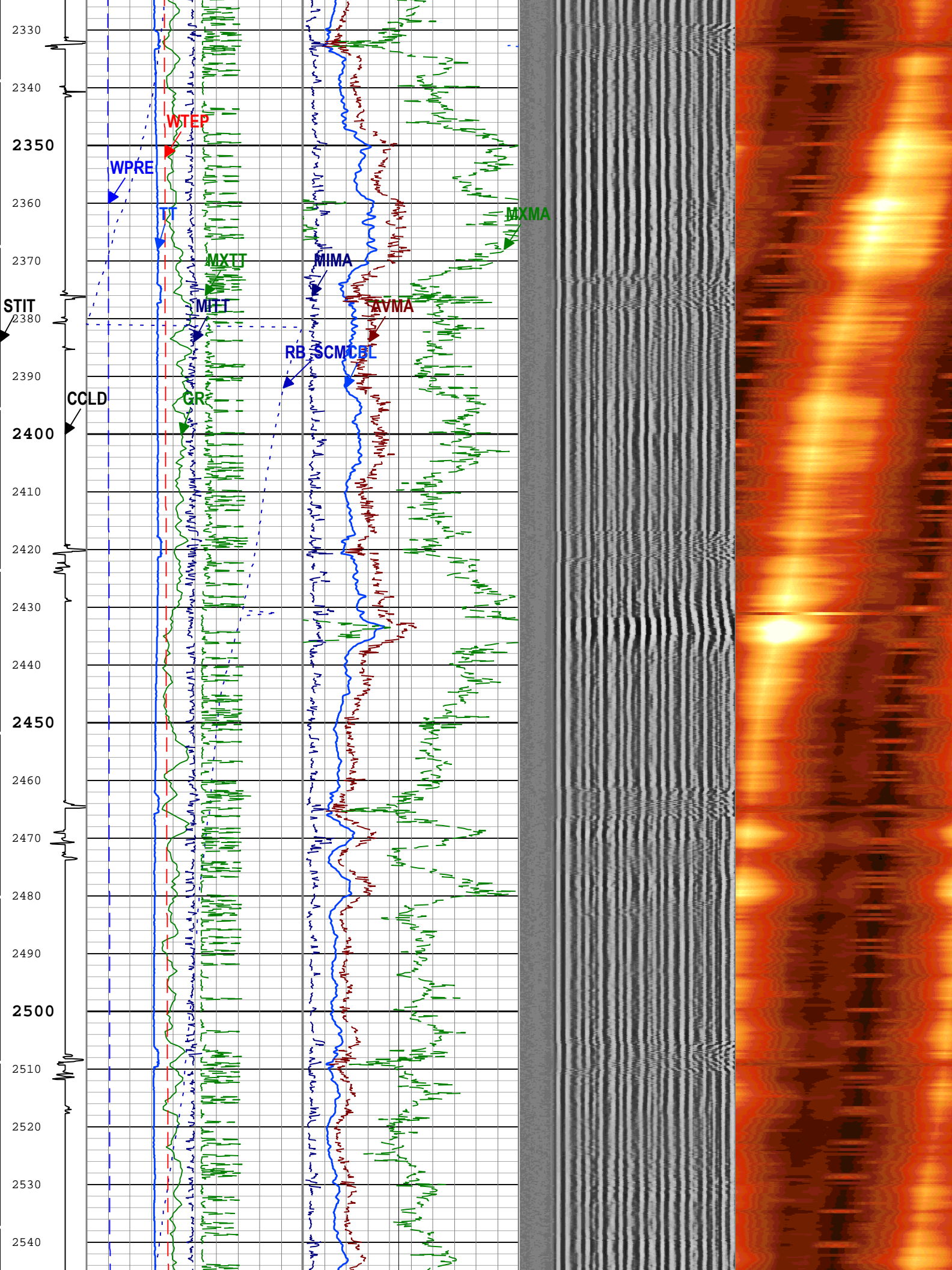


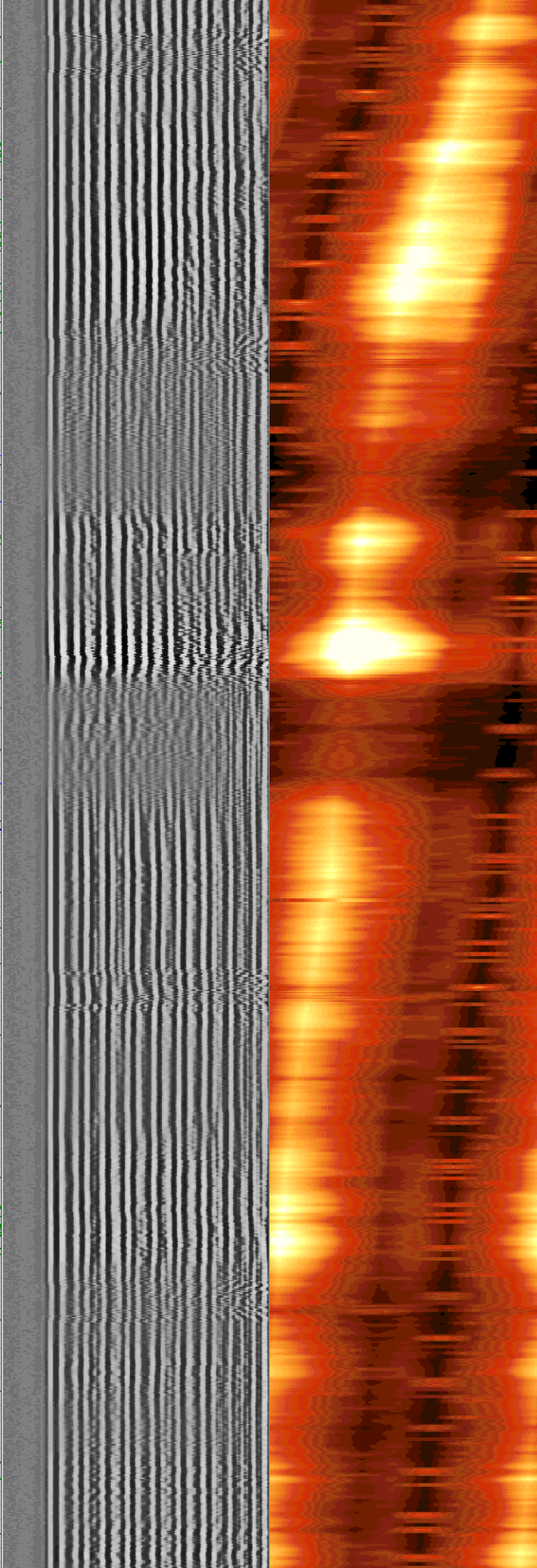
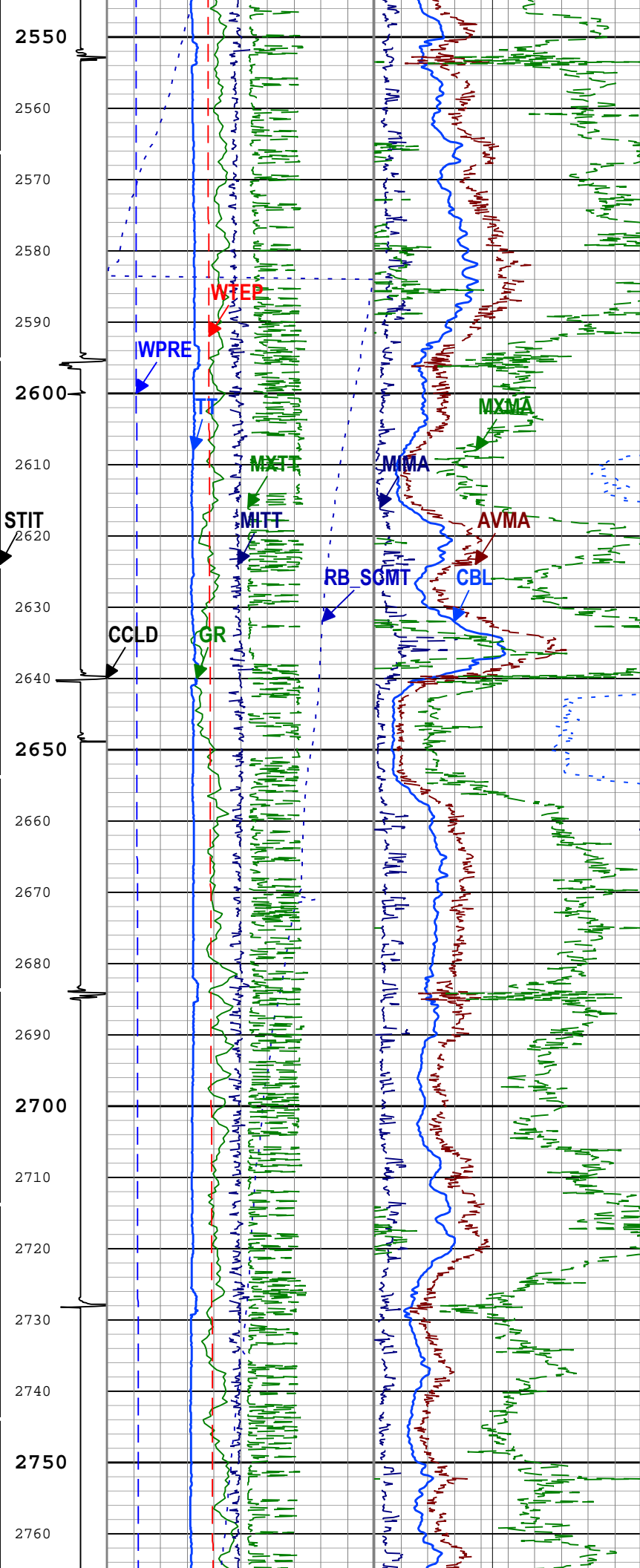




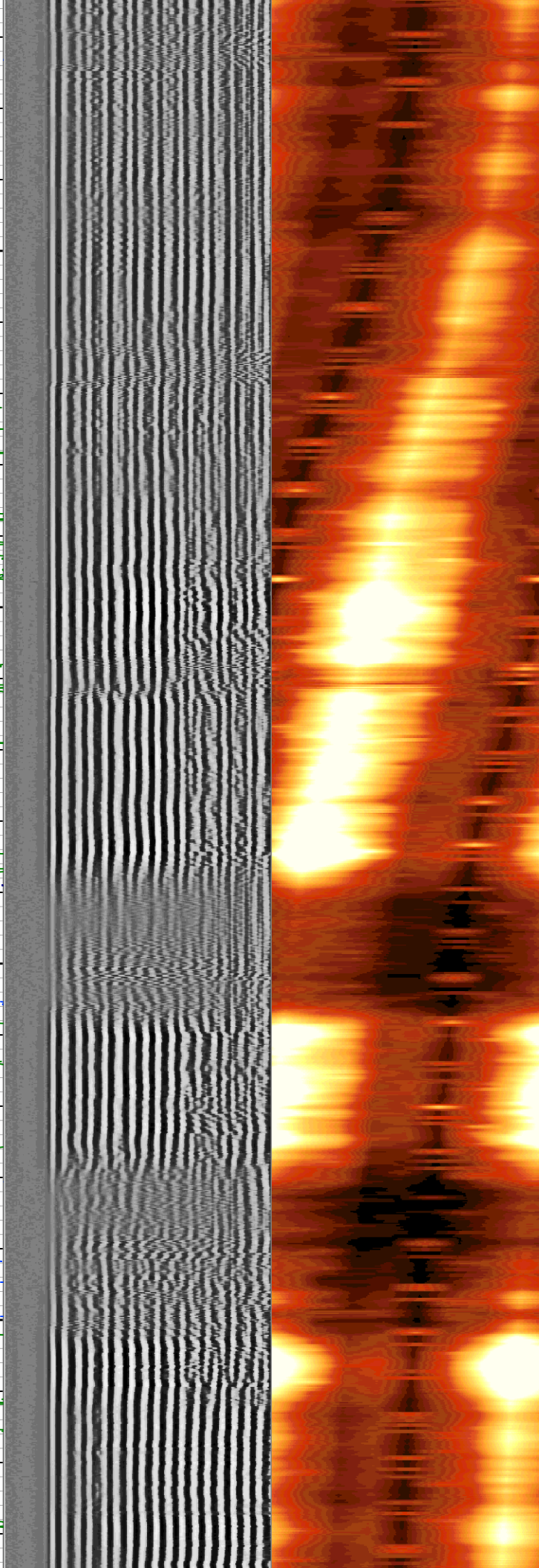
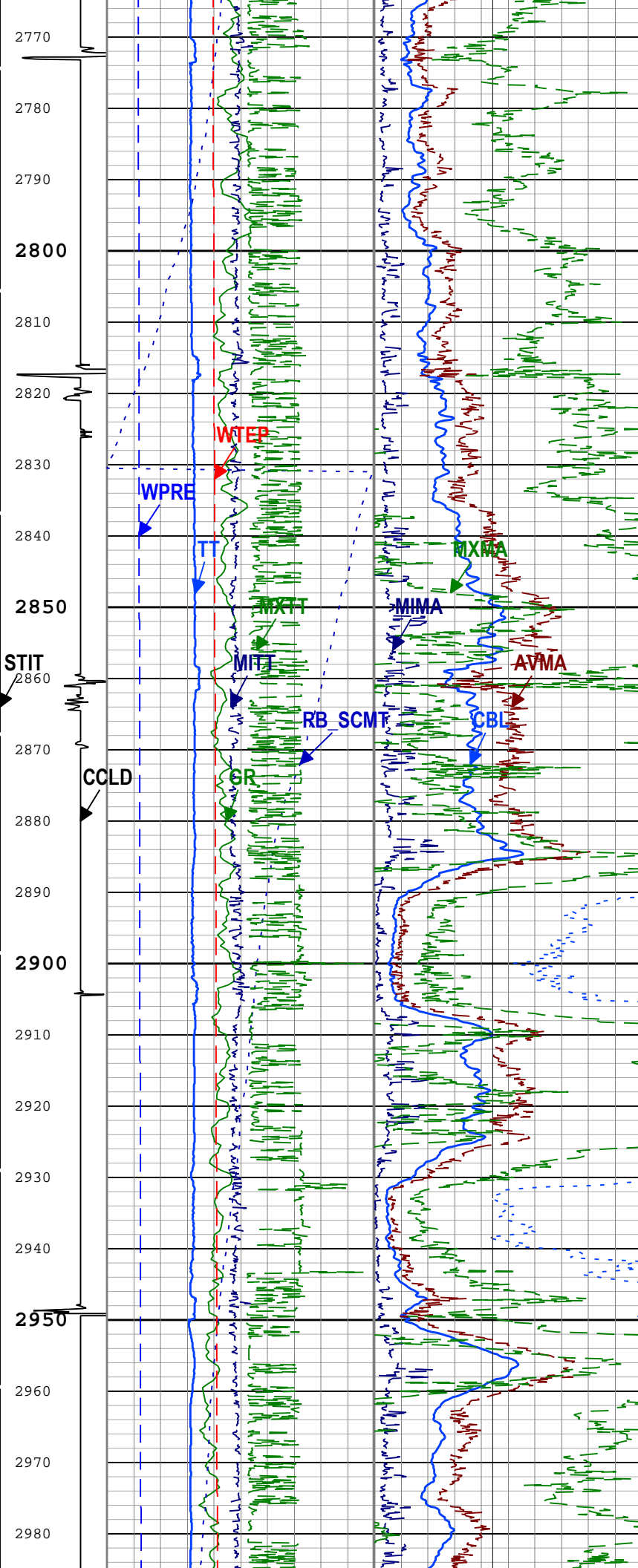


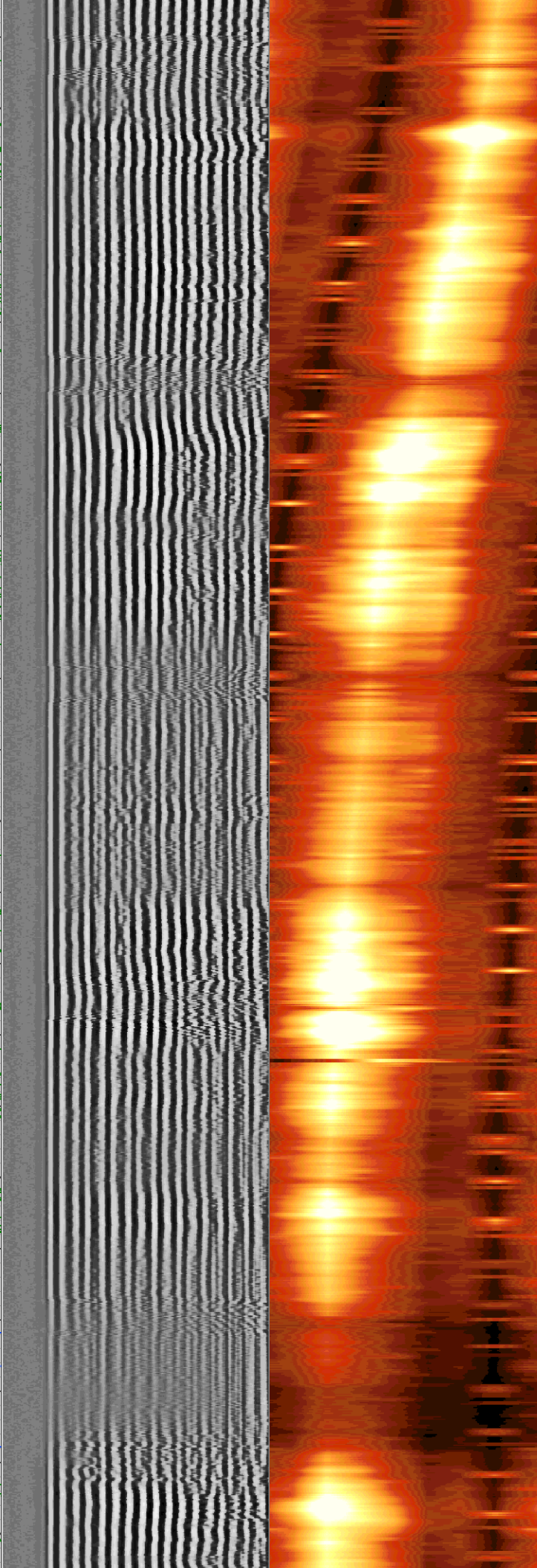
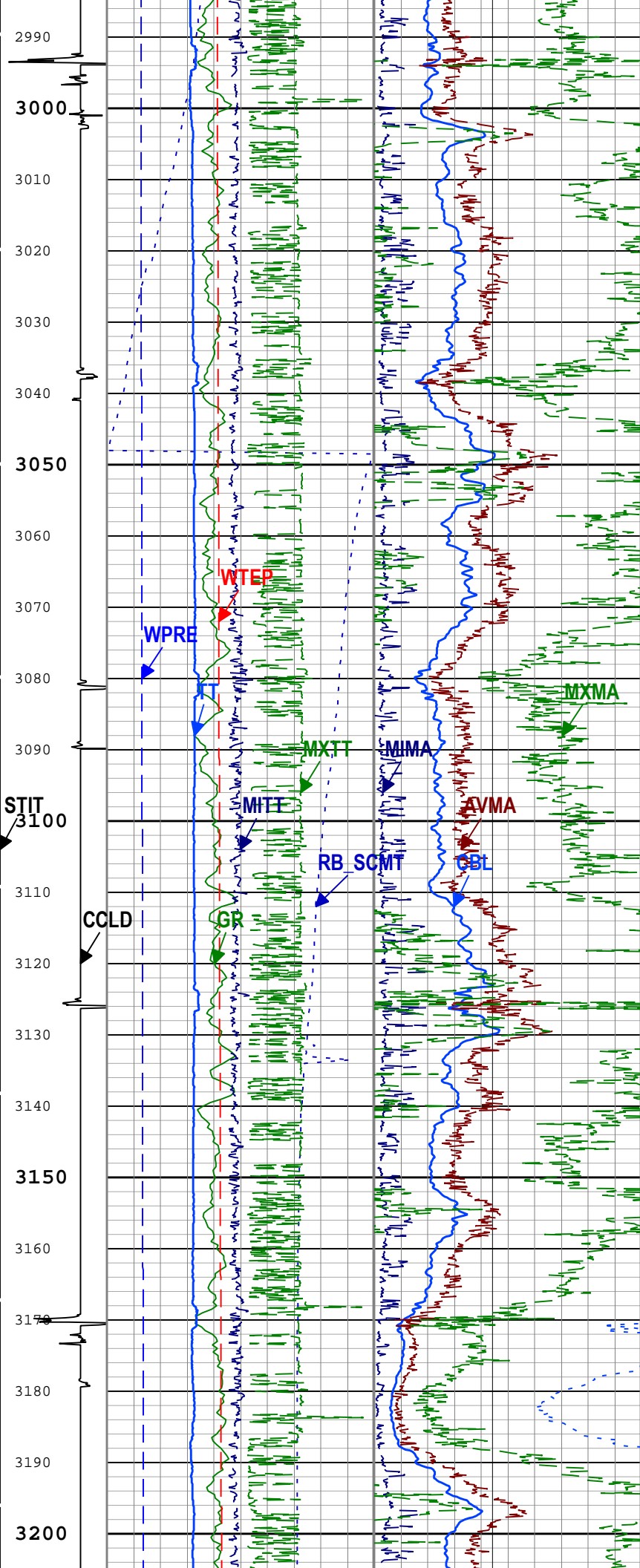




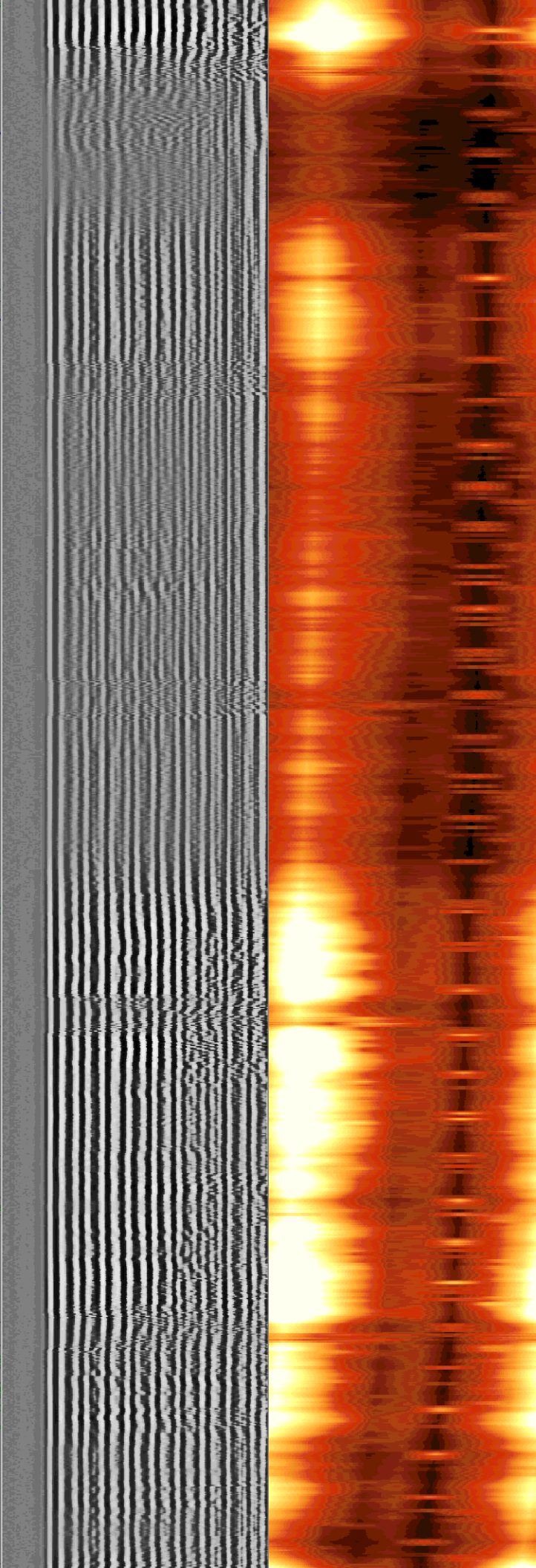
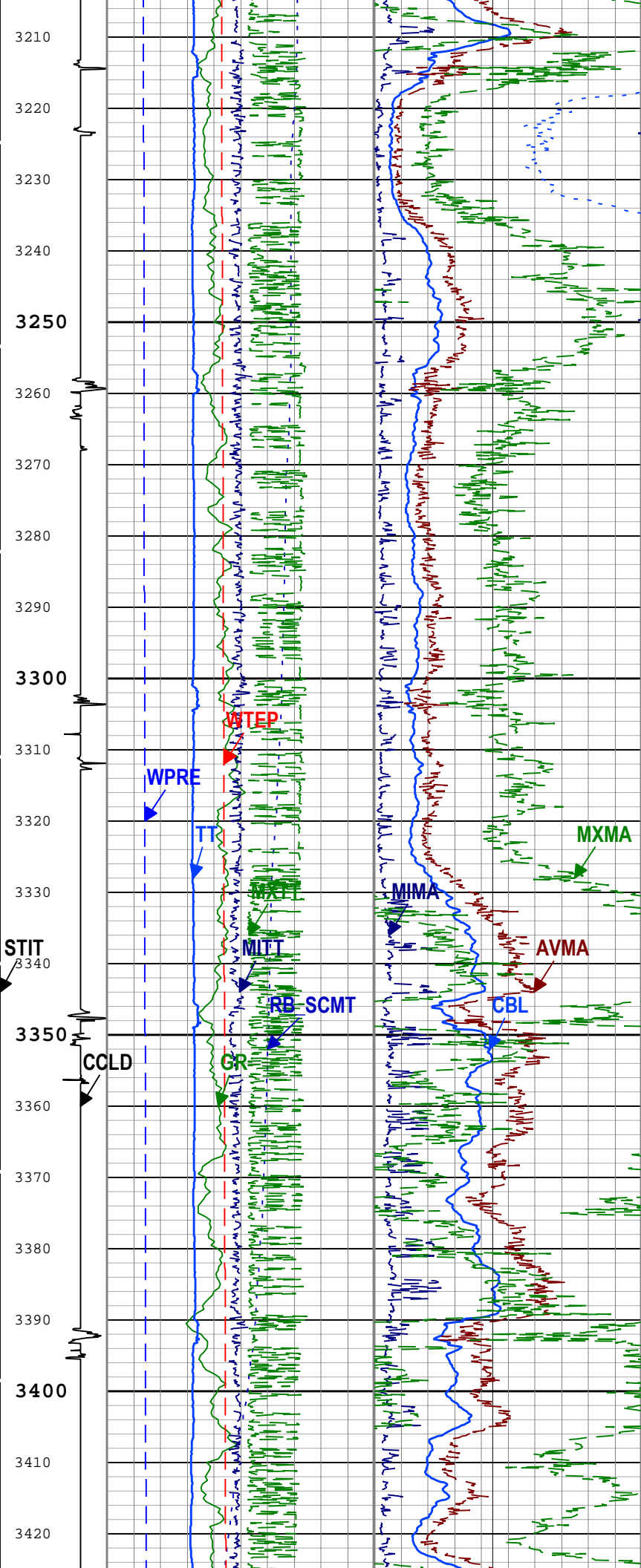


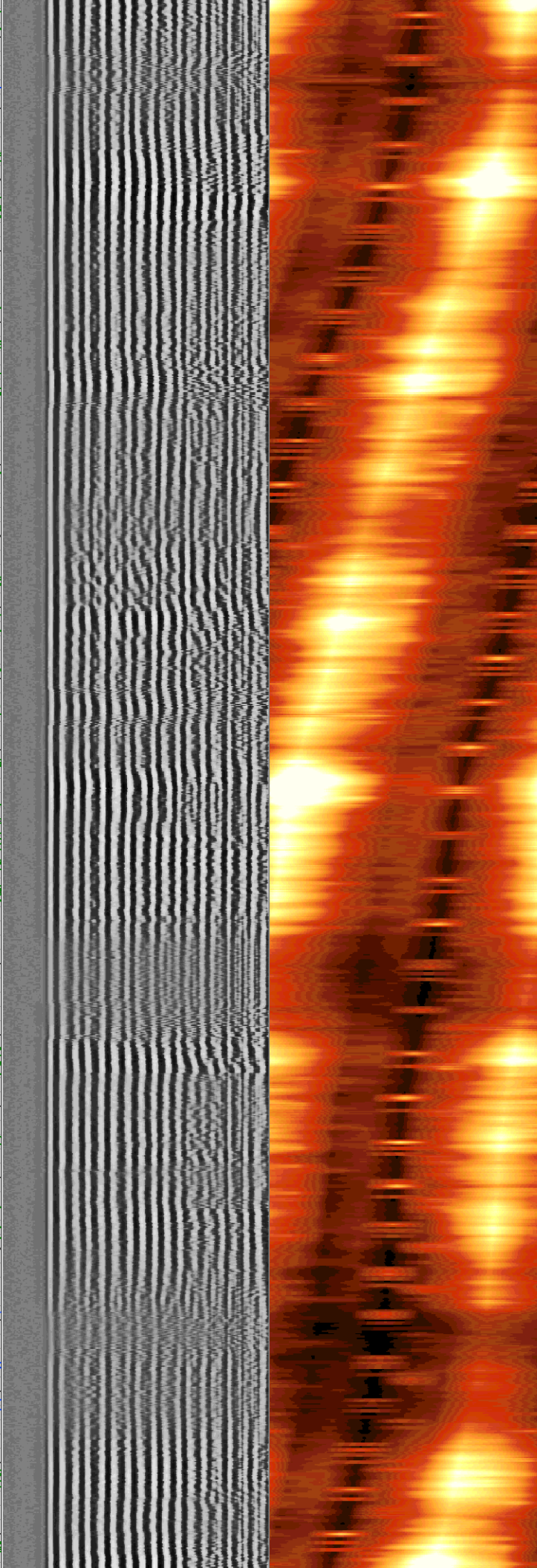
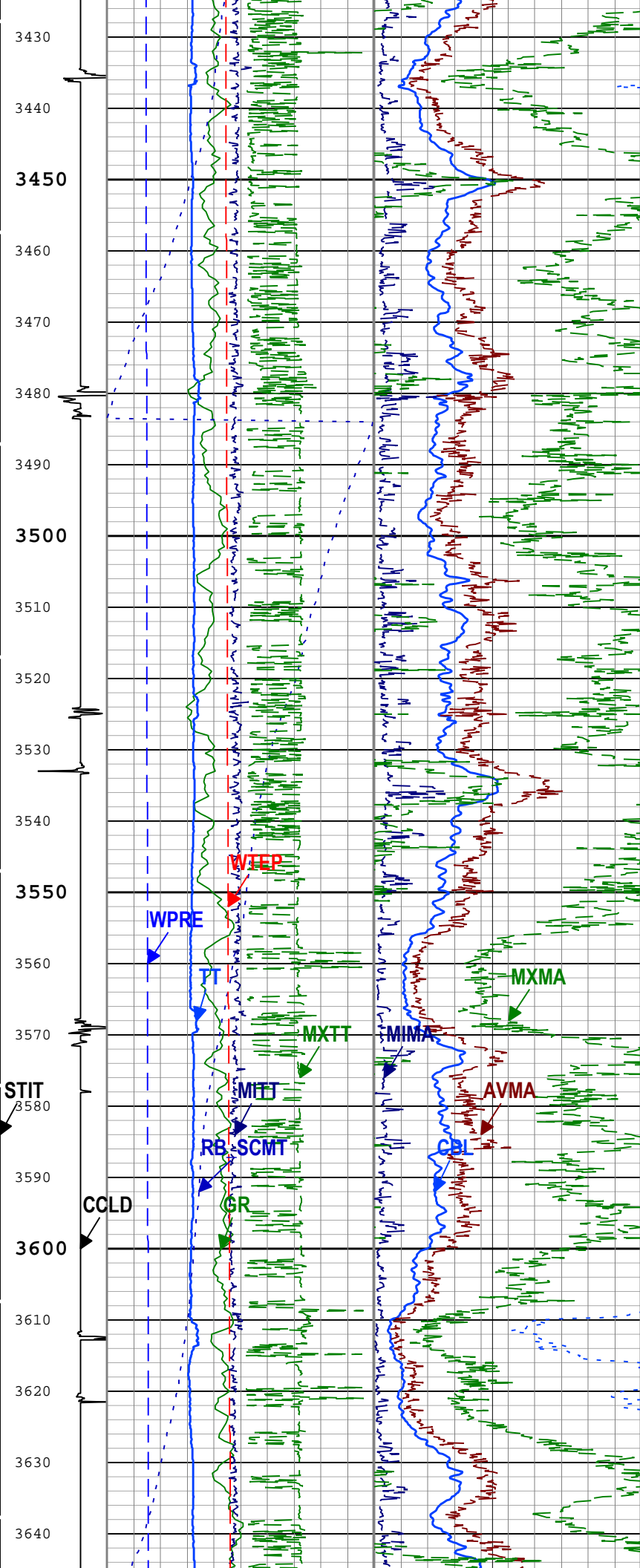




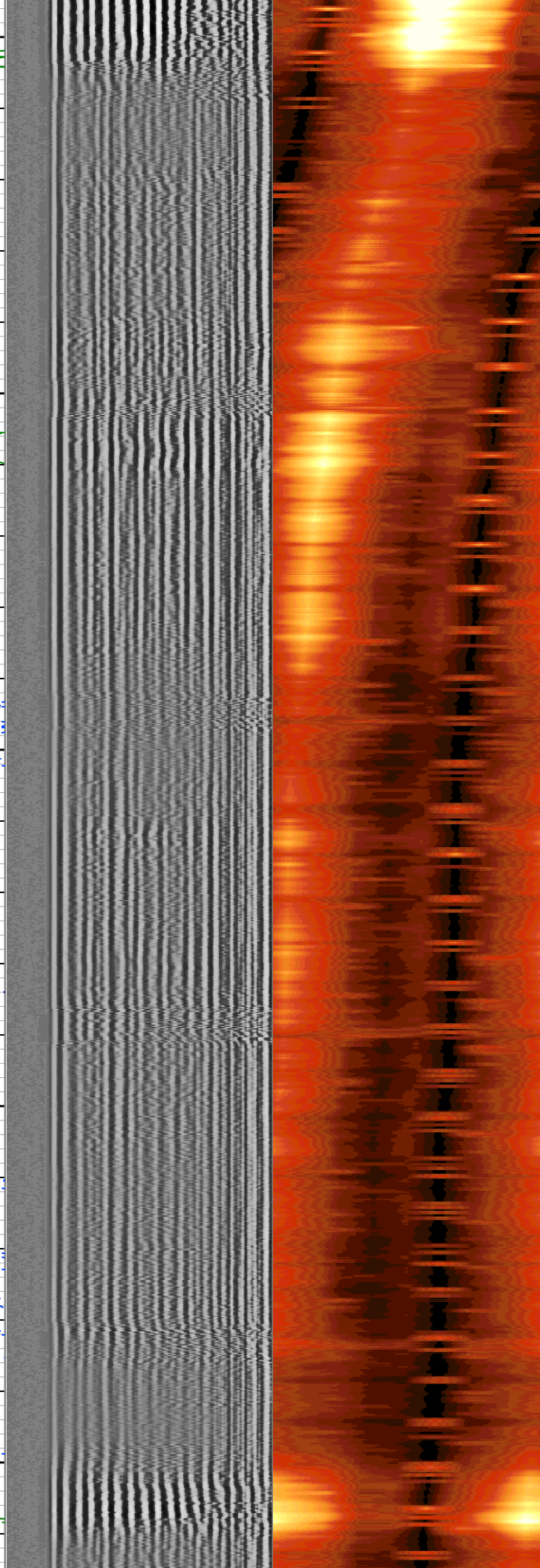
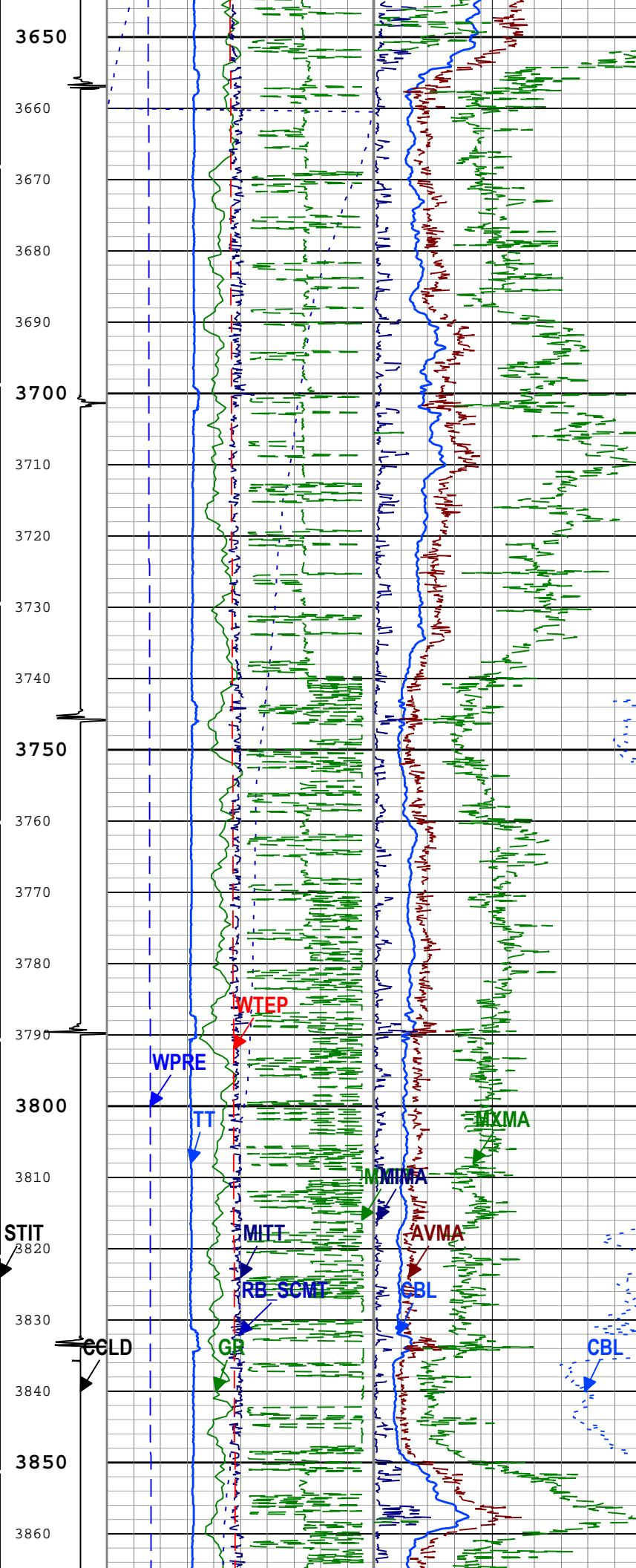


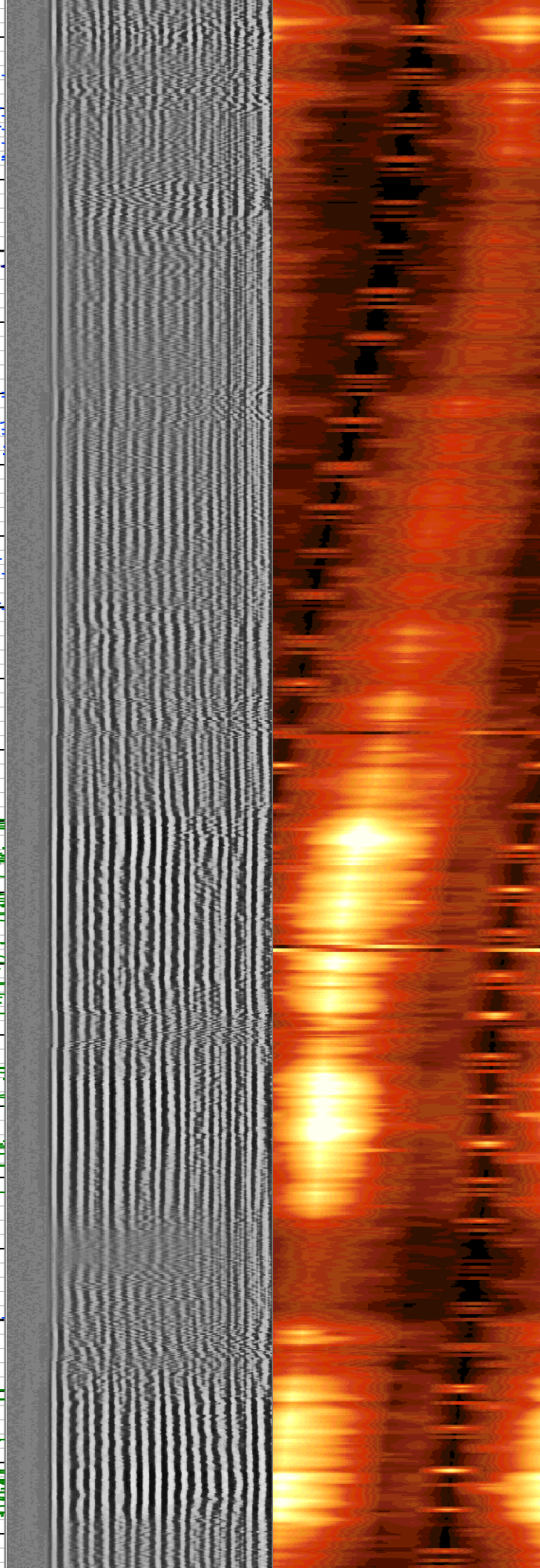
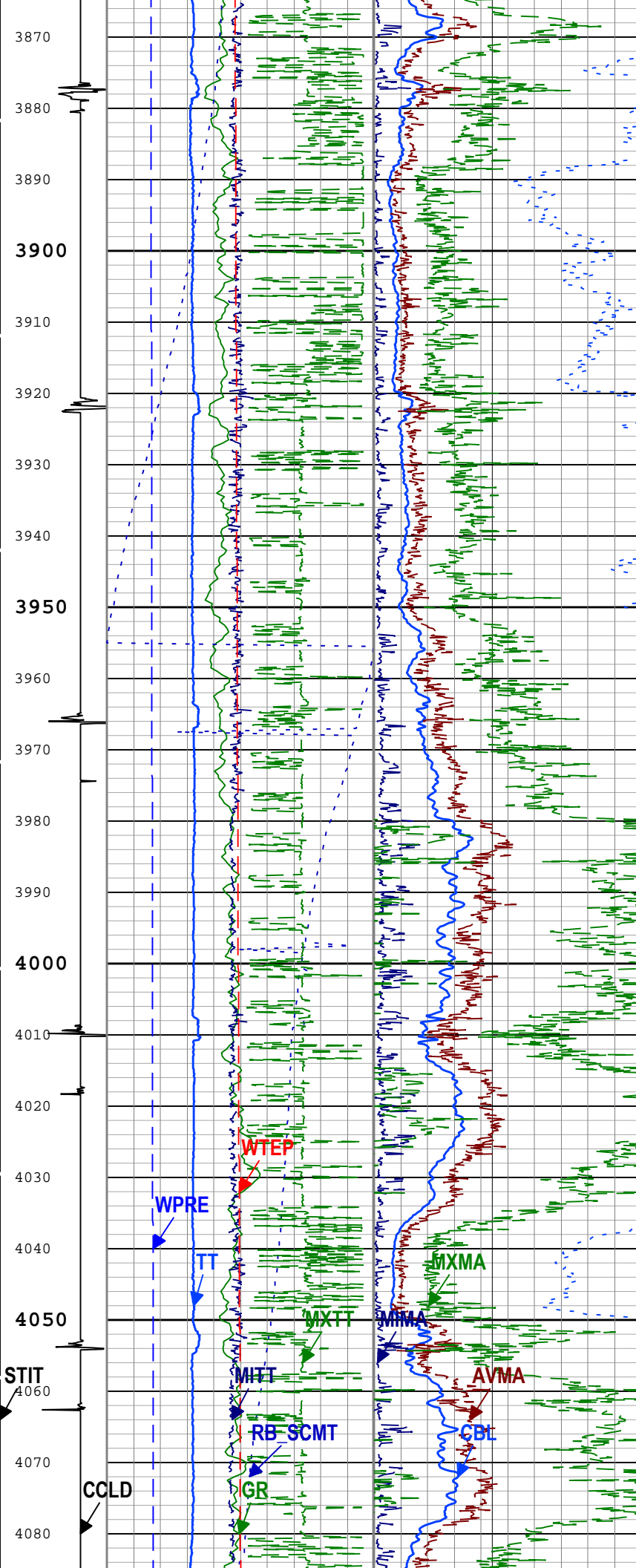




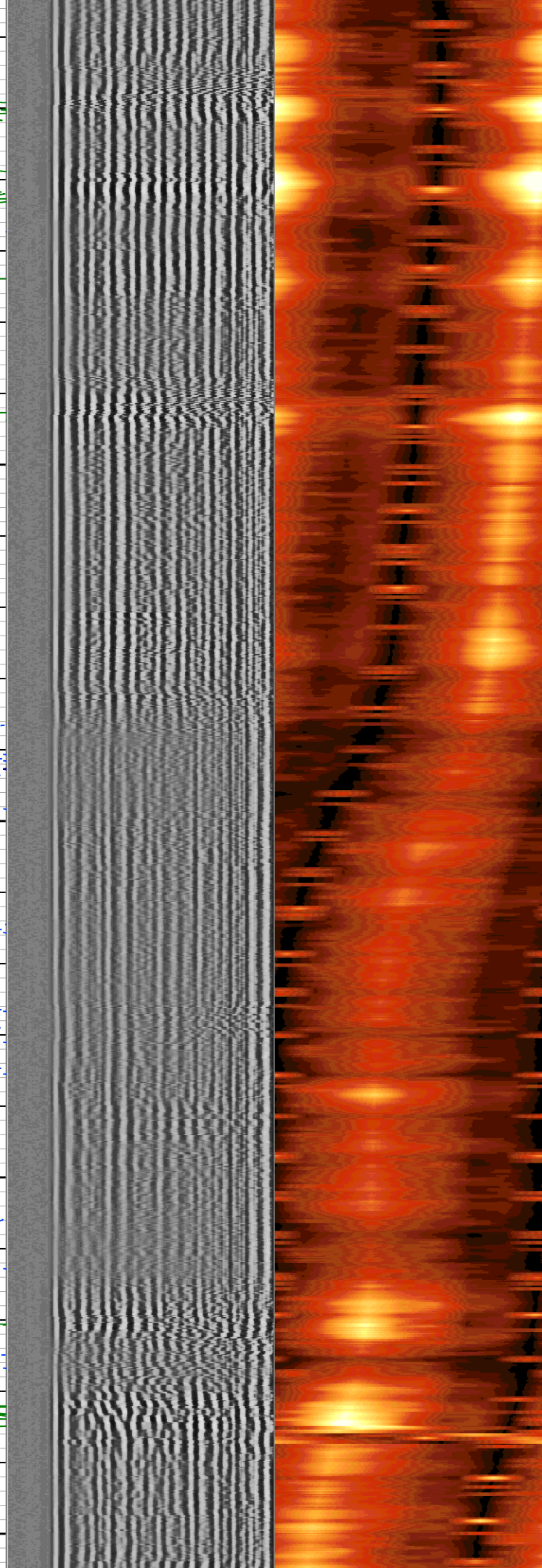
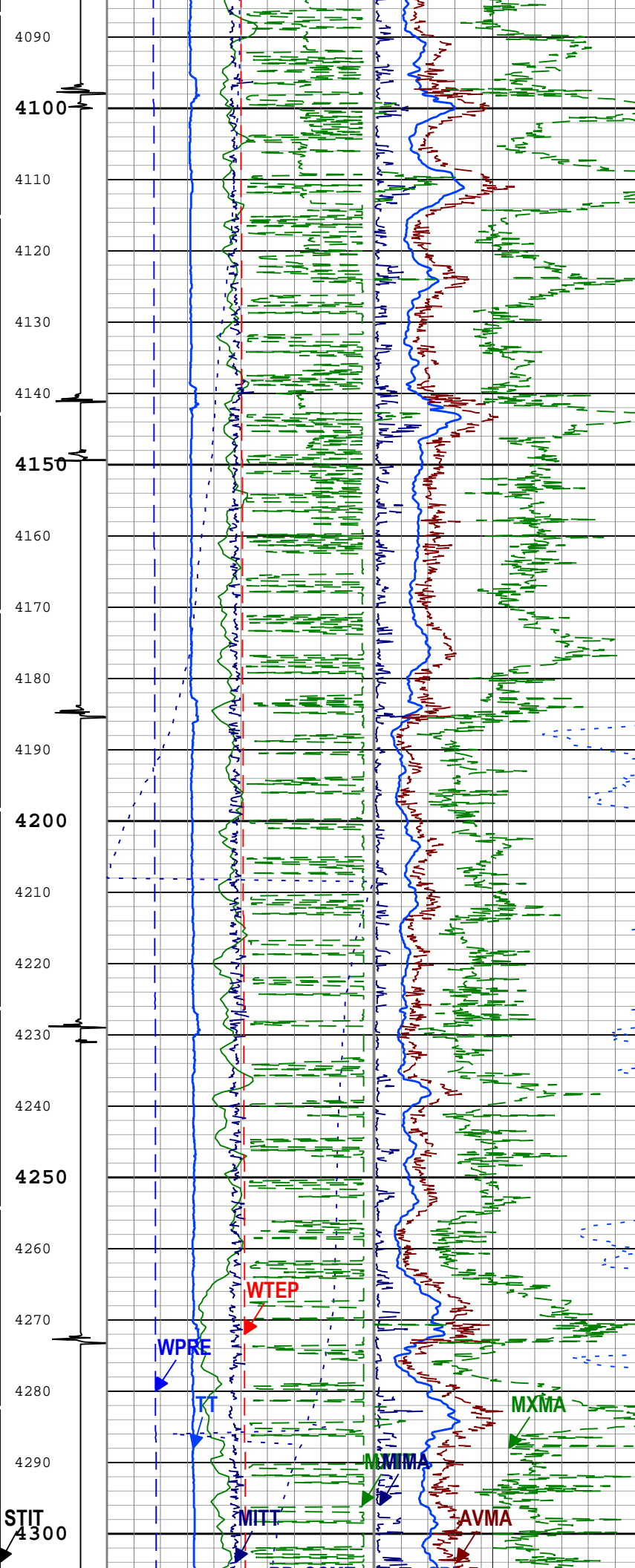


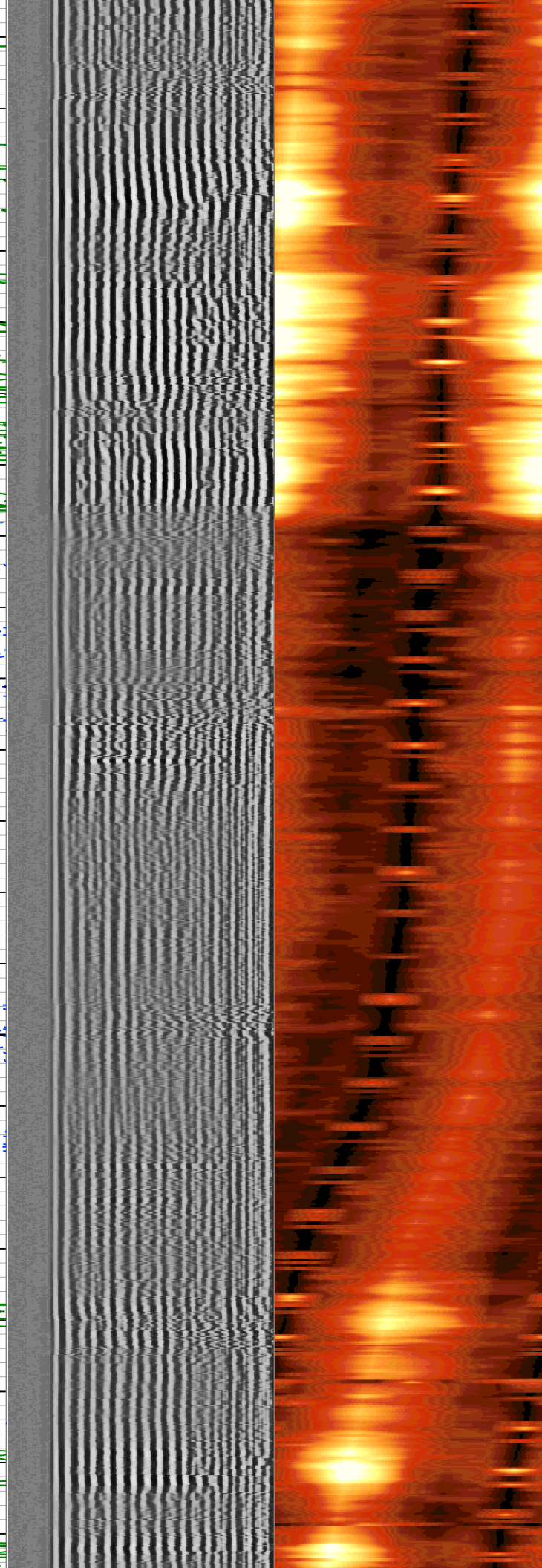
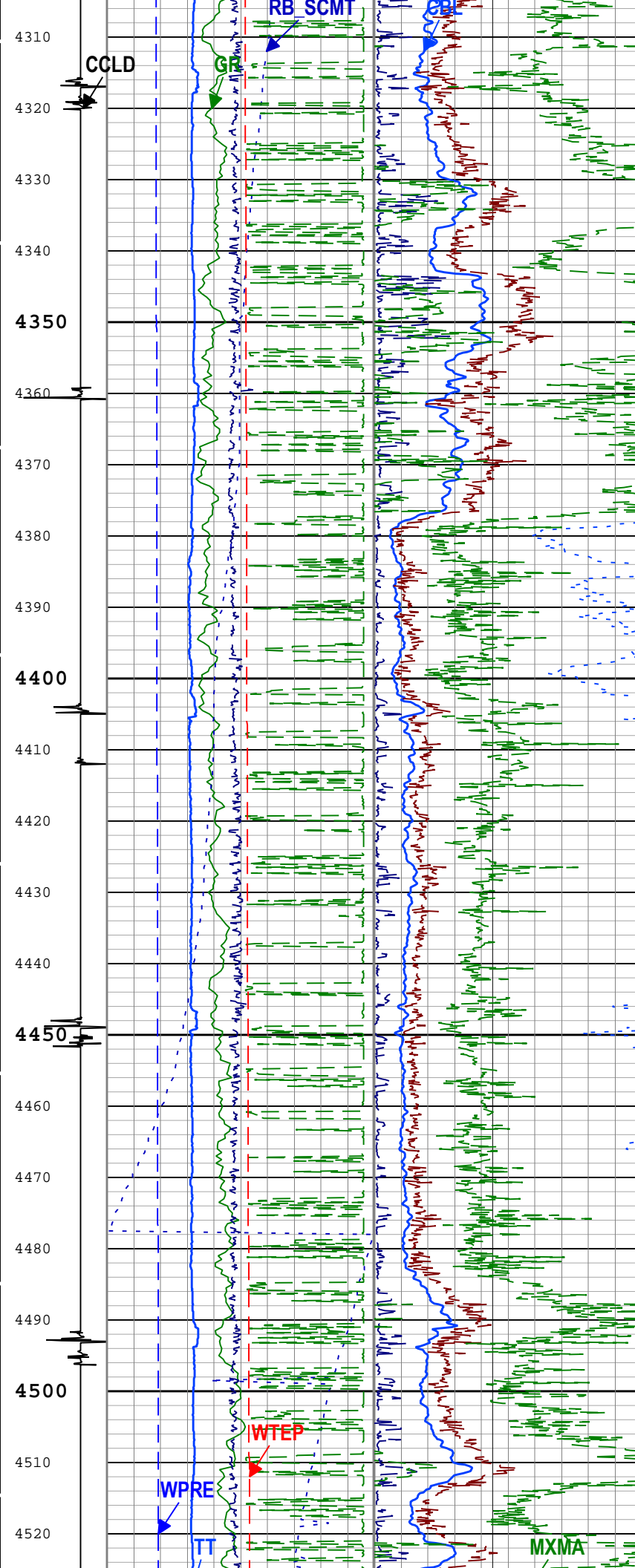




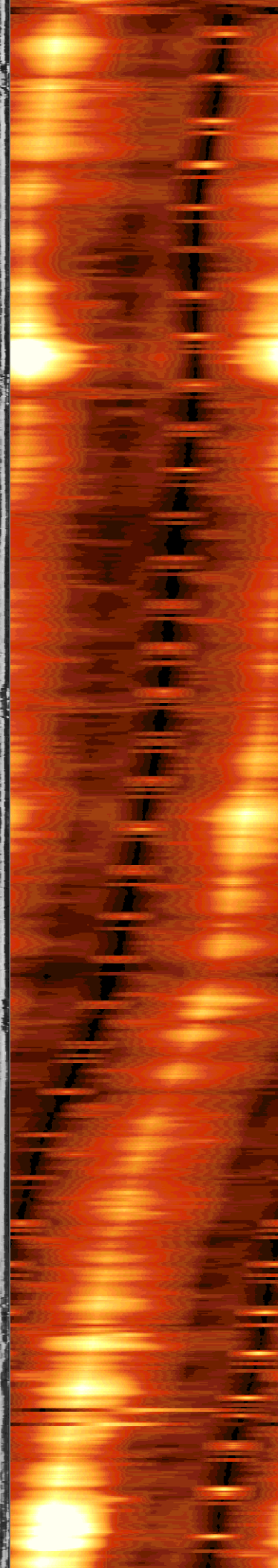
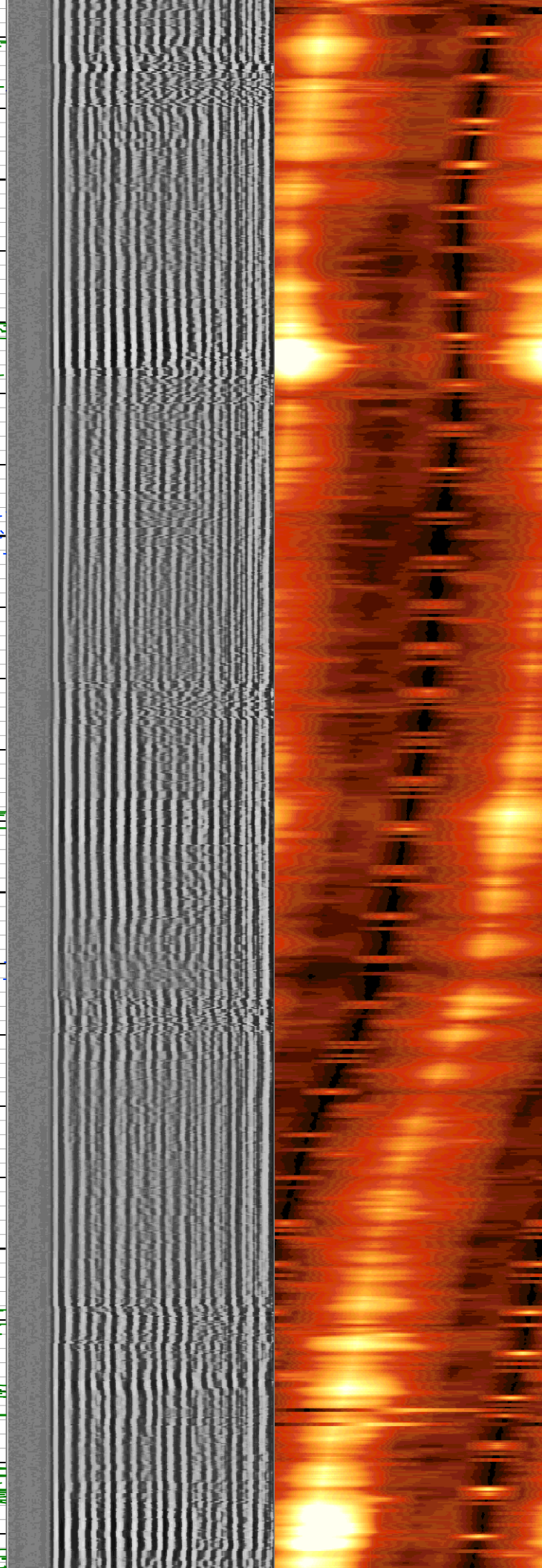
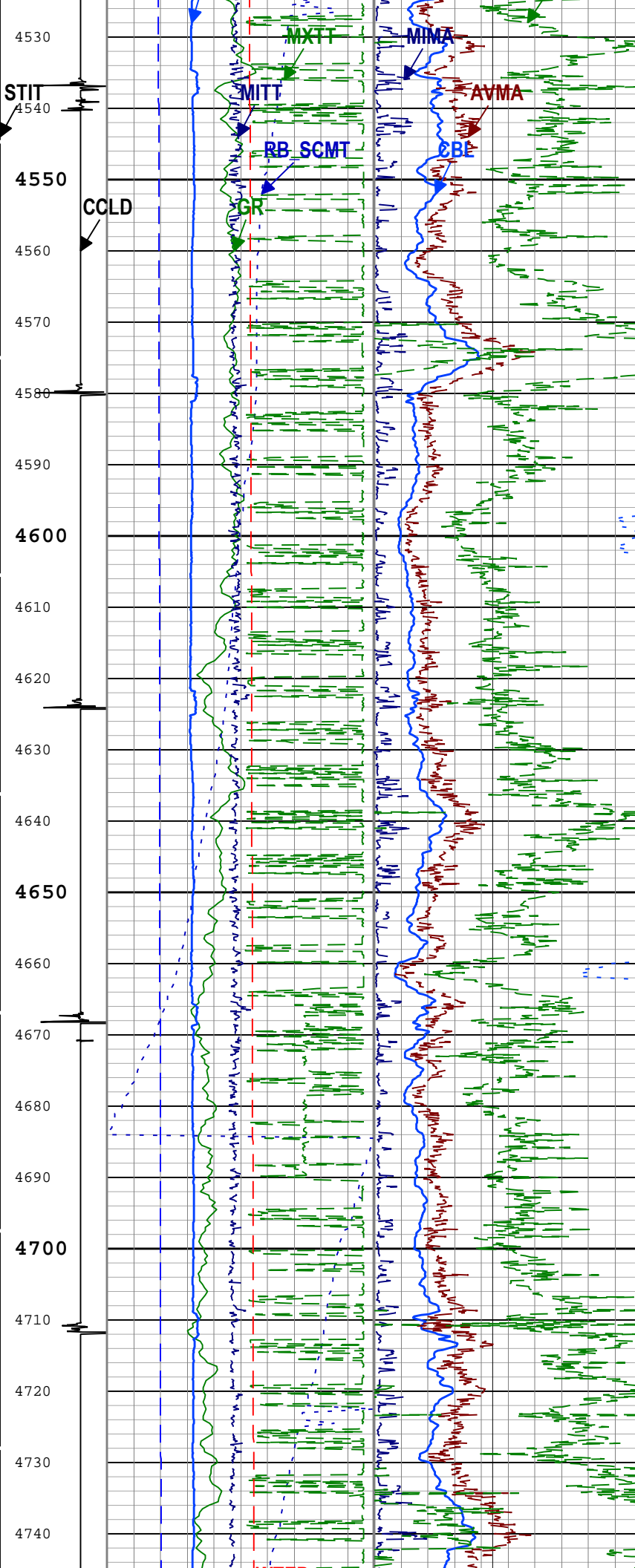


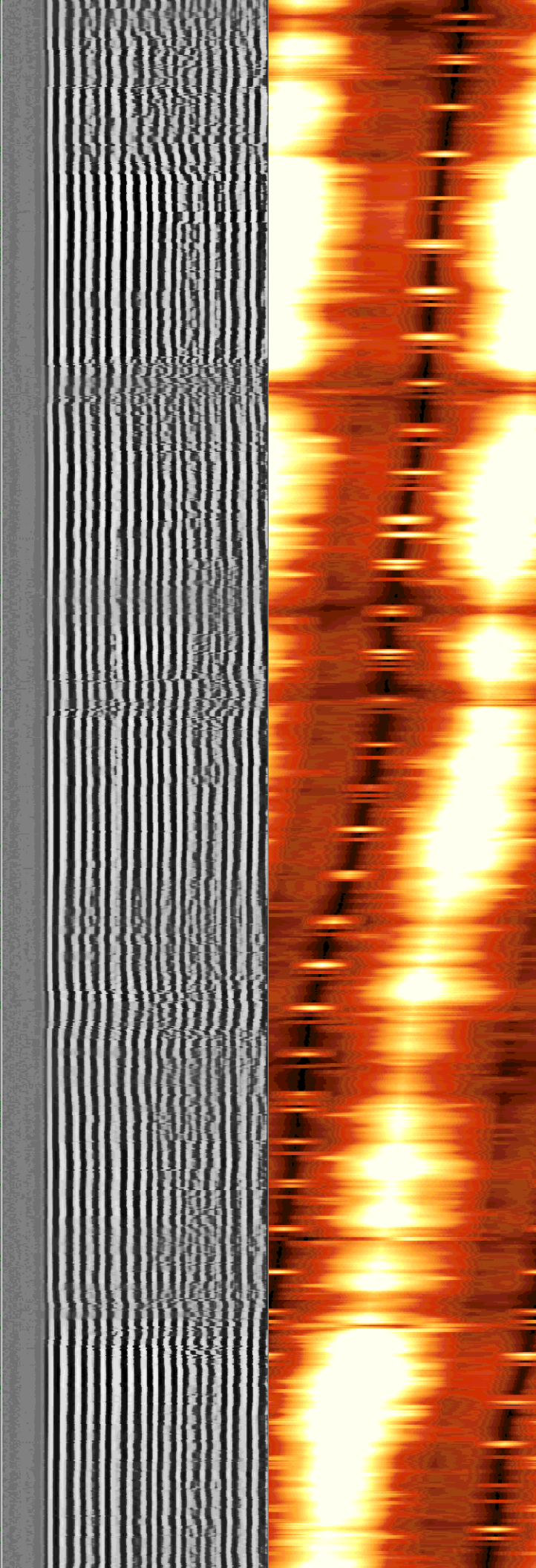
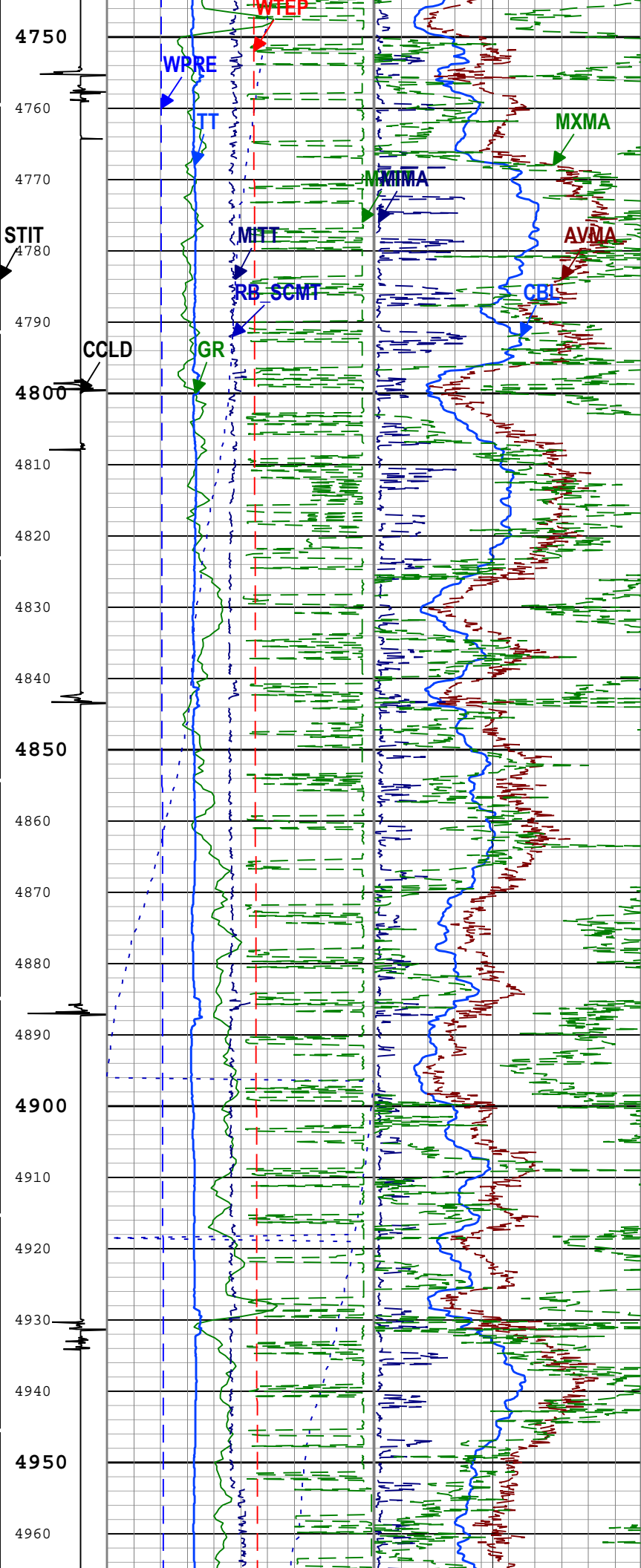




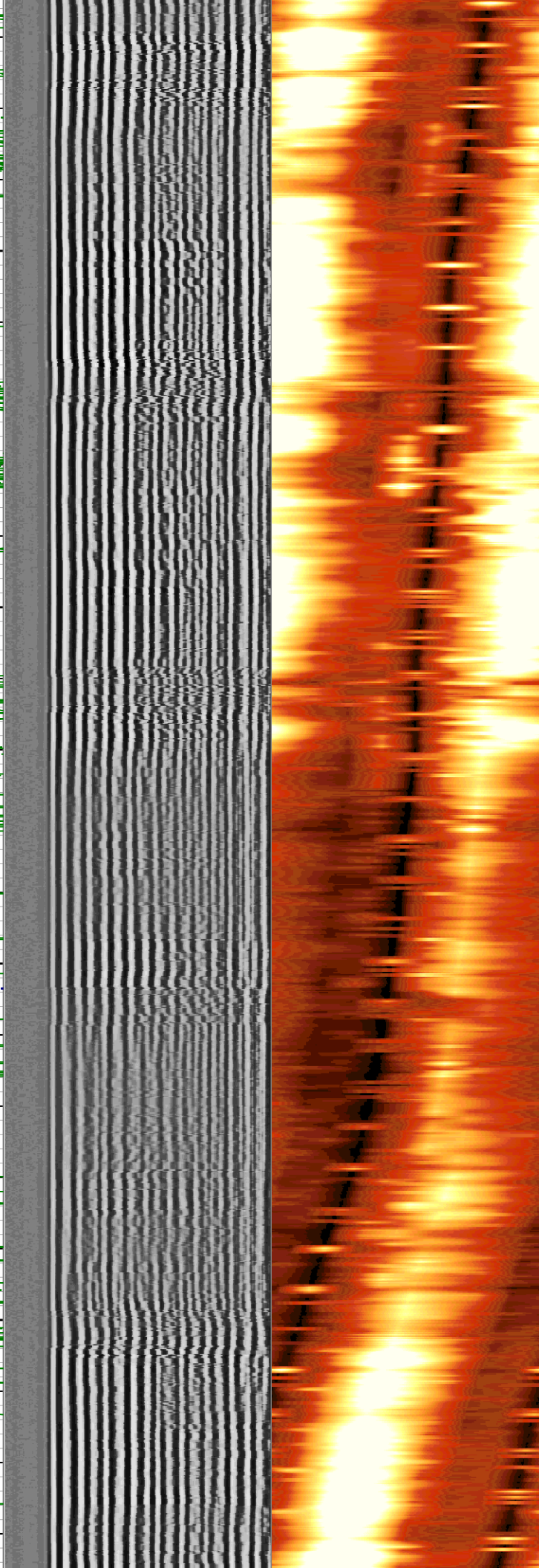
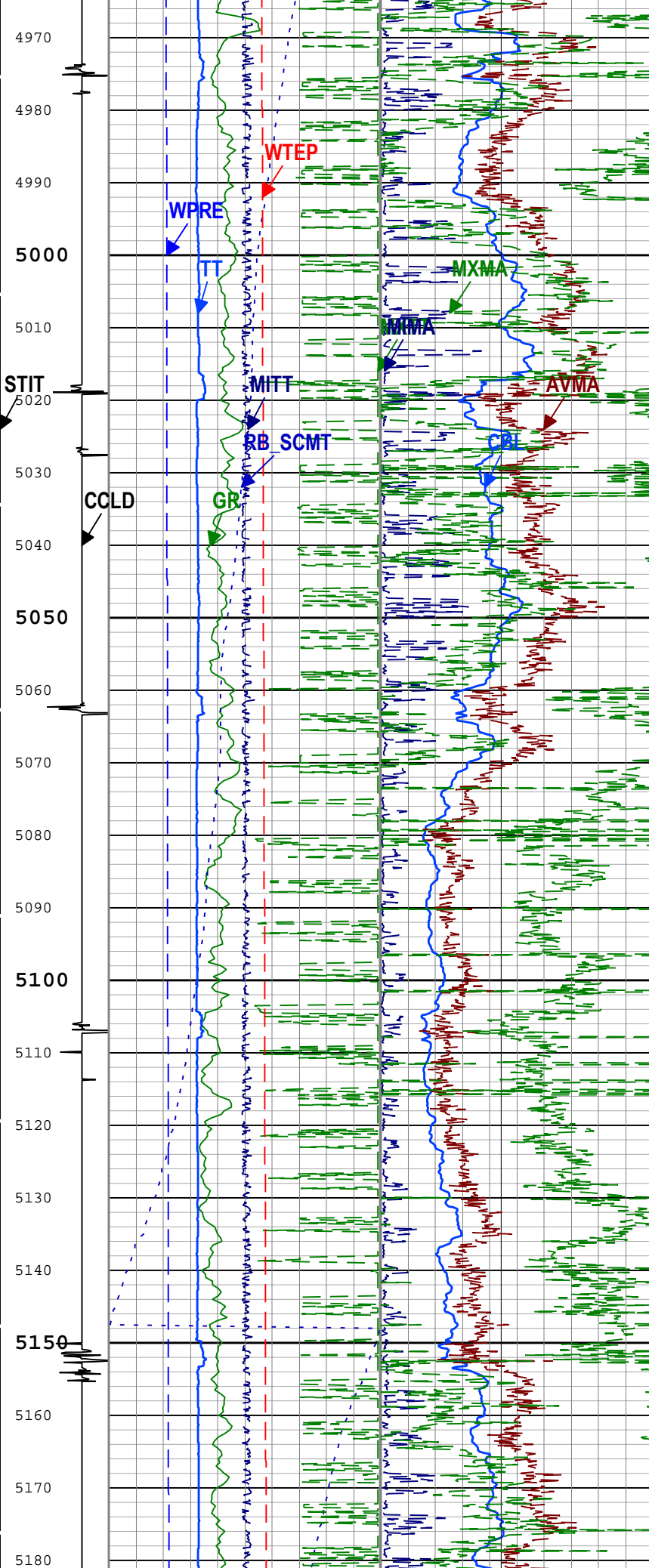


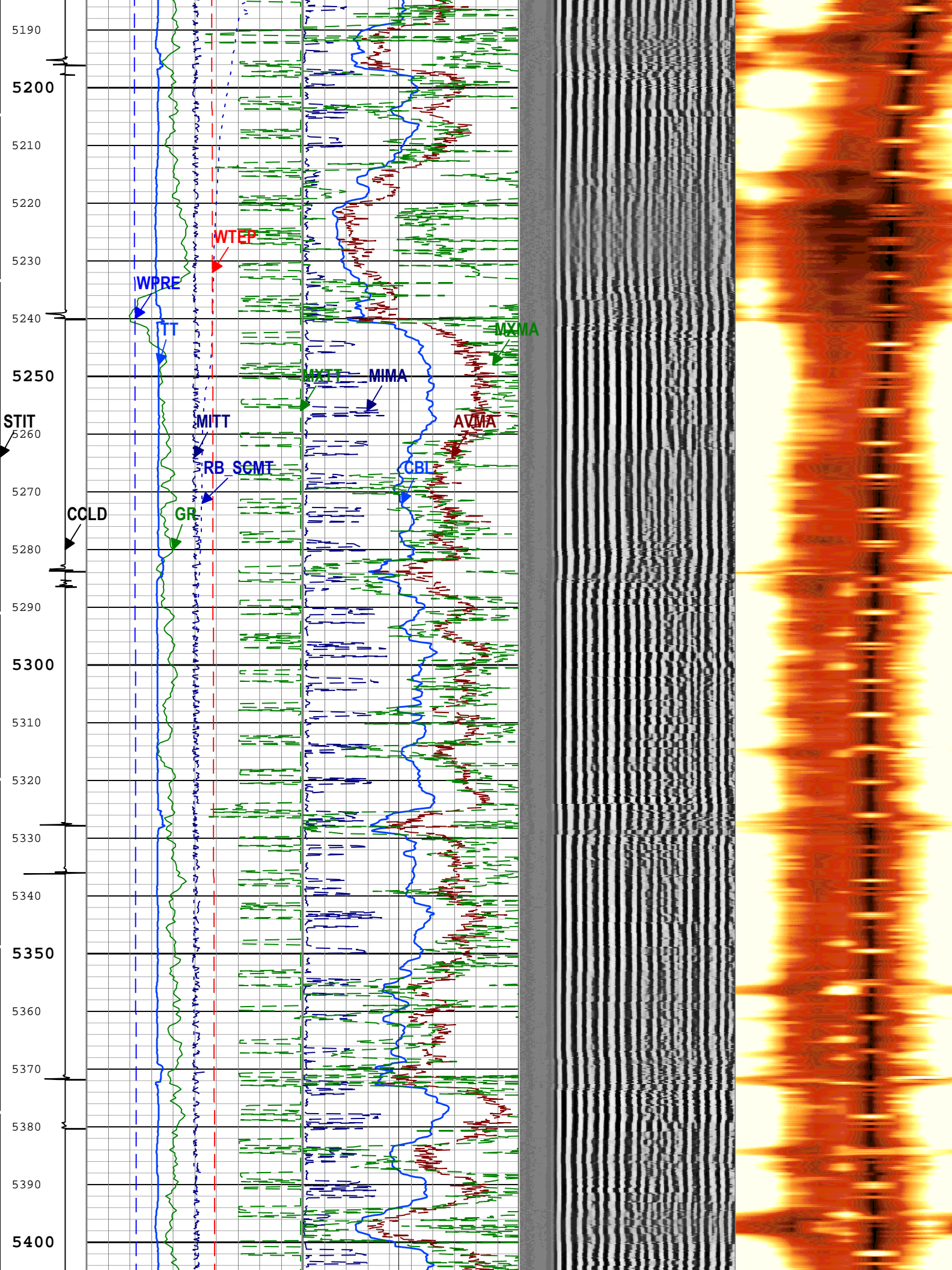




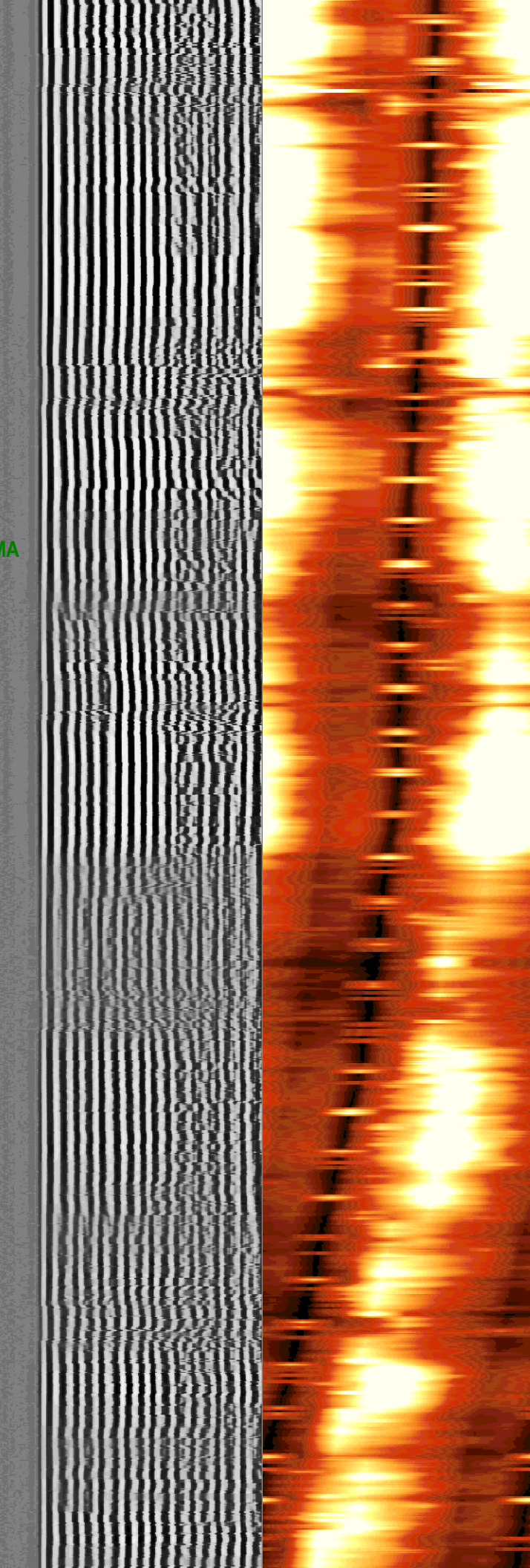
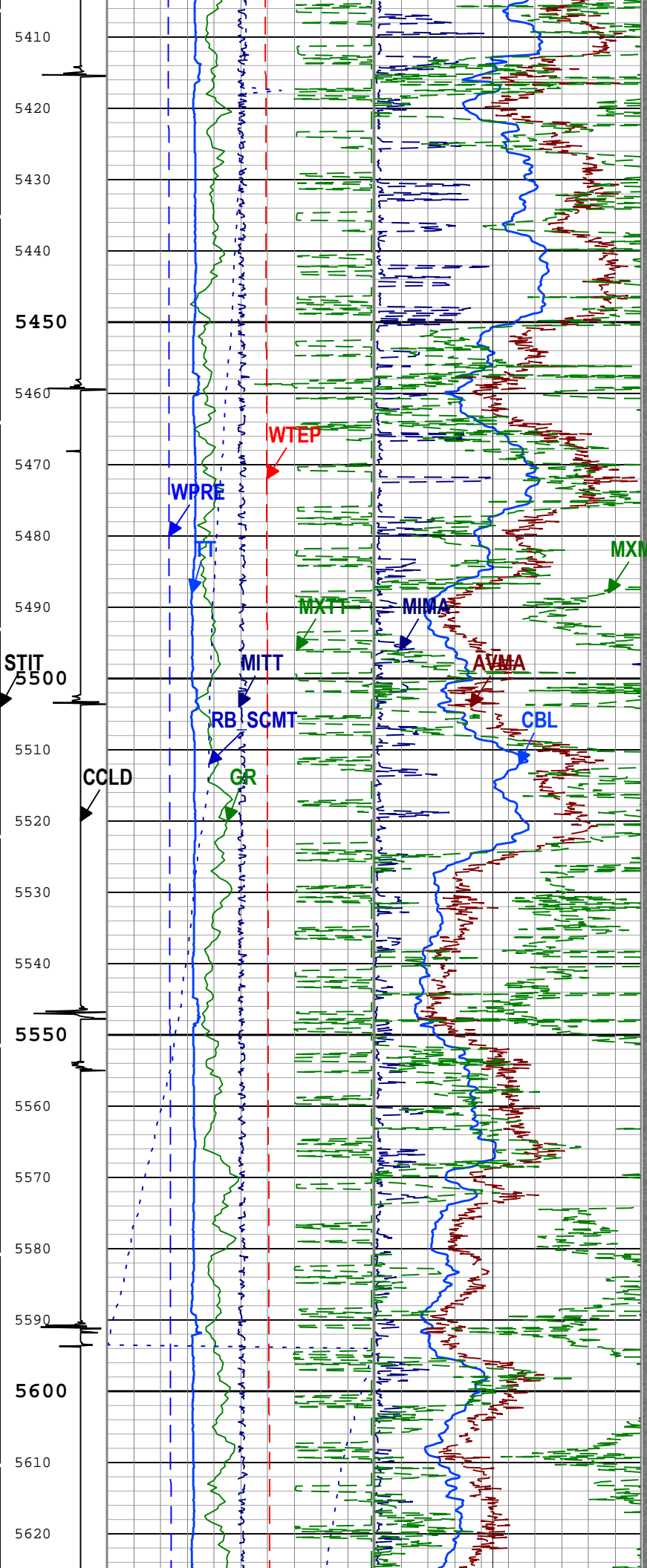


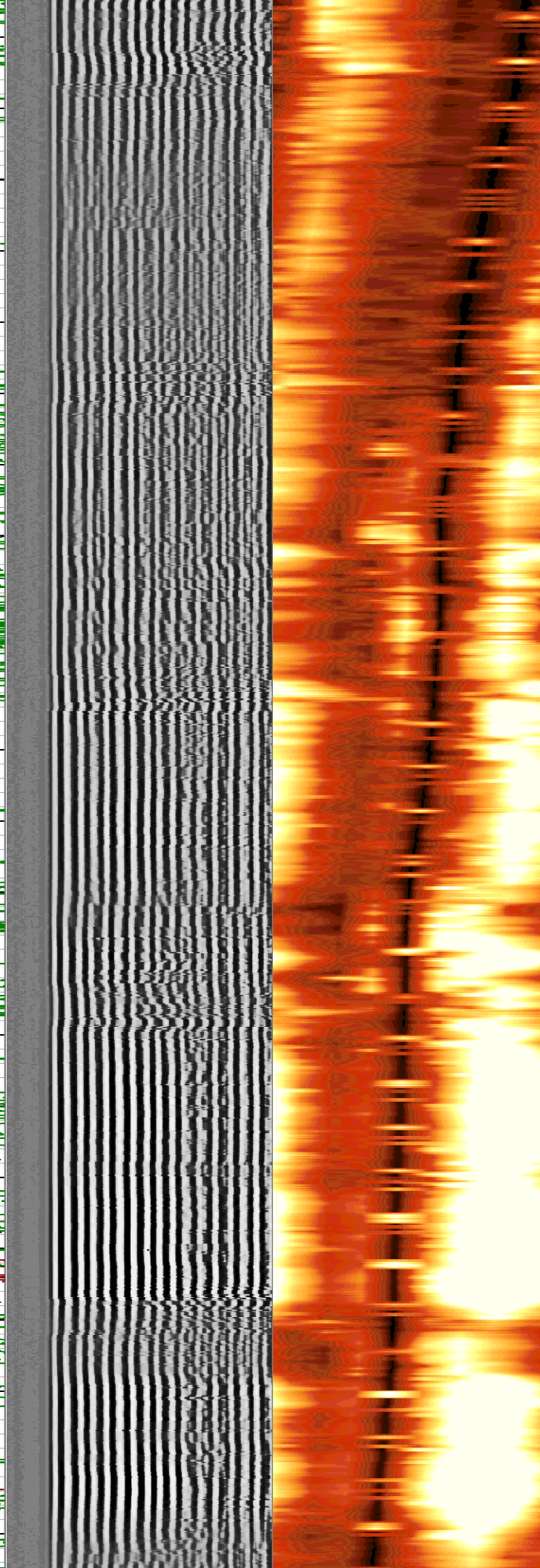
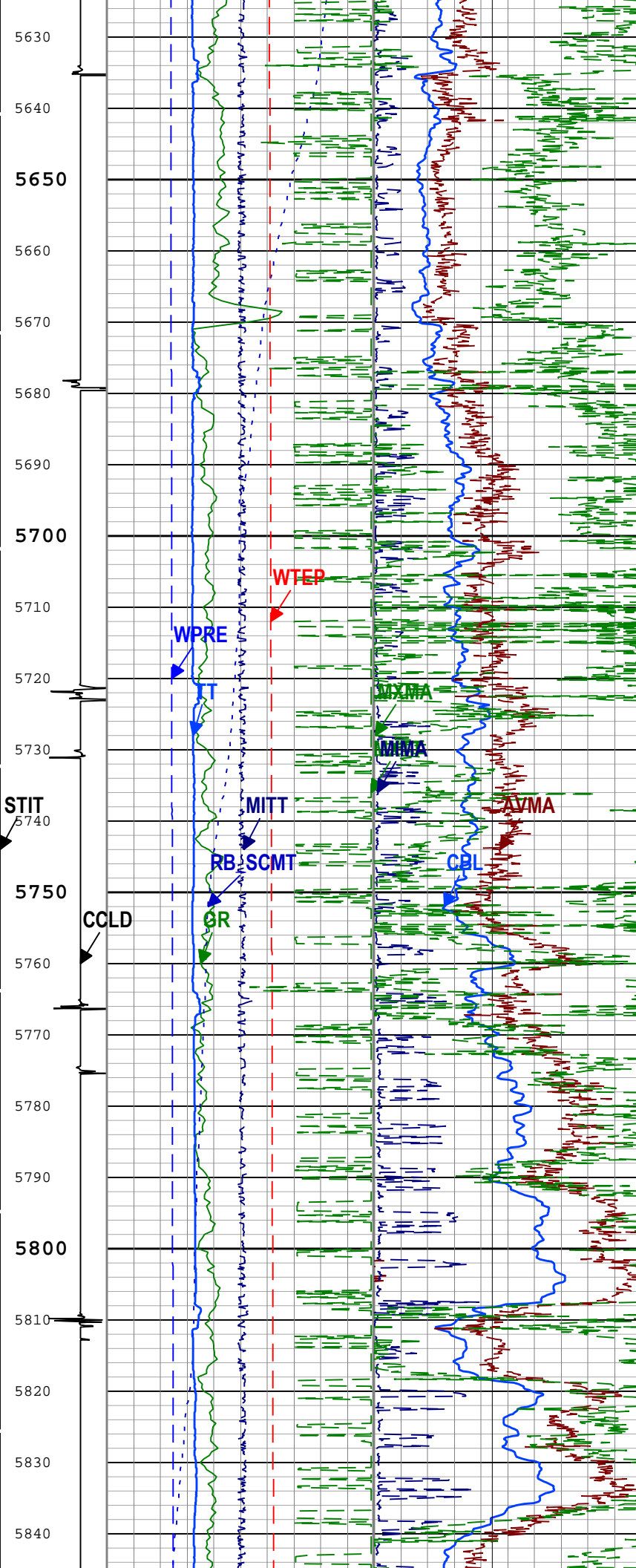




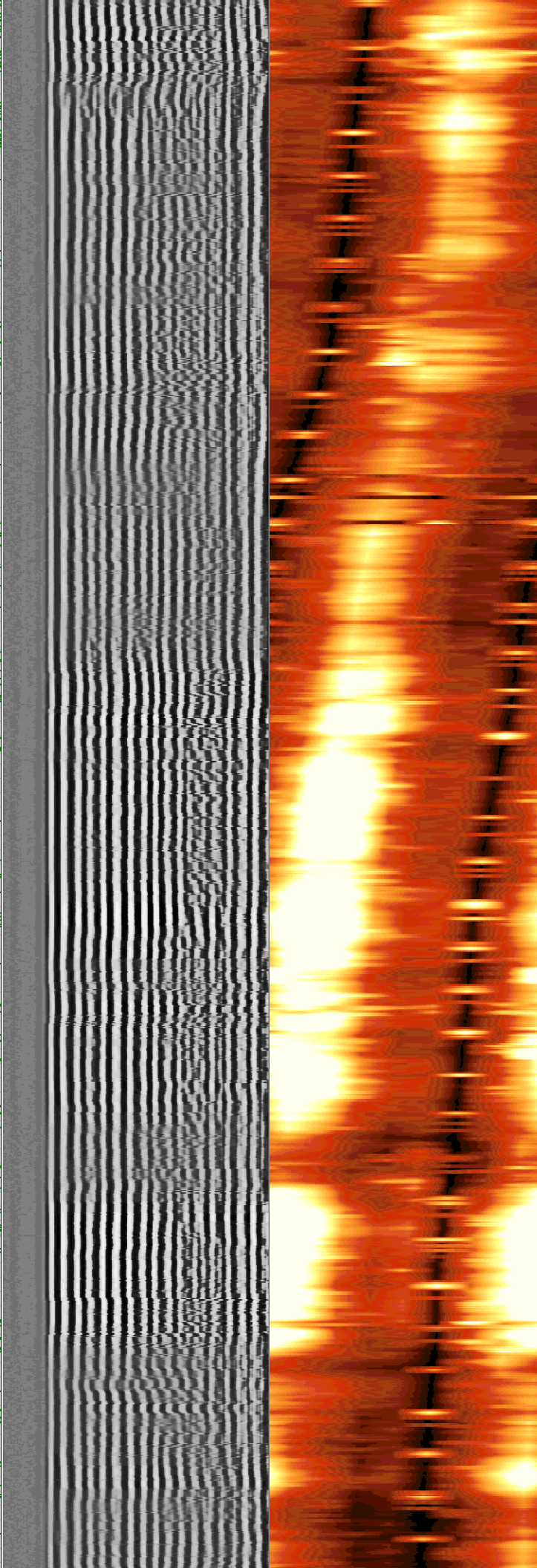
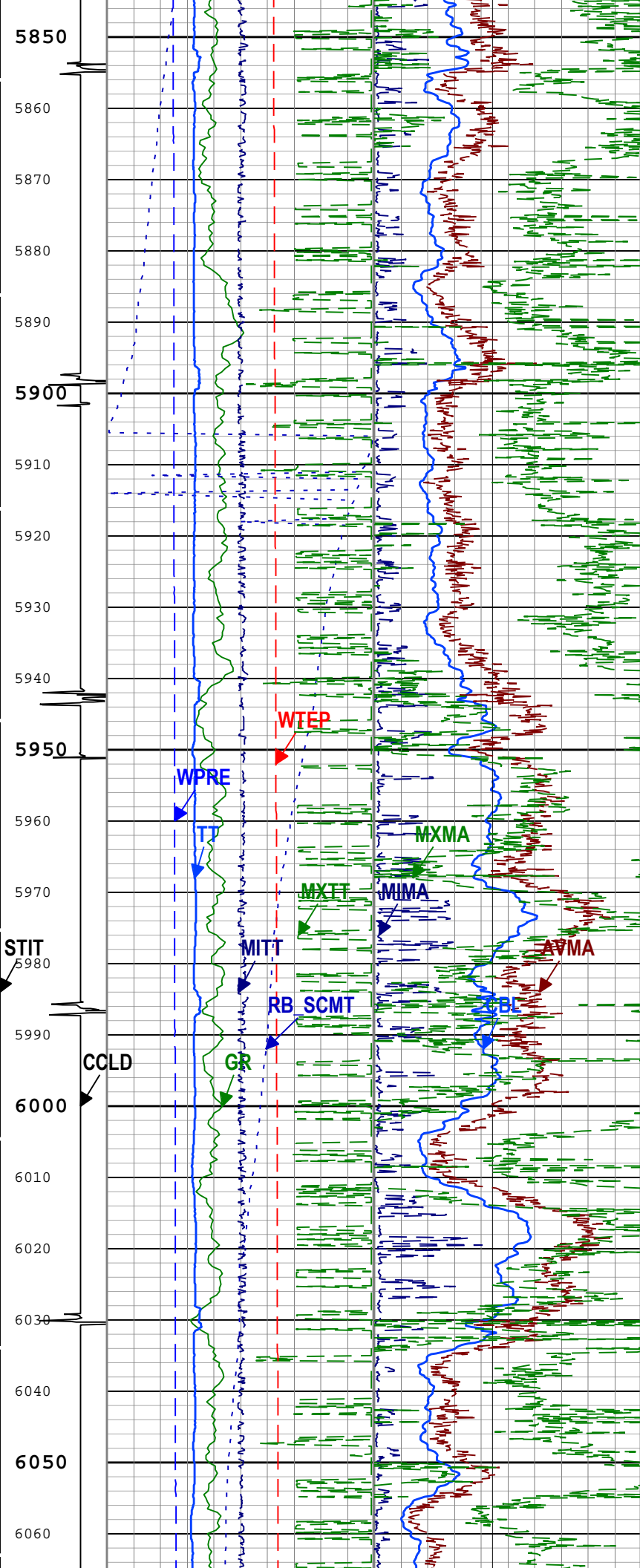


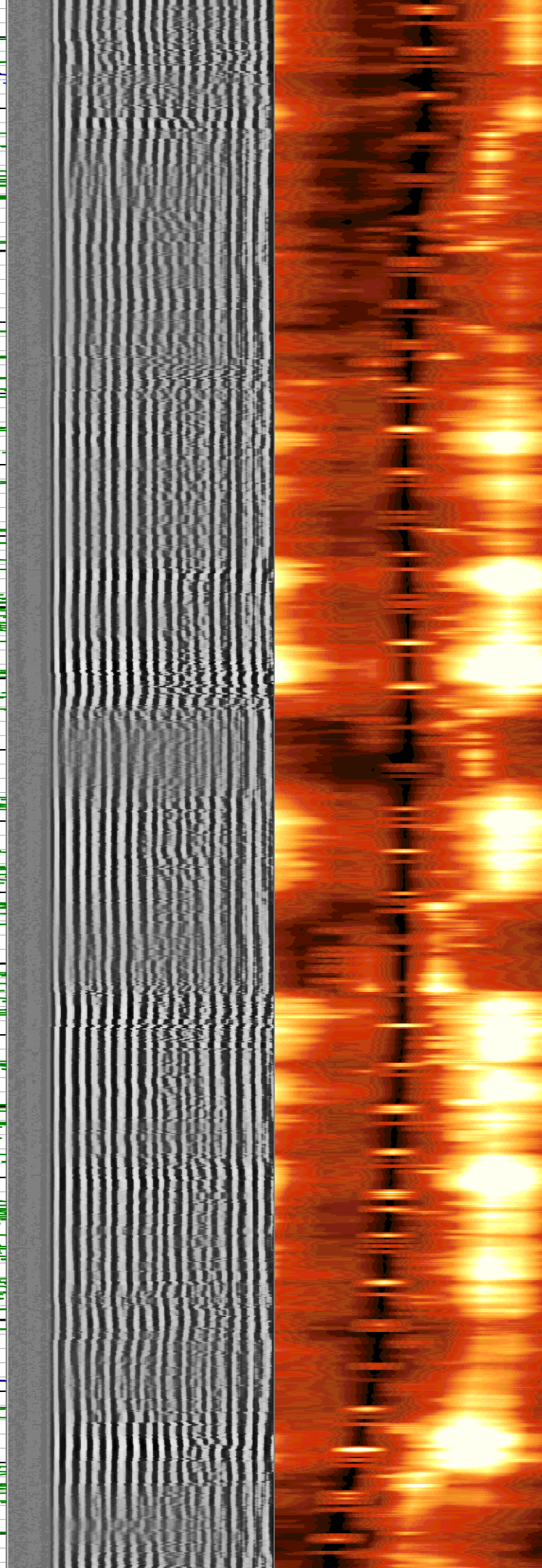
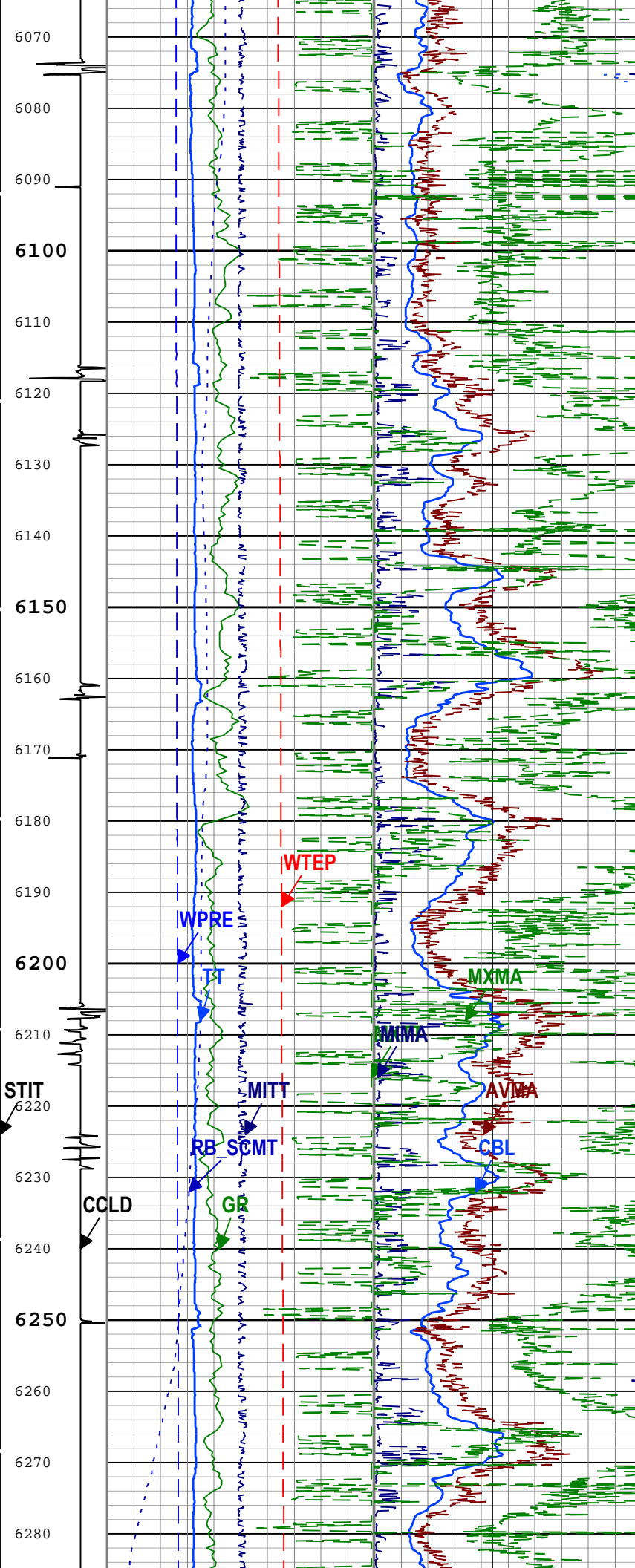




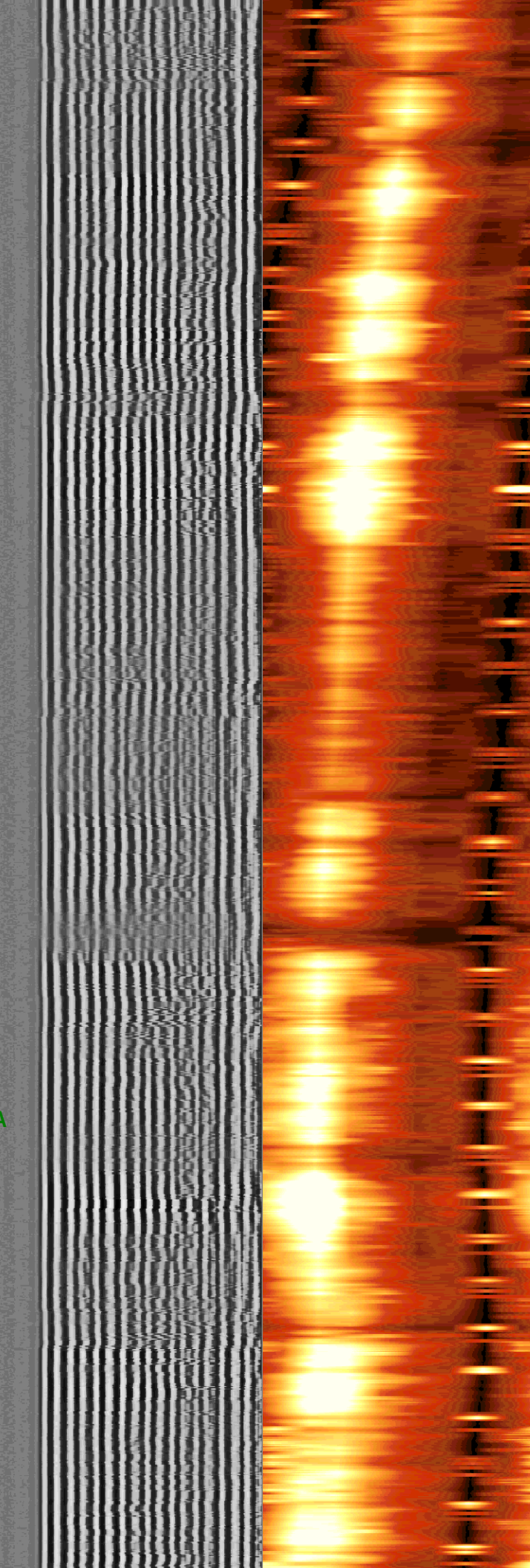
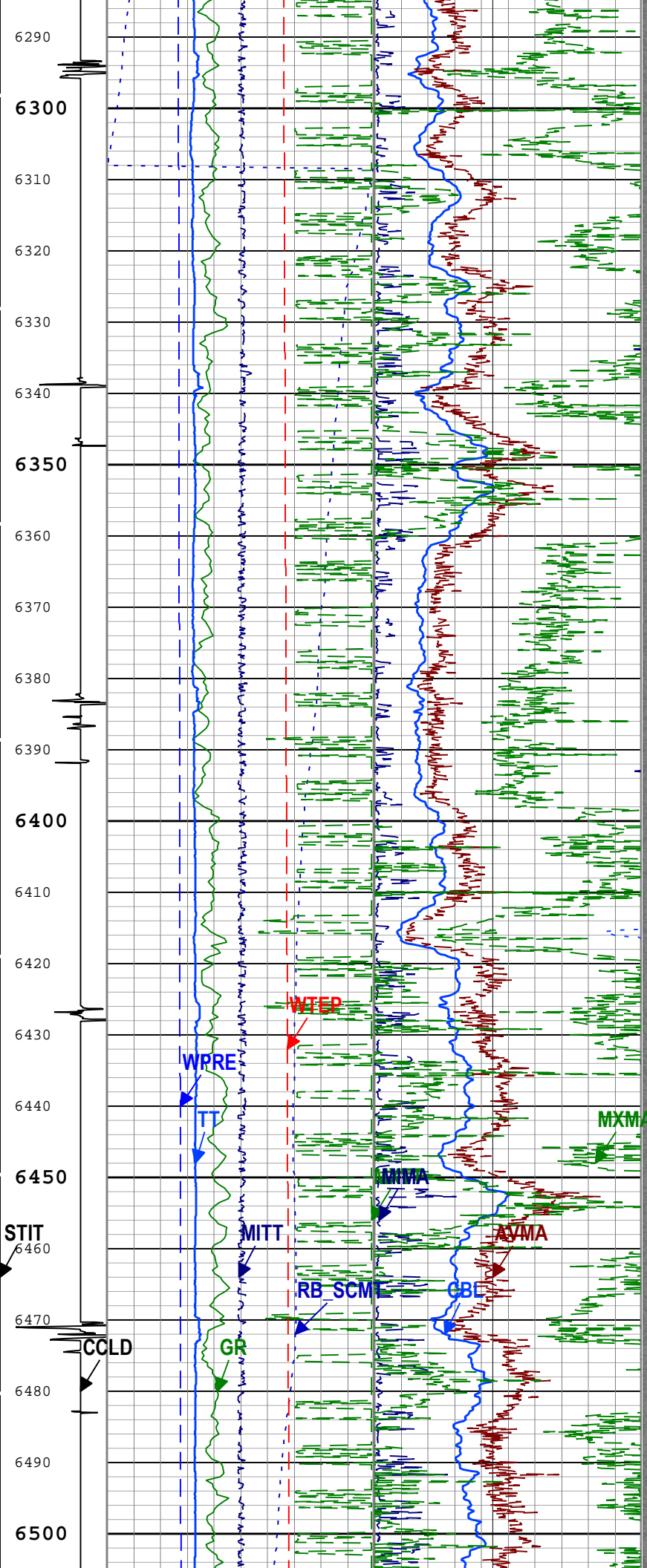


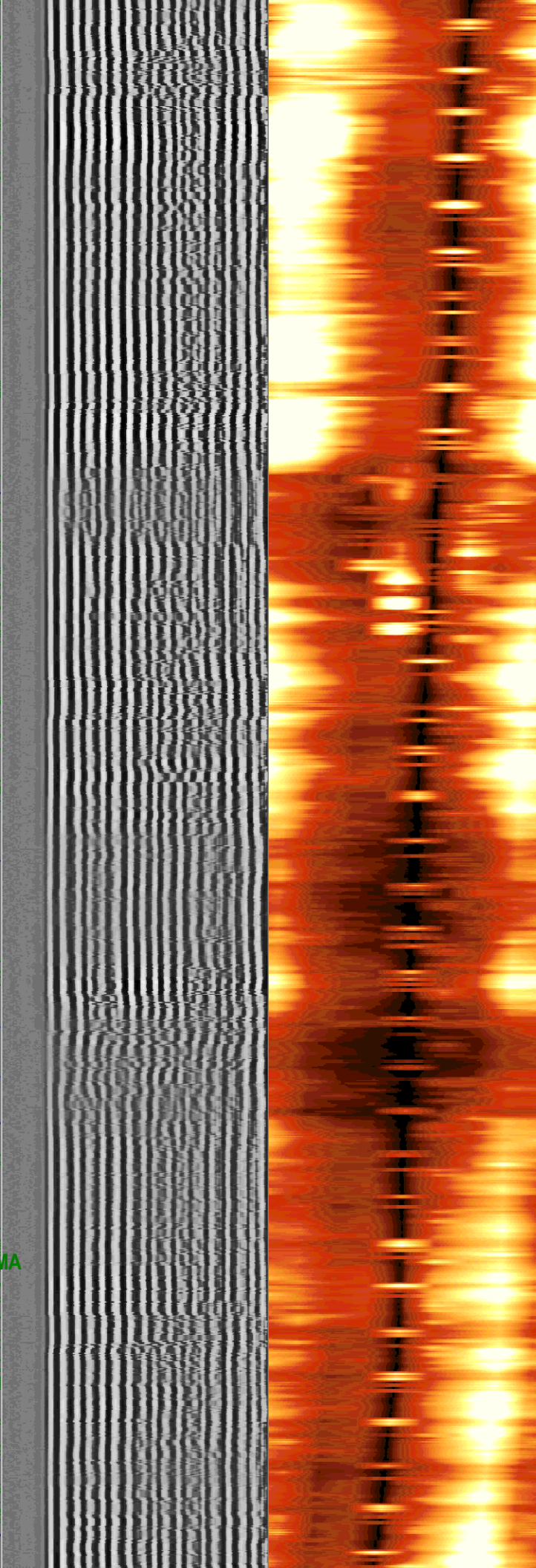
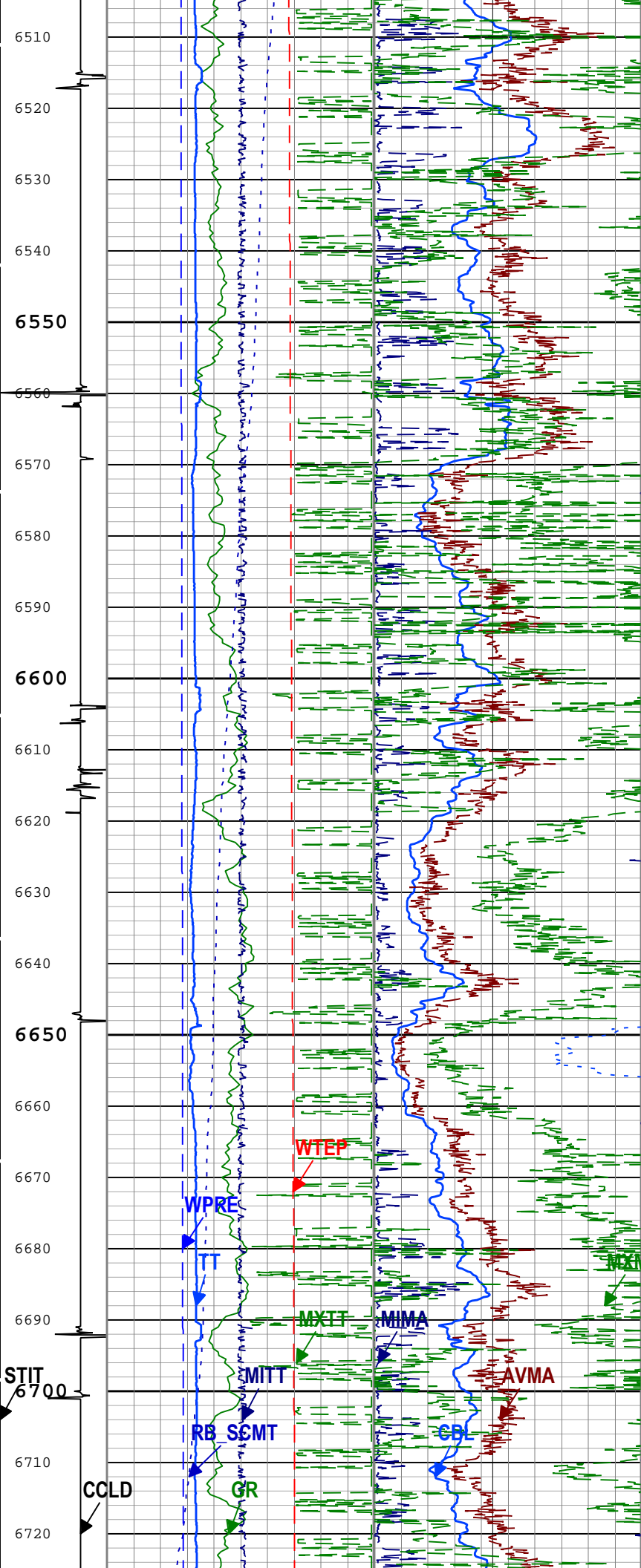




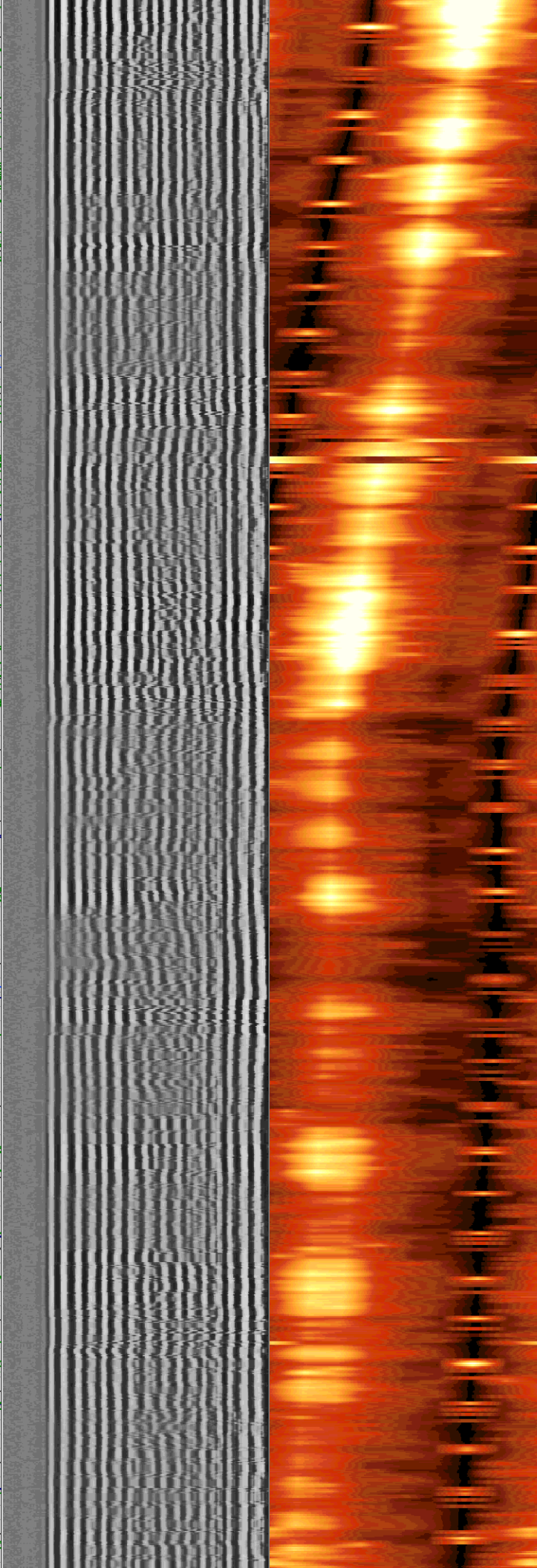
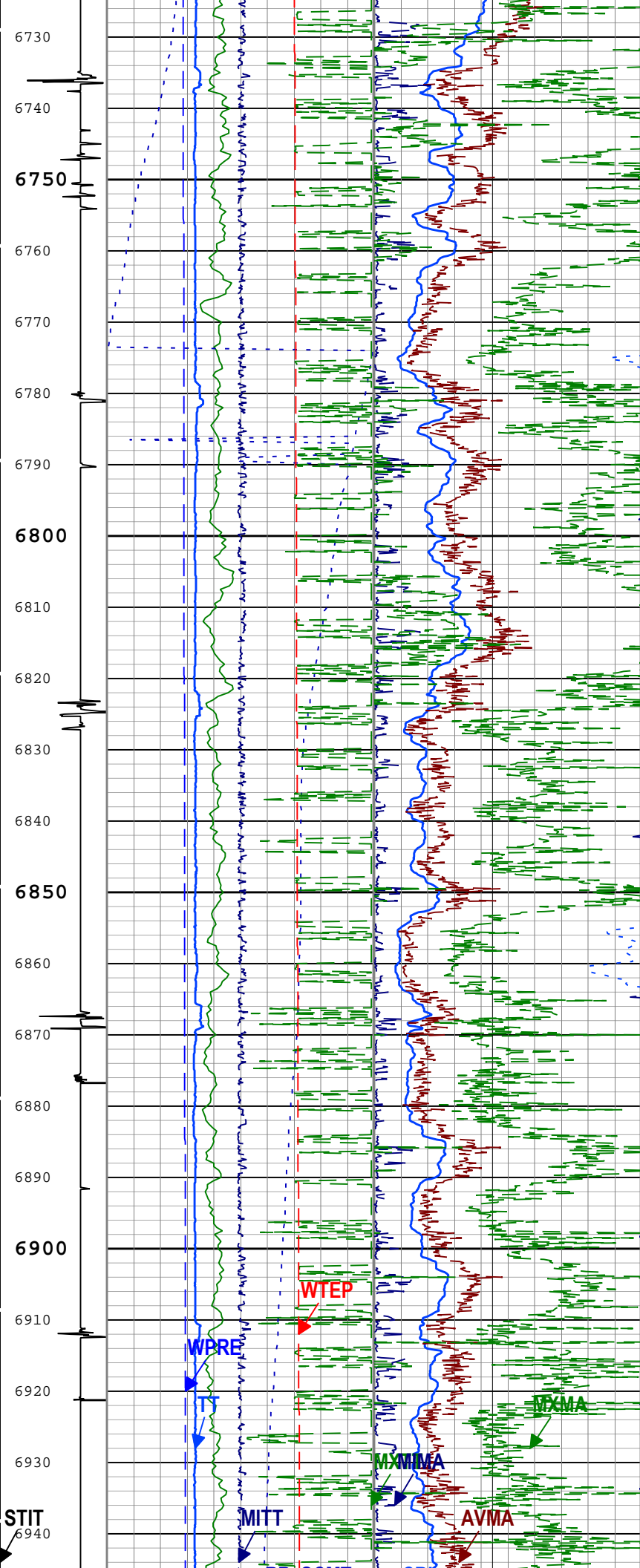


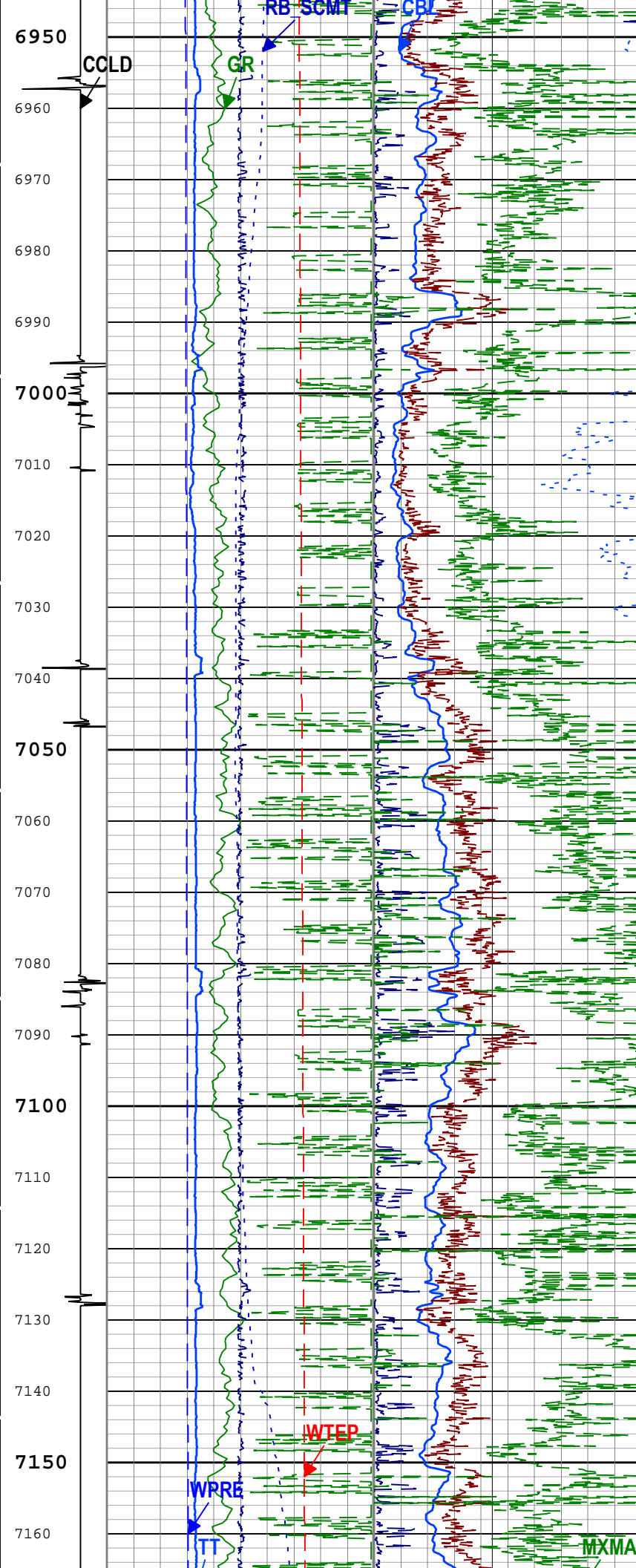




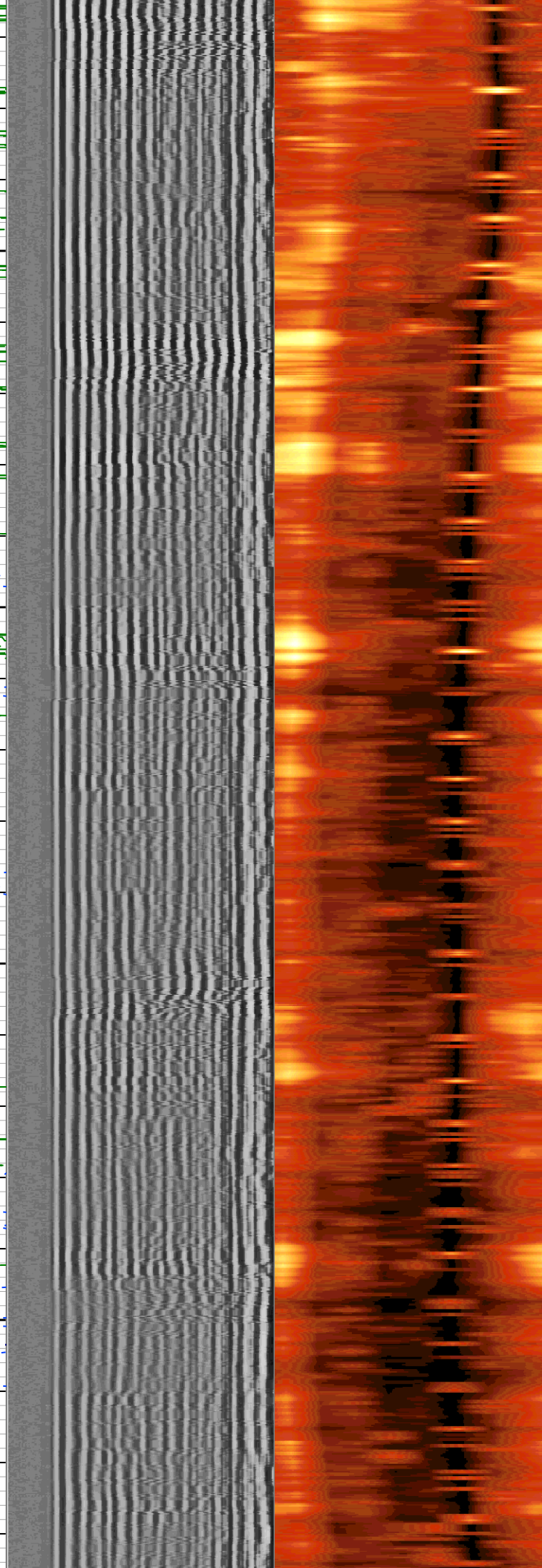
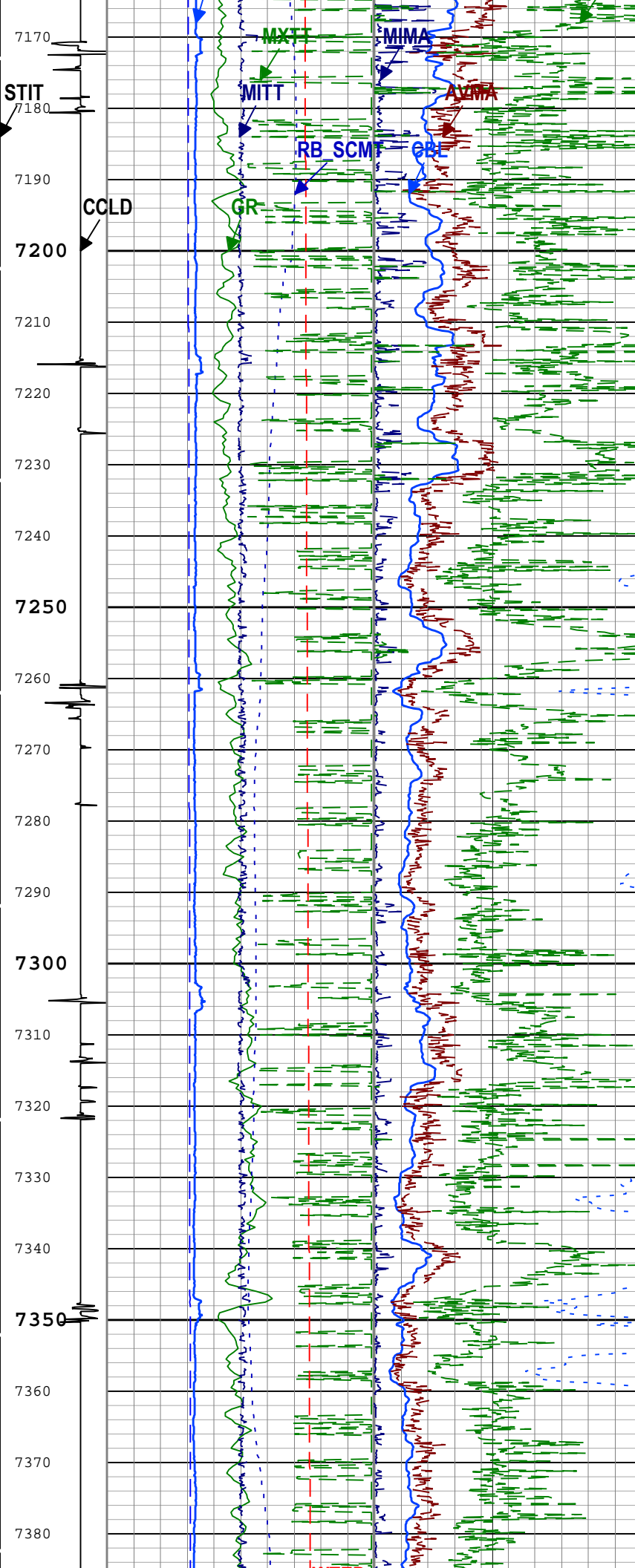


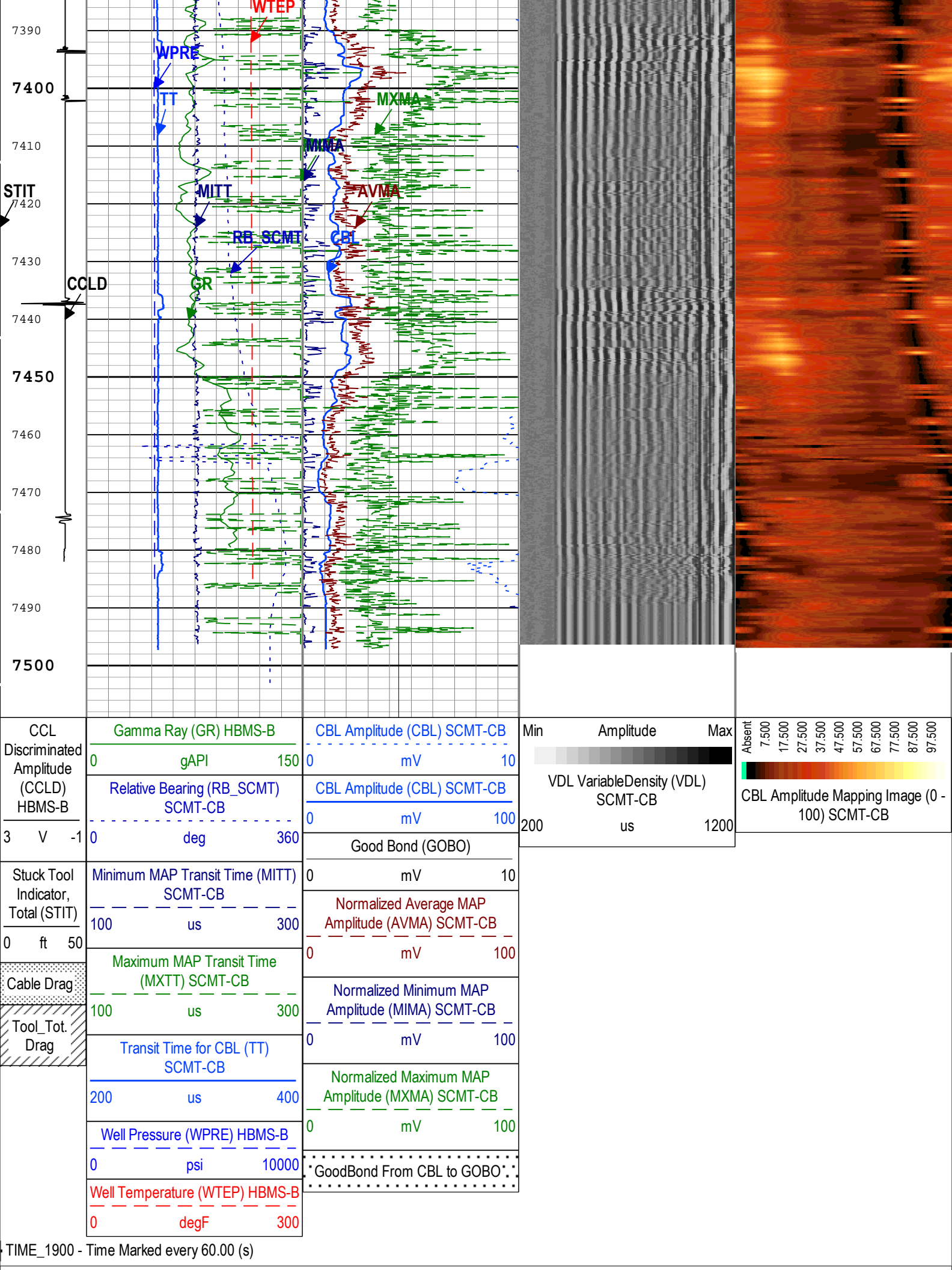














## Channel Processing Parameters

### Run 1: Parameters

Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	220	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-CB	253	us
CBLG	CBL Gate Width	SCMT-CB	40	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-CB	72	mV
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.361	in
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	190	us/ft
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	Time Zoned	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	1	

### Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth ( ft )	Stop Depth ( ft )
MAPG	198	20-Sep-2015 11:17:44	20-Sep-2015 12:43:17	7509.39	4966.59
MAPG	191.29	20-Sep-2015 12:43:17	20-Sep-2015 15:26:31	4966.59	56.3

All depth are at tool zero.

## 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

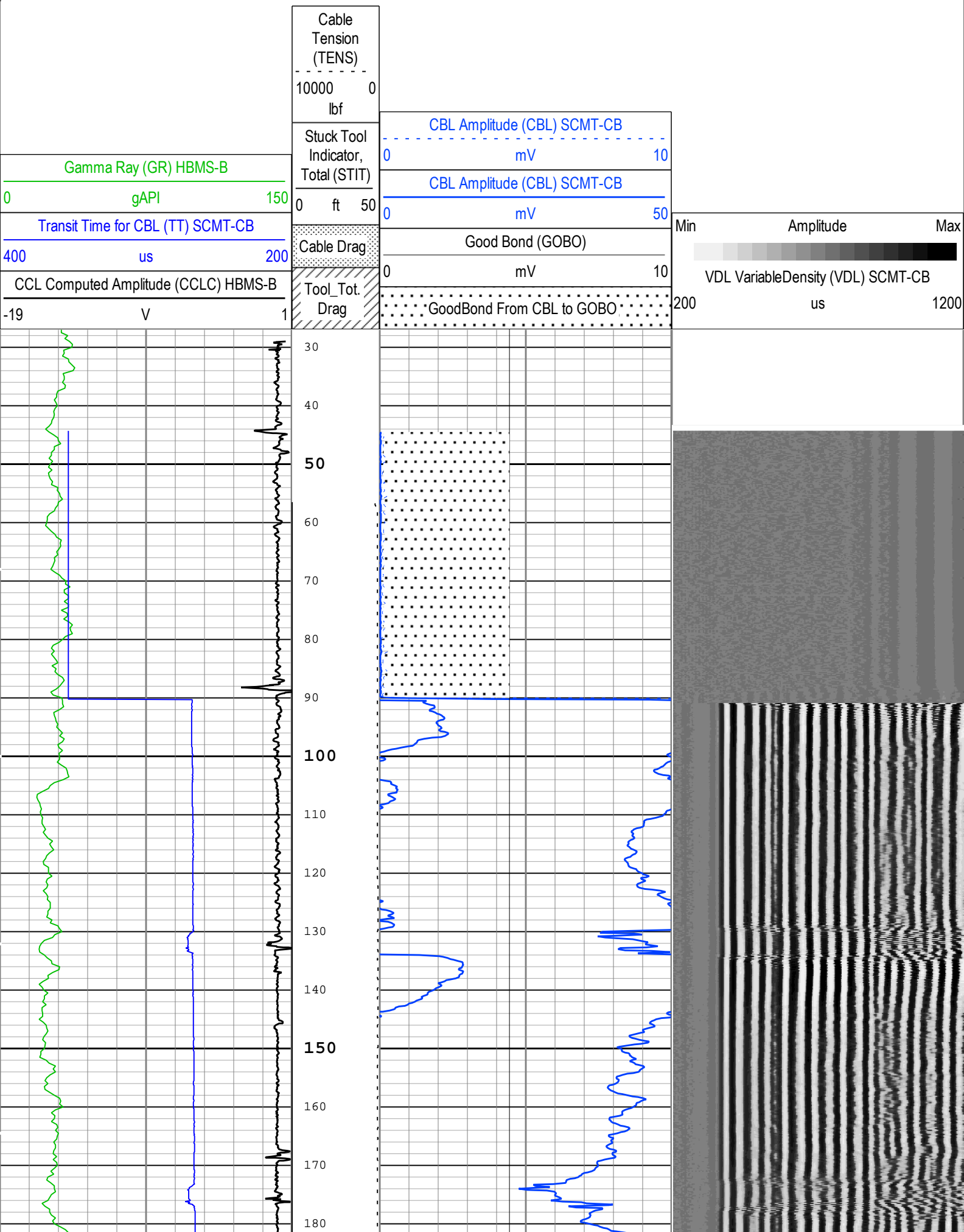
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Run 1	Main[4]:Up	Up	56.30 ft	7509.39 ft	20-Sep-2015 11:17:44 AM	20-Sep-2015 3:26:31 PM	ON	8.54 ft	No

All depths are referenced to toolstring zero

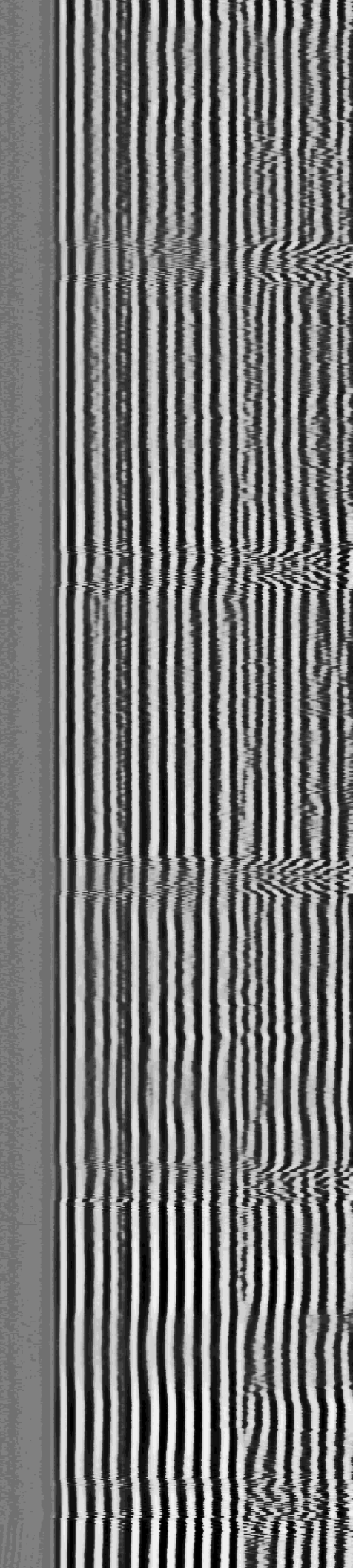
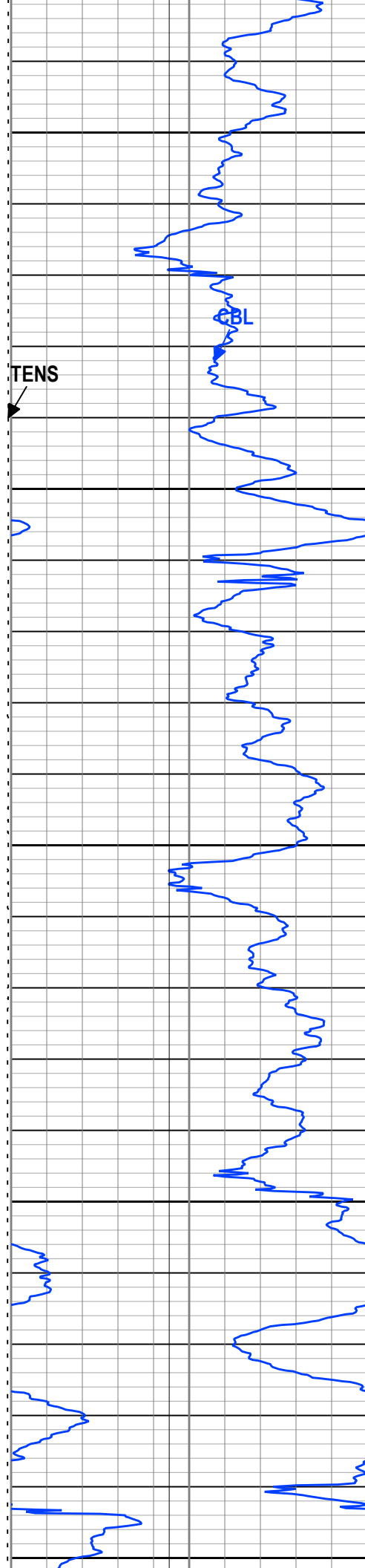
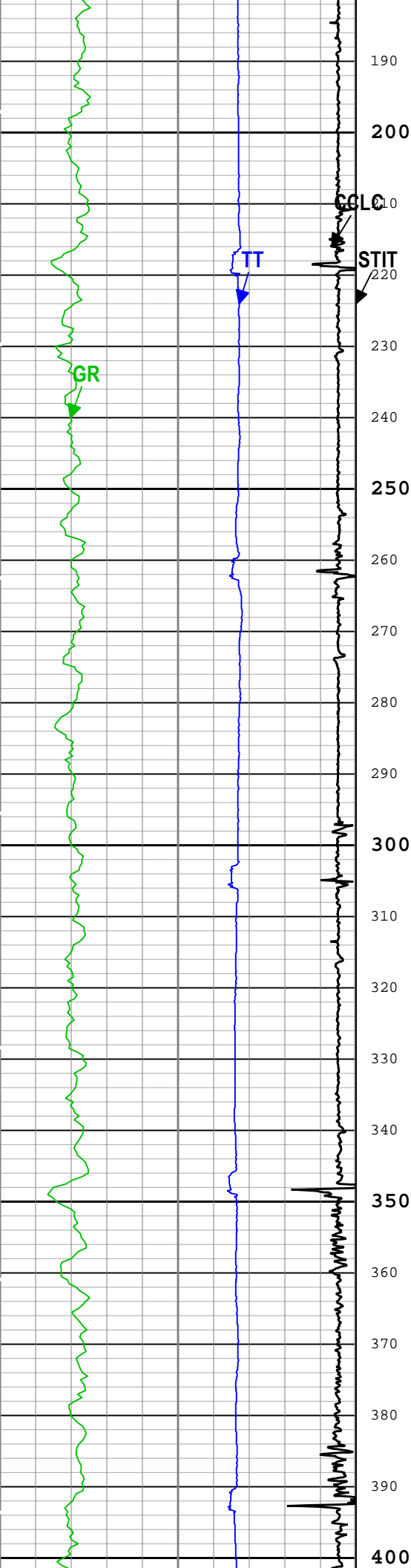
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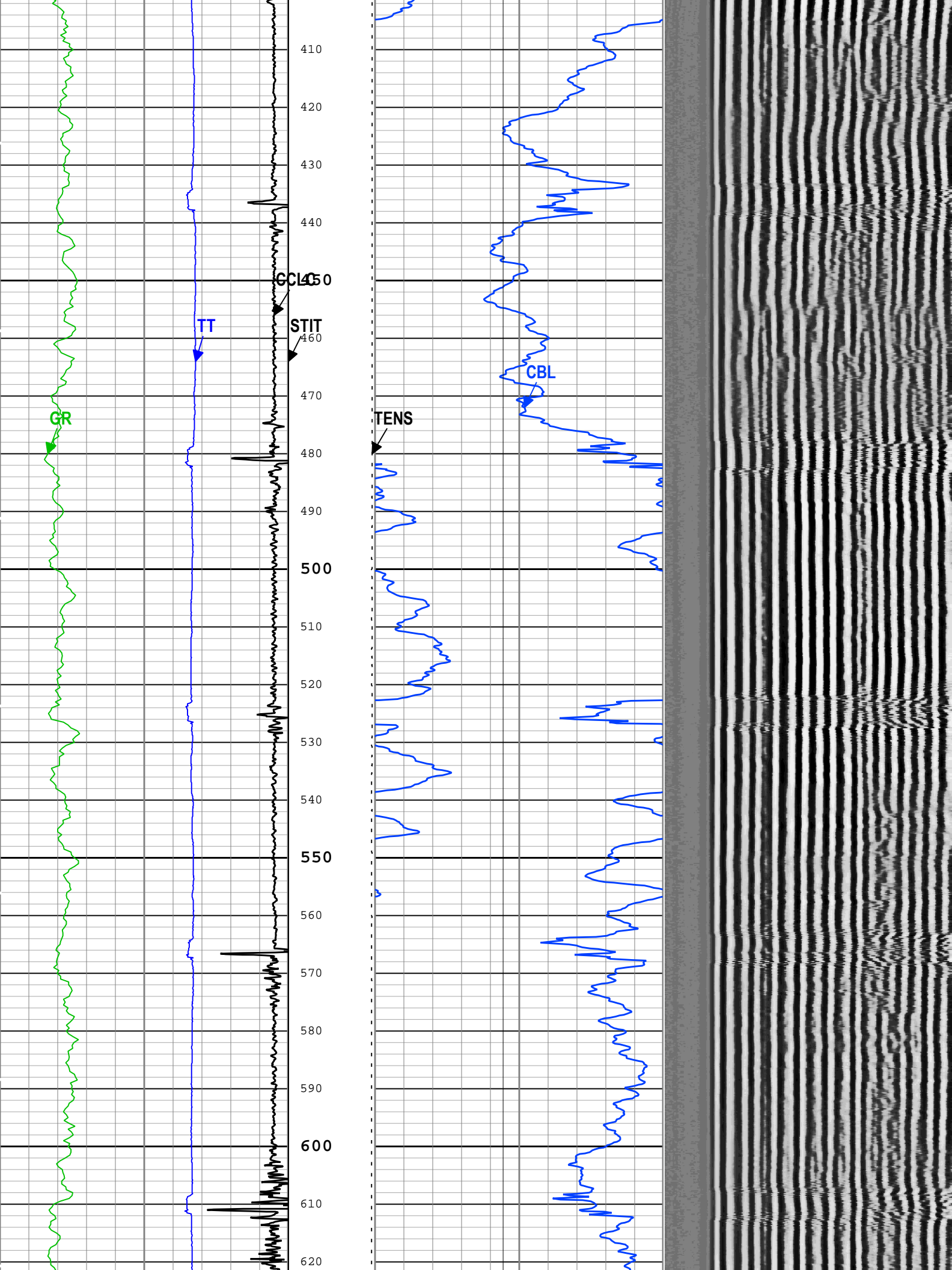
Company:Extraction Oil & Gas LLC    Well:Troudt 2  
Run 1: Main[4]:Up:S002

TIME\_1900 - Time Marked every 60.00 (s)

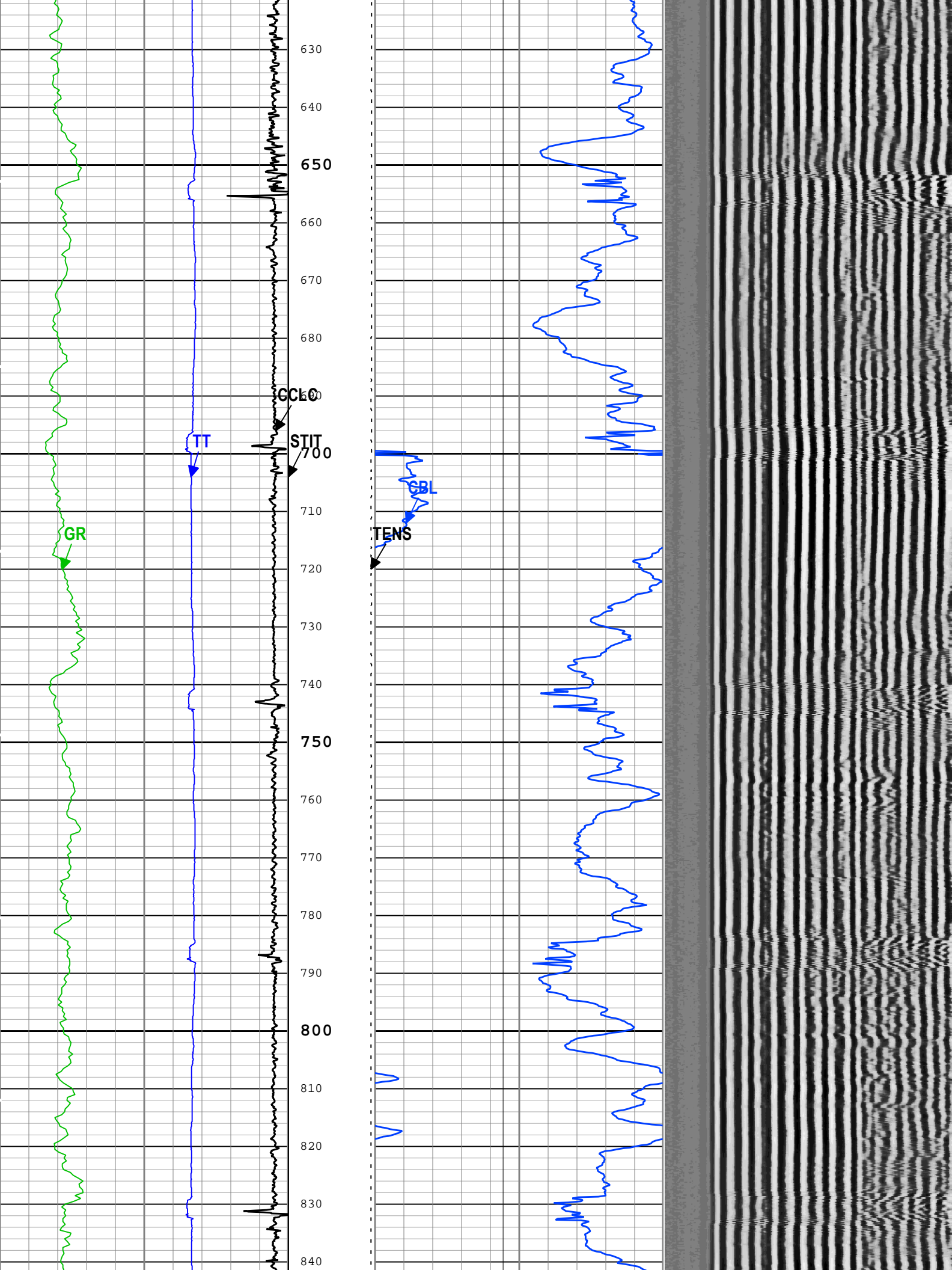


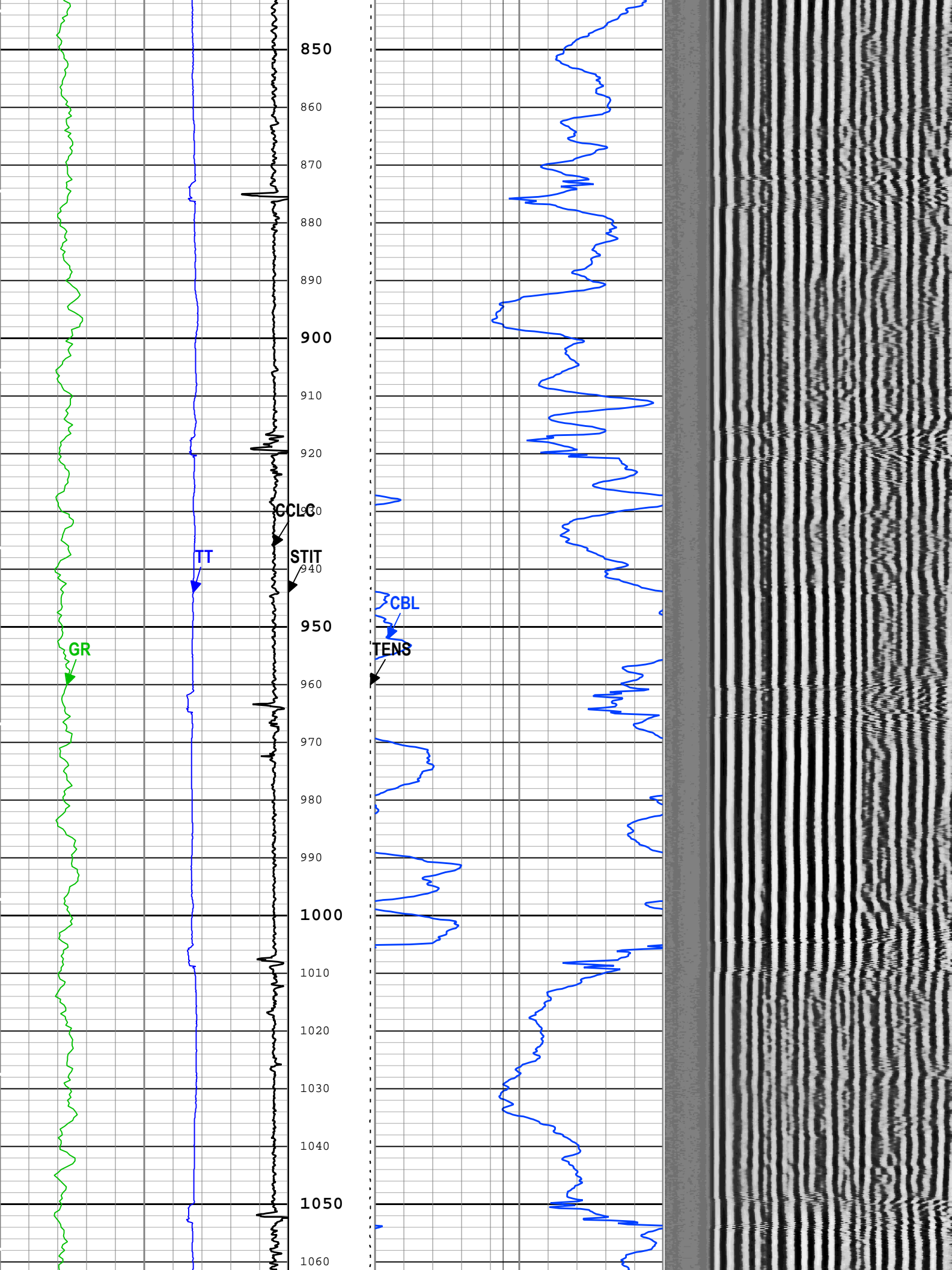




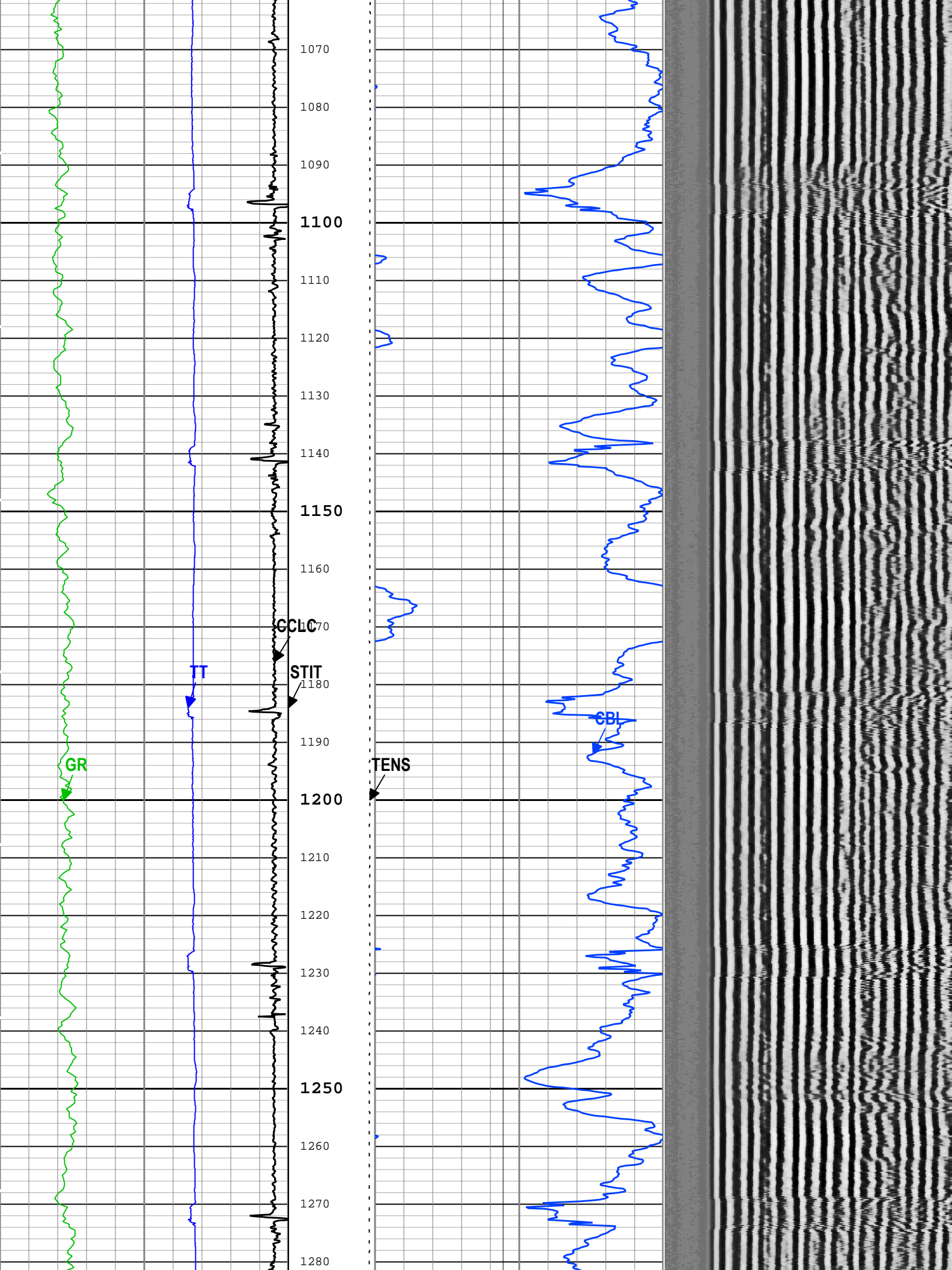


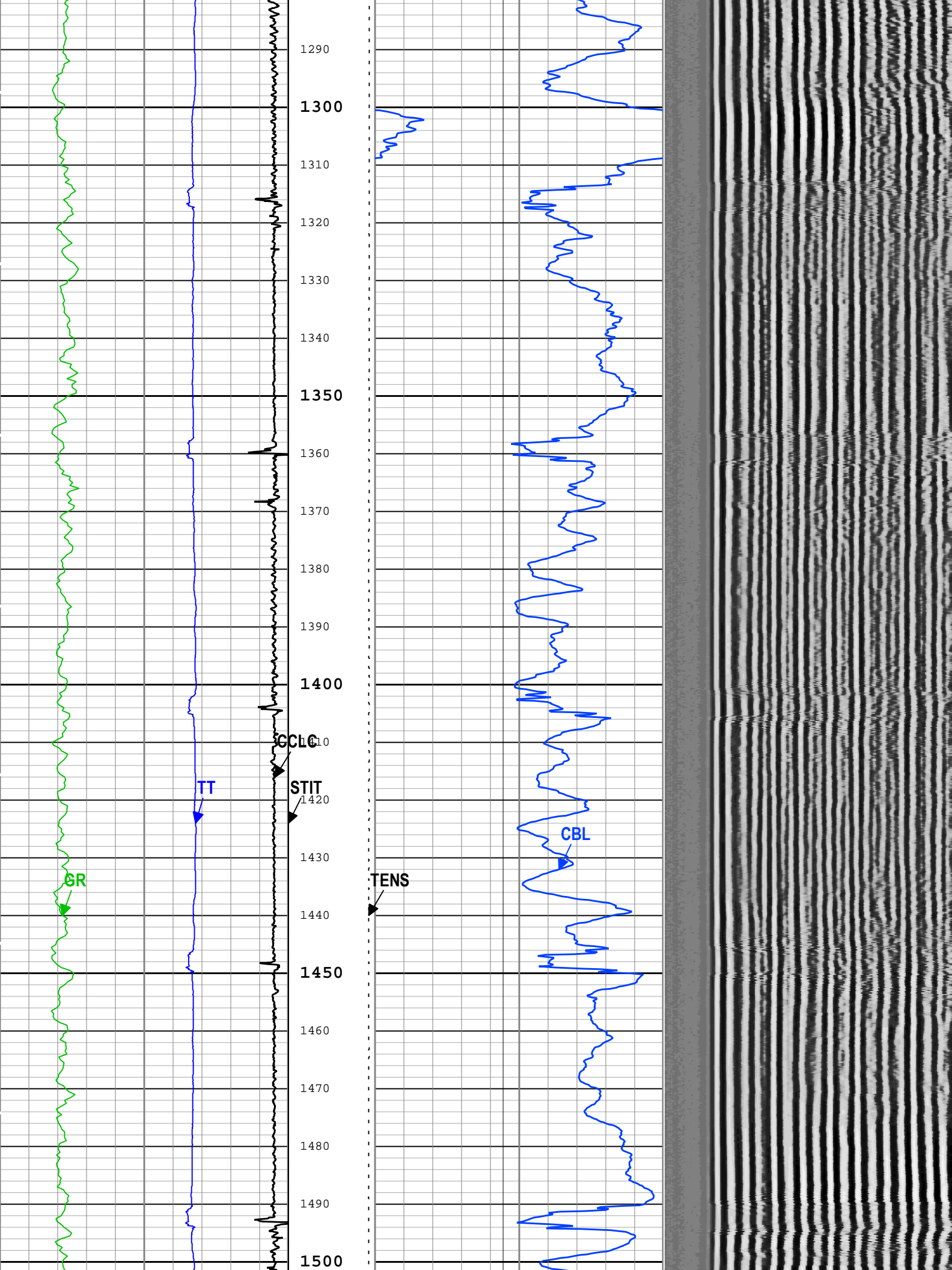




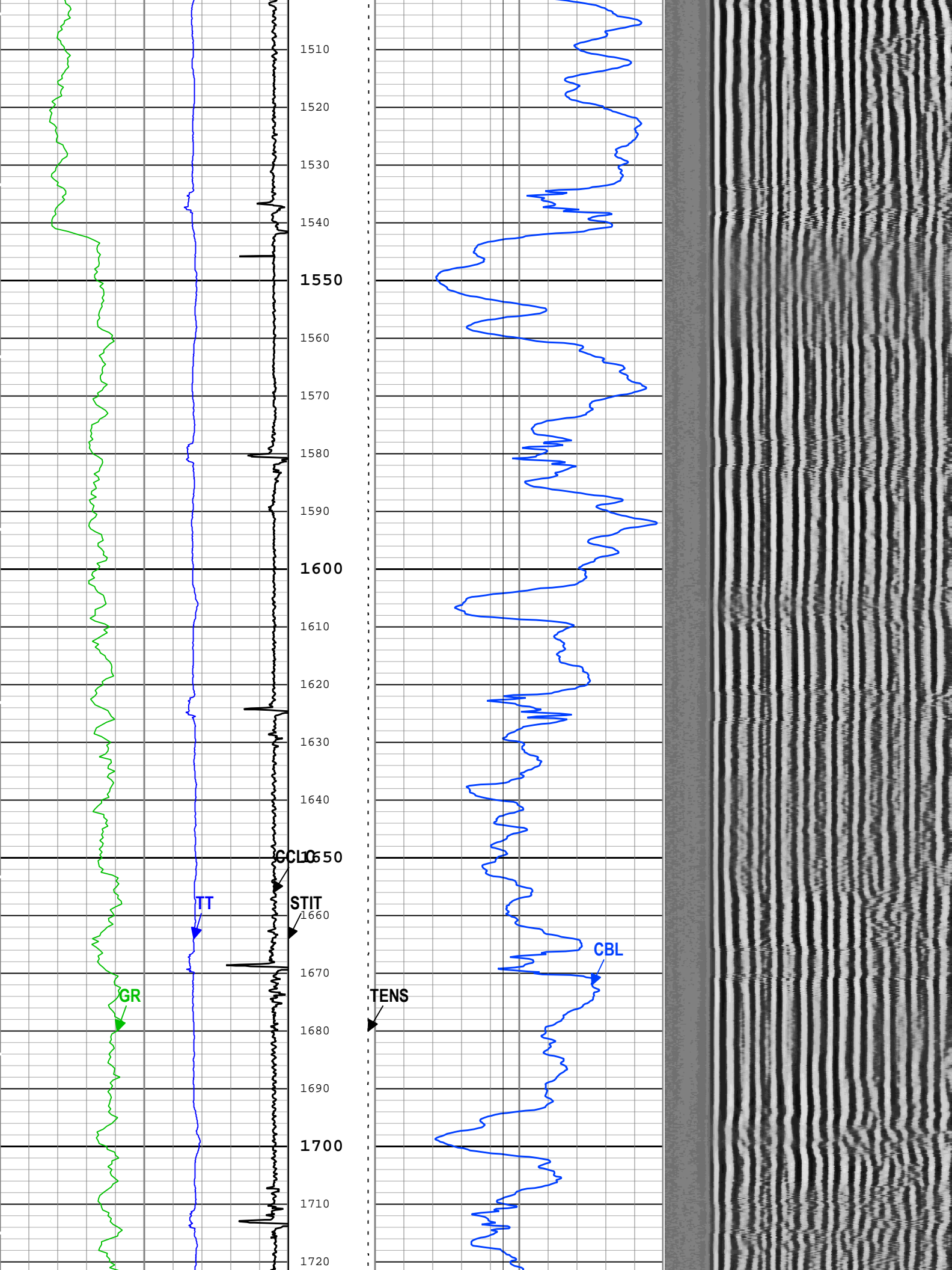


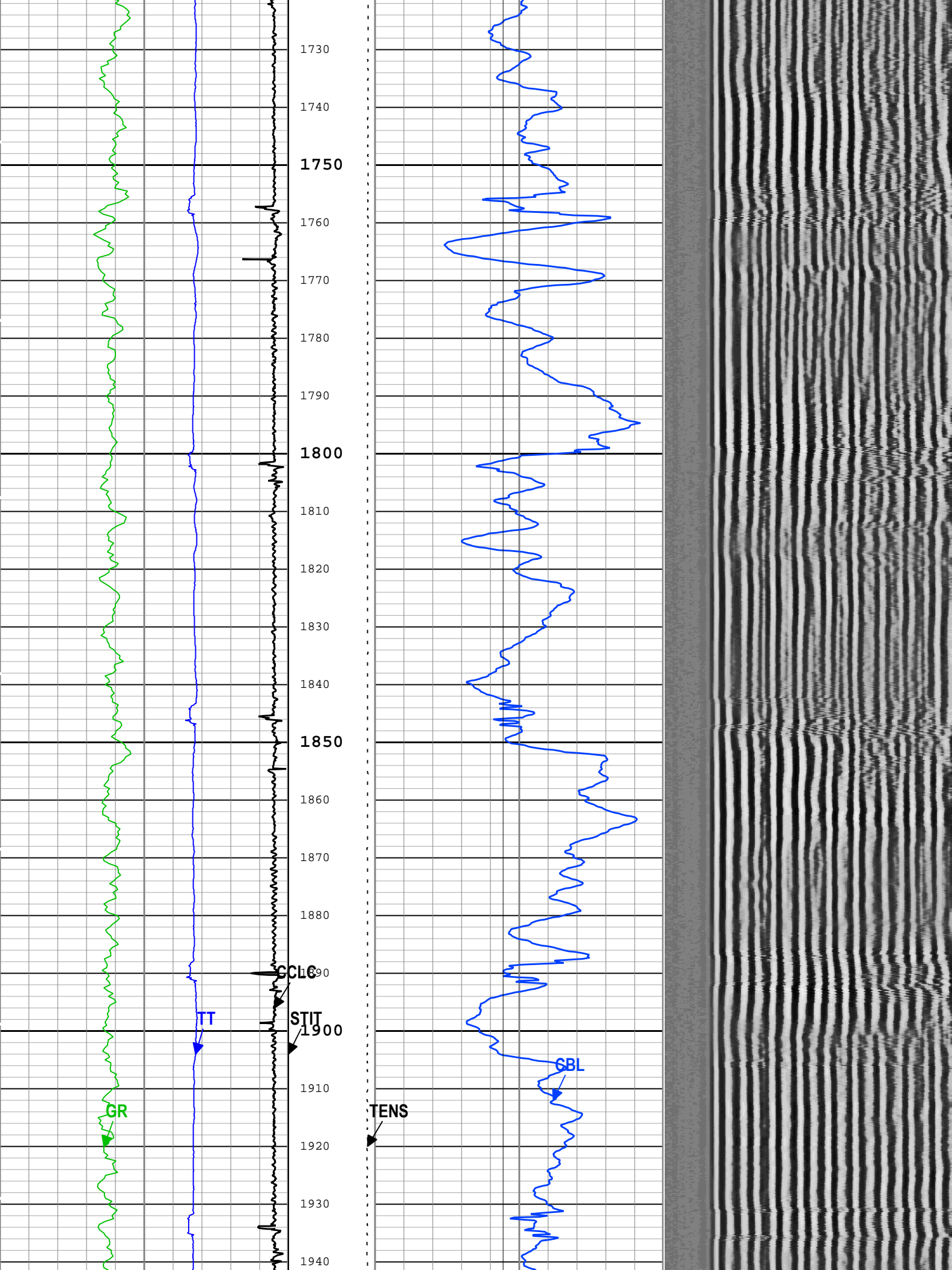




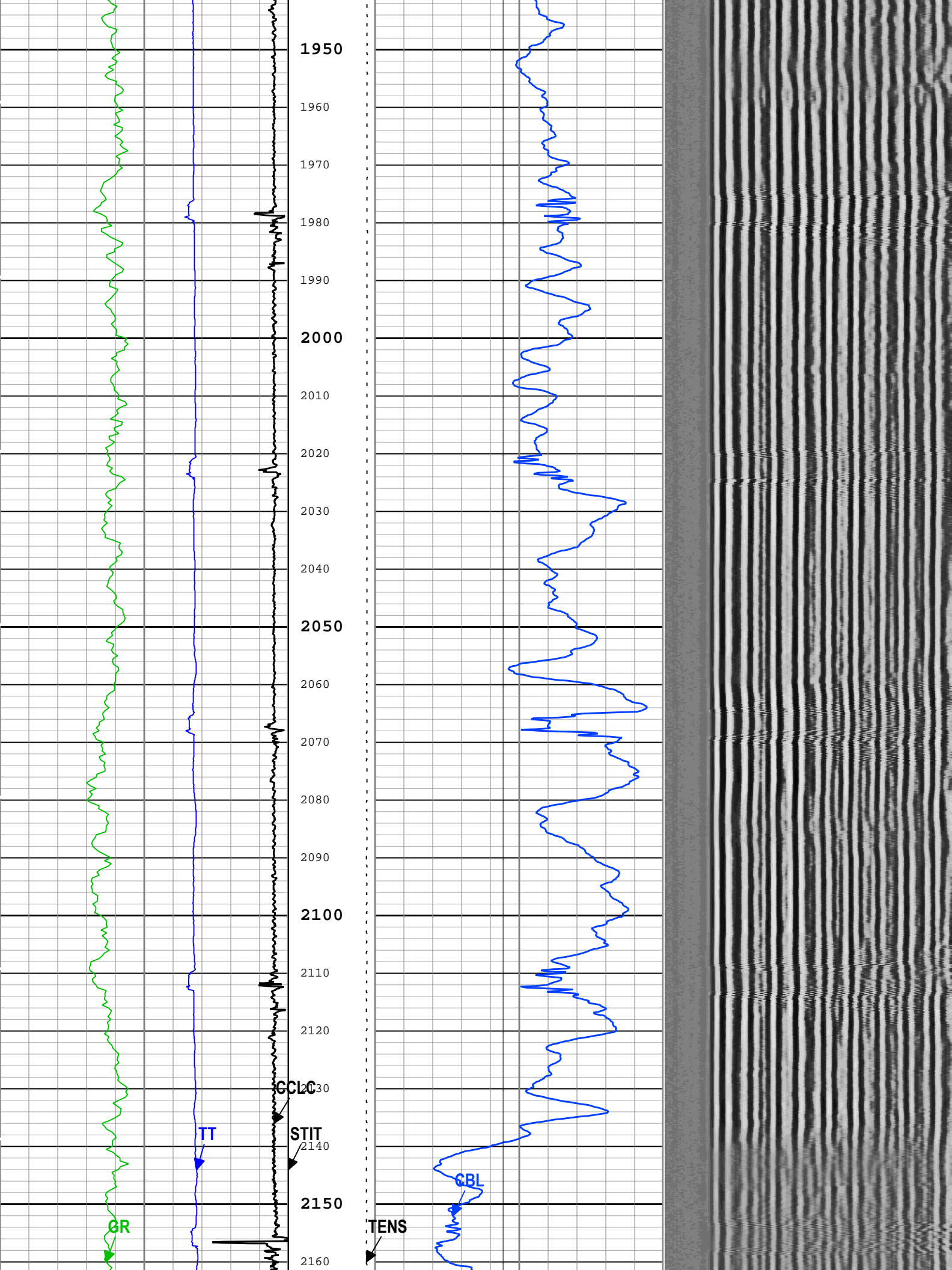


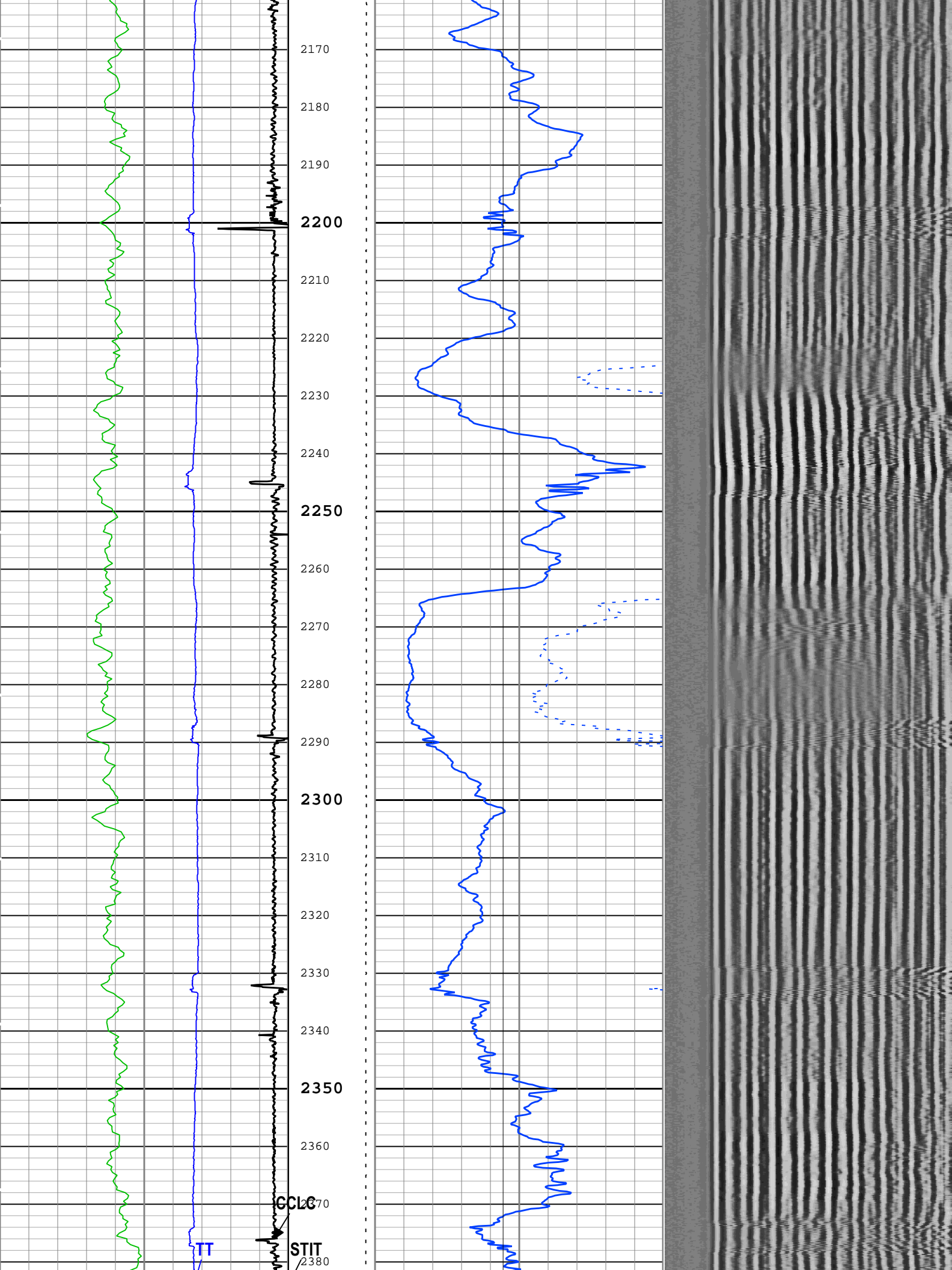




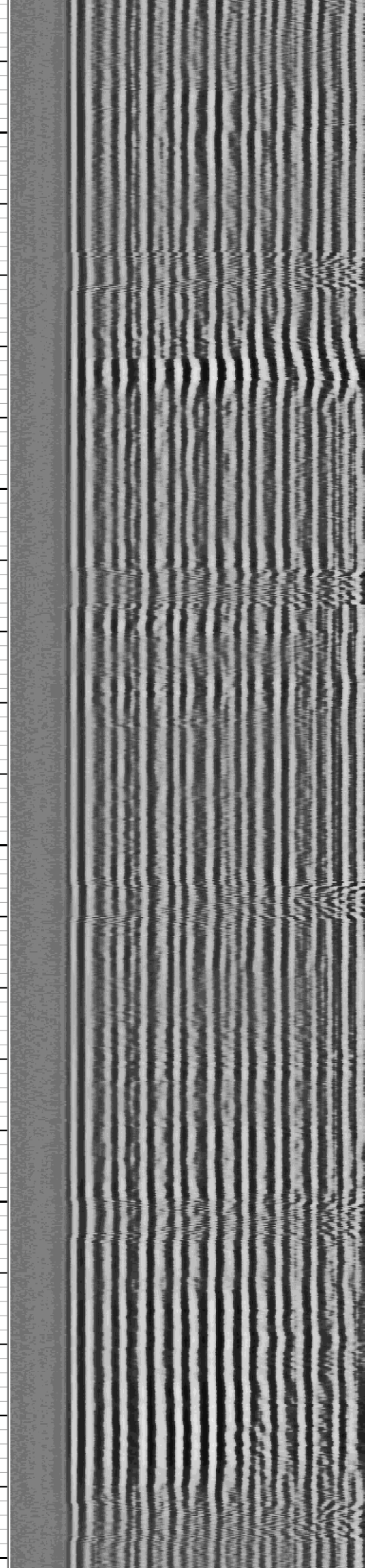
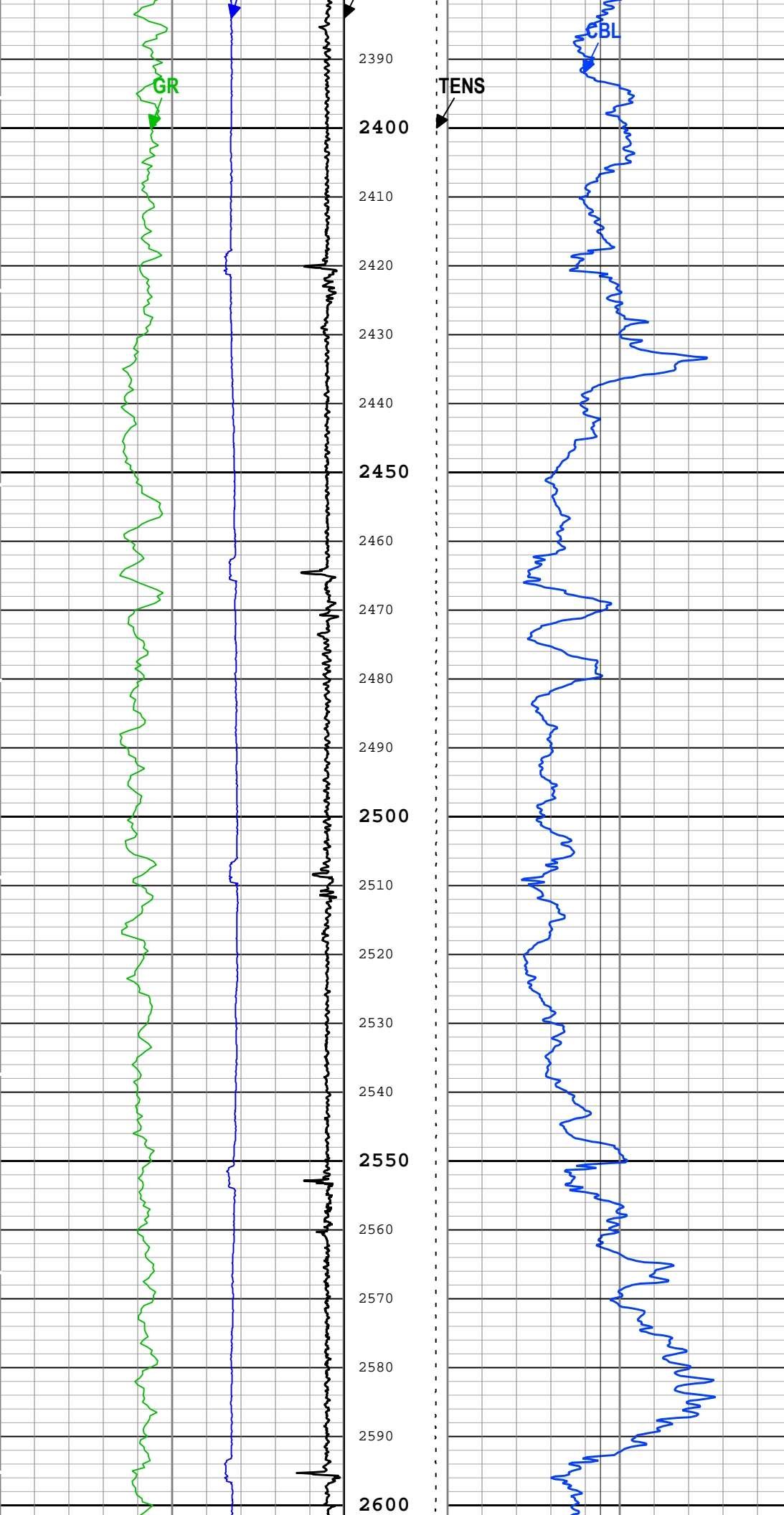


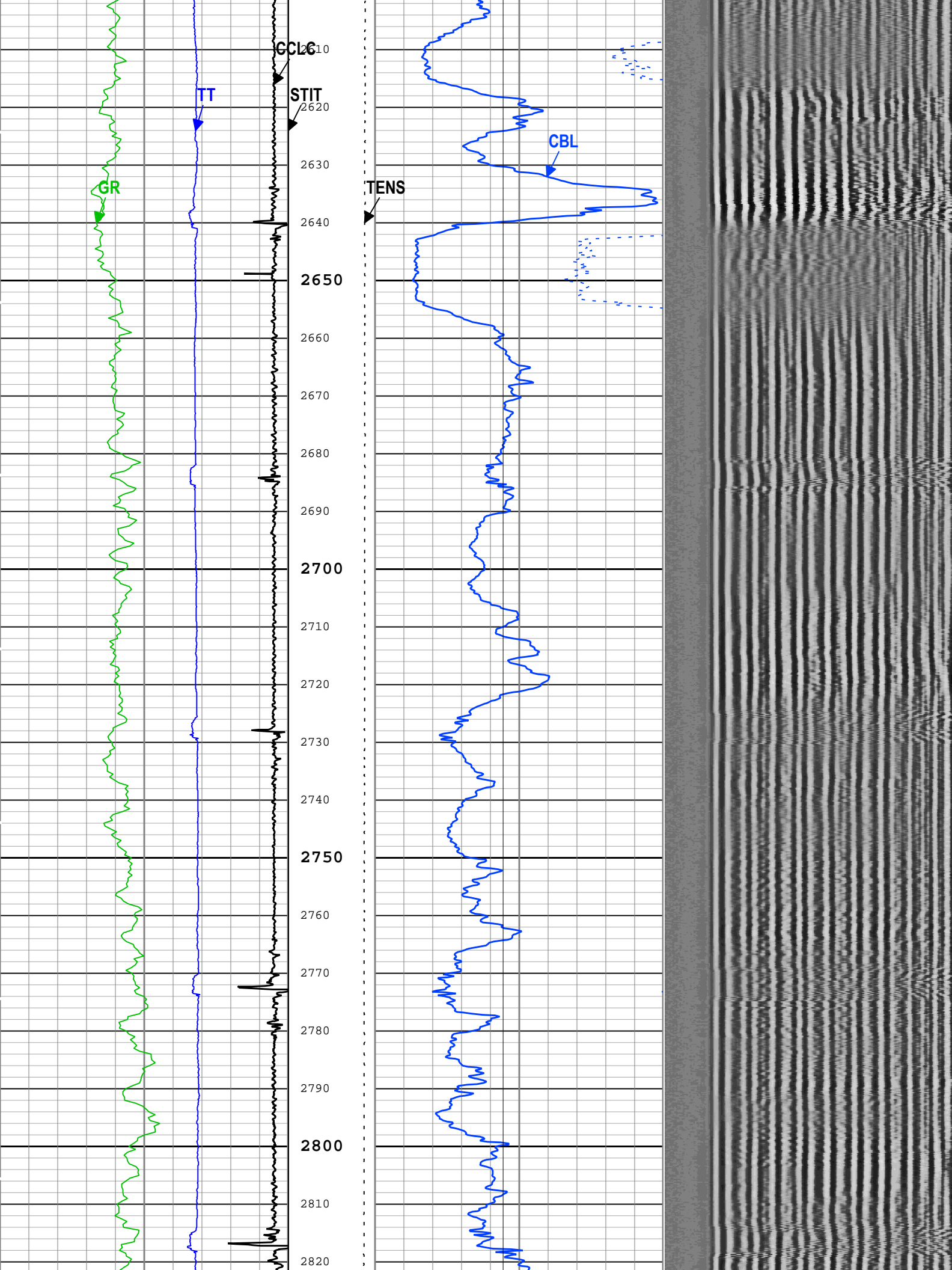




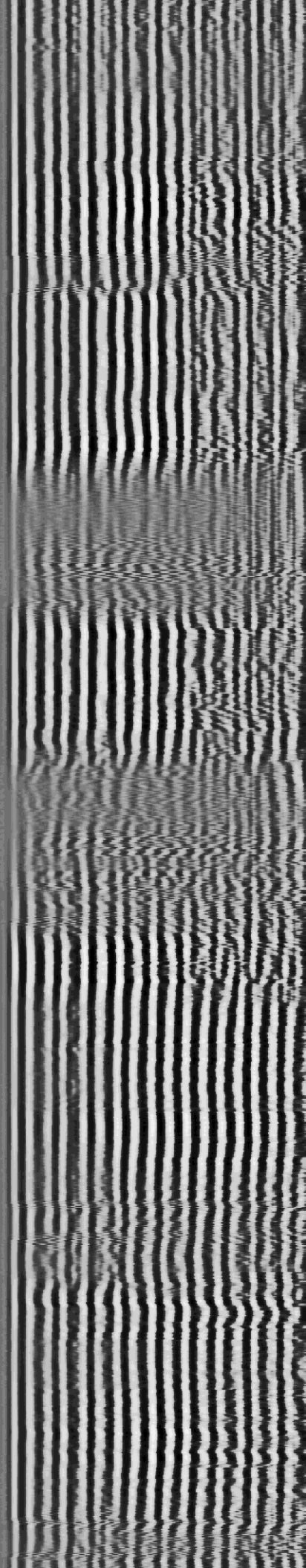
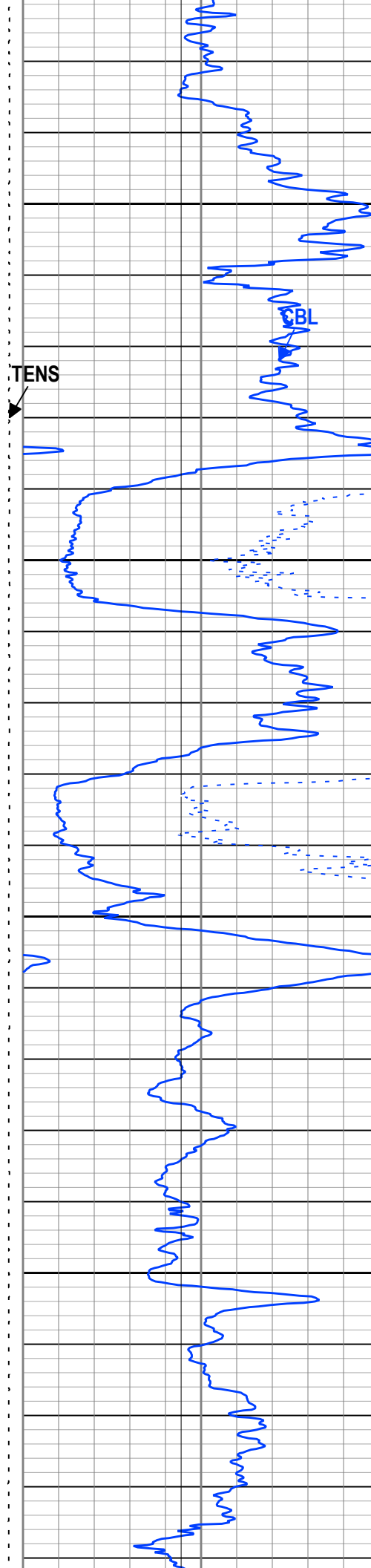
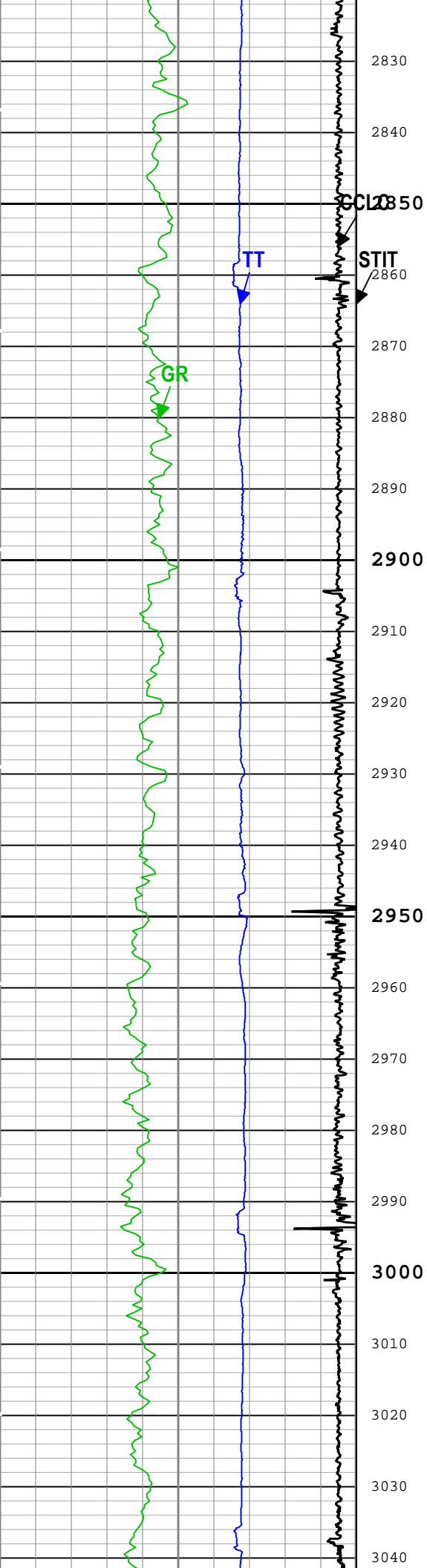


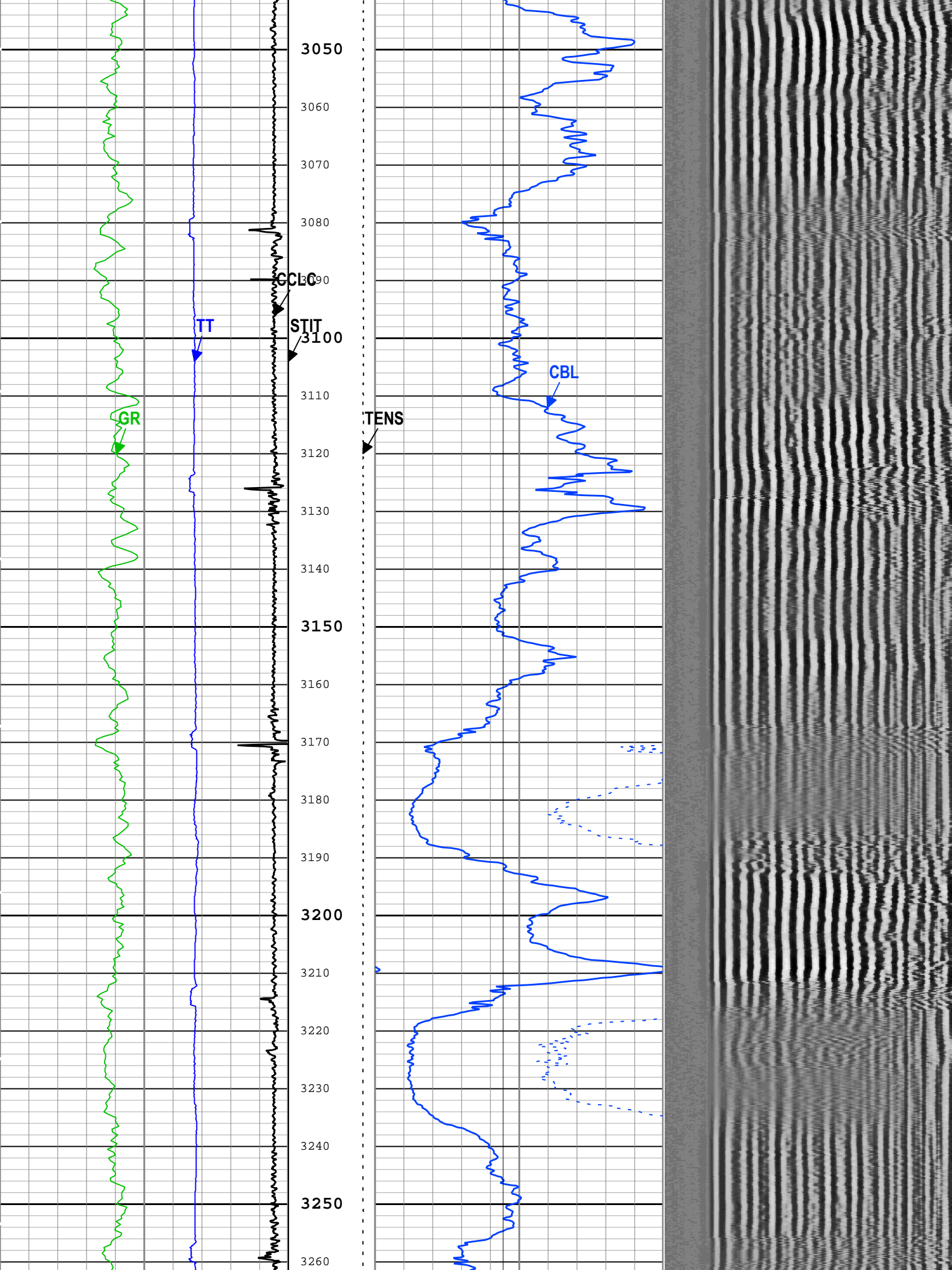




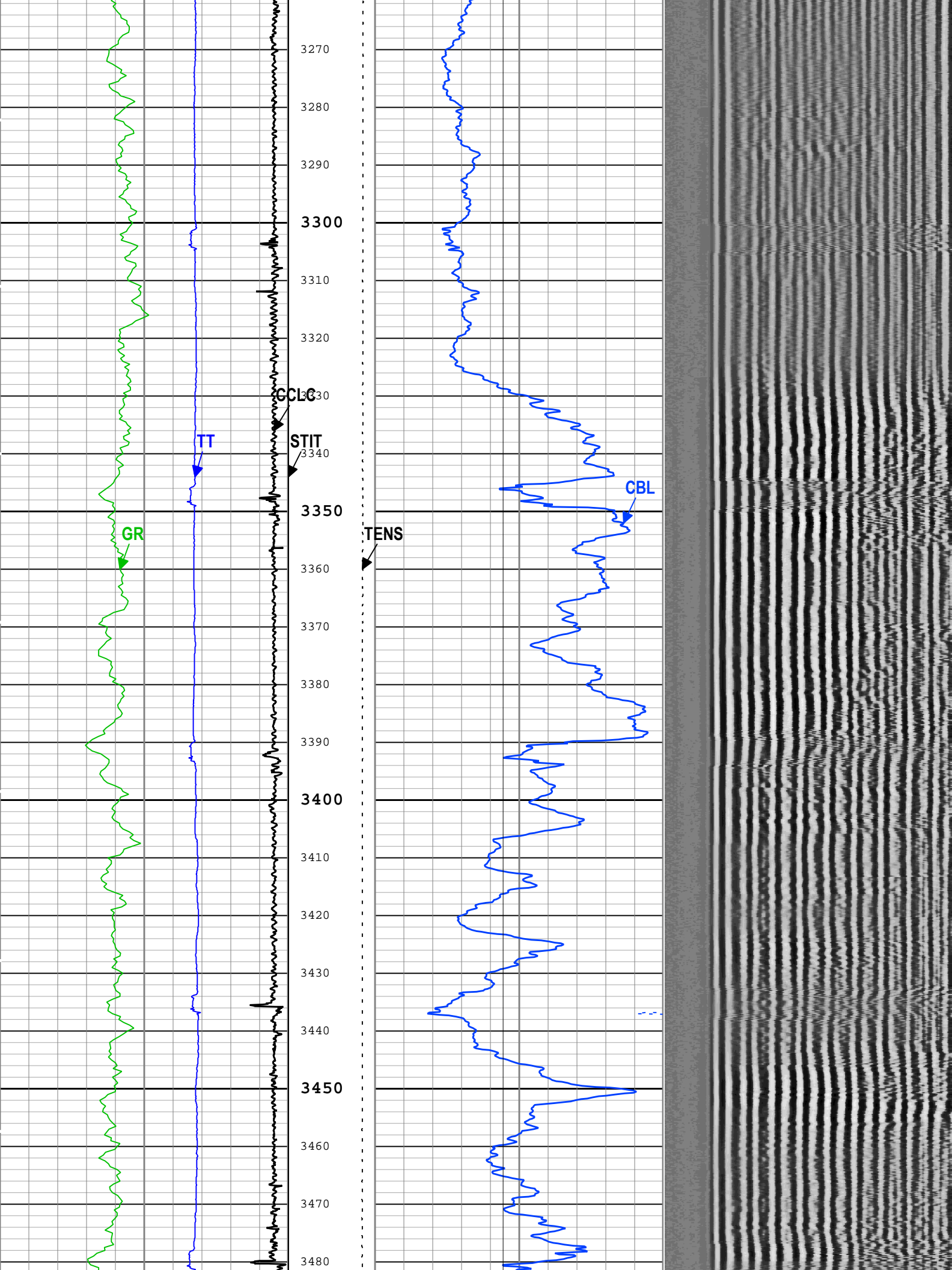


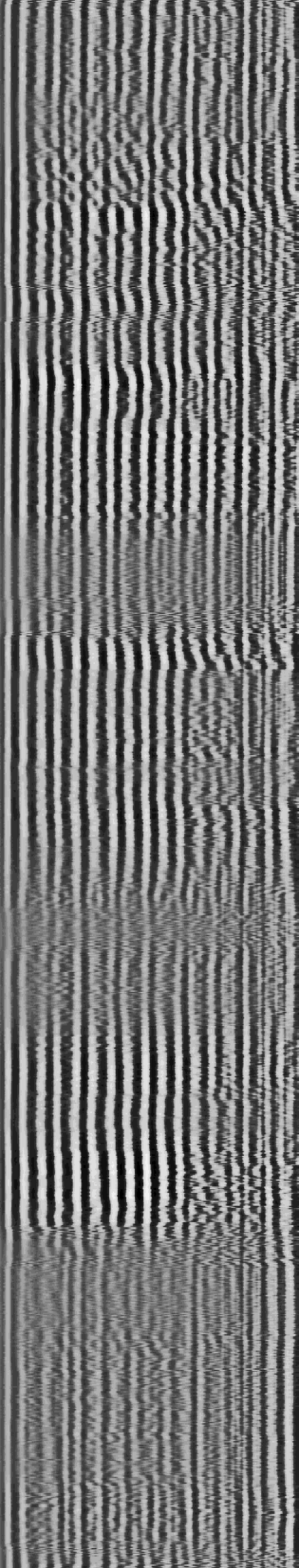
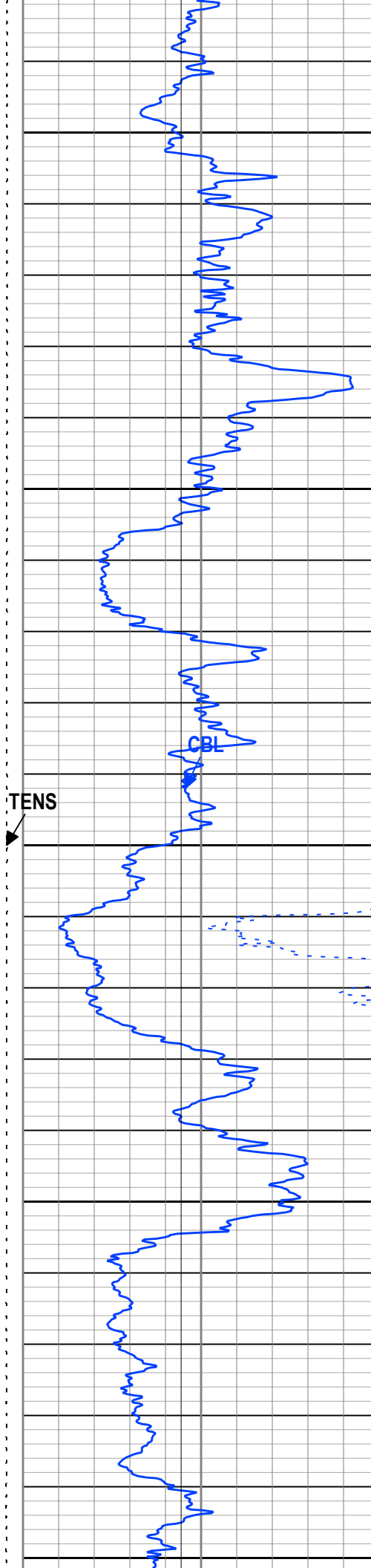
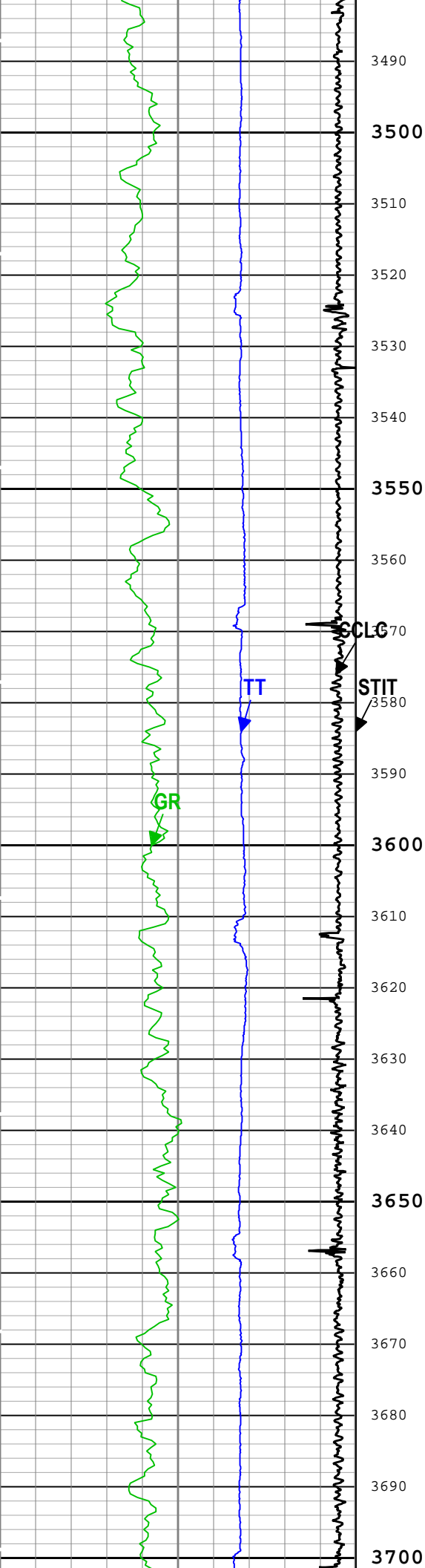




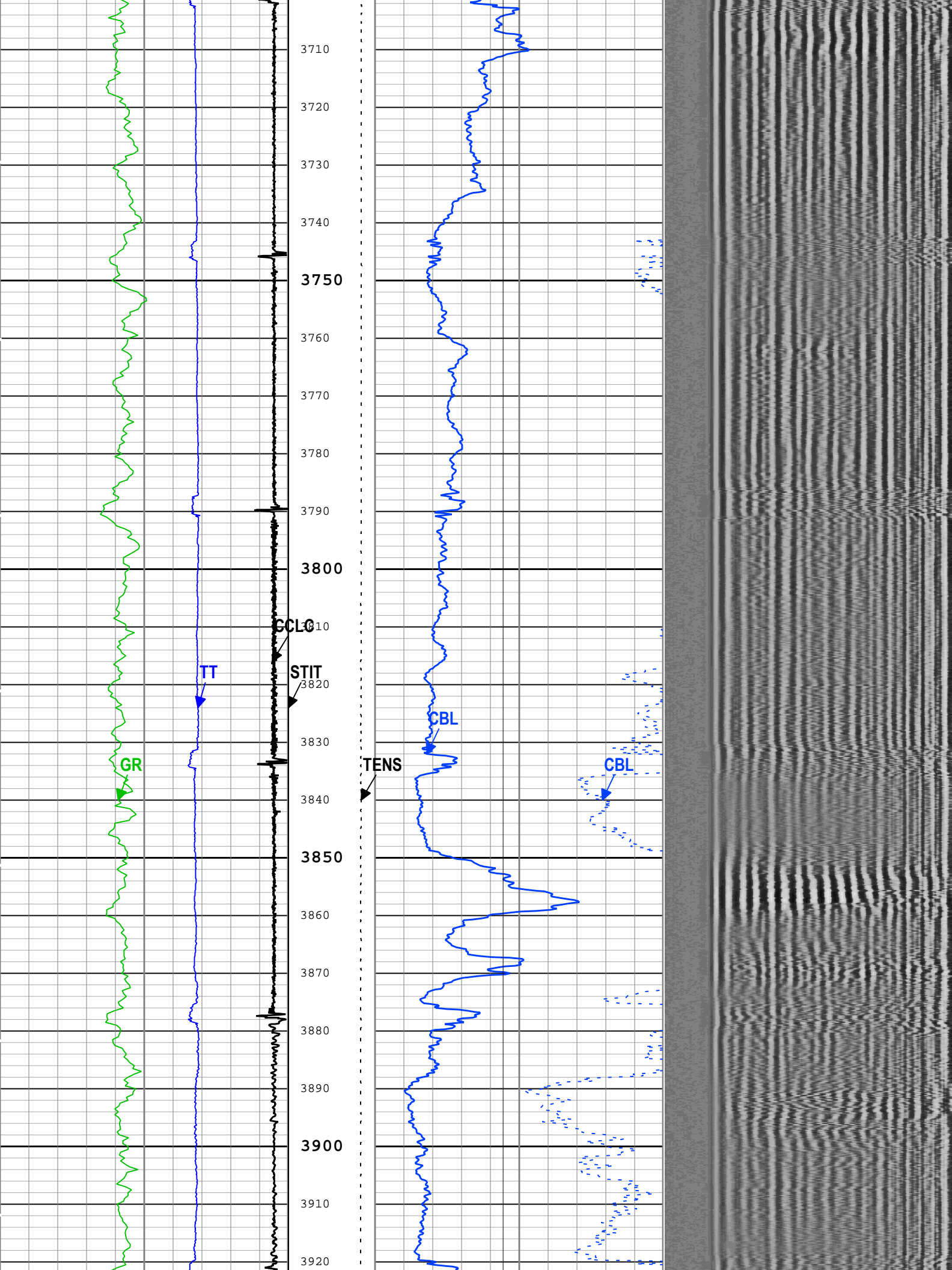


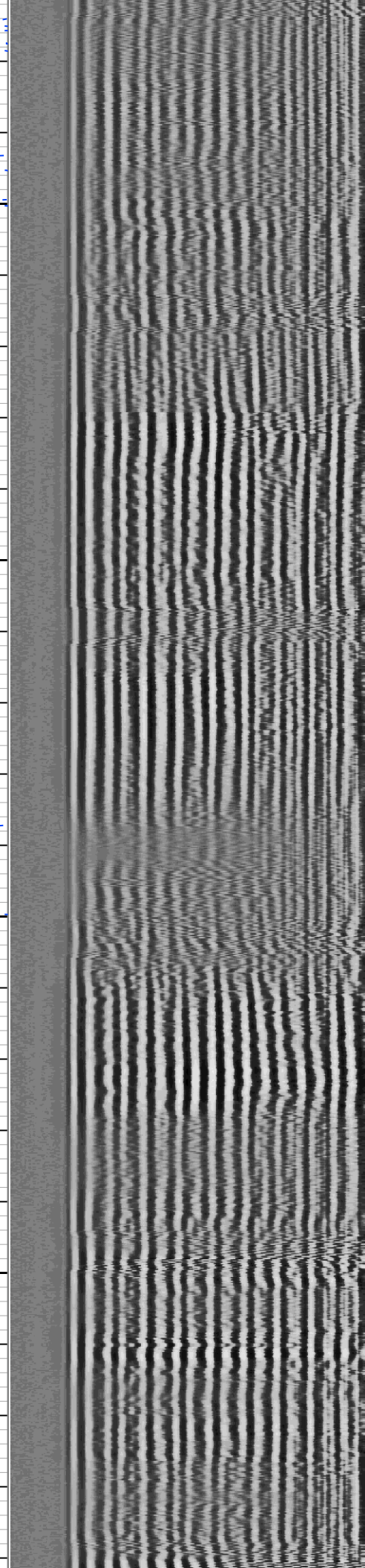
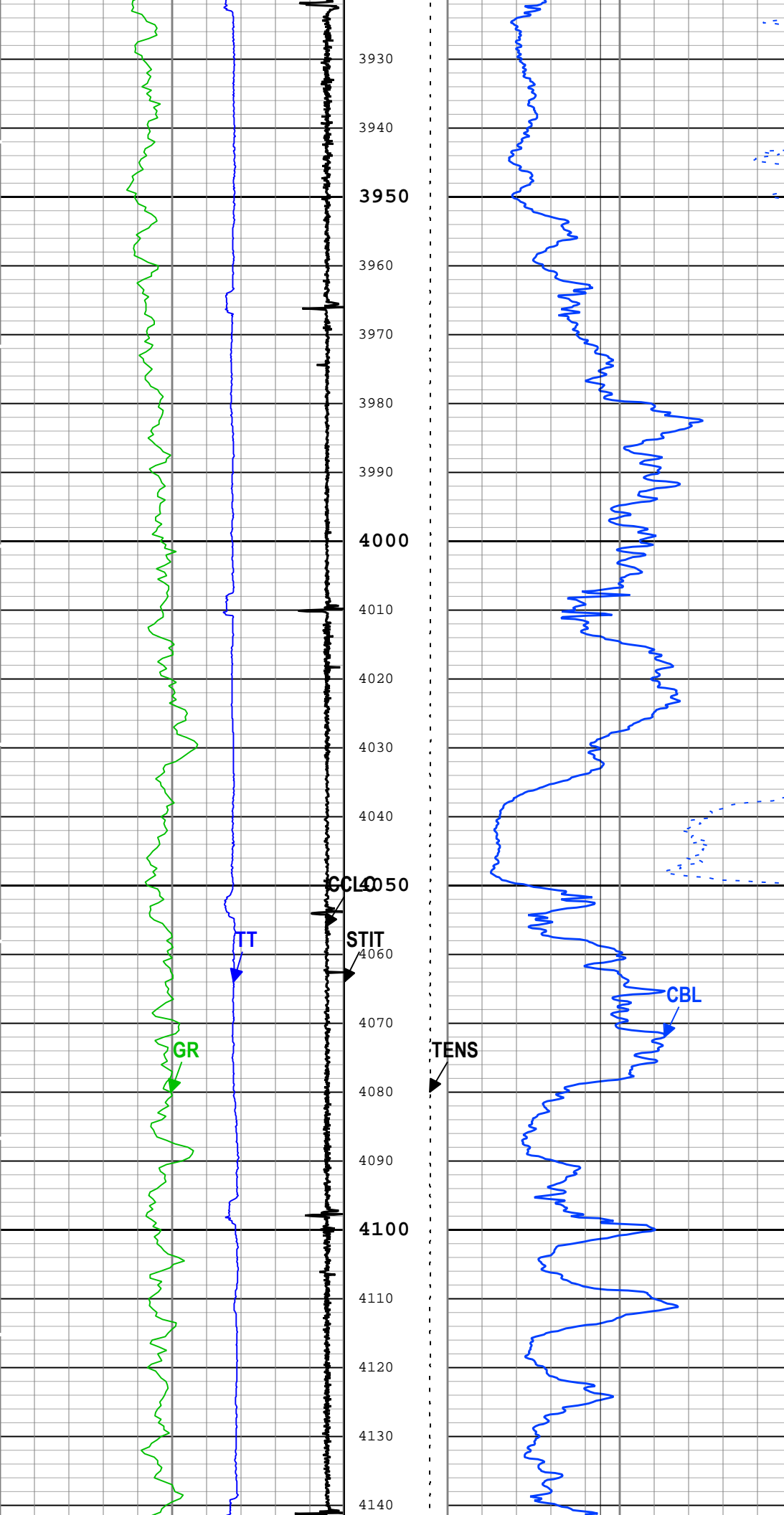




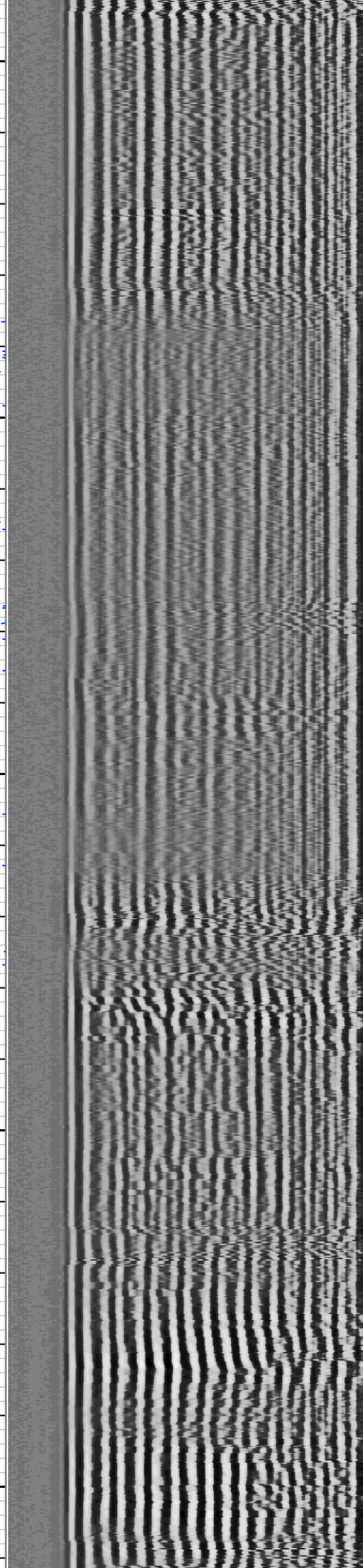
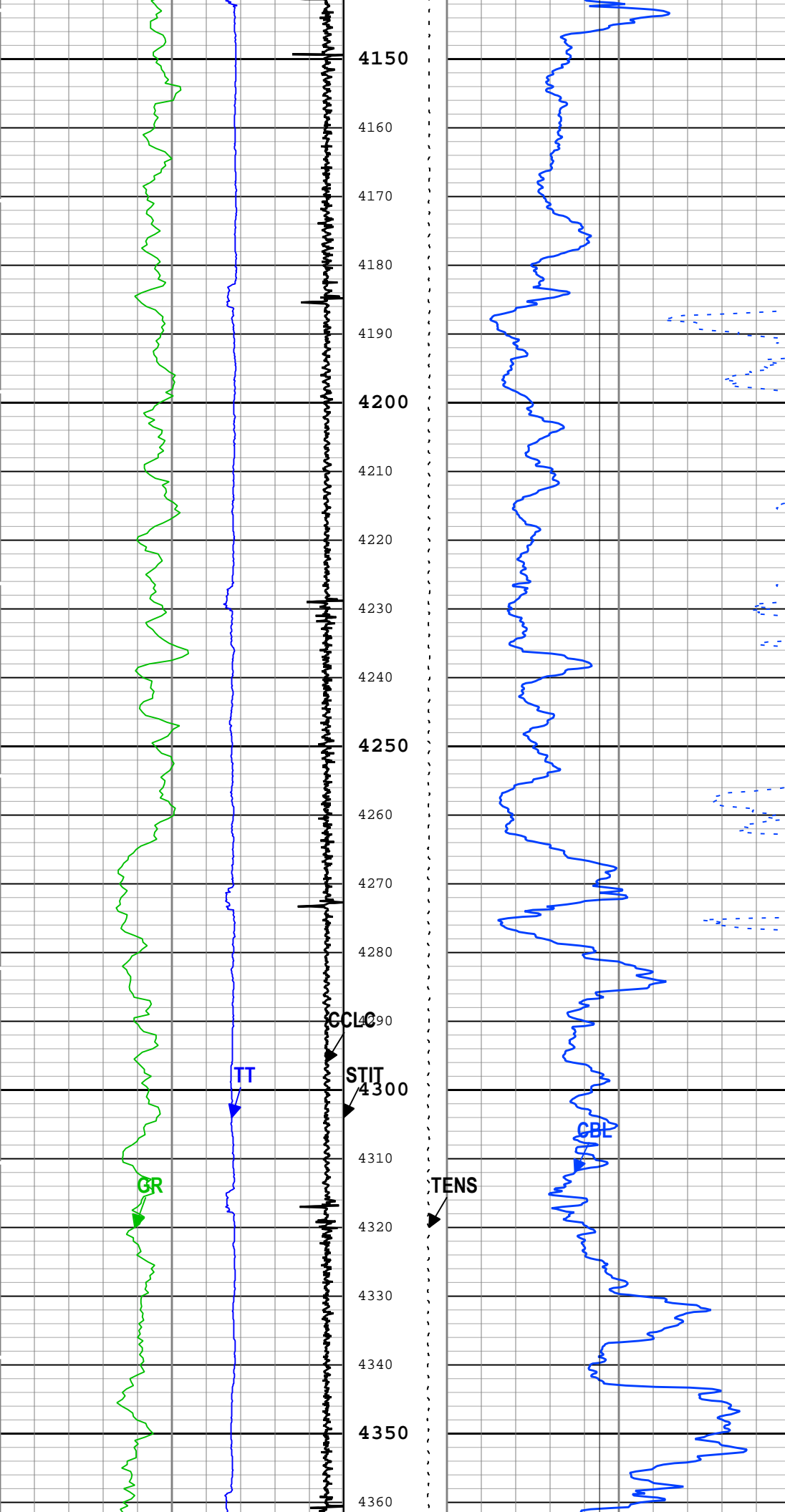


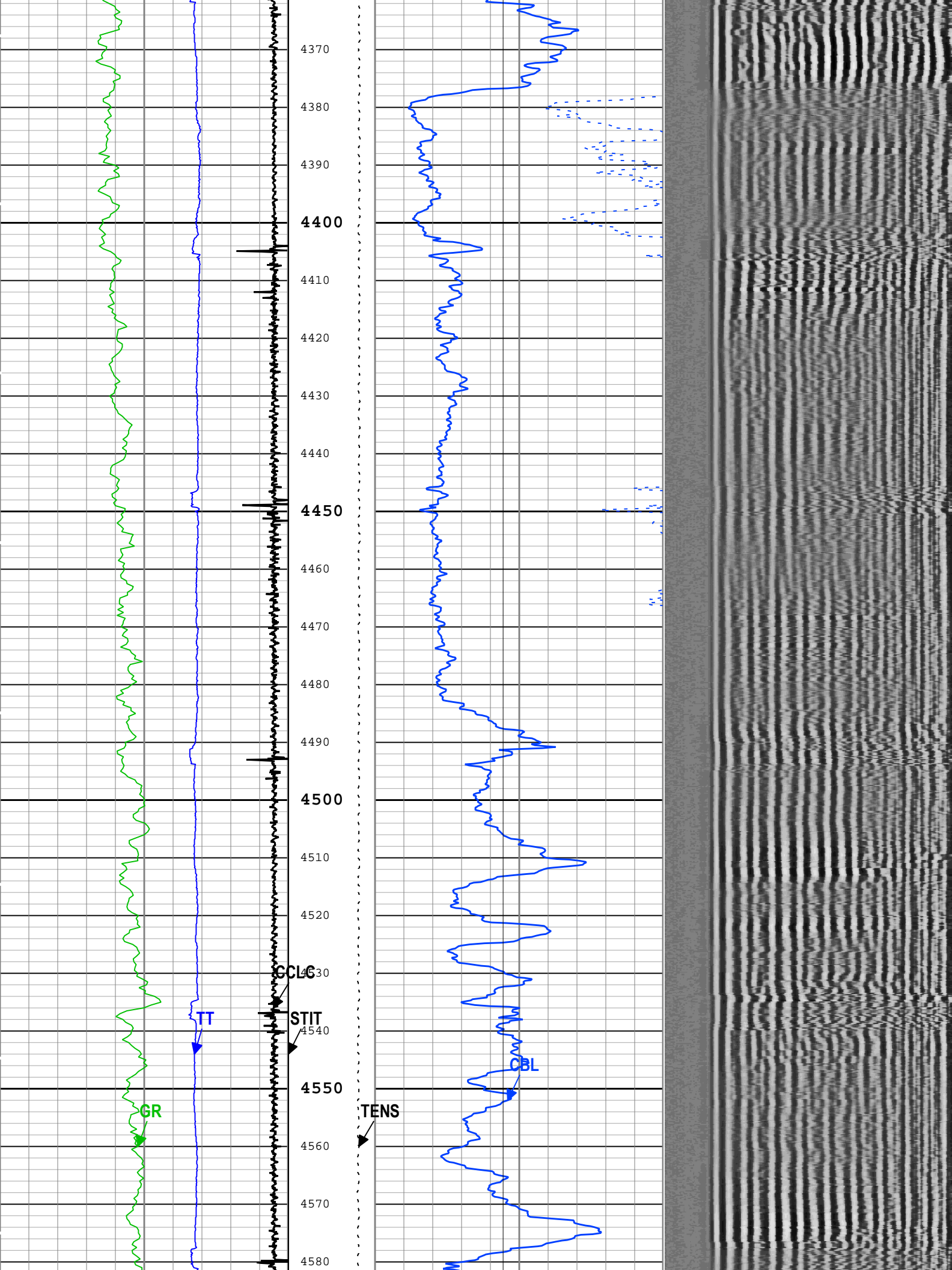




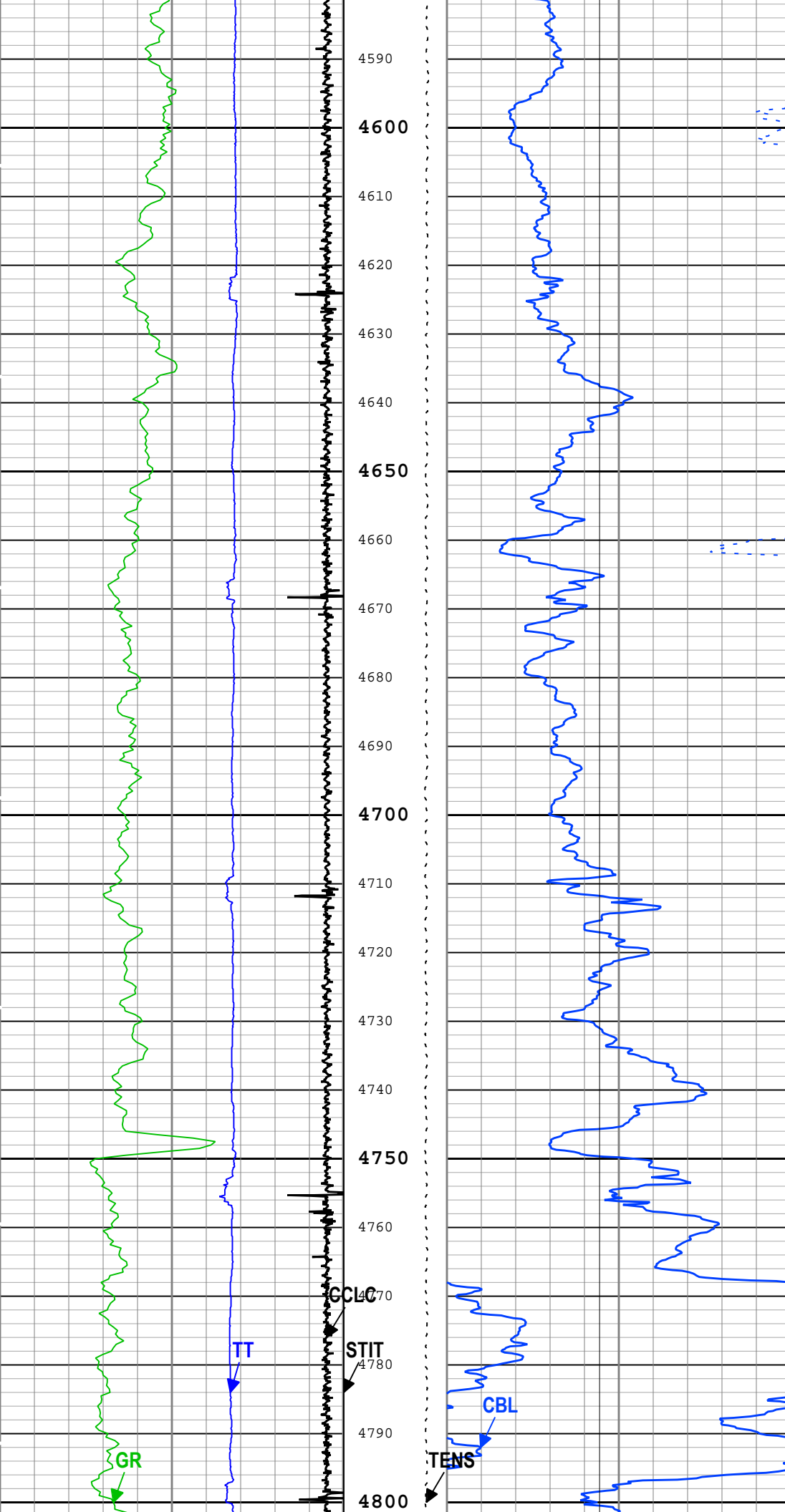


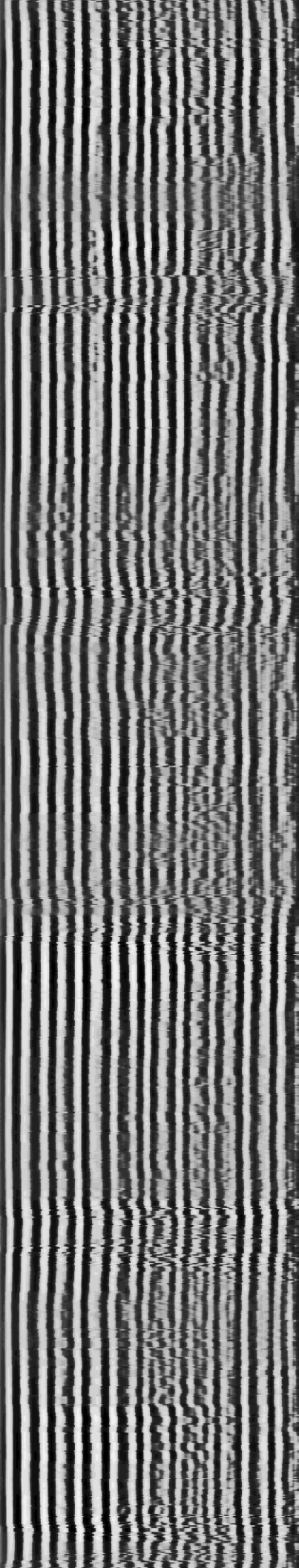
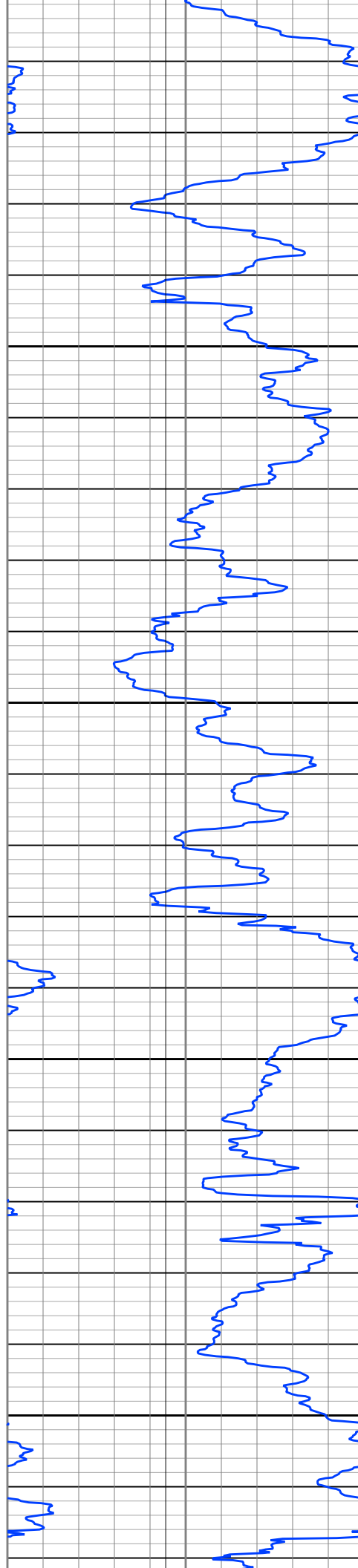
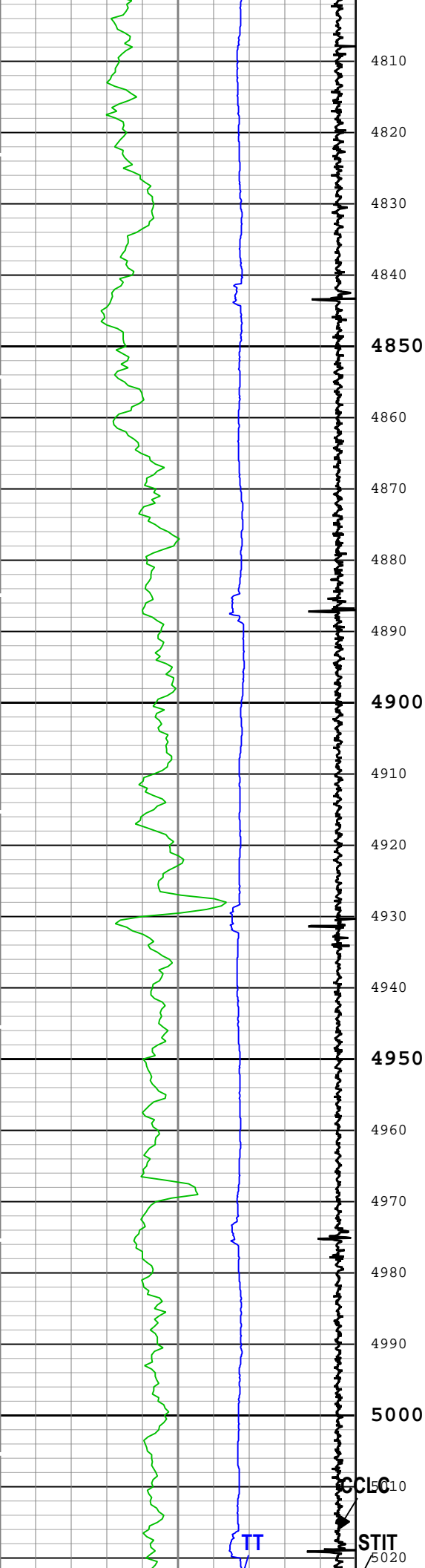




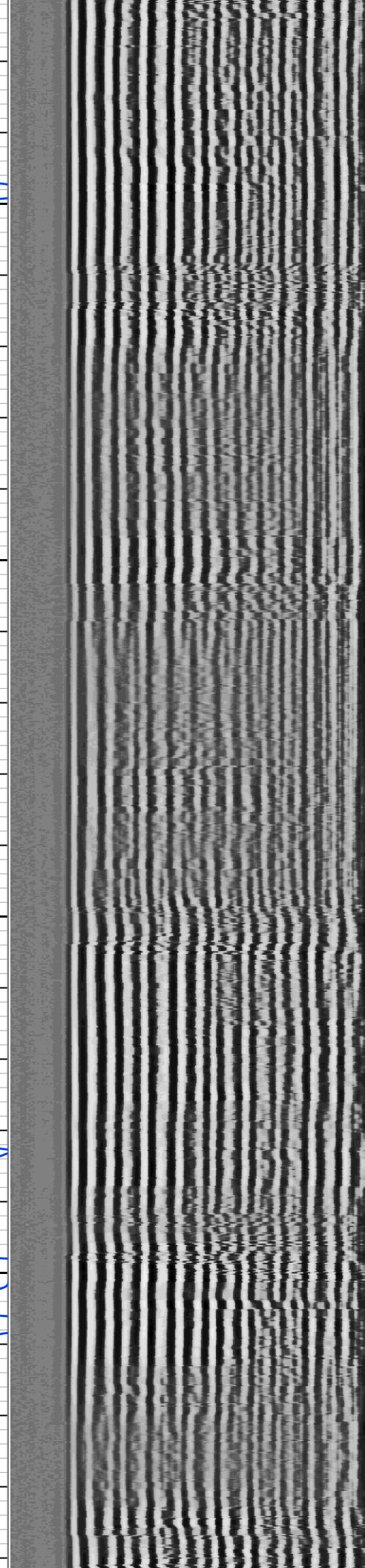
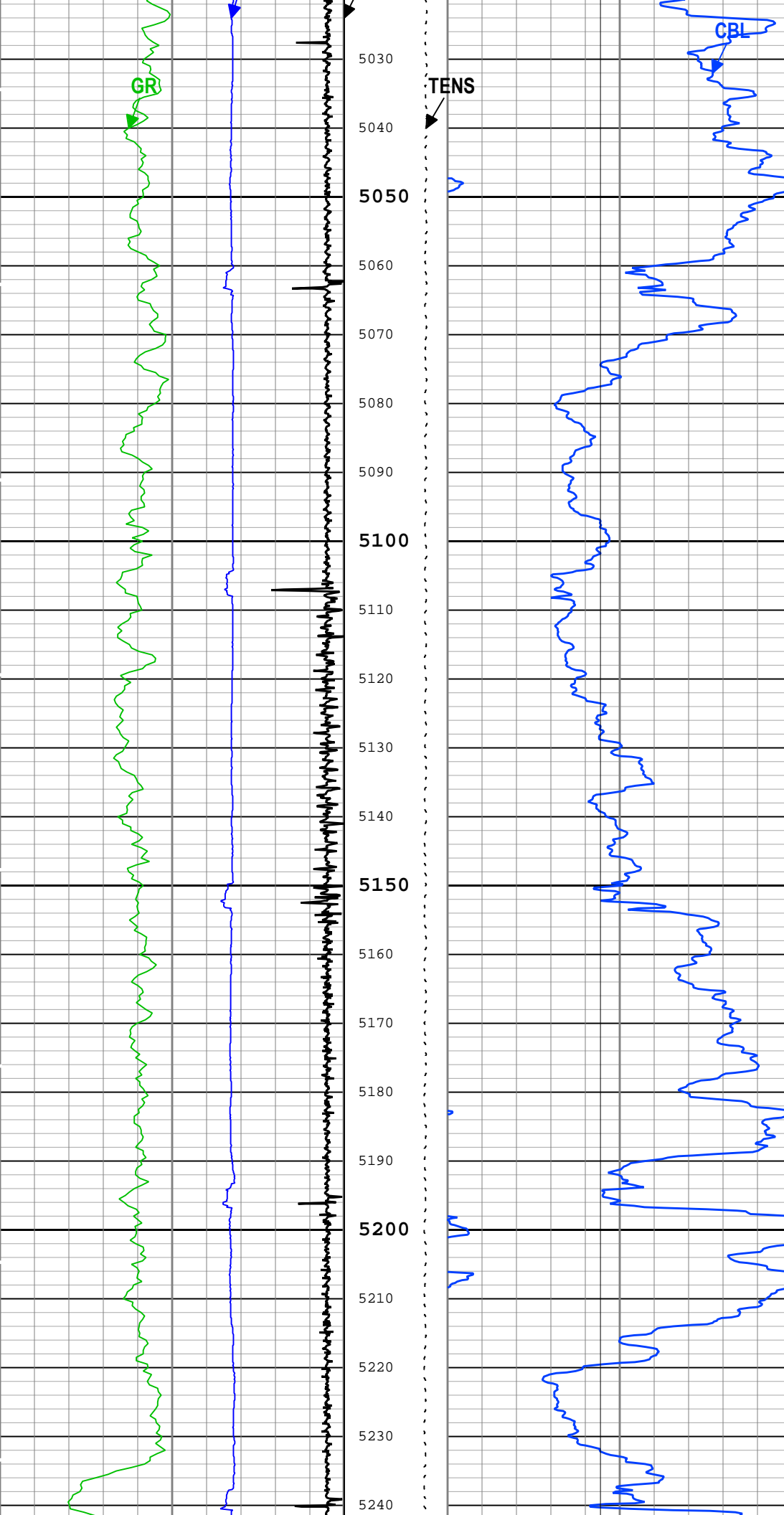


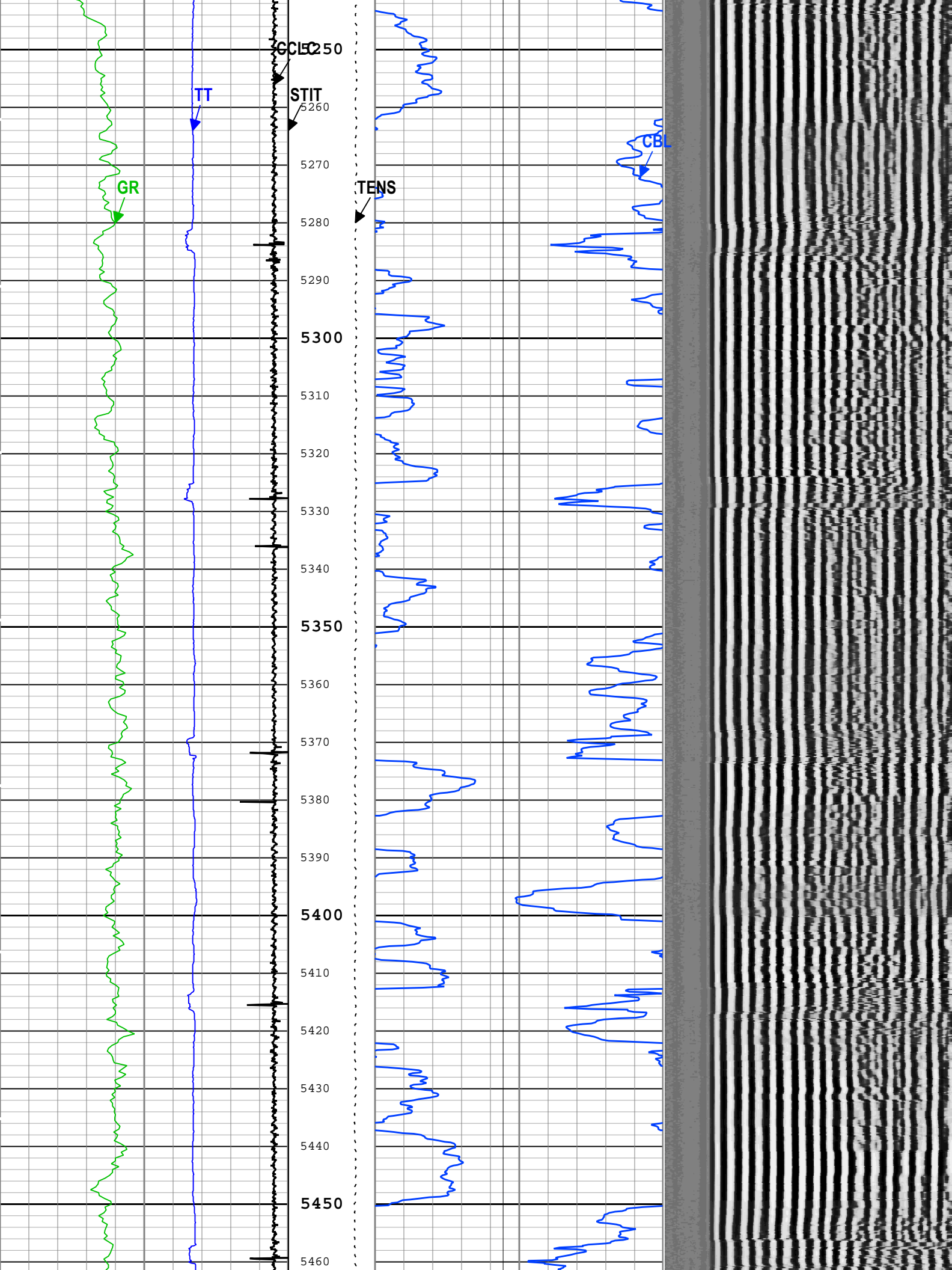




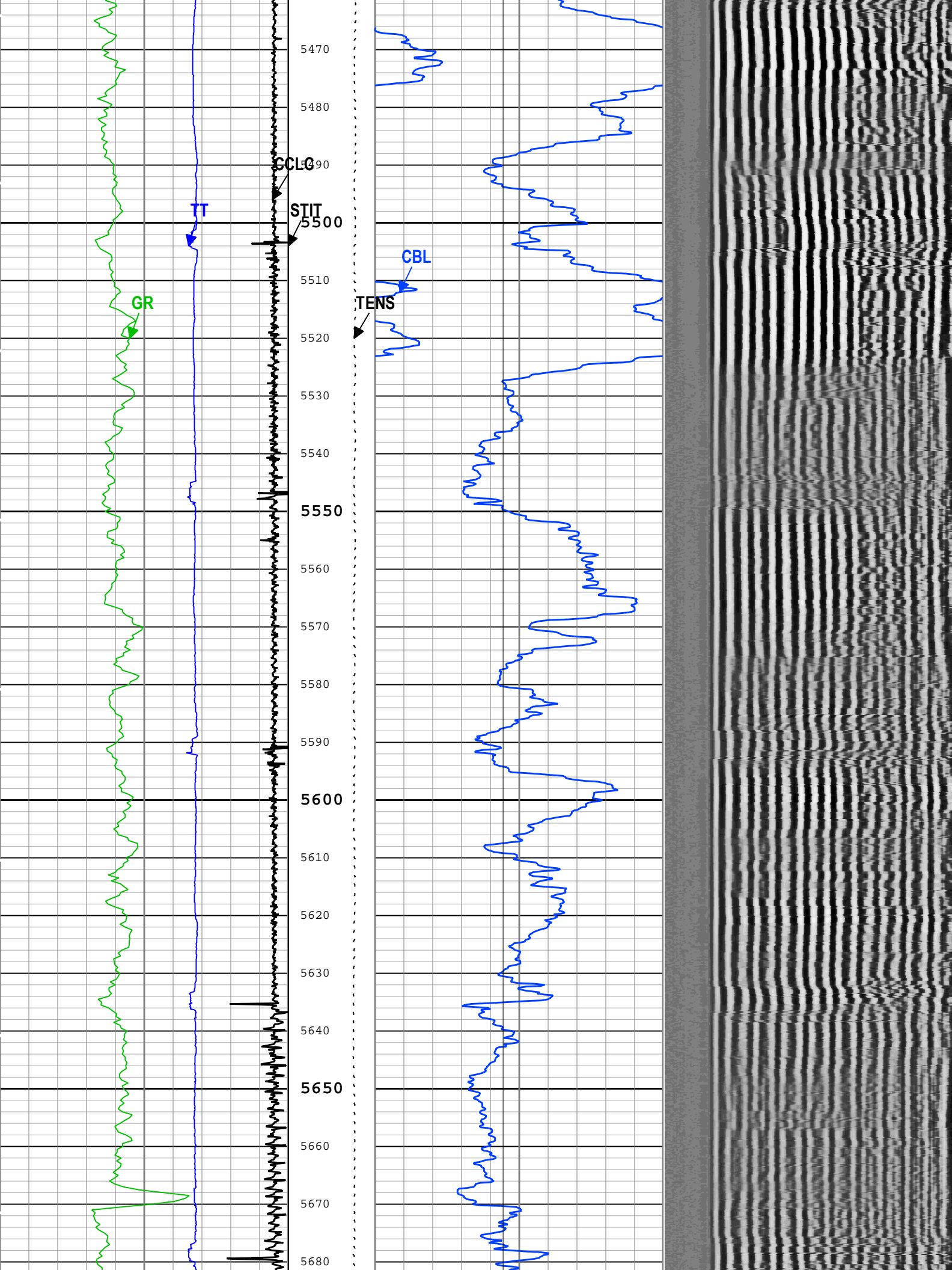


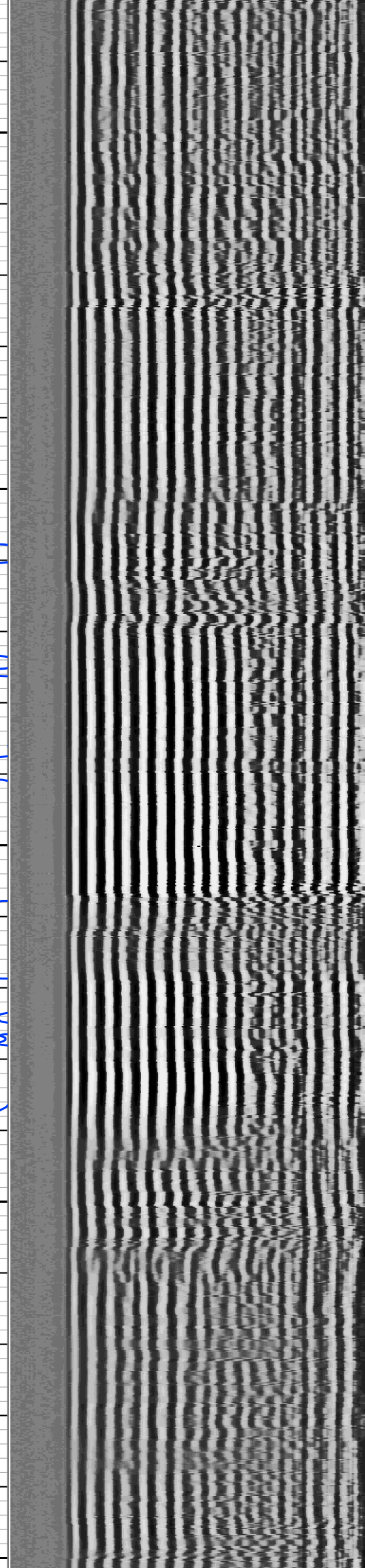
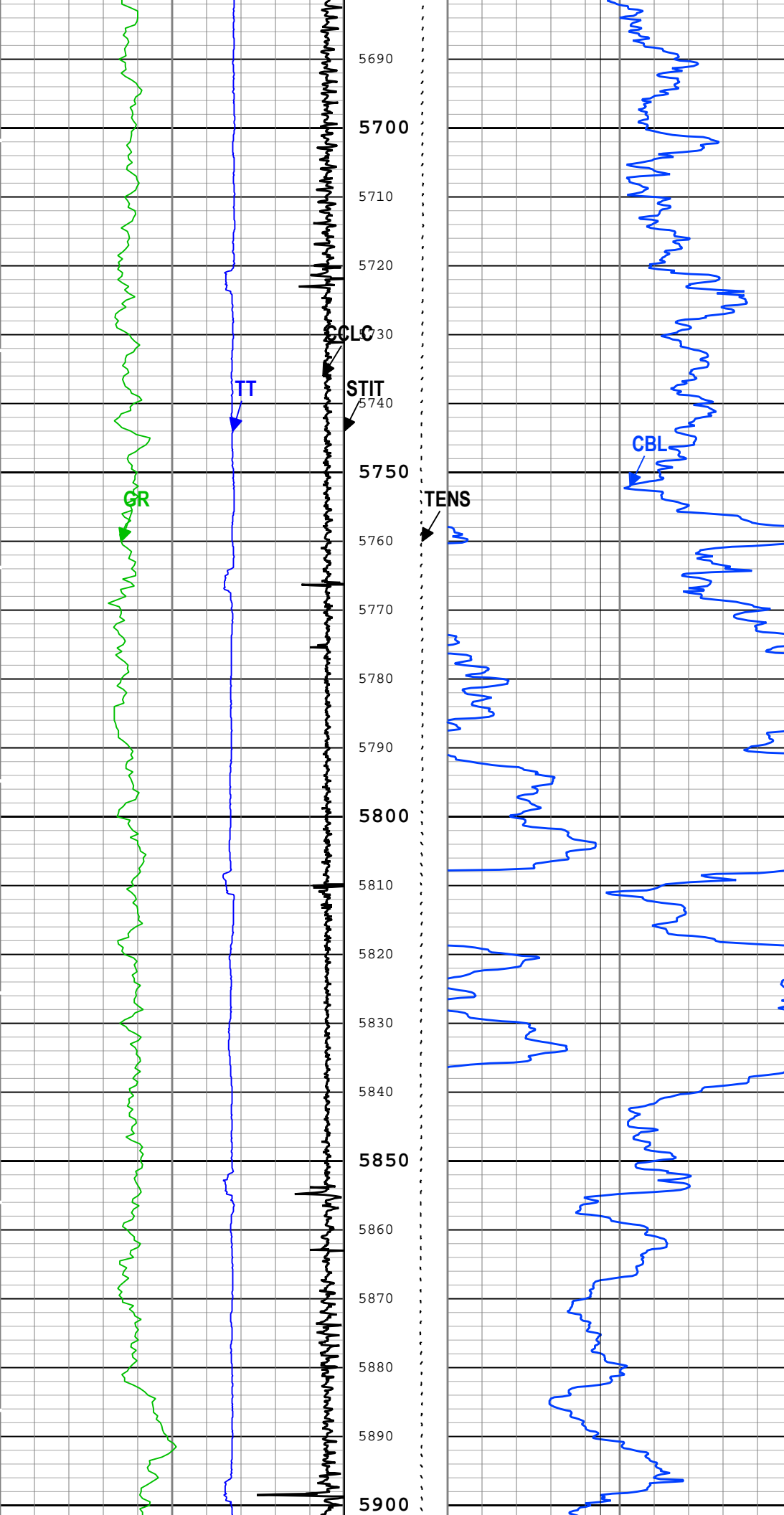




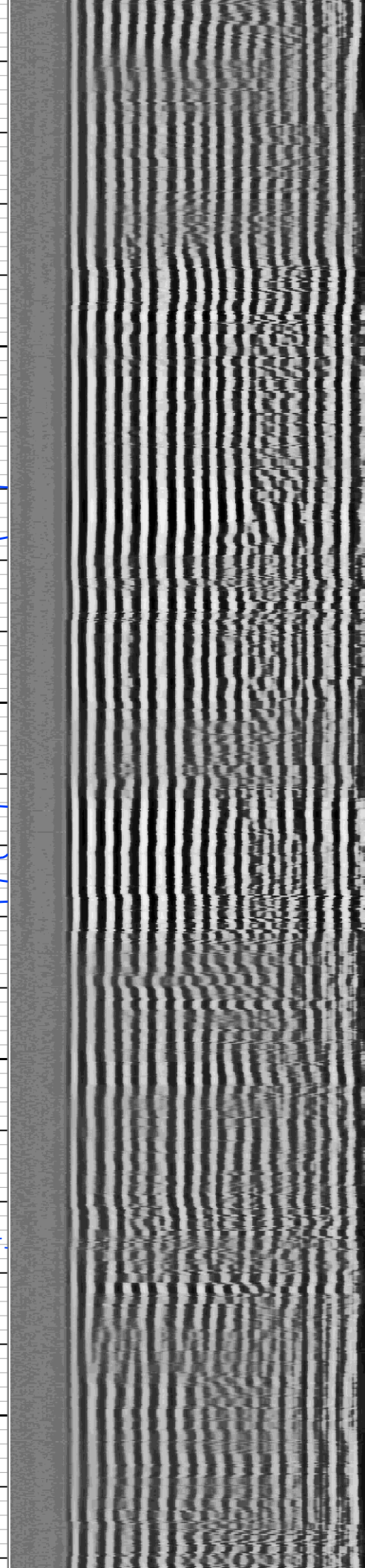
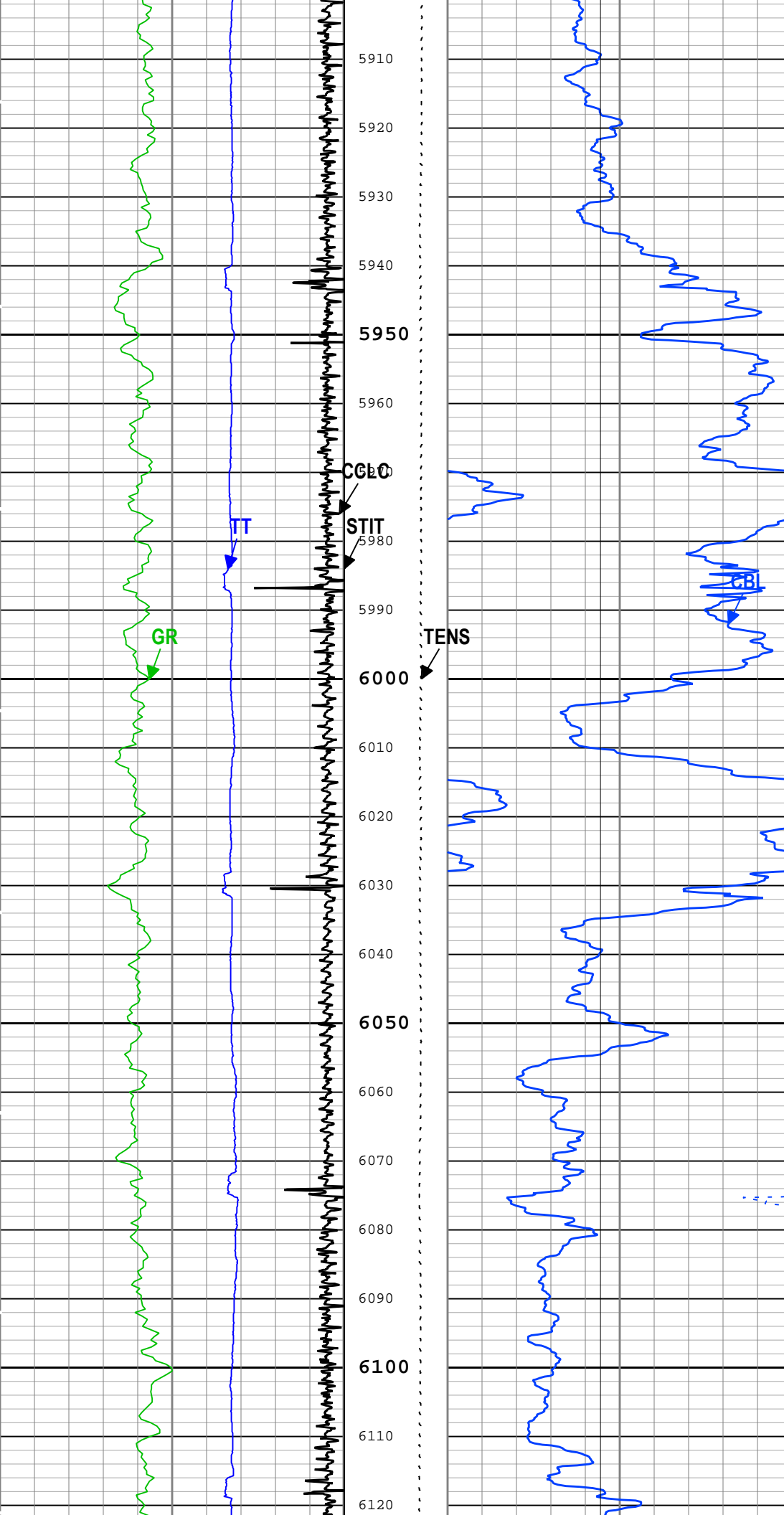


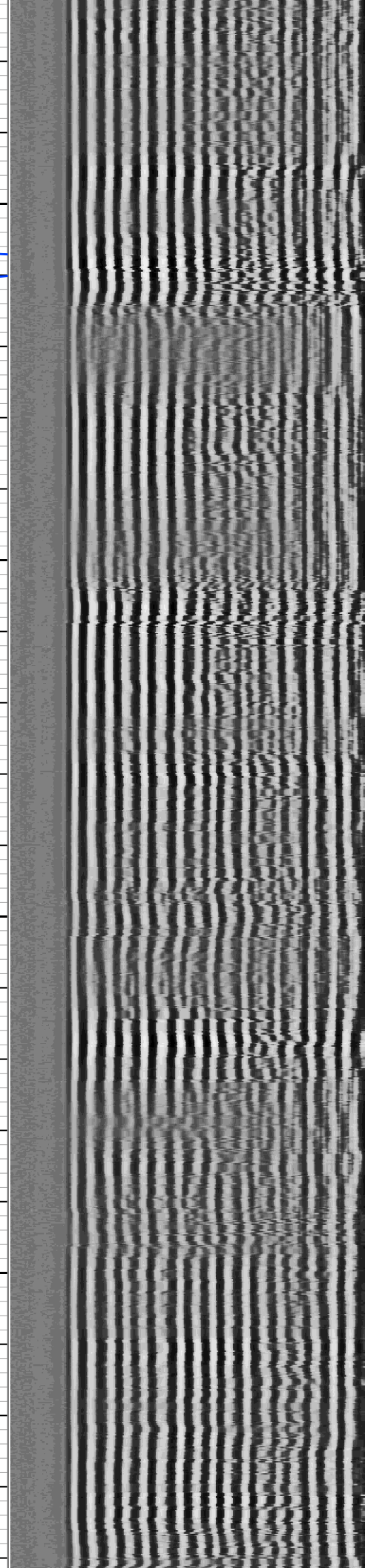
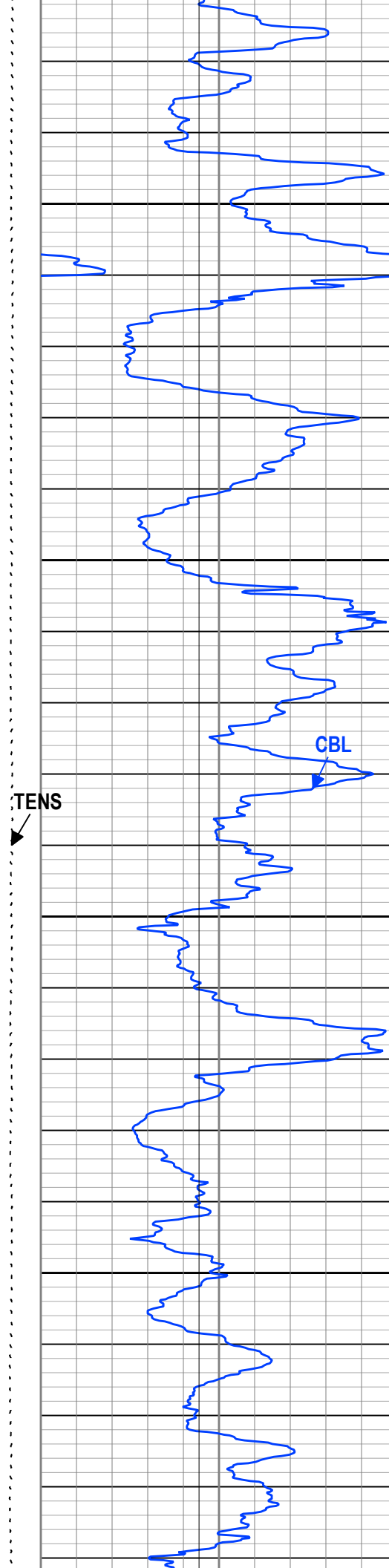
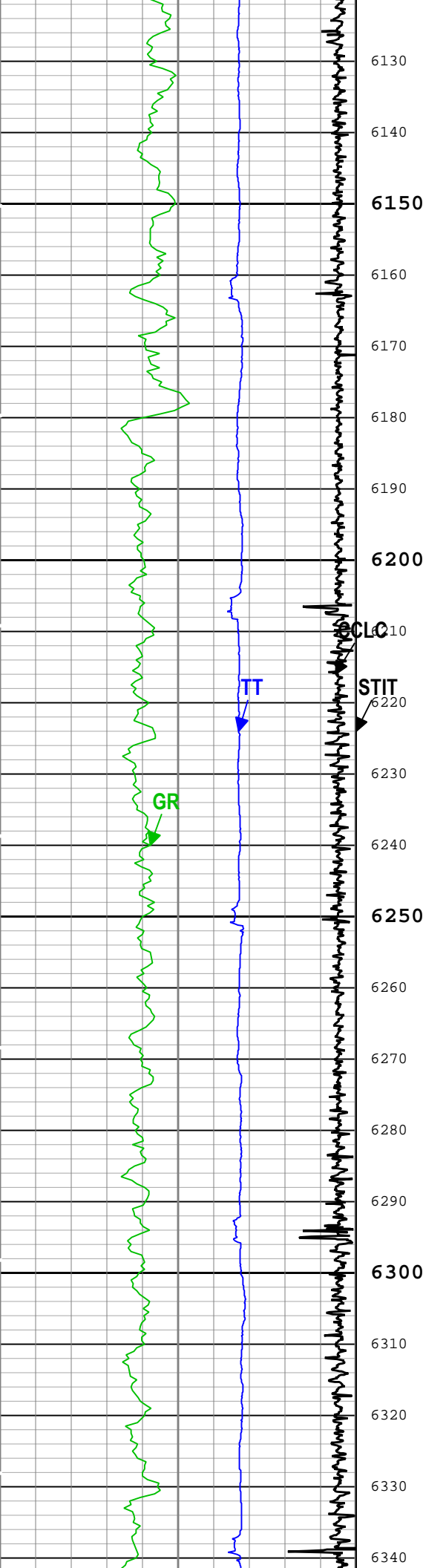




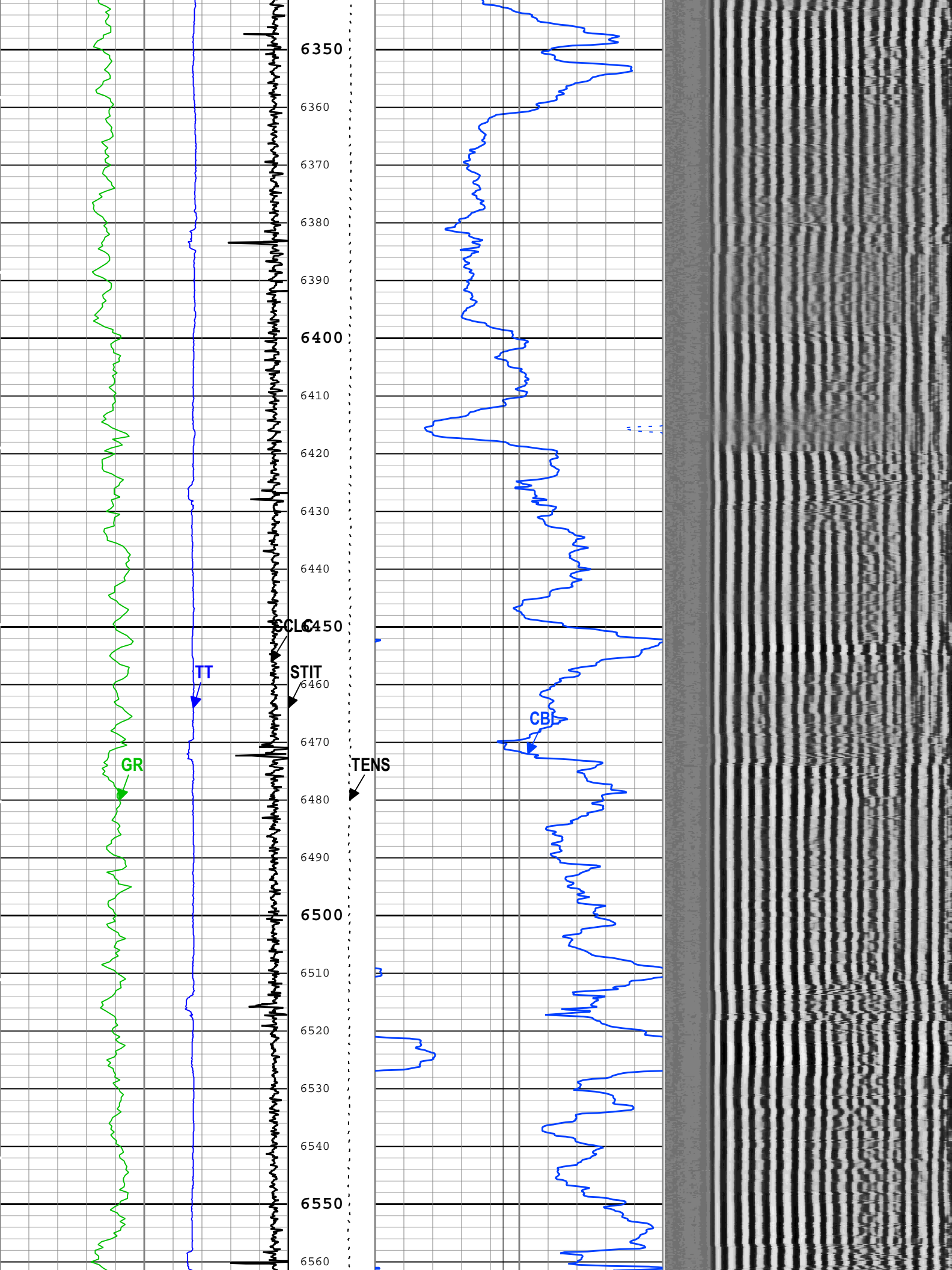


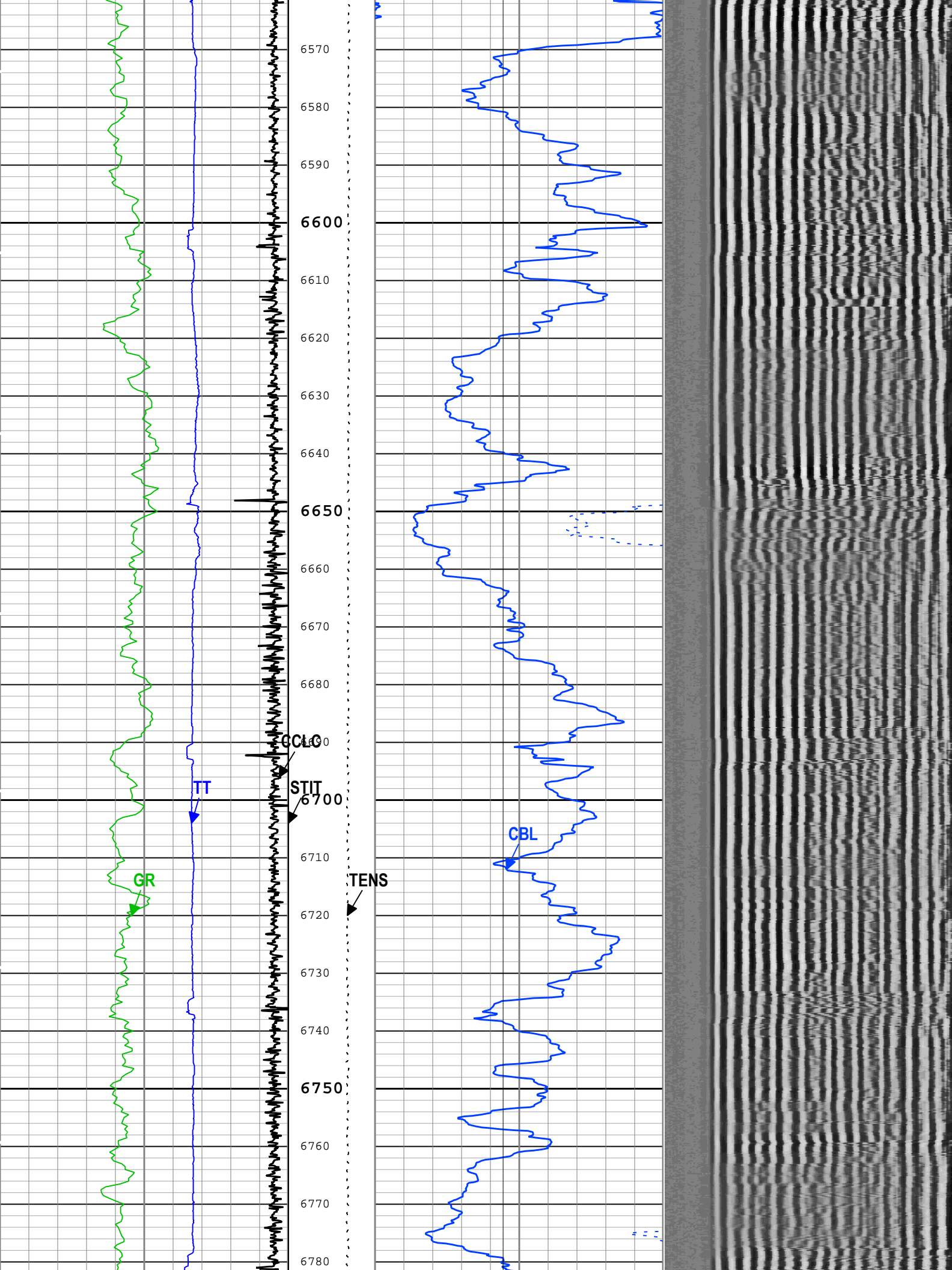




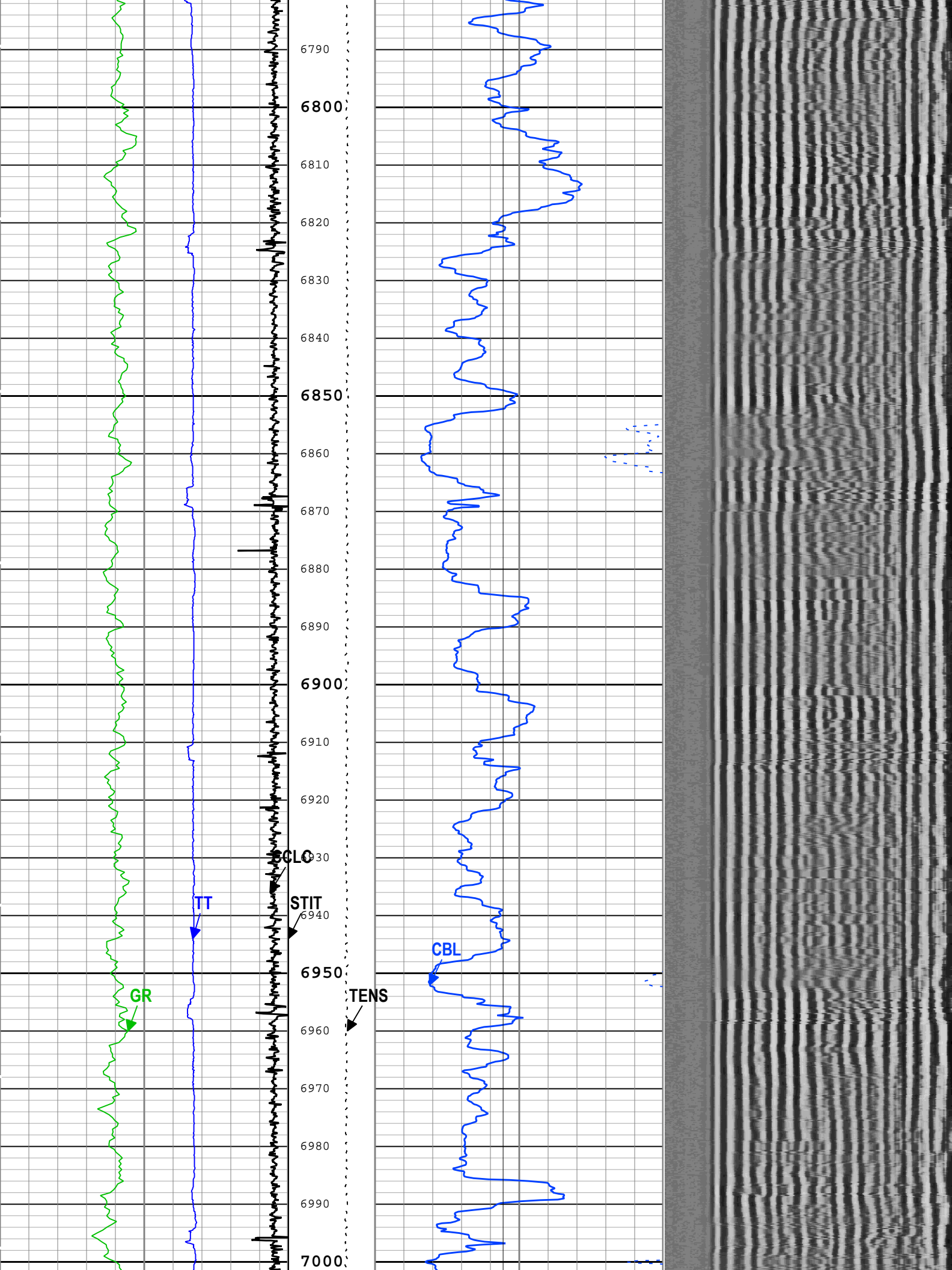


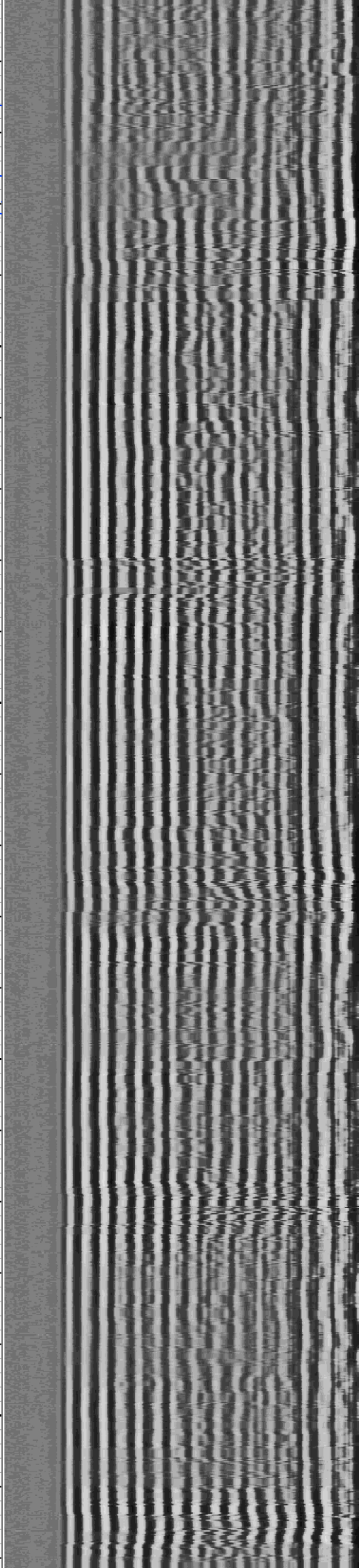
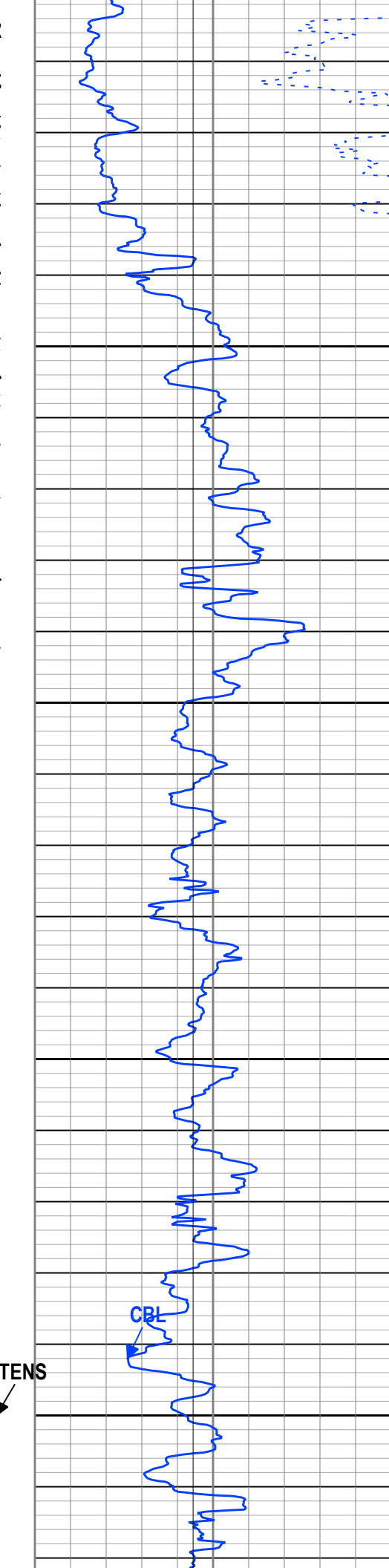
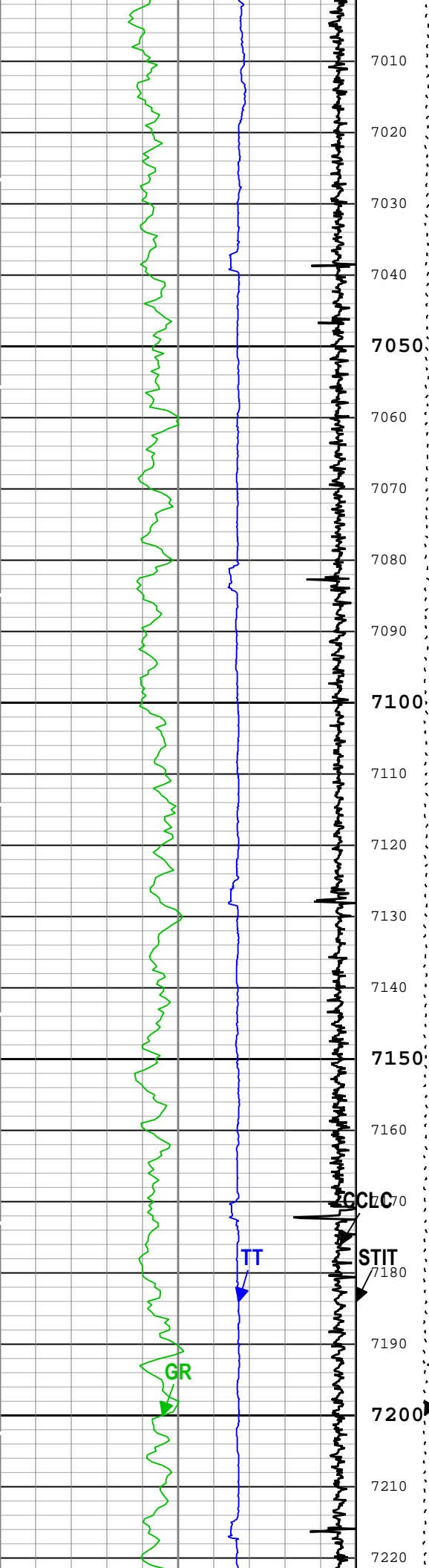




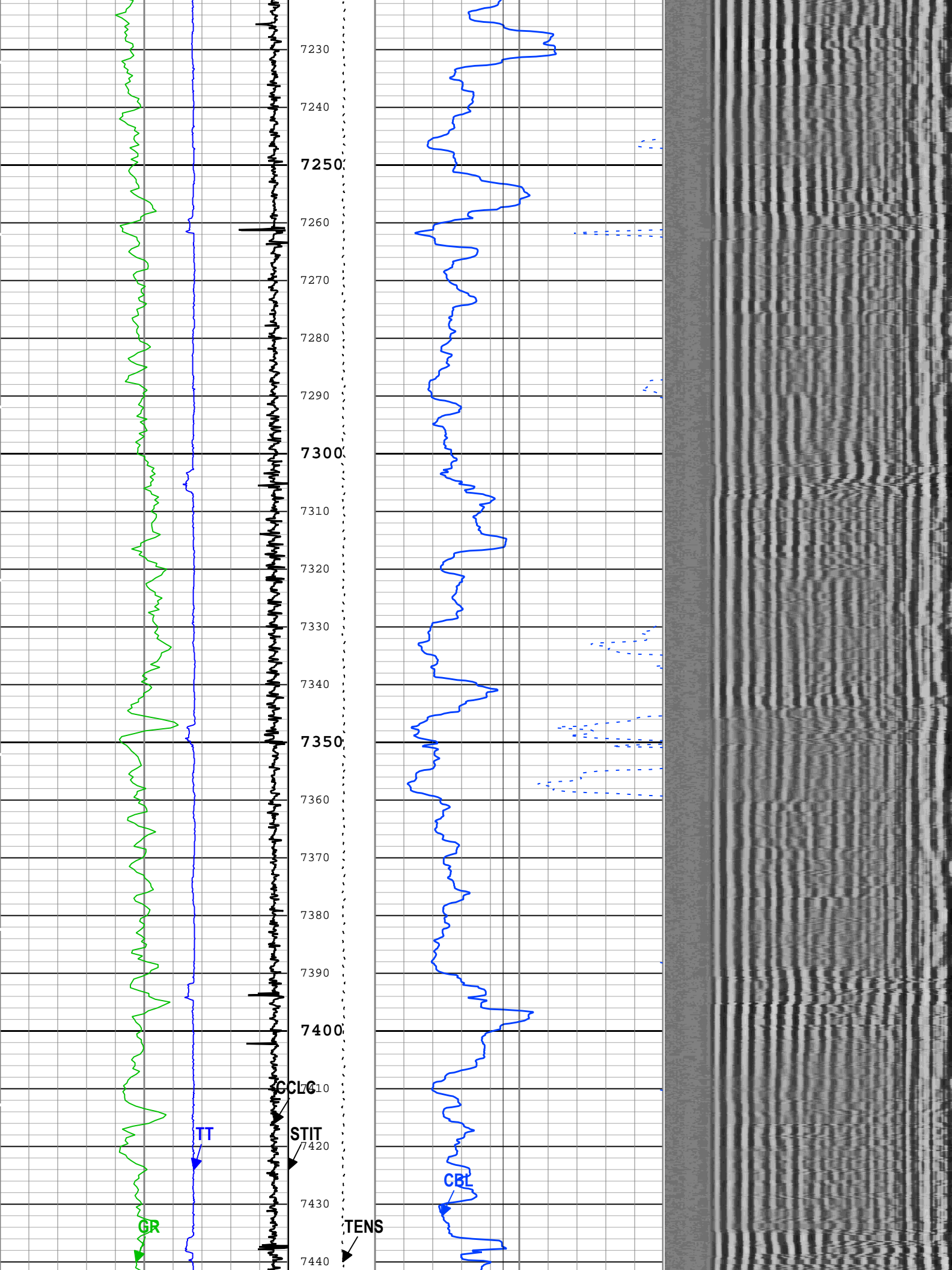


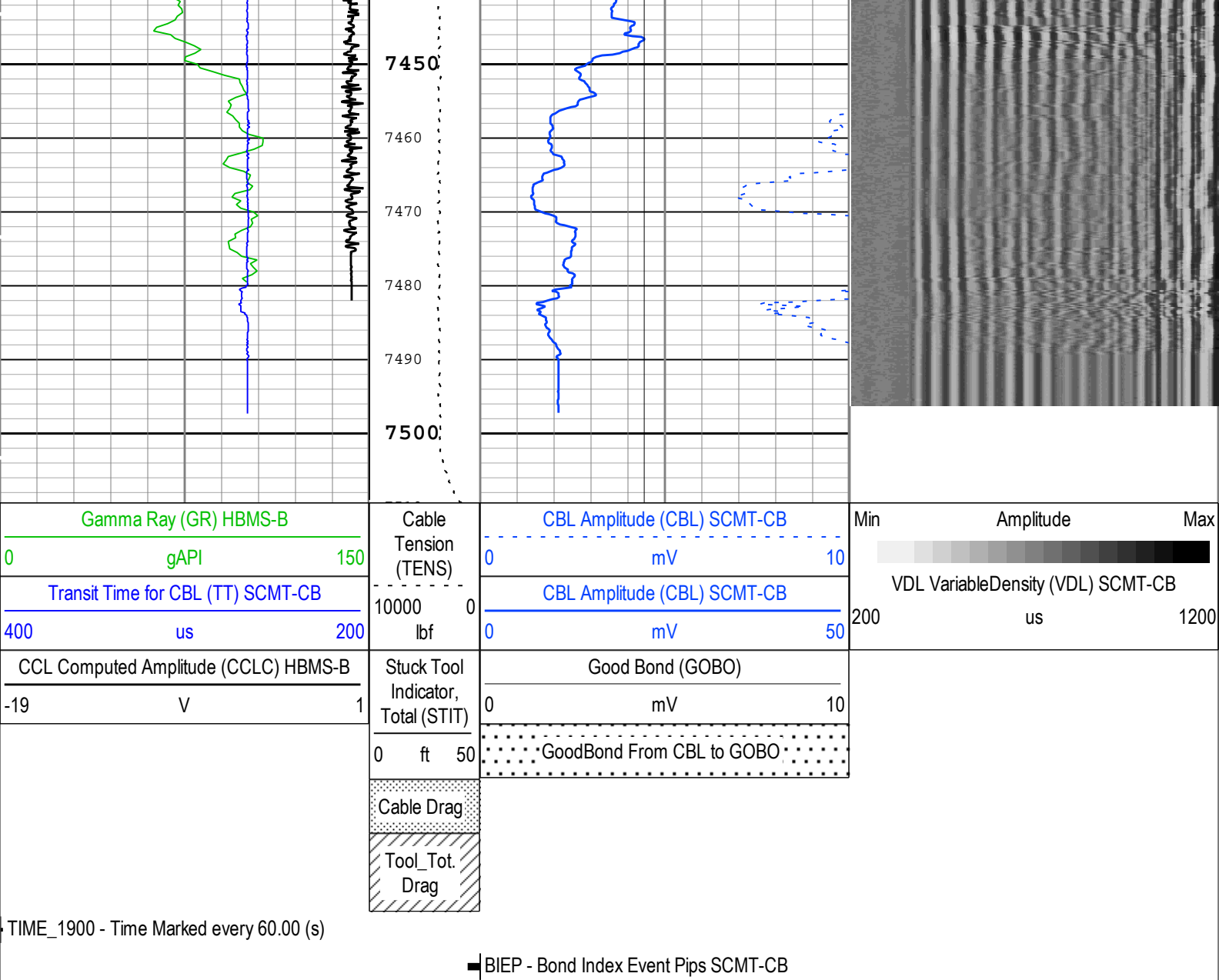












Description: Sonic CBL with VDL   Format: Log ( Sonic CBL with VDL )   Index Scale: 5 in per 100 ft   Index Unit: ft   Index Type: Measured Depth   Creation Date: 20-Sep-2015 15:52:01

## Channel Processing Parameters

Run 1: Parameters				
Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	220	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-CB	253	us
CBLG	CBL Gate Width	SCMT-CB	40	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-CB	72	mV
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
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	1	

## 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

## Calibration Report

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

## Primary Equipment :

Slim Cement Mapping Sonde

SCMS-CB

8212

## CBL and MAP Amplitude Normalization - Measurements

Master (File): 16:25:58 17-Sep-2015

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	----	----	----	----	

Raw Amplitude (at 270 degree) - 0							
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		

### CBL and MAP Amplitude Adjustment - Measurements

Before (Measured): 17:39:11 17-Sep-2015							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Amplitude	mV	Before			23.98		
Average MAP Amplitude (Fluid Compensated)	mV	Before			52.13		
Measurement Depth	ft	Before			1839.49		

### CBL and MAP Amplitude Adjustment - Coefficients

Before (Measured): 17:39:11 17-Sep-2015							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Adjustment Factor - 0		Before	-----	-----	-----	-----	
CBL LQC Reference Amplitude in Free Pipe - 0	mV	Before	-----	-----	-----	-----	
MAP Adjustment Factor - 0		Before	-----	-----	-----	-----	
Depth of Before Calibration - 0	ft	Before	-----	-----	-----	-----	



Company:	Extraction Oil & Gas LLC	Schlumberger
Well:	Troudt 2	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	
Cement Bond Log		
Variable Density Log		