

Company: Whiting Oil & Gas Corporation

Well: Razor 250-2410

Field: Wildcat

County: Weld State: Colorado

Cement Bond Log  
GR-CCL

County:	Weld		
Field:	Wildcat		
Location:	SWSE Sec 25, T10N, R58W		
Well:	Razor 250-2410		
Company:	Whiting Oil & Gas Corporation		
Location:			
SWSE Sec 25, T10N, R58W		Elev.: K.B. 4739.00 ft	
SHL: 355' FSL x 1980' FEL		G.L. 4718.00 ft	
Lat/Long: 40.803461/-103.810306		D.F. 4738.00 ft	
Permanent Datum:		Ground Level 4718.00 f	
Log Measured From:		Kelly Bushing 21.00 ft above Perm.Datum	
Drilling Measured From:		Kelly Bushing	
API Serial No.	Section:	Township:	Range:
05-123-42636	25	10N	58W
Logging Date	21-Sep-2016		

Run Number	One		
Depth Driller	15844.00 ft		
Schlumberger Depth	15844.00 ft		
Bottom Log Interval	4970.00 ft		
Top Log Interval	55.00 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	2084.00 ft		
To	15844.00 ft		
Casing/Tubing Size	5.5 in		
Weight	20 lbm/ft		
Grade	N/A		
From	21.00 ft		
To	15843.00 ft		
Max Recorded Temperatures	190 degF		
Logger on Bottom	Time		
Unit Number	Location:	2161	FtMorgan
Recorded By	B Kesek		
Witnessed By	Bradd Kothe		

Disclaimer

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

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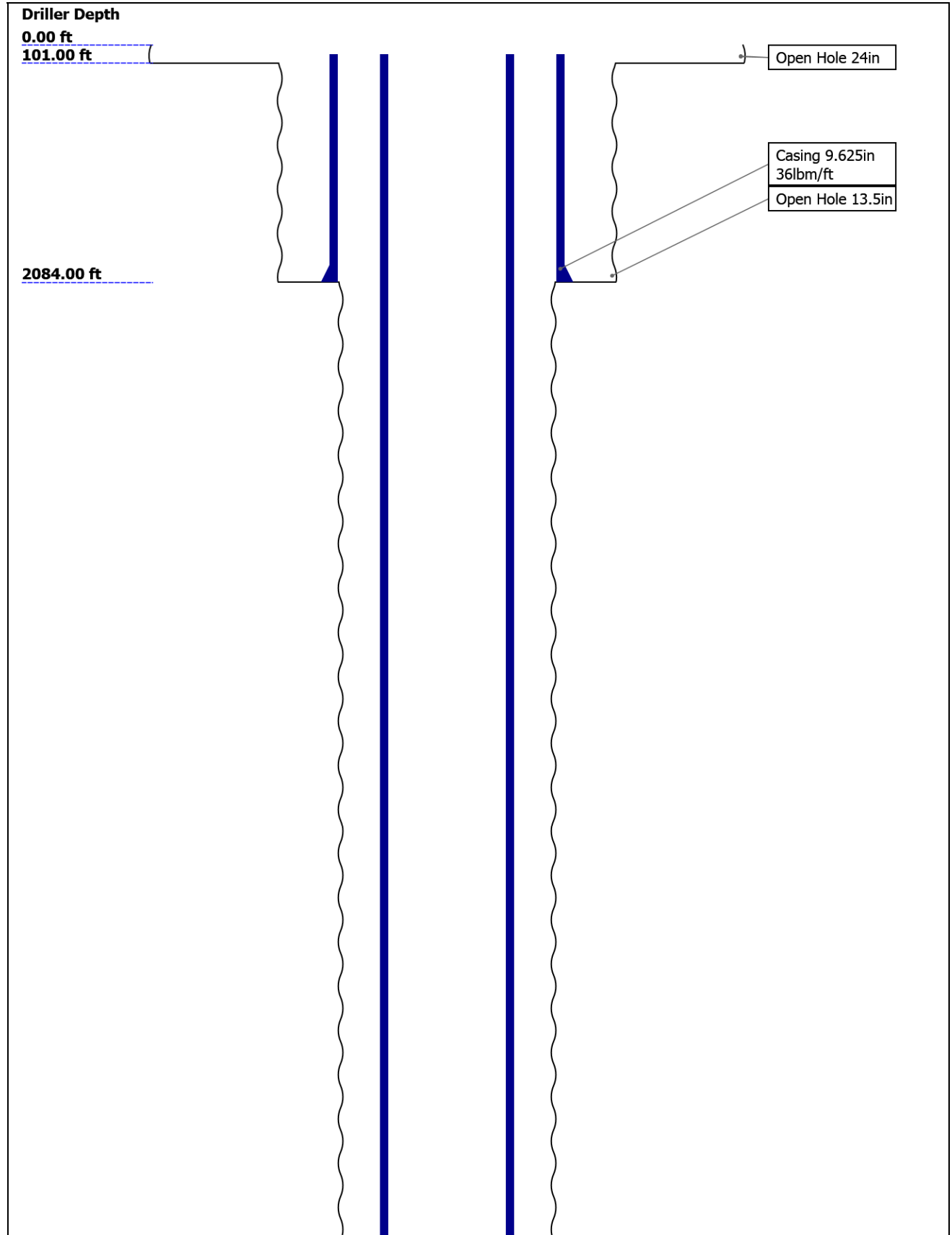
9.4 Log ( Sonic CBL with VDL )

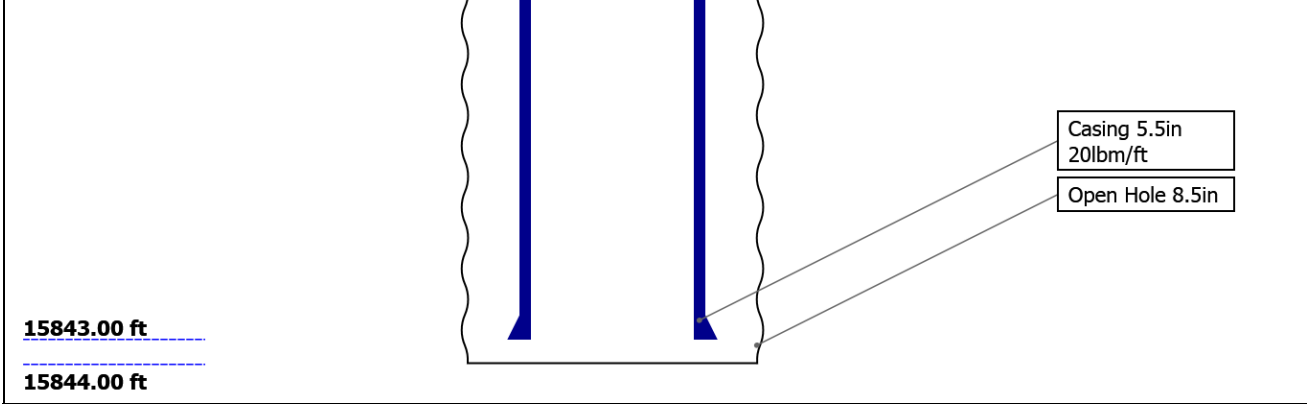
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10. Calibration Report

11. Tail

## Well Sketch





Borehole Size/Casing/Tubing Record

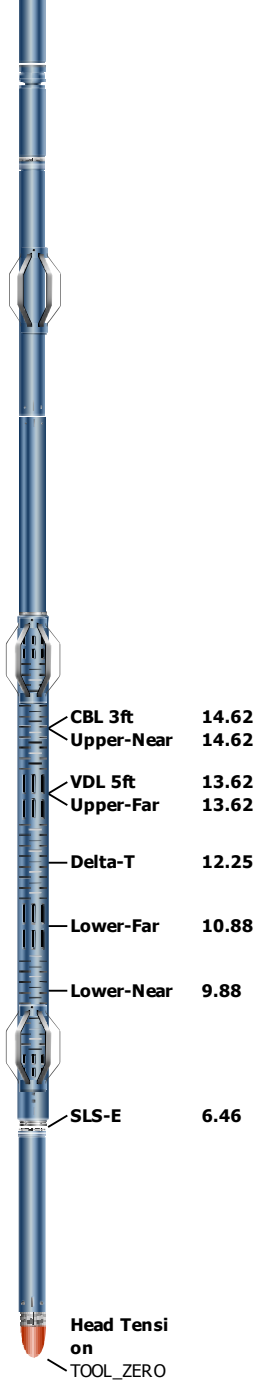
Bit						
Bit Size ( in )	24	13.5	8.5			
Top Driller ( ft )	0	101	2084			
Top Logger ( ft )	0	101	2084			
Bottom Driller ( ft )	101	2084	15844			
Bottom Logger ( ft )	101	2084	15844			
Casing						
Size ( in )	9.625	5.5				
Weight ( lbm/ft )	36	20				
Inner Diameter ( in )	8.921	4.778				
Grade	N/A	N/A				
Top Driller ( ft )	21	21				
Top Logger ( ft )	21	21				
Bottom Driller ( ft )	2084	15843				
Bottom Logger ( ft )	2084	15843				

Remarks and Equipment Summary

One: Toolstring				One: Remarks
Equip name	Length	MP name	Offset	Tool ran as per toolsketch.
LEH-QT	46.01			Main pass recorded at 1500PSI, repeat pass recorded at 0PSI.
CAL-YA:666	43.1			
CAL-YA:666		CCL	42.31	
DTC-H:8803	39.6			
ECH-KC:10354		CTEM	38.7	
DTC-H:8803		HV	0.00	
SGT-N:10210	36.6	TelStatus	36.6	
SGH-K:2996		ToolStatus	36.6	
SGC-TB:10210				
SGD-TAA:2166		GR	35.68	
1				
AH-184[2]:4	31.1			
700				

AH-184[1]:3 29.1  
906

DSLTH-H:8318 27.1  
ECH-KH:8373  
DSLCH-H:8318  
SLS-E:1650



Head Tension  
TOOL\_ZERO  
Lengths are in ft  
Maximum Outer Diameter = 6.250 in  
Line: Sensor Location, Value: Gating Offset  
All measurements are relative to TOOL\_ZERO

## Depth Summary

One

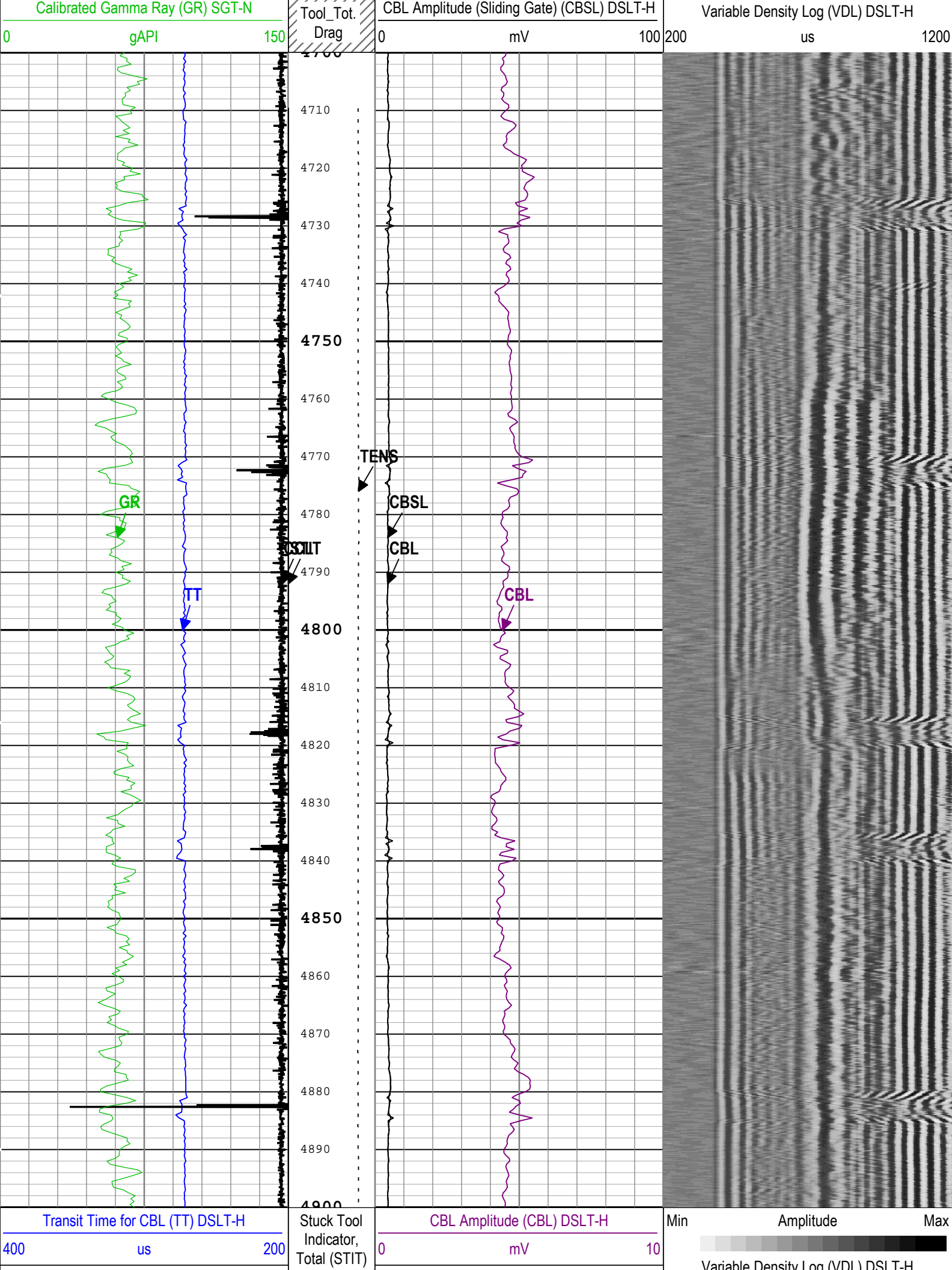
### Depth Measuring Device

Type	IDW-JA
Serial Number	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	1109





Casing Collar Locator Amplitude (CCL) CAL-YA		CBL Amplitude (CBL) DSLT-H		Variable Density Log (VDL) DSLT-H	
-19	1	0	ft	50	200
Calibrated Gamma Ray (GR) SGT-N		CBL Amplitude (Sliding Gate) (CBSL) DSLT-H		us	
0	150	0	mV	100	1200
gAPI		CBL Amplitude (Sliding Gate) (CBSL) DSLT-H		mV	
		0	mV	100	
		10000	0		
		lb			
		Cable Drag			
		Tool_Tot. Drag			

TIME\_1900 - Time Marked every 60.00 (s)

└─ BIEP - Bond Index Event Pips DSLT-H

Description: CBL\_VDL    Format: Log ( Sonic CBL with VDL )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 22-Sep-2016 17:48:42

## Channel Processing Parameters

### One: Parameters

Parameter	Description	Tool	Value	Unit
AMSG	Auxiliary Minimum Sliding Gate	DSLTH	255	us
CBLG	CBL Gate Width	DSLTH	47	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLTH	72	mV
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YA	25	
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DETE	Delta-T Detection	DSLTH	E1	
FCF	CBL Fluid Compensation Factor	DSLTH	1.01	
GOBO_CURR	Good Bond in Arbitrary Cement	DSLTH	3.42	mV
MAHTR	Manual High Threshold Reference for first arrival detection	DSLTH	120	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLTH	11.85	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLTH	4.75	ft
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLTH	100	
MSA	Minimum Sonic Amplitude	DSLTH	1.6	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLTH	1.6	mV
NMSG	Near Minimum Sliding Gate	DSLTH	257	us
SGAD	Sliding Gate Status	DSLTH	Off	
SGDT	Sliding Gate Delta-T	DSLTH	57	us/ft

## Tool Control Parameters

### One: Parameters

Parameter	Description	Tool	Value	Unit
MODE	DSLTH Acquisition Mode	DSLTH	CBL	
RATE	DSLTH Firing Rate	DSLTH	15 Hz	
DTFS	DSLTH Telemetry Frame Size	DSLTH	536	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

## One

## 1500 PSI Main Pass

## Software Version

Acquisition System	Version
Maxwell 2016 SP1	6.1.58882.3100

### Base Summary

# Pass Summary

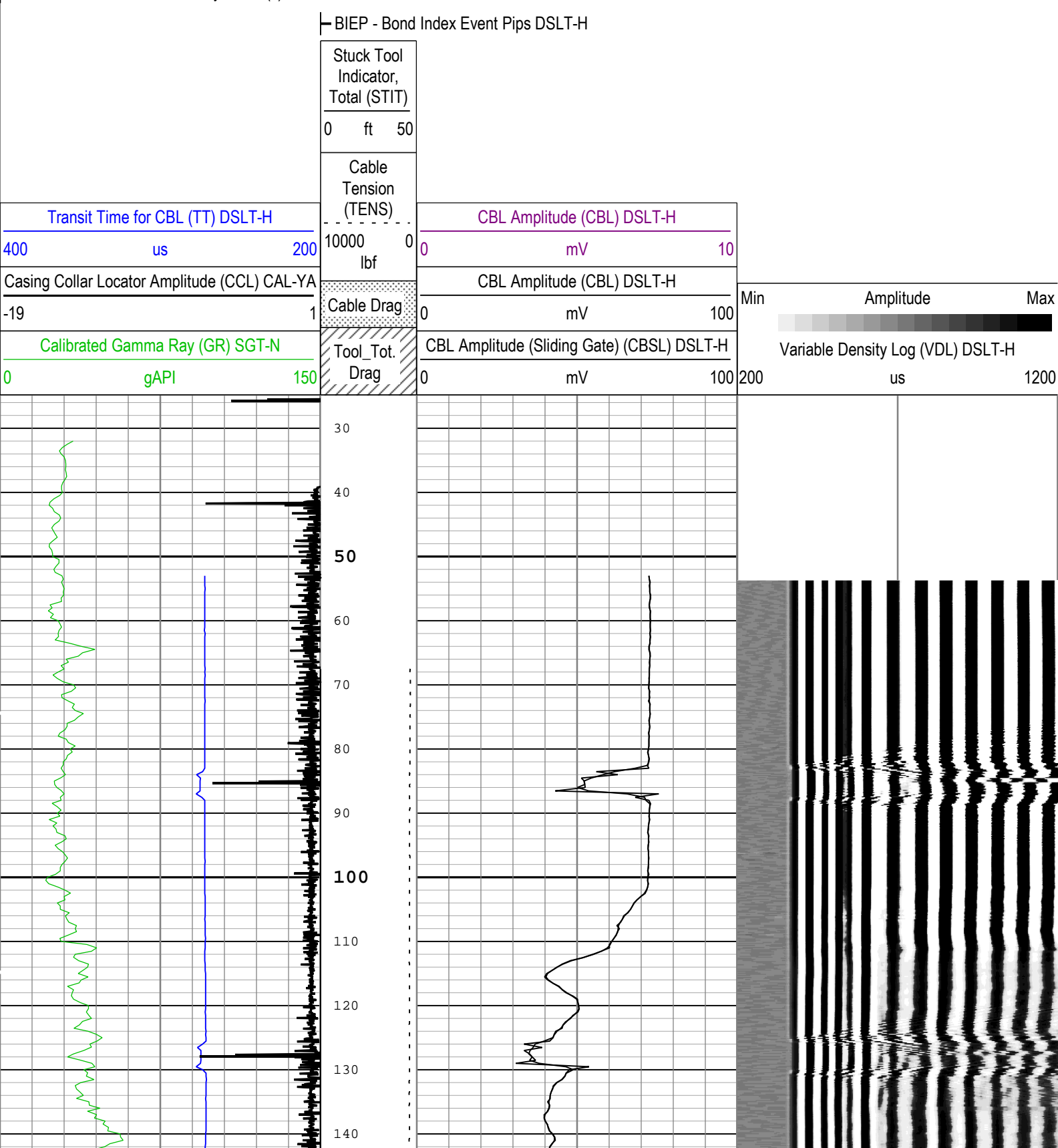
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[3]:Up	Up	67.19 ft	5017.17 ft	21-Sep-2016 1:32:30 PM	21-Sep-2016 2:39:20 PM	ON	15.24 ft	Yes

All depths are referenced to toolstring zero

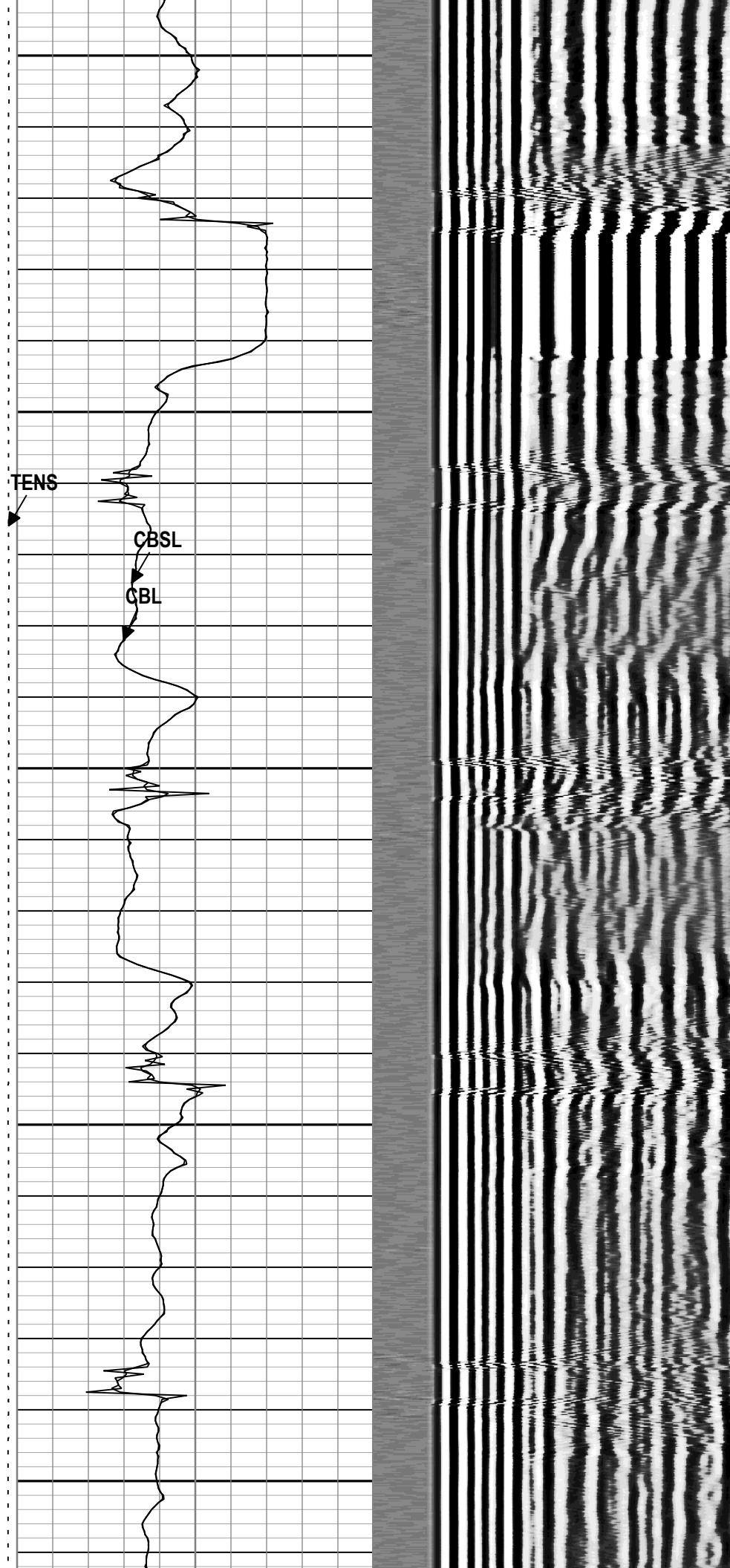
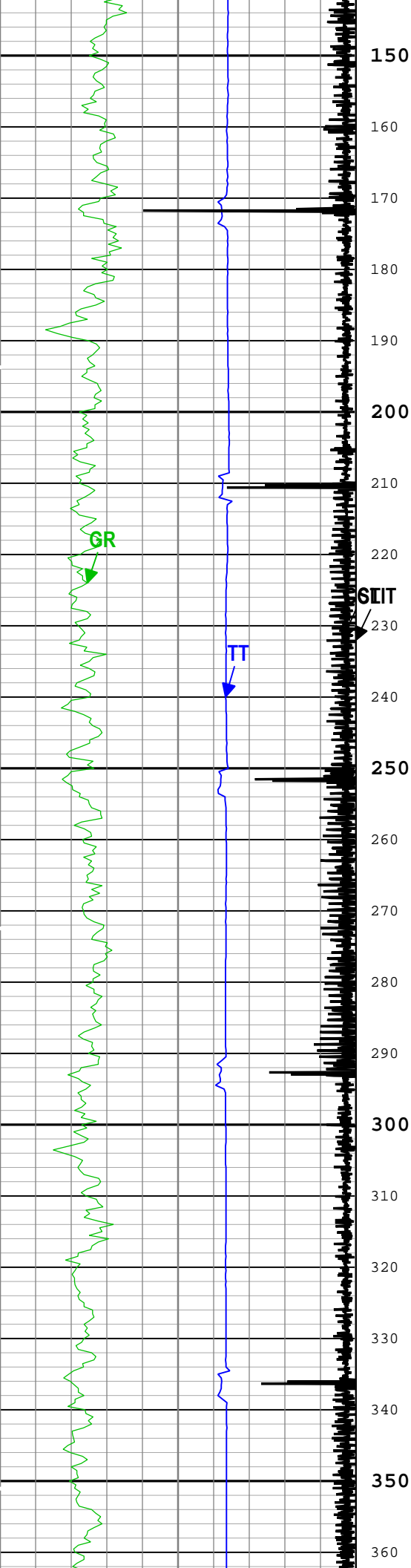
<b>Log</b>	Company:Whiting Oil & Gas Corporation	Well:Razor 250-2410
		One: Log[3]:Up:S004

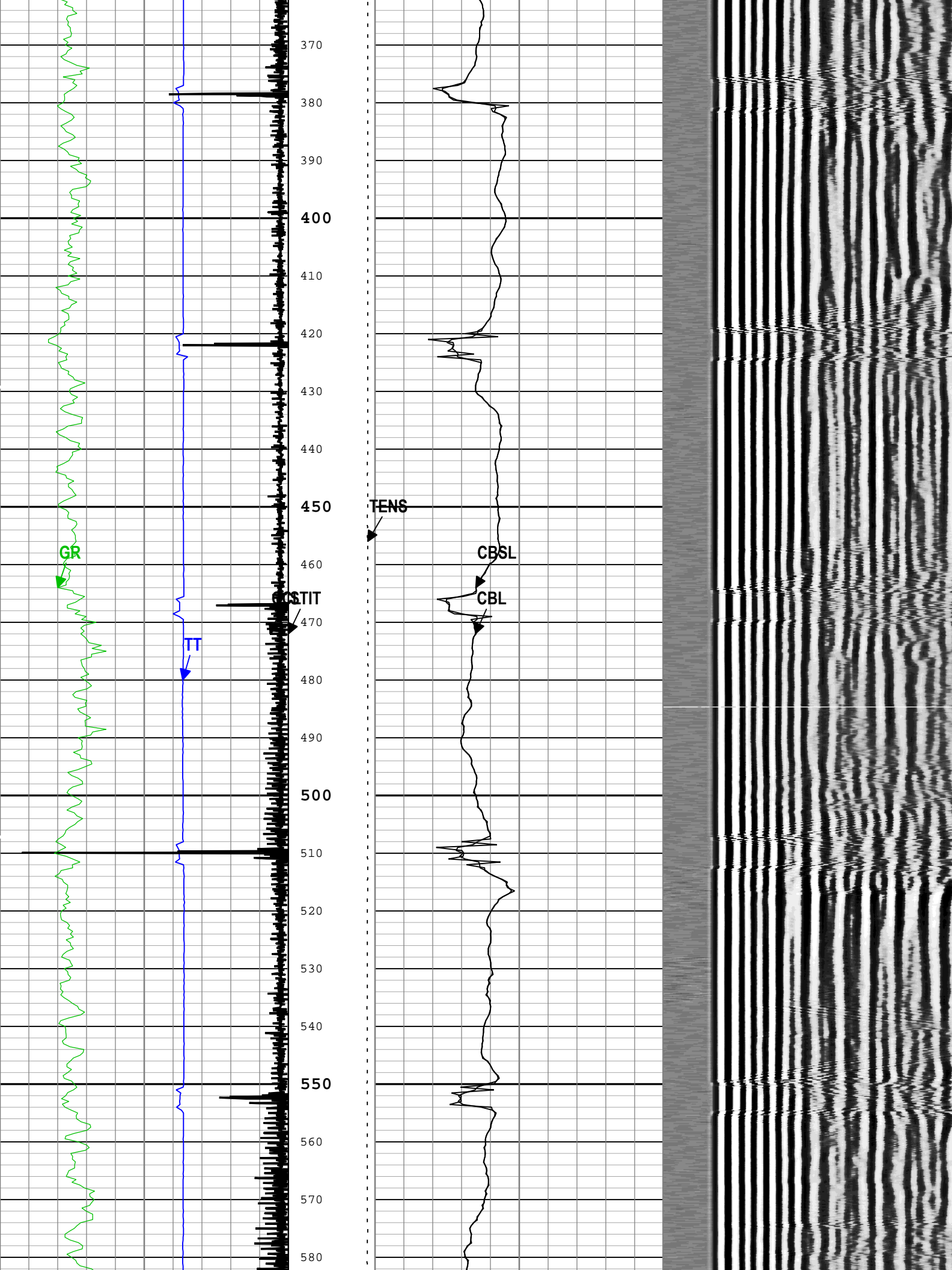
Description: CBL\_VDL Format: Log ( Sonic CBL with VDL ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 22-Sep-2016 17:48:43

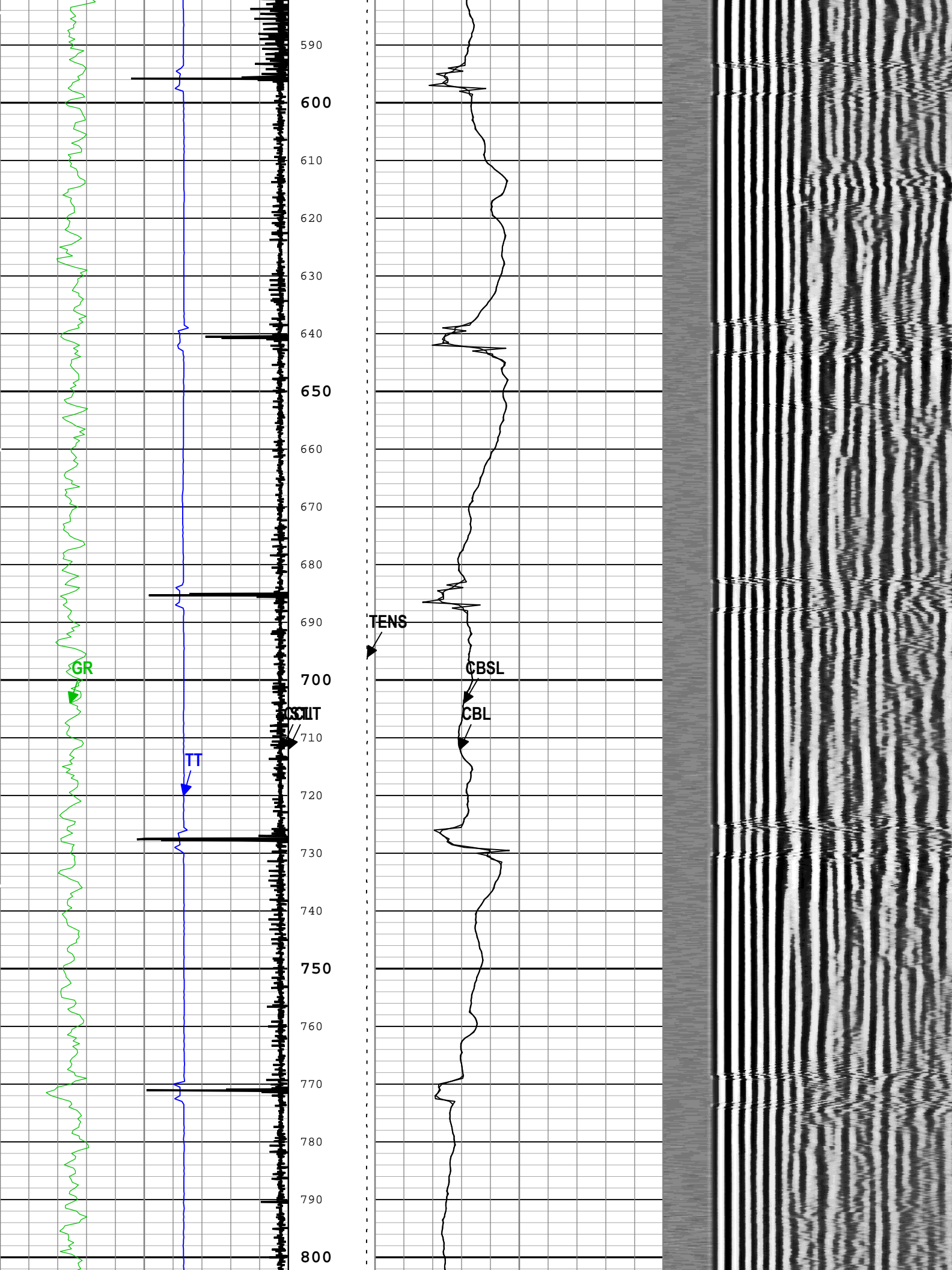
TIME\_1900 - Time Marked every 60.00 (s)



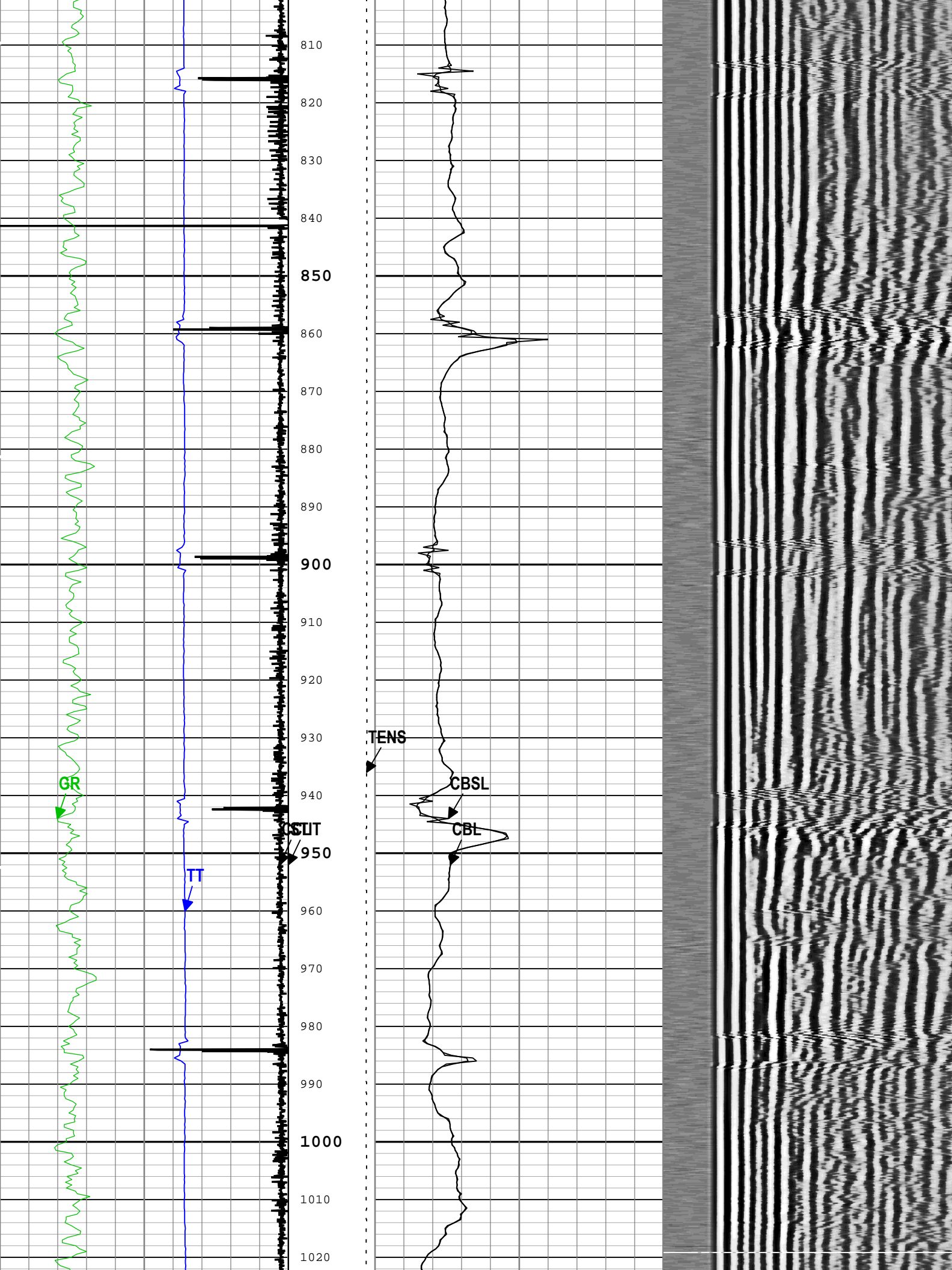


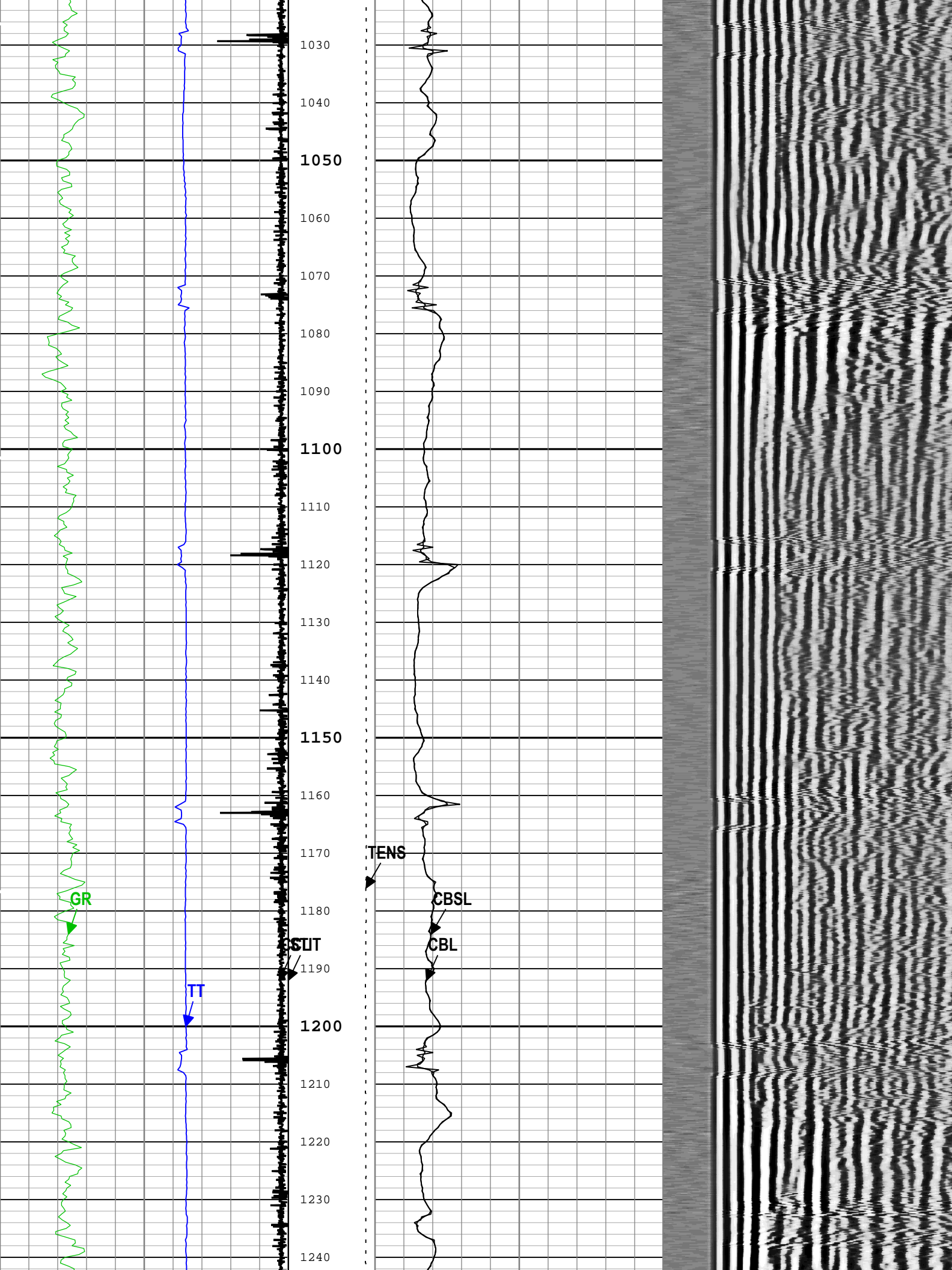


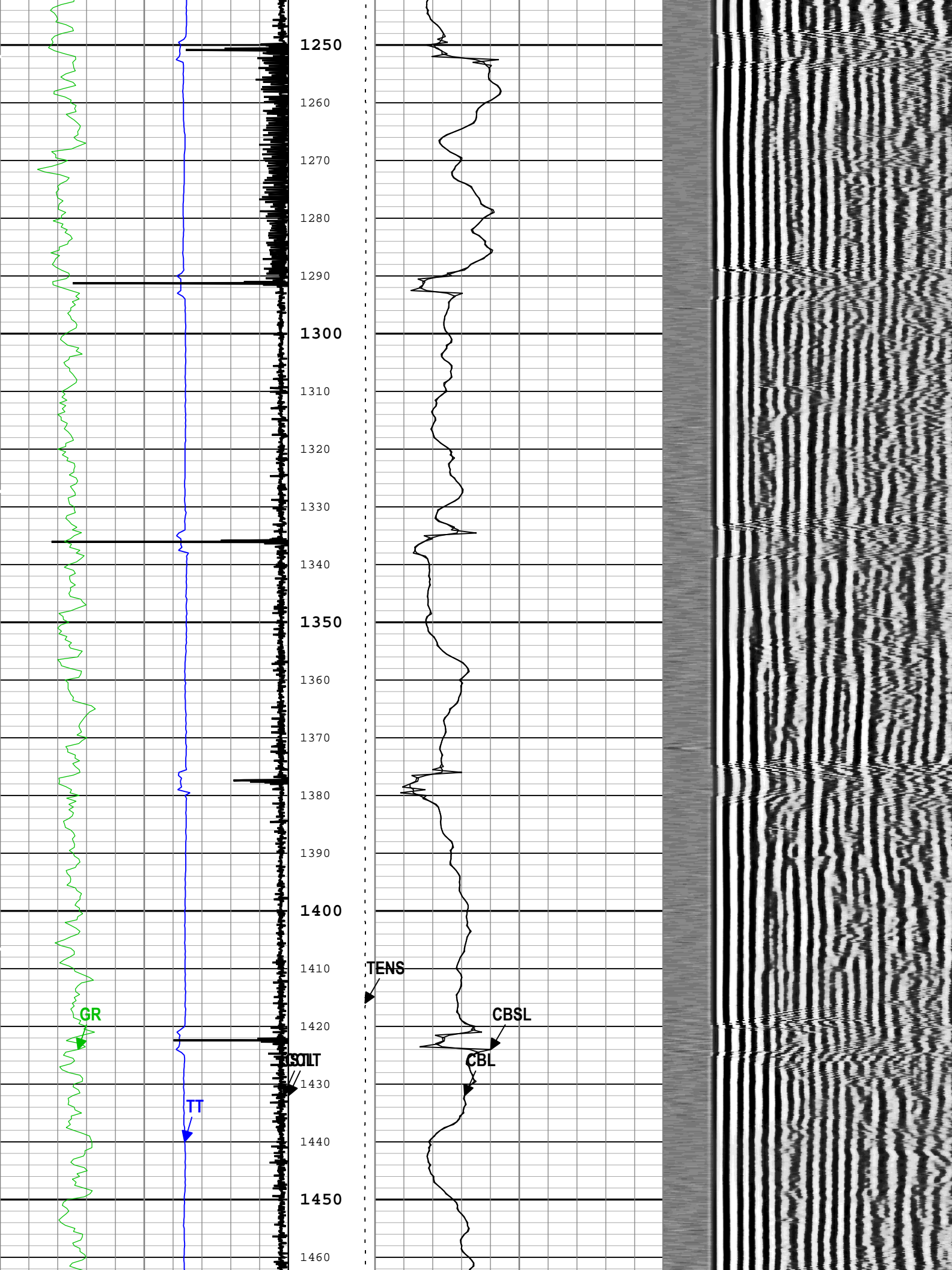




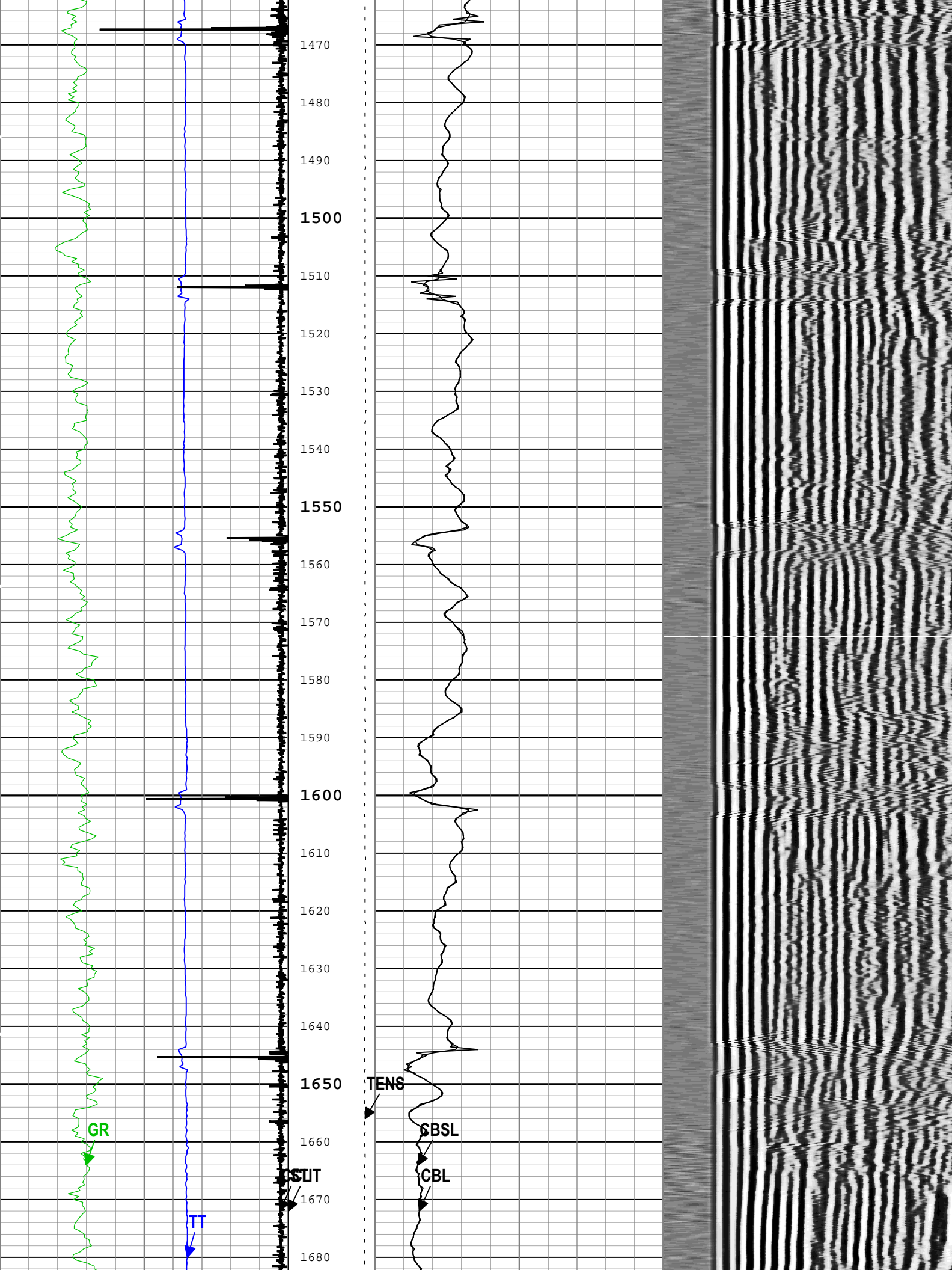


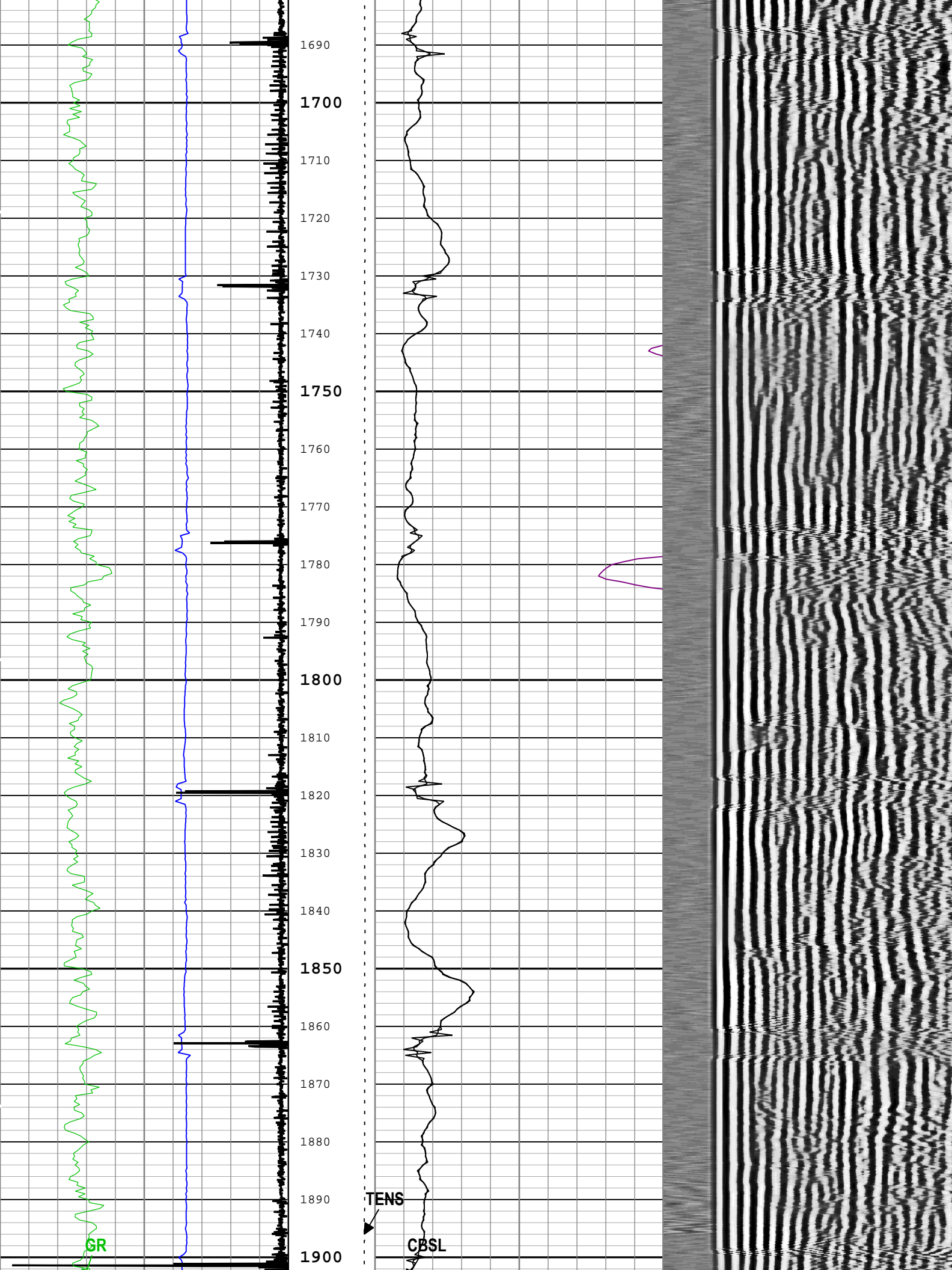




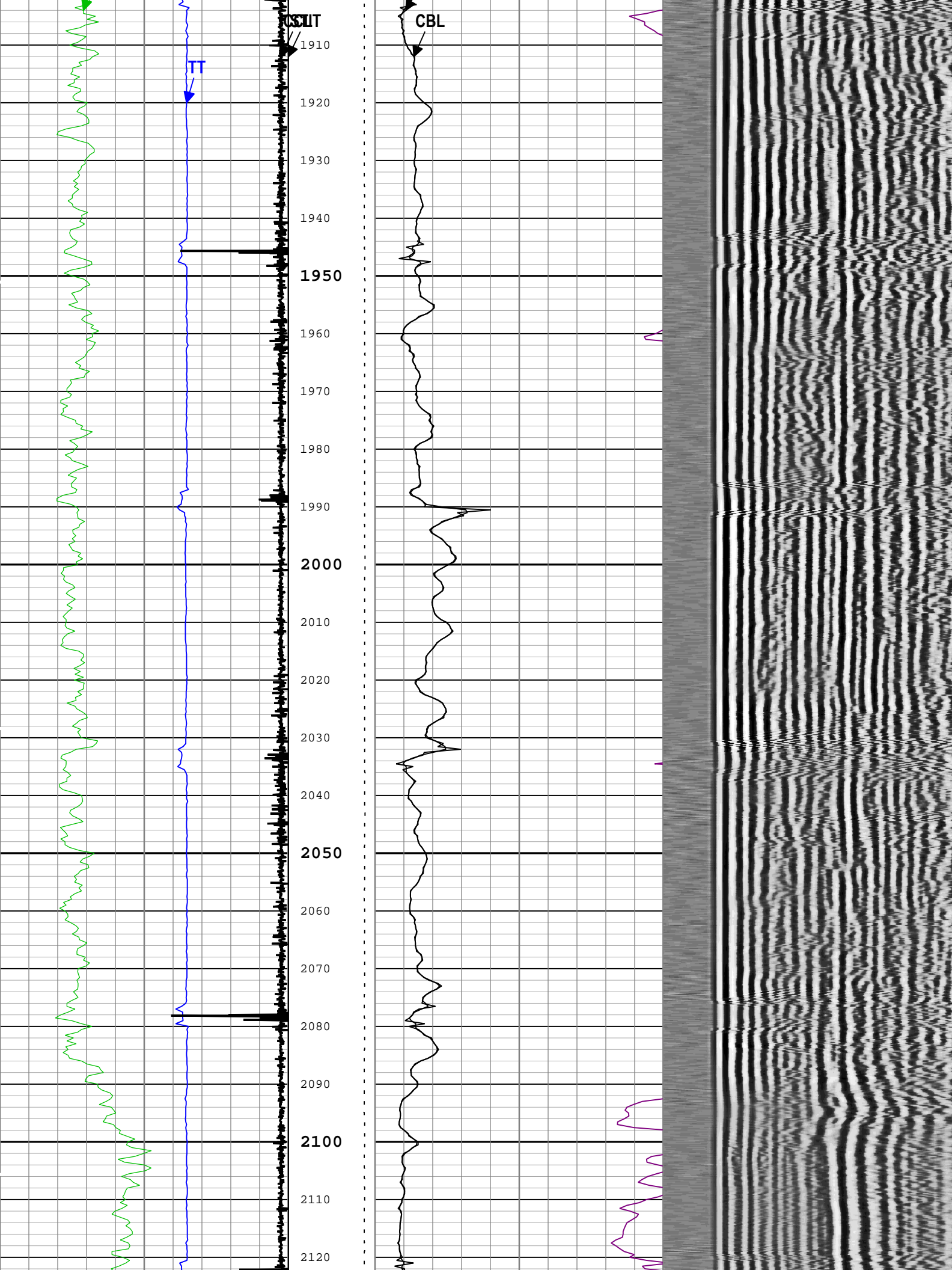


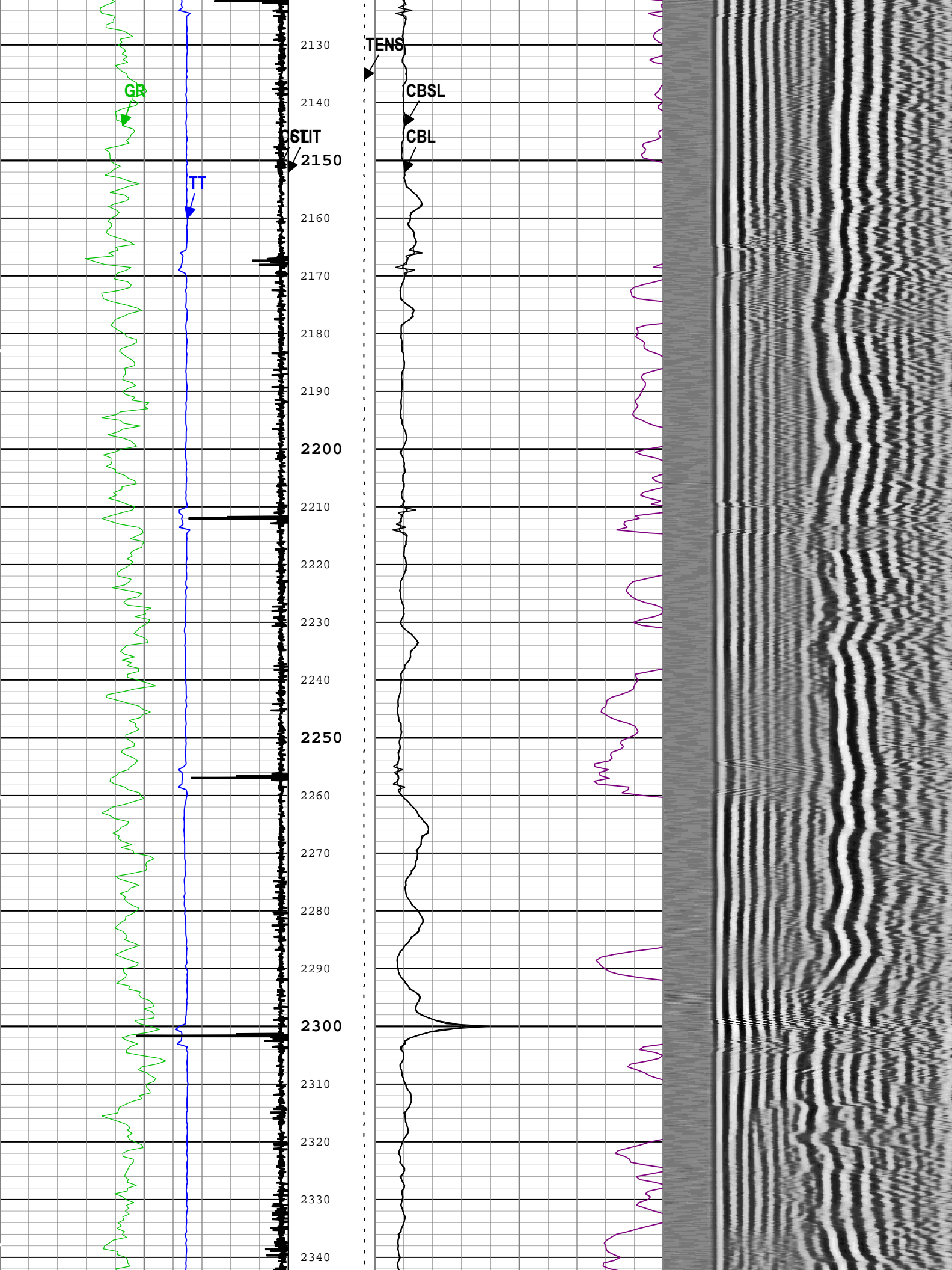


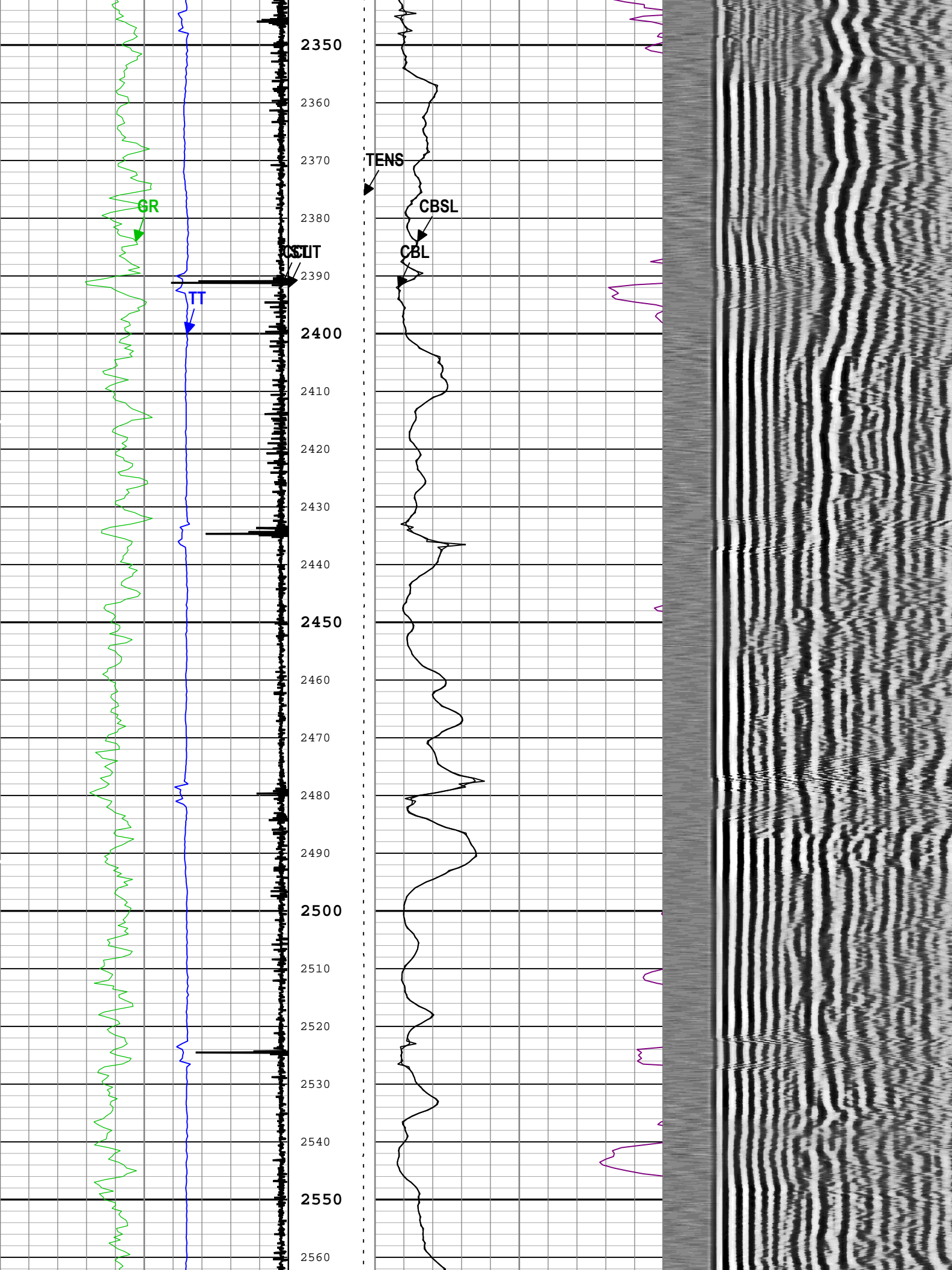




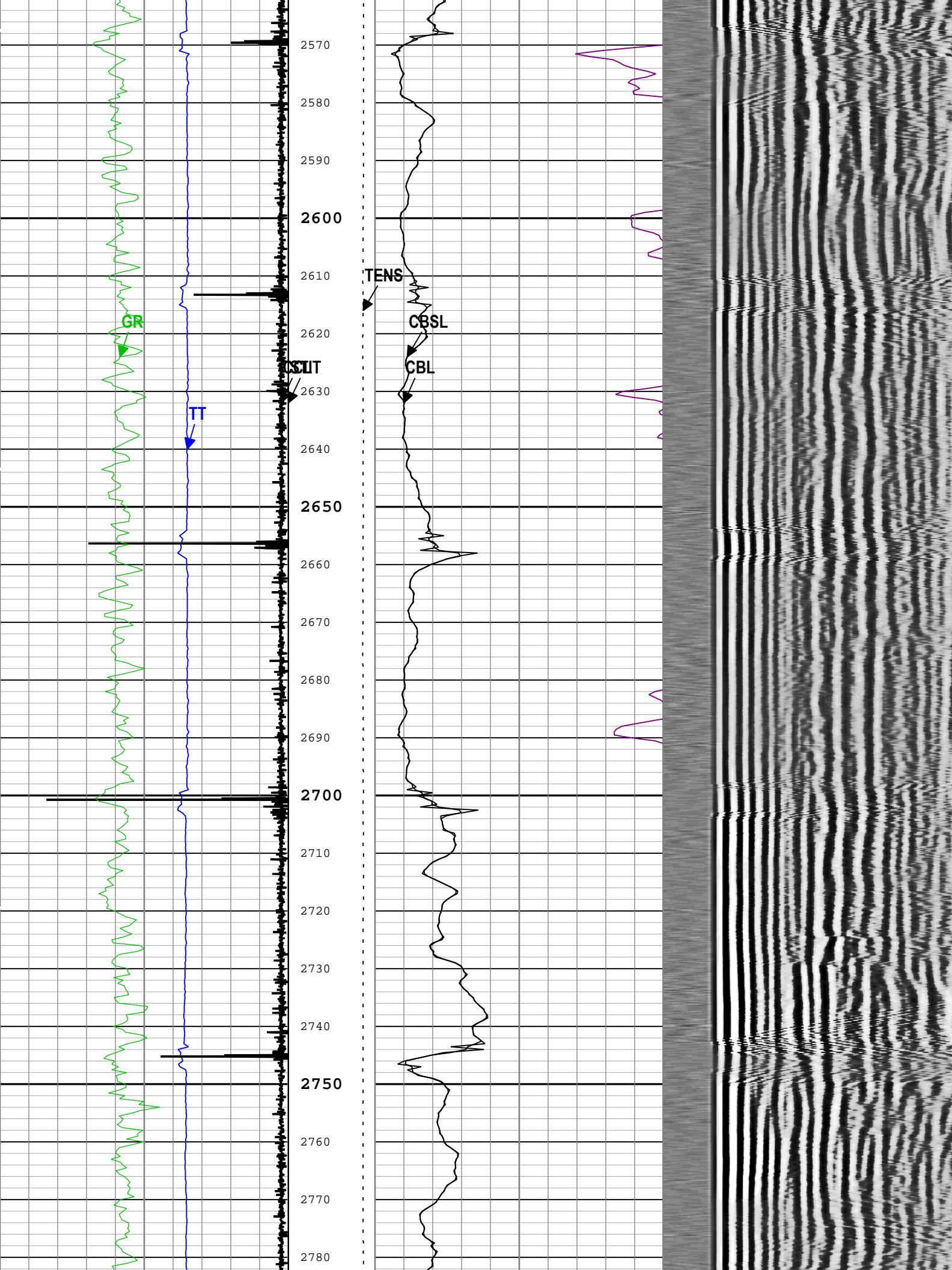


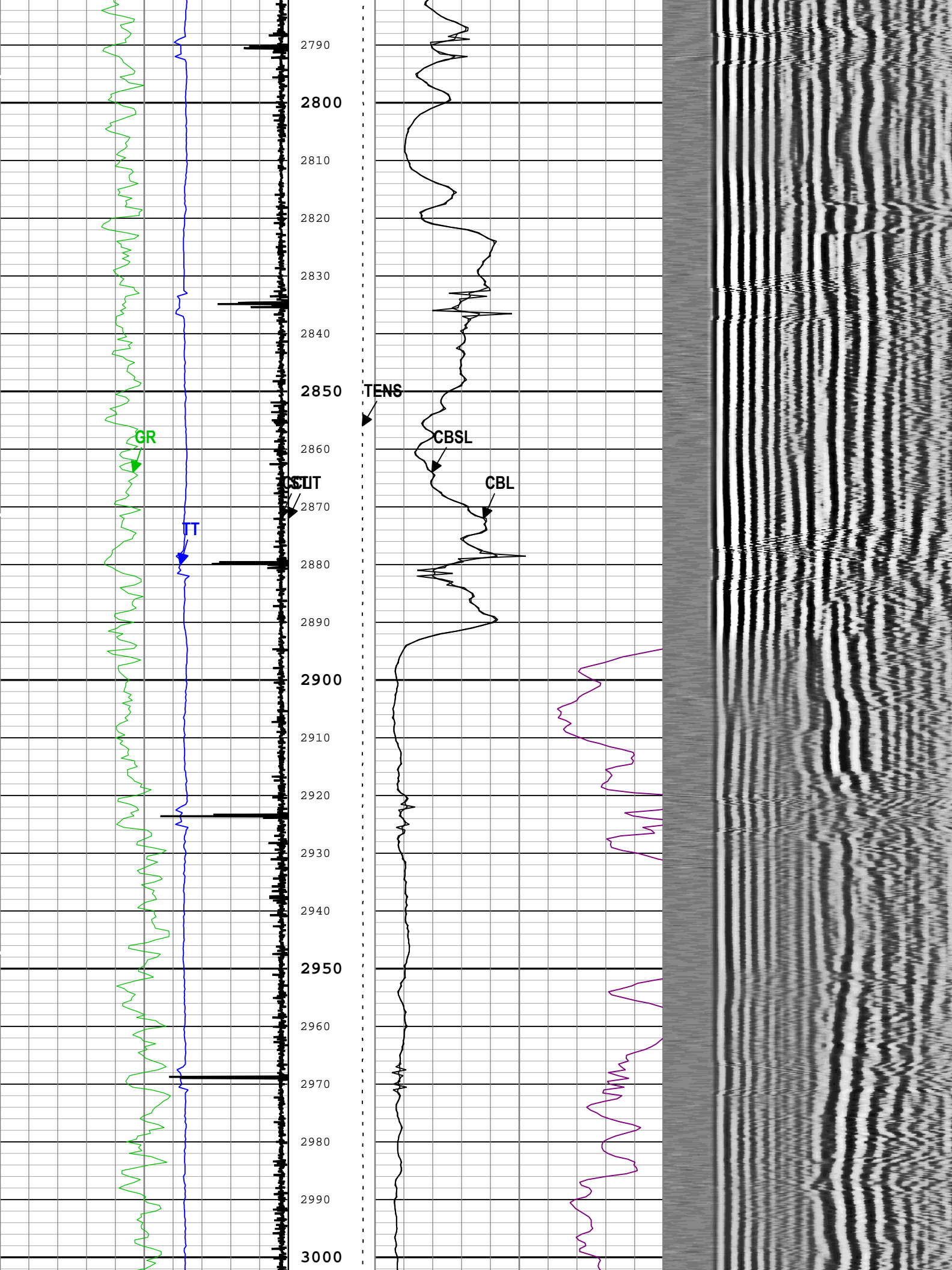


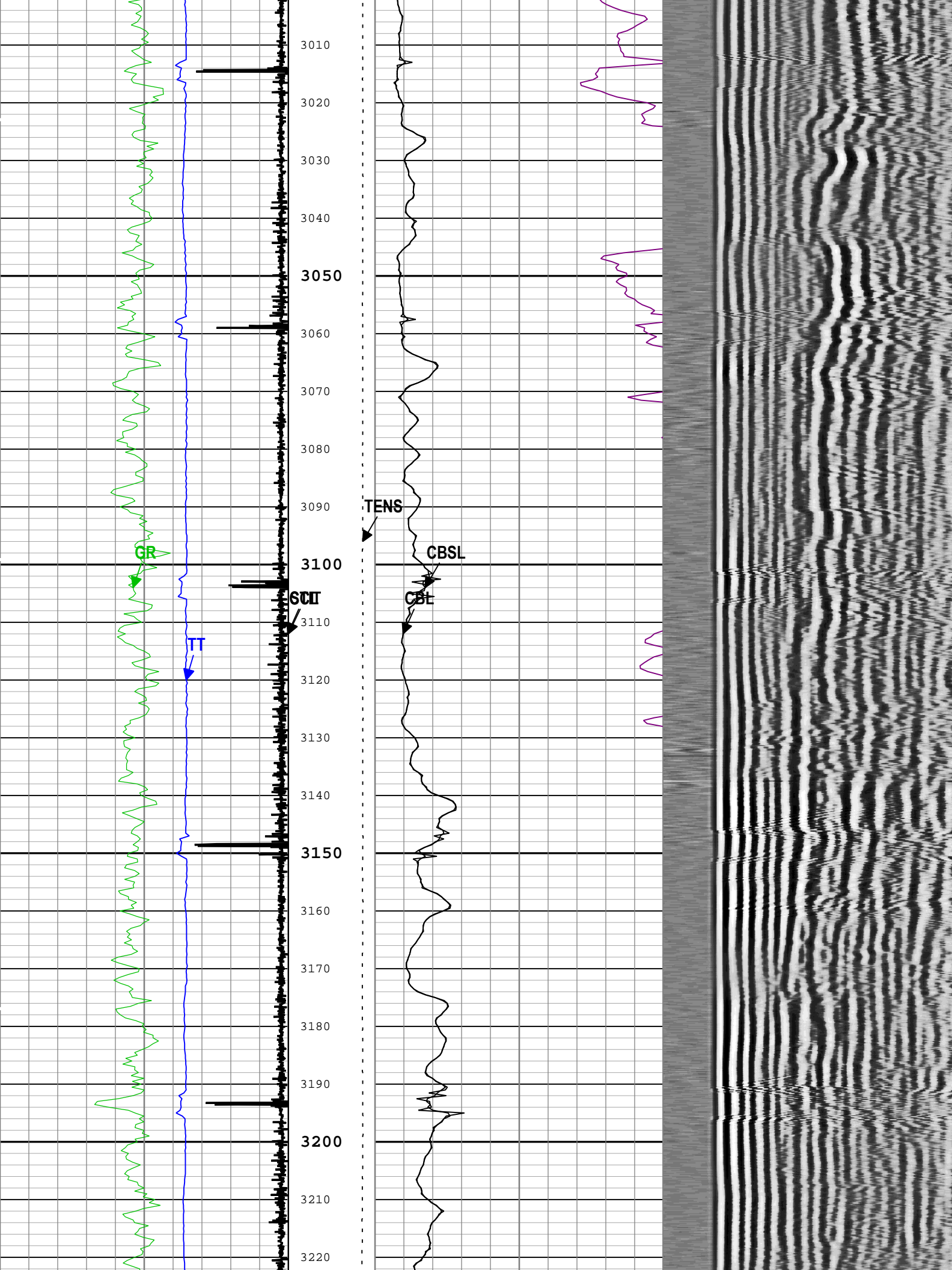




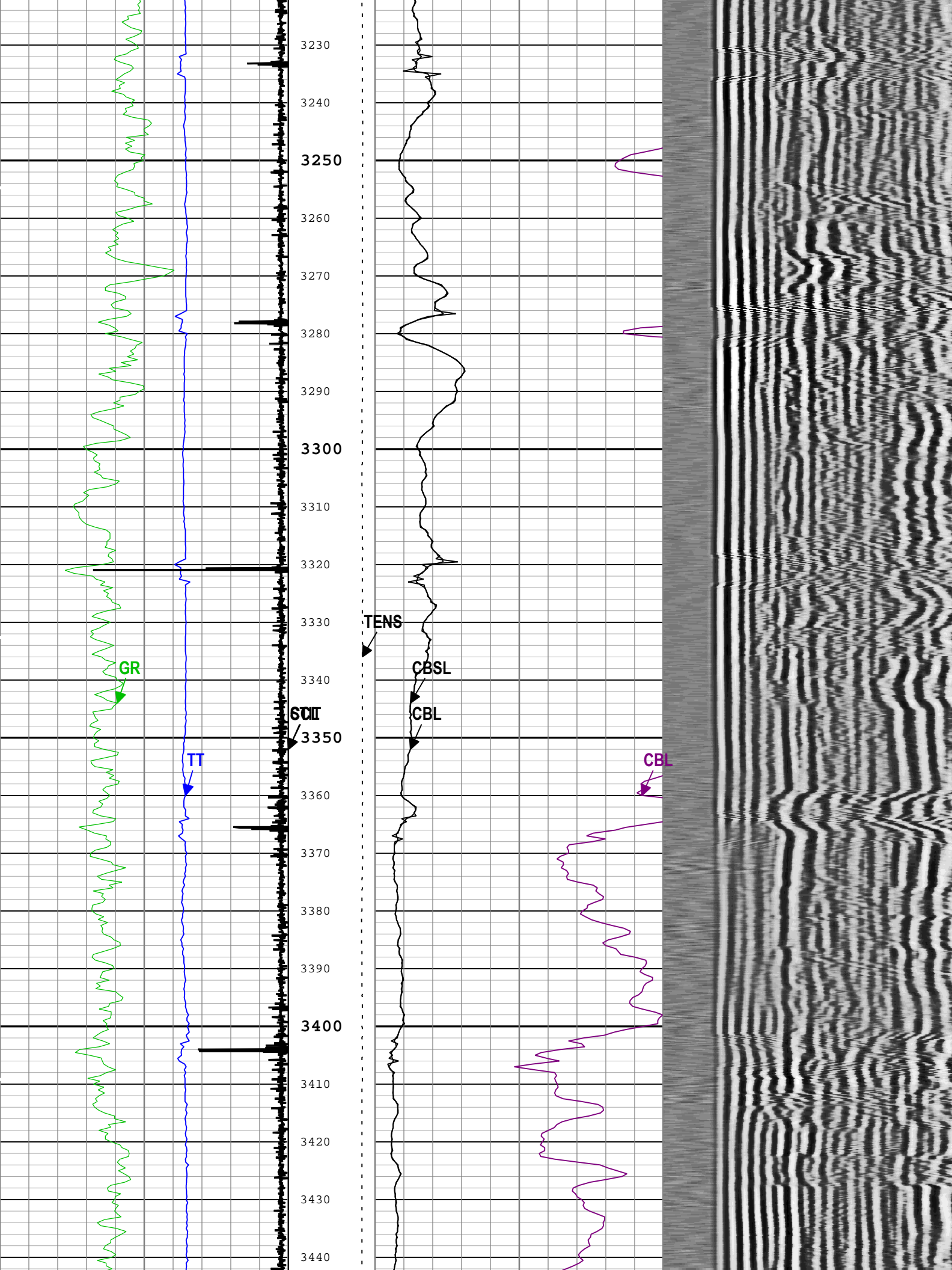


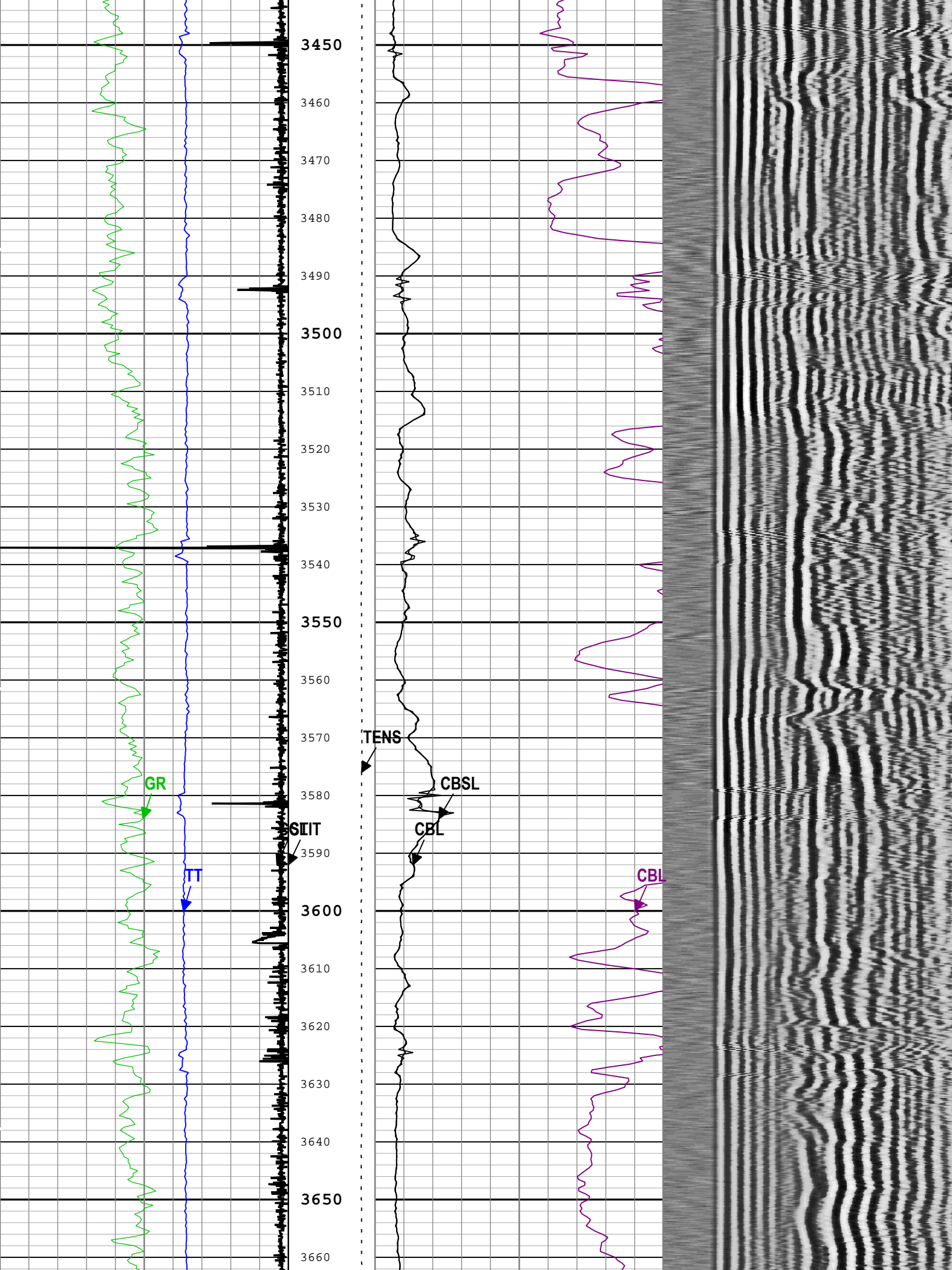




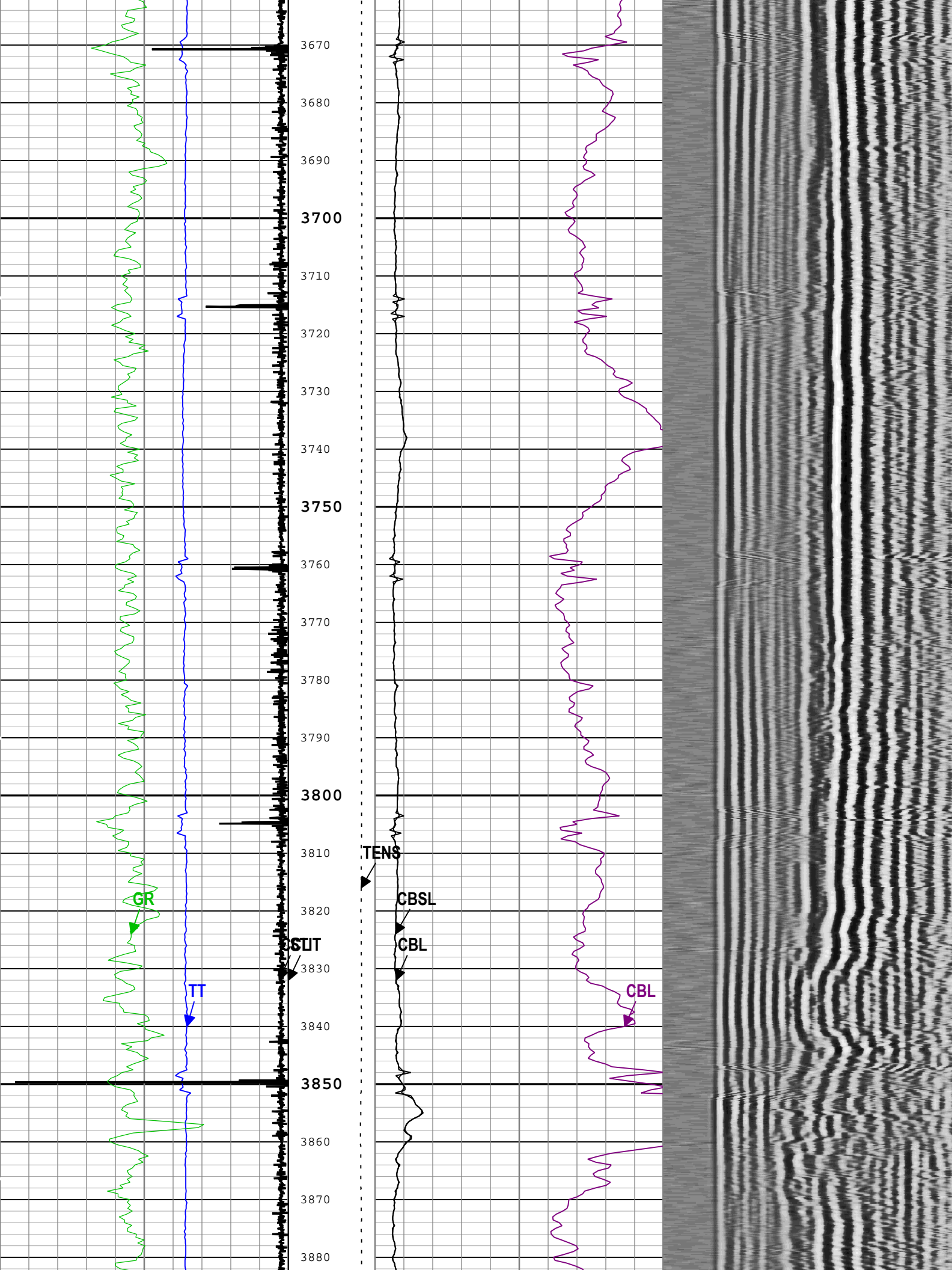


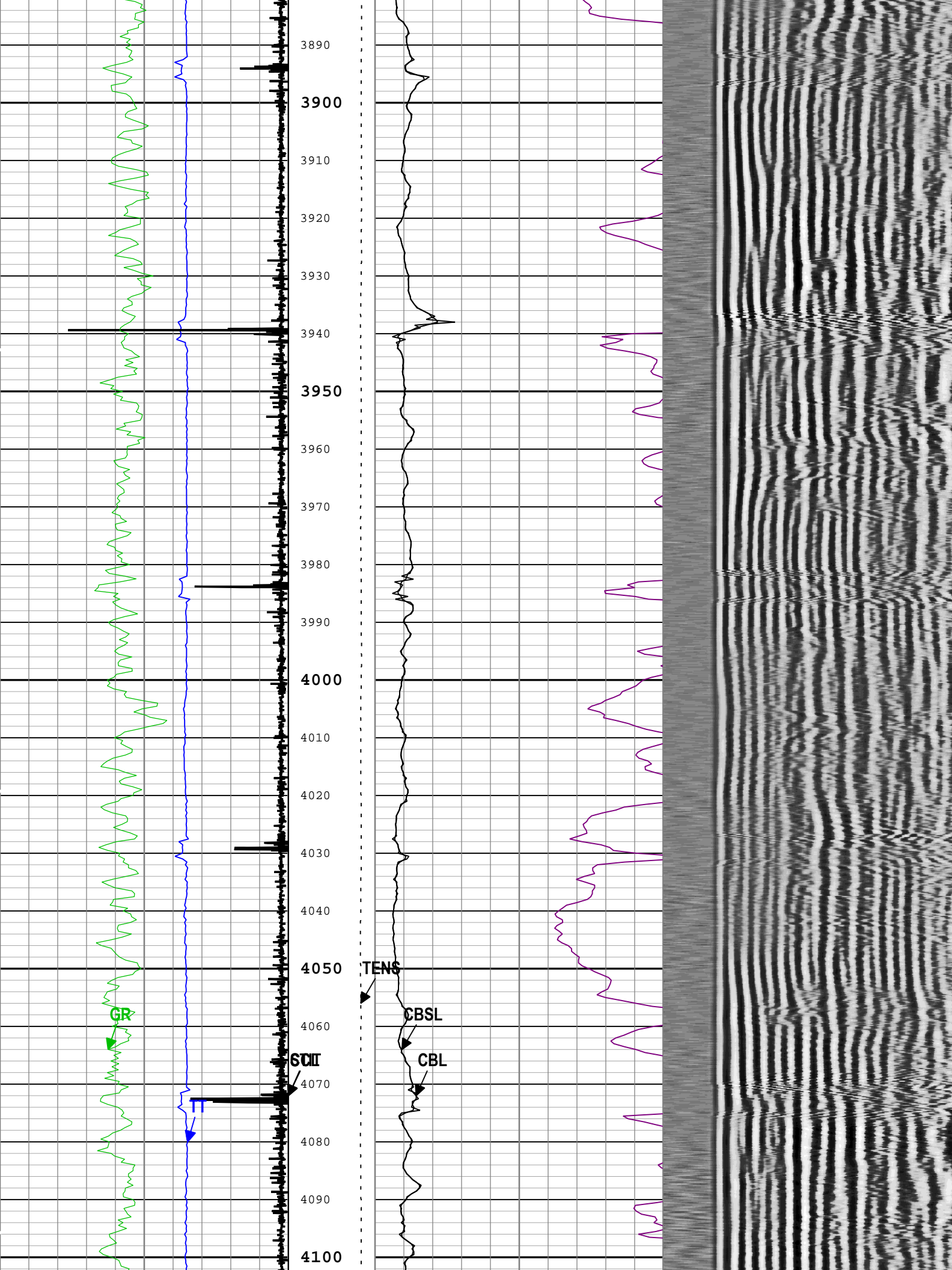




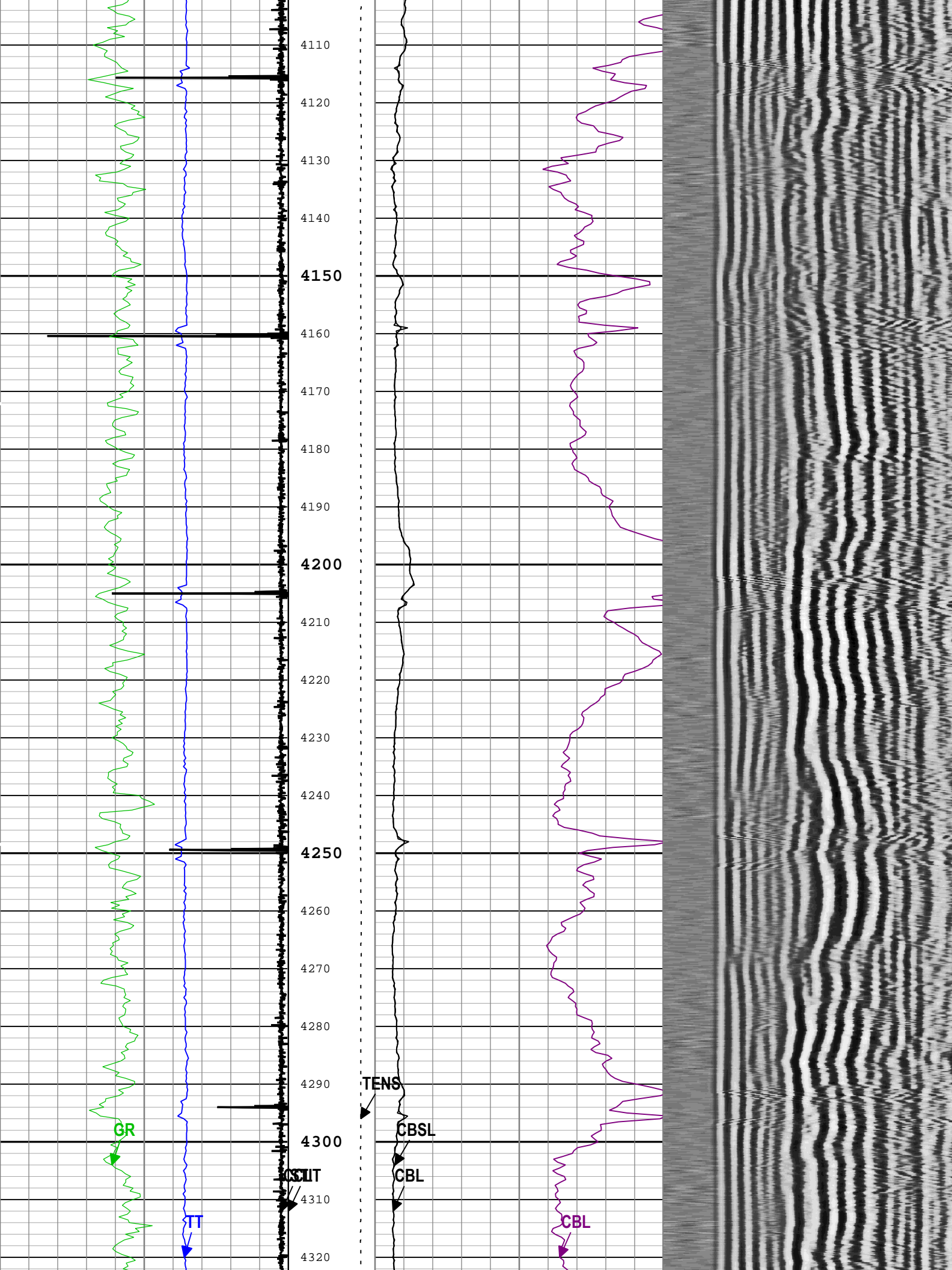


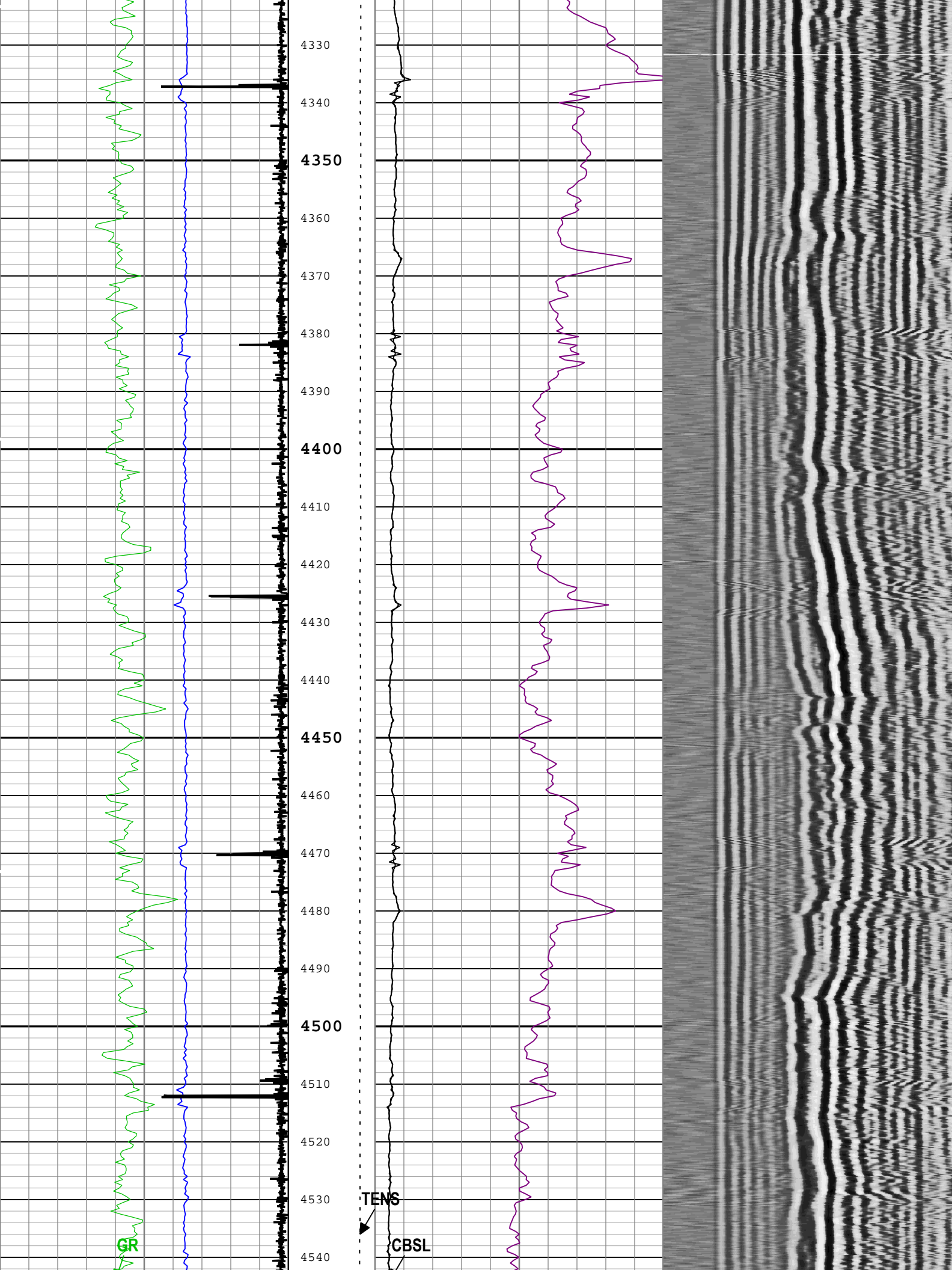


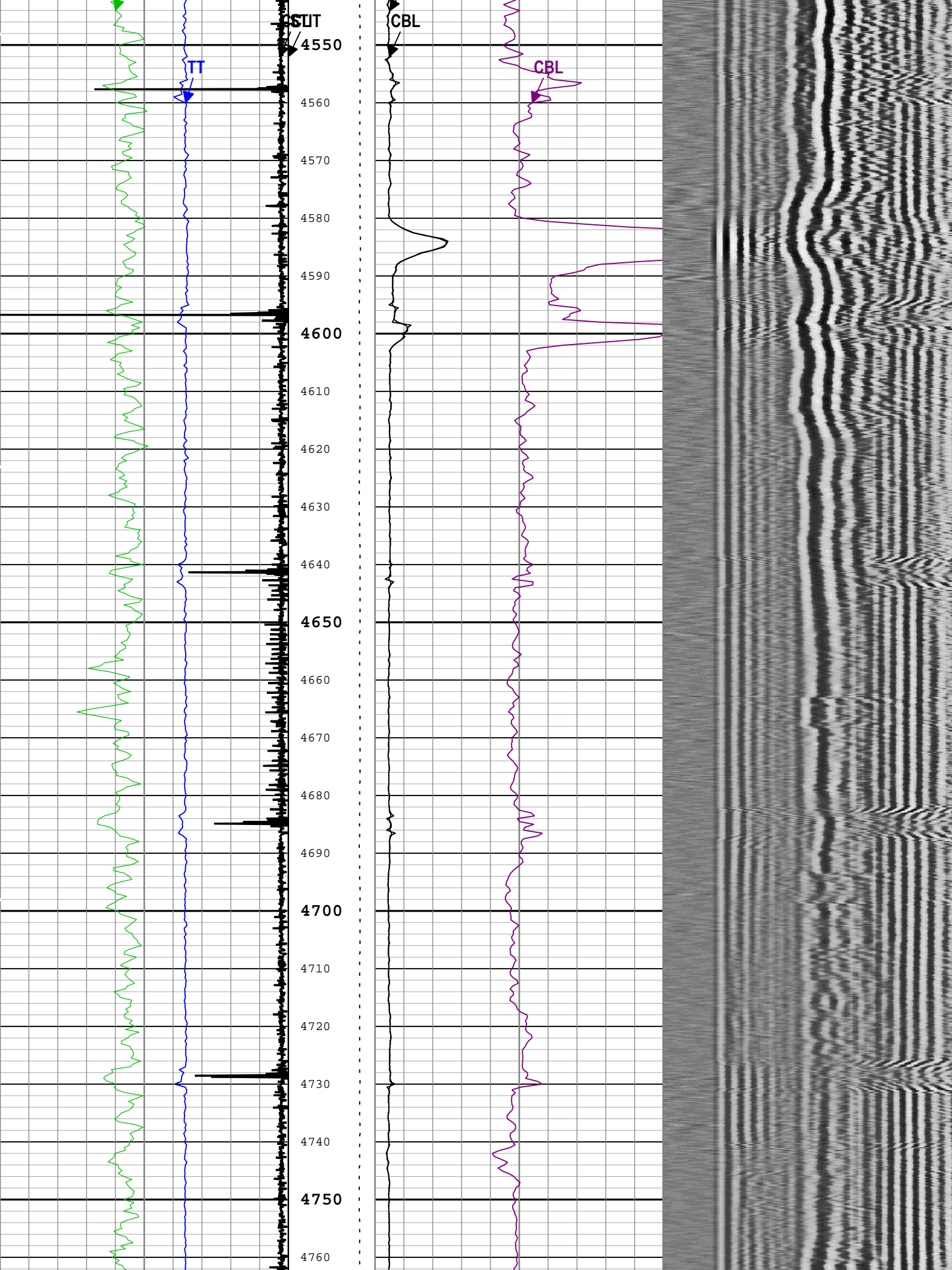




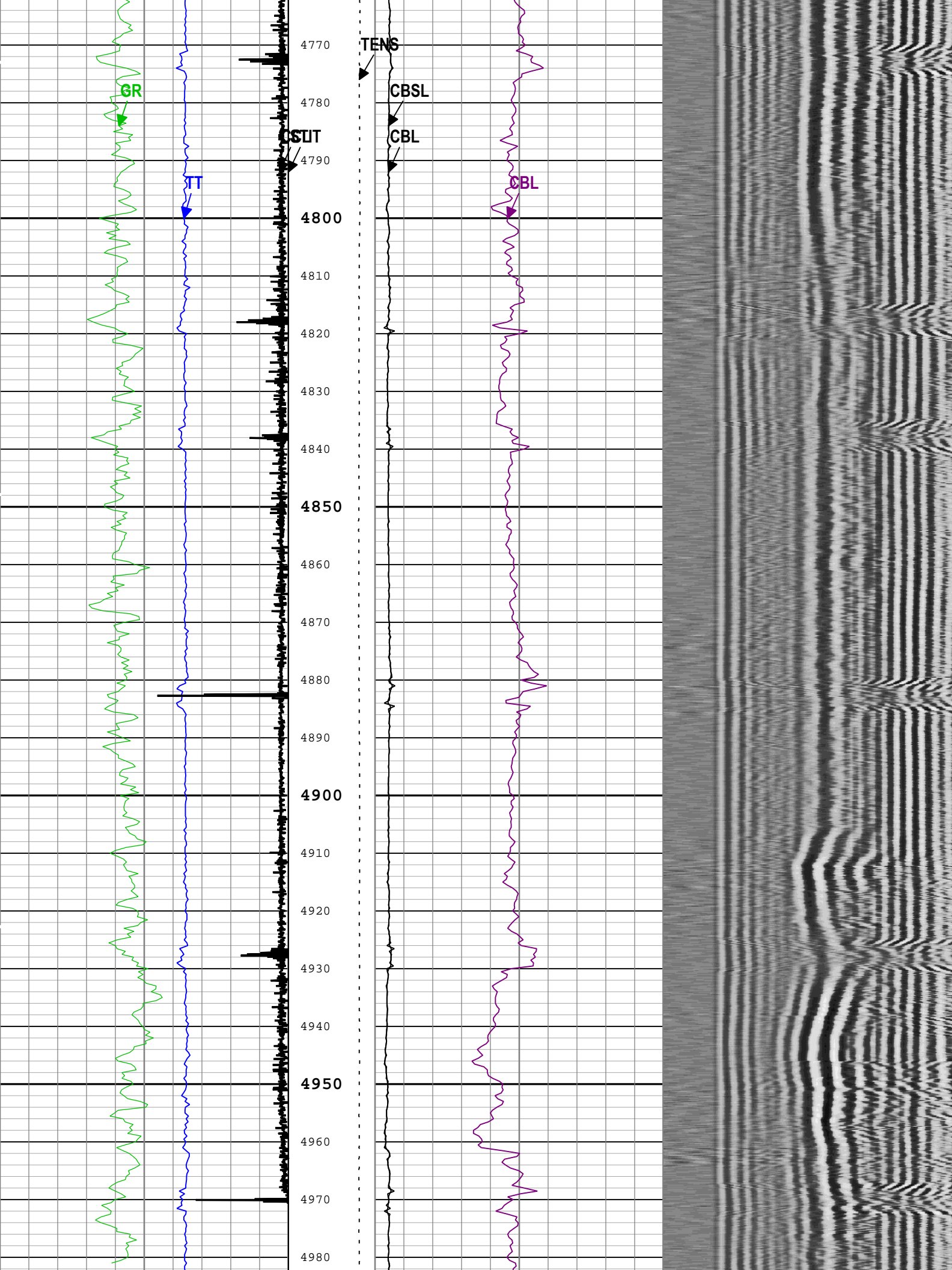


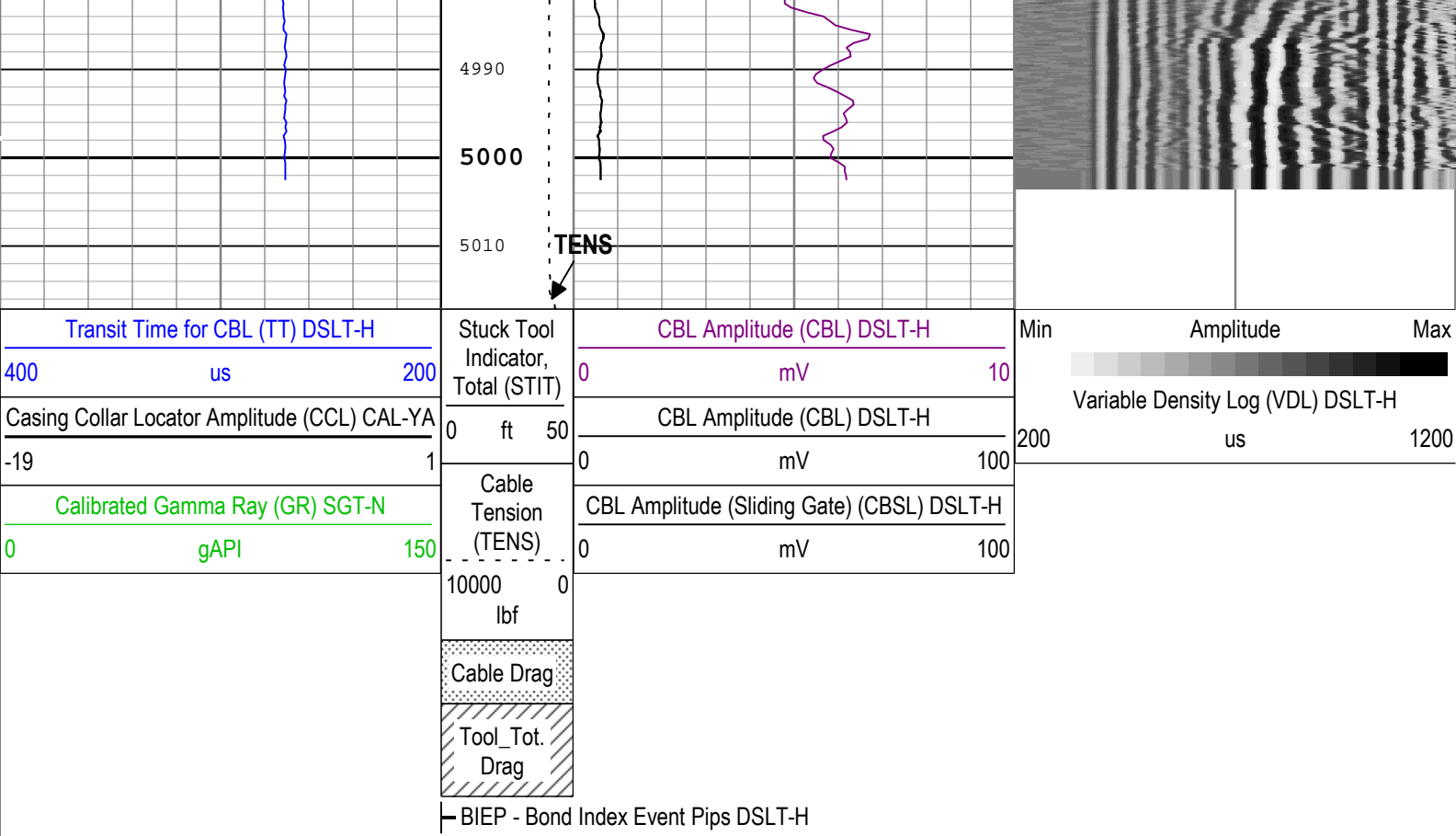












TIME\_1900 - Time Marked every 60.00 (s)

Description: CBL\_VDL Format: Log ( Sonic CBL with VDL ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 22-Sep-2016 17:48:43

Channel Processing Parameters				
One: Parameters				
Parameter	Description	Tool	Value	Unit
AMSG	Auxiliary Minimum Sliding Gate	DSLTH	255	us
CBLG	CBL Gate Width	DSLTH	47	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLTH	72	mV
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YA	25	
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DETE	Delta-T Detection	DSLTH	E1	
FCF	CBL Fluid Compensation Factor	DSLTH	1.01	
GOBO_CURR	Good Bond in Arbitrary Cement	DSLTH	3.42	mV
MAHTR	Manual High Threshold Reference for first arrival detection	DSLTH	120	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLTH	11.85	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLTH	Depth Zoned	ft
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLTH	100	
MSA	Minimum Sonic Amplitude	DSLTH	1.6	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLTH	1.6	mV
NMSG	Near Minimum Sliding Gate	DSLTH	257	us
SGAD	Sliding Gate Status	DSLTH	Off	
SGDT	Sliding Gate Delta-T	DSLTH	57	us/ft
Depth Zone Parameters				
Parameter	Value	Start ( ft )	Stop ( ft )	
MCI	14.81	24.92	2084	
MCI	4.75	2084	5017.17	

All depth are actual.

## Tool Control Parameters

### One: Parameters

Parameter	Description	Tool	Value	Unit
MODE	DSLT Acquisition Mode	DSLT-H	CBL	
RATE	DSLT Firing Rate	DSLT-H	15 Hz	
DTFS	DSLT Telemetry Frame Size	DSLT-H	536	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

## Calibration Report

### DSLT-H (Digitizing Sonic Logging Tool - H) Calibration - Run One

Primary Equipment :	Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL	SLS-E	1650
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### CBL Free Pipe Adjustment - Free Pipe Measurement

Before (Measured):		14:40:31 21-Sep-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Amplitude	mV	Before	60.00	15.00	102.73	174.00	
CBL Reference Amplitude (CBRA)	mV	Before			72.00		
Measurement Depth	ft	Before			52.29		

### CBL Free Pipe Adjustment - CBL Amplitude Coefficient

Before (Measured):		14:40:31 21-Sep-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Adjustment Factor		Before	1.000	0.200	0.701	5.000	
Depth of Before Calibration	ft	Before			52.29		

### SGT-N (Scintillation Gamma-Ray Tool) Calibration - Run One

Primary Equipment :	Scintillation Gamma Cartridge	SGC-TB	10210
Calibration Parameter :	Plus Reference (Jig minus background reference)	160	

### SGT-N Gamma-Ray Calibration - Gamma Ray Coefficients

Before (Measured):		14:30:25 20-Sep-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Gain		Before			1.148		

### SGT-N Gamma-Ray Calibration - Gamma Ray Accumulations

Before (Measured):		14:30:25 20-Sep-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before		0	60.089	120.000	
RGR Plus Measurement	gAPI	Before	139.354	126.685	139.354	152.022	

### SGT-N Gamma-Ray Plateau Check - Gamma Ray Plateau Check

Before (Measured):		14:33:01 20-Sep-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Plus Plateau Measurement	gAPI	Before			205.737		
RGR Minus Plateau Measurement	gAPI	Before			191.286		



Company:	Whiting Oil & Gas Corporation	Schlumberger
Well:	Razor 25O-2410	
Field:	Wildcat	
County:	Weld	
State:	Colorado	
Cement Bond Log		
GR-CCL		