

Company: ENCANA OIL & GAS (USA) INC

Well: SGU 8510B-23 (L24 496)

Field: STORY GULCH

County: GARFIELD State: COLORADO

SLIM CEMENT MAPPING LOG
CBL-VDL
GR-CCL

County: GARFIELD

Field: STORY GULCH

Location: SHL: 900 FWL & 1608 FSL

Well: SGU 8510B-23 (L24 496)

Company: ENCANA OIL & GAS (USA) INC

LOCATION	
SHL: 900 FWL & 1608 FSL	Elev.: K.B. 8210.00 ft
BHL: 2319 FSL & 1816 FEL	G.L. 8180.00 ft
	D.F. 8209.00 ft
Permanent Datum: _____	GROUND LEVEL _____
Log Measured From: _____	KELLY BUSHING _____
Drilling Measured From: _____	KELLY BUSHING _____
API Serial No. _____	Section 24
05-045-21152-000C	Township 4S
	Range 96W

	Run 1	Run 2	Run 3
PVT DATA			
Oil Density			
Water Salinity			
Gas Gravity			
Bo			
Bw			
1/Bg			
Bubble Point Pressure			
Bubble Point Temperature			
Solution GOR			
Maximum Deviation			
CEMENTING DATA			
Primary/Squeeze	Primary		
Casing String No			
Lead Cement Type			
Volume			
Density			
Water Loss			
Additives			
Tail Cement Type			
Volume			
Density			
Water Loss			
Additives			
Expected Cement Top			

Logging Date	25-Apr-2013
Run Number	1
Depth Driller	12655 ft
Schlumberger Depth	12588 ft
Bottom Log Interval	12562 ft
Top Log Interval	70 ft
Casing Fluid Type	FRESH WATER
Salinity	
Density	8.4 lbm/gal
Fluid Level	70 ft
BIT/CASING/TUBING STRING	
Bit Size	7.875 in
From	8936 ft
To	12655 ft
Casing/Tubing Size	4.500 in
Weight	11.6 lbm/ft
Grade	
From	30 ft
To	12625 ft
Maximum Recorded Temperatures	287 degF
Logger On Bottom	25-Apr-2013
Unit Number	391
Recorded By	KIRSTIE BUNTING
Witnessed By	SCOTT PITT

Logging Date	
Run Number	
Depth Driller	
Schlumberger Depth	
Bottom Log Interval	
Top Log Interval	
Casing Fluid Type	
Salinity	
Density	
Fluid Level	
BIT/CASING/TUBING STRING	
Bit Size	
From	
To	
Casing/Tubing Size	
Weight	
Grade	
From	
To	
Maximum Recorded Temperatures	
Logger On Bottom	
Unit Number	
Recorded By	
Witnessed By	

DEPTH SUMMARY LISTING

Date Created: 14-MAR-2013 10:41:08

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW-B	Type:	CMTD-B/A	Type:	1-25ZT
Serial Number:	6214	Serial Number:	3421	Serial Number:	112136
Calibration Date:	24-APR-2012	Calibration Date:	20-FEB-2011	Length:	19500 FT
Calibrator Serial Number:		Calibrator Serial Number:	174878	Conveyance Method:	Wireline
Calibration Cable Type:	1-25ZT	Number of Calibration Points:	10	Rig Type:	LAND
Wheel Correction 1:	-3	Calibration RMS:	4		
Wheel Correction 2:	-4	Calibration Peak Error:	8		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	
Tool Zero Check At Surface:	

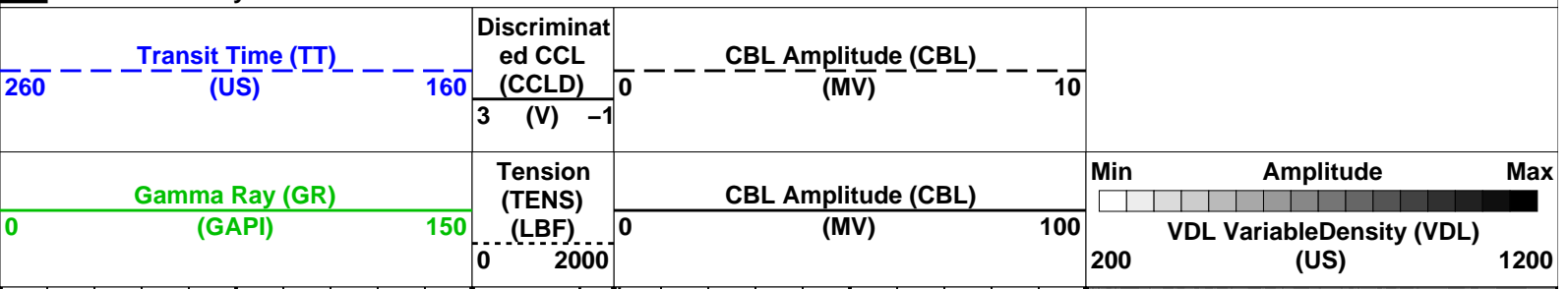
Depth Control Remarks

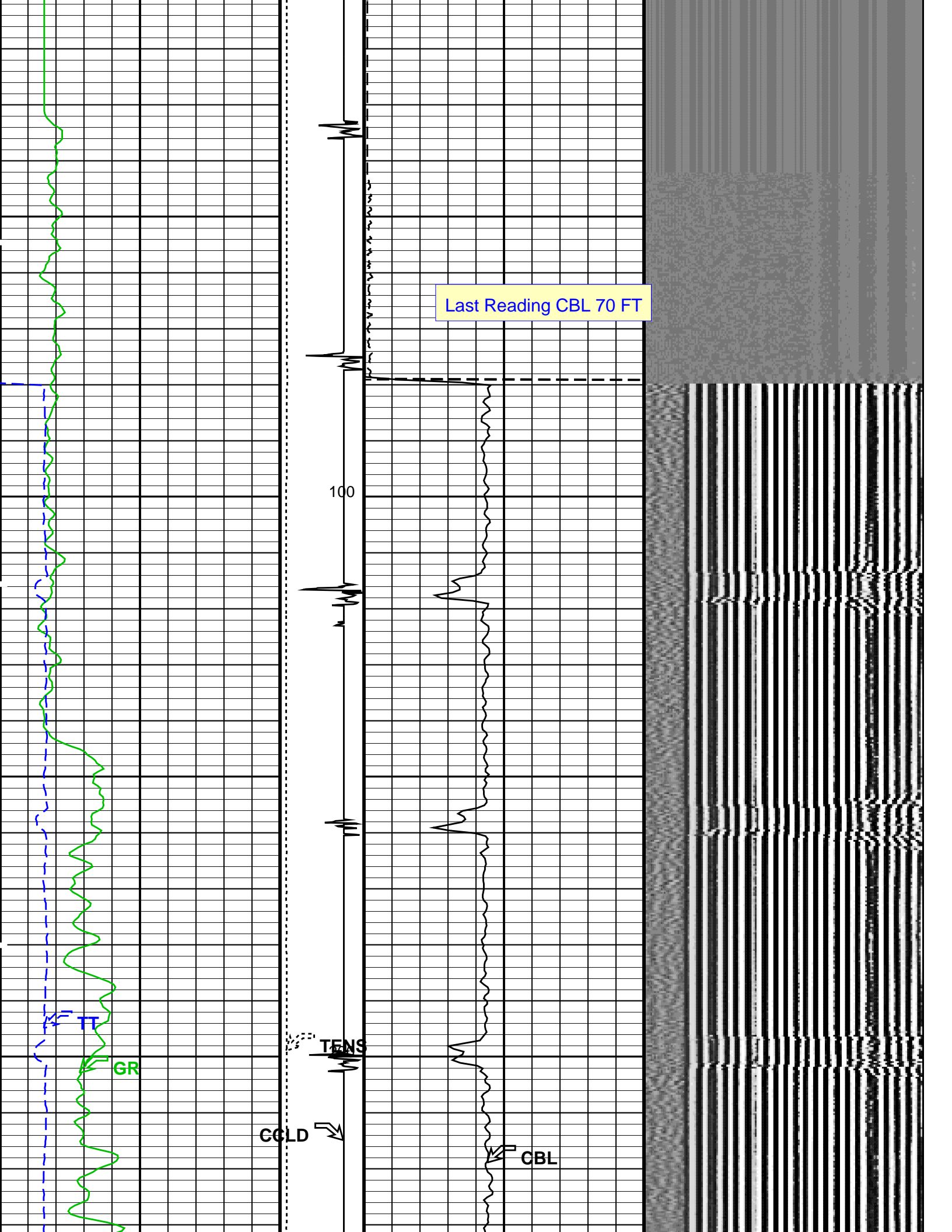
1. ALL SCHLUMBERGER DEPTH CONTROL POLICIES APPLIED
2. IDW USED AS PRIMARY DEPTH REFERENCE
3. SWPT DRUM COUNTER USED AS SECONDARY DEPTH REFERENCE
- 4.
- 5.
- 6.

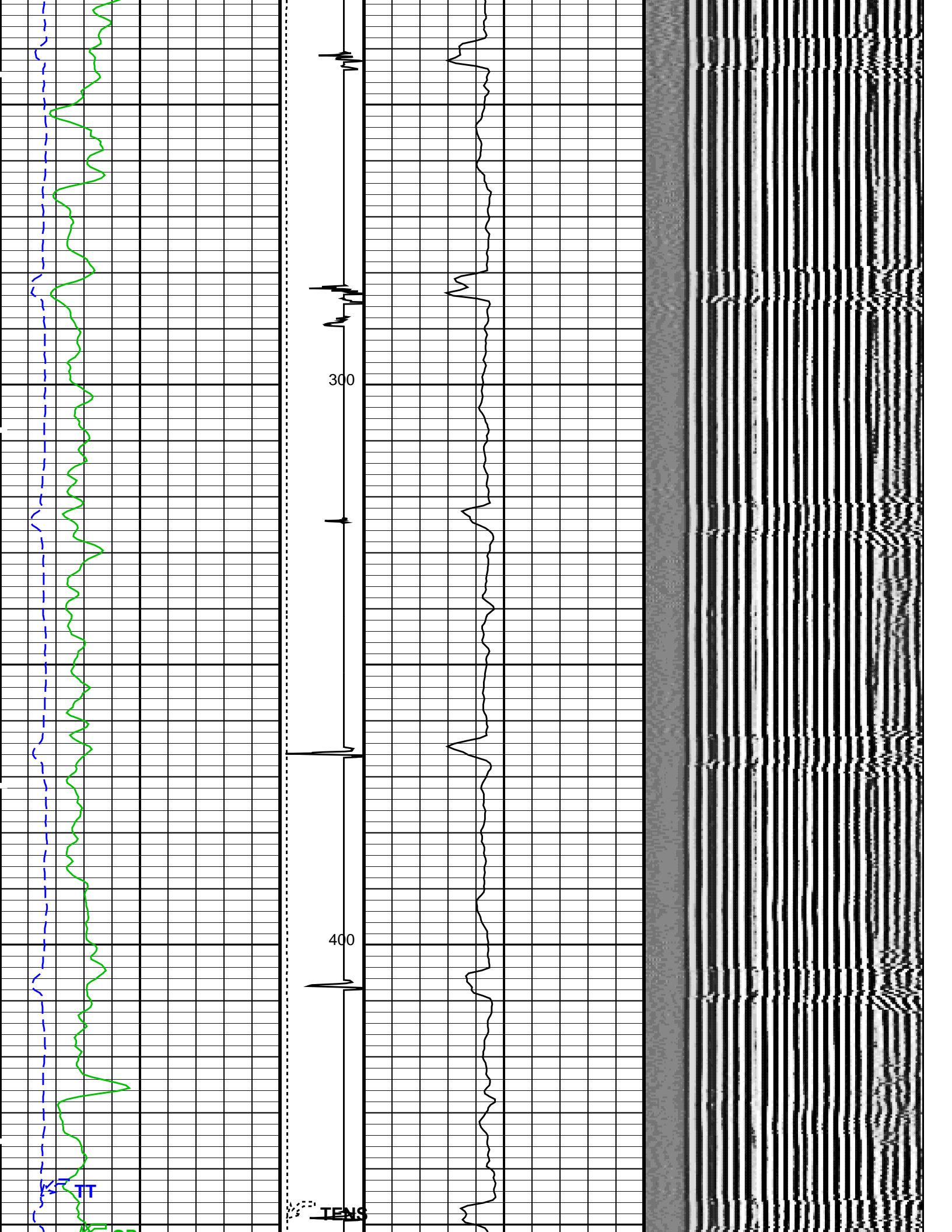
DISCLAIMER

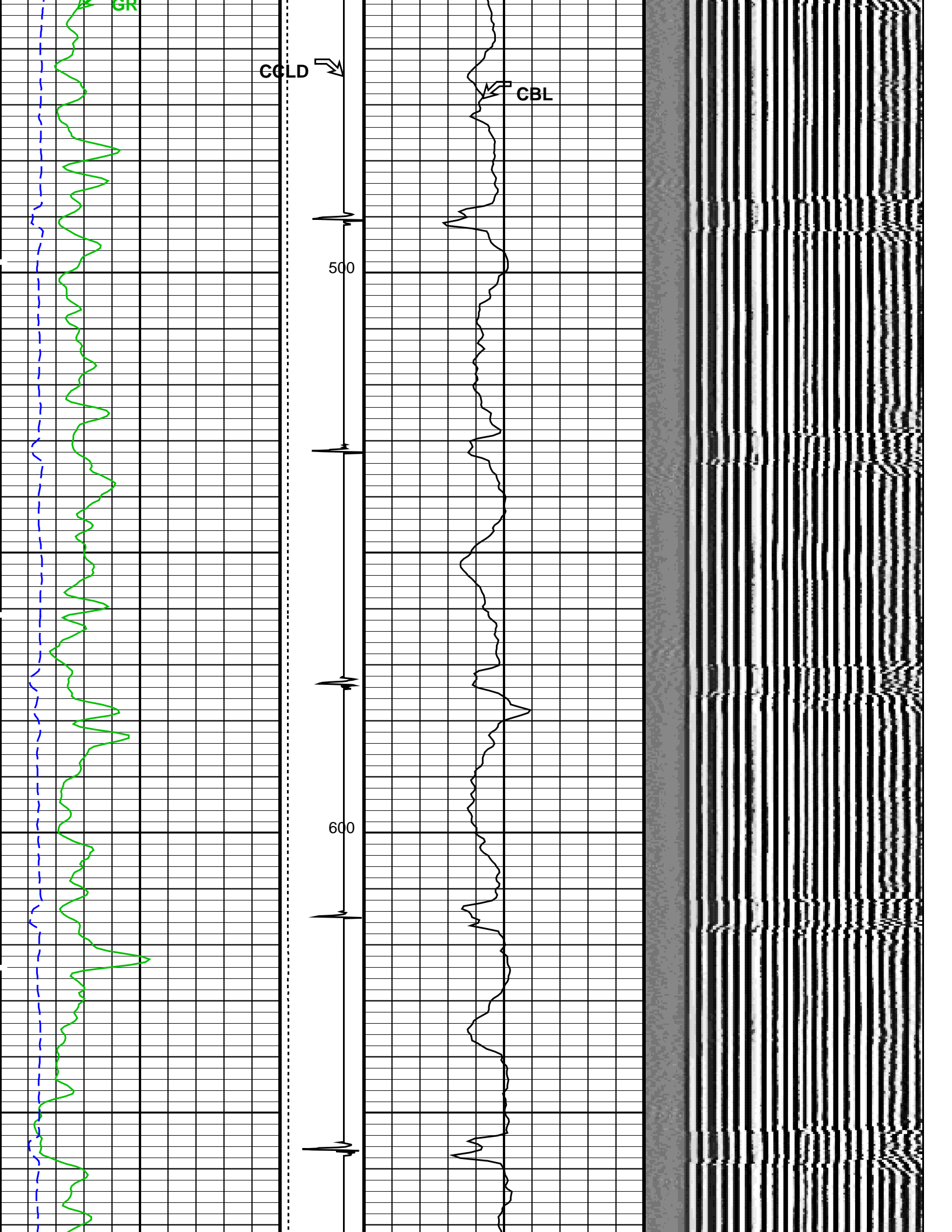
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

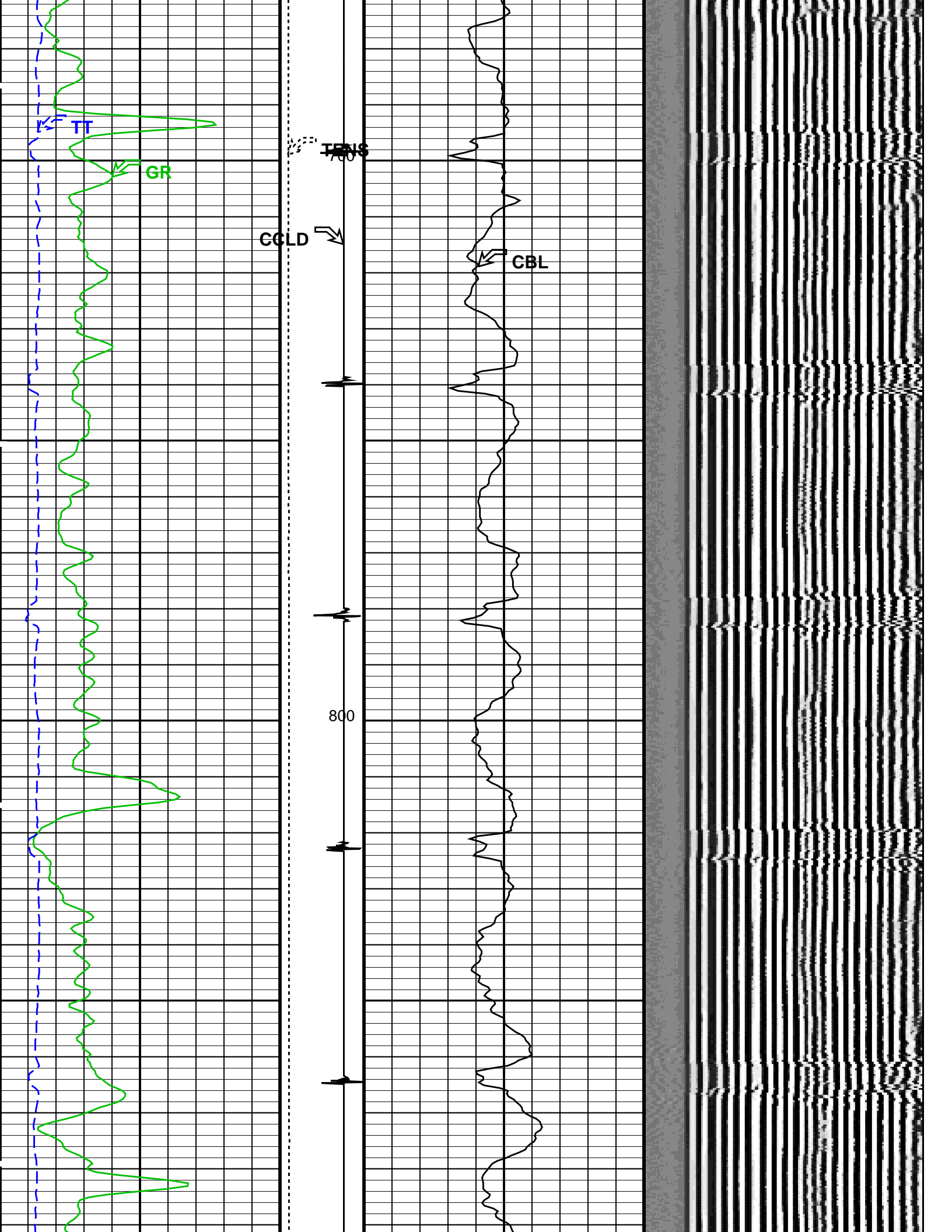
OTHER SERVICES1 OS1: NONE OS2: OS3: OS4: OS5:	OTHER SERVICES2 OS1: OS2: OS3: OS4: OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
FIRST RUN IN HOLE CORRELATED TO DOWN LOG	
TOOL RAN AS PER TOOL SKETCH	
MAXIMUM RECORDED TEMPERATURE= 287 DEGF	
MAXIMUM RECORDED PRESSURE= 5099 PSIA	
ENTRANCE TIME= 21:30	

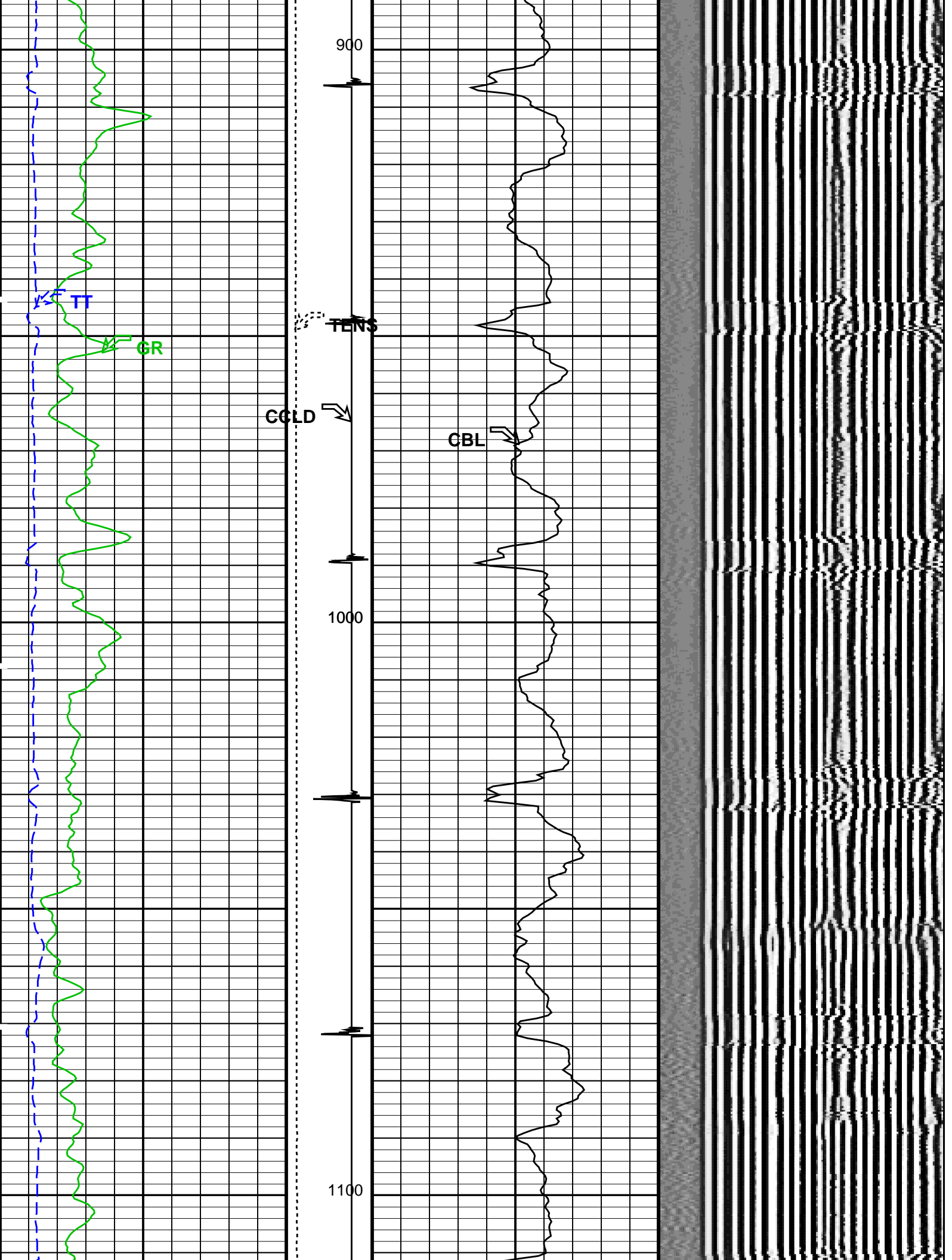


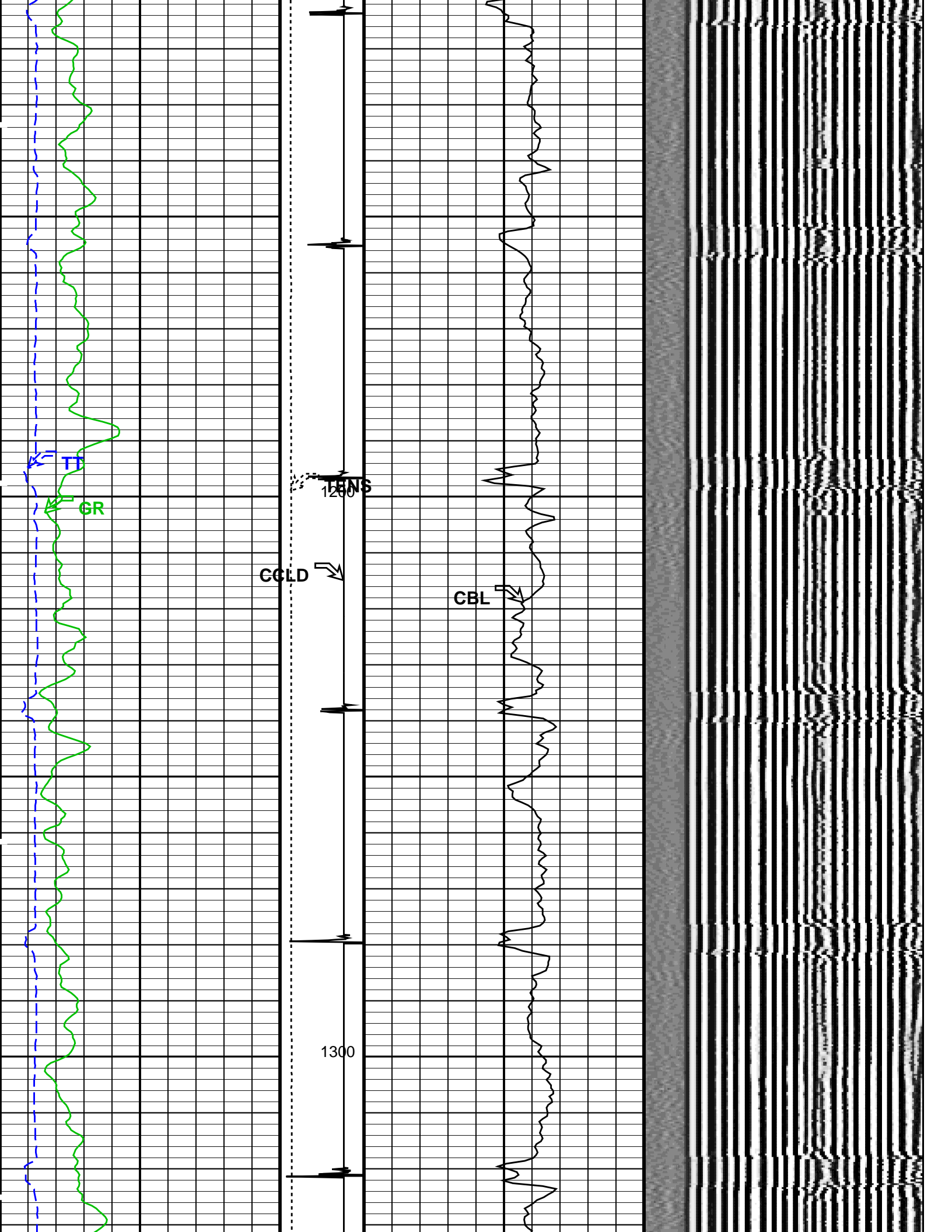


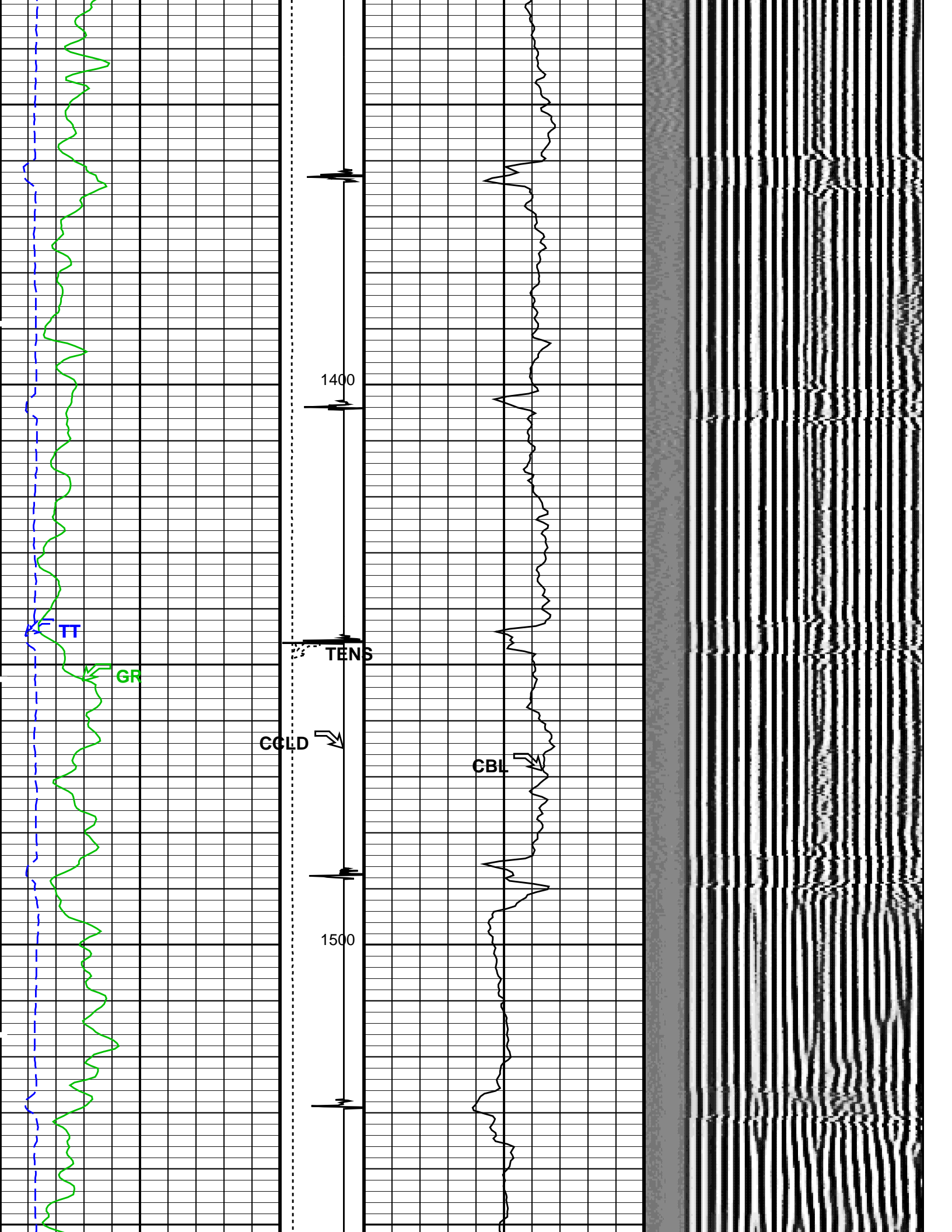


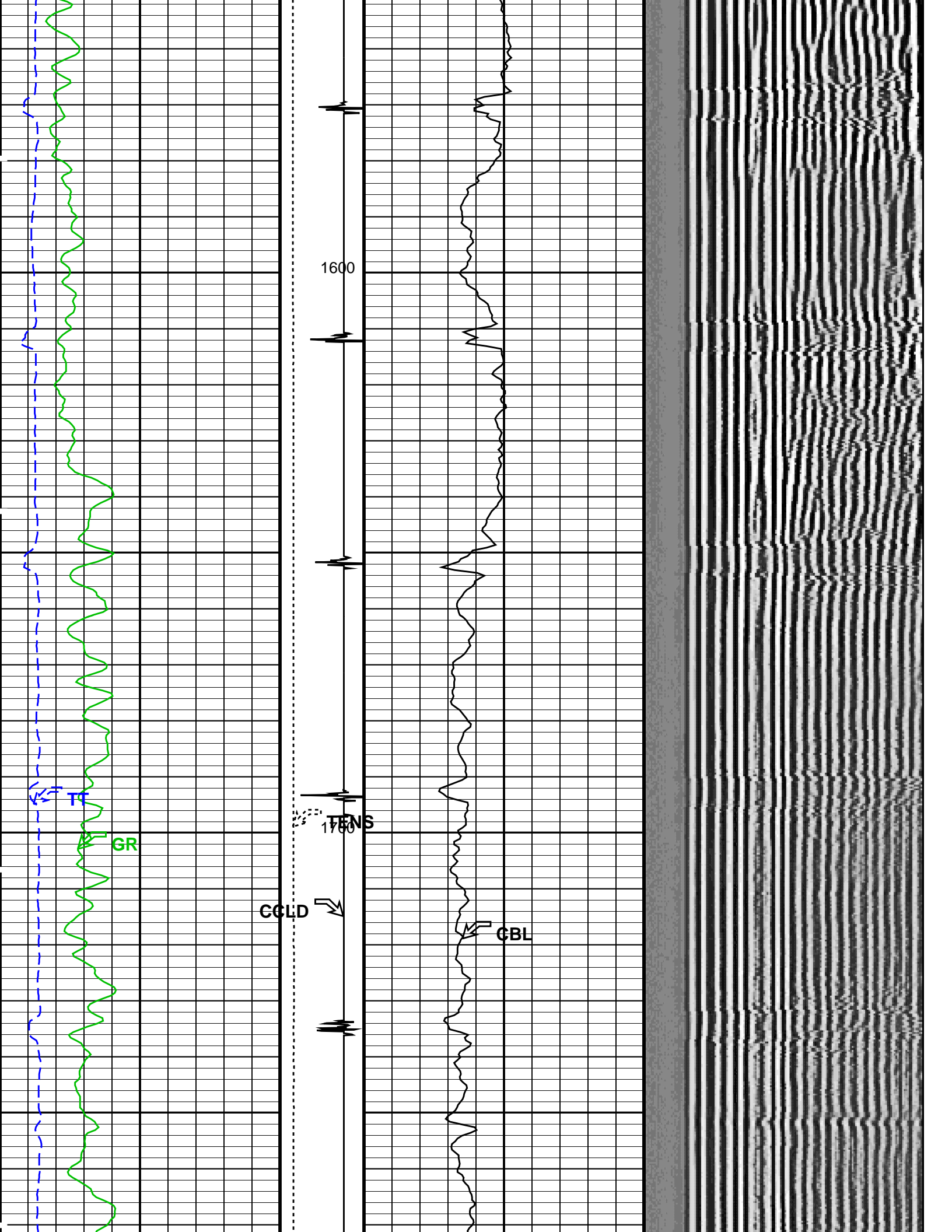


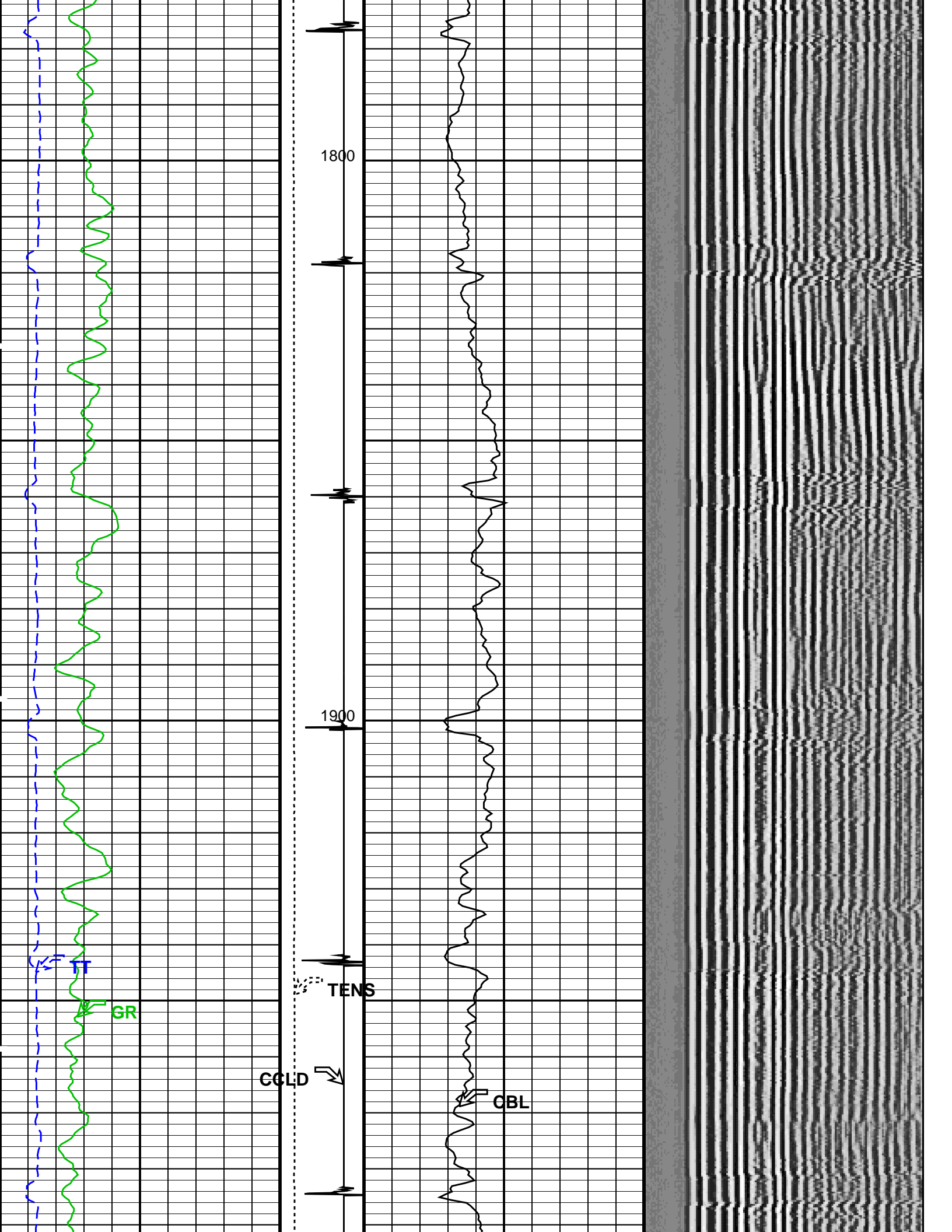


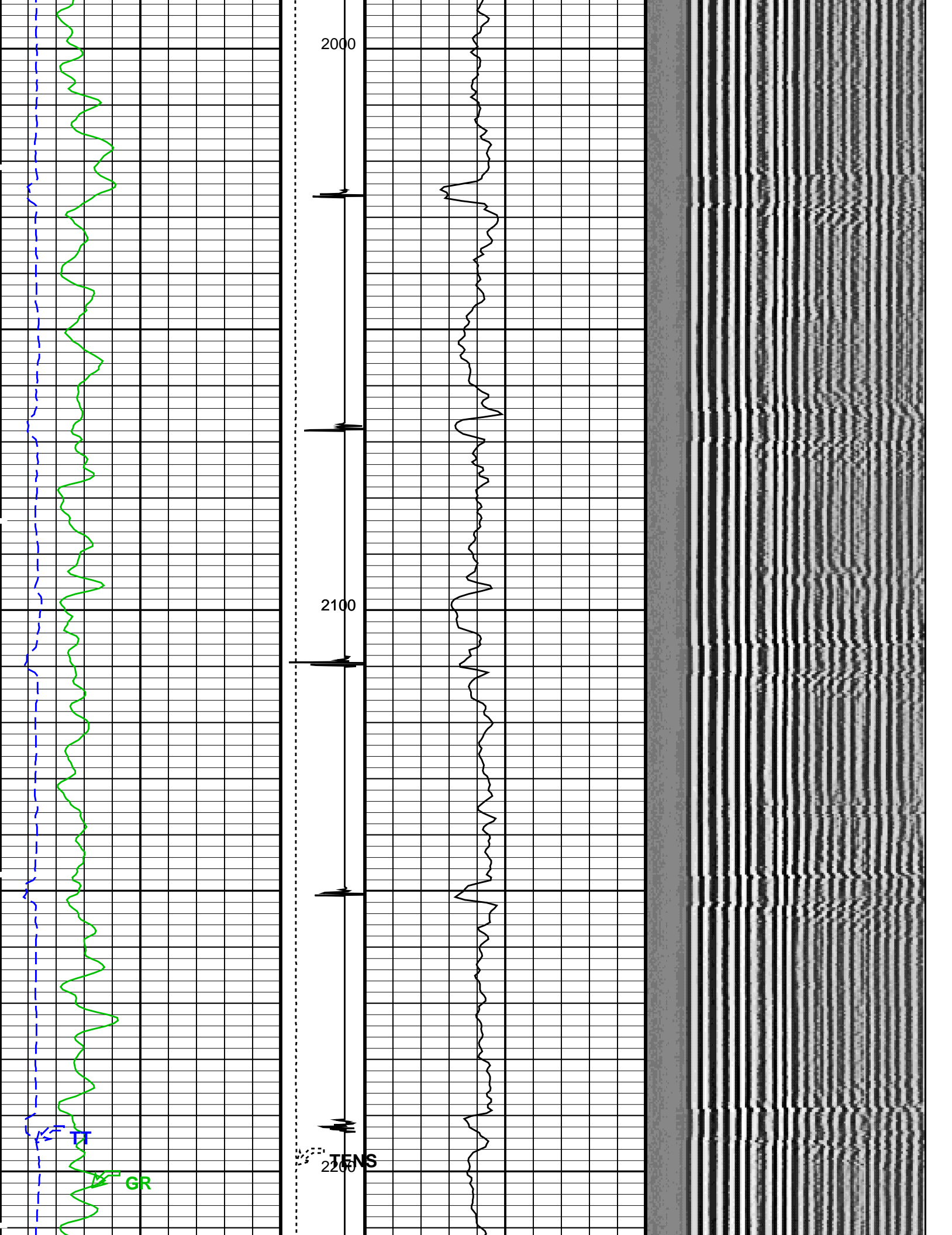


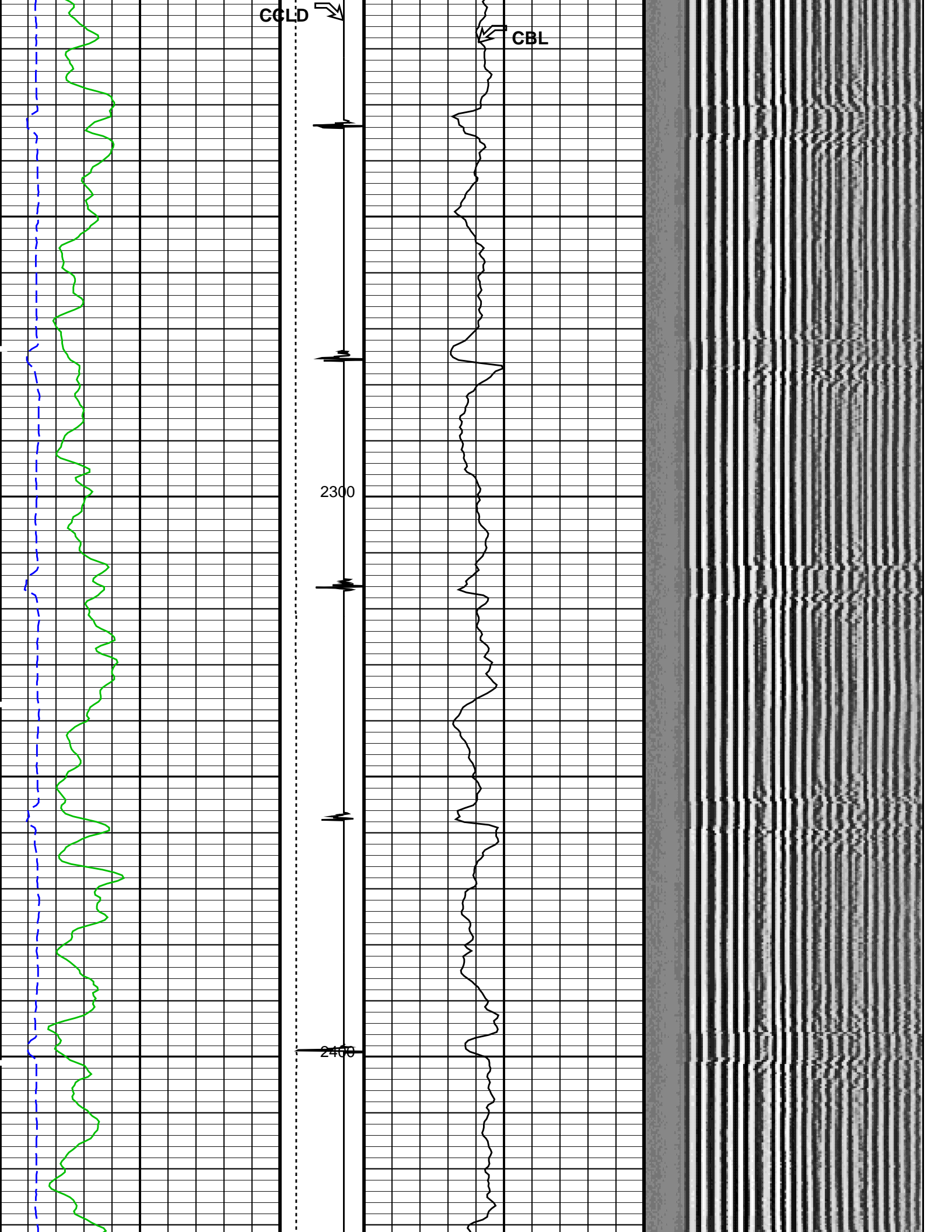


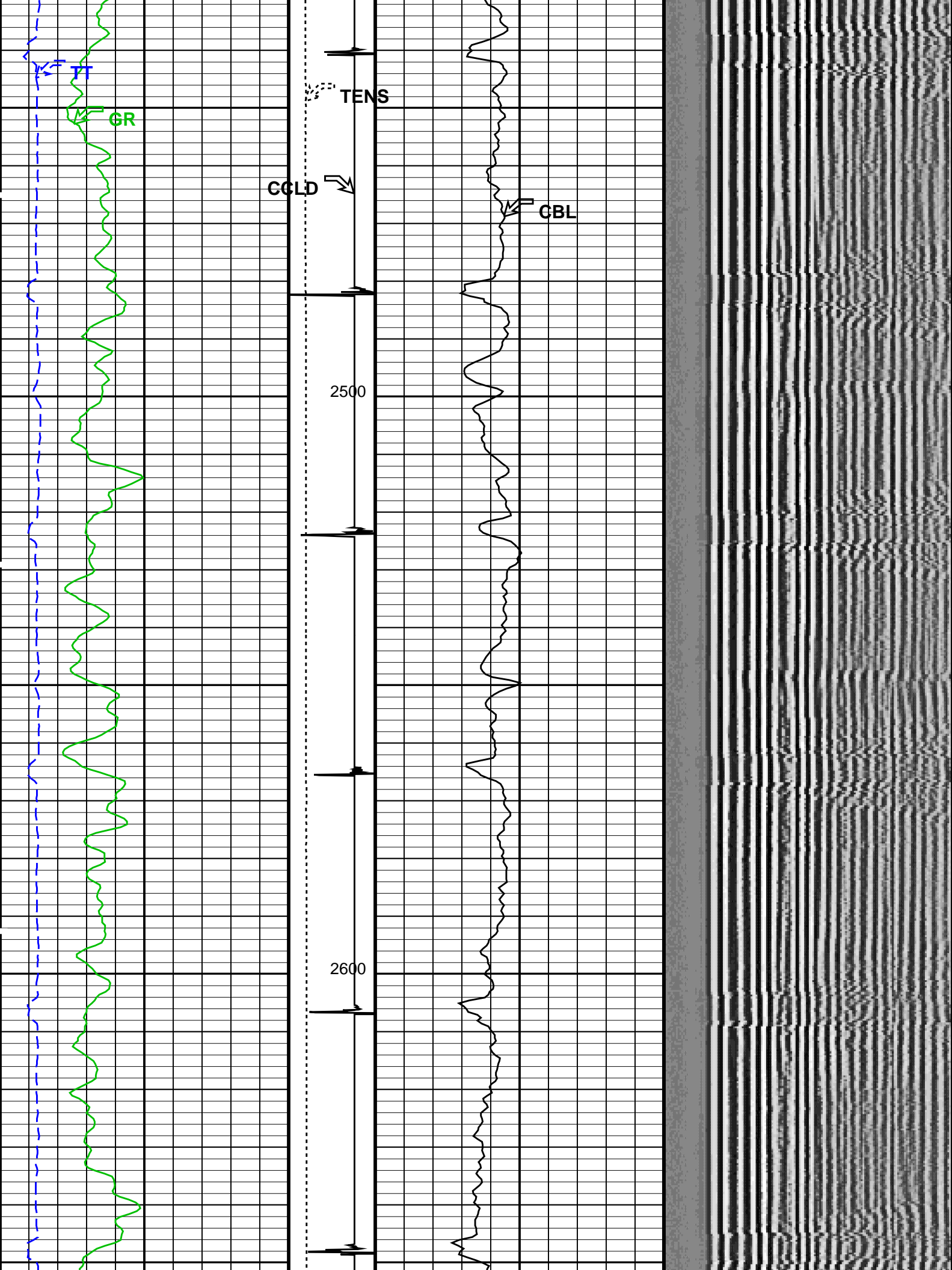


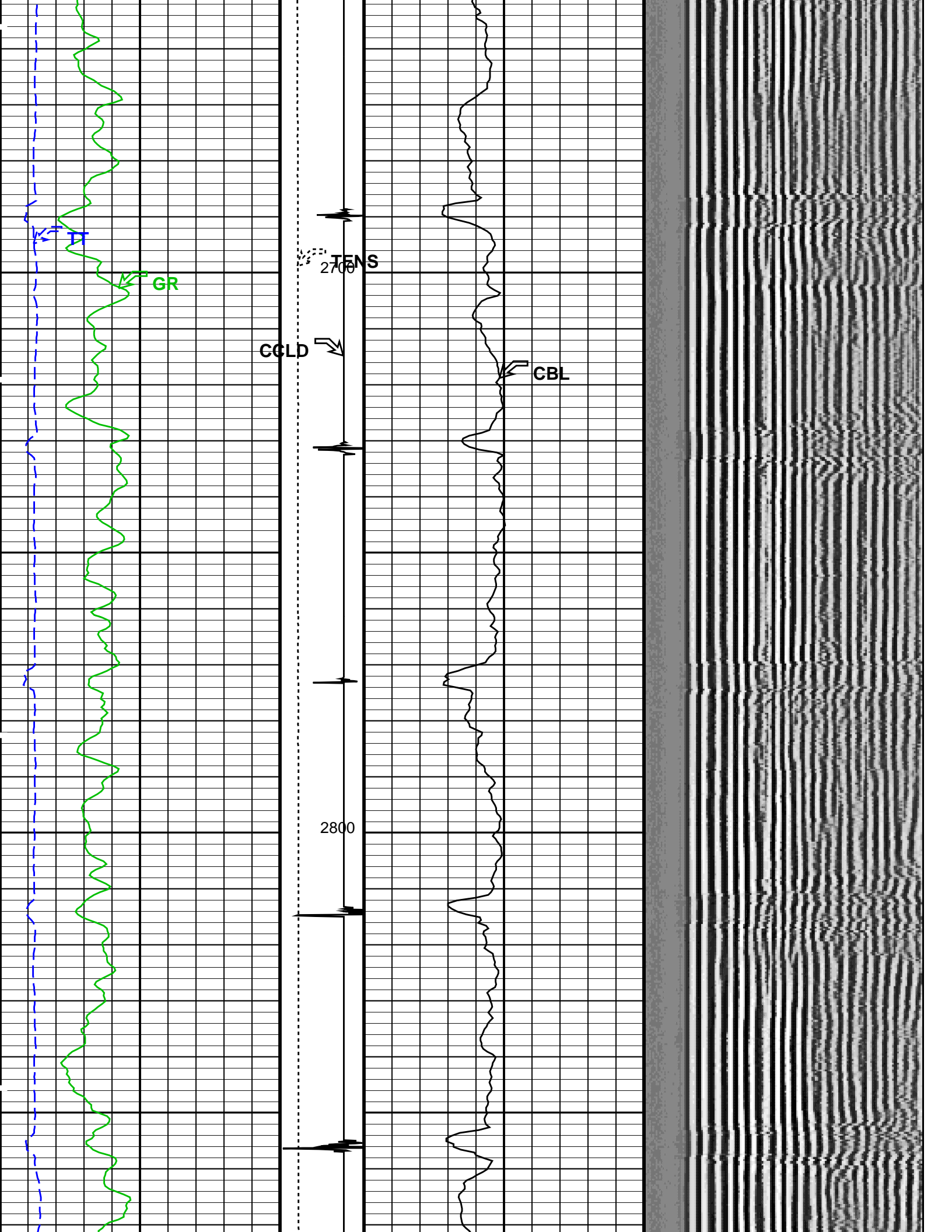


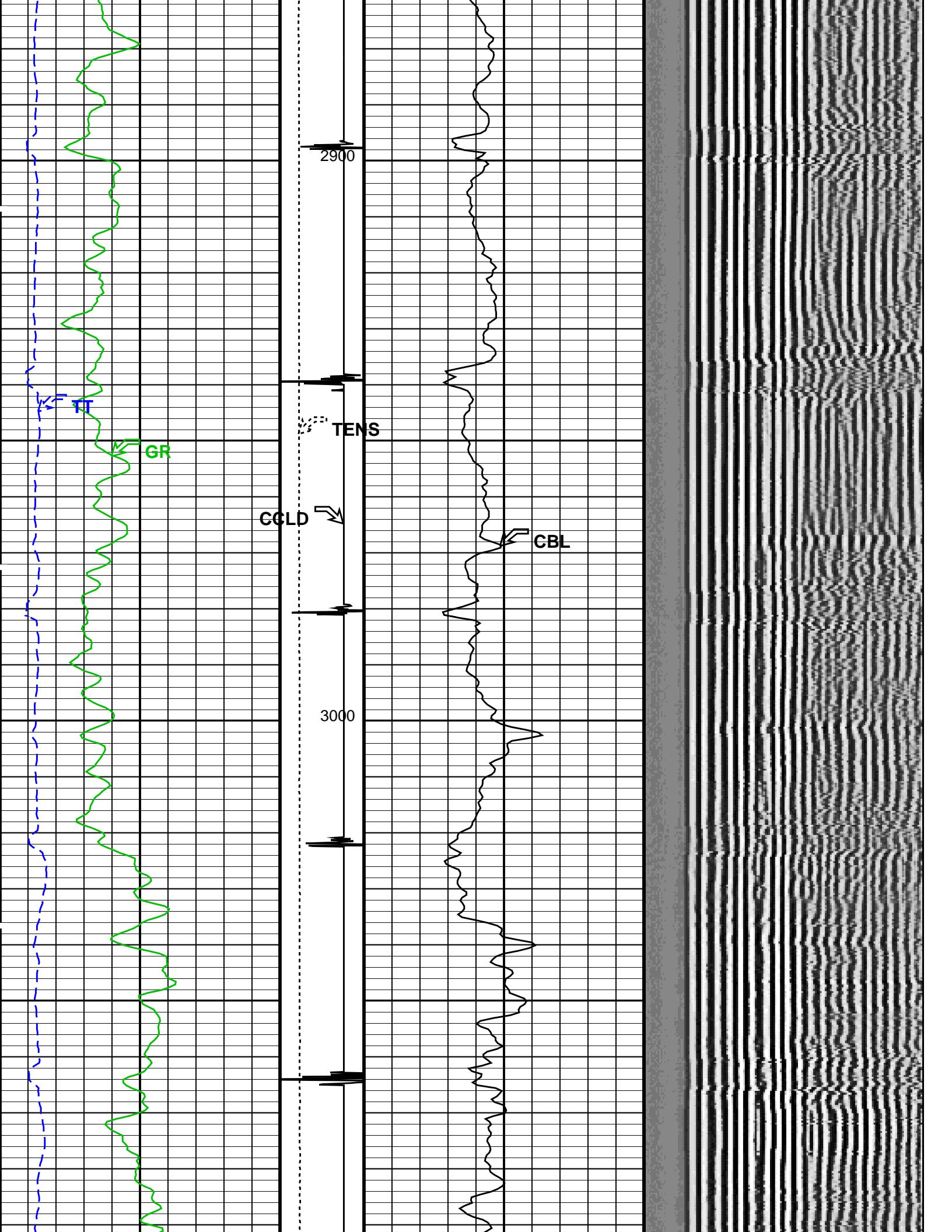


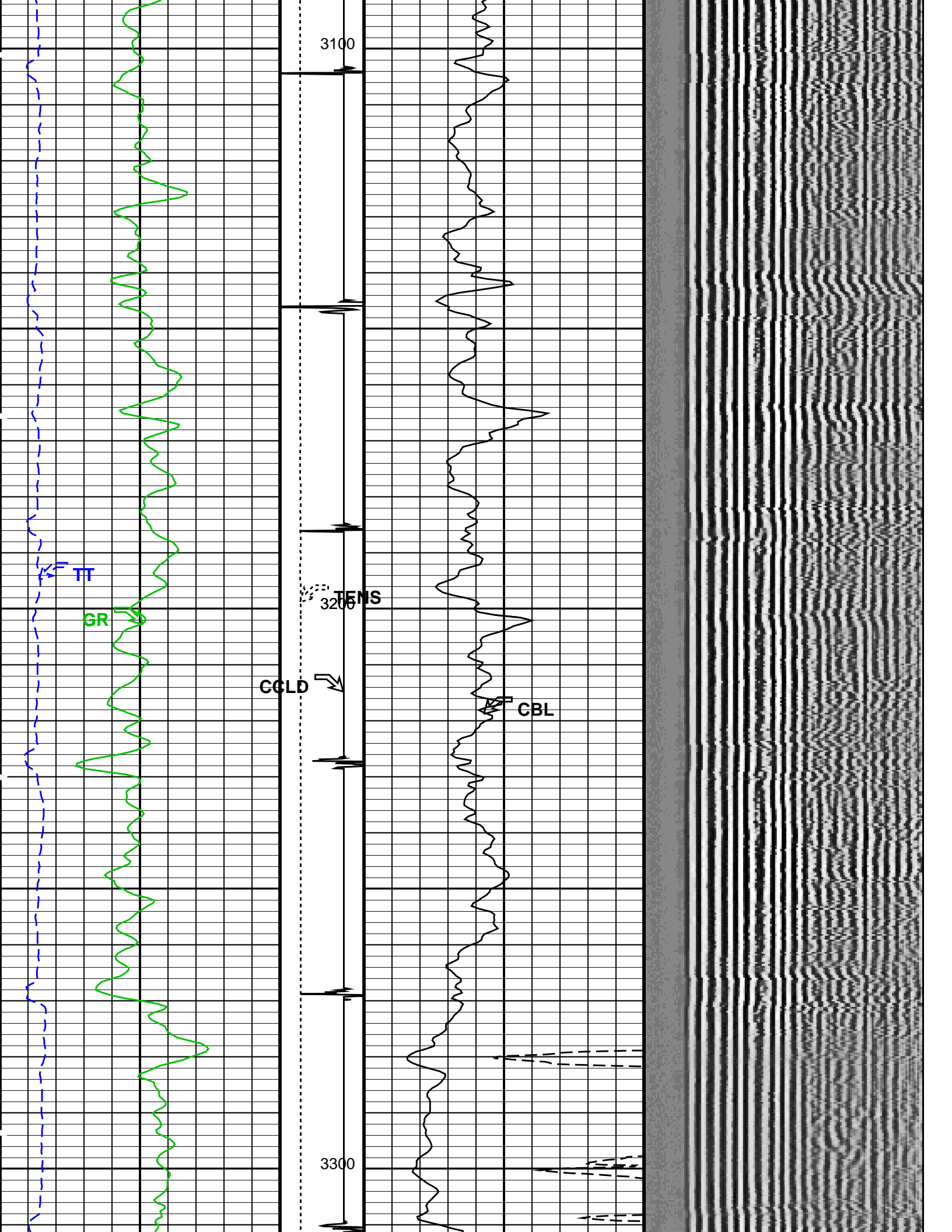


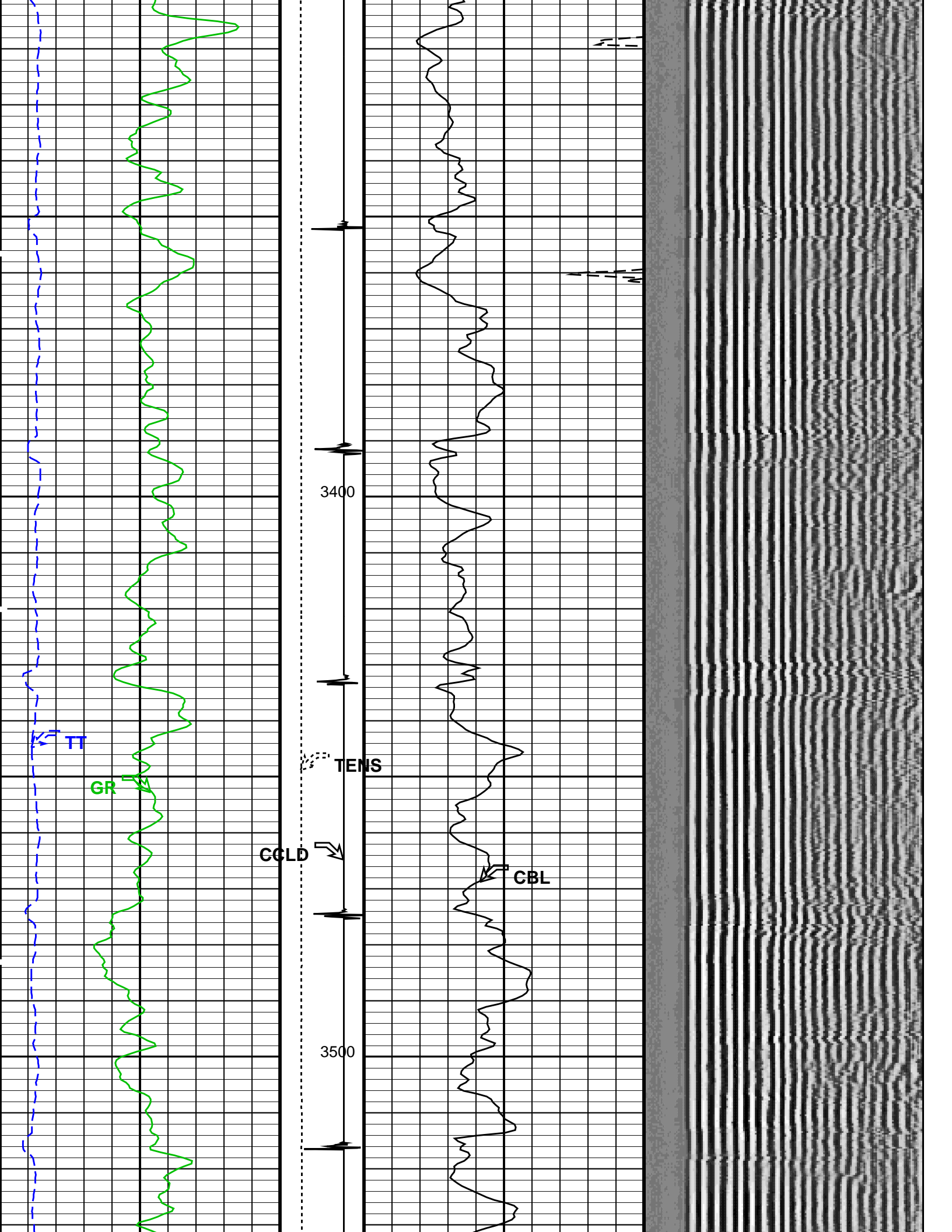


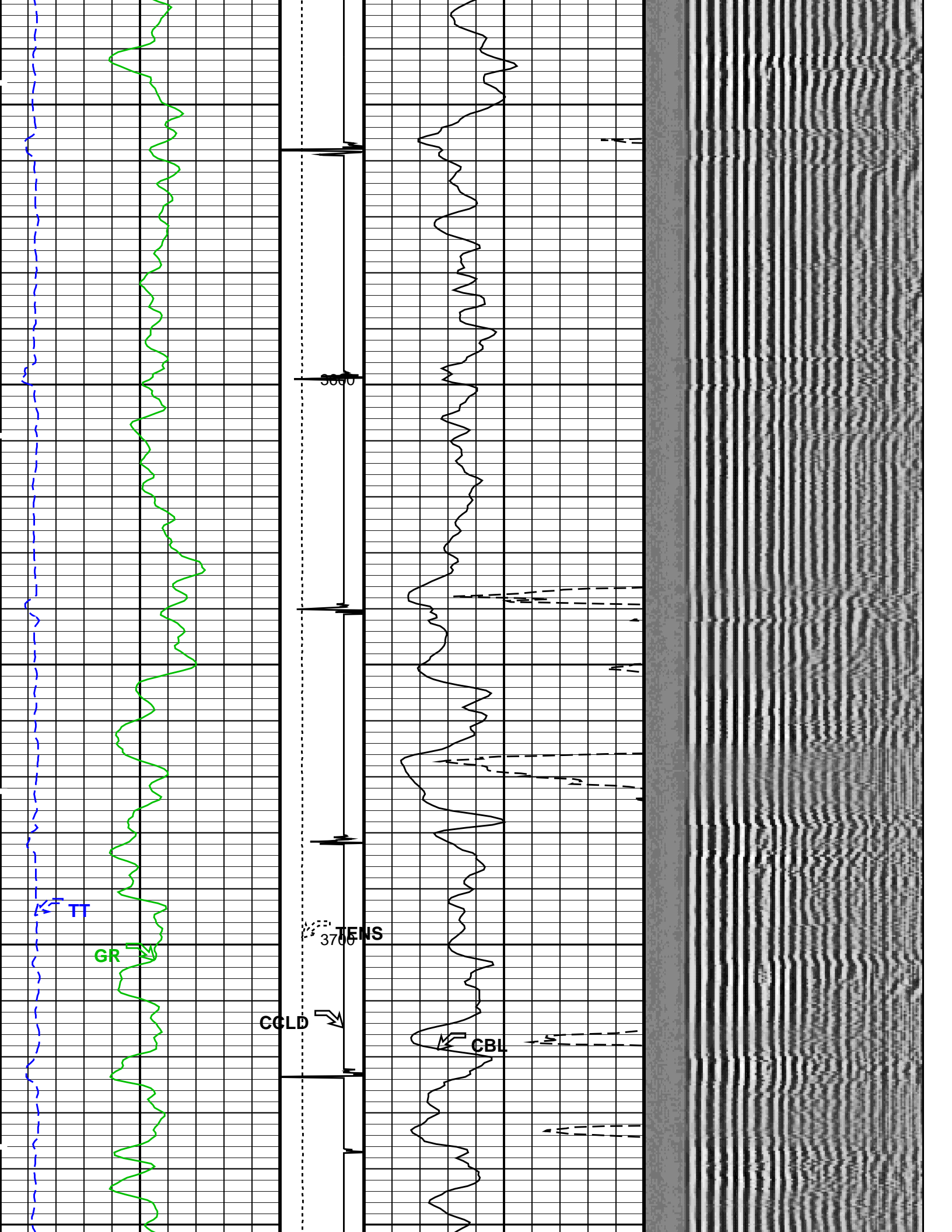


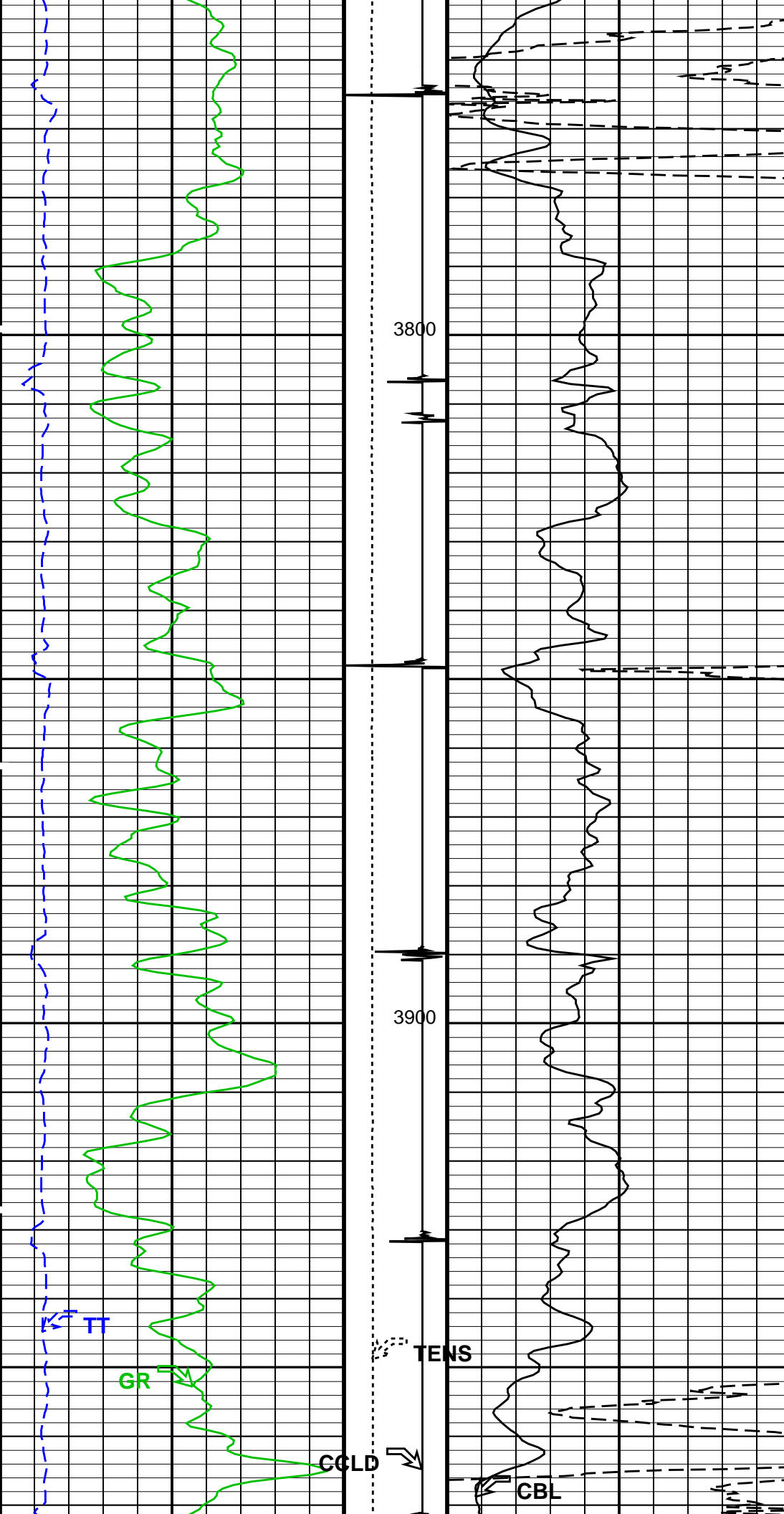


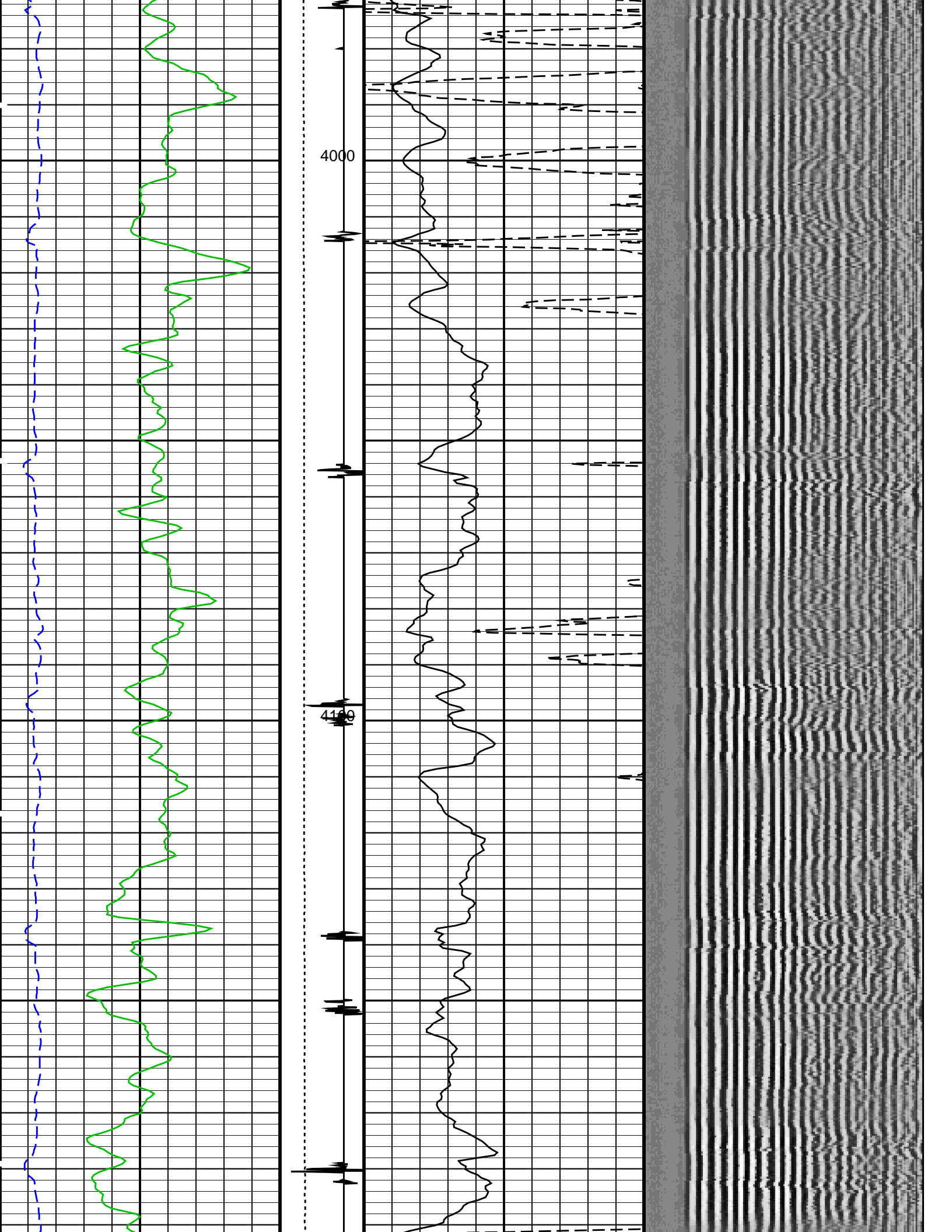


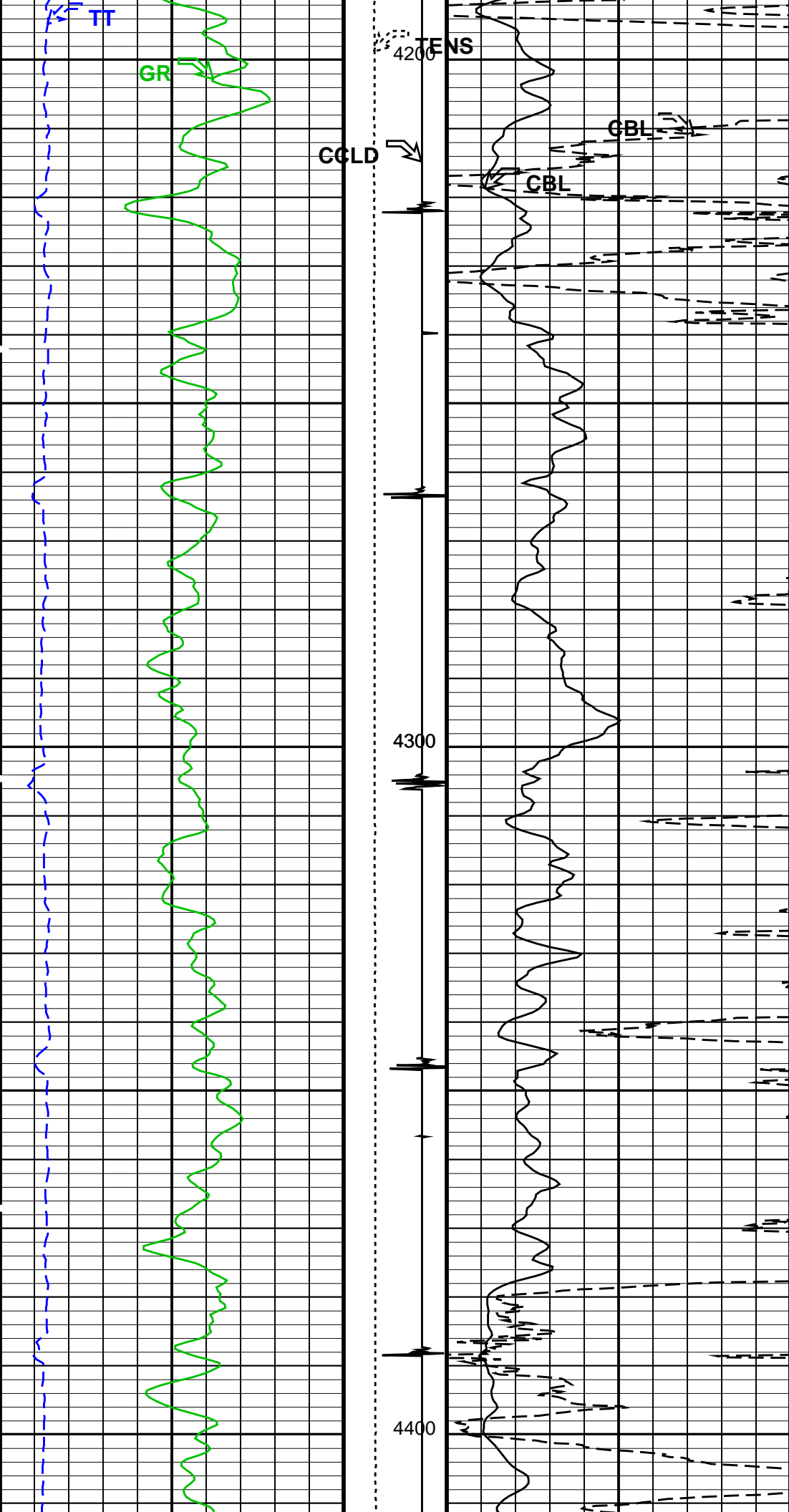


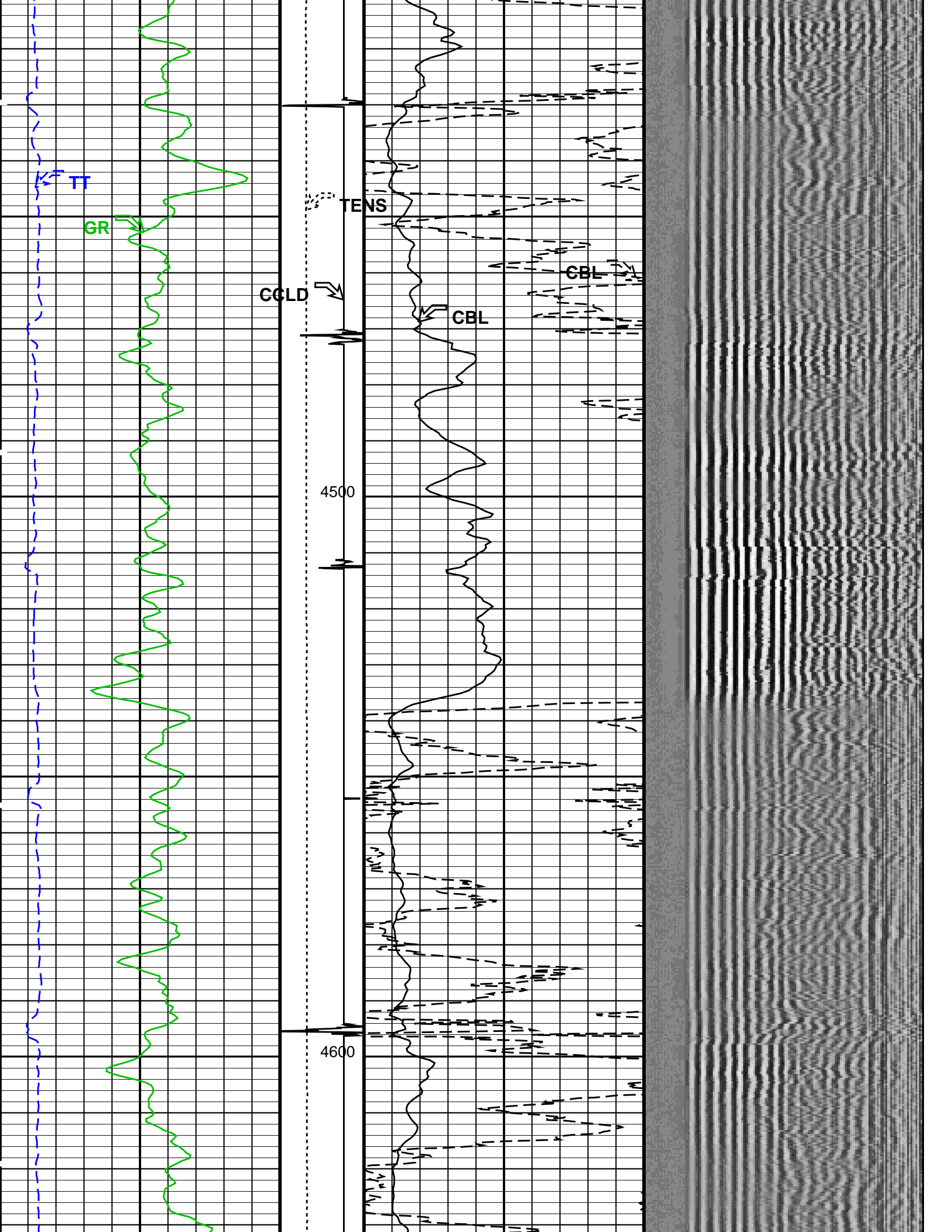


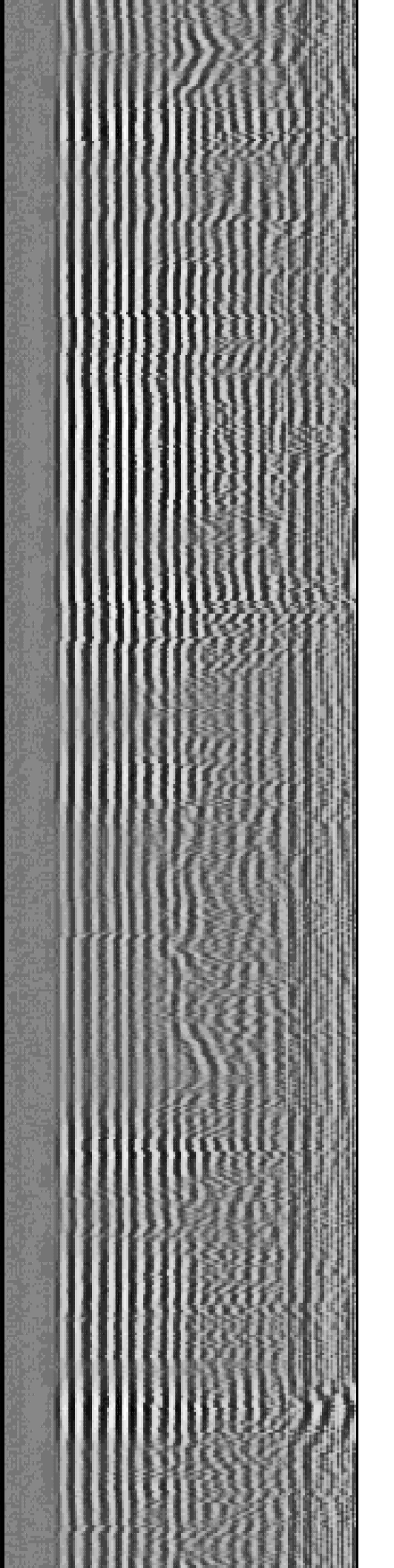
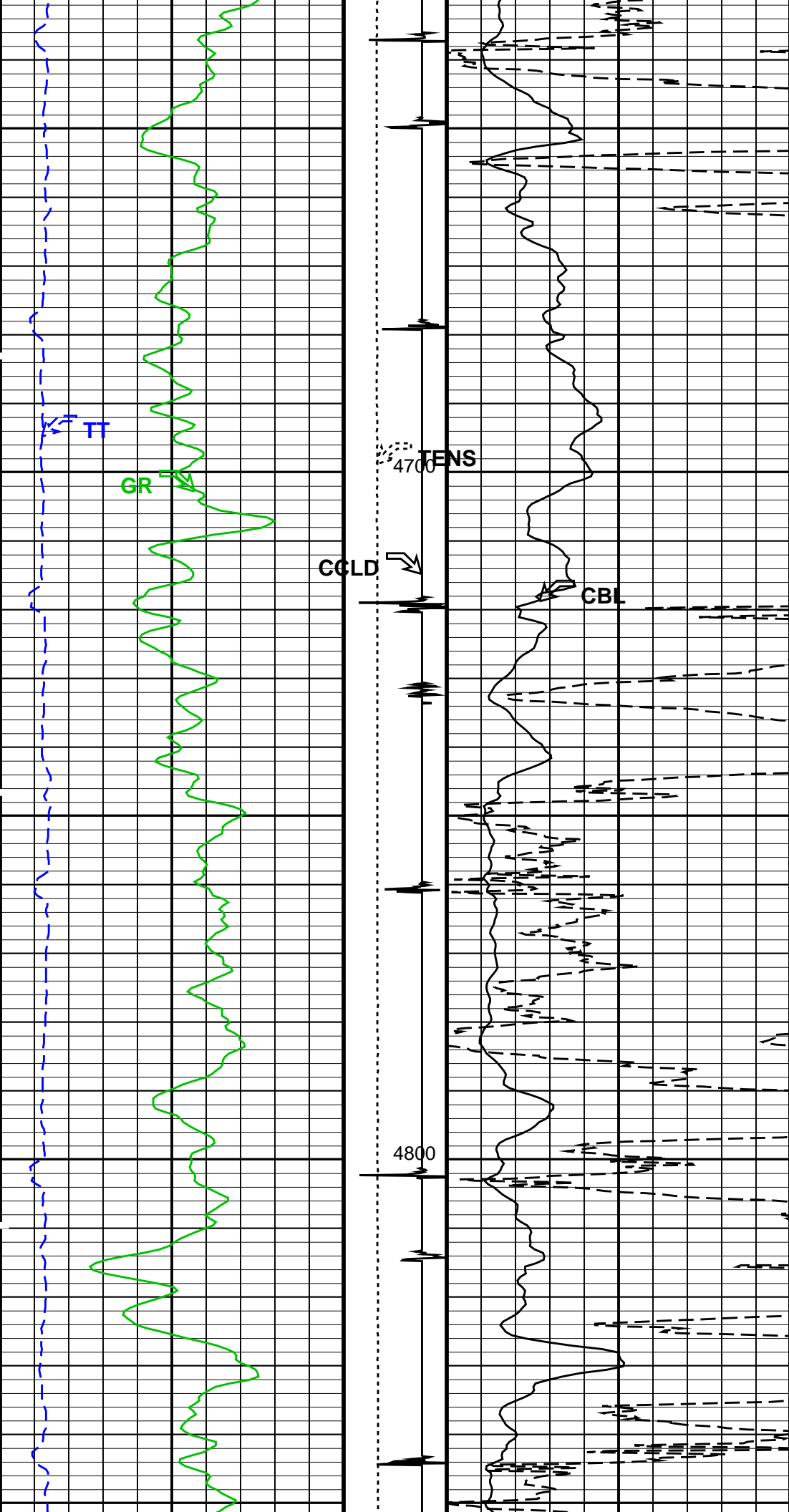


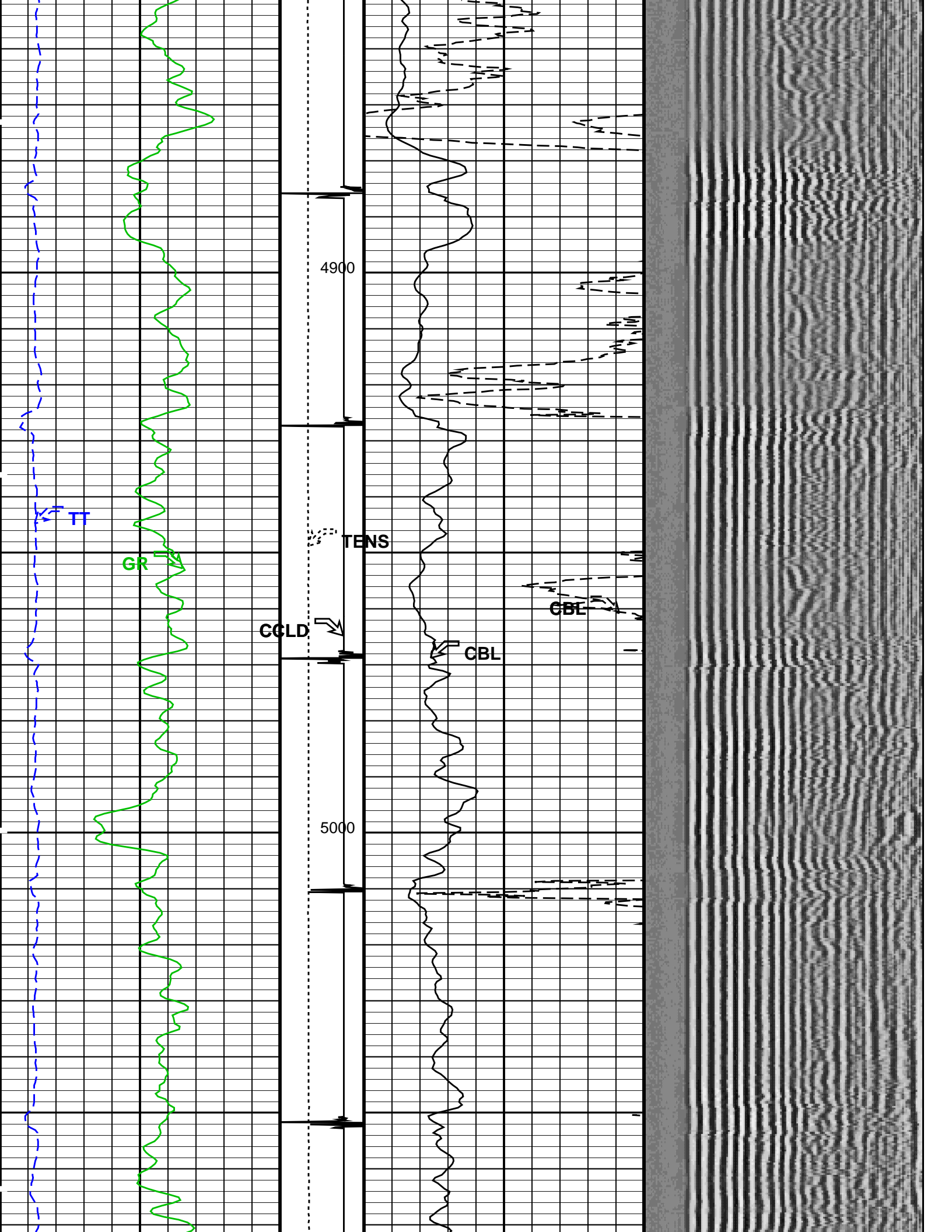


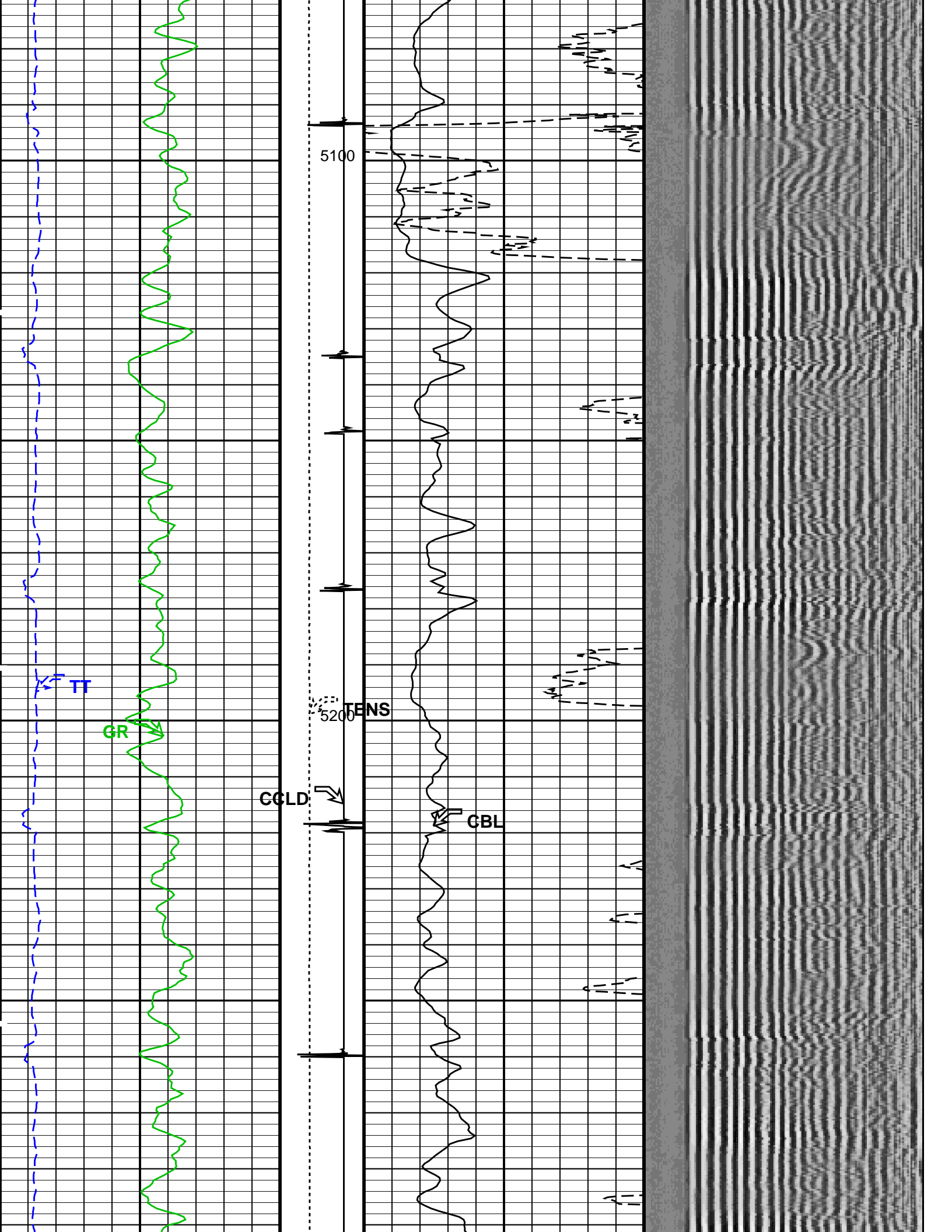


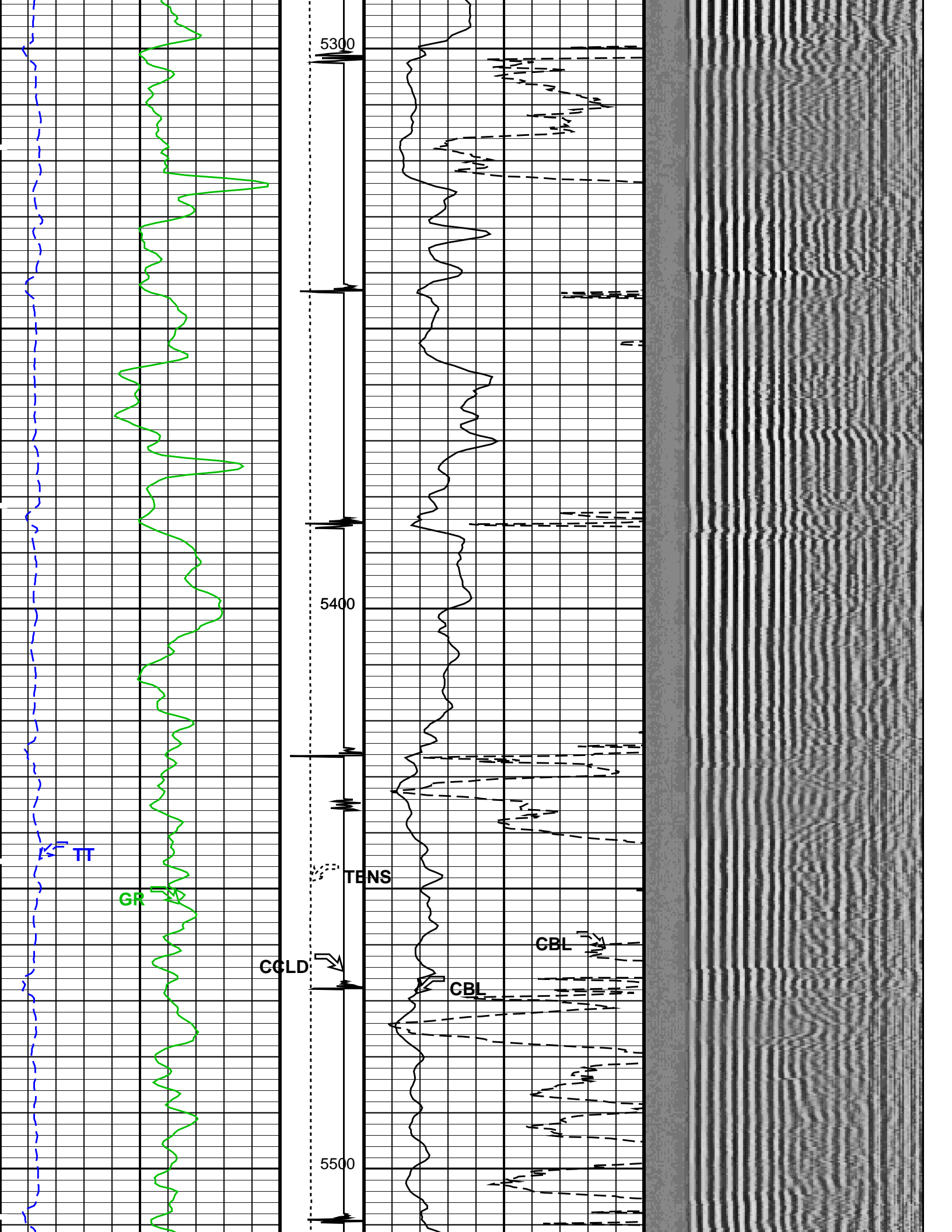


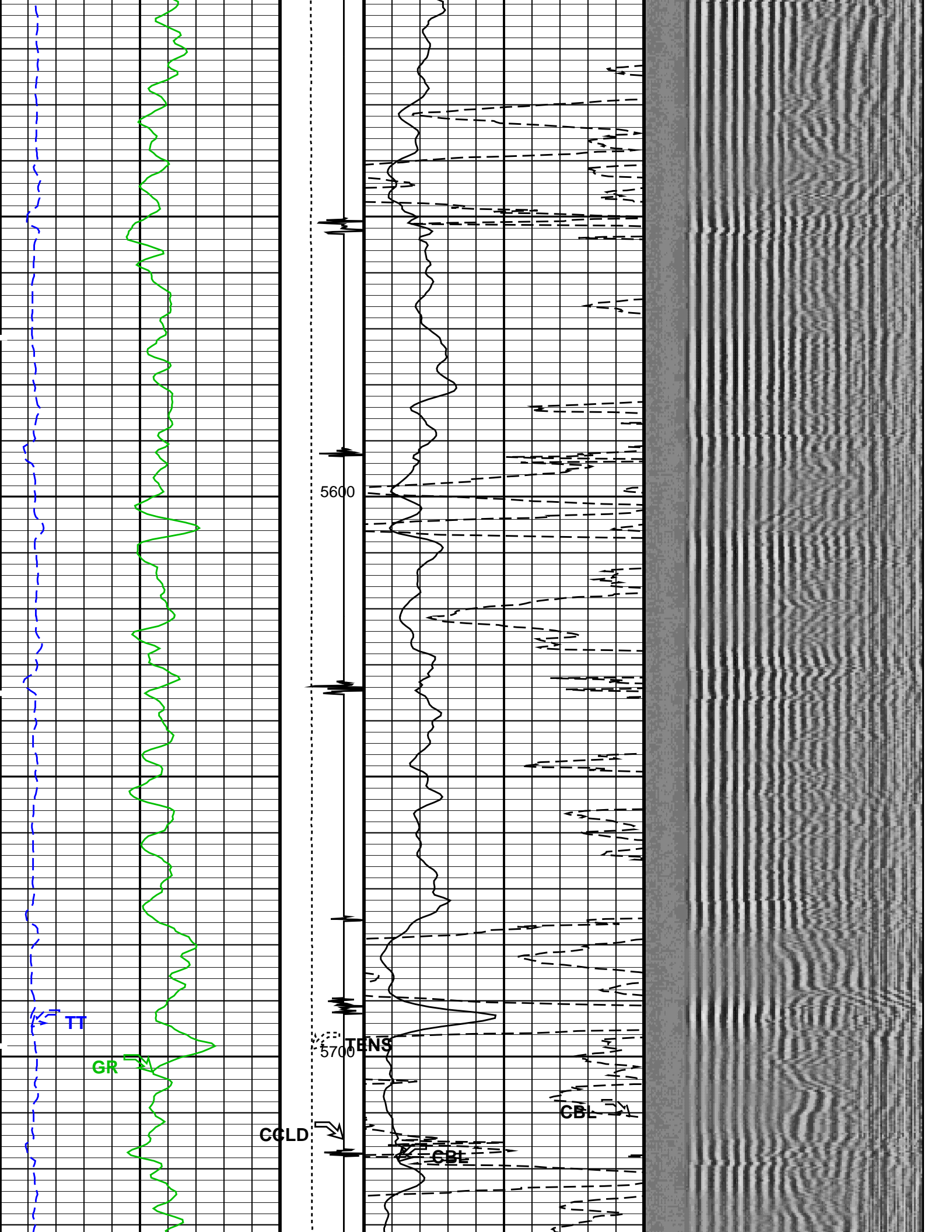


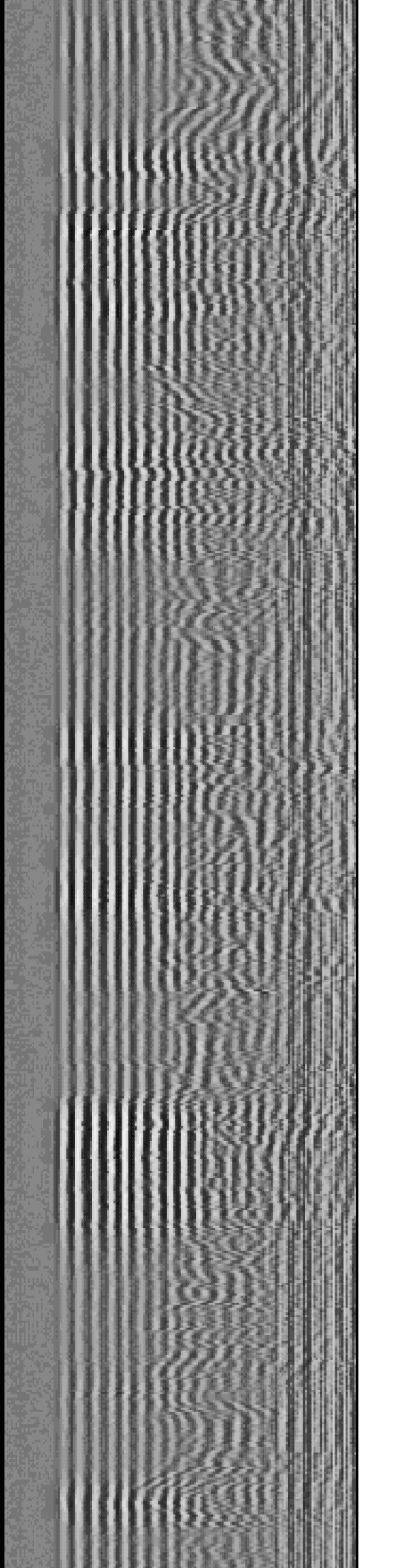
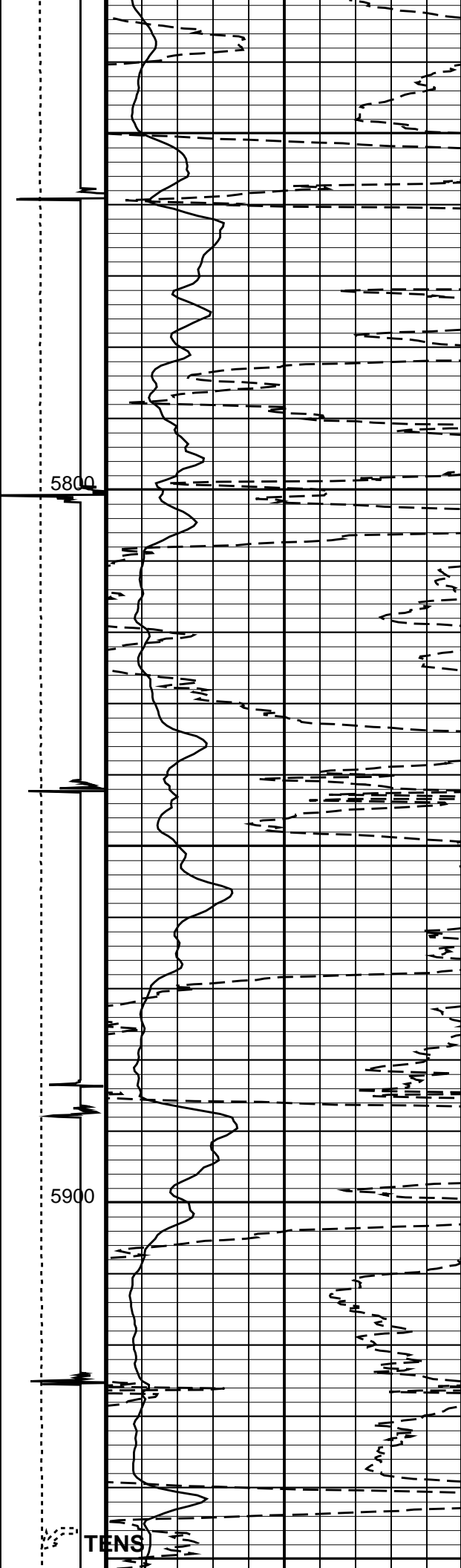
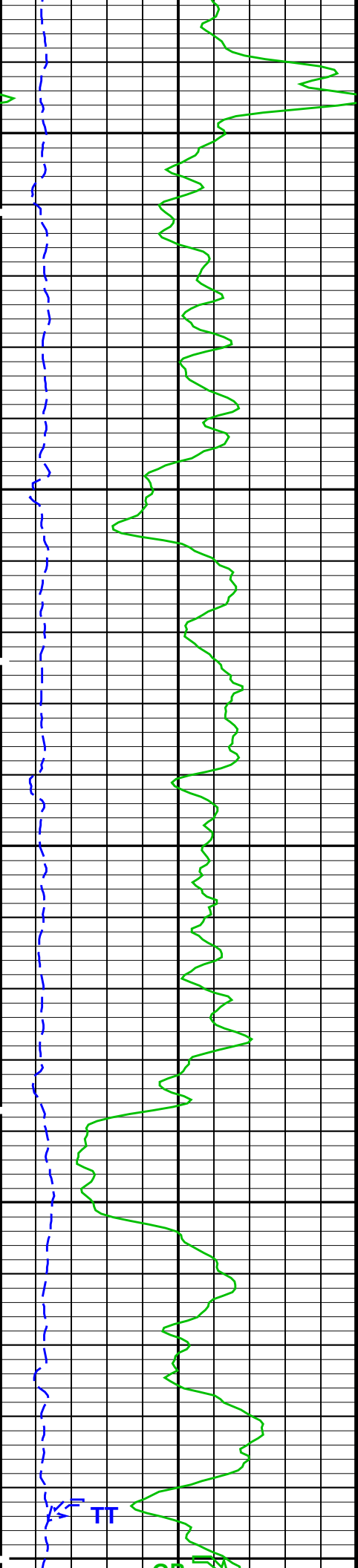


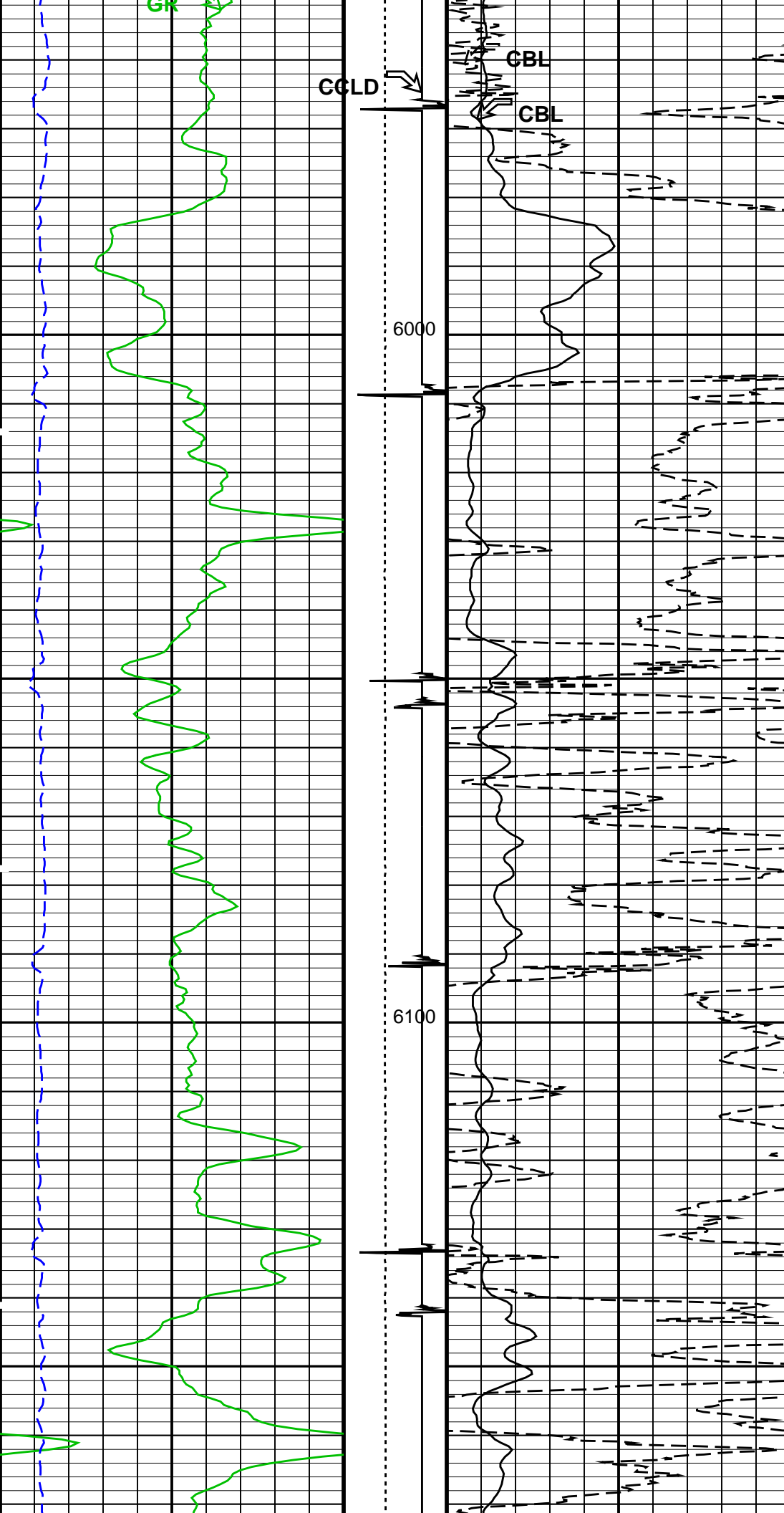


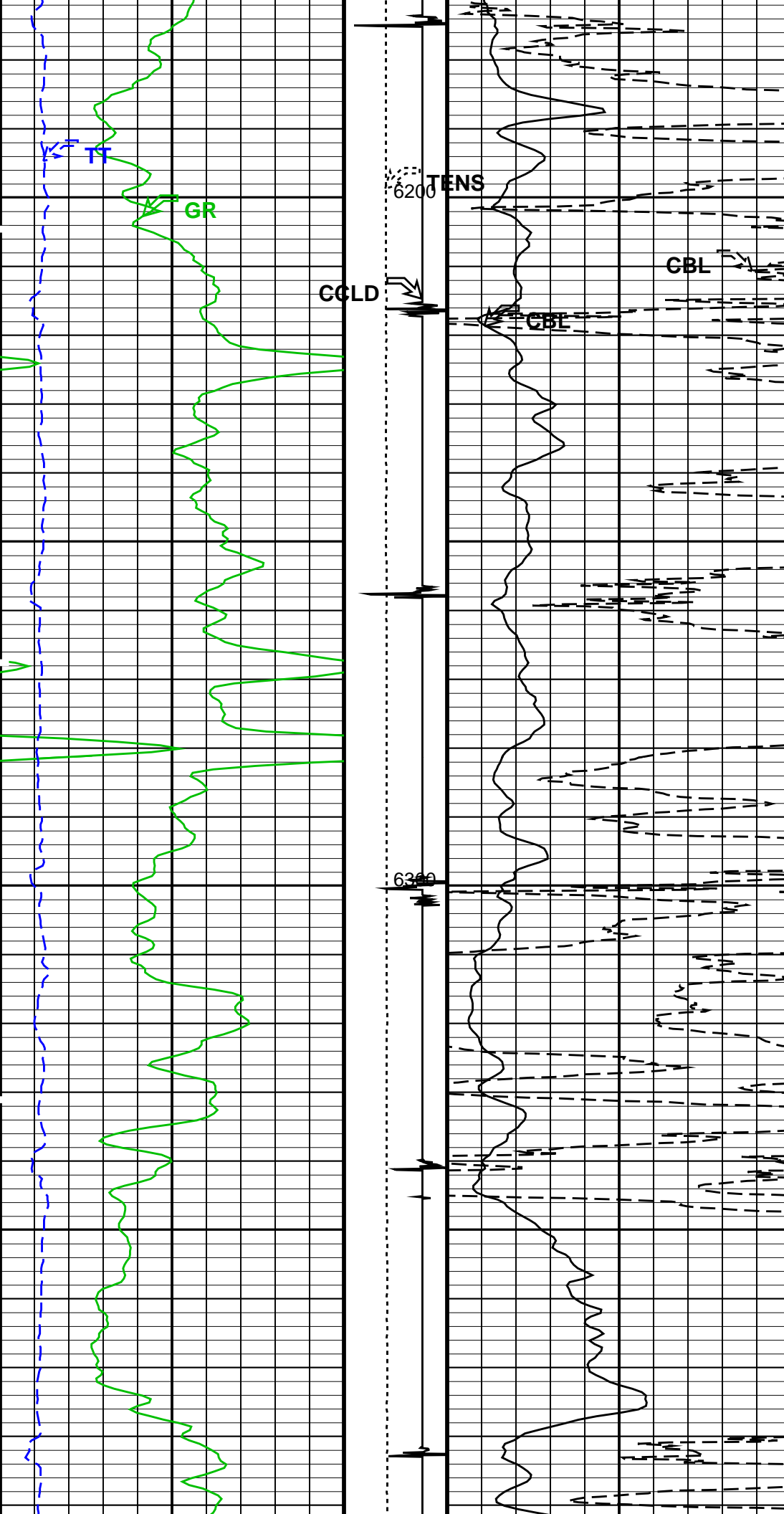


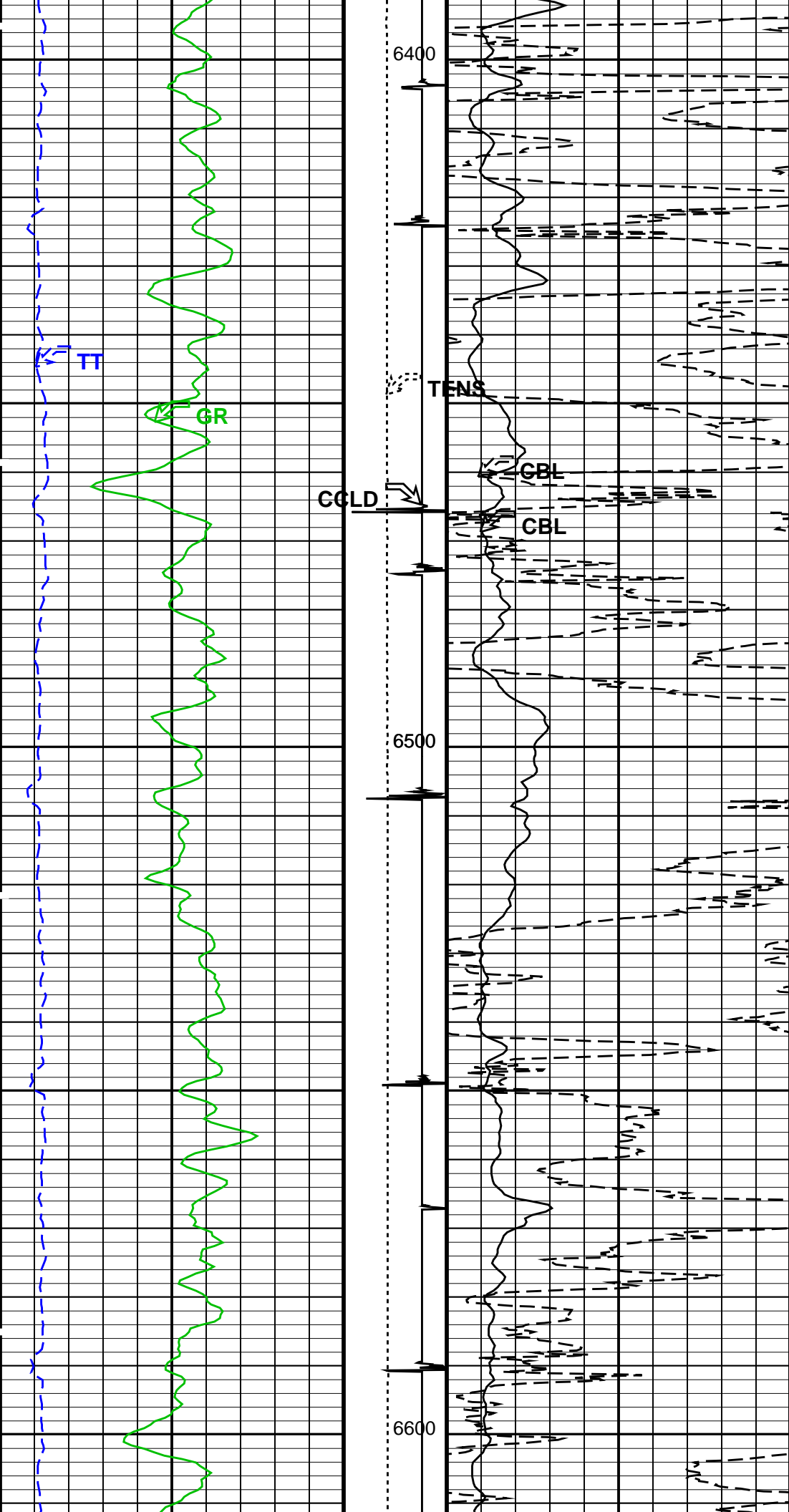


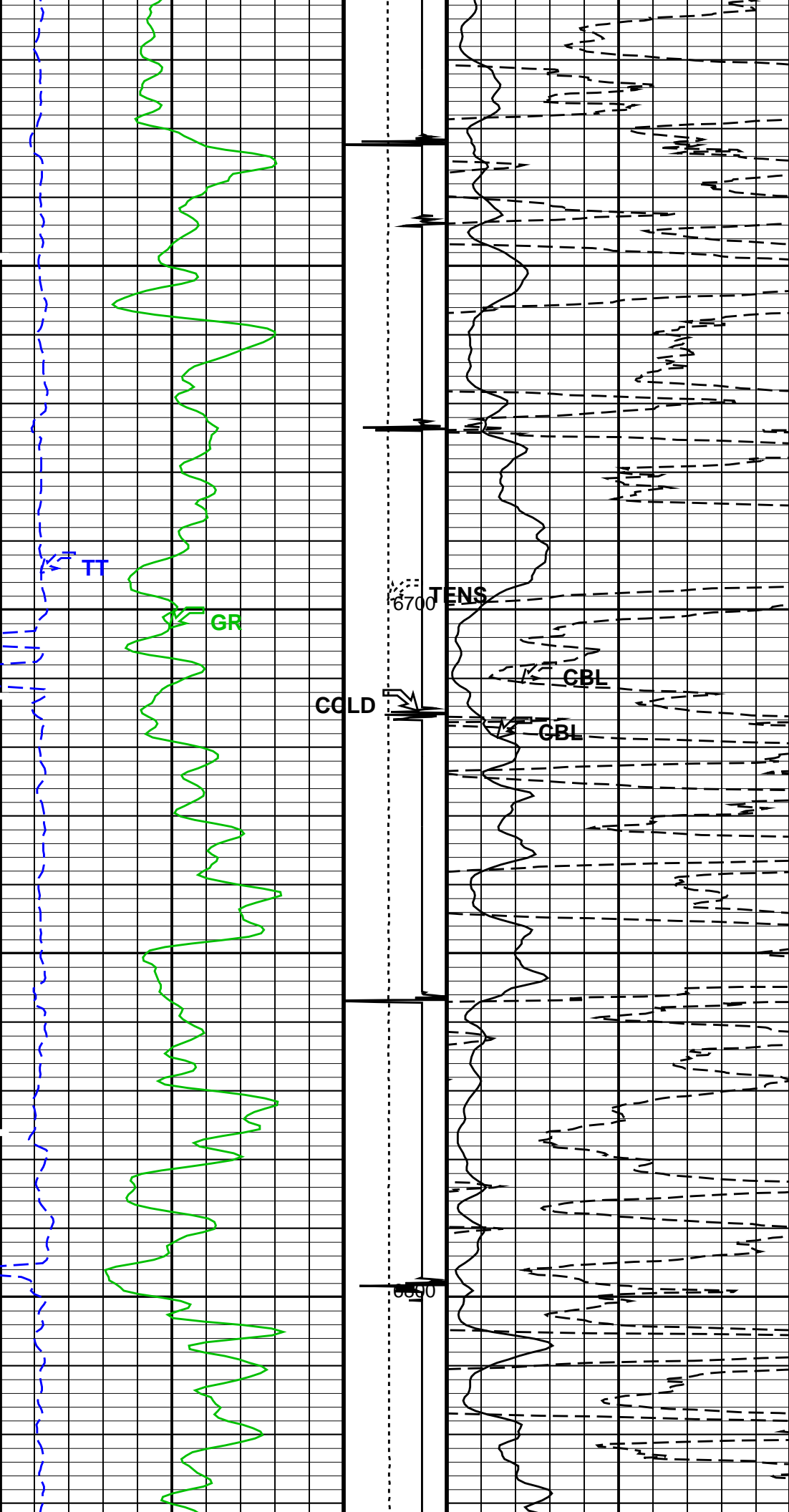


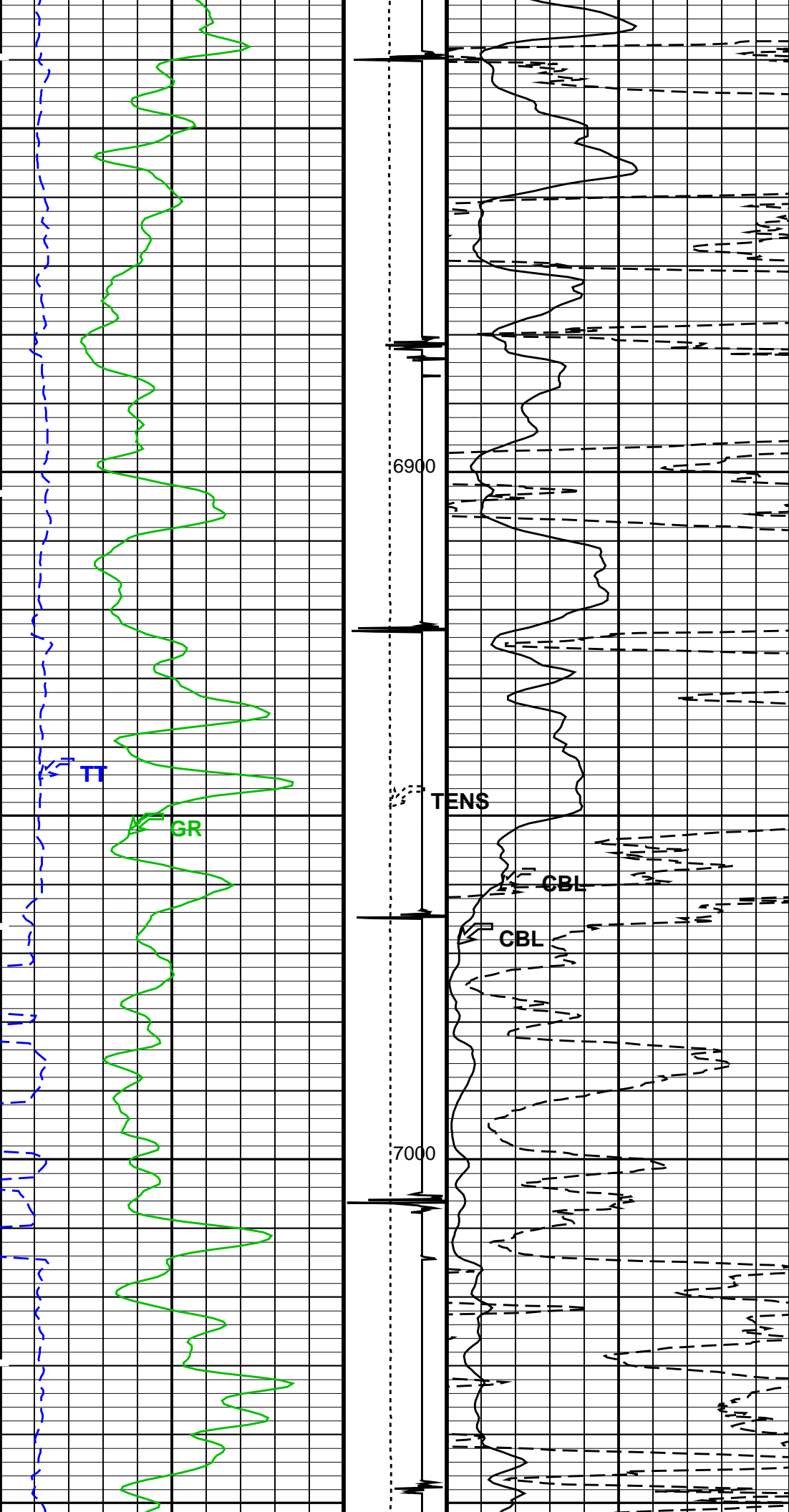


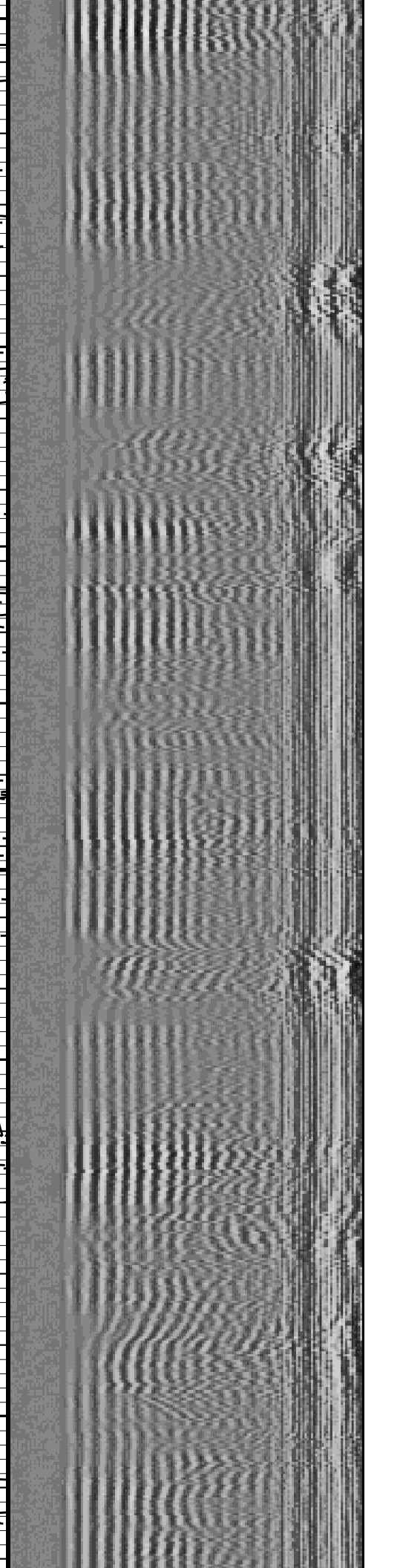
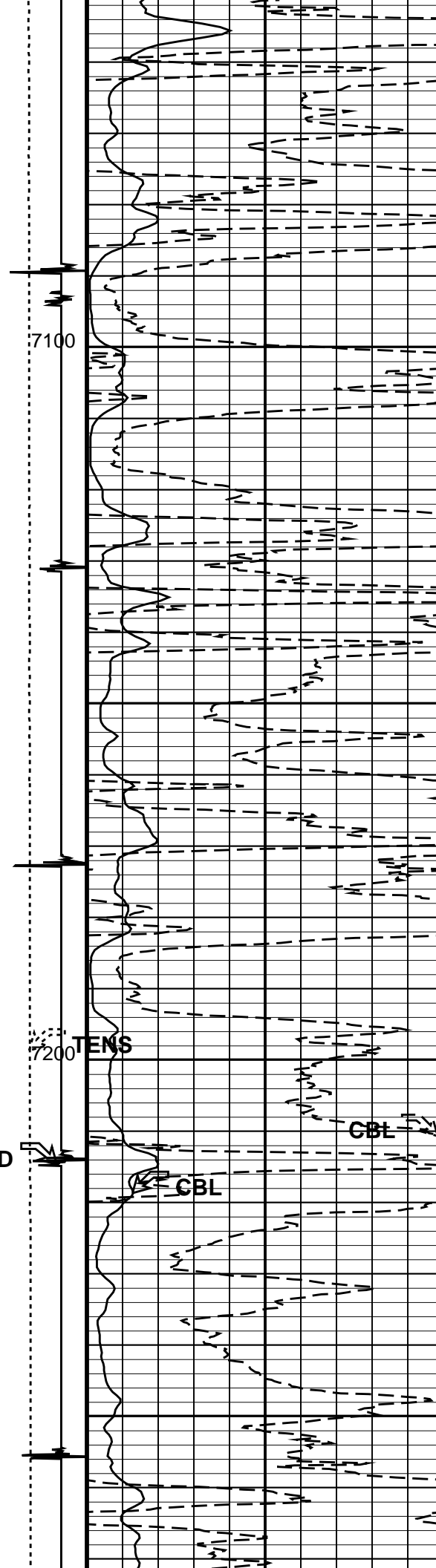
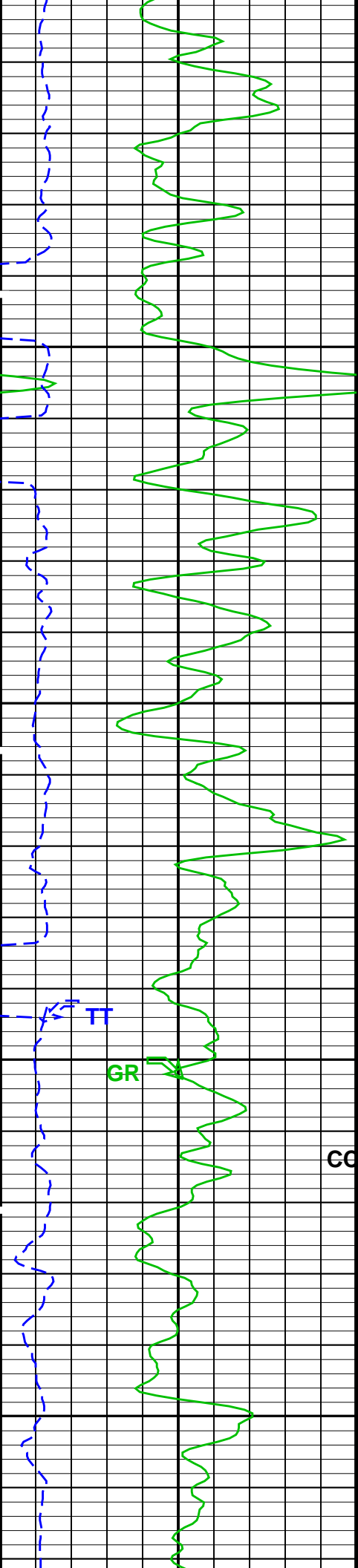


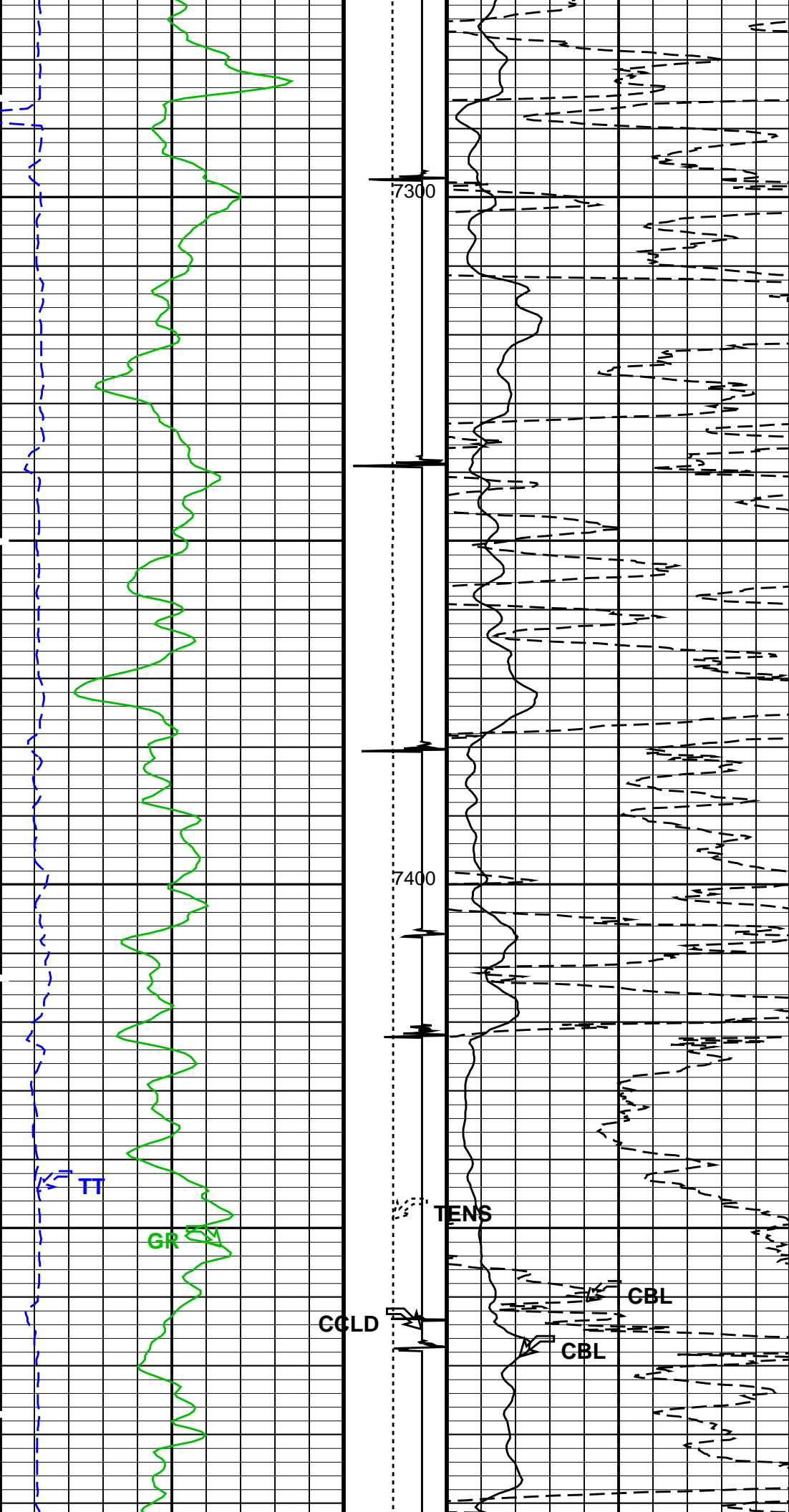


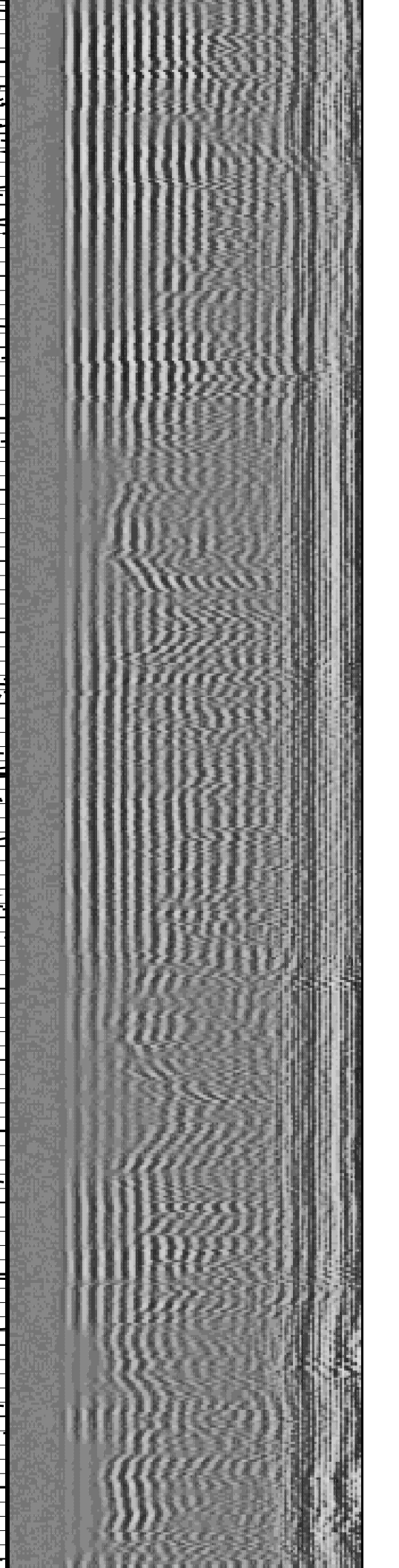
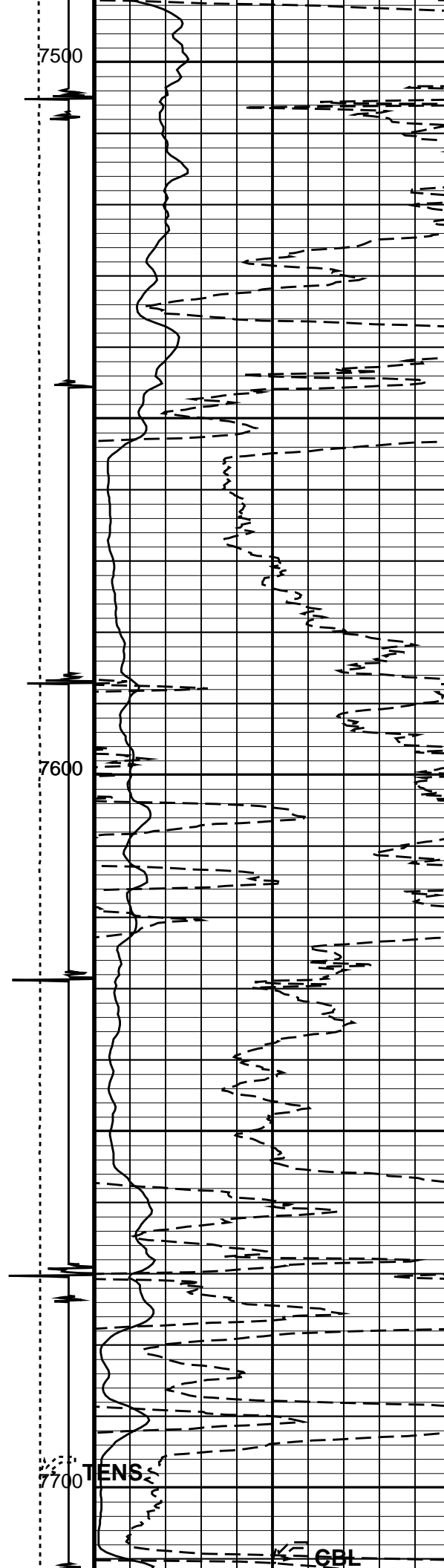
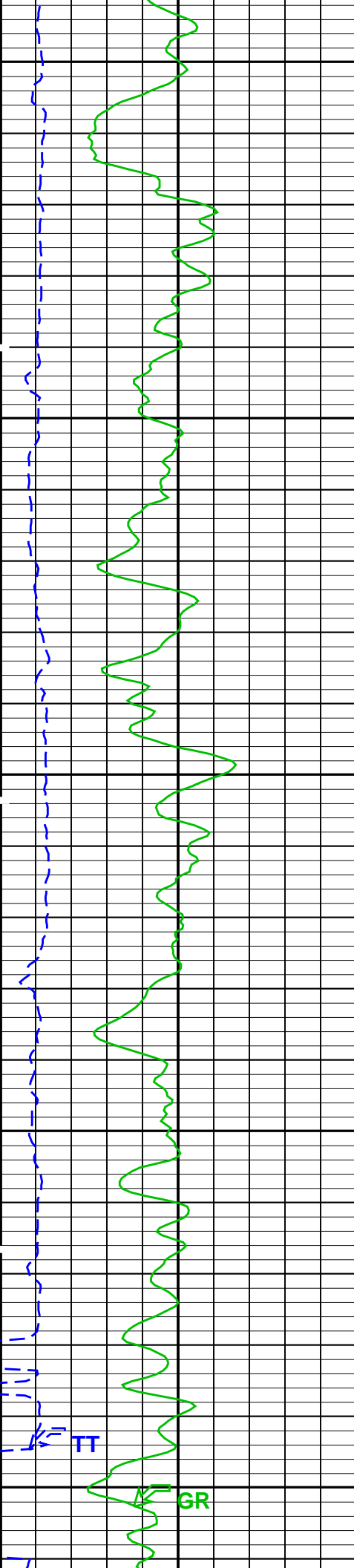


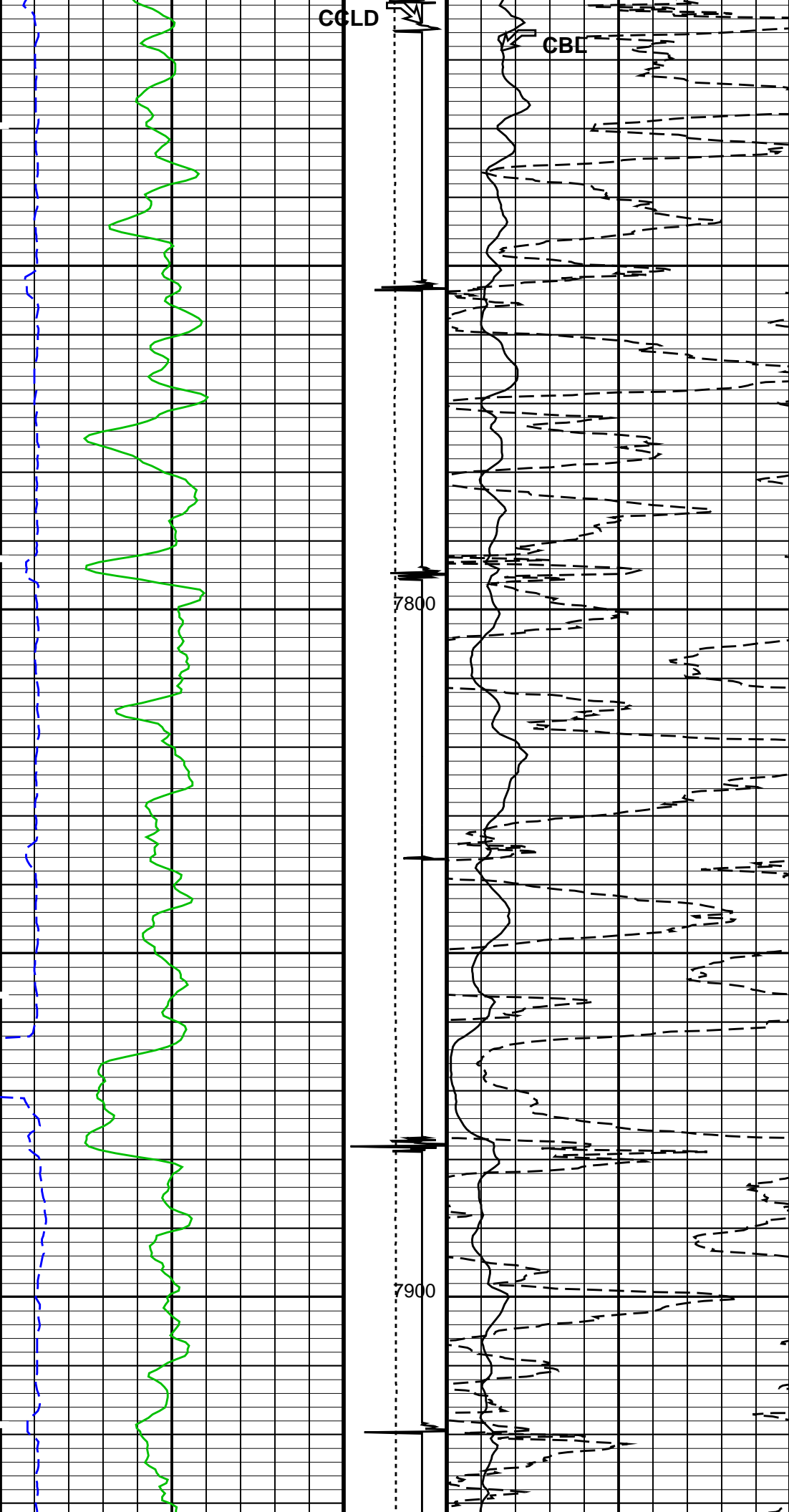


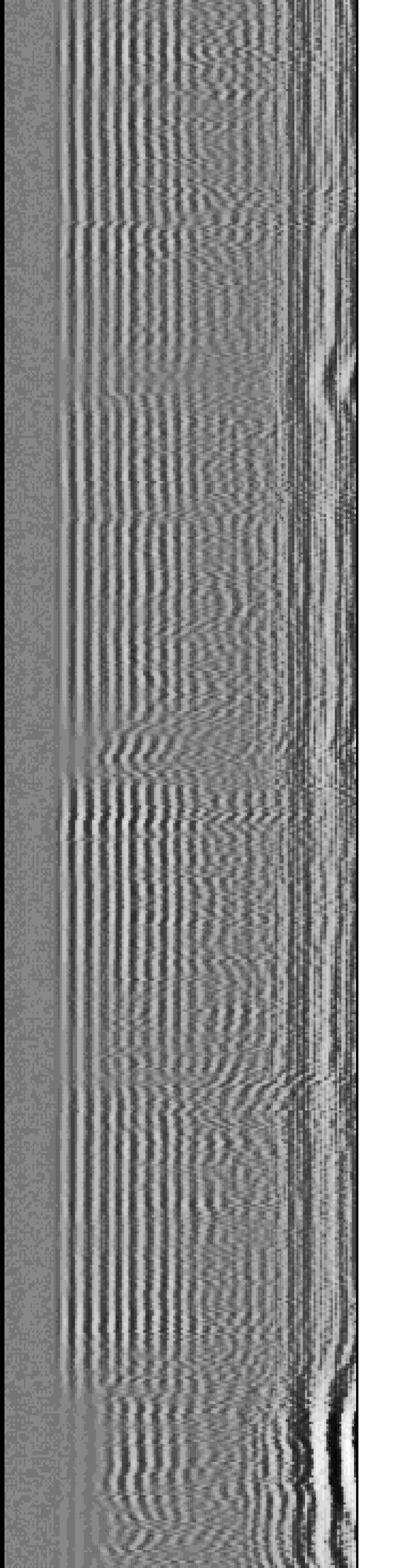
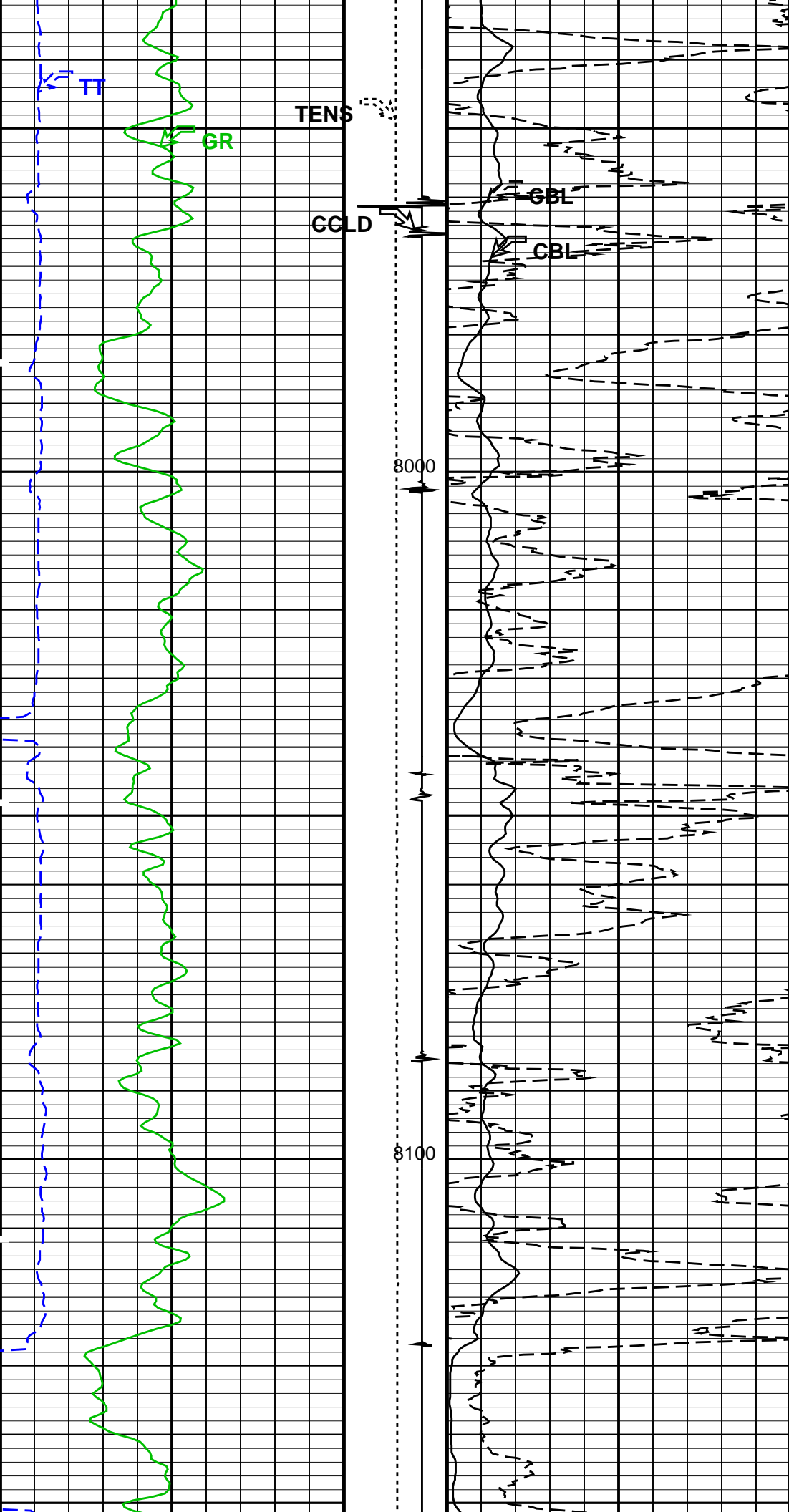


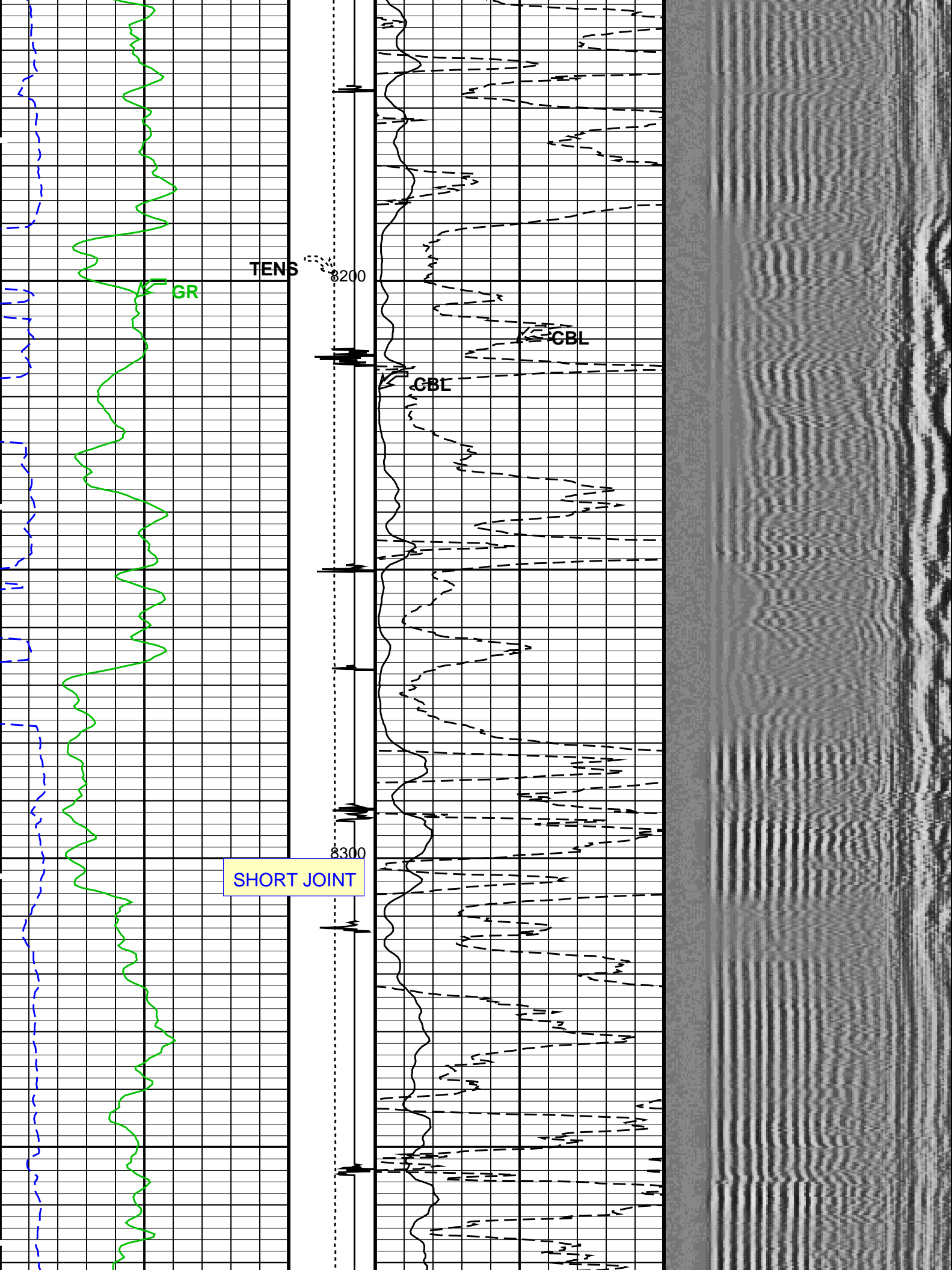


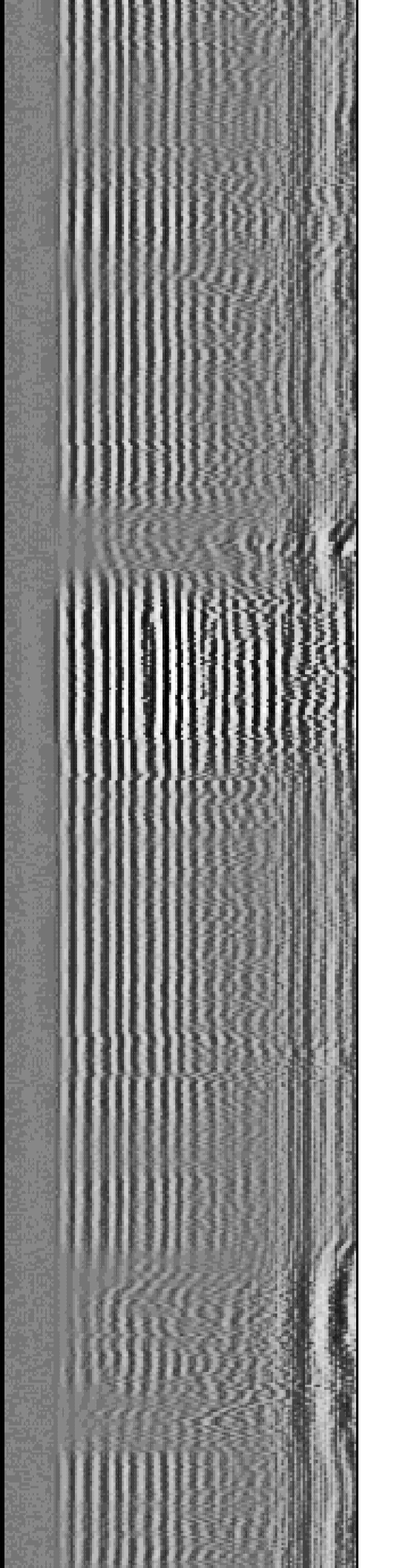
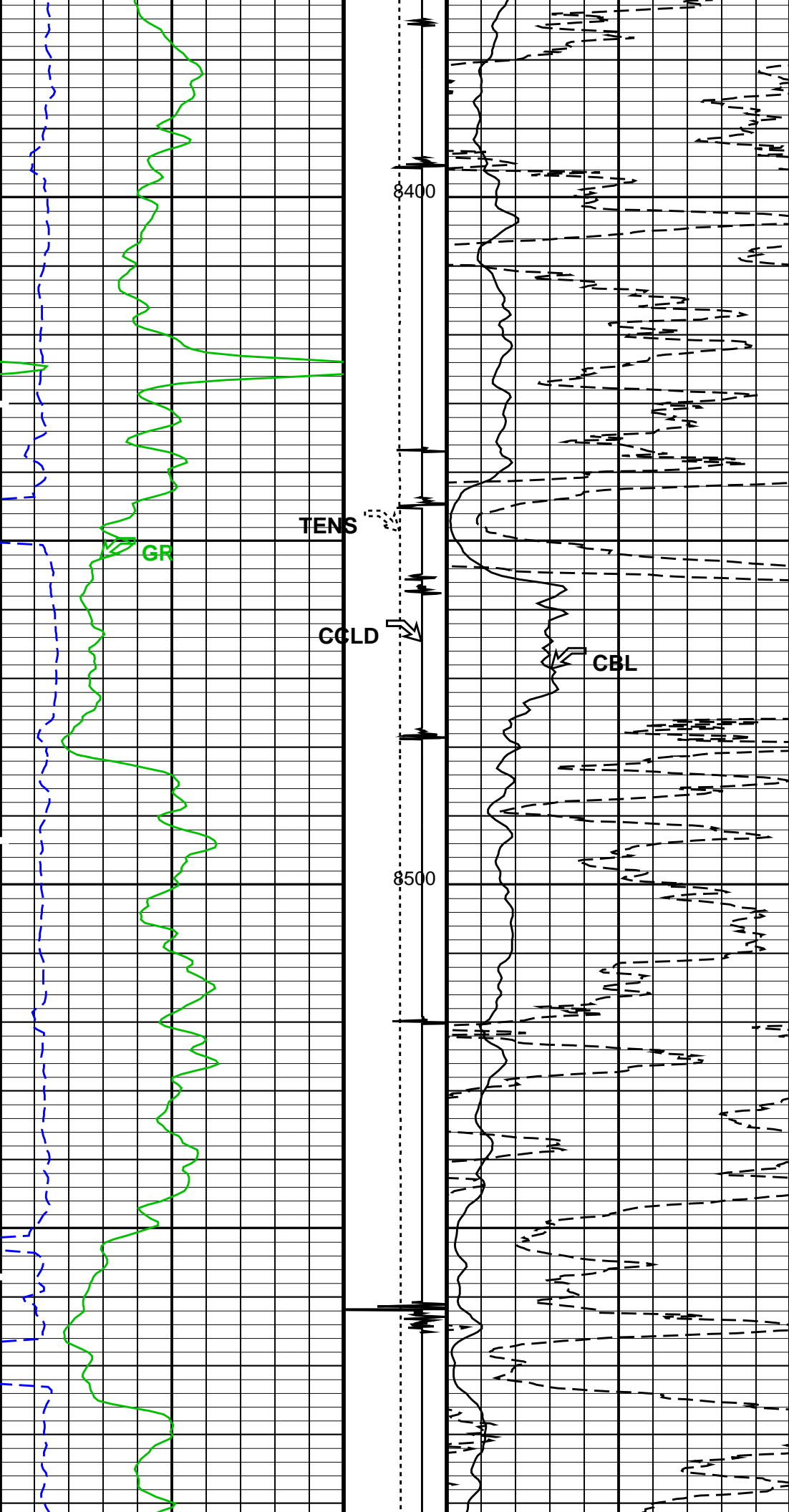


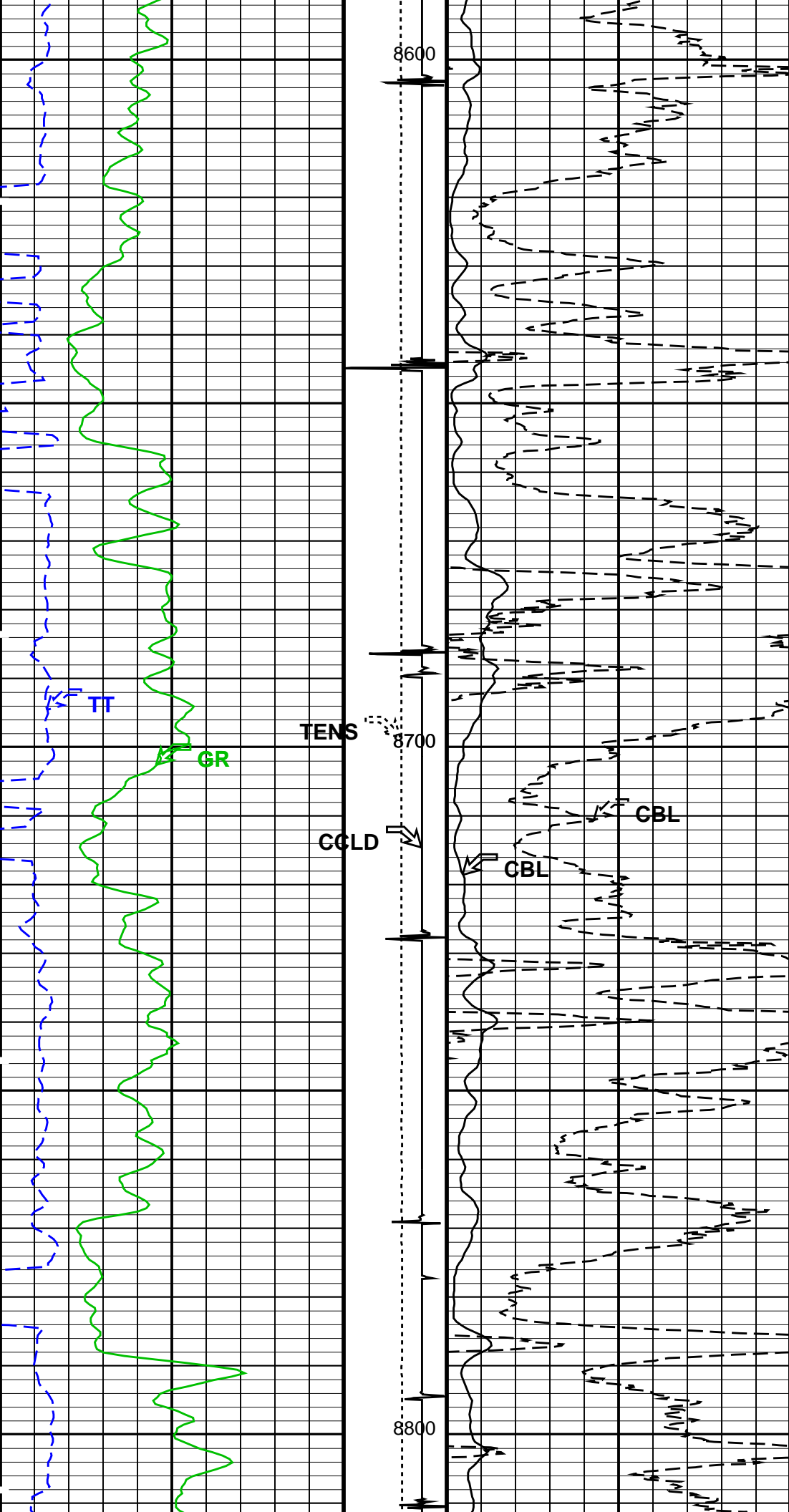


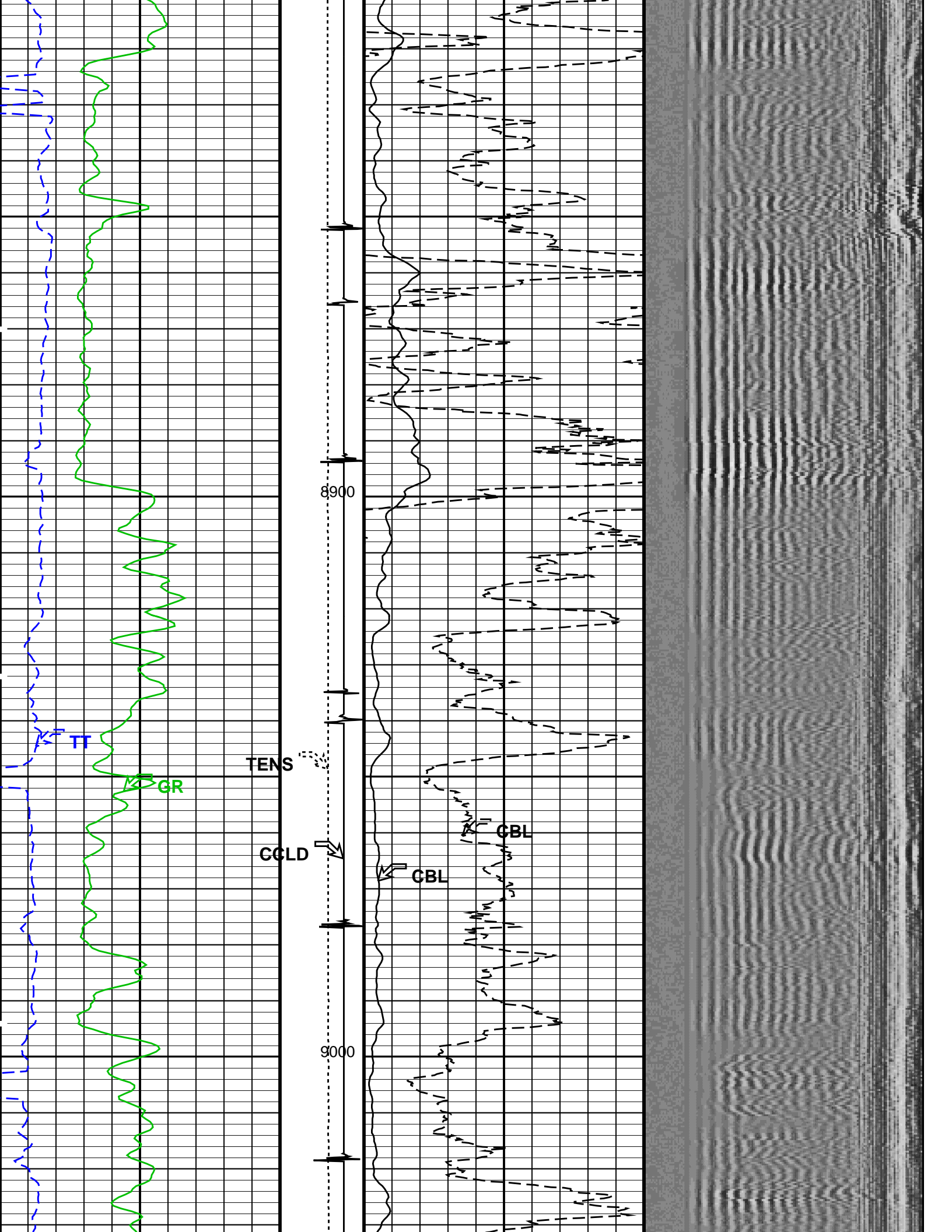


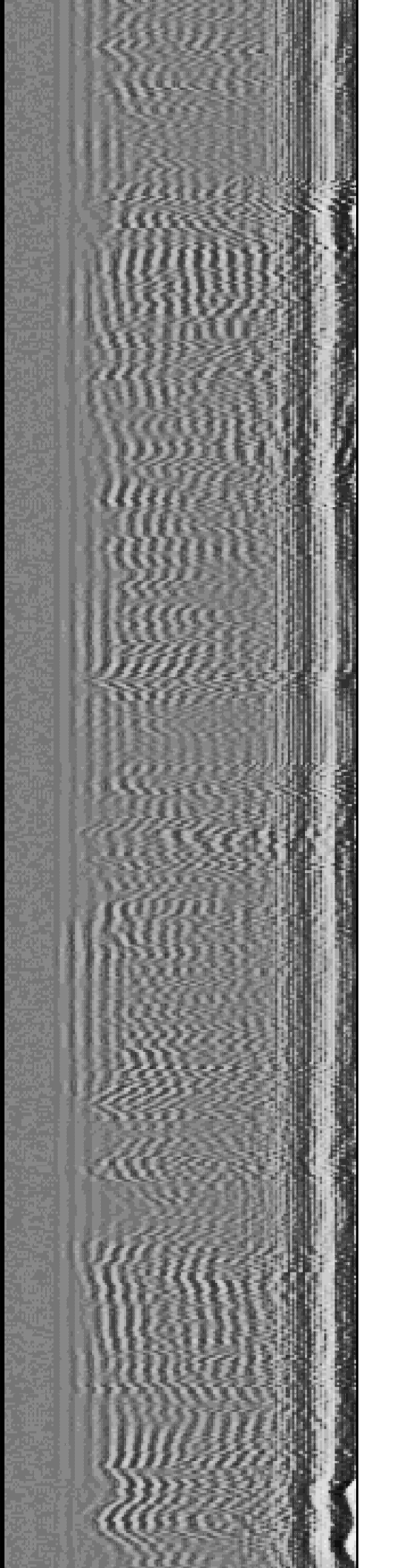
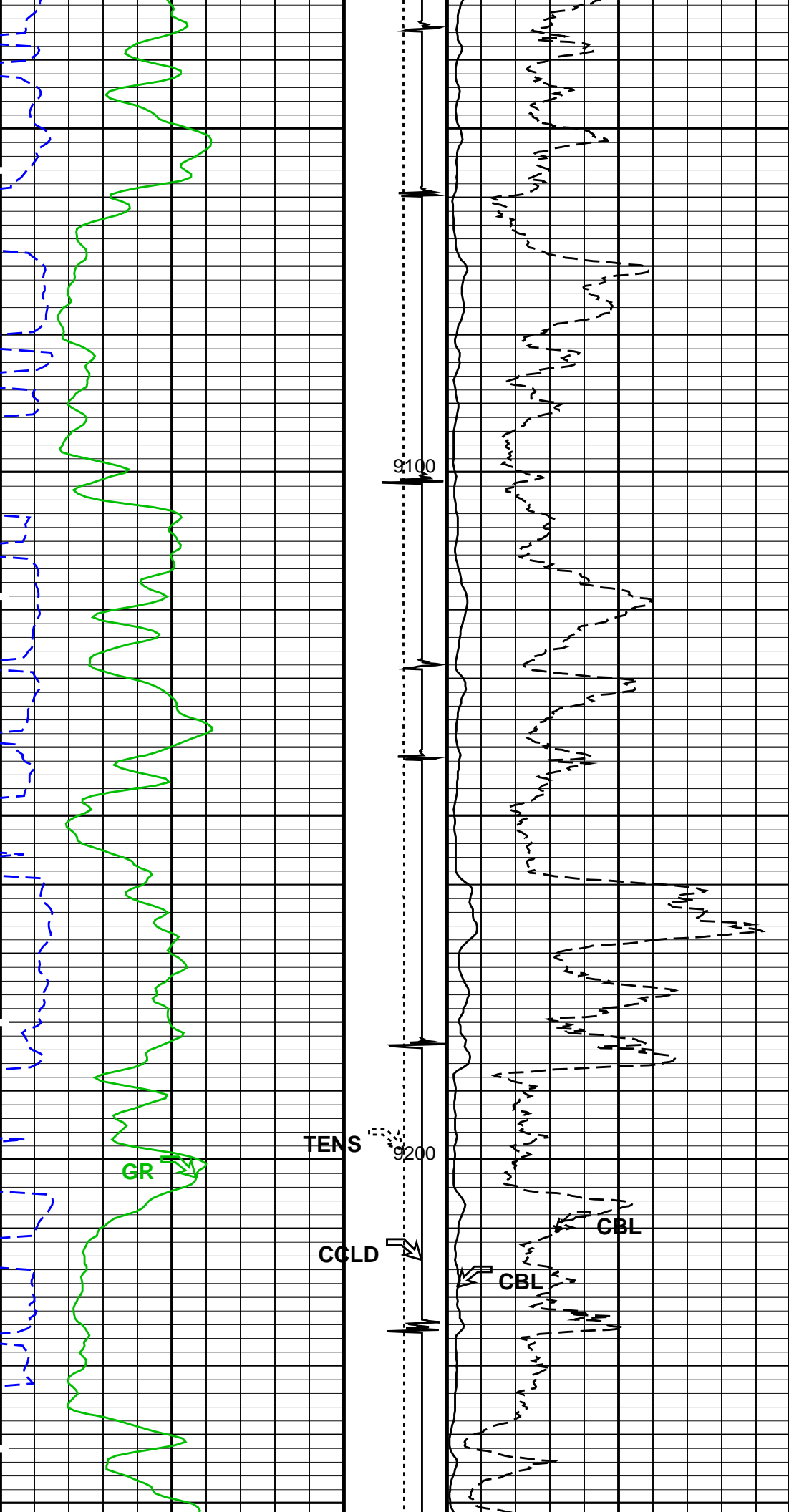


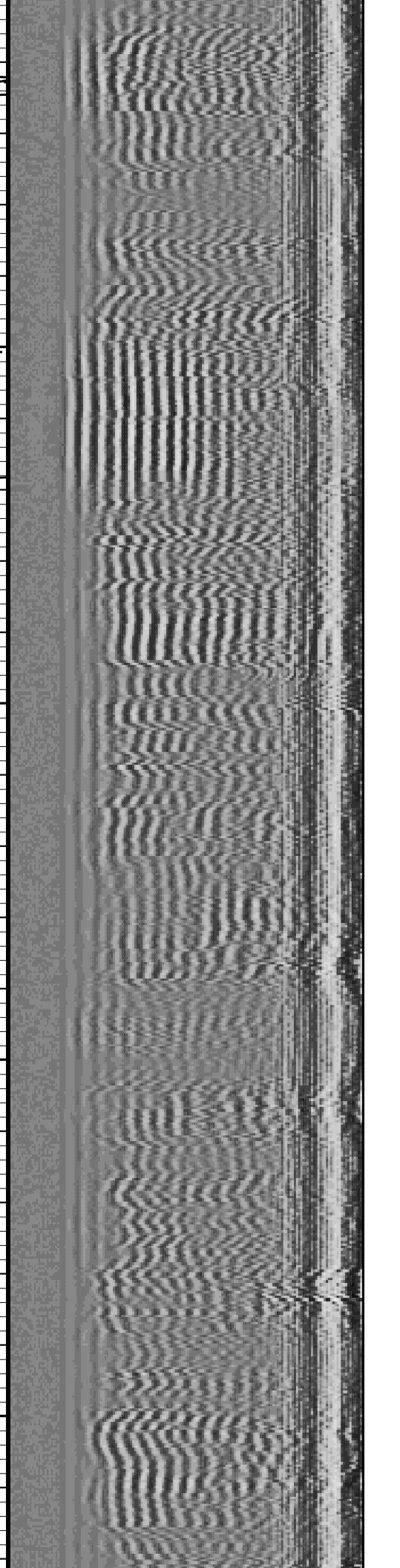
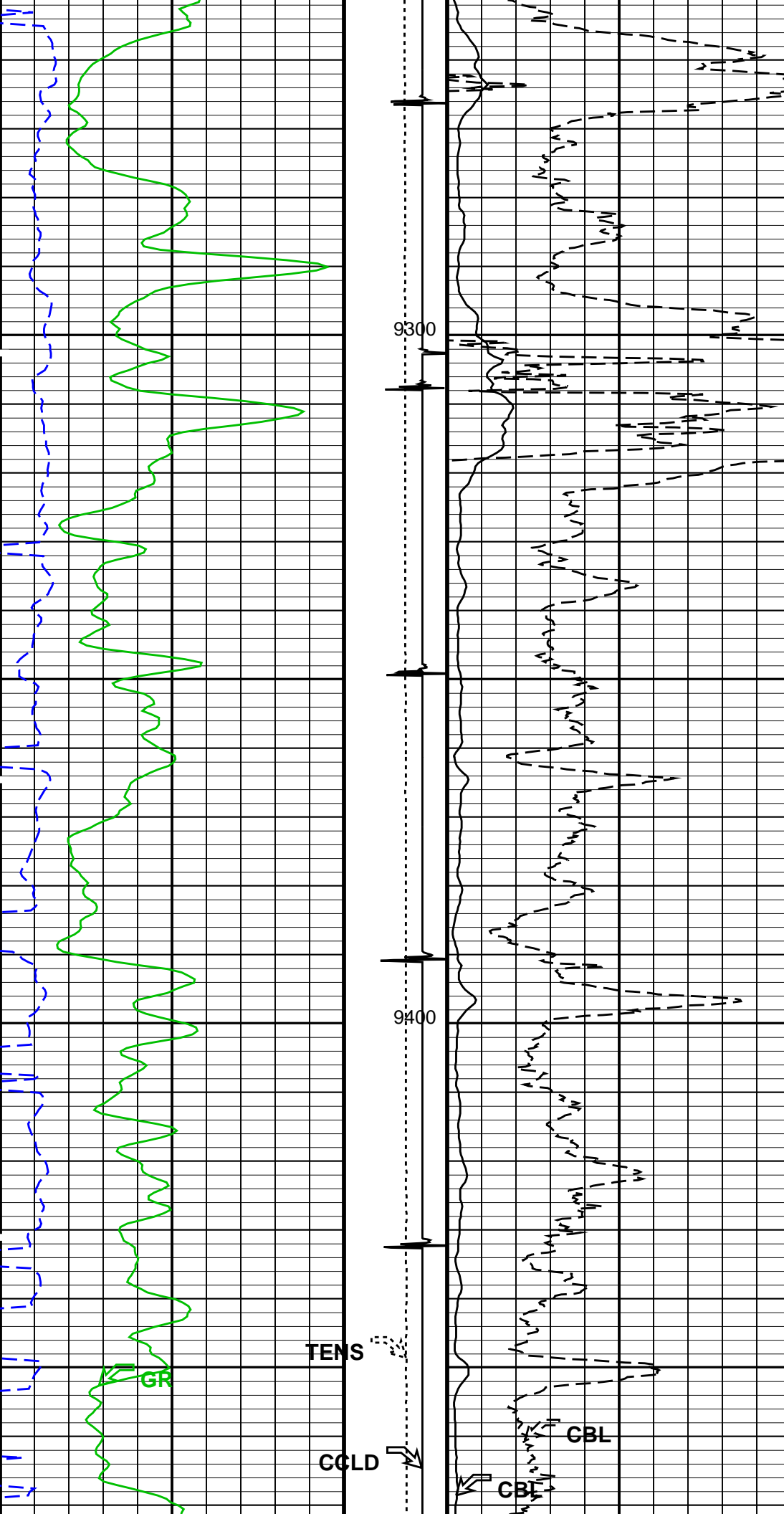


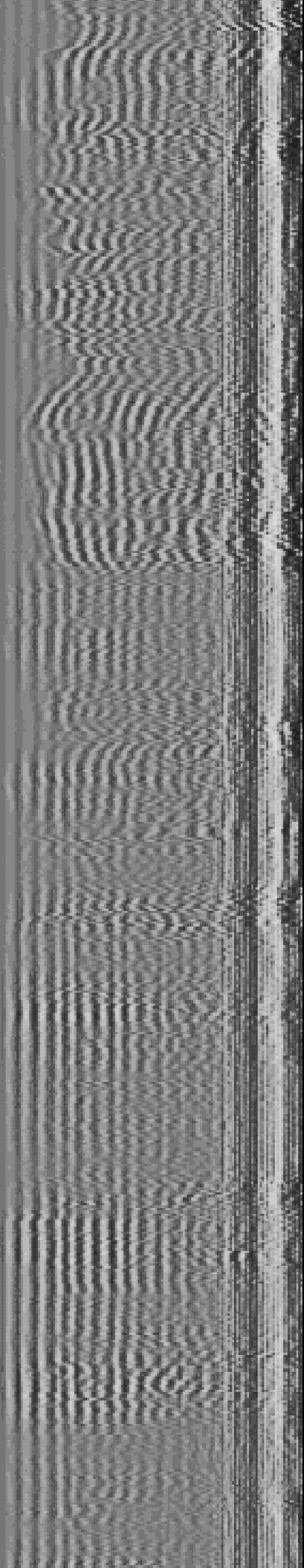
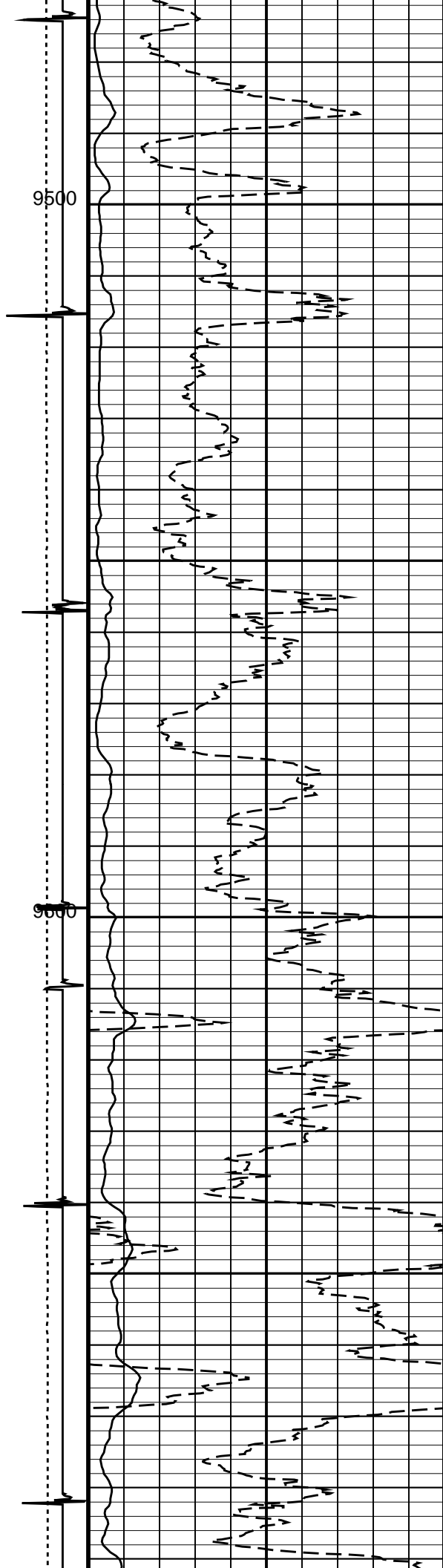
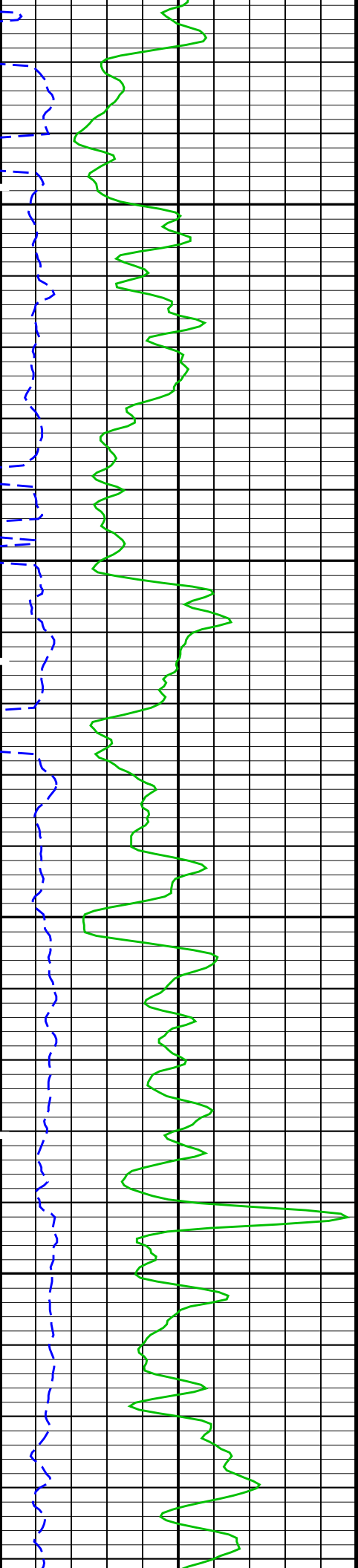


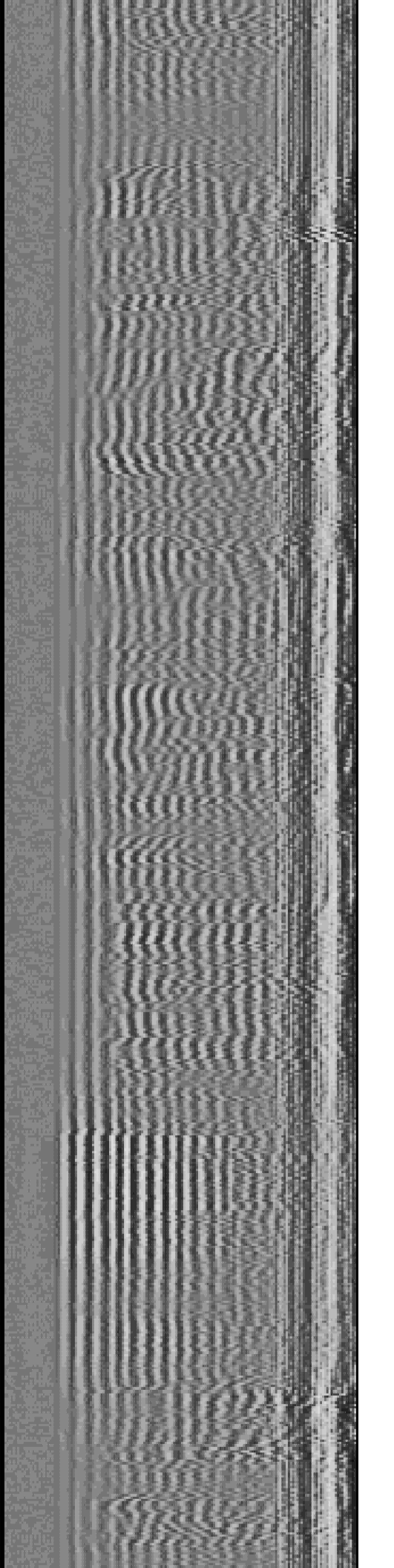
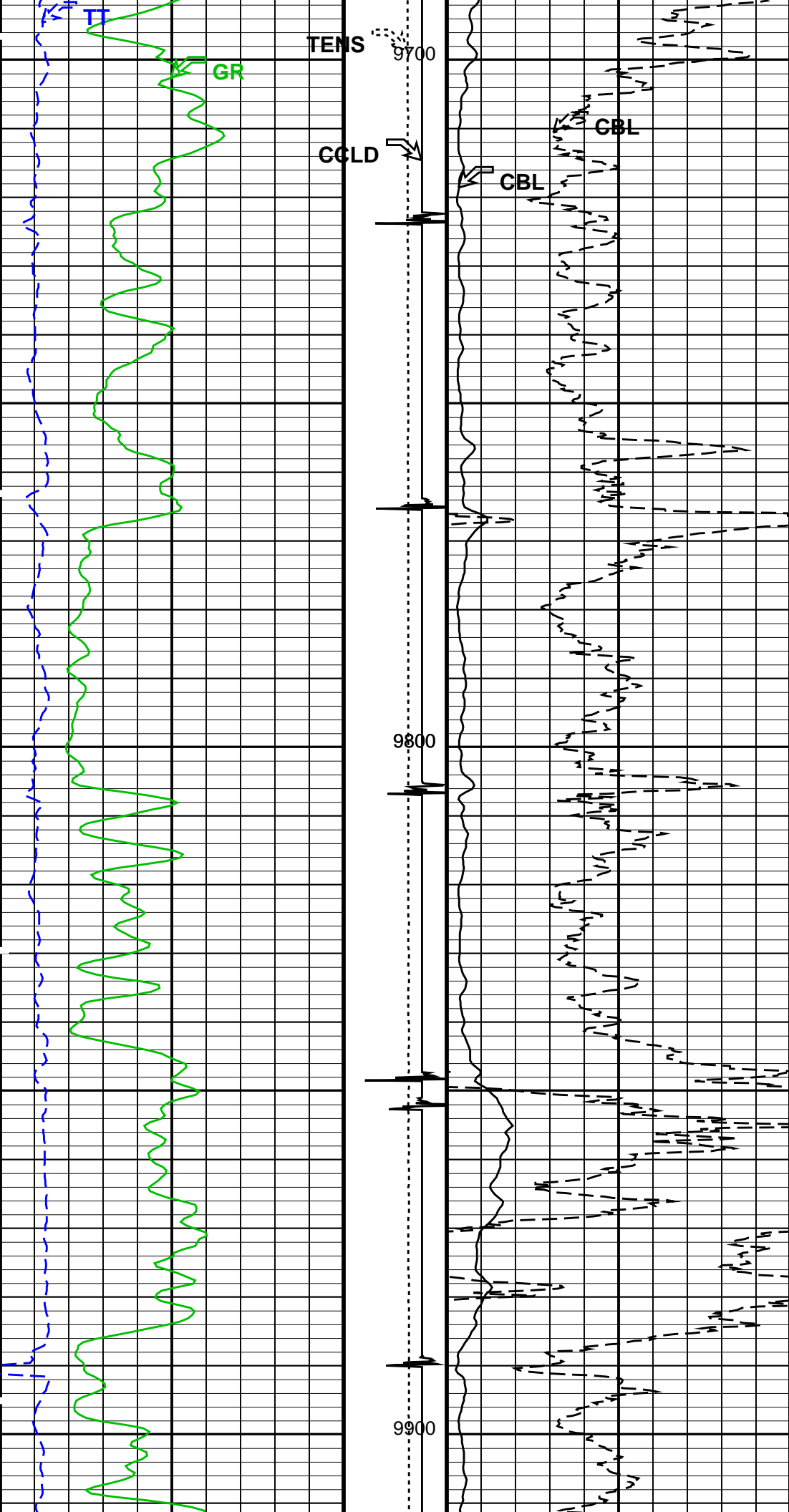


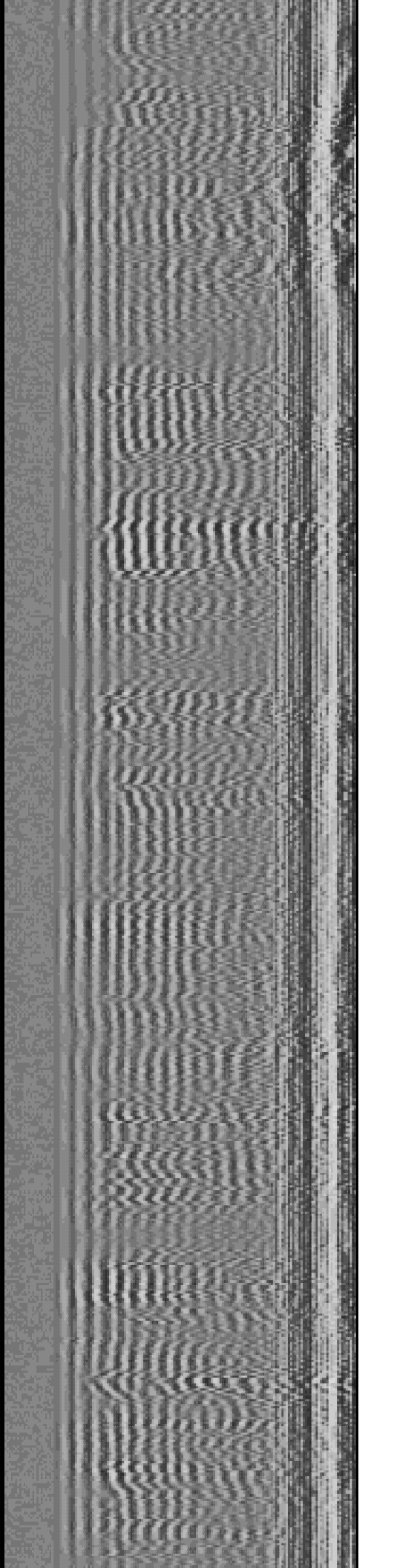
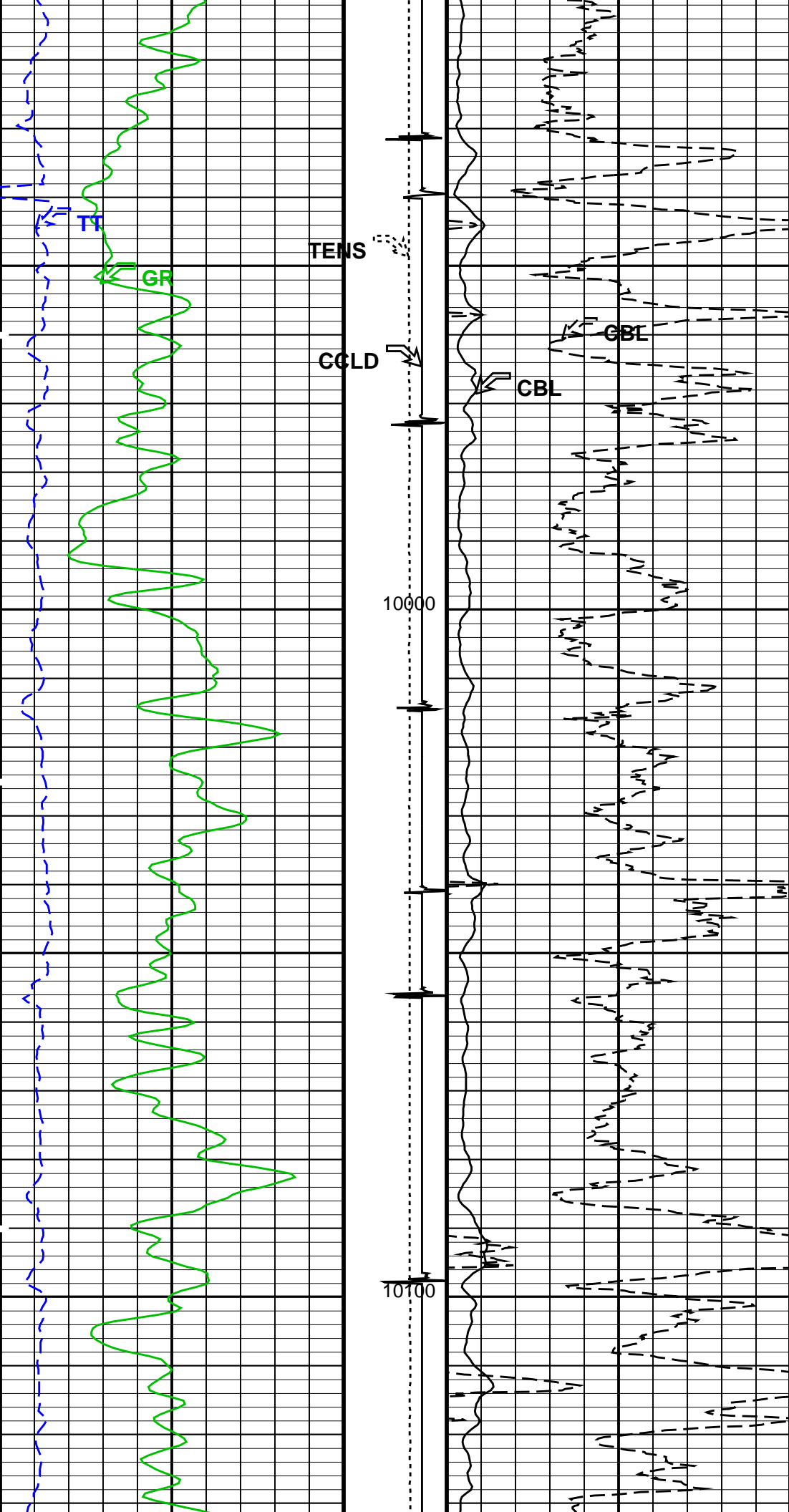


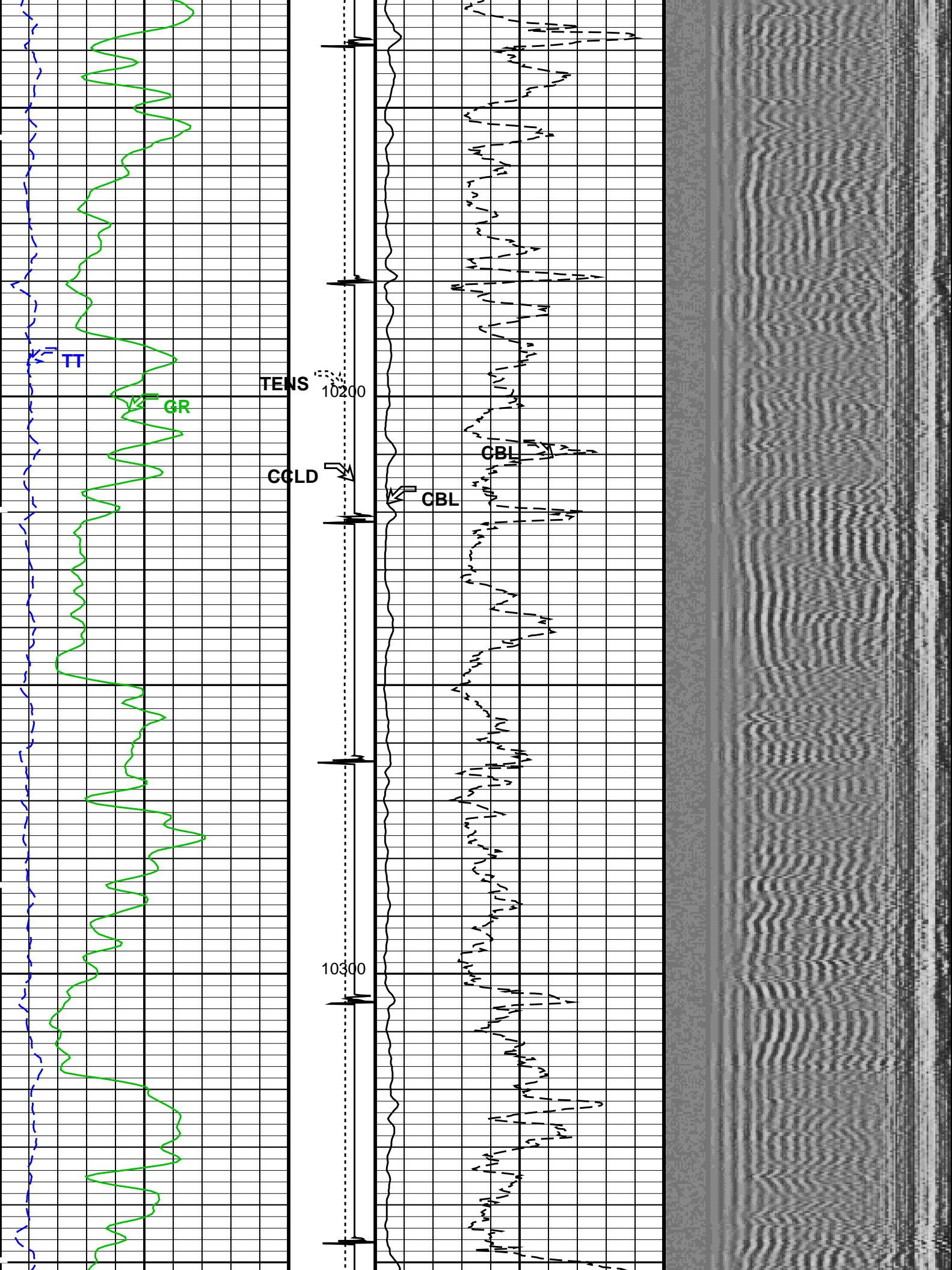


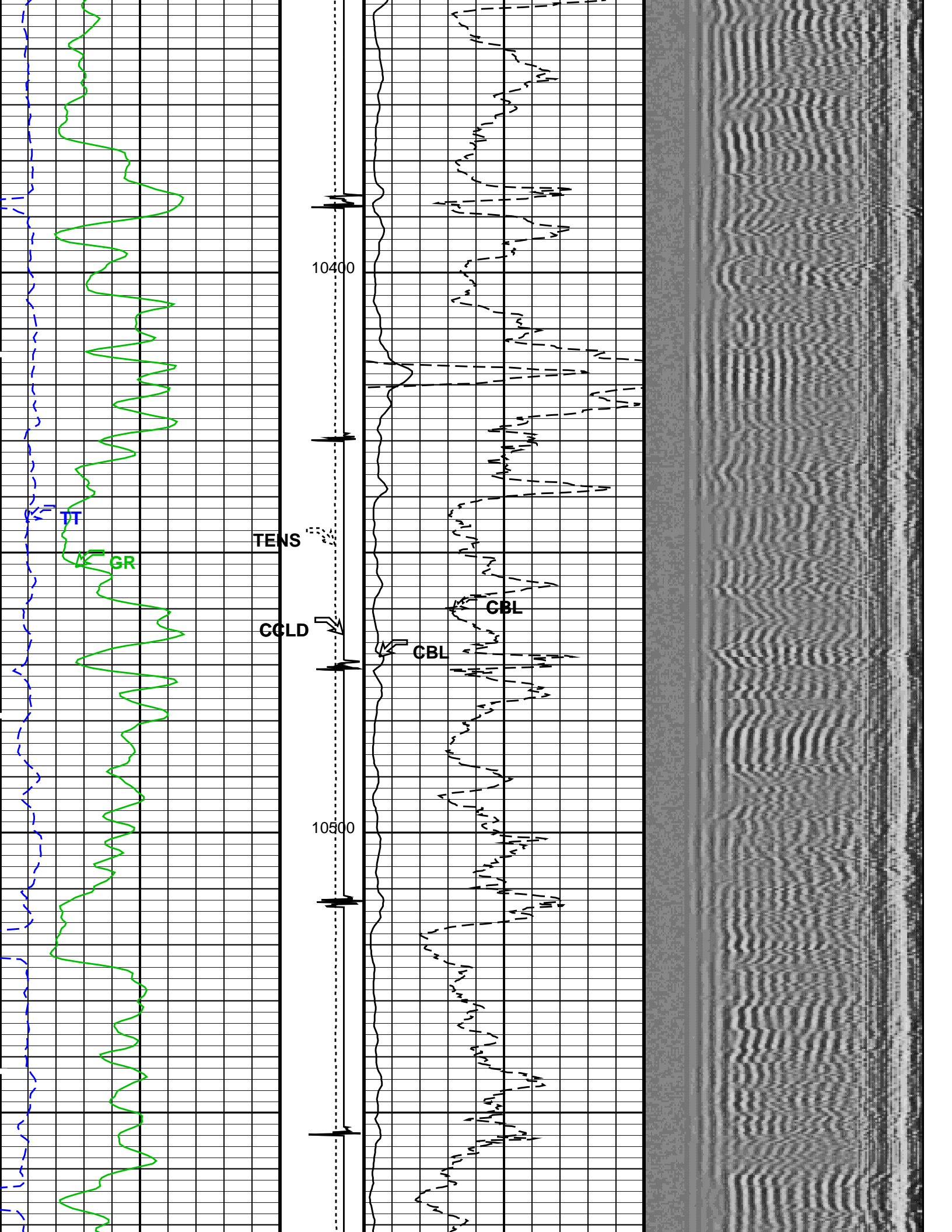


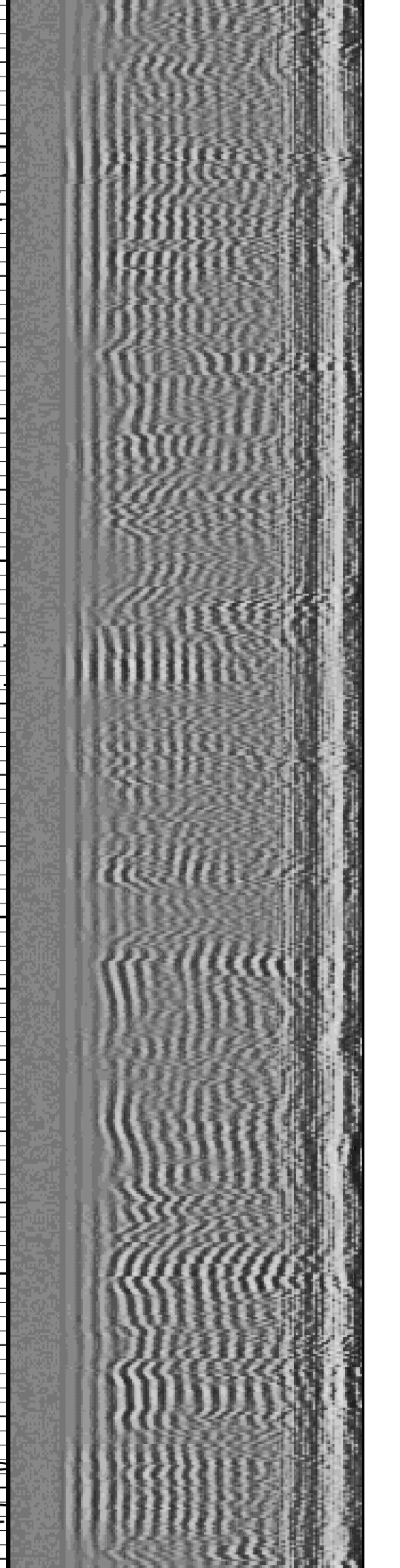
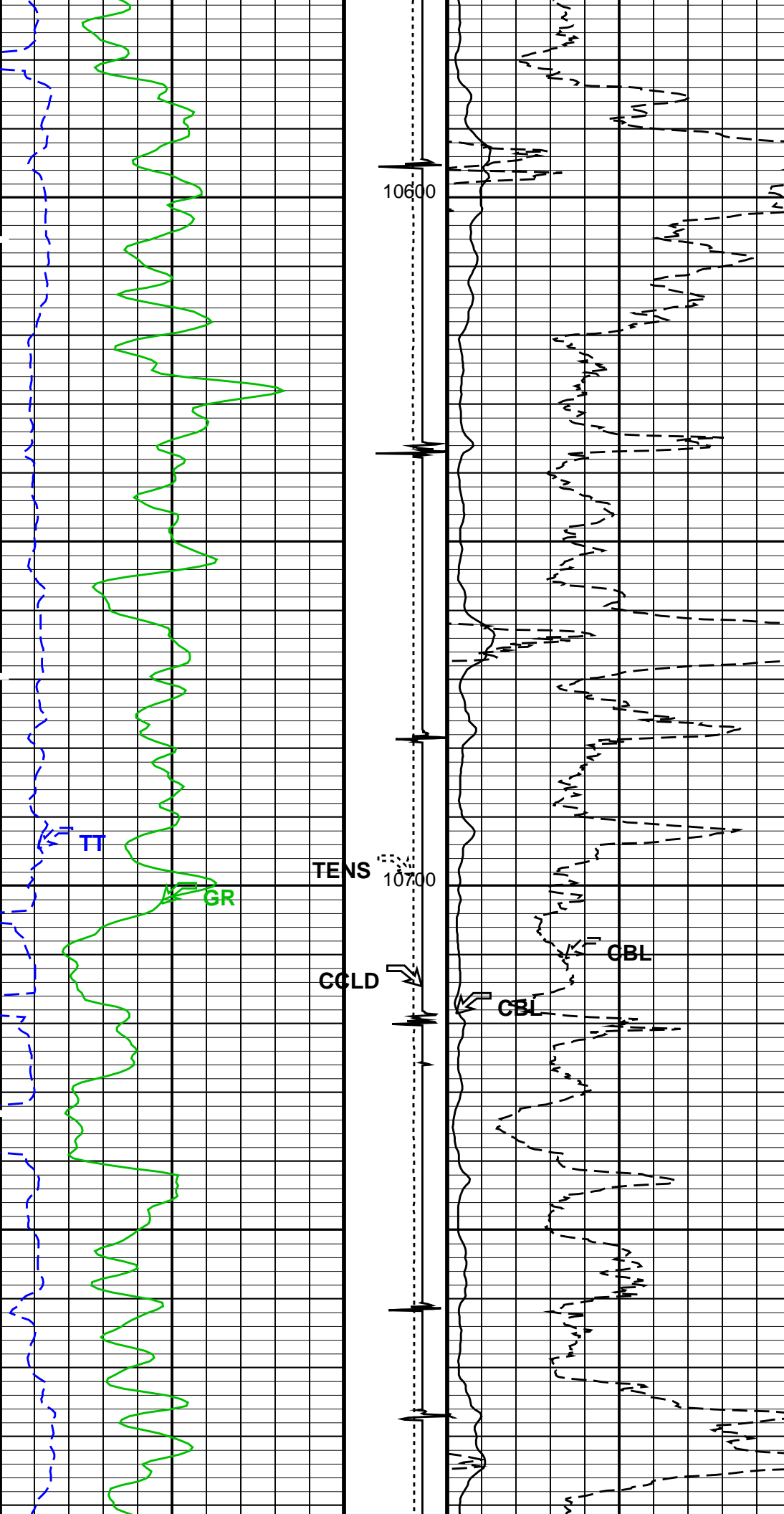


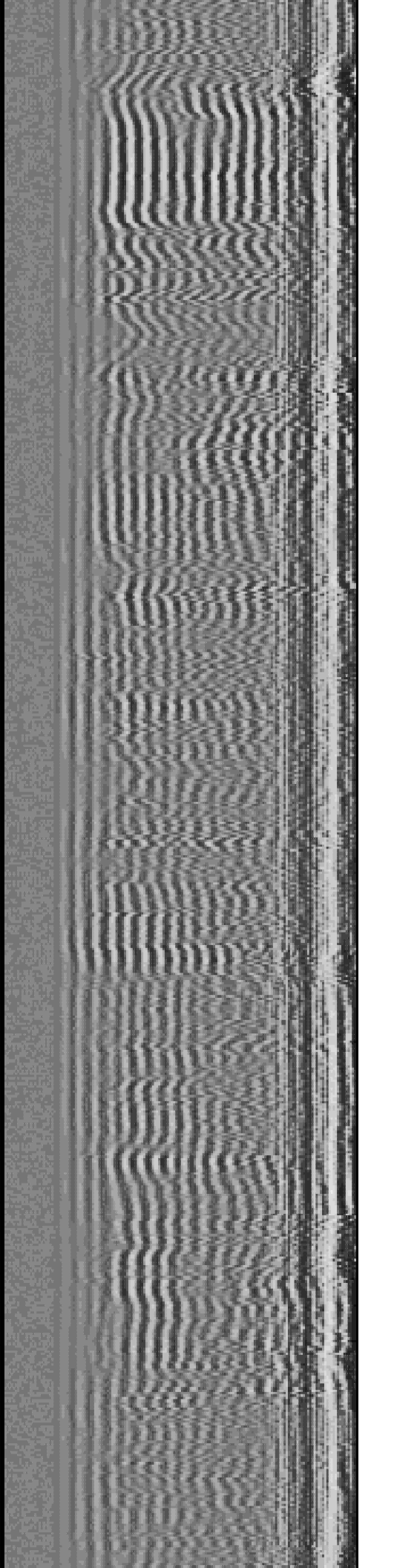
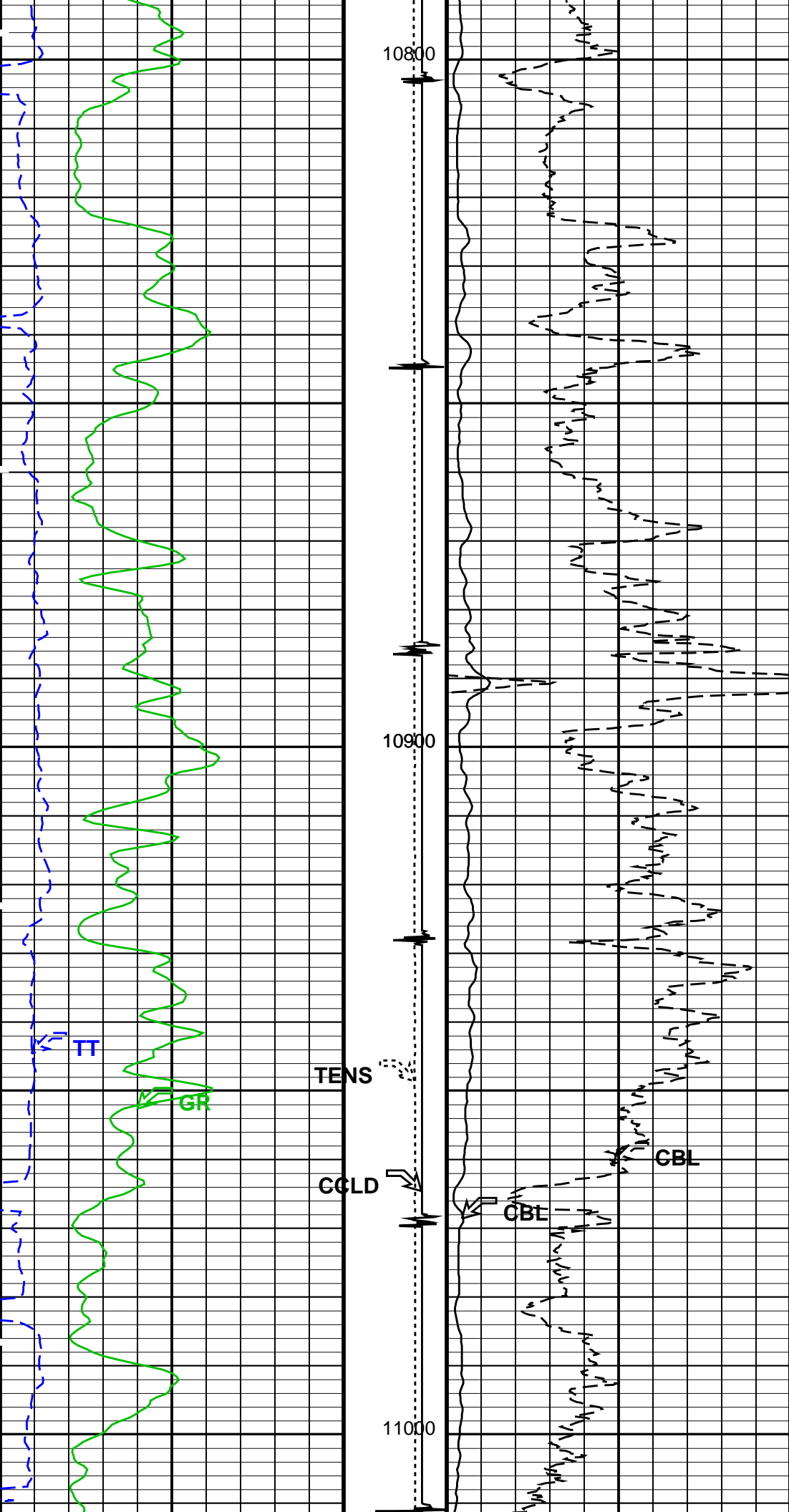


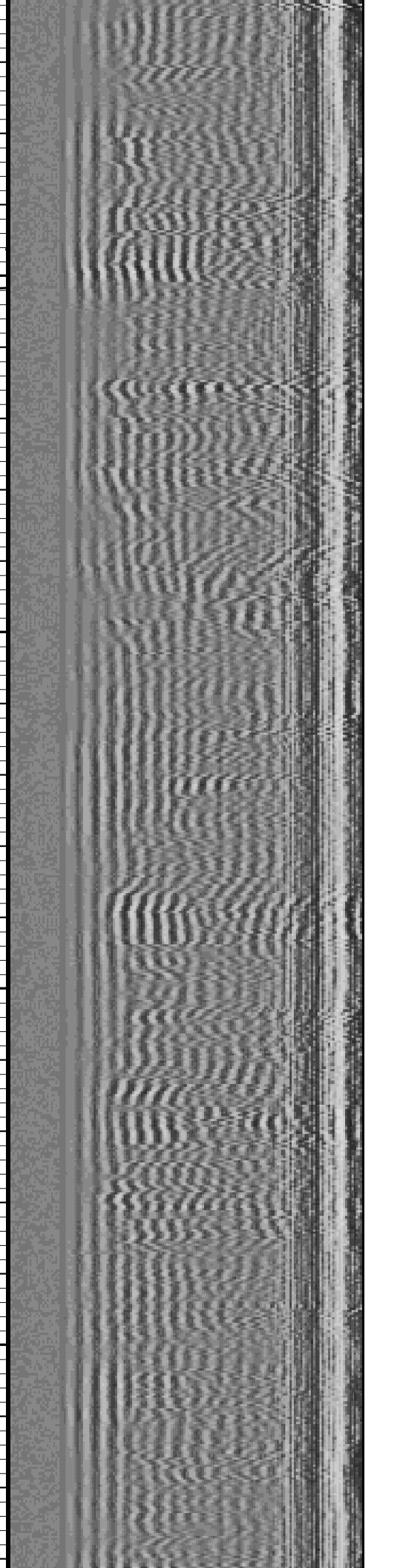
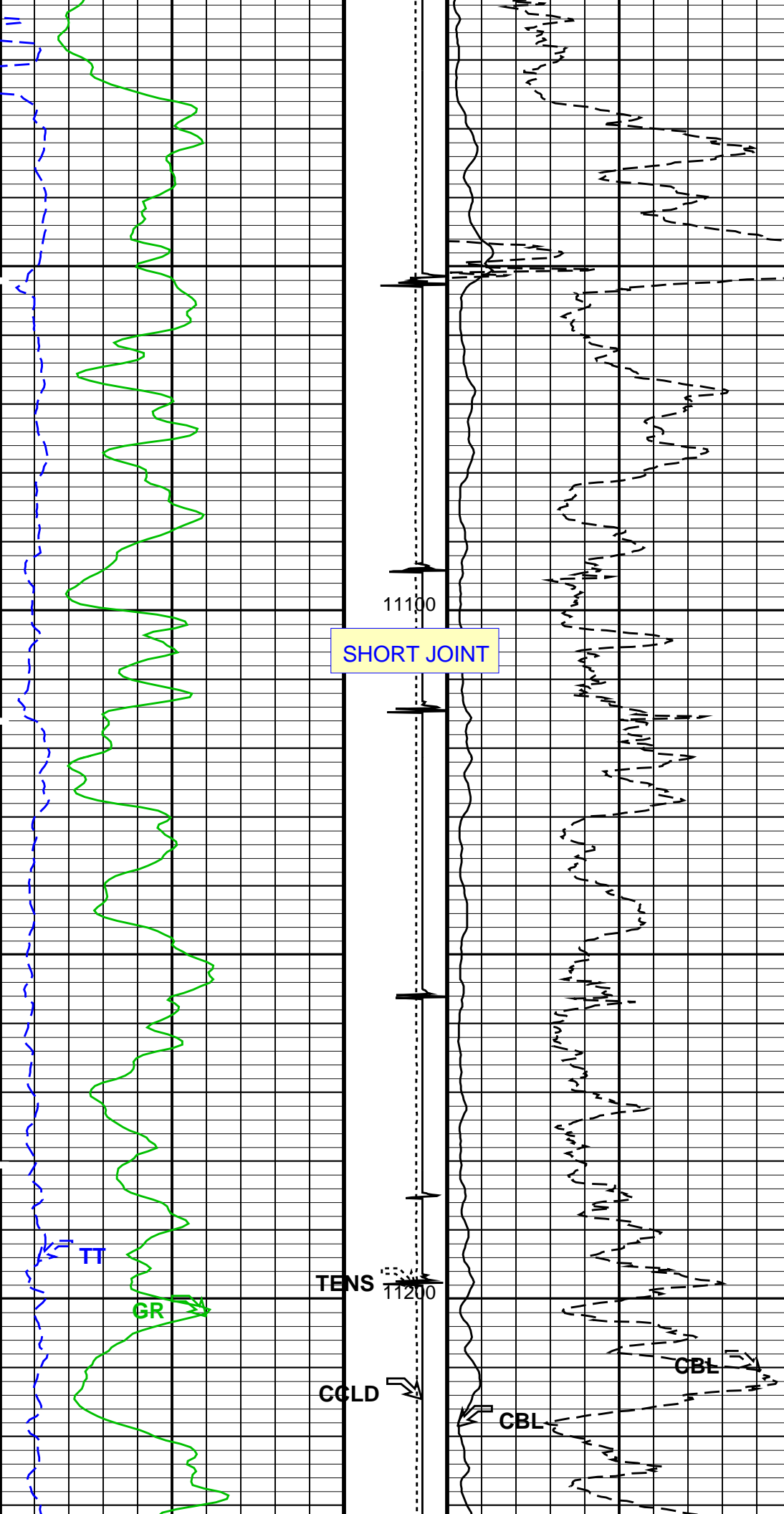


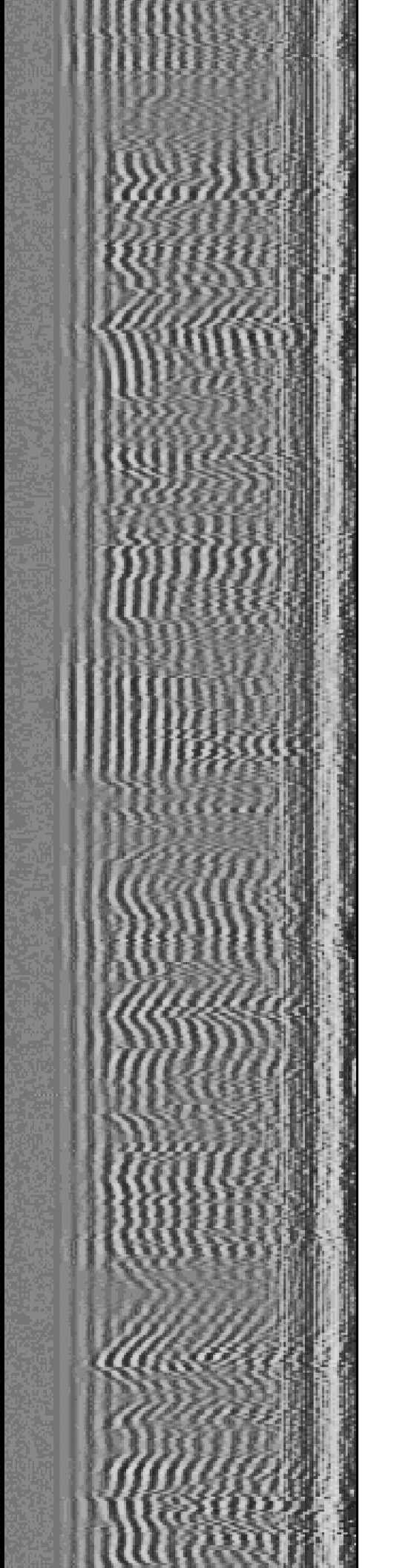
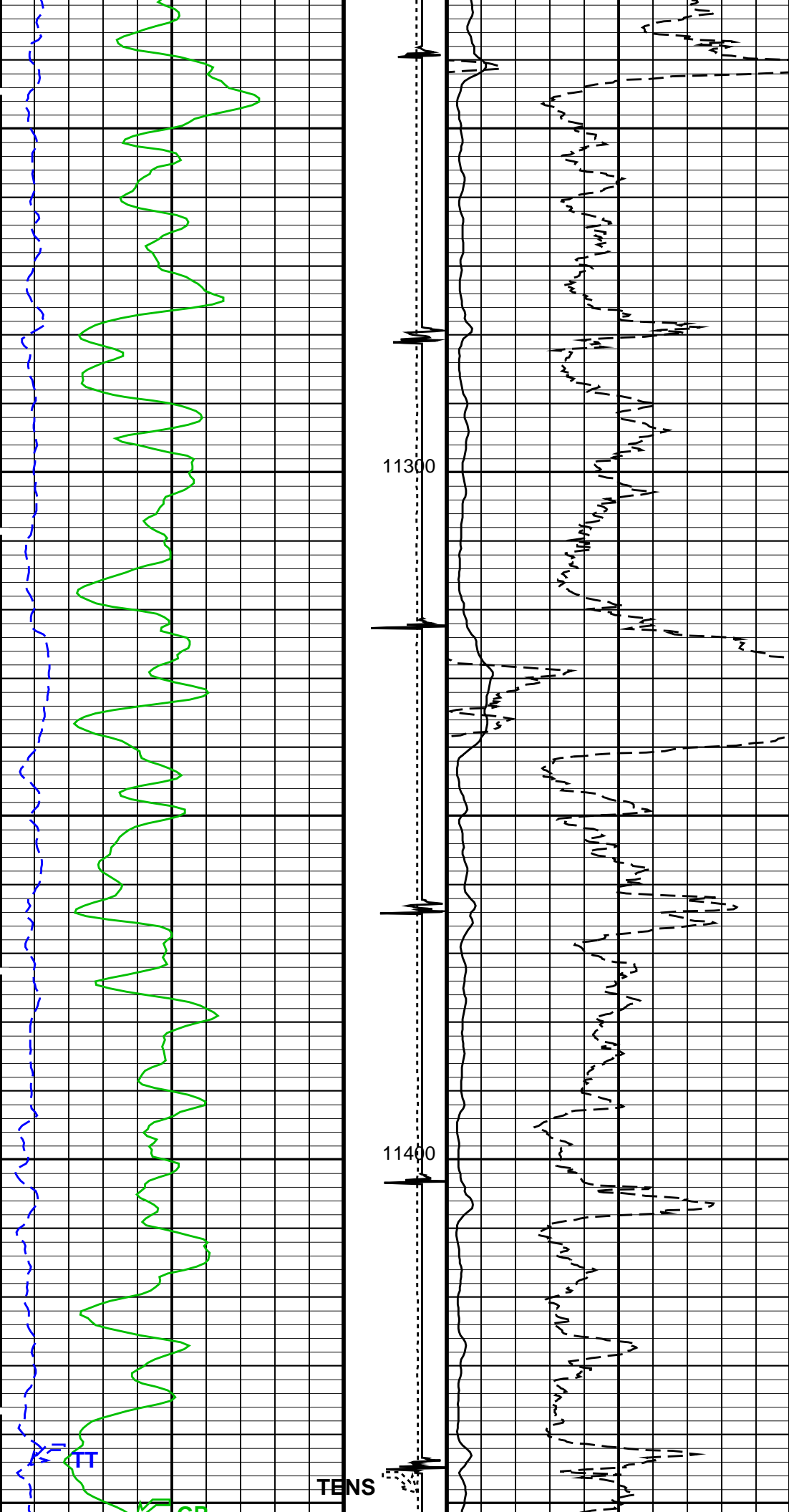


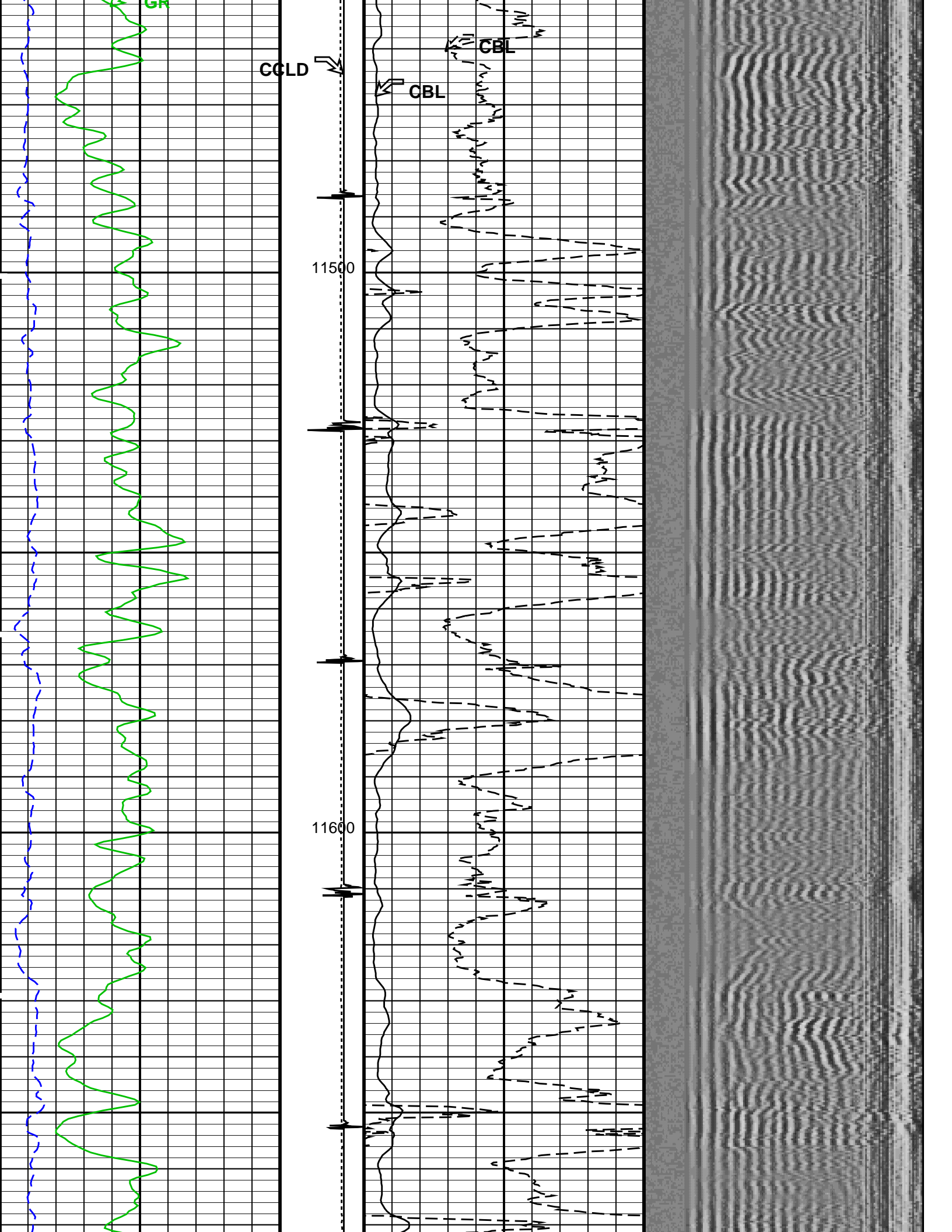


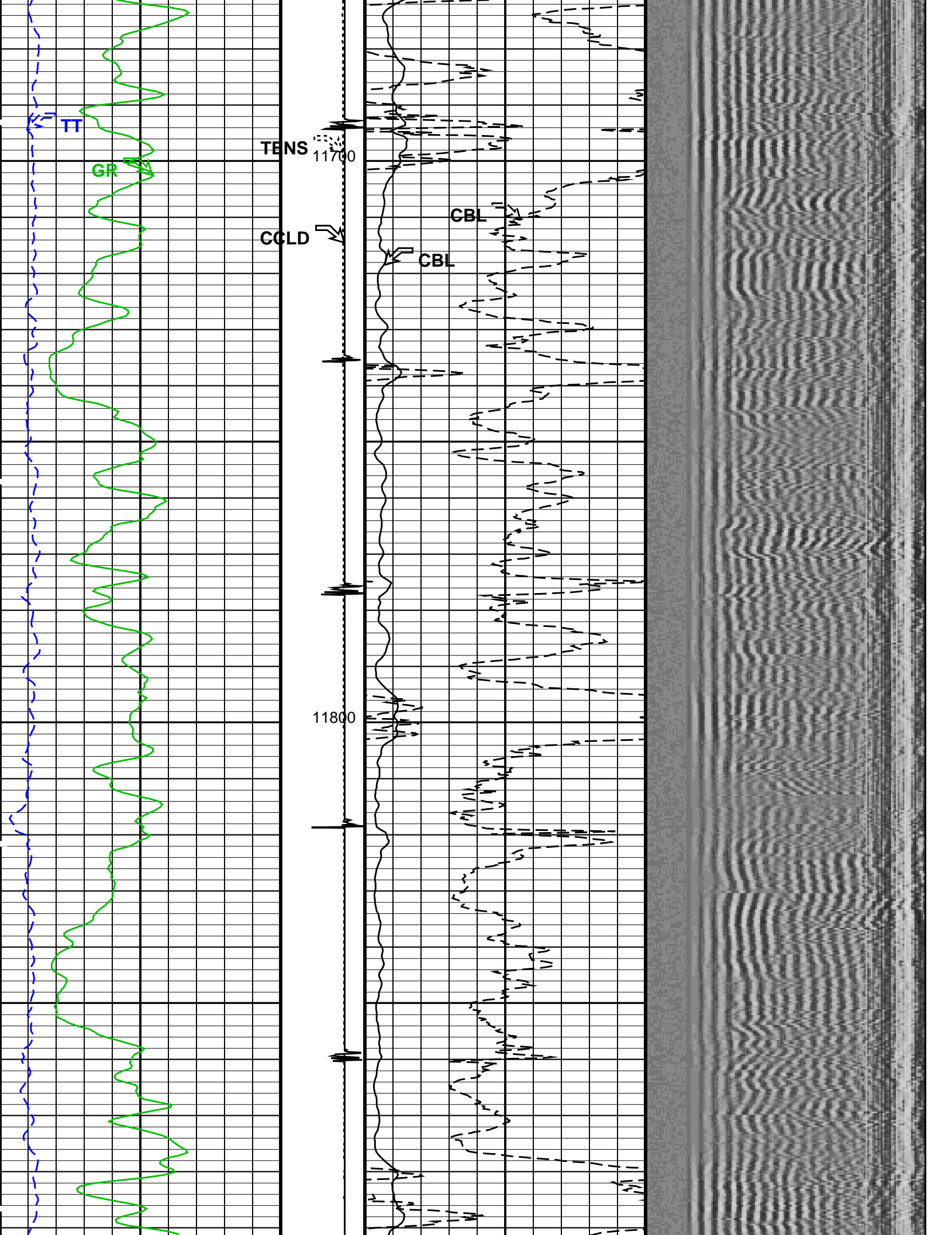


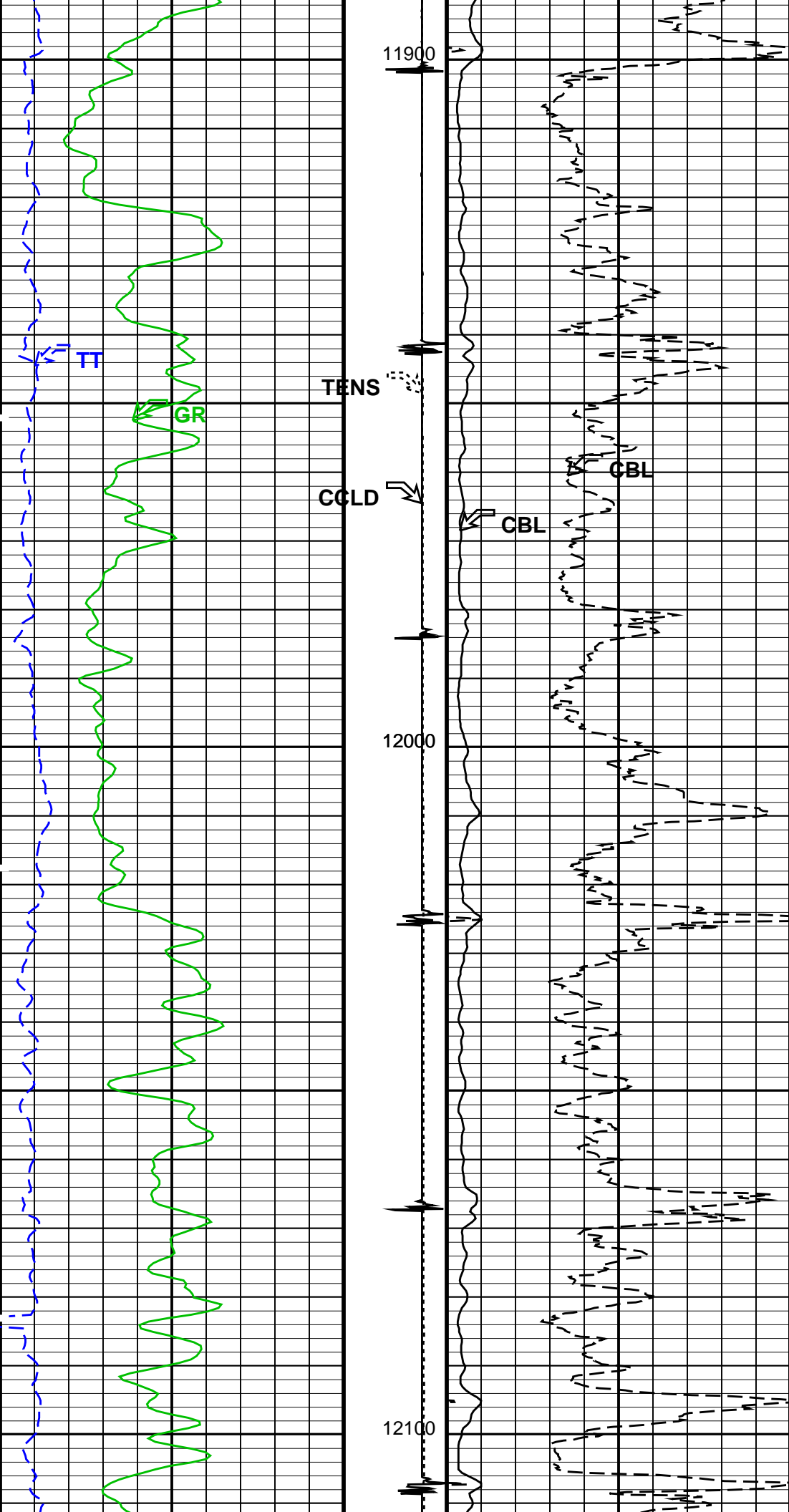


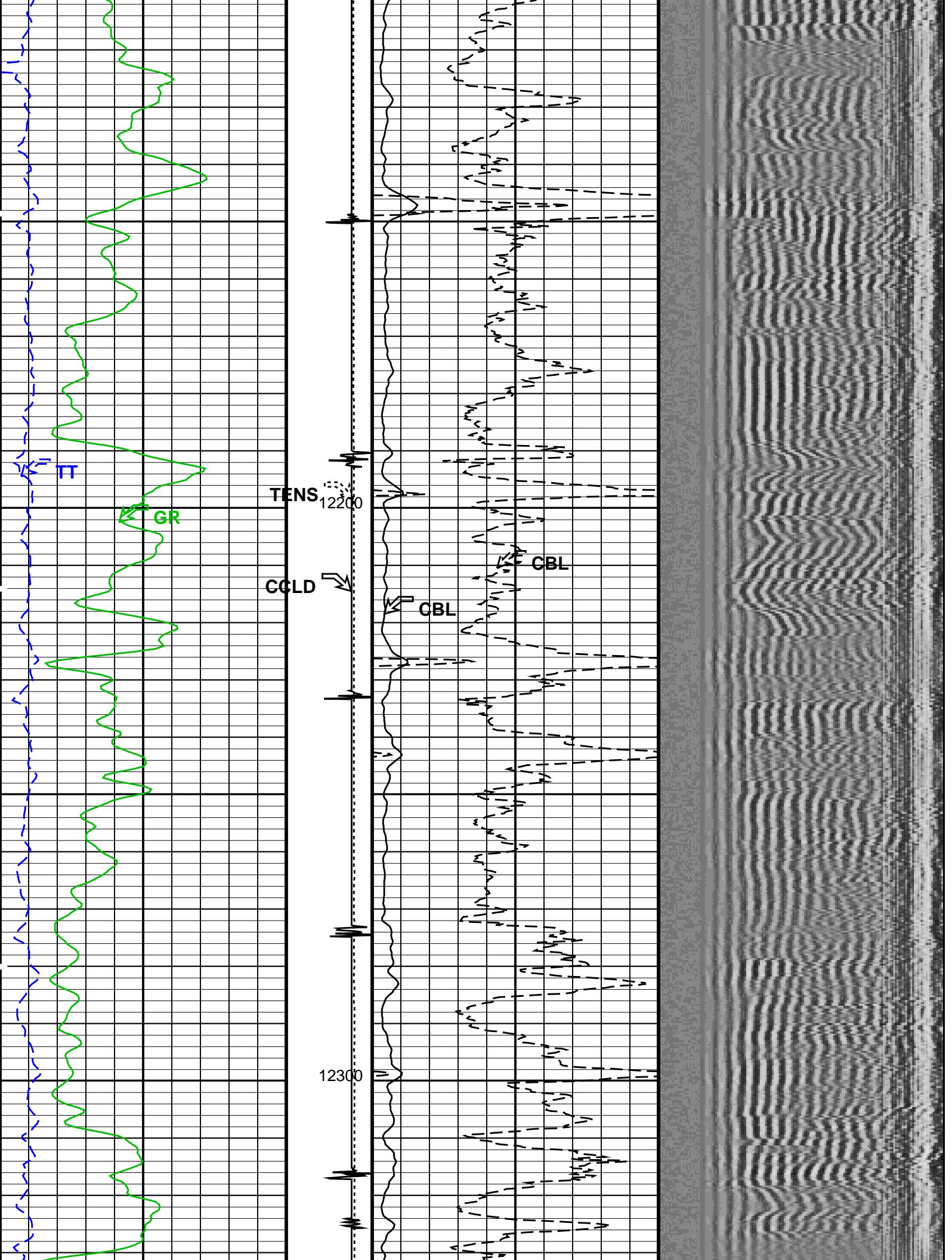


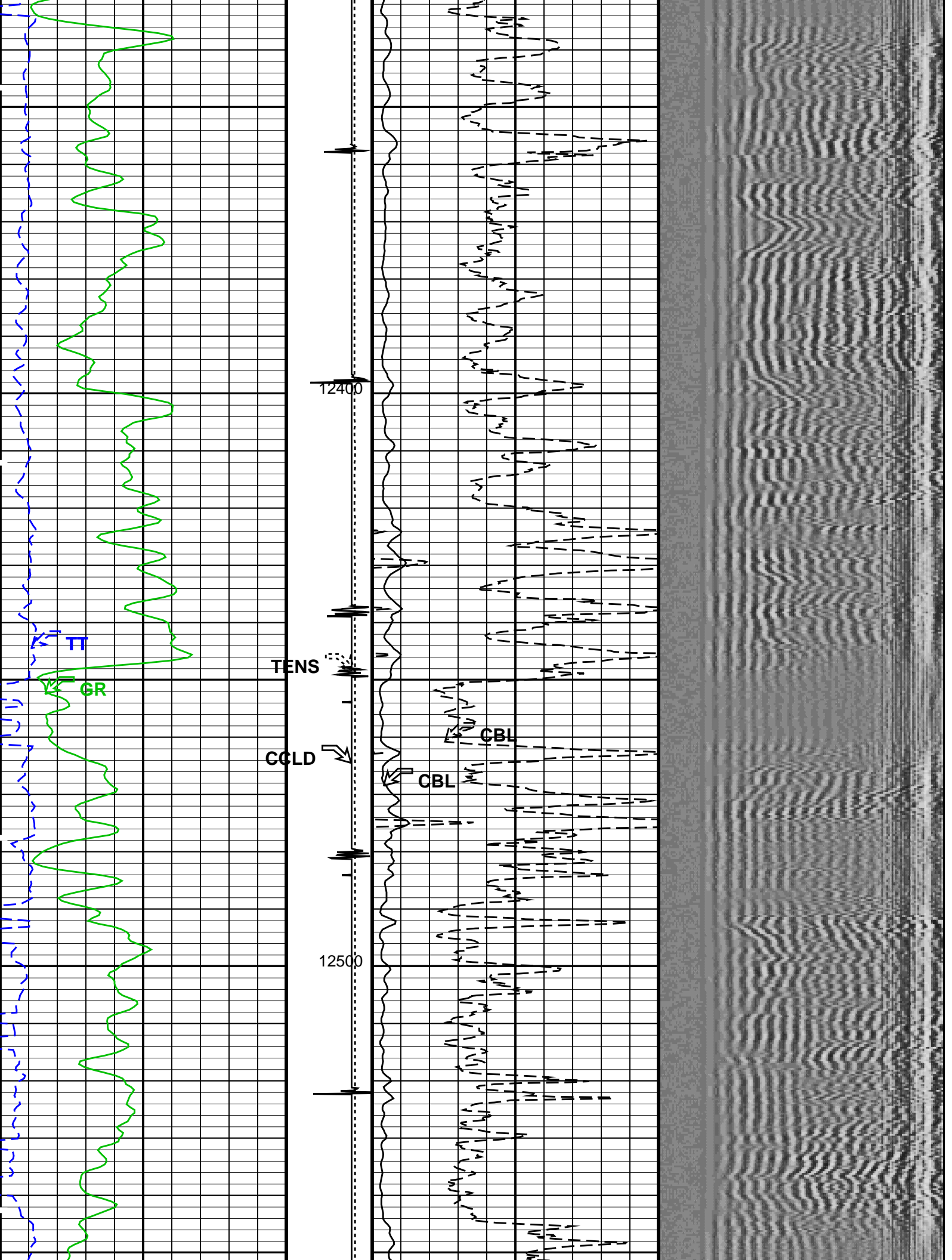


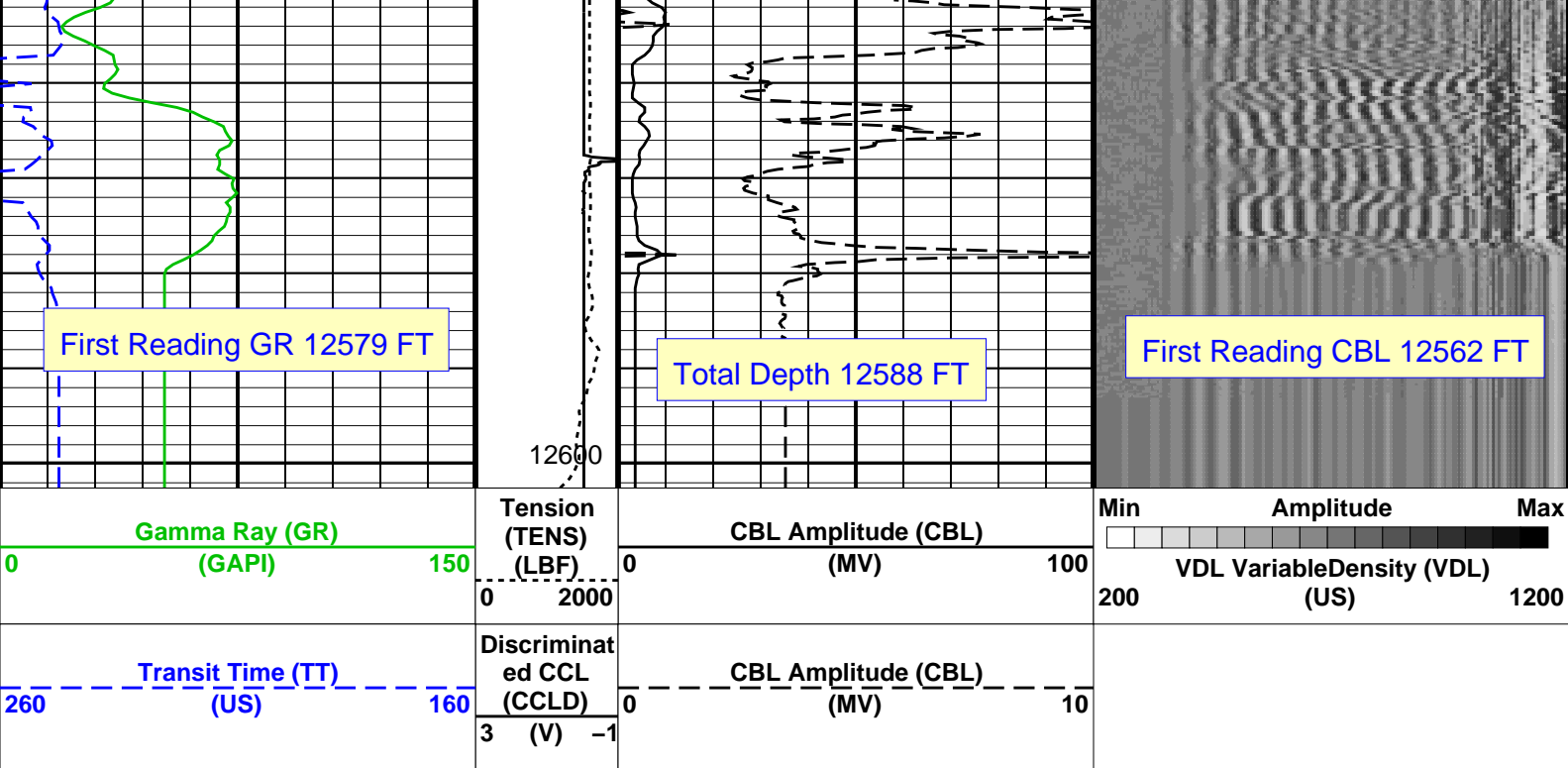












PIP SUMMARY

Time Mark Every 60 S

Format: CBL_VDL Vertical Scale: 5" per 100'

Graphics File Created: 26-Apr-2013 01:44

OP System Version: 19C0-187

SCMT-CB SRPC-5214-H2-2012-OP1 PSPT SRPC-5214-H2-2012-OP1

<<<SCMT Cement Evaluation Information Summary>>>

Sonde Serial Number	SCMS-CB 8317		
Current Casing Size	4.50000 IN		
Casing Weight	11.6000 LB/F		
Expected CBL Amplitude in Free Pipe Section	80 MV	Minimum Sonic Amplitude	0.579149 MV (100% Cement) 1.55185 MV (80% Cement)
		MAP Minimum Sonic Amplitude	4.32284 MV (100% Cement) 8.10244 MV (80% Cement)
Master Calibration (Normalization)		Before Calibration (Adjustment)	
Date of Master Calibration	26-SEP-2012		
CBL Correction Factor	0.0719381	CBL Adjustment Factor (CBAF)	1.20000
MAP 1 Correction Factor	0.116622	MAP Adjustment Factor (MPAF)	1.0
MAP 2 Correction Factor	0.138771		
MAP 3 Correction Factor	0.154480		
MAP 4 Correction Factor	0.126474		
MAP 5 Correction Factor	0.116062		
MAP 6 Correction Factor	0.126351		
MAP 7 Correction Factor	0.134711		
MAP 8 Correction Factor	0.138445		

Parameters

DLIS Name	Description	Value
SCMT-CB:	Slim Cement Mapping Tool, 1-11/16 OD	
BILI	Bond Index Level for Zone Isolation	0.8
CB3D	SCMT CBL 3 ft Peak Detection Mode	PEAK

CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	224.559	US
CB3T	SCMT CBL 3 ft Fixed Threshold Level	20	MV
CB5D	SCMT CBL 5 ft Peak Detection Mode	PEAK	
CB5G	SCMT CBL 5 ft Peak Detection T0_Delay and Noise Gate	338.559	US
CB5T	SCMT CBL 5 ft Fixed Threshold Level	20	MV
CBLG	CBL Gate Width	45	US
CBRA	CBL LQC Reference Amplitude in Free Pipe	80	MV
CMCF	CBL Cement Type Compensation Factor	1	
CMTC	SCMT Slow Channel Multiplexer Mode	SCAN	
CMTM	SCMT Operating Mode	LOG	
CSCS	SCMT Slow Channel Index	VCC	
CTHI	Casing Thickness	0.255617	IN
DTF	Delta-T Fluid	189	US/F
FATT	Acoustic Attenuation due to Fluid	0	DB/F
FCF	CBL Fluid Compensation Factor	0.924277	
GOBO	Good Bond	1.55185	MV
MAPD	SCMT MAP Peak Detection Mode	PEAK	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	167.559	US
MAPT	SCMT MAP Fixed Threshold Level	30	MV
MATT	Maximum Attenuation	16.5449	DB/F
MCCF	MAP Cement Type Compensation Factor	1	
MCI	Minimum Cemented Interval for Isolation	1.25	FT
MMSA	MAP Minimum Sonic Amplitude	4.32284	MV
MSA	Minimum Sonic Amplitude	0.579149	MV
PEDE	Peak Detection On/Off Switch in Playback	OFF	
VDLG	VDL Manual Gain	5	
ZCMT	Acoustic Impedance of Cement	6.8	MRAY
System and Miscellaneous			
CSIZ	Current Casing Size	4.500	IN
CWEI	Casing Weight	11.60	LB/F
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset for Playback	5.0	FT
PP	Playback Processing	RECOMPUTE	
TD	Total Depth	12588	FT

Input DLIS Files

DEFAULT SCMT_PSP_027LUP FN:25 PRODUCER 25-Apr-2013 22:21 12597.5 FT 25.5 FT

Output DLIS Files

DEFAULT SCMT_PSP_029PUP FN:27 PRODUCER 26-Apr-2013 01:44

Schlumberger

REPEAT ANALYSIS CBL VDL

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC

Well: SGU 8510B-23 (L24 496)

Input DLIS Files

DEFAULT SCMT_PSP_025LUP FN:23 PRODUCER 25-Apr-2013 22:06 11209.5 FT 10877.2 FT
 DEFAULT SCMT_PSP_029PUP FN:27 PRODUCER 26-Apr-2013 01:44 12602.5 FT 9.0 FT

Output DLIS Files

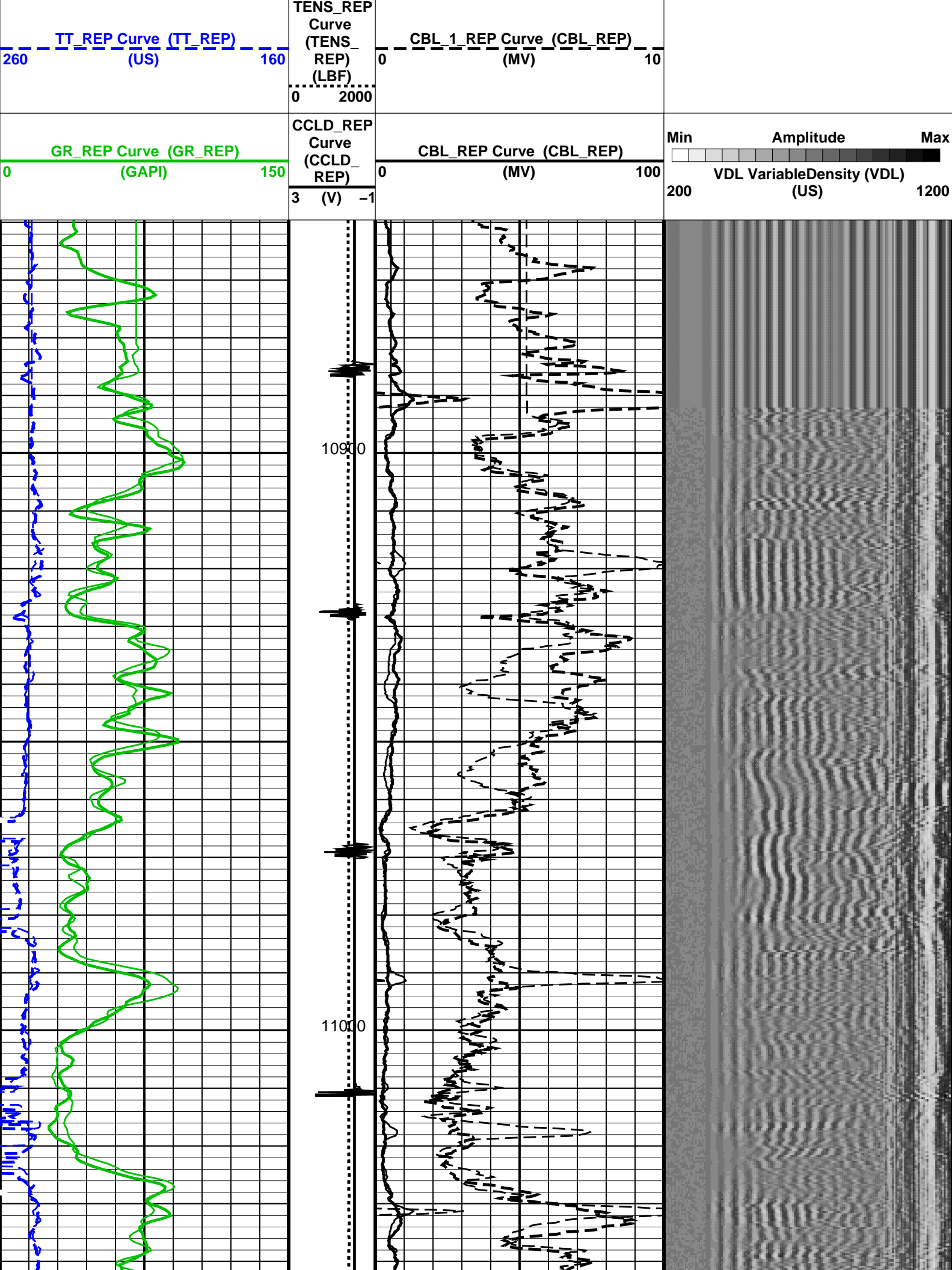
DEFAULT SCMT_PSP_030PUP FN:28 PRODUCER 26-Apr-2013 01:54 11212.5 FT 10859.0 FT

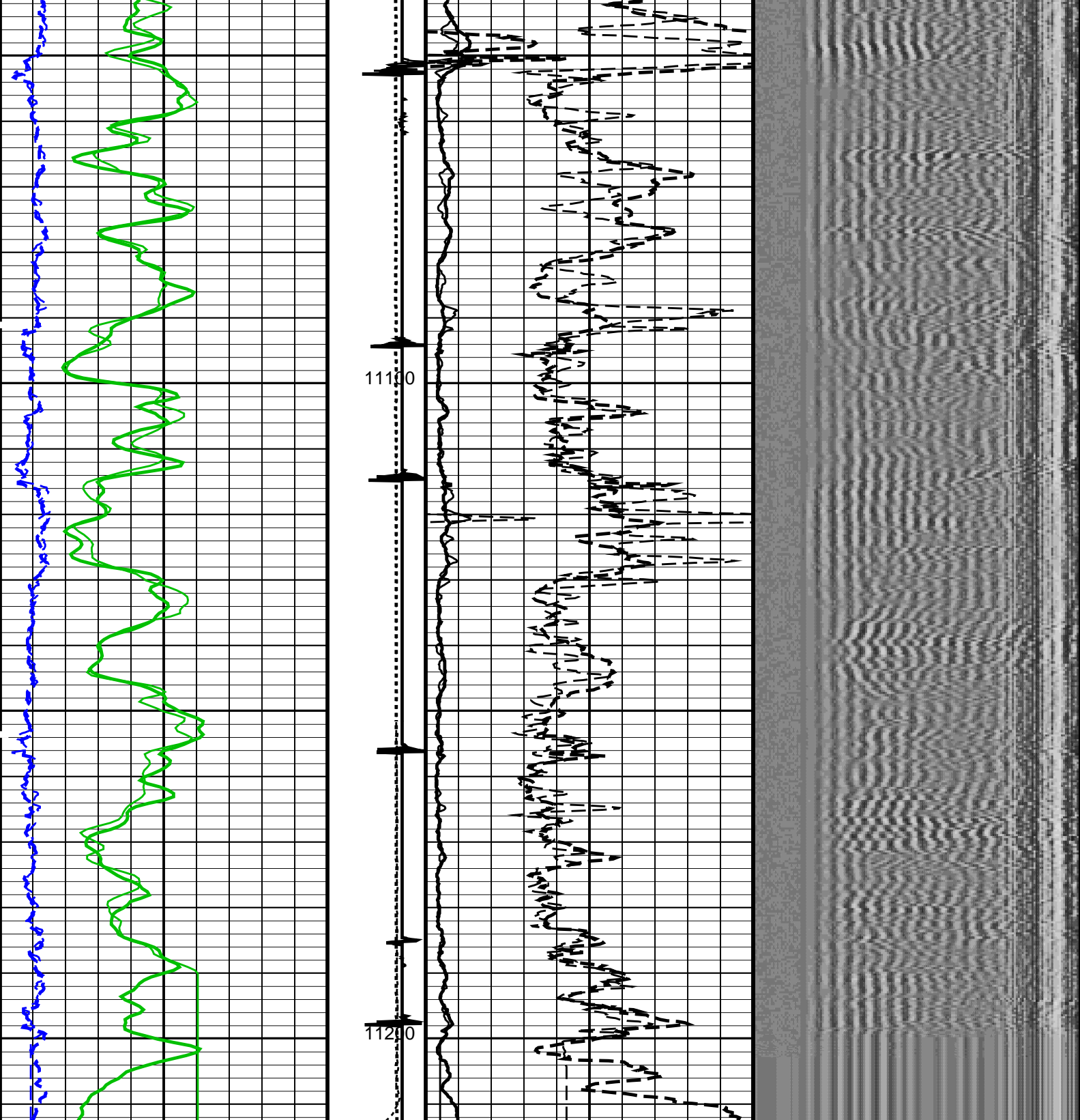
OP System Version: 19C0-187

SCMT-CB SRPC-5214-H2-2012-OP1! PSPT SRPC-5214-H2-2012-OP1!

PIP SUMMARY

Time Mark Every 60 S





<p>GR REP Curve (GR REP) (GAPI)</p> <p>0 150</p>	<p>CCLD REP Curve (CCLD REP) (V)</p> <p>3 -1</p>	<p>CBL REP Curve (CBL REP) (MV)</p> <p>0 100</p>	<p>Min Amplitude Max</p> <p>VDL Variable Density (VTL) (US)</p> <p>200 1200</p>
<p>TT REP Curve (TT REP) (US)</p> <p>260 160</p>	<p>TENS REP Curve (TENS REP) (LBF)</p> <p>0 2000</p>	<p>CBL 1 REP Curve (CBL REP) (MV)</p> <p>0 10</p>	

PIP SUMMARY

Format: CBL_VDL_REP

Vertical Scale: 5 per 100

Graphics File Created: 26-Apr-2013 01:54

OP System Version: 19C0-187				
SCMT-CB	SRPC-5214-H2-2012-OP1	PSPT	SRPC-5214-H2-2012-OP1	
<<<SCMT Cement Evaluation Information Summary>>>				
Sonde Serial Number	SCMS-CB 8317			
Current Casing Size	4.50000 IN			
Casing Weight	11.6000 LB/F			
Expected CBL Amplitude in Free Pipe Section	80 MV	Minimum Sonic Amplitude	0.579149 MV (100% Cement)	
			1.55185 MV (80% Cement)	
		MAP Minimum Sonic Amplitude	4.32284 MV (100% Cement)	
			8.10244 MV (80% Cement)	
Master Calibration (Normalization)		Before Calibration (Adjustment)		
Date of Master Calibration	26-SEP-2012			
CBL Correction Factor	0.0719381	CBL Adjustment Factor (CBAF)	1.20000	
MAP 1 Correction Factor	0.116622	MAP Adjustment Factor (MPAF)	1.0	
MAP 2 Correction Factor	0.138771			
MAP 3 Correction Factor	0.154480			
MAP 4 Correction Factor	0.126474			
MAP 5 Correction Factor	0.116062			
MAP 6 Correction Factor	0.126351			
MAP 7 Correction Factor	0.134711			
MAP 8 Correction Factor	0.138445			
Parameters				
DLIS Name	Description	Value		
SCMT-CB: Slim Cement Mapping Tool, 1-11/16 OD				
BILI	Bond Index Level for Zone Isolation	0.8		
CB3D	SCMT CBL 3 ft Peak Detection Mode	PEAK		
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	224.559	US	
CB3T	SCMT CBL 3 ft Fixed Threshold Level	20	MV	
CB5D	SCMT CBL 5 ft Peak Detection Mode	PEAK		
CB5G	SCMT CBL 5 ft Peak Detection T0_Delay and Noise Gate	338.559	US	
CB5T	SCMT CBL 5 ft Fixed Threshold Level	20	MV	
CBLG	CBL Gate Width	45	US	
CBRA	CBL LQC Reference Amplitude in Free Pipe	80	MV	
CMCF	CBL Cement Type Compensation Factor	1		
CMTC	SCMT Slow Channel Multiplexer Mode	SCAN		
CMTM	SCMT Operating Mode	LOG		
CSCS	SCMT Slow Channel Index	VCC		
CTHI	Casing Thickness	0.255617	IN	
DTF	Delta-T Fluid	189	US/F	
FATT	Acoustic Attenuation due to Fluid	0	DB/F	
FCF	CBL Fluid Compensation Factor	0.924277		
GOBO	Good Bond	1.55185	MV	
MAPD	SCMT MAP Peak Detection Mode	PEAK		
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	167.559	US	
MAPT	SCMT MAP Fixed Threshold Level	30	MV	
MATT	Maximum Attenuation	16.5449	DB/F	
MCCF	MAP Cement Type Compensation Factor	1		
MCI	Minimum Cemented Interval for Isolation	1.25	FT	
MMSA	MAP Minimum Sonic Amplitude	4.32284	MV	
MSA	Minimum Sonic Amplitude	0.579149	MV	
PEDE	Peak Detection On/Off Switch in Playback	OFF		
VDLG	VDL Manual Gain	5		
ZCMT	Acoustic Impedance of Cement	6.8	MRAY	
System and Miscellaneous				
CSIZ	Current Casing Size	4.500	IN	
CWEI	Casing Weight	11.60	LB/F	
DFD	Drilling Fluid Density	8.40	LB/G	
DO	Depth Offset for Playback	3.0	FT	
DORL	Depth Offset for Repeat Analysis	0.0	FT	
PP	Playback Processing	RECOMPUTE		
TD	Total Depth	12588	FT	

Input DLIS Files

DEFAULT	SCMT_PSP_025LUP	FN:23	PRODUCER	25-Apr-2013 22:06	11209.5 FT	10877.2 FT
DEFAULT	SCMT_PSP_029PUP	FN:27	PRODUCER	26-Apr-2013 01:44	12602.5 FT	9.0 FT

Output DLIS Files

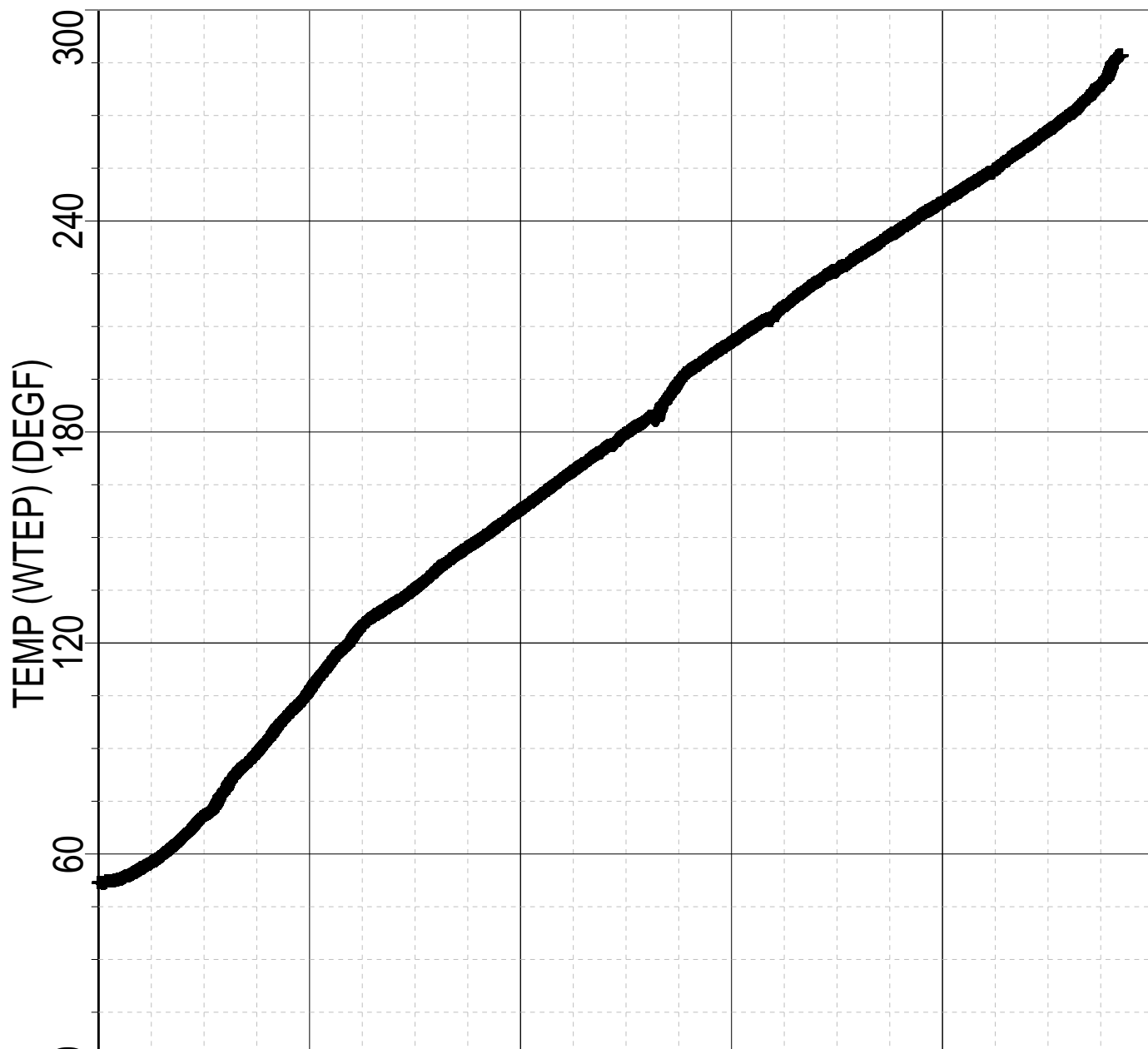
DEFAULT	SCMT_PSP_030PUP	FN:28	PRODUCER	26-Apr-2013 01:54
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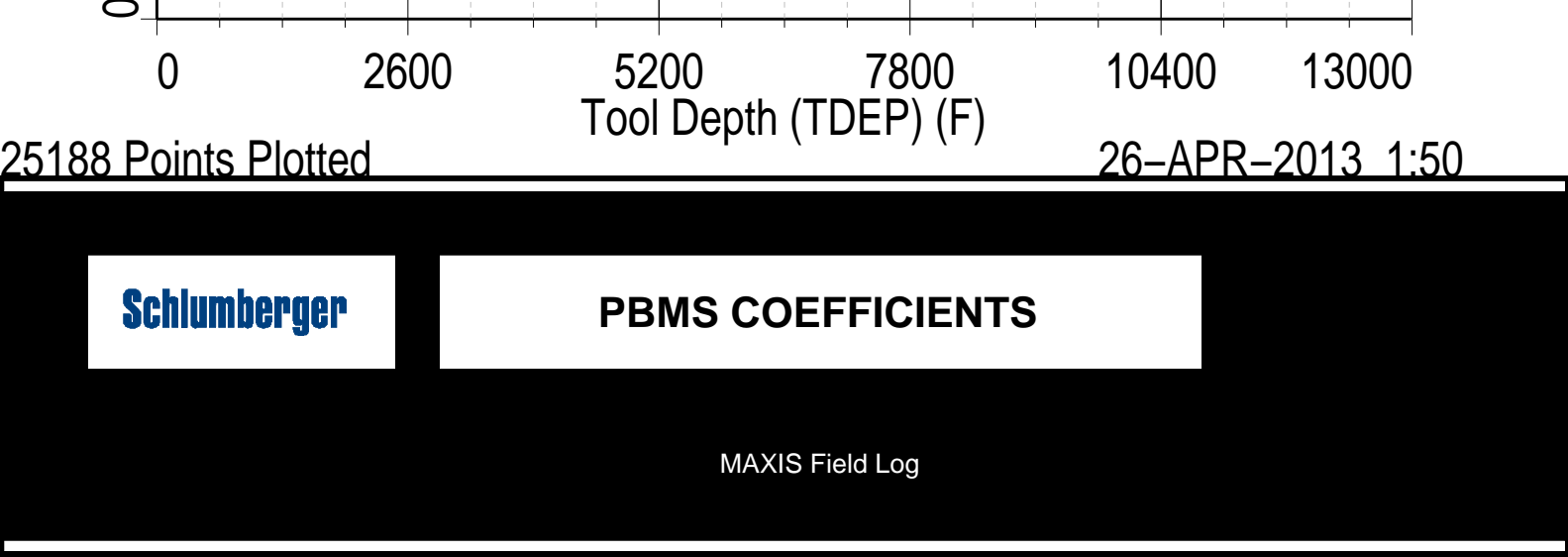
Schlumberger

TEMPERATURE PLOT

MAXIS Field Log

Index: 12602.5 – 9.0 FT





Client:	ENCANA OIL & GAS (USA) INC	Tool:	PSP
Field:	STORY GULCH	Sub Type:	PBMS
Well:	SGU 8510B-23 (L24 496)	Sensor:	GR
Run date:	25-Apr-2013		

PBMS Gamma Ray

Sonde Serial NB	RESISTORS FOR GR SENSOR N.33223,TOOL PBMS-BA0928. SENSOR S/N:
Sensor Serial NB	33223
Calib Date ddmmyy	090800
Matrix Size	12
Coeff CRC	CFE2

GR HV Rt		
	Rt**0	Rt**1
Rt**0	+.182000000000e+04	+.332000000000e+04

Client:	ENCANA OIL & GAS (USA) INC	Tool:	PSP
Field:	STORY GULCH	Sub Type:	PBMS
Well:	SGU 8510B-23 (L24 496)	Sensor:	WellTemp RTD
Run date:	25-Apr-2013		

PBMS RTD Well Thermometer

Sonde Serial NB

Sensor Serial NB

Calib Date ddmmyy

Matrix Size

Coeff CRC

COEFFICIENTS FOR RTD THERMOMETER PBMS-B.928 S/N:
928
280612
16
A24E

WTemp Coeff

	Tt**0	Tt**1	Tt**2
Tt**0	-.391987973189E+03	+.191346892512E+03	-.440920753451E+02
	Tt**3	Tt**4	Tt**5
Tt**0	+.957191300908E+01	-.711421725686E+00	0.0

PBMS Quartz Gauge type F

Sonde Serial NB

Sensor Serial NB

Calib Date ddmmyy

Matrix Size

Coeff CRC

COEFFICIENTS FOR CQG PBMS-B.928 S/N:
928
280612
66
9DC3

Pres Coeff

	Fb**0	Fb**1	Fb**2
Fc**0	+.714463802232E+04	+.183434658655E-01	-.156620073569E-06
Fc**1	-.100638308957E+01	-.119899563644E-04	-.912155899025E-10
Fc**2	+.936268101283E-06	+.423898071451E-10	+.958076371919E-15
Fc**3	+.185123362373E-11	+.203107925433E-15	0.0
Fc**4	0.0	0.0	0.0
Fc**5	0.0	0.0	0.0
	Fb**3	Fb**4	Fb**5
Fc**0	-.746577997611E-10	-.588773826860E-15	-.622250441458E-19

Fc**1	−.120636521092E−15	+.400325894750E−19	0.0
Fc**2	0.0	0.0	0.0
Fc**3	0.0	0.0	0.0
Fc**4	0.0	0.0	0.0
Fc**5	0.0	0.0	0.0

PBMS Quartz Gauge type F

Sonde Serial NB

:

Sensor Serial NB

928

Calib Date ddmmyy

280612

Matrix Size

66

Coeff CRC

283B

Temp Coeff

	Fc**0	Fc**1	Fc**2
Fb**0	+.117016867873E+03	−.284359629614E−03	+.604391180345E−08
Fb**1	−.598309140812E−02	+.182731130848E−07	+.160166486172E−12
Fb**2	−.307621454576E−07	+.300601550309E−12	+.311233548560E−17
Fb**3	−.419658736767E−12	+.117473708647E−16	0.0
Fb**4	0.0	0.0	0.0
Fb**5	0.0	0.0	0.0
	Fc**3	Fc**4	Fc**5
Fb**0	+.114322792679E−12	+.153807711176E−17	−.736714260866E−21
Fb**1	−.528037875456E−18	−.220337637519E−21	0.0
Fb**2	0.0	0.0	0.0
Fb**3	0.0	0.0	0.0
Fb**4	0.0	0.0	0.0
Fb**5	0.0	0.0	0.0

PBMS Quartz Gauge type F

Sonde Serial NB

:

Sensor Serial NB

928

Calib Date ddmmyy

280612

Matrix Size



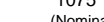
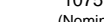


16




Coeff CRC

093F

Clock Freq Coeff

	(Fb'−Fc')**0	(Fb'−Fc')**1	(Fb'−Fc')**2
(Fb'−Fc')**0	+.310874009898E+05	+.288920923041E−02	+.697940727038E−06

Slim Cement Mapping Tool, 1–11/16 OD Master Calibration							
SCMT CBL and MAP Amplitude Normalization in SFT–155/–255							
Phase	MAP 1 Amplitude Plus MV		Value	Phase	MAP 2 Amplitude Plus MV		Value
Master			1029	Master			864.7
	500.0 (Minimum)	1075 (Nominal)	1650 (Maximum)		500.0 (Minimum)	1075 (Nominal)	1650 (Maximum)
Phase	MAP 3 Amplitude Plus MV		Value	Phase	MAP 4 Amplitude Plus MV		Value
Master			776.8	Master			948.8
	500.0 (Minimum)	1075 (Nominal)	1650 (Maximum)		500.0 (Minimum)	1075 (Nominal)	1650 (Maximum)
Phase	MAP 5 Amplitude Plus MV		Value	Phase	MAP 6 Amplitude Plus MV		Value
Master			1034	Master			949.7
	500.0 (Minimum)	1075 (Nominal)	1650 (Maximum)		500.0 (Minimum)	1075 (Nominal)	1650 (Maximum)

500.0 (Minimum)	1075 (Nominal)	1650 (Maximum)	500.0 (Minimum)	1075 (Nominal)	1650 (Maximum)		
Phase	MAP 7 Amplitude Plus MV		Value	Phase	MAP 8 Amplitude Plus MV		Value
Master			890.8	Master			866.8
500.0 (Minimum)	1075 (Nominal)	1650 (Maximum)	500.0 (Minimum)	1075 (Nominal)	1650 (Maximum)		
Phase	CBL Amplitude Plus MV		Value				
Master			1334				
1000 (Minimum)	1350 (Nominal)	1700 (Maximum)					
Master: 26-Sep-2012 14:15							

Company: **ENCANA OIL & GAS (USA) INC**

Schlumberger

Well: **SGU 8510B-23 (L24 496)**

Field: **STORY GULCH**

County: **GARFIELD**

State: **COLORADO**

SLIM CEMENT MAPPING LOG

CBL-VDL

GR-CCL