

Company: ENCANA OIL & GAS (USA) INC

Well: TWIN CREEK 12-6A1

Field: MAMM CREEK

County: GARFIELD

State: COLORADO

CEMENT BOND LOG
CBL-VDL

County: GARFIELD

Field: MAMM CREEK

Location: SE / NW

Well: TWIN CREEK 12-6A1

Company: ENCANA OIL & GAS (USA) INC

LOCATION

SE / NW

2515' FNL & 1615' FWL

Elev.: K.B. 6166.80 ft
G.L. 6144.80 ft
D.F. 6166.80 ft

Permanent Datum: _____

GROUND LEVEL _____

Elev.: 6144.80 ft _____

Log Measured From: _____

KELLY BUSHING _____

22.00 ft above Perm. Datum

Drilling Measured From: _____

KELLY BUSHING _____

API Serial No. 05-045-20394

Section 12

Township 7S

Range 92W

Logging Date	28-Apr-2012			
Run Number	TWO			
Depth Driller	4420 ft			
Schlumberger Depth	4088 ft			
Bottom Log Interval	4088 ft			
Top Log Interval	0 ft			
Casing Fluid Type	FRESH WATER			
Salinity	1200 ppm			
Density	8.4 lbm/gal			
Fluid Level				
BIT/CASING/TUBING STRING				
Bit Size	8.750 in			
From	0 ft			
To	4420 ft			
Casing/Tubing Size	7.000 in			
Weight	23 lbm/ft			
Grade	J-55			
From	0 ft			
To	4420 ft			
Maximum Recorded Temperatures				
Logger On Bottom	29-Apr-2012		0:30	
Unit Number	Location	221	VERNAL	
Recorded By	VIVIAN UKPABI			
Witnessed By	TONY KETTERLING			

PVT DATA				
Oil Density	Run 1	Run 2	Run 3	Run 4
Water Salinity	1200 ppm			
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				
Unit Number	Location			
Recorded By				
Witnessed By				

DEPTH SUMMARY LISTING

Date Created: 28-APR-2012 15:32:22

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW-B	Type:	CMTD-B/A	Type:	7-46A XS
Serial Number:	6982	Serial Number:	2054	Serial Number:	710065
Calibration Date:	20-FEB-2012	Calibration Date:	21-APR-201	Length:	17350 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	100518	Conveyance Method:	Wireline
Calibration Cable Type:	7-46A XS	Number of Calibration Points:	10	Rig Type:	LAND
Wheel Correction 1:	-7	Calibration RMS:	17		
Wheel Correction 2:	-7	Calibration Peak Error:	27		

Depth Control Parameters

Log Sequence:	Subsequent Trip To the Well
Reference Log Name:	CEMENT BOND
Reference Log Run Number:	ONE
Reference Log Date:	06-APR-2012
Subsequent Trip Down Log Correction:	4.00 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.

DISCLAIMER

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

OTHER SERVICES1 OS1: NONE OS2: OS3: OS4: OS5:	OTHER SERVICES2 OS1: OS2: OS3: OS4: OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
THANK YOU FOR CHOOSING SCHLUMBERGER!	
CBL AMPLITUDE IN FREE PIPE = 62 mV	
REFERENCE LOG: CEMENT BOND LOG, LOGGED 06-APR-2012	
LOG NOT RUN UNDER PRESSURE	

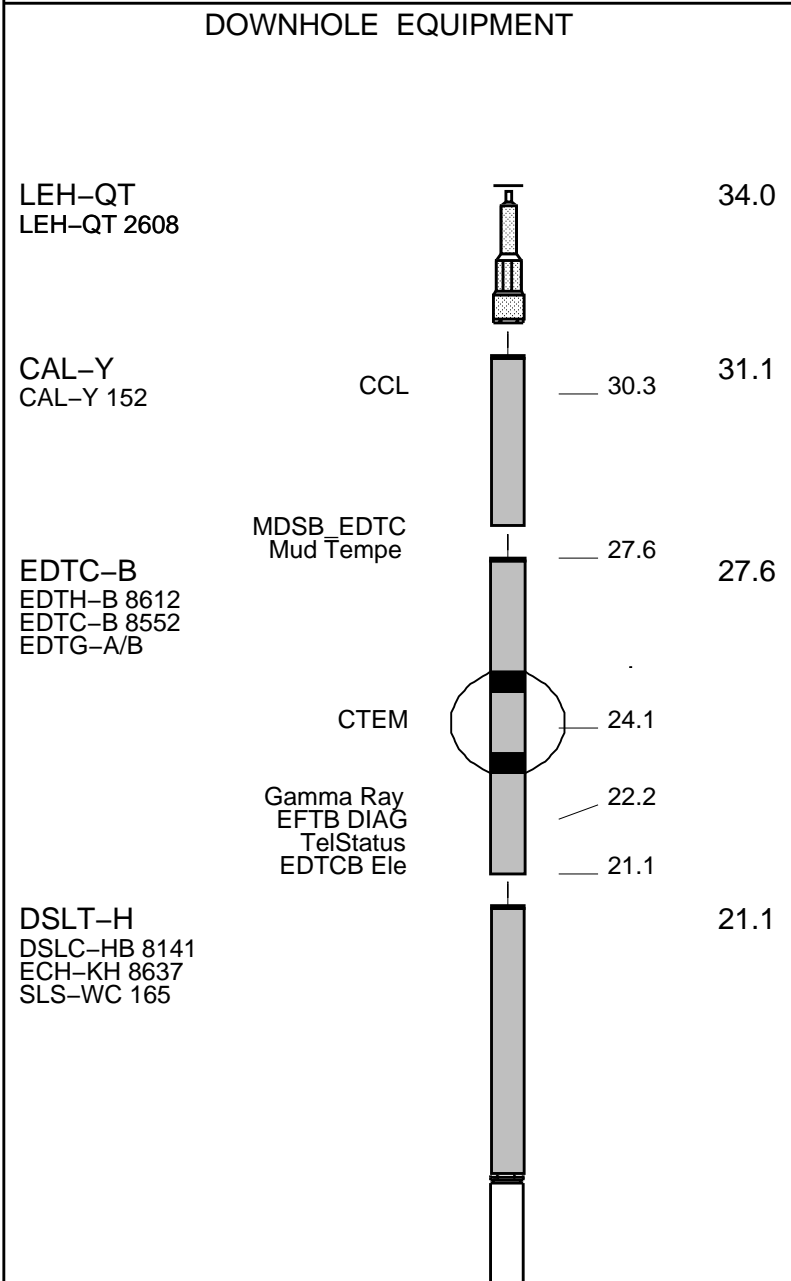
LOG NOT RUN UNDER PRESSURE	
FREE PIPE ESTIMATED AT 700FT	

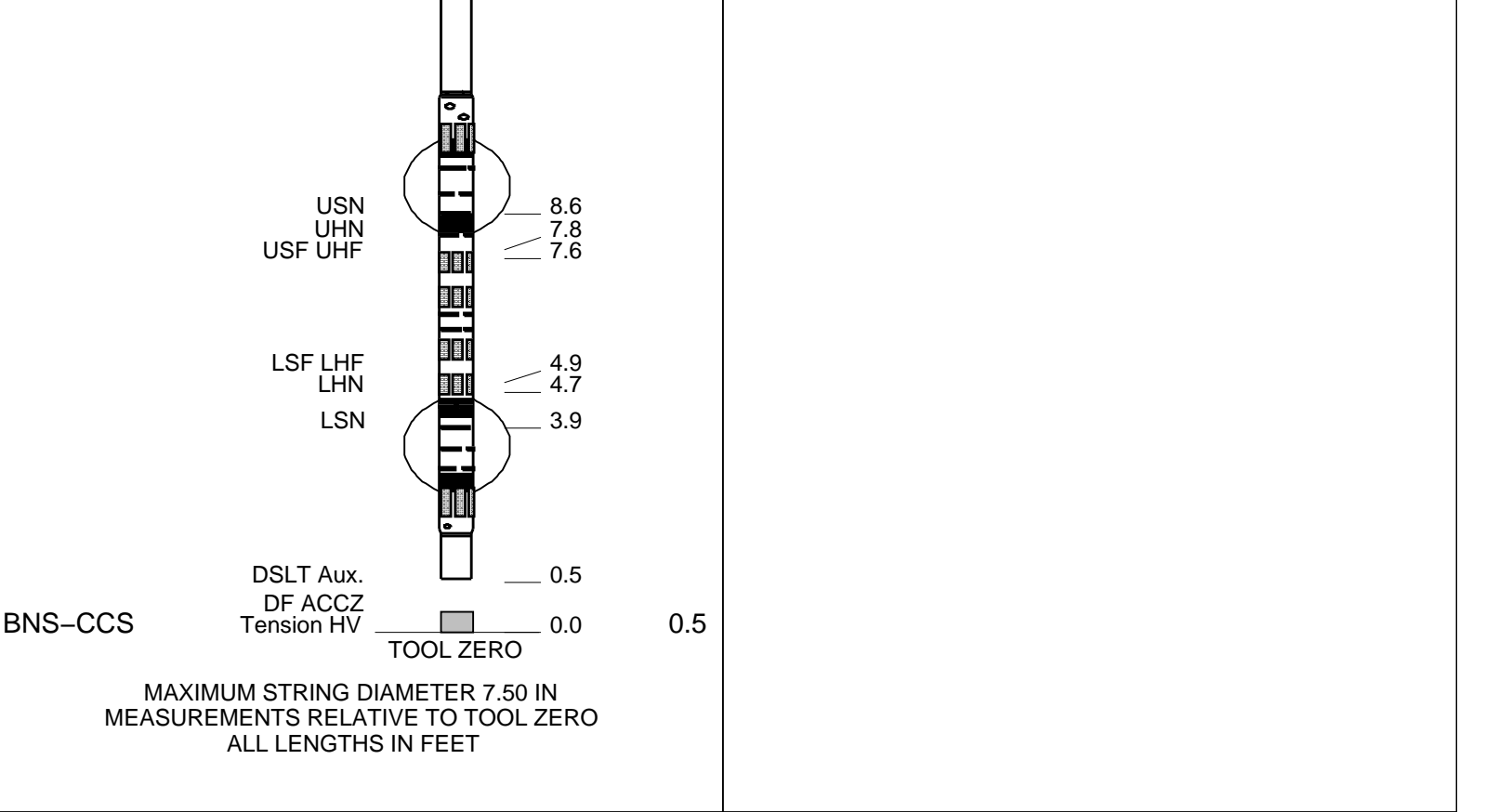
RUN 1			RUN 2		
SERVICE ORDER #:		BYG5-00020	SERVICE ORDER #:		
PROGRAM VERSION:		19C0-187	PROGRAM VERSION:		
FLUID LEVEL:			FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION					
RUN 1			RUN 2		

SURFACE EQUIPMENT

WITM (EDTS)-A



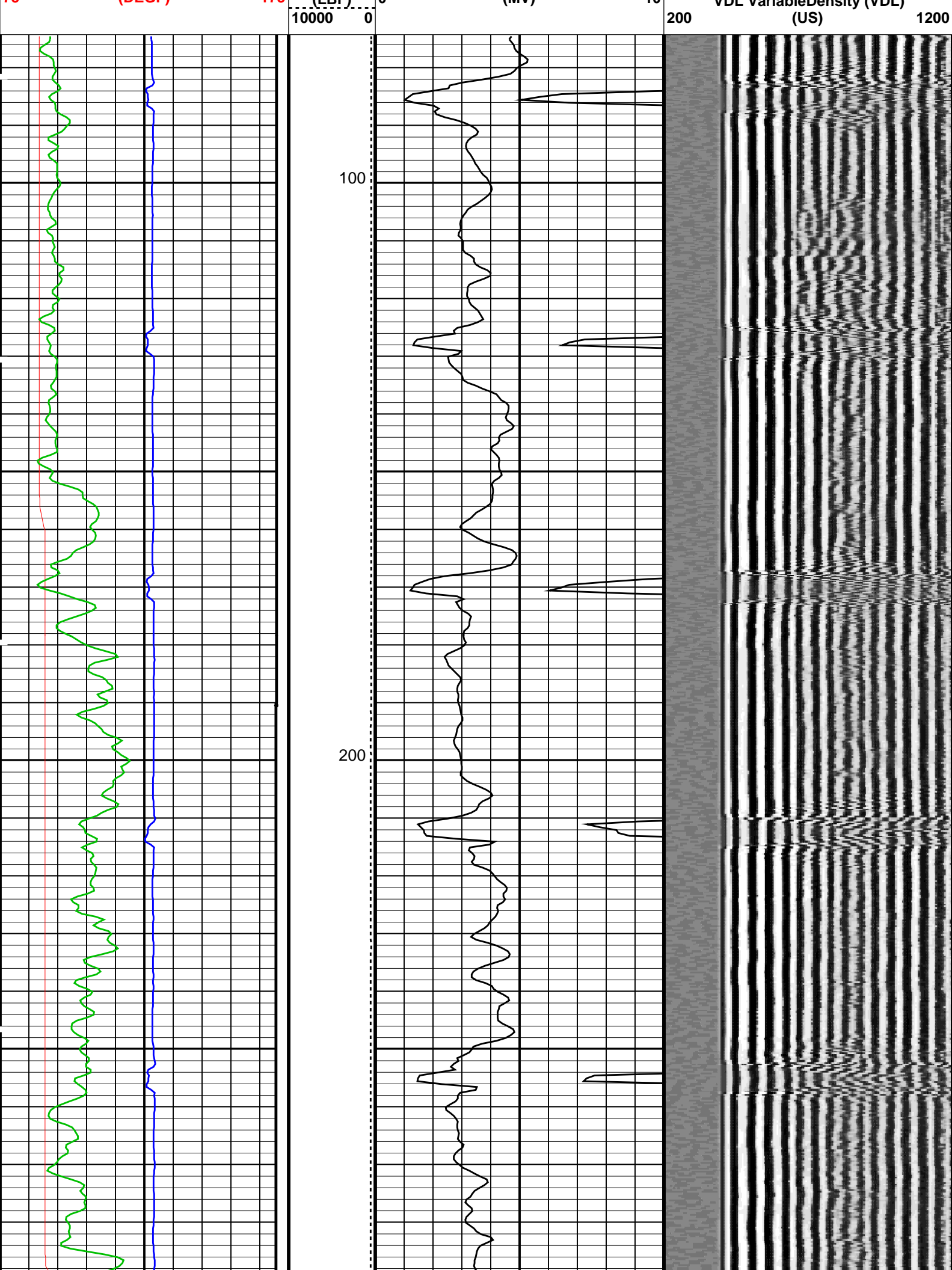


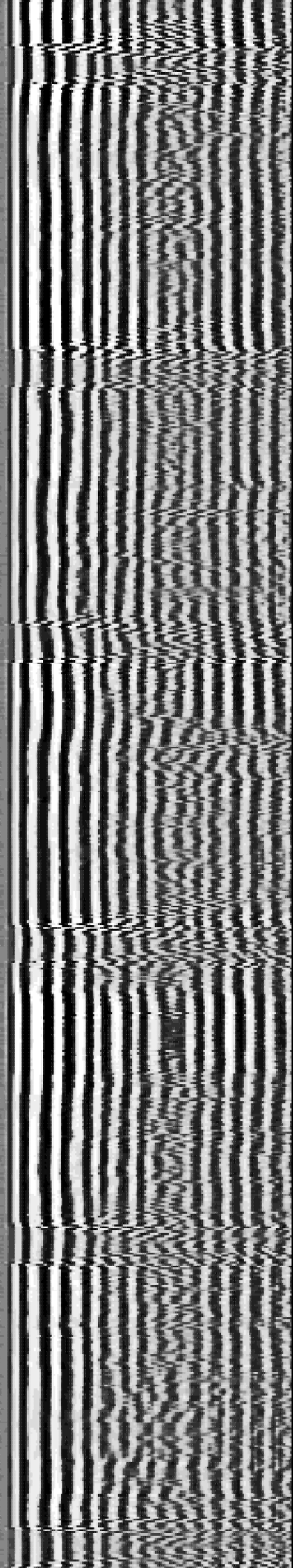
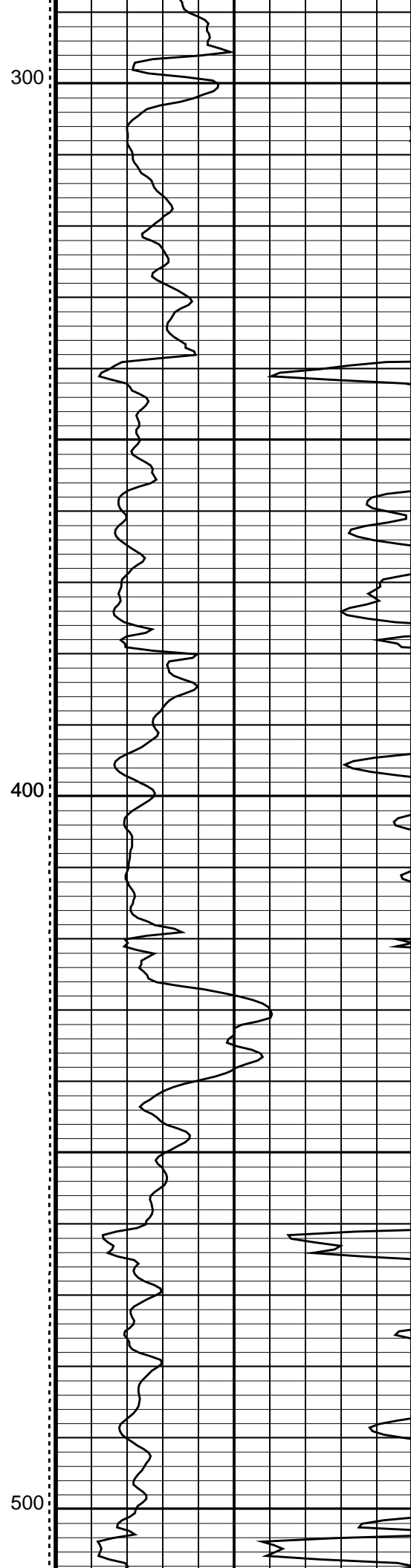
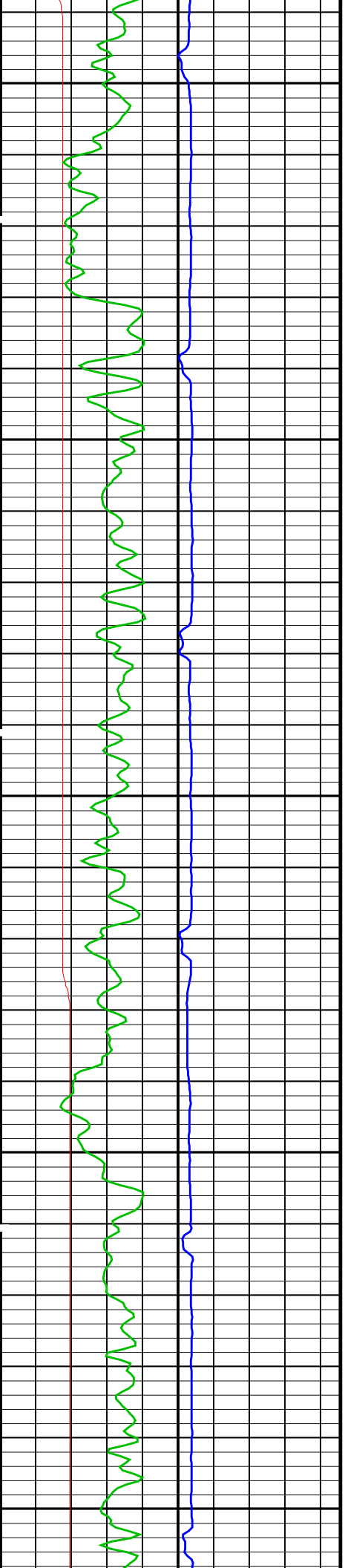
Company: ENCANA OIL & GAS (USA) INC Well: TWIN CREEK 12-6A1 (F12E)

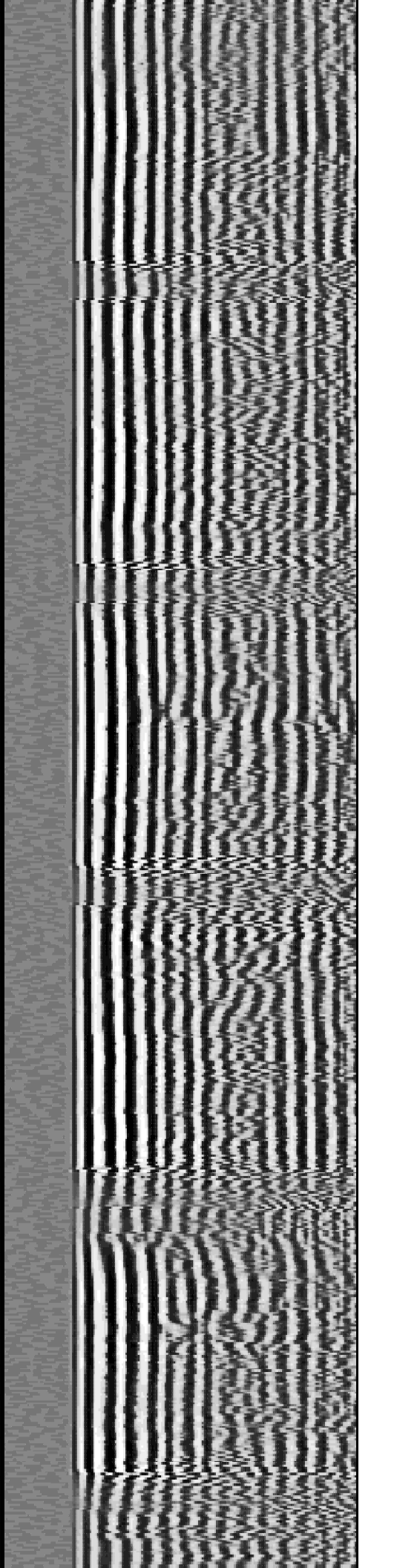
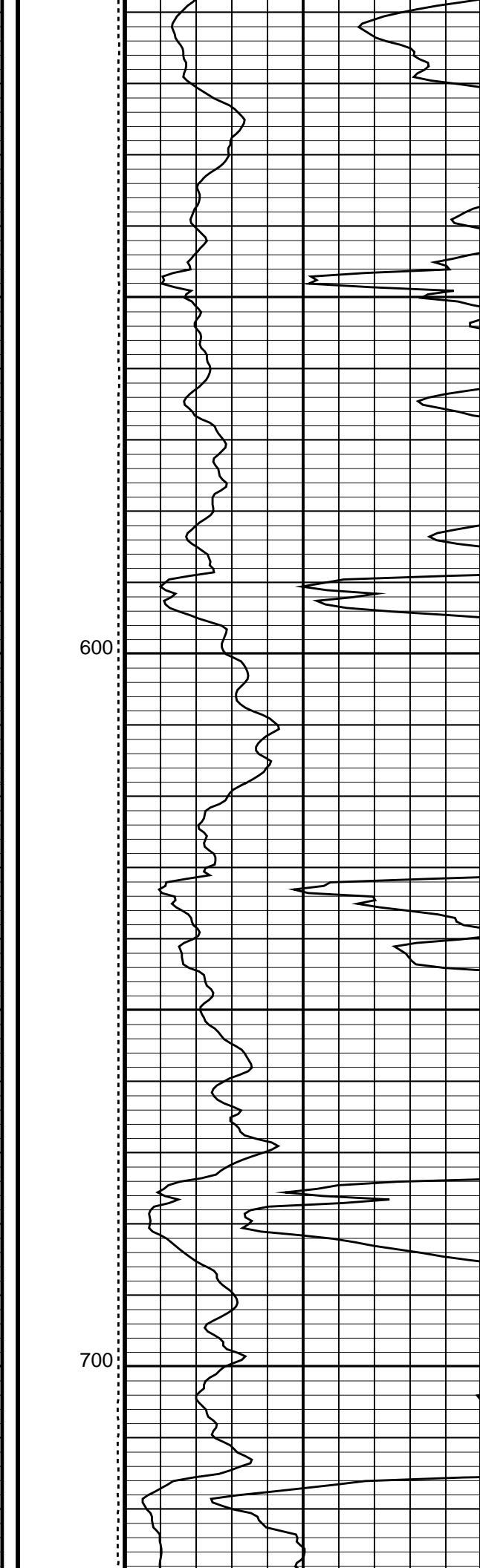
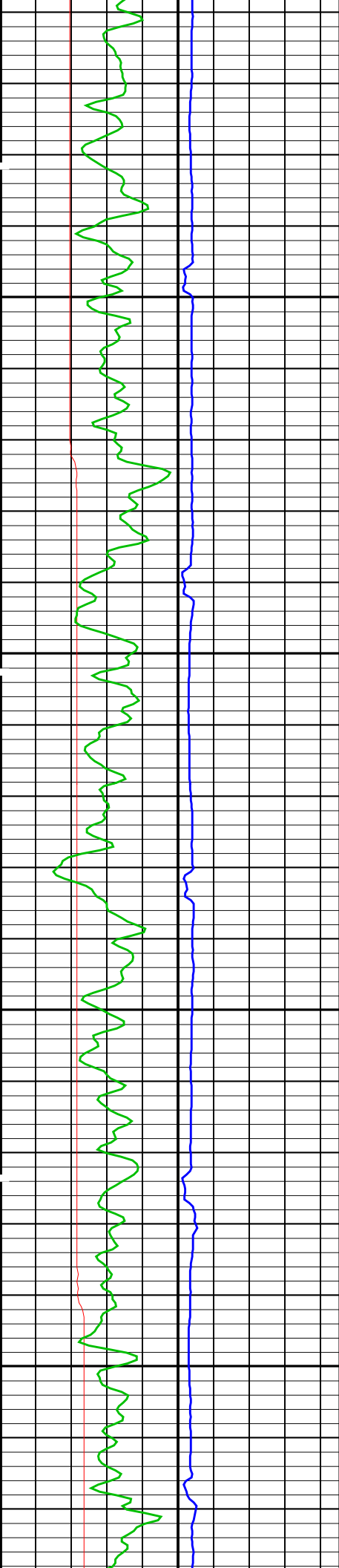
Input DLIS Files					
SONIC_024PUP	FN:35	30-Apr-2012 10:00	4103.0 FT	74.0 FT	
Output DLIS Files					
DEFAULT	SONIC_006PUP	FN:5	PRODUCER	30-Apr-2012 10:48	4103.0 FT 74.0 FT

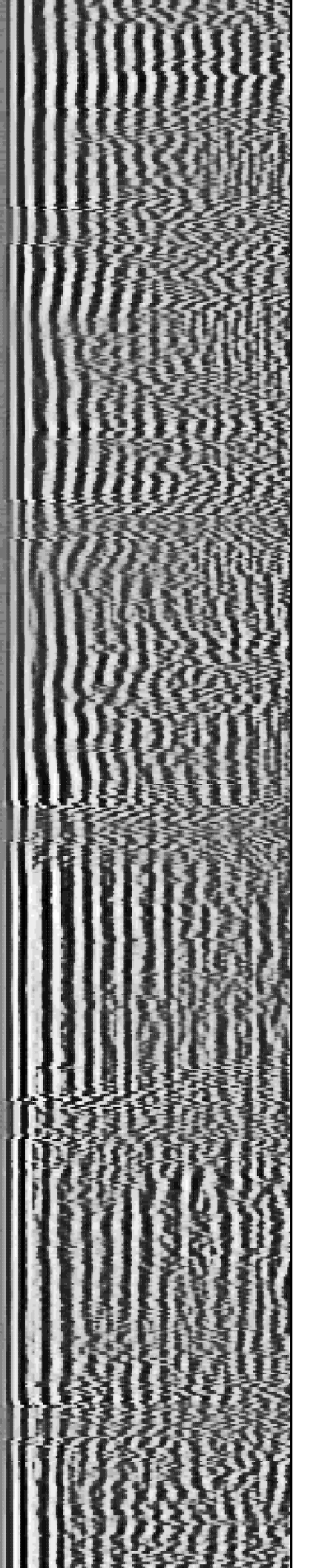
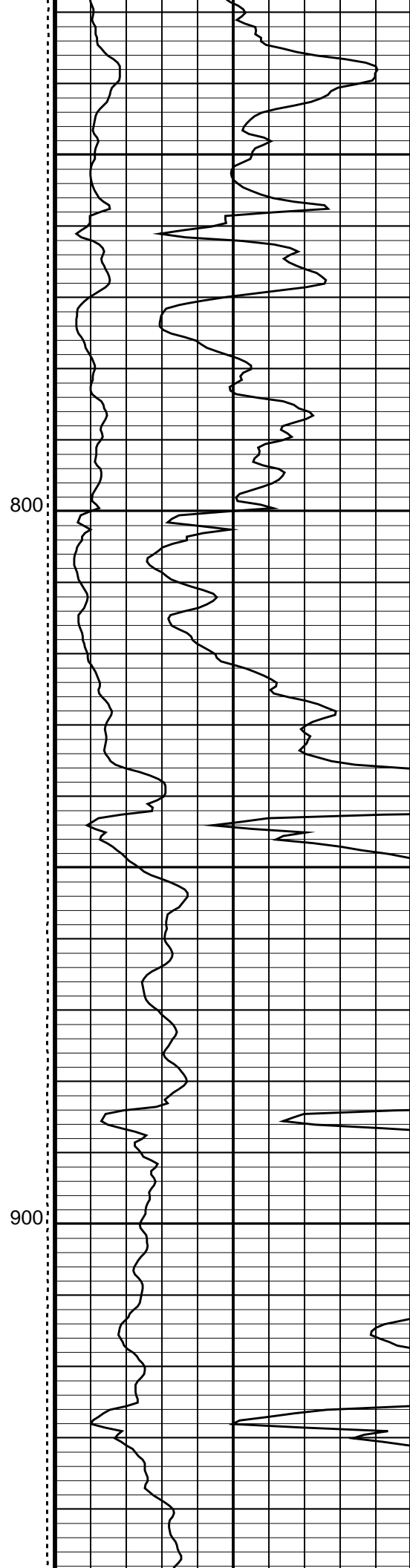
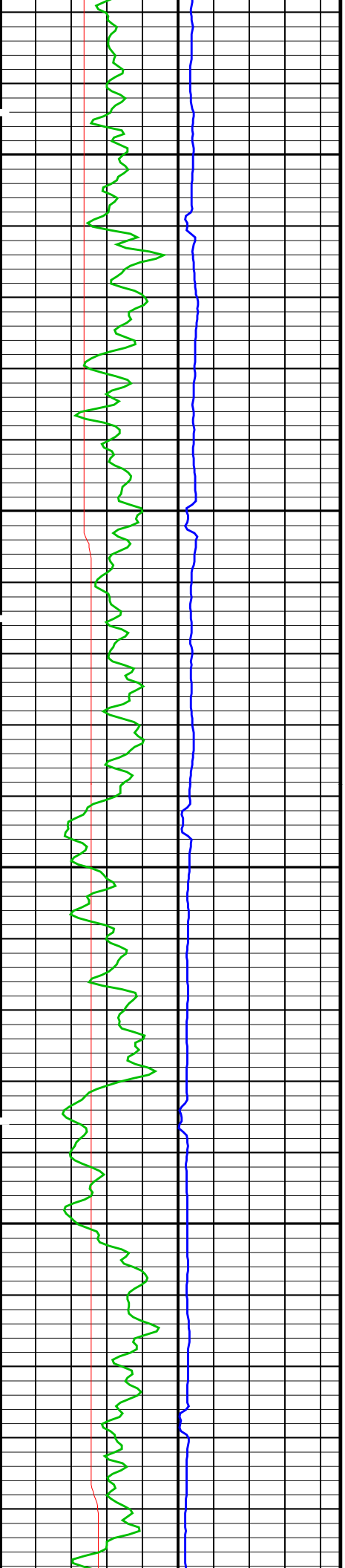
OP System Version: 19C0-187					
DSLTT-H	19C0-187	EDTC-B	19C0-187		
CAL-Y	19C0-187				

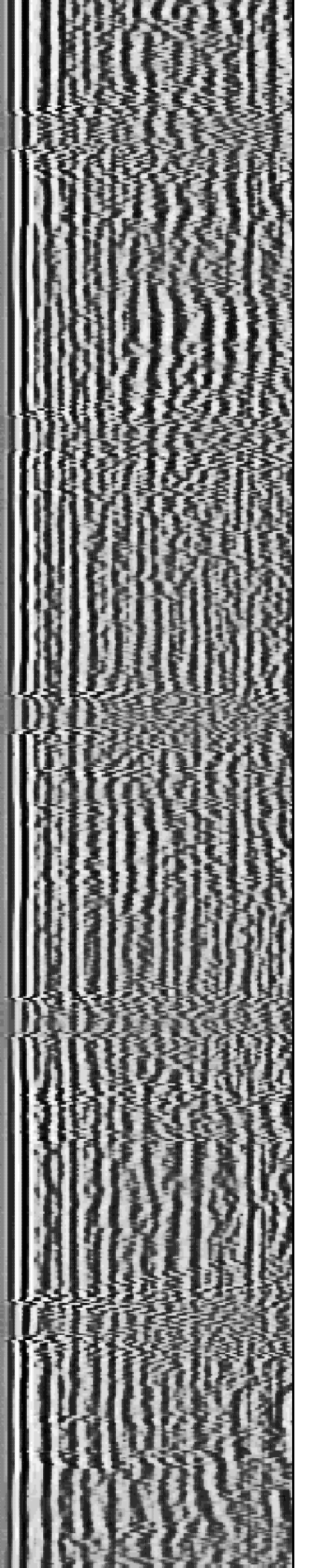
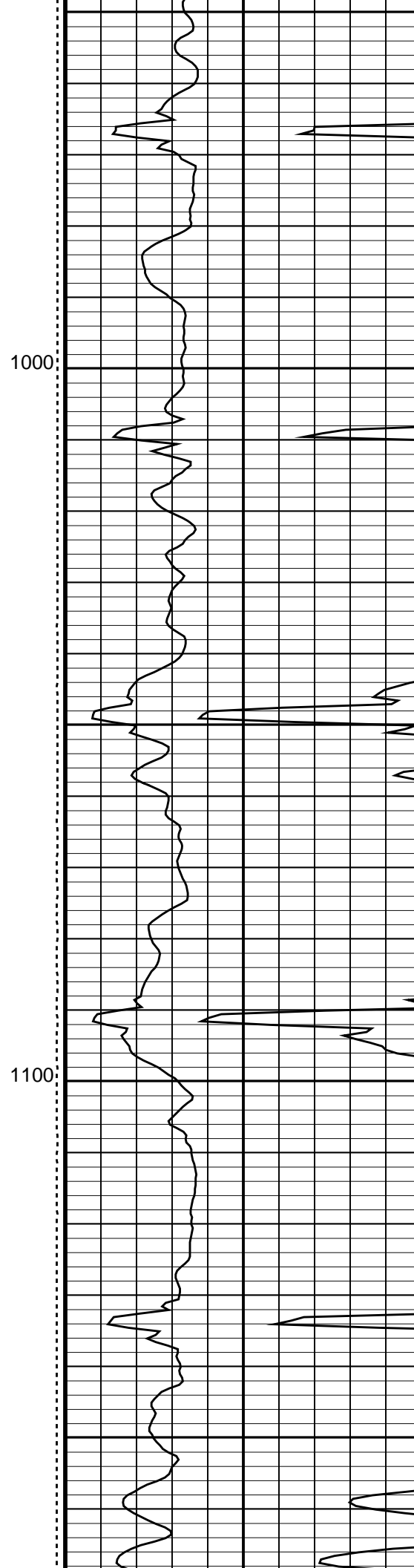
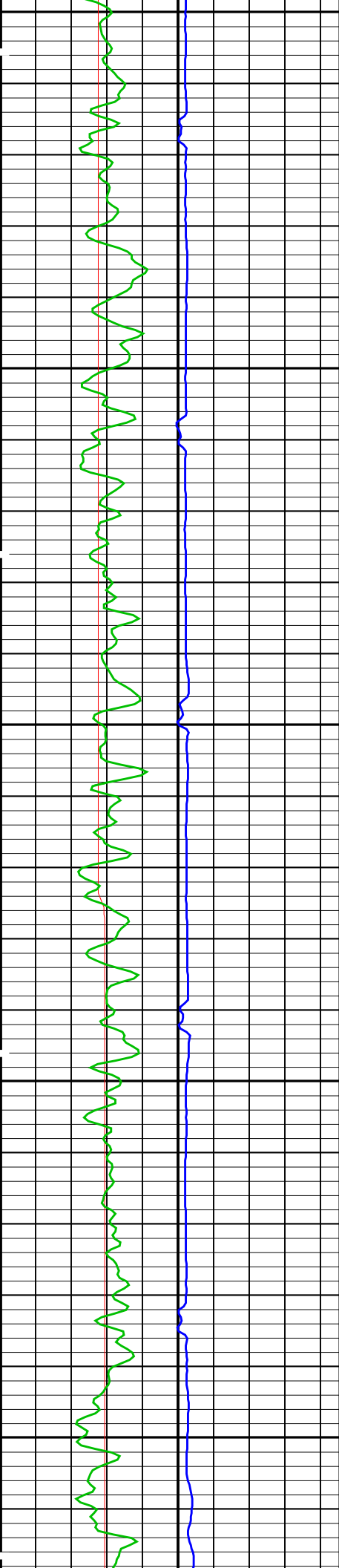
PIP SUMMARY					
Time Mark Every 60 S					
Casing Collars					
CasCollar From CCL to T1					
Casing Collar Locator (CCL)		Tool/Tot. Drag From D3T to STIA	GoodBond From ACBL to GOBO		
-19	(----	1			
Transit Time (TT)		Cable Drag From STIA to STIT	Good Bond (GOBO)		
400	(US)	200	0	(MV)	10
Gamma Ray (GR_EDTC)		Stuck Stretch (STIT)	CBL Amplitude (CBL)		
0	(GAPI)	150	0	(MV)	50
		0 (F) 50			
Cartridge Temperature (CTEM)		Tension (TENS)	CBL Amplitude (CBL)		Min Amplitude Max
75	(DEGE)	175	0	(MV)	10
VDL Variable Density (VDL)					

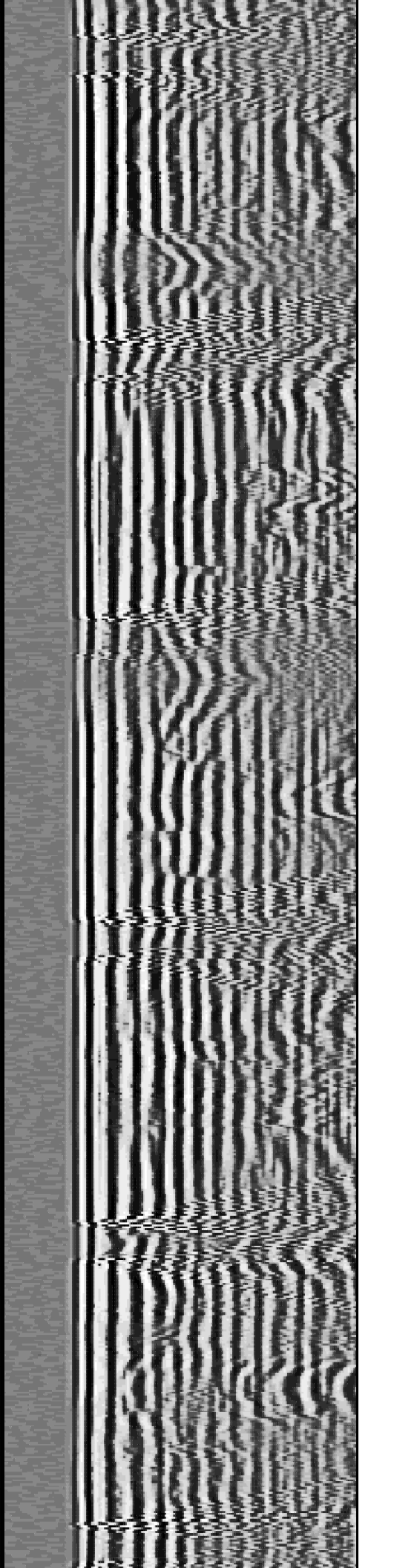
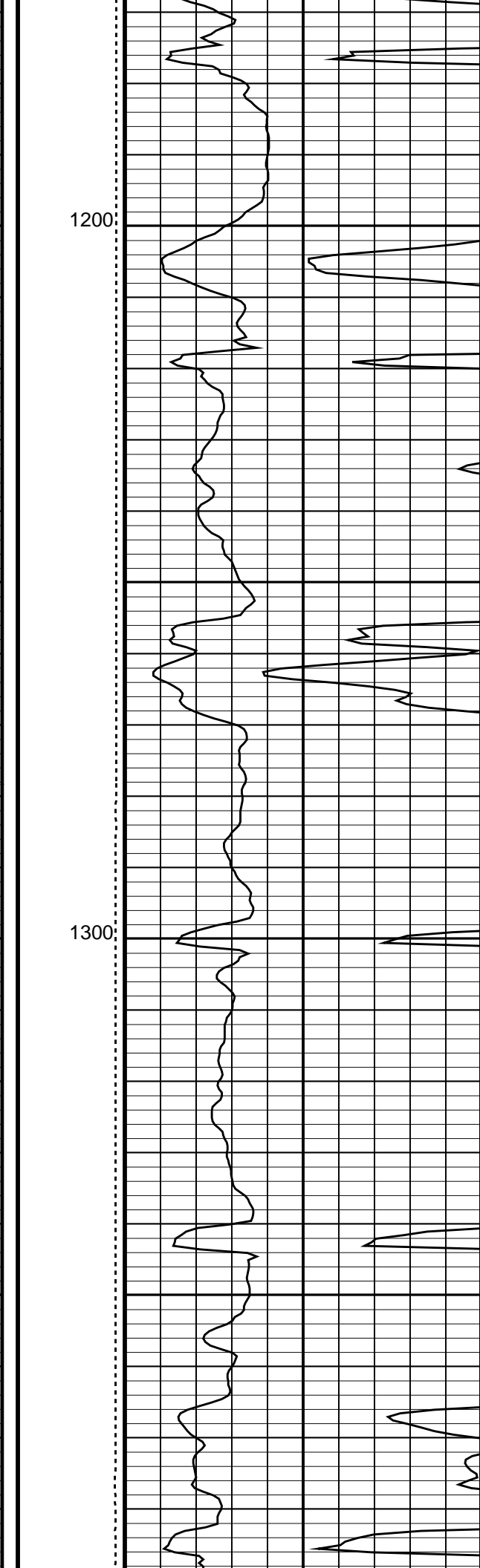
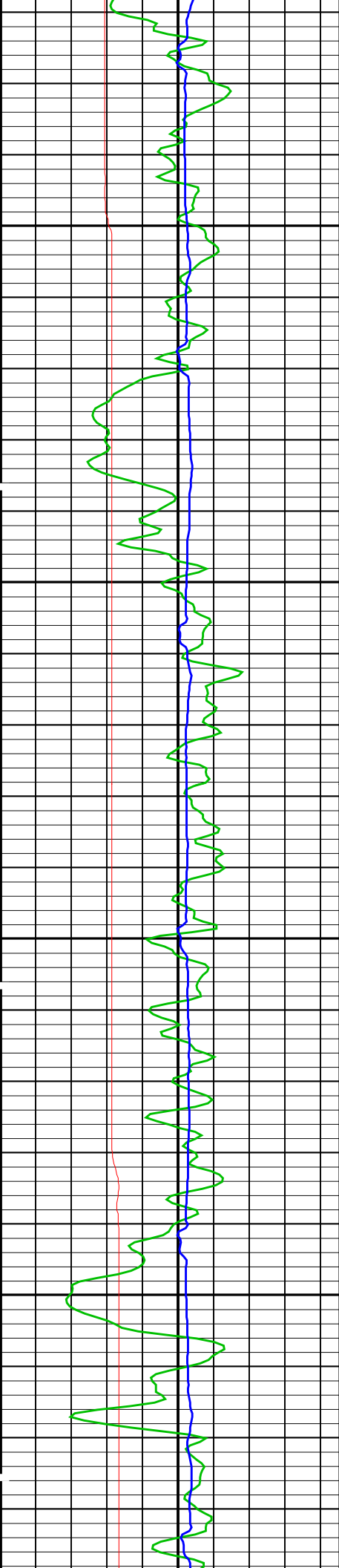


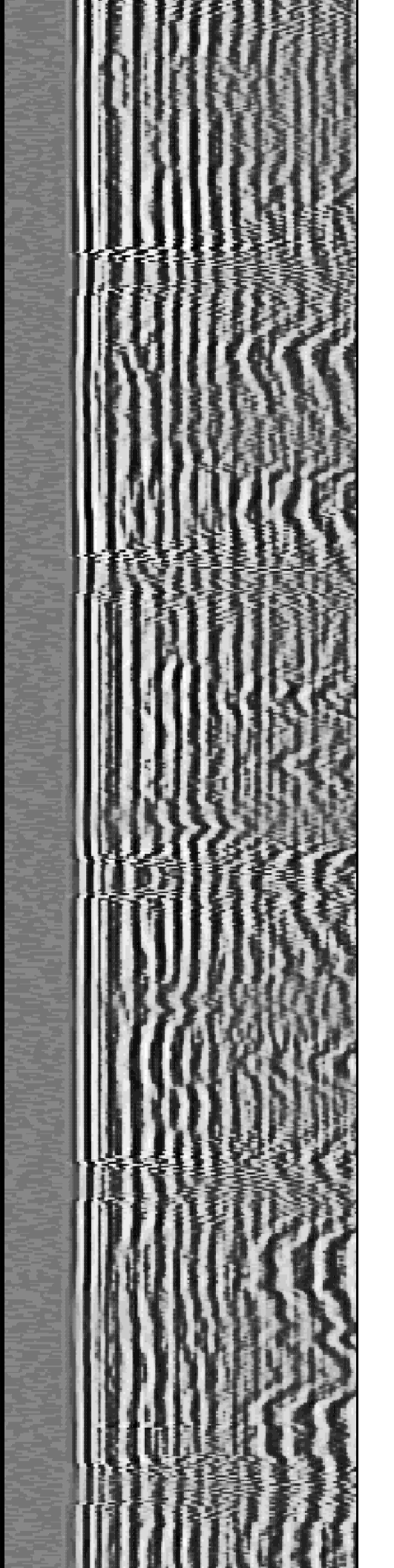
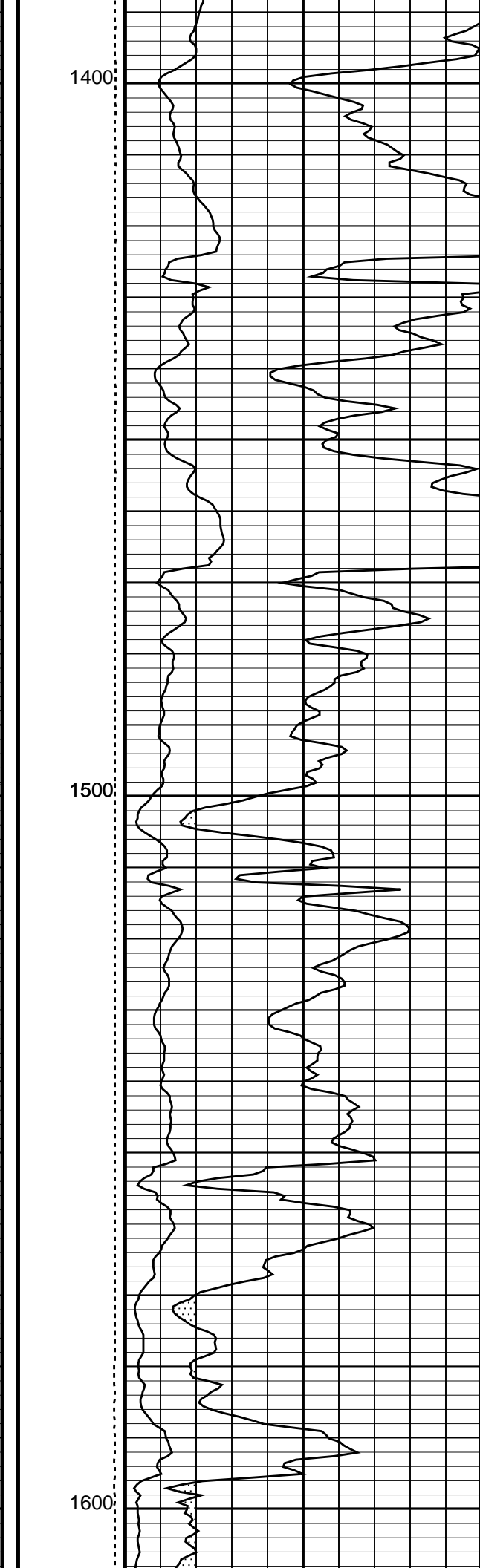
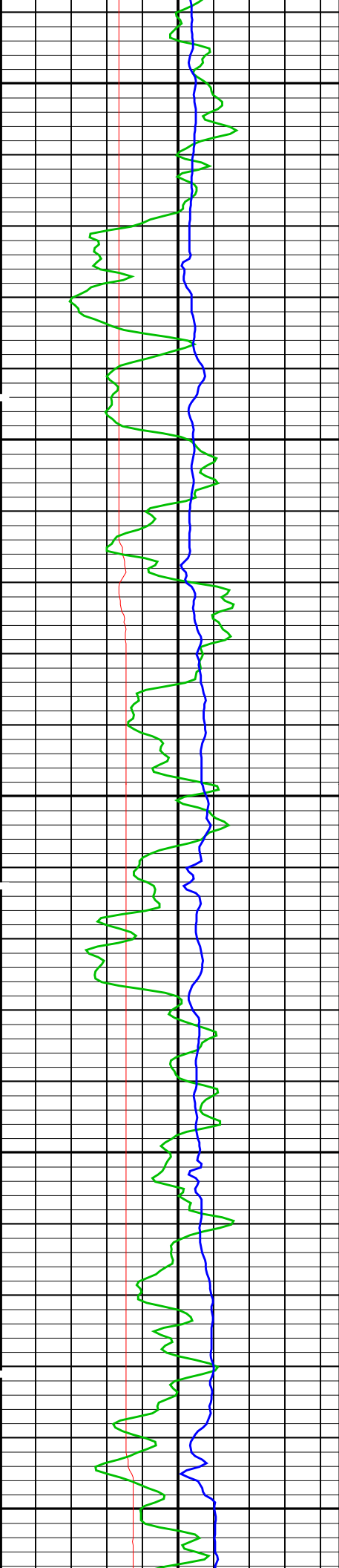


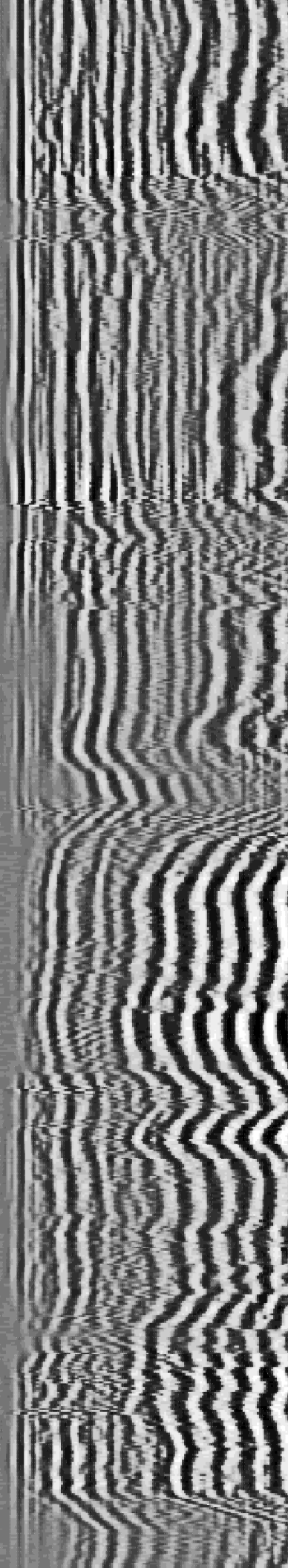
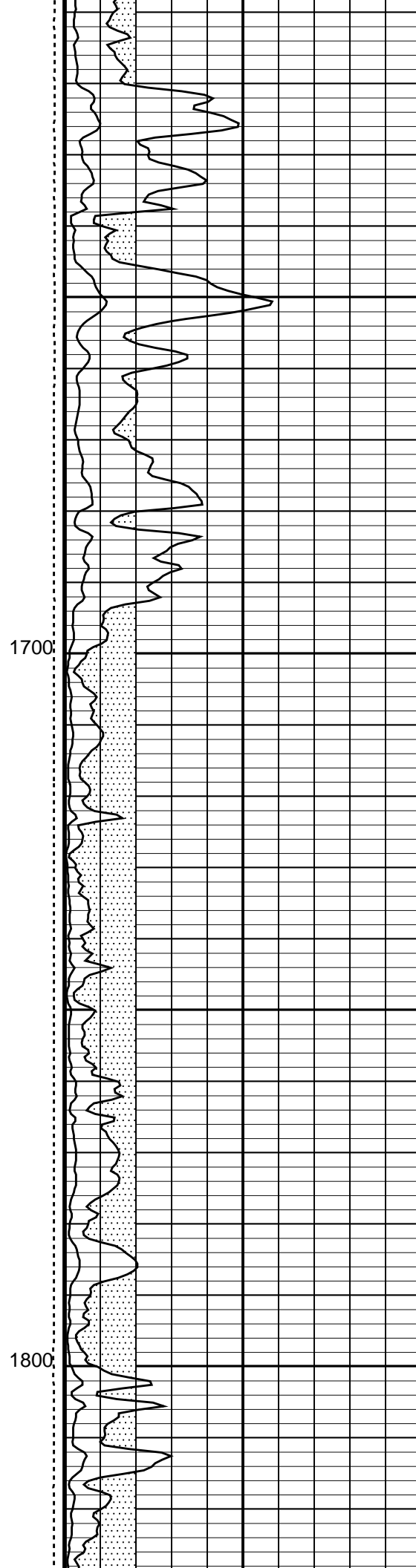
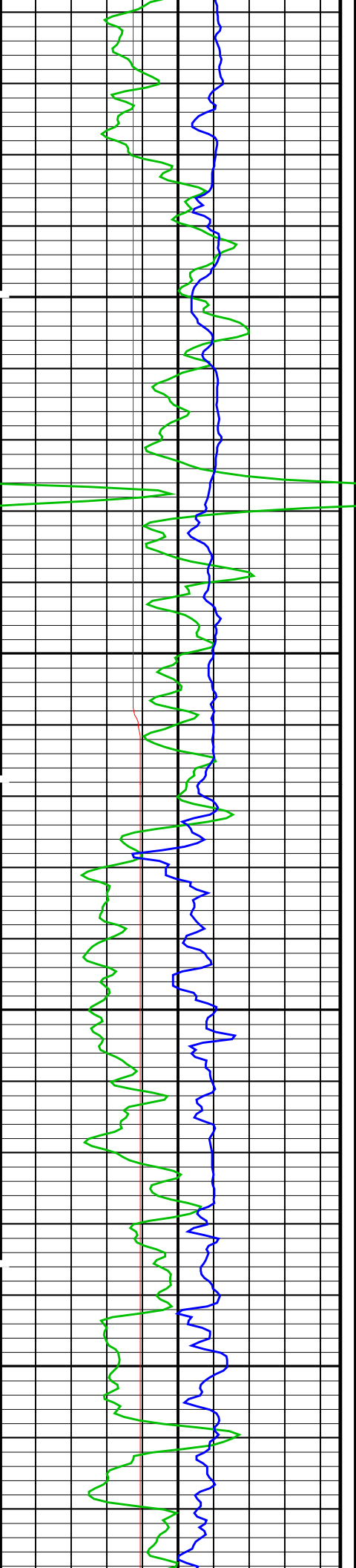


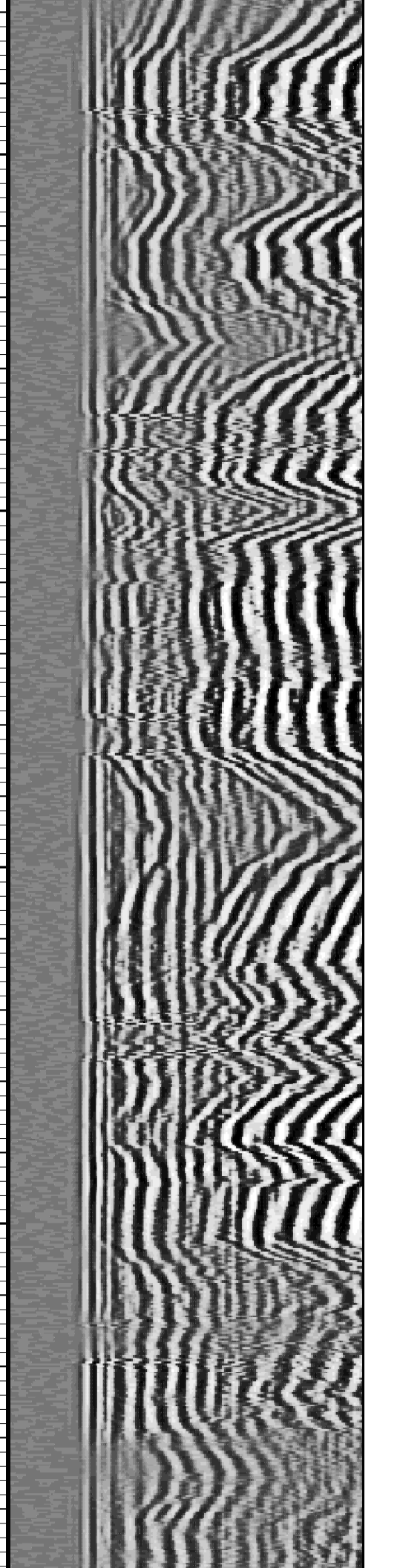
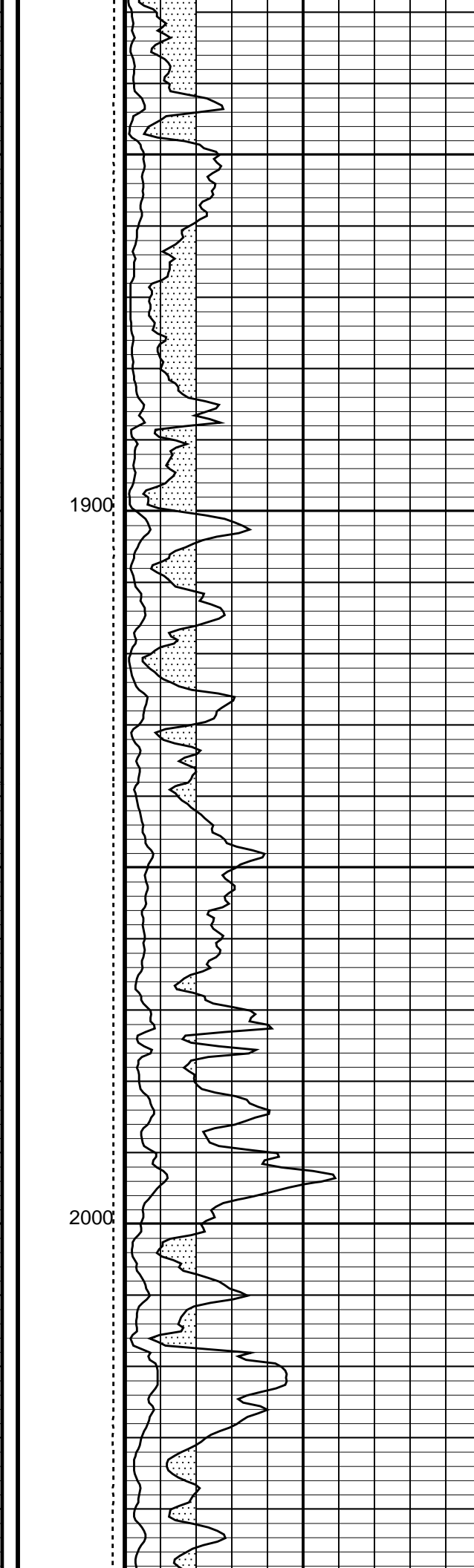


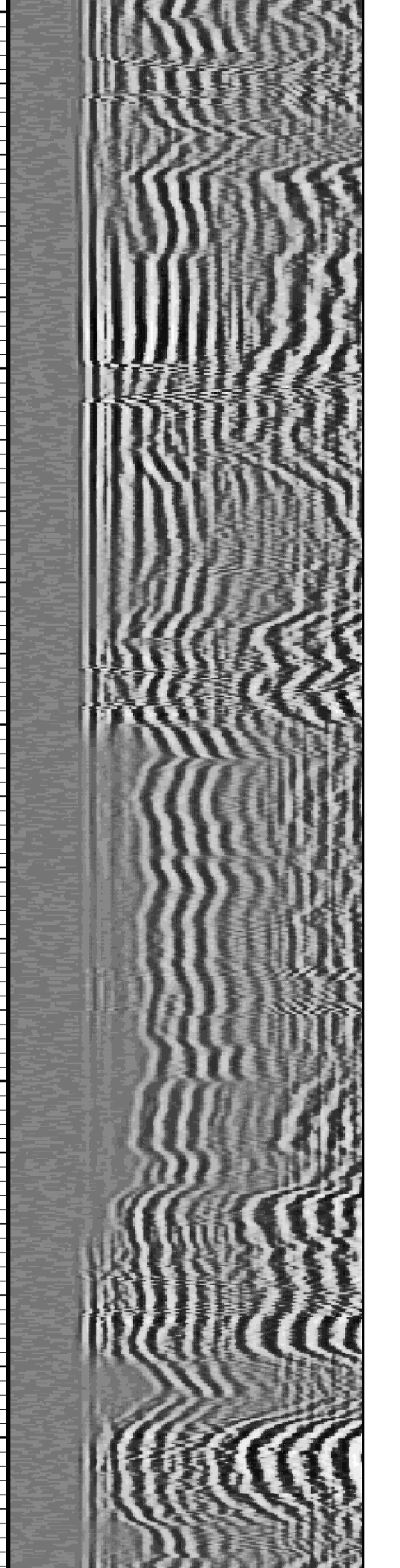
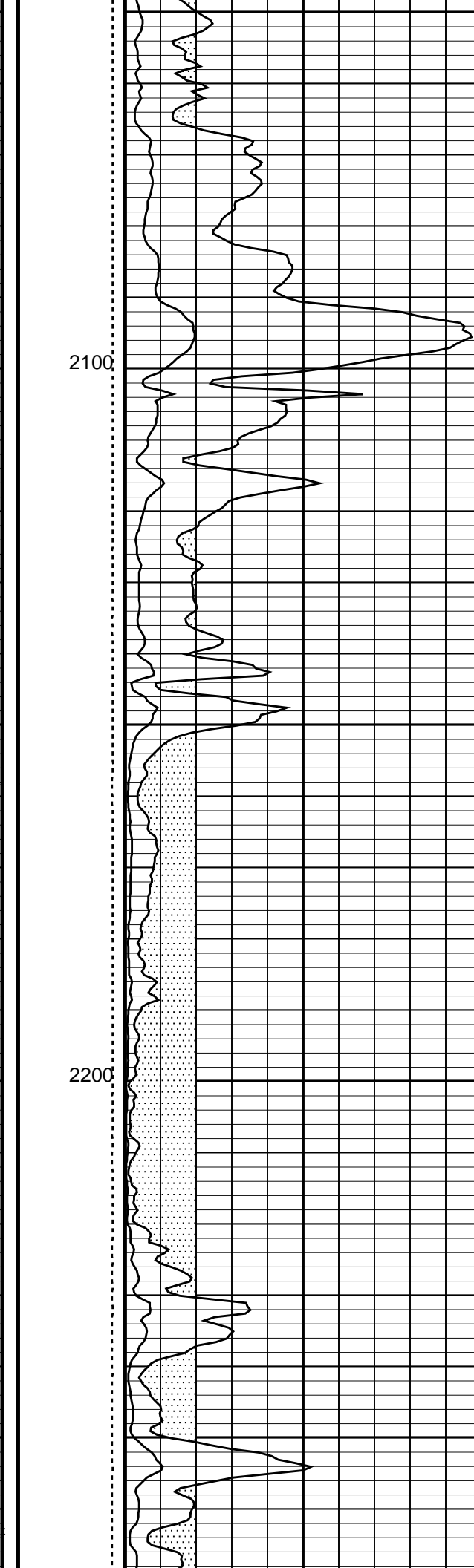
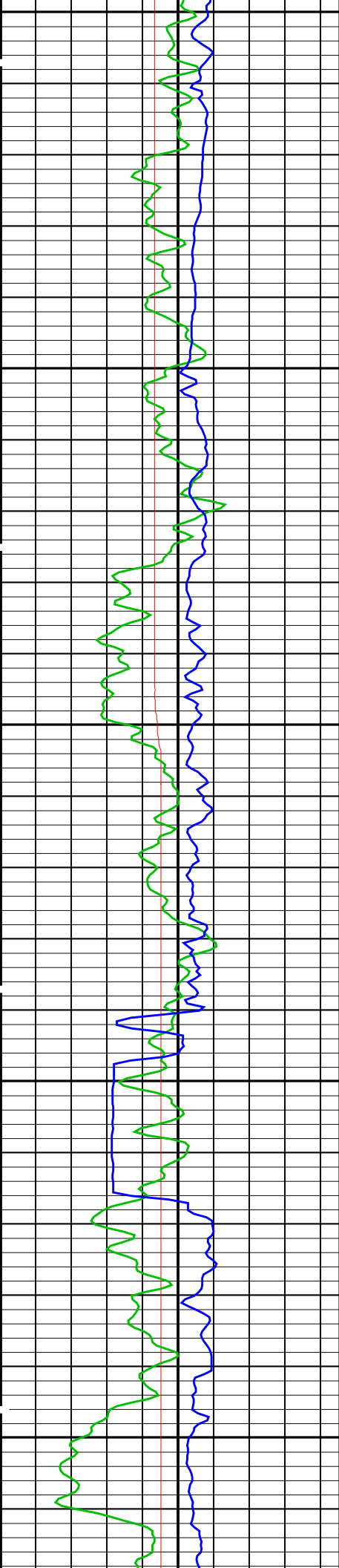


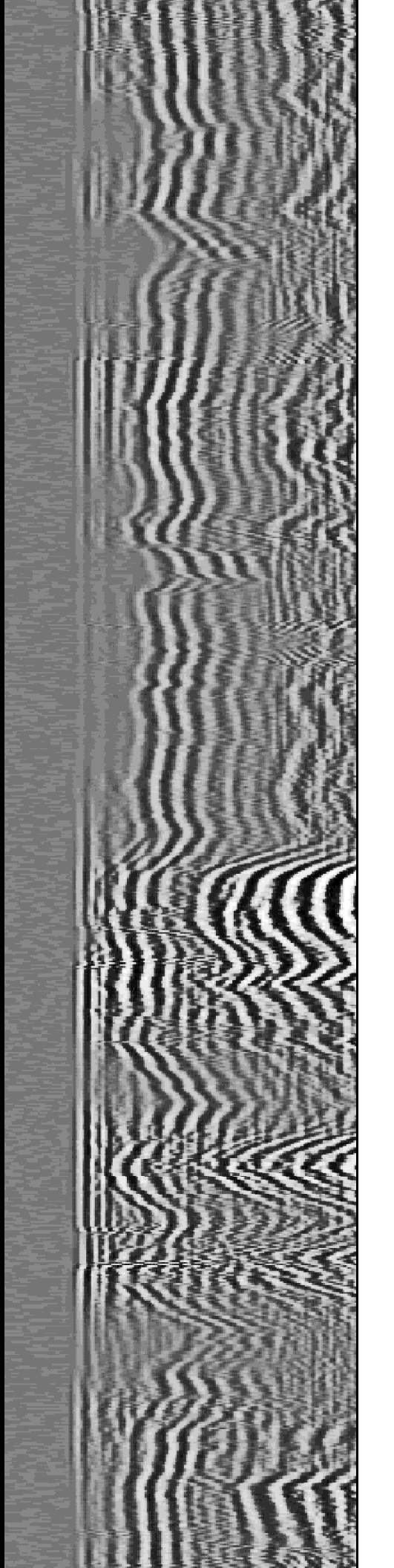
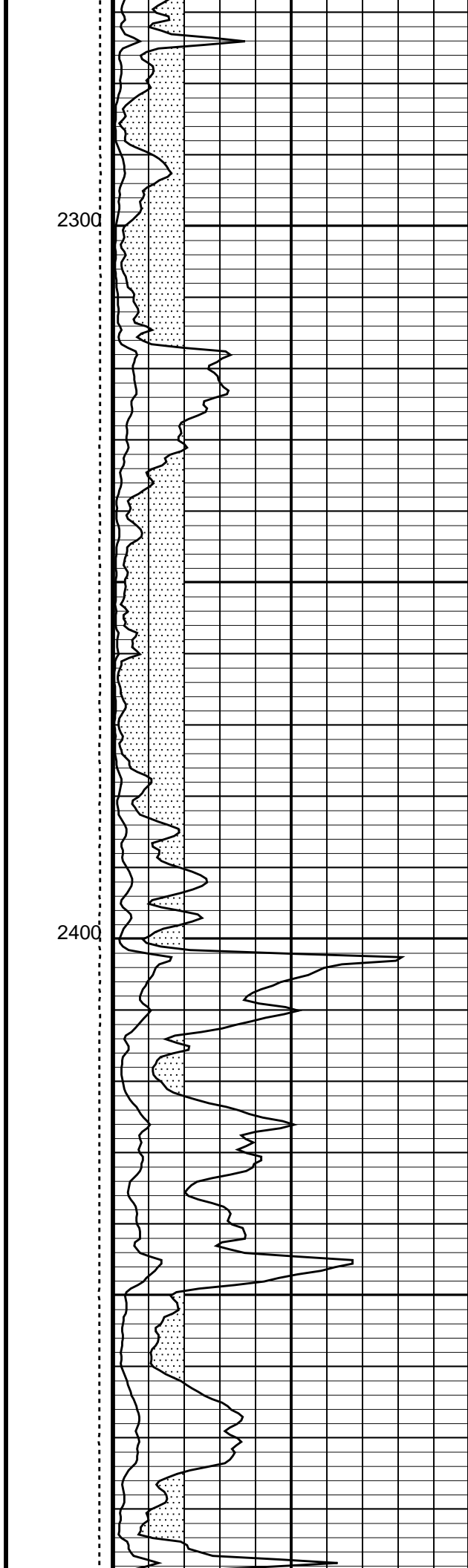
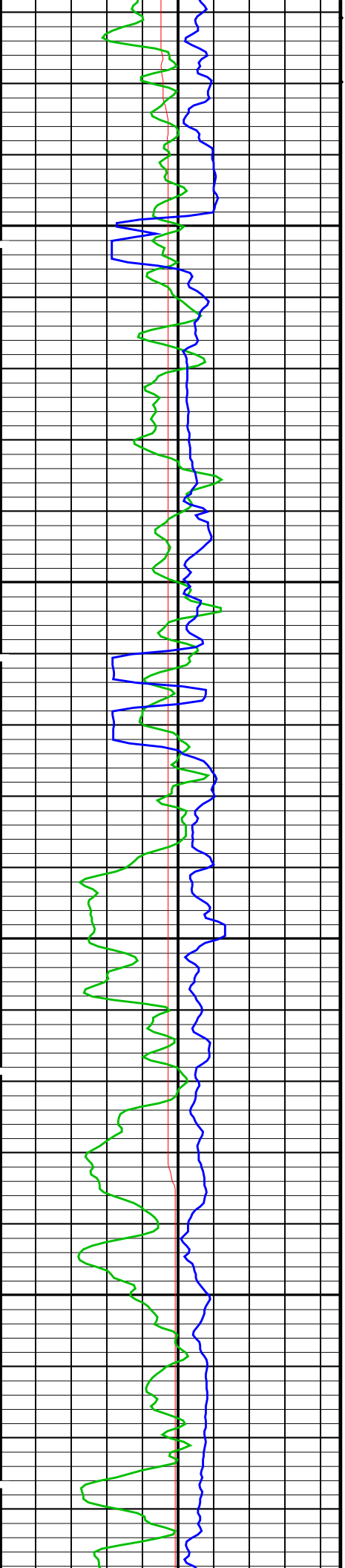


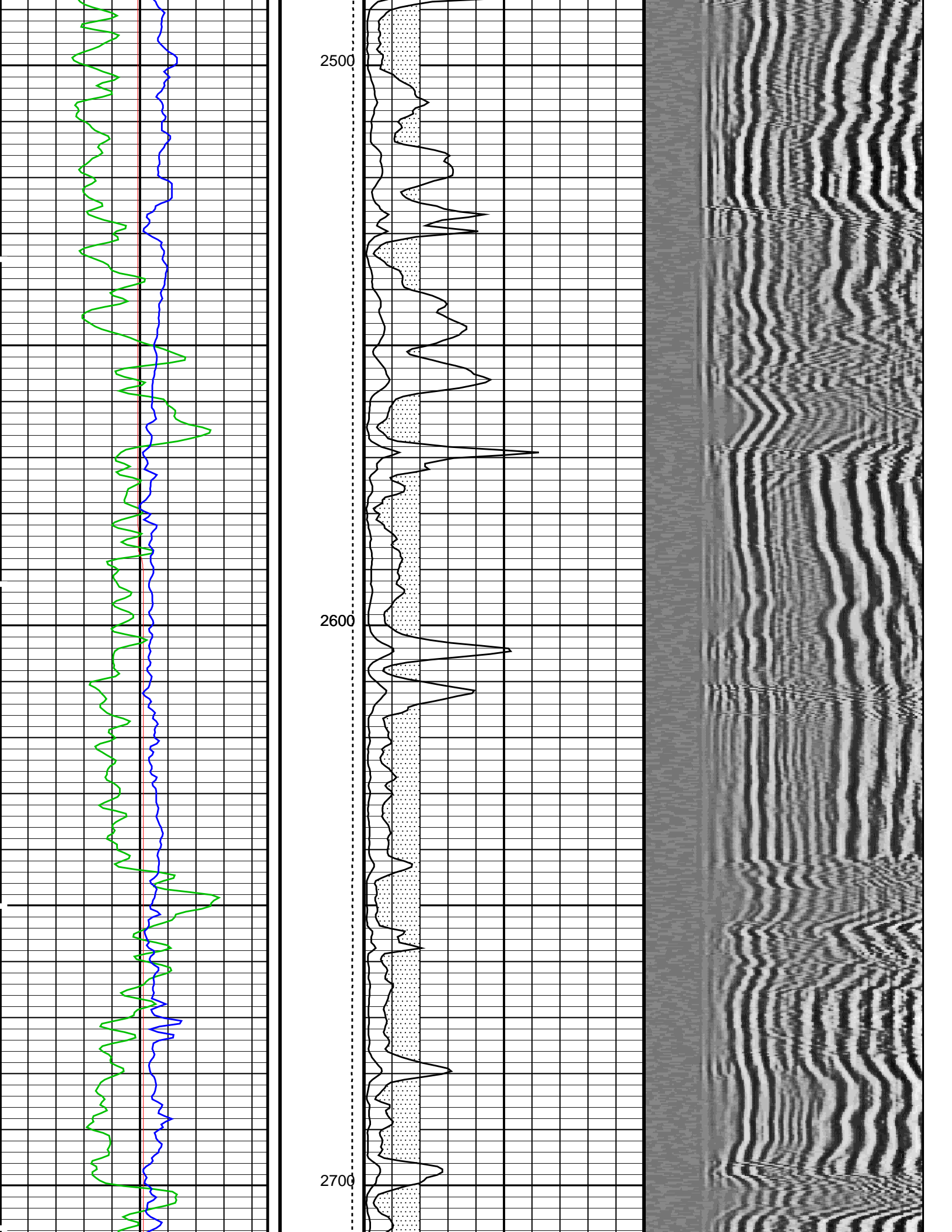


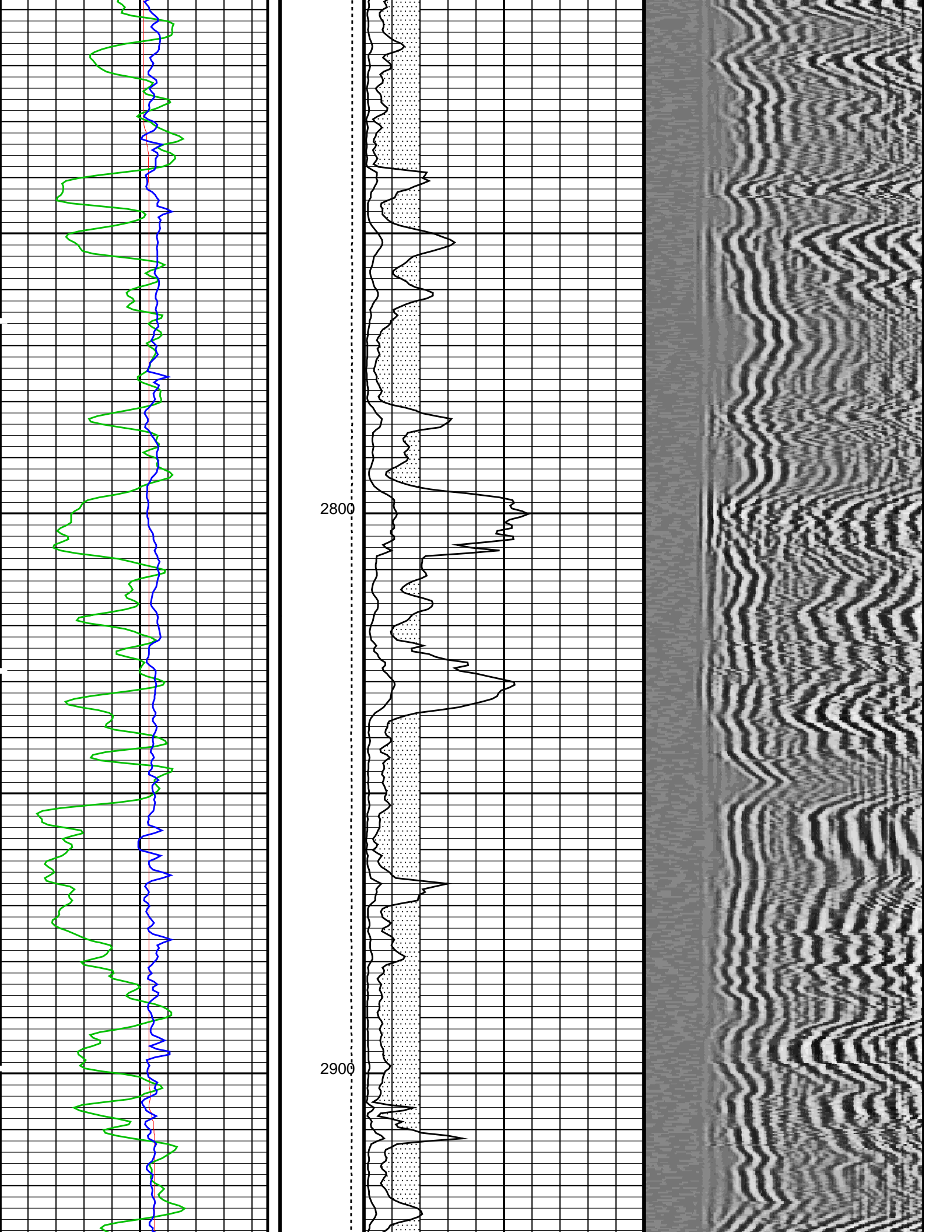


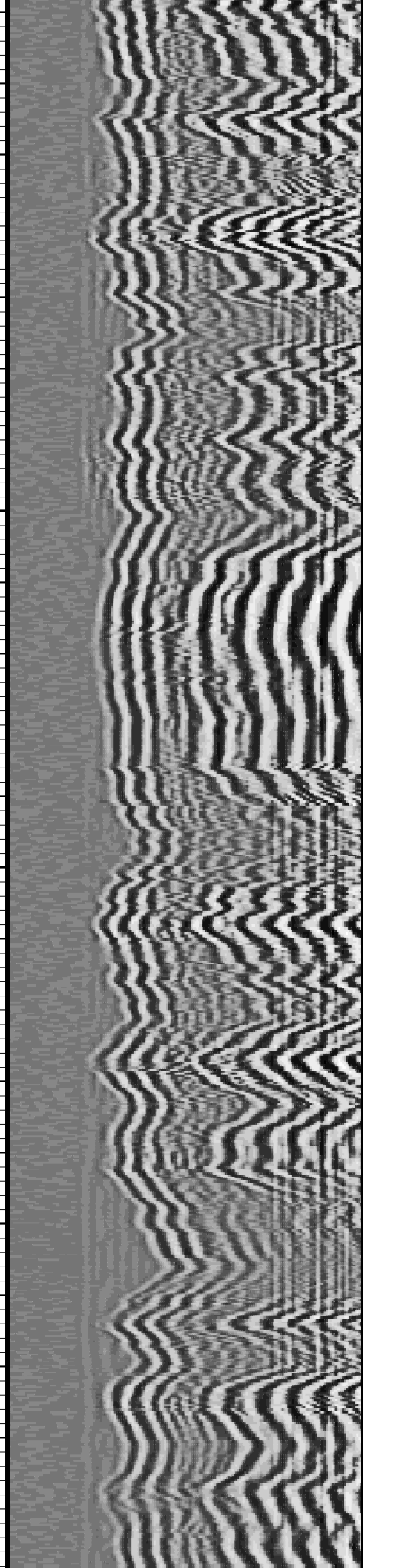
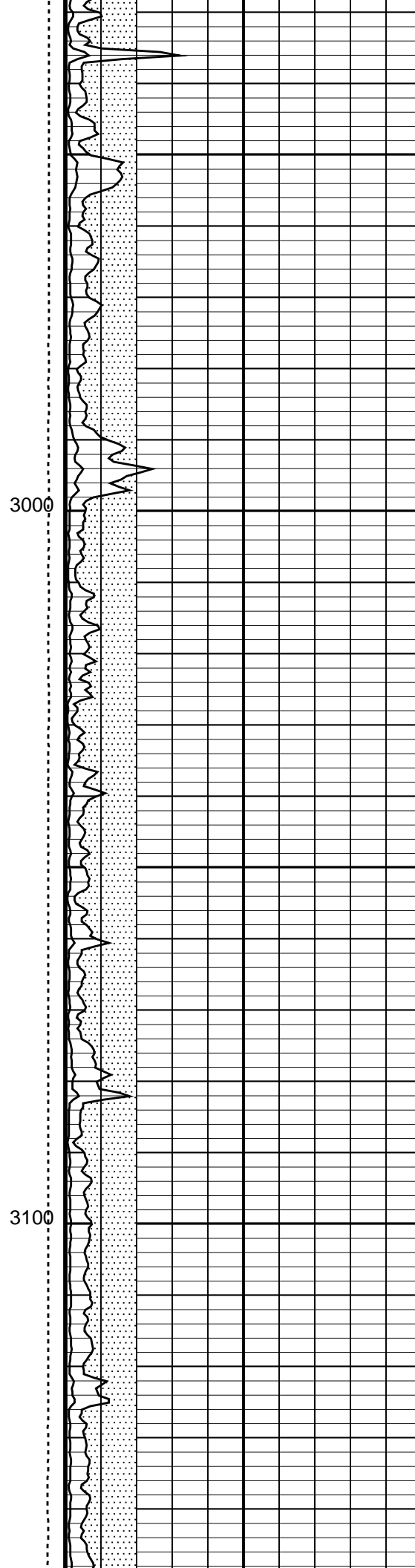
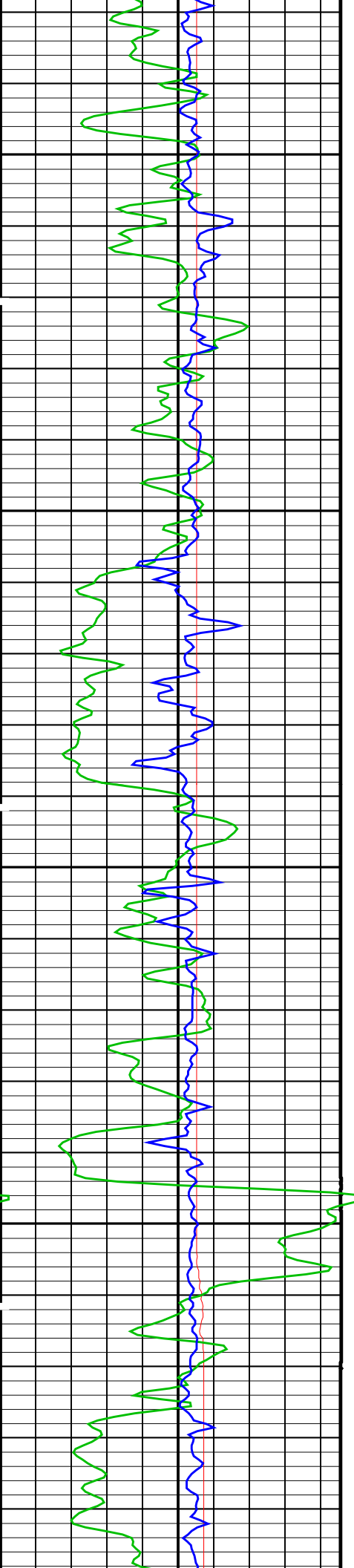


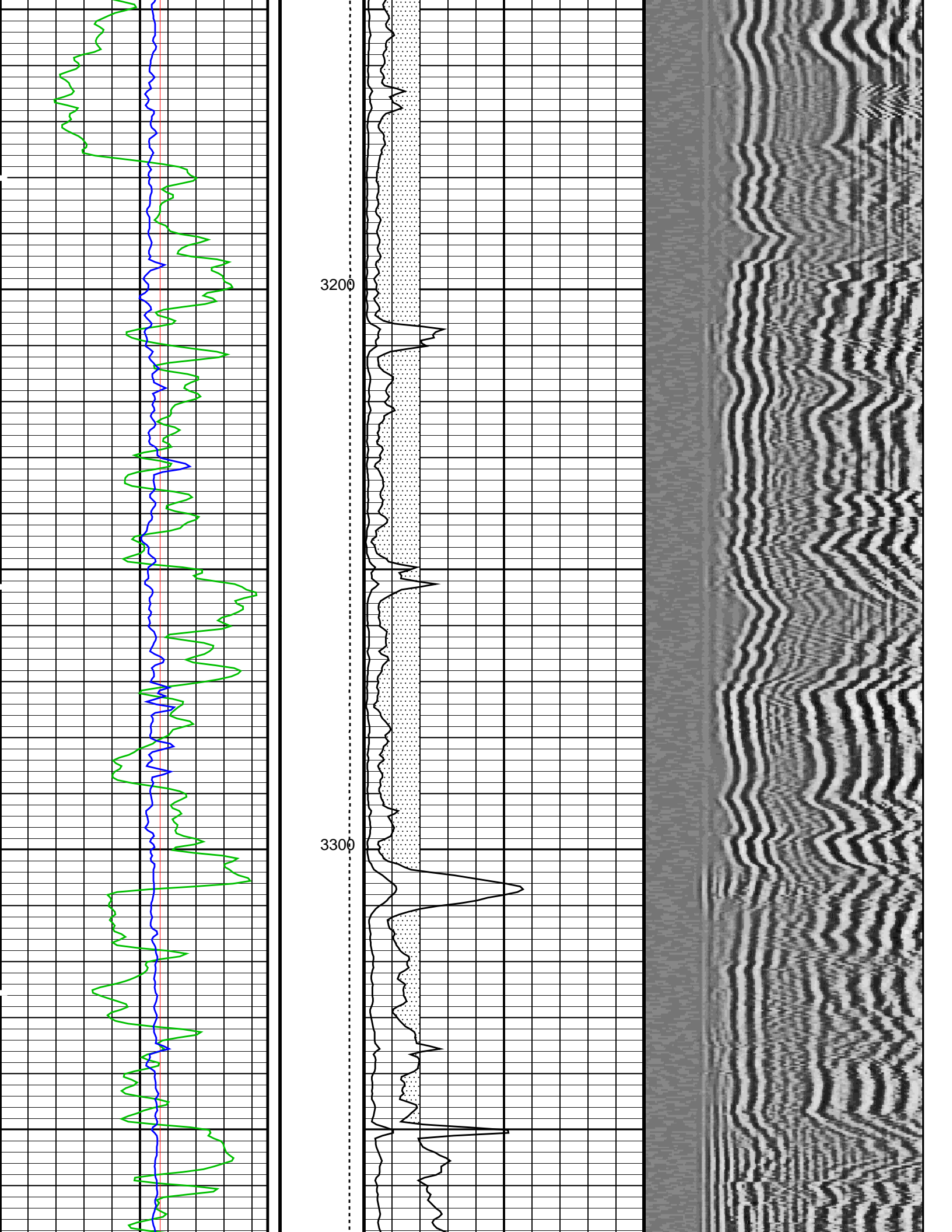


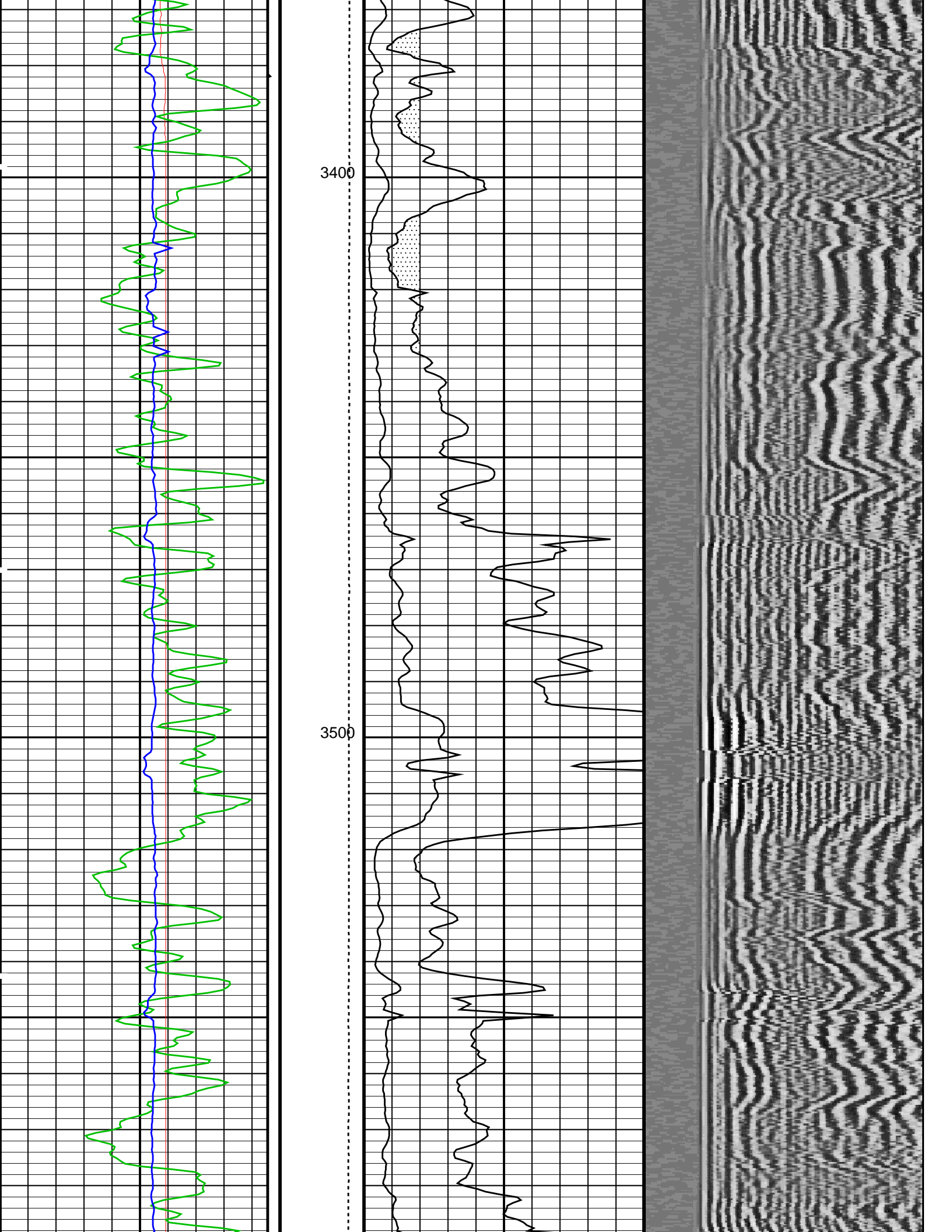


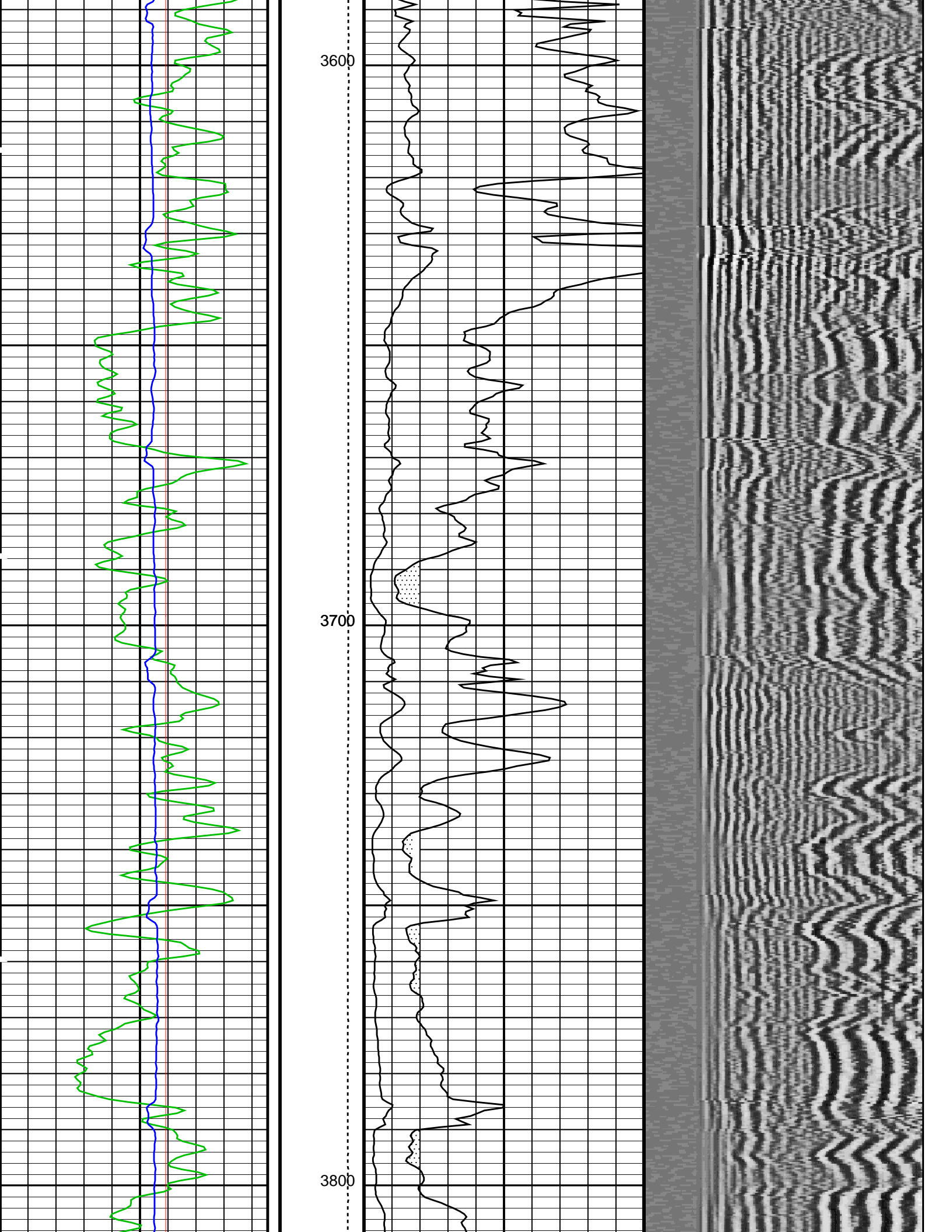


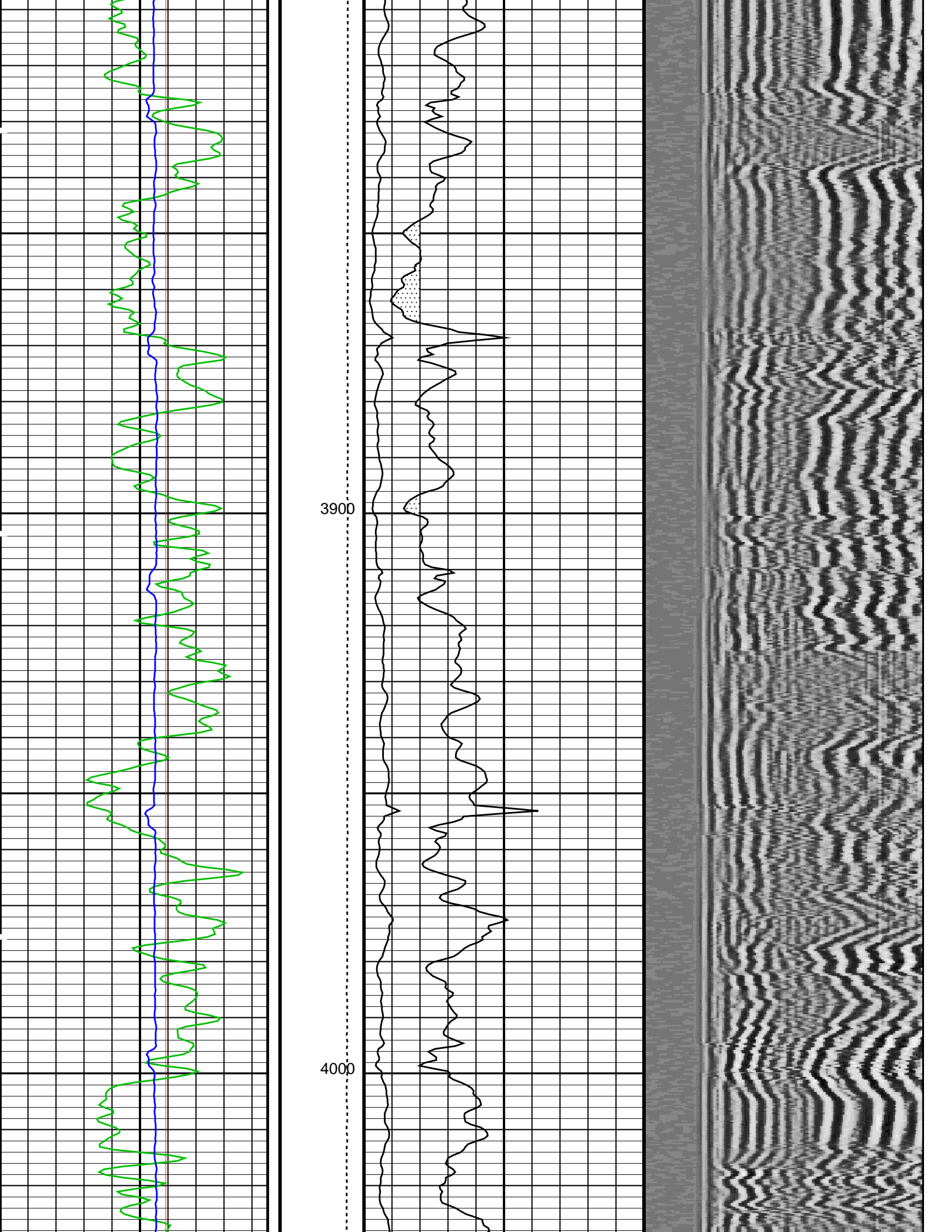


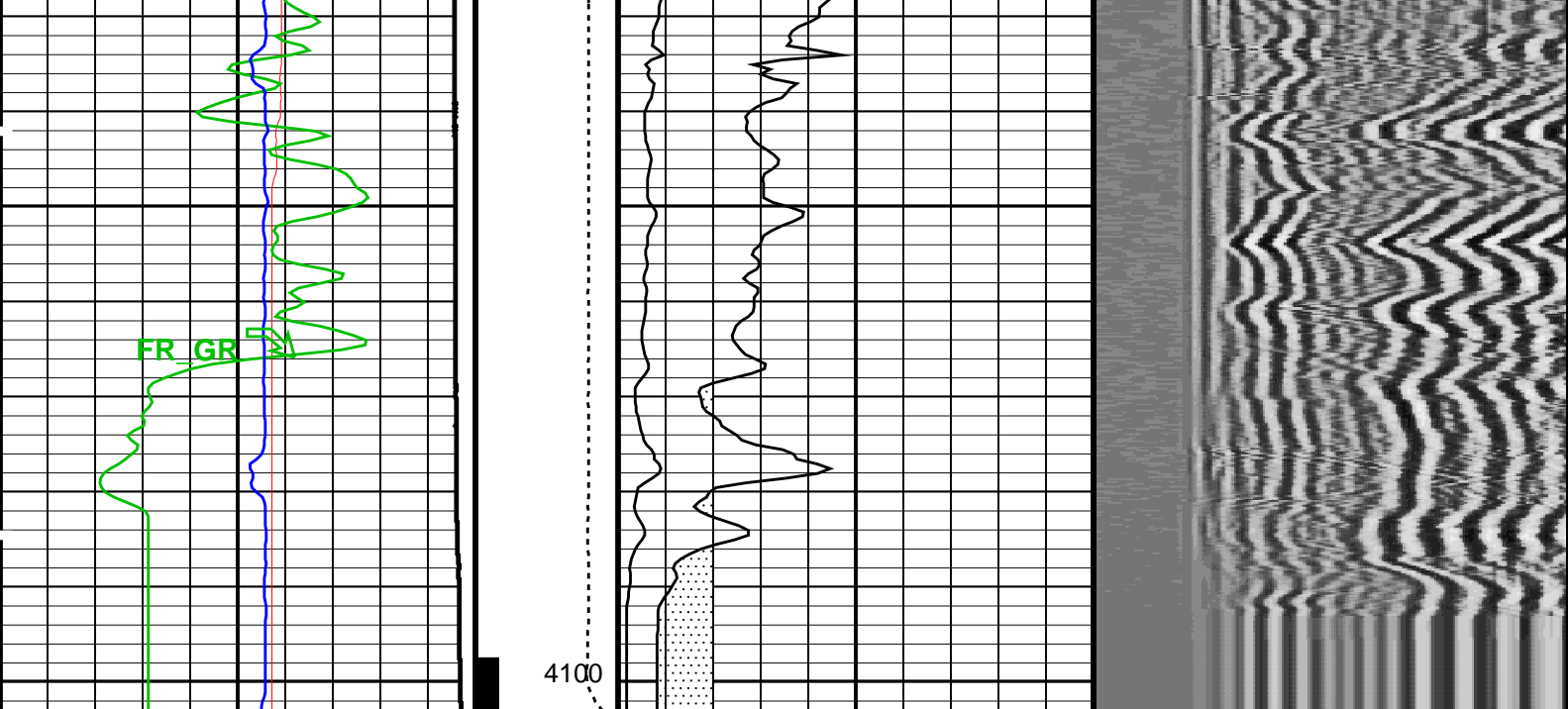












Cartridge Temperature (CTEM) (DEGF) 75 175	Tension (TENS) (LBF) 10000 0	CBL Amplitude (CBL) (MV) 0 10	Min Amplitude Max 200 VDL VariableDensity (VDL) 1200 (US)
Gamma Ray (GR_EDTC) (GAPI) 0 150	Stuck Stretch (STIT) 0 (F) 50	CBL Amplitude (CBL) (MV) 0 50	
Transit Time (TT) (US) 400 200	Cable Drag From STIA to STIT	Good Bond (GOBO) (MV) 0 10	
Casing Collar Locator (CCL) (---- -19 1	Tool/Tot. Drag From D3T to STIA	GoodBond From ACBL to GOBO	
CasCollar From CCL to T1			

PIP SUMMARY

└─ Casing Collars

Time Mark Every 60 S

Format: CBL_VDL Vertical Scale: 5" per 100'

Graphics File Created: 30-Apr-2012 10:48

OP System Version: 19C0-187

DSLT-H	19C0-187	EDTC-B	19C0-187
CAL-Y	19C0-187		

Information for DSLT Sonde Status and Casing Features

Sonde Type	Not Recorded
Sonde Serial Number	Not Recorded (0)

Casing Size (CSIZ)	7.0 IN
Casing Weight (CWEI)	23.0 LB/F

Expected CBL Amplitude in Free Pipe Section (CPBA)	62.0 MV
--	---------

Expected CBL Amplitude in Free Pipe Section (CBRA)	0.837733 MV
Minimum Sonic Amplitude (MSA : 100% Cement)	0.837733 MV
Minimum Sonic Amplitude (MSA : 80% Cement)	1.98136 MV
Date of Master Calibration	Not Recorded
CBL Correction Factor (Master Calibration)	2.50000
Depth of Before Calibration (BDEP)	Not Recorded
CBL Adjustment Factor (CBAF : Before Calibration)	1.37800

Parameters				
DLIS Name	Description	Value		
DSLTH: Digitizing Sonic Logging Tool				
	DSLTH Firing Mode	CBL_W		
	Telemetry Mode	DSLTH_FTB		
AMSG	Auxiliary Minimum Sliding Gate	158	US	
CBAF	CBL Adjustment Factor	1.378		
CBLG	CBL Gate Width	70	US	
DDEL	Digitizing Delay	0	US	
DRCS	DSLTH DLIS Recording Size	120		
DSIN	Digitizing Sample Interval	10		
DTFS	DSLTH Telemetry Frame Size	236		
DWCO	Digitizing Word Count	120		
GAI	Manual Gain	40		
GOBO	Good Bond	1.98136	MV	
MAHTR	Manual High Threshold Reference	40		
MGAI	Maximum Gain	1000		
MNHTR	Minimum High Threshold Reference	30		
NMSG	Near Minimum Sliding Gate	263	US	
NMXG	Near Maximum Sliding Gate	750	US	
RATE	Firing Rate	R7		
SFAF	Sonic Formation Attenuation Factor	0	DB/F	
SGCL	Sliding Gate Closing Delta-T	250	US/F	
SGDT	Sliding Gate Delta-T	57	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	TDL		
STKT	STI Stuck Threshold	2.5	FT	
TDD	Total Depth - Driller	4420.00	FT	
TDL	Total Depth - Logger	4088.00	FT	
System and Miscellaneous				
DO	Depth Offset for Playback	0.0	FT	
PP	Playback Processing	OFF		

Input DLIS Files					
	SONIC_024PUP	FN:35	30-Apr-2012 10:00	4103.0 FT	74.0 FT
Output DLIS Files					
DEFAULT	SONIC_006PUP	FN:5	PRODUCER	30-Apr-2012 10:48	

Company: ENCANA OIL & GAS (USA) INC	Well: TWIN CREEK 12-6A1 (F12E)
-------------------------------------	--------------------------------

Input DLIS Files					
	SONIC_022PUP	FN:31	30-Apr-2012 10:00	4089.5 FT	3787.0 FT
DEFAULT	SONIC_003PUP	FN:2	PRODUCER	30-Apr-2012 10:19	4103.0 FT
				74.0 FT	
Output DLIS Files					
DEFAULT	SONIC_005PUP	FN:4	PRODUCER	30-Apr-2012 10:45	4089.5 FT
					3787.0 FT

OP System Version: 19C0-187

DSLTH
CAL-Y

19C0-187
19C0-187

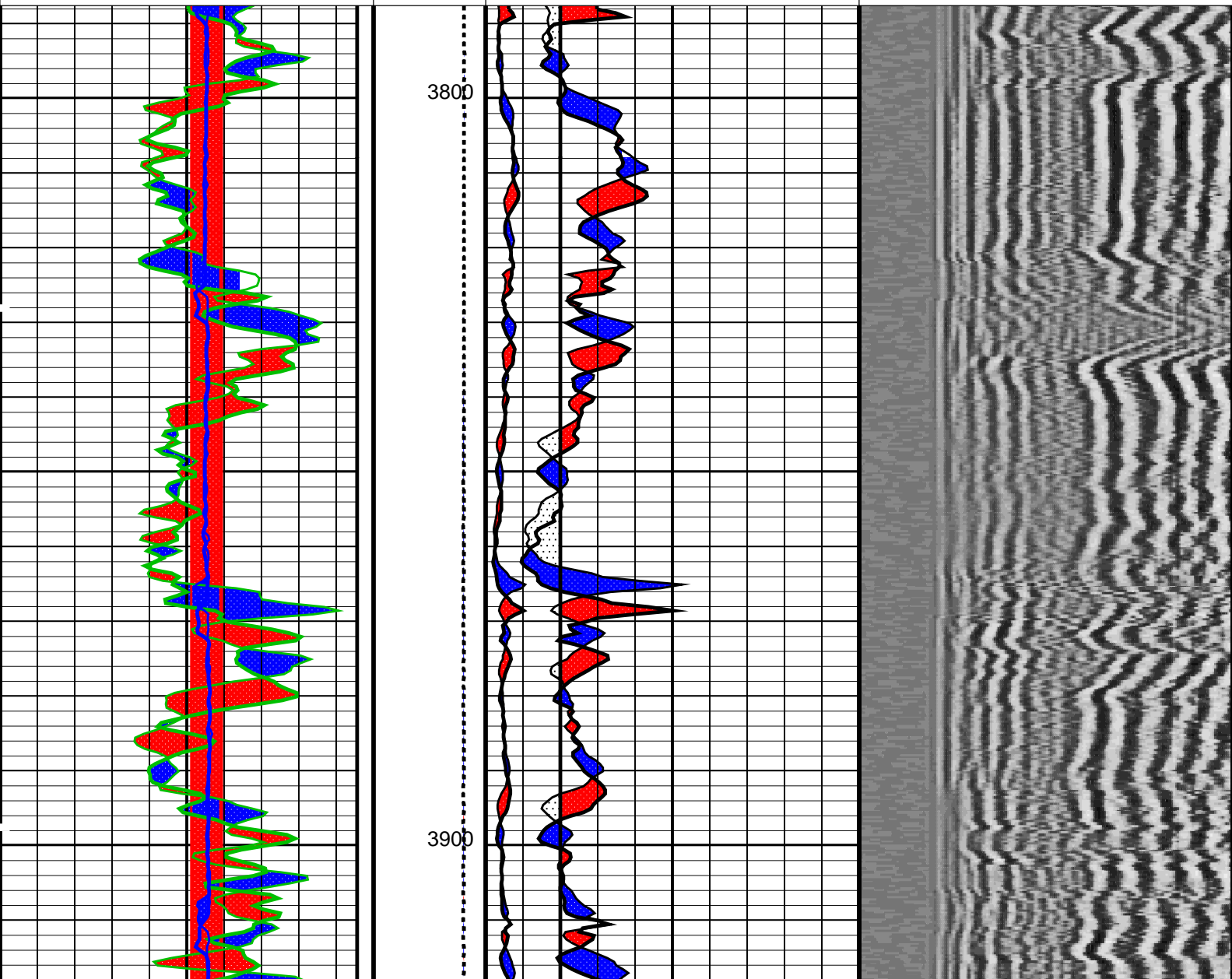
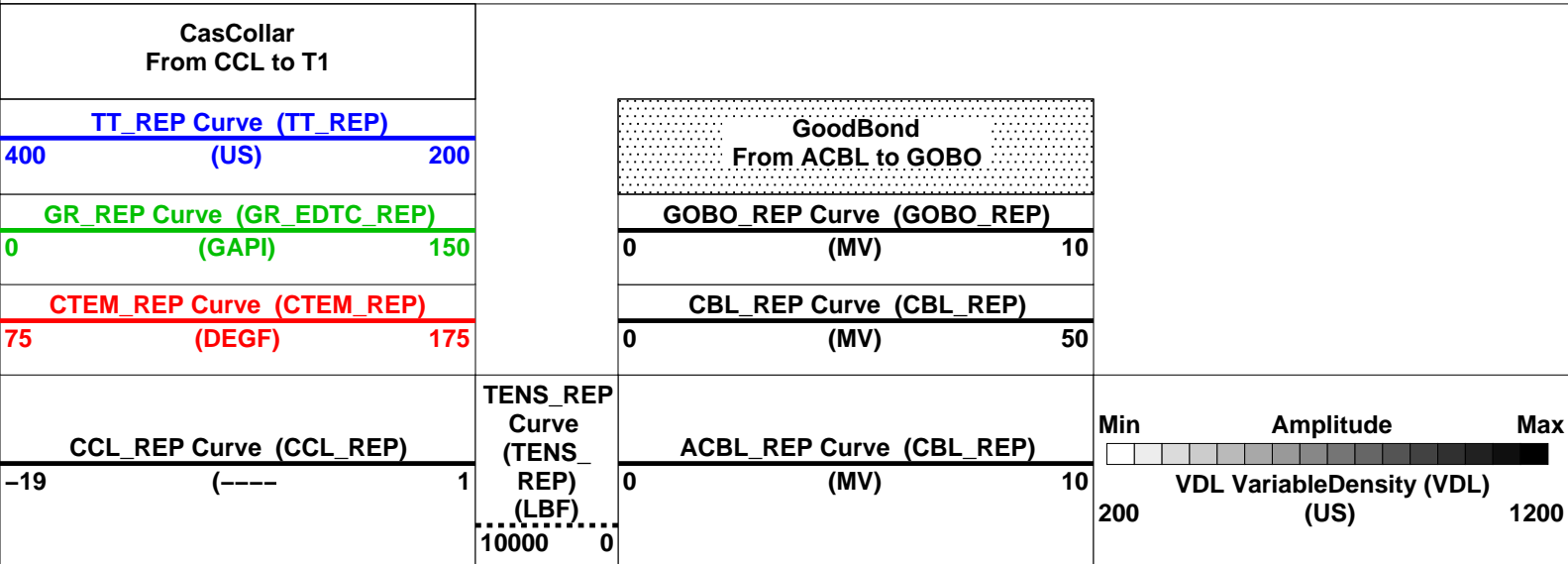
EDTC-B

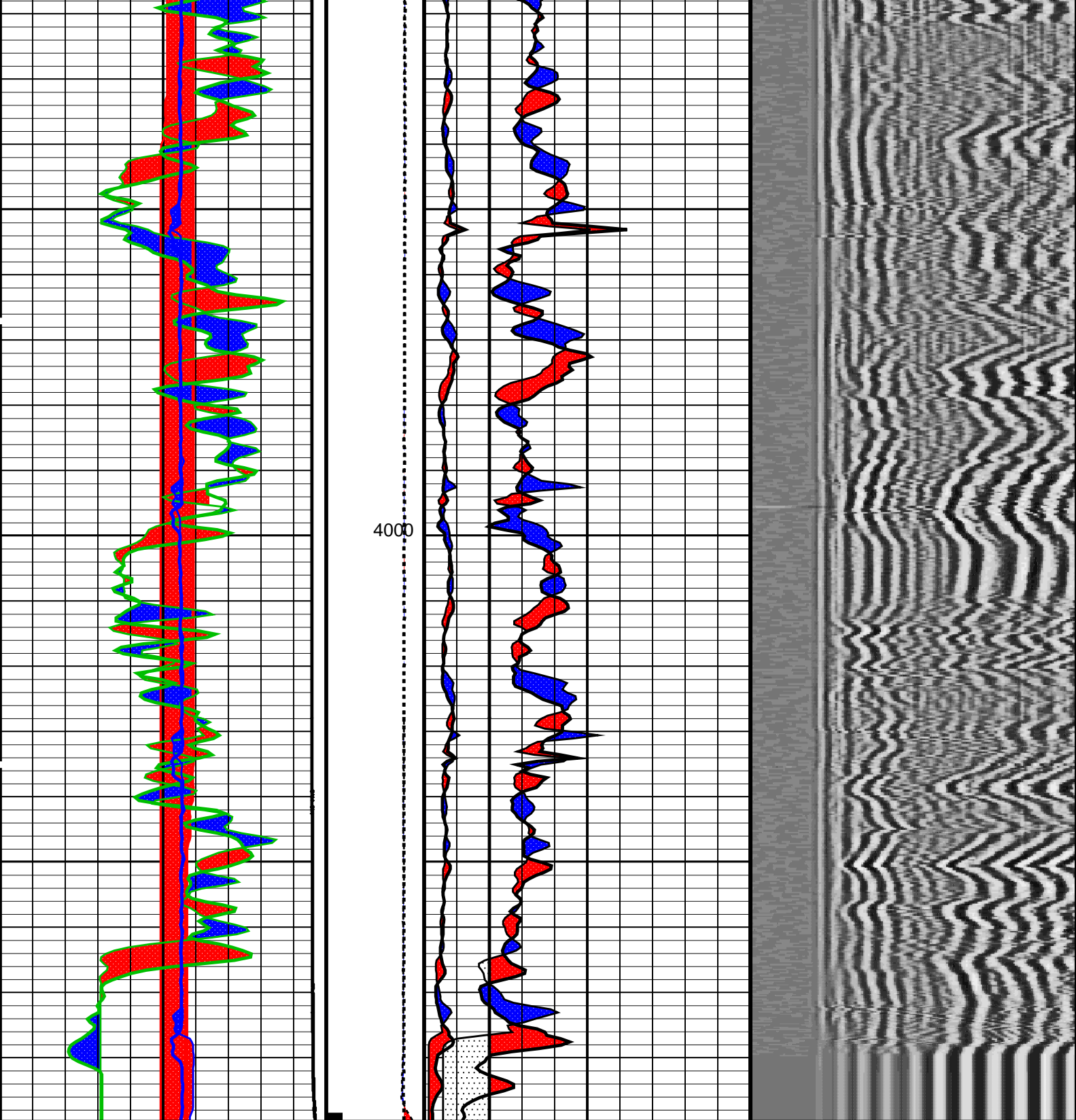
19C0-187

PIP SUMMARY

Casing Collars

Time Mark Every 60 S





CCL_REP Curve (CCL_REP)		TENS_REP Curve (TENS_ REP) (LBF)	ACBL_REP Curve (CBL_REP)		<div><div>Min</div><div>Amplitude</div><div>Max</div><div>VDL VariableDensity (VDL)</div><div>(US)</div></div> <div><div>200</div><div>1200</div></div>
-19	(----) 1		0	(MV) 10	
10000 0					
CTEM_REP Curve (CTEM_REP)			CBL_REP Curve (CBL_REP)		
75	(DEGF) 175		0	(MV) 50	
GR_REP Curve (GR_EDTC_REP)			GOBO_REP Curve (GOBO_REP)		
0	(GAPI) 150		0	(MV) 10	
TT_REP Curve (TT_REP)		<div>GoodBond</div> <div>From ACBL to GOBO</div>			
400	(US) 200				

CasCollar From CCL to T1			
PIP SUMMARY			
└─ Casing Collars			
Time Mark Every 60 S			
Format: CBL_VDL_REP		Vertical Scale: 5" per 100'	Graphics File Created: 30-Apr-2012 10:45
OP System Version: 19C0-187			
DSLT-H	19C0-187	EDTC-B	19C0-187
CAL-Y	19C0-187		
### Information for DSLT Sonde Status and Casing Features ###			
Sonde Type		Not Recorded	
Sonde Serial Number		Not Recorded (0)	
Casing Size (CSIZ)		7.0 IN	
Casing Weight (CWEI)		23.0 LB/F	
Expected CBL Amplitude in Free Pipe Section (CBRA)		62.0 MV	
Minimum Sonic Amplitude (MSA : 100% Cement)		0.837733 MV	
Minimum Sonic Amplitude (MSA : 80% Cement)		1.98136 MV	
Date of Master Calibration		Not Recorded	
CBL Correction Factor (Master Calibration)		2.50000	
Depth of Before Calibration (BDEP)		Not Recorded	
CBL Adjustment Factor (CBAF : Before Calibration)		1.37800	
Parameters			
DLIS Name	Description	Value	
DSLT-H: Digitizing Sonic Logging Tool			
	Telemetry Mode	DSLCL_FTB	
	DSLT Firing Mode	CBL_W	
AMSG	Auxiliary Minimum Sliding Gate	158	US
CBAF	CBL Adjustment Factor	1.378	
CBLG	CBL Gate Width	70	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	120	
GAI	Manual Gain	40	
GOBO	Good Bond	1.98136	MV
MAHTR	Manual High Threshold Reference	40	
MGAI	Maximum Gain	1000	
MNHTR	Minimum High Threshold Reference	30	
NMSG	Near Minimum Sliding Gate	263	US
NMXG	Near Maximum Sliding Gate	750	US
RATE	Firing Rate	R7	
SFAF	Sonic Formation Attenuation Factor	0	DB/F
SGCL	Sliding Gate Closing Delta-T	250	US/F
SGDT	Sliding Gate Delta-T	57	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
System and Miscellaneous			

System and Miscellaneous		Depth Offset for Playback		0.0	FT
DO		Depth Offset for Repeat Analysis		0.0	FT
DORL		Playback Processing		OFF	
PP					
Input DLIS Files					
DEFAULT	SONIC_022PUP	FN:31		30-Apr-2012 10:00	4089.5 FT 3787.0 FT
	SONIC_003PUP	FN:2	PRODUCER	30-Apr-2012 10:19	4103.0 FT 74.0 FT
Output DLIS Files					
DEFAULT	SONIC_005PUP	FN:4	PRODUCER	30-Apr-2012 10:45	
Company: ENCANA OIL & GAS (USA) INC					
Schlumberger					
Well: TWIN CREEK 12-6A1					
Field: MAMM CREEK					
County: GARFIELD					
State: COLORADO					
CEMENT BOND LOG					
CBL-VDL					