

Company: Whiting Oil & Gas Corporation

Well: Razor 250-2411

Field: Wildcat

County: Weld State: Colorado

Cement Bond Log  
GR-CCL

County:	Weld		
Field:	Wildcat		
Location:	SWSE Sec25, T10N, R58W		
Well:	Razor 250-2411		
Company:	Whiting Oil & Gas Corporation		
Location:	SWSE Sec25, T10N, R58W	Elev.:	K.B. 4739.00 ft
	SHL: 330' FNL & 1940' FEL		G.L. 4718.00 ft
	Lat/Long: 40.803461/-103.810197		D.F. 4738.00 ft
	Permanent Datum:	Ground Level	Elev.: 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:
05-123-42647	25	10N	58W

Logging Date	22-Sep-2016		
Run Number	One		
Depth Driller	15771.00 ft		
Schlumberger Depth	15771.00 ft		
Bottom Log Interval	4860.00 ft		
Top Log Interval	50.00 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	2106.00 ft		
To	15771.00 ft		
Casing/Tubing Size	5.5 in		
Weight	20 lbm/ft		
Grade	N/A		
From	21.00 ft		
To	15769.00 ft		
Max Recorded Temperatures	193 degF		
Logger on Bottom	22-Sep-2016	08:07:00	
Unit Number	Location:	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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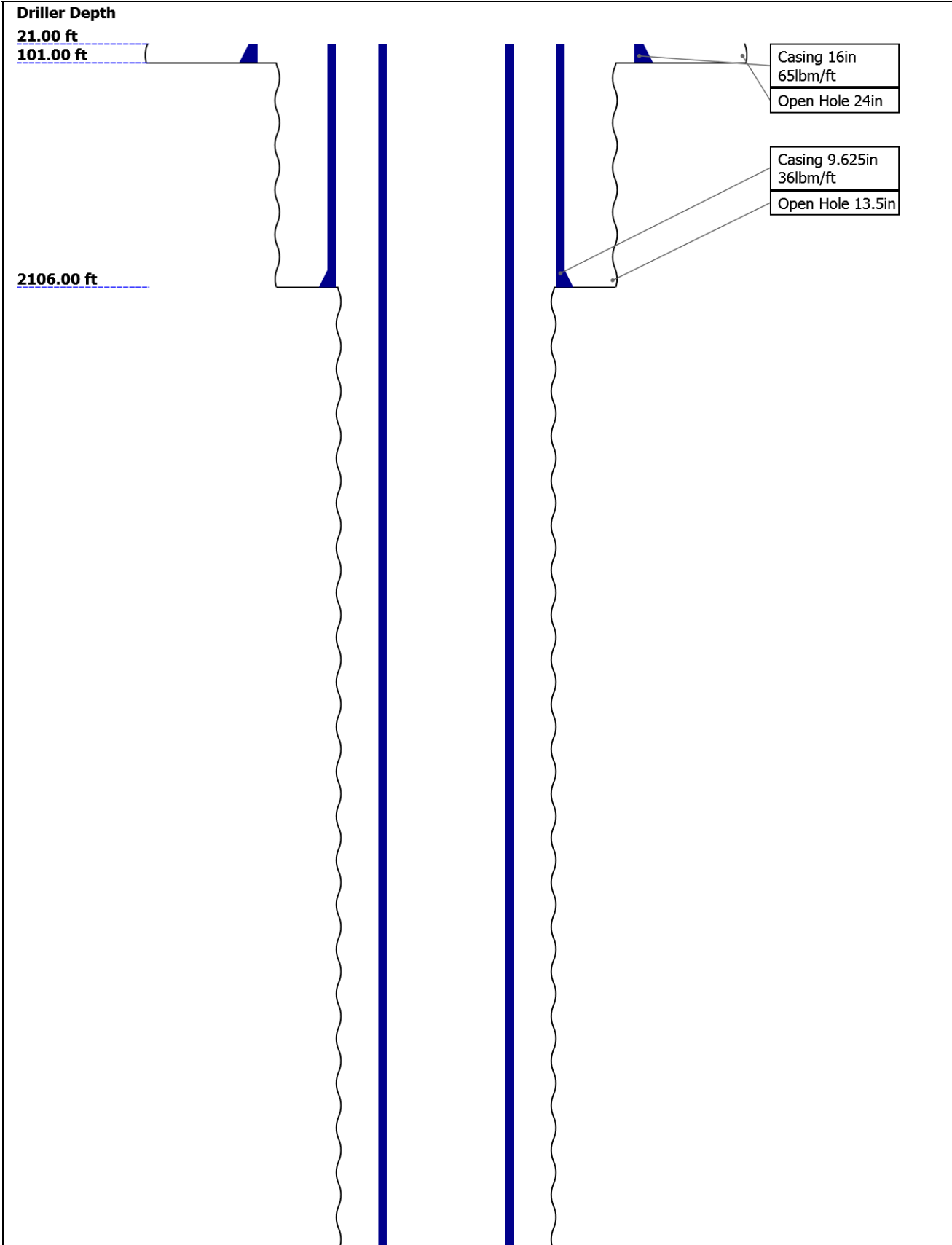
9.4 Log ( Sonic CBL with VDL )

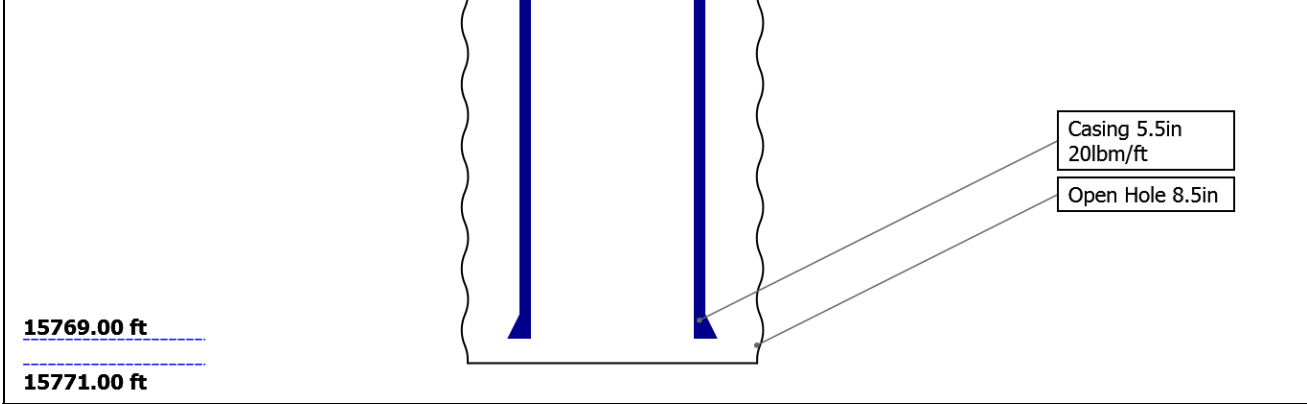
9.5 Parameter Listing

10. Calibration Report

11. Tail

Well Sketch






Borehole Size/Casing/Tubing Record

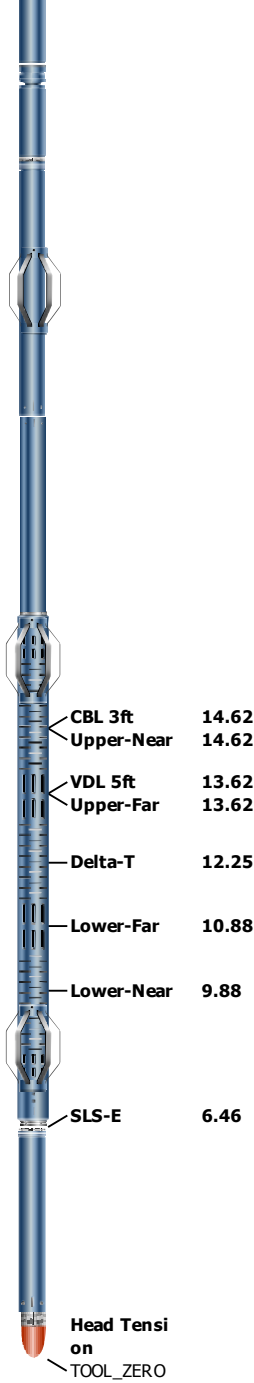
Bit						
Bit Size ( in )	24	13.5	8.5			
Top Driller ( ft )	21	101	2106			
Top Logger ( ft )	21	101	2106			
Bottom Driller ( ft )	101	2106	15771			
Bottom Logger ( ft )	101	2106	15771			
Casing						
Size ( in )	16	9.625	5.5			
Weight ( lbm/ft )	65	36	20			
Inner Diameter ( in )	15.25	8.921	4.778			
Grade	N/A	N/A	N/A			
Top Driller ( ft )	21	21	21			
Top Logger ( ft )	21	21	21			
Bottom Driller ( ft )	101	2106	15769			
Bottom Logger ( ft )	101	2106	15769			

Remarks and Equipment Summary

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

AH-184[1]:3 29.1  
906

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



Adaptor\_Head 6.46

BNS-STD 0.46

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

Calibration Date			
Calibrator Serial Number	441435A		
Number of Calibration Points	10		
Calibration Root Mean Square Error	3		
Calibration Peak Error	4		

## Logging Cable

Type	7-39P-LXS		
Serial Number			
Length	15000.00 ft		
Conveyance Type	Wireline		
Rig Type	Crane		

### One:Depth Control Parameters

Depth Control Remarks
-----------------------

Log Sequence	First Log In the Well	This is the first run in the well. All Schlumberger depth control procedures were followed.
Rig Up Length At Surface		IDW used as primary depth control device.
Rig Up Length At Bottom		Z-Chart used as secondary depth control device.
Rig Up Length Correction		Depth correlated to short joint at 4746'.
Stretch Correction		
Tool Zero Check At Surface		

One

## 1500 PSI Main Pass

## 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[3]:Up	Up	64.98 ft	4909.55 ft	22-Sep-2016 7:48:41 AM	22-Sep-2016 9:01:03 AM	ON	6.41 ft	No

All depths are referenced to toolstring zero

## Log

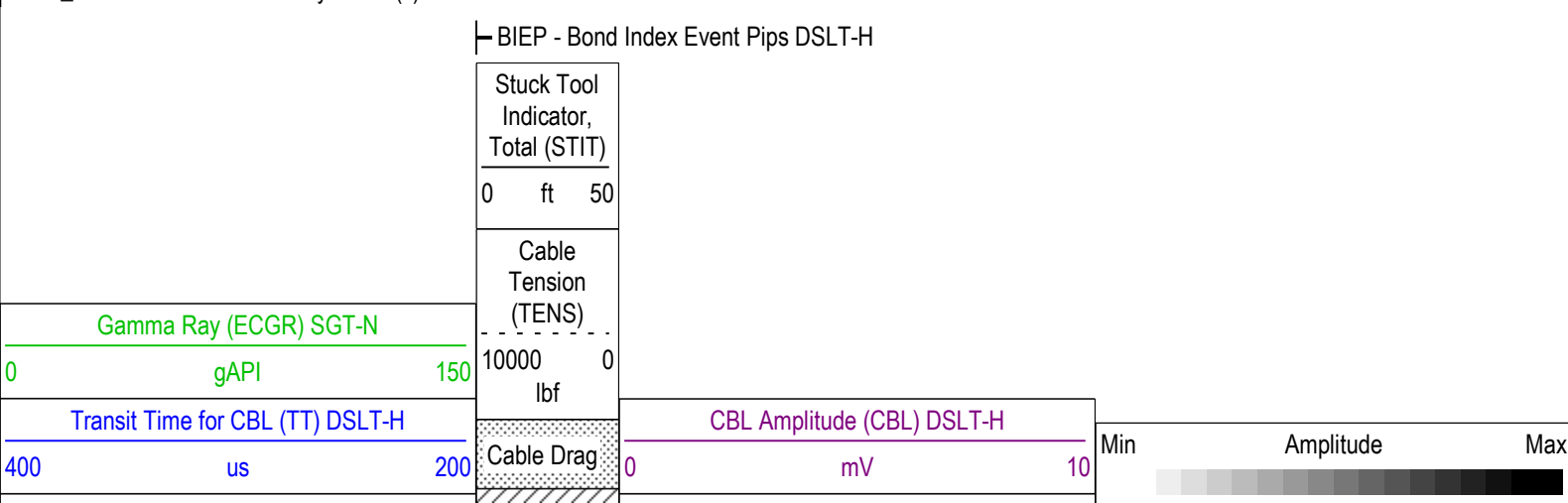
Company:Whiting Oil & Gas Corporation

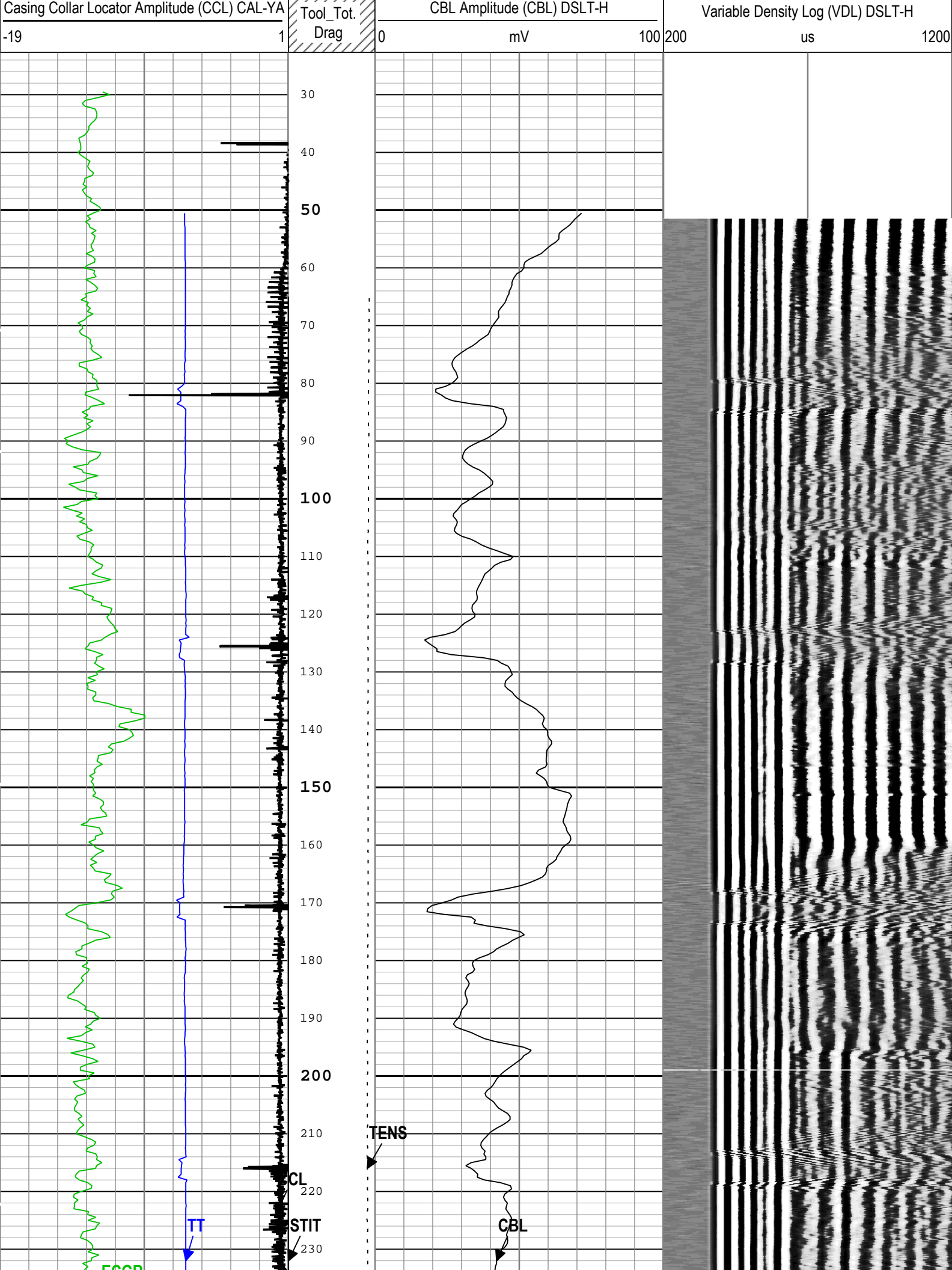
Well:Razor 250-2411

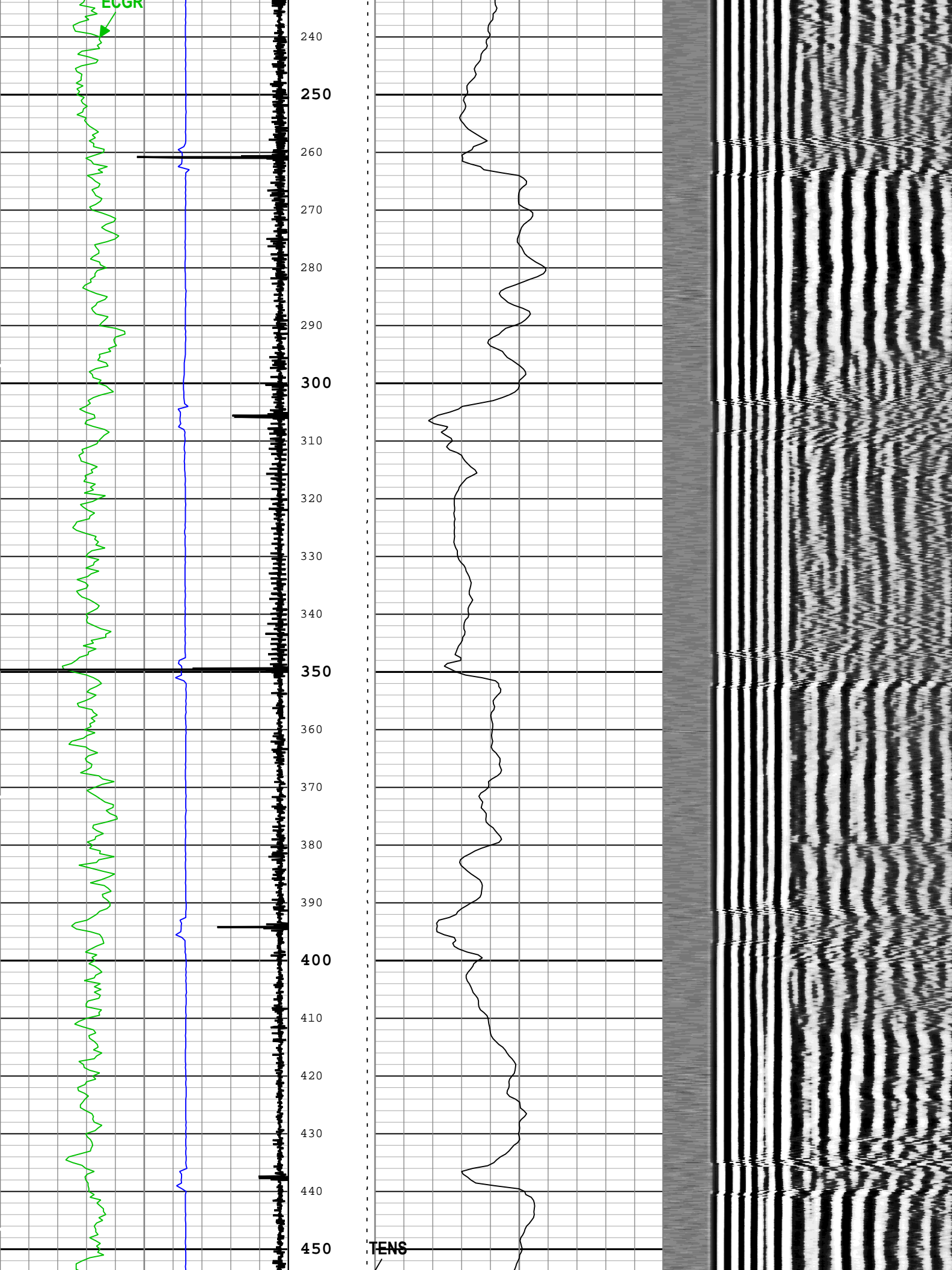
One: Log[3]:Up:S003

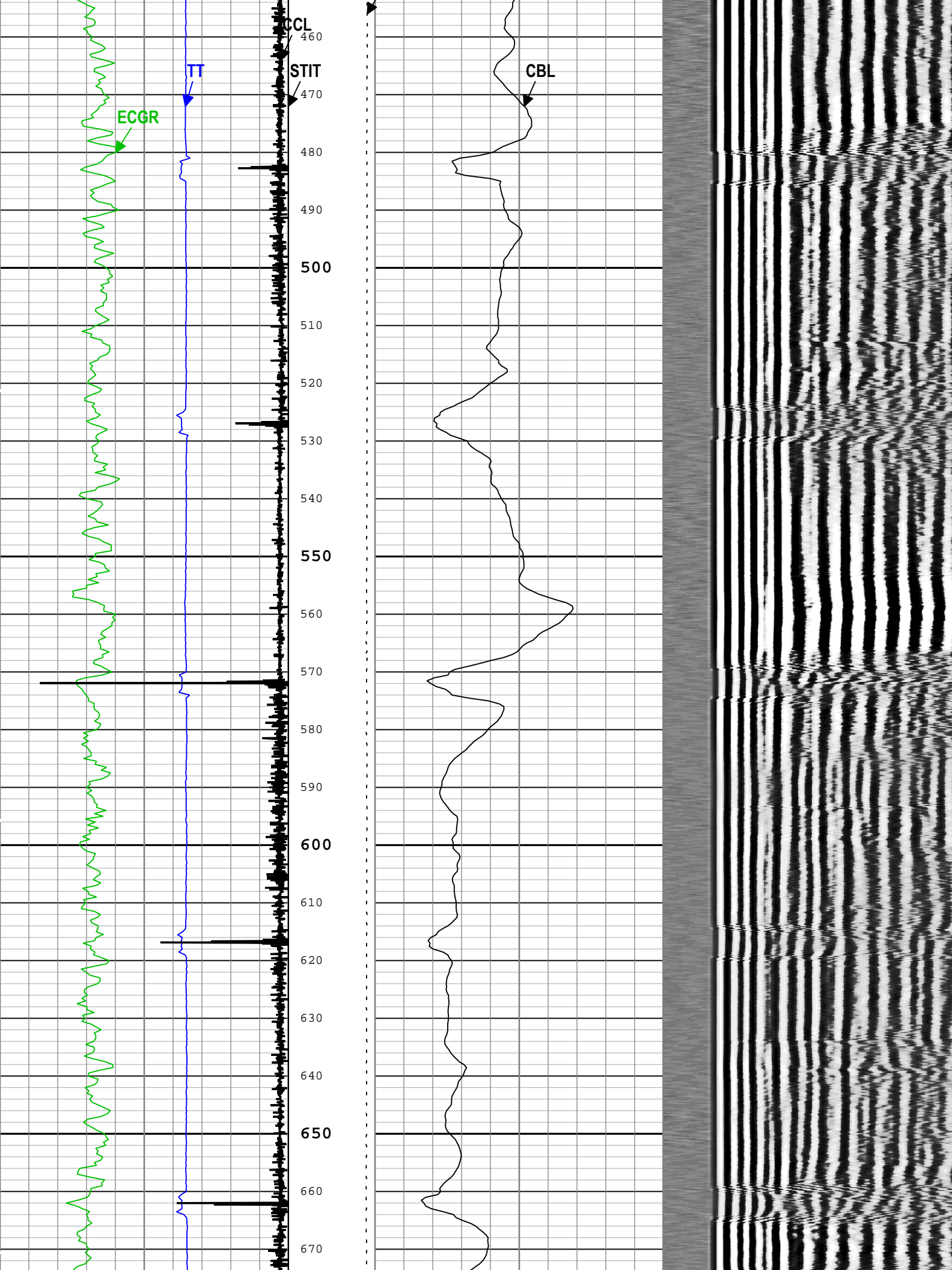
Description: CBL\_VDL    Format: Log ( Sonic CBL with VDL )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 22-Sep-2016 09:07:48

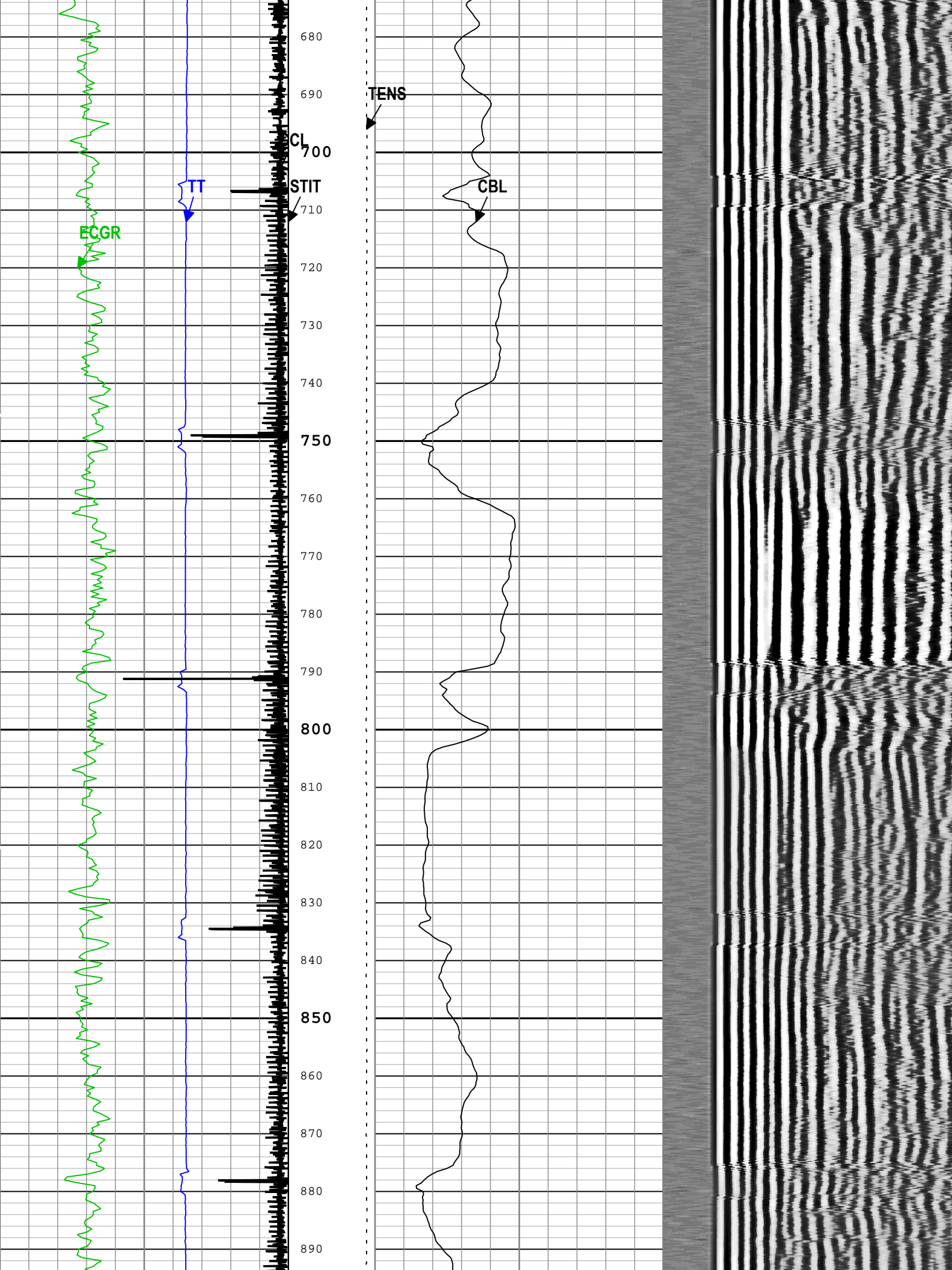
TIME 1900 - Time Marked every 60.00 (s)

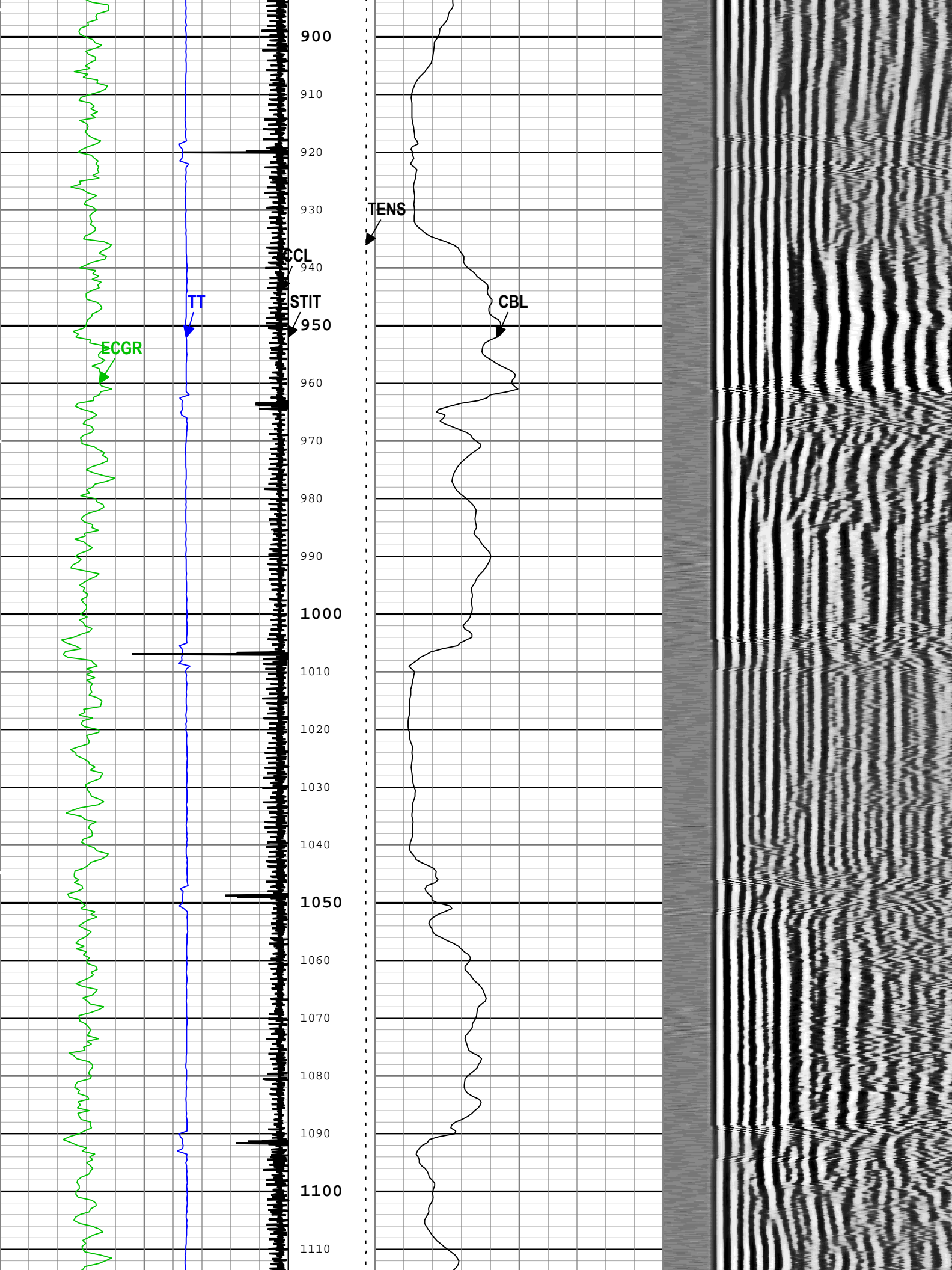


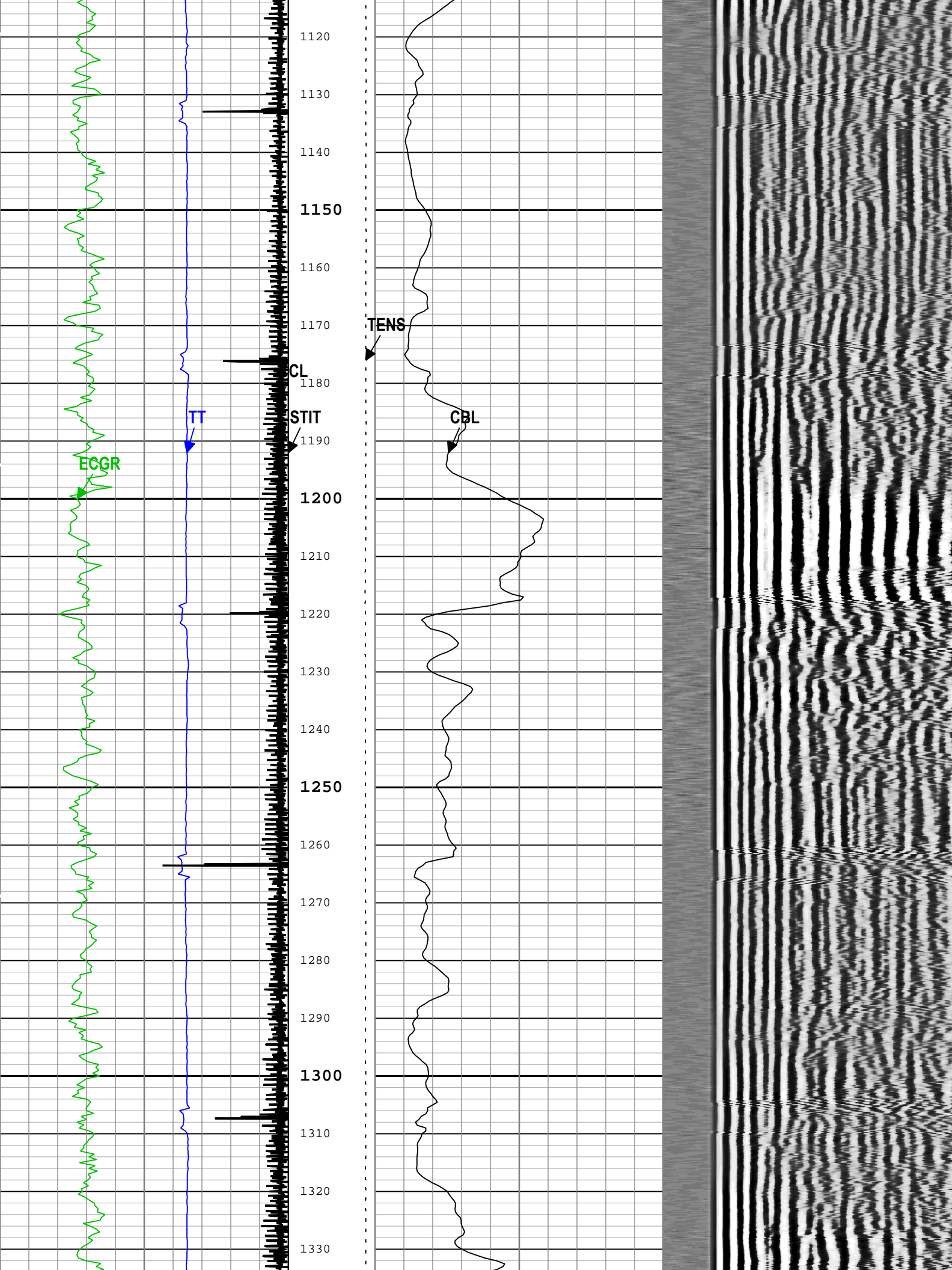


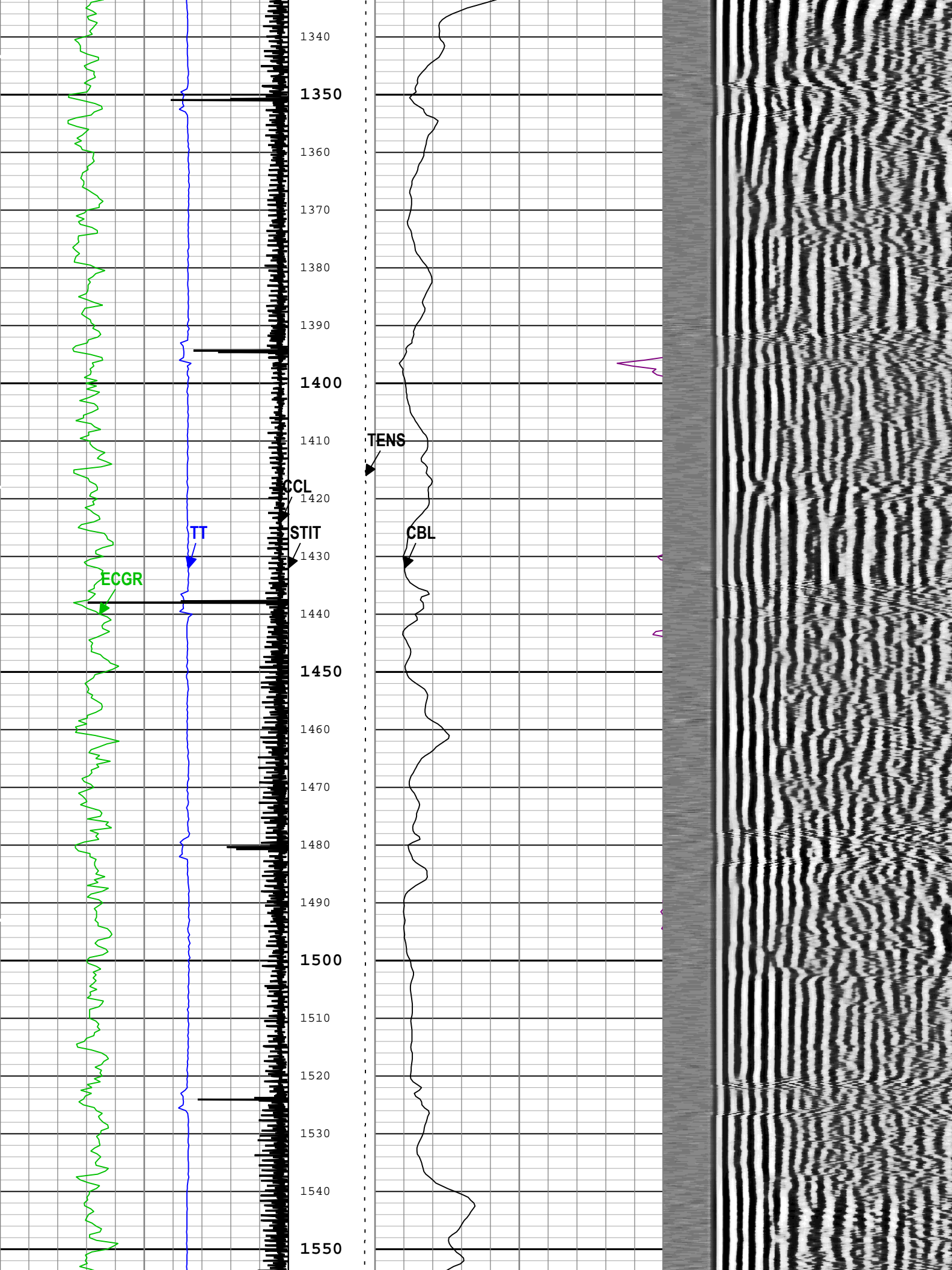


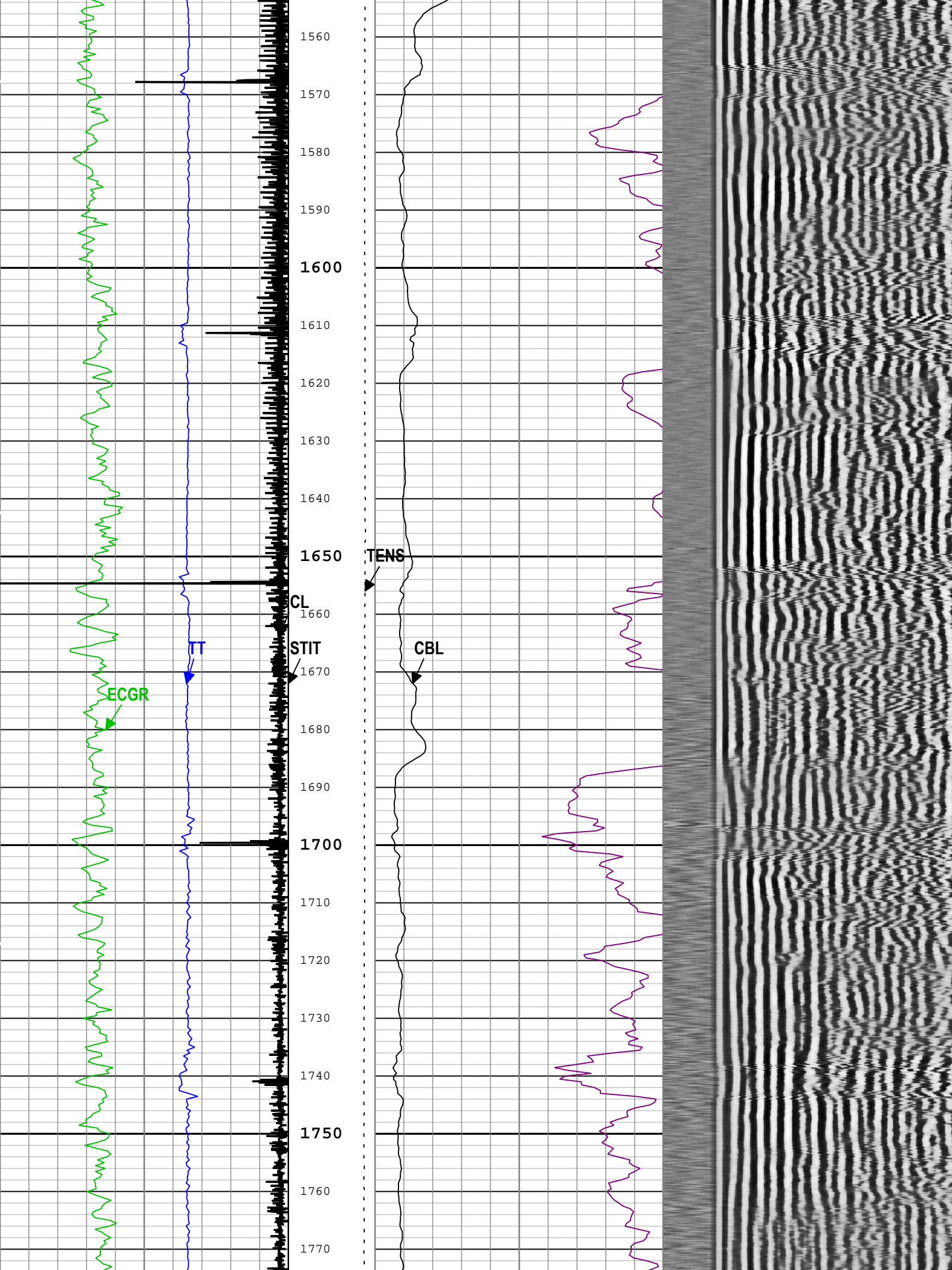


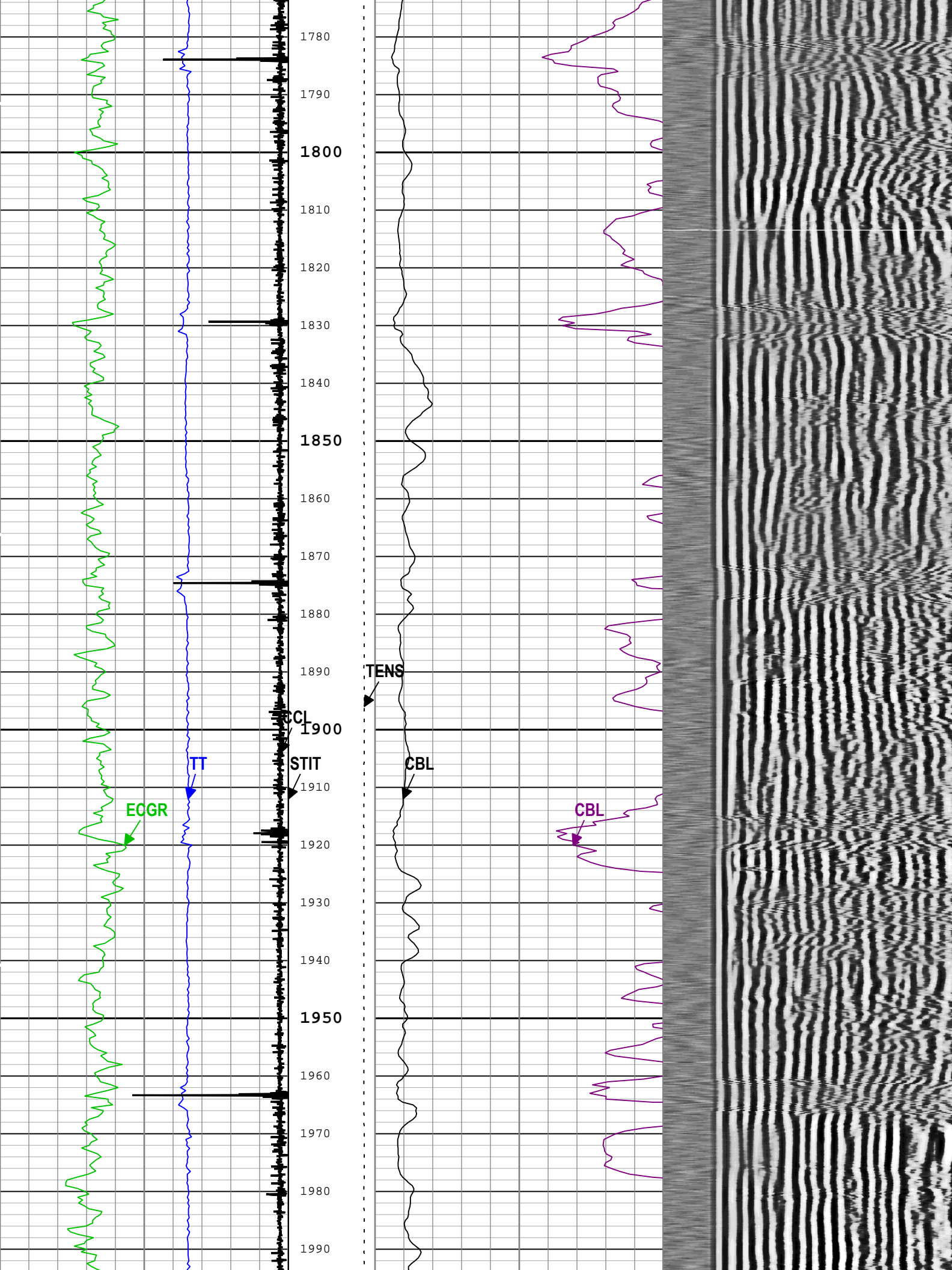


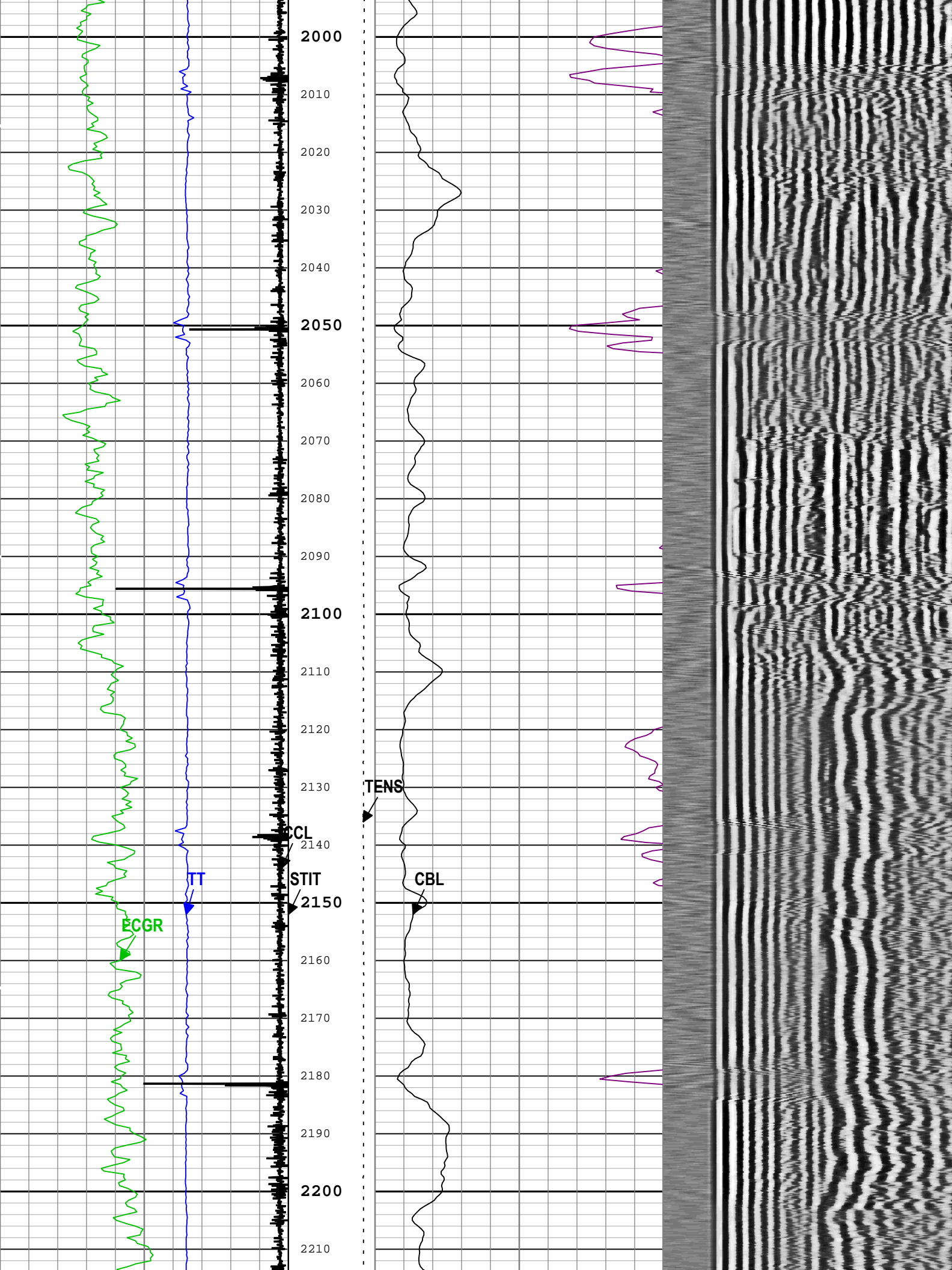


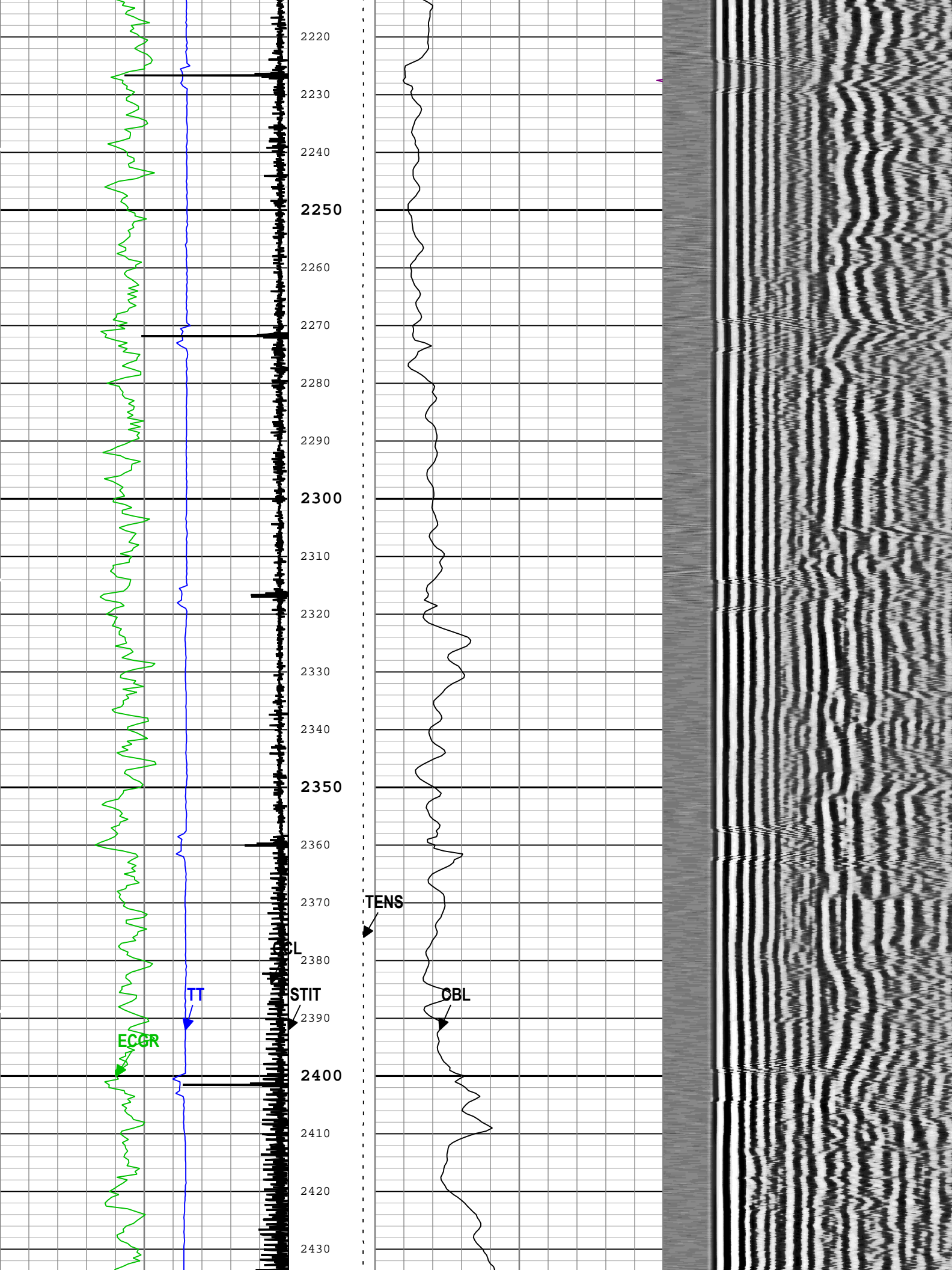


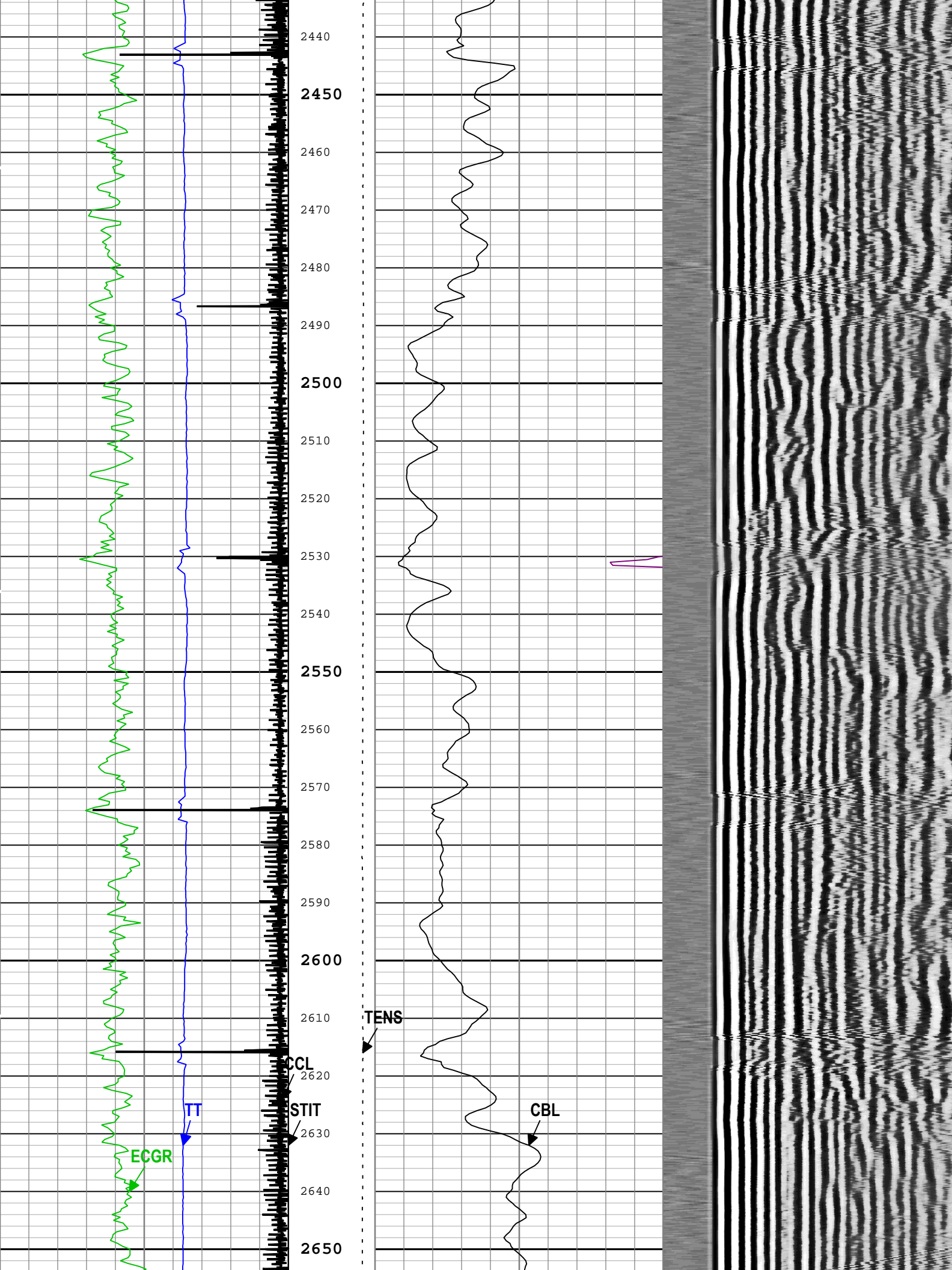


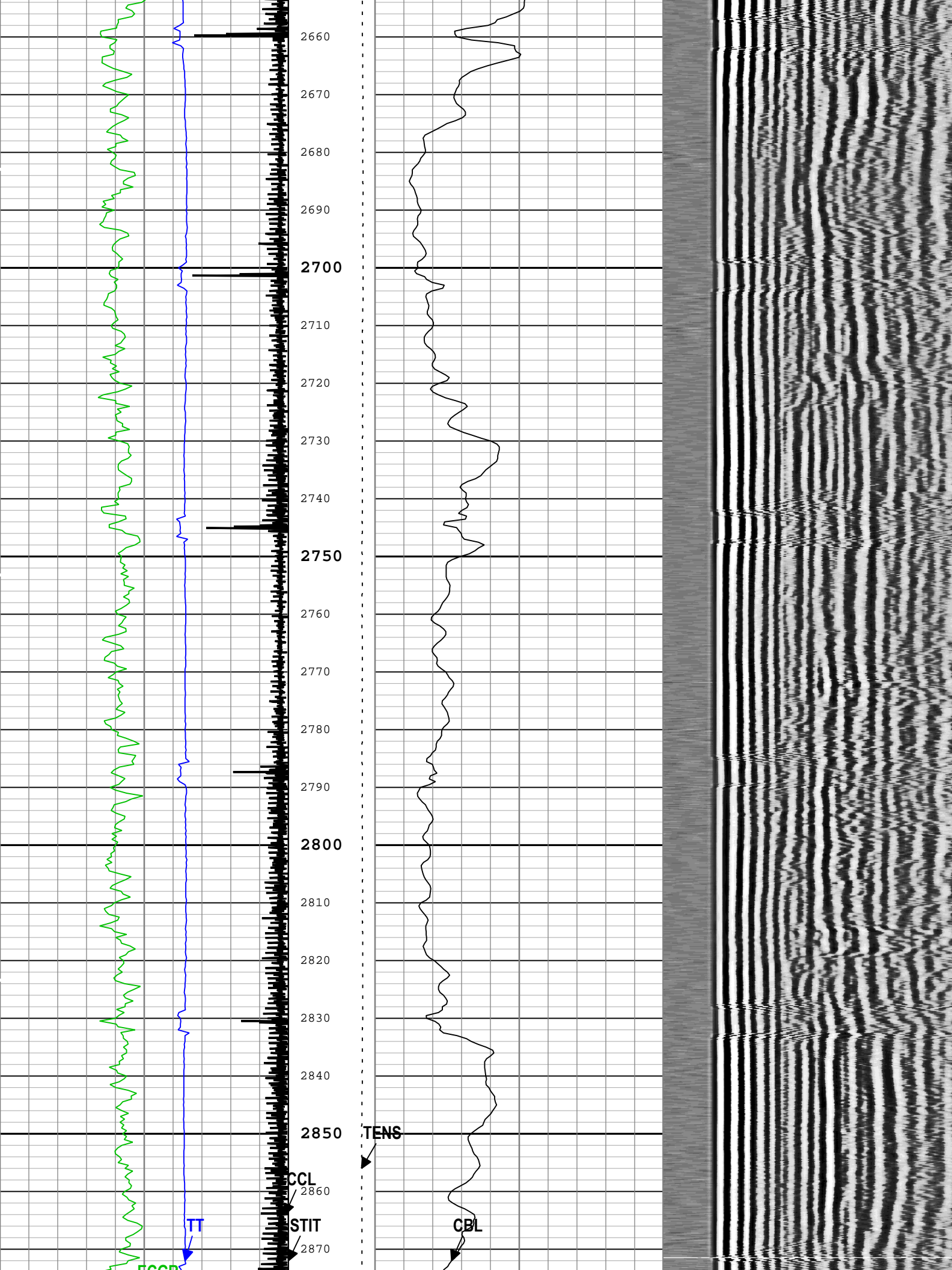


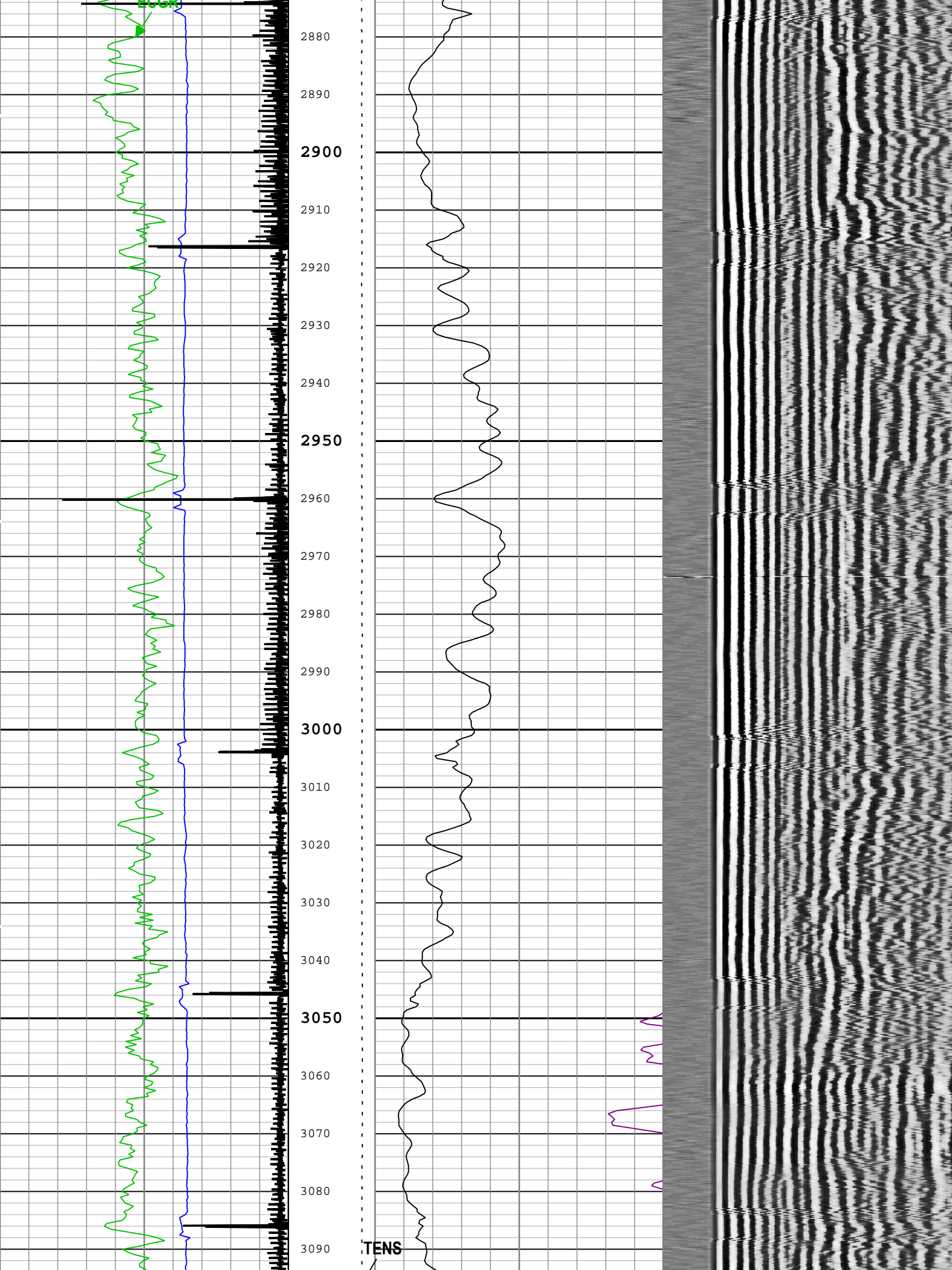


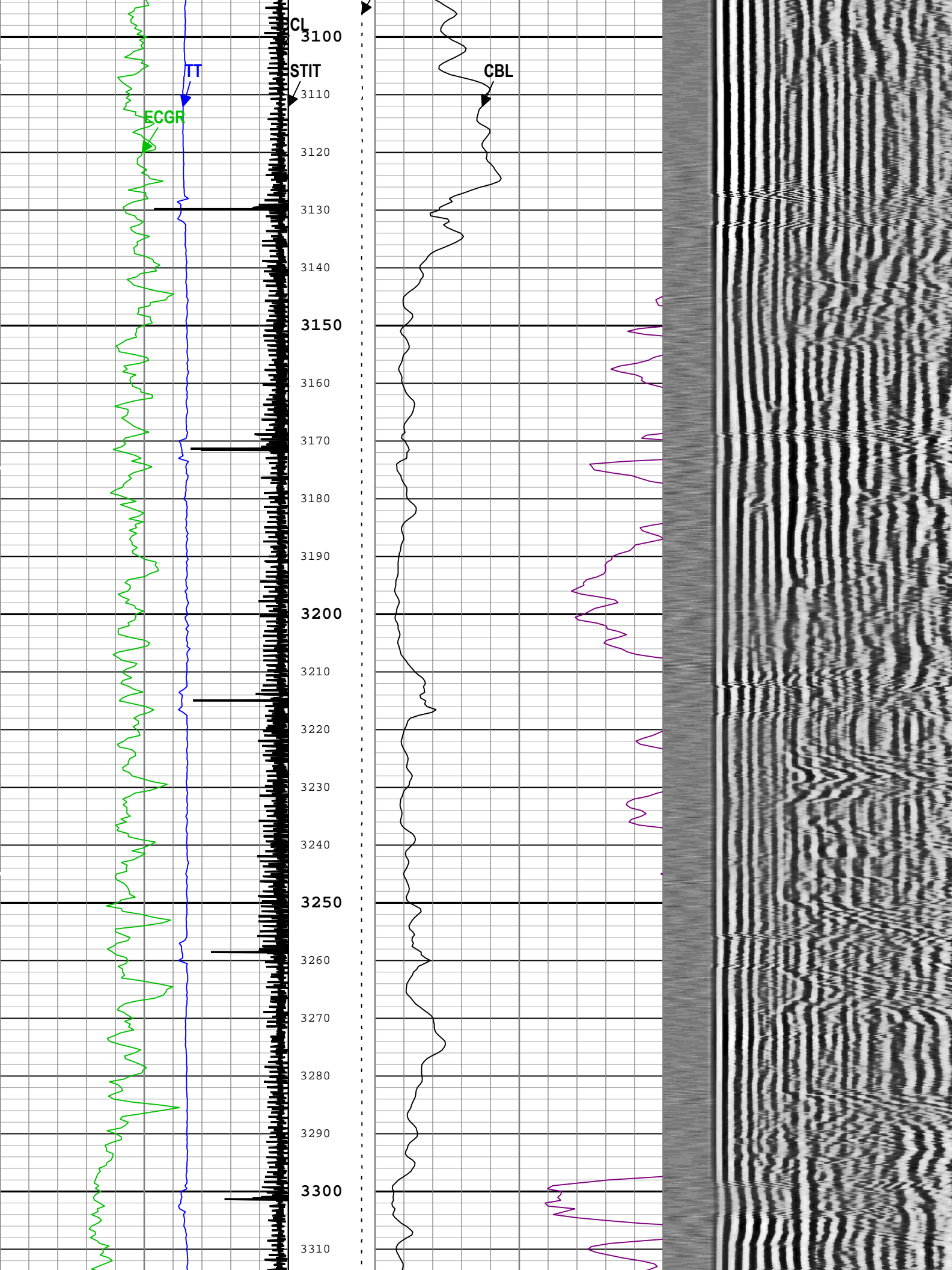


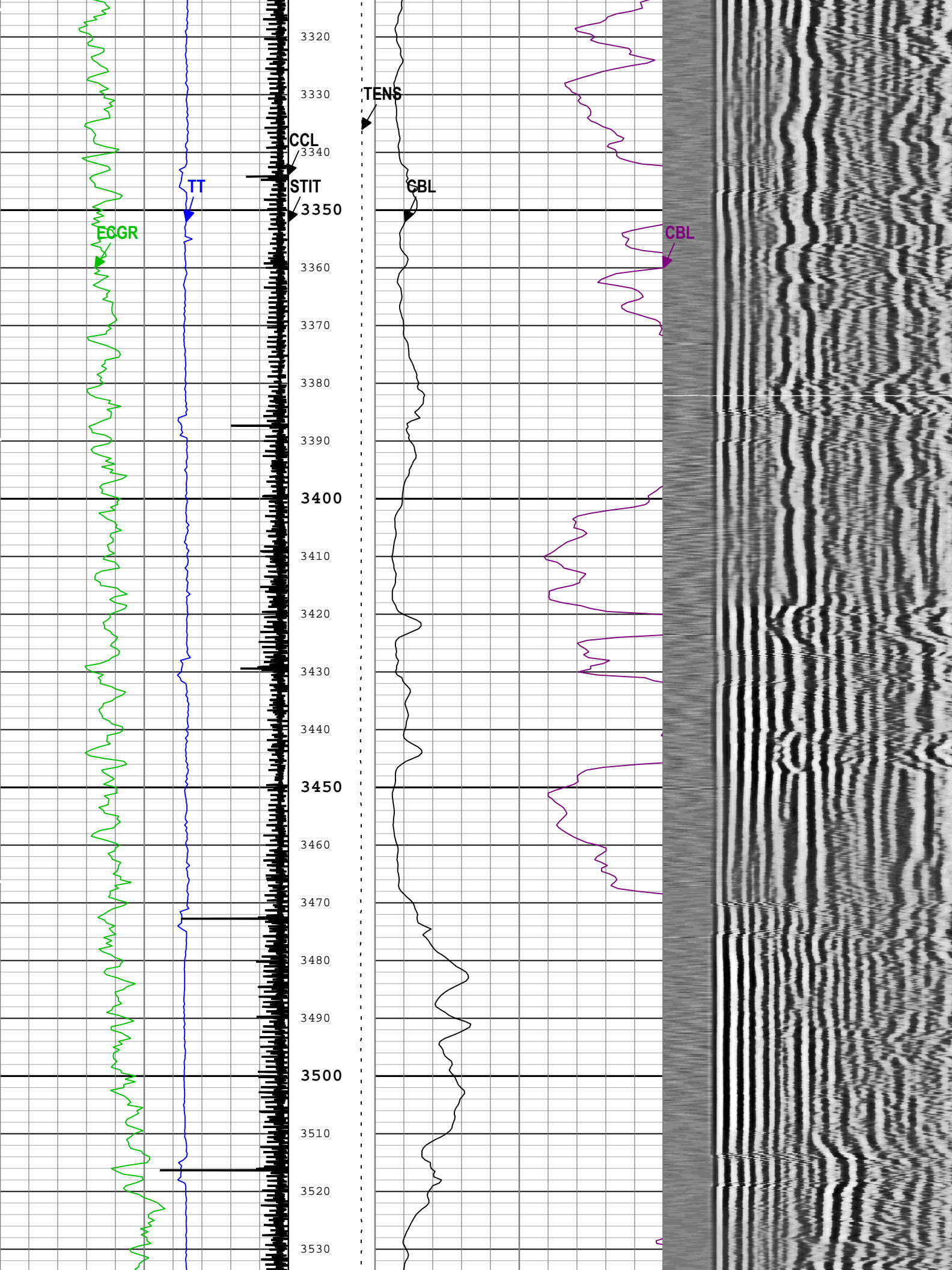


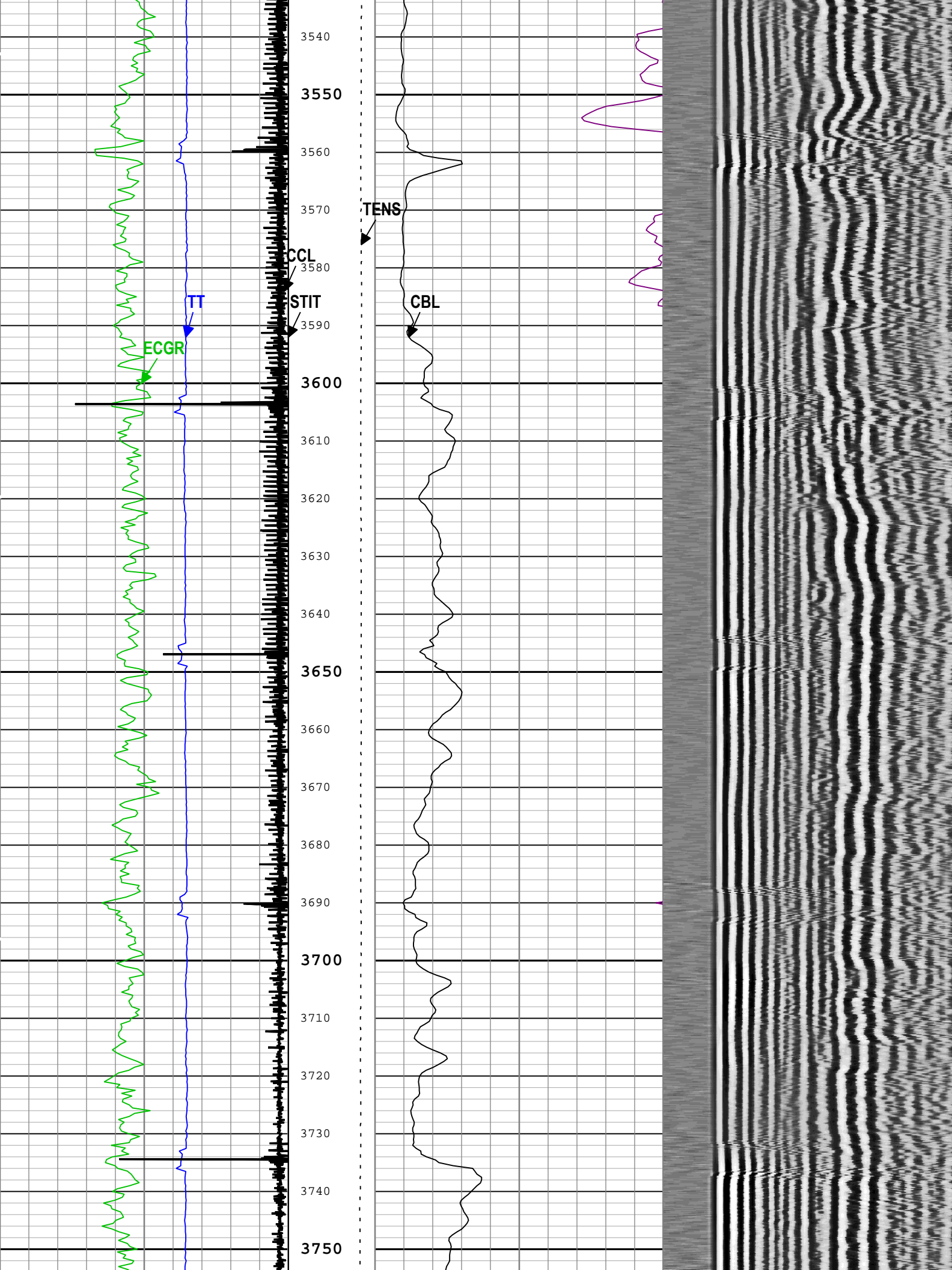


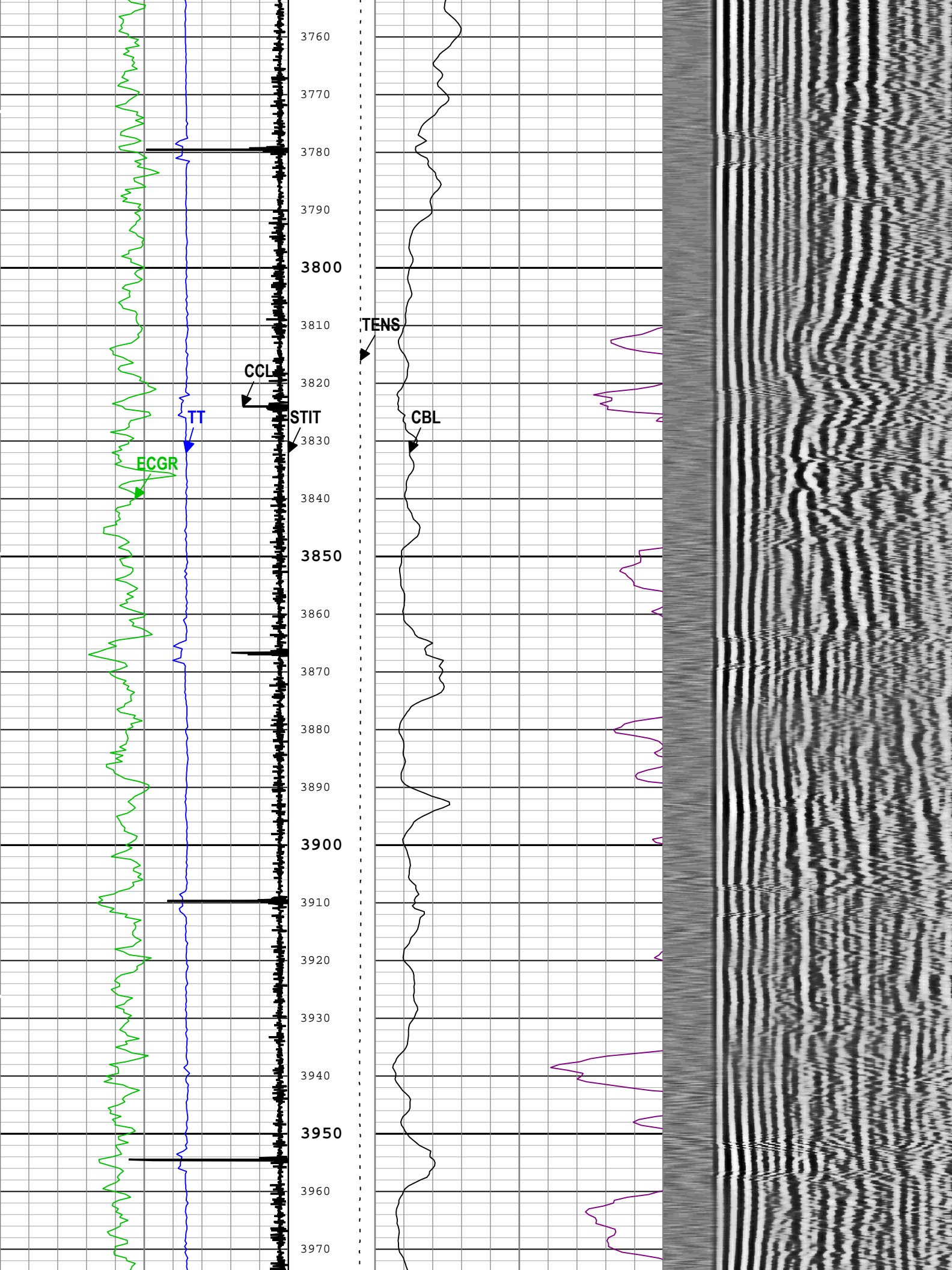


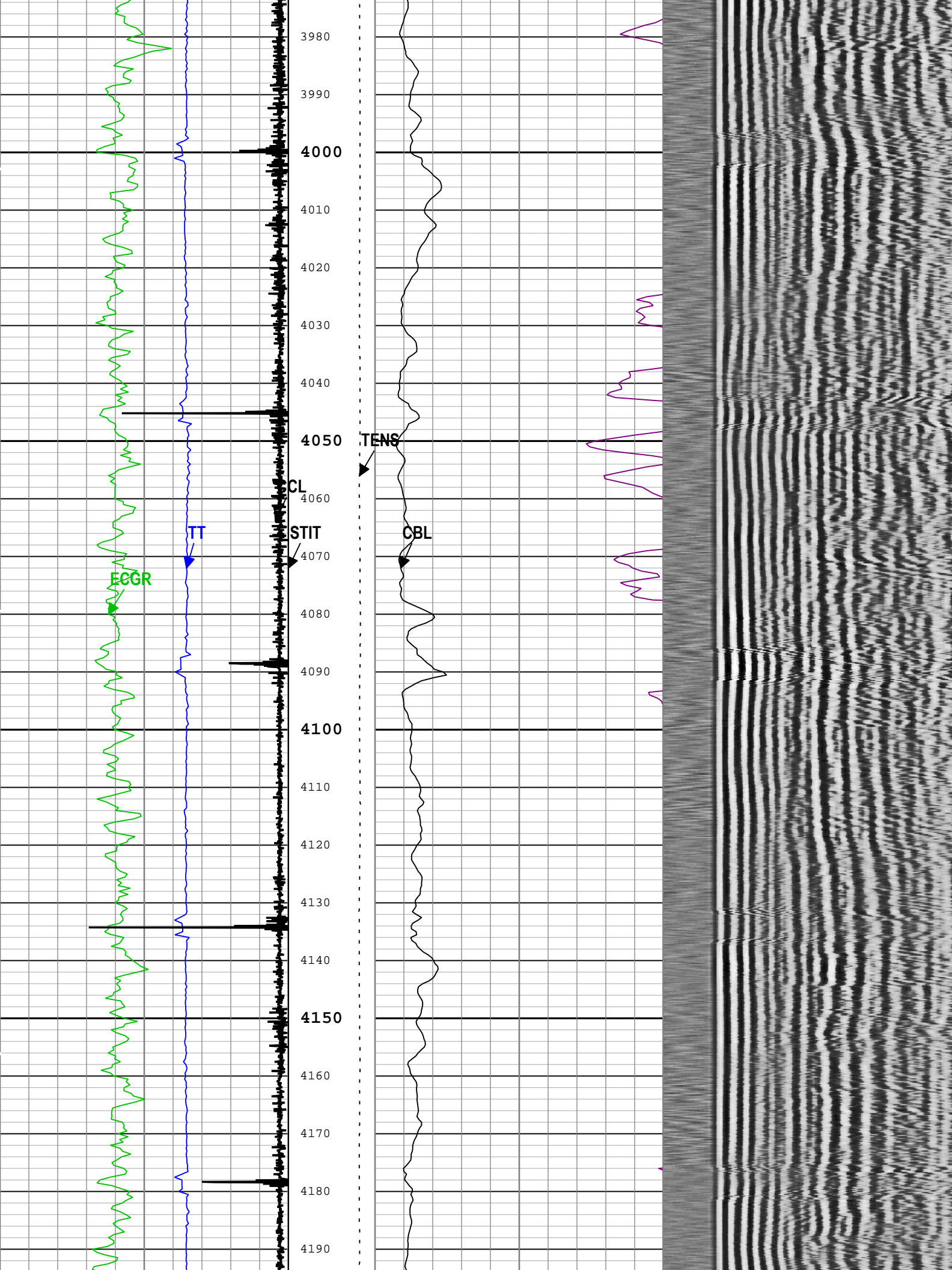


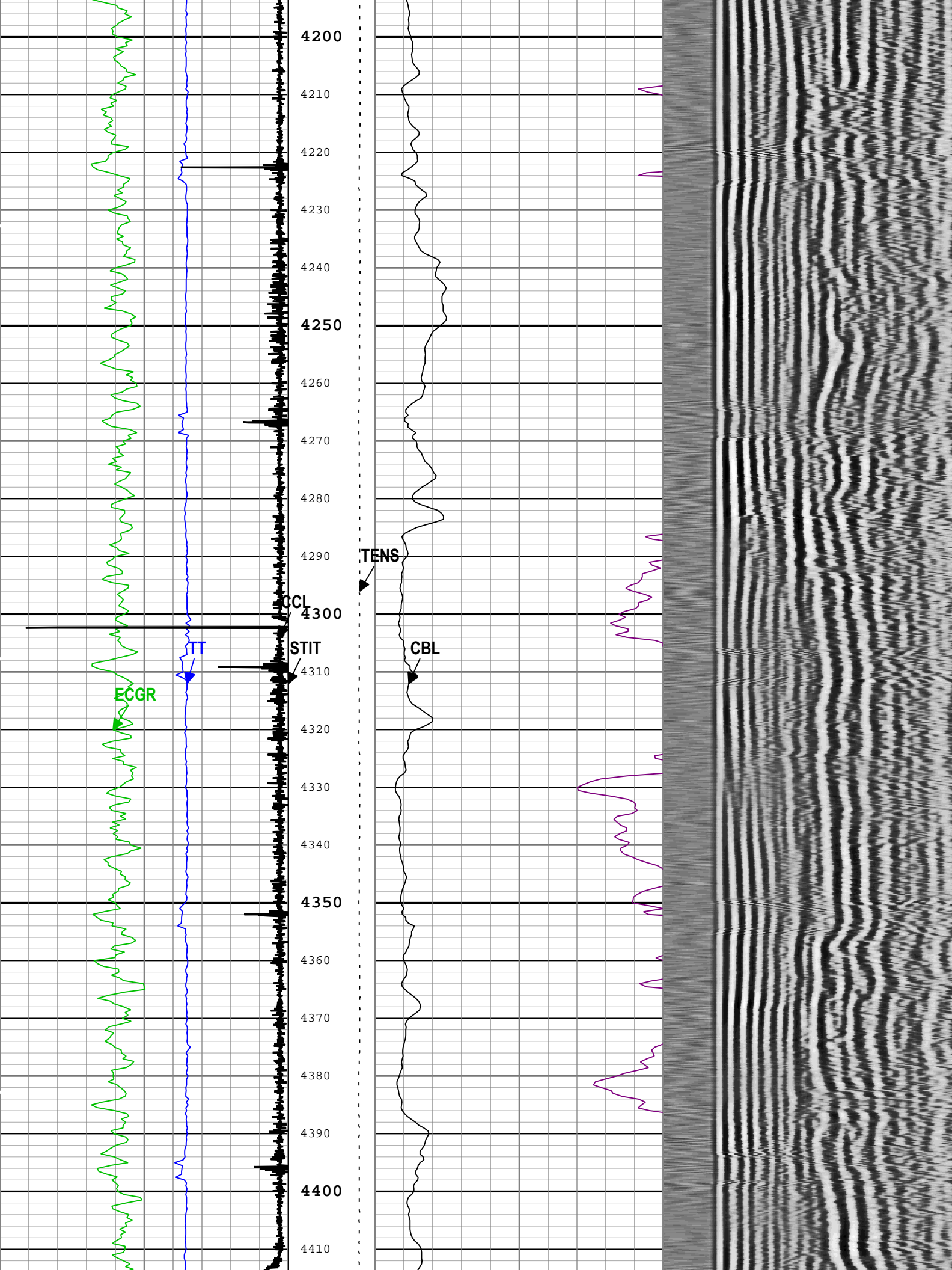


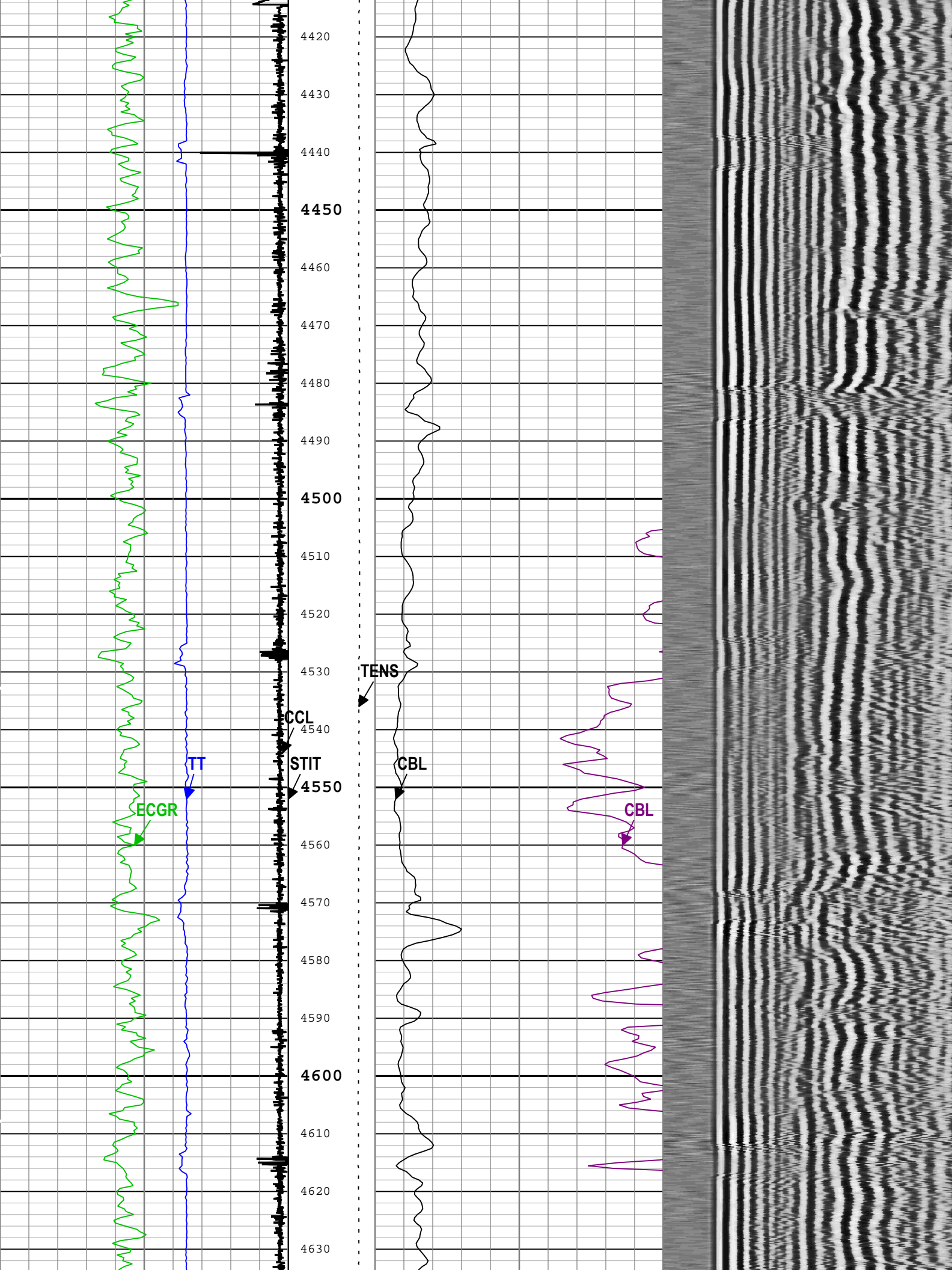


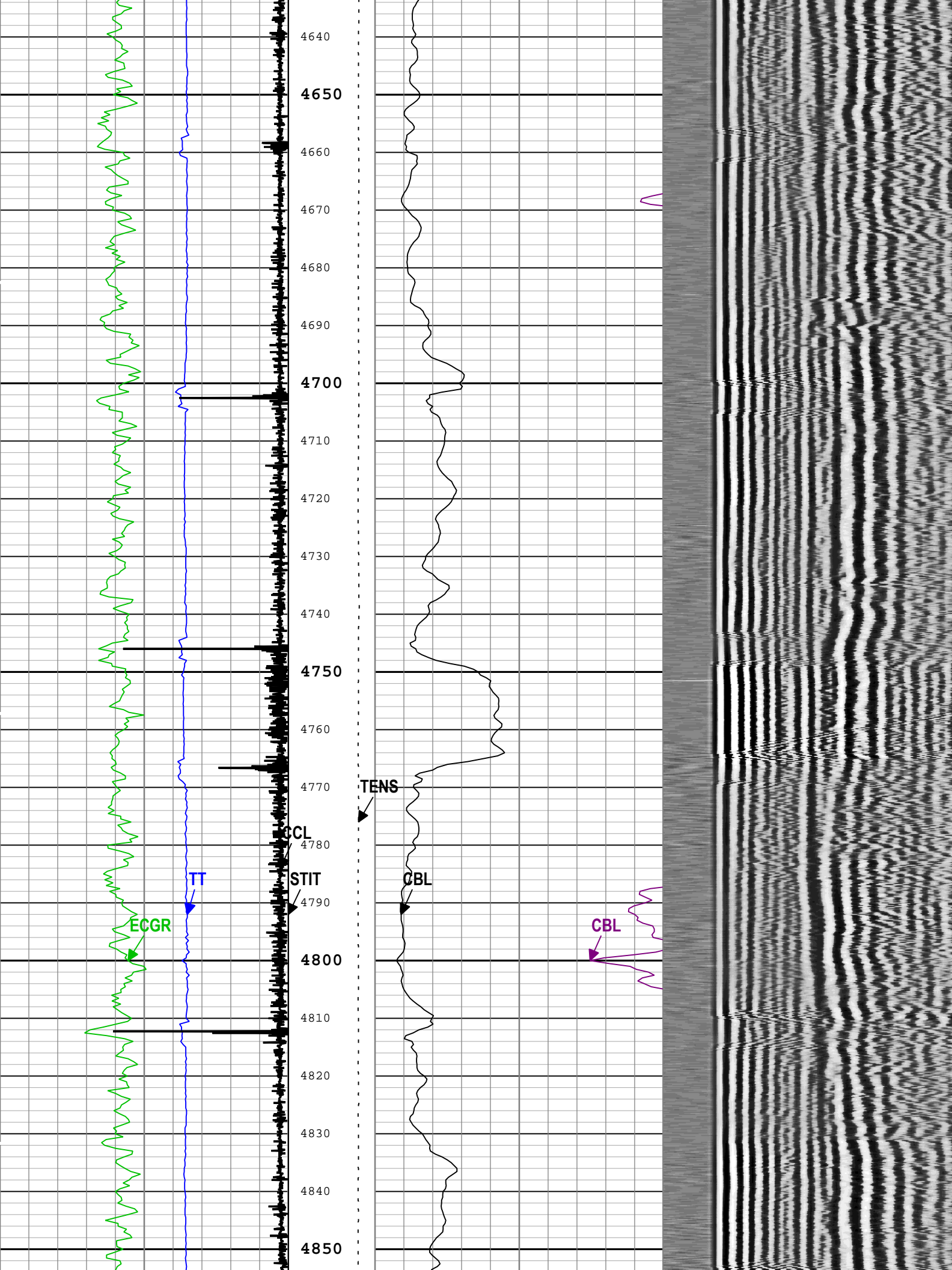


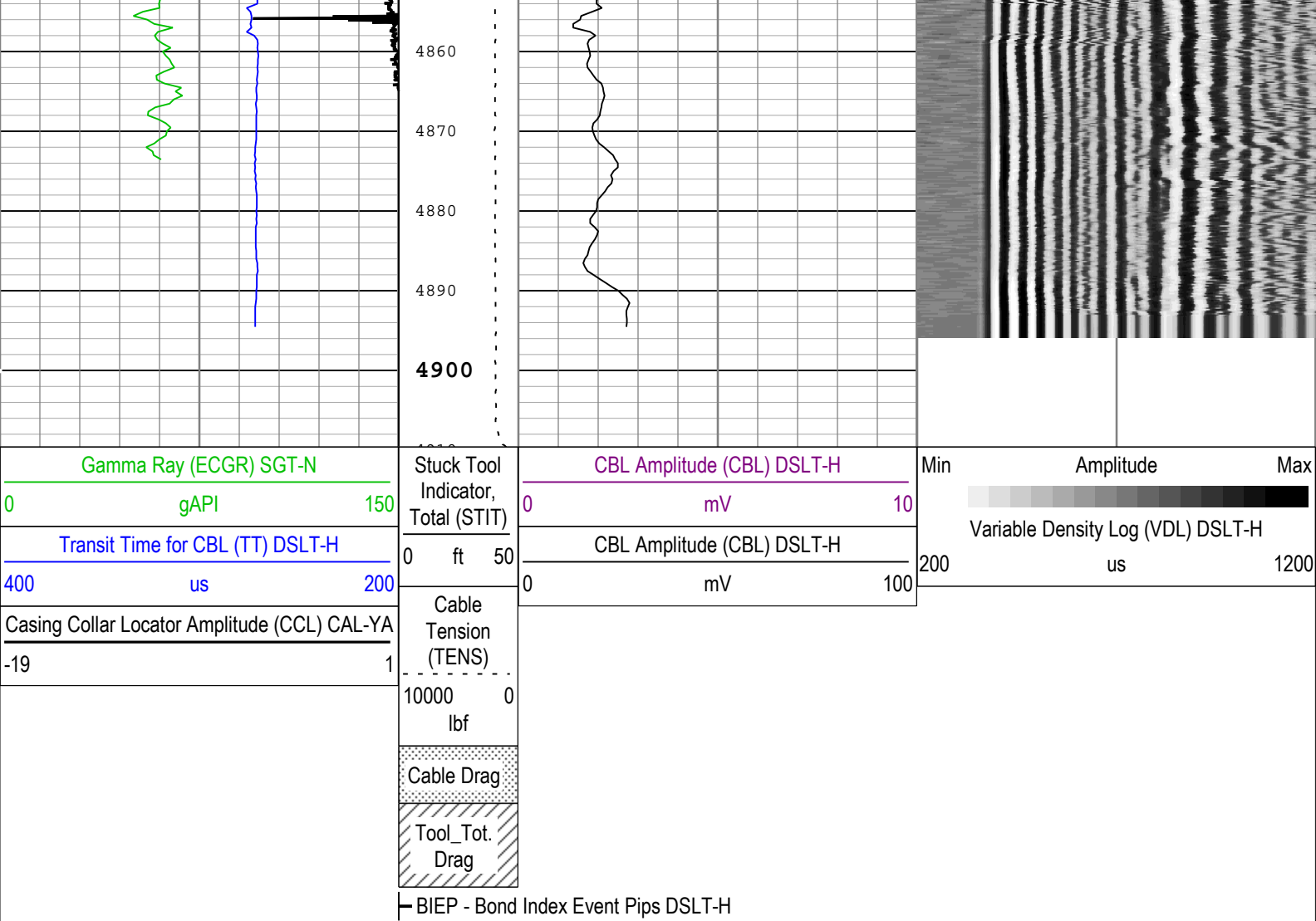












TIME\_1900 - Time Marked every 60.00 (s)

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 09:07:48

Channel Processing Parameters				
One: Parameters				
Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLG	CBL Gate Width	DSLTH	47	us
CBLO	Casing Bottom (Logger)	WLSESSION	15769	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLTH	72	mV
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YA	20	
CDEN	Cement Density	SGT-N	2	g/cm3
DETE	Delta-T Detection	DSLTH	E1	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
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	247	us
SGAD	Sliding Gate Status	DSLTH	Off	

## Depth Zone Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	24	22.75	101
BS	13.5	101	2106
BS	8.5	2106	4909.58
MCI	26.48	22.75	101
MCI	14.81	101	2106
MCI	4.75	2106	4909.58

All depth are actual.

## 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

## 0 PSI Repeat Pass

## Software Version

Acquisition System	Version
Maxwell 2016 SP2	6.2.68624.3100

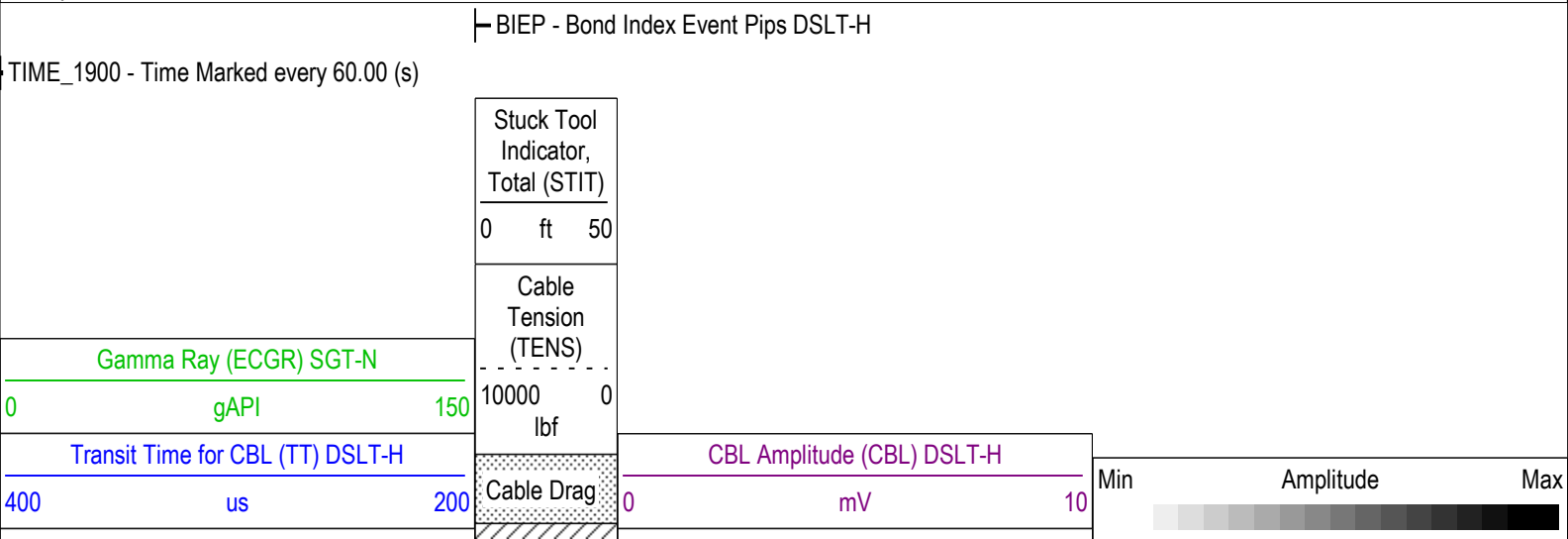
## Pass Summary

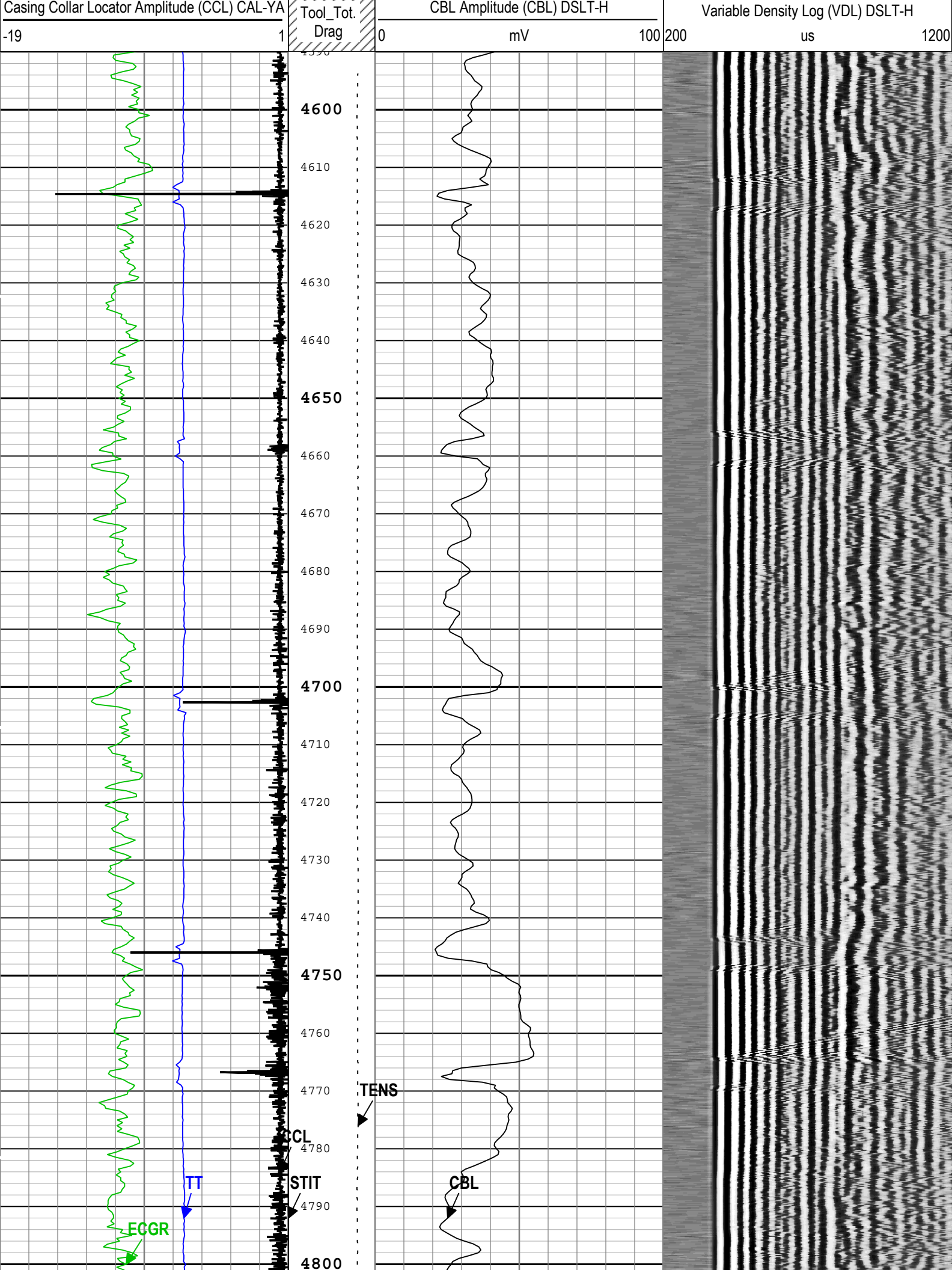
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[2]:Up	Up	4593.71 ft	4907.00 ft	22-Sep-2016 7:34:54 AM	22-Sep-2016 7:39:40 AM	ON	5.42 ft	No

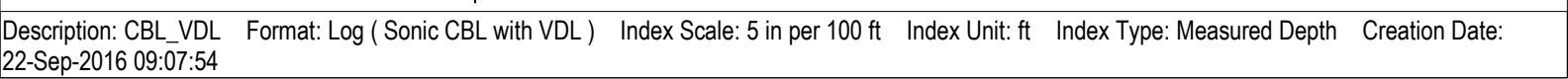
All depths are referenced to toolstring zero

Log	Company:Whiting Oil & Gas Corporation	Well:Razor 250-2411
		One: Log[2]:Up:S003

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 09:07:54







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Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.5	in
CBLG	CBL Gate Width	DSLT-H	47	us
CBLO	Casing Bottom (Logger)	WLSESSION	15769	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	72	mV
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YA	20	
CDEN	Cement Density	SGT-N	2	g/cm3
DETE	Delta-T Detection	DSLT-H	E1	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GOBO_CURR	Good Bond in Arbitrary Cement	DSLT-H	3.42	mV
MAHTR	Manual High Threshold Reference for first arrival detection	DSLT-H	120	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLT-H	11.85	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLT-H	4.75	ft
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	1.6	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLT-H	1.6	mV
NMSG	Near Minimum Sliding Gate	DSLT-H	247	us
SGAD	Sliding Gate Status	DSLT-H	Off	

[illegible]

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
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<b>Calibration Report</b>	
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<b>DSLT-H (Digitizing Sonic Logging Tool - H) Calibration - Run One</b>
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Primary Equipment :	Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL	SLS-E	1650
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<b>CBL Free Pipe Adjustment - Free Pipe Measurement</b>
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Before (Measured):		09:02:23 22-Sep-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div></div>
CBL Amplitude	mV	Before	60.00	15.00	93.48	174.00	<div></div>
CBL Reference Amplitude (CBRA)	mV	Before			72.00		<div></div>
Measurement Depth	ft	Before			58.60		<div></div>

<b>CBL Free Pipe Adjustment - CBL Amplitude Coefficient</b>
---

Before (Measured):		09:02:23 22-Sep-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div></div>
CBL Adjustment Factor		Before	1.000	0.200	0.770	5.000	<div></div>
Depth of Before Calibration	ft	Before			58.60		<div></div>

<b>SGT-N (Scintillation Gamma-Ray Tool) Calibration - Run One</b>
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Primary Equipment :	Scintillation Gamma Cartridge	SGC-TB	10210
Calibration Parameter :	Plus Reference (Jig minus background reference)	160	

<b>SGT-N Gamma-Ray Calibration - Gamma Ray Coefficients</b>
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Before (Measured):		14:30:25 20-Sep-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div></div>
Gamma Ray Gain		Before			1.148		<div></div>

<b>SGT-N Gamma-Ray Calibration - Gamma Ray Accumulations</b>
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Before (Measured):		14:30:25 20-Sep-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div></div>
RGR Zero Measurement	gAPI	Before		0	60.089	120.000	<div></div>
RGR Plus Measurement	gAPI	Before	139.354	126.685	139.354	152.022	<div></div>

<b>SGT-N Gamma-Ray Plateau Check - Gamma Ray Plateau Check</b>
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Before (Measured):		14:33:01 20-Sep-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div></div>
RGR Plus Plateau Measurement	gAPI	Before			205.737		<div></div>
RGR Minus Plateau Measurement	gAPI	Before			191.286		<div></div>

Company:	Whiting Oil & Gas Corporation	<b>Schlumberger</b>
Well:	Razor 25O-2411	
Field:	Wildcat	
County:	Weld	
State:	Colorado	
Cement Bond Log		
GR-CCL		