

Company: Whiting Oil & Gas Corp

Well: Razor 21B-909A

Field: Wildcat

County: Weld State: Colorado

Cement Bond Log
GR-CCL-CBL-VDL

County: Weld
Field: Wildcat
Location: NWNNE Sec. 21, T10N, R58W
Well: Razor 21B-909A
Company: Whiting Oil & Gas Corp

Location:		NWNNE Sec. 21, T10N, R58W		Elev.: K.B. 4853.80 ft	
		SHL: 327' FNL & 2161' FEL		G.L. 4837.00 ft	
		Lat/Long: 40.830200/-103.86886		D.F. 4852.80 ft	
		Permanent Datum:	Ground Level	Elev.: 16.80 ft	4837.00 f above Perm.Datum
Log Measured From:		Kelly Bushing			
Drilling Measured From:		Kelly Bushing			
API Serial No.	Section:	Township:		Range:	
05-123-39529-0000	21	10N		58W	

Logging Date	06-Nov-2014	06-Nov-2014	
Run Number	ONE	ONE	
Depth Driller	13915.00 ft	13915.00 ft	
Schlumberger Depth	13915.00 ft	13915.00 ft	
Bottom Log Interval	4965.00 ft	4965.00 ft	
Top Log Interval	0.00 ft	0.00 ft	
Casing Fluid Type	2% KCL	2% KCL	
Salinity			
Density	8.7 lbm/gal	8.4 lbm/gal	
Fluid Level	0.00 ft	8.00 ft	
BIT/CASING/TUBING STRING			
Bit Size	6.00 in	6.00 in	
From	6152.00 ft	6152.00 ft	
To	13915.00 ft	13915.00 ft	
Casing/Tubing Size	4.5 in	4.5 in	
Weight	11.6 lbm/ft	11.6 lbm/ft	
Grade	P110	P110	
From	4973.60 ft	4973.60 ft	
To	13909.00 ft	13909.00 ft	
Max Recorded Temperatures	185 degF		
Logger on Bottom	Time	06-Nov-2014	12:15:00
Unit Number	Location:	Fort Morgan, CO	Fort Morgan, CO
Recorded By	Nolan Welsh	Nolan Welsh	
Witnessed By	Tom Flynn	Tom Flynn	

Disclaimer

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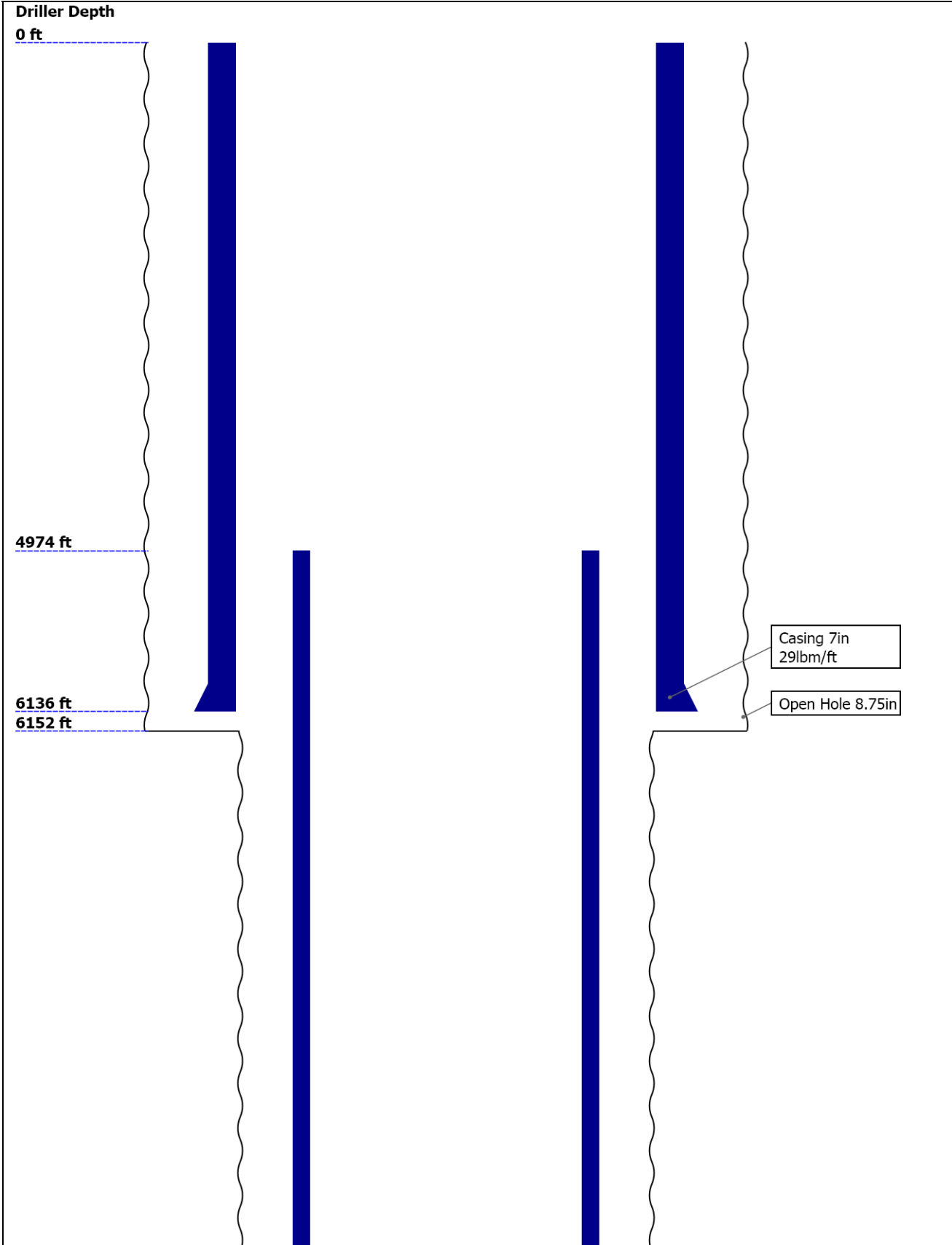
9.4 Log (Sonic CBL with VDL_1)

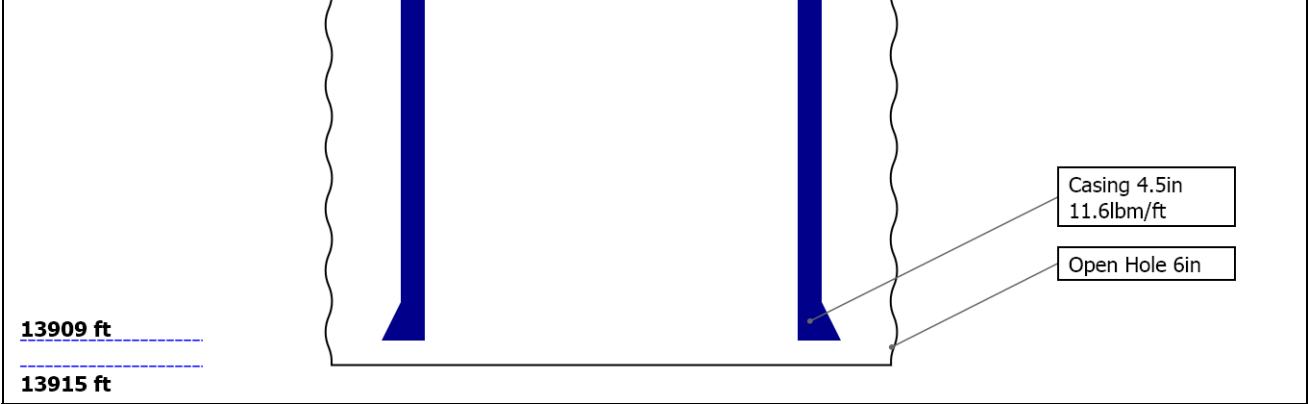
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Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	8.75	6				
Top Driller (ft)	0	6152				
Top Logger (ft)	0	6152				
Bottom Driller (ft)	6152	13915				
Bottom Logger (ft)	6152	13915				
Casing						
Size (in)	7	4.5				
Weight (lbm/ft)	29	11.6				
Inner Diameter (in)	6.184	4				
Grade	P110	P110				
Top Driller (ft)	0	4974				
Top Logger (ft)	0	4974				
Bottom Driller (ft)	6136	13909				
Bottom Logger (ft)	6136	13909				

Operational Run Summary

Parameter (unit)	ONE	ONE				
Date Log Started	06-Nov-2014	06-Nov-2014				
Time Log Started	09:32:10	09:32:10				
Date Log Finished	06-Nov-2014	06-Nov-2014				
Time Log Finished	12:56:48	12:56:48				
Top Log Interval (ft)	0.00	0.00				
Bottom Log Interval (ft)	4965.00	4965.00				
Total Depth (ft)	4965.00	4965.00				
Max Hole Deviation (deg)	0.00	0.00				
Azimuth of Max Deviation (deg)	0.00	0.00				
Bit Size (in)	6.000	6.000				
Logging Unit Number	3022	3022				
Logging Unit Location	Fort Morgan, CO	Fort Morgan, CO				
Recorded By	Nolan Welsh	Nolan Welsh				
Witnessed By	Tom Flynn	Tom Flynn				
Service Order Number	CYBX 00052	CYBX 00052				

Remarks and Equipment Summary

Toolstring as per tool sketch.

0 psi Repeat Pass

1500 psi Main Pass.

Top of Cement: 110 Feet.

Primary Cement: 14.5 lb/gal Class G.

Crew: Ian Derry, Troy Oconus, Mike Sullivan

ONE: Remarks

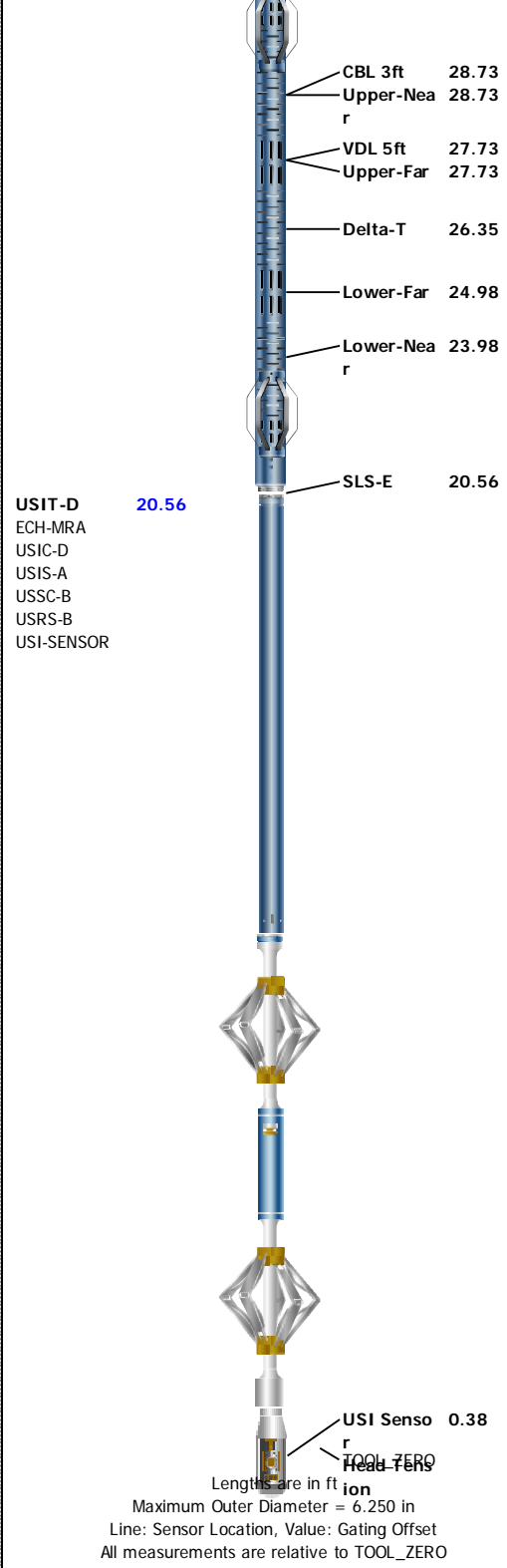
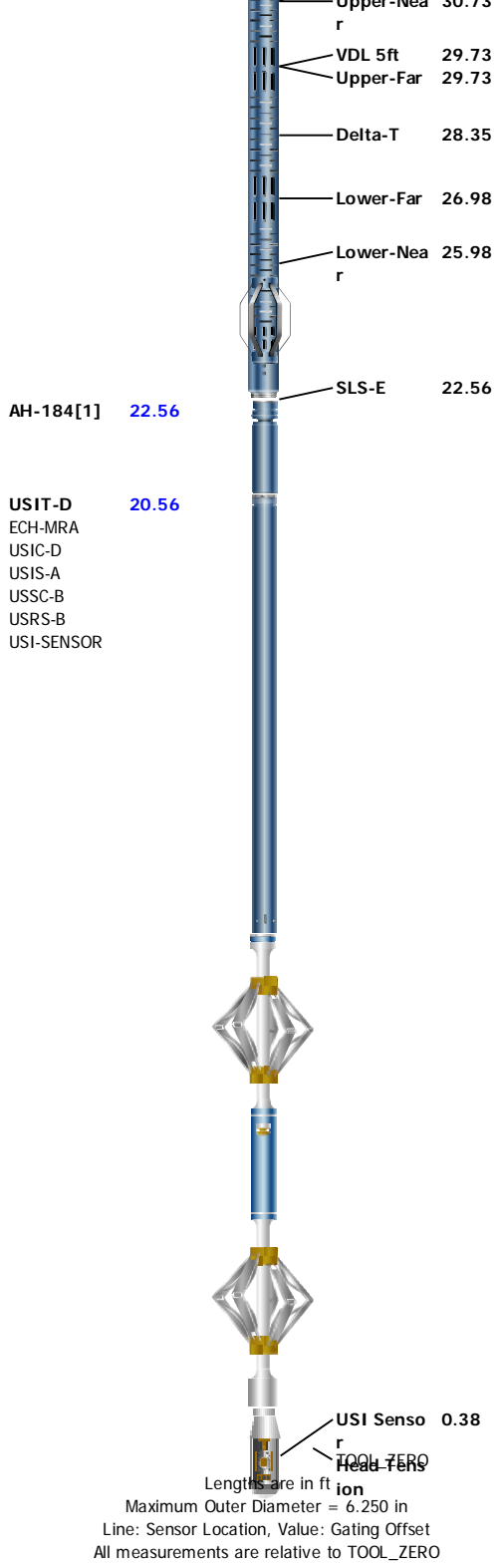
ONE: Remarks

ONE: Toolstring

ONE: Toolstring

Equip name	Length	MP name	Offset
LEH-QT	67.52		
LEH-QT			
EDTC-B	64.61		
EDTH-B			
EDTG-A			
EDTC-B			
		CTEM	61.11
		ACCZ	0.00
		HV	0.00
		Gamma Ray	59.24
		TelStatus	58.11
HGNS-H	58.11	Temperature	58.08
HGNH		GR	57.36
NSR-F:5069			
NPV-N			
HMCA-H			
HACCZ-H:6305			
HGNS-H			
		CNL Porosity	51.03
		HGNS	48.7
		HMCA	48.7
		Accelerometer	0.00
AH-184[2]	48.7		
CAL-YB	46.7		
CAL-YB			
		CCL	45.91
DSLTH-H	43.2		
ECH-KH			
DSLCH-H			
SLS-E			
		CBL 3ft	30.73
		Upper Nip	30.73

Equip name	Length	MP name	Offset
LEH-QT	67.52		
LEH-QT			
EDTC-B	64.61		
EDTH-B			
EDTG-A			
EDTC-B			
		CTEM	61.11
		ACCZ	0.00
		HV	0.00
		Gamma Ray	59.24
		TelStatus	58.11
HGNS-H	58.11	Temperature	58.08
HGNH			
NSR-F:5069		GR	57.36
NPV-N			
HGNS-H			
HMCA-H			
HACCZ-H:6305			
		CNL Porosity	51.03
		HMCA	48.7
		HGNS	48.7
		Accelerometer	0.00
AH-184[2]	48.7		
CAL-YB	46.7		
CAL-YB			
		CCL	45.91
AH-184[1]	43.2		
DSL-T-H	41.2		
ECH-KH			
DSL-C-H			
SLS-E			



Main			
5" CBL VDL Main			
Software Version			
Acquisition System		Version	
MaxWell		4.0.9163.3000	
Application Patch		Patch-SP-10767_13393-4.0.9163.3001	
Computation	Description	Version	
CEVAL	Sonic Cement Evaluation Computation Ensemble provides common Parameters and Channels	4.0.9033.3000	
DepthCorrection	DepthCorrection	4.0.9213.3000	
Tool Elements	Description	Software Version	Firmware Version

CAL-YB	Casing Anomaly Locator	4.0.9033.3000	
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	4.0.9231.3000	2.0
SLS-E	Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL	4.0.9033.3000	4.0
USI-SENSOR	USIT Transducer Element	4.0.9265.3000	

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[6]:Up	Up	48.18 ft	4970.00 ft	06-Nov-2014 11:05:30 AM	06-Nov-2014 12:35:02 PM	ON	3.51 ft	Yes
ONE	Log[6]:Up	Up	43.06 ft	4964.88 ft	06-Nov-2014 11:05:30 AM	06-Nov-2014 12:35:02 PM	ON	-1.62 ft	Yes

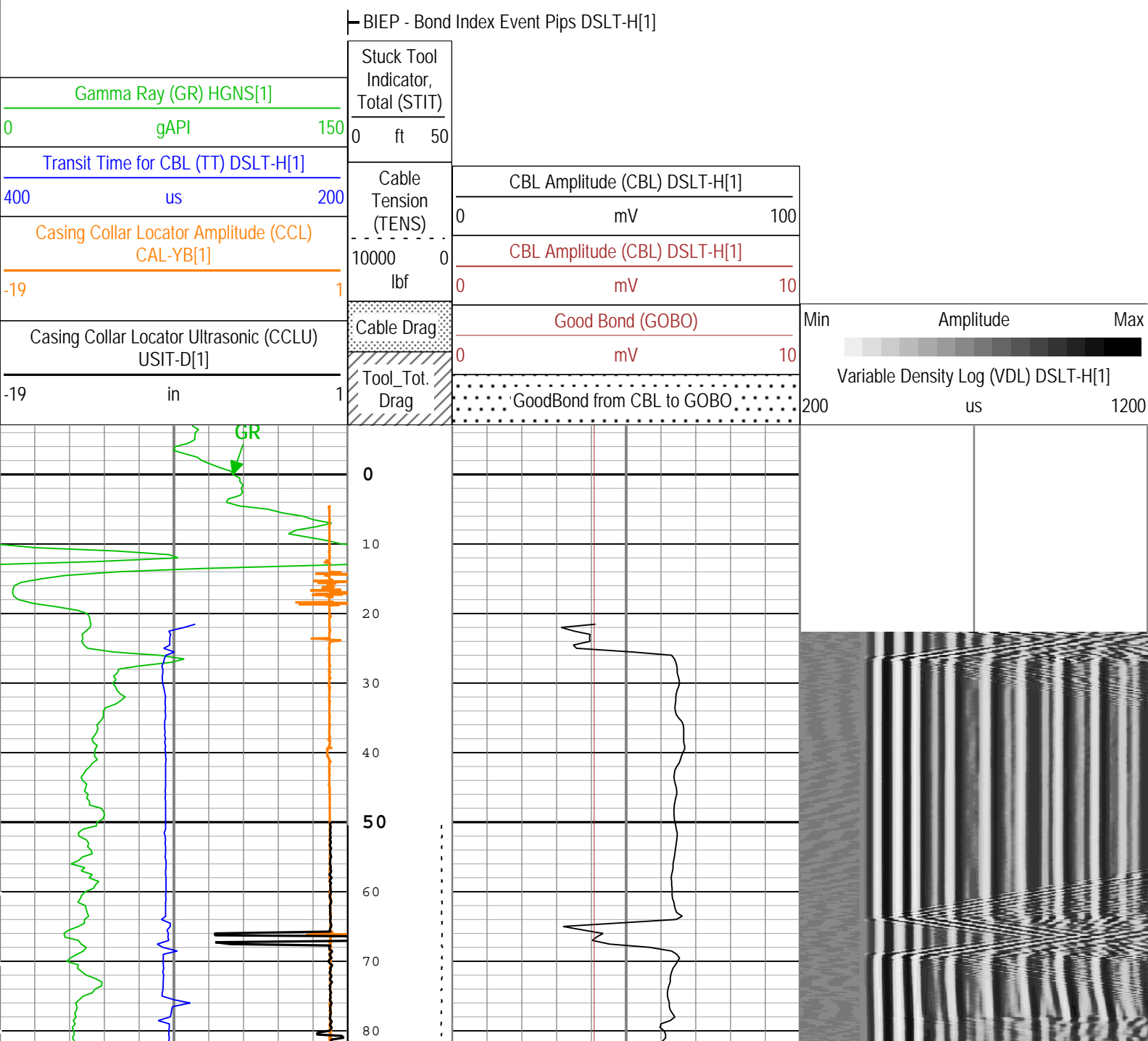
All depths are referenced to toolstring zero

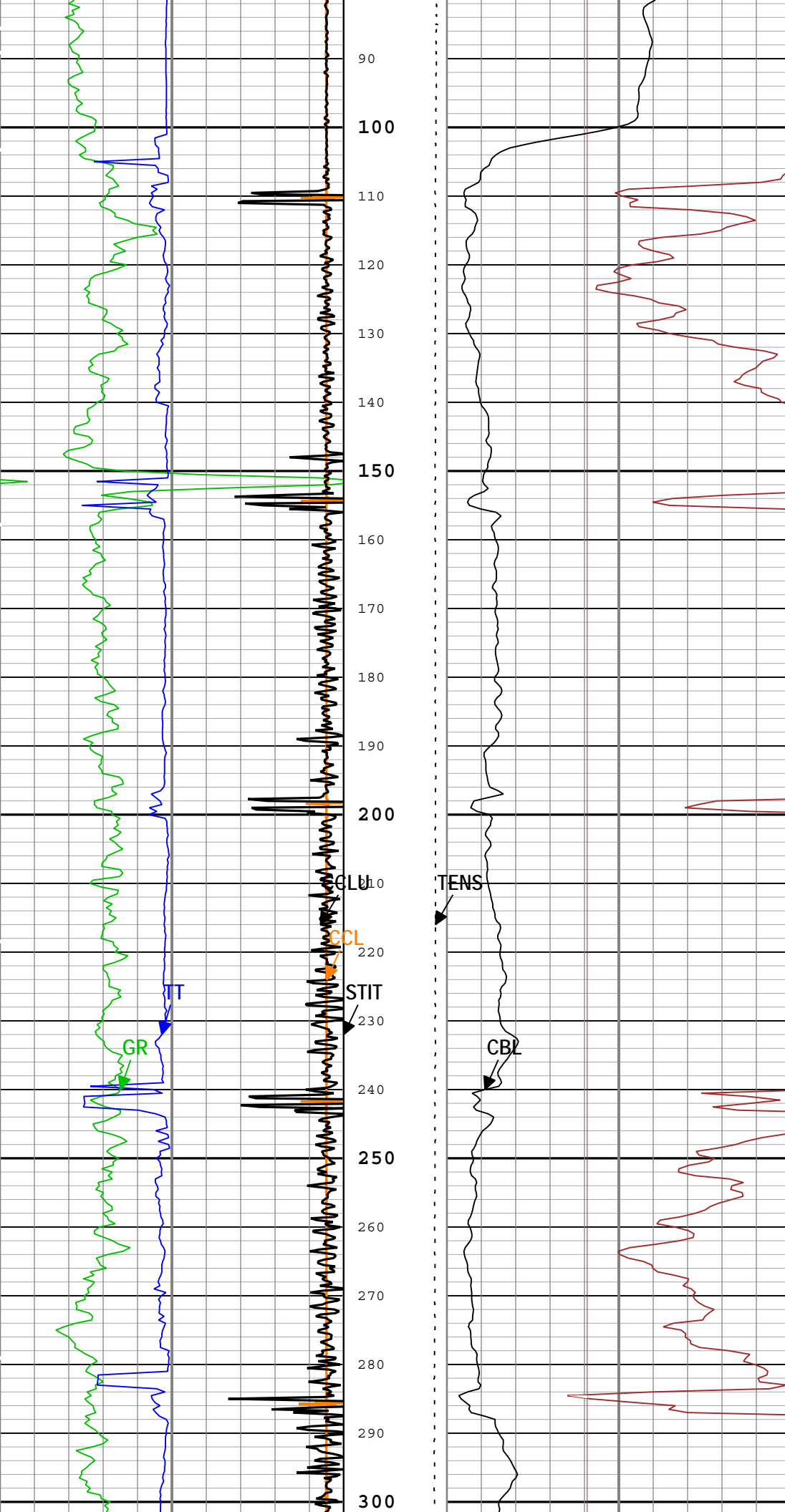
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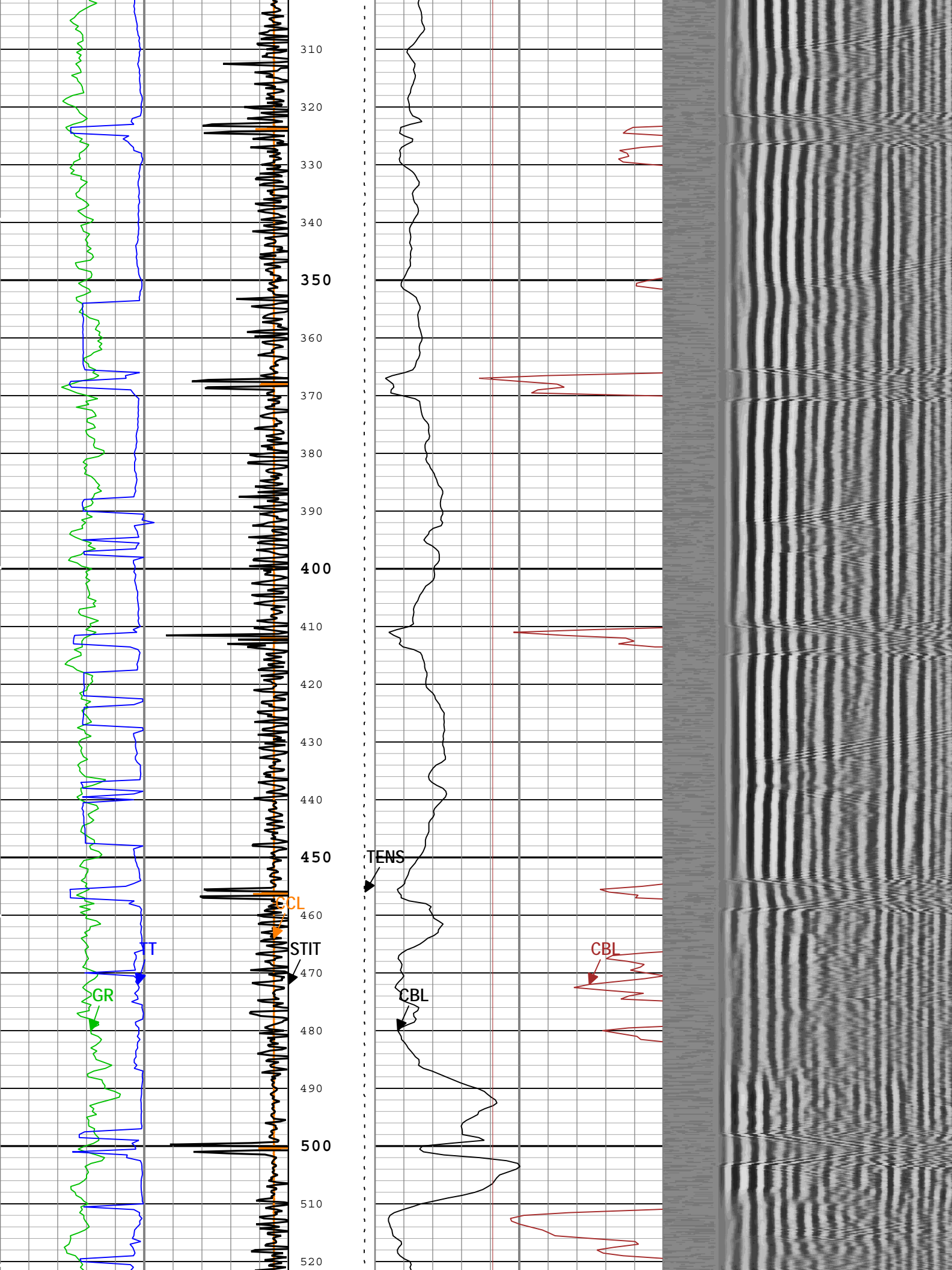
Company:Whiting Oil & Gas Corp Well:Razor 21B-909A
Main:S069

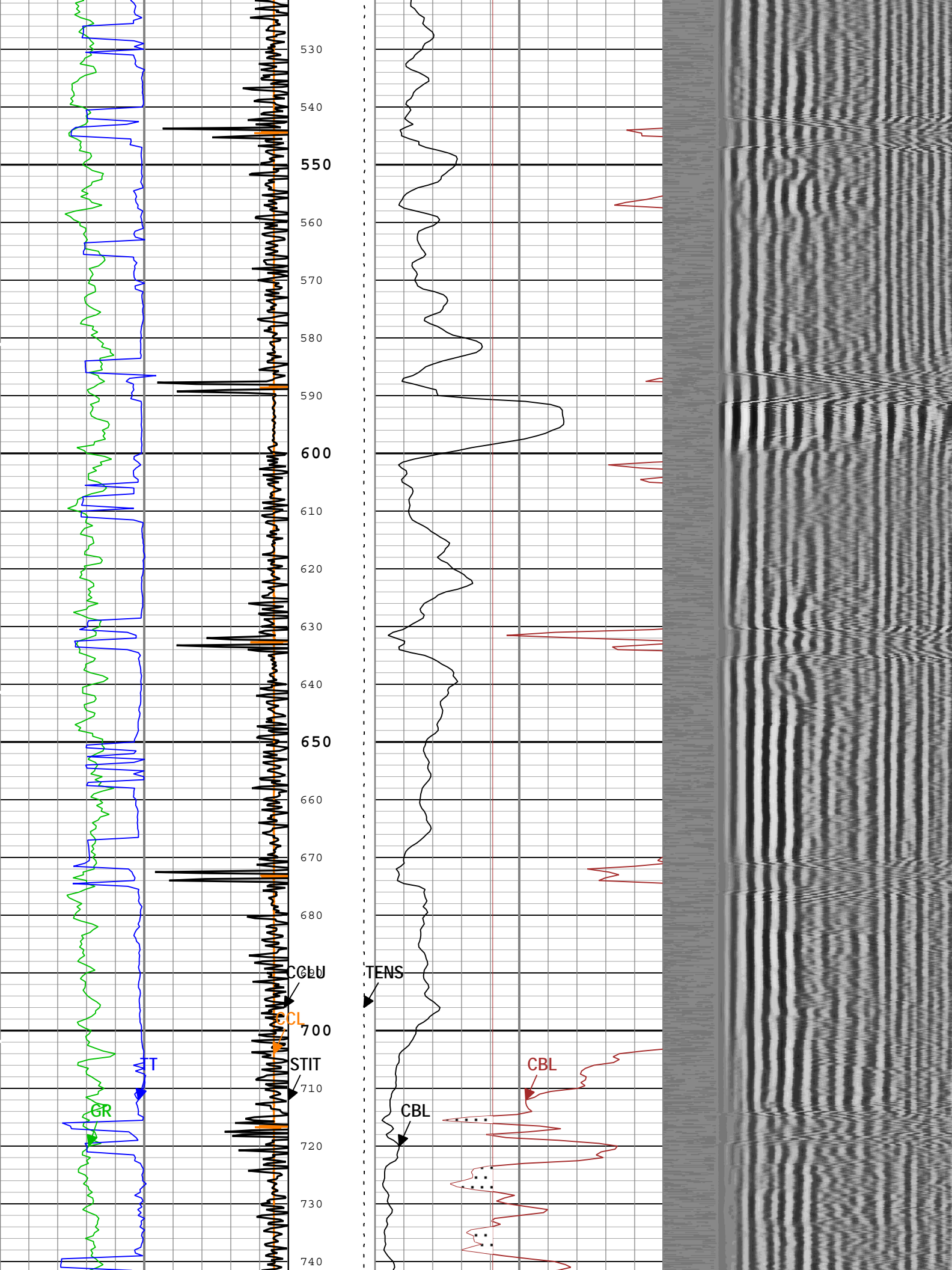
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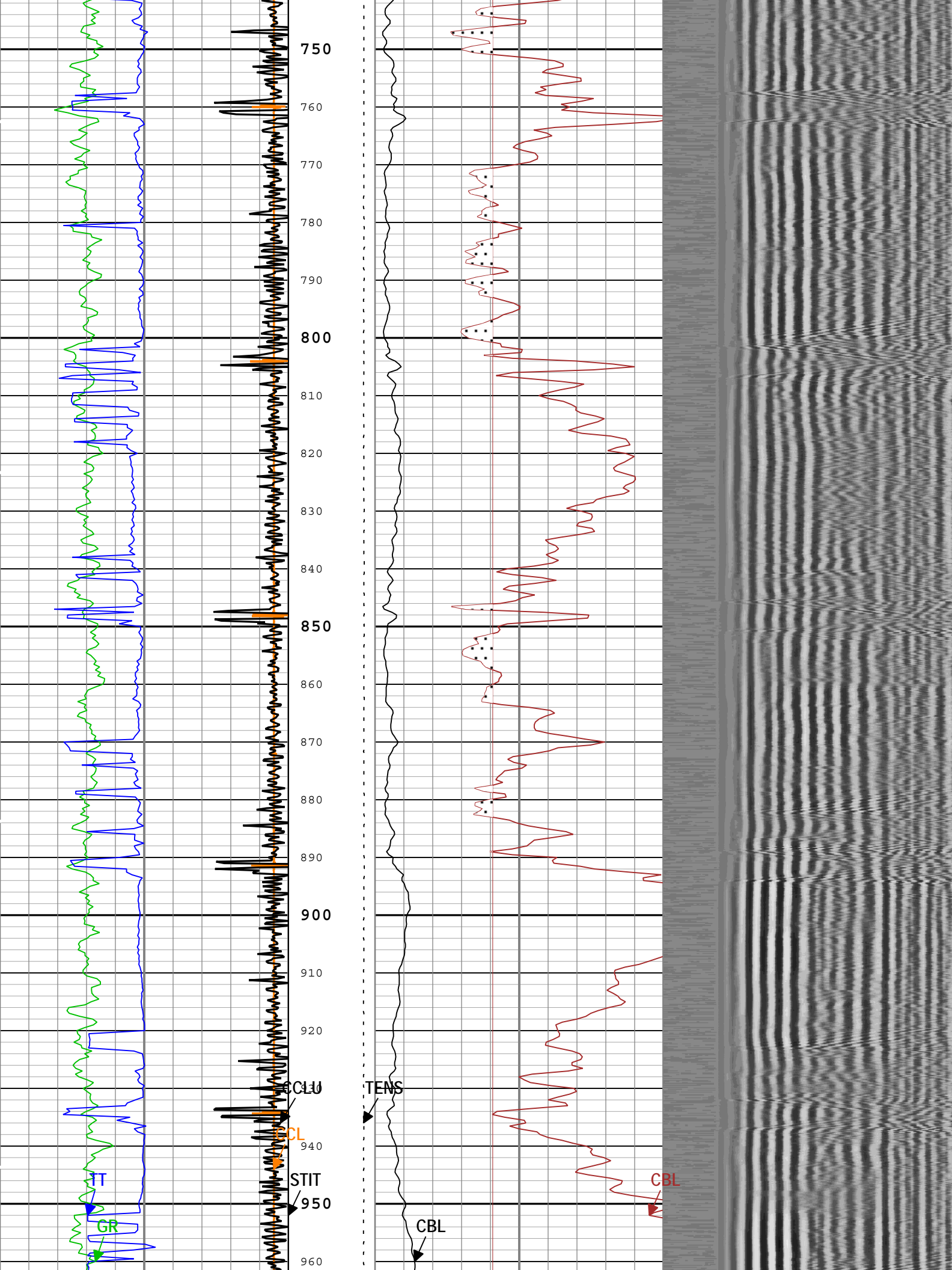
TIME_1900 - Time Marked every 60.00 (s)

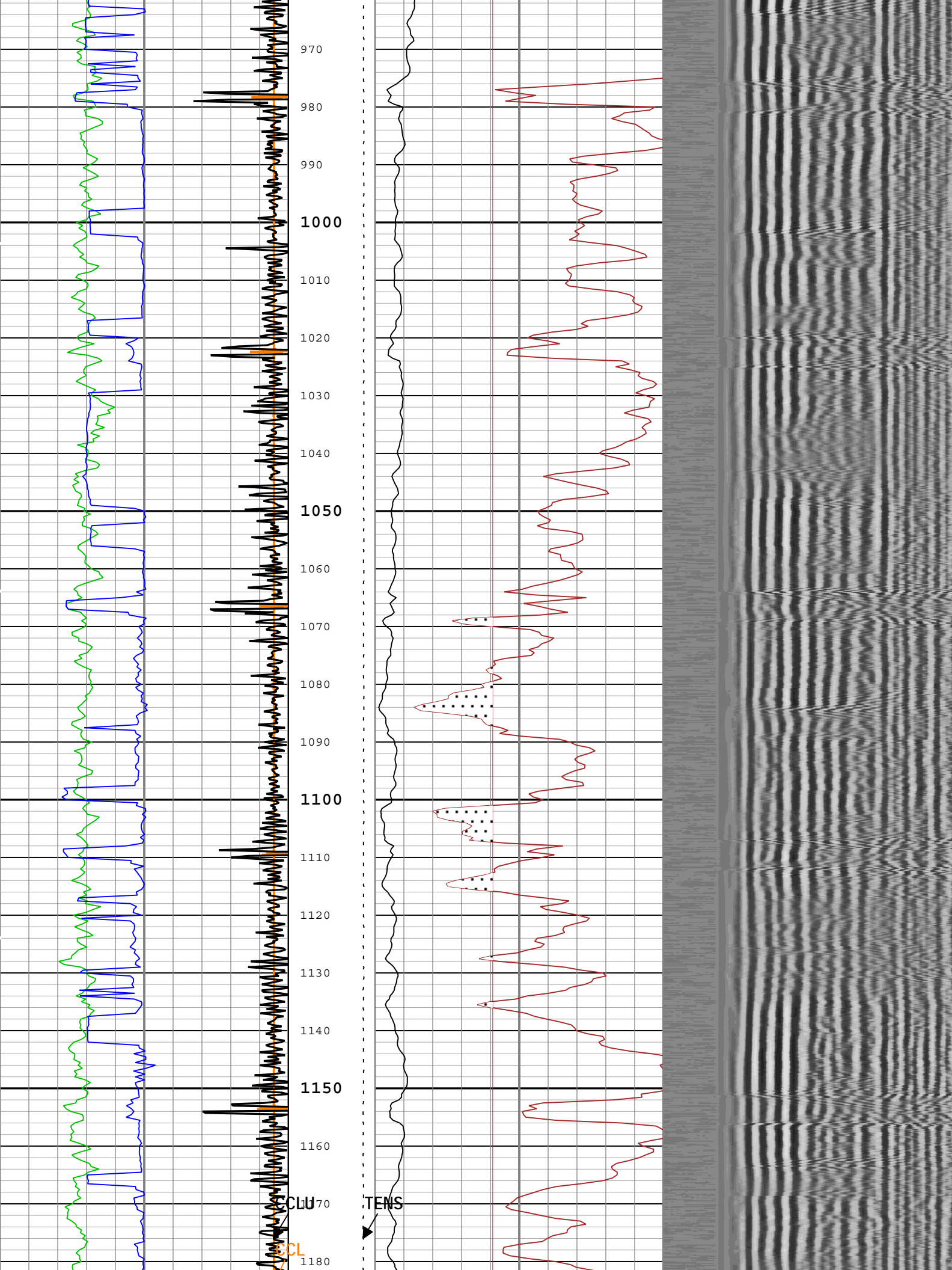


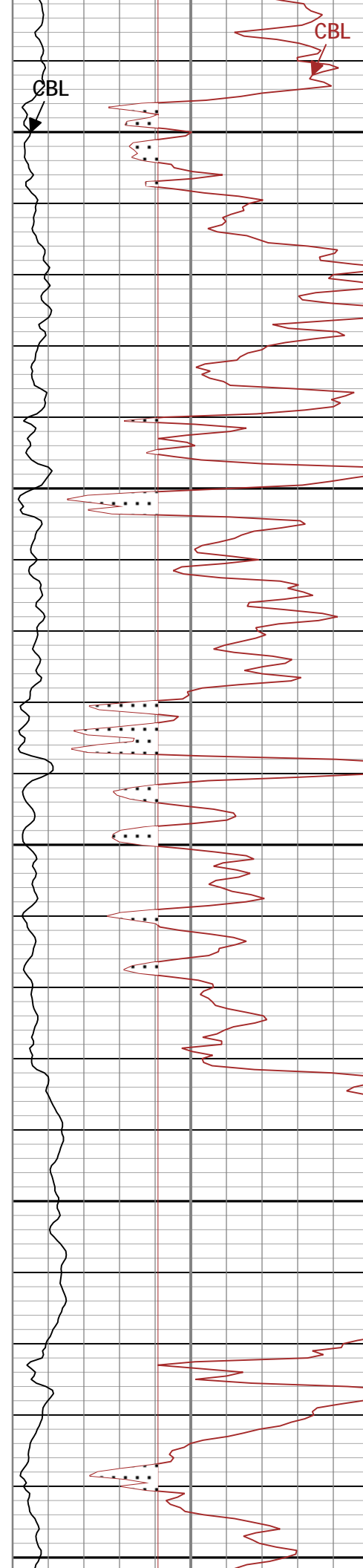
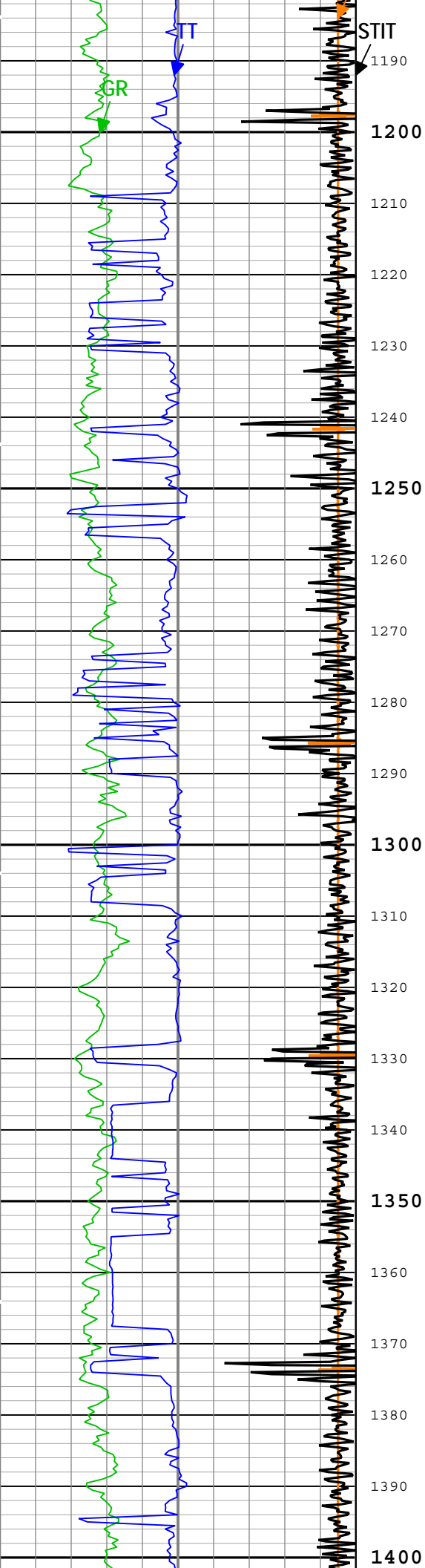


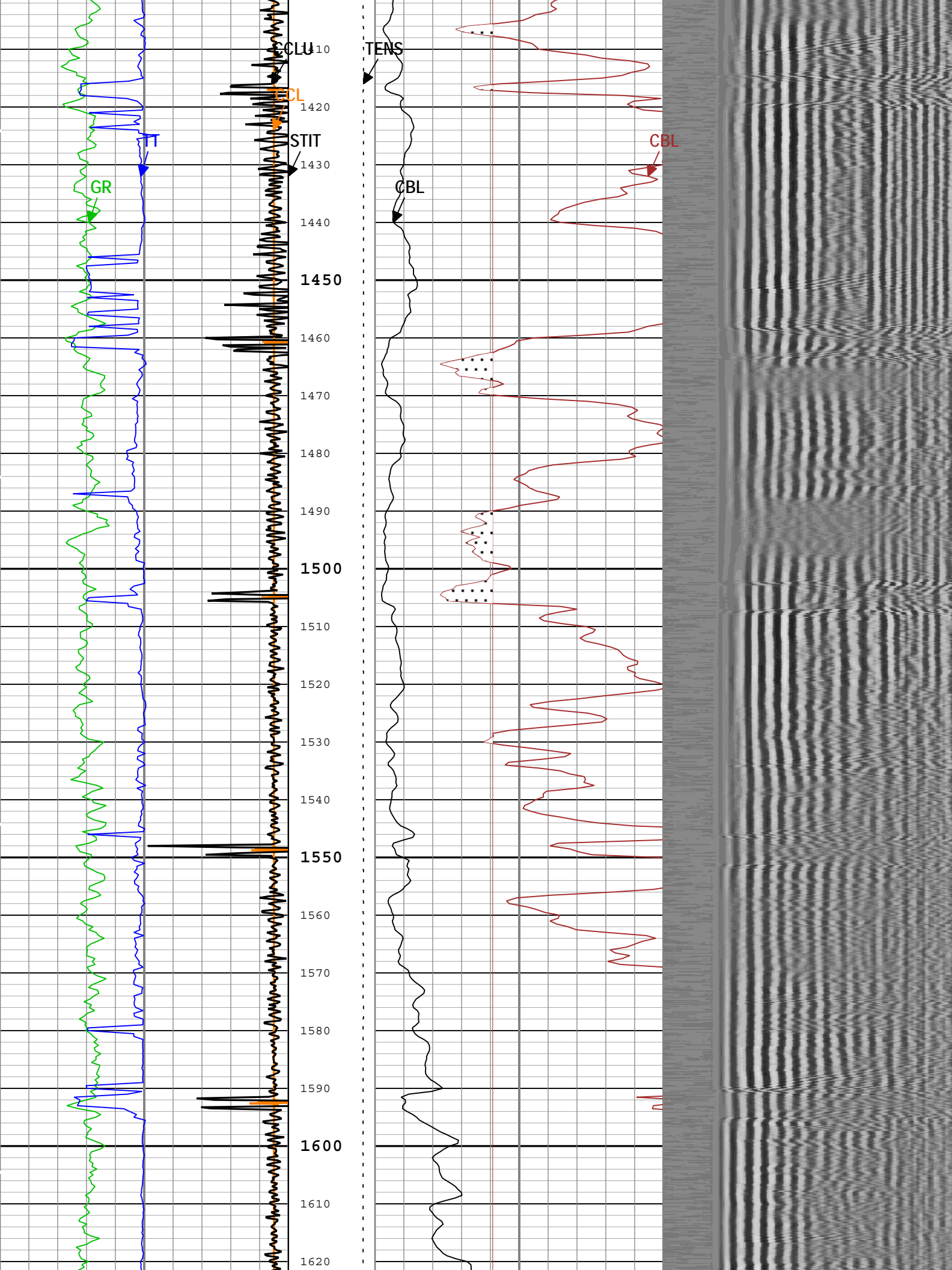


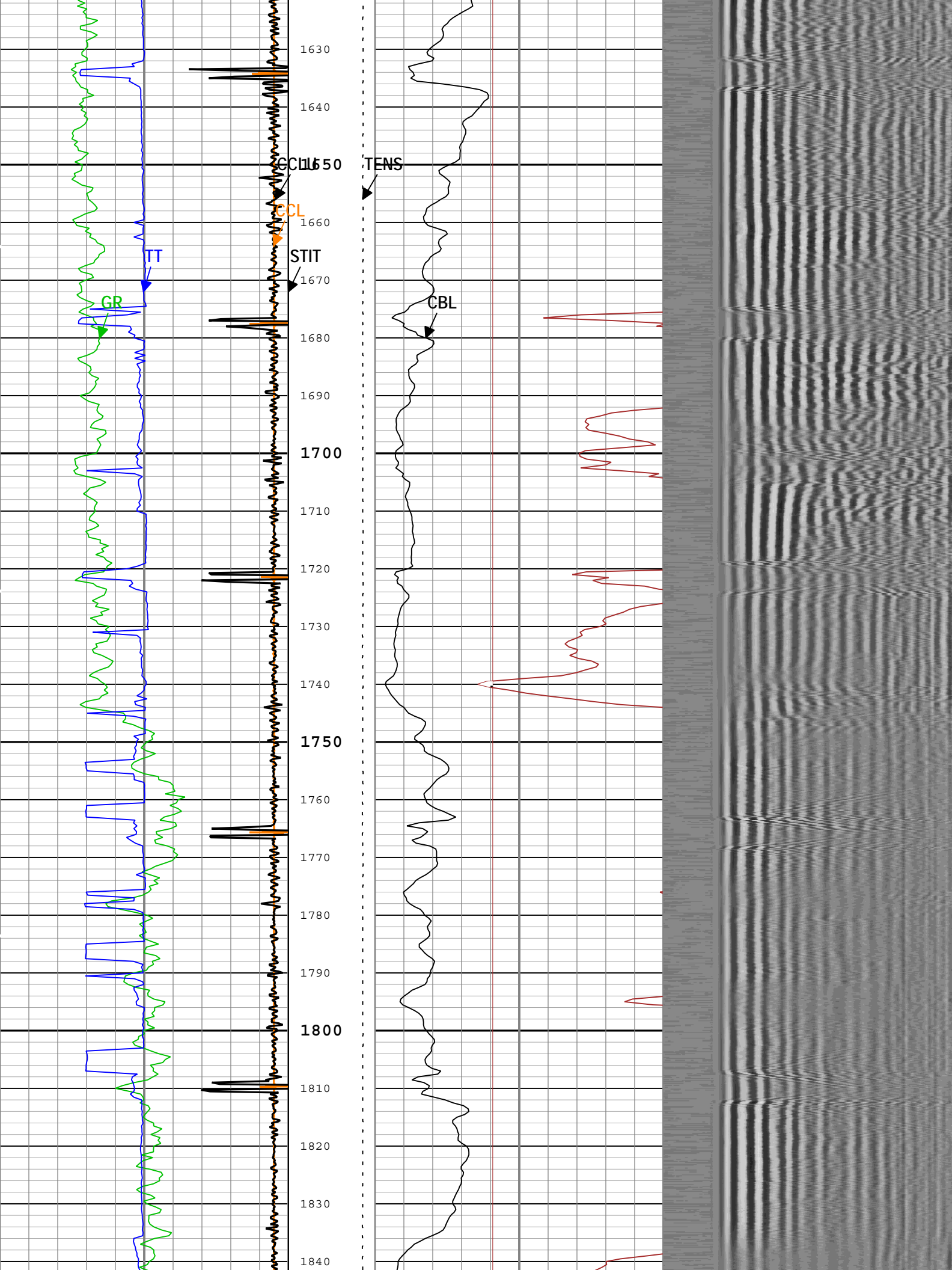


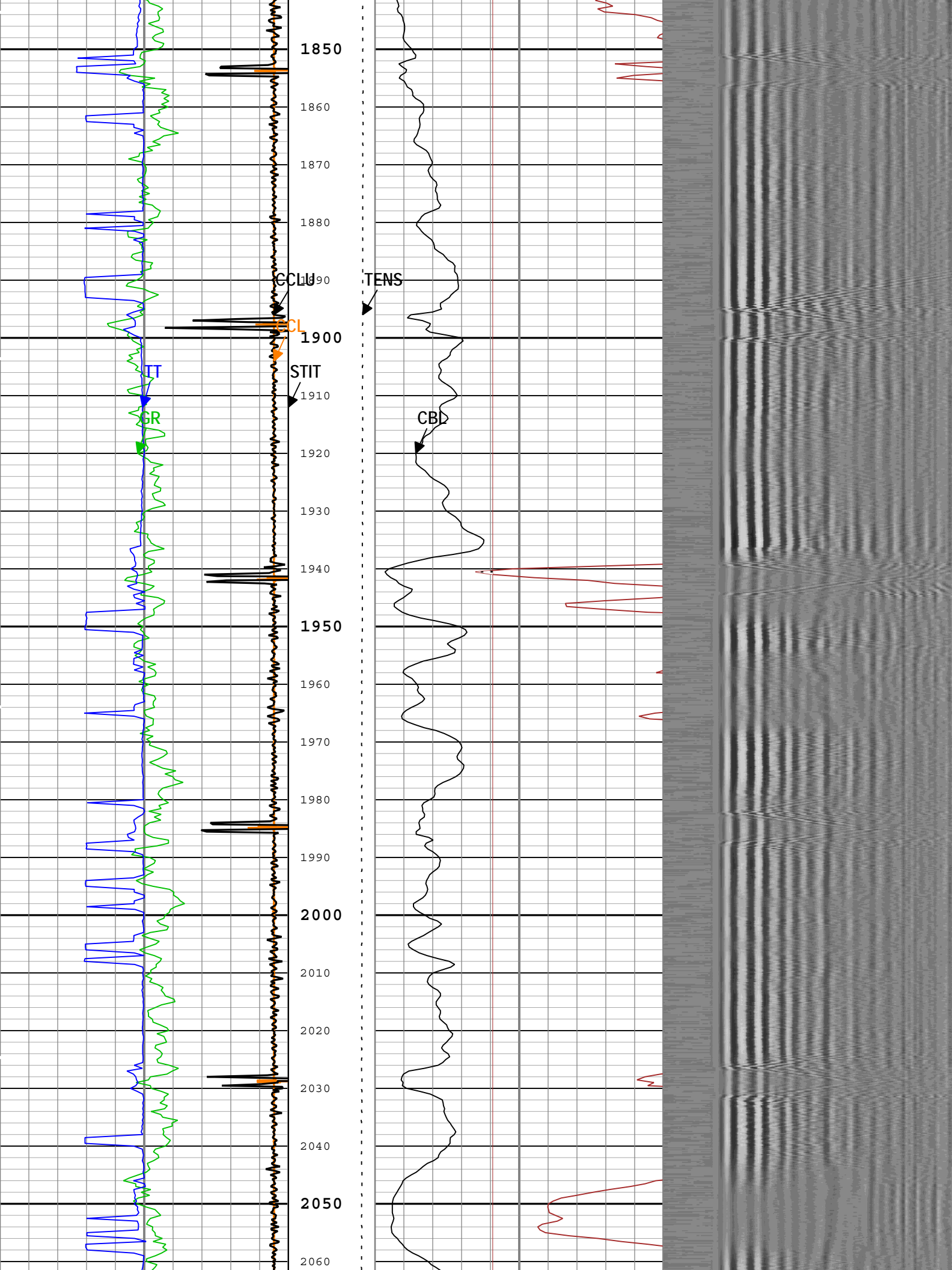


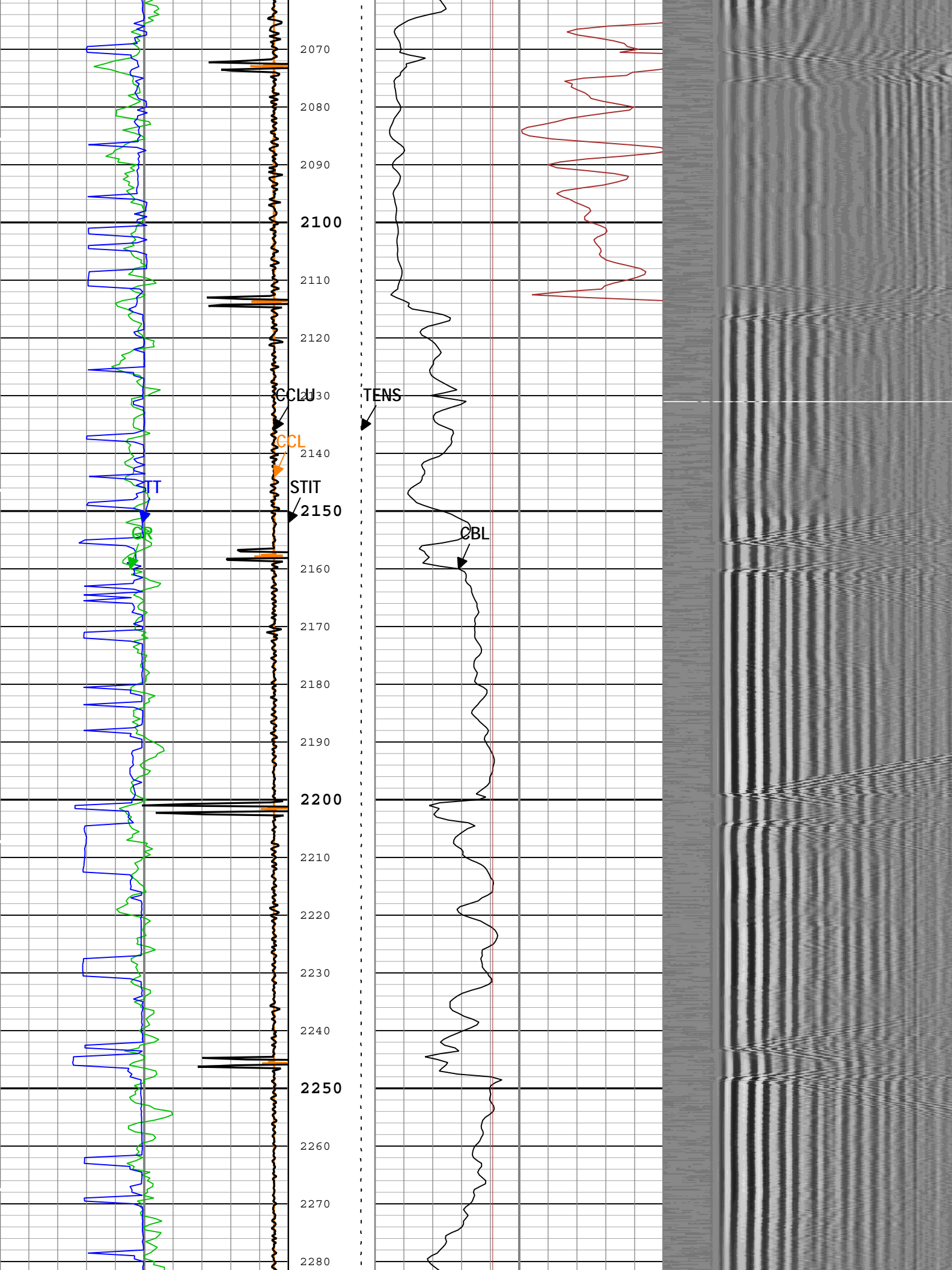


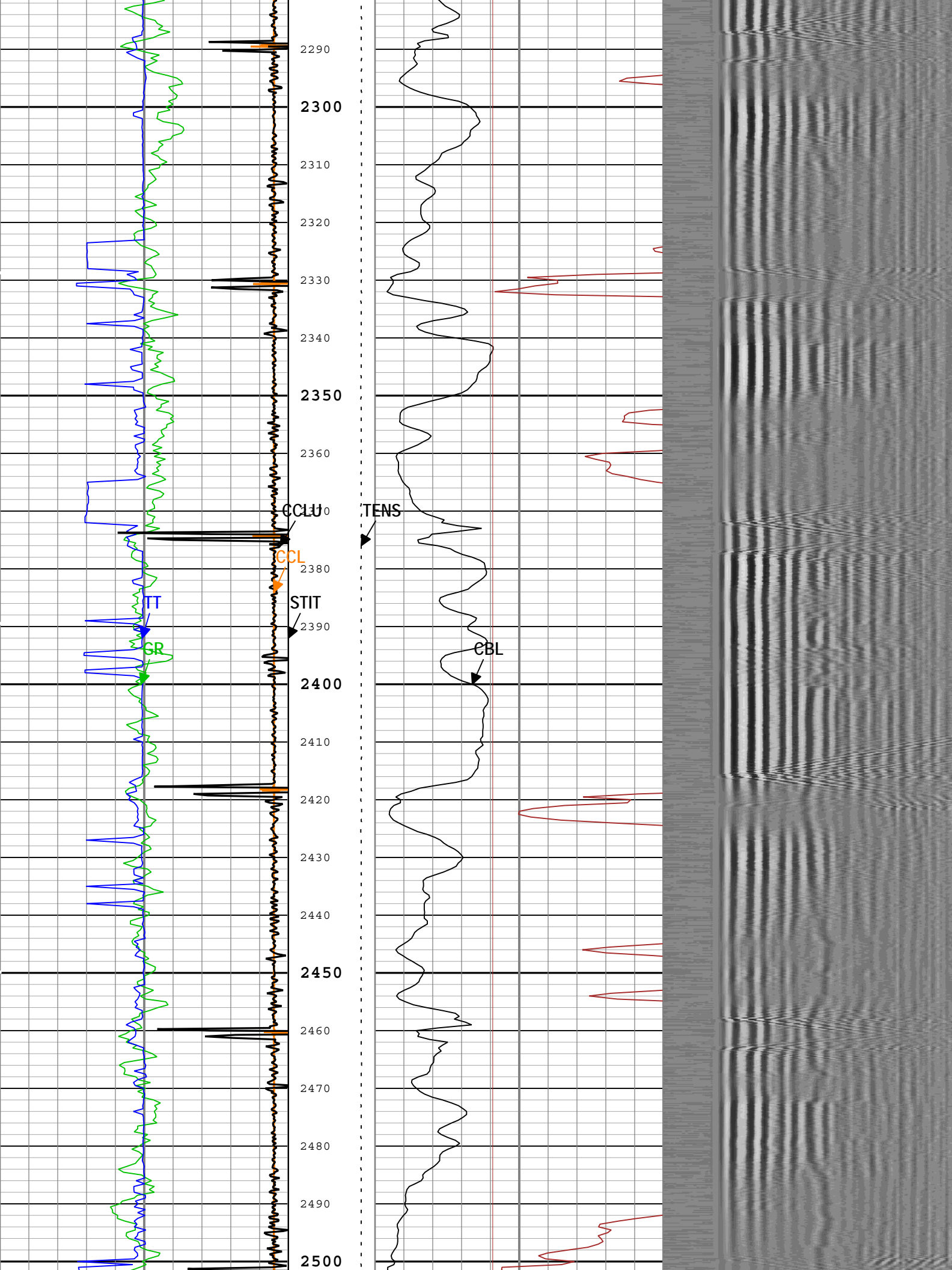


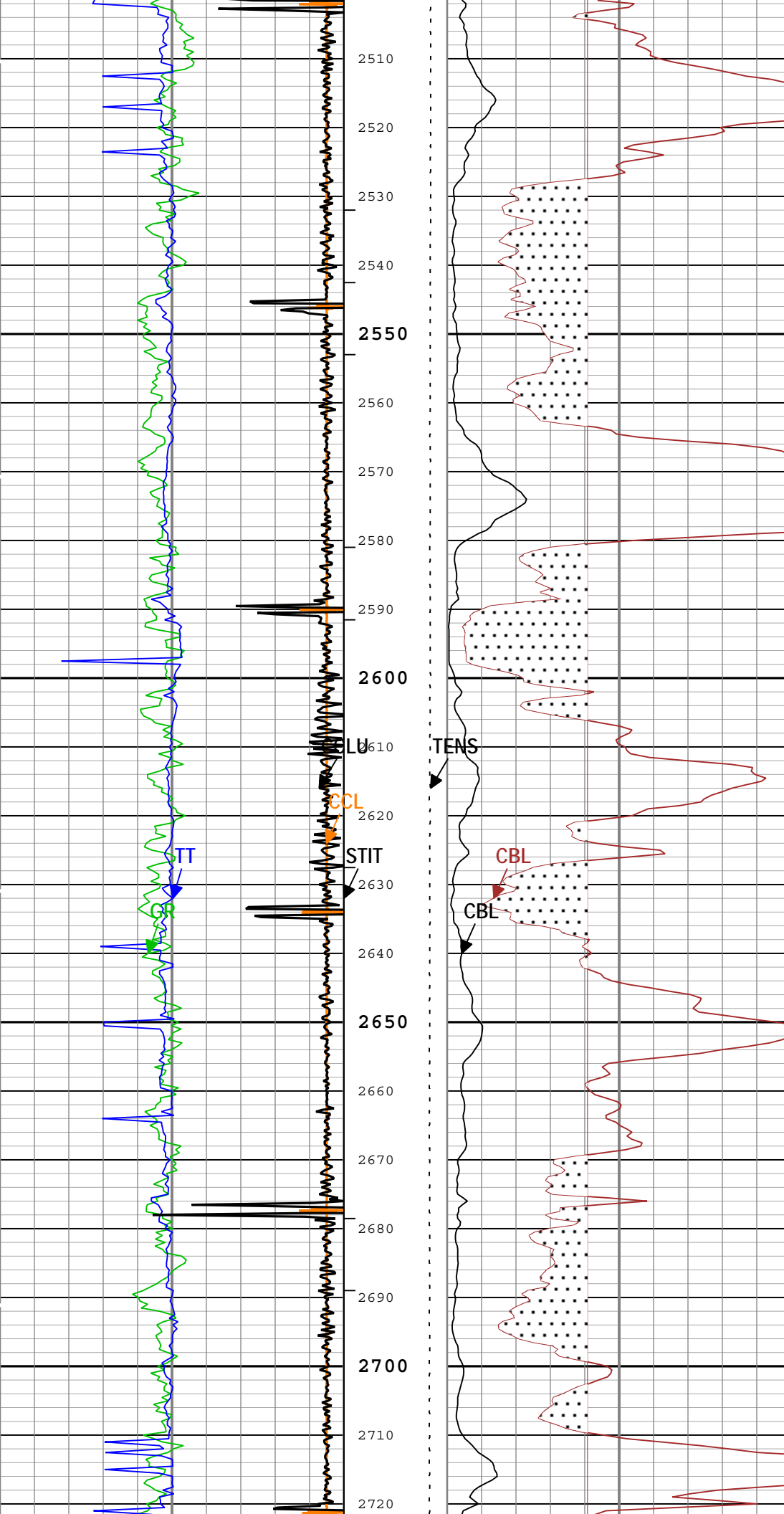


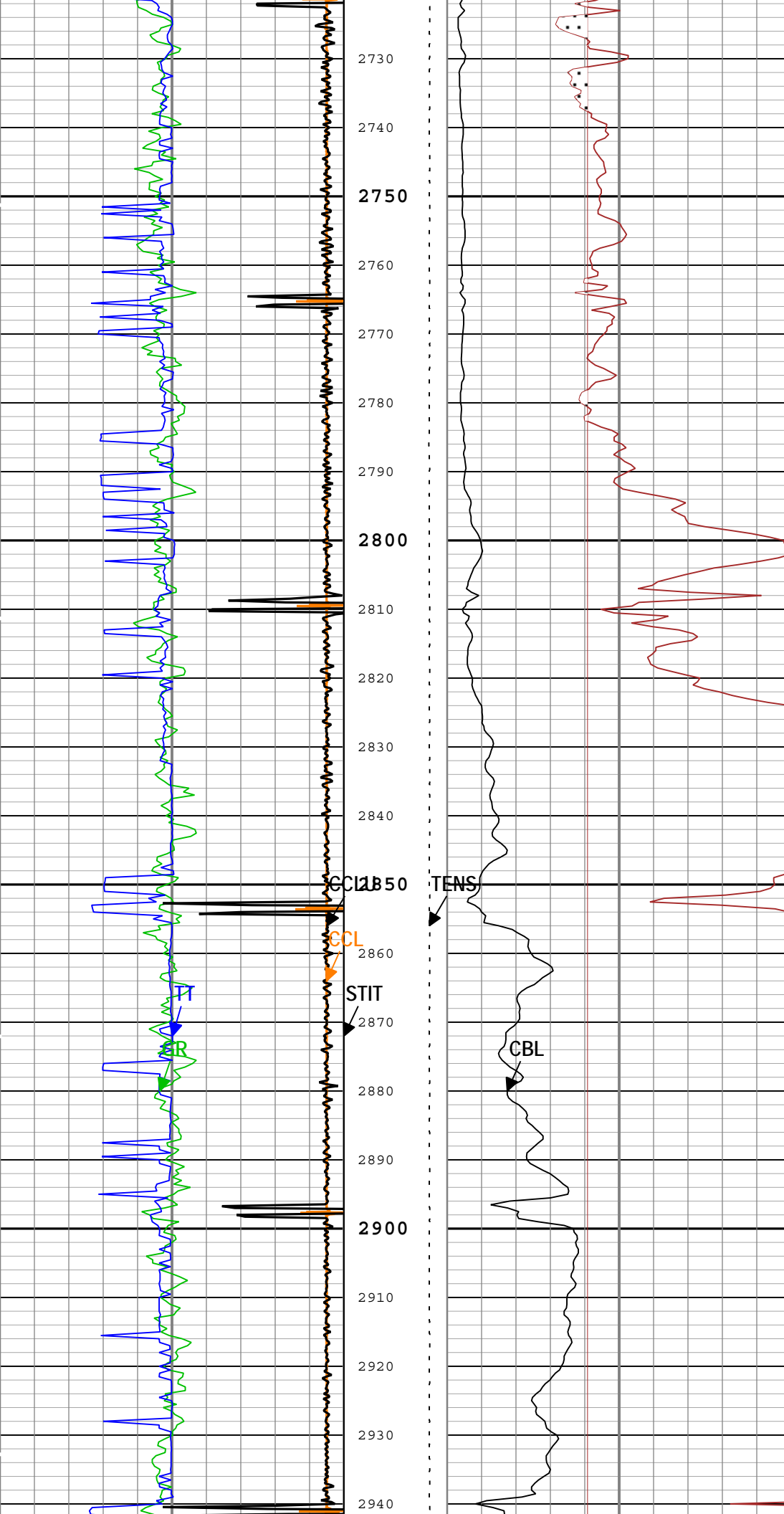


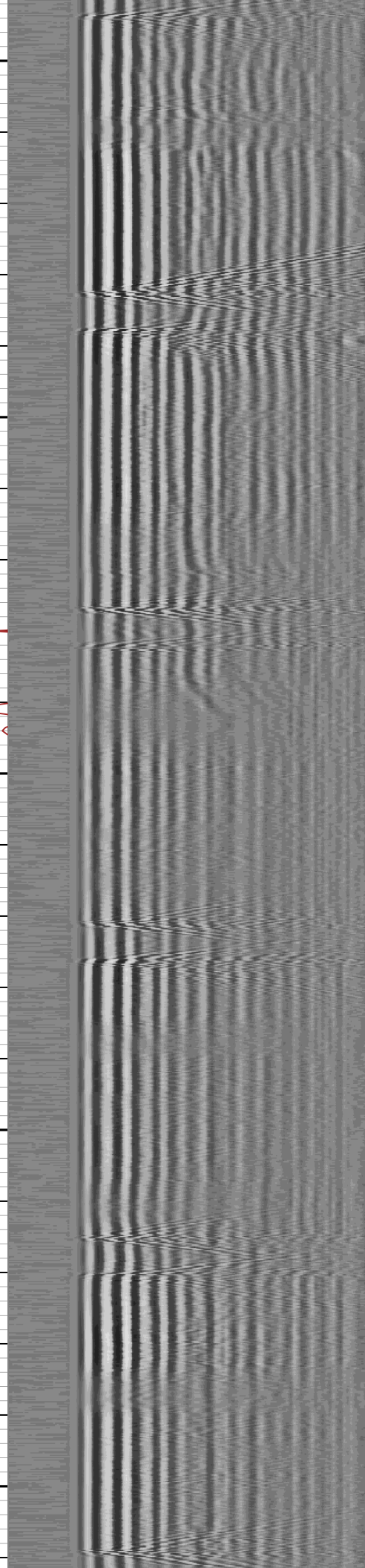
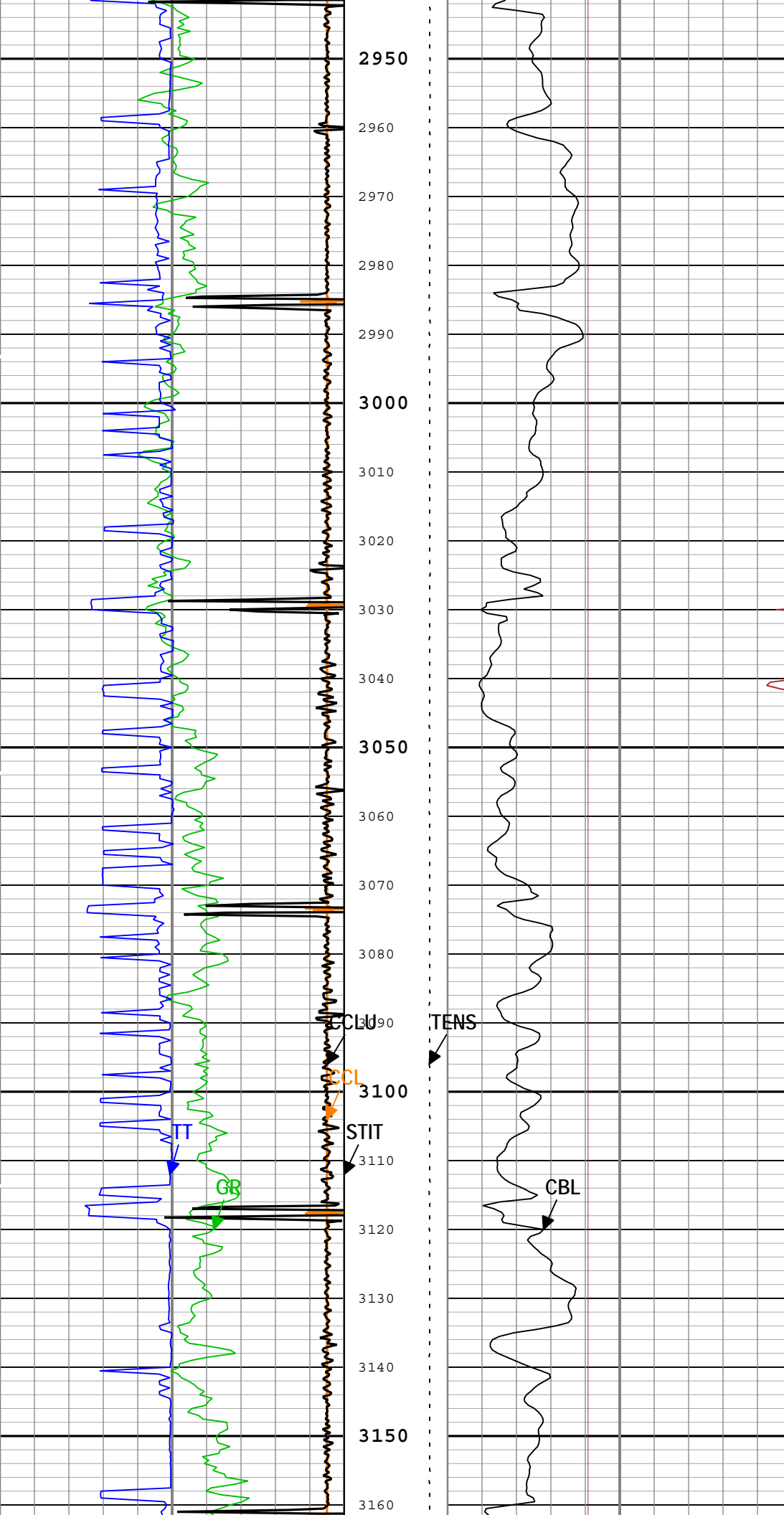


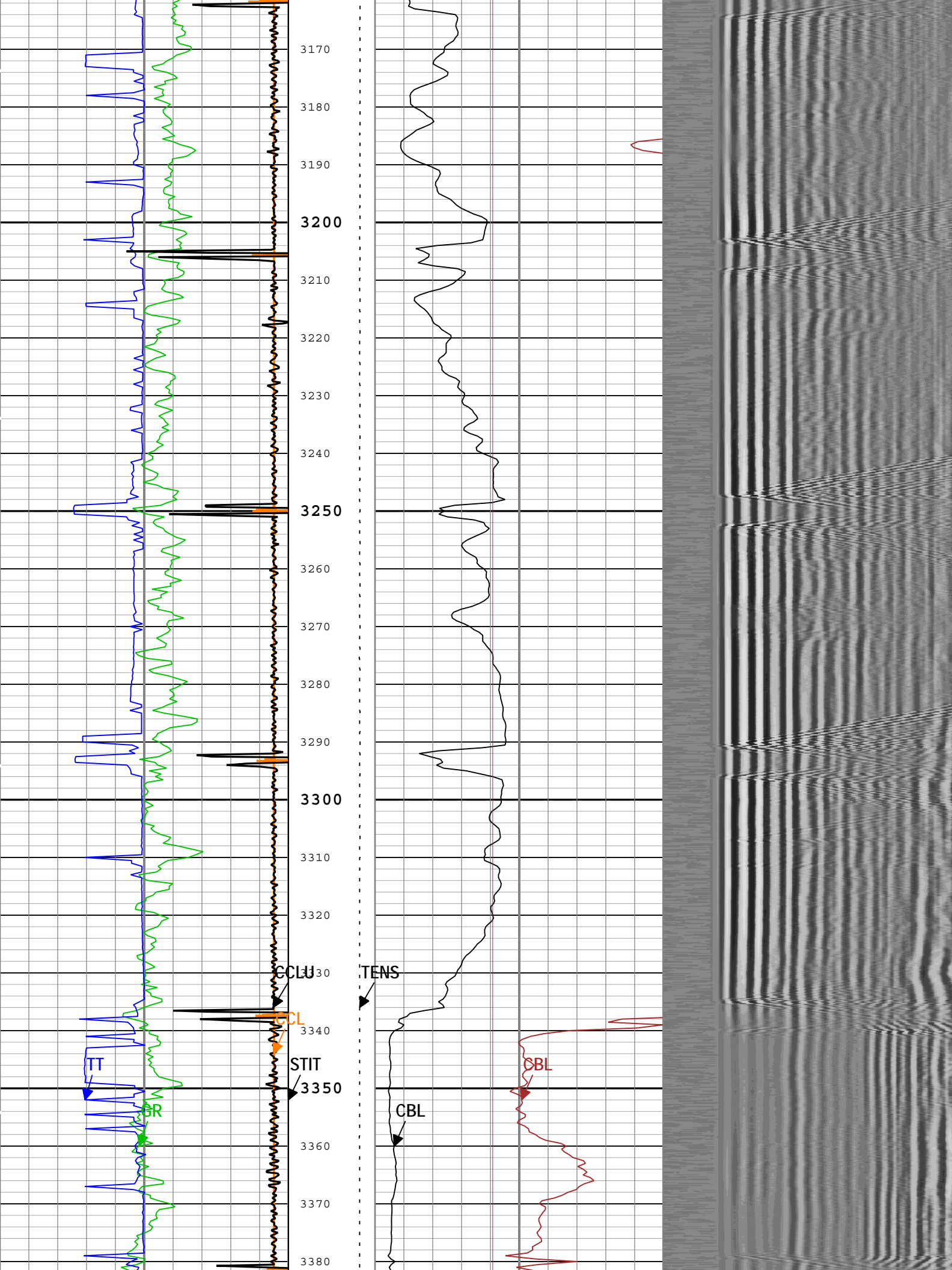


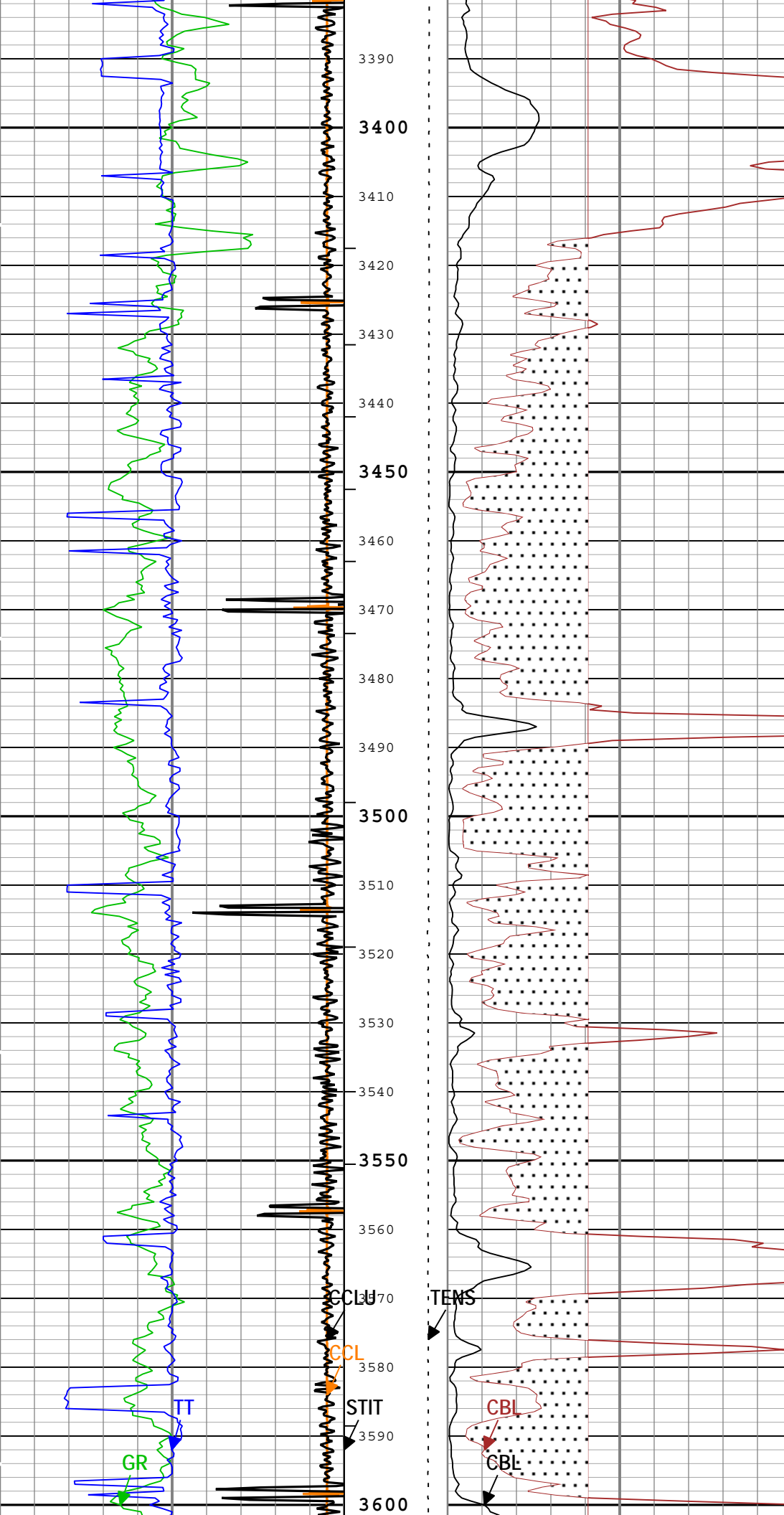


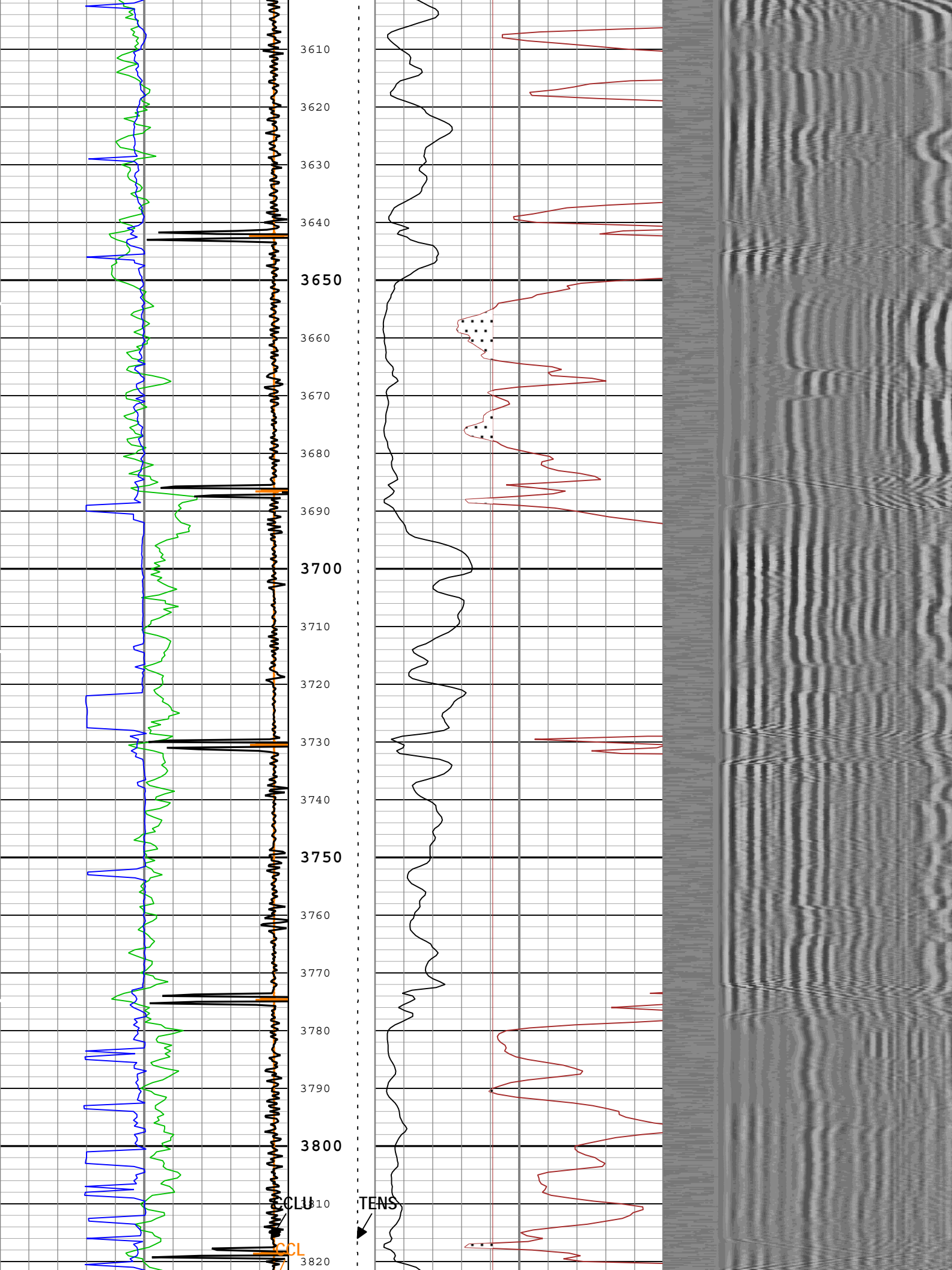


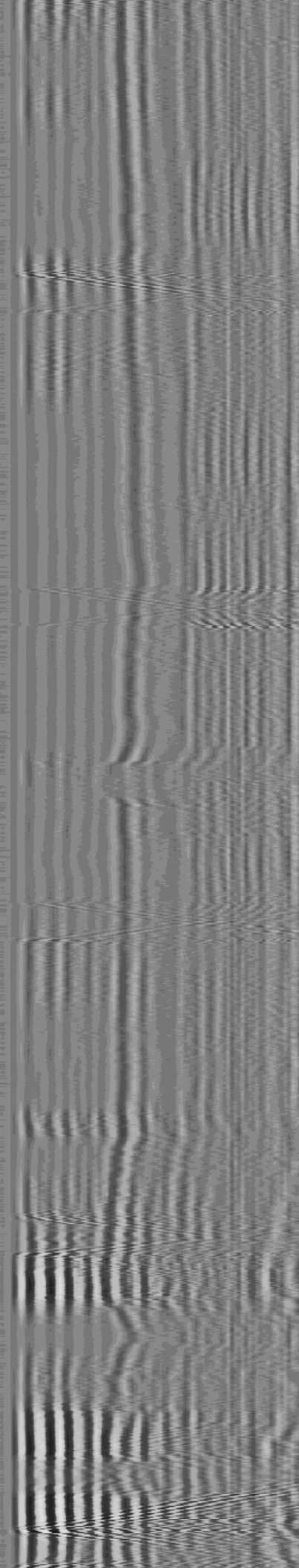
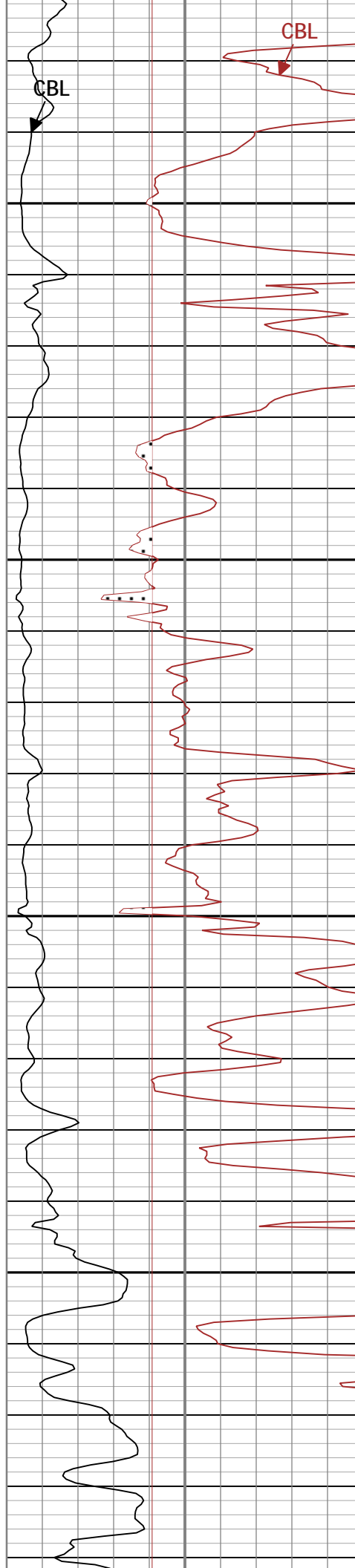
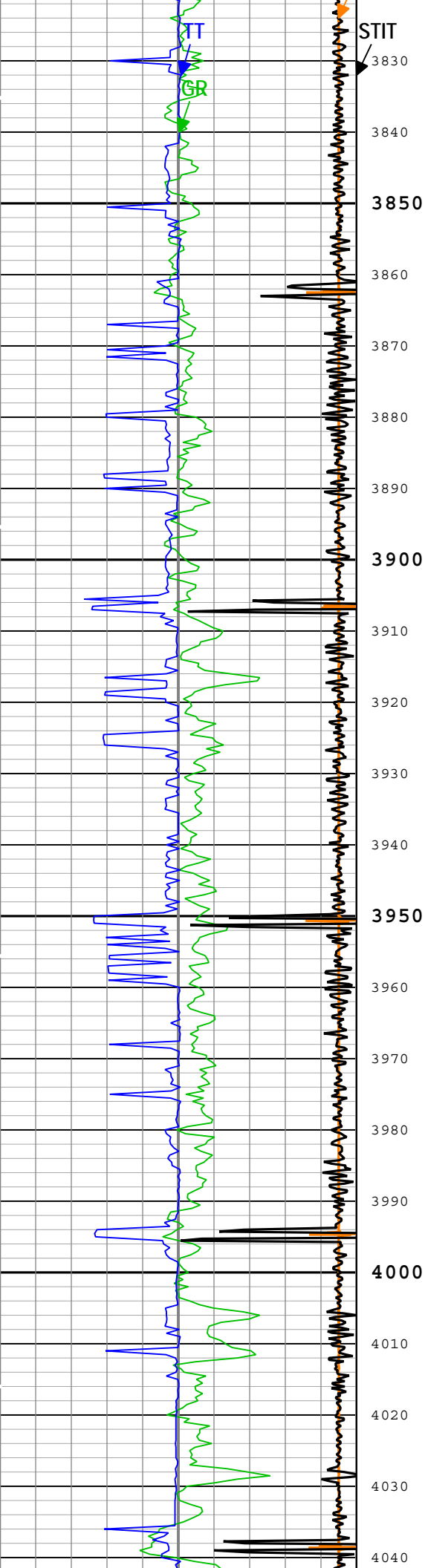


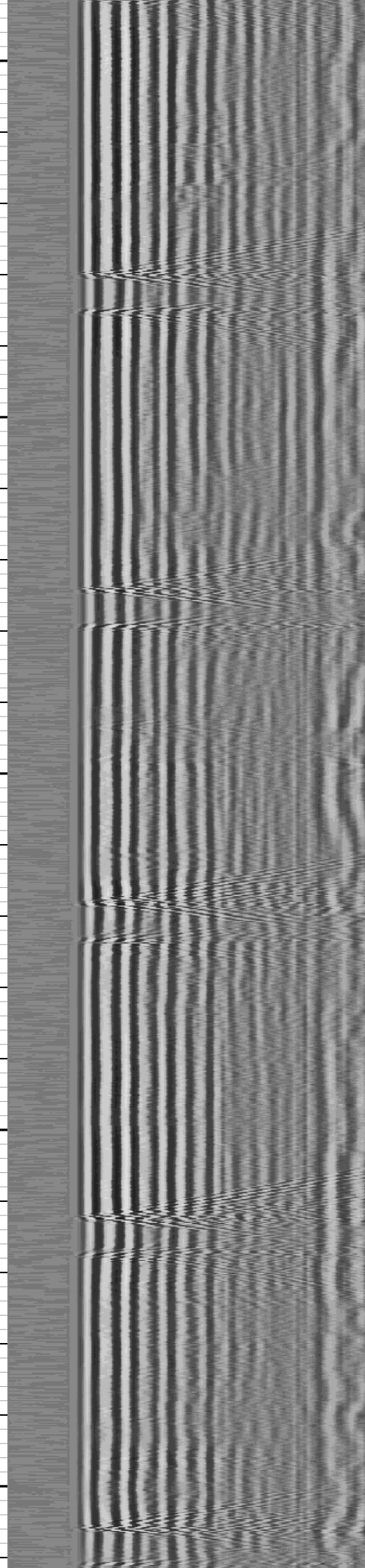
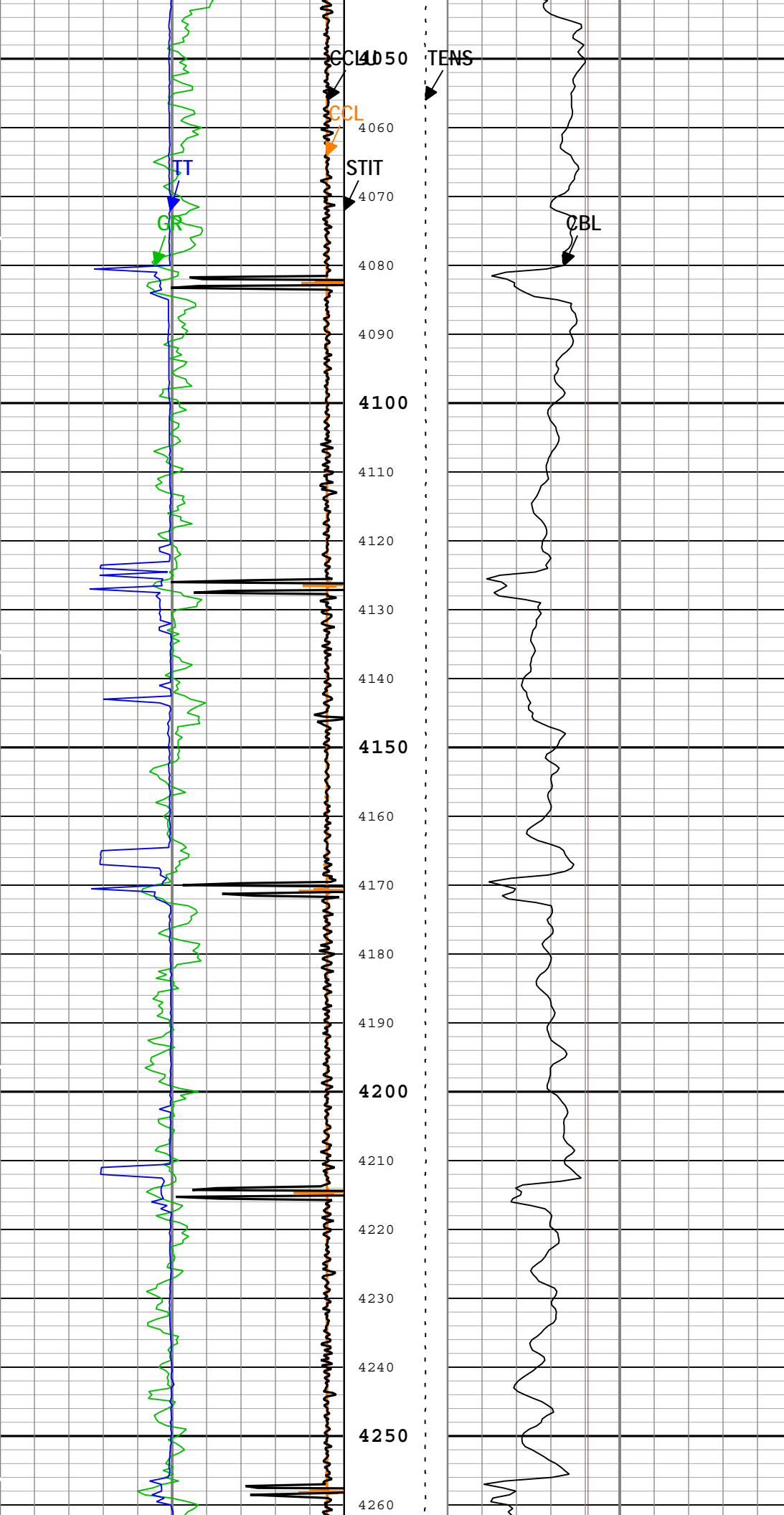


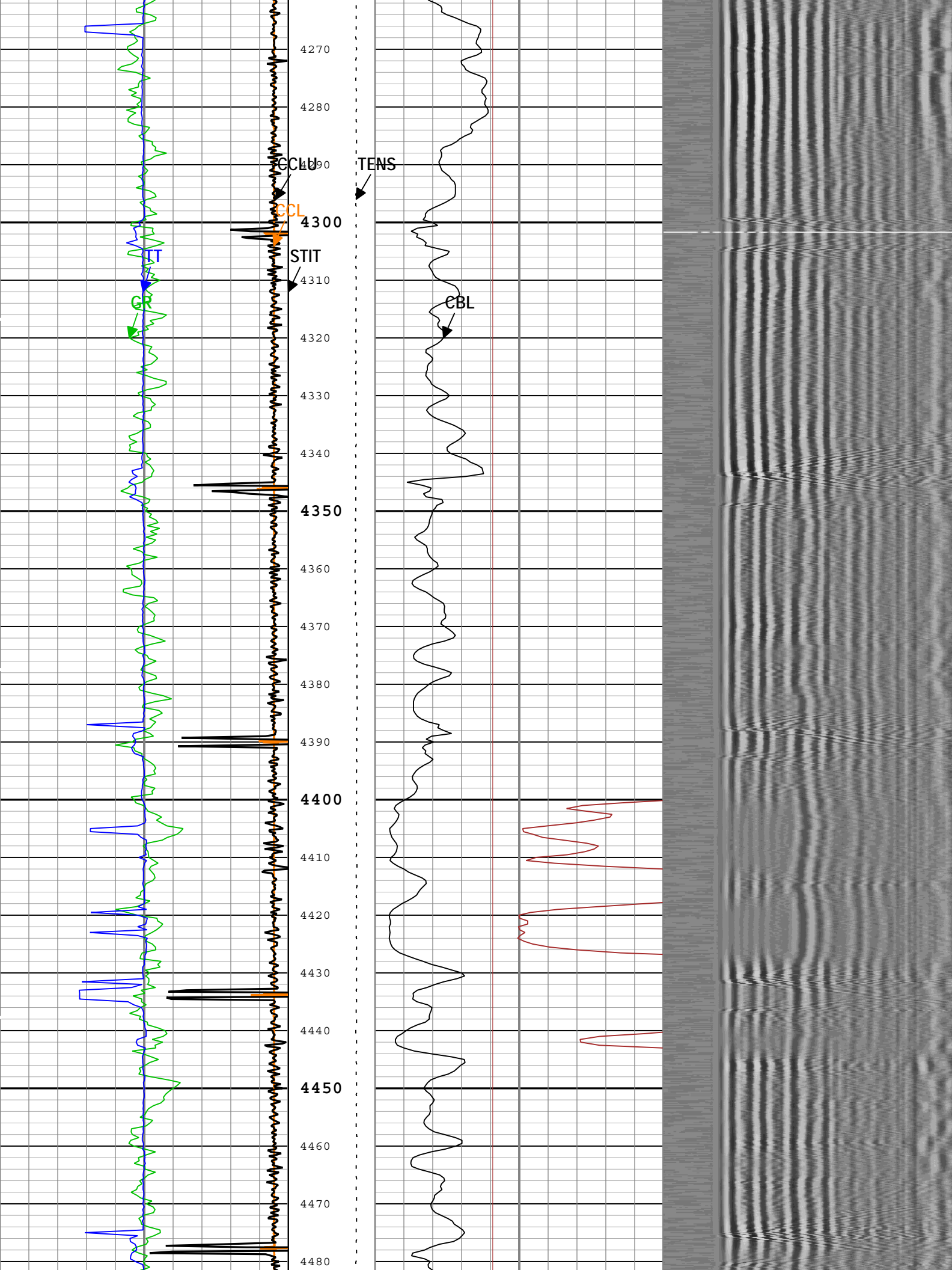


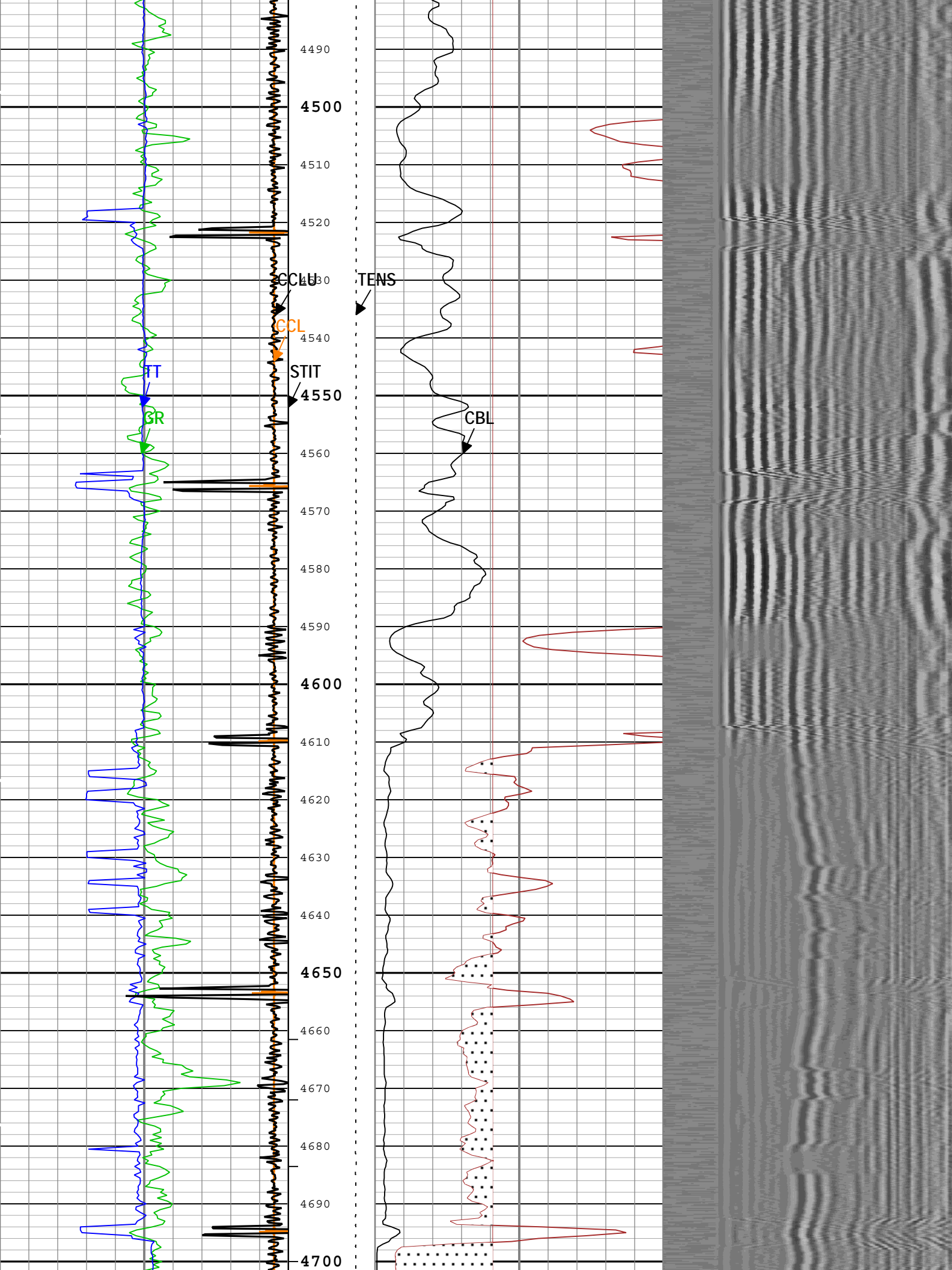


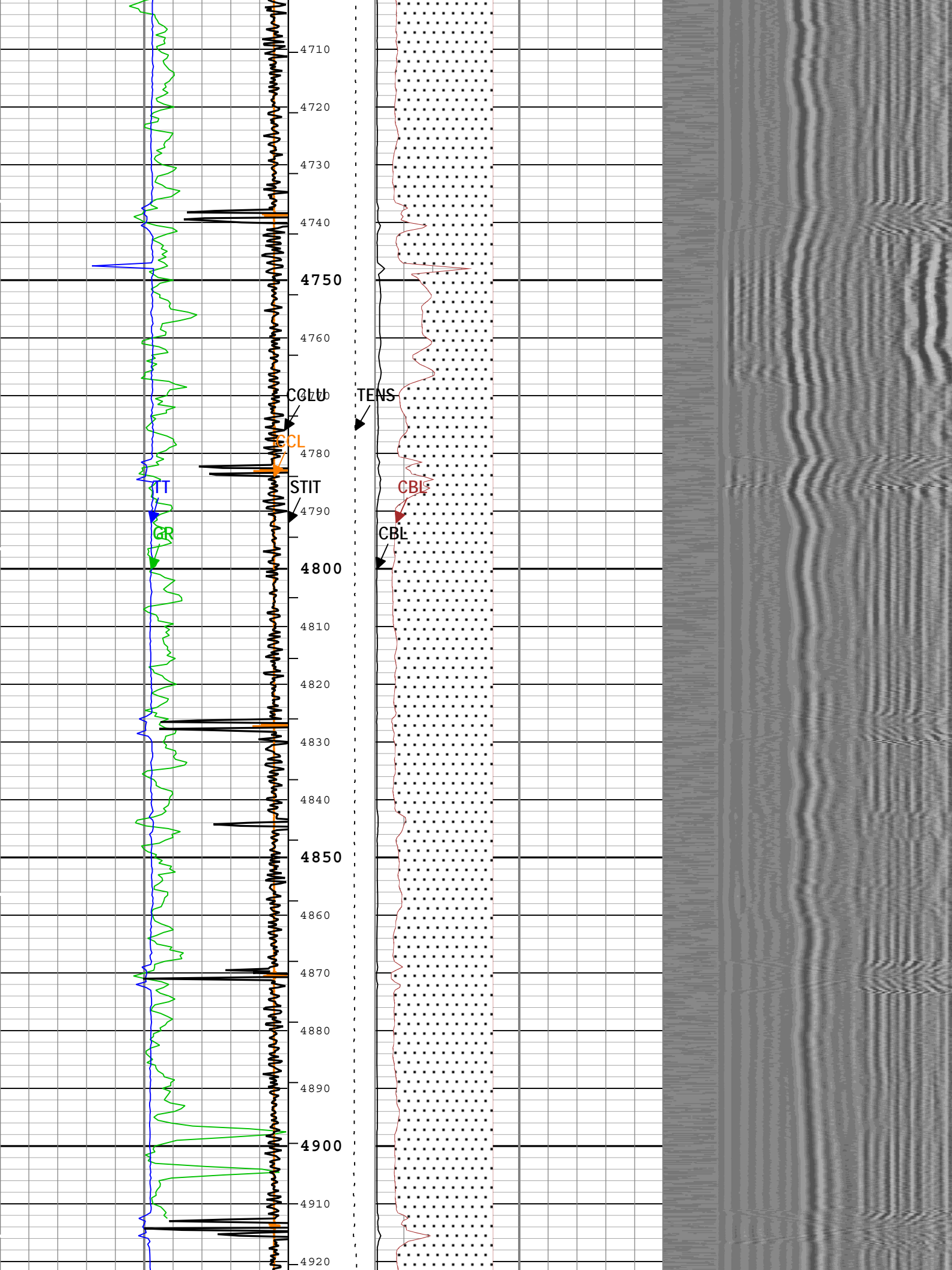


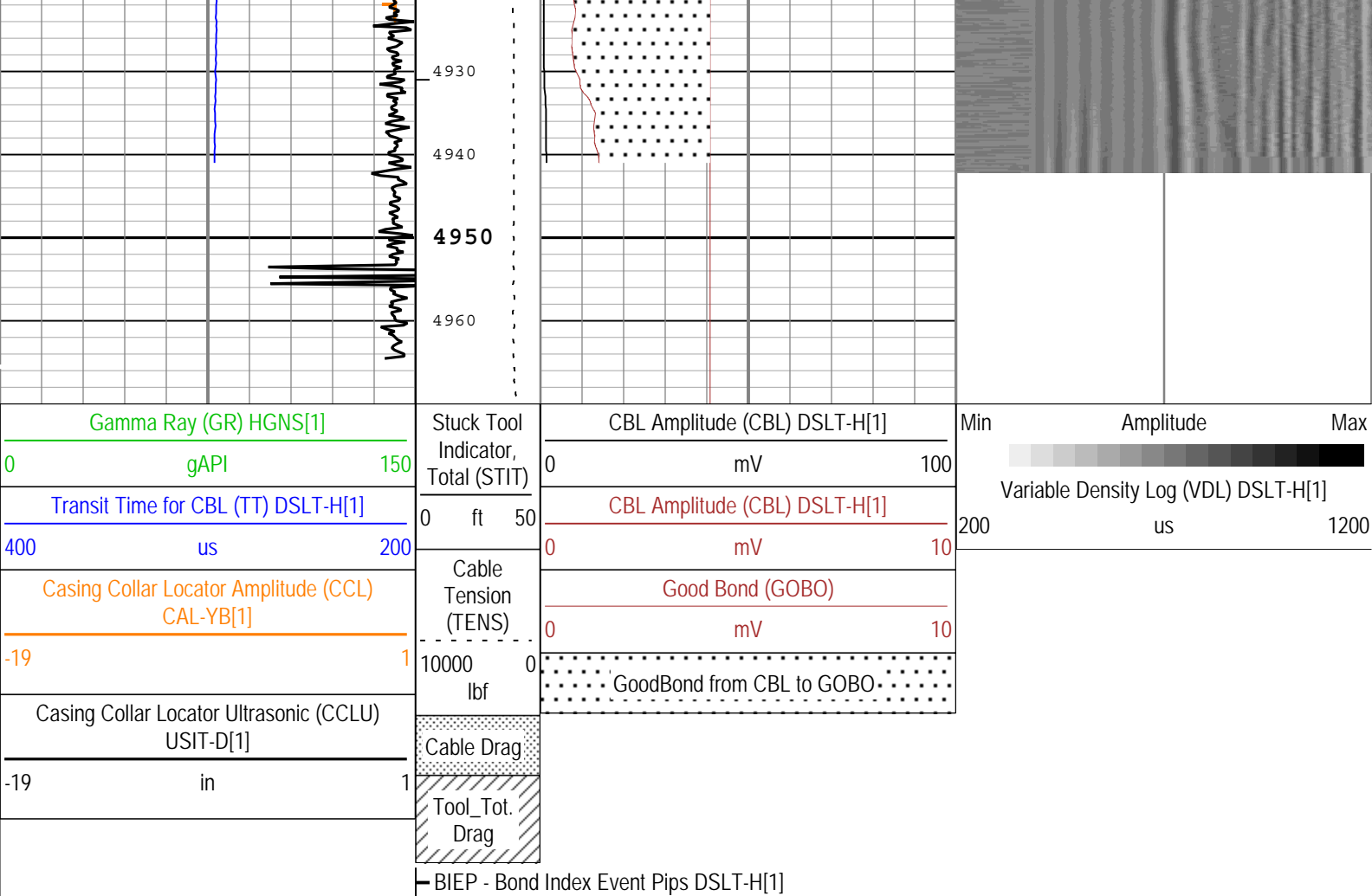












TIME_1900 - Time Marked every 60.00 (s)

Description: CBL_VDL Format: Log (Sonic CBL with VDL_1) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 11-Nov-2014 09:52:47

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	8.75	in
CBLG	CBL Gate Width	DSLTH	Time Zoned	us
CBLO	Casing Bottom (Logger)	WLSESSION	13909	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLTH	63	mV
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YB	1	
CDEN	Cement Density	HGNS-H	14.5	lbm/gal
CMTY	Cement Type	USIT-D	Light Cement	
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
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	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
IMAR	Image Rotation	USIT-D	Off	
MAHTR	Manual High Threshold Reference for first arrival detection	DSLTH	120	
MCI	Minimum Cemented Interval for Isolation	DSLTH	10	ft
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLTH	100	
MSA	Minimum Sonic Amplitude	DSLTH	2.06	mV

NMSG	Near Minimum Sliding Gate	DSLT-H	273	us
RCTH	Reference Calibrator Thickness	USIT-D	0.295	in
SGAD	Sliding Gate Status	DSLT-H	Off	
SGDT	Sliding Gate Delta-T	DSLT-H	57	us/ft
TCUB	T^3 Processing Level	USIT-D	Loop	
TD	Total Measured Depth	Borehole	4965	ft
THDH	Maximum Search Thickness (percentage of nominal)	USIT-D	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-D	70	%
UDFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-D	0	Mrayl
UFGDE	Fiberglass Density	USIT-D	16.27	lbm/gal
UFGPS	Fiberglass Processing Selection	USIT-D	No	
UFGVL	Fiberglass Velocity	USIT-D	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-D	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-D	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-D	Theoretical	
UTHDP	Thickness Detection Policy	USIT-D	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-D	51.4	us/ft
VDLG	VDL Manual Gain	DSLT-H	0.61	
ZCAS	Acoustic Impedance of Casing	USIT-D	46.25	Mrayl

ONETime Zoned Parameters

Pass Log[6]:Up

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
CBLG	45	06-Nov-2014 11:05:30	06-Nov-2014 11:09:53	4970	4804
CBLG	70	06-Nov-2014 11:09:53	06-Nov-2014 11:11:10	4804	4725
CBLG	100	06-Nov-2014 11:11:10	06-Nov-2014 12:35:02	4725	50

All depth are at tool zero.

ONE: Parameters

Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
CMTY	Cement Type	USIT-D	Light Cement	
CTHILGR	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.408	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	8.7	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FDII	FPM Data Interpolation Interval	USIT-D	0	ft
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-D	Yes	
IMAR	Image Rotation	USIT-D	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-D	25.48	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-D	1.09	
RCTH	Reference Calibrator Thickness	USIT-D	0.295	in
TCUB	T^3 Processing Level	USIT-D	Loop	
TD	Total Measured Depth	Borehole	4965	ft
THDH	Maximum Search Thickness (percentage of nominal)	USIT-D	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-D	70	%
UDFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-D	0	Mrayl
UFGDE	Fiberglass Density	USIT-D	16.27	lbm/gal

UFGPS	Fiberglass Processing Selection	USIT-D	No	
UFGVL	Fiberglass Velocity	USIT-D	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-D	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-D	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-D	FreePipe Norm.	
UTHDP	Thickness Detection Policy	USIT-D	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-D	51.4	us/ft
ZCAS	Acoustic Impedance of Casing	USIT-D	46.25	Mrayl
ZMUD	Acoustic Impedance of Mud	Borehole	Depth Zoned	Mrayl

ONEDepth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
ZMUD	1.75	0	80
ZMUD	1.74	80	110
ZMUD	1.76	110	400
ZMUD	1.77	400	1500
ZMUD	1.78	1500	2000
ZMUD	1.79	2000	4001
ZMUD	1.8	4001	4965

All depth are actual.

Tool Control Parameters

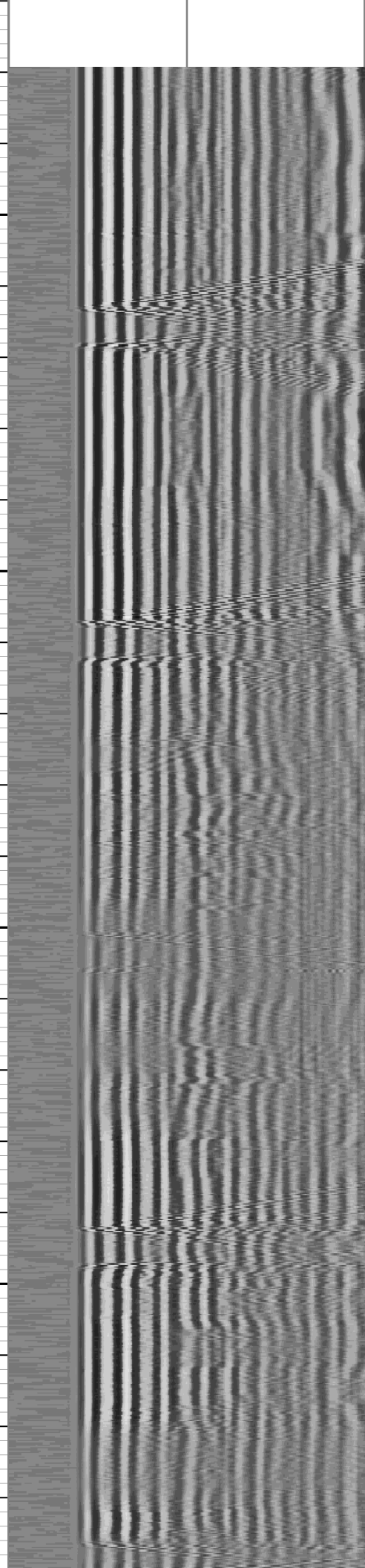
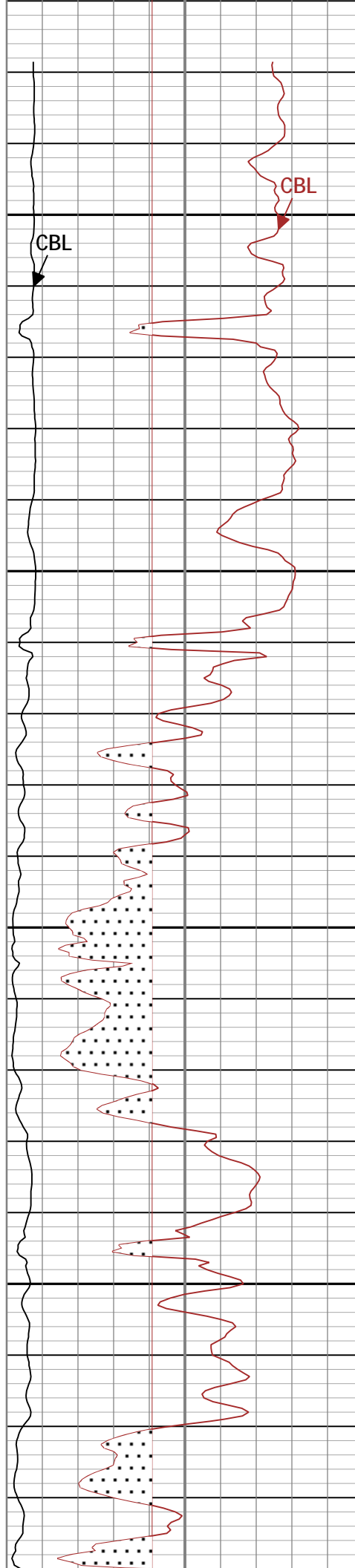
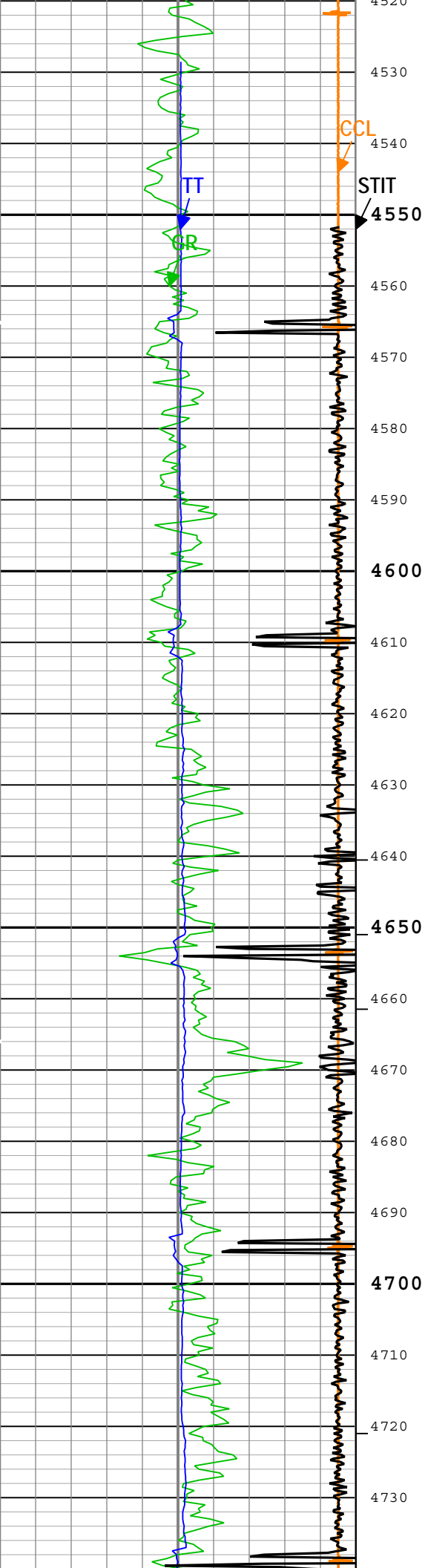
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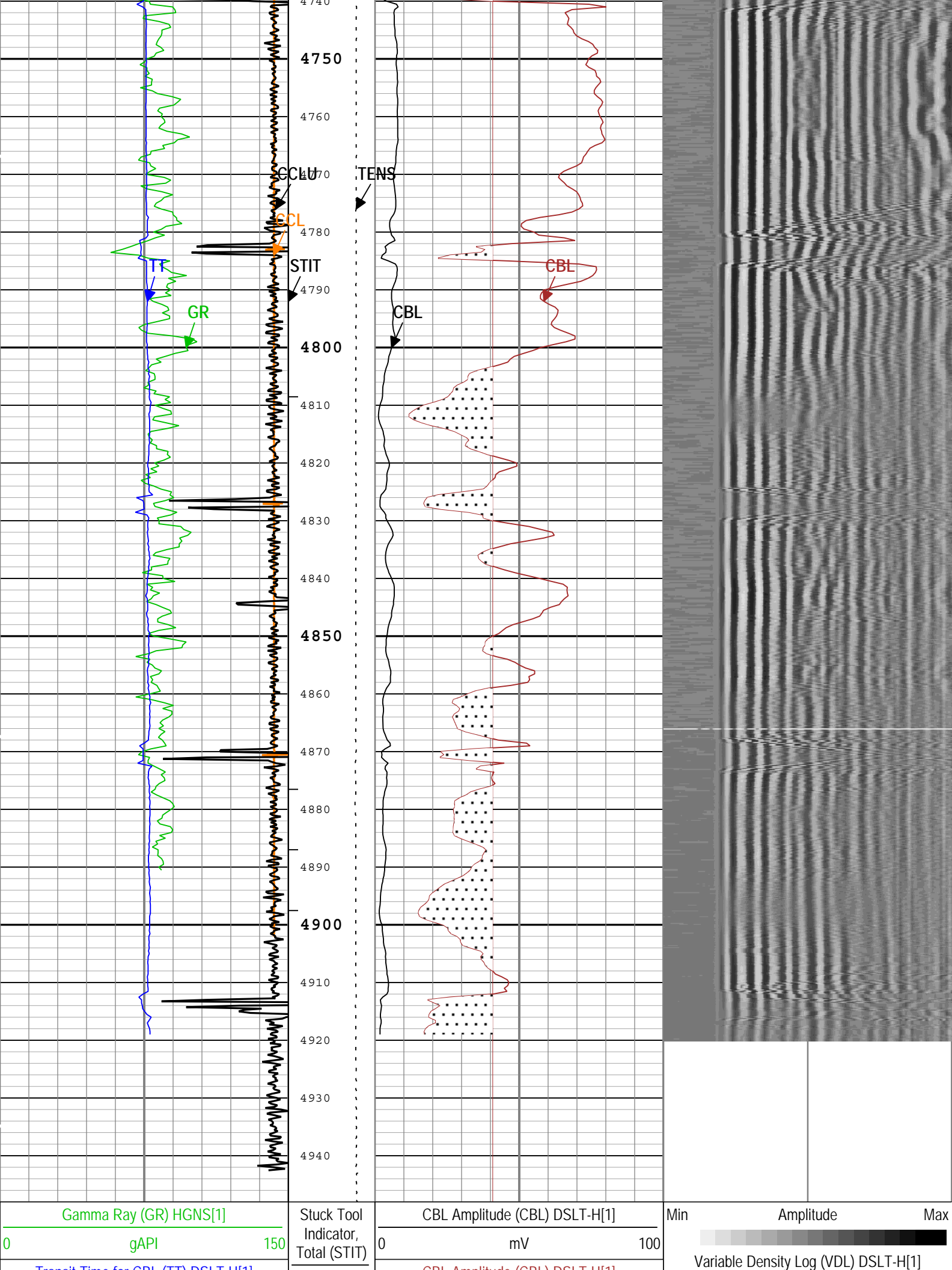
Parameter	Description	Tool	Value	Unit
DSLT_MODE	DSLT Acquisition Mode	DSLT-H	CBL	
DSLT_RATE	DSLT Firing Rate	DSLT-H	15 Hz	
DTFS	DSLT Telemetry Frame Size	DSLT-H	536	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h
ULOG	Logging Objective	USIT-D	MEASUREMENT	
UMFR	Modulation Frequency	USIT-D	333333	Hz
USI_UPAT	USIT Emission Pattern	USIT-D	Pattern 300 KHz	
USI_UWKM	USIT Working Mode	USIT-D	Uncompressed 10 deg at 3.0 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-D	4966	ft
VRES	Vertical Resolution	USIT-D	3.0 in	
WINB	Window Begin Time	USIT-D	36.82	us
WINE	Window End Time	USIT-D	76.82	us

ONE: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-D	-4	dB
AGMX	Maximum Gain of Cartridge	USIT-D	26	dB
DDT5	USIC Downhole Decimation for T5 only	USIT-D	0_NONE	
EMXV	EMEX Voltage	USIT-D	60	V
HRES	Horizontal Resolution	USIT-D	10 deg	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h
ULOG	Logging Objective	USIT-D	MEASUREMENT	
UMFR	Modulation Frequency	USIT-D	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-D	500000	Hz
USI_UPAT	USIT Emission Pattern	USIT-D	Pattern 300 KHz	
USI_UWKM	USIT Working Mode	USIT-D	Uncompressed 10 deg at 3.0 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-D	4966	ft

BIEP - Bond Index Event Pips DSLT-H[1]		
<div>Gamma Ray (GR) HGNS[1]</div> <div>0 gAPI 150</div>	<div>Stuck Tool Indicator, Total (STIT)</div> <div>0 ft 50</div>	
<div>Transit Time for CBL (TT) DSLT-H[1]</div> <div>400 us 200</div>	<div>Cable Tension (TENS)</div> <div>10000 lbf 0</div>	<div>CBL Amplitude (CBL) DSLT-H[1]</div> <div>0 mV 100</div>
<div>Casing Collar Locator Amplitude (CCL) CAL-YB[1]</div> <div>-19 1</div>		<div>CBL Amplitude (CBL) DSLT-H[1]</div> <div>0 mV 10</div>
<div>Casing Collar Locator Ultrasonic (CCLU) USIT-D[1]</div> <div>-19 in 1</div>	<div>Cable Drag</div> <div>Tool_Tot. Drag</div>	<div>Good Bond (GOBO)</div> <div>0 mV 10</div>
		<div>GoodBond from CBL to GOBO</div> <div>200 us 1200</div>





Transit Time for CBL (T) DSLT-H[1]	0	ft	50	CBL Amplitude (CBL) DSLT-H[1]	200	us	1200
400	us	200		0	mV	10	
Casing Collar Locator Amplitude (CCL) CAL-YB[1]			Cable Tension (TENS)	Good Bond (GOBO)			
-19	1	10000	0	0	mV	10	
Casing Collar Locator Ultrasonic (CCLU) USIT-D[1]			lbf	GoodBond from CBL to GOBO			
-19	in	1	Cable Drag				
			Tool_Tot. Drag				
			BIEP - Bond Index Event Pips DSLT-H[1]				

TIME_1900 - Time Marked every 60.00 (s)

Description: CBL_VDL Format: Log (Sonic CBL with VDL_1) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 11-Nov-2014 09:52:53

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	8.75	in
CBLG	CBL Gate Width	DSLT-H	45	us
CBLO	Casing Bottom (Logger)	WLSESSION	13909	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	63	mV
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YB	1	
CDEN	Cement Density	HGNS-H	14.5	lbm/gal
CMTY	Cement Type	USIT-D	Light Cement	
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
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	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
IMAR	Image Rotation	USIT-D	Off	
MAHTR	Manual High Threshold Reference for first arrival detection	DSLT-H	120	
MCI	Minimum Cemented Interval for Isolation	DSLT-H	10	ft
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	2.06	mV
NMSG	Near Minimum Sliding Gate	DSLT-H	273	us
RCTH	Reference Calibrator Thickness	USIT-D	0.295	in
SGAD	Sliding Gate Status	DSLT-H	Off	
SGDT	Sliding Gate Delta-T	DSLT-H	57	us/ft
TCUB	T^3 Processing Level	USIT-D	Loop	
TD	Total Measured Depth	Borehole	4965	ft
THDH	Maximum Search Thickness (percentage of nominal)	USIT-D	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-D	70	%
UDFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-D	0	Mrayl
UFGDE	Fiberglass Density	USIT-D	16.27	lbm/gal
UFGPS	Fiberglass Processing Selection	USIT-D	No	
UFGVL	Fiberglass Velocity	USIT-D	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-D	0_OFF	
USI_LEVEL_SEL	USI Fluid Velocity Selection	USIT-D	Automatic	

USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-D	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-D	Theoretical	
UTHDP	Thickness Detection Policy	USIT-D	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-D	51.4	us/ft
VDLG	VDL Manual Gain	DSLT-H	0.61	
ZCAS	Acoustic Impedance of Casing	USIT-D	46.25	Mrayl

ONE: Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
CMTY	Cement Type	USIT-D	Light Cement	
CTHILGR	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.408	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	8.7	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FDII	FPM Data Interpolation Interval	USIT-D	0	ft
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-D	Yes	
IMAR	Image Rotation	USIT-D	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-D	25.48	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-D	1.09	
RCTH	Reference Calibrator Thickness	USIT-D	0.295	in
TCUB	T^3 Processing Level	USIT-D	Loop	
TD	Total Measured Depth	Borehole	4965	ft
THDH	Maximum Search Thickness (percentage of nominal)	USIT-D	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-D	70	%
UDFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-D	0	Mrayl
UFGDE	Fiberglass Density	USIT-D	16.27	lbm/gal
UFGPS	Fiberglass Processing Selection	USIT-D	No	
UFGVL	Fiberglass Velocity	USIT-D	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-D	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-D	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-D	FreePipe Norm.	
UTHDP	Thickness Detection Policy	USIT-D	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-D	51.4	us/ft
ZCAS	Acoustic Impedance of Casing	USIT-D	46.25	Mrayl
ZMUD	Acoustic Impedance of Mud	Borehole	1.8	Mrayl

Tool Control Parameters				
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ONE: Parameters				
Parameter	Description	Tool	Value	Unit
DSLT_MODE	DSLT Acquisition Mode	DSLT-H	CBL	
DSLT_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
ULOG	Logging Objective	USIT-D	MEASUREMENT	
UMFR	Modulation Frequency	USIT-D	333333	Hz
USI_UPAT	USIT Emission Pattern	USIT-D	Pattern 300 KHz	
USI_UWKM	USIT Working Mode	USIT-D	Uncompressed 10 deg at 3.0 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-D	4945	ft

VRES	Vertical Resolution	USIT-D	3.0 in	
WINB	Window Begin Time	USIT-D	36.82	us
WINE	Window End Time	USIT-D	76.82	us

ONE: Parameters				
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-D	-4	dB
AGMX	Maximum Gain of Cartridge	USIT-D	26	dB
DDT5	USIC Downhole Decimation for T5 only	USIT-D	0_NONE	
EMXV	EMEX Voltage	USIT-D	60	V
HRES	Horizontal Resolution	USIT-D	10 deg	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h
ULOG	Logging Objective	USIT-D	MEASUREMENT	
UMFR	Modulation Frequency	USIT-D	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-D	500000	Hz
USI_UPAT	USIT Emission Pattern	USIT-D	Pattern 300 KHz	
USI_UWKM	USIT Working Mode	USIT-D	Uncompressed 10 deg at 3.0 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-D	4945	ft
VRES	Vertical Resolution	USIT-D	3.0 in	
WINB	Window Begin Time	USIT-D	36.82	us
WINE	Window End Time	USIT-D	76.82	us

Calibration Report				
HGNS-H (HILT Gamma-Ray and Neutron Sonde, 150 degC) Calibration - Run ONE				
Primary Equipment :				
	HILT Gamma-Ray and Neutron Sonde, 150 degC	HGNS-H		
Auxiliary Equipment :				
	HGNS Accelerometer, 150 degC	HACCZ-H	6305	
	AmBe Neutron Logging Source	NSR-F	5069	
Calibration Parameter :				
	Water Temperature			
	Housing Size			
	JIG-BKG (Jig minus background reference)	165		

HGNS Accelerometer Calibration - Accelerometer Accumulations							
Before (Measured):		08:28:13 06-Nov-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	ft/s2	Before	32.2	31.5	32.1	32.8	

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read							
Master (EEPROM):		00:00:00 15-Feb-2007					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Accelerometer Manufacturer		Master			QAT_160		
Accelerometer Reference Temperature	degF	Master		30.2	77.0	122.0	
Accelerometer Coefficients - 0		Master	----	----	-1557.100	----	
Accelerometer Coefficients - 1		Master	----	----	29.260	----	
Accelerometer Coefficients - 2		Master	----	----	-0.015	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	2.740	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	298.600	----	
Accelerometer Coefficients - 9		Master	----	----	1.000	----	

HGNS Neutron Calibration - HGNS Neutron Accumulations							
Master (EEPROM):		15-10-10 00:00 2014					

Master (EEPROM):		15:40:16 22-Oct-2014		Before (Measured):		08:24:30 06-Nov-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	25.7	40.0	
		Before	0	5.0	25.4	40.0	
		Before-Master	----	-3.9	-0.3	3.9	
Far Zero Measurement	1/s	Master	0	5.0	25.3	40.0	
		Before	0	5.0	26.9	40.0	
		Before-Master	----	-3.8	1.6	3.8	
Near Plus Measurement	1/s	Master	6031.0	4700.0	4913.0	6900.0	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Far Plus Measurement	1/s	Master	2793.0	1900.0	2059.0	2900.0	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Near Corrected Plus Measurement	1/s	Master		4700.0	4841.0	6900.0	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Far Corrected Plus Measurement	1/s	Master		1900.0	2000.0	2900.0	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured):		08:51:46 06-Nov-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	88.4	120.0	
RGR Plus Measurement	gAPI	Before	185.4	157.1	166.8	206.3	
GR Calibration Gain		Before	0.89	0.80	0.99	1.05	

HGNS-H (HILT Gamma-Ray and Neutron Sonde, 150 degC) Calibration - Run ONE

Primary Equipment :			
HILT Gamma-Ray and Neutron Sonde, 150 degC		HGNS-H	
Auxiliary Equipment :			
HGNS Accelerometer, 150 degC		HACCZ-H	6305
AmBe Neutron Logging Source		NSR-F	5069
Calibration Parameter :			
Water Temperature			
Housing Size			
JIG-BKG (Jig minus background reference)		165	

HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured):		08:28:12 06-Nov-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	ft/s2	Before	32.2	31.5	32.1	32.8	

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM):		00:00:00 15-Feb-2007					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Accelerometer Manufacturer		Master			QAT_160		
Accelerometer Reference Temperature	degF	Master		30.2	77.0	122.0	
Accelerometer Coefficients - 0		Master	----	----	-1557.100	----	
Accelerometer Coefficients - 1		Master	----	----	29.260	----	
Accelerometer Coefficients - 2		Master	----	----	-0.015	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	2.740	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	298.600	----	
Accelerometer Coefficients - 9		Master	----	----	1.000	----	

HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM):		15:40:16 22-Oct-2014		Before (Measured):		08:24:30 06-Nov-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	25.7	40.0	

Measurement	Resolution	Before	0	5.0	25.4	40.0	
Far Zero Measurement	1/s	Before-Master	-----	-3.9	-0.3	3.9	
		Master	0	5.0	25.3	40.0	
		Before	0	5.0	26.9	40.0	
		Before-Master	-----	-3.8	1.6	3.8	
Near Plus Measurement	1/s	Master	6031.0	4700.0	4913.0	6900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
		Master	2793.0	1900.0	2059.0	2900.0	
Far Plus Measurement	1/s	Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
		Master		4700.0	4841.0	6900.0	
		Before	-----	-----	-----	-----	
Near Corrected Plus Measurement	1/s	Before-Master	-----	-----	-----	-----	
		Master		1900.0	2000.0	2900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
Far Corrected Plus Measurement	1/s	Master					
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
		Master					

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
RGR Zero Measurement - 0	gAPI	Before	----	----	----	----		
RGR Plus Measurement	gAPI	Before			NOT DONE			
GR Calibration Gain		Before			NOT DONE			

Company:	Whiting Oil & Gas Corp	Schlumberger
Well:	Razor 21B-909A	
Field:	Wildcat	
County:	Weld	
State:	Colorado	
Cement Bond Log		
GR-CCL-CBL-VDL		