

Company: Extraction Oil & Gas LLC

Well: Troutd 1

Field: Wattenberg

County: Weld State: Colorado

Cement Bond Log

Variable Density Log

County:	Weld				
Field:	Wattenberg				
Location:	SHL: SESE 537' FSL & 951' FEL				
Well:	Troutd 1				
Company:	Extraction Oil & Gas LLC				
Location:		SHL: SESE 537' FSL & 951' FEL	Elev.:	K.B.	5096.00 ft
		Section 32, Township 2N, Range 67W		G.L.	5076.00 ft
		Lat: 40.089064, Long: -104.908715		D.F.	5095.00 ft
		Permanent Datum:	Ground Level	Elev.:	5076.00 f
		Log Measured From:	Kelly Bushing	20.00 ft	above Perm.Datum
		Drilling Measured From:	Kelly Bushing		
API Serial No.		Section:	Township:	Range:	
05-123-41433-00		32	2N	67W	

Logging Date	20-Sep-2015		
Run Number	Run 1		
Depth Driller	17976.00 ft		
Schlumberger Depth	17976.00 ft		
Bottom Log Interval	7500.00 ft		
Top Log Interval	50.00 ft		
Casing Fluid Type	Salt Brine		
Salinity			
Density	8.4 lbm/gal		
Fluid Level	8.00 ft		
BIT/CASING/TUBING STRING			
Bit Size	8.88 in		
From	0.00 ft		
To	17976.00 ft		
Casing/Tubing Size	5.5 in		
Weight	20 lbm/ft		
Grade	P110		
From	0.00 ft		
To	17976.00 ft		
Max Recorded Temperatures	218 degF		
Logger on Bottom	20-Sep-2015		16:30:00
Unit Number	Location:	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.

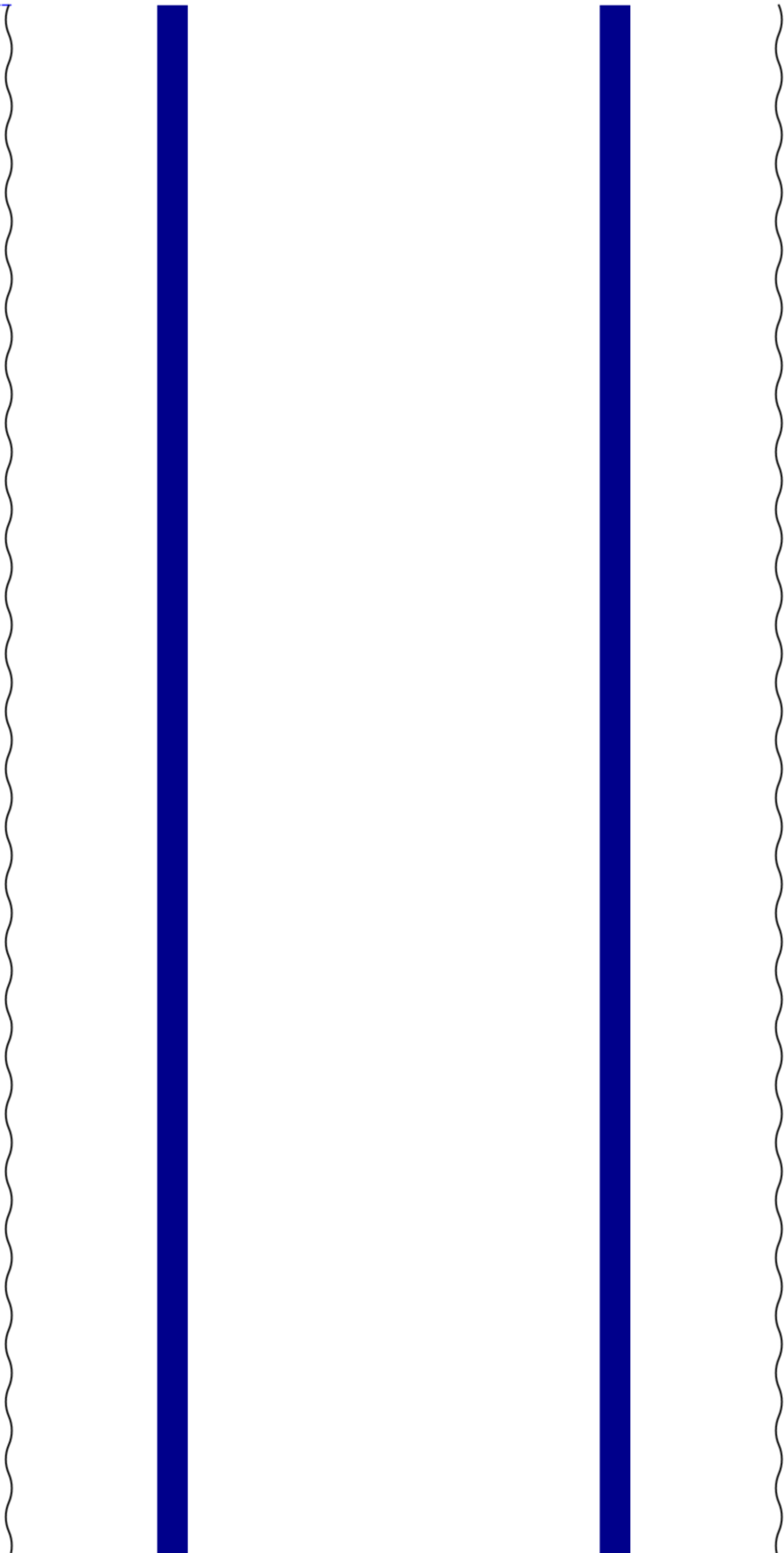
Contents

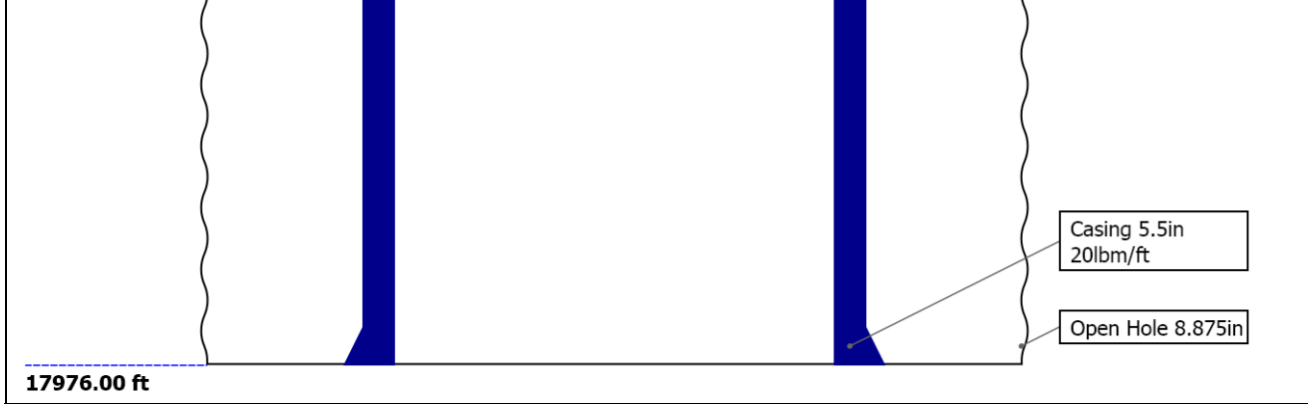
- 1. Header
- 2. Disclaimer
- 3. Contents
- 4. Well Sketch
- 5. Borehole Size/Casing/Tubing Record
- 6. Borehole Fluids
- 7. Remarks and Equipment Summary
- 8. Depth Summary
- 9. Survey Record
- 10. Run 1
 - 10.1 Integration Summary
 - 10.2 Software Version
 - 10.3 Composite Summary
 - 10.4 Log (SCMT_VDL_Image)
 - 10.5 Parameter Listing
- 11. Run 1
 - 11.1 Integration Summary

- 11.2 Software Version
- 11.3 Composite Summary
- 11.4 Log (Sonic CBL with VDL)
- 11.5 Parameter Listing
- 12. Calibration Report
- 13. Tail

Well Sketch

Driller Depth
0.00 ft





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	8.875					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	17976					
Bottom Logger (ft)	17976					
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)	17976					
Bottom Logger (ft)	17976					

Borehole Fluids

Parameter(unit)	Run 1					
Fluid Type	Water					
Fluid Name	Salt Brine					
Max Recorded Temperatures (degF)	218					
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	16:30:00					
Source RMF						
RMC	Pressed					
RM @ Meas Temp (ohm.m@degF)	0.2 @ 68					
RME @ Meas Temp	0.15 @ 68					

RM @ Meas Temp (ohm.m@degF)	0.15 @ 218					
RMC @ Meas Temp (ohm.m@degF)						
RM @ BHT (ohm.m@degF)	0.07 @ 218					
RMF @ BHT (ohm.m@degF)	0.05 @ 218					
RMC @ BHT (ohm.m@degF)	NaN @ 218					
Total Solid (%)						
High Gravity Solids (%)						

Remarks and Equipment Summary

Run 1: Toolstring		Run 1: Remarks	
Equip name	Length	MP name	Offset
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	0.00
		ol String	
		Bottom	
		CQG Pre	24.56
		ssure	
		Tempera	24.56
		ture	
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		

Survey Record

Survey Calculation

Method :	Minimum Radius of Curvature	DLS Method :	Lubinski
North Reference :	True North	Total Correction Formula :	Magnetic Dec

Rig Location

Latitude :		40.089064 degrees		Longitude :		-104.90871 degrees					
Tie In Point											
Measured Depth:		0.00 ft		Inclination:		0.00 deg		Azimuth:		0.00 deg	
True Vertical Depth:		0.00 ft		North Displacement:		0.00 ft		East Displacement:		0.00 ft	

Survey Quality Index

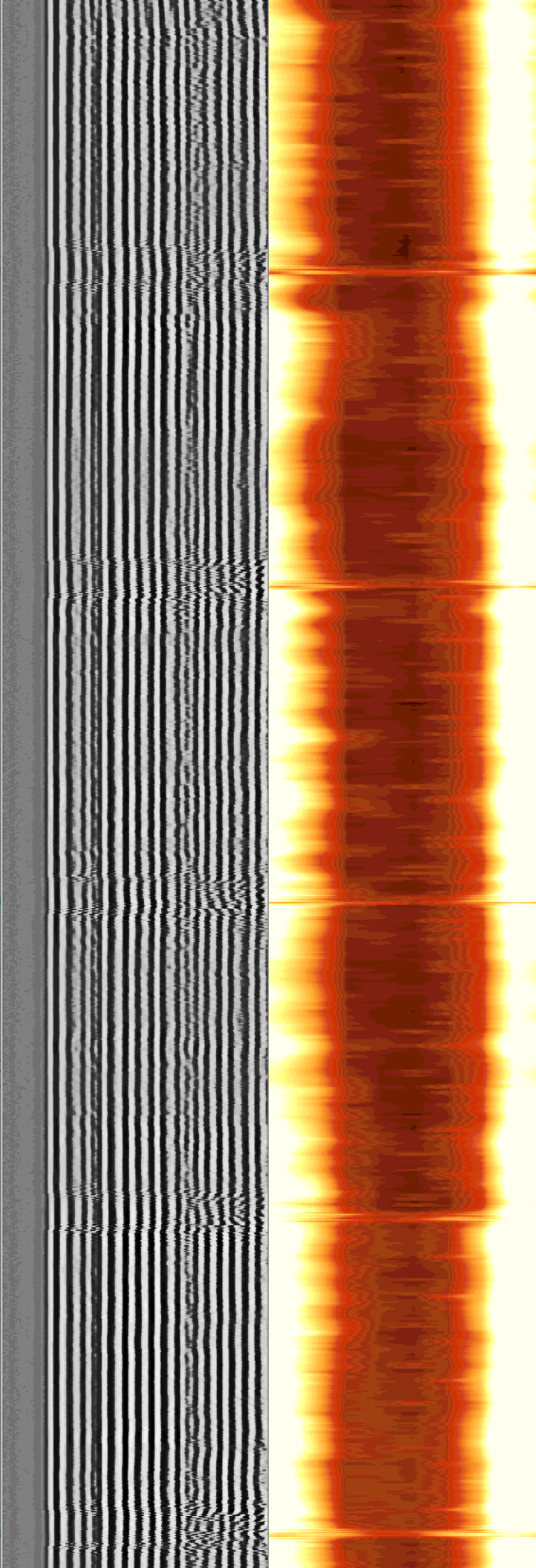
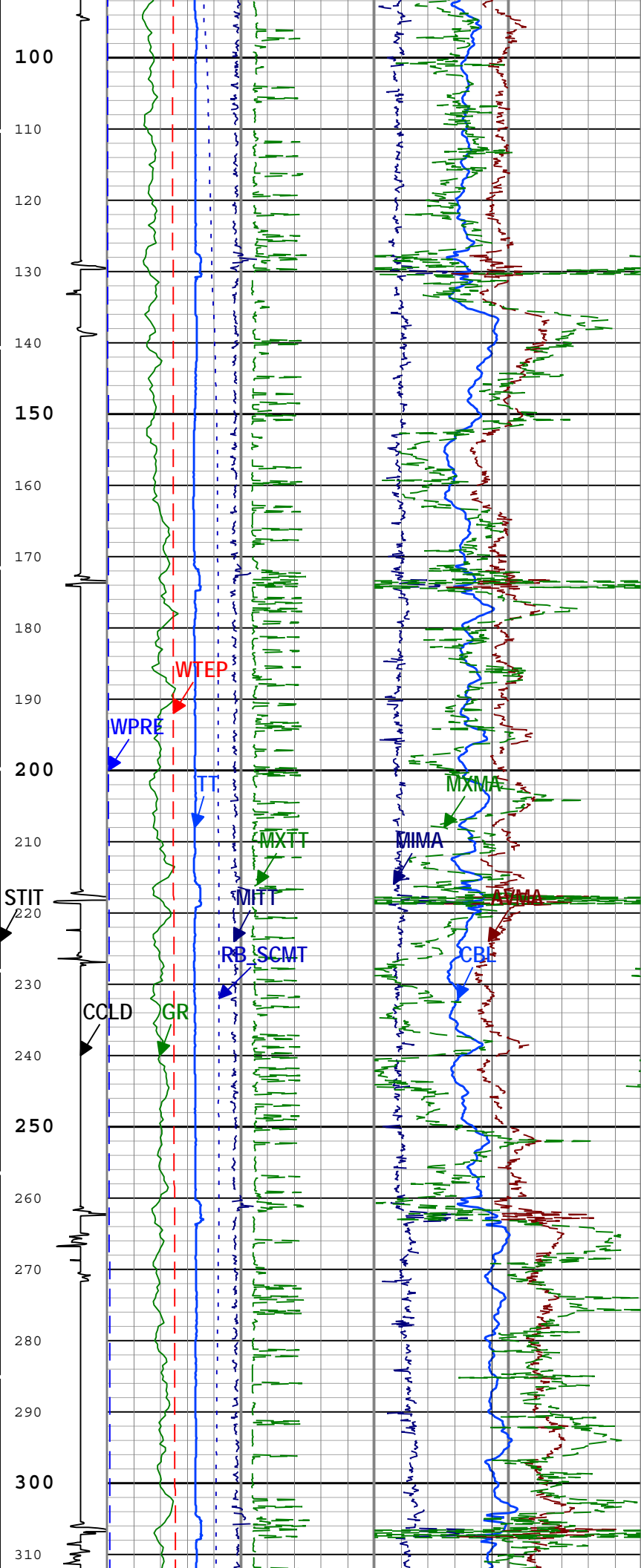
28 : Tie-In Point

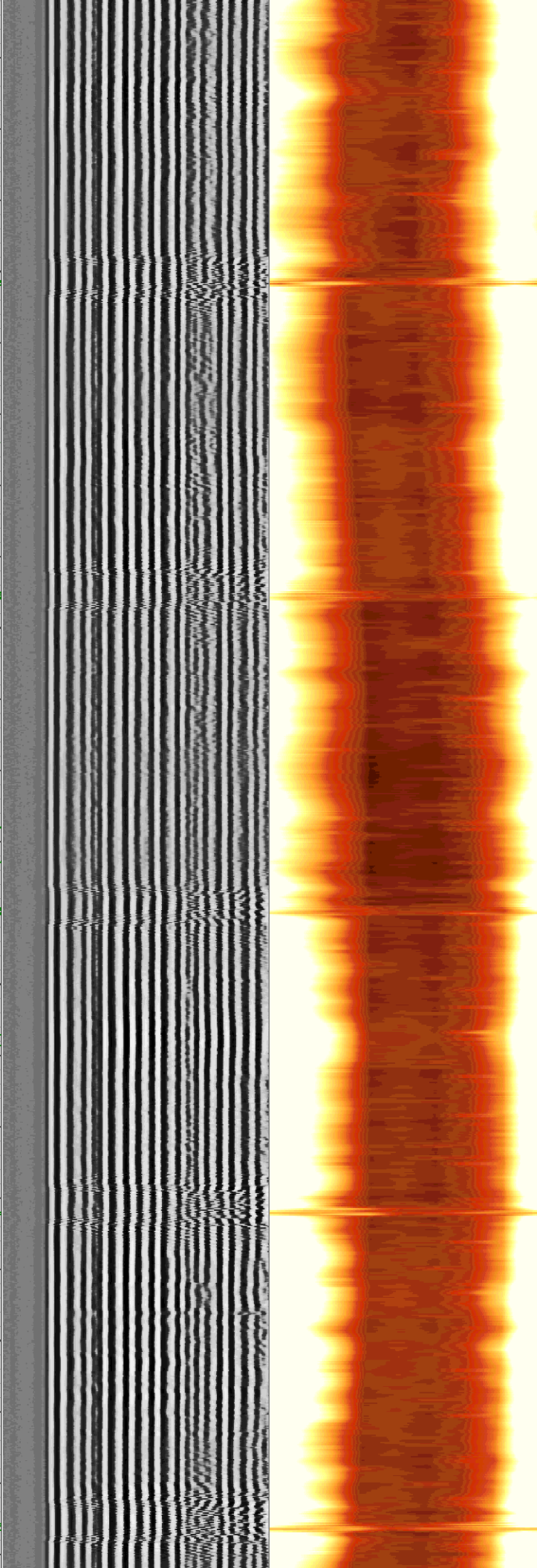
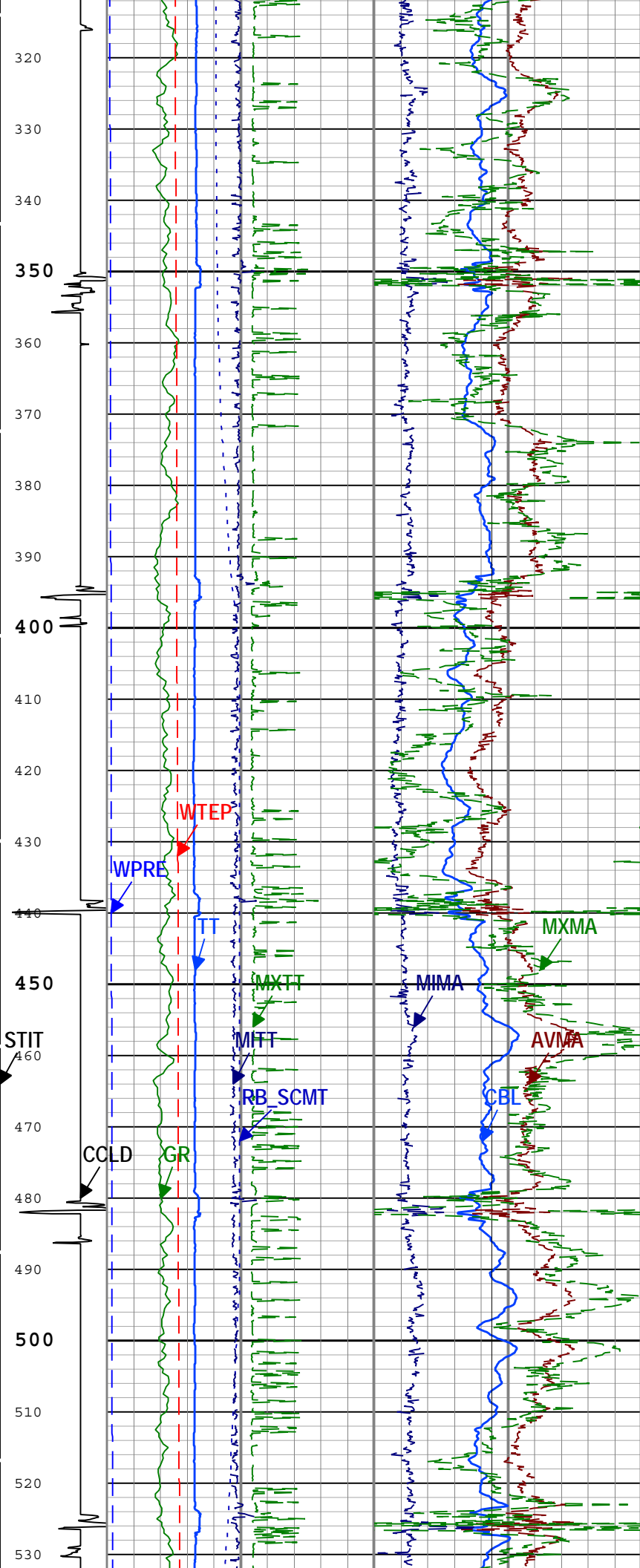
Survey Correction Index

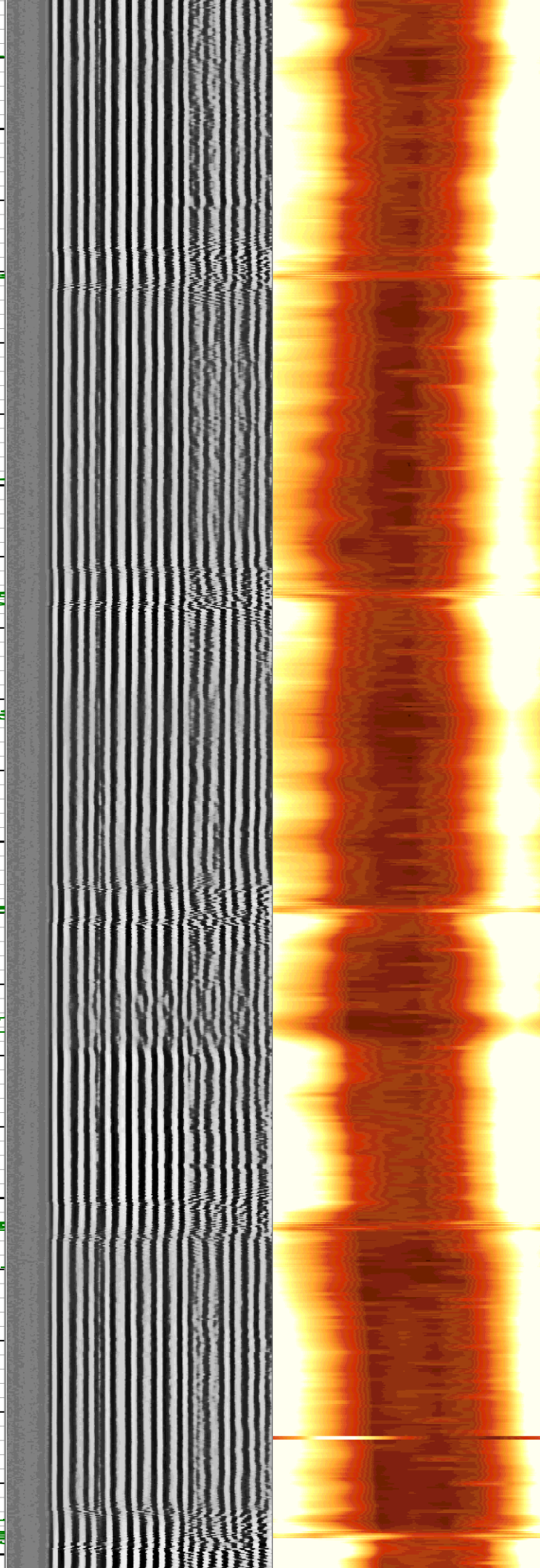
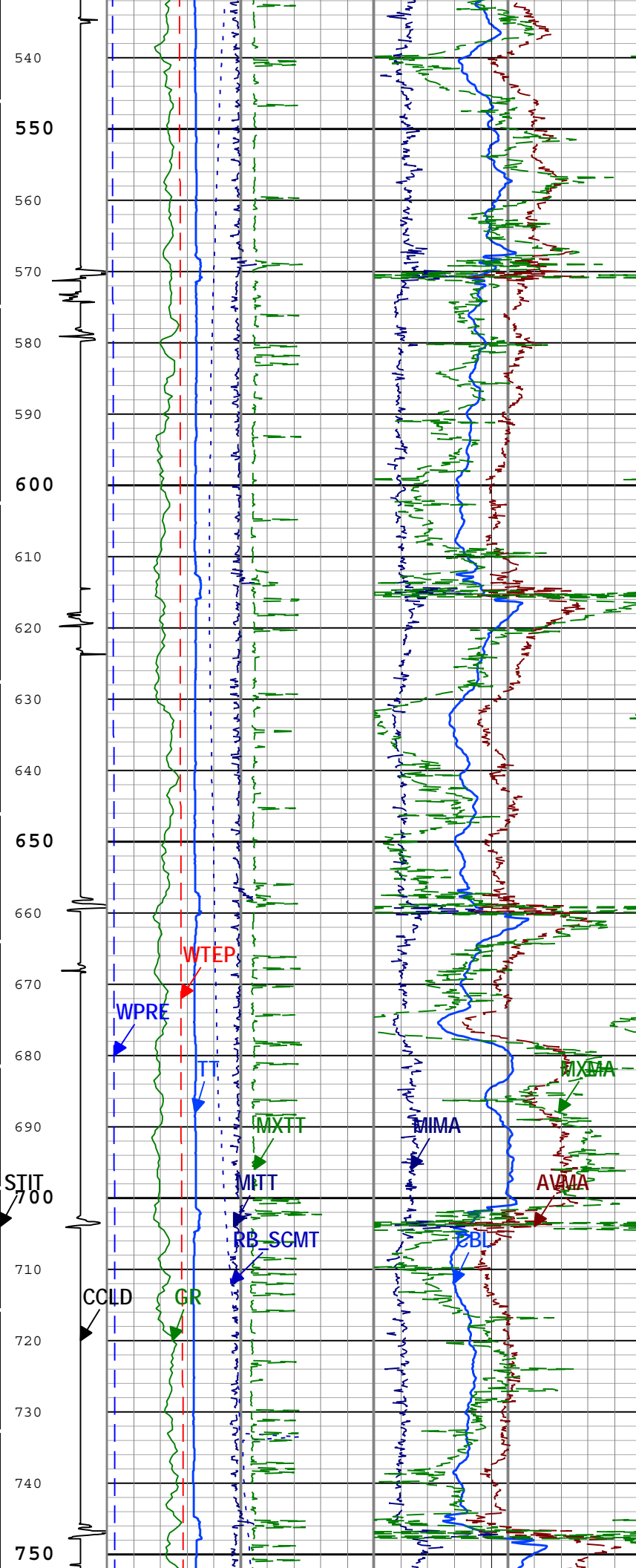
0 : No correction

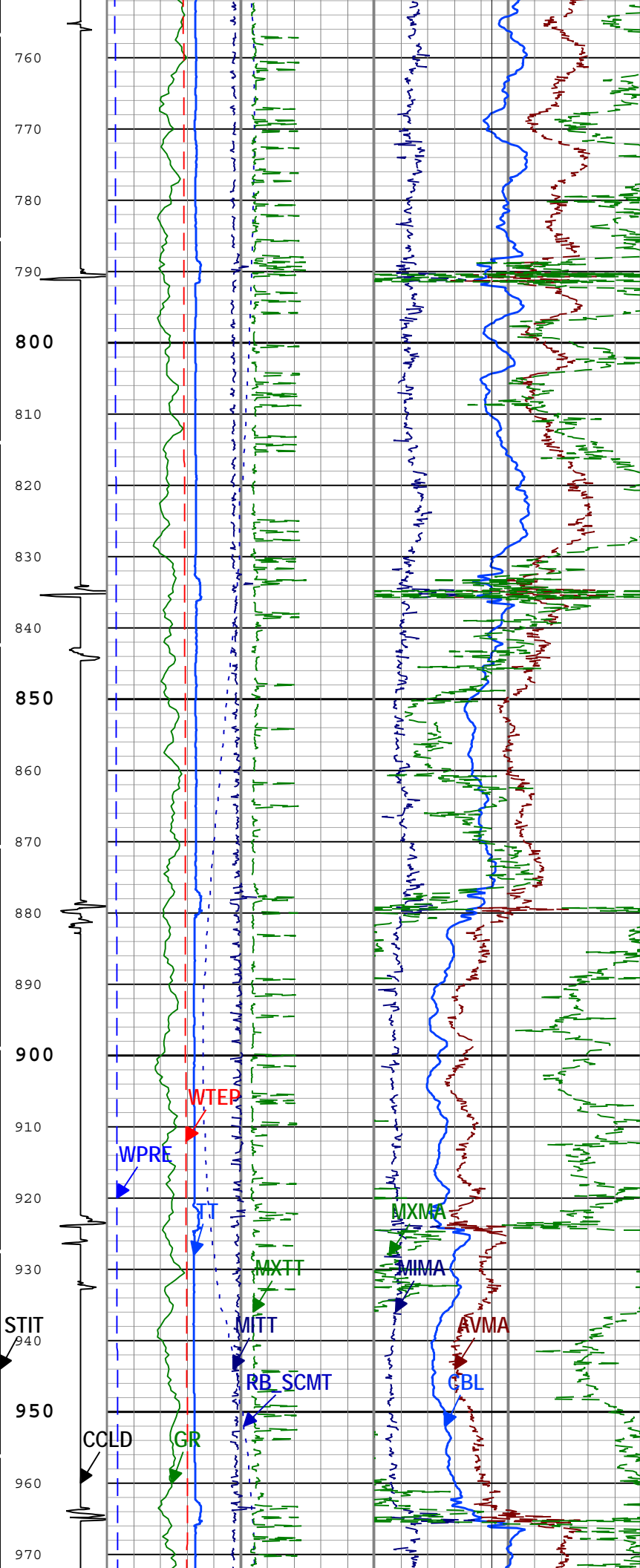
Survey Description Index

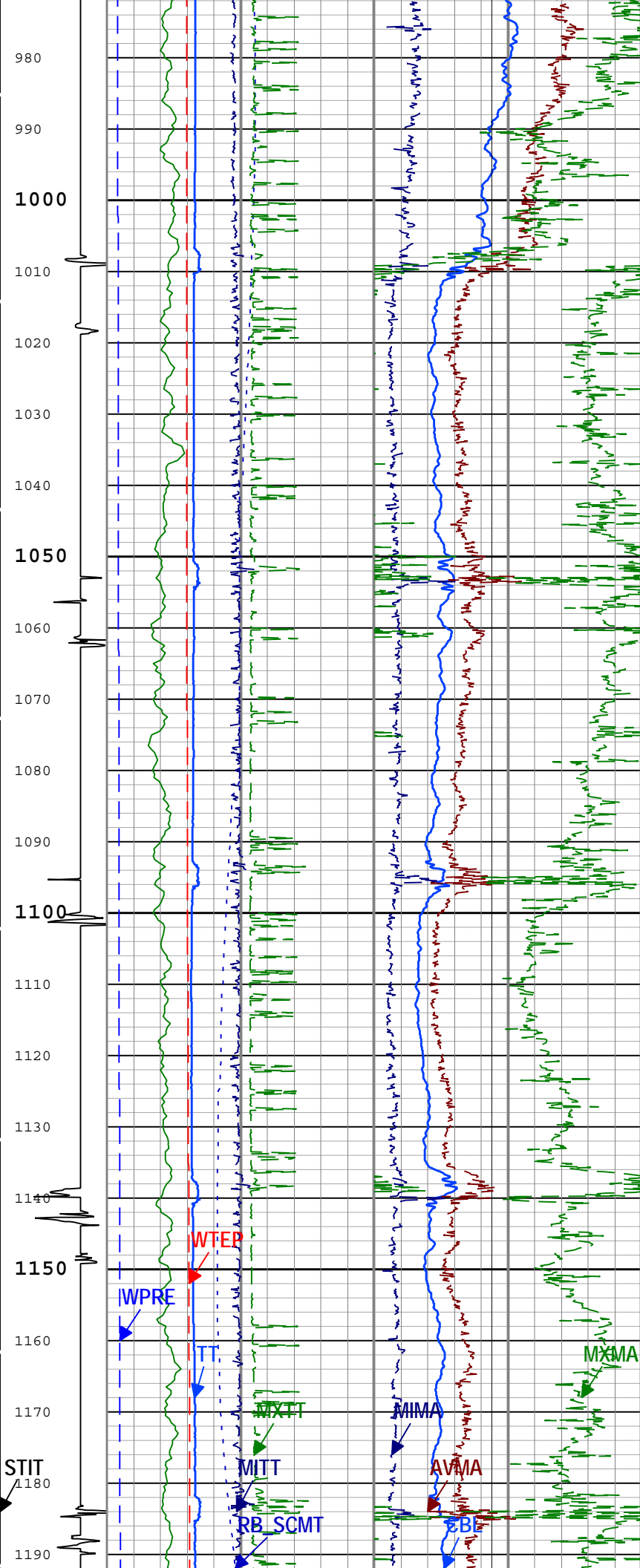
0 : Not Flagged Survey

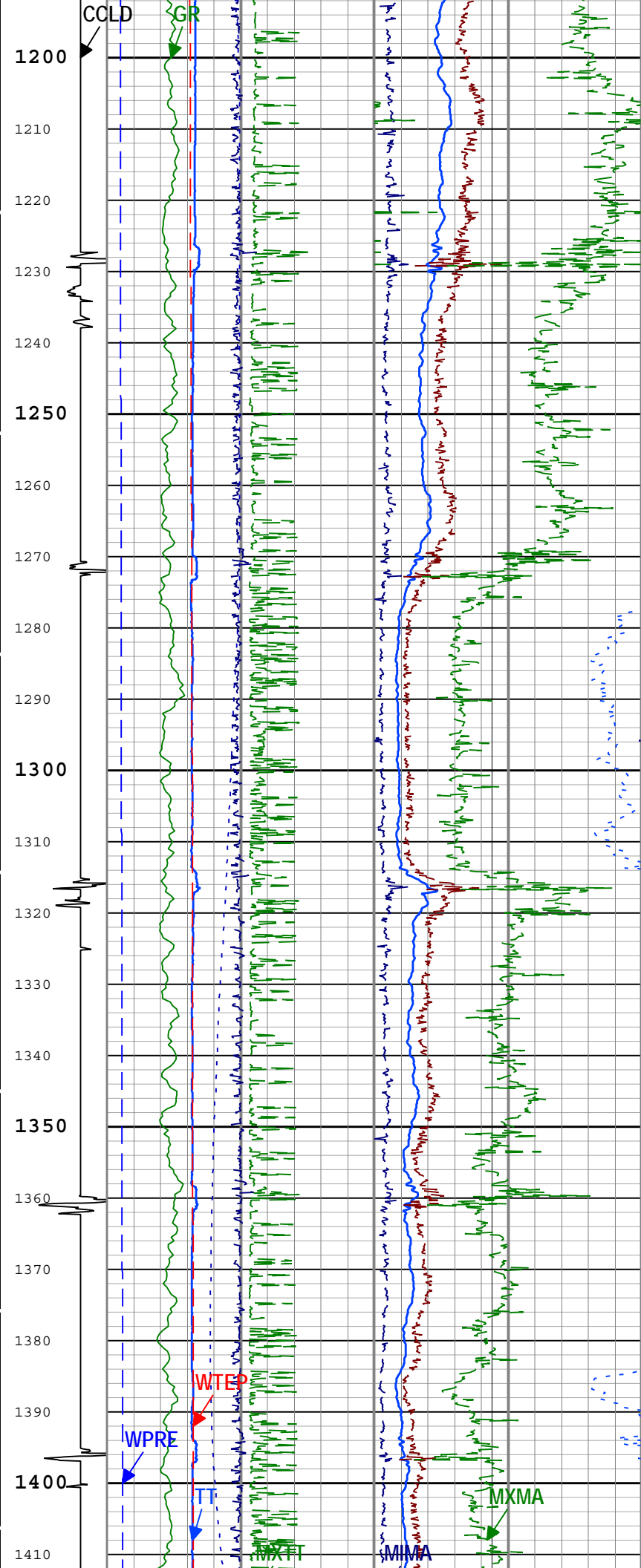


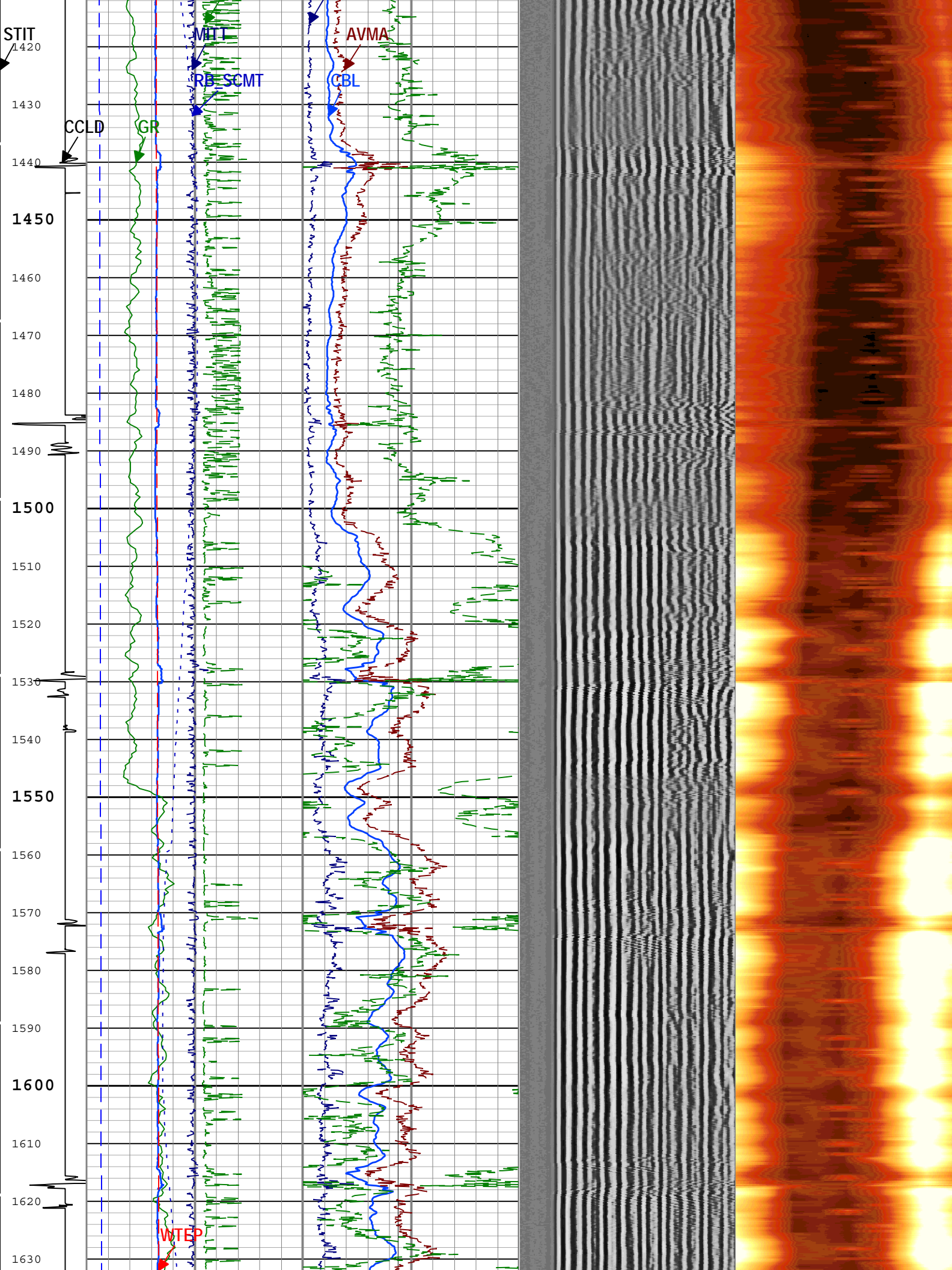


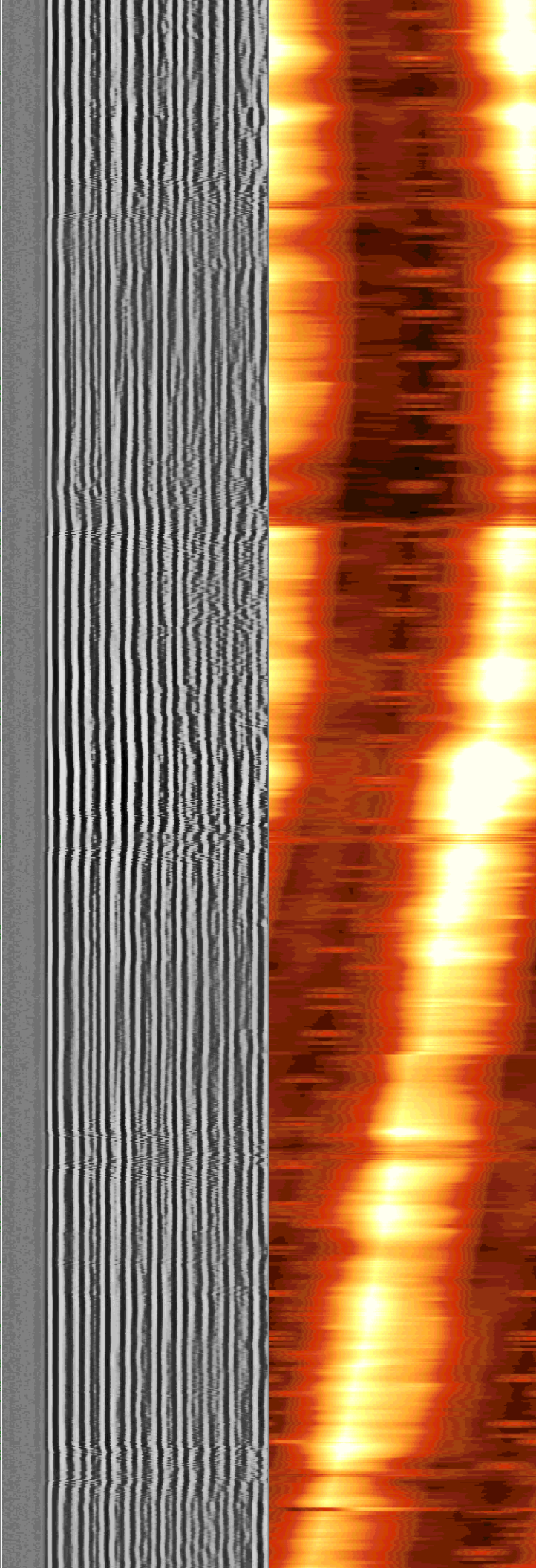
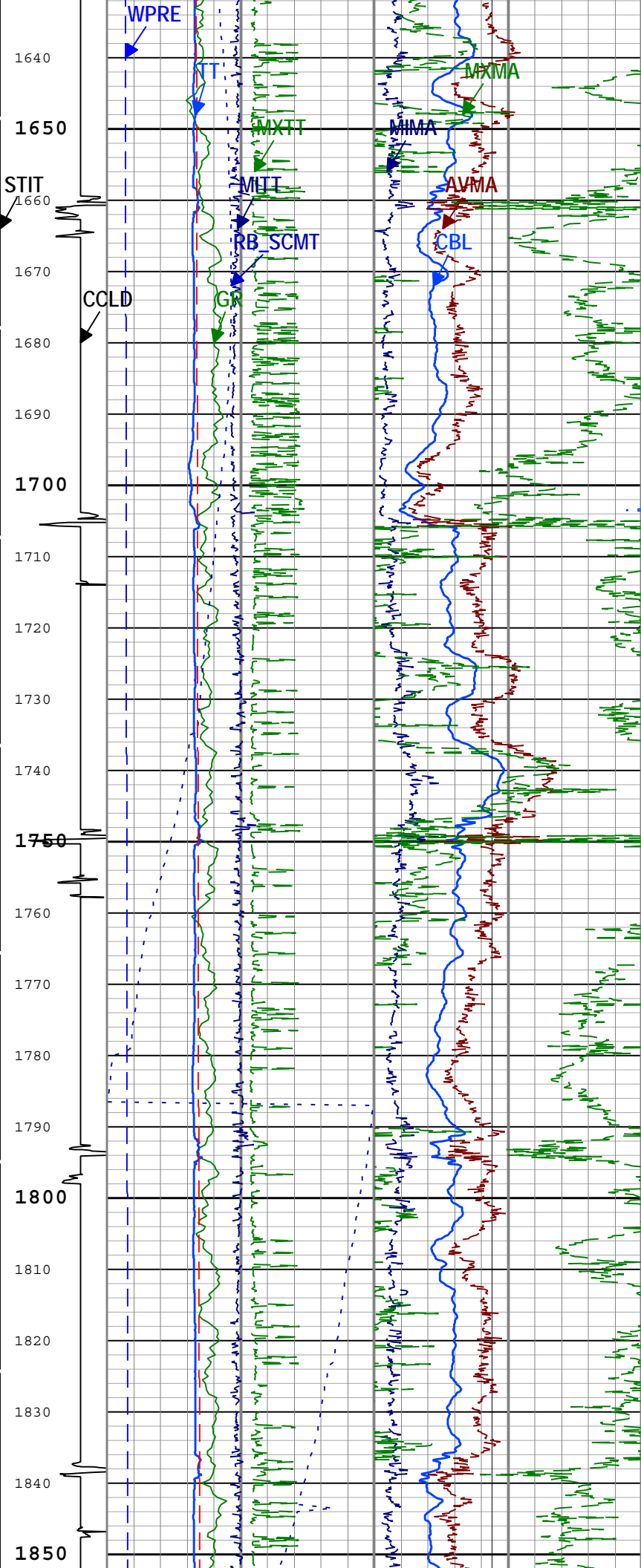


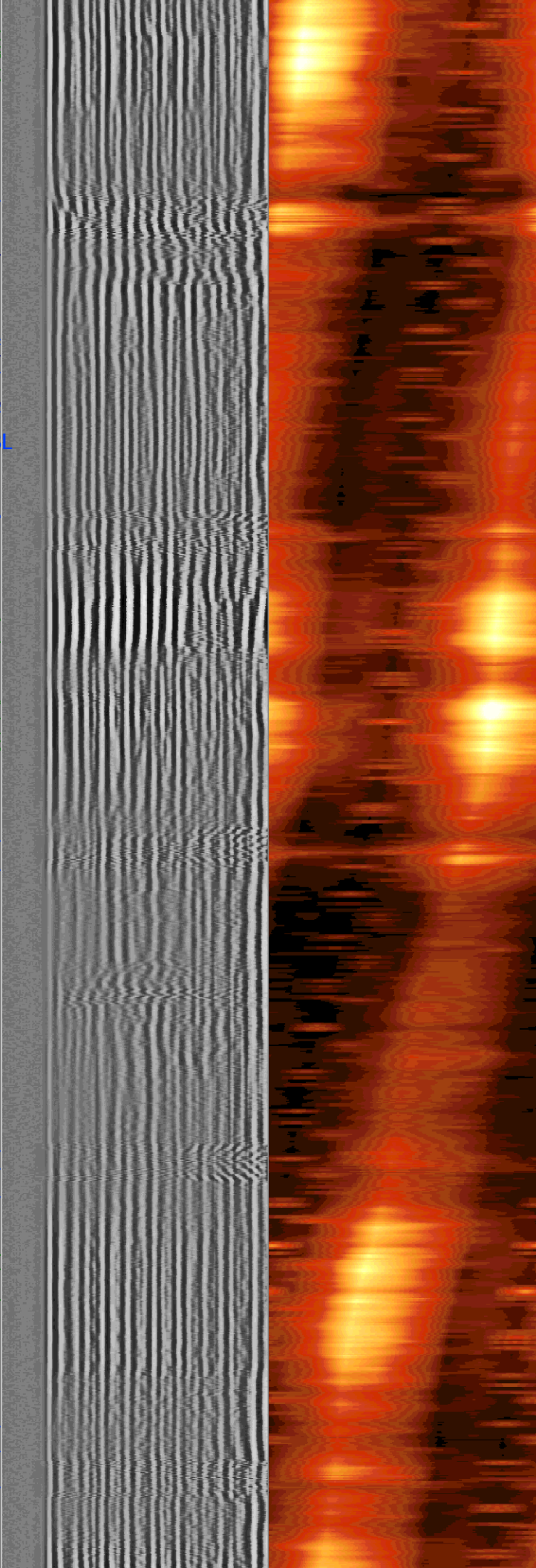
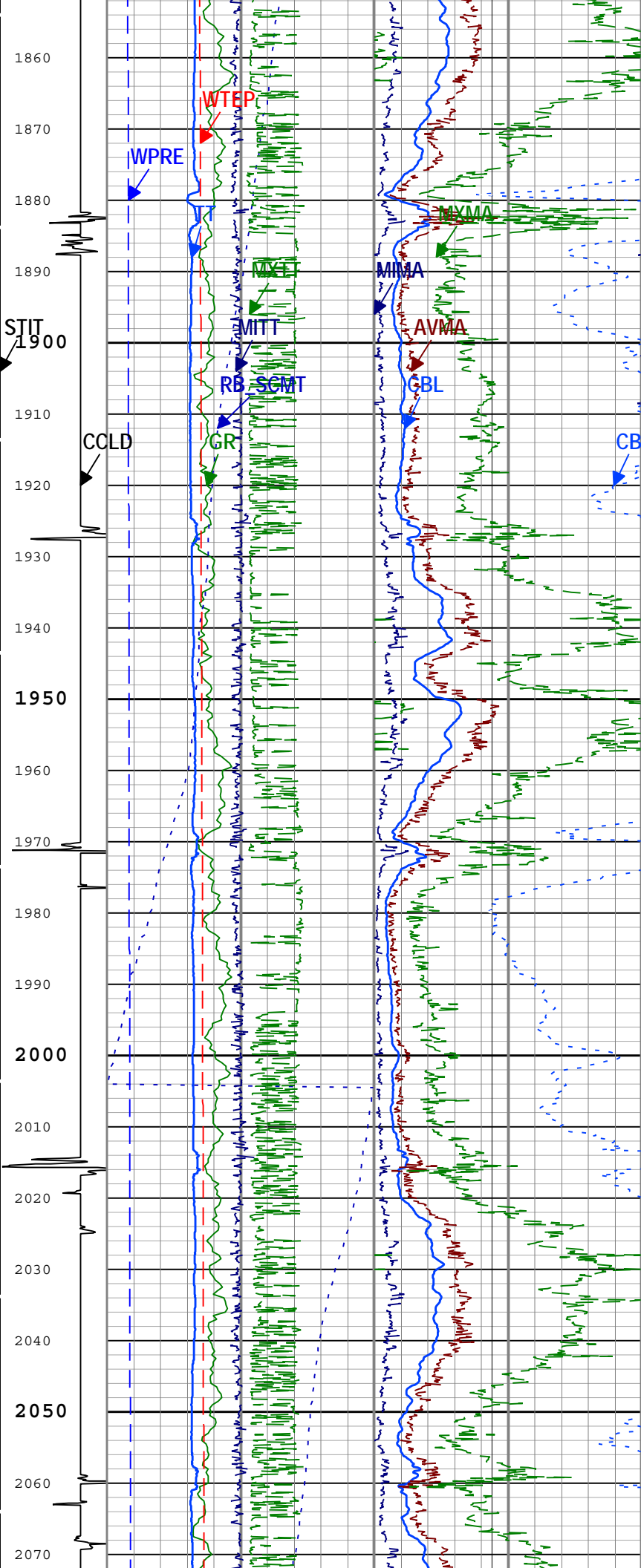


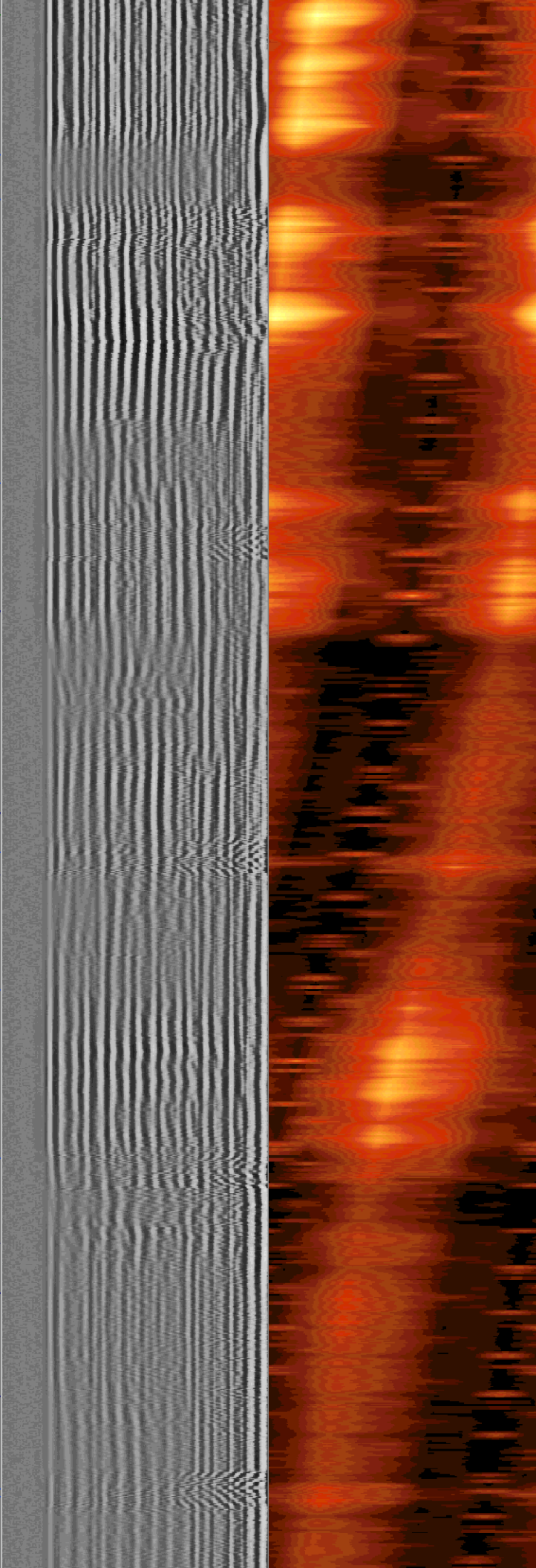
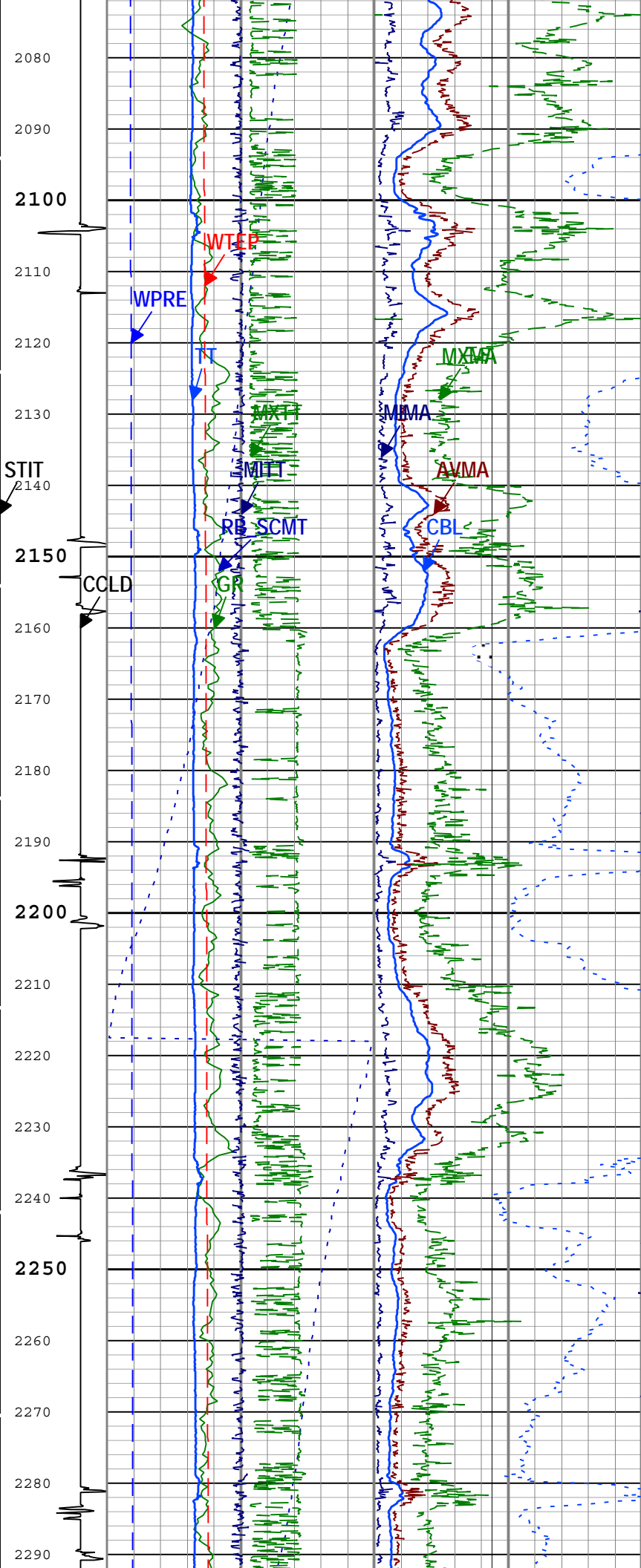


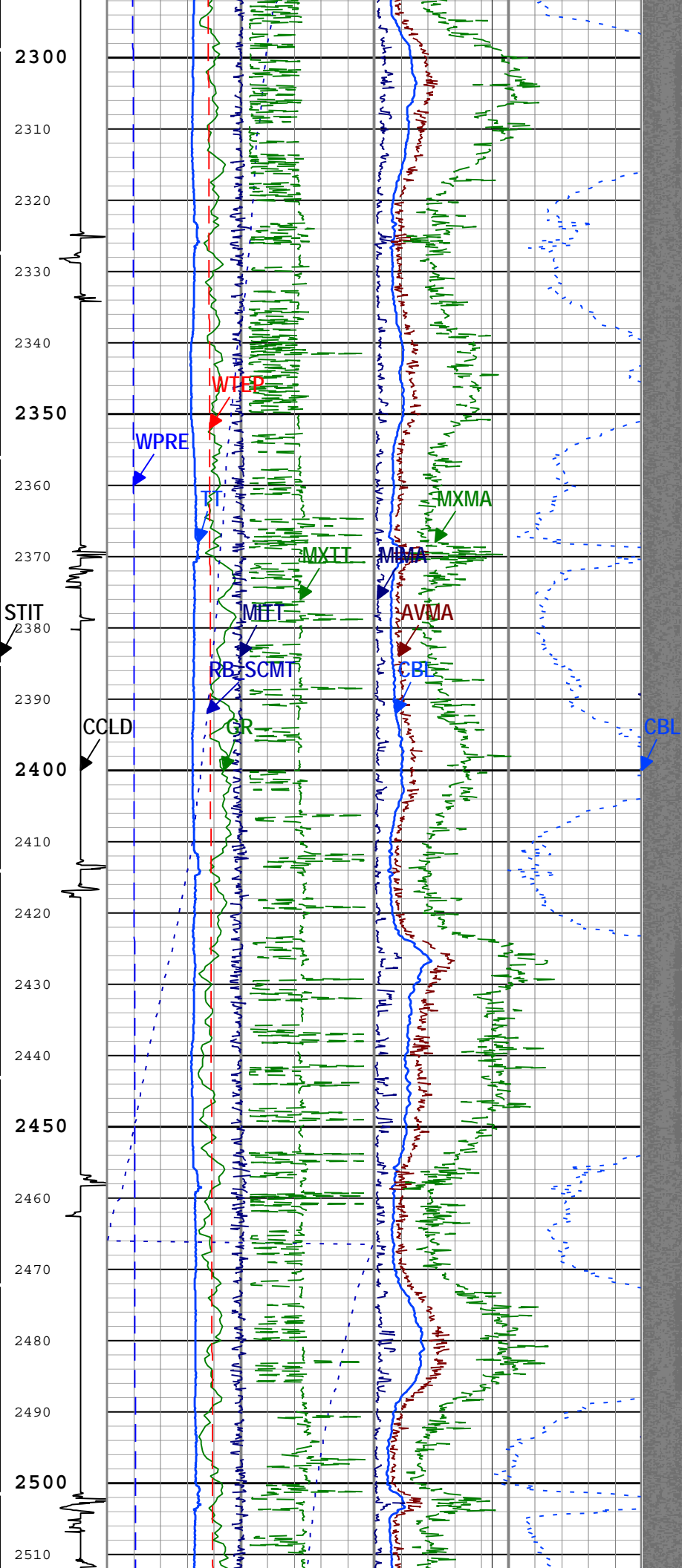


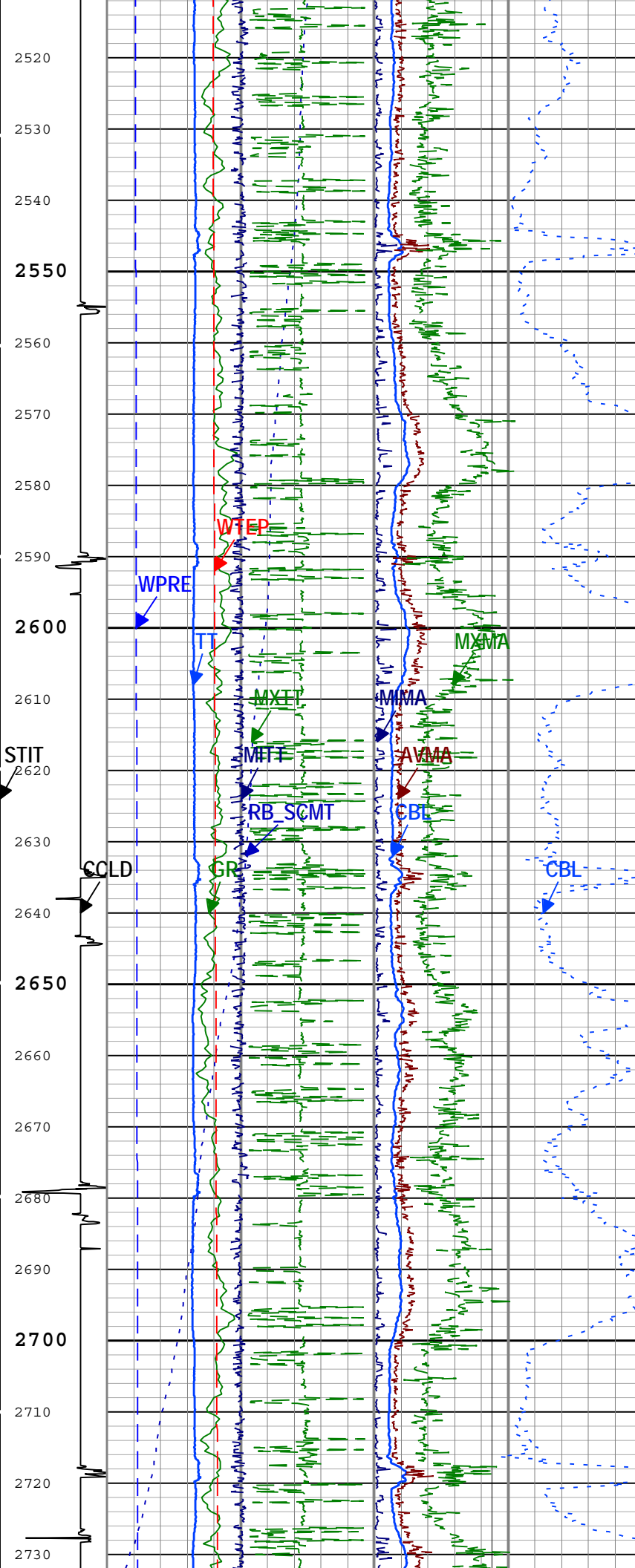


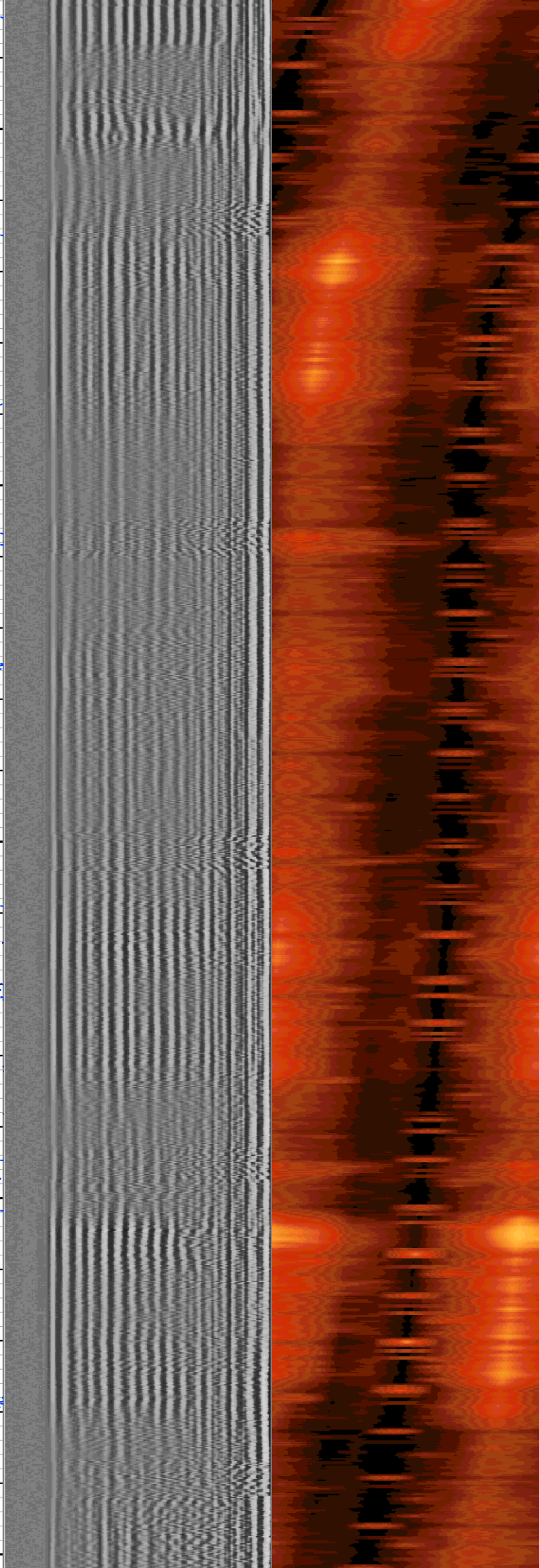
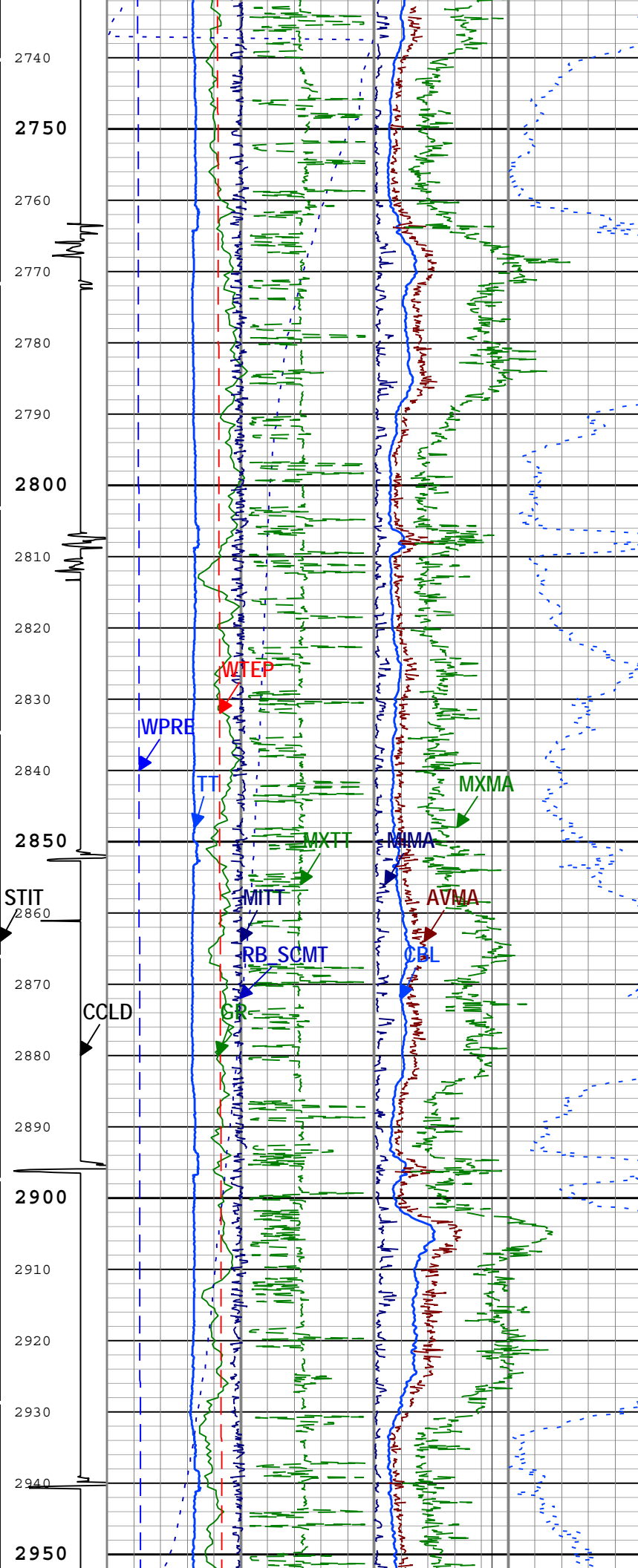


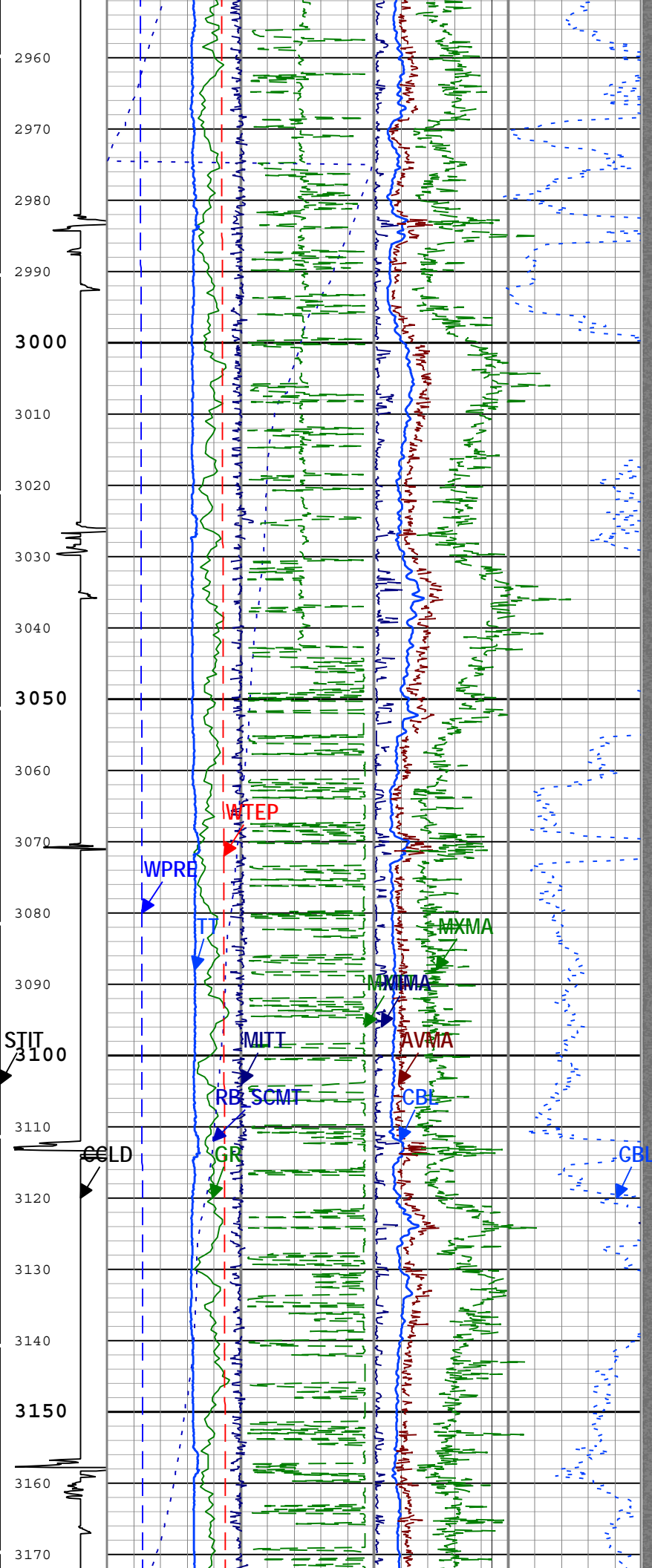


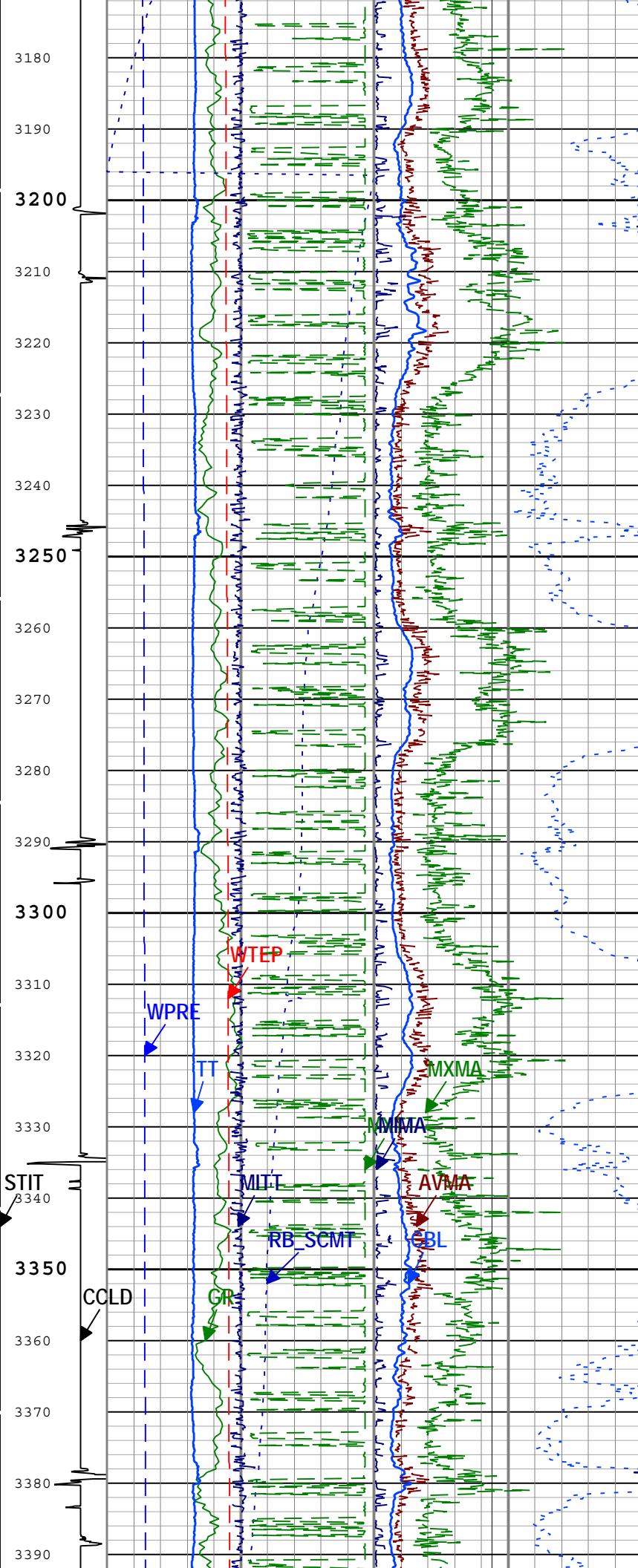


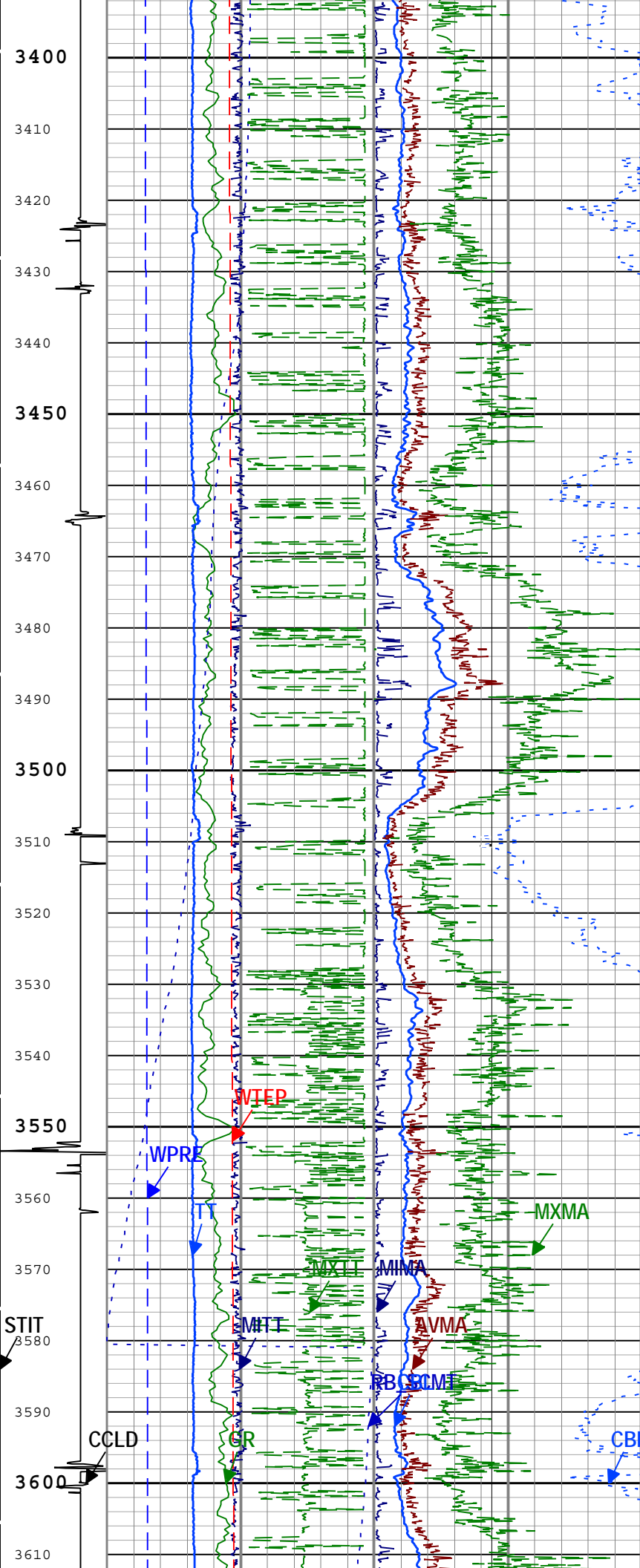


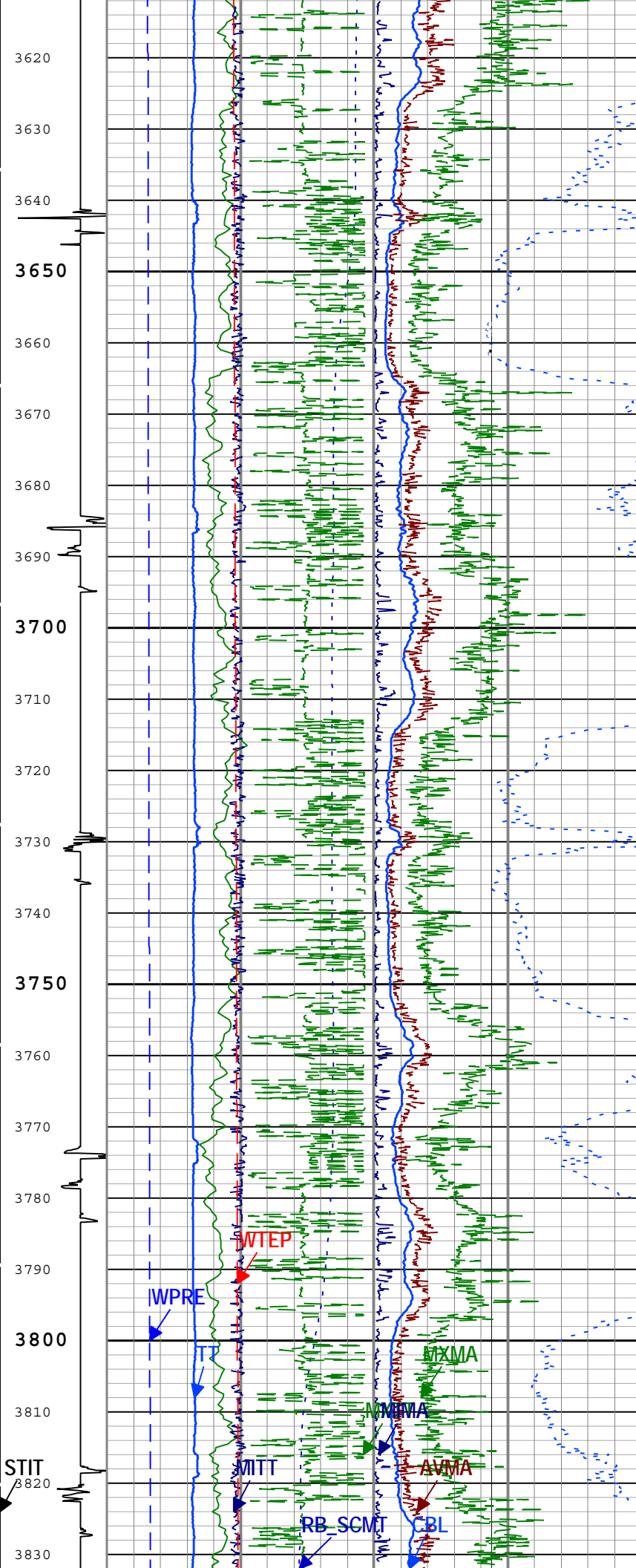


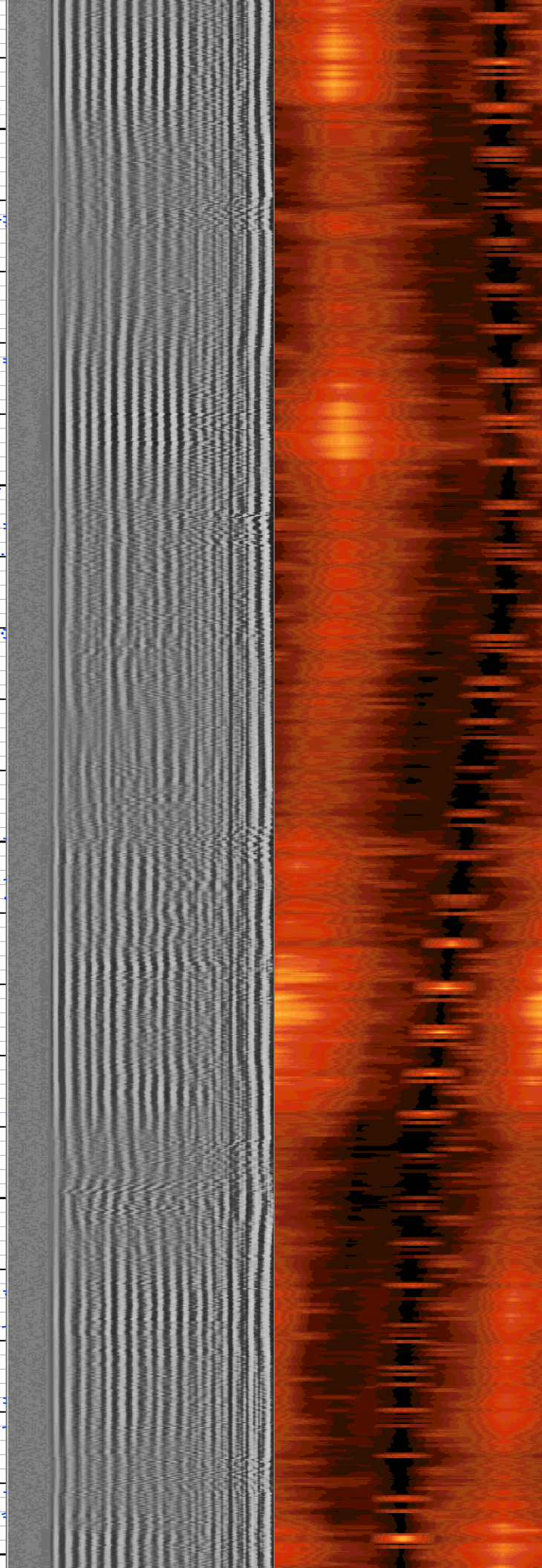
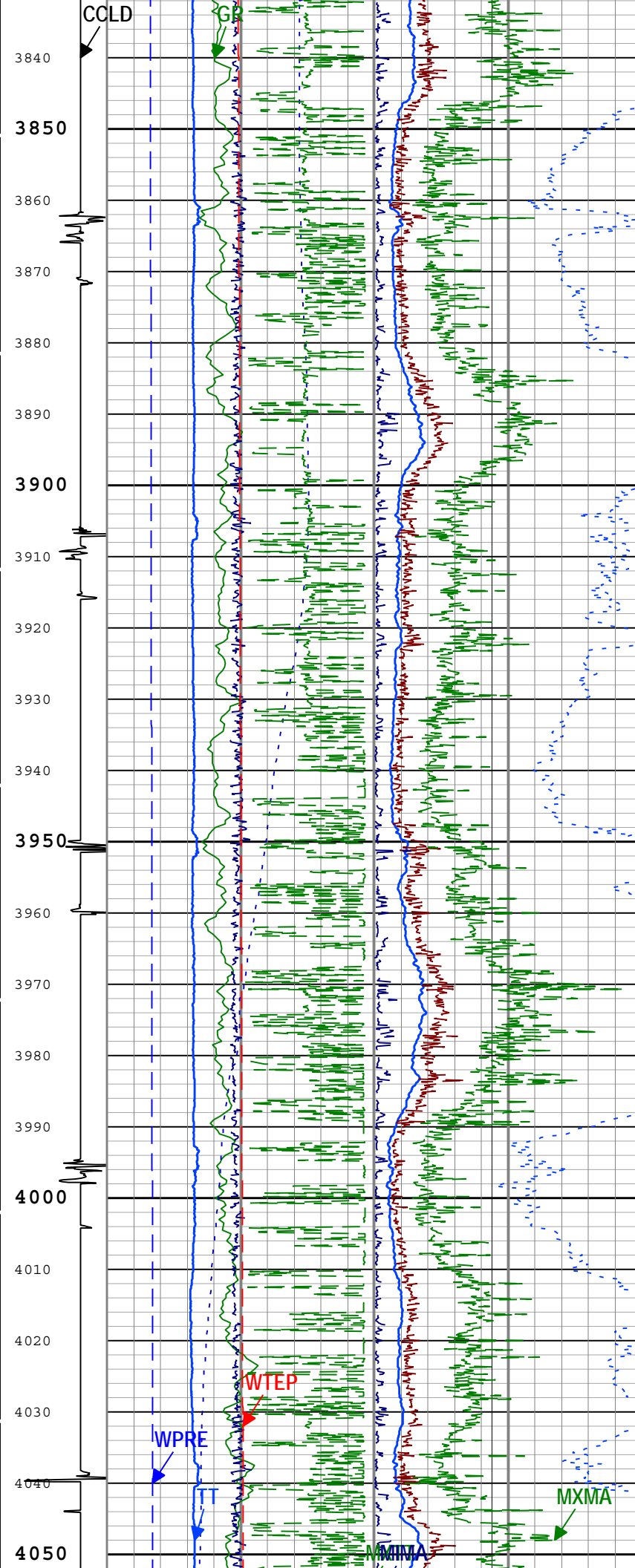


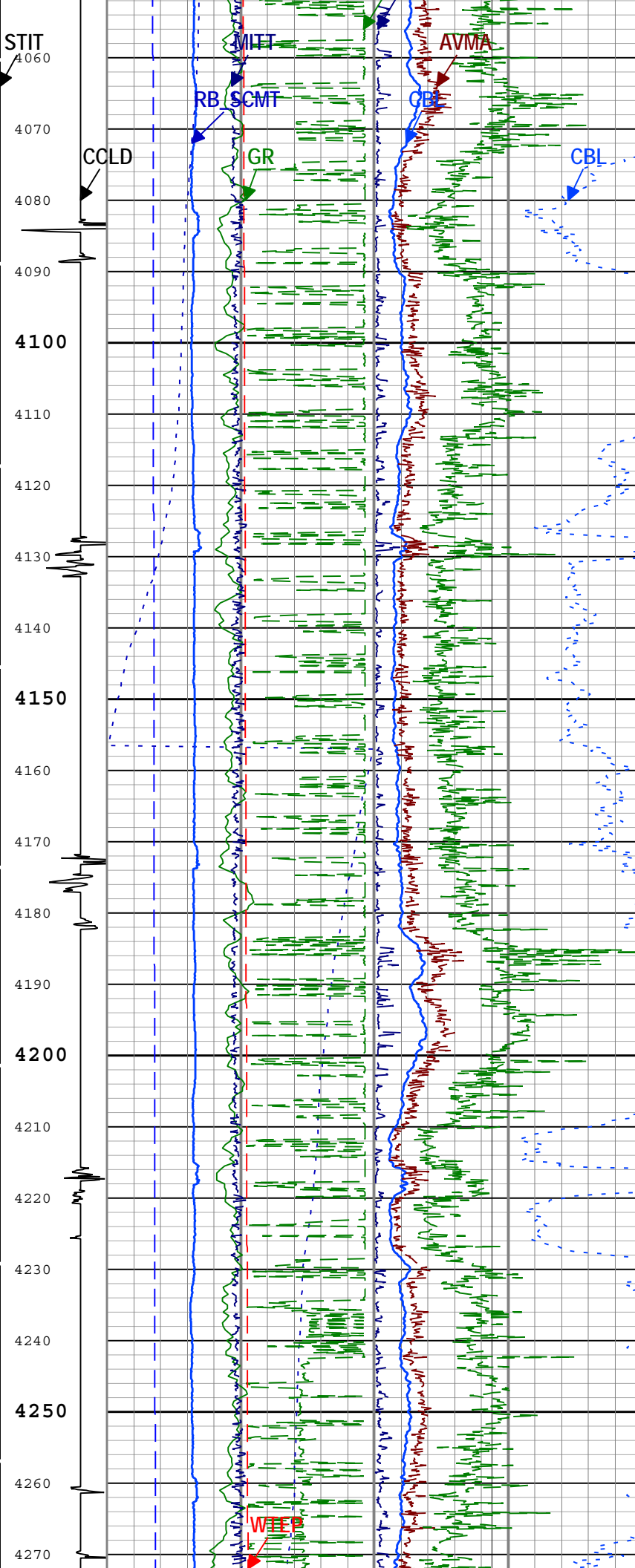


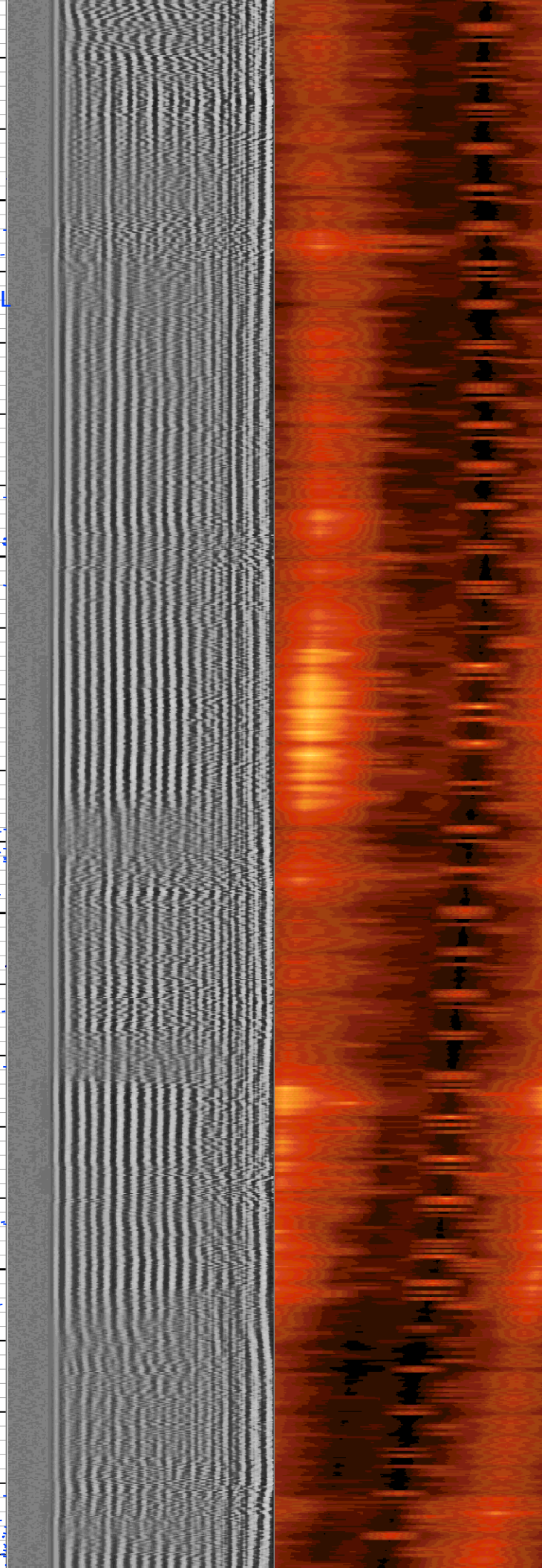
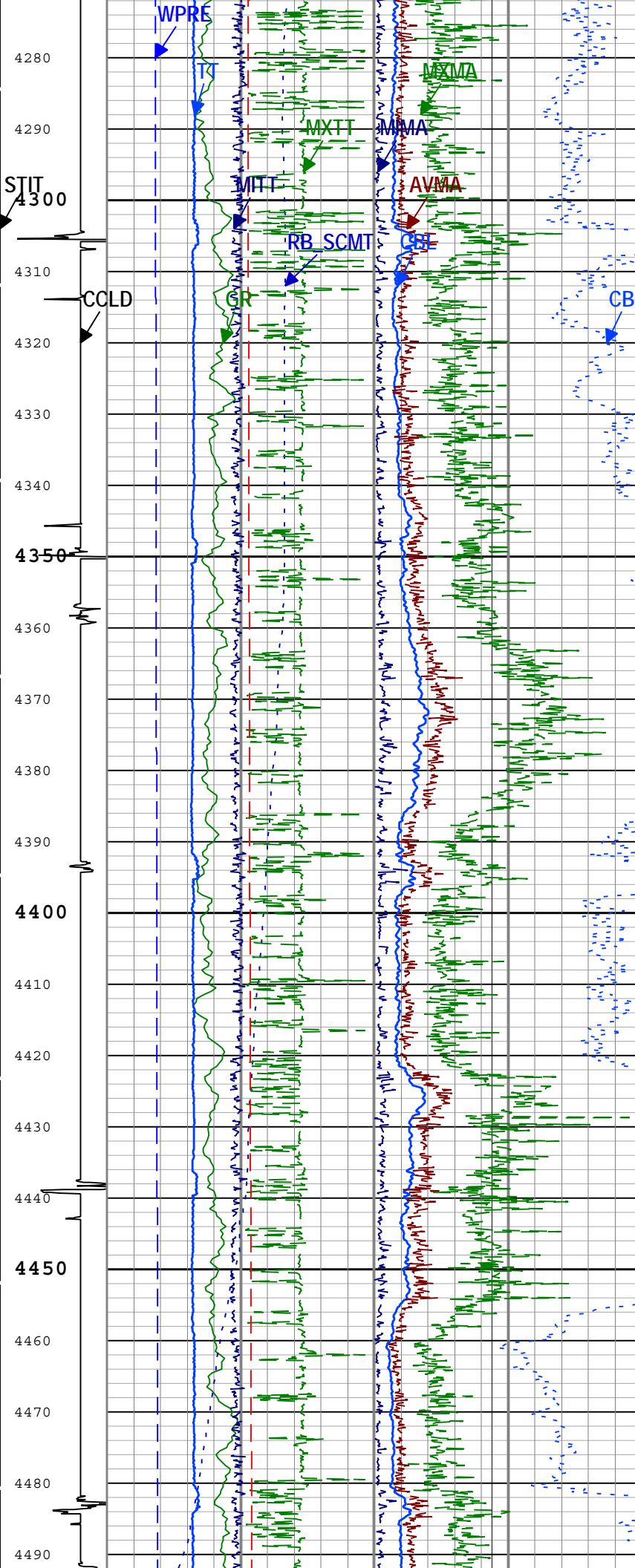


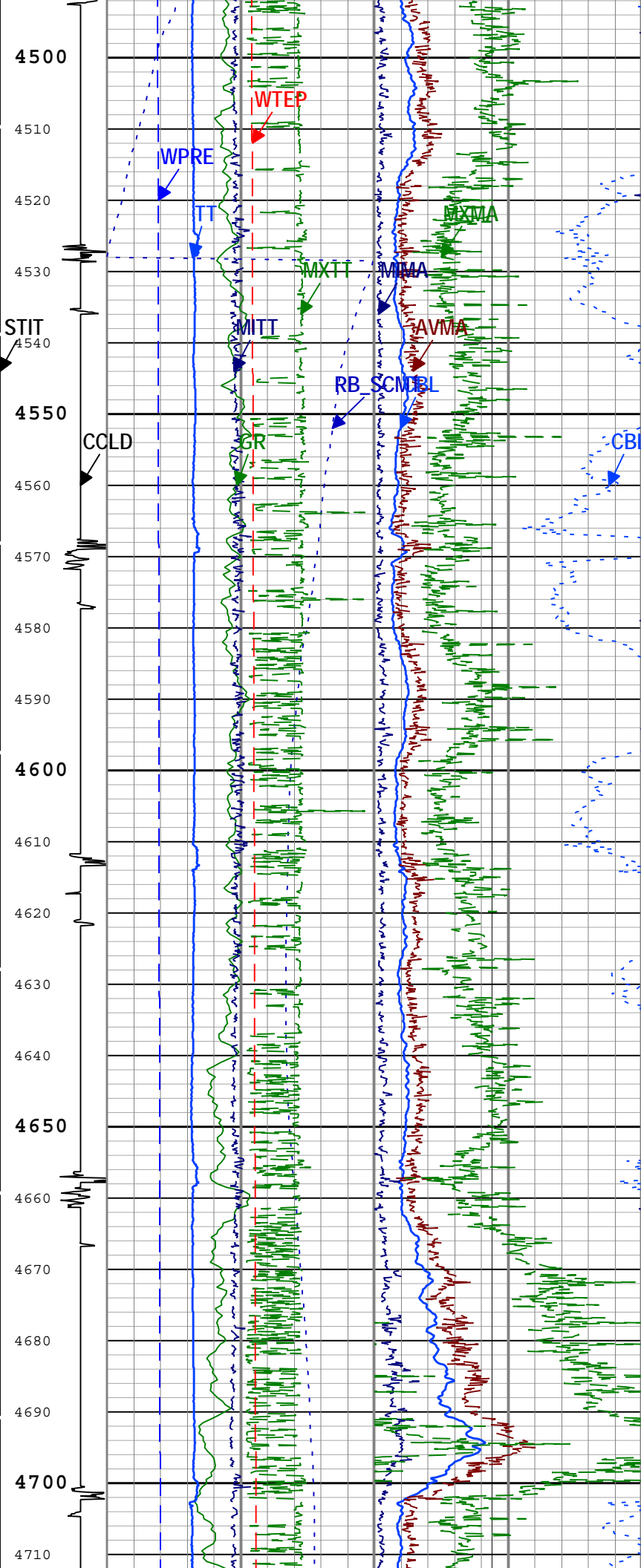


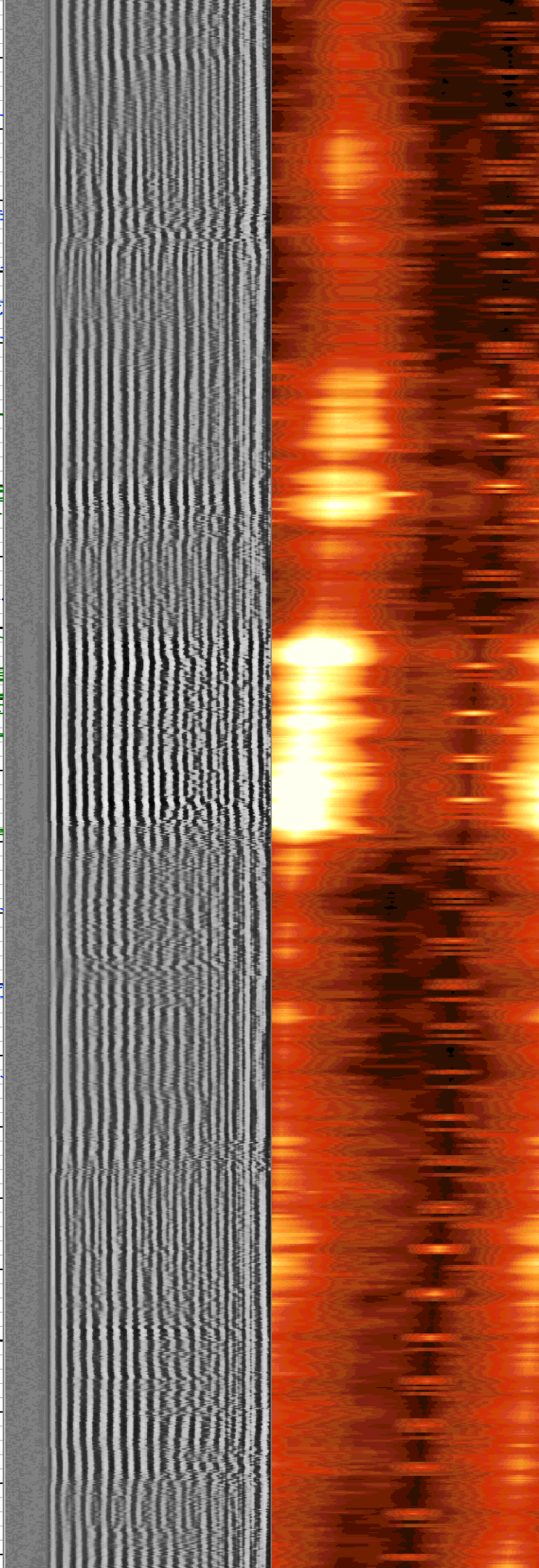
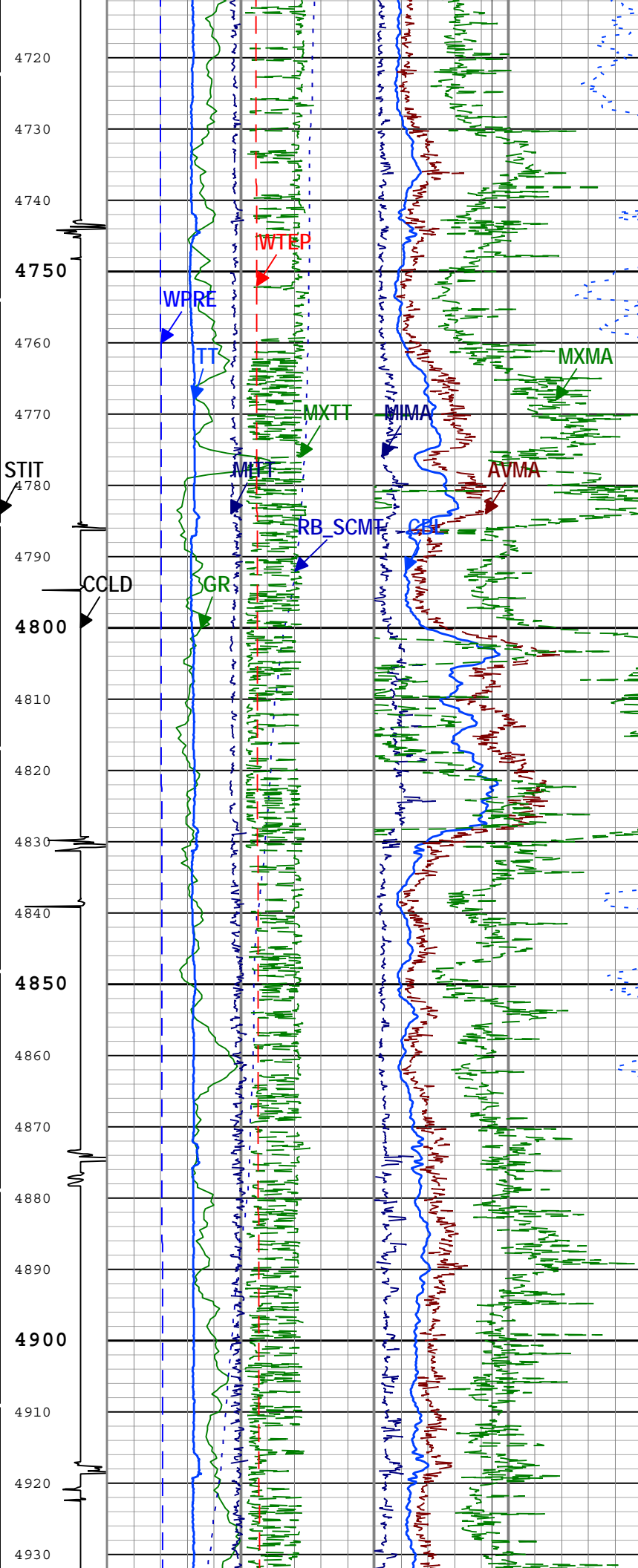


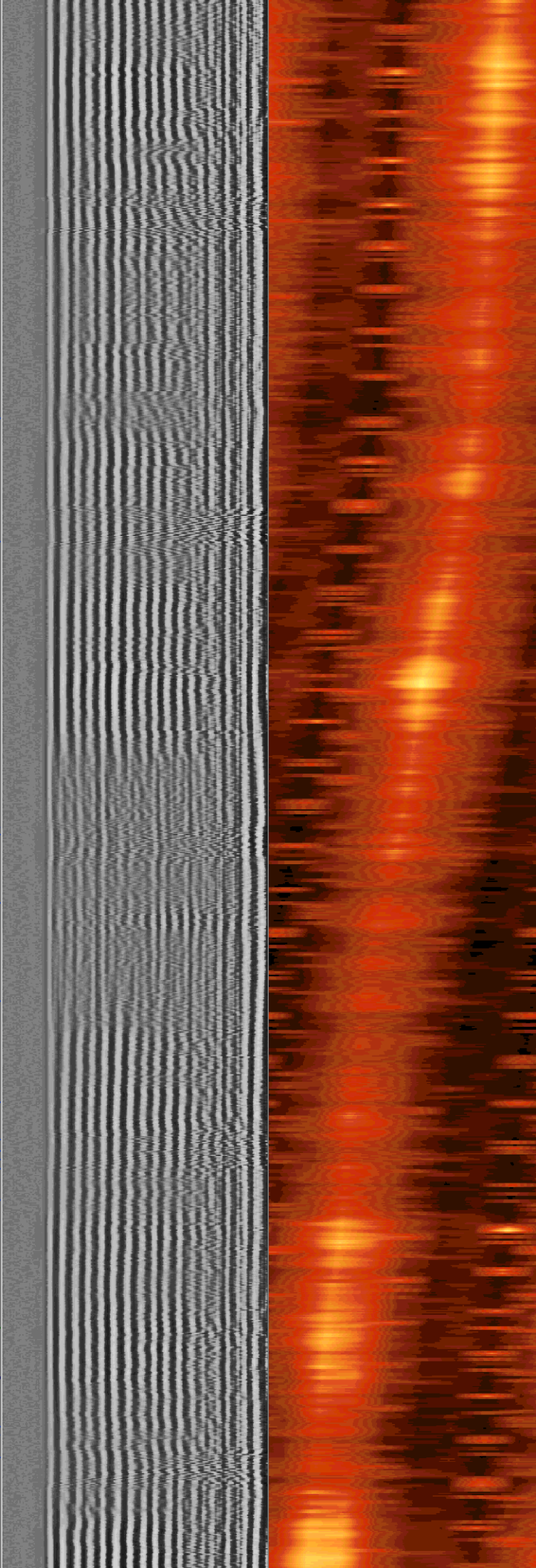
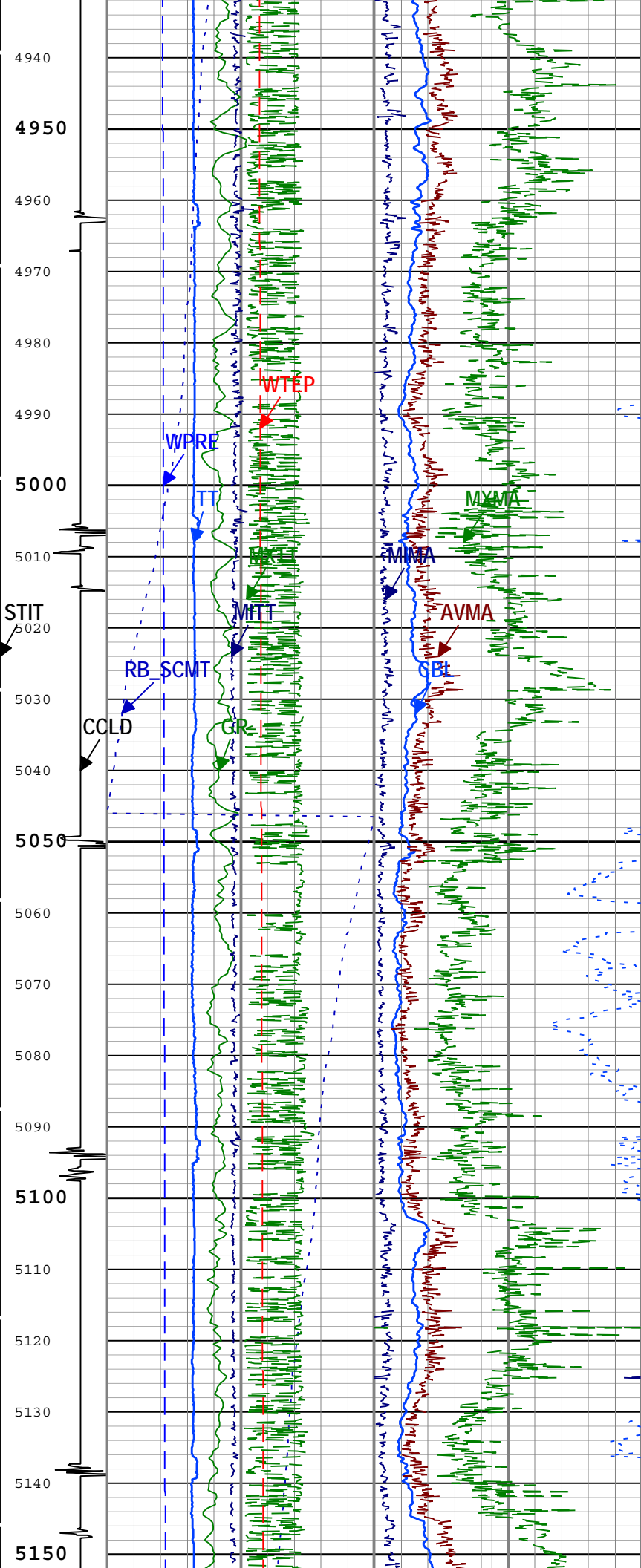


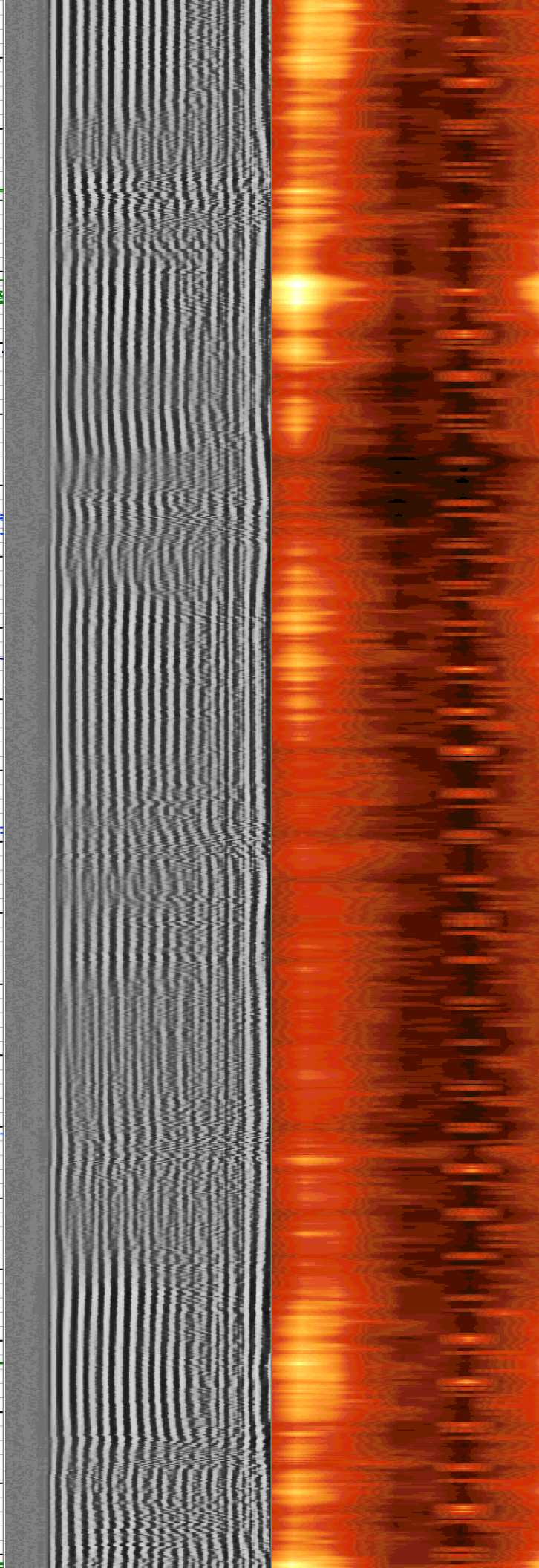
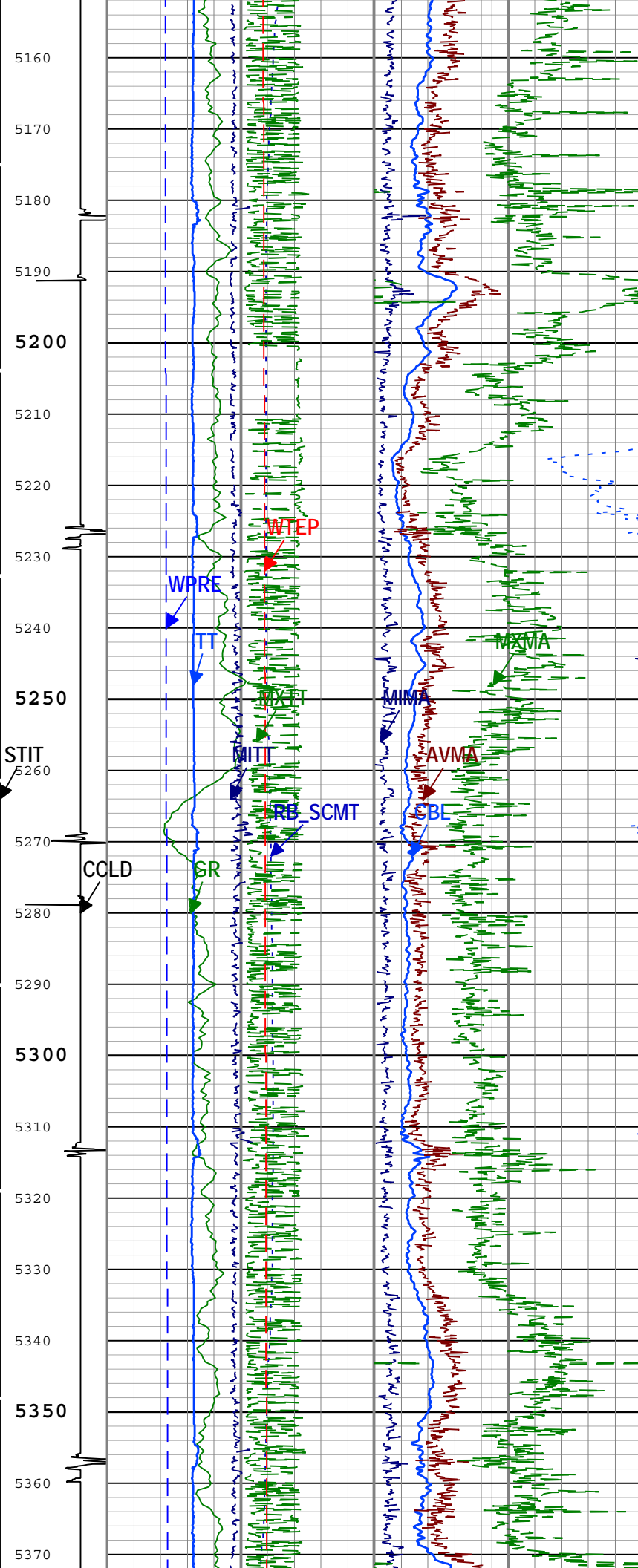


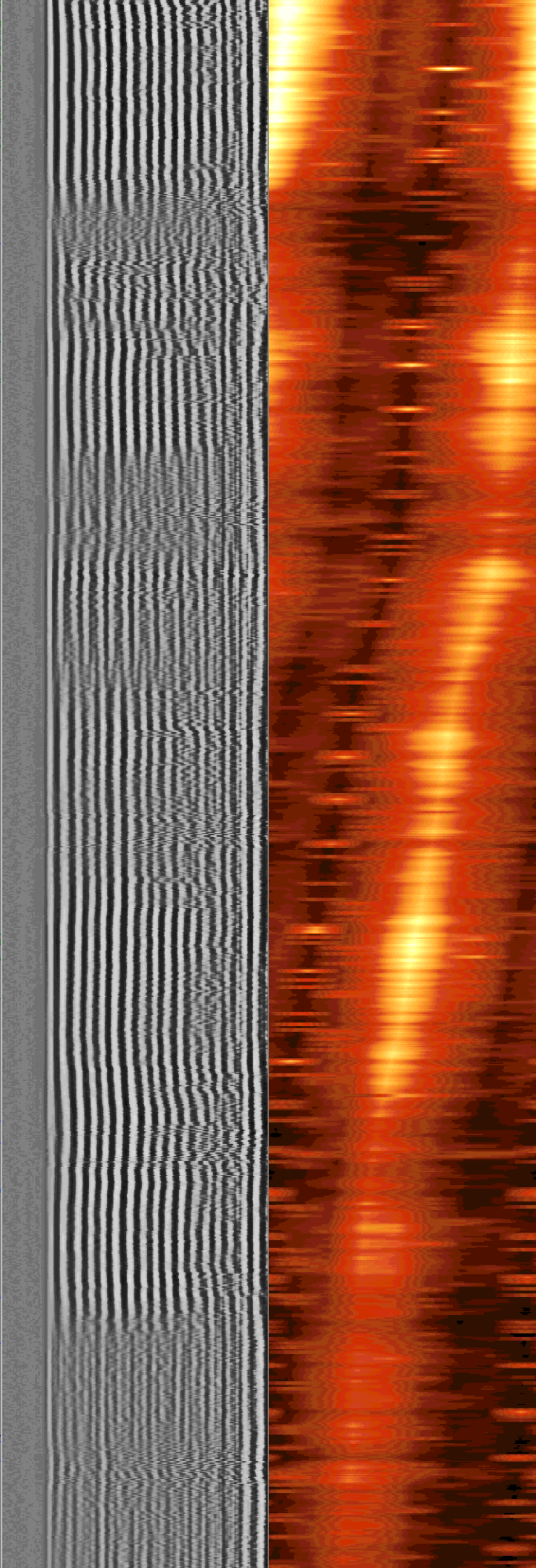
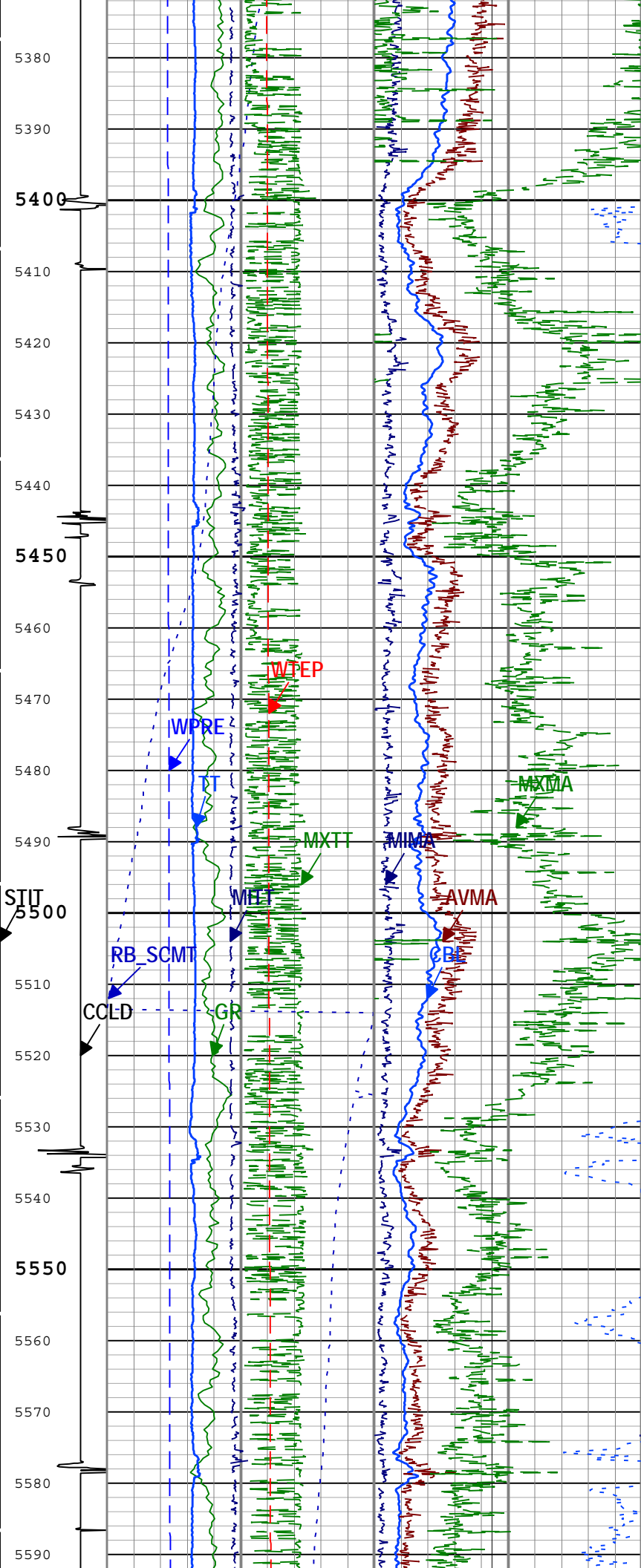


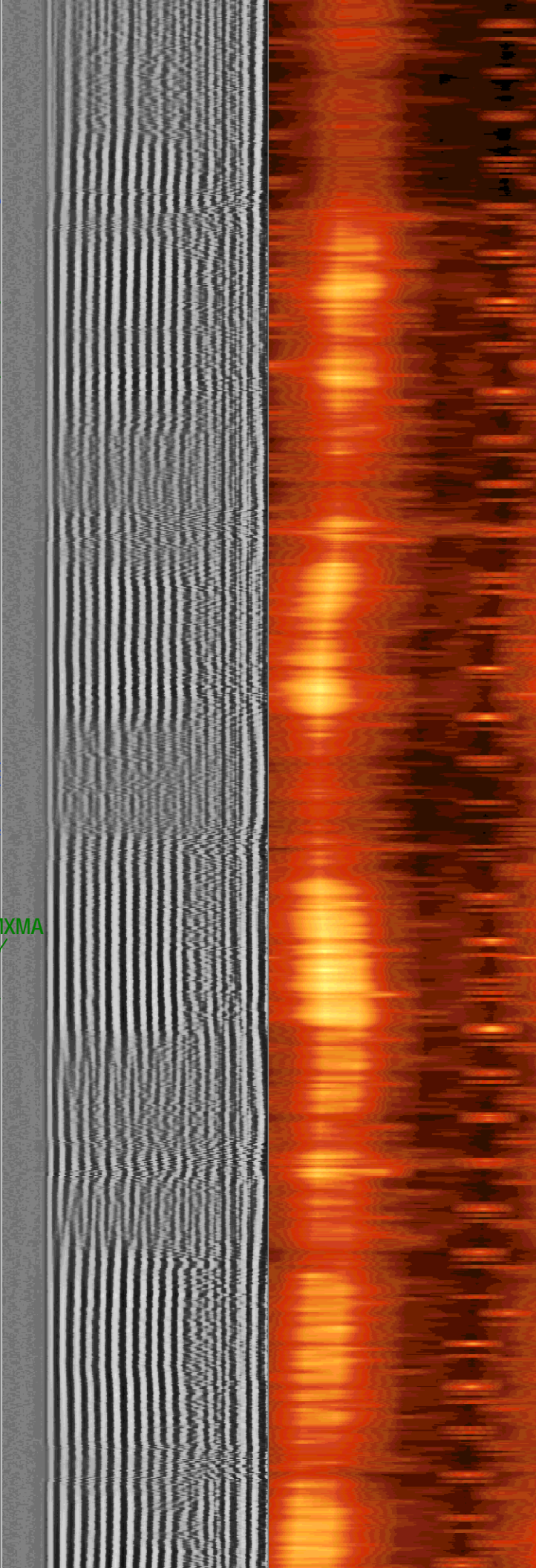
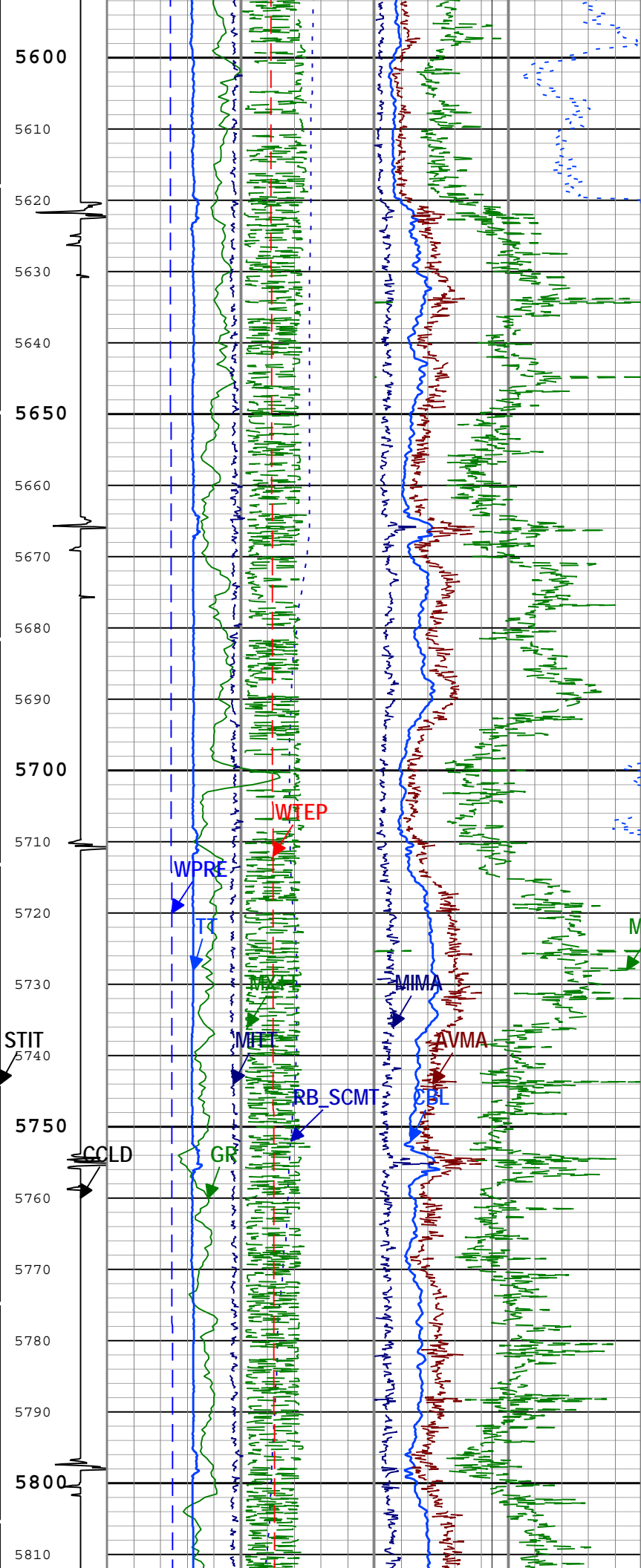


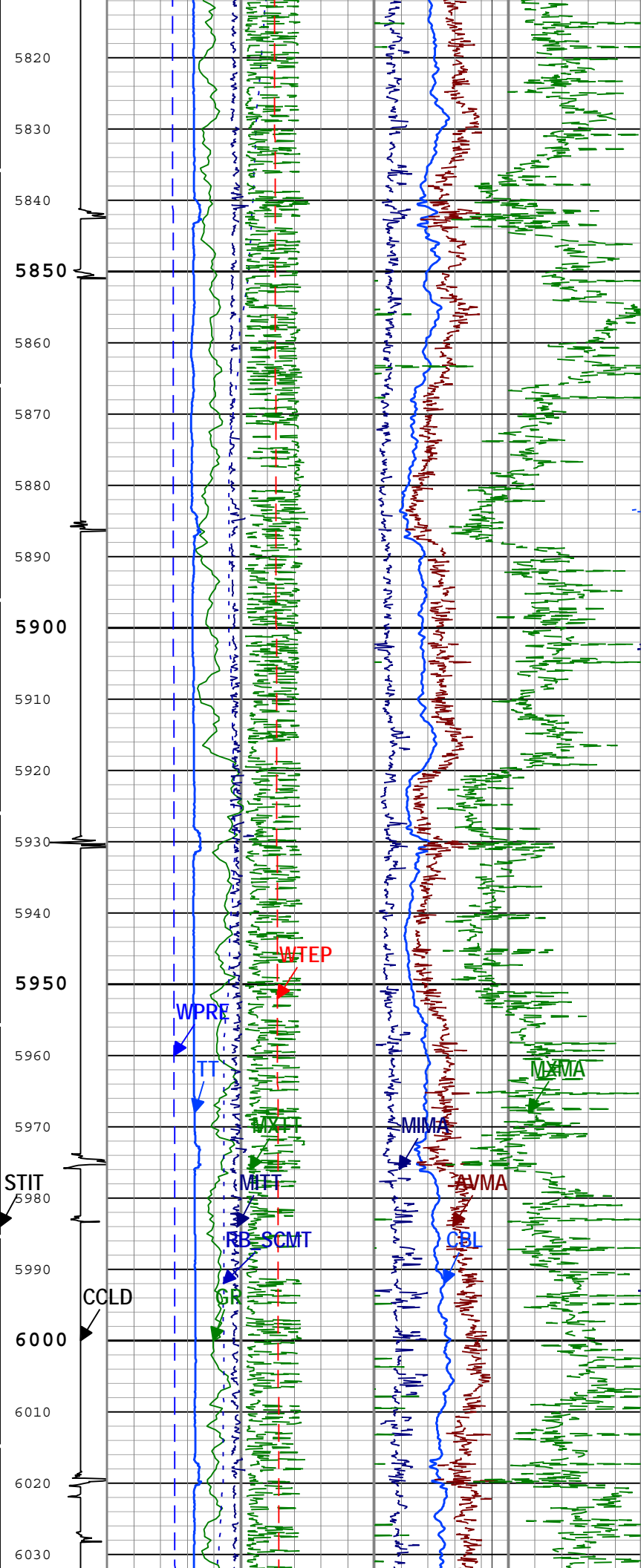


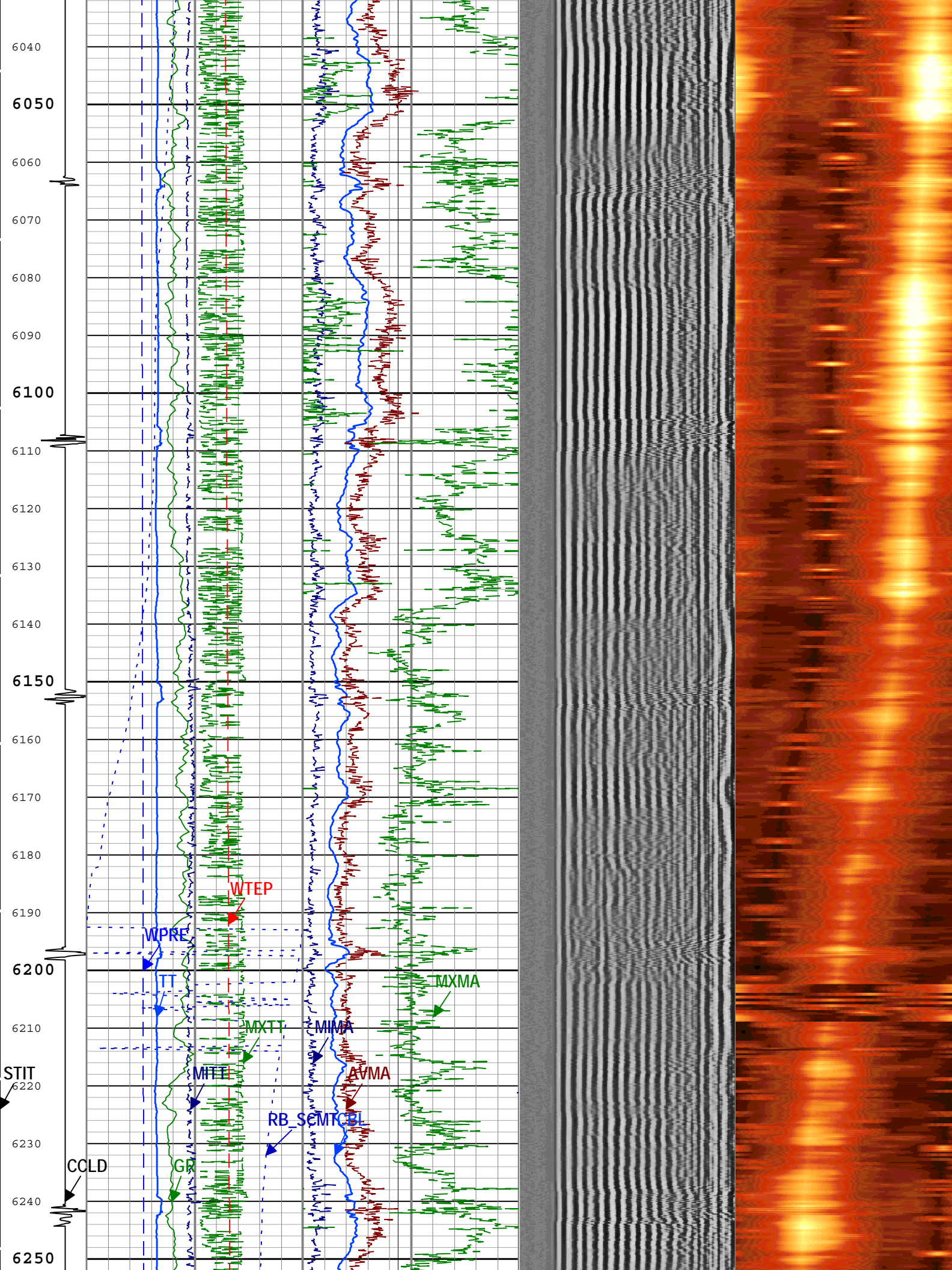


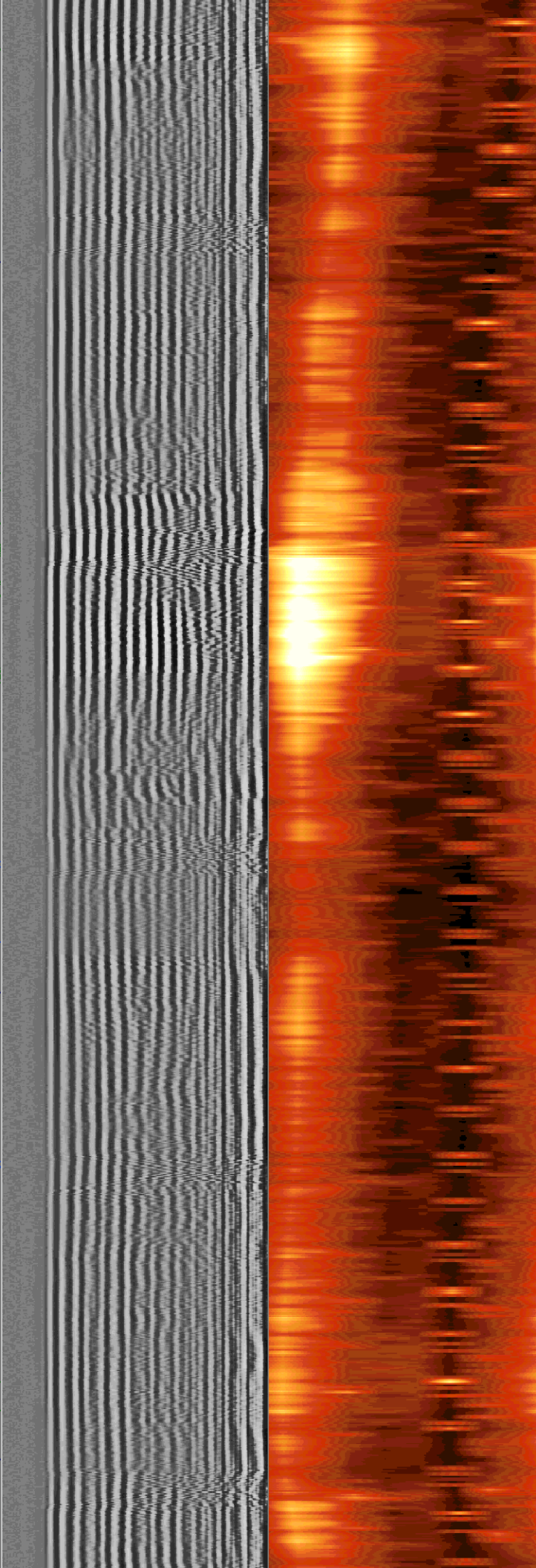
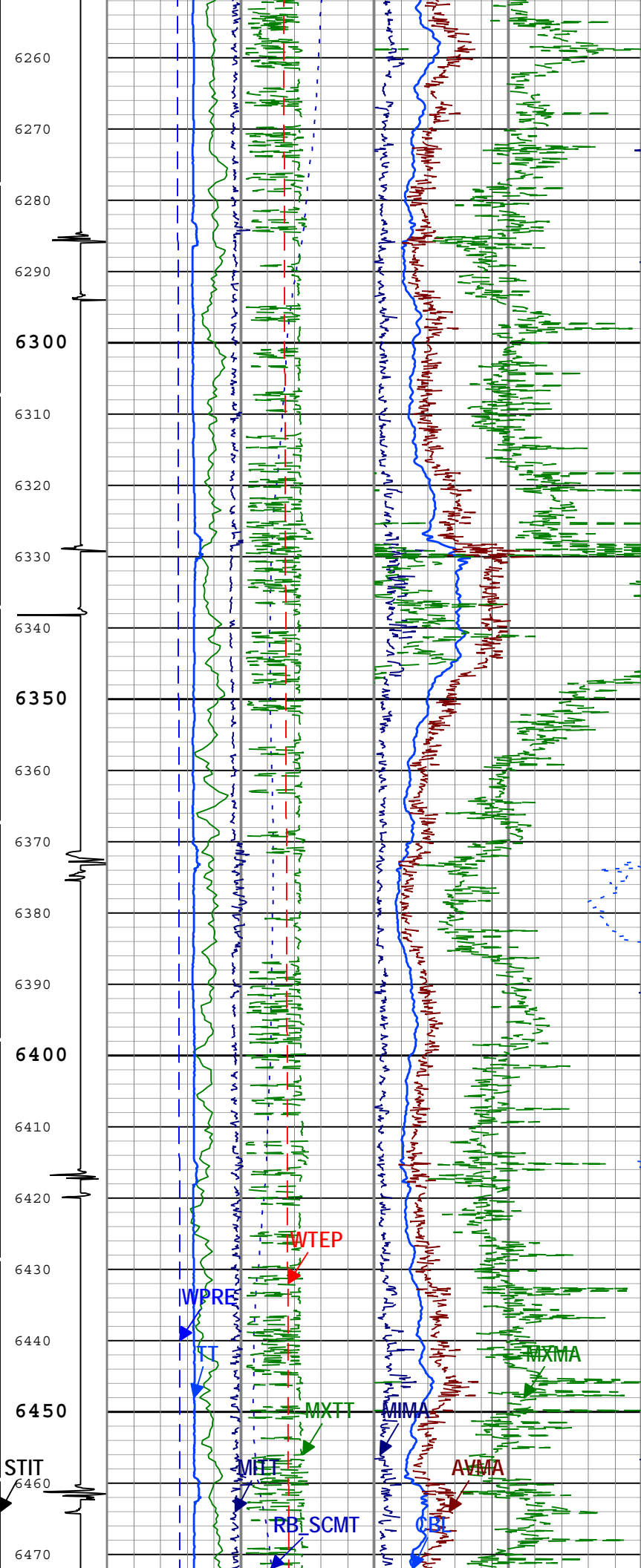


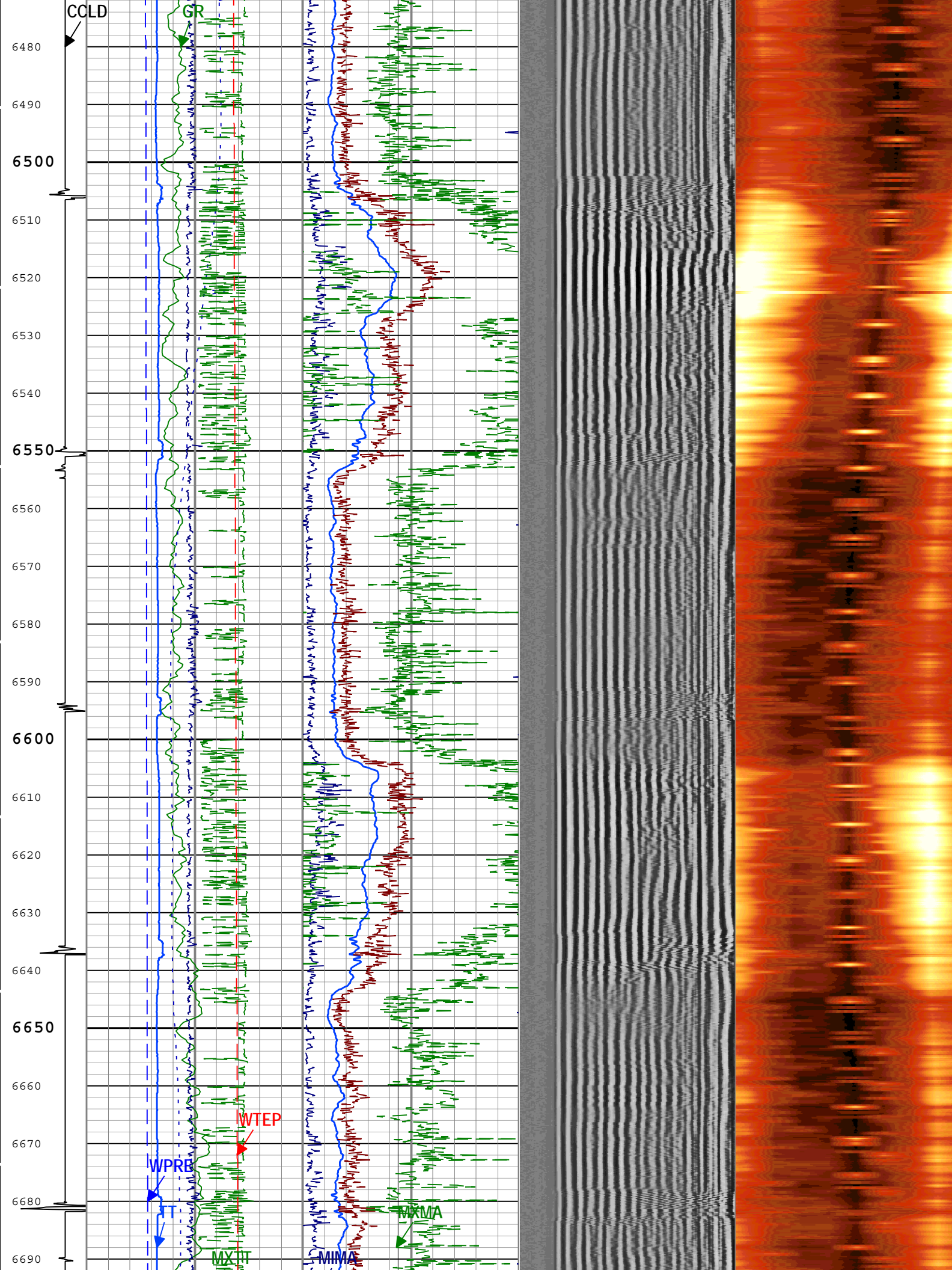


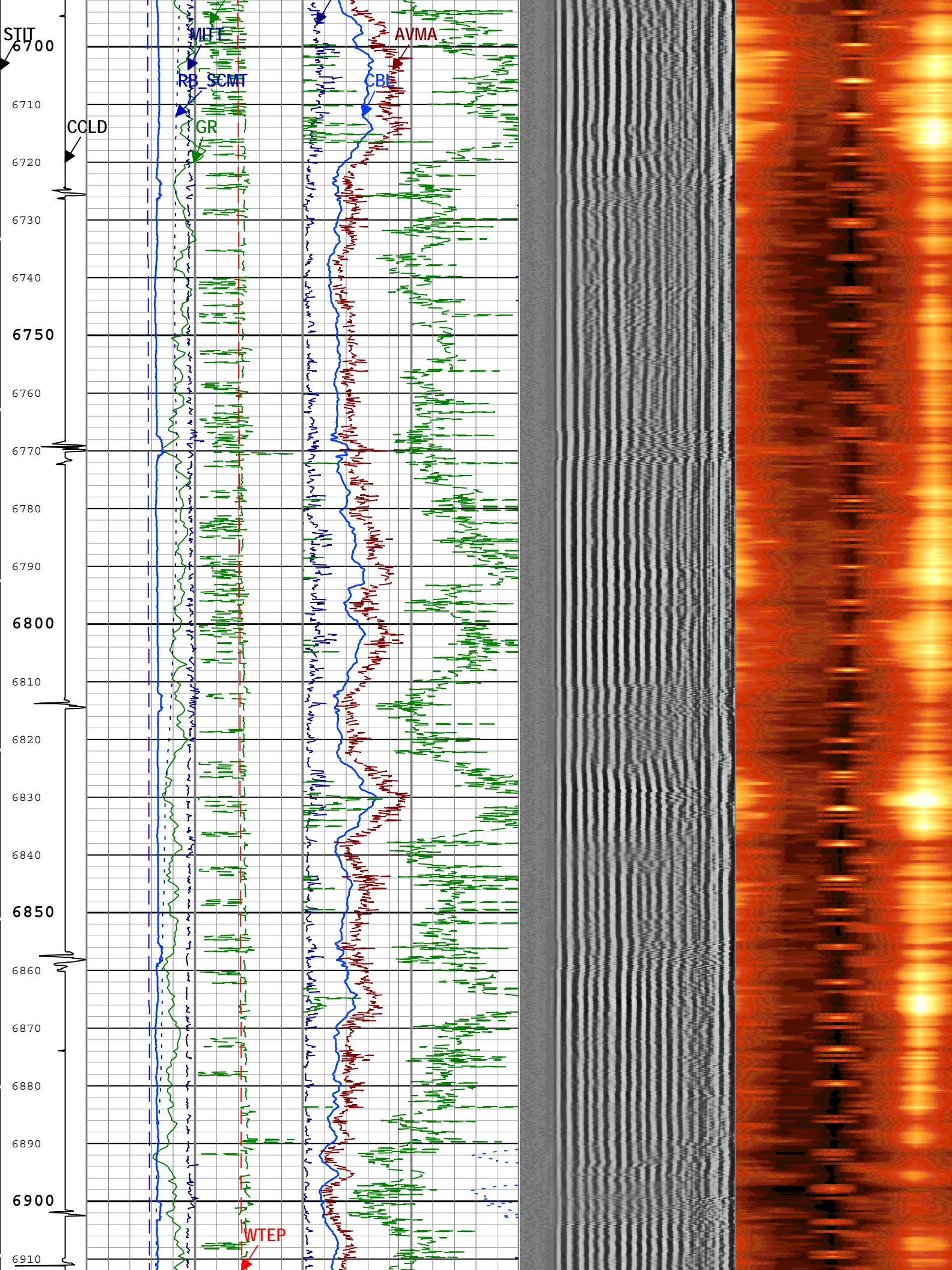


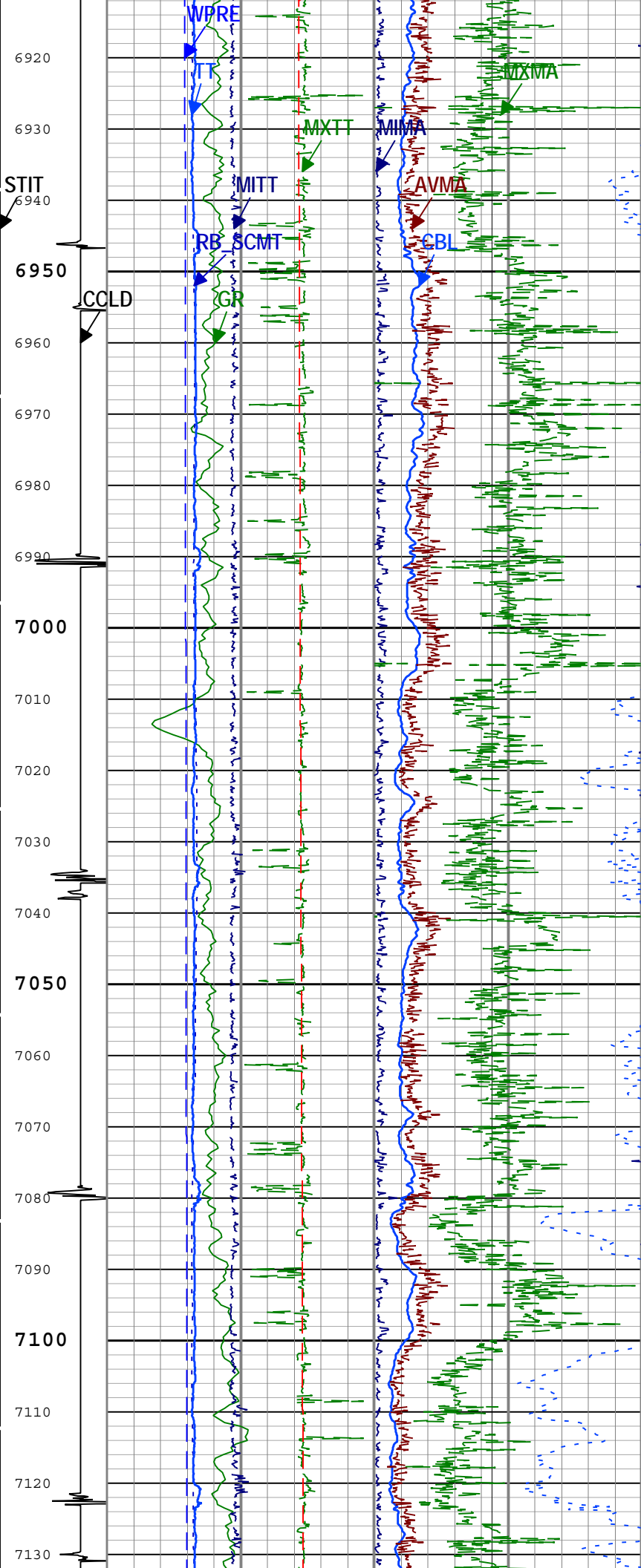


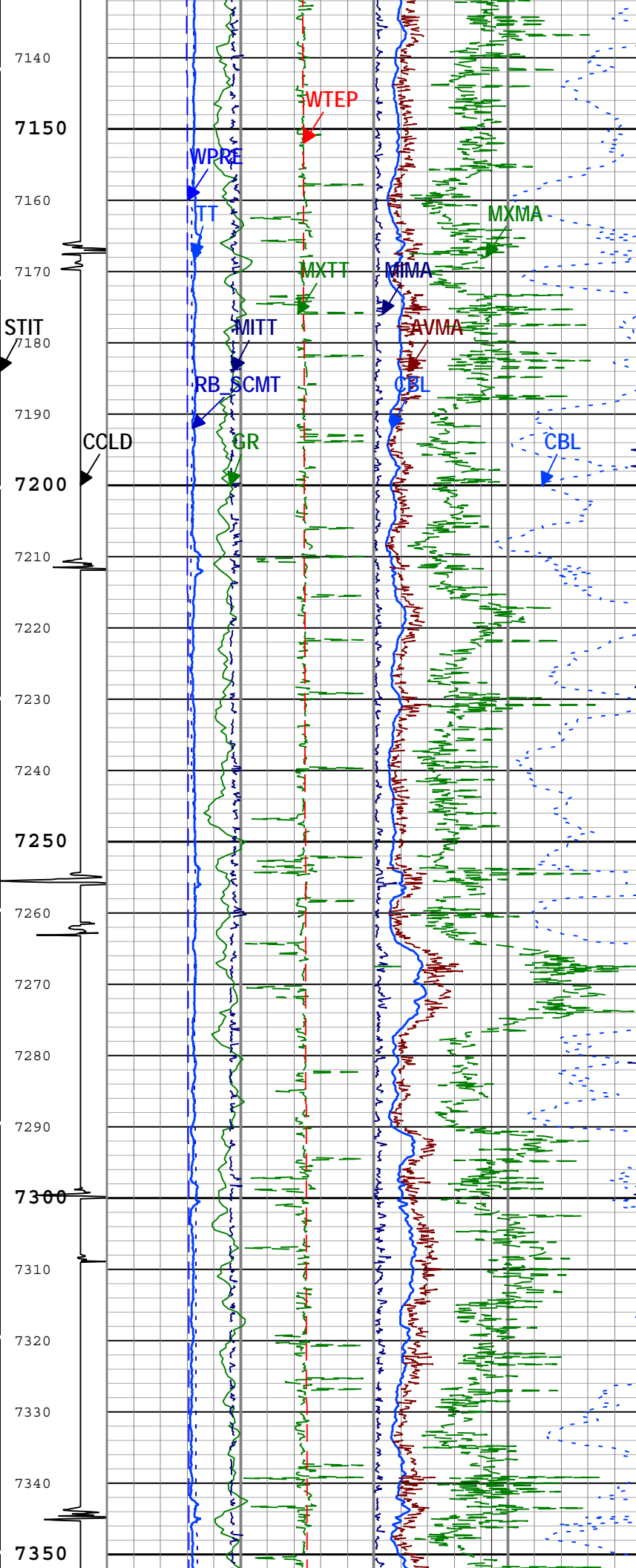


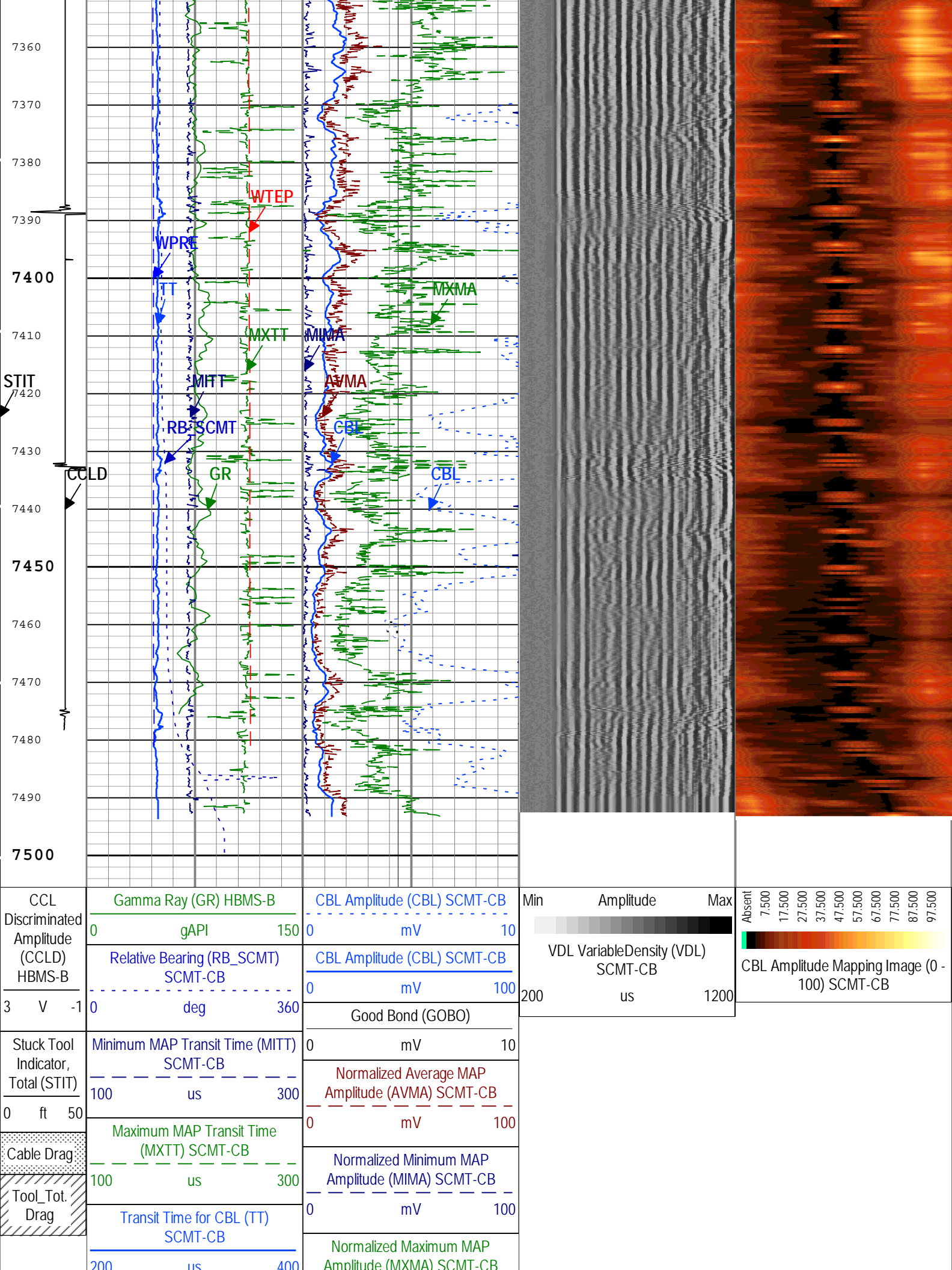


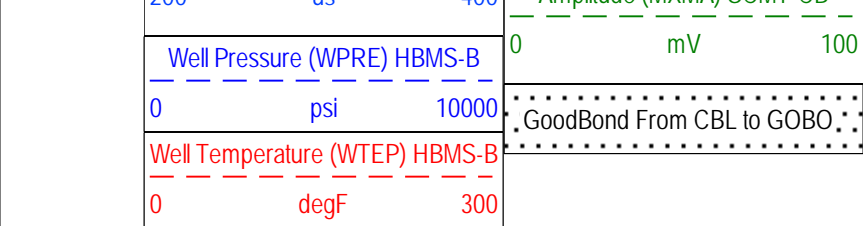












TIME_1900 - Time Marked every 60.00 (s)

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: 20-Sep-2015 20:53:08

Channel Processing Parameters				
Run 1: Parameters				
Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	218	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	206	us/ft
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
MMSA	MAP Minimum Sonic Amplitude	SCMT-CB	10.85	mV
MSA	Minimum Sonic Amplitude	SCMT-CB	2.19	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 2014 SP3	5.3.45427.3100

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Run 1	Main[3]:Up	Up	77.64 ft	7505.70 ft	20-Sep-2015 4:31:45 PM	20-Sep-2015 8:45:10 PM	ON	4.27 ft	Yes
All depths are referenced to toolstring zero									

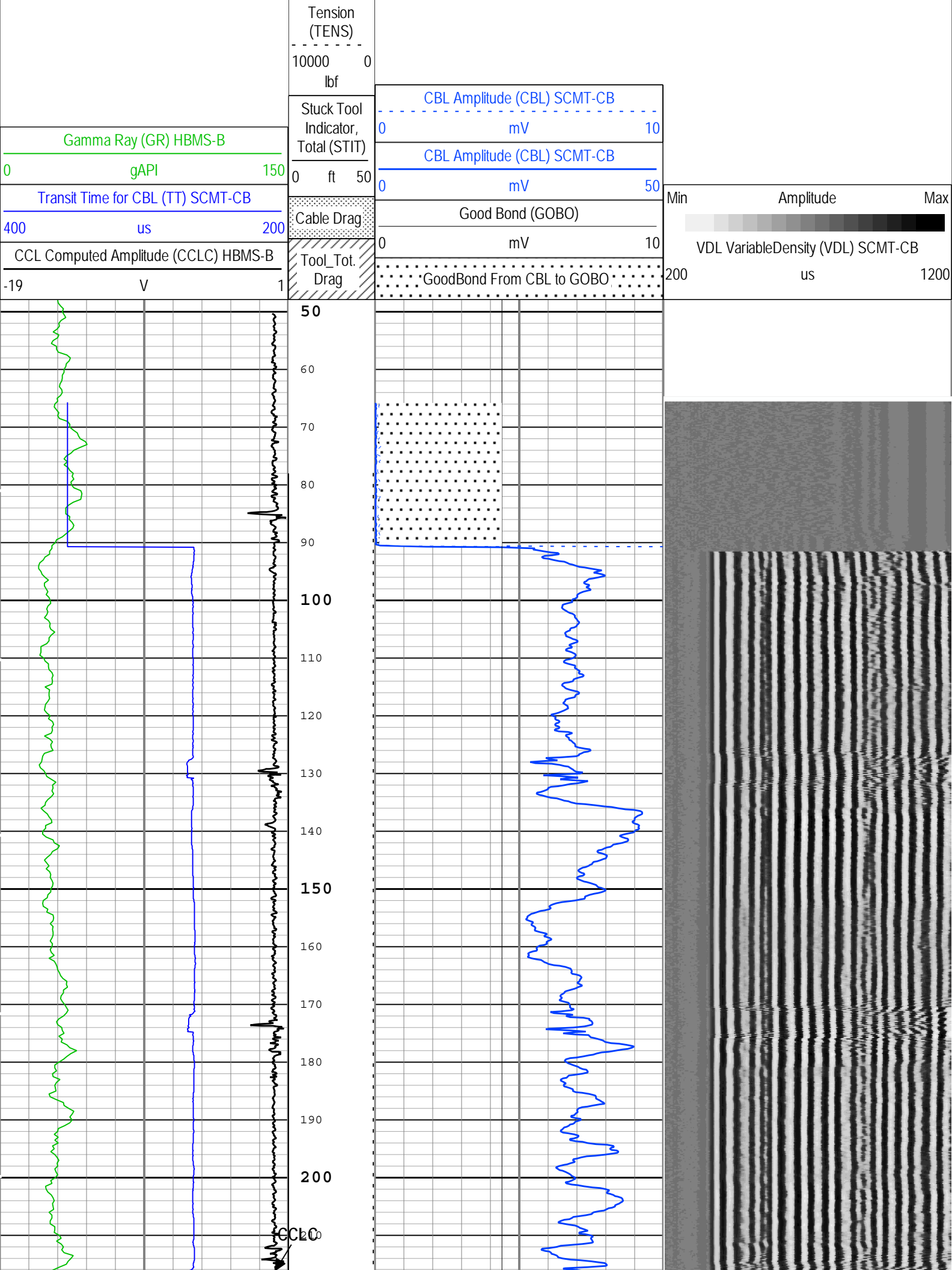
Log	Company:Extraction Oil & Gas LLC Well:Troudt 1 Run 1: Main[3]:Up:S002
-----	---

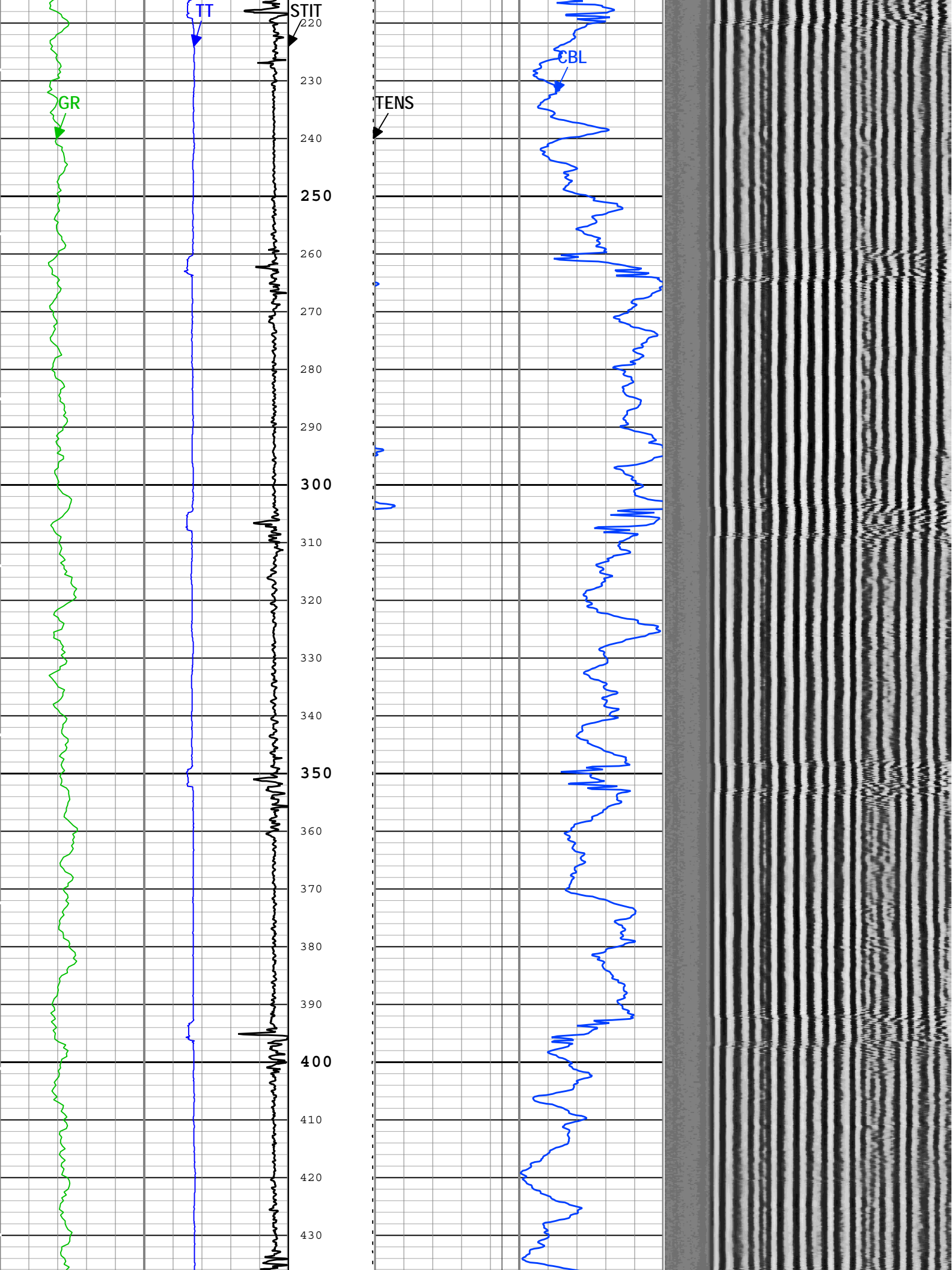
Description: Sonic CBL with VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Sep-2015 20:53:15

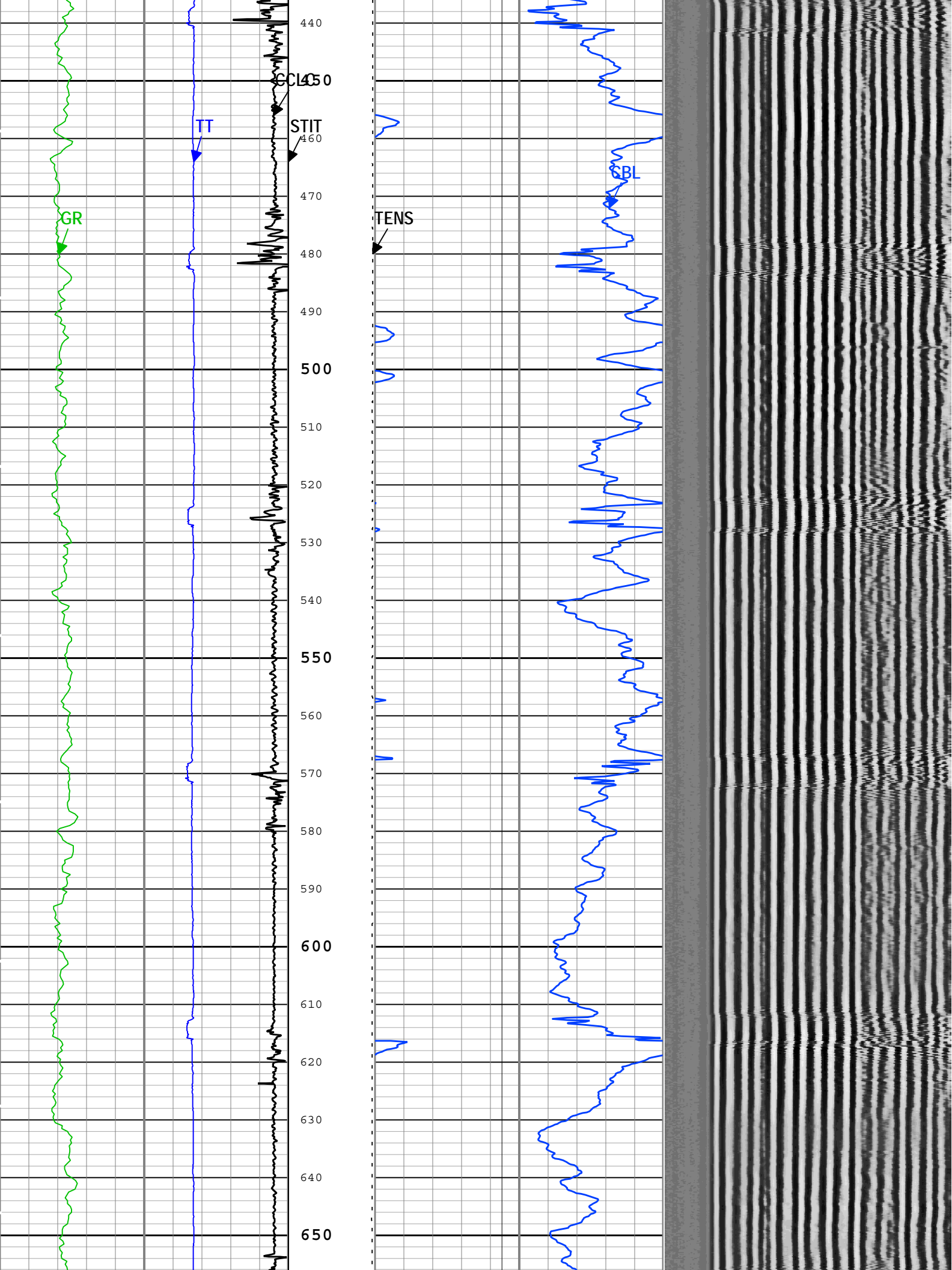
■ BIEP - Bond Index Event Pips SCMT-CB

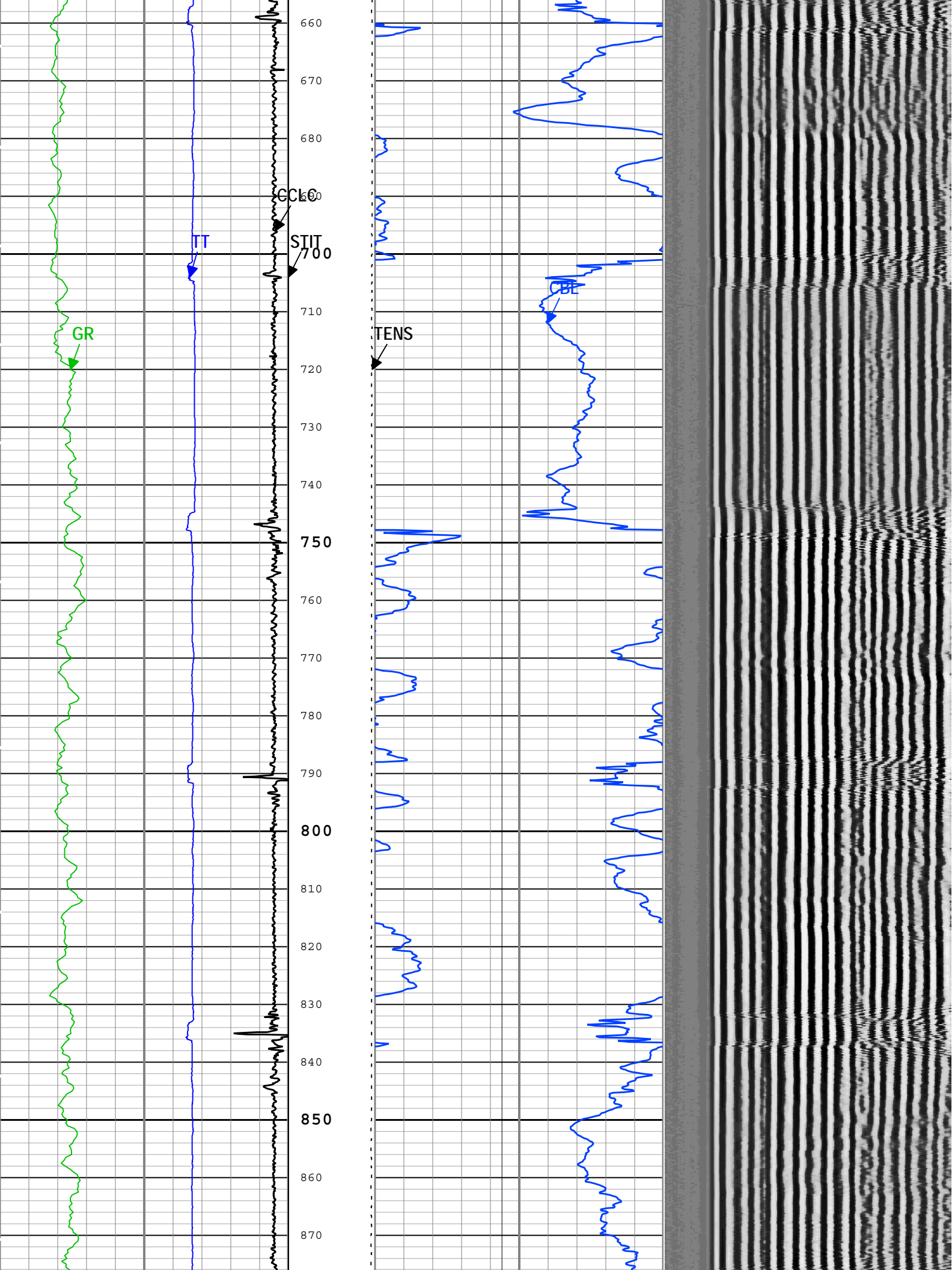
TIME_1900 - Time Marked every 60.00 (s)

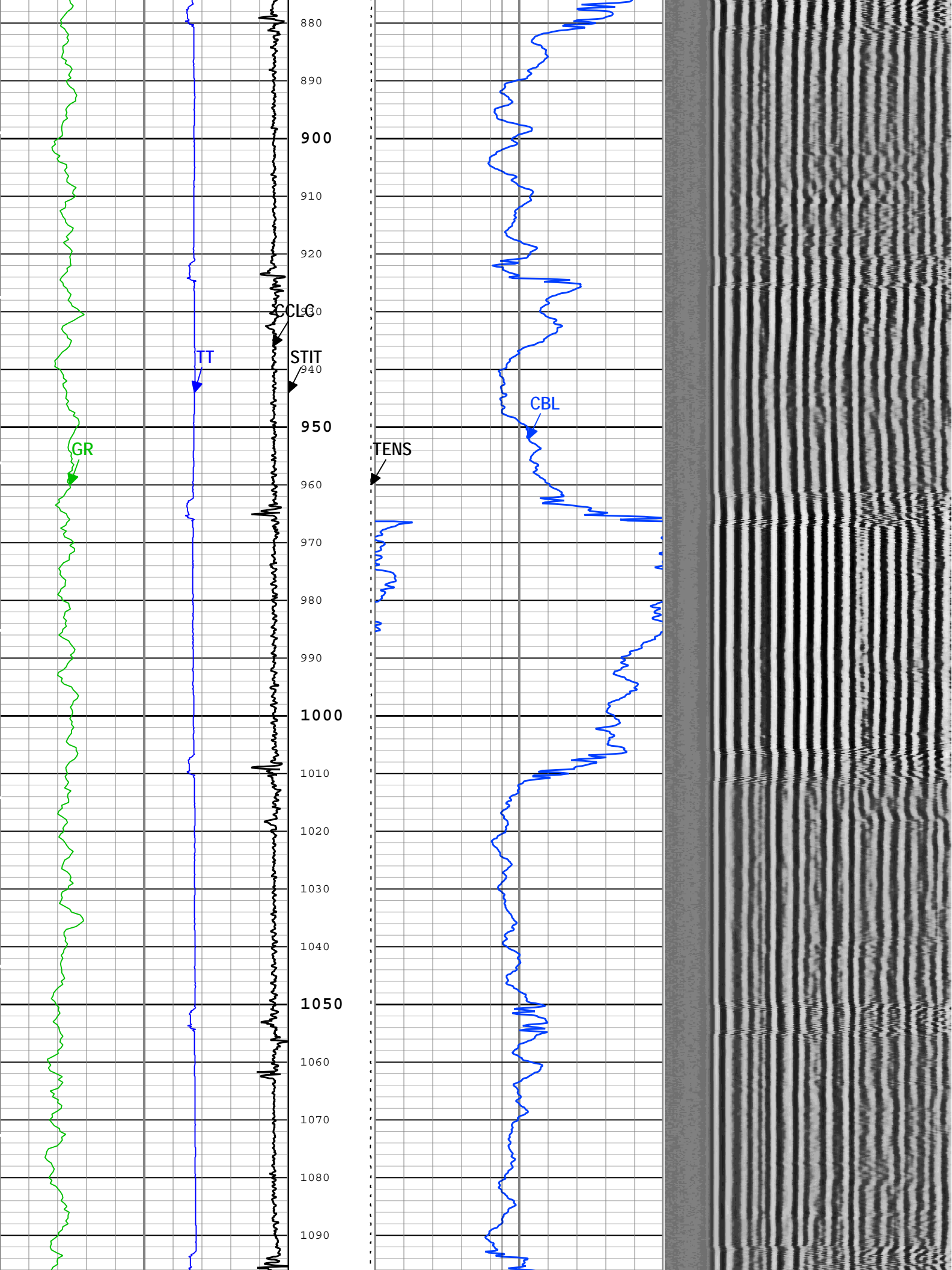
Cable

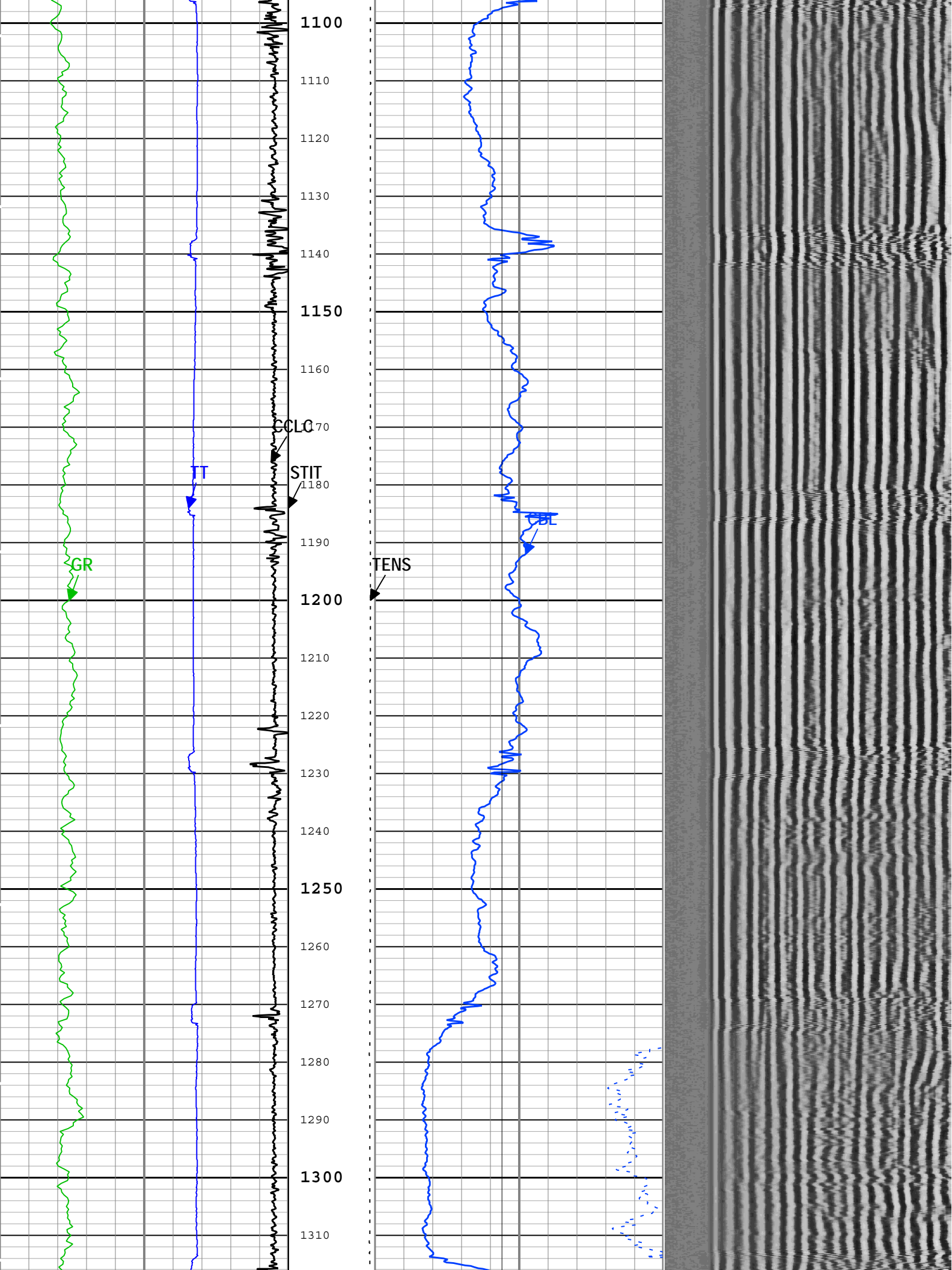


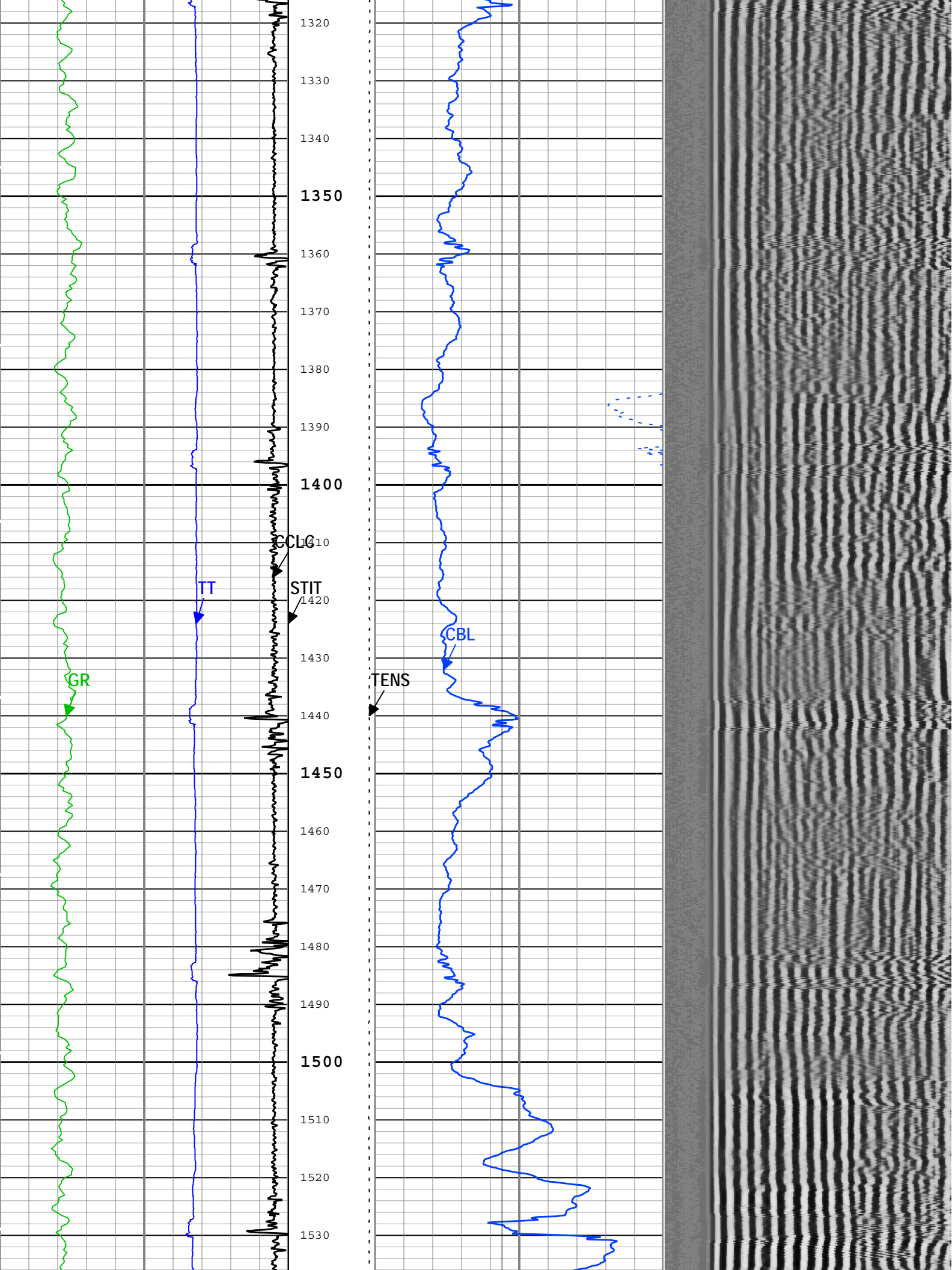


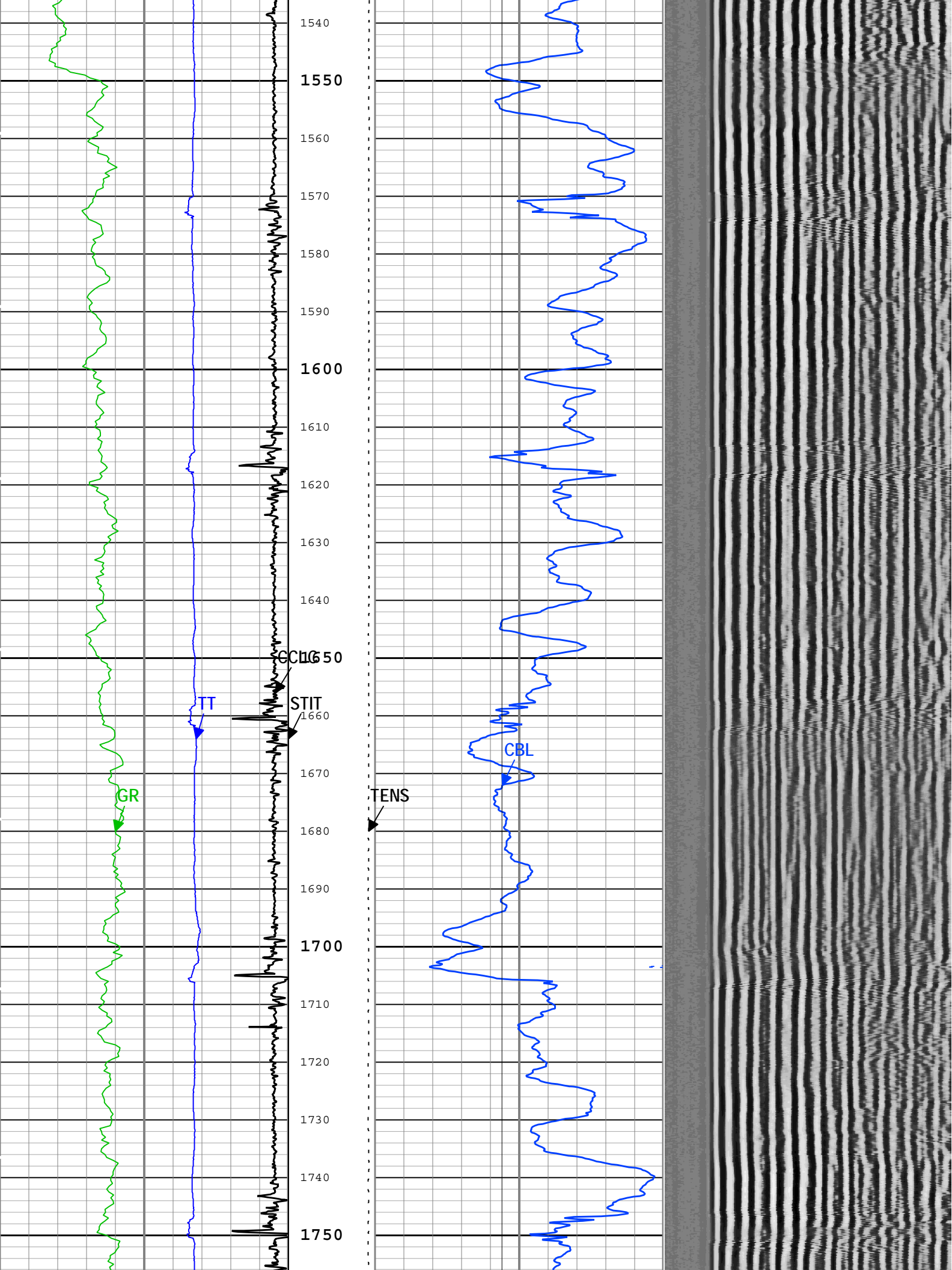


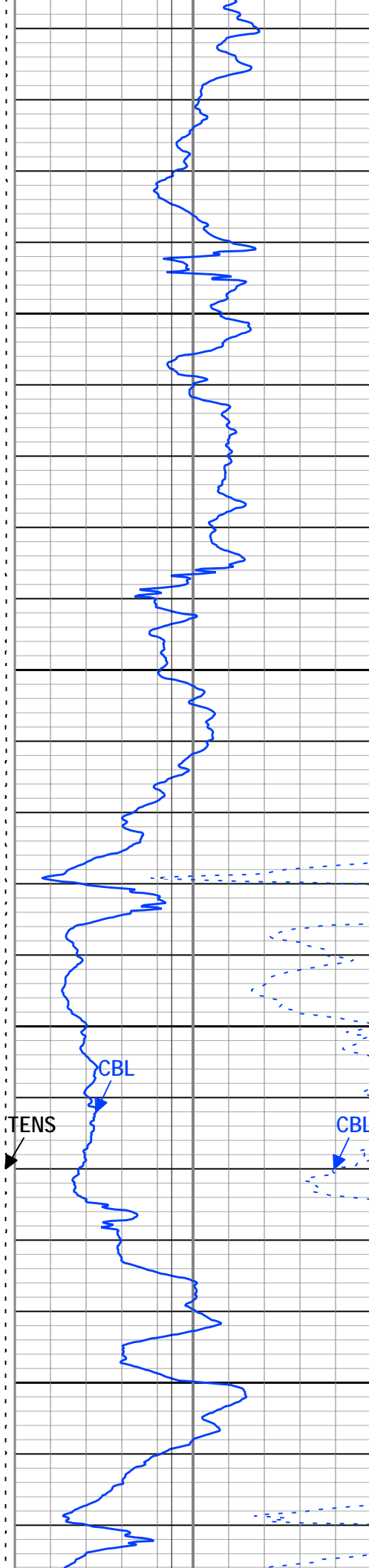
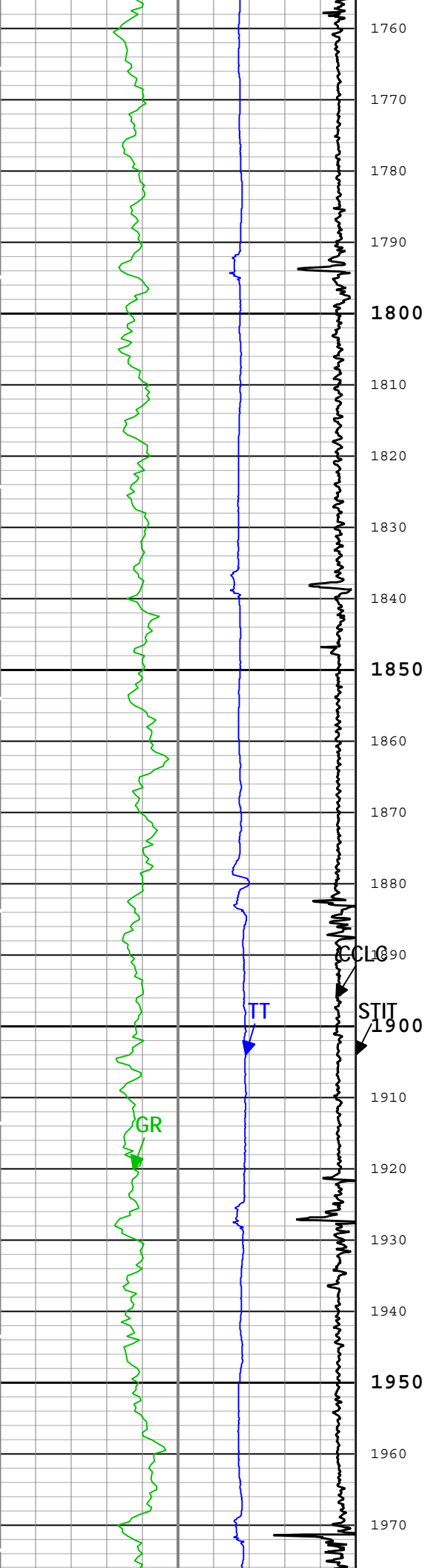


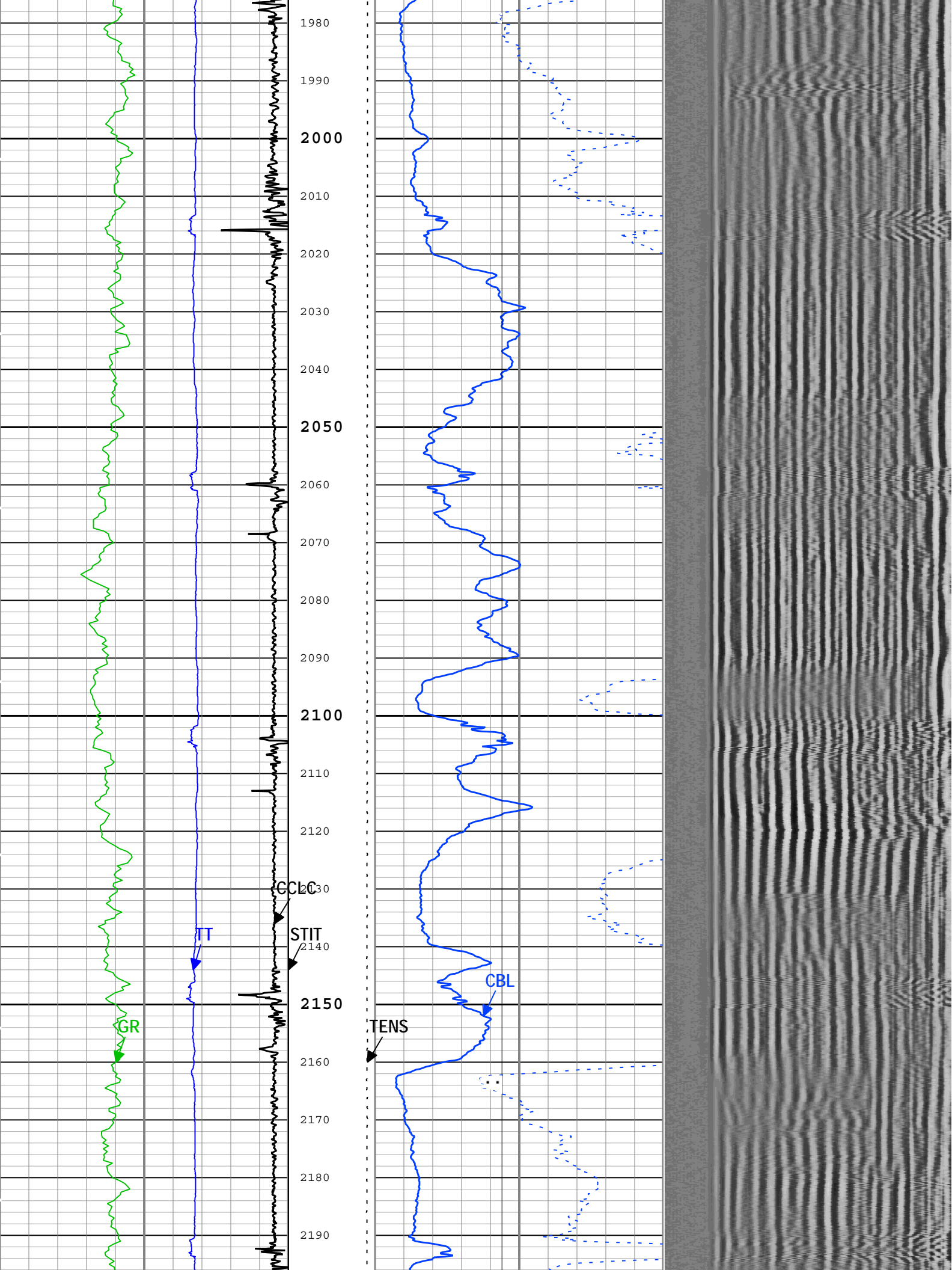


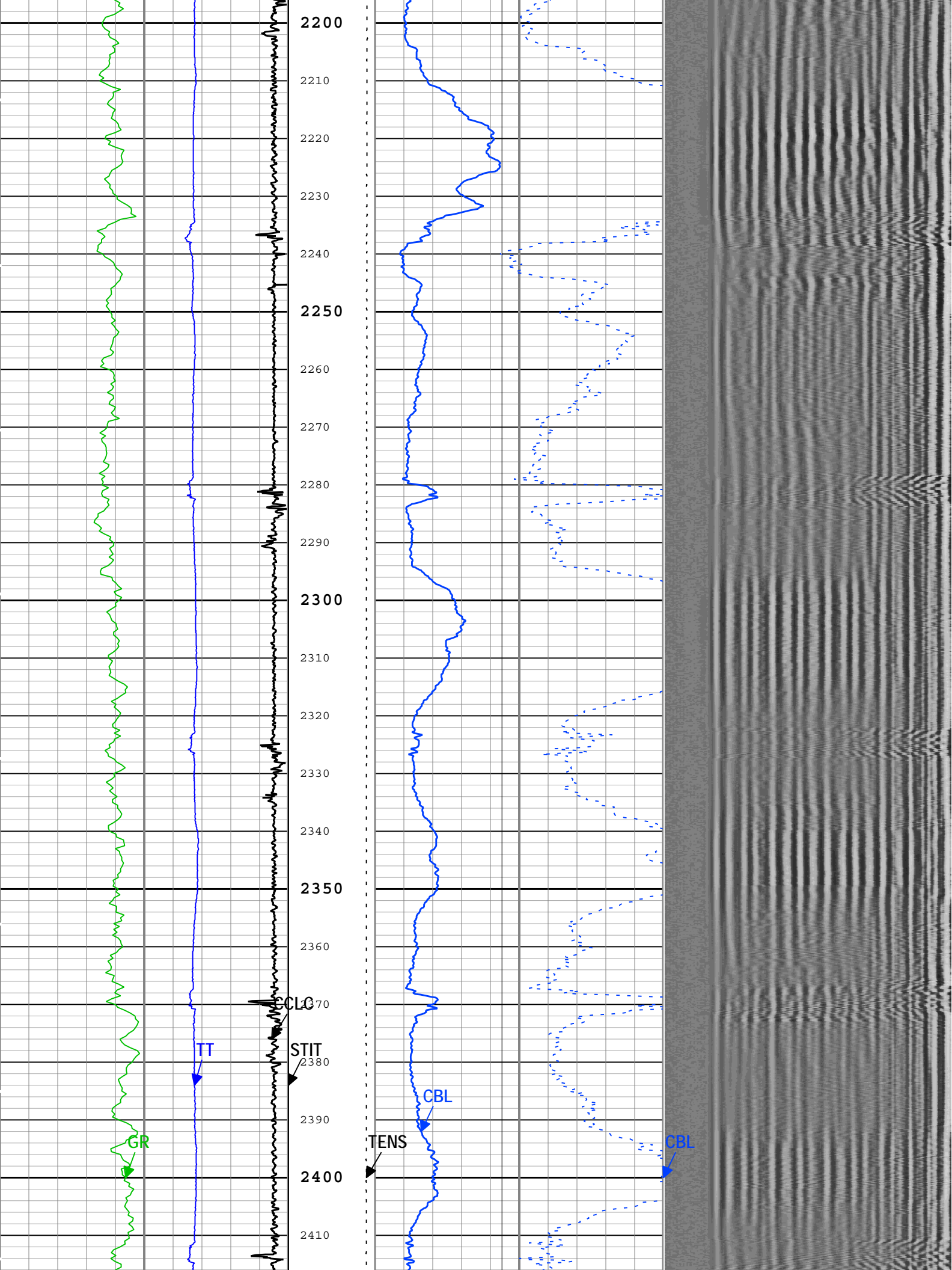


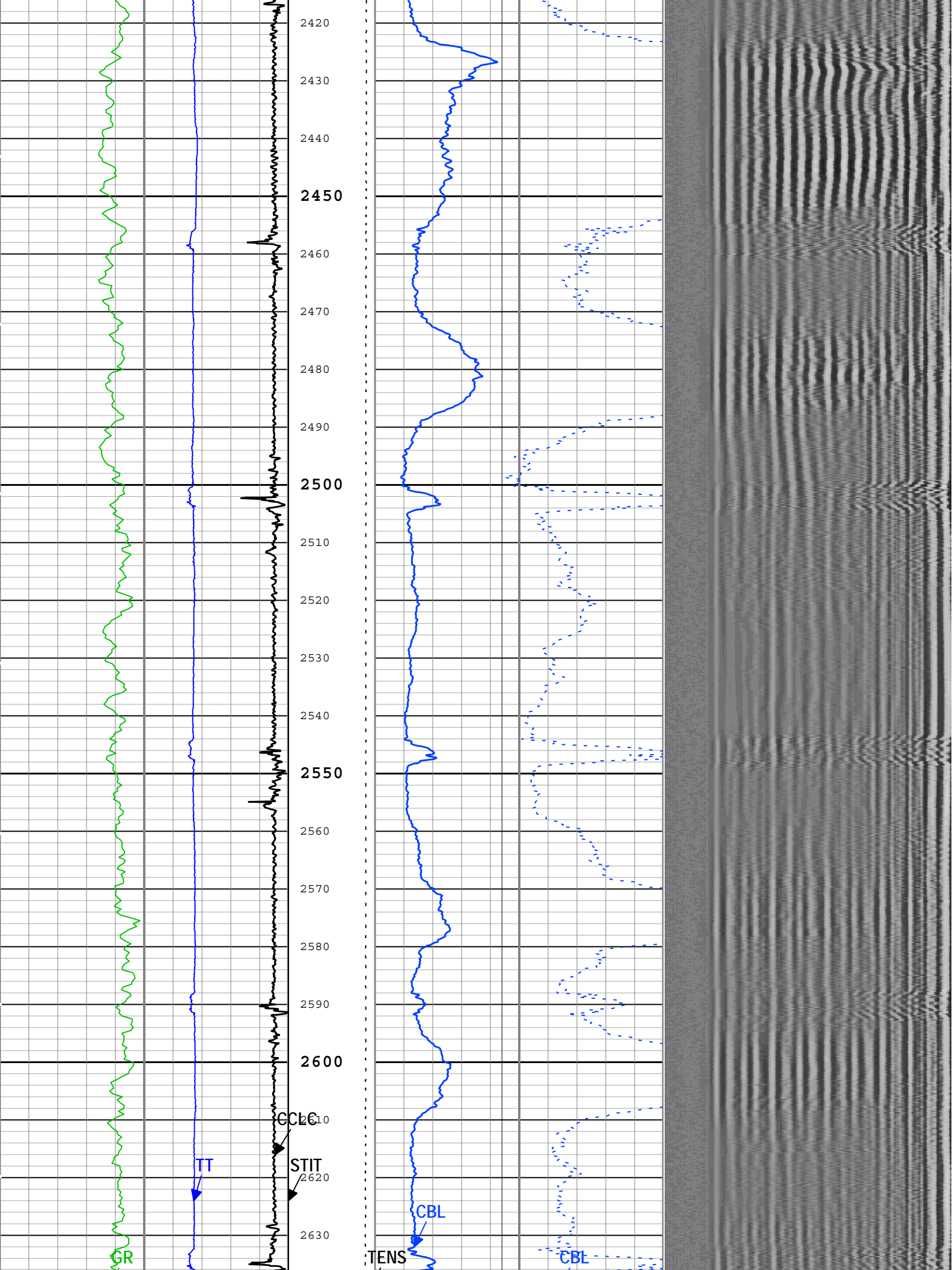


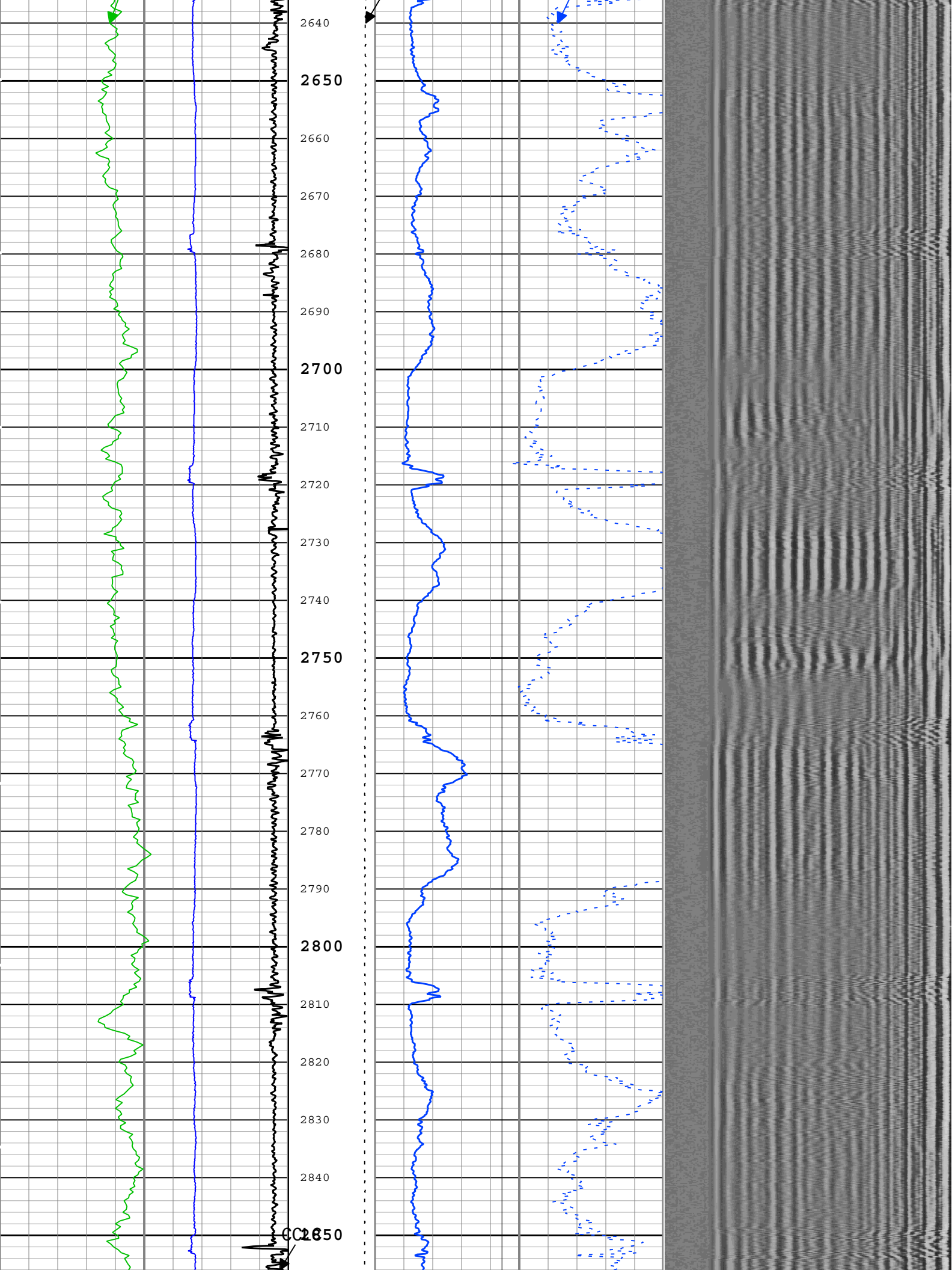


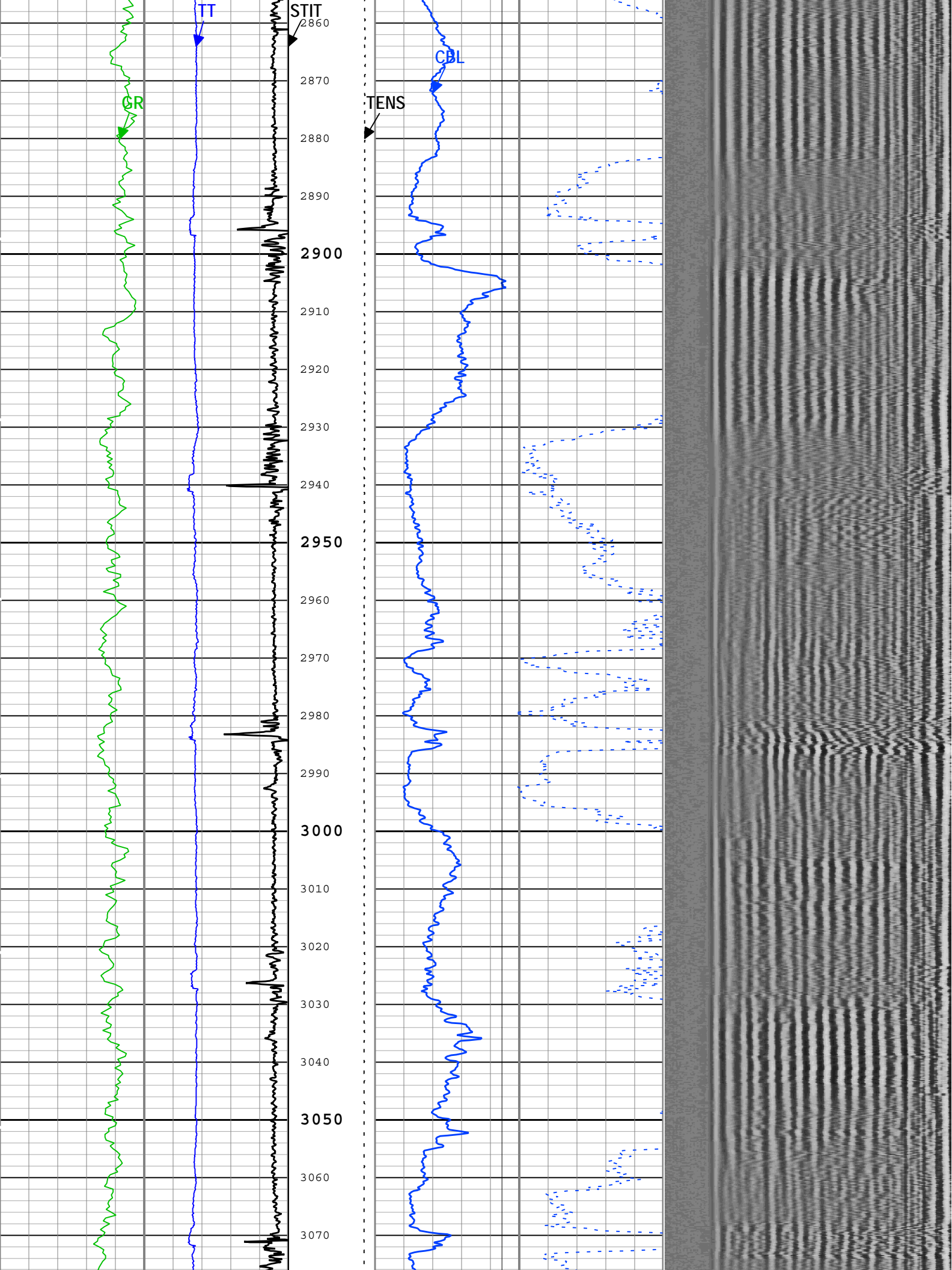


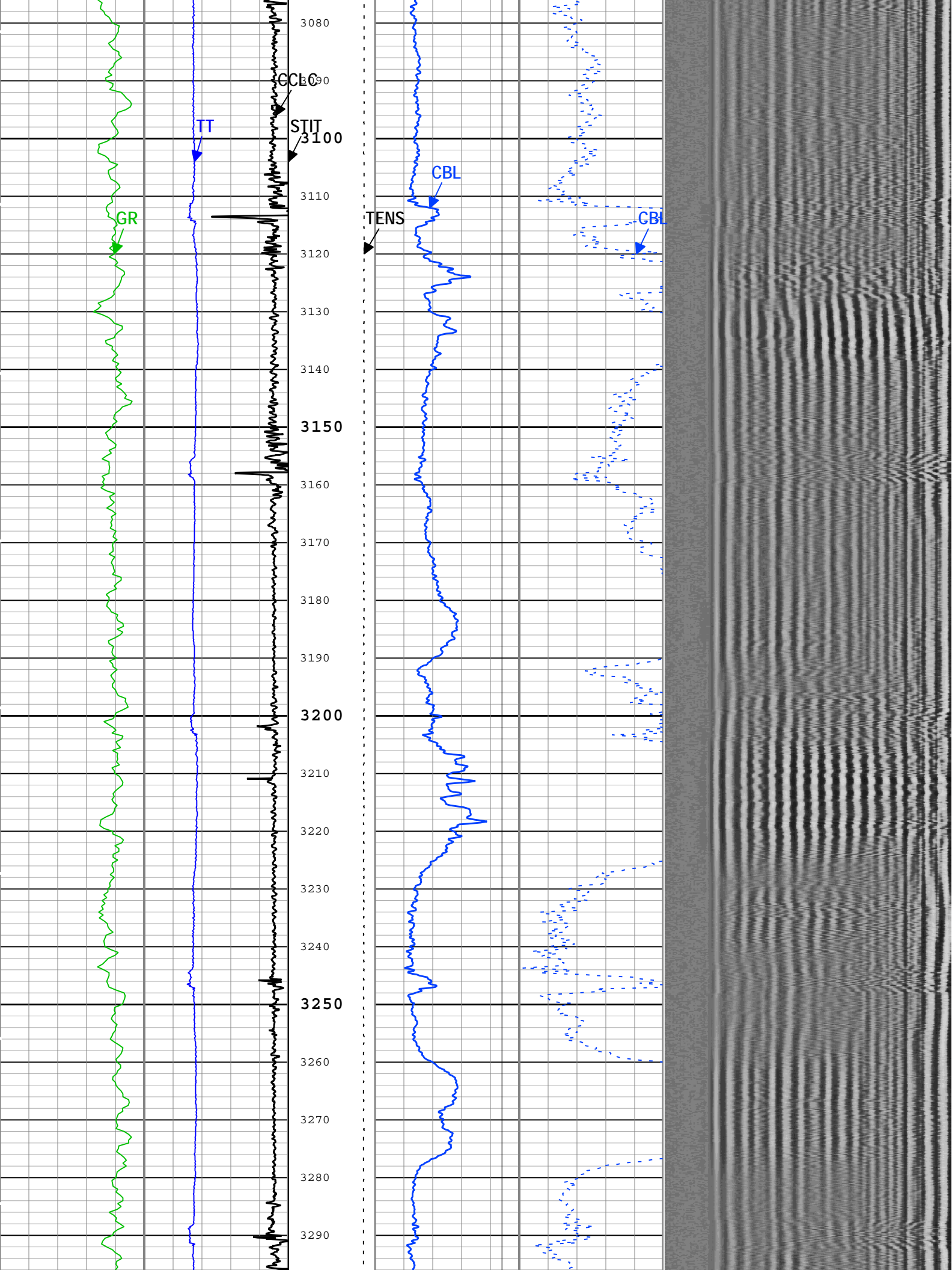


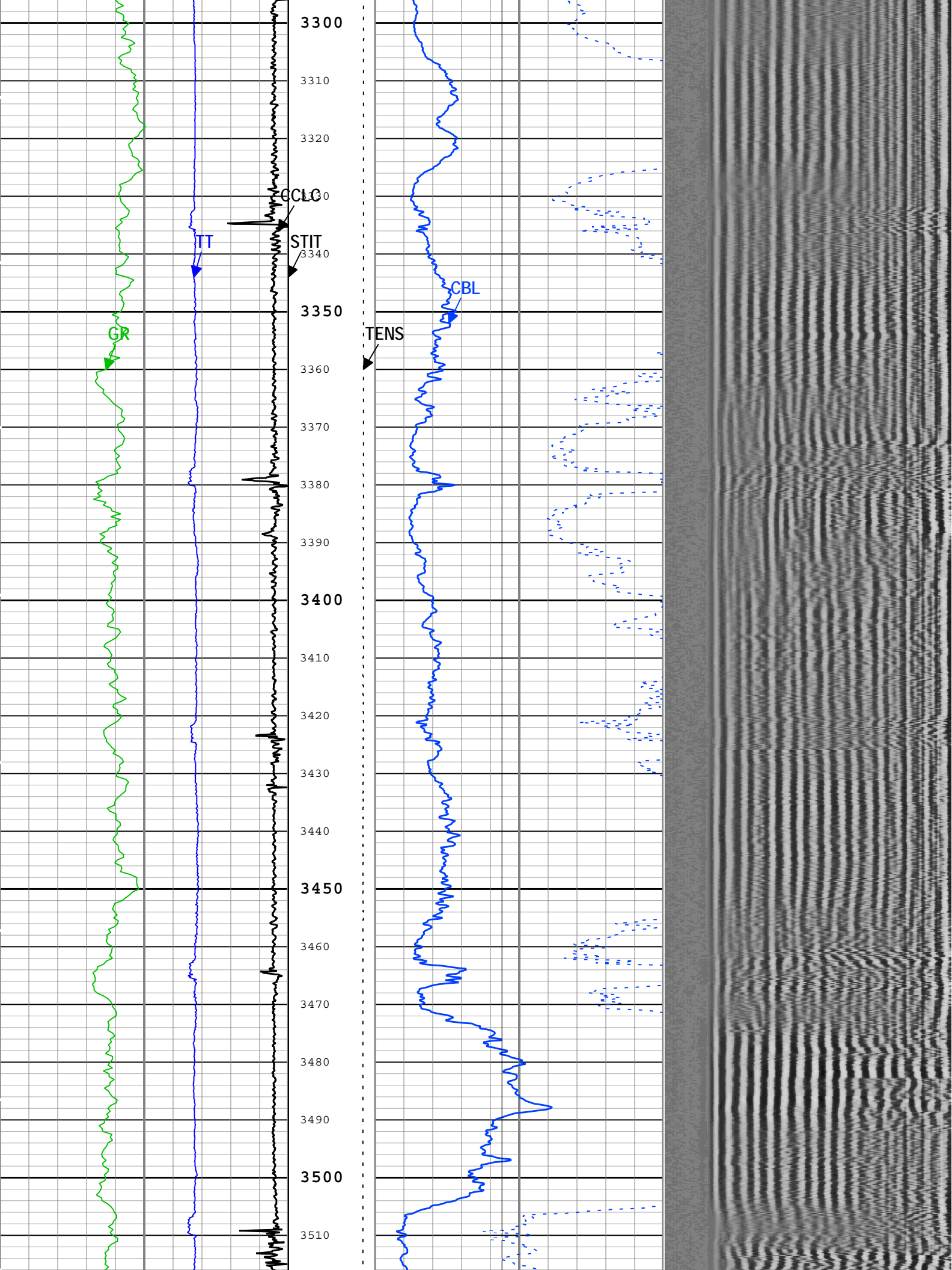


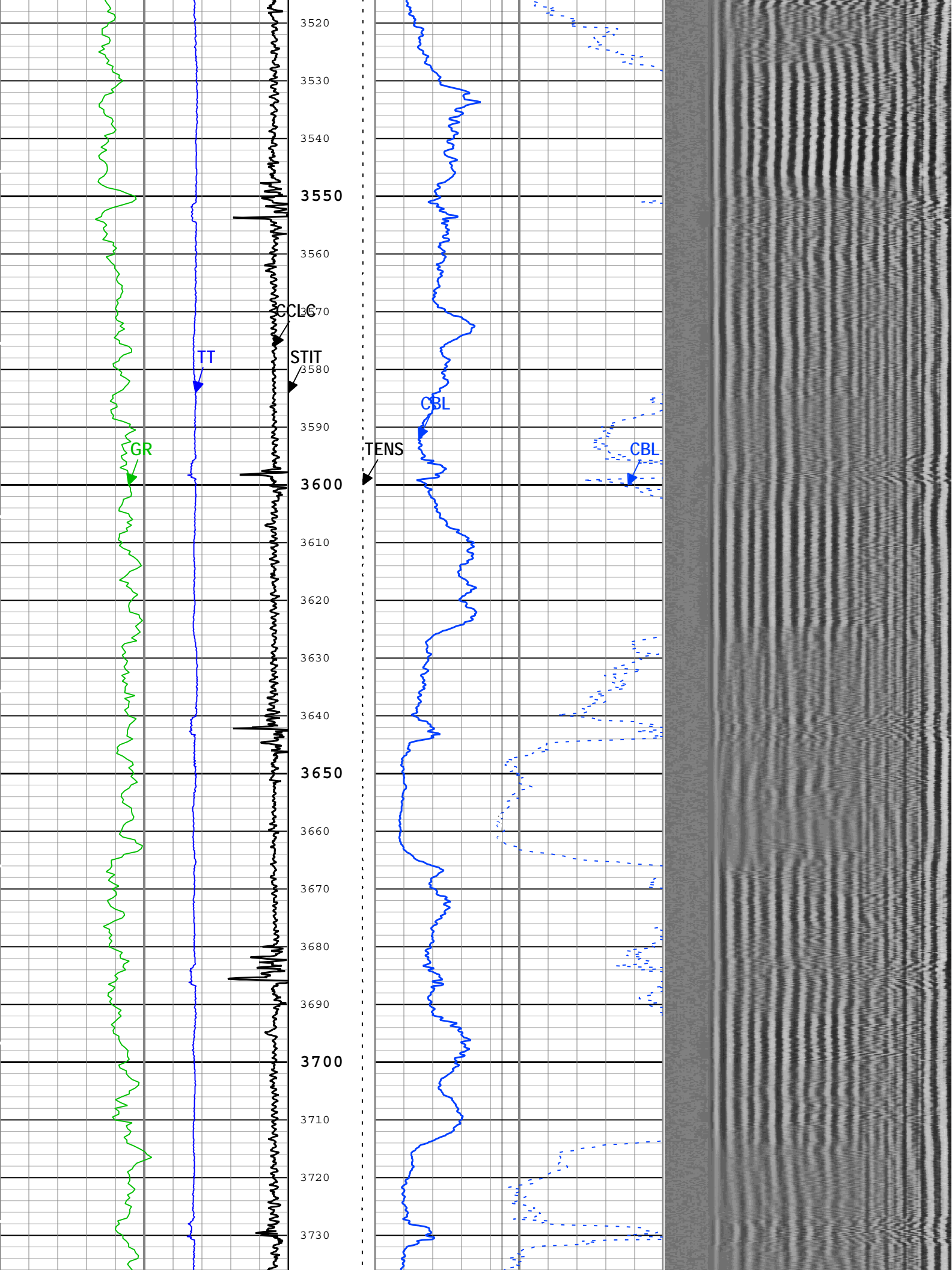


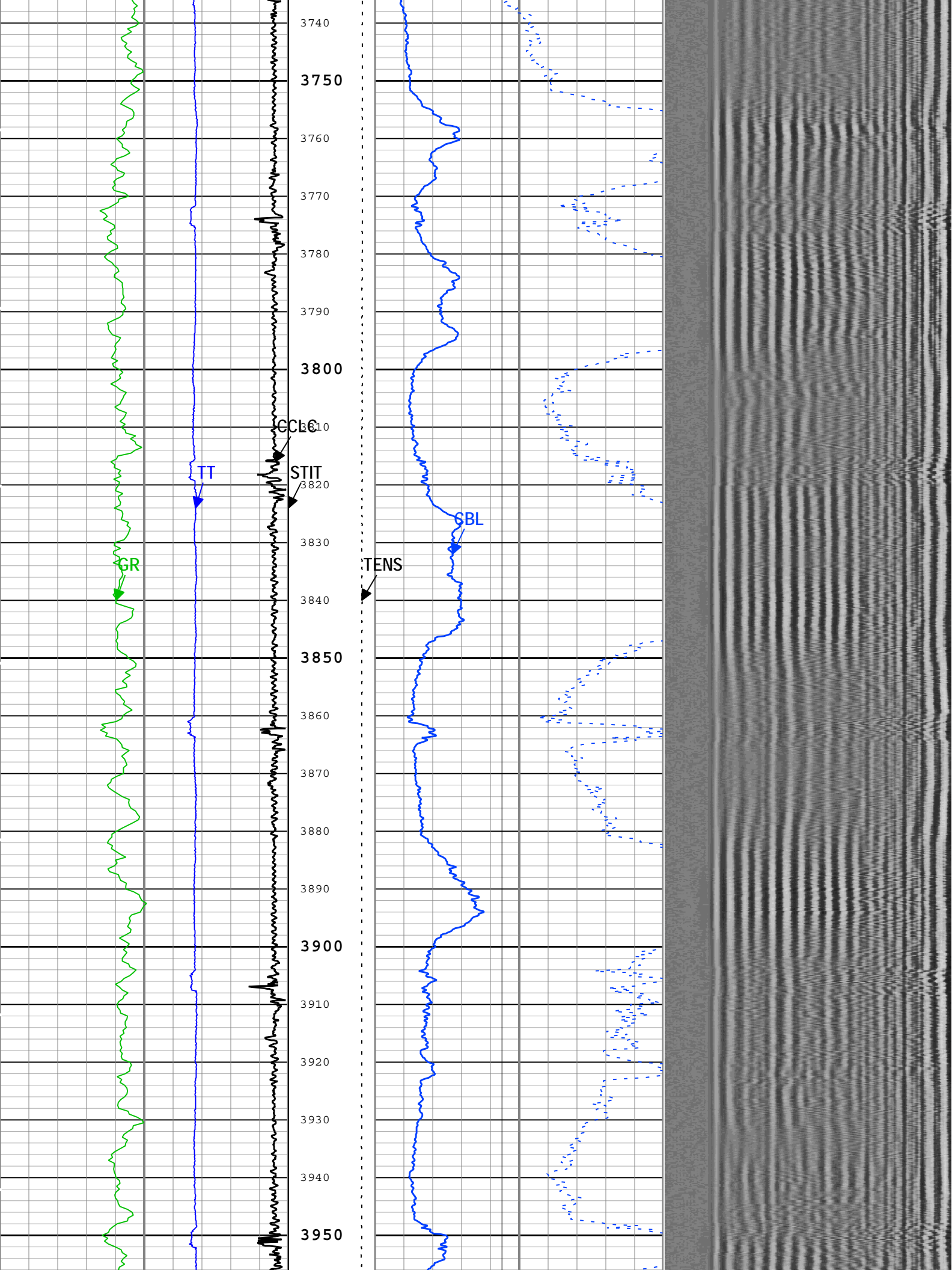


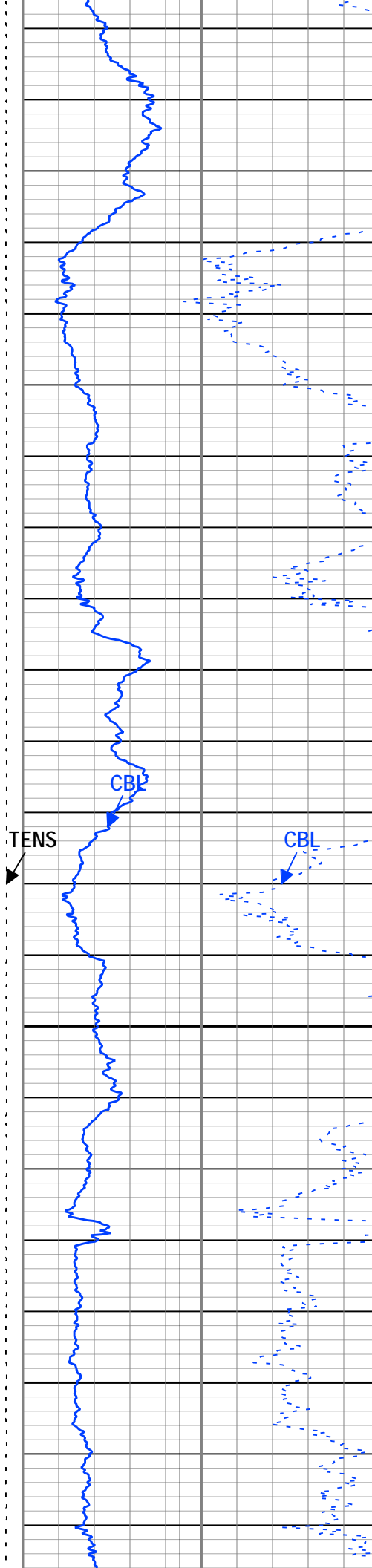
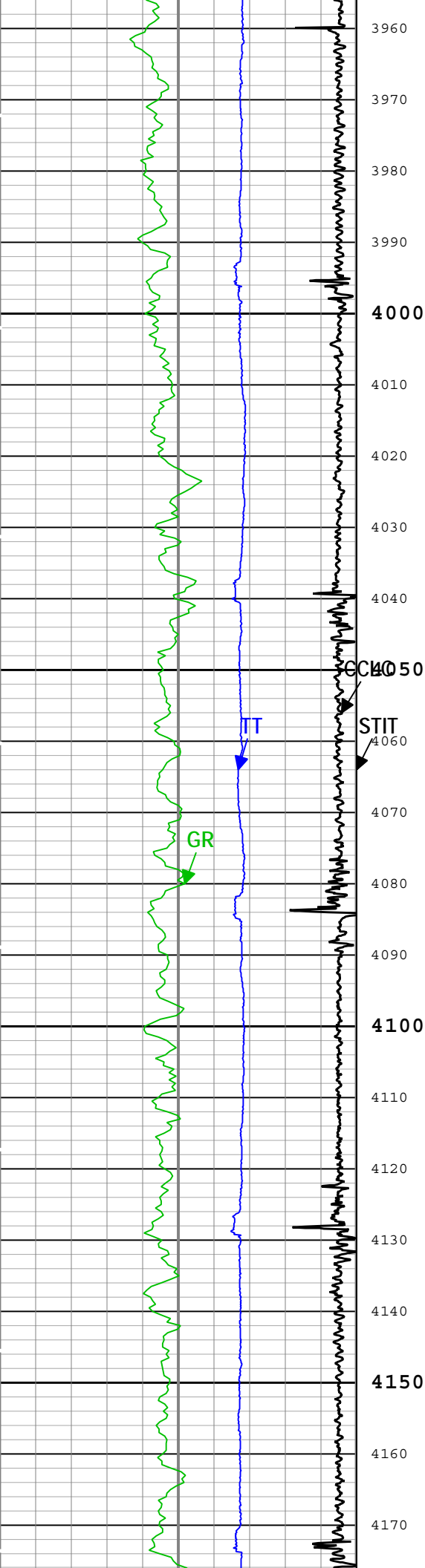


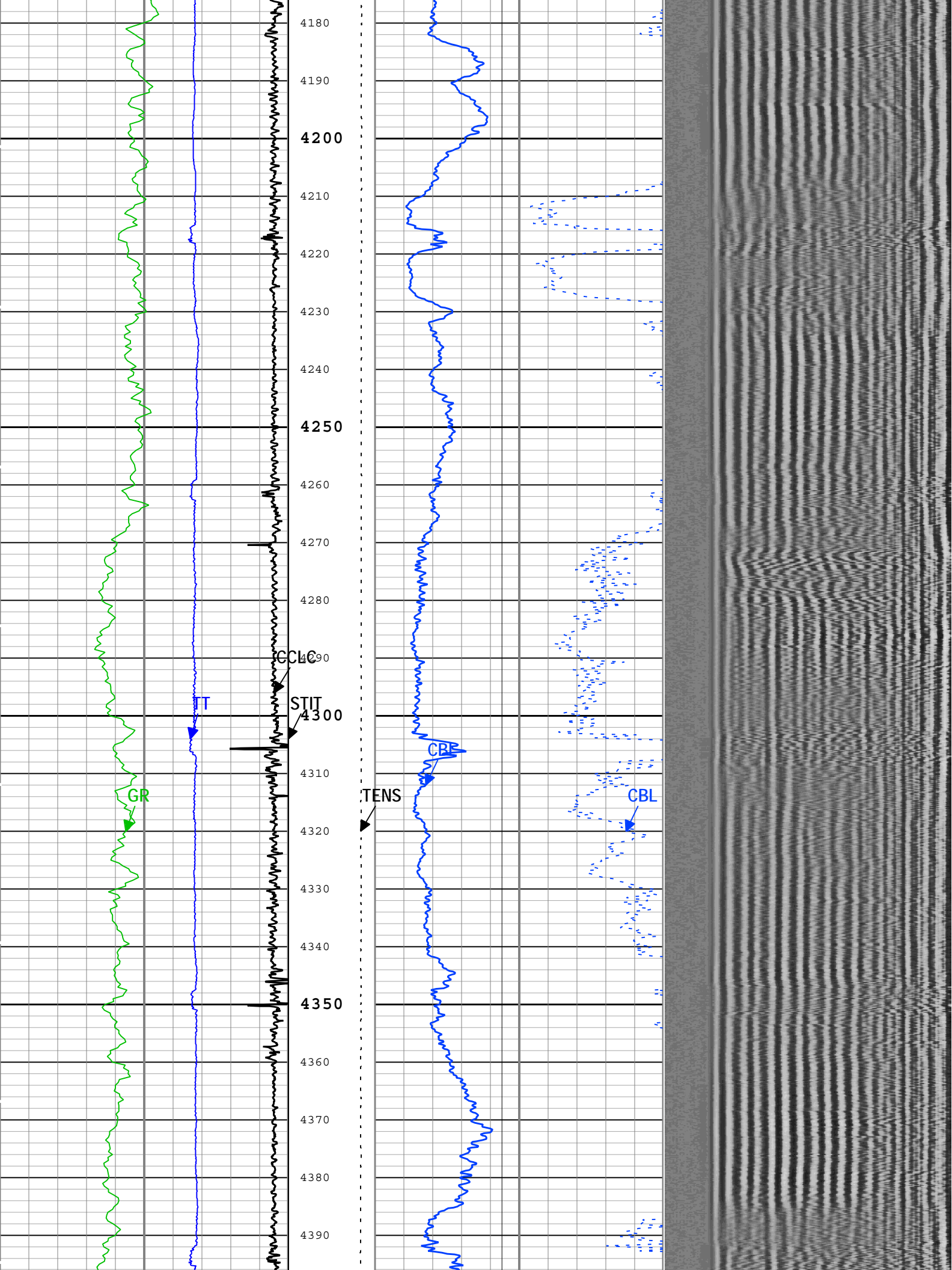


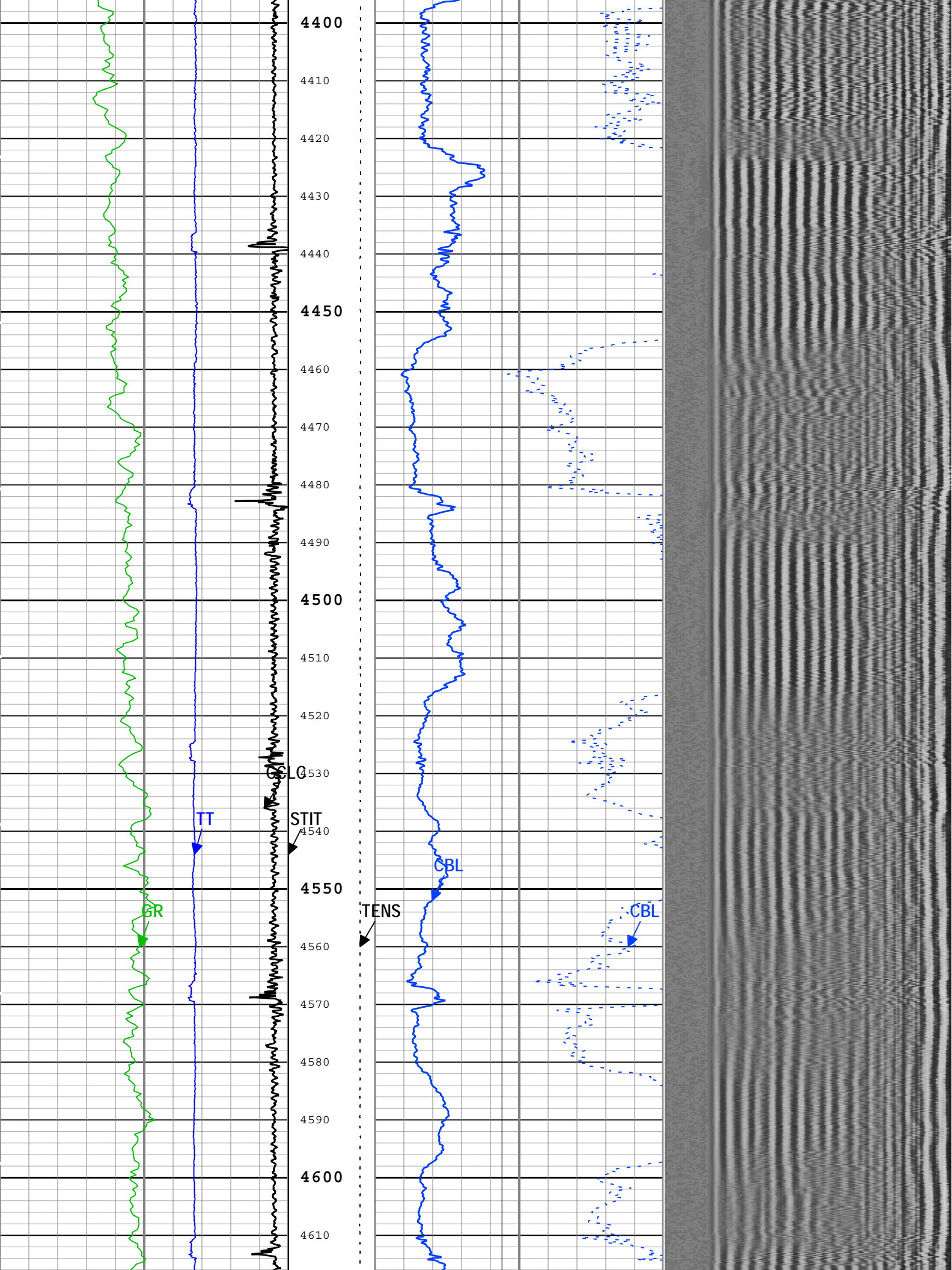


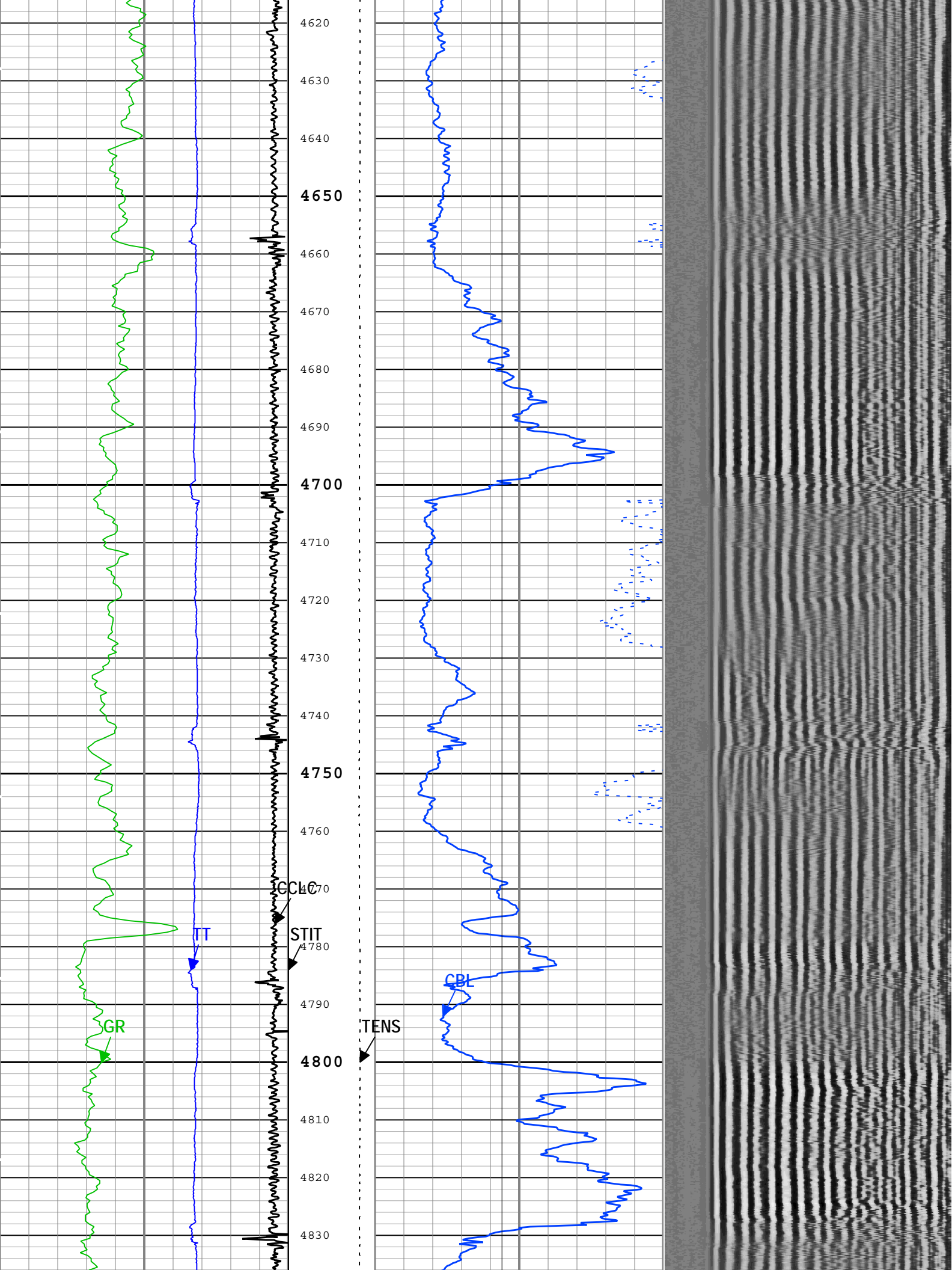


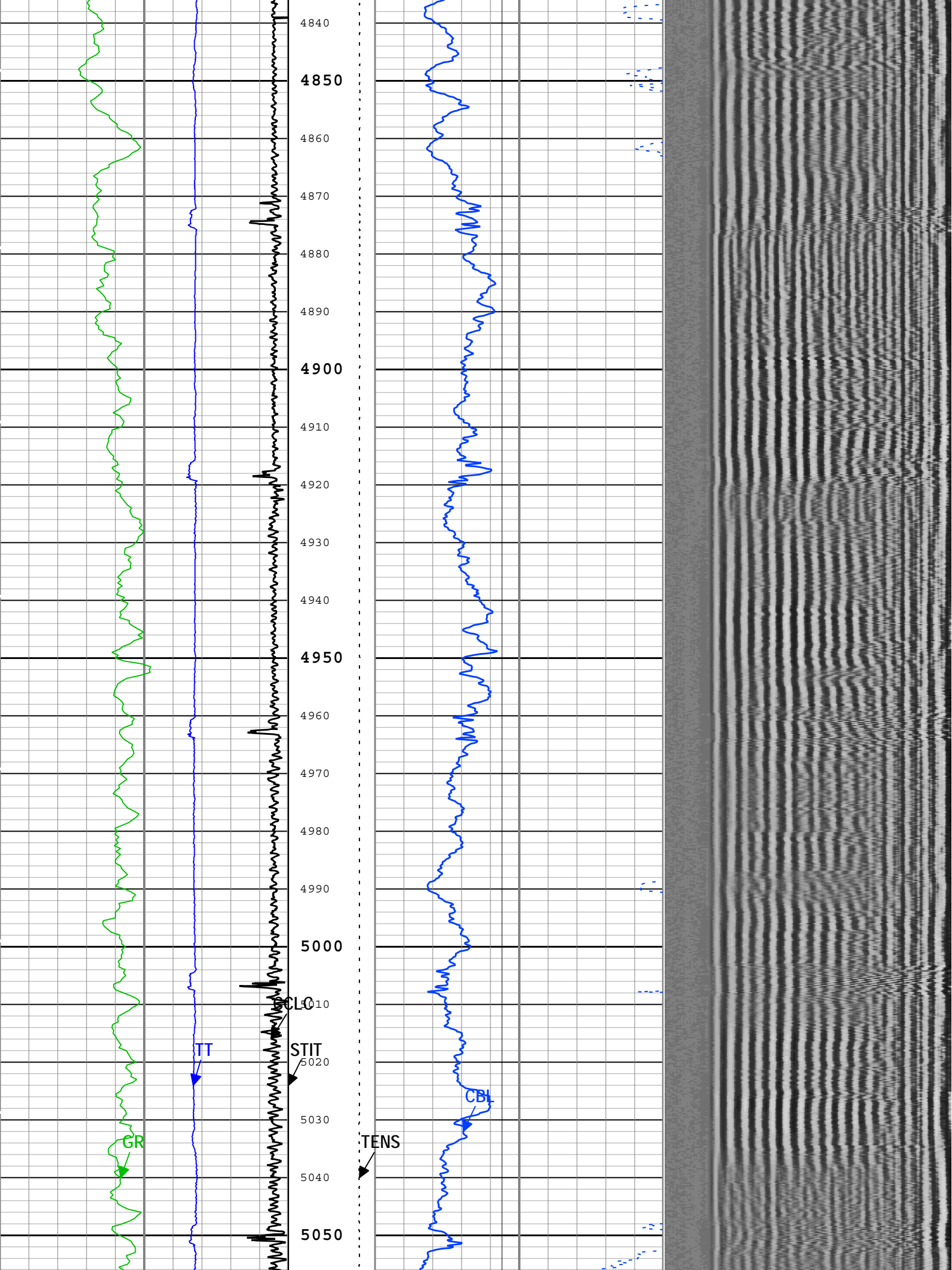


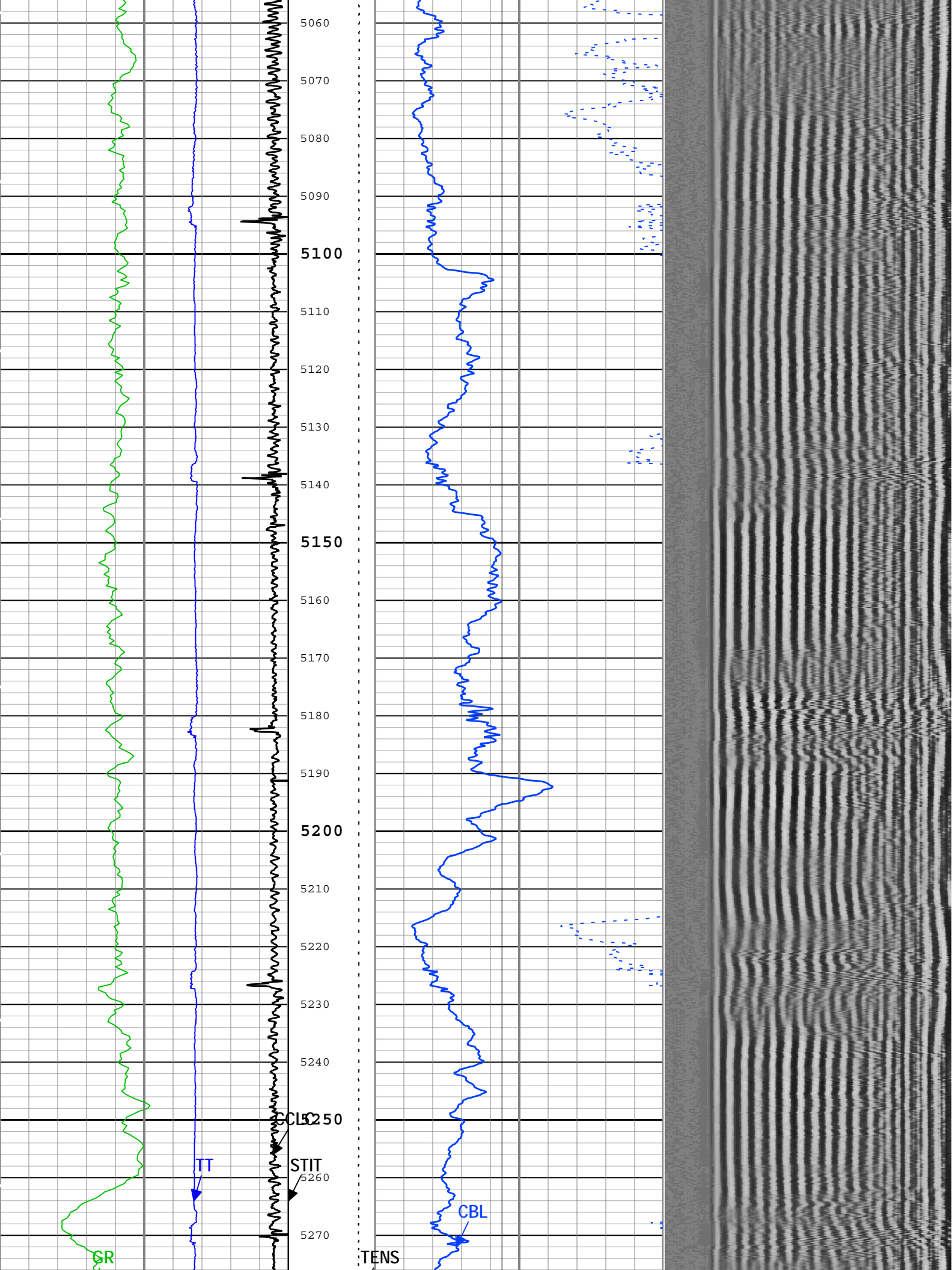


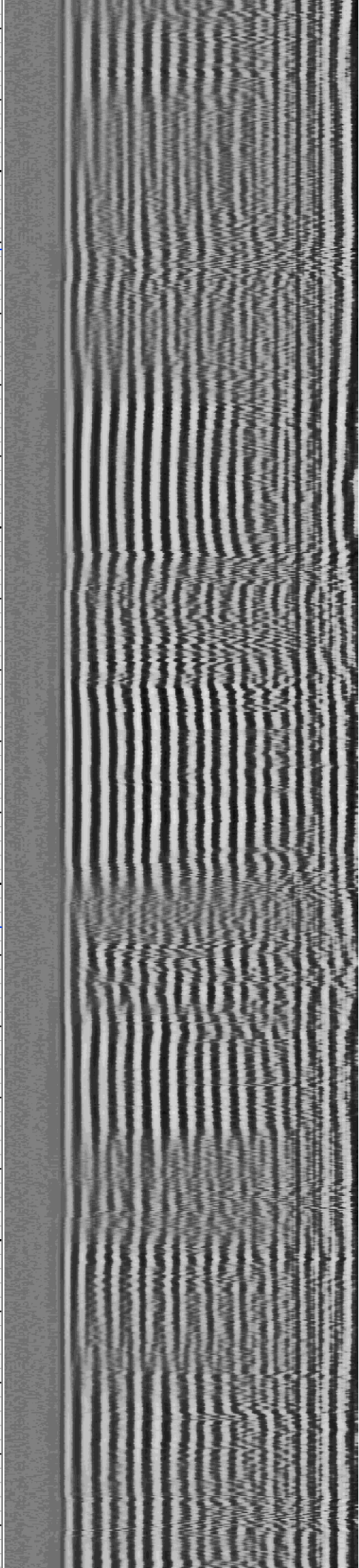
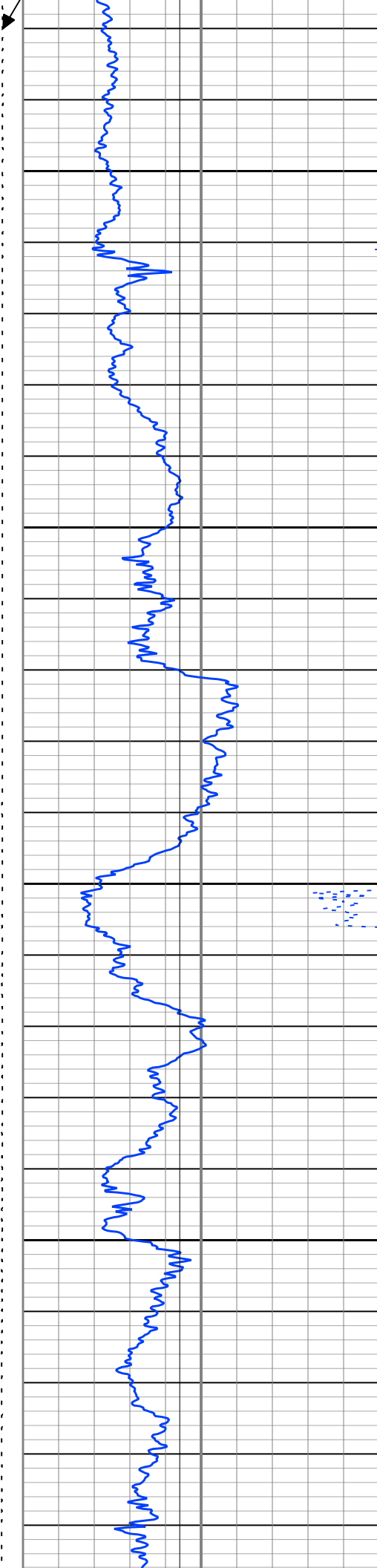
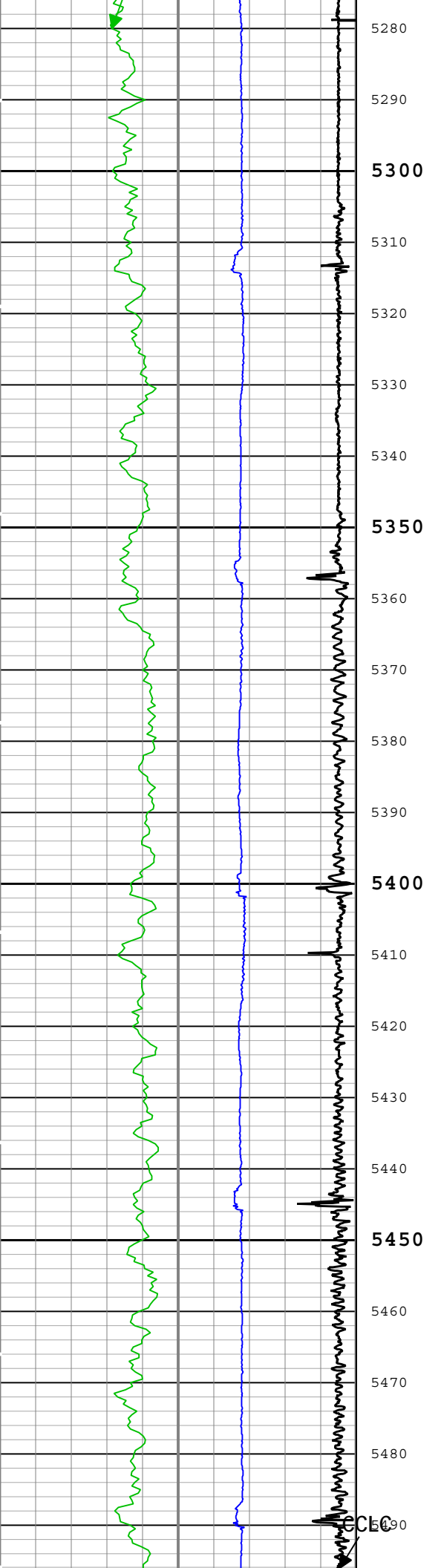


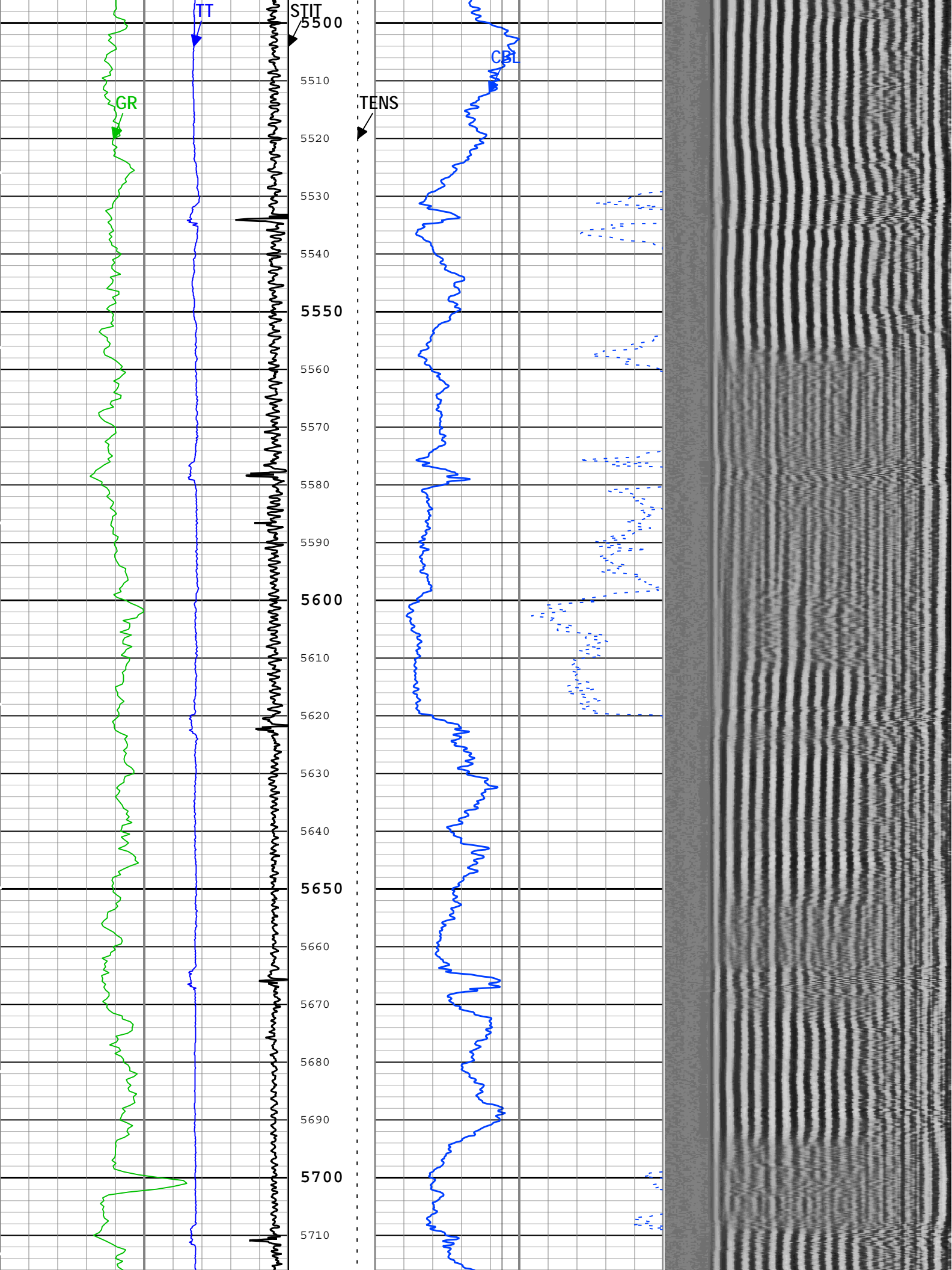


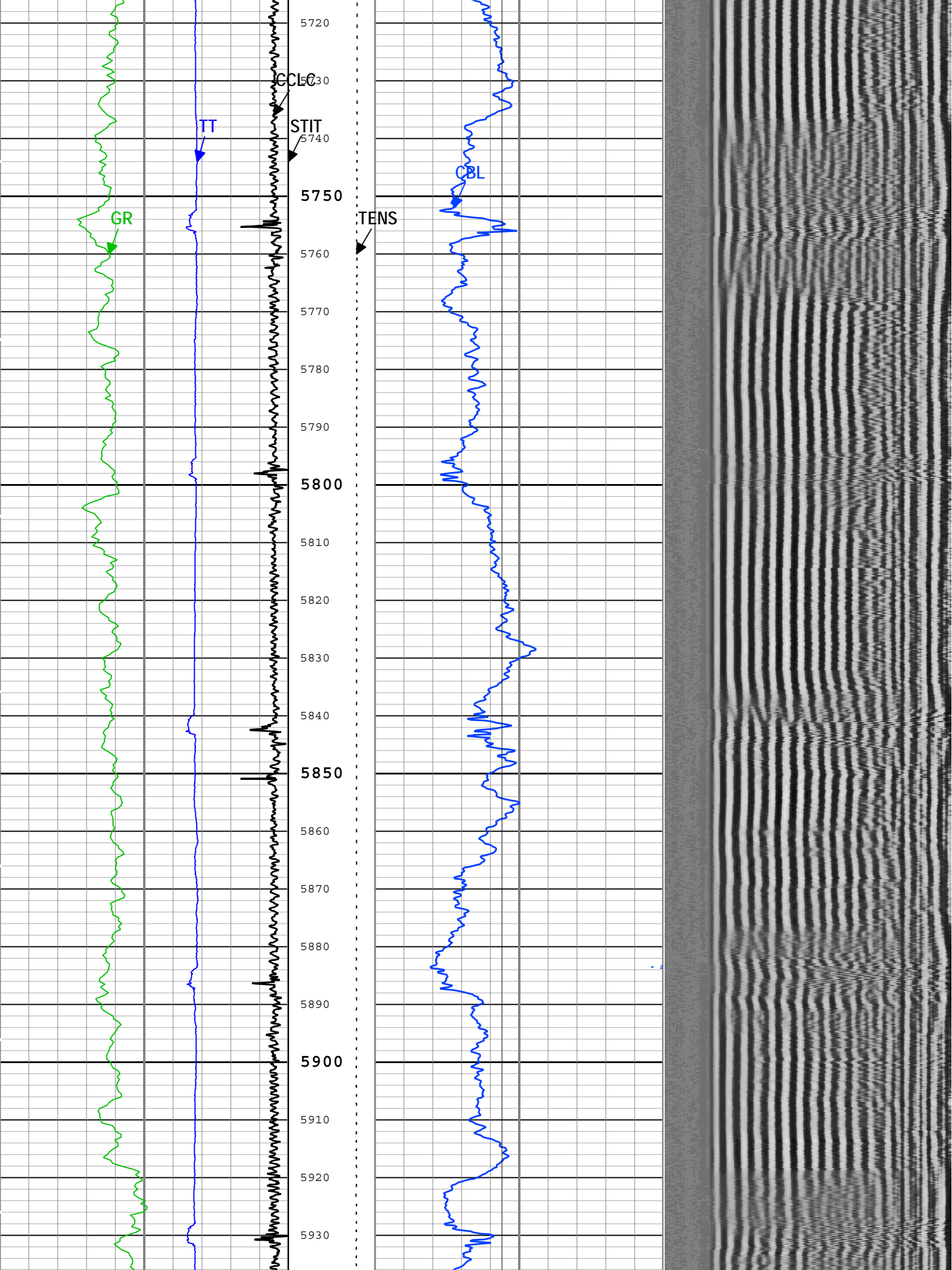


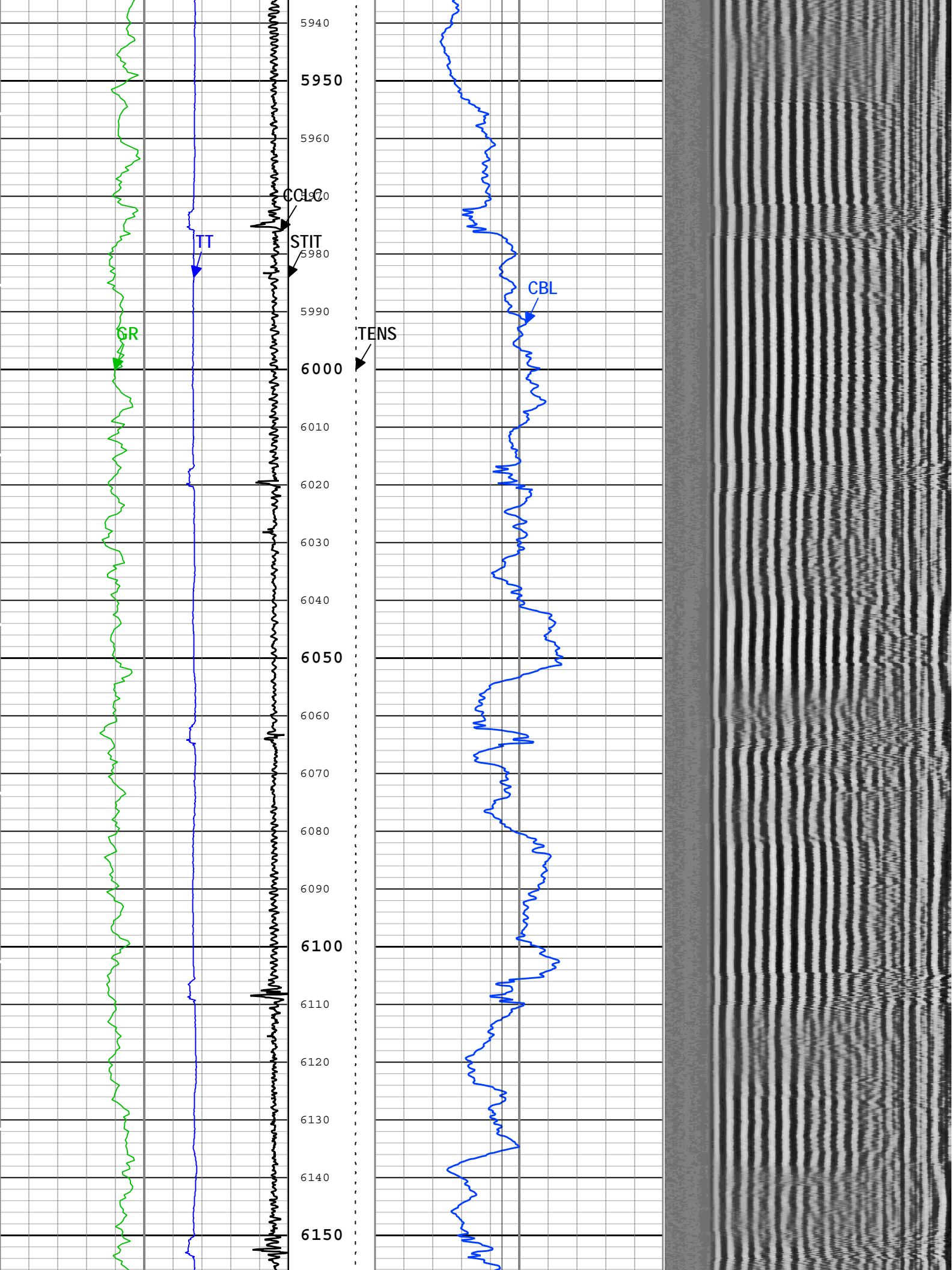


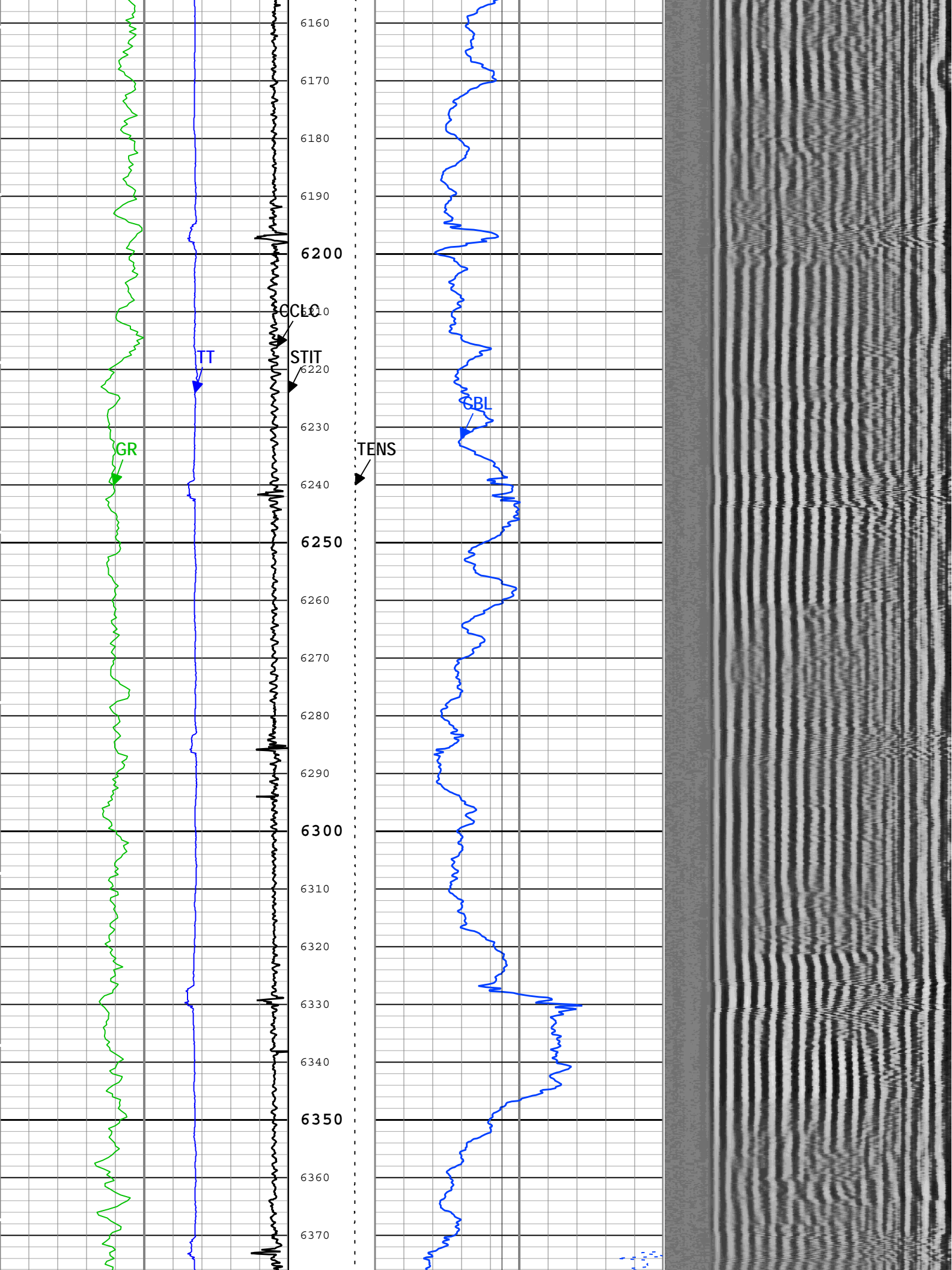


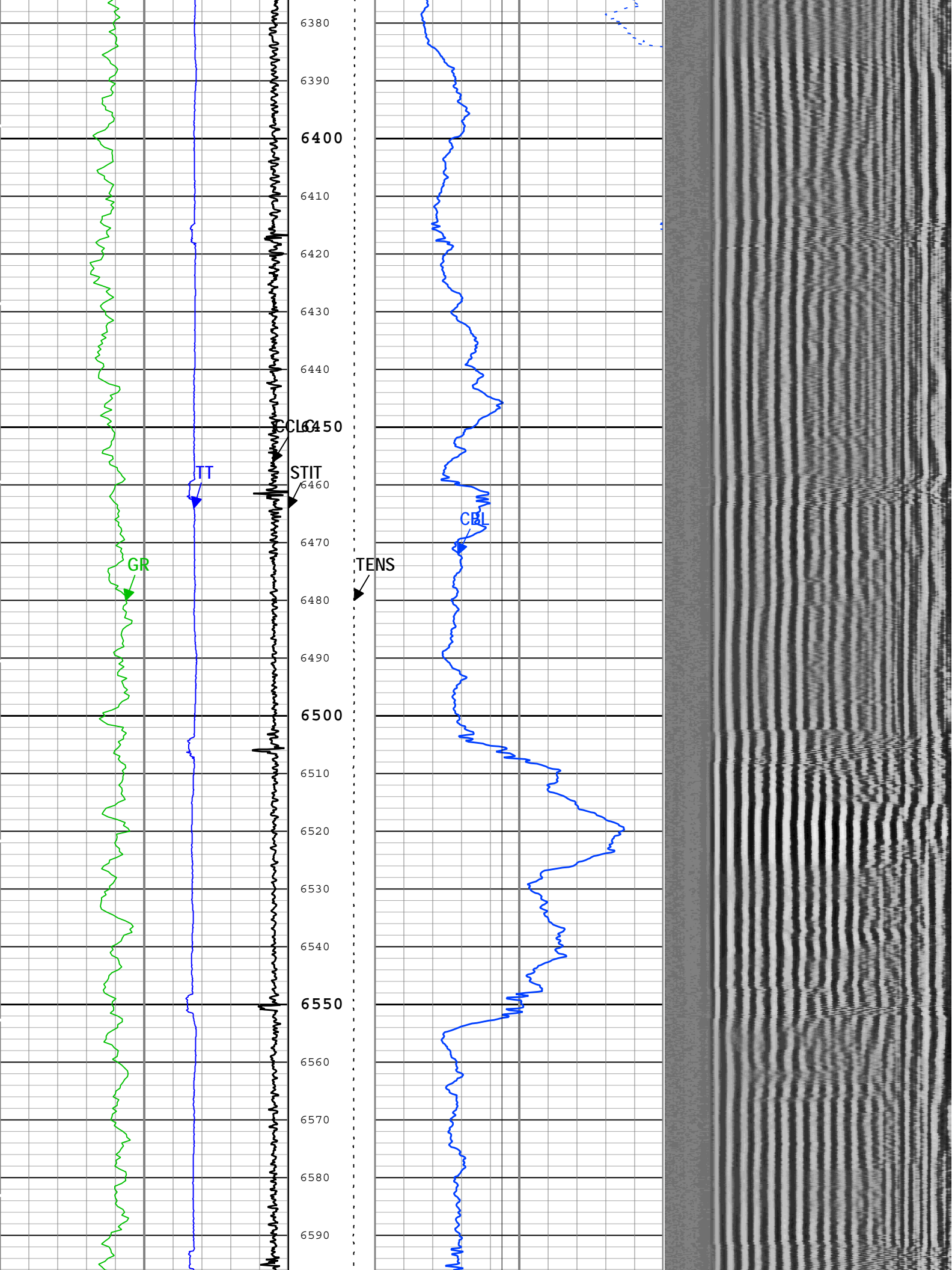


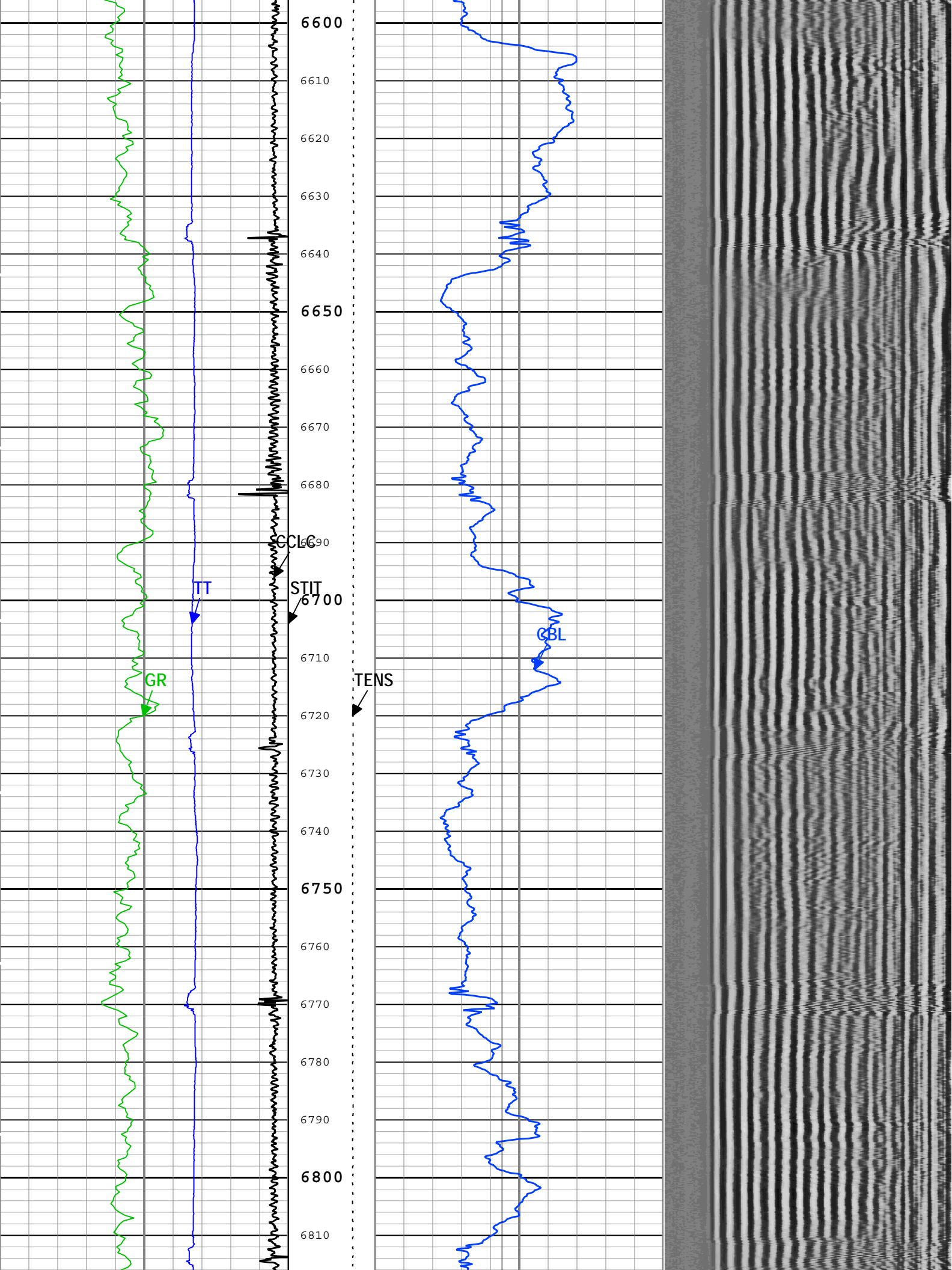


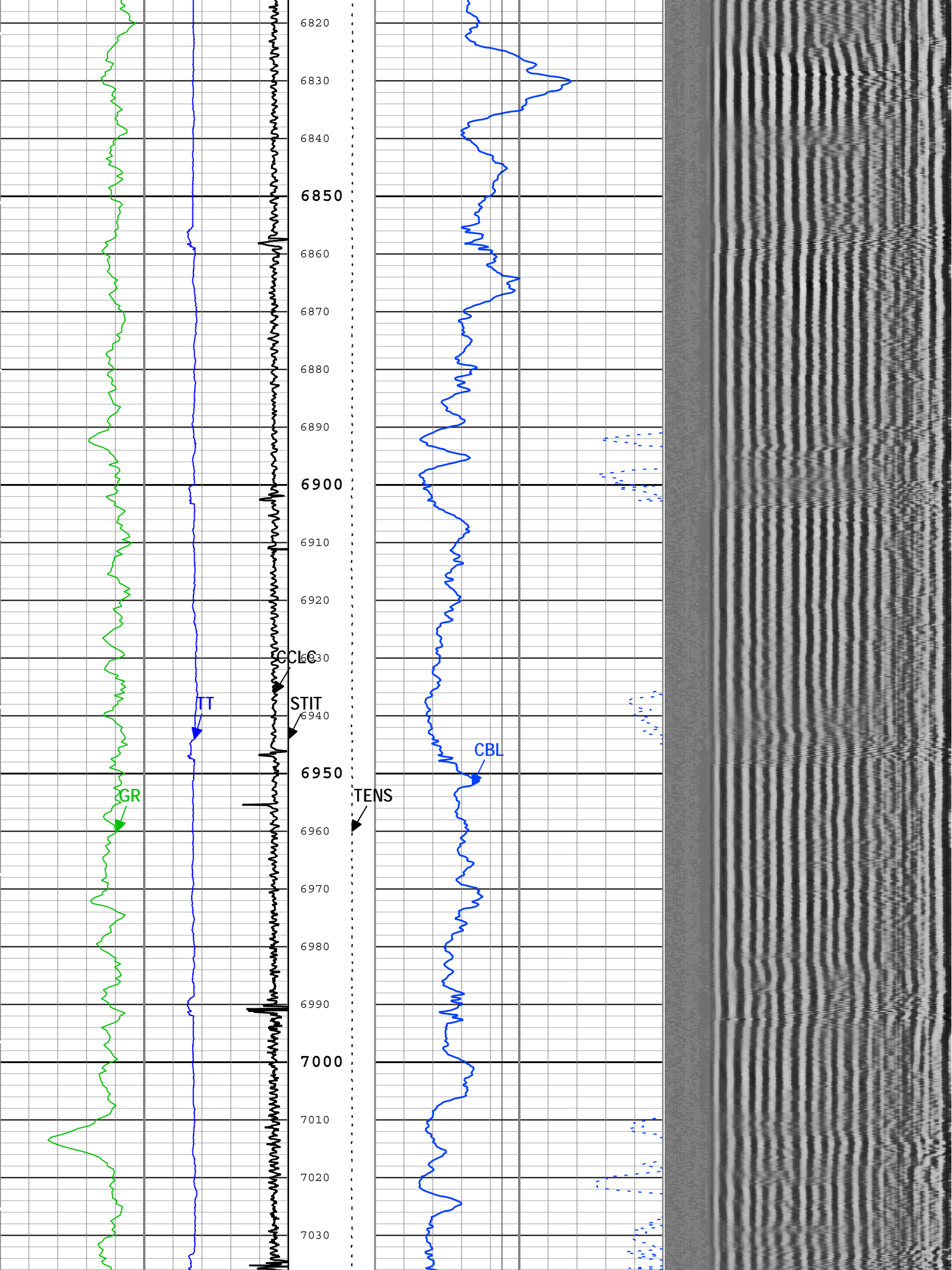


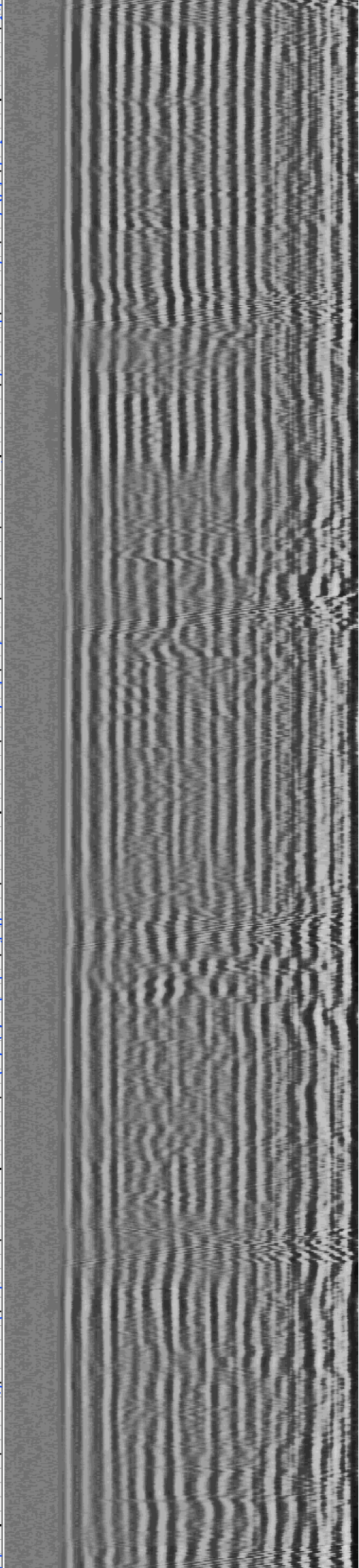
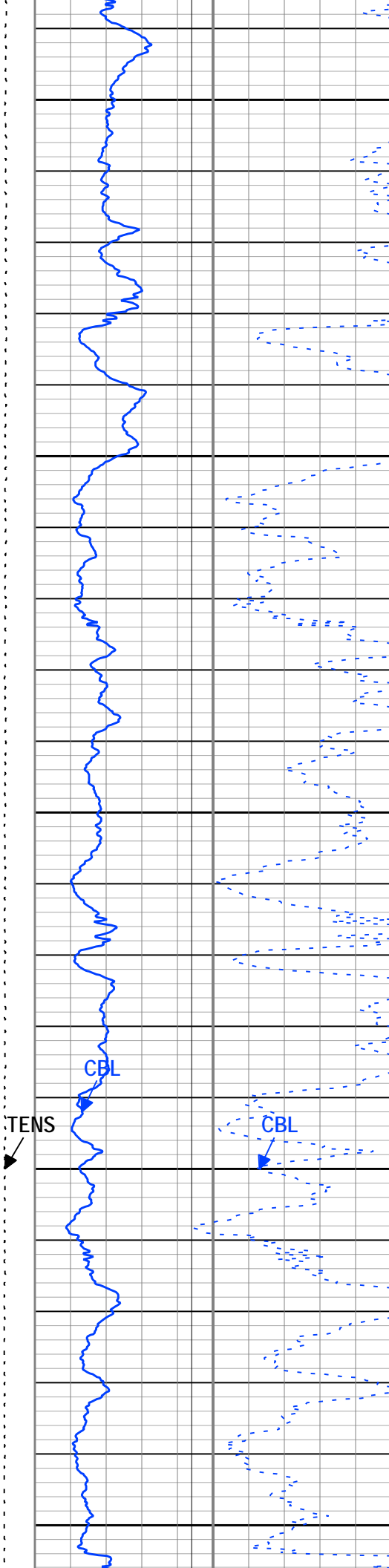
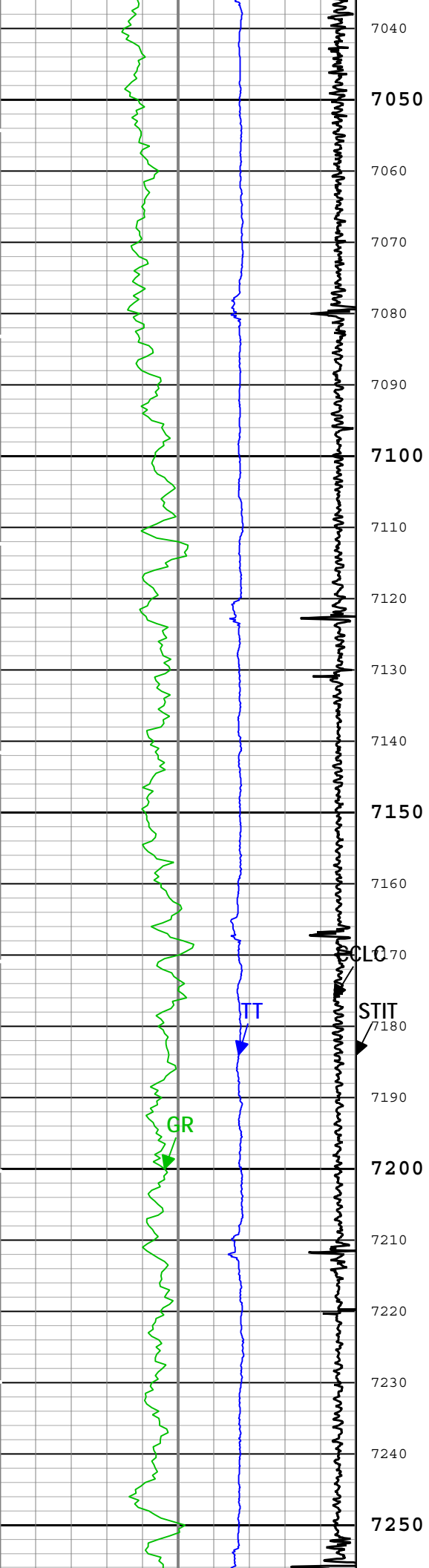


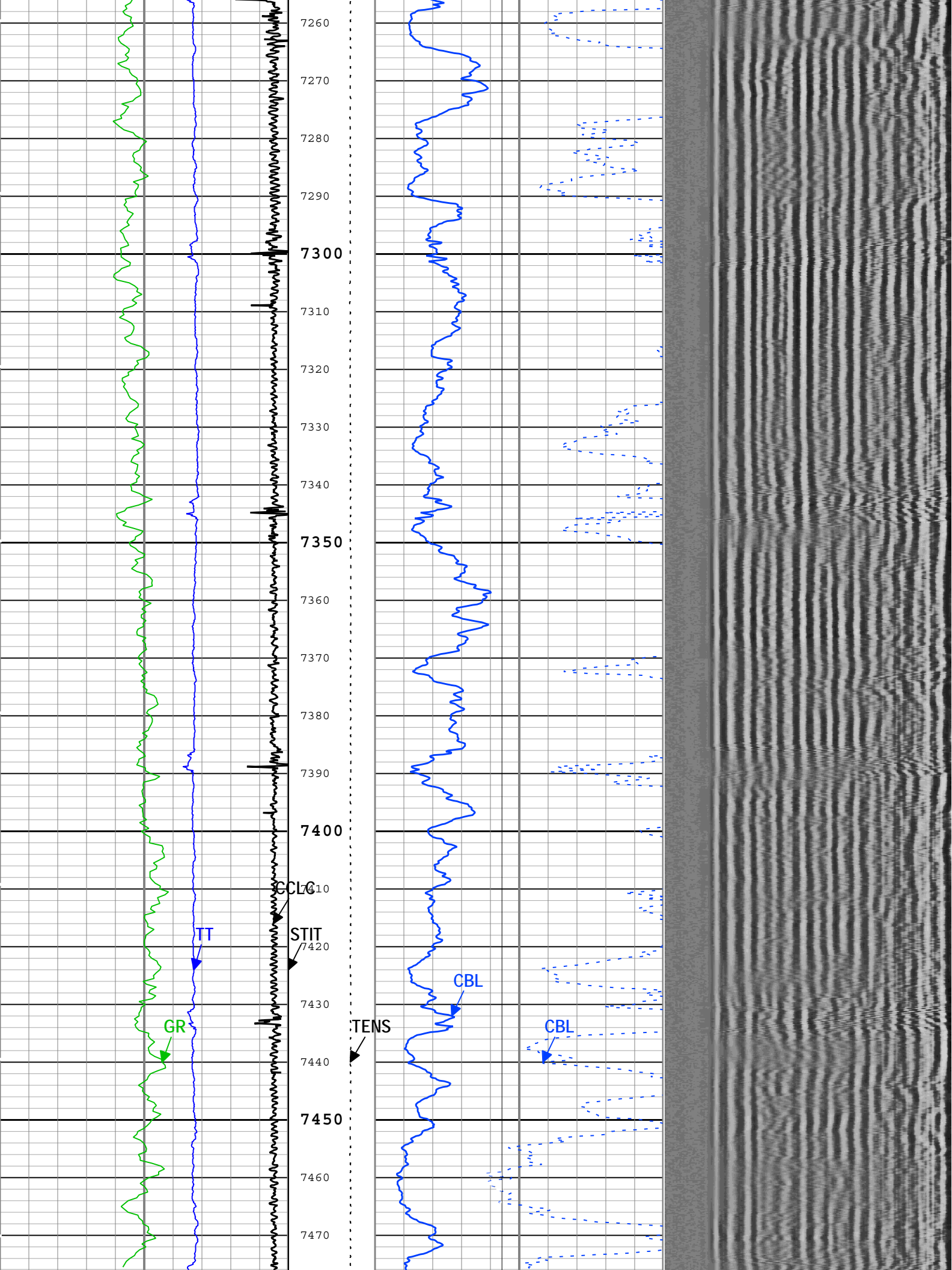












Primary Equipment :

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

Raw Amplitude (at 270 degree) - 0							
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 1	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	

Cement Bond Log
Variable Density Log