

Company: Occidental Petroleum Inc

Well: Warner 11-18

Field: Wattenberg

County: Weld State: Colorado

**Cement Bond Log**  
**Variable Density Log**  
**Gamma Ray - CCL**

Location:	NESW Sec 9, T2N, R65W	Elev.:	K.B.	5018.00 ft
	SHL: 2180' FSL X 1800' FWL		G.L.	5002.00 ft
			D.F.	5017.00 ft
Permanent Datum:		Ground Level		5002.00 f
Log Measured From:		Kelly Bushing	16.00 ft	above Perm.Datum
Drilling Measured From:		Kelly Bushing		
API Serial No.	05-123-21995-00	Section:	18	Township: 2N Range: 65W

Logging Date	25-Feb-2022
Run Number	One
Depth Driller	8052.00 ft
Schlumberger Depth	8052.00 ft
Bottom Log Interval	7000.00 ft
Top Log Interval	50.00 ft
Casing Fluid Type	Water
Salinity	
Density	9 lbn/gal
Fluid Level	8.00 ft
BIT/CASING/TUBING STRING	
Bit Size	7.88 in
From	944.00 ft
To	8052.00 ft
Casing/Tubing Size	4.5 in
Weight	11.6 lbn/ft
Grade	N80
From	0.00 ft
To	8026.00 ft
Max Recorded Temperatures	160 degF
Logger on Bottom	25-Feb-2022
Time	11:52:00
Unit Number	9115
Location:	Ft. Morgan
Recorded By	Ruobing Wu
Witnessed By	Ray Bishop

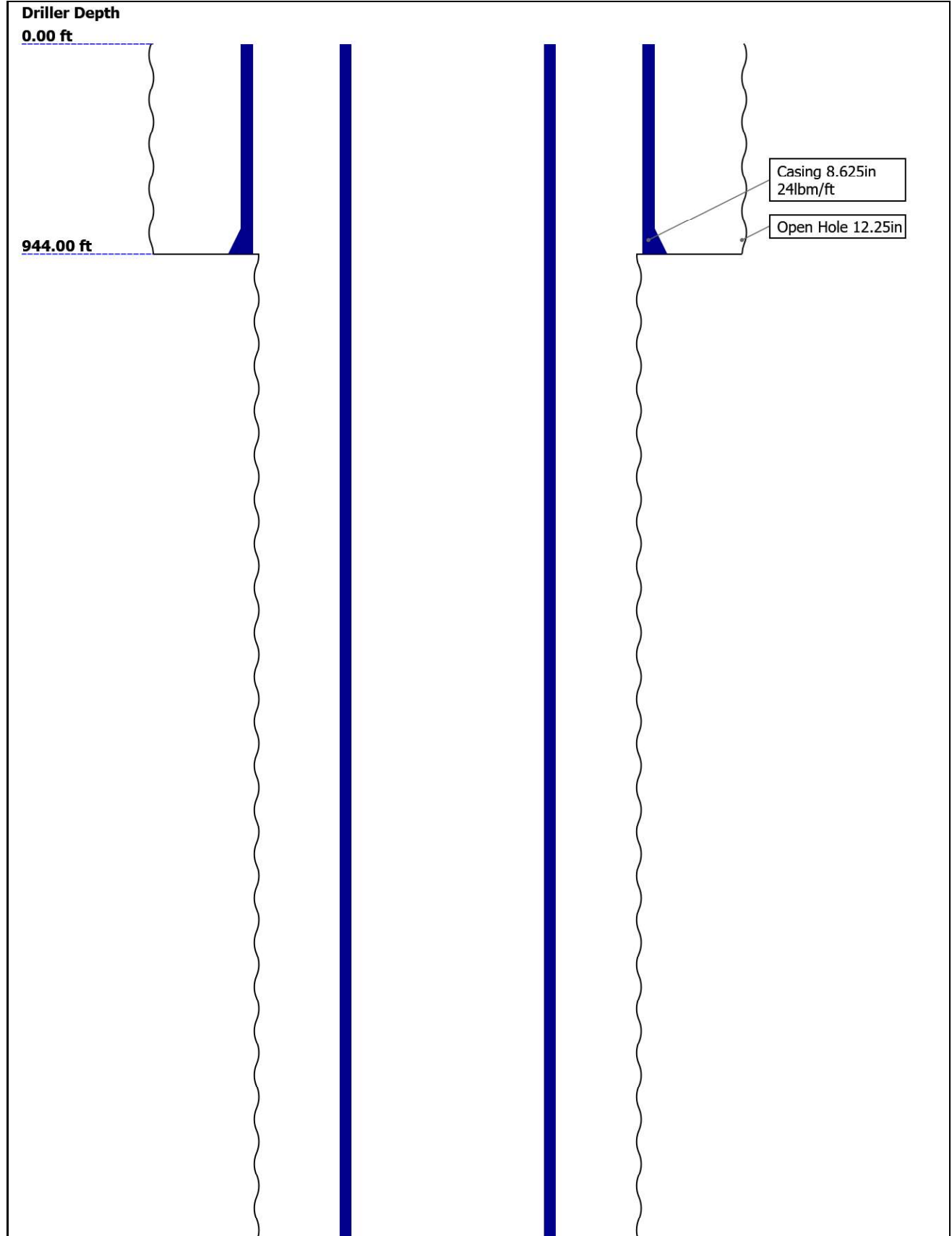
## Disclaimer

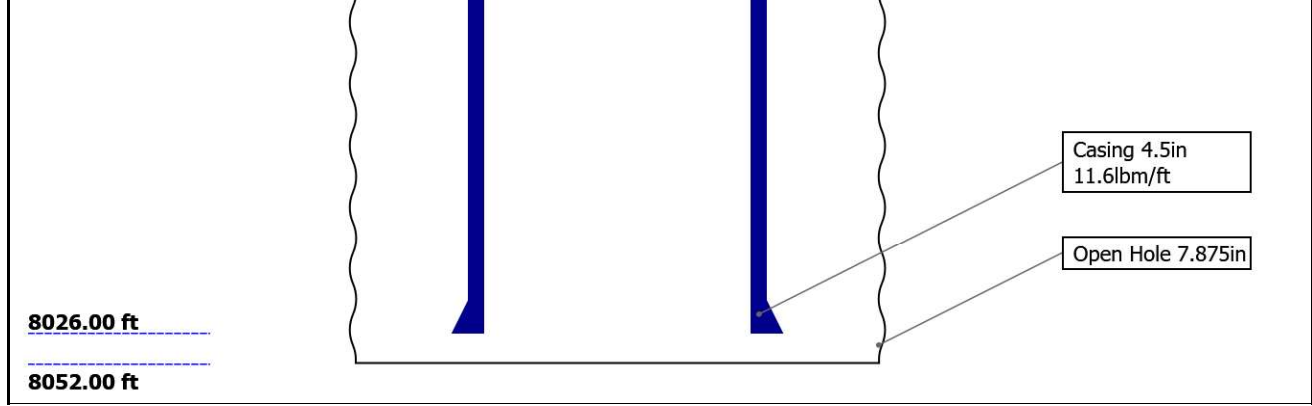
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# Well Sketch





## Borehole Size/Casing/Tubing Record

Bit					
Bit Size ( in )	12.25	7.875			
Top Driller ( ft )	0	944			
Top Logger ( ft )	0	944			
Bottom Driller ( ft )	944	8052			
Bottom Logger ( ft )	944	8052			
Casing					
Size ( in )	8.625	4.5			
Weight ( lbm/ft )	24	11.6			
Inner Diameter ( in )	8.097	4			
Grade	N/A	N80			
Top Driller ( ft )	0	0			
Top Logger ( ft )	0	0			
Bottom Driller ( ft )	944	8026			
Bottom Logger ( ft )	944	8026			

## Remarks and Equipment Summary

### One: Toolstring

### One: Remarks

Equip name length  
LEH-QT 49.07  
LEH-QT

MP name Offset



EDTC-B: 45.58  
8412  
EDTH-B  
EDTG-A  
EDTC-B:  
8412

CTEM 42.08  
ACCZ 0.00  
HV 0.00  
Gamma Ray 40.21  
TelStar 39.08  
tus

ASLT-B: 39.08  
8073  
ASLT-BB  
:8073

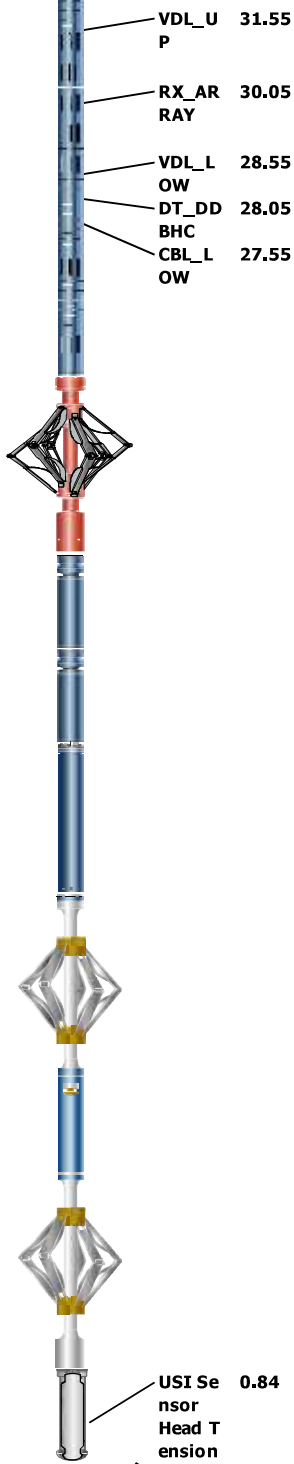
CBL\_U 32.55  
P

Log recorded in 10 Deg, 6 in Resolution; ASLT ran in attenuation mode

Log recorded without surface induced pressure from TD to 500ft, 500 psi from 500ft

Tool was run as per tool sketch

All logging intervals as per client request



Lengths are in ft  
 Maximum Outer Diameter = 3.800 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	6611
Calibration Date	07-Jun-2021
Calibrator Serial Number	57
Calibration Cable Type	7-39PIXXS
Wheel Correction 1	-8
Wheel Correction 2	-8

### Tension Device

Type	CMTD-B/A		
Serial Number			
Calibration Date	07-Feb-2022		
Calibrator Serial Number			
Number of Calibration Points	0		

<b>Logging Cable</b>			
Type	7-39PI-XXS		
Serial Number	1234		
Length	28000.00 ft		
Conveyance Type	Wireline		
Rig Type			

<b>One:Depth Control Parameters</b>		<b>Depth Control Remarks</b>
Log Sequence	First Log In the Well	Schlumberger depth control procedures followed
Rig Up Length At Surface		IDW used as primary depth control system
Rig Up Length At Bottom		Z-Chart used as secondary depth control system
Rig Up Length Correction		
Stretch Correction		
Tool Zero Check At Surface		

## Main Pass

### Software Version

<b>Acquisition System</b>	<b>Version</b>
Maxwell 2022.0	12.0.215014.3100
Application Patch	Wireline_Hotfix-Mandatory-2022.0_12.0.216515

### Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[6]:Up	Up	217.58 ft	7009.18 ft	25-Feb-2022 11:52:44 AM	25-Feb-2022 1:59:09 PM	ON	6.34 ft	Yes
One	Log[10]:Up	Up	54.88 ft	907.28 ft	25-Feb-2022 3:10:33 PM	25-Feb-2022 3:27:16 PM	ON	1.53 ft	Yes

All depths are referenced to toolstring zero

<b>Log</b>	Company: Occidental Petroleum Inc    Well: Warner 11-18 Main Pass: S010
------------	----------------------------------------------------------------------------

Description: CBL\_VDL    Format: Log ( DSLT ASLT\_CBL-VDL )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 25-Feb-2022 18:35:35

TIME\_1900 - Time Marked every 60.00 (s)

BIEP - Bond Index Event Pips ASLT-B[1]

Stuck Tool Indicator, Total (STIT)	
0    ft    50	

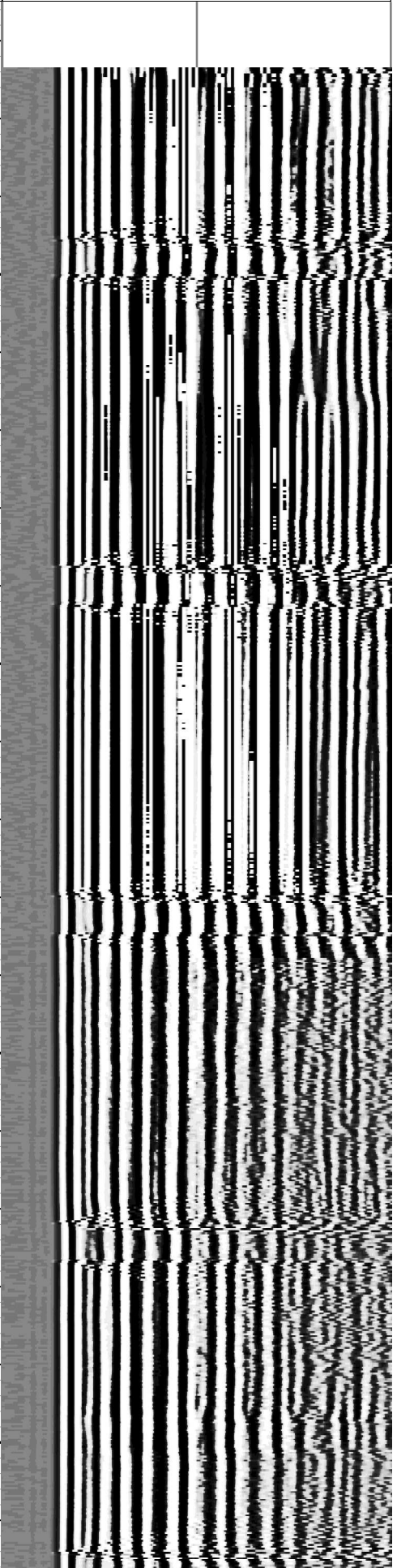
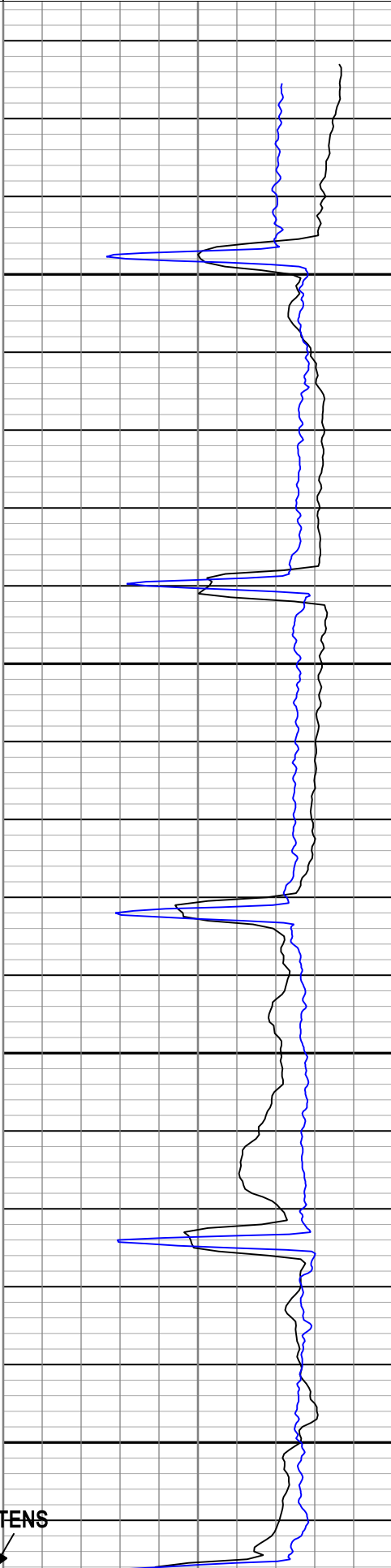
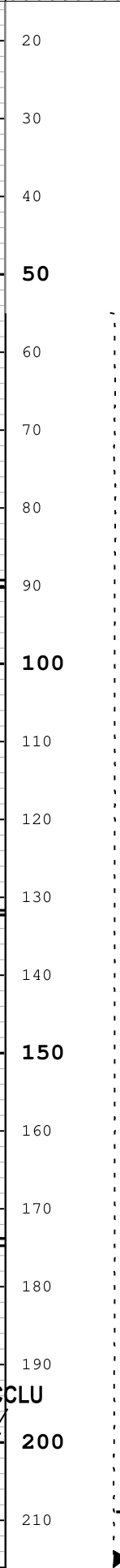
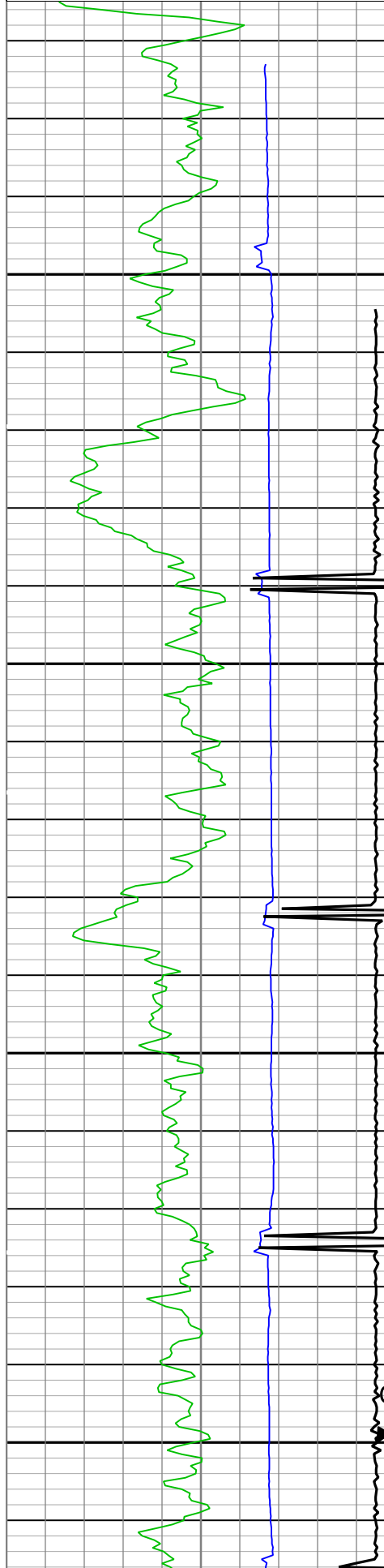
Cable Tension (TENS)	CBL Amplitude (CBL) ASLT-B[1]	
0    10000    150	0    mV    100	
400    us    200	CBL Amplitude (CBL) ASLT-B[1]	
	0    mV    10	

Casing Collar Locator Ultrasonic (CCLU)  
USIT-E[1]

Cable Drag  
Tool\_Tot.  
Drag

Synthetic CBL from Discriminated Attenuation  
(DCBL) ASLT-B[1]

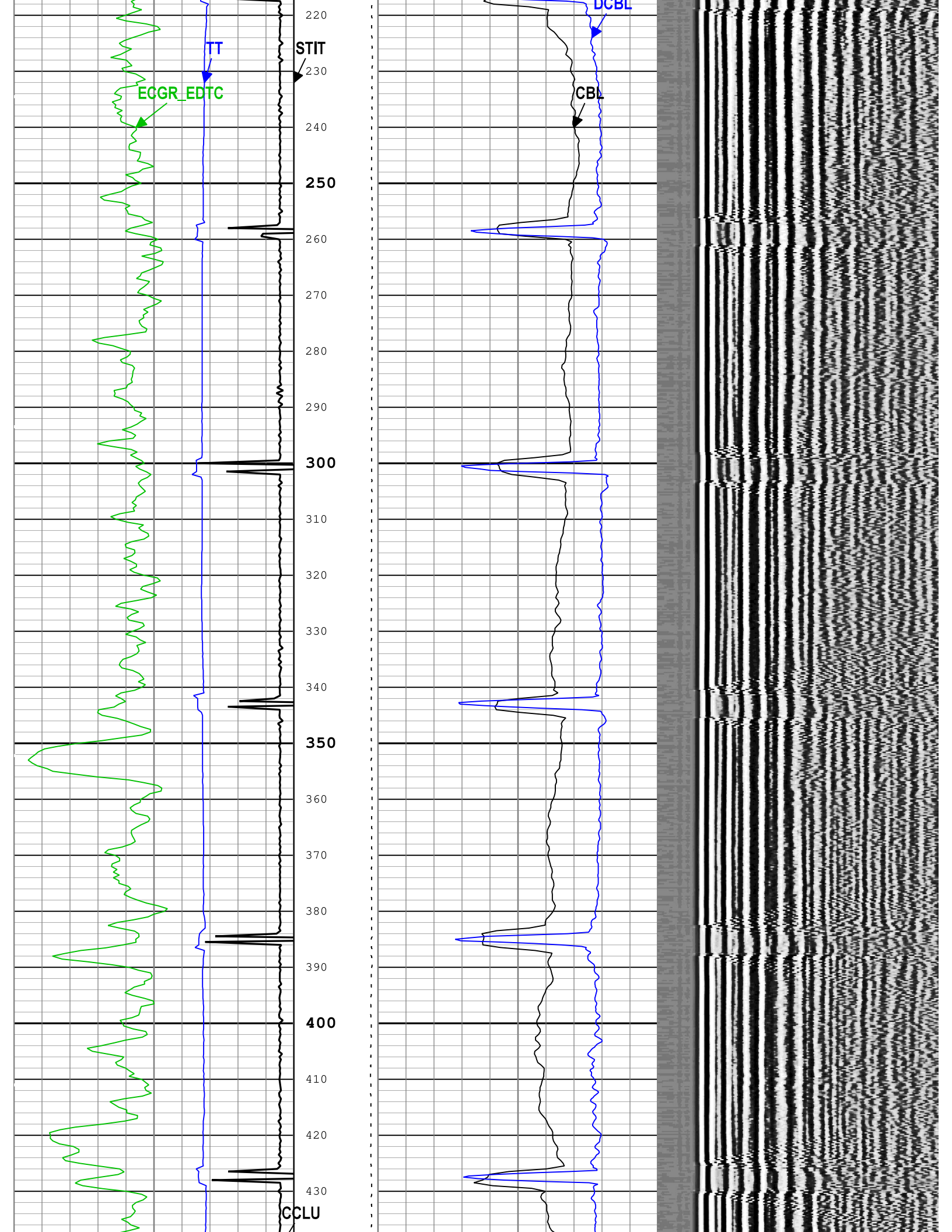
Min Amplitude Max  
Variable Density Log (VDL) ASLT-B[1]  
100 us 700

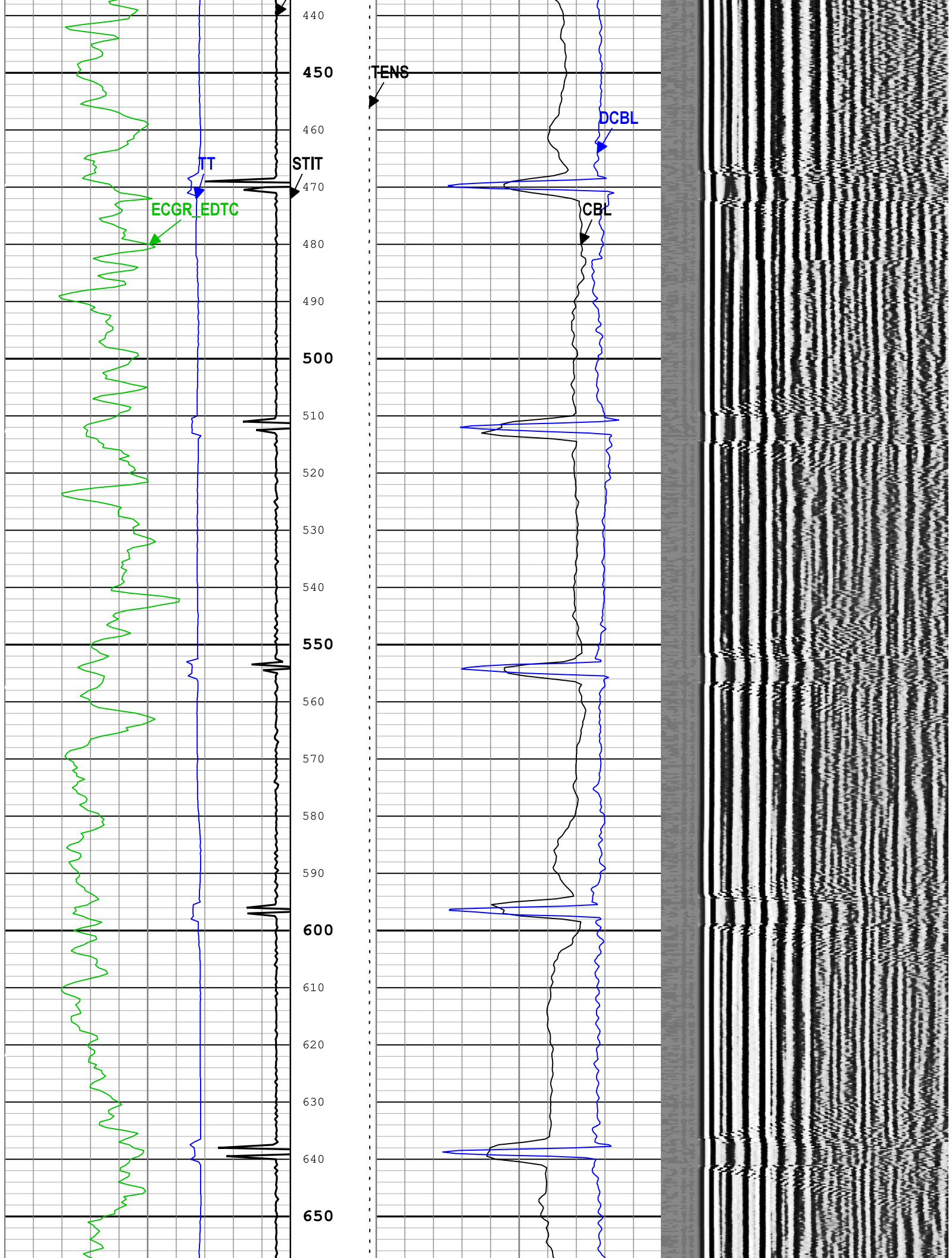


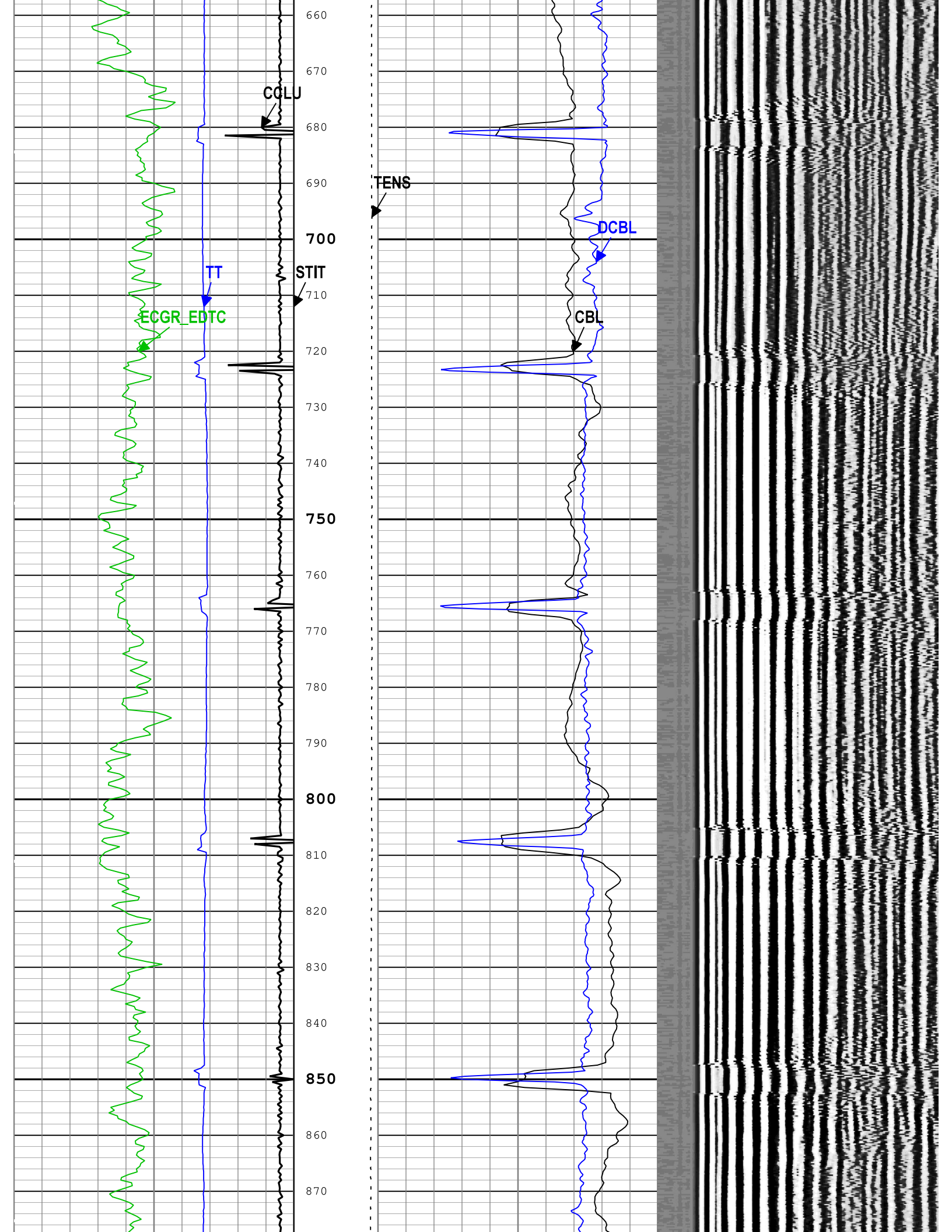
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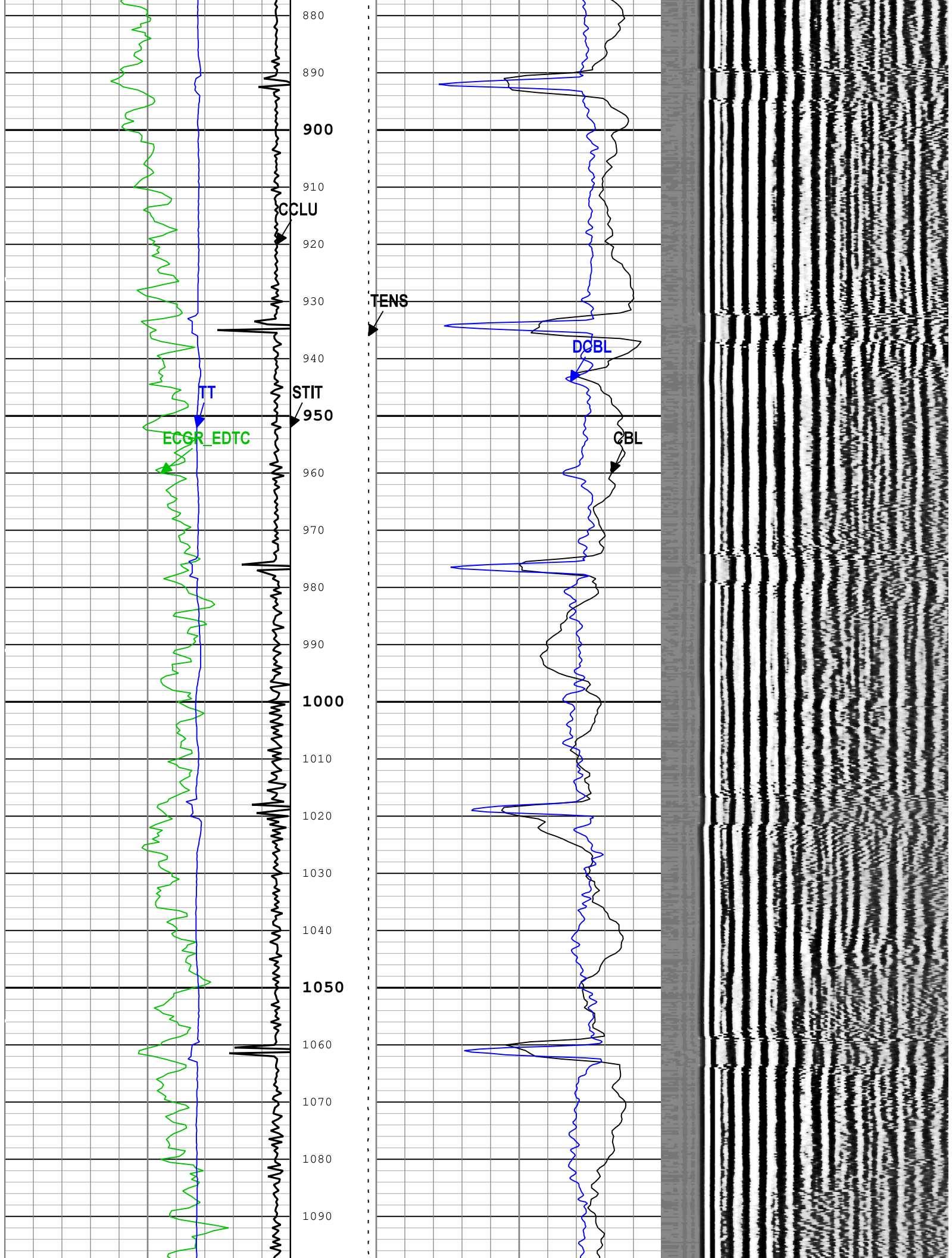
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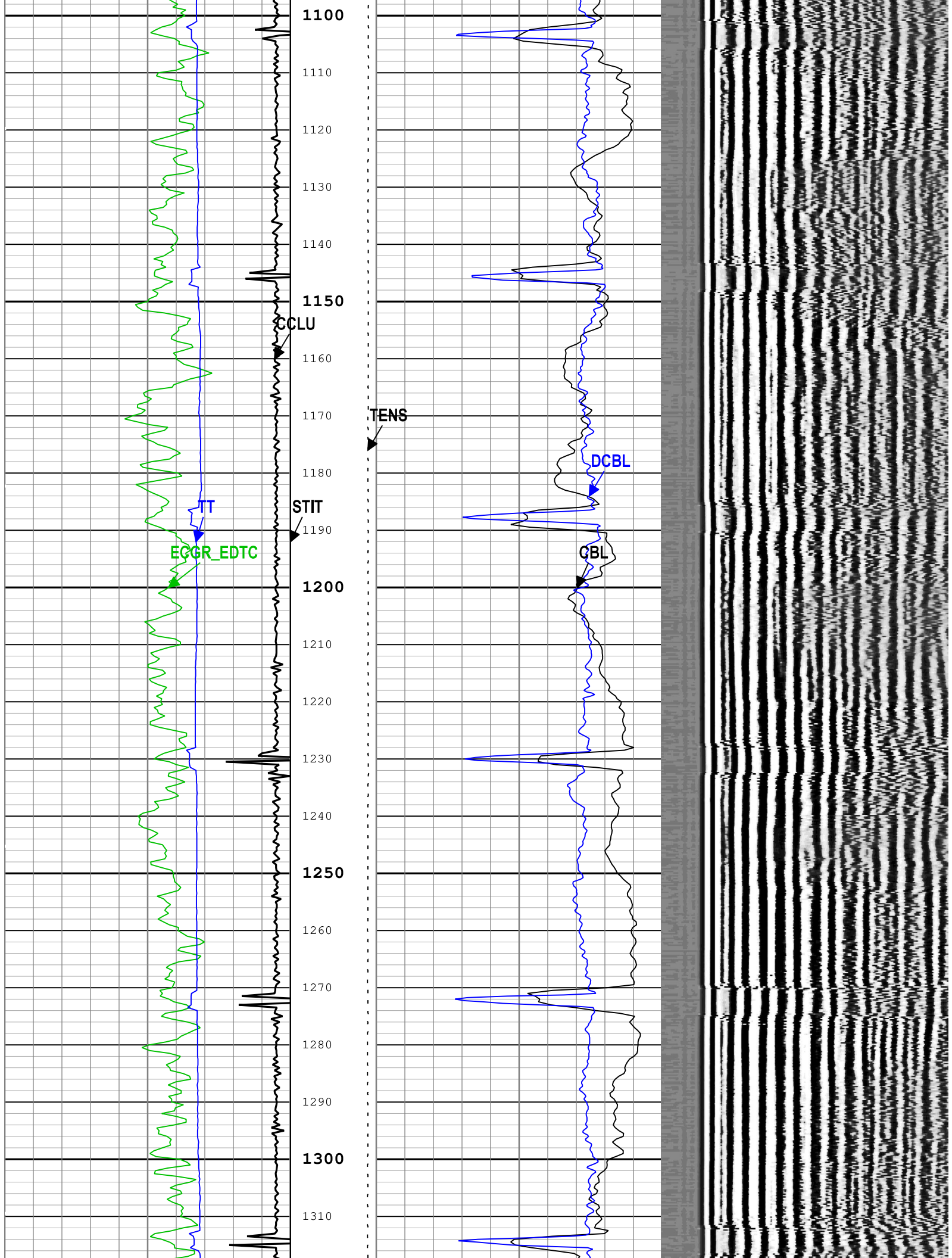
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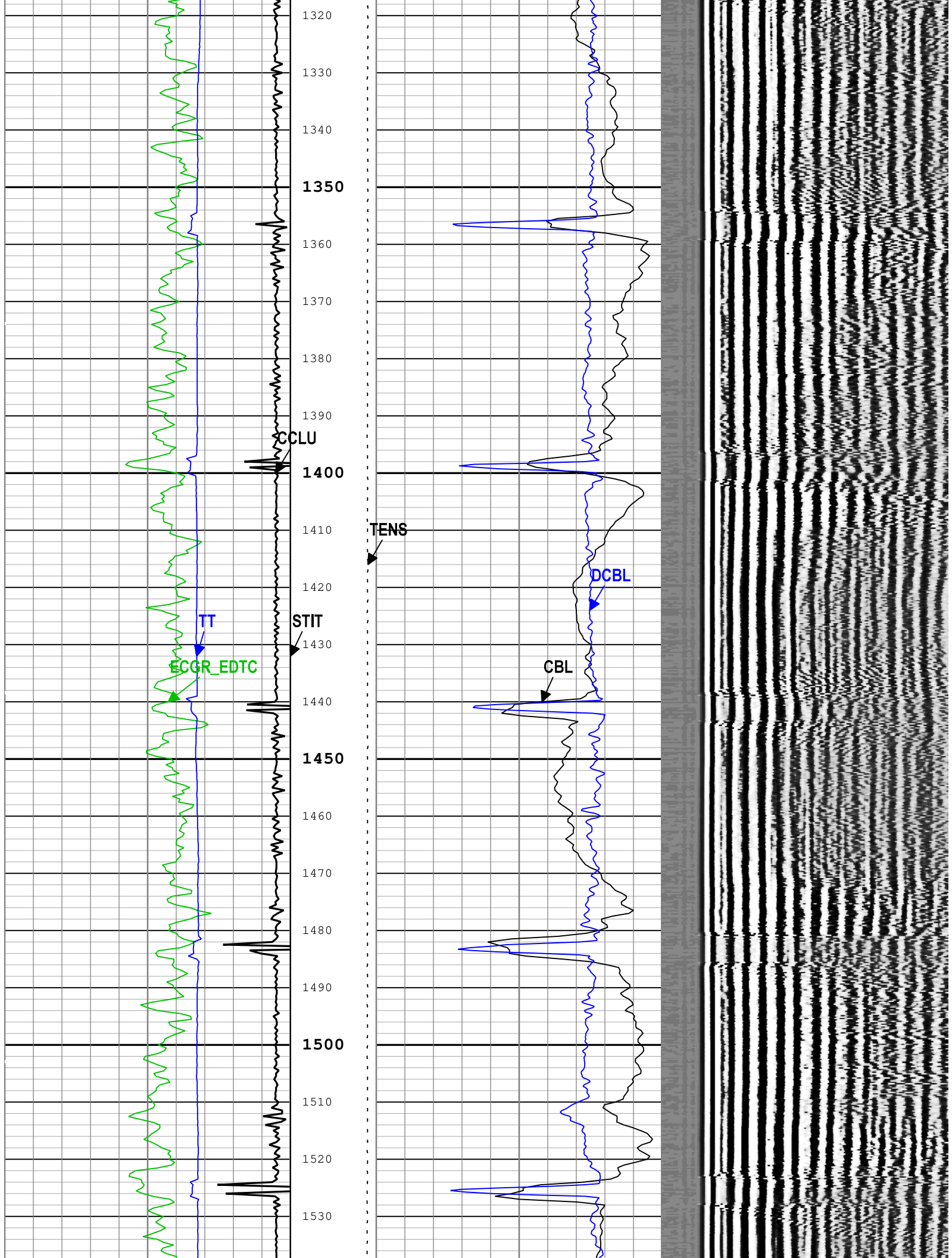


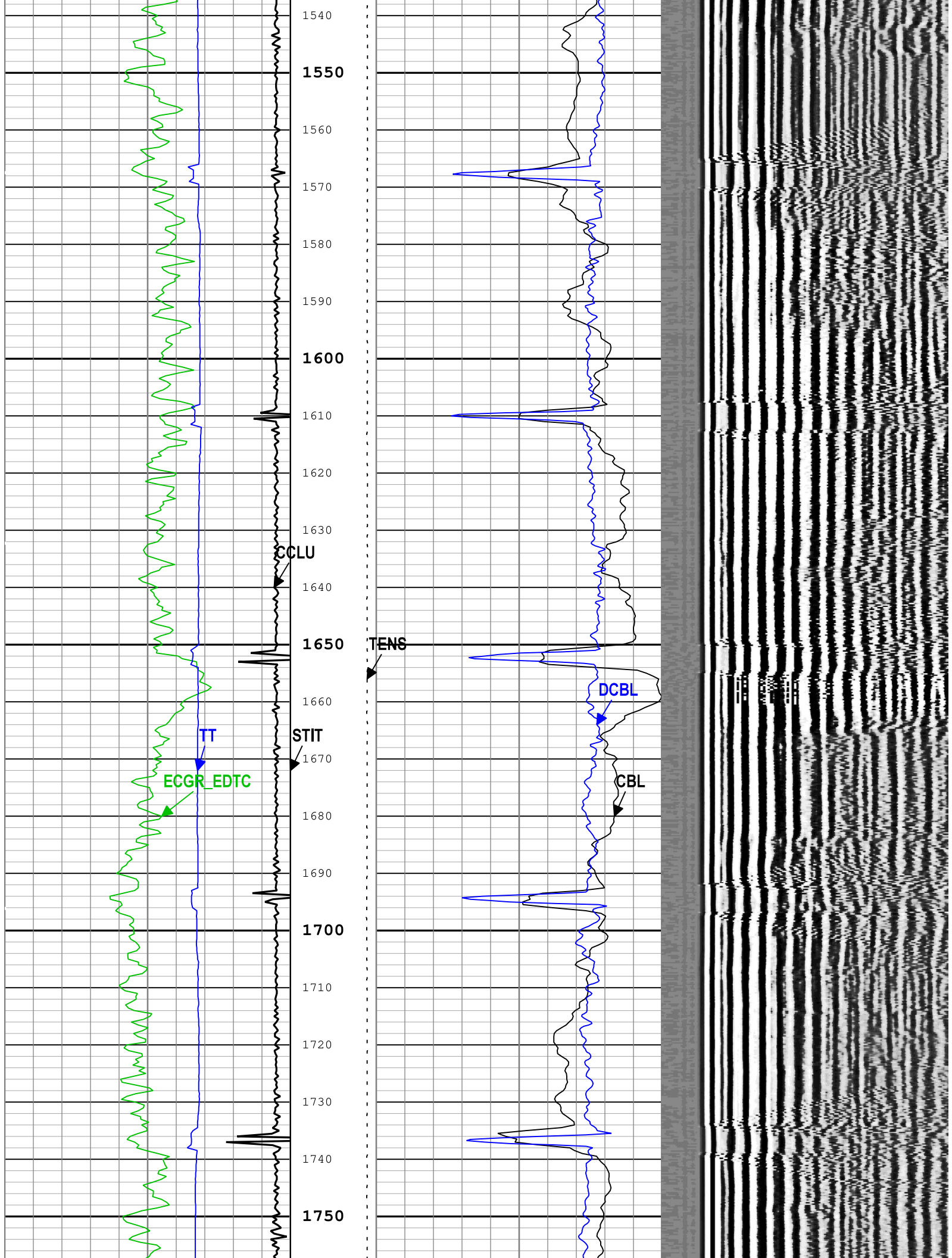


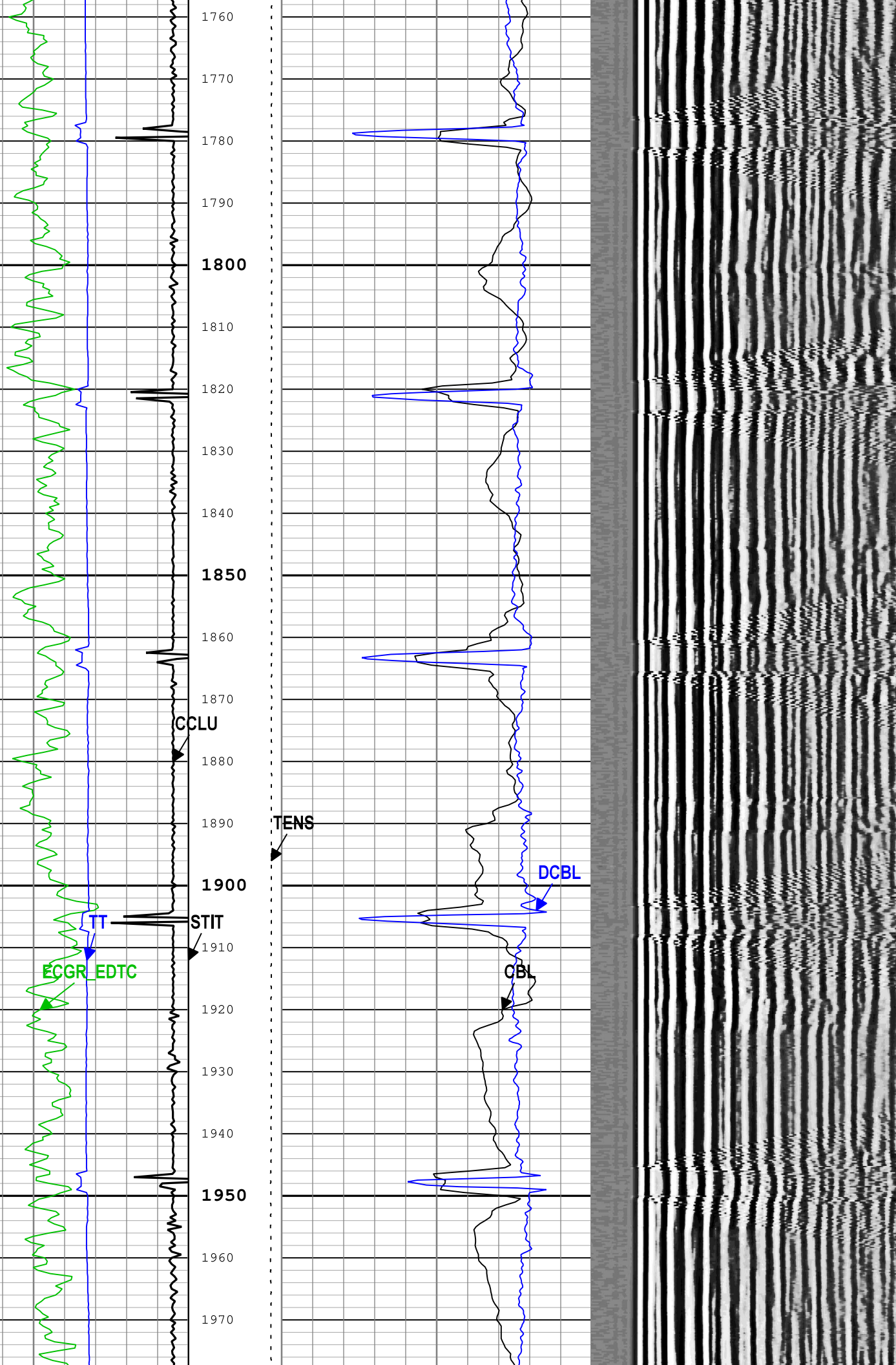


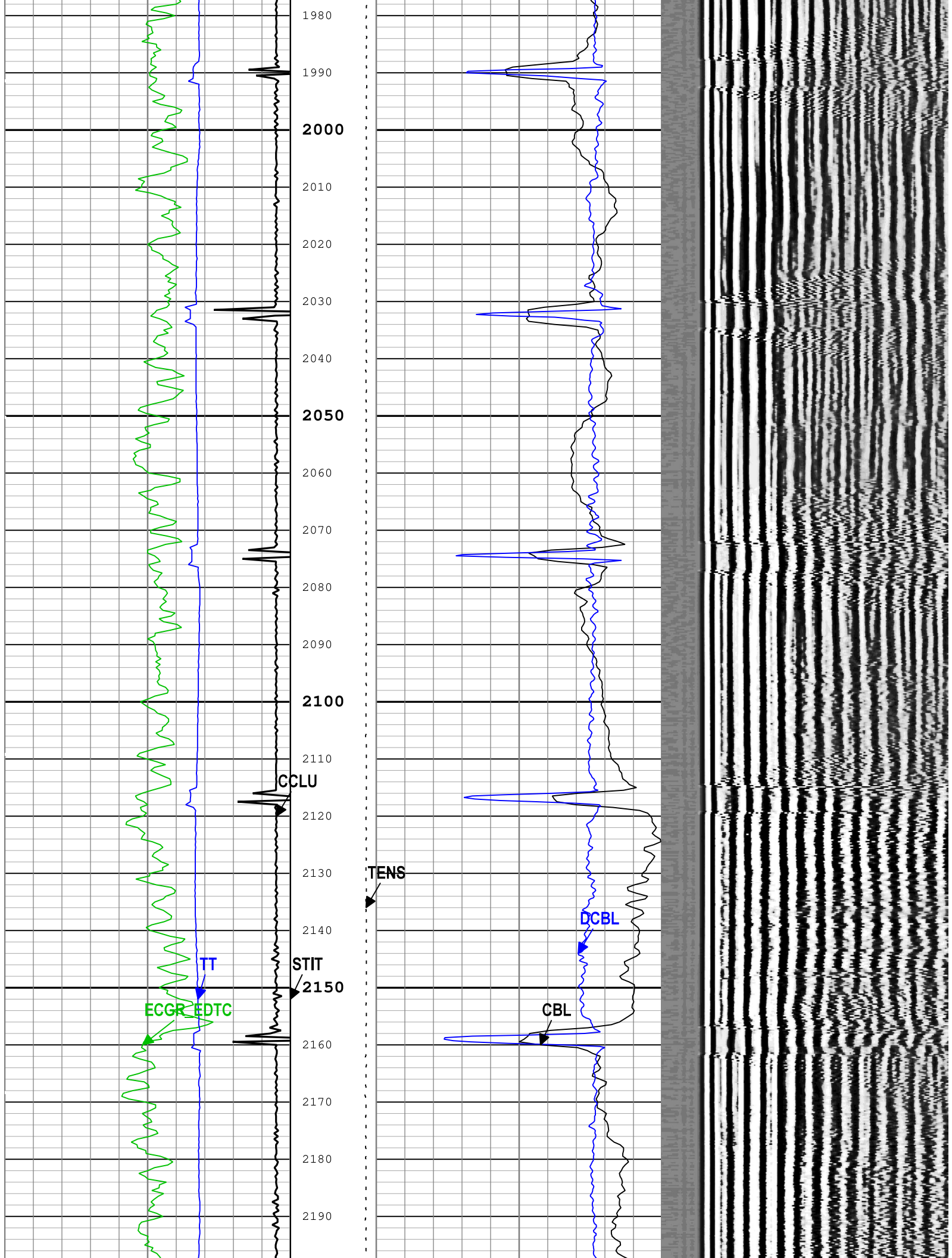


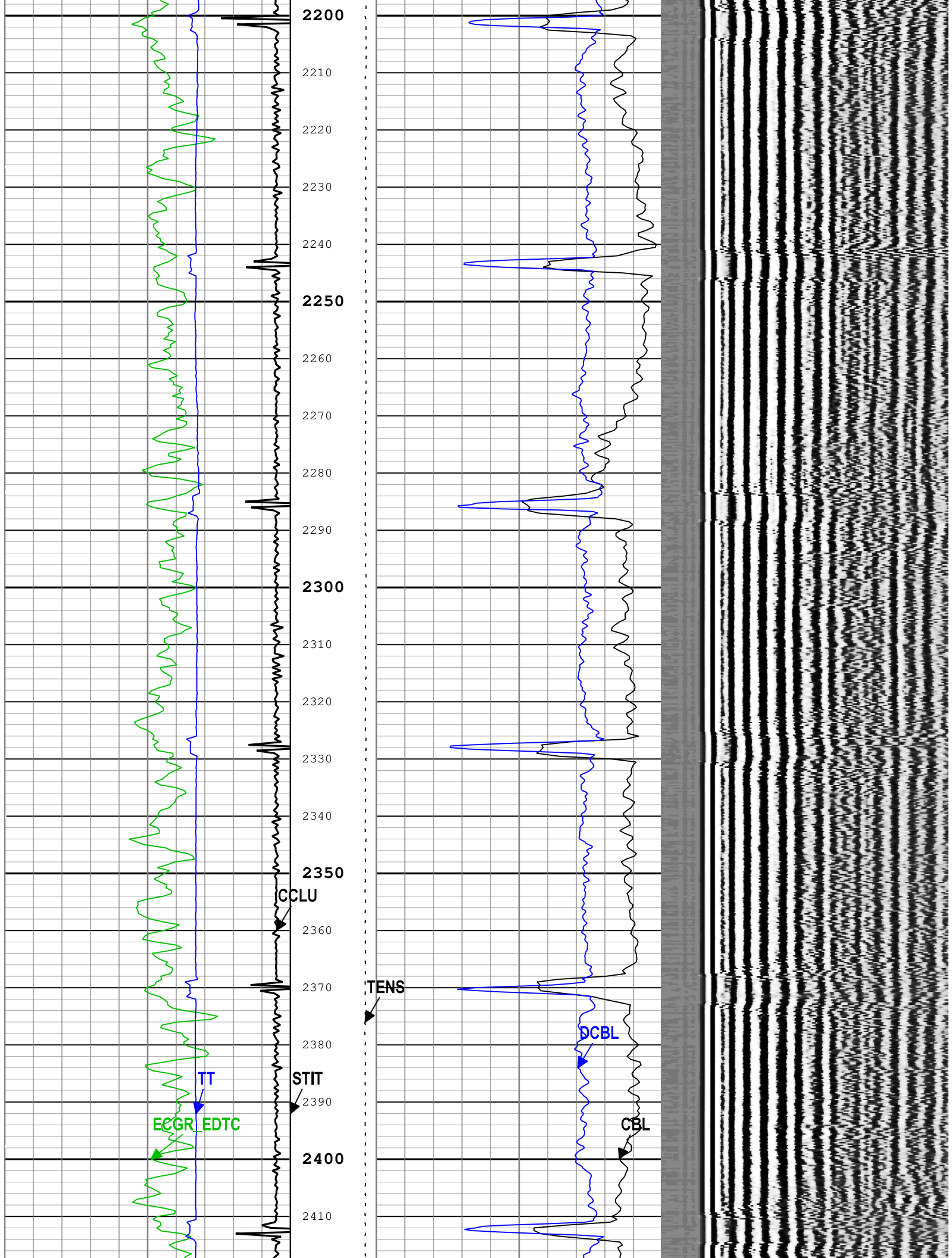


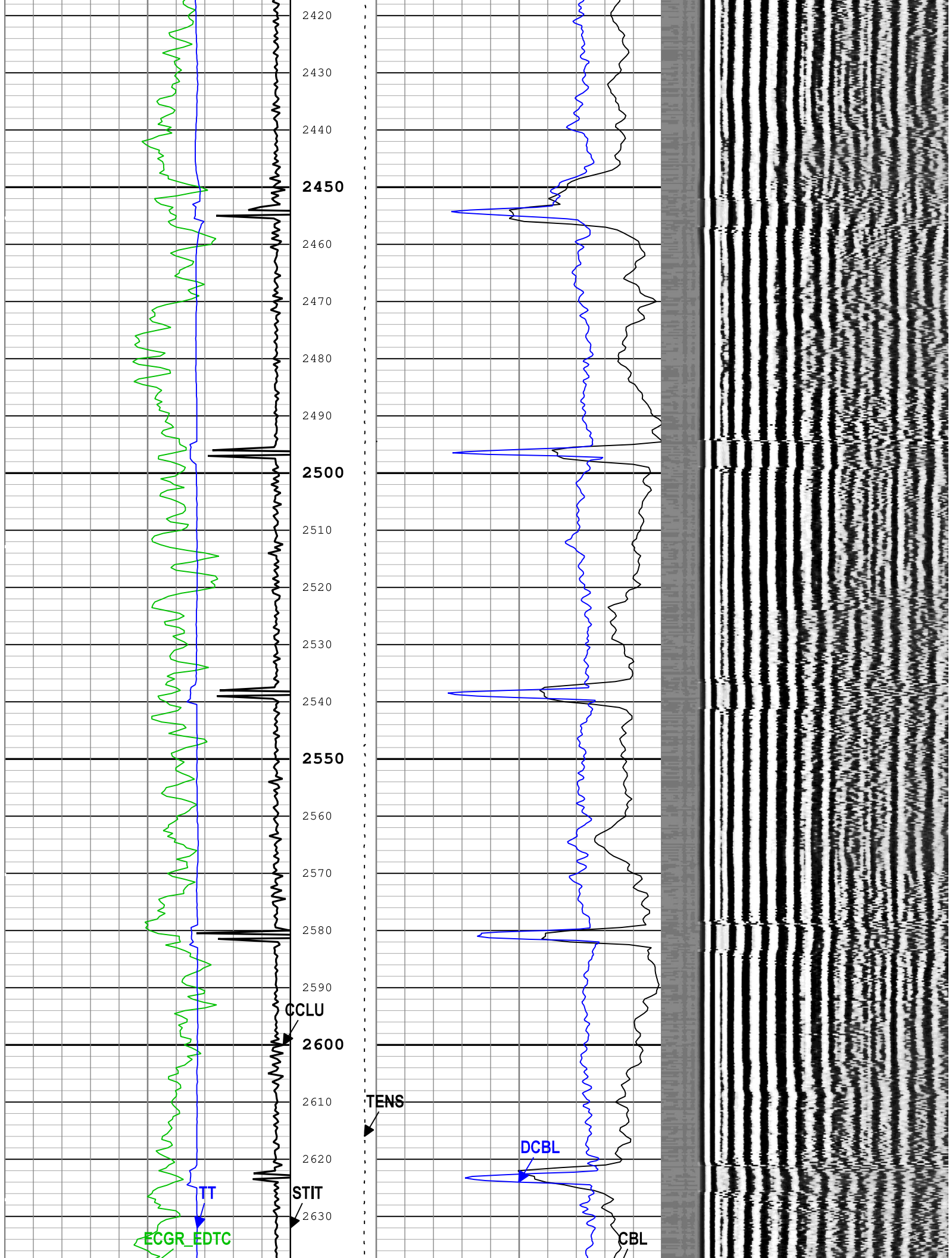


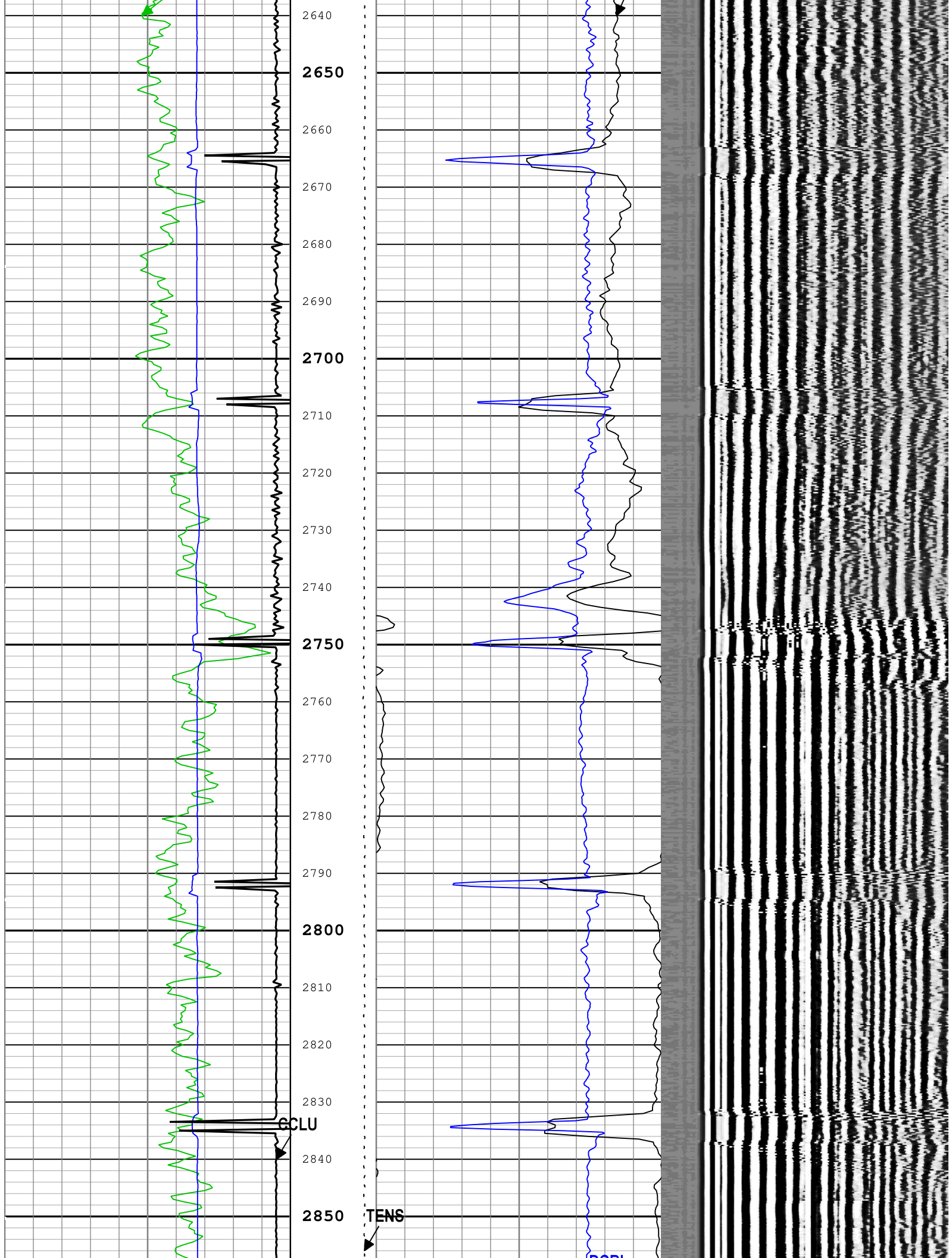


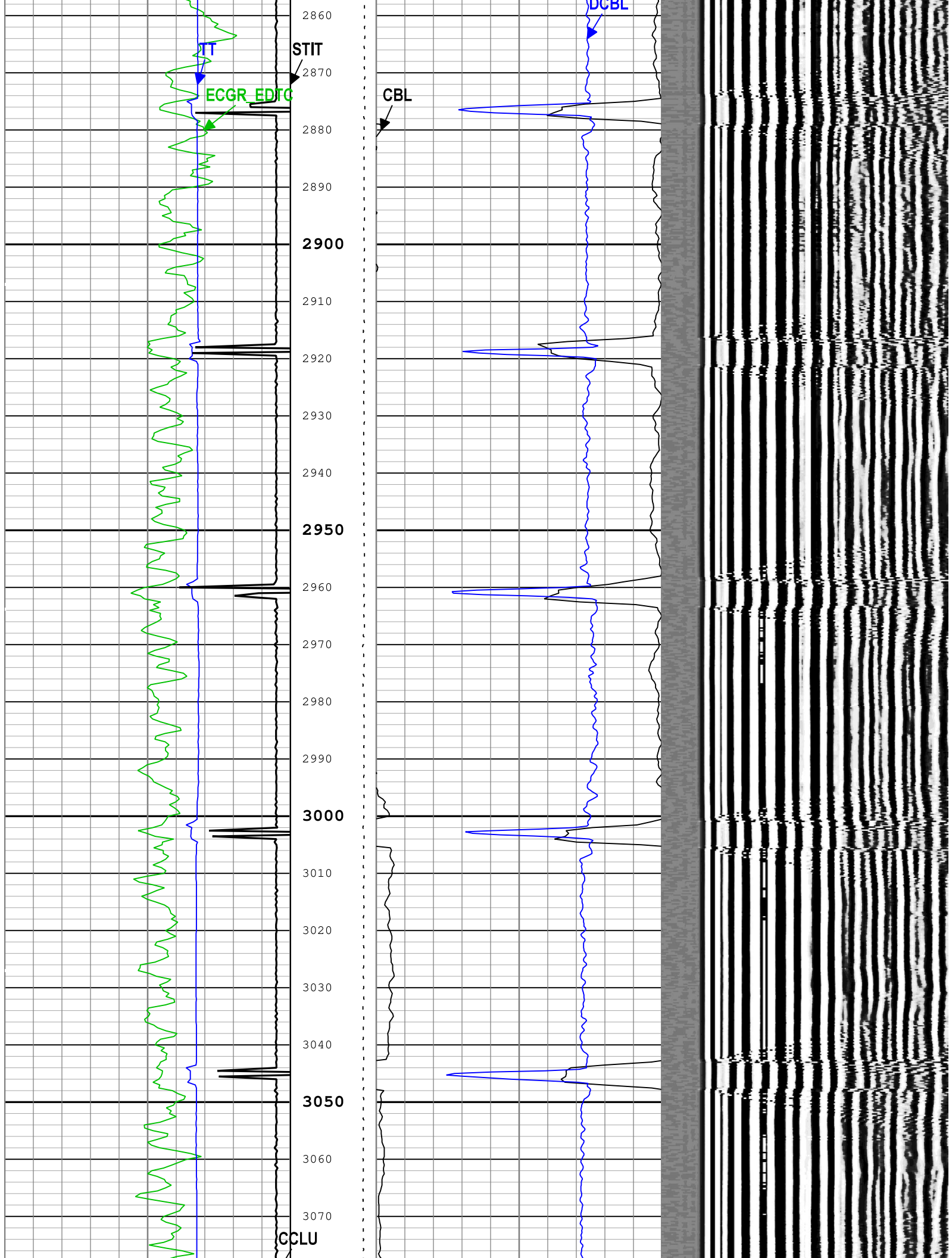


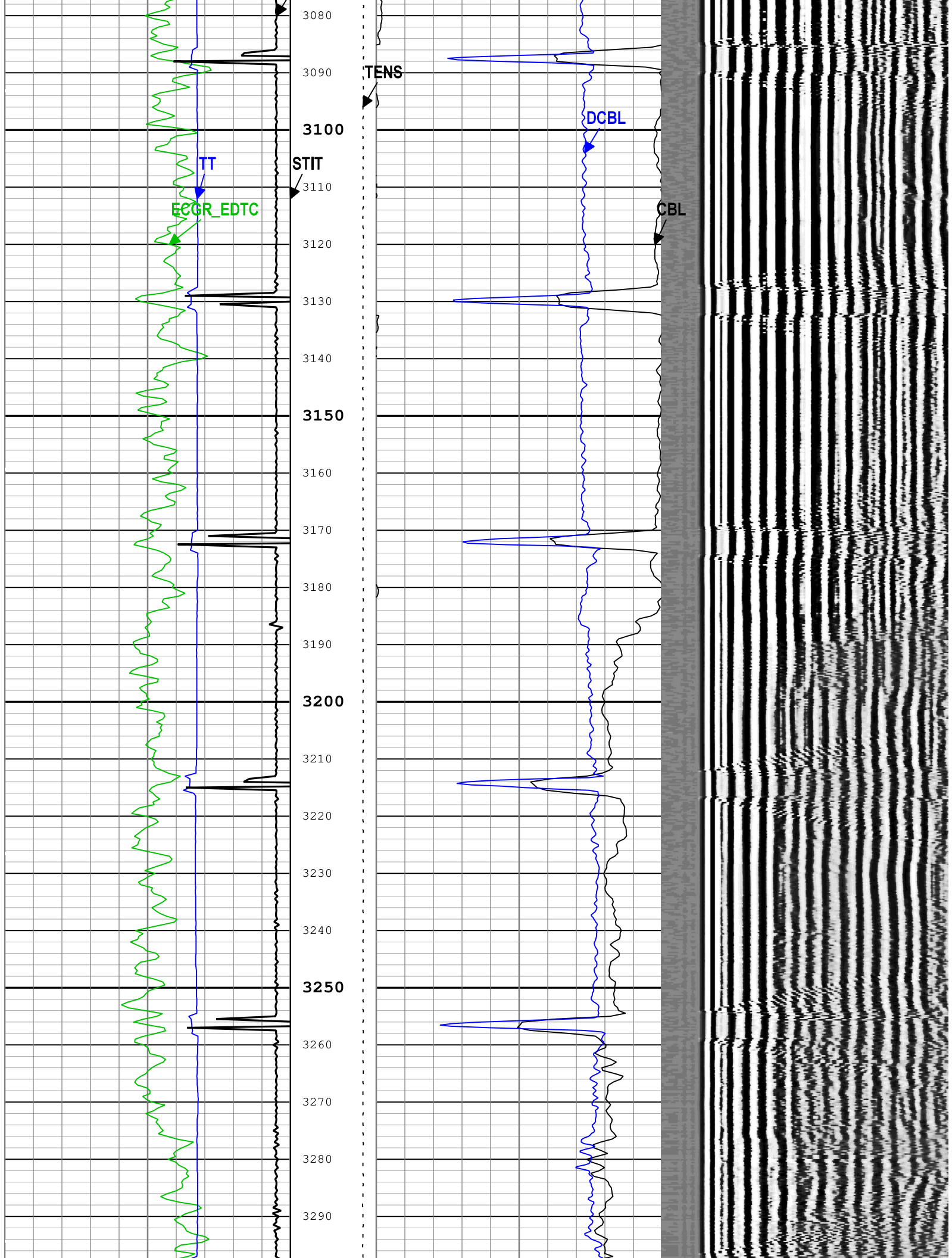


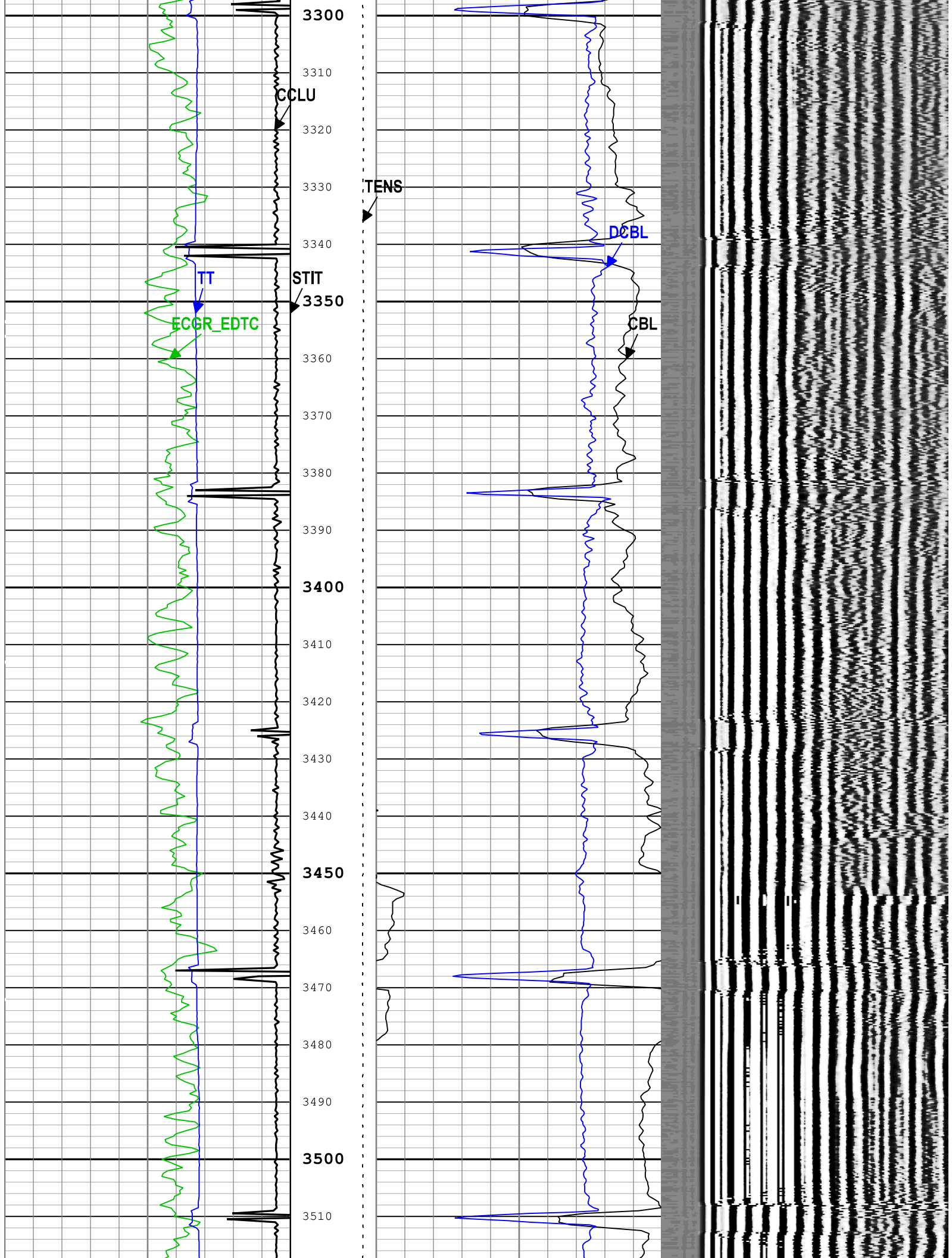


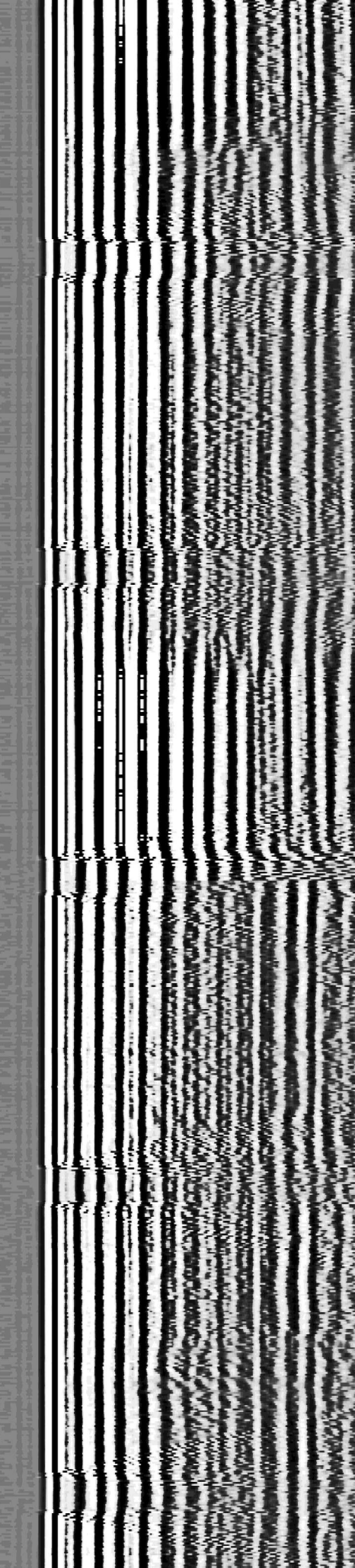
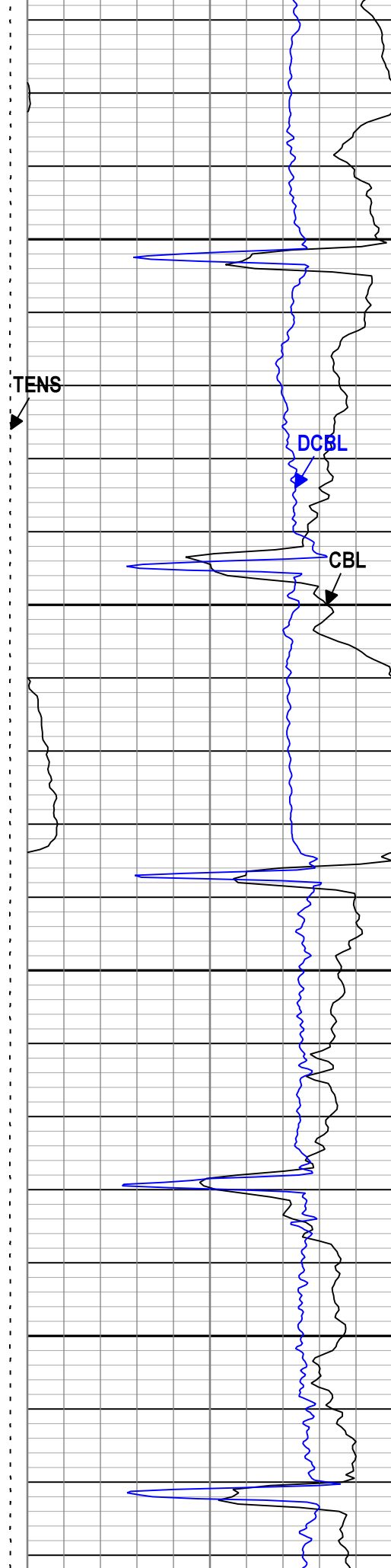
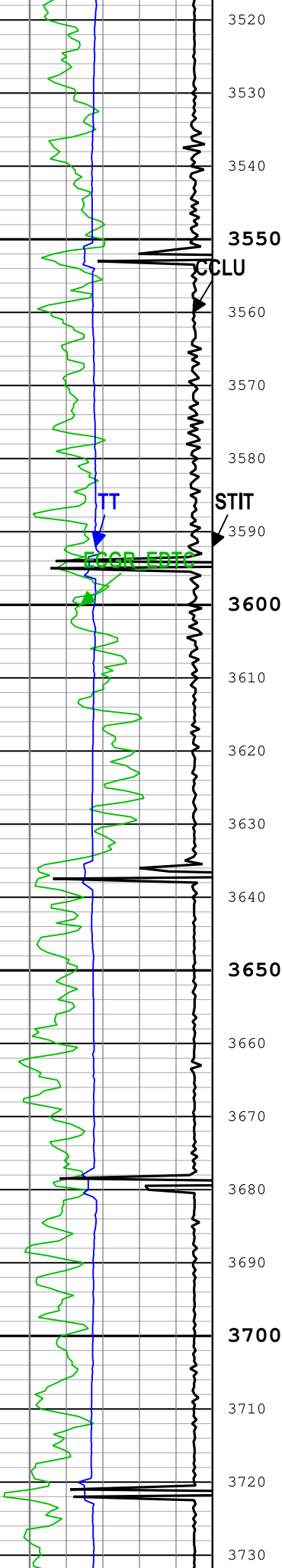


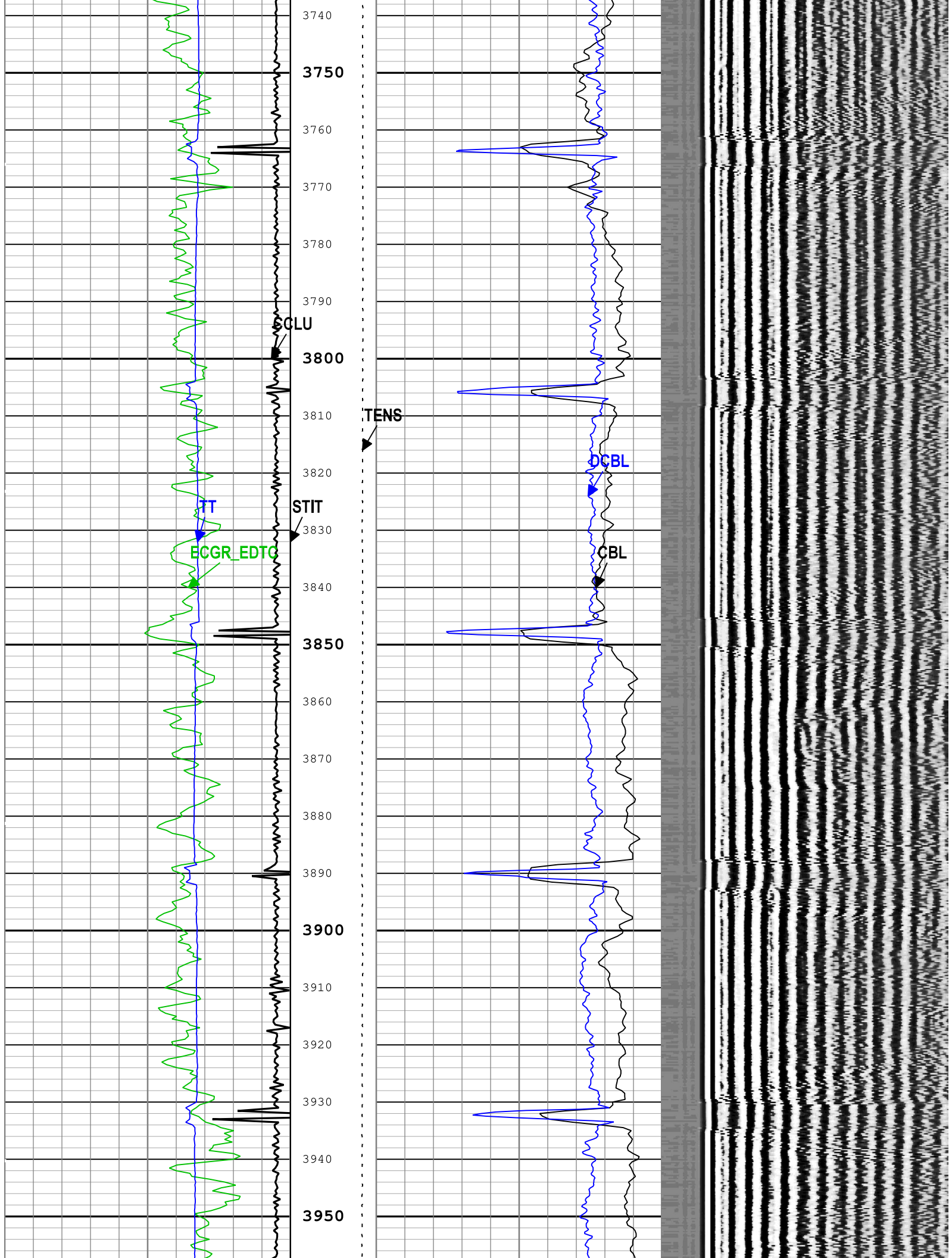


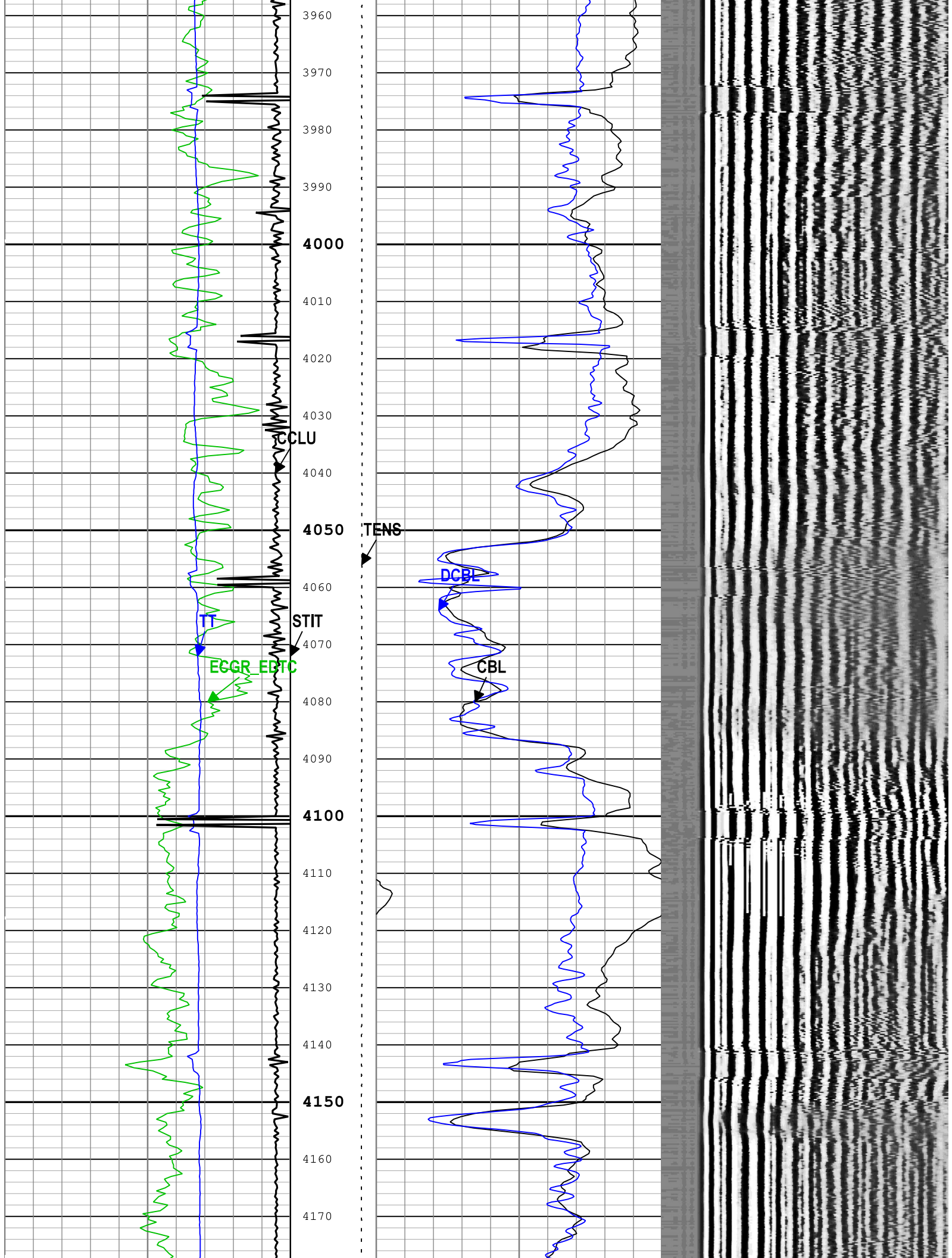


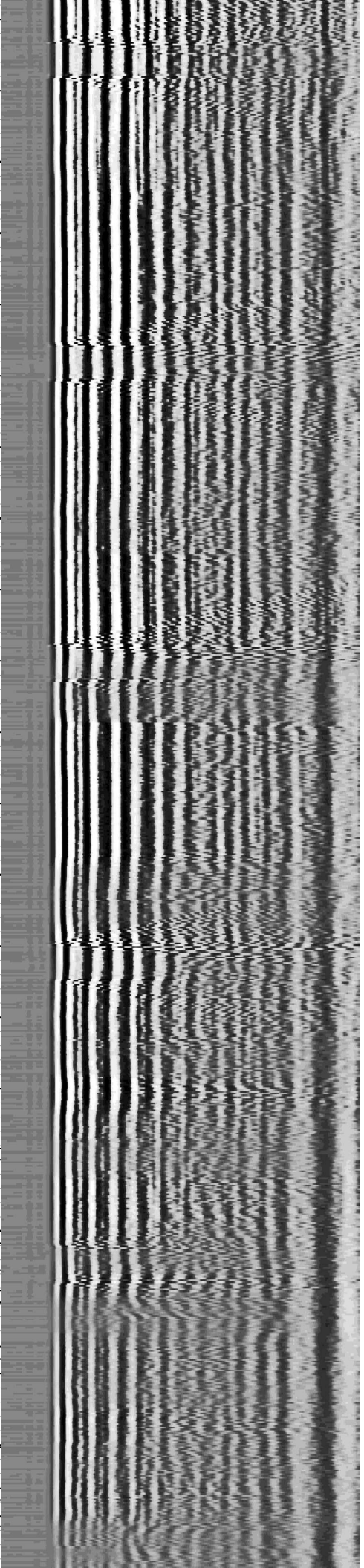
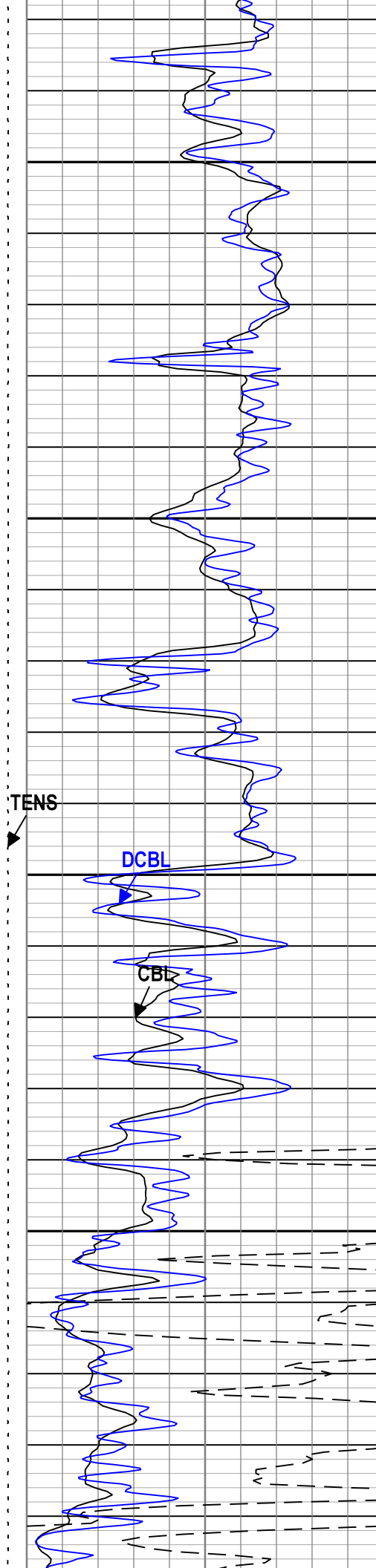
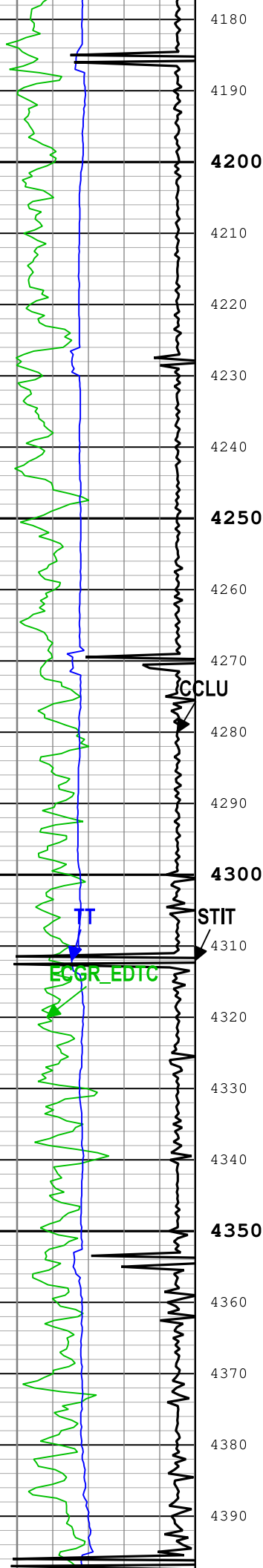


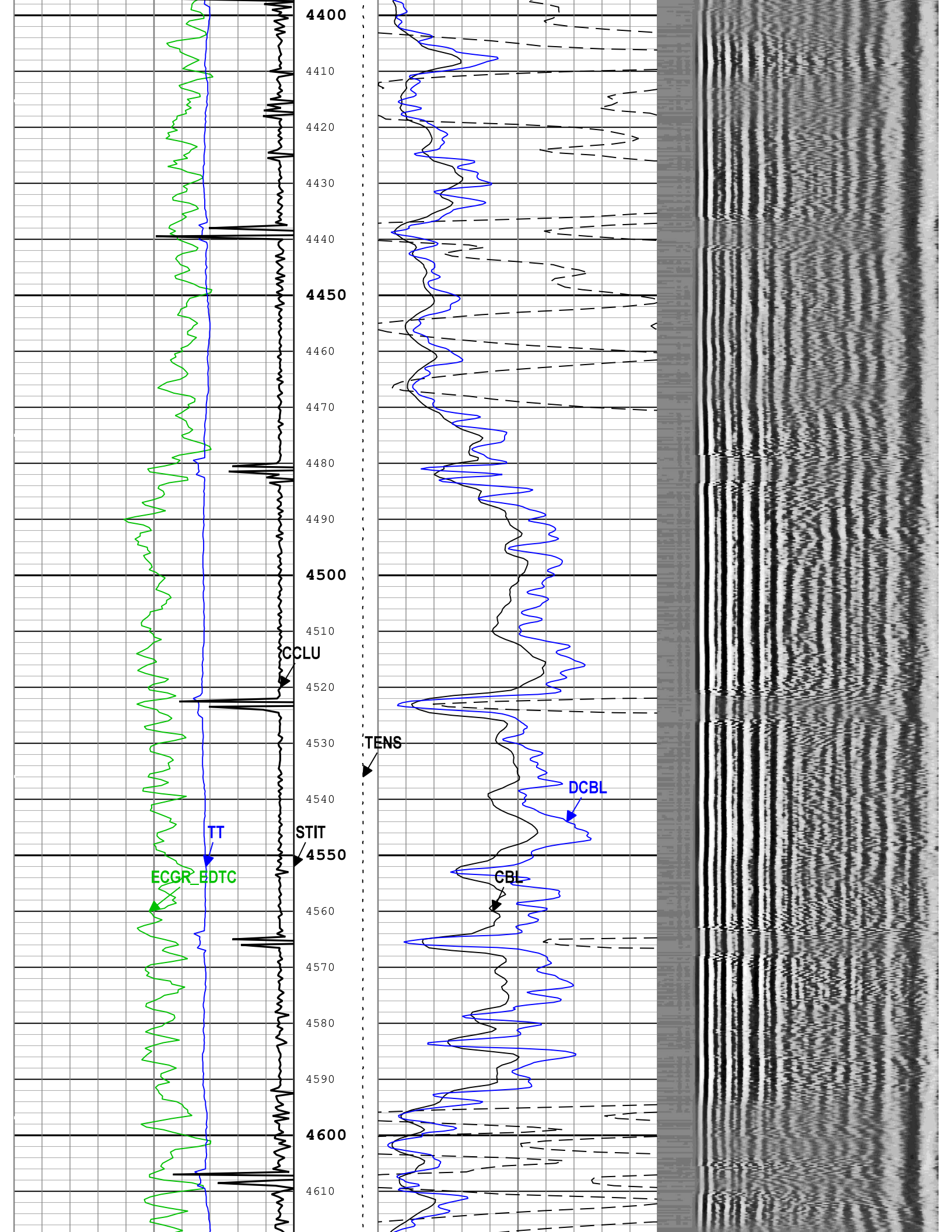


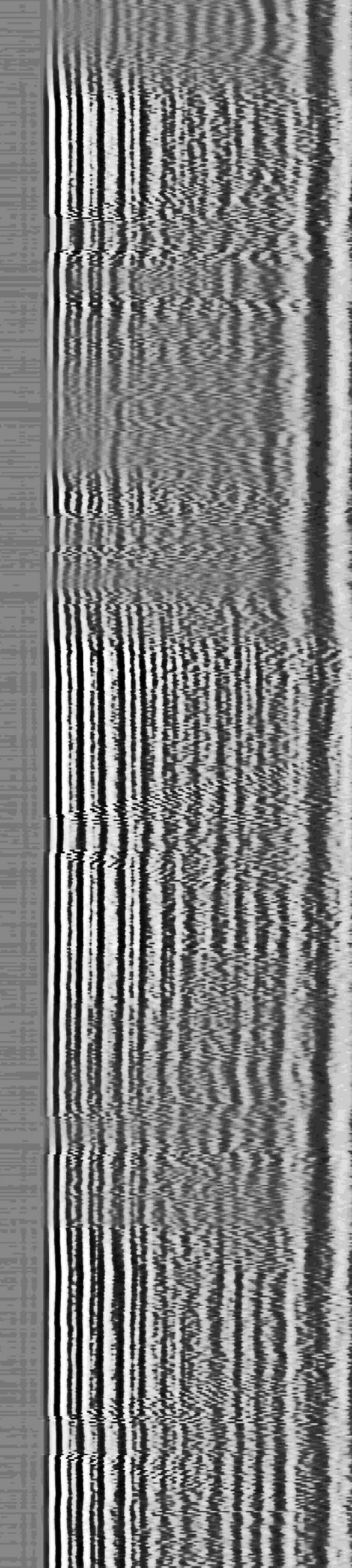
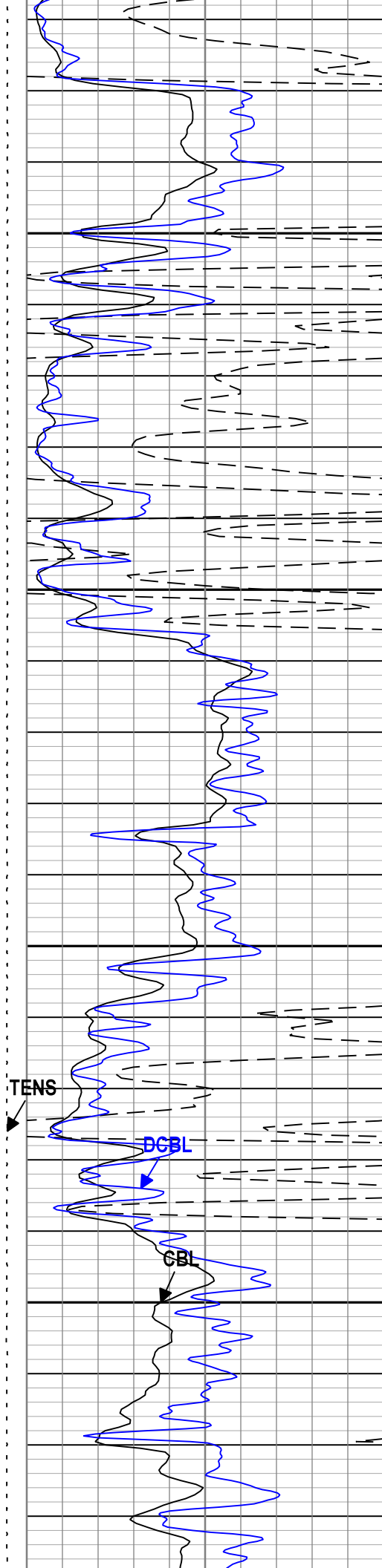
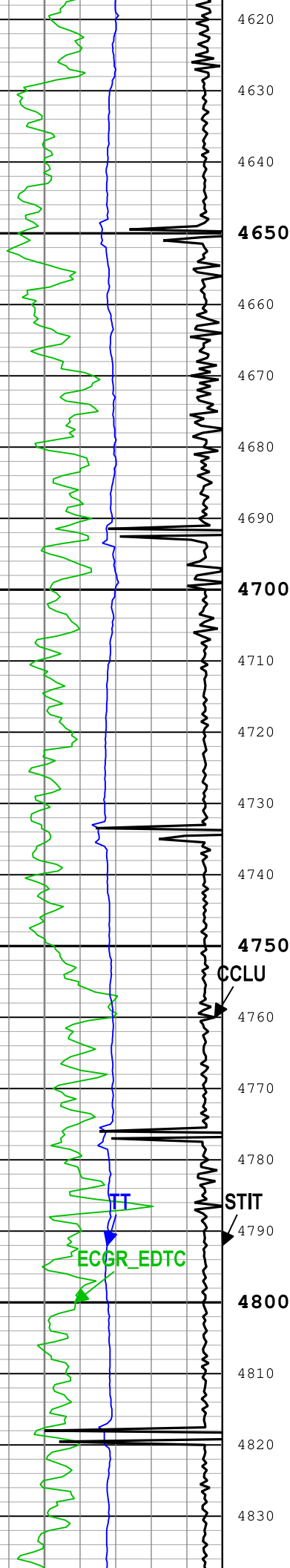


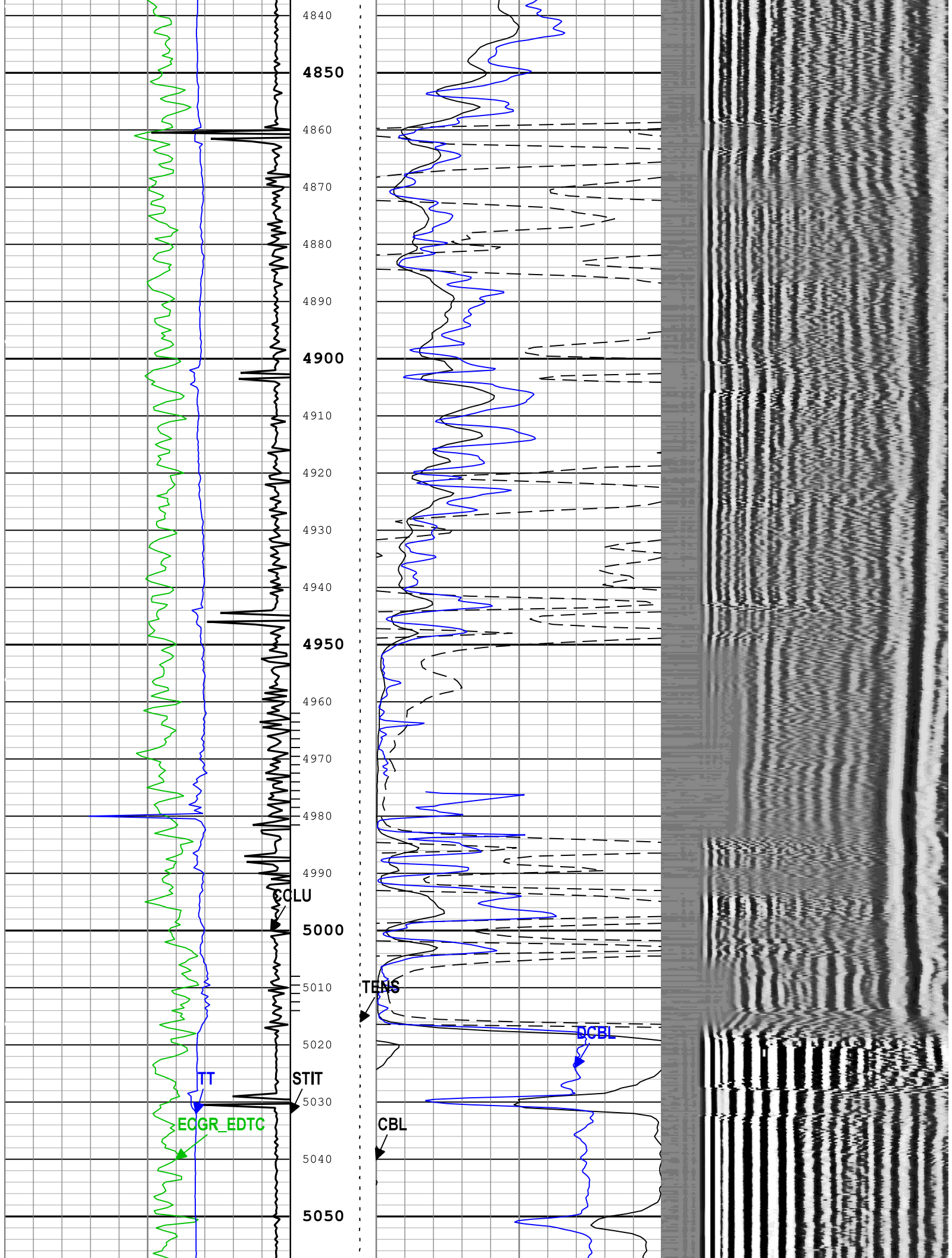


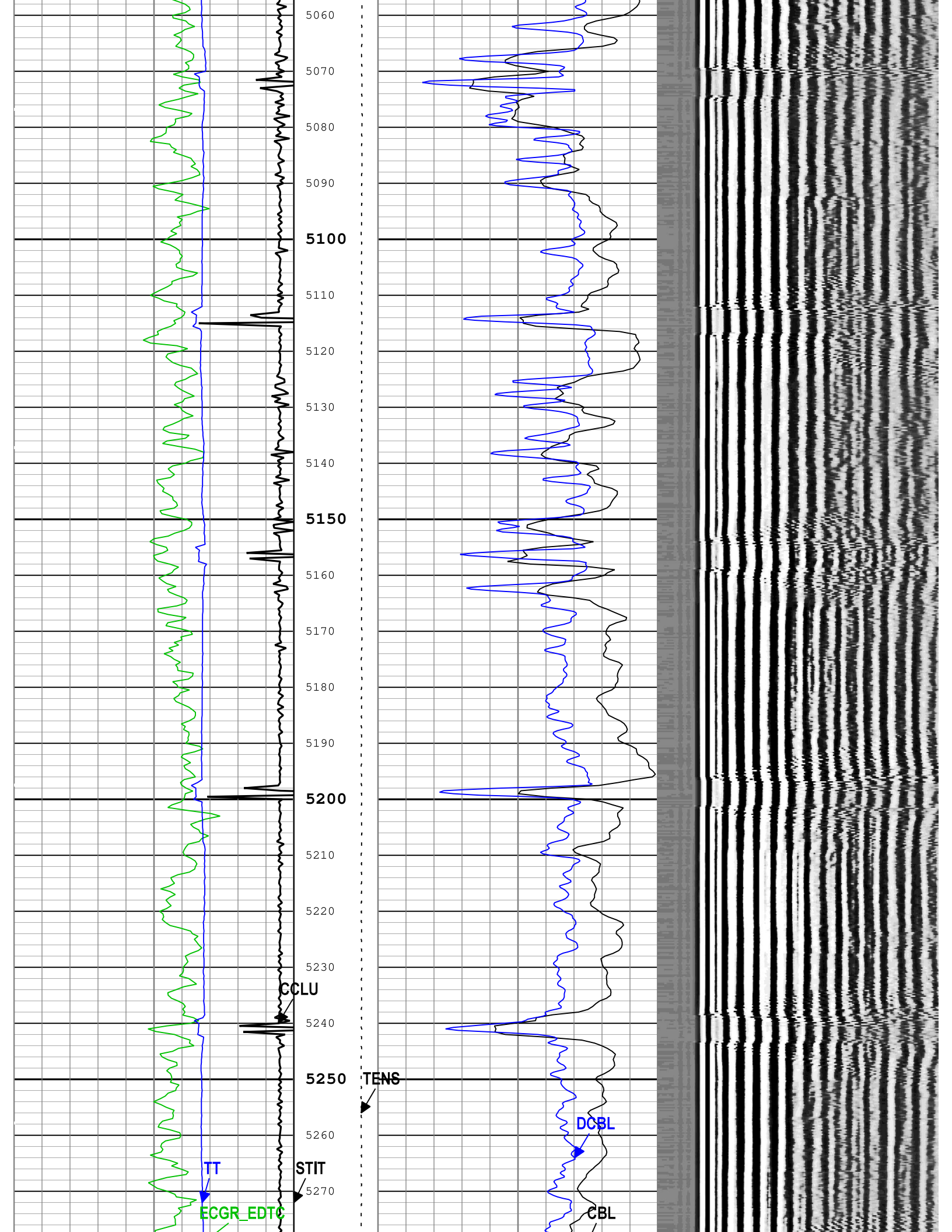


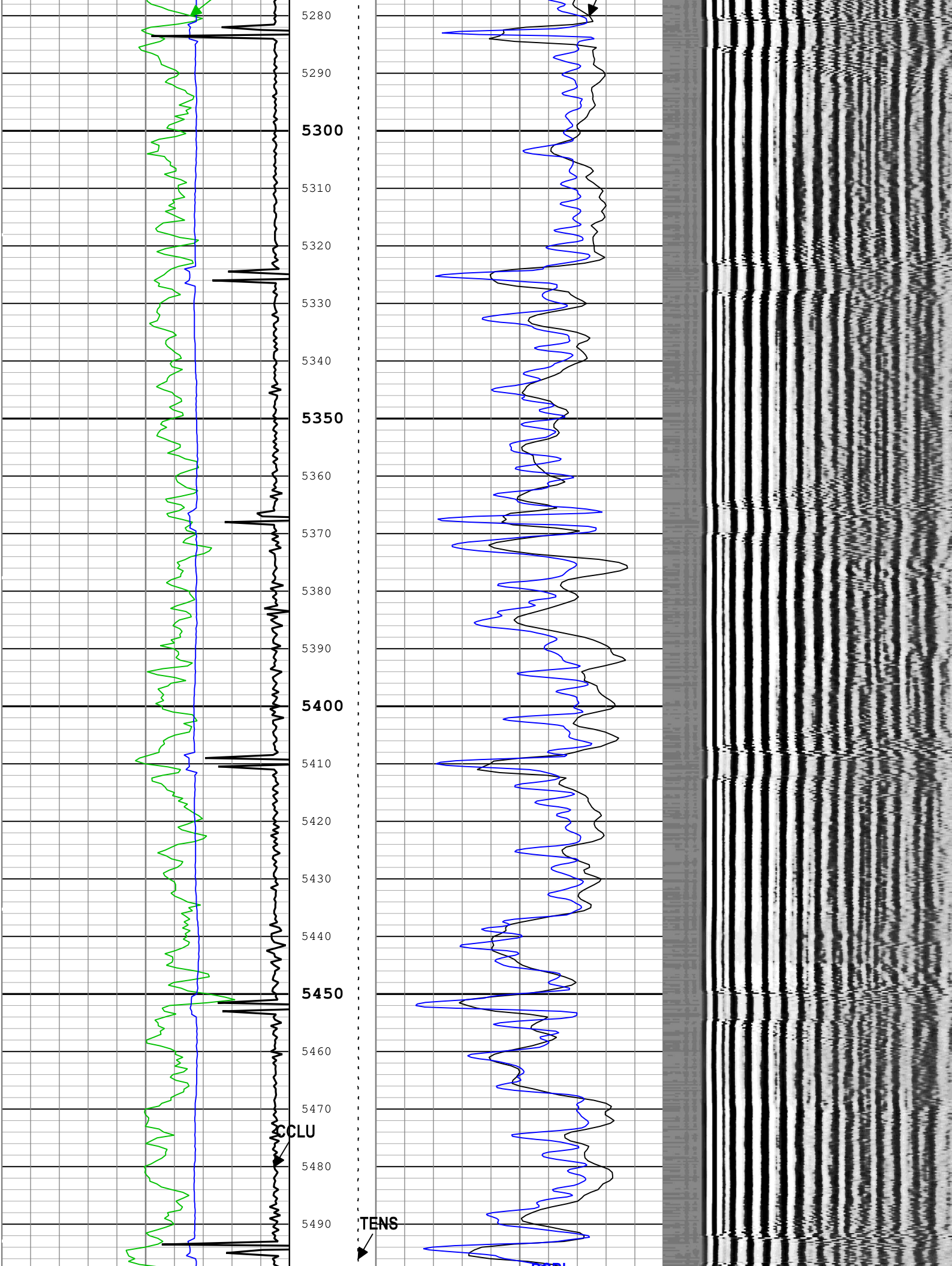


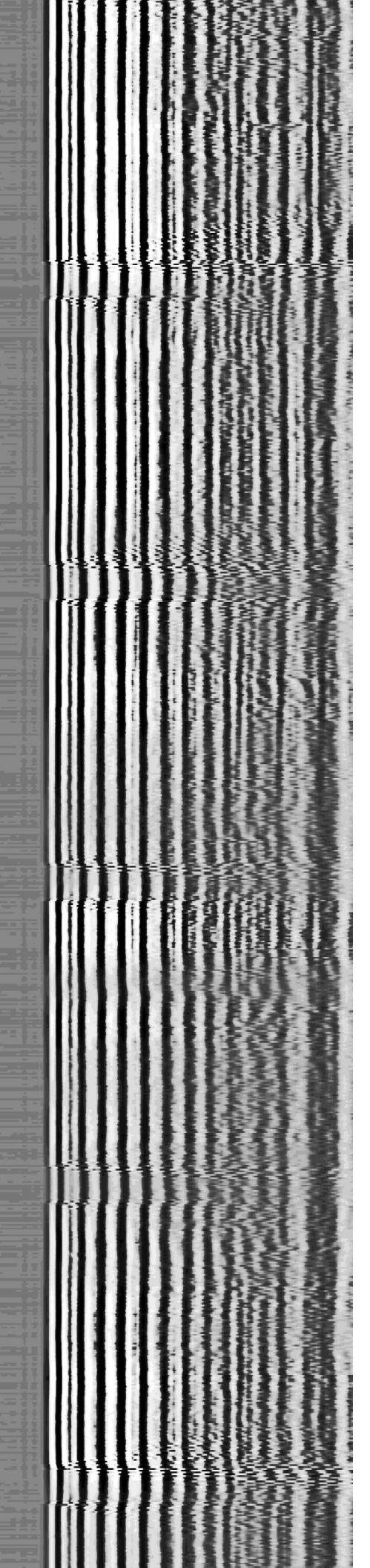
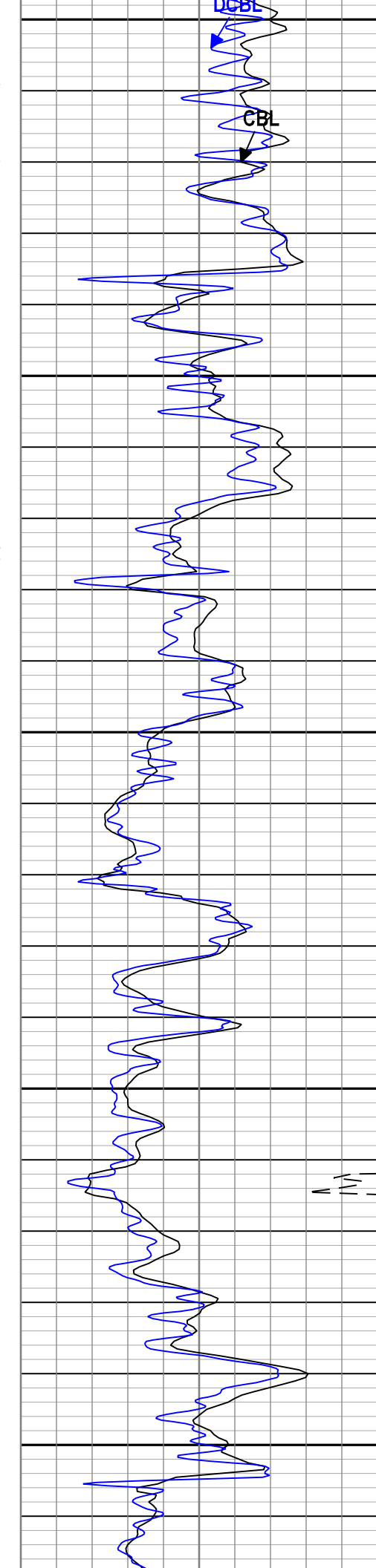
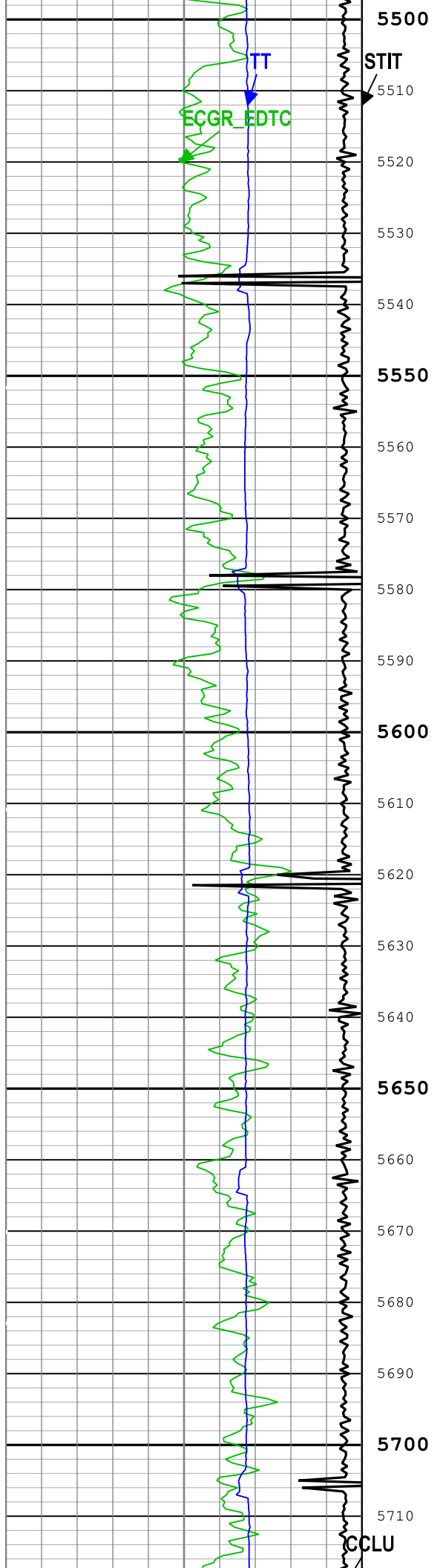


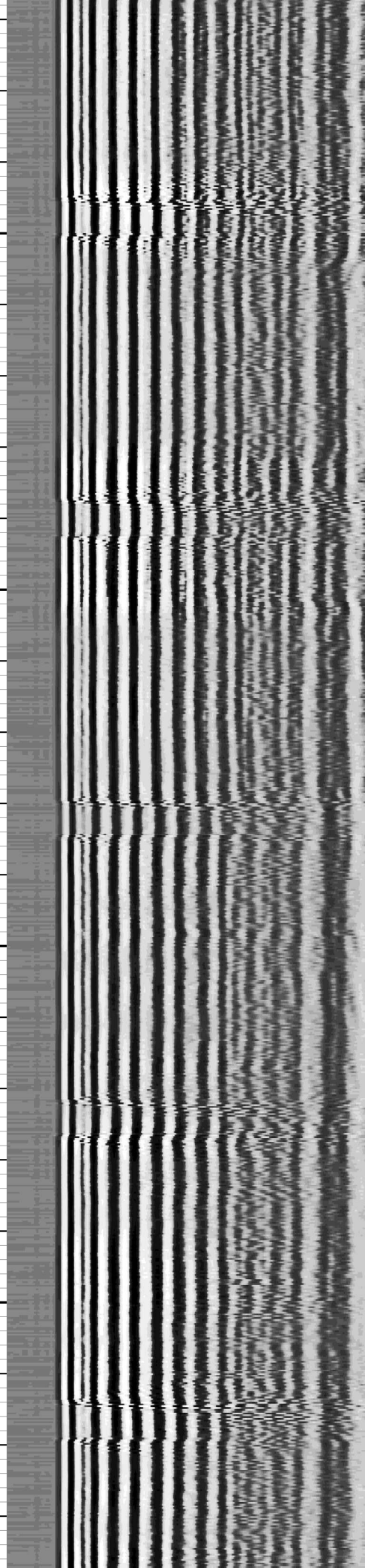
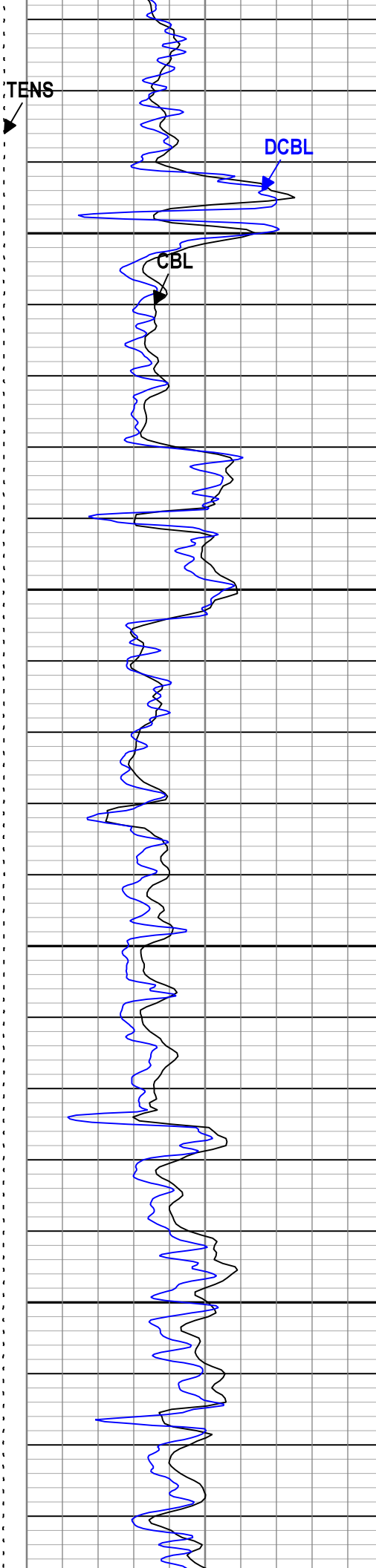
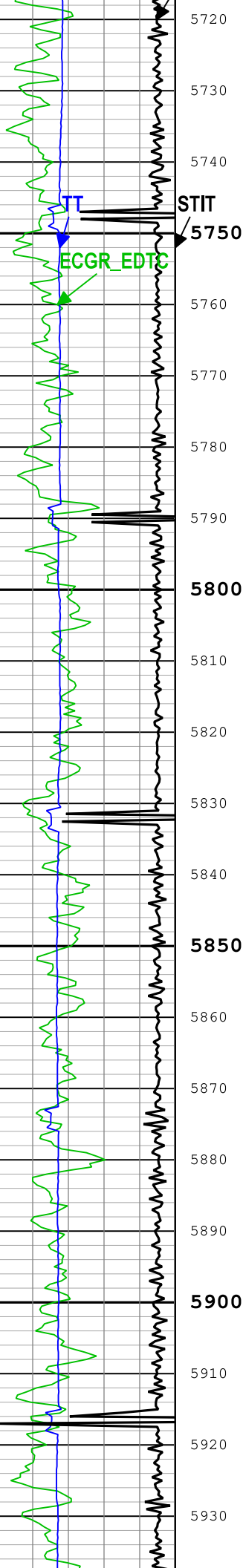


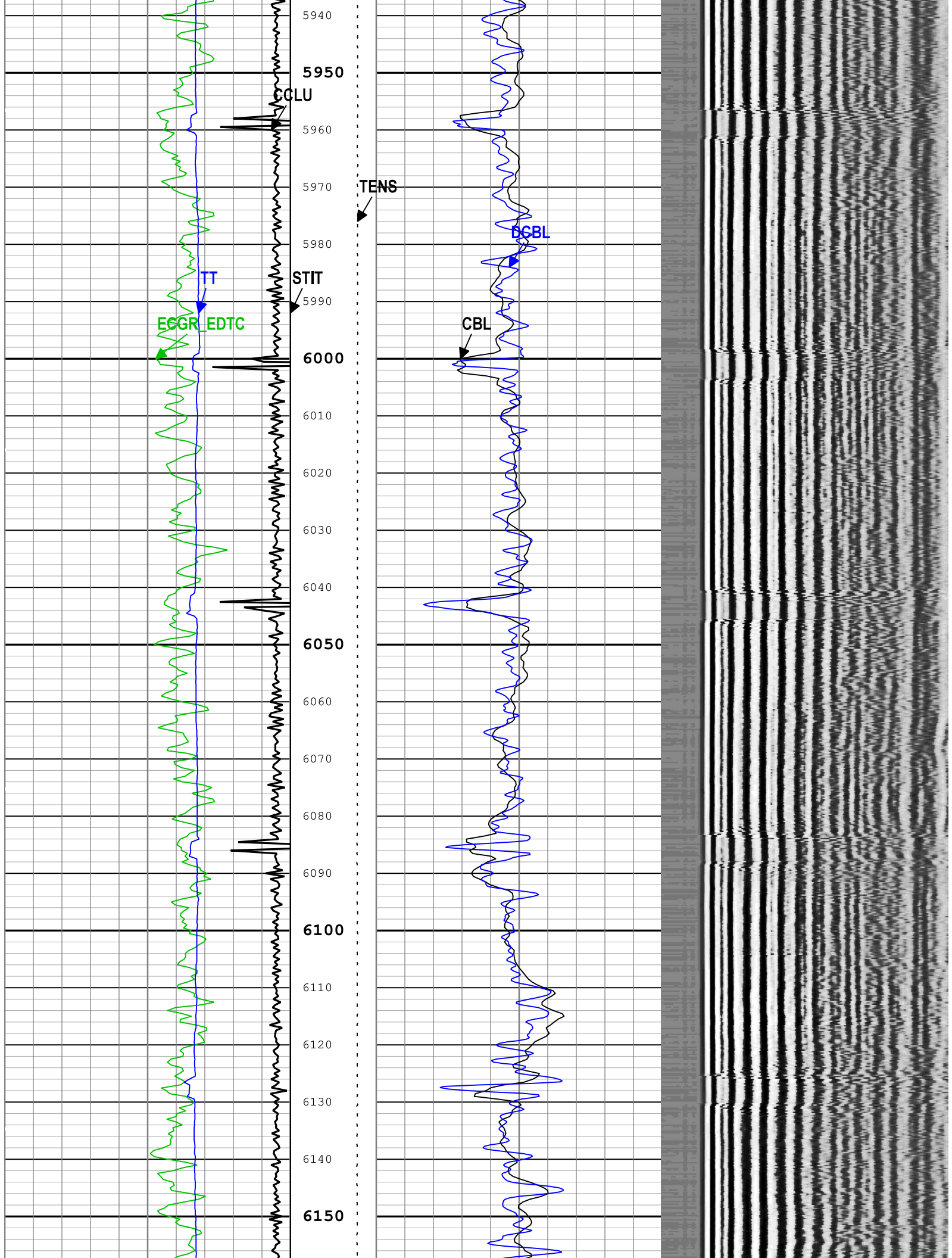


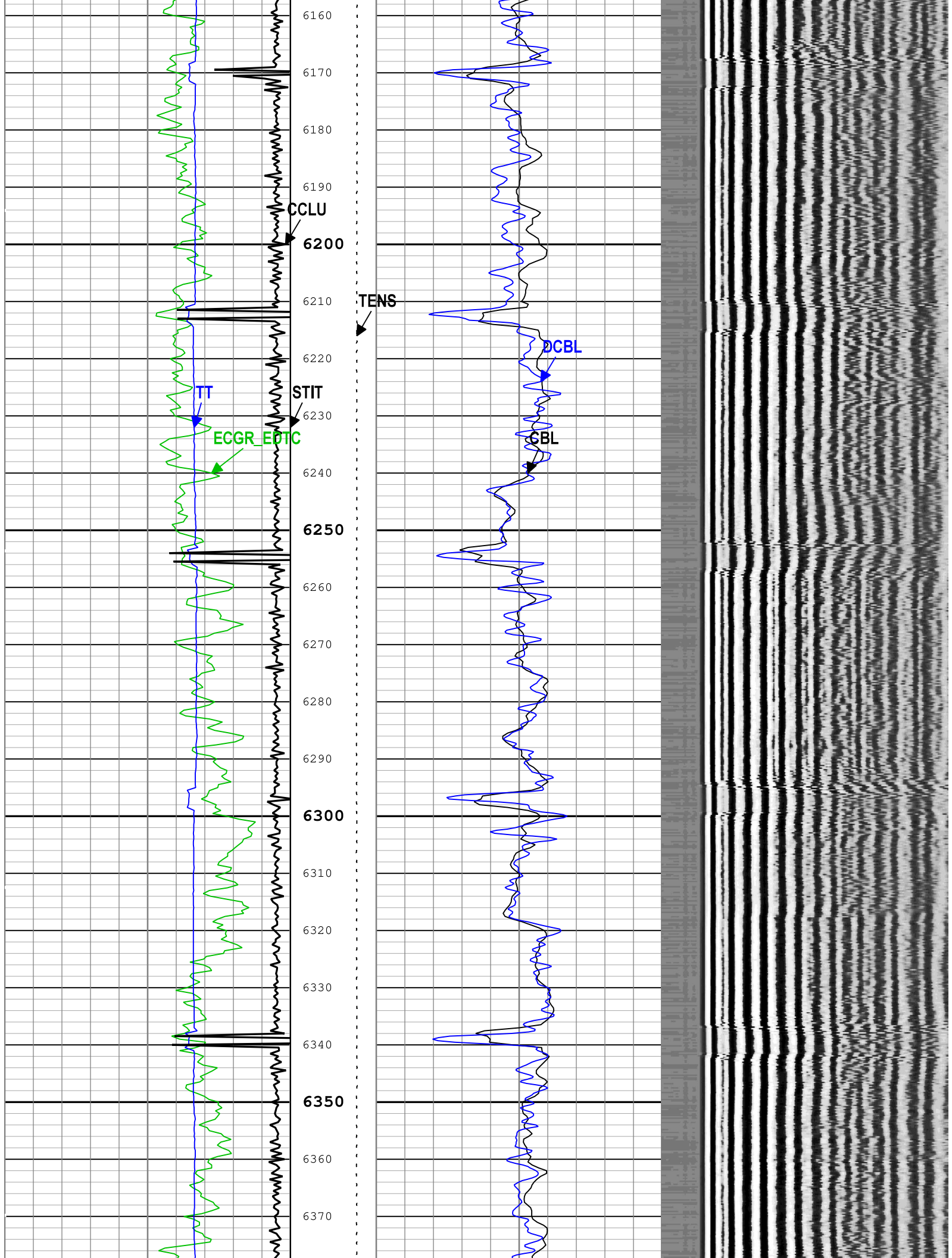


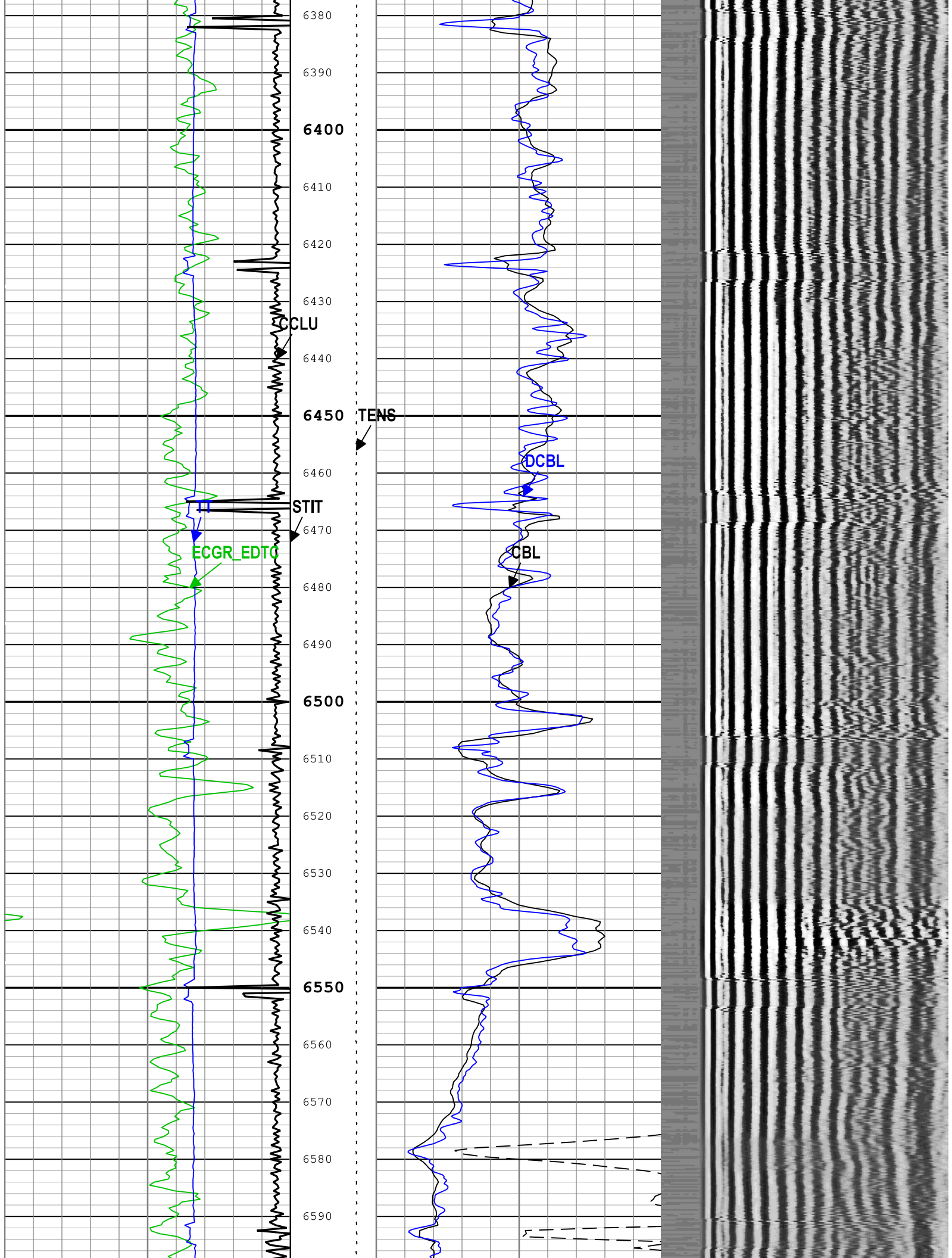


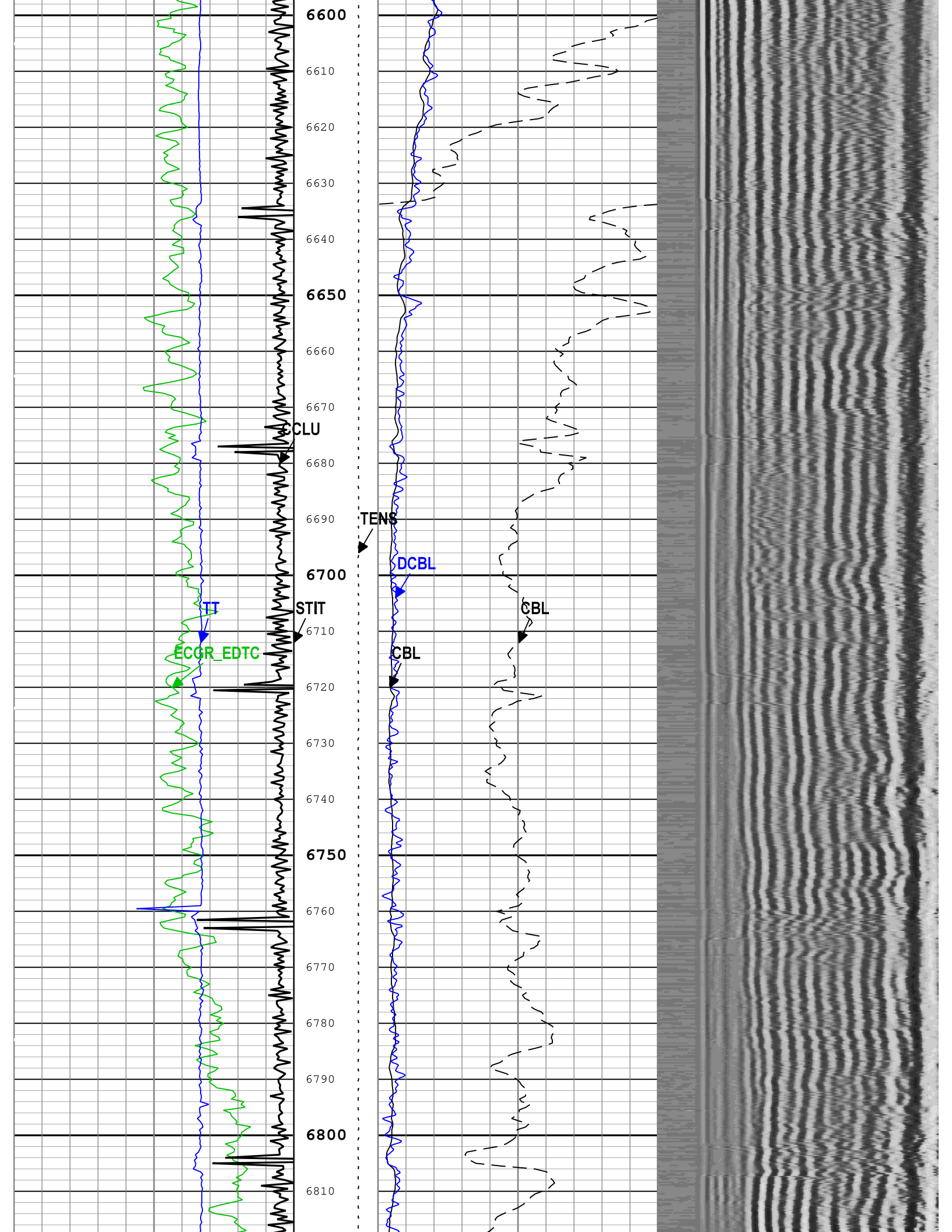


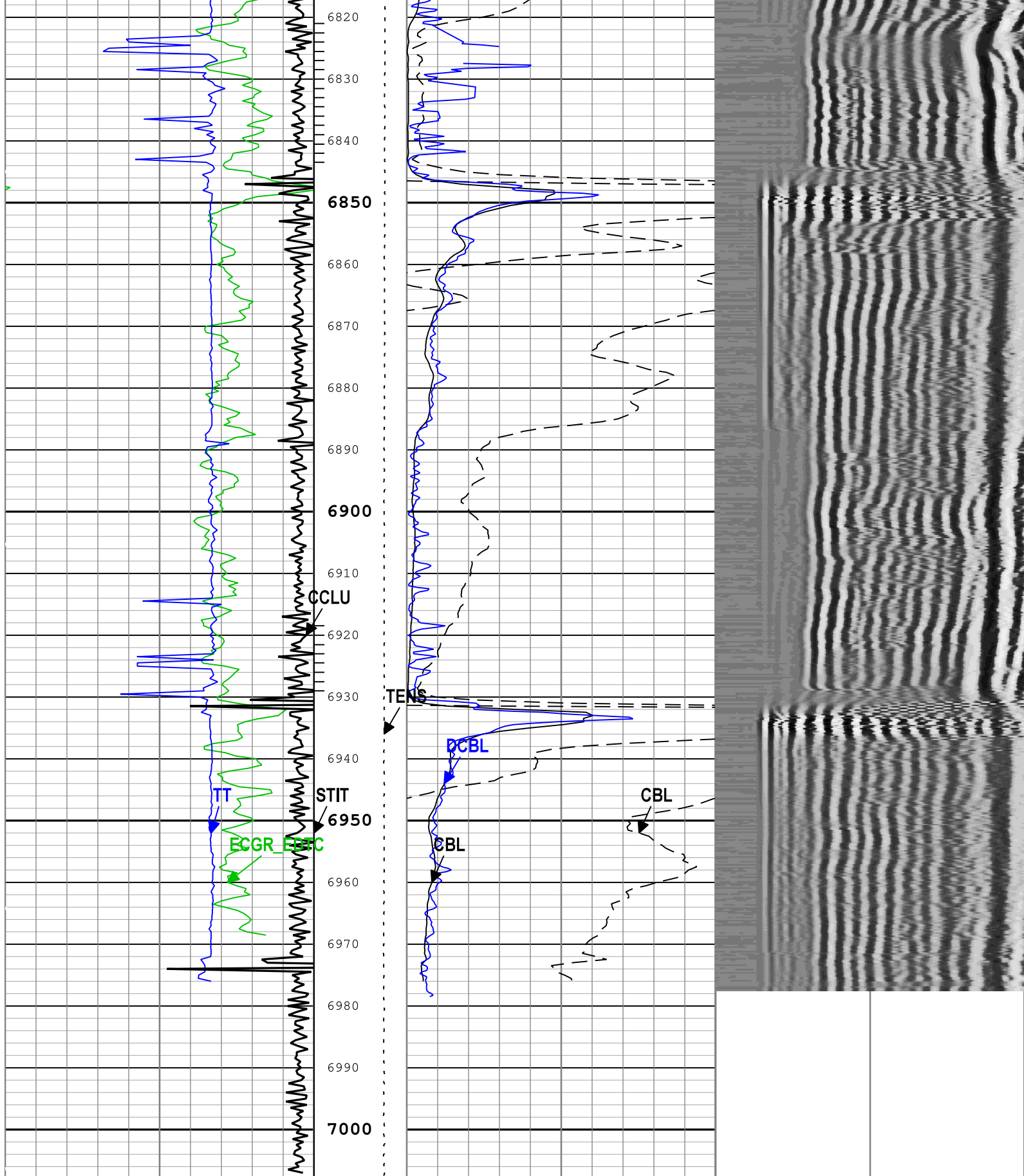












Gamma Ray (ECGR_EDTC) EDTC-B[1]	0	150
gAPI		
Transit Time for CBL (TT) ASLT-B[1]	400	200
us		
Casing Collar Locator Ultrasonic (CCLU) USIT-E[1]		

Stuck Tool Indicator, Total (STIT)	0	50
ft		
Cable Tension (TENS)		

CBL Amplitude (CBL) ASLT-B[1]	0	100
mV		
CBL Amplitude (CBL) ASLT-B[1]	0	10
mV		
Synthetic CBL from Discriminated Attenuation (DCBL) ASLT-B[1]		

Min	Amplitude	Max
100	Variable Density Log (VDL) ASLT-B[1]	700
	us	

-19 in 1 10000 lbf 0 0 mV 100

Cable Drag  
 Tool\_Tot.  
 Drag

└ BIEP - Bond Index Event Pips ASLT-B[1]

TIME\_1900 - Time Marked every 60.00 (s)

Description: CBL\_VDL Format: Log ( DSLT ASLT\_CBL-VDL ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 25-Feb-2022 18:35:35

## 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	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBAF_D	CBL Adjustment Factor	ASLT-B	1	
CBLO	Casing Bottom (Logger)	WLSESSION	8026	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	ASLT-B	80	mV
CDEN	Cement Density	USIT-E	1.62	g/cm3
CDEN	Cement Density	EDTC-B	2	g/cm3
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.25	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTF	Delta-T Fluid	Borehole	189	us/ft
DTMD	Borehole Fluid Slowness	Borehole	203	us/ft
FD	Fluid Density	USIT-E	1.08	g/cm3
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	Good Bond	ASLT-B	1.35	mV
GOBO_CURR	Good Bond in Arbitrary Cement	ASLT-B	1.35	mV
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-12.61	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	UFAO	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	FreePipe Norm.	
IMAR	Image Rotation	USIT-E	Off	
MATT	Maximum Attenuation	ASLT-B	16.92	dB/ft
MATT_CURR	Maximum Attenuation in Arbitrary Cement	ASLT-B	16.92	dB/ft
MCI	Minimum Cemented Interval for Isolation	ASLT-B	1.25	ft
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	15.37	us
MSA	Minimum Sonic Amplitude	ASLT-B	0.49	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	ASLT-B	0.49	mV
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.08	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.25	
NFPL_L5_D	Near Free Pipe Sonic Amplitude for Lower Transmitter - Receiver 5 (depth domain)	ASLT-B	0	
NFPL_U1_D	Near Free Pipe Sonic Amplitude for Upper Transmitter - Receiver 1 (depth domain)	ASLT-B	0	

RUN_SNUM	Run Sequence Number	WSDRUN	1	
SFPI_L6_D	Short Free Pipe Sonic Amplitude for Lower Transmitter - Receiver 6 (depth domain)	ASLT-B	0	
TD	Total Measured Depth	Borehole	7010	ft
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.62	Mrayl
U-USIT_UFAO	USIT Flexural Attenuation Offset	USIT-E	-5.7	dB/m
UFSFILT	Ultrasonic Flexural Surface Filter	USIT-E	LPF 250k	
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	ThirdInterfaceEcho	
ZMUD	Acoustic Impedance of Mud	Borehole	1.61	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

### OneDepth Zoned Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	12.25	15	944
BS	7.875	944	7009

All depth are actual.

### Tool Control Parameters

#### One: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
EMXV	EMEX Voltage	USIT-E	Time Zoned	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	4010	ft/h
MODE	SSLT Firing Mode	ASLT-B	Attenuation	
UPAT	USIT Emission Pattern	USIT-E	Pattern 750 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 6.0 in	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VDM	SSLT VDL Display Mode	ASLT-B	R5	
VRES	Vertical Resolution	USIT-E	6.0 in	

### OneTime Zoned Parameters

#### Pass Log[6]:Up

Parameter	Value	Start Time	Stop Time	Start Depth ( ft )	Stop Depth ( ft )
EMXV	40	25-Feb-2022 11:52:44	25-Feb-2022 11:59:39	7008.84	6625.59
EMXV	50	25-Feb-2022 11:59:39	25-Feb-2022 11:59:48	6625.59	6615.96
EMXV	60	25-Feb-2022 11:59:48	25-Feb-2022 12:00:03	6615.96	6601.65
EMXV	65	25-Feb-2022 12:00:03	25-Feb-2022 13:59:09	6601.65	512.69

#### Pass Log[10]:Up

EMXV	95	25-Feb-2022 15:11:31	25-Feb-2022 15:27:16	907.28	54.87
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All depth are at tool zero.

## Main Pass

### Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include
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Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DOB Mode	Depth Limit	Include Parallel Data
One	Log[4]:Up	Up	721.15 ft	1000.48 ft	25-Feb-2022 10:52:51 AM	25-Feb-2022 11:01:12 AM	ON	0.88 ft	Yes
One	Log[6]:Up	Up	217.58 ft	7009.18 ft	25-Feb-2022 11:52:44 AM	25-Feb-2022 1:59:09 PM	ON	6.34 ft	Yes
One	Log[10]:Up	Up	54.88 ft	907.28 ft	25-Feb-2022 3:10:33 PM	25-Feb-2022 3:27:16 PM	ON	1.53 ft	Yes

All depths are referenced to toolstring zero

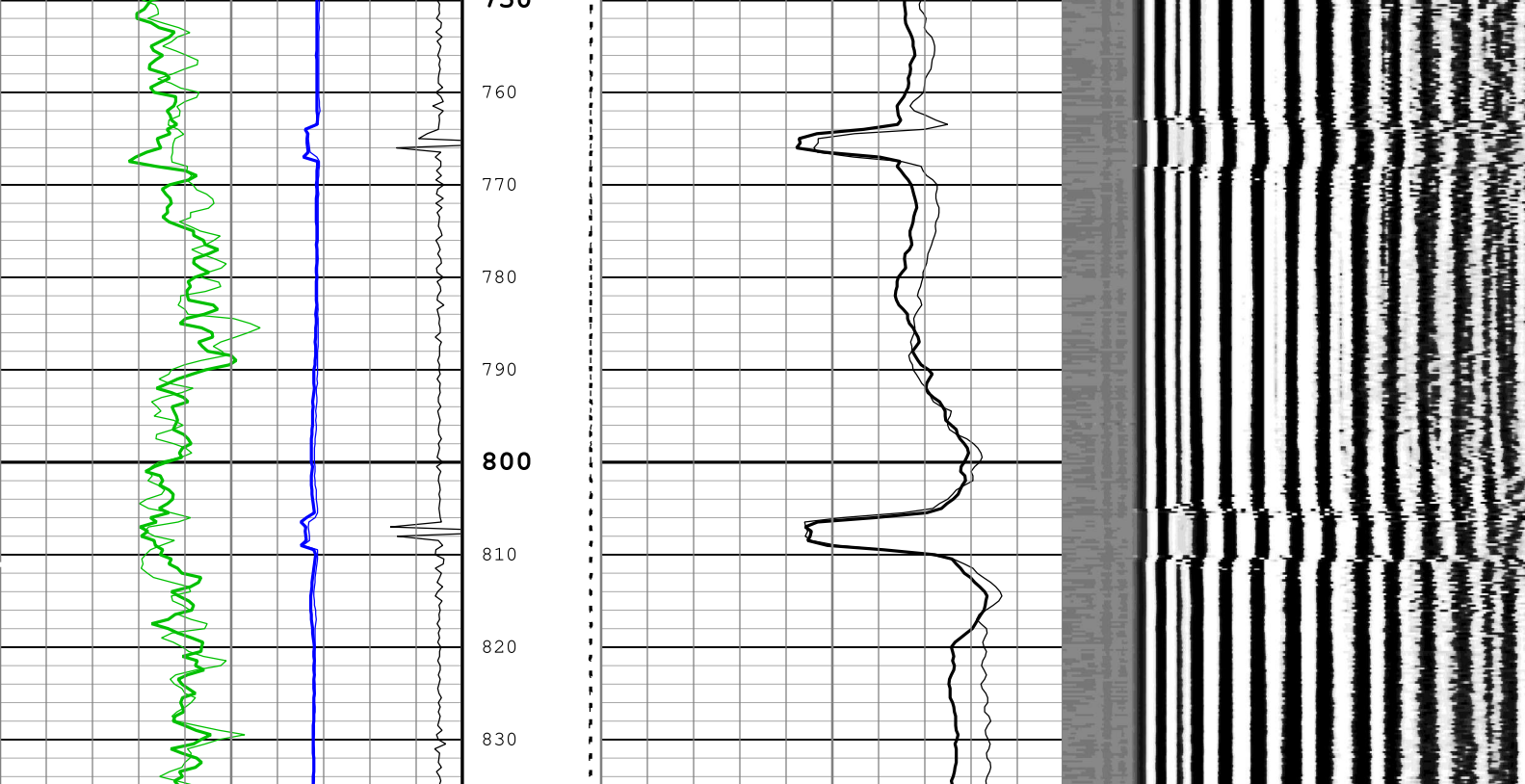
**Log** Company: Occidental Petroleum Inc Well: Warner 11-18 Main Pass: S010

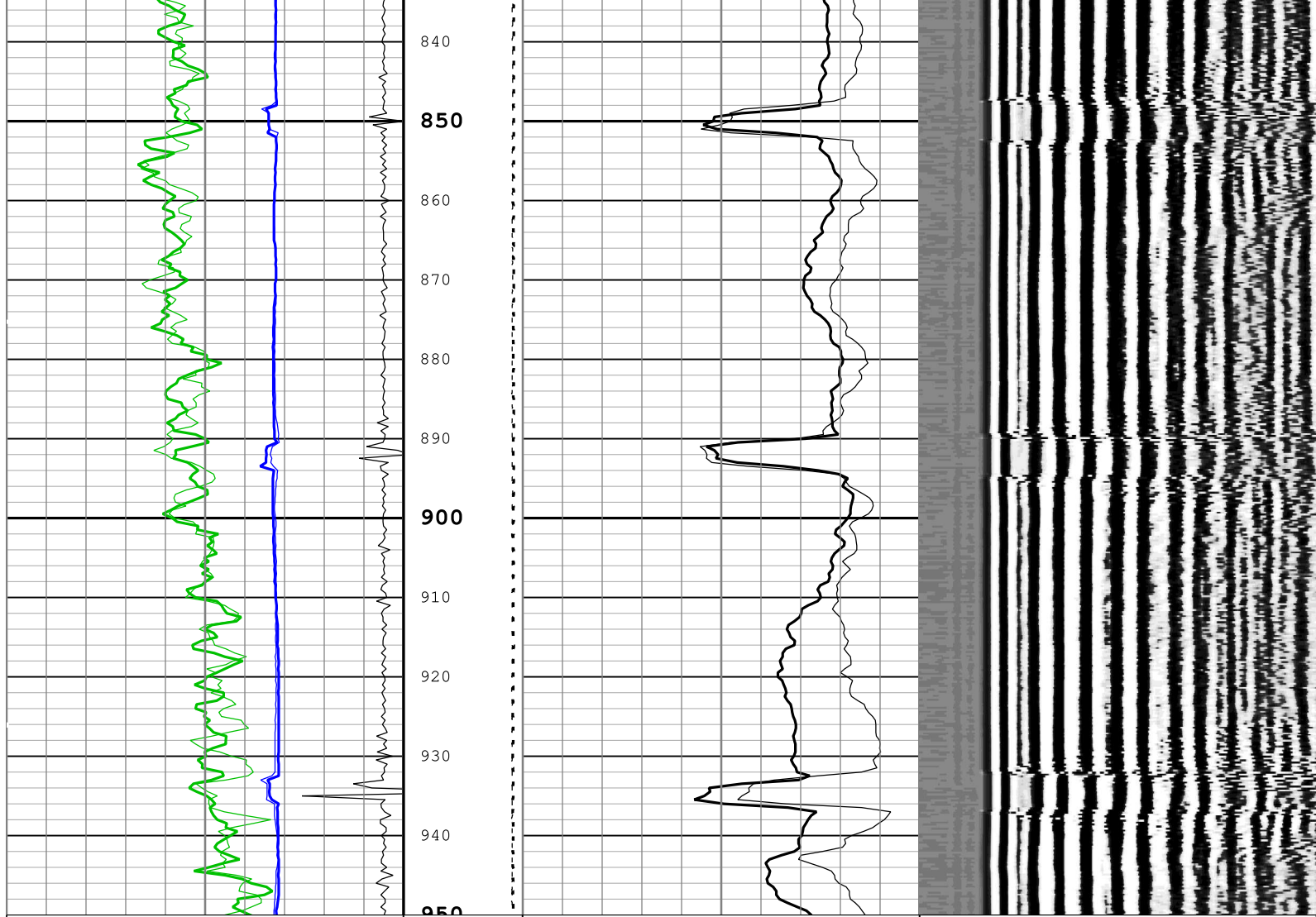
Description: CBL\_VDL Format: Log ( DSLT ASLT\_CBL-VDL RA ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 25-Feb-2022 18:35:42

TIME\_1900 - Time Marked every 60.00 (s)

BIEP - Bond Index Event Pips ASLT-B[1]

<p>Main To Repeat</p> <p>Repeat To Main</p> <p><u>Gamma Ray (ECGR_EDTC) EDTC-B[1]</u></p> <p>0 gAPI 150</p>	<p>Main To Repeat</p> <p>Repeat To Main</p> <p>Cable Tension (TENS)</p> <p>10000 lbf</p>	<p>Main To Repeat</p> <p>Repeat To Main</p> <p>CBL Amplitude (CBL) ASLT-B[1]</p> <p>0 mV 10</p>	<p>Min Amplitude Max</p> <p>Variable Density Log (VDL) ASLT-B[1]</p> <p>100 us 600</p>
<p>Main To Repeat</p> <p>Repeat To Main</p> <p><u>Transit Time for CBL (TT) ASLT-B[1]</u></p> <p>400 us 200</p>	<p>Main To Repeat</p> <p>Repeat To Main</p> <p>Stuck Tool Indicator, Total (STIT)</p> <p>0 ft 50</p>	<p>Main To Repeat</p> <p>Repeat To Main</p> <p>CBL Amplitude (CBL) ASLT-B[1]</p> <p>0 mV 100</p>	
<p>Main To Repeat</p> <p>Repeat To Main</p> <p>Casing Collar Locator Ultrasonic (CCLU) USIT-E[1]</p> <p>-19 in 1</p>			





Main To Repeat  
Repeat To Main  
Gamma Ray (ECGR\_EDTC) EDTC-B[1]  
0 gAPI 150

Main To Repeat  
Repeat To Main  
Transit Time for CBL (TT) ASLT-B[1]  
400 us 200

Main To Repeat  
Repeat To Main  
Casing Collar Locator Ultrasonic (CCLU) USIT-E[1]  
-19 in 1

Main To Repeat  
Repeat To Main  
Repeat To Main  
Cable Tension (TENS) 10000 lbf  
Main To Repeat  
Repeat To Main  
Stuck Tool Indicator, Total (STIT) 0 ft 50

Main To Repeat  
Repeat To Main  
CBL Amplitude (CBL) ASLT-B[1]  
0 mV 10

Main To Repeat  
Repeat To Main  
CBL Amplitude (CBL) ASLT-B[1]  
0 mV 100

Min Amplitude Max  
Variable Density Log (VDL) ASLT-B[1]  
100 us 600

└ BIEP - Bond Index Event Pips ASLT-B[1]

TIME\_1900 - Time Marked every 60.00 (s)

Company: Occidental Petroleum Inc

**Schlumberger**

Well: Warner 11-18

Field: Wattenberg

County: Weld

State: Colorado

Cement Bond Log

Variable Density Log

