Schlumberger

Company: Crestone Peak Resources and Operating LLC

Well: Echeverria 2F-2H-D267

Field: Wattenberg

County: Weld State: Colorado

Slim Cement Mapping Tool

Cement Evaluation

Gamma Ray - CCL Log

County: Weld
Field: Wattenberg
Location: NWNW Sec. 2, T2N, R67W
Well: Echeverria 2F-2H-D267
Company: Crestone Peak Resources and Operating LLC

Location:				
NWNW Sec. 2, T2N, R67W		Elev.:	K.B.	4905.00 ft
SHL: 898' FNL & 609' FWL			G.L.	4882.00 ft
Lat/Long: 40.172031 \ -104.864792			D.F.	4905.00 ft
Permanent Datum:	Ground Level	Elev.:	4882.00 f	
Log Measured From:	Kelly Bushing	23.00 ft	above Perm.Datum	
Drilling Measured From:	Kelly Bushing			

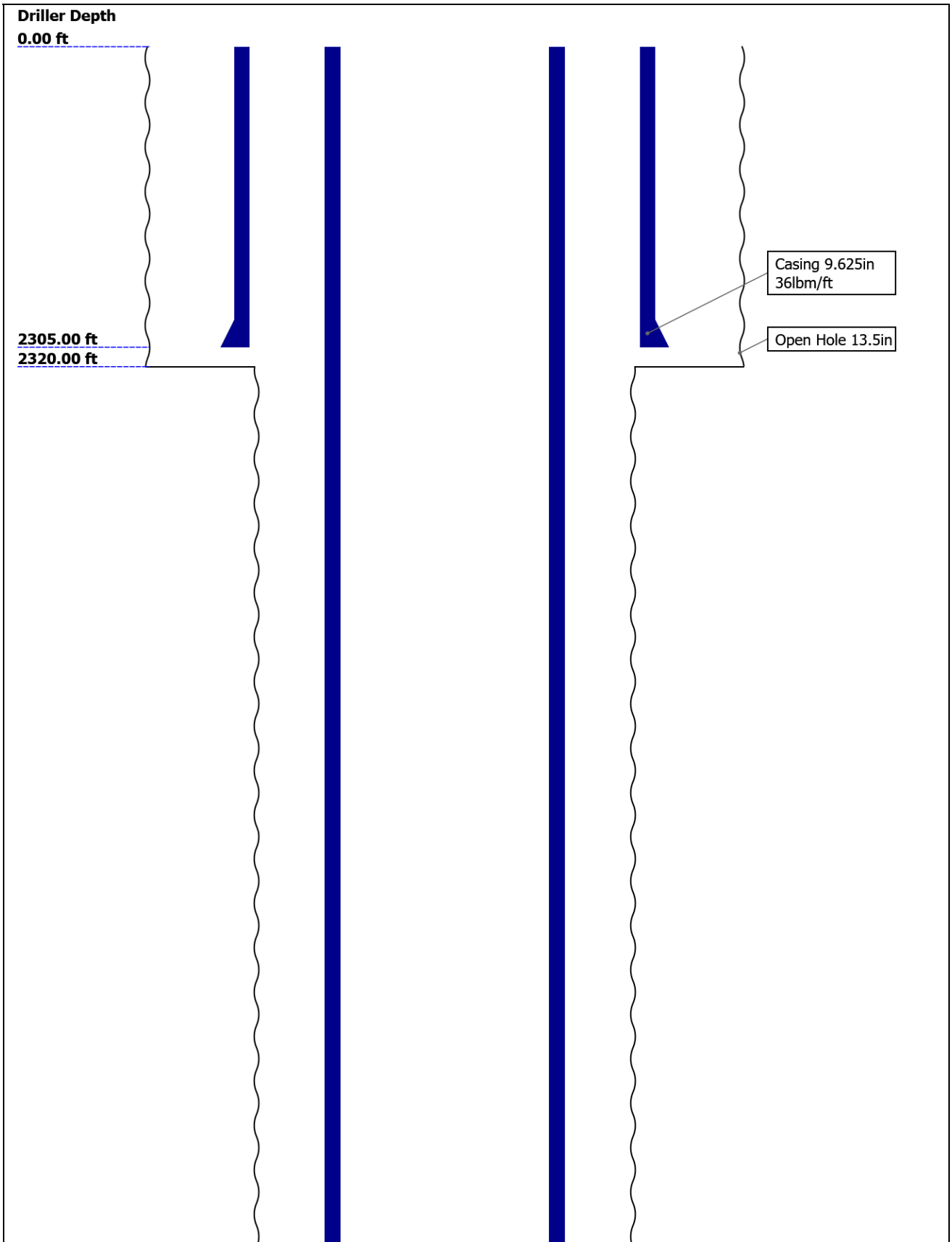
API Serial No.	Section:	Township:	Range:
05-123-48750	2	2N	67W

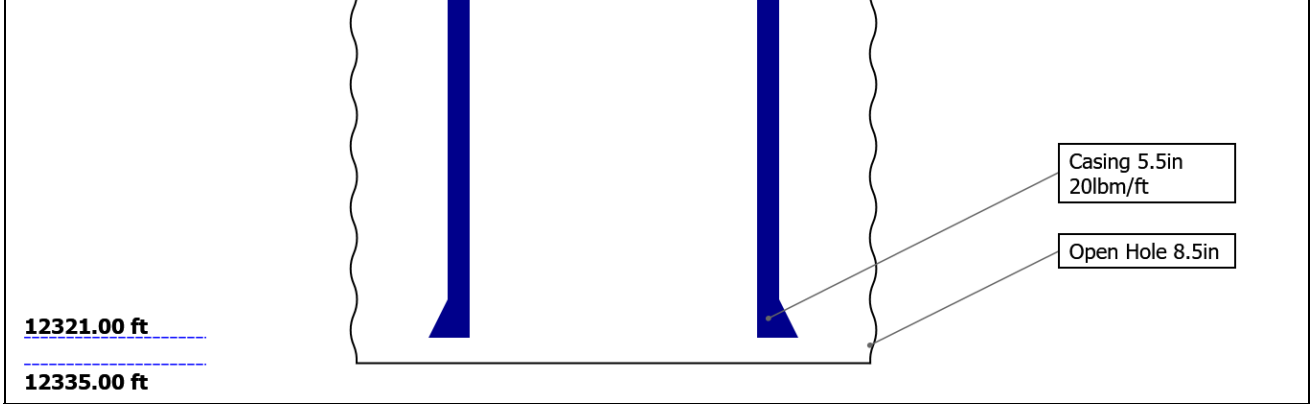
Logging Date	17-May-2019		
Run Number	ONE		
Depth Driller	12335.00 ft		
Schlumberger Depth	7208.00 ft		
Bottom Log Interval	7196.00 ft		
Top Log Interval	100.00 ft		
Casing Fluid Type	Brine		
Salinity			
Density	8.4 lbm/gal		
Fluid Level	8.00 ft		
BIT/CASING/TUBING STRING			
Bit Size	8.50 in		
From	2320.00 ft		
To	12335.00 ft		
Casing/Tubing Size	5.5 in		
Weight	20 lbm/ft		
Grade	P110		
From	0.00 ft		
To	12321.00 ft		
Max Recorded Temperatures	229.34 degF		
Logger on Bottom Time	17-May-2019	15:40:00	
Unit Number Location:	9111	Fort Morgan	
Recorded By	A.Blochowicz/A.Alkindi		
Witnessed By	Keith Kershisnik		

Disclaimer

Contents

Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	13.5	8.5				
Top Driller (ft)	0	2320				
Top Logger (ft)	0	2320				
Bottom Driller (ft)	2320	12335				
Bottom Logger (ft)	2320	12335				
Casing						
Size (in)	9.625	5.5				
Weight (lbm/ft)	36	20				
Inner Diameter (in)	8.921	4.778				
Grade	J55	P110				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	2305	12321				
Bottom Logger (ft)	2305	12321				

Remarks and Equipment Summary

ONE: Toolstring

Equip name	Length
LEH-QT	**52.99**
LEH-QT	
AH-323	**49.5**
AH-329	**49.07**
PSTP-A:1925	**48.78**
PSC-A:2776	
PSTC-A:2776	
PBMS-A:1925	
Sapphire 10kPSI:2776	
PNX-A:23	**40.51**
PNCH-A:17	
PNCE-A:23	
PNSH-A:26	
PNSE-A:23	
PNG-H:3071-51199	

MP name	Offset
GR	**45.07**
PSTC	**44.78**
PSTC Tool String Bottom	**0.00**
Temperature	**41.99**
Sapphire Pressure	**41.87**
CCL	**41.26**
PBMS	**40.51**

ONE: Remarks

Thank you for choosing Schlumberger!

Toolstring run as per tool sketch and client logging program.

centralizers run on SCMT.

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

	ONE		
Depth Measuring Device			
Type	IDW-JA		

Serial Number	6241		
Calibration Date	30-Apr-2019		
Calibrator Serial Number	IDWC-57		
Calibration Cable Type	7-46PXS		
Wheel Correction 1	-1		
Wheel Correction 2	-2		

Tension Device

Type	CMTD-B/A		
Serial Number	161		
Calibration Date	13-May-2018		
Calibrator Serial Number	1148		
Number of Calibration Points	10		
Calibration Root Mean Square Error	6		
Calibration Peak Error	10		

Logging Cable

Type	7-46PI-XS		
Serial Number			
Length	22000.00 ft		
Conveyance Type	Wireline		
Rig Type	Crane		

ONE:Depth Control Parameters		Depth Control Remarks
Log Sequence	First Log In the Well	All Schlumberger depth control policies followed.
Rig Up Length At Surface		IDW used as primary depth reference.
Rig Up Length At Bottom		Z-chart used as secondary depth reference.
Rig Up Length Correction		
Stretch Correction		
Tool Zero Check At Surface		

ONE

Main Pass

Software Version

Acquisition System	Version
Maxwell 2019	9.0.106845.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[5]:Up	Up	105.20 ft	7207.07 ft	17-May-2019 3:40:44 PM	17-May-2019 9:05:54 PM	ON	5.19 ft	No

All depths are referenced to toolstring zero

Log

Company:Crestone Peak Resources and Operating LLC Well:Echeverria 2F-2H-D267

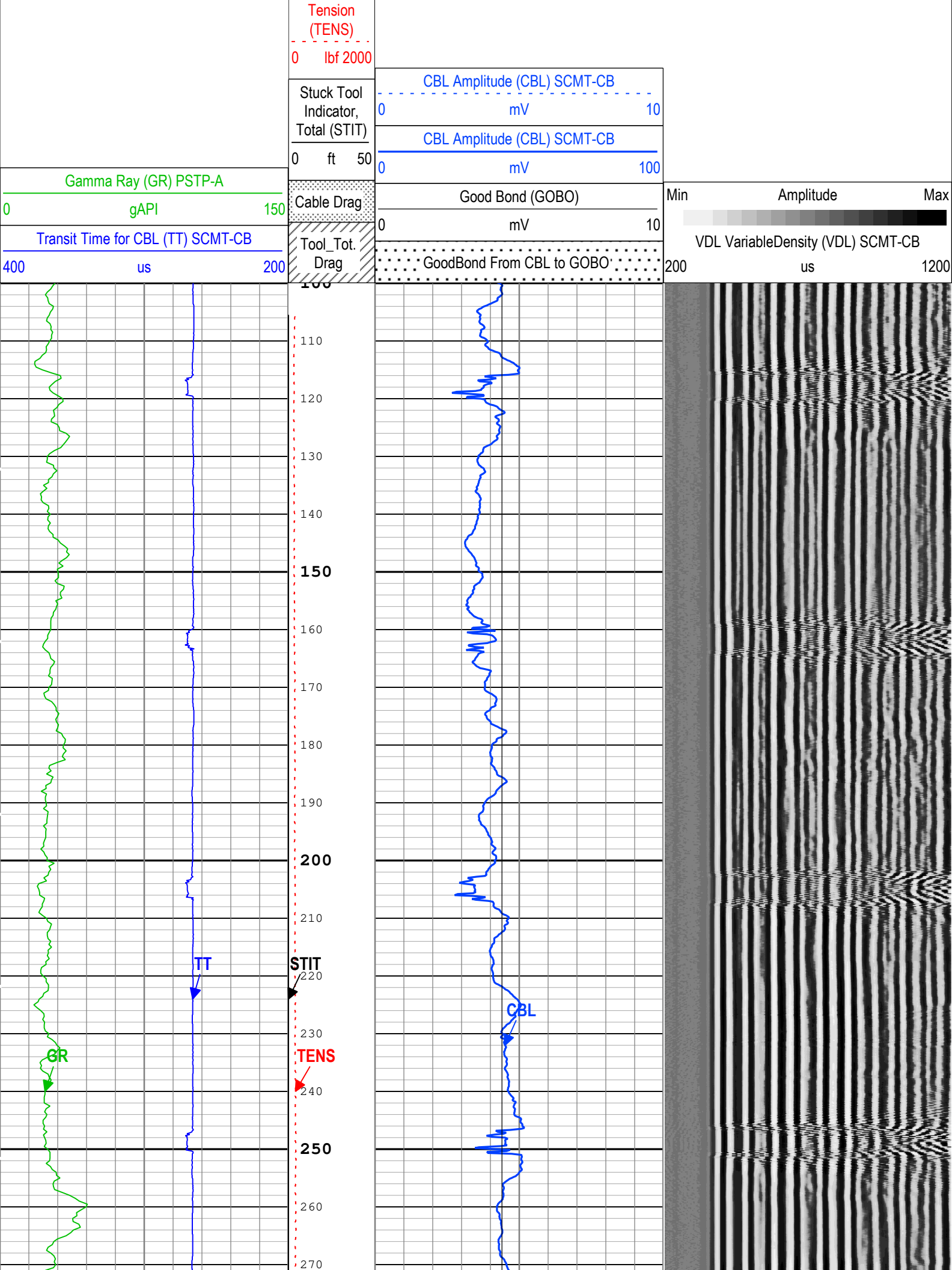
ONE: Log[5]:Up:S006

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: 17-May-2019 21:44:19

BIEP - Bond Index Event Pips SCMT-CB

TIME_1900 - Time Marked every 60.00 (s)

Cable


Tension (TENS)
0 lbf 2000
Stuck Tool Indicator, Total (STIT)
0 ft 50
Cable Drag
Tool_Tot. Drag
CBL Amplitude (CBL) SCMT-CB
0 mV 10
CBL Amplitude (CBL) SCMT-CB
0 mV 100
Good Bond (GOBO)
0 mV 10
GoodBond From CBL to GOBO
Min Amplitude Max
VDL VariableDensity (VDL) SCMT-CB
200 us 1200
Gamma Ray (GR) PSTP-A
0 gAPI 150
Transit Time for CBL (TT) SCMT-CB
400 us 200
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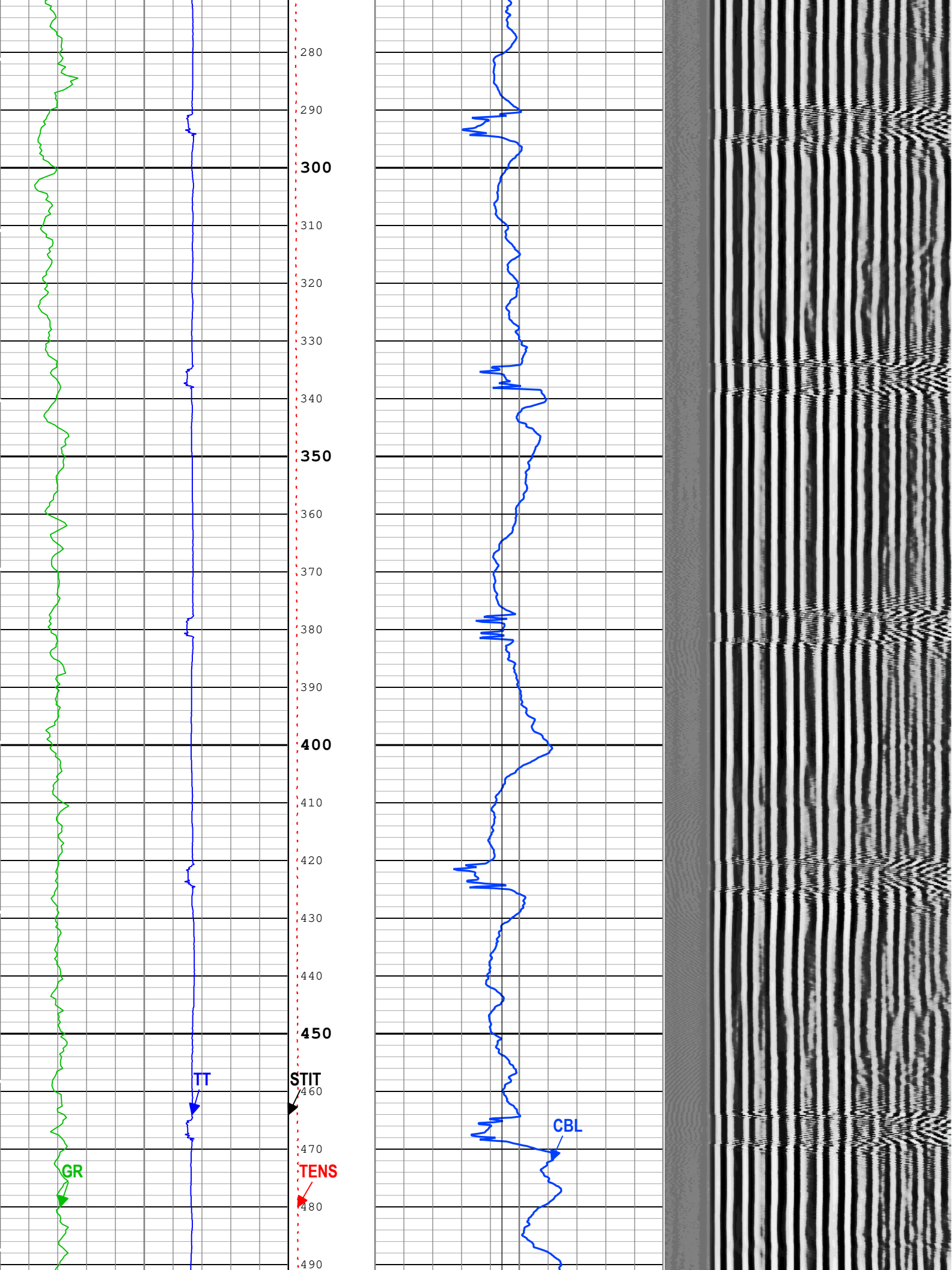
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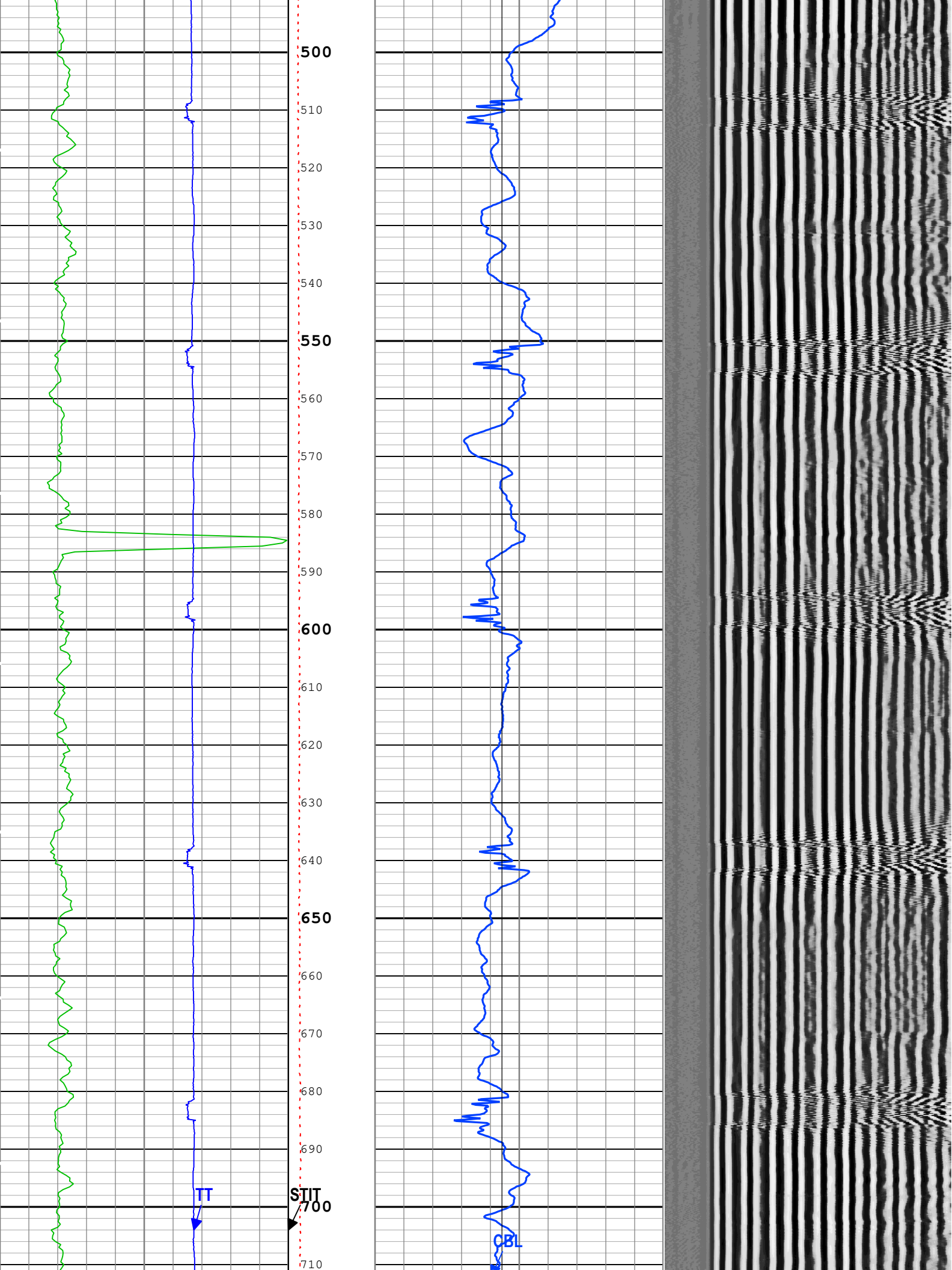
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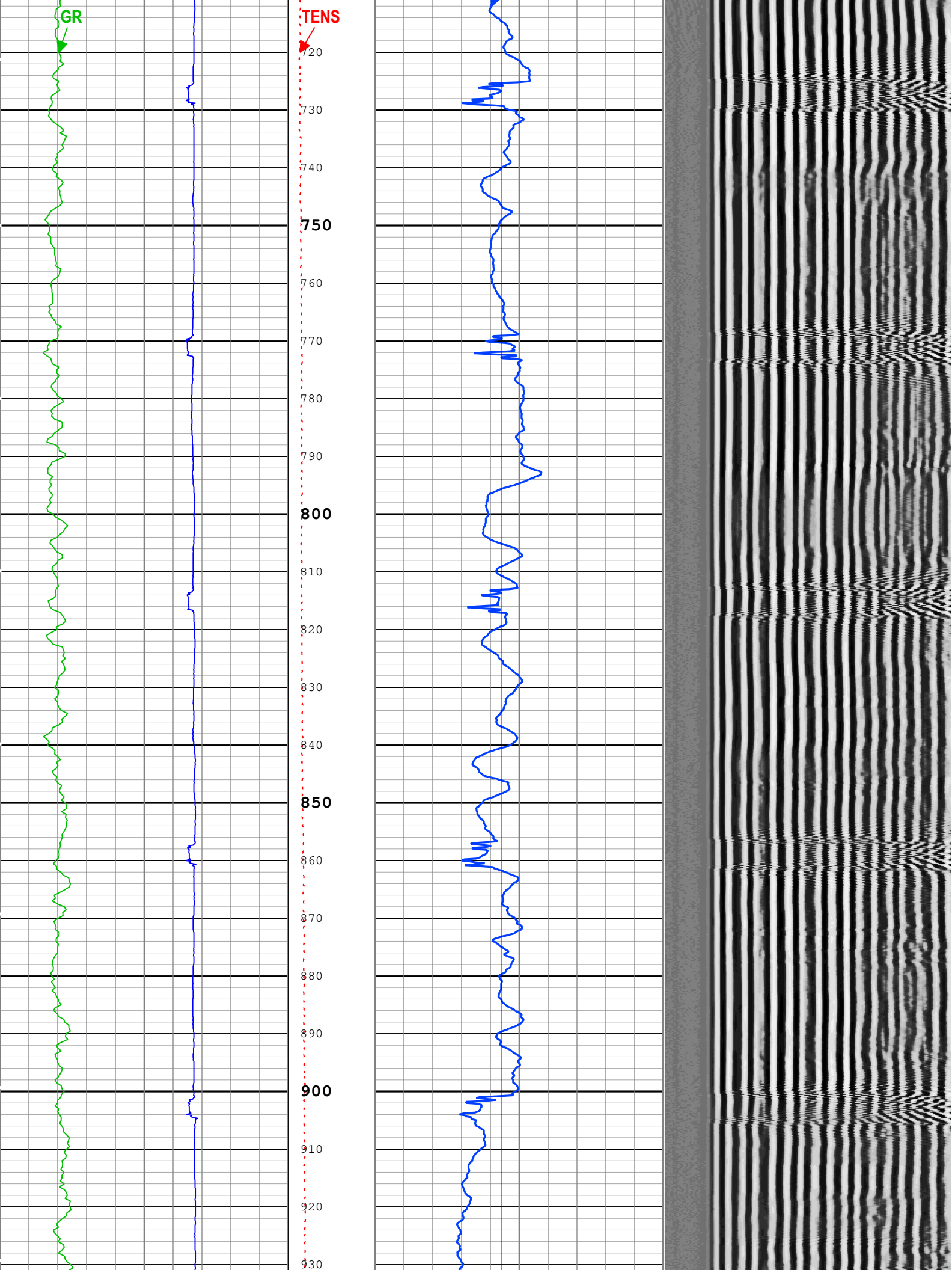
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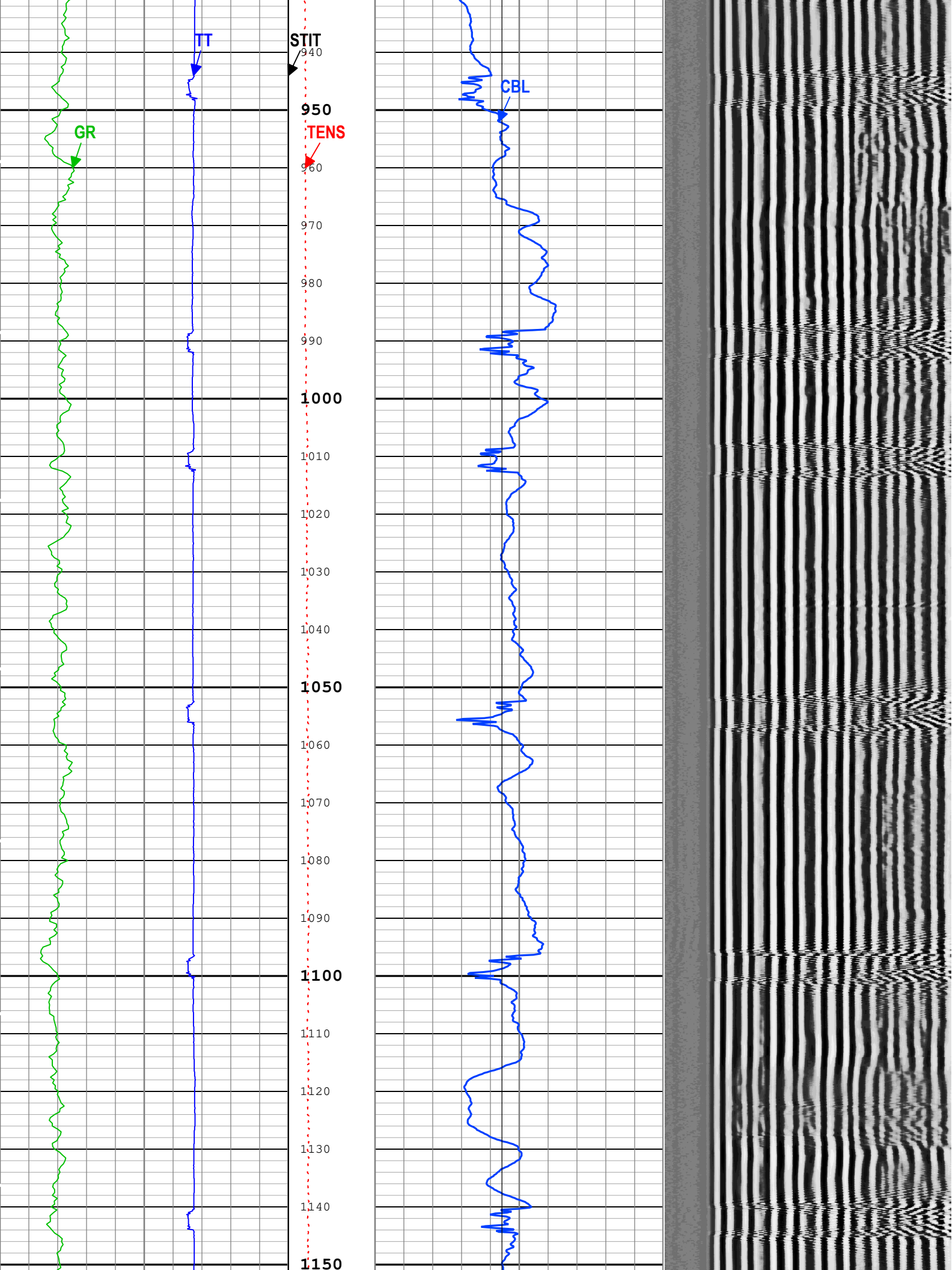
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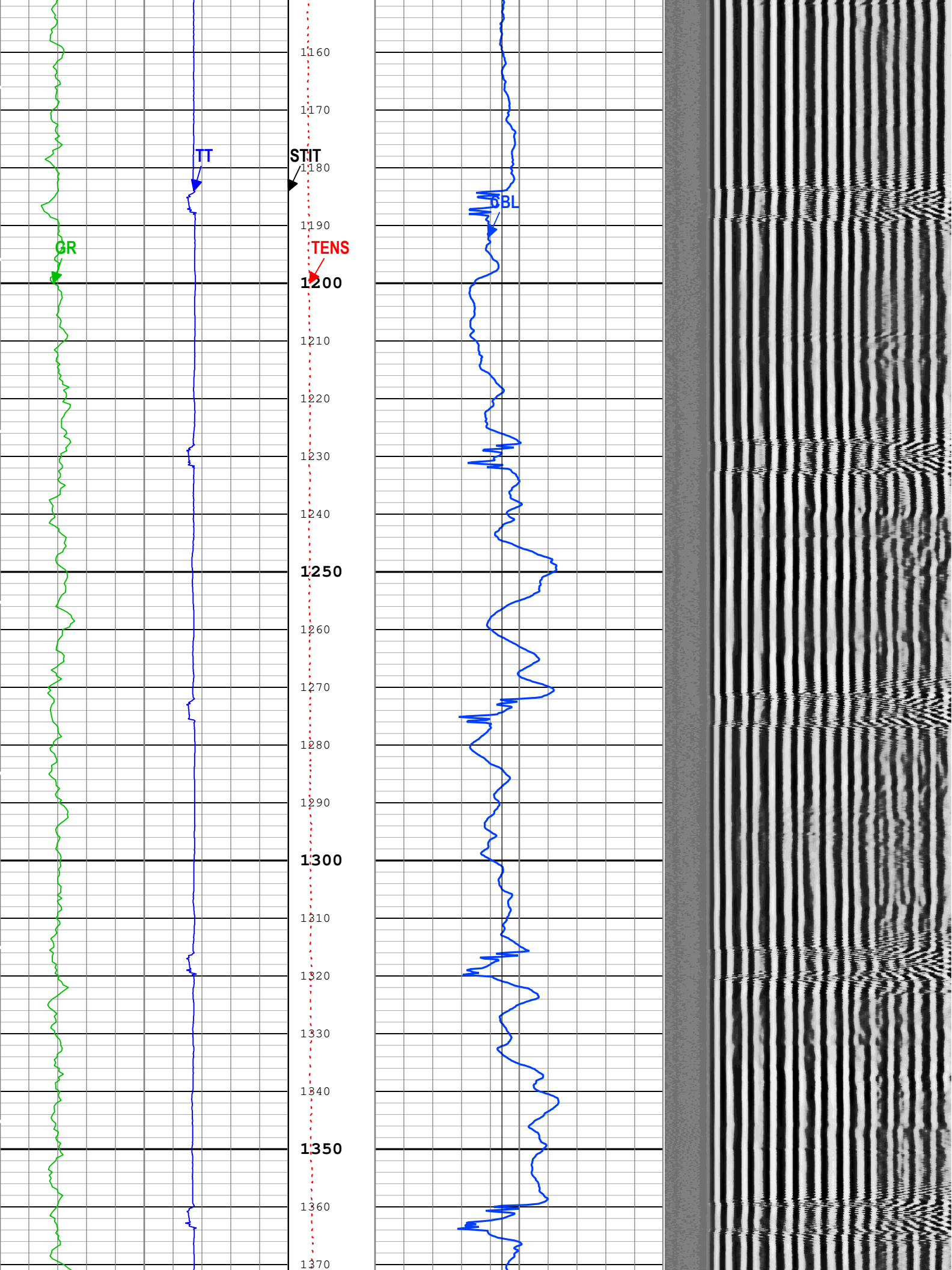
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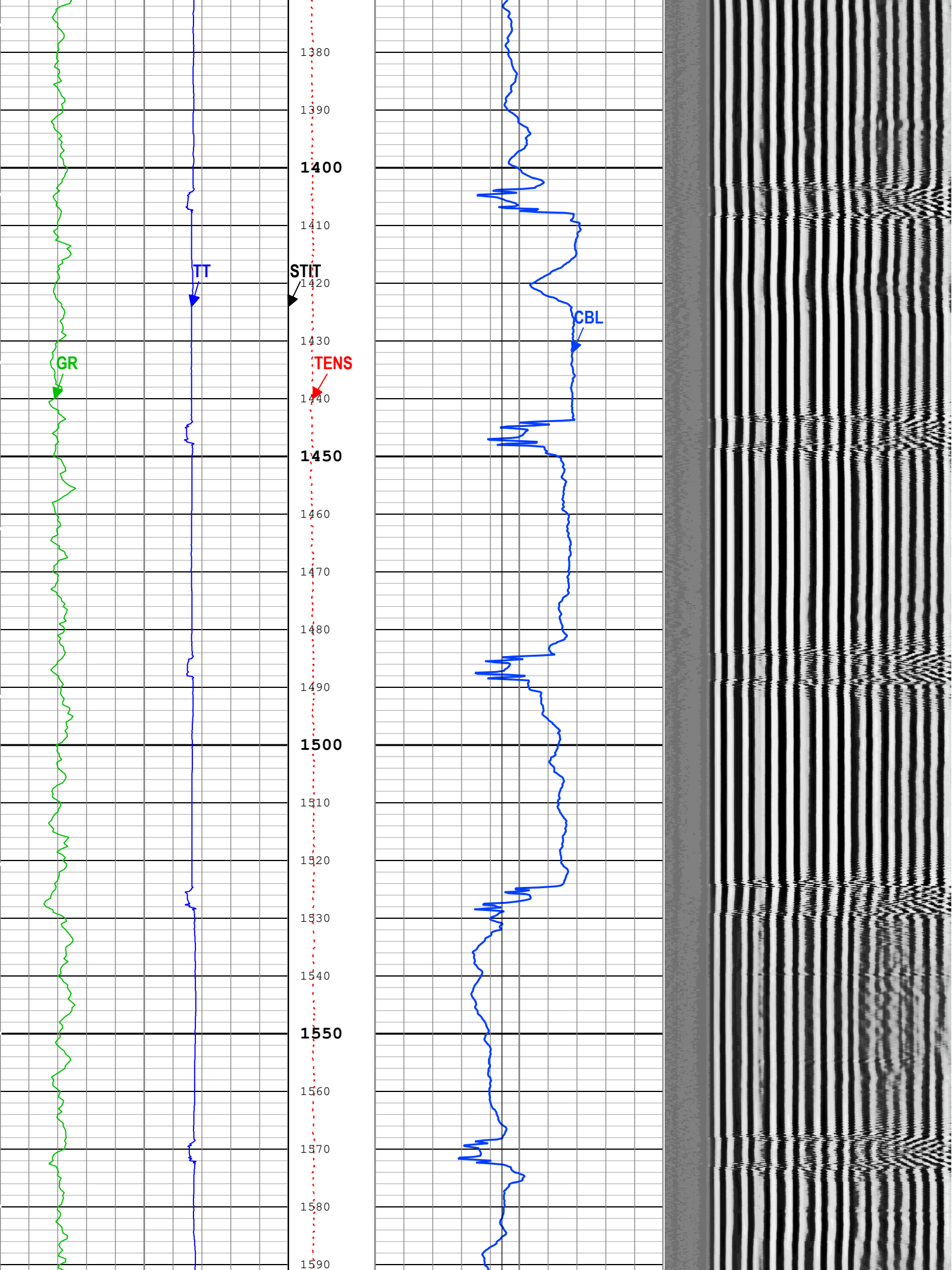
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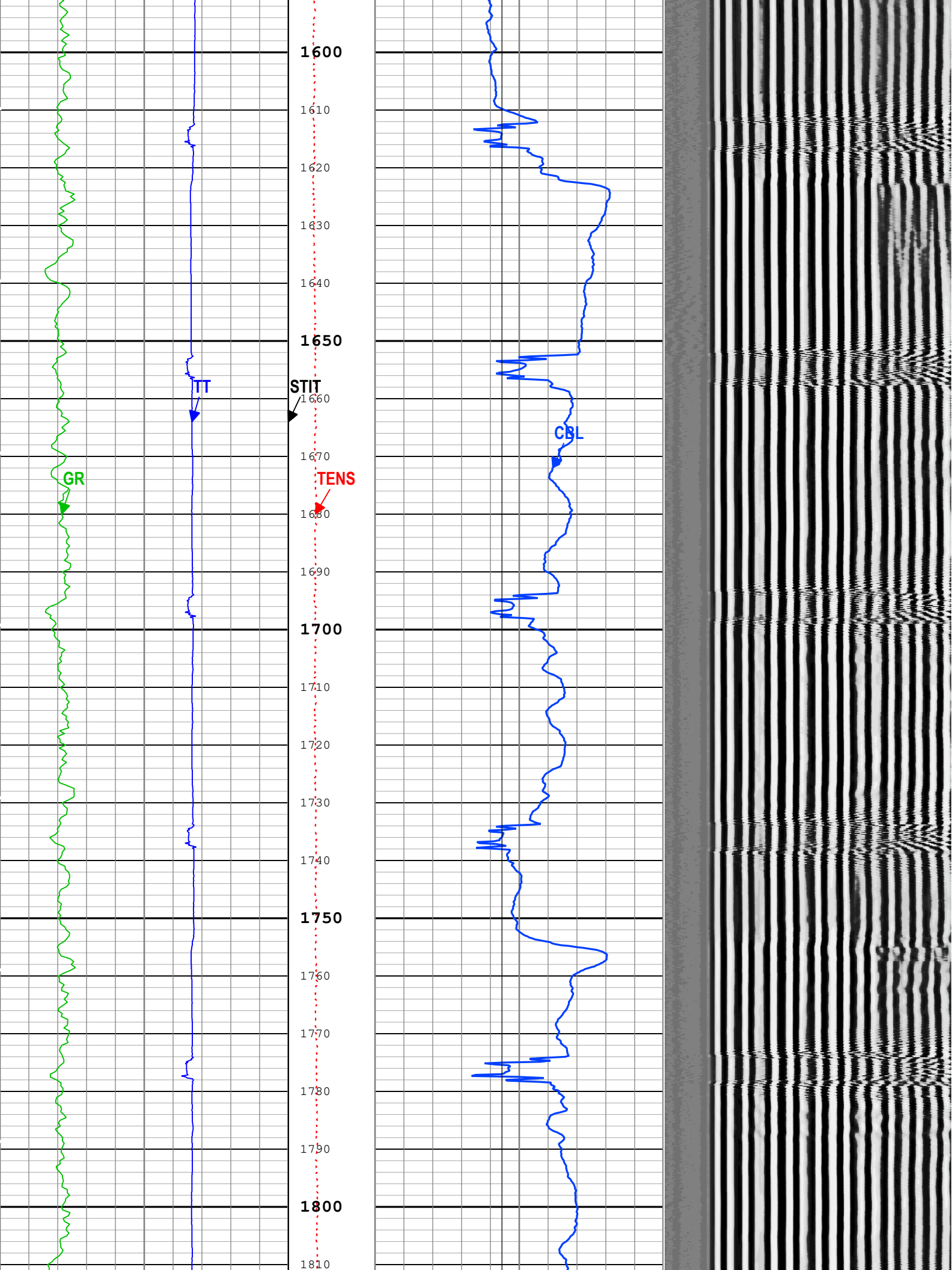
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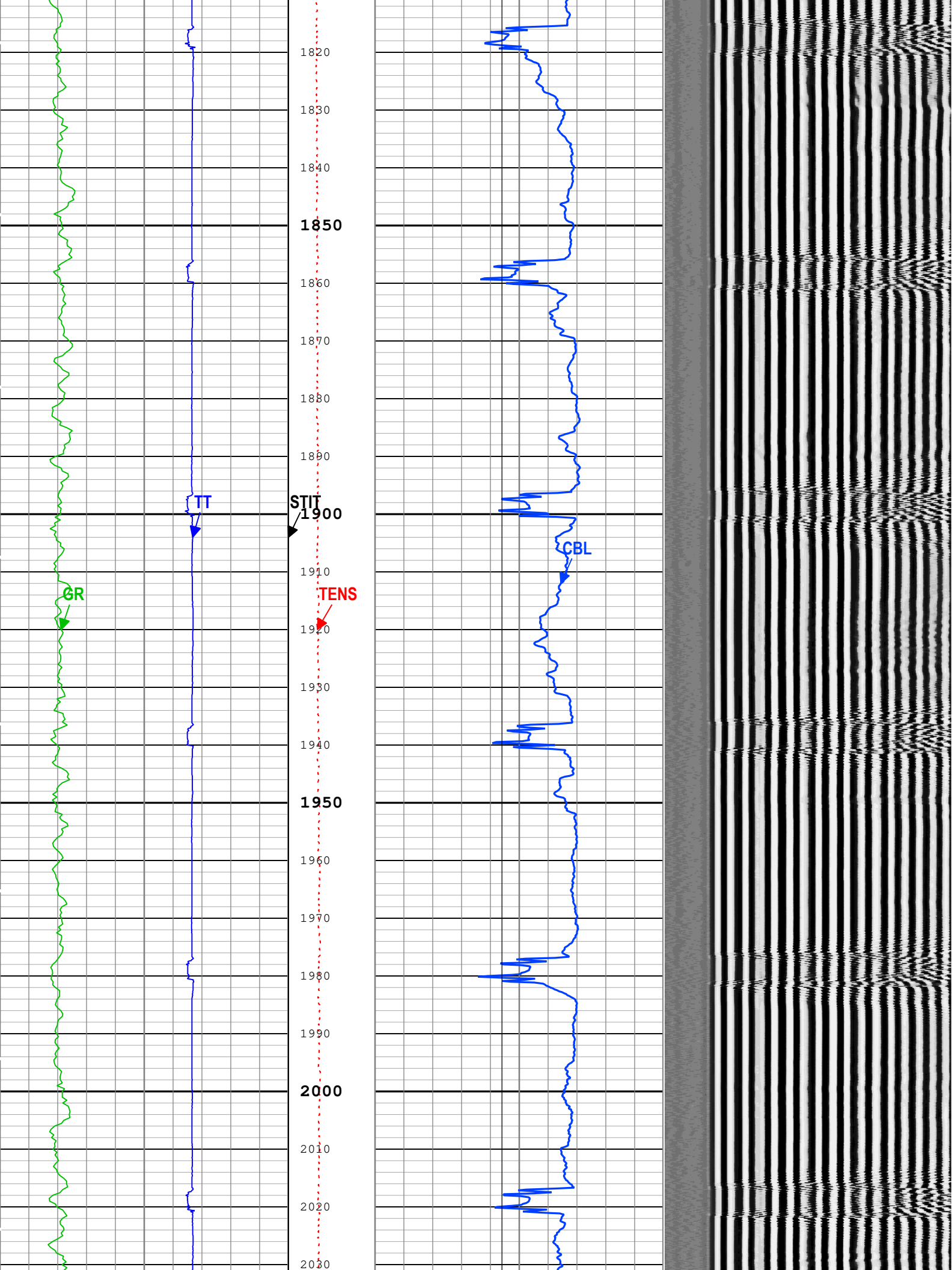
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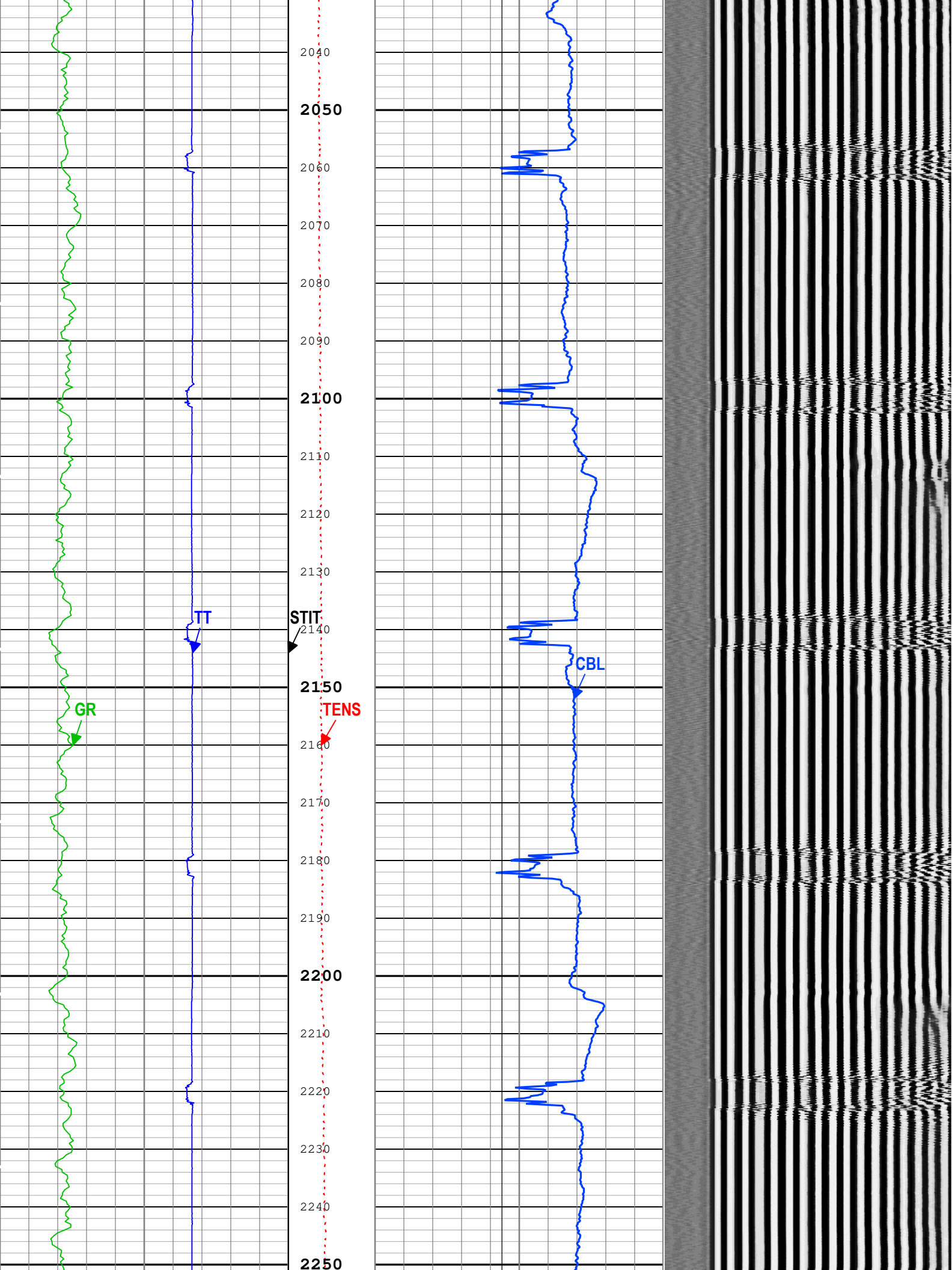
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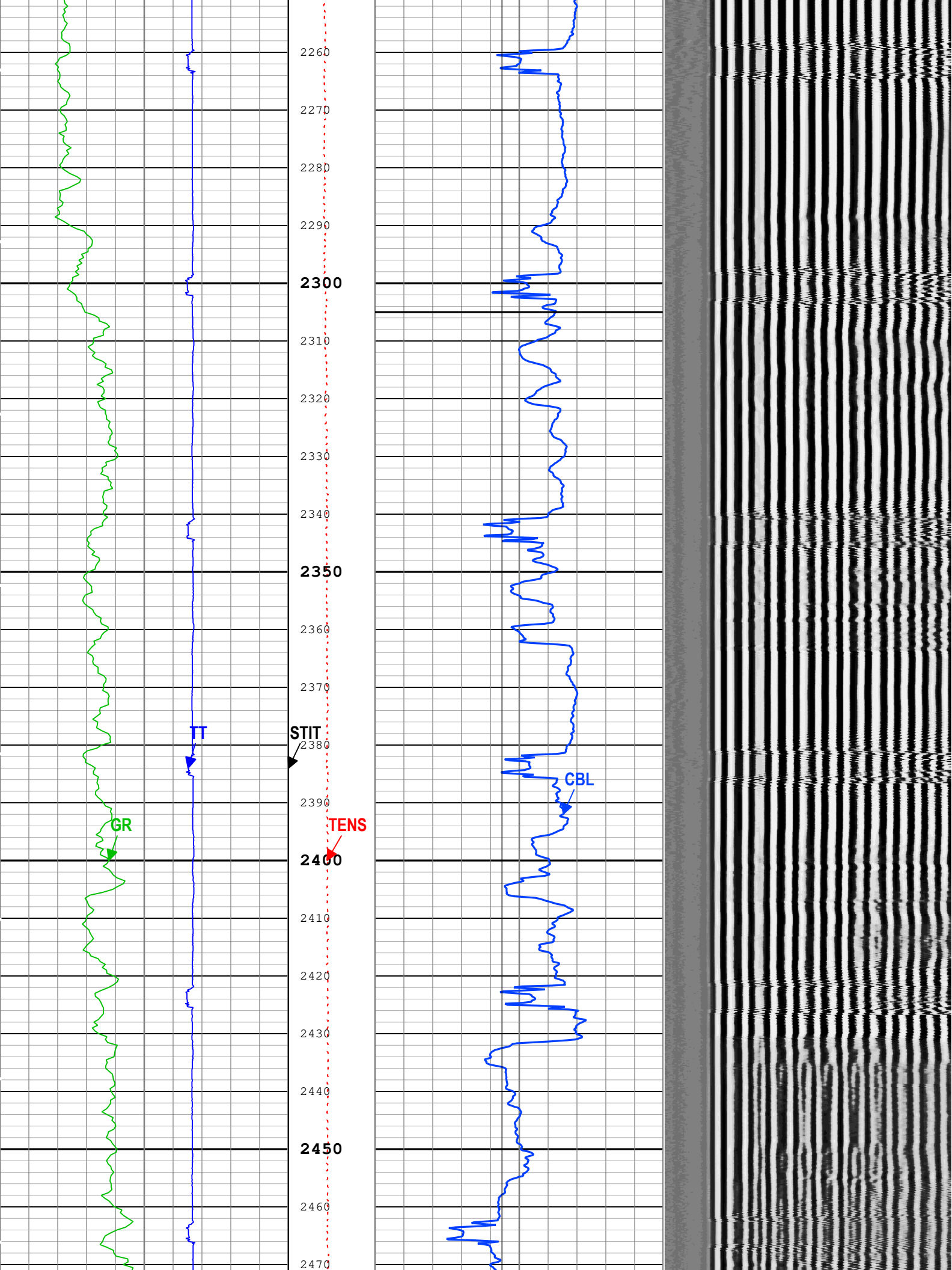
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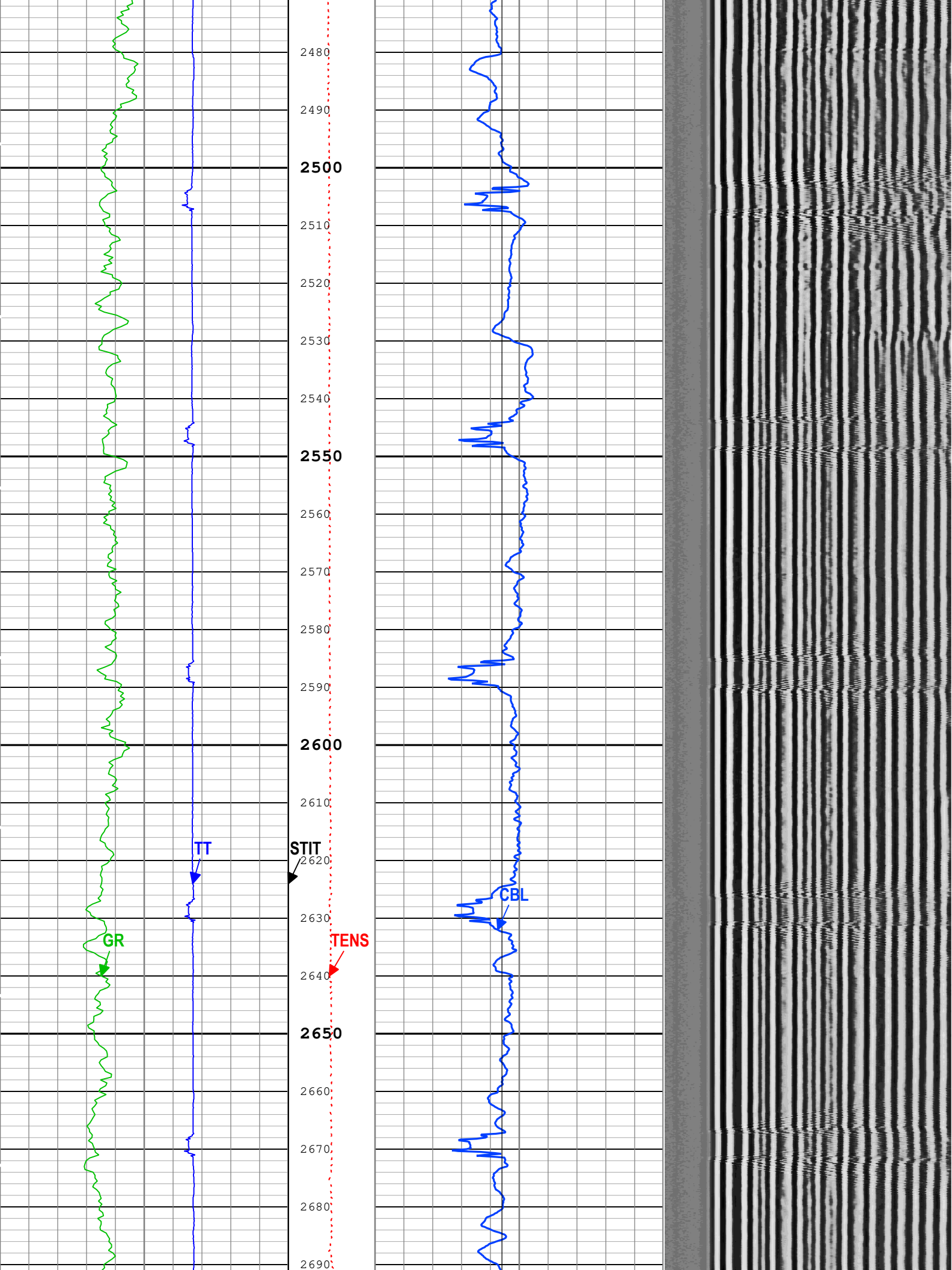
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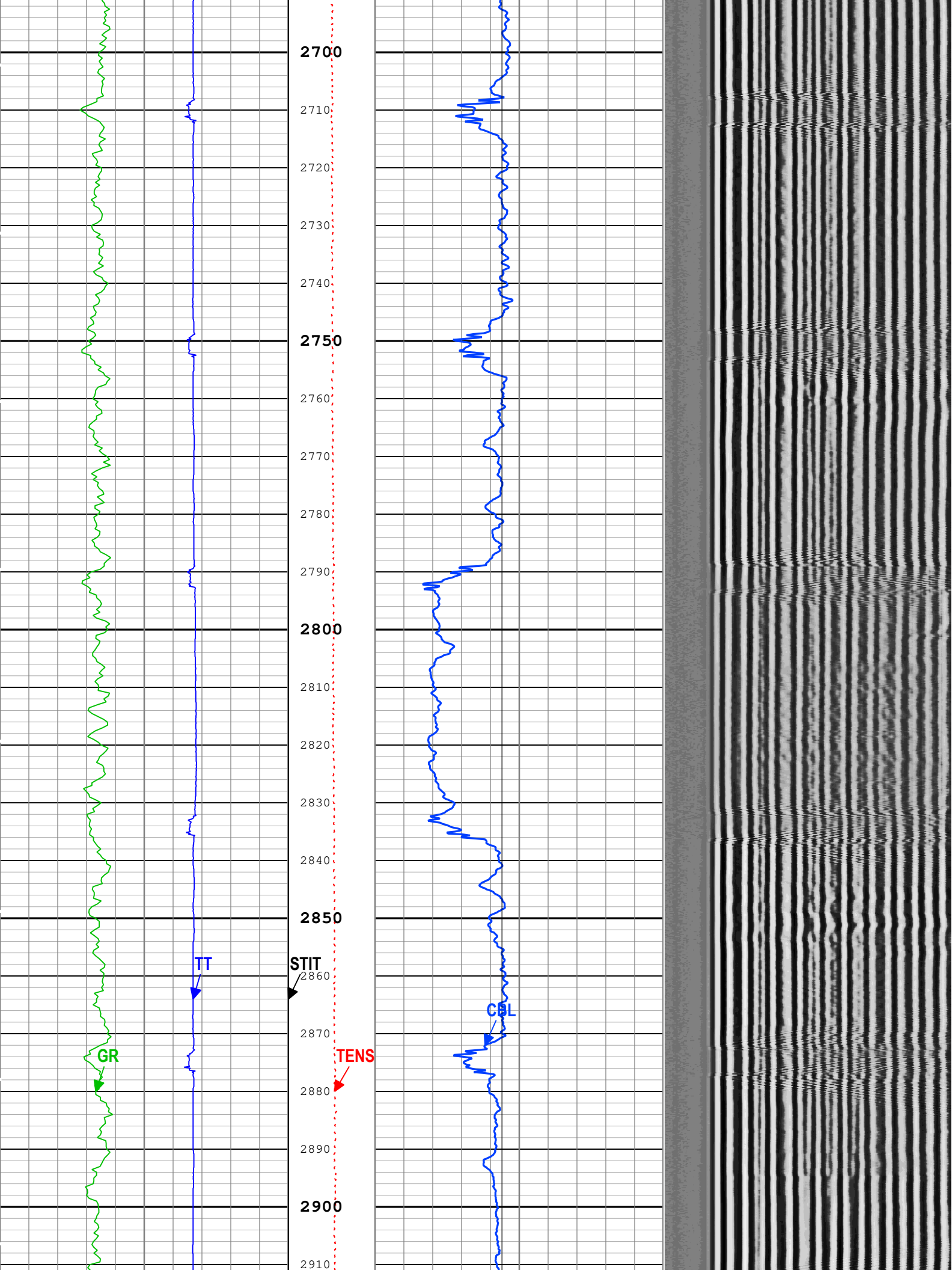
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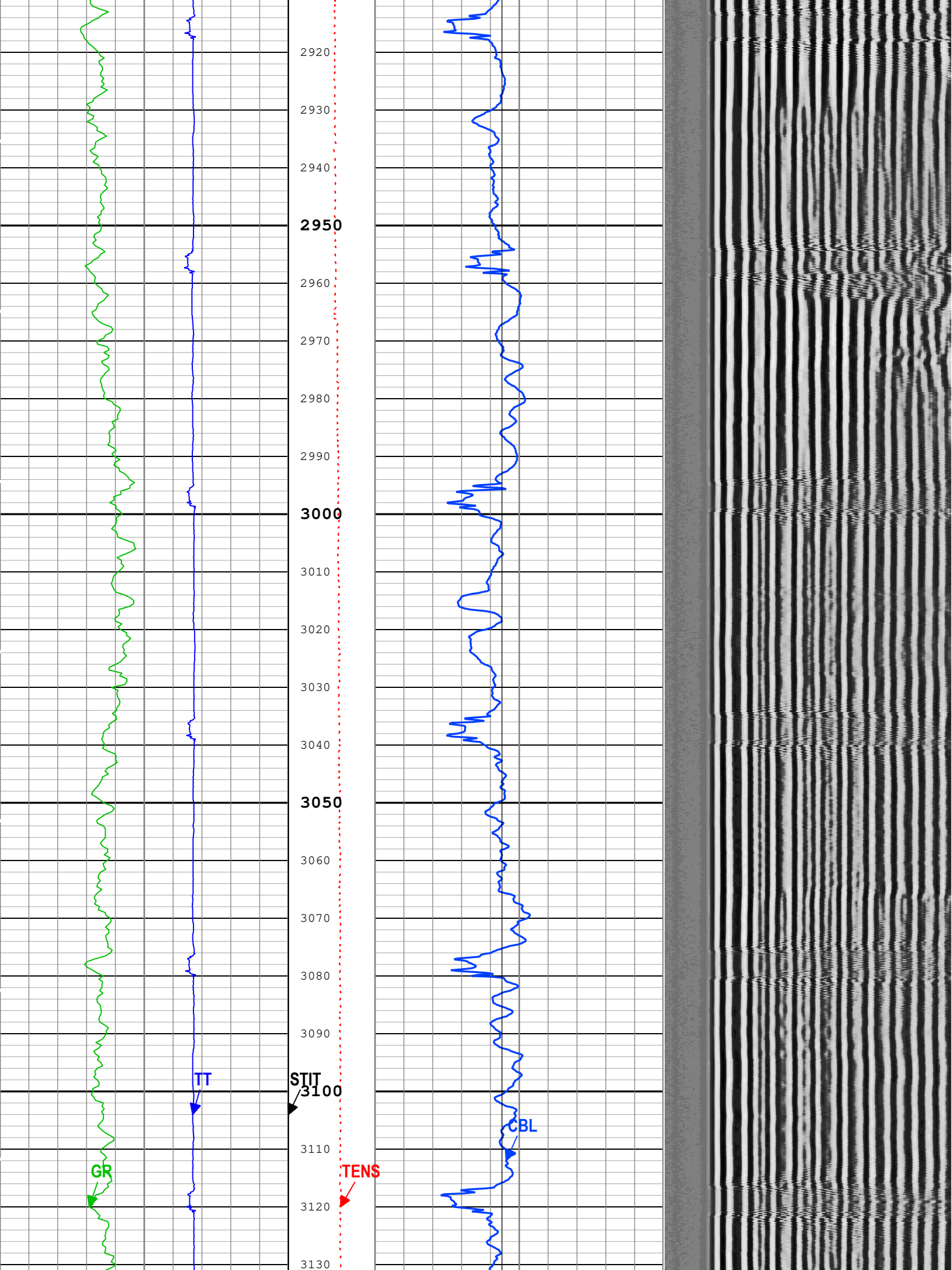
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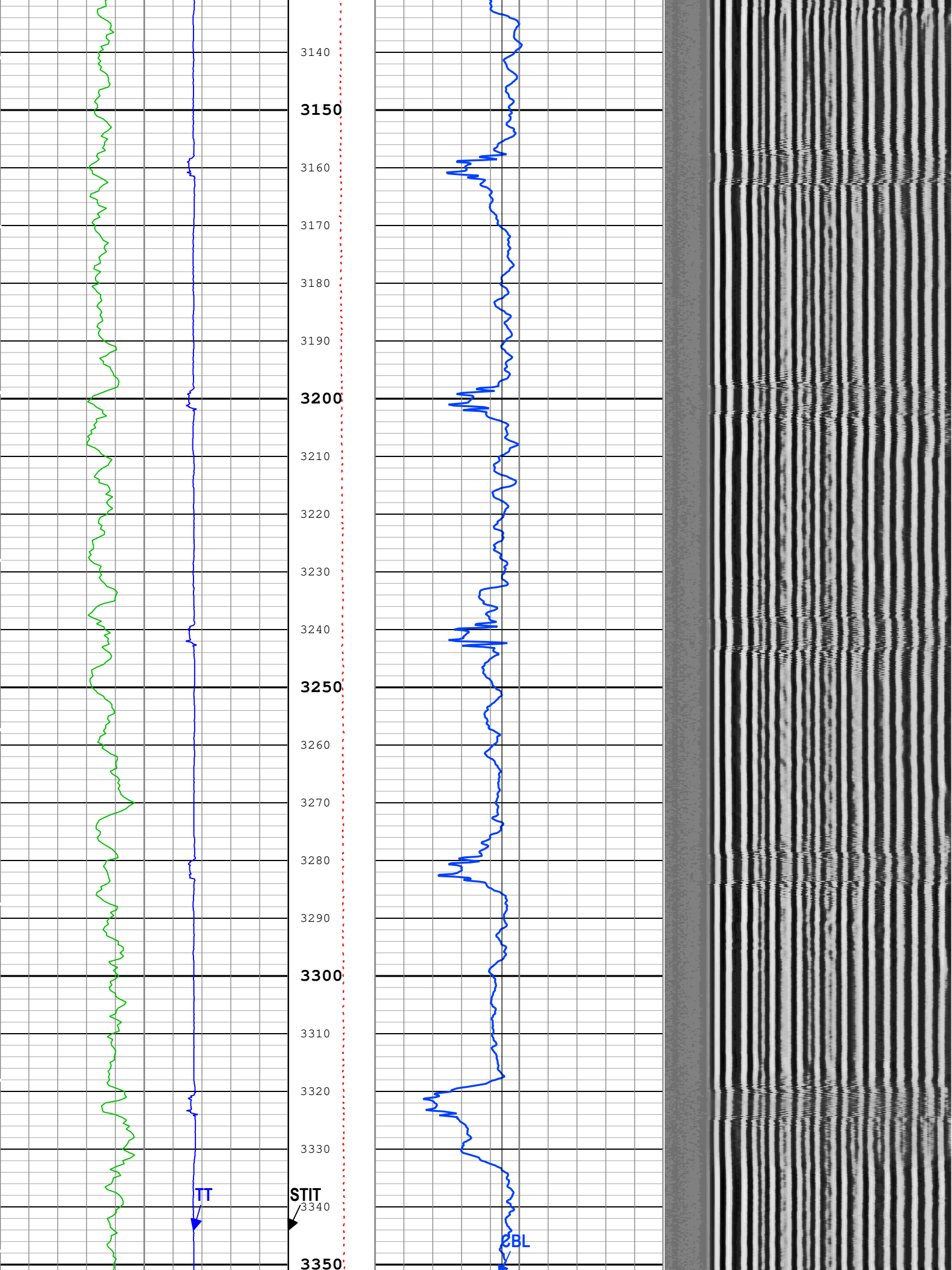
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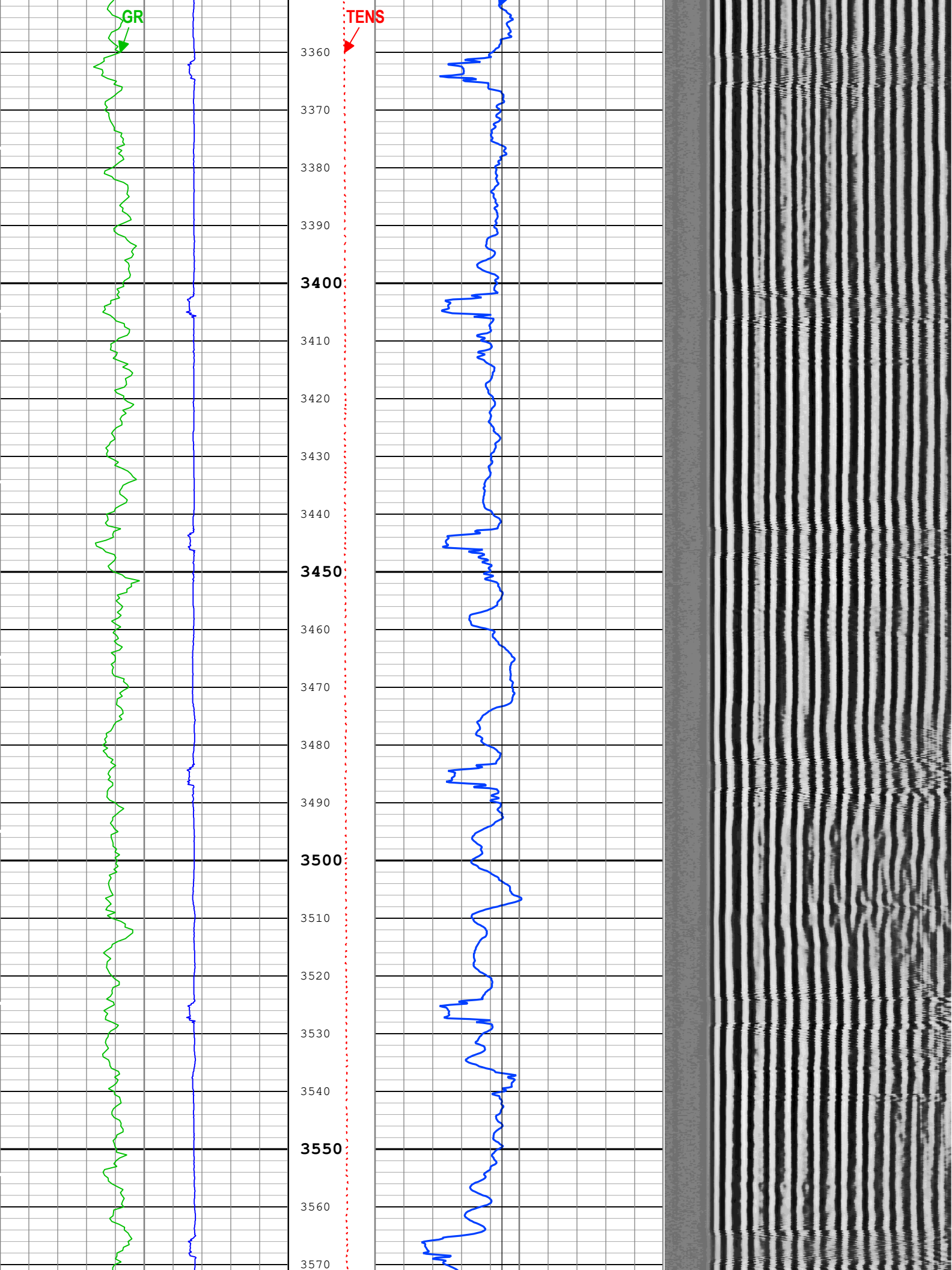
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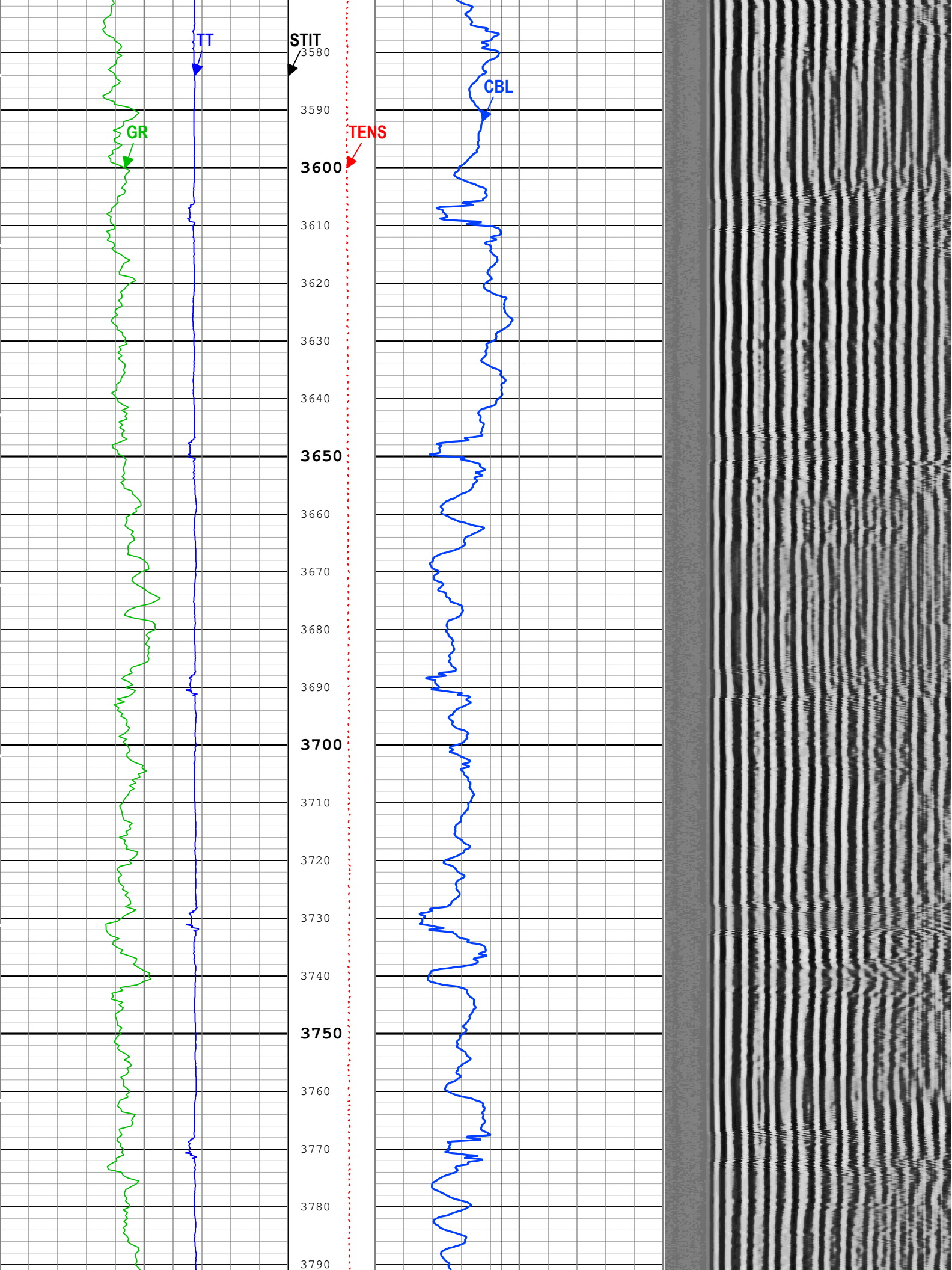
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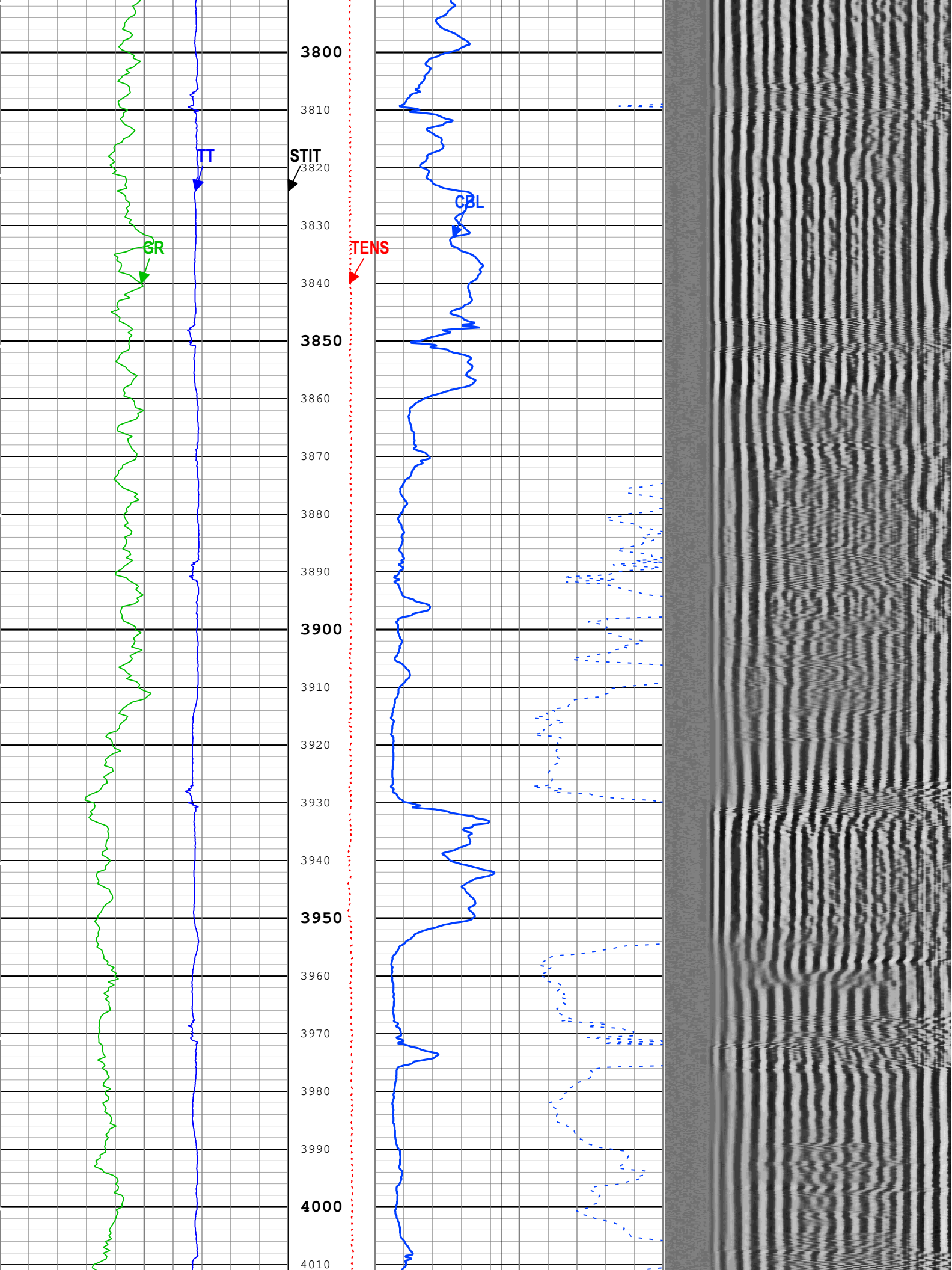
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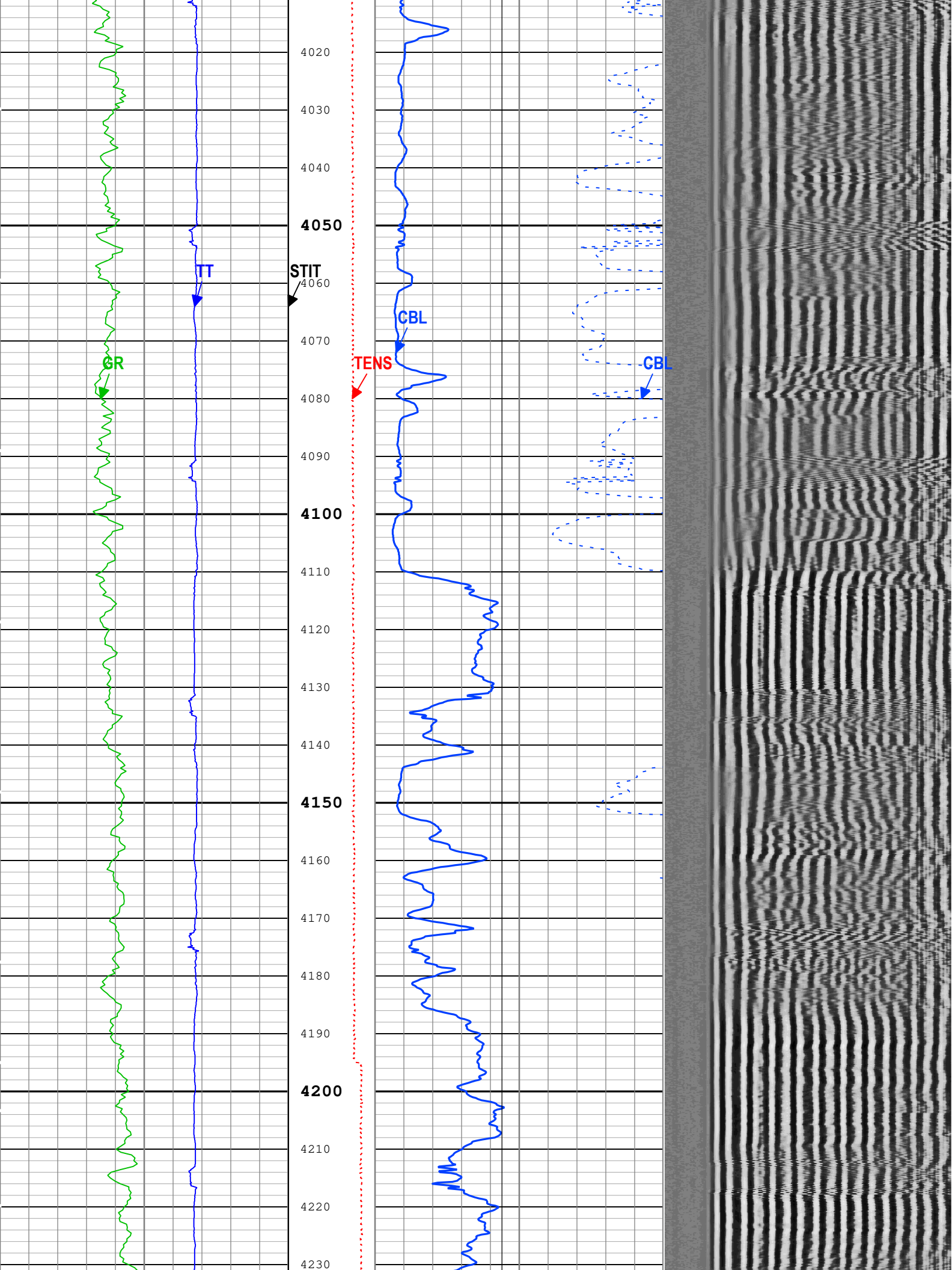
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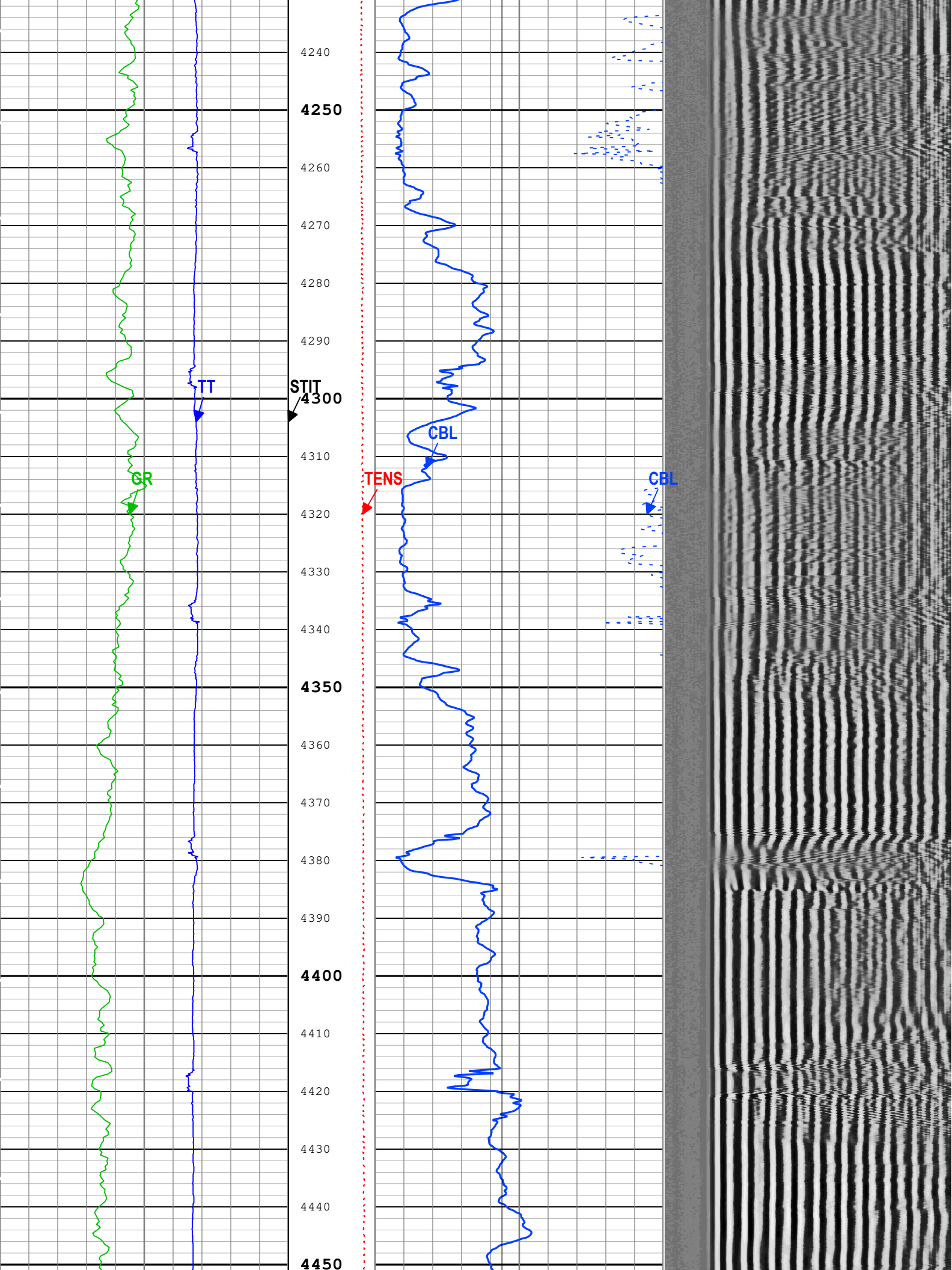
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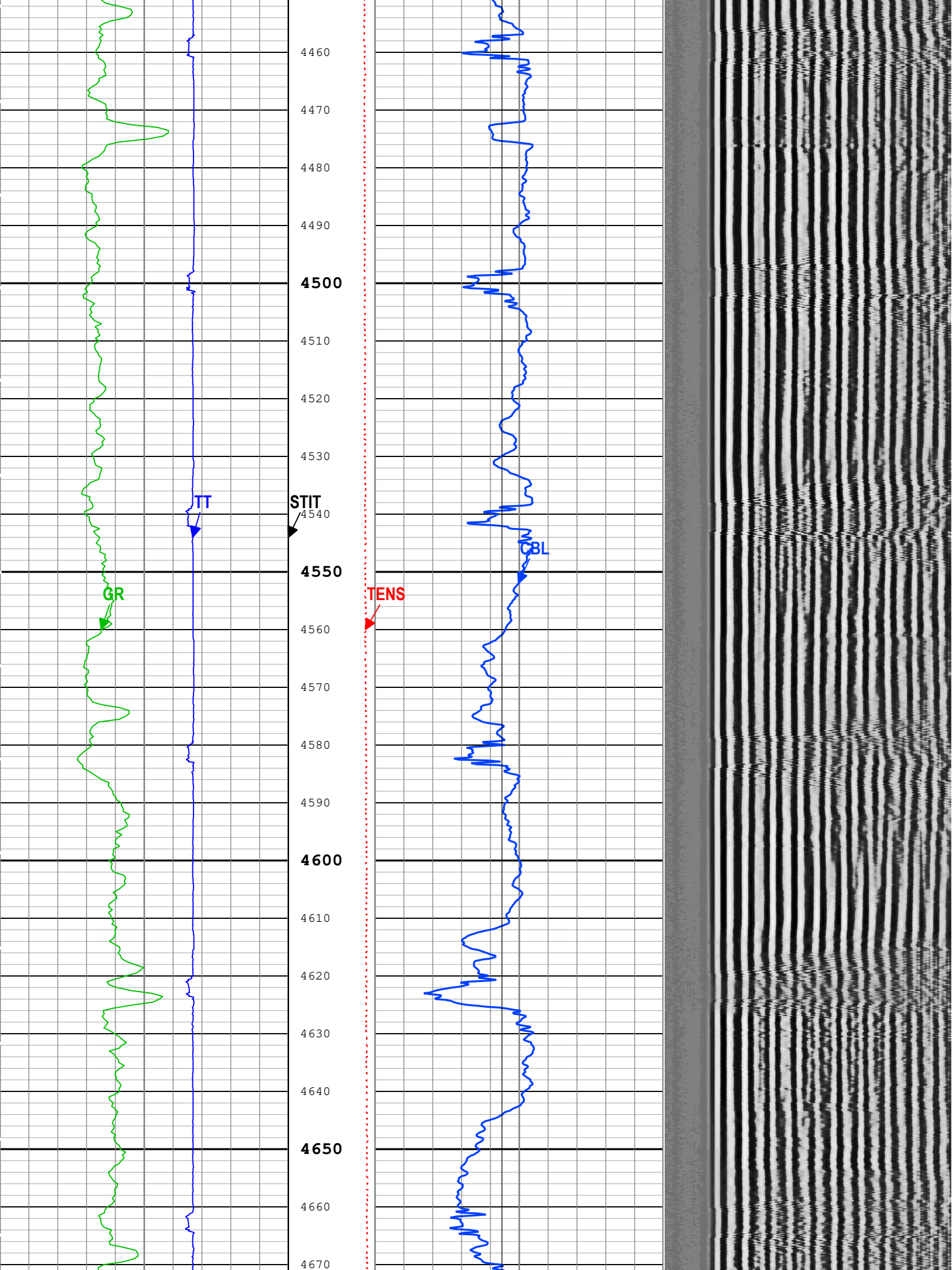
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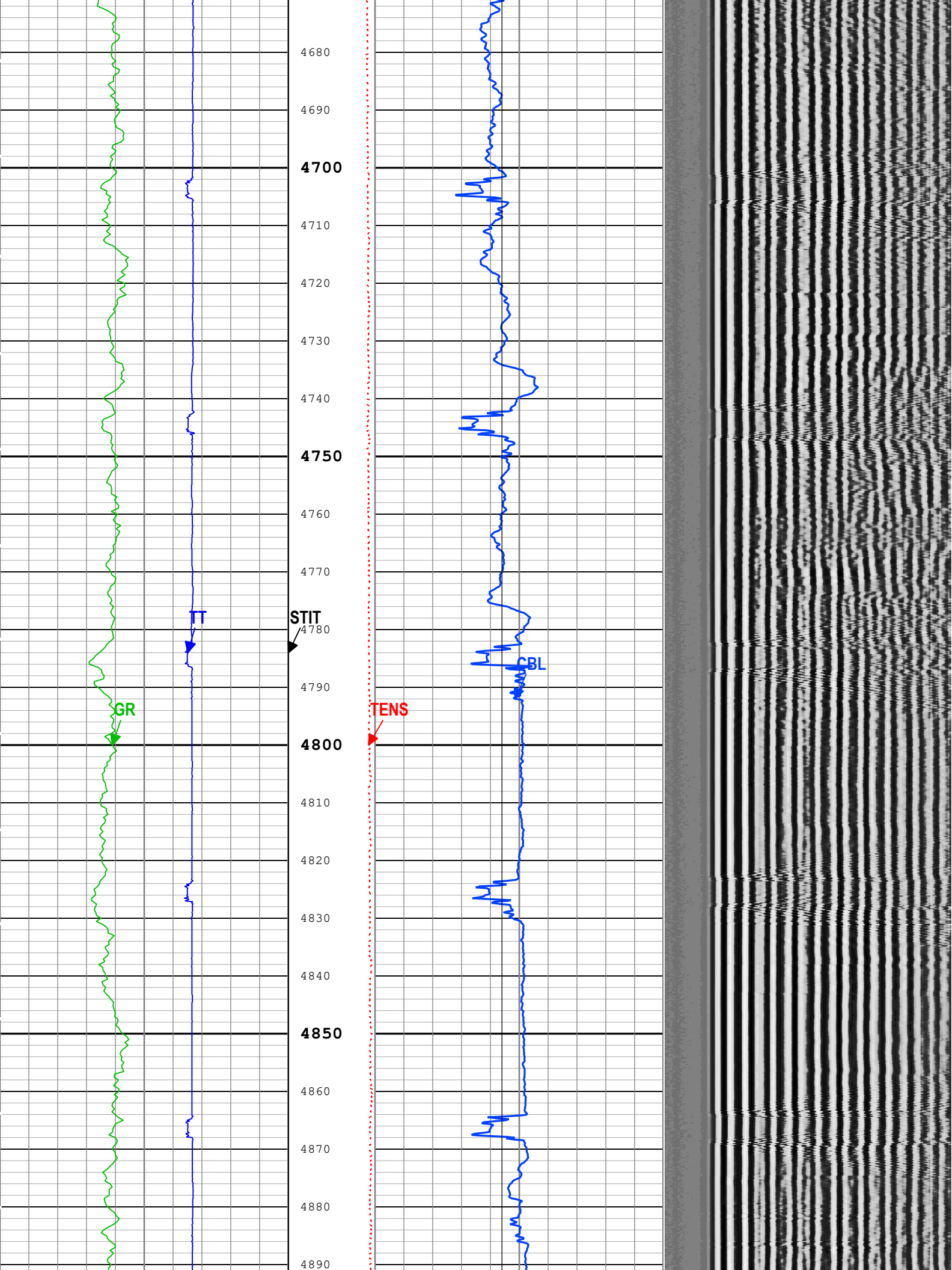
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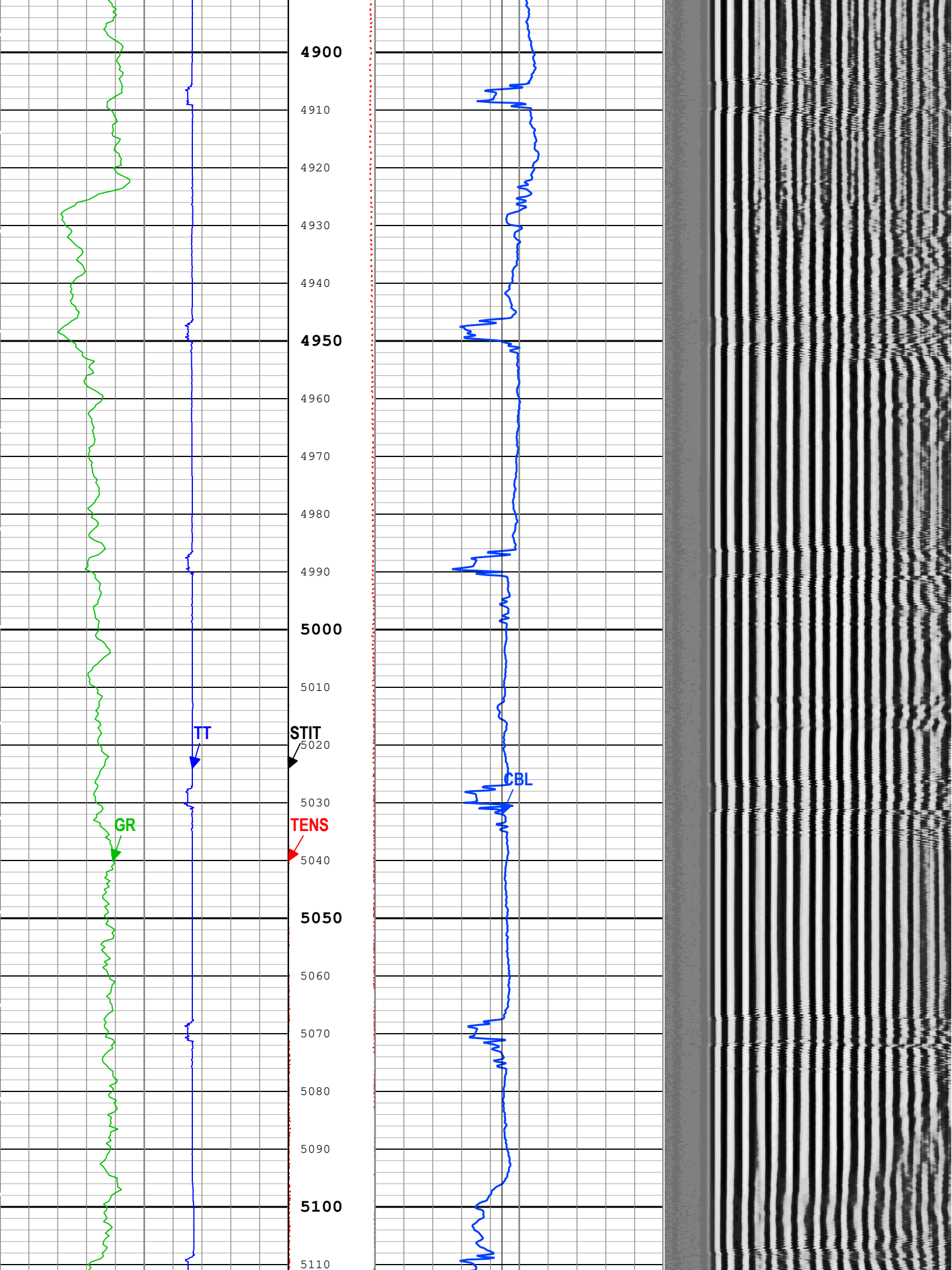
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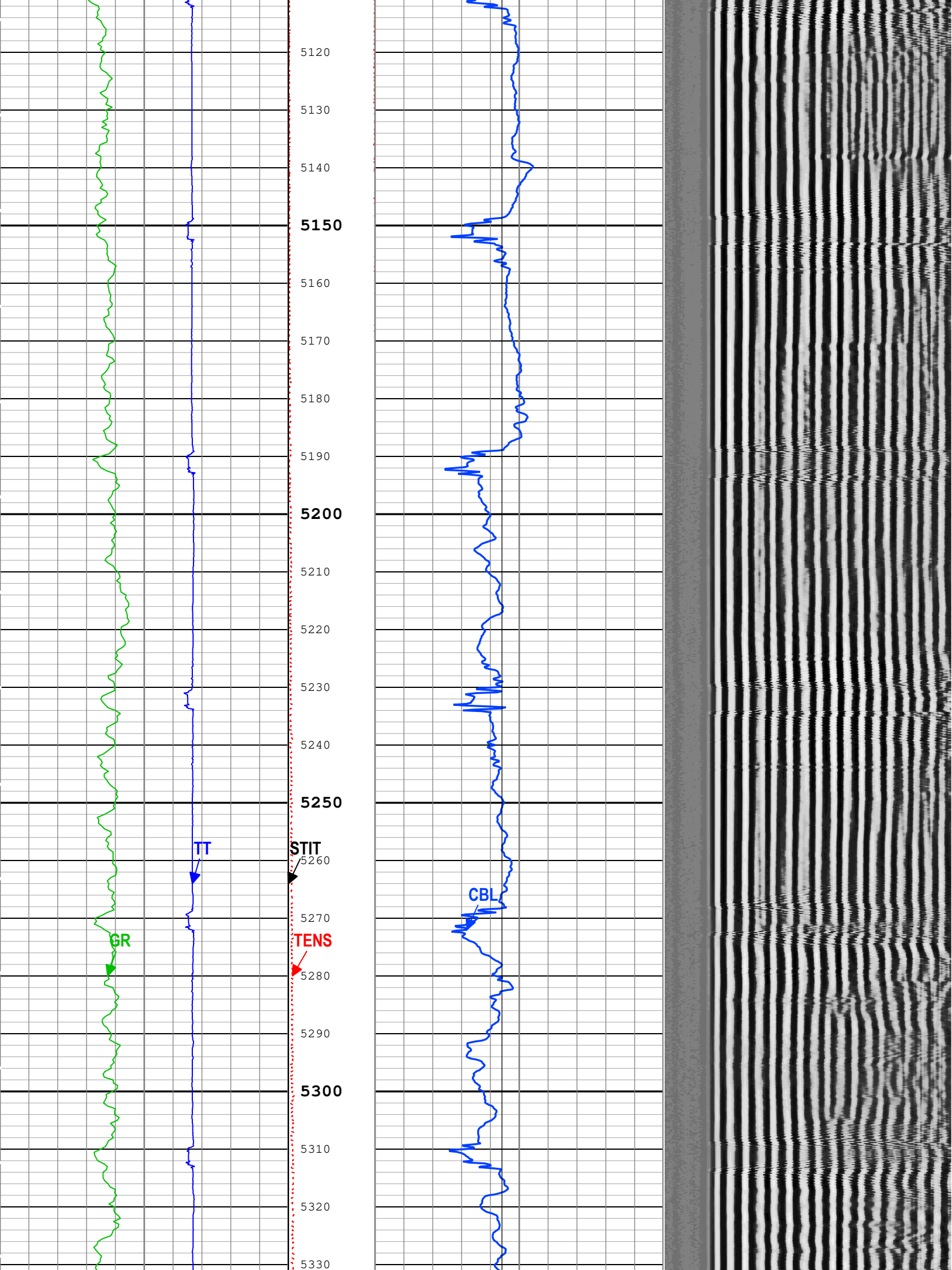
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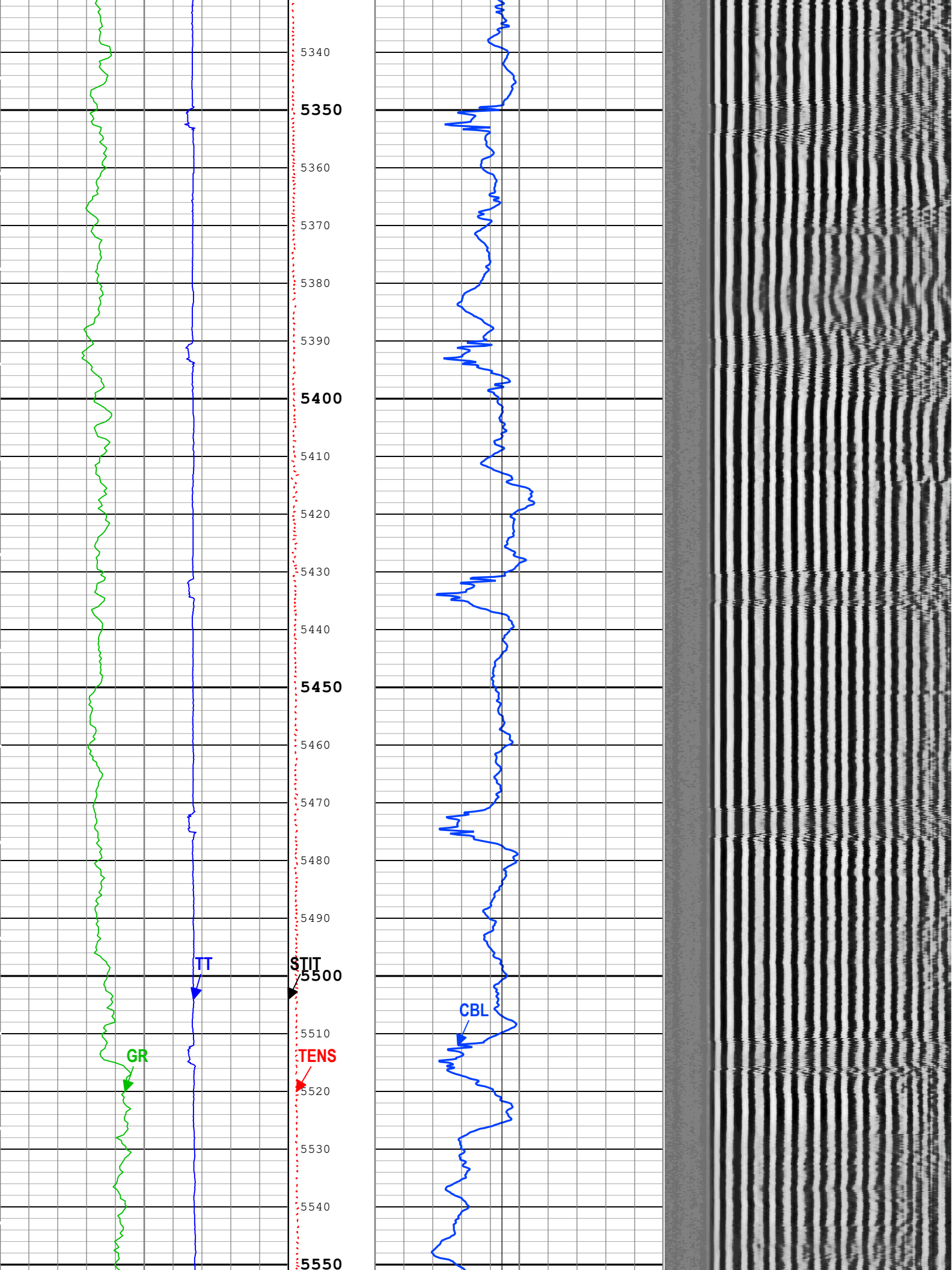
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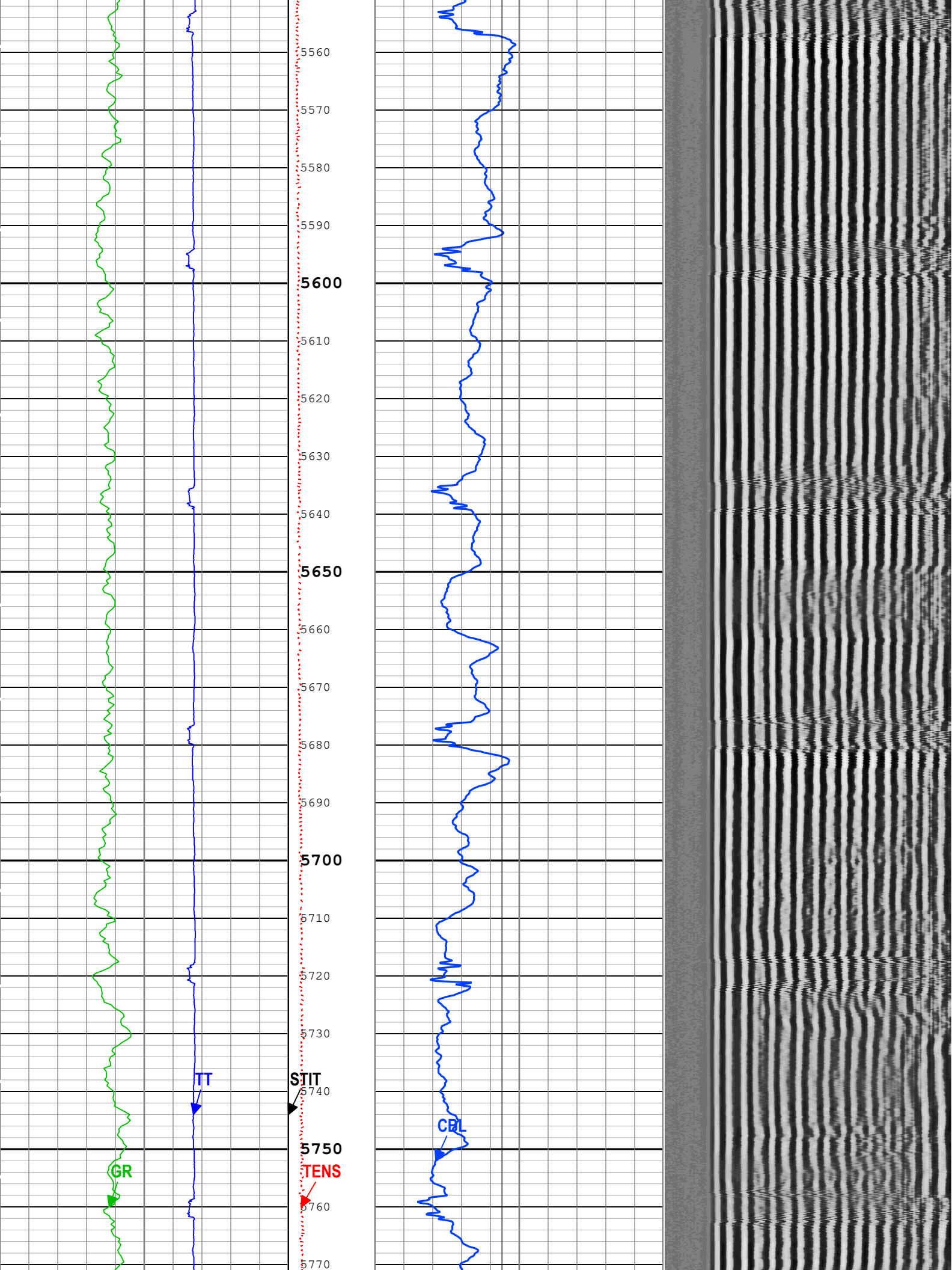
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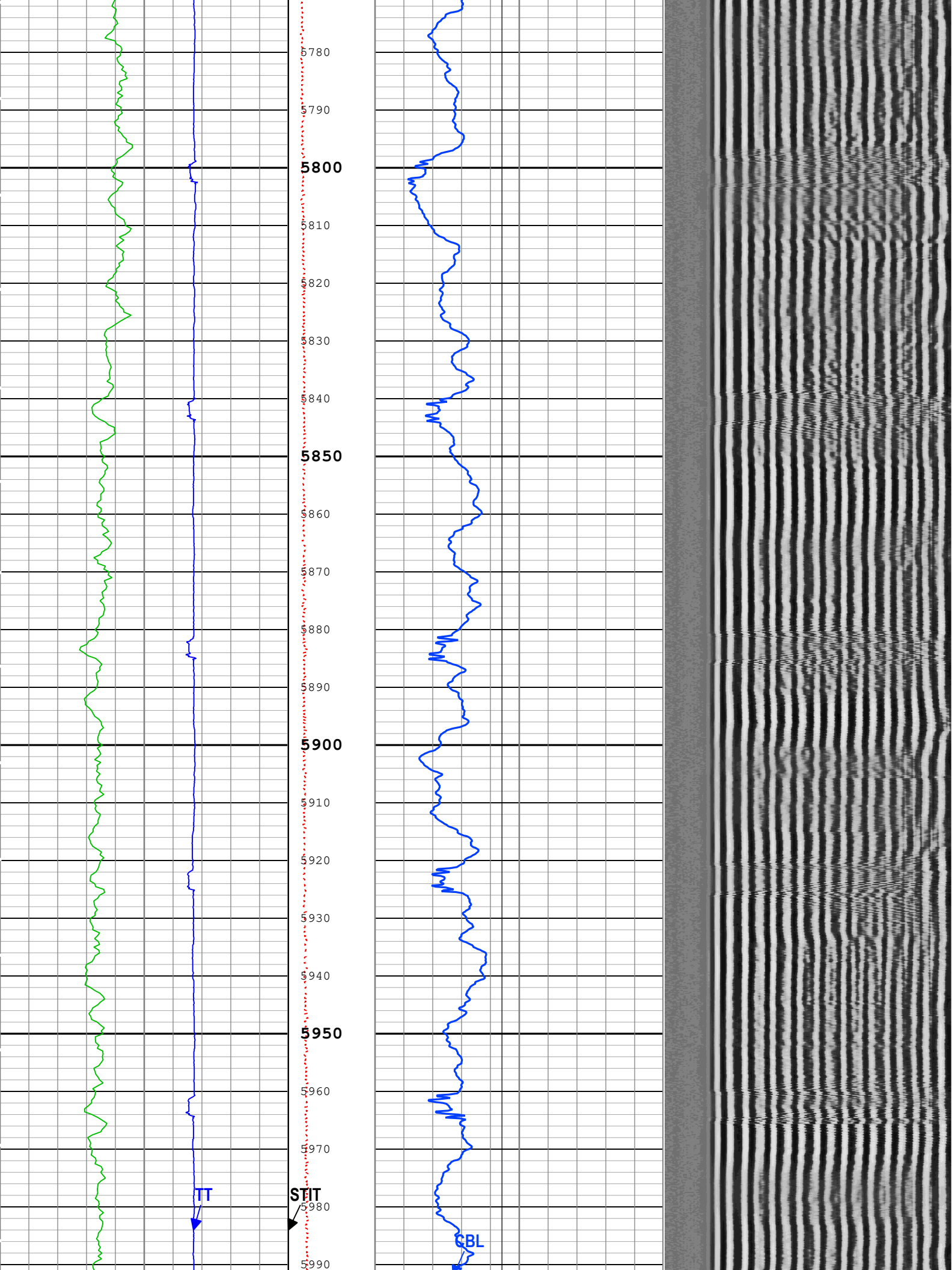
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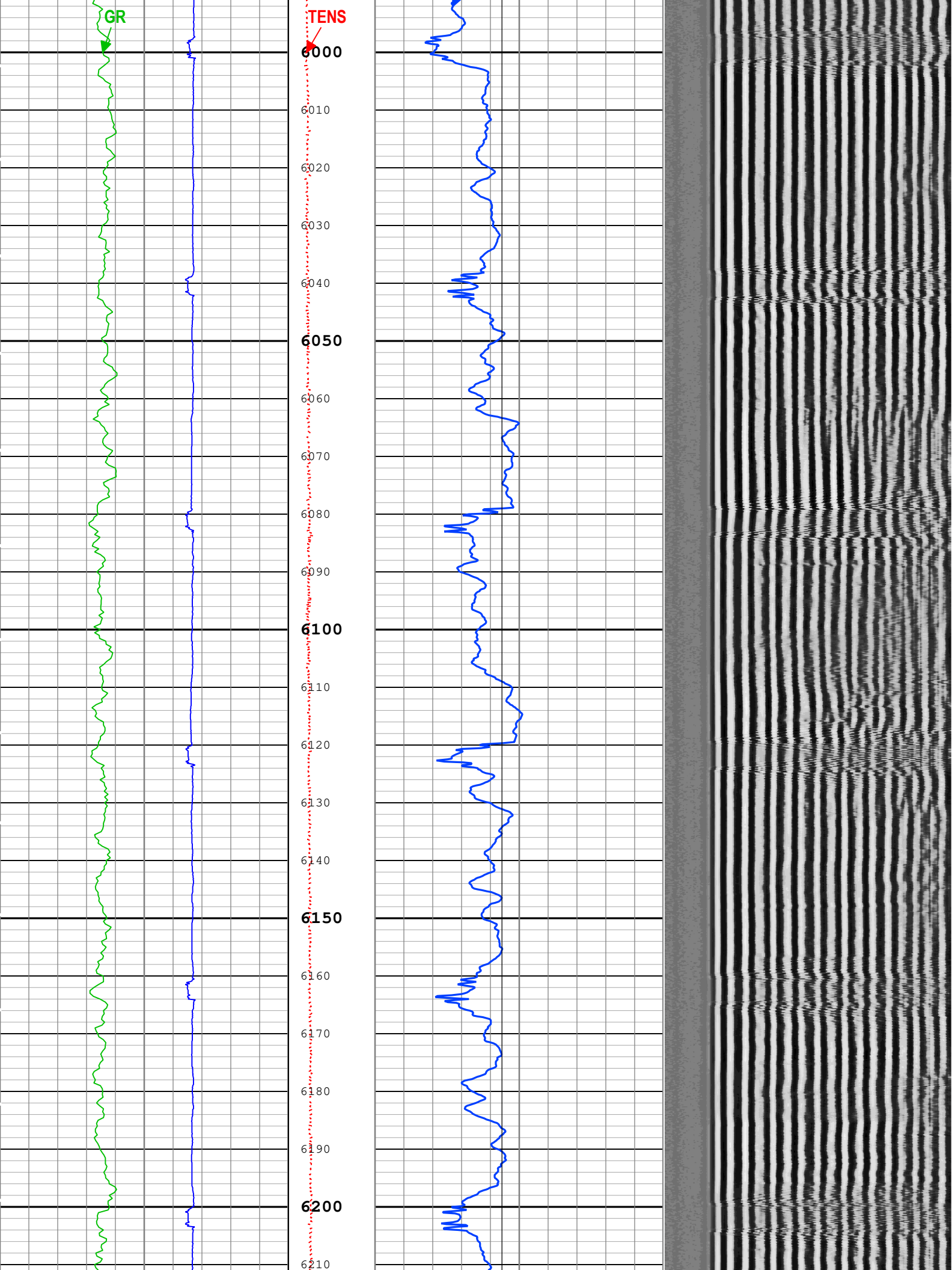
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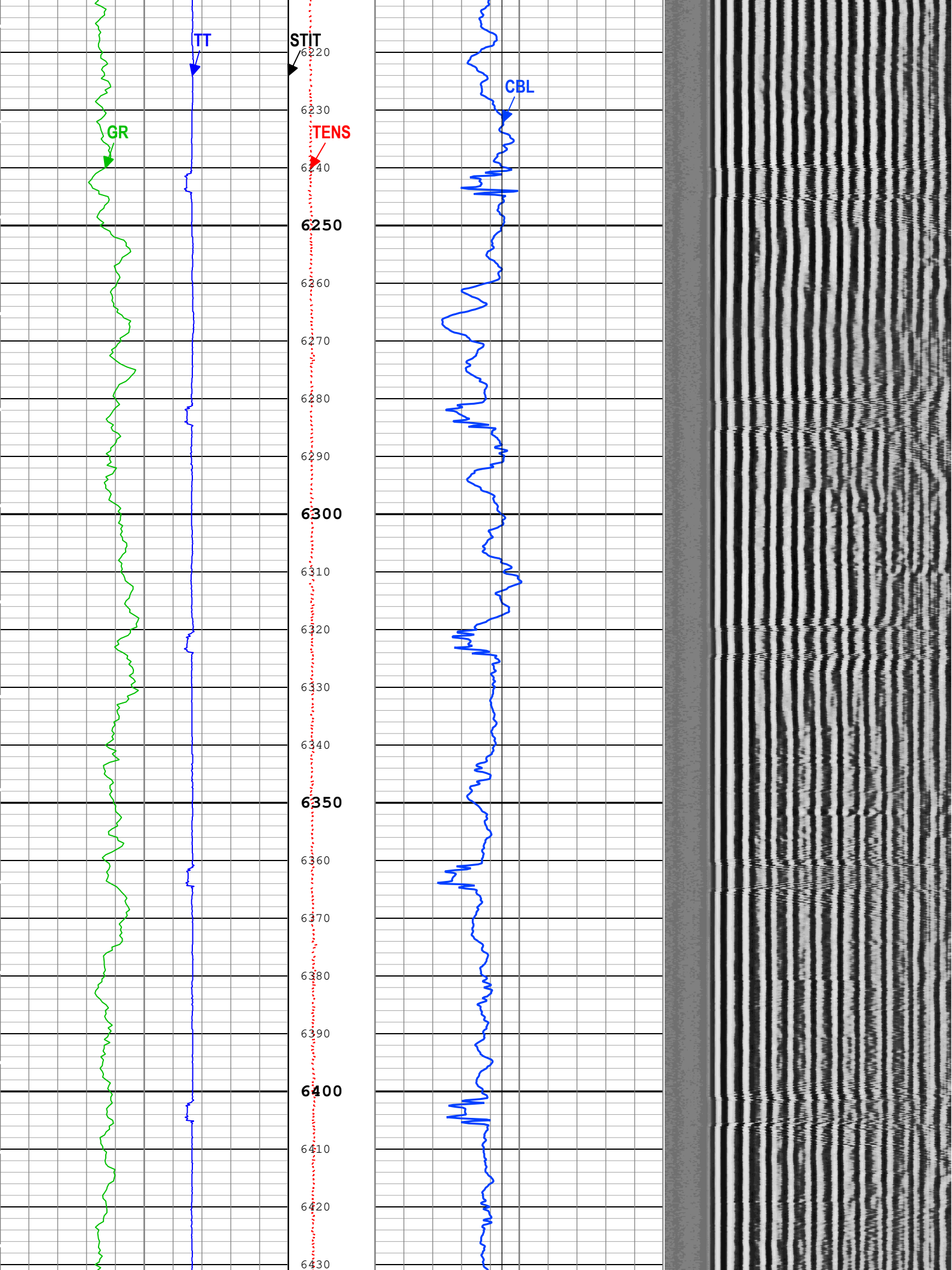
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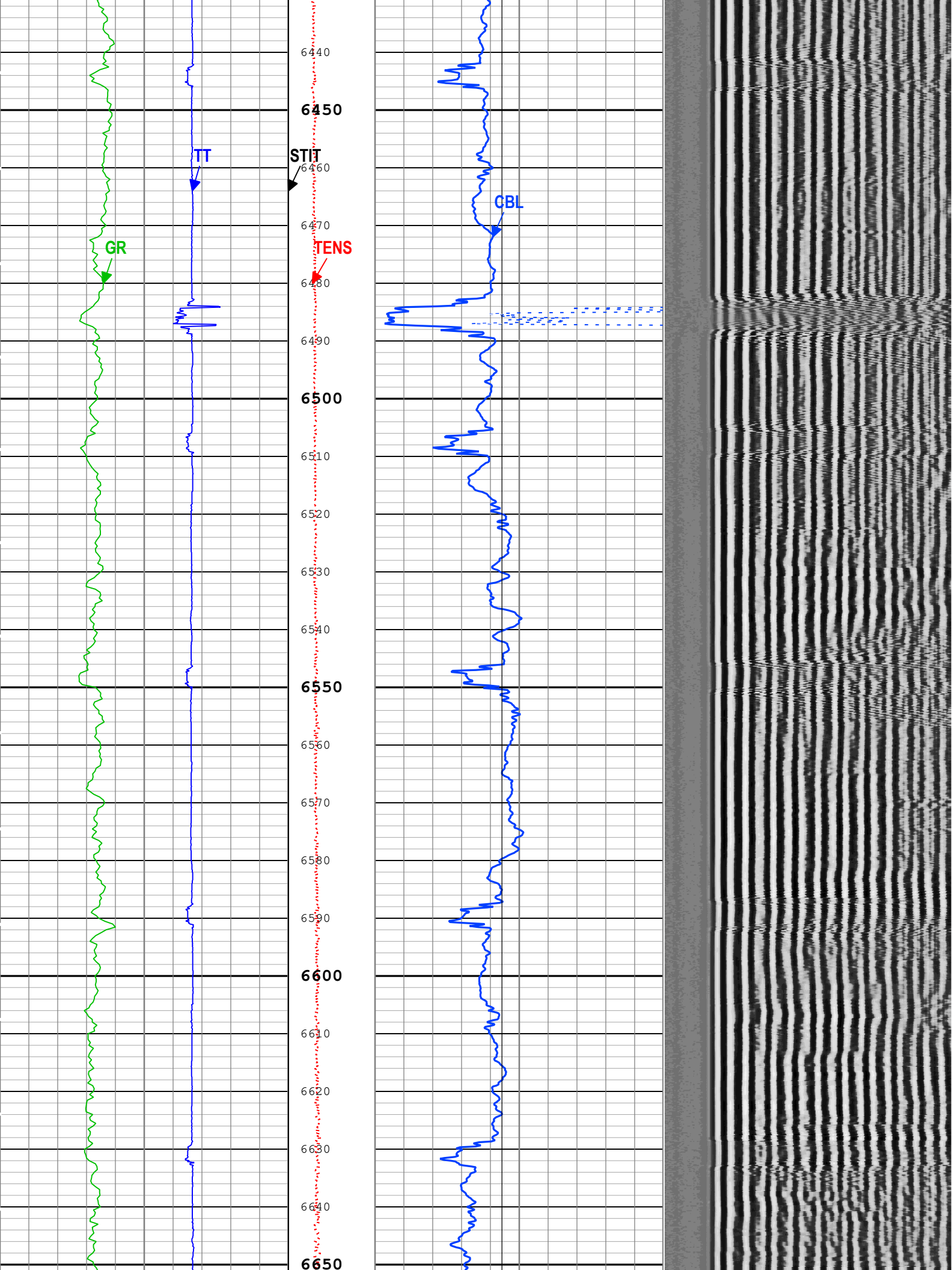
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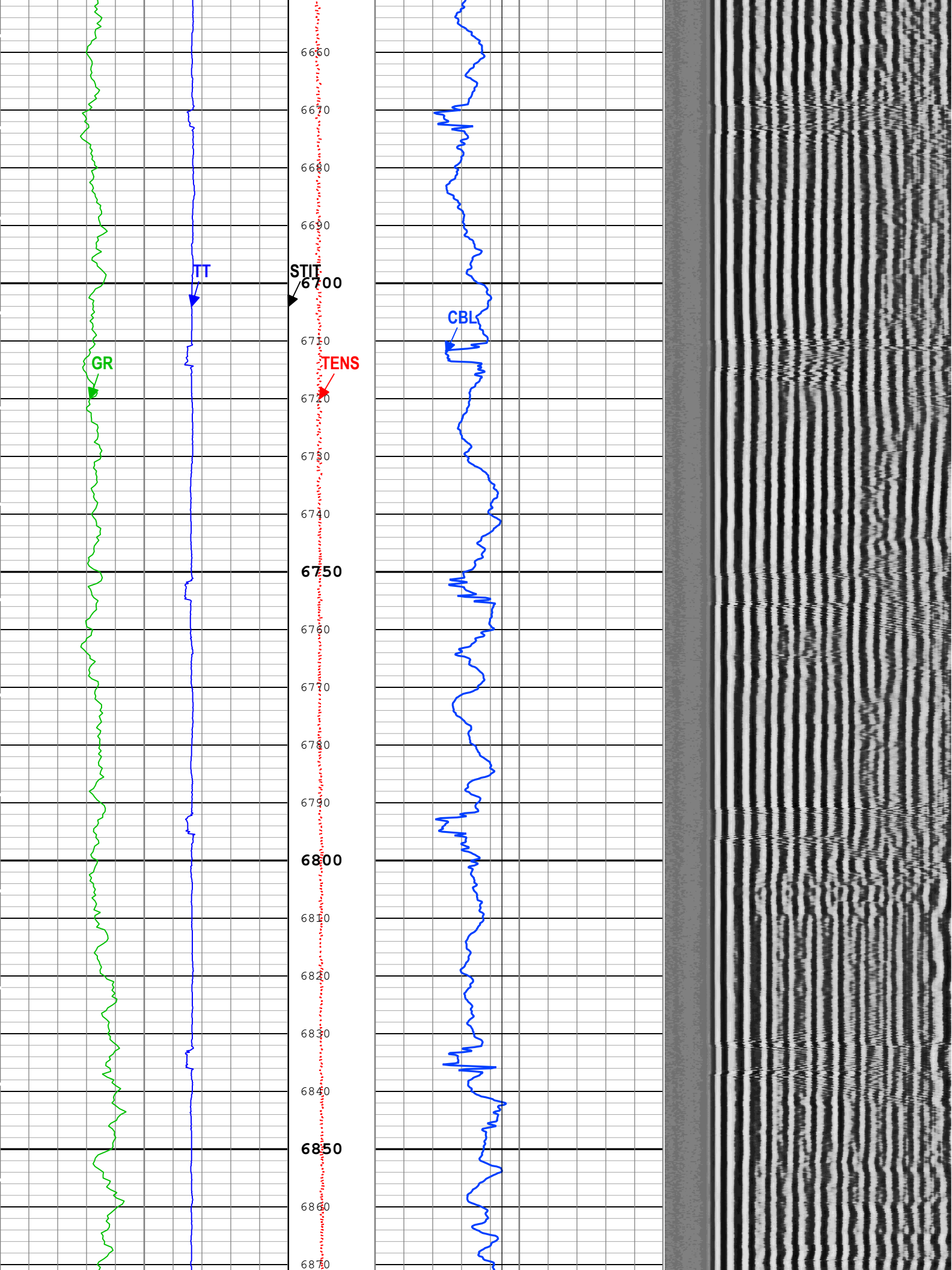
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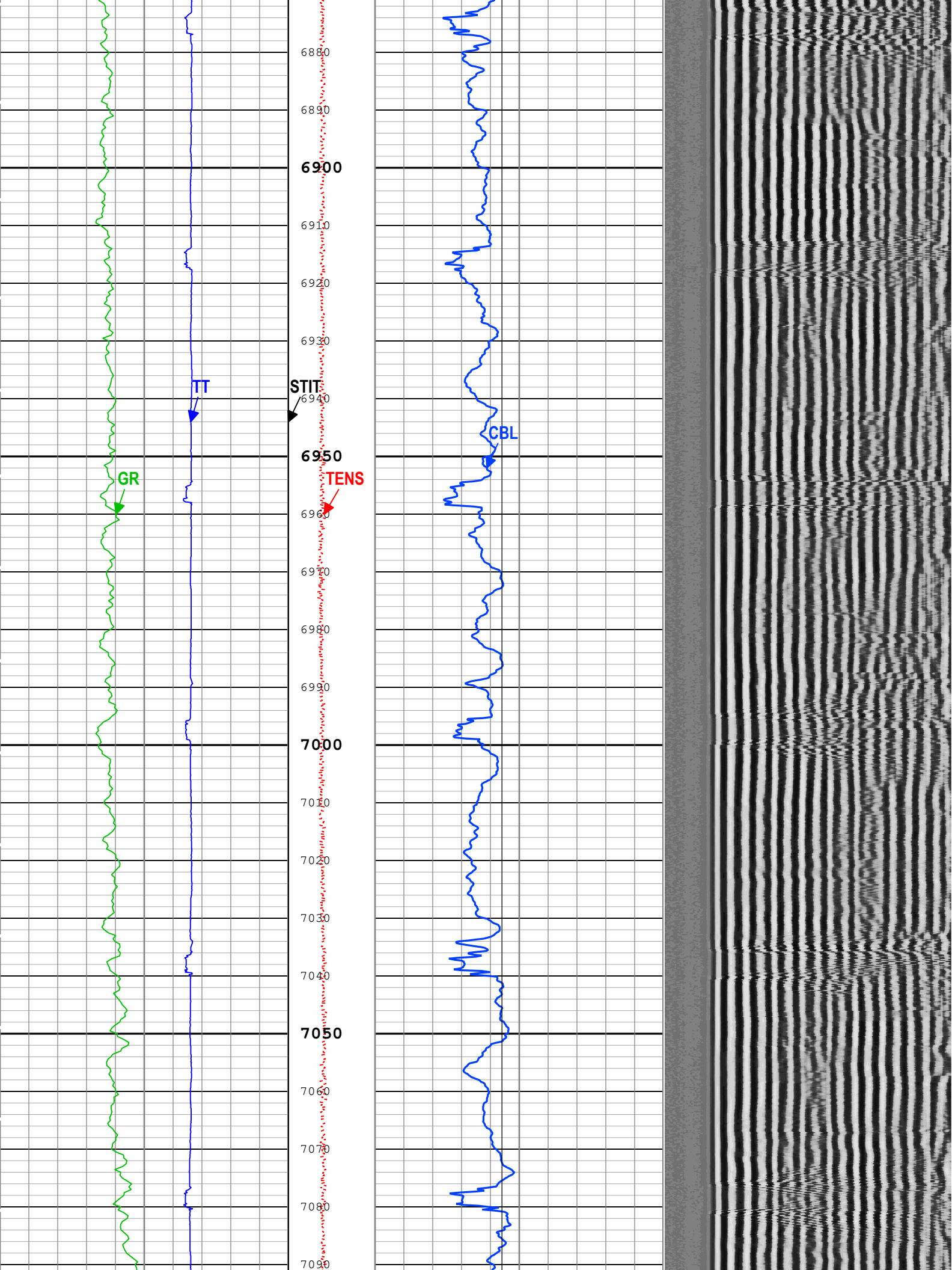
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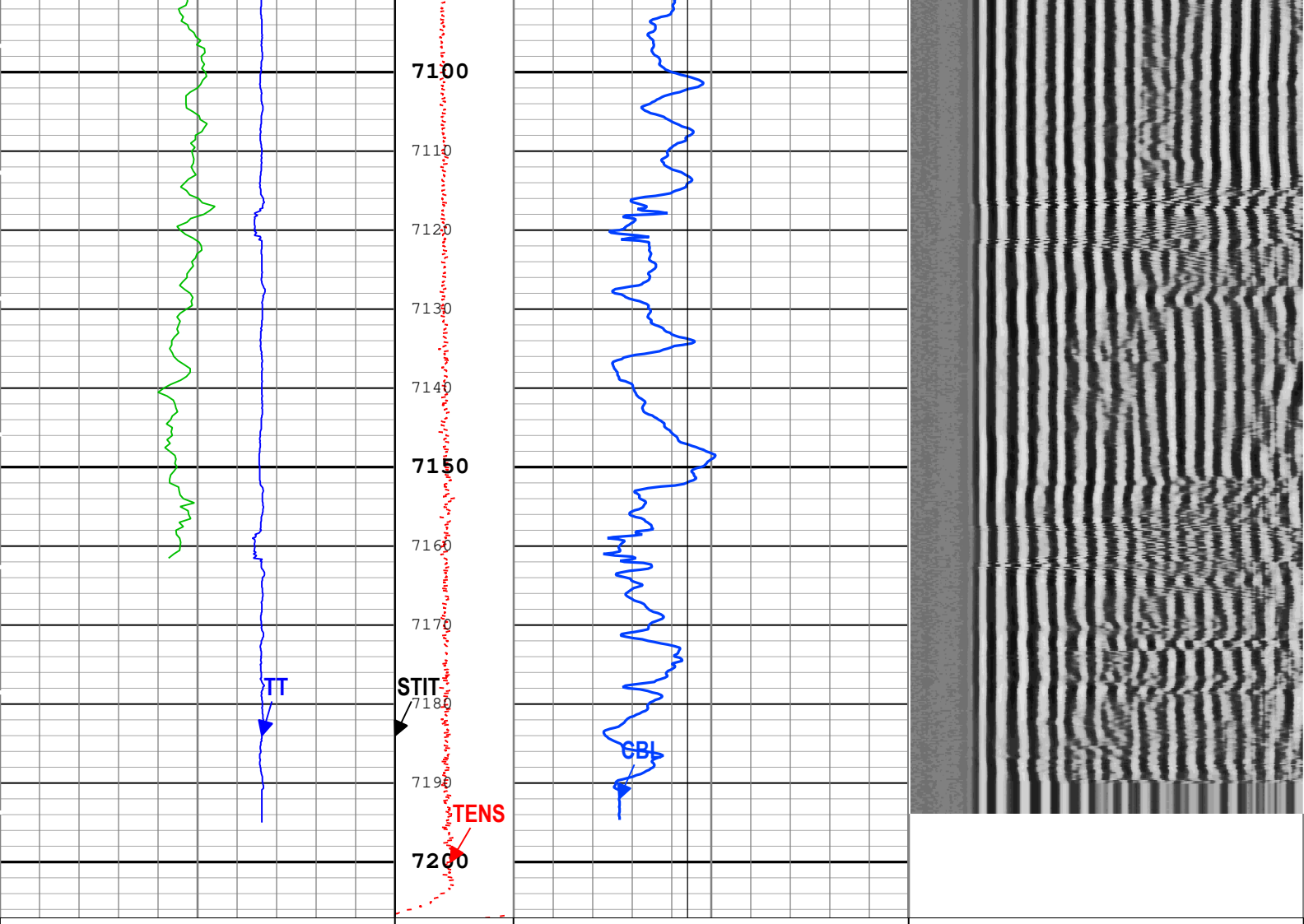

Gamma Ray (GR) PSTP-A
0 gAPI 150

Transit Time for CBL (TT) SCMT-CB
400 us 200

Cable Tension (TENS)
0 lbf 2000

Stuck Tool Indicator, Total (STIT)
0 ft 50

Cable Drag

Tool_Tot. Drag

CBL Amplitude (CBL) SCMT-CB
0 mV 10

CBL Amplitude (CBL) SCMT-CB
0 mV 100

Good Bond (GOBO)
0 mV 10

GoodBond From CBL to GOBO

Min Amplitude Max

VDL VariableDensity (VDL) SCMT-CB
200 us 1200

TIME_1900 - Time Marked every 60.00 (s)

BIEP - Bond Index Event Pips SCMT-CB

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: 17-May-2019 21:44:19

Channel Processing Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	229.31	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-CB	235.75	us
CBLG	CBL Gate Width	SCMT-CB	42	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-CB	72	mV

DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-CB	4.41	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	WTEP	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-CB	11.85	dB/ft
MCI	Minimum Cemented Interval for Isolation	SCMT-CB	Depth Zoned	ft
MSA	Minimum Sonic Amplitude	SCMT-CB	2.19	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	SCMT-CB	2.19	mV
RUN_SNUM	Run Sequence Number	WSDRUN	1	

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
MCI	14.81	100	2305
MCI	4.75	2305	7207.08

All depth are actual.

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	Time Zoned	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-A	Time Zoned	

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
MAX_LOG_SPEED	1077.14	17-May-2019 15:40:44	17-May-2019 18:44:50	7207.07	4195.03
MAX_LOG_SPEED	1800	17-May-2019 18:44:50	17-May-2019 21:05:54	4195.03	105.2
PCCG	12 dB	17-May-2019 15:40:44	17-May-2019 15:42:13	7207.07	7190.33
PCCG	24 dB	17-May-2019 15:42:13	17-May-2019 15:46:06	7190.33	7127.02
PCCG	0 dB	17-May-2019 15:46:06	17-May-2019 15:50:58	7127.02	7049.26
PCCG	12 dB	17-May-2019 15:50:58	17-May-2019 18:51:18	7049.26	4079.74
PCCG	0 dB	17-May-2019 18:51:18	17-May-2019 18:53:29	4079.74	4015.58
PCCG	12 dB	17-May-2019 18:53:29	17-May-2019 21:05:54	4015.58	105.2

All depth are at tool zero.

ONE

Main Pass

Software Version

Acquisition System	Version
Maxwell 2019	9.0.106845.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[5]:Up	Up	105.20 ft	7207.07 ft	17-May-2019 3:40:44 PM	17-May-2019 9:05:54 PM	ON	5.19 ft	No

All depths are referenced to toolstring zero

Log

Company:Crestone Peak Resources and Operating LLC Well:Echeverria 2F-2H-D267

ONE: Log[5]:Up:S006

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

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: 17-May-2019 21:44:30

TIME_1900 - Time Marked every 60.00 (s)

Gamma Ray (GR) PSTP-A
0 gAPI 150

Relative Bearing (RB_SCMT) SCMT-CB
0 deg 360

Minimum MAP Transit Time (MITT) SCMT-CB
100 us 300

Maximum MAP Transit Time (MXTT) SCMT-CB
100 us 300

Transit Time for CBL (TT) SCMT-CB
200 us 400

Well Pressure (WPRE) PSTP-A
0 psi 10000

Well Temperature (WTEP) PSTP-A
0 degF 300

CBL Amplitude (CBL) SCMT-CB
0 mV 10

CBL Amplitude (CBL) SCMT-CB
0 mV 100

Good Bond (GOBO)
0 mV 10

Normalized Average MAP Amplitude (AVMA) SCMT-CB
0 mV 100

Normalized Minimum MAP Amplitude (MIMA) SCMT-CB
0 mV 100

Normalized Maximum MAP Amplitude (MXMA) SCMT-CB
0 mV 100

GoodBond From CBL to GOBO

Stuck Tool Indicator, Total (STIT)
0 ft 50

Cable Drag

Tool_Tot. Drag

Min Amplitude Max

VDL VariableDensity (VDL) SCMT-CB
200 us 1200

Absent 7.500 17.500 27.500 37.500 47.500 57.500 67.500 77.500 87.500 97.500

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

110 120 130 140 150 160 170 180 190 200 210

WTEP
WPRE
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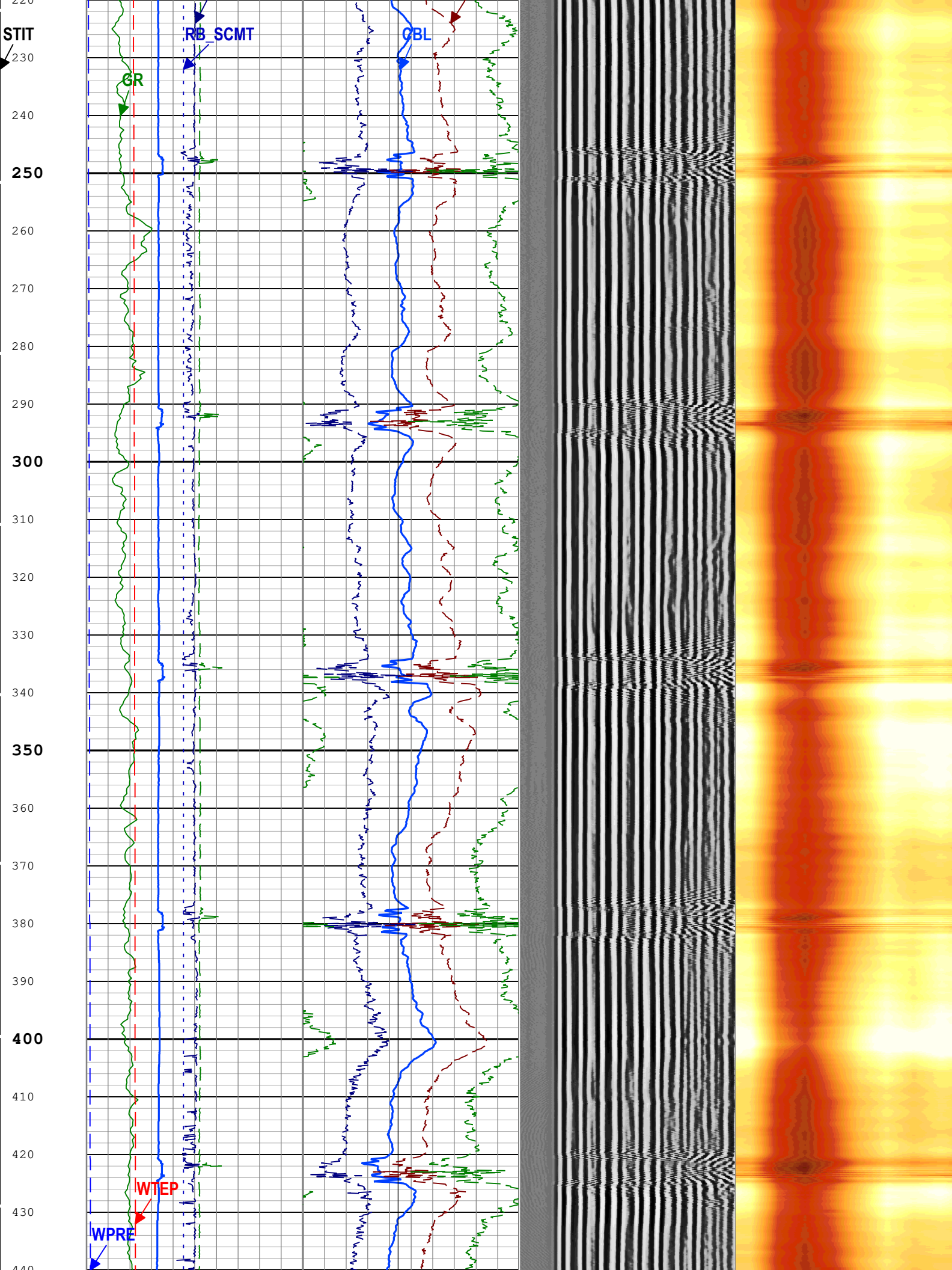
MXTT
MITT
MIMA
MXMA
AVMA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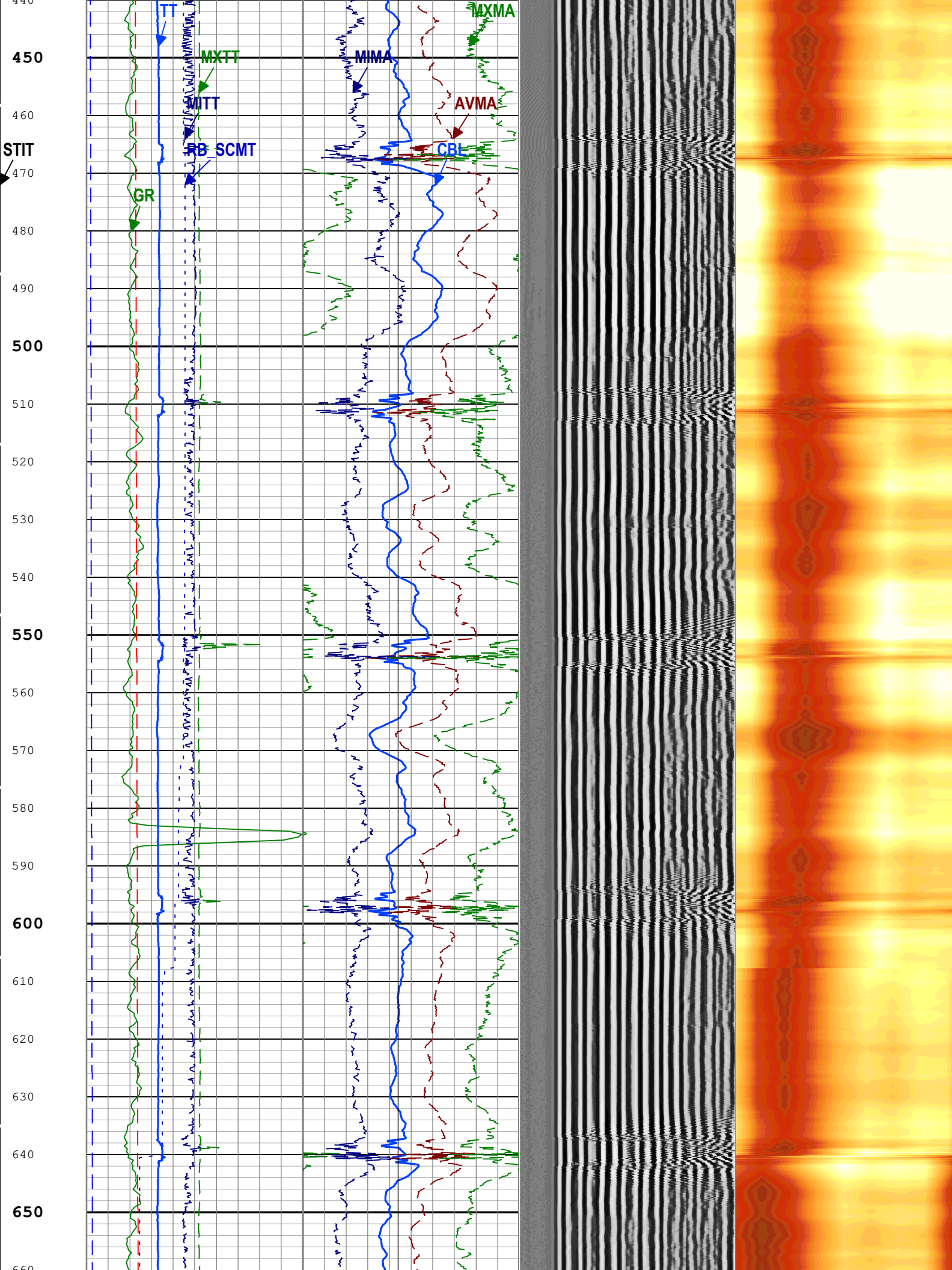
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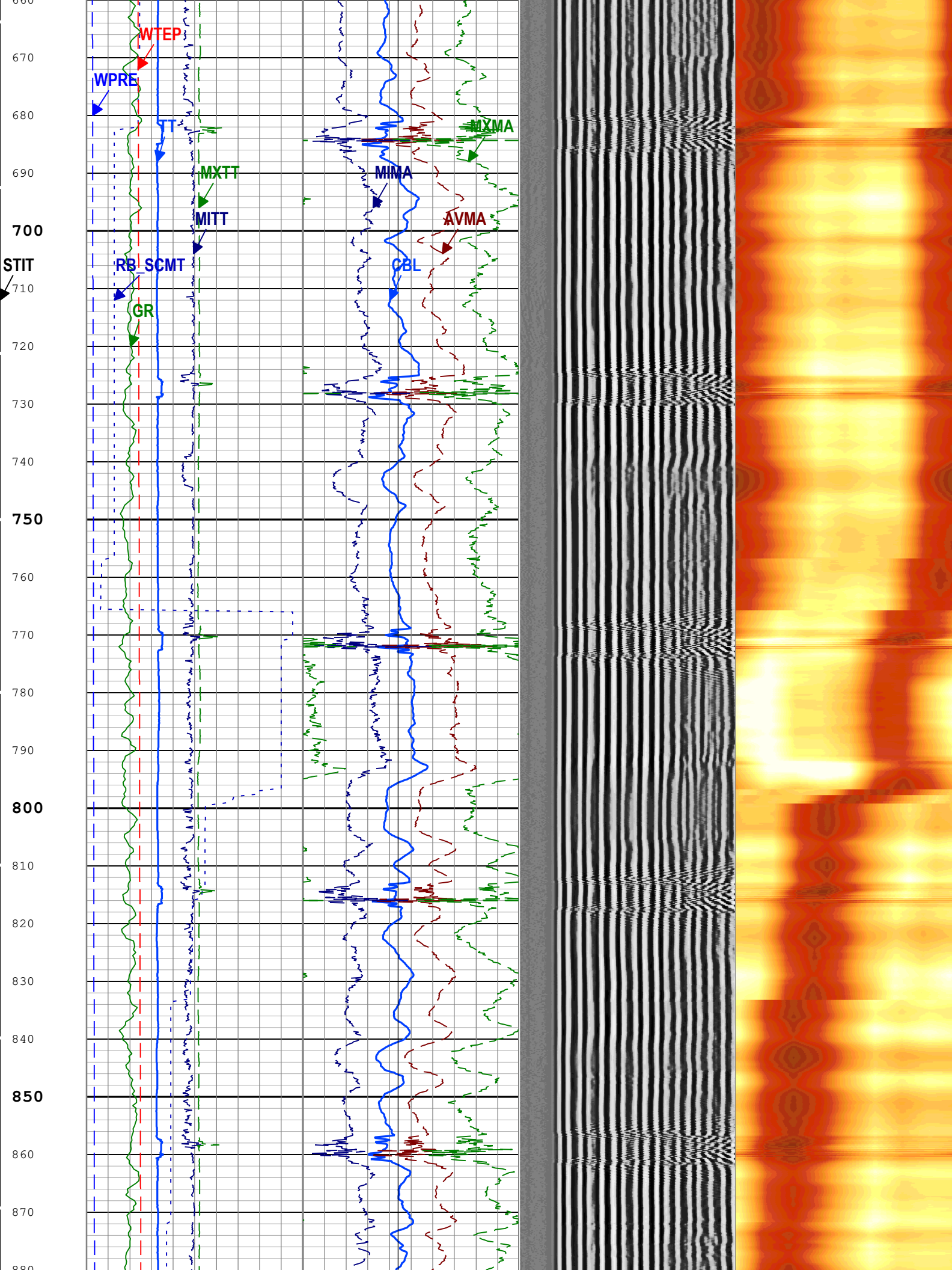
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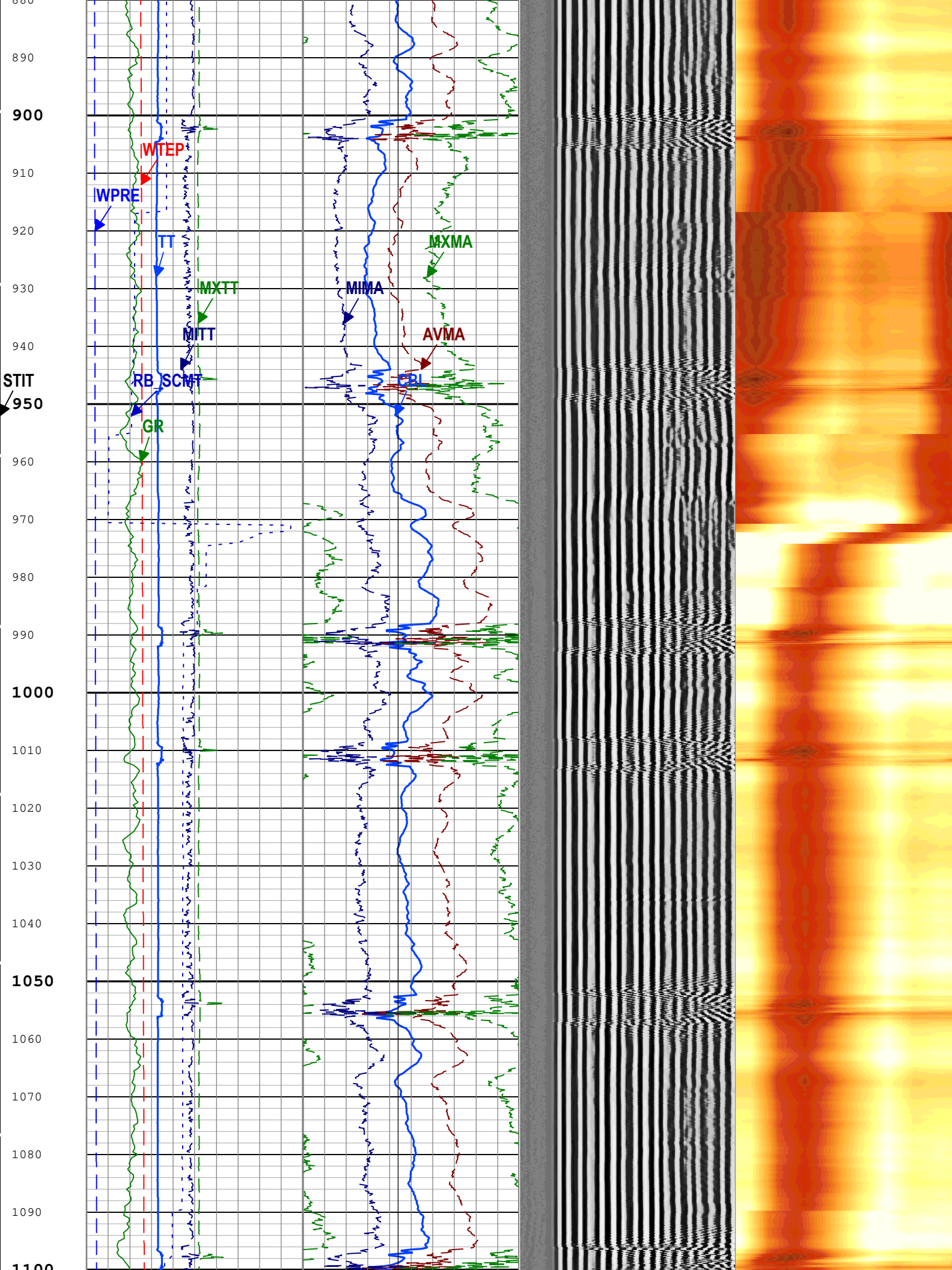
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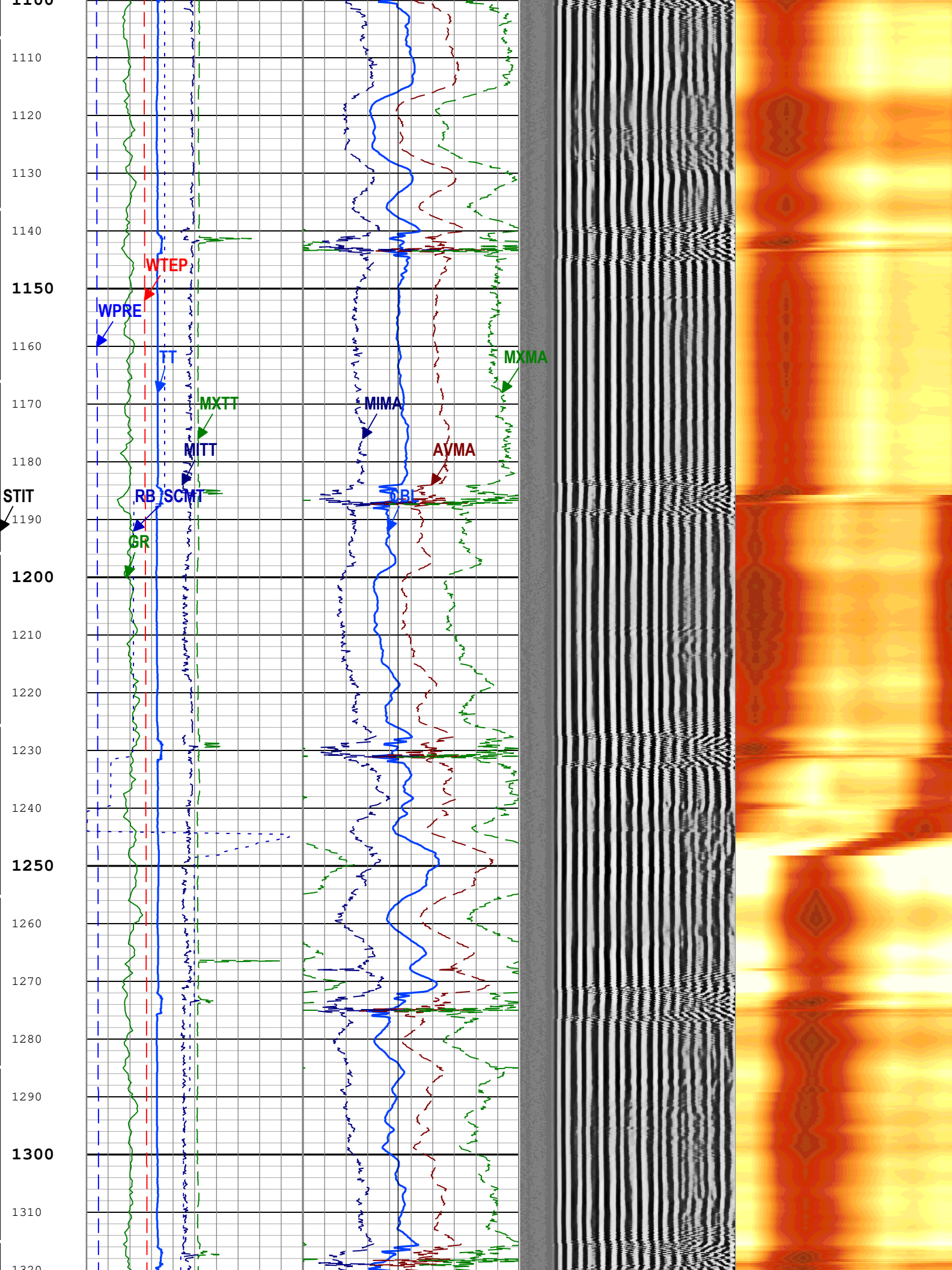
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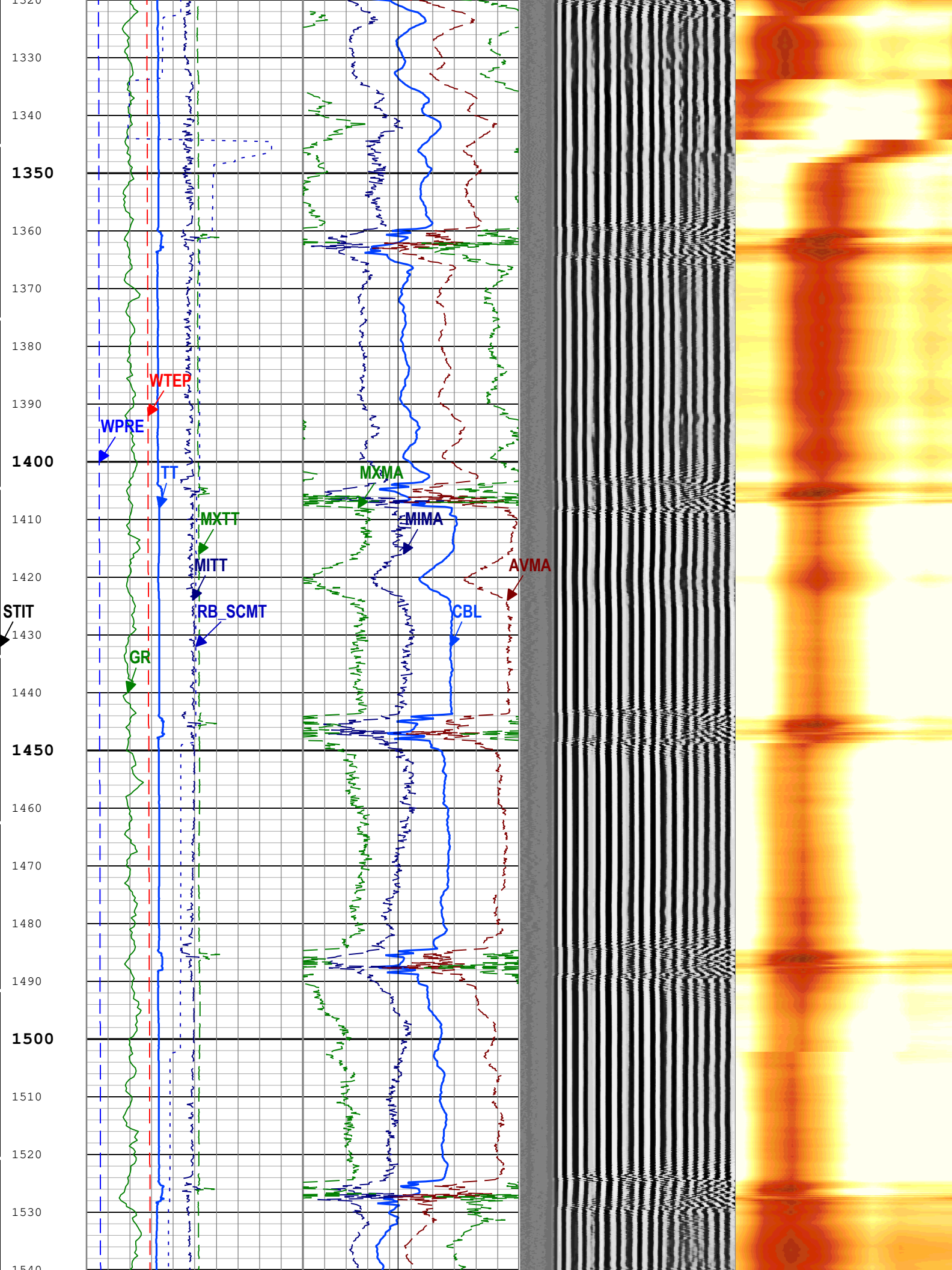
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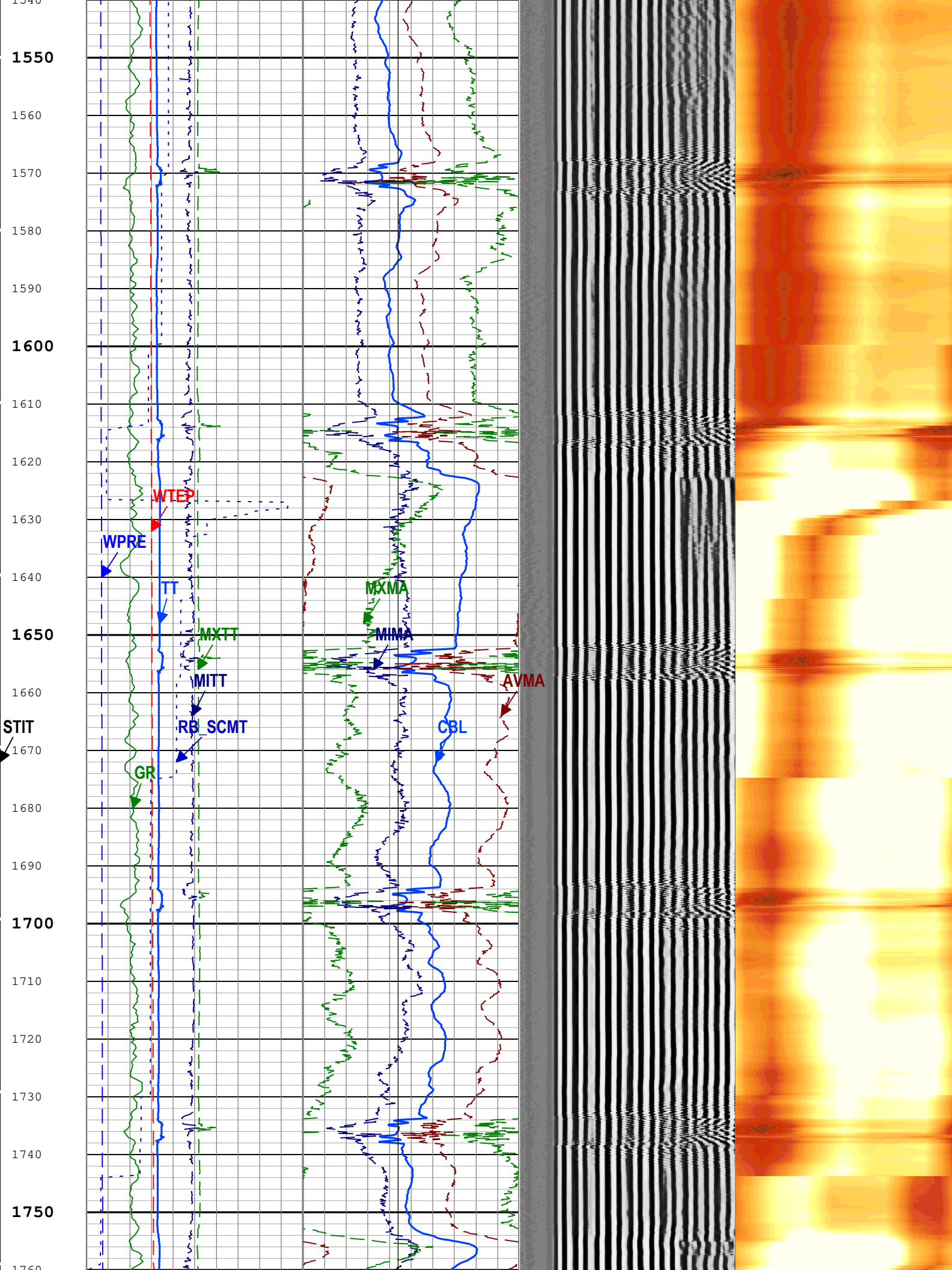
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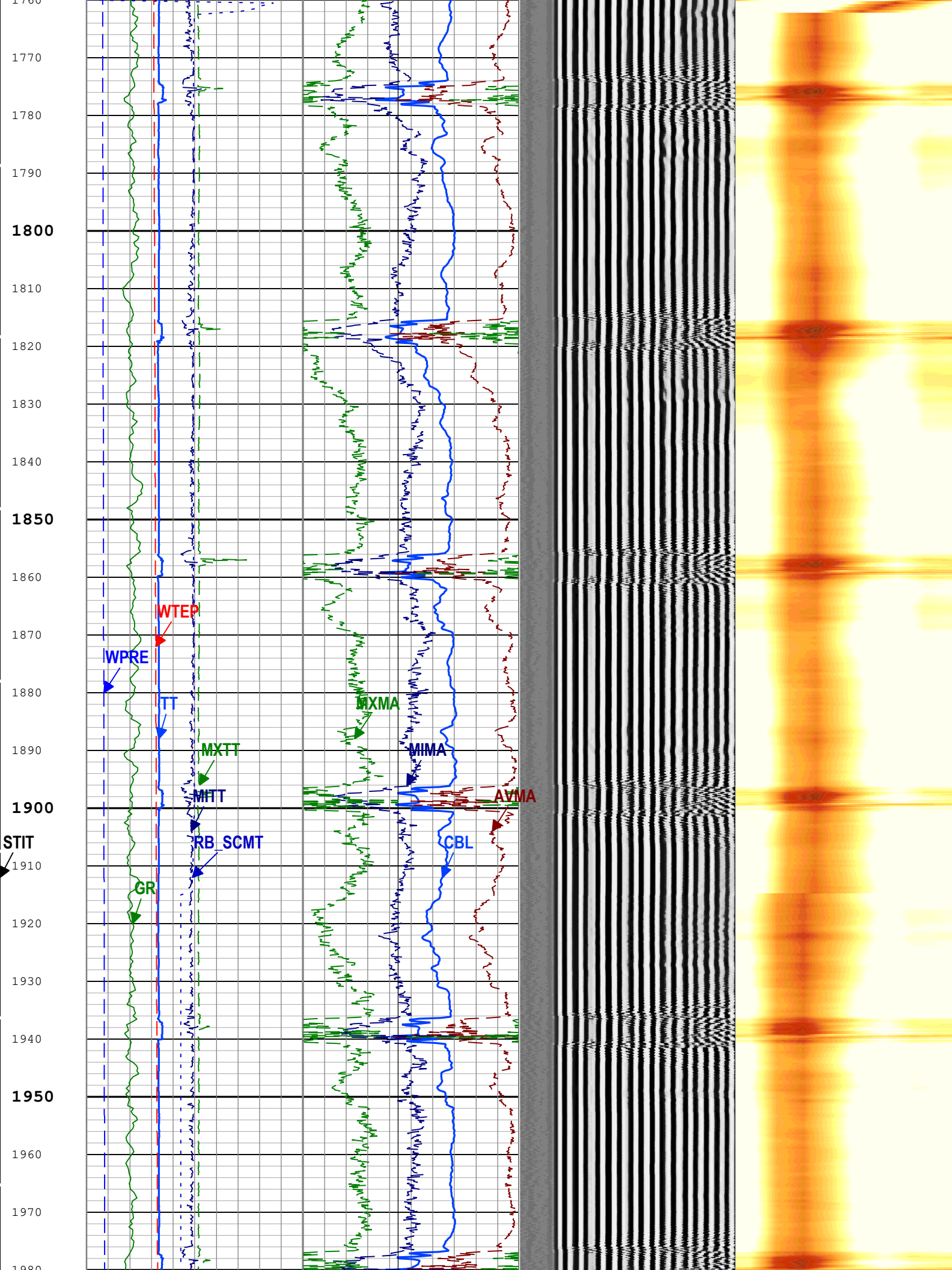
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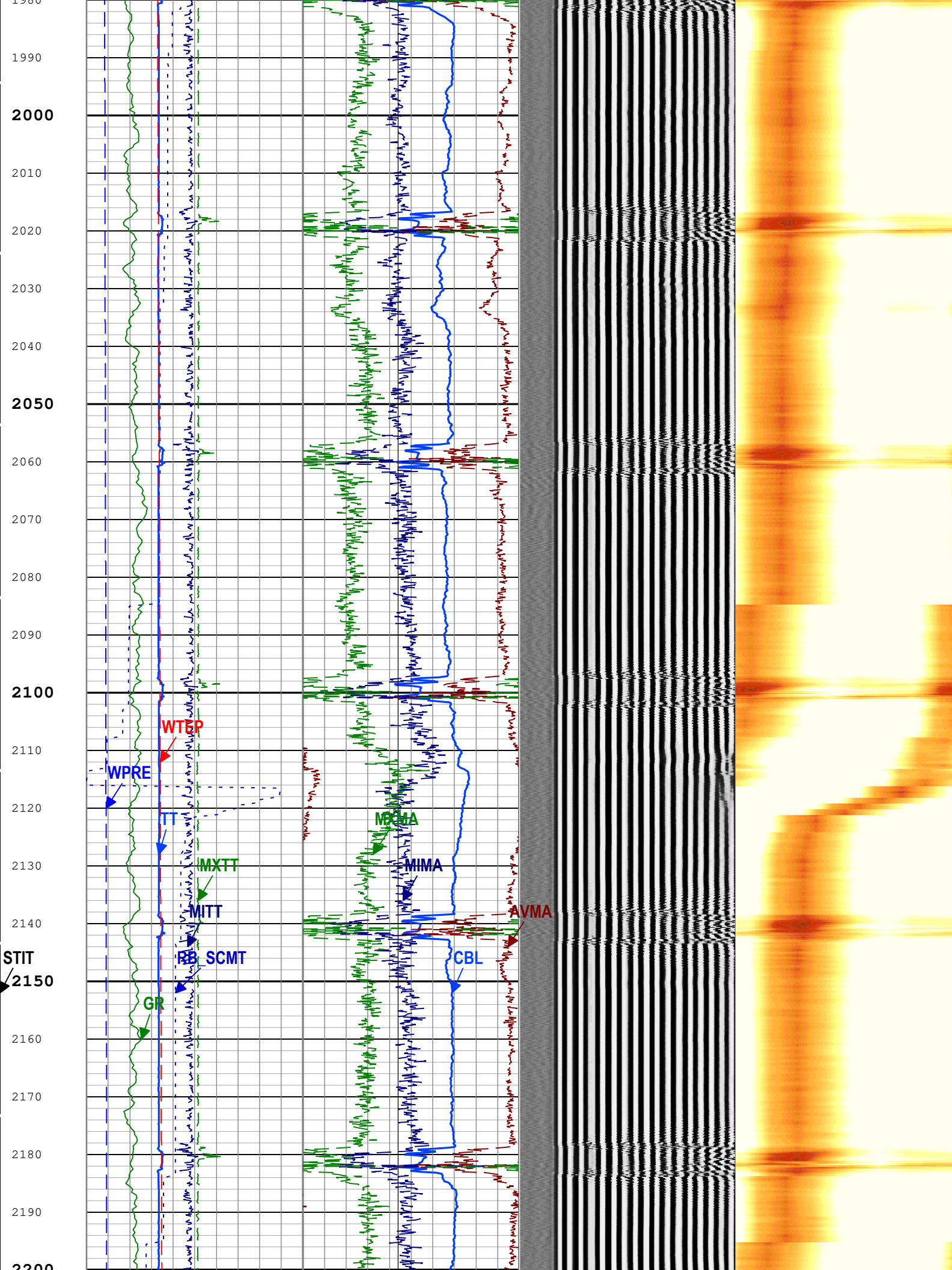
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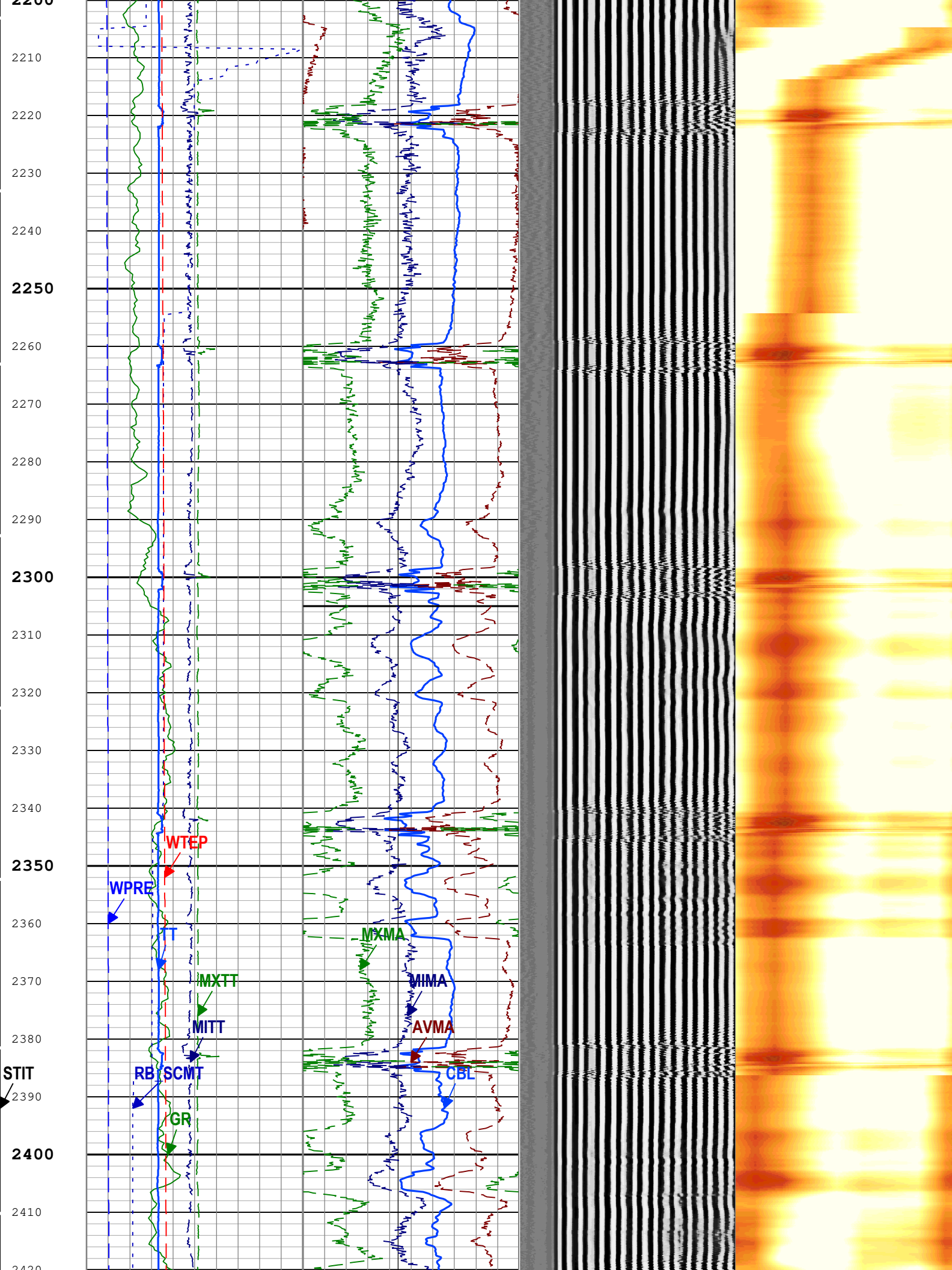
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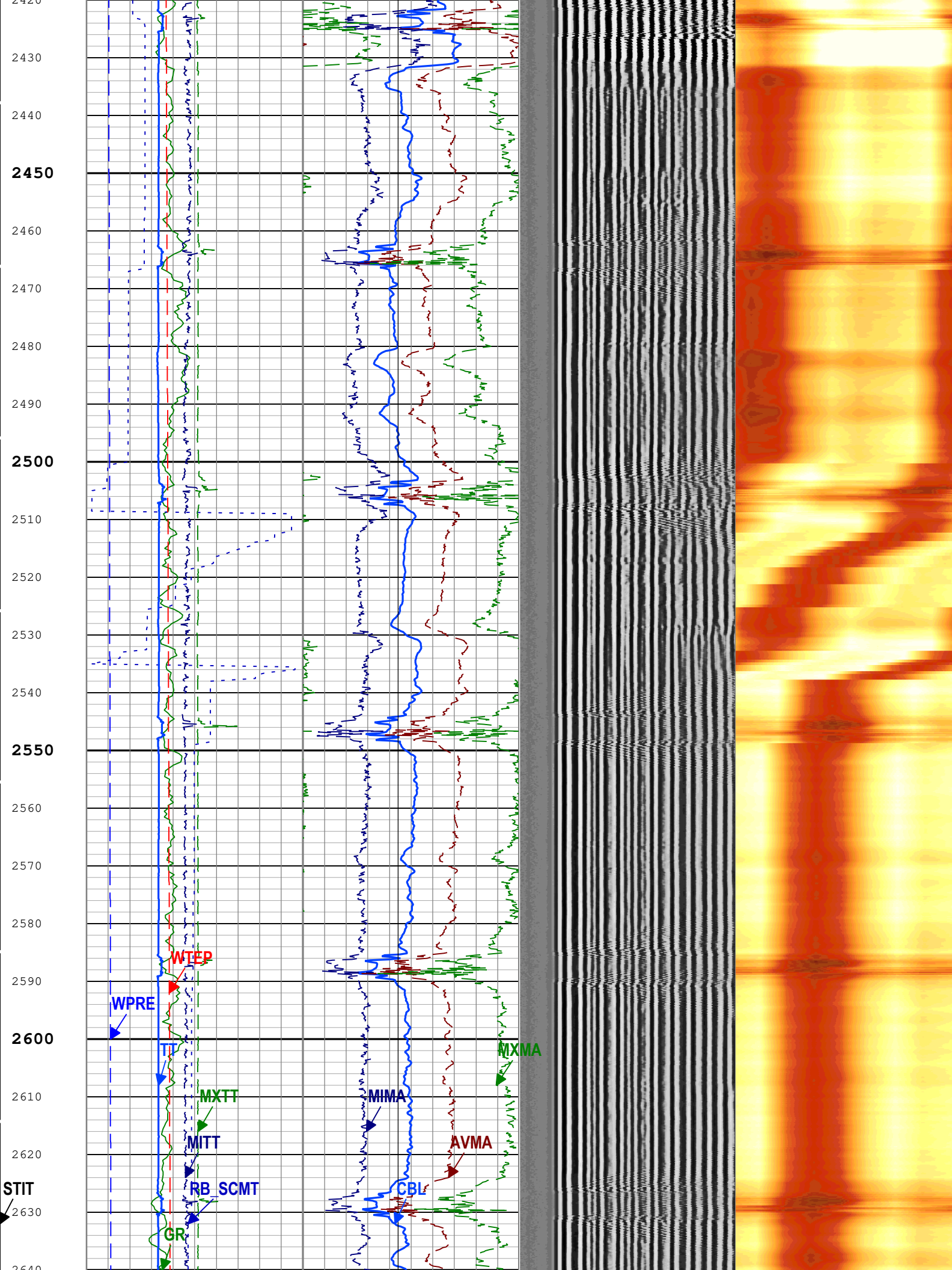
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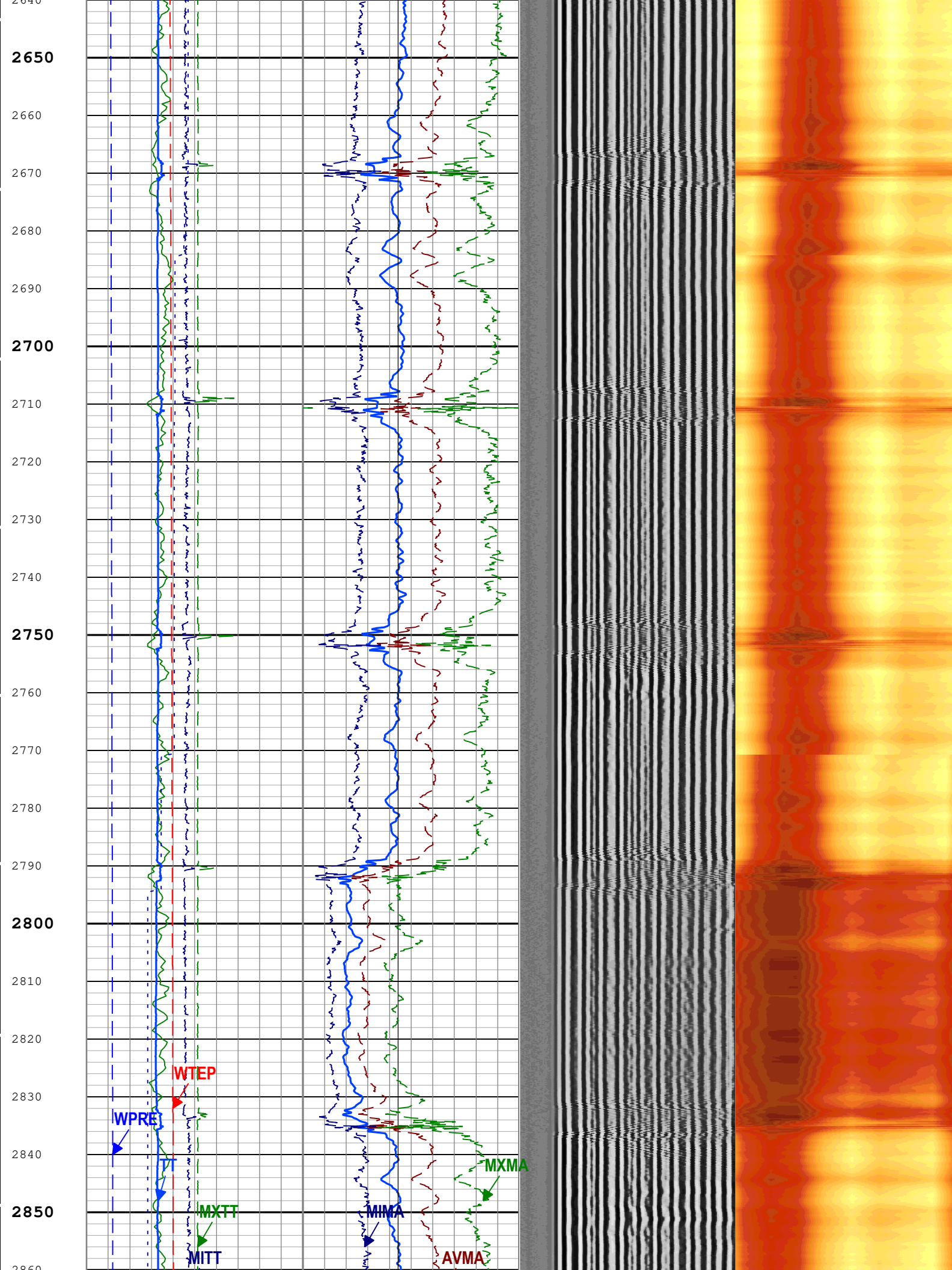
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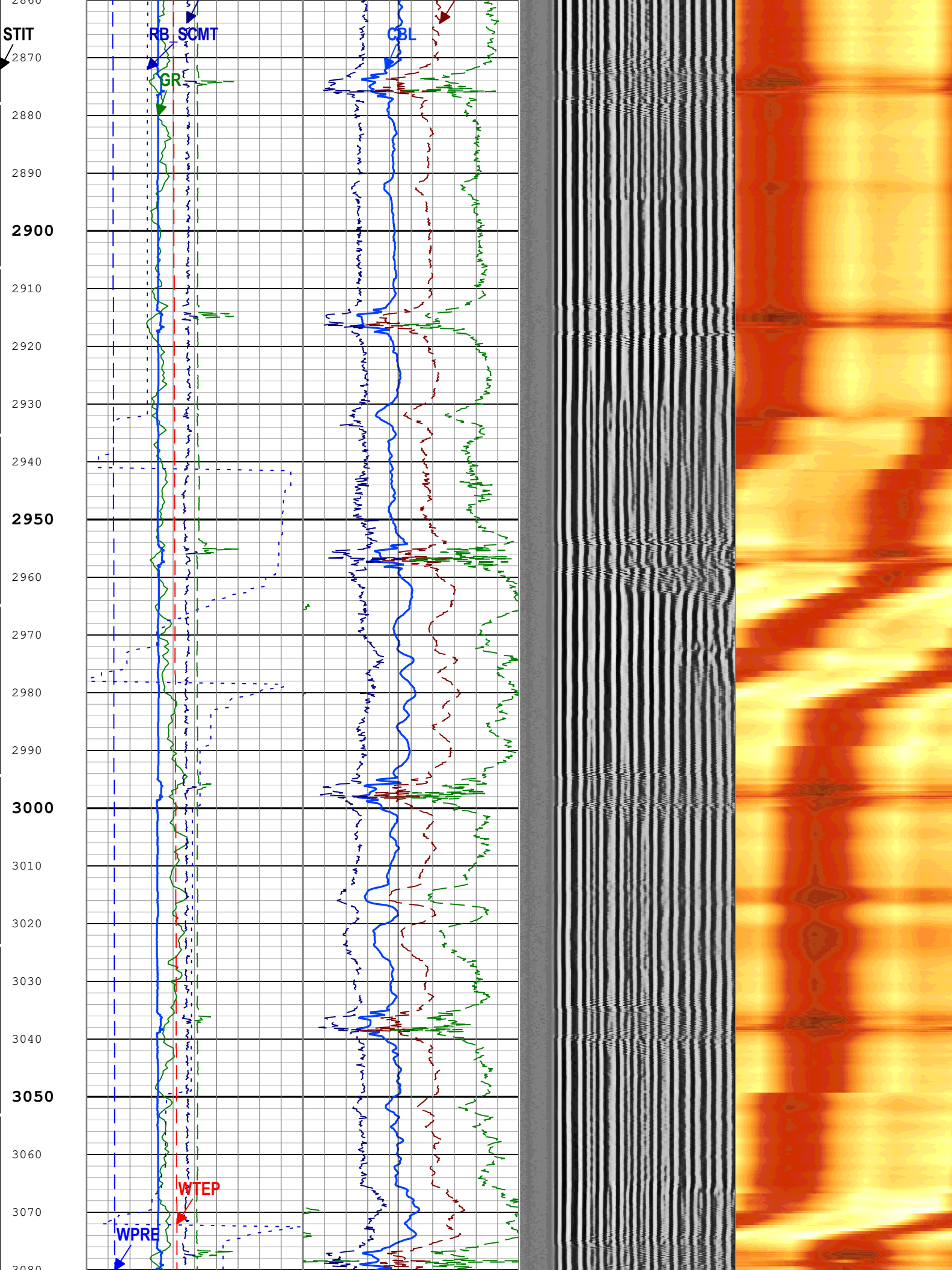
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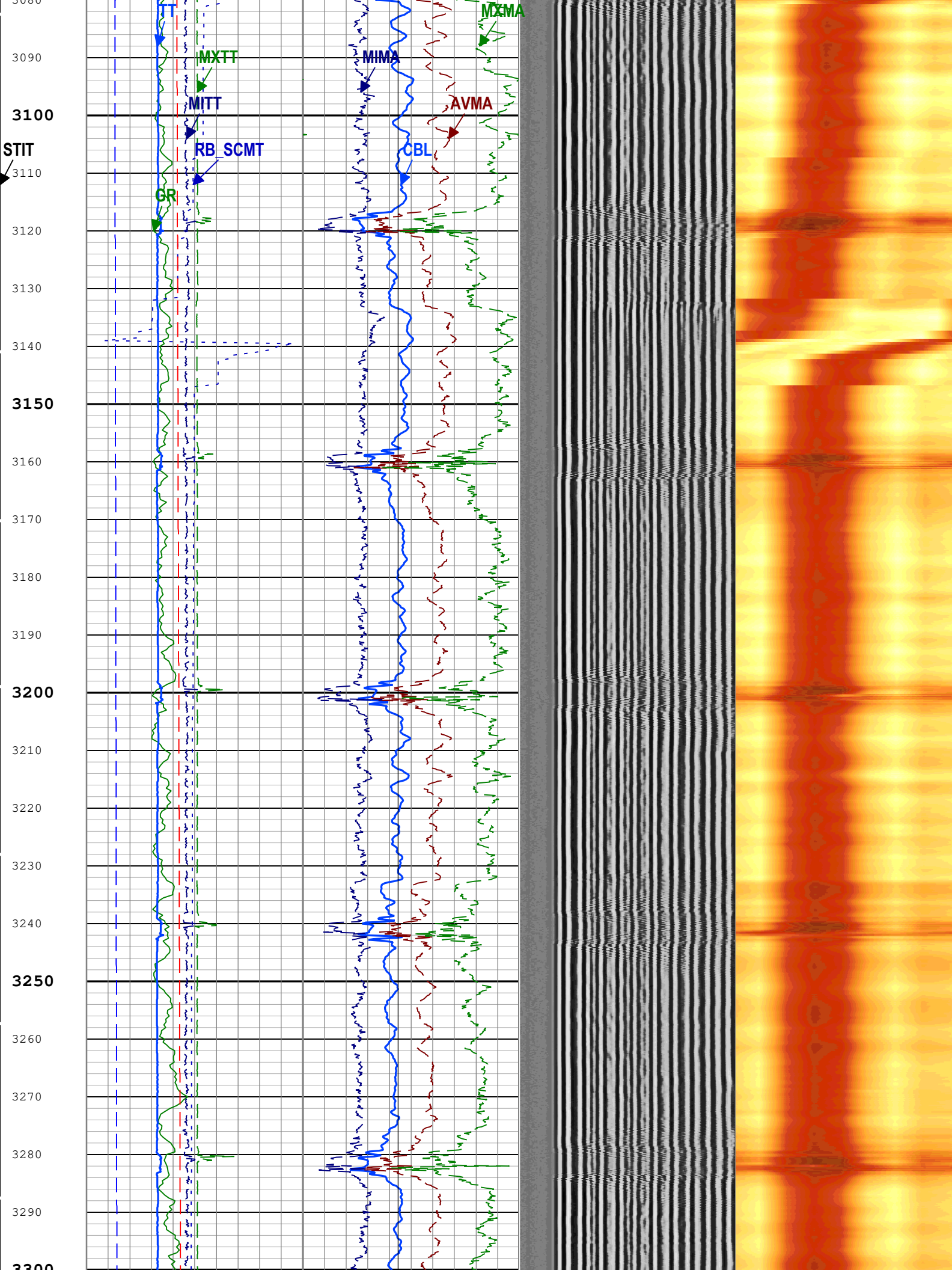
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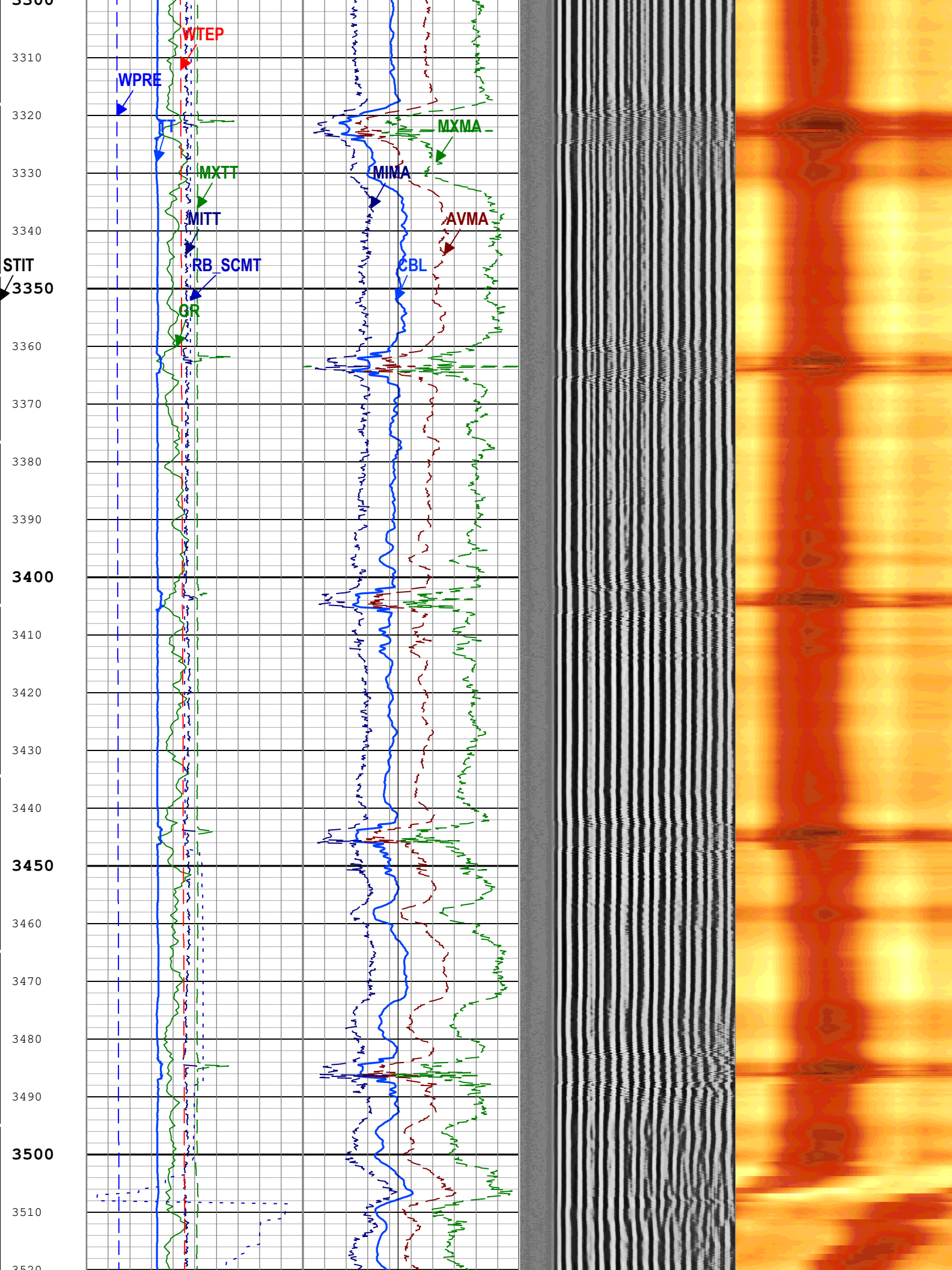
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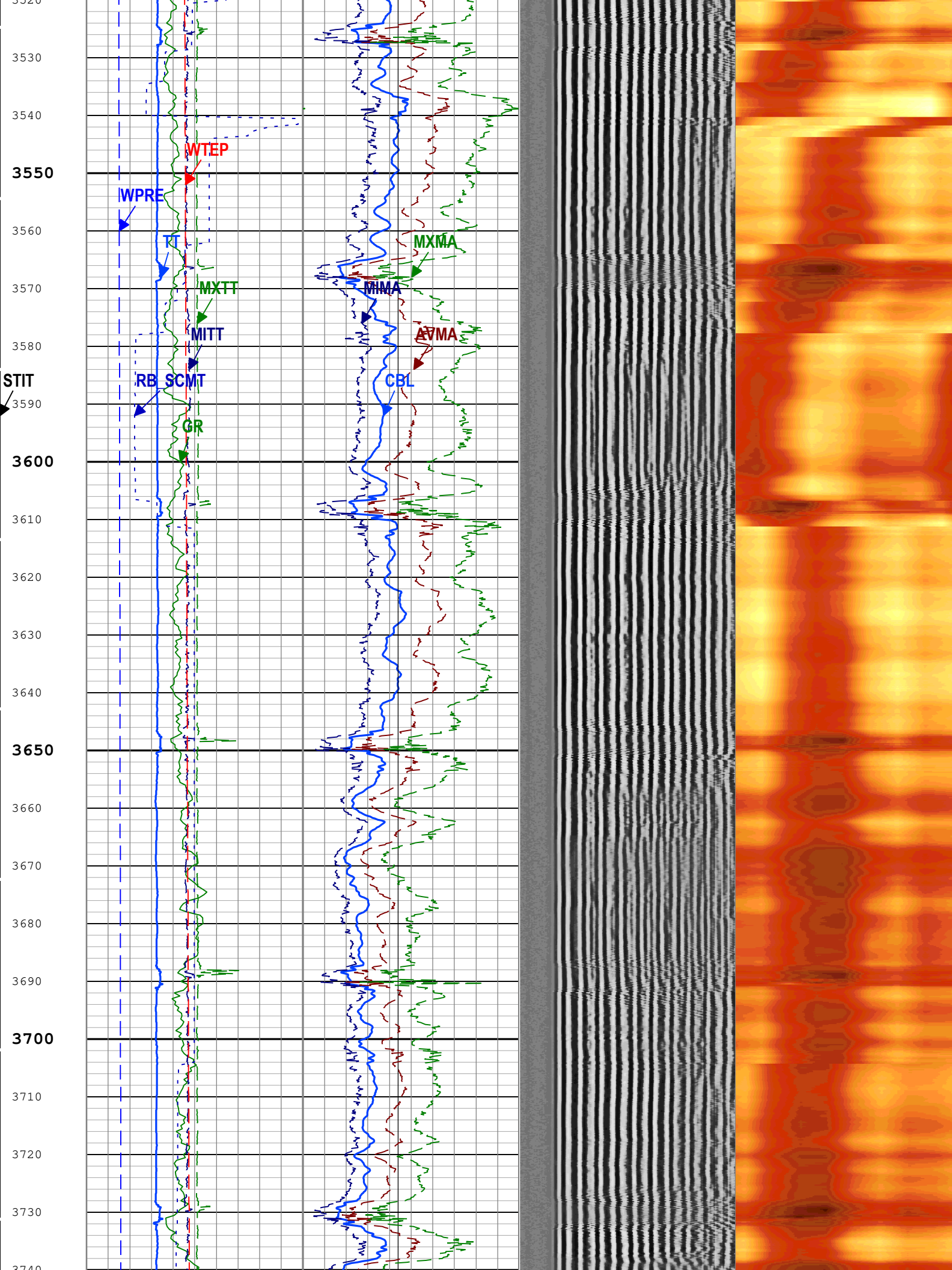
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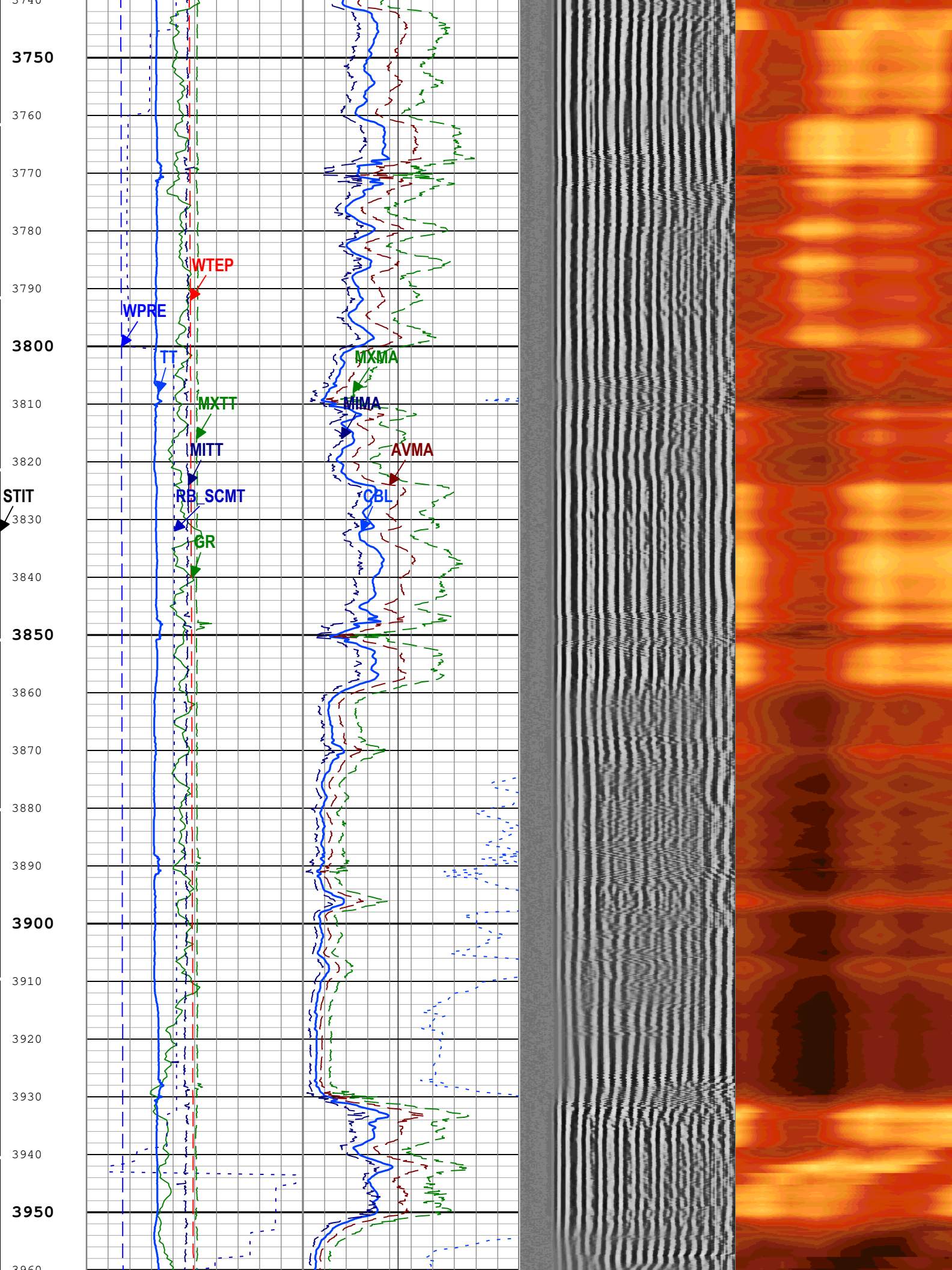
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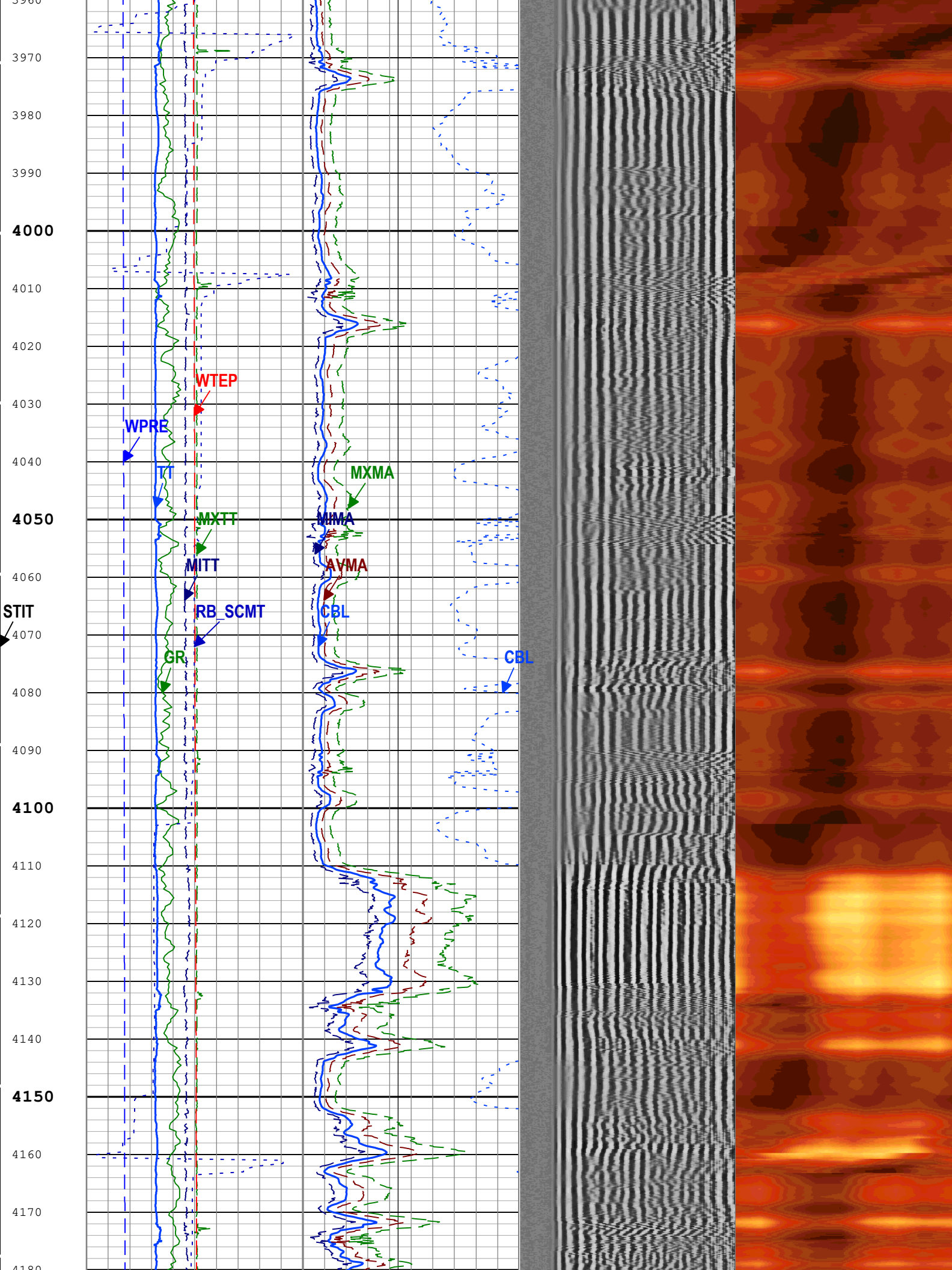
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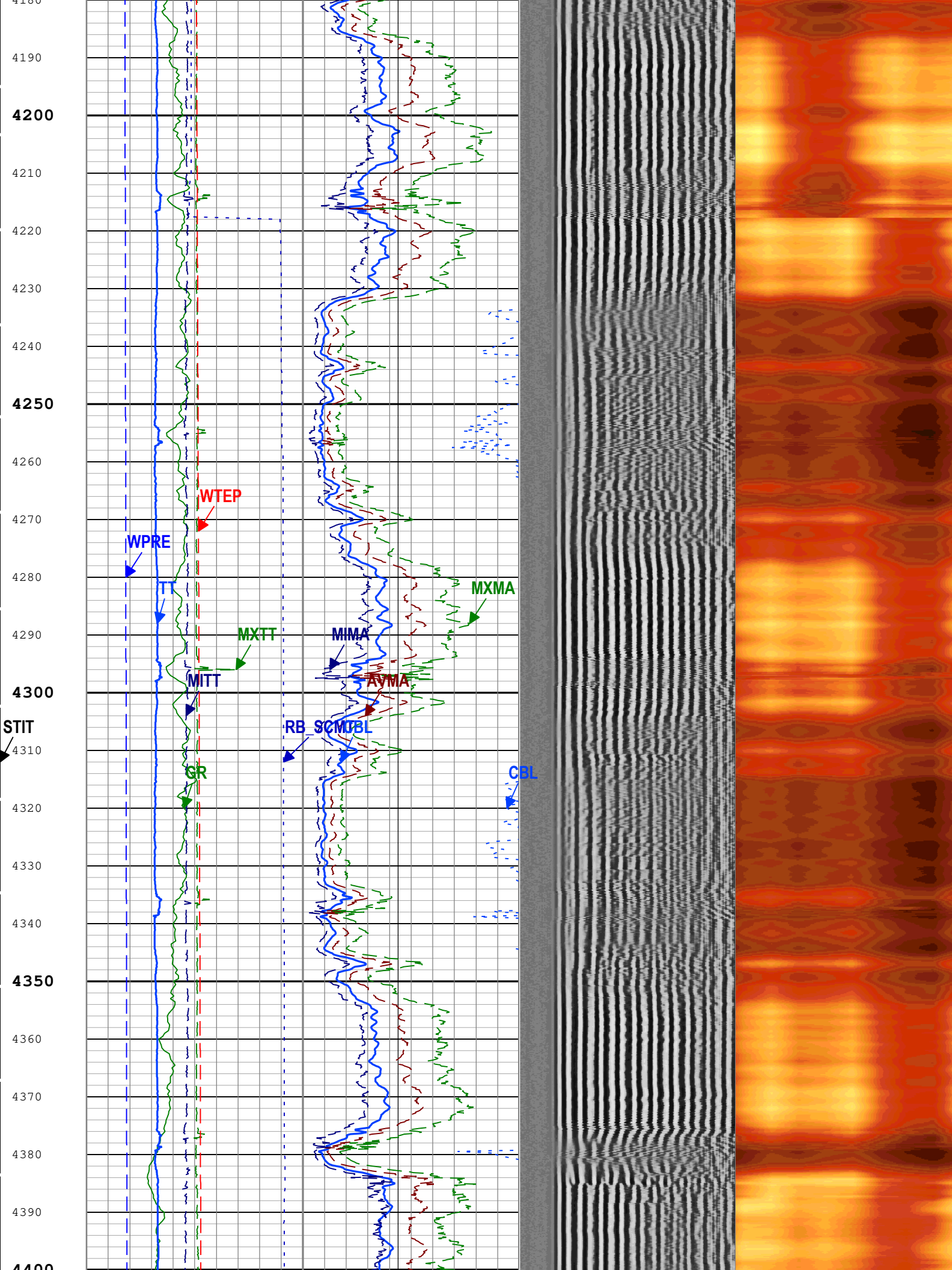
CBL
CBL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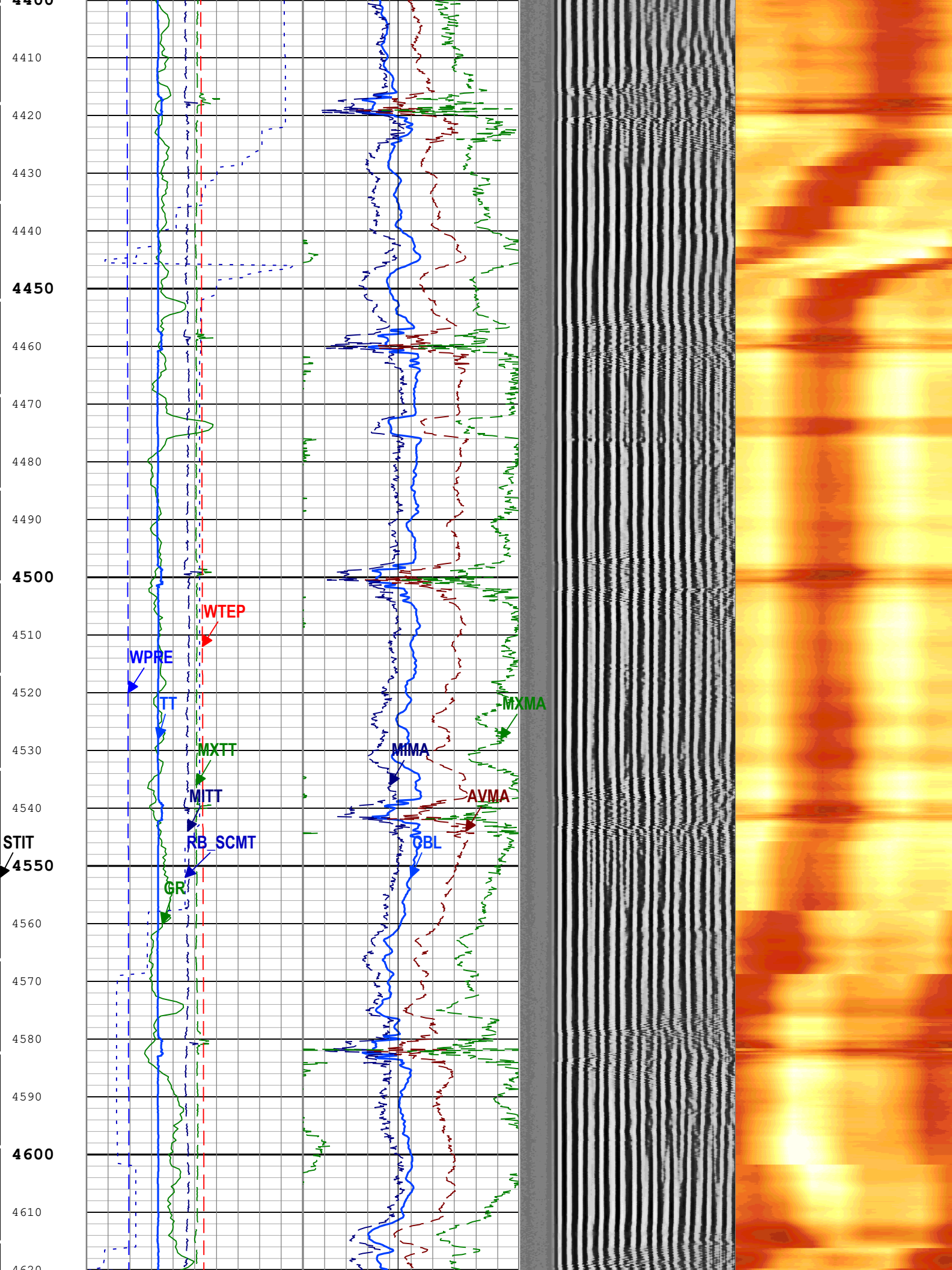
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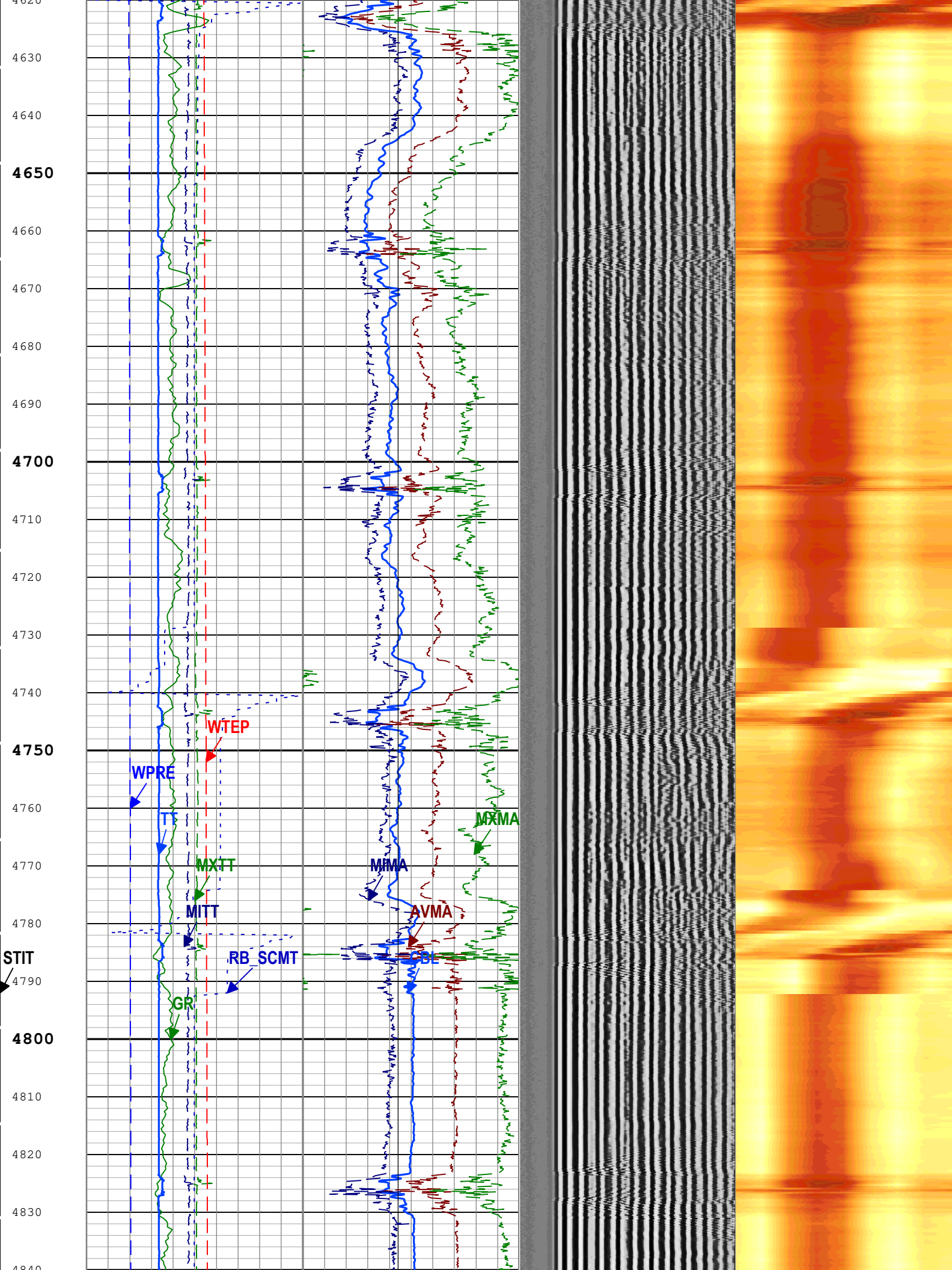
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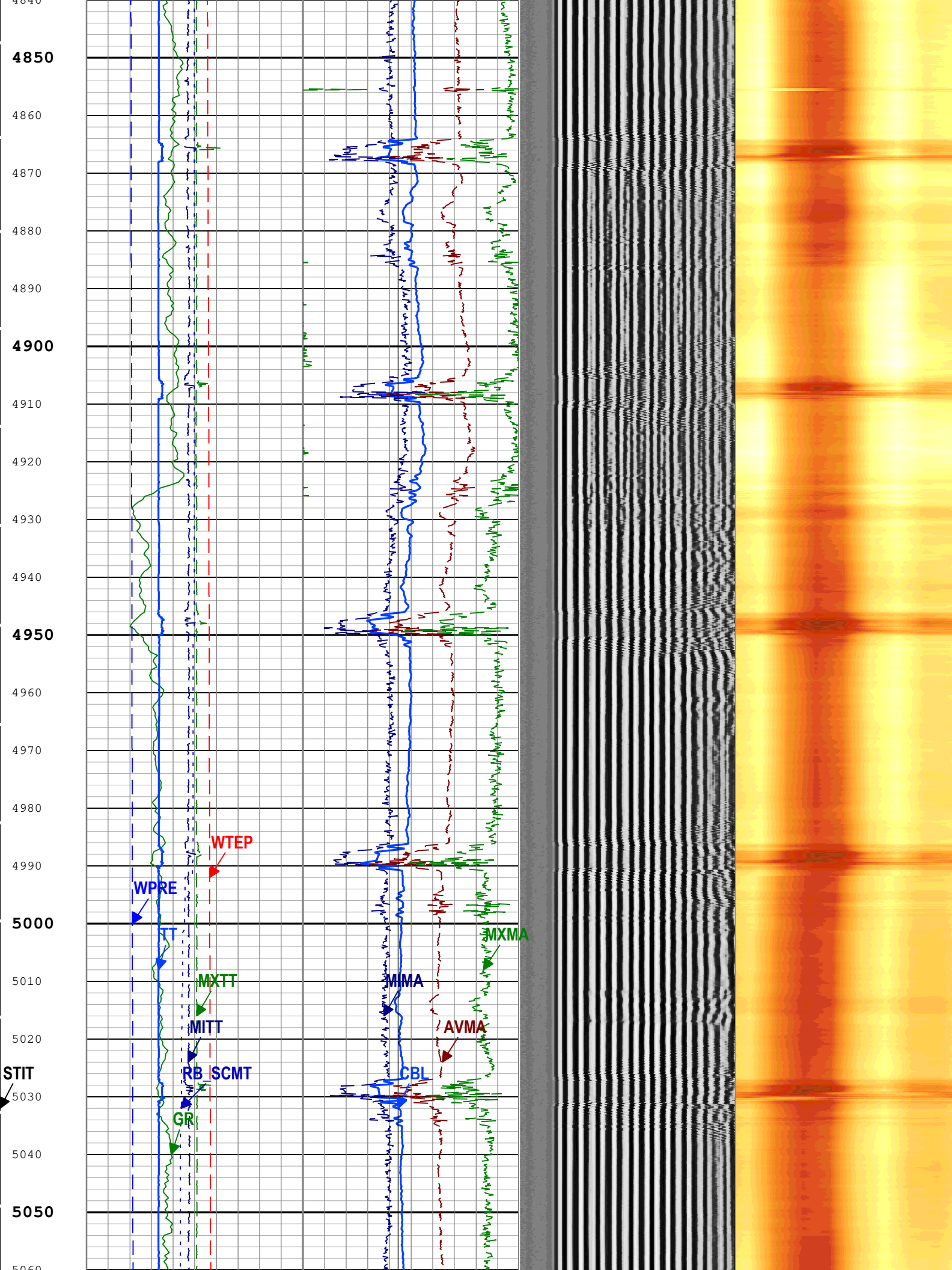
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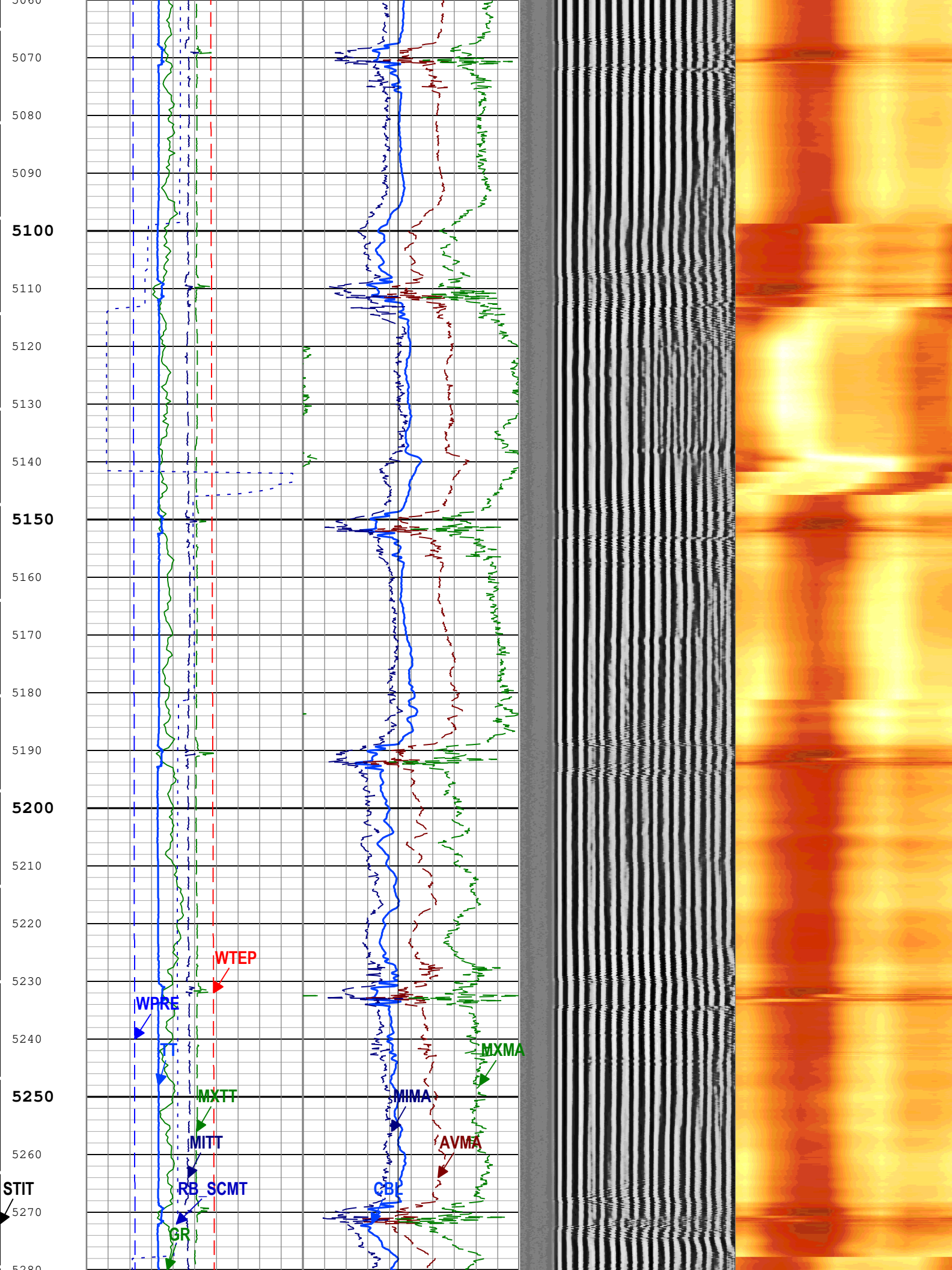
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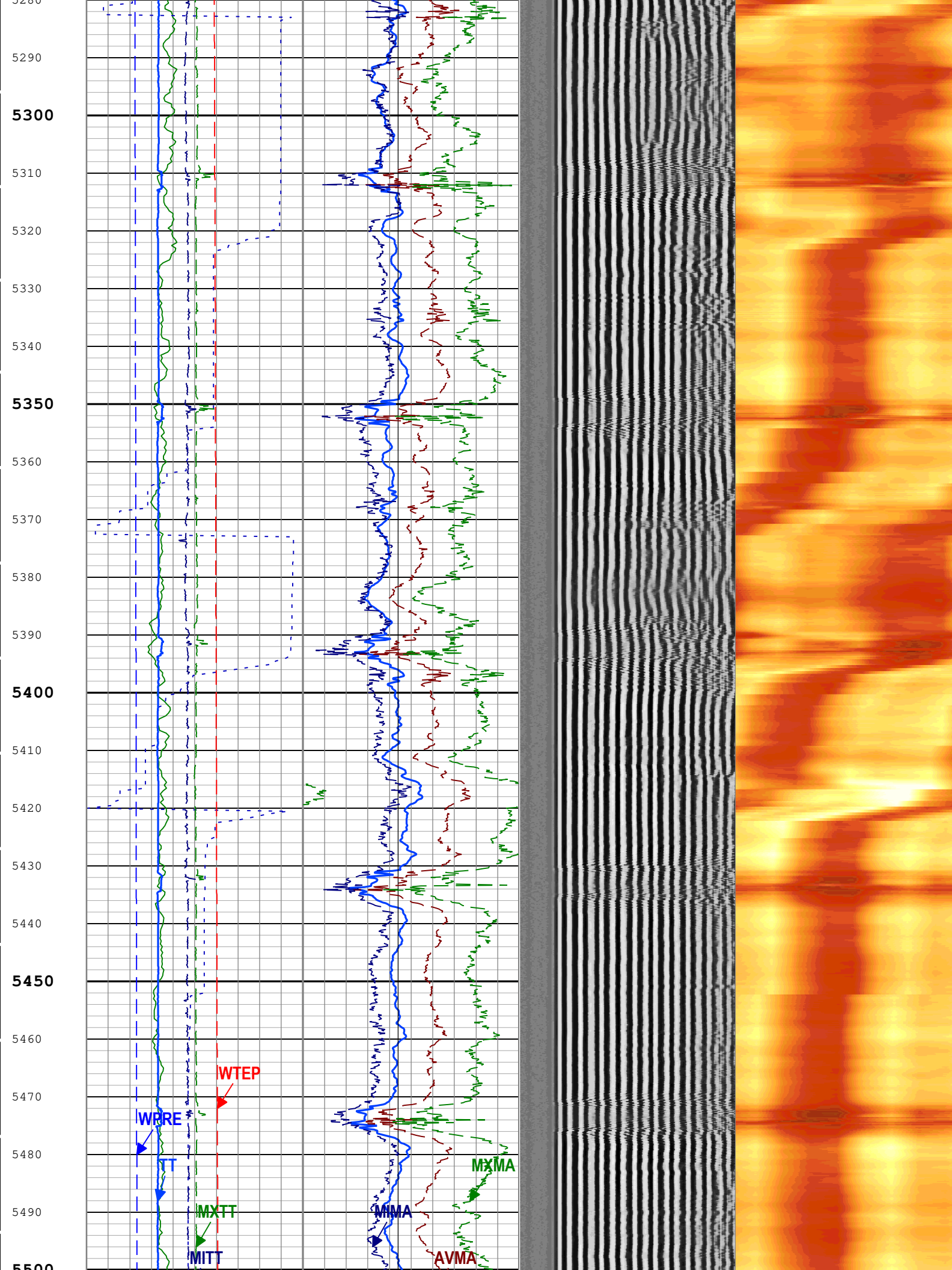
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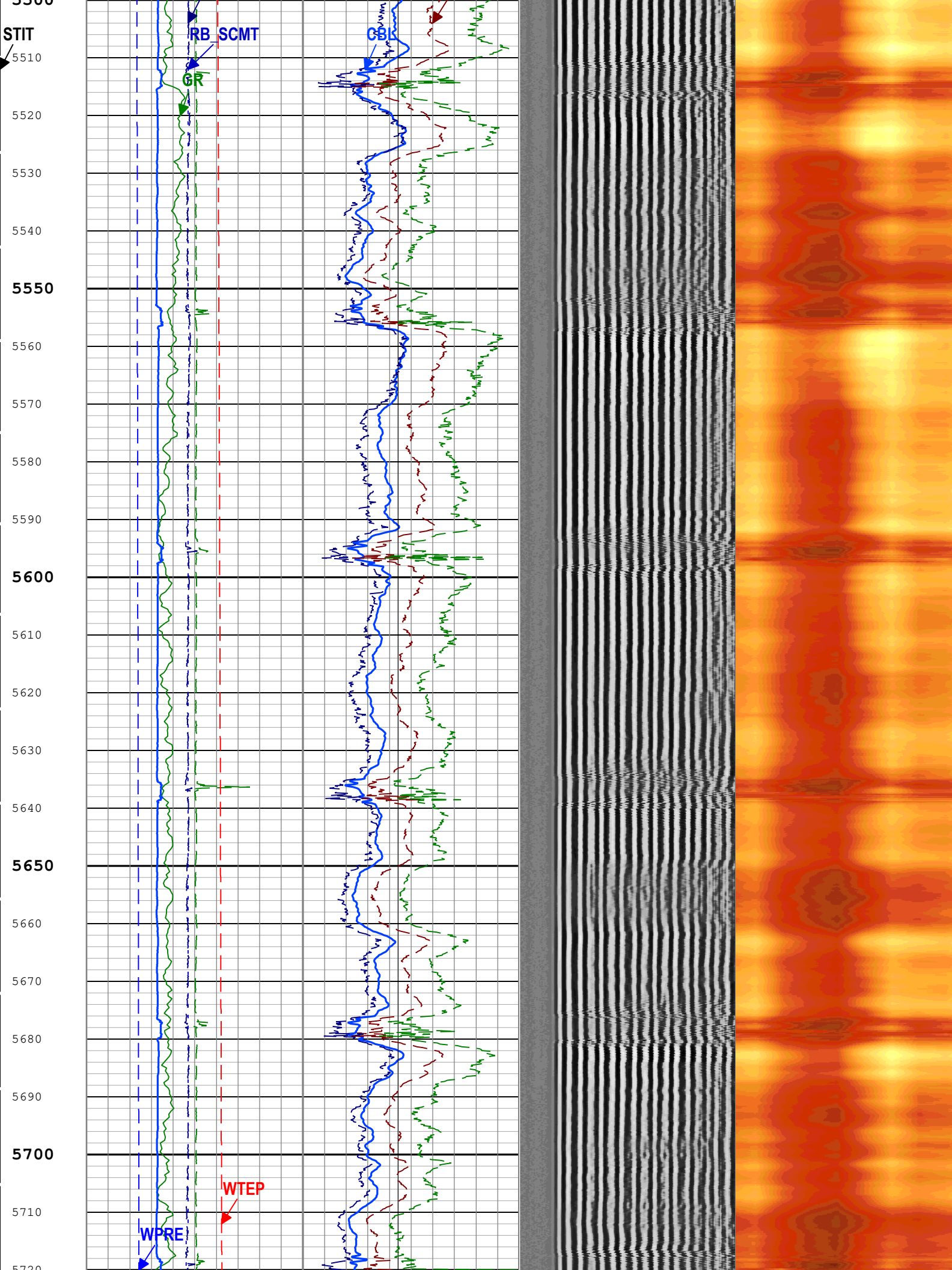
AVMA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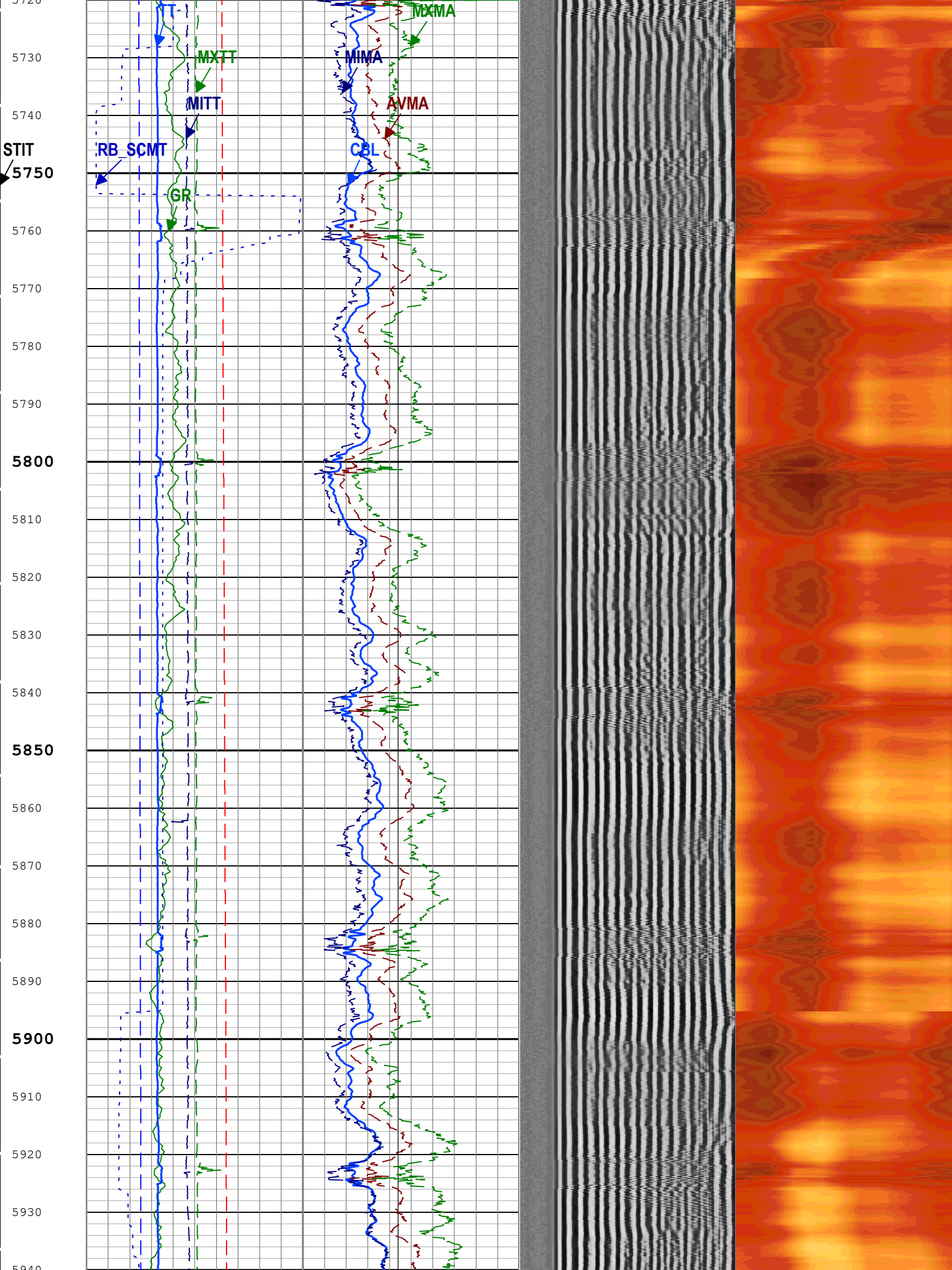
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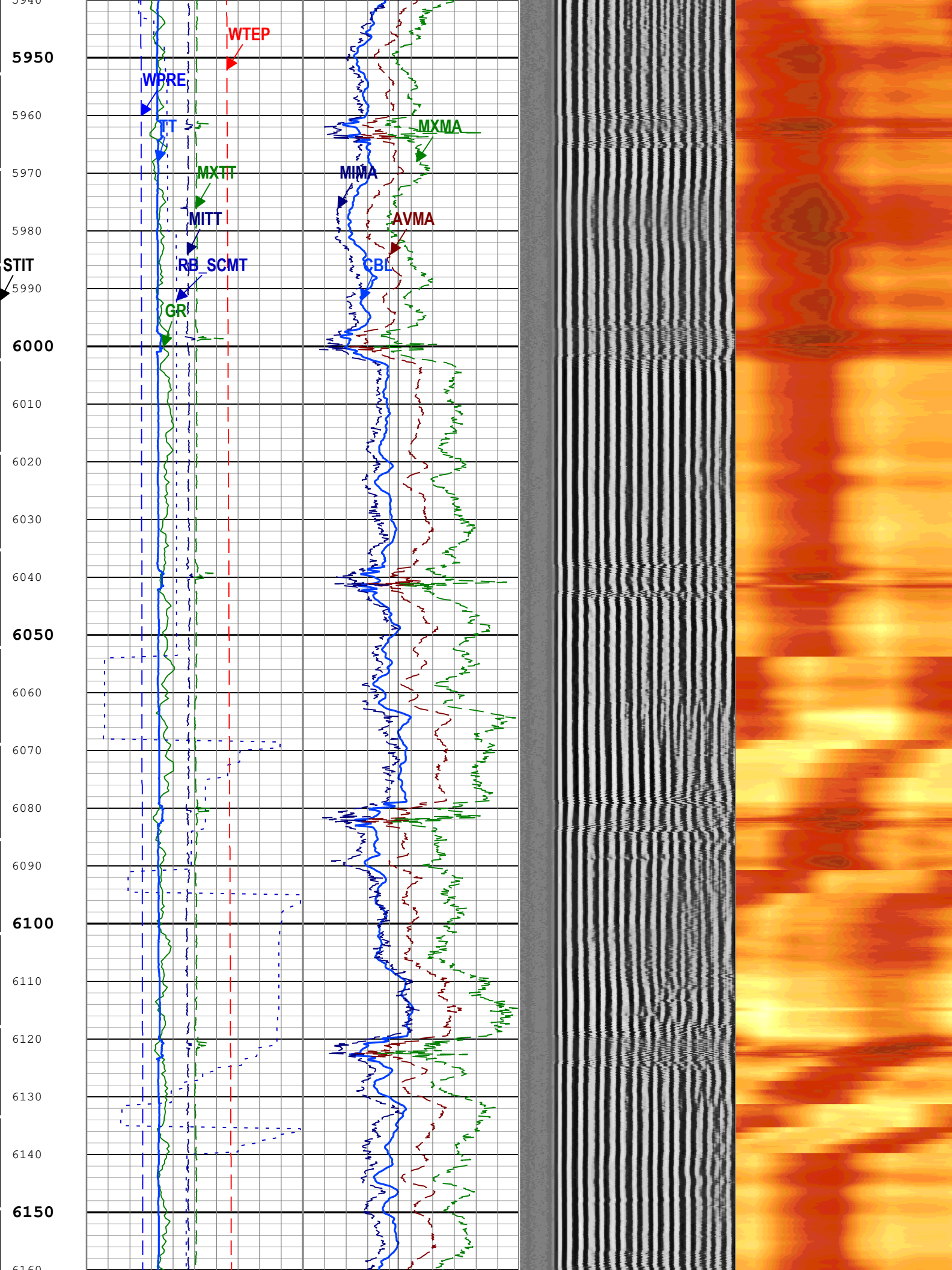
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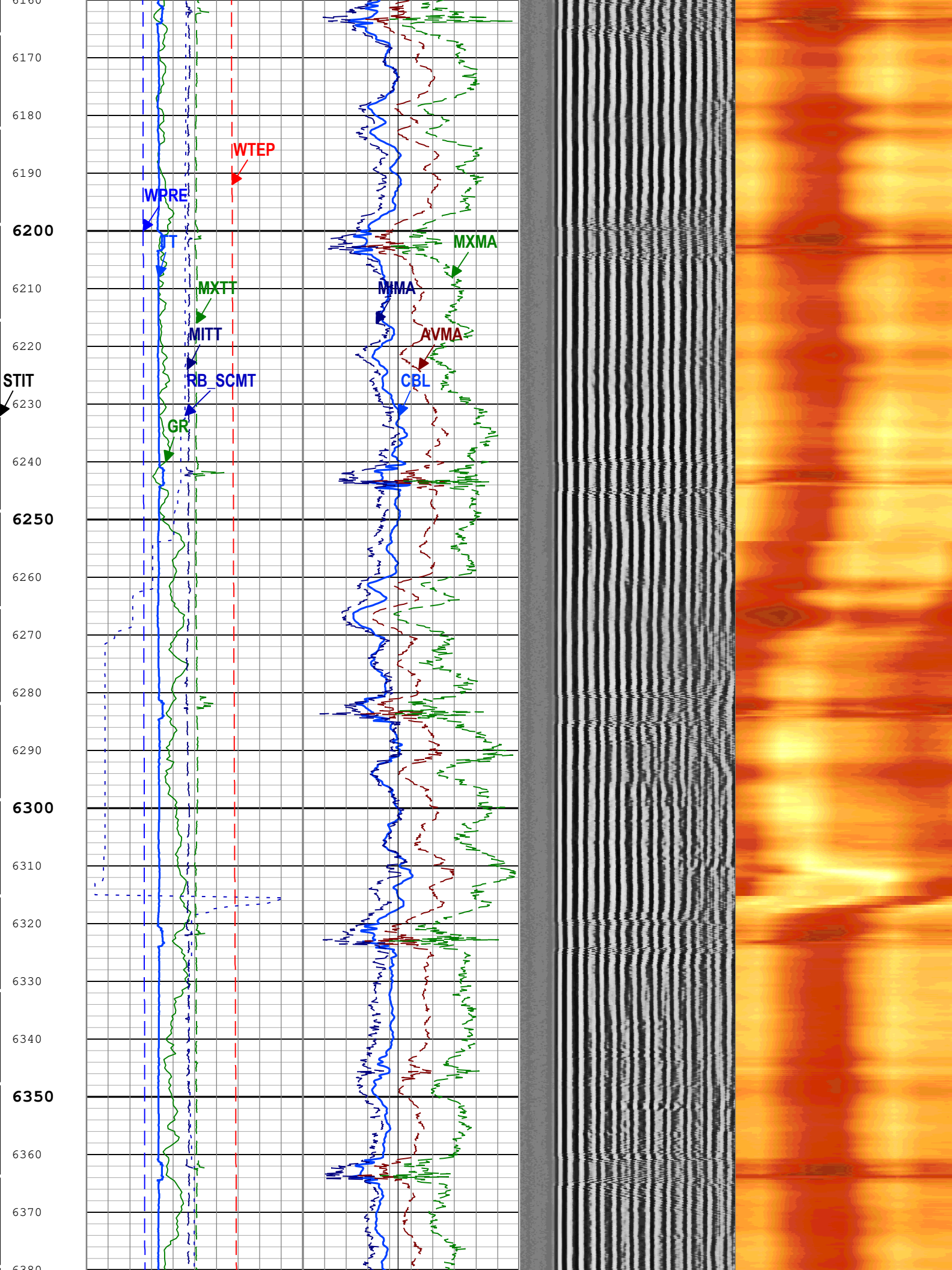
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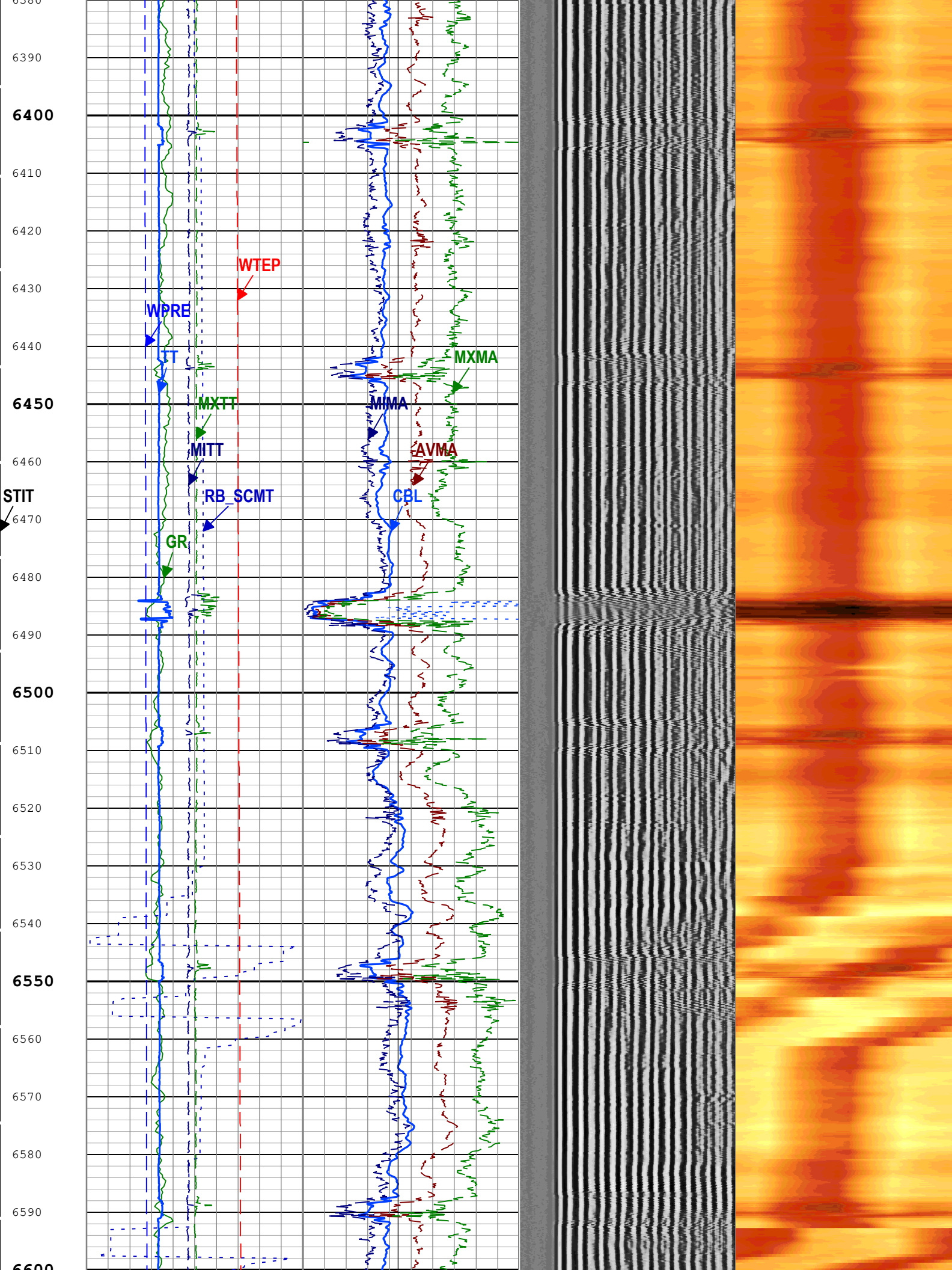
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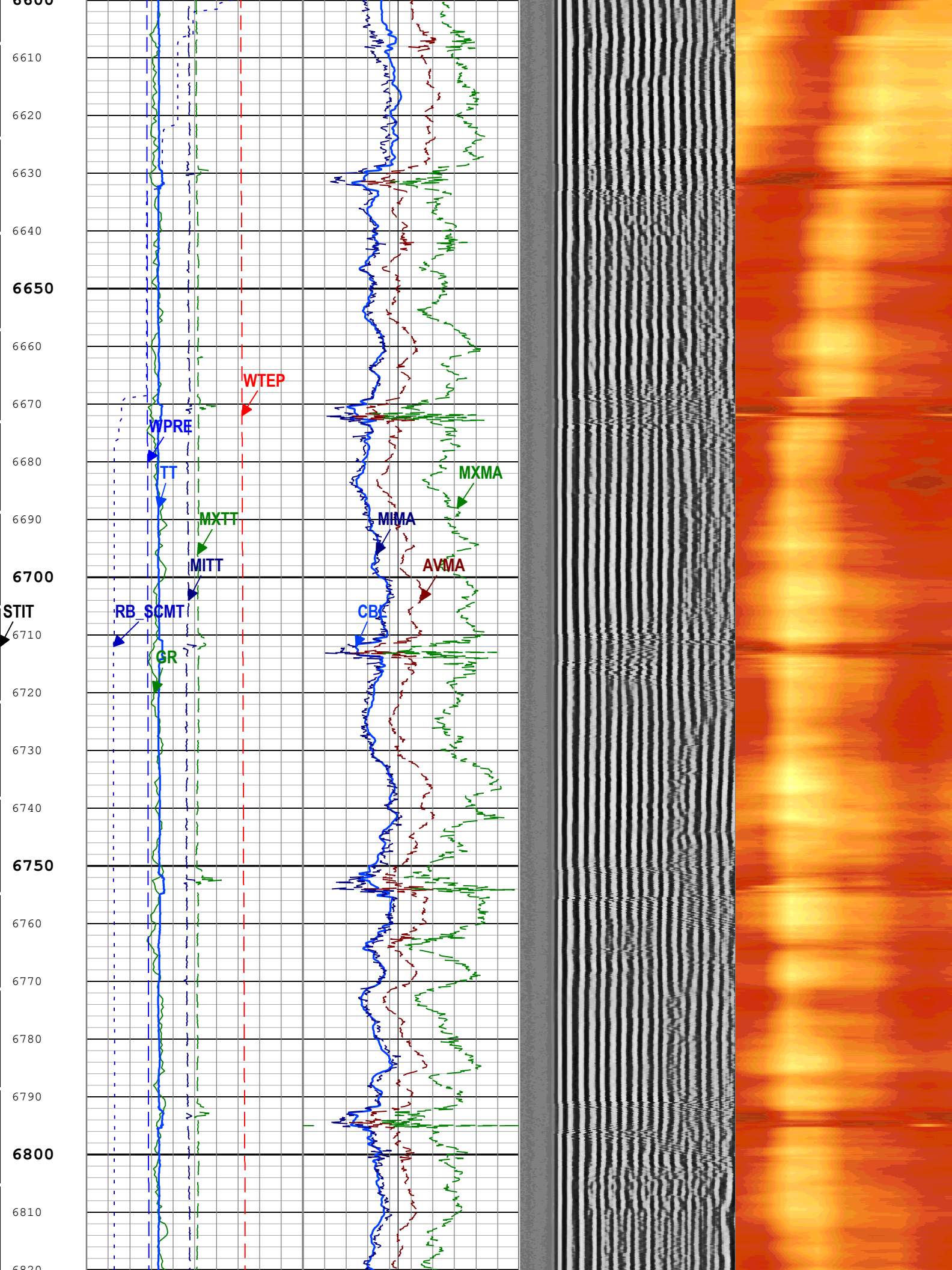
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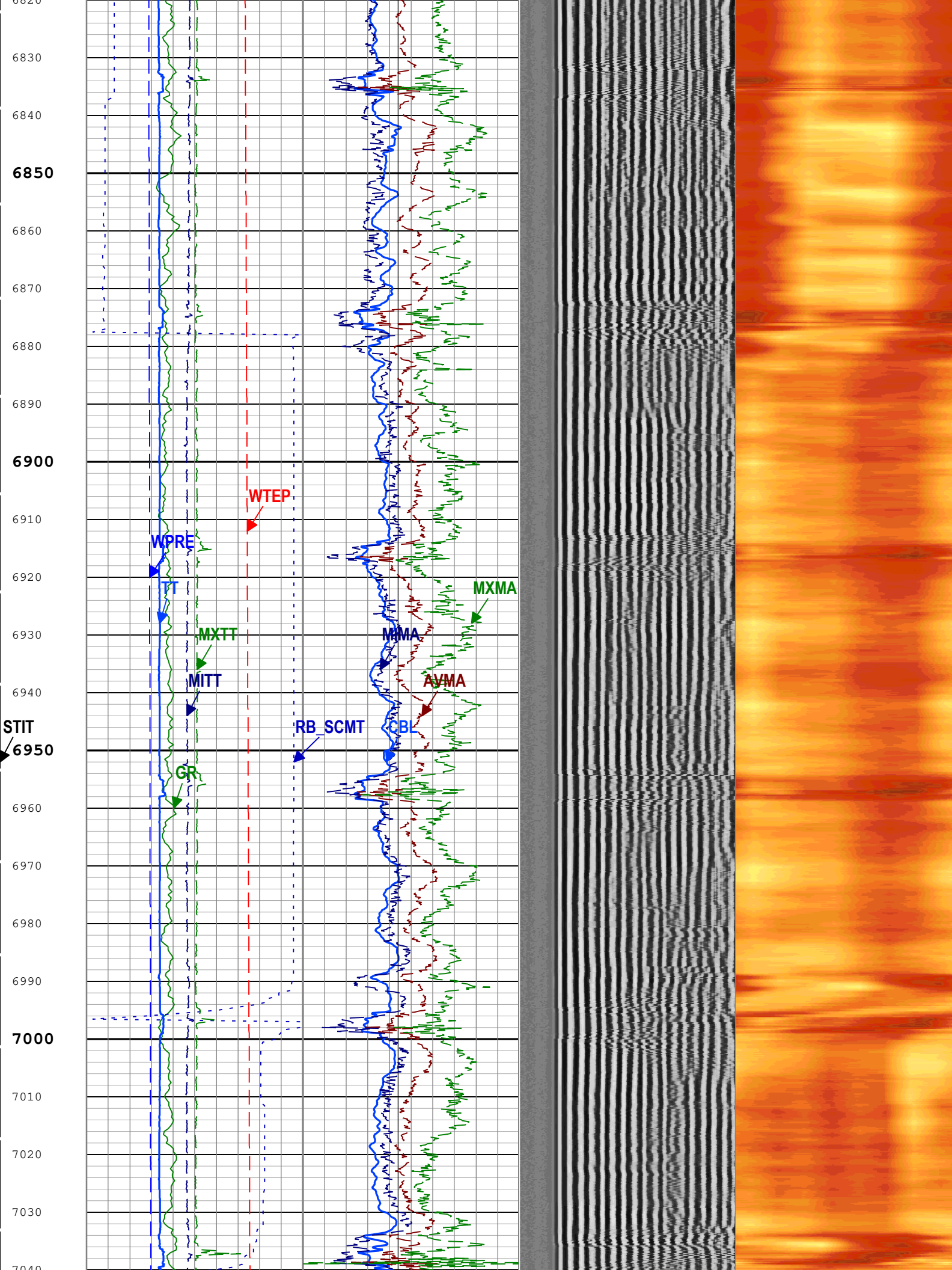
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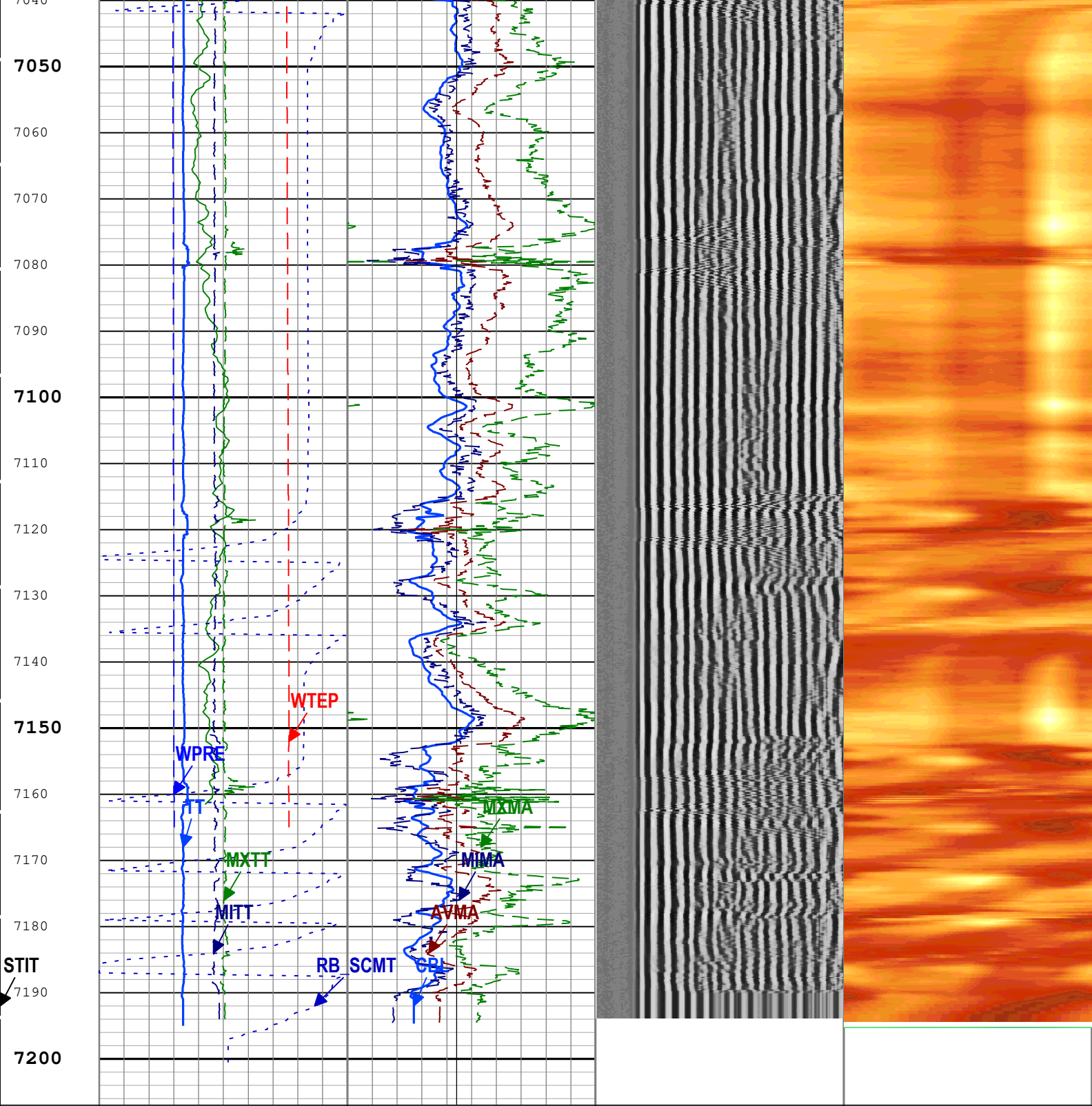


Stuck Tool Indicator, Total (STIT)
0 ft 50

Cable Drag

Tool_Tot. Drag

Gamma Ray (GR) PSTP-A
0 gAPI 150

Relative Bearing (RB_SCMT) SCMT-CB
0 deg 360

Minimum MAP Transit Time (MITT) SCMT-CB
100 us 300

Maximum MAP Transit Time (MXTT) SCMT-CB
100 us 300

CBL Amplitude (CBL) SCMT-CB
0 mV 10

CBL Amplitude (CBL) SCMT-CB
0 mV 100

Good Bond (GOBO)
0 mV 10

Normalized Average MAP Amplitude (AVMA) SCMT-CB
0 mV 100

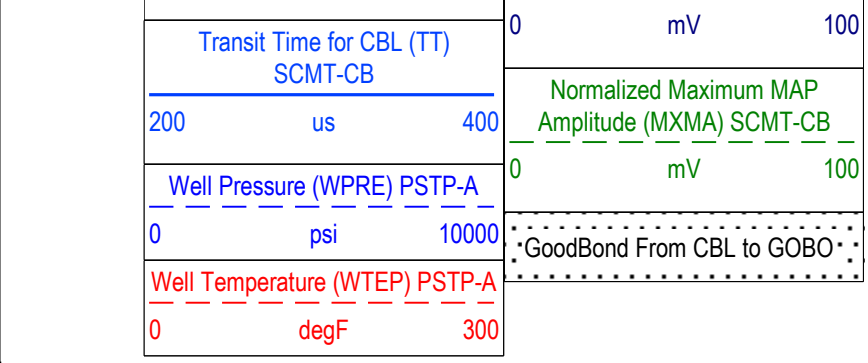
Normalized Minimum MAP Amplitude (MIMA) SCMT-CB

Min Amplitude Max

VDL VariableDensity (VDL) SCMT-CB
200 us 1200

Absent 7.500 17.500 27.500 37.500 47.500 57.500 67.500 77.500 87.500 97.500

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



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: 17-May-2019 21:44:30

Channel Processing Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	229.31	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-CB	235.75	us
CBLG	CBL Gate Width	SCMT-CB	42	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
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	204	us/ft
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-CB	4.41	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	WTEP	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	SCMT-CB	178.61	us
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-CB	11.85	dB/ft
MCI	Minimum Cemented Interval for Isolation	SCMT-CB	Depth Zoned	ft
MMSA	MAP Minimum Sonic Amplitude	SCMT-CB	10.86	mV
MSA	Minimum Sonic Amplitude	SCMT-CB	2.19	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	SCMT-CB	2.19	mV
RUN_SNUM	Run Sequence Number	WSDRUN	1	

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
MCI	14.81	100	2305
MCI	4.75	2305	7207

All depth are actual.

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	Time Zoned	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-A	Time Zoned	

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
MAX_LOG_SPEED	1077.14	17-May-2019 15:40:44	17-May-2019 18:44:50	7207.07	4195.03
MAX_LOG_SPEED	1800	17-May-2019 18:44:50	17-May-2019 21:05:54	4195.03	105.2

PCCG	12 dB	17-May-2019 15:40:44	17-May-2019 15:42:13	7207.07	7190.33
PCCG	24 dB	17-May-2019 15:42:13	17-May-2019 15:46:06	7190.33	7127.02
PCCG	0 dB	17-May-2019 15:46:06	17-May-2019 15:50:58	7127.02	7049.26
PCCG	12 dB	17-May-2019 15:50:58	17-May-2019 18:51:18	7049.26	4079.74
PCCG	0 dB	17-May-2019 18:51:18	17-May-2019 18:53:29	4079.74	4015.58
PCCG	12 dB	17-May-2019 18:53:29	17-May-2019 21:05:54	4015.58	105.2

All depth are at tool zero.

ONE

Repeat Pass

Software Version

Acquisition System	Version
Maxwell 2019	9.0.106845.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[2]:Up	Up	2386.37 ft	2610.03 ft	17-May-2019 3:02:33 PM	17-May-2019 3:11:01 PM	ON	-2.59 ft	No

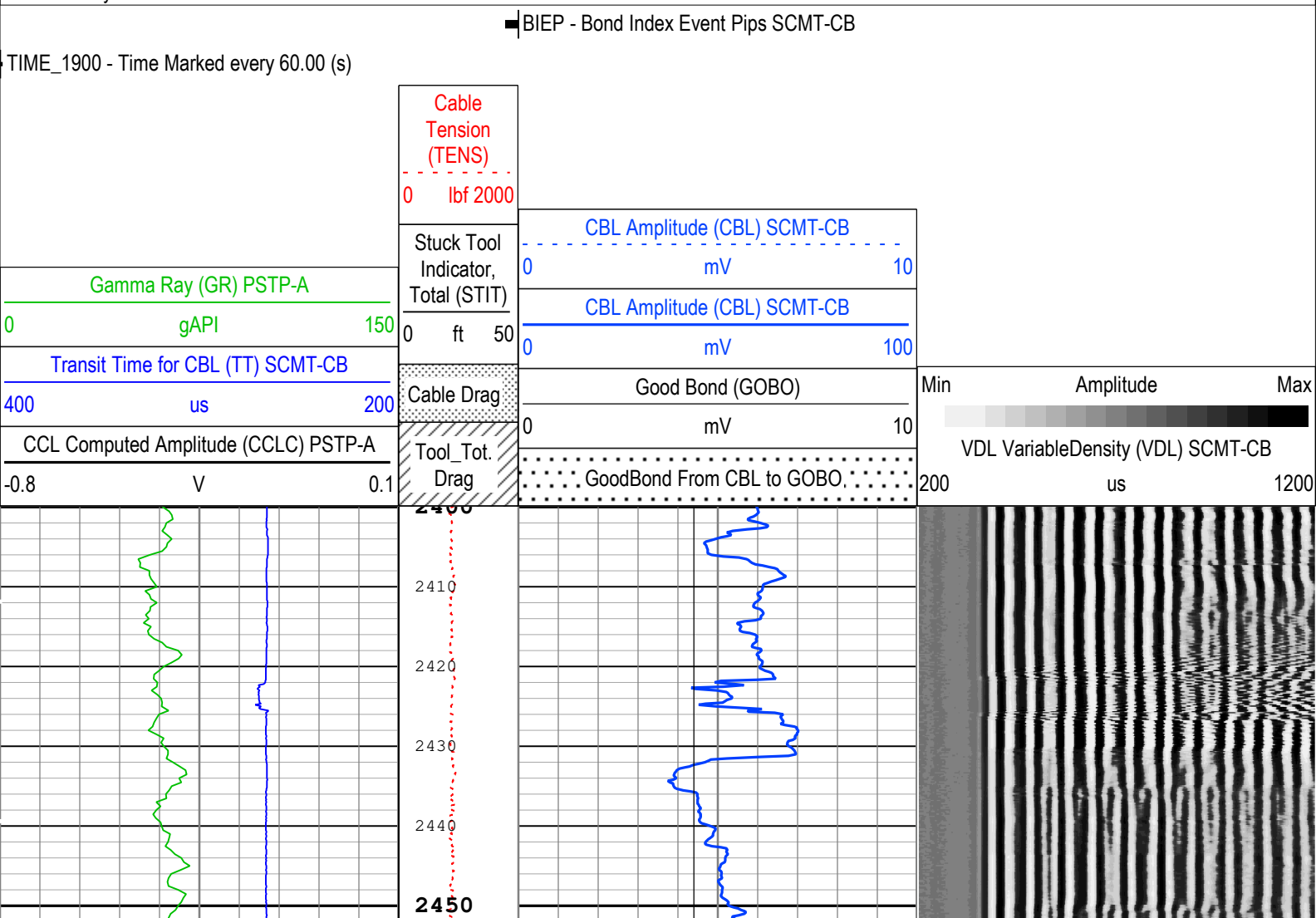
All depths are referenced to toolstring zero

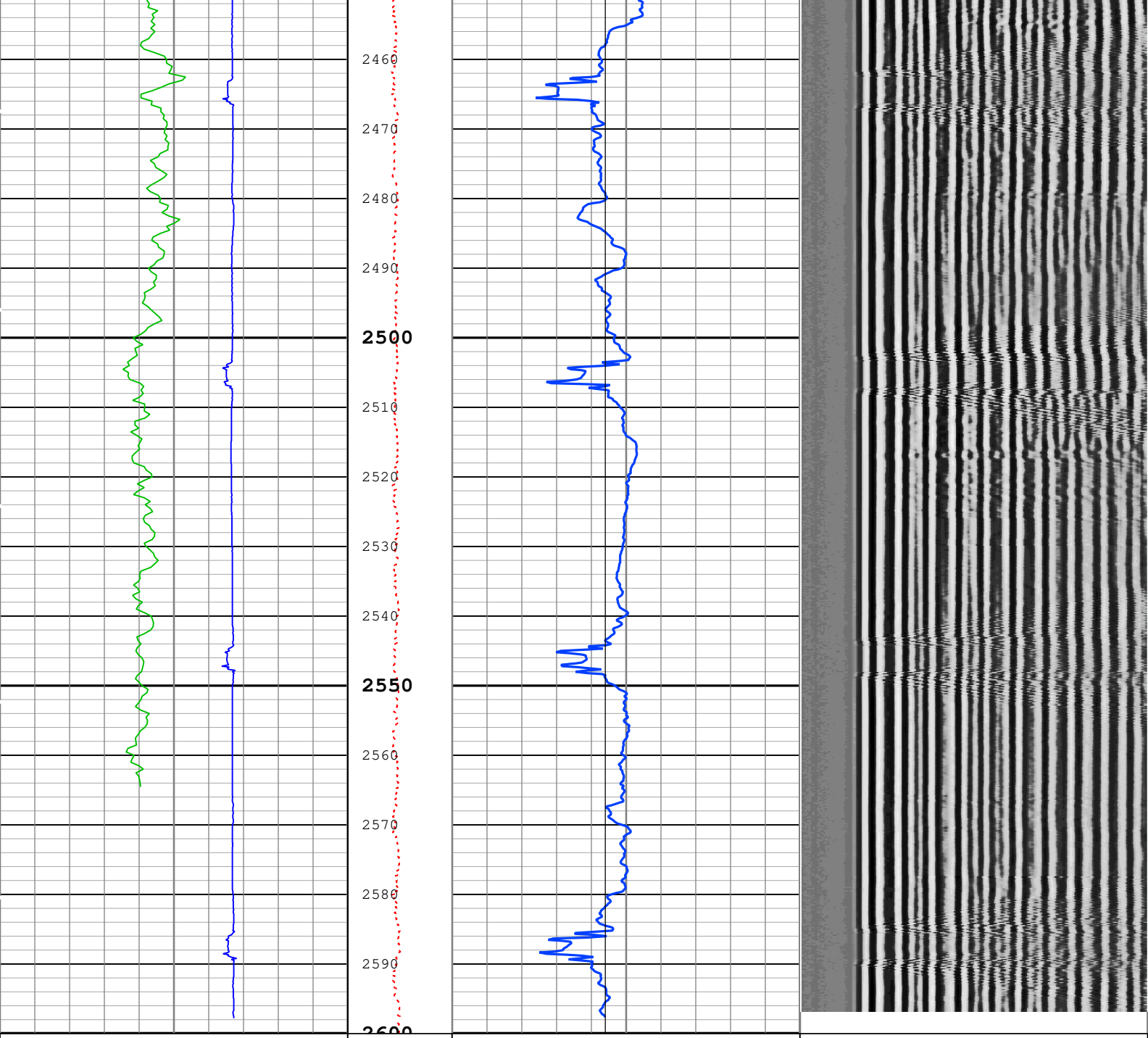
Log

Company:Crestone Peak Resources and Operating LLC Well:Echeverria 2F-2H-D267

ONE: Log[2]:Up:S006

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: 17-May-2019 21:44:43





Gamma Ray (GR) PSTP-A
0 gAPI 150

Transit Time for CBL (TT) SCMT-CB
400 us 200

CCL Computed Amplitude (CCLC) PSTP-A
-0.8 V 0.1

Cable Tension (TENS)
0 lbf 2000

Stuck Tool Indicator, Total (STIT)
0 ft 50

Cable Drag

Tool_Tot. Drag

CBL Amplitude (CBL) SCMT-CB
0 mV 10

CBL Amplitude (CBL) SCMT-CB
0 mV 100

Good Bond (GOBO)
0 mV 10

GoodBond From CBL to GOBO

Min Amplitude Max

VDL VariableDensity (VDL) SCMT-CB
200 us 1200

TIME_1900 - Time Marked every 60.00 (s)

BIEP - Bond Index Event Pips SCMT-CB

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: 17-May-2019 21:44:43

Channel Processing Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	229.31	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-CB	235.75	us
CBLG	CBL Gate Width	SCMT-CB	42	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-CB	72	mV
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-CB	4.41	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	WTEP	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-CB	11.85	dB/ft
MCI	Minimum Cemented Interval for Isolation	SCMT-CB	4.75	ft
MSA	Minimum Sonic Amplitude	SCMT-CB	2.19	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	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	1077.14	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-A	12 dB	

ONE

Repeat Pass

Software Version

Acquisition System	Version
Maxwell 2019	9.0.106845.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[2]:Up	Up	2386.37 ft	2610.03 ft	17-May-2019 3:02:33 PM	17-May-2019 3:11:01 PM	ON	-2.59 ft	No

All depths are referenced to toolstring zero

Log

Company:Crestone Peak Resources and Operating LLC Well:Echeverria 2F-2H-D267

ONE: Log[2]:Up:S006

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: 17-May-2019 21:44:46

TIME_1900 - Time Marked every 60.00 (s)

Gamma Ray (GR) PSTP-A
0 gAPI 150

Relative Bearing (RB_SCMT) SCMT-CB
0 deg 360

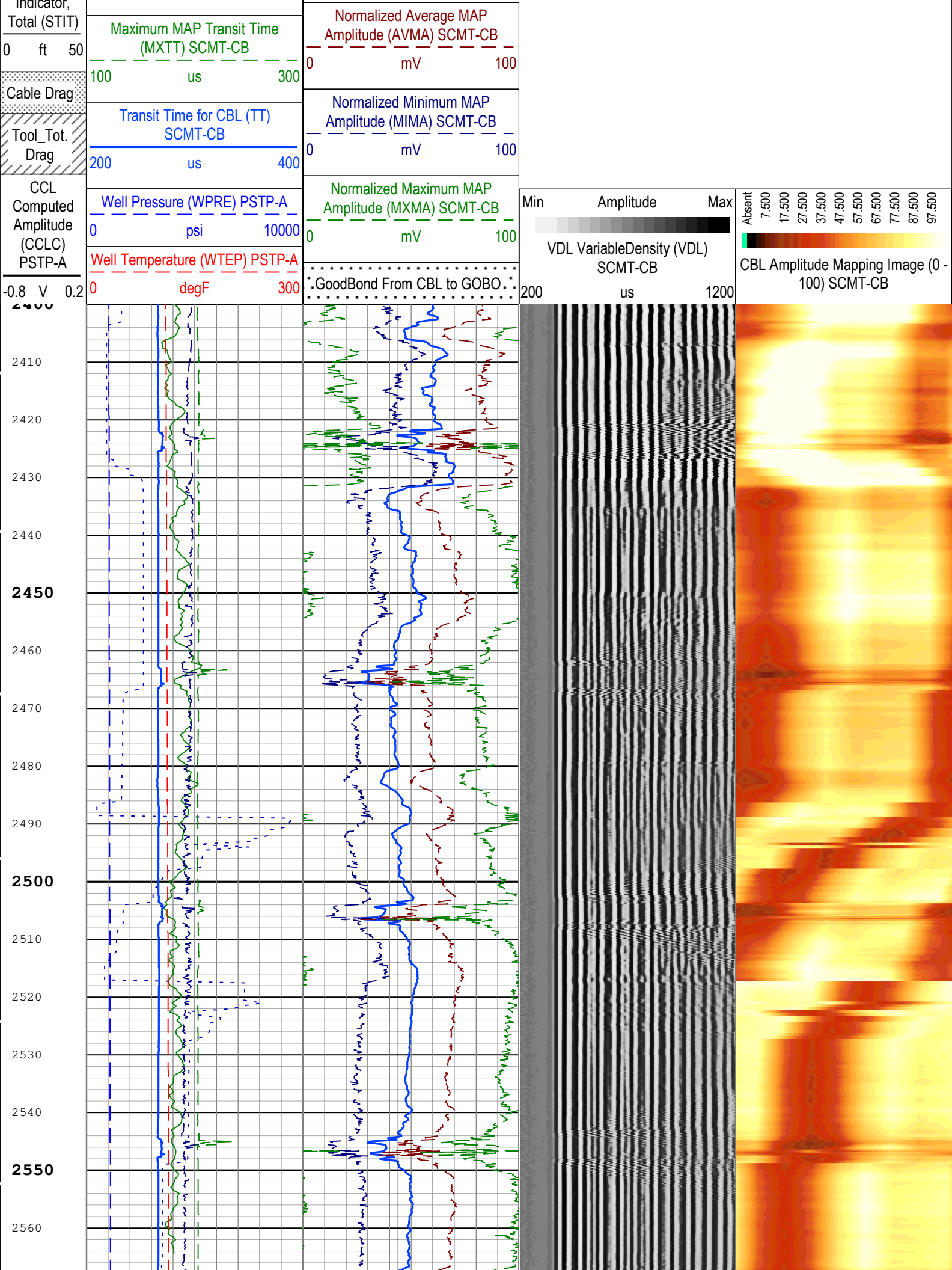
Minimum MAP Transit Time (MITT) SCMT-CB
100 us 300

CBL Amplitude (CBL) SCMT-CB
0 mV 10

CBL Amplitude (CBL) SCMT-CB
0 mV 100

Good Bond (GOBO)
0 mV 10

Stuck Tool Indicator


Indicator, Total (STIT)
0 ft 50
Cable Drag
Tool_Tot. Drag
CCL Computed Amplitude (CCLC) PSTP-A
-0.8 V 0.2
Maximum MAP Transit Time (MXTT) SCMT-CB
100 us 300
Transit Time for CBL (TT) SCMT-CB
200 us 400
Well Pressure (WPRE) PSTP-A
0 psi 10000
Well Temperature (WTEP) PSTP-A
0 degF 300
Normalized Average MAP Amplitude (AVMA) SCMT-CB
0 mV 100
Normalized Minimum MAP Amplitude (MIMA) SCMT-CB
0 mV 100
Normalized Maximum MAP Amplitude (MXMA) SCMT-CB
0 mV 100
GoodBond From CBL to GOBO
Min Amplitude Max
VDL VariableDensity (VDL) SCMT-CB
200 us 1200
Absent 7.500 17.500 27.500 37.500 47.500 57.500 67.500 77.500 87.500 97.500
CBL Amplitude Mapping Image (0 - 100) SCMT-CB
2400
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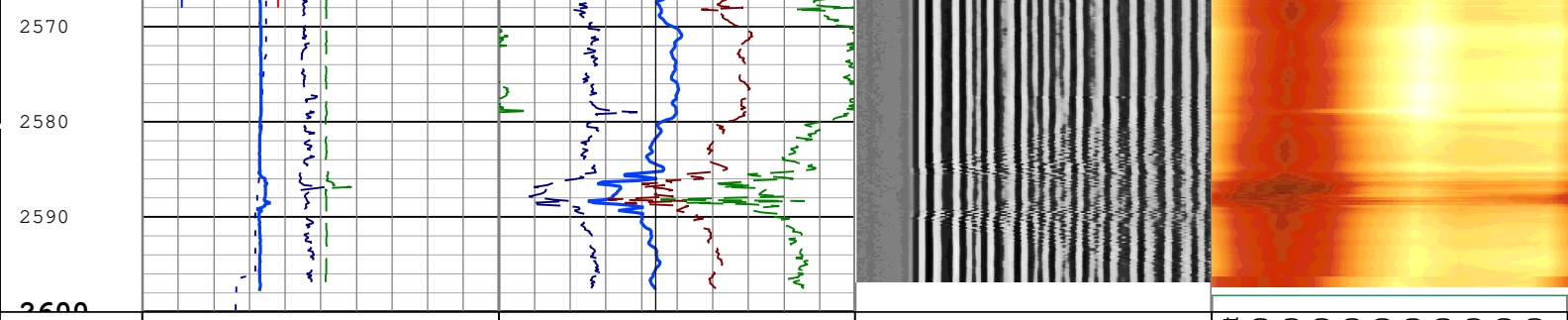

Stuck Tool Indicator, Total (STIT)
0 ft 50

Cable Drag

Tool_Tot. Drag

CCL Computed Amplitude (CCLC) PSTP-A
-0.8 V 0.2

Gamma Ray (GR) PSTP-A
0 gAPI 150

Relative Bearing (RB_SCMT) SCMT-CB
0 deg 360

Minimum MAP Transit Time (MITT) SCMT-CB
100 us 300

Maximum MAP Transit Time (MXTT) SCMT-CB
100 us 300

Transit Time for CBL (TT) SCMT-CB
200 us 400

Well Pressure (WPRE) PSTP-A
0 psi 10000

Well Temperature (WTEP) PSTP-A
0 degF 300

CBL Amplitude (CBL) SCMT-CB
0 mV 10

CBL Amplitude (CBL) SCMT-CB
0 mV 100

Good Bond (GOBO)
0 mV 10

Normalized Average MAP Amplitude (AVMA) SCMT-CB
0 mV 100

Normalized Minimum MAP Amplitude (MIMA) SCMT-CB
0 mV 100

Normalized Maximum MAP Amplitude (MXMA) SCMT-CB
0 mV 100

GoodBond From CBL to GOBO

Min Amplitude Max

VDL VariableDensity (VDL) SCMT-CB
200 us 1200

Absent 7.500 17.500 27.500 37.500 47.500 57.500 67.500 77.500 87.500 97.500

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

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: 17-May-2019 21:44:46

Channel Processing Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	229.31	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-CB	235.75	us
CBLG	CBL Gate Width	SCMT-CB	42	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
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	204	us/ft
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-CB	4.41	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	WTEP	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	SCMT-CB	178.61	us
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-CB	11.85	dB/ft
MCI	Minimum Cemented Interval for Isolation	SCMT-CB	4.75	ft
MMSA	MAP Minimum Sonic Amplitude	SCMT-CB	10.86	mV

MSA	Minimum Sonic Amplitude	SCMT-CB	2.19	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	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	1077.14	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-A	12 dB	

Calibration Report

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

Primary Equipment :

Slim Cement Mapping Sonde SCMS-CB 8258

CBL and MAP Amplitude Normalization - Measurements

Master (Measured): 20:16:15 09-Oct-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
CBL 3 ft Temperature/Pressure Compensated Raw Amplitude (at 0 degree)	mV	Master	1350.000	1000.000	1179.675	1700.000
MAP 1 Temperature/Pressure Compensated Raw Amplitude (at 0 degree)	mV	Master	1075.000	500.000	1218.098	1650.000
MAP 2 Temperature/Pressure Compensated Raw Amplitude (at 0 degree)	mV	Master	1075.000	500.000	1093.785	1650.000
MAP 3 Temperature/Pressure Compensated Raw Amplitude (at 0 degree)	mV	Master	1075.000	500.000	807.772	1650.000
MAP 4 Temperature/Pressure Compensated Raw Amplitude (at 0 degree)	mV	Master	1075.000	500.000	882.819	1650.000
MAP 5 Temperature/Pressure Compensated Raw Amplitude (at 0 degree)	mV	Master	1075.000	500.000	964.949	1650.000
MAP 6 Temperature/Pressure Compensated Raw Amplitude (at 0 degree)	mV	Master	1075.000	500.000	1086.432	1650.000
MAP 7 Temperature/Pressure Compensated Raw Amplitude (at 0 degree)	mV	Master	1075.000	500.000	1188.836	1650.000
MAP 8 Temperature/Pressure Compensated Raw Amplitude (at 0 degree)	mV	Master	1075.000	500.000	1282.034	1650.000
CBL 3 ft Temperature/Pressure Compensated Raw Amplitude (at 90 degree)	mV	Master	1350.000	1000.000	1178.190	1700.000
MAP 1 Temperature/Pressure Compensated Raw Amplitude (at 90 degree)	mV	Master	1075.000	500.000	1054.282	1650.000
MAP 2 Temperature/Pressure Compensated Raw Amplitude (at 90 degree)	mV	Master	1075.000	500.000	965.417	1650.000
MAP 3 Temperature/Pressure Compensated Raw Amplitude (at 90 degree)	mV	Master	1075.000	500.000	760.428	1650.000
MAP 4 Temperature/Pressure Compensated Raw Amplitude (at 90 degree)	mV	Master	1075.000	500.000	942.255	1650.000
MAP 5 Temperature/Pressure Compensated Raw Amplitude (at 90 degree)	mV	Master	1075.000	500.000	1117.953	1650.000
MAP 6 Temperature/Pressure Compensated Raw Amplitude (at 90 degree)	mV	Master	1075.000	500.000	1289.531	1650.000
MAP 7 Temperature/Pressure Compensated Raw Amplitude (at 90 degree)	mV	Master	1075.000	500.000	1273.549	1650.000
MAP 8 Temperature/Pressure Compensated Raw Amplitude (at 90 degree)	mV	Master	1075.000	500.000	1172.603	1650.000
CBL 3 ft Temperature/Pressure Compensated Raw Amplitude (at 180 degree)	mV	Master	1350.000	1000.000	1177.369	1700.000
MAP 1 Temperature/Pressure Compensated Raw Amplitude (at 180 degree)	mV	Master	1075.000	500.000	995.650	1650.000
MAP 2 Temperature/Pressure Compensated Raw Amplitude (at 180 degree)	mV	Master	1075.000	500.000	998.660	1650.000
MAP 3 Temperature/Pressure Compensated Raw Amplitude (at 180 degree)	mV	Master	1075.000	500.000	861.659	1650.000
MAP 4 Temperature/Pressure Compensated Raw Amplitude (at 180 degree)	mV	Master	1075.000	500.000	1085.633	1650.000
MAP 5 Temperature/Pressure Compensated Raw Amplitude (at 180 degree)	mV	Master	1075.000	500.000	1238.145	1650.000

MAP 6 Temperature/Pressure Compensated Raw Amplitude (at 180 degree)	mV	Master	1075.000	500.000	1300.507	1650.000	
MAP 7 Temperature/Pressure Compensated Raw Amplitude (at 180 degree)	mV	Master	1075.000	500.000	1172.184	1650.000	
MAP 8 Temperature/Pressure Compensated Raw Amplitude (at 180 degree)	mV	Master	1075.000	500.000	1036.327	1650.000	
CBL 3 ft Temperature/Pressure Compensated Raw Amplitude (at 270 degree)	mV	Master	1350.000	1000.000	1174.563	1700.000	
MAP 1 Temperature/Pressure Compensated Raw Amplitude (at 270 degree)	mV	Master	1075.000	500.000	1078.665	1650.000	
MAP 2 Temperature/Pressure Compensated Raw Amplitude (at 270 degree)	mV	Master	1075.000	500.000	1119.866	1650.000	
MAP 3 Temperature/Pressure Compensated Raw Amplitude (at 270 degree)	mV	Master	1075.000	500.000	955.836	1650.000	
MAP 4 Temperature/Pressure Compensated Raw Amplitude (at 270 degree)	mV	Master	1075.000	500.000	1120.067	1650.000	
MAP 5 Temperature/Pressure Compensated Raw Amplitude (at 270 degree)	mV	Master	1075.000	500.000	1171.587	1650.000	
MAP 6 Temperature/Pressure Compensated Raw Amplitude (at 270 degree)	mV	Master	1075.000	500.000	1166.519	1650.000	
MAP 7 Temperature/Pressure Compensated Raw Amplitude (at 270 degree)	mV	Master	1075.000	500.000	1067.010	1650.000	
MAP 8 Temperature/Pressure Compensated Raw Amplitude (at 270 degree)	mV	Master	1075.000	500.000	1043.943	1650.000	

CBL and MAP Amplitude Normalization - Coefficients

Master (Measured): 20:16:15 09-Oct-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Normalization Temperature in SFT Tube	degF	Master			64.00		
CBL Correction Factor		Master	0		0.082		
MAP 1 Correction Factor		Master	0		0.110		
MAP 2 Correction Factor		Master	0		0.115		
MAP 3 Correction Factor		Master	0		0.142		
MAP 4 Correction Factor		Master	0		0.119		
MAP 5 Correction Factor		Master	0		0.107		
MAP 6 Correction Factor		Master	0		0.099		
MAP 7 Correction Factor		Master	0		0.102		
MAP 8 Correction Factor		Master	0		0.106		

CBL and MAP Amplitude Adjustment - Measurements

Before (Measured): 21:18:29 17-May-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Amplitude	mV	Before			84.32		
Average MAP Amplitude (Fluid Compensated)	mV	Before			171.74		
Measurement Depth	ft	Before			1443.83		

CBL and MAP Amplitude Adjustment - Coefficients

Before (Measured): 21:18:29 17-May-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Adjustment Factor		Before			0.854		
CBL LQC Reference Amplitude in Free Pipe	mV	Before			72.00		
MAP Adjustment Factor		Before			0.582		
Depth of Before Calibration	ft	Before			1443.83		

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

Primary Equipment :

PBMS-A PBMS-A 1925

Calibration Parameter :

JIG-BKGD

PBMS Well Temp Master Calibration

Master (EEPROM): 00:00:00 22-Oct-2018

PBMS_RTD_THERM (Master) RTD Coefficients

	Tt**0	Tt**1	Tt**2	Tt**3	Tt**4	Tt**5
Tt**0	-410.1011	188.1116	-36.84356	7.122567	-0.4733946	0

PBMS Gamma Ray Master Calibration

Master (EEPROM): 00:00:00 07-Mar-2003

PBMS_GR_MODEL (Master) GR Coefficients

	Rt**0	Rt**1
Rt**0	2000	4740

PBMS A Reference Clock Master Calibration

Master (EEPROM): 00:00:00 22-Oct-2018

PBMS_REF_CLOCK (Master) PBMS A Clock Coefficients

	Temp**0	Temp**1	Temp**2	Temp**3	Temp**4	Temp**5
Temp**0	-53.18935	-7.201934	-0.02214573	0.0001183733	4.091469E-06	0

PBMS A Sapphire Master Calibration

Master (EEPROM): 00:00:00 22-Oct-2018

PBMS_P_GAUGE_PRES (Master) Sapphire Pressure Model Coefficients

	Tt**0	Tt**1	Tt**2	Tt**3	Tt**4	Tt**5
Tp**0	-25691.09	17029.96	-5075.791	726.4449	-40.75964	0
Tp**1	19132.39	-12381.02	3822.557	-563.1737	32.42202	0
Tp**2	-179.7185	65.96684	-6.392941	0	0	0
Tp**3	3.901225	-0.8302976	0	0	0	0
Tp**4	0	0	0	0	0	0
Tp**5	0	0	0	0	0	0

PBMS_P_GAUGE_TEMP (Master) Sapphire Temperature Model Coefficients

	Tp**0	Tp**1	Tp**2	Tp**3	Tp**4	Tp**5
Tt**0	2139.044	0.9065338	-1.614862	0.4019501	-0.0426815	0
Tt**1	-1249.353	0.4641727	0.3407869	-0.06403436	0.007093906	0
Tt**2	256.6918	-0.2288171	-0.01679745	0	0	0
Tt**3	-18.59611	0.0234225	0	0	0	0
Tt**4	0	0	0	0	0	0
Tt**5	0	0	0	0	0	0

Company:	Crestone Peak Resources and Operating LLC
Well:	Echeverria 2F-2H-D267
Field:	Wattenberg
County:	Weld
State:	Colorado

Schlumberger

Slim Cement Mapping Tool
Cement Evaluation
Gamma Ray - CCL Log