

Company: Caerus Piceance LLC

Well: Puckett 13C-1

Field: Wildcat

County: Garfield State: Colorado

Slim Cement Mapping Tool

CBL-VDL

County:	Garfield
Field:	Wildcat
Location:	SHL: S2, T7S, R97W
Well:	Puckett 13C-1
Company:	Caerus Piceance LLC
Location:	
SHL: S2, T7S, R97W	Elev.: K.B. 8509.00 ft
2233' FNL & 634' FEL	G.L. 8479.00 ft
LAT: 39.475658 / LONG: -108.180247	D.F. 8509.00 ft
Permanent Datum:	Ground Level
Log Measured From:	Kelly Bushing
Drilling Measured From:	Kelly Bushing
API Serial No.	Section: 2
05-045-22628	Township: 7S
	Range: 97W

Logging Date	22-Jul-2015
Run Number	ONE
Depth Driller	9110.00 ft
Schlumberger Depth	9041.00 ft
Bottom Log Interval	9041.00 ft
Top Log Interval	2500.00 ft
Casing Fluid Type	3% KCl
Salinity	
Density	9.1 lbm/gal
Fluid Level	0.00 ft
BIT/CASING/TUBING STRING	
Bit Size	8.75 in
From	2488.00 ft
To	9110.00 ft
Casing/Tubing Size	4.5 in
Weight	11.6 lbm/ft
Grade	P110
From	0.00 ft
To	9105.00 ft
Max Recorded Temperatures	235 degF
Logger on Bottom	22-Jul-2015 03:30:00
Unit Number	9115
Location:	Fort Morgan, CO.
Recorded By	Benjamin Mammon
Witnessed By	Natalie Naeve

Disclaimer

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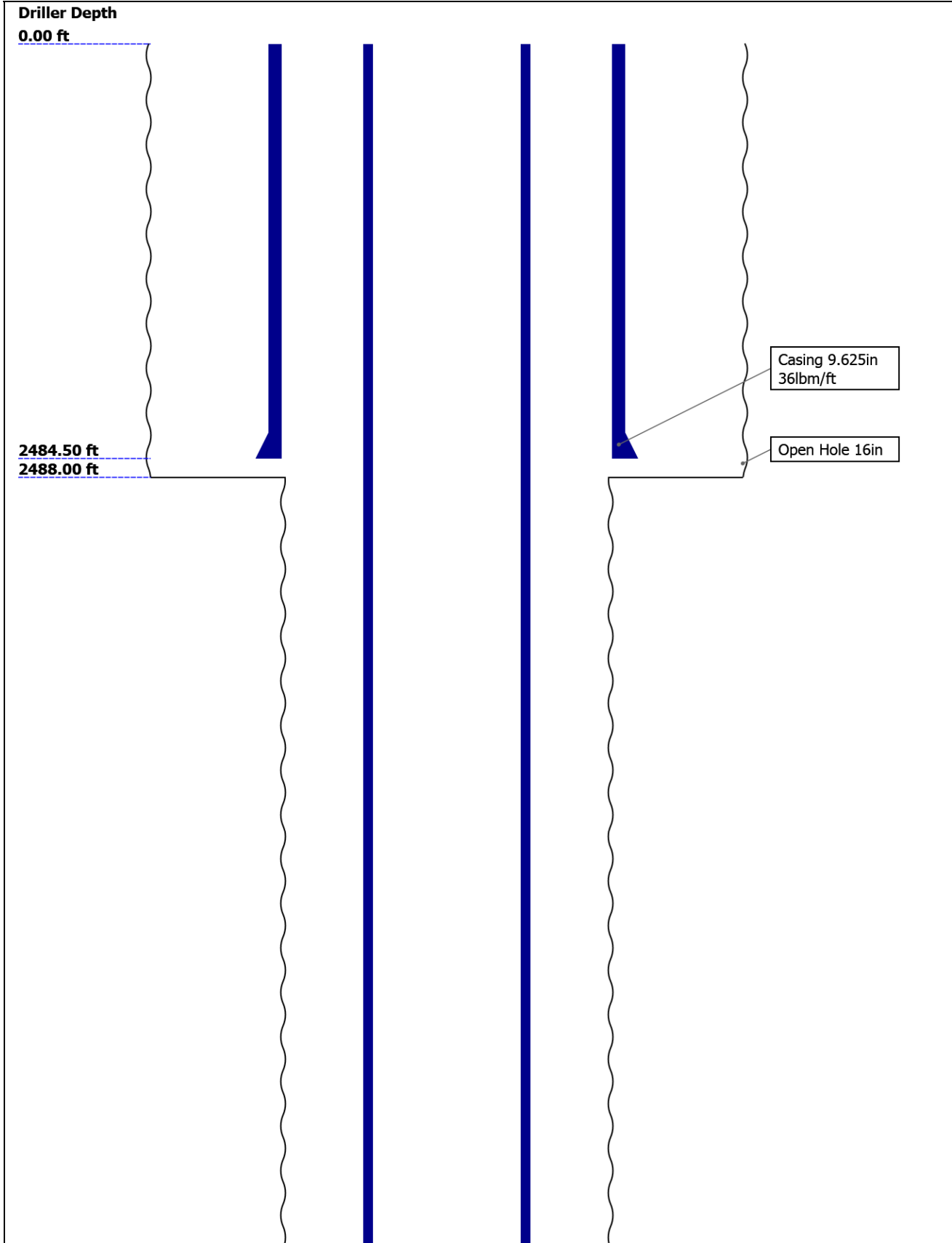
Contents

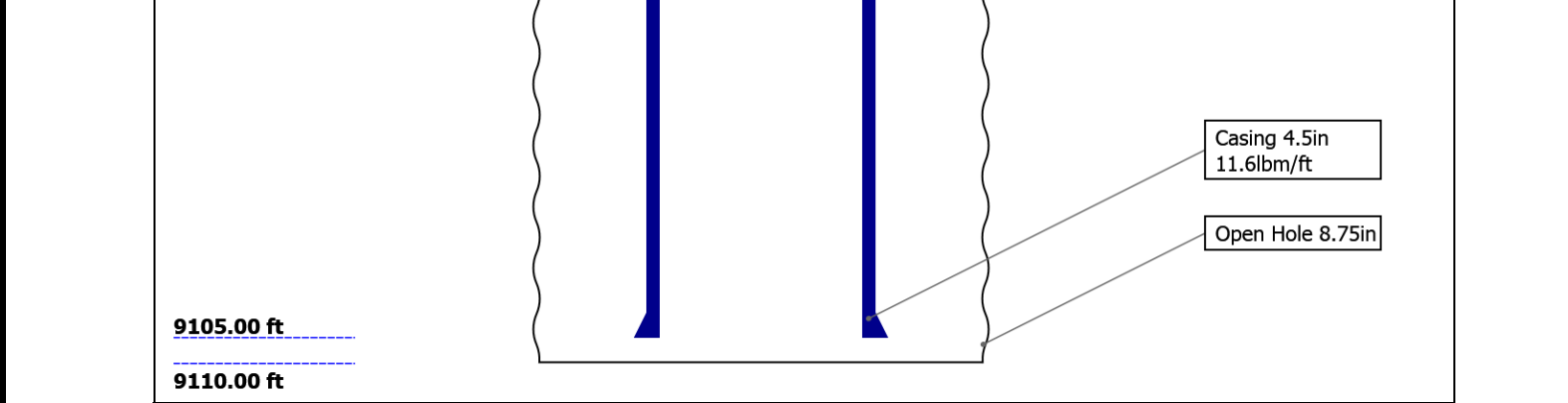
- 1. Header
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- 11. ONE
 - 11.1 Integration Summary
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Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	16	8.75				
Top Driller (ft)	0	2488				
Top Logger (ft)	0	2488				
Bottom Driller (ft)	2488	9110				
Bottom Logger (ft)	2488	9110				
Casing						
Size (in)	9.625	4.5				
Weight (lbm/ft)	36	11.6				
Inner Diameter (in)	8.921	4				
Grade	J55	P110				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	2484.5	9105				
Bottom Logger (ft)	2484.5	9105				

Operational Run Summary

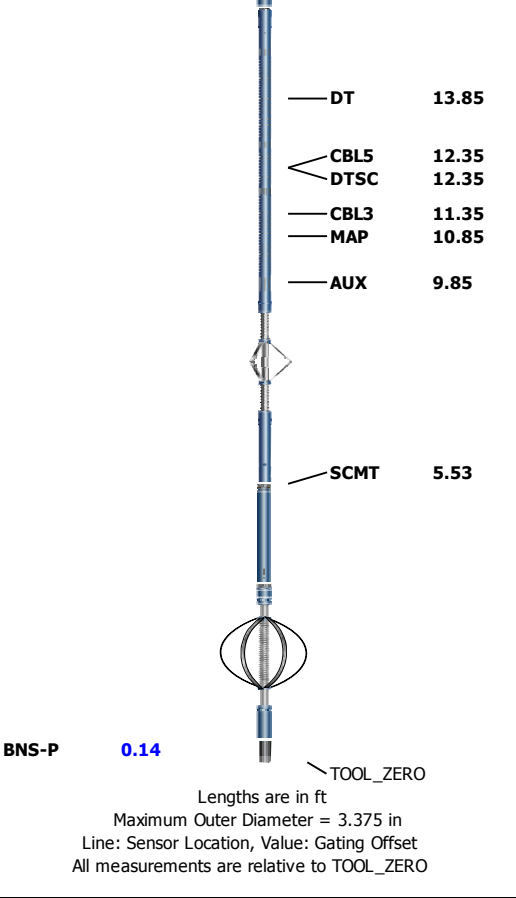
Parameter (unit)	ONE					
Date Log Started	22-Jul-2015					
Time Log Started	02:14:09					
Date Log Finished	22-Jul-2015					
Time Log Finished	08:03:20					
Top Log Interval (ft)	2500.00					
Bottom Log Interval (ft)	9041.00					
Total Depth (ft)	9059.00					
Max Hole Deviation (deg)	0.00					
Azimuth of Max Deviation (deg)	0.00					
Bit Size (in)	8.750					
Logging Unit Number	9115					
Logging Unit Location	Fort Morgan, CO.					
Recorded By	Benjamin Marmon					

Witnessed By	Natalie Naeve					
Service Order Number	D5ND-00068					

Remarks and Equipment Summary

ONE: Toolstring				ONE: Remarks	
<div><div><div>Equip name</div><div>Length</div></div><div>LEH-QT</div><div>58.3</div></div> <div><div><div>MP name</div><div>Offset</div></div><div>LEH-QT</div><div></div></div>		Toolstring ran as per tool sketch			
This is first run in hole					
Main and repeat passes are correlated to down log.					
RST ran in Sigma mode					
Matrix: Sandstone, 2.68 g/cc					
Tagged float collar at 9042 ft					
Repeat pass is done with 0 psi					
Main pass is done with 2200 psi					
Log stopped at 2500 ft as per client's request					
<div><div><div>Equip name</div><div>Length</div></div><div>LEH-QT</div><div>58.3</div></div> <div><div><div>MP name</div><div>Offset</div></div><div>LEH-QT</div><div></div></div>					
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<div><div><div>Equip name</</div></div></div>					





Depth Summary			
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	ONE		
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Depth Measuring Device			
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Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		

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

Logging Cable			
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Type	7-46A-XS		
Serial Number			
Length	21000.00 ft		
Conveyance Type	Wireline		
Rig Type	Crane		

ONE:Depth Control Parameters		Depth Control Remarks	
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Log Sequence	First Log In the Well	All Schlumberger depth control procedures followed during logging operations.	
Rig Up Length At Surface		IDW used as primary depth control device.	

Rig Up Length At Bottom	Z-Chart used as secondary depth control.
Rig Up Length Correction	
Stretch Correction	
Tool Zero Check At Surface	

ONE

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
ONE	Main[3]:Up	Up	2435.96 ft	9042.63 ft	22-Jul-2015 4:01:20 AM	22-Jul-2015 7:41:43 AM	ON	8.33 ft	Yes

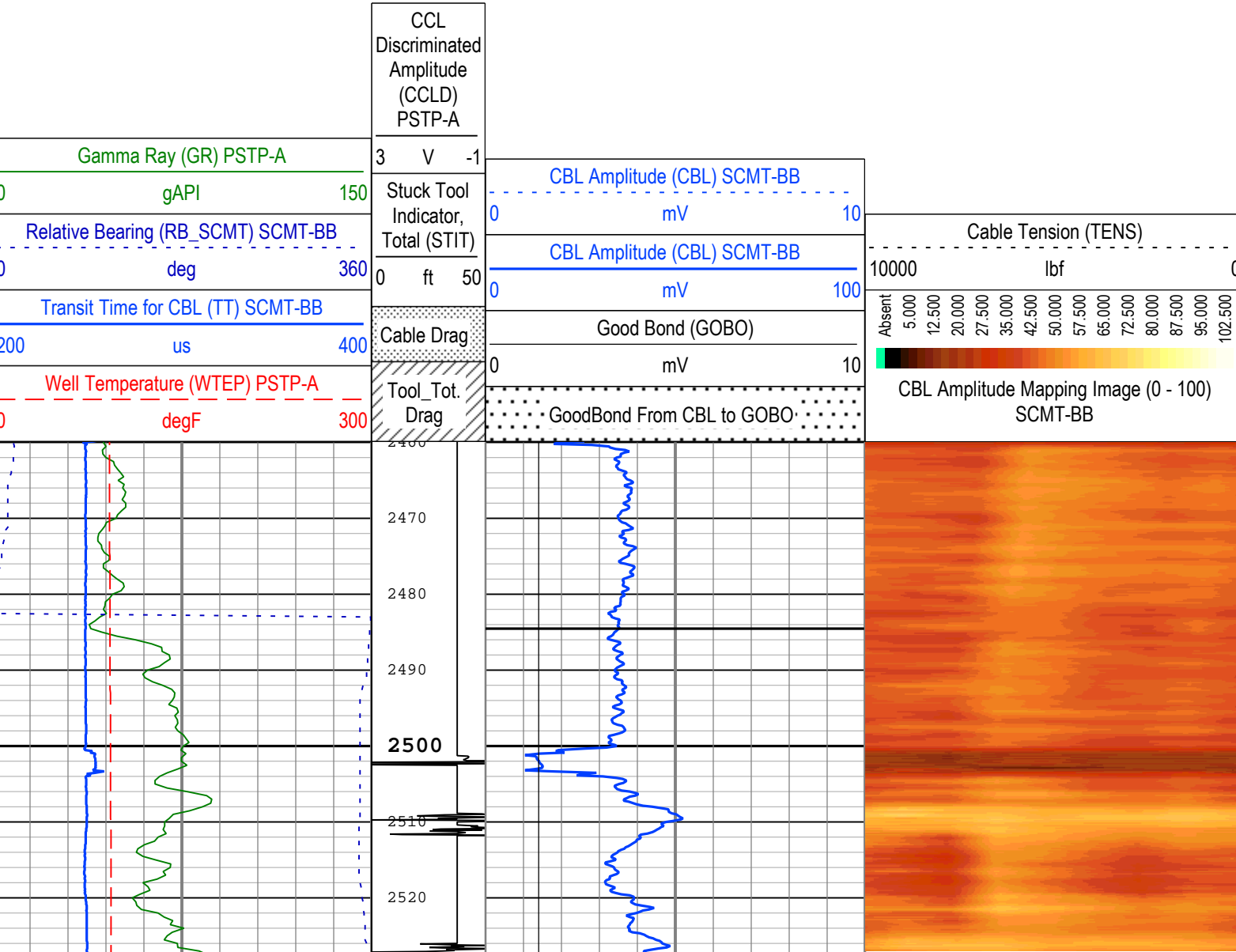
All depths are referenced to toolstring zero

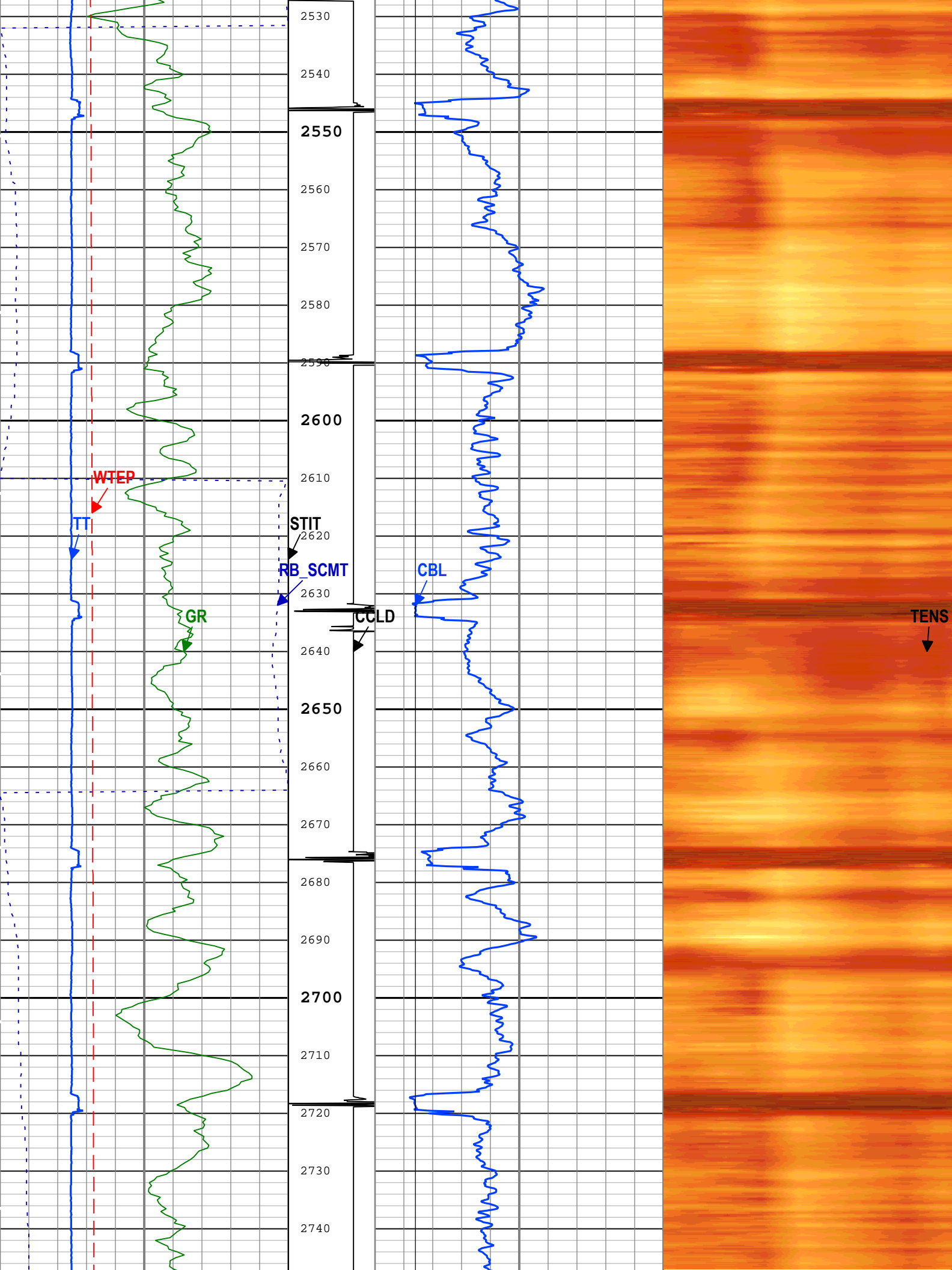
Log

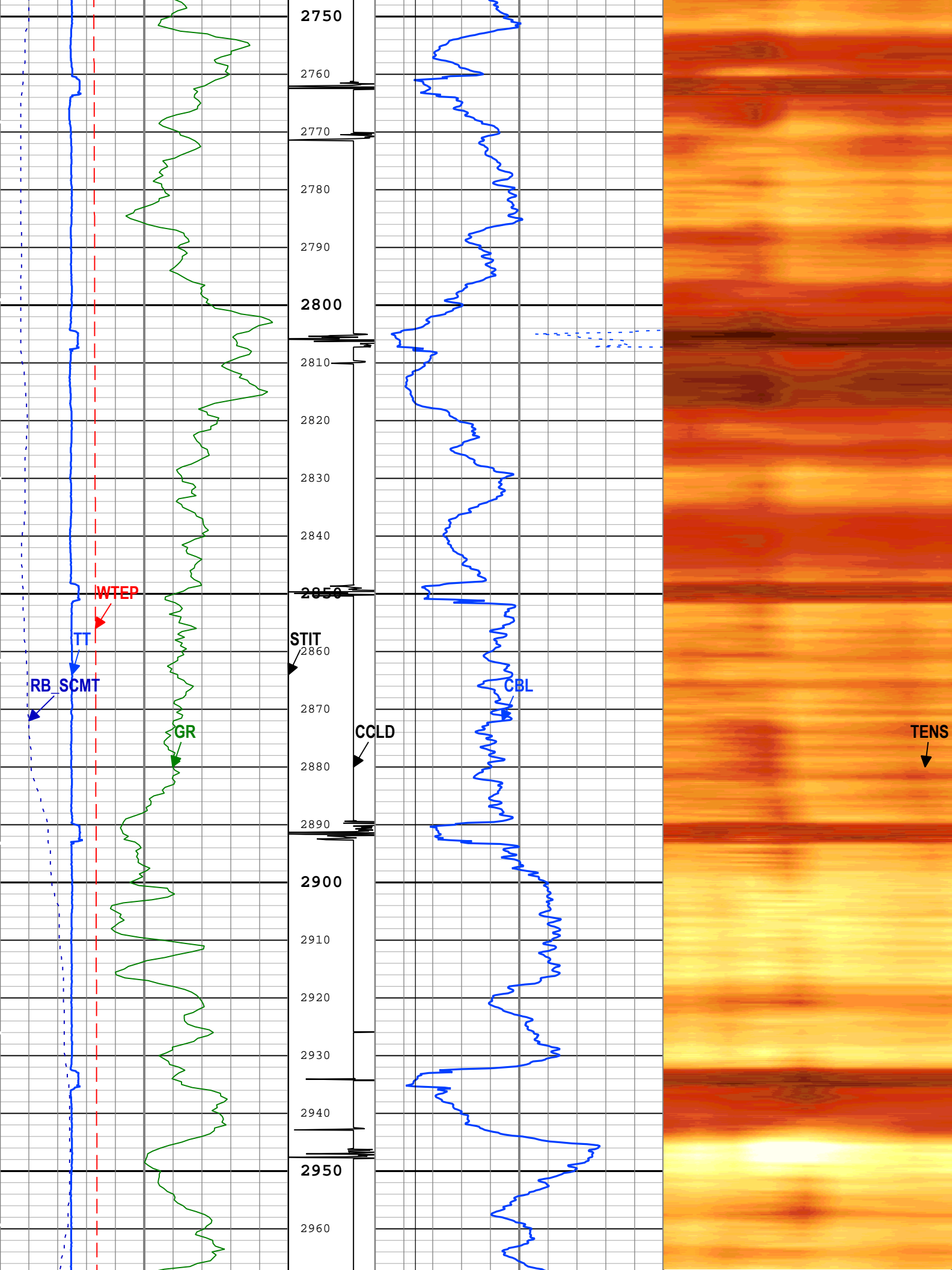
Company:Caerus Piceance LLC Well:Puckett 13C-1
ONE: Main[3]:Up:S013

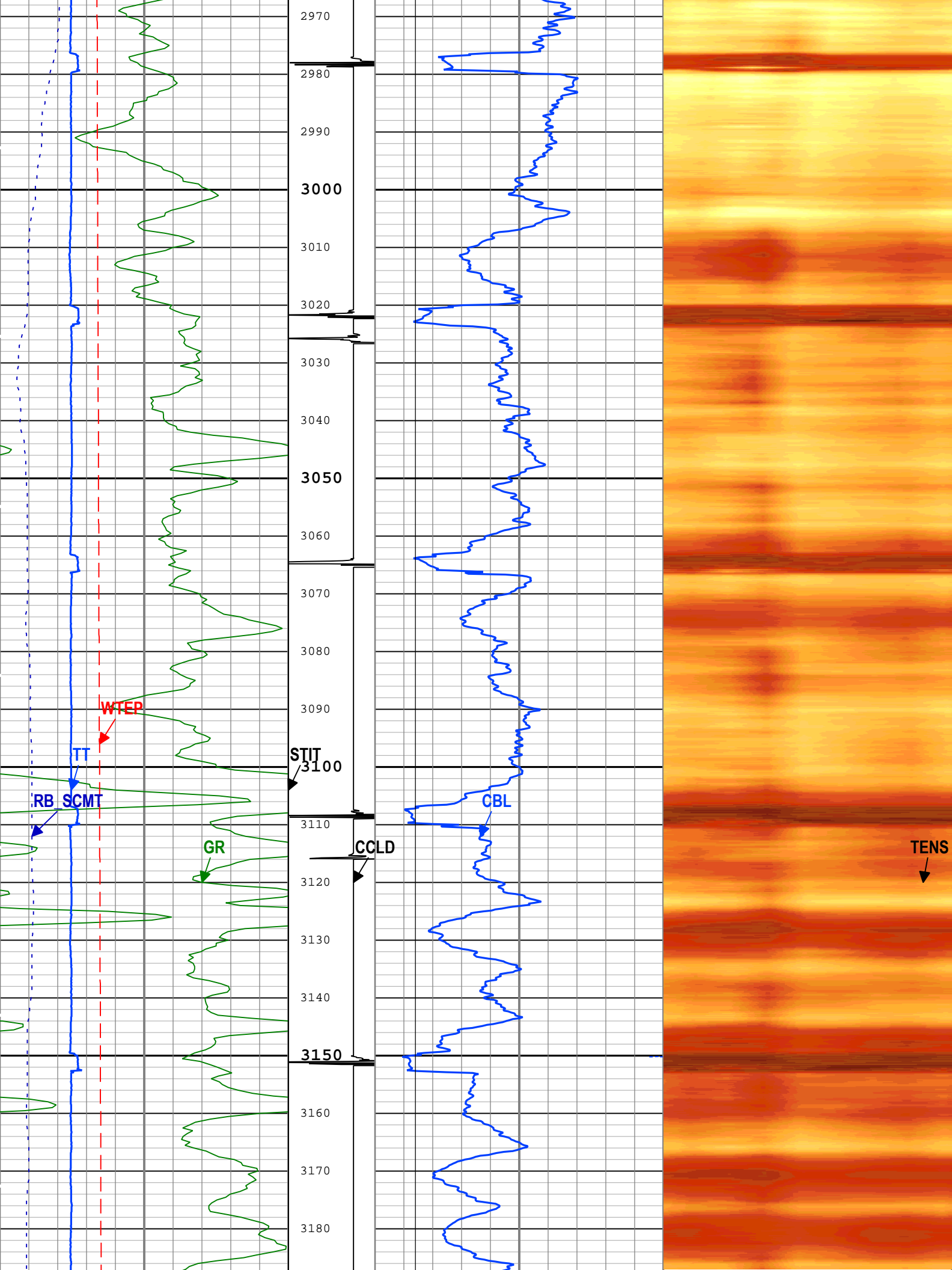
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Depth Creation Date: 07-Aug-2015 10:27:24

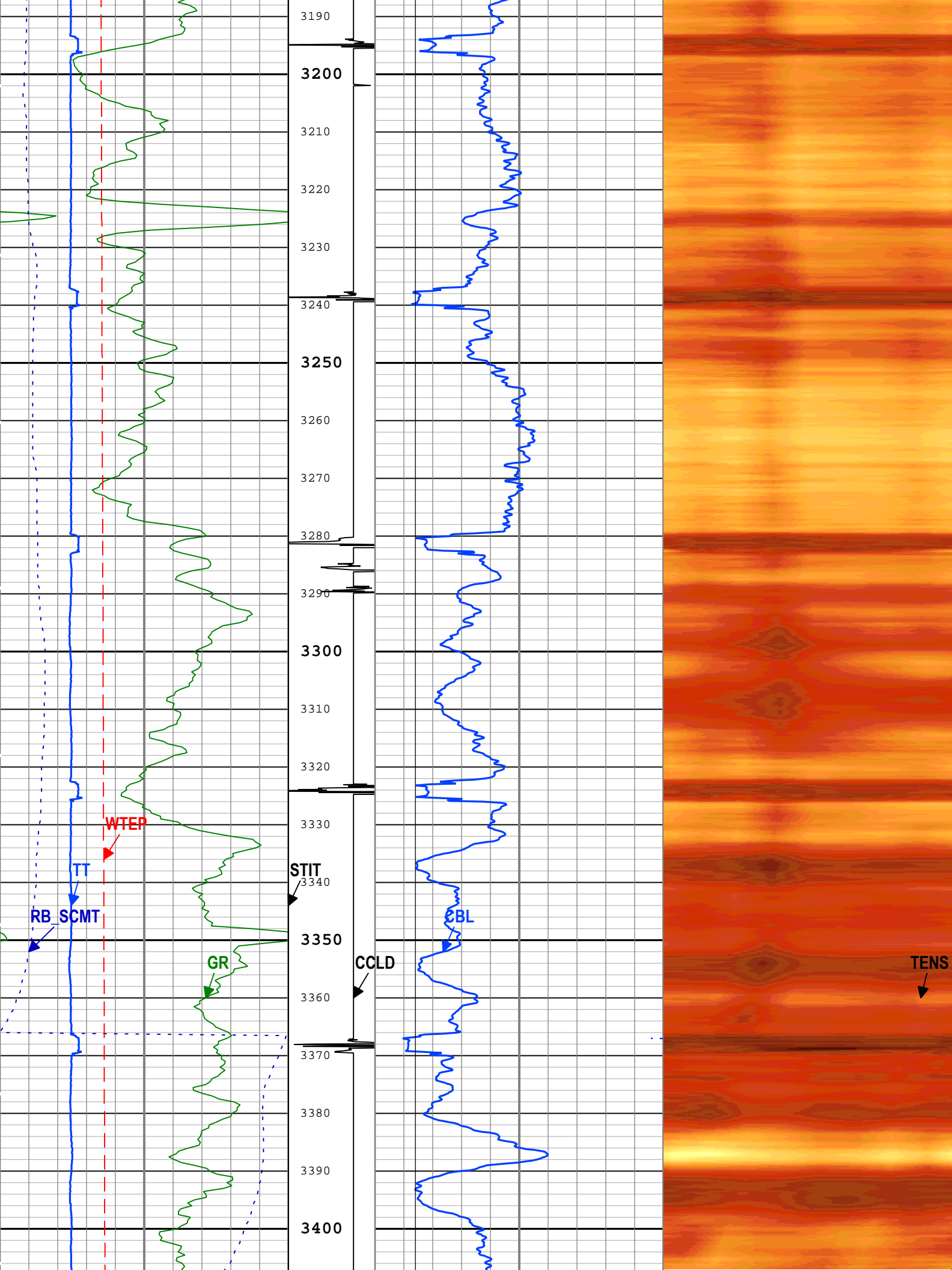
TIME_1900 - Time Marked every 60.00 (s)

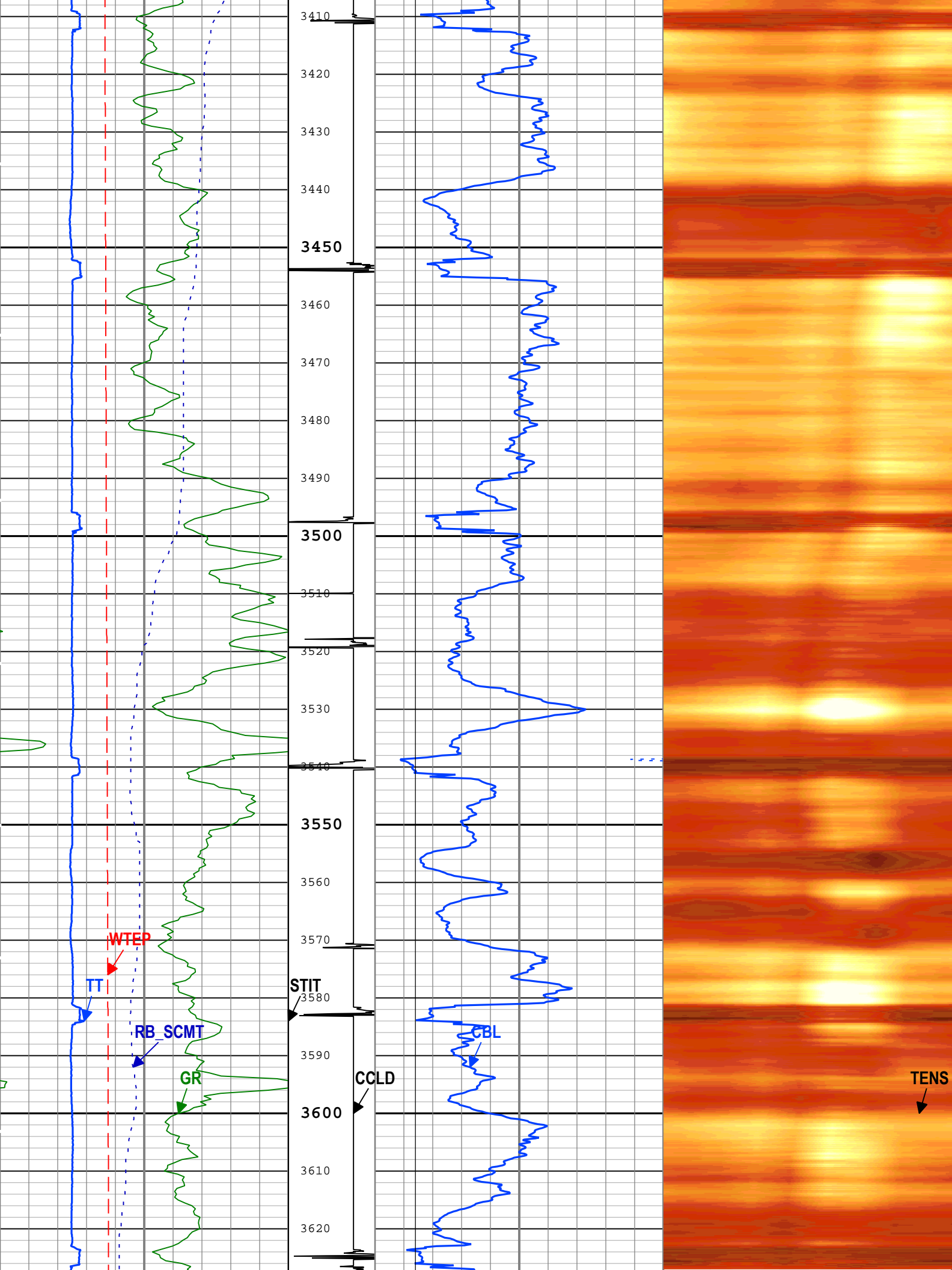


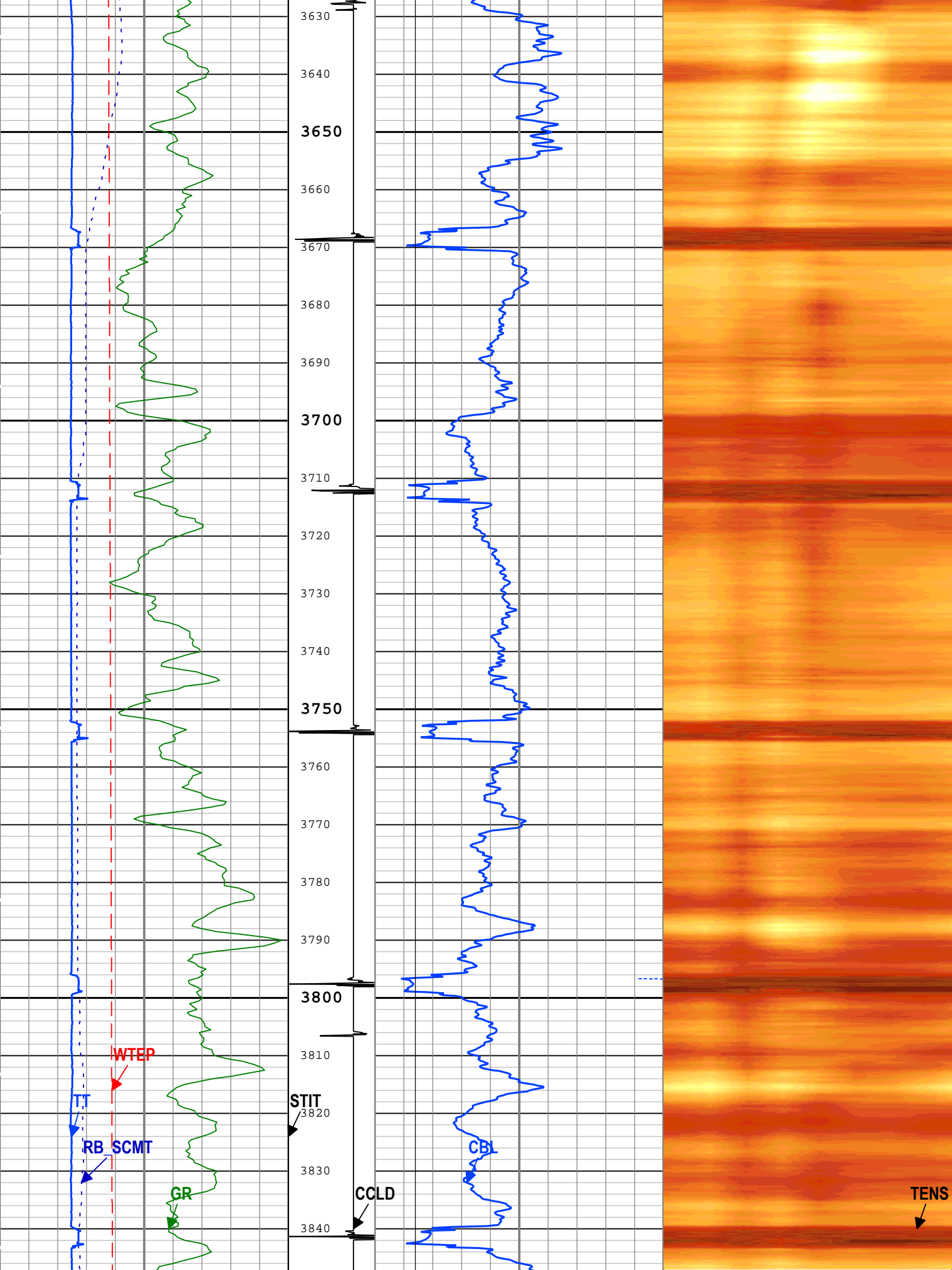


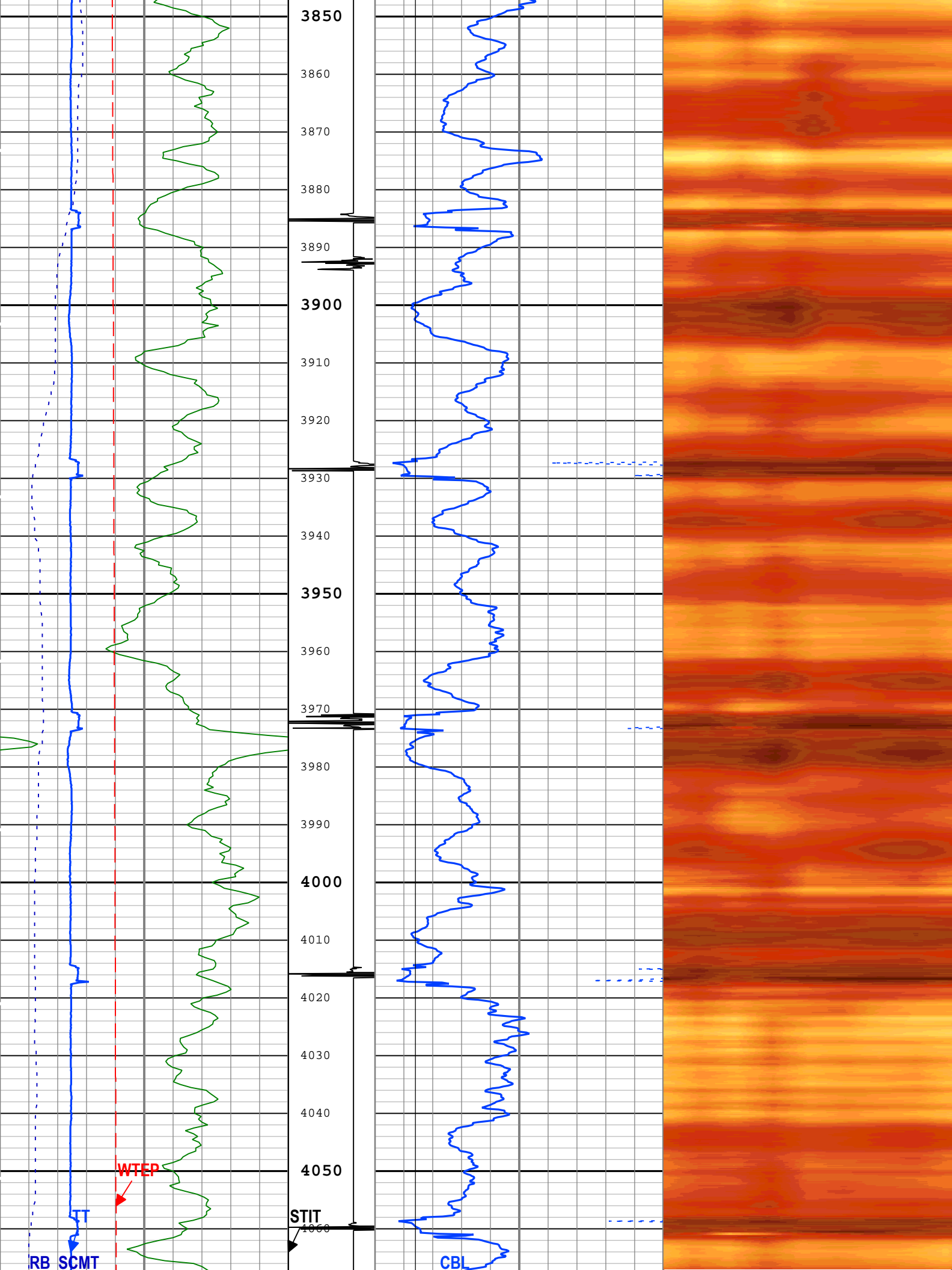


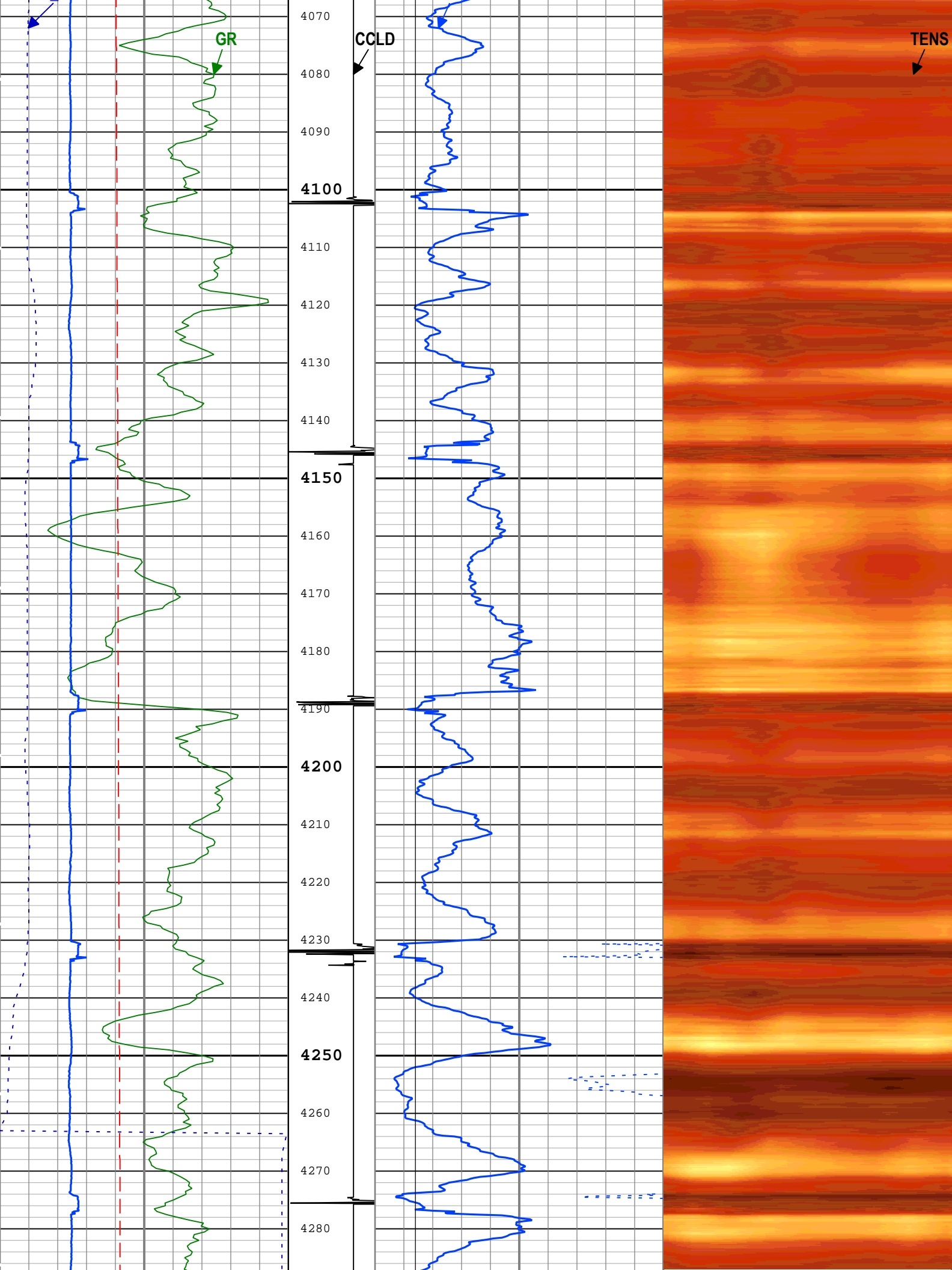


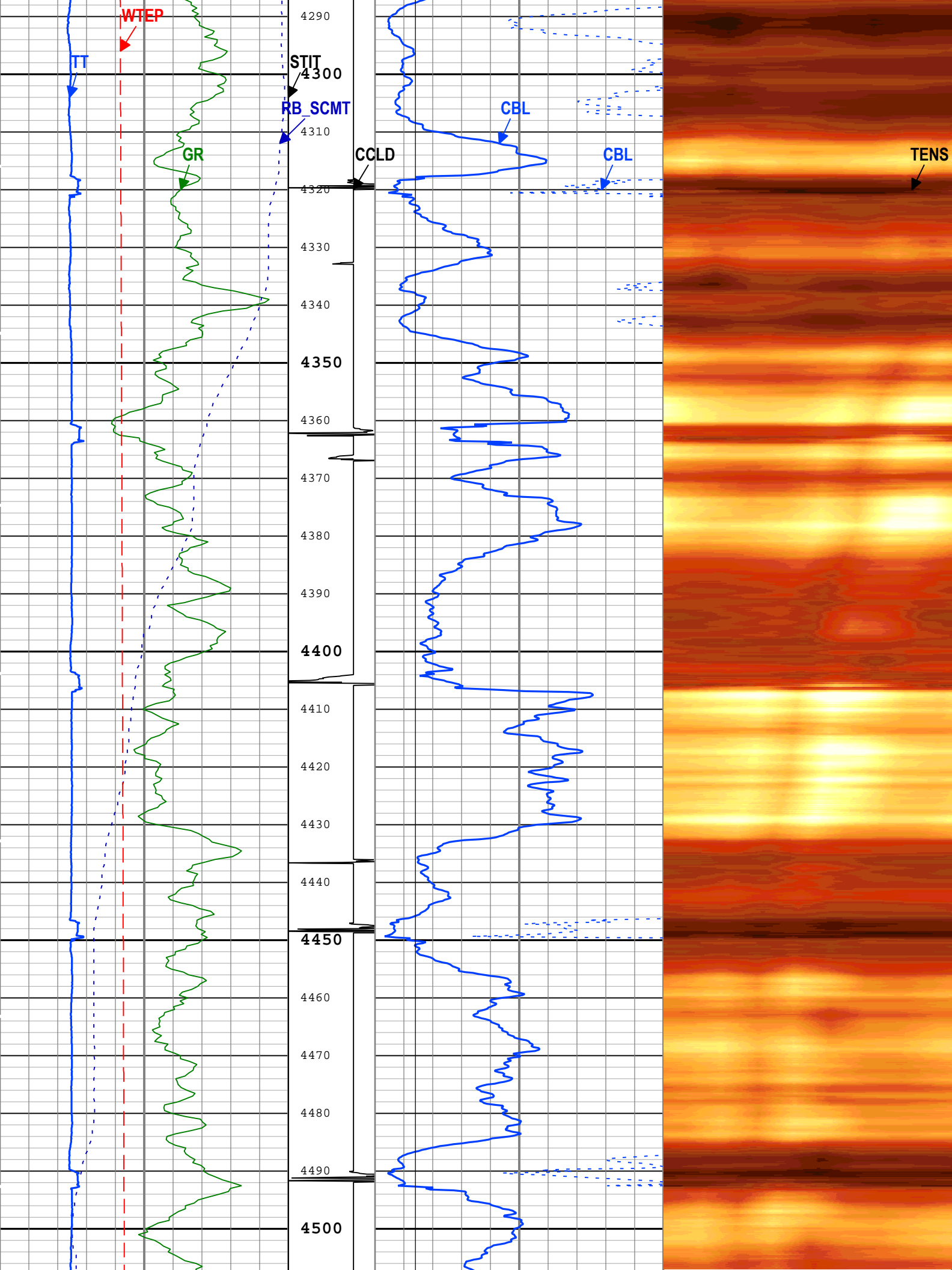


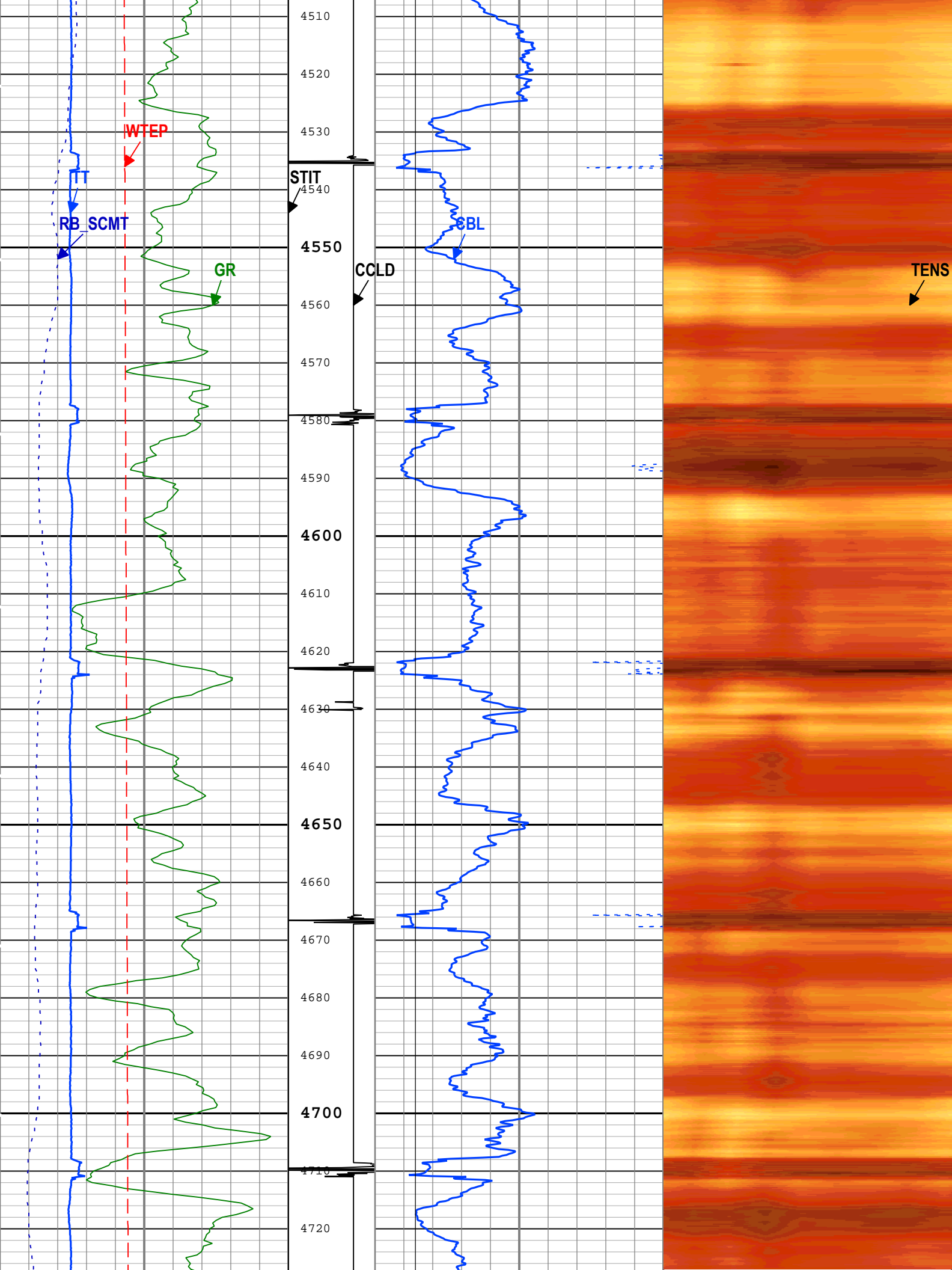


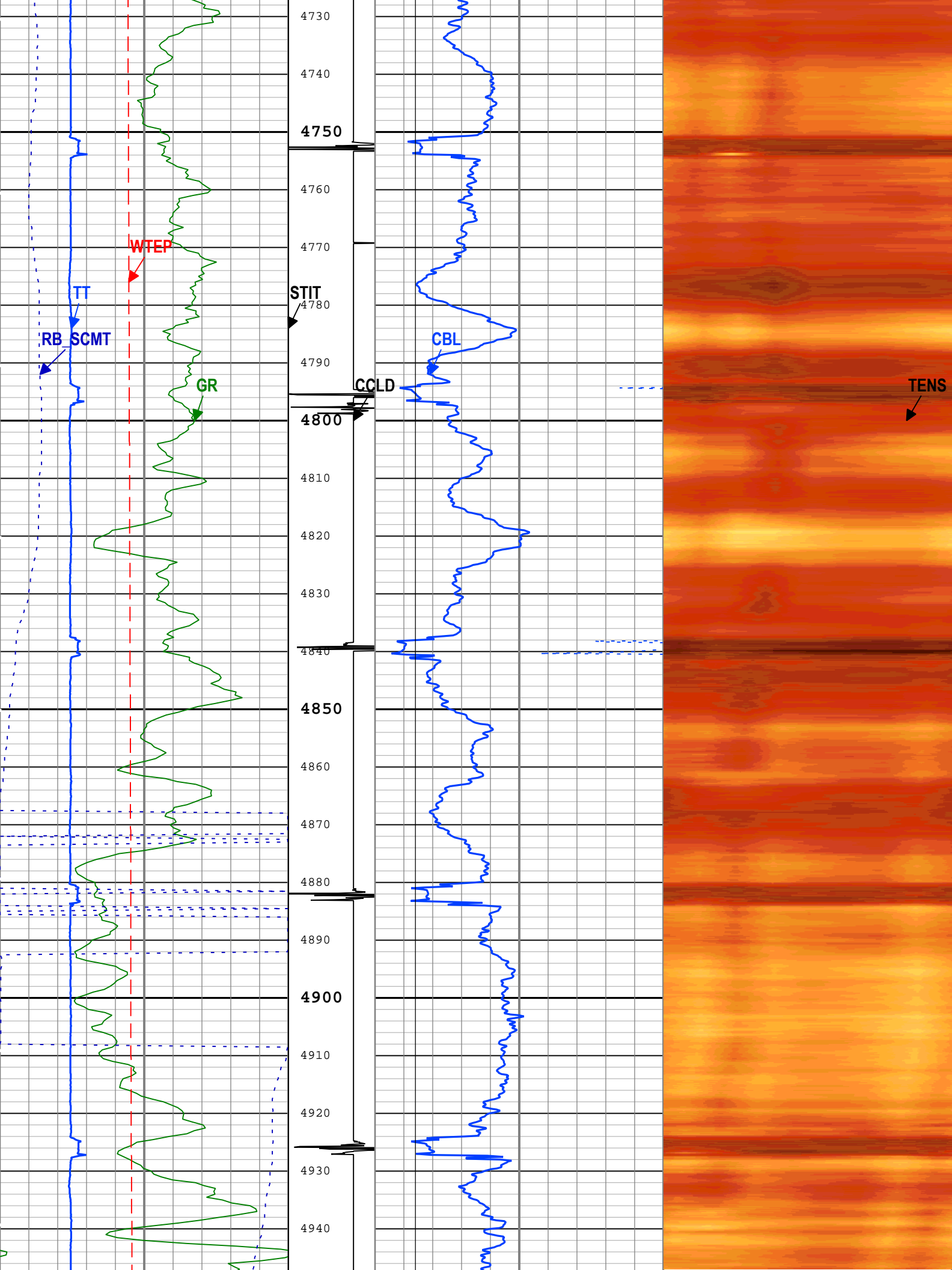


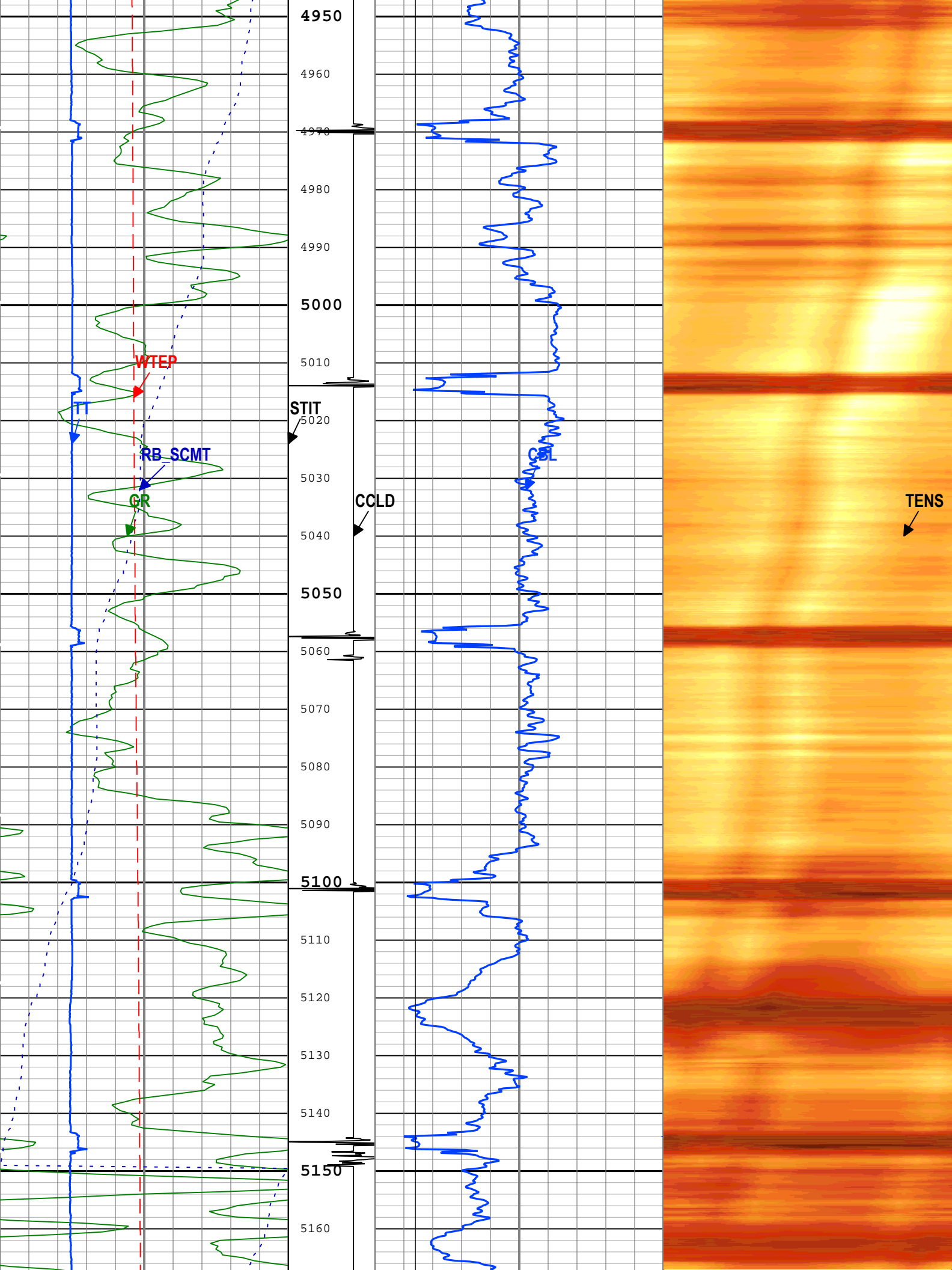


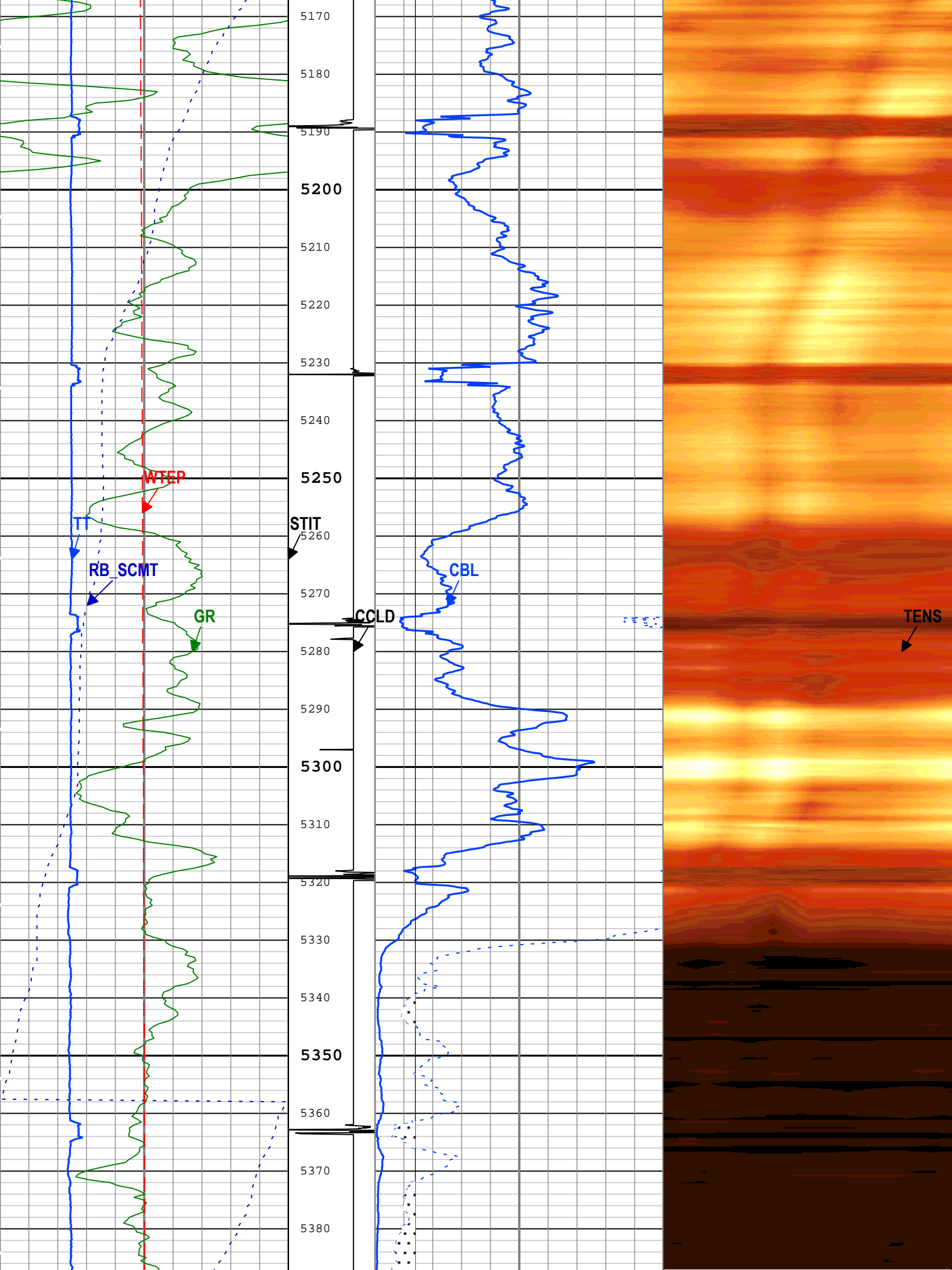


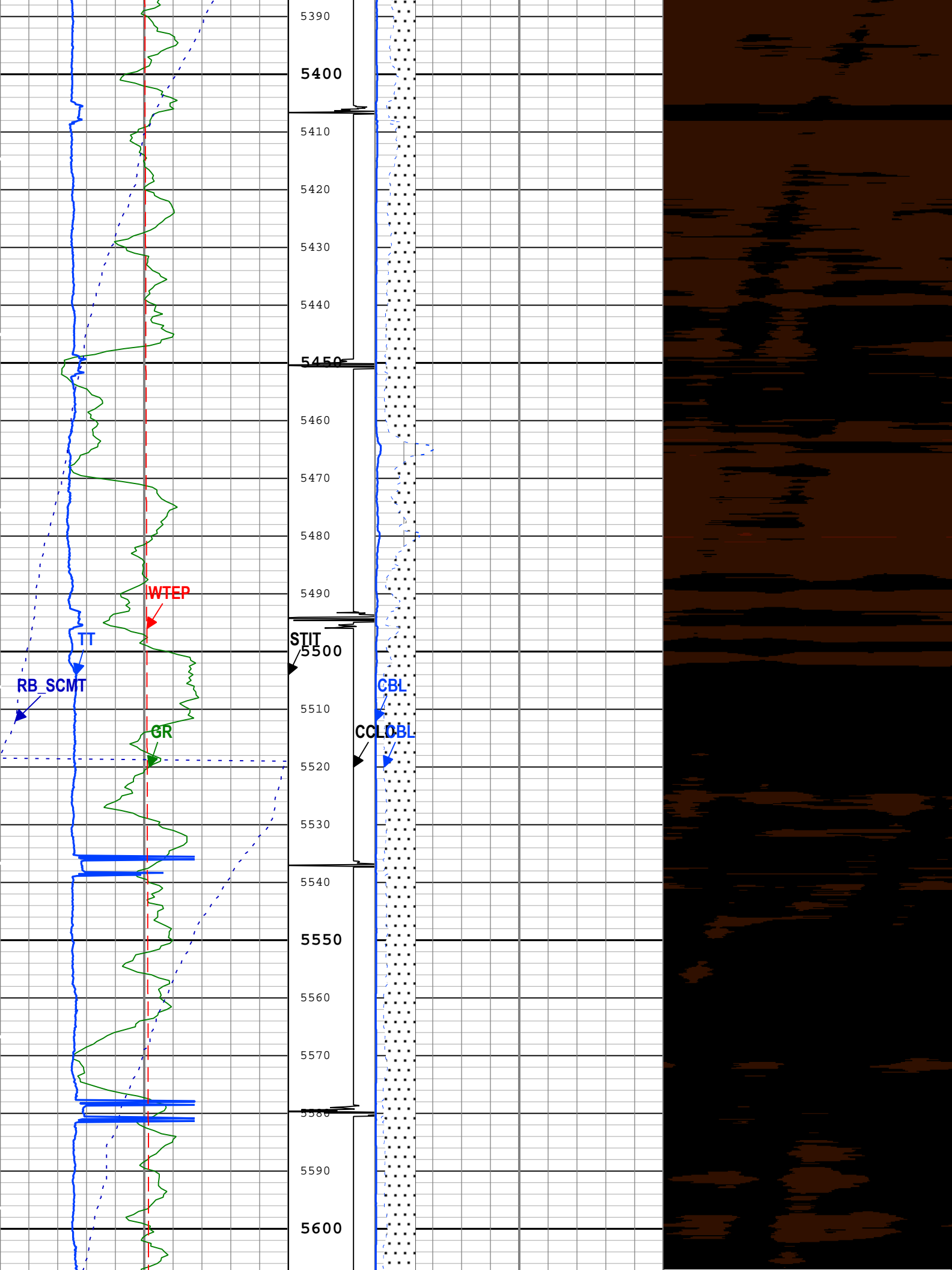


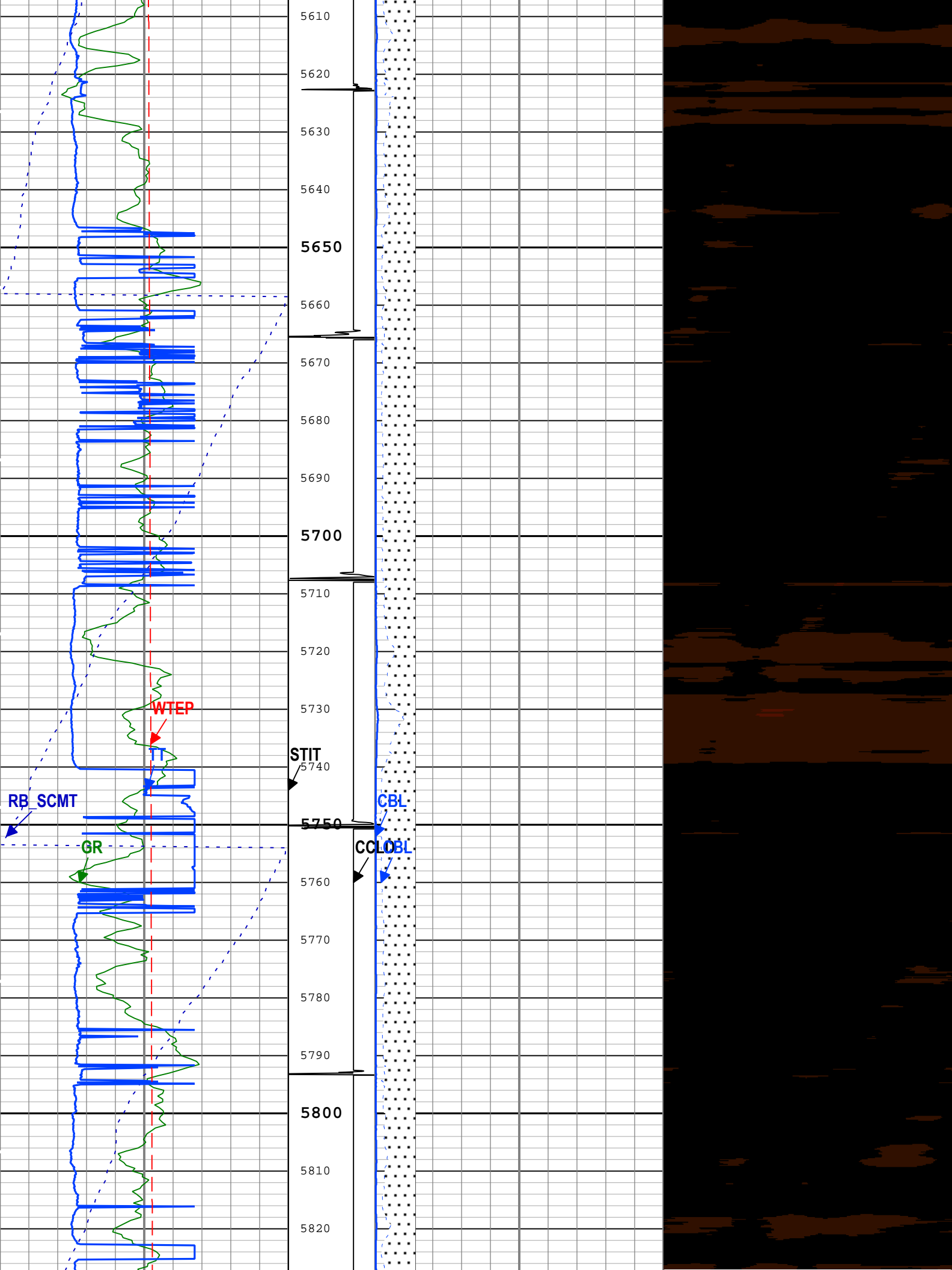


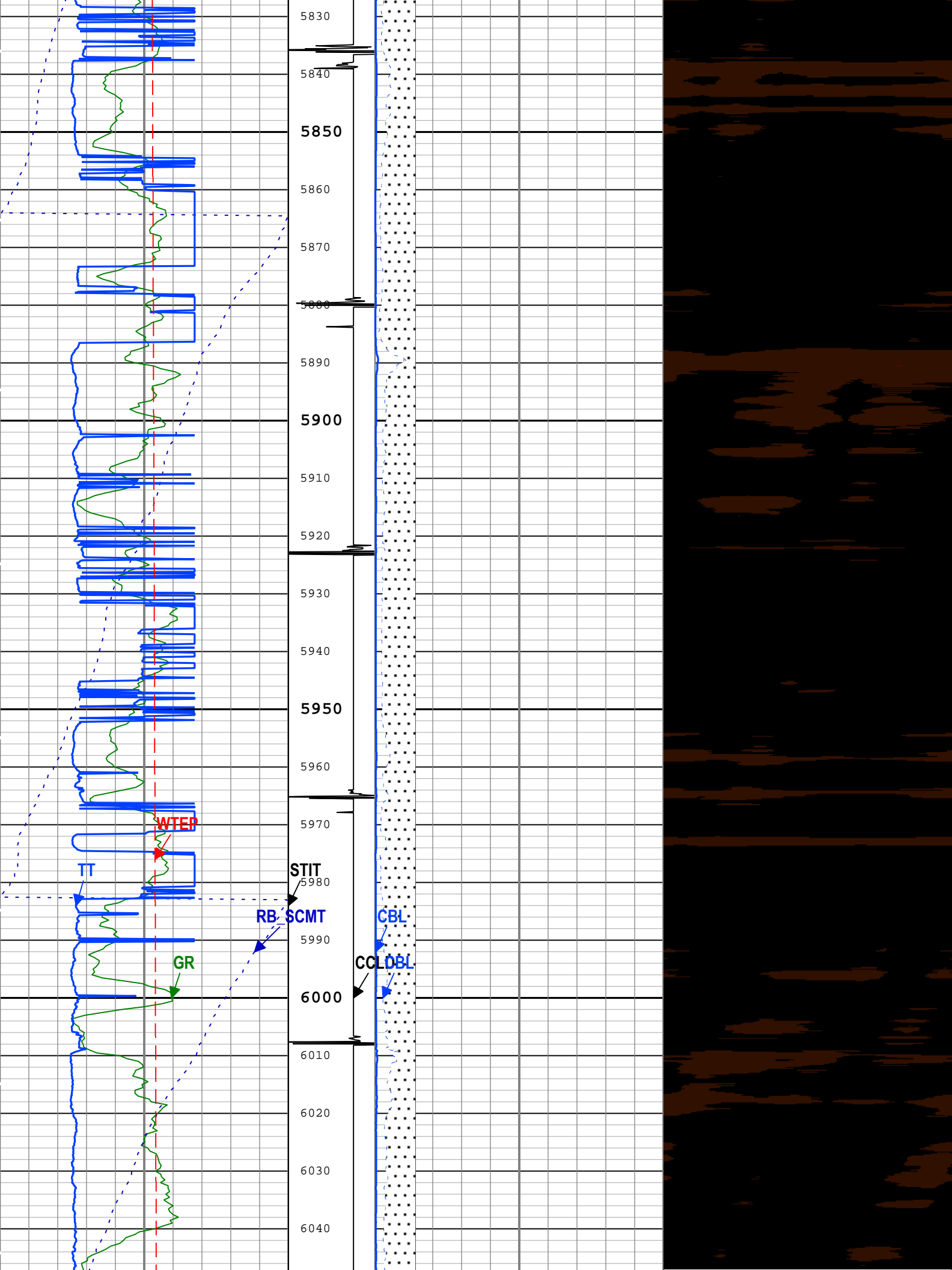


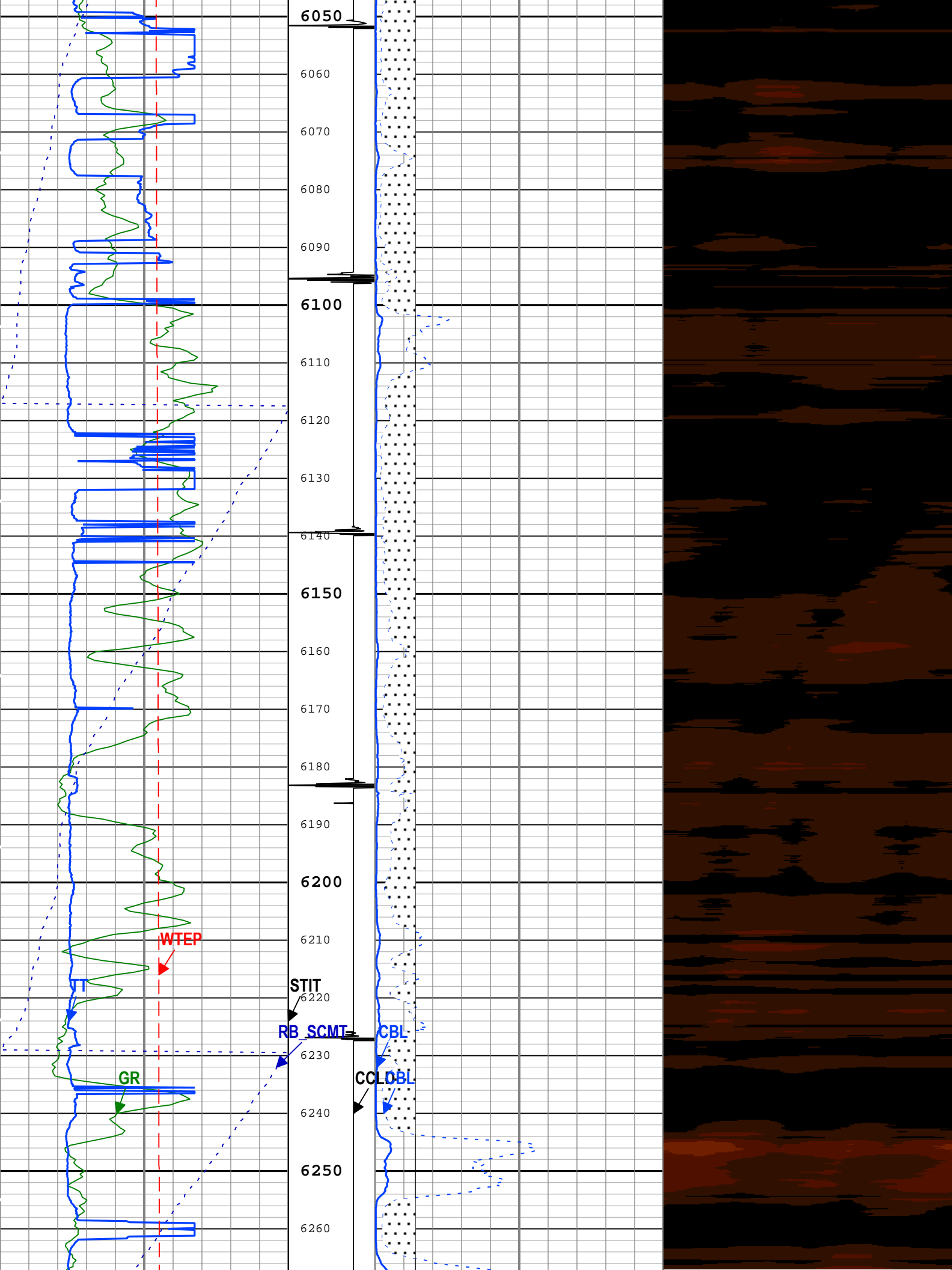


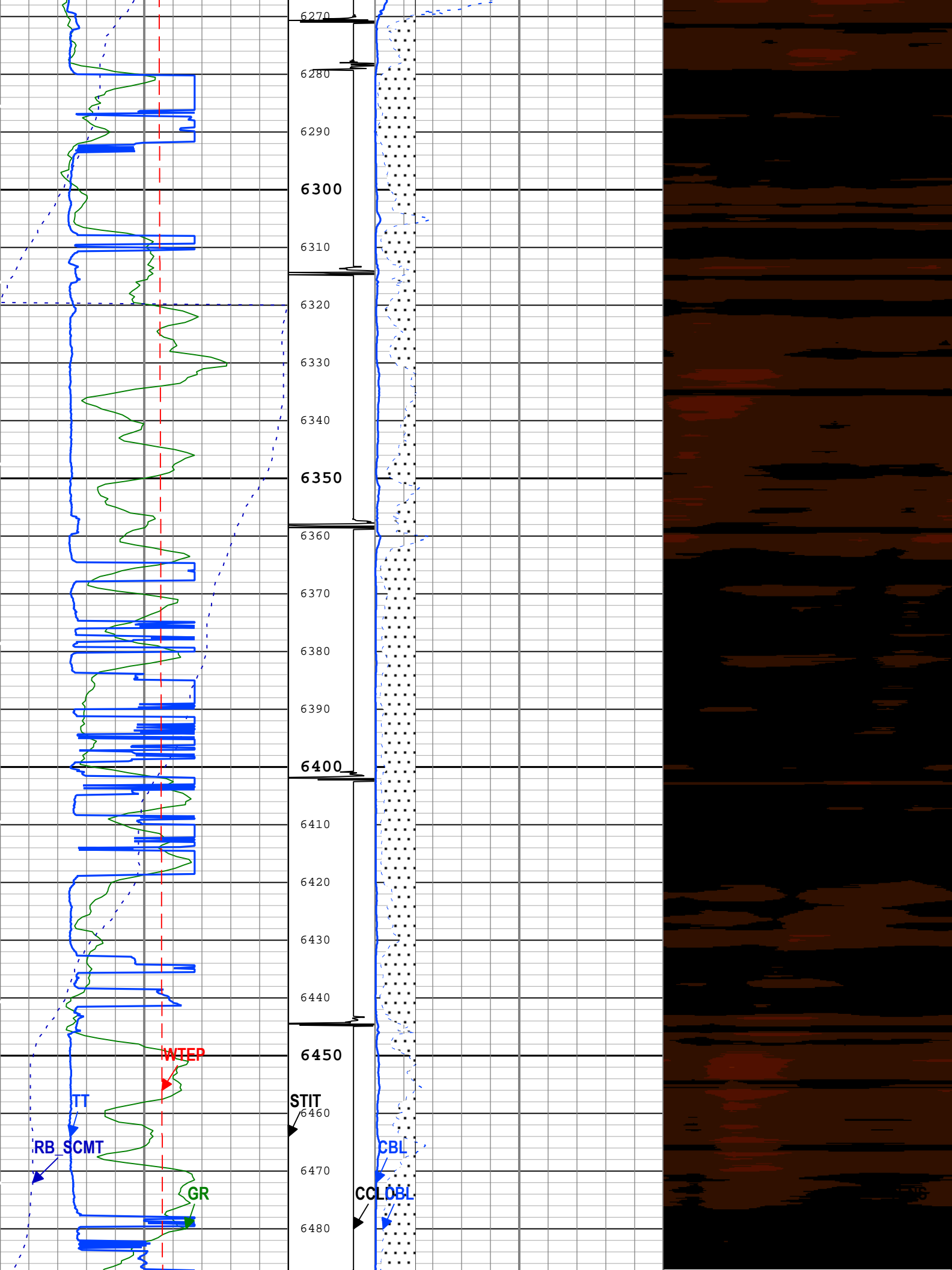


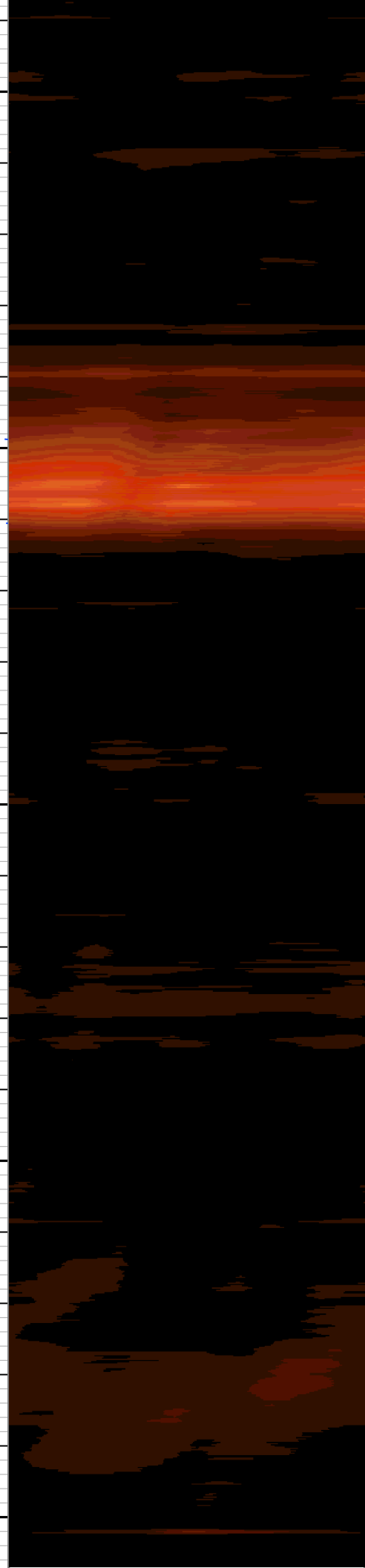
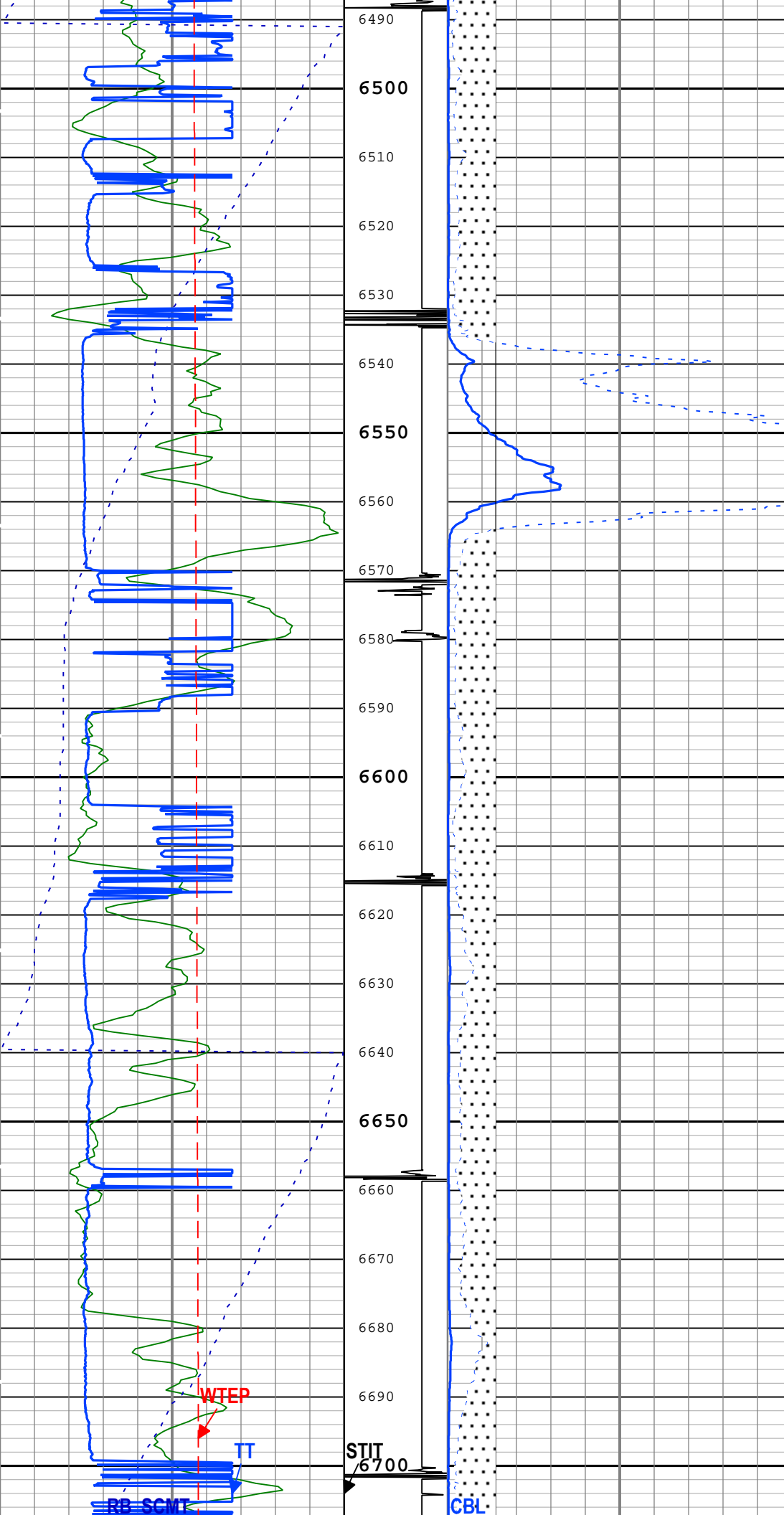


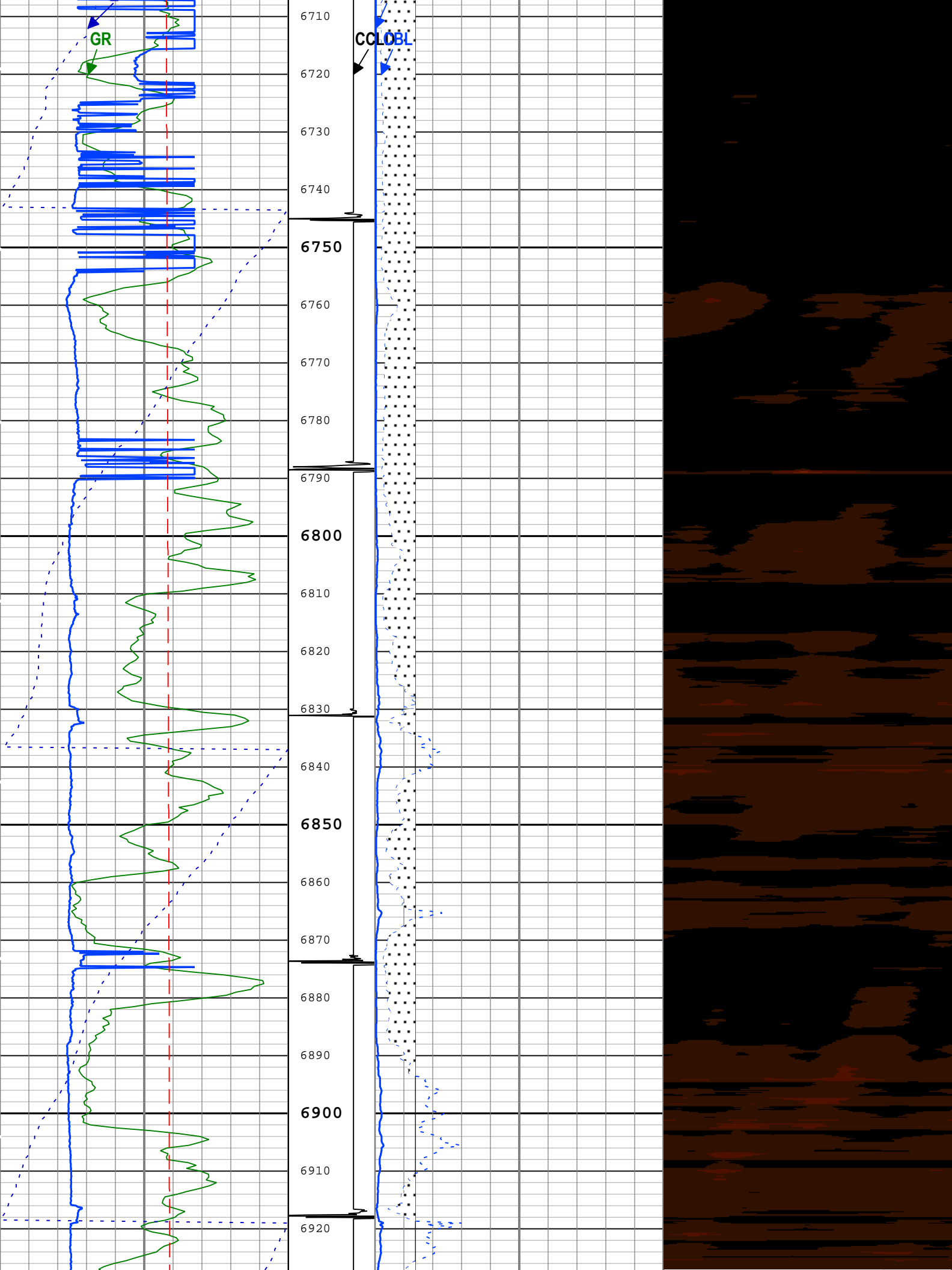


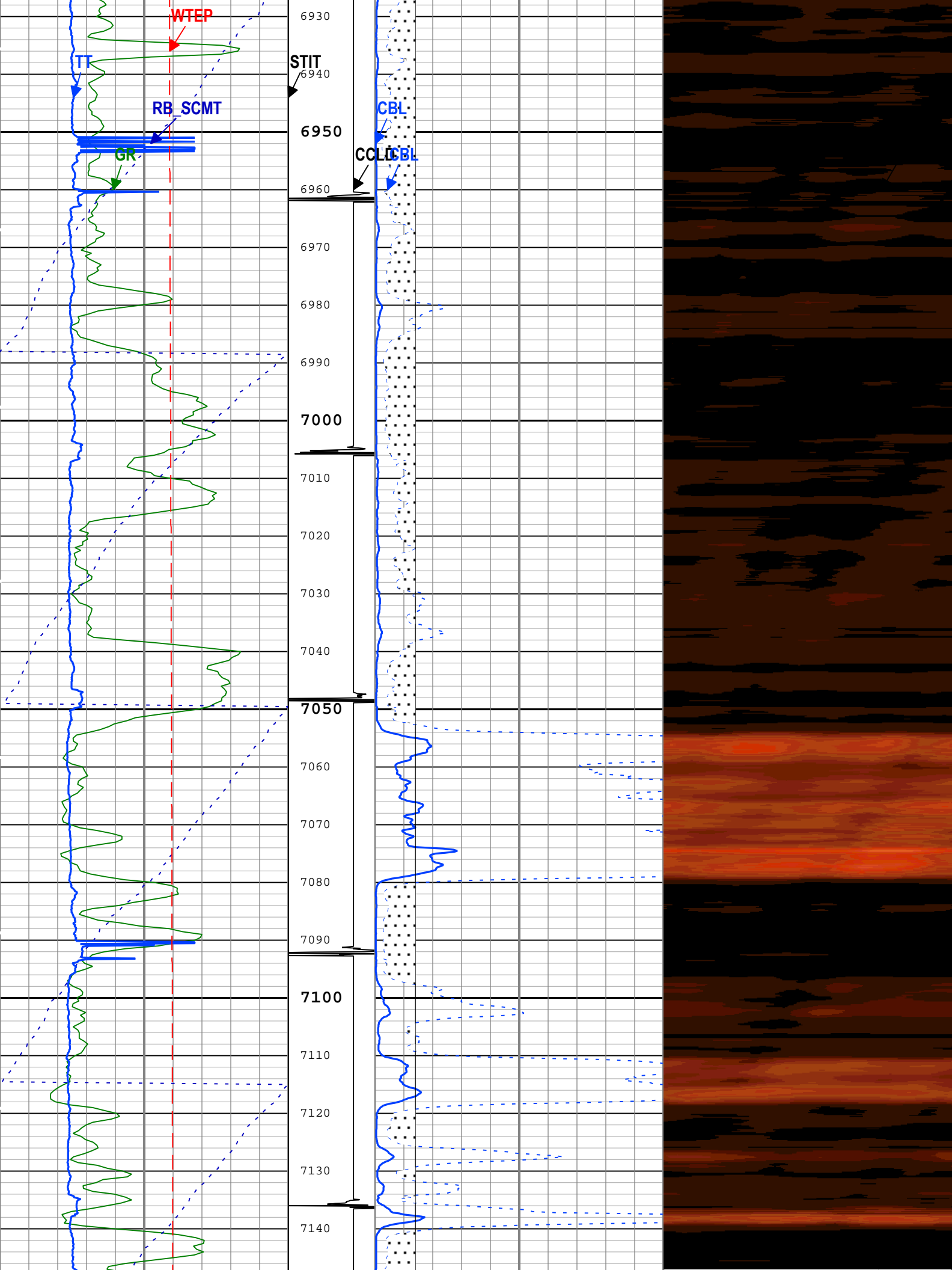


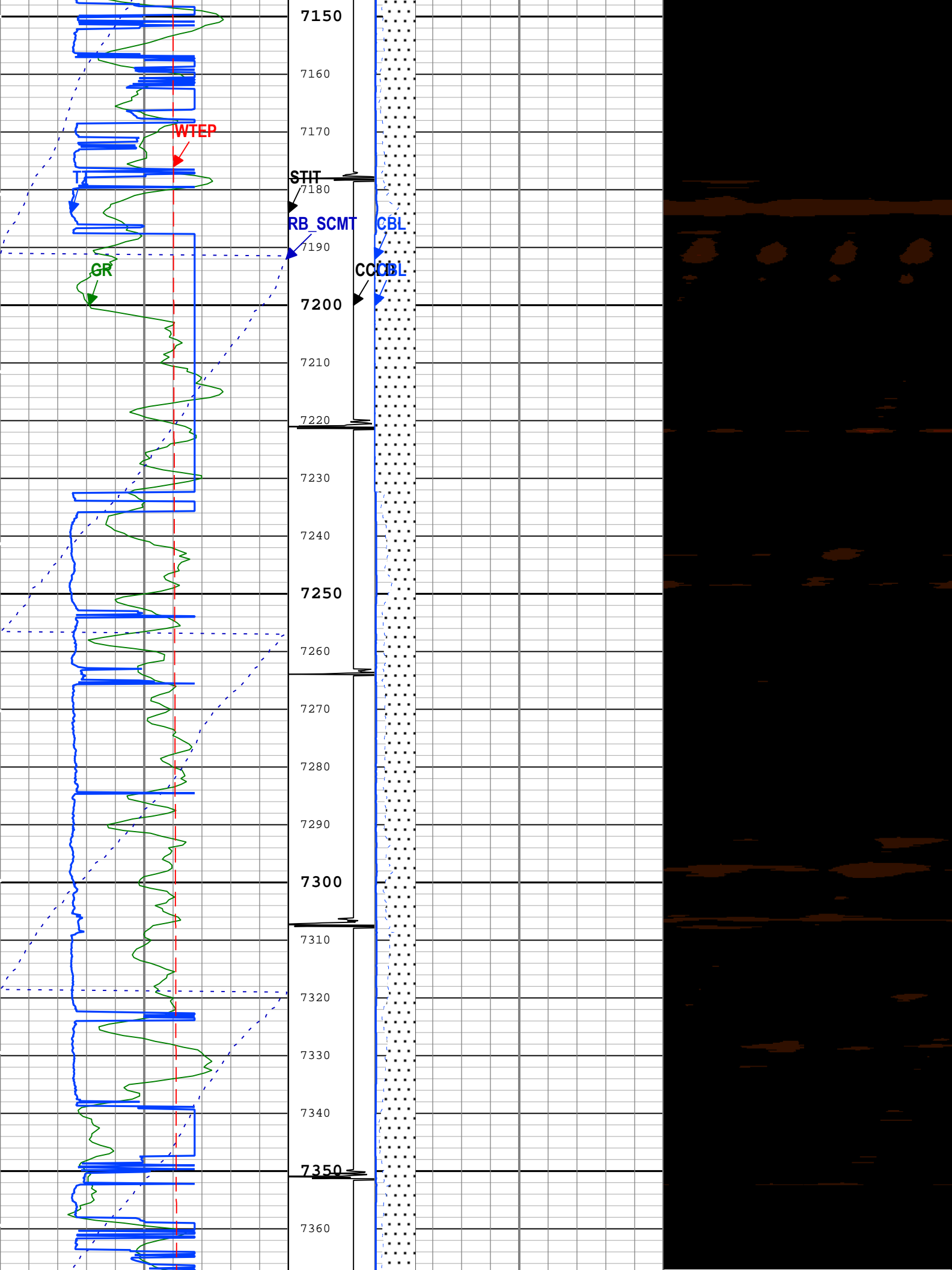


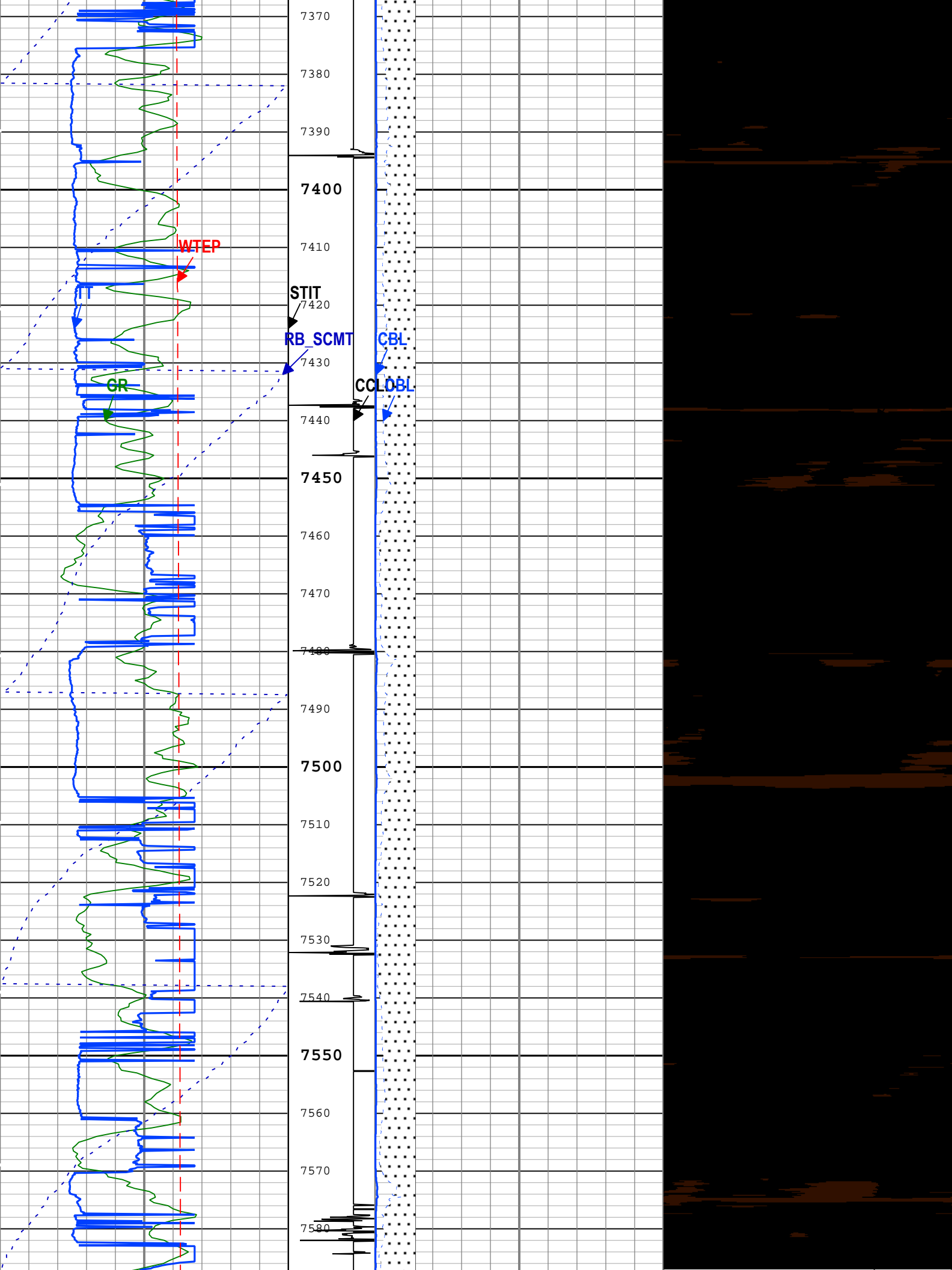


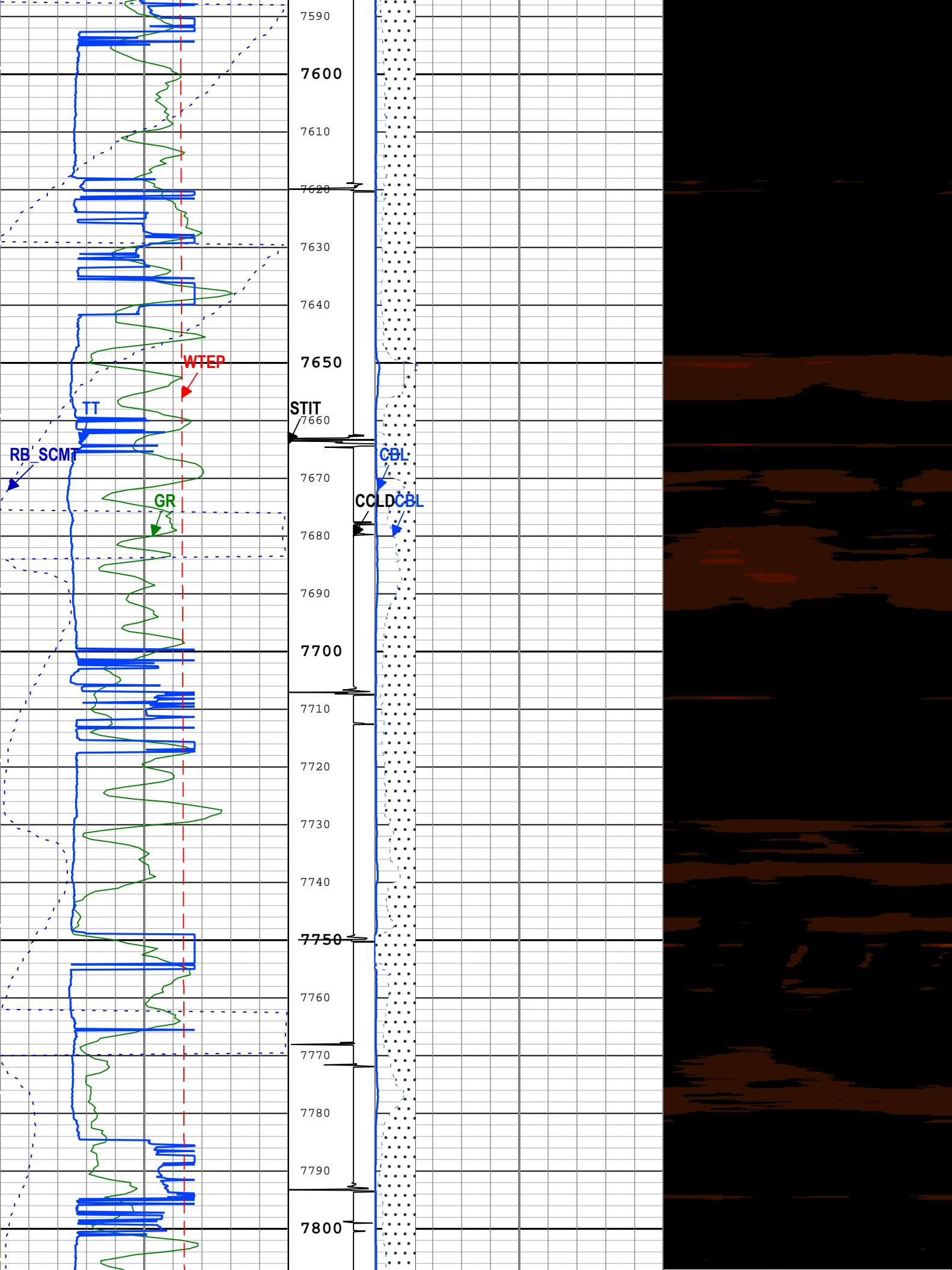


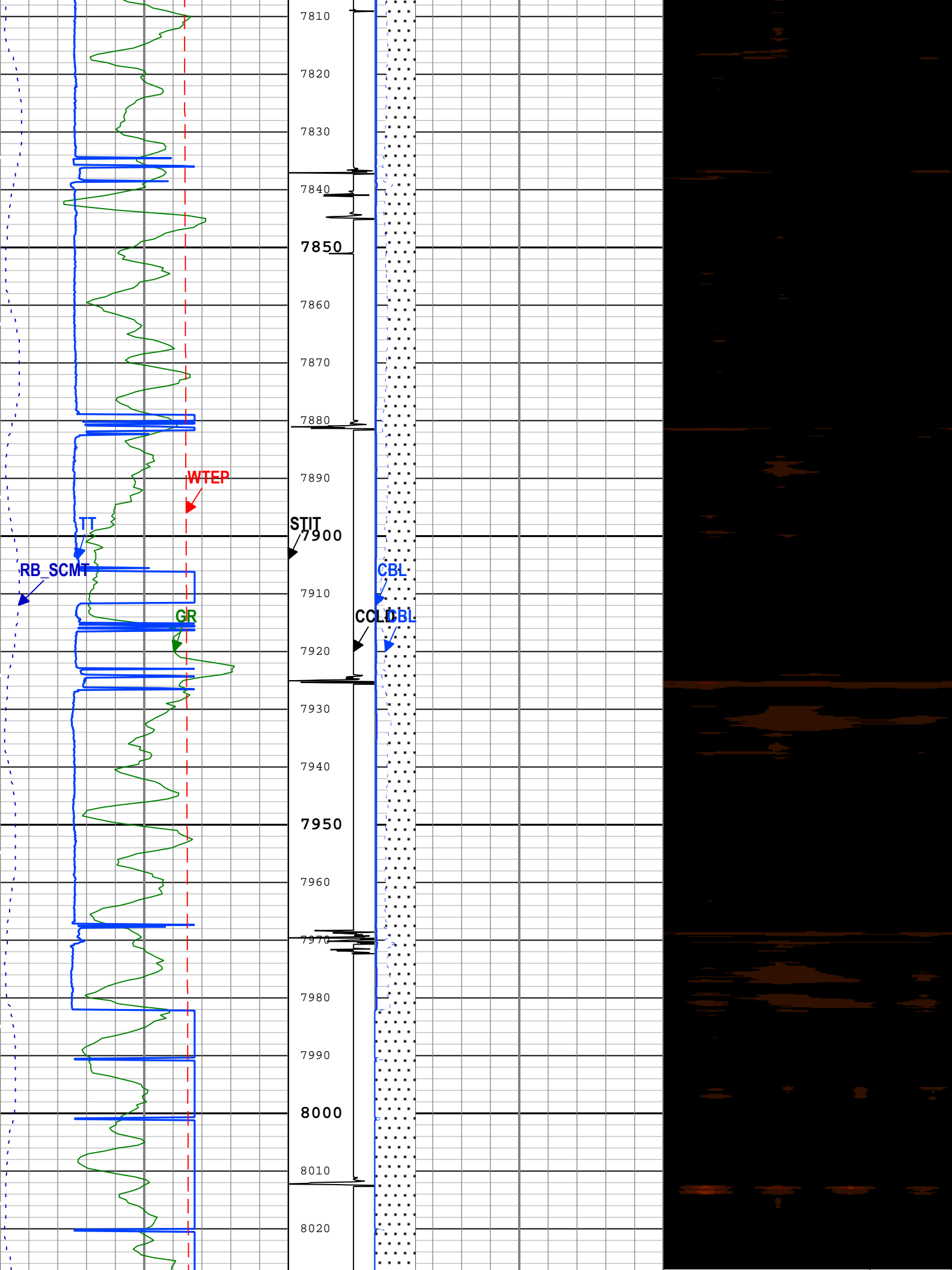


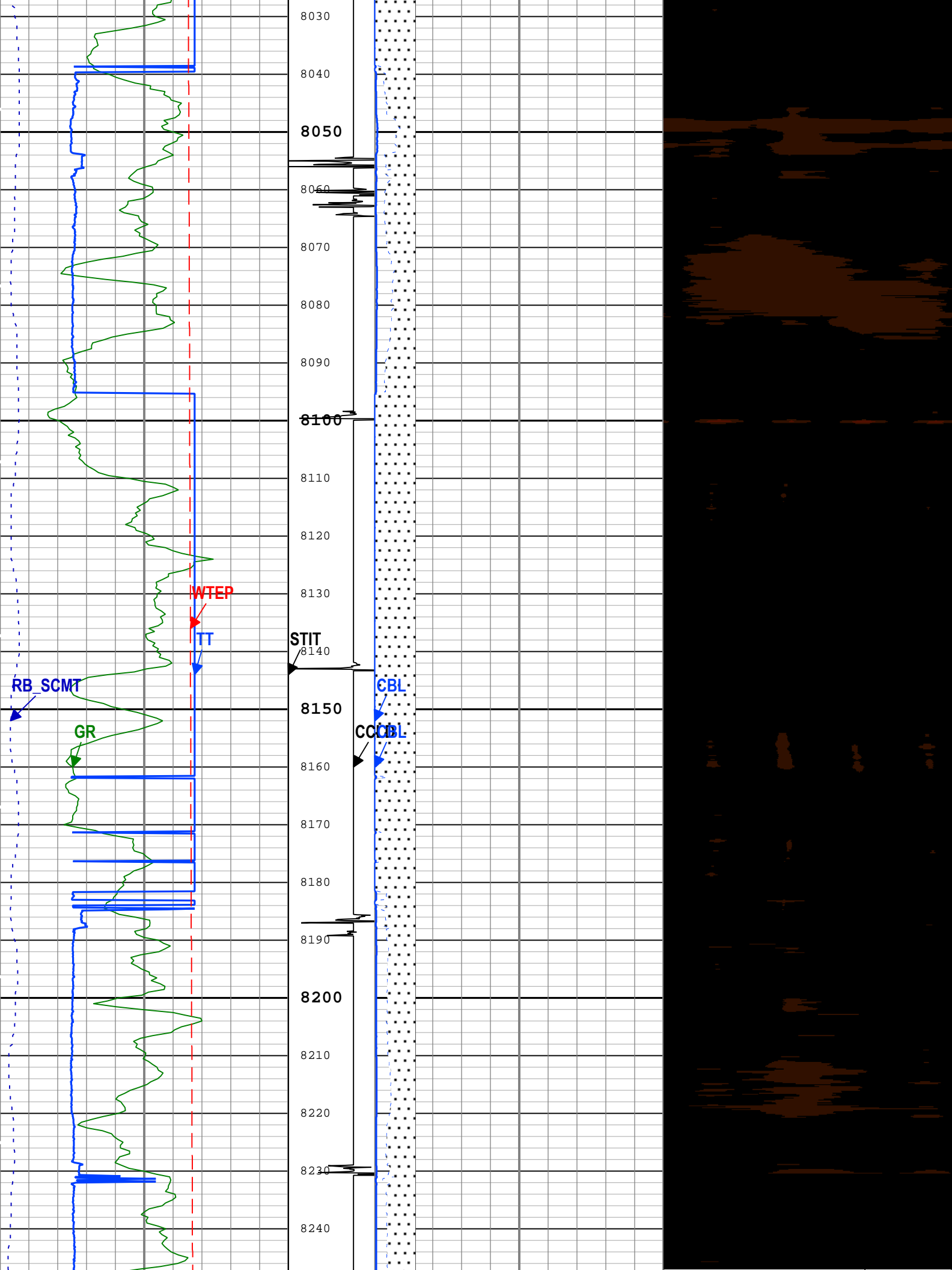


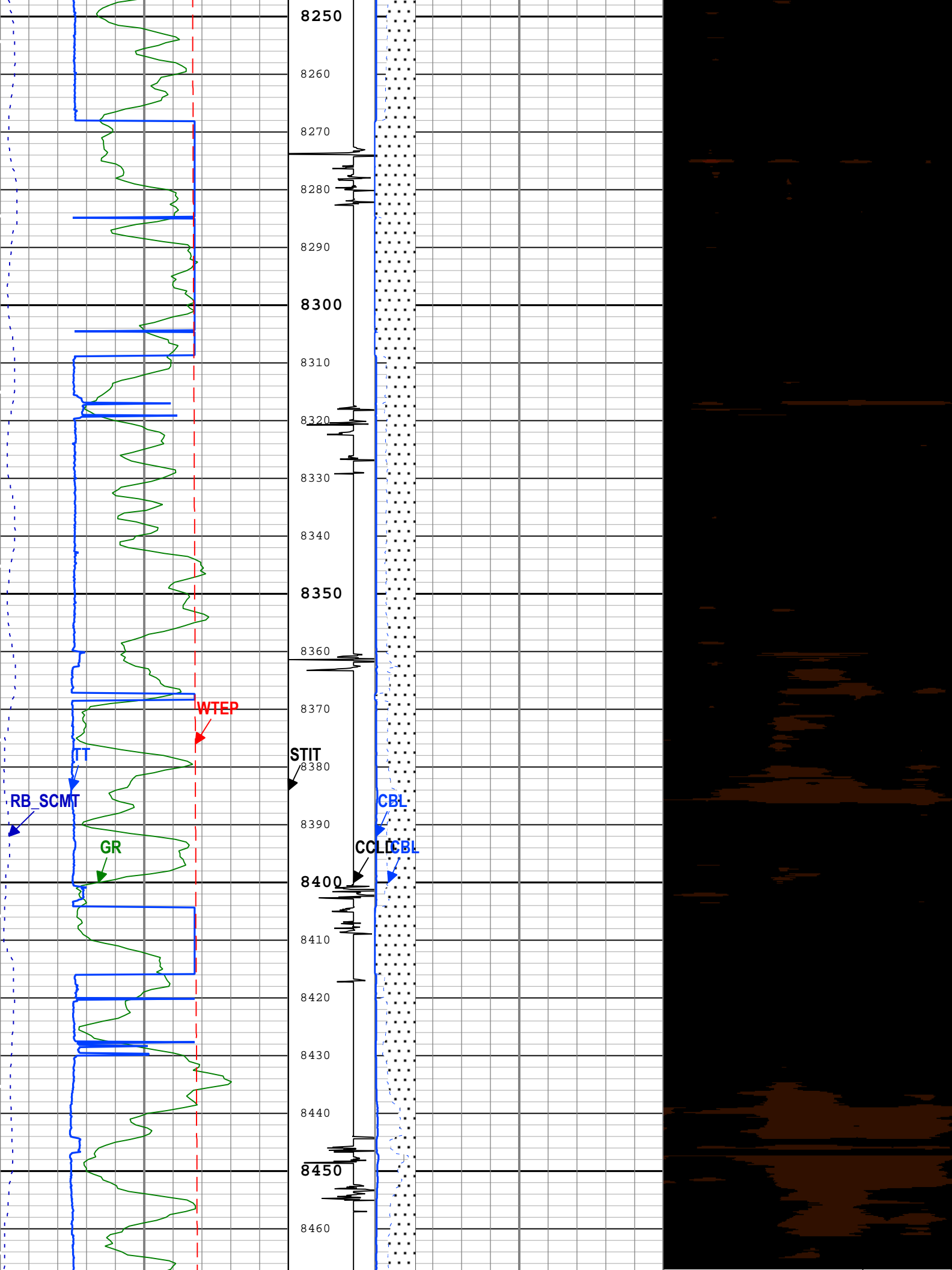


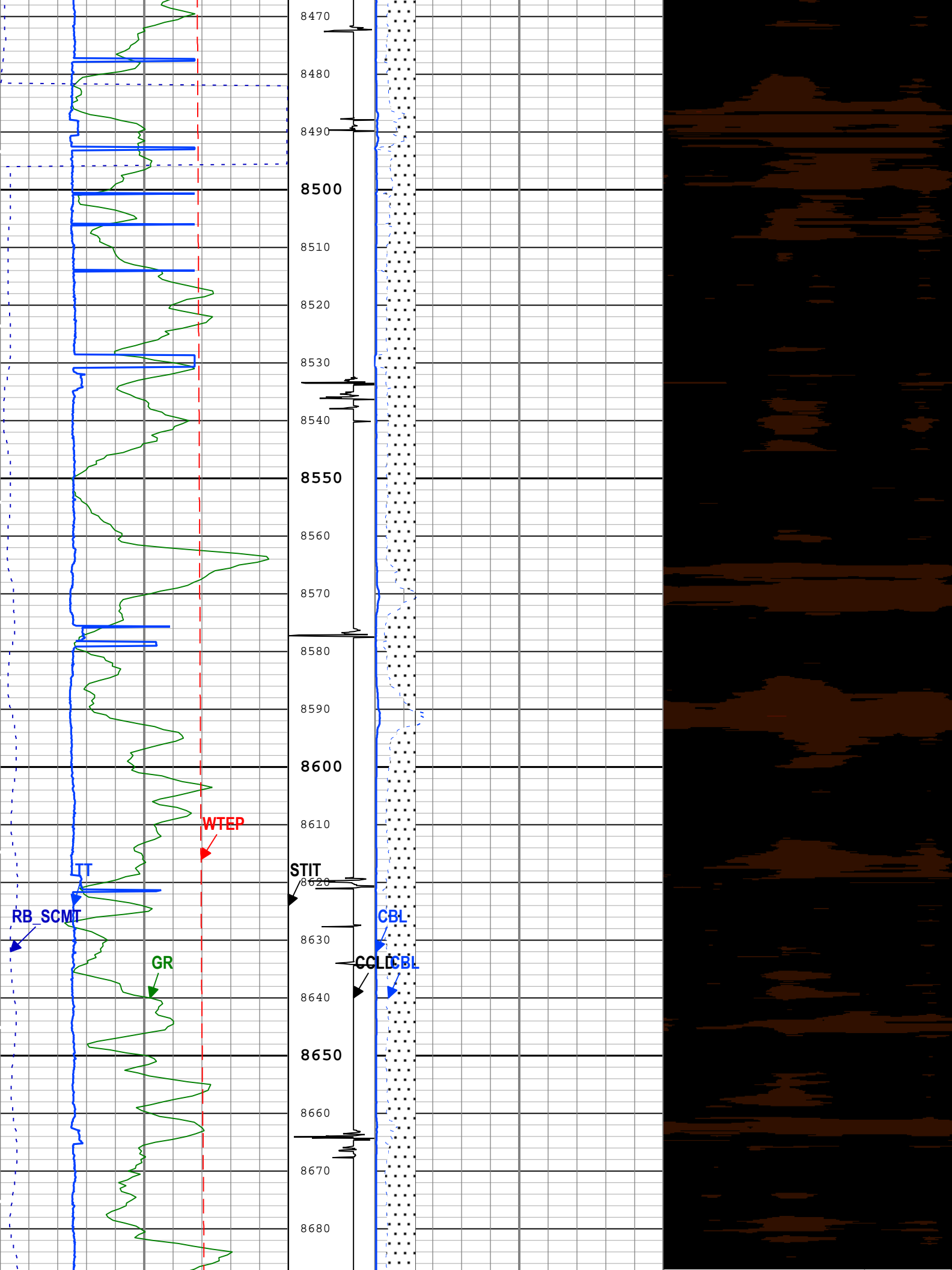


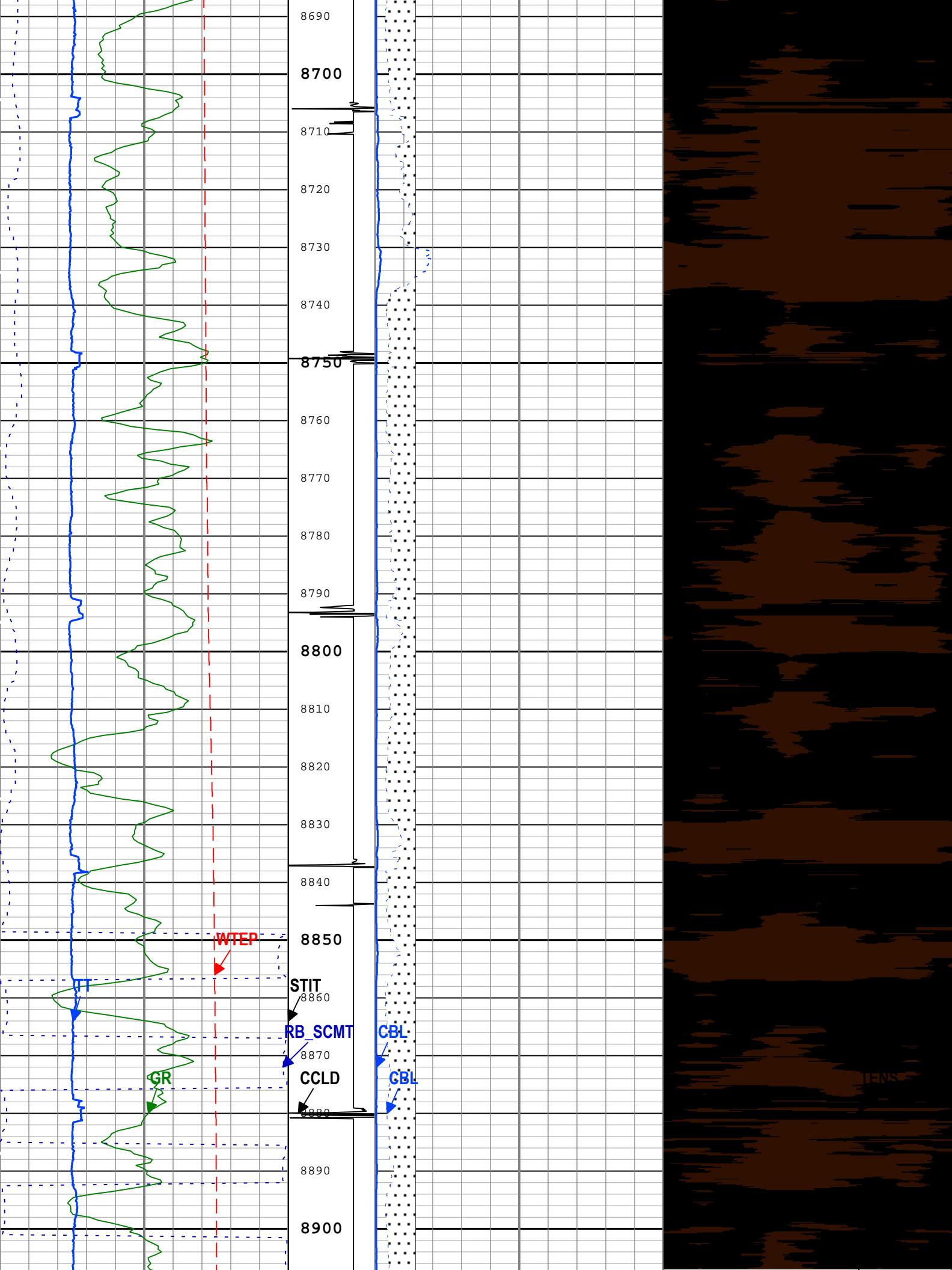


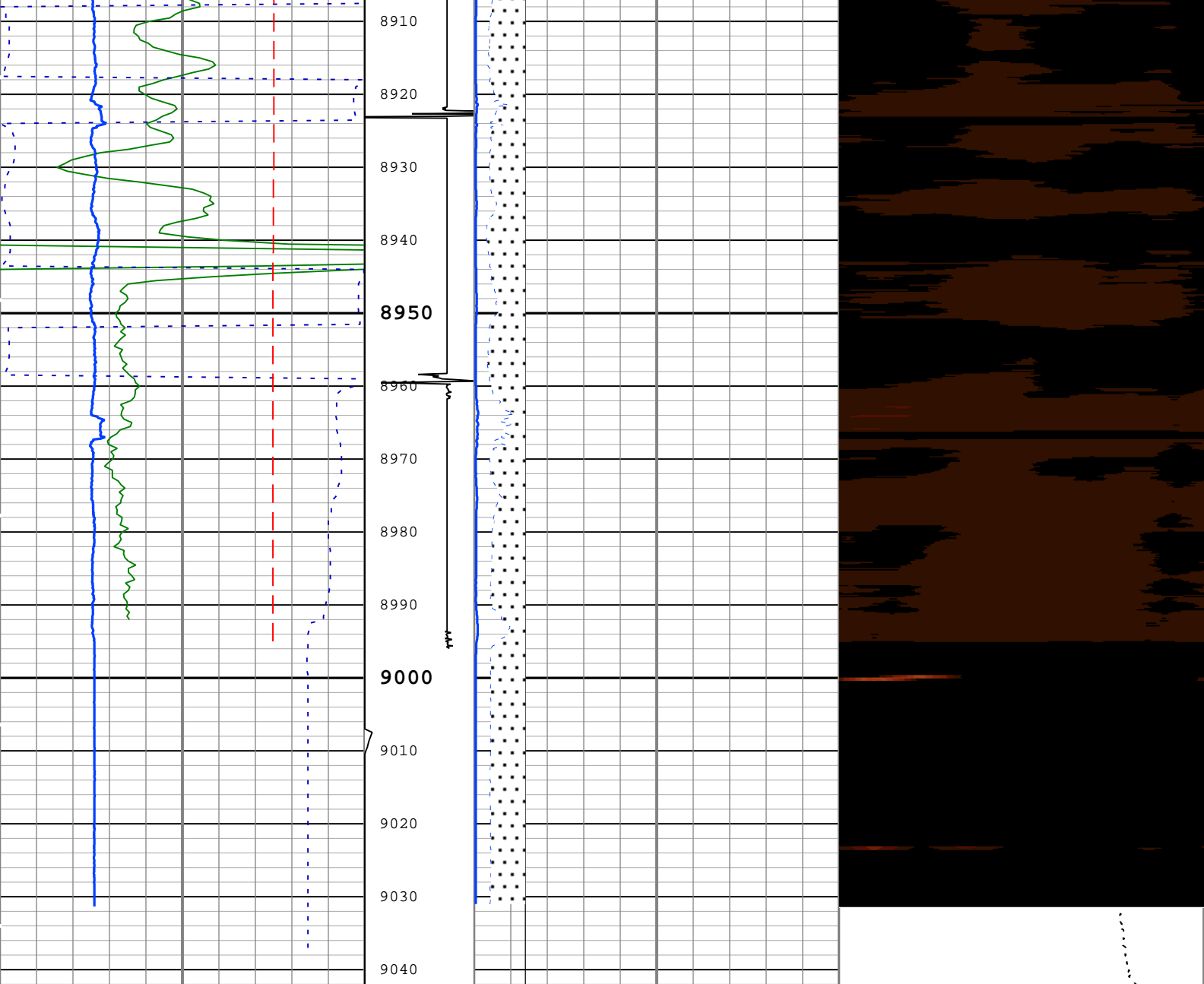













Gamma Ray (GR) PSTP-A			CCL Discriminated Amplitude (CCLD) PSTP-A 3 V -1 Stuck Tool Indicator, Total (STIT) 0 ft 50	CBL Amplitude (CBL) SCMT-BB		Cable Tension (TENS)										
0	gAPI 150			0	mV 10		10000 lbf 0									
Relative Bearing (RB_SCMT) SCMT-BB				CBL Amplitude (CBL) SCMT-BB		Absent 5000 12500 20000 27500 35000 42500 50000 57500 65000 72500 80000 87500 95000 102500										
0	deg 360			0	mV 100											
Transit Time for CBL (TT) SCMT-BB				Good Bond (GOBO)		CBL Amplitude Mapping Image (0 - 100)										
200	us 400			0	mV 10		SCMT-BB									
Well Temperature (WTEP) PSTP-A				GoodBond From CBL to GOBO												
0	degF 300															

Cable Drag	
Tool_Tot. Drag	

TIME_1900 - Time Marked every 60.00 (s)

Description: SCMT Amplitudes and MAP Image Format: Log (SCMT_Amp_Image_1) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured
Depth Creation Date: 07-Aug-2015 10:27:24

Channel Processing Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
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BHT	Bottom Hole Temperature	Borehole	235	degF
BILI	Bond Index Level for Zone Isolation	SCMT-BB	0.8	
CB3D	SCMT CBL 3 ft Peak Detection Mode	SCMT-BB	Peak	
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-BB	235	us
CB3T	SCMT CBL 3 ft Fixed Threshold Level	SCMT-BB	20	mV
CBLG	CBL Gate Width	SCMT-BB	40	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-BB	80	mV
CMCF	CBL Cement Type Compensation Factor	SCMT-BB	0.14	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.25	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9.1	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	196	us/ft
ETEM	HP Estimated Temperature	PSTP-A	212	degF
FCF	CBL Fluid Compensation Factor	SCMT-BB	0.88	
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-BB	6.65	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	WTEP	
MAPD	SCMT MAP Peak Detection Mode	SCMT-BB	Peak	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	SCMT-BB	167	us
MAPT	SCMT MAP Fixed Threshold Level	SCMT-BB	30	mV
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-BB	10.8	dB/ft
MCCF	MAP Cement Type Compensation Factor	SCMT-BB	0.29	
MCI	Minimum Cemented Interval for Isolation	SCMT-BB	Depth Zoned	ft
MMSA	MAP Minimum Sonic Amplitude	SCMT-BB	3.98	mV
MSA	Minimum Sonic Amplitude	SCMT-BB	0.51	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	SCMT-BB	3.57	mV
PTCO	PBMS Pressure Temperature Correction Option	PSTP-A	Gauge Temperature	
RBC	Relative Bearing Correction Allow/Disallow	SCMT-BB	Allow	
RUN_SNUM	Run Sequence Number	WSDRUN	1	
TD	Total Measured Depth	Borehole	9059	ft
ZCMT	Acoustic Impedance of Cement	SCMT-BB	3.7	Mrayl
ZCMT_NEAT	Acoustic Impedance of Cement in Neat Cement	SCMT-BB	6.8	Mrayl

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
MCI	14.81	2460	2484.5
MCI	1.25	2484.5	9042.67

All depth are actual.

Tool Control Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
CMTM	SCMT Operating Mode	SCMT-BB	Log	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-A	36 dB	

ONE

Software Version

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Repeat[2]:Up	Up	8665.93 ft	9041.98 ft	22-Jul-2015 3:31:19 AM	22-Jul-2015 3:55:39 AM	ON	5.73 ft	Yes

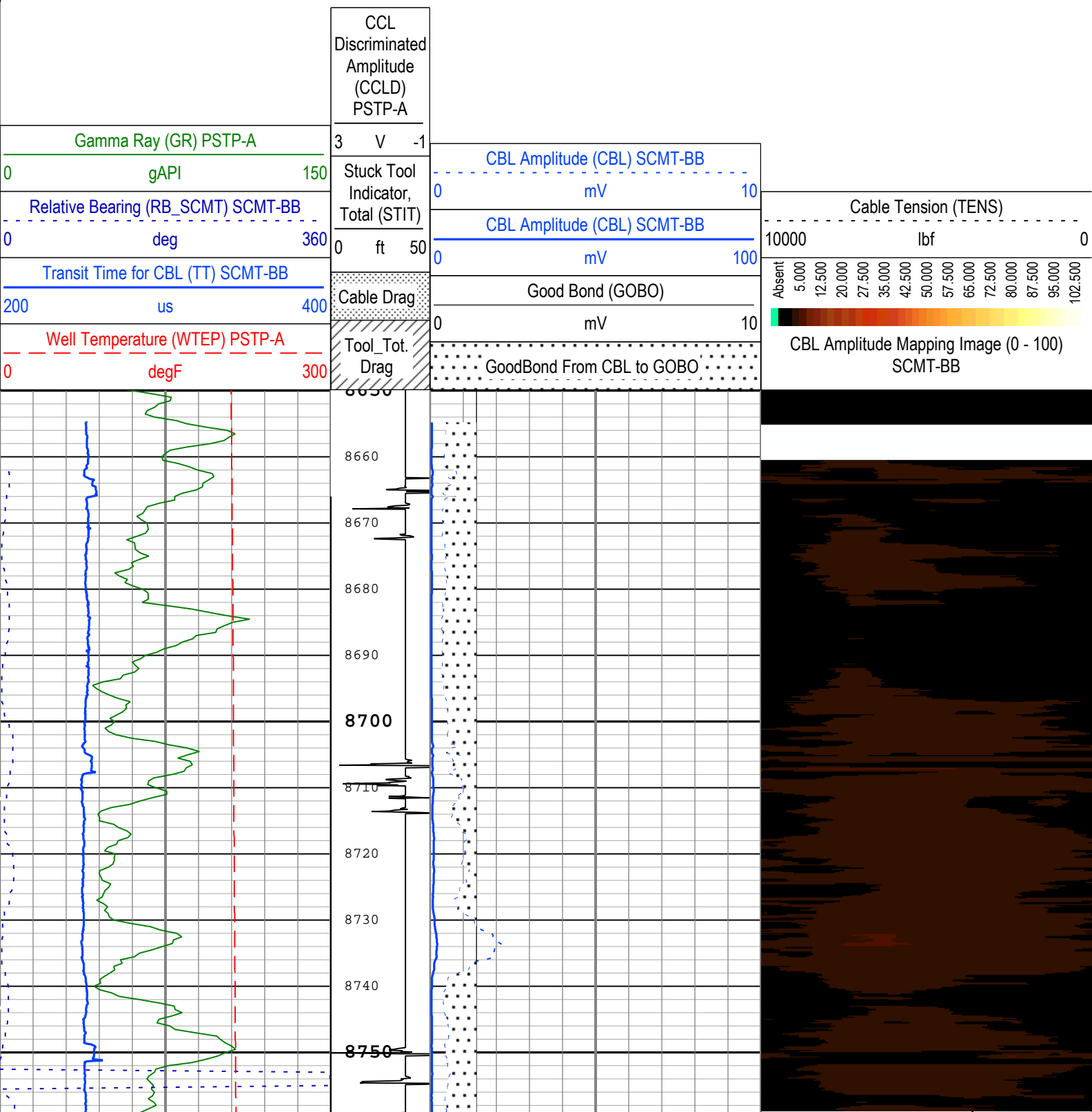
All depths are referenced to toolstring zero

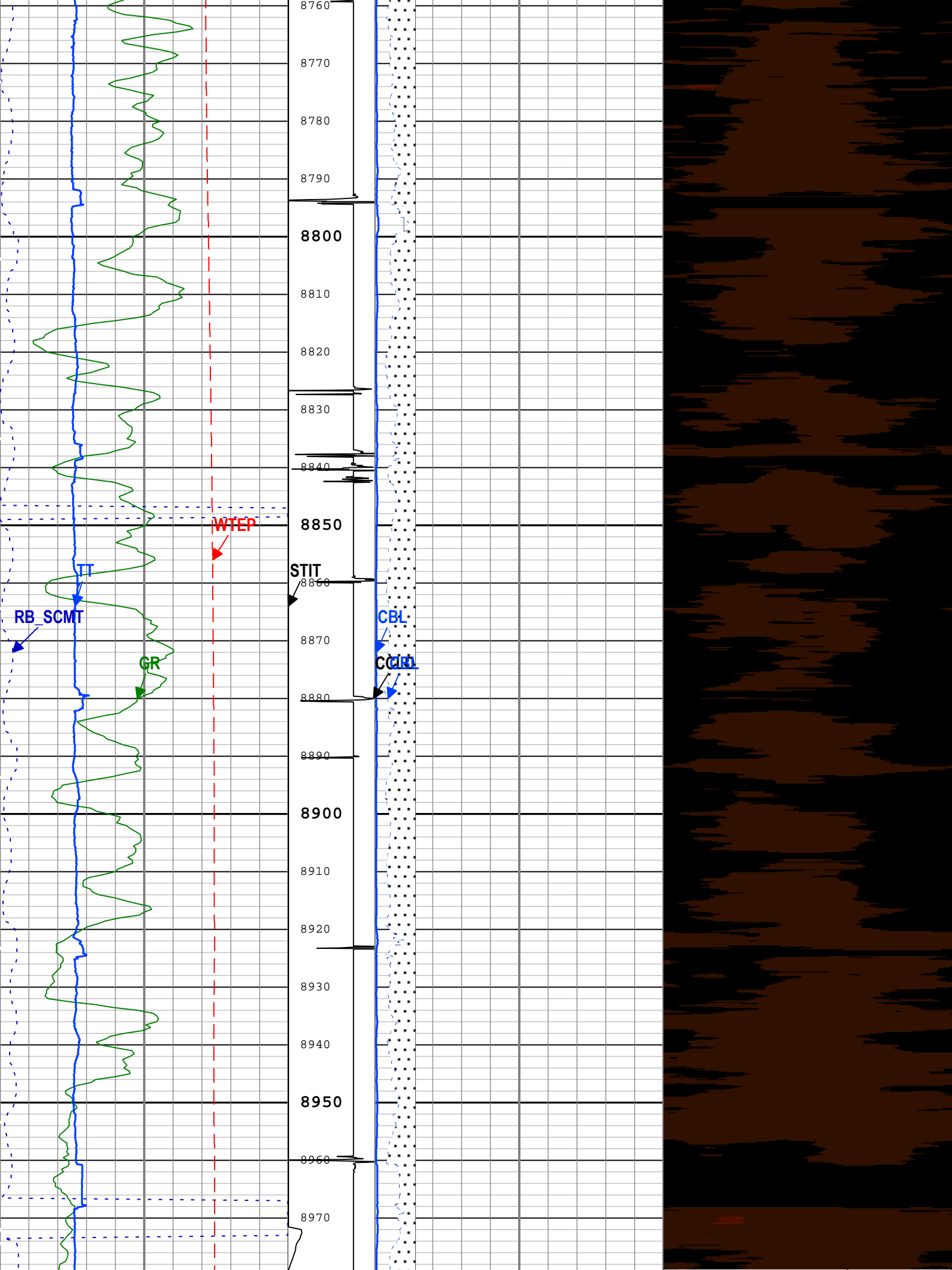
Log	Company:Caerus Piceance LLC	Well:Puckett 13C-1
	ONE: Repeat[2]:Up:S013	

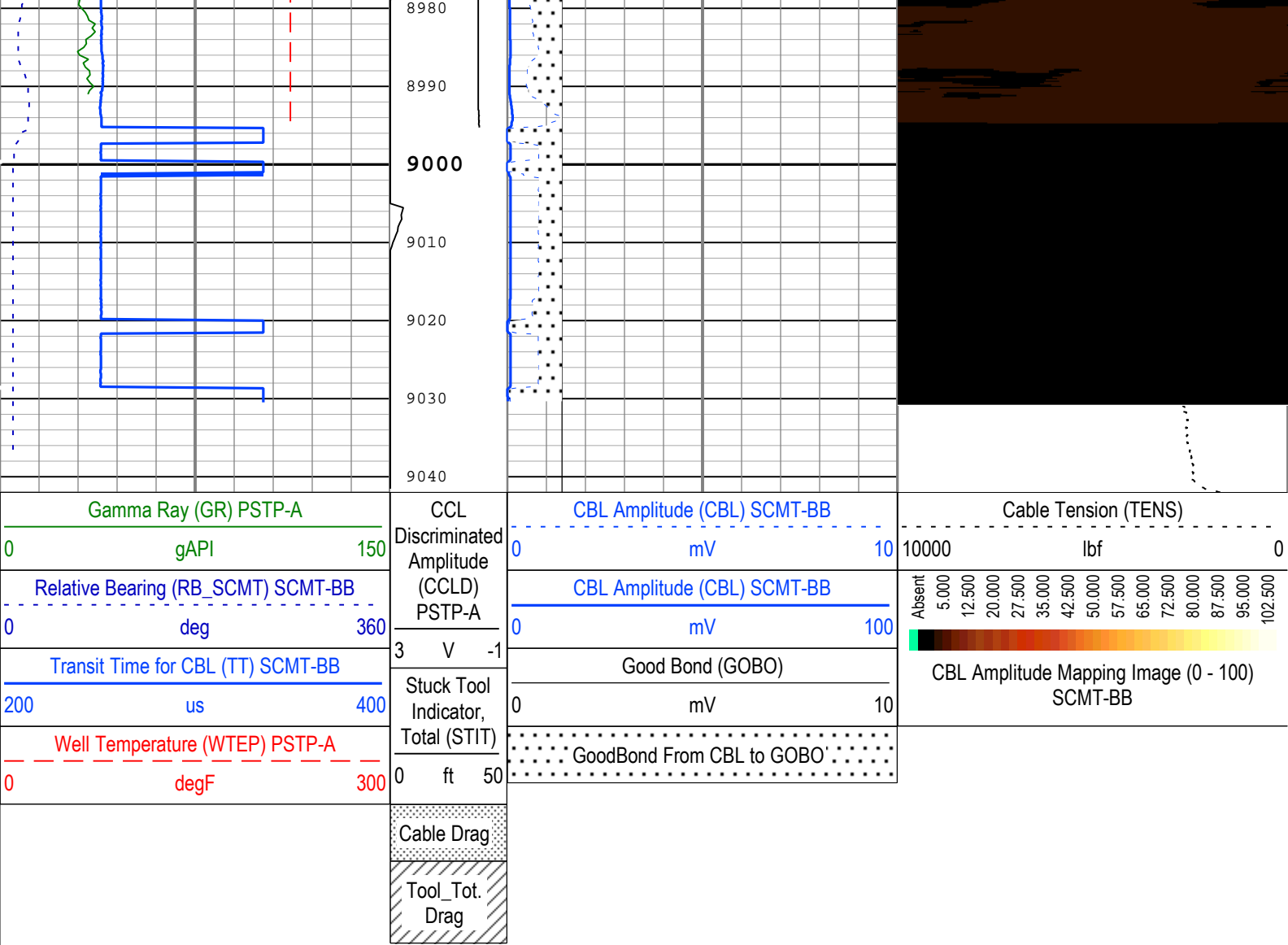
Description: SCMT Amplitudes and MAP Image Format: Log (SCMT_Amp_Image_1) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured

Depth Creation Date: 07-Aug-2015 10:27:29

TIME_1900 - Time Marked every 60.00 (s)







TIME_1900 - Time Marked every 60.00 (s)

Description: SCMT Amplitudes and MAP Image Format: Log (SCMT_Amp_Image_1) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured
Depth Creation Date: 07-Aug-2015 10:27:29

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	235	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-BB	235	us
CBLG	CBL Gate Width	SCMT-BB	40	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-BB	80	mV
CMCF	CBL Cement Type Compensation Factor	SCMT-BB	0.14	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.25	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9.1	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	196	us/ft
FCF	CBL Fluid Compensation Factor	SCMT-BB	0.88	
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-BB	6.65	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	WTEP	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	SCMT-BB	167	us
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-BB	10.8	dB/ft
MCCF	MAP Cement Type Compensation Factor	SCMT-BB	0.29	

MCI	Minimum Cemented Interval for Isolation	SCMT-BB	1.25	ft
MMSA	MAP Minimum Sonic Amplitude	SCMT-BB	3.98	mV
MSA	Minimum Sonic Amplitude	SCMT-BB	0.51	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	SCMT-BB	3.57	mV
RUN_SNUM	Run Sequence Number	WSDRUN	1	
TD	Total Measured Depth	Borehole	9059	ft
ZCMT	Acoustic Impedance of Cement	SCMT-BB	3.7	Mrayl

Tool Control Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
CMTM	SCMT Operating Mode	SCMT-BB	Log	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h

ONE

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
ONE	Main[3]:Up	Up	2435.96 ft	9042.63 ft	22-Jul-2015 4:01:20 AM	22-Jul-2015 7:41:43 AM	ON	8.33 ft	Yes

All depths are referenced to toolstring zero

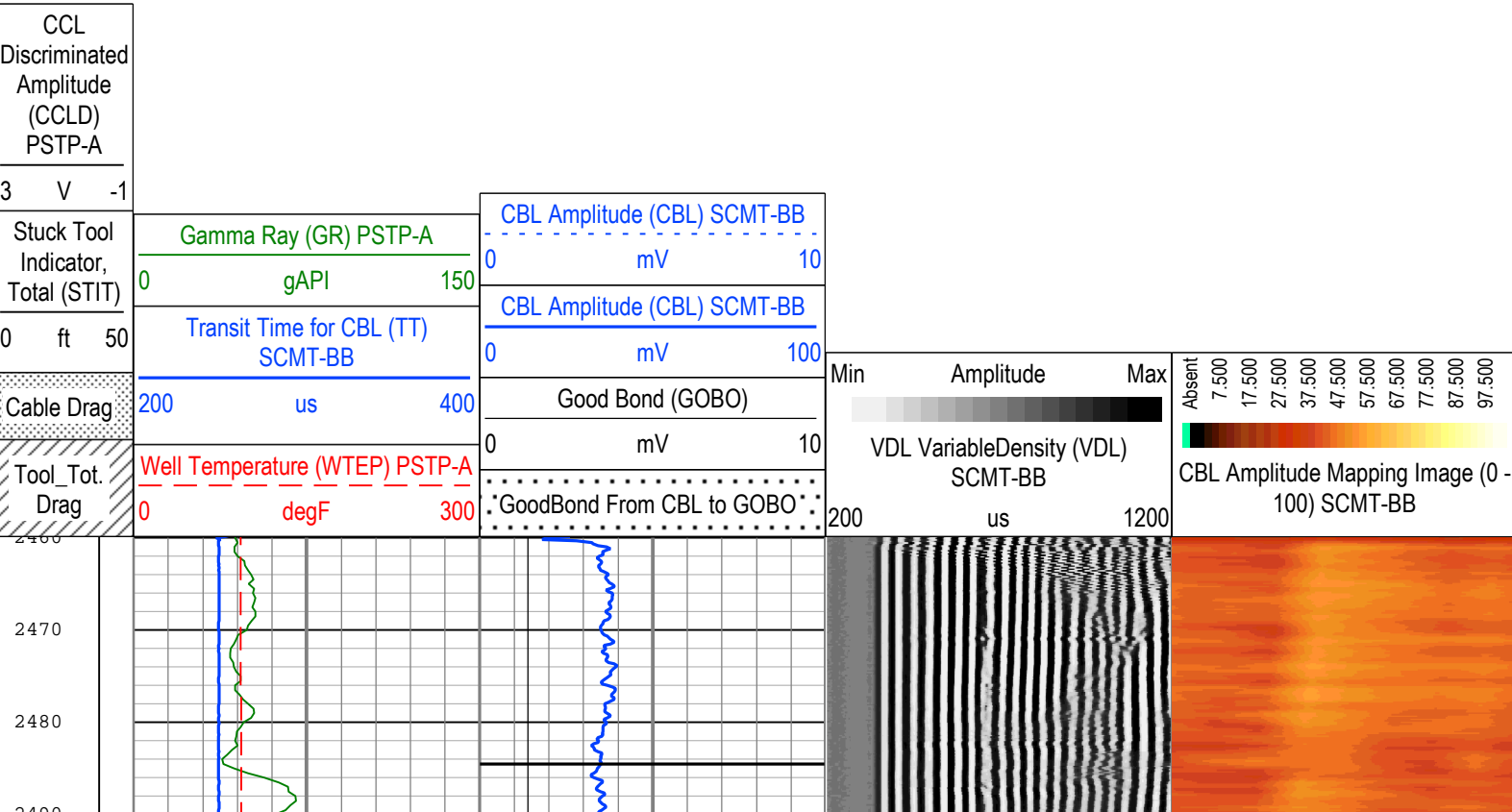
Log

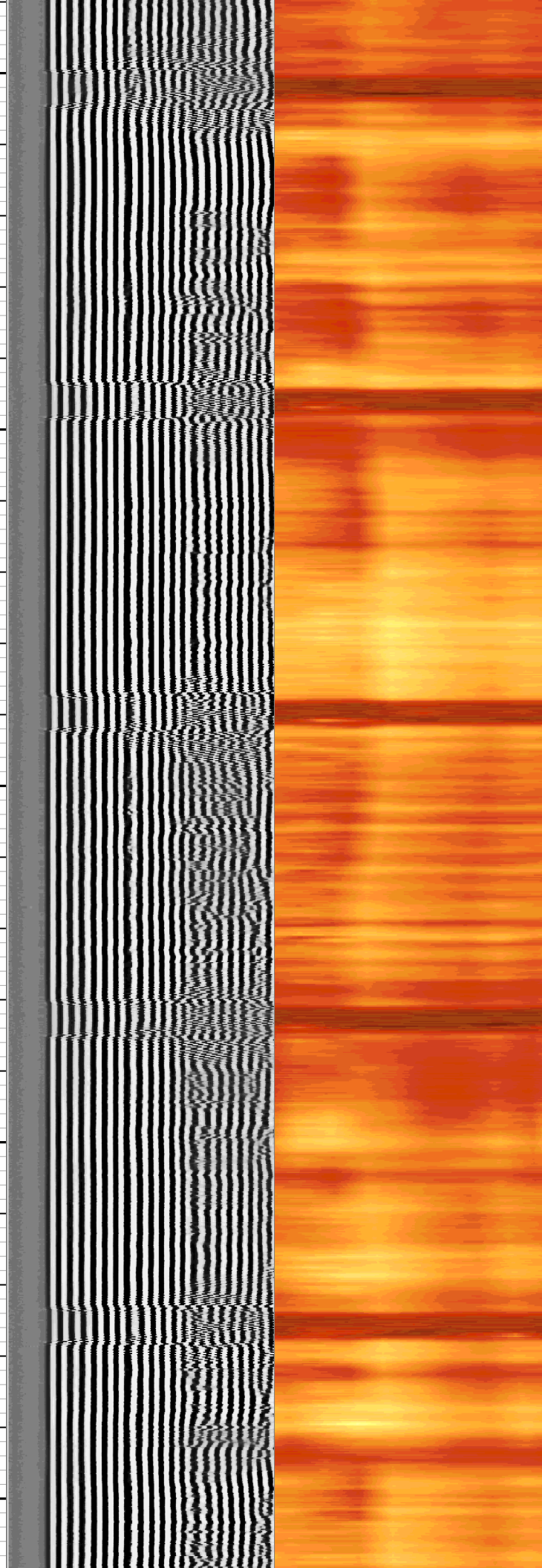
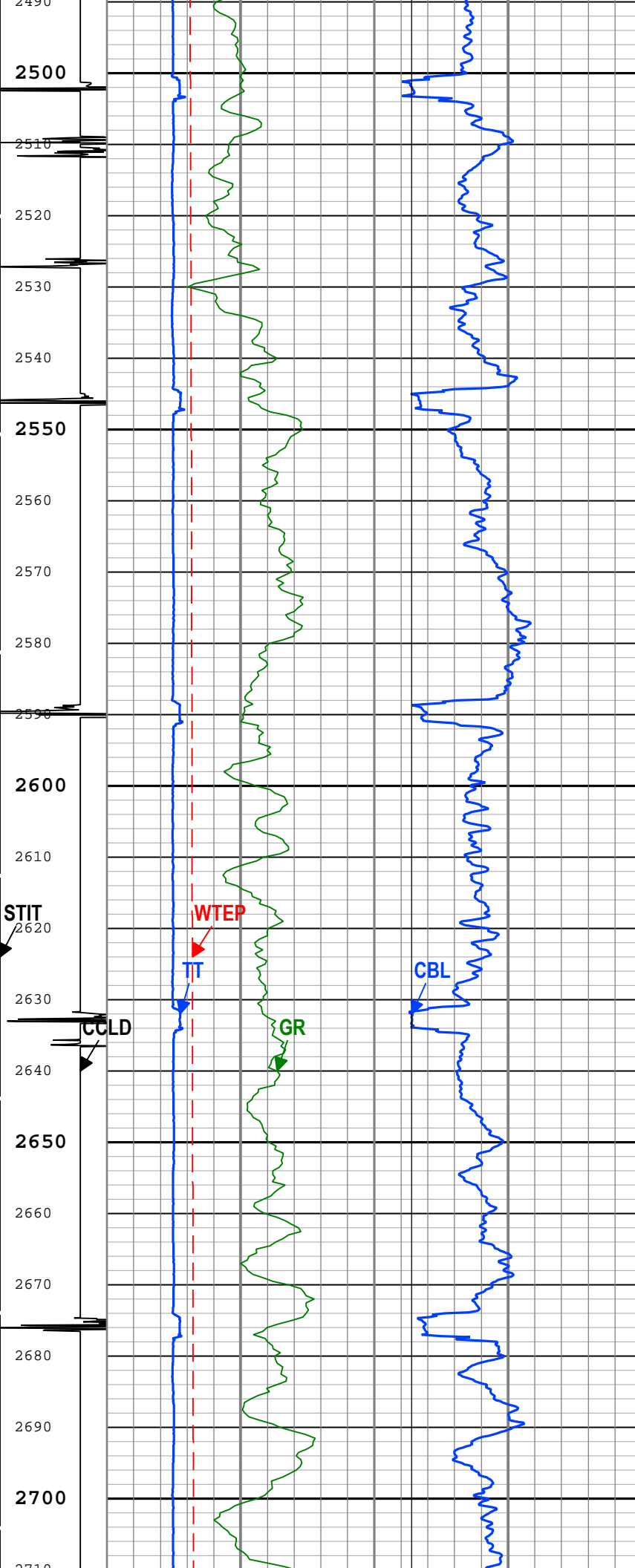
Company:Caerus Piceance LLC Well:Puckett 13C-1

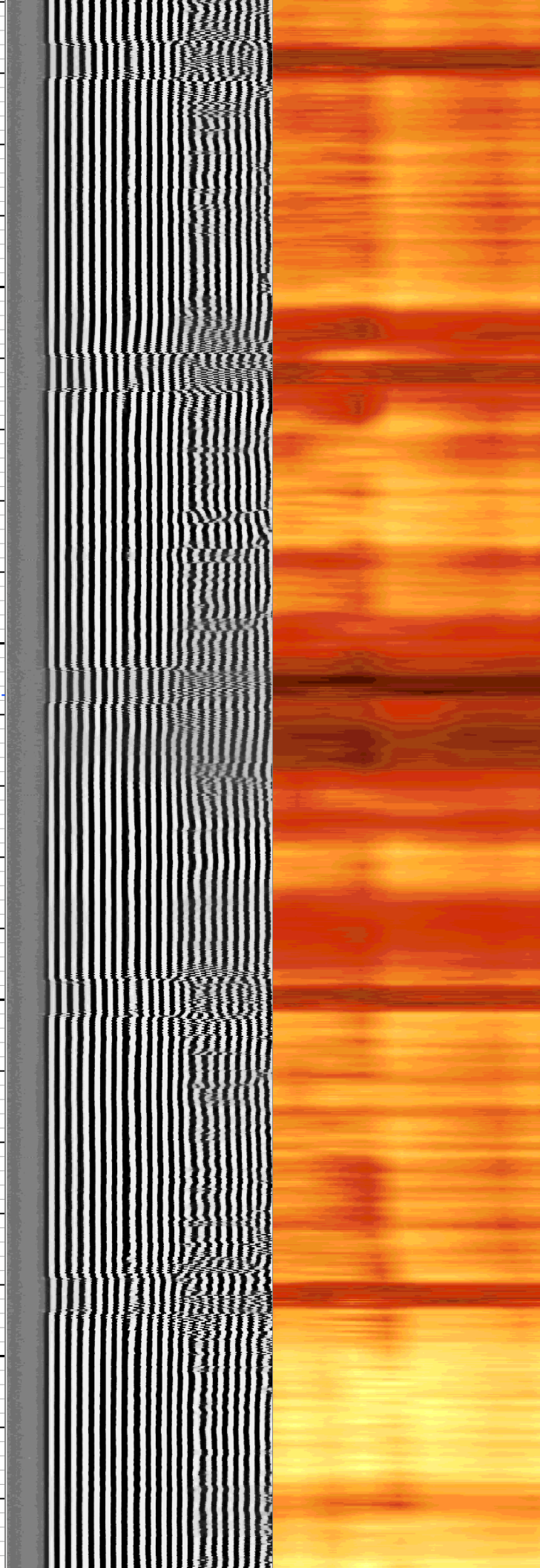
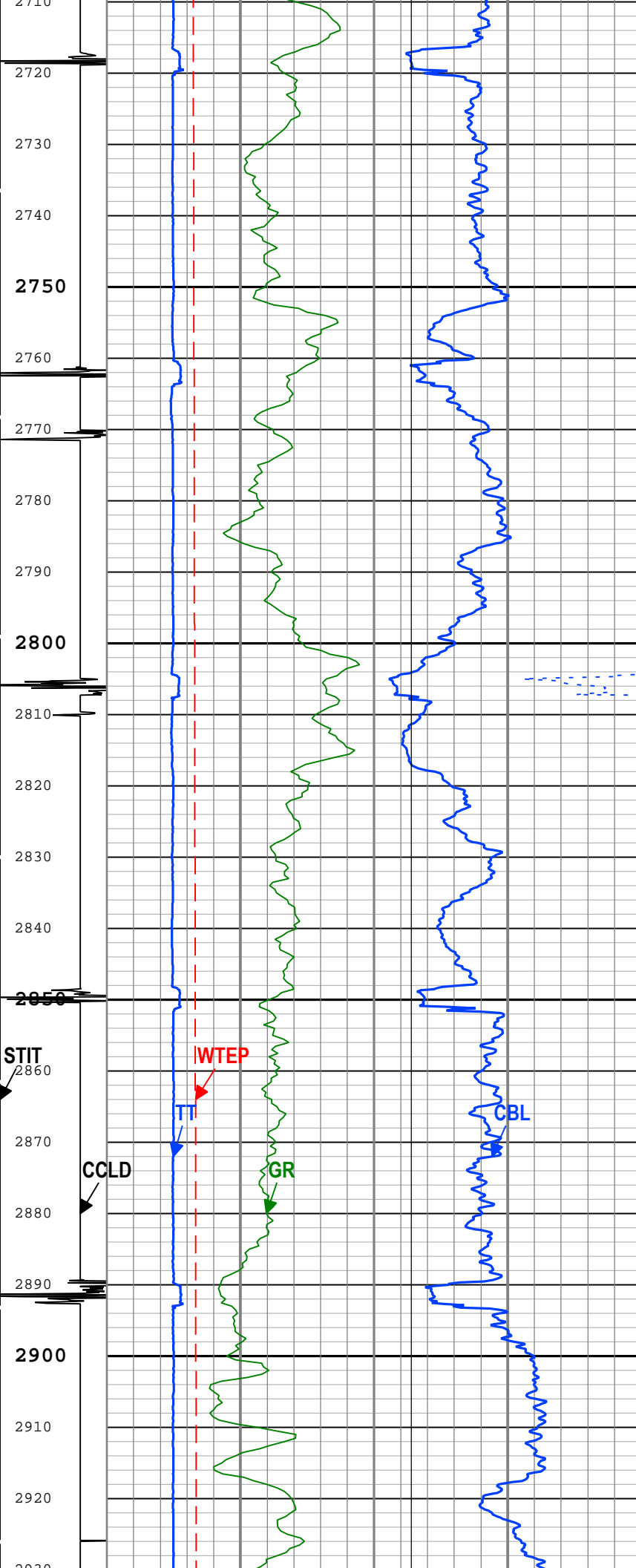
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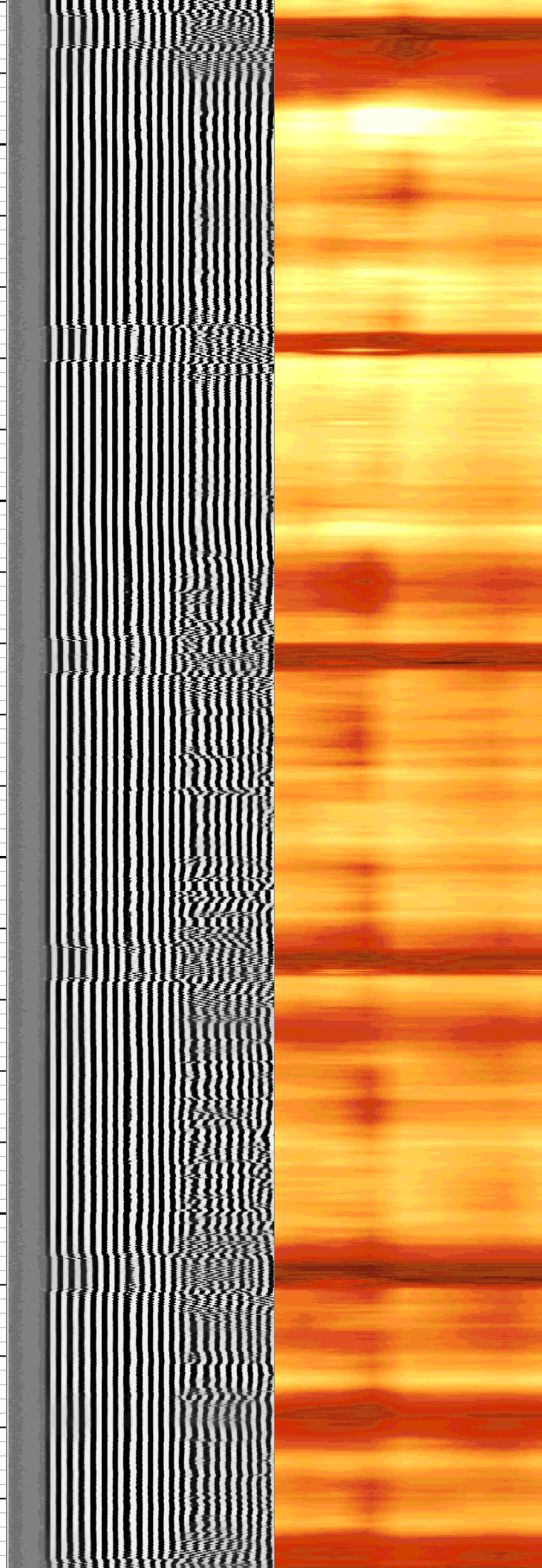
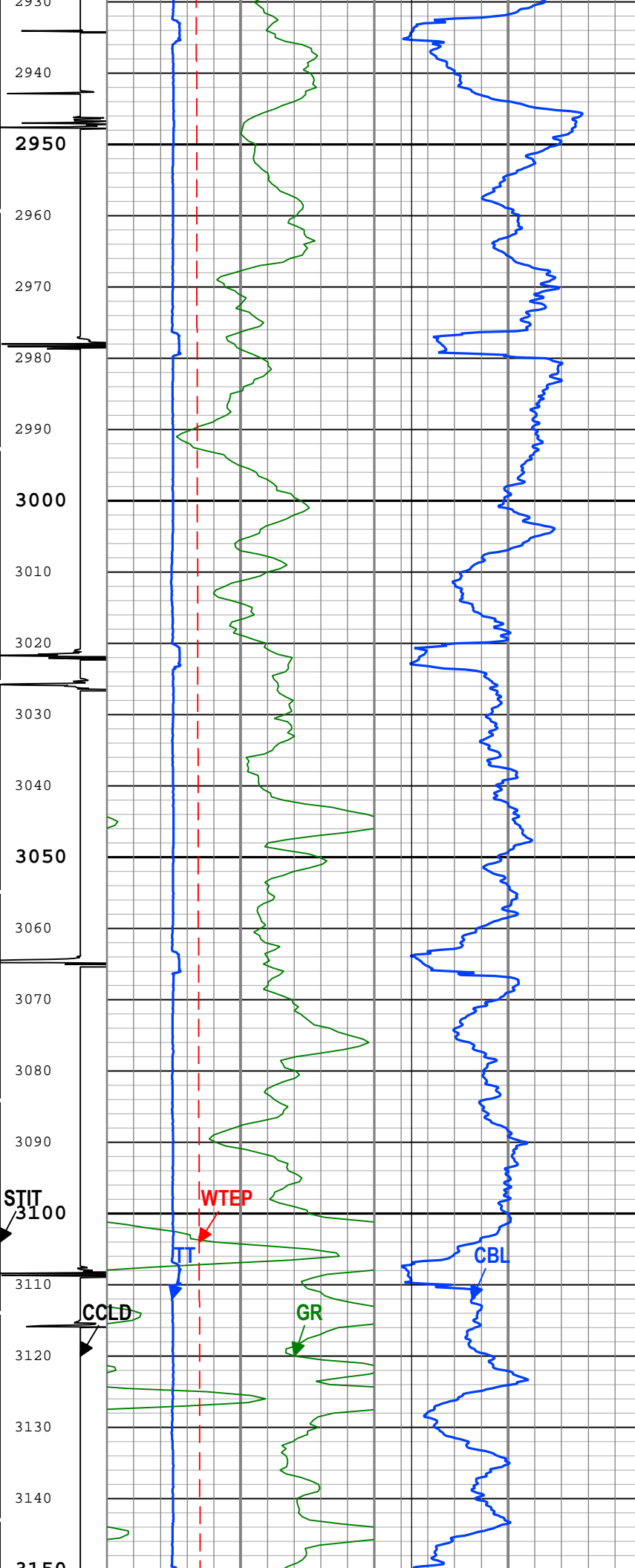
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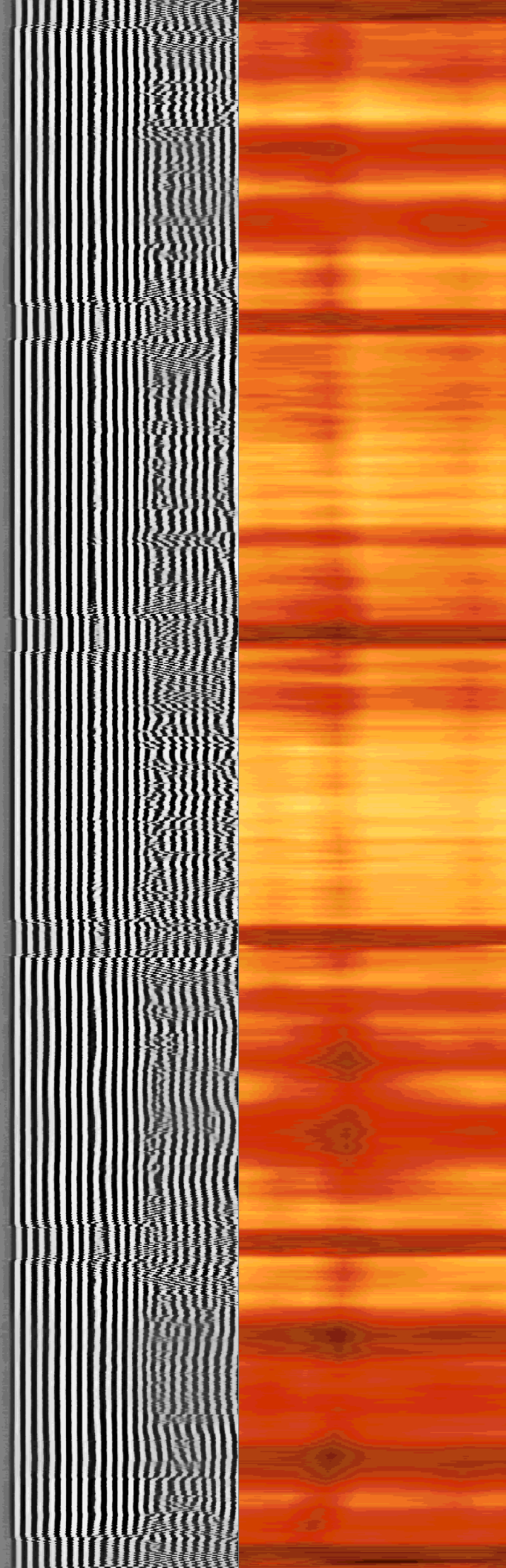
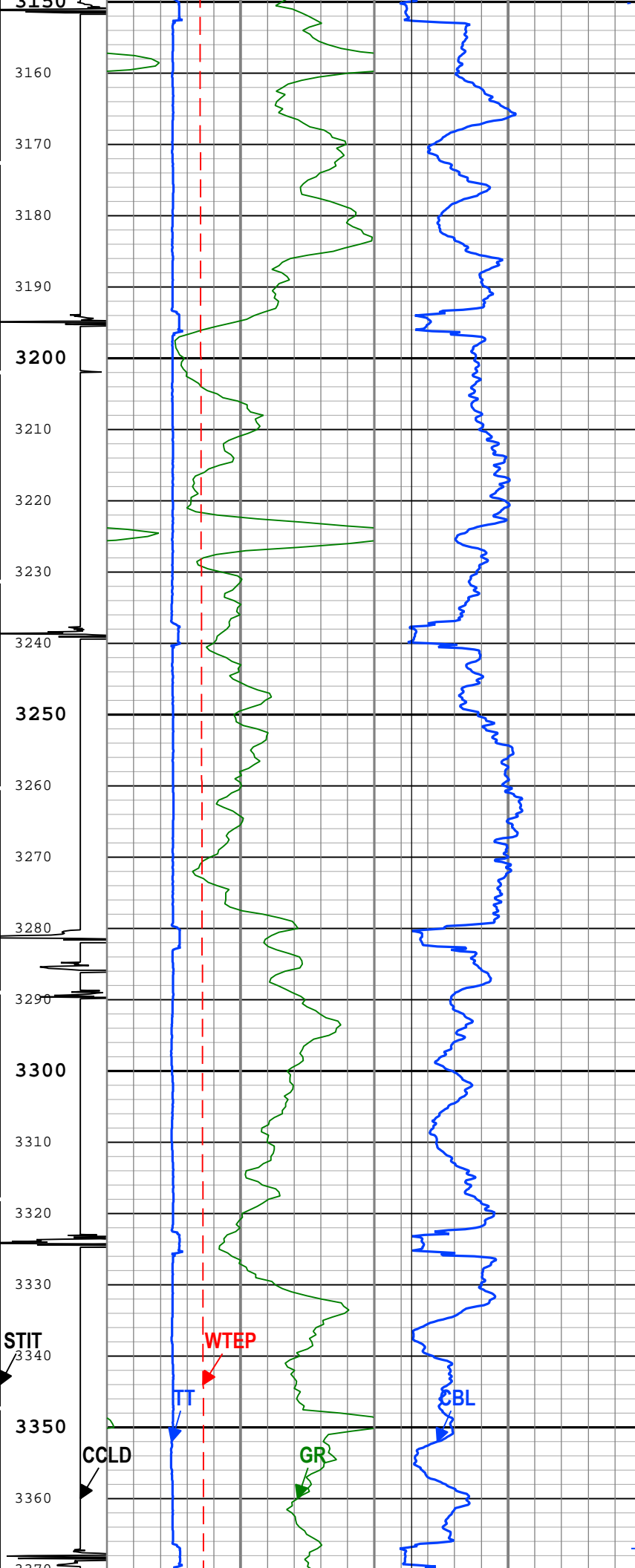
TIME_1900 - Time Marked every 60.00 (s)

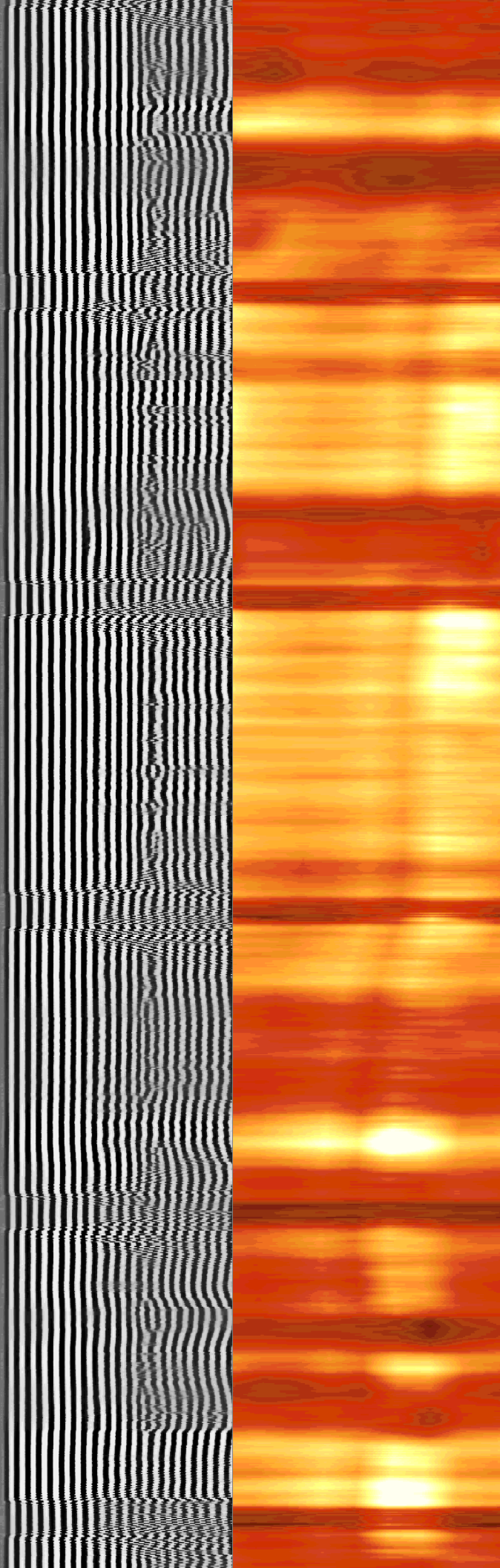
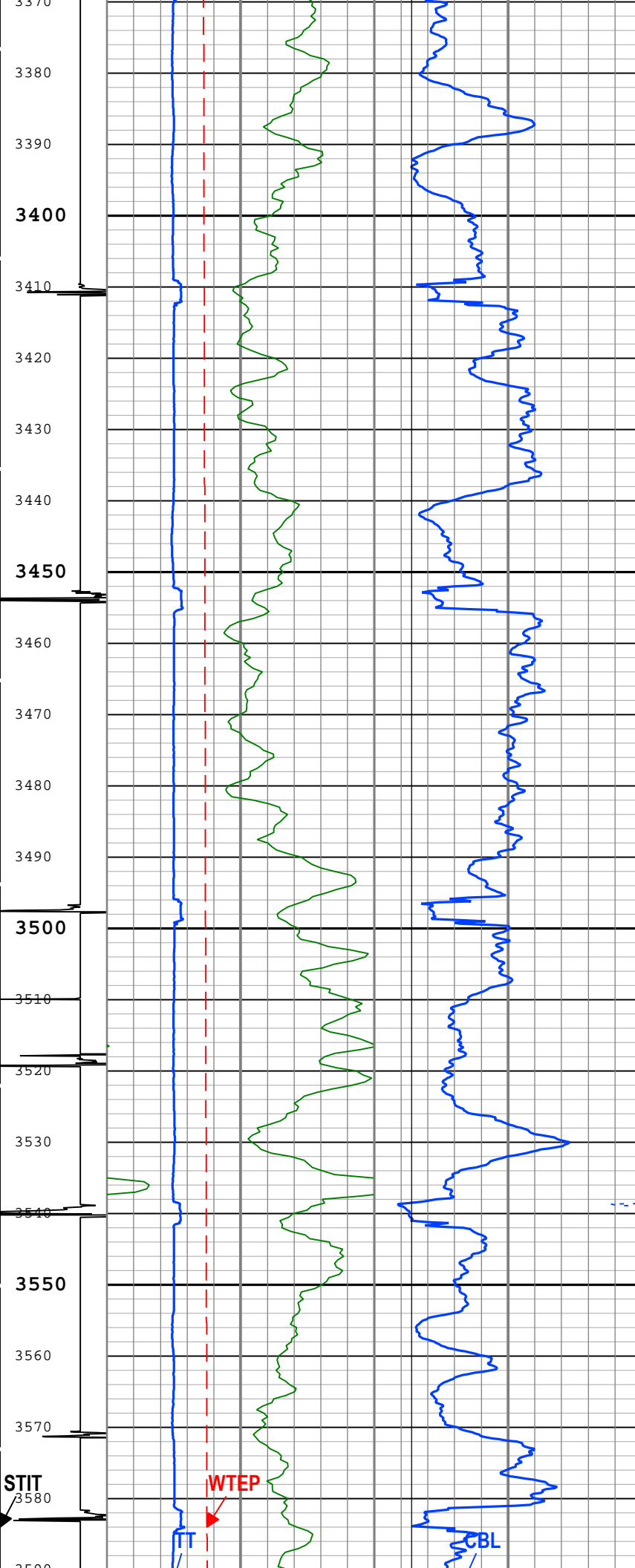


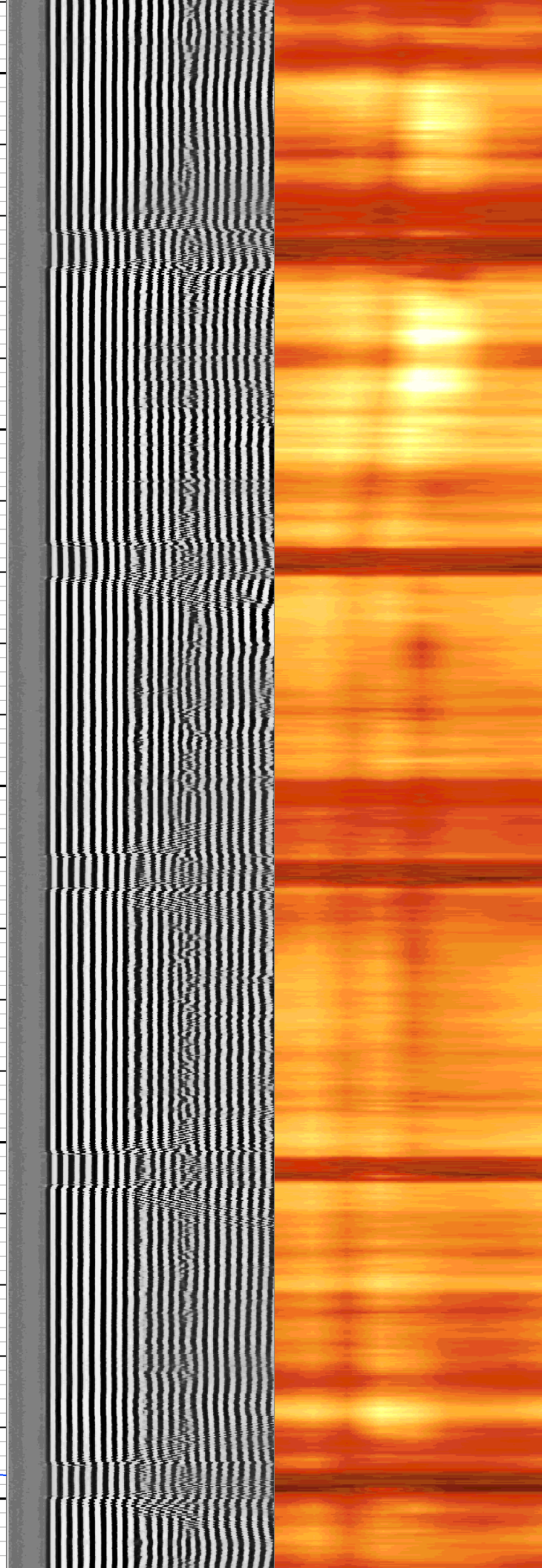
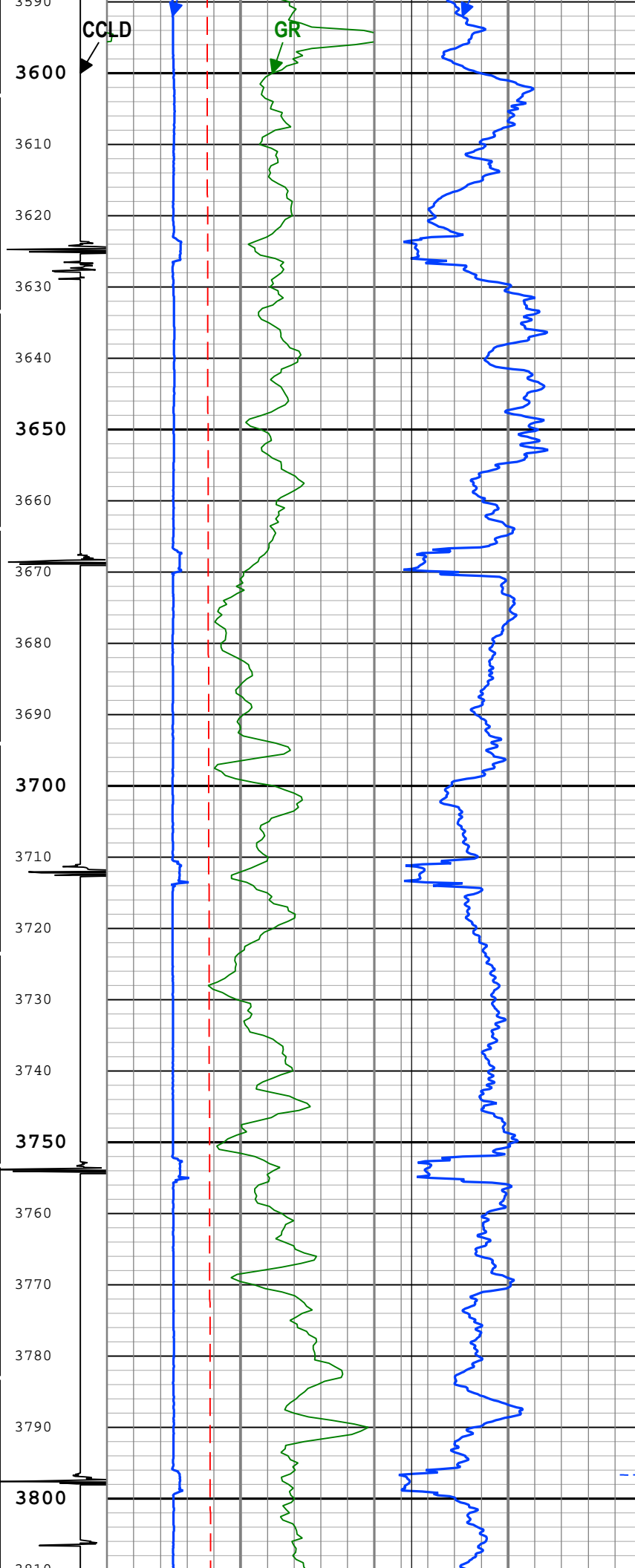


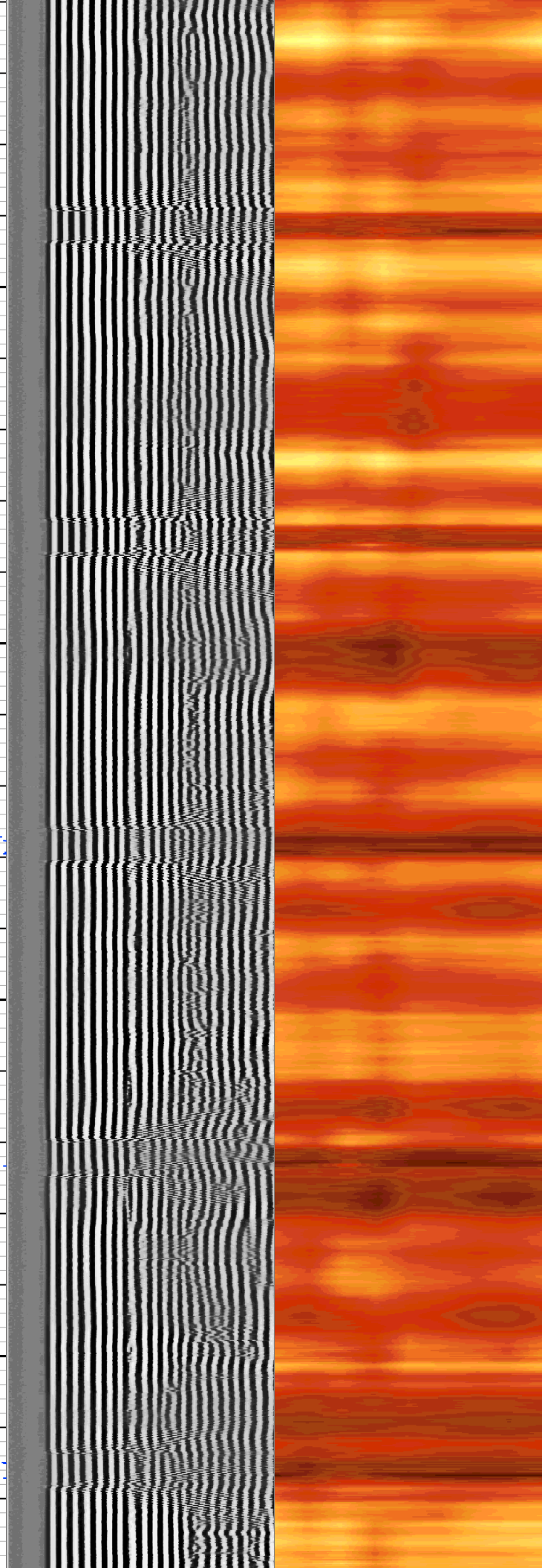
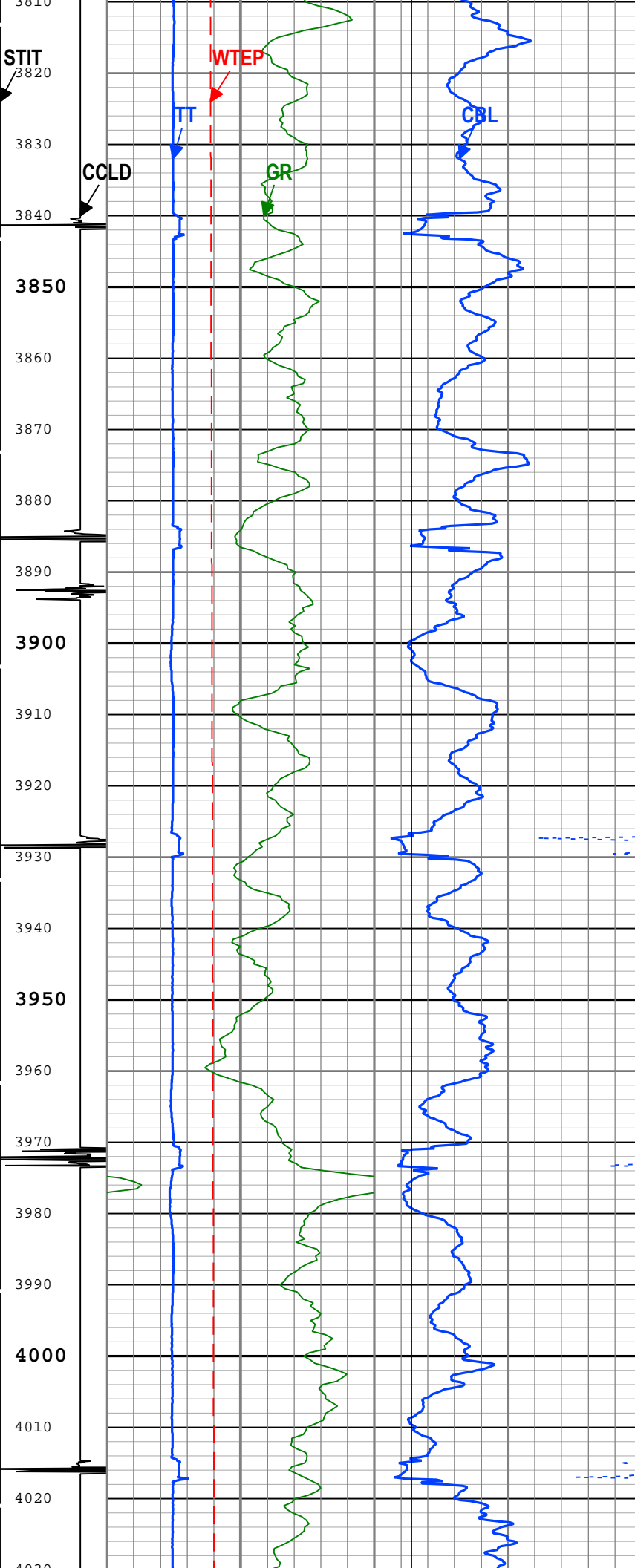


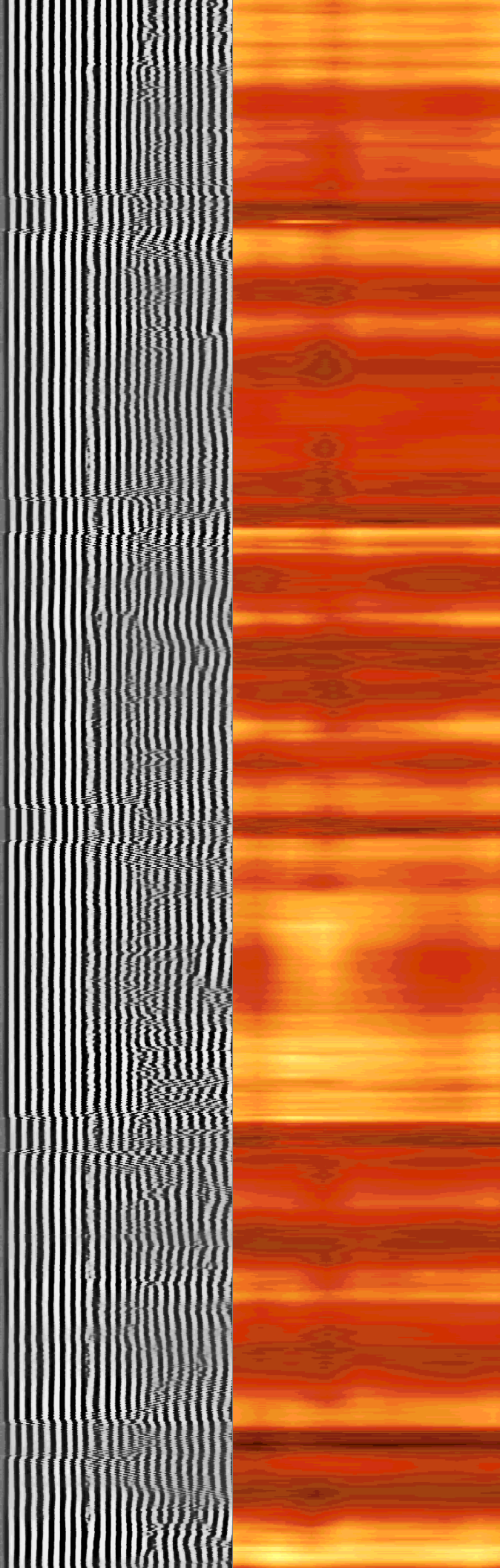
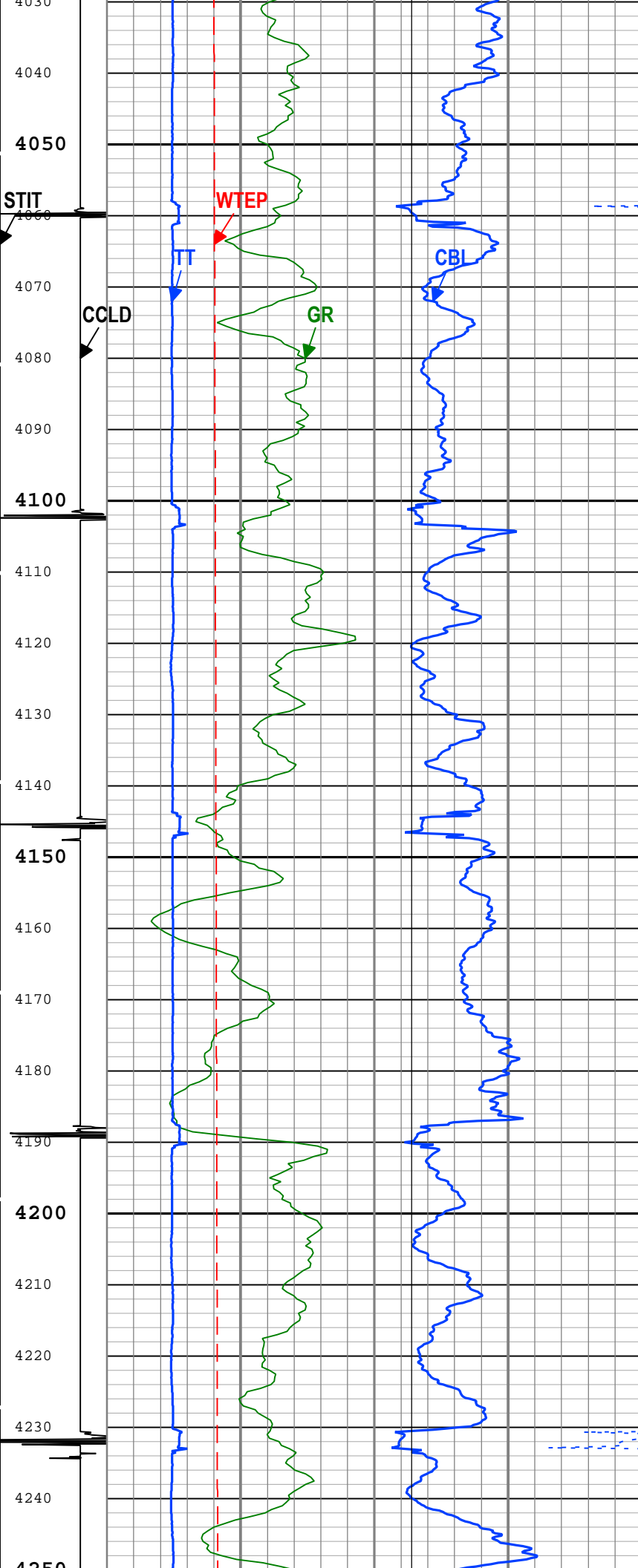


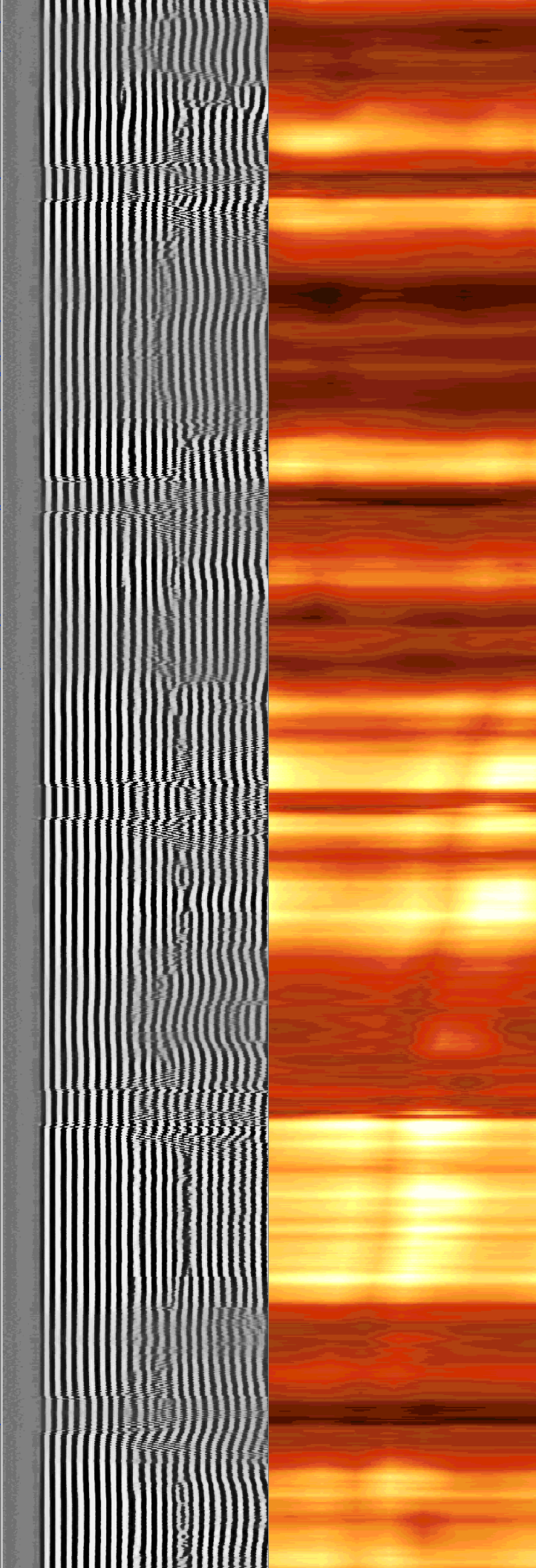
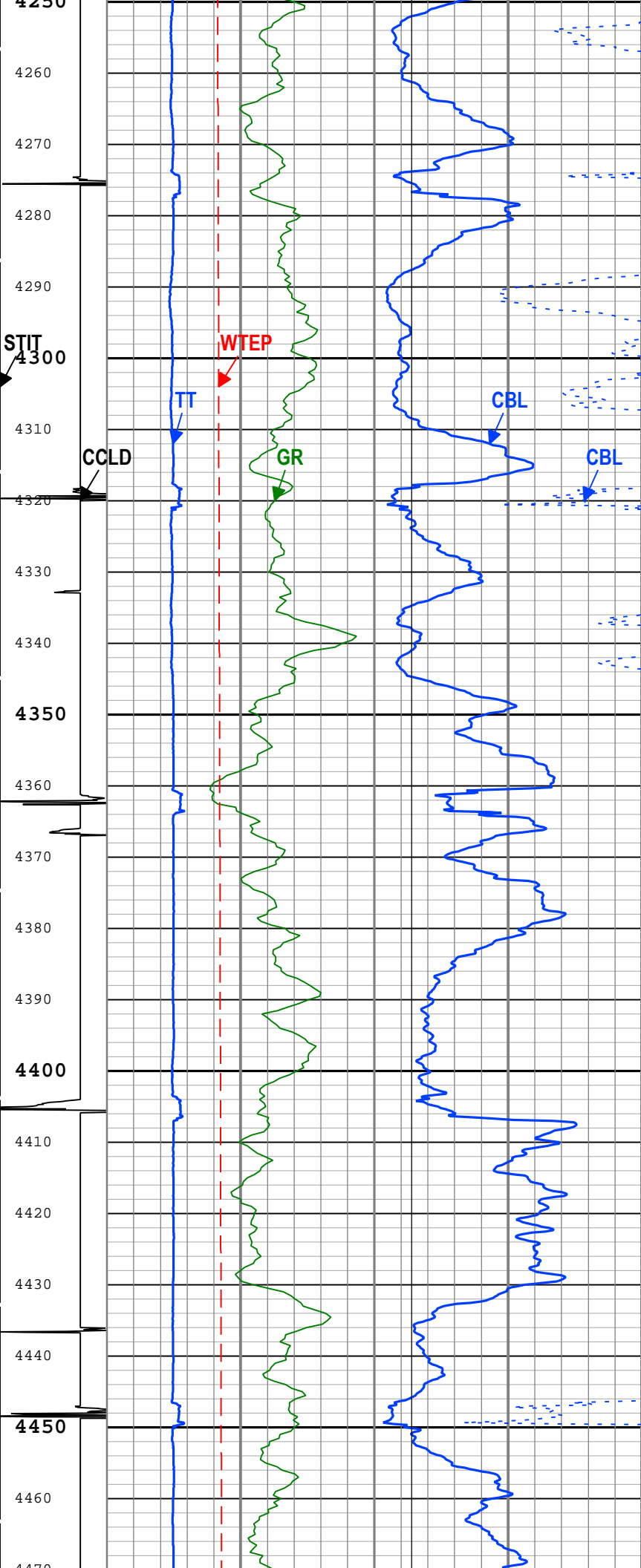


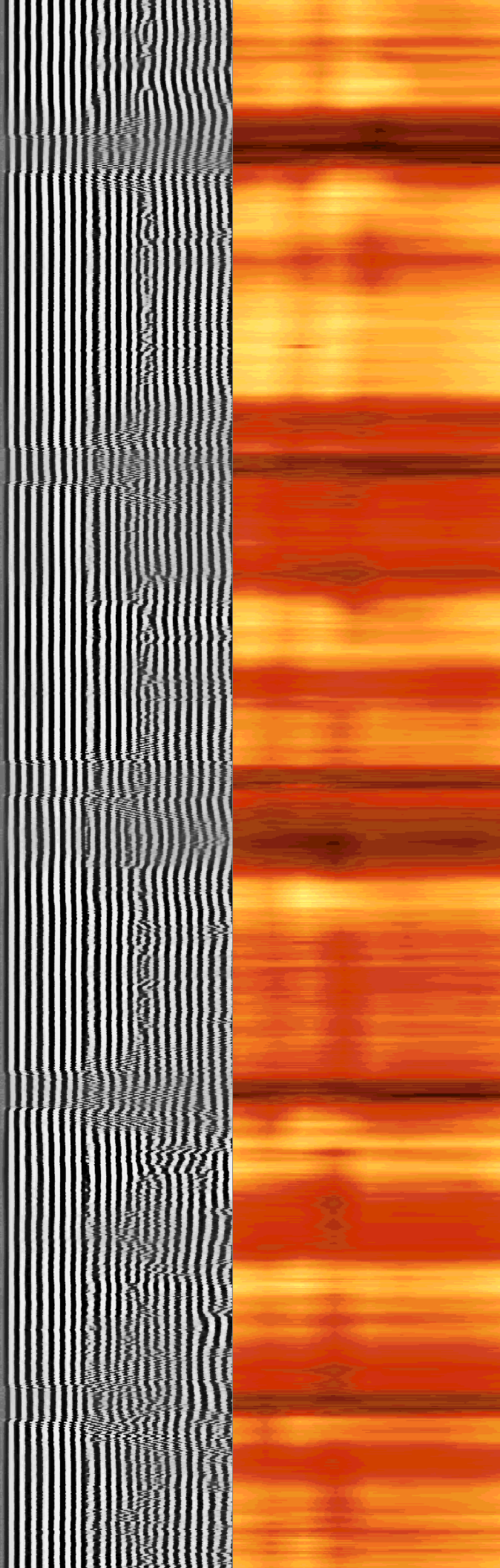
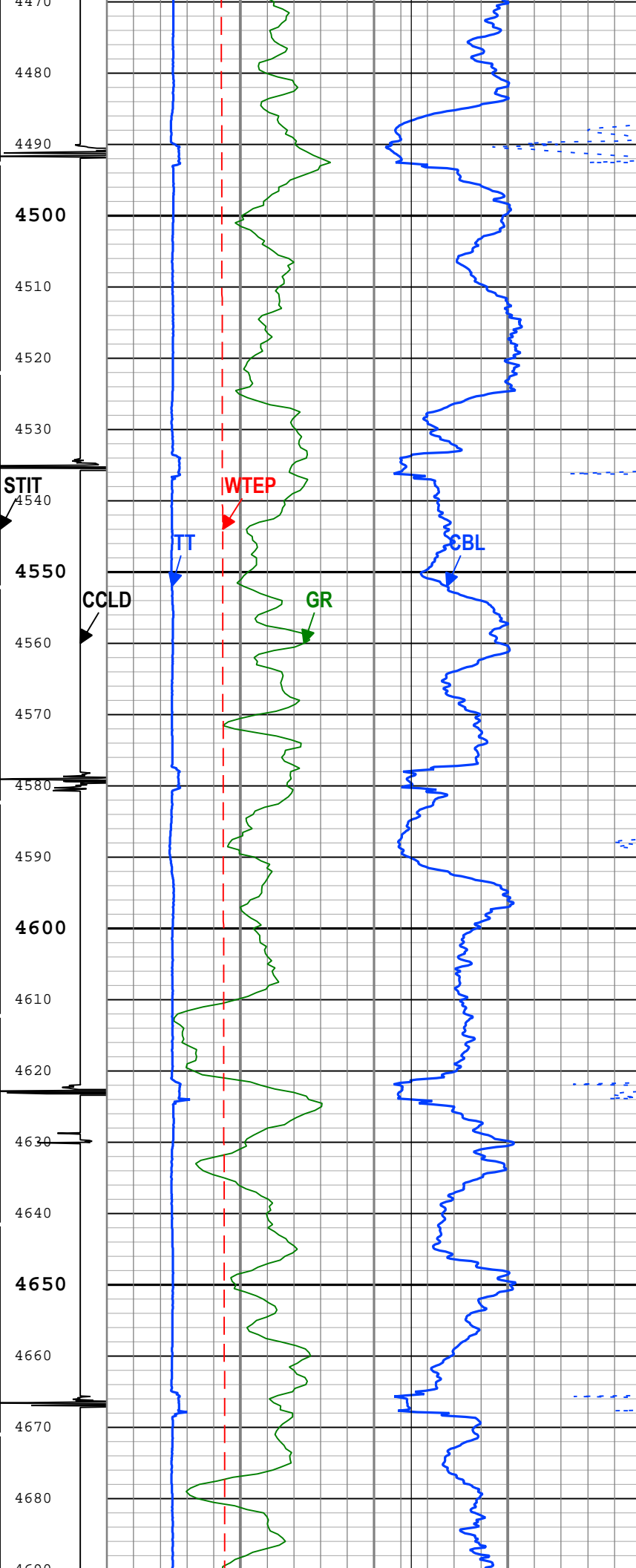


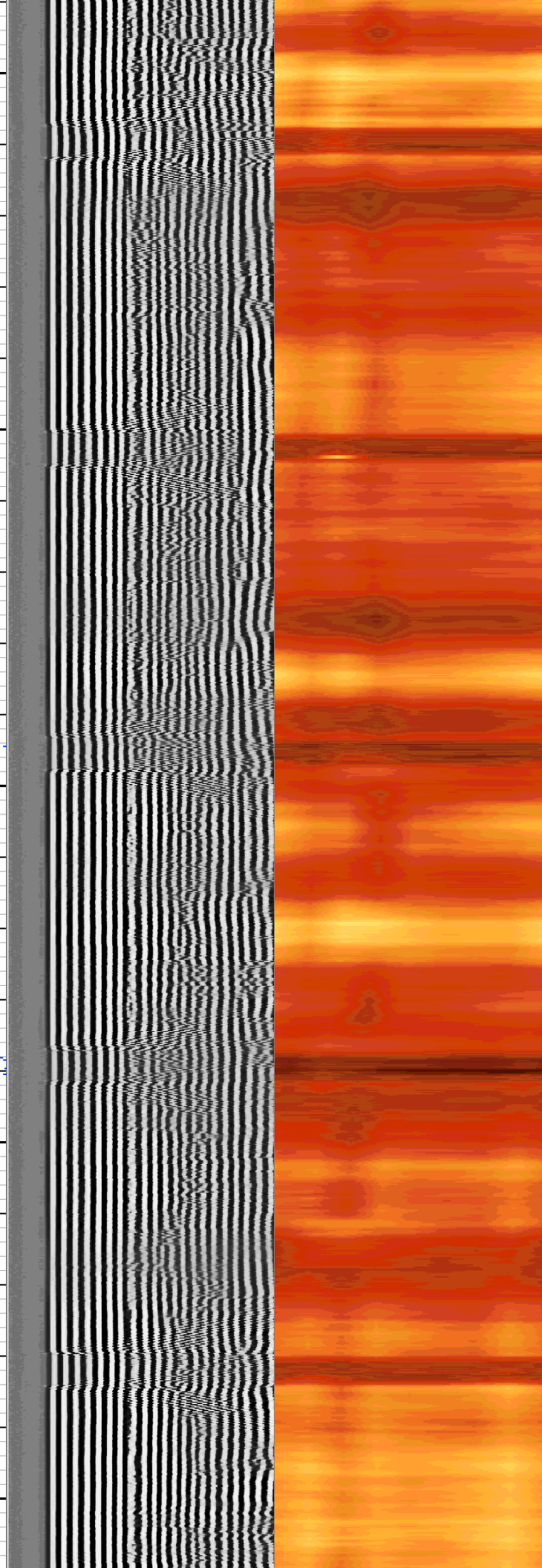
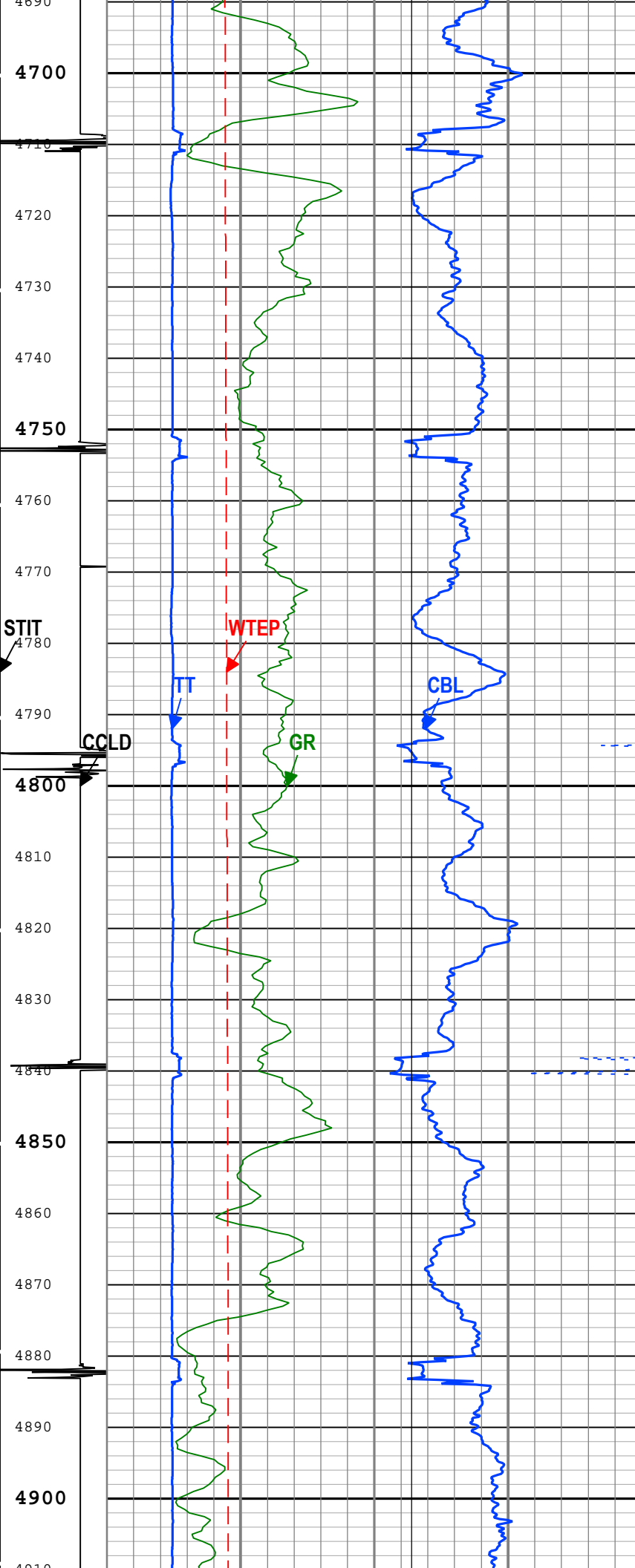


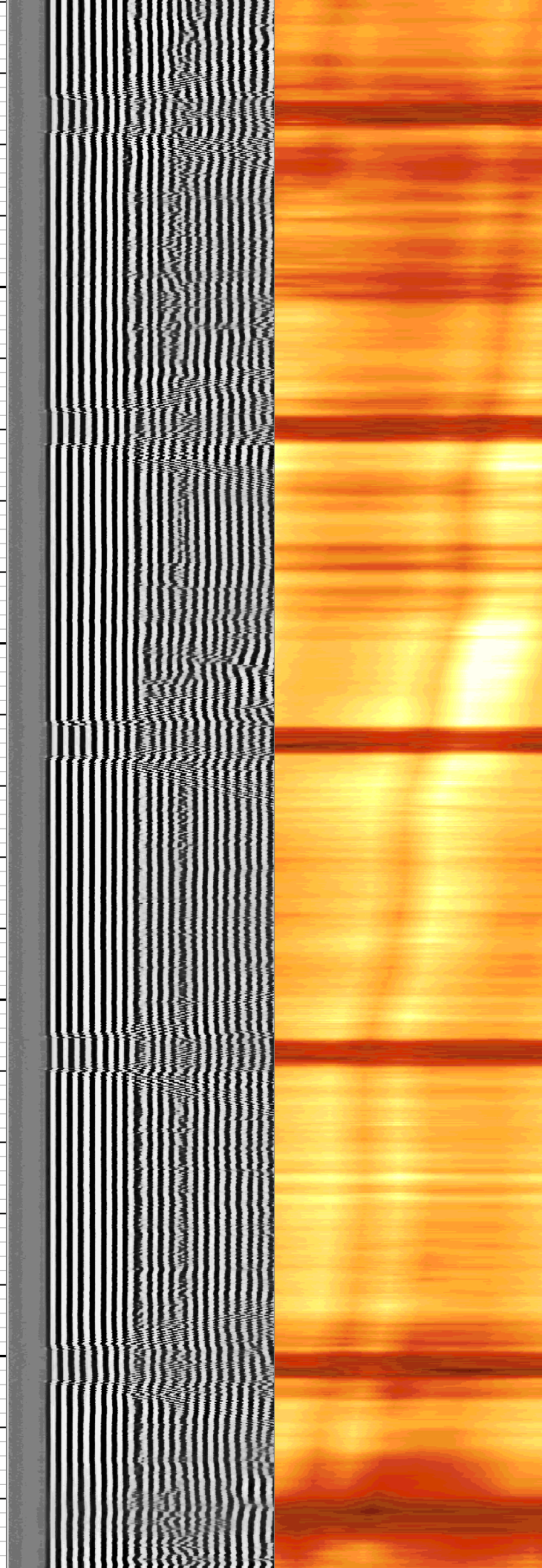
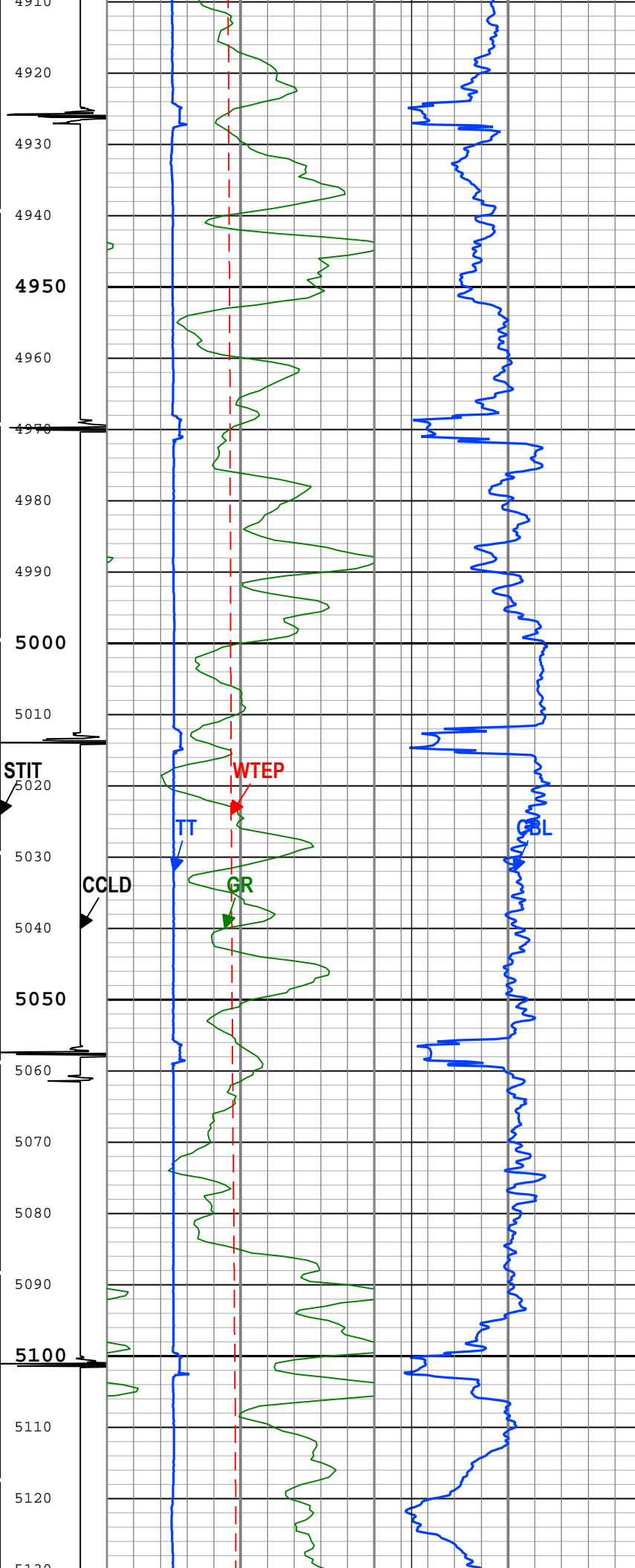


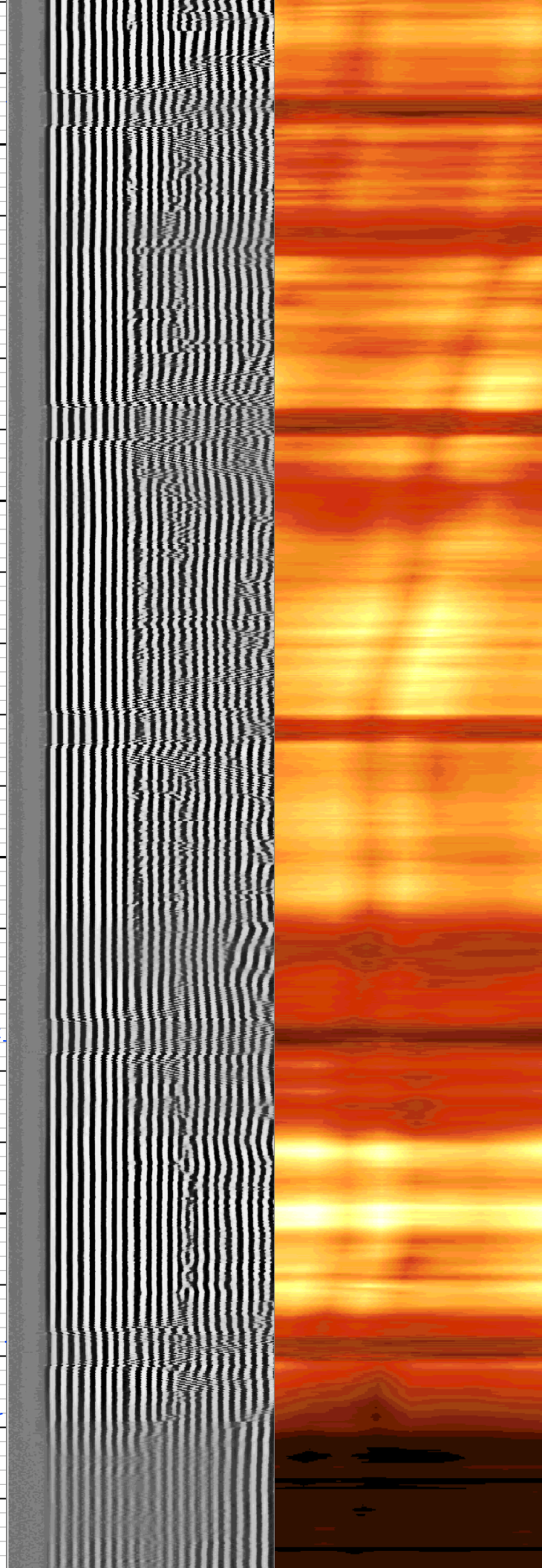
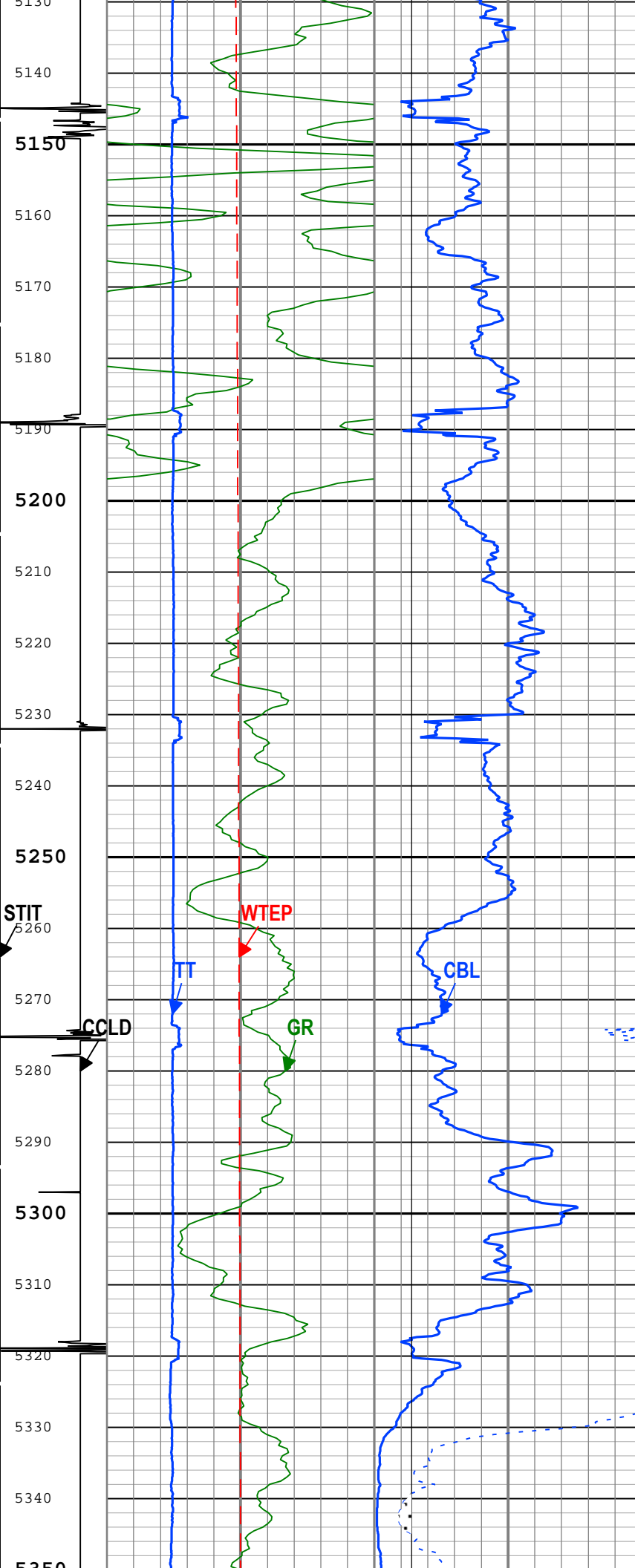


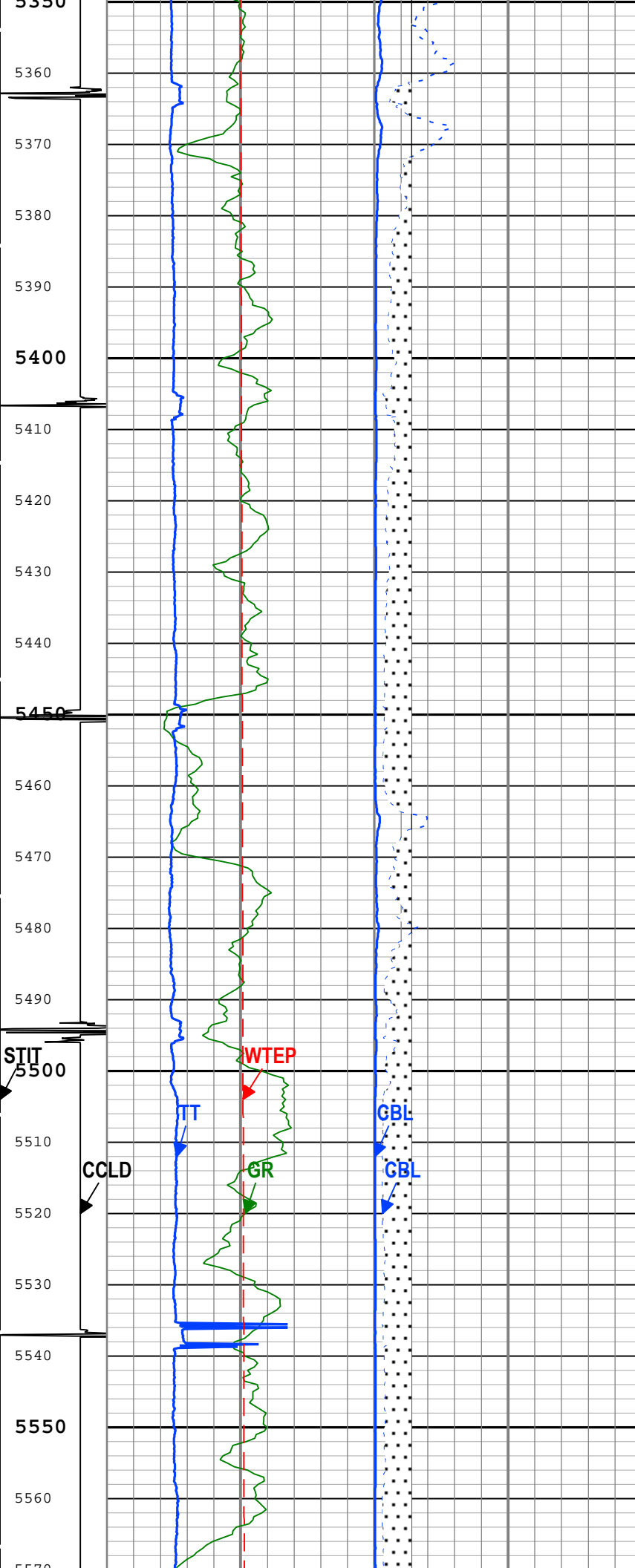


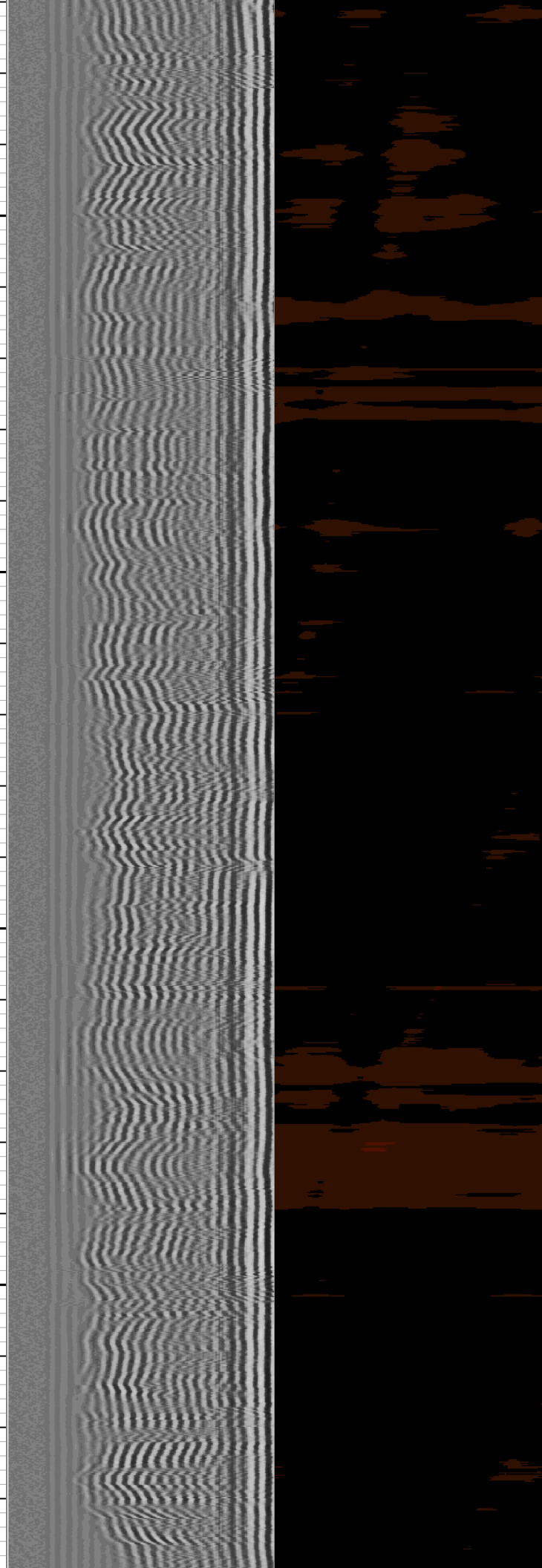
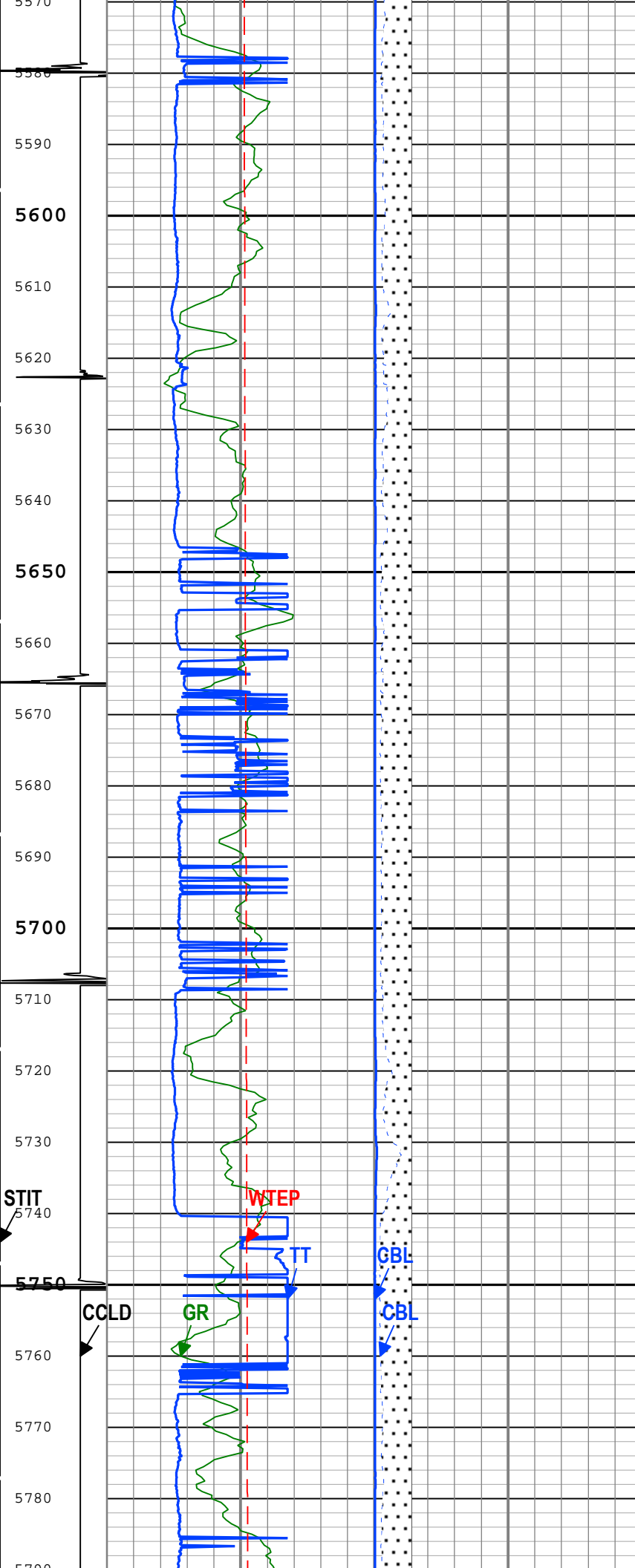


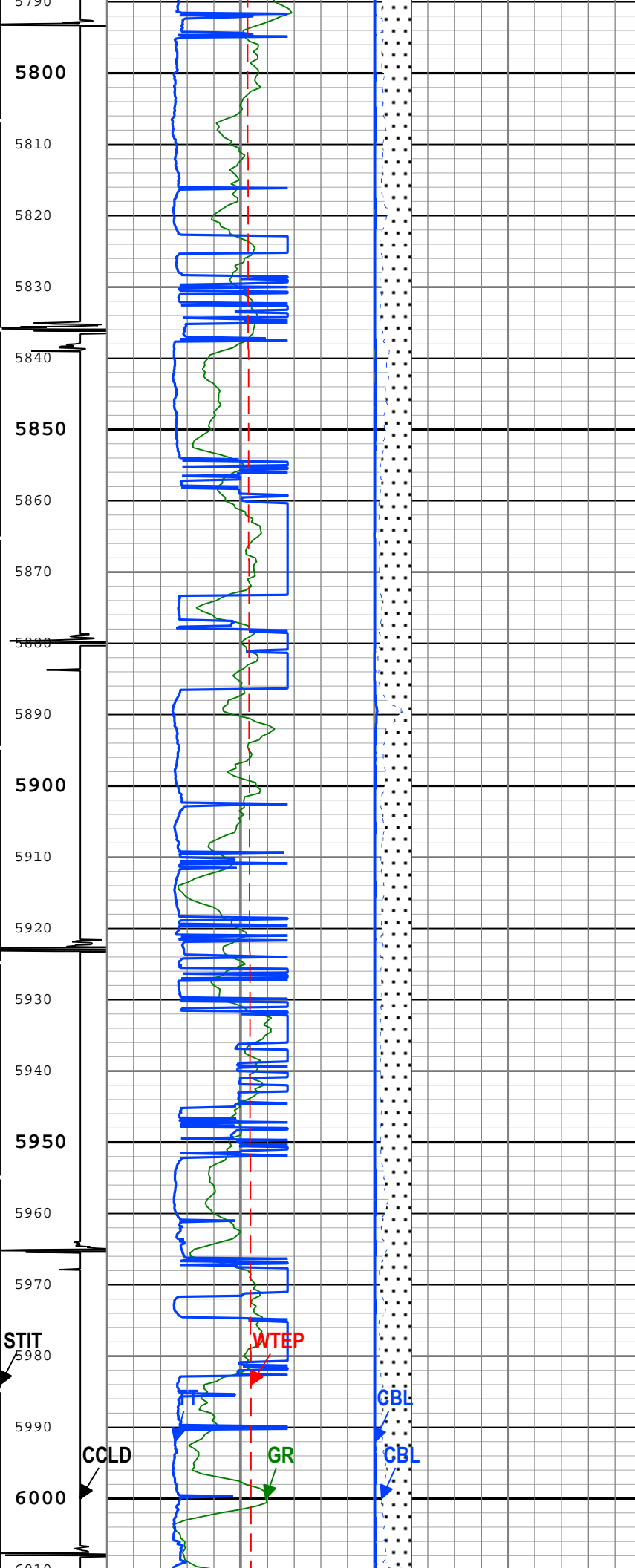


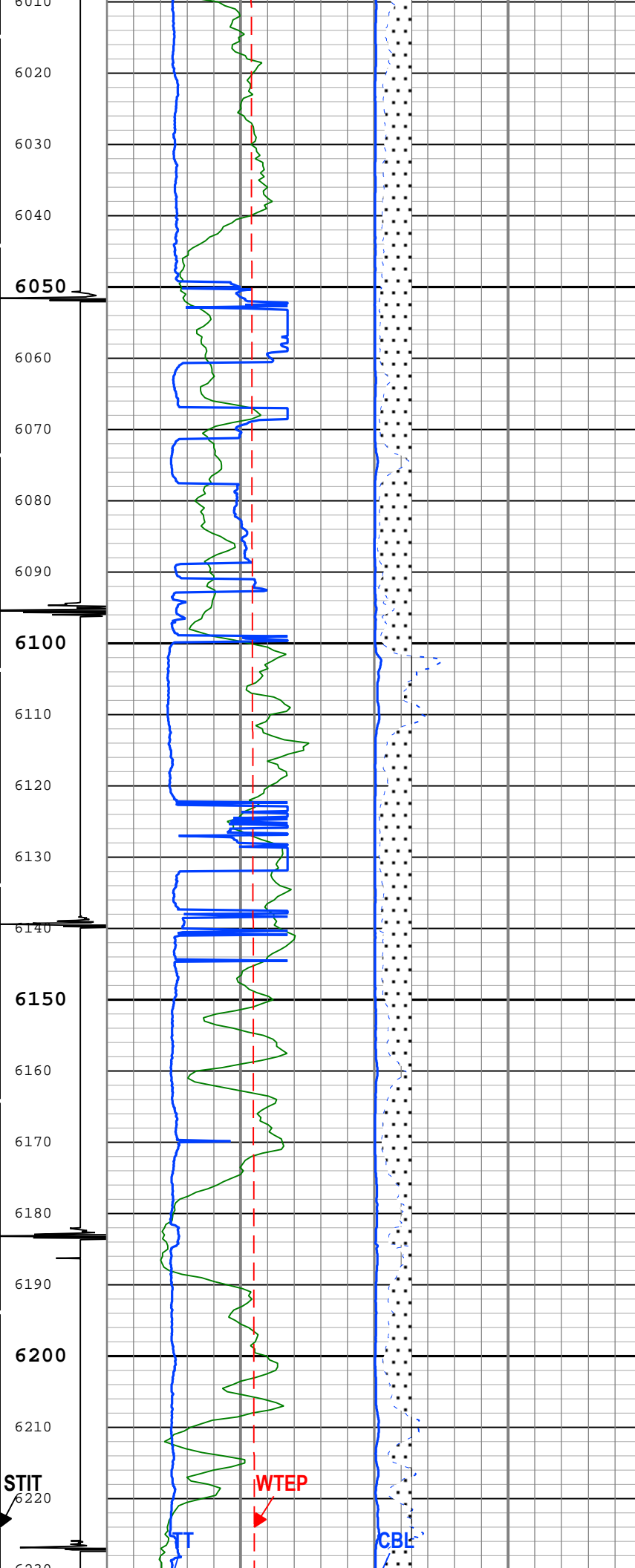


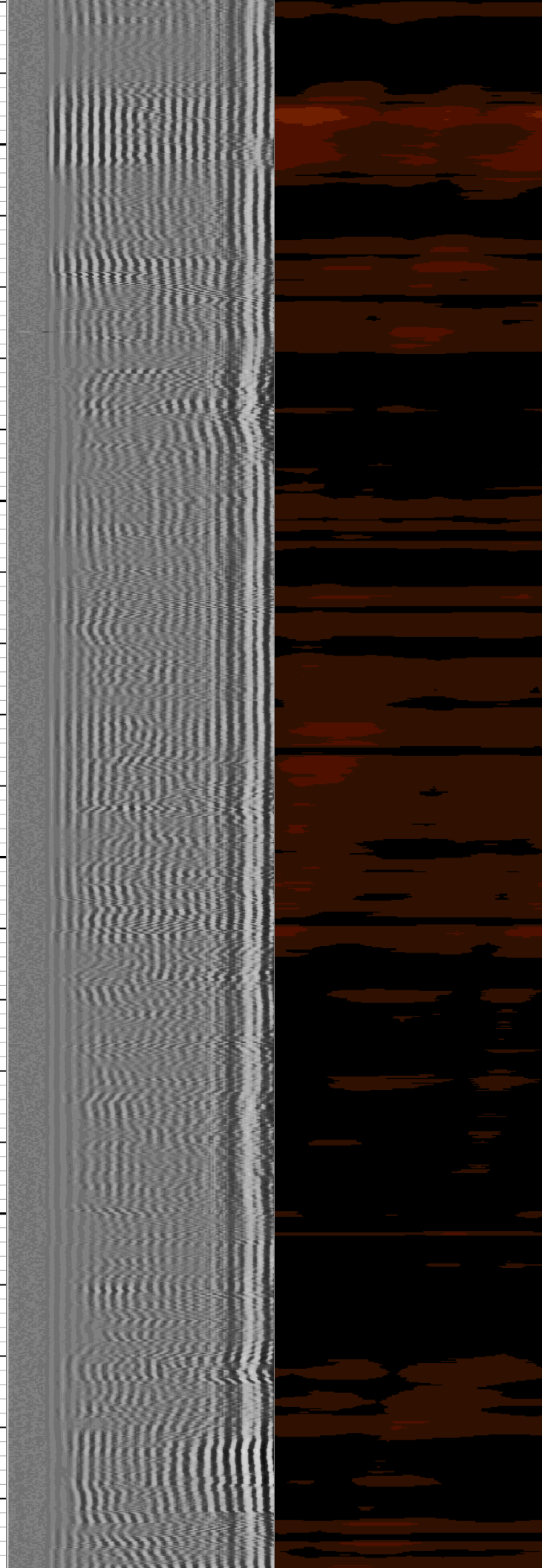
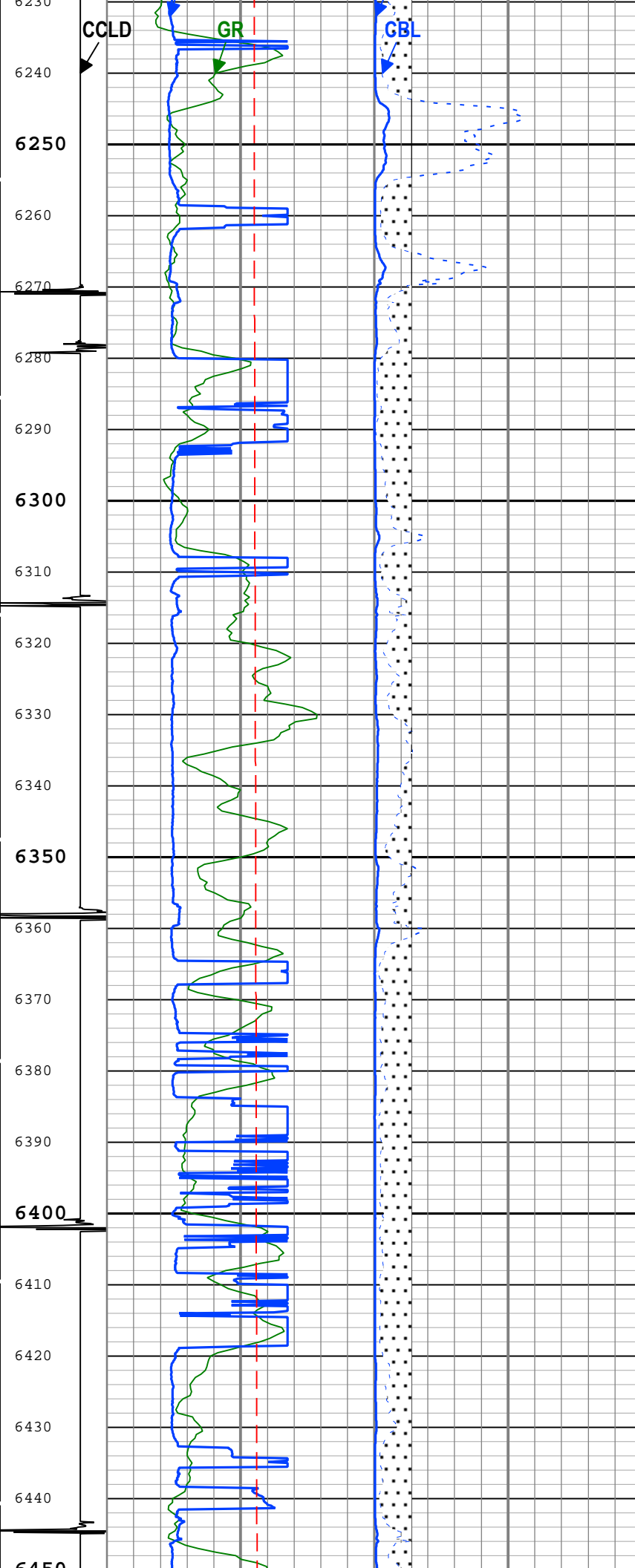


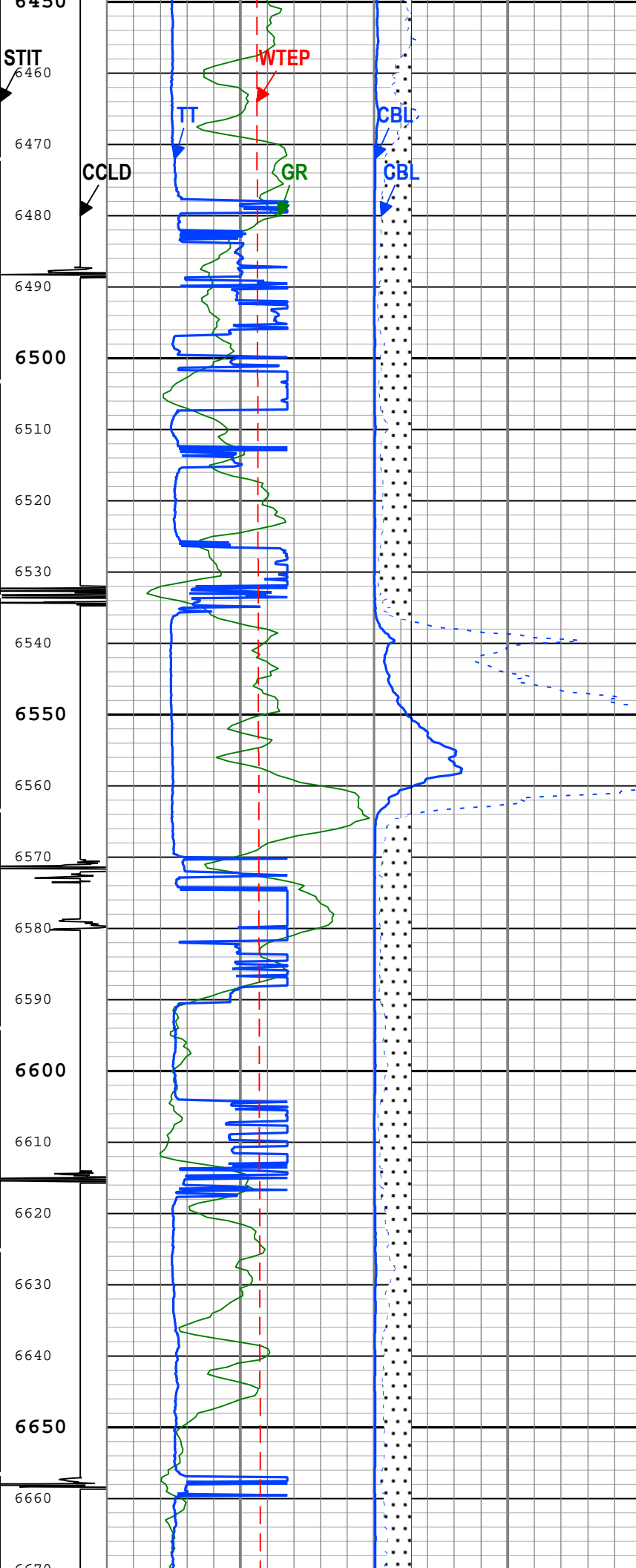


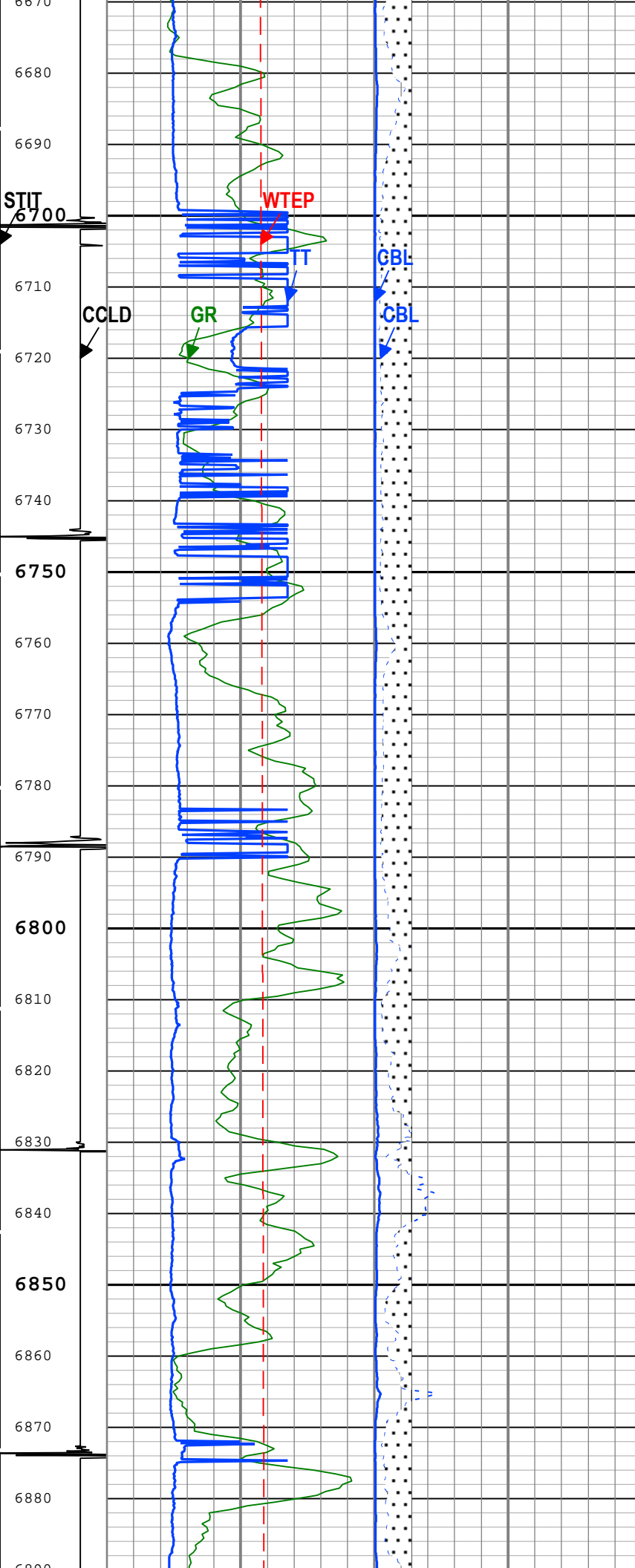


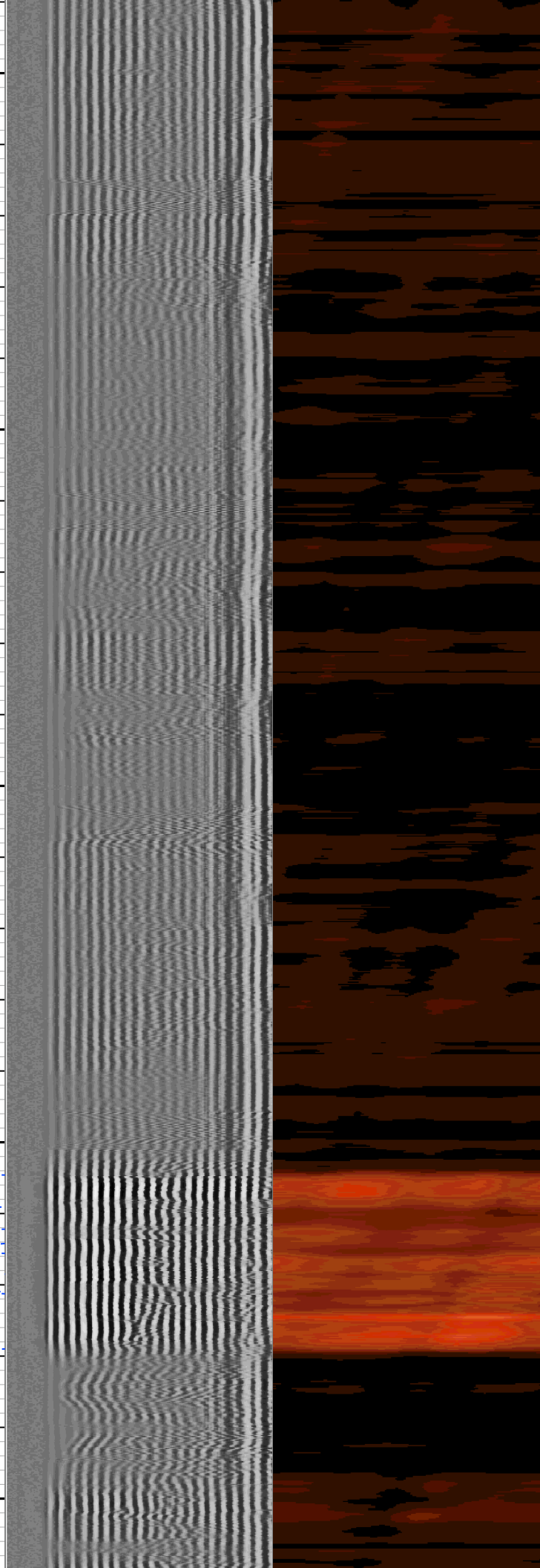
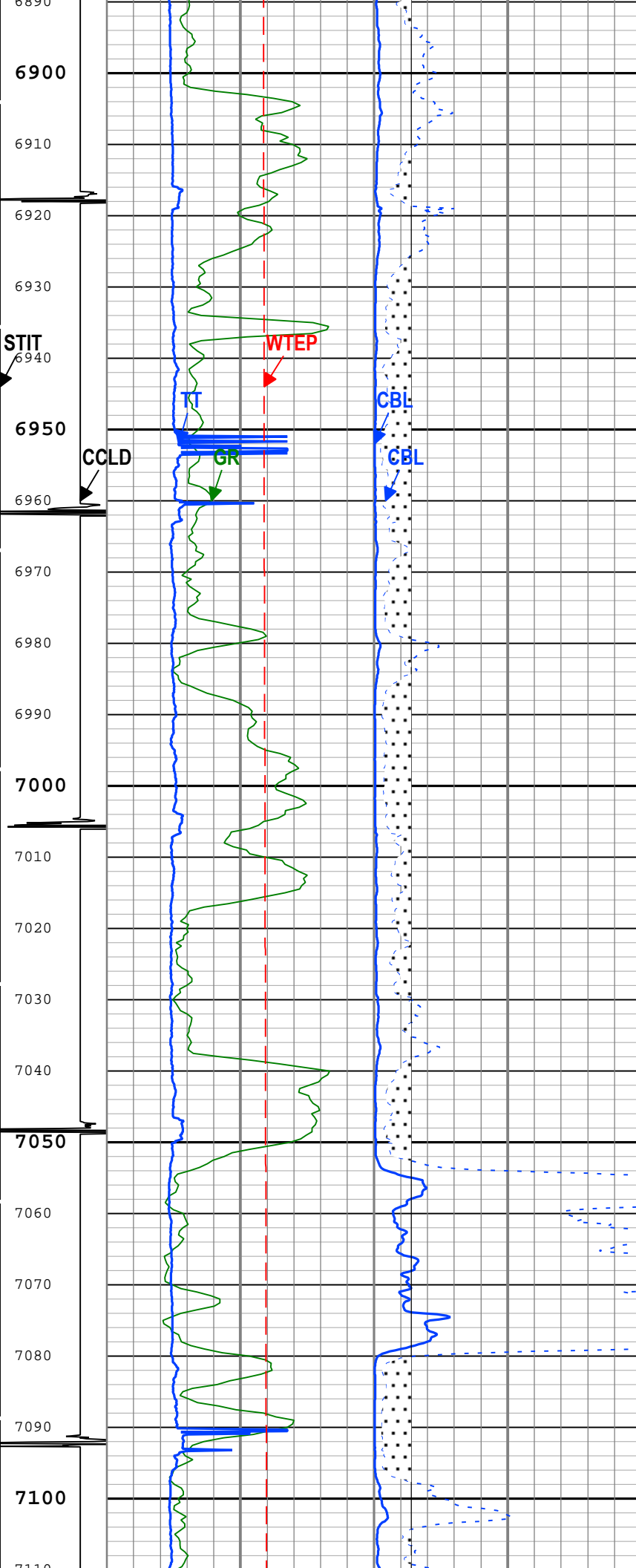


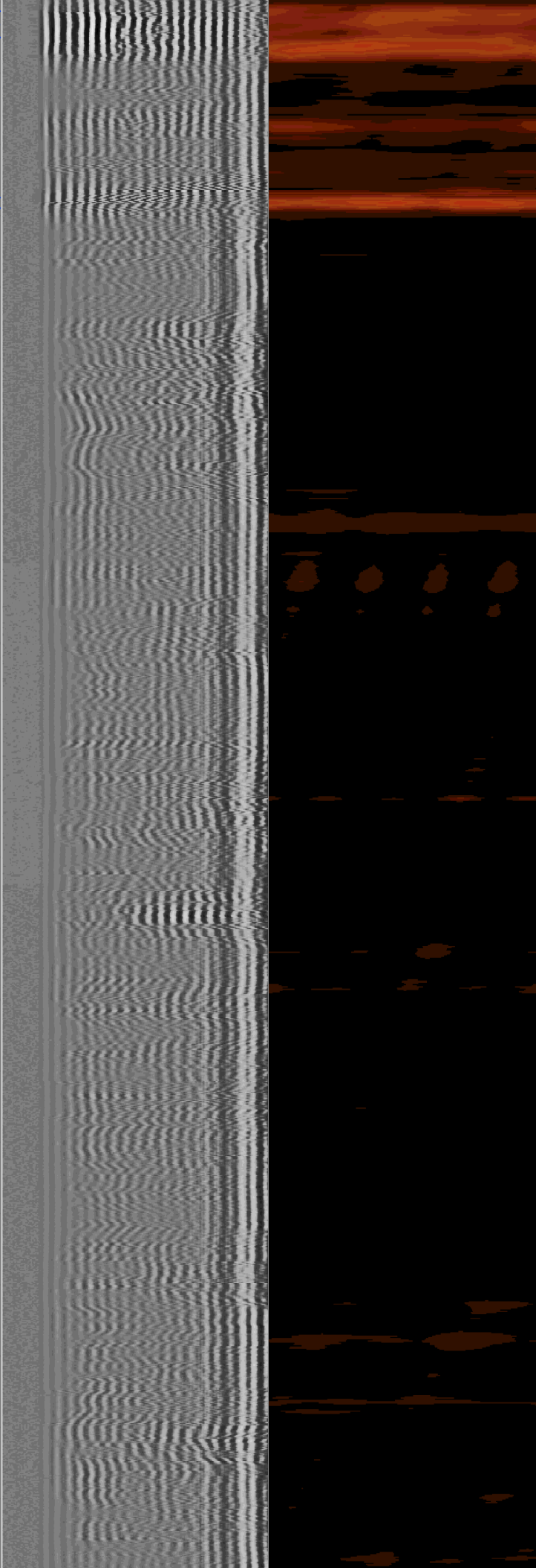
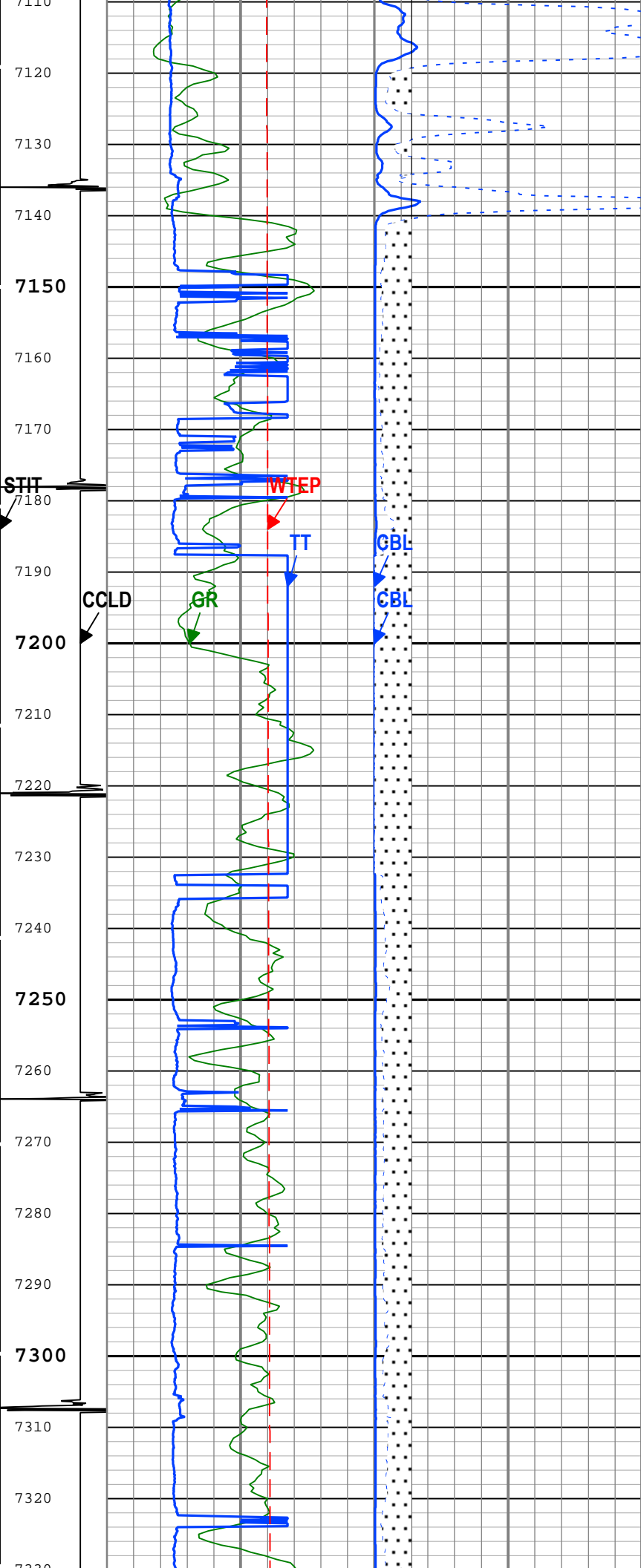


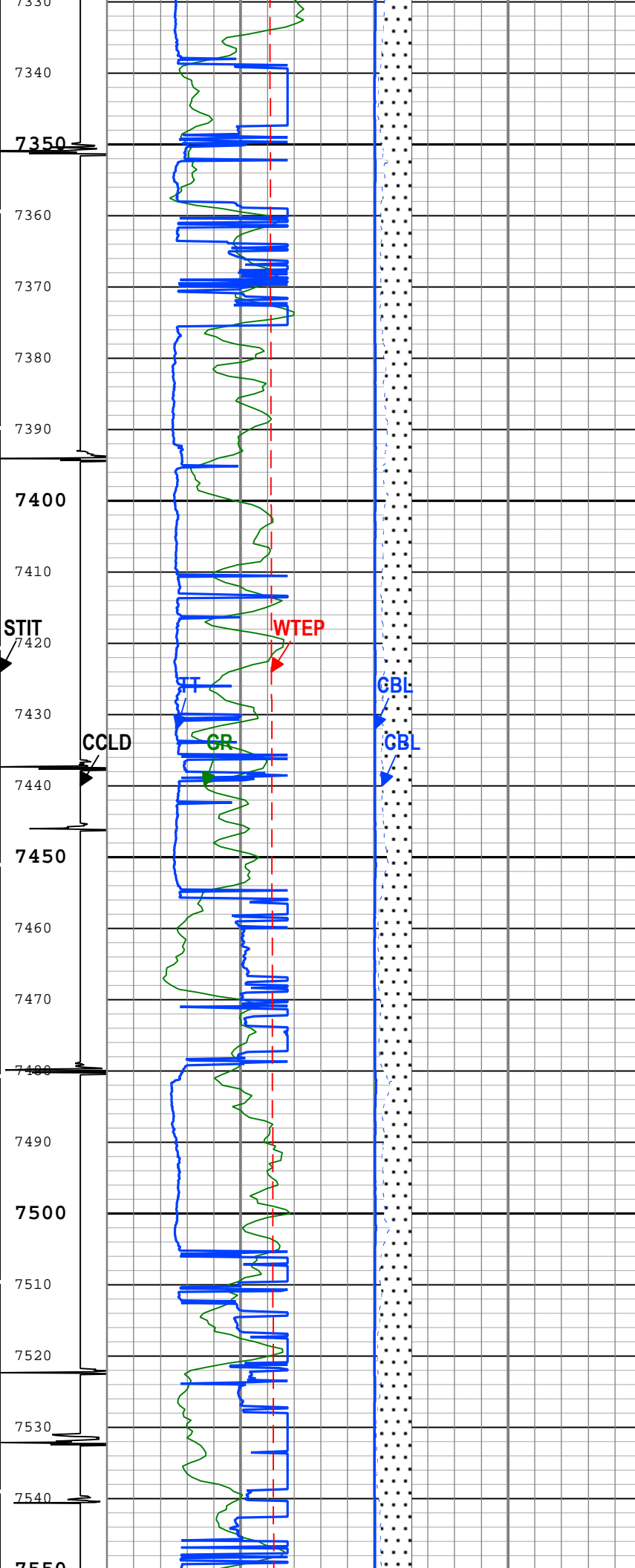


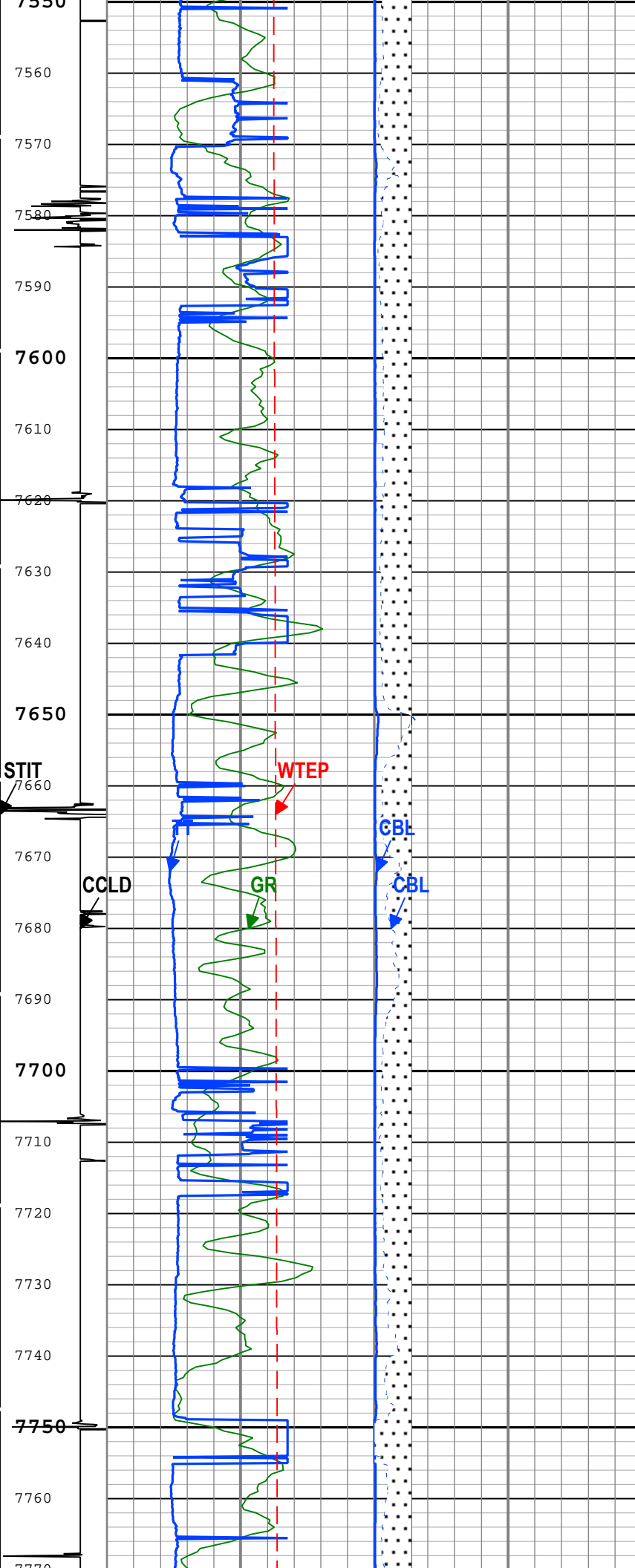


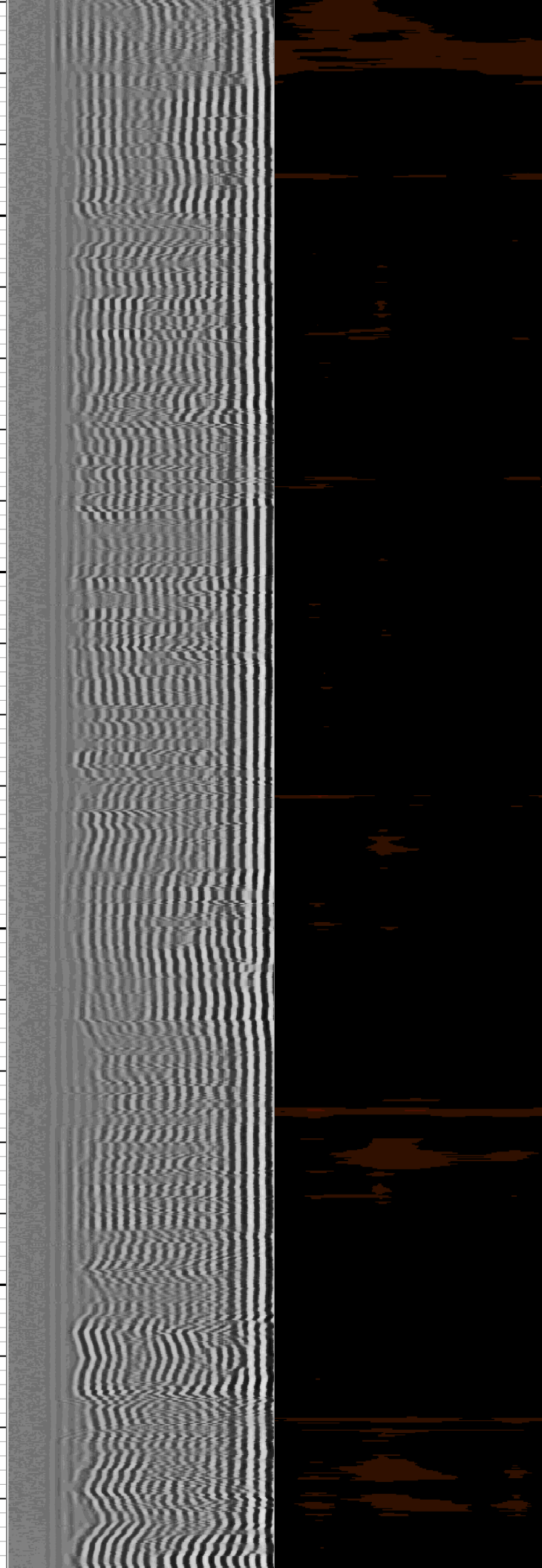
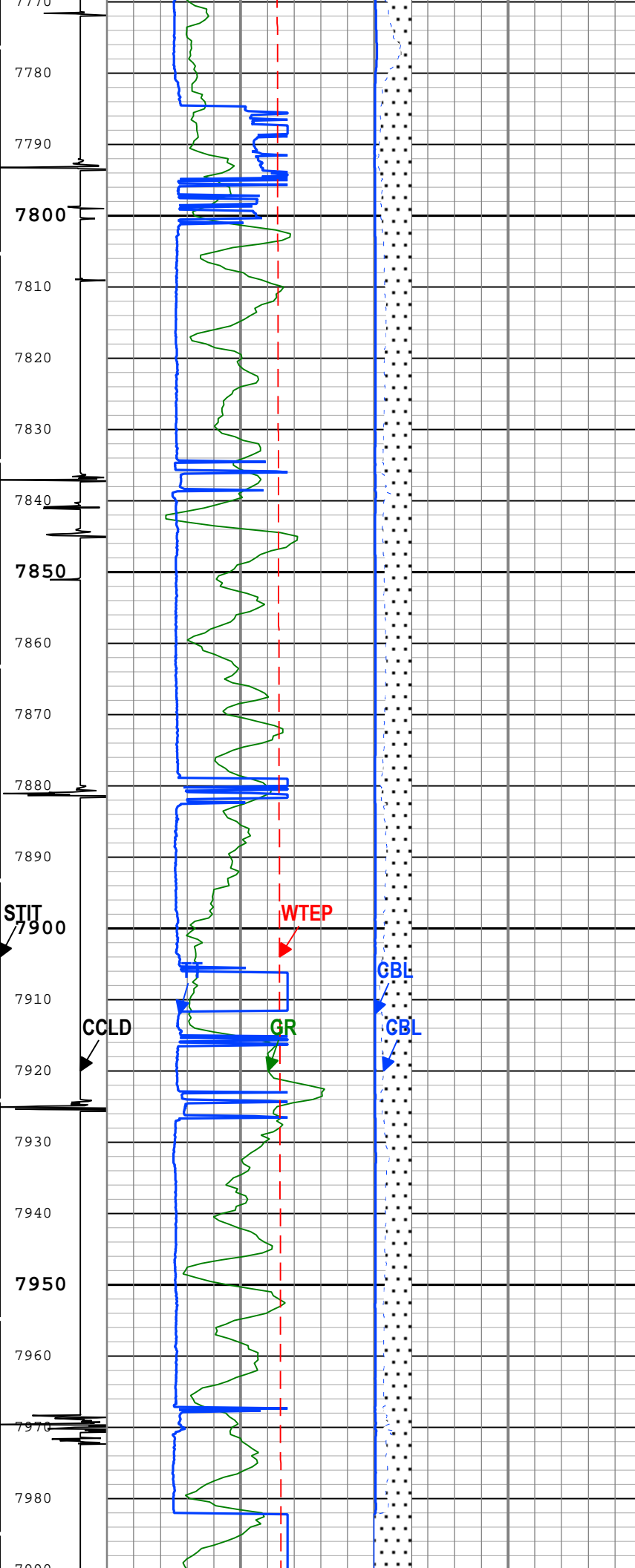


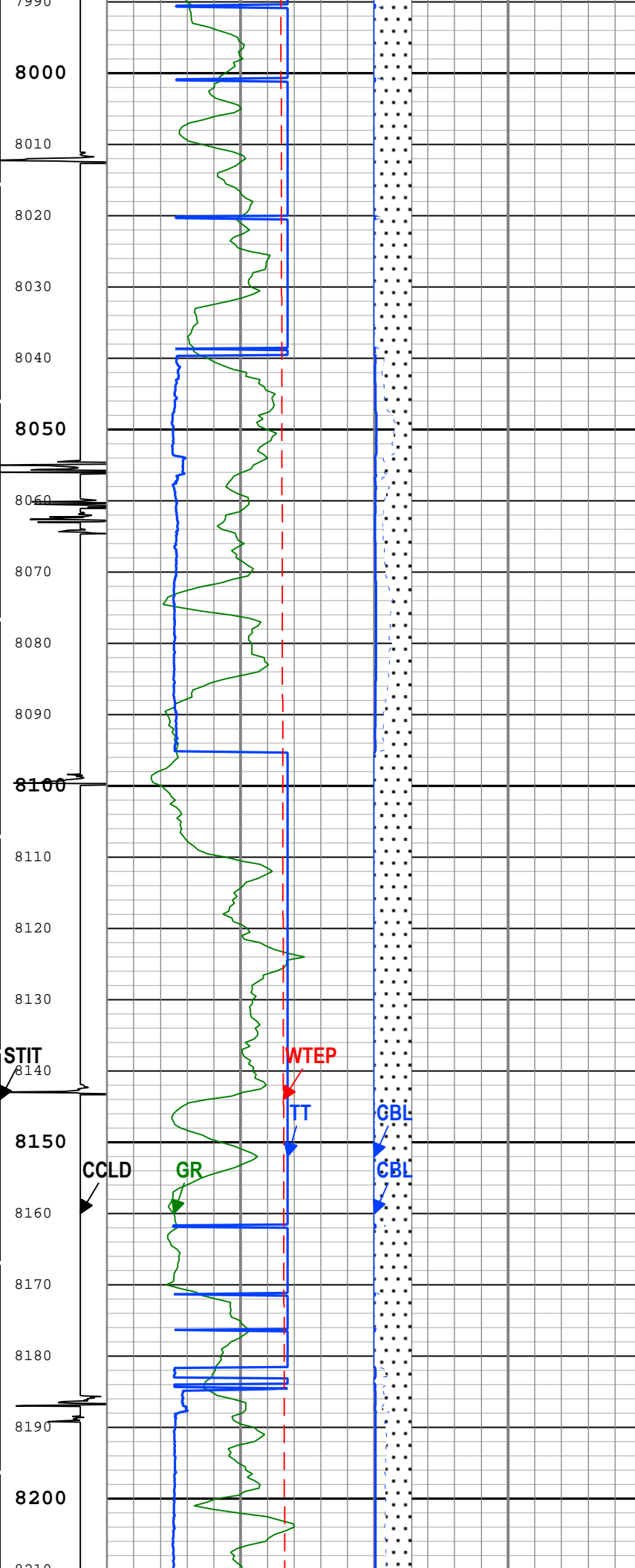


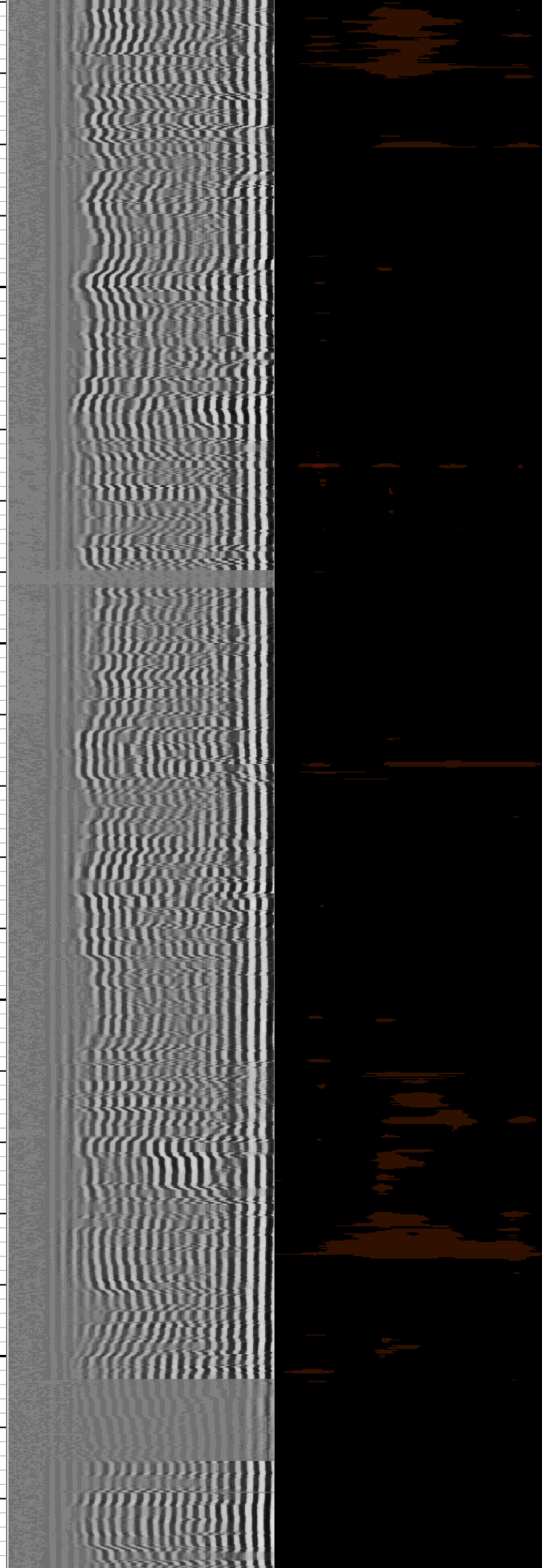
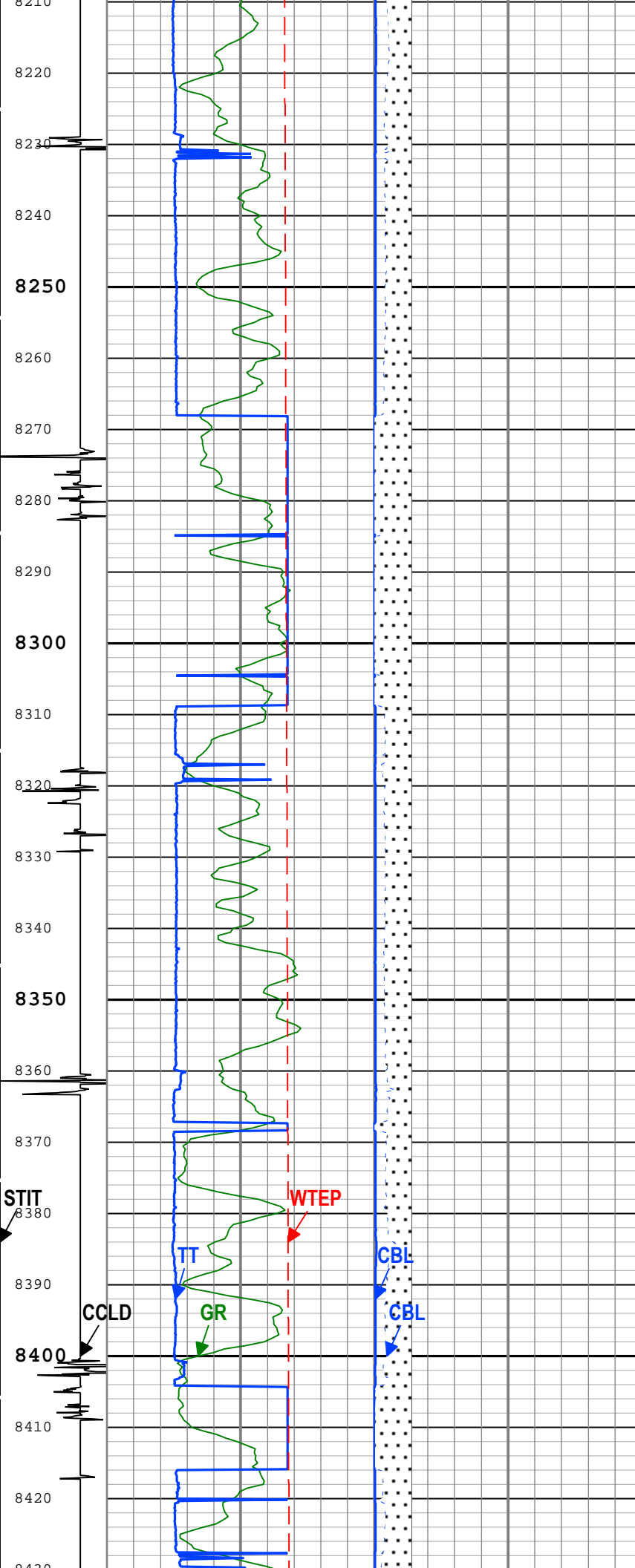


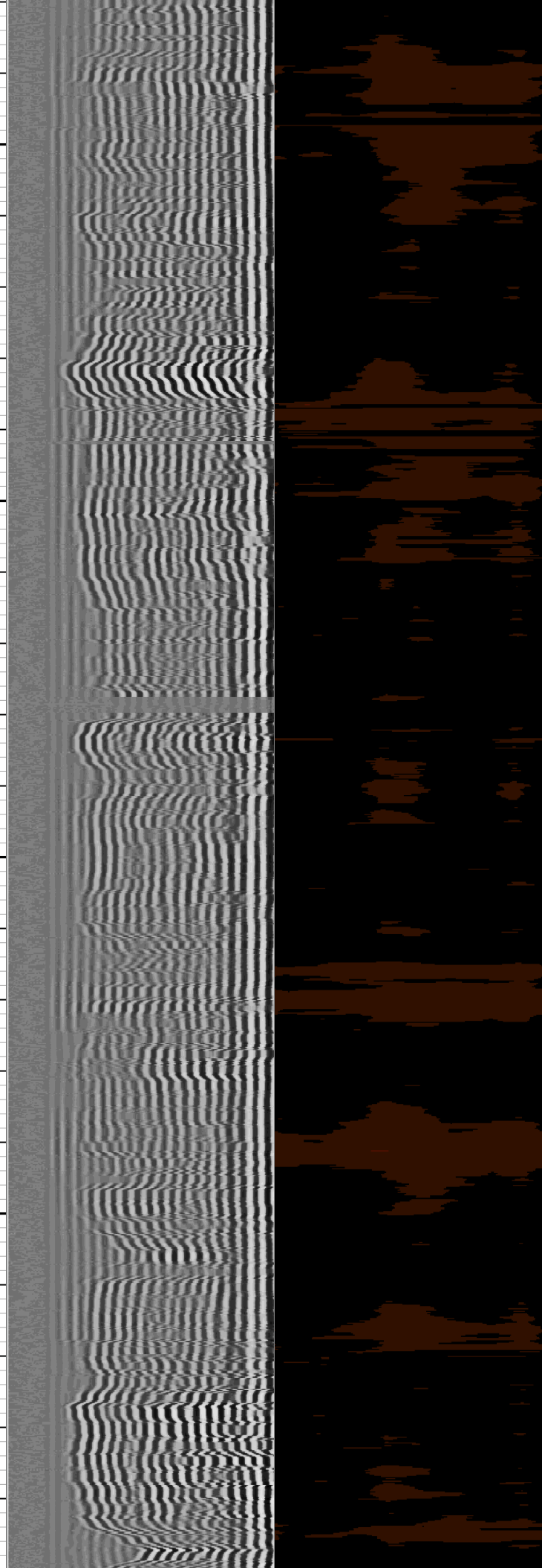
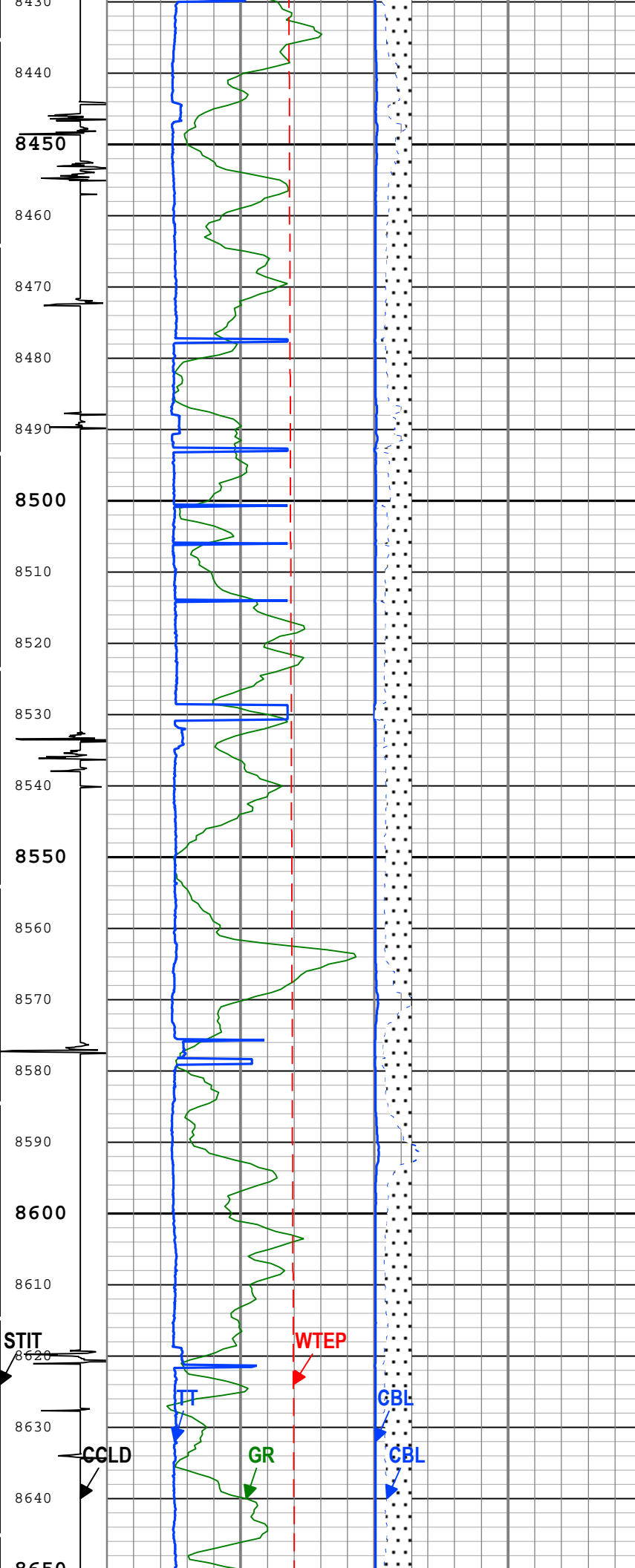


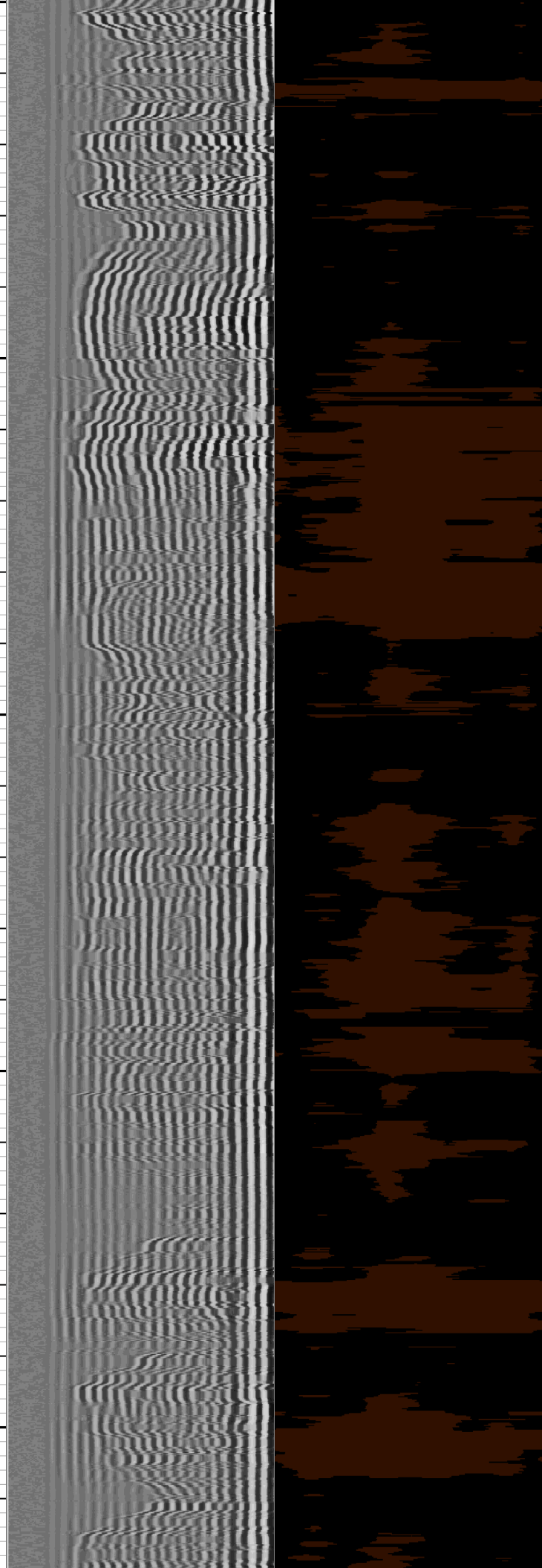
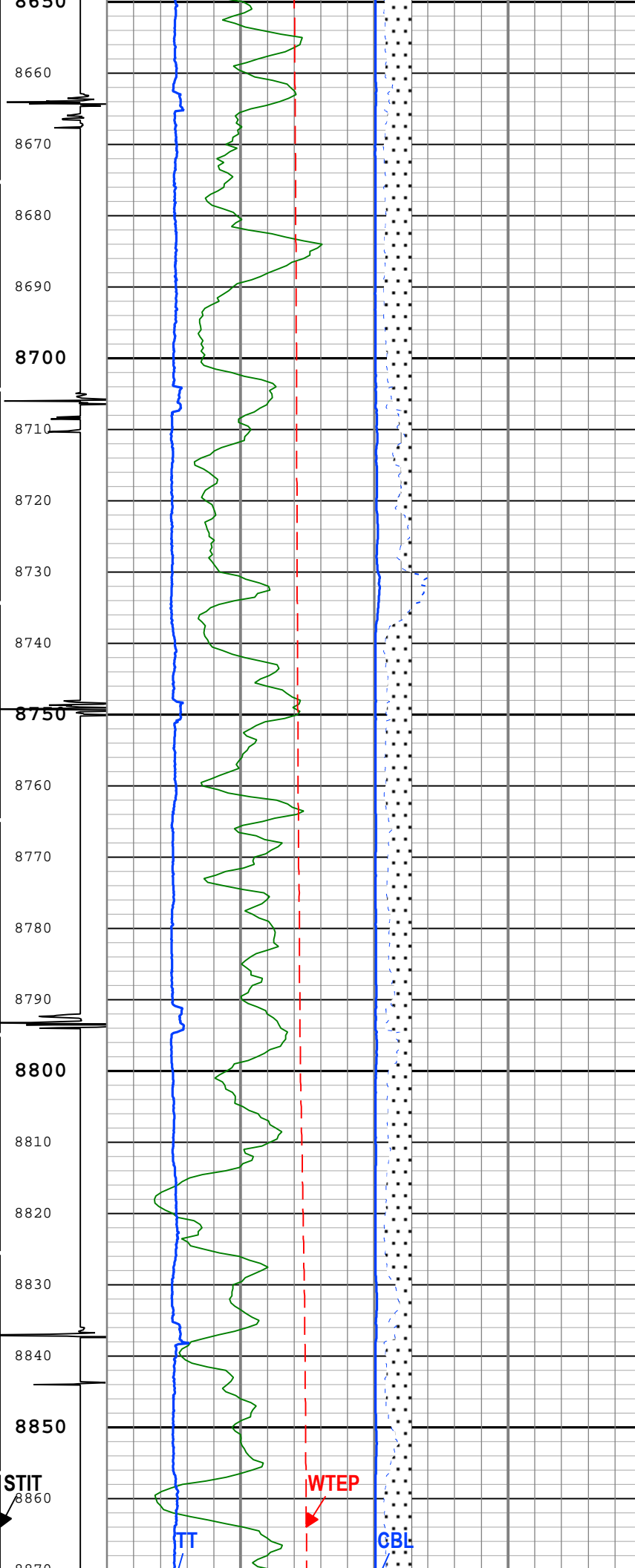


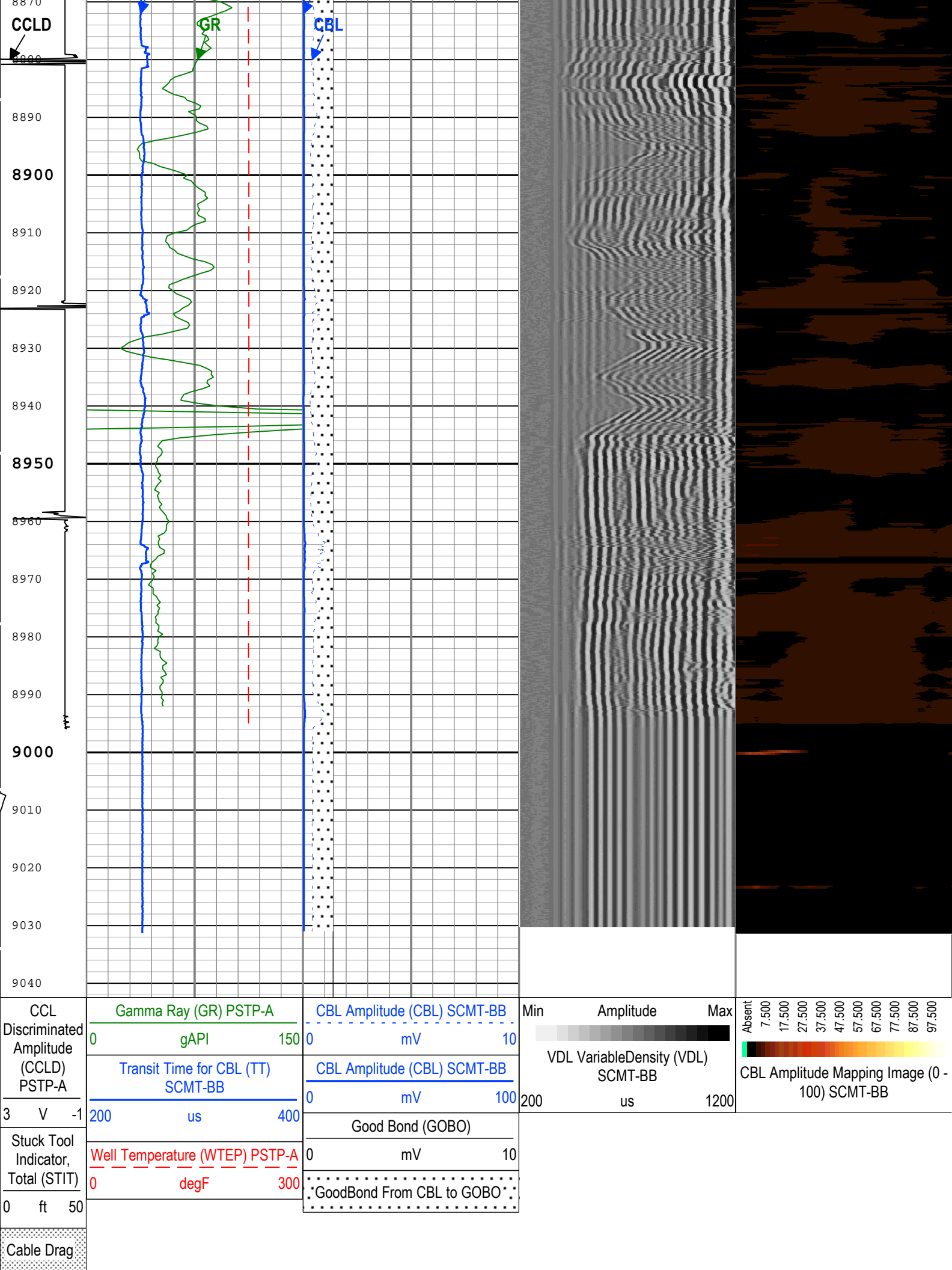














TIME_1900 - Time Marked every 60.00 (s)

Description: SCMT VDL Image Format: Log (SCMT_VDL_Image_1) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 07-Aug-2015 10:27:31

Channel Processing Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	235	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-BB	235	us
CBLG	CBL Gate Width	SCMT-BB	40	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-BB	80	mV
CMCF	CBL Cement Type Compensation Factor	SCMT-BB	0.14	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.25	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9.1	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	196	us/ft
FCF	CBL Fluid Compensation Factor	SCMT-BB	0.88	
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-BB	6.65	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	WTEP	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	SCMT-BB	167	us
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-BB	10.8	dB/ft
MCCF	MAP Cement Type Compensation Factor	SCMT-BB	0.29	
MCI	Minimum Cemented Interval for Isolation	SCMT-BB	Depth Zoned	ft
MMSA	MAP Minimum Sonic Amplitude	SCMT-BB	3.98	mV
MSA	Minimum Sonic Amplitude	SCMT-BB	0.51	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	SCMT-BB	3.57	mV
RUN_SNUM	Run Sequence Number	WSDRUN	1	
TD	Total Measured Depth	Borehole	9059	ft
ZCMT	Acoustic Impedance of Cement	SCMT-BB	3.7	Mrayl

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
MCI	14.81	2460	2484.5
MCI	1.25	2484.5	9042.5

All depth are actual.

Tool Control Parameters

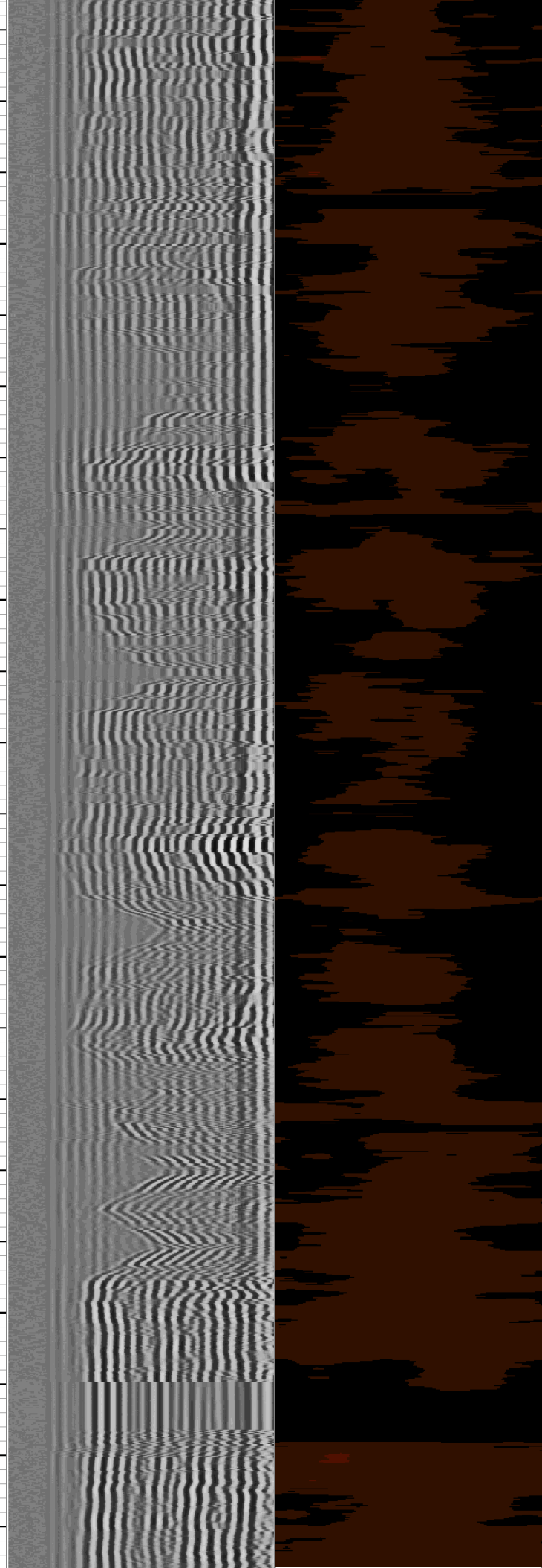
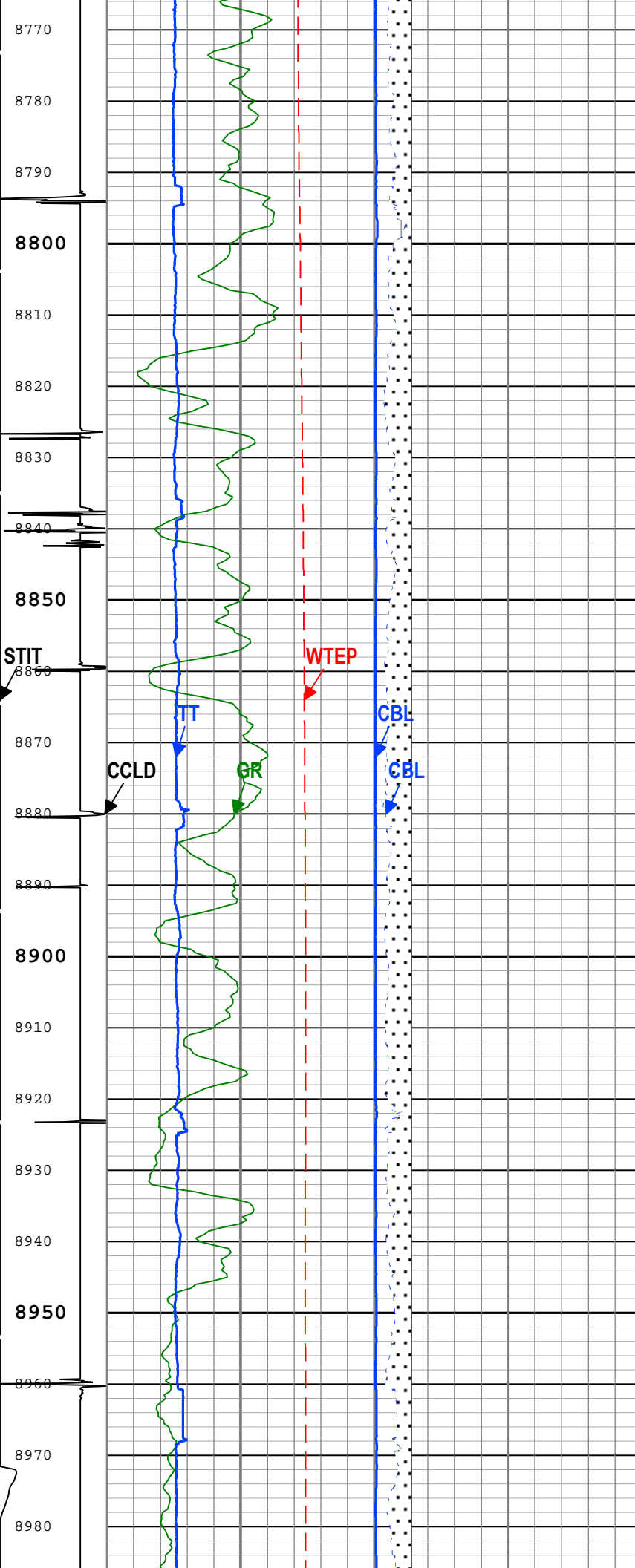
ONE: Parameters

Parameter	Description	Tool	Value	Unit
CMTM	SCMT Operating Mode	SCMT-BB	Log	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h

ONE

Software Version

Acquisition System	Version
Maxwell 2016	6.0.47569.3100



MSA	MAP Minimum Sonic Amplitude	SCMT-BB	3.98	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	SCMT-BB	3.57	mV
RUN_SNUM	Run Sequence Number	WSDRUN	1	
TD	Total Measured Depth	Borehole	9059	ft
ZCMT	Acoustic Impedance of Cement	SCMT-BB	3.7	Mrayl

Tool Control Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
CMTM	SCMT Operating Mode	SCMT-BB	Log	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h

Calibration Report

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

Primary Equipment :

Slim Cement Mapping SondeSCMS-BB8002

CBL and MAP Amplitude Adjustment - Measurements

Before (Measured):		15:07:38 20-Jul-2015					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Amplitude	mV	Before			86.34		
Average MAP Amplitude (Fluid Compensated)	mV	Before			121.92		
Measurement Depth	ft	Before			1110.17		

CBL and MAP Amplitude Adjustment - Coefficients

Before (Measured):		15:07:38 20-Jul-2015					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Adjustment Factor		Before			0.927		
CBL LQC Reference Amplitude in Free Pipe	mV	Before			80.00		
MAP Adjustment Factor		Before			0.820		
Depth of Before Calibration	ft	Before			1110.17		

PSTP-A (PSP Telemetry Platform A - Sapphire) Calibration - Run ONE

Primary Equipment :

PBMS-APBMS-A1963

Calibration Parameter :

JIG-BKGD (Jig minus background reference)160

PBMS Well Temp Master Calibration

Master (EEPROM):		00:00:00 12-May-2005				
PBMS_RTD_THERM (Master)		RTD Coefficients				
	Tt**0	Tt**1	Tt**2	Tt**3	Tt**4	Tt**5
Tt**0	-1418.501	1118.407	-362.1241	56.89739	-3.317989	0

PBMS Gamma Ray Master Calibration

Master (EEPROM):		00:00:00 01-Dec-2003	
PBMS_GR_MODEL (Master)		GR Coefficients	
	Rt**0	Rt**1	
Rt**0	2000	4740	

PBMS A Reference Clock Master Calibration

PBMS A Reference Clock Master Calibration

Master (EEPROM): 00:00:00 12-May-2005						
PBMS_REF_CLOCK PBMS A Clock Coefficients (Master)						
	Temp**0	Temp**1	Temp**2	Temp**3	Temp**4	Temp**5
Temp**0	45.0069	-9.445683	-0.02744274	0.0002354008	3.654205E-06	0

PBMS A Sapphire Master Calibration						
Master (EEPROM): 00:00:00 12-May-2005						
PBMS_P_GAUGE_PRES Sapphire Pressure Model Coefficients (Master)						
	Tt**0	Tt**1	Tt**2	Tt**3	Tt**4	Tt**5
Tp**0	4187.029	-3429.79	773.3541	-119.1729	7.244876	0
Tp**1	698.9312	545.2234	21.97955	-3.948855	0.2235462	0
Tp**2	-6.430802	9.633142	-3.005254	0	0	0
Tp**3	-2.550163	0.6971294	0	0	0	0
Tp**4	0	0	0	0	0	0
Tp**5	0	0	0	0	0	0
PBMS_P_GAUGE_TEMP Sapphire Temperature Model Coefficients (Master)						
	Tp**0	Tp**1	Tp**2	Tp**3	Tp**4	Tp**5
Tt**0	-293.9637	10.31608	-5.693609	1.308318	-0.1107738	0
Tt**1	63.53009	-2.347224	1.230874	-0.2610083	0.02165993	0
Tt**2	8.593975	0.03386374	-0.01621674	0	0	0
Tt**3	-0.487141	0.005250175	0	0	0	0
Tt**4	0	0	0	0	0	0
Tt**5	0	0	0	0	0	0

Well: Puckett 13C-1
Field: Wildcat
County: Garfield
State: Colorado

Slim Cement Mapping Tool
CBL-VDL