

Company: ENCANA OIL & GAS (USA) INC

Well: HAGEN CLEM 15-10C (PC22)

Field: SOUTH PARACHUTE

County: GARFIELD State: COLORADO

SLIM CEMENT MAPPING LOG
CBL-VDL
GAMMA RAY-CCL

County:	GARFIELD		
Field:	SOUTH PARACHUTE		
Location:	SHL: 596 FNL & 1762 FWL		
Well:	HAGEN CLEM 15-10C (PC22)		
Company:	ENCANA OIL & GAS (USA) INC		
	LOCATION		
	SHL: 596 FNL & 1762 FWL	Elev.: K.B.	6543.00 ft
	BHL: 1492 FSL & 2464 FEL	G.L.	6521.00 ft
		D.F.	6542.00 ft
Permanent Datum:	GROUND LEVEL	Elev.: 6521.00 ft	
Log Measured From:	KELLY BUSHING	22.00 ft	above Perm. Datum
Drilling Measured From:	KELLY BUSHING		
API Serial No.	Section 22	Township 7S	Range 95W
05-045-22050-0C			

	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	14-Sep-2013		
Run Number	1		
Depth Driller	8409 ft		
Schlumberger Depth	8317 ft		
Bottom Log Interval	9308 ft		
Top Log Interval	50 ft		
Casing Fluid Type	FRESH WATER		
Salinity			
Density	8.4 lbm/gal		
Fluid Level	50 ft		
BIT/CASING/TUBING STRING			
Bit Size	8.750 in		
From	22 ft		
To	8409 ft		
Casing/Tubing Size	4.500 in		
Weight	11.6 lbm/ft		
Grade	S-80		
From	22 ft		
To	8387 ft		
Maximum Recorded Temperatures	218 degF		
Logger On Bottom	14-Sep-2013	18:15	
Unit Number	Location		
338	GRAND JUNCTION		
Recorded By	KIRSTIE BUNTING		
Witnessed By	JIM DYKEMAN		

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	Location		
Recorded By			
Witnessed By			

DEPTH SUMMARY LISTING

Date Created: 14-AUG-2013 11:54:57

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW-JB	Type:	CMTD-B/A	Type:	1-25ZT
Serial Number:	6349	Serial Number:	3421	Serial Number:	112136
Calibration Date:	7-31-2013	Calibration Date:	14-AUG-201	Length:	19000 FT
Calibrator Serial Number:		Calibrator Serial Number:	174878		
Calibration Cable Type:	1-25ZT	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	-5	Calibration RMS:	3	Rig Type:	LAND
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 PROCEDURES USED
2. IDW USED AS PRIMARY DEPTH REFERENCE
3. SPWT 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	OTHER SERVICES2
OS1: RESERVOIR SATURATION	OS1:
OS2: LOG	OS2:
OS3: SIGMA MODE	OS3:
OS4:	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: 17:45	
TIME ON BOTTOM: 18:15	
EXIT: 20:30	

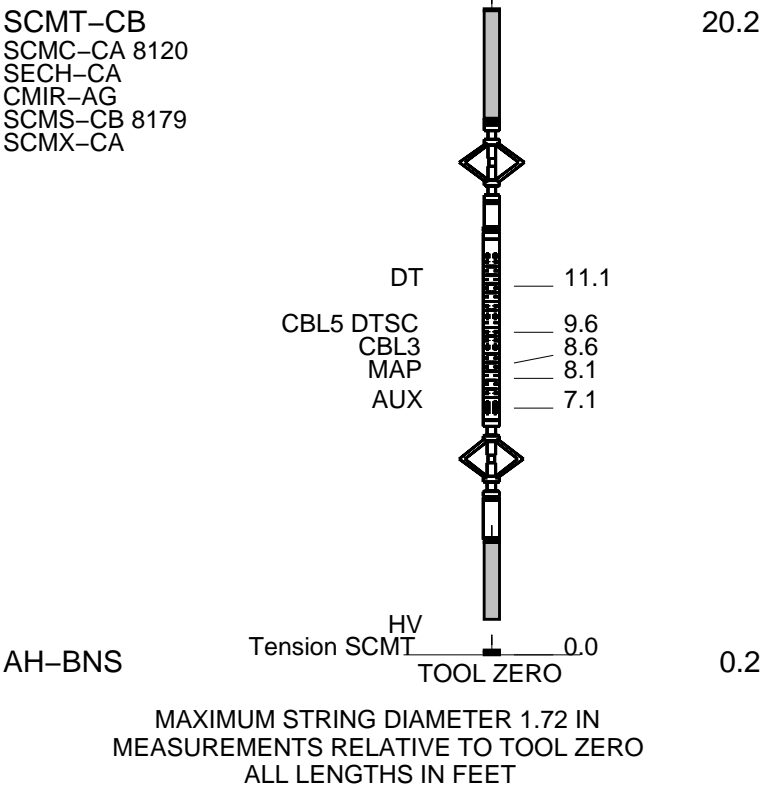
MAXIMUM RECORDED TEMPERATURE: 218 DEGF	
MAXIMUM RECORDED PRESSURE: 3320 PSIA	
SHORT JOINTS: 5779 FT & 6812 FT	
MAIN PASS LOGGED UNDER ZERO SURFACE PRESSURE	
EXPECTED CBL AMPLITUDE IN FREE PIPE IS 80MV	
CREW: KBUNTING, KJOHNS, JMANN	
THANK YOU FOR CHOOSING E&P WIRELINE. A SCHLUMBERGER COMPANY	

RUN 1			RUN 2		
SERVICE ORDER #:	CGF9-00141		SERVICE ORDER #:		
PROGRAM VERSION:	19C0-187		PROGRAM VERSION:		
FLUID LEVEL:	50 ft		FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

[illegible]

SURFACE EQUIPMENT		
WITM-A		
PSC_16MHZ		

DOWNHOLE EQUIPMENT			
MH-22			53.3
MH-22			
Detail MT			
AH-38	TelStatus		51.7
PSPT	CTEM		51.5
PSC-A			51.5
PSPT-B 928			
PSTC-A			
PBMS-B	GR		47.8
CQG_F_Mano			
RTD_Thermometer			
GR	Well_Temp		44.7
CCL	CQG Manom		44.4
PBMS	CCL		44.0
	PBMS PSTC		43.2
RST-C			43.2
RSCH-A 197			
RSC-E			
RSS-A 255			
RSXH-A 425			
RSX-E			
	RSC-A Far		34.1
	RSC-A PNG		
	RSC-A Nea		
	RSX-A PNG		33.6



Schlumberger

MAIN PASS CBL VDL

MAXIS Field Log

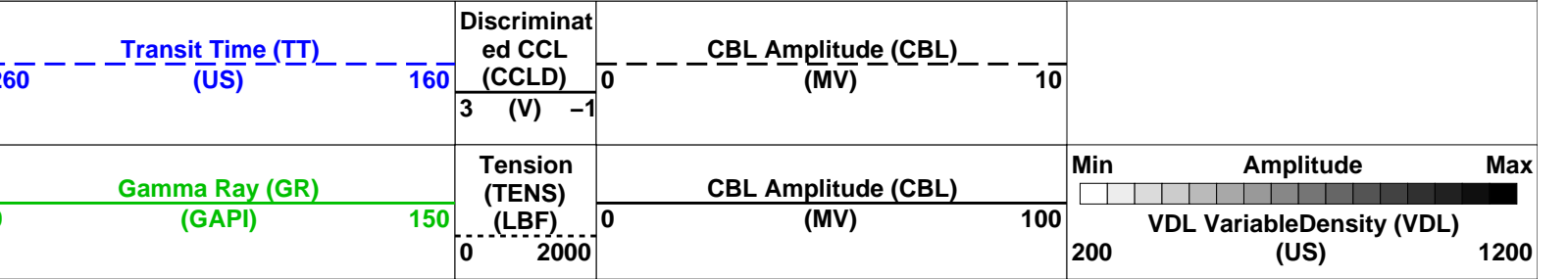
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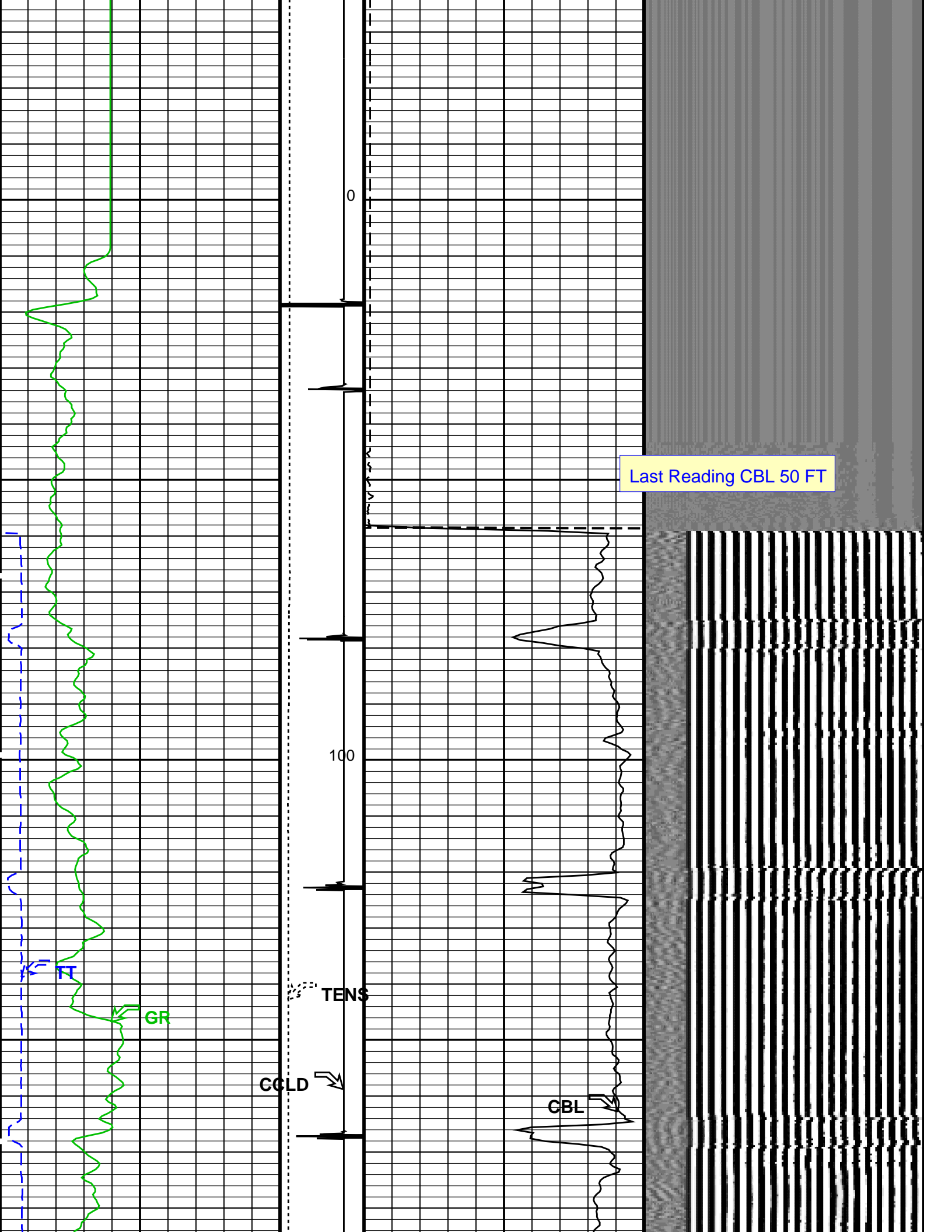
Input DLIS Files						
DEFAULT	SCMT_RST_PSP_073LUP	FN:69	PRODUCER	14-Sep-2013 18:14	8325.5 FT	4.0 FT
Output DLIS Files						
DEFAULT	SCMT_RST_PSP_076PUP	FN:72	PRODUCER	14-Sep-2013 20:29	8329.5 FT	-36.5 FT

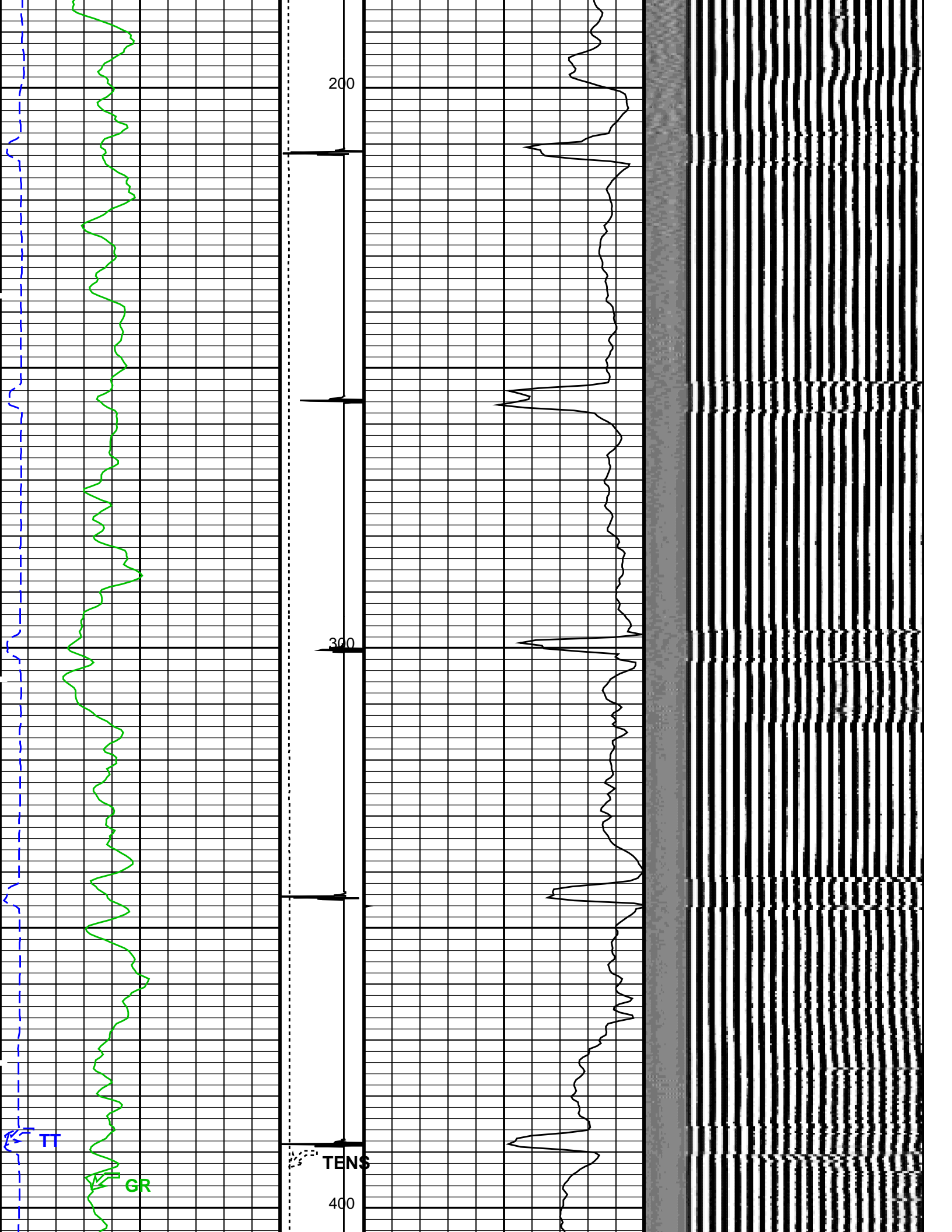
OP System Version: 19C0-187			
SCMT-CB	19C0-187	RST-C	19C0-187
PSPT	19C0-187		

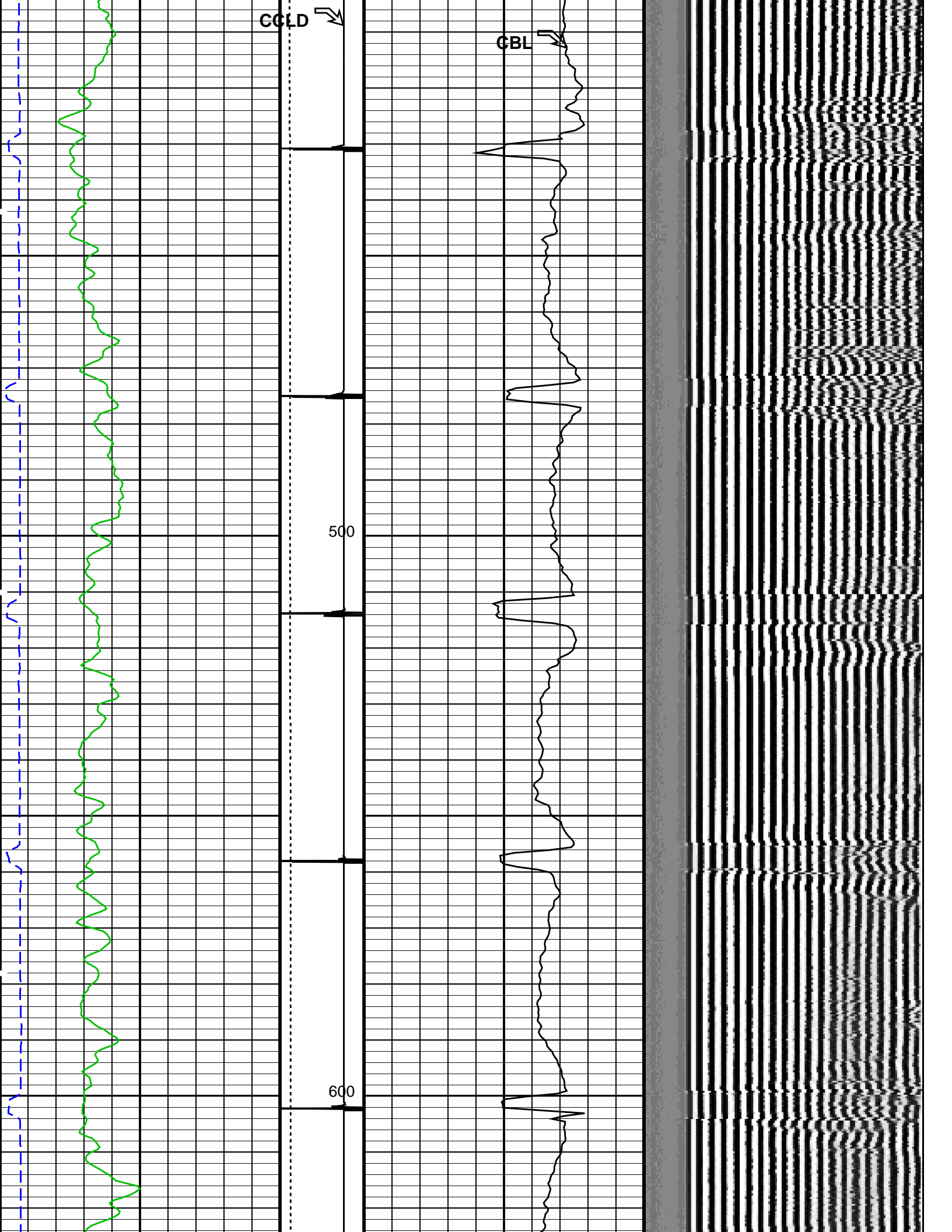
PIP SUMMARY

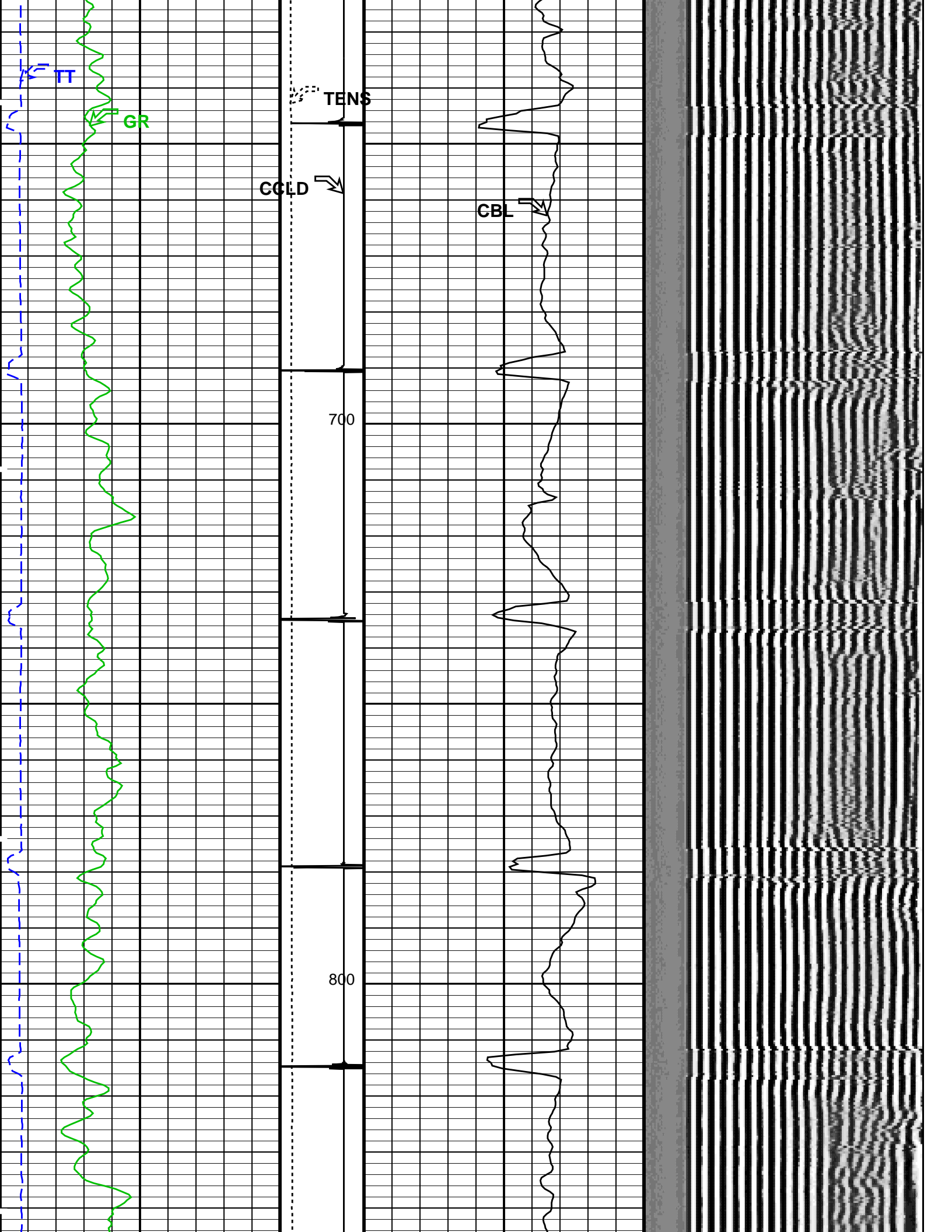
☐ Time Mark Every 60 S

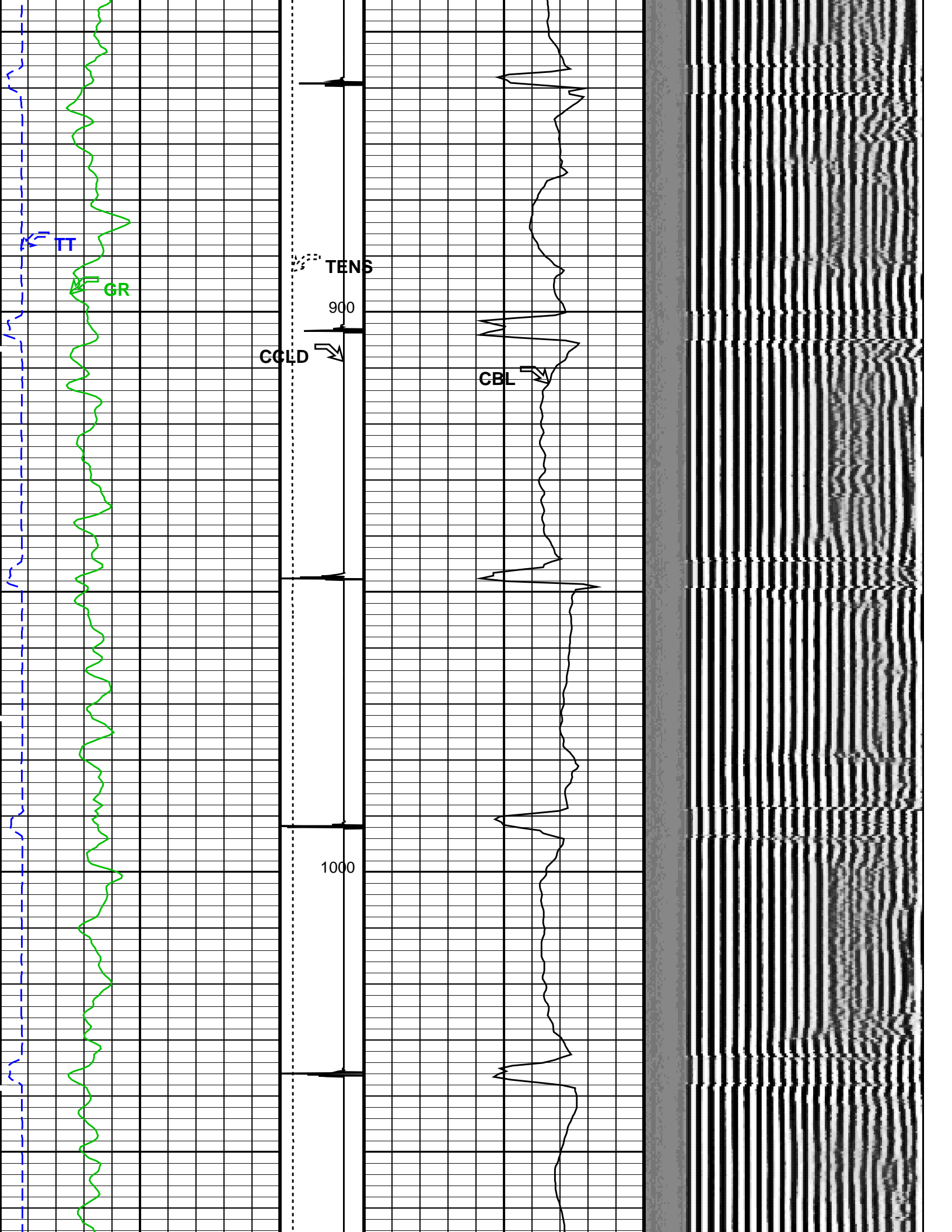


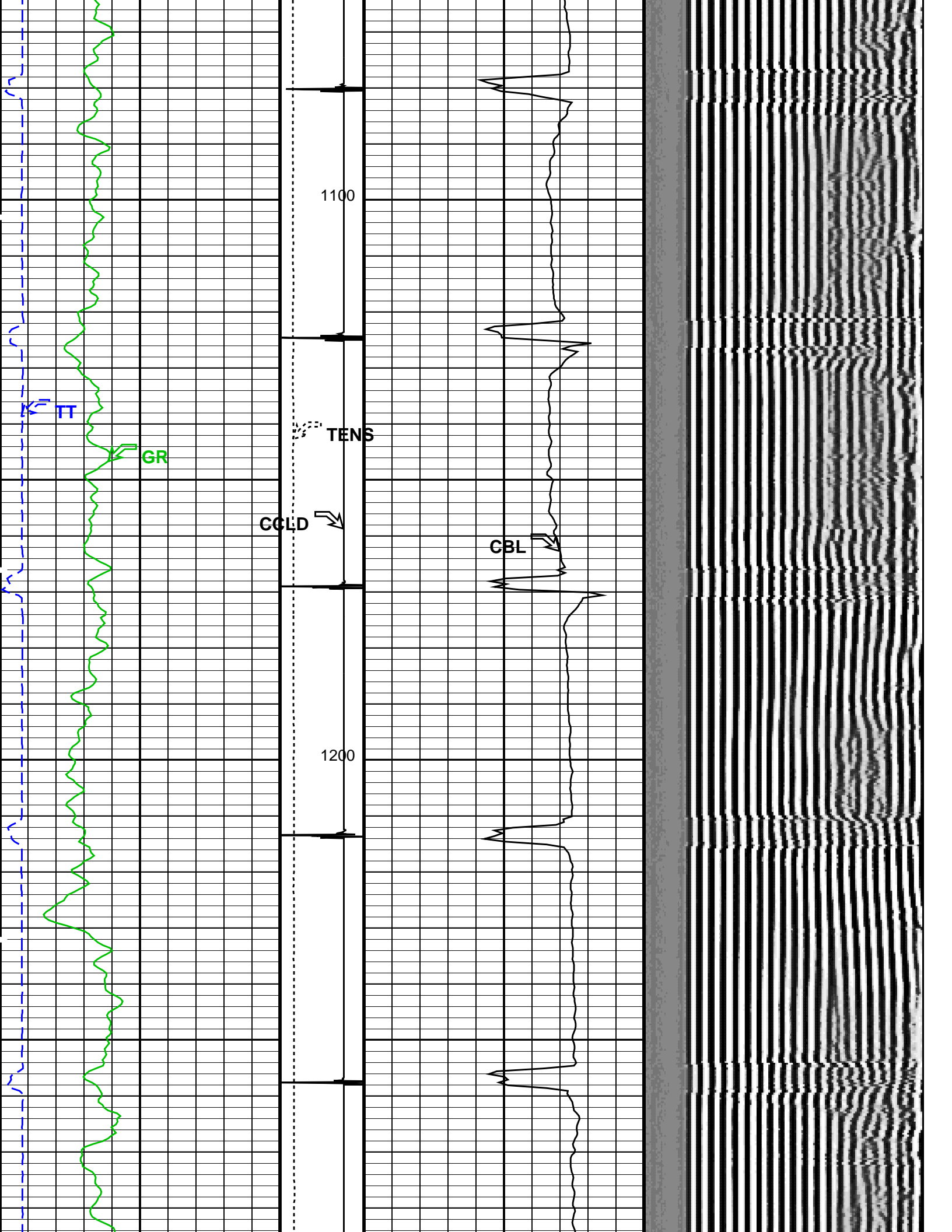


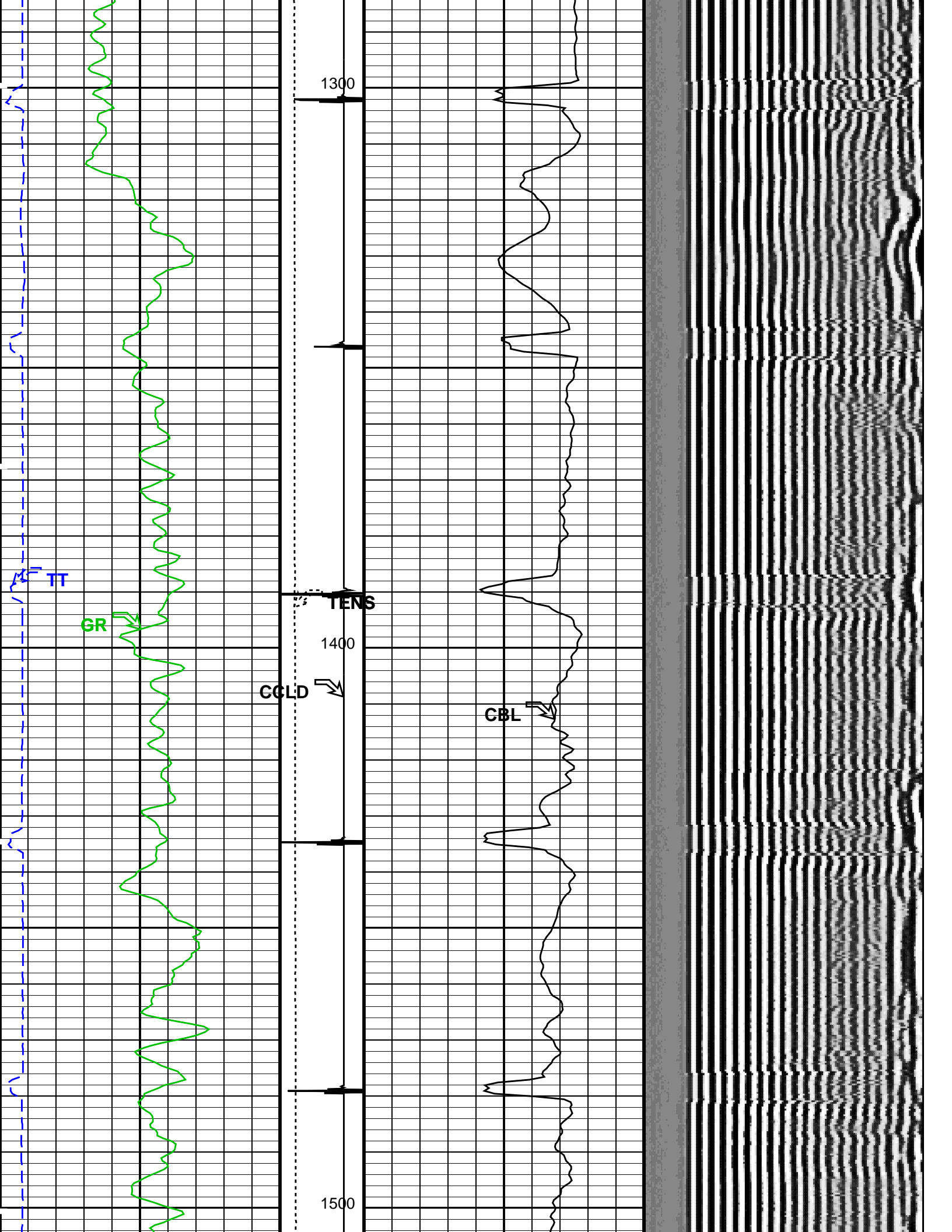


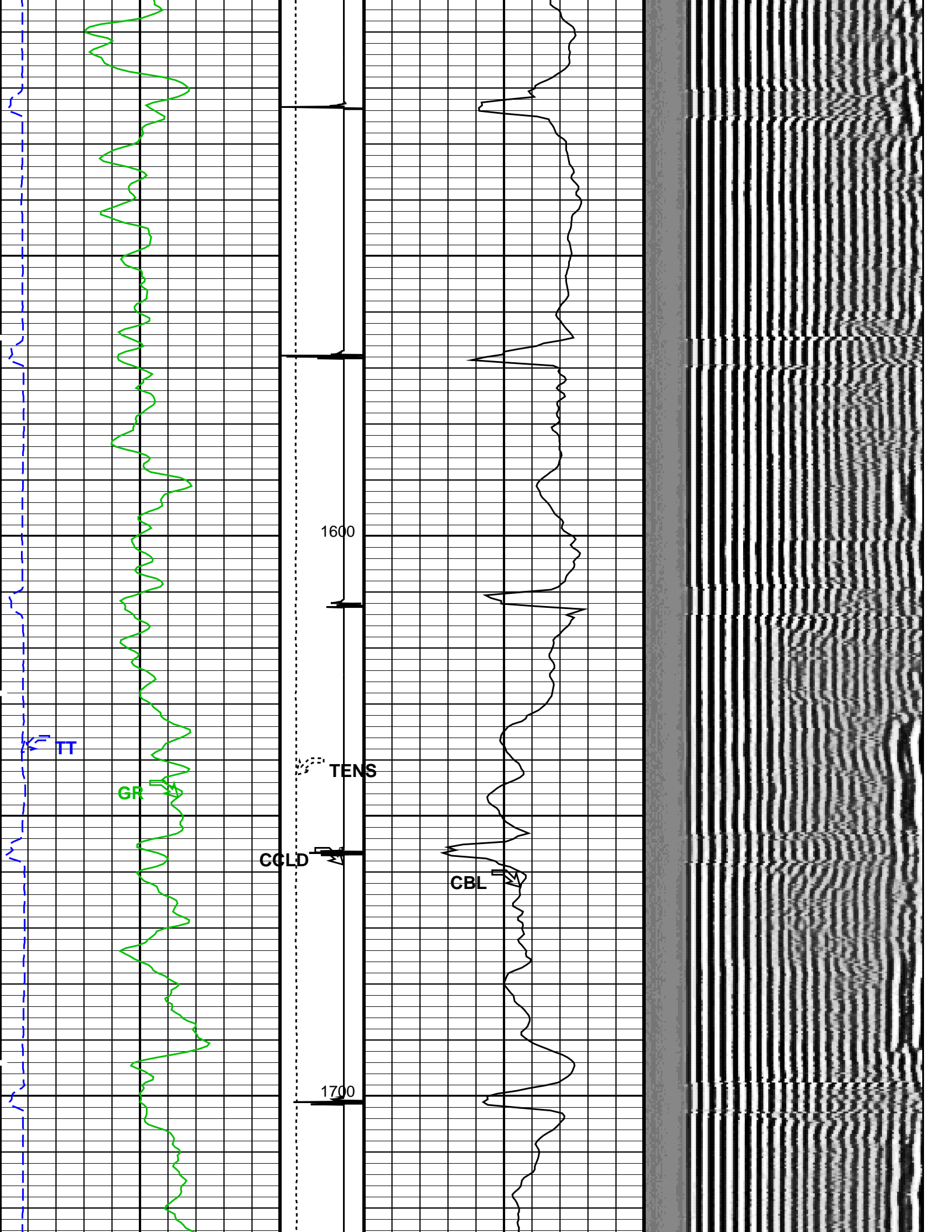


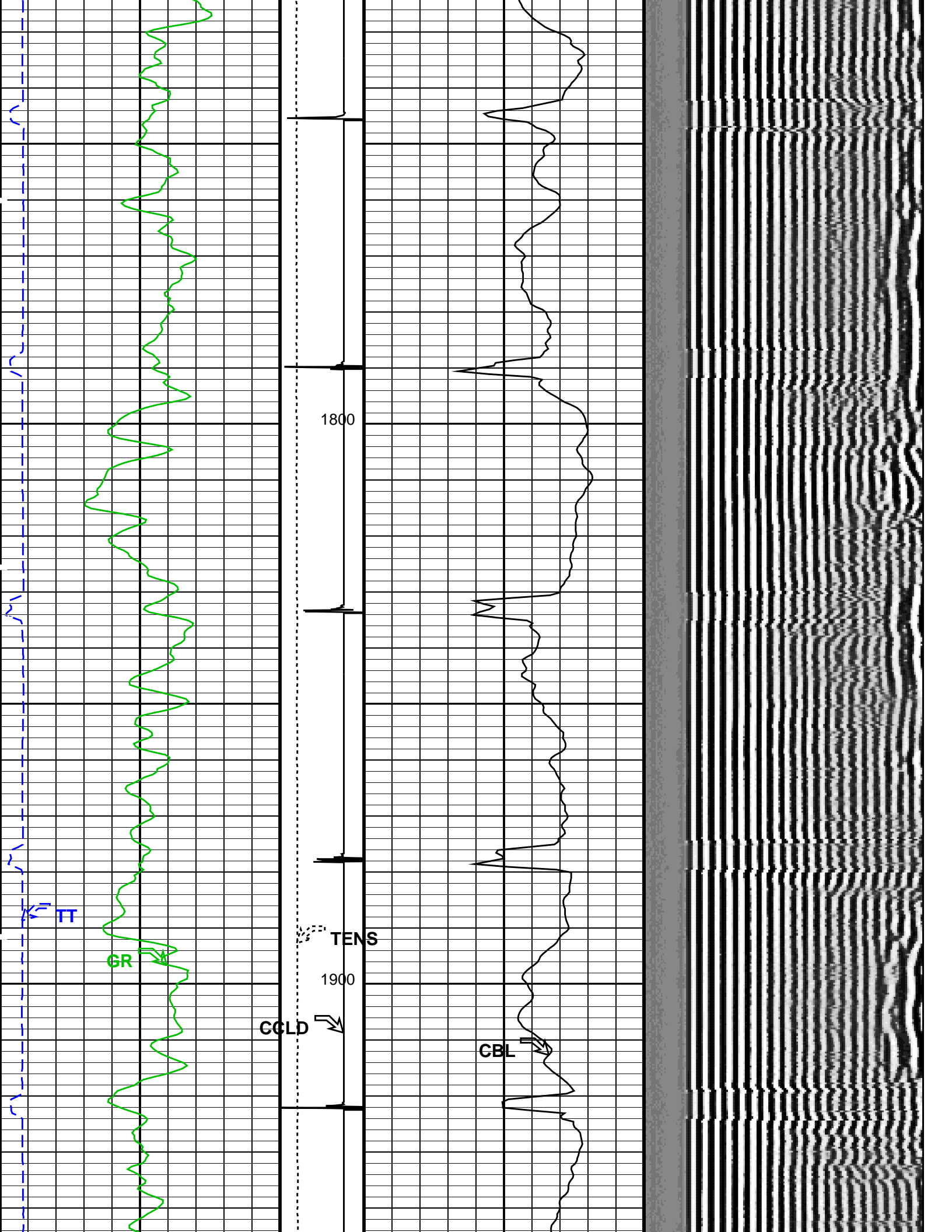


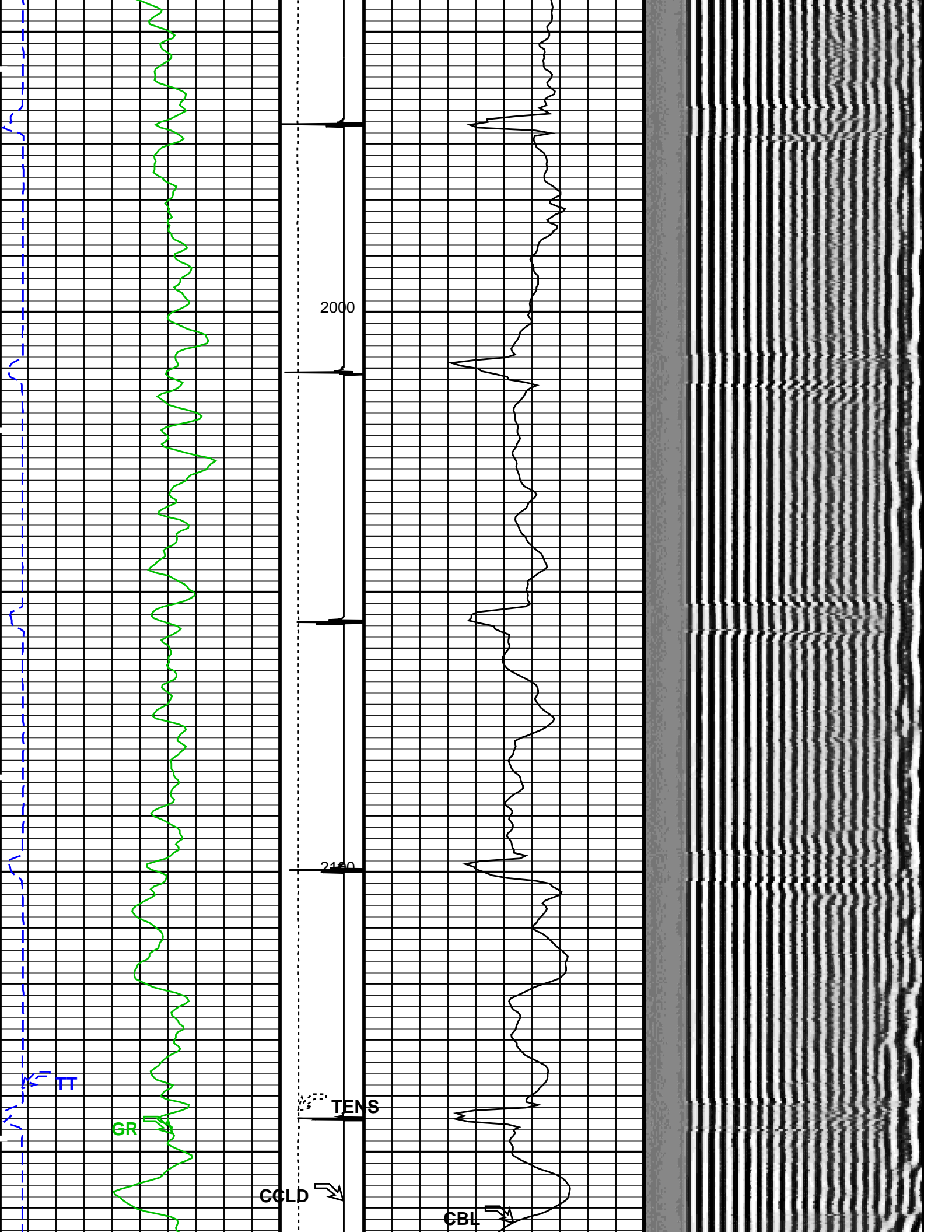


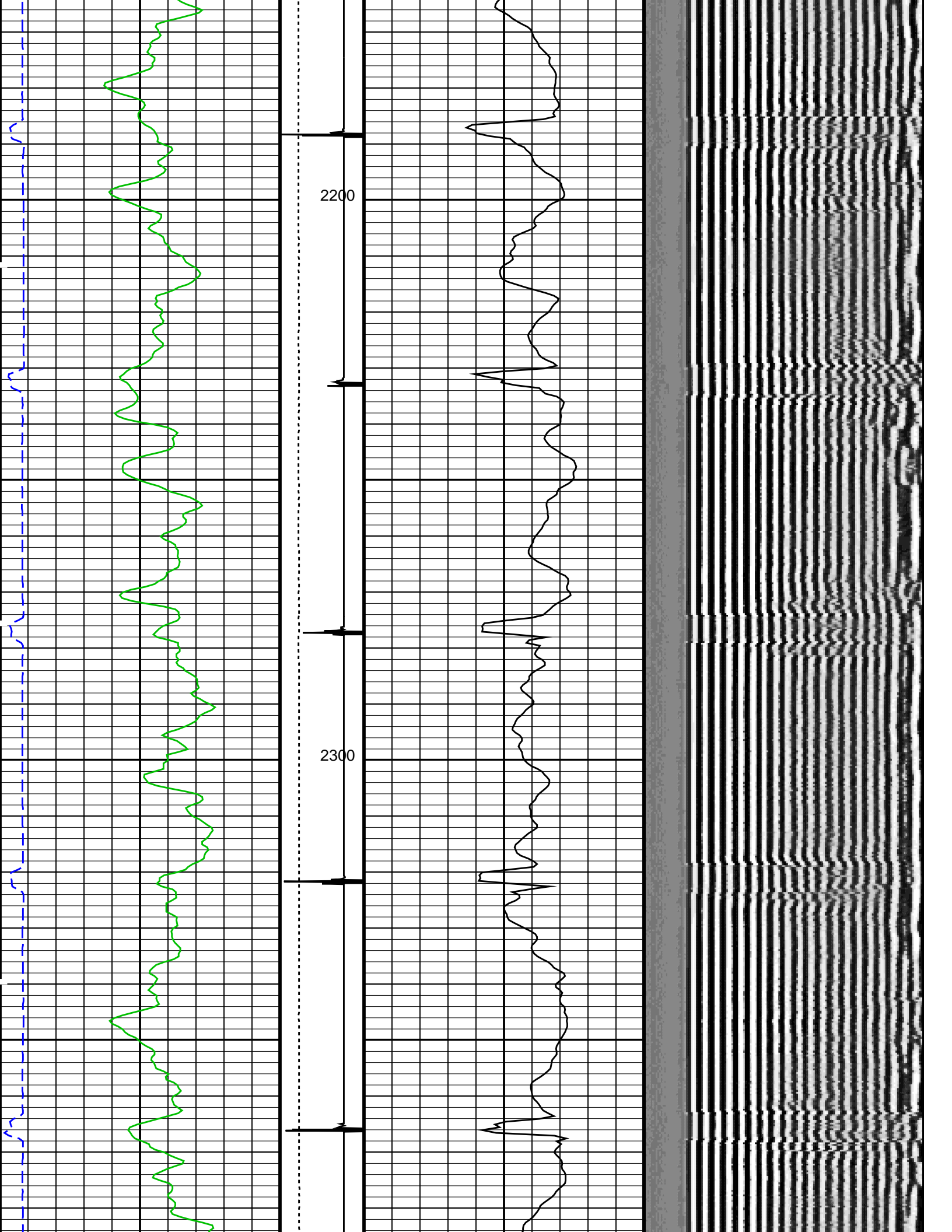


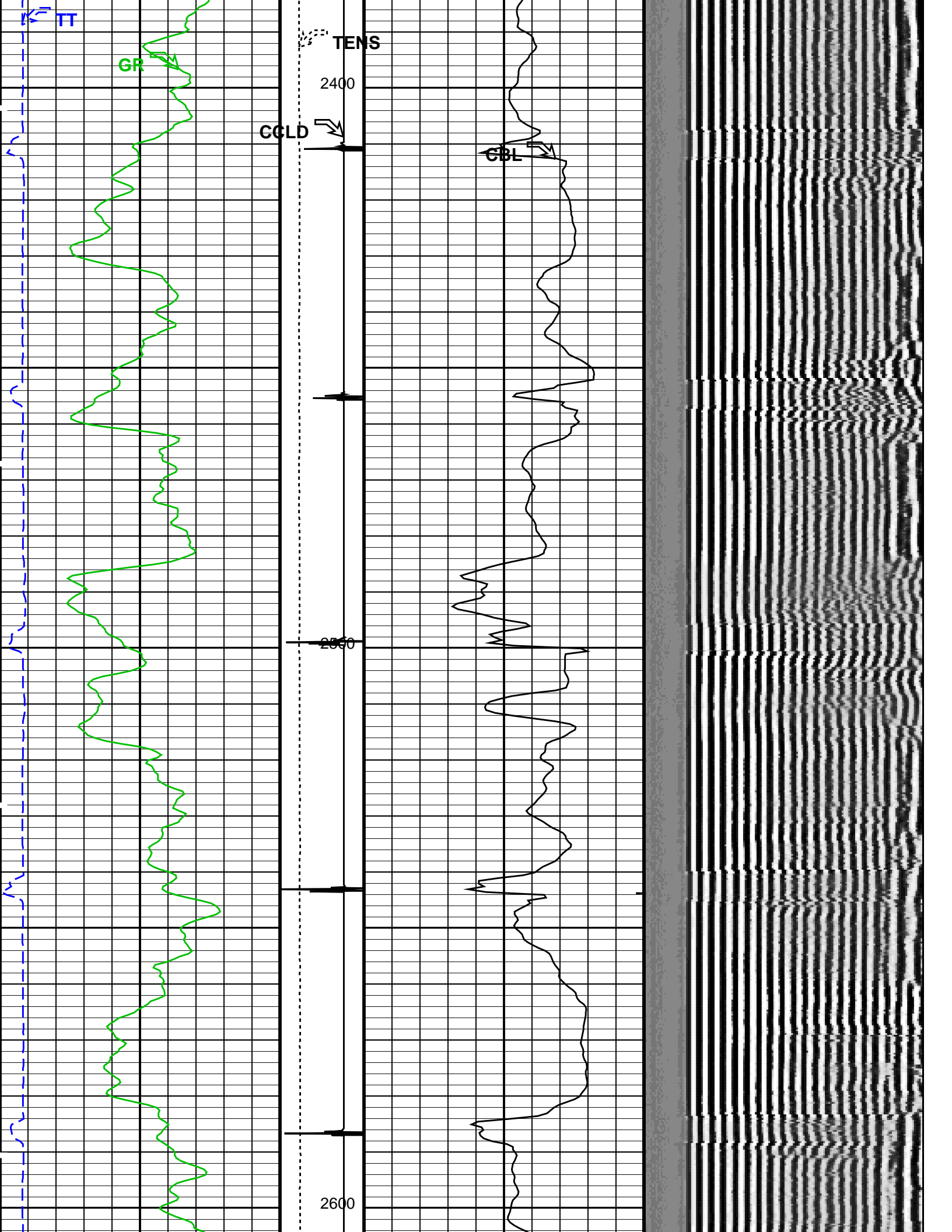


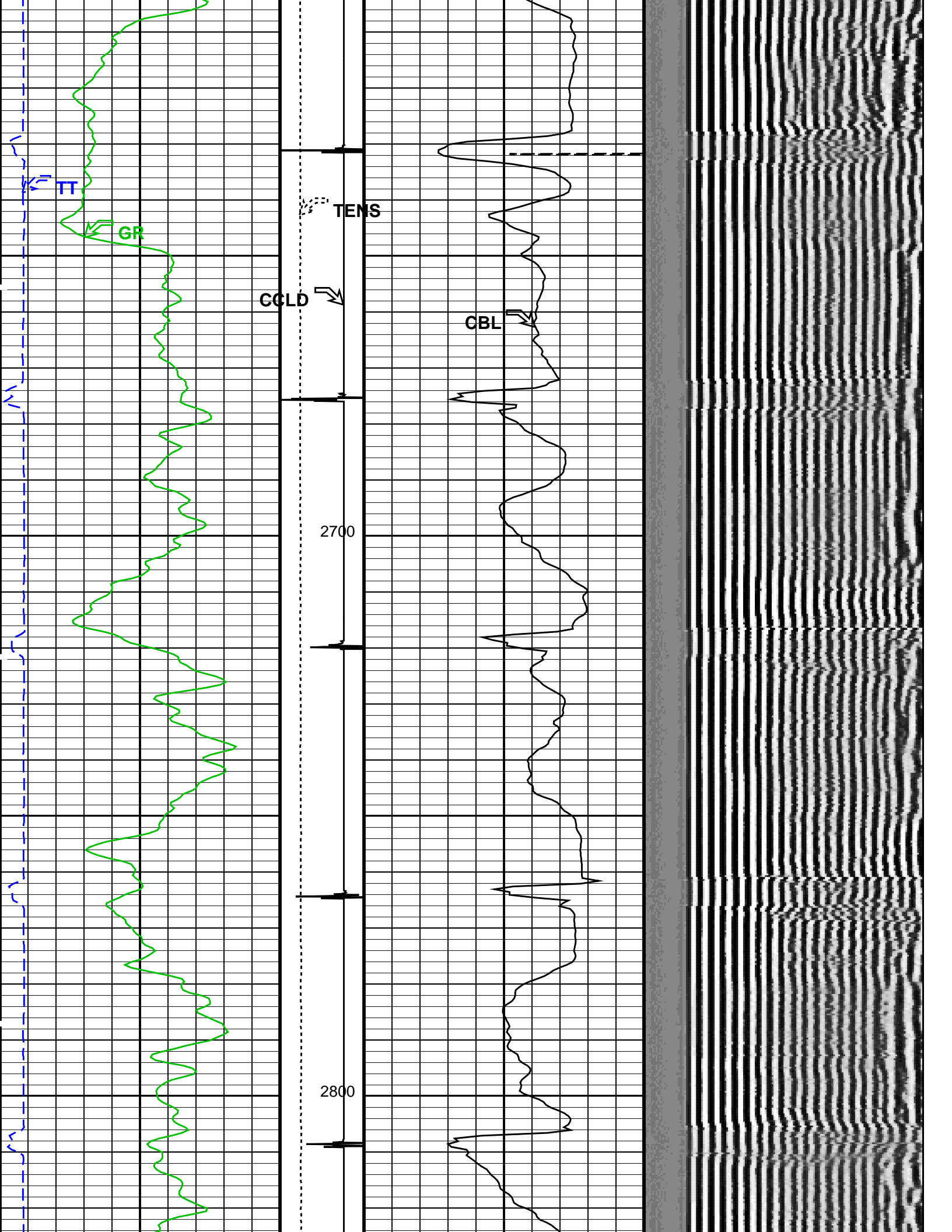


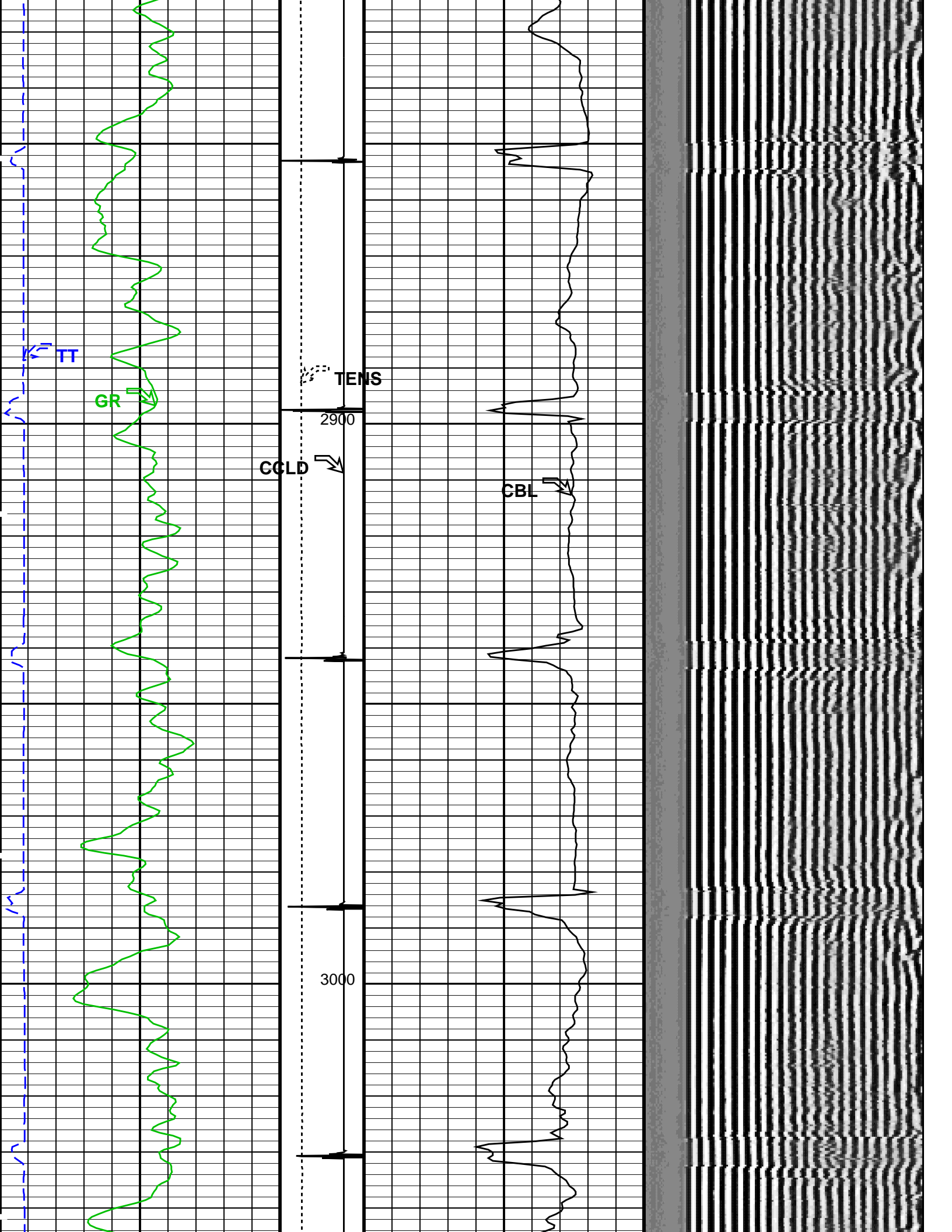


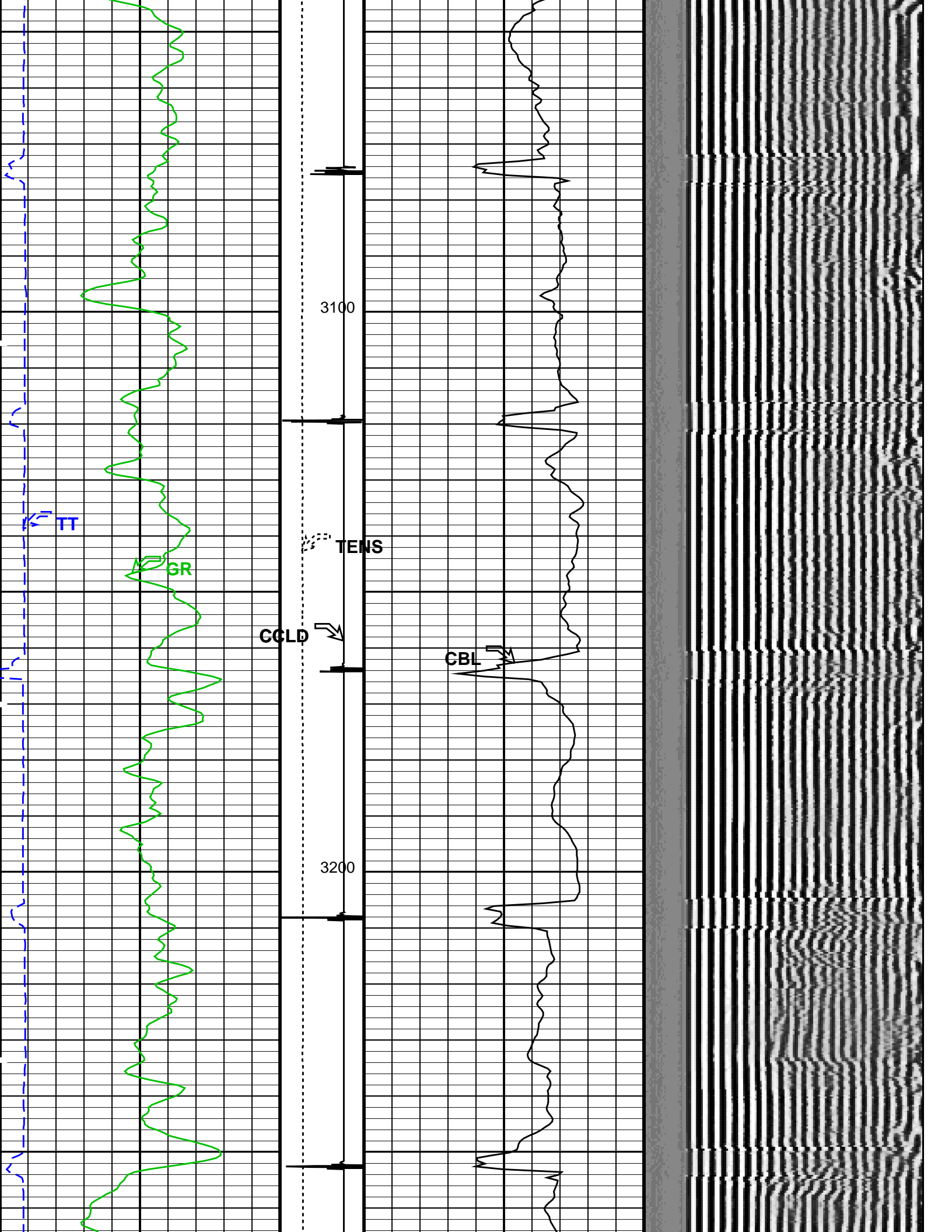


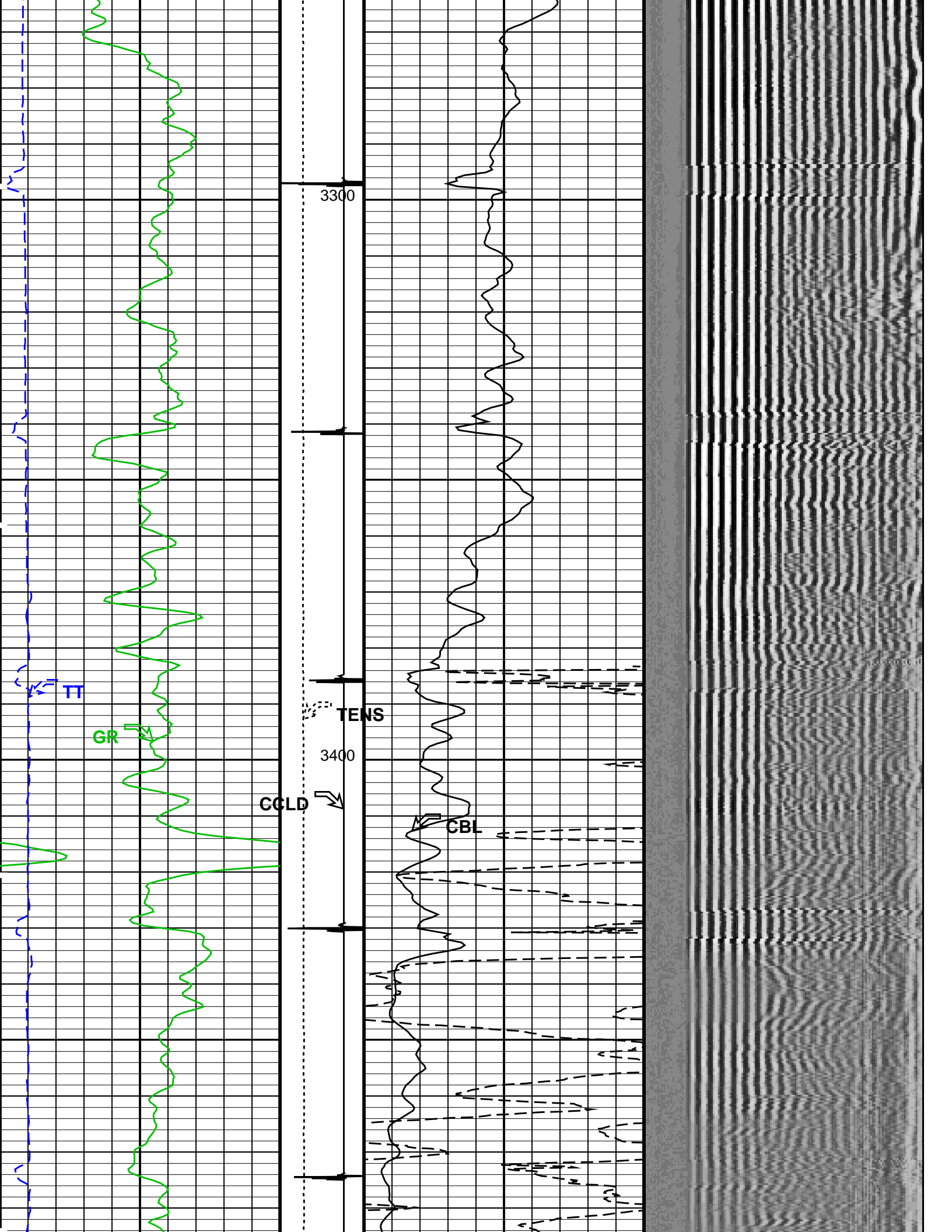


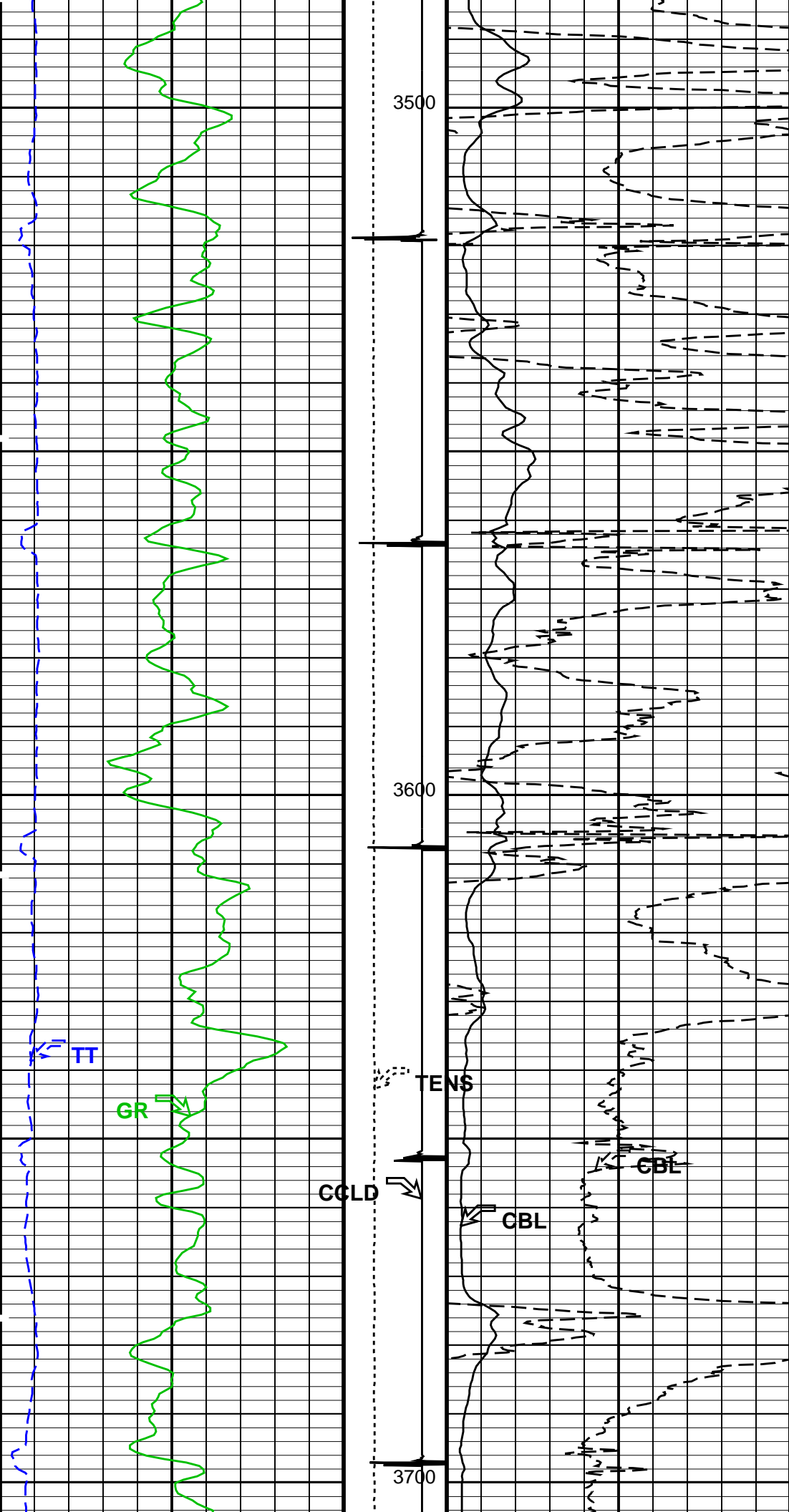


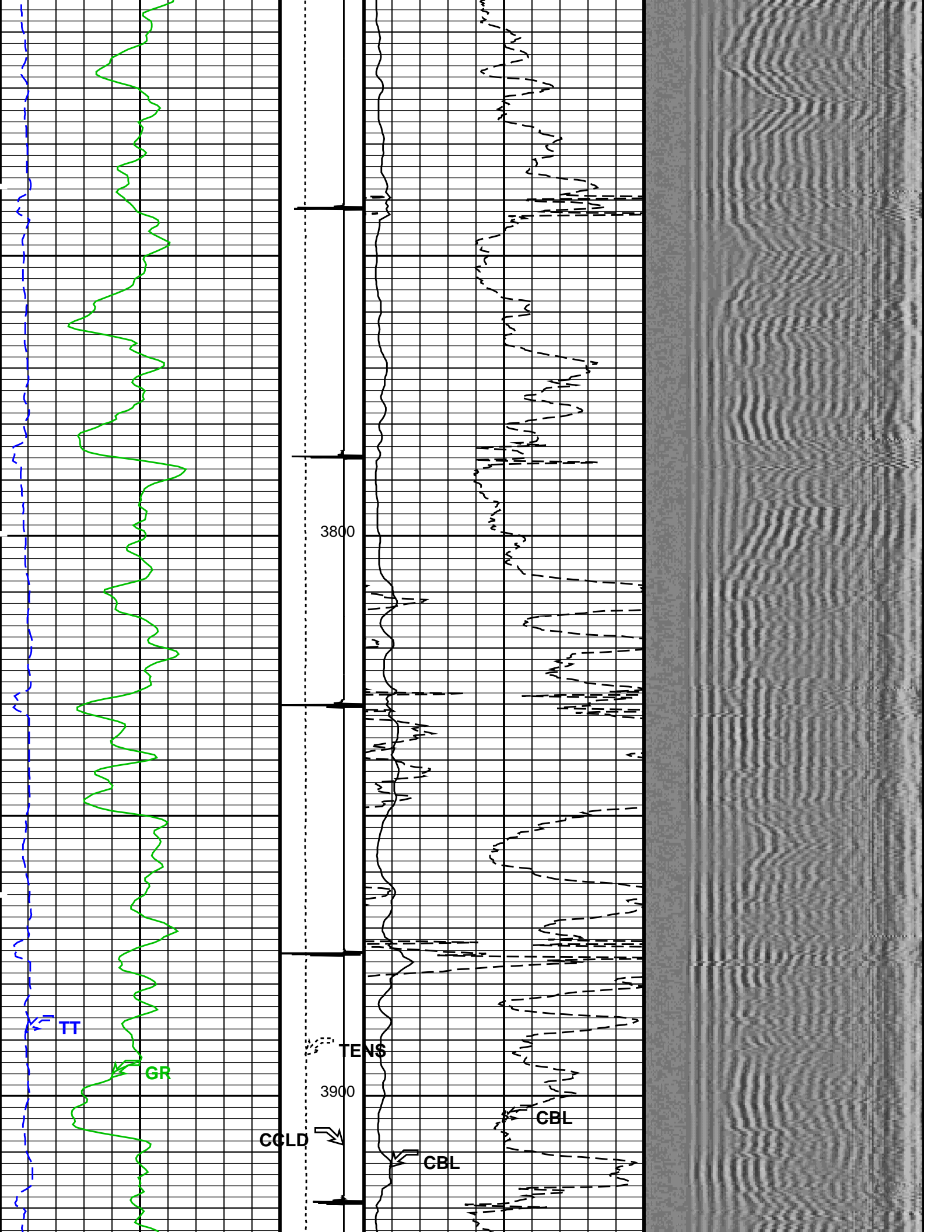


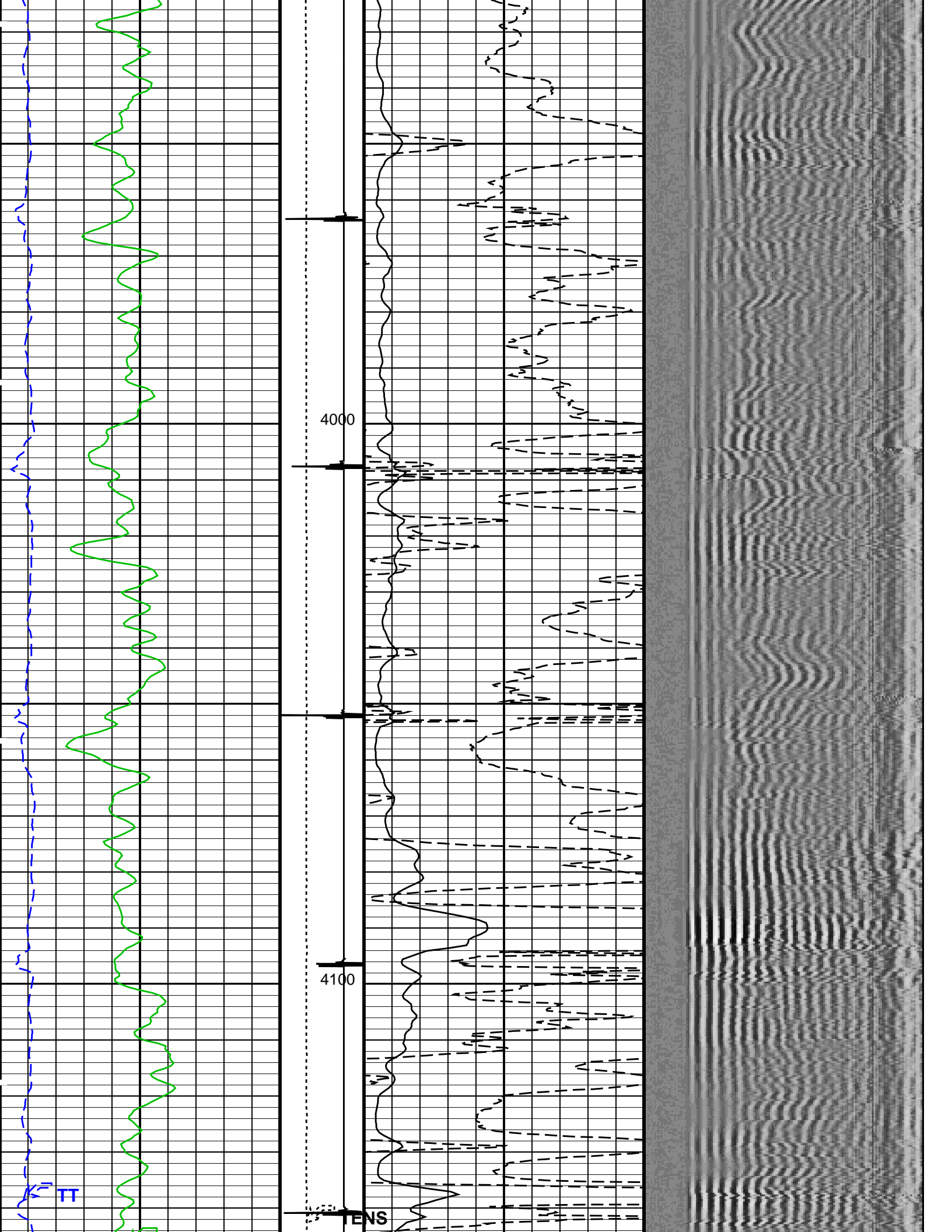


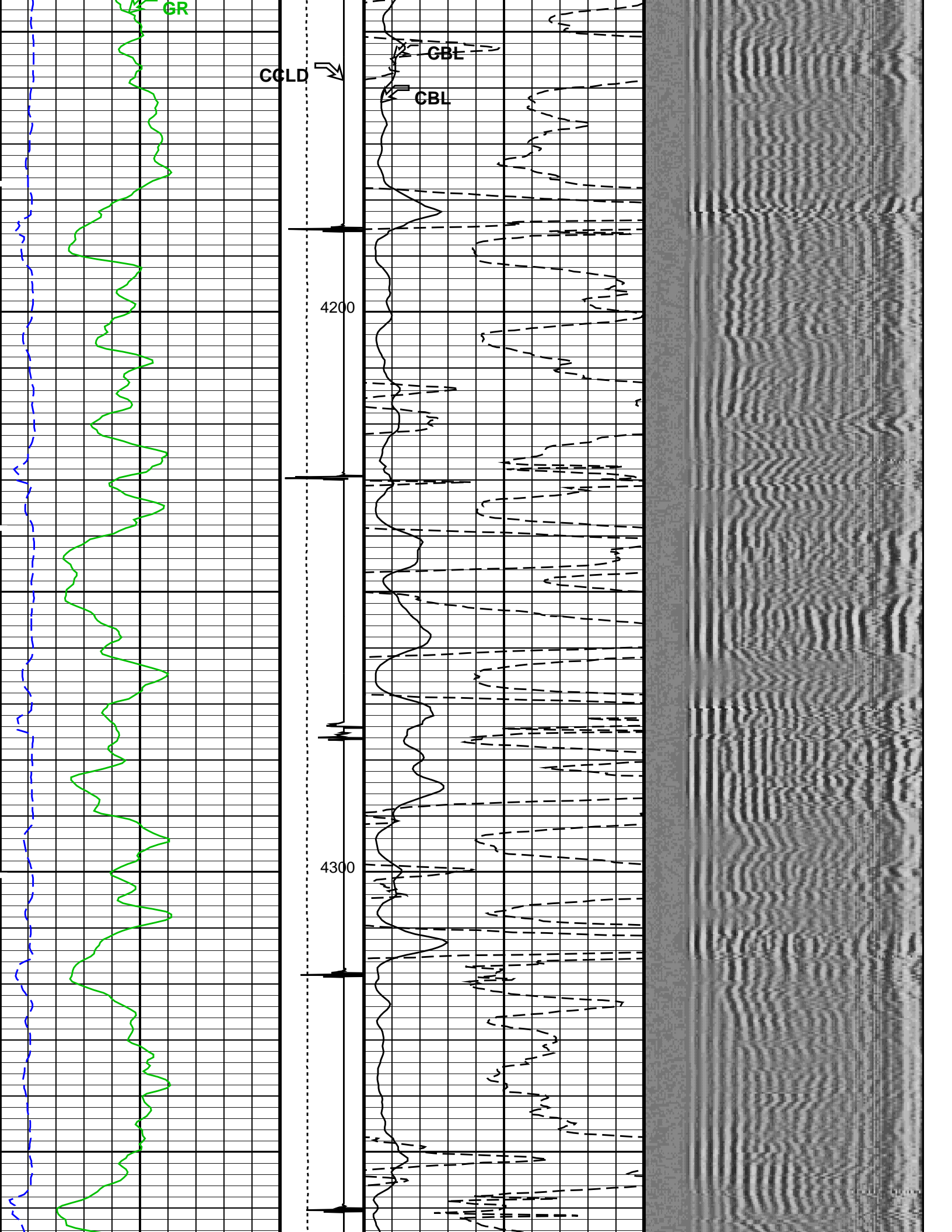


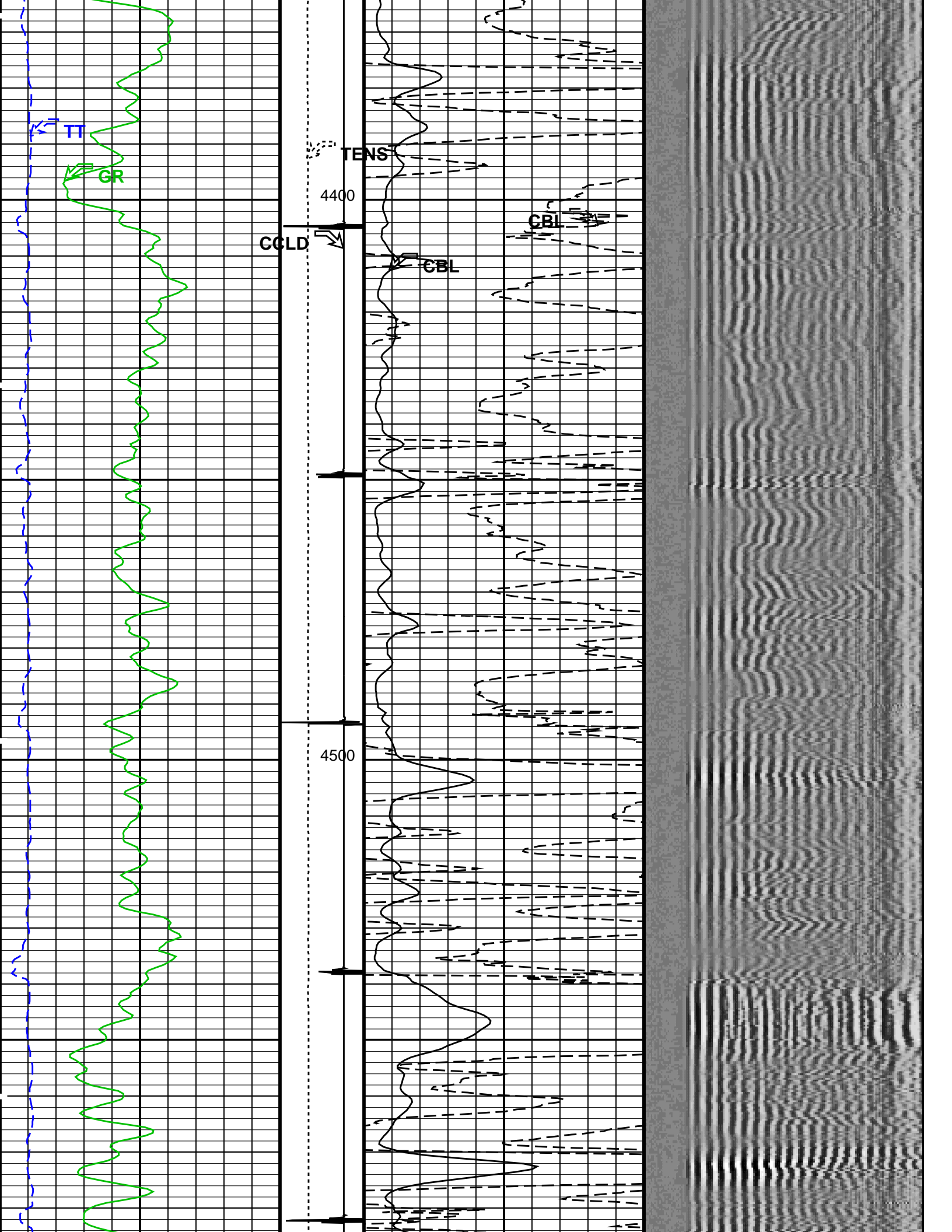


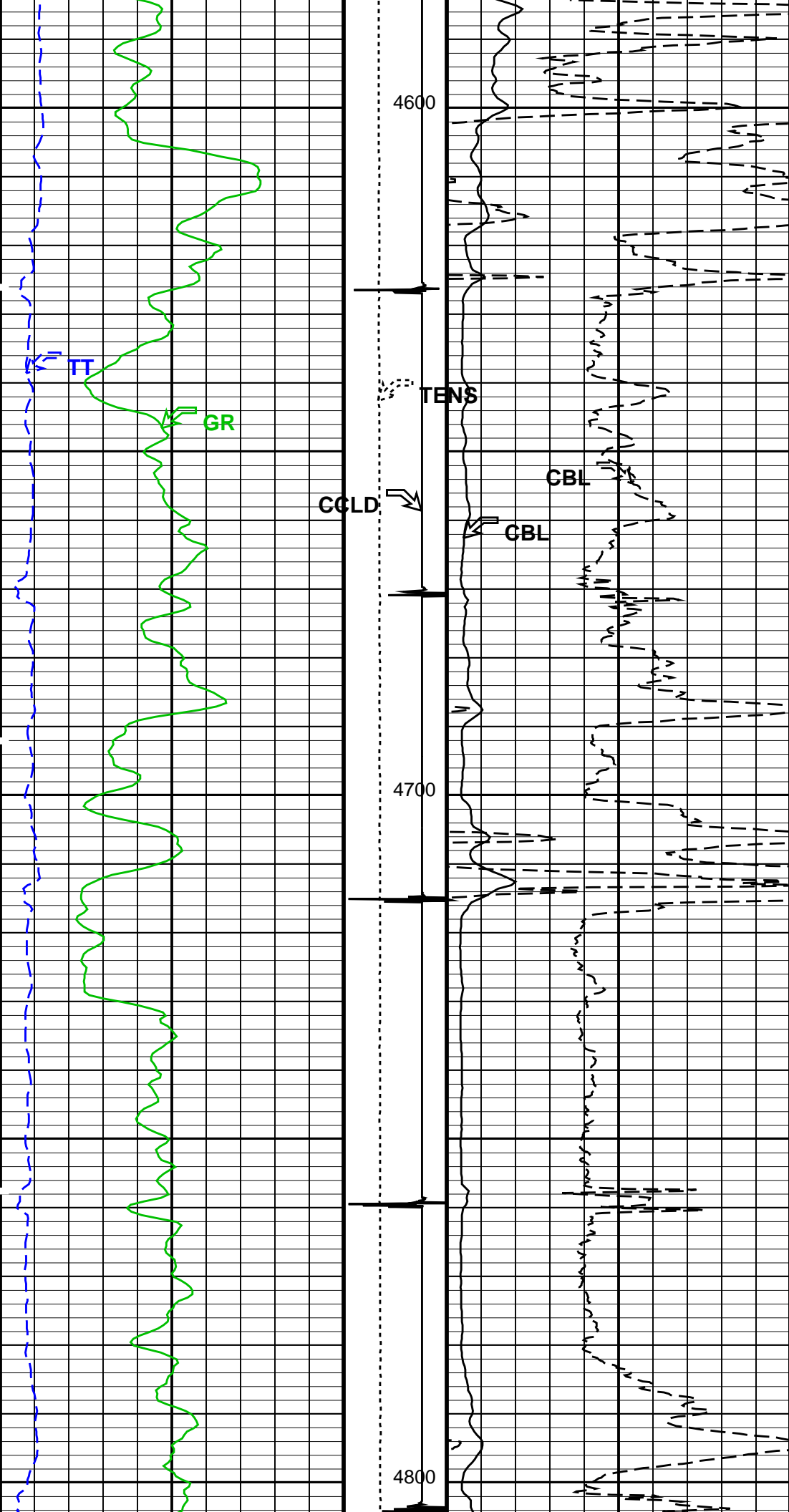


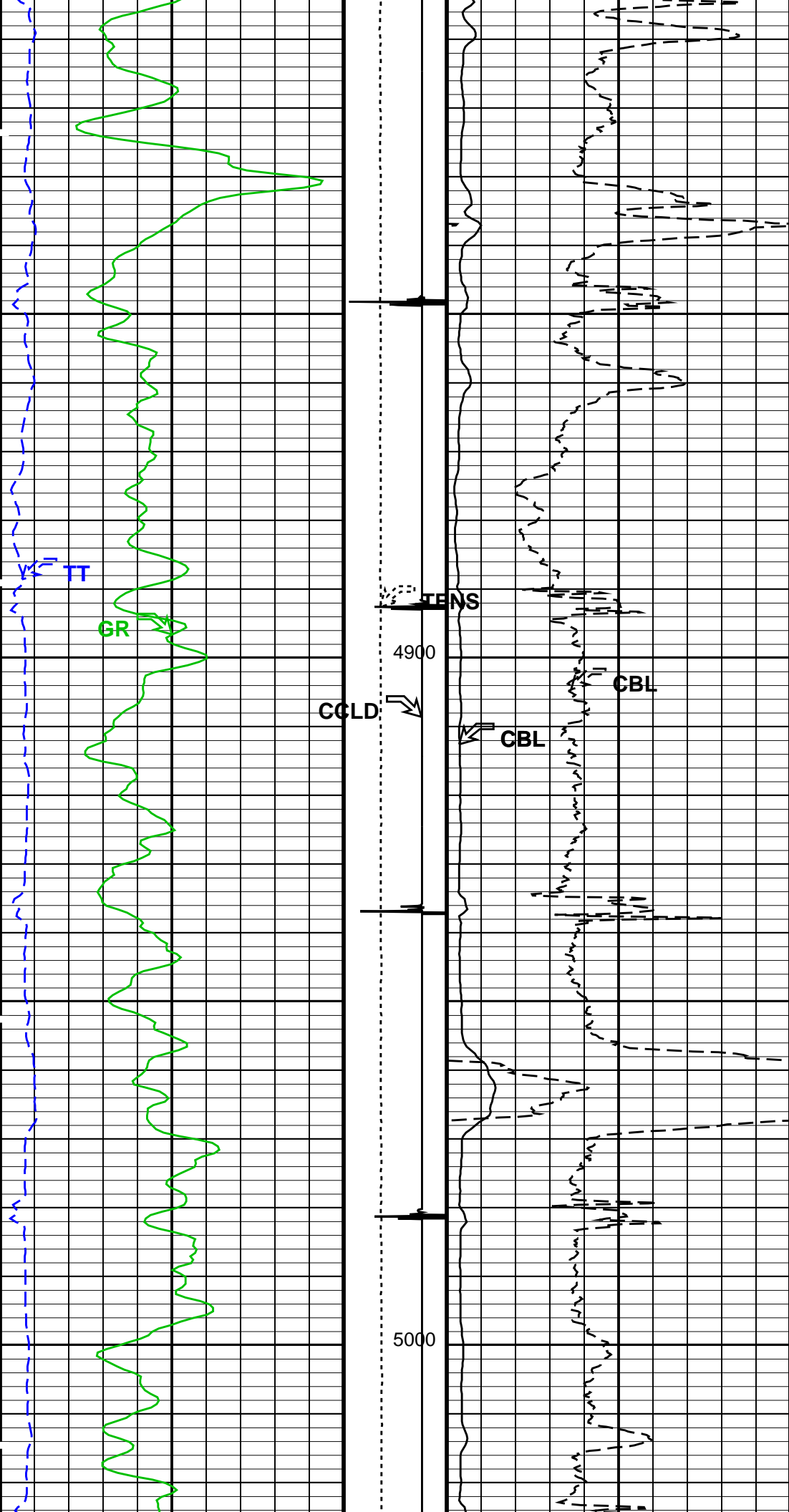


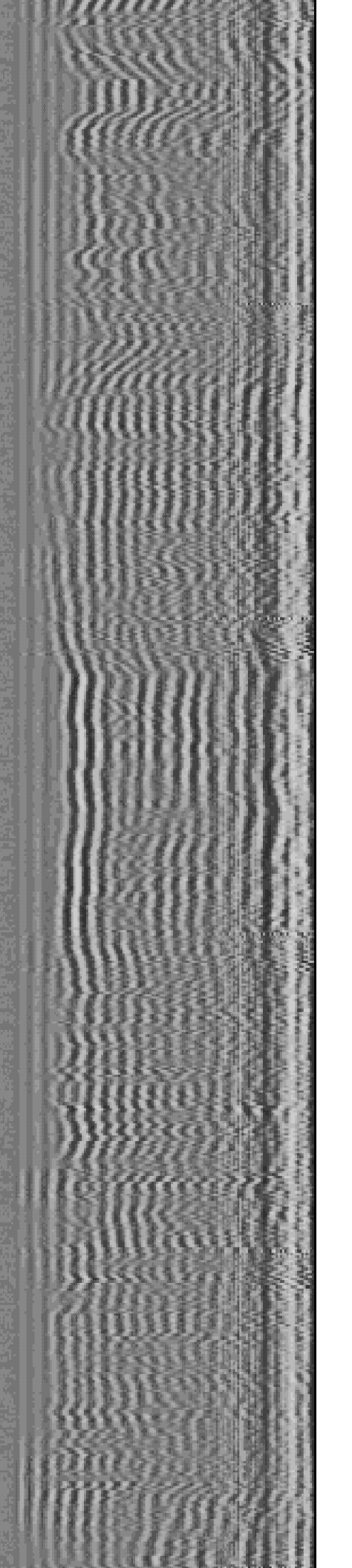
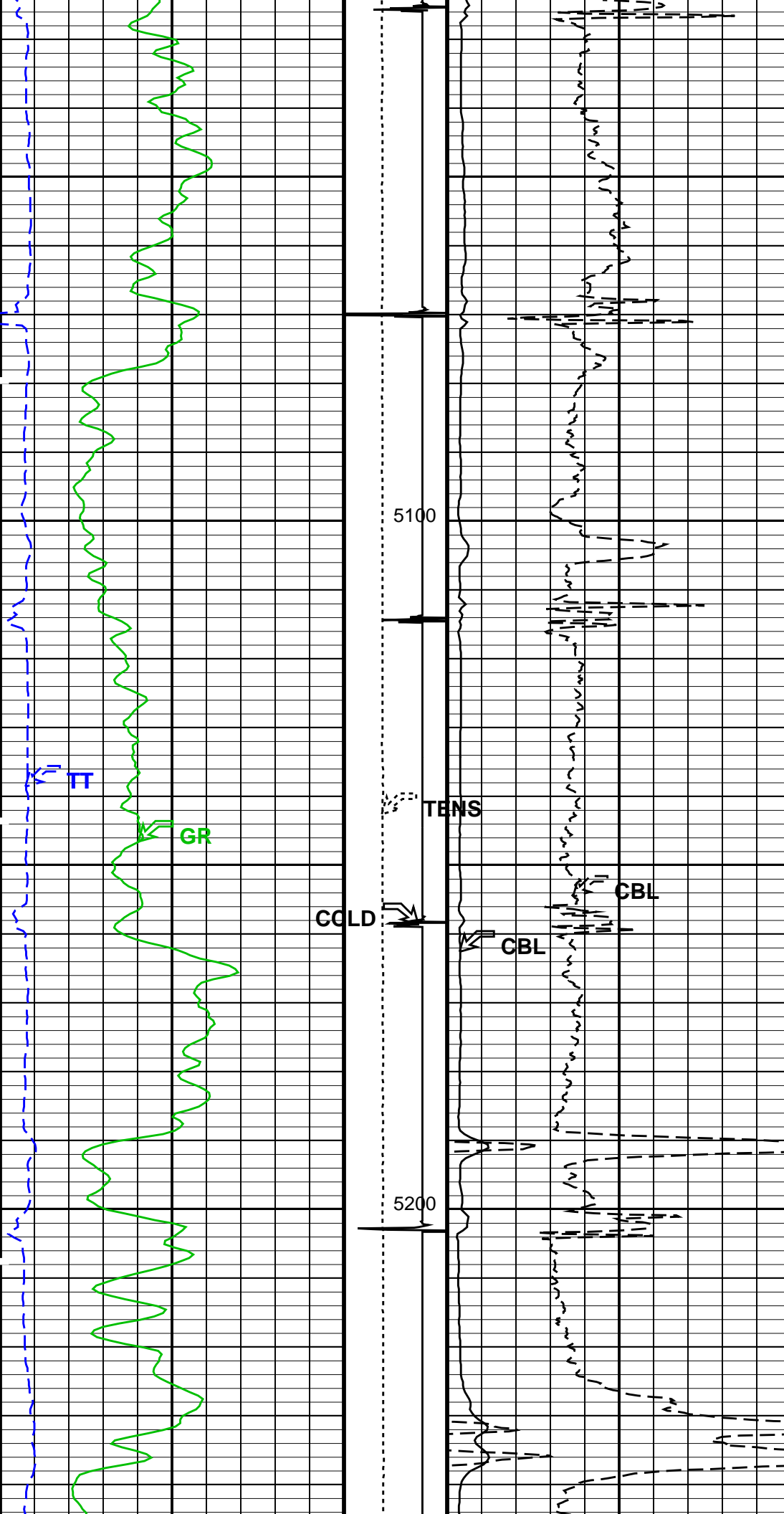


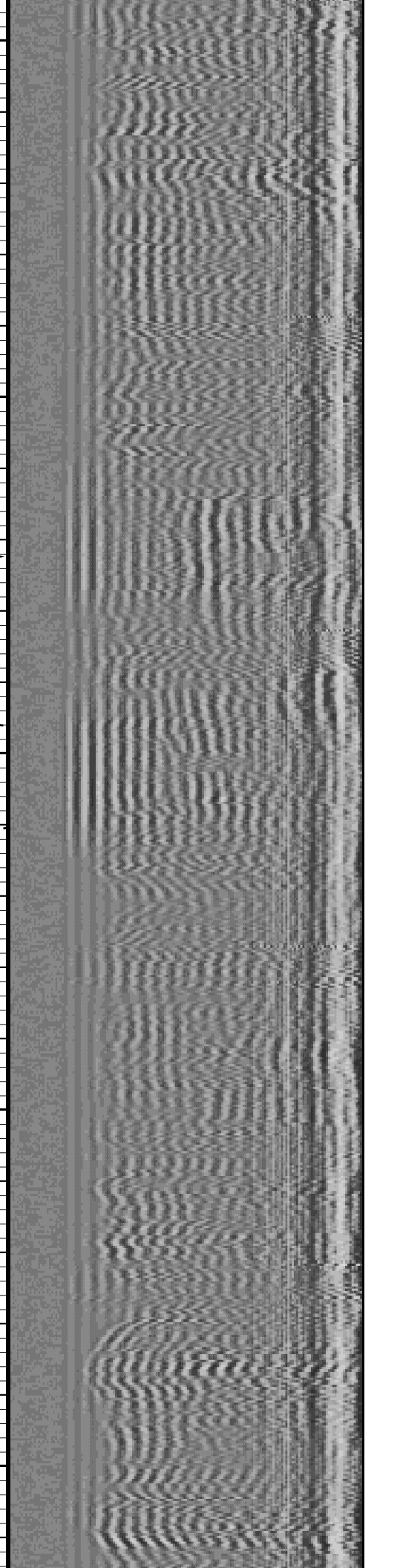
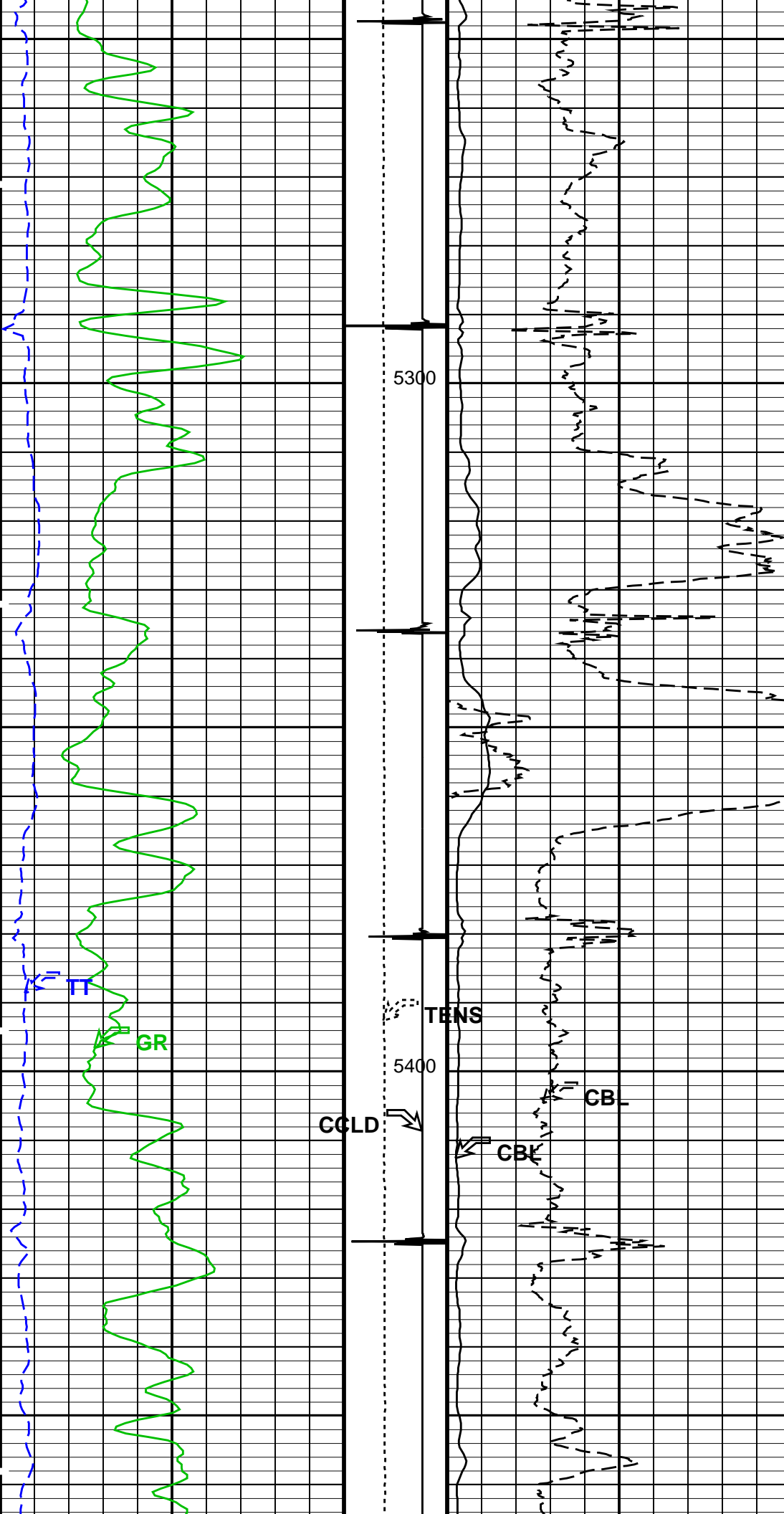


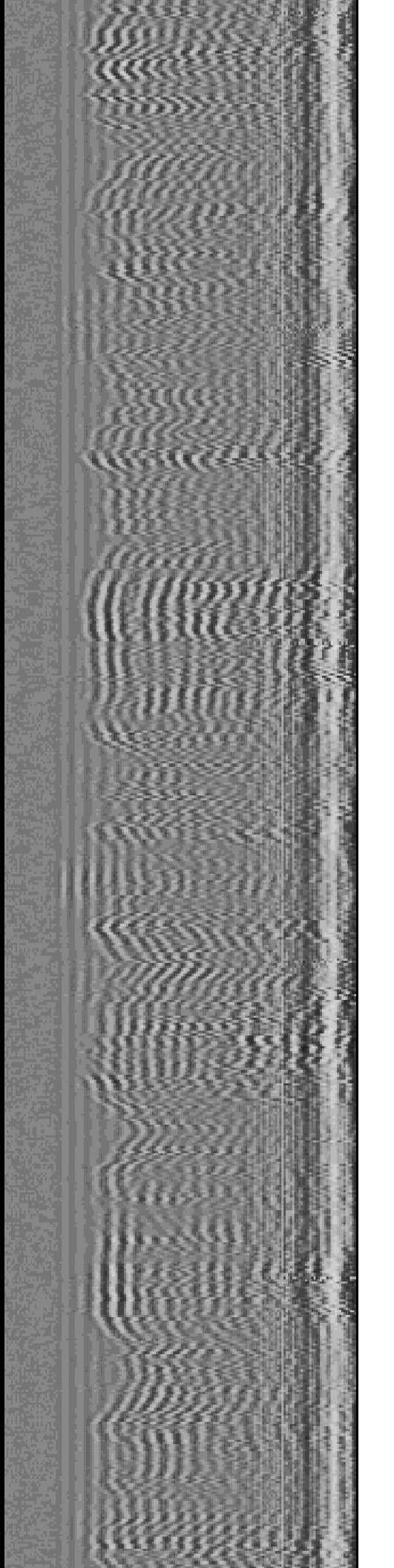
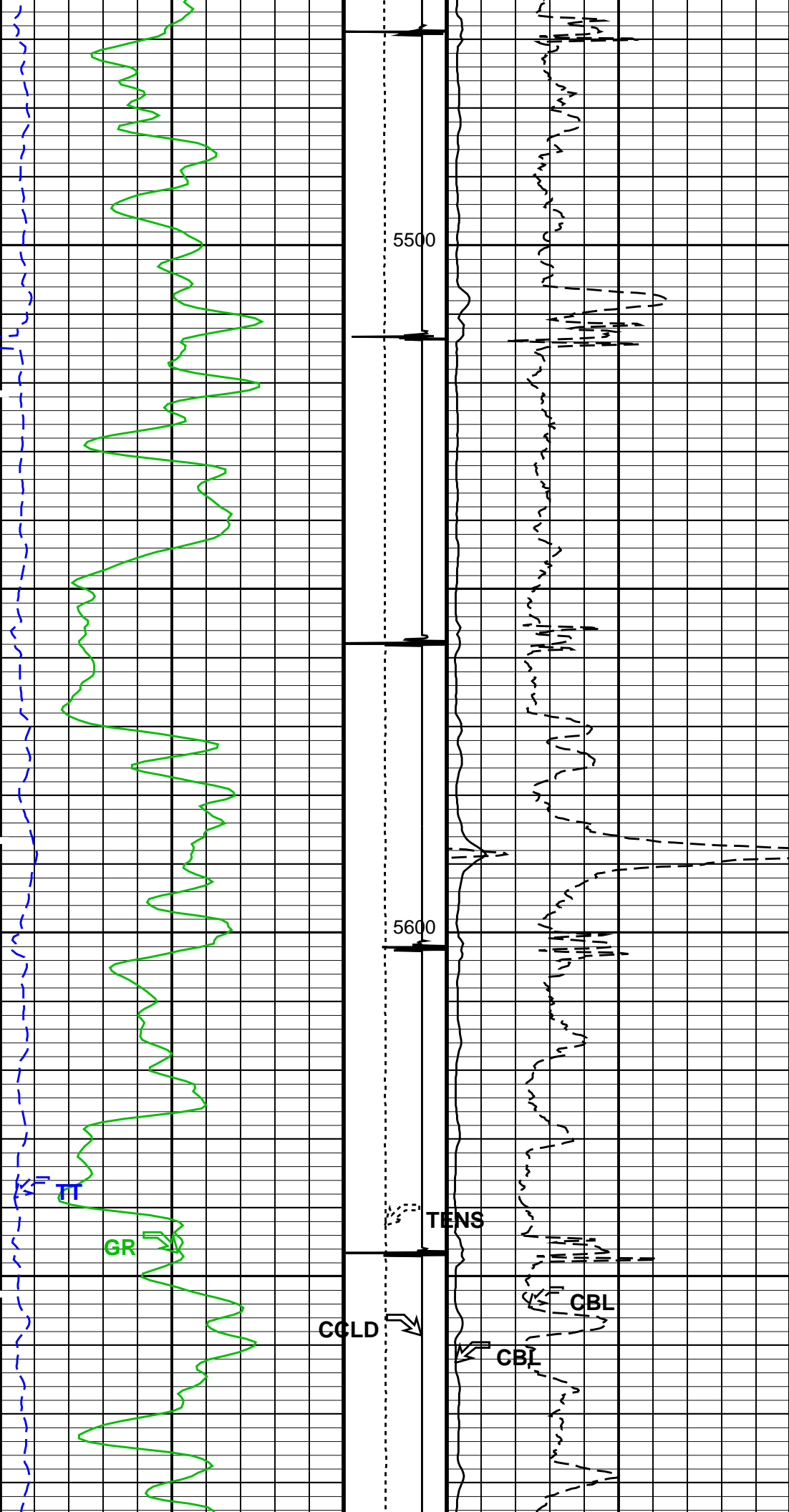


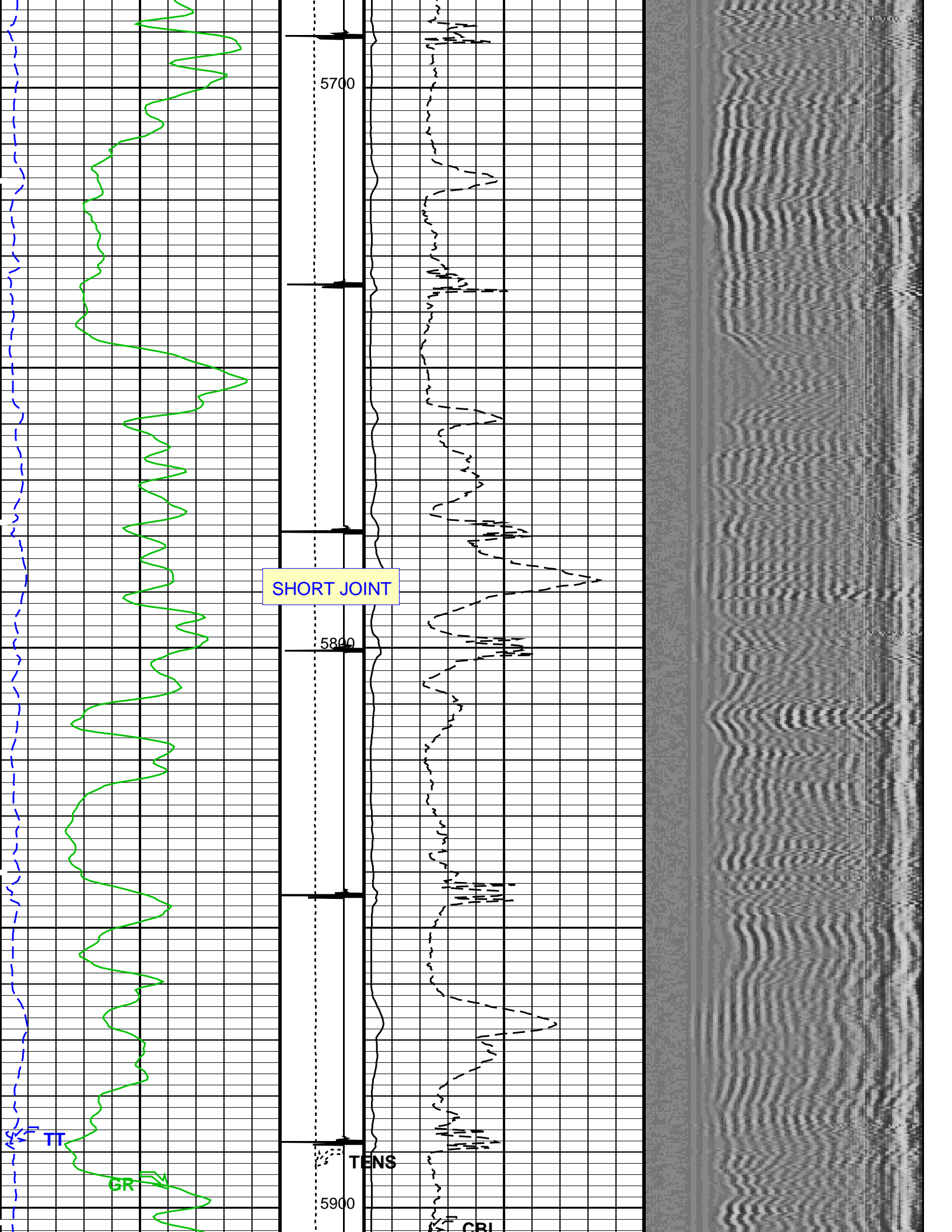


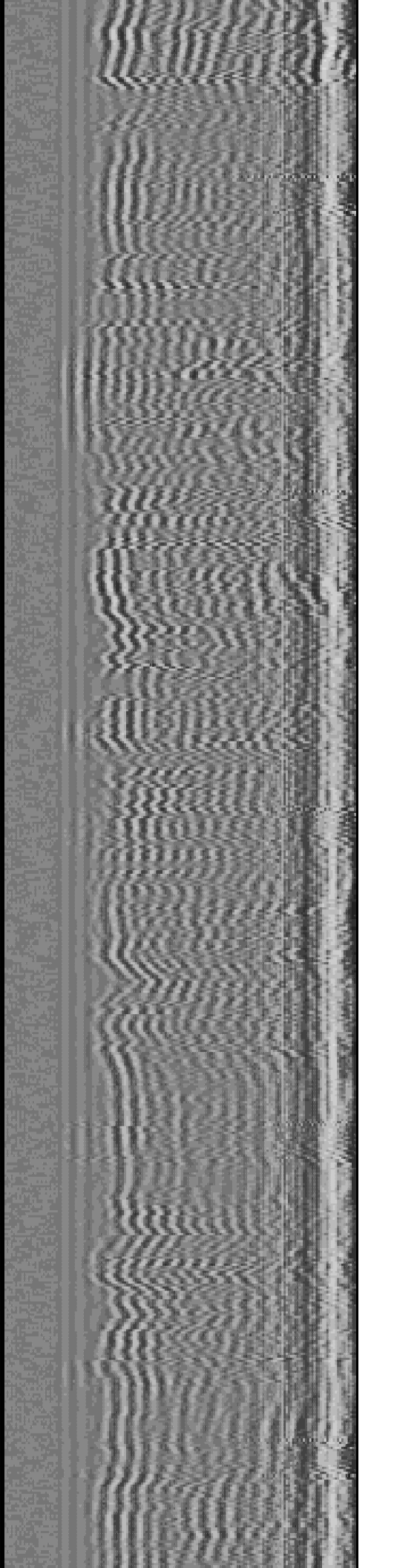
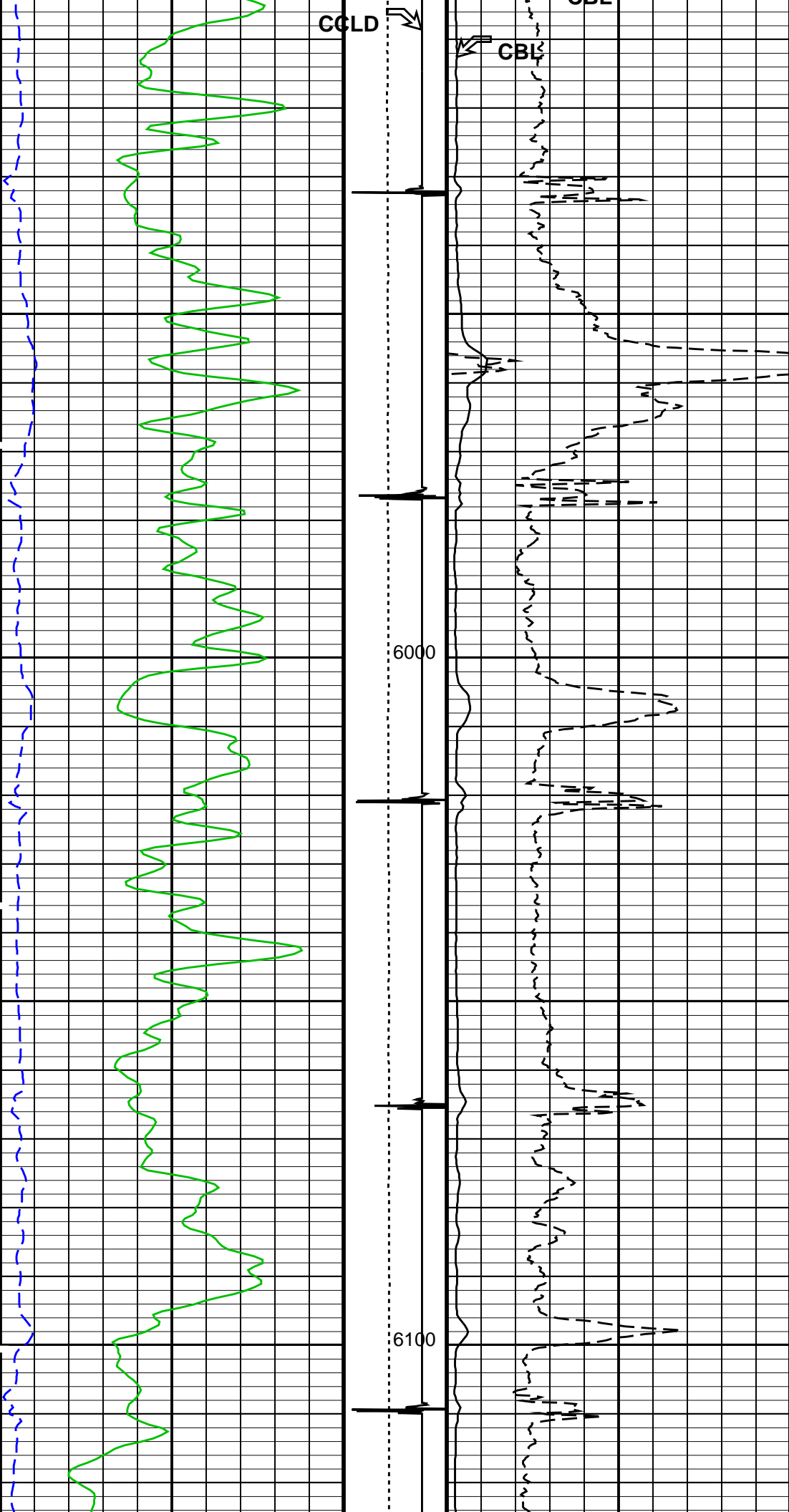


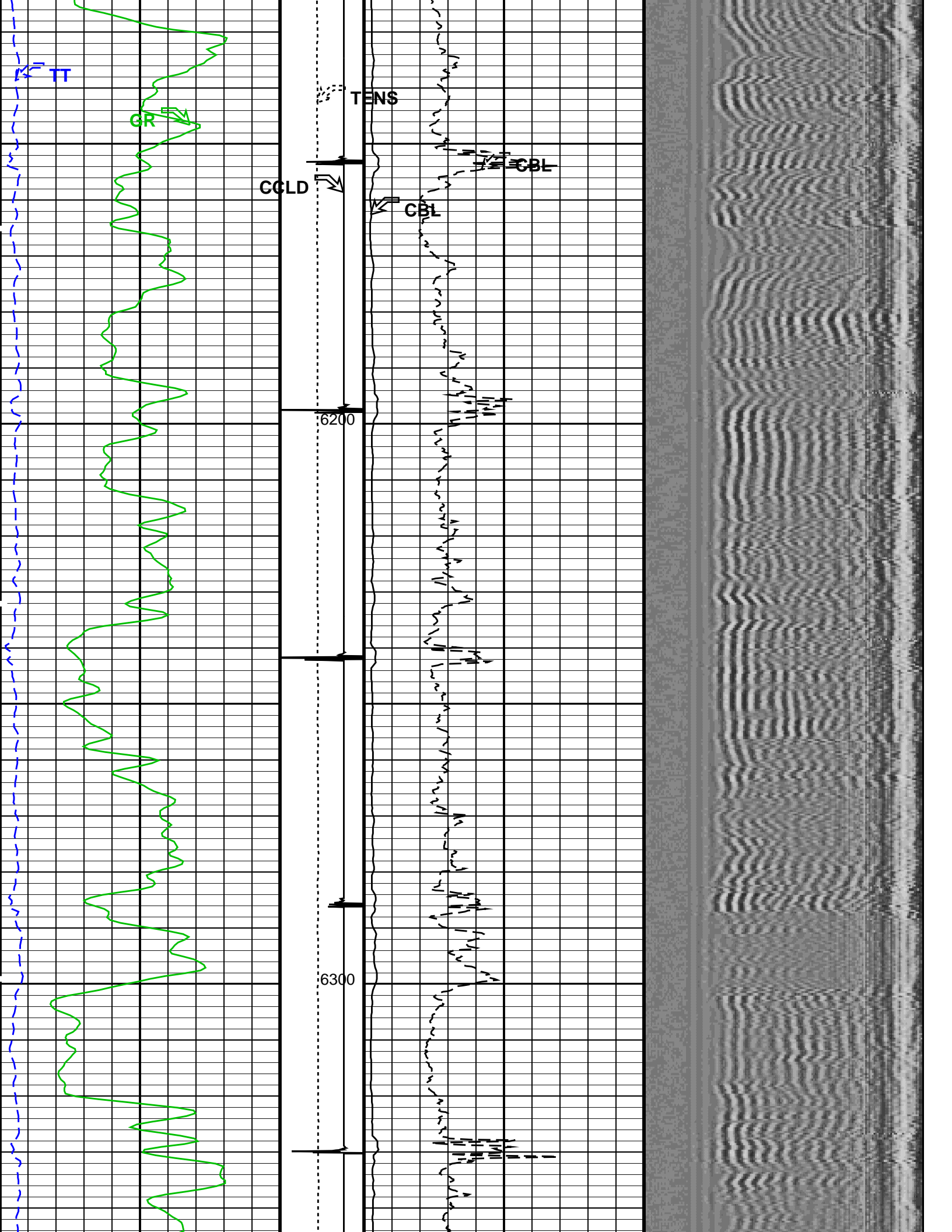


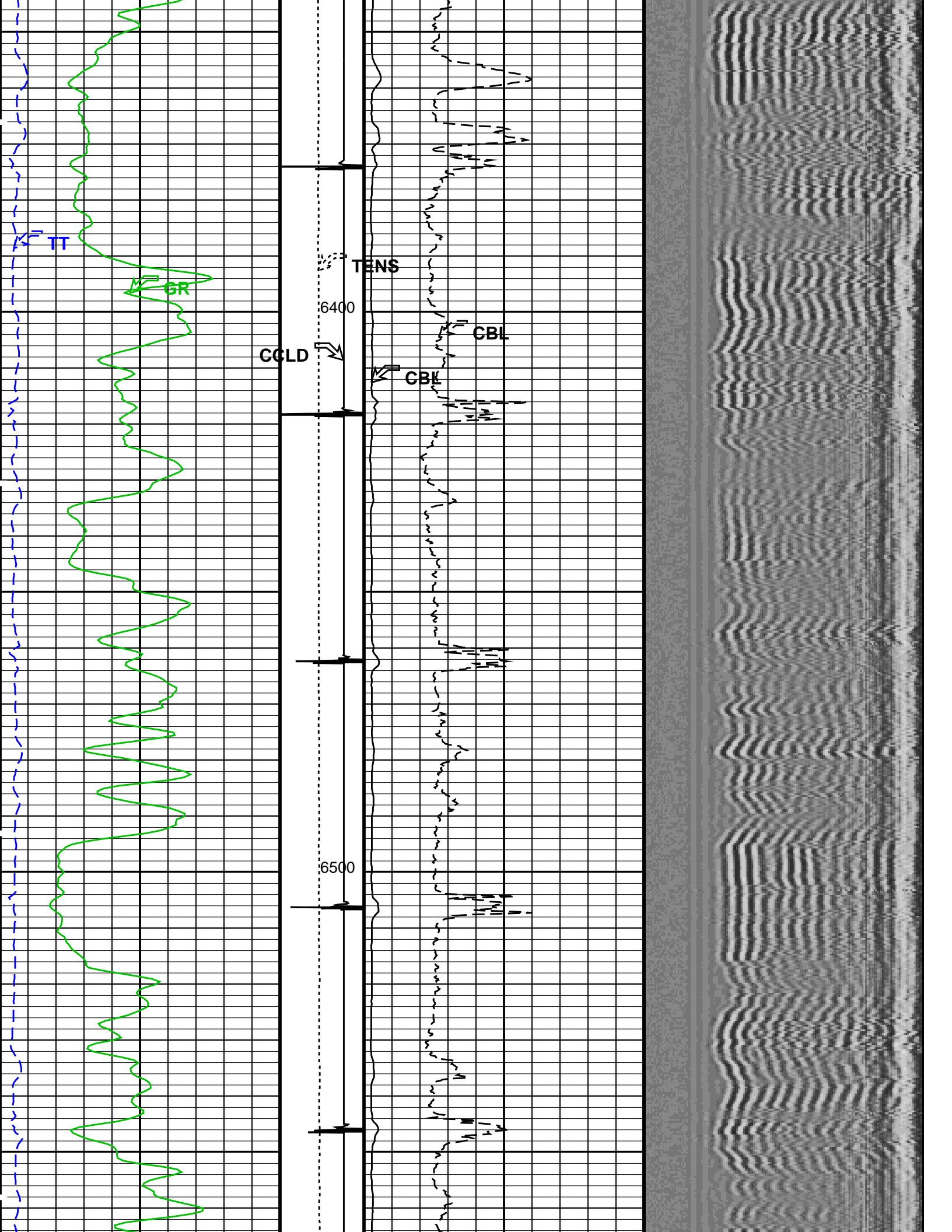


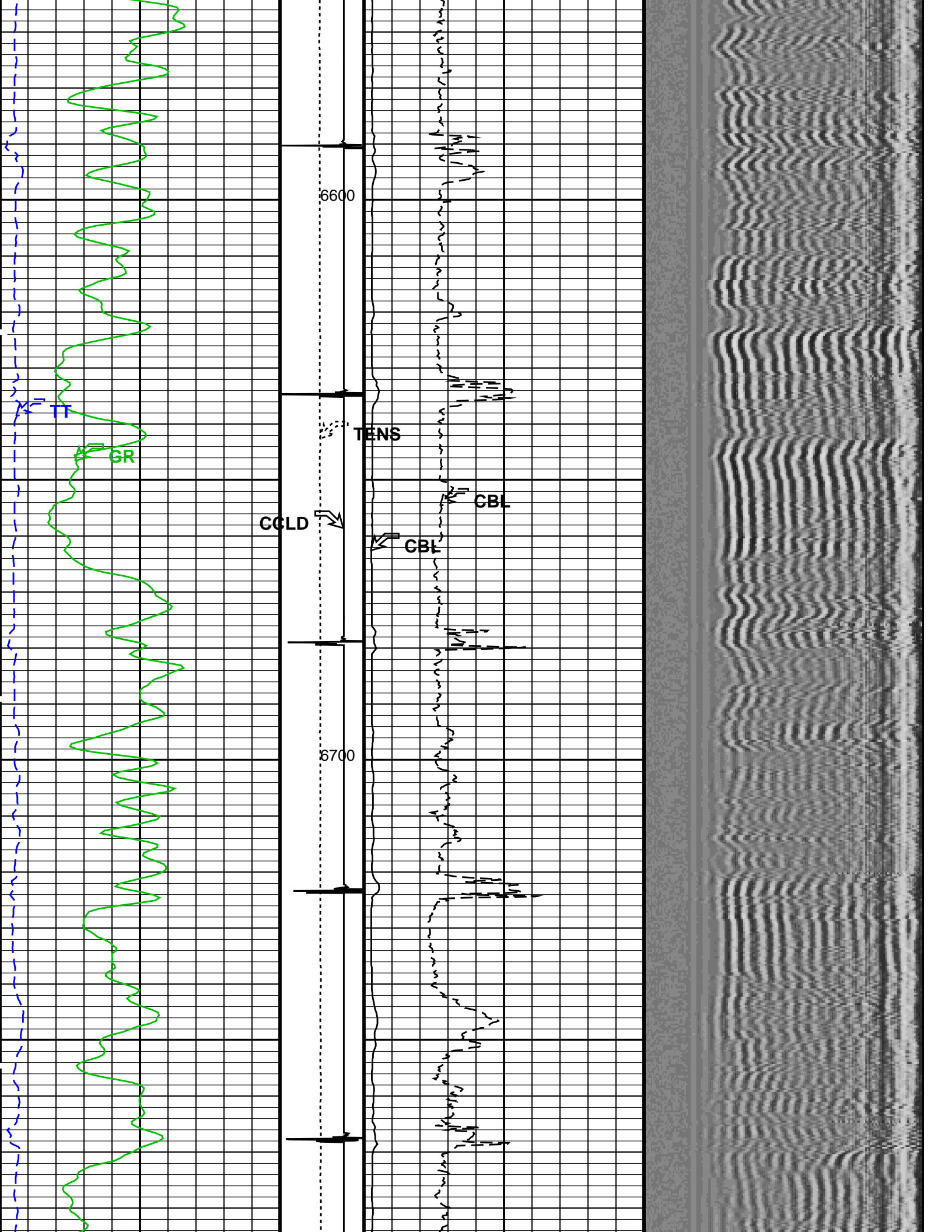


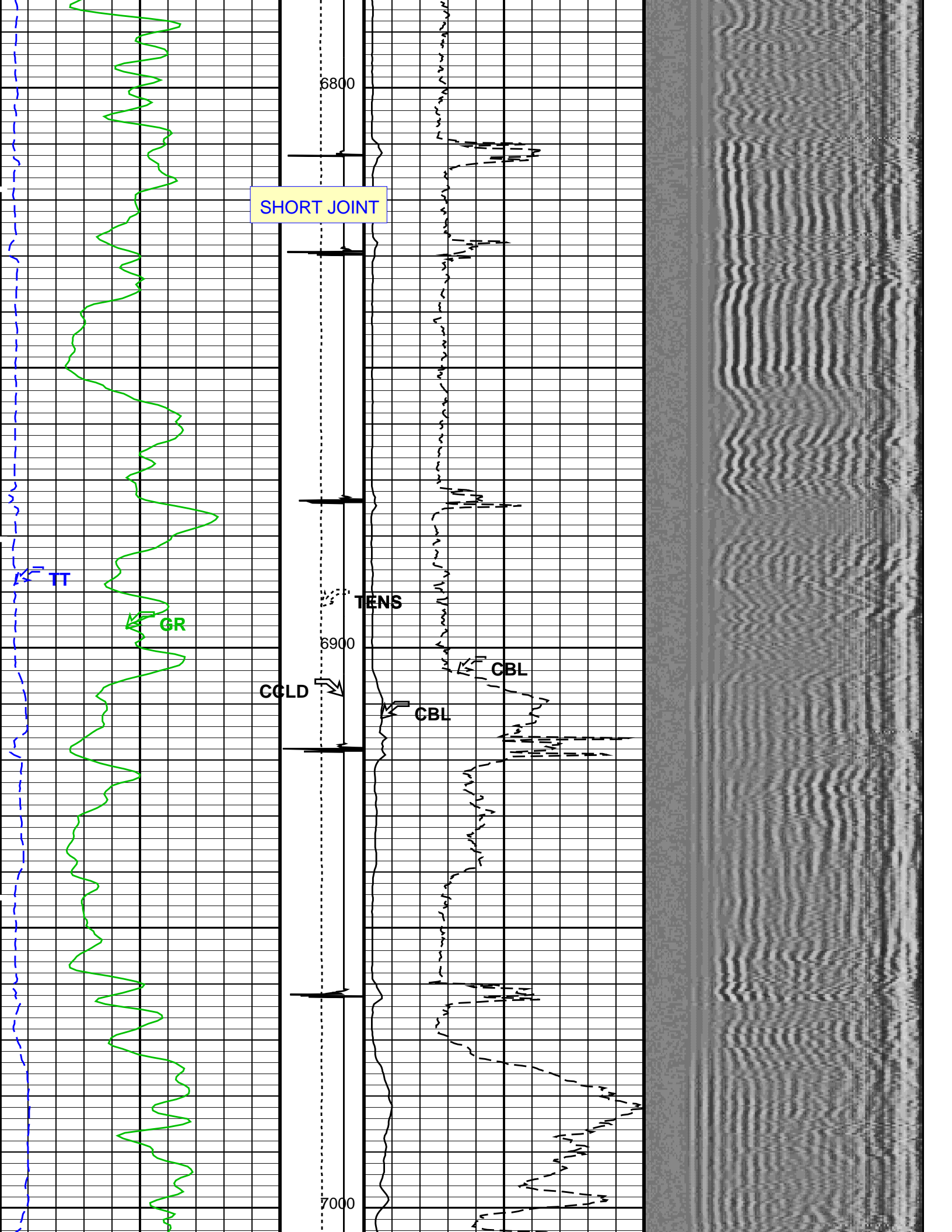


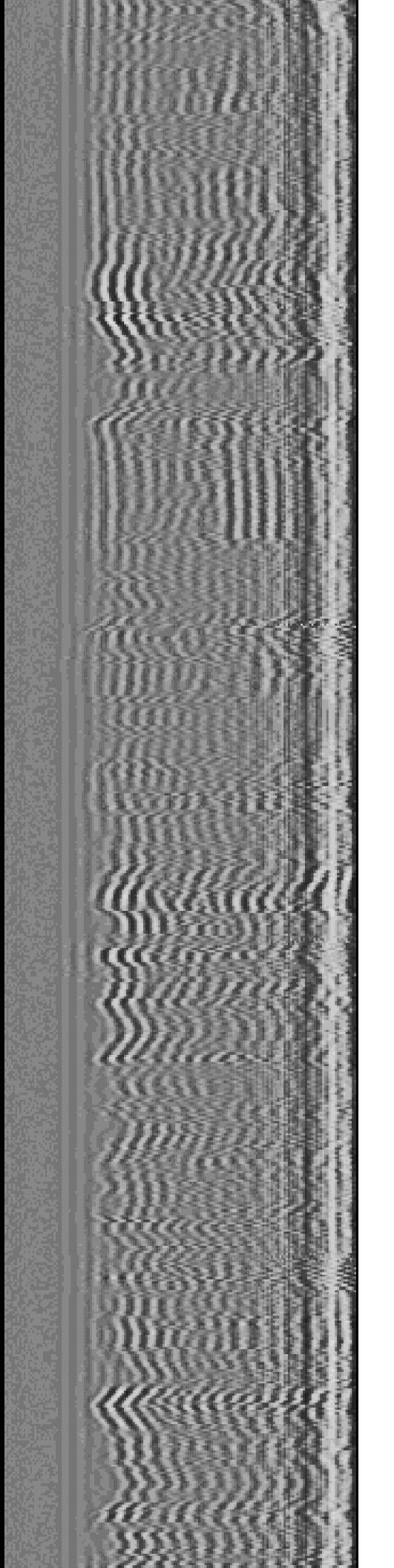
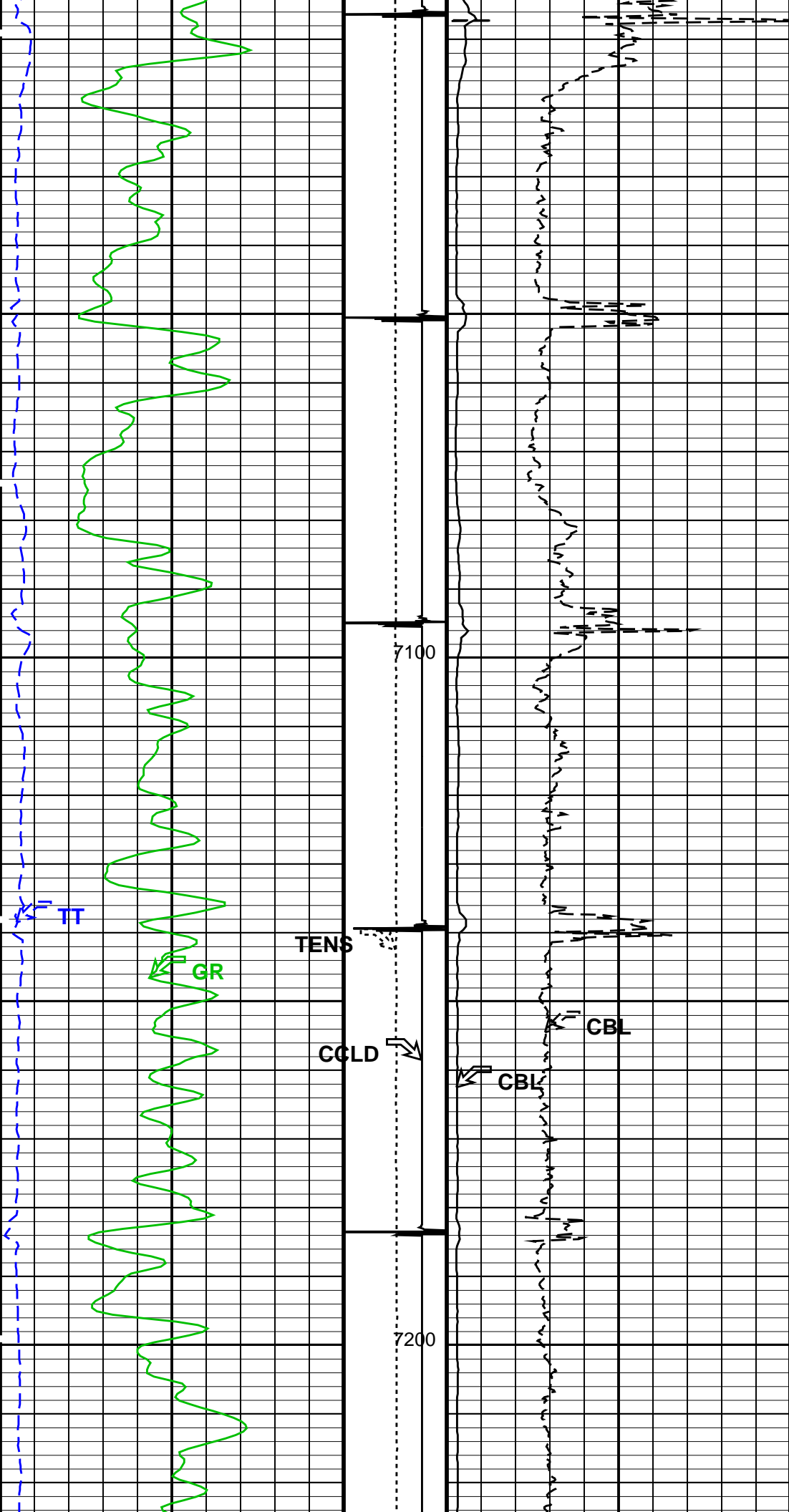


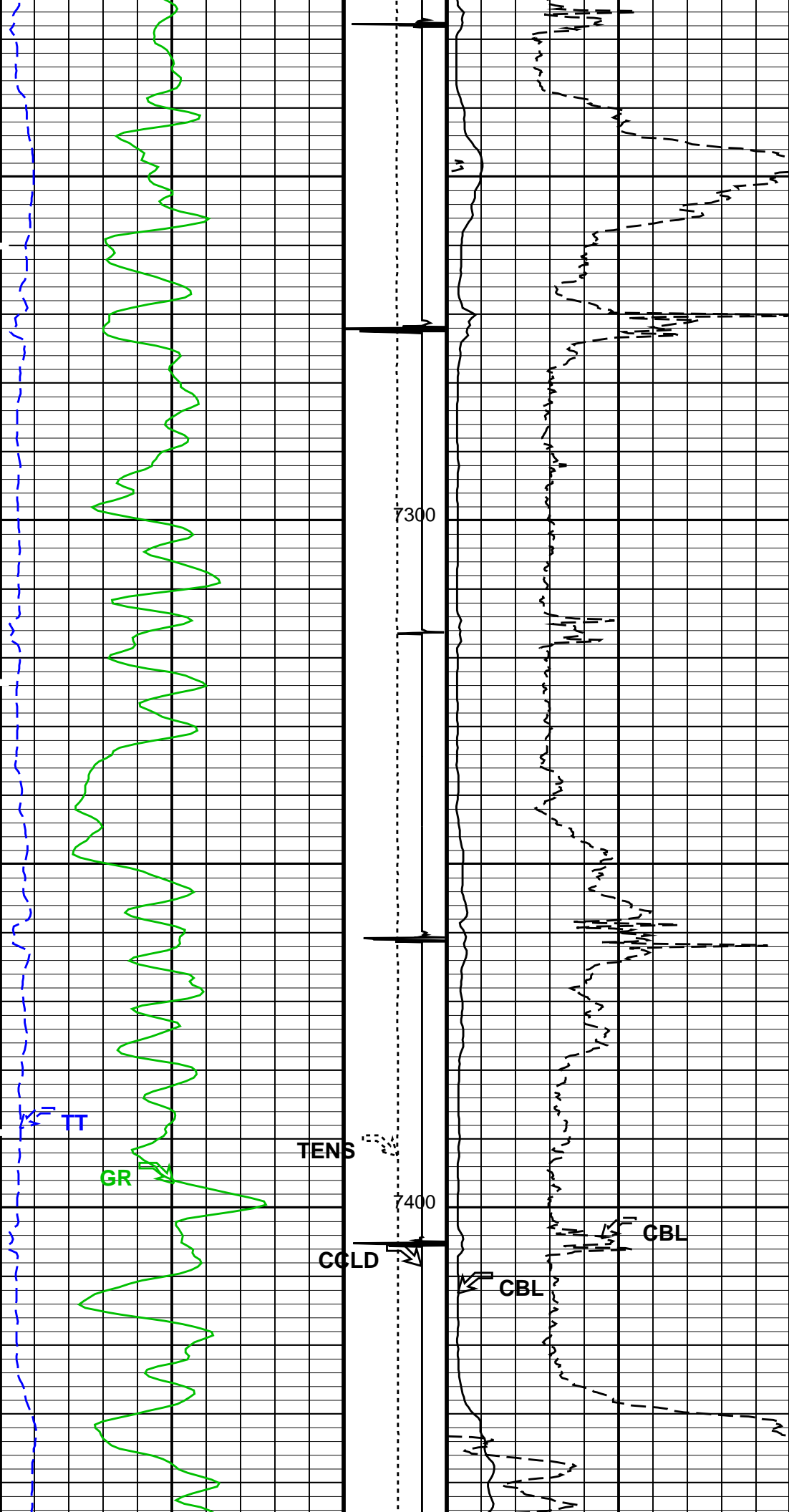


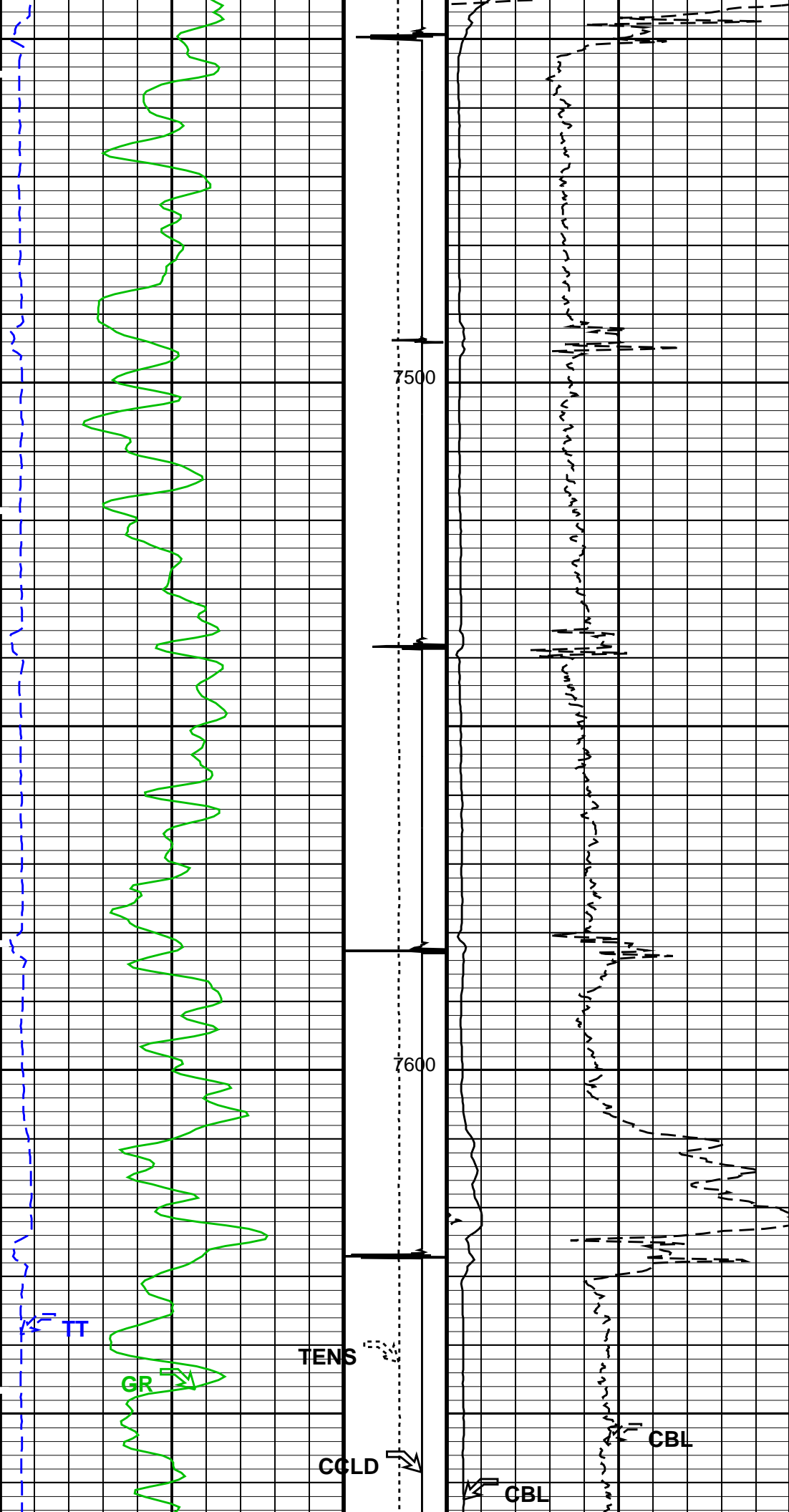


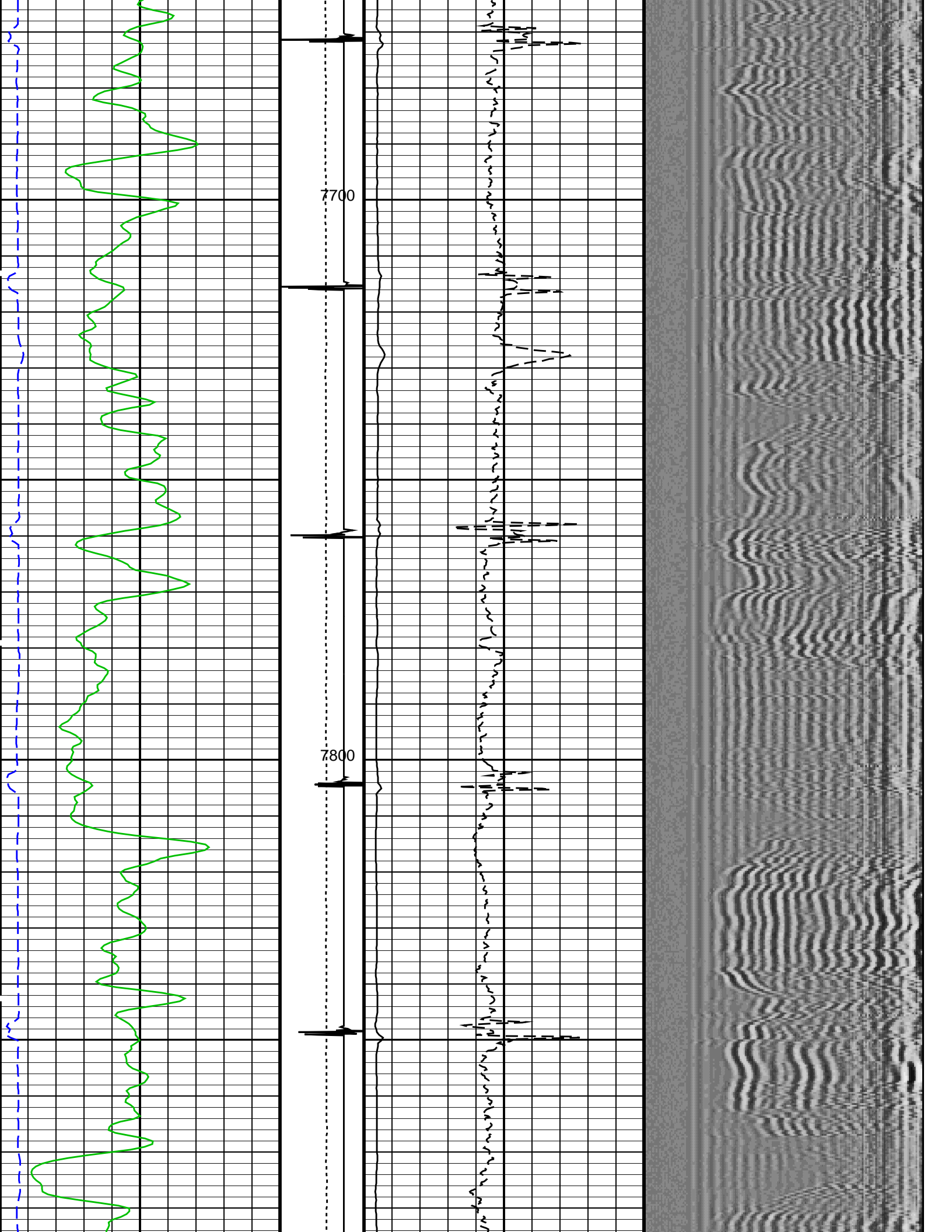


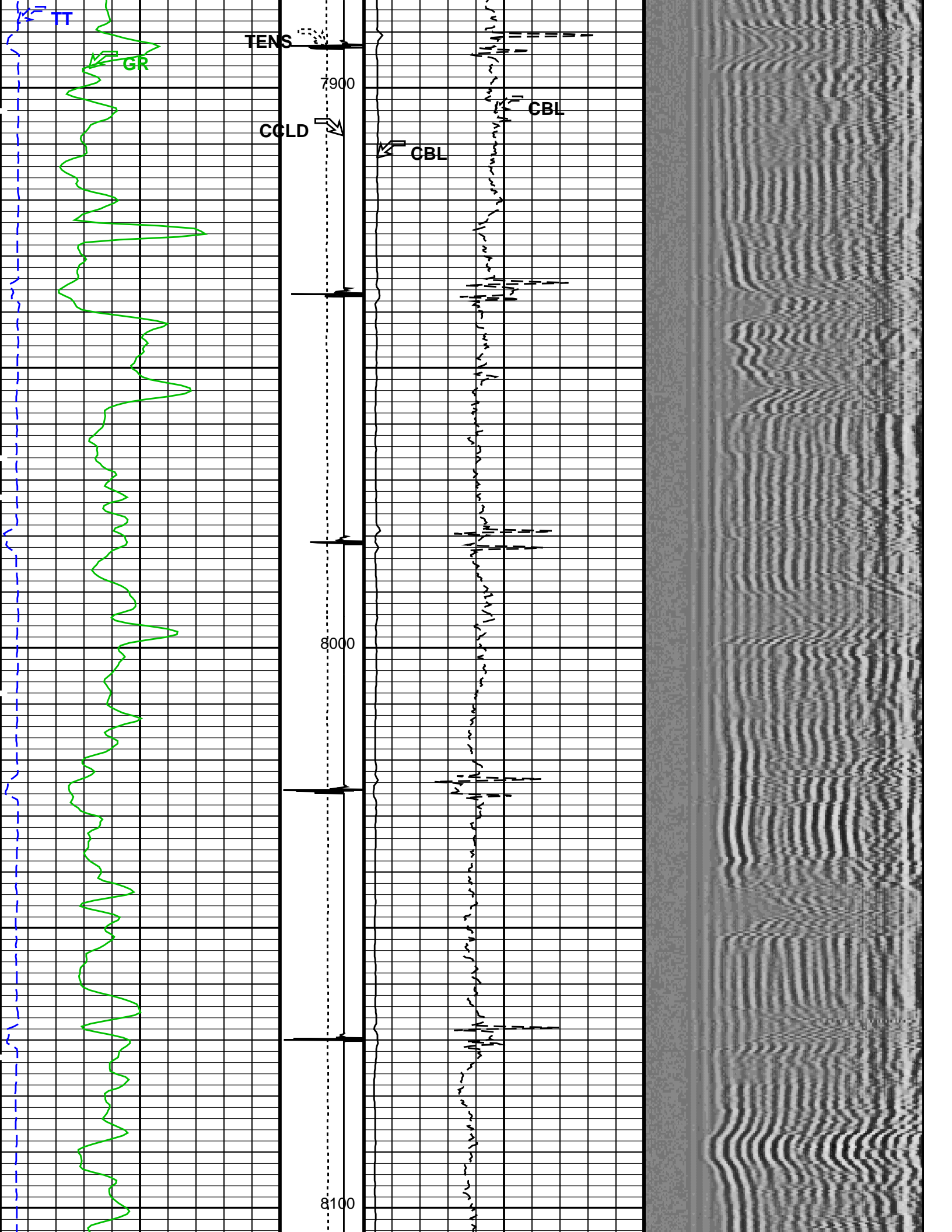


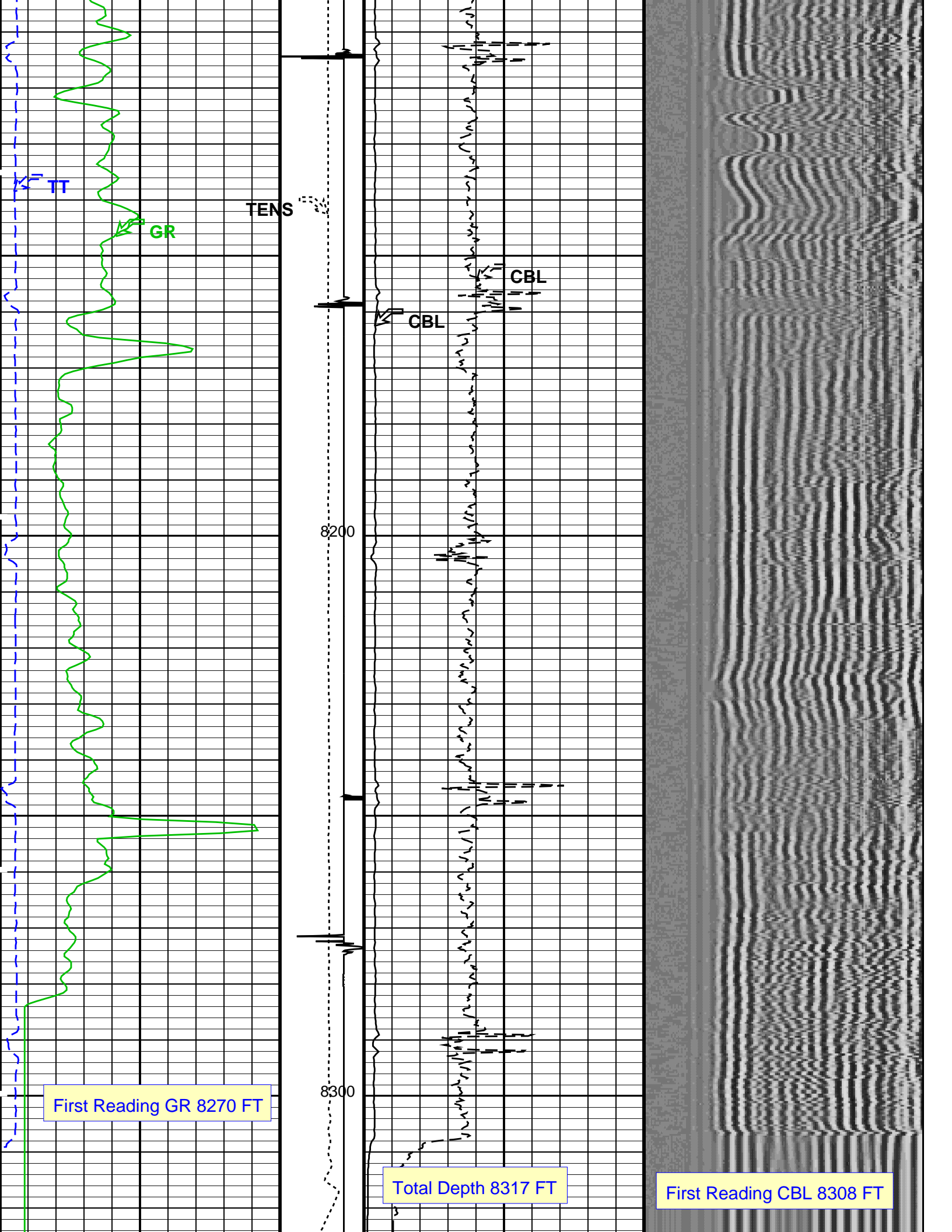












MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	167.559	US
MAPT	SCMT MAP Fixed Threshold Level	30	MV
MATT	Maximum Attenuation	16.5449	DB/F
MCCF	MAP Cement Type Compensation Factor	1	
MCI	Minimum Cemented Interval for Isolation	1.25	FT
MMSA	MAP Minimum Sonic Amplitude	4.32284	MV
MSA	Minimum Sonic 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	4.0	FT
PP	Playback Processing	RECOMPUTE	
TD	Total Depth	8317	FT

Input DLIS Files

DEFAULT	SCMT_RST_PSP_073LUP	FN:69	PRODUCER	14-Sep-2013 18:14	8325.5 FT	4.0 FT
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Output DLIS Files

DEFAULT	SCMT_RST_PSP_076PUP	FN:72	PRODUCER	14-Sep-2013 20:29		
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Schlumberger

REPEAT ANALYSIS CBL VDL

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC Well: HAGEN CLEM 15-10C (PC22)

Input DLIS Files

DEFAULT	SCMT_RST_PSP_071LUP	FN:67	PRODUCER	14-Sep-2013 18:01	5951.5 FT	5641.5 FT
DEFAULT	SCMT_RST_PSP_076PUP	FN:72	PRODUCER	14-Sep-2013 20:29	8329.5 FT	-36.5 FT

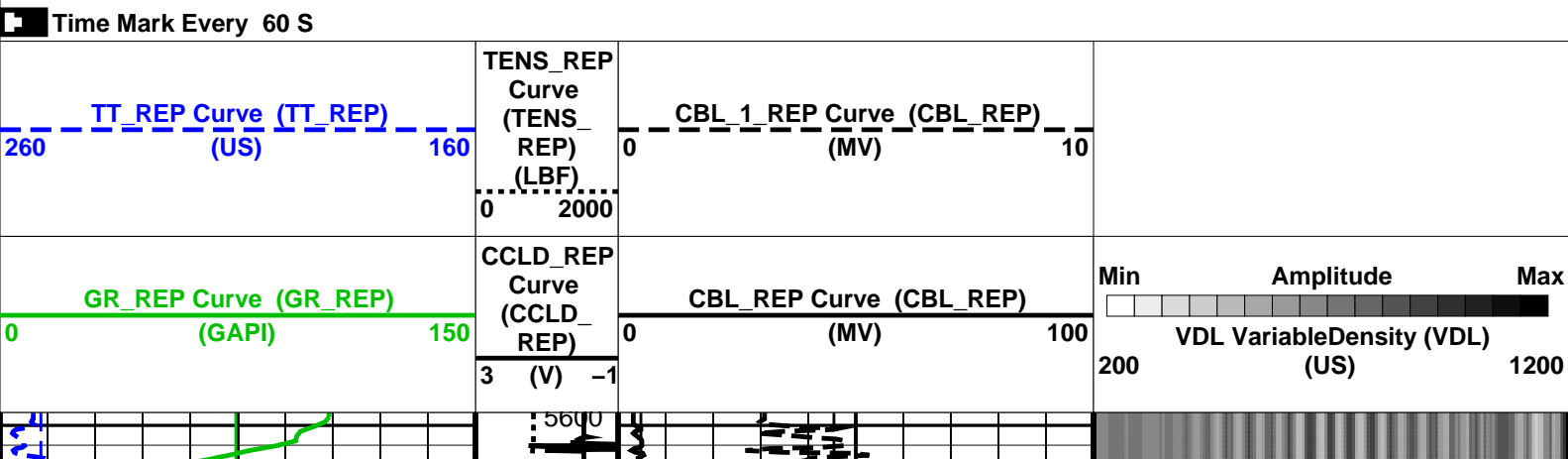
Output DLIS Files

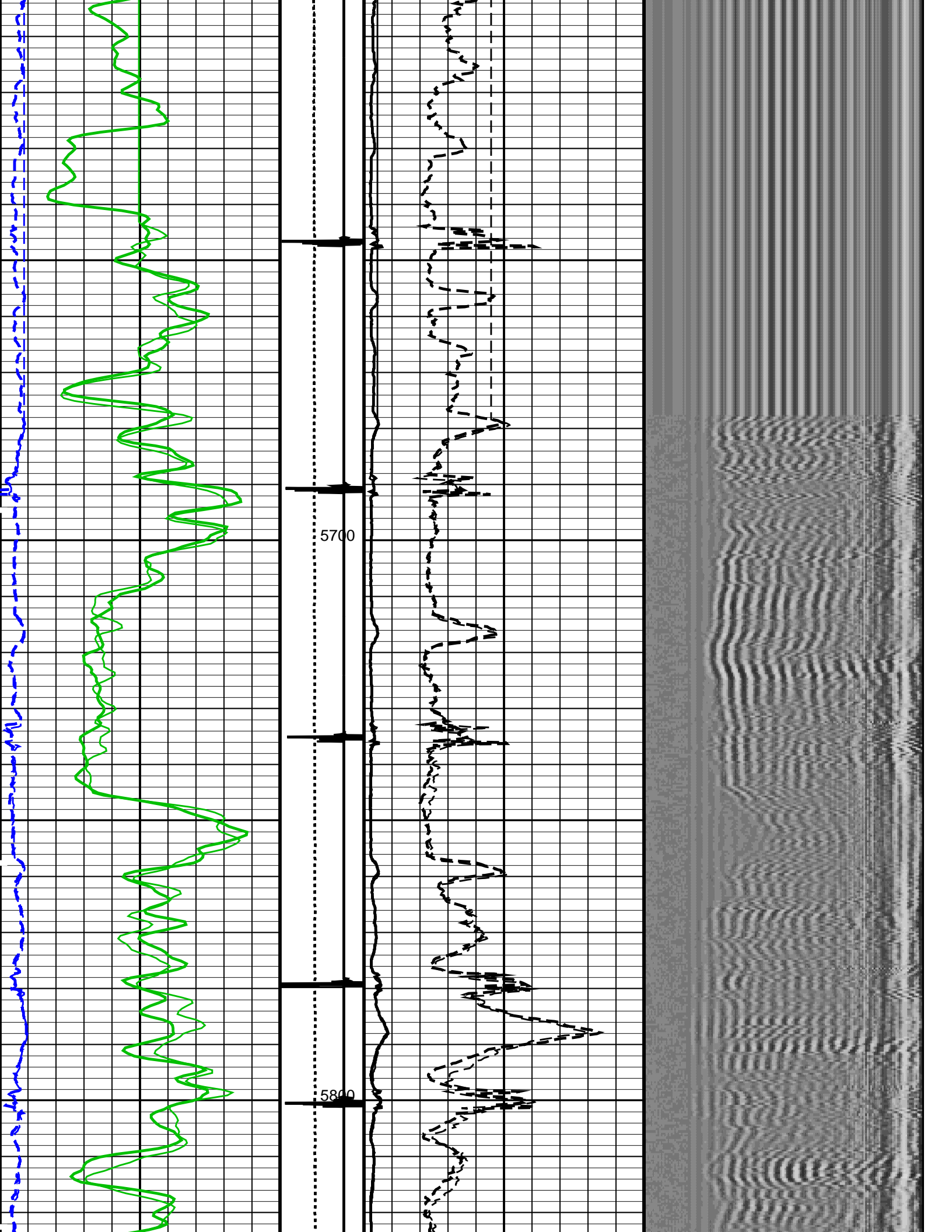
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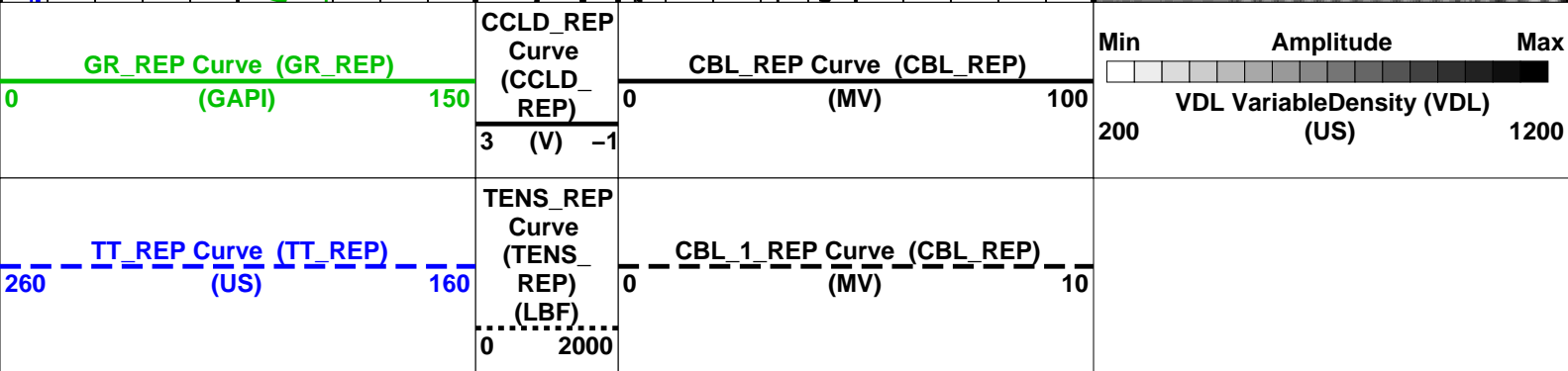
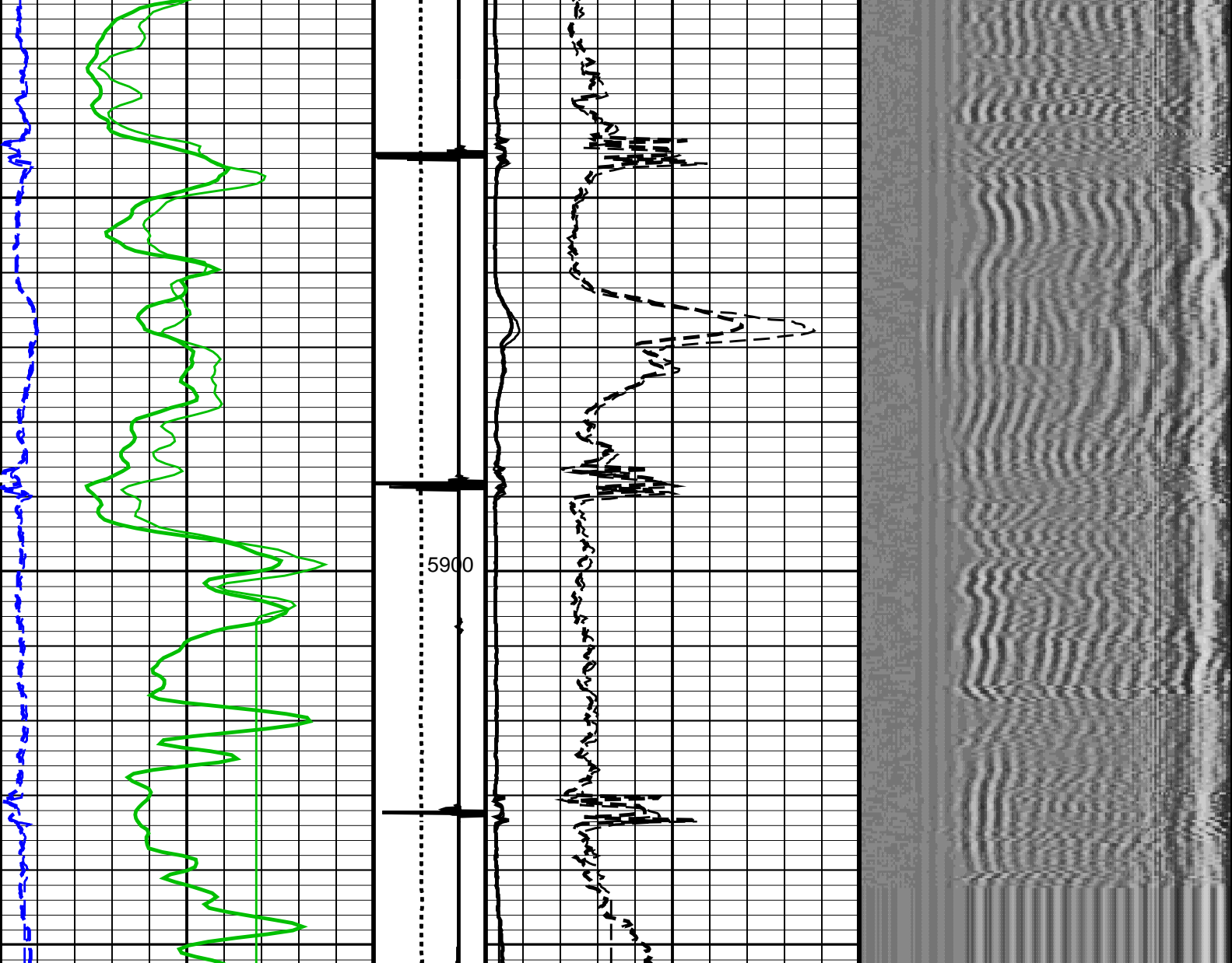
OP System Version: 19C0-187

SCMT-CB	19C0-187	RST-C	19C0-187
PSPT	19C0-187		

PIP SUMMARY







PIP SUMMARY

Time Mark Every 60 S

Format: CBL_VDL_REP Vertical Scale: 5" per 100'

Graphics File Created: 14-Sep-2013 20:34

OP System Version: 19C0-187

SCMT-CB	19C0-187	RST-C	19C0-187
PSPT	19C0-187		

<<<SCMT Cement Evaluation Information Summary>>>

Sonde Serial Number	SCMS-CB 8179
Current Casing Size	4.50000 IN
Casing Weight	11.6000 LB/F

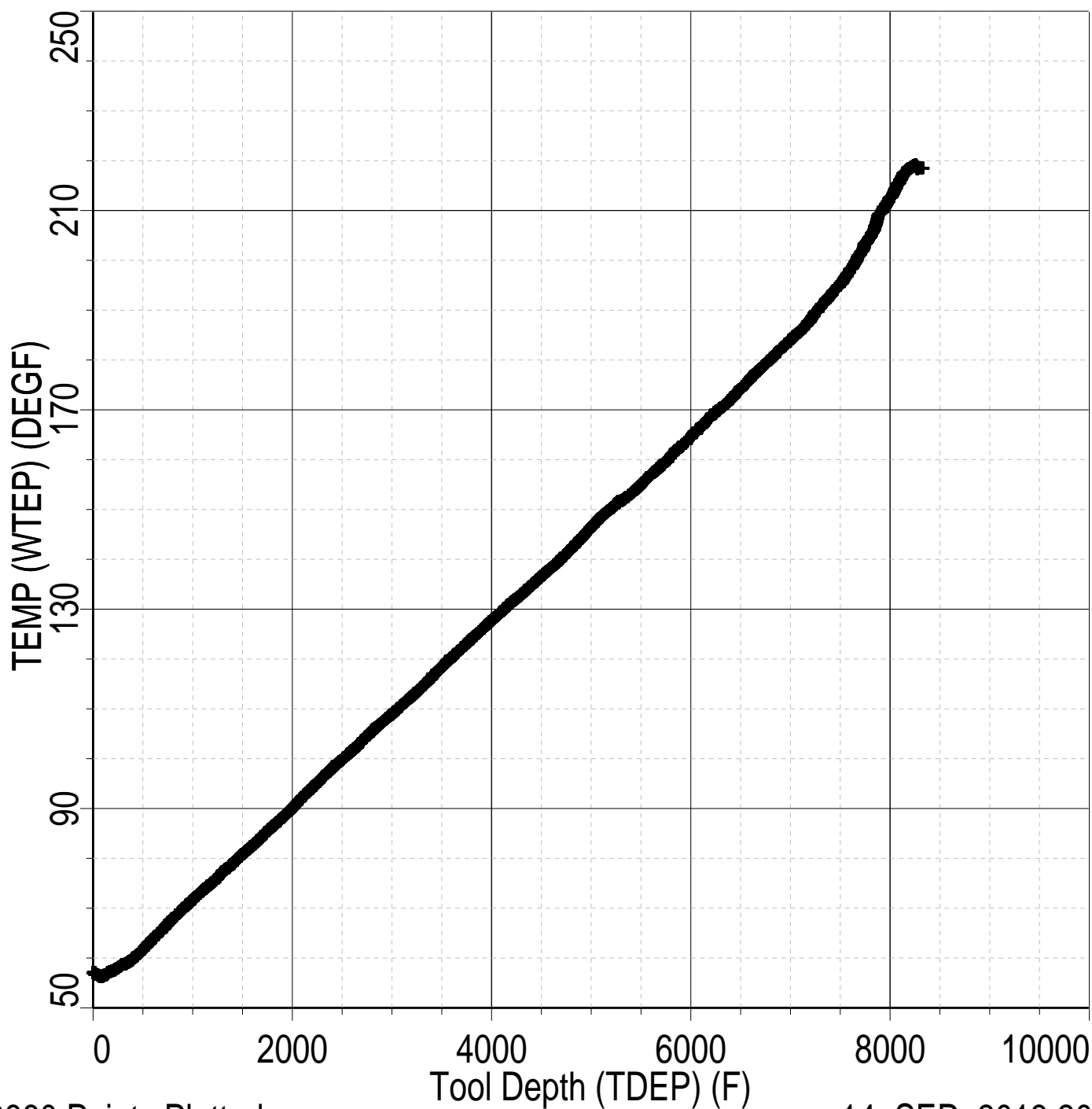
Expected CBL Amplitude in Free Pipe Section		80 MV	Minimum Sonic Amplitude		0.579149 MV (100% Cement)	
			MAP Minimum Sonic Amplitude		1.55185 MV (80% Cement)	
					4.32284 MV (100% Cement)	
					8.10244 MV (80% Cement)	
Master Calibration (Normalization)			Before Calibration (Adjustment)			
Date of Master Calibration		6–MAR–2012				
CBL Correction Factor		0.0704263	CBL Adjustment Factor (CBAF)		1.0	
MAP 1 Correction Factor		0.0993191	MAP Adjustment Factor (MPAF)		1.0	
MAP 2 Correction Factor		0.0941329				
MAP 3 Correction Factor		0.101552				
MAP 4 Correction Factor		0.114415				
MAP 5 Correction Factor		0.127992				
MAP 6 Correction Factor		0.121190				
MAP 7 Correction Factor		0.112867				
MAP 8 Correction Factor		0.102913				

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	8317	FT

Input DLIS Files						
DEFAULT	SCMT_RST_PSP_071LUP	FN:67	PRODUCER	14–Sep–2013 18:01	5951.5 FT	5641.5 FT
DEFAULT	SCMT_RST_PSP_076PUP	FN:72	PRODUCER	14–Sep–2013 20:29	8329.5 FT	–36.5 FT
Output DLIS Files						
DEFAULT	SCMT_RST_PSP_077PUP	FN:73	PRODUCER	14–Sep–2013 20:34		

MAXIS Field Log

Index: 8329.5 – -36.5 FT



16660 Points Plotted

14-SEP-2013 20:34

MAXIS Field Log

Client: ENCANA OIL & GAS (USA) INC
Field: SOUTH PARACHUTE
Well: HAGEN CLEM 15-10C (PC22)
Run date: 14-Sep-2013

Tool: PSP
Sub Type: PBMS
Sensor: GR

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
Field: SOUTH PARACHUTE
Well: HAGEN CLEM 15-10C (PC22)
Run date: 14-Sep-2013

Tool: PSP
Sub Type: PBMS
Sensor: WellTemp RTD

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	Tt**0	Tt**1	Tt**2
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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:	SOUTH PARACHUTE	Sub Type:	PBMS
Well:	HAGEN CLEM 15−10C (PC22)	Sensor:	CQG
Run date:	14−Sep−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
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

	(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

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	+1.115369519827E+03	-.565338877075E-02	-.333717531829E-07
	(Fb'-Fc')**3	(Fb'-Fc')**4	(Fb'-Fc')**5
(Fb'-Fc')**0	-.124387135327E-12	+7.13102327208E-16	-.316084316842E-20

Schlumberger

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	8248

Auxiliary Equipment:

Slim Electronics Cartridge Housing	SECH - CA
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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			1208	Master			1275
	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			1182	Master			1049
	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			937.6	Master			990.2
	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			1063	Master			1166
	500.0 (Minimum)	1075 (Nominal)	1650 (Maximum)		500.0 (Minimum)	1075 (Nominal)	1650 (Maximum)
Phase	CBL Amplitude Plus MV		Value				
Master			1363				
	1000 (Minimum)	1350 (Nominal)	1700 (Maximum)				
Master: Calibration out of date 6–Mar–2012 15:06							

Company: ENCANA OIL & GAS (USA) INC



Well: HAGEN CLEM 15-10C (PC22)
Field: SOUTH PARACHUTE
County: GARFIELD
State: COLORADO

SLIM CEMENT MAPPING LOG
CBL-VDL
GAMMA RAY-CCL