Schlumberger

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

Well: **MCU 26−12A (I27W)**
Field: **MAMM CREEK**
County: **GARFIELD** State: **COLORADO**

SLIM CEMENT MAPPING LOG
CBL−VDL
GR−CCL

County: GARFIELD
Field: MAMM CREEK
Location: SHL: 459 FEL & 1979 FSL
Well: MCU 26−12A (I27W)
Company: ENCANA OIL & GAS (USA) INC

LOCATION

SHL: 459 FEL & 1979 FSL
BHL: 900 FWL & 2500 FSL

Elev.: K.B. 7224.00 ft
G.L. 7202.00 ft
D.F. 7223.00 ft

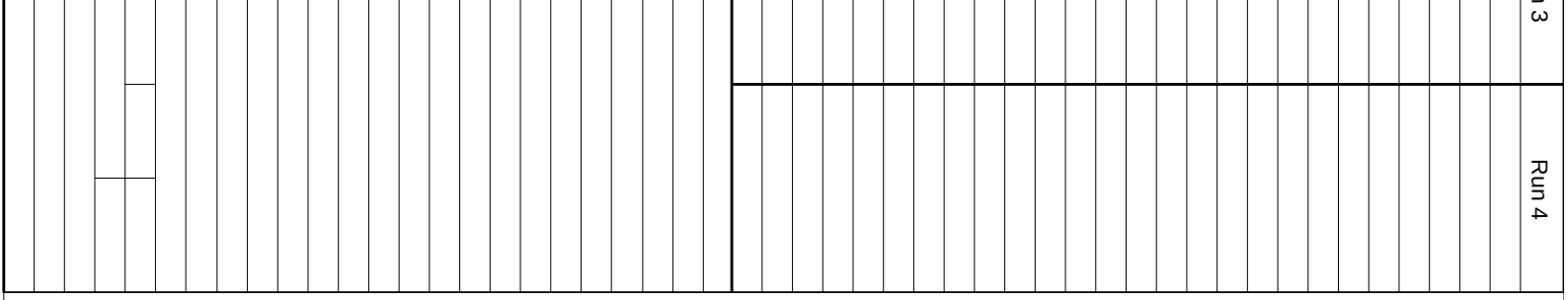
Permanent Datum: GROUND LEVEL Elev.: 7202.00 ft
Log Measured From: KELLY BUSHING 22.00 ft above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.	Section	Township	Range
05−045−21602−0(	27	7S	93W

Logging Date		21−Jan−2013						
Run Number		1						
Depth Driller		10505 ft						
Schlumberger Depth		10388 ft						
Bottom Log Interval		10379 ft						
Top Log Interval		60 ft						
Casing Fluid Type		FRESH WATER						
Salinity								
Density		8.4 lbm/gal						
Fluid Level		60 ft						
BIT/CASING/TUBING STRING								
Bit Size		7.875 in						
From		7042 ft						
To		10505 ft						
Casing/Tubing Size		4.500 in						
Weight		11.6 lbm/ft						
Grade		S−80						
From		22 ft						
To		10486 ft						
Maximum Recorded Temperatures		271 degF						
Logger On Bottom	Time	21−Jan−2013	22:00					
Unit Number	Location	391	GRAND JUNCTION					
Recorded By		KIRSTIE BUNTING						
Witnessed By		EUGENE						

		Run 1	Run 2	Run
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								
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	Time							
Unit Number	Location							
Recorded By								
Witnessed By								



DEPTH SUMMARY LISTING

Date Created: 12−DEC−2012 9:29:15

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:	
Calibration Date:	4−24−2012	Calibration Date:	28−11−2012	Length:	19700 FT
Calibrator Serial Number:		Calibrator Serial Number:	174878		
Calibration Cable Type:	1−25ZT	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−3	Calibration RMS:	6	Rig Type:	LAND
Wheel Correction 2:	−4	Calibration Peak Error:	11		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	200.00 FT
Rig Up Length At Bottom:	200.00 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.

OTHER SERVICES1	OTHER SERVICES2
OS1: RESERVOIR SATURATION	OS1:
OS2: LOG	OS2:
OS3: SIGMA MODE	OS3:
OS4: GR−CCL	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
FIRST RUN IN HOLE CORRELATED TO DOWN LOG	
TOOL RAN AS PER TOOL SKETCH	
ENTRANCE TIME: 21:00	
TIME AT TD: 22:00	
EXIT TIME: 00:30	

MAXIMUM RECORDED TEMEPRATURE: 271 DEGF

MAXIMUM RECORDED PRESSURE: 4329 PSIA

SHORT JOINTS: 8120FT & 7120FT

MAIN PASS LOGGED WITH ZERO SURFACE PRESSRE

EXPECTED CBL AMP IN FREE PIPE 80MV

THANK YOU FOR CHOOSING E&P WIRELINE, A SCHLUMBERGER COMPANY

CREW: KBUNTING JBARRY WAZIZ BRANSBOTTOM

RUN 1		RUN 2	
SERVICE ORDER #:	CGF9−00007	SERVICE ORDER #:	
PROGRAM VERSION:	19C0−187	PROGRAM VERSION:	
FLUID LEVEL:	60 ft	FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

WITM−A
PSC_16MHZ

DOWNHOLE EQUIPMENT

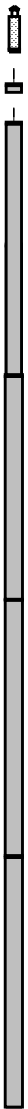
MH−22
MH−22 53.4

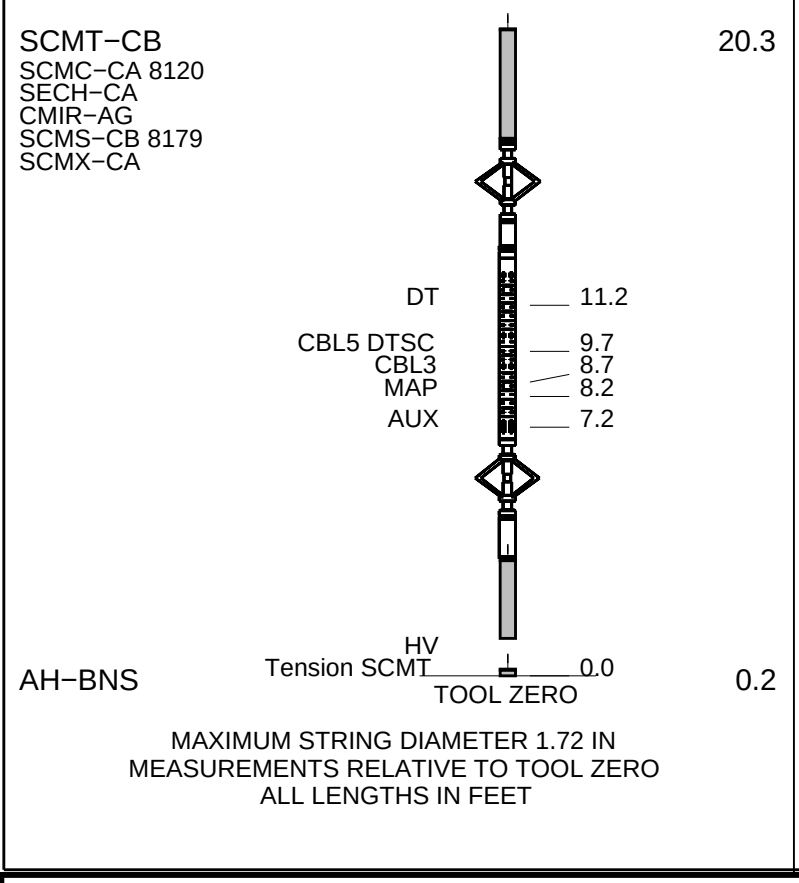
Detail MT
TelStatus
AH−38 51.8
CTEM 51.5
PSPT 51.5
PSC−A
PSPT−B 928
PSTC−A 928
PBMS−B 928
CQG_F_Mano
RTD_Thermometer
GR
CCL
PBMS 928

GR 47.8
Well_Temp 44.8
CQG Manom 44.5
CCL 44.0
PBMS PSTC 43.3

RST−C 43.3
RSCH−A 469
RSC−E
RSS−A 461
RSXH−A 493
RSX−E

RSC−A Far 34.2
RSC−A PNG
RSC−A Nea
RSX−A PNG 33.7





MAXIMUM STRING DIAMETER 1.72 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Schlumberger

MAIN PASS CBL VDL

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC **Well: MCU 26−12A (I27W)**

Input DLIS Files

DEFAULT	**SCMT_RST_PSP_007LUP**	**FN:6**	**PRODUCER**	**21−Jan−2013 21:54**	**10398.0 FT**	**−16.5 FT**

Output DLIS Files

DEFAULT	**SCMT_RST_PSP_011PUP**	**FN:10**	**PRODUCER**	**22−Jan−2013 00:54**	**10403.0 FT**	**−56.0 FT**

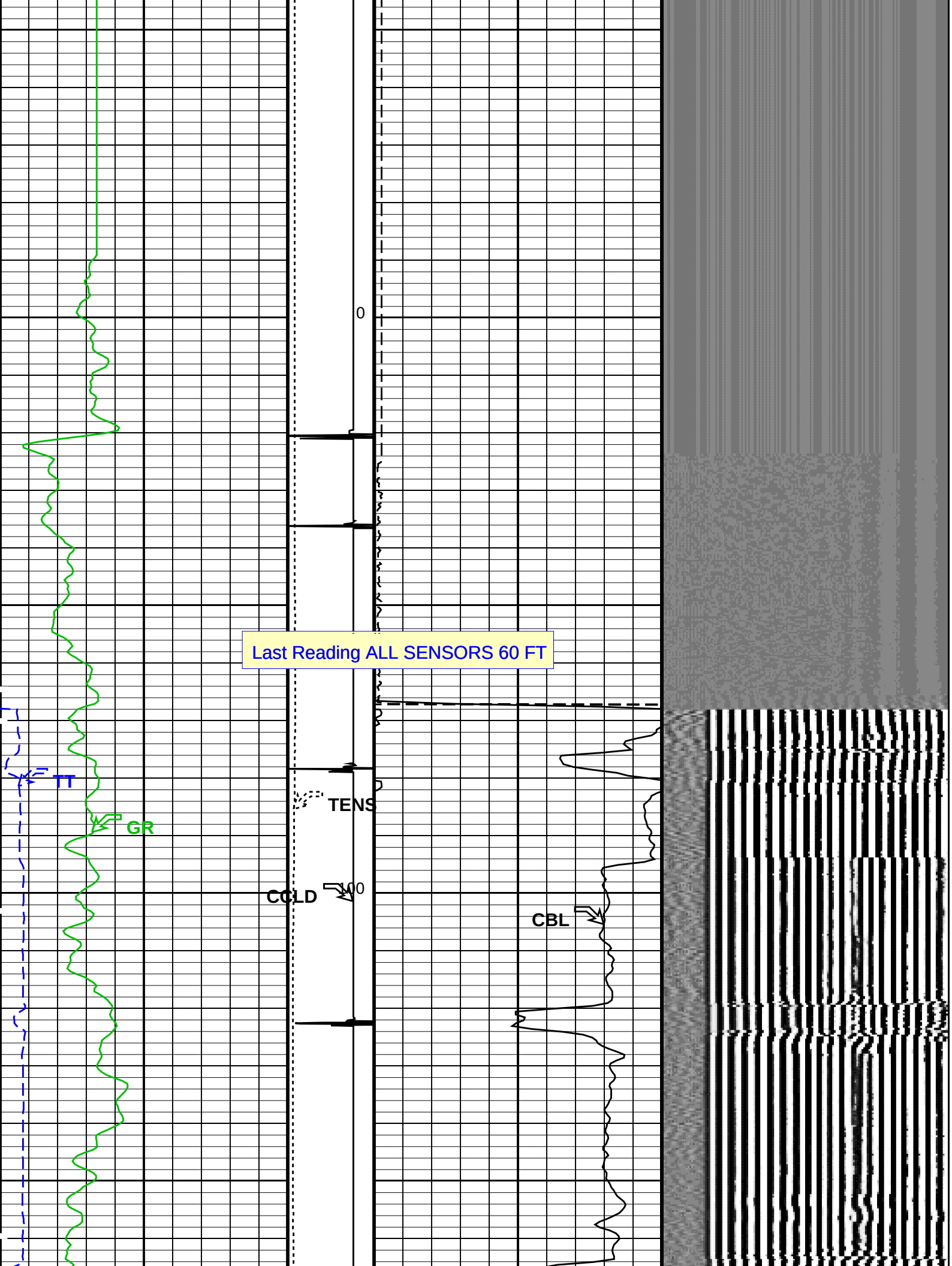
OP System Version: 19C0−187

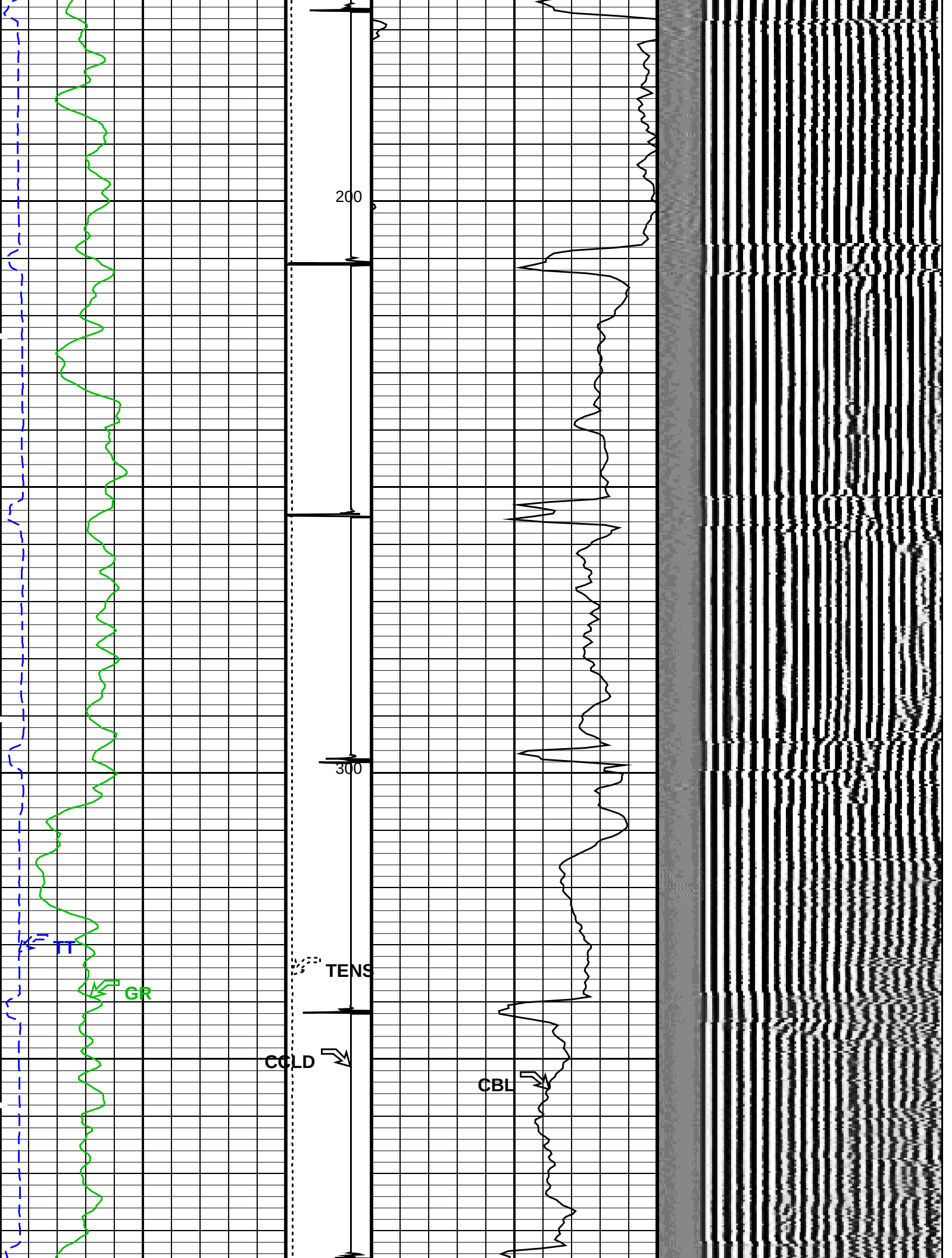
SCMT−CB	**SRPC−5214−H2−2012−OP1**	**RST−C**	**SRPC−5214−H2−2012−OP1**
PSPT	**SRPC−5214−H2−2012−OP1**		

PIP SUMMARY

Time Mark Every 60 S

Transit Time (TT) 260 (US) 160	**Discriminated CCL (CCLD)** 3 (V) −1	**CBL Amplitude (CBL)** 0 (MV) 10
Gamma Ray (GR) 0 (GAPI) 150	**Tension (TENS)** (LBF) 0 2000	**CBL Amplitude (CBL)** 0 (MV) 100
		Min Amplitude Max **VDL VariableDensity (VDL)** 200 (US) 1200


0
Last Reading ALL SENSORS 60 FT
TT
GR
TENS
CCLD
100
CBL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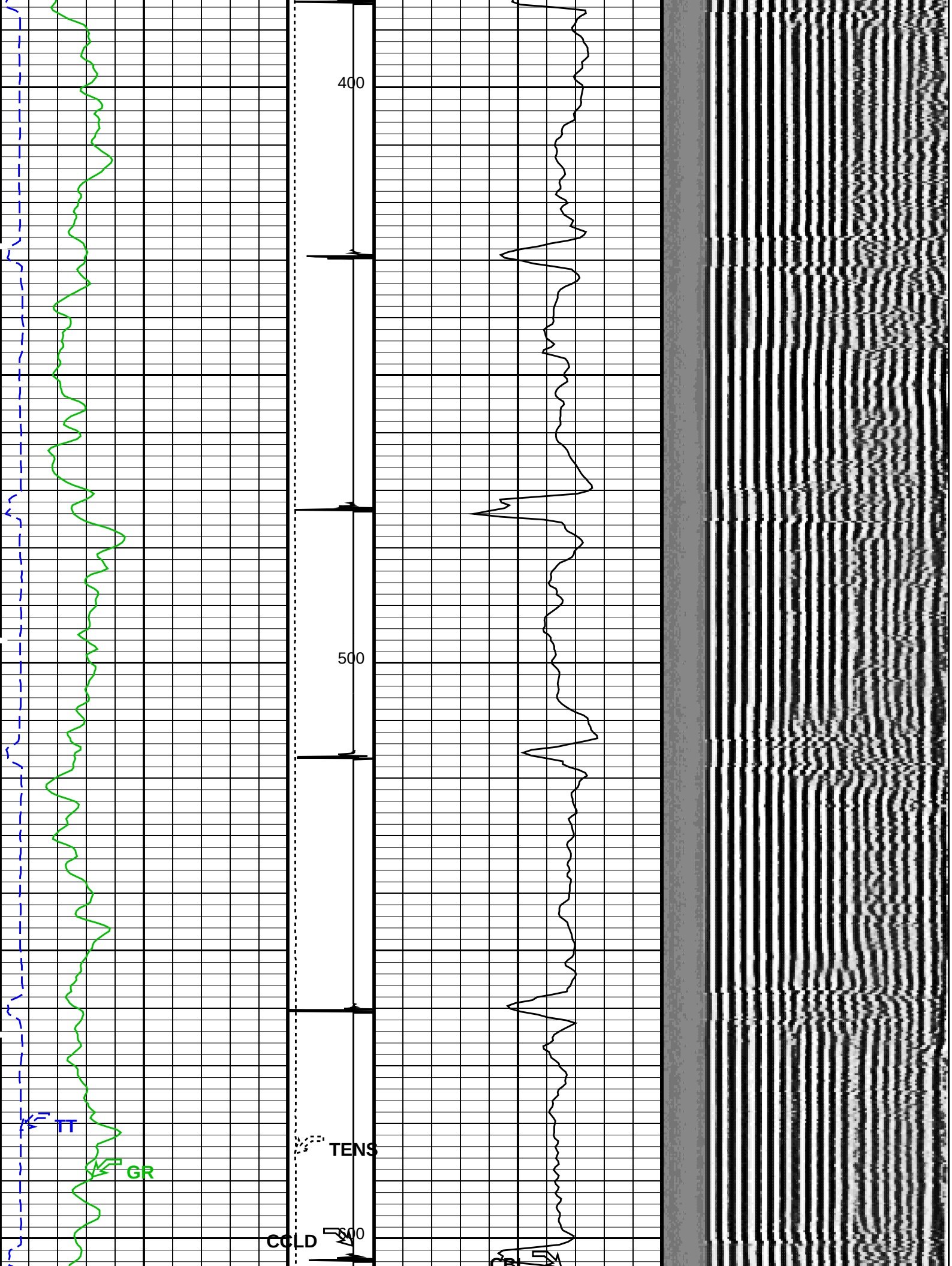
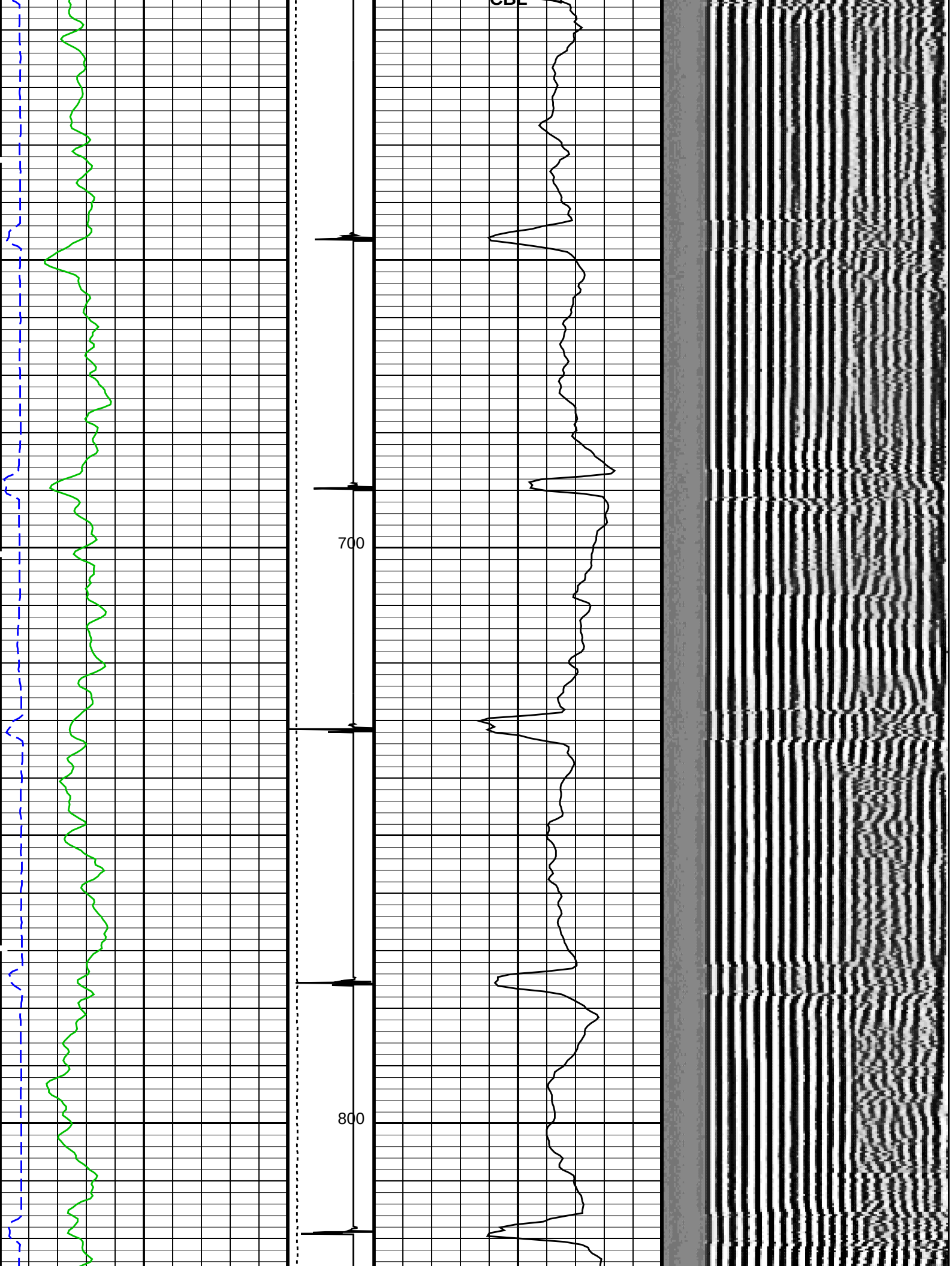
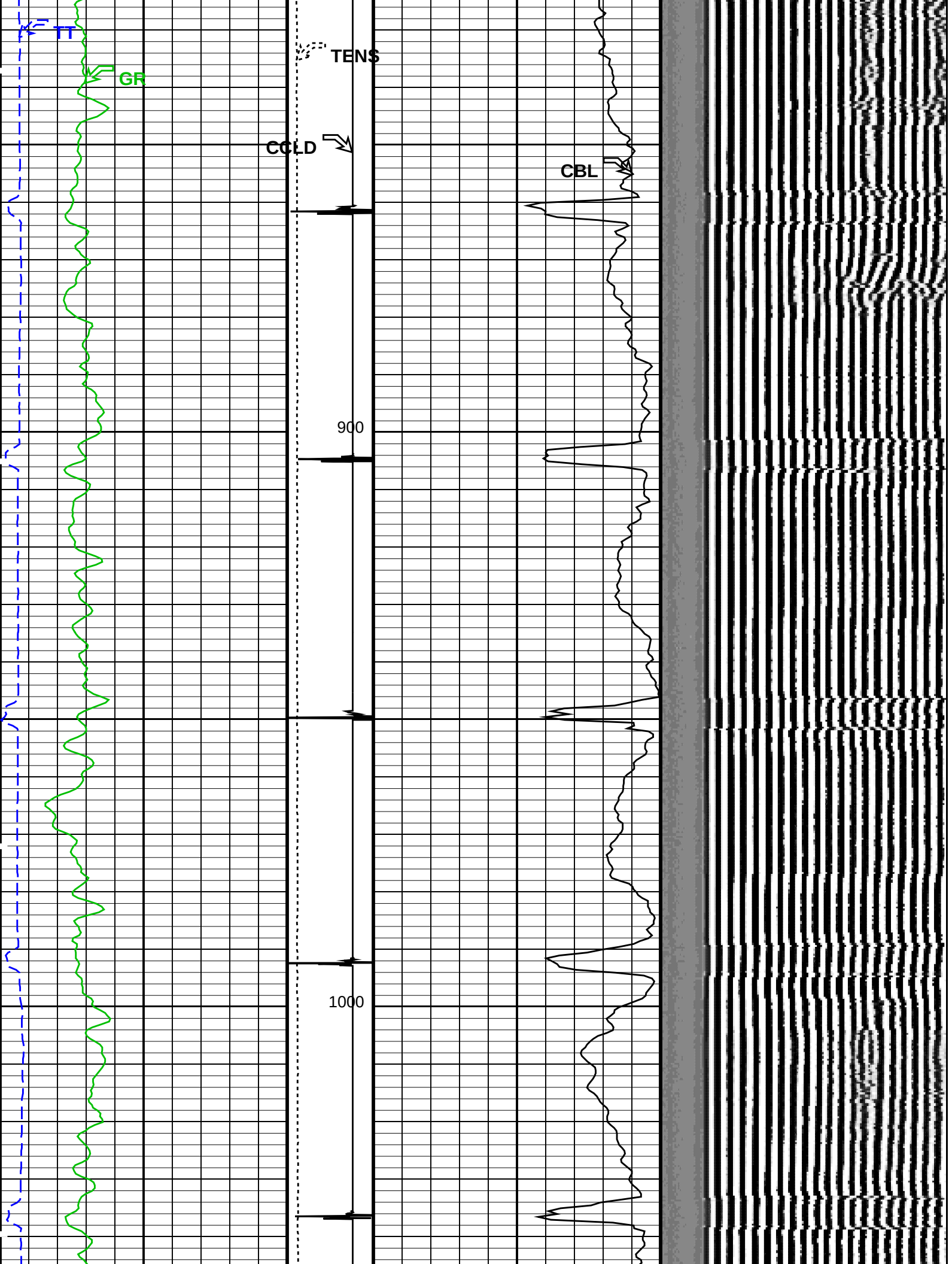
TT
GR
TENS
CCLD
CBL


400
500
600
TT
GR
TENS
CCLD


CBL
700
800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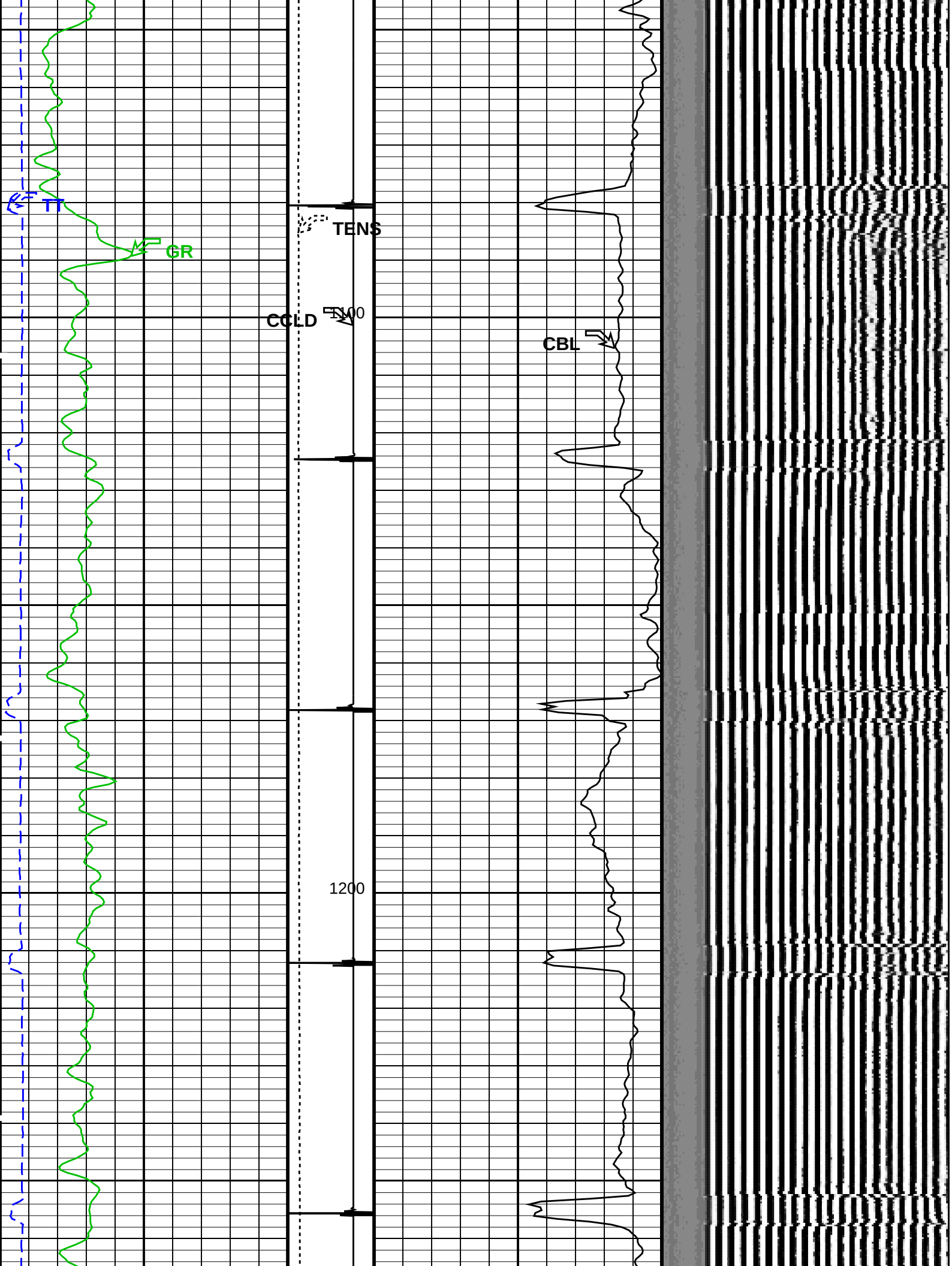
GR
TENS
CCLD
CBL
900
1000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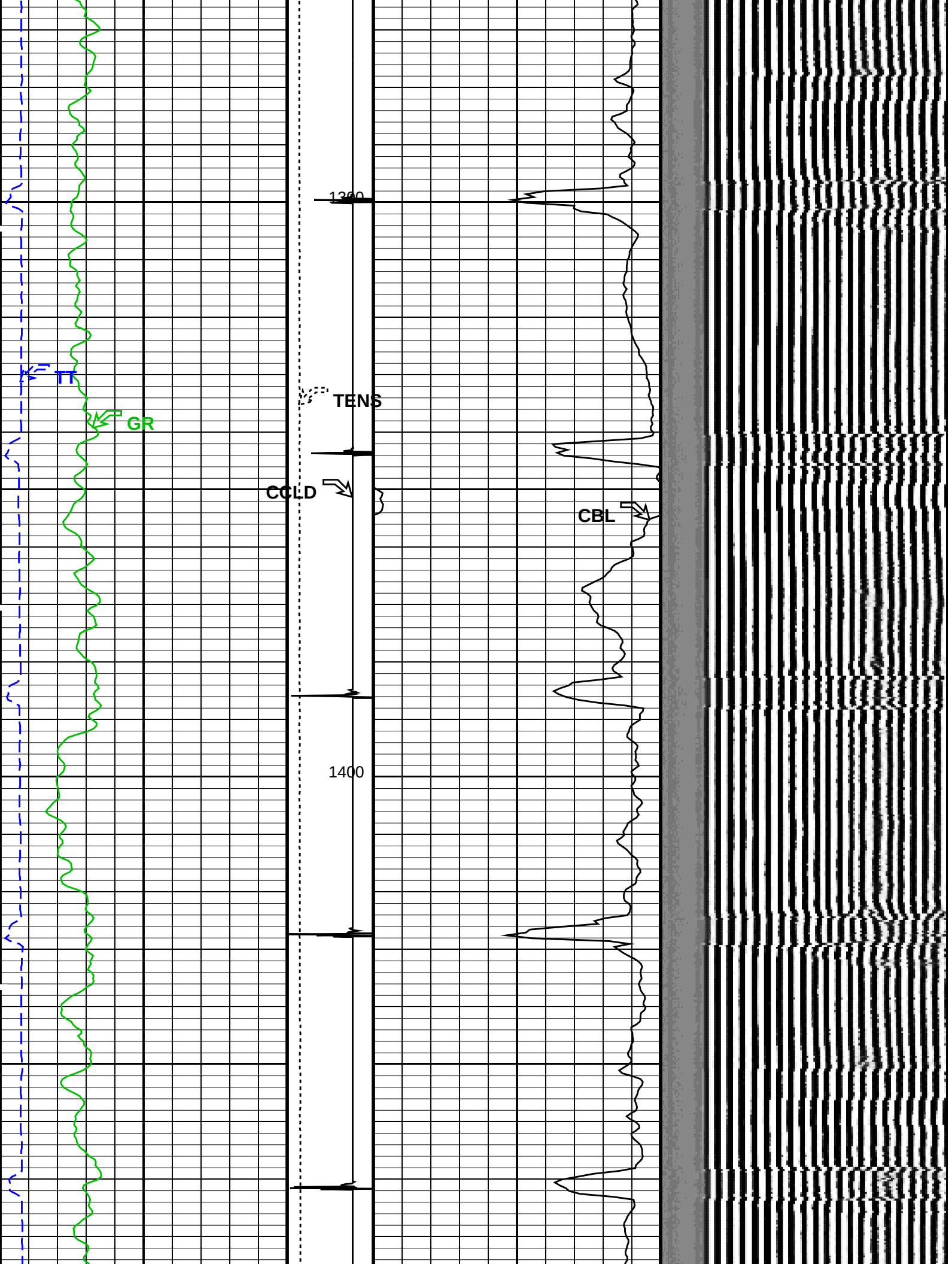
TENS
CCLD
1100
CBL
1200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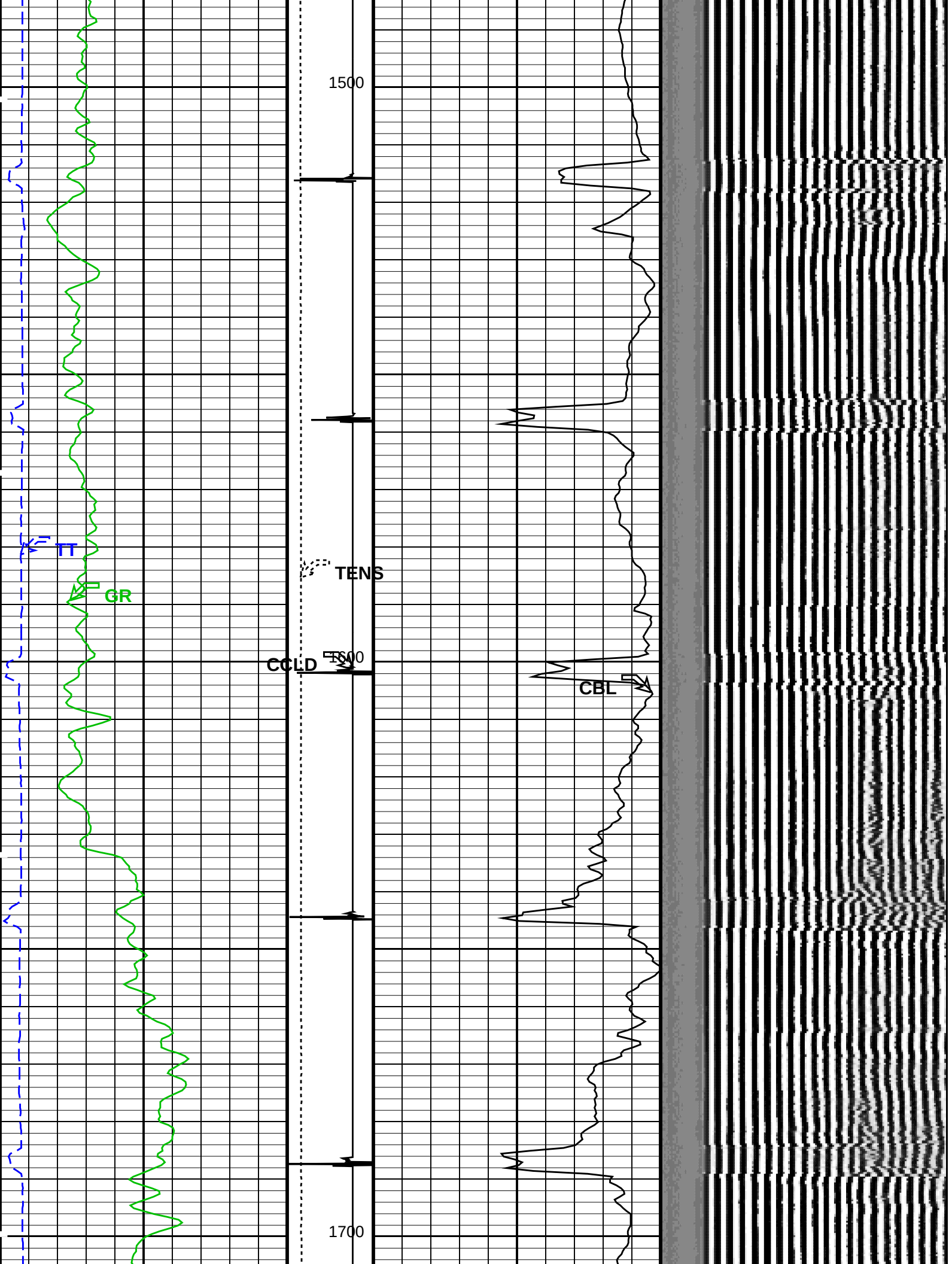
CCLD
CBL
1400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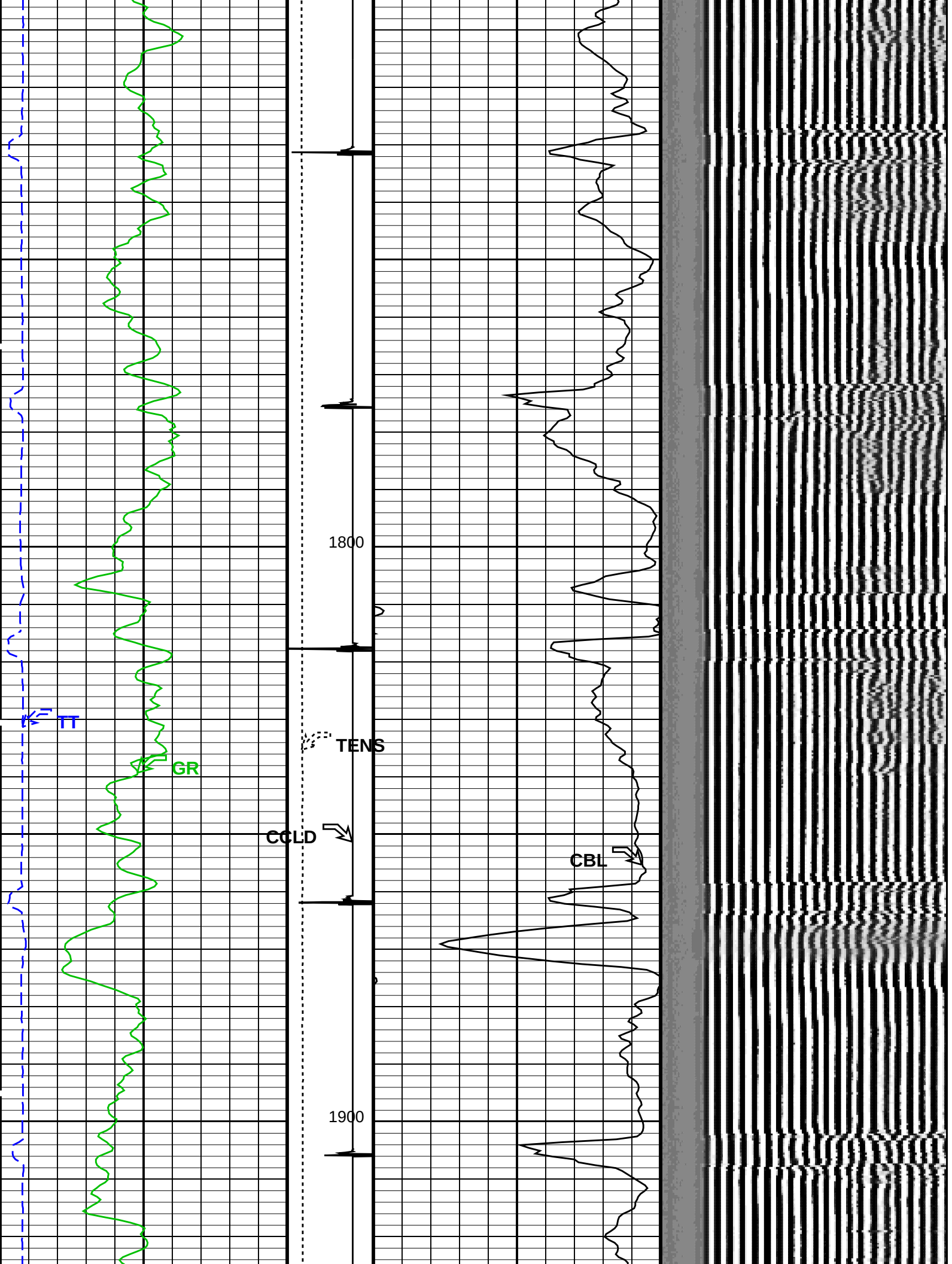
CCLD
1600
CBL
1700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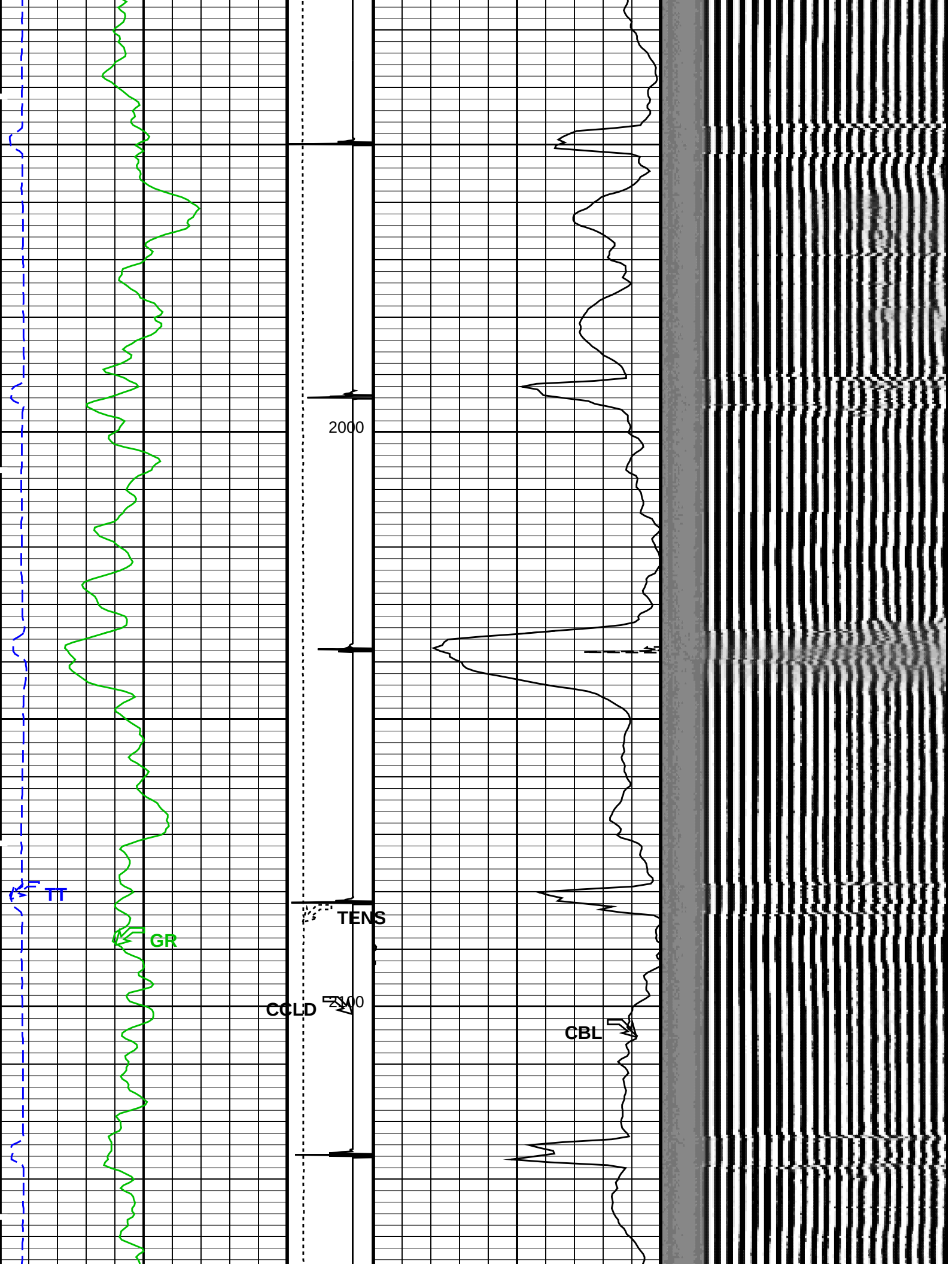
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TENS
CCLD
2100
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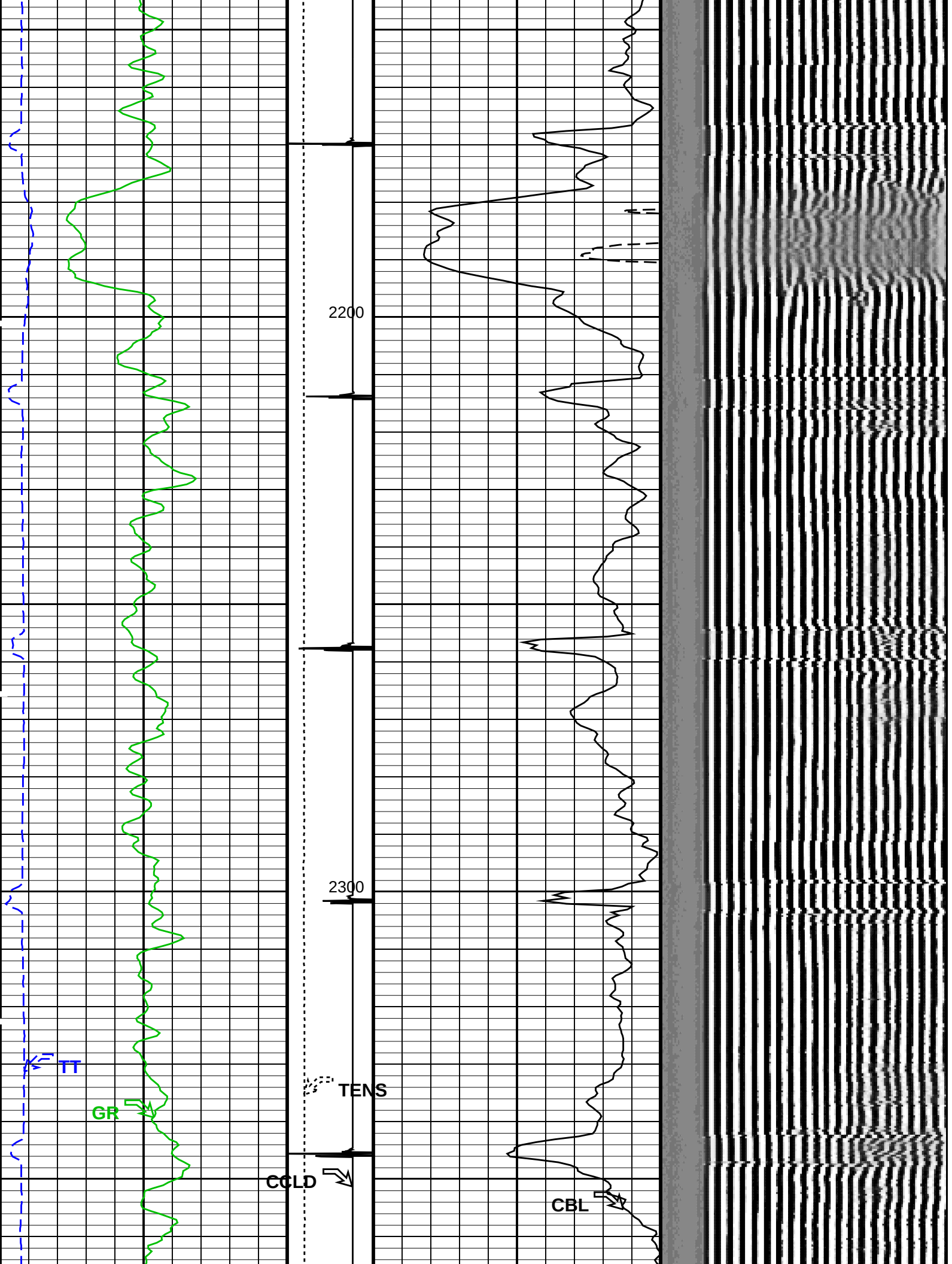
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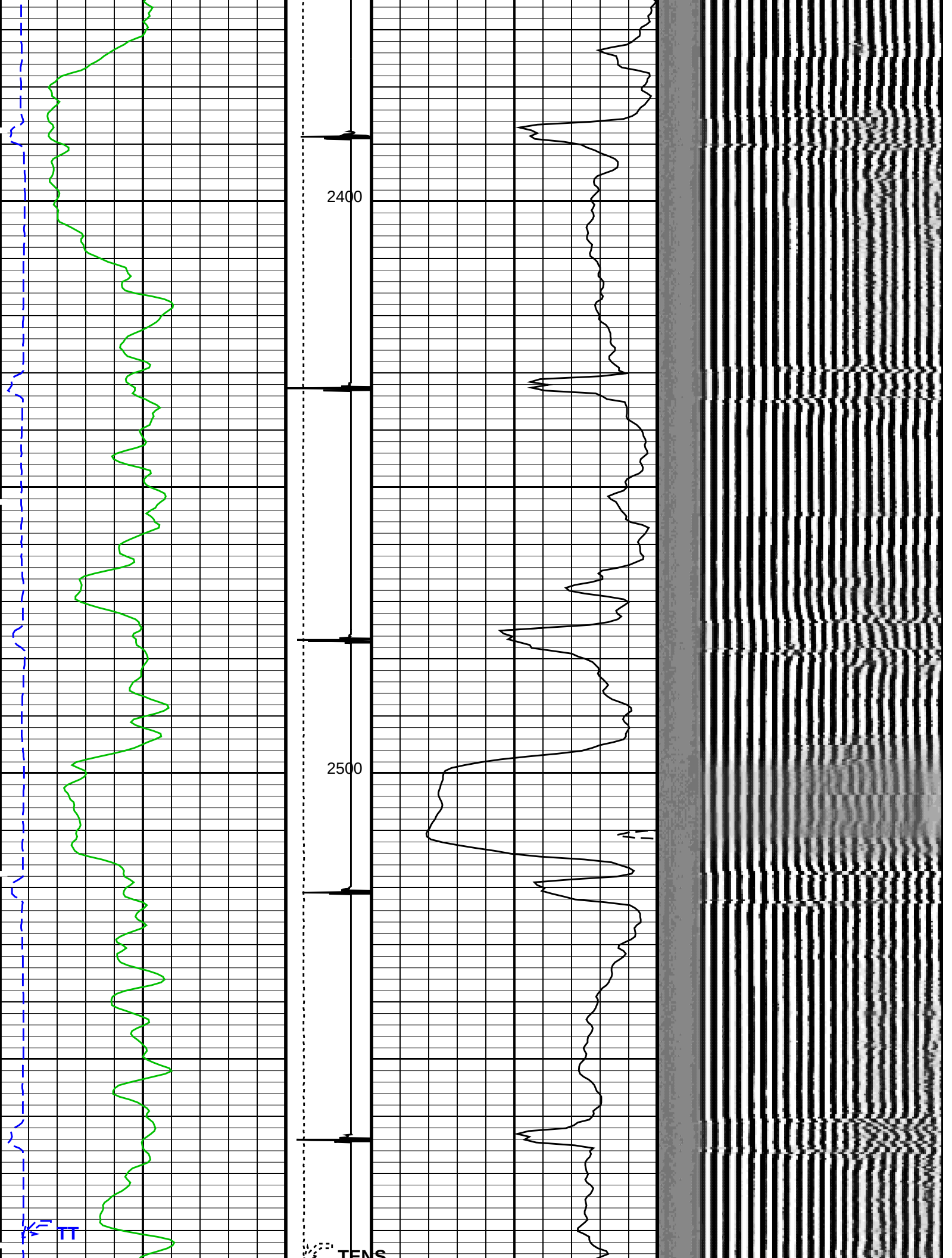
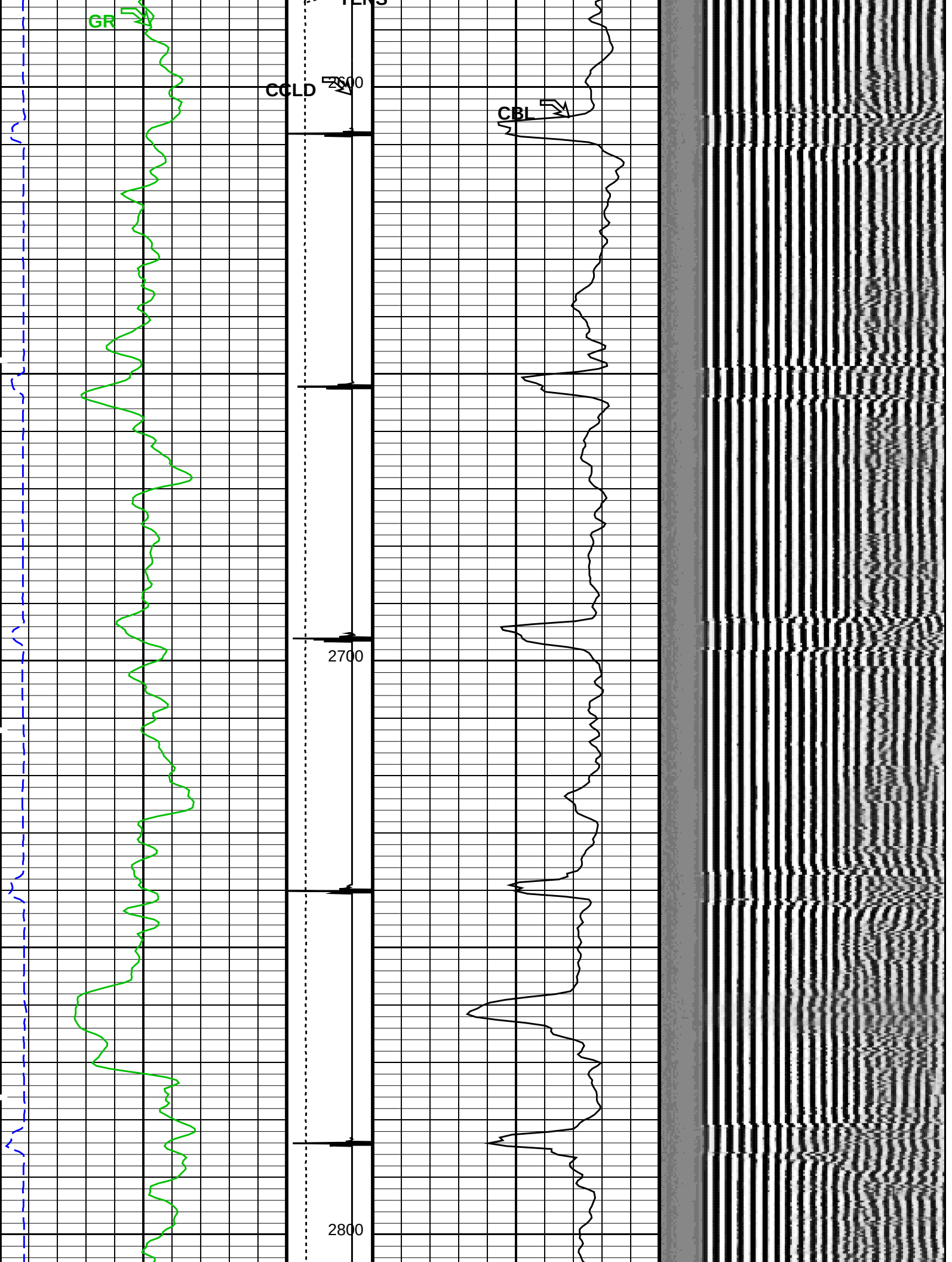

2400
2500
TT
TENS


GR
TENS
CCLD
2600
CBL
2700
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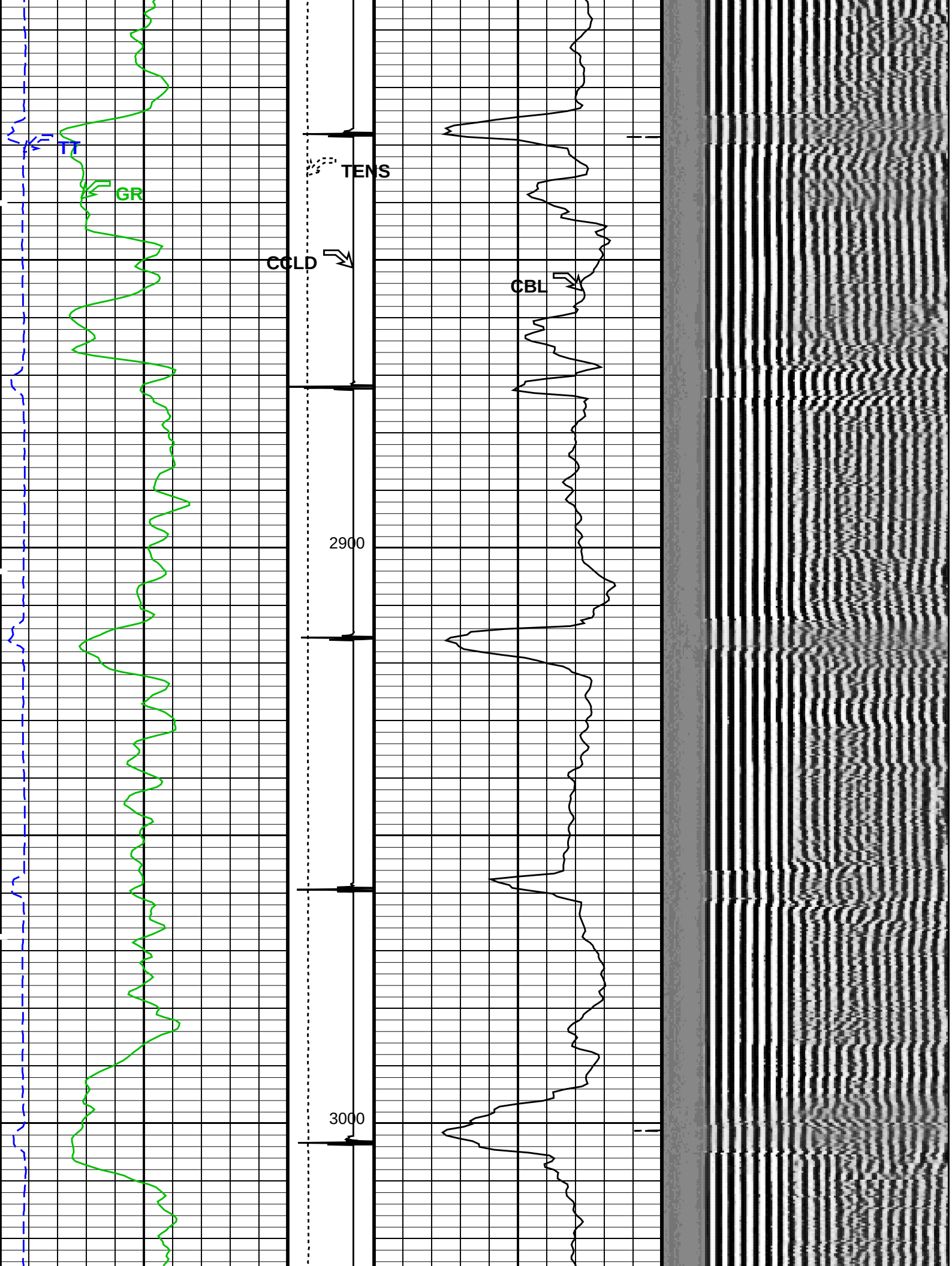
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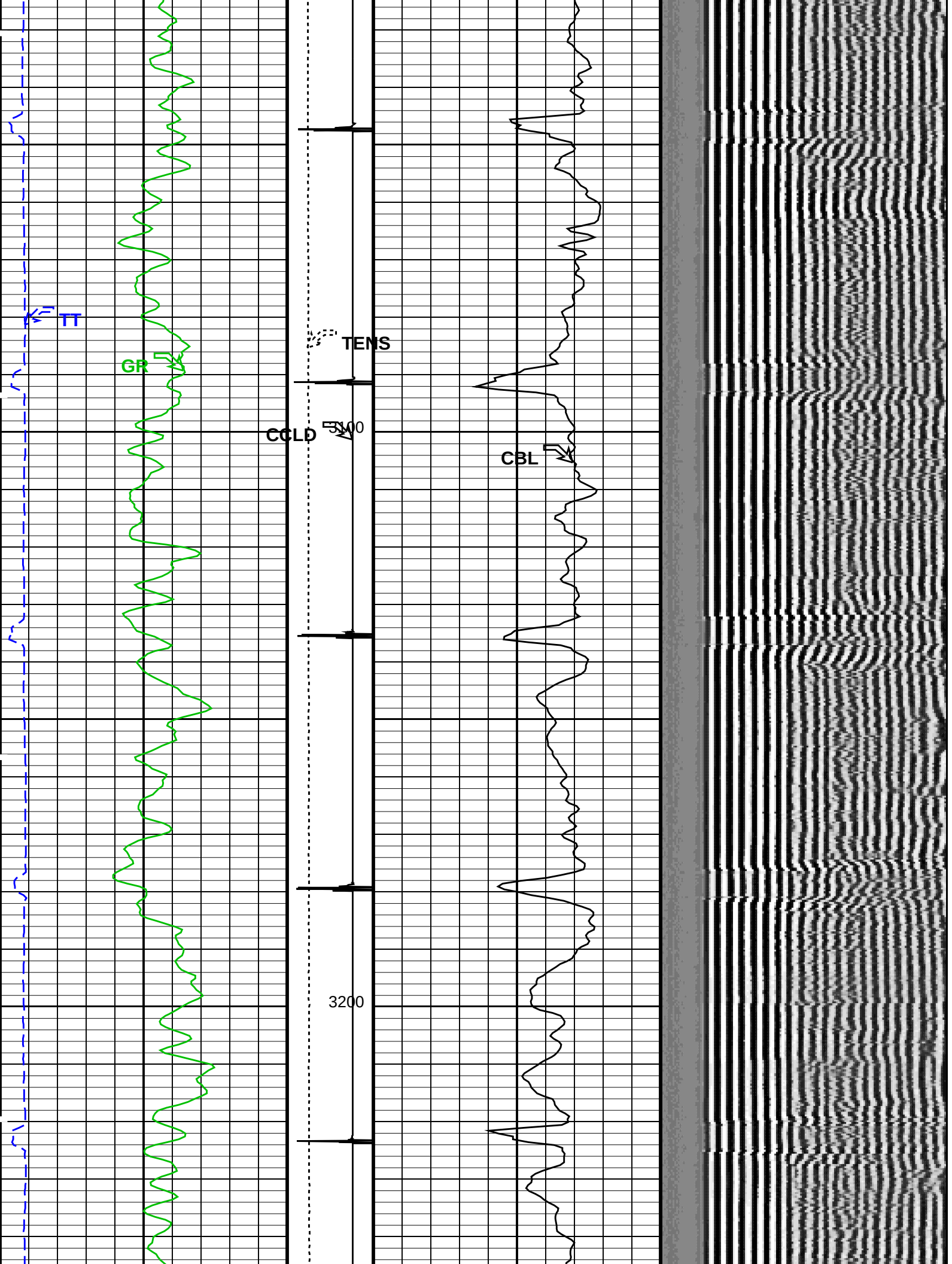
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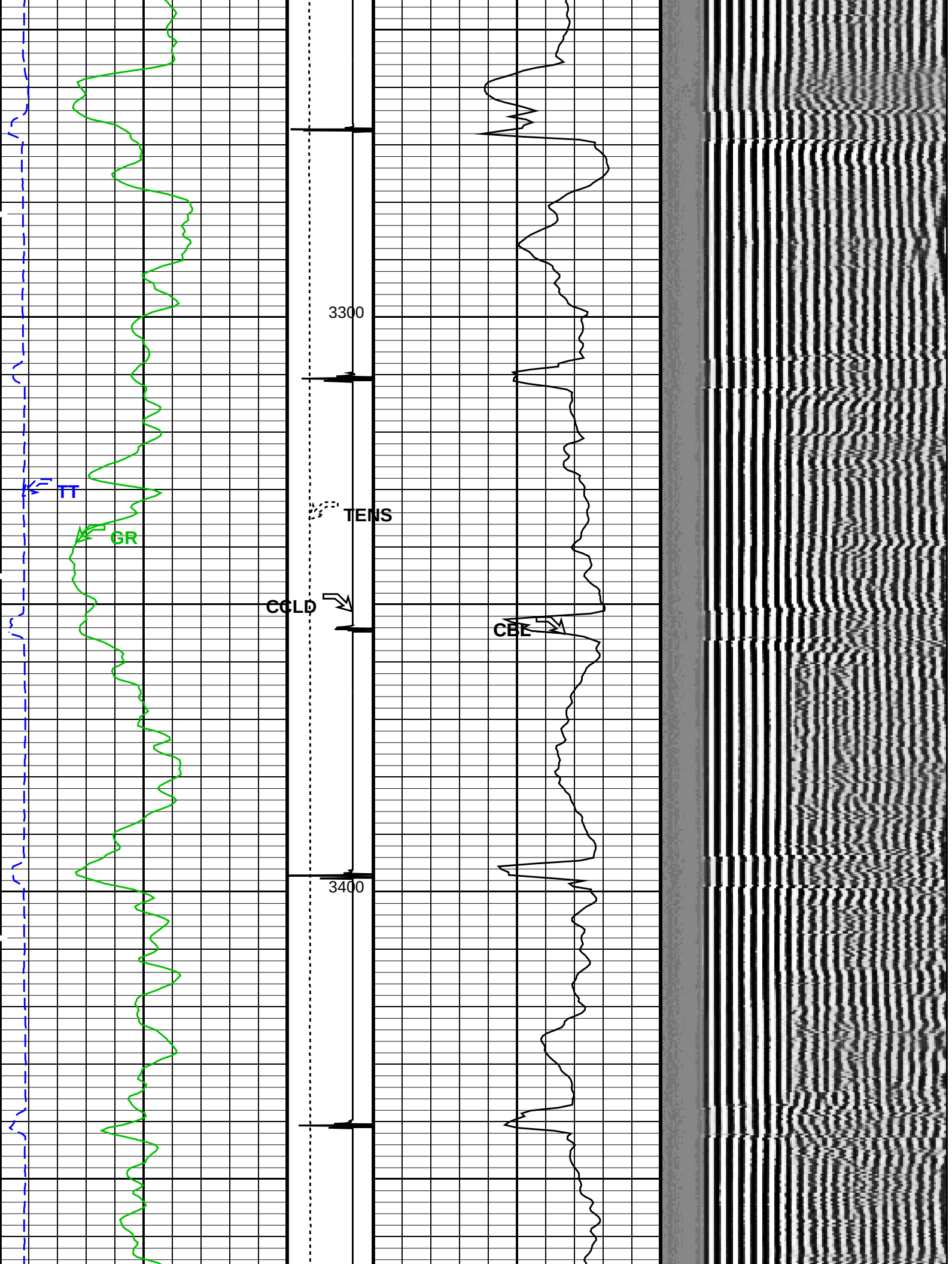
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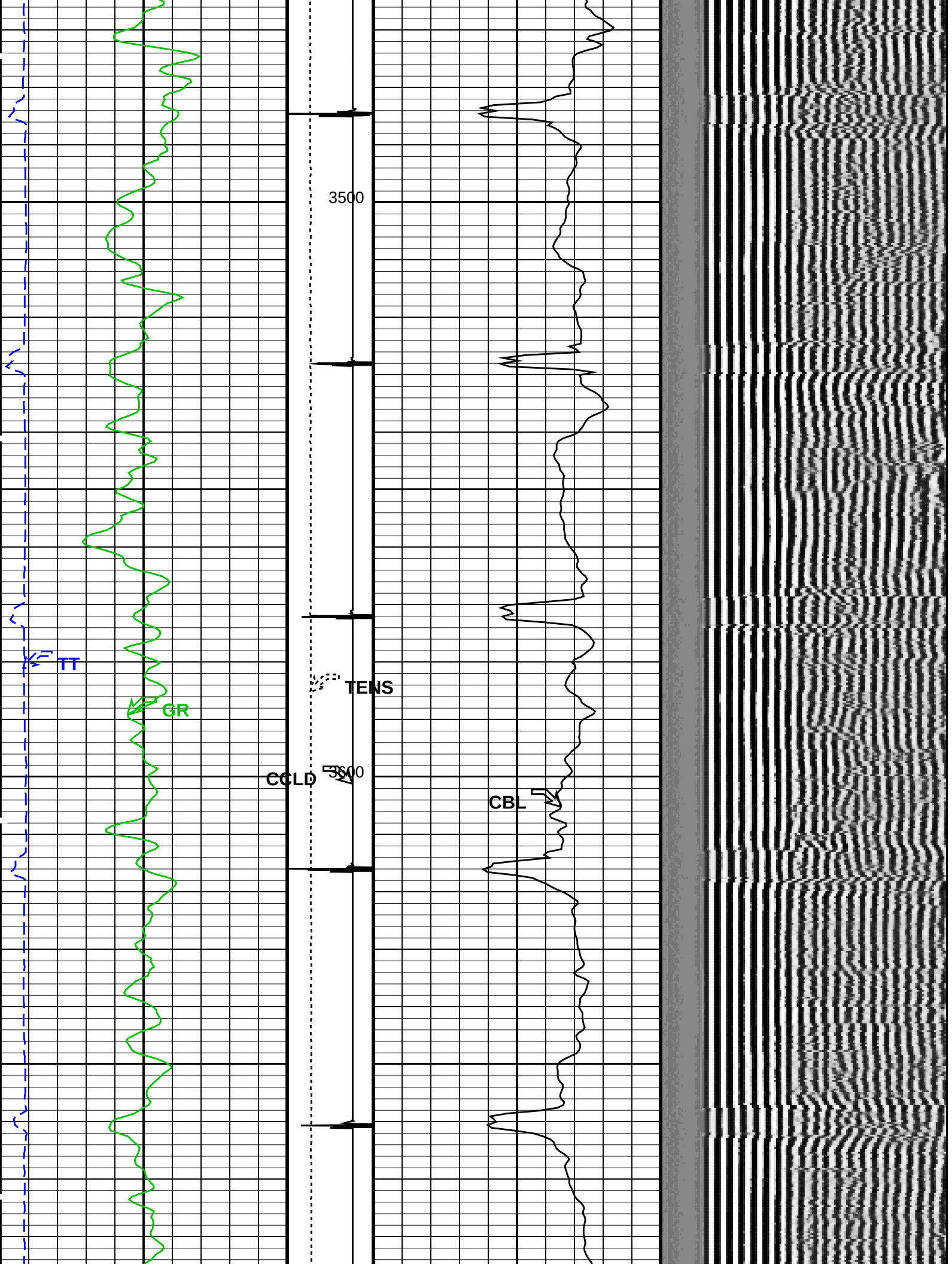
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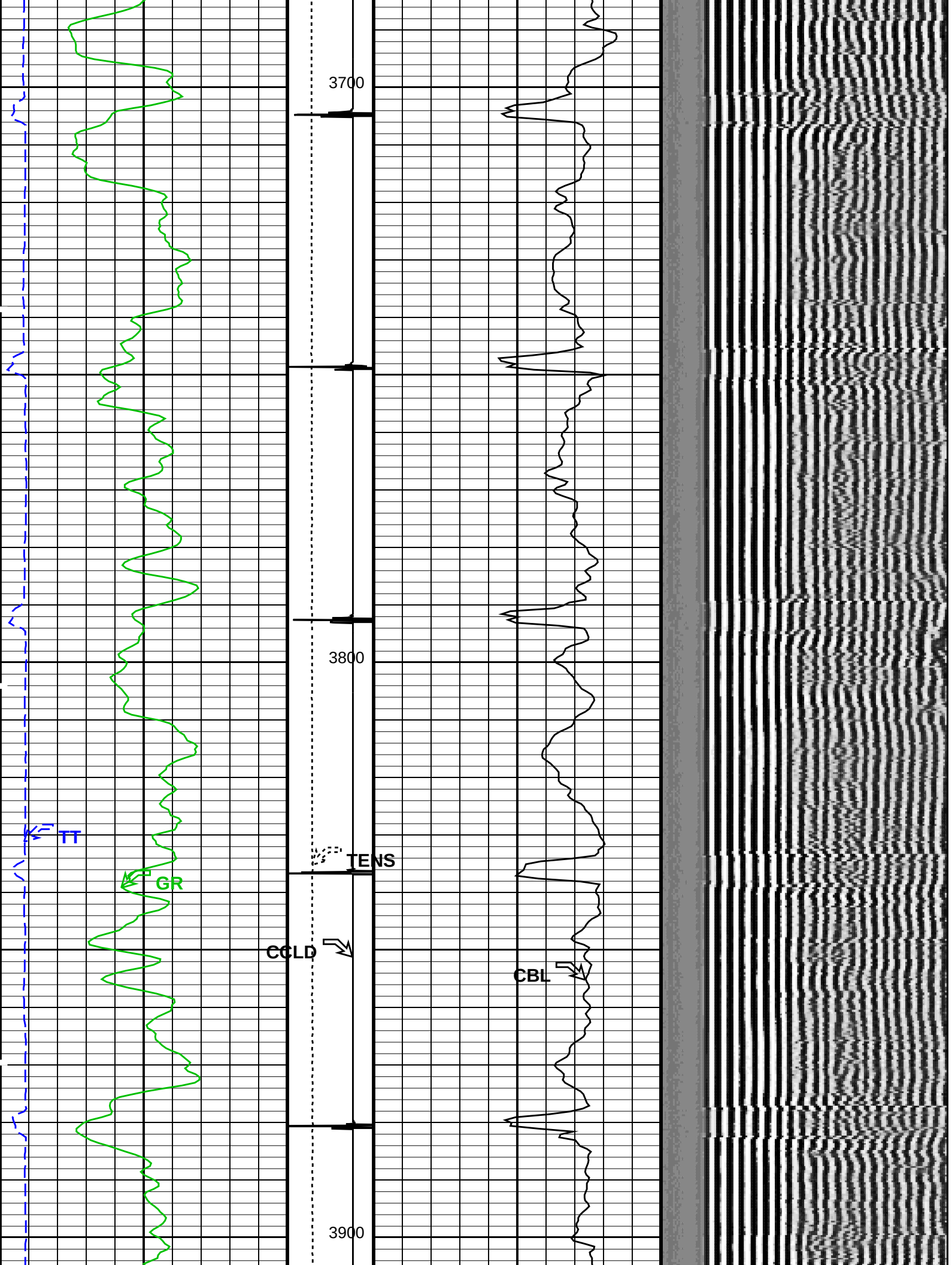
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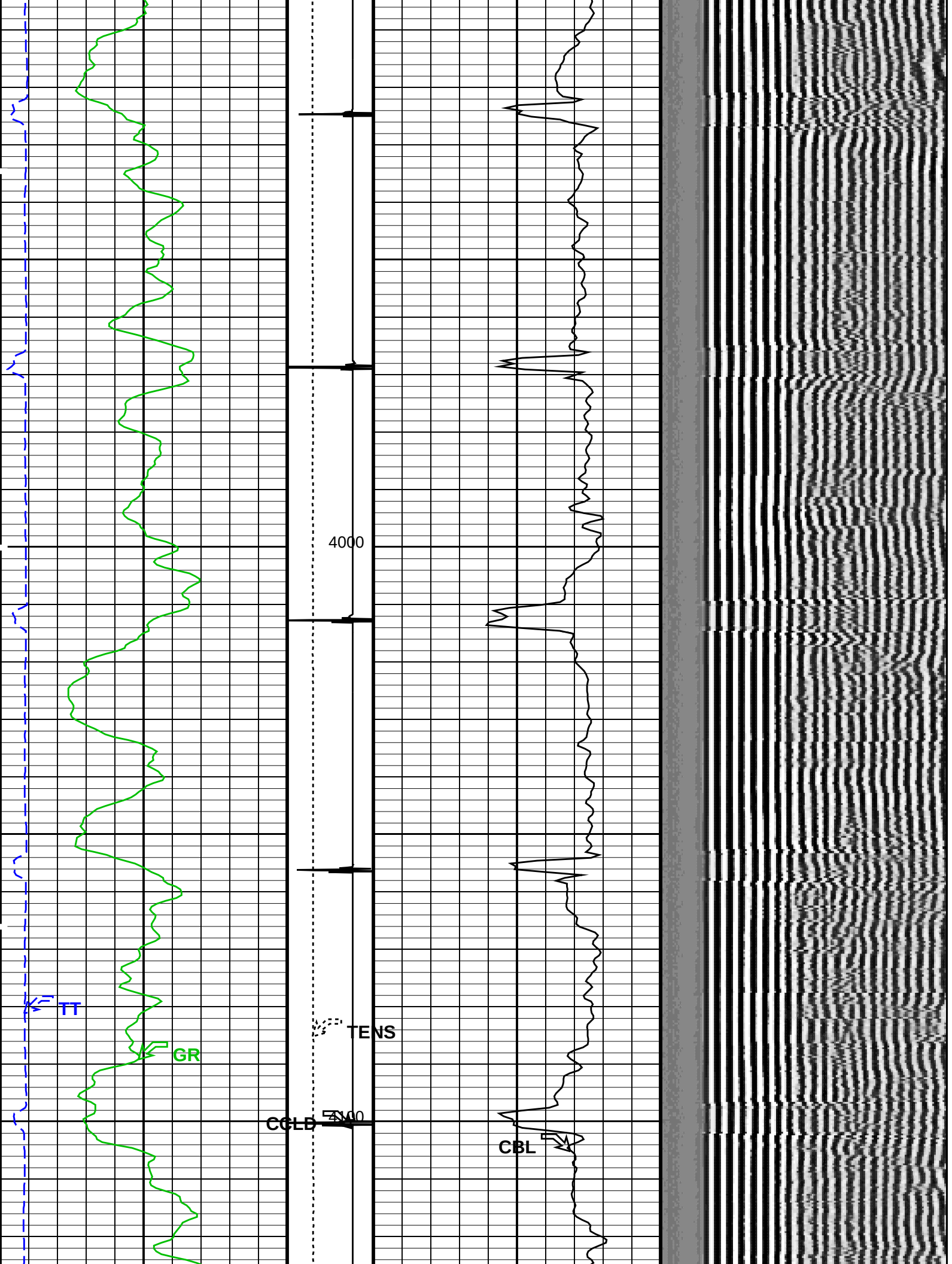
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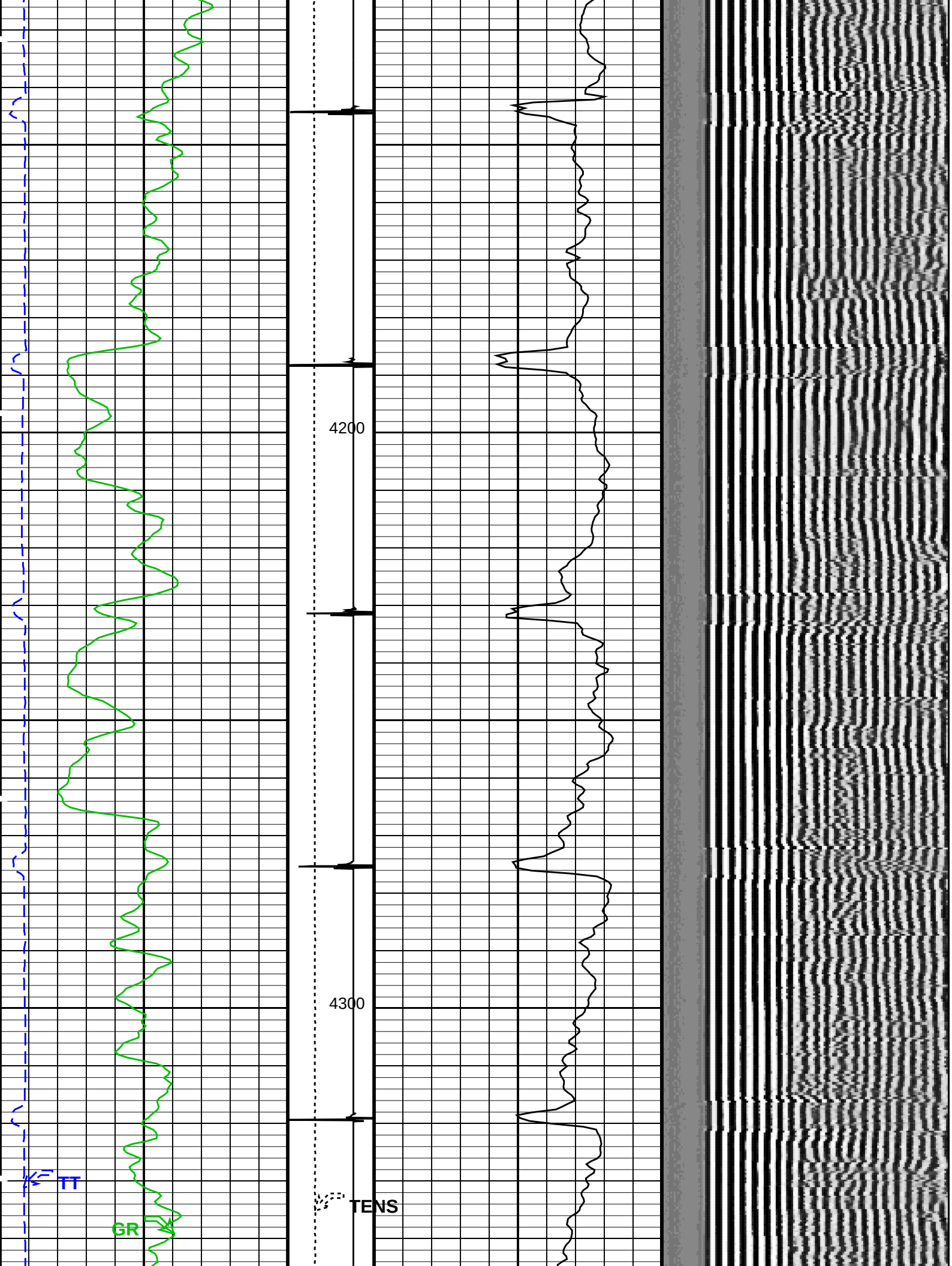
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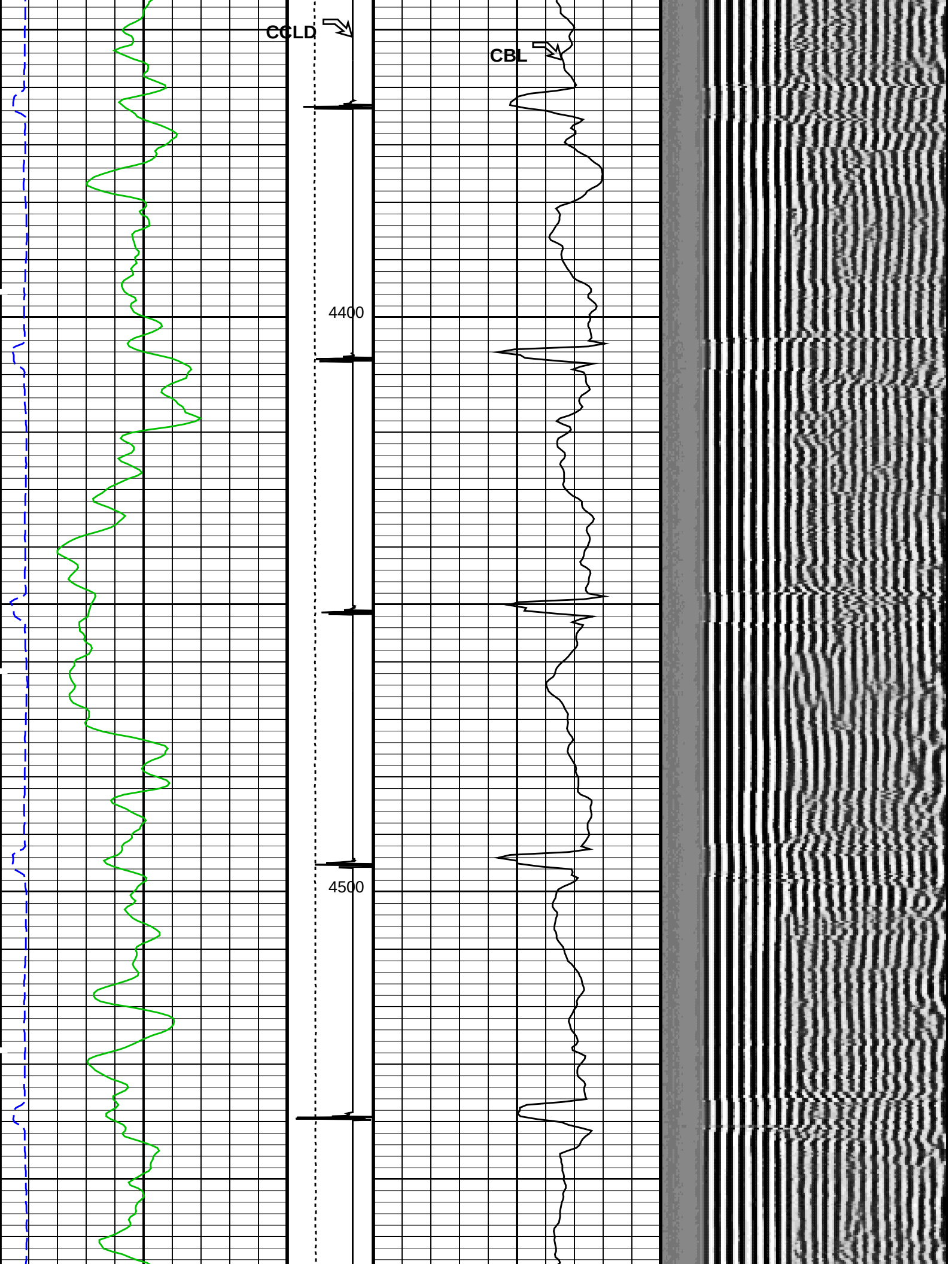
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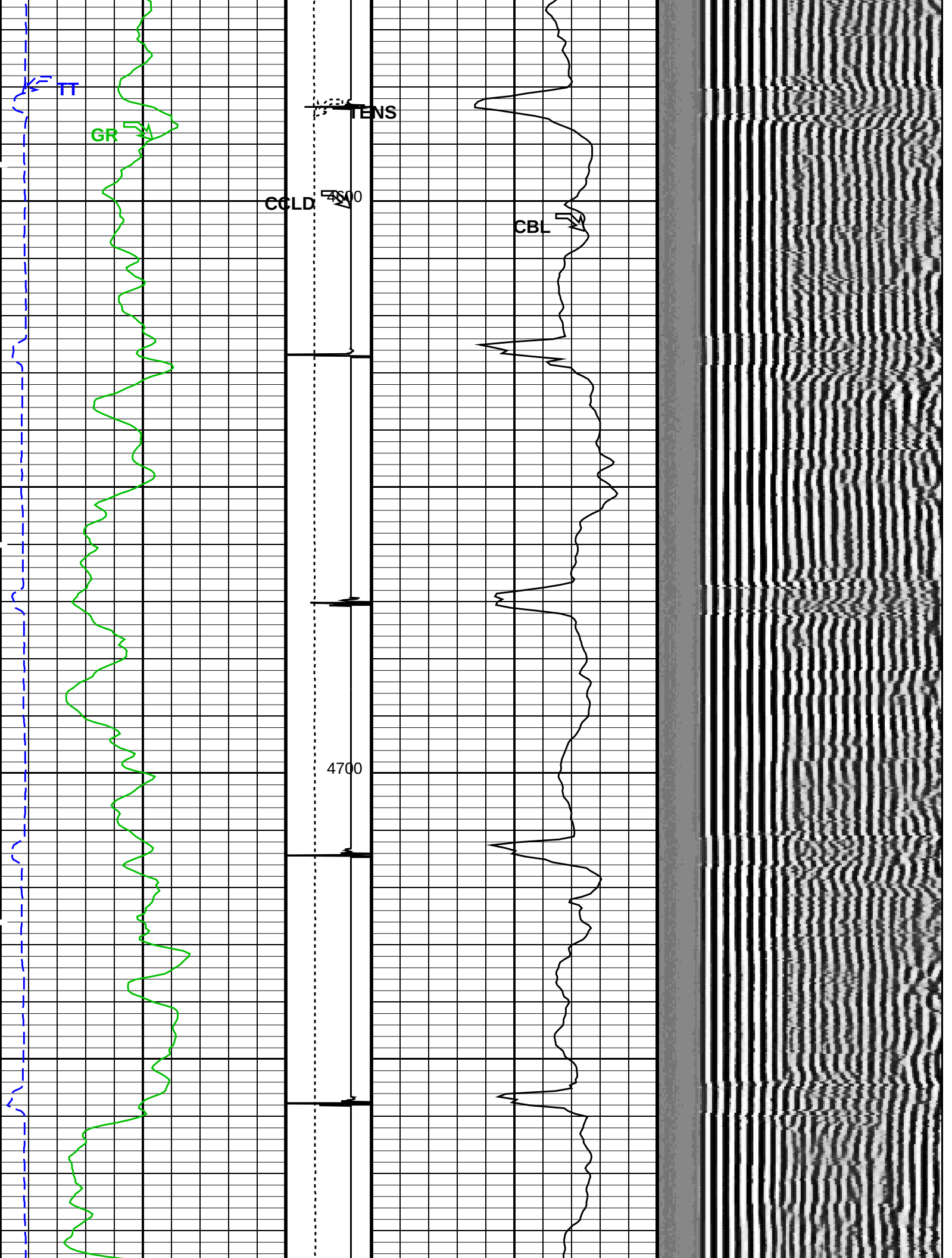
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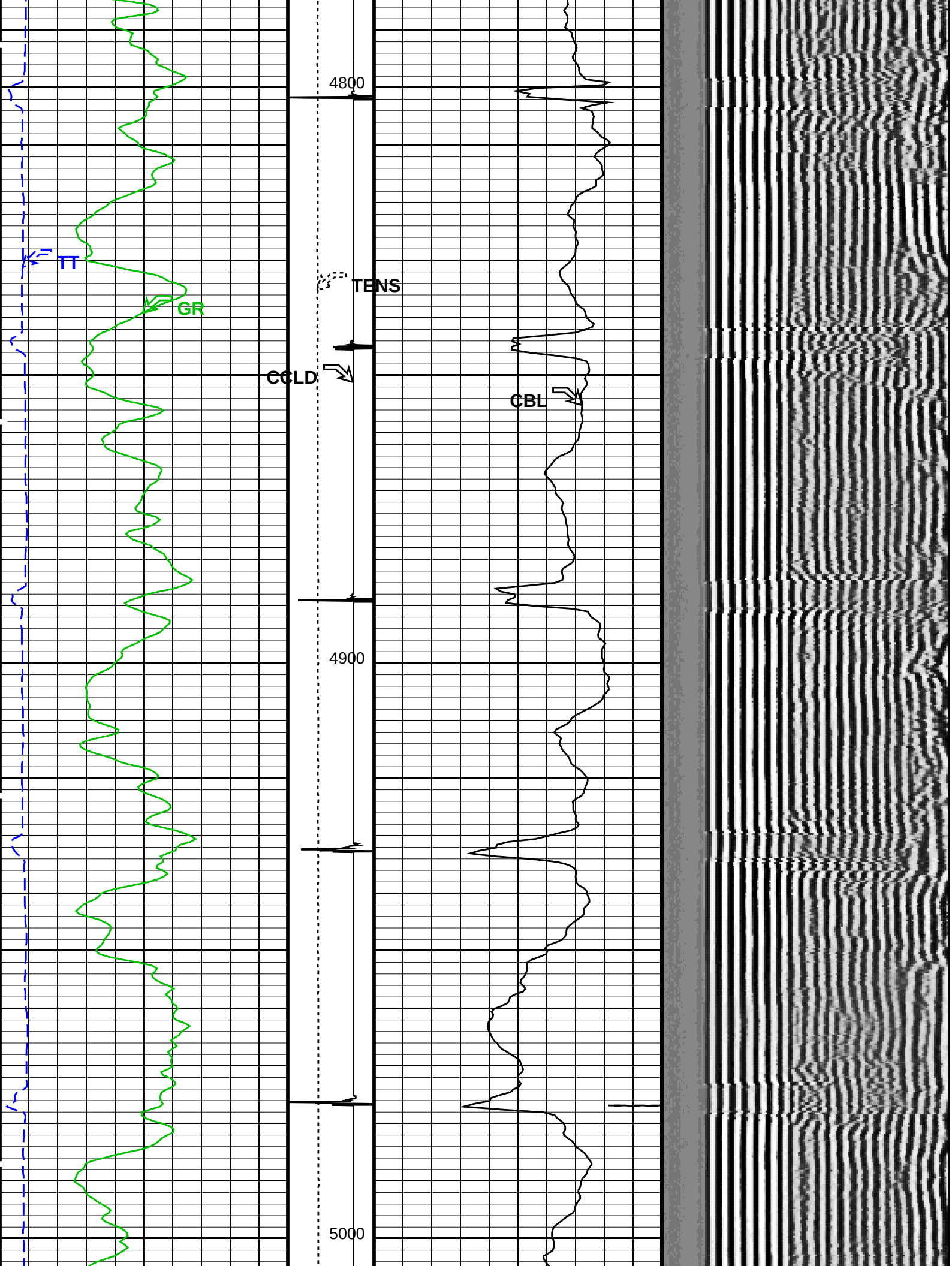
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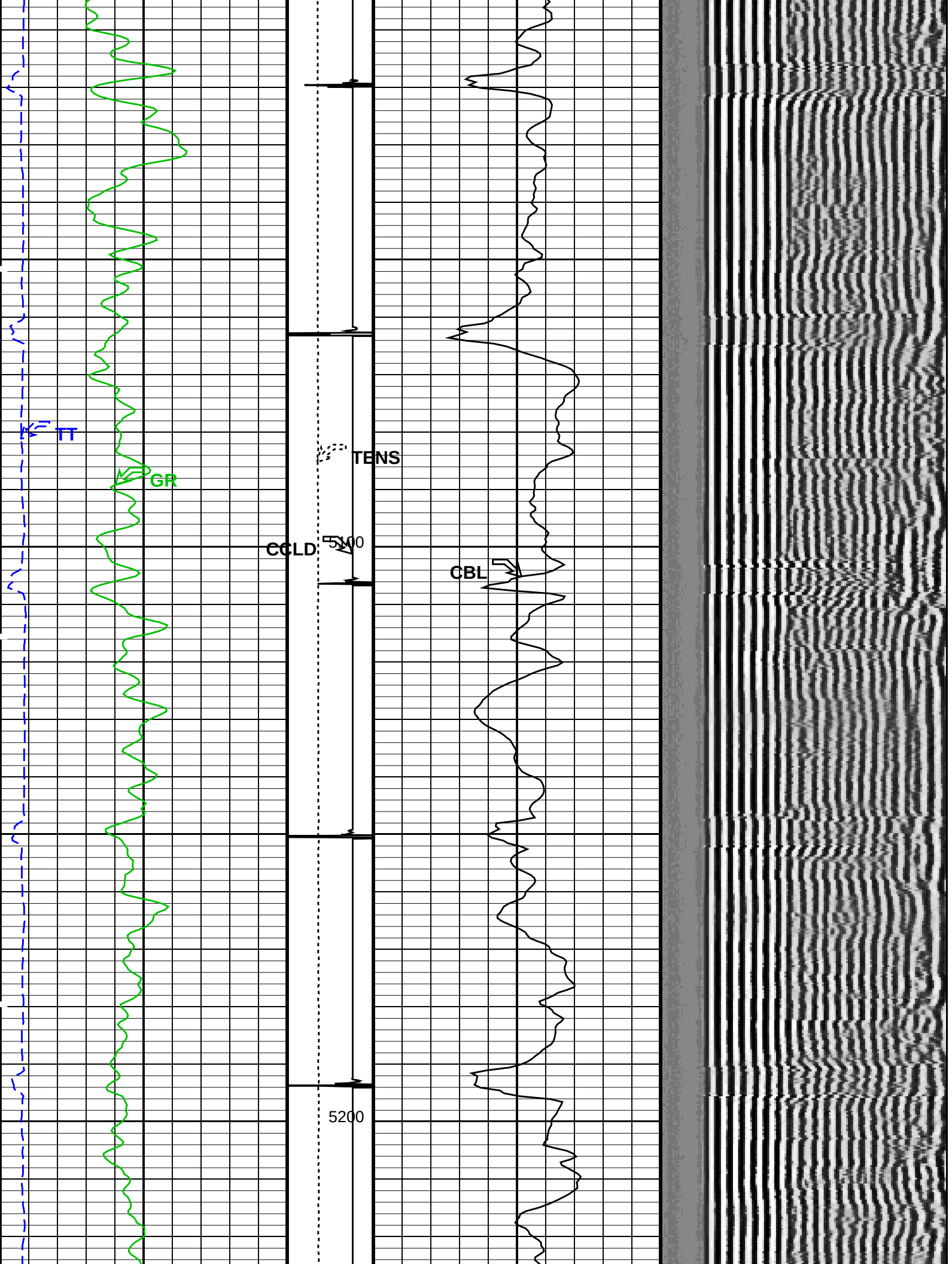
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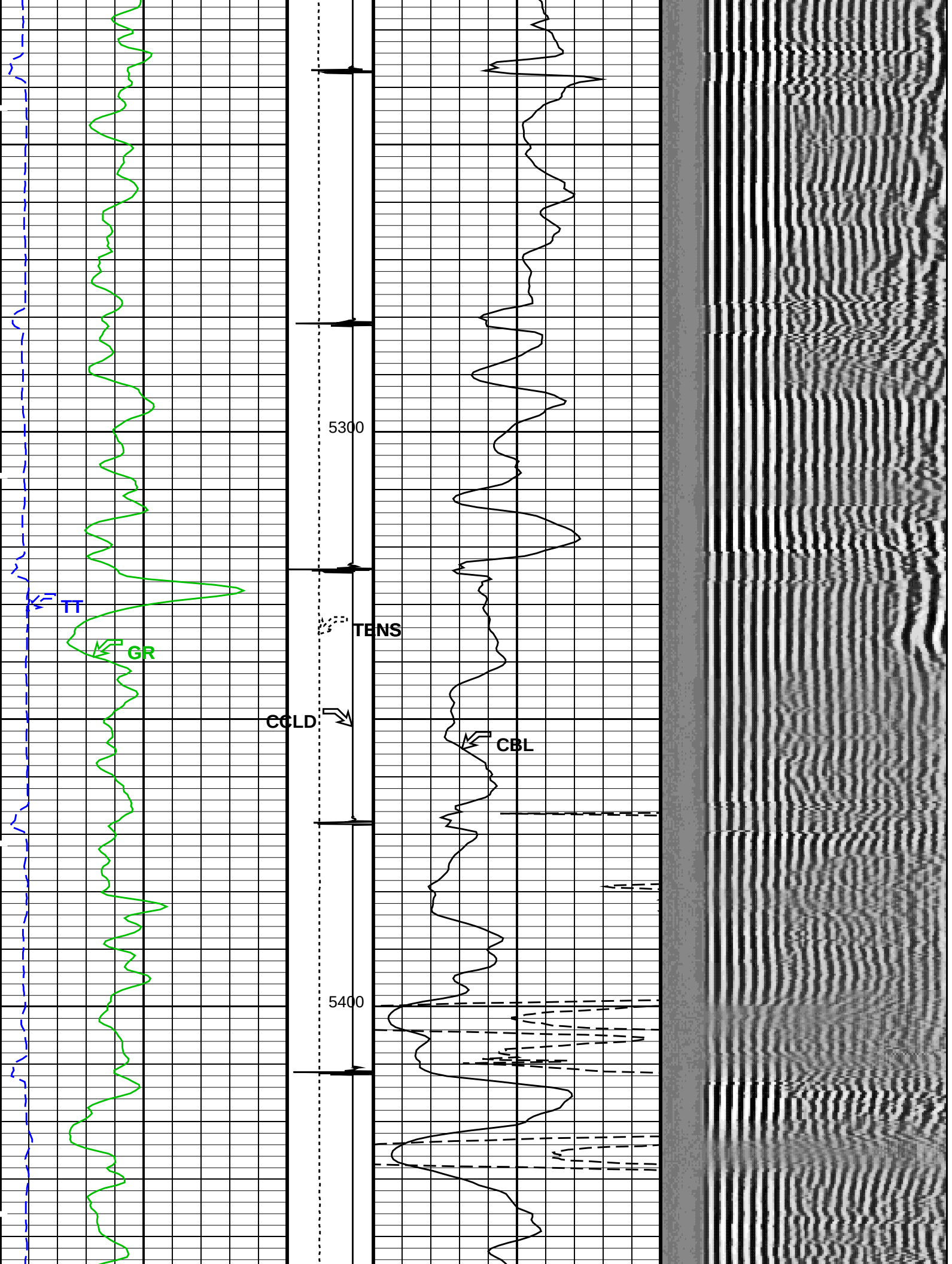
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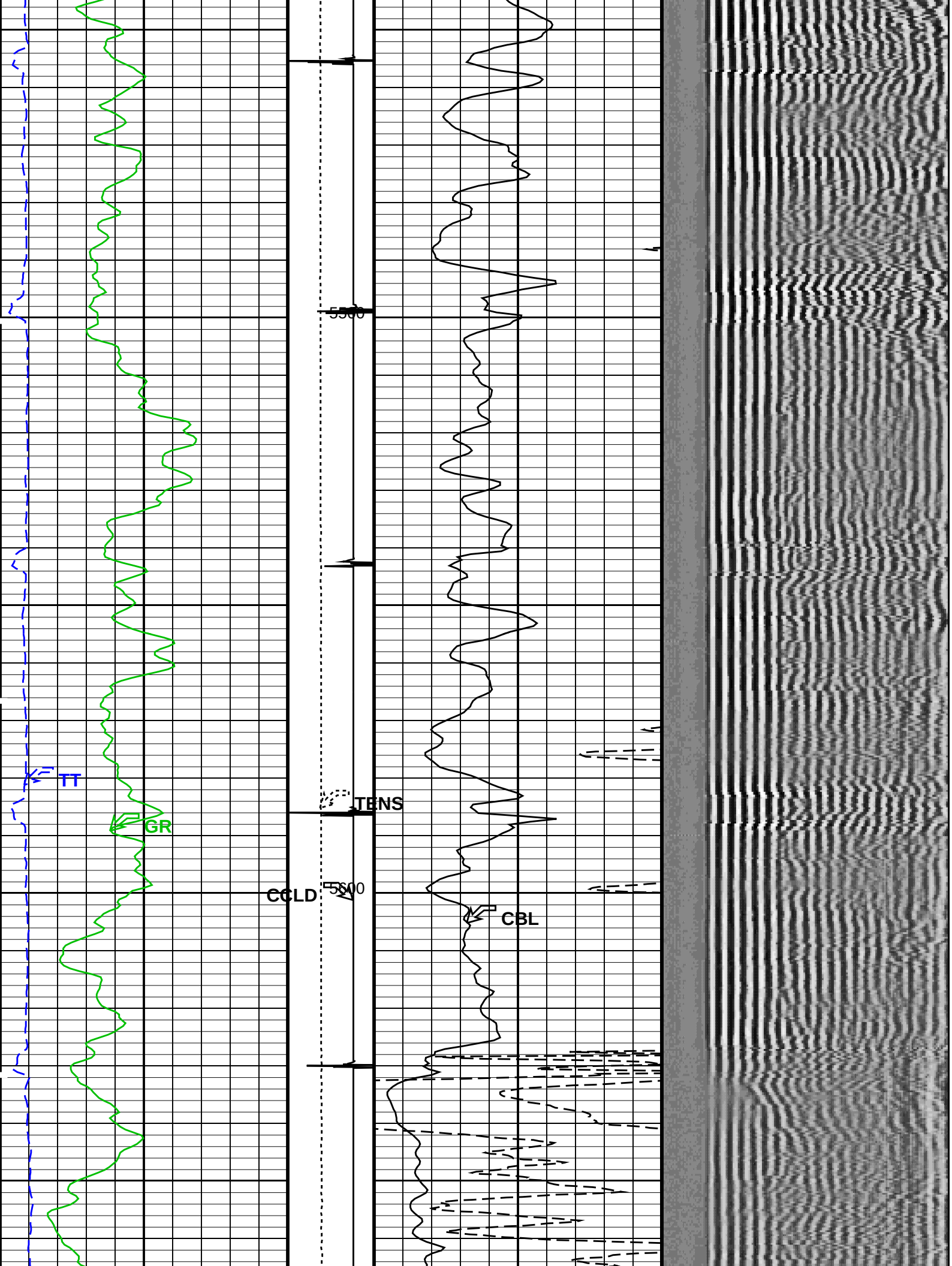
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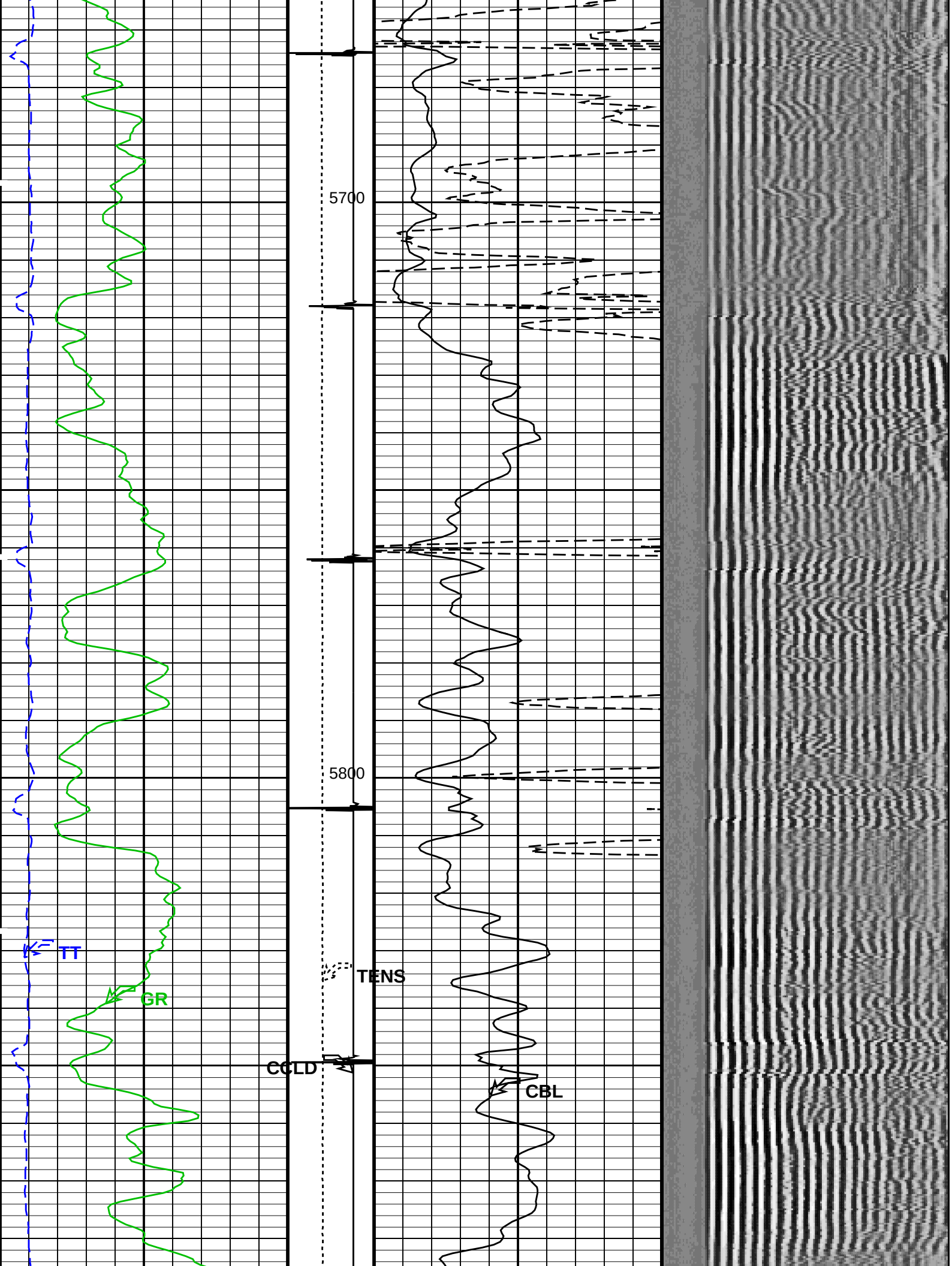
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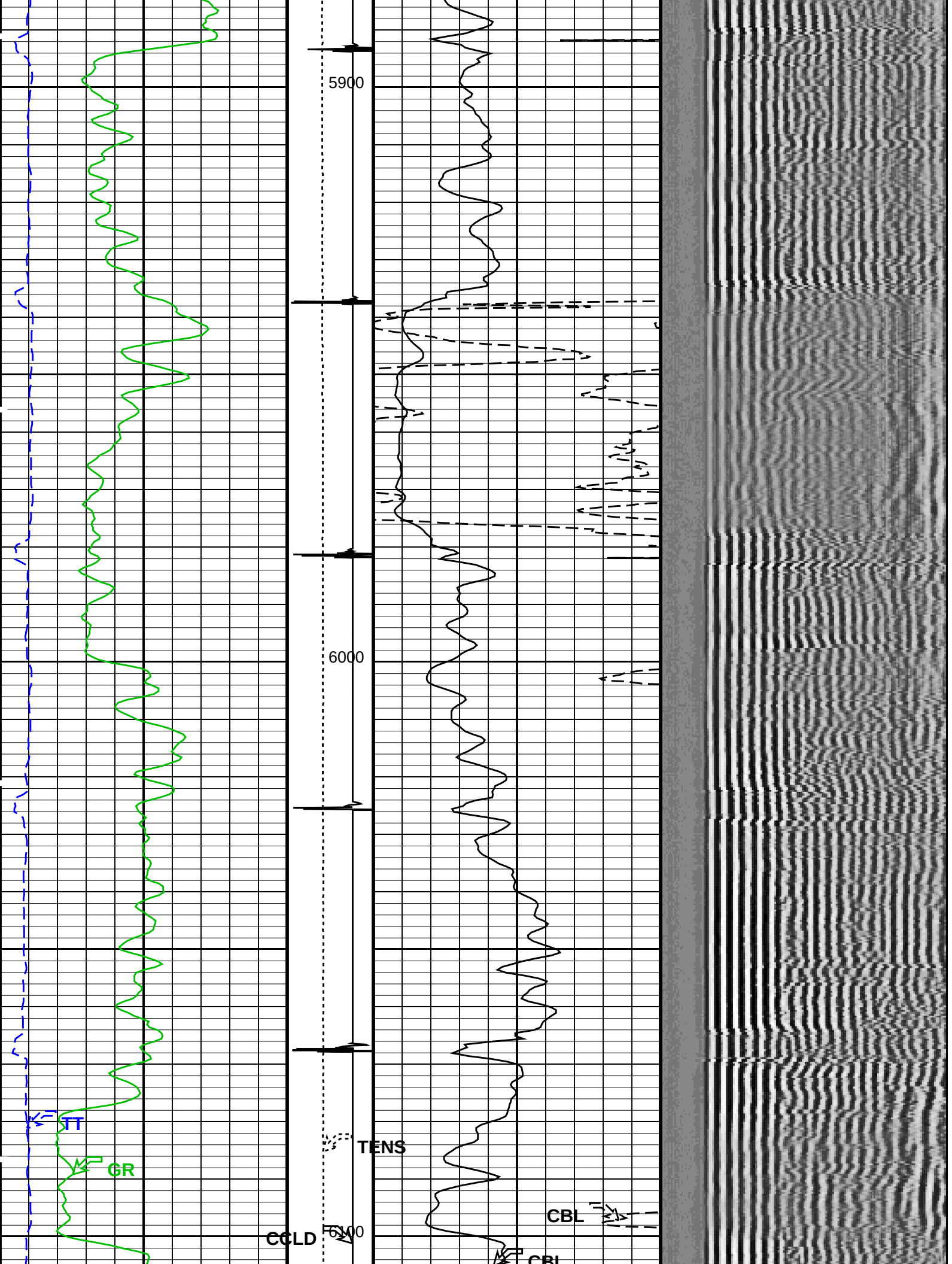
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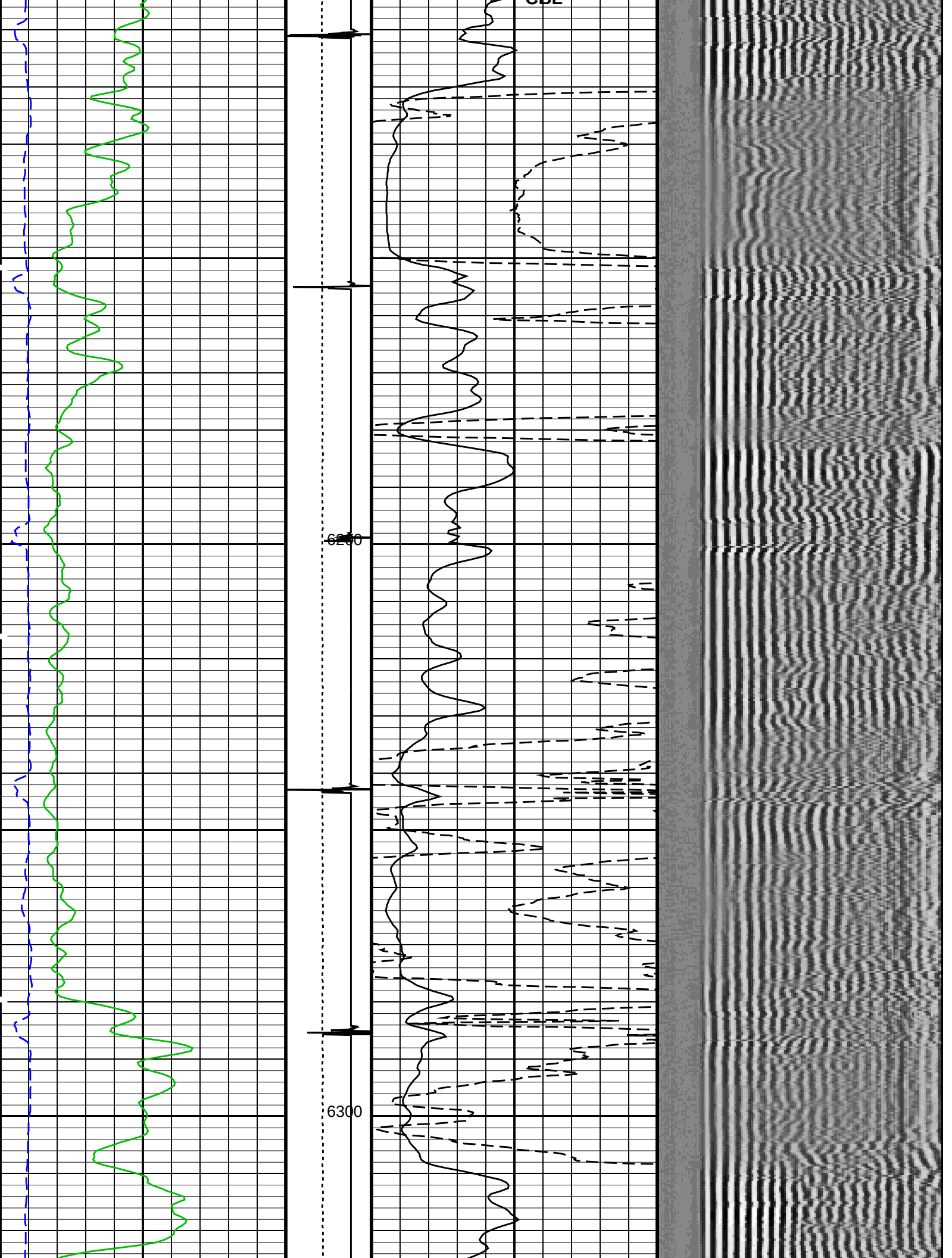
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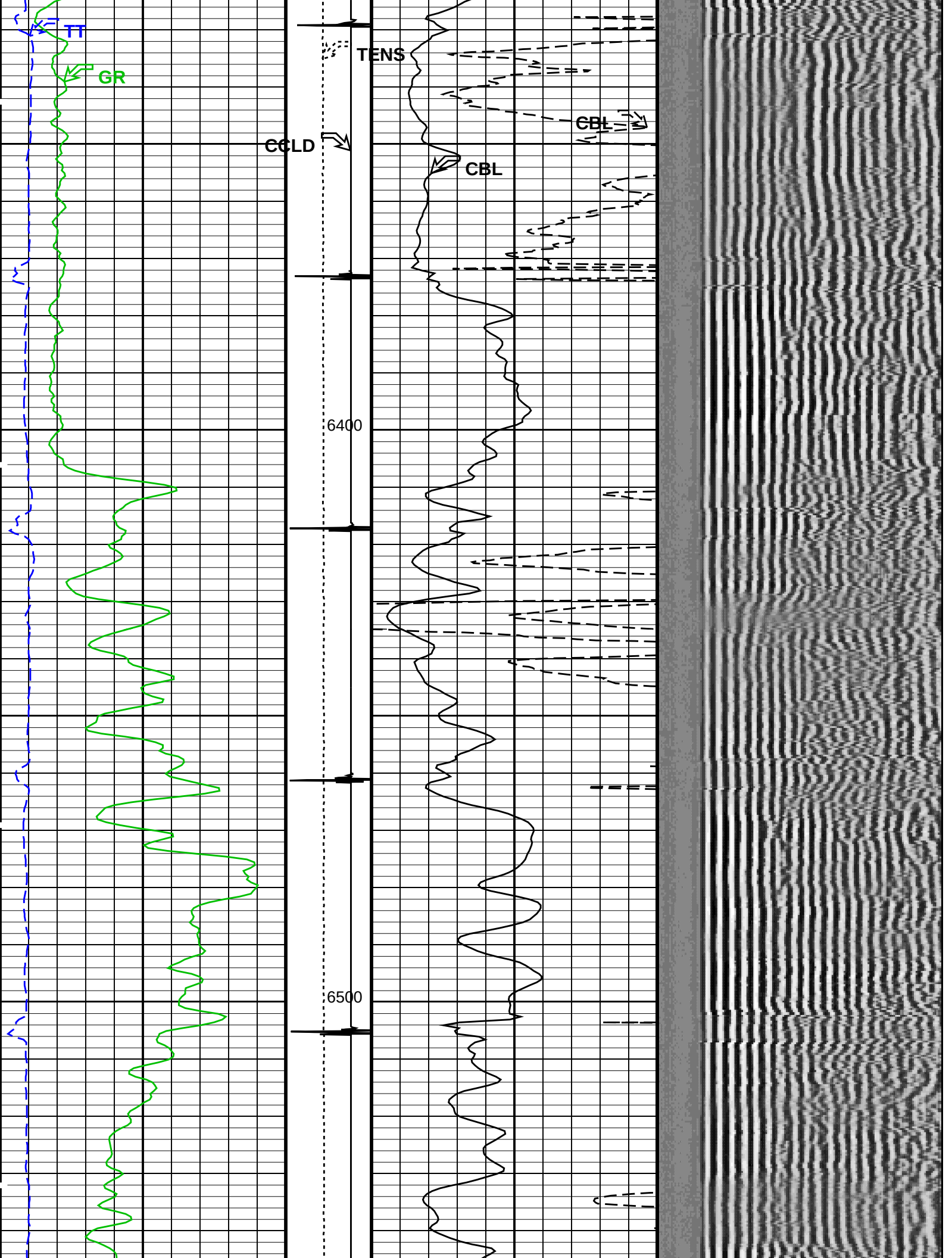
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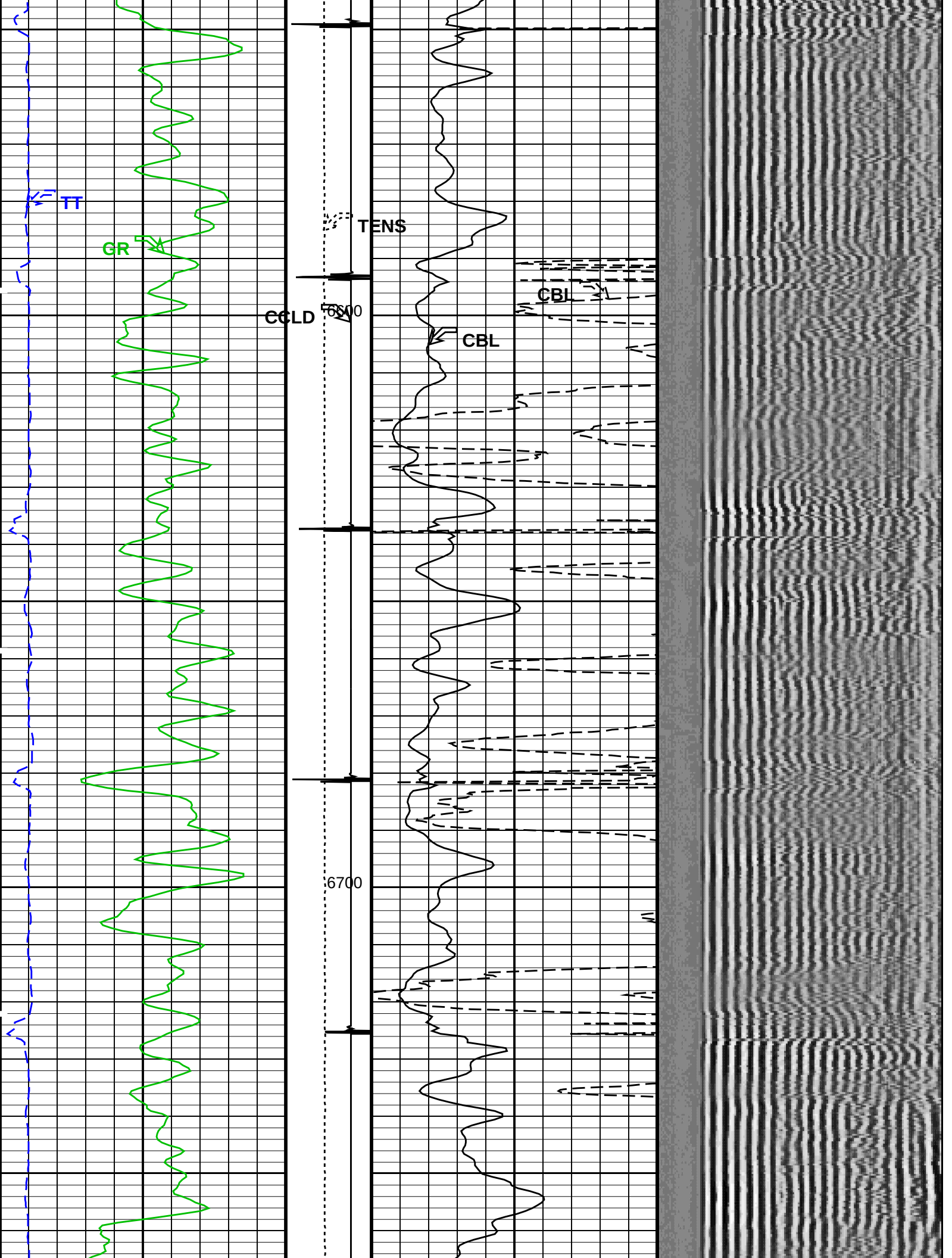
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TEN$
CCLD
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CBL
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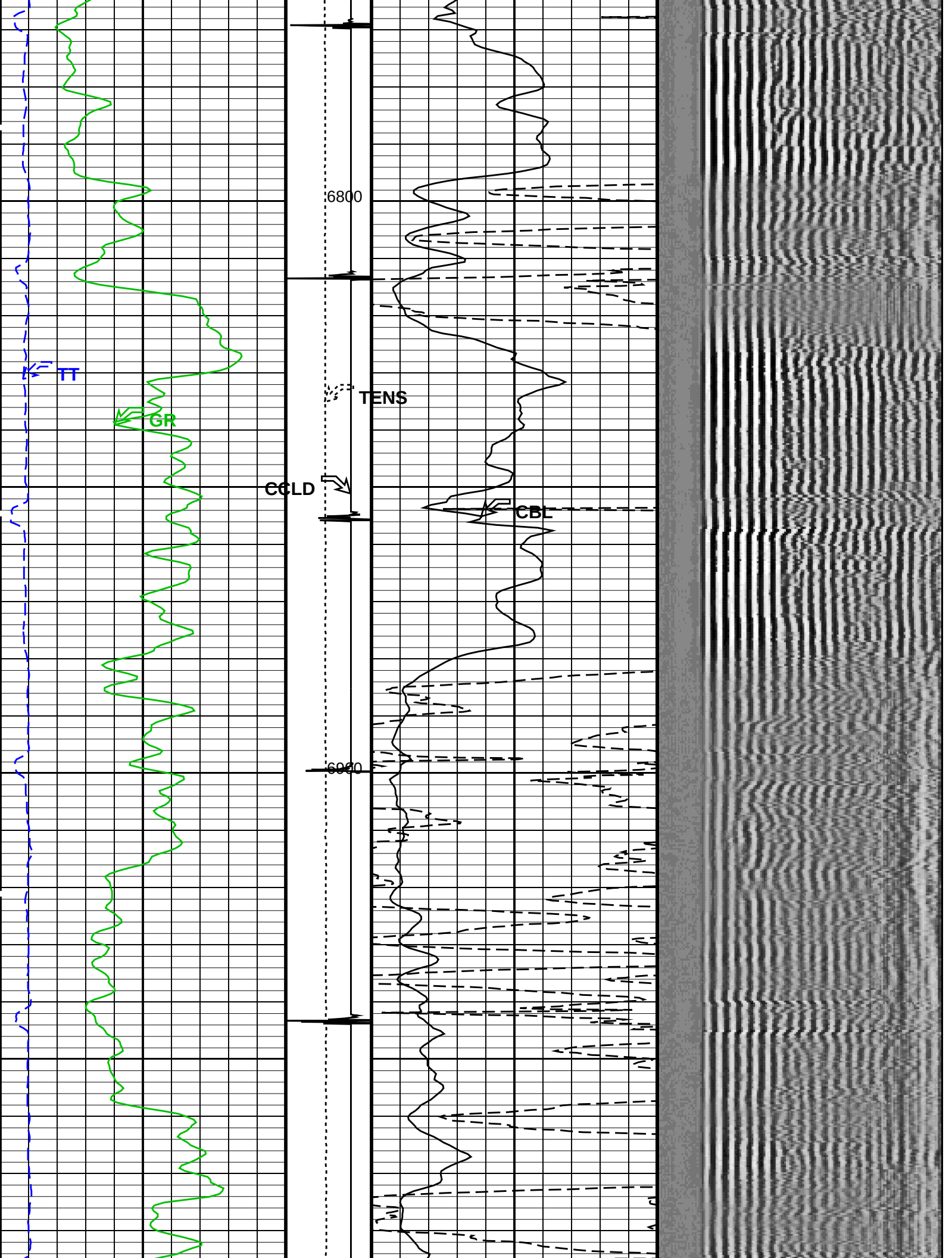
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TENS
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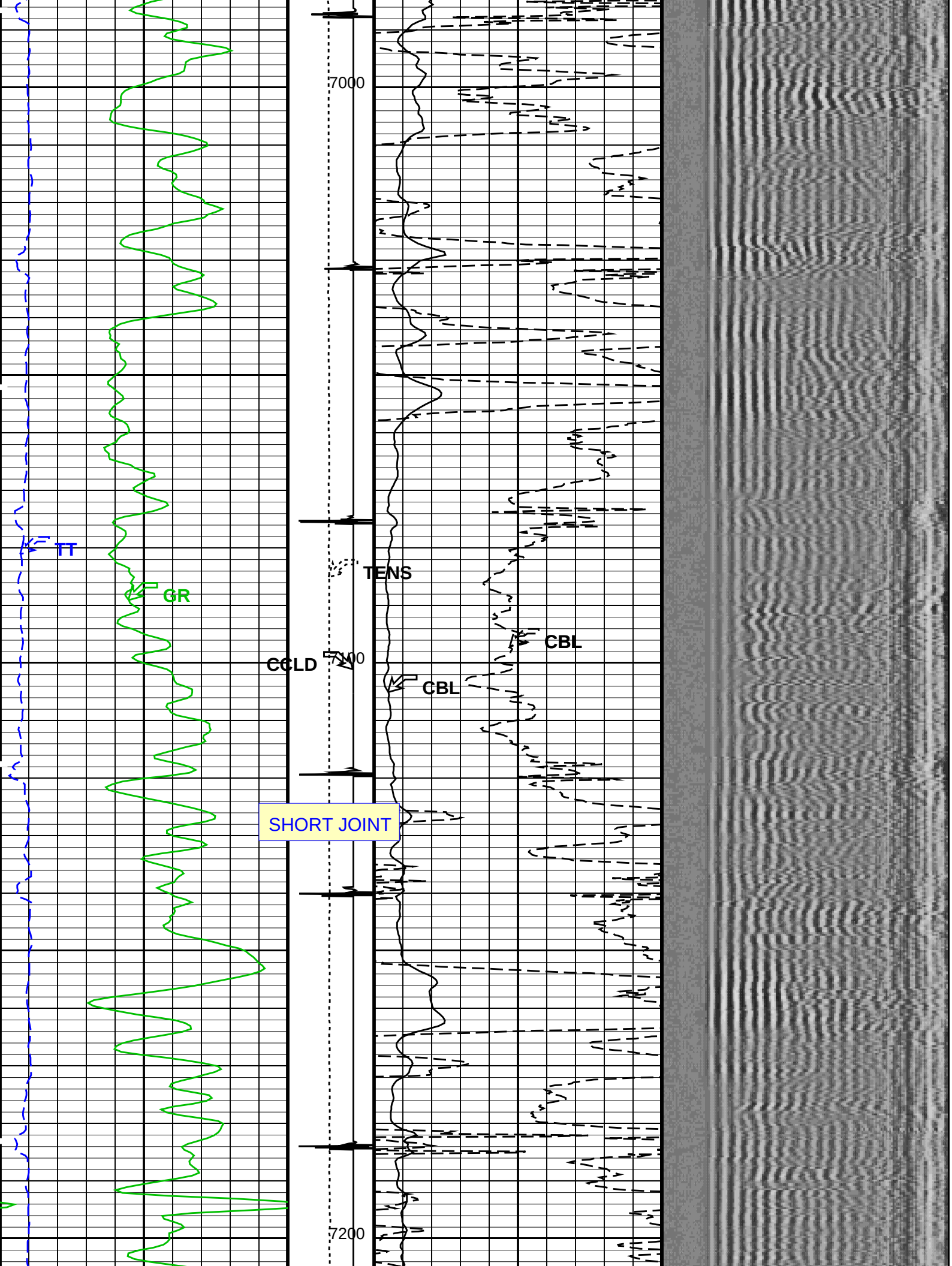
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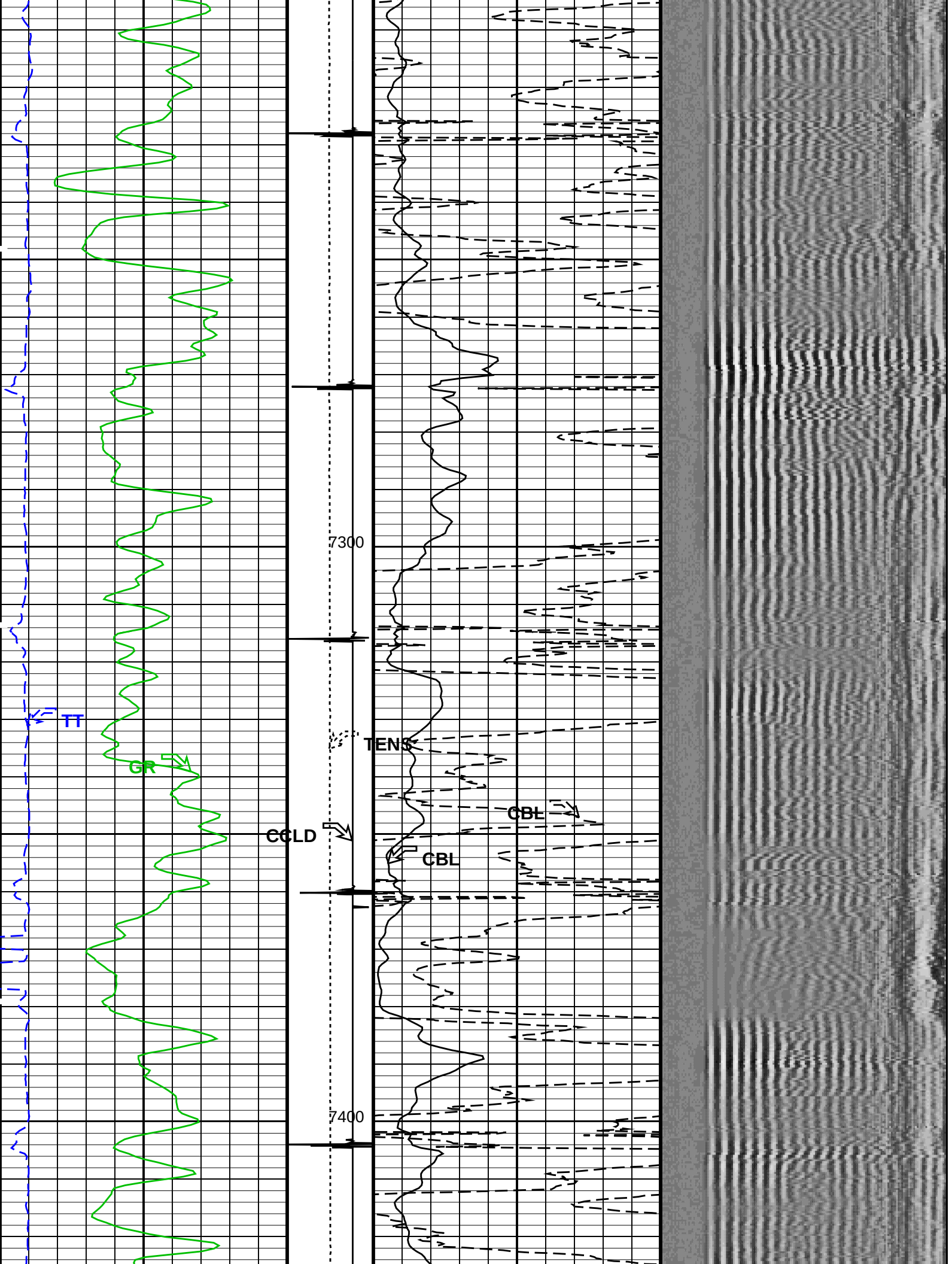
SHORT JOINT
7200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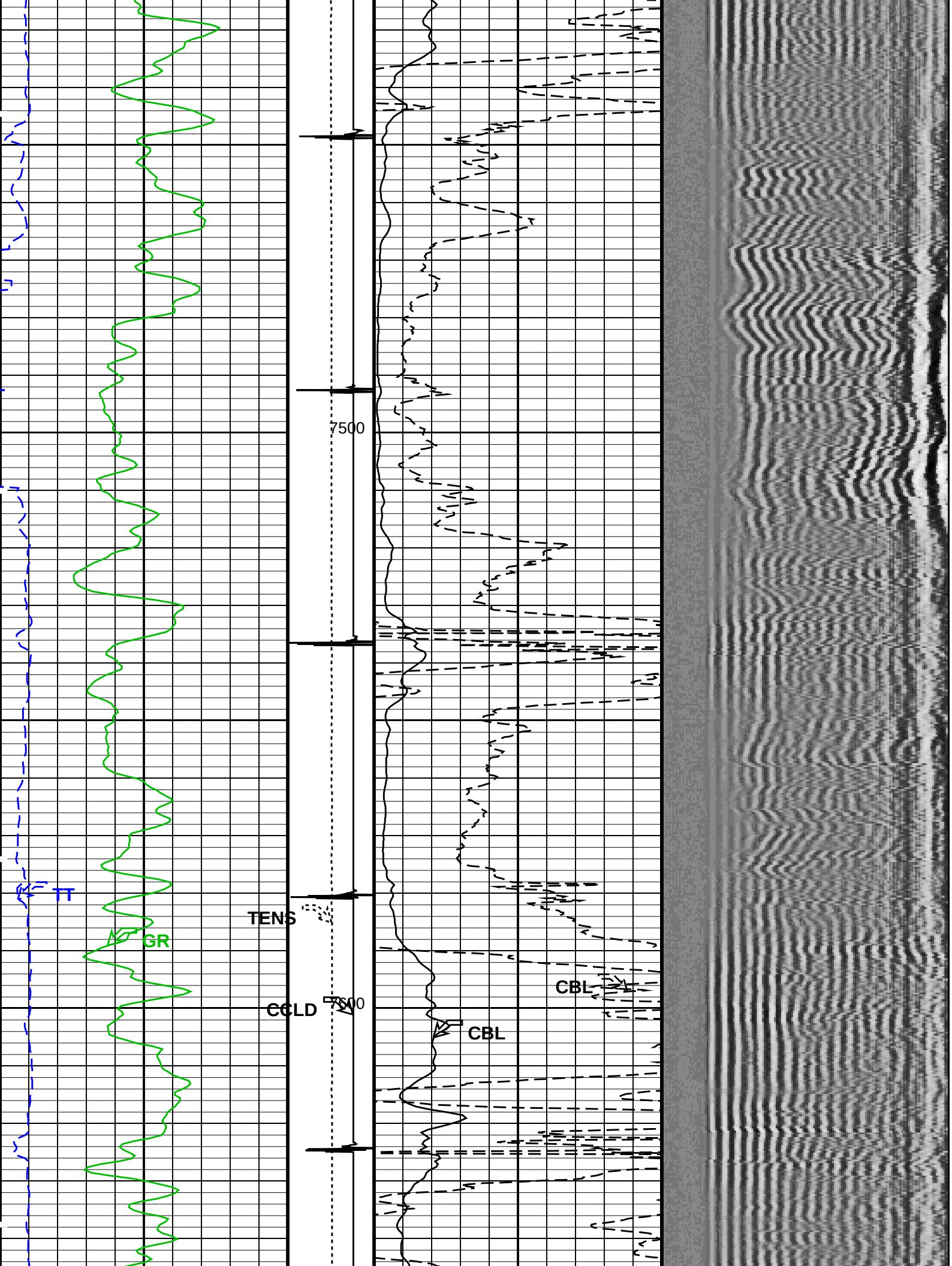
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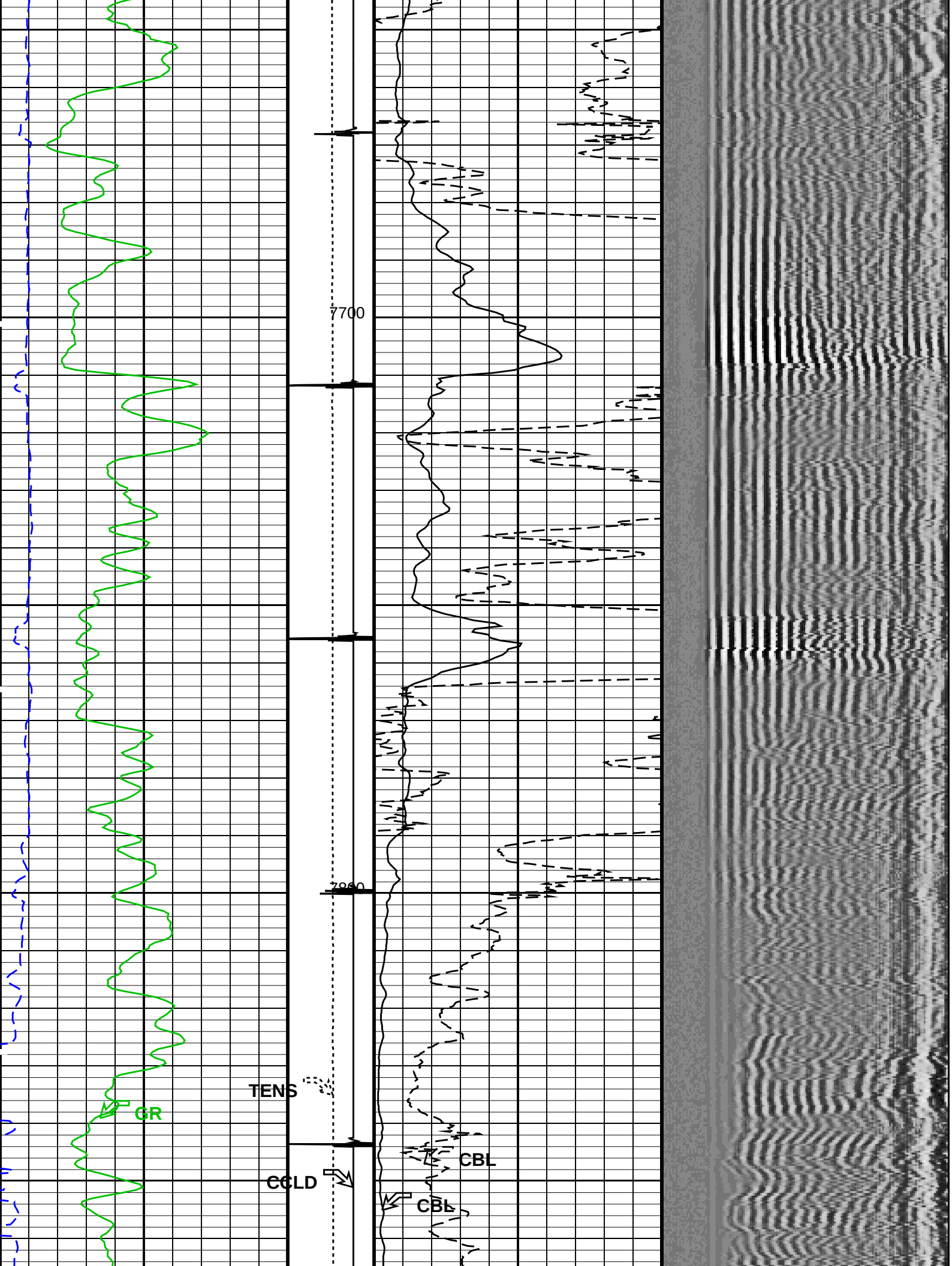
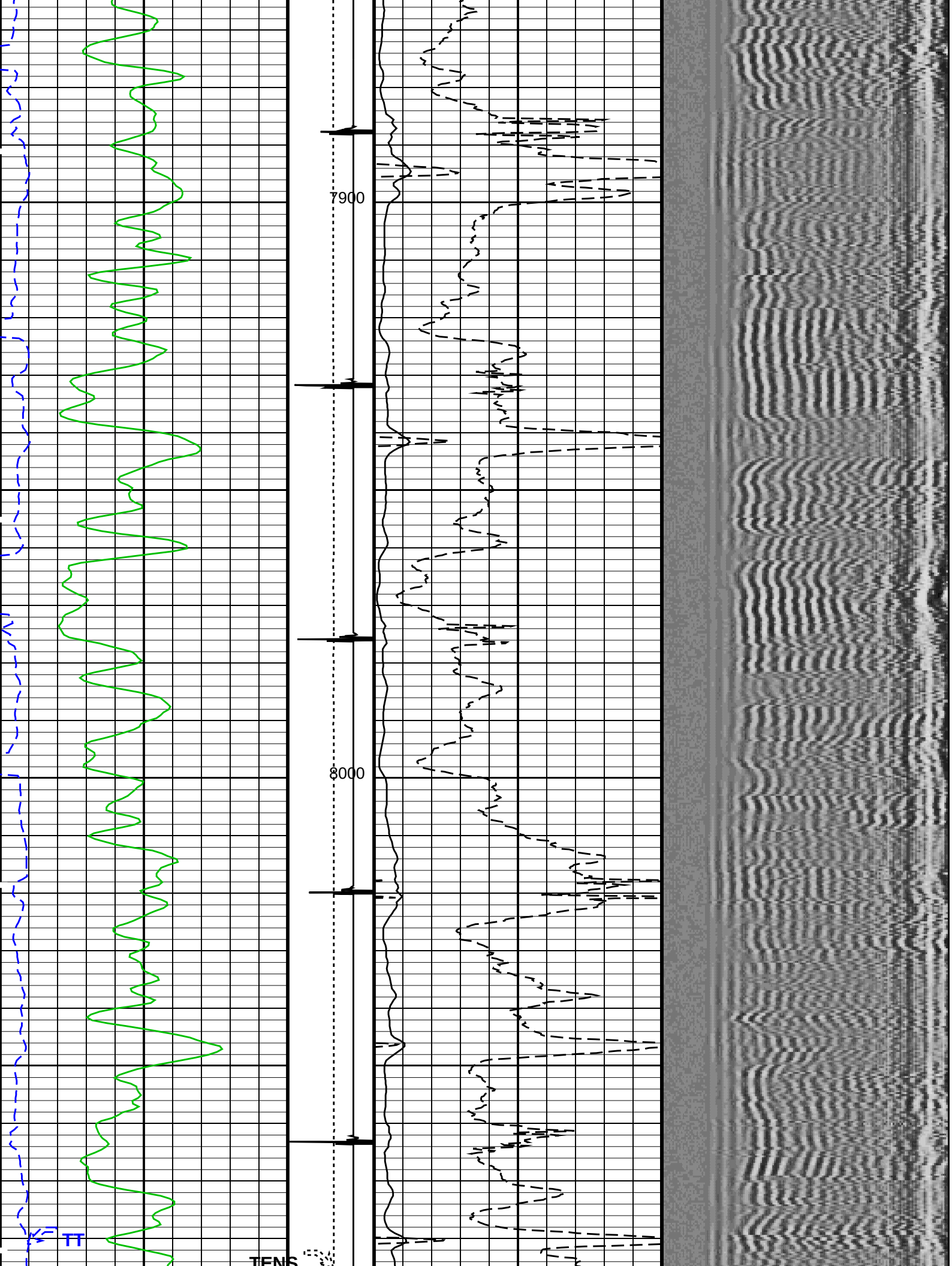
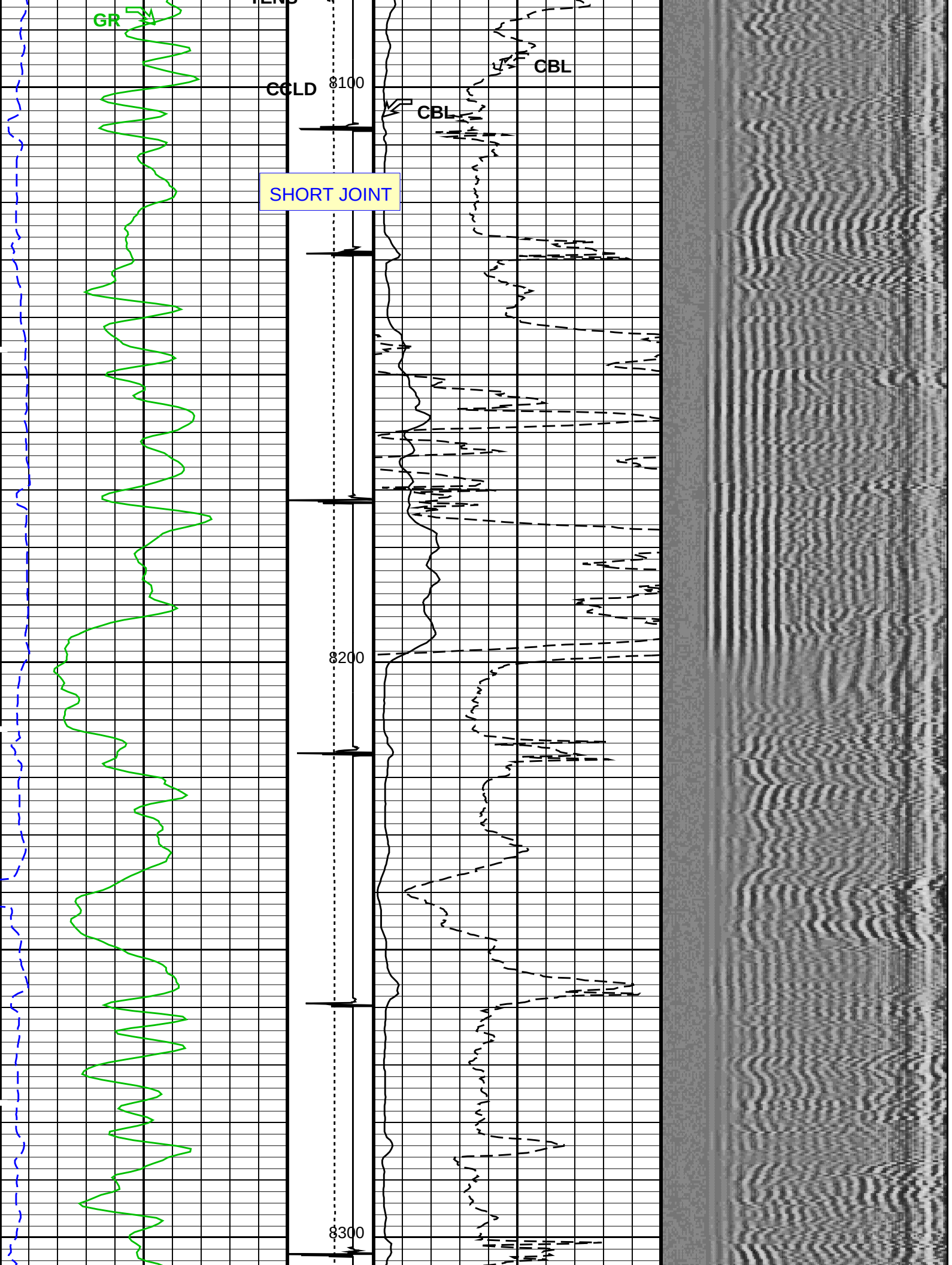
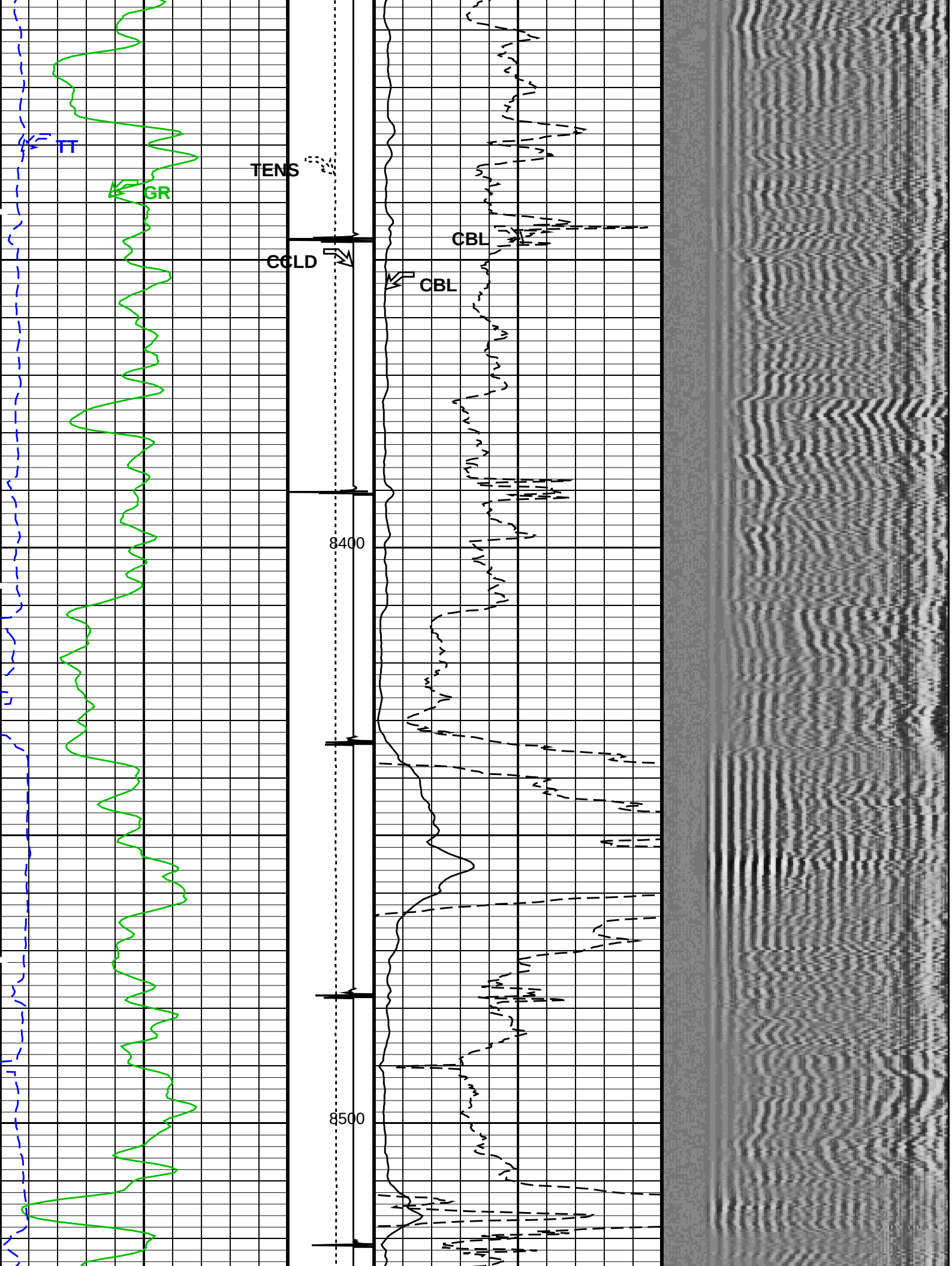
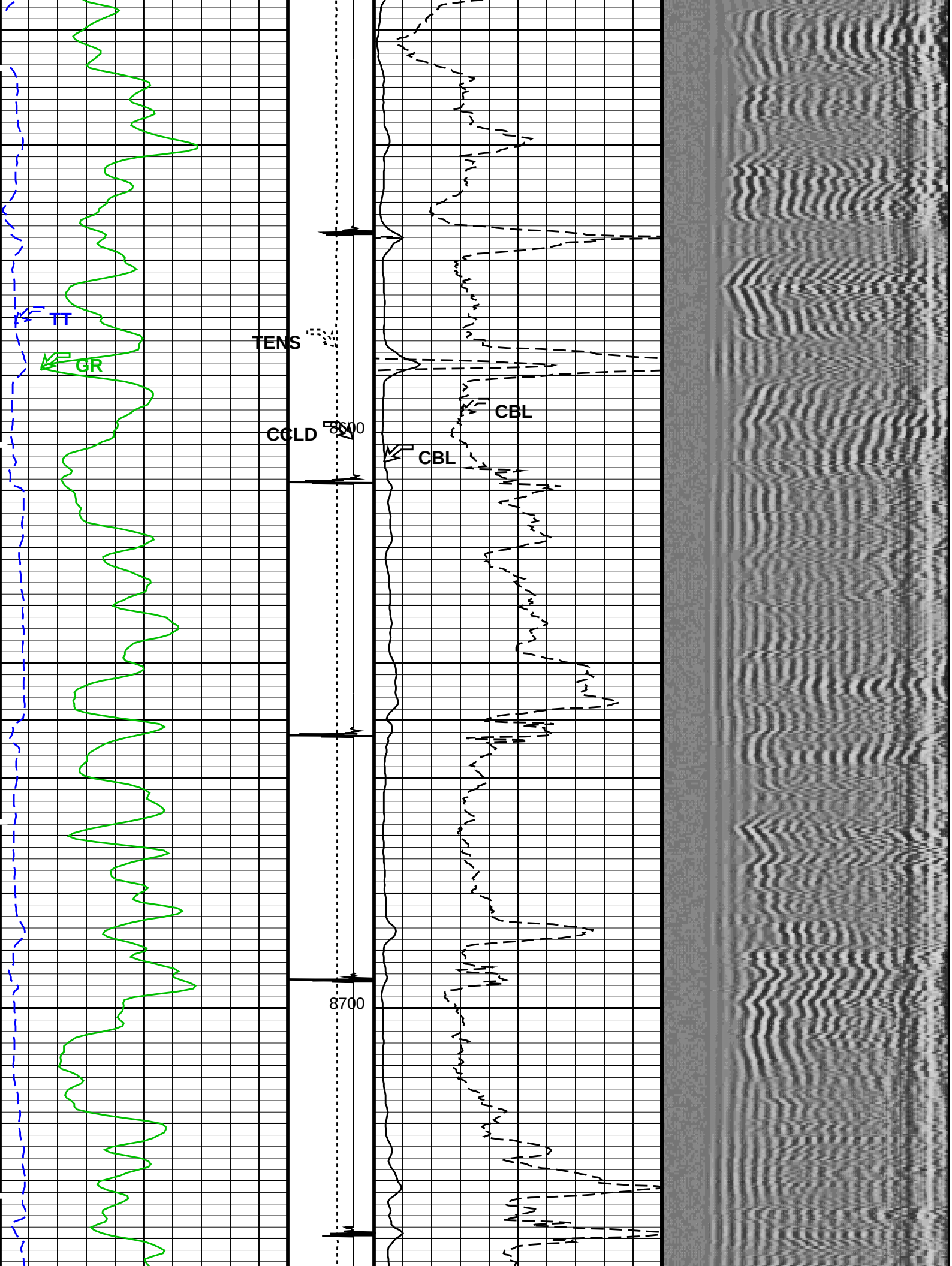
GR
TENS
CCLD
7600
CBL
CBL
CBL

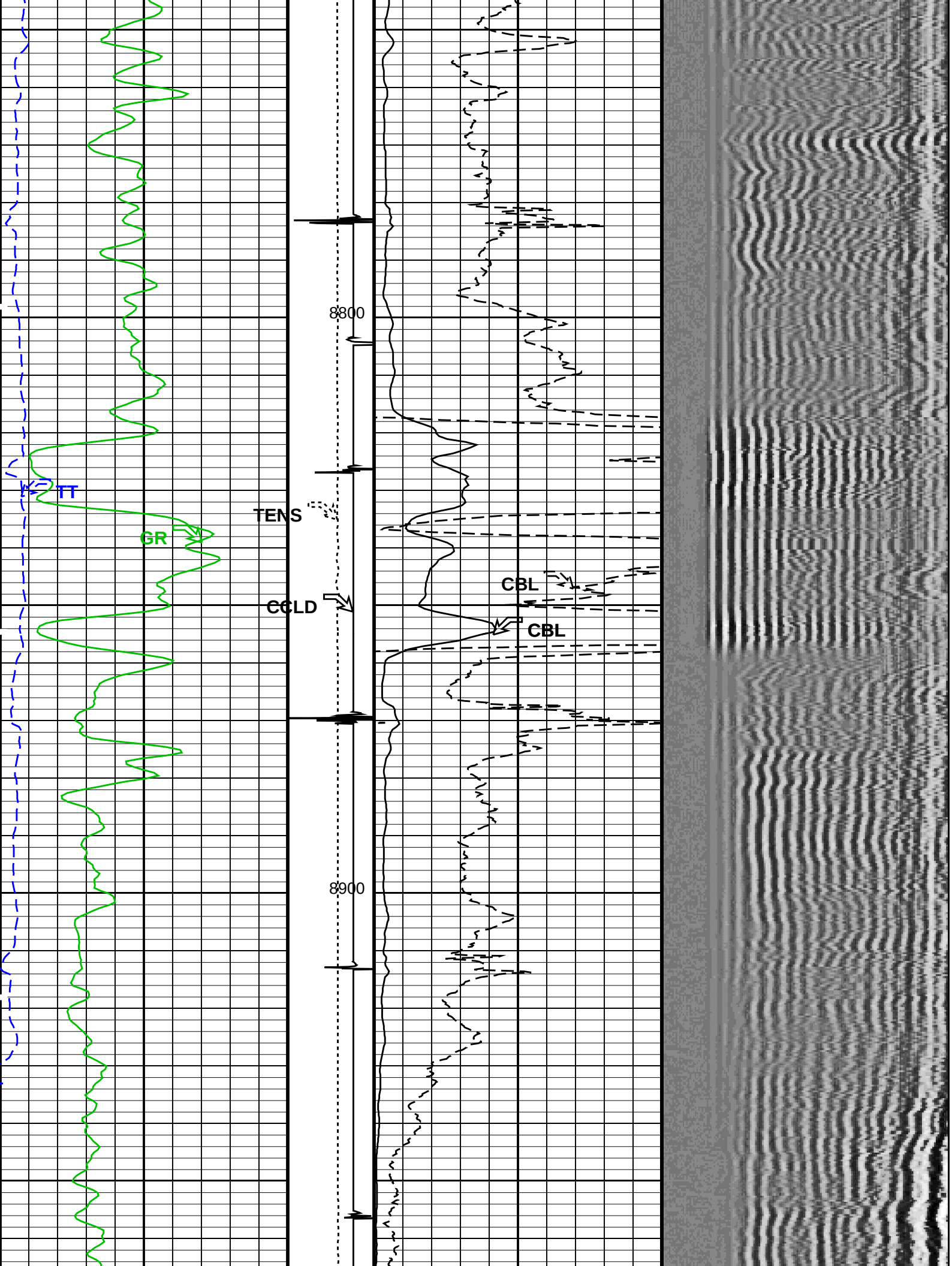

7700
7960
TENS
GR
CCLD
CBL
CBL

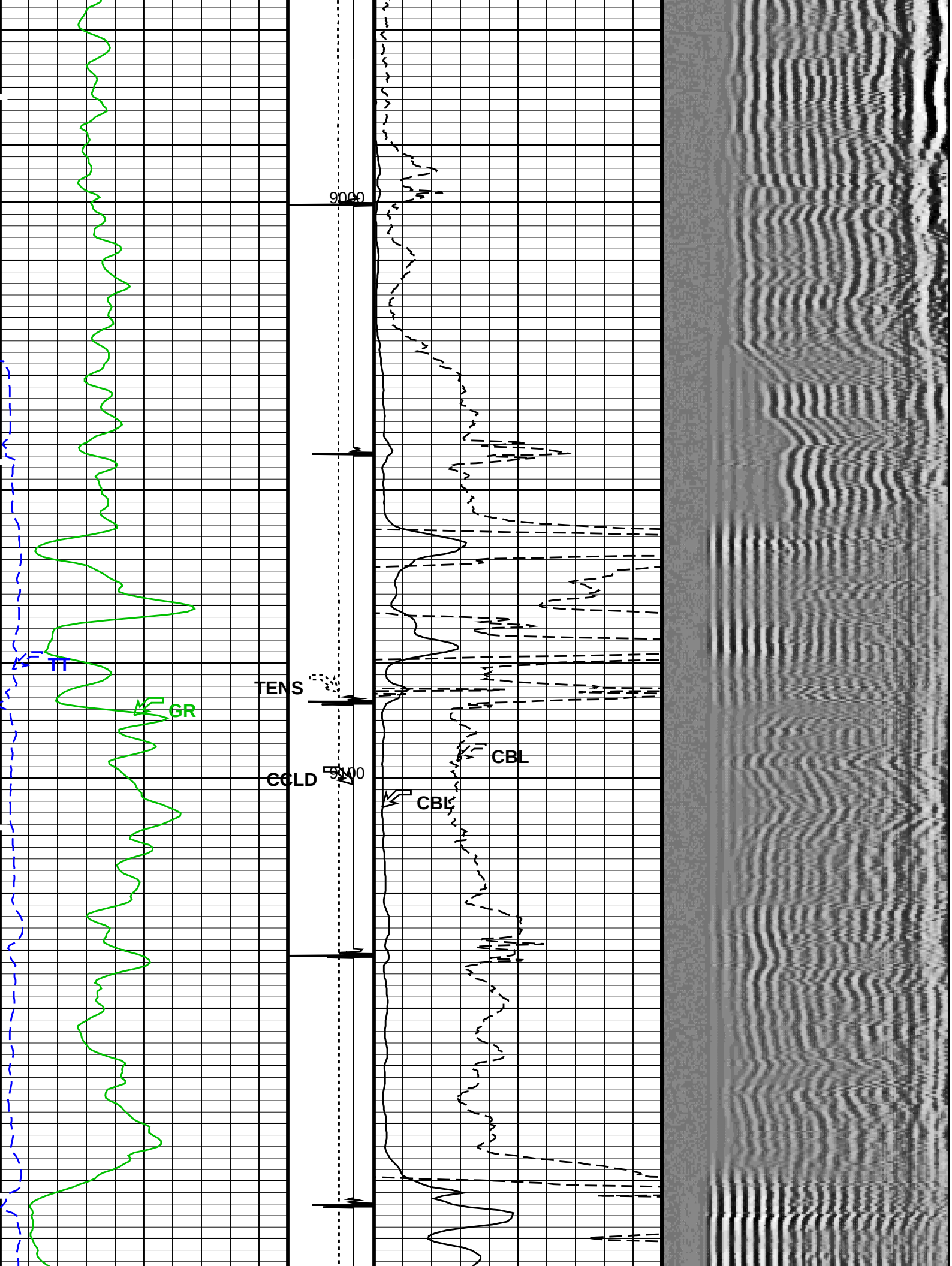

7900
8000
TT
TENS

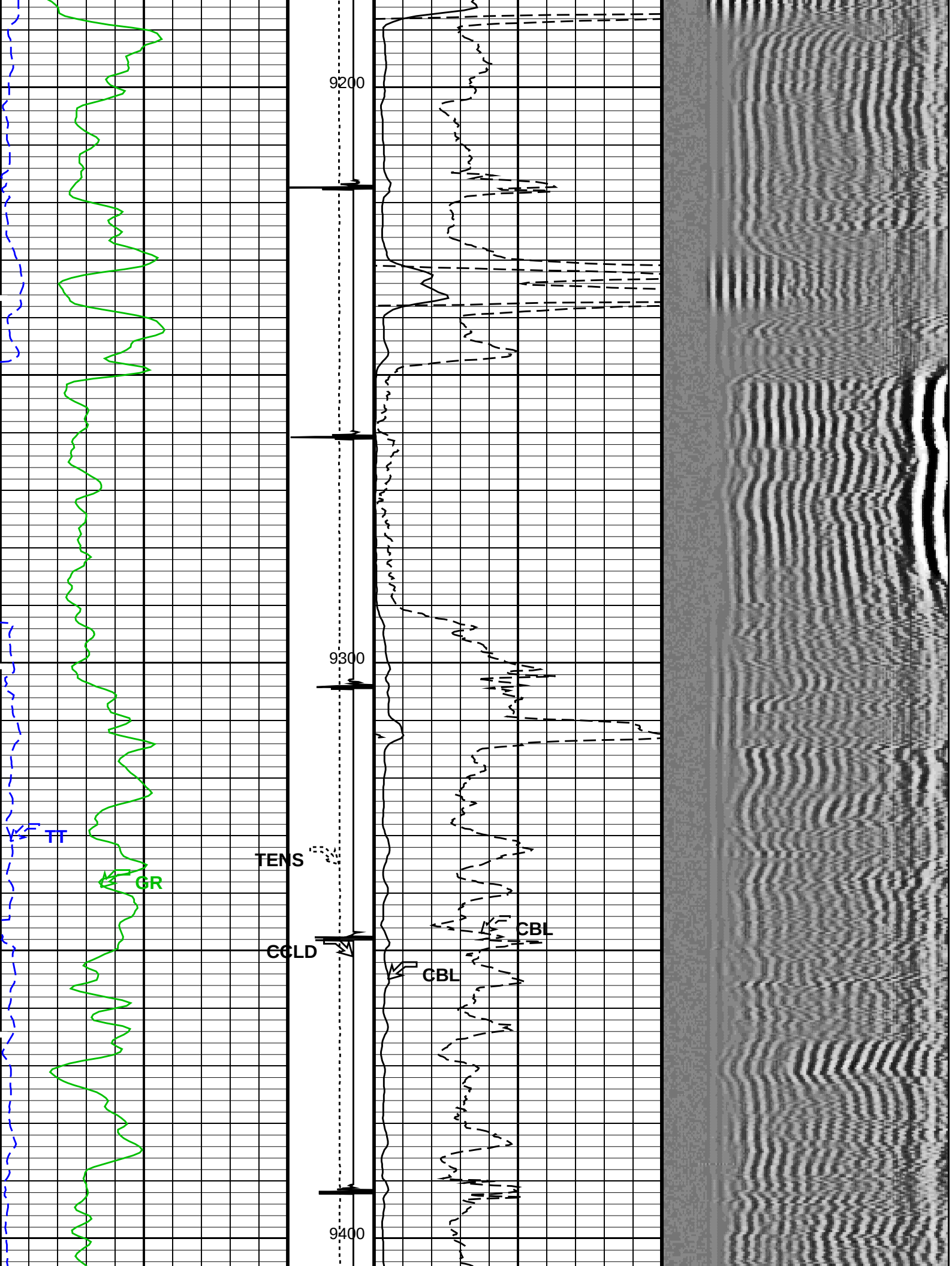

GR
CCLD
8100
CBL
CBL
SHORT JOINT
8200
8300

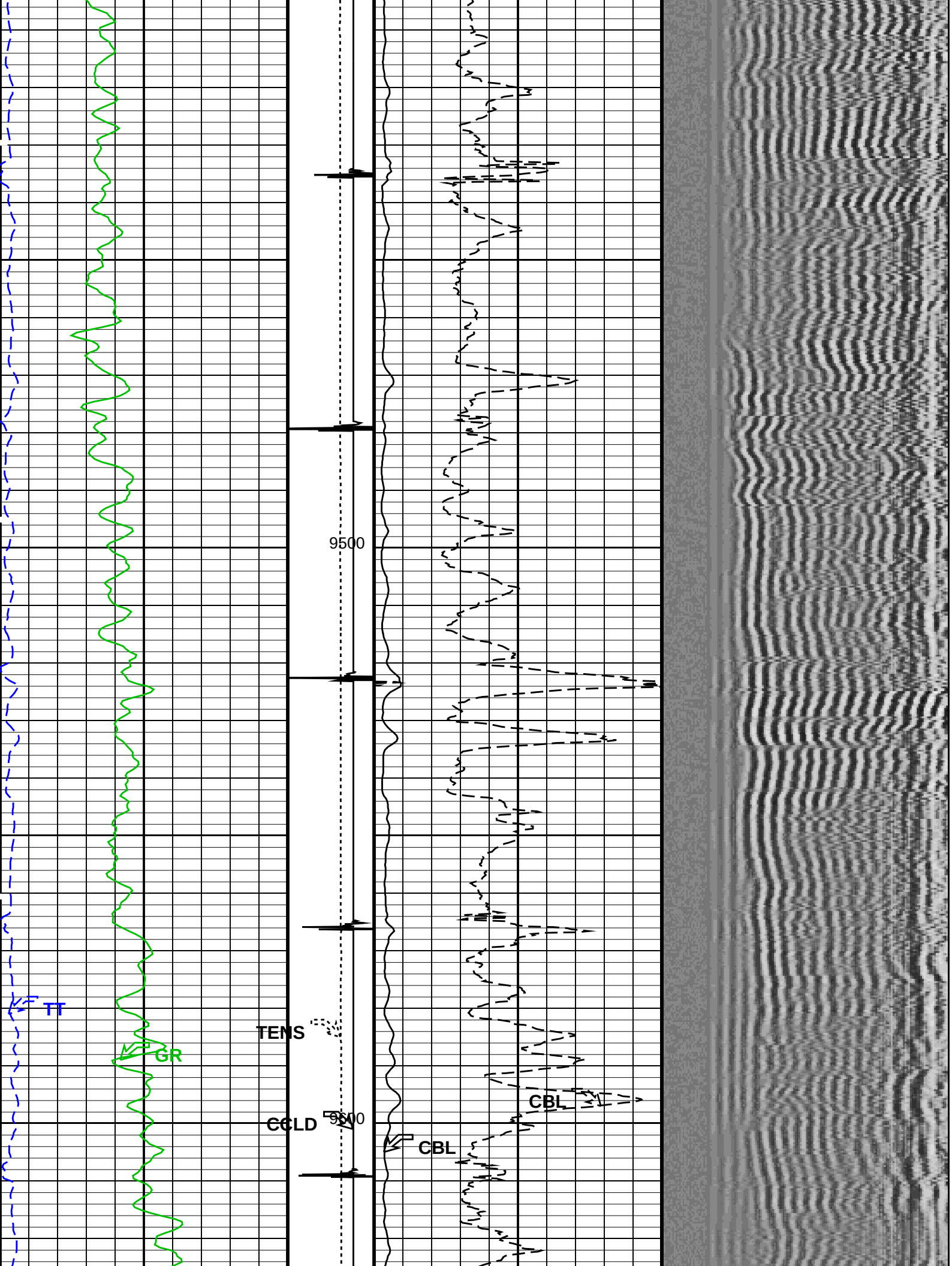

TT
GR
TENS
CCLD
CBL
CBL
8400
8500

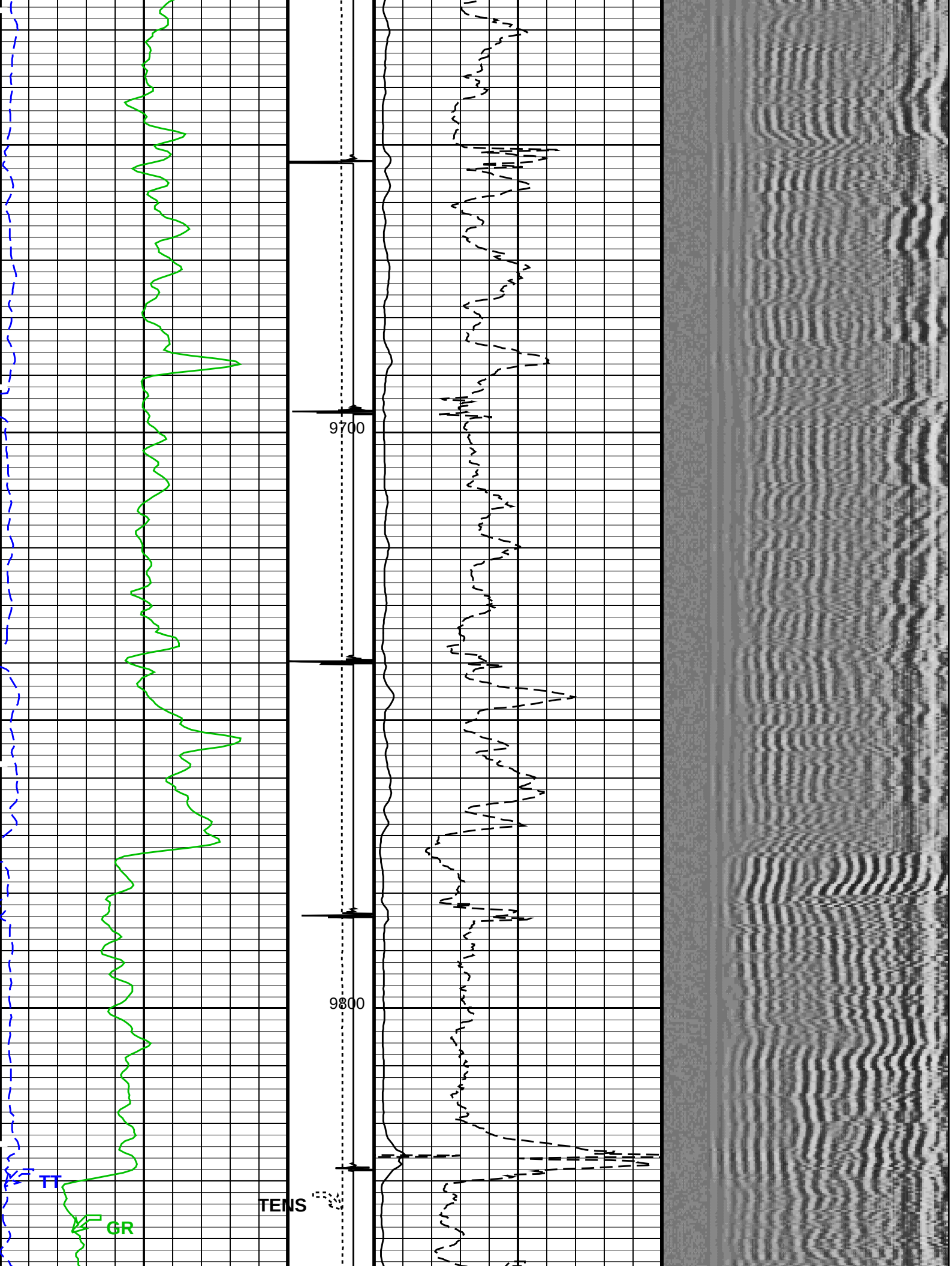

TT
GR
TENS
CCLD
8800
CBL
CBL
8700

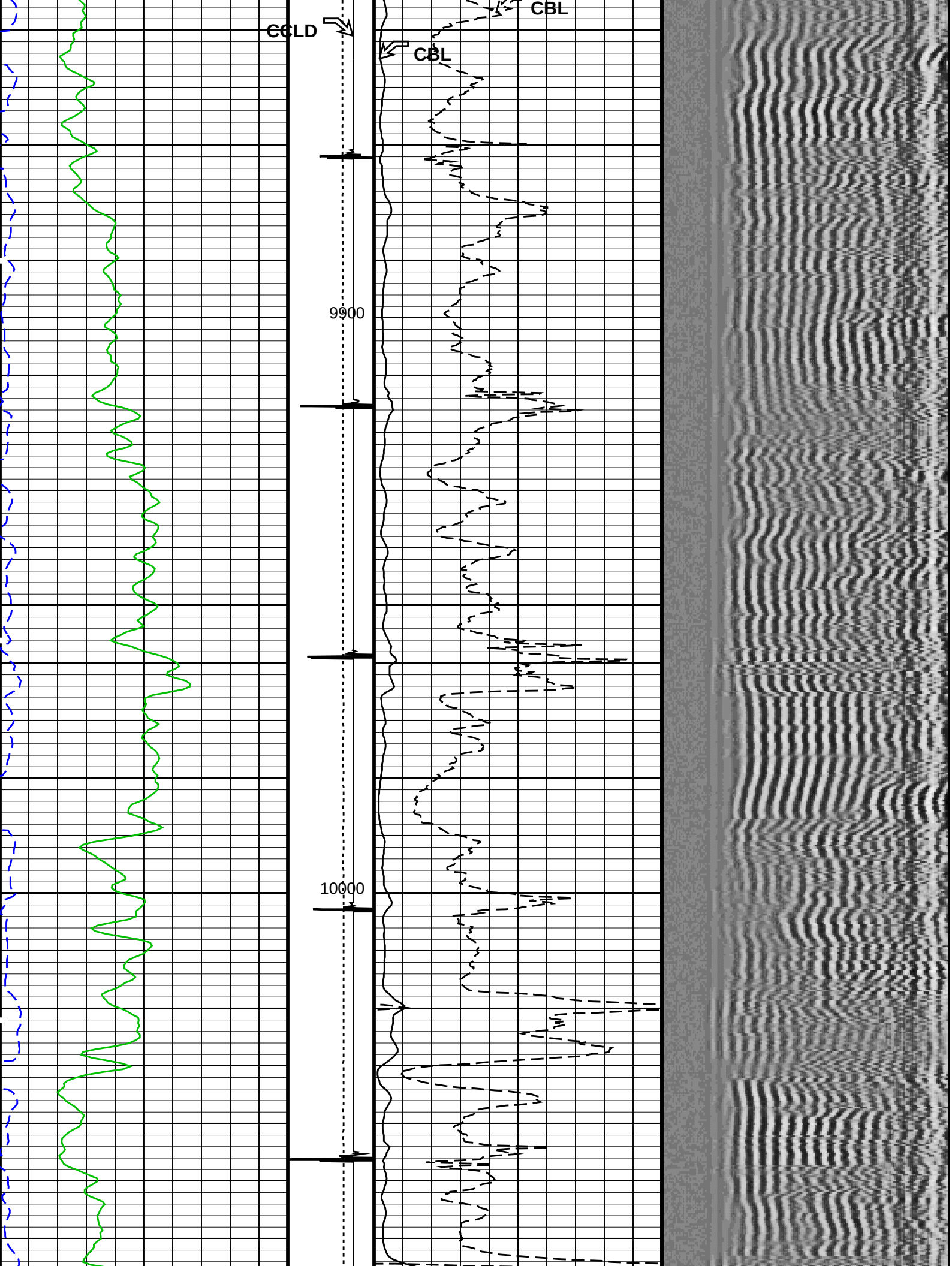

8800
8900
TT
GR
TENS
CCLD
CBL
CBL

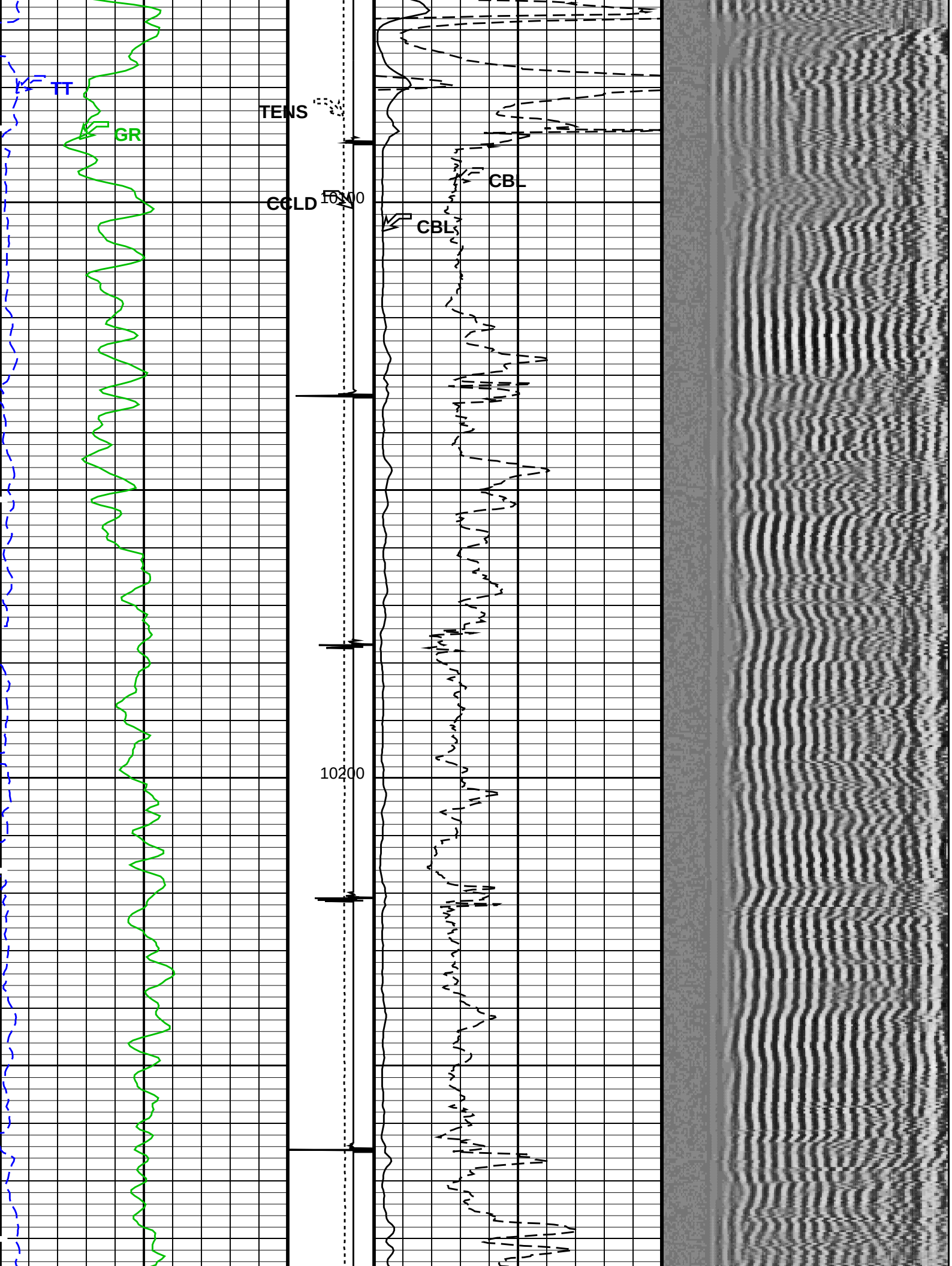

9000
TT
TENS
GR
CBL
CCLD
9100
CBL

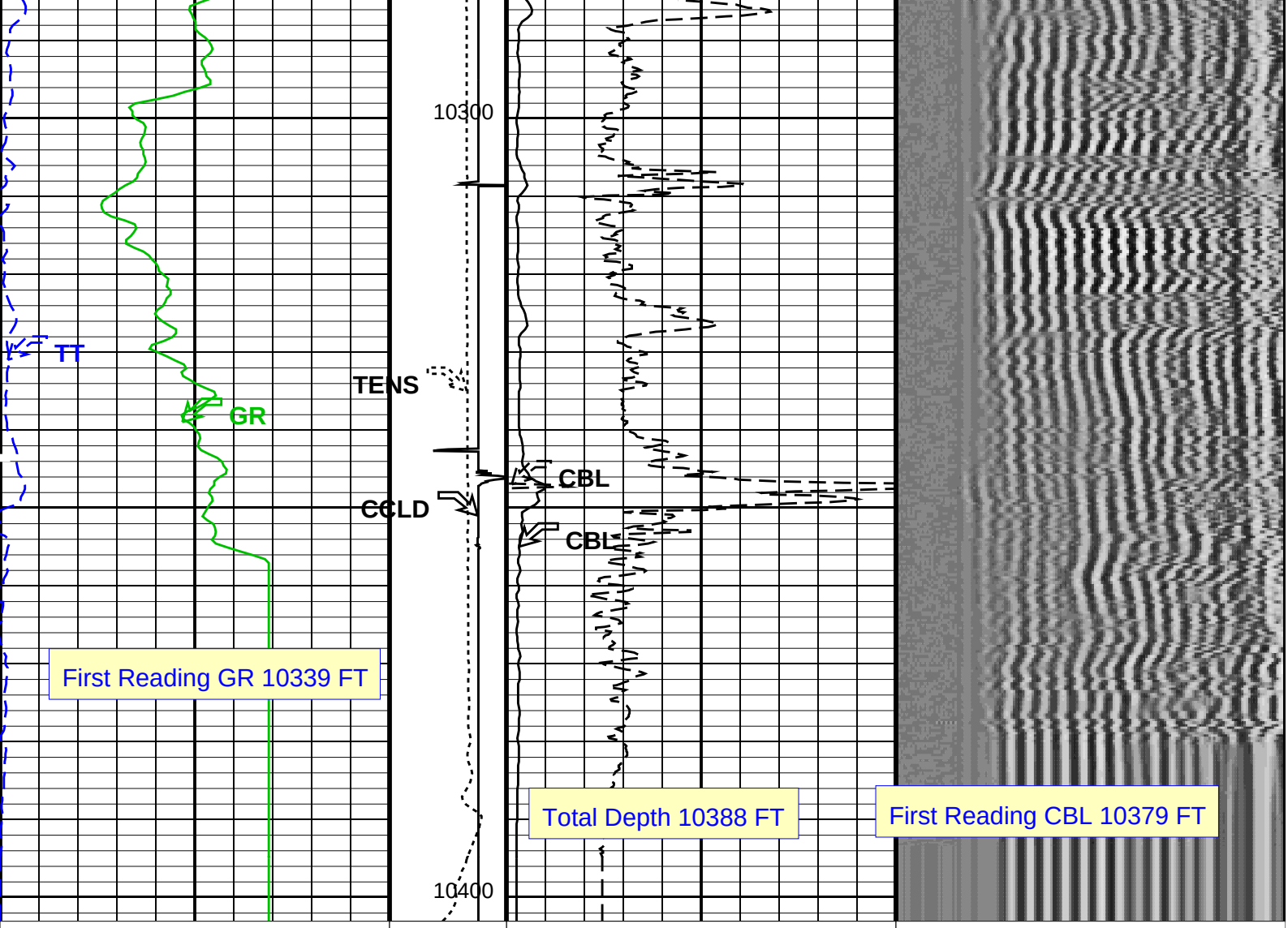

9200
9300
9400
TT
GR
TENS
CCLD
CBL
CBL


9500
TT
GR
TENS
CCLD
9600
CBL
CBL


9700
9800
TT
GR
TENS


CCLD
CBL
CBL
9900
10000


TT
GR
TENS
CCLD
10100
CBL
CBL
10200



Gamma Ray (GR)	Tension (TENS)	CBL Amplitude (CBL)	Min Amplitude Max
0 (GAPI) 150	(LBF) 0 2000	0 (MV) 100	VDL VariableDensity (VDL) 200 (US) 1200
Transit Time (TT) 260 (US) 160	Discriminated CCL (CCLD) 3 (V) −1	CBL Amplitude (CBL) 0 (MV) 10	

PIP SUMMARY

Time Mark Every 60 S

Format: CBL_VDL Vertical Scale: 5" per 100' Graphics File Created: 22−Jan−2013 00:54

OP System Version: 19C0−187

SCMT−CB	SRPC−5214−H2−2012−OP1	RST−C	SRPC−5214−H2−2012−OP1
PSPT	SRPC−5214−H2−2012−OP1		

<<<SCMT Cement Evaluation Information Summary>>>

Sonde Serial Number	SCMS−CB 8179		
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)	

Master Calibration (Normalization)		**Before Calibration (Adjustment)**	
Date of Master Calibration	**2−JAN−2013**		
CBL Correction Factor	**0.0710826**	**CBL Adjustment Factor (CBAF)**	**1.0**
MAP 1 Correction Factor	**0.103584**	**MAP Adjustment Factor (MPAF)**	**1.0**
MAP 2 Correction Factor	**0.0974321**		
MAP 3 Correction Factor	**0.0970306**		
MAP 4 Correction Factor	**0.107300**		
MAP 5 Correction Factor	**0.113090**		
MAP 6 Correction Factor	**0.0923740**		
MAP 7 Correction Factor	**0.0954019**		
MAP 8 Correction Factor	**0.0947290**		

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**	**10388**	**FT**

Input DLIS Files

DEFAULT	**SCMT_RST_PSP_007LUP**	**FN:6**	**PRODUCER**	**21−Jan−2013 21:54**	**10398.0 FT**	**−16.5 FT**

Output DLIS Files

DEFAULT	**SCMT_RST_PSP_011PUP**	**FN:10**	**PRODUCER**	**22−Jan−2013 00:54**

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REPEAT ANALYSIS CBL VDL

Company: ENCANA OIL & GAS (USA) INC | Well: MCU 26−12A (I27W)

Input DLIS Files

DEFAULT	SCMT_RST_PSP_004LUP	FN:3	PRODUCER	21−Jan−2013 21:28	7228.0 FT	6808.0 FT
DEFAULT	SCMT_RST_PSP_011PUP	FN:10	PRODUCER	22−Jan−2013 00:54	10403.0 FT	−56.0 FT

Output DLIS Files

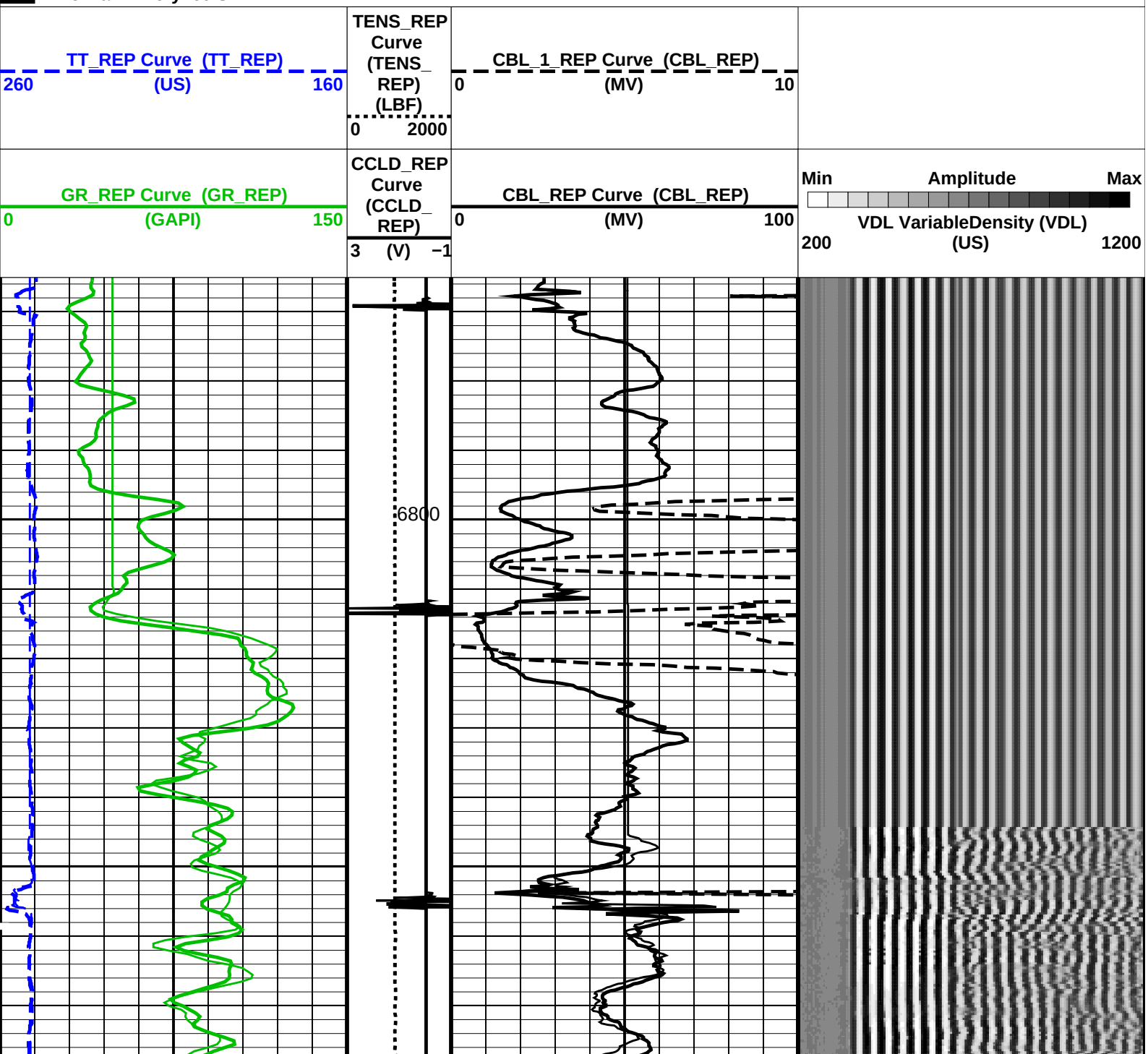
DEFAULT	SCMT_RST_PSP_012PUP	FN:11	PRODUCER	22−Jan−2013 01:02	7229.0 FT	6764.5 FT

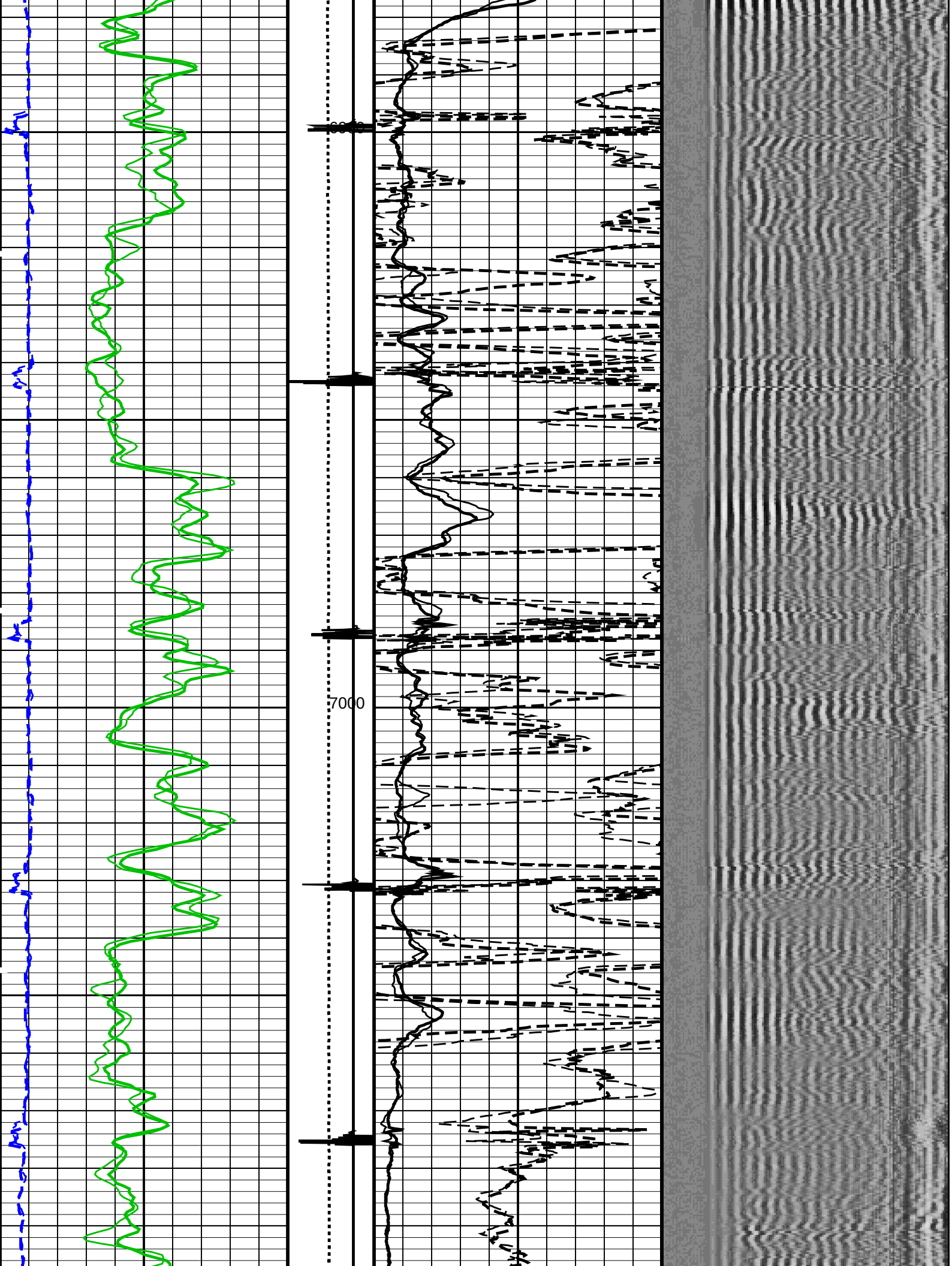
OP System Version: 19C0−187

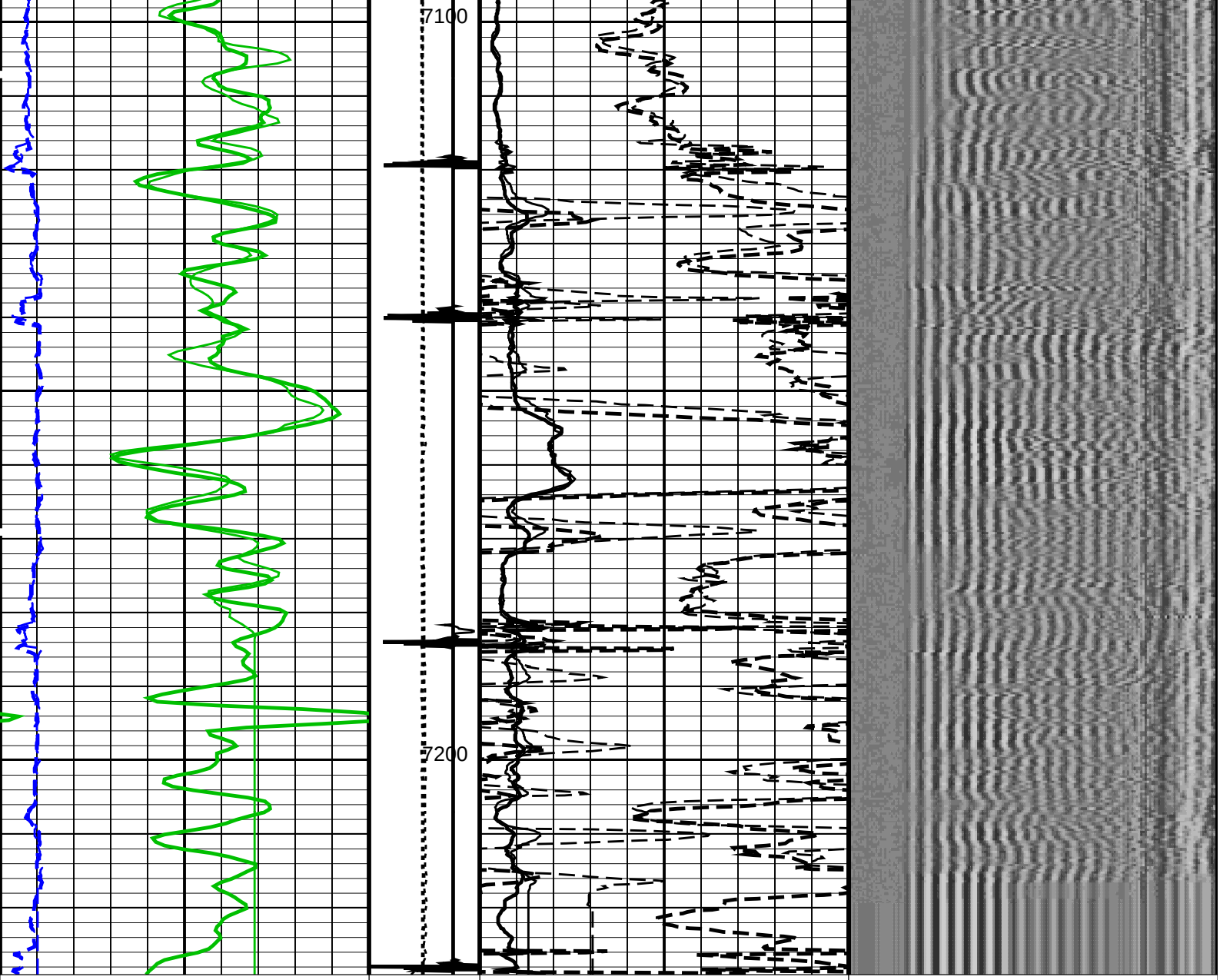
SCMT−CB	SRPC−5214−H2−2012−OP1	RST−C	SRPC−5214−H2−2012−OP1
PSPT	SRPC−5214−H2−2012−OP1		

PIP SUMMARY

Time Mark Every 60 S




7000



GR_REP Curve (GR_REP)	CCLD_REP Curve (CCLD_REP)	CBL_REP Curve (CBL_REP)	Amplitude
0 (GAPI) 150	3 (V) −1	0 (MV) 100	Min Max
			VDL VariableDensity (VDL)
			200 (US) 1200
TT_REP Curve (TT_REP)	TENS_REP Curve (TENS_REP) (LBF)	CBL_1_REP Curve (CBL_REP)	
260 (US) 160	0 2000	0 (MV) 10	

PIP SUMMARY

Time Mark Every 60 S

Format: CBL_VDL_REP Vertical Scale: 5" per 100' Graphics File Created: 22−Jan−2013 01:02

OP System Version: 19C0−187

SCMT−CB	SRPC−5214−H2−2012−OP1	RST−C	SRPC−5214−H2−2012−OP1
PSPT	SRPC−5214−H2−2012−OP1		

<<<SCMT Cement Evaluation Information Summary>>>

Sonde Serial Number	SCMS−CB 8179
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	2−JAN−2013		
CBL Correction Factor	0.0710826	CBL Adjustment Factor (CBAF)	1.0
MAP 1 Correction Factor	0.103584	MAP Adjustment Factor (MPAF)	1.0
MAP 2 Correction Factor	0.0974321		
MAP 3 Correction Factor	0.0970306		
MAP 4 Correction Factor	0.107300		
MAP 5 Correction Factor	0.113090		
MAP 6 Correction Factor	0.0923740		
MAP 7 Correction Factor	0.0954019		
MAP 8 Correction Factor	0.0947290		

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	1.0	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
PP	Playback Processing	RECOMPUTE	
TD	Total Depth	10388	FT

Input DLIS Files

DEFAULT	SCMT_RST_PSP_004LUP	FN:3	PRODUCER	21−Jan−2013 21:28	7228.0 FT	6808.0 FT
DEFAULT	SCMT_RST_PSP_011PUP	FN:10	PRODUCER	22−Jan−2013 00:54	10403.0 FT	−56.0 FT

Output DLIS Files

DEFAULT	SCMT_RST_PSP_012PUP	FN:11	PRODUCER	22−Jan−2013 01:02

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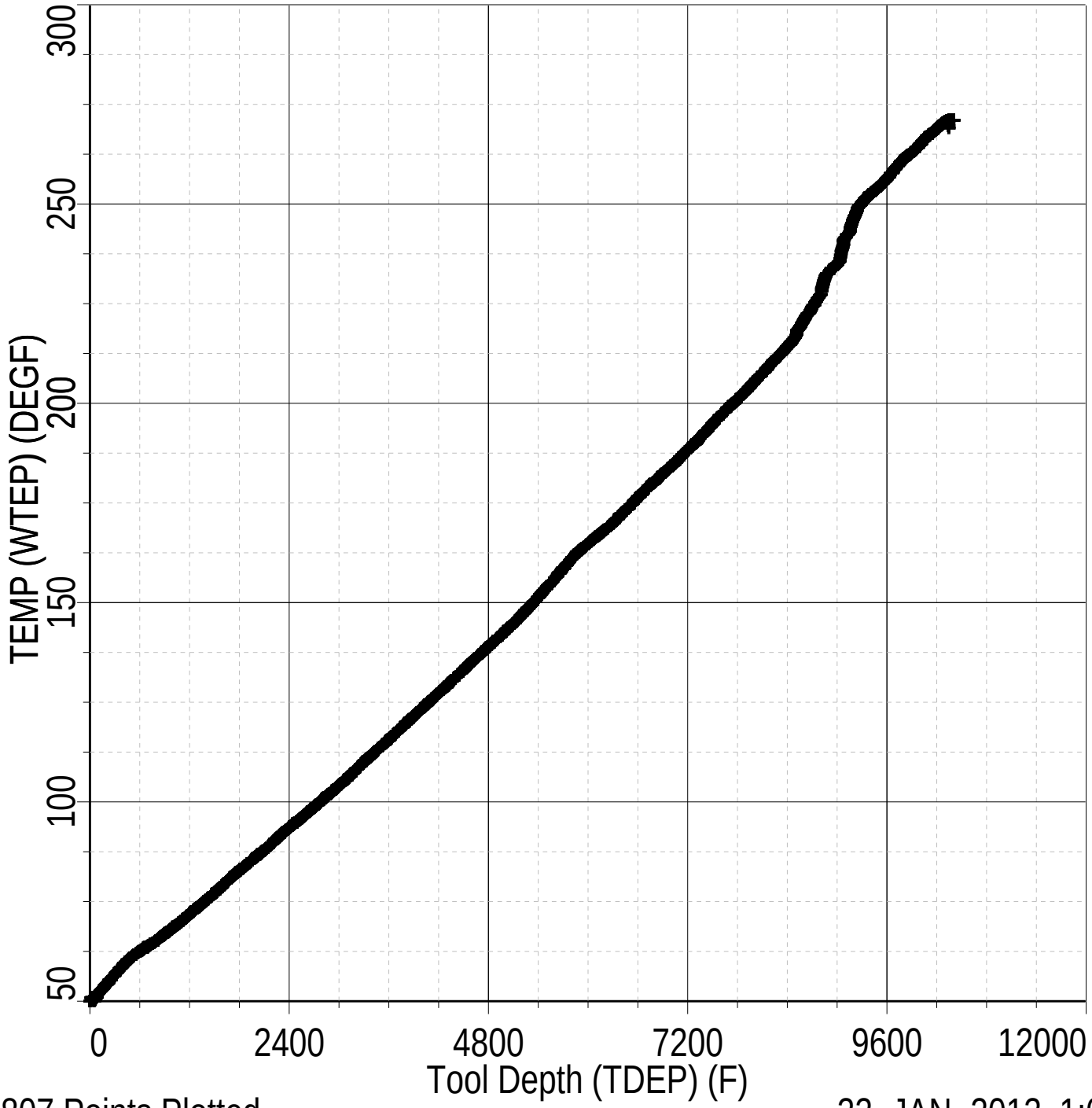
TEMPERATURE PLOT

MAXIS Field Log

Index: 10403.0 − −56.0 FT



20807 Points Plotted

22−JAN−2013 1:01

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PBMS COEFFICIENTS

Client:	**ENCANA OIL & GAS (USA) INC**	**Tool:**	**PSP**
Field:	**MAMM CREEK**	**Sub Type:**	**PBMS**
Well:	**MCU 26−12A (I27W)**	**Sensor:**	**GR**
Run date:	**21−Jan−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

	Rt0**	**Rt**1**
Rt0**	**+.182000000000e+04**	**+.332000000000e+04**

Client:	**ENCANA OIL & GAS (USA) INC**	**Tool:**	**PSP**
Field:	**MAMM CREEK**	**Sub Type:**	**PBMS**
Well:	**MCU 26−12A (I27W)**	**Sensor:**	**WellTemp RTD**
Run date:	**21−Jan−2013**		

PBMS RTD Well Thermometer

Sonde Serial NB	**COEFFICIENTS FOR RTD THERMOMETER PBMS−B.928 S/N:**
Sensor Serial NB	**928**
Calib Date ddmmyy	**280612**
Matrix Size	**16**
Coeff CRC	**A24E**

WTemp Coeff

	T*0	**T***1	**T***2

	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

Client:	ENCANA OIL & GAS (USA) INC	**Tool:**	PSP
Field:	MAMM CREEK	**Sub Type:**	PBMS
Well:	MCU 26−12A (I27W)	**Sensor:**	CQG
Run date:	21−Jan−2013		

PBMS Quartz Gauge type F

Sonde Serial NB	**COEFFICIENTS FOR CQG PBMS−B.928 S/N:**
Sensor Serial NB	**928**
Calib Date ddmmyy	**280612**
Matrix Size	**66**
Coeff CRC	**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
Fb0**	**+.117016867873E+03**	**−.284359629614E−03**	**+.604391180345E−08**
Fb1**	**−.598309140812E−02**	**+.182731130848E−07**	**+.160166486172E−12**
Fb2**	**−.307621454576E−07**	**+.300601550309E−12**	**+.311233548560E−17**
Fb3**	**−.419658736767E−12**	**+.117473708647E−16**	**0.0**
Fb4**	**0.0**	**0.0**	**0.0**
Fb5**	**0.0**	**0.0**	**0.0**

	Fc**3	Fc**4	Fc**5
Fb0**	**+.114322792679E−12**	**+.153807711176E−17**	**−.736714260866E−21**
Fb1**	**−.528037875456E−18**	**−.220337637519E−21**	**0.0**
Fb2**	**0.0**	**0.0**	**0.0**
Fb3**	**0.0**	**0.0**	**0.0**
Fb4**	**0.0**	**0.0**	**0.0**
Fb5**	**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**

	(Fb'−Fc')**3	(Fb'−Fc')**4	(Fb'−Fc')**5
(Fb'−Fc')0**	**−.657432344763E−10**	**−.412920638782E−15**	**+.213369826099E−20**

PBMS Quartz Gauge type F

Sonde Serial NB	**:**
Sensor Serial NB	**928**

Sensor Serial NB	**928**
Calib Date ddmmyy	**280612**
Matrix Size	**16**
Coeff CRC	**8419**

Clock Temp Coeff

	(Fb'−Fc')**0	(Fb'−Fc')**1	(Fb'−Fc')**2
(Fb'−Fc')0**	**+.115369519827E+03**	**−.565338877075E−02**	**−.333717531829E−07**

	(Fb'−Fc')**3	(Fb'−Fc')**4	(Fb'−Fc')**5
(Fb'−Fc')0**	**−.124387135327E−12**	**+.713102327208E−16**	**−.316084316842E−20**

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MASTER CALIBRATION

MAXIS Field Log

Slim Cement Mapping Tool, 1−11/16 OD / Equipment Identification

Primary Equipment:

Slim Cement Mapping Xmitter Electronics	SCMX − CA	
Slim Cement Mapping Sonde	SCMS − CB	8179
Slim Cement Mapping Cartridge	SCMC − CA	8120

Auxiliary Equipment:

Slim Electronics Cartridge Housing	SECH − CA

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
Master		1158
	500.0 (Minimum) 1075 (Nominal) 1650 (Maximum)	

Phase	MAP 2 Amplitude Plus MV	Value
Master		1232
	500.0 (Minimum) 1075 (Nominal) 1650 (Maximum)	

Phase	MAP 3 Amplitude Plus MV	Value
Master		1237
	500.0 (Minimum) 1075 (Nominal) 1650 (Maximum)	

Phase	MAP 4 Amplitude Plus MV	Value
Master		1118
	500.0 (Minimum) 1075 (Nominal) 1650 (Maximum)	

Phase	MAP 5 Amplitude Plus MV	Value
Master		1061
	500.0 (Minimum) 1075 (Nominal) 1650 (Maximum)	

Phase	MAP 6 Amplitude Plus MV	Value
Master		1299
	500.0 (Minimum) 1075 (Nominal) 1650 (Maximum)	

Phase	MAP 7 Amplitude Plus MV	Value
Master		1258
	500.0 (Minimum) 1075 (Nominal) 1650 (Maximum)	

Phase	MAP 8 Amplitude Plus MV	Value
Master		1267
	500.0 (Minimum) 1075 (Nominal) 1650 (Maximum)	

Phase	CBL Amplitude Plus MV	Value
Master		1351
	1000 (Minimum) 1350 (Nominal) 1700 (Maximum)	

Master: 2−Jan−2013 15:55

Company:	**ENCANA OIL & GAS (USA) INC**
Well:	**MCU 26−12A (I27W)**
Field:	**MAMM CREEK**
County:	**GARFIELD**
State:	**COLORADO**

Schlumberger

SLIM CEMENT MAPPING LOG
CBL−VDL
GR−CCL