

Company: Whiting Oil & Gas Corp

Well: Horsetail 07H-0615

Field: Wattenberg

County: Weld State: Colorado

Cement Bond Log

County:	Weld
Field:	Wattenberg
Location:	SENE Sec 7, T10N, R57W
Well:	Horsetail 07H-0615
Company:	Whiting Oil & Gas Corp
Location:	
SENE Sec 7, T10N, R57W	Elev.: K.B. 4933.00 ft
SHL: 2630' FSL X 540' FWL	G.L. 4912.00 ft
Latitude: 40.853408 Longitude:-103.787233	D.F. 4933.00 ft
Permanent Datum:	Ground Level
Log Measured From:	Kelly Bushing
Drilling Measured From:	Kelly Bushing
API Serial No.	Section:
05-123-43043-0000	7
	Township:
	10N
	Range:
	57W

Logging Date	07-Jul-2016
Run Number	One
Depth Driller	13510.00 ft
Schlumberger Depth	13510.00 ft
Bottom Log Interval	6240.00 ft
Top Log Interval	0.00 ft
Casing Fluid Type	Water
Salinity	
Density	8.4 lbm/gal
Fluid Level	8.00 ft
BIT/CASING/TUBING STRING	
Bit Size	8.50 in
From	2083.00 ft
To	13510.00 ft
Casing/Tubing Size	5.5 in
Weight	20 lbm/ft
Grade	P110
From	0.00 ft
To	13497.00 ft
Max Recorded Temperatures	220 degF
Logger on Bottom	07-Jul-2016 06:02:00
Unit Number	2161
Recorded By	A Becker & B Kesek
Witnessed By	Kelly Lewis

Disclaimer

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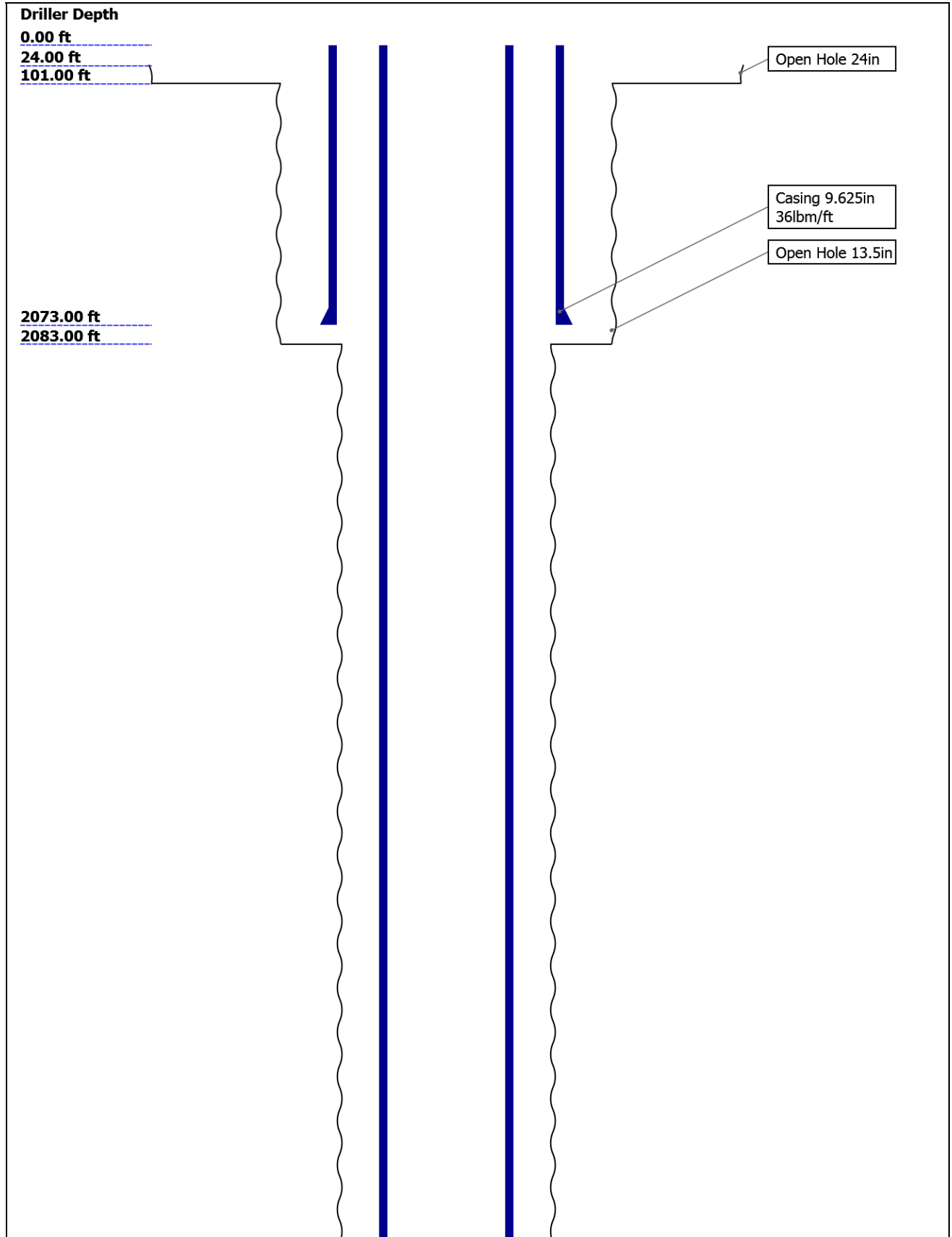
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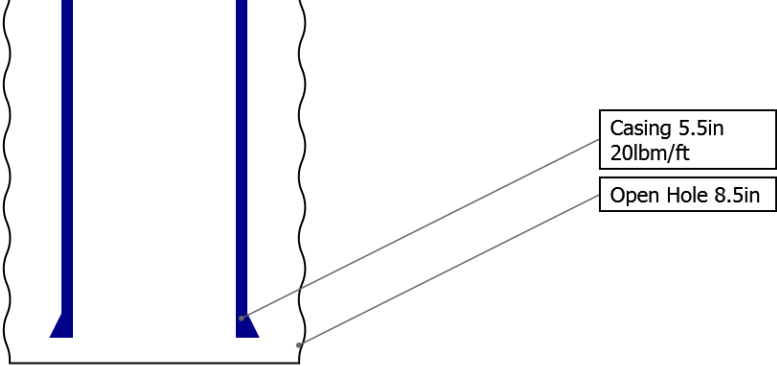
10. Tail

## Well Sketch



13497.00 ft

13510.00 ft



Borehole Size/Casing/Tubing Record

Bit						
Bit Size ( in )	24	13.5	8.5			
Top Driller ( ft )	24	101	2083			
Top Logger ( ft )	24	101	2083			
Bottom Driller ( ft )	101	2083	13510			
Bottom Logger ( ft )	101	2083	13510			
Casing						
Size ( in )	9.625	5.5				
Weight ( lbm/ft )	36	20				
Inner Diameter ( in )	8.921	4.778				
Grade	N/A	P110				
Top Driller ( ft )	0	0				
Top Logger ( ft )	0	0				
Bottom Driller ( ft )	2073	13497				
Bottom Logger ( ft )	2073	13497				

Remarks and Equipment Summary

One: Toolstring				One: Remarks	
Equip name	Length		MP name	Offset	Toolstring ran as per tool sketch.
LEH-QT	43.46				CSG 5.5" 20 lb/ft P-110
SAH-F	40.54		1817		
AH-63	35.69				
AH-79	35.37				
HBMS-B:2	34.54				
949					
HUDH-A:29					
45					
PSC-A:2945					
HSTC-A:80					
0					
HBMC-A:37					
116					
HTPS-A:29					
49			GR	29.54	

AH-63

35.69

AH-79

35.37

HBMS-B:2

949

HUDH-A:29

45

PSC-A:2945

HSTC-A:80

0

HBMC-A:37

116

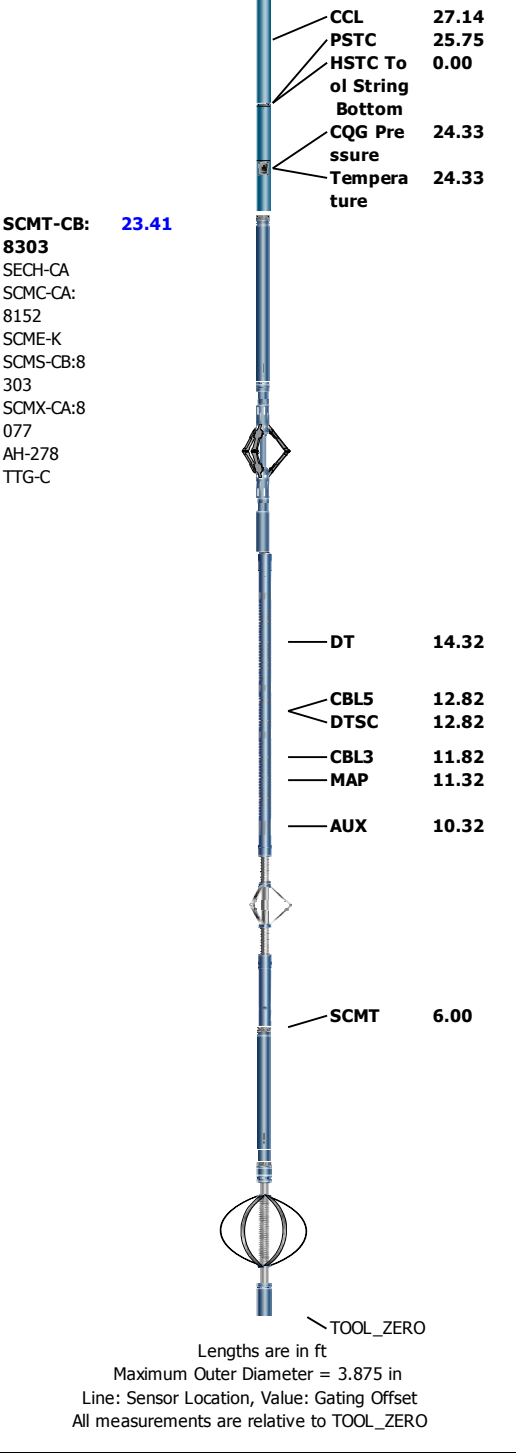
HTPS-A:29

49

GR

29.54





Depth Summary			
		One	
Depth Measuring Device			
Type	IDW-JA		
Serial Number	5896		
Calibration Date	29-Apr-2016		
Calibrator Serial Number			
Calibration Cable Type	7-39P-LXS		
Wheel Correction 1	-1		
Wheel Correction 2	-3		
Tension Device			
Type	CMTD-B/A		
Serial Number			
Calibration Date	23-Jun-2016		

Calibrator Serial Number

Number of Calibration Points

0

Logging Cable

Type

Serial Number

Length

Conveyance Type

Rig Type

7-39P-LXS

F713311

13000.00 ft

Wireline

Crane

One:Depth Control Parameters

Depth Control Remarks

Log Sequence

Rig Up Length At Surface

Rig Up Length At Bottom

Rig Up Length Correction

Stretch Correction

Tool Zero Check At Surface

First Log In the Well

All Schlumberger depth procedures followed.  
IDW used as primary depth device.  
Z-chart used as secondary depth device.  
Depth correlated to short joint at 5134ft.

One

Main 1500 PSI

Software Version

Acquisition System

Version

Maxwell 2016 SP2

6.2.68624.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[6]:Up	Up	57.69 ft	6247.14 ft	07-Jul-2016 6:45:50 AM	07-Jul-2016 8:20:30 AM	ON	0.00 ft	No

All depths are referenced to toolstring zero

Log

Company:Whiting Oil & Gas Corp

Well:Horsetail 07H-0615

One: Log[6]:Up:S003

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: 07-Jul-2016 12:40:11

TIME\_1900 - Time Marked every 60.00 (s)

CCL

Discriminated Amplitude (CCLD) HBMS-B

3 V -1

Stuck Tool Indicator, Total (STIT)

0 ft 50

Cable Drag

Tool\_Tot. Drag

30

Gamma Ray (GR) HBMS-B

0 gAPI 150

Transit Time for CBL (TT) SCMT-CB

200 us 400

Well Temperature (WTEP) HBMS-B

50 degF 250

Relative Bearing (RB\_SCMT) SCMT-CB

-40 deg 360

CBL Amplitude (CBL) SCMT-CB

0 mV 100

Min

Amplitude

Max

VDL VariableDensity (VDL) SCMT-CB

200 us 1200

Absent

7.500

17.500

27.500

37.500

47.500

57.500

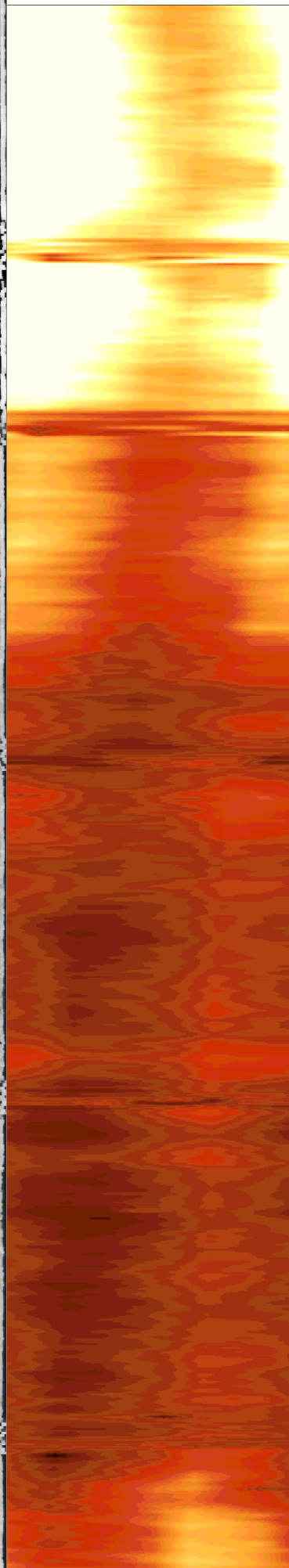
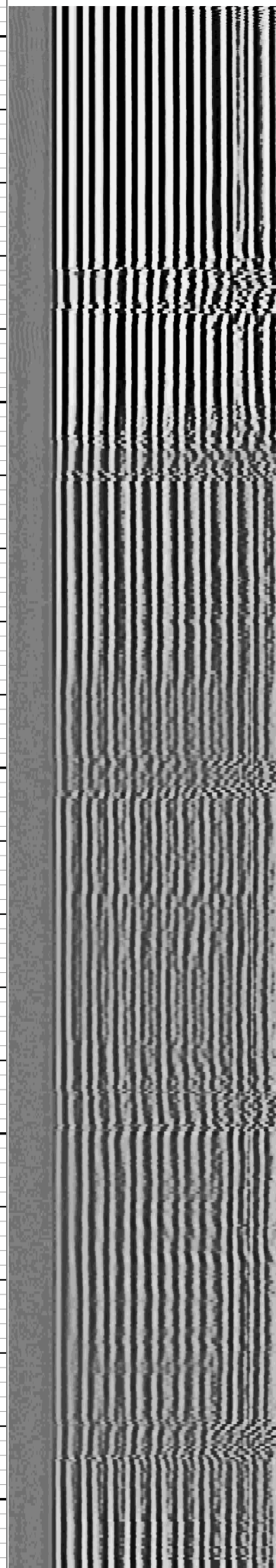
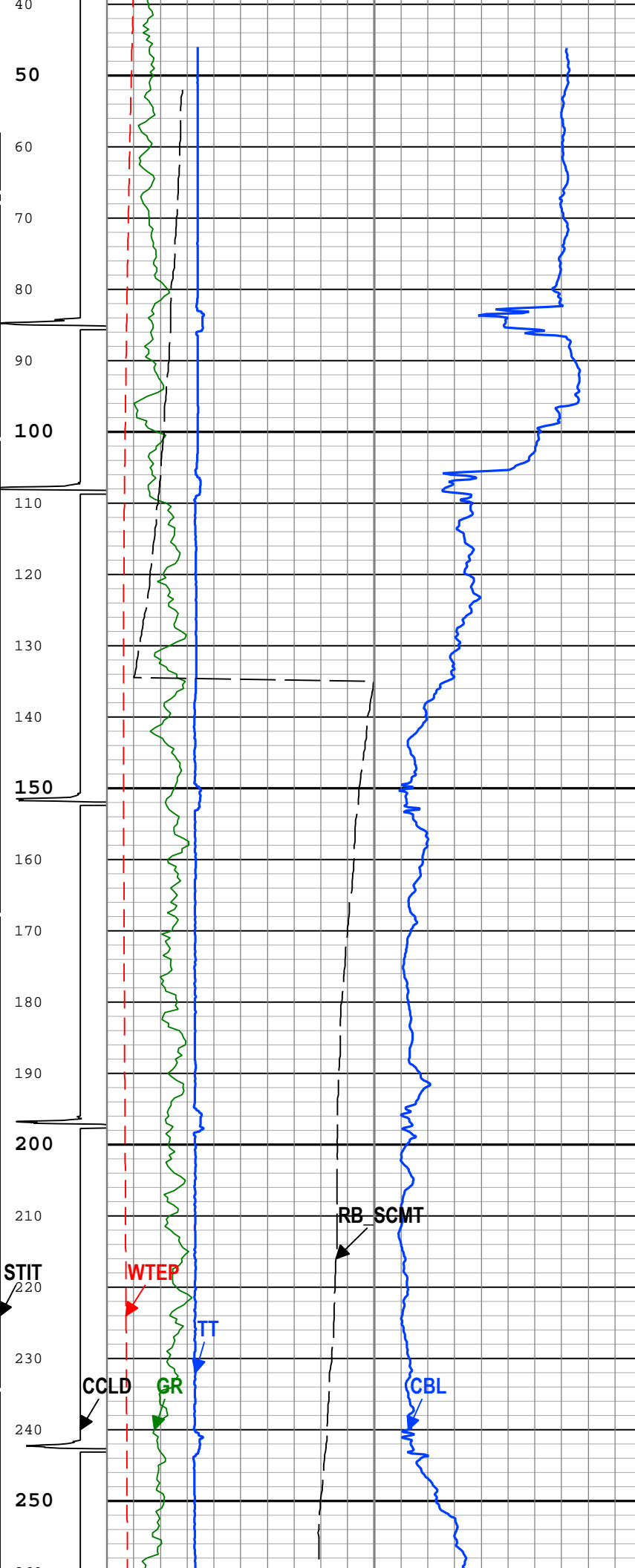
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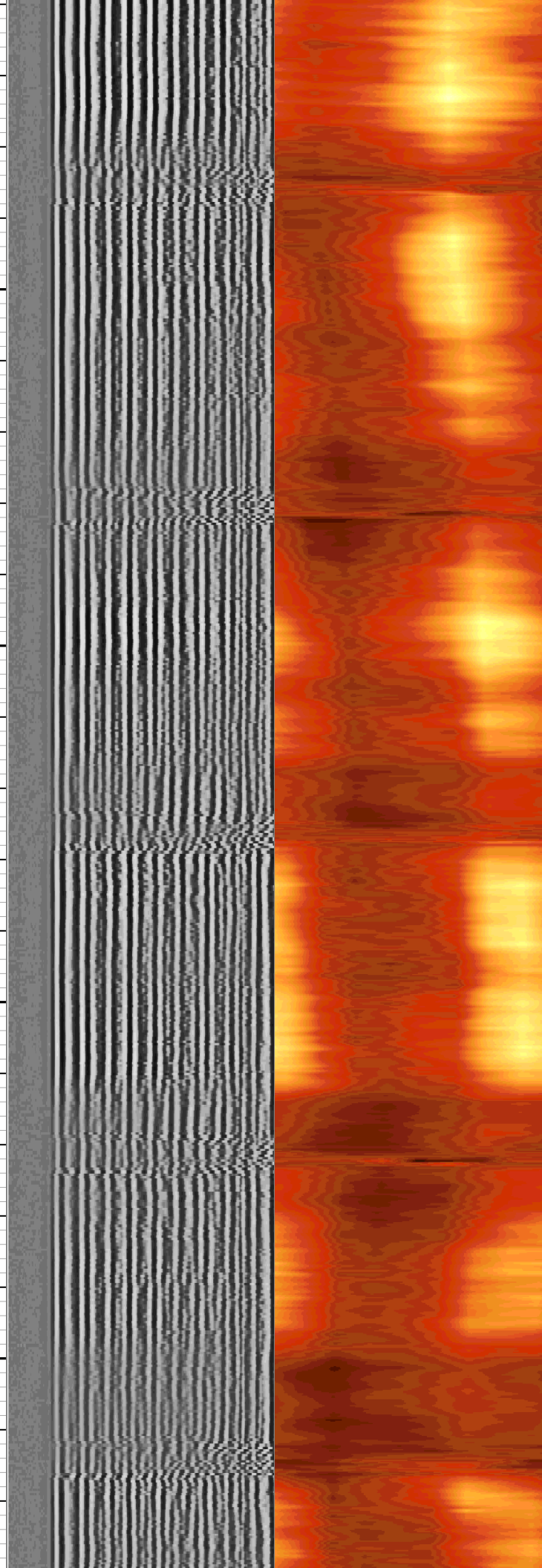
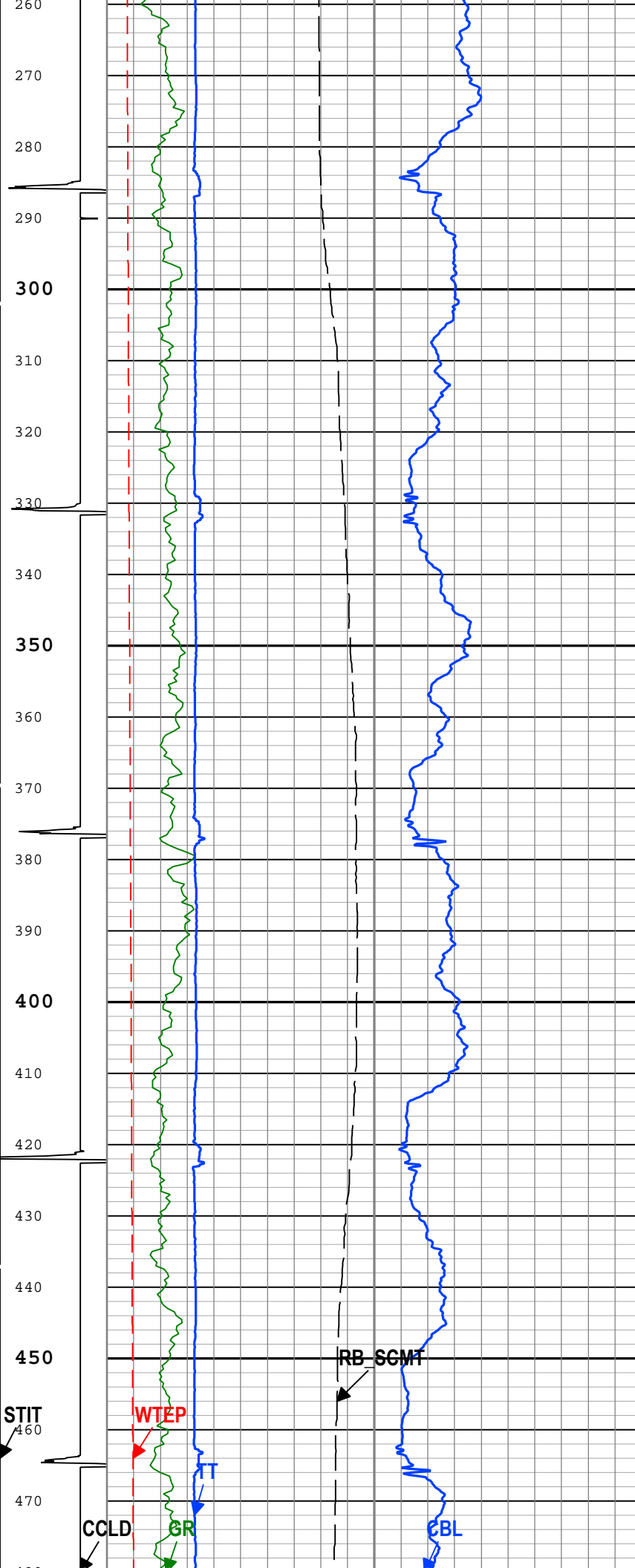
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87.500

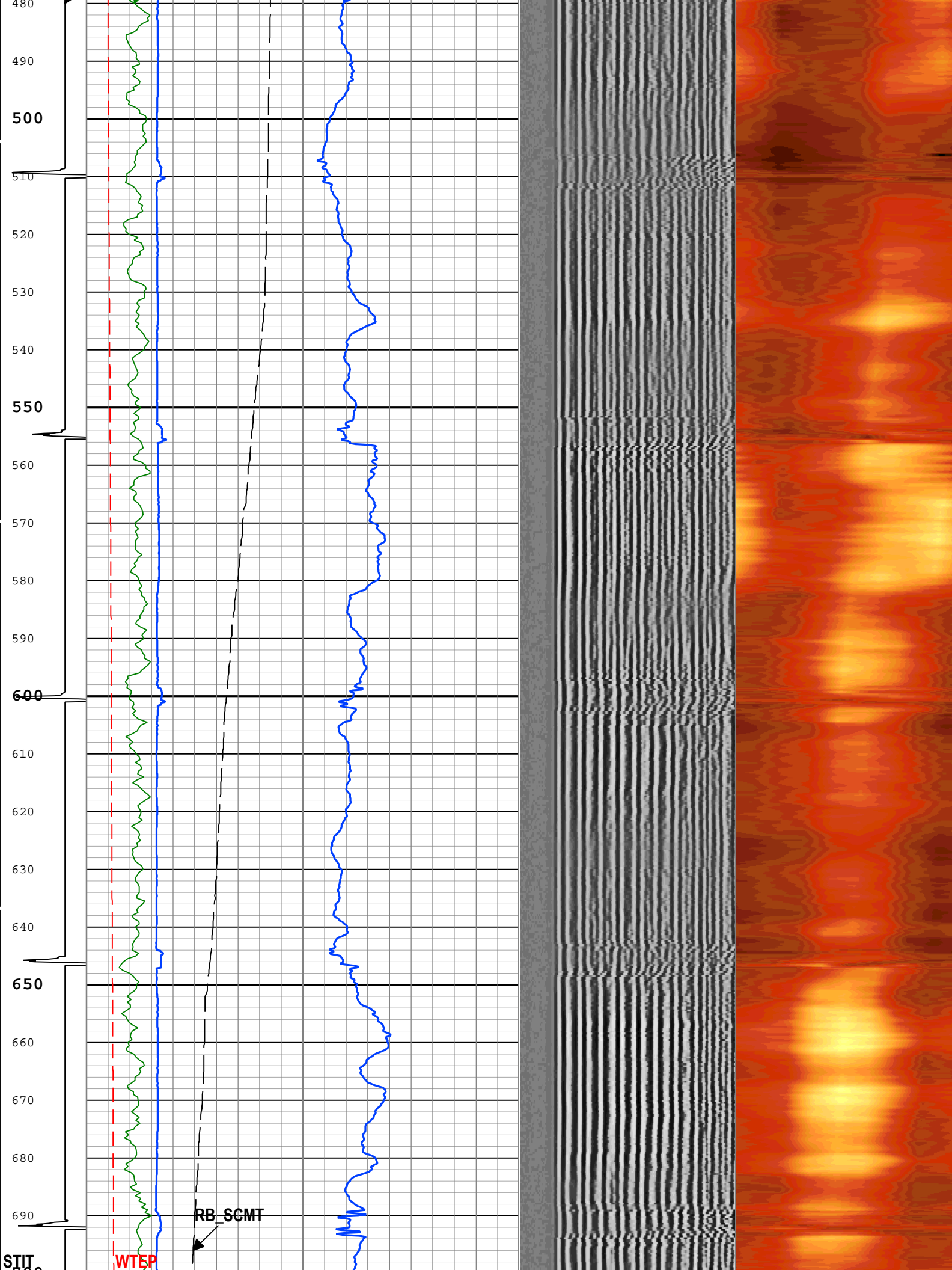
97.500

CBL Amplitude Mapping Image (0 - 100) SCMT-CB

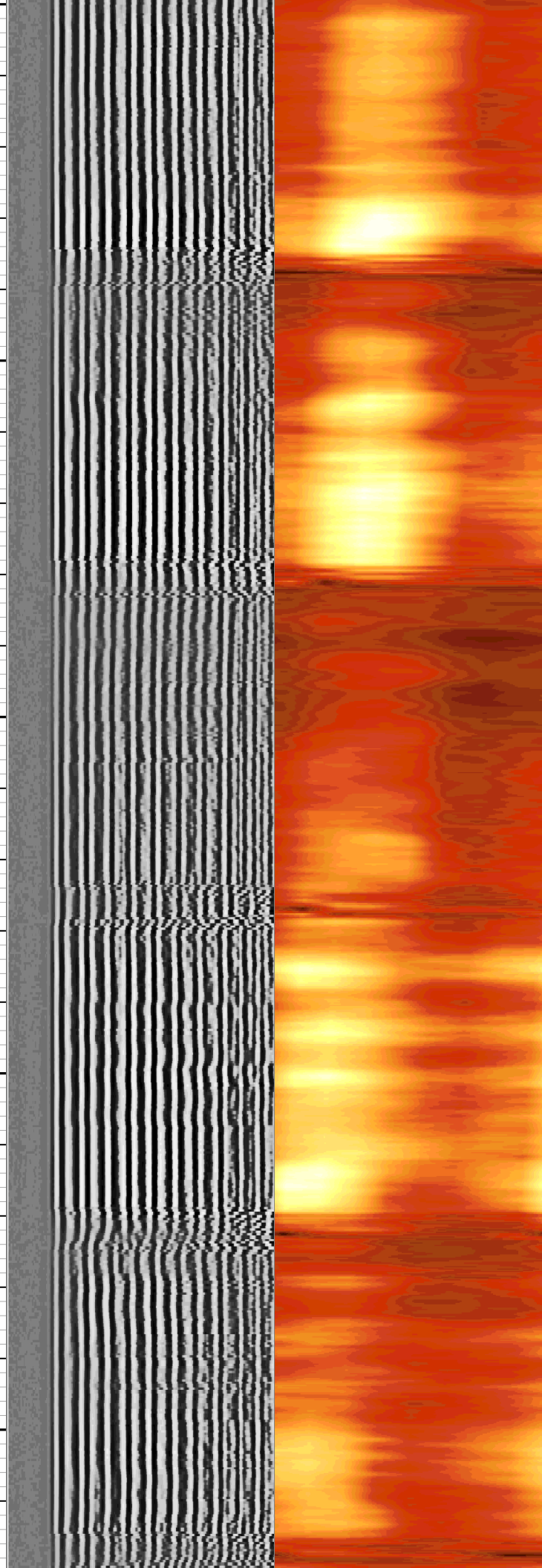
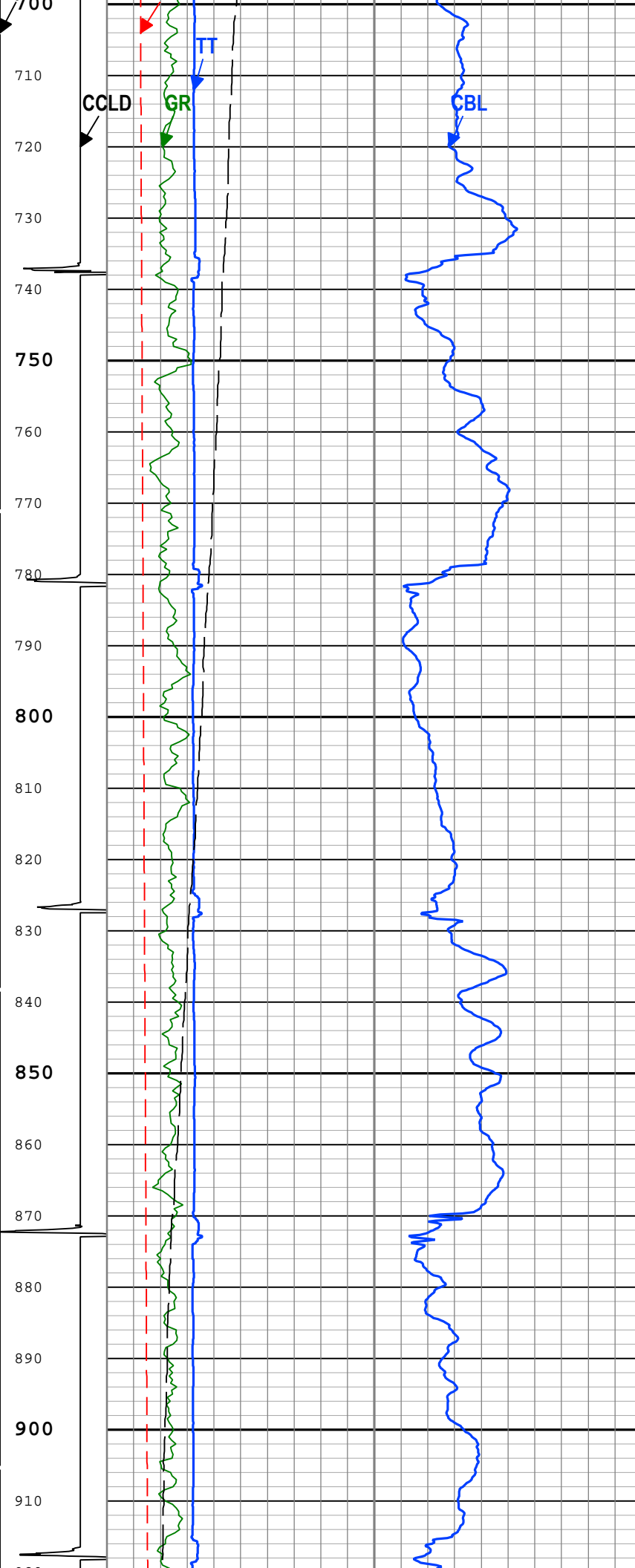


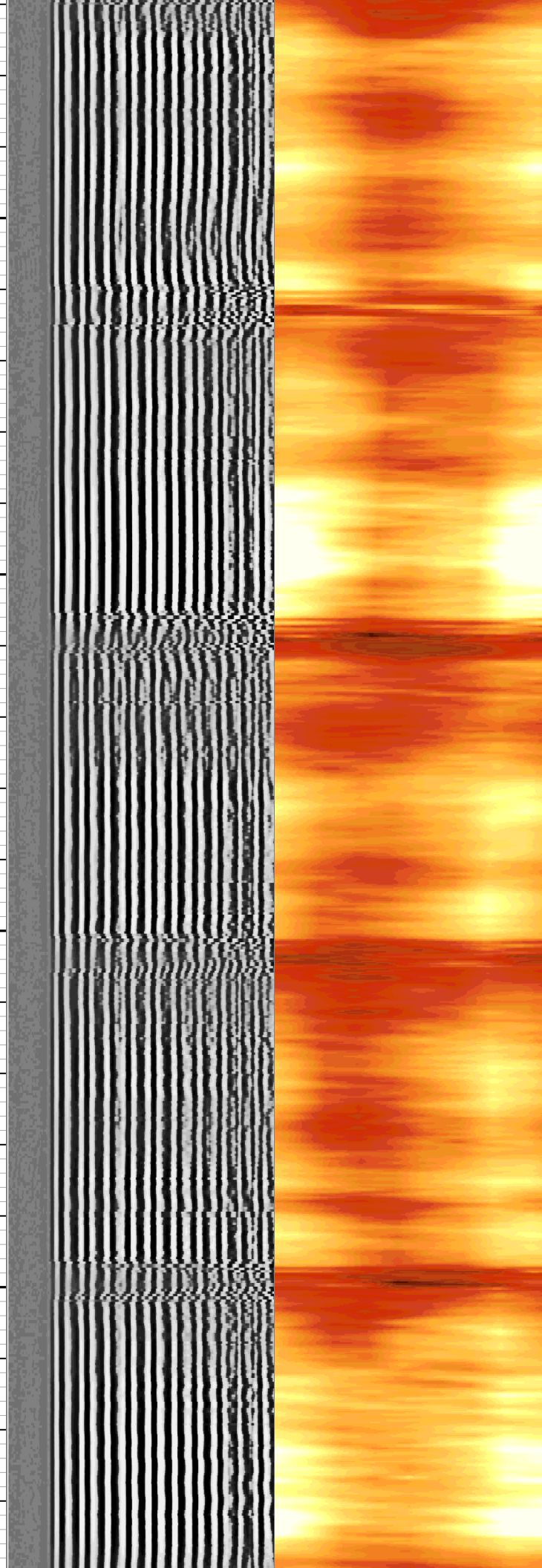
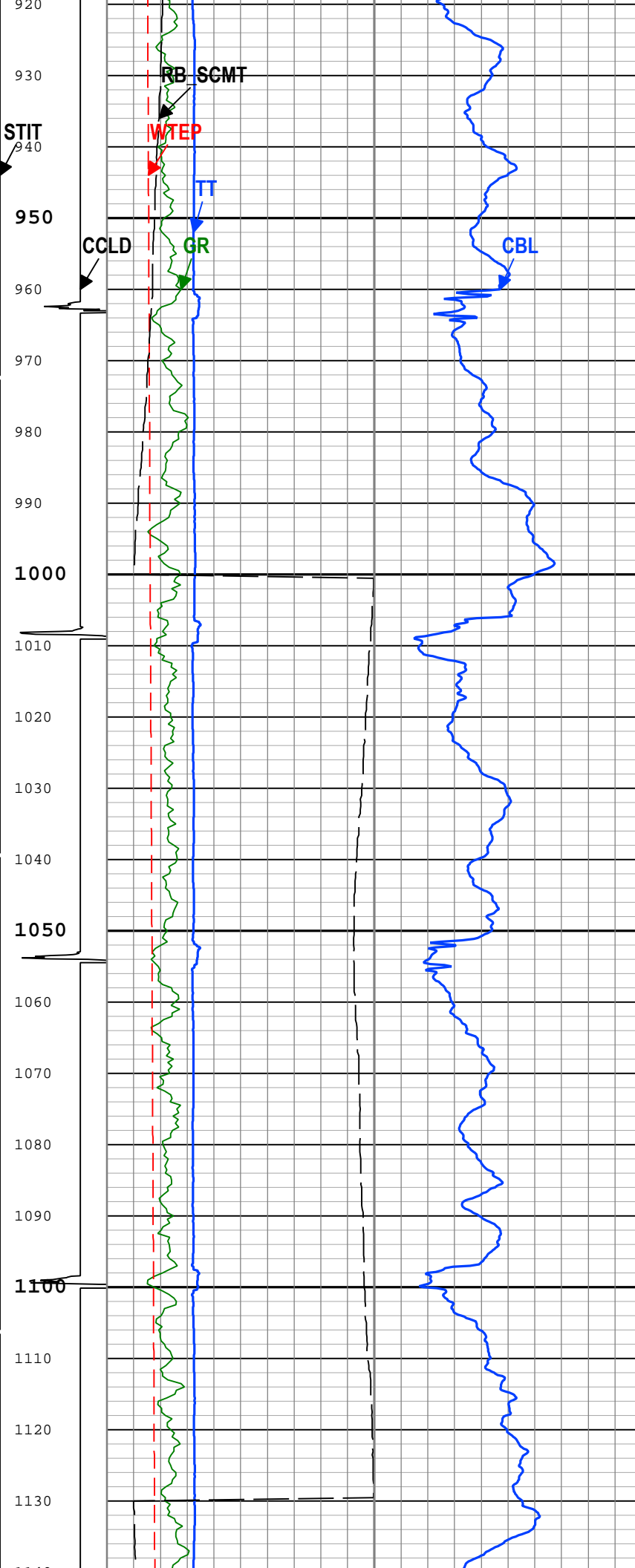


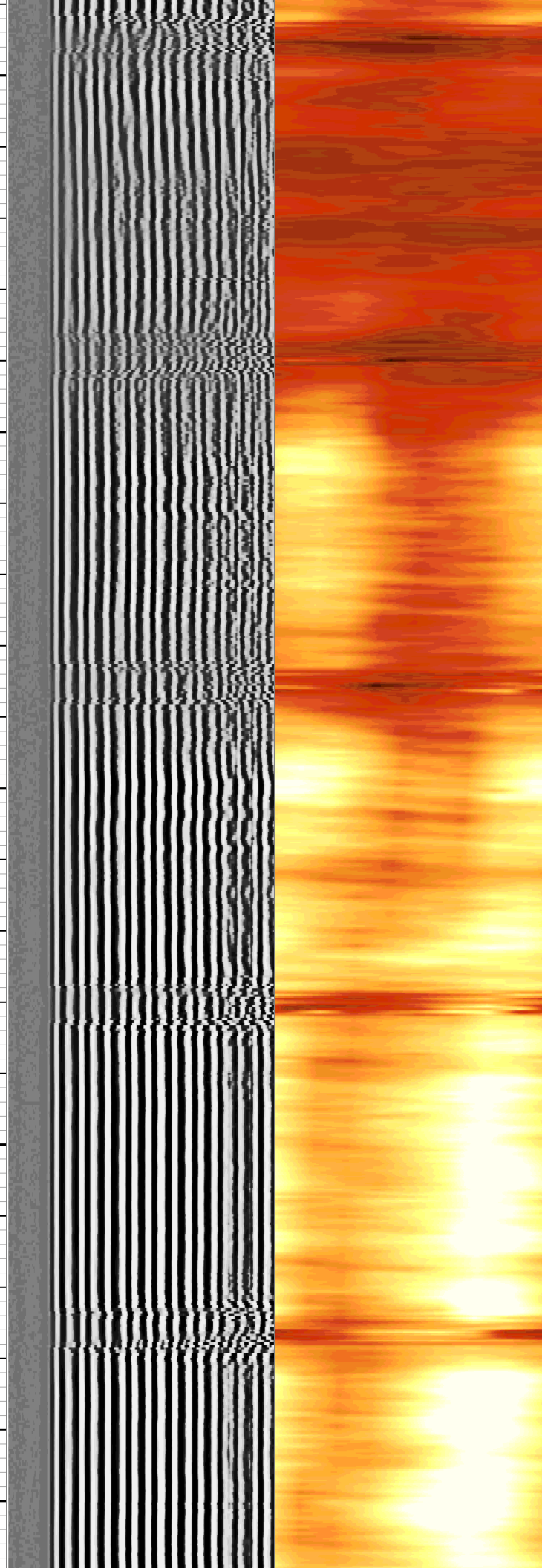
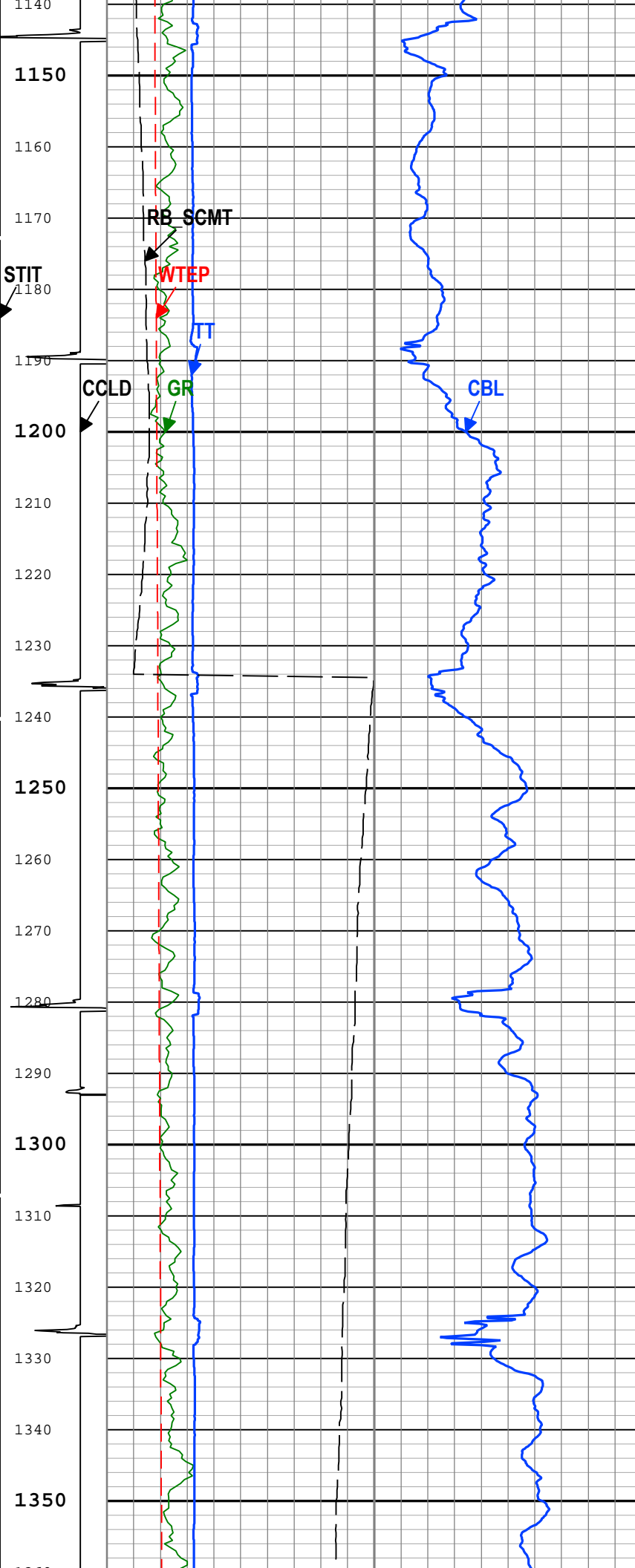


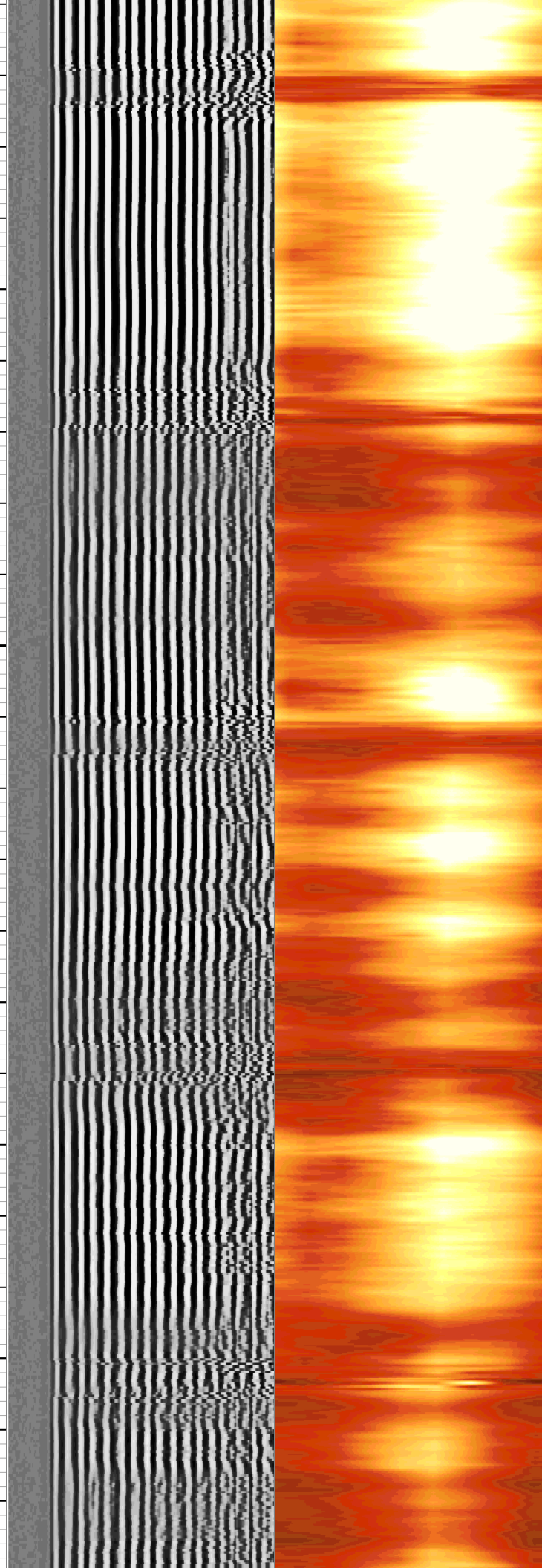
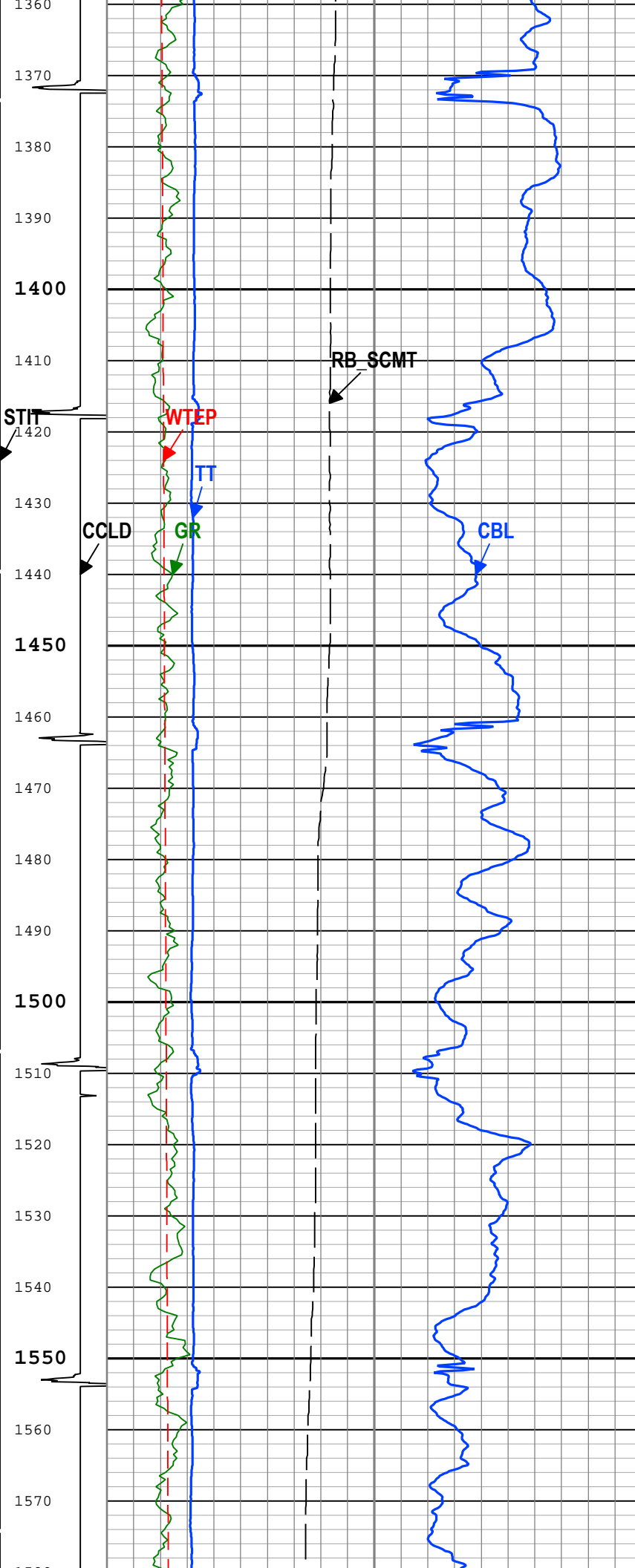




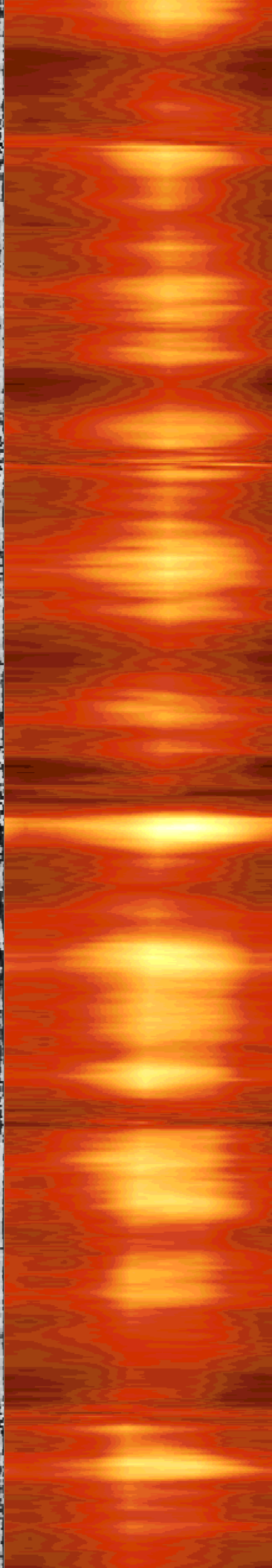
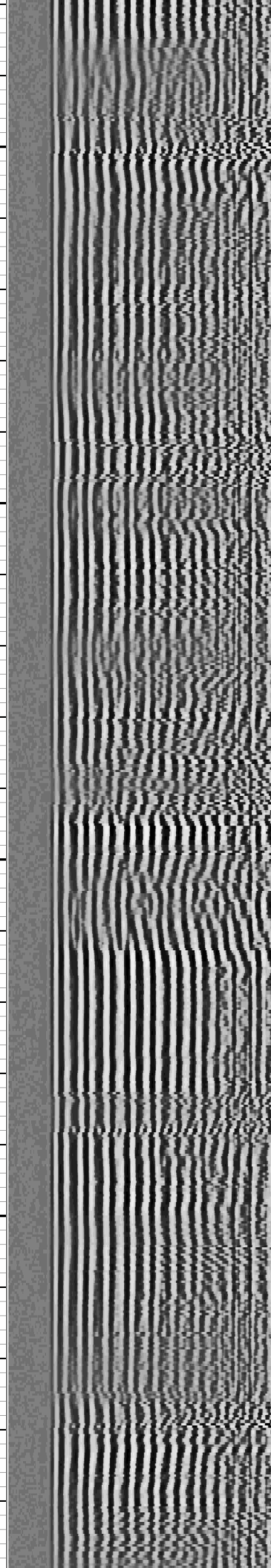
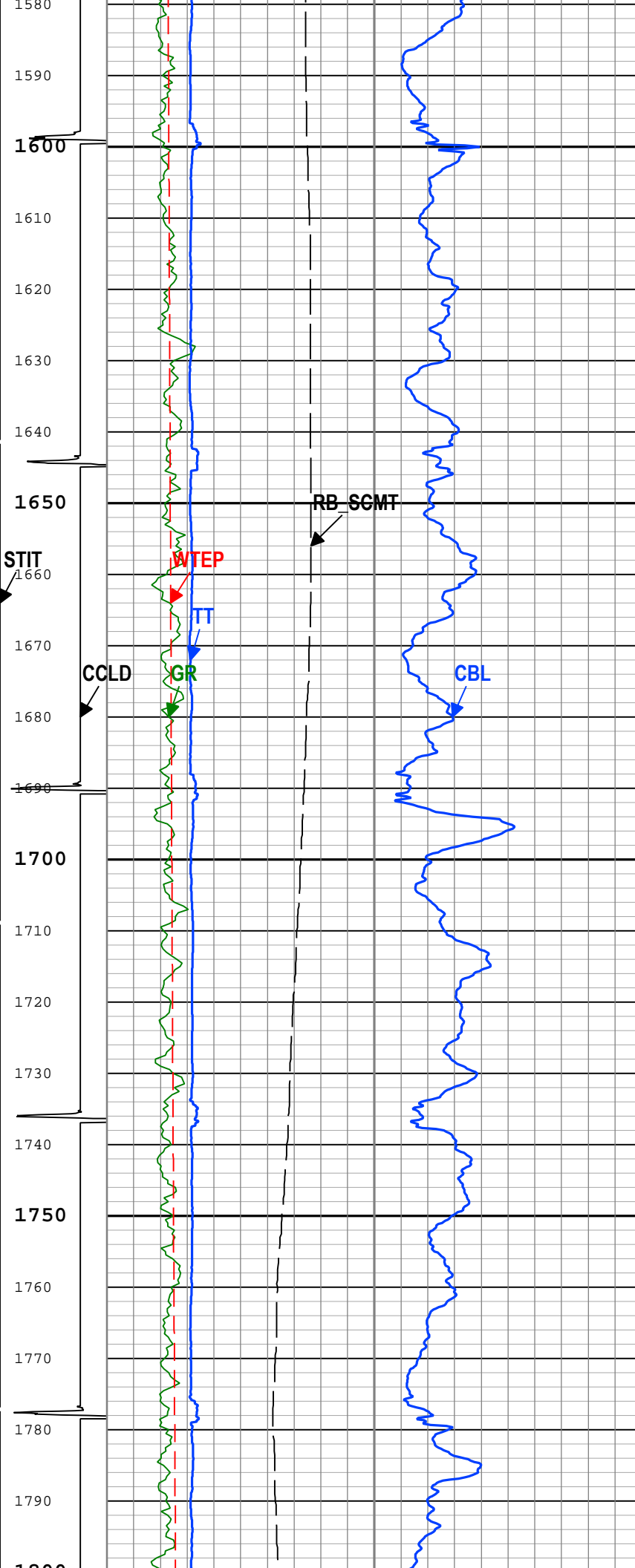


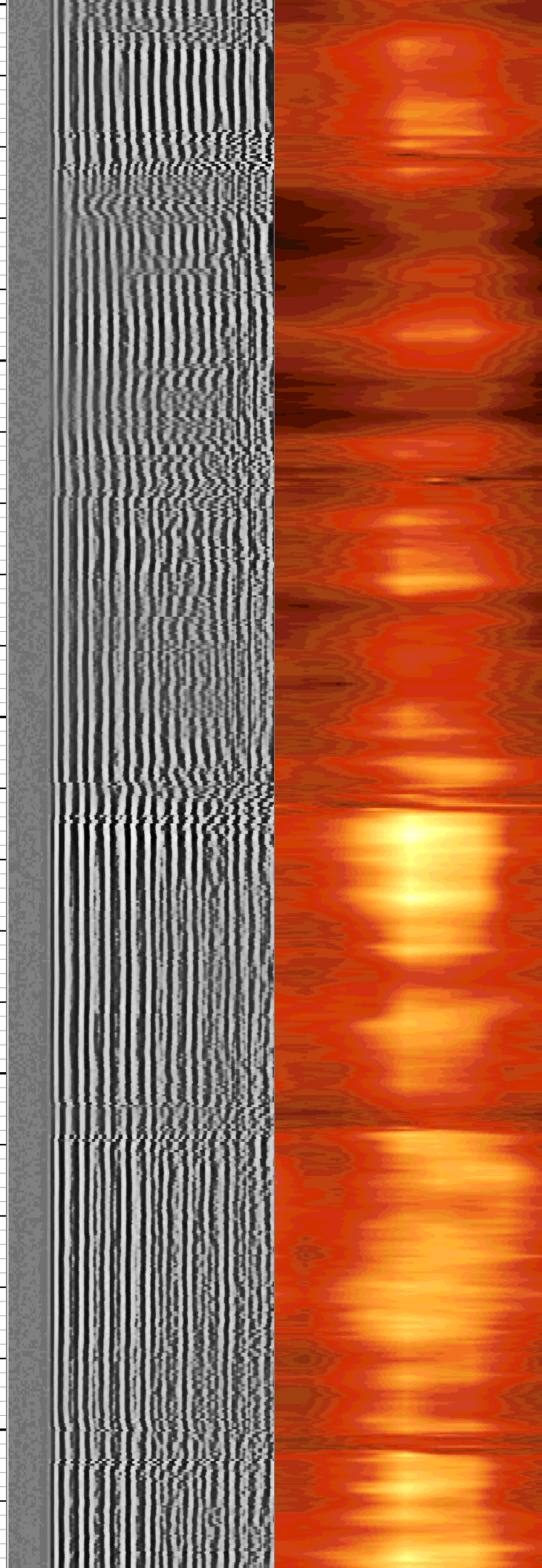
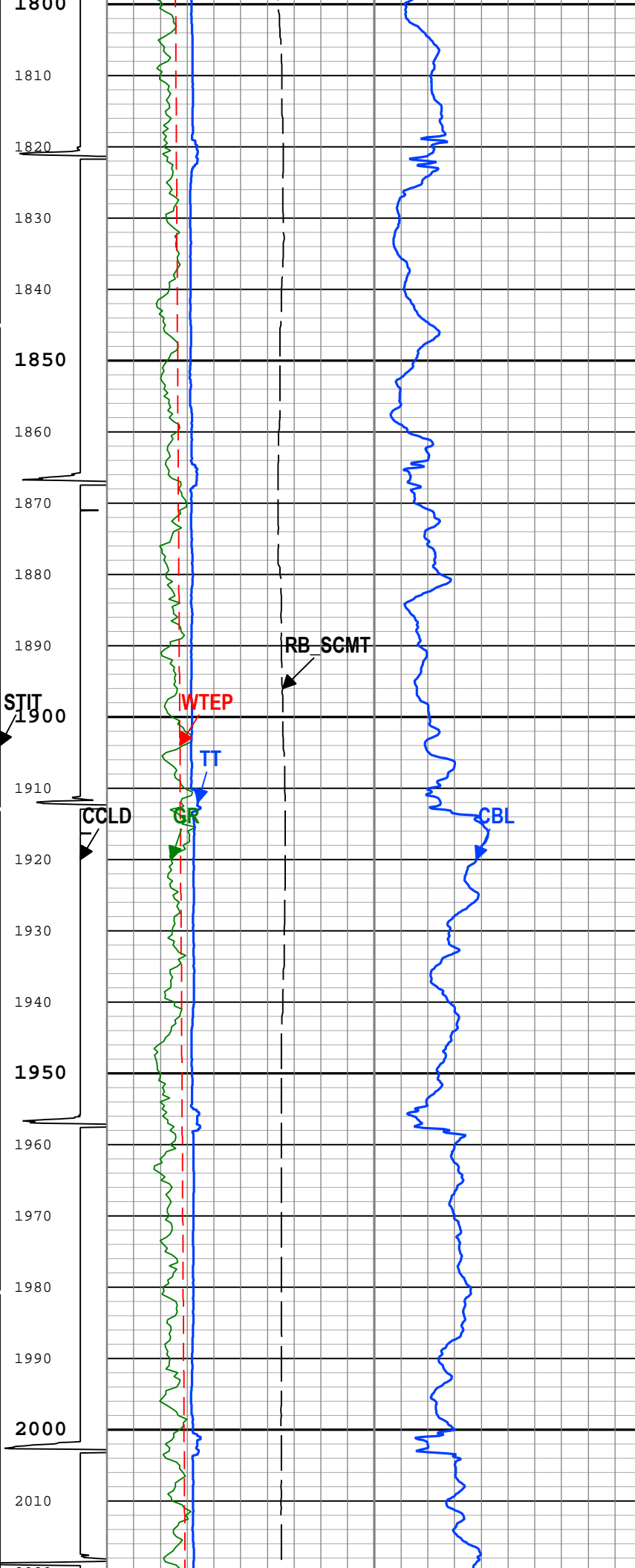


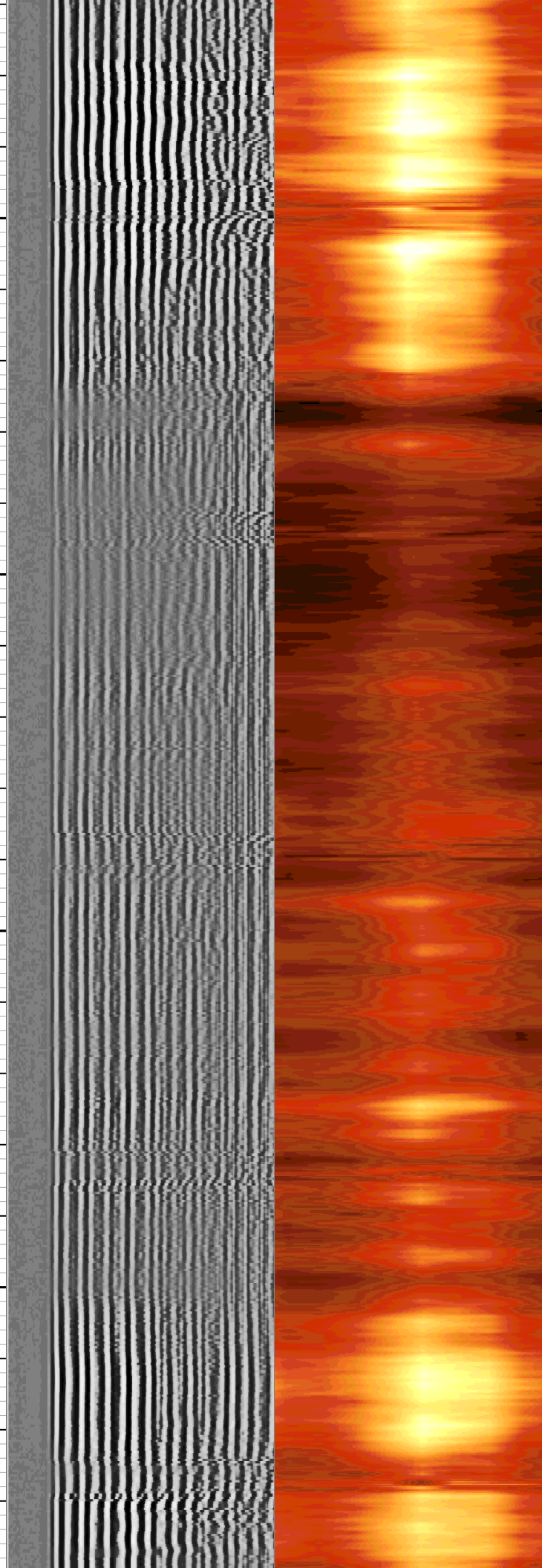
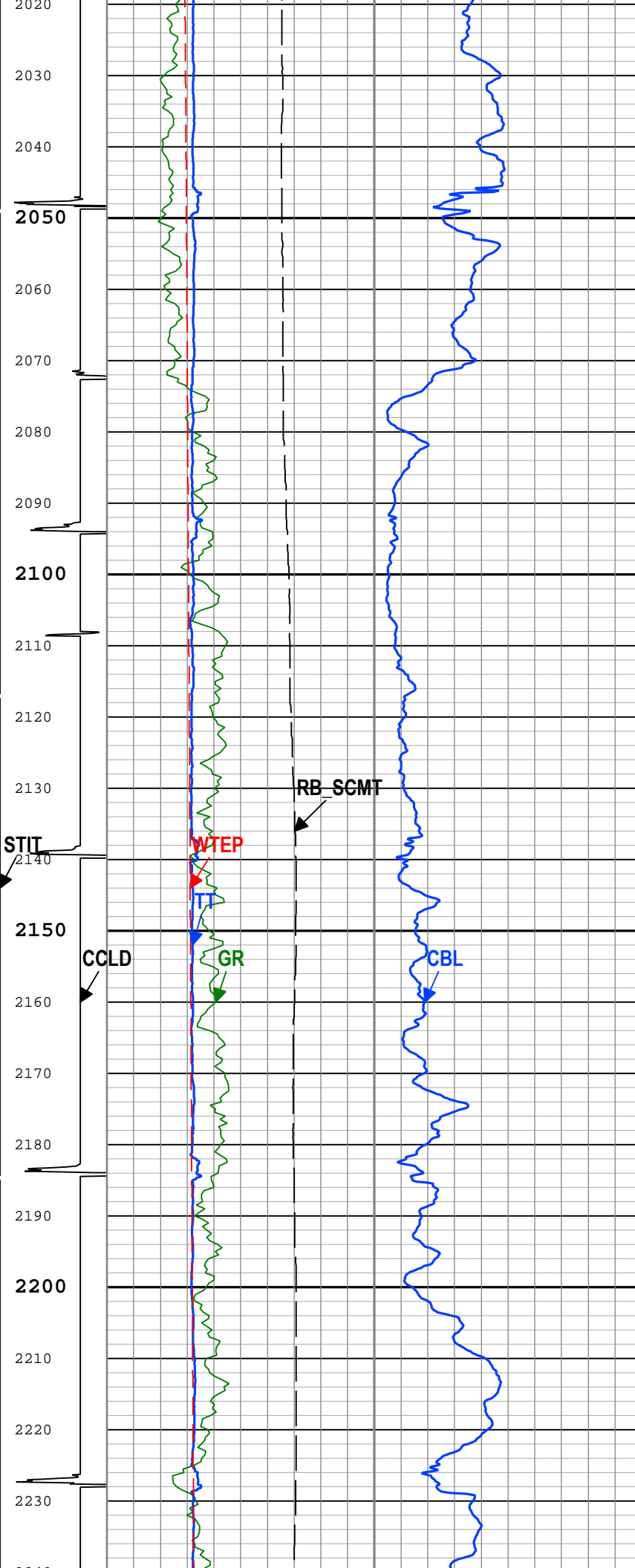




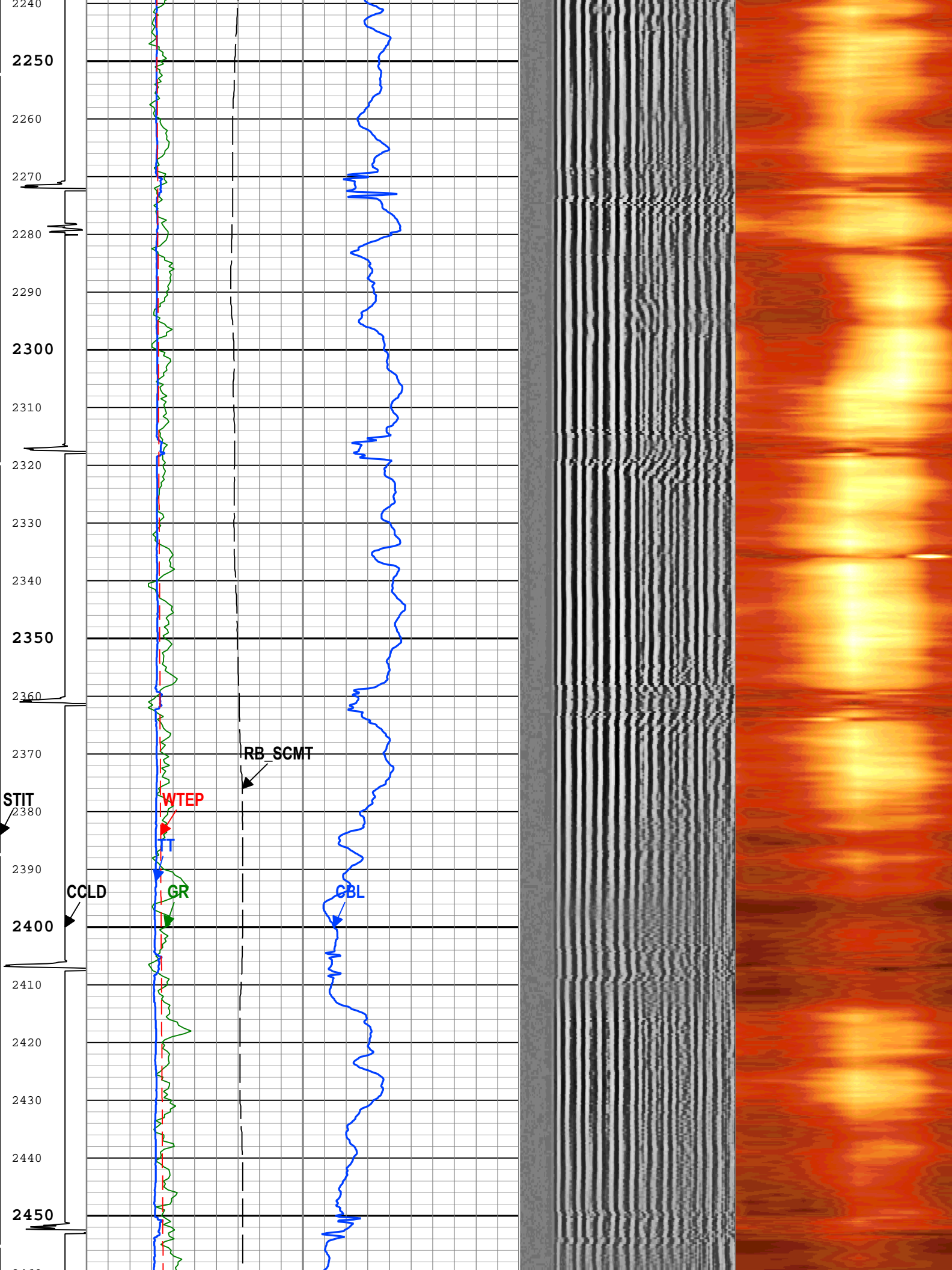


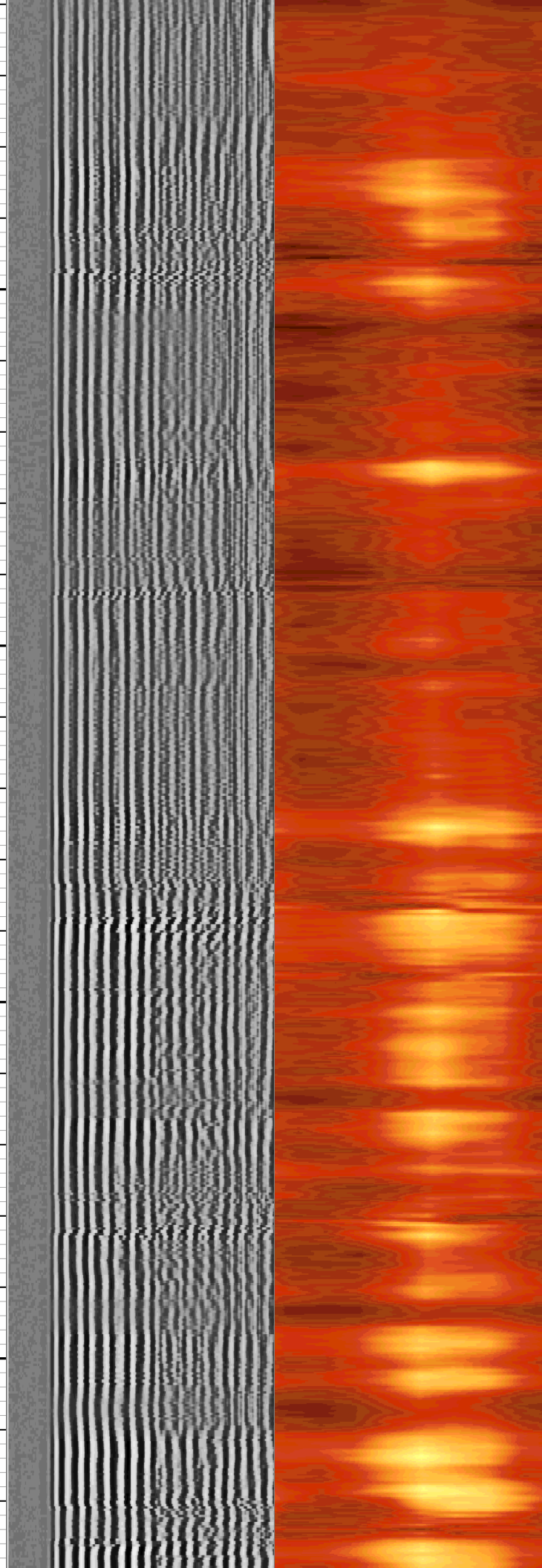
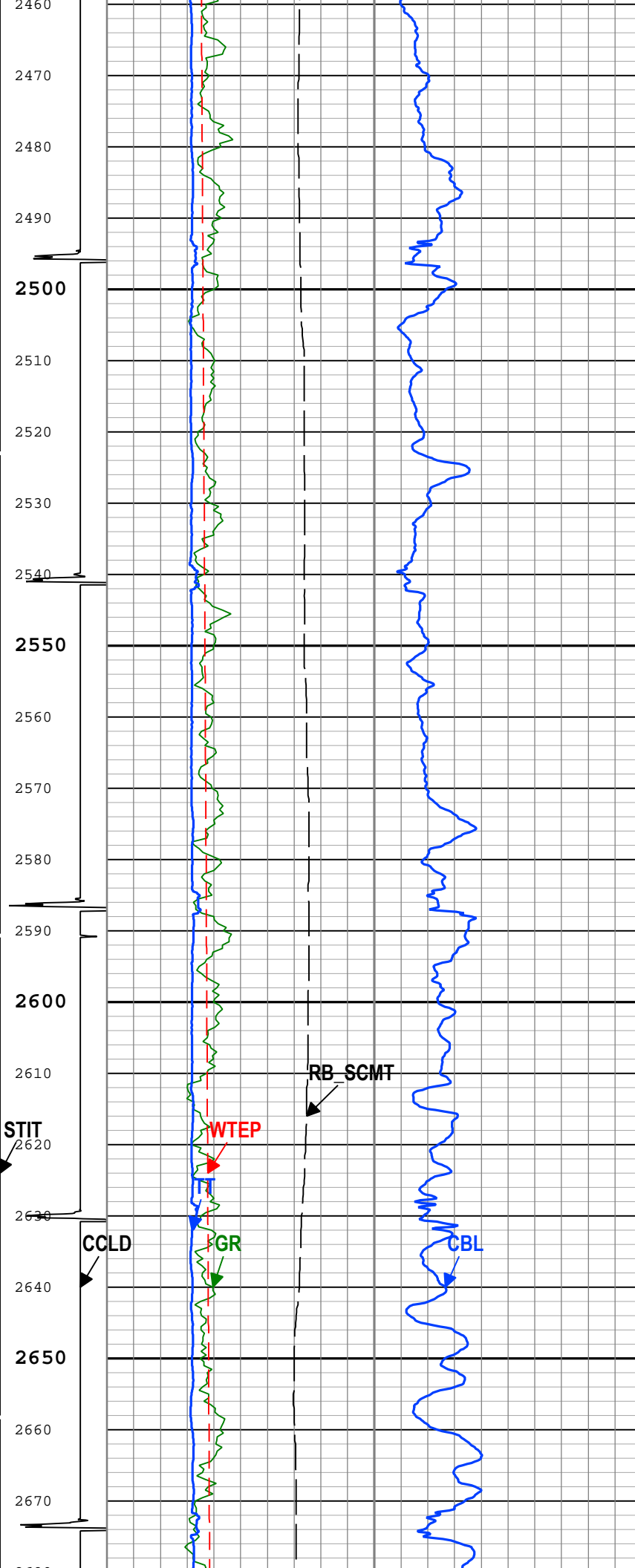


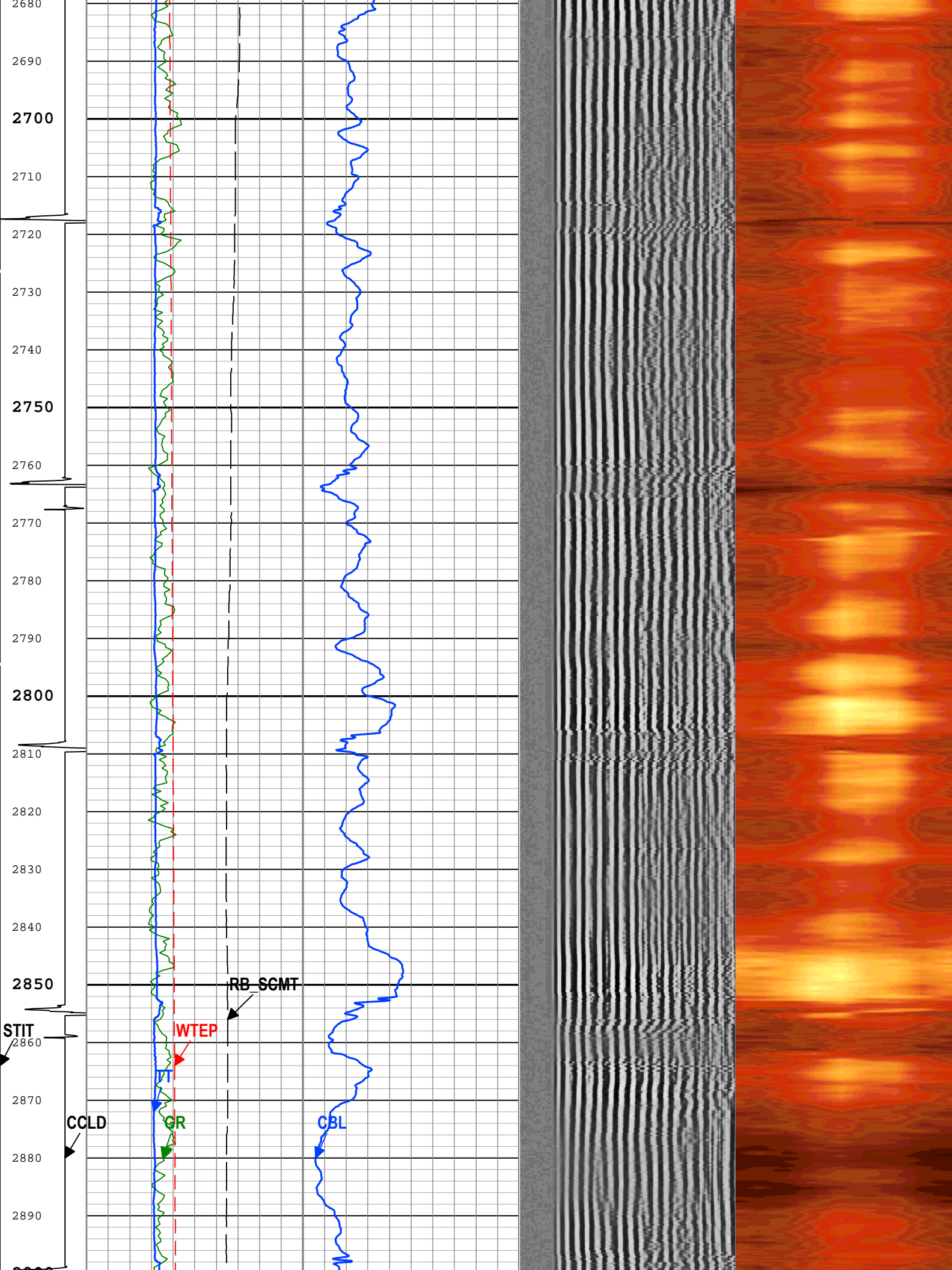


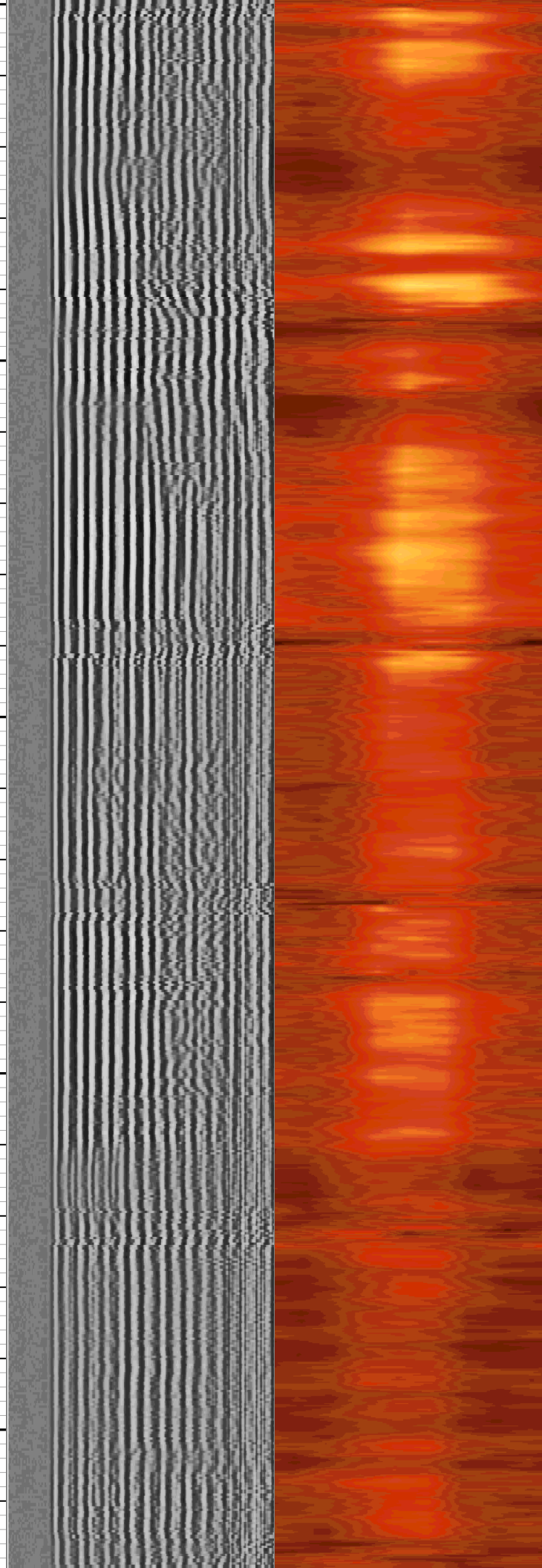
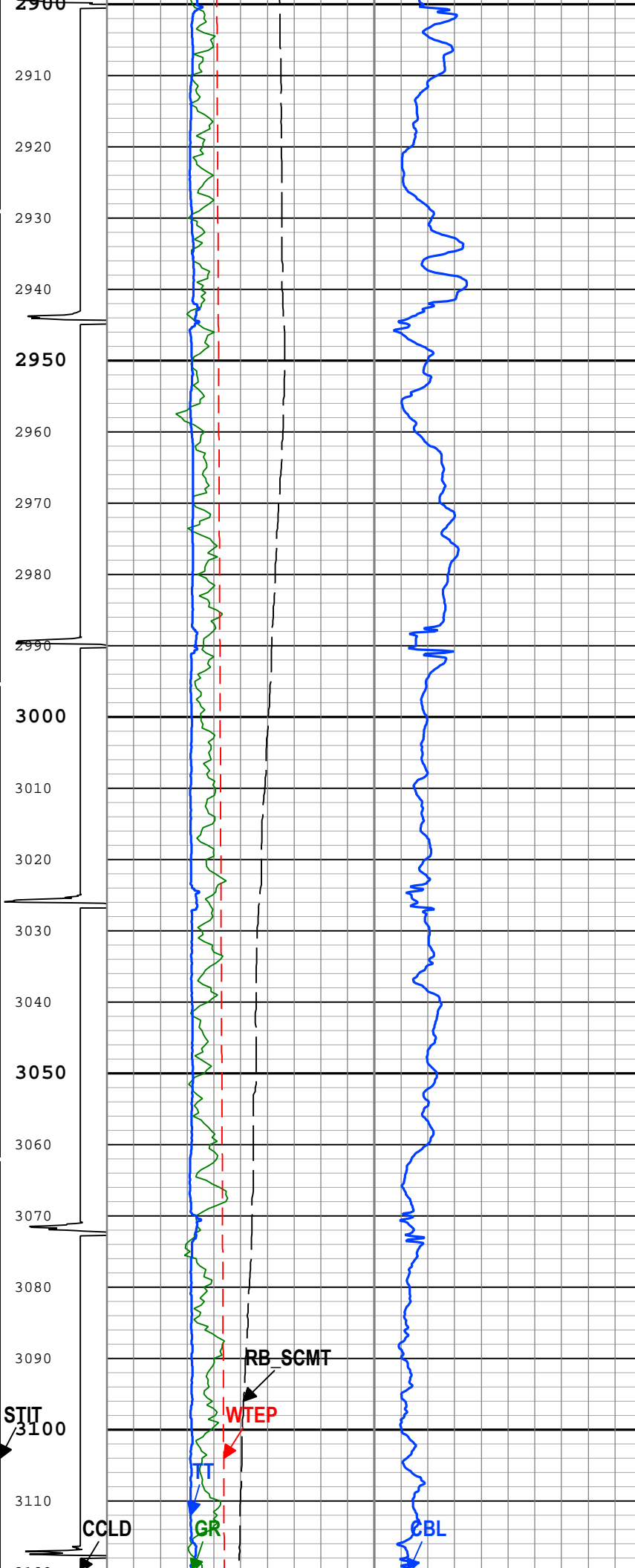




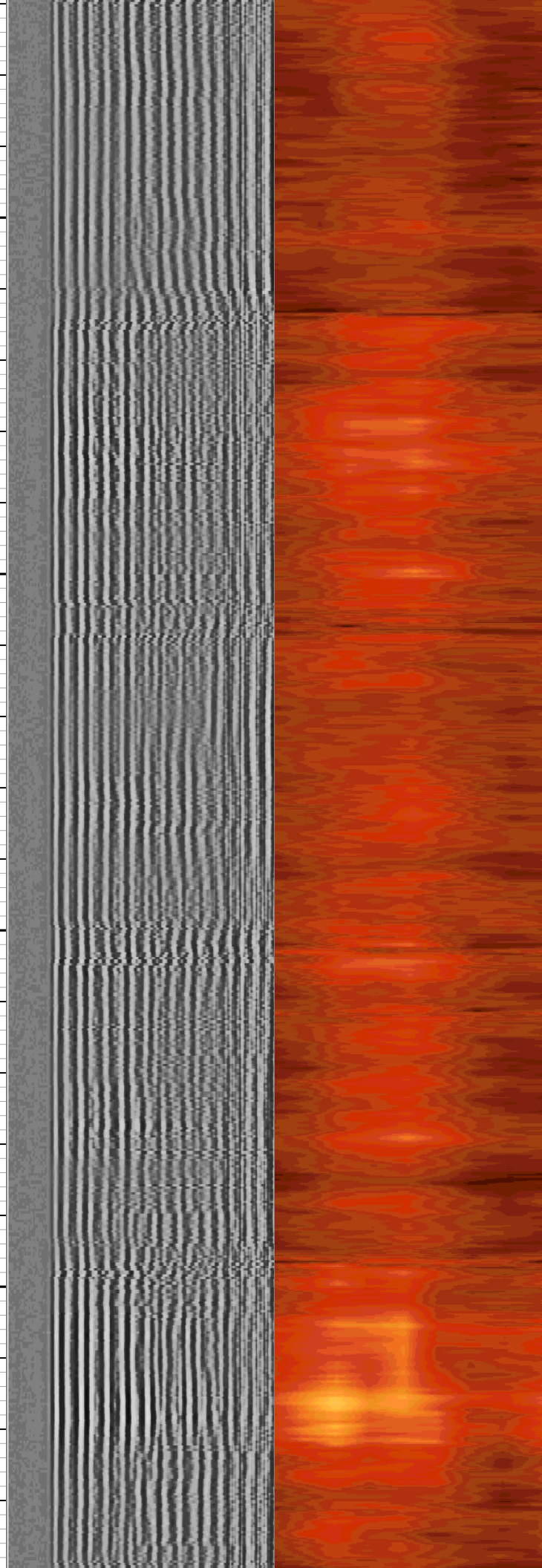
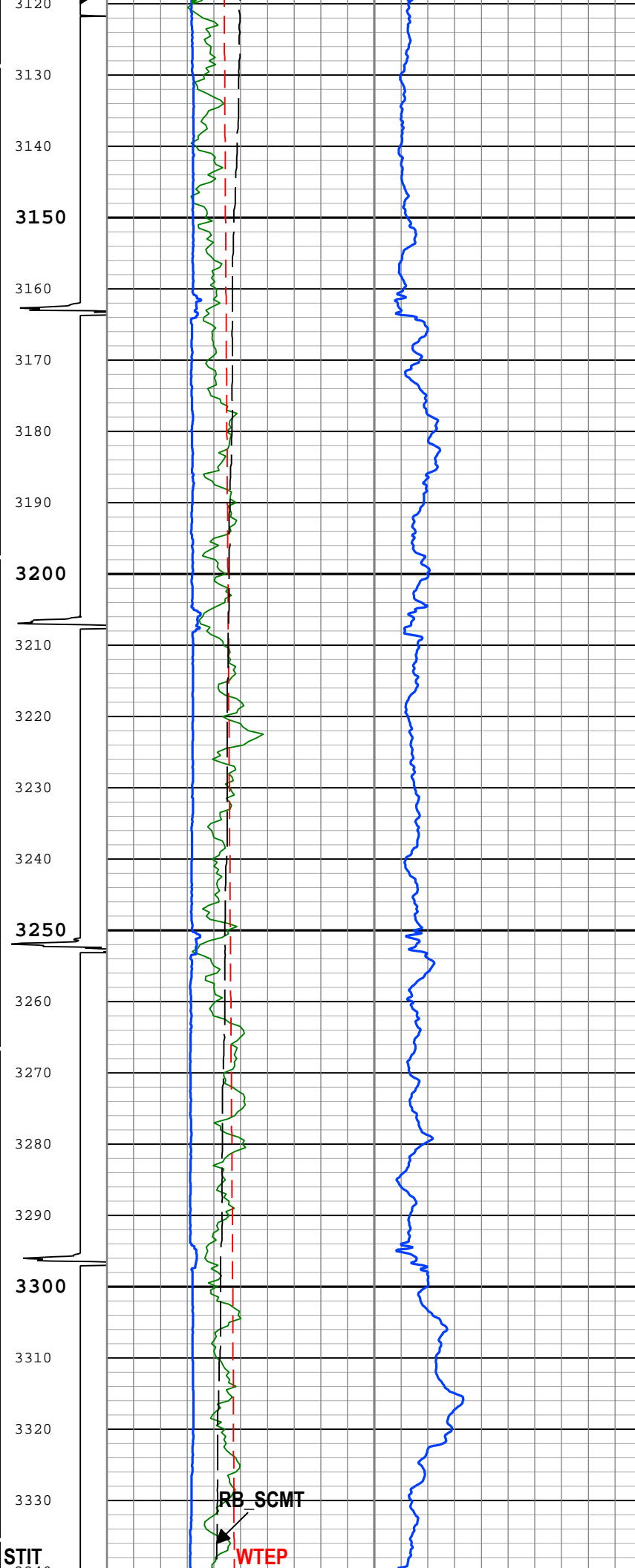


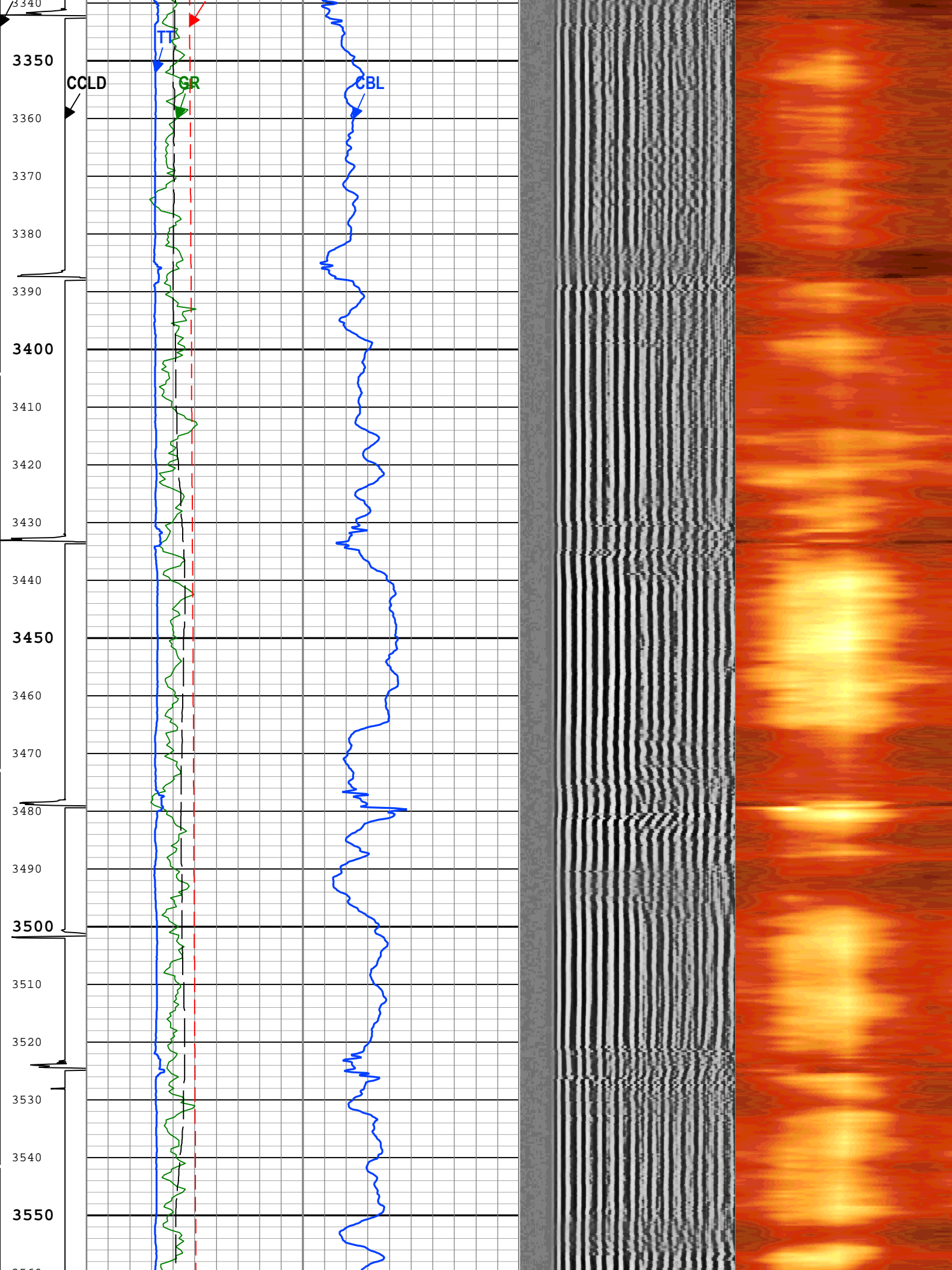


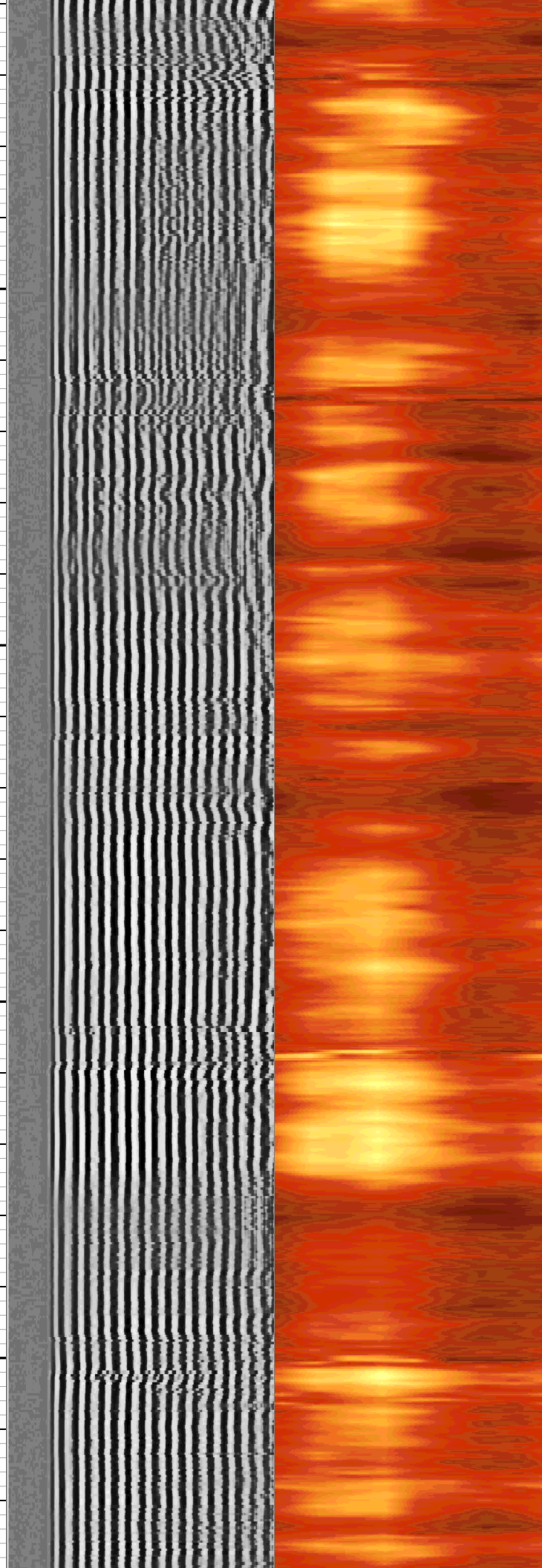
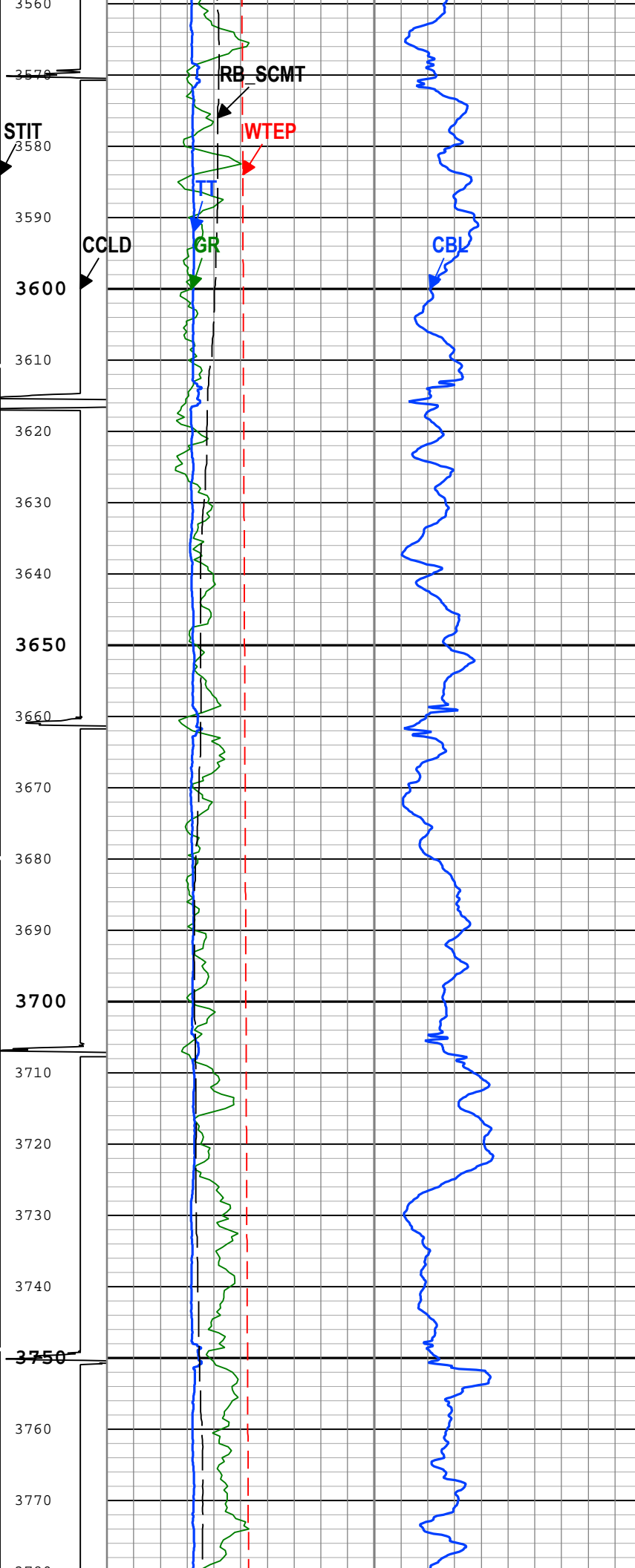




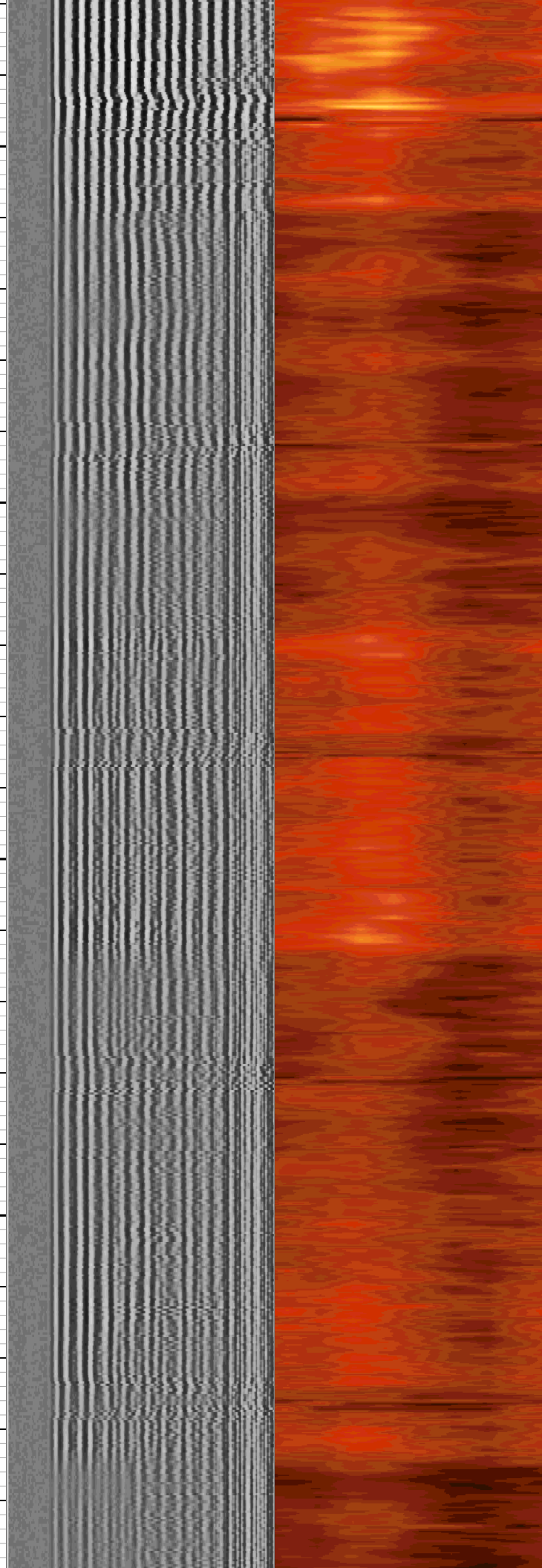
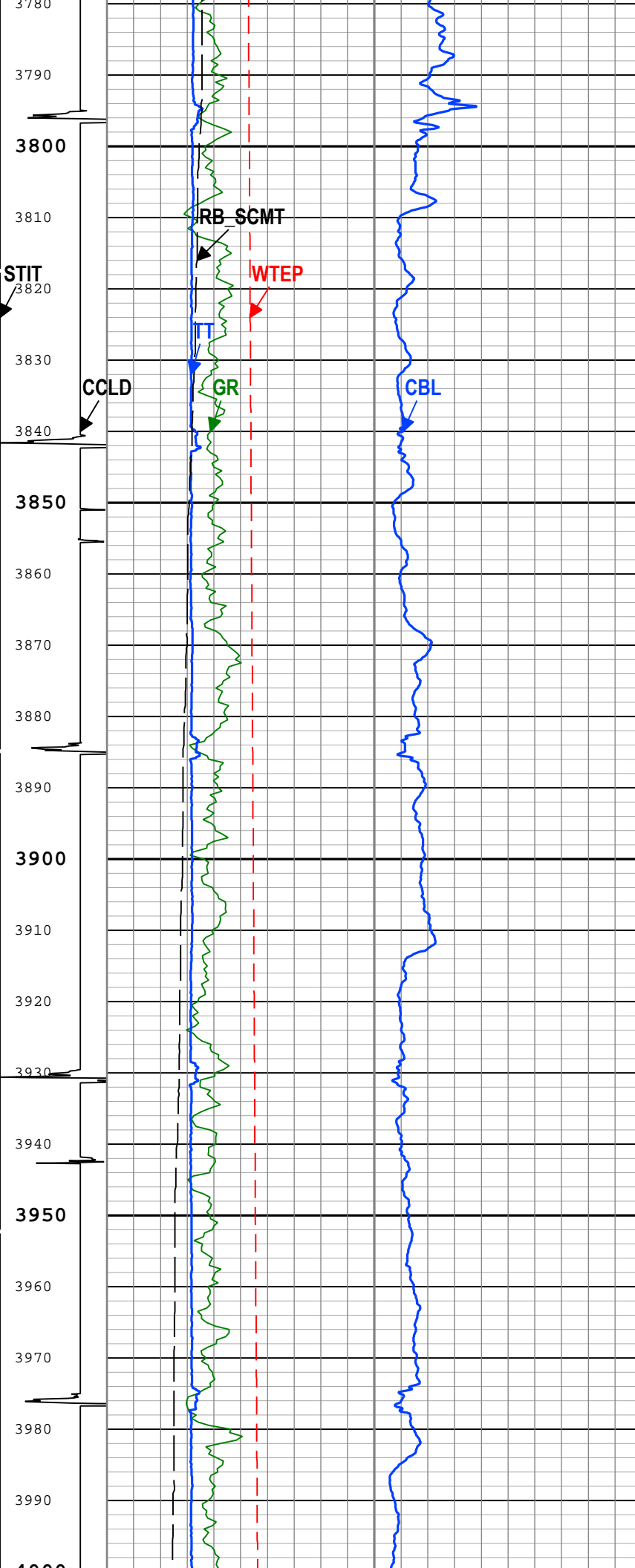


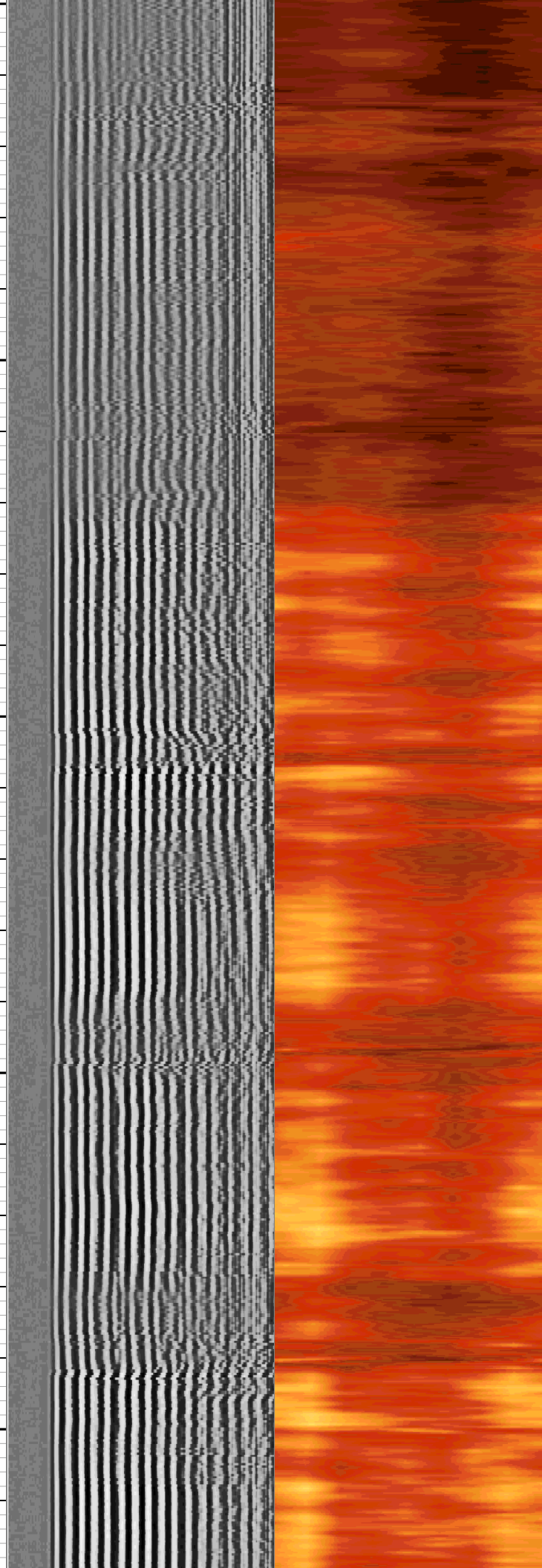
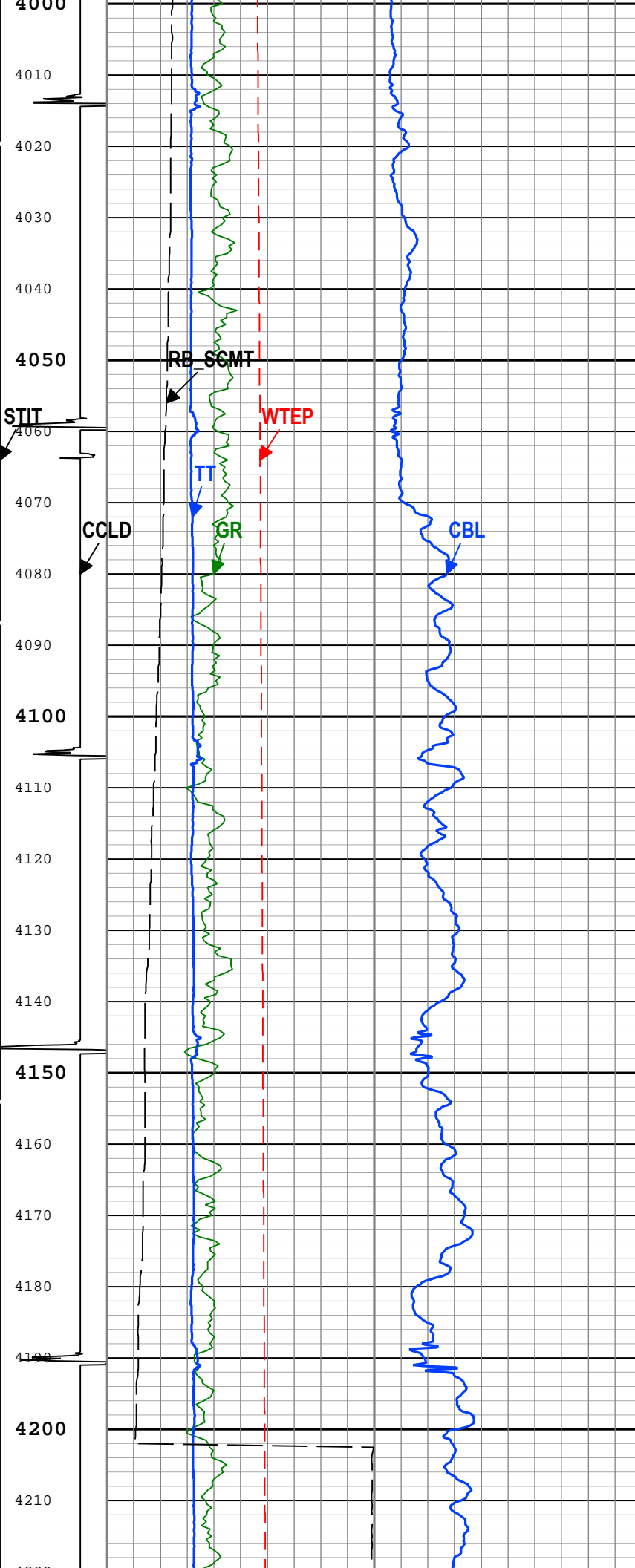


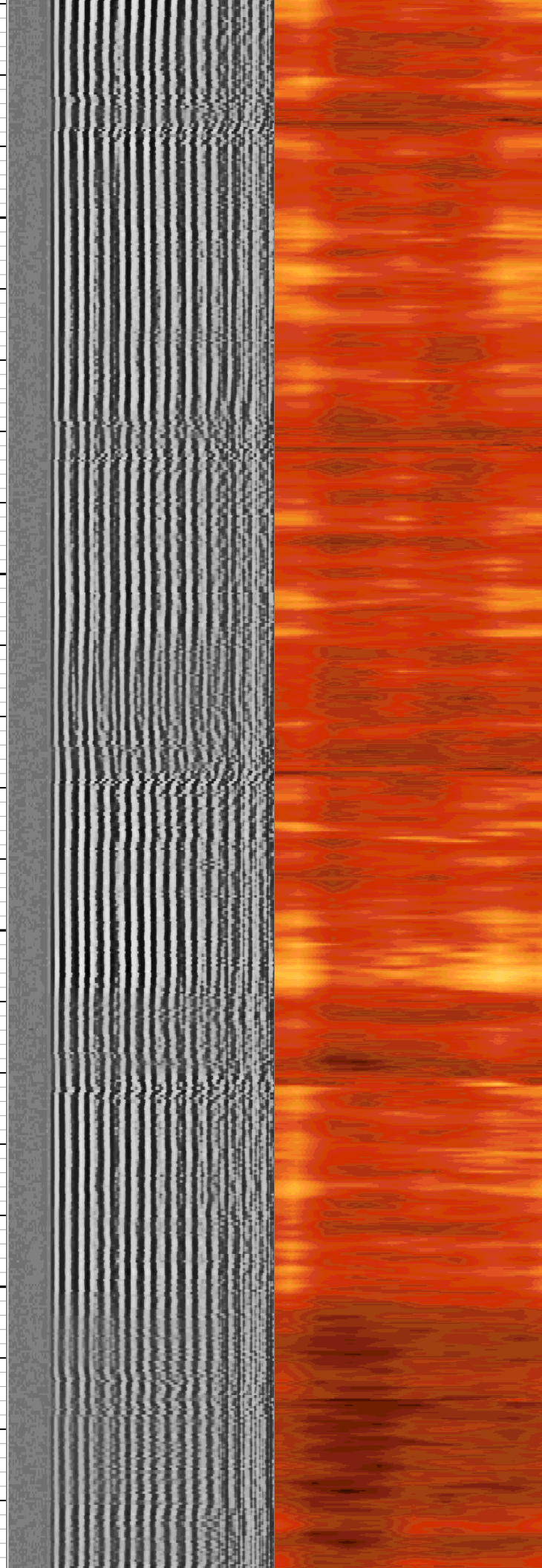
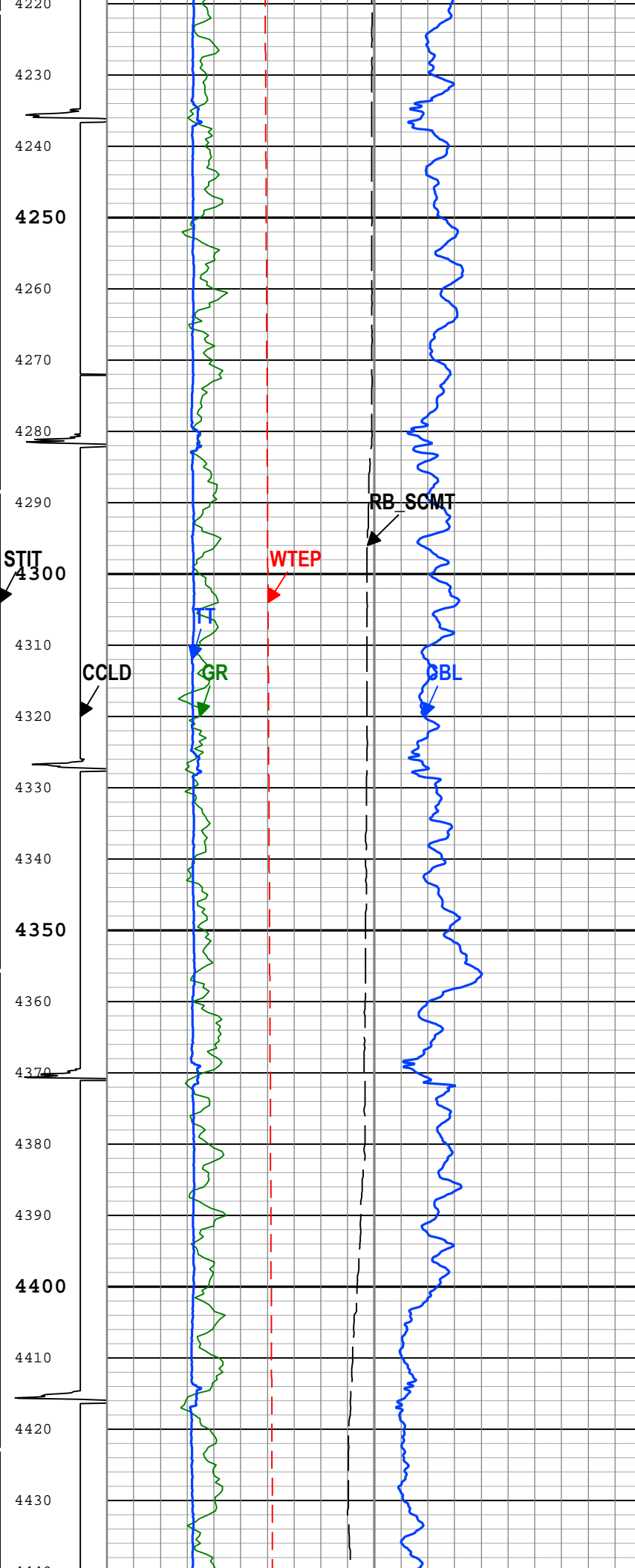


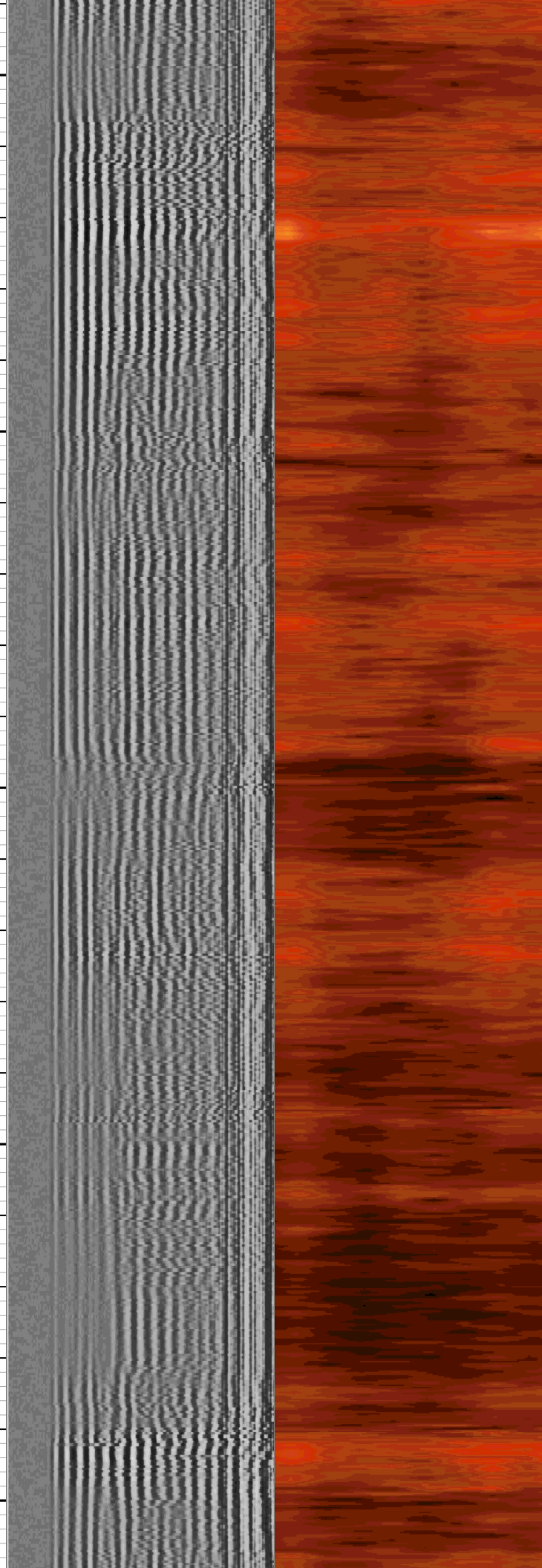
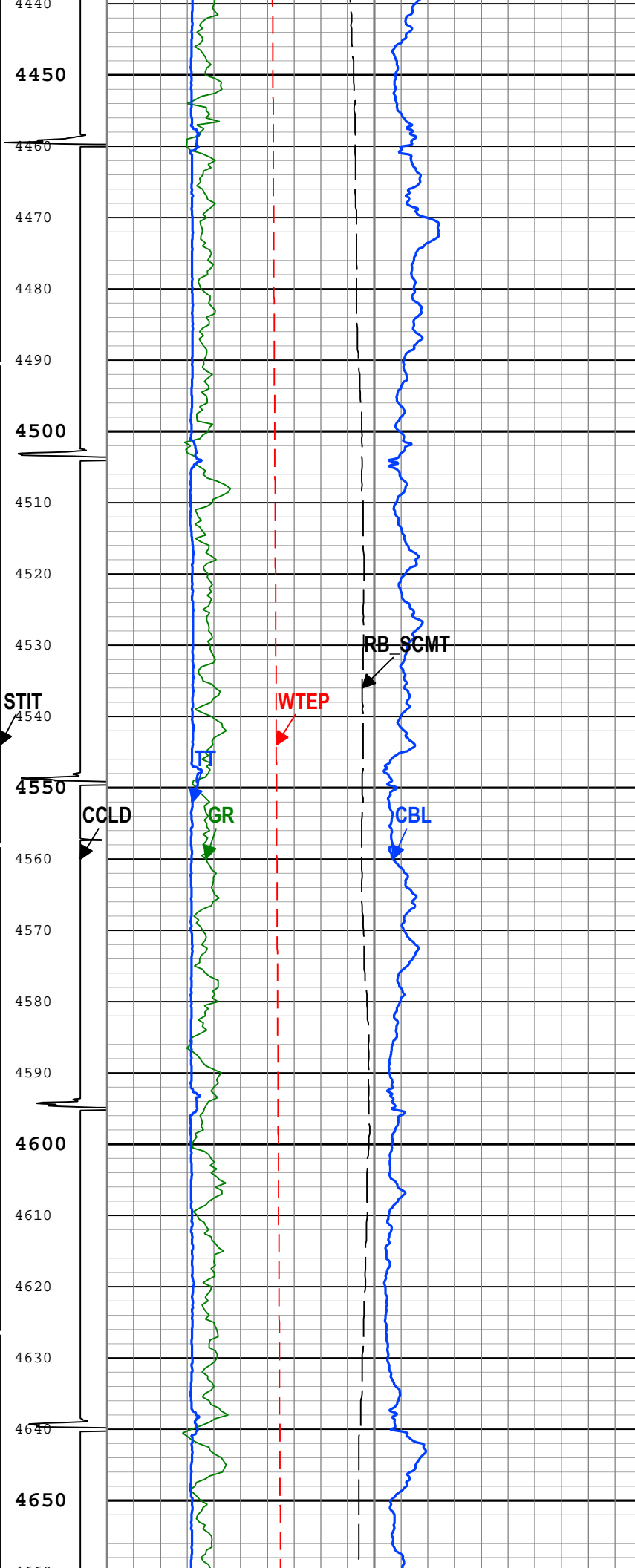




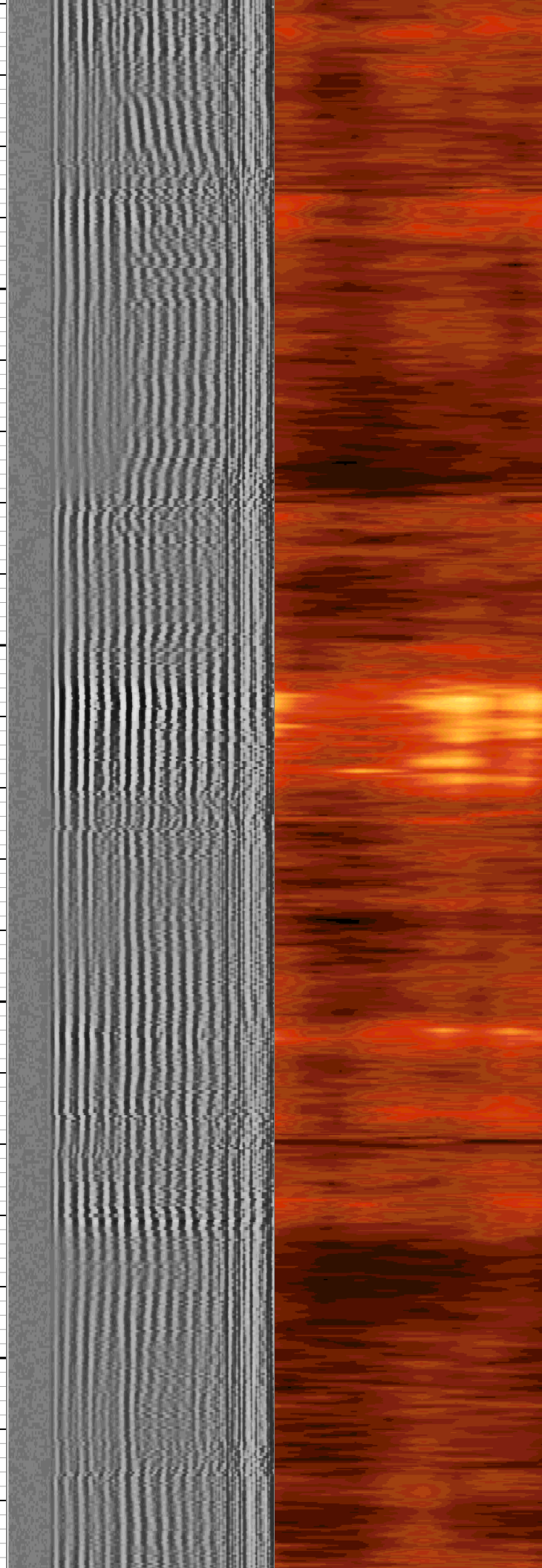
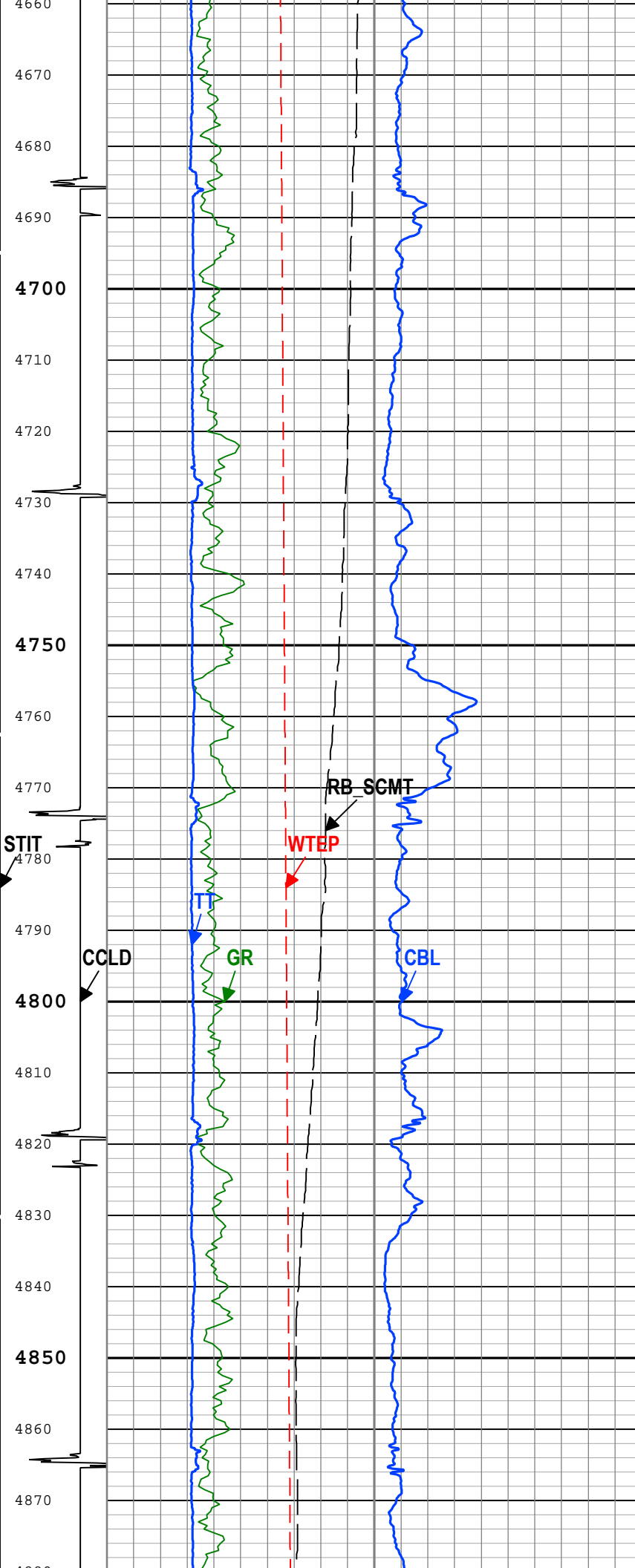


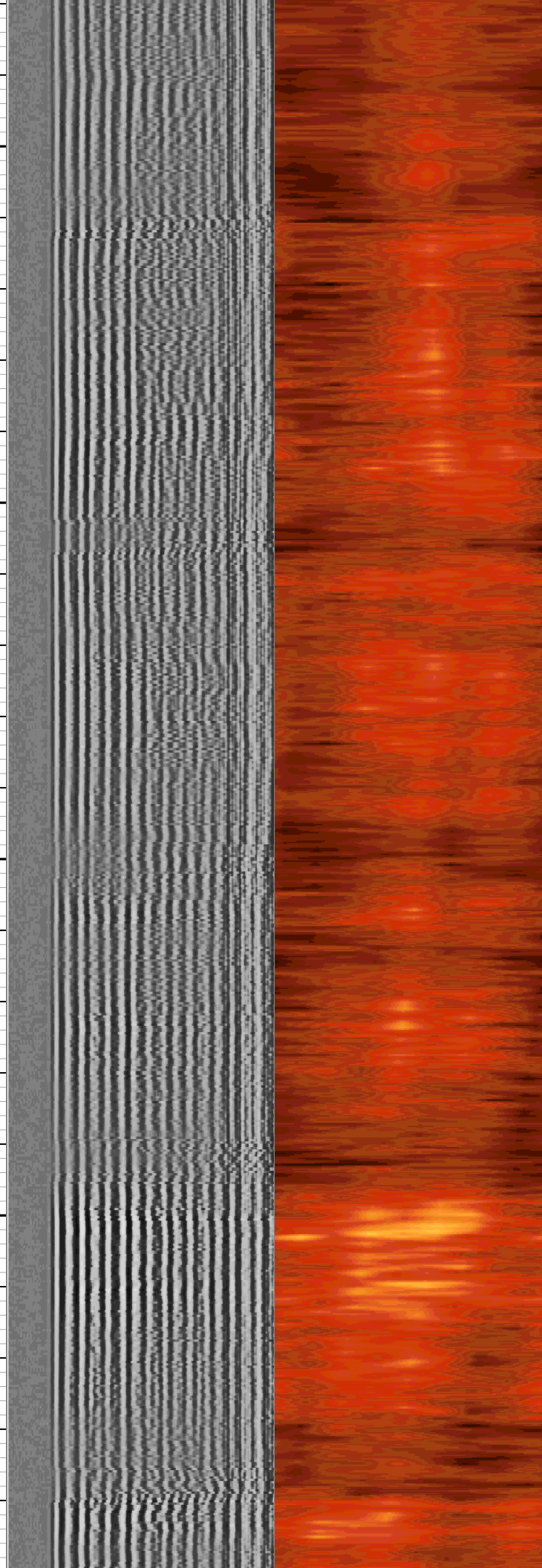
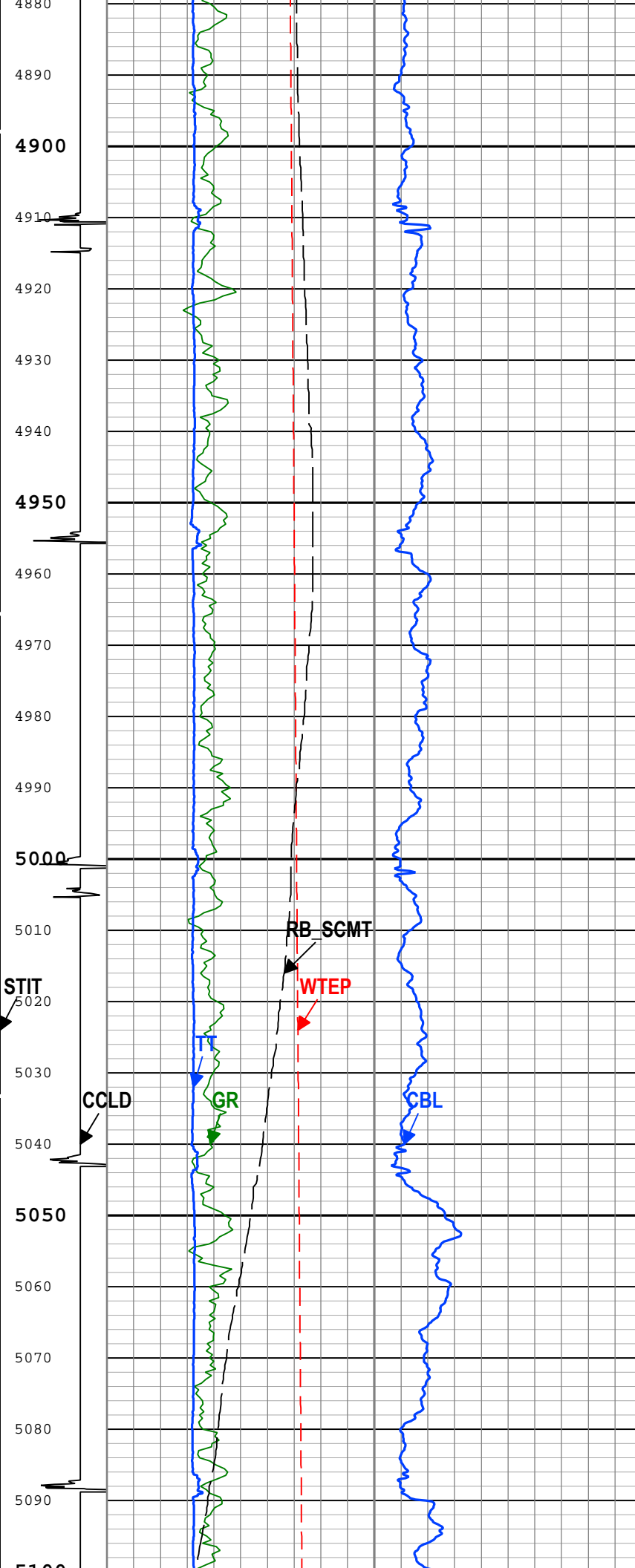


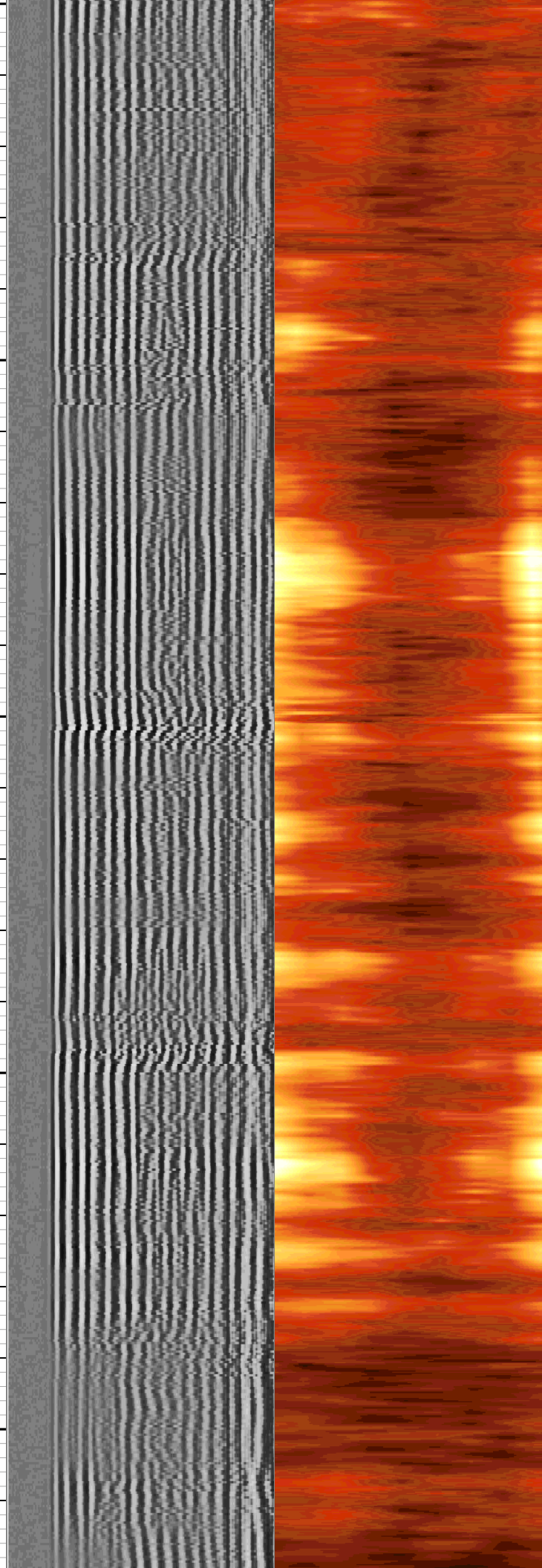
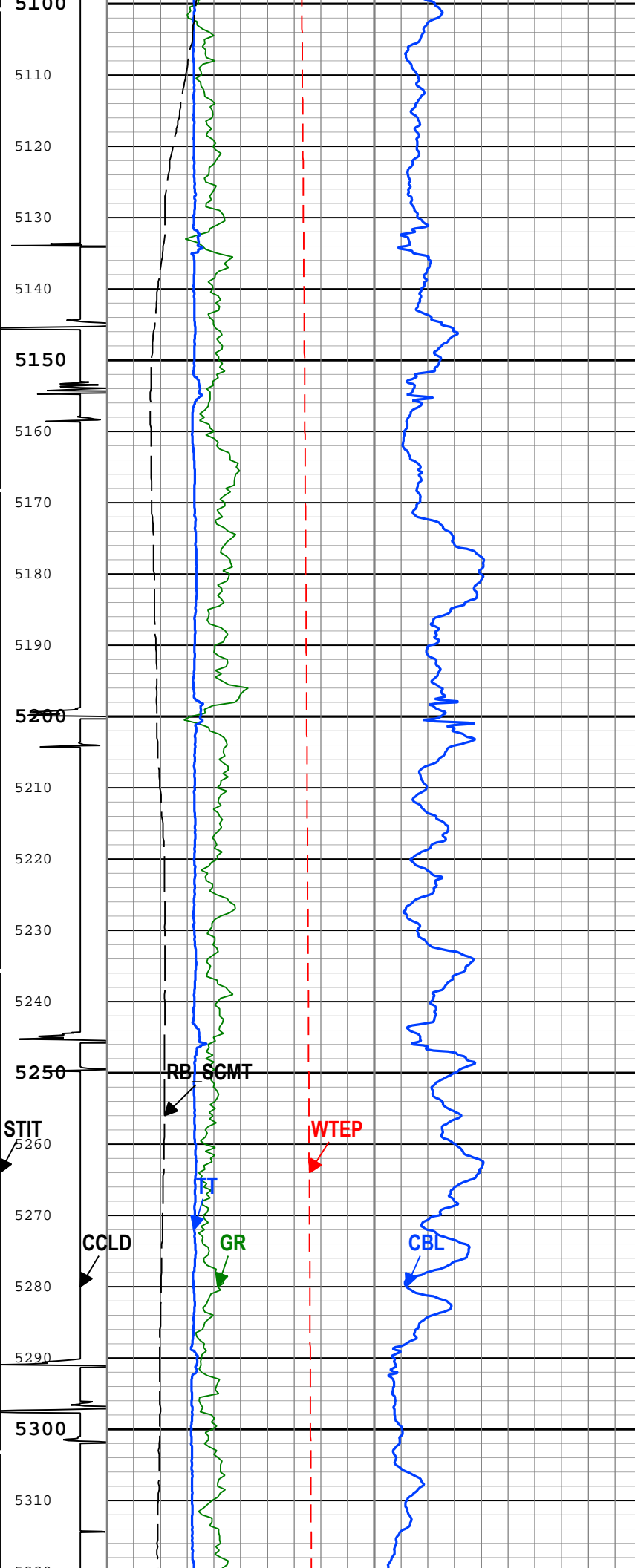




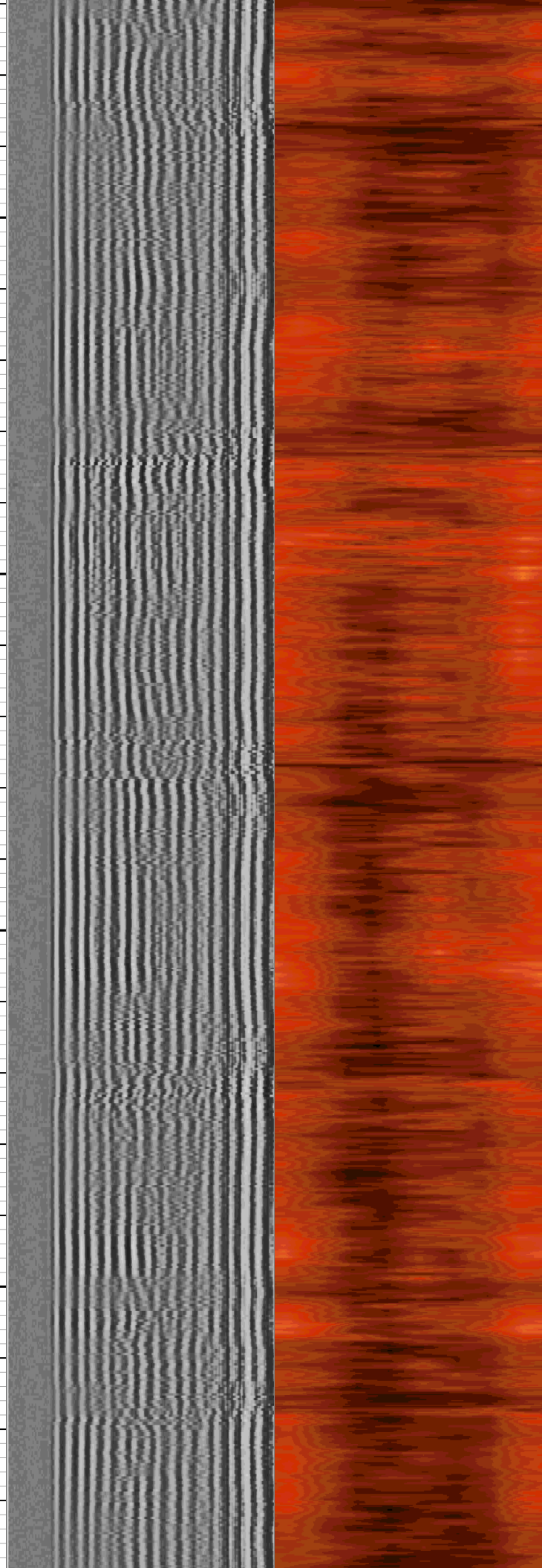
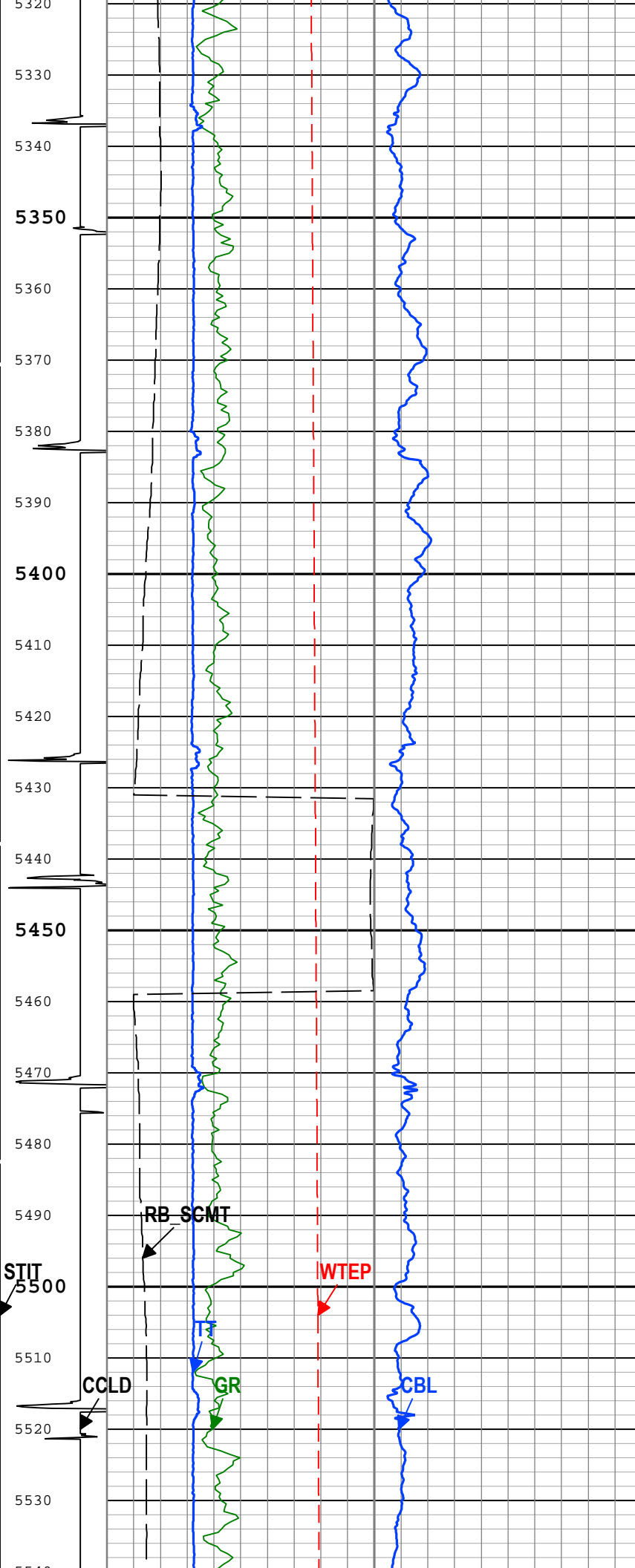


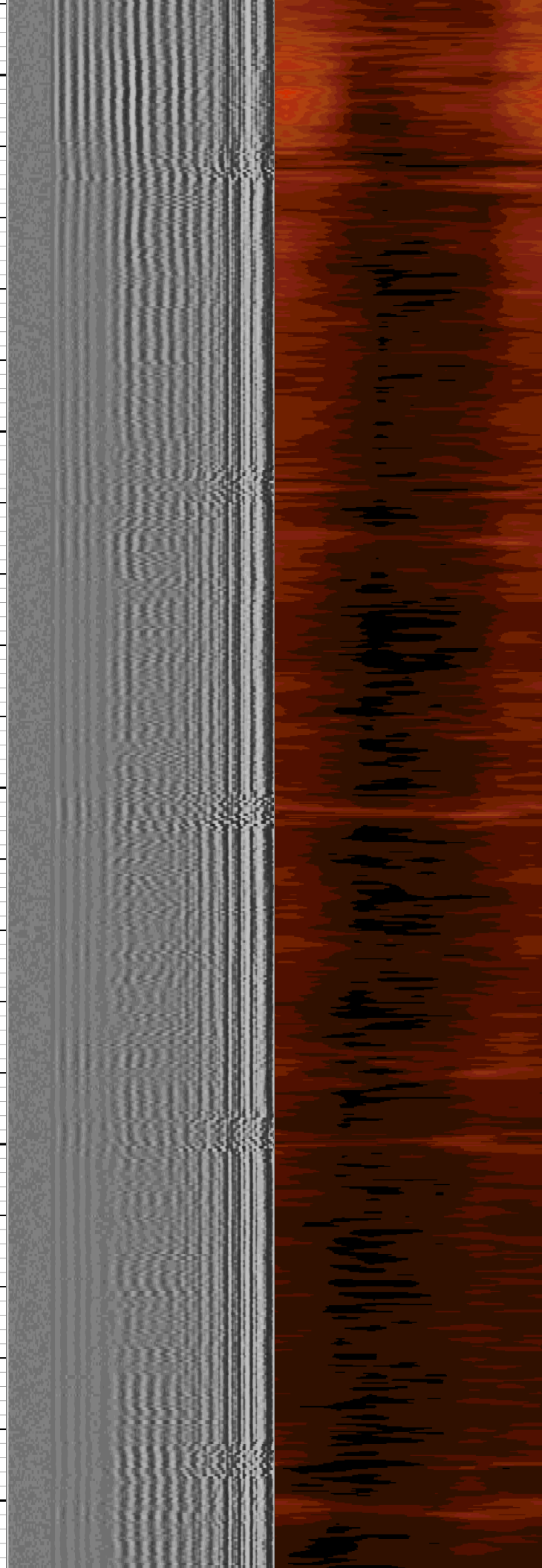
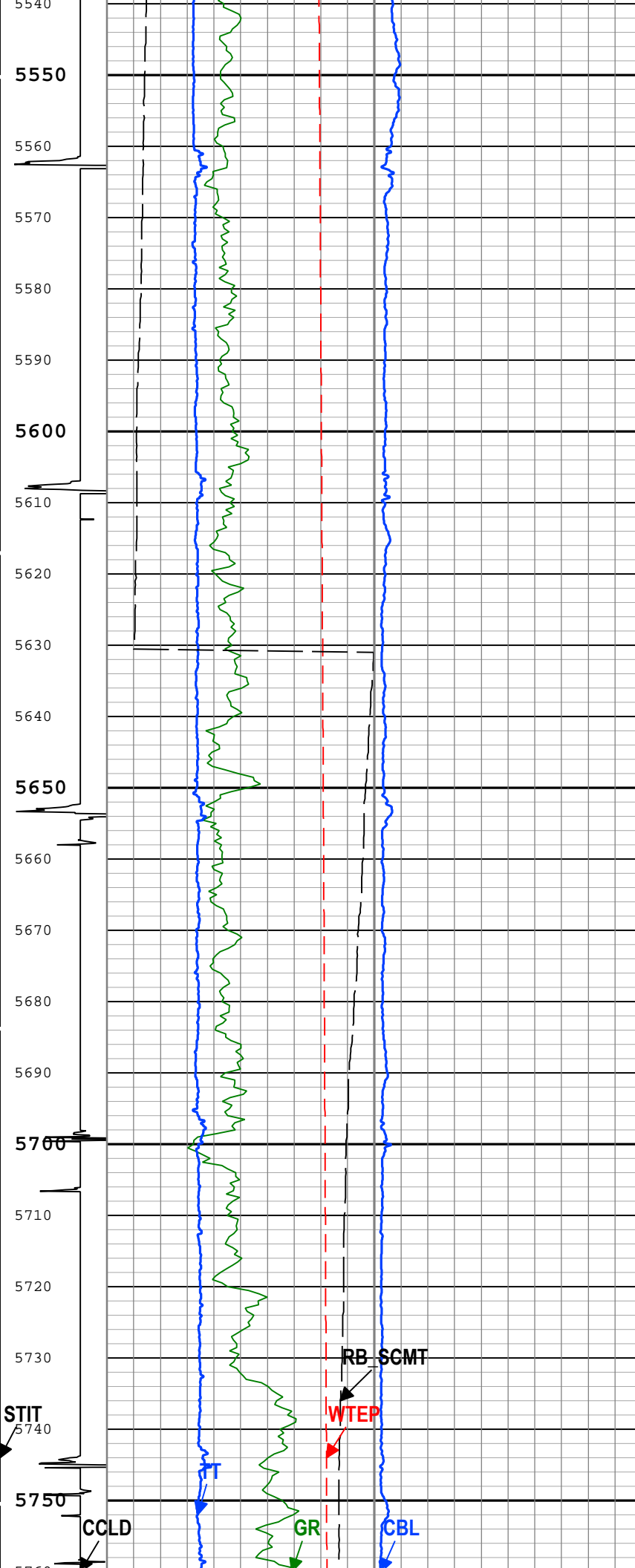


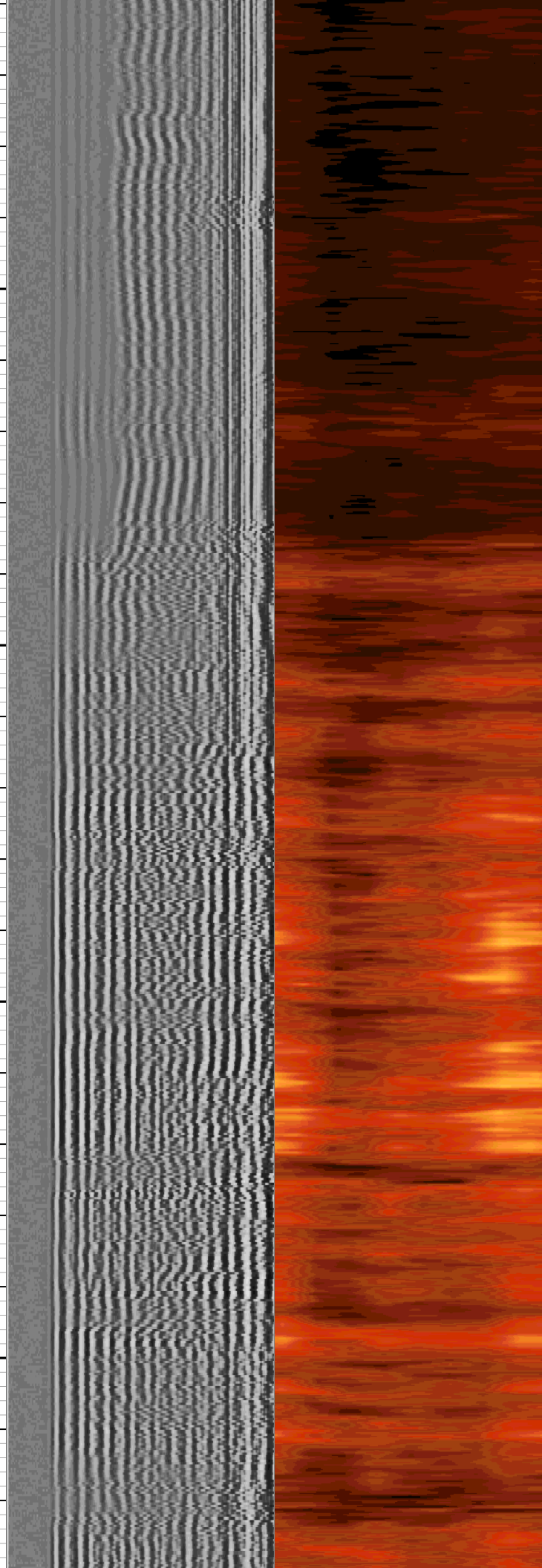
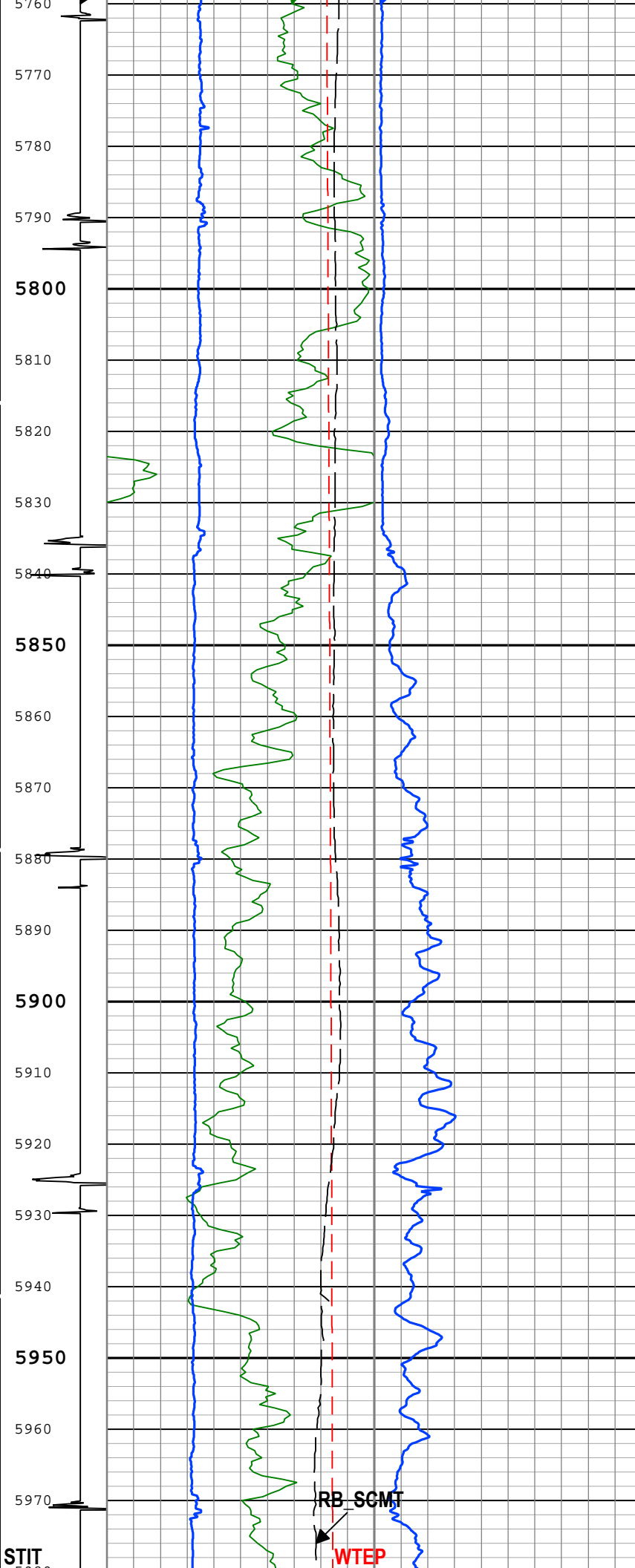








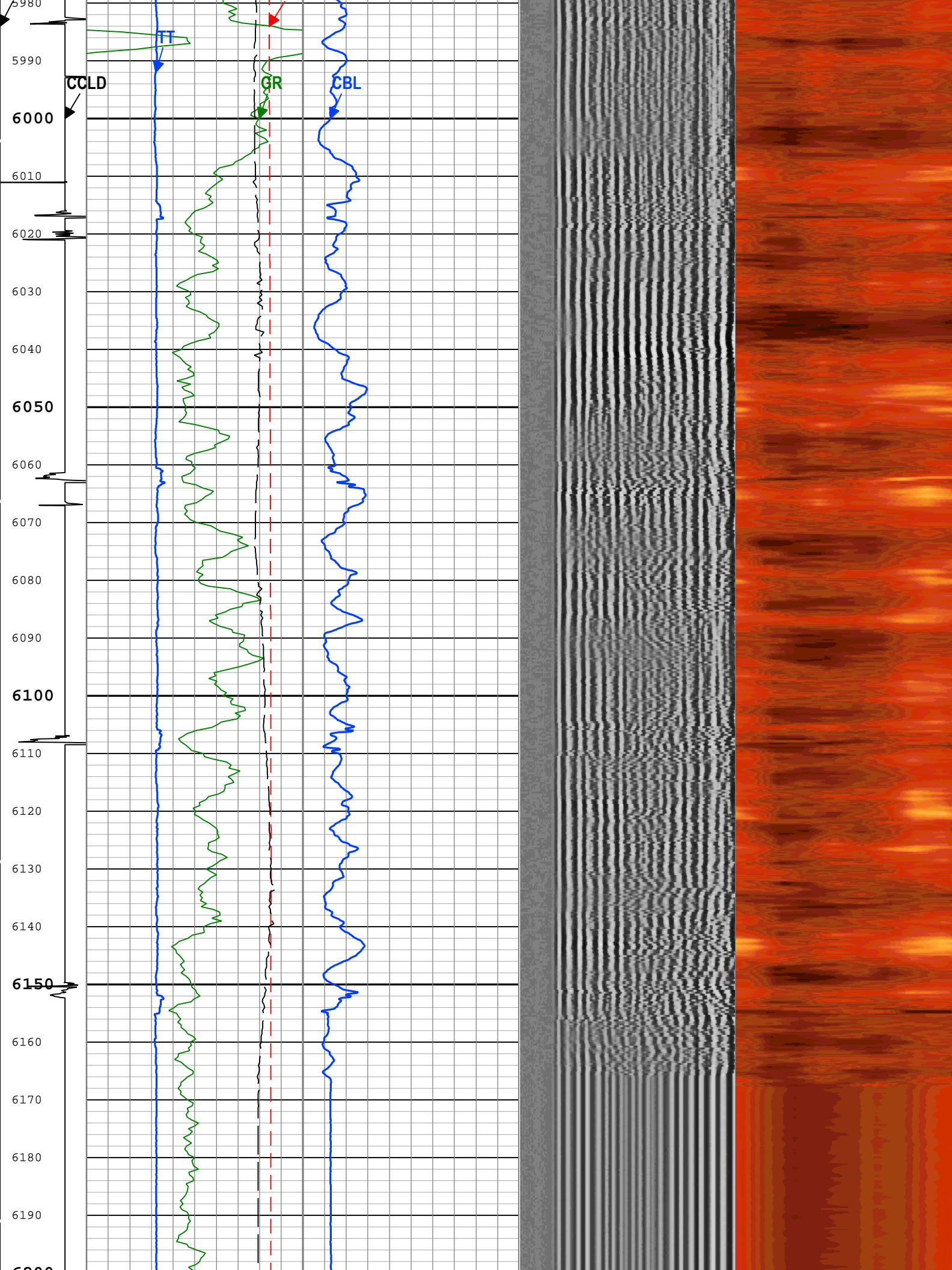




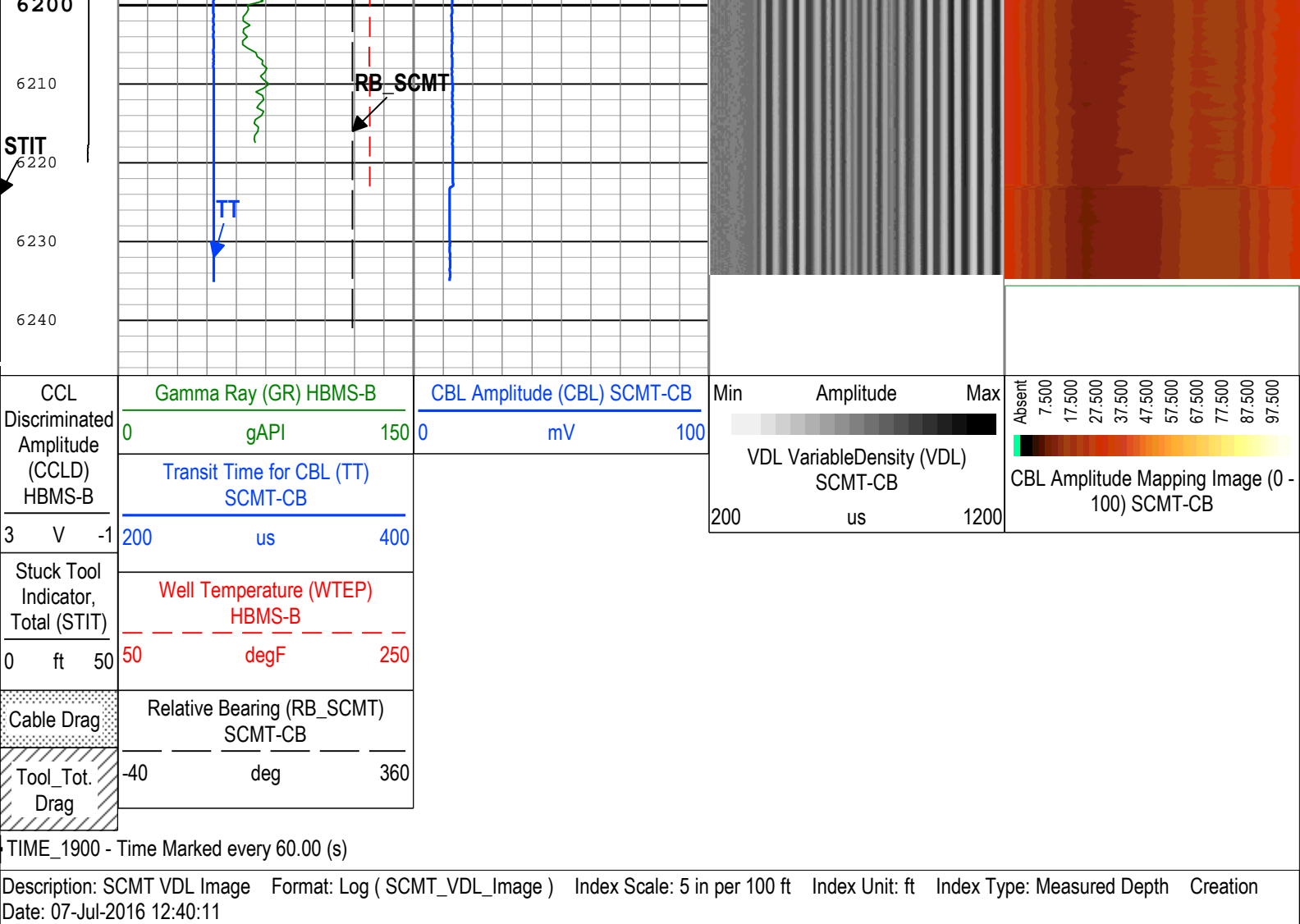
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RB SCMT

WTEP







## Channel Processing Parameters

### One: 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	255.2	us
CBLG	CBL Gate Width	SCMT-CB	33	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	194.7	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	1	

## Tool Control Parameters

### One: Parameters

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

## Repeat 0PSI

## Software Version

Acquisition System

Maxwell 2016 SP2

Version

6.2.68624.3100

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[4]:Up	Up	4696.26 ft	4998.43 ft	07-Jul-2016 6:29:25 AM	07-Jul-2016 6:34:23 AM	ON	-3.26 ft	No

All depths are referenced to toolstring zero

## Log

Company:Whiting Oil &amp; Gas Corp

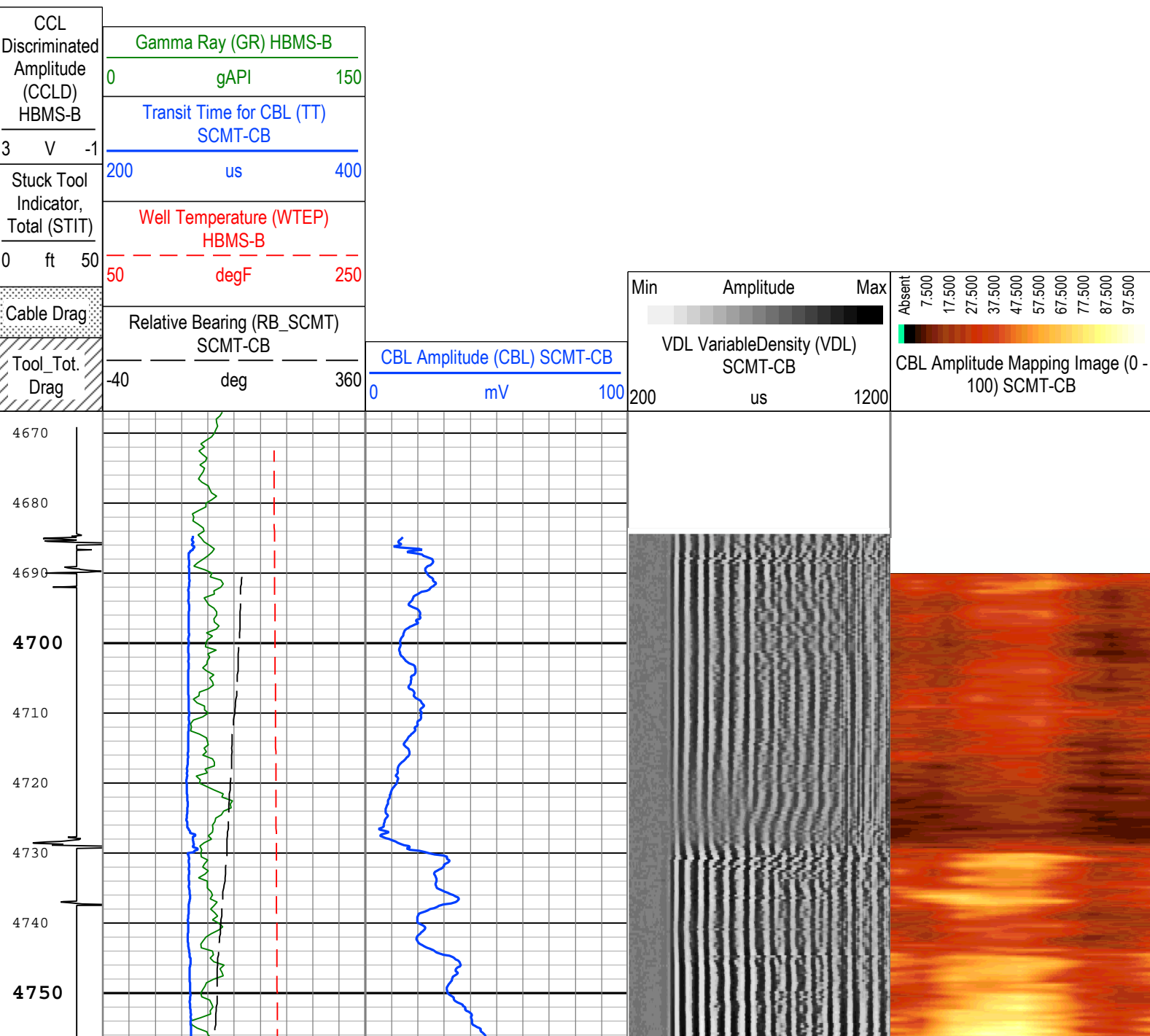
Well:Horsetail 07H-0615

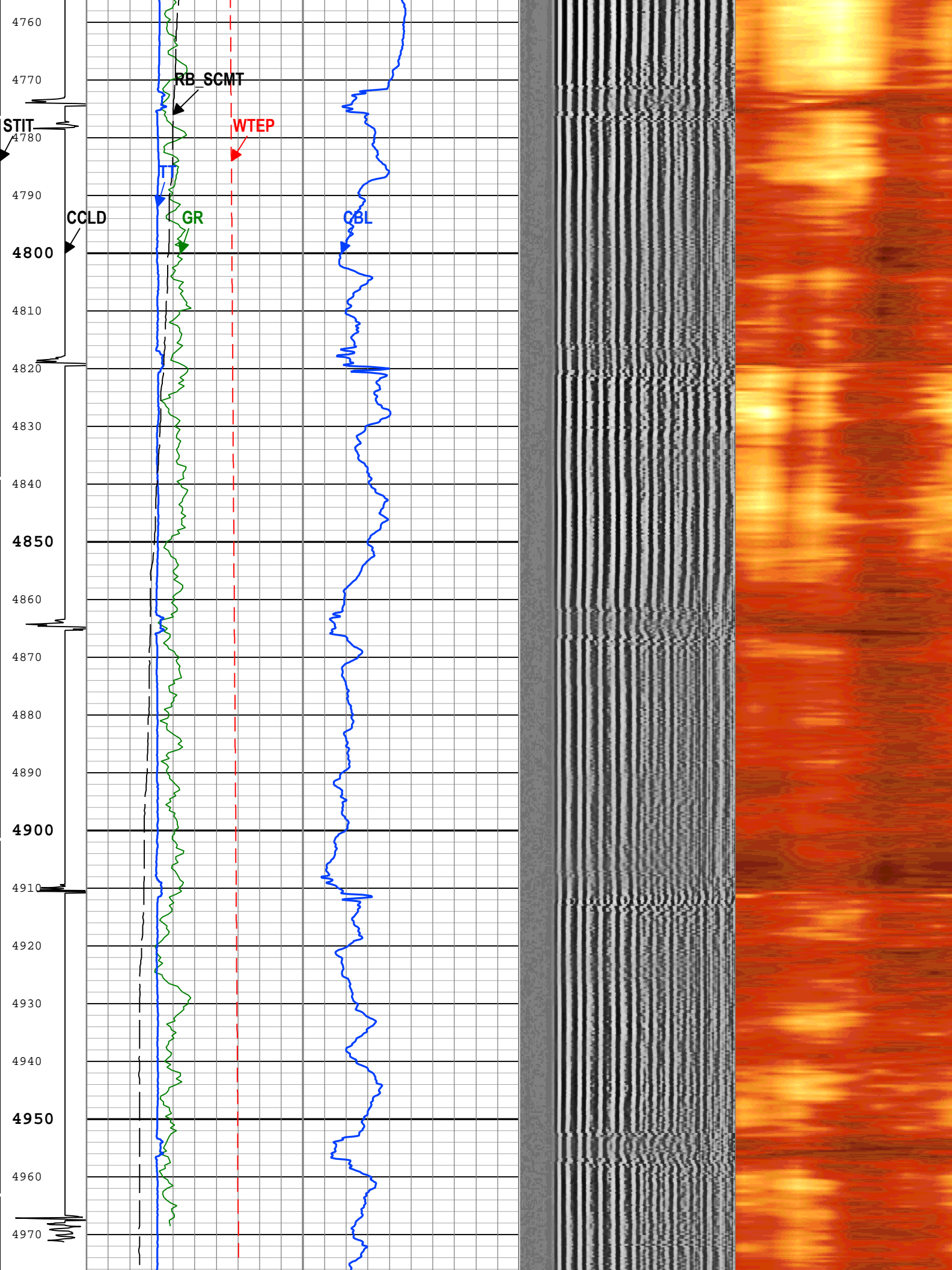
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Description: SCMT VDL Image Format: Log ( SCMT\_VDL\_Image ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation

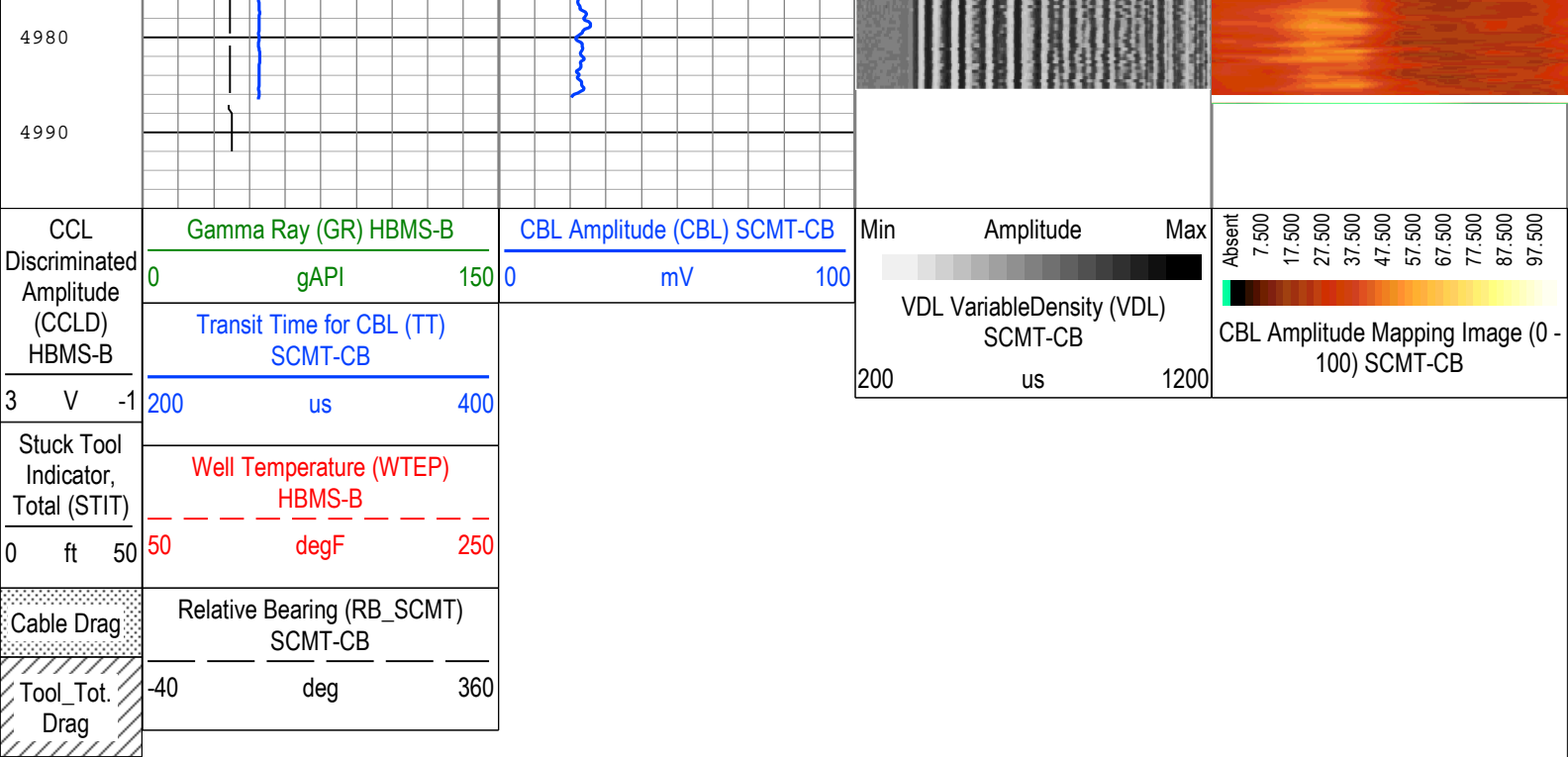
Date: 07-Jul-2016 12:40:43

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 )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 07-Jul-2016 12:40:43

Channel Processing Parameters

One: 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	255.2	us
CBLG	CBL Gate Width	SCMT-CB	33	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	194.7	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	1	

Tool Control Parameters

One: Parameters

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

Company:	Whiting Oil & Gas Corp	Schlumberger
Well:	Horsetail 07H-0615	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	

Cement Bond Log