

Company: Crestone Peak Resources Operating LLC

Well: Lochbuie Land 2L-25H-D166

Field: Wattenberg

County: Weld State: Colorado

Digital Sonic Logging Tool

CBL with VDL

Weld				
Wattenberg				
NWNW				
Lochbuie Land 2L-25H-D166				
Crestone Peak Resources Operating LLC				
Location:	NWNW	Elev.: K.B. 5089.00 ft		
	1008 FNL 297 FWL	G.L. 5076.00 ft		
		D.F. 5089.00 ft		
	Permanent Datum:	Ground Level	Elev.:	5076.00 f
Log Measured From:		Kelly Bushing	13.00 ft	above Perm.Datum
Drilling Measured From:		Kelly Bushing		
API Serial No.	Section:	Township:	Range:	
05-123-47987	25	1N	66	

Logging Date	09-Jan-2019		
Run Number	One		
Depth Driller	2400.00 ft		
Schlumberger Depth	2400.00 ft		
Bottom Log Interval	2280.00 ft		
Top Log Interval	25.00 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	2400.00 ft		
Casing/Tubing Size	9.625 in		
Weight	40 lbm/ft		
Grade	N/A		
From	0.00 ft		
To	2385.00 ft		
Max Recorded Temperatures	106.3 degF		
Logger on Bottom	09-Jan-2019	00:32:00	
Unit Number	Location:	Time	
Recorded By	Z. Hamidaddin / A. Voyage	Ft. Morgan, CO	
Witnessed By	Ryan Rensink		

Disclaimer

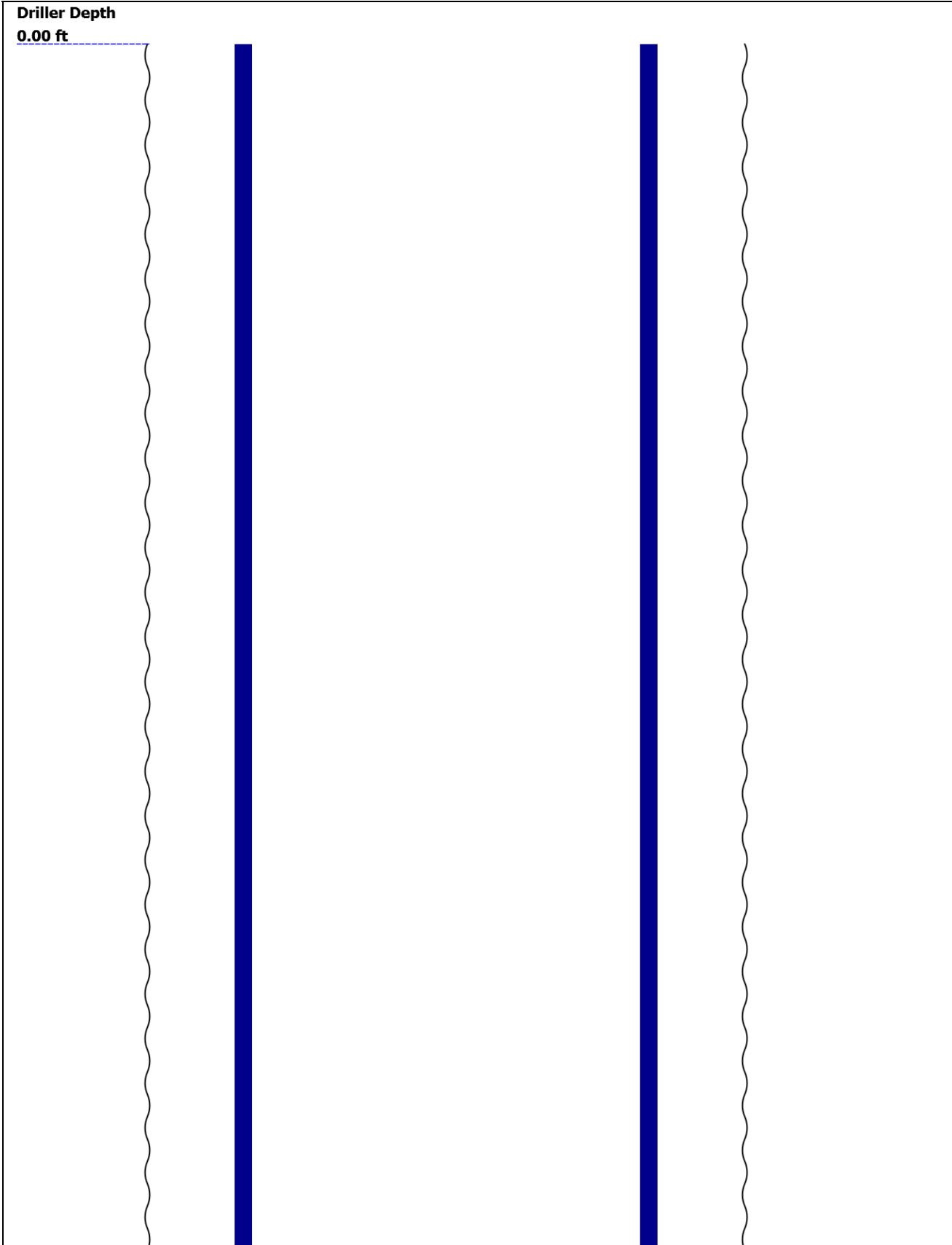
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Contents

- 1. Header
- 2. Disclaimer
- 3. Contents
- 4. Well Sketch
- 5. Borehole Size/Casing/Tubing Record
- 6. Remarks and Equipment Summary
- 7. Depth Summary
- 8. One
 - 8.1 Integration Summary
 - 8.2 Software Version
 - 8.3 Composite Summary
 - 8.4 Log (Sonic CBL with VDL)
 - 8.5 Parameter Listing
- 9. Calibration Report
- 10. Tail

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Well Sketch




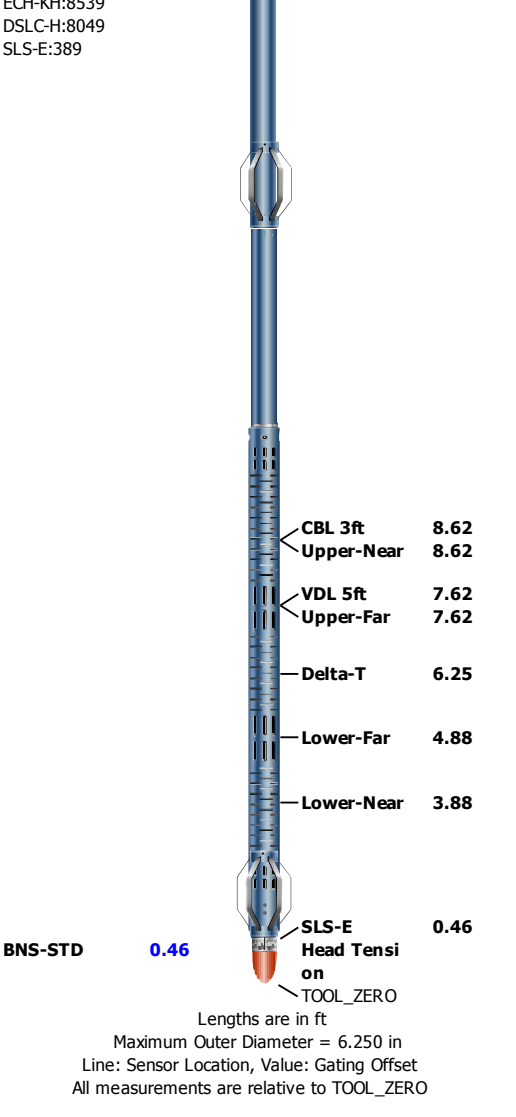


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	13.5					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	2400					
Bottom Logger (ft)	2400					
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)	2400					
Bottom Logger (ft)	2400					

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 13 ft				
	Crew: Alex Schaab				
<div><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>SGT-N</div><div>SGH-K:2605</div><div>SGC-TB</div><div>SGD-TAA</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>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>DSLT-H:8049</div><div>ESL-KH:8530</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		

One:Depth Control Parameters	Depth Control Remarks
Log Sequence	
First Log In the Well	
Rig Up Length At Surface	
Rig Up Length At Bottom	
Rig Up Length Correction	
Stretch Correction	
Tool Zero Check At Surface	

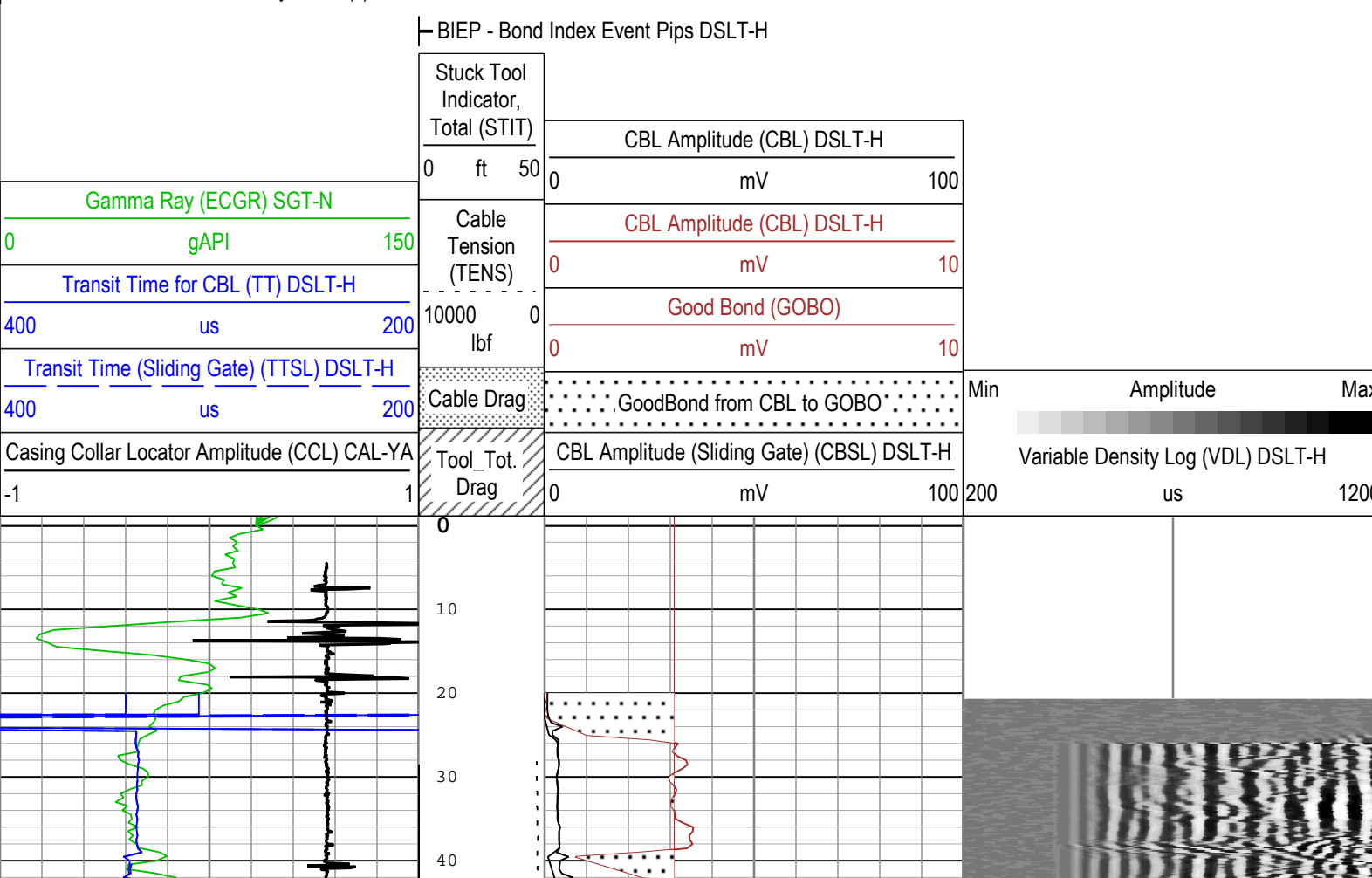
Software Version

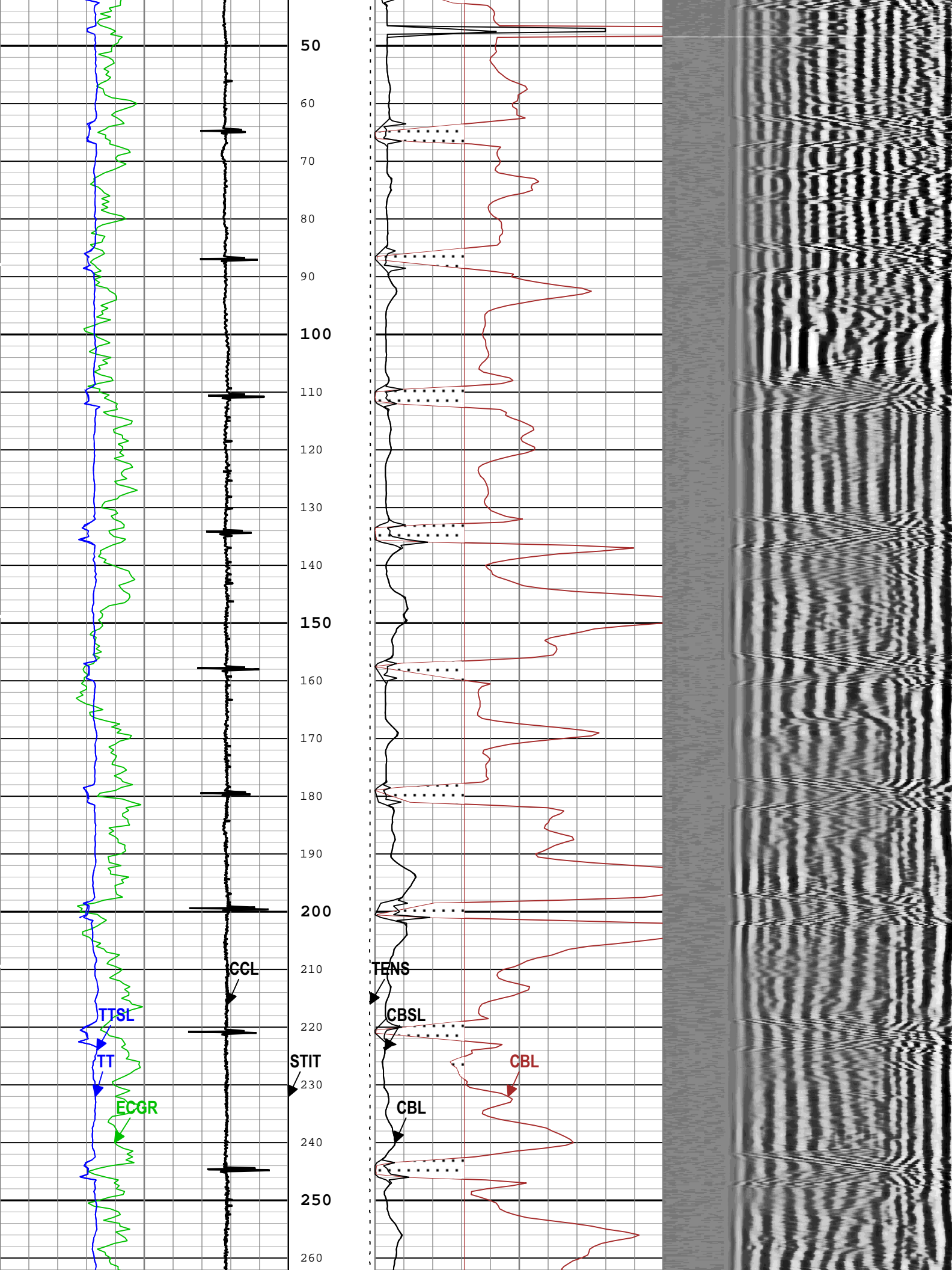
Pass Summary	
1	100%
2	100%
3	100%
4	100%
5	100%
6	100%
7	100%
8	100%
9	100%
10	100%
11	100%
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100	100%

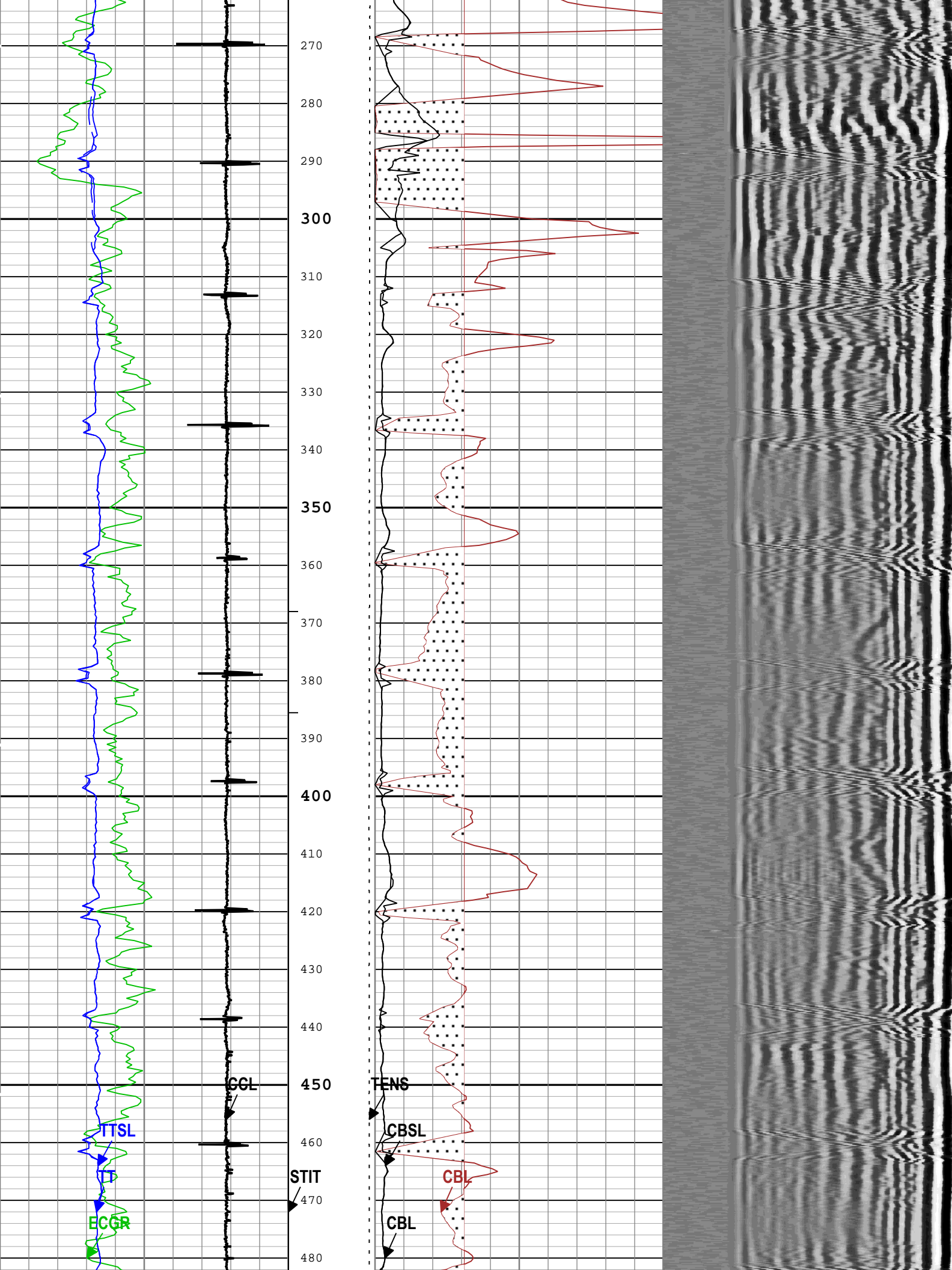
One	Log[3]:Up	Up	28.17 ft	2285.01 ft	09-Jan-2019 12:32:22 AM	09-Jan-2019 1:09:58 AM	ON	-3.00 ft	Yes
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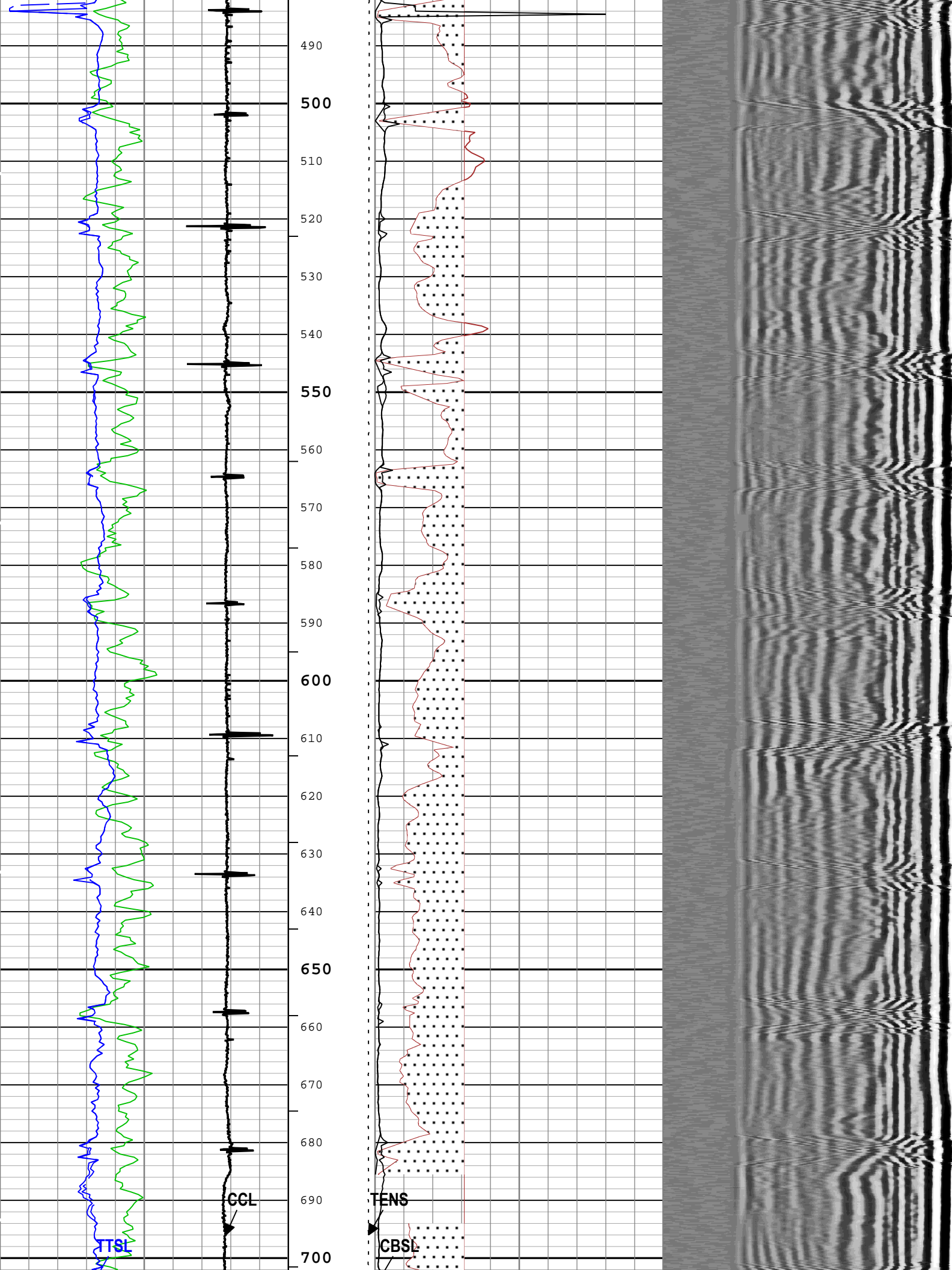
Log	Company:Crestone Peak Resources Operating LLC	Well:Lochbuie Land 2L-25H-D166
		One: Log[3]:Up:S004

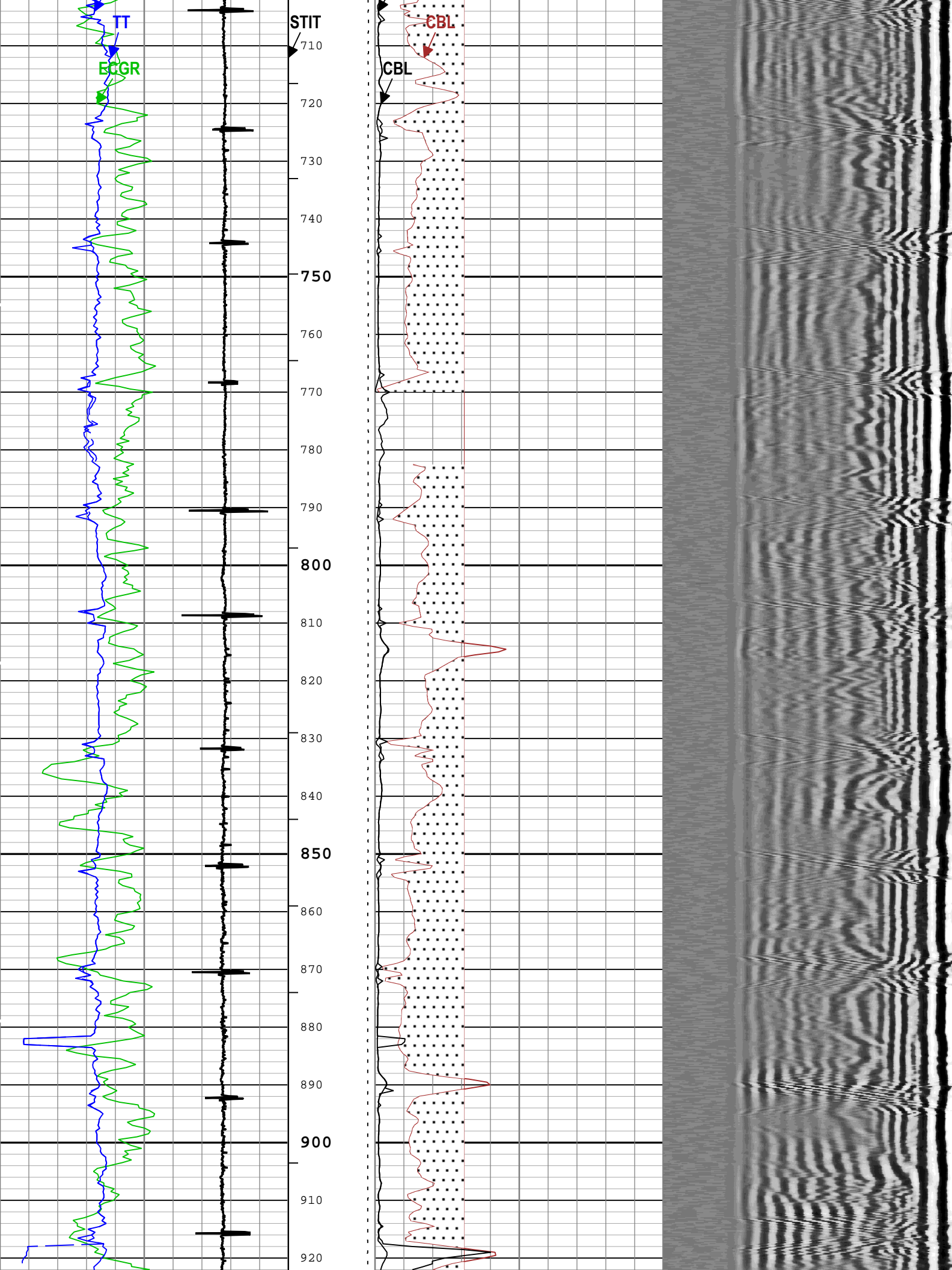
TIME_1900 - Time Marked every 60.00 (s)

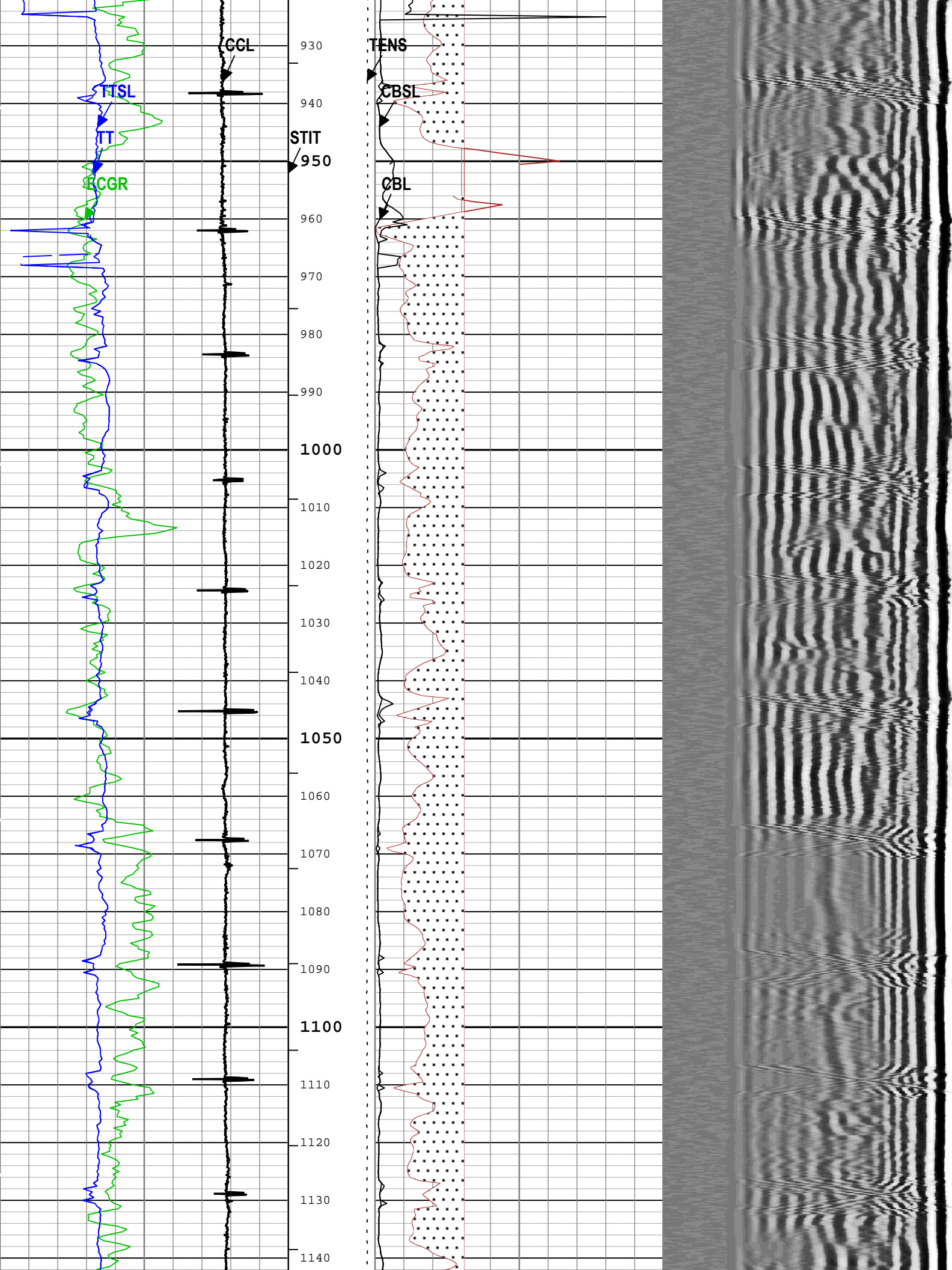


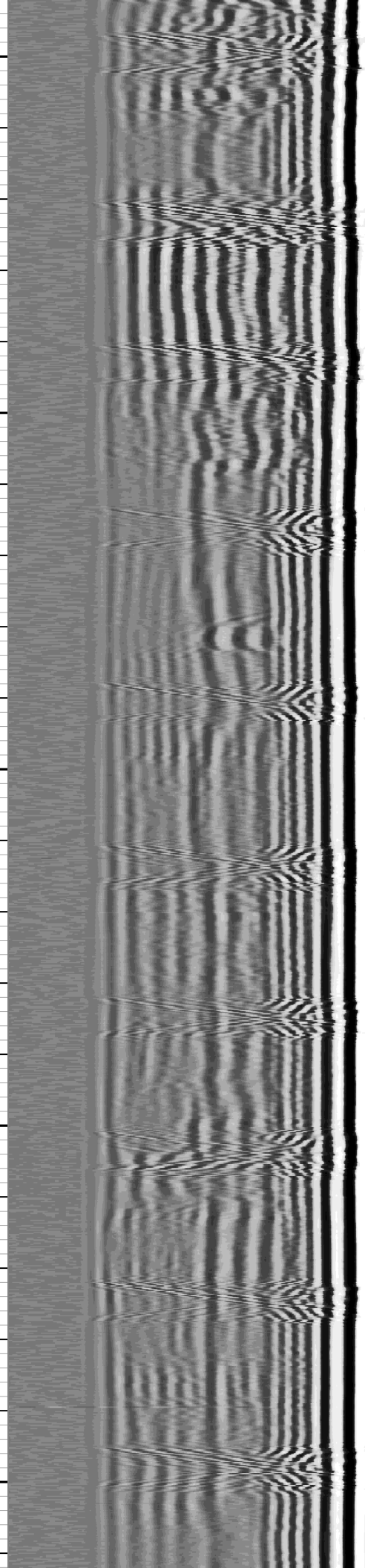
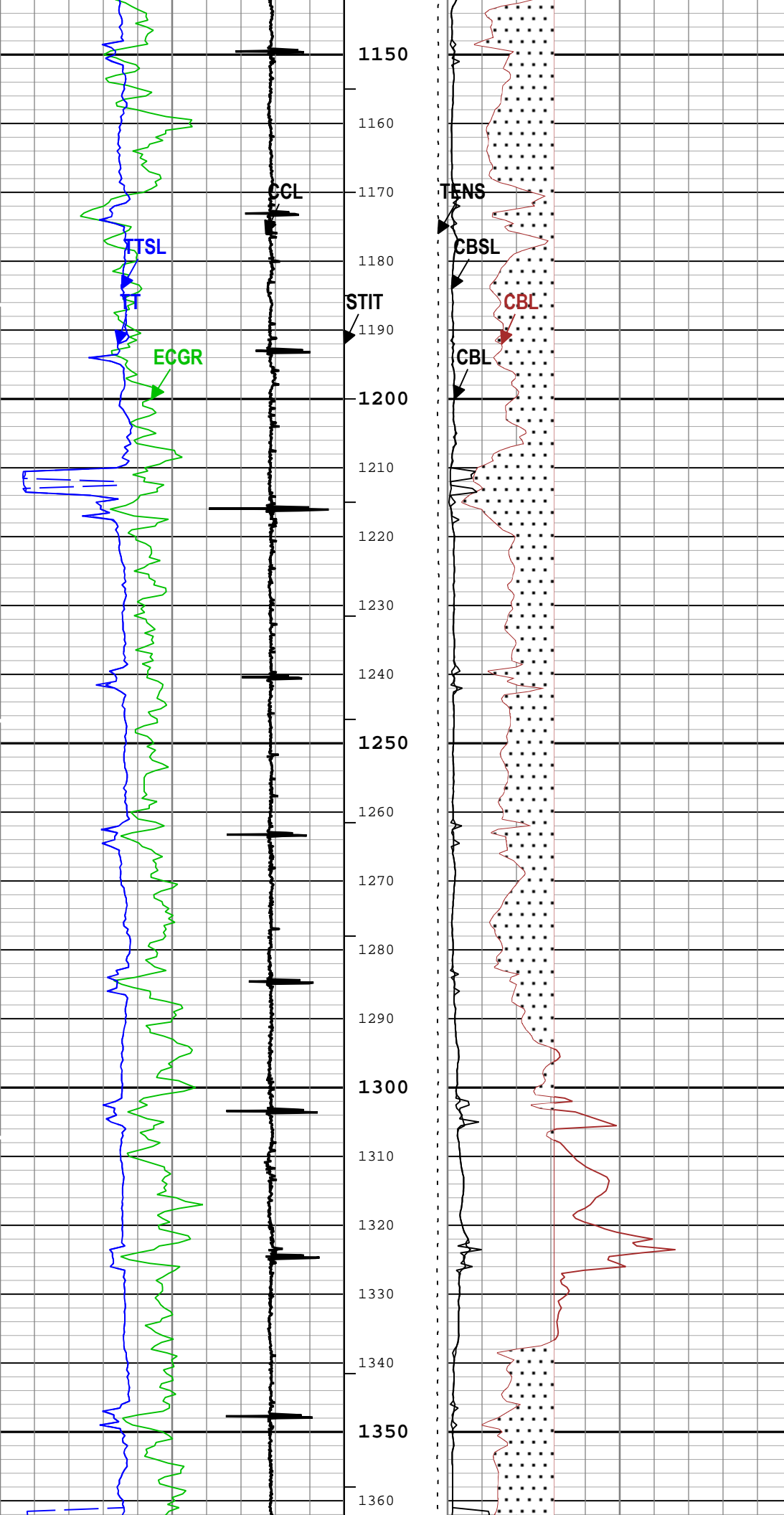


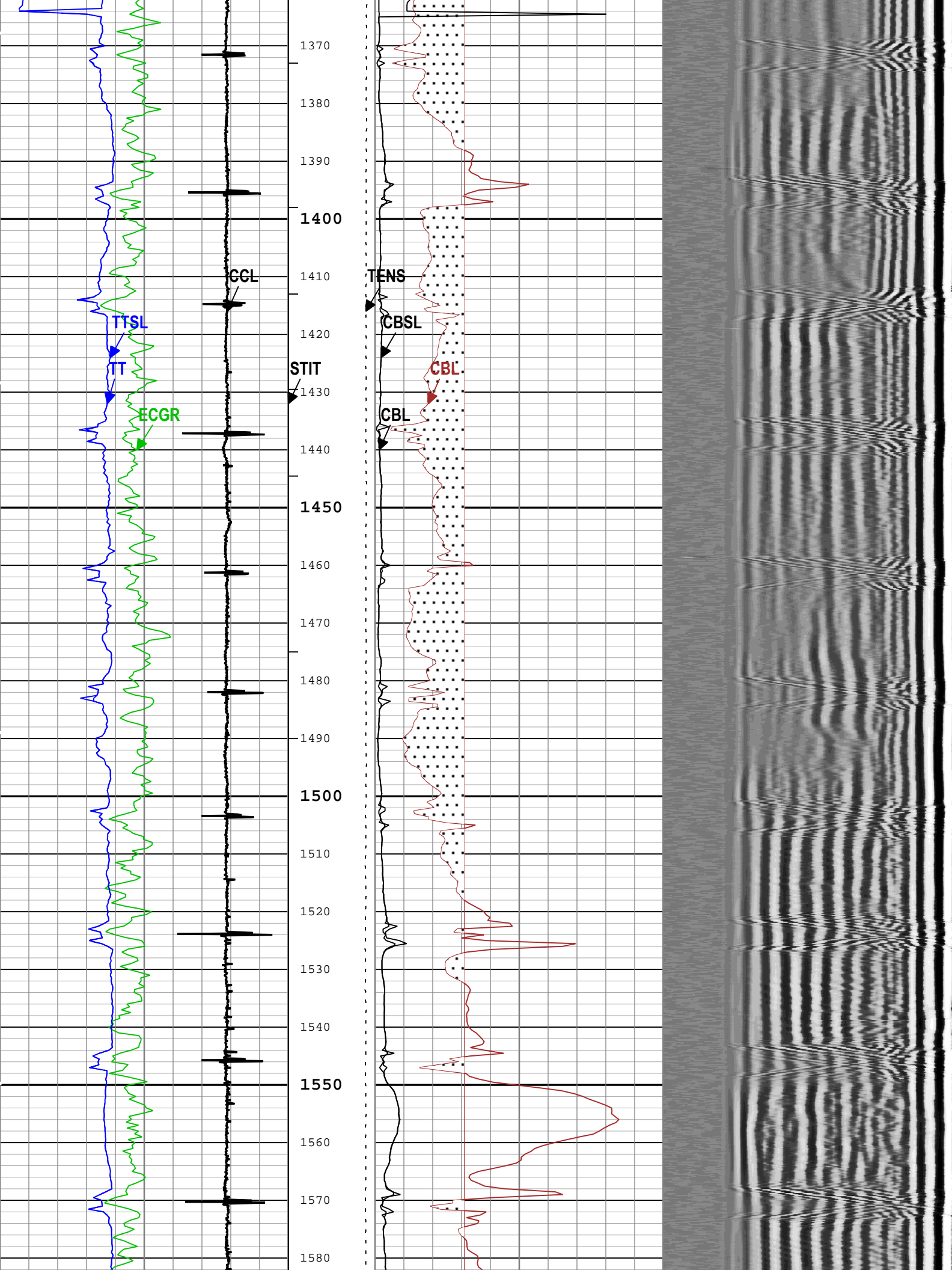


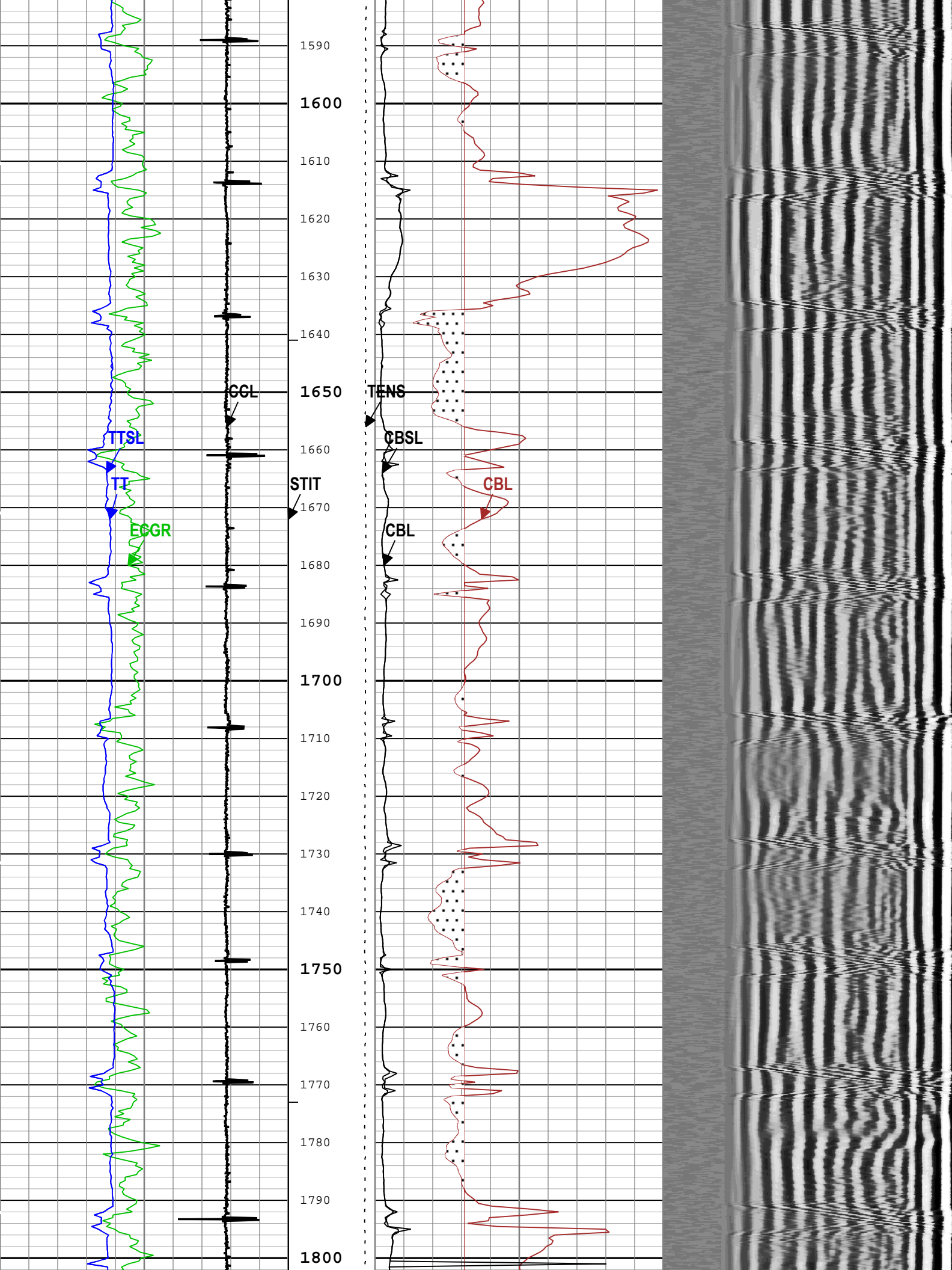


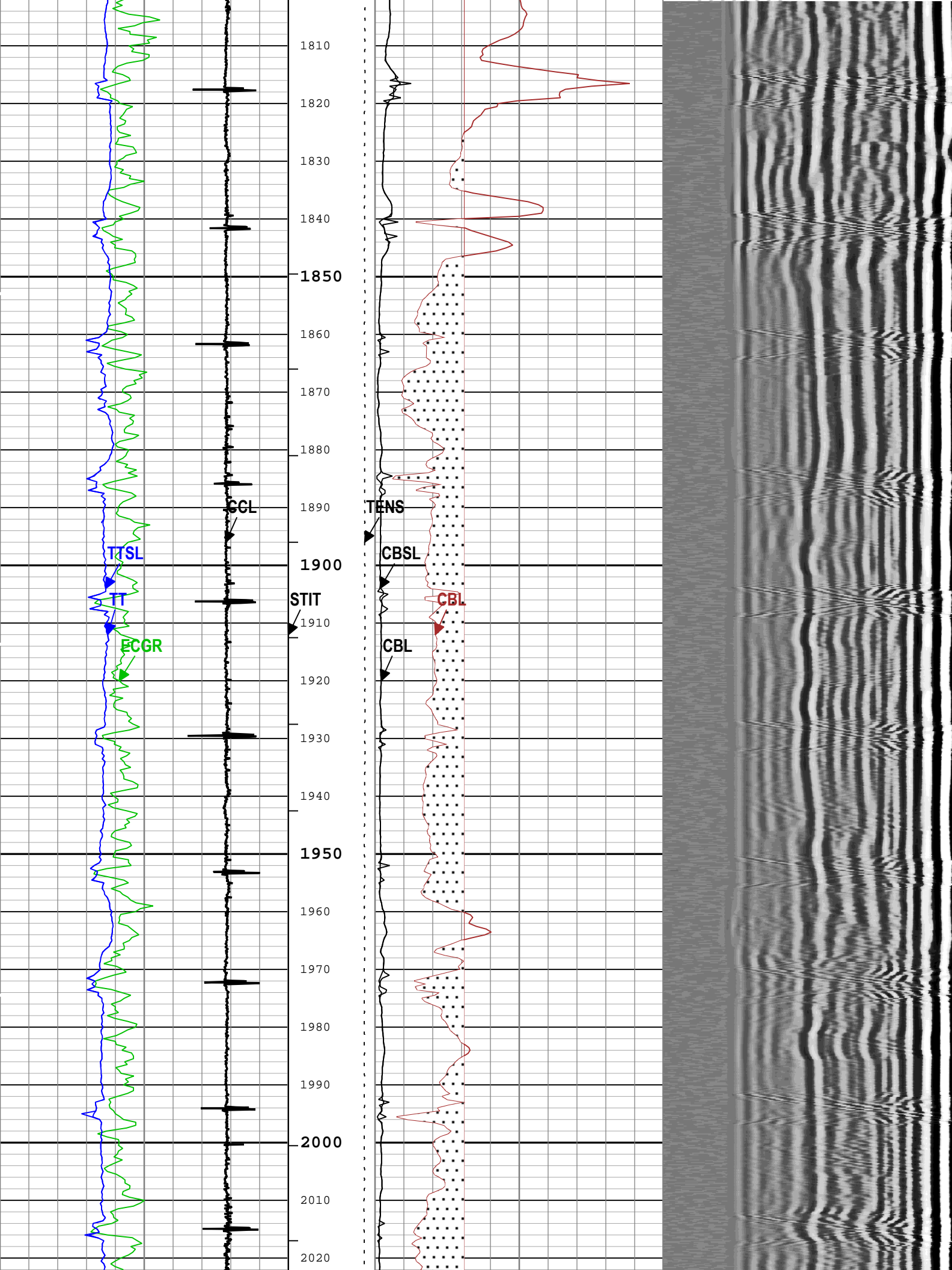


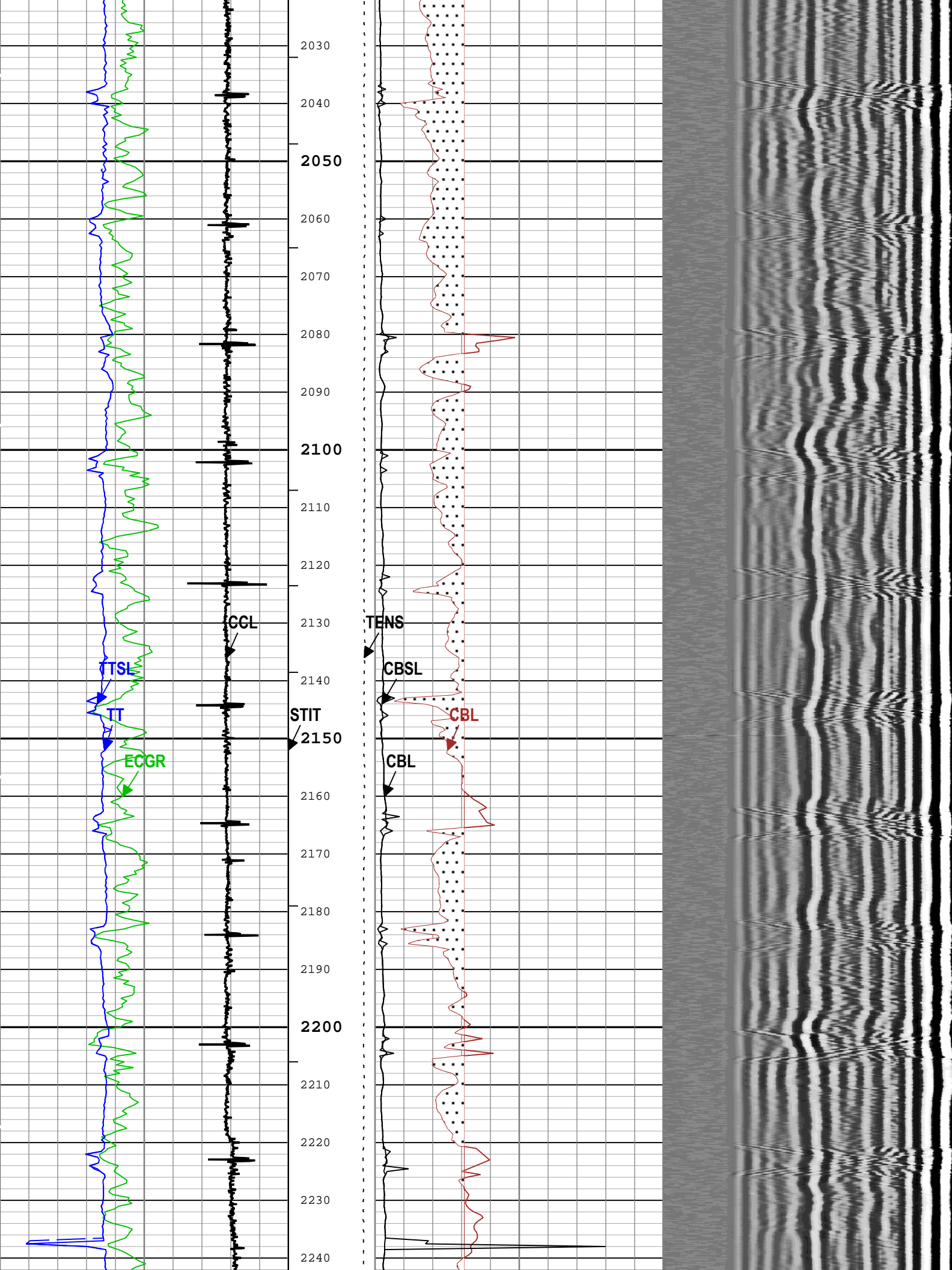


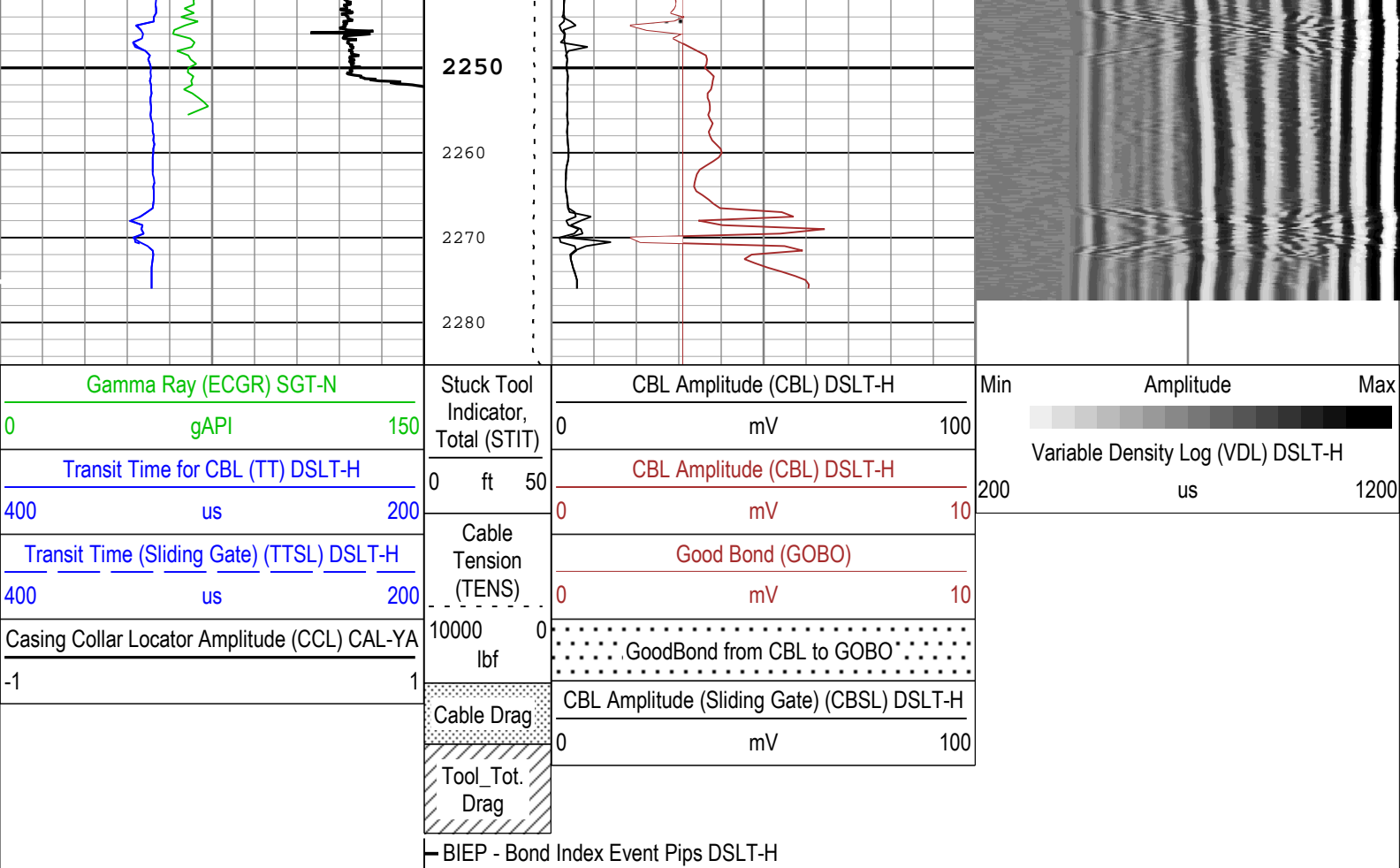












Channel Processing Parameters

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	2400	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLTH	52	mV
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YA	15	
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	DSLTH	100	
MSA	Minimum Sonic Amplitude	DSLTH	1.53	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLTH	1.53	mV
NMSG	Near Minimum Sliding Gate	DSLTH	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

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	389	

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 2L-25H-D166

Field: Wattenberg

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