

HALLIBURTON

ACOUSTIC CEMENT
BOND LOG

CompanyCAERUS PICEANCE, LLC.
WellISLAND RANCH 24B-13
FieldPARACHUTE
CountyGARFIELDStateCO

CompanyCAERUS PICEANCE, LLC.
WellISLAND RANCH 24B-13
FieldPARACHUTE
CountyGARFIELDStateCO

API No.: 05-045-22394-0000
Location: SURFACE HOLE LOCATION:
1334' FSL & 1055' FWL
BOTTOM HOLE LOCATION:
0865' FSL & 1980' FWL
Sec: 13 Twp: 07S Rge: 96W
RMT

Other Services

Permanent DatumGROUND LEVEL Elevation 5056'
Log Measured FromKB, 24 Ft. above perm. datum
Drilling Measured FromKB

Elevation
K.B. 5080'
D.F. 5080'
G.L. 5056'

Date @ Time Logged16 JULY 2014
Run No. ONE
Depth - Driller6996'
Depth - Logger5908'
Bottom - Logged Interval5908'
Top - Log IntervalSURFACE
Max. Recorded Temp. N/A
CEMENTING DATA
Surface String
Protection String
Witnessed by
B. STEWART

Type Fluid in Hole
Density of Fluid
Fluid Level
Cement Top Est. Logged
Equipment / Location
Recorded by
Liner

WATER
8.4#
64'
SEE LOG
10971668 / G.J.
BURSON / SOLIS

Date / Time Cemented
Primary / Squeeze
Expected Compressive Strength
Cement Volume
Cement Type / Weight
Formulation
Mud Type / Mud Wgt.

psi@ hrs
psi@ hrs
psi@ hrs
psi@ hrs
psi@ hrs
psi@ hrs
psi@ hrs

N/A
N/A
N/A
N/A
N/A
N/A
N/A

Borehole Record
Run Number
ONE
TWO
Bit
N/A
8.75"
From
SURFACE
991'
To
991'
5996'
Size
9.625"
4.5"
Weight
36.0#
11.6#
From
SURFACE
991'
To
991'
5996'

Casing & Tubing Record
Weight
11.6#
From
SURFACE
991'
To
991'
5996'

<<< Fold Here >>>

HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

Comments

HES CBL LOG DATED 16 JULY 2014 IS THE PRIMARY DEPTH REFERENCE FOR THIS WELL.

GR-RMT-CBL RAN IN COMBINATION.

LOG INTERVALS PER CUSTOMER REQUEST.

SHORT JOINTS @: 4064' - 4074' AND 5553' - 5563'.

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES.

Service Ticket No.	901505039	API No.	05-045-22394-0000	PGM Ver	14.05.12001
The Well Name, Location, Borehole Description, and / or Cementing Data Furnished by Client					
EQUIPMENT DATA					
TELEMETRY		CEMENT BOND TOOL		RESERVOIR MONITOR TOOL	
Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	11224503	Serial No.	12091452	Serial No.	12210614
Model No.	TTTC-U-002	Model No.	CBL-M	Model No.	RMTI-A
Diameter	1.688"	Diameter	2.75"	Diameter	2.125"
LOGGING DATA					
General Data					
Pass	Depths		Well Head	Speed	Logging Run Comments
No	From	To	Pressure	Ft/Min	

ONE	5908'	SURFACE	0	REC	MAIN LOG SECTION			
	GAMMA RAY		TRAVEL TIME		AMPLITUDE		MSG	
Pass	Scale		Scale		Scale		Scale	
No.	L	R	L	R	L	R	L	L
ONE	0	200	410	210	0	100	200	1060
DIRECTIONAL INFORMATION								
Maximum Deviation		N/A	deg. @	N/A	KOP	N/A		

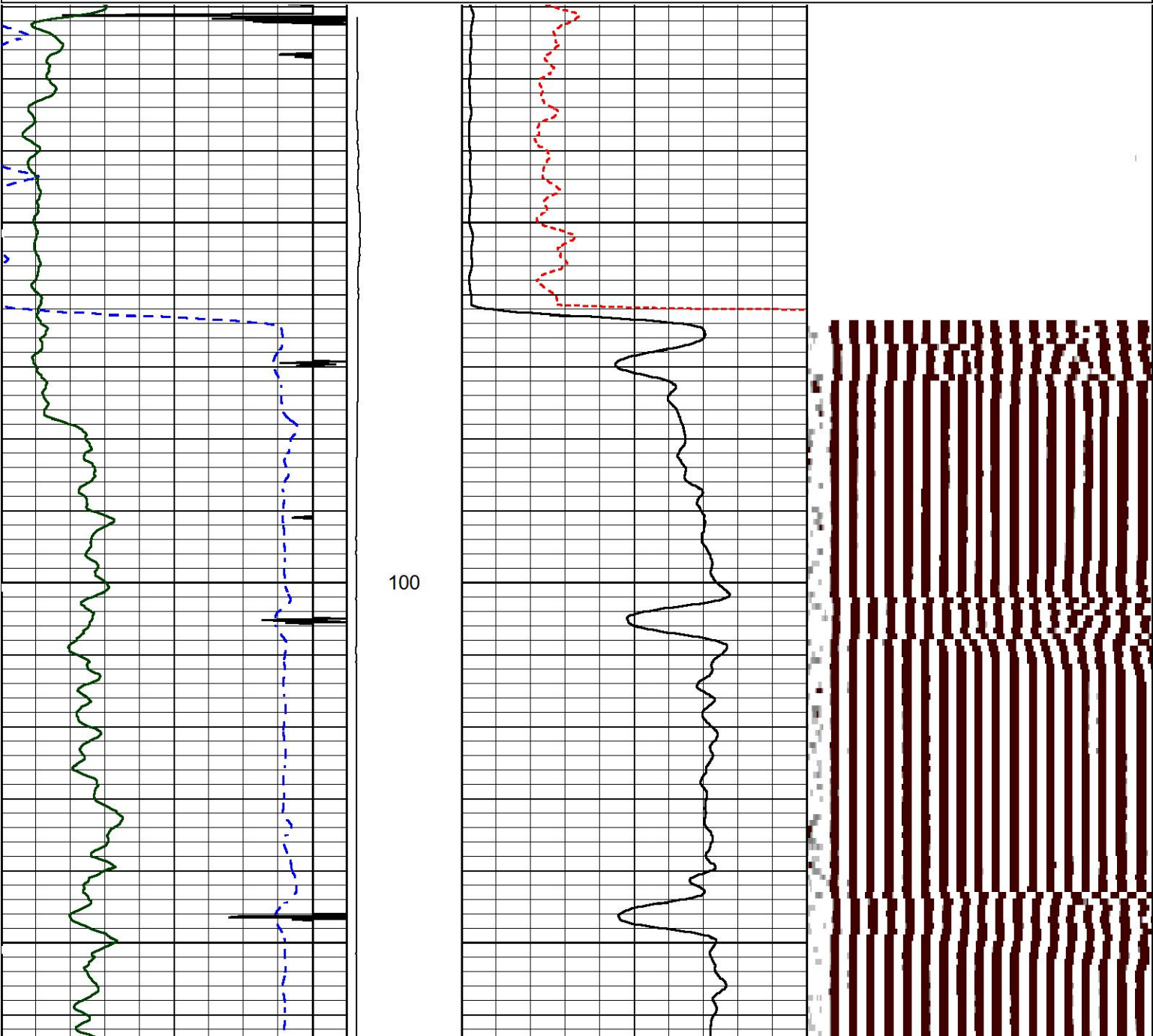
HALLIBURTON

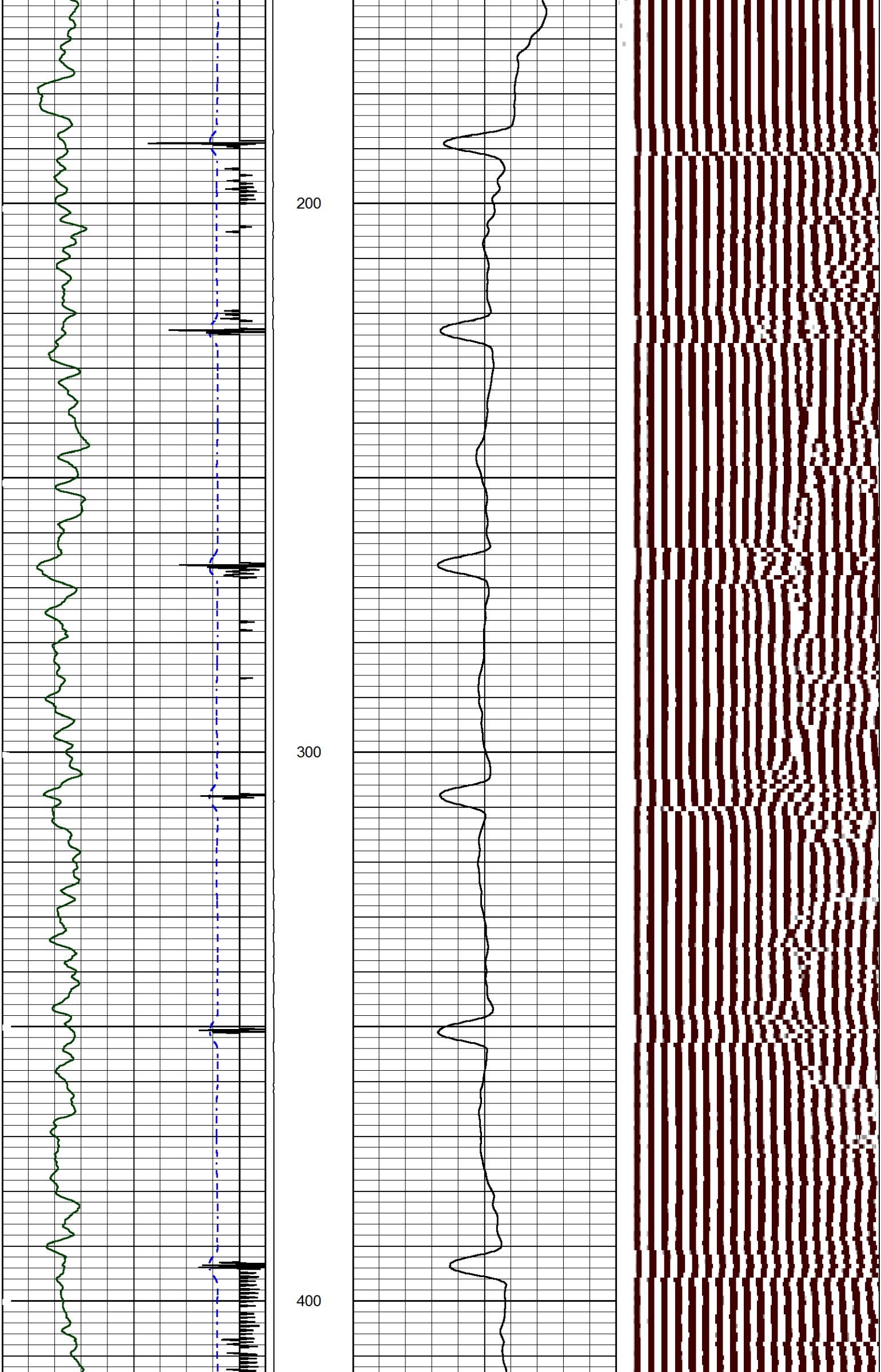
MAIN LOG SECTION

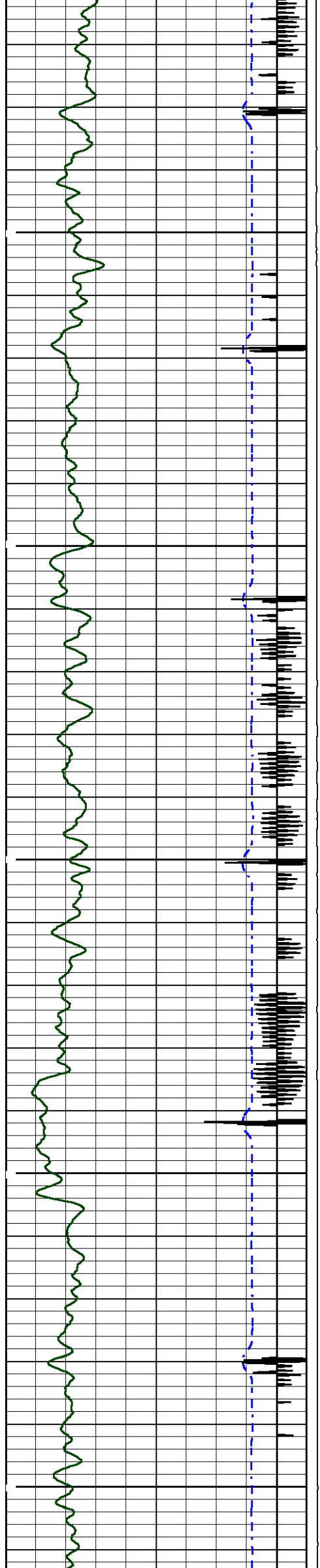
5"=100

Database File	ir_24b_13_cmb.db							
Dataset Pathname	MAIN1							
Presentation Format	hcbl							
Dataset Creation	Wed Jul 16 14:48:19 2014							
Charted by	Depth in Feet scaled 1:240							

410	3' Travel Time (usec)	210	LTEN	0	3' Amplitude (mV)	100	200	MSG	1060
-1660	CCL	180	0 (lb,4000	0	Amplified Amplitude (mV)	10			
0	Gamma Ray (GAPI)	200							

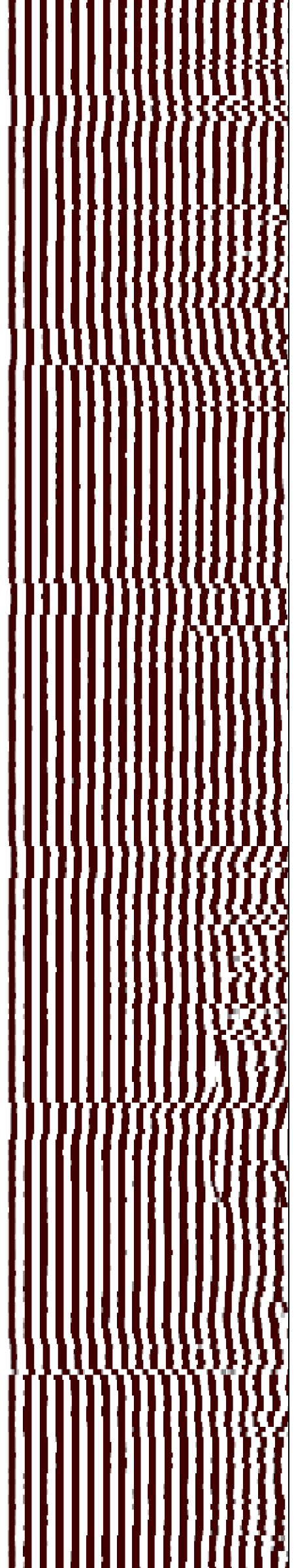
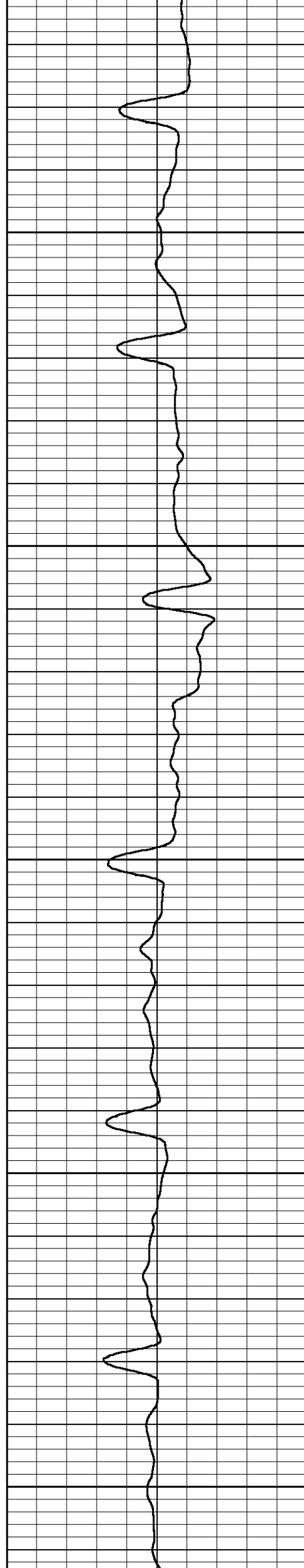


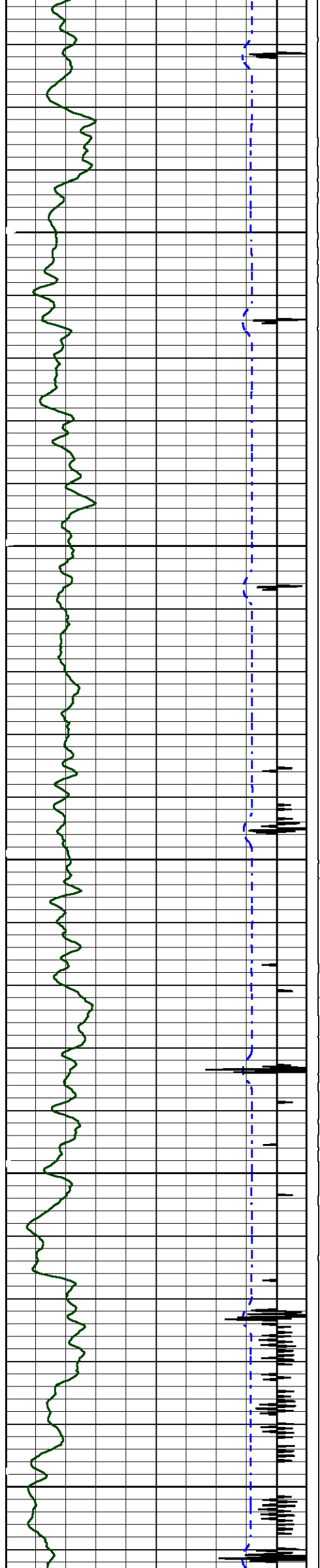




500

600

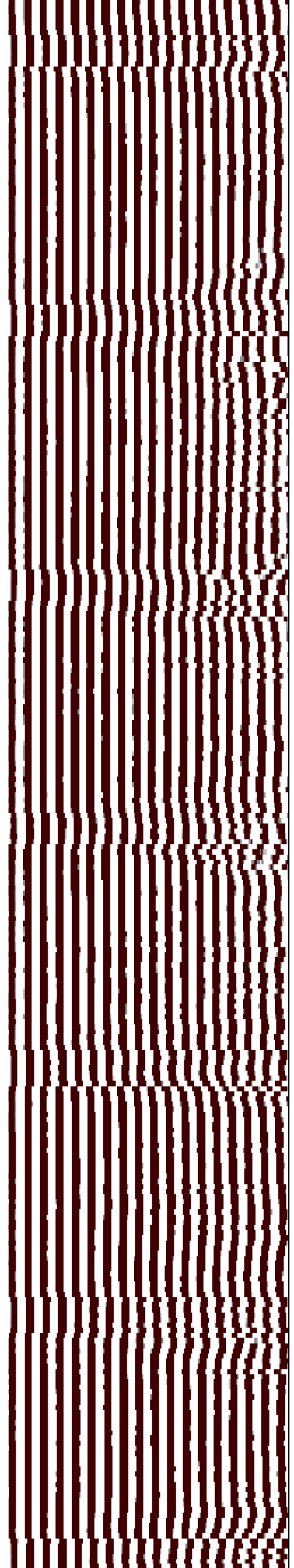
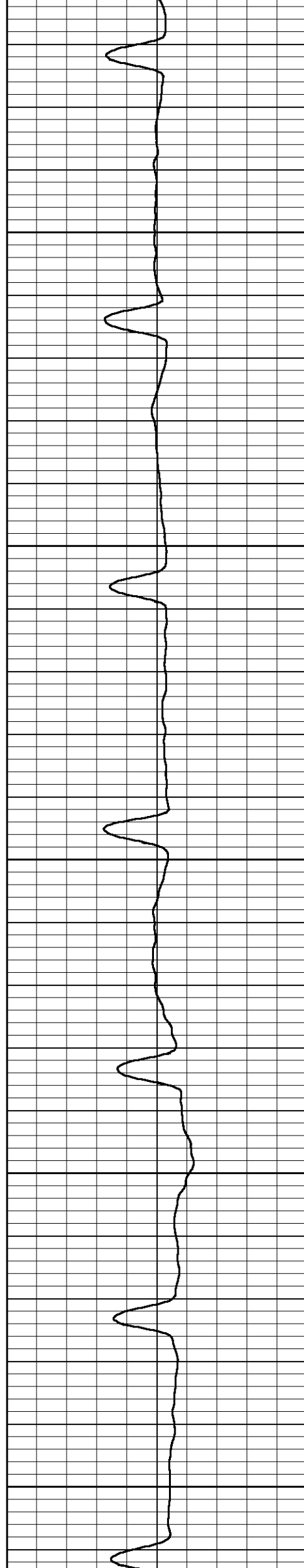


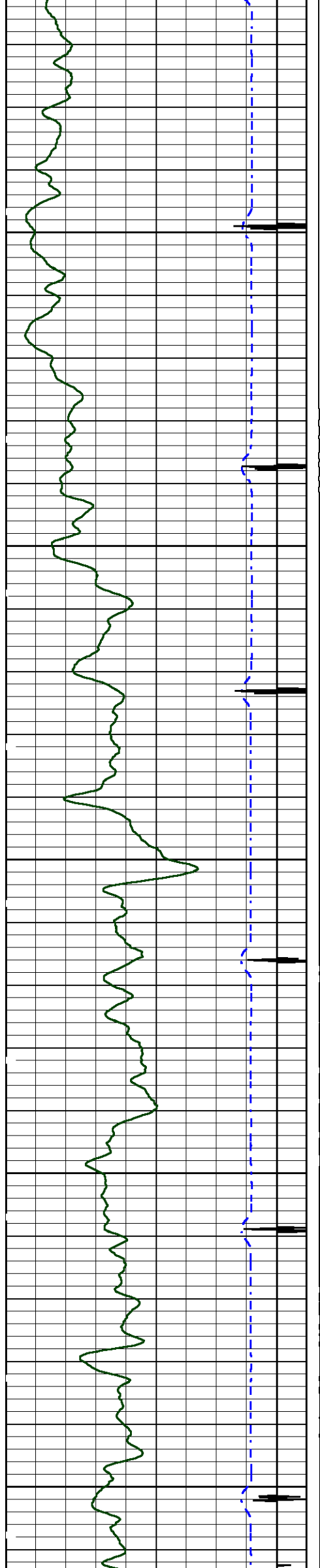


700

800

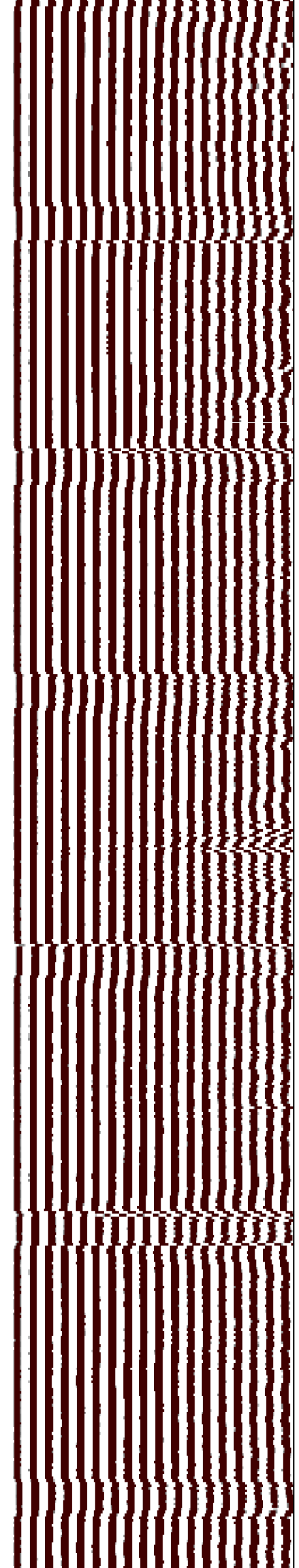
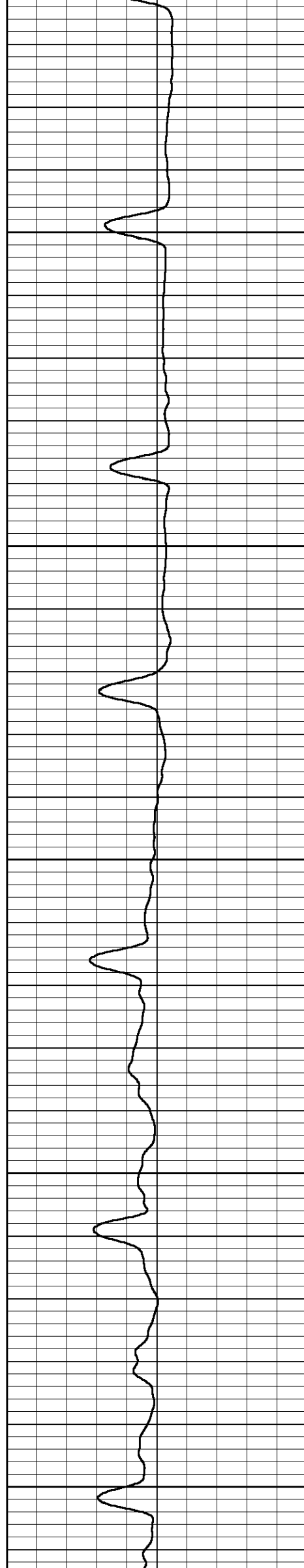
900

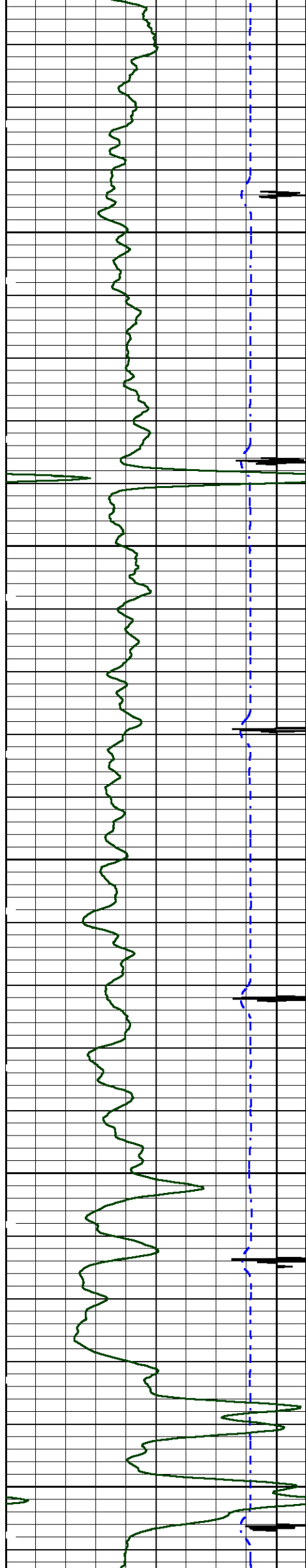




1000

1100

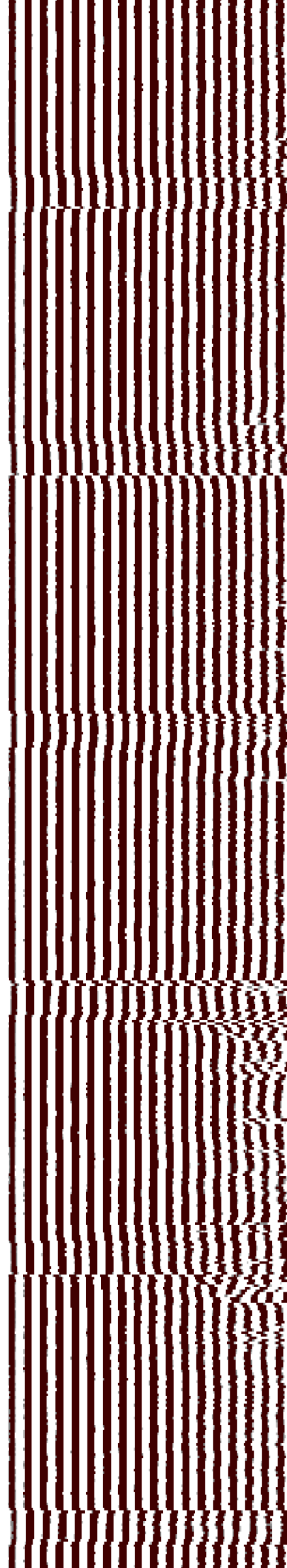
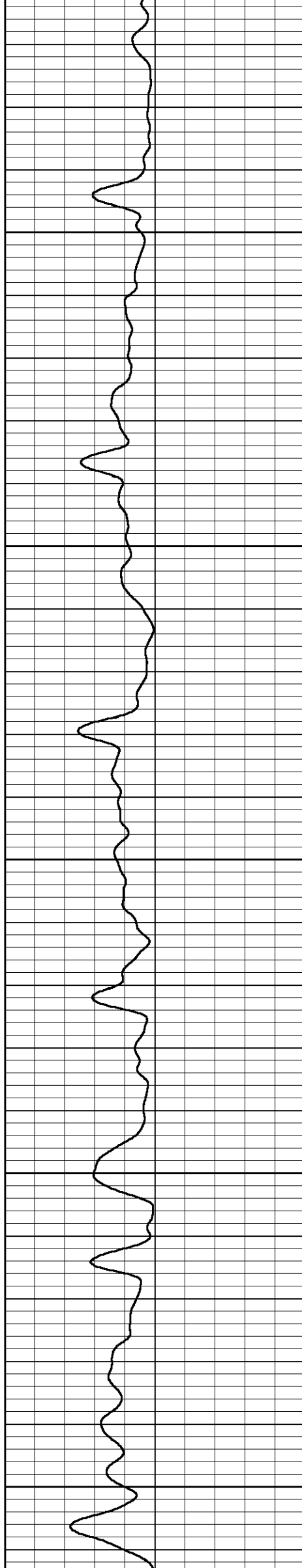


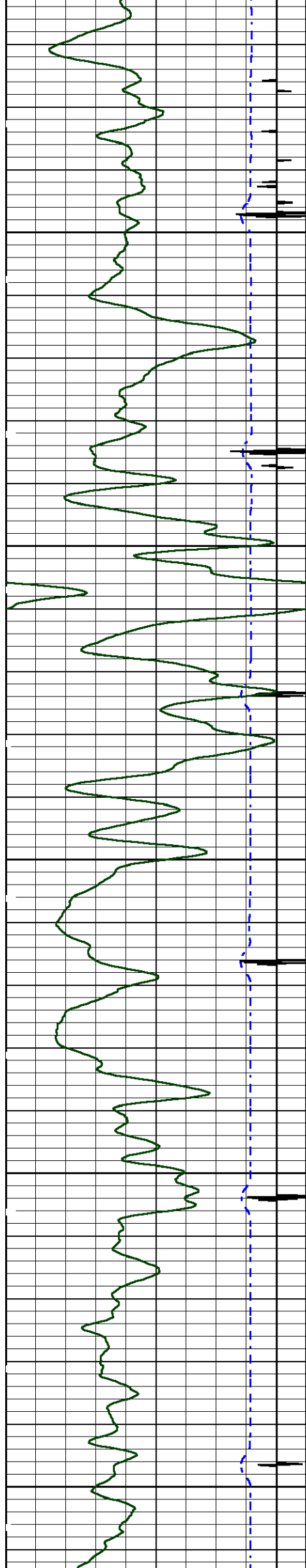


1200

1300

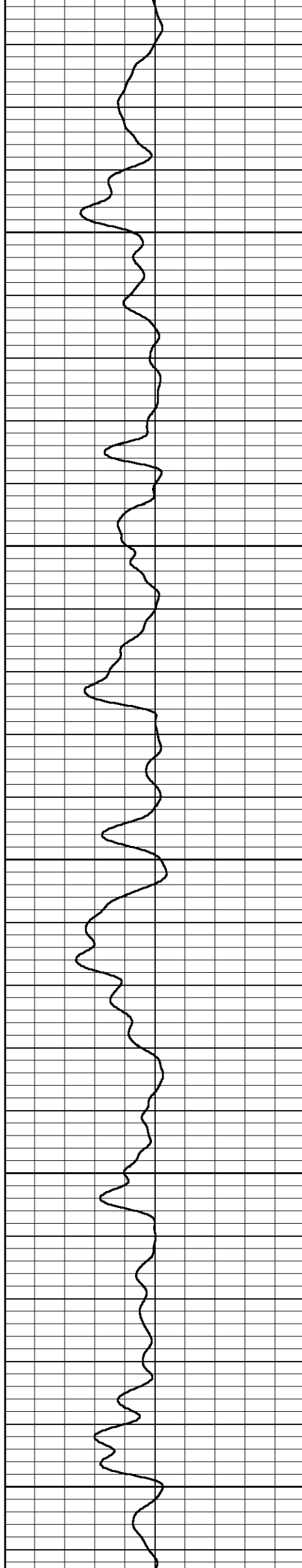
1400

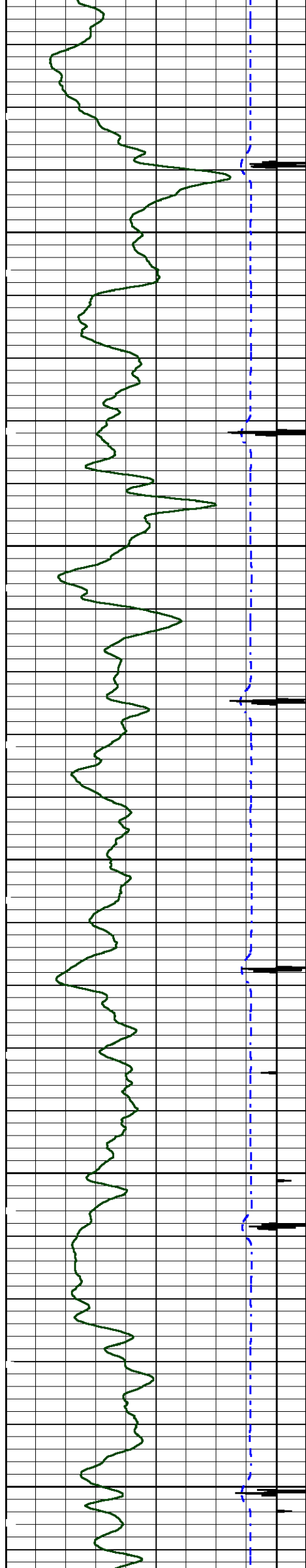




1500

1600

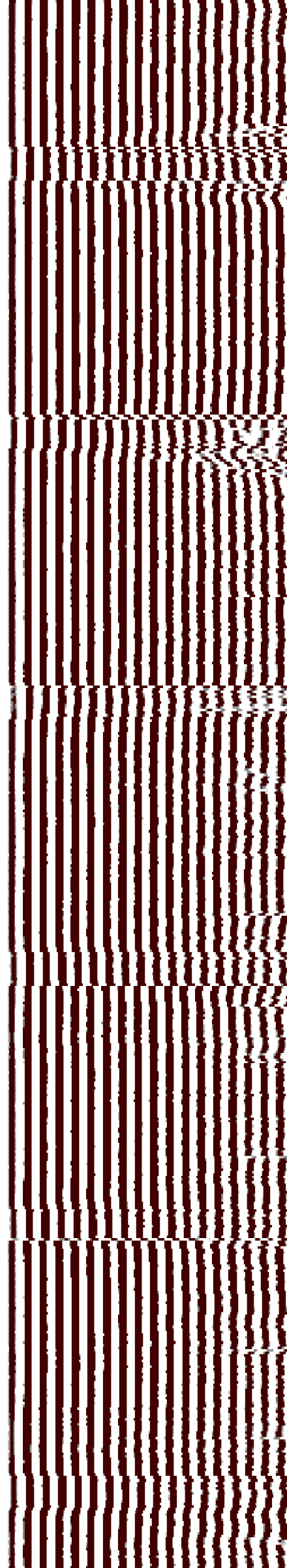
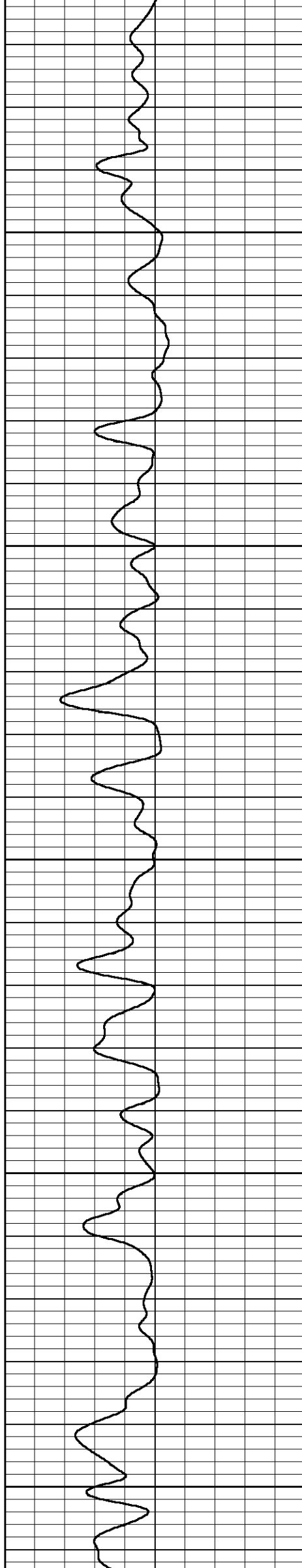


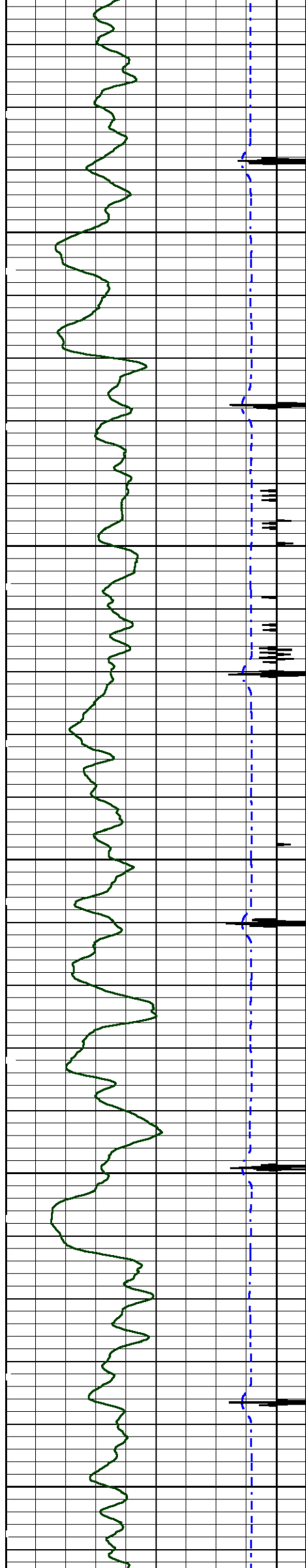


1700

1800

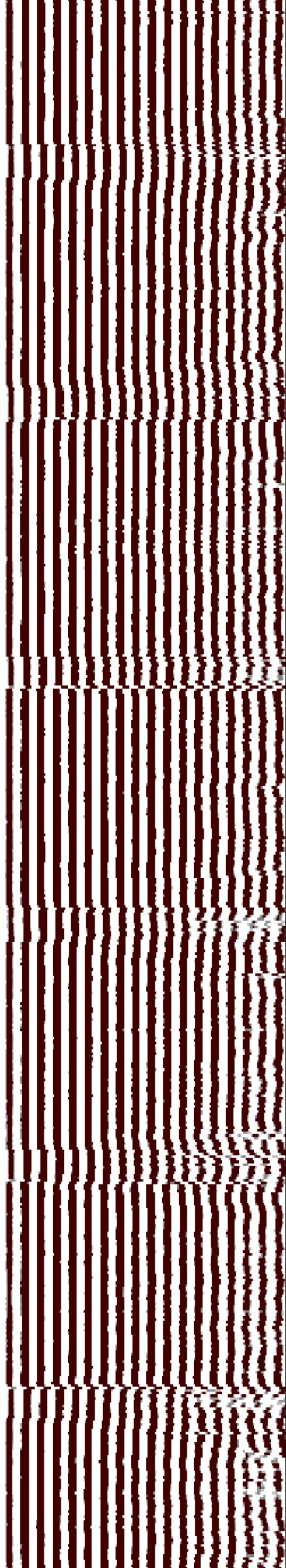
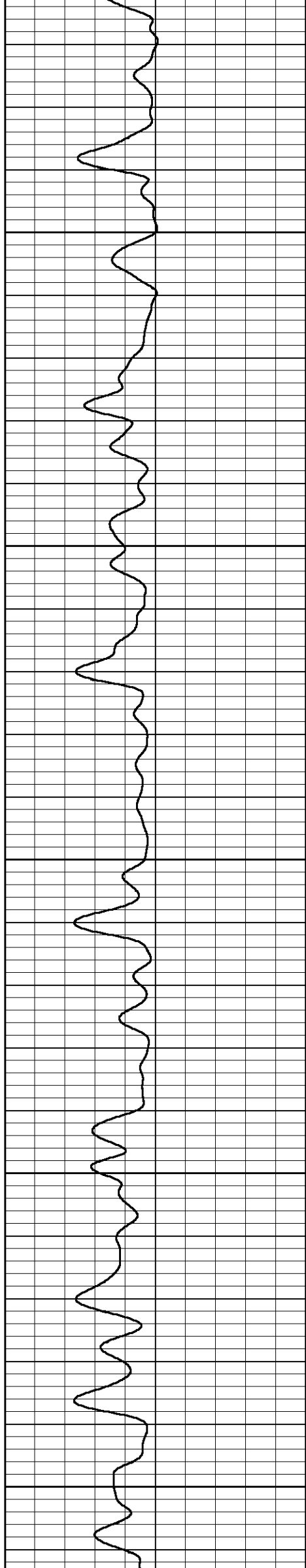
1900

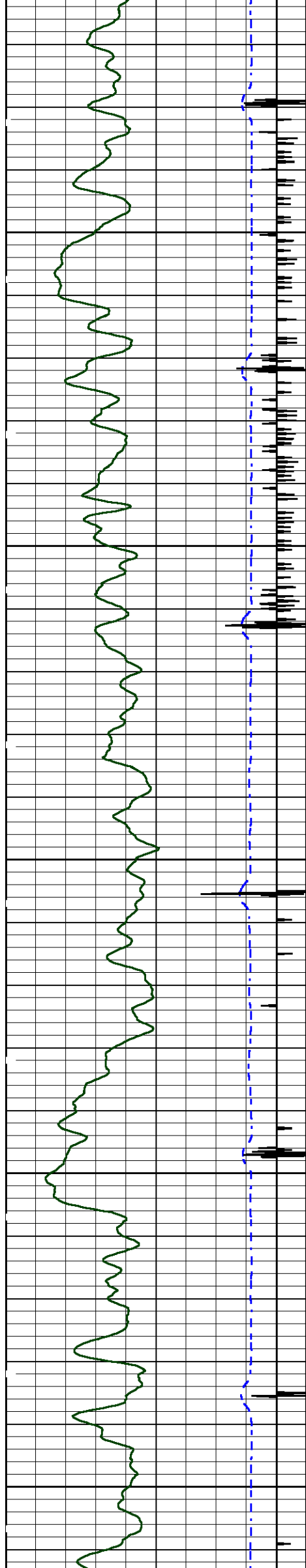




2000

2100

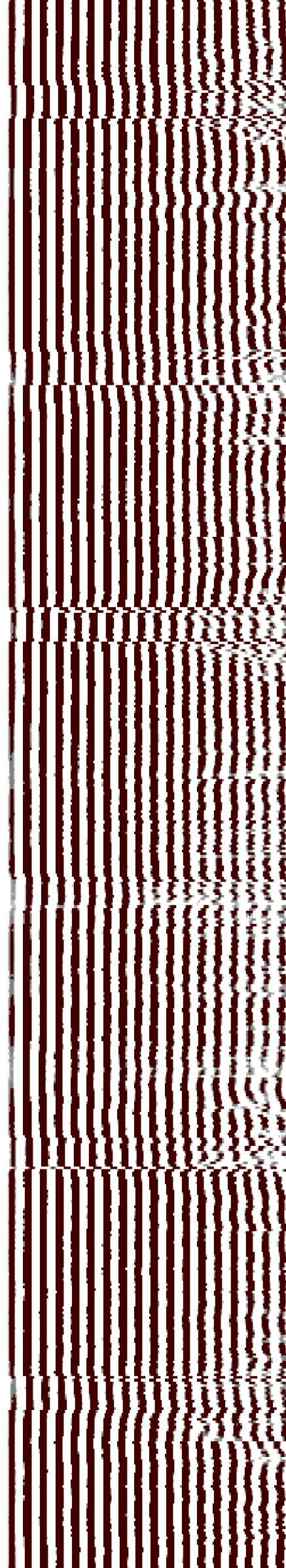
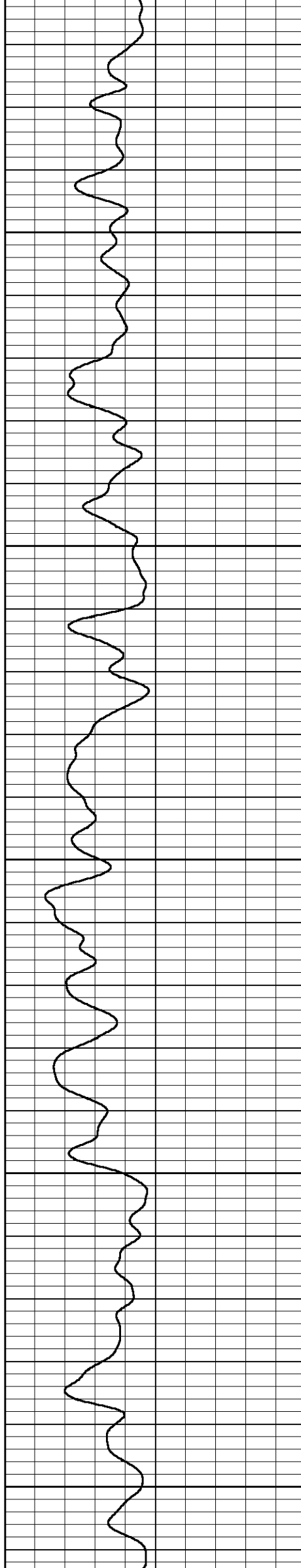


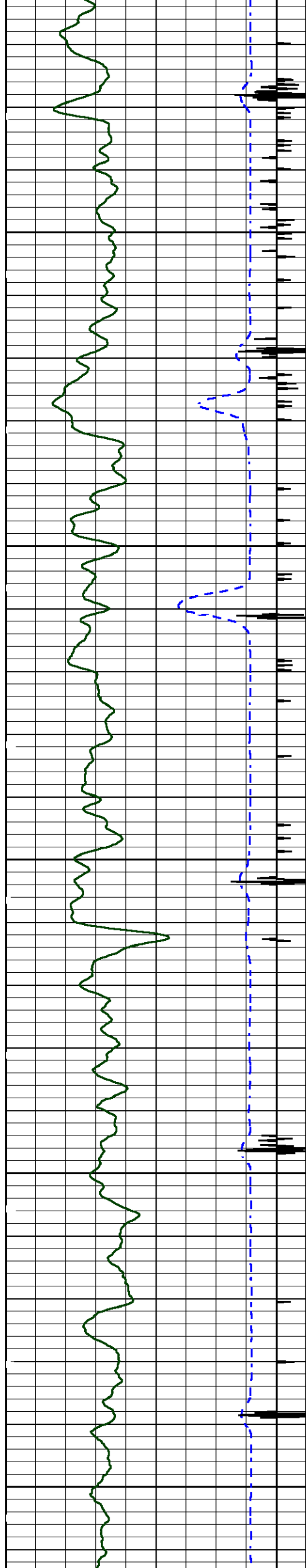


2200

2300

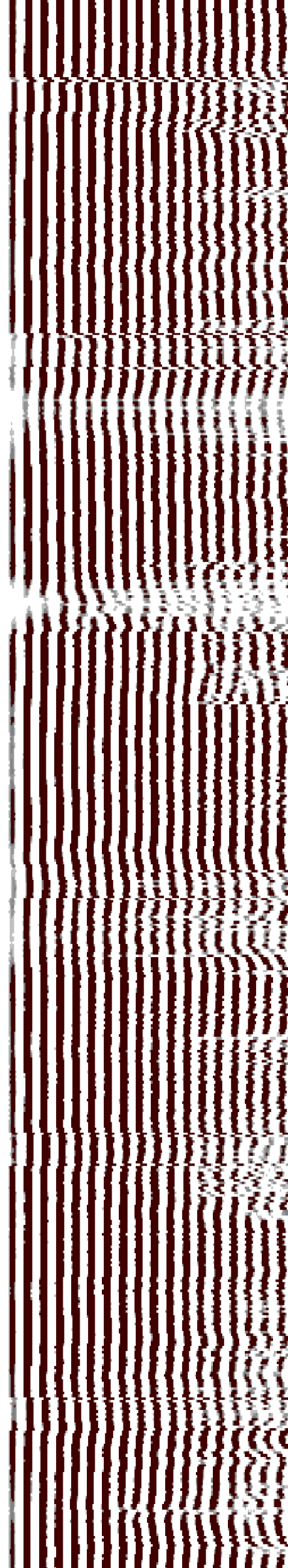
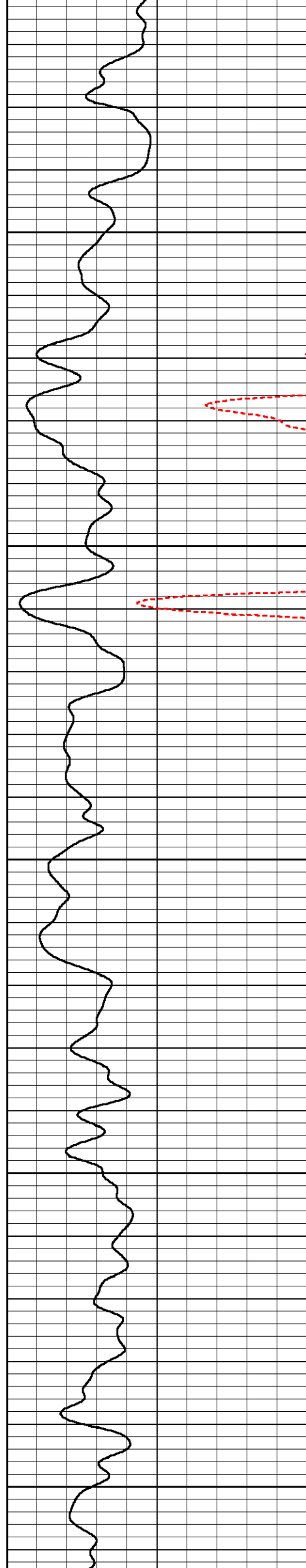
2400

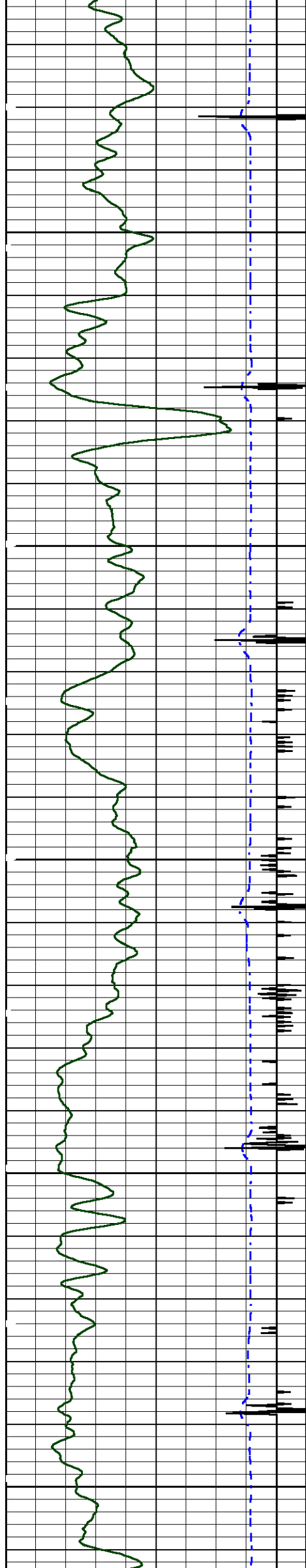




2500

2600

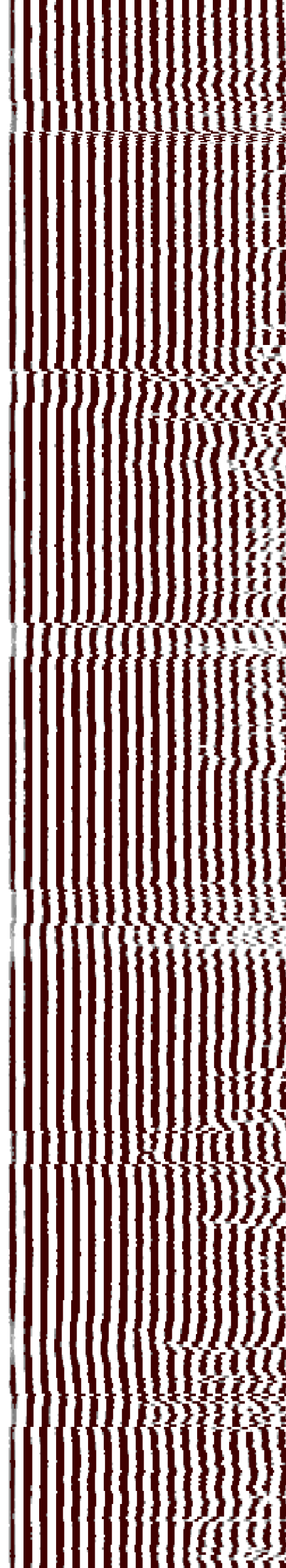
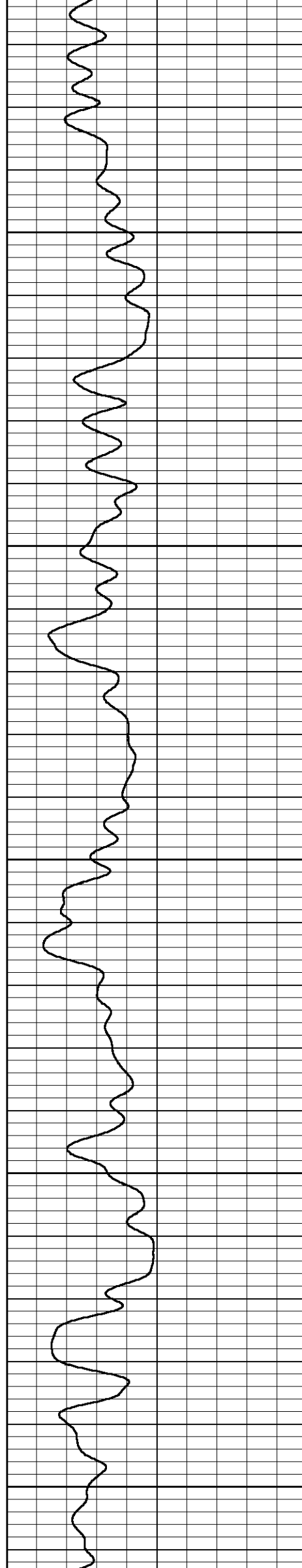


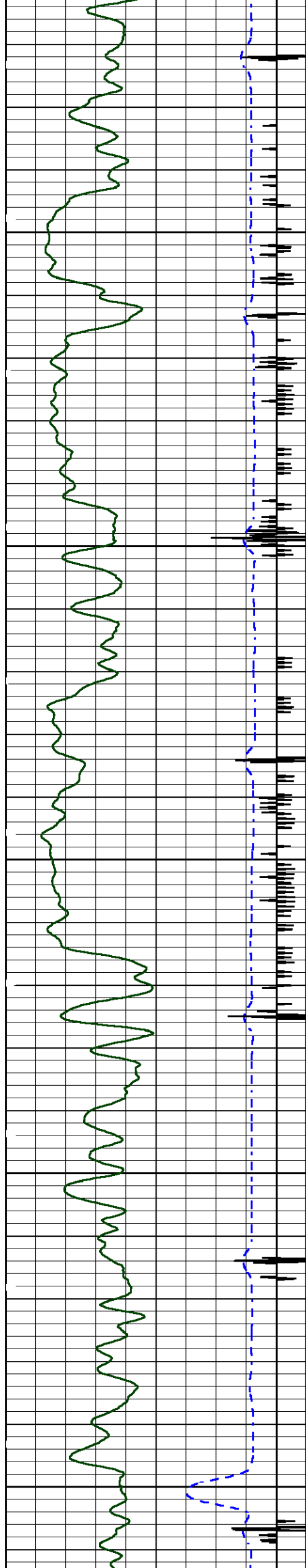


2700

2800

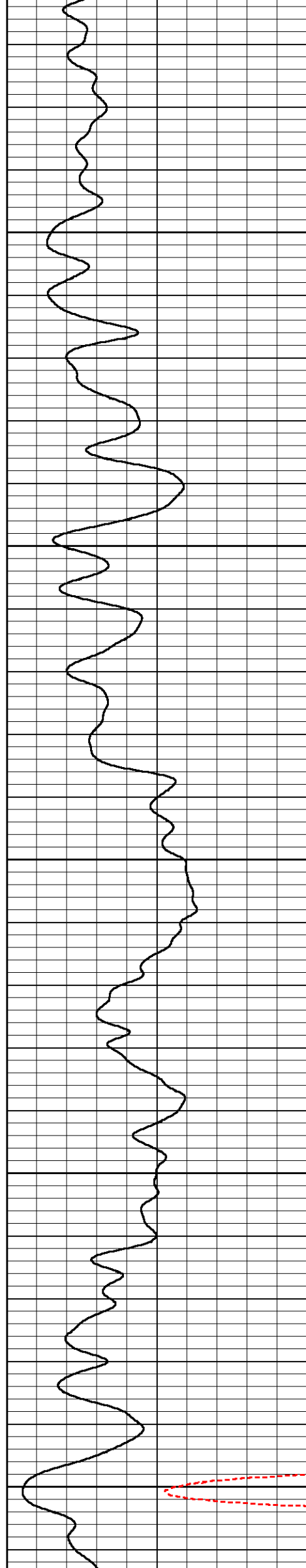
2900

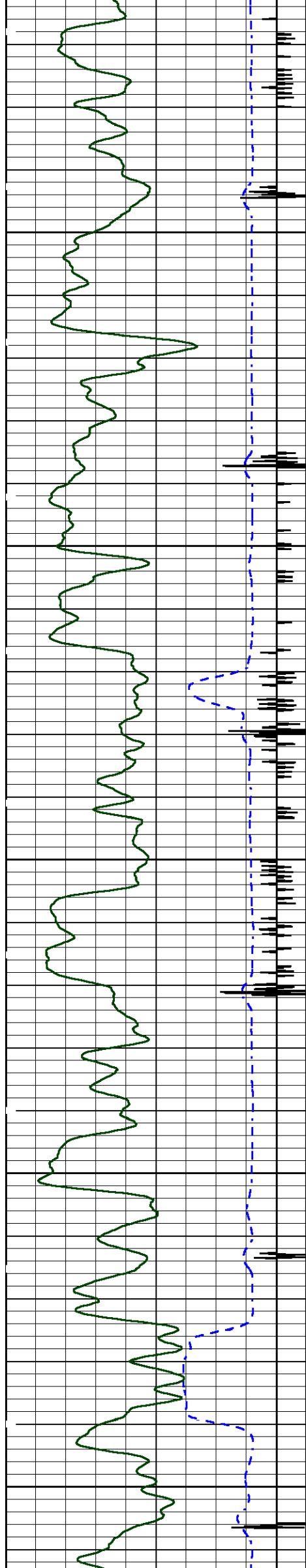




3000

3100

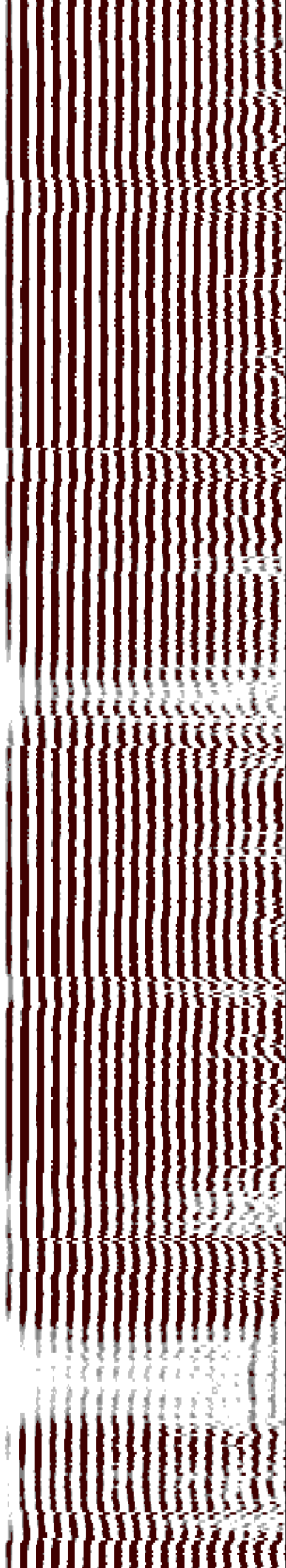
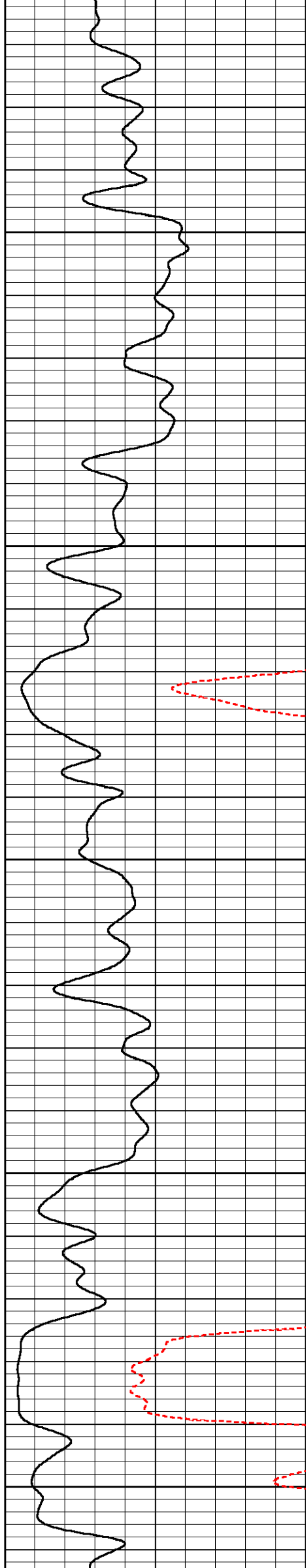


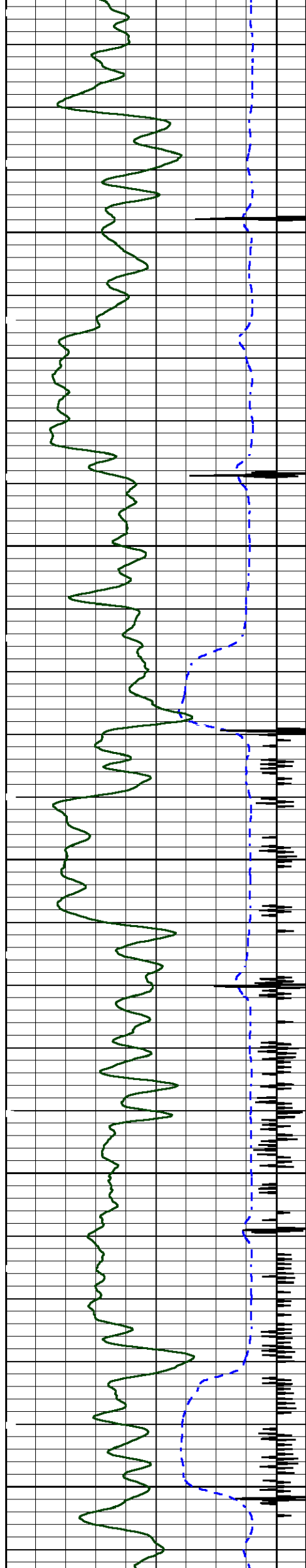


3200

3300

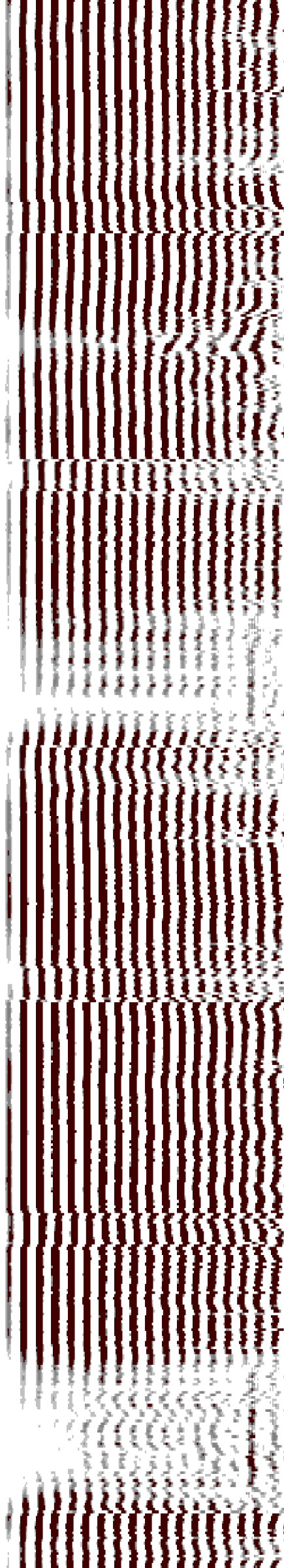
3400

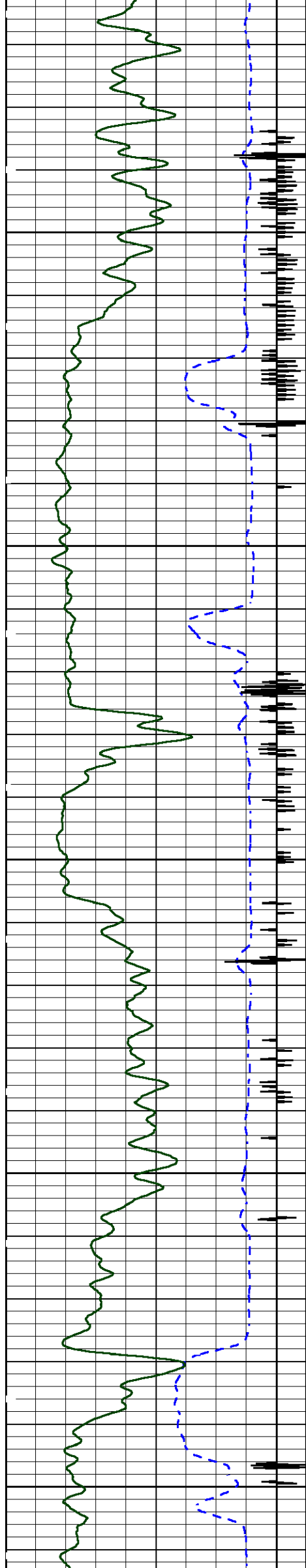




3500

3600

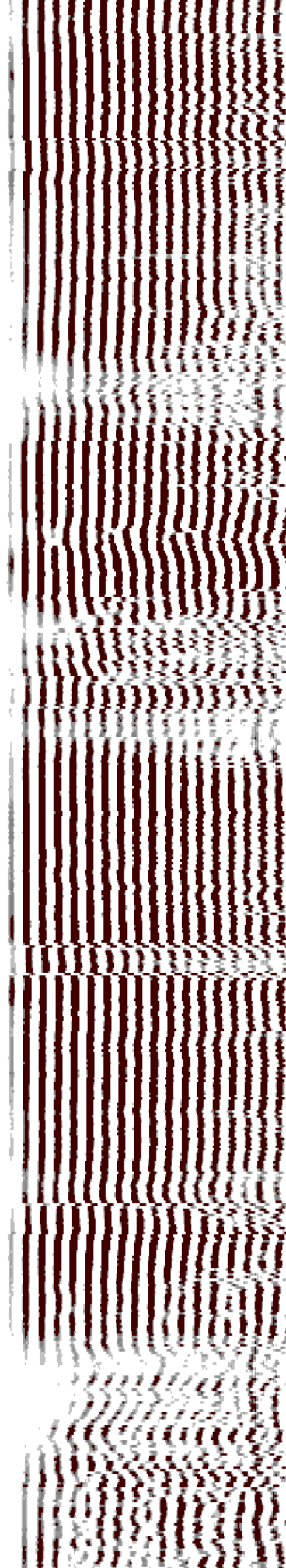
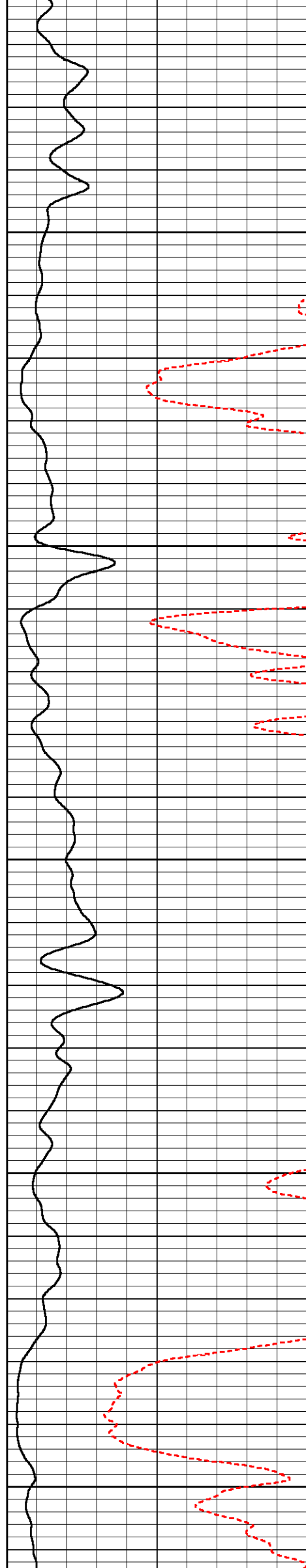


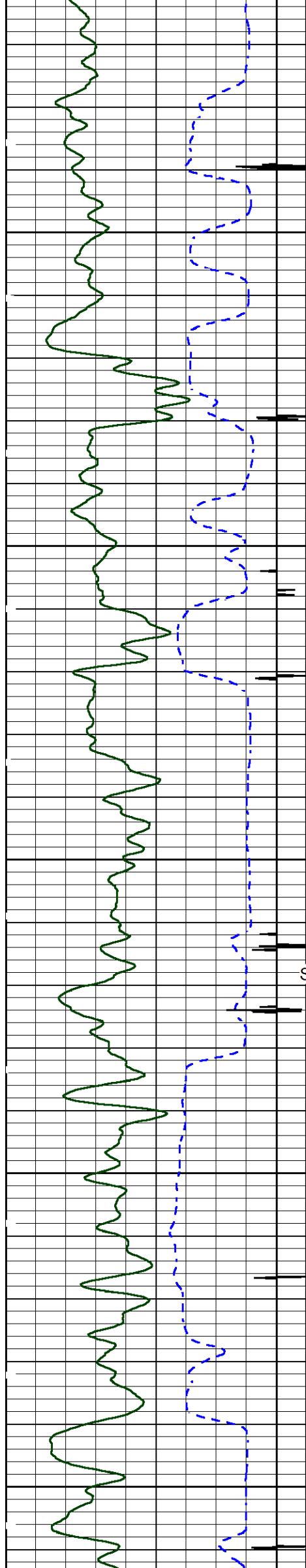


3700

3800

3900

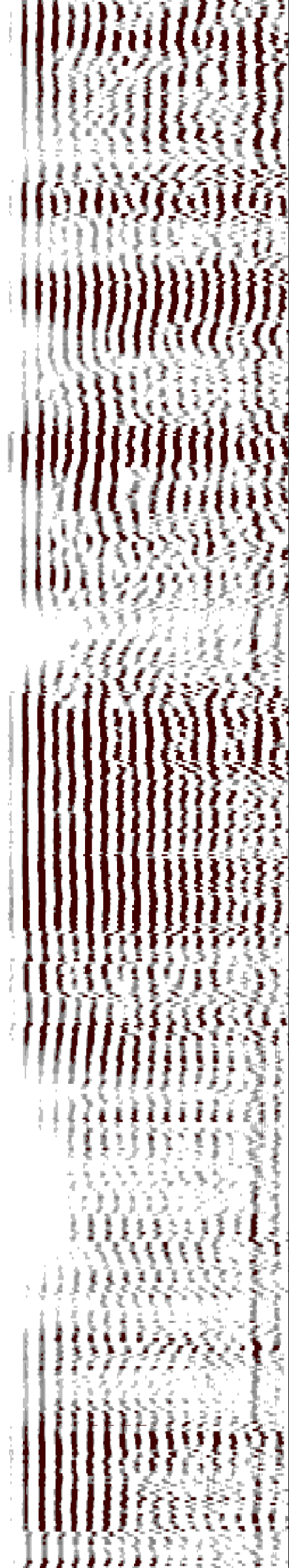
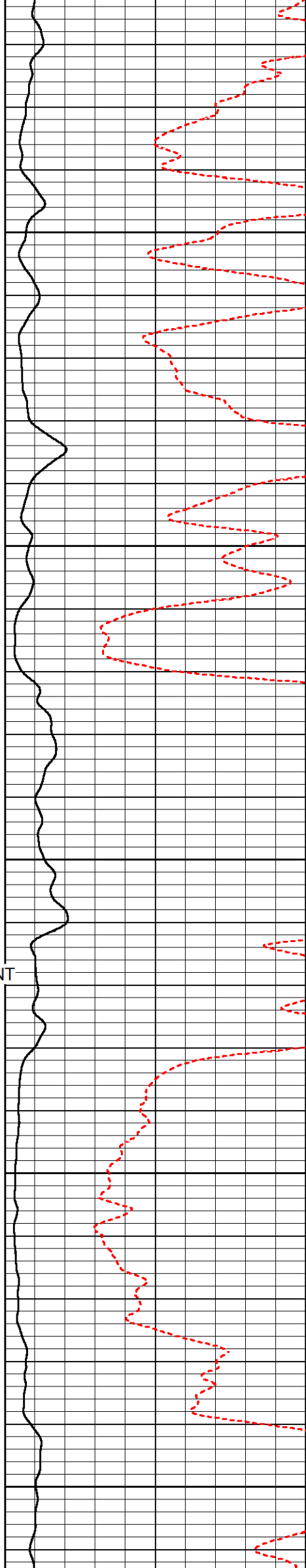


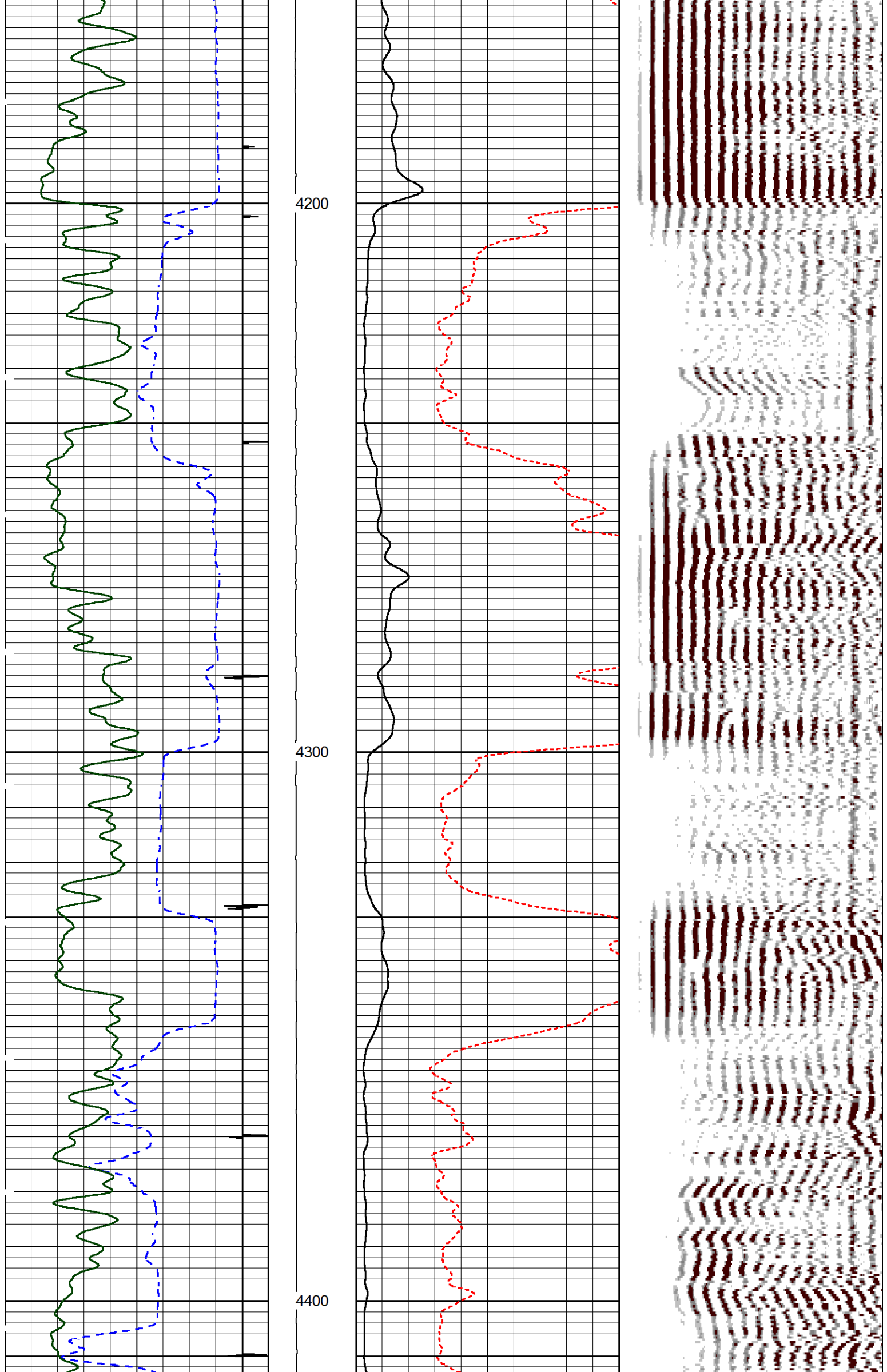


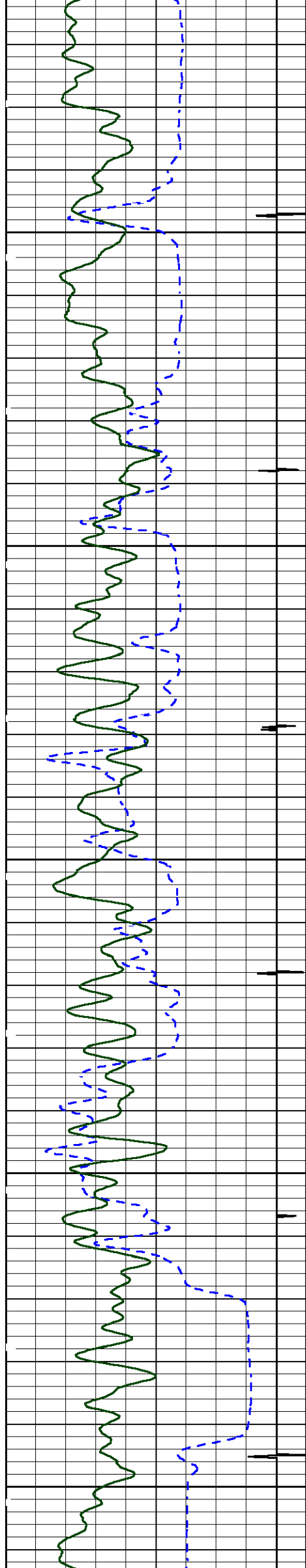
4000

SHORT JOINT

4100

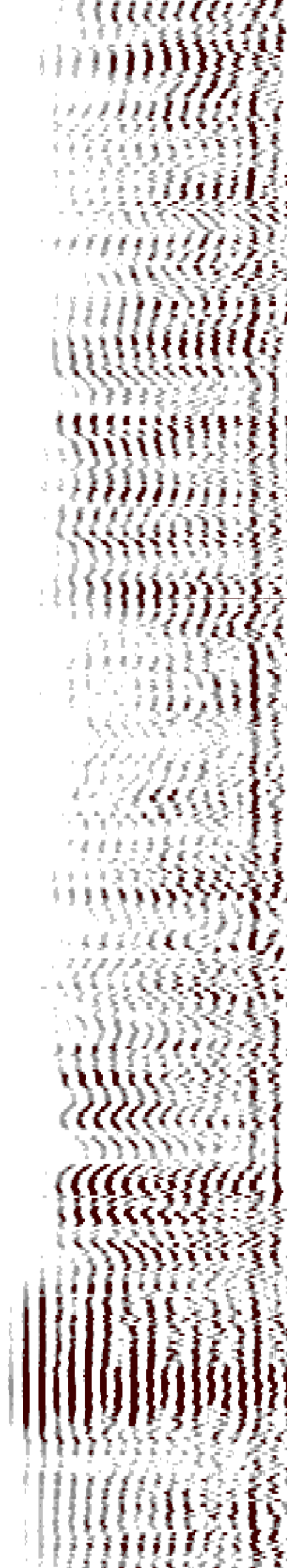
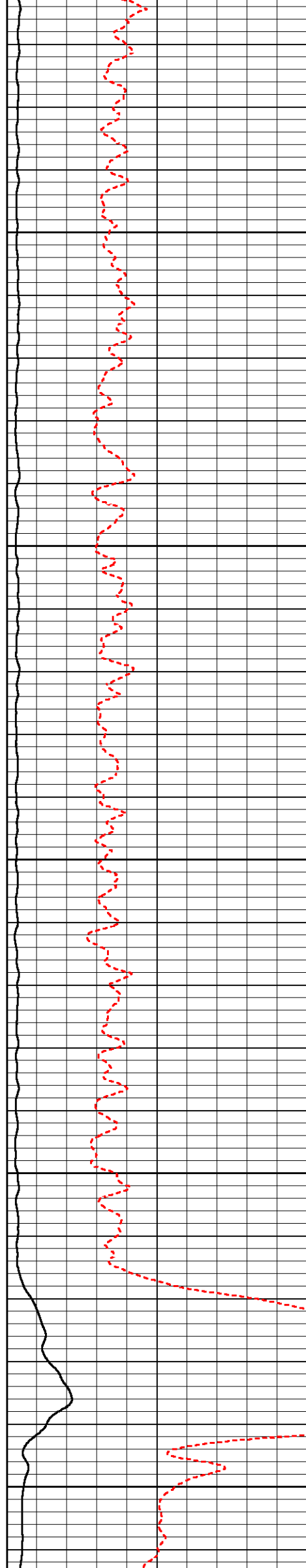


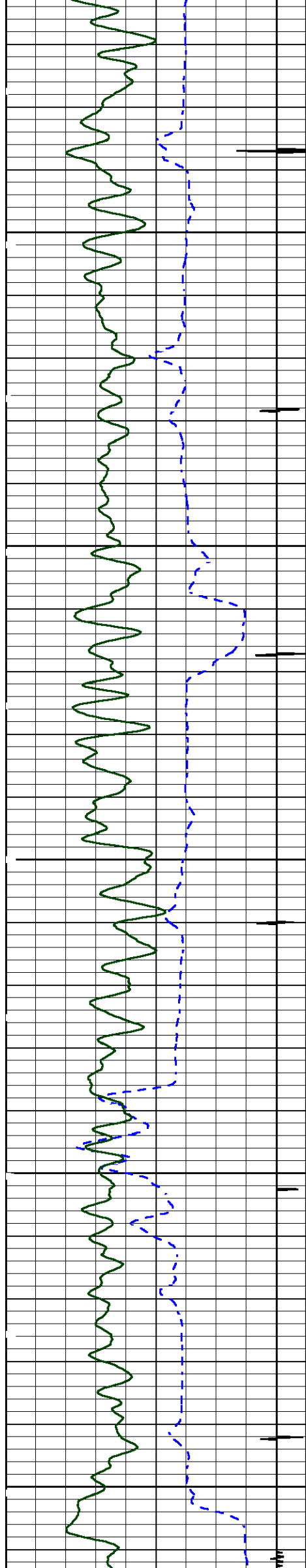




4500

4600

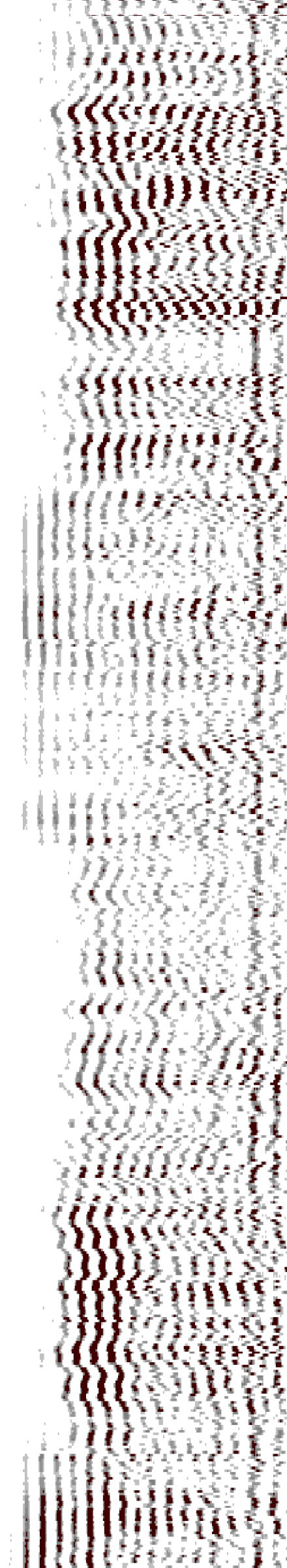
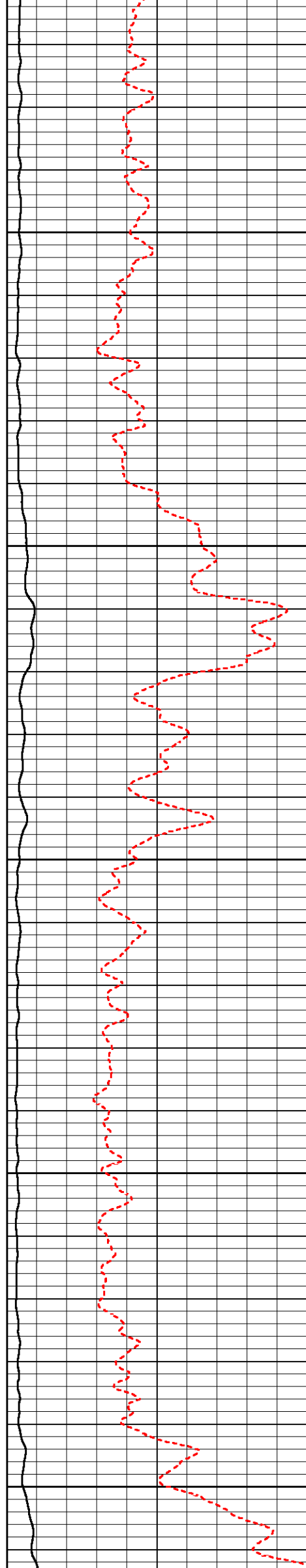


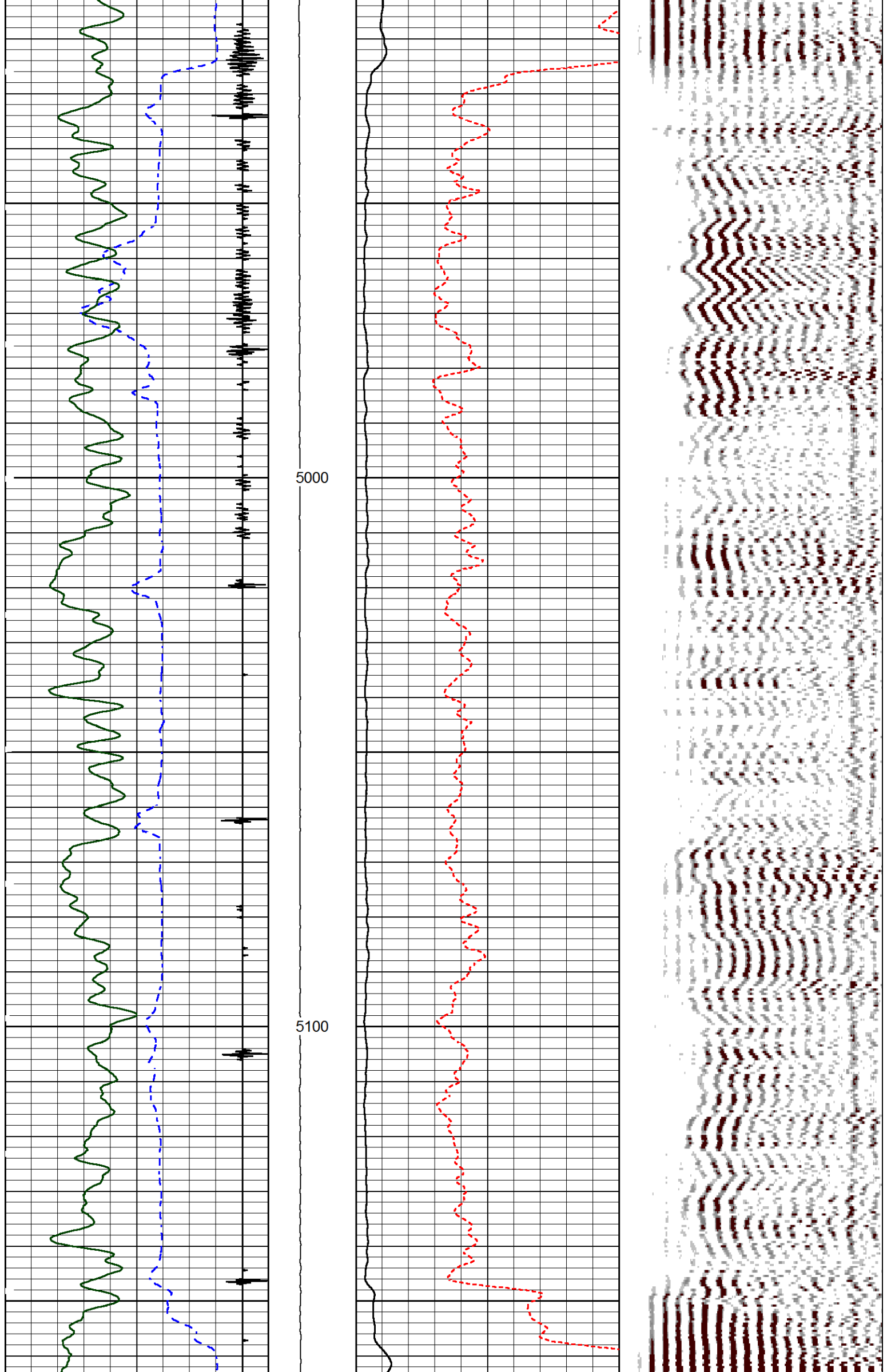


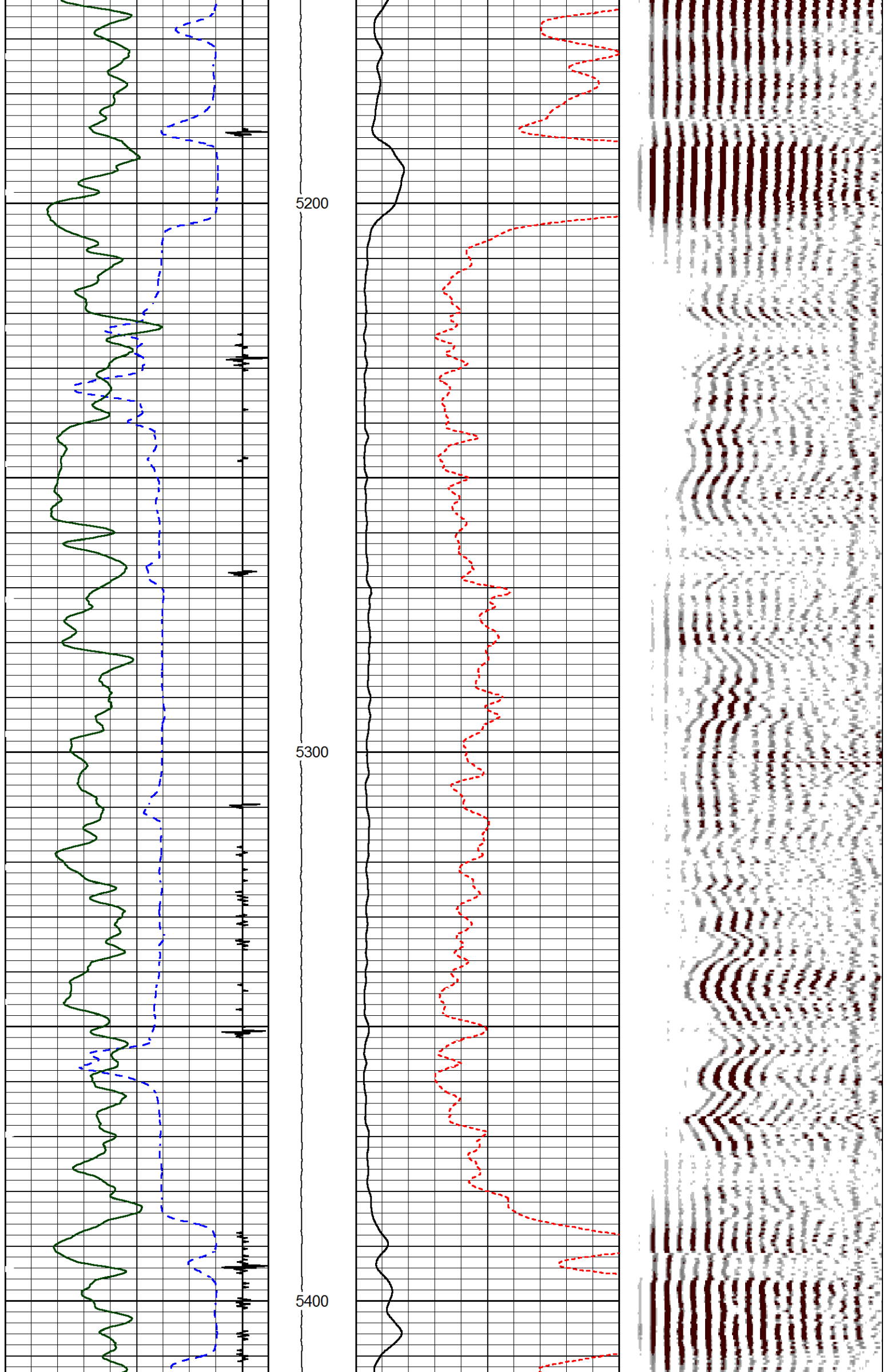
4700

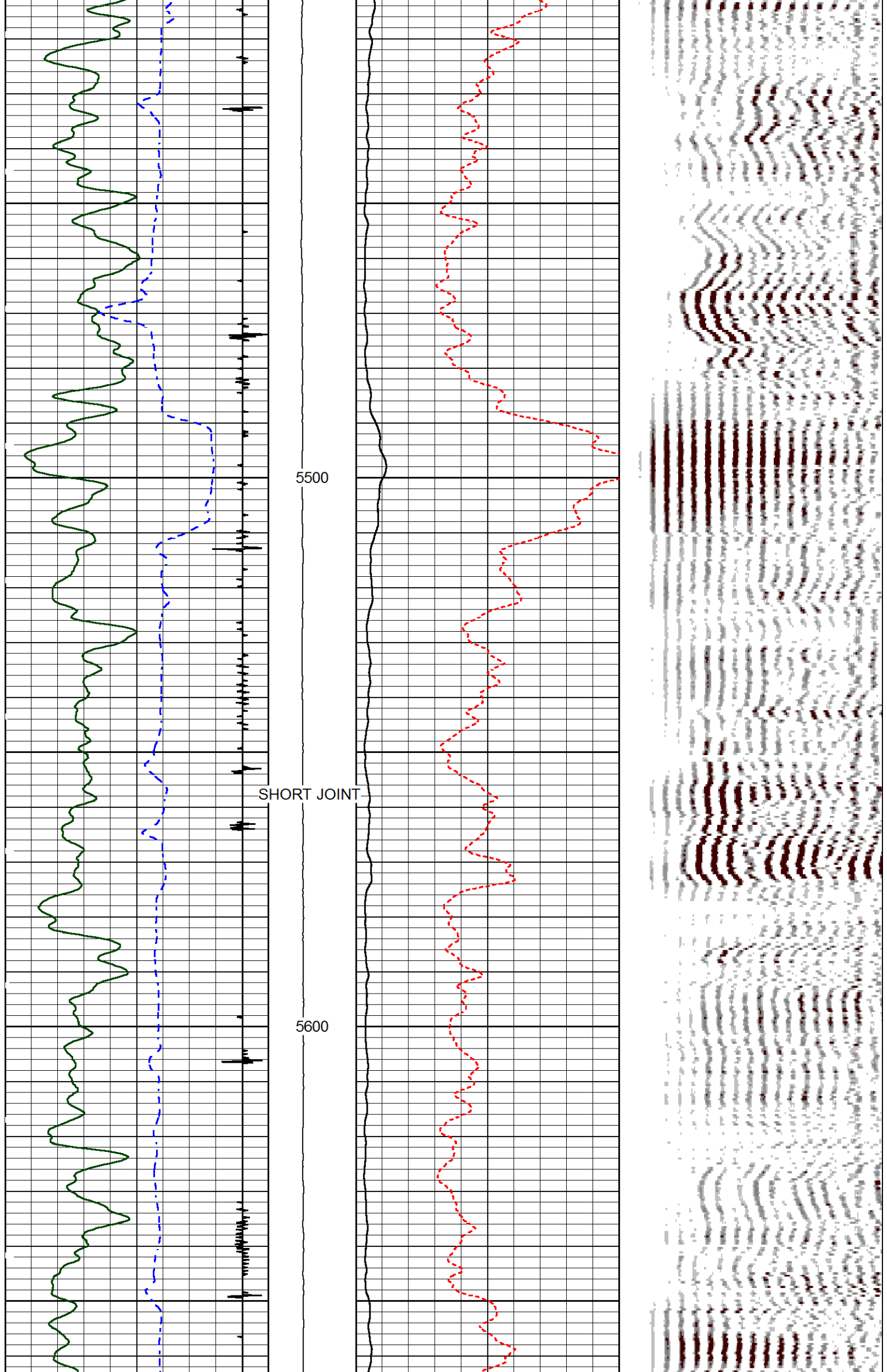
4800

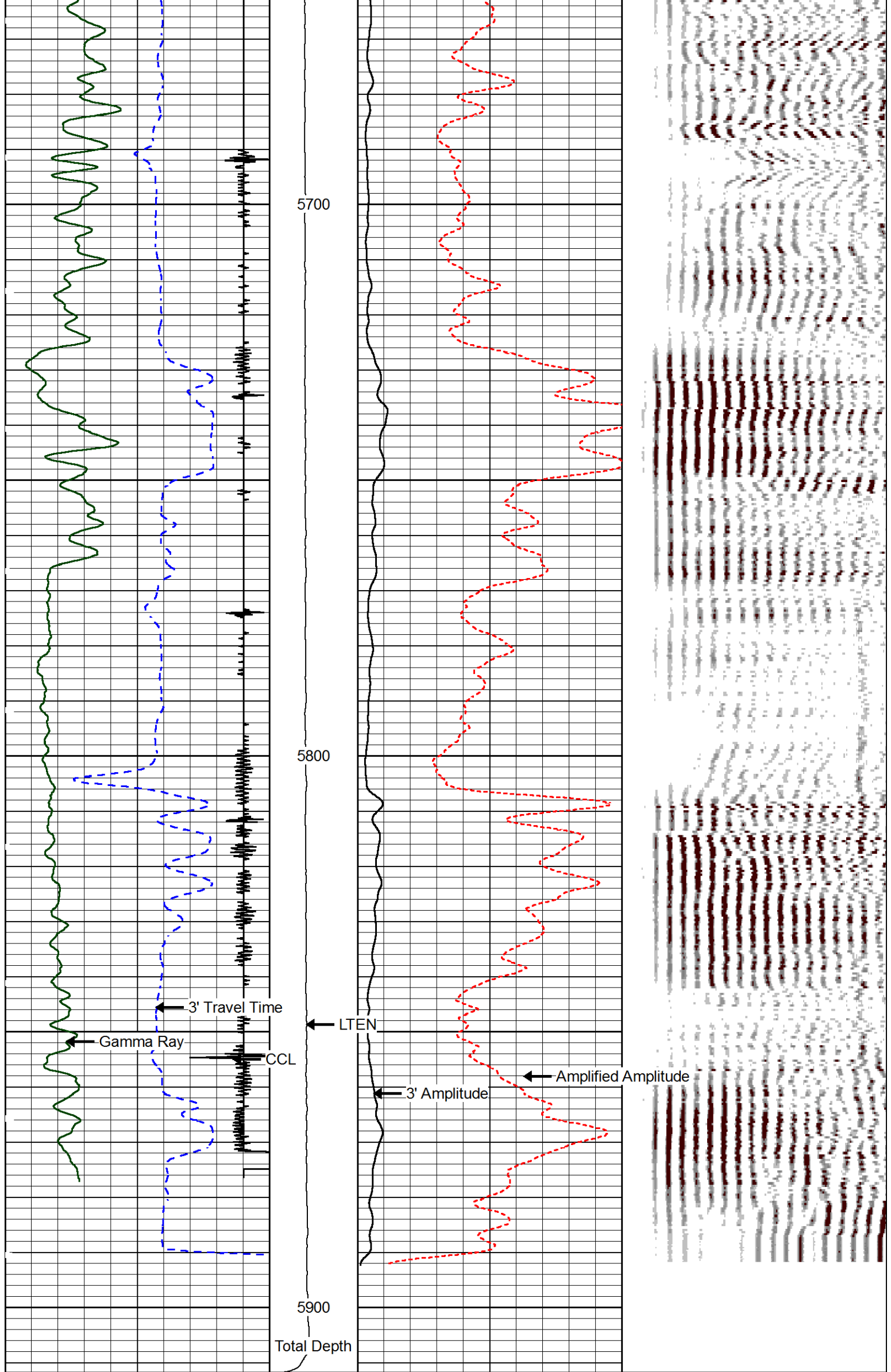
4900











410	3' Travel Time (usec)	210	LTEN	0	3' Amplitude (mV)	100	200	MSG	1060
-1660	CCL	180	0	(lb.4000	0	Amplified Amplitude (mV)	10		
0	Gamma Ray (GAPI)	200							

MAIN LOG SECTION

HALLIBURTON

5"=100

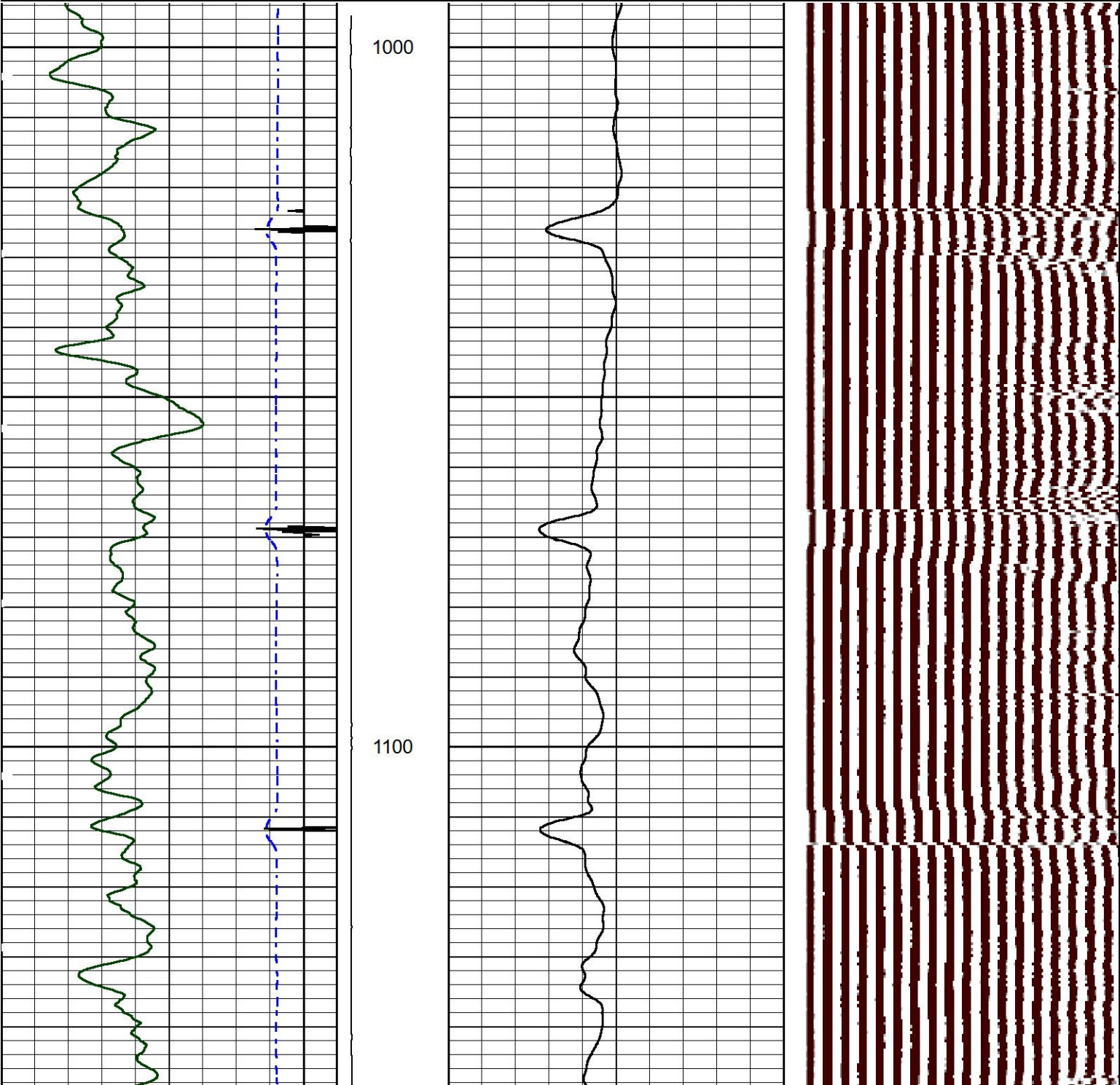
REPEAT LOG SECTION

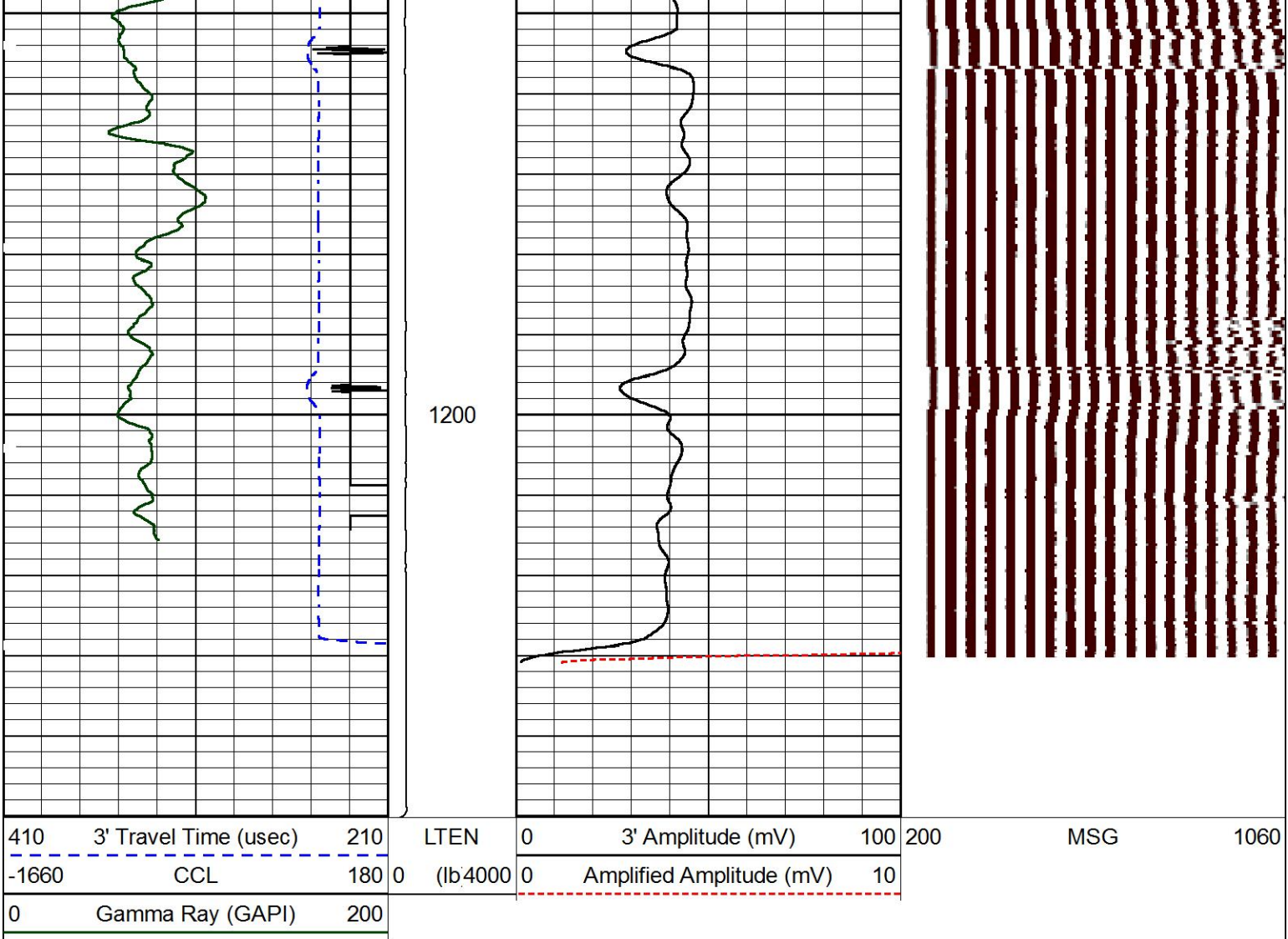
HALLIBURTON

5"=100'

Database File ir_24b_13_cmb.db
Dataset Pathname REPEAT2
Presentation Format hcbl
Dataset Creation Wed Jul 16 14:08:27 2014
Charted by Depth in Feet scaled 1:240

410	3' Travel Time (usec)	210	LTEN	0	3' Amplitude (mV)	100	200	MSG	1060
-1660	CCL	180	0	(lb.4000	0	Amplified Amplitude (mV)	10		
0	Gamma Ray (GAPI)	200							





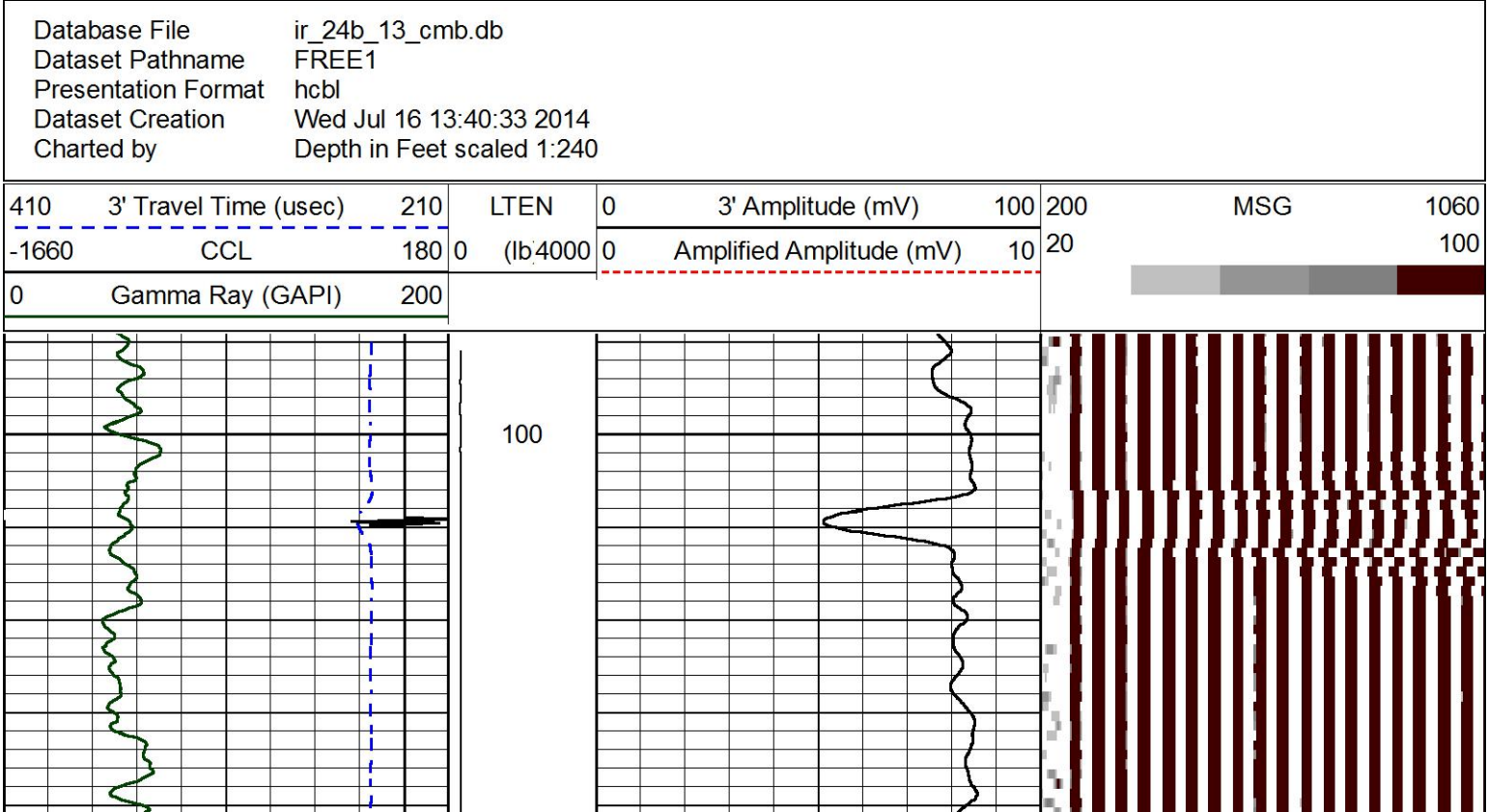
REPEAT LOG SECTION

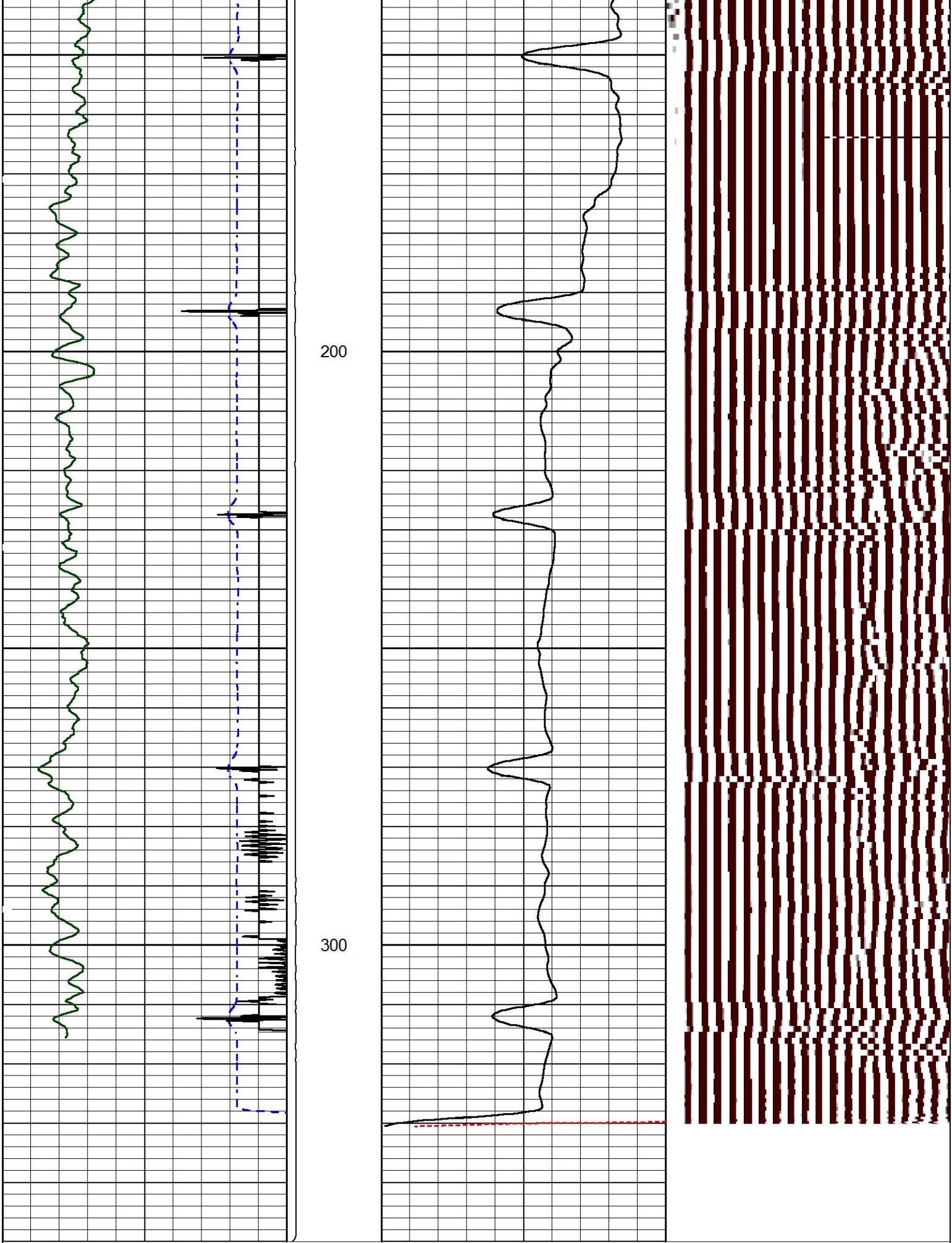
5"=100'



FREE PIPE LOG SECTION

5" = 100'





410	3' Travel Time (uSec)	210	LTEN	0	3' Amplitude (mV)	100	200	MSG	1060
-1660	CCL	180	0	(lb,4000)	0	Amplified Amplitude (mV)	10	20	100
0	Gamma Ray (GAPI)	200							

HALLIBURTON

FREE PIPE LOG SECTION

5" = 100'

Top - Bottom

BHTEMP_Src	BHSAL2	BHSAL1	POROS2	POROS1	LTH	UHSGC	RHO�F
1	0	1	0	1	Sandstone	NONE	0.25
SO in 0	BORSAL kppm 150	CASED? Yes	MSGGN 1	USERFTT usec/ft 0	ZREF MRayl 1.7	CASEWGHT lb/ft 11.6	SRFTEMP degF 0
MudWgt lb/gal 8.4	CASETHCK in 0.25	CASEOD in 4.5	PERFS 0	TDEPTH ft 0	BOTTEMP degF 100	BITSIZE in 8.75	

Calibration Report

Database File ir_24b_13_cmb.db
Dataset Pathname MAIN1
Dataset Creation Wed Jul 16 14:48:19 2014

Reservoir Monitor Tool I Calibration Report

Serial-Model: 12210614-A

Shop Calibration Performed: Wed Jul 09 16:17:58 2014

Carbon/Oxygen Mode

Stabilization

Result	Logged	Expected Value	Diff.	Tol.	Units
GENV	81.00	80.00	1.00	+/-15.00	V
ITCR2	3199	3250	-51	+/-250	cps

Near Detector

	Channel	Expected Value	Amplitude	FWHM	Tol.
H	60	60 +/-2	0.0266	5.36	<6.00
Fe	206	206 +/-2	0.0969	-----	-----
NGAIN = 0.996 NZOFF = 0.5					

Far Detector

	Channel	Expected Value	Amplitude	FWHM	Tol.
H	60	60 +/-2	0.0359	5.69	<6.50
Fe	209	208 +/-2	0.0915	-----	-----
FGAIN = 0.993 FZOFF = 0.2					

Flask Temperature 62.3 degF

Result	Logged	Expected Value	Diff.	Tol.	Units
COIR2	0.45	0.45	-0.00	+/-0.02	
LIRI2	1.65	1.64	0.01	+/-0.05	
TCCR2	5003	5000	3	+/-1000	cps
ITCR2	3160	3200	-40	+/-250	cps

Sigma Mode

Stabilization

Result	Logged	Expected Value	Diff.	Tol.	Units
GENV	81.00	80.00	1.00	+/-15.00	V
FCAP	9882	10000	-118	+/-500	cps

Horizontal Water Tank						
Result	Logged	Expected Value	Diff.	Tol.	Units	
N/F Normalizer	0.94	0.95	-0.01			
N/F Inel Norm	0.61	0.61	-0.00			
RNF	1.06	1.07	-0.01	+/-0.12		
RINC	1.64	1.64	0.00	+/-0.18		
SGFN	24.08	24.00	0.08	+/-0.50	cu	
SGFF	22.87	22.85	0.02	+/-0.50	cu	
FSIN	23851	24000	-149	+/-2000	cps	
FCAP	10021	10000	21	+/-1000	cps	
NFTR	0.80			<5.00		
FFTR	0.92			<5.00		
NBKG	179			<500	cps	
FBKG	92			<500	cps	
RTN	0.40	0.40	0.00	+/-0.10	usec	
RTF	0.43	0.40	0.03	+/-0.10	usec	

Calibration Software Modules	
HRMTI Module	2013.11.14.0
RMTI Module	2014.5.9.1
Log Data Acquisition Software Modules	
HRMTI Module	2013.11.14.0
RMTI Module	2014.5.9.1

Cement Bond Log Shop Calibration Report

Serial-Model:	12091452-A
Calibration Performed:	Tue Jul 15 09:57:44 2014

Free Pipe Calibration		
	Measured	Units
TT	246.1	usec
Amplitude	554.4	mV
Log Base Line	-7.2	mV
Calibration References and Gain		
Name	Value	Units
Pipe O.D.	4.500	in
Pipe Weight	11.6	lb/ft
Pipe Ref. Amp.	81.2	mV
Amp. Gain	0.145	

Gamma Ray Calibration Report

Type / Serial:	002 / 11214503
----------------	----------------

SHOP CALIBRATION		Wed Jul 16 08:49:54 2014			
	Counts/Sec.	Gain	Offset	Jig	Units
Background	48.8				cps
Calibrator	346.4				cps
		1.3712			GAPI/cps
PRIMARY VERIFICATION		Wed Jul 16 08:52:21 2014			
Background	67.4				cps
Calibrator	471.1				cps
Difference				403.7	GAPI
BEFORE SURVEY VERIFICATION					
Background	0.0				cps
Calibrator	0.0				cps
Difference				0.0	GAPI

AFTER SURVEY VERIFICATION

Background	0.0		cps
Calibrator	0.0		cps
Difference		0.0	GAPI

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
CCL	35.09		STNDCH-STND_CH 1.4375 IN CABLE HEAD	1.50	1.44	1.00
GR	32.83					
Temp	23.11					
TT3FT	20.86					
AMP3FT	20.86					
WVF5FT	19.90					
FrameCnt	16.38					
TLINITCNT	16.38		TTTCU-002 (11214503) Through Tubing Telemetry Cartridge - Ultrawire	7.65	1.69	100.00
CblCTT	16.38					
CblCCsgWgt	16.38					
CblCCsgOD	16.38					
CblCAmp	16.38					
CblBLine	16.38					
CblTTThresh	16.38					
CblAGate	16.38		XHU-003 (11899561) Crossover Halliburton 1553 to Ultrawire	1.58	1.69	7.00
CblLWvCnt	16.38					
CblCStat	16.38		CENT-CASTM-CENT CAST M INLINE CENTRALIZER	2.16	3.13	25.00
CblIVolt	16.38					
CblITemp	16.38					
CblSeqNum	16.38					
CblTStat	16.38					
WVF3FT	16.38					
RmtTFGT	8.47					
RmtFBACK	8.47					
RmtFCAPT	8.47					
RmtFINEL	8.47		HCBLM-A (12091452) Halliburton HCBLM Tool	9.38	2.75	116.00
RmtTNGT	7.97					
RmtNBACK	7.97					
RmtNCAPT	7.97					
RmtNINEL	7.97					
TLINITCNT	0.22					
RImpBTEST	0.22					
RImpBCYC	0.22		CENT-CASTM-CENT CAST M INLINE CENTRALIZER	2.16	3.13	25.00
RImpBRGW	0.22					
RImpBRGO	0.22					
RImpState	0.22					
RImpPhase	0.22					
RImpCyc	0.22					
RmtGenClampV	0.22					
RmtFTemp	0.22					
RmtFP5V	0.22					
RmtFPMHV	0.22					
RmtFPMI	0.22					
RmtFPrgSt1	0.22					
RmtFDetStat	0.22					
RmtNTemp	0.22		RMTI-A (12210614) Halliburton RMTI Tool	14.00	2.13	77.00
RmtNPMHV	0.22					
RmtNPMI	0.22					
RmtNPrgSt1	0.22					
RmtNDetStat	0.22					
RmtGenIonI	0.22					
RmtGen15BusV	0.22					
RmtGenLvdsV	0.22					
RmtGenSyncV	0.22					
RmtGenClampV	0.22					
RmtGenP5V	0.22					

RmtGenP33V	0.22		BUL-006 (000002)	0.22	1.69	1.20
RmtGen200V	0.22		Bullnose Terminator			
RmtGenP15VI	0.22		Dataset:	ir_24b_13_cmb.db: field/well/run1/MAIN1		
RmtGenTemp	0.22		Total length:	38.66 ft		
RmtGenP5VI	0.22		Total weight:	352.20 lb		
			O.D.:	3.13 in		

Company	CAERUS PICEANCE, LLC.				
Well	ISLAND RANCH 24B-13				
Field	PARACHUTE				
County	GARFIELD		State	CO	
HALLIBURTON	ACOUSTIC CEMENT BOND LOG				