

Company: Anadarko Petroleum Corporation

Well: COWBOY 21-5HZ

Field: DJ BASIN

County: WELD State: COLORADO

Cement Bond Log
Variable Density Log
2800 PSI

WELD
DJ BASIN
T2N R67W SEC21 SENE
COWBOY 21-5HZ
Anadarko Petroleum Corporation

Location:	T2N R67W SEC21 SENE	Elev.:	K.B.	5067.00 ft
	2334/FNL 886 FEL		G.L.	5041.00 ft
	LAT/LONG 40.124675/-104.889306		D.F.	5067.00 ft
	Permanent Datum:	Ground Level	Elev.:	5041.00 f
Log Measured From:		Kelly Bushing	26.00 ft	above Perm.Datum
Drilling Measured From:		Kelly Bushing		
API Serial No.	Section:	Township:	Range:	
0512347100	21	2N	67W	

Logging Date 14-Nov-2018

Run Number ONE

Depth Driller 21278.00 ft

Schlumberger Depth 7010.00 ft

Bottom Log Interval 7010.00 ft

Top Log Interval 40.00 ft

Casing Fluid Type Fresh Water

Salinity

Density 8.4 lbm/gal

Fluid Level 0.00 ft

BIT/CASING/TUBING STRING

Bit Size 8.50 in

From 1893.00 ft

To 21278.00 ft

Casing/Tubing Size 5.5 in

Weight 17 lbm/ft

Grade P110

From 0.00 ft

To 21268.00 ft

Max Recorded Temperatures 187 degF 92

Logger on Bottom 14-Nov-2018 13:50:00

Unit Number 9108 FORT MORGAN, C

Recorded By Justin Ray

Witnessed By Kyle Carver

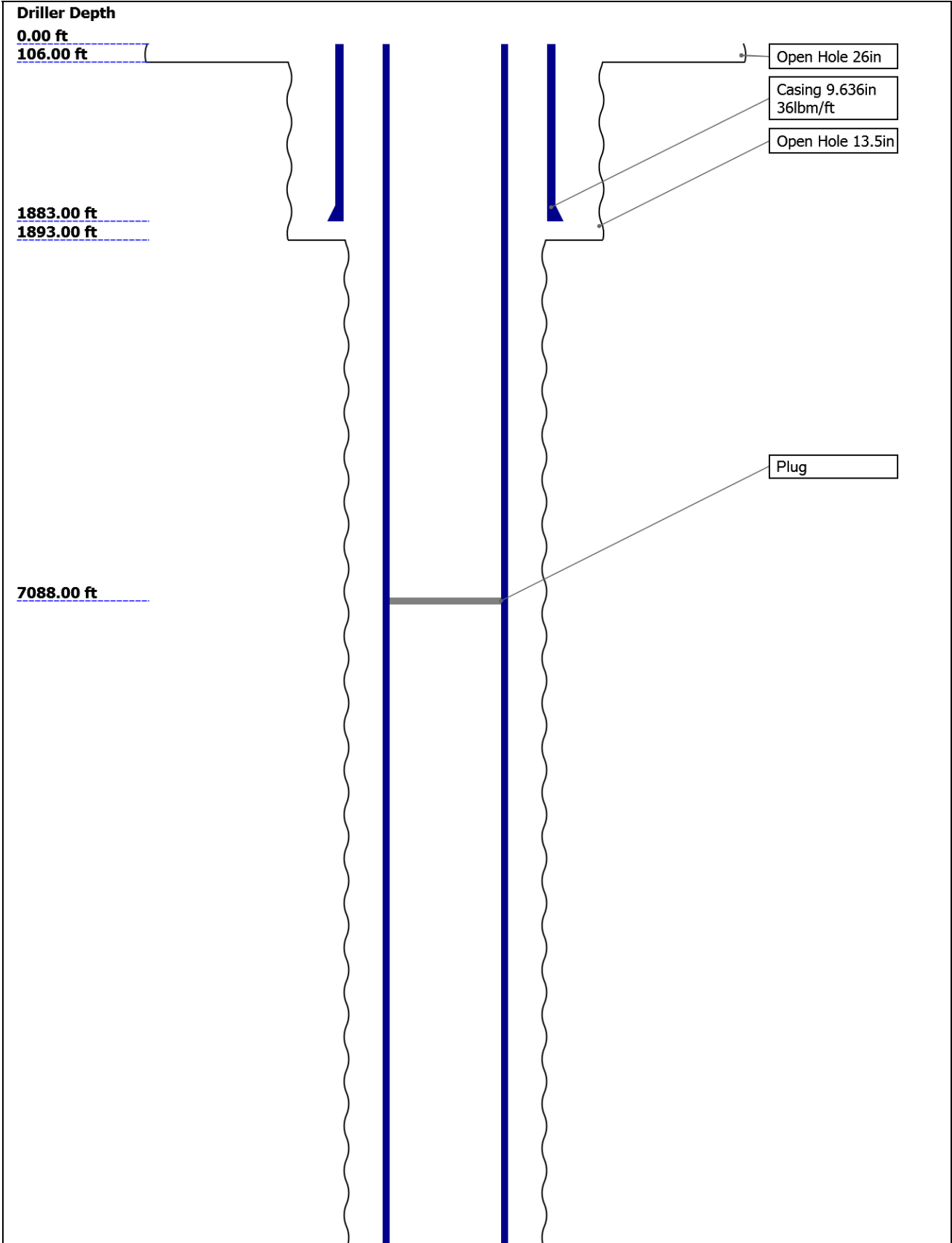
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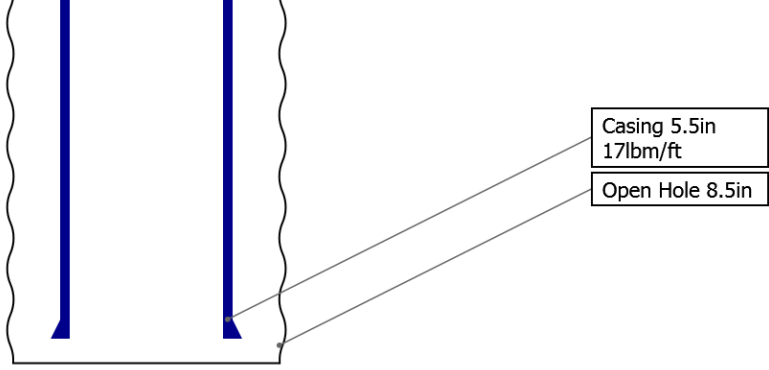
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Well Sketch



21268.00 ft


21278.00 ft

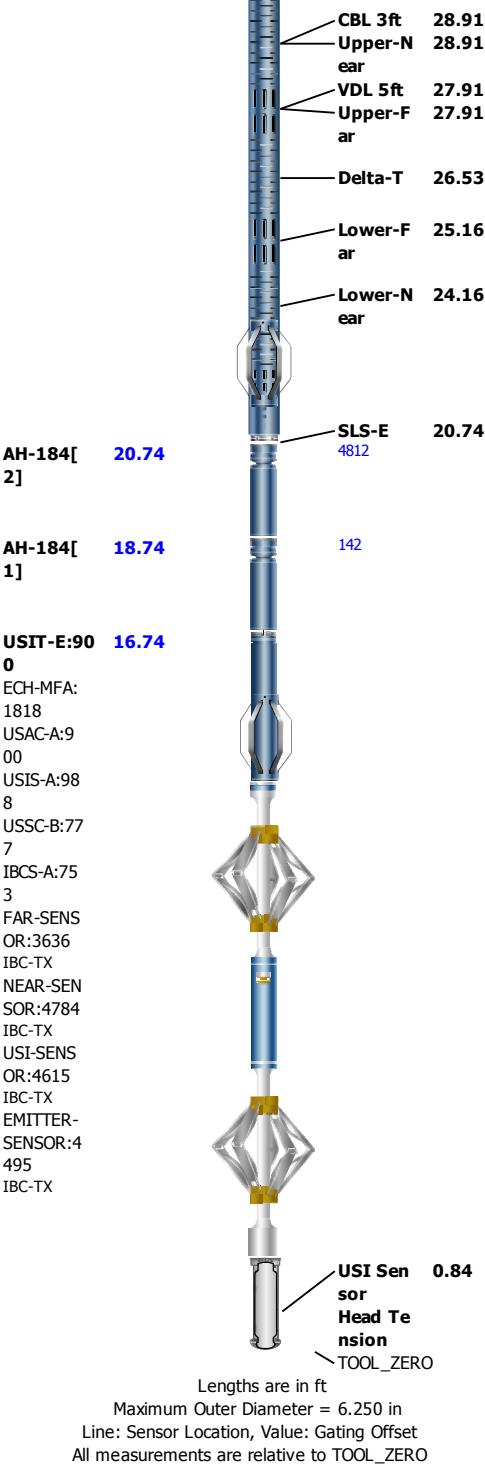


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	26	13.5	8.5			
Top Driller (ft)	0	106	1893			
Top Logger (ft)	0	106	1893			
Bottom Driller (ft)	106	1893	21278			
Bottom Logger (ft)	106	1893	21278			
Casing						
Size (in)	9.636	5.5				
Weight (lbm/ft)	36	17				
Inner Diameter (in)	8.926	4.892				
Grade	J55	P110				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	1883	21268				
Bottom Logger (ft)	1883	21268				

Remarks and Equipment Summary

ONE: Toolstring			ONE: Remarks	
Equip name Length LEH-QT:2 56.21 109 LEH-QT:21 09		MP name Offset	Toolstring ran as per tool sketch	
		Gemcos, boosters, small hole springs and two knuckles ran for tool centralization		
		Main pass No. 1 ran with 0 PSI SIP.		
Weight 52.73		Main pass No. 2 ran with 2800 PSI SIP		
		Main pass No. 3 ran with 7500 PSI SIP		
		Isolation scanner run at 10 deg 6 in for cement evaluation		
		Cement: 12 ppg Lead. 13.5 Tail		
		Spacer: 8.4 ppg		
		Thank you for choosing Schlumberger		
EDTC-B:9 47.88 316 EDTH-B:93 73 EDTG-A:7 9527 EDTC-B:93 16		CTEM 44.38 ACCZ 0.00 HV 0.00 Gamma Ray 42.51 TelStatu s 41.38		
DSLT-H:8 41.38 049 ECH-KH:8 539 DSLCH:80 49 SLC-F:801				



Depth Summary

ONE		
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Depth Measuring Device

Type	IDW-JA	
Serial Number	6455	

Calibration Date	26-JUL-2018		
Calibrator Serial Number	IDWC-C-57		
Calibration Cable Type	7-32 ASXS		
Wheel Correction 1	-1		
Wheel Correction 2	1		

Tension Device

Type	CMTD-B/A		
Serial Number	1703		
Calibration Date			
Calibrator Serial Number			
Number of Calibration Points	0		

Logging Cable

Type	7-32AS-XS		
Serial Number	U718001		
Length	24000.00 ft		
Conveyance Type	Wireline		
Rig Type	MAST		

ONE:Depth Control Parameters

Depth Control Remarks

Log Sequence	First Log In the Well	All Schlumberger depth control procedures 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		Log correlated to down pass
Stretch Correction	10.20 ft	
Tool Zero Check At Surface		

ONE

CBL 2800 PSI

Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[7]:Up	Up	247.12 ft	7035.93 ft	15-Nov-2018 8:18:24 AM	15-Nov-2018 9:59:14 AM	ON	10.07 ft	No

All depths are referenced to toolstring zero

Log

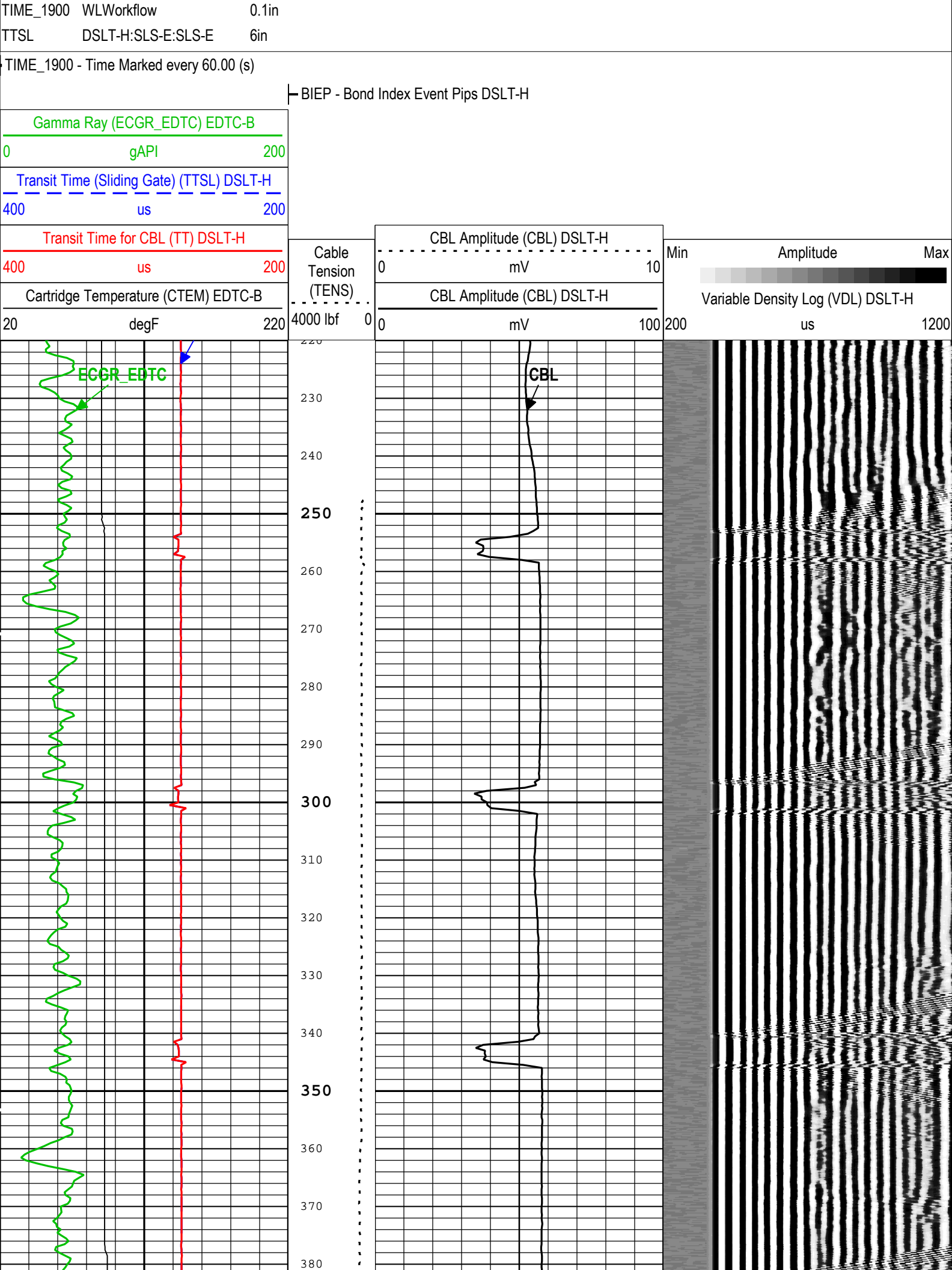
Company: Anadarko Petroleum Corporation

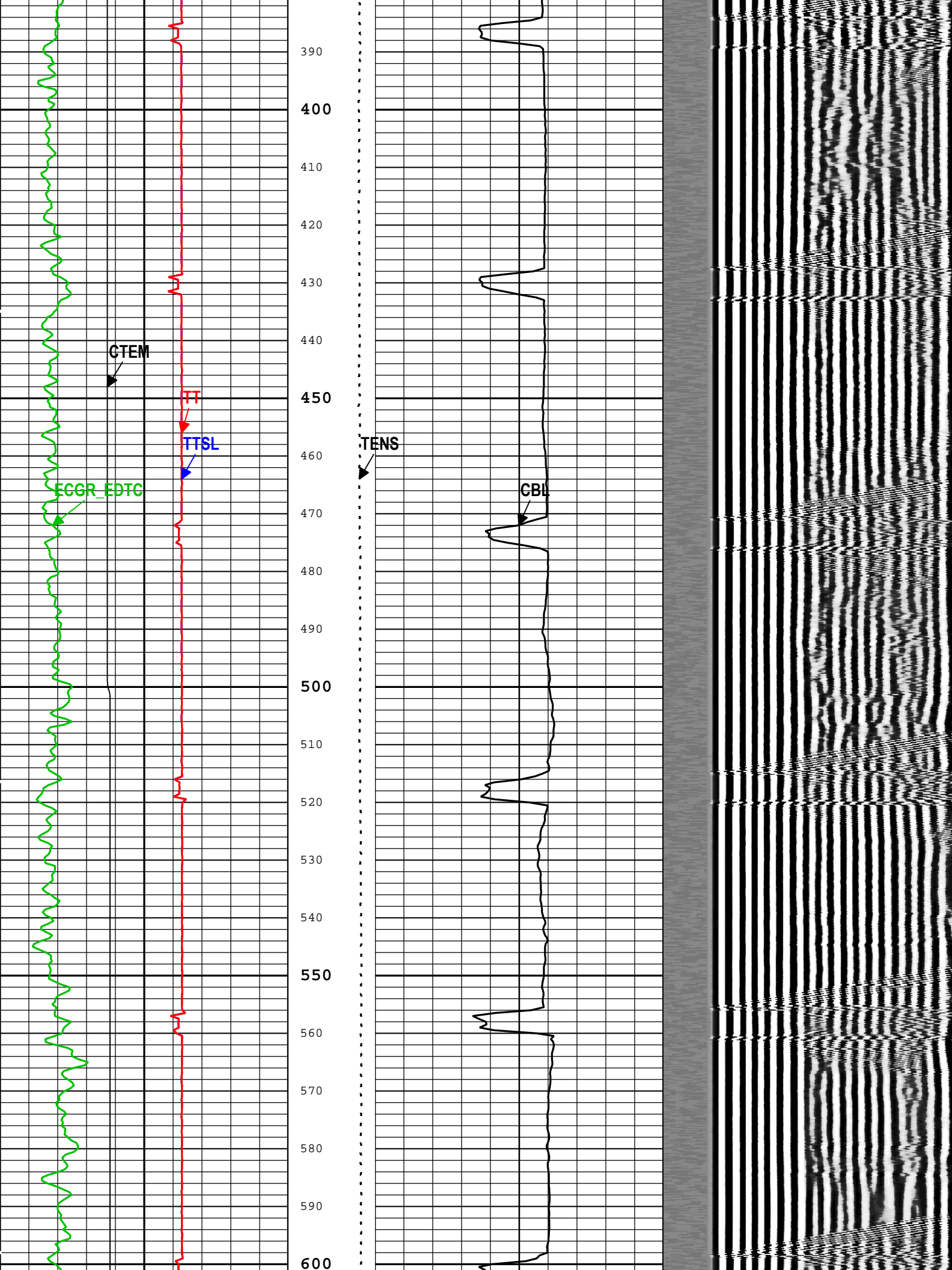
Well:COWBOY 21-5HZ

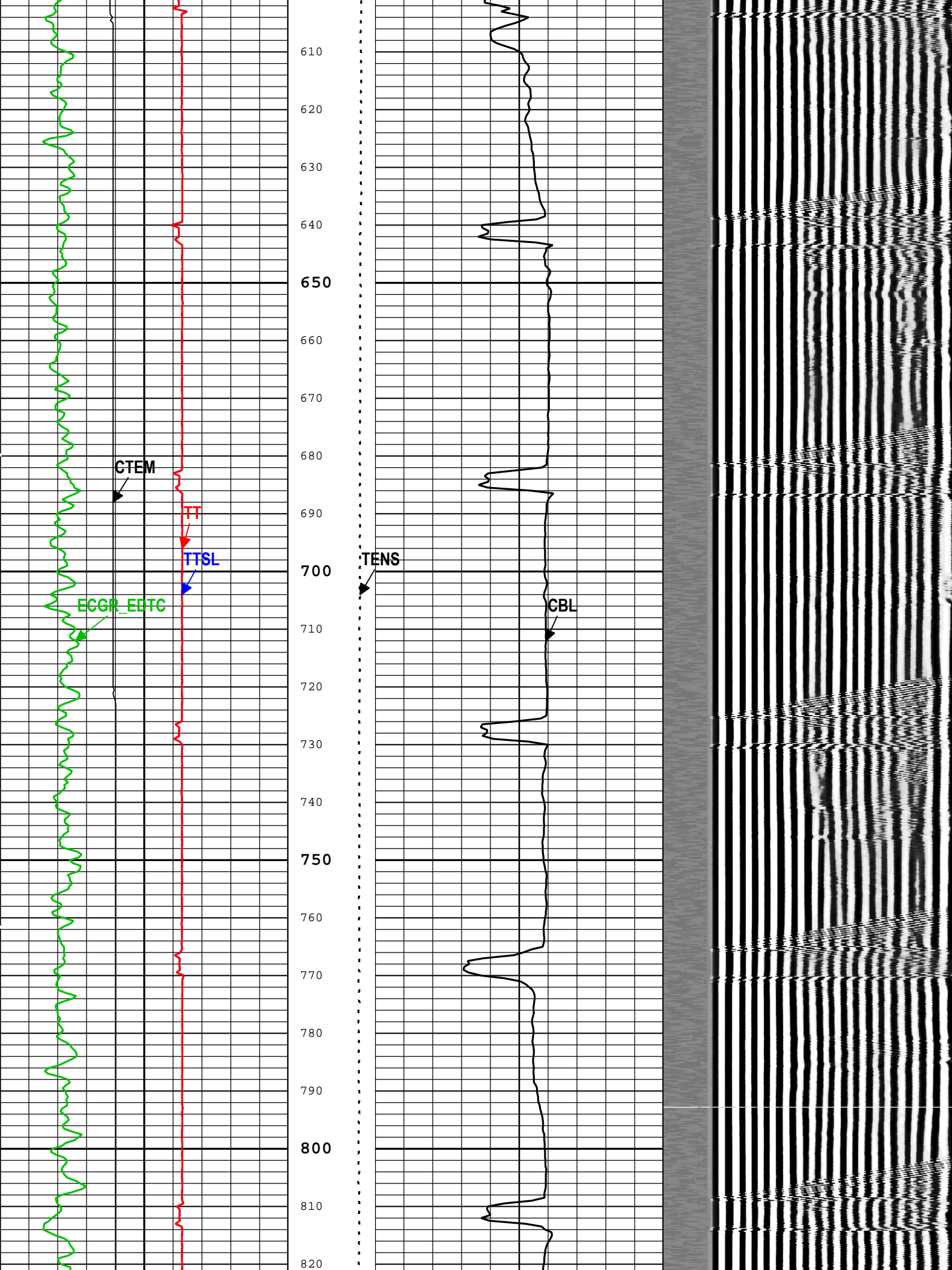
ONE: Log[7]:Up:S021

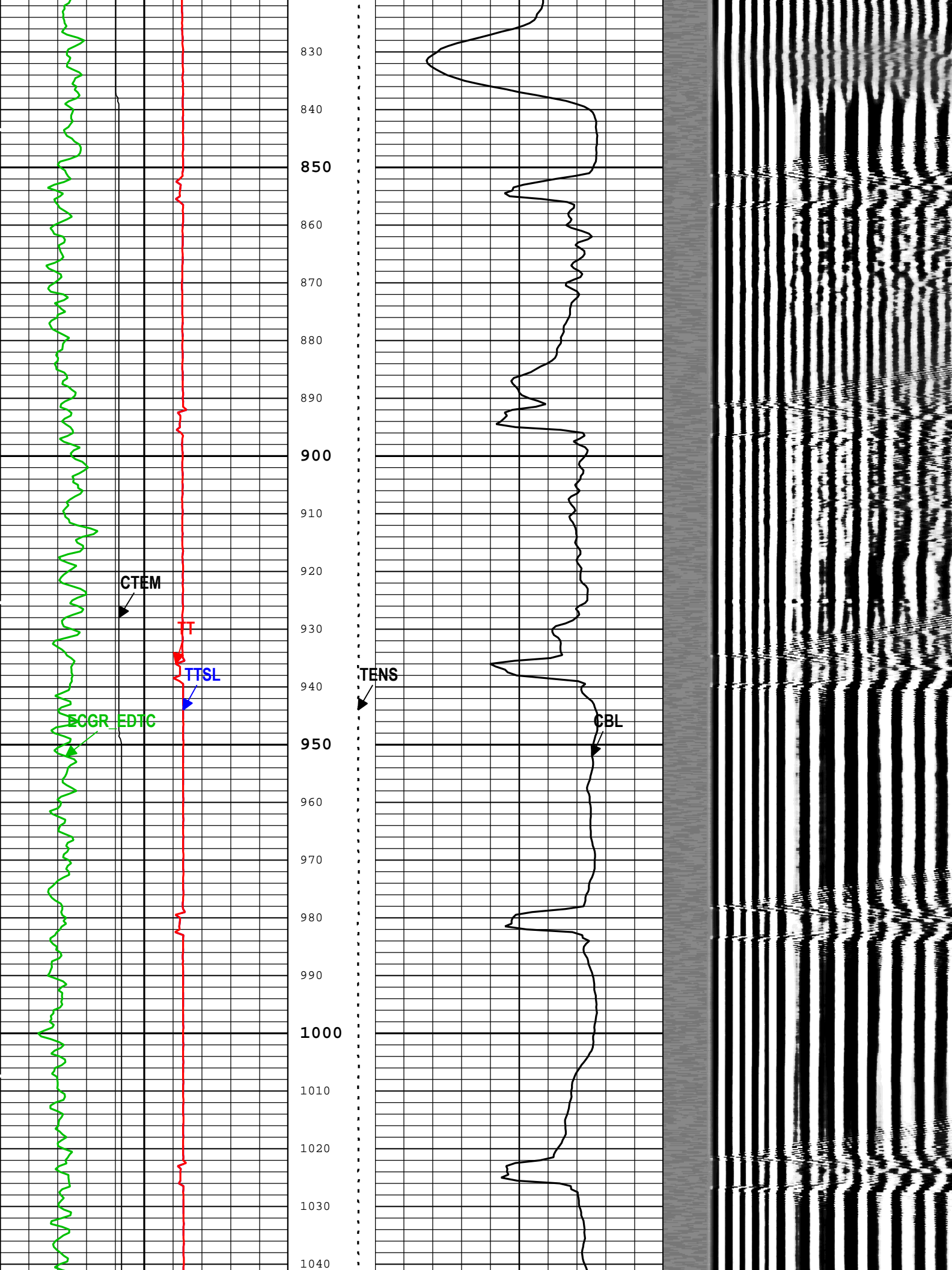
Description: CBL_Dual_Gate Format: Log (CBL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 16-Nov-2018 19:14:31

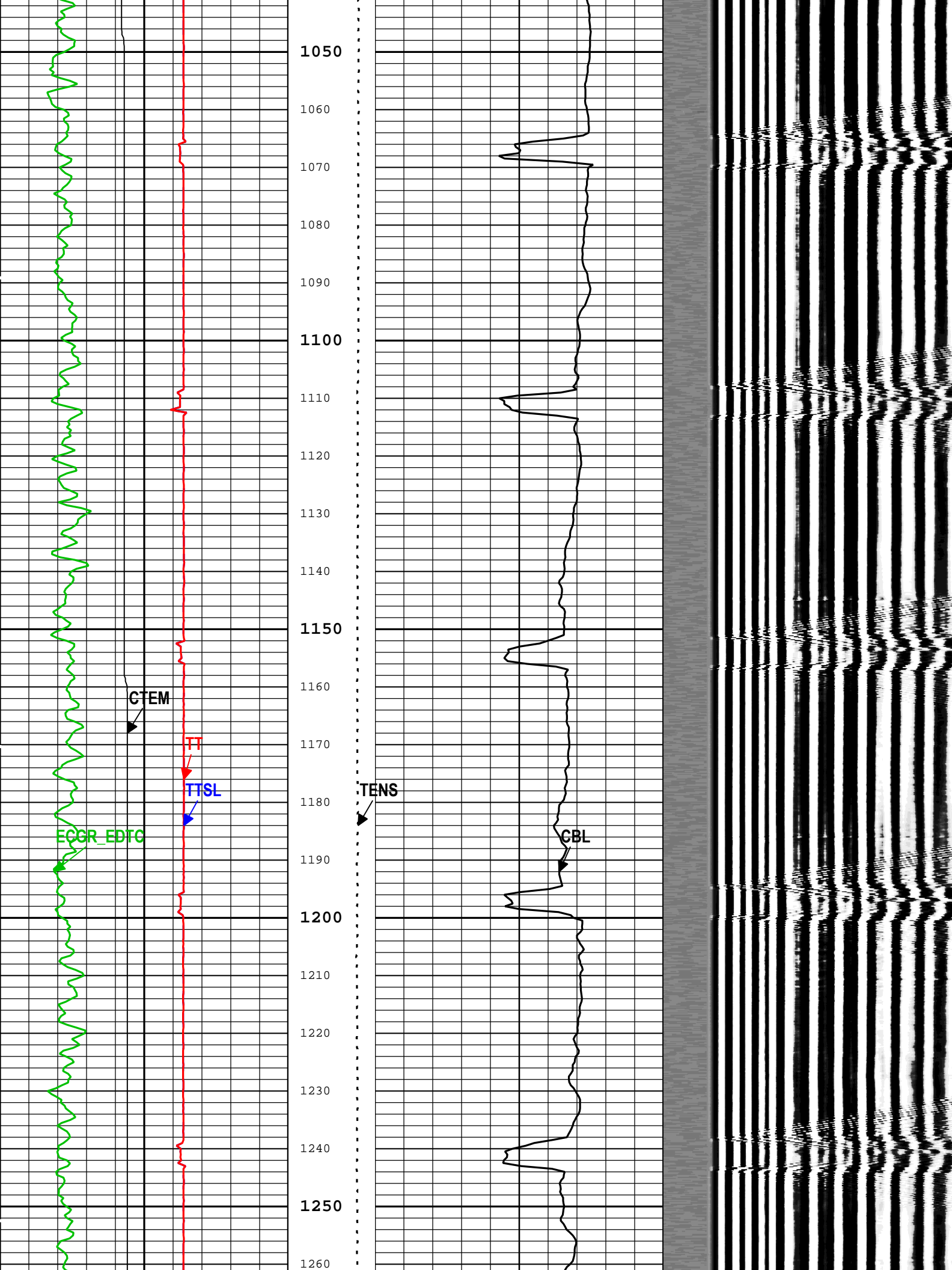
Channel	Source	Sampling
TT	DSLT-H:SLS-E:SLS-E	6in
BIEP	DSLT-H:SLS-E:SLS-E	6in
CBL	DSLT-H:SLS-E:SLS-E	6in
CTEM	EDTC-B:EDTC-B:EDTC-B	6in
GR	EDTC-B:EDTC-B:EDTC-B	6in
TENS	WLWorkflow	1in

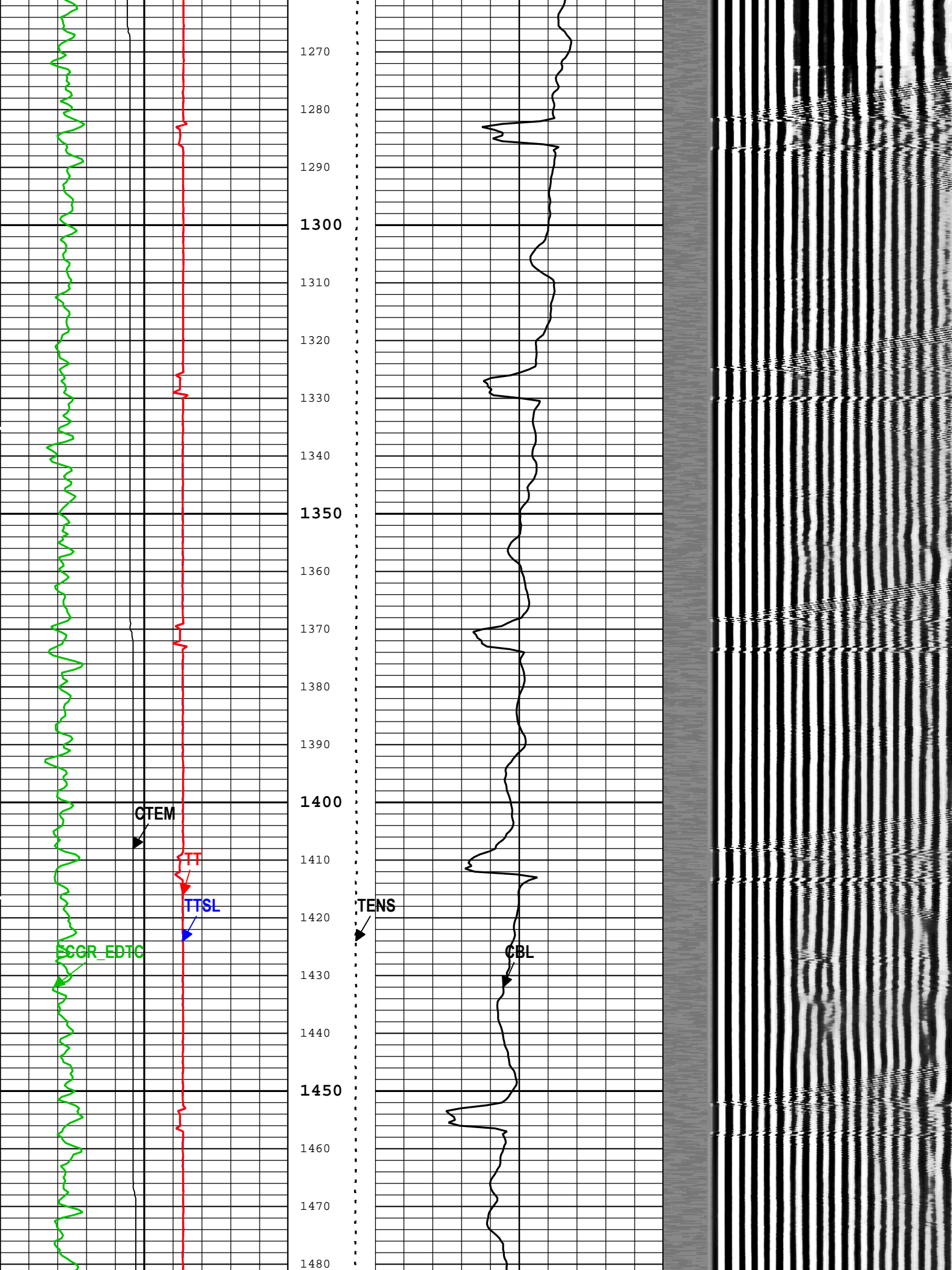


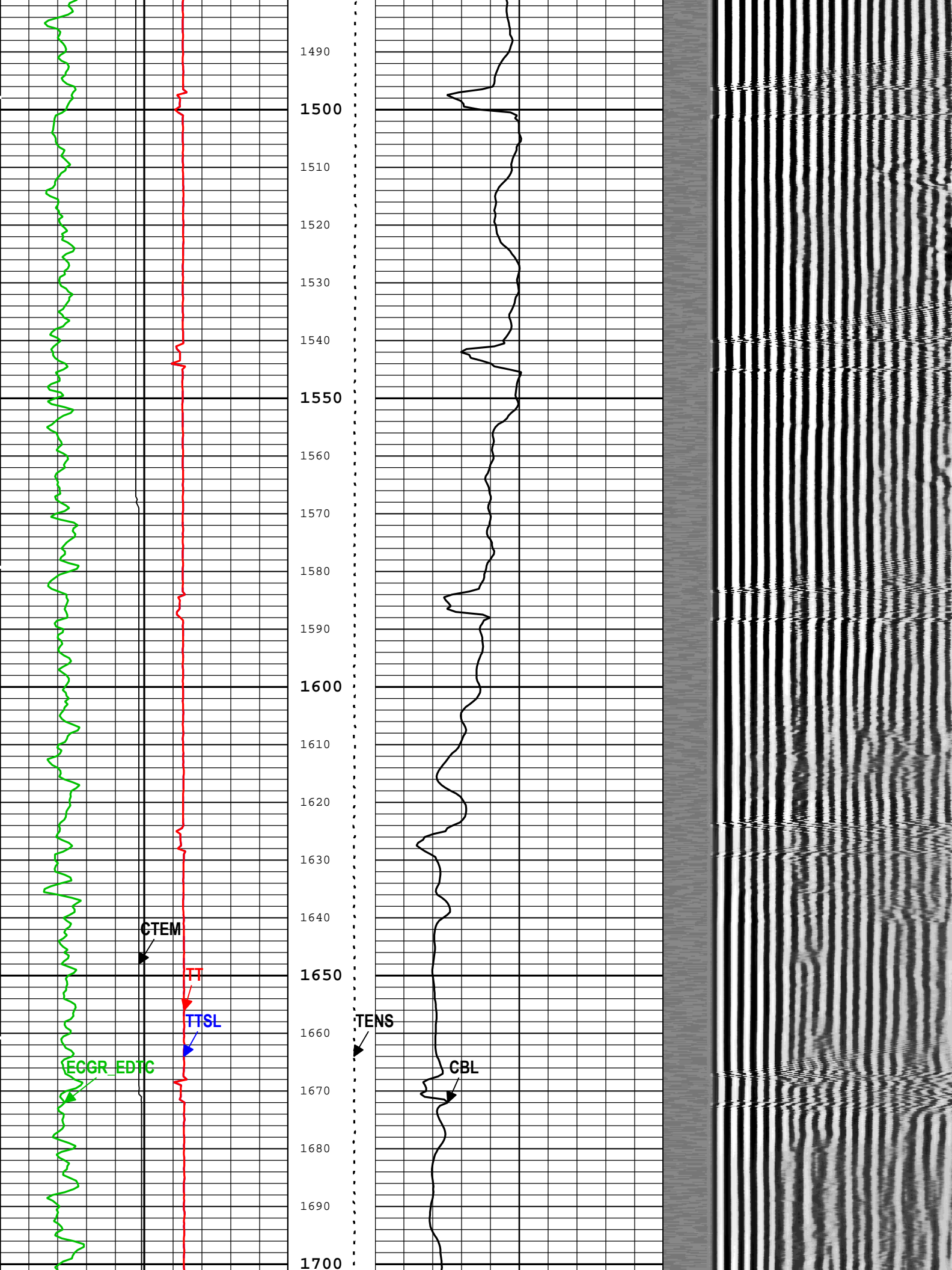


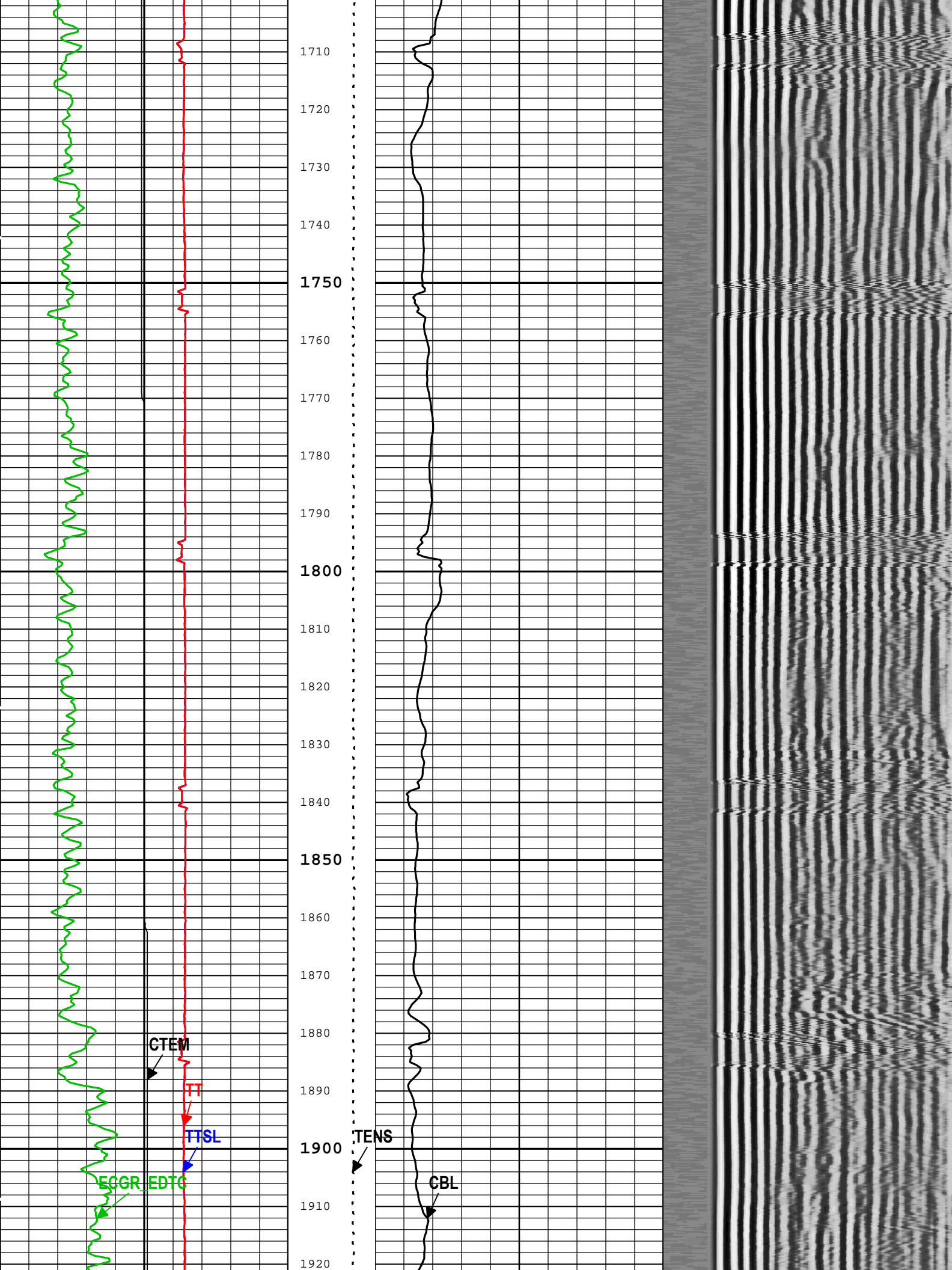


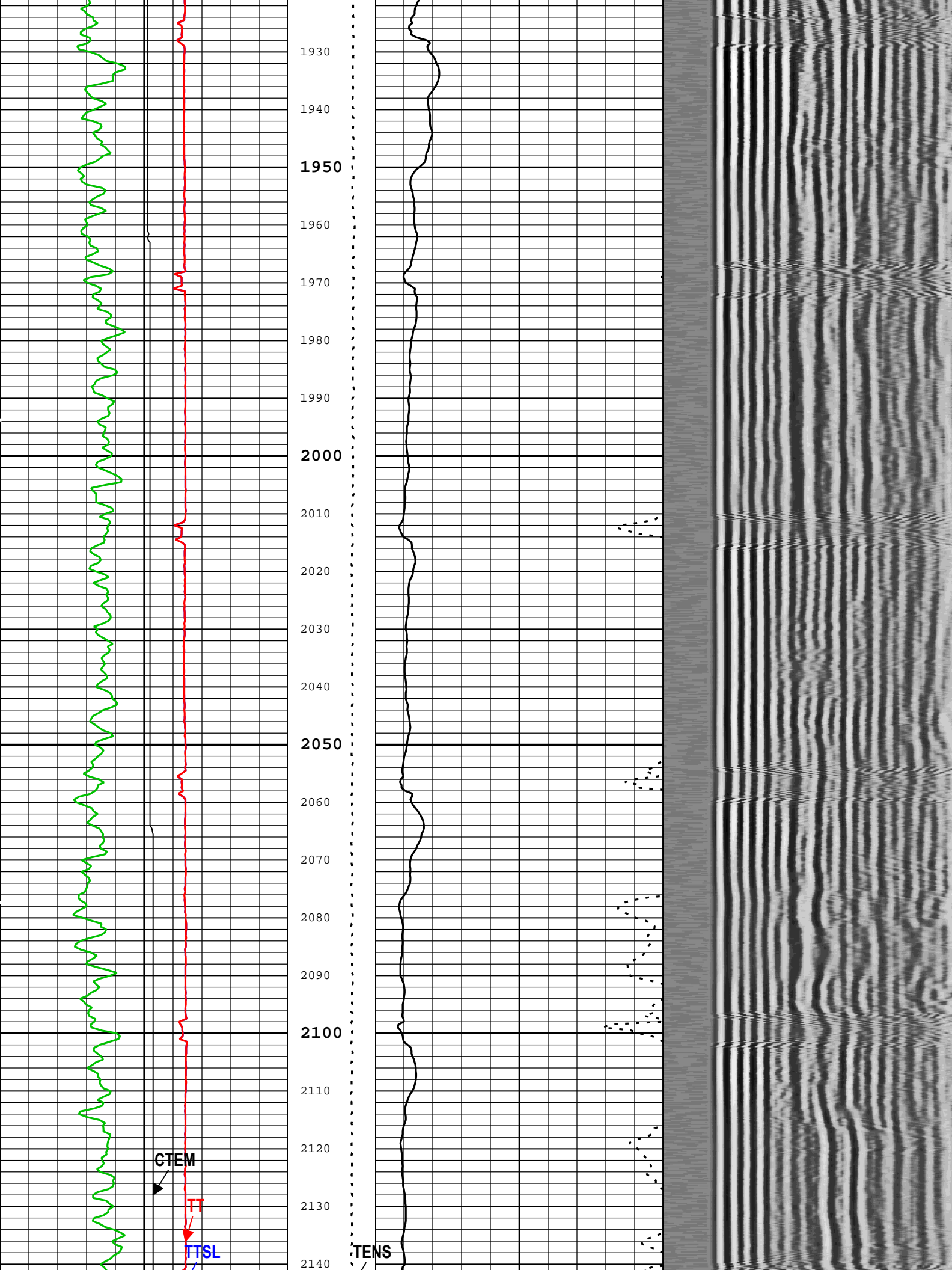


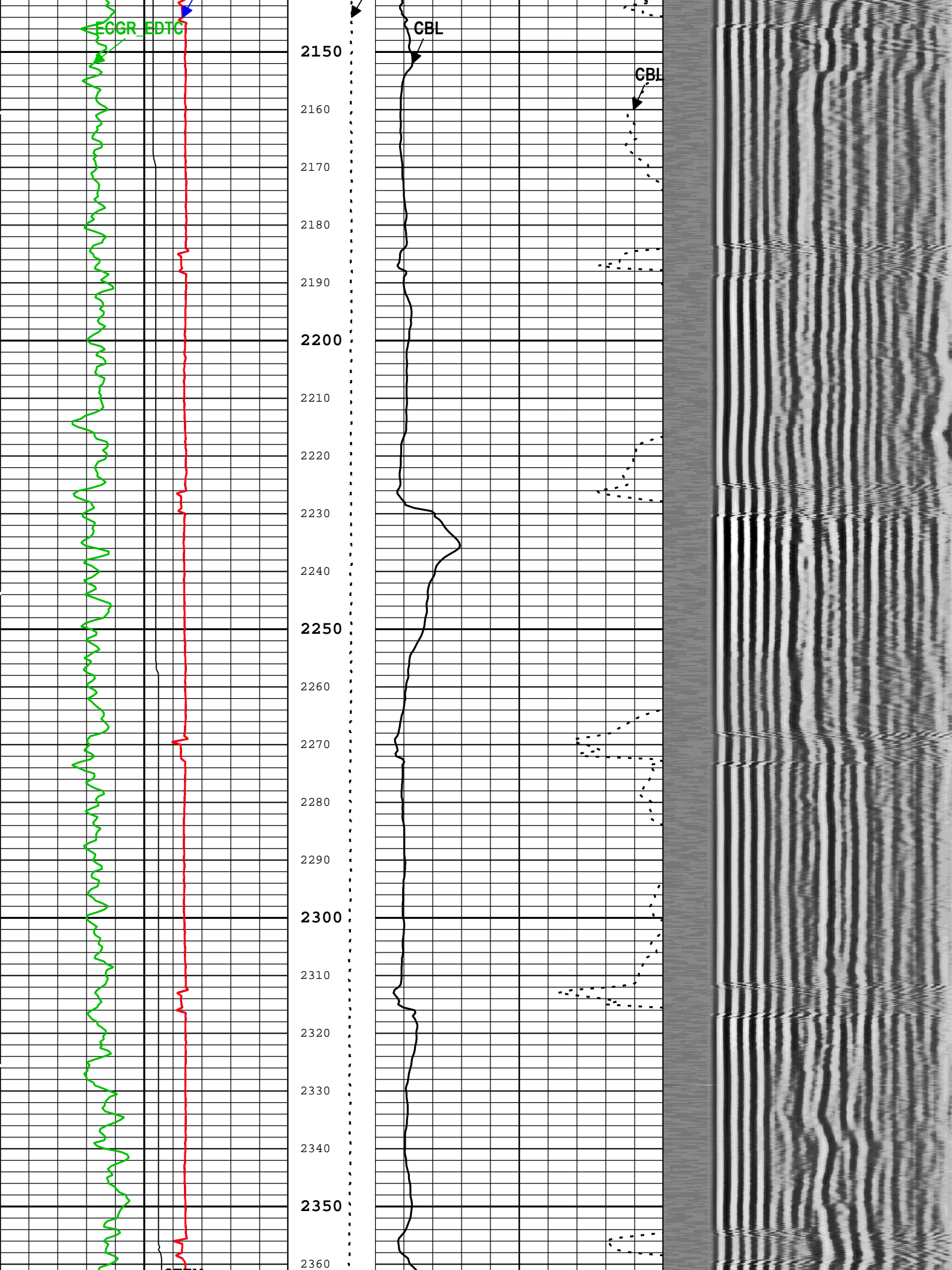


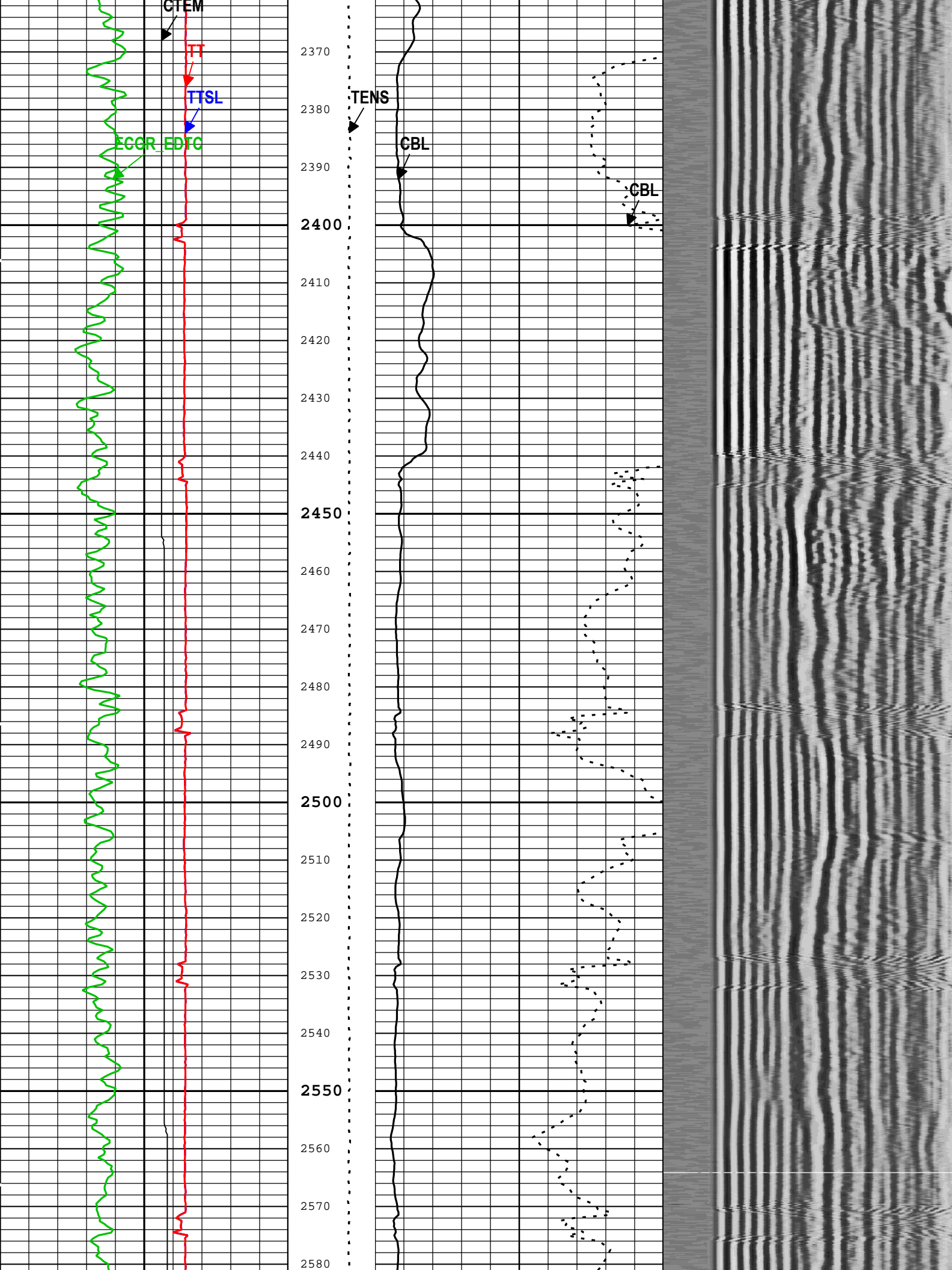


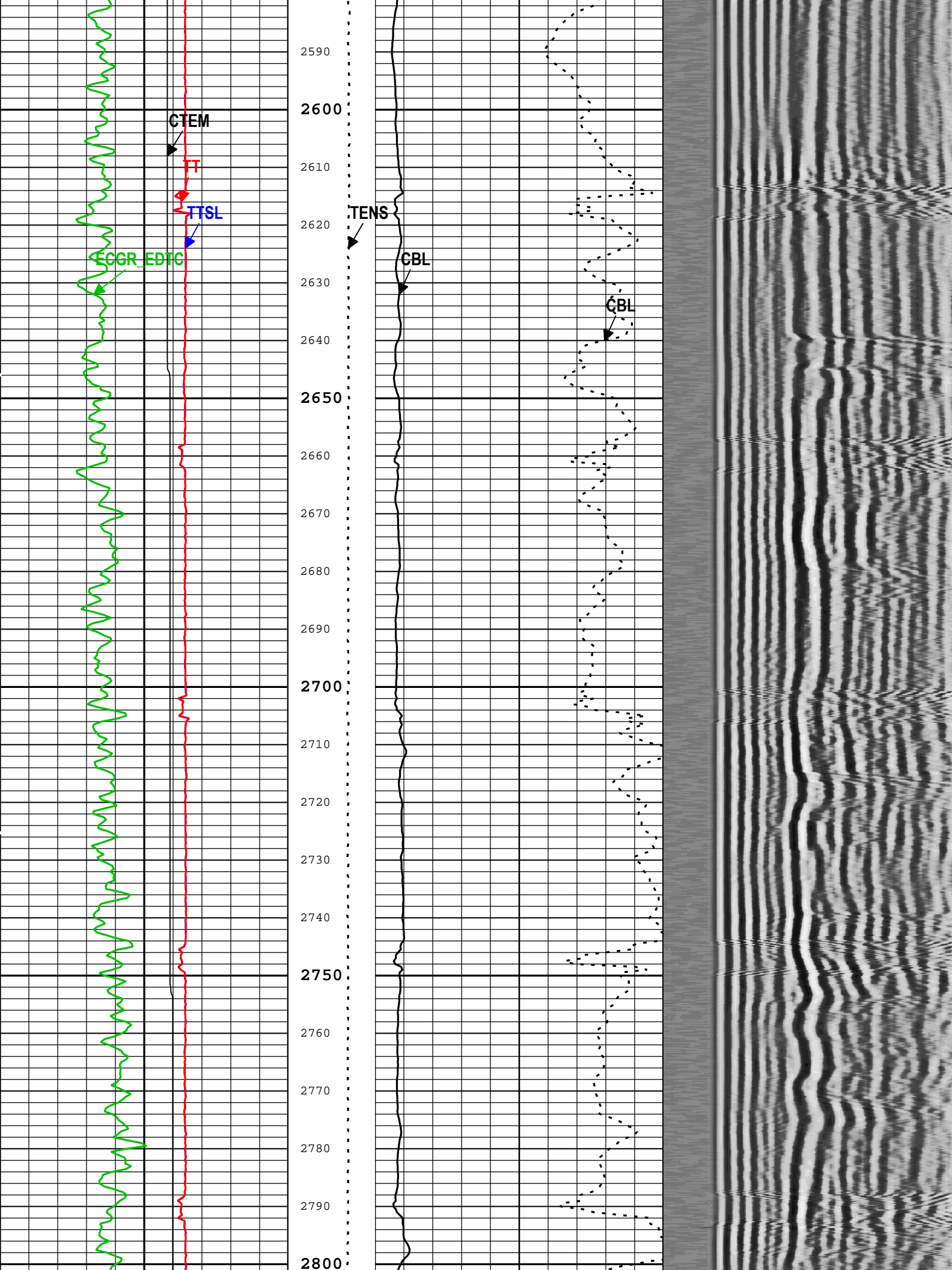


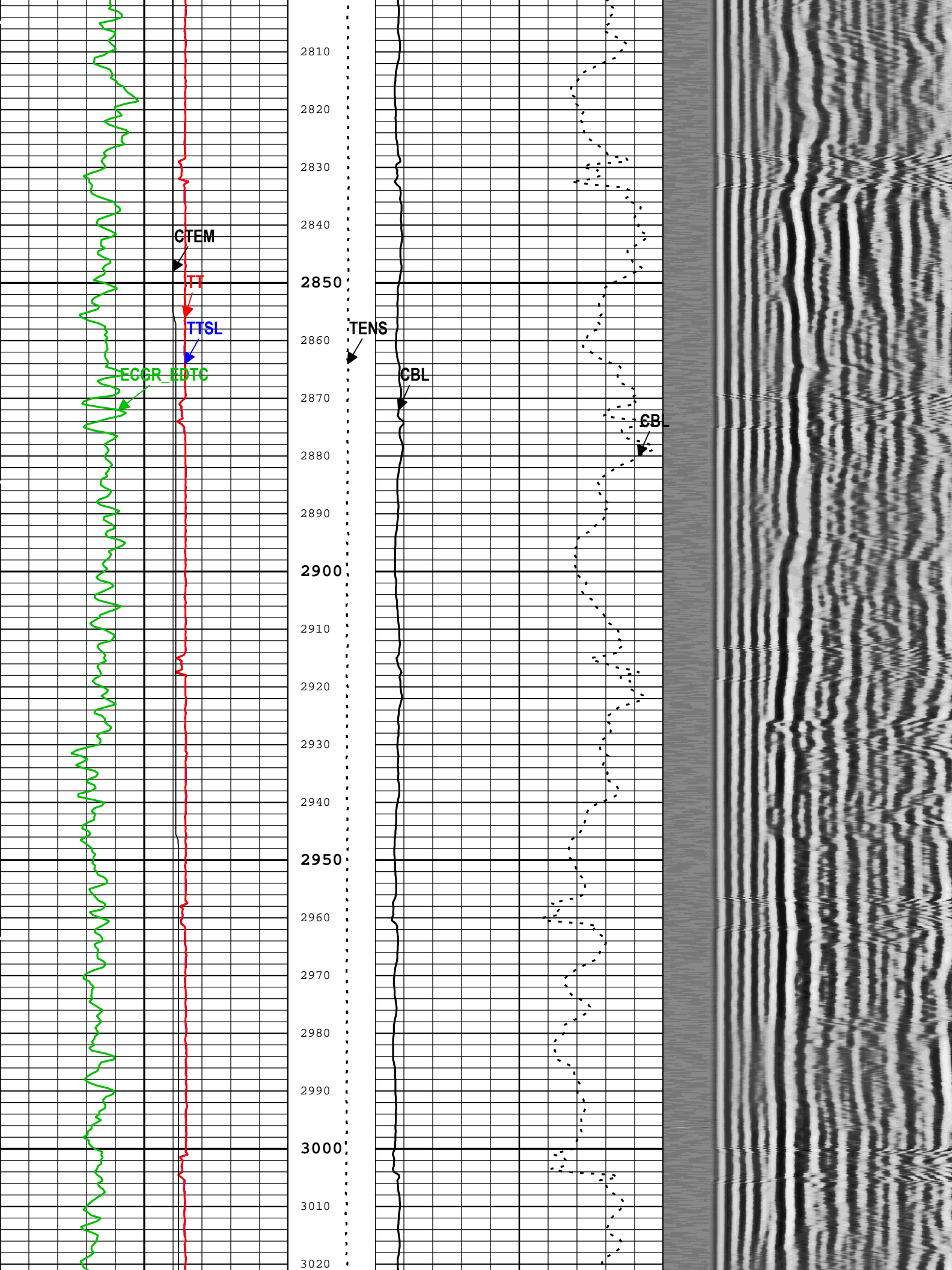


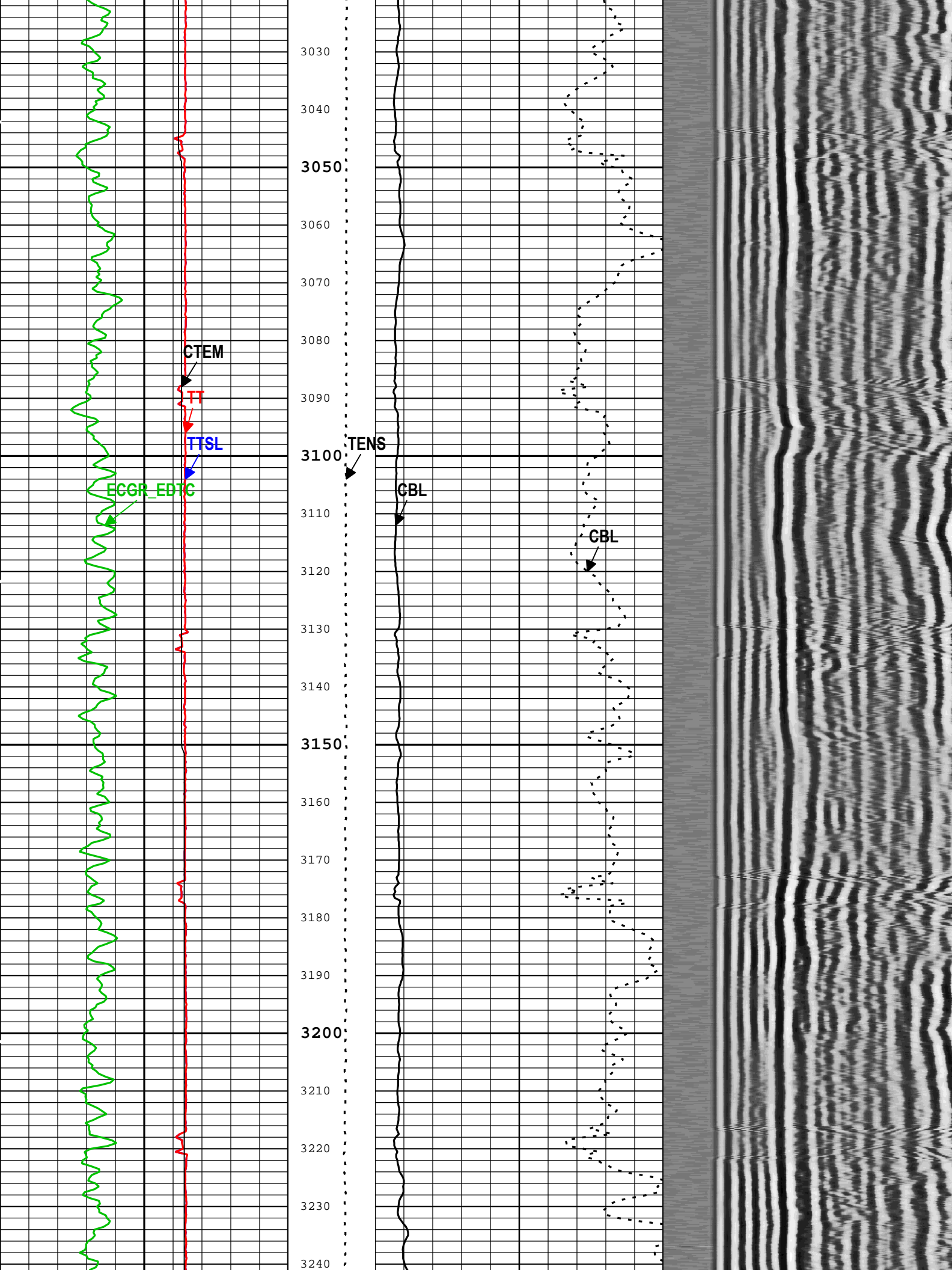


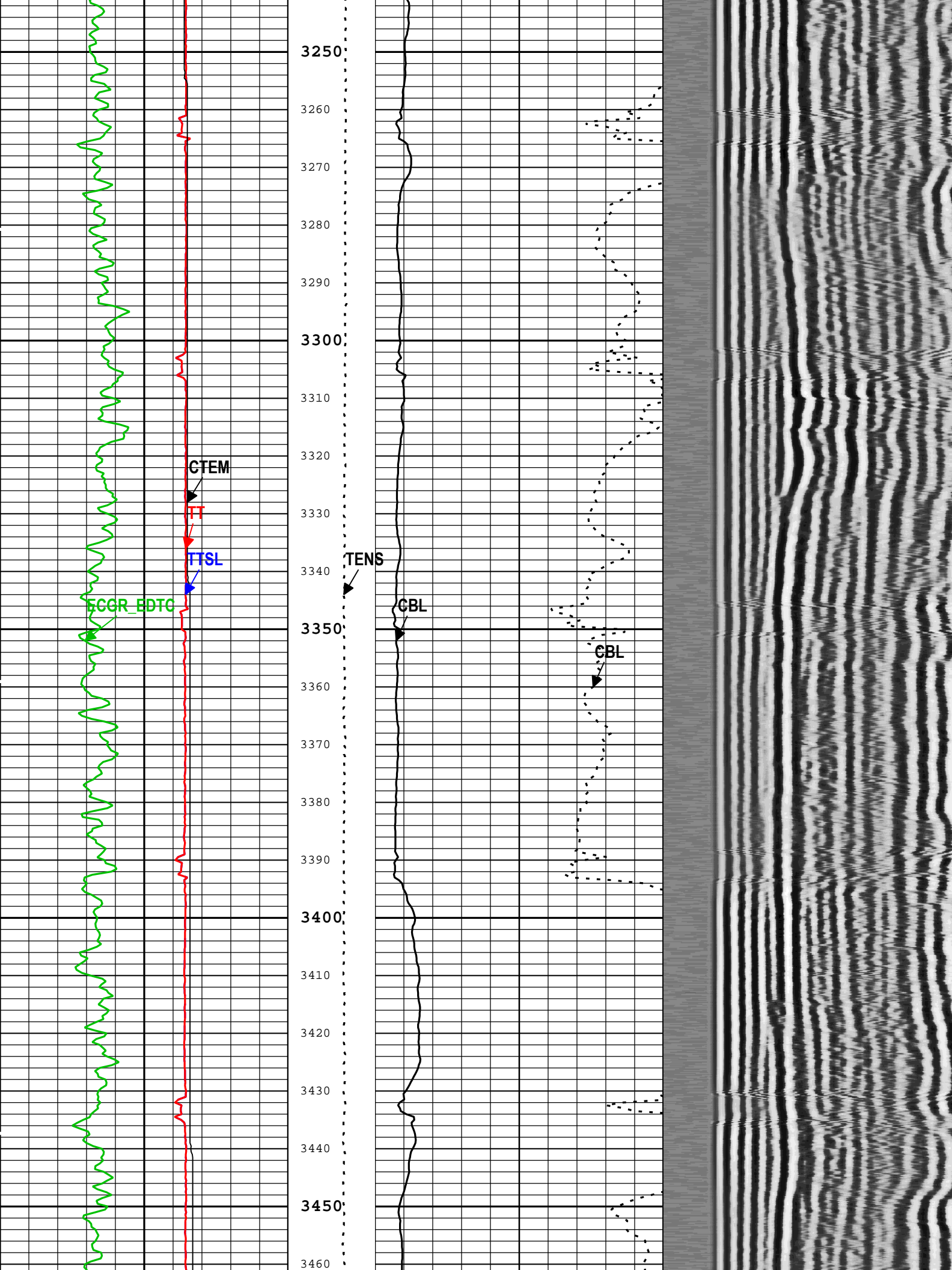


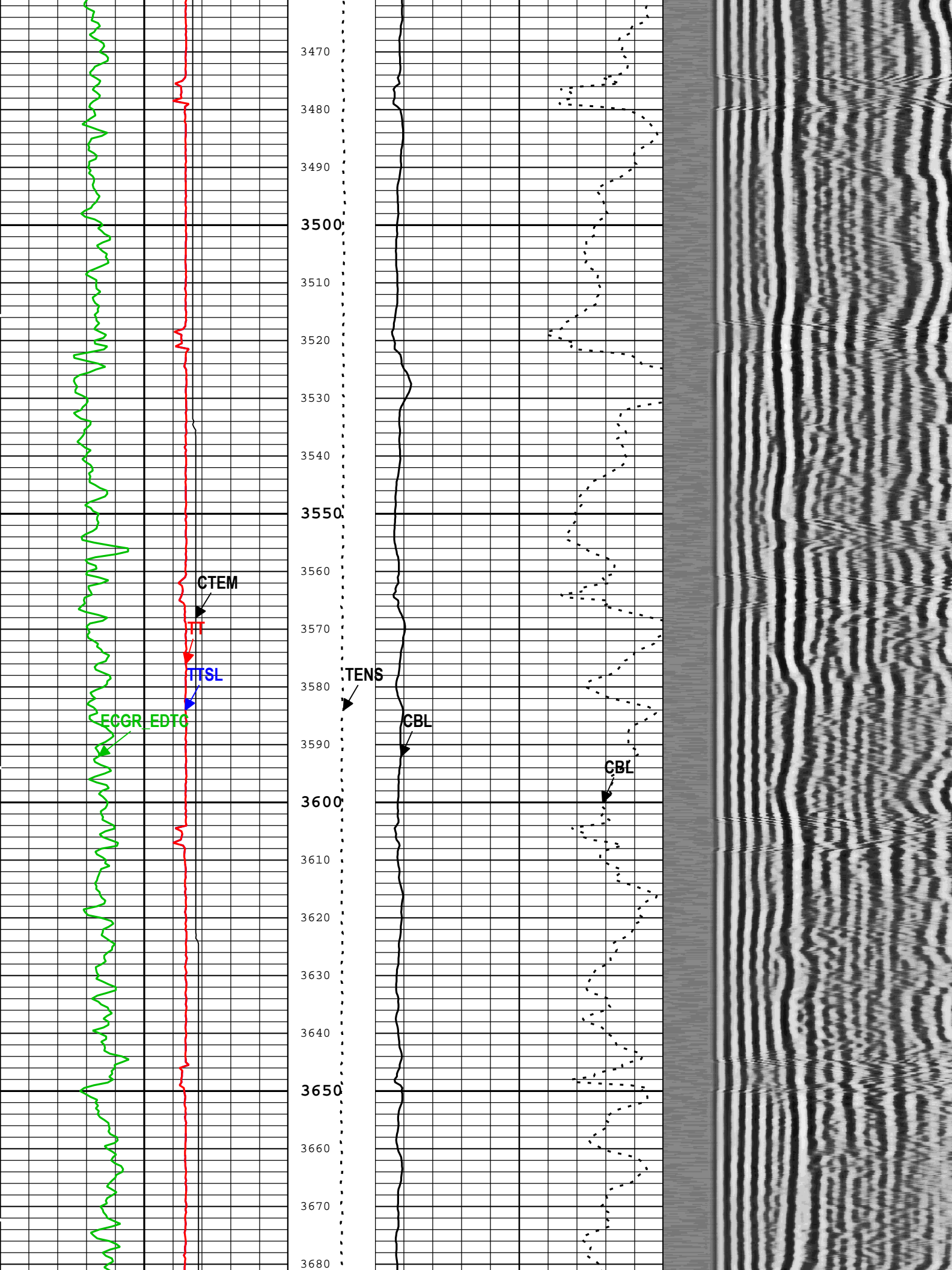


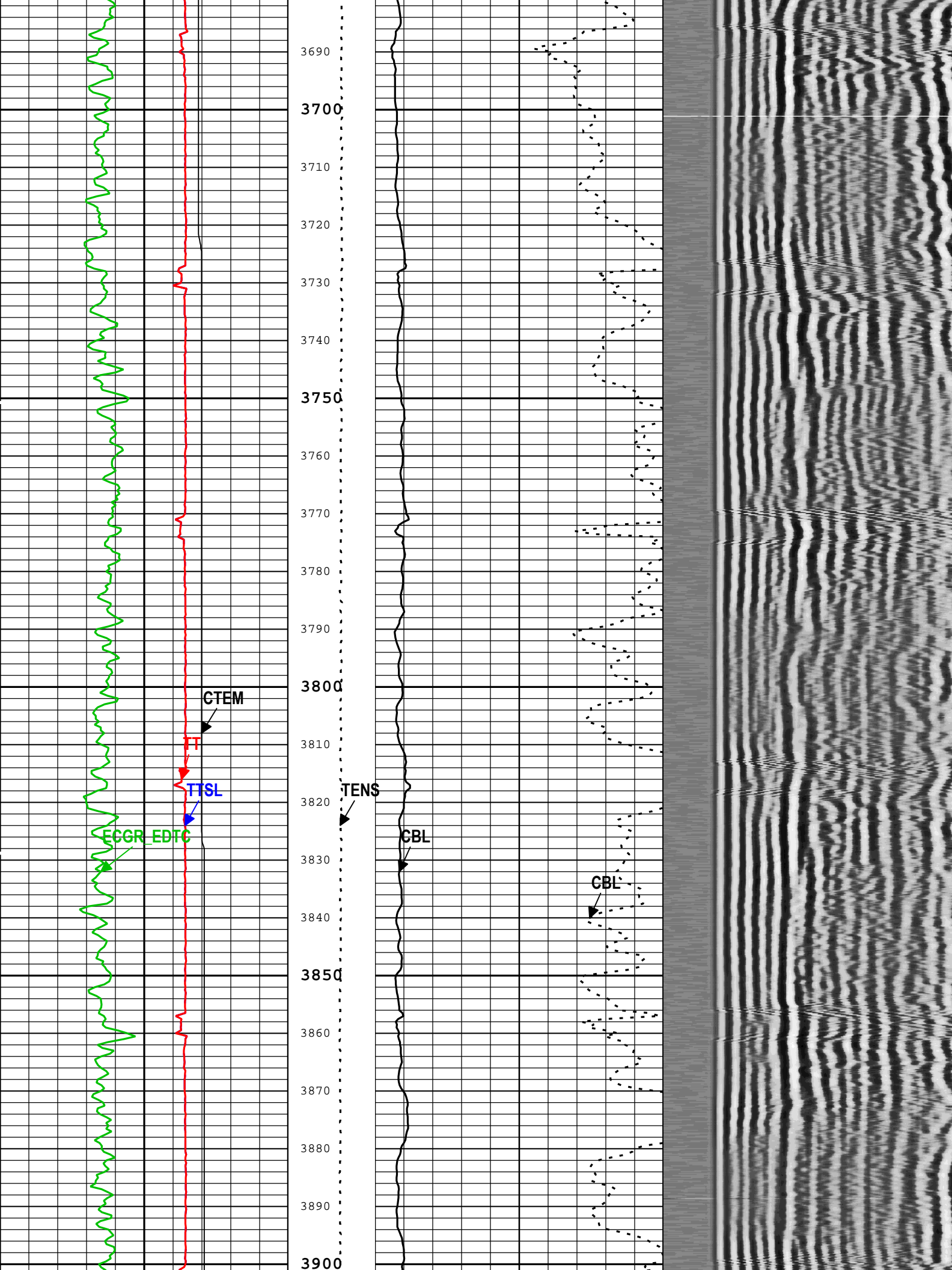


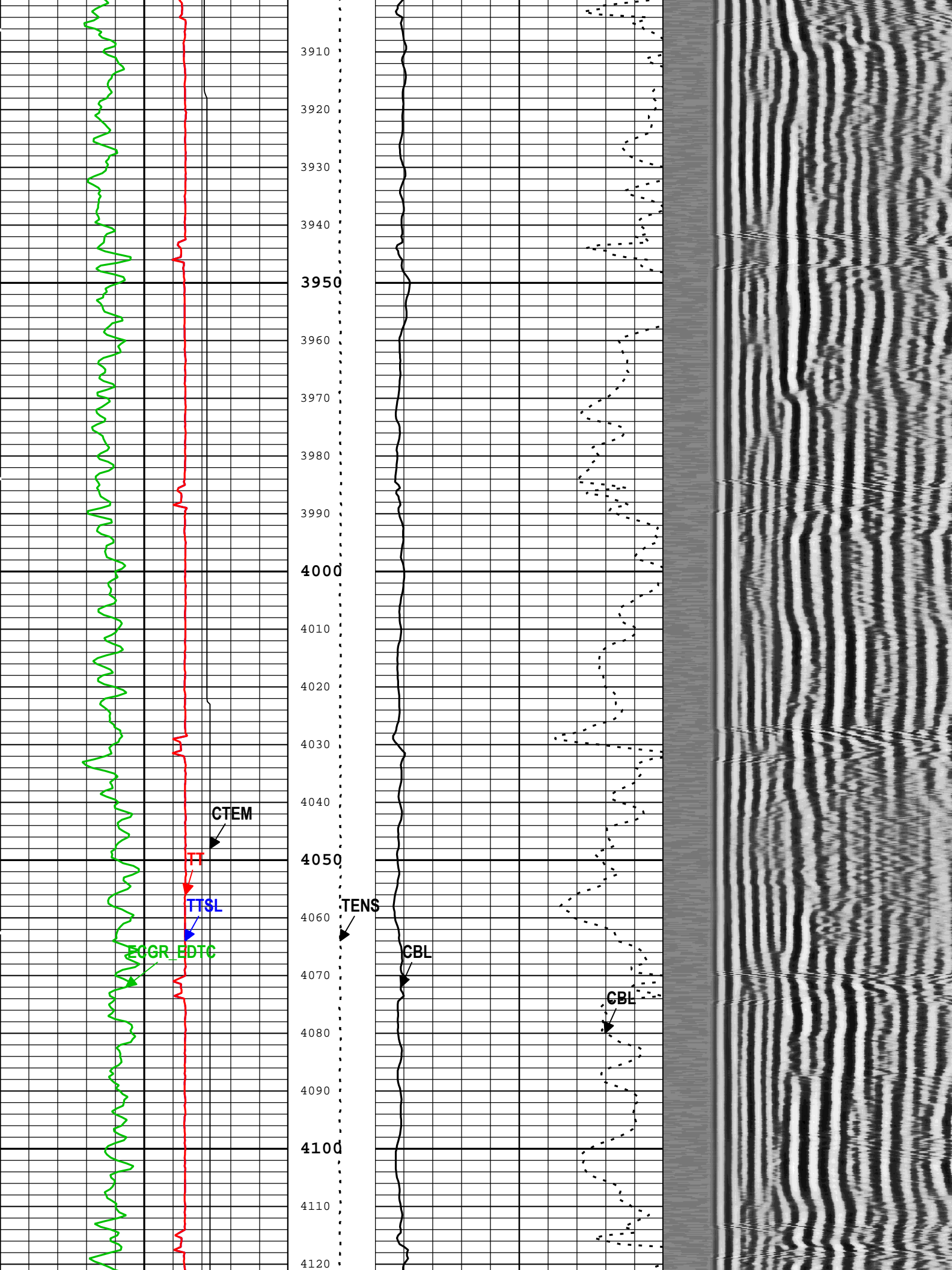


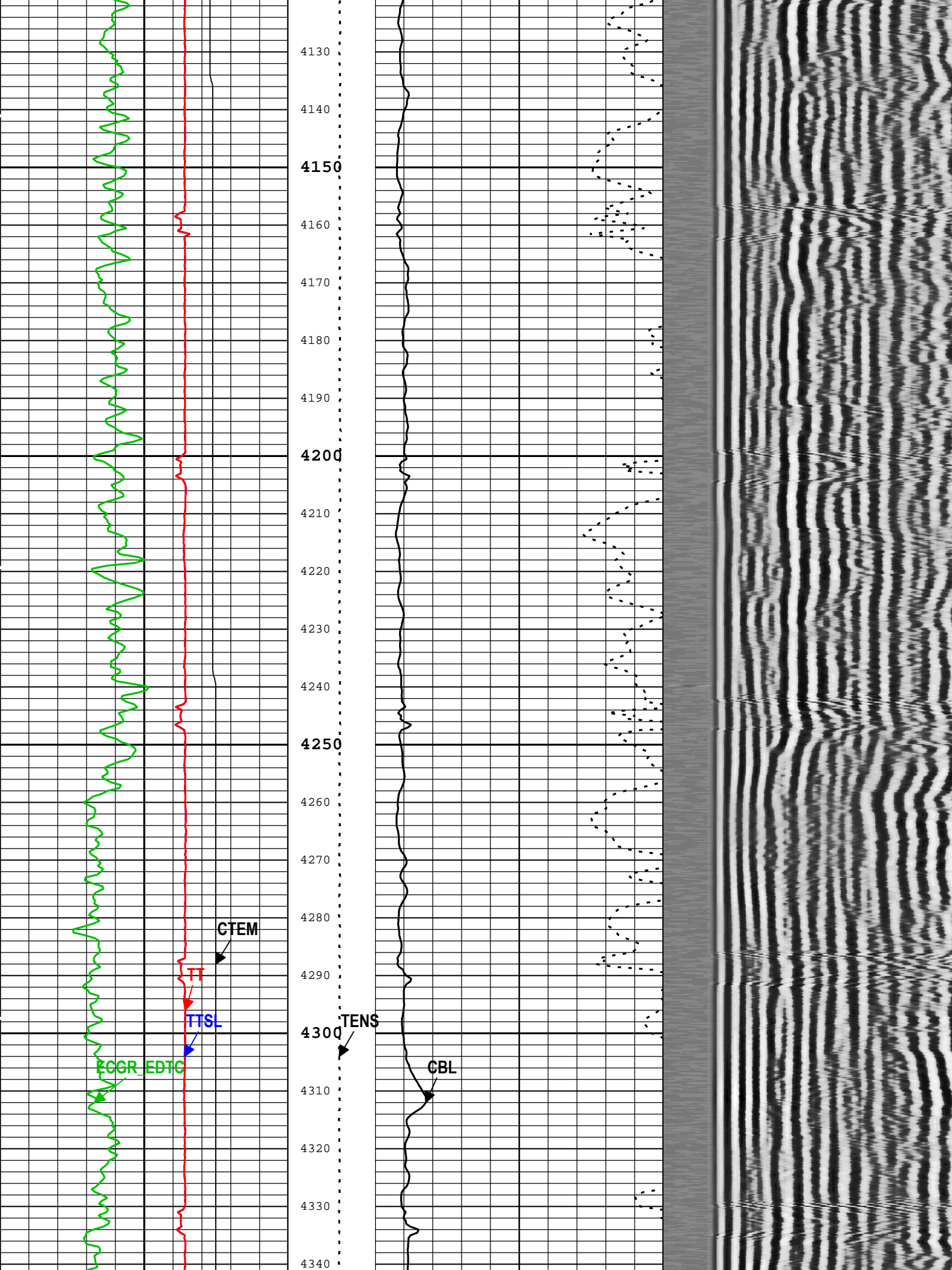


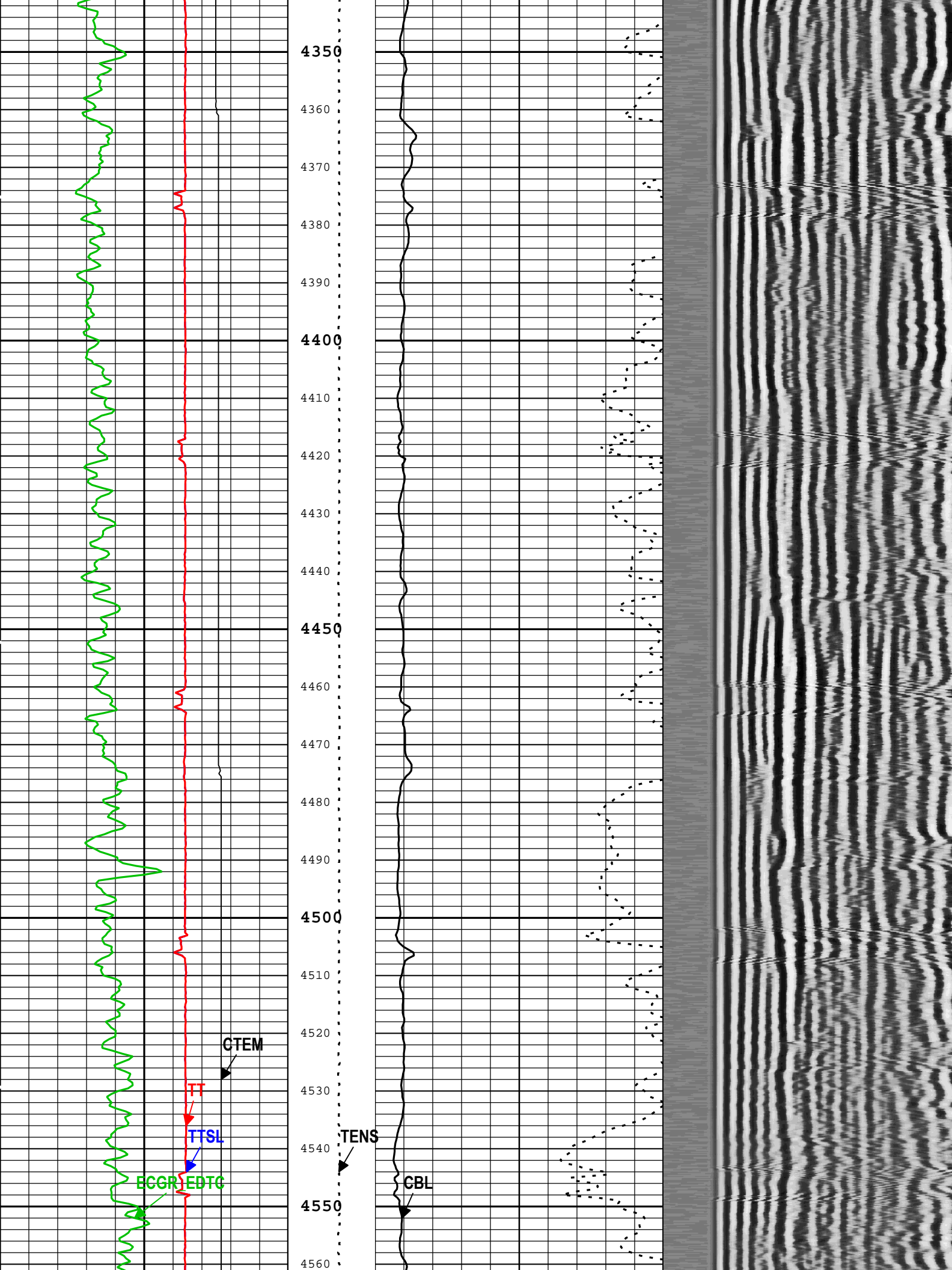


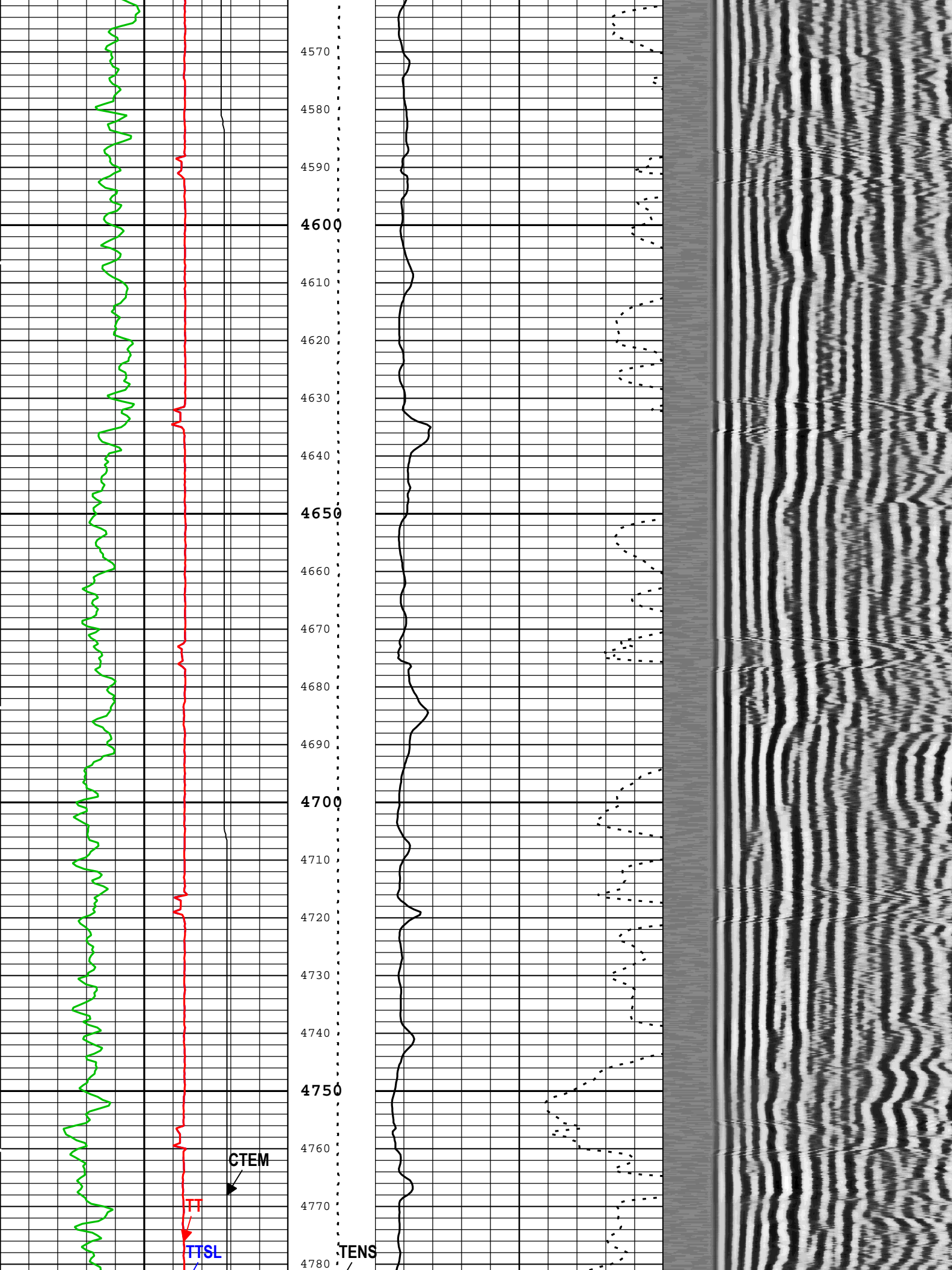


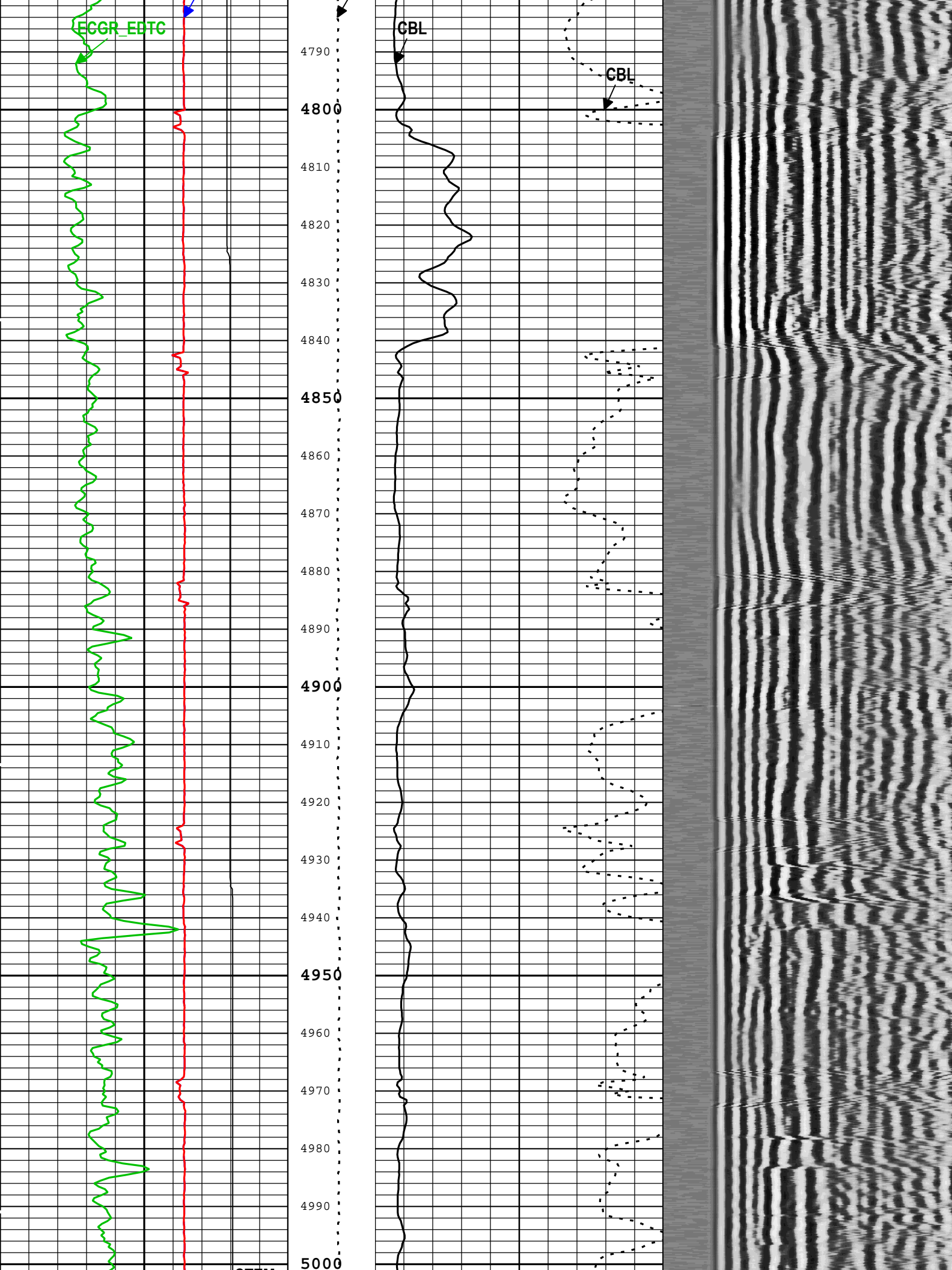


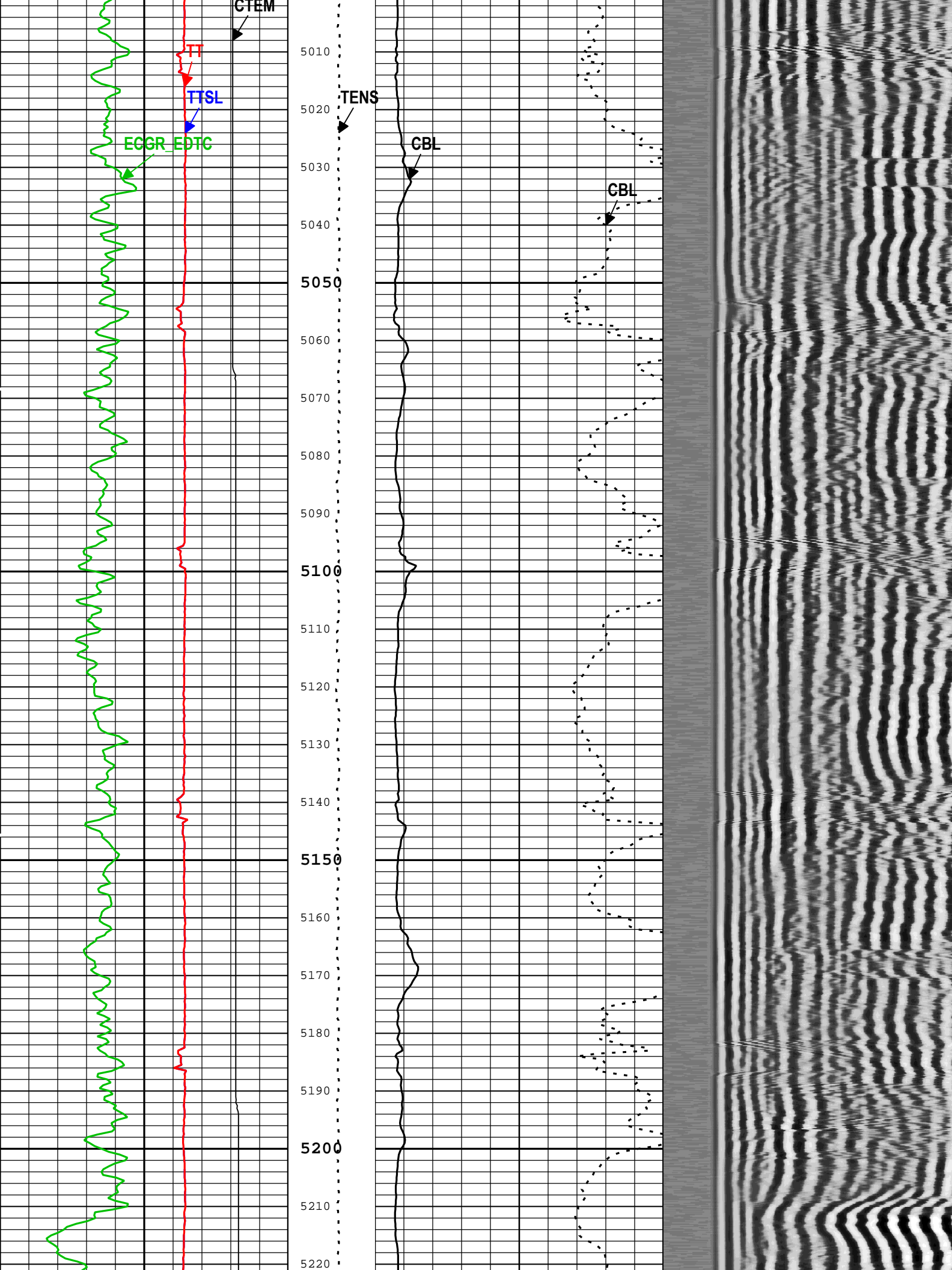


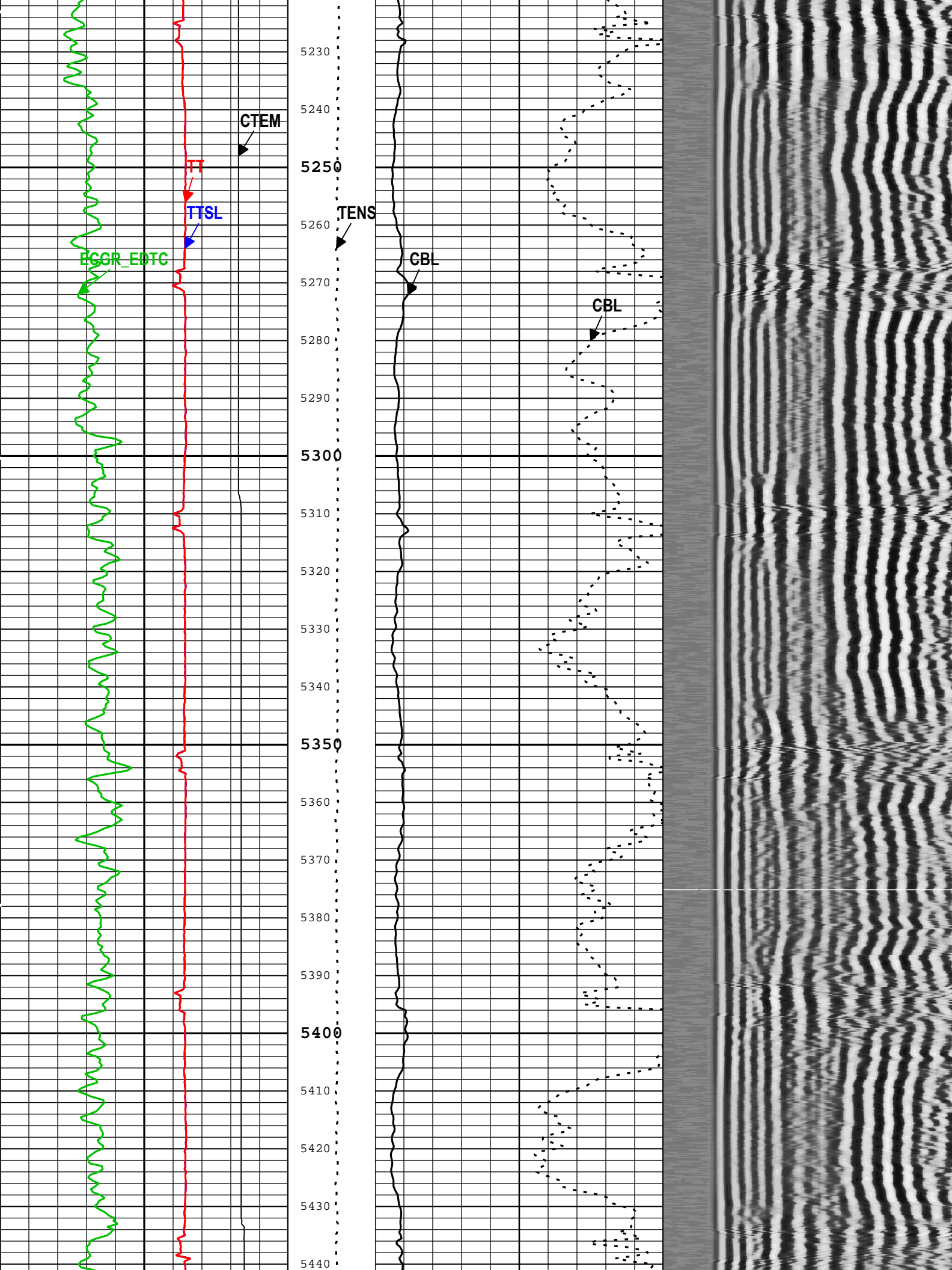


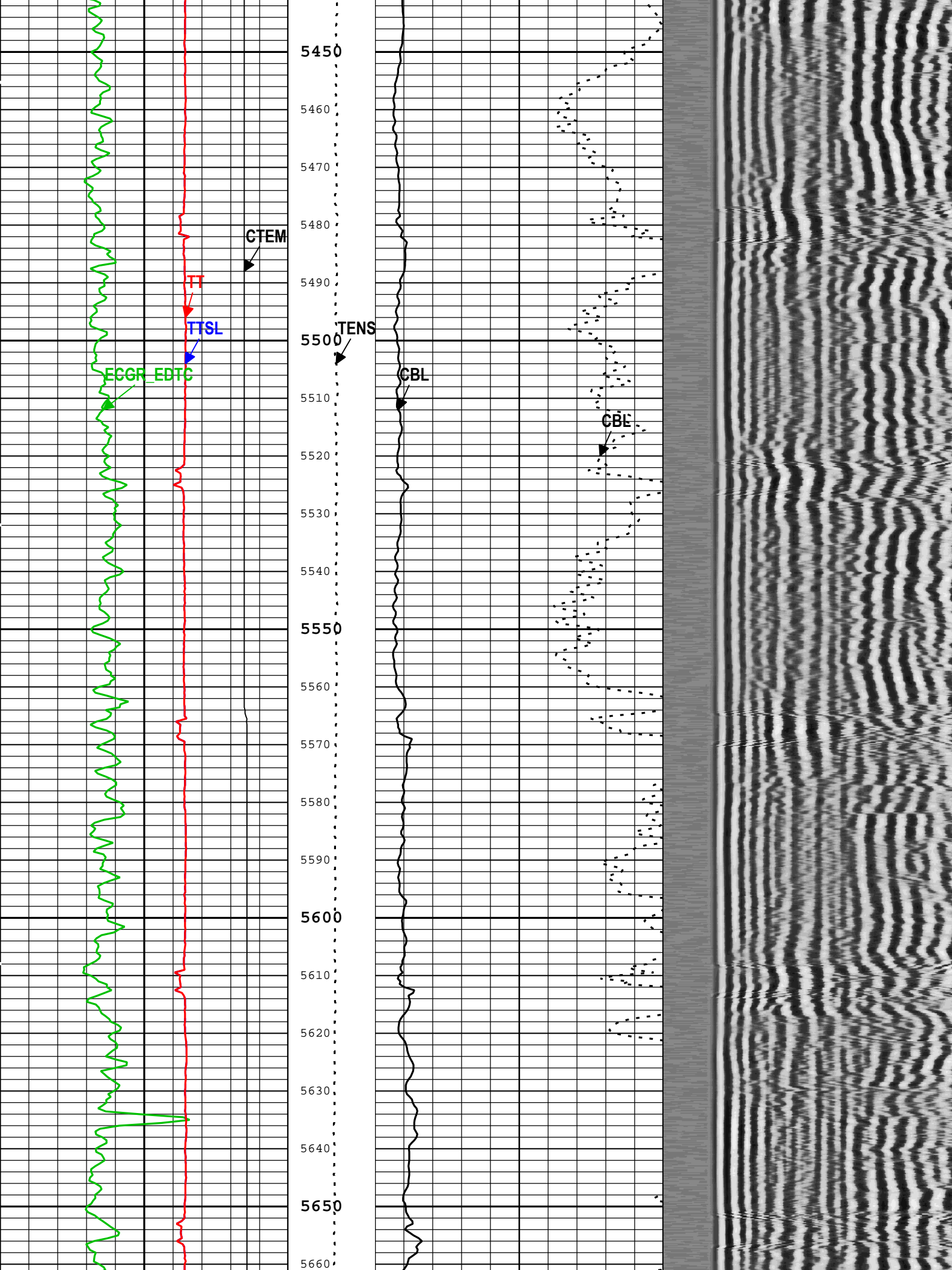


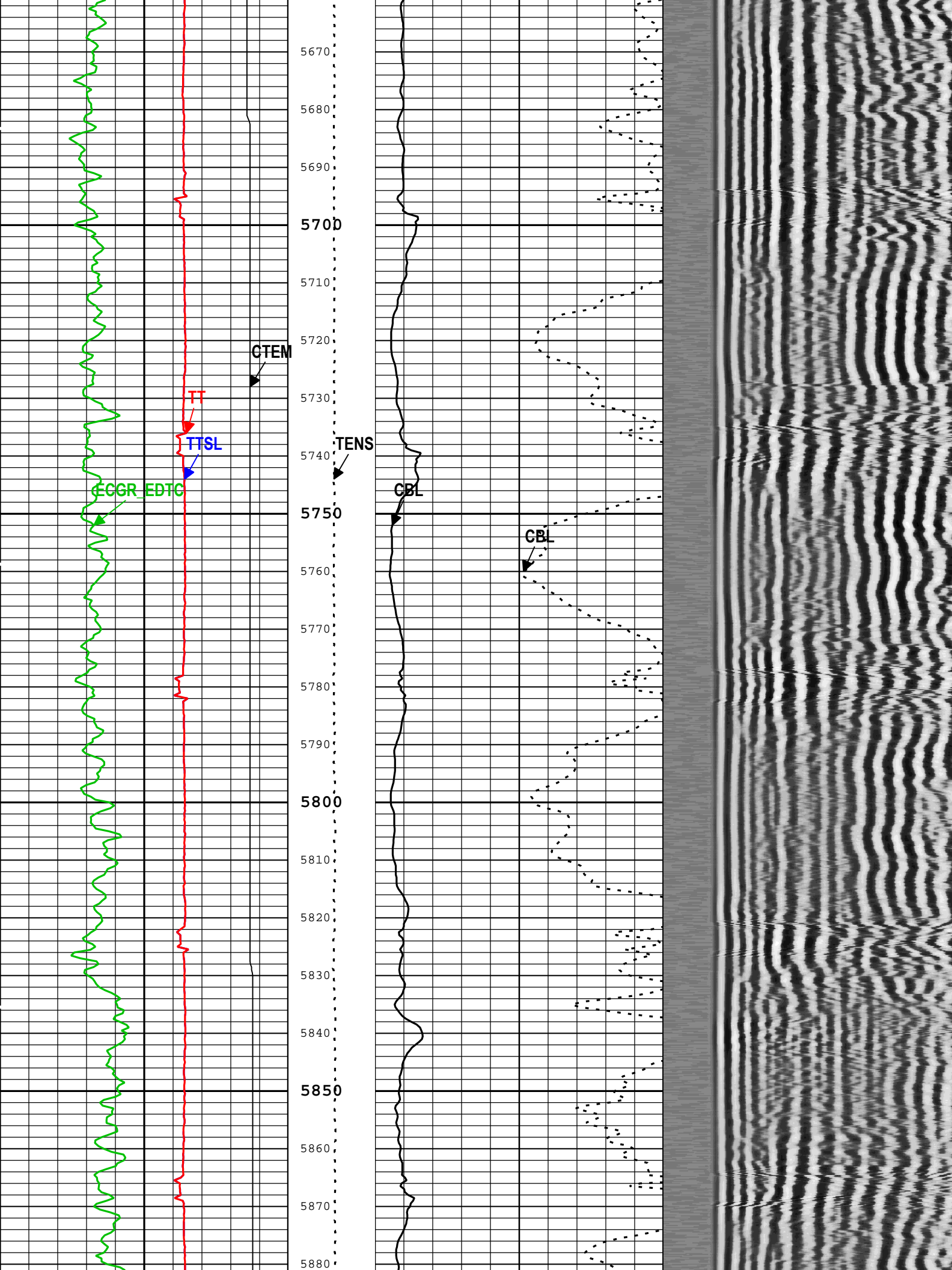


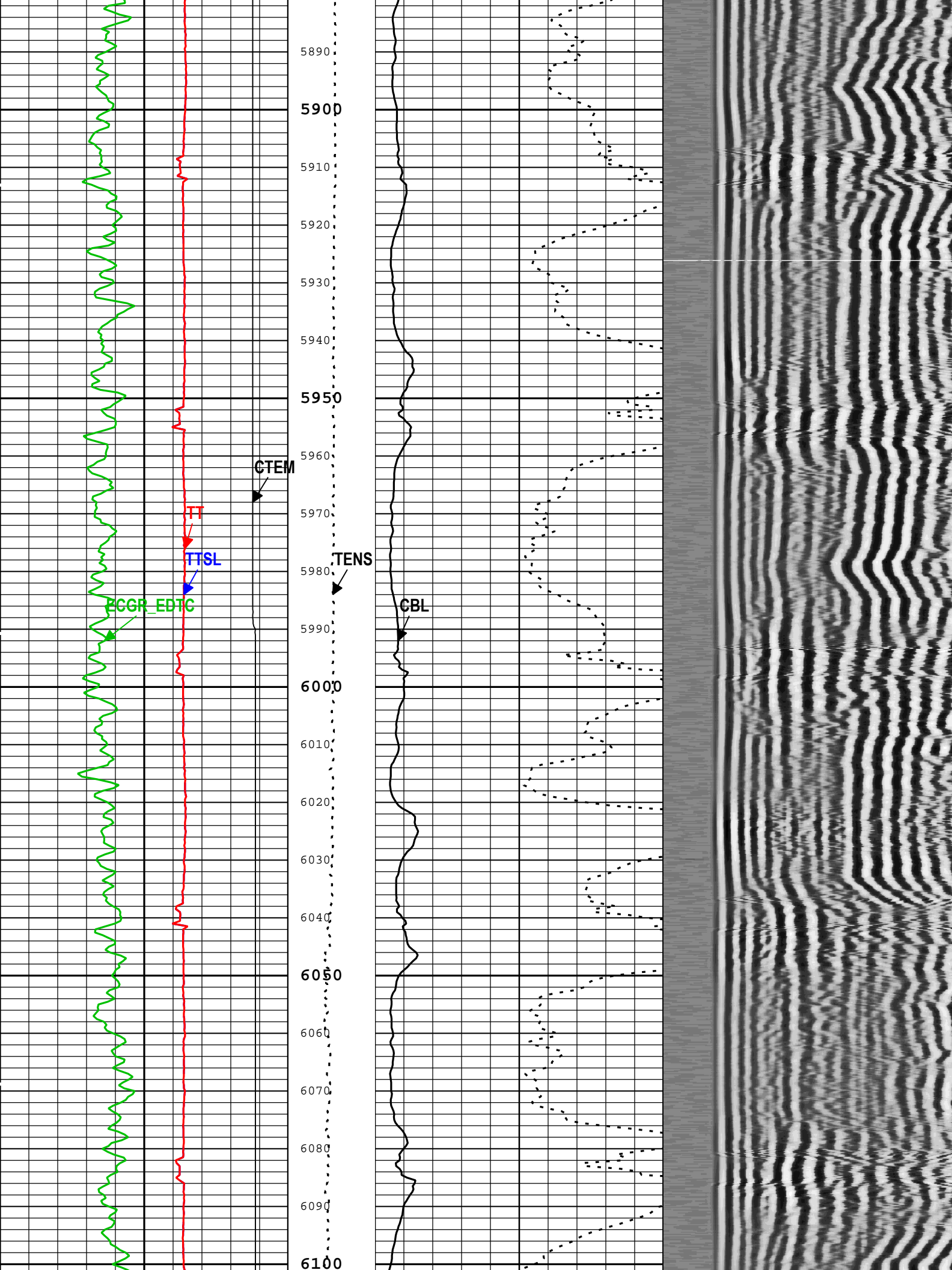


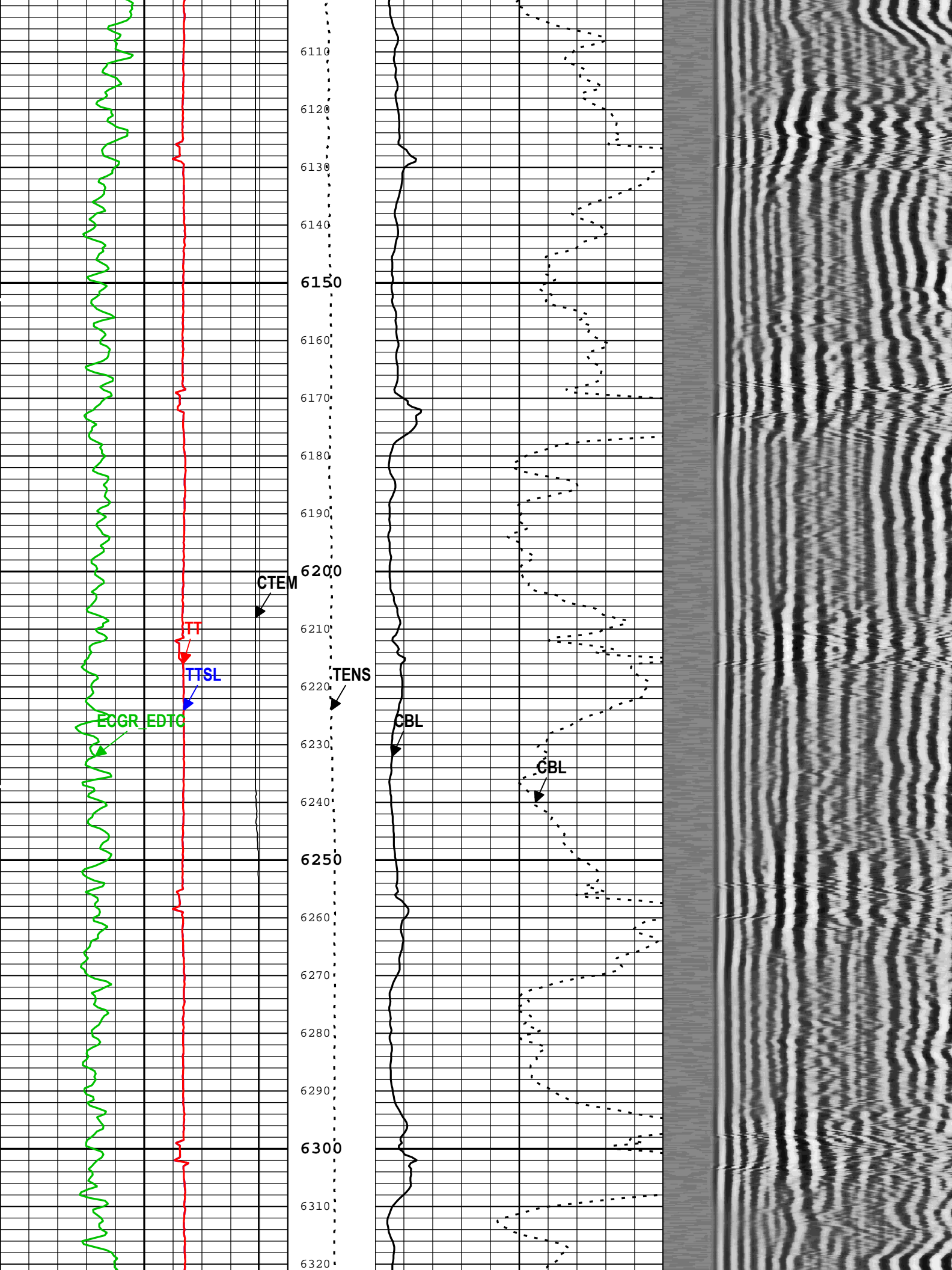


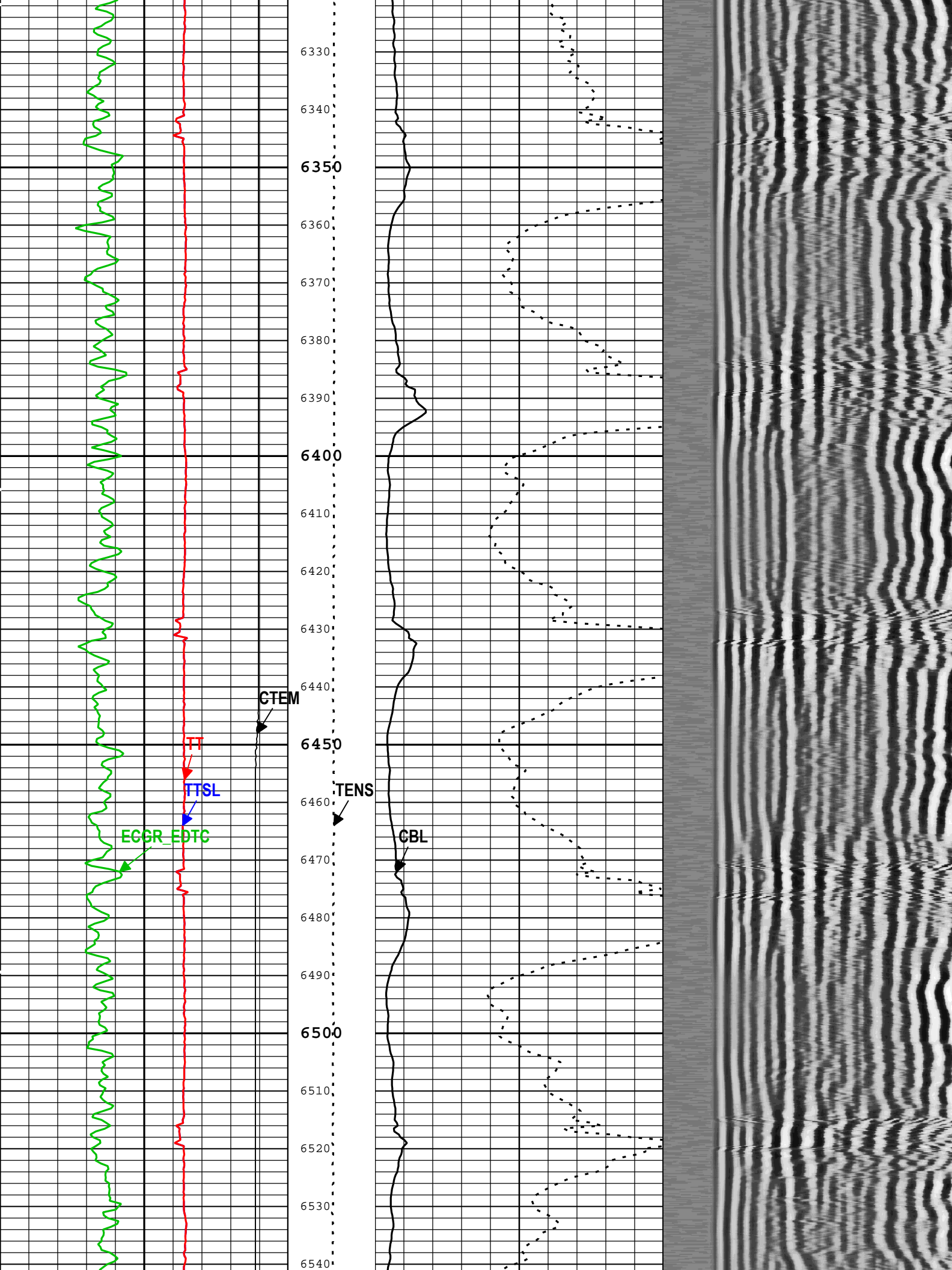


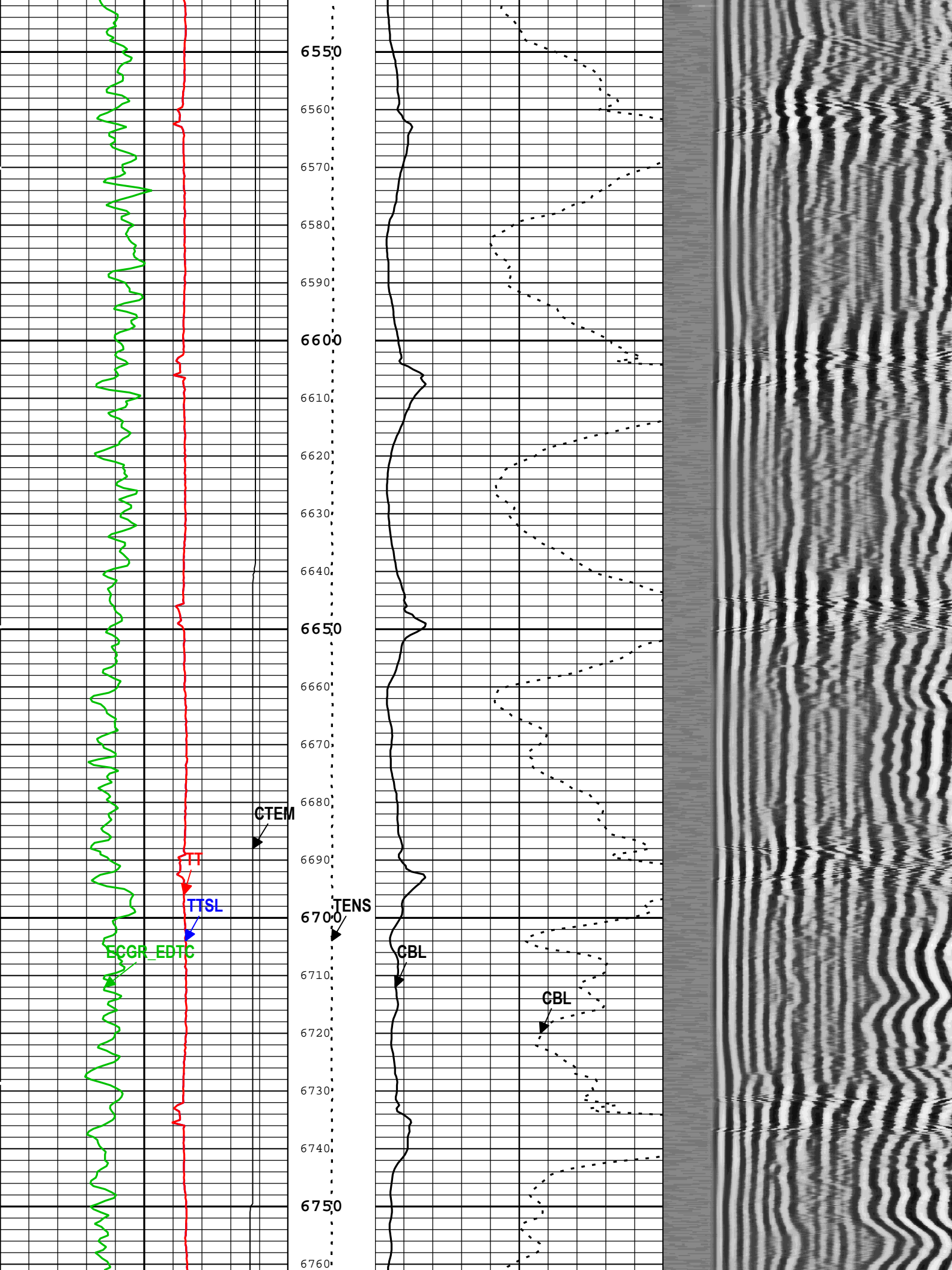


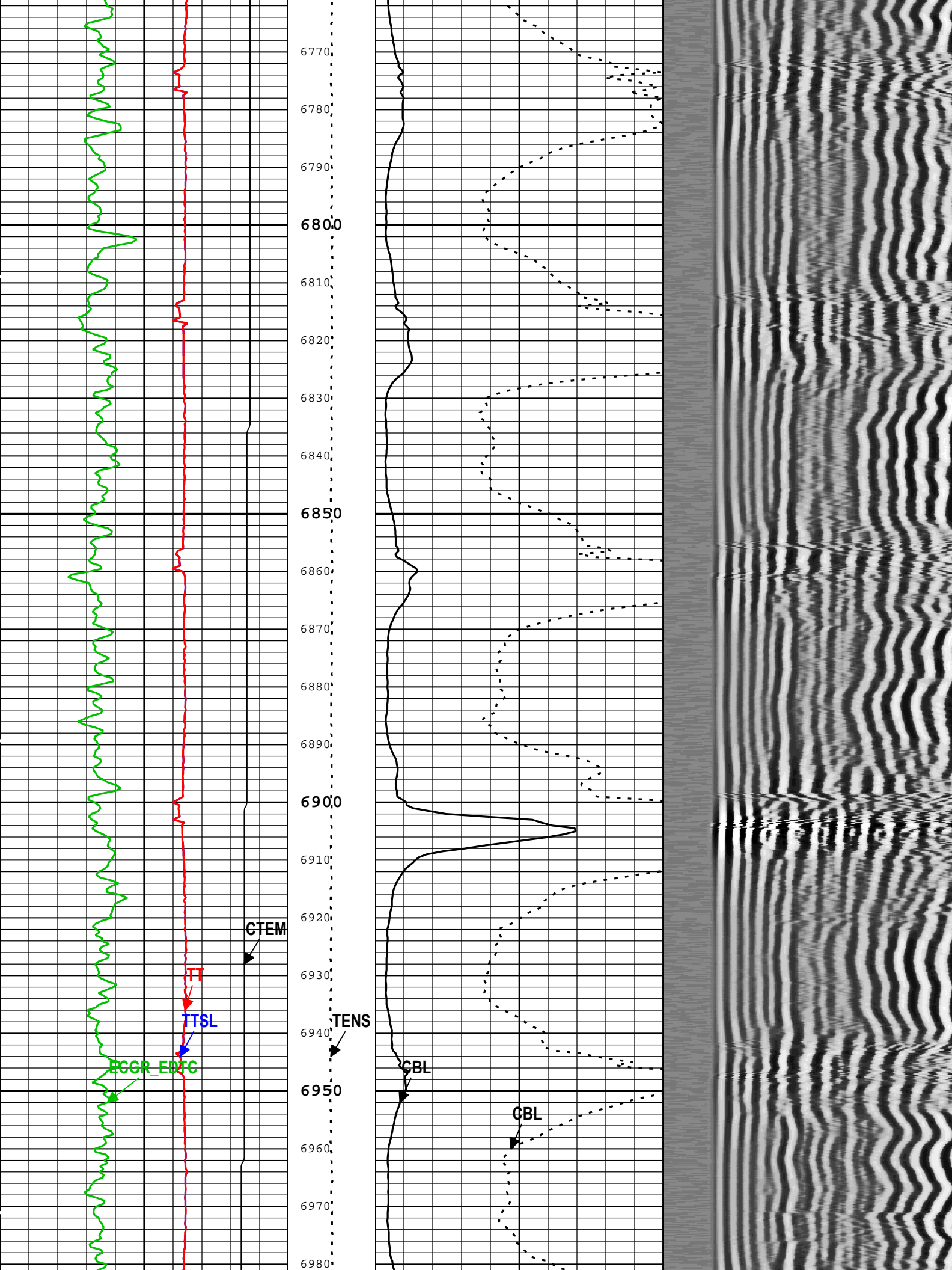


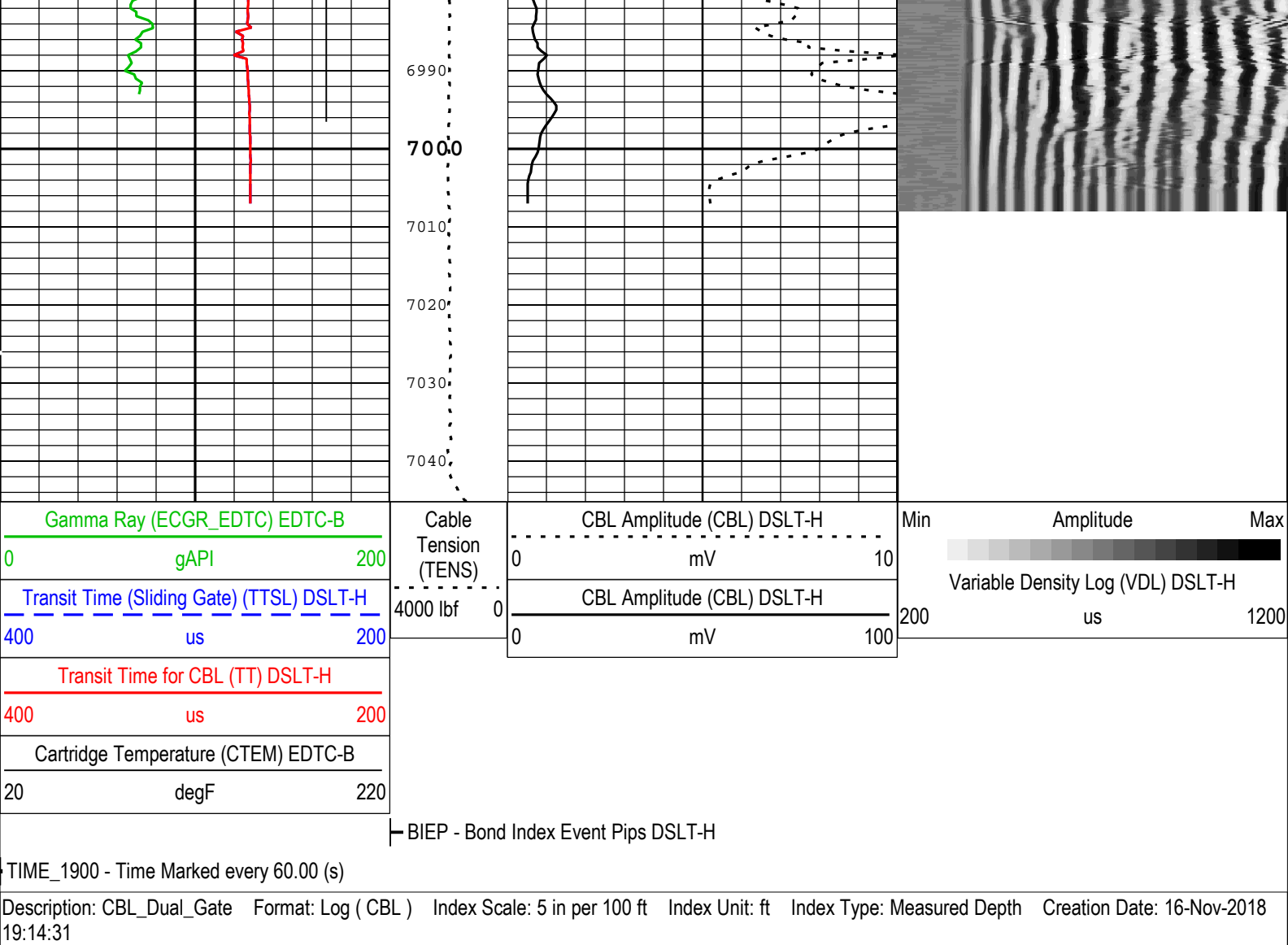












Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
AMSG	Auxiliary Minimum Sliding Gate	DSLTH	250	us
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLG	CBL Gate Width	DSLTH	Time Zoned	us
CBLO	Casing Bottom (Logger)	WLSESSION	21268	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLTH	71	mV
CDEN	Cement Density	EDTC-B	2	g/cm3
CDEN	Cement Density	USIT-E	1.44	g/cm3
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
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	1.89	mV
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-34.74	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	IBC_FRP_OFFSET	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	FreePipe Norm.	

IMAR	Image Rotation	USIT-E	Off	
MAHTR	Manual High Threshold Reference for first arrival detection	DSLTH	120	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLTH	13.94	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLTH	Depth Zoned	ft
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLTH	120	
MSA	Minimum Sonic Amplitude	DSLTH	0.76	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLTH	0.76	mV
NMSG	Near Minimum Sliding Gate	DSLTH	250	us
SGAD	Sliding Gate Status	DSLTH	Off	
SGDT	Sliding Gate Delta-T	DSLTH	57	us/ft
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.5	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-33.39	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	

Depth Zone Parameters			
Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	220	1893
BS	8.5	1893	7045.17
MCI	14.83	220	1883
MCI	4.75	1883	7045.17
All depth are actual.			

Time Zone Parameters					
Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
CBLG	63	15-Nov-2018 08:18:24	15-Nov-2018 09:10:43	7035.93	4163.15
CBLG	58	15-Nov-2018 09:10:43	15-Nov-2018 09:59:14	4163.15	247.12
All depth are at tool zero.					

Tool Control Parameters	
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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	4408.8	ft/h
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	138	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	178	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	107	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	147	us
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 6.0 in	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	6.0 in	

Company:	Anadarko Petroleum Corporation	Schlumberger
Well:	COWBOY 21-5HZ	
Field:	DJ BASIN	
County:	WELD	
State:	COLORADO	
Cement Bond Log		
Variable Density Log		
2800 PSI		