Schlumberger

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

Well: **MF 07B−16 (H17) 696**
Field: **NORTH PARACHUTE**
County: **GARFIELD** State: **COLORADO**

County: GARFIELD
Field: NORTH PARACHUTE
Location: SHL: SENE 1545' FNL 300' FEL
Well: MF 07B−16 (H17) 696
Company: ENCANA OIL & GAS (USA) INC.

CEMENT BOND LOG
CBL− VDL
GAMMA RAY − CCL

LOCATION

SHL: SENE 1545' FNL 300' FEL
BHL: SENE 1599' FNL 2517' FWL

Elev.: K.B. 5676.00 ft
G.L. 5654.00 ft
D.F. 5675.00 ft

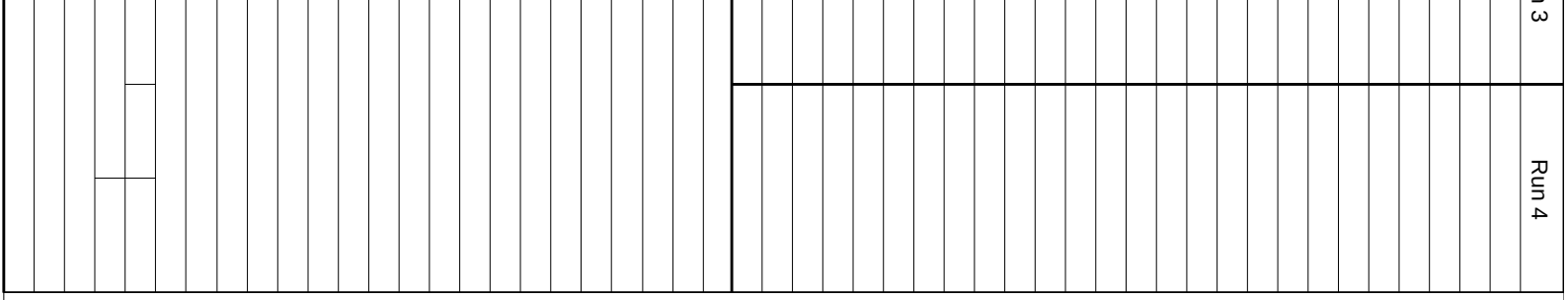
Permanent Datum: GROUND LEVEL Elev.: 5654.00 ft
Log Measured From: KELLY BUSHING 22.00 ft above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.	Section	Township	Range
05−045−18699−0000	16	6S	96W

Logging Date		13−Apr−2011					
Run Number		ONE					
Depth Driller		8614 ft					
Schlumberger Depth		8520 ft					
Bottom Log Interval		8511 ft					
Top Log Interval		200 ft					
Casing Fluid Type		WATER					
Salinity							
Density		8.4 lbm/gal					
Fluid Level		30 ft					
BIT/CASING/TUBING STRING							
Bit Size		8.750 in					
From		30 ft					
To		8614 ft					
Casing/Tubing Size		4.500 in					
Weight		11.6 lbm/ft					
Grade		E−80					
From		30 ft					
To		8594 ft					
Maximum Recorded Temperatures		239 degF					
Logger On Bottom	Time	13−Apr−2011	14:31				
Unit Number	Location	409	GRAND JUNCTION				
Recorded By		DAVID PATE					
Witnessed By		SCOTT PITT					

		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: 13−APR−2011 16:19:11

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−C	Type:	1−25ZT
Serial Number:	5873	Serial Number:	5033	Serial Number:	409
Calibration Date:	19−OCT−2010	Calibration Date:	21−MAR−201	Length:	11450 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	10051		
Calibration Cable Type:	1−25P	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−6	Calibration RMS:	9	Rig Type:	LAND
Wheel Correction 2:	−5	Calibration Peak Error:	21		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	165.00 FT
Rig Up Length At Bottom:	164.00 FT
Rig Up Length Correction:	1.00 FT
Stretch Correction:	6.00 FT
Tool Zero Check At Surface:	1.60 FT

Depth Control Remarks

1. ALL SCHLUMBERGER DEPTH CONTROL PROCEDURES FOLLOWED
2. IDW USED AS PRIMARY DEPTH CONTROL.
3. Z−CHART USED AS SECONDARY DEPTH CONTROL
4.
5.
6.

OTHER SERVICES1	OTHER SERVICES2
OS1: SIGMA	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
THIS IS THE FIRST RUN IN WELL.	
TOOL RAN AS PER TOOL SKETCH.	
TD TAGGED AT: 8520 FT	
MAXIMUM RECORDED TEMPERATURE AT TD: 239 DEGF	
MAXIMUM RECORDED PRESSURE AT TD: 3109 PSIA	

SHORT JOINTS: 4950 FT AND 7070 FT

CYCLE SKIPPING DUE TO GOOD BOND CAUSING TT TO READ HIGH.
EXPECTED FREE PIPE AMPLITUDE: 81 mV.

AFE: 10142224

THANK YOU FOR CHOOSING SCHLUMBERGER.
CREW: DAVID P., WALEED A. & JARED R.

RUN 1		RUN 2	
SERVICE ORDER #:	BIHS−00104	SERVICE ORDER #:	
PROGRAM VERSION:	17C0−154	PROGRAM VERSION:	
FLUID LEVEL:	30 ft	FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

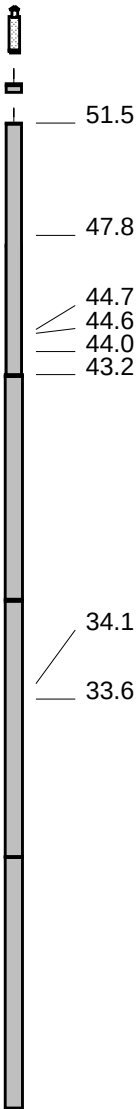
EQUIPMENT DESCRIPTION

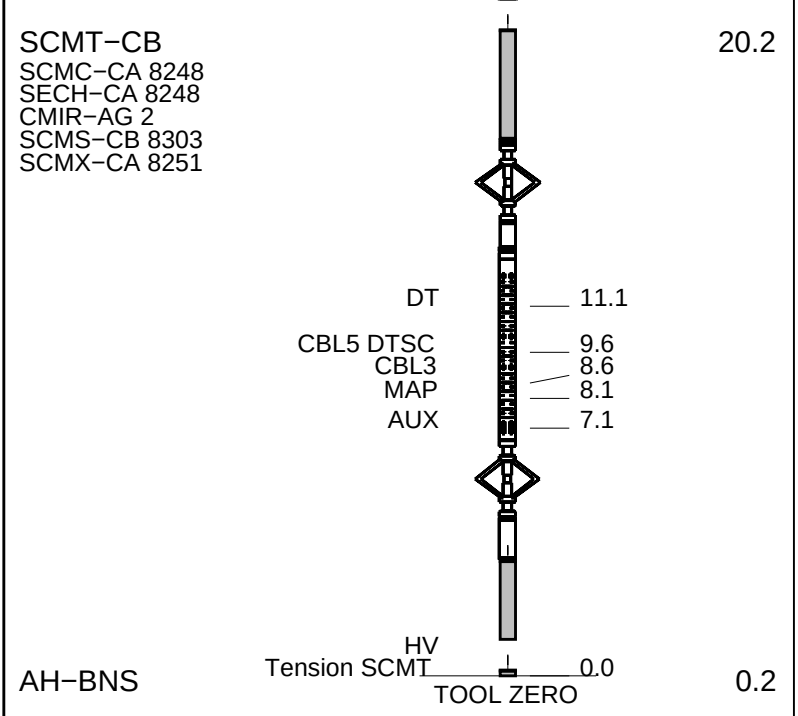
RUN 1 RUN 2

SURFACE EQUIPMENT

WITM−A 4045
PSC_16MHZ 4045

DOWNHOLE EQUIPMENT





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

Schlumberger

MAIN PASS 0 PSI

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. **Well: MF 07B−16 (H17) 696**

Input DLIS Files

DEFAULT	**SCMT_RST_PSP_015LUP**	**FN:14**	**PRODUCER**	**13−Apr−2011 14:31**	**8551.5 FT**	**145.5 FT**

Output DLIS Files

DEFAULT	**SCMT_RST_PSP_018PUP**	**FN:17**	**PRODUCER**	**13−Apr−2011 16:46**	**8553.5 FT**	**103.0 FT**

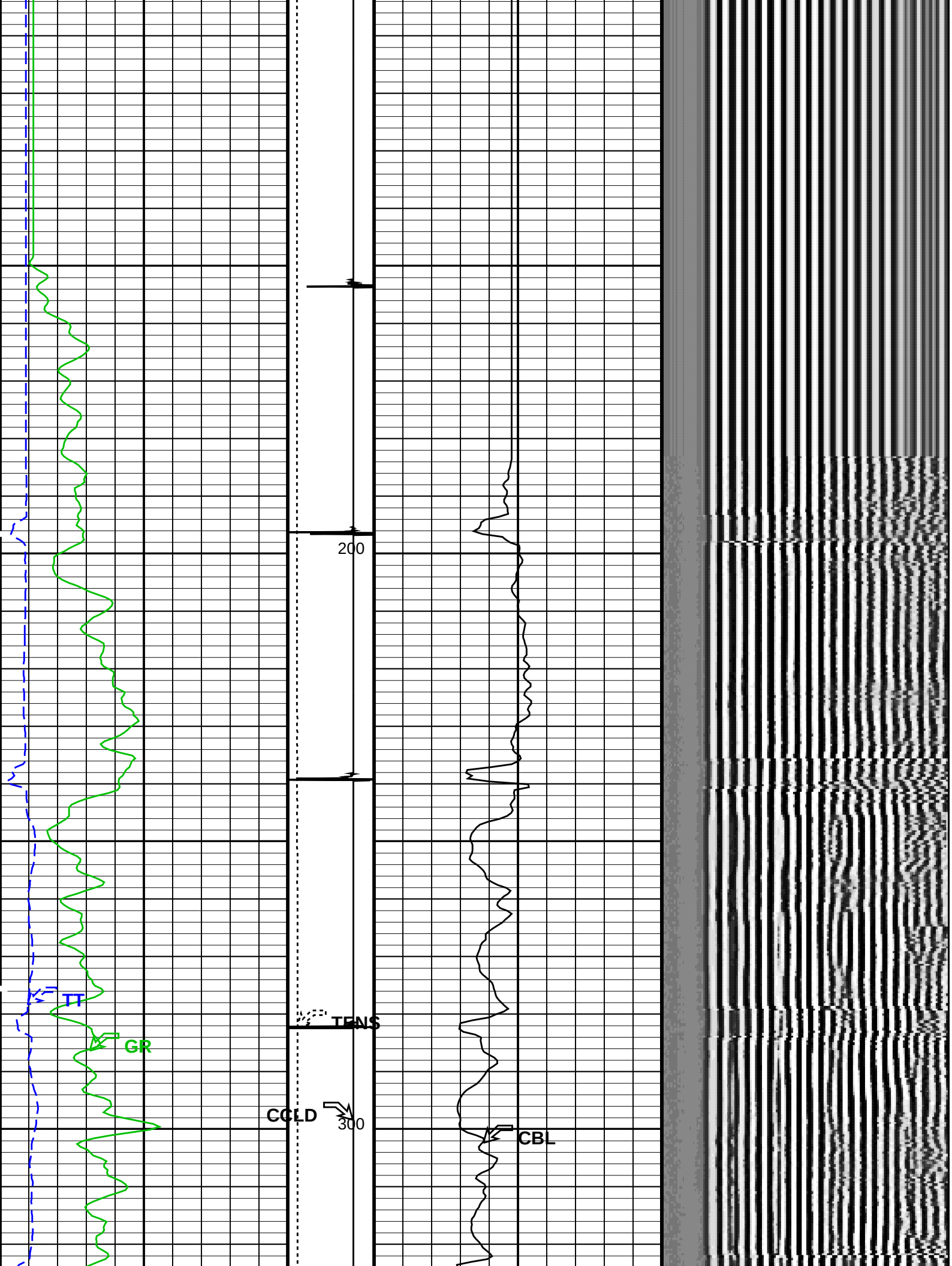
OP System Version: 17C0−154

SCMT−CB	**17C0−154**	**RST−C**	**17C0−154**
PSPT	**17C0−154**		

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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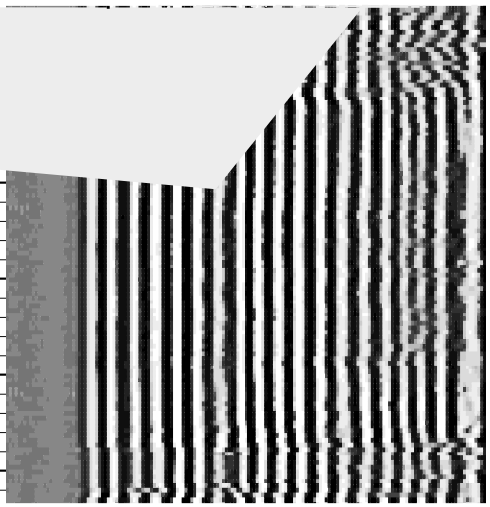
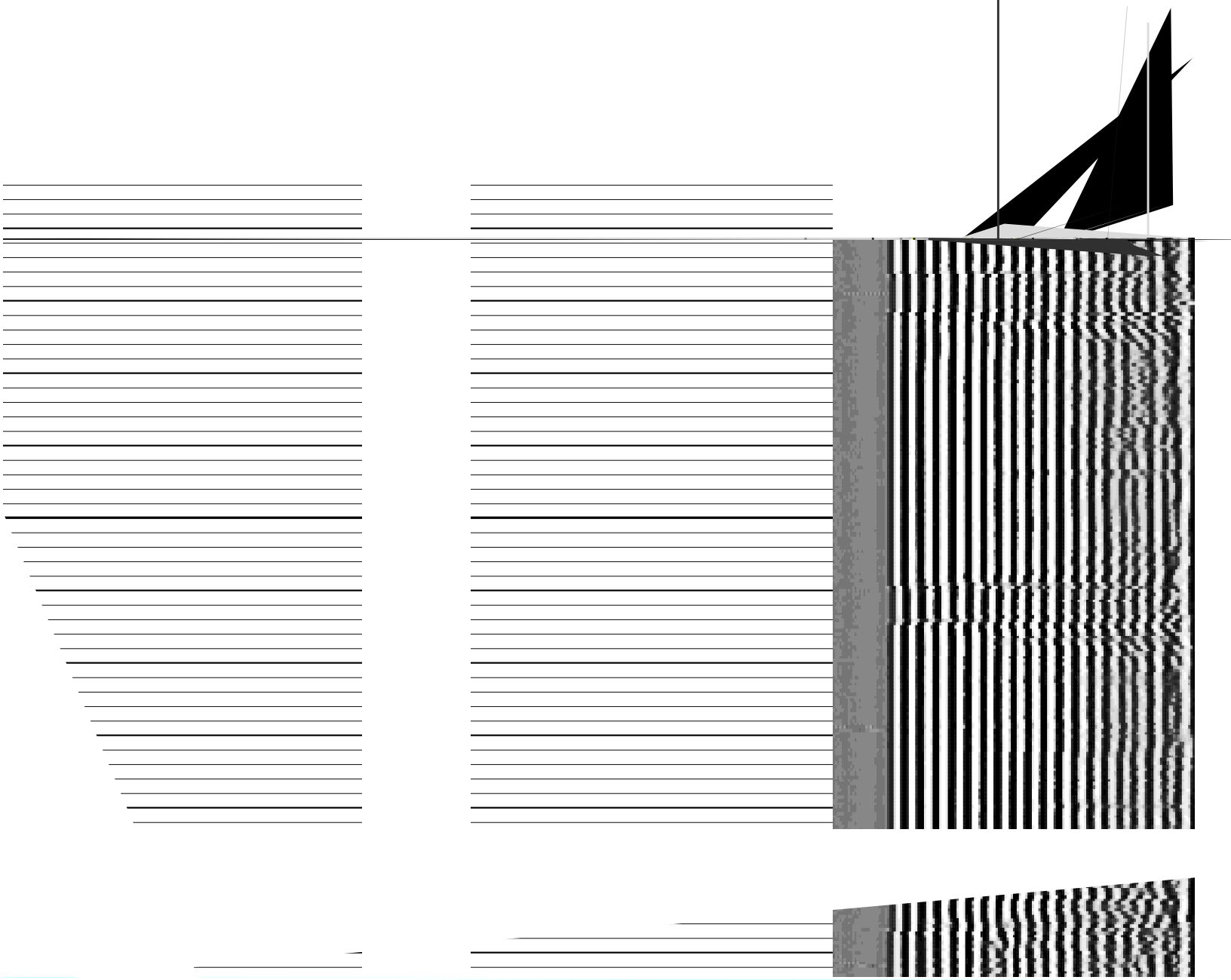
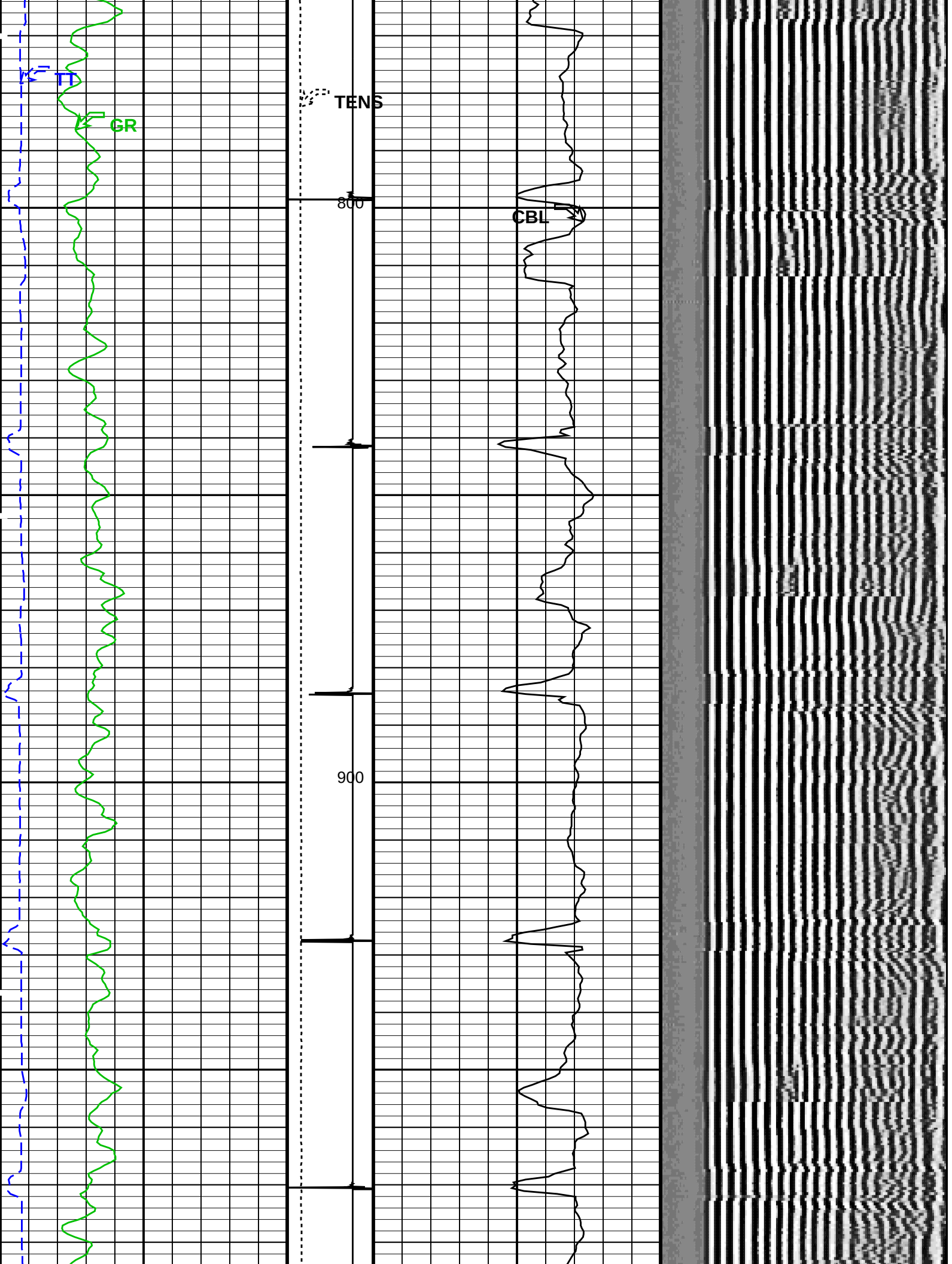
TT
GR
TENS
CCLD
300
CBL



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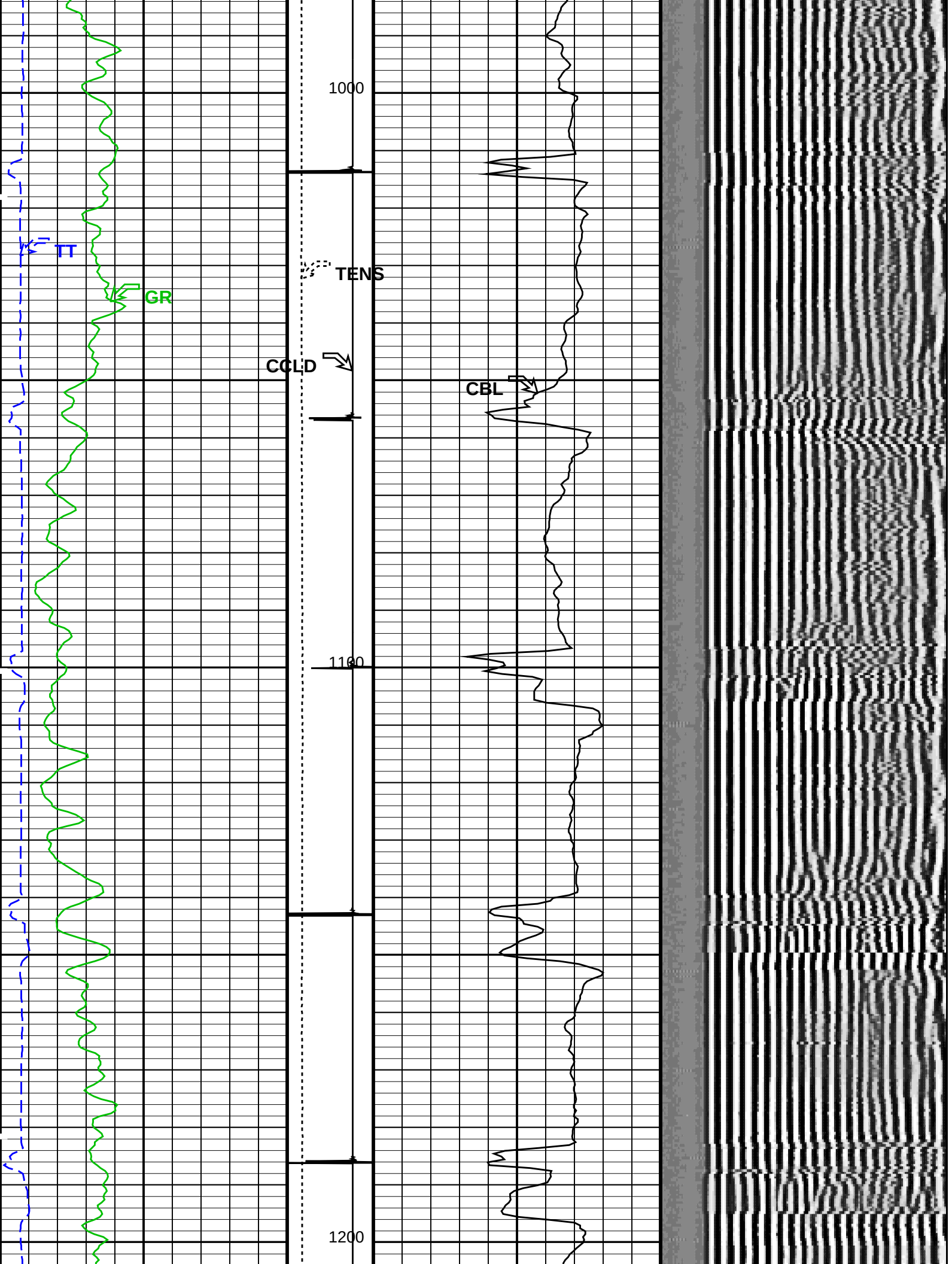
TENS
800
CBL
900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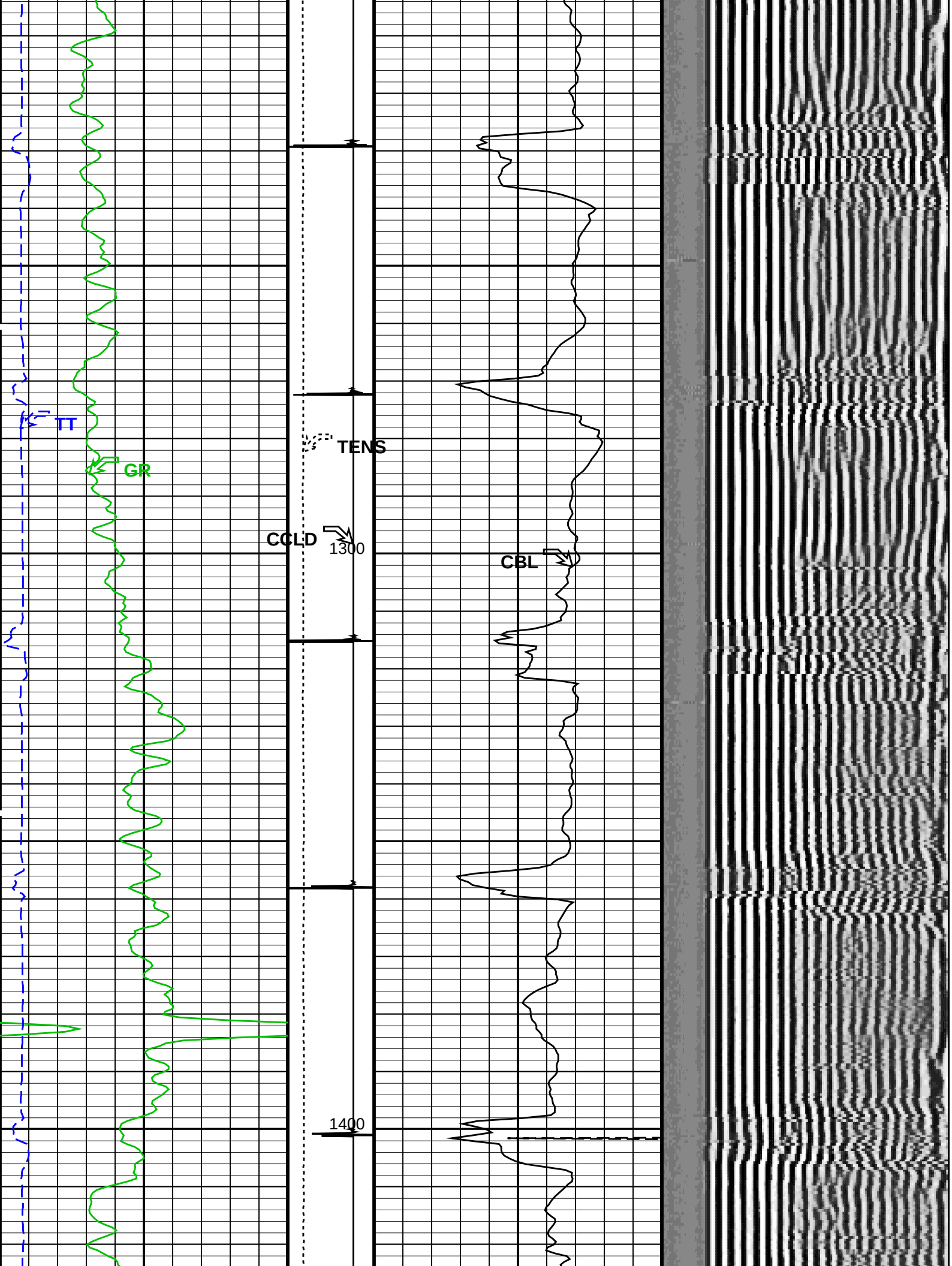
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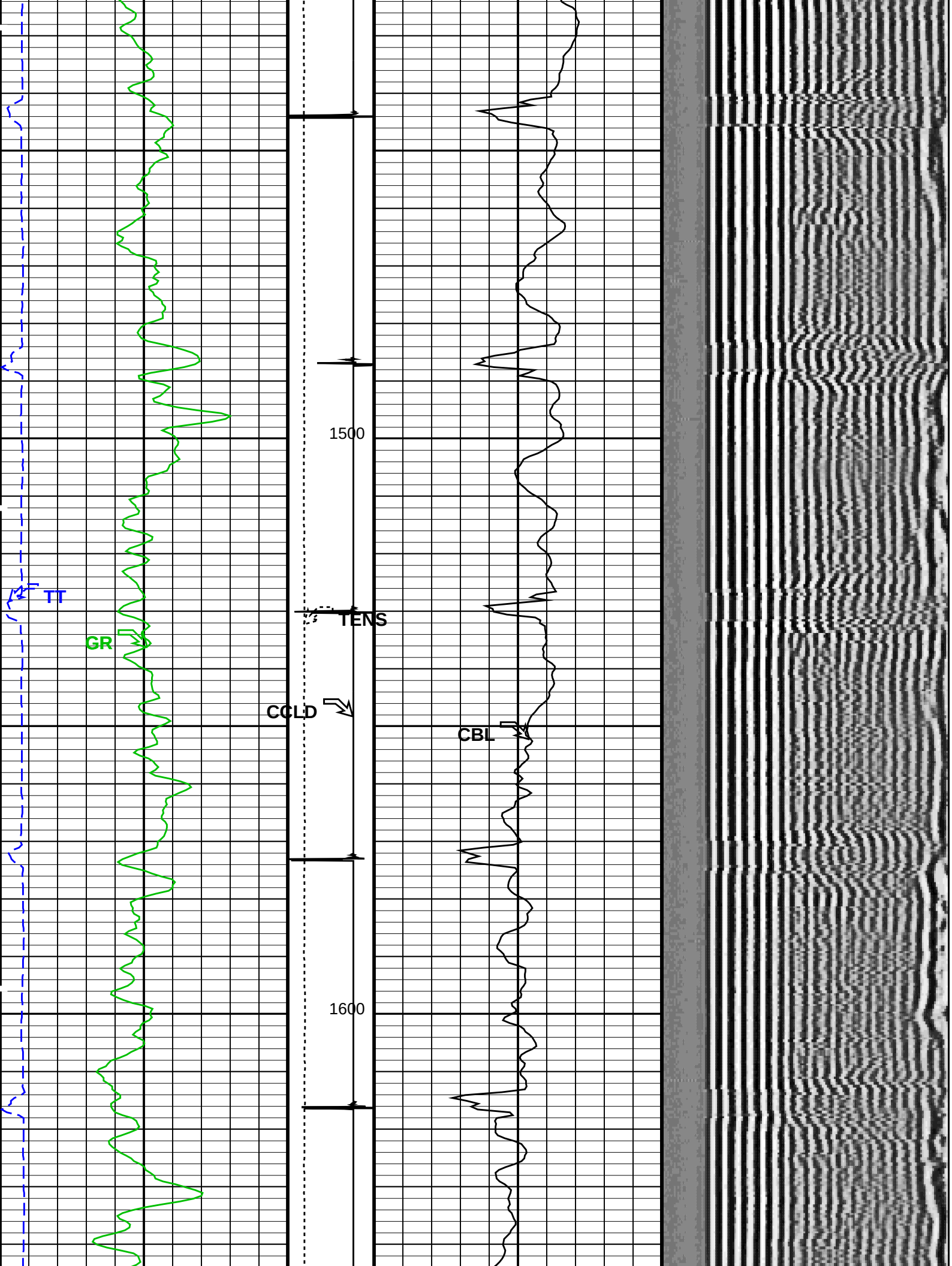
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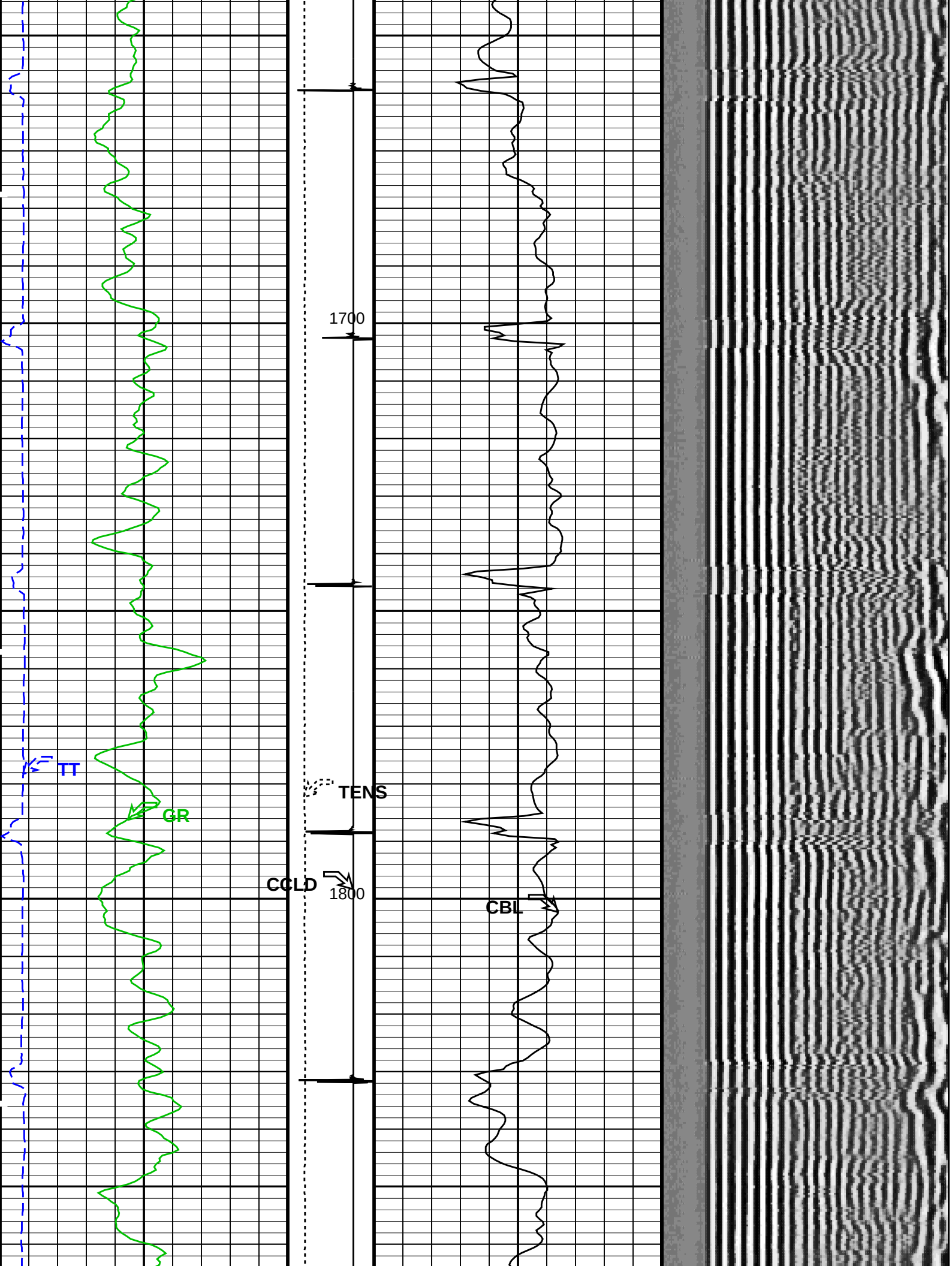
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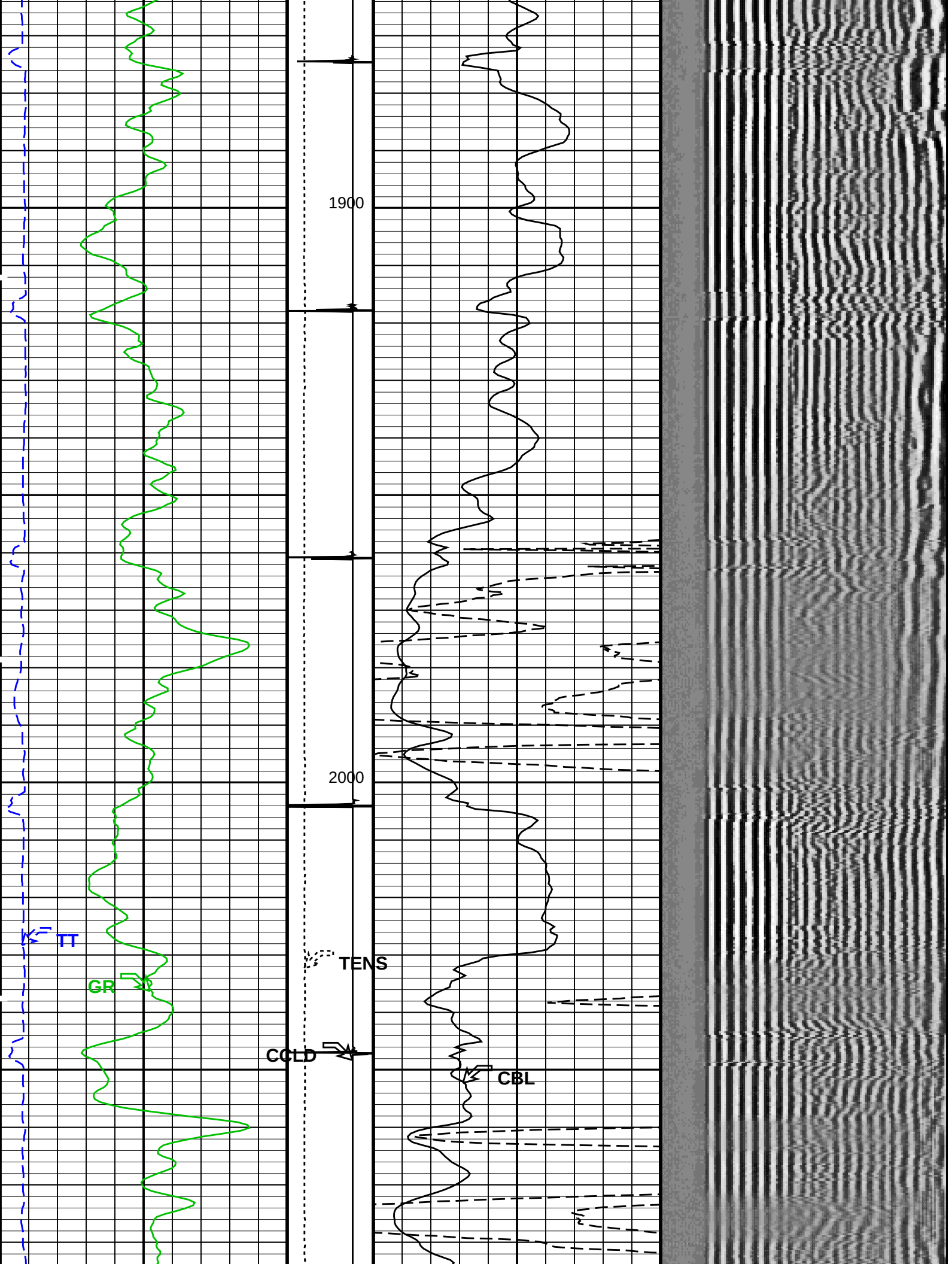
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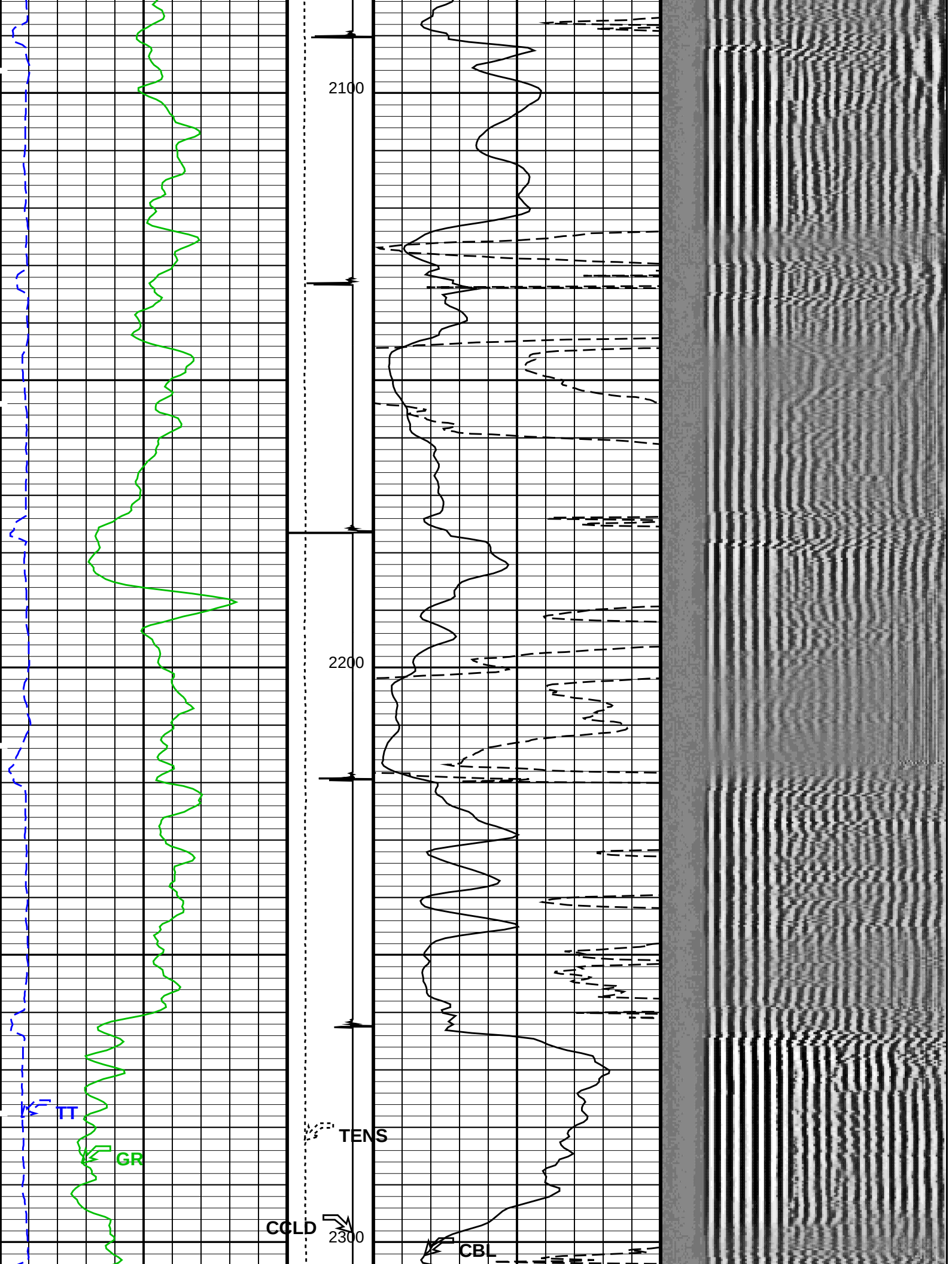
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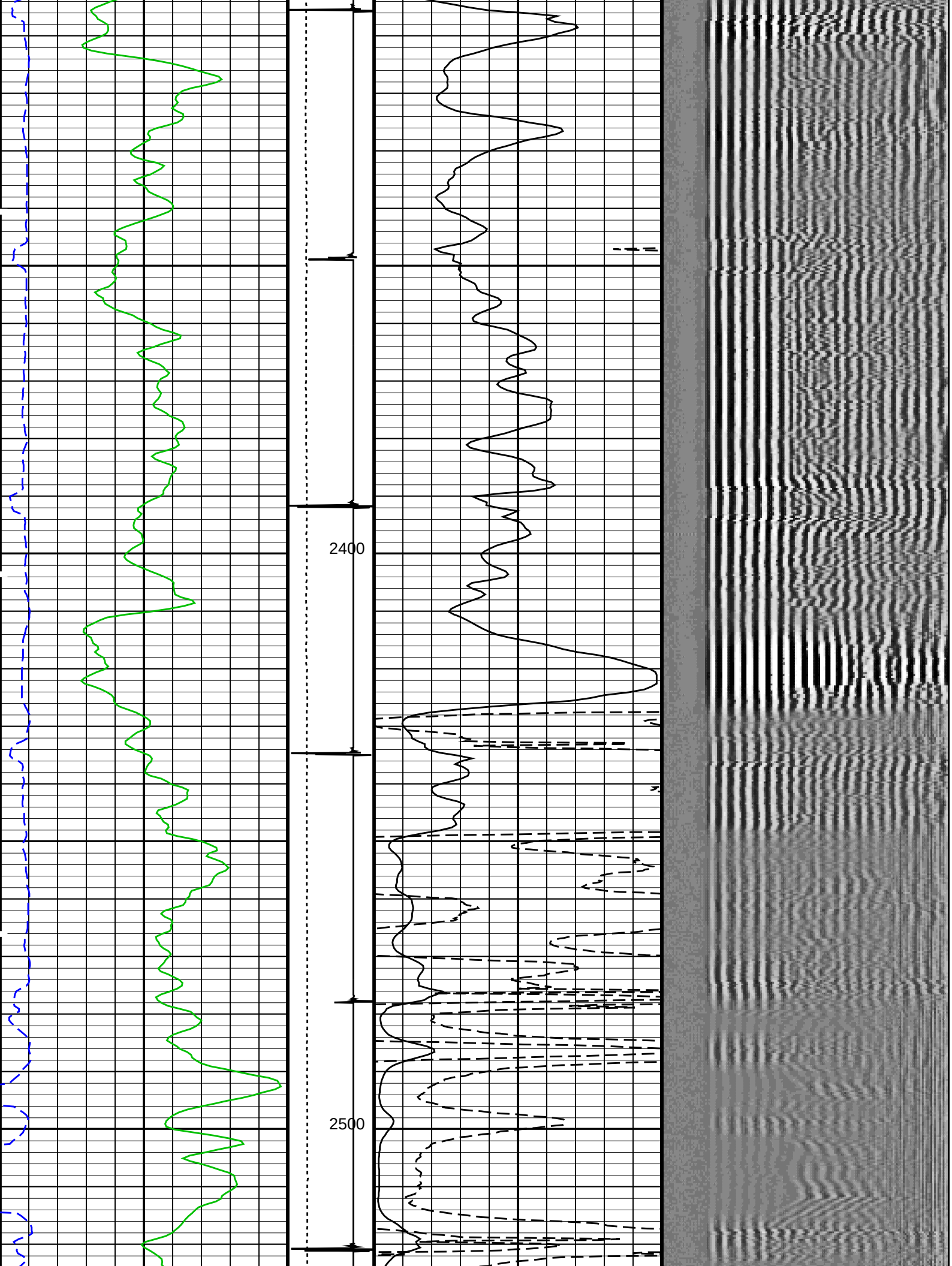
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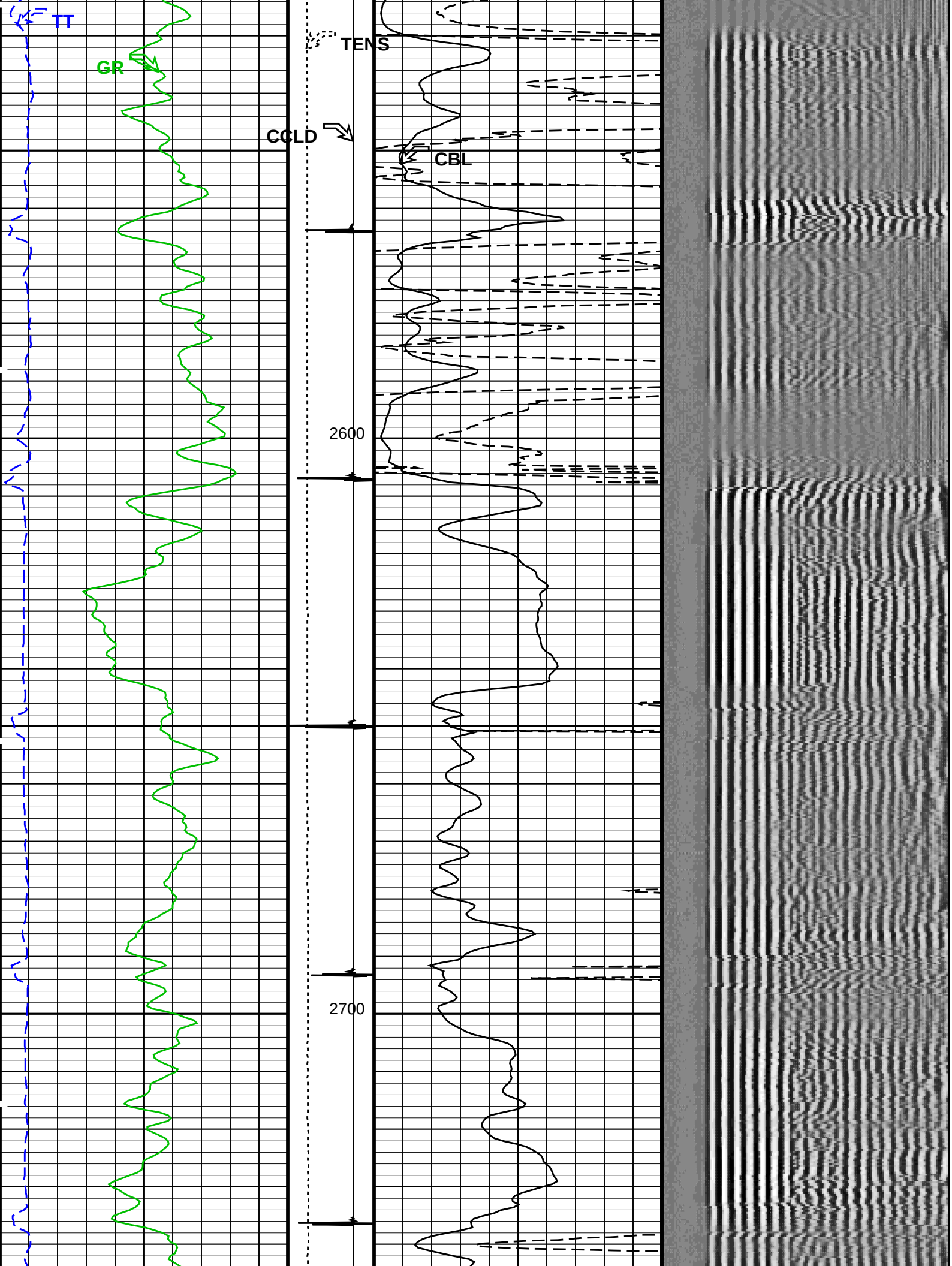
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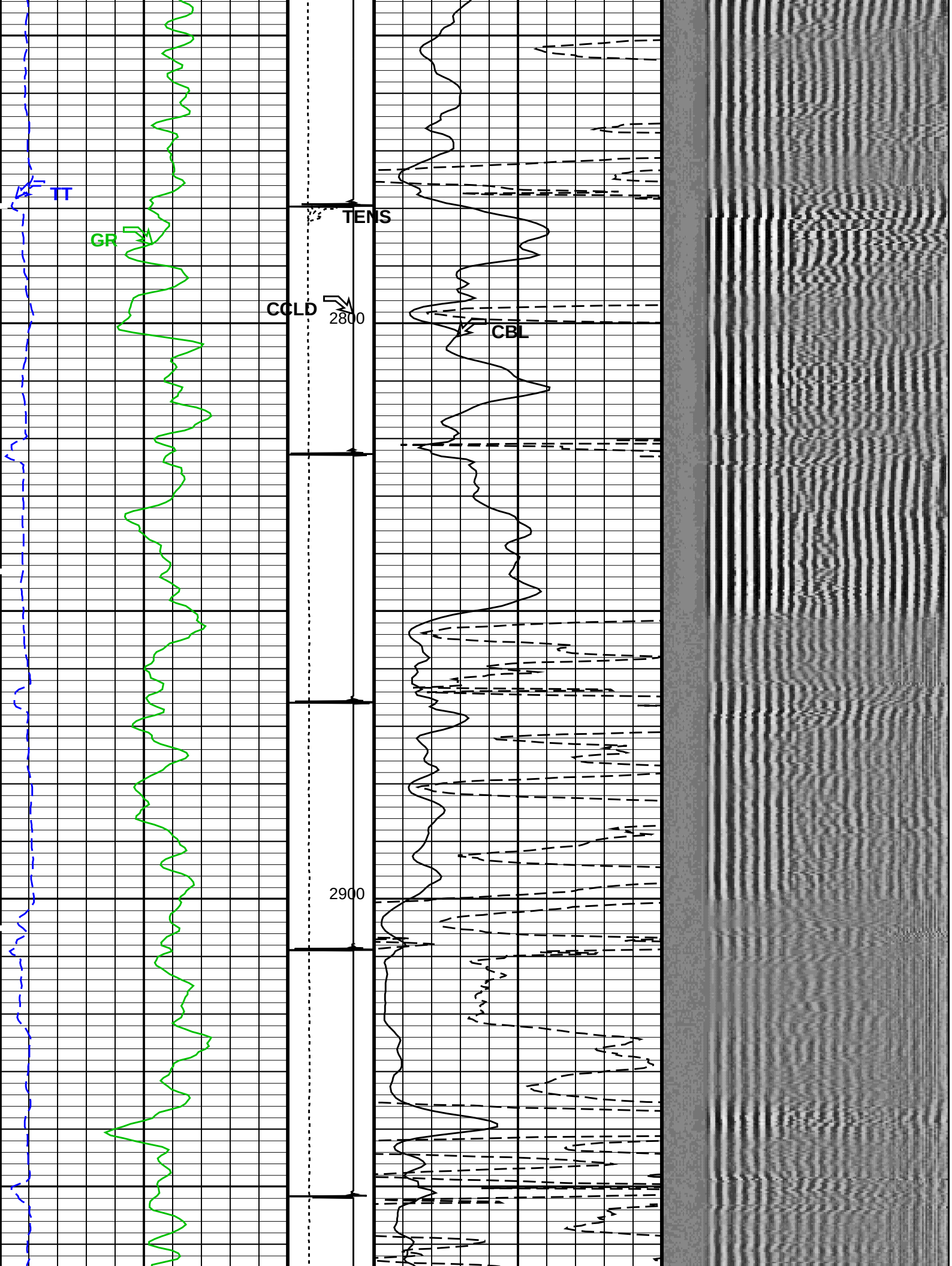
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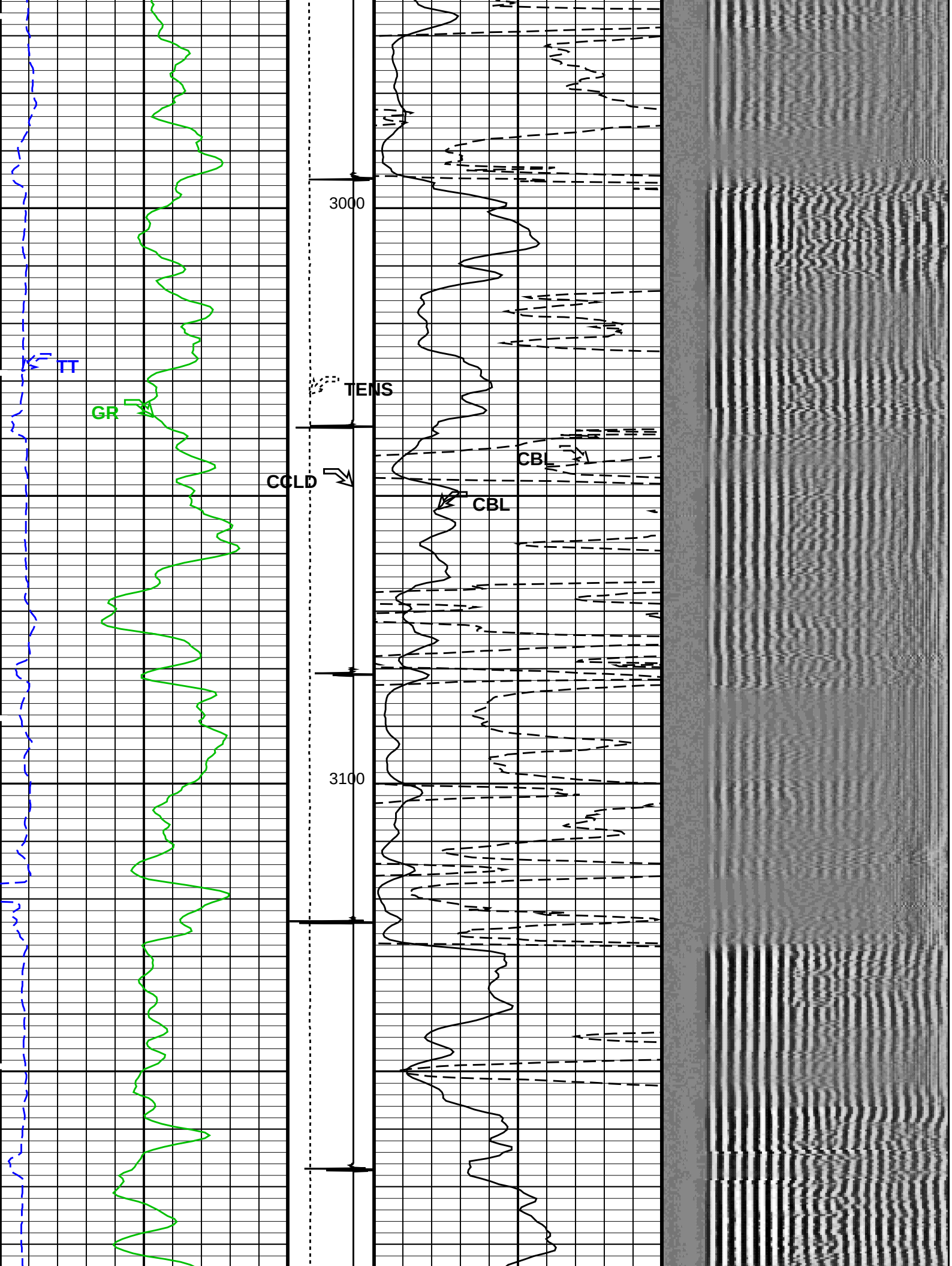
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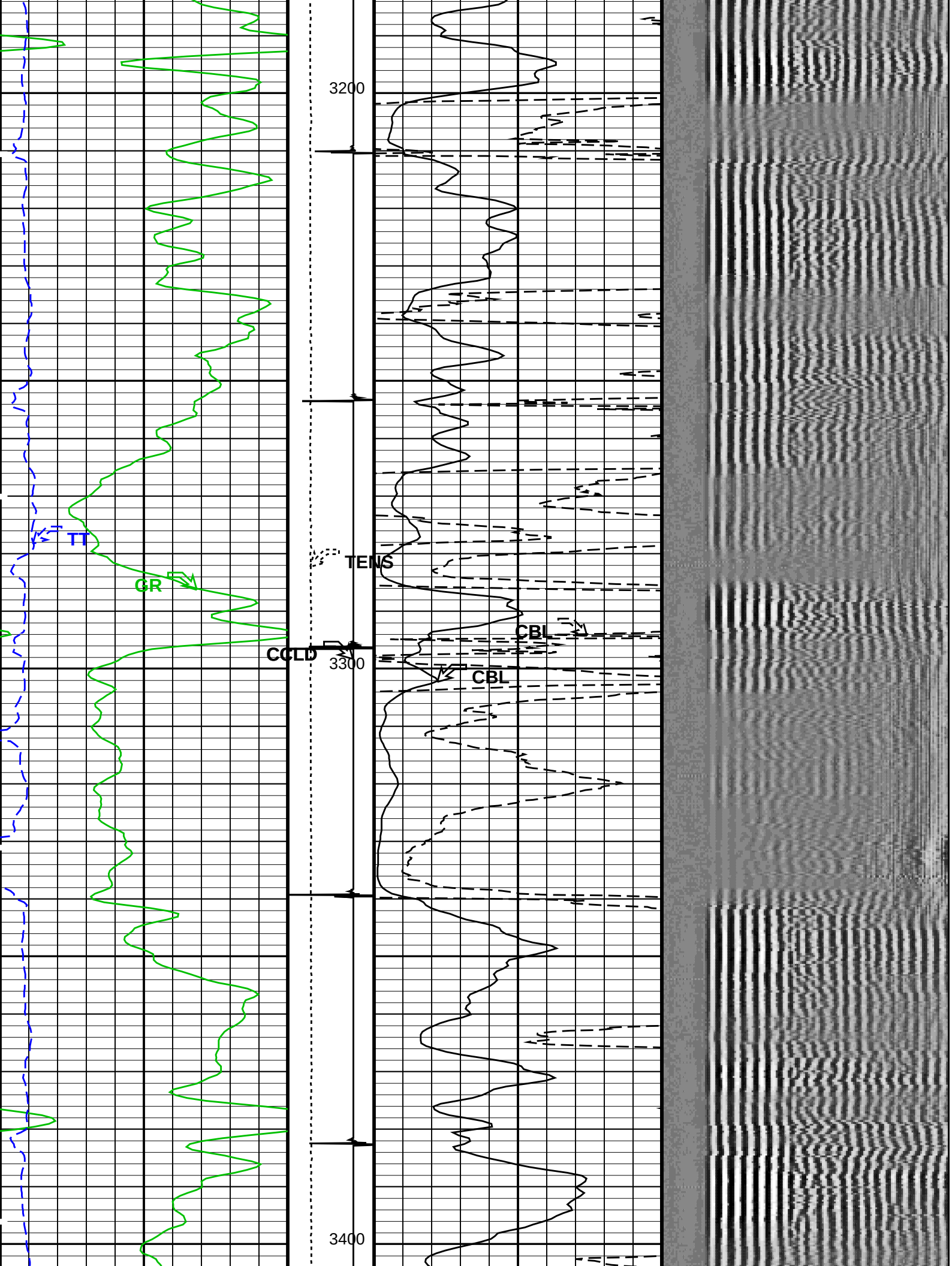
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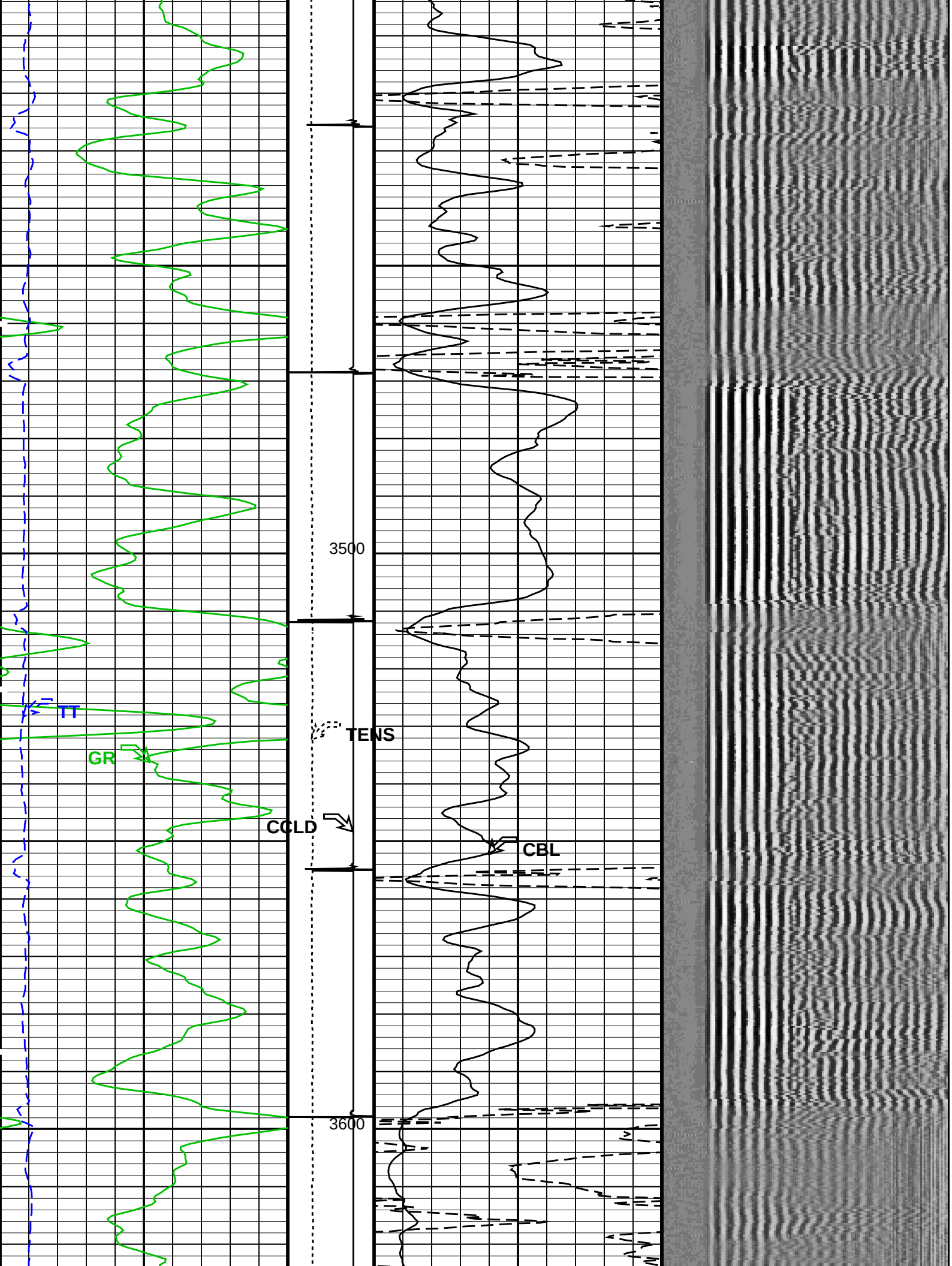
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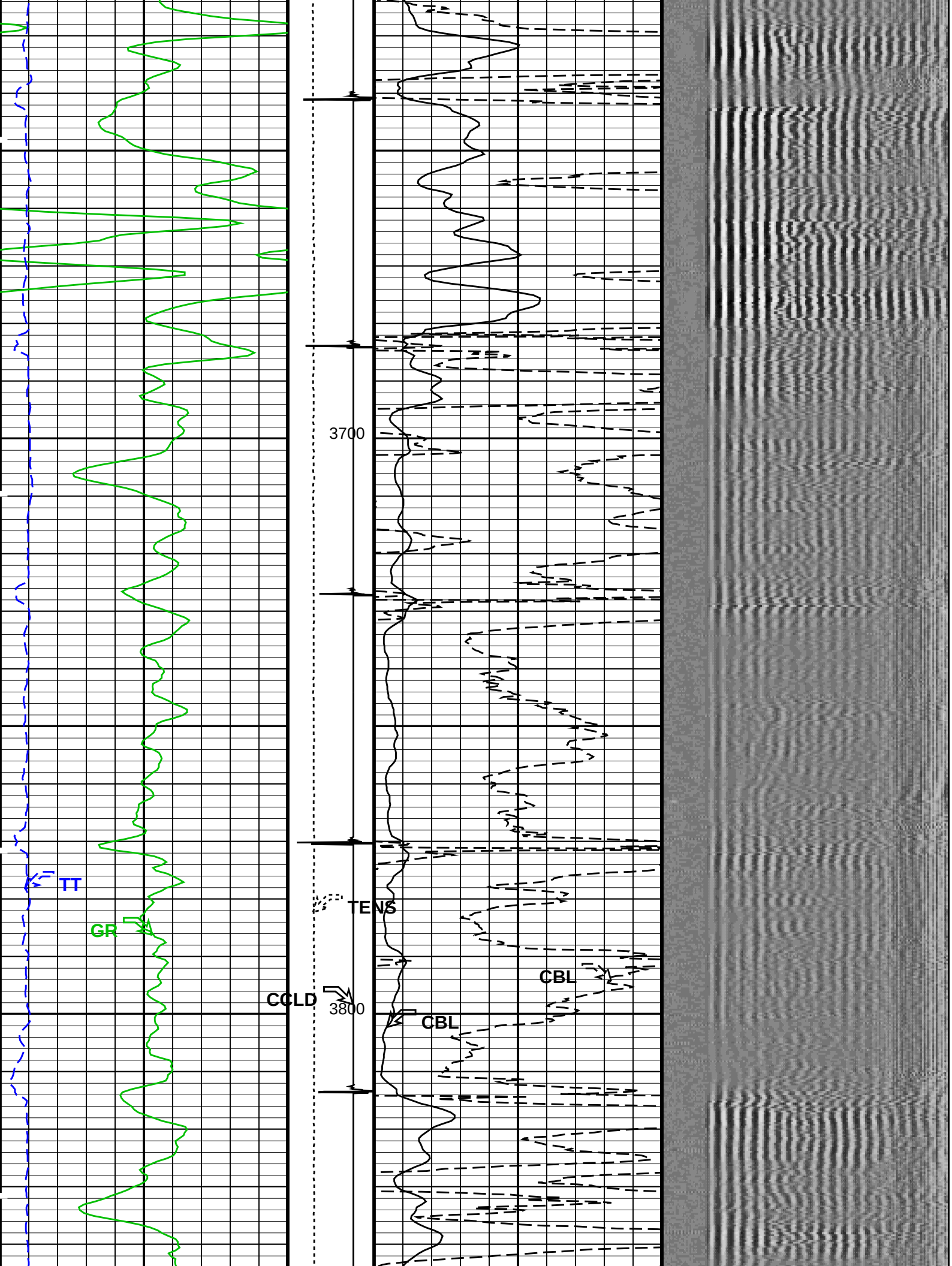
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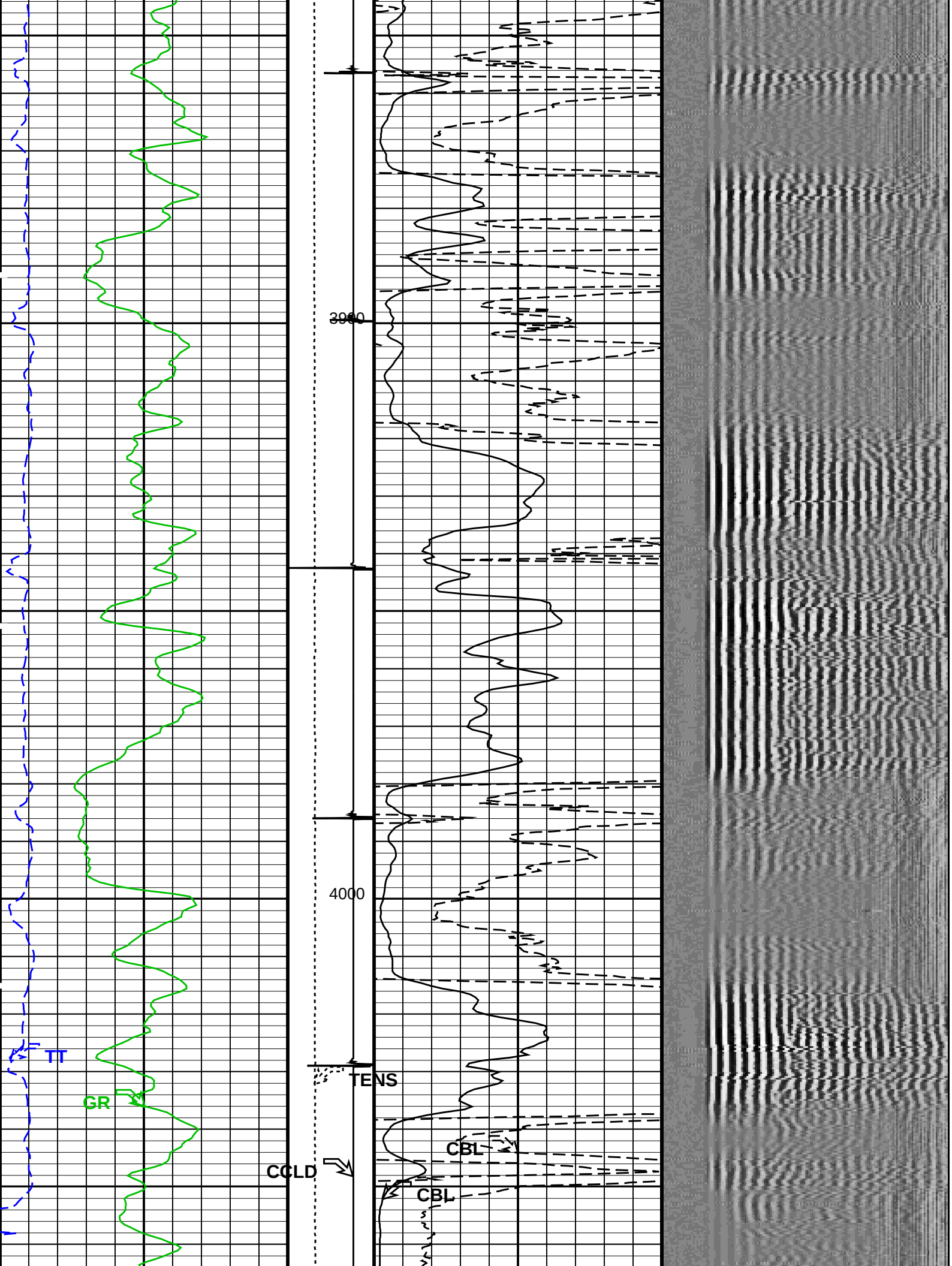
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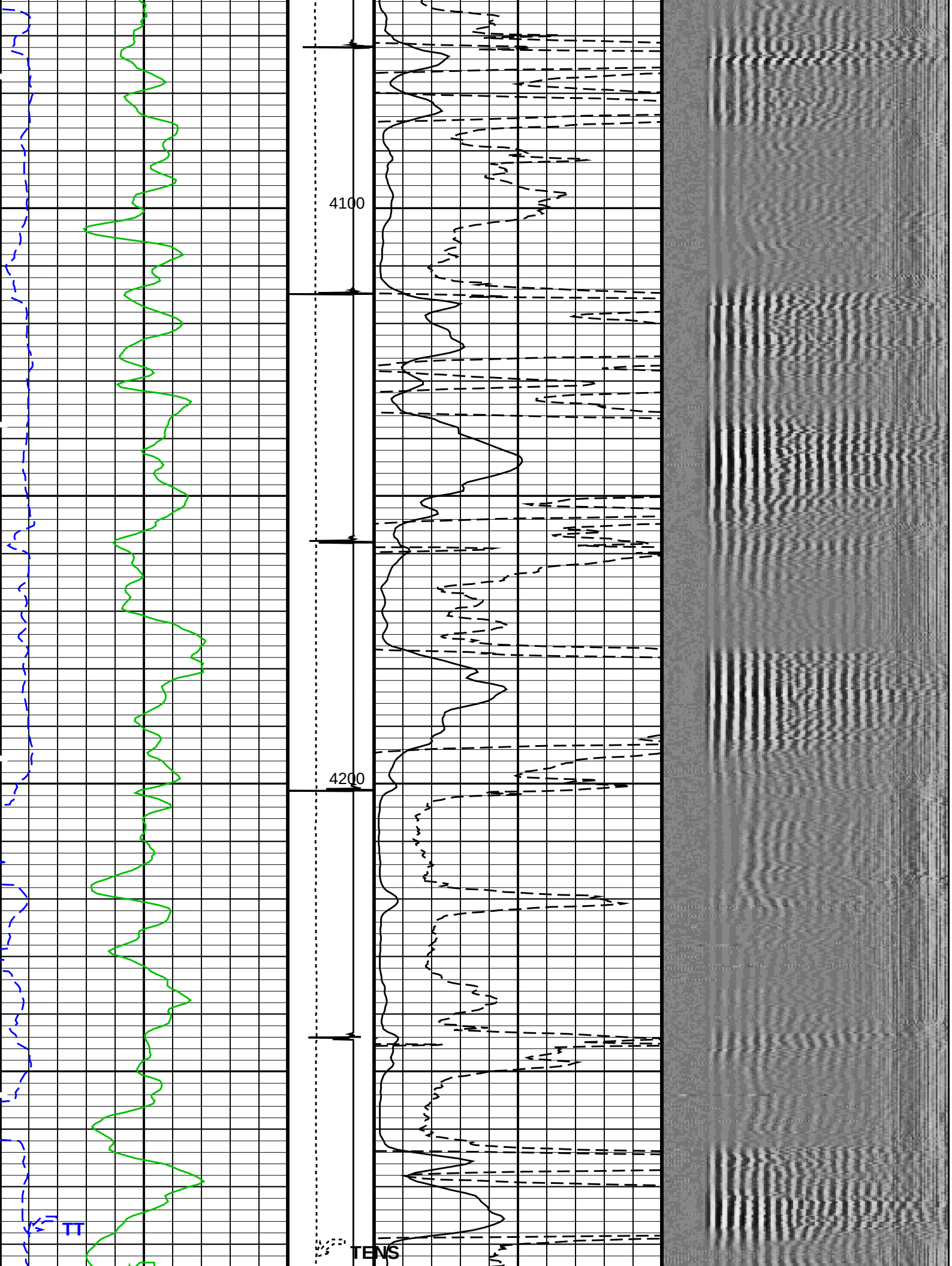
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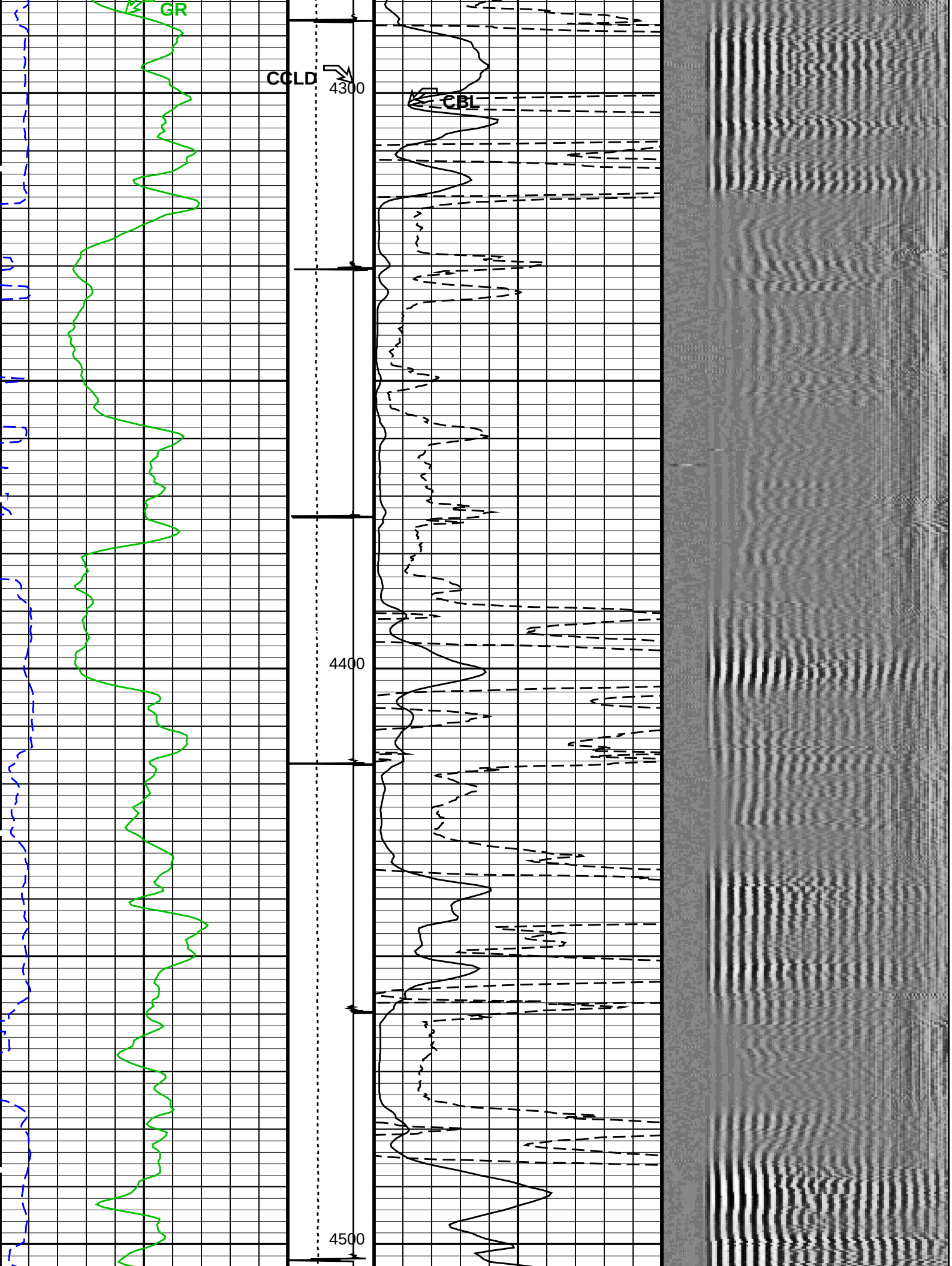
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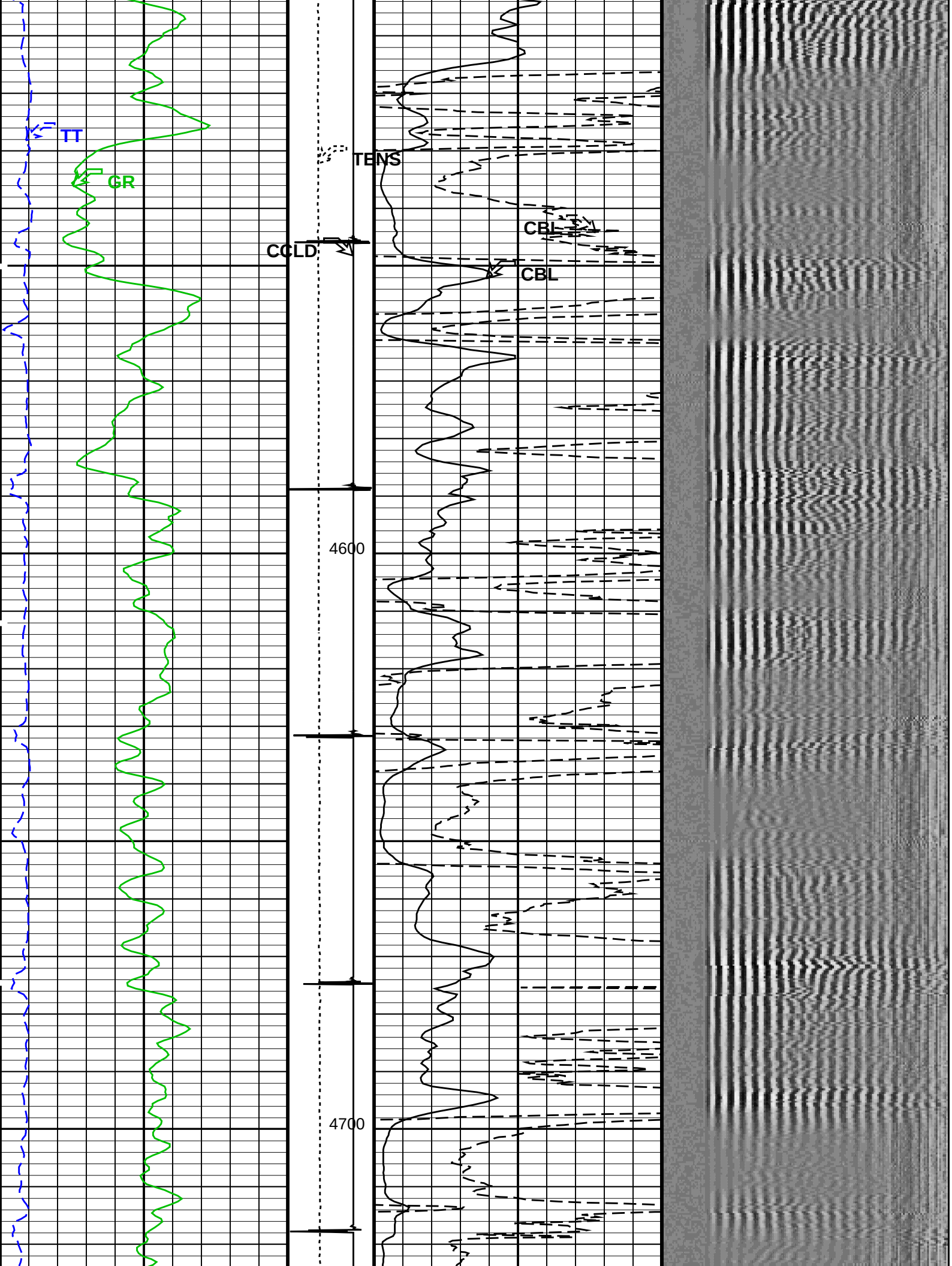
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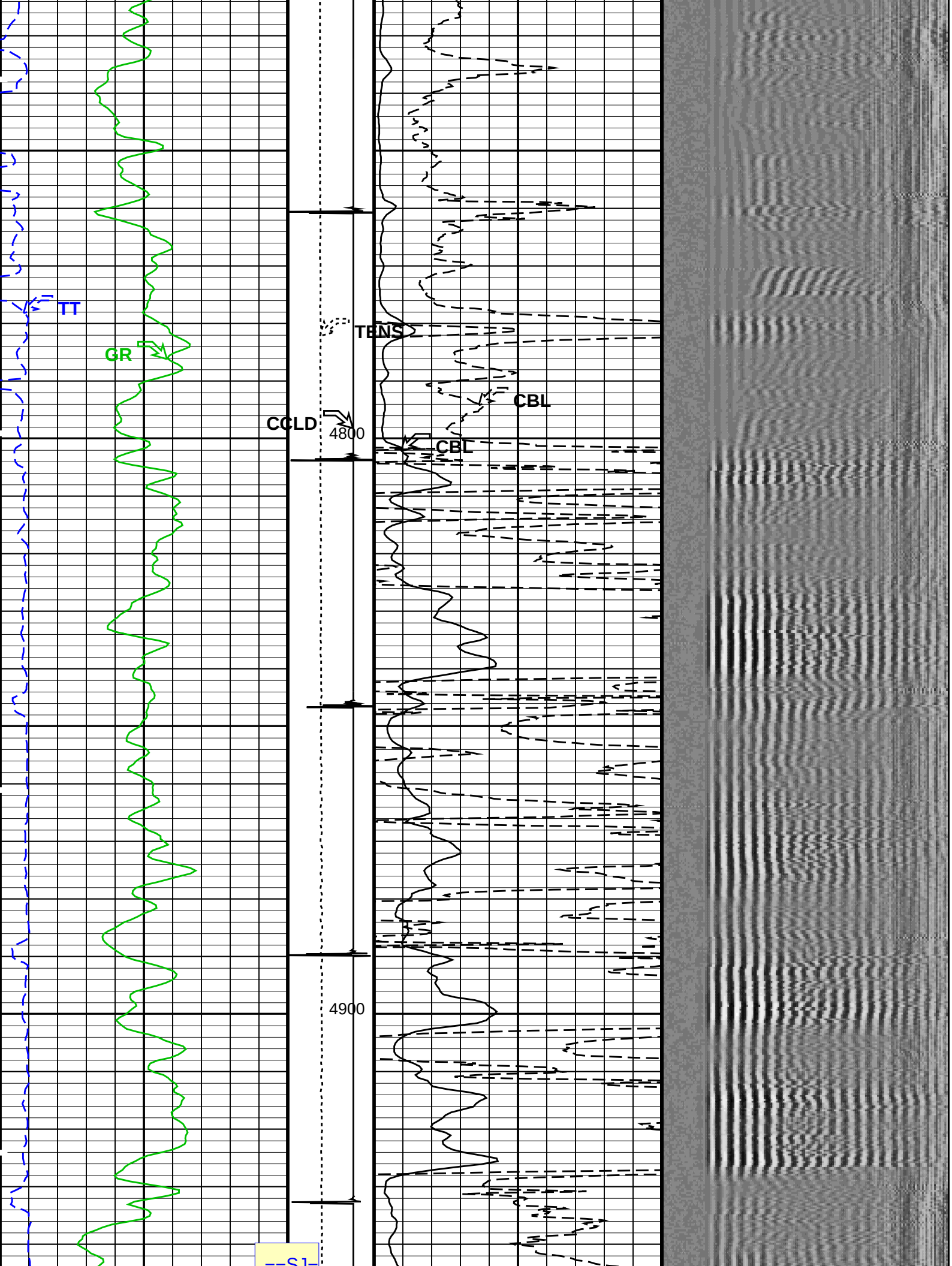
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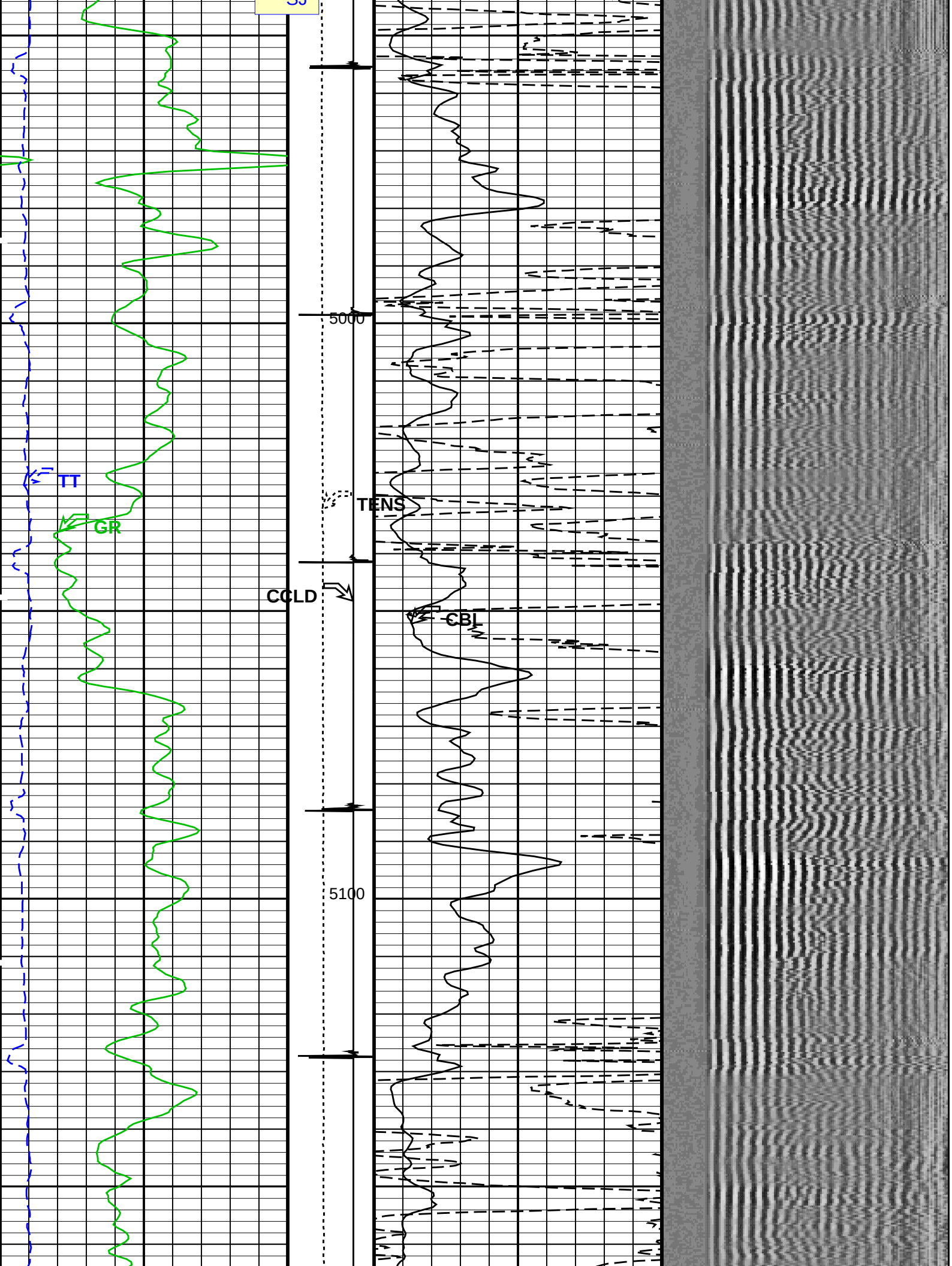
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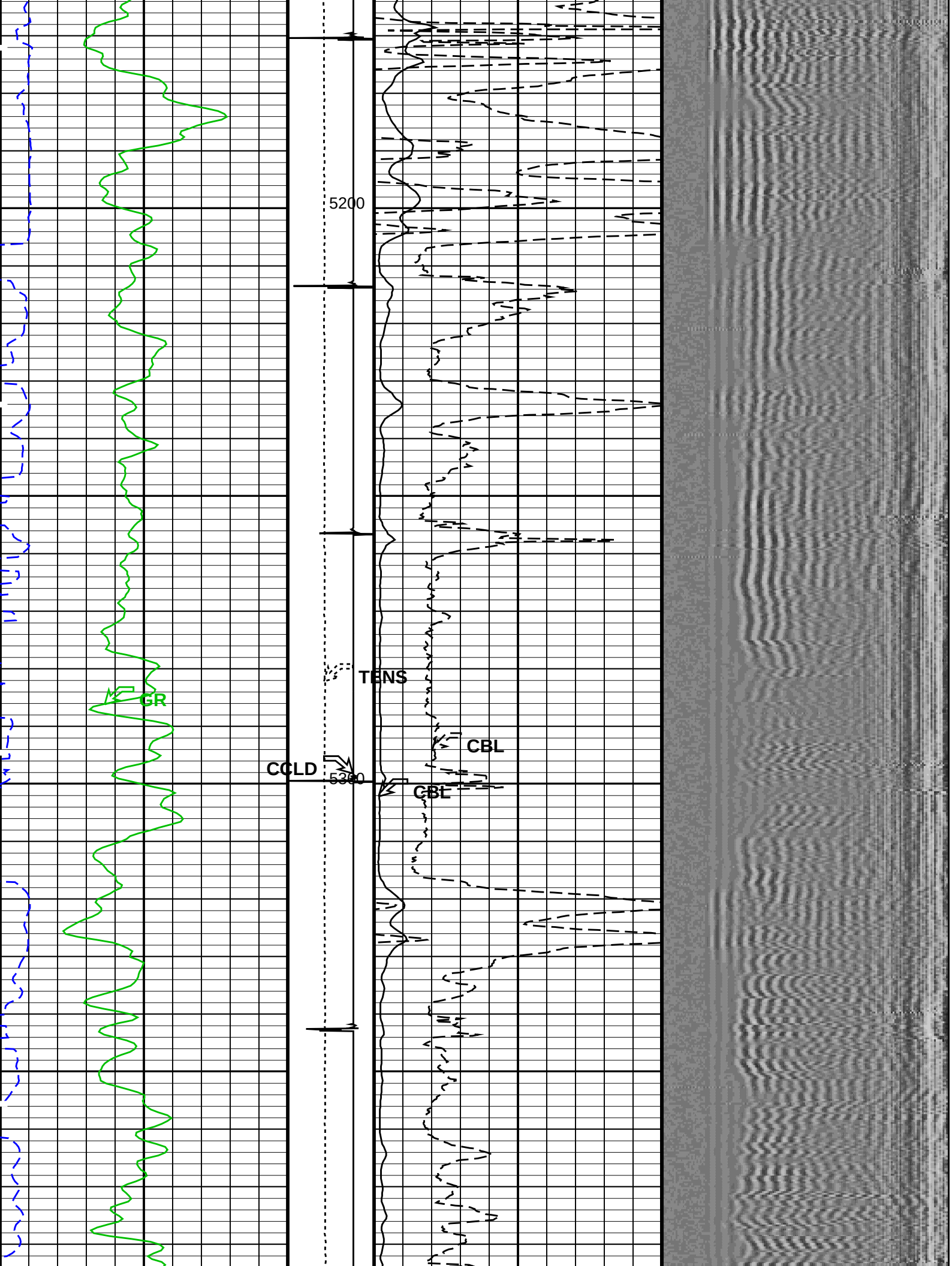
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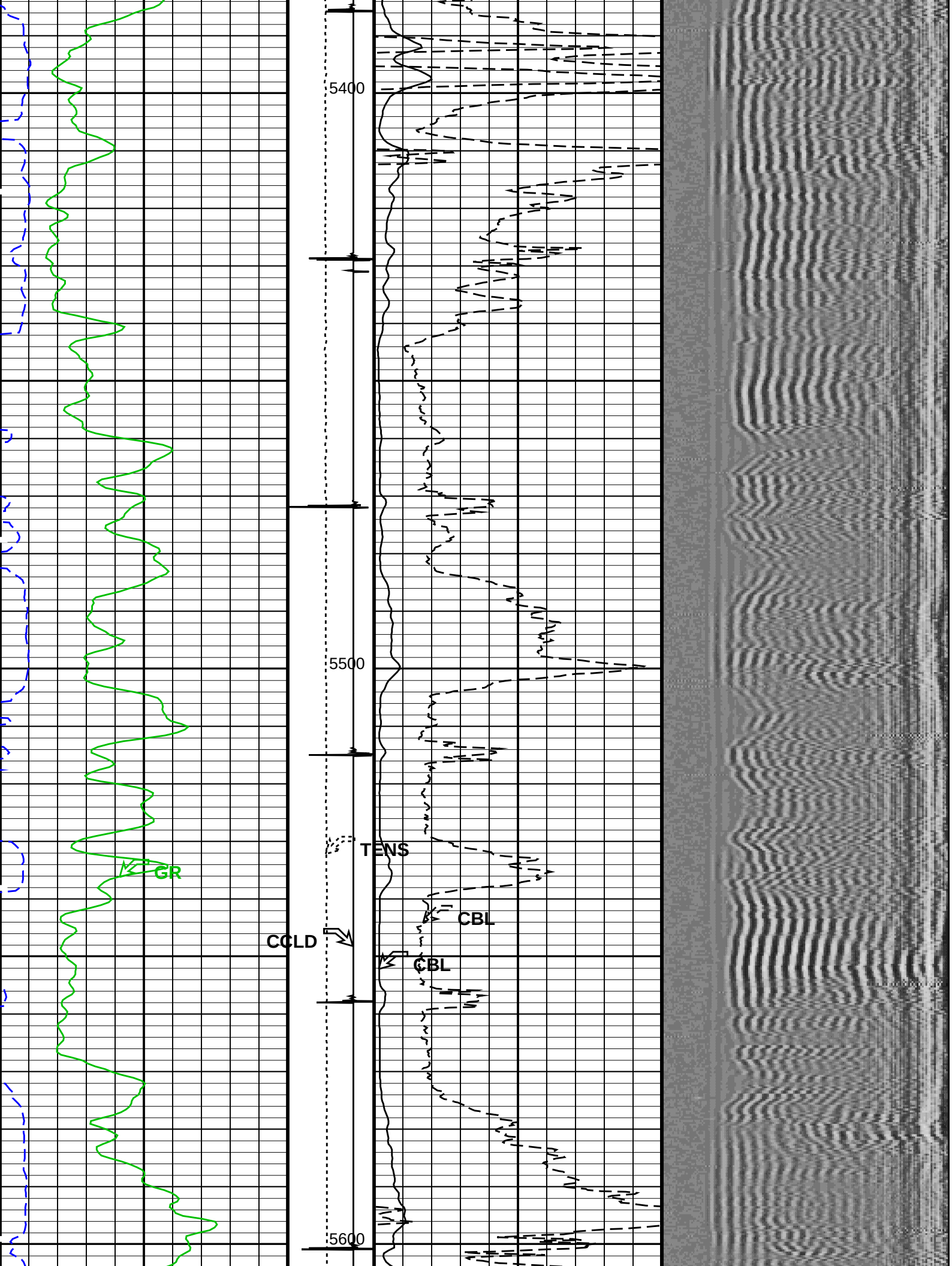
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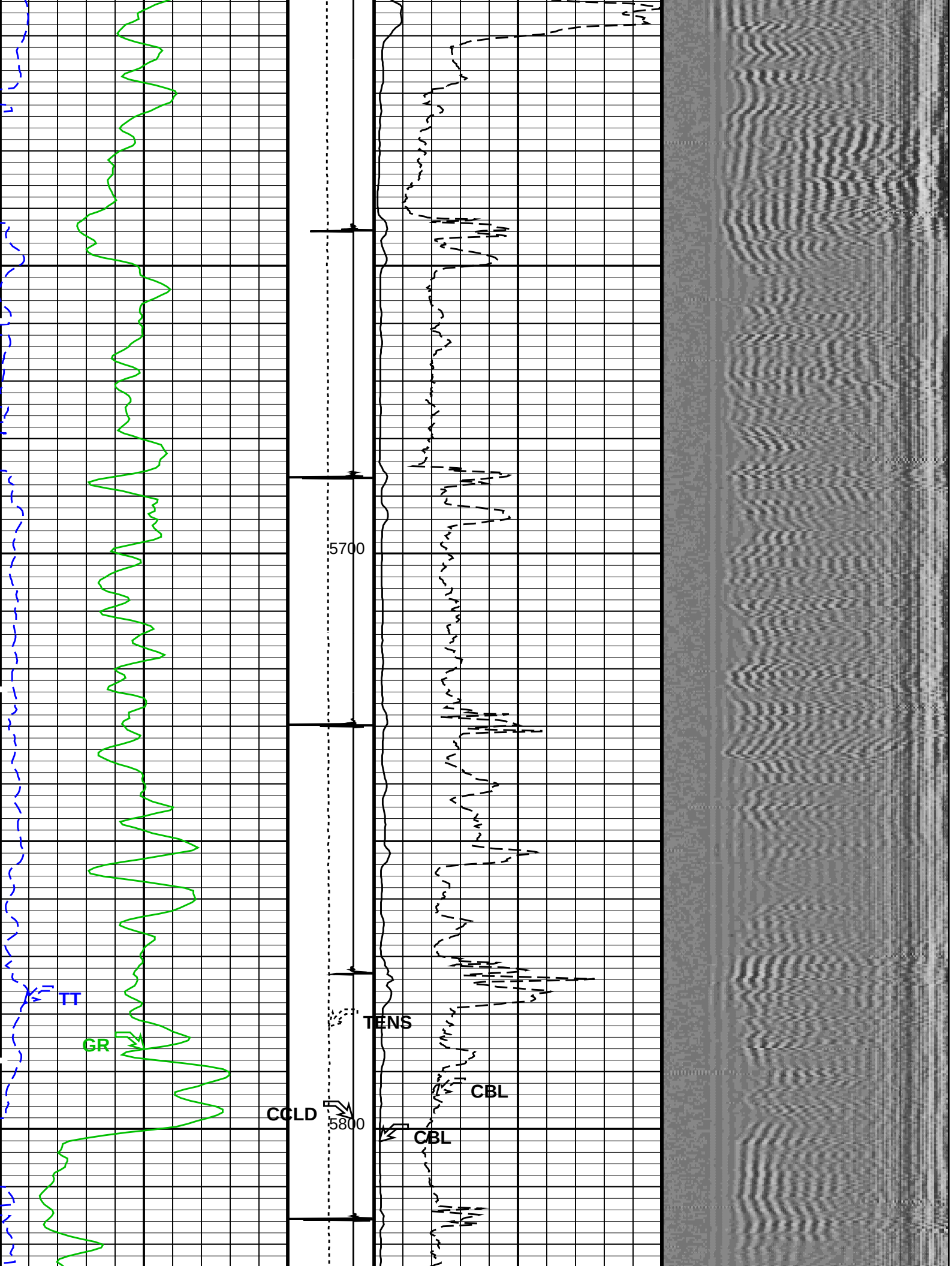
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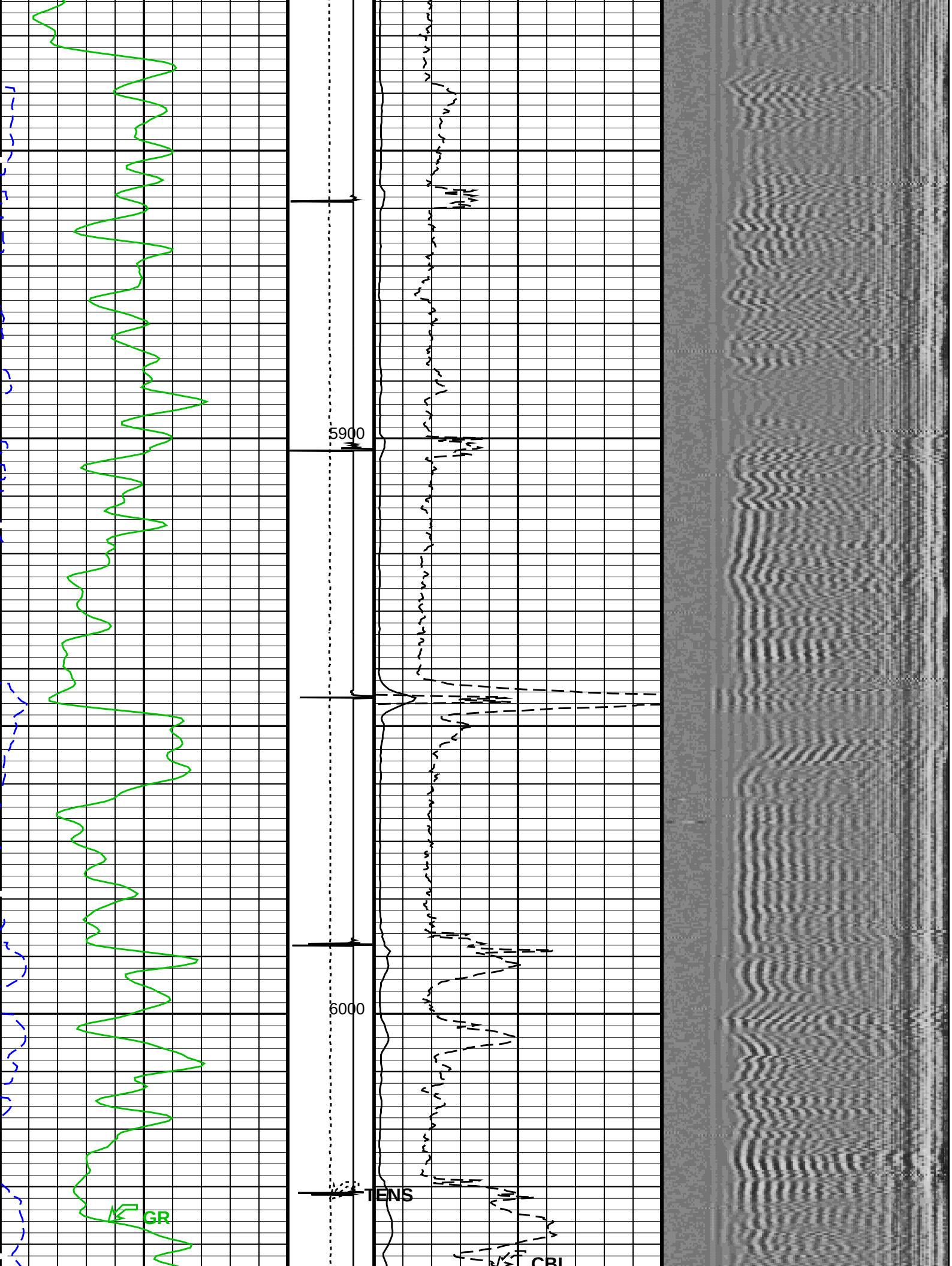
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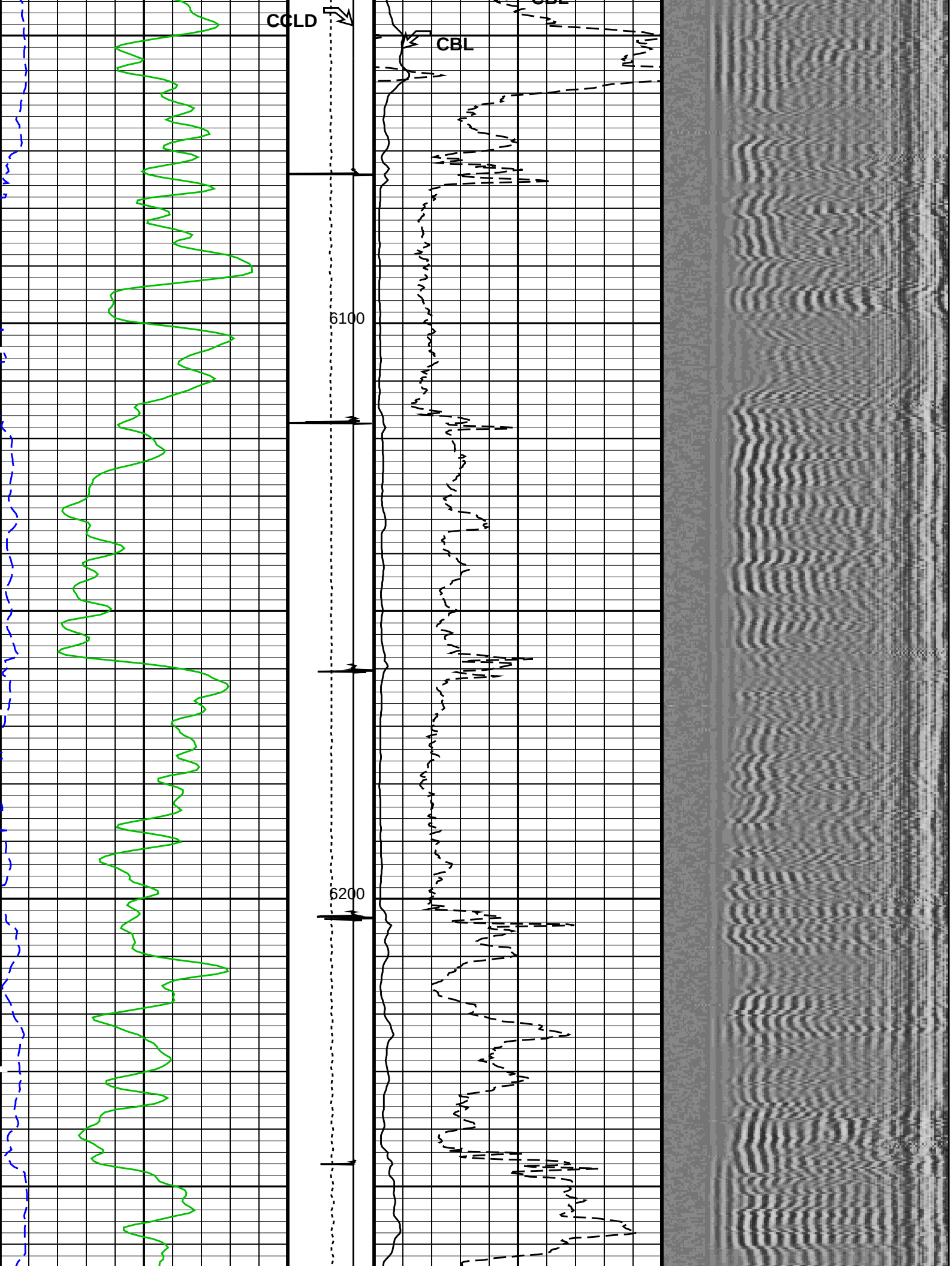
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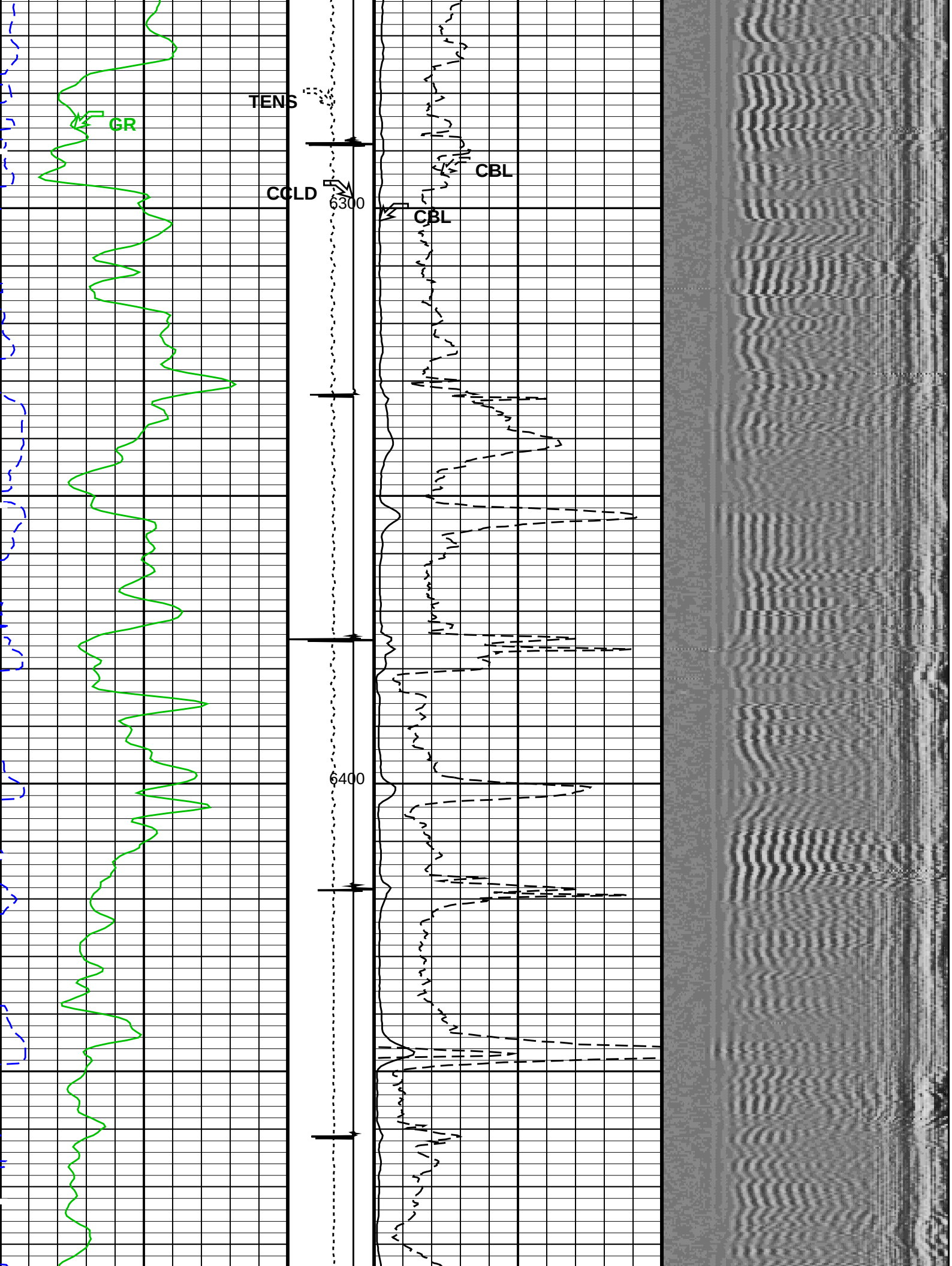
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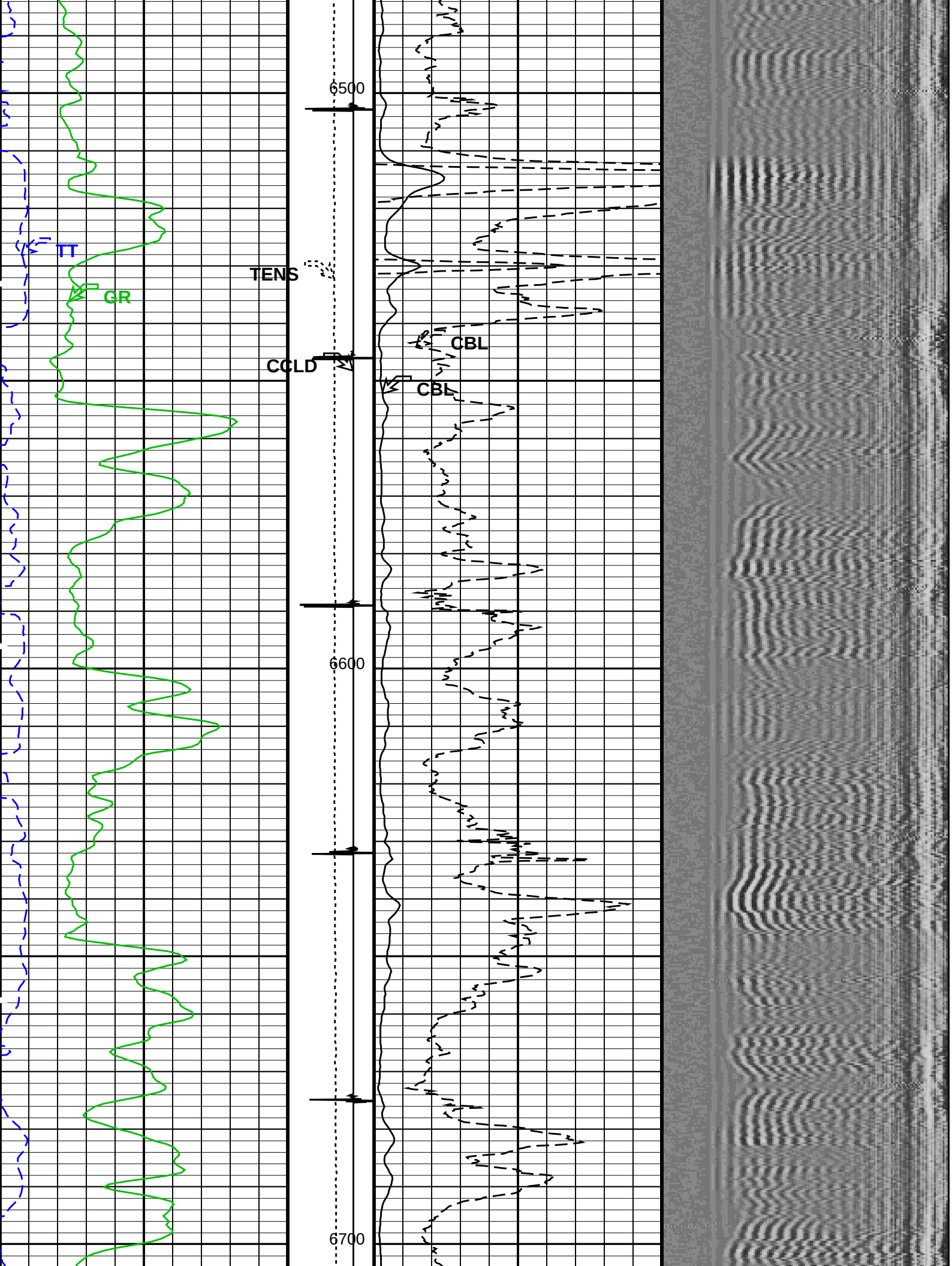
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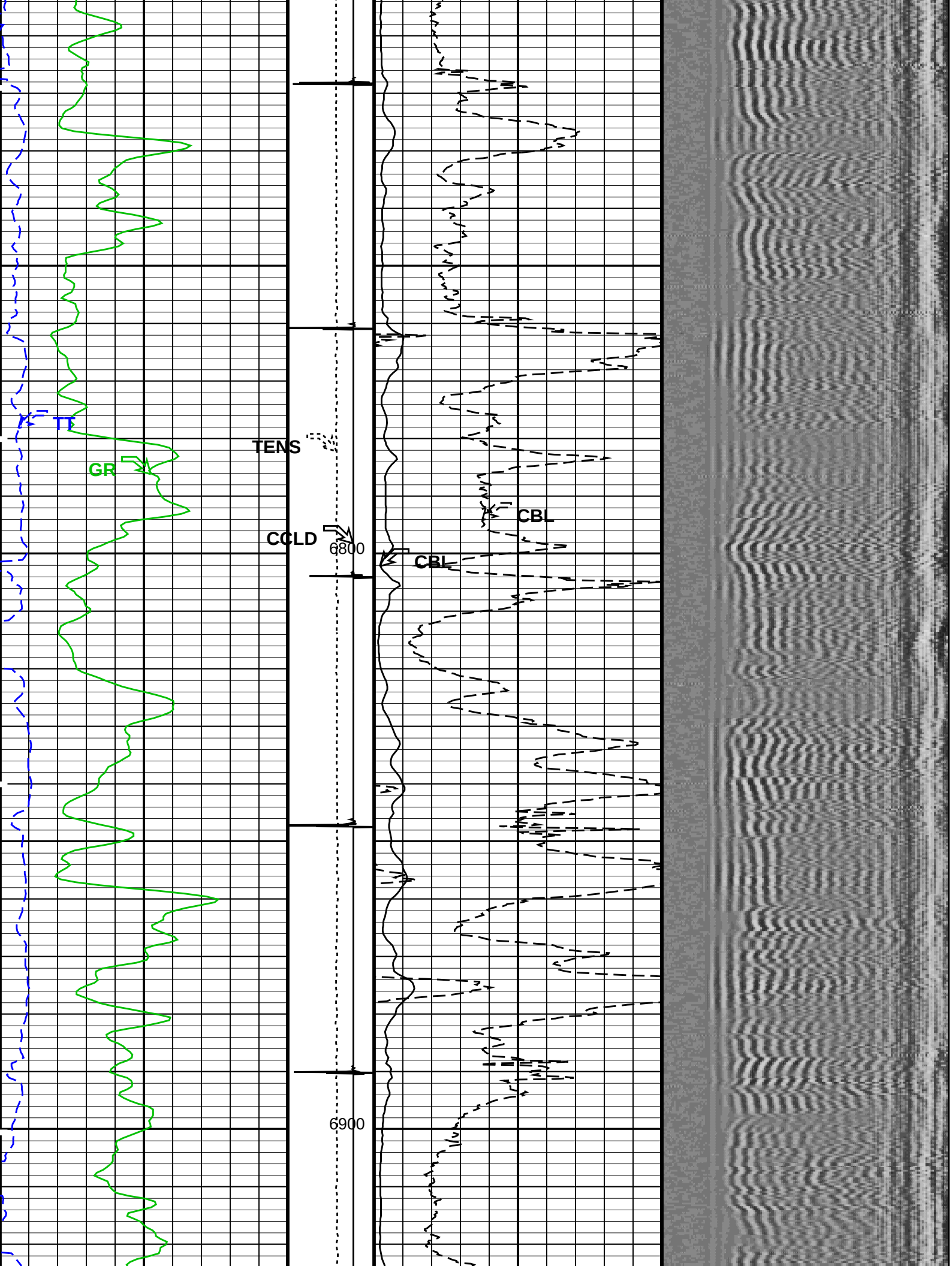
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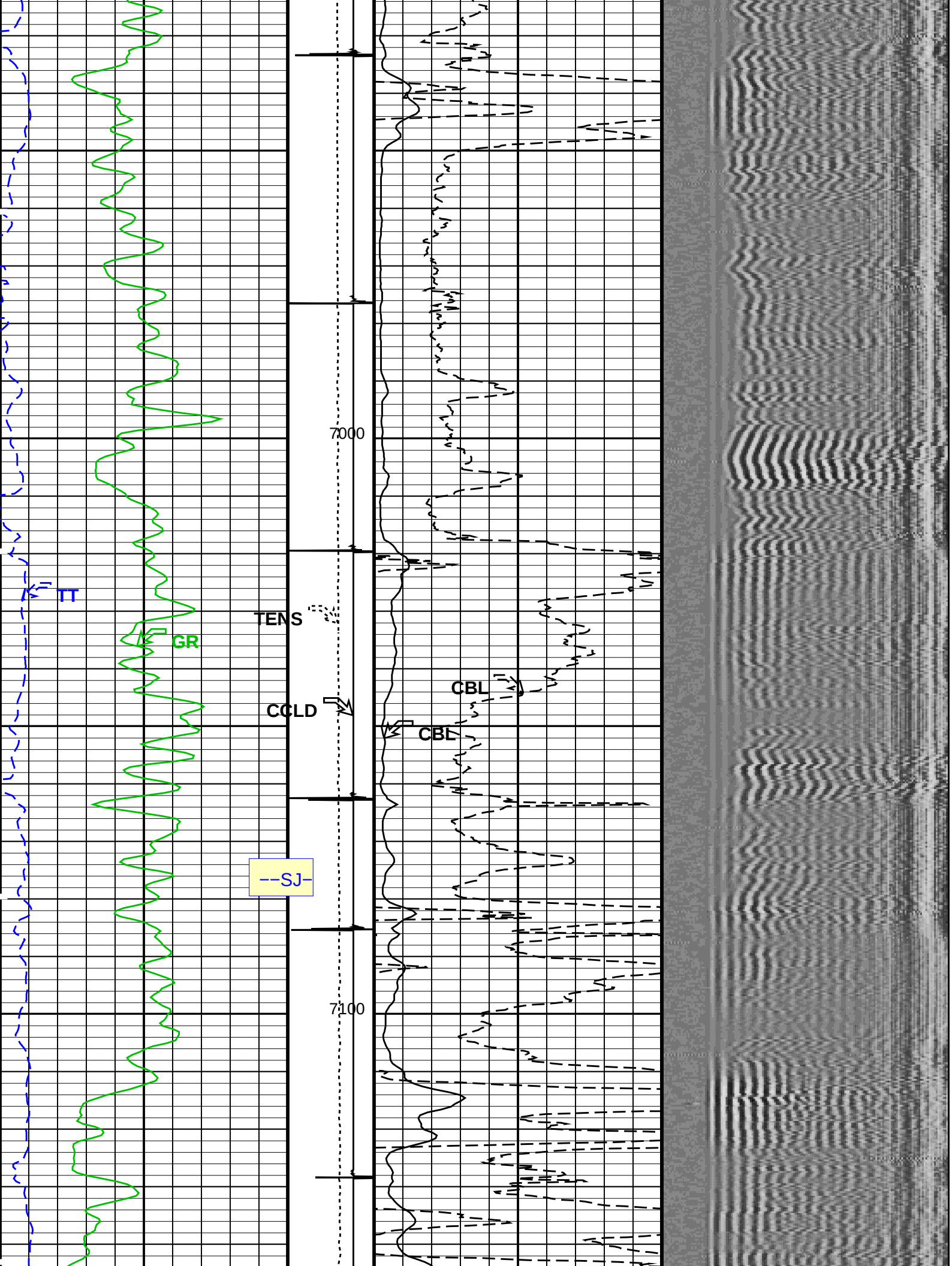
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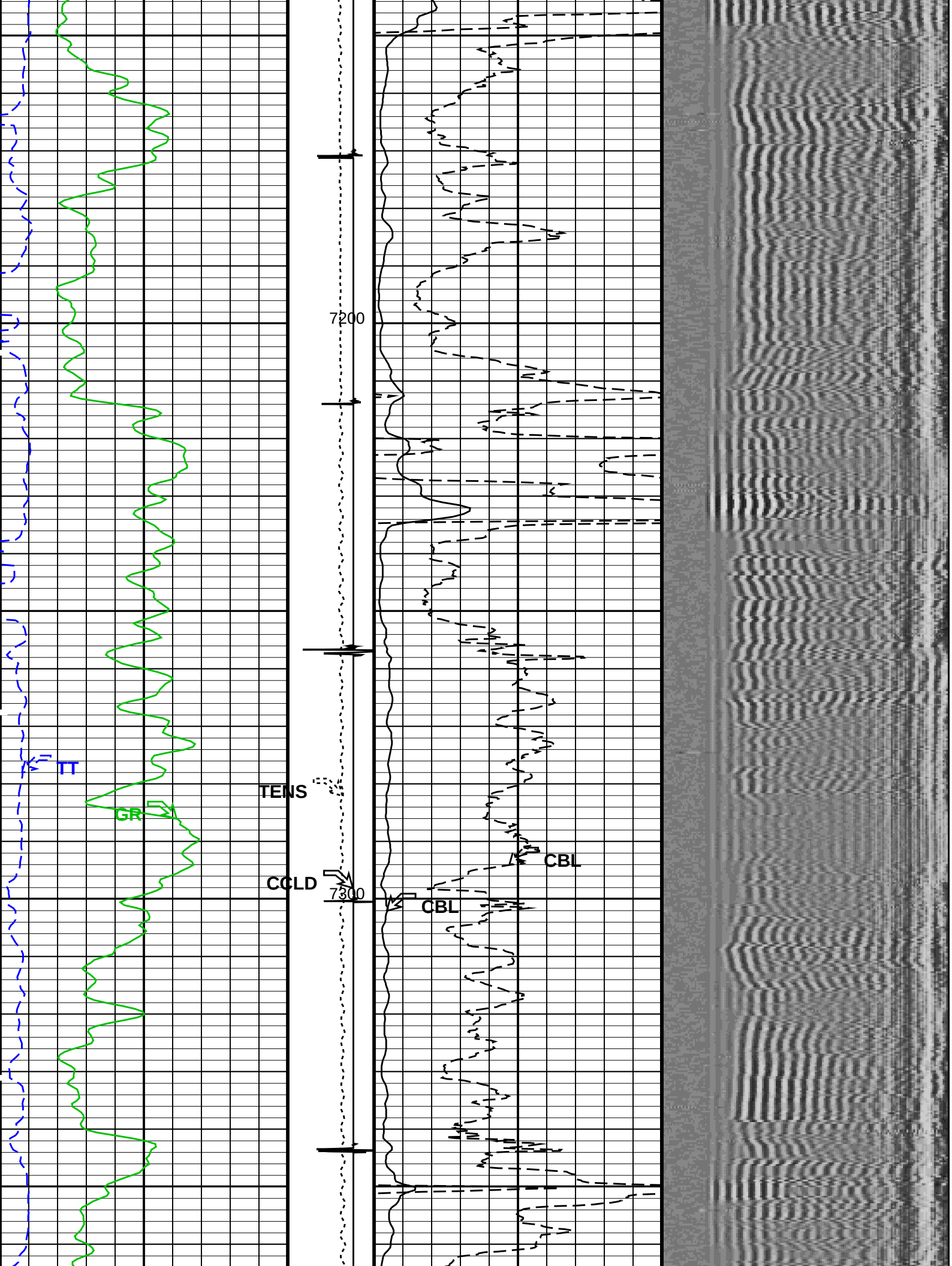
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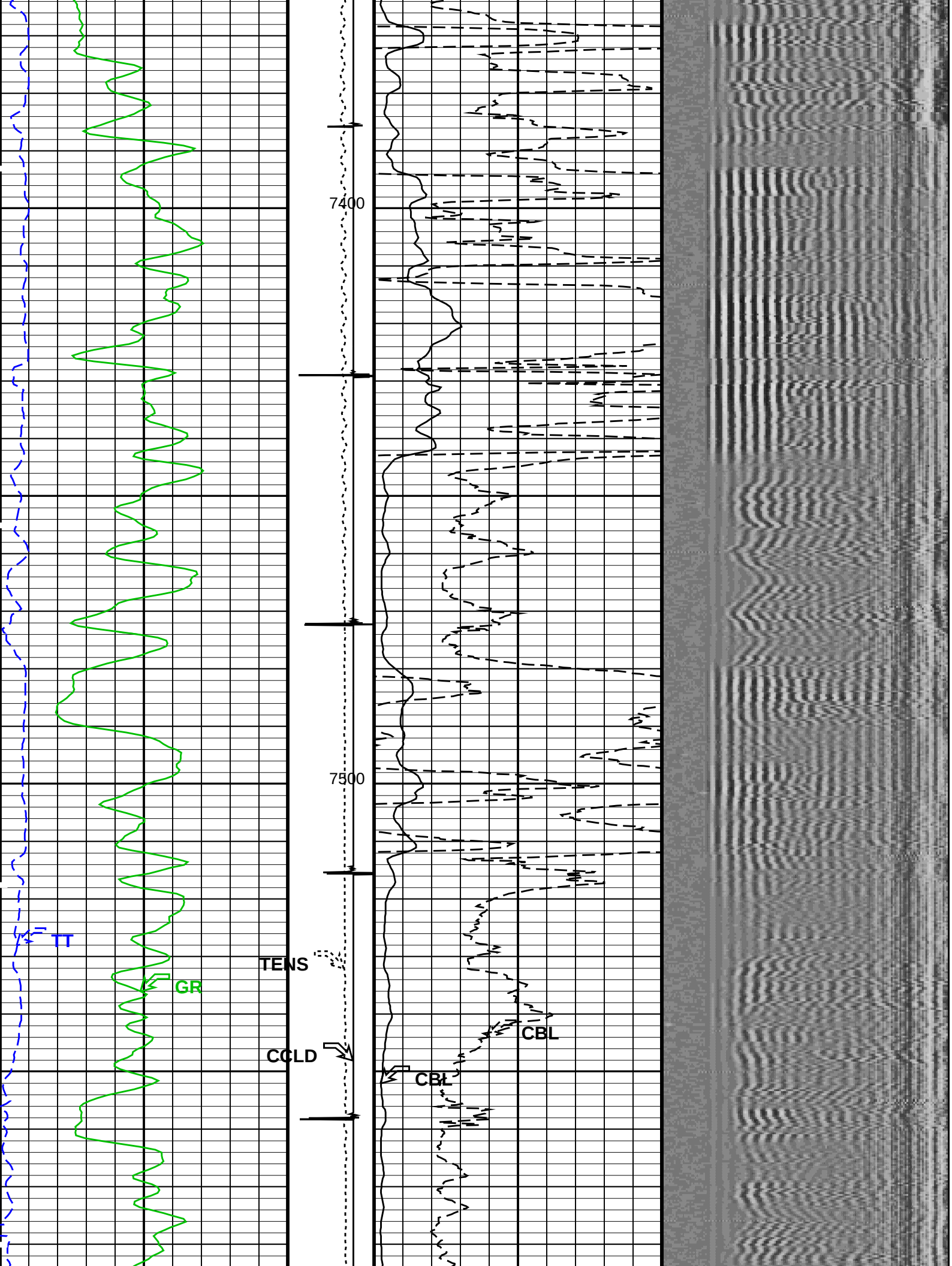
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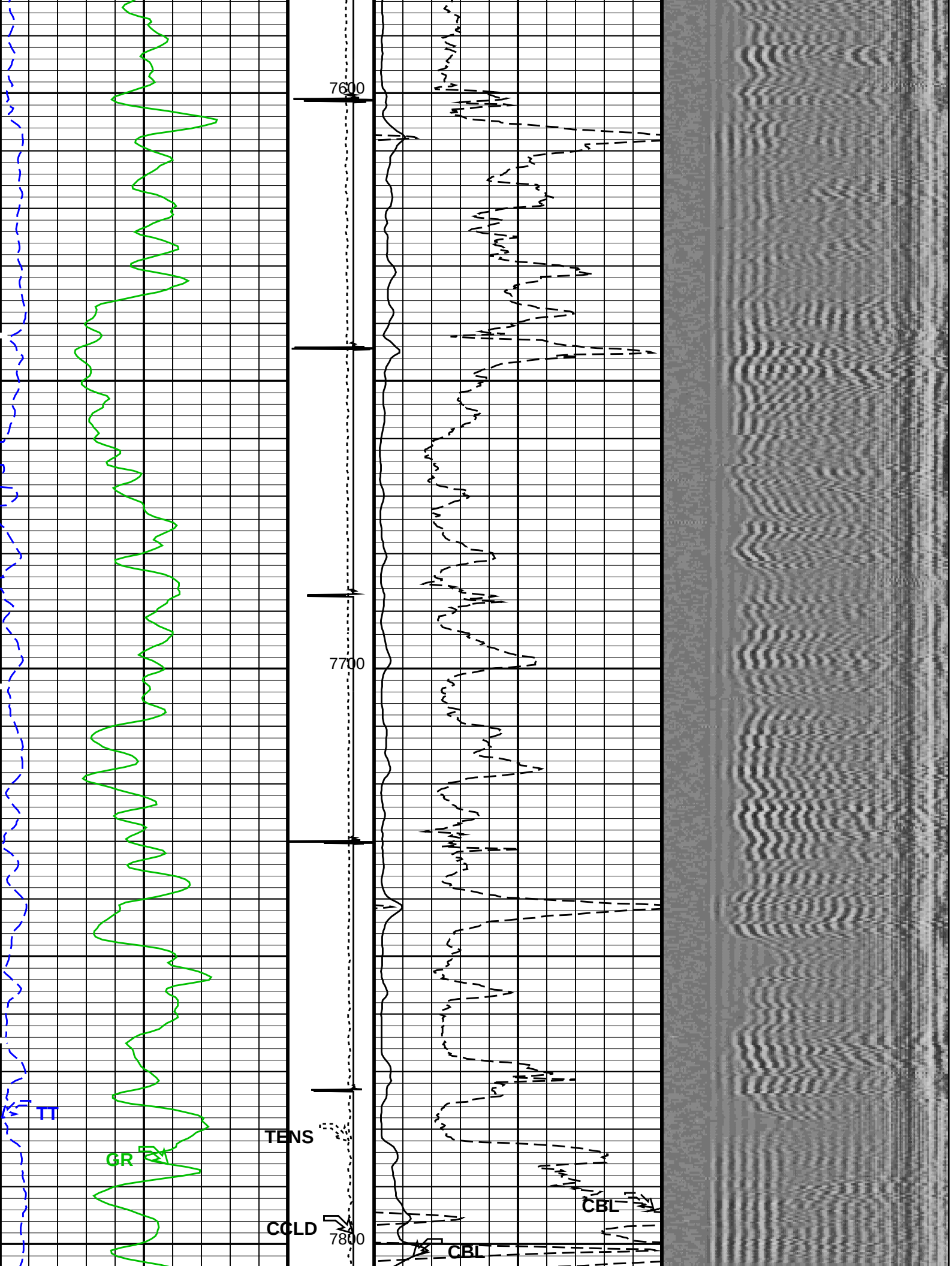
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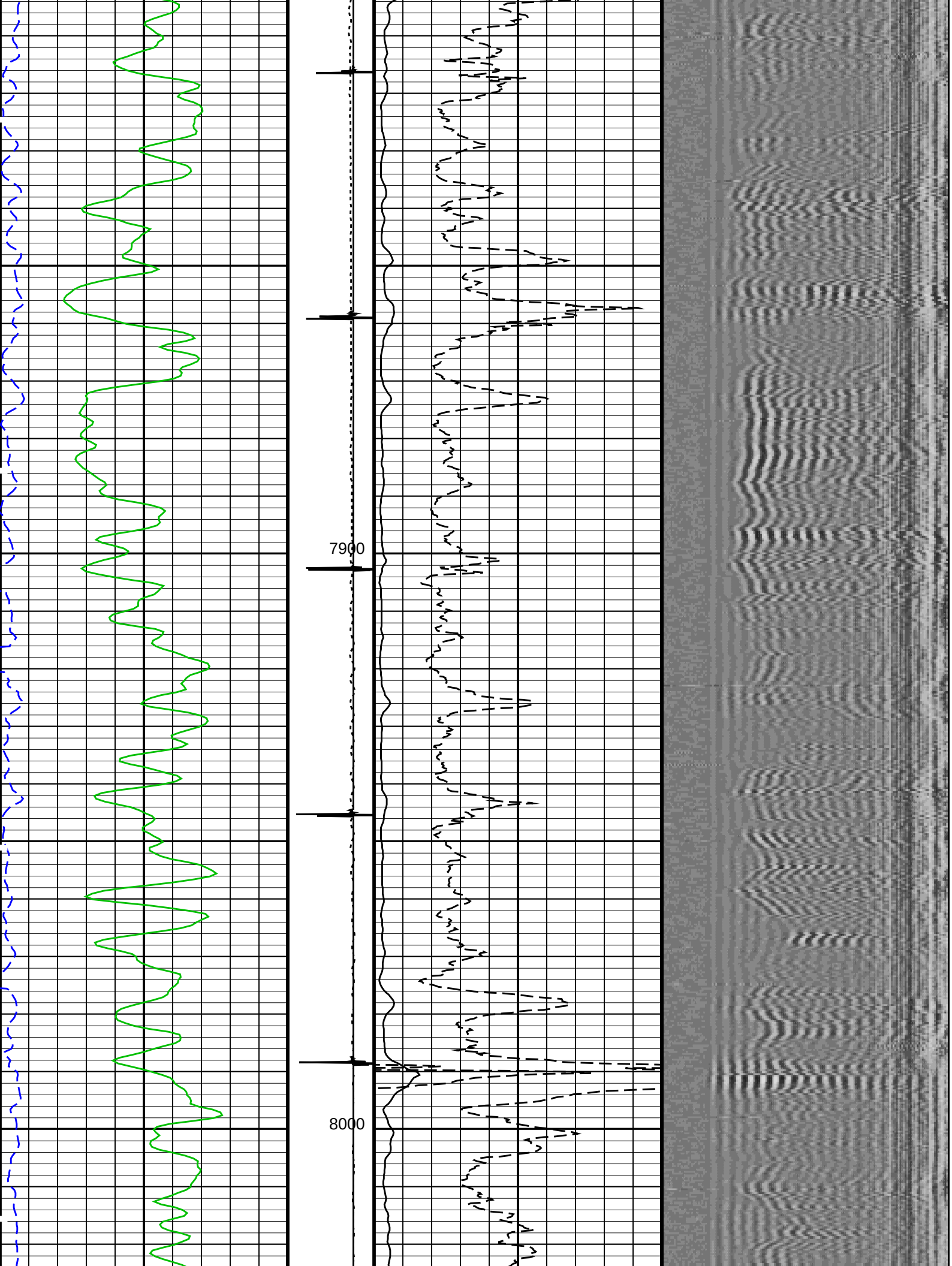
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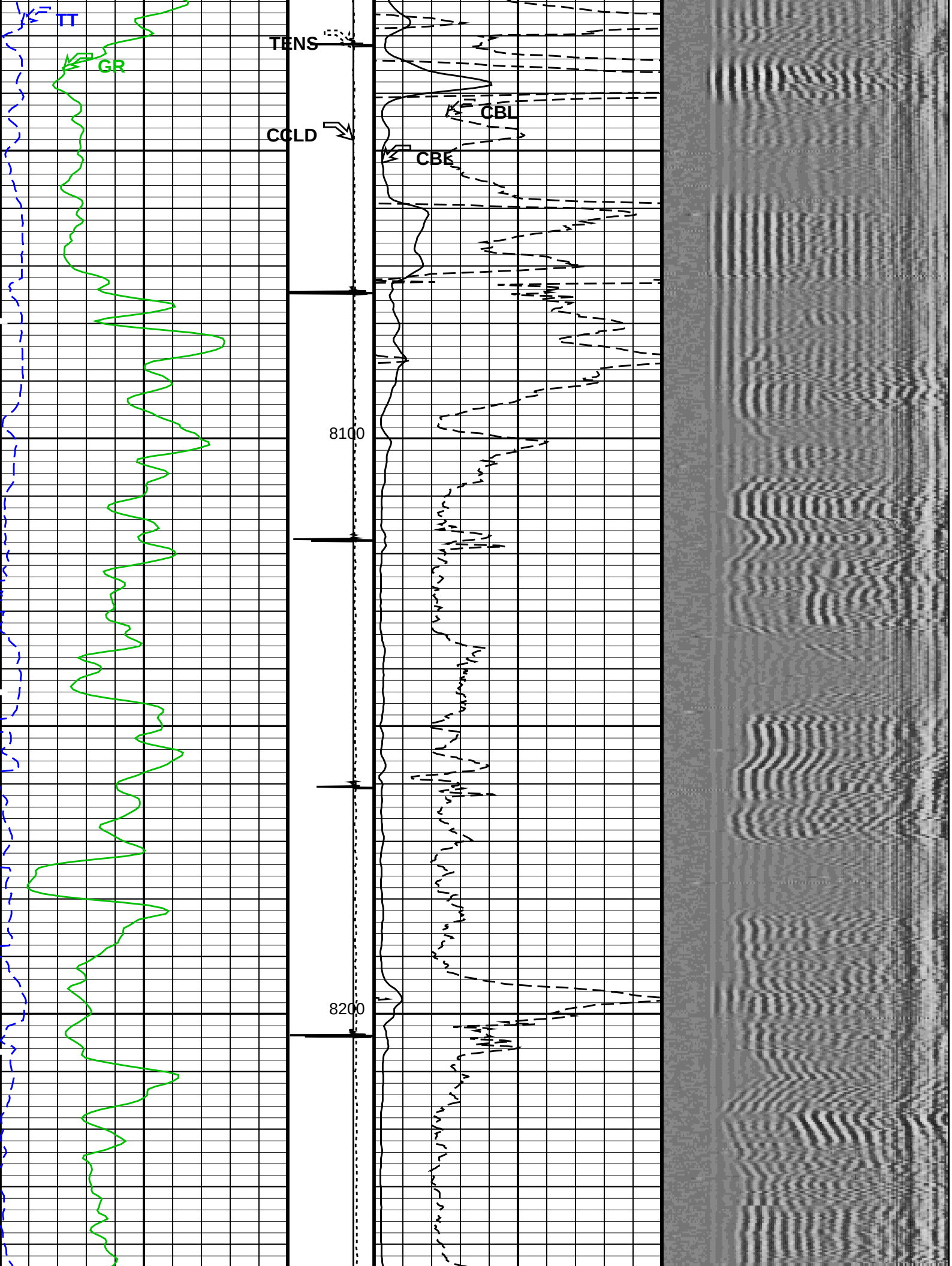
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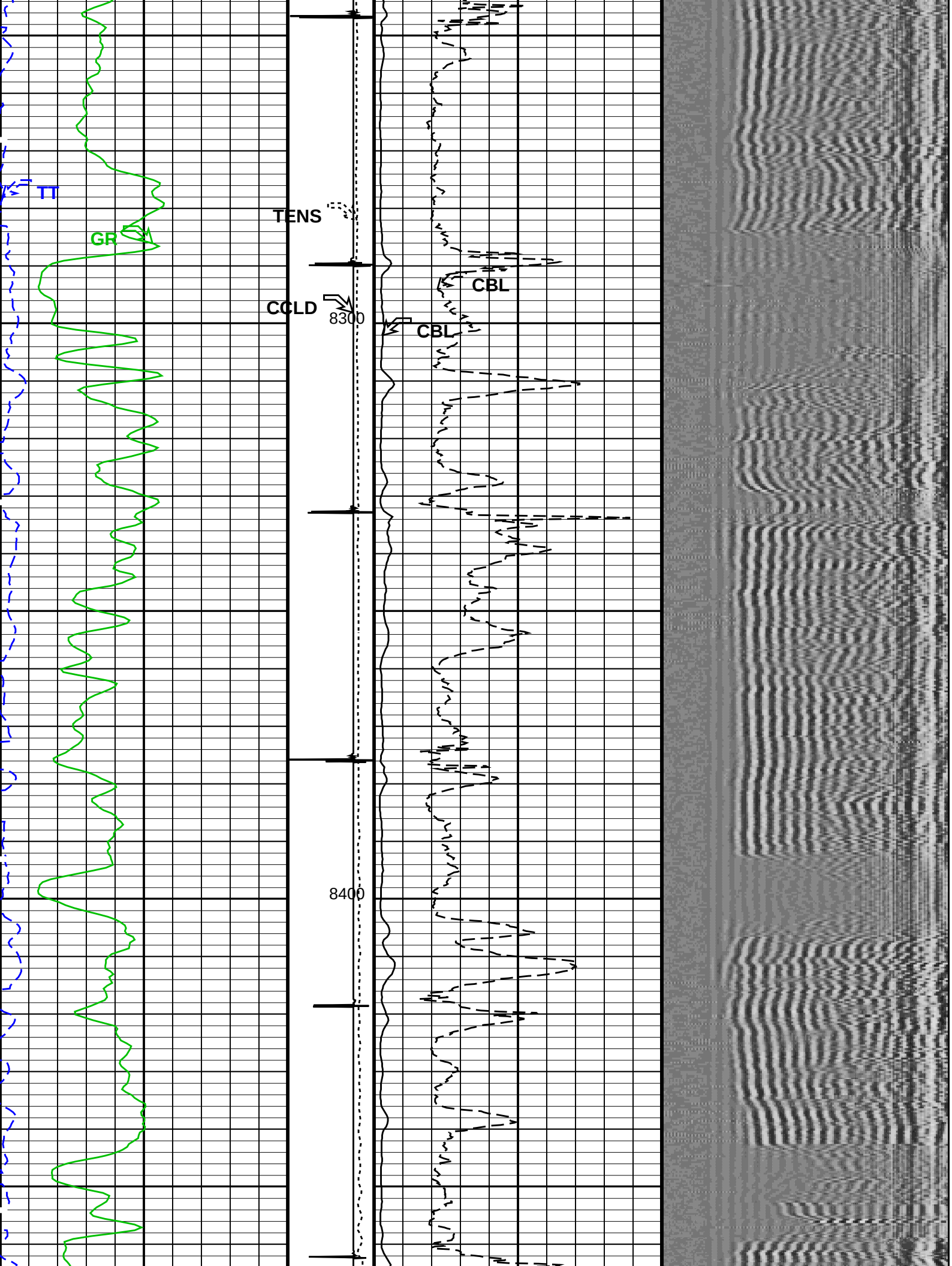
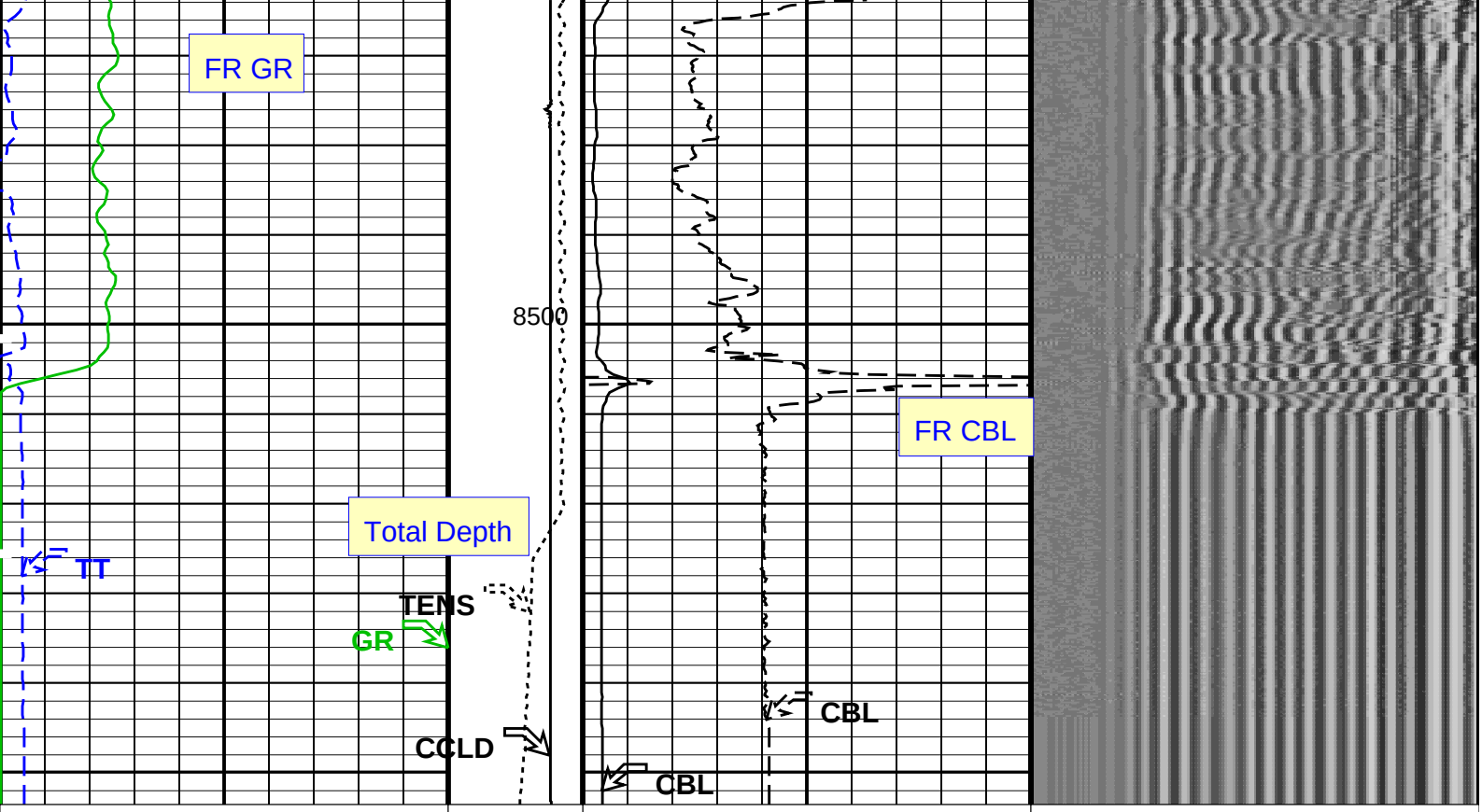
8100
8200


TT
GR
TENS
CCLD
CBL
CBL
8300
8400



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

PIP SUMMARY

Time Mark Every 60 S

Format: CBL_VDL Vertical Scale: 5" per 100' Graphics File Created: 13−Apr−2011 16:46

OP System Version: 17C0−154

SCMT−CB	17C0−154	RST−C	17C0−154
PSPT	17C0−154		

<<<SCMT Cement Evaluation Information Summary>>>

Sonde Serial Number	SCMS−CB 8303		
Current Casing Size	4.50000 IN		
Casing Weight	11.6000 LB/F		
Expected CBL Amplitude in Free Pipe Section	80 MV	Minimum Sonic Amplitude	0.572744 MV (100% Cement) 1.53811 MV (80% Cement)
		MAP Minimum Sonic Amplitude	4.27504 MV (100% Cement) 8.03067 MV (80% Cement)
Master Calibration (Normalization)		Before Calibration (Adjustment)	
Date of Master Calibration	17−JAN−2011		
CBL Correction Factor	0.0743637	CBL Adjustment Factor (CBAF)	1.0
MAP 1 Correction Factor	0.165722	MAP Adjustment Factor (MPAF)	1.0
MAP 2 Correction Factor	0.192039		
MAP 3 Correction Factor	0.132977		
MAP 4 Correction Factor	0.175062		

MAP 5 Correction Factor	0.161562
MAP 6 Correction Factor	0.177685
MAP 7 Correction Factor	0.144065
MAP 8 Correction Factor	0.233552

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	228.424	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	342.424	US
CB5T	SCMT CBL 5 ft Fixed Threshold Level	20	MV
CBLG	CBL Gate Width	40	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	204.5	US/F
FATT	Acoustic Attenuation due to Fluid	0	DB/F
FCF	CBL Fluid Compensation Factor	1	
GOBO	Good Bond	1.53811	MV
MAPD	SCMT MAP Peak Detection Mode	PEAK	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	171.424	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	4.27504	MV
MSA	Minimum Sonic Amplitude	0.572744	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
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset for Playback	2.0	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
PP	Playback Processing	NORMAL	
TD	Total Depth	7588	FT

Input DLIS Files

DEFAULT	SCMT_RST_PSP_015LUP	FN:14	PRODUCER	13−Apr−2011 14:31	8551.5 FT	145.5 FT

Output DLIS Files

DEFAULT	SCMT_RST_PSP_018PUP	FN:17	PRODUCER	13−Apr−2011 16:46

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REPEAT ANALYSIS

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. Well: MF 07B−16 (H17) 696

Input DLIS Files

DEFAULT	SCMT_RST_PSP_015LUP	FN:14	PRODUCER	13−Apr−2011 14:31	8551.5 FT	145.5 FT
DEFAULT	SCMT_RST_PSP_013PUP	FN:12	PRODUCER	13−Apr−2011 14:22	5006.5 FT	4645.0 FT

Output DLIS Files

DEFAULT SCMT_RST_PSP_018PUP FN:17 PRODUCER 13−Apr−2011 16:46

OP System Version: 17C0−154

SCMT−CB	17C0−154	RST−C	17C0−154
PSPT	17C0−154		

PIP SUMMARY

Time Mark Every 60 S

TT_REP Curve (TT_REP)
260 (US) 160

TENS_REP Curve (TENS_REP) (LBF)
0 2000

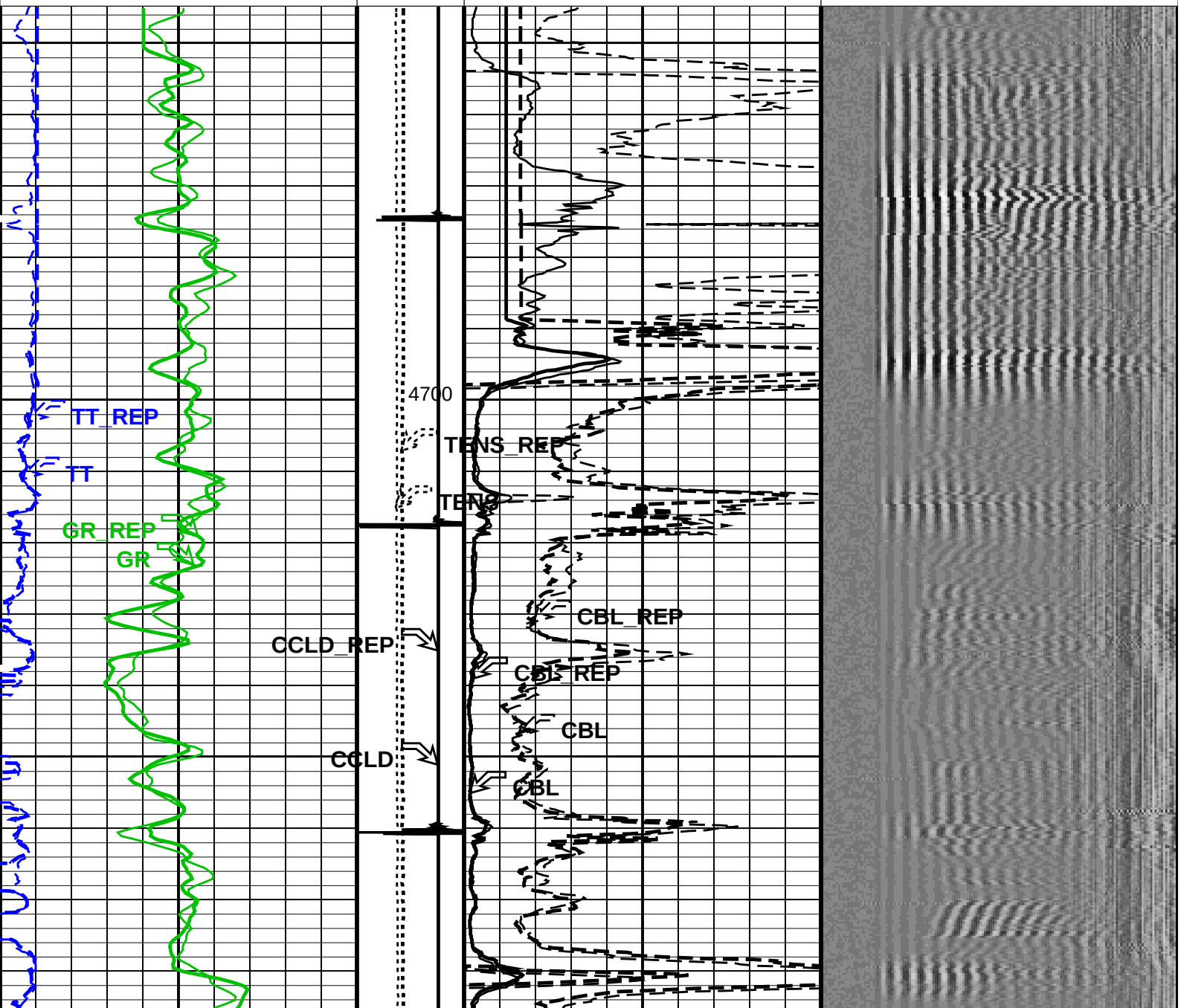
CBL_1_REP Curve (CBL_REP)
0 (MV) 10

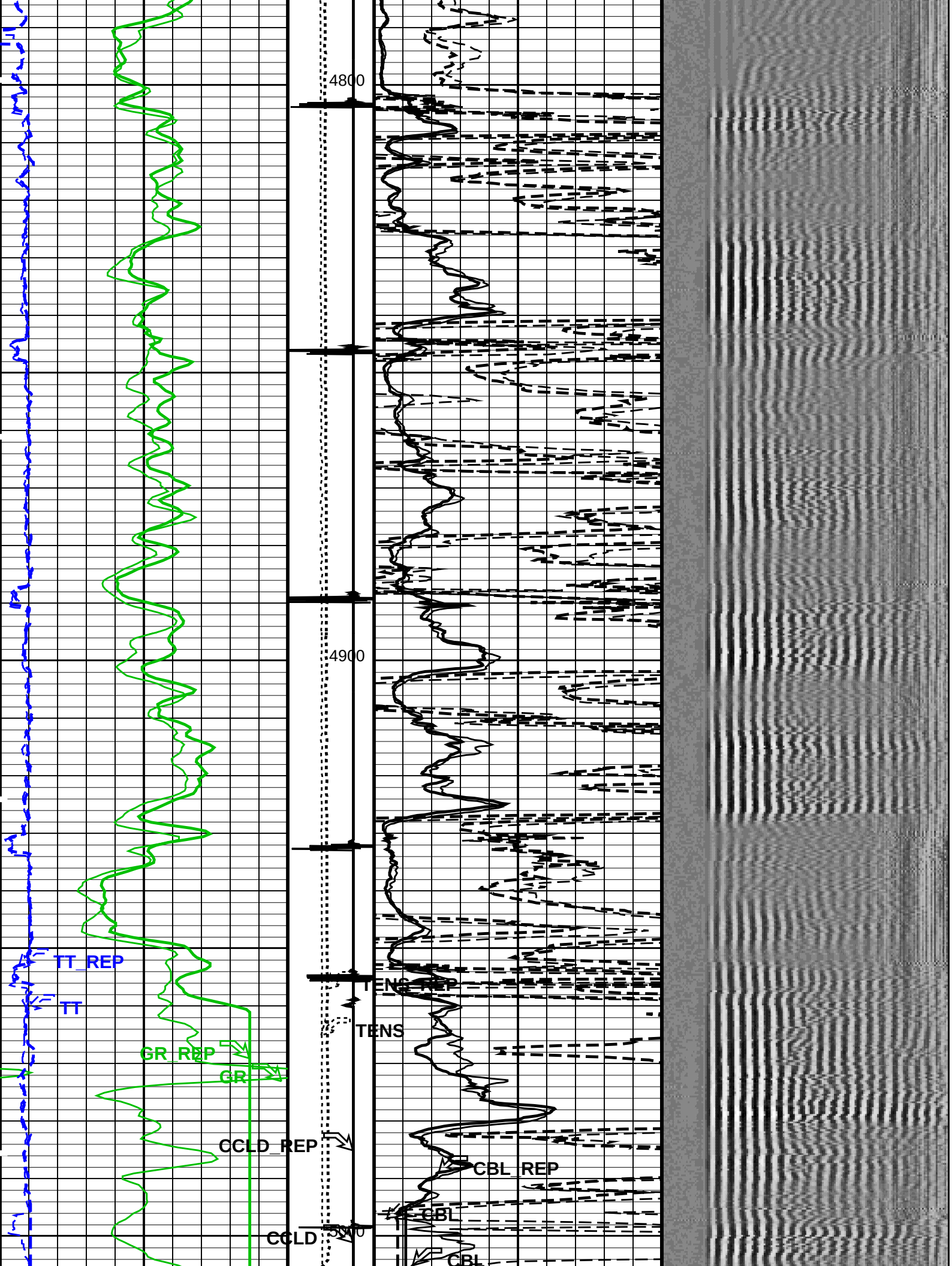
GR_REP Curve (GR_REP)
0 (GAPI) 150

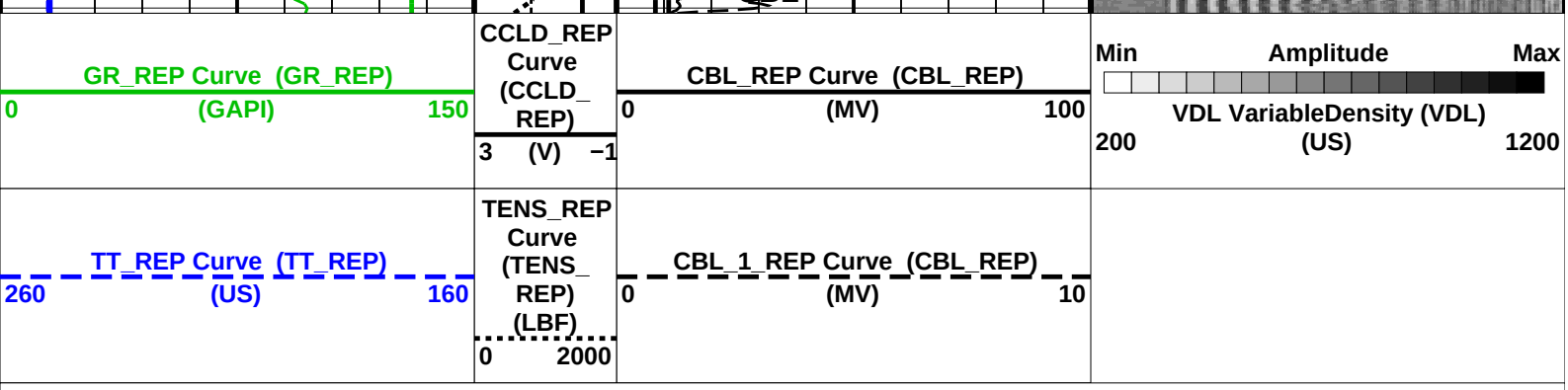
CCLD_REP Curve (CCLD_REP)
3 (V) −1

CBL_REP Curve (CBL_REP)
0 (MV) 100

Min Amplitude Max
VDL VariableDensity (VDL)
200 (US) 1200




4800
4900
TT_REP
TT
GR_REP
GR
TENS_REP
TENS
CCLD_REP
CCLD
CBL_REP
CBL
CBL



OP System Version: 17C0−154

SCMT−CB	17C0−154	RST−C	17C0−154
PSPT	17C0−154		

<<<SCMT Cement Evaluation Information Summary>>>

Sonde Serial Number	SCMS−CB 8303		
Current Casing Size	4.50000 IN		
Casing Weight	11.6000 LB/F		
Expected CBL Amplitude in Free Pipe Section	80 MV	Minimum Sonic Amplitude	0.572744 MV (100% Cement) 1.53811 MV (80% Cement)
		MAP Minimum Sonic Amplitude	4.27504 MV (100% Cement) 8.03067 MV (80% Cement)
Master Calibration (Normalization)		**Before Calibration (Adjustment)**	
Date of Master Calibration	17−JAN−2011		
CBL Correction Factor	0.0743637	CBL Adjustment Factor (CBAF)	1.0
MAP 1 Correction Factor	0.165722	MAP Adjustment Factor (MPAF)	1.0
MAP 2 Correction Factor	0.192039		
MAP 3 Correction Factor	0.132977		
MAP 4 Correction Factor	0.175062		
MAP 5 Correction Factor	0.161562		
MAP 6 Correction Factor	0.177685		
MAP 7 Correction Factor	0.144065		
MAP 8 Correction Factor	0.233552		

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	228.424	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	342.424	US
CB5T	SCMT CBL 5 ft Fixed Threshold Level	20	MV
CBLG	CBL Gate Width	40	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	204.5	US/F
FATT	Acoustic Attenuation due to Fluid	0	DB/F
FCF	CBL Fluid Compensation Factor	1	

GOBO	Good Bond	1.53811	MV
MAPD	SCMT MAP Peak Detection Mode	PEAK	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	171.424	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	4.27504	MV
MSA	Minimum Sonic Amplitude	0.572744	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
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset for Playback	2.0	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
PP	Playback Processing	NORMAL	
TD	Total Depth	7588	FT

Input DLIS Files

DEFAULT	SCMT_RST_PSP_015LUP	FN:14	PRODUCER	13−Apr−2011 14:31	8551.5 FT	145.5 FT
DEFAULT	SCMT_RST_PSP_013PUP	FN:12	PRODUCER	13−Apr−2011 14:22	5006.5 FT	4645.0 FT

Output DLIS Files

DEFAULT	SCMT_RST_PSP_018PUP	FN:17	PRODUCER	13−Apr−2011 16:46

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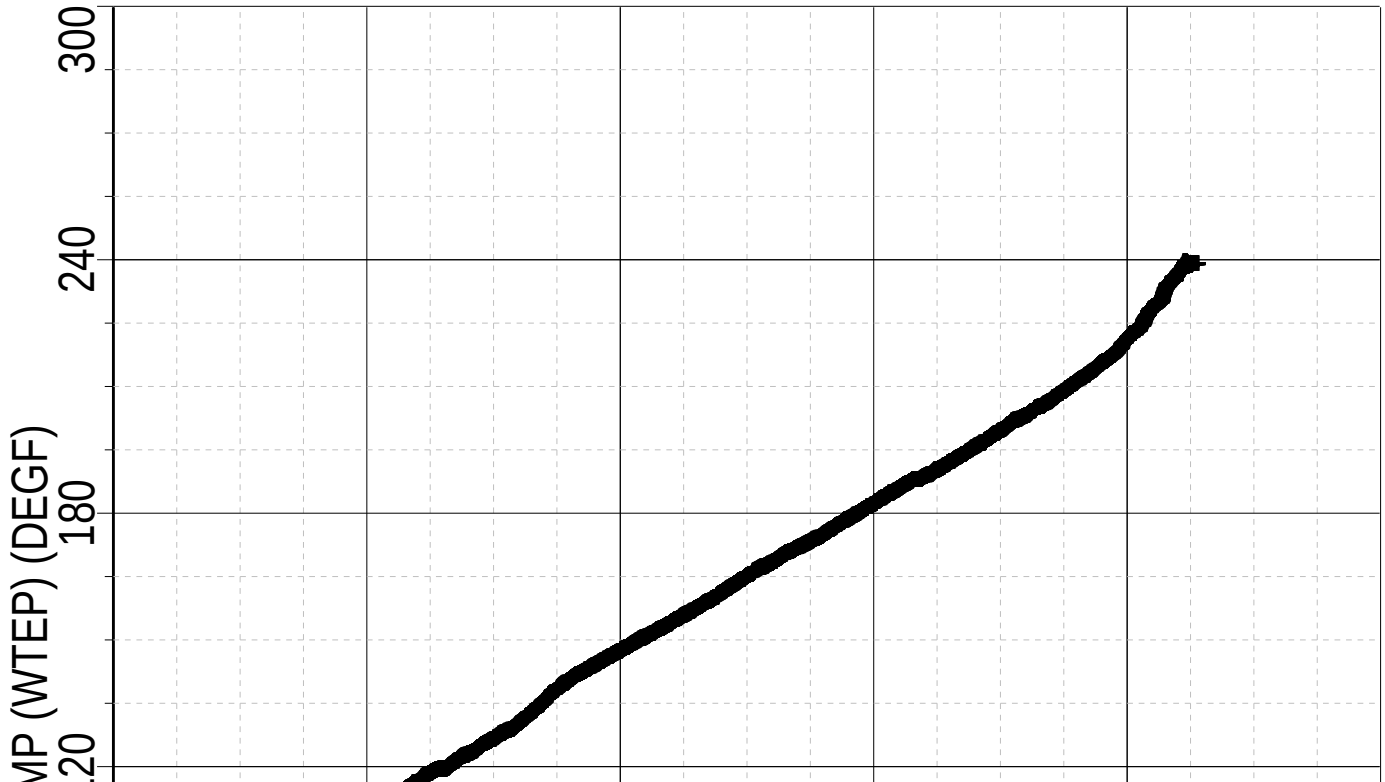
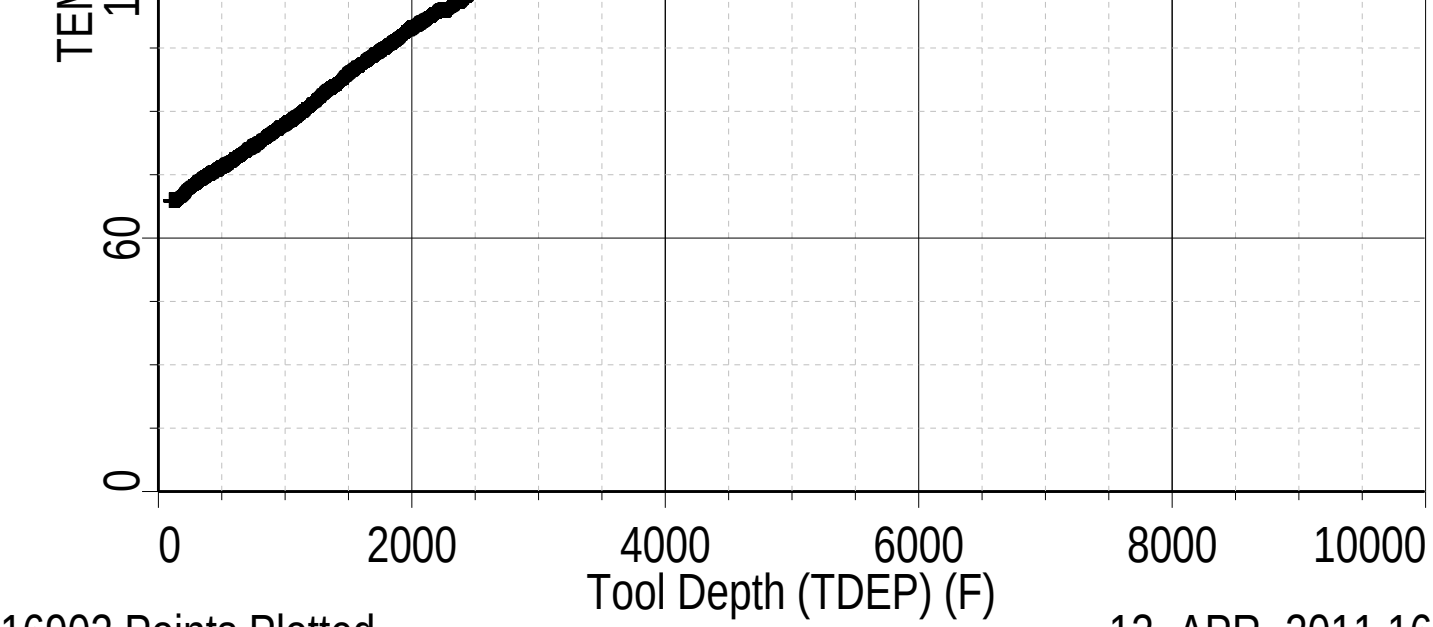
TEMPERATURE PLOT

MAXIS Field Log

Index: 8553.5 − 103.0 FT





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COEFFICIENTS

MAXIS Field Log

Client:	**ENCANA OIL & GAS (USA) INC.**	**Tool:**	**PSP**
Field:	**NORTH PARACHUTE**	**Sub Type:**	**PBMS**
Well:	**MFH17 QUAD 2**	**Sensor:**	**Clock Model**
Run date:	**13−Apr−2011**		

PBMS Digitalization Clock	
Sonde Serial NB	
Sensor Serial NB	**3779**
Calib Date ddmmyy	**090107**
Matrix Size	**16**
Coeff CRC	**D285**

Clock Coeff

	Temp**0	Temp**1	Temp**2
Temp0**	**−.210501098404E+03**	**−.537713340627E+01**	**−.752421519422E−01**

	Temp**3	Temp**4	Temp**5
Temp0**	**+.630273975887E−03**	**+.266728381738E−05**	**0.0**

Client:	**ENCANA OIL & GAS (USA) INC.**	**Tool:**	**PSP**
Field:	**NORTH PARACHUTE**	**Sub Type:**	**PBMS**
Well:	**MFH17 QUAD 2**	**Sensor:**	**Sapphire**
Run date:	**13−Apr−2011**		

PBMS Sapphire 10kPsi Gauge

Sonde Serial NB	**COEFFICIENTS FOR SAPPHIRE PBMS−A.3779 S/N:**
Sensor Serial NB	**3779**
Calib Date ddmmyy	**090107**
Matrix Size	**66**
Coeff CRC	**4C82**

Pres Coeff

	Tt0**	**Tt**1**	**Tt**2**
Tp0**	**−.611876617639E+04**	**+.471061007964E+04**	**−.216447354932E+04**
Tp1**	**+.371836126905E+04**	**−.234756196935E+04**	**+.129149325686E+04**
Tp2**	**+.193143980957E+02**	**−.189348218853E+01**	**−.341812471126E+01**
Tp3**	**−.568815065386E+01**	**+.200079683569E+01**	**0.0**
Tp4**	**0.0**	**0.0**	**0.0**
Tp5**	**0.0**	**0.0**	**0.0**

	Tt3**	**Tt**4**	**Tt**5**
Tp0**	**+.380249508124E+03**	**−.247683004908E+02**	**0.0**
Tp1**	**−.227135245080E+03**	**+.146352372057E+02**	**0.0**
Tp2**	**0.0**	**0.0**	**0.0**
Tp3**	**0.0**	**0.0**	**0.0**
Tp4**	**0.0**	**0.0**	**0.0**
Tp5**	**0.0**	**0.0**	**0.0**

PBMS Sapphire 10kPsi Gauge

Sonde Serial NB	**:**
Sensor Serial NB	**3779**
Calib Date ddmmyy	**090107**
Matrix Size	**66**
Coeff CRC	**C39E**

Temp Coeff

	Tp0**	**Tp**1**	**Tp**2**

Tt**0	−.278275571347E+03	+.251216271916E+01	−.820715649824E+00
Tt**1	+.598349067015E+02	−.107326373545E+01	+.652890183203E−01
Tt**2	+.109160002120E+02	+.262812193556E+00	−.450134240377E−02
Tt**3	−.673302171285E+00	−.213772918779E−01	0.0
Tt**4	0.0	0.0	0.0
Tt**5	0.0	0.0	0.0

	Tp**3	Tp**4	Tp**5
Tt**0	+.151507143209E+00	−.592670012996E−02	0.0
Tt**1	+.127486538512E−01	−.437897076104E−02	0.0
Tt**2	0.0	0.0	0.0
Tt**3	0.0	0.0	0.0
Tt**4	0.0	0.0	0.0
Tt**5	0.0	0.0	0.0

Client:	ENCANA OIL & GAS (USA) INC.	**Tool:**	PSP
Field:	NORTH PARACHUTE	**Sub Type:**	PBMS
Well:	MFH17 QUAD 2	**Sensor:**	GR
Run date:	13−Apr−2011		

PBMS Gamma Ray

Sonde Serial NB	RESISTORS FOR GR SENSOR N.34552,TOOL PBMS−AA3779. SENSOR S/N:
Sensor Serial NB	34552
Calib Date ddmmyy	030606
Matrix Size	12
Coeff CRC	3AE5

GR HV Rt

	Rt**0	Rt**1
Rt**0	+.200000000000e+04	+.214000000000e+04

Client:	**ENCANA OIL & GAS (USA) INC.**	**Tool:**	**PSP**
Field:	**NORTH PARACHUTE**	**Sub Type:**	**PBMS**
Well:	**MFH17 QUAD 2**	**Sensor:**	**WellTemp RTD**
Run date:	**13−Apr−2011**		

PBMS RTD Well Thermometer

Sonde Serial NB	**COEFFICIENTS FOR RTD THERMOMETER PBMS−A.3779 S/N:**
Sensor Serial NB	**3779**
Calib Date ddmmyy	**090107**
Matrix Size	**16**
Coeff CRC	**3846**

WTemp Coeff

	Tt**0	Tt**1	Tt**2
Tt0**	**+.492135102627E+02**	**−.278827553804E+03**	**+.142867554561E+03**

	Tt**3	Tt**4	Tt**5
Tt0**	**−.233378392336E+02**	**+.145553494493E+01**	**0.0**

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

Schlumberger

Well: **MF 07B−16 (H17) 696**
Field: **NORTH PARACHUTE**
County: **GARFIELD**
State: **COLORADO**

CEMENT BOND LOG
CBL− VDL
GAMMA RAY − CCL