

Company: ENCANA OIL & GAS (USA) INC.

Well: ORCHARD UNIT 18-15H (K200U)

Field: GRAND VALLEY

County: MESA State: COLORADO

CEMENT BOND LOG  
GAMMA RAY – CCL

County: MESA

Field: GRAND VALLEY

Location: SHL: NESW 1468' FSL & 1682' F

Well: ORCHARD UNIT 18-15H (K200U)

Company: ENCANA OIL & GAS (USA) INC.

LOCATION

SHL: NESW 1468' FSL & 1682' FWL

Elev.: K.B. 5953.00 ft  
G.L. 5930.00 ft  
D.F. 5952.00 ft

Permanent Datum: \_\_\_\_\_

GROUND LEVEL

Elev.: 5930.00 ft

Log Measured From: \_\_\_\_\_

KELLY BUSHING

23.00 ft above Perm. Datum

Drilling Measured From: \_\_\_\_\_

KELLY BUSHING

API Serial No. 05-077-10112-000C

Section 20

Township 8S

Range 96W

PVT DATA			
Oil Density	Run 1	Run 2	Run 3
Water Salinity			
Gas Gravity	1000 ppm		
Bo			
Bw			
1/Bg			
Bubble Point Pressure			
Bubble Point Temperature			
Solution GOR			
Maximum Deviation	15 deg		
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	2-Jun-2011		
Run Number	2		
Depth Driller	7537 ft		
Schlumberger Depth	7510 ft		
Bottom Log Interval	7506.1 ft		
Top Log Interval	200 ft		
Casing Fluid Type	WATER BASED MUD		
Salinity	1000 ppm		
Density	11.5 lbm/gal		
Fluid Level	10 ft		
BIT/CASING/TUBING STRING			
Bit Size	9.875 in		
From	23 ft		
To	7537 ft		
Casing/Tubing Size	7.625 in		
Weight	29.7 lbm/ft		
Grade			
From	23 ft		
To	7491 ft		
Maximum Recorded Temperatures	211 degF		
Logger On Bottom	2-Jun-2011	14:34	
Unit Number	Location	2379	GRAND JUNCTION, CO
Recorded By	M. ARNETT		
Witnessed By	RICHARD MITCHELL		

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: 2-JUN-2011 15:51:50

## Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW-B	Type:	CMTD-B/A	Type:	7-46ZV XXS
Serial Number:	6122	Serial Number:	8093	Serial Number:	
Calibration Date:	22-APR-2011	Calibration Date:	5-MAY-2011	Length:	24000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	1159	Conveyance Method:	Wireline
Calibration Cable Type:	7-46P	Number of Calibration Points:	10	Rig Type:	LAND
Wheel Correction 1:	-6	Calibration RMS:	32		
Wheel Correction 2:	-7	Calibration Peak Error:	17		

## Depth Control Parameters

Log Sequence:	Subsequent Log In the Well
Reference Log Name:	RESERVOIR SATURATION TOOL
Reference Log Run Number:	1
Reference Log Date:	2-JUN-2011

### Depth Control Remarks

1. ALL SCHLUMBERGER DEPTH CONTROL POLICIES APPLIED
2. IDW USED AS PRIMARY DEPTH REFERENCE, Z-CHART USED AS SECONDARY
- 3.
- 4.
- 5.
- 6.

## DISCLAIMER

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OTHER SERVICES1	OTHER SERVICES2
OS1: RST	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
THIS IS A SUBSEQUENT RUN IN WELL	
TOOLSTRING RUN AS PER TOOLSKETCH	
DSL T RAN WITH TWO CENTRALIZING GEMCOS	
LOG CORRELATED TO: RST RAN 2-JUN-2011	
MAXIMUM RECORDED TEMPERATURE: 211 DEGF	

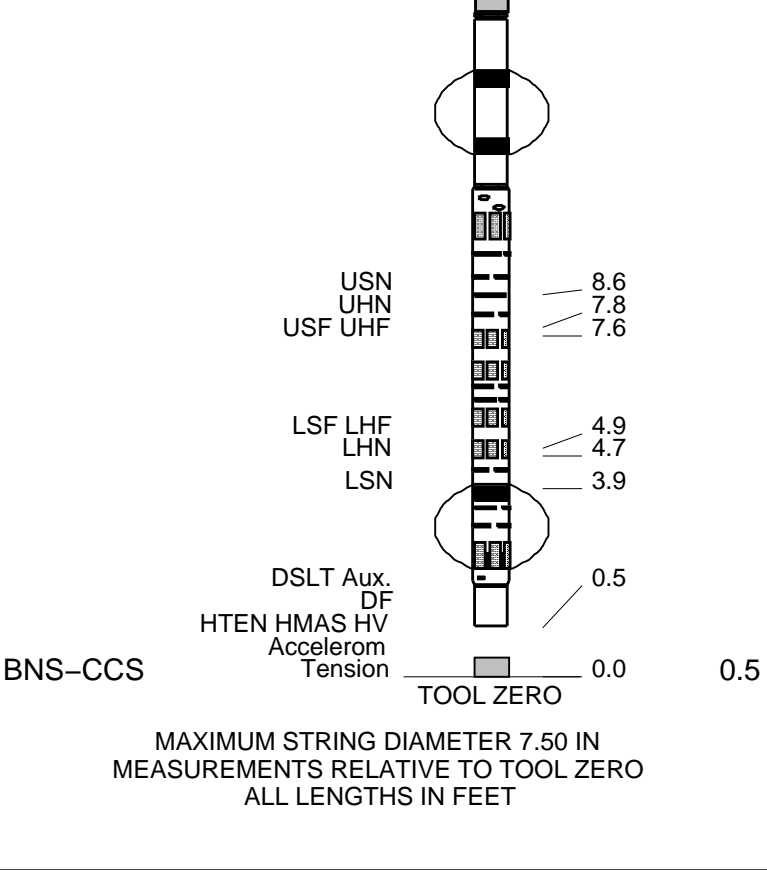
AFE: 08117917	
RIG: ENSIGN 119	
YOUR CREW: JESSE, KEN, & JOSH	
THANK YOU FOR CHOOSING SCHLUMBERGER!	

RUN 1			RUN 2		
SERVICE ORDER #:		BCVF-00109	SERVICE ORDER #:		
PROGRAM VERSION:		18C0-147	PROGRAM VERSION:		
FLUID LEVEL:		10 ft	FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION					
RUN 1			RUN 2		

SURFACE EQUIPMENT	
WITM (DTS)-A	
GSR-U/Y	
NCT-B	
CNB-AB	
NCS-VB	

DOWNHOLE EQUIPMENT	
LEH-QT	
LEH-QT	39.9
CAL-Y	
CAL-Y 666	CCL 36.2 37.0
DTC-H	
ECH-KC 10440	CTEM 32.6 33.5
DTCH0-A	TelStatus 30.5
DTCH1-A	ToolStatu 30.5
HILTH-FTB	HGNS HTEM 30.5
HGNSD-H	HMCA 29.8 30.5
HMCA-H	
HGNS 2795	
NLS-KL	
NSR-F 5138	
HACCZ-H 1614	
HCNT-H	
HGR	
NPV-N	
	HGNS Neut 23.9
	HGNS Neut 23.4
	HGNS sens 21.1
DSLT-H	
DSLC-H 8151	21.1
ECH-KH	
SLS-W 8150	



# MAIN PASS

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. Well: ORCHARD UNIT 18-15H (K200U)

## Input DLIS Files

DEFAULT	SONIC_TLD_MCFL_CNL_039LUP	FN:53	PRODUCER	02-Jun-2011 14:42	7518.0 FT	144.5 FT
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## Output DLIS Files

DEFAULT	SONIC_TLD_MCFL_CNL_044PUP	FN:60	PRODUCER	02-Jun-2011 16:04	7524.5 FT	115.0 FT
RTB	SONIC_TLD_MCFL_CNL_044PUP	FN:61	PRODUCER	02-Jun-2011 16:04	7524.5 FT	115.0 FT

## OP System Version: 18C0-147

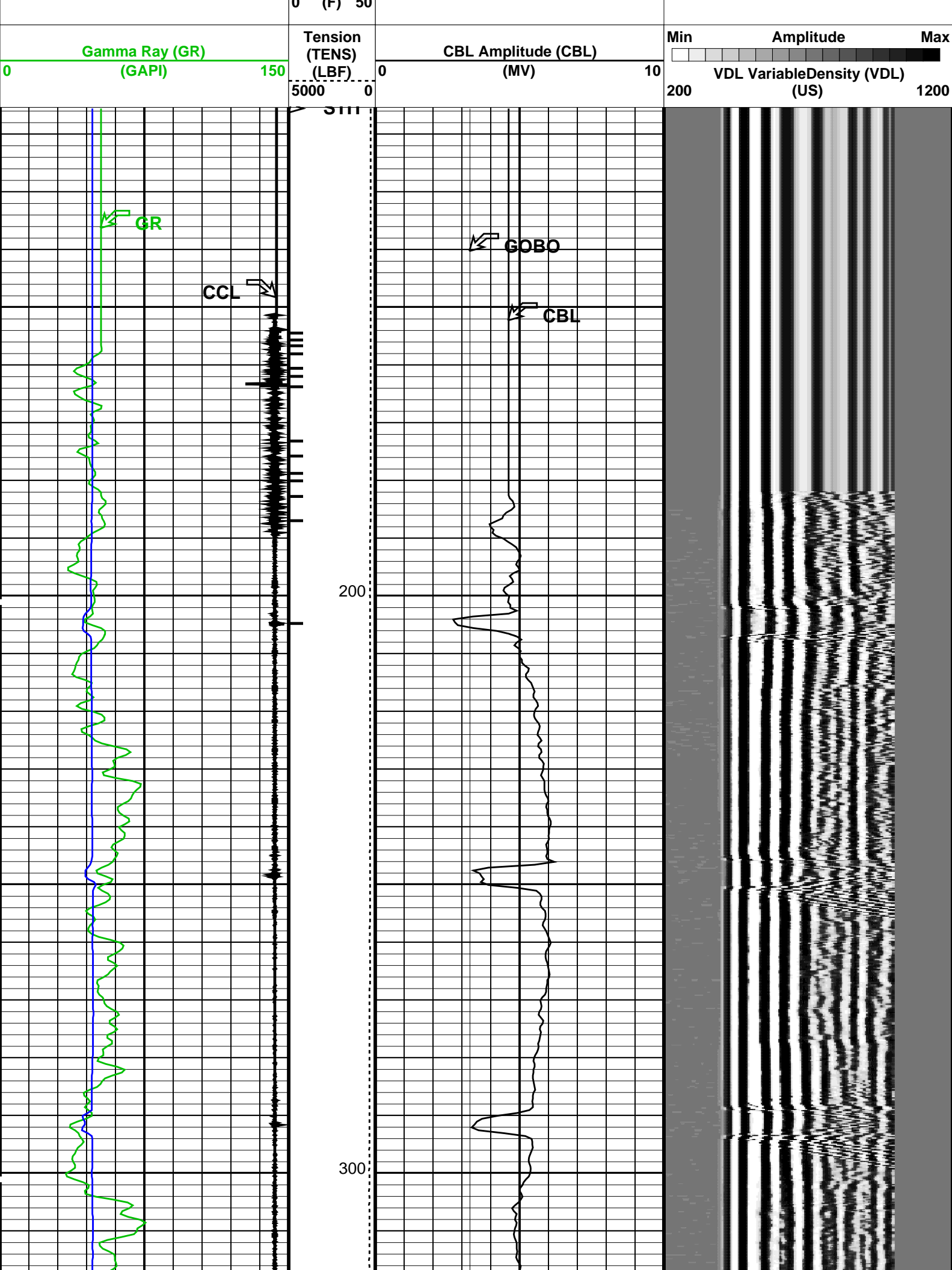
DSLT-H	18C0-147	HILTH-FTB	18C0-147
DTC-H	18C0-147	CAL-Y	18C0-147

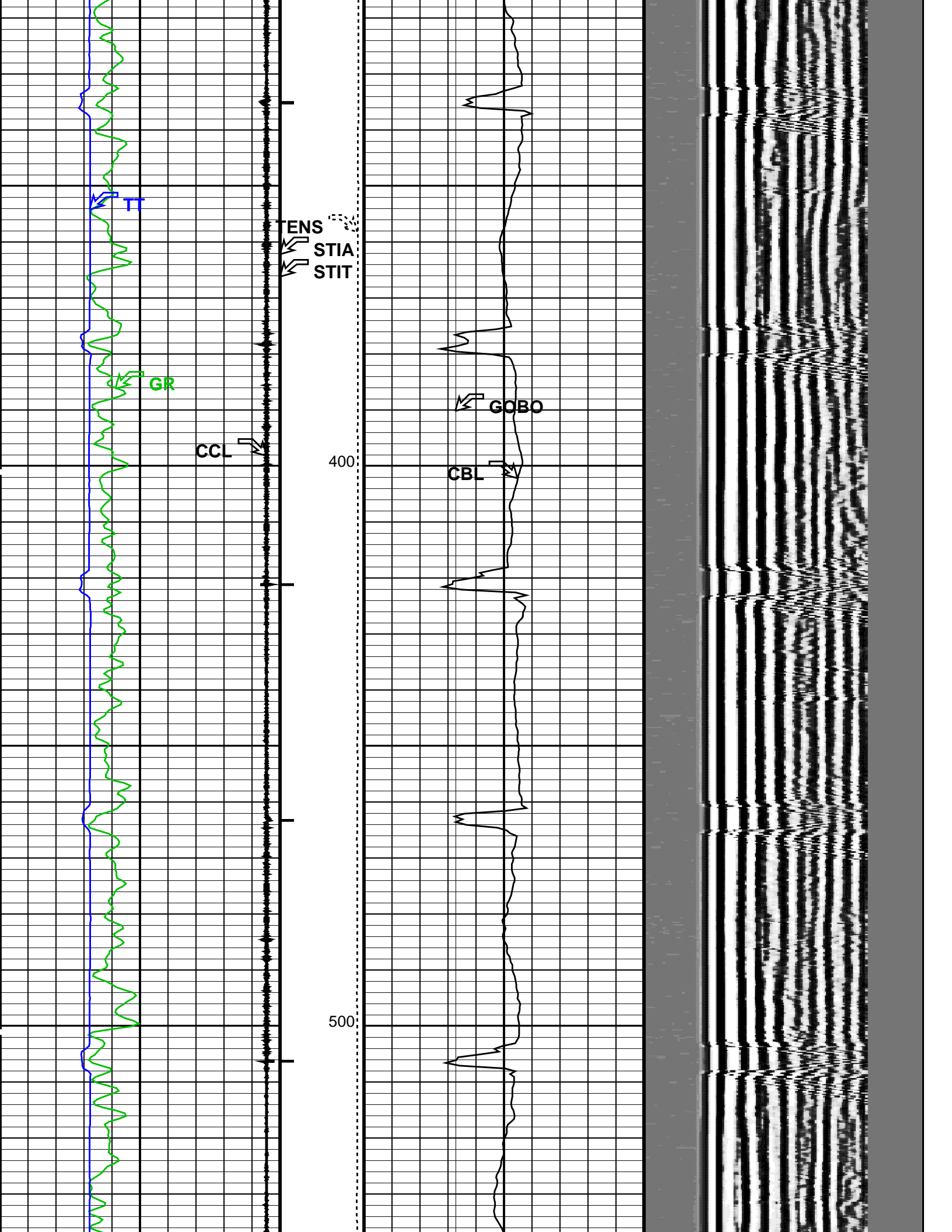
## PIP SUMMARY

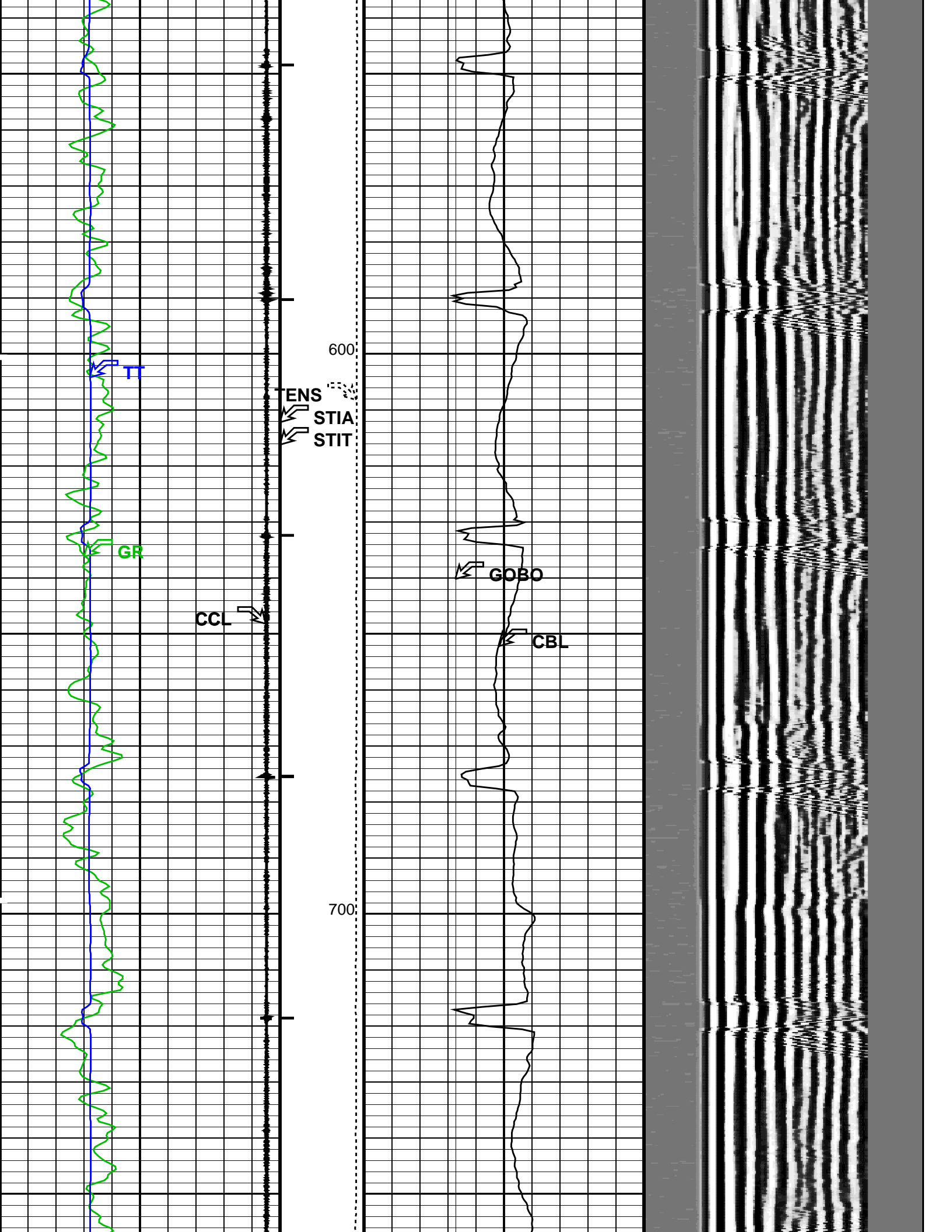
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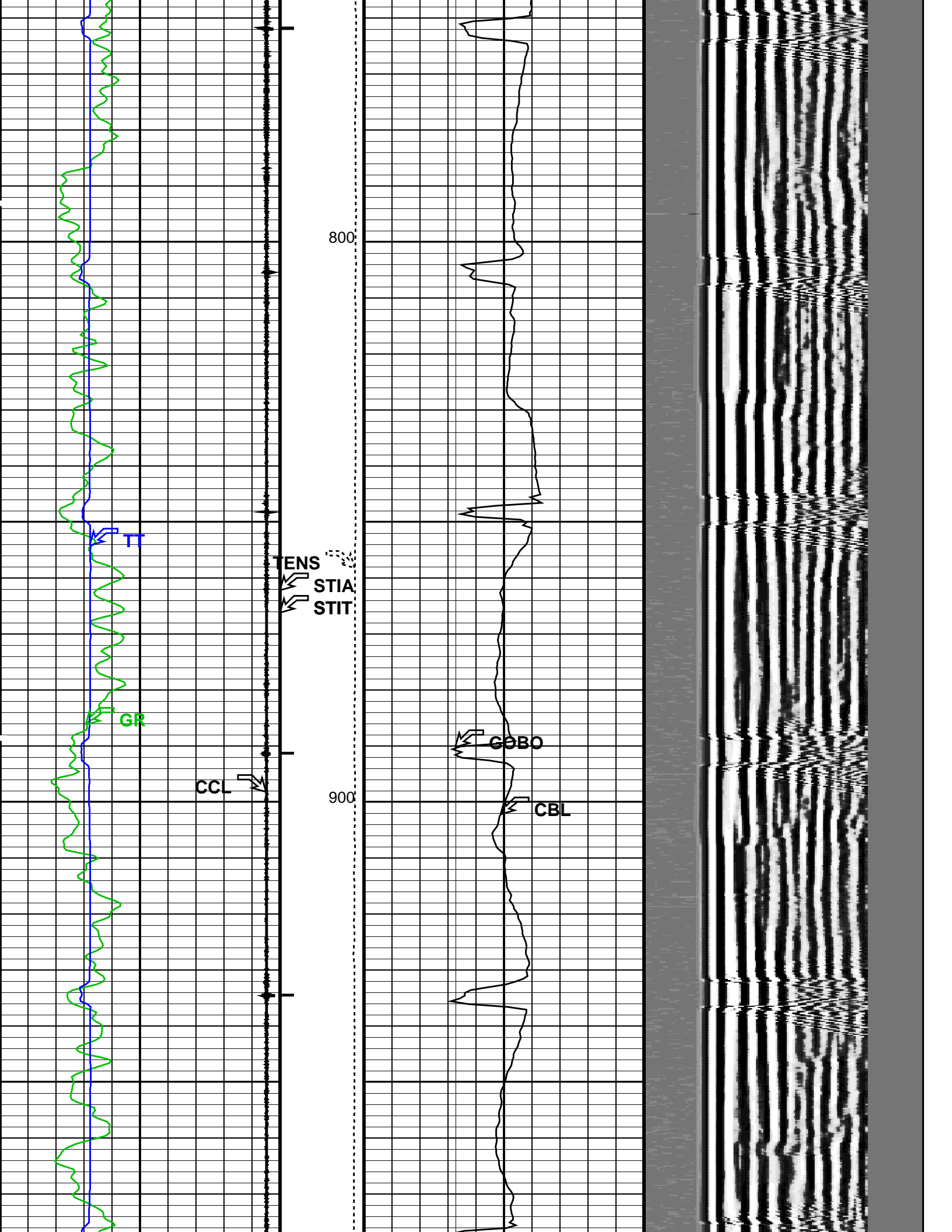
Casing Collar Locator (CCL)		Good Bond (GOBO)	
19	(---- -1	0	(MV) 10
Transit Time (TT)		CBL Amplitude (CBL)	
400	(US) 200	0	(MV) 100

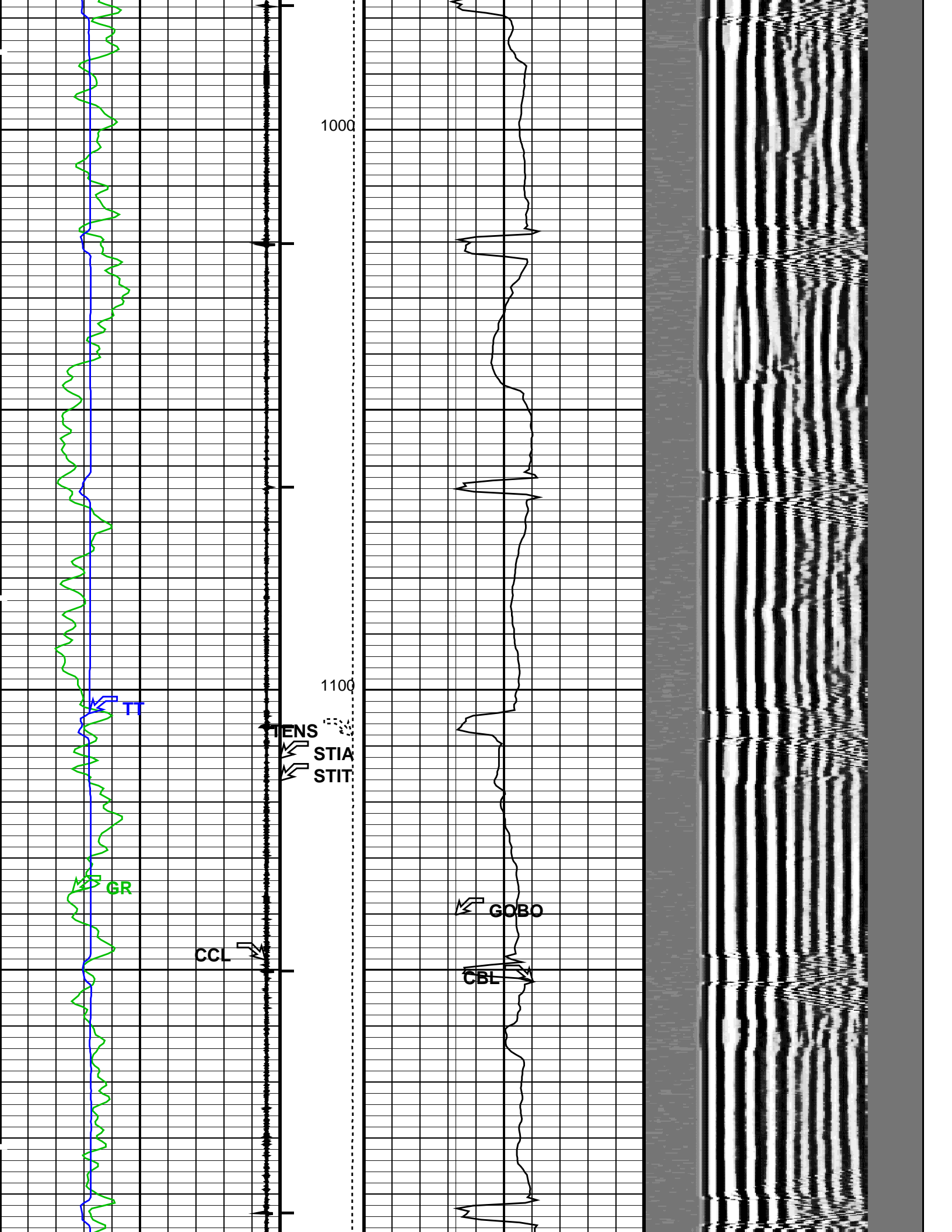




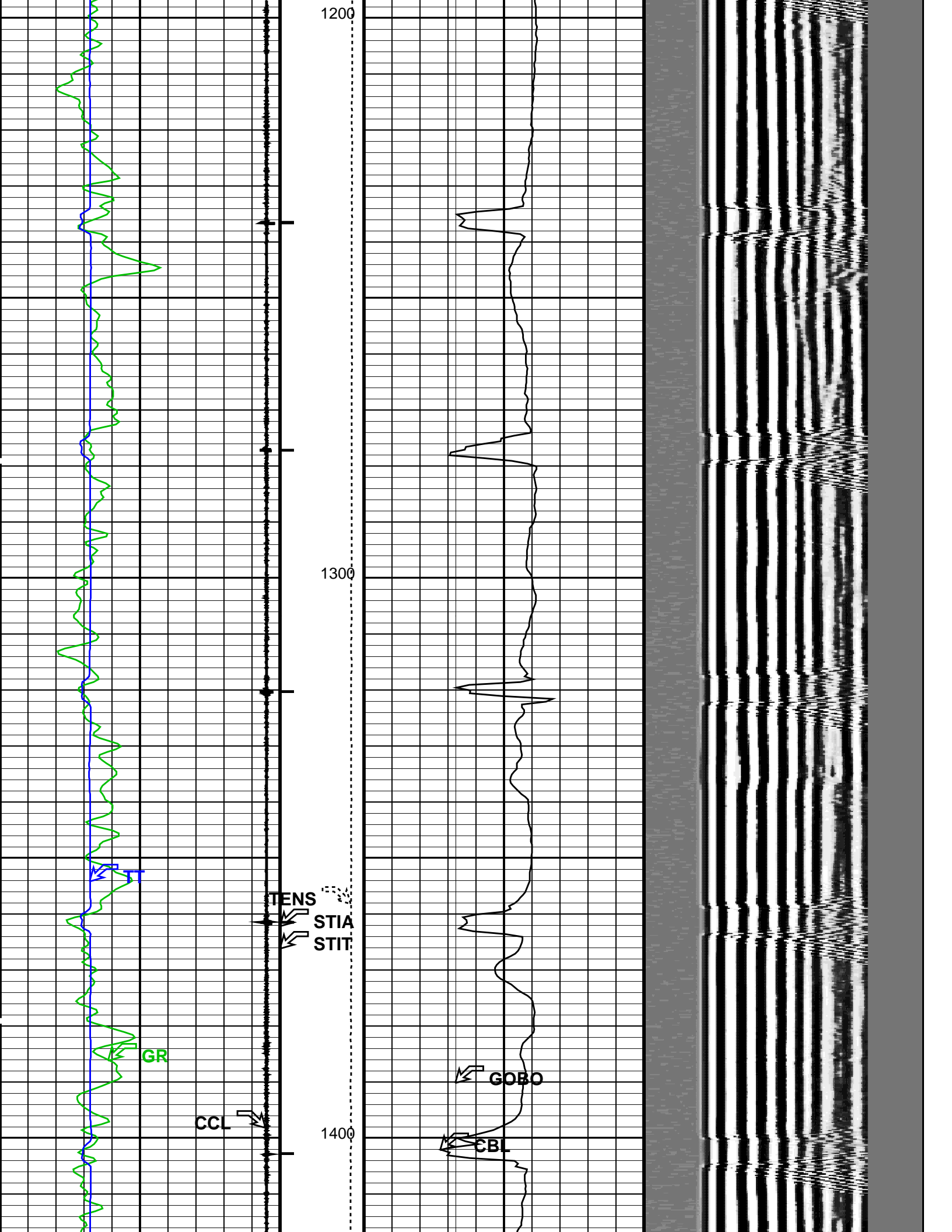


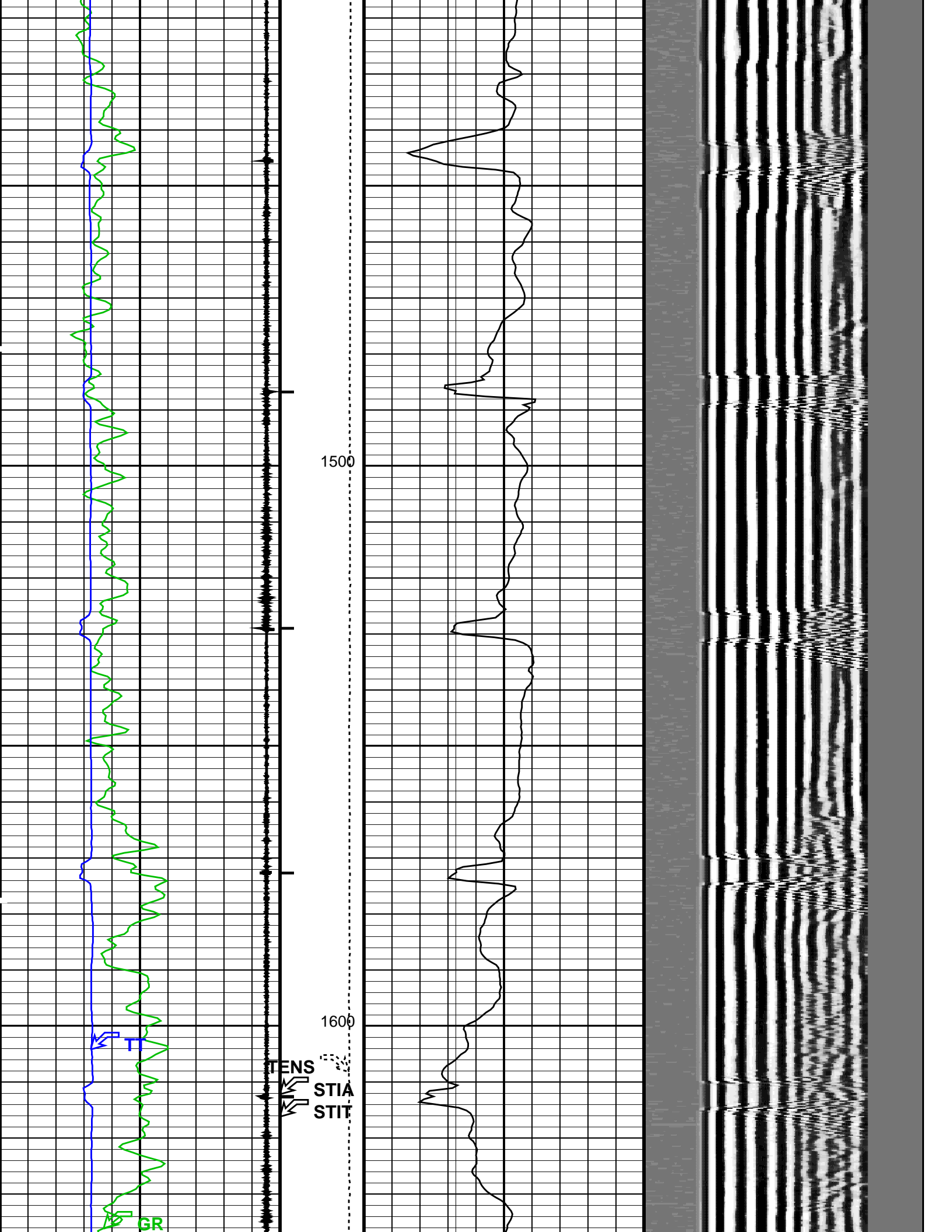


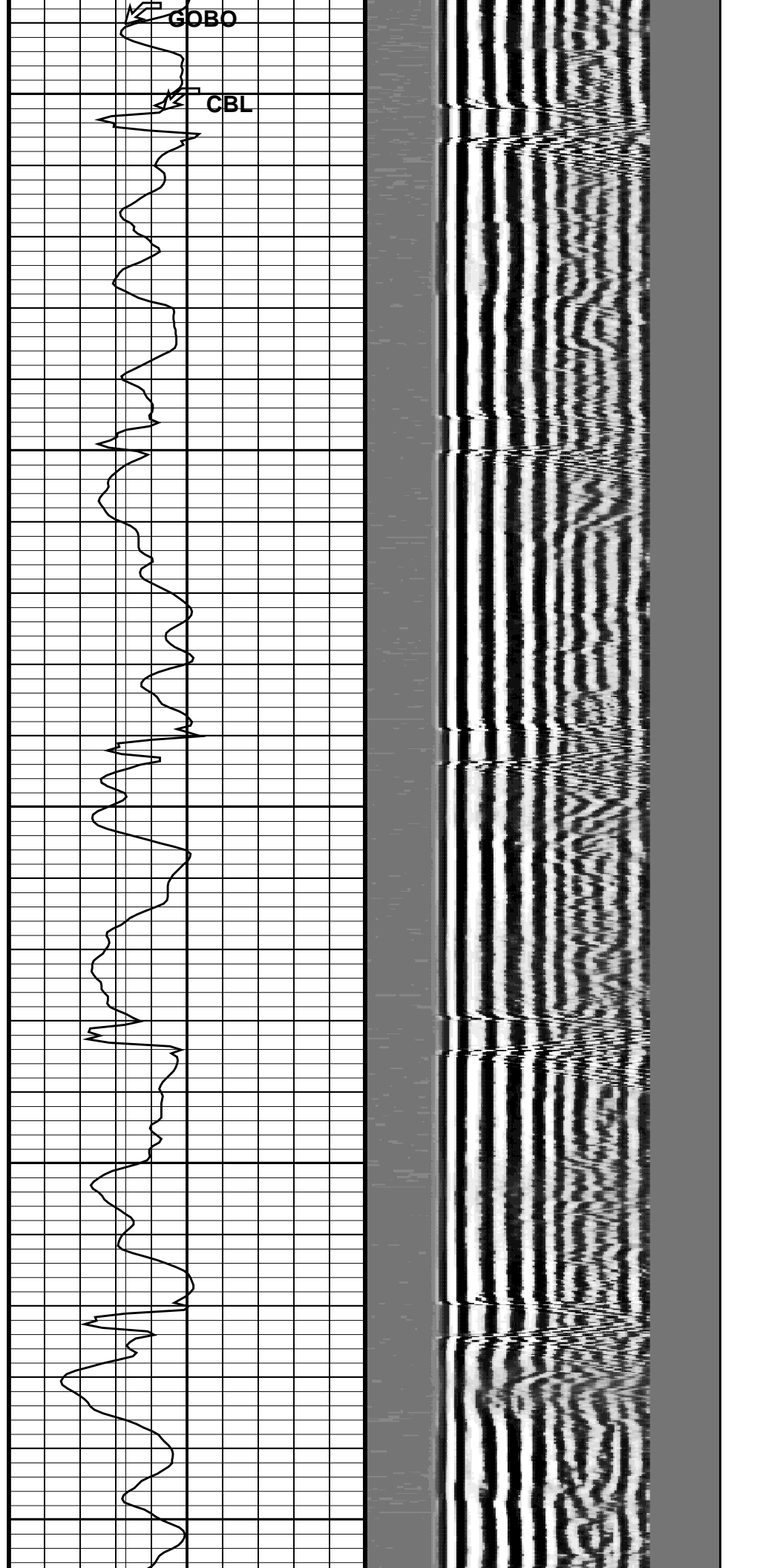
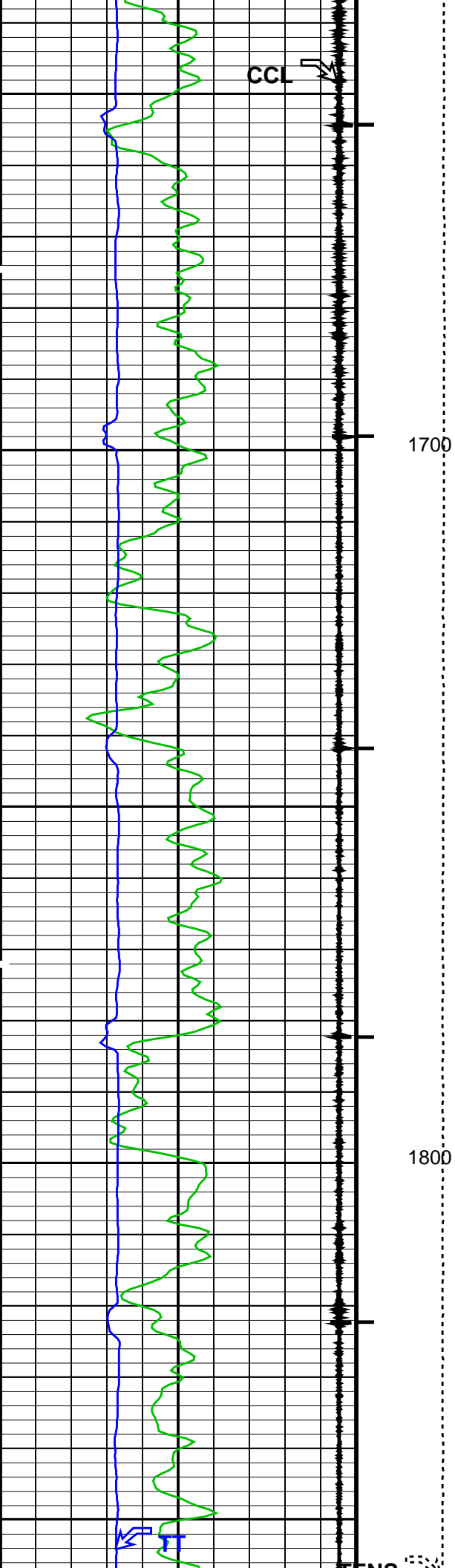




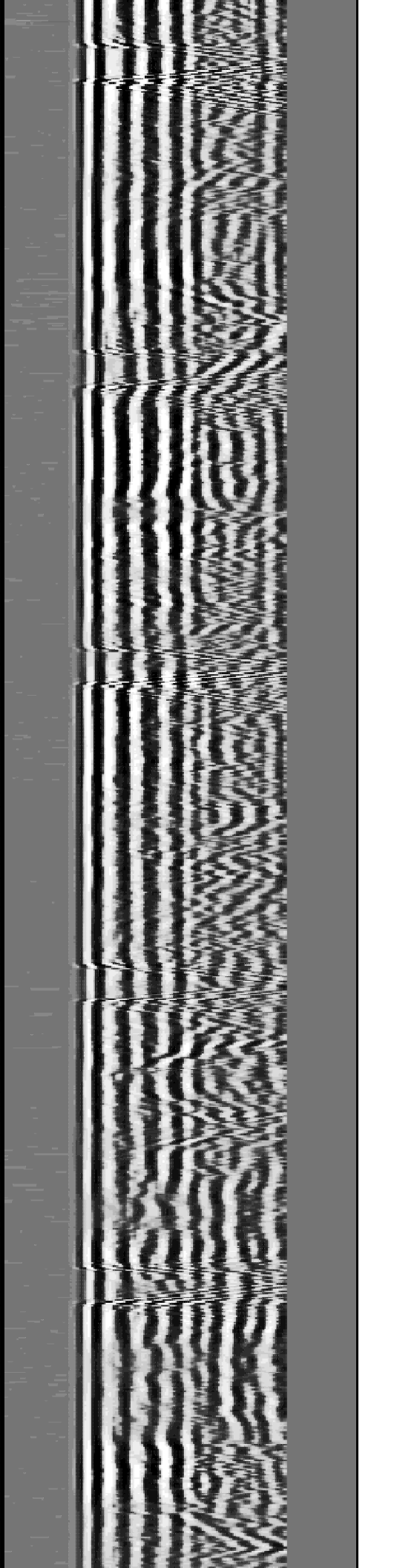
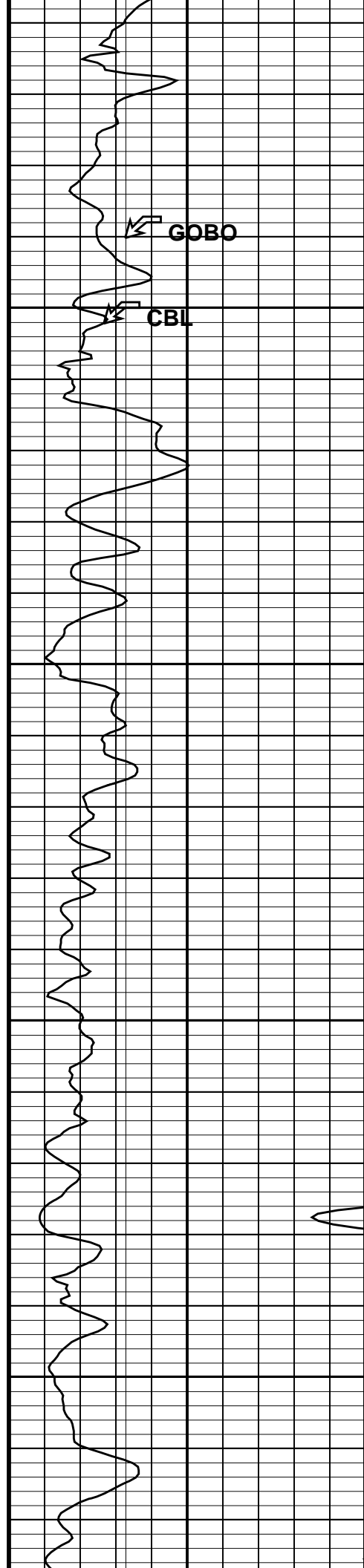
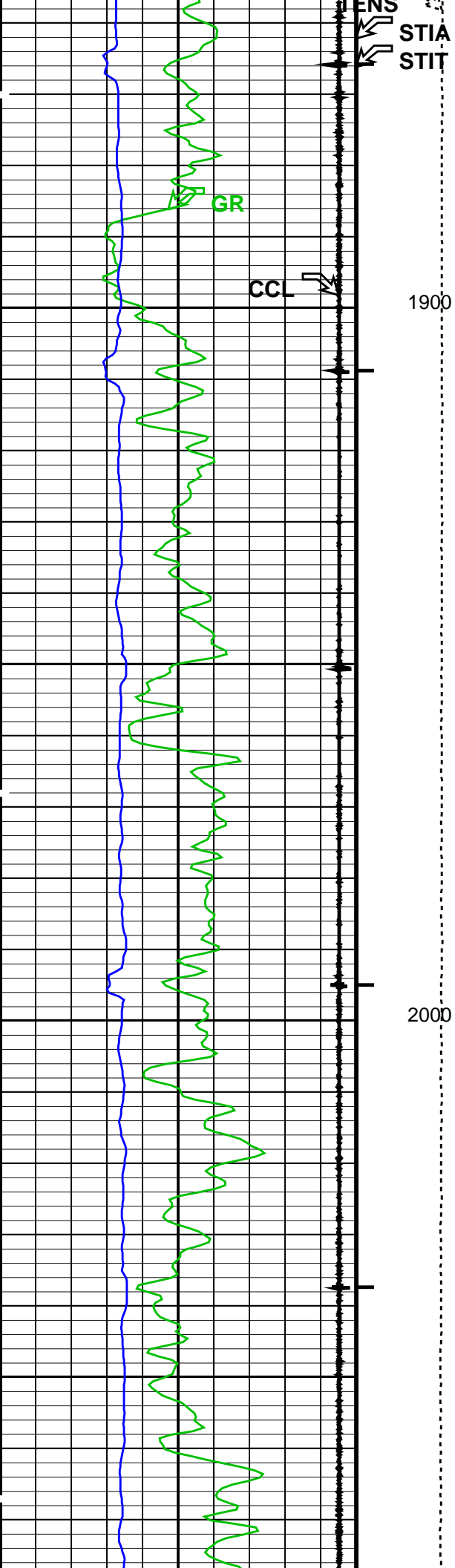


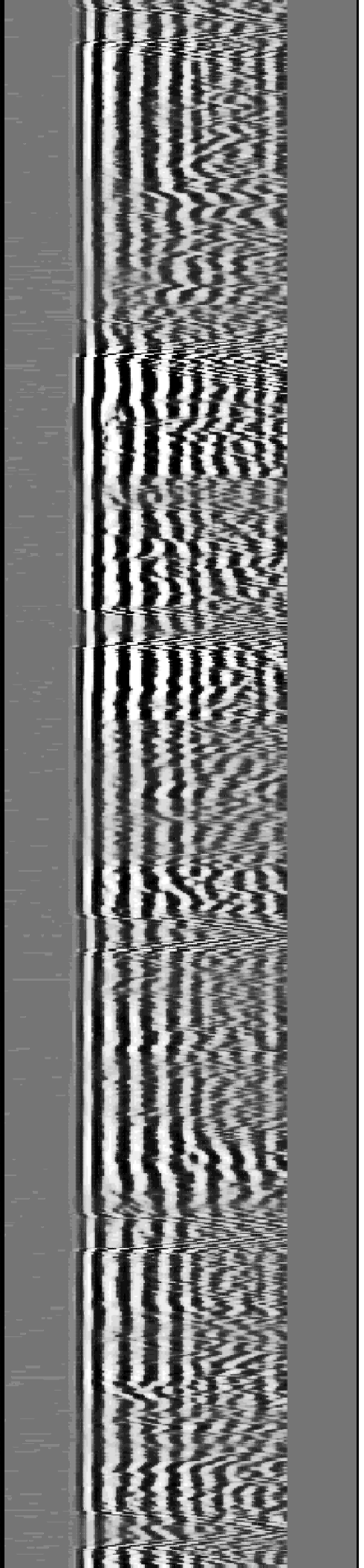
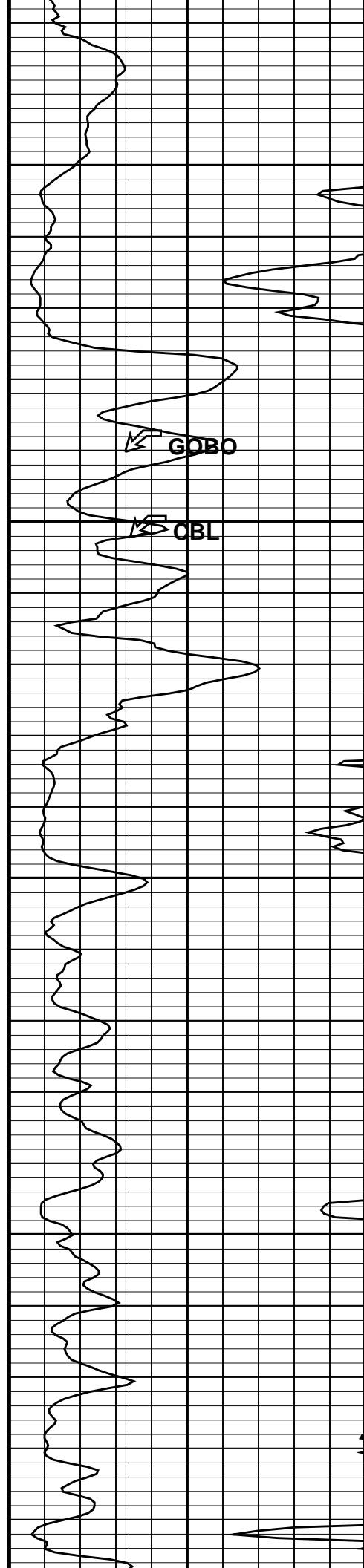
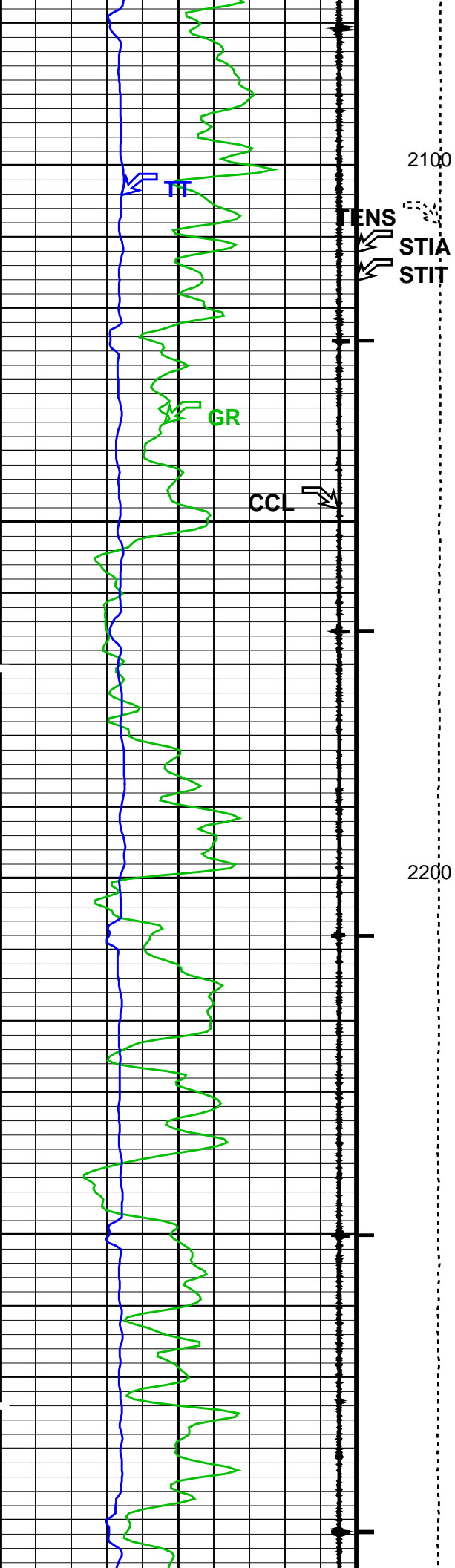


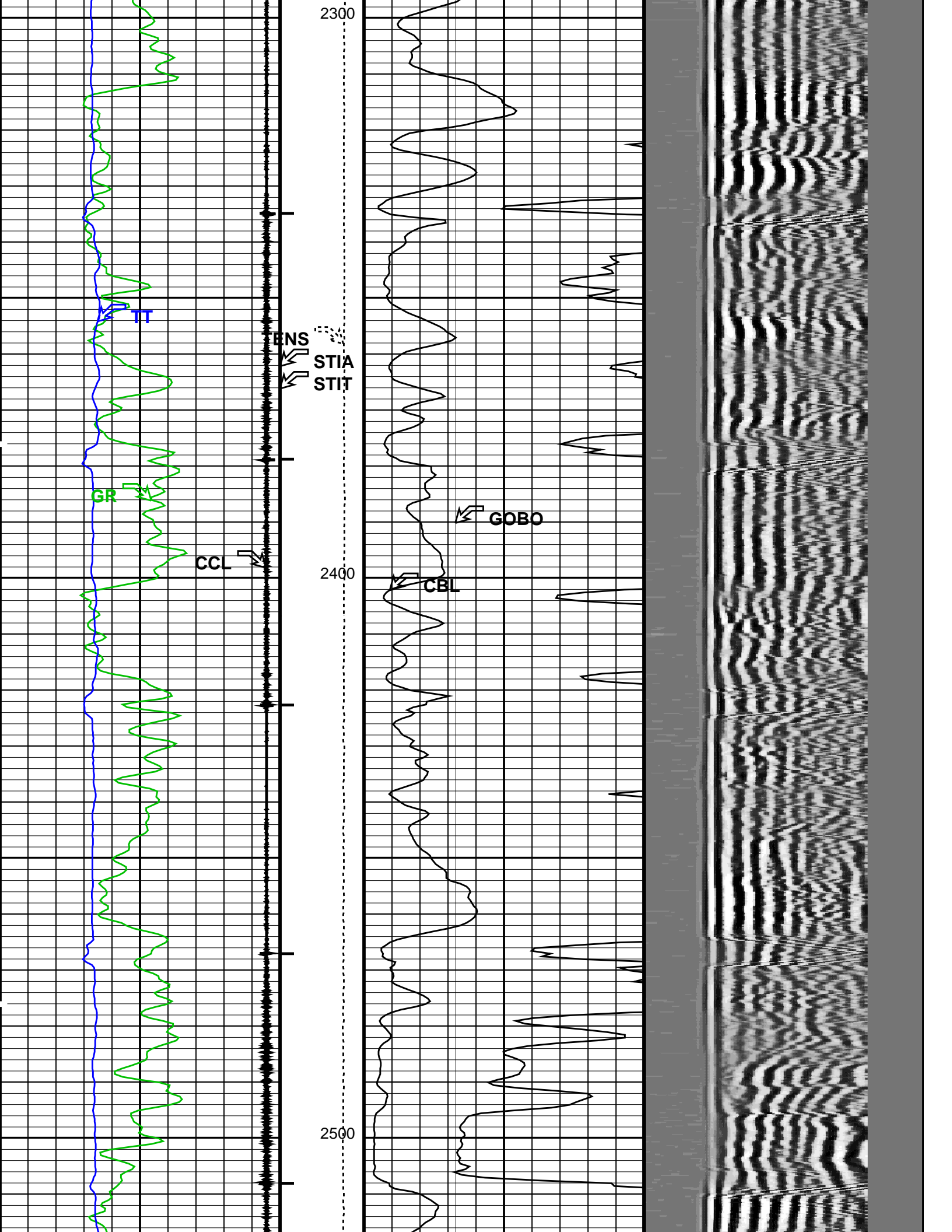


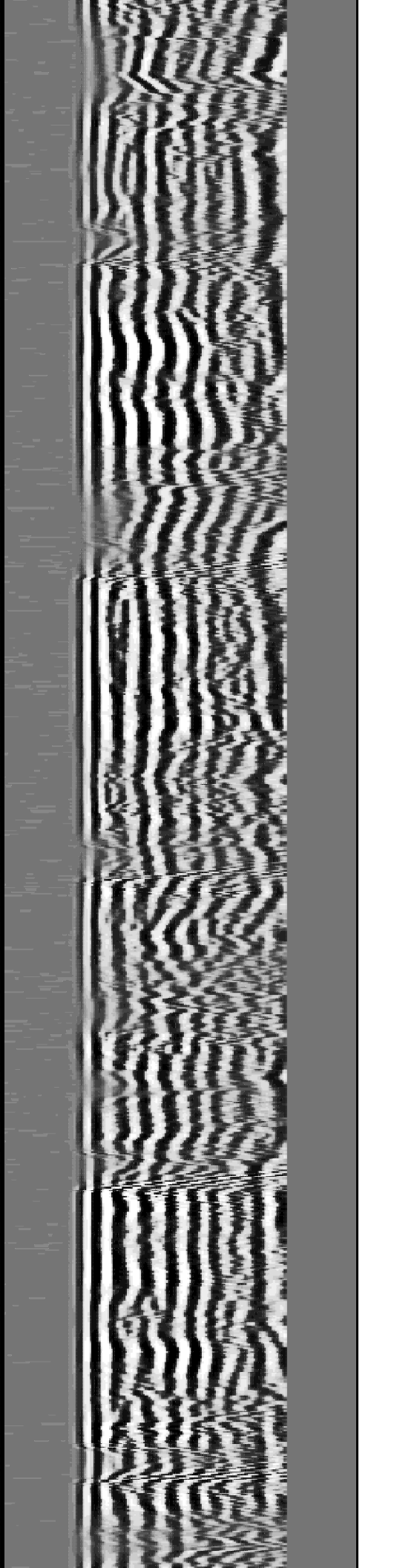
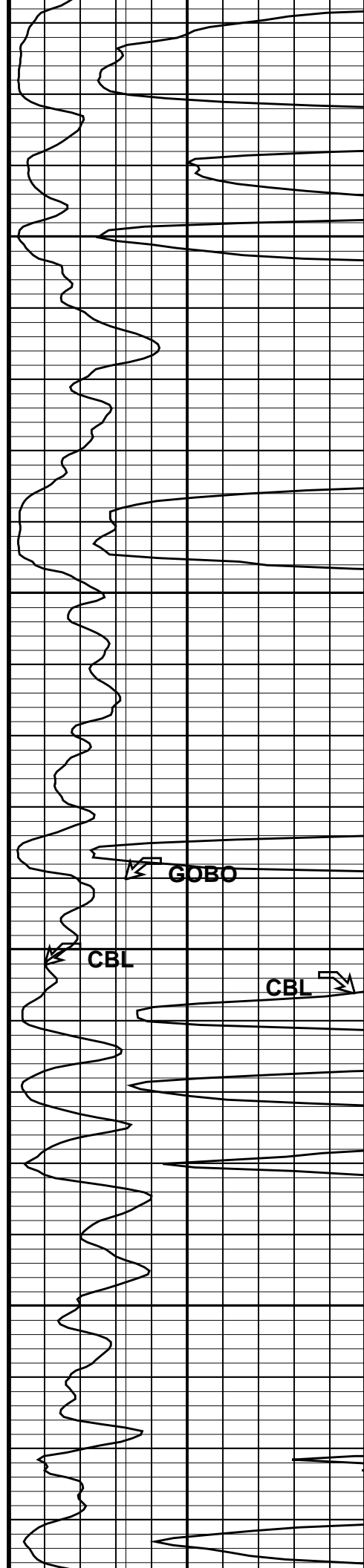
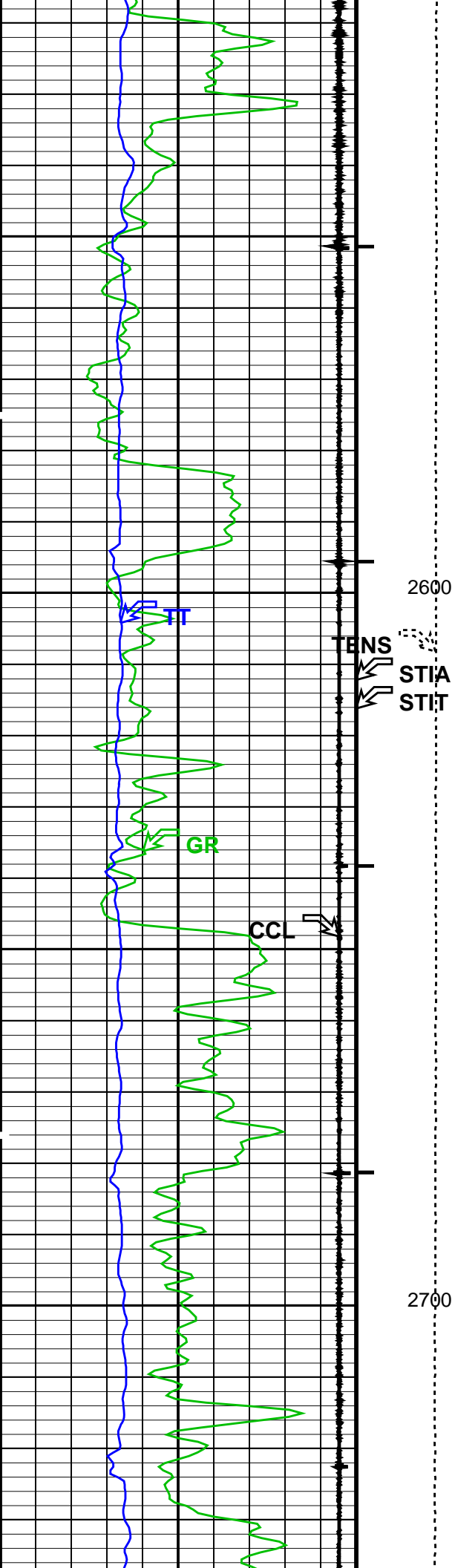




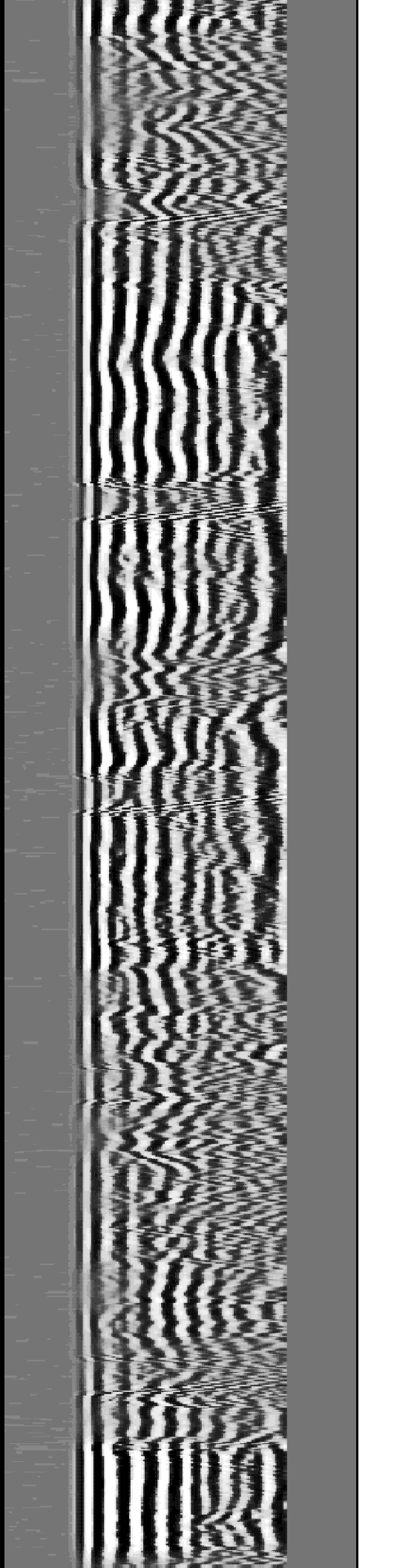
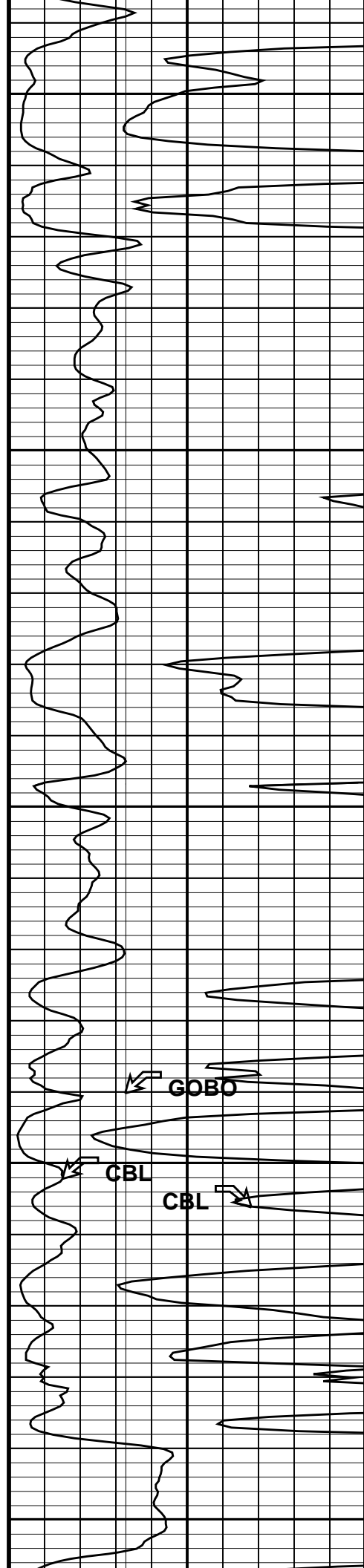
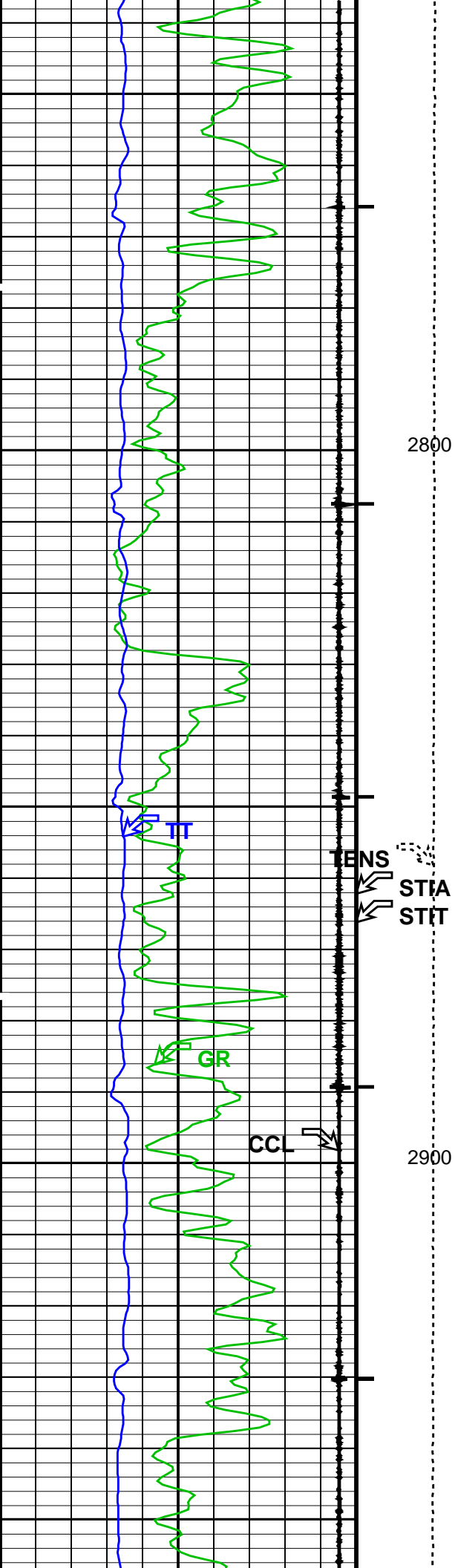


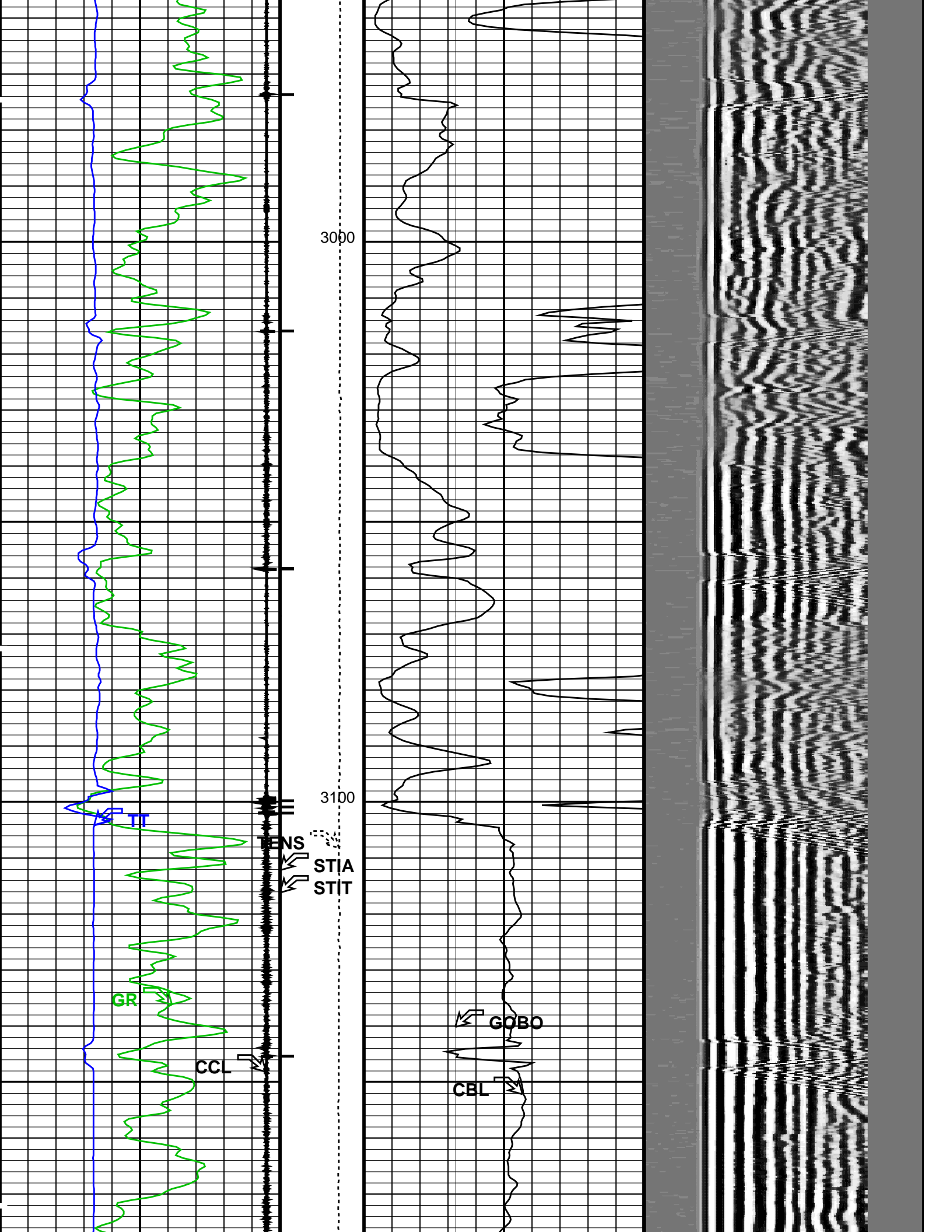


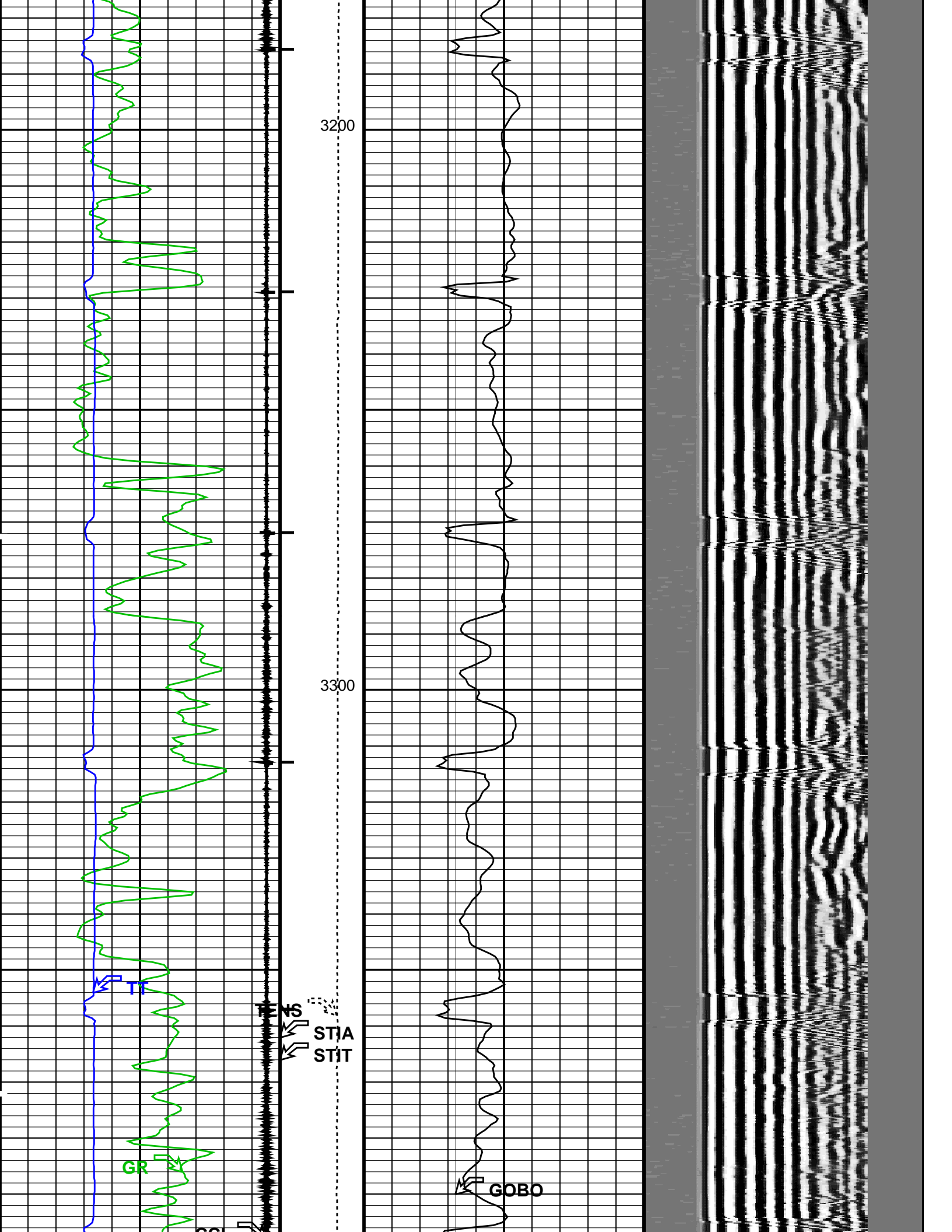


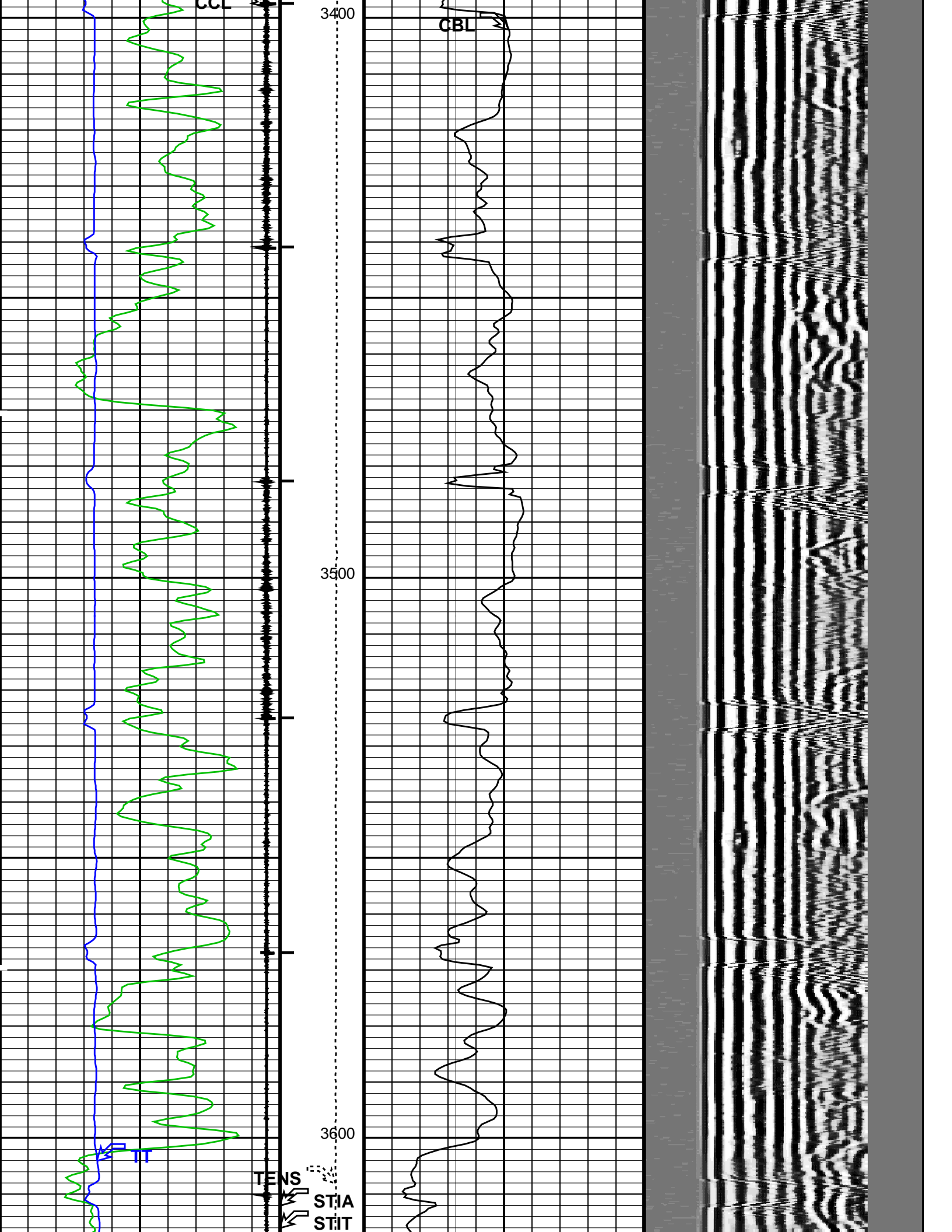




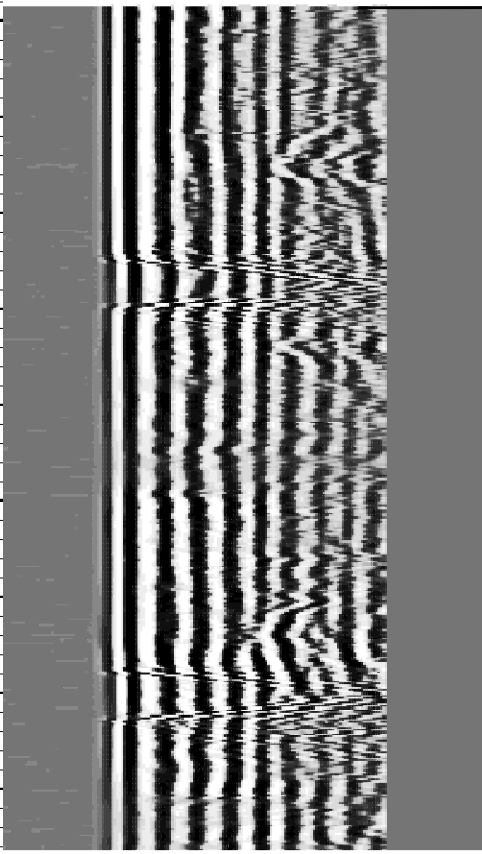
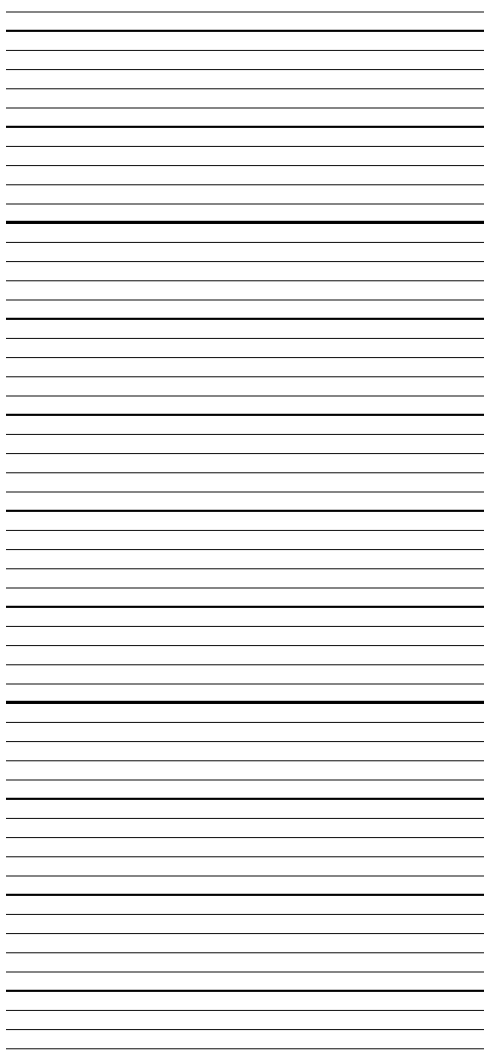
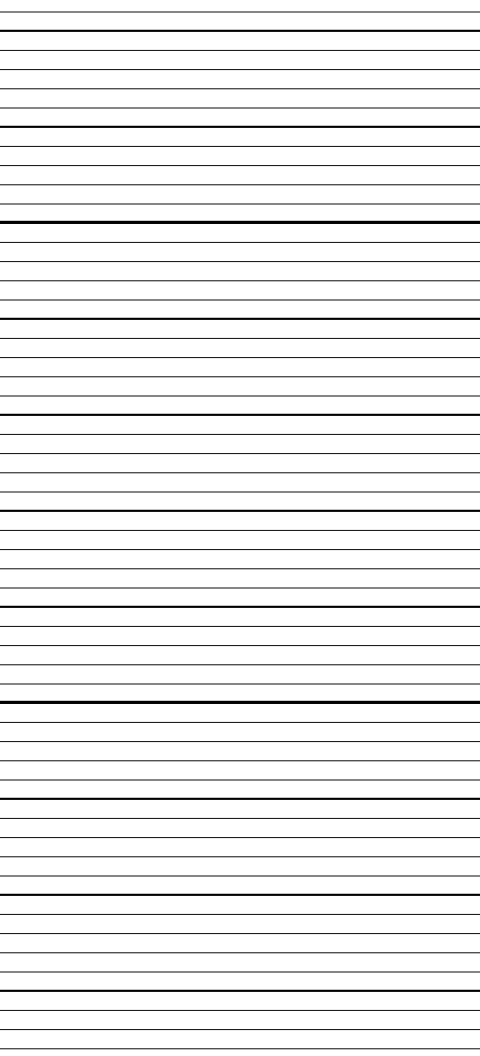


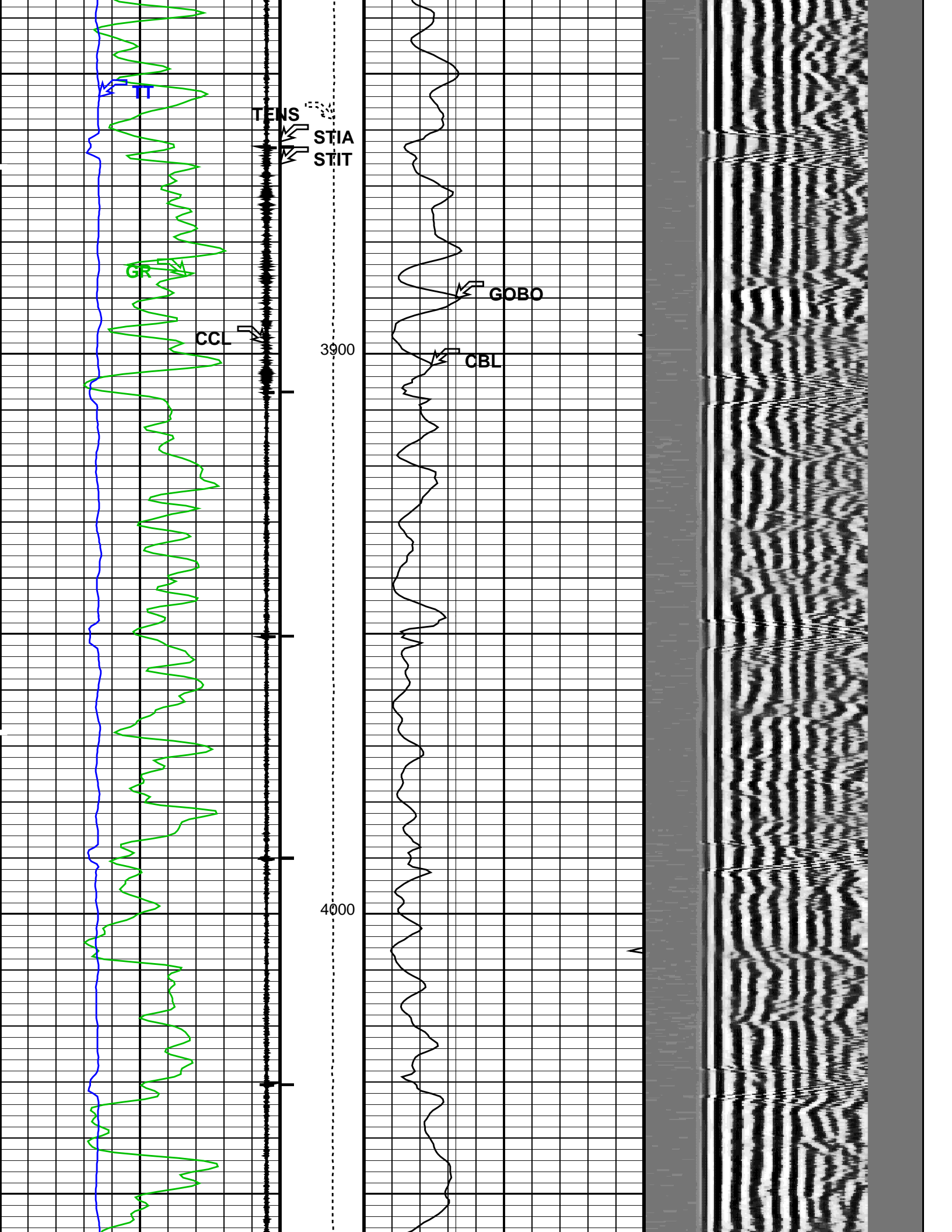


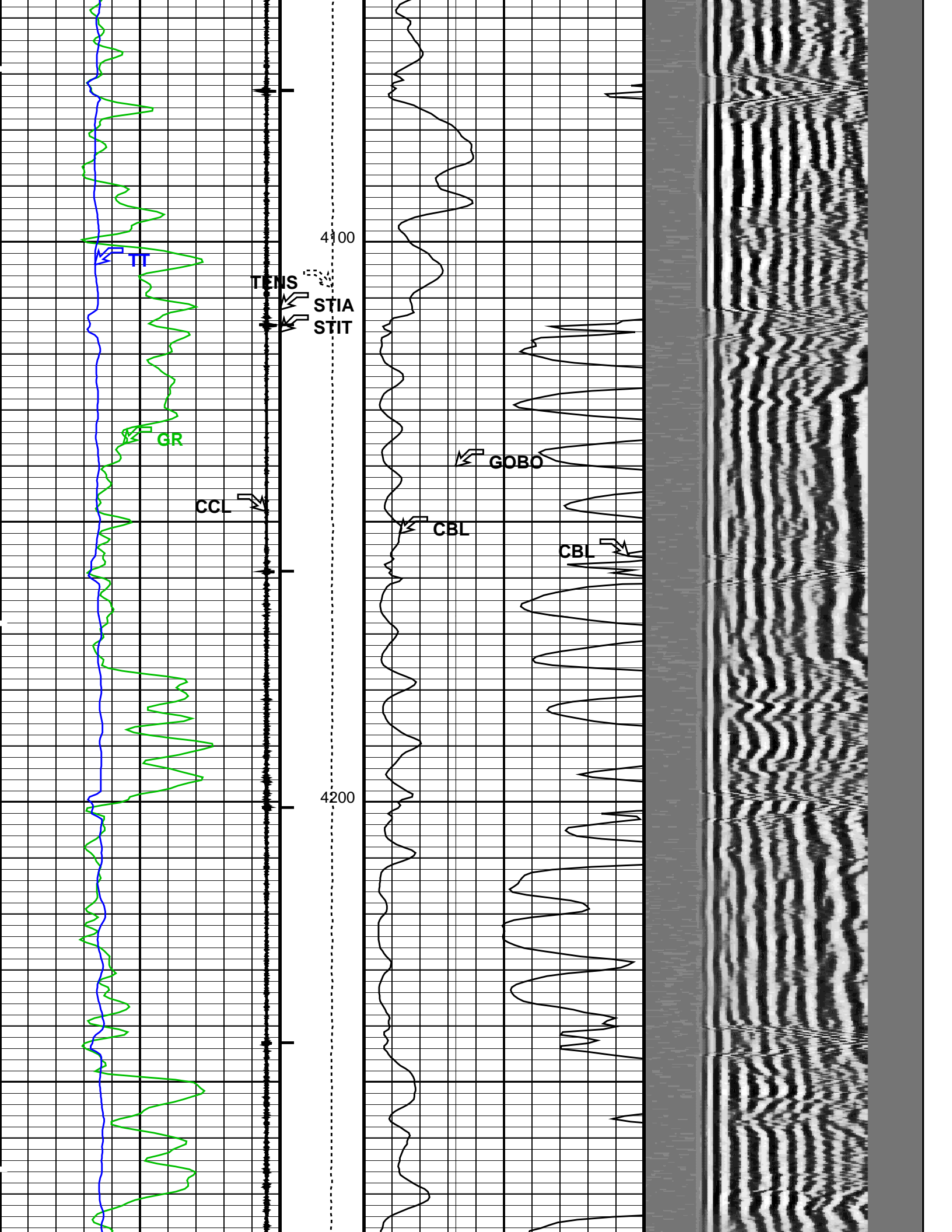


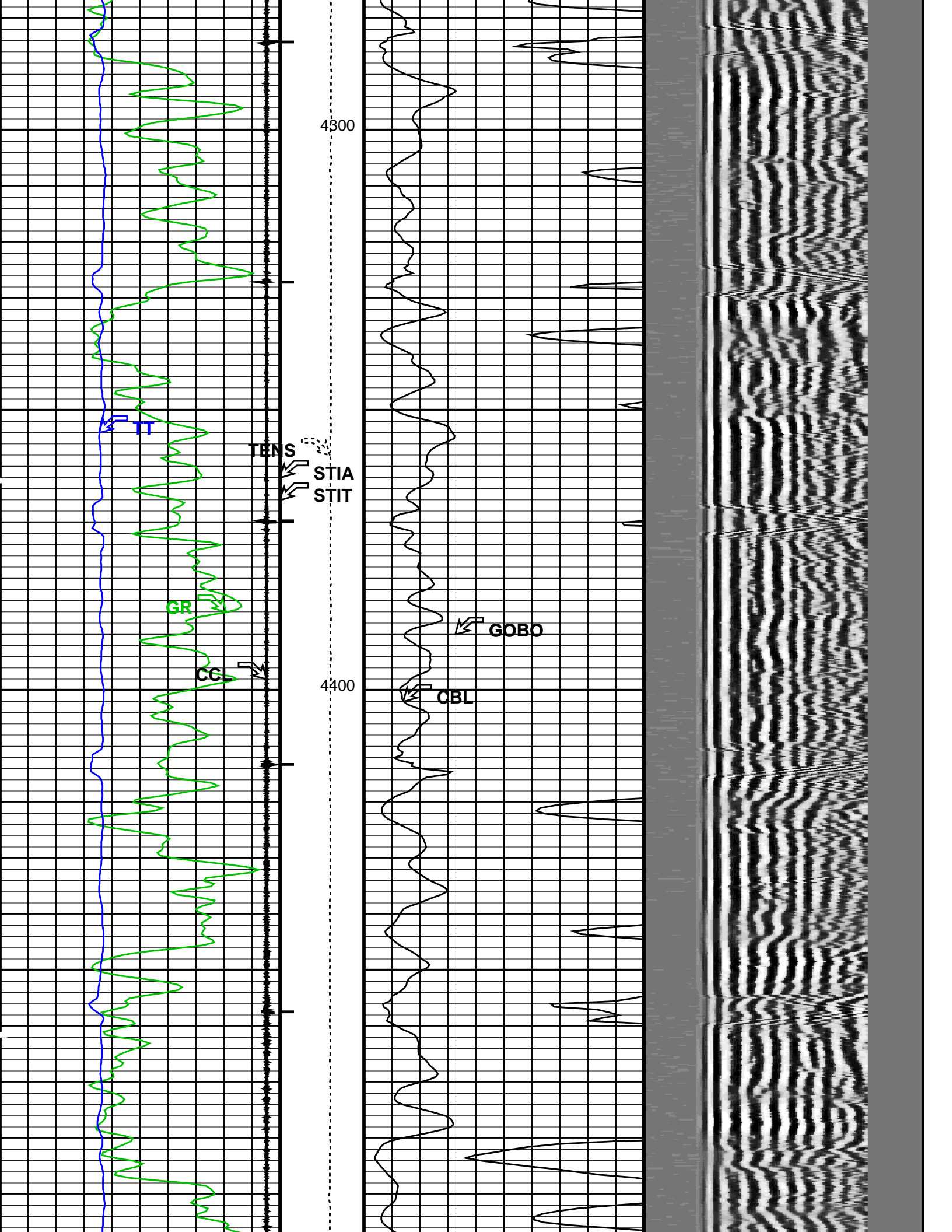


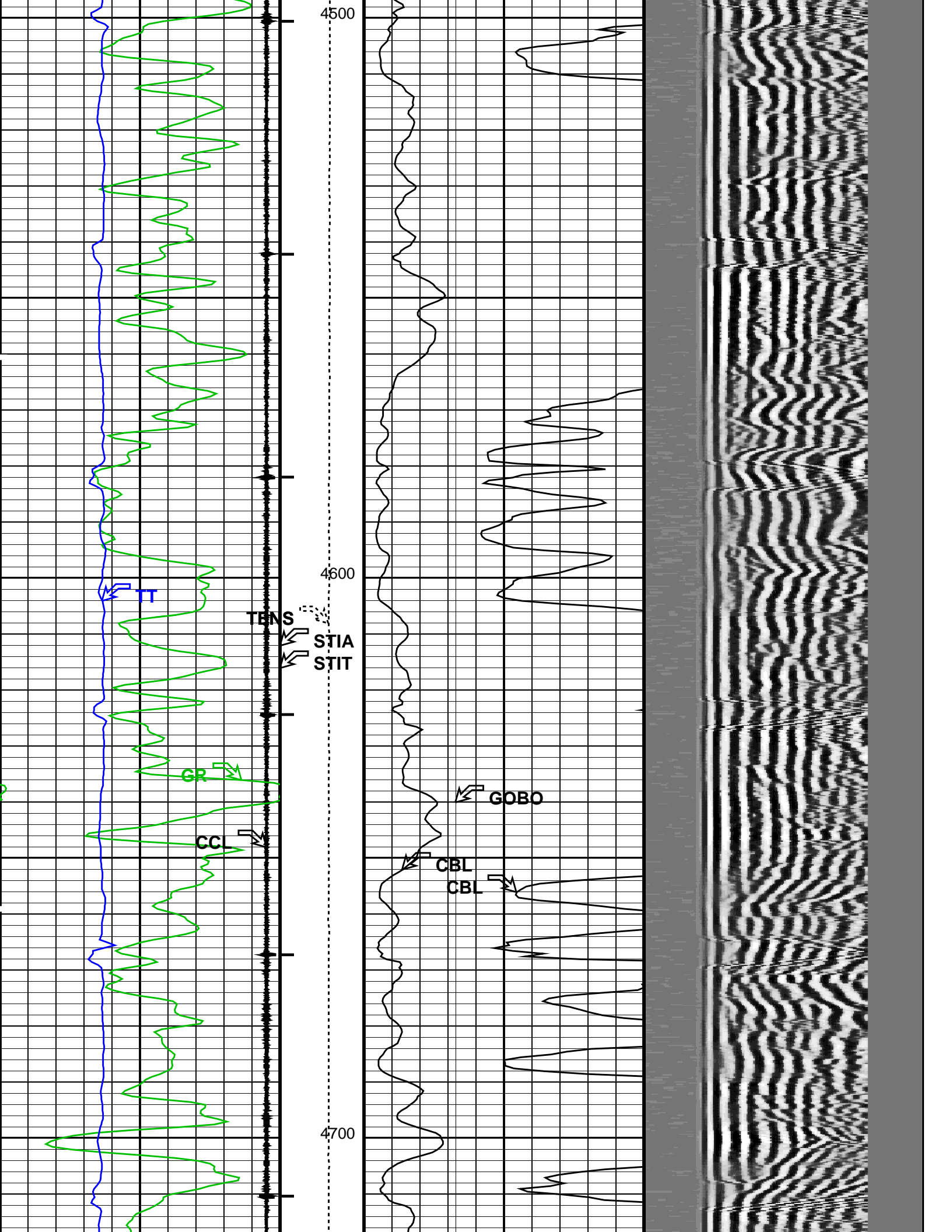




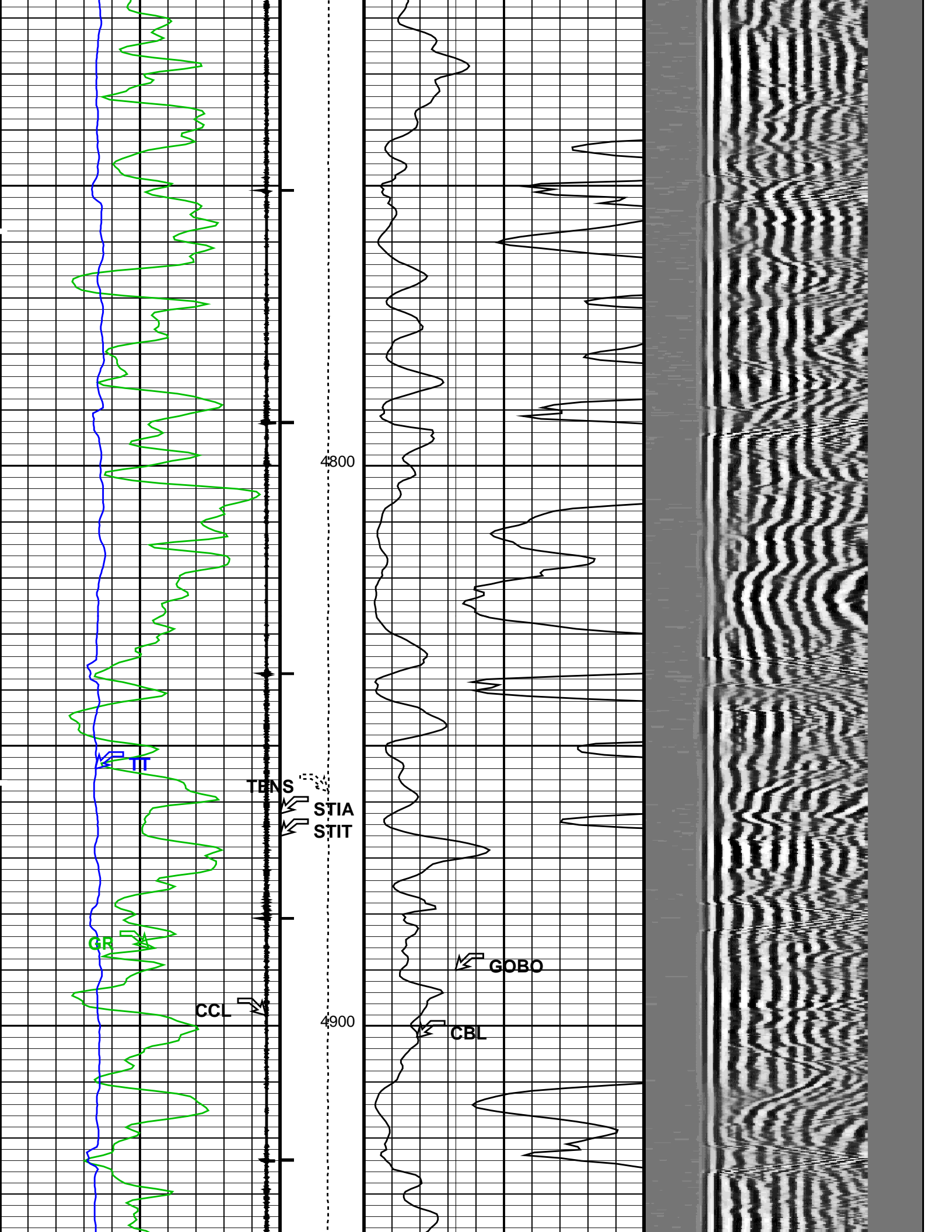


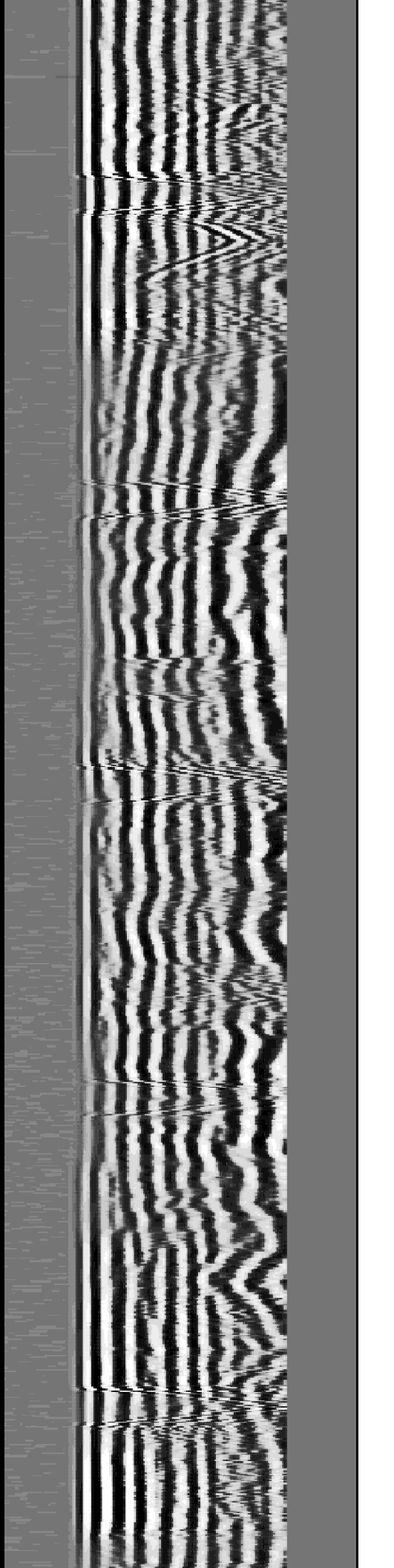
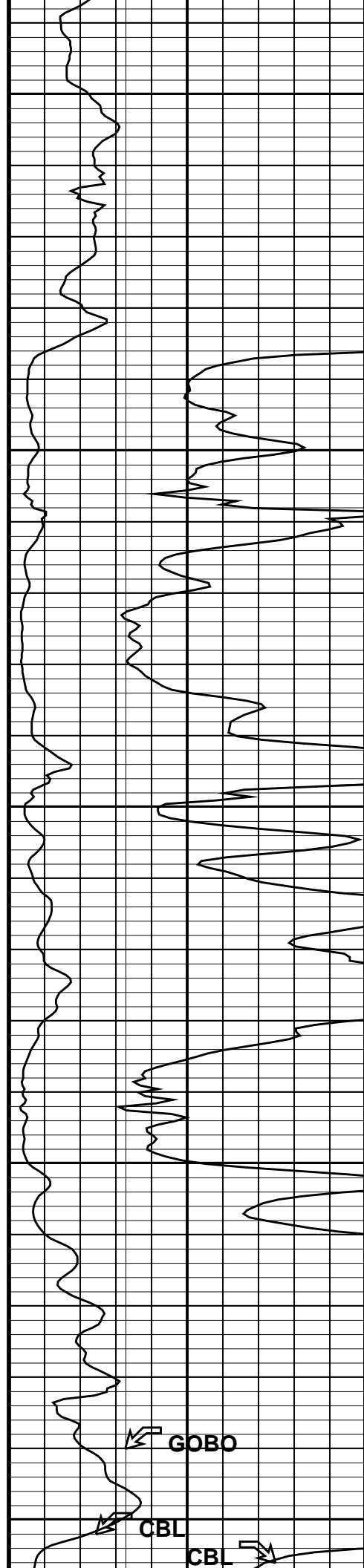
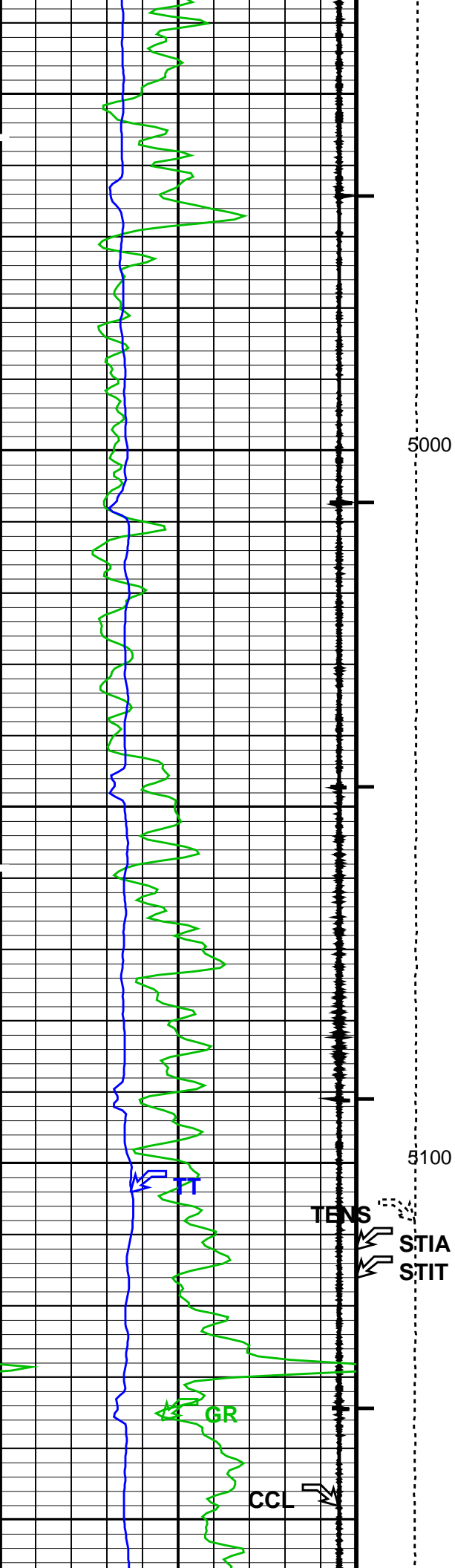


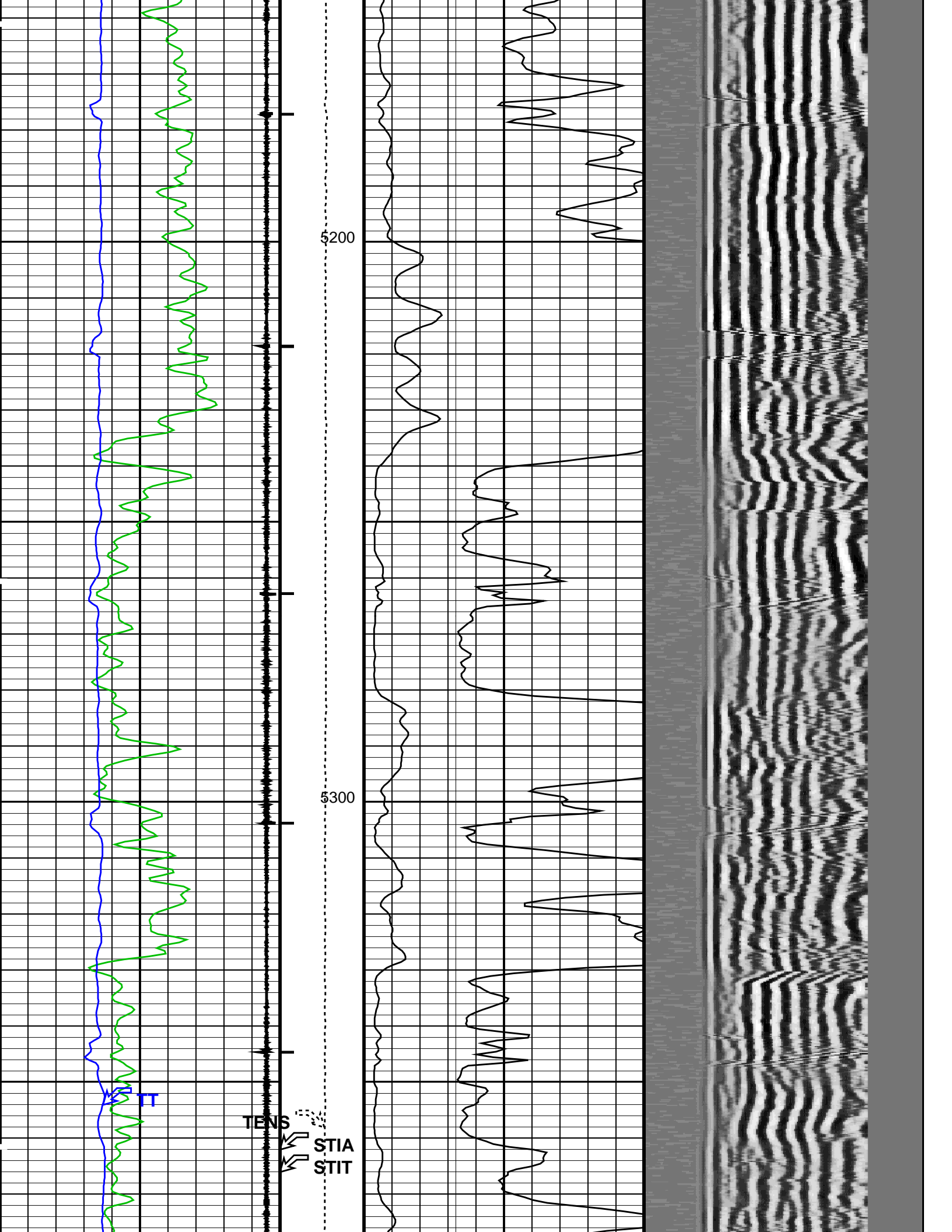




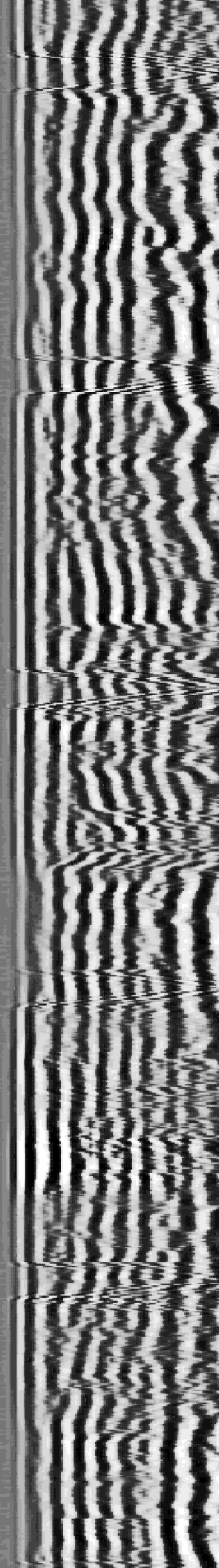
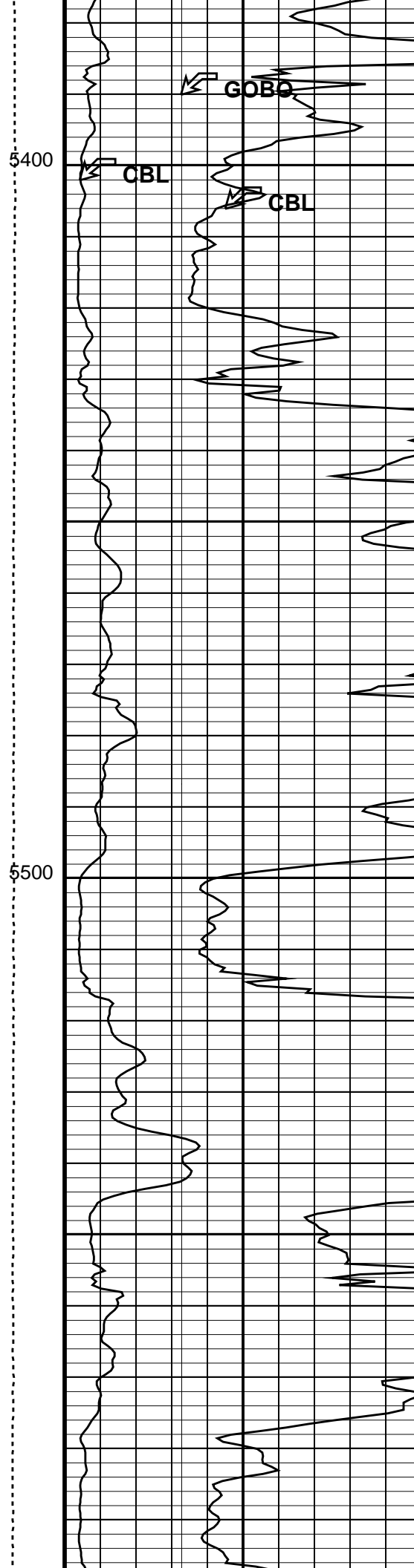
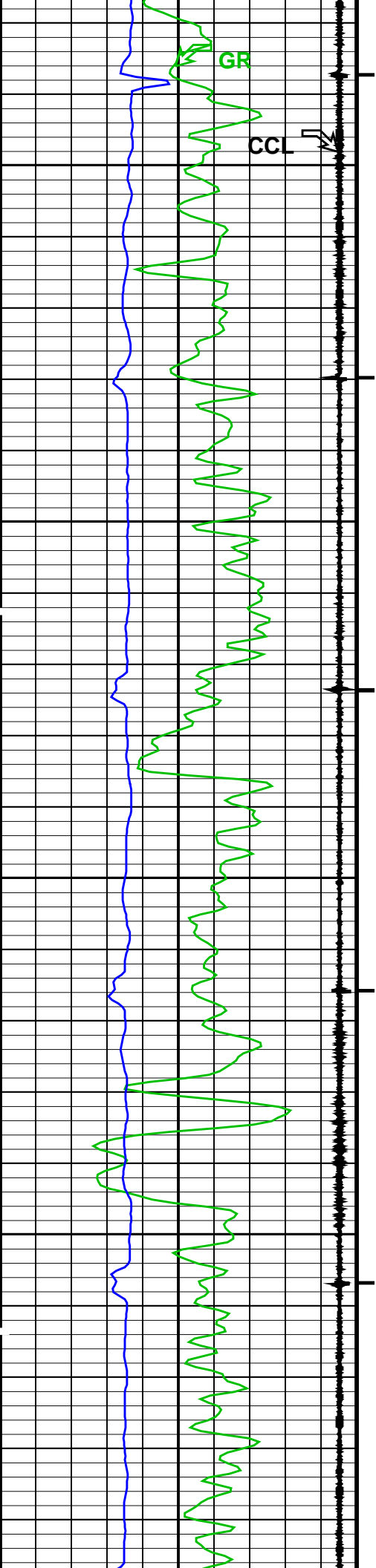


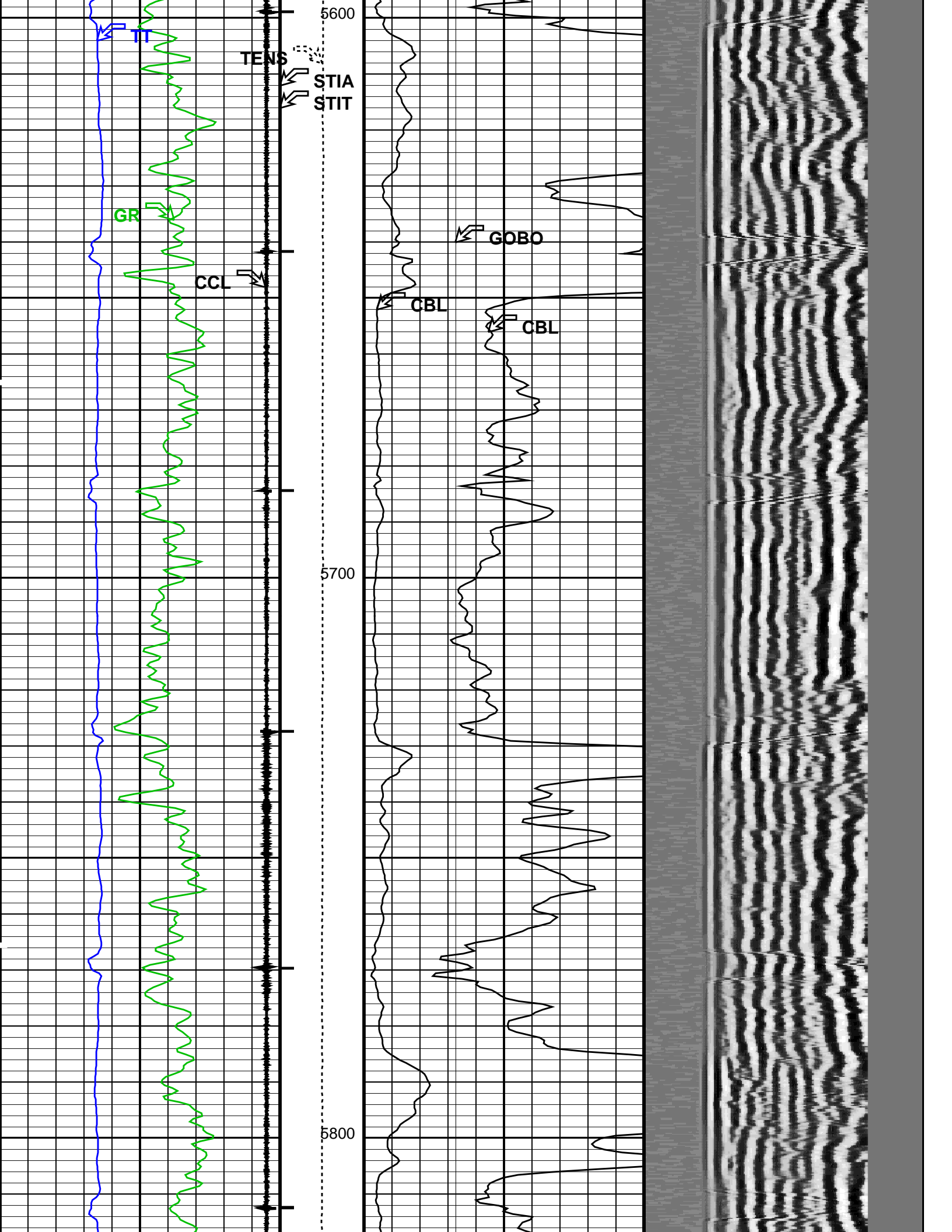


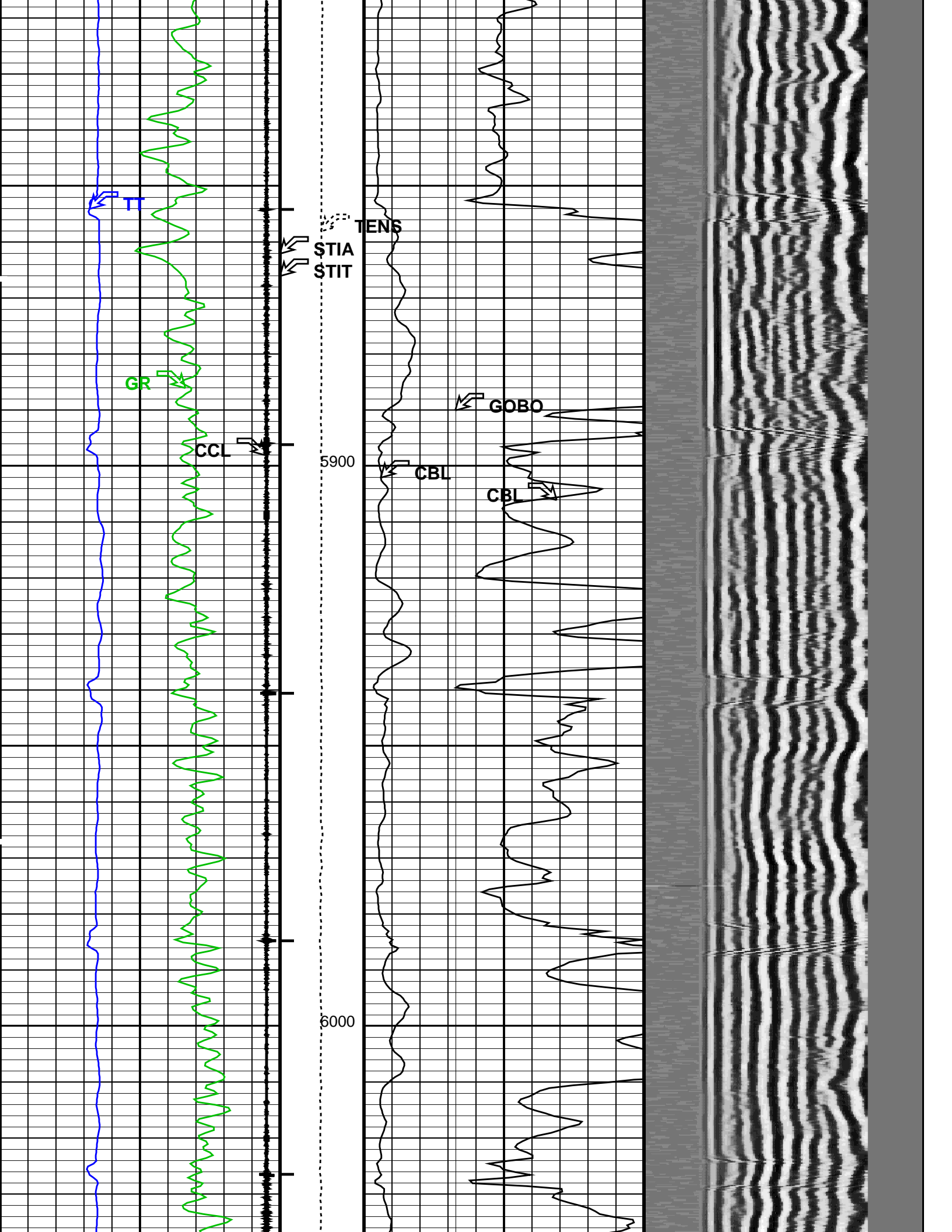


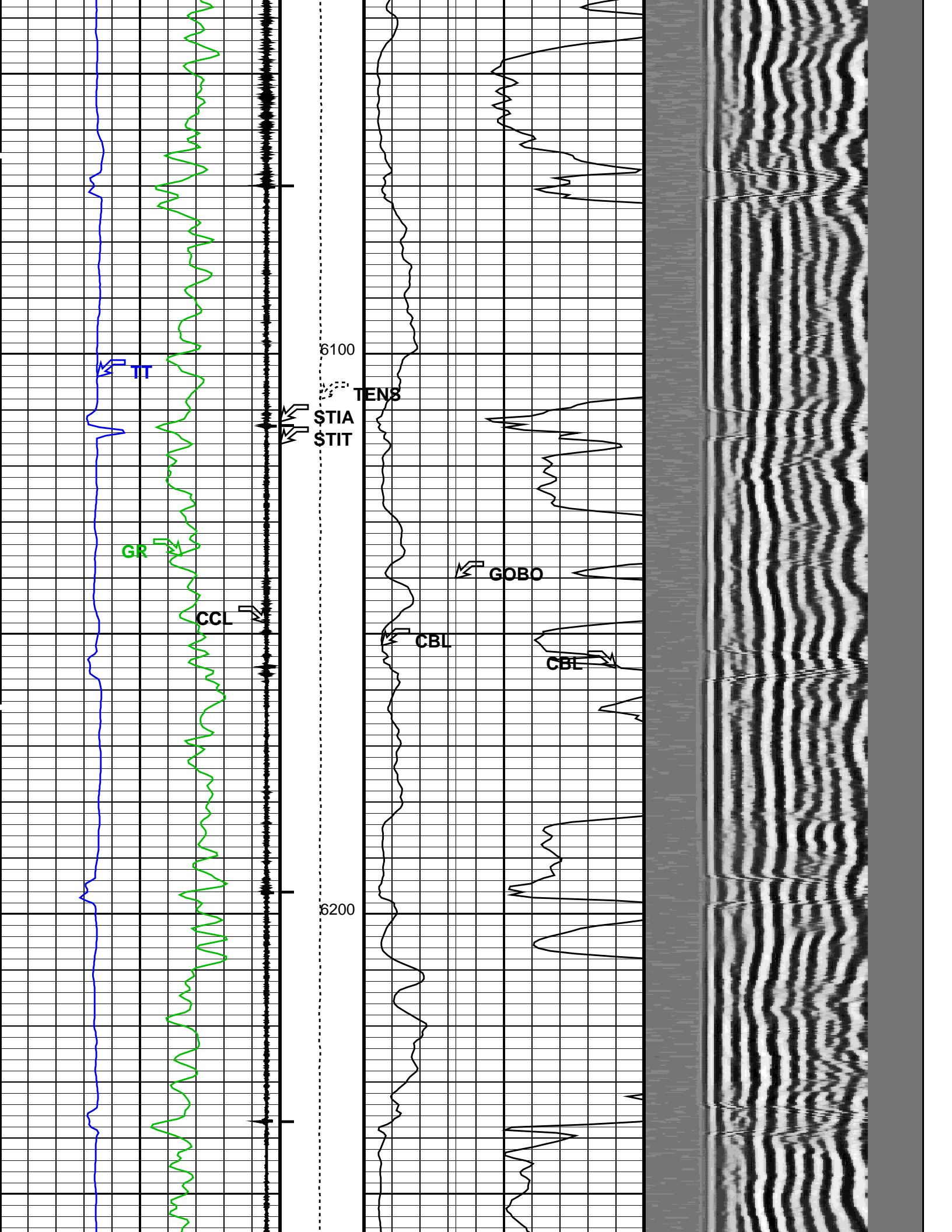




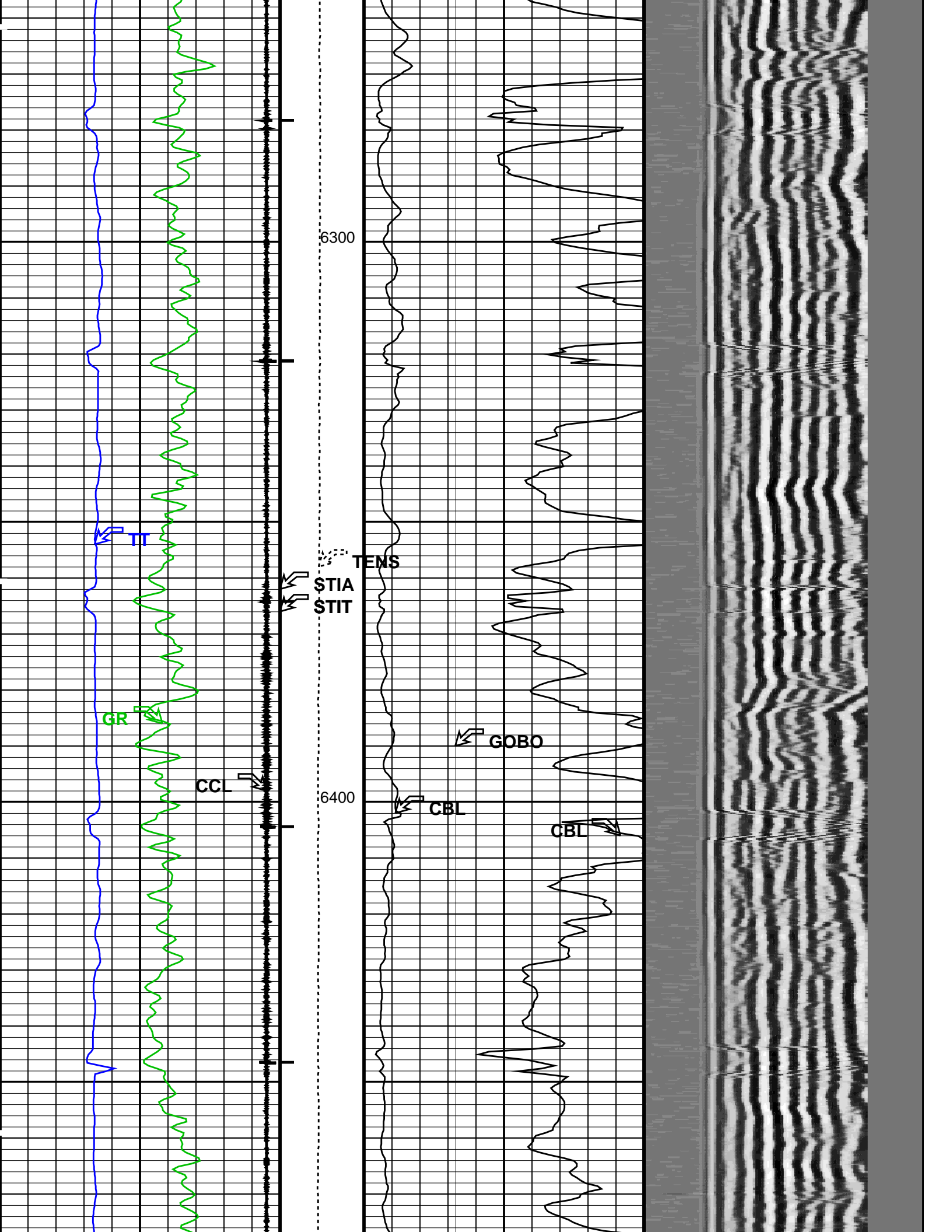


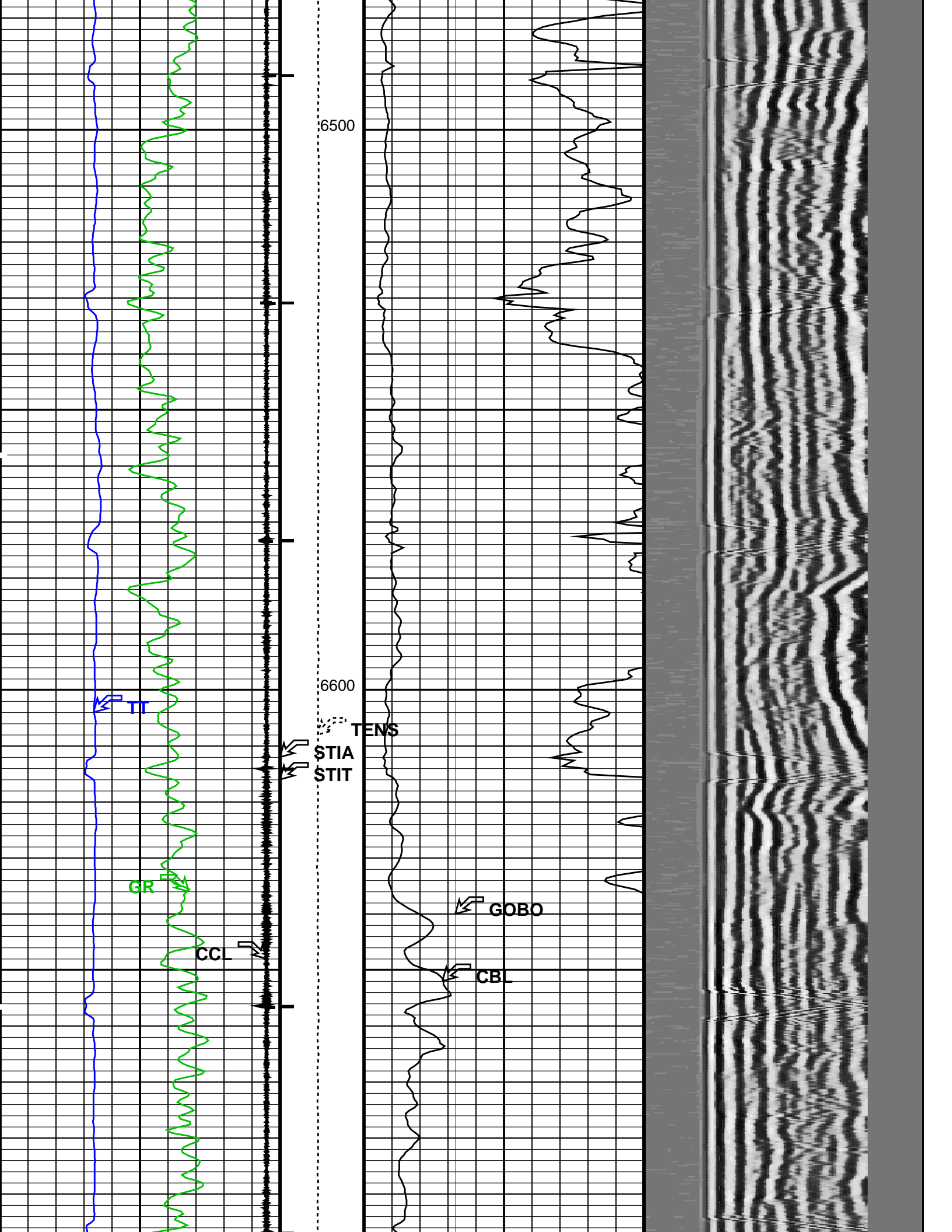


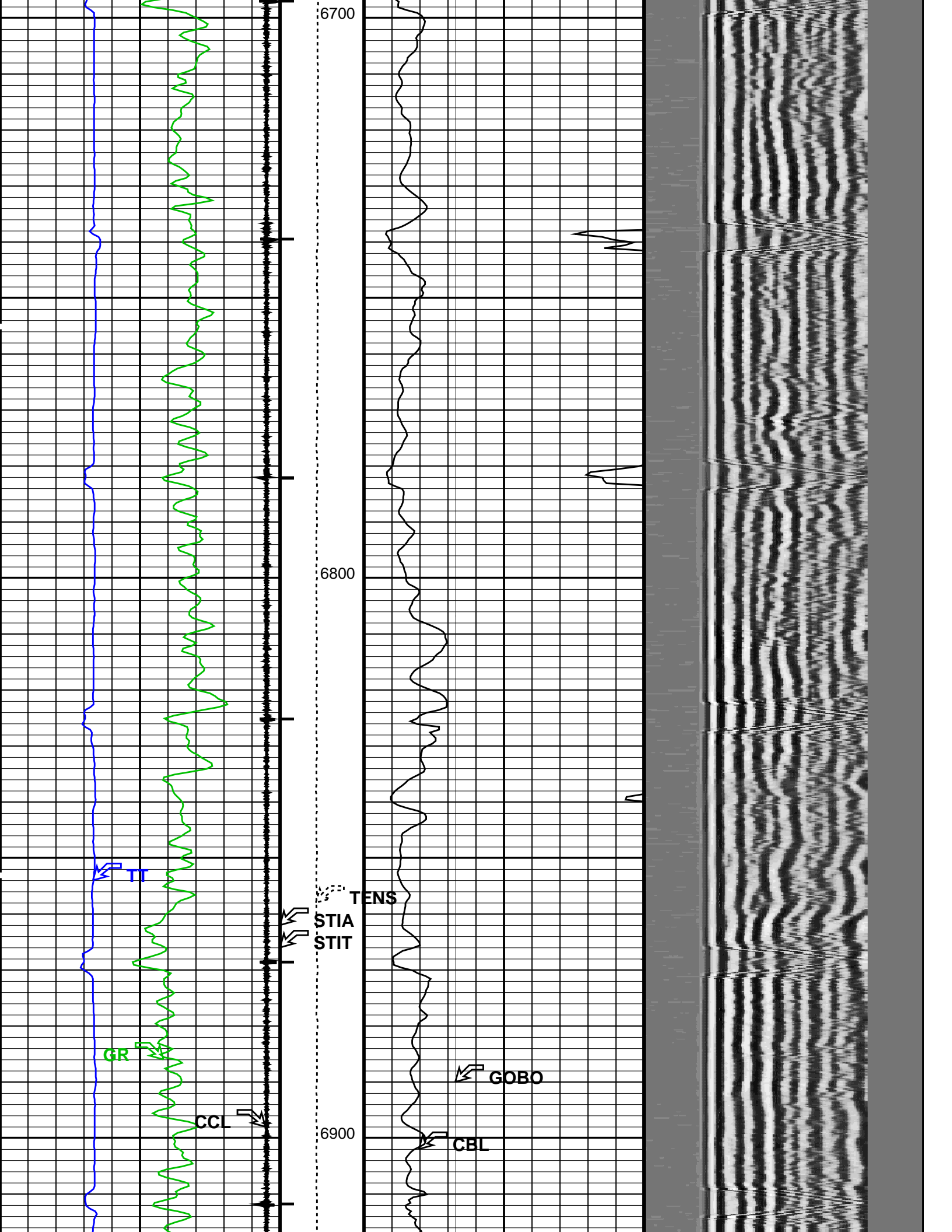


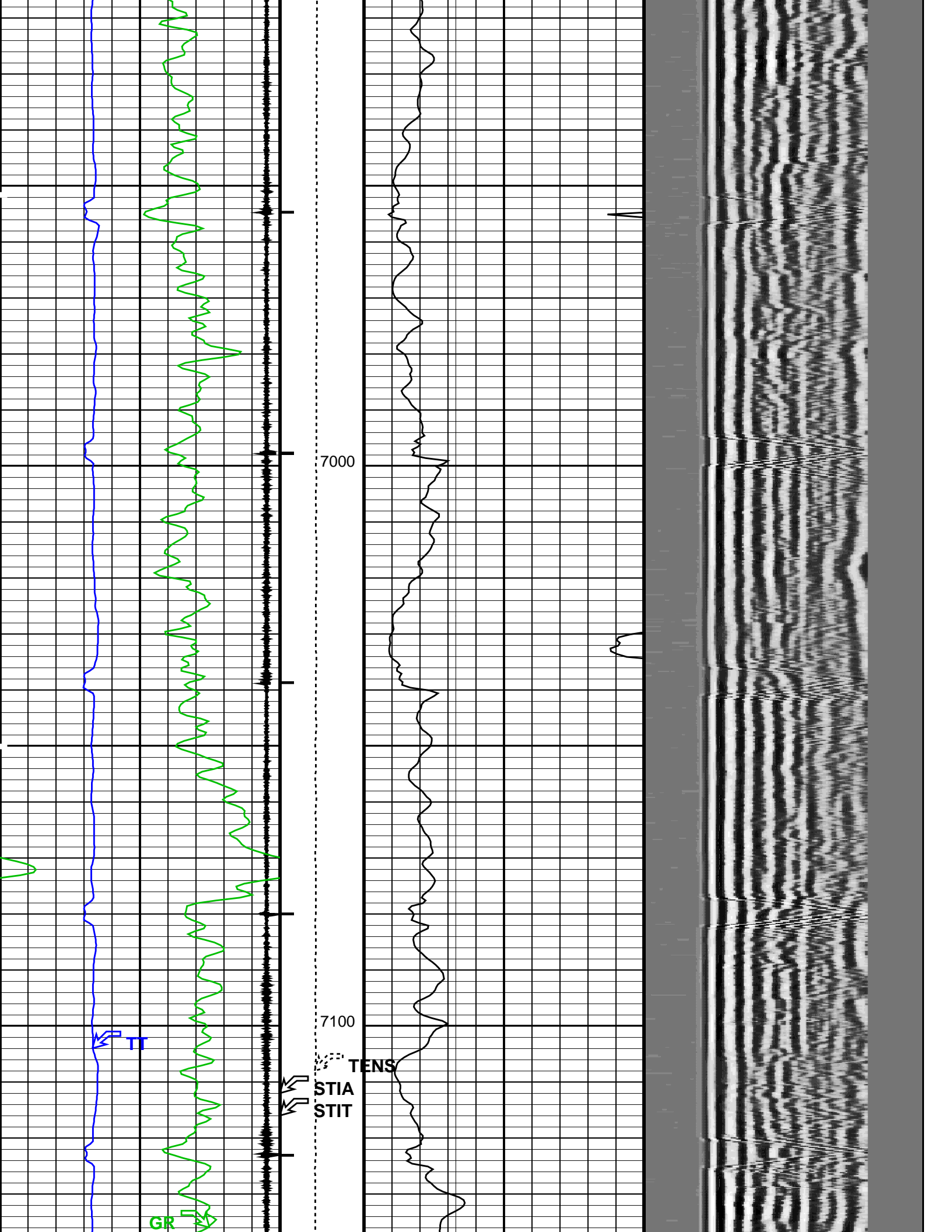




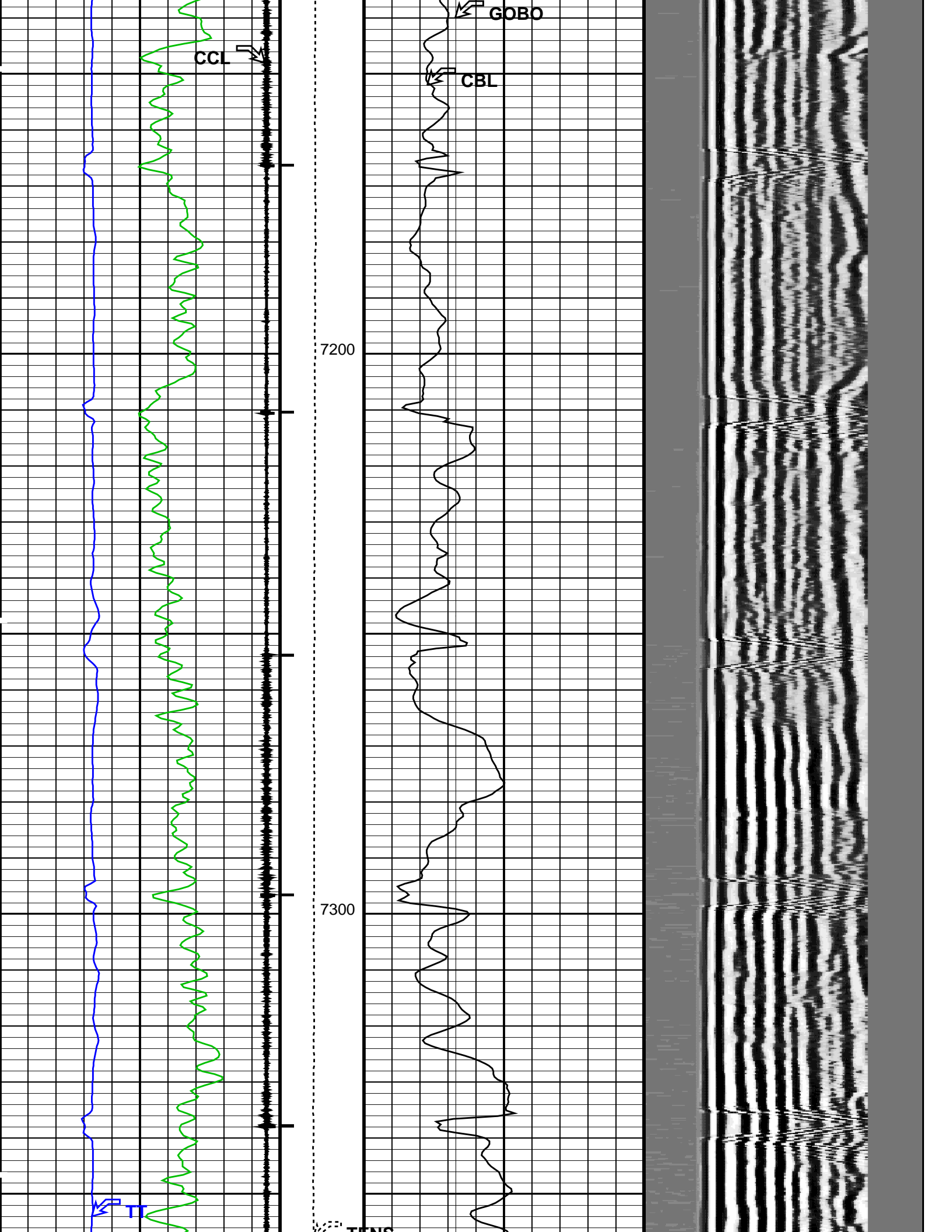


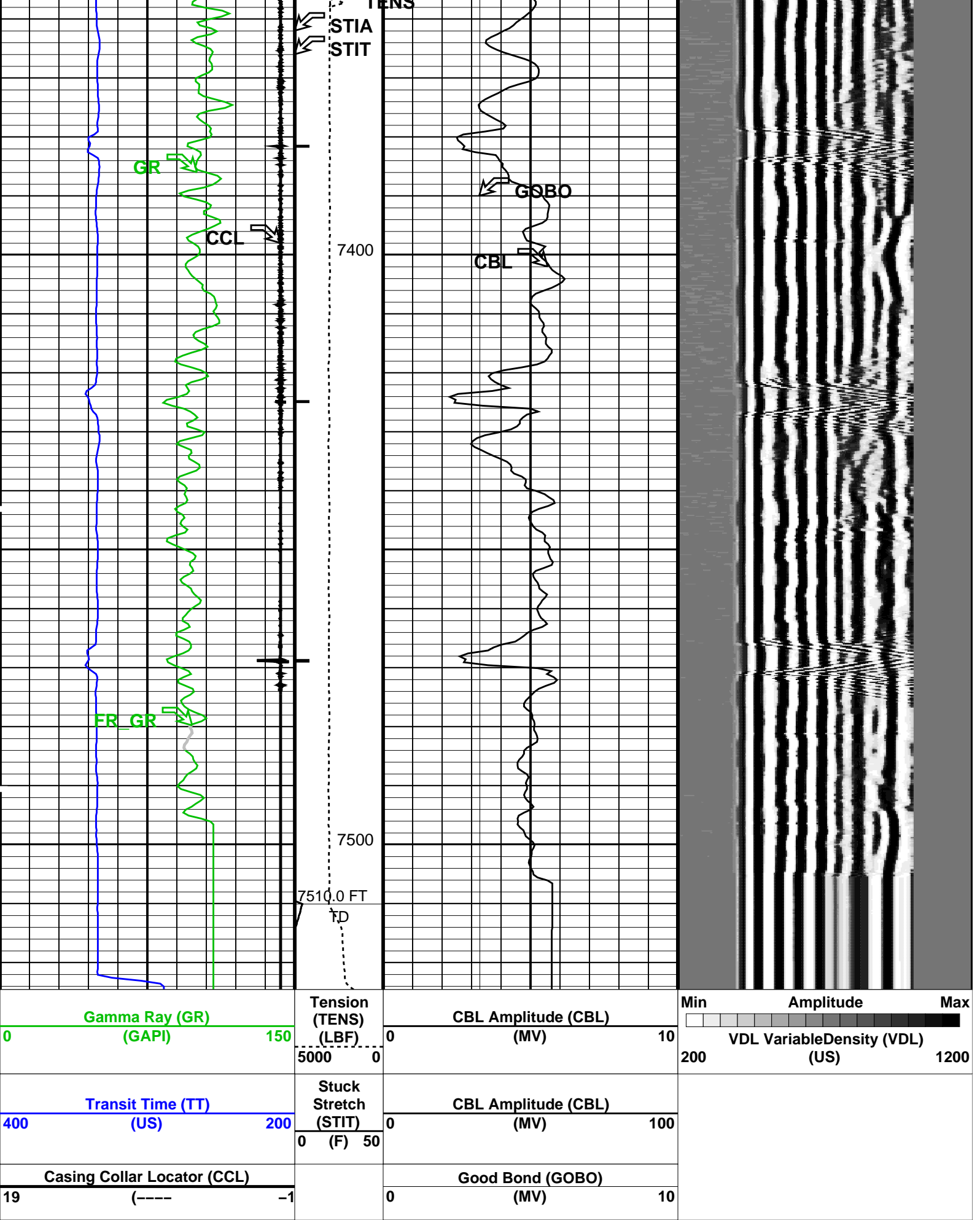












PIP SUMMARY

└─ Casing Collars

Time Mark Every 60 S

## OP System Version: 18C0-147

DSLT-H	18C0-147	HILTH-FTB	18C0-147
DTC-H	18C0-147	CAL-Y	18C0-147

## ### Information for DSLT Sonde Status and Casing Features ###

Sonde Type	Not Recorded
Sonde Serial Number	Not Recorded (0)
Casing Size (CSIZ)	7.62500 IN
Casing Weight (CWEI)	29.7000 LB/F
Expected CBL Amplitude in Free Pipe Section (CBRA)	59.0 MV
Minimum Sonic Amplitude (MSA : 100% Cement)	1.57533 MV
Minimum Sonic Amplitude (MSA : 80% Cement)	3.25139 MV
Date of Master Calibration	Not Recorded
CBLB Correction Factor (Master Calibration)	1.0
Depth of Before Calibration (BDEP)	Not Recorded
CBLB Adjustment Factor (CBAF : Before Calibration)	0.737500

## Parameters

DLIS Name	Description	Value
DSLT-H: Digitizing Sonic Logging Tool		
	DSLT Firing Mode	CBLB_W
	Telemetry Mode	DSLCL_FTB
AMSG	Auxiliary Minimum Sliding Gate	140 US
CBAF	CBL Adjustment Factor	0.7375
CBLG	CBL Gate Width	100 US
DDEL	Digitizing Delay	0 US
DRCS	DSLT DLIS Recording Size	120
DSIN	Digitizing Sample Interval	10
DTFS	DSLCL Telemetry Frame Size	236
DWCO	Digitizing Word Count	100
GAI	Manual Gain	40
GOBO	Good Bond	3.25139 MV
MAHTR	Manual High Threshold Reference	40
MGAI	Maximum Gain	60
MNHTR	Minimum High Threshold Reference	43
NMSG	Near Minimum Sliding Gate	278 US
NMXG	Near Maximum Sliding Gate	693 US
RATE	Firing Rate	R15
SFAF	Sonic Formation Attenuation Factor	0 DB/F
SGCL	Sliding Gate Closing Delta-T	250 US/F
SGDT	Sliding Gate Delta-T	50 US/F
SGW	Sliding Gate Width	80 US
SLEV	Signal Level for AGC	5000
VDLG	VDL Manual Gain	5
WAGC	Waveform AGC Allow/Disallow	OFF
WMOD	Waveform Firing Mode	FULL
CAL-Y: Casing Anomaly Locator - Y		
CCLD	CCL reset delay	12 IN
CCLT	CCL Detection Level	0.3 V
STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	STI
STKT	STI Stuck Threshold	2.5 FT
TDD	Total Depth - Driller	7537.00 FT
TDL	Total Depth - Logger	7510.00 FT
System and Miscellaneous		
DO	Depth Offset for Playback	6.5 FT
PP	Playback Processing	RECOMPUTE

Input DLIS Files

DEFAULT SONIC\_TLD\_MCFL\_CNL\_039LUP FN:53 PRODUCER 02-Jun-2011 14:42 7518.0 FT 144.5 FT

Output DLIS Files

DEFAULT SONIC\_TLD\_MCFL\_CNL\_044PUP FN:60 PRODUCER 02-Jun-2011 16:04  
RTB SONIC\_TLD\_MCFL\_CNL\_044PUP FN:61 PRODUCER 02-Jun-2011 16:04

Schlumberger

REPEAT PASS

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. Well: ORCHARD UNIT 18-15H (K200U)

Input DLIS Files

DEFAULT SONIC\_TLD\_MCFL\_CNL\_038LUP FN:51 PRODUCER 02-Jun-2011 14:34 7100.5 FT 6790.0 FT

Output DLIS Files

DEFAULT SONIC\_TLD\_MCFL\_CNL\_043PUP FN:58 PRODUCER 02-Jun-2011 16:01 7106.5 FT 6760.0 FT  
RTB SONIC\_TLD\_MCFL\_CNL\_043PUP FN:59 PRODUCER 02-Jun-2011 16:01 7106.5 FT 6760.6 FT

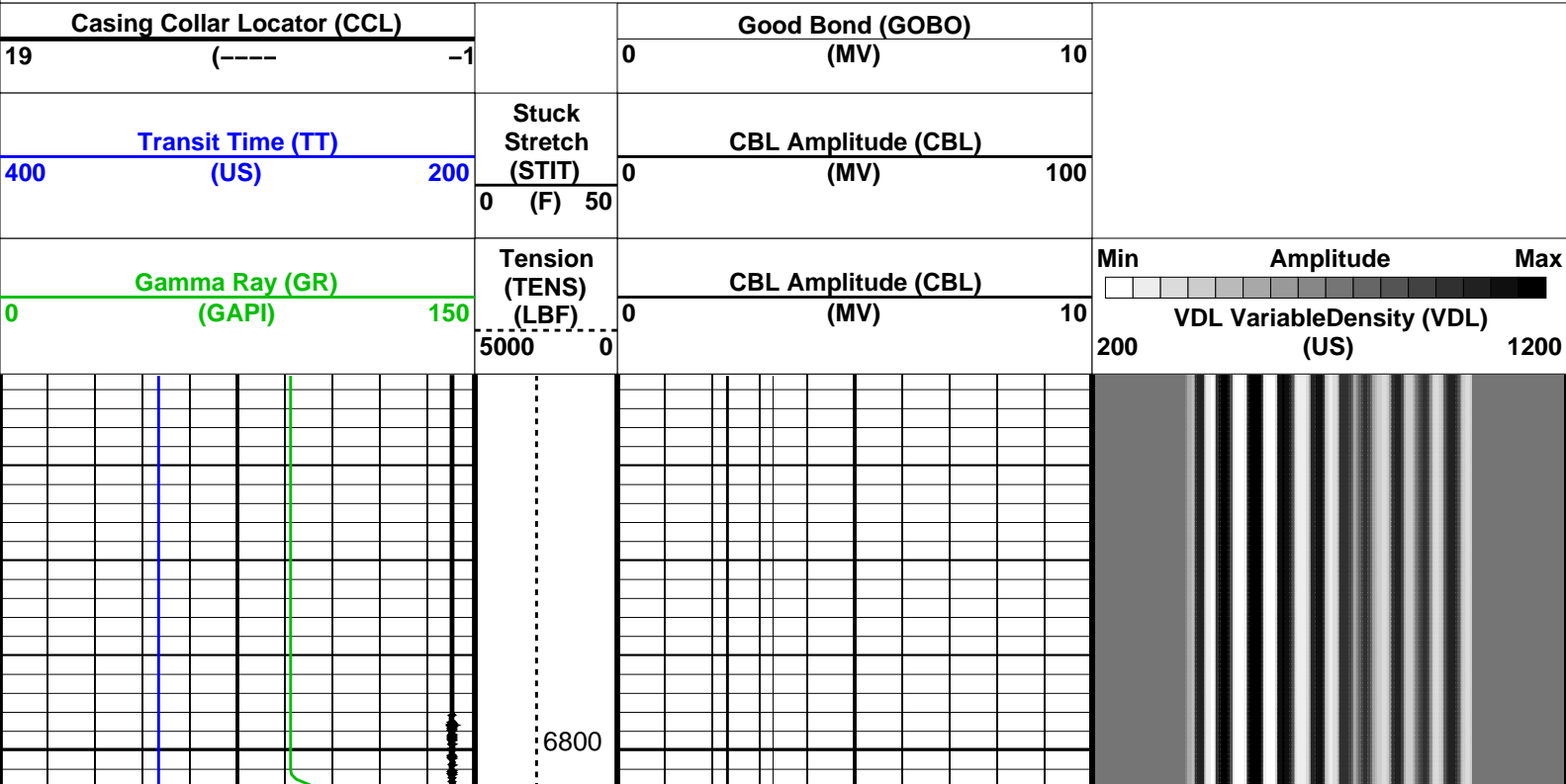
OP System Version: 18C0-147

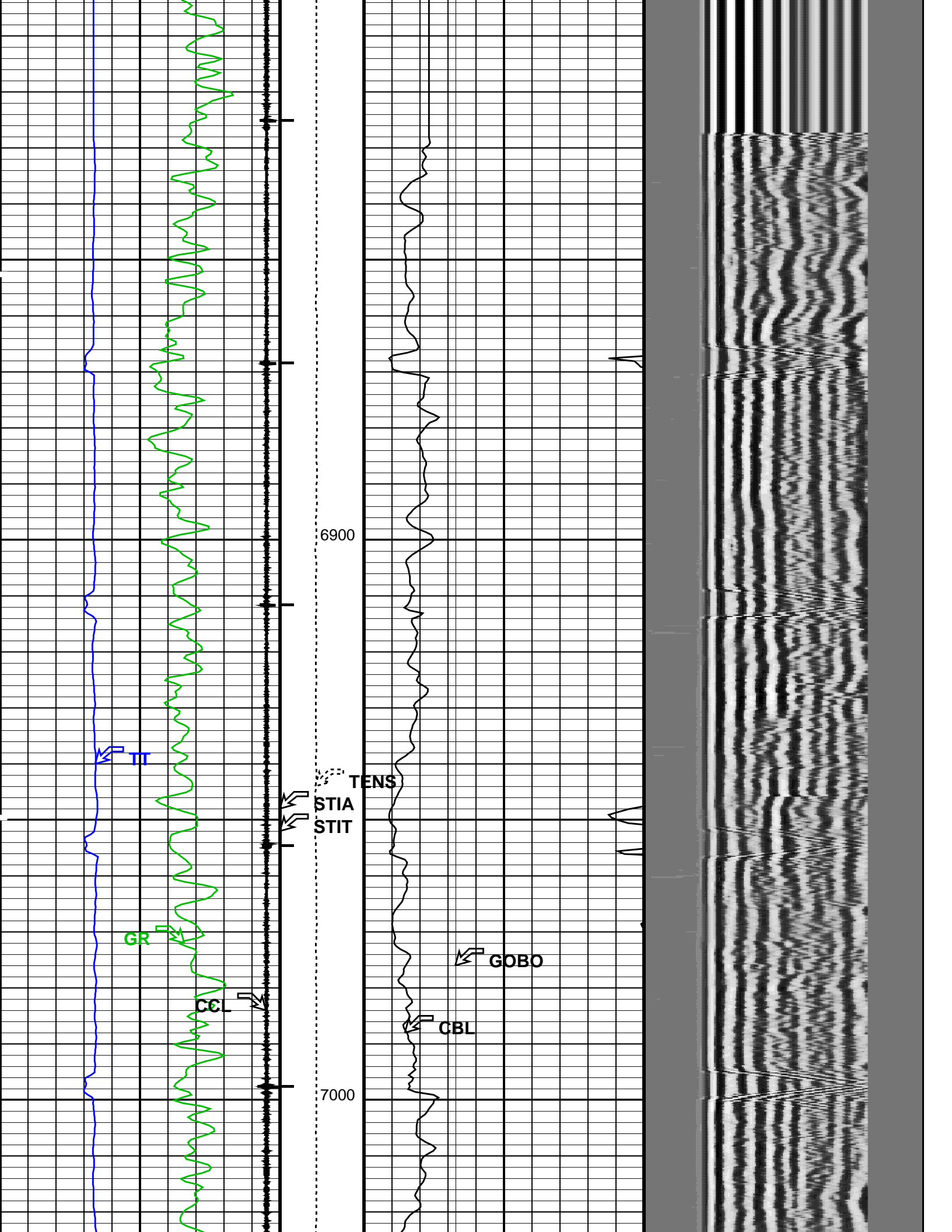
DSLT-H 18C0-147 HILTH-FTB 18C0-147  
DTC-H 18C0-147 CAL-Y 18C0-147

PIP SUMMARY

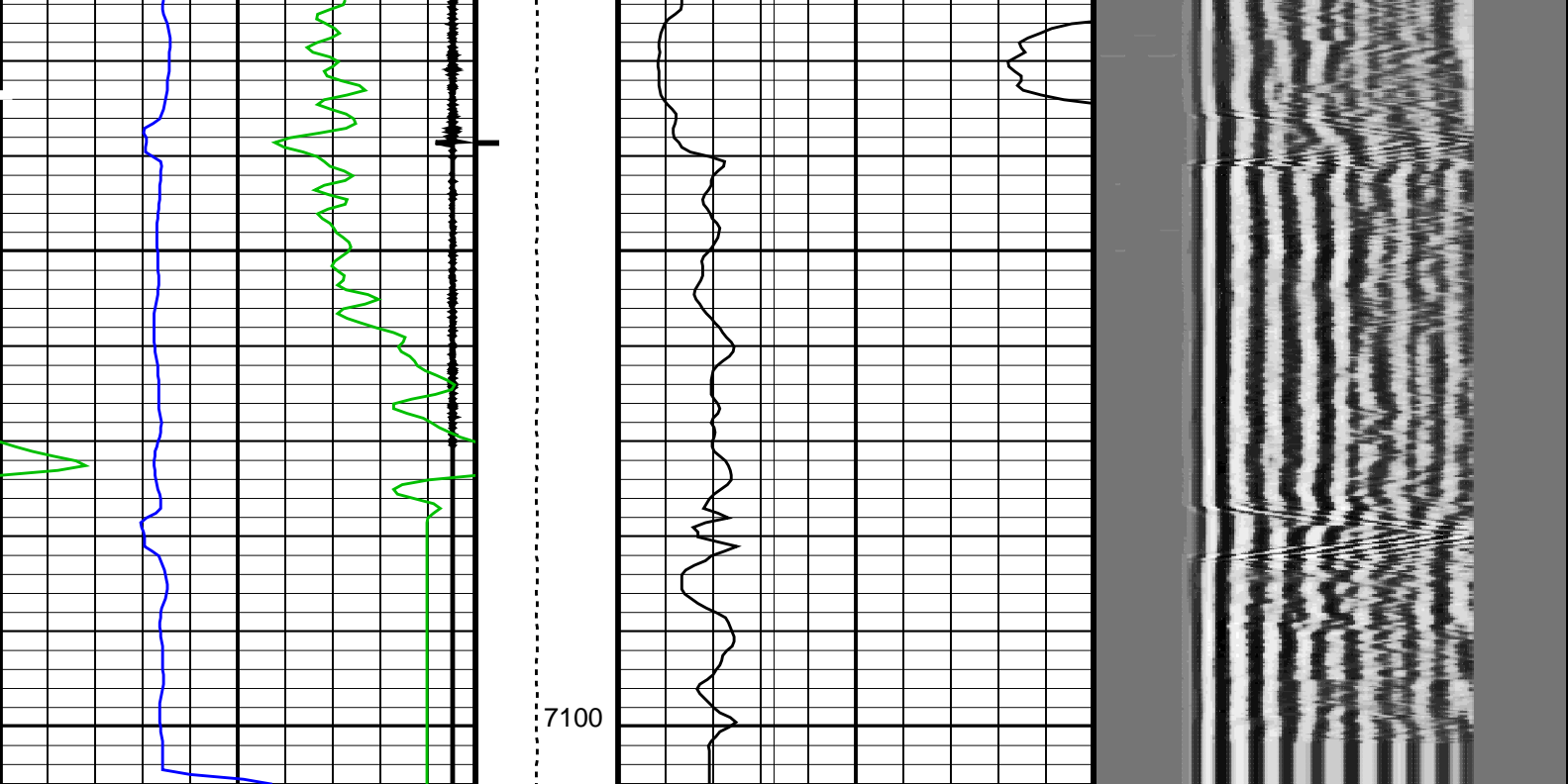
Casing Collars

Time Mark Every 60 S









Gamma Ray (GR) (GAPI)	0150	Tension (TENS) (LBF)	50000	CBL Amplitude (CBL) (MV)	010	Min 200	Amplitude Max	VDL VariableDensity (VDL) (US)	1200
Transit Time (TT) (US)	400200	Stuck Stretch (STIT) (F)	050	CBL Amplitude (CBL) (MV)	0100				
Casing Collar Locator (CCL)	19-----1			Good Bond (GOBO) (MV)	010				

PIP SUMMARY

└─ Casing Collars

Time Mark Every 60 S

Format: CBL\_VDL Vertical Scale: 5" per 100'

Graphics File Created: 02-Jun-2011 16:01

OP System Version: 18C0-147

DSLT-H	18C0-147	HILTH-FTB	18C0-147
DTC-H	18C0-147	CAL-Y	18C0-147

### Information for DSLT Sonde Status and Casing Features ###

Sonde Type	Not Recorded
Sonde Serial Number	Not Recorded (0)
Casing Size (CSIZ)	7.62500 IN
Casing Weight (CWEI)	29.7000 LB/F
Expected CBL Amplitude in Free Pipe Section (CBRA)	59.0 MV
Minimum Sonic Amplitude (MSA : 100% Cement)	1.57533 MV
Minimum Sonic Amplitude (MSA : 80% Cement)	3.25139 MV
Date of Master Calibration	Not Recorded
CBLB Correction Factor (Master Calibration)	1.0

Depth of Before Calibration (BDEP)	Not Recorded
CBLB Adjustment Factor (CBAF : Before Calibration)	0.737500

Parameters

DLIS Name	Description	Value	
DSLT-H: Digitizing Sonic Logging Tool			
	DSLT Firing Mode	CBLB_W	
	Telemetry Mode	DSLCL_FTB	
AMSG	Auxiliary Minimum Sliding Gate	140	US
CBAF	CBL Adjustment Factor	0.7375	
CBLG	CBL Gate Width	100	US
DDEL	Digitizing Delay	0	US
DRCS	DSLT DLIS Recording Size	120	
DSIN	Digitizing Sample Interval	10	
DTFS	DSLCL Telemetry Frame Size	236	
DWCO	Digitizing Word Count	100	
GAI	Manual Gain	40	
GOBO	Good Bond	3.25139	MV
MAHTR	Manual High Threshold Reference	40	
MGAI	Maximum Gain	60	
MNHTR	Minimum High Threshold Reference	43	
NMSG	Near Minimum Sliding Gate	278	US
NMXG	Near Maximum Sliding Gate	693	US
RATE	Firing Rate	R15	
SFAF	Sonic Formation Attenuation Factor	0	DB/F
SGCL	Sliding Gate Closing Delta-T	250	US/F
SGDT	Sliding Gate Delta-T	50	US/F
SGW	Sliding Gate Width	80	US
SLEV	Signal Level for AGC	5000	
VDLG	VDL Manual Gain	5	
WAGC	Waveform AGC Allow/Disallow	OFF	
WMOD	Waveform Firing Mode	FULL	
CAL-Y: Casing Anomaly Locator - Y			
CCLD	CCL reset delay	12	IN
CCLT	CCL Detection Level	0.3	V
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	STI	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth - Driller	7537.00	FT
TDL	Total Depth - Logger	7510.00	FT
System and Miscellaneous			
DO	Depth Offset for Playback	6.0	FT
PP	Playback Processing	RECOMPUTE	

Input DLIS Files

DEFAULT	SONIC_TLD_MCFL_CNL_038LUP	FN:51	PRODUCER	02-Jun-2011 14:34	7100.5 FT	6790.0 FT
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Output DLIS Files

DEFAULT	SONIC_TLD_MCFL_CNL_043PUP	FN:58	PRODUCER	02-Jun-2011 16:01		
RTB	SONIC_TLD_MCFL_CNL_043PUP	FN:59	PRODUCER	02-Jun-2011 16:01		



CALIBRATIONS

MAXIS Field Log

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Detector Calibration							
Before: 1–Jun–2011 12:08							
Gamma Ray Background	30.00	N/A	59.23	N/A	N/A	N/A	GAPI
Gamma Ray (Jig – Bkgd)	165.0	N/A	177.5	N/A	N/A	15.00	GAPI
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Zero Measurement							
Master: 16–May–2011 15:01 Before: 1–Jun–2011 12:17							
CNTC Background	27.68	27.68	25.98	N/A	N/A	4.152	CPS
CFTC Background	27.33	27.33	26.88	N/A	N/A	4.100	CPS
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Ratio Measurement							
Master: 16–May–2011 15:01							
Thermal Near Corr. (Tank)	5800	5651	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2270	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.489	N/A	N/A	N/A	N/A	
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Accelerometer Calibration							
Before: 2–Jun–2011 13:39							
Z–Axis Acceleration	32.19	N/A	32.24	N/A	N/A	N/A	F/S2
The HGNS Neutron Master Calibration was done with the following parameters :							
NCT–B Water Temperature	55.9	DEGF.					
Thermal Housing Size	3.372	IN.					
NSR–F serial number	0						

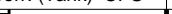
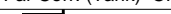

Digitizing Sonic Logging Tool / Equipment Identification			
Primary Equipment:			
BHC Sonde		SLS – W	8150
Digitizing Sonic Logging Cartridge		DSLCL – H	8151
Auxiliary Equipment:			
Electronics Cartridge Housing		ECH – KH	


High resolution Integrated Logging Tool–DTS / Equipment Identification			
Primary Equipment:			
HILT Gamma–Ray Neutron Sonde–DTS		HGNS – H	
HGNS Gamma–Ray Device		HGR –	
HGNS Neutron Detector with Alpha Source		HCNT – H	
Z–Axis Accelerometer		HACC – H	1614
Neutron Logging Source		NLS – KL	
Neutron Source Radioactive		NSR – F	
Compensated Neutron Box		CNB – AB	
HTBC Communication Assembly DTS Mode		HMCA – H	
Auxiliary Equipment:			
Neutron Calibration Tank		NCT – B	
Gamma Source Radioactive		GSR – U/Y	
HGNS Housing		HGNH –	2795

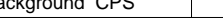

High resolution Integrated Logging Tool–DTS Wellsite Calibration							
Detector Calibration							
Phase	Gamma Ray Background	GAPI	Value	Phase	Gamma Ray (Jig – Bkgd)	GAPI	Value
Before			59.23	Before			177.5
	0	30.00	120.0		157.1	165.0	206.3
	(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)
Before: 1–Jun–2011 12:08							

High resolution Integrated Logging Tool–DTS Wellsite Calibration							
Zero Measurement							
Phase	CNTC Background	CPS	Value	Phase	CFTC Background	CPS	Value
Master			27.68	Master			27.33
Before			25.98	Before			26.88

Before				Before			
5.000 (Minimum)	27.68 (Nominal)	40.00 (Maximum)	23.96	5.000 (Minimum)	27.33 (Nominal)	40.00 (Maximum)	26.88
Master: 16-May-2011 15:01				Before: 1-Jun-2011 12:17			

High resolution Integrated Logging Tool-DTS Wellsite Calibration														
Ratio Measurement														
Phase	Thermal Near Corr. (Tank) CPS			Value	Phase	Thermal Far Corr. (Tank) CPS			Value	Phase	CNTC/CFTC (Tank)			Value
Master				5651	Master				2270	Master				2.489
	4700 (Minimum)	5800 (Nominal)	6900 (Maximum)		1900 (Minimum)	2400 (Nominal)	2900 (Maximum)			2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)		
Master: 16-May-2011 15:01														

High resolution Integrated Logging Tool-DTS		
Wellsite Calibration		
Accelerometer Calibration		
Phase	Z-Axis Acceleration F/S2	Value
Before		32.24
31.53 (Minimum)	32.19 (Nominal)	32.84 (Maximum)
Before: 2-Jun-2011 13:39		

High resolution Integrated Logging Tool-DTS Master Calibration									
Zero Measurement									
Phase	CNTC Background CPS			Value	Phase	CFTC Background CPS			Value
Master				27.68	Master				27.33
	5.000 (Minimum)	27.68 (Nominal)	40.00 (Maximum)			5.000 (Minimum)	27.33 (Nominal)	40.00 (Maximum)	
Master: 16-May-2011 15:01									

High resolution Integrated Logging Tool-DTS Master Calibration														
Tank Measurement														
Phase	Thermal Near Corr. (Tank) CPS			Value	Phase	Thermal Far Corr. (Tank) CPS			Value	Phase	CNTC/CFTC (Tank)			Value
Master				5651	Master				2270	Master				2.489
	4700 (Minimum)	5800 (Nominal)	6900 (Maximum)		1900 (Minimum)	2400 (Nominal)	2900 (Maximum)			2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)		
Master: 16-May-2011 15:01														

DTS Telemetry Tool / Equipment Identification		
Primary Equipment:		
DTC-H Auxiliary Cartridge	DTCH – A	
DTC-H Telemetry Cartridge	DTCH – A	
Auxiliary Equipment:		
DTCH Telemetry Cartridge Housing	ECH – KC	10440

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

**Schlumberger**

Well: **ORCHARD UNIT 18-15H (K20OU)**

Field: **GRAND VALLEY**

County: **MESA**

State: **COLORADO**

**CEMENT BOND LOG**

CEMENT BOND LOG  
GAMMA RAY – CCL