

Company: Crestone Peak Resources Operating LLC

Well: Lochbuie Land 2A-25H-D166

Field: Wattenberg

County: Weld State: Colorado

Digital Sonic Logging Tool

CBL with VDL

CBL with VDL

Location:	
NWNW	Elev.: K.B. 5091.00 ft
898 FNL 298 FWL	G.L. 5078.00 ft
	D.F. 5091.00 ft
Permanent Datum:	Ground Level
Log Measured From:	Kelly Bushing
Drilling Measured From:	Kelly Bushing
API Serial No.	Section:
05-123-47991	25
	Township:
	1N
	Range:
	66W

Logging Date		08-Jan-2019		
Run Number		One		
Depth Driller		2387.00 ft		
Schlumberger Depth		2387.00 ft		
Bottom Log Interval		2297.00 ft		
Top Log Interval		24.00 ft		
Casing Fluid Type		Water		
Salinity				
Density		8.34 lbm/gal		
Fluid Level		8.00 ft		
BIT/CASING/TUBING STRING				
Bit Size		13.50 in		
From		0.00 ft		
To		2372.00 ft		
Casing/Tubing Size		9.625 in		
Weight		40 lbm/ft		
Grade		N/A		
From		0.00 ft		
To		2387.00 ft		
Max Recorded Temperatures		112 degF		
Logger on Bottom		08-Jan-2019		13:40:00
Unit Number	Location:	Time		
Recorded By		OSL C-AR1 2215	Ft. Morgan, CO	
Witnessed By		Z. Hamidaddin / A. Voyage		
		Ryan Rensink		

Disclaimer

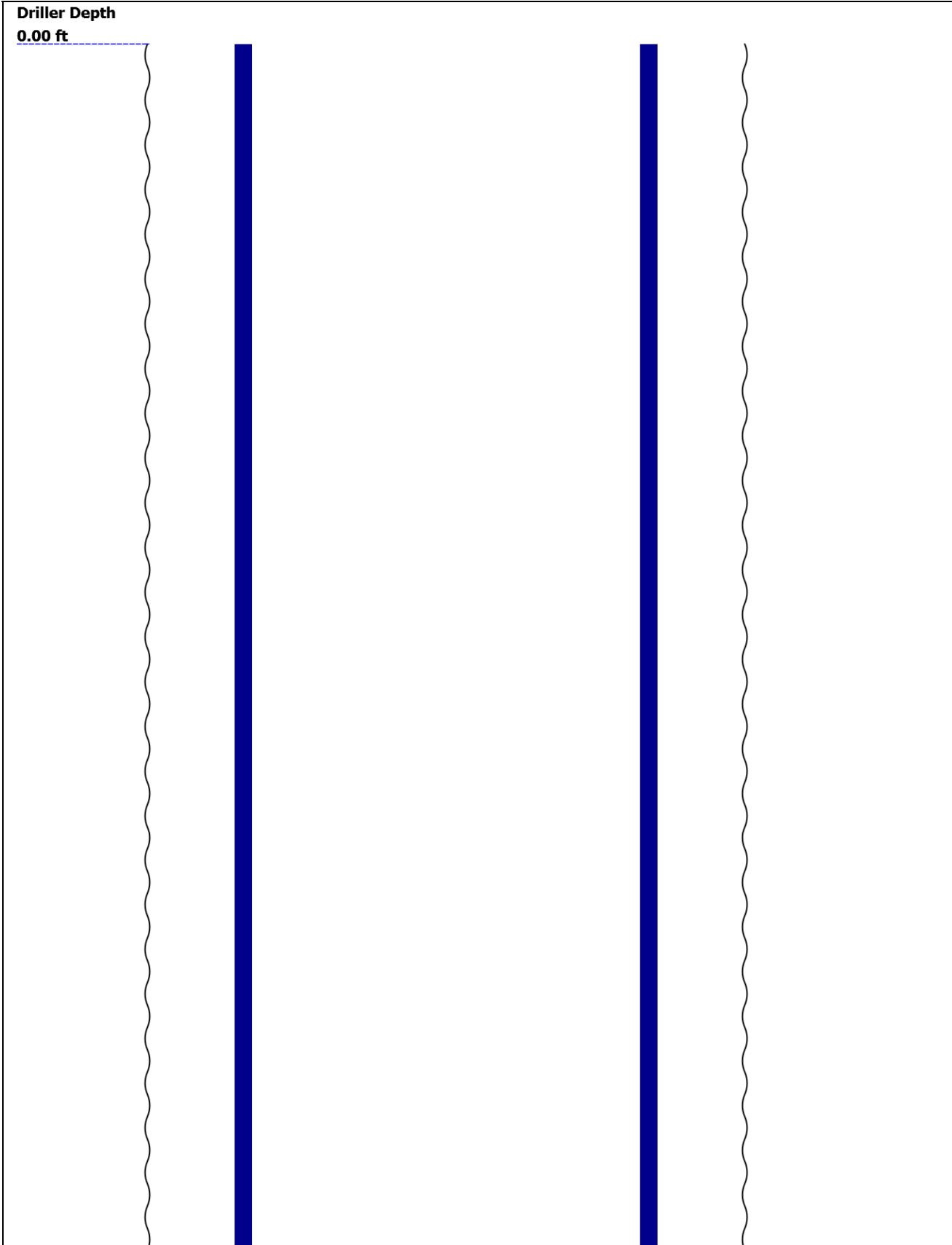
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Well Sketch




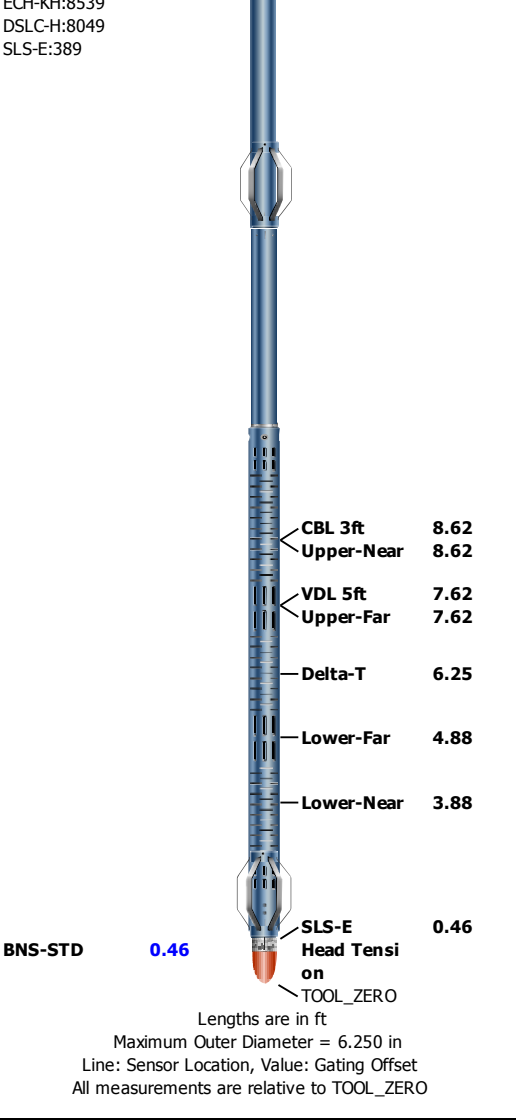


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	13.5					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	2387					
Bottom Logger (ft)	2387					
Casing						
Size (in)	9.625					
Weight (lbm/ft)	40					
Inner Diameter (in)	8.835					
Grade	N/A					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	2387					
Bottom Logger (ft)	2387					

Remarks and Equipment Summary

One: Toolstring				One: Remarks	
<div><div><div>Equip name</div><div>LEH-QT:2148</div><div>LEH-QT:2148</div></div><div><div>Length</div><div>36.58</div></div><div><div>MP name</div><div></div></div><div><div>Offset</div><div></div></div></div> <div></div>				Thank you for choosing Schlumberger Wireline!	
				Log run for cement evaluation.	
				Toolstring ran centralized as per tool sketch	
				Log run under no pressure	
				Tool Zero at KB at 13ft	
				Crew: Tim Ludgate, Alex Schaab	
<div><div><div>Equip name</div><div>DTC-H:8602</div><div>ECH-KC:9680</div><div>DTC-H:8602</div></div><div><div>Length</div><div>33.1</div></div><div><div>MP name</div><div>CTEM HV</div></div><div><div>Offset</div><div>32.2</div></div></div> <div><div><div>TelStatus</div><div>30.1</div></div><div><div>ToolStatus</div><div>30.1</div></div></div>					
<div><div><div>Equip name</div><div>SGT-N</div><div>SGH-K:2605</div><div>SGD-TAA</div><div>SGC-TB</div></div><div><div>Length</div><div>30.1</div></div><div><div>MP name</div><div>GR</div></div><div><div>Offset</div><div>29.18</div></div></div> <div></div>					
<div><div><div>Equip name</div><div>CAL-YA:213</div><div>CAL-YA:213</div></div><div><div>Length</div><div>24.6</div></div><div><div>MP name</div><div>CCL</div></div><div><div>Offset</div><div>23.81</div></div></div> <div></div>					
<div><div><div>Equip name</div><div>DSLT-H:8049</div><div>ESL-KL:8520</div></div><div><div>Length</div><div>21.1</div></div><div><div>MP name</div><div></div></div><div><div>Offset</div><div></div></div></div> <div></div>					



Depth Summary

	One		
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Depth Measuring Device

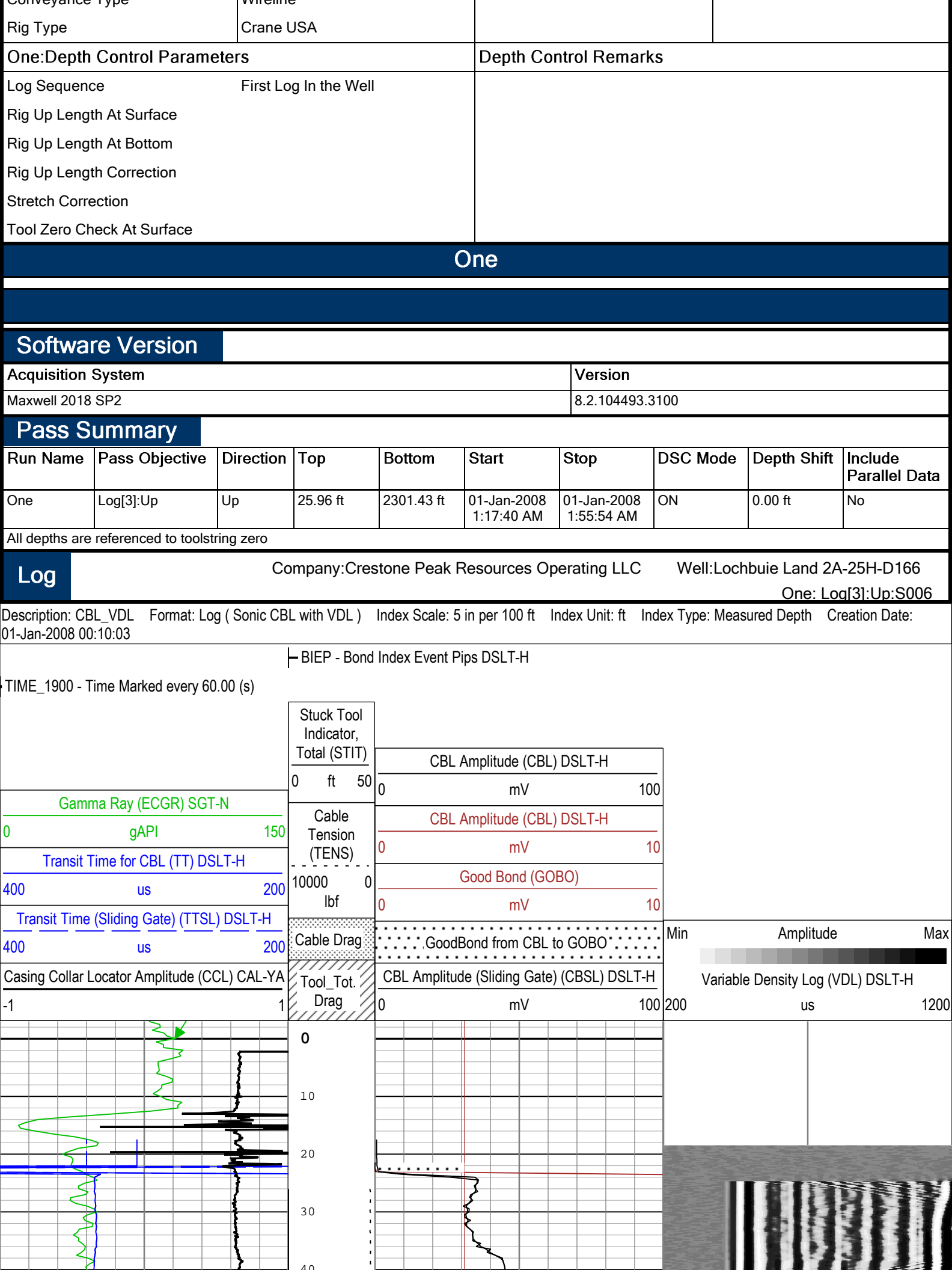
Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		

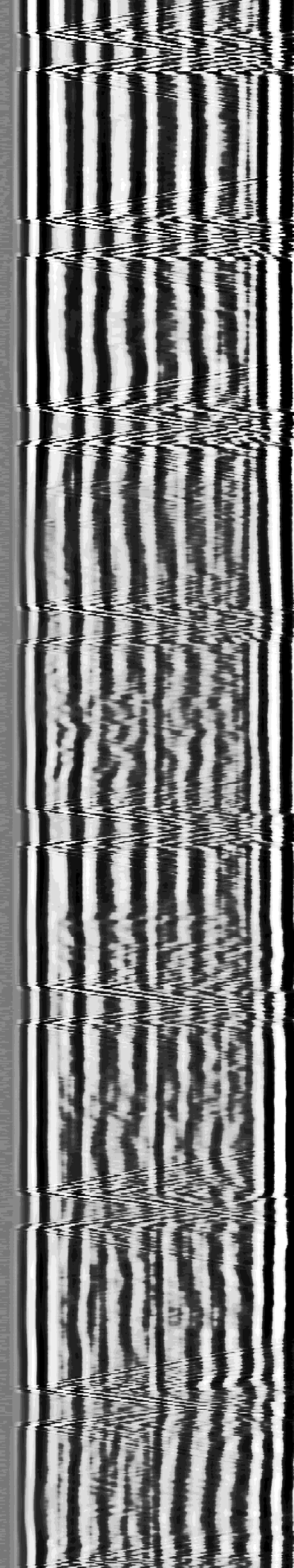
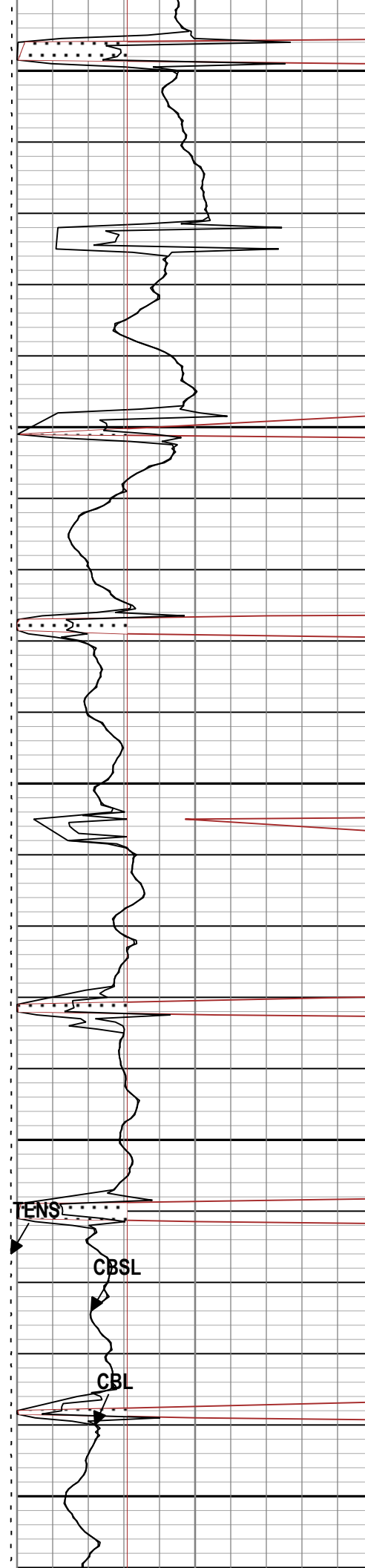
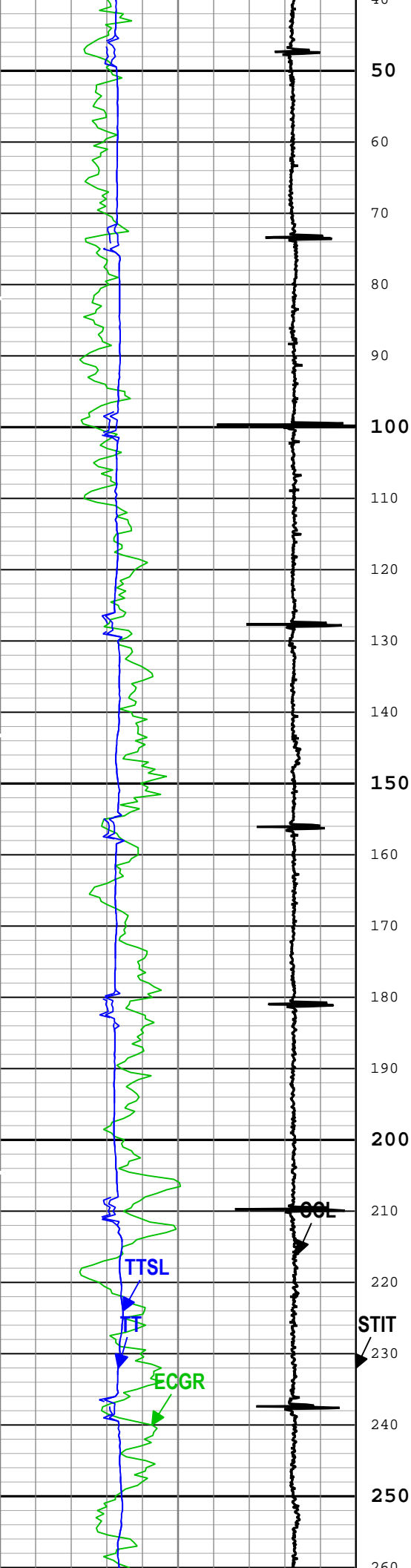
Tension Device

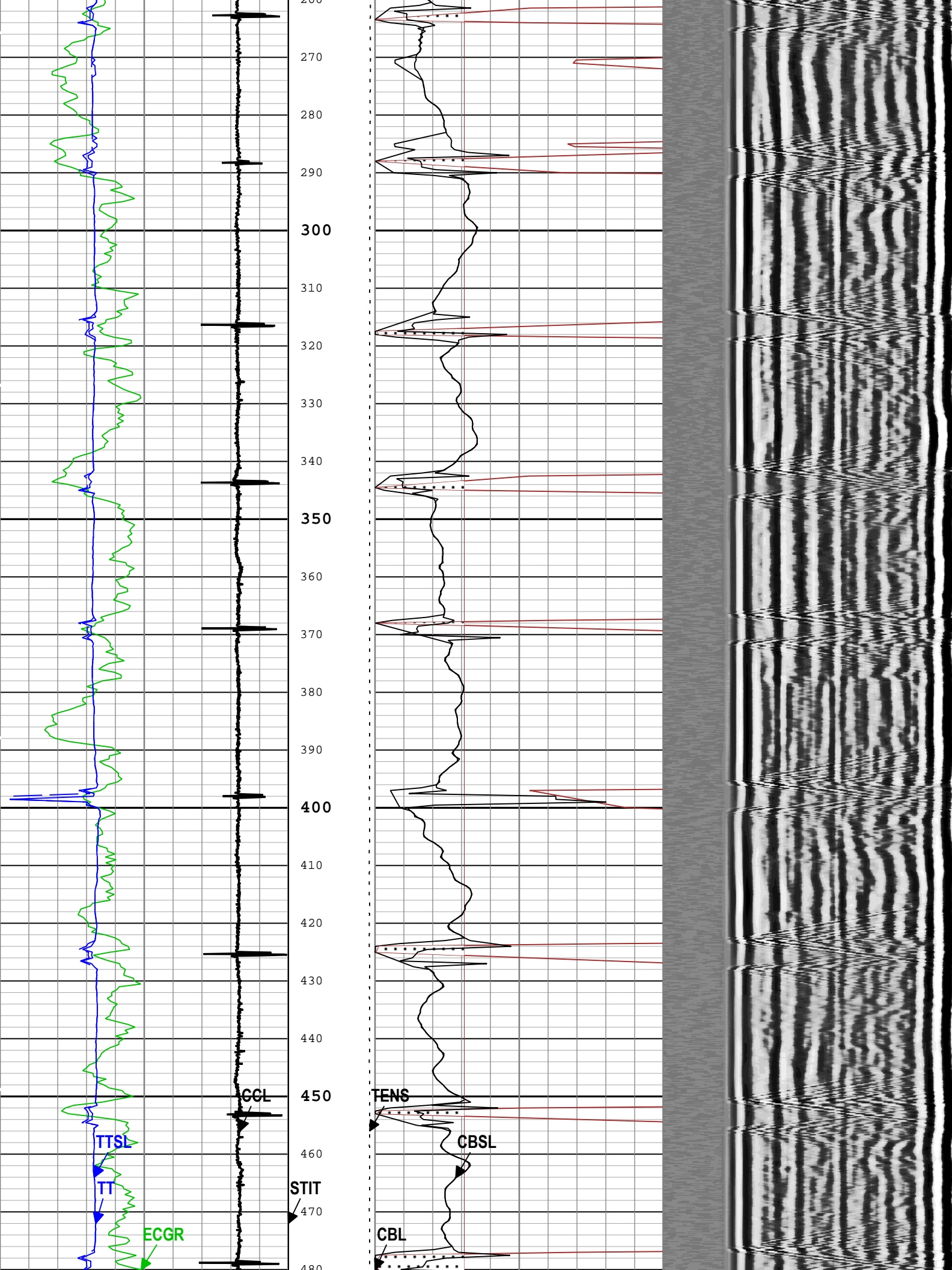
Type	CMTD-B/A		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Number of Calibration Points	0		

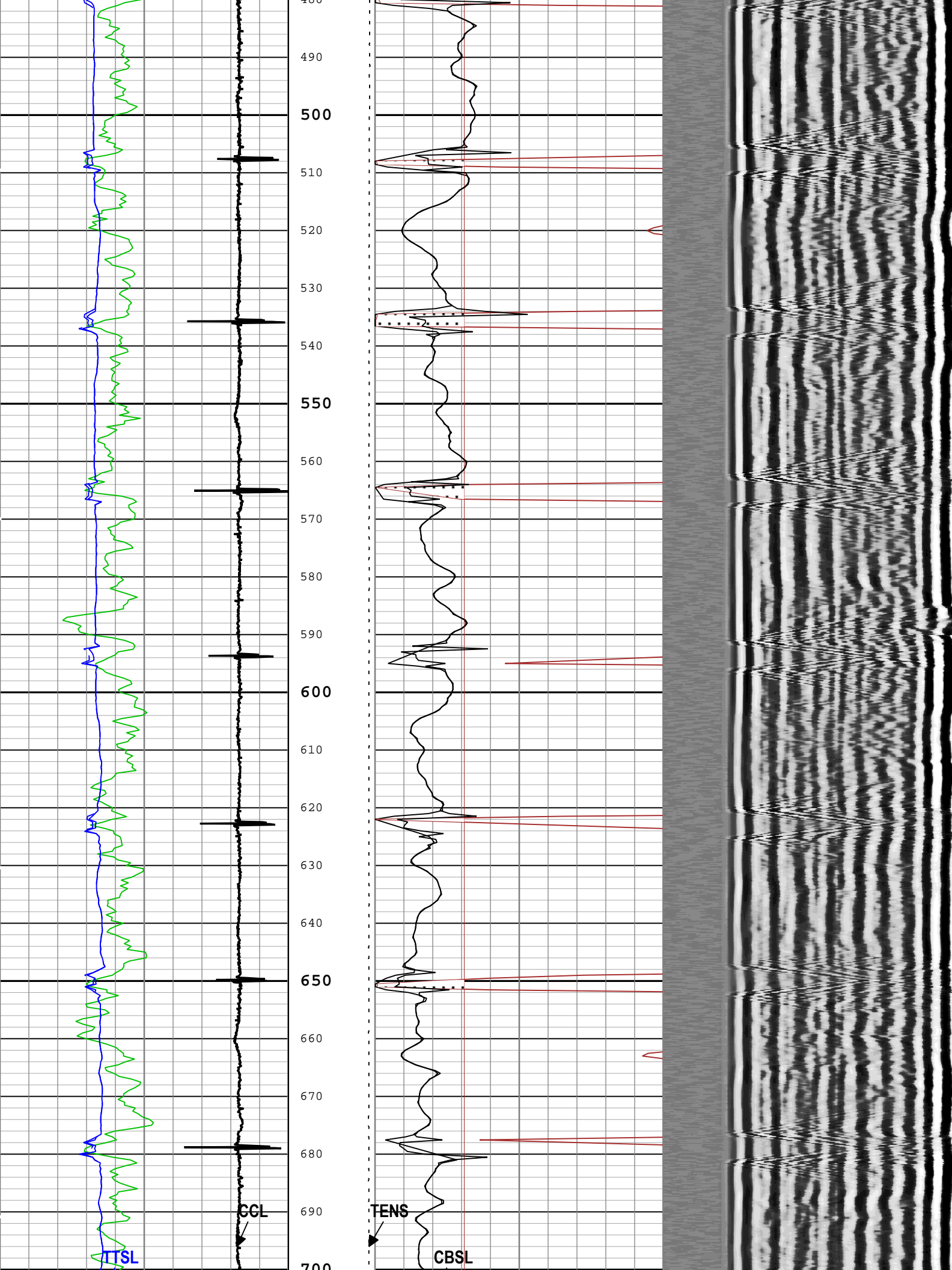
Logging Cable

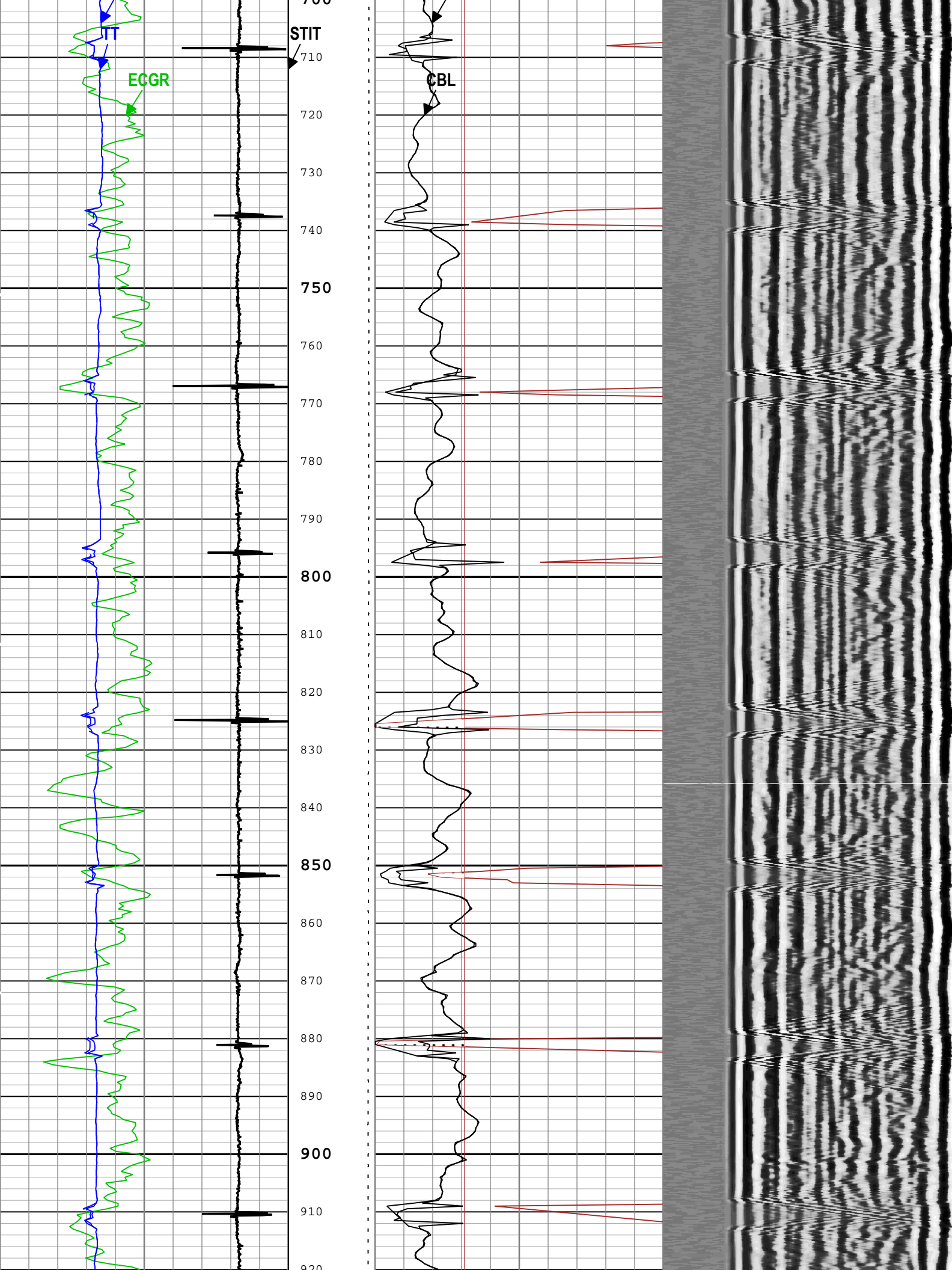
Type	7-46NT-XS		
Serial Number			
Length	24000.00 ft		
Conveyance Type	Wireline		

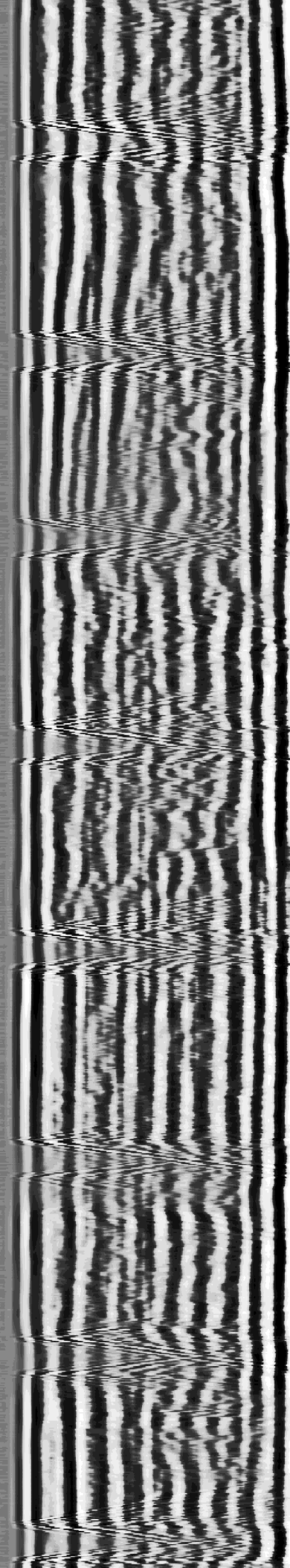
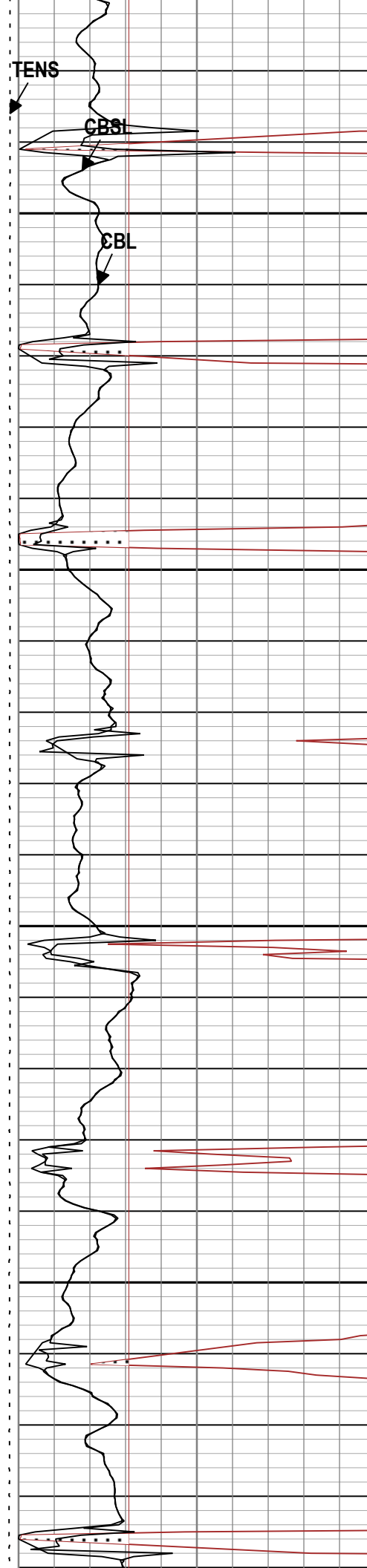
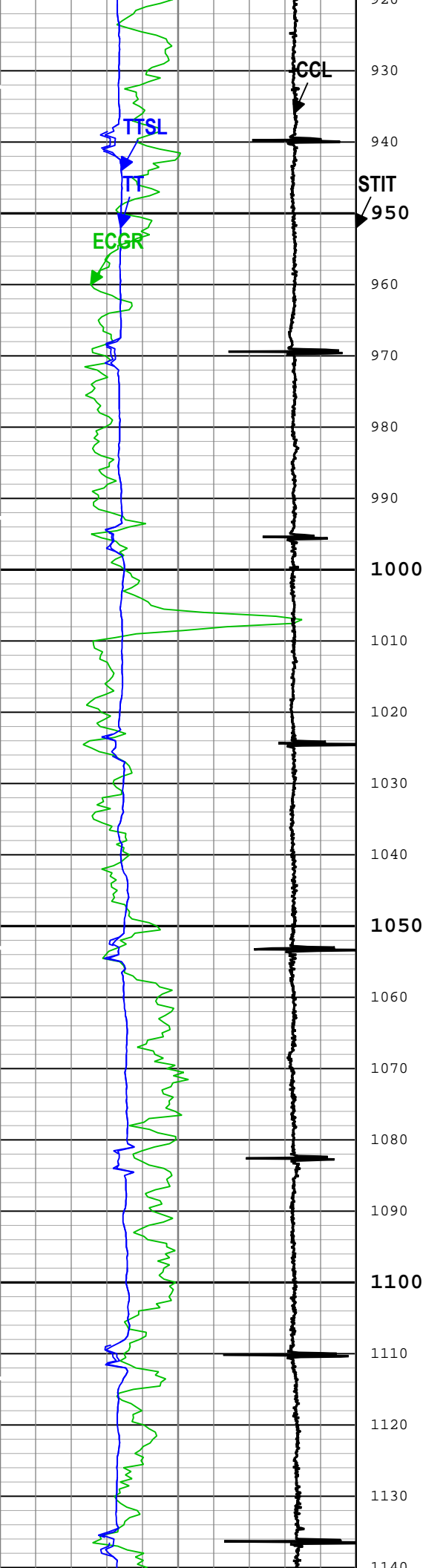


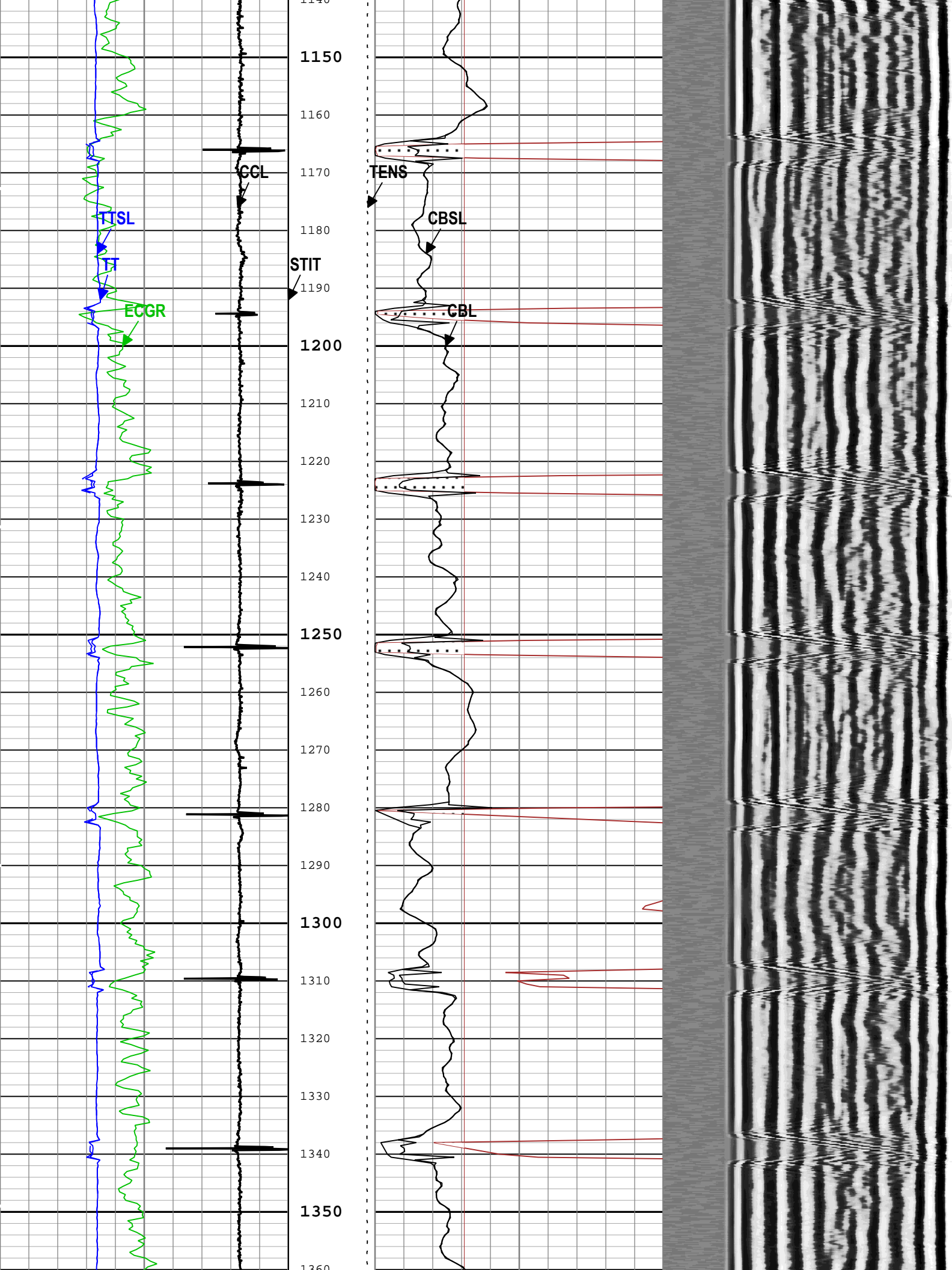


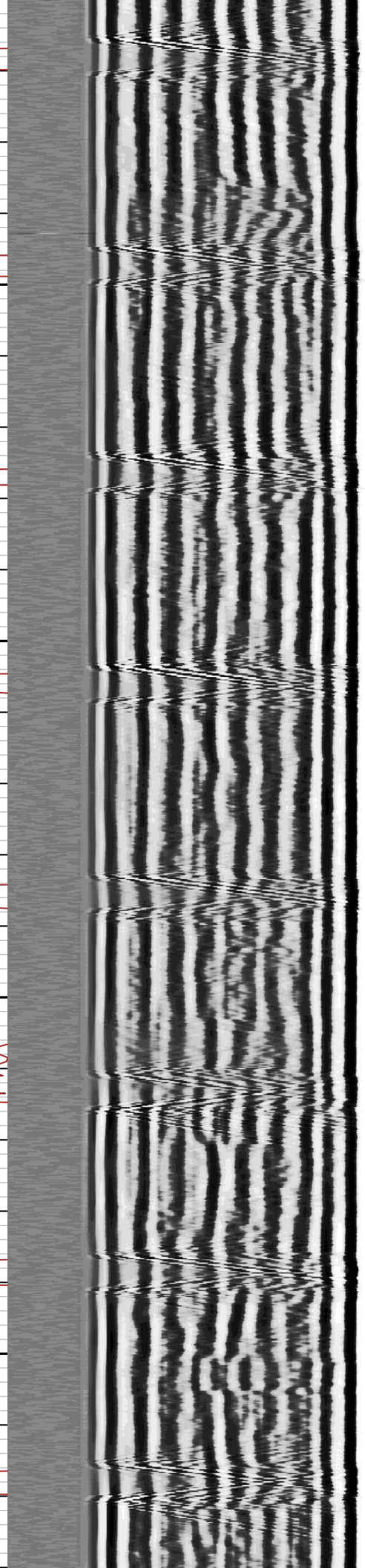
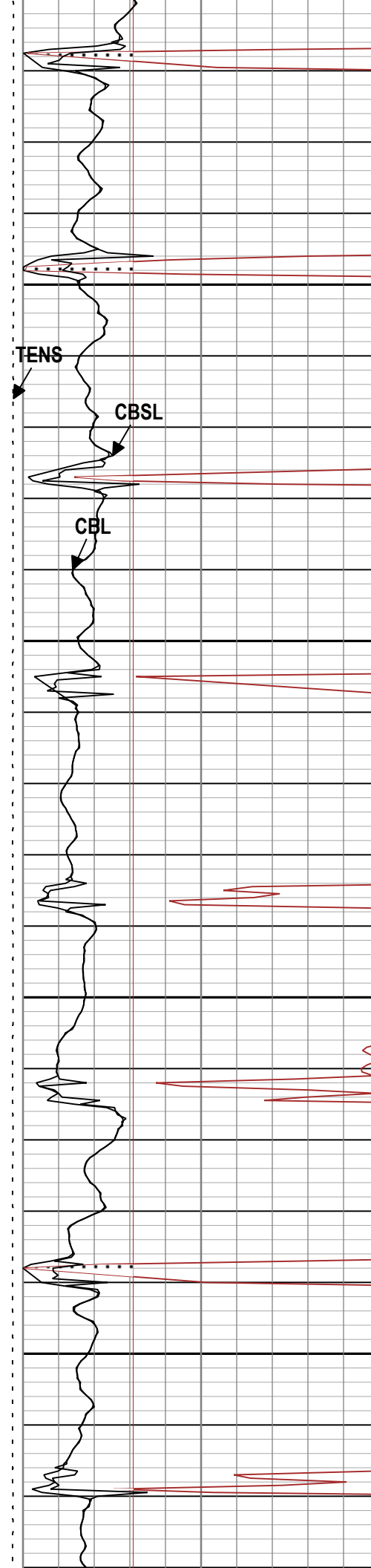
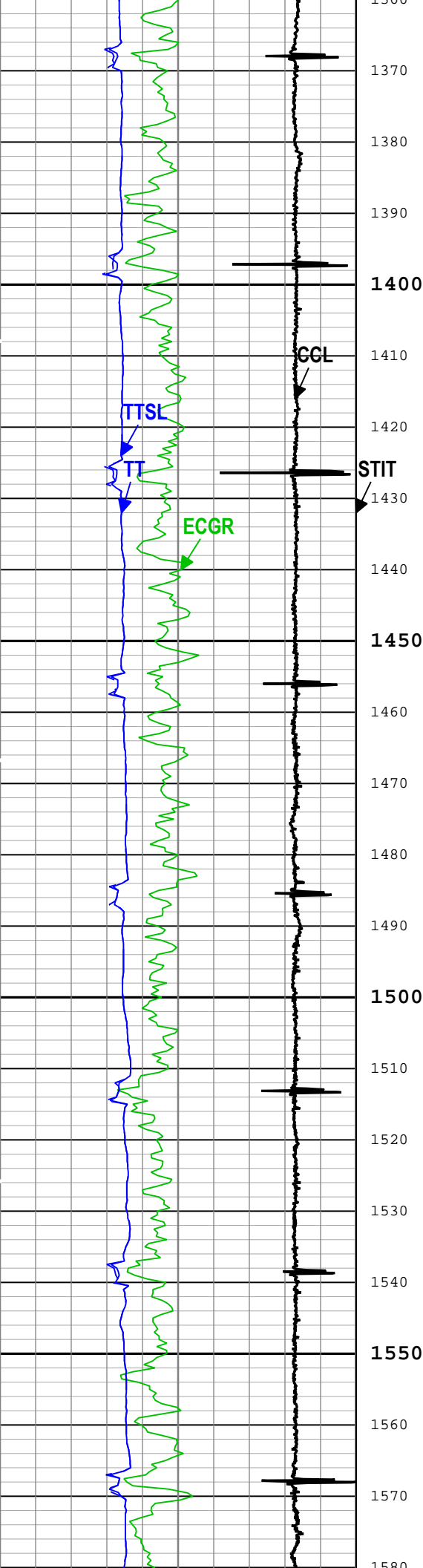


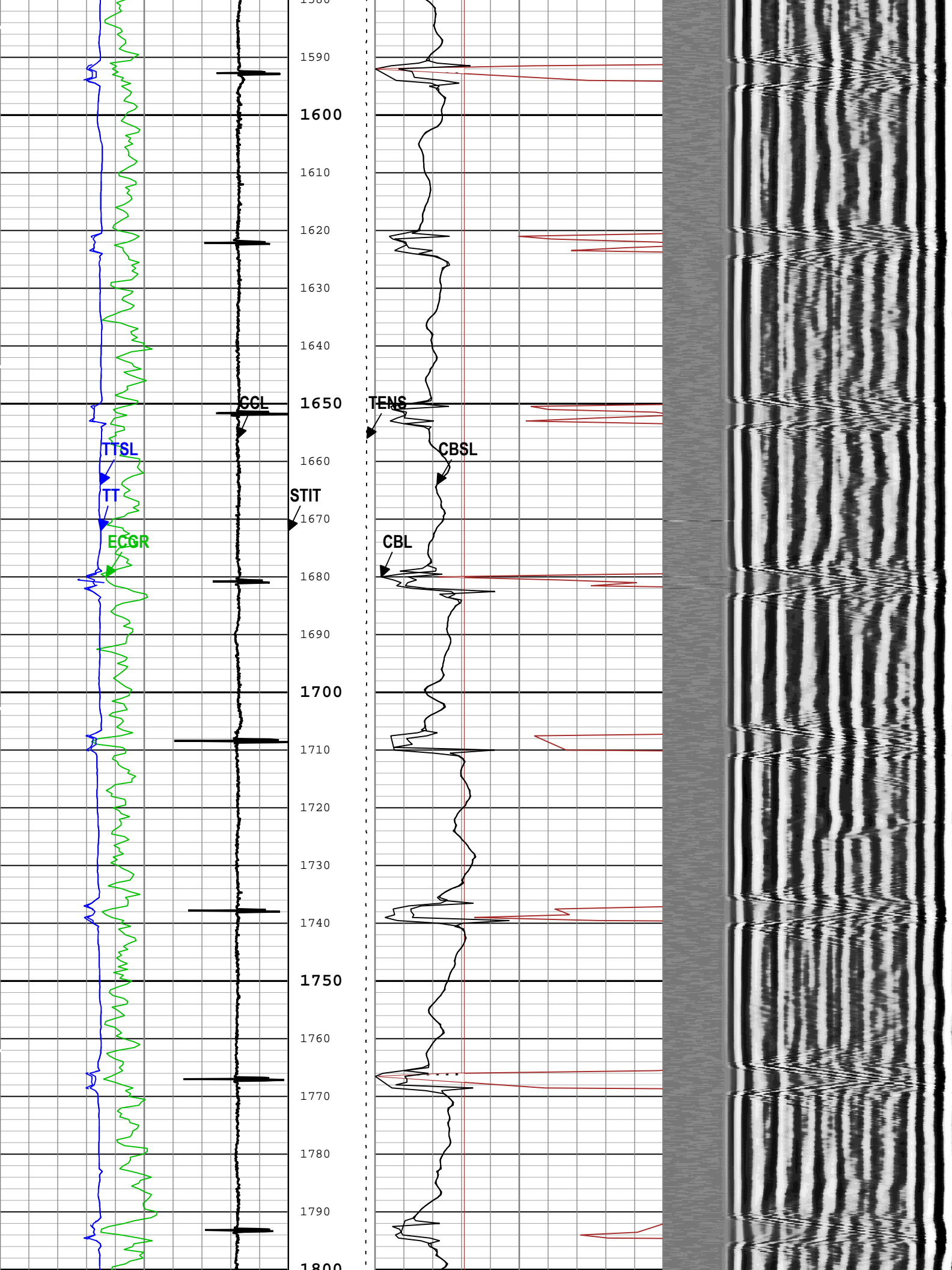


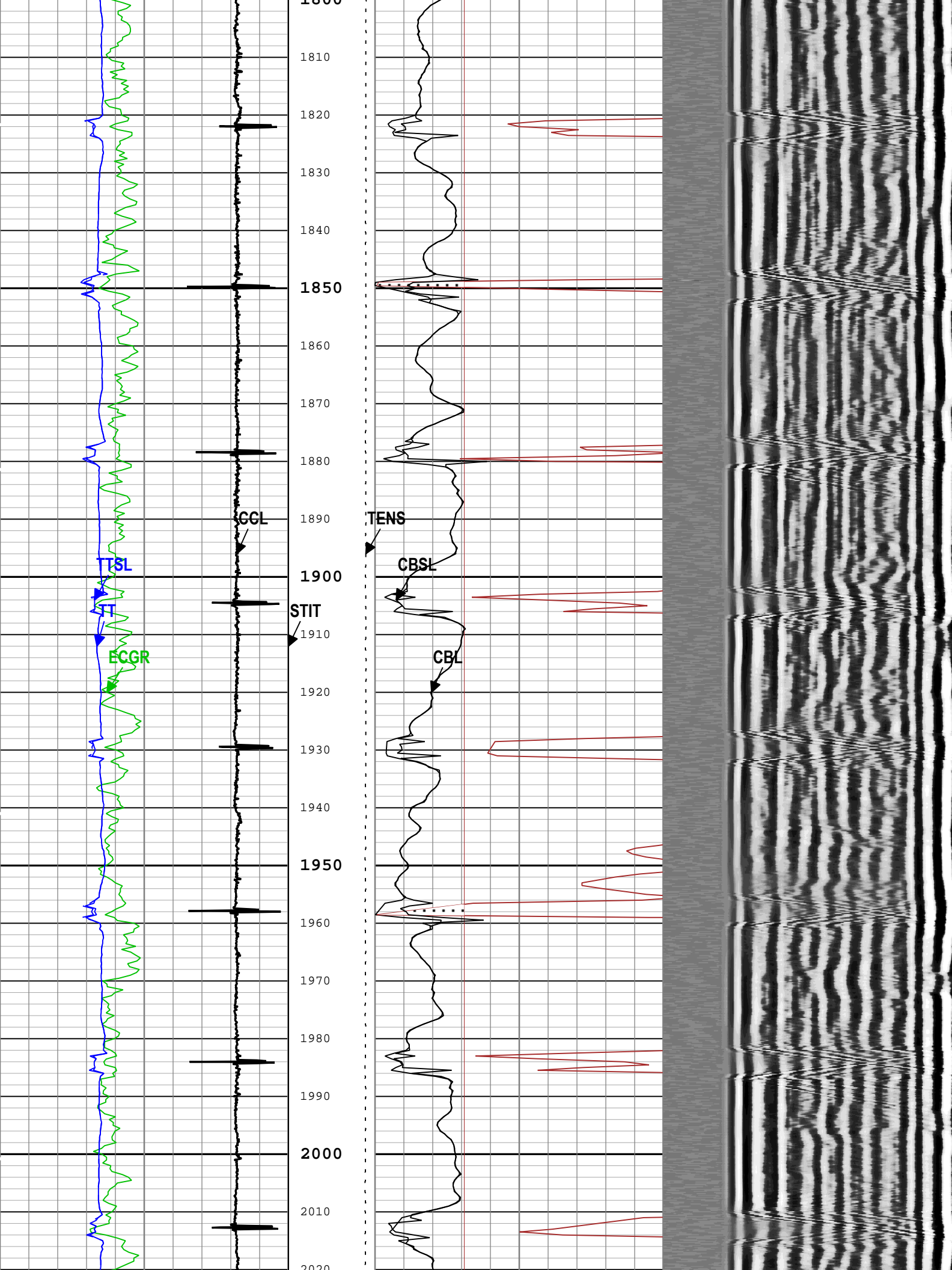


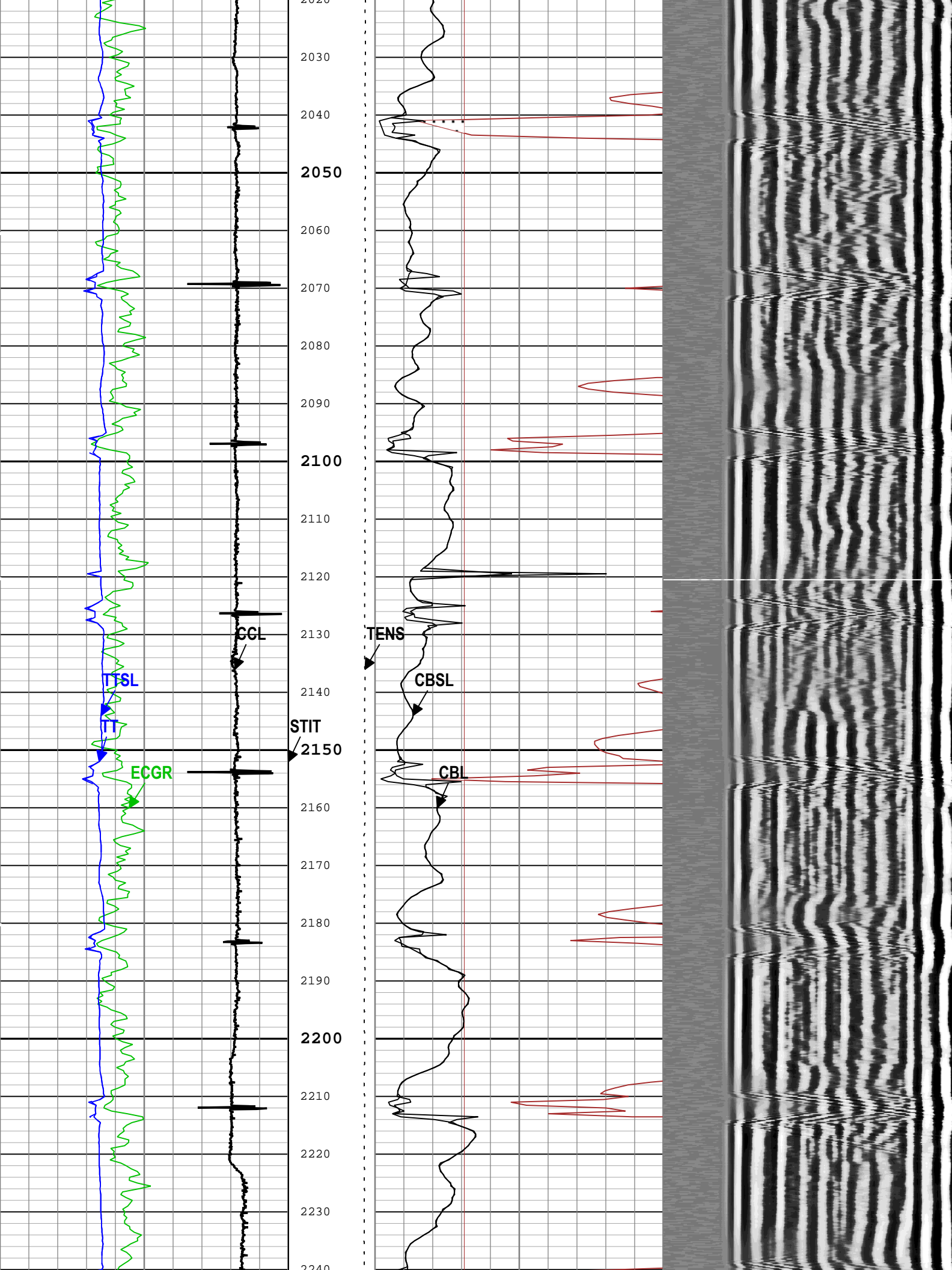


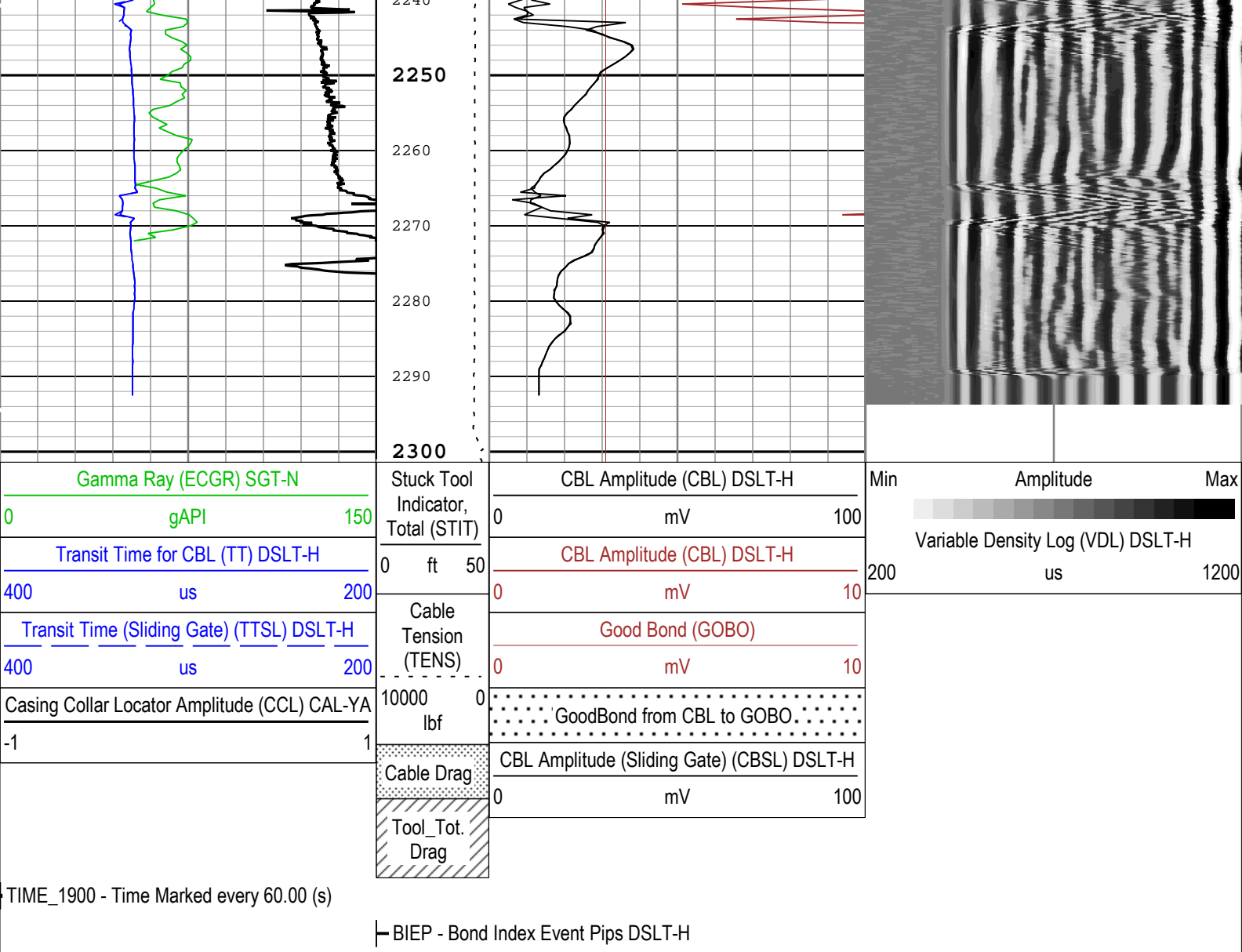












Description: CBL_VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 01-Jan-2008 00:10:03

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	13.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	2387	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLTH	52	mV
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YA	20	
CDEN	Cement Density	SGT-N	2	g/cm3
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DETE	Delta-T Detection	DSLTH	E1	
DFD	Drilling Fluid Density	Borehole	8.34	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	3.09	mV
MAHTR	Manual High Threshold Reference for first arrival detection	DSLTH	120	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLTH	10.91	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLTH	14.81	ft

MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	1.53	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLT-H	1.53	mV
NMSG	Near Minimum Sliding Gate	DSLT-H	305	us
SGAD	Sliding Gate Status	DSLT-H	Off	
SGDT	Sliding Gate Delta-T	DSLT-H	57	us/ft
VDLG	VDL Manual Gain	DSLT-H	6.5	

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
SGAI	Selectable Acquisition Gain	DSLT-H	x1	

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

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CBL Normalization - CBL Accumulations

Master (Measured): 15:00:27 27-Mar-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Upper Far Amplitude		Master	4200.0	3200.0	3805.0		
Upper Near Raw Amplitude	mV	Master	33.000	27.000	31.807	43.000	
Lower Far Amplitude		Master	4200.0	3200.0	3601.3		
Lower Near Raw Amplitude	mV	Master	46.000	27.000	38.403	68.000	

CBL Normalization - CBL/VDL Coefficients

Master (Measured): 15:00:27 27-Mar-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Correction Factor for UT		Master	3.500	2.700	3.647	4.300	
CBL Correction Factor for LT		Master	2.500	1.700	3.021	4.300	
VDL Ratio between UT and LT for CBLB Mode		Master	1.000		0.946		

CBL Free Pipe Adjustment - Free Pipe Measurement

Before (Manual Entry): 14:17:39 08-Jan-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Amplitude - 0	mV	Before	-----	-----	-----	-----	
CBL Reference Amplitude (CBRA) - 0	mV	Before	-----	-----	-----	-----	
Measurement Depth - 0	ft	Before	-----	-----	-----	-----	

CBL Free Pipe Adjustment - CBL Amplitude Coefficient

Before (Manual Entry): 14:17:39 08-Jan-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Adjustment Factor		Before	1.000	0.200	1.290	5.000	
Depth of Before Calibration	ft	Before			1.00		

Company: Crestone Peak Resources Operating LLC

Schlumberger

Well: Lochbuie Land 2A-25H-D166

Field: Wattenberg

County:	Weld
State:	Colorado
Digital Sonic Logging Tool	
CBL with VDL	