



MIDWEST WIRELINE

# BOREHOLE COMPENSATED SONIC LOG

**Company** Cobalt Energy, LLC  
**Well** Darwin #1-22  
**Field** Wildcat  
**County** Graham **State** Kansas

Company Cobalt Energy, LLC  
 Well Darwin #1-22  
 Field Wildcat  
 County Graham  
 State Kansas

**Location:** API #: 15-065-24303-00-00  
 NE NW SW SE  
 1207 FSL & 2076 FEL  
 SEC 20 TWP 10S RGE 22W  
 Permanent Datum Ground Level Elevation 2331  
 Log Measured From Kelly Bushing  
 Drilling Measured From Kelly Bushing  
 Other Services  
 CNL/CDL  
 DIL/MEL  
 Elevation  
 K.B. 2336  
 D.F.  
 G.L. 2331

Date	11/24/2023						
Run Number	Two						
Type Log	BHCS						
Depth Driller	3900						
Depth Logger	3898						
Bottom Logged Interval	3886						
Top Logged Interval	250						
Type Fluid In Hole	Chemical						
Salinity, PPM CL	1600						
Density	9.2						
Level	Full						
Max. Rec. Temp. F	115						
Operating Rig Time	Full						
Equipment -- Location	P-108   HAYS						
Recorded By	D. Schmidt						
Witnessed By	Larry Nicholson						
Borehole Record							
Run No.	Bit	From	To	Size	Wgt.	From	To
One	12.25	0	259	8.625	23	0	259
Two	7.875	259	TD				
Casing Record							

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and Midwest Wireline LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Midwest Wireline LLC will not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees.

**Comments**

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.

Wakeeney,  
 North to Rd D (Graham County),  
 5 East, 1 South Rd C, 1/2 East,  
 North into

39.164528688 -99.761612634

Log Measured From: Kelly Bushing                      5    Ft. Above Permanent Datum

THANK YOU FOR USING MIDWEST WIRELINE LLC  
 785-625-3858

**Your Midwest Wireline Crew**

Engineer: D. Schmidt  
 Operator:  
 Operator:  
 Operator:

**This Log Record Was Witnessed By**

Primary Witness: Larry Nicholson  
 Secondary Witness:  
 Secondary Witness:  
 Secondary Witness:

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)	
			CENT-PENGO	4.25	3.00	70.00	
WVF4 WVF1	12.50 12.50		SLT-PENGO (602)	16.00	3.50	300.00	
WVF3 WVF2	10.50 10.50						
			CENT-PENGO	4.25	3.00	70.00	

Dataset: cobalt\_darvin 1-22.db: field/well/son/pass2  
 Total length: 24.50 ft  
 Total weight: 440.00 lb  
 O.D.: 3.50 in

# Log Variables

DatabaseC:\ProgramData\Warrior\Data\cobalt\_darvin 1-22.db  
 Dataset field/well/stkml/pass4.1/\_vars\_

## Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	115	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	No	-1	5.35	184	30	Off	3898

## Variable Description

A : Cement Factor (a)  
 BOREID : Borehole I.D.  
 BOTTEMP : Bottom Hole Temperature  
 CASEOD : Casing O.D.  
 CASETHCK : Casing Thickness  
 FLUIDDEN : Fluid Density  
 M : Cement Exp (m)  
 MATRXDEN : Matrix Density

NPORSEL : Neutron Porosity Curve Select  
 PERFS : Perforation Flag  
 SNDERR : Deep Sonde Error Correction  
 SNDERRM : Medium Sonde Error Correction  
 SPSHIFT : S.P. Baseline Offset  
 SRFTEMP : Surface Temperature  
 SZCOR : CN Size Cor. ?  
 TDEPTH : Total Depth

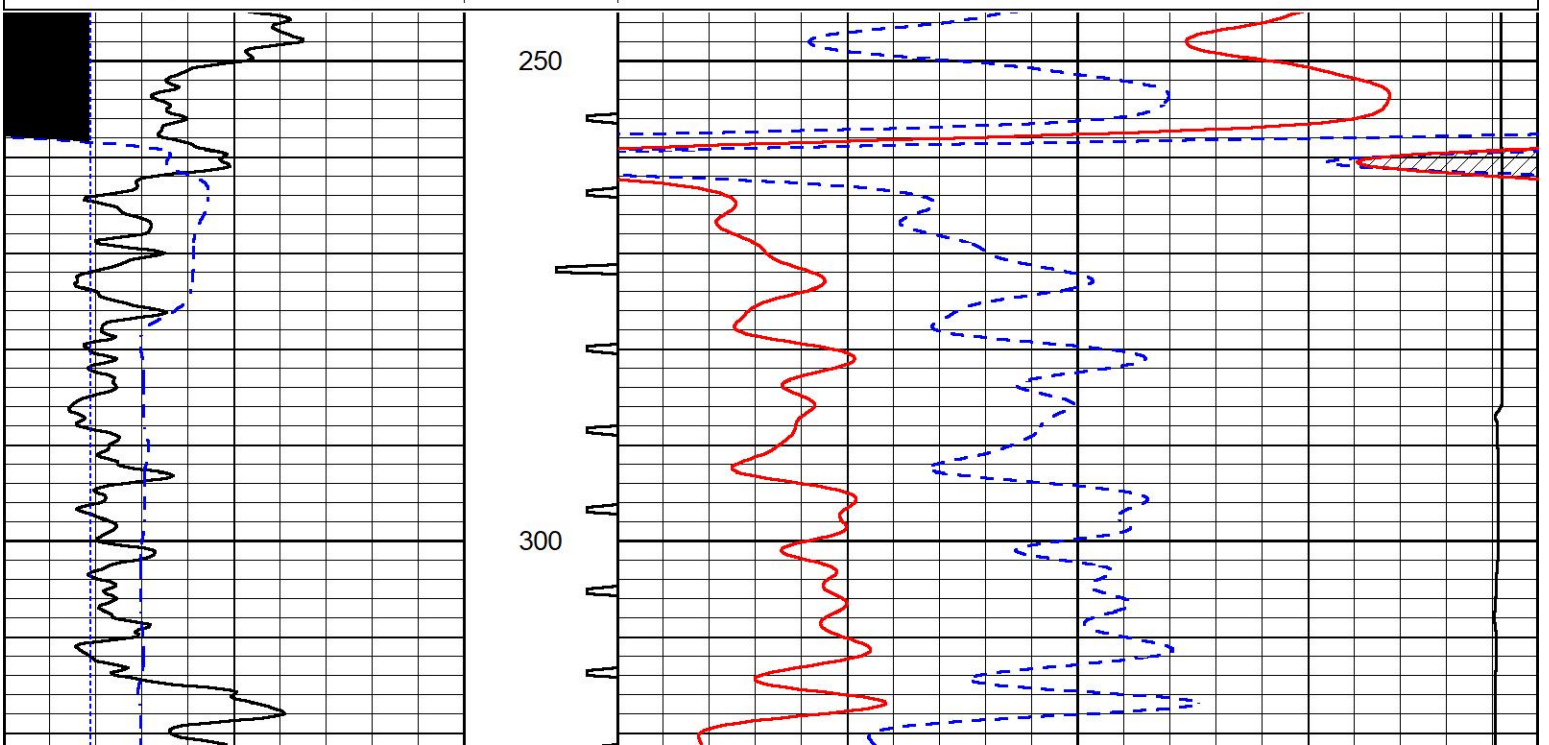


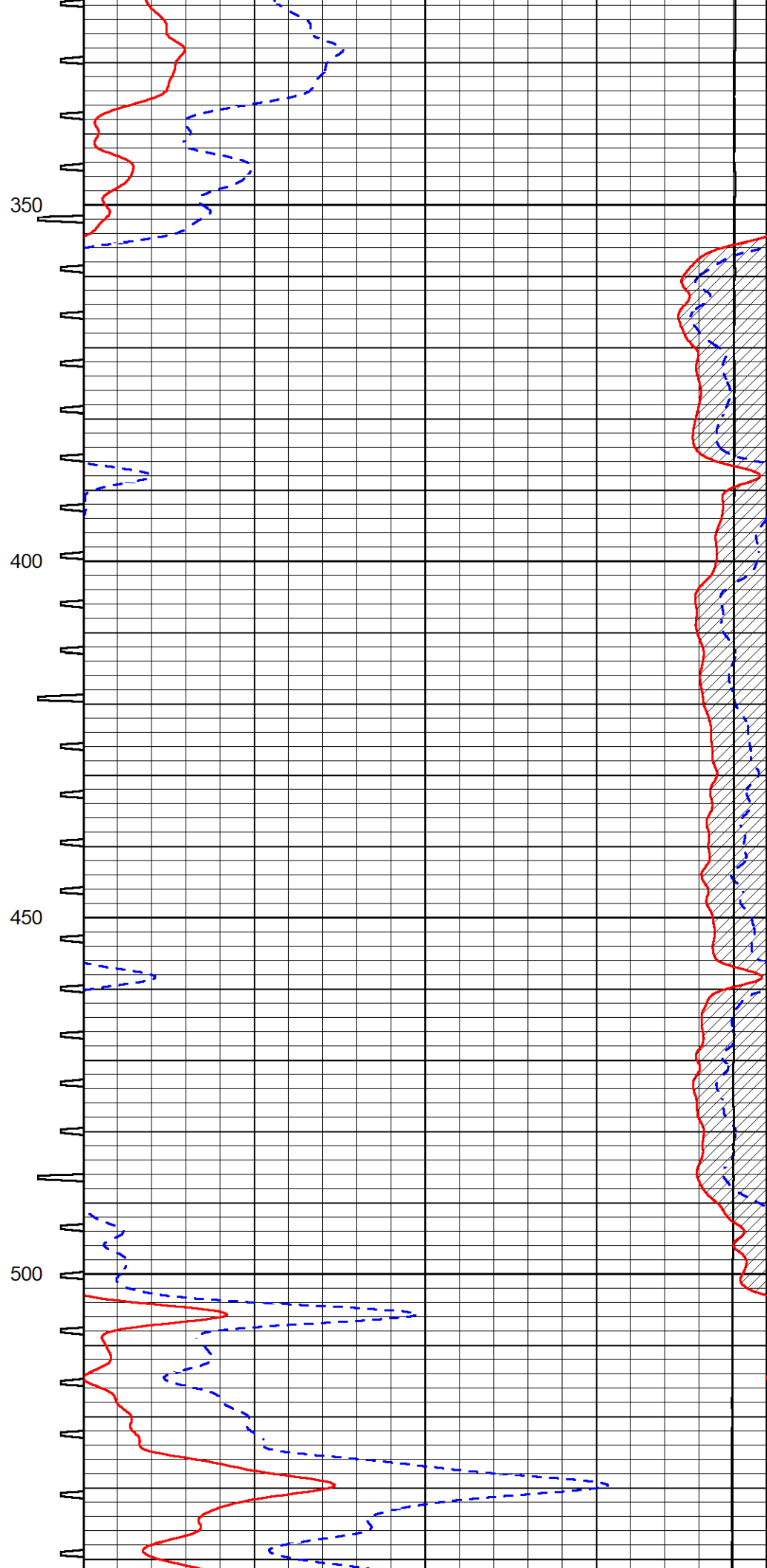
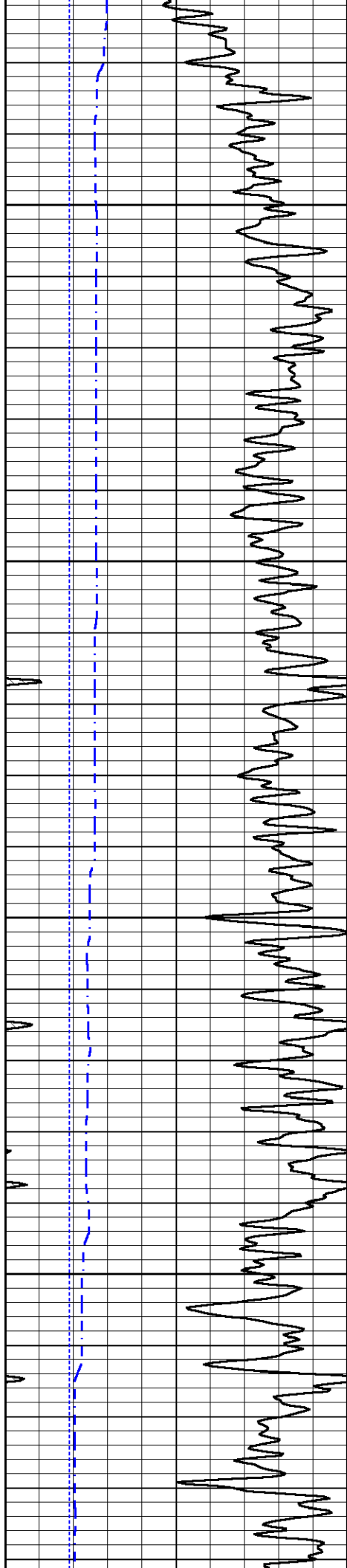
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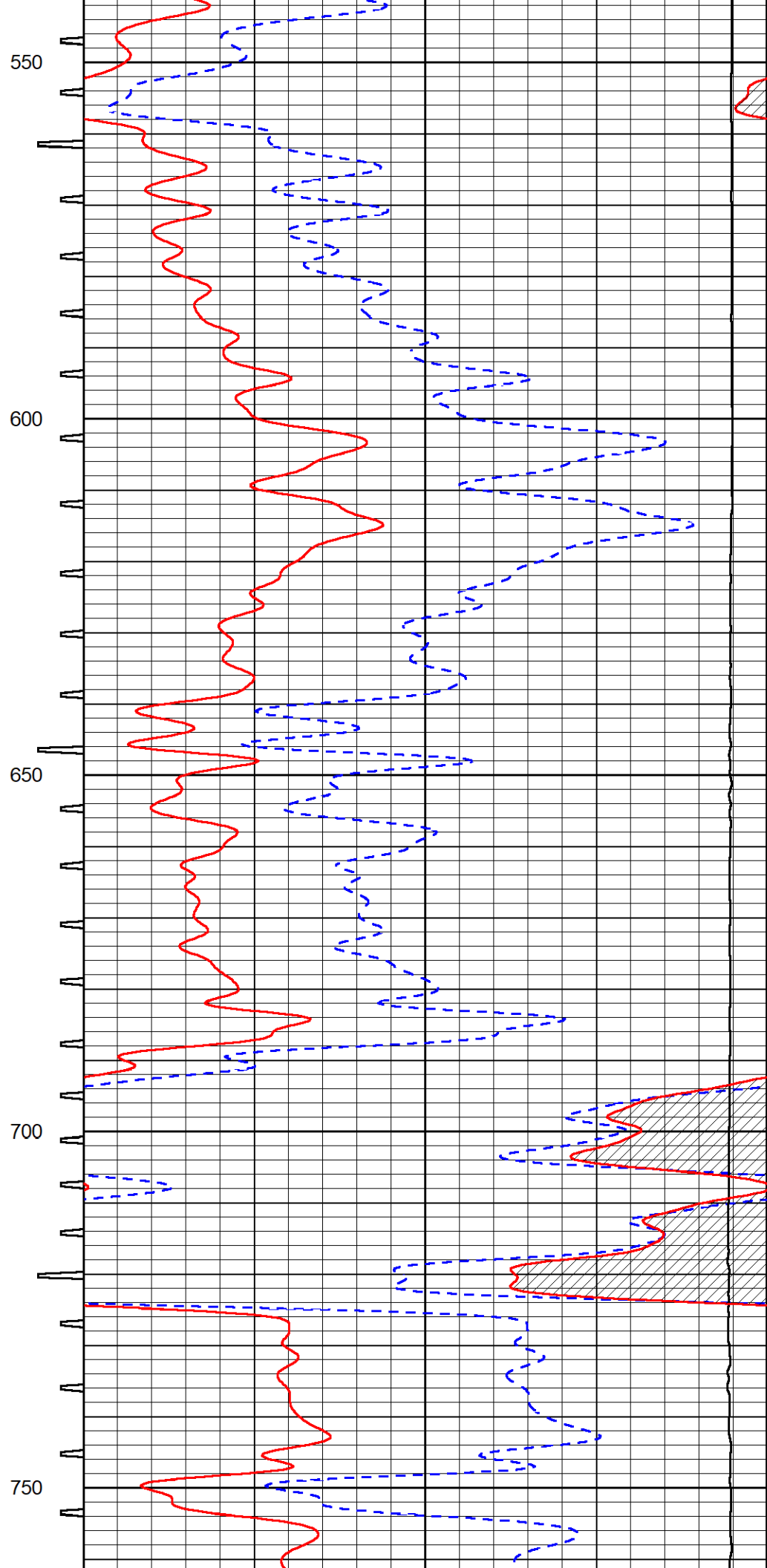
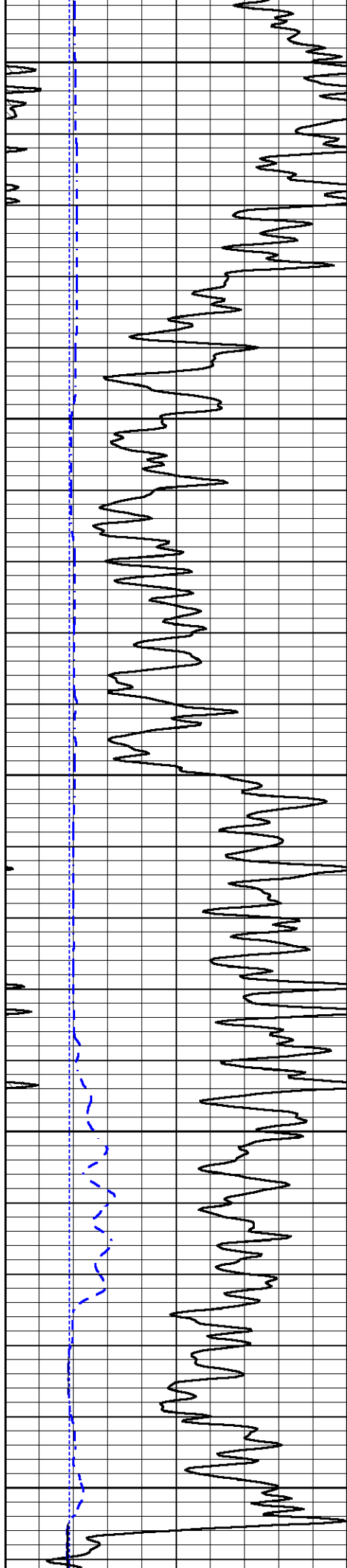
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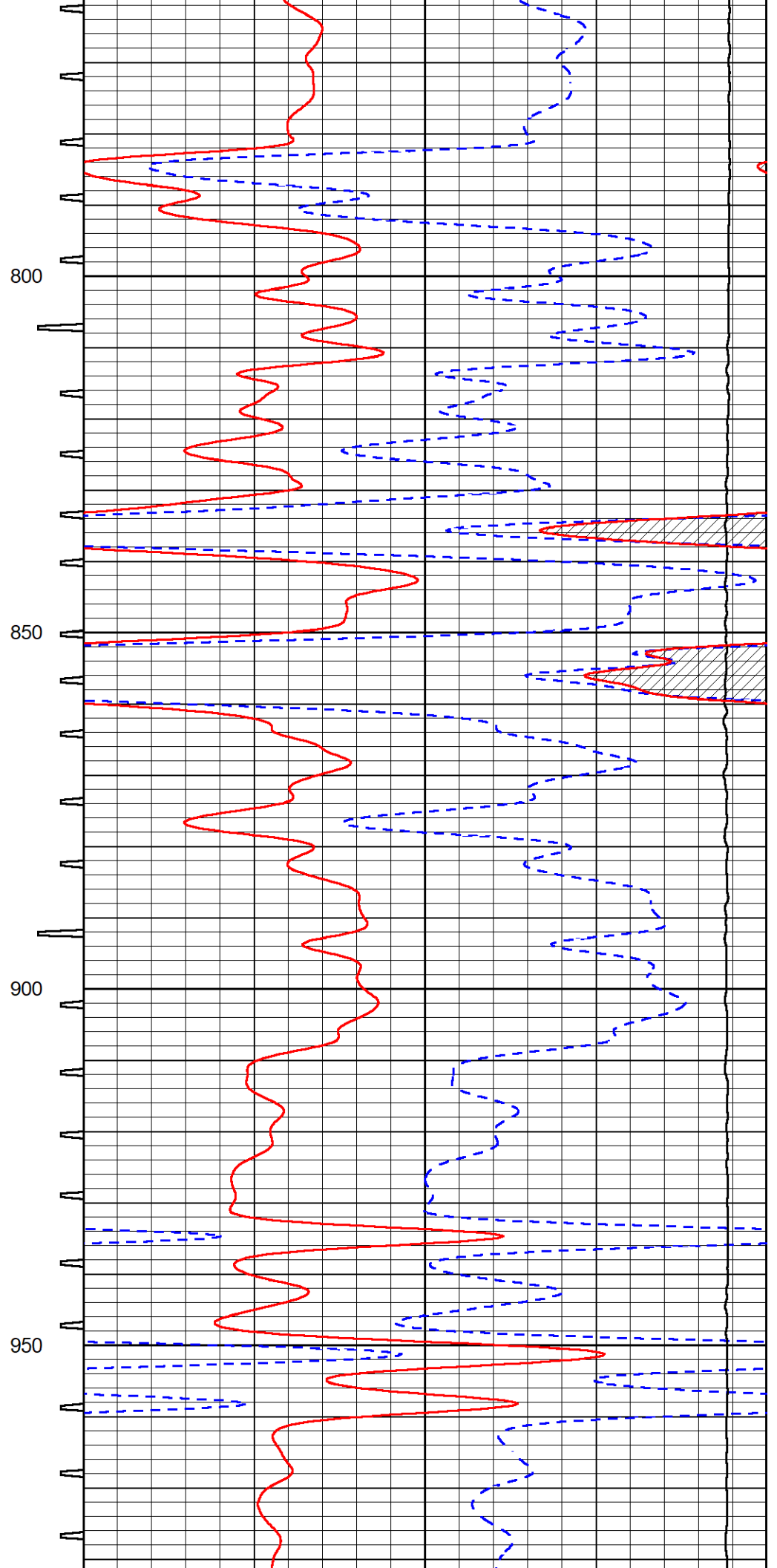
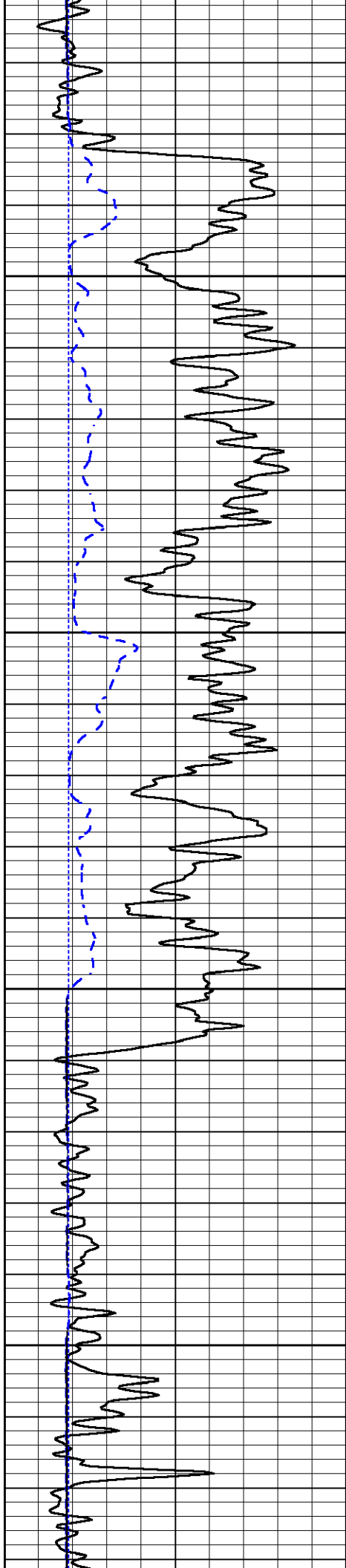
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 Dataset Pathname stkml/pass4.1  
 Presentation Format \_sonic  
 Dataset Creation Fri Nov 24 17:17:58 2023  
 Charted by Depth in Feet scaled 1:240

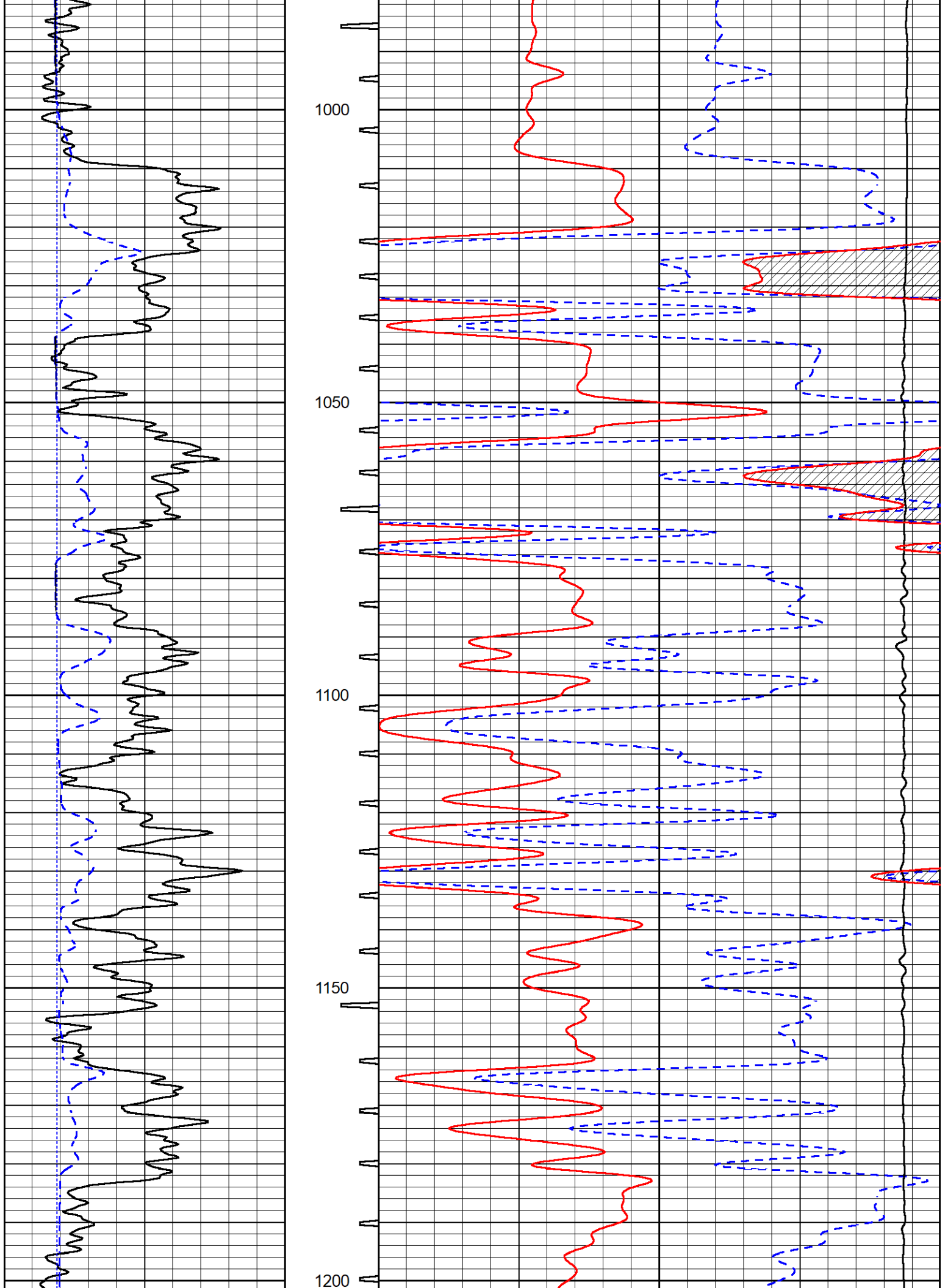
0	Gamma Ray (GAPI)	150	Sonic Int	140	Delta Time (usec/ft) (usec/ft)	40
150	GR (GAPI)	300	5 (msec) 0	30	Sonic Porosity (pu) (pu)	-10
6	LCAL (in)	16		15000	Line Tension (lb)	0

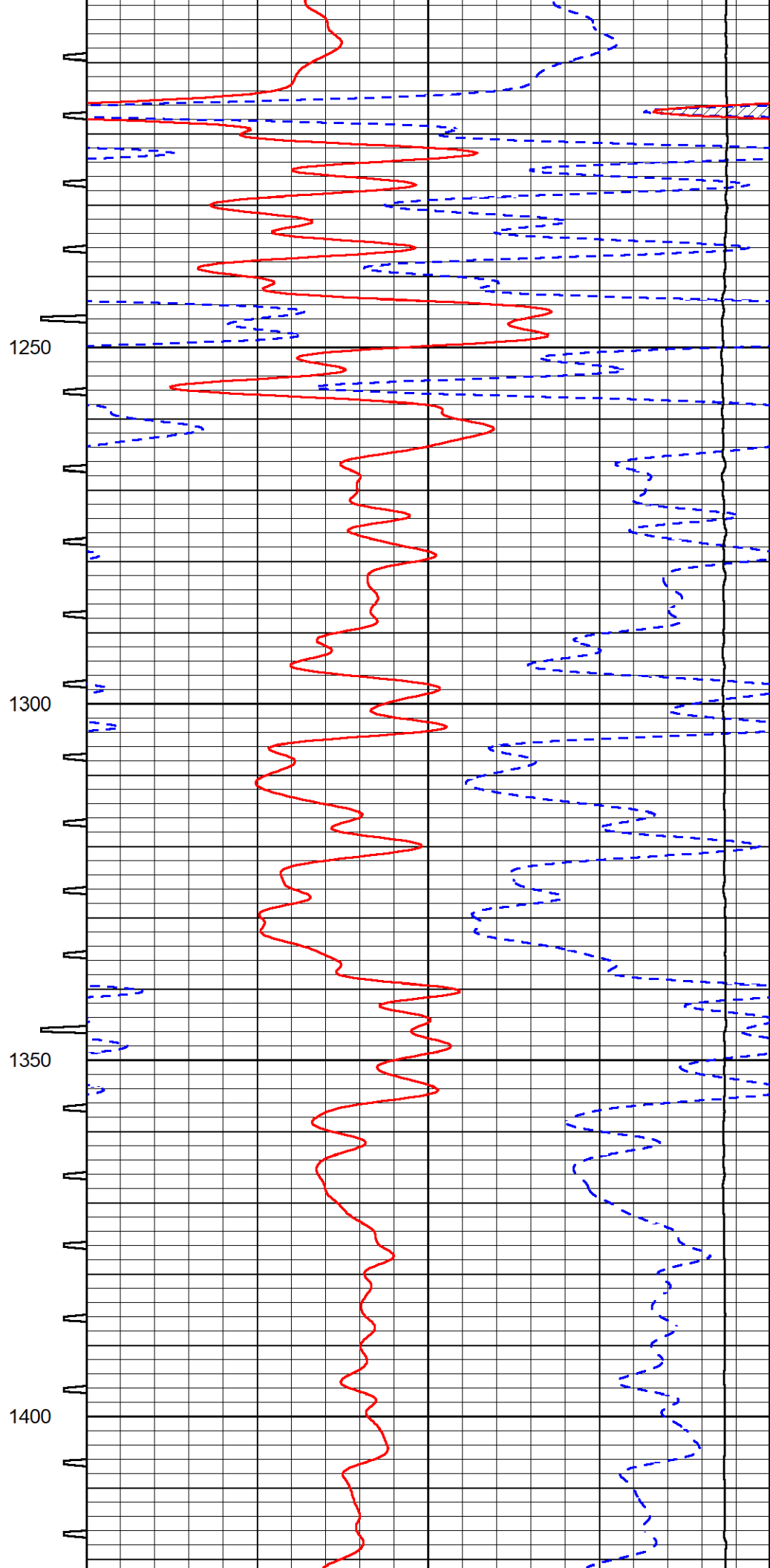
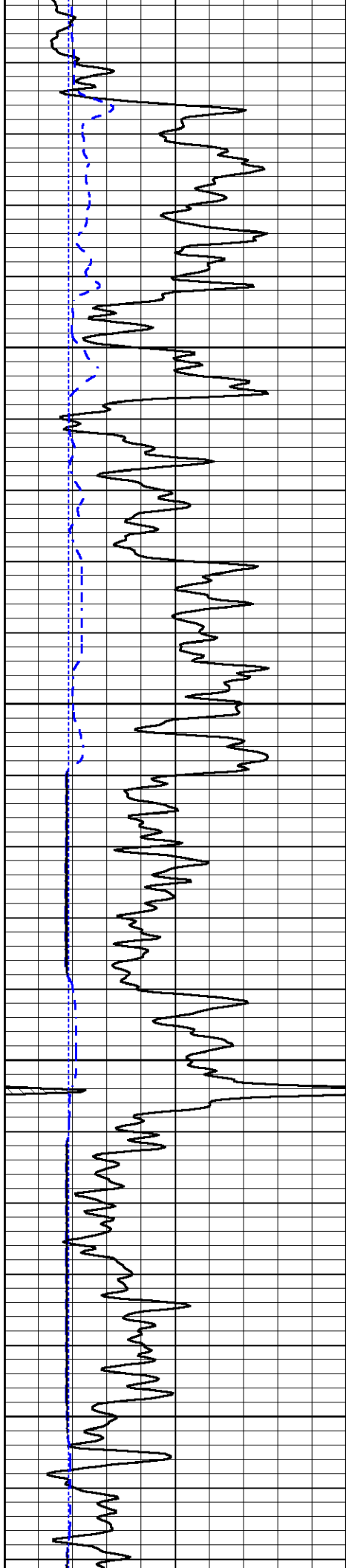


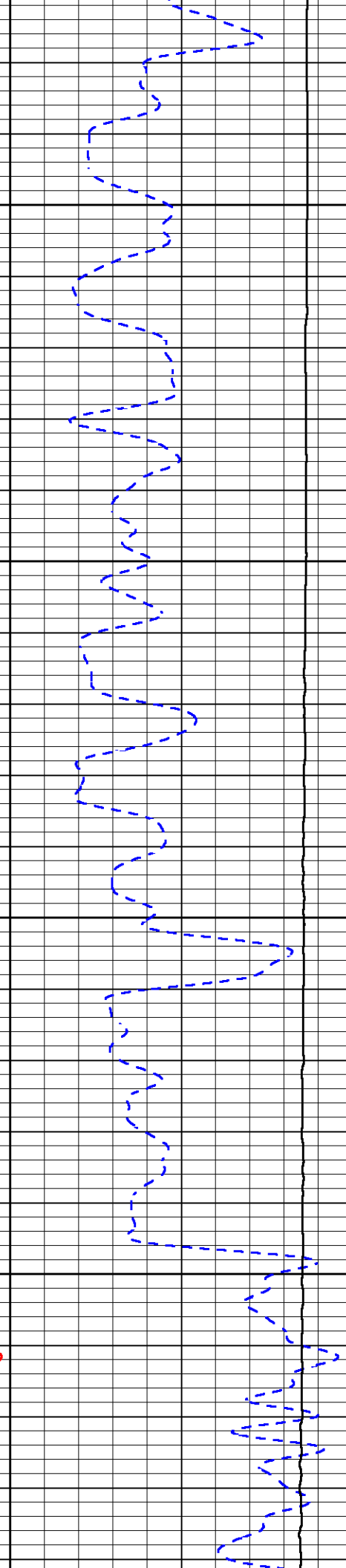
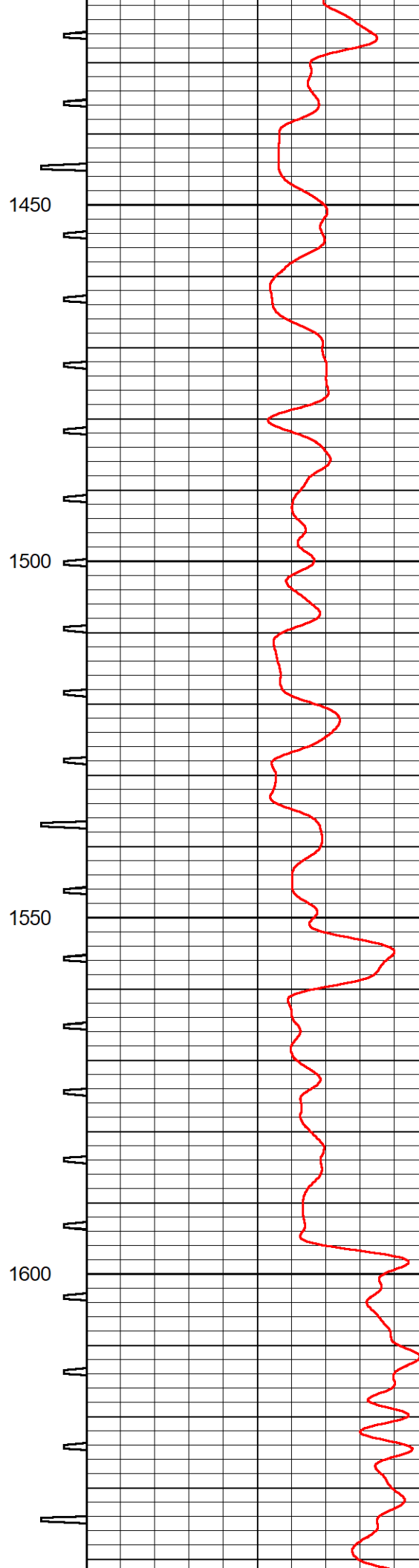
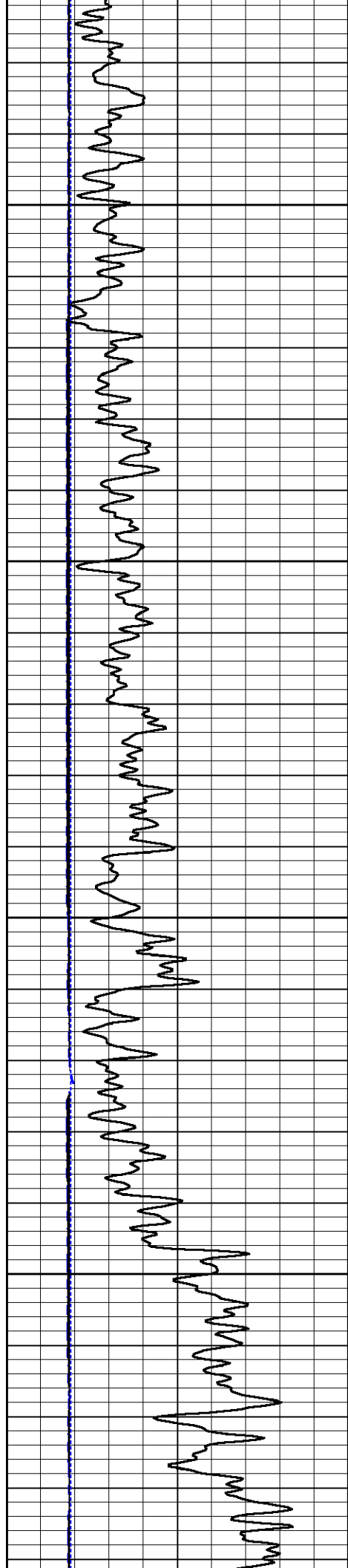










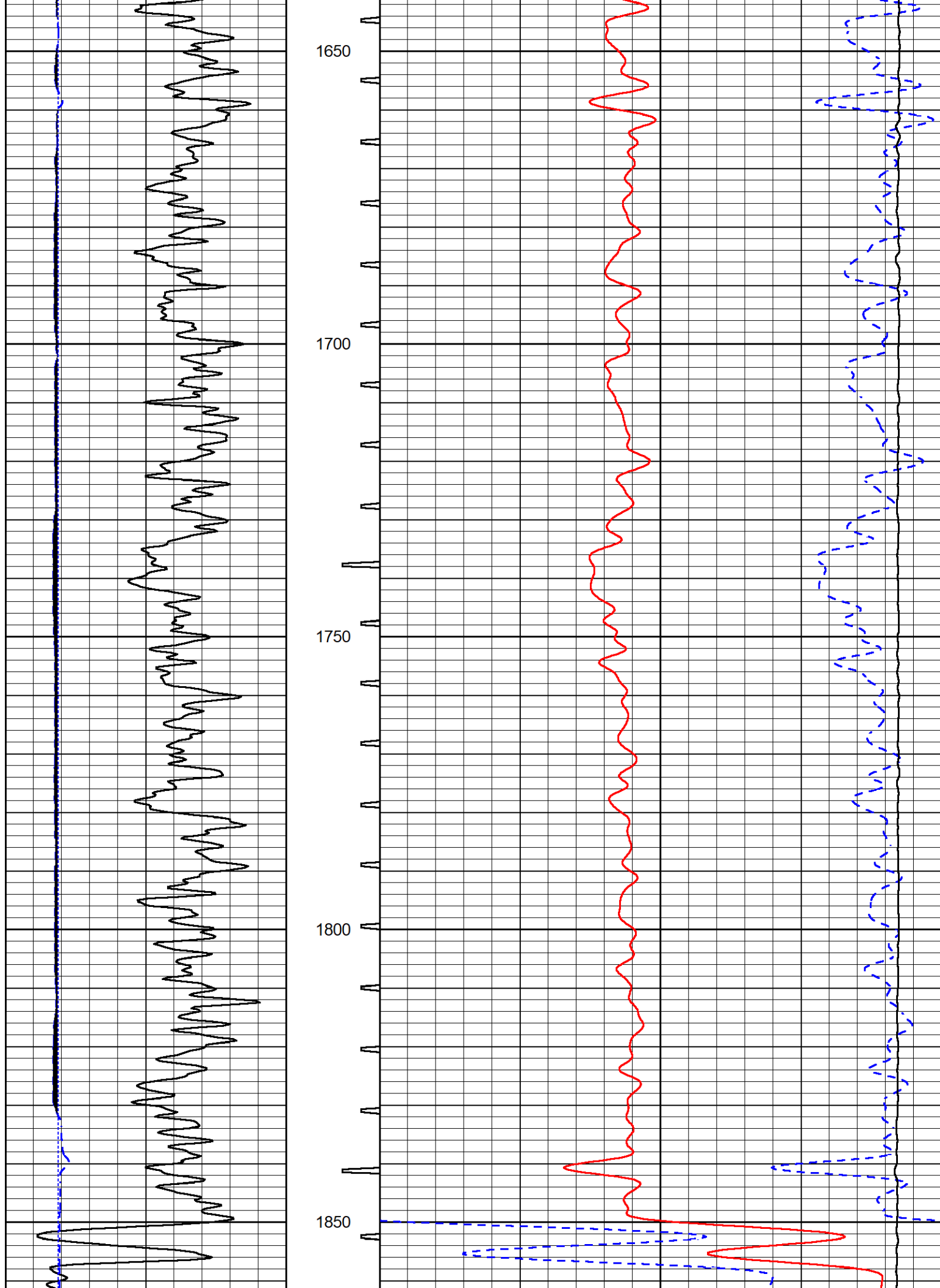


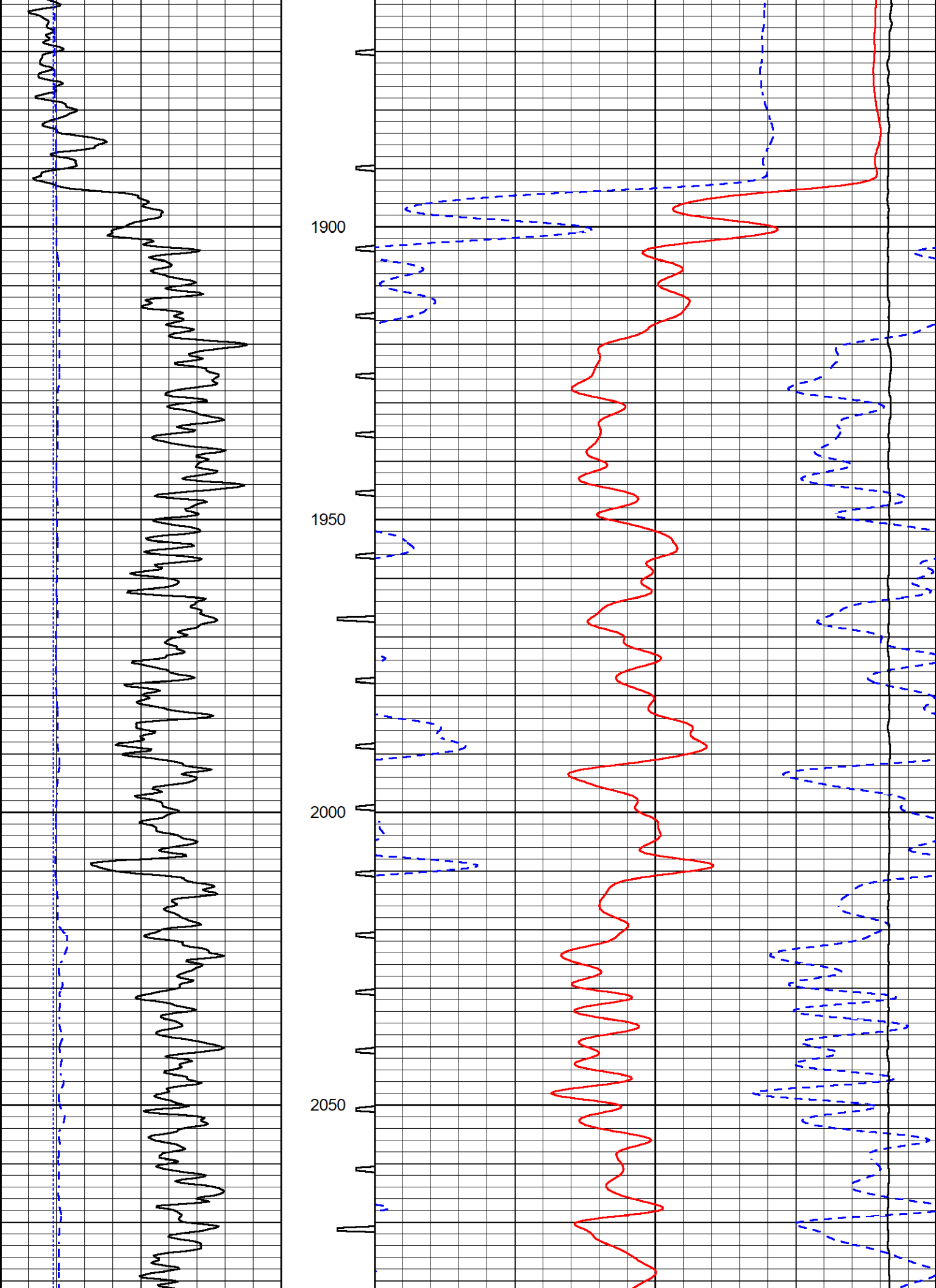
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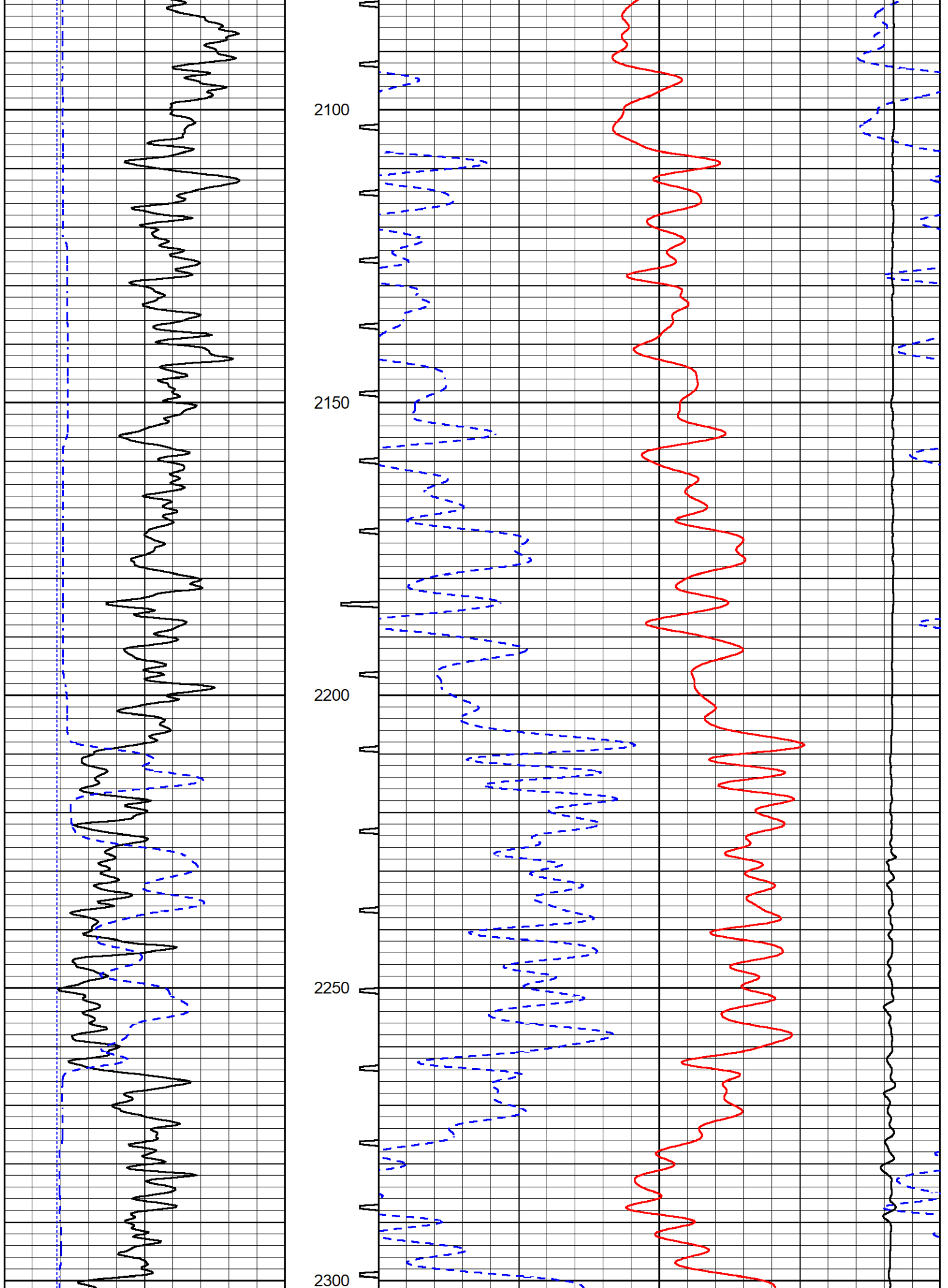
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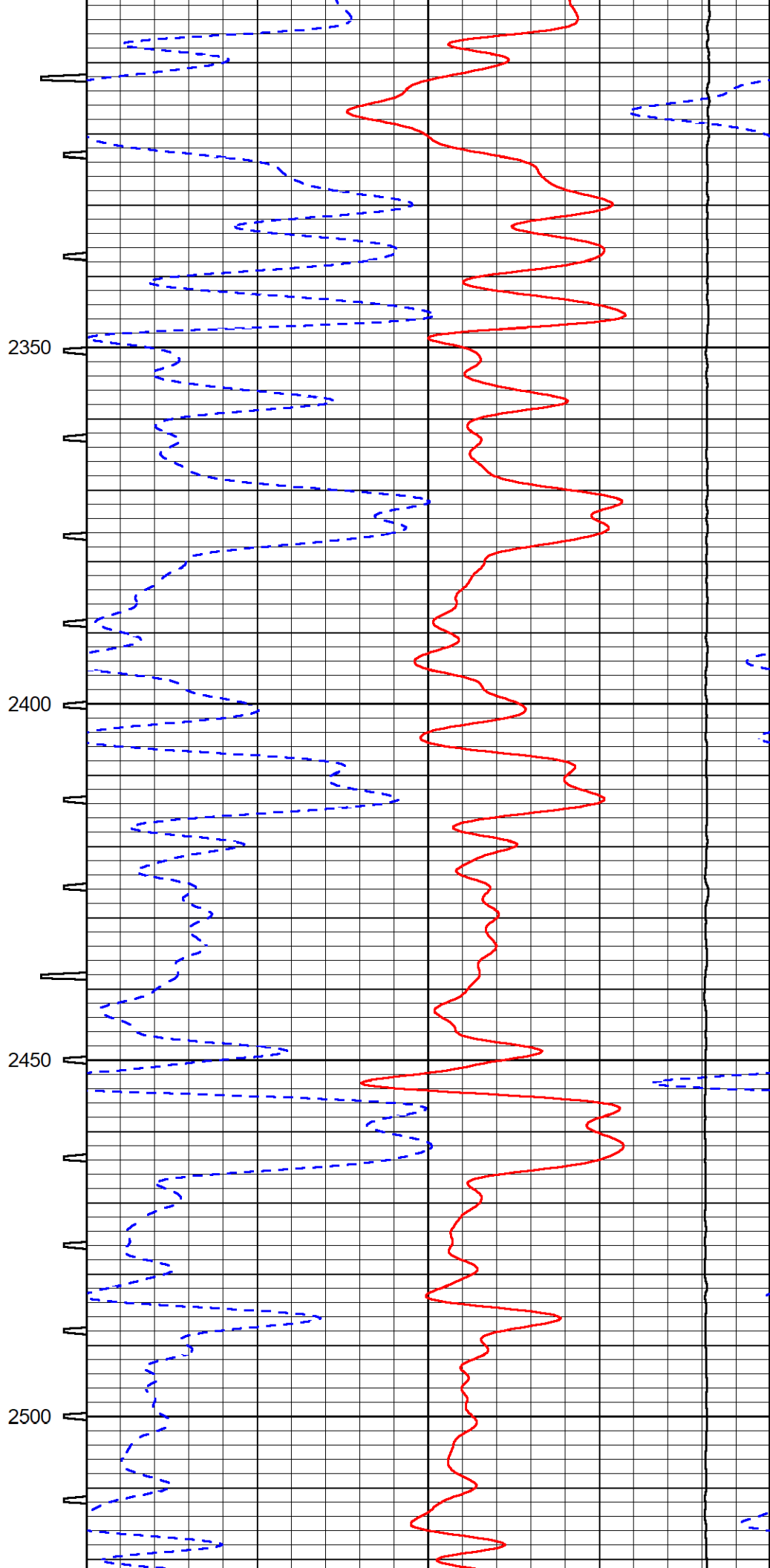
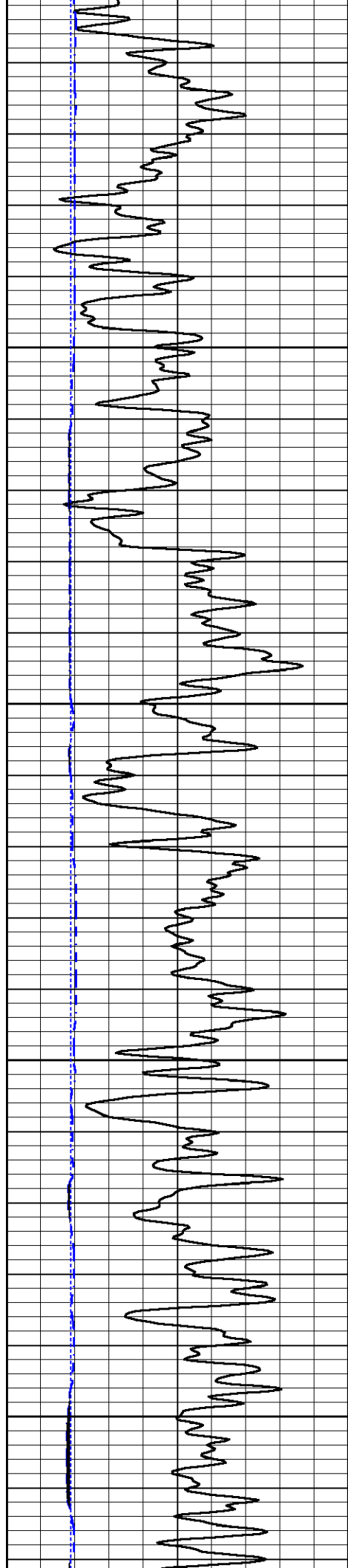
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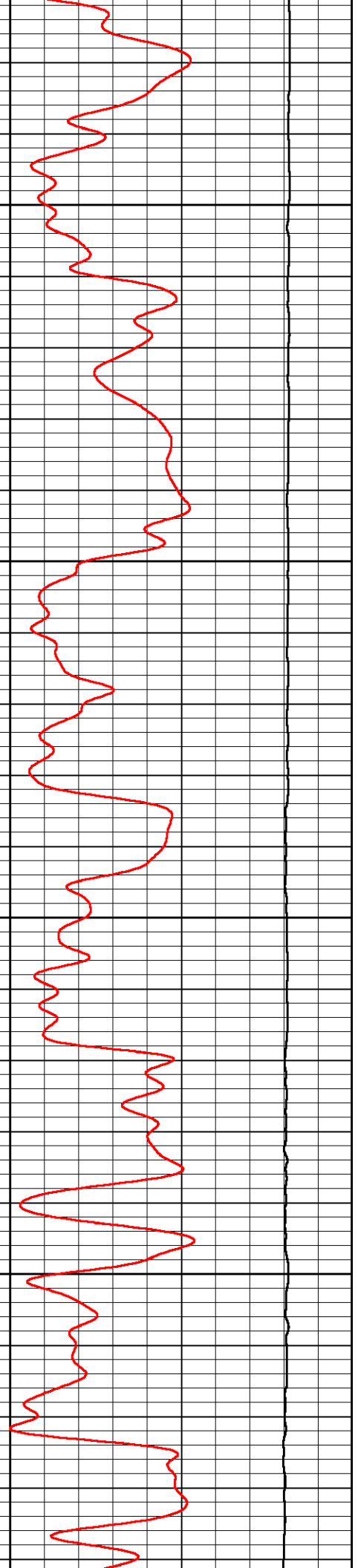
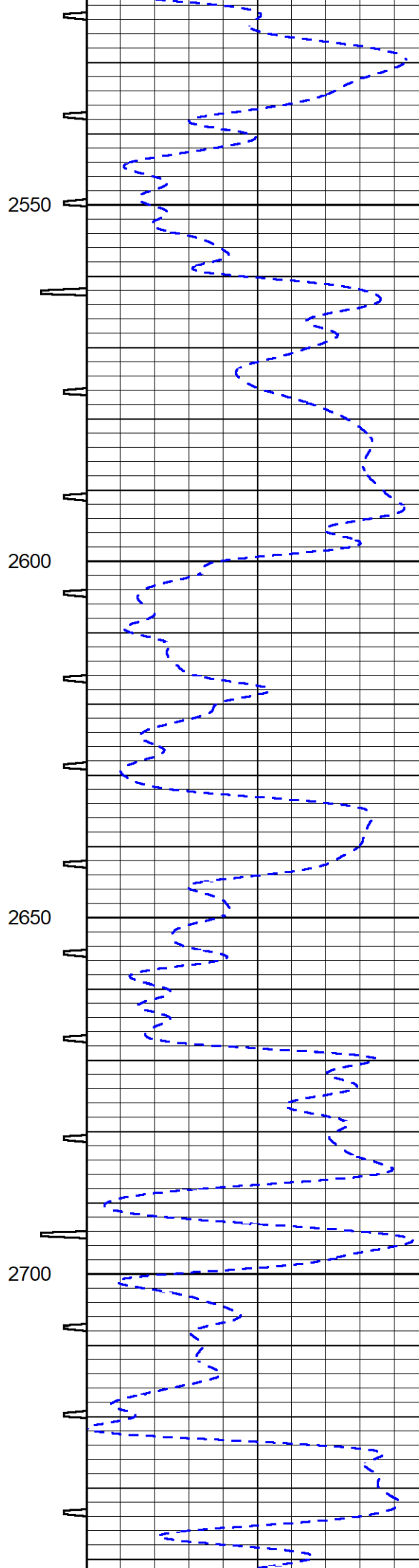
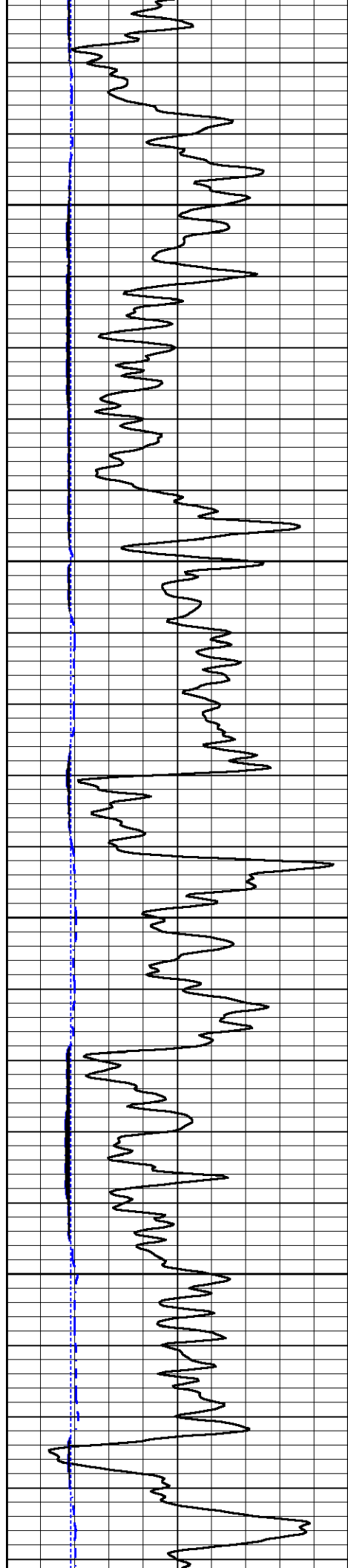
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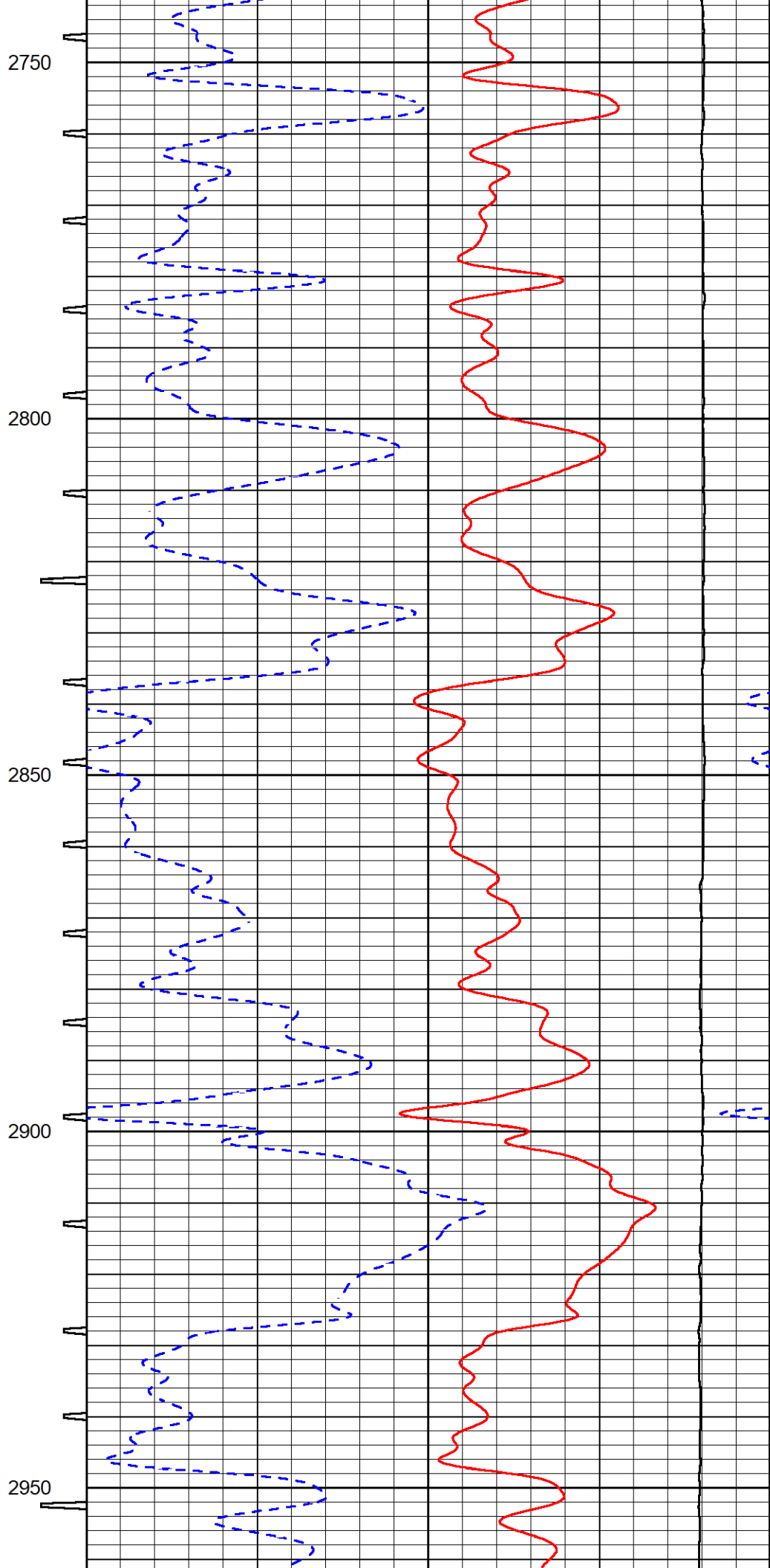
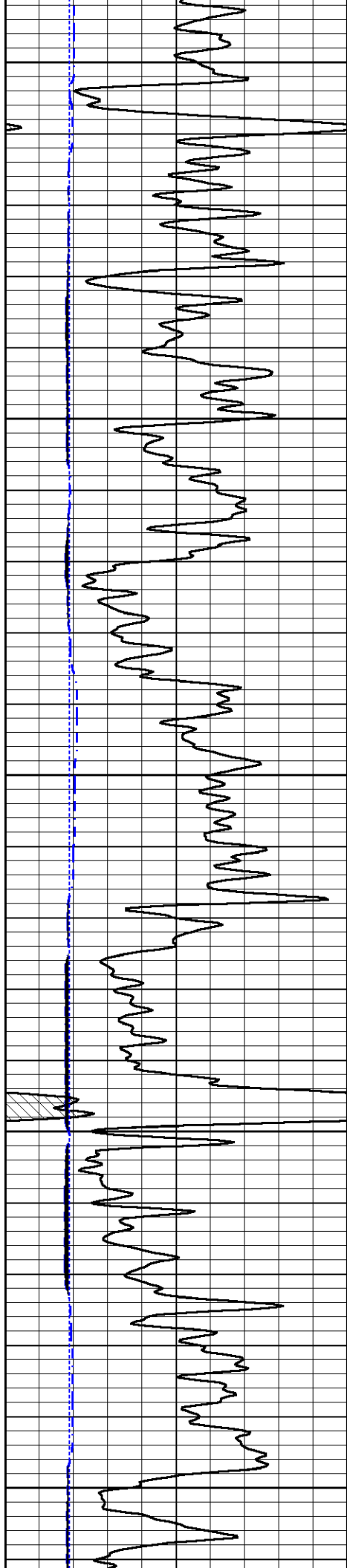


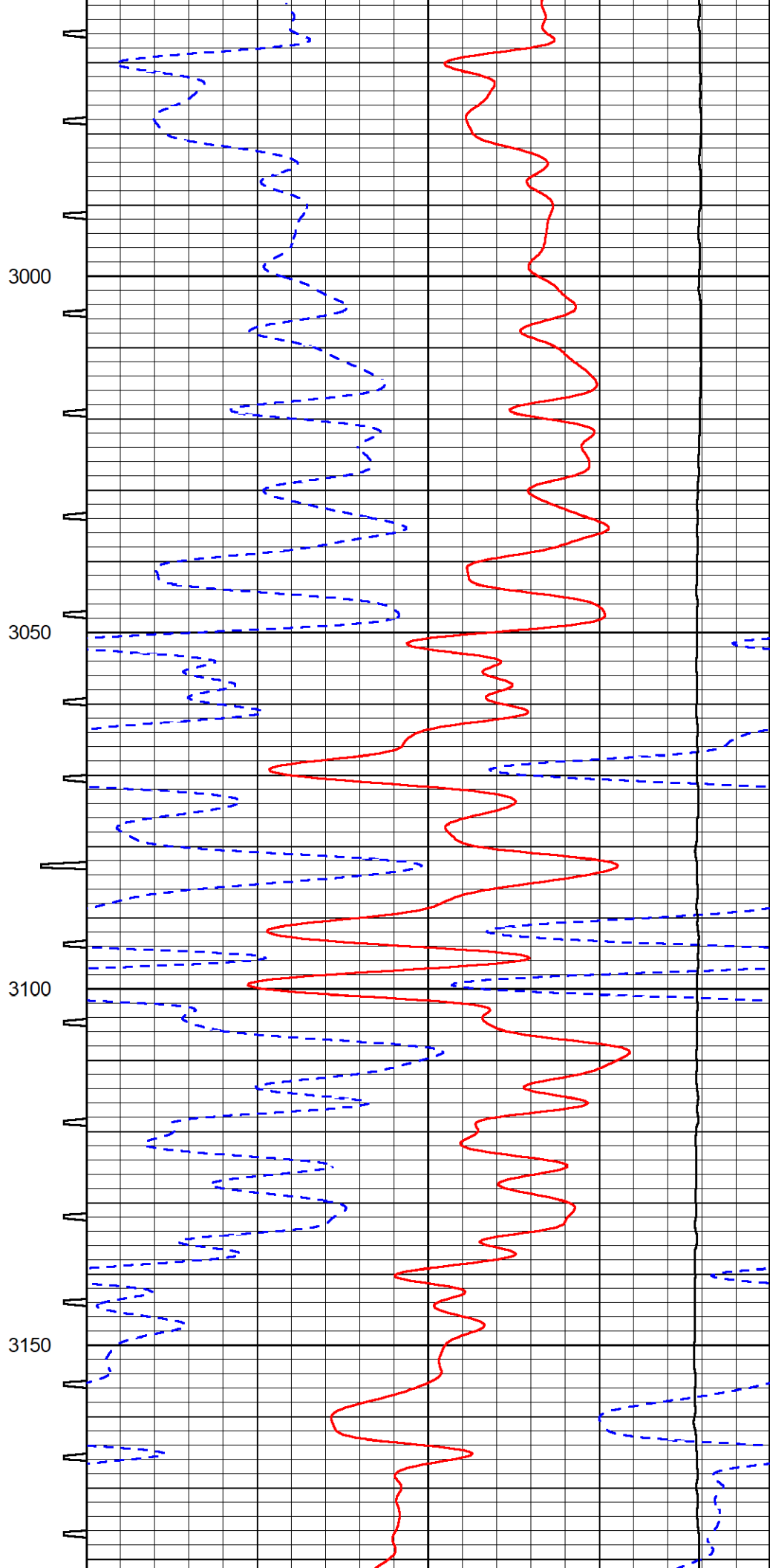
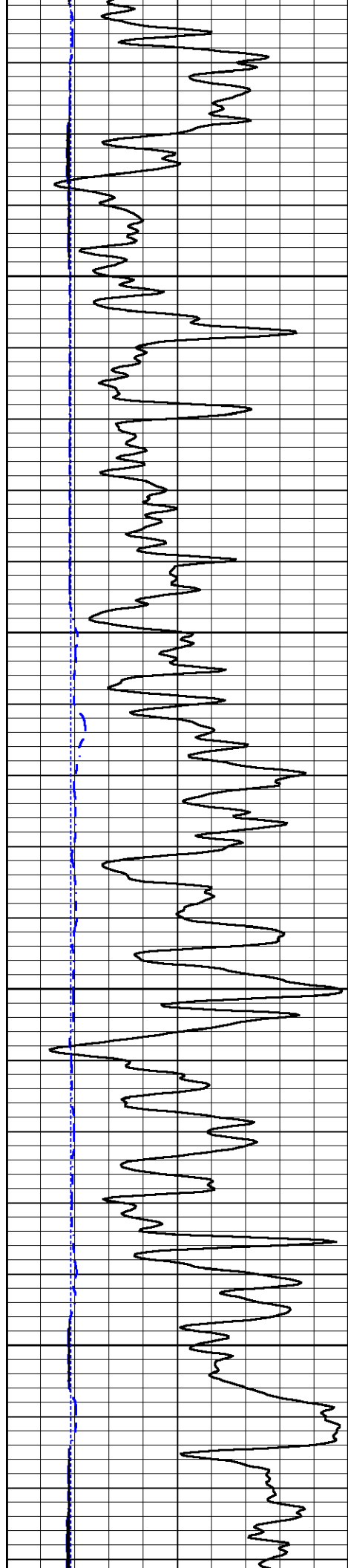


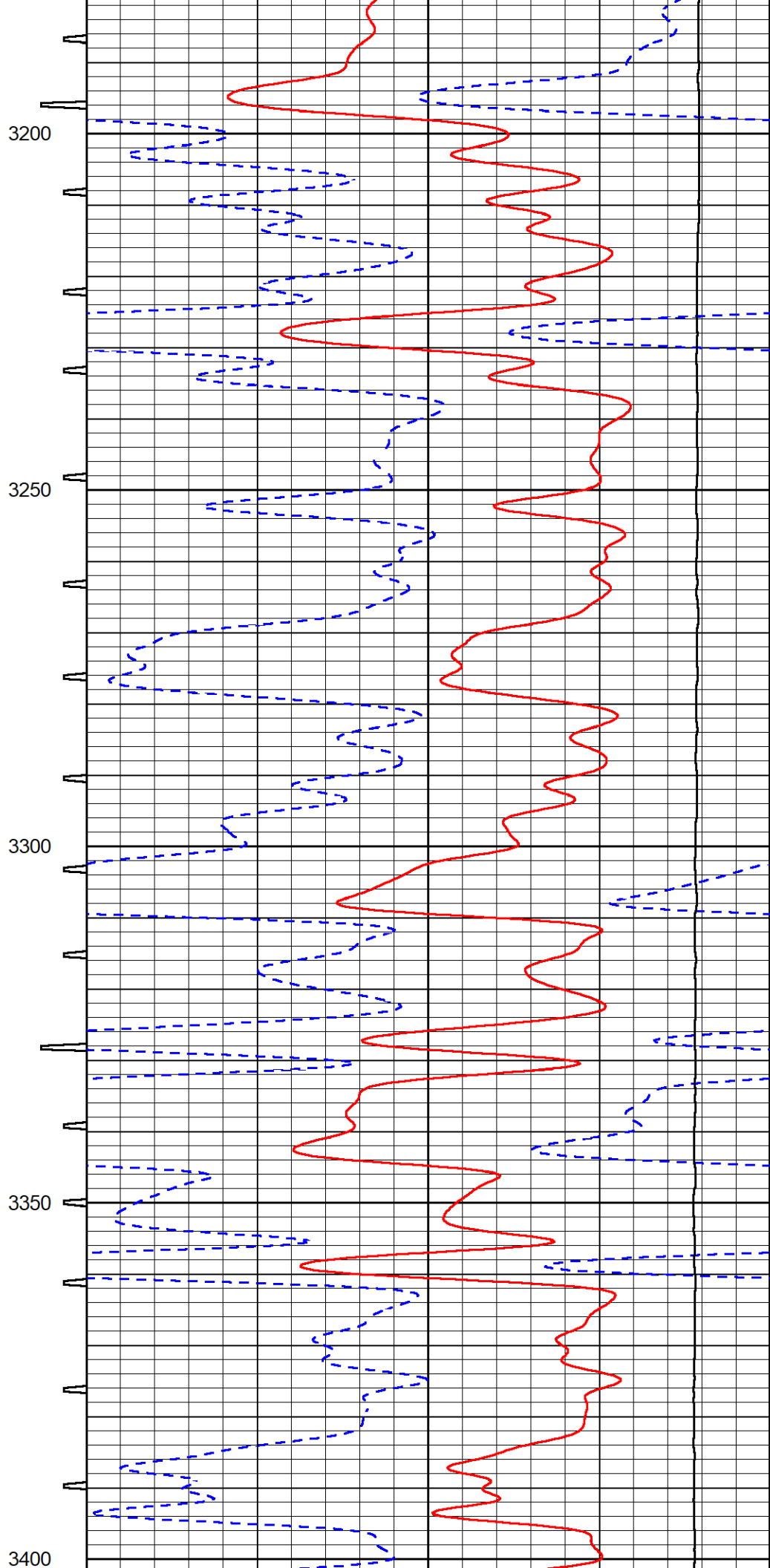
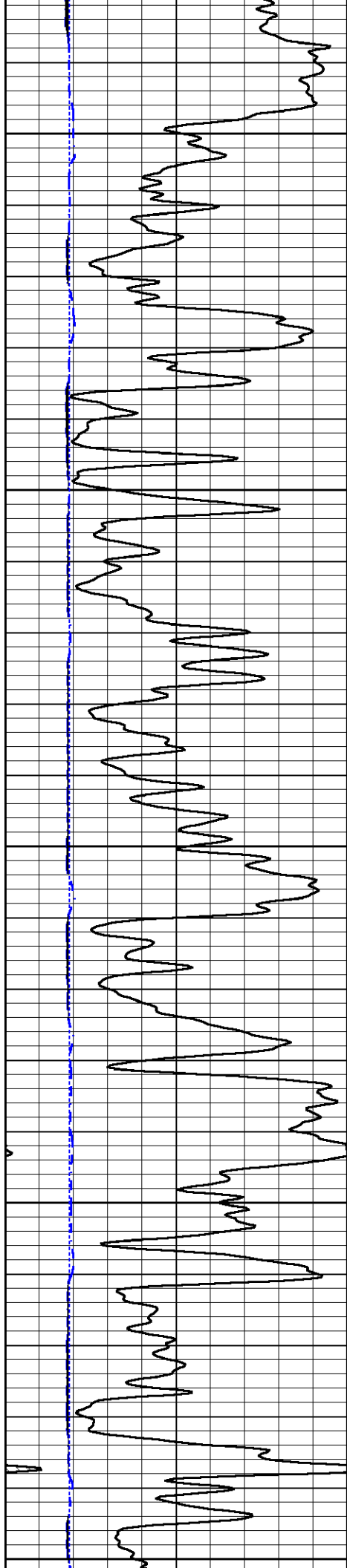


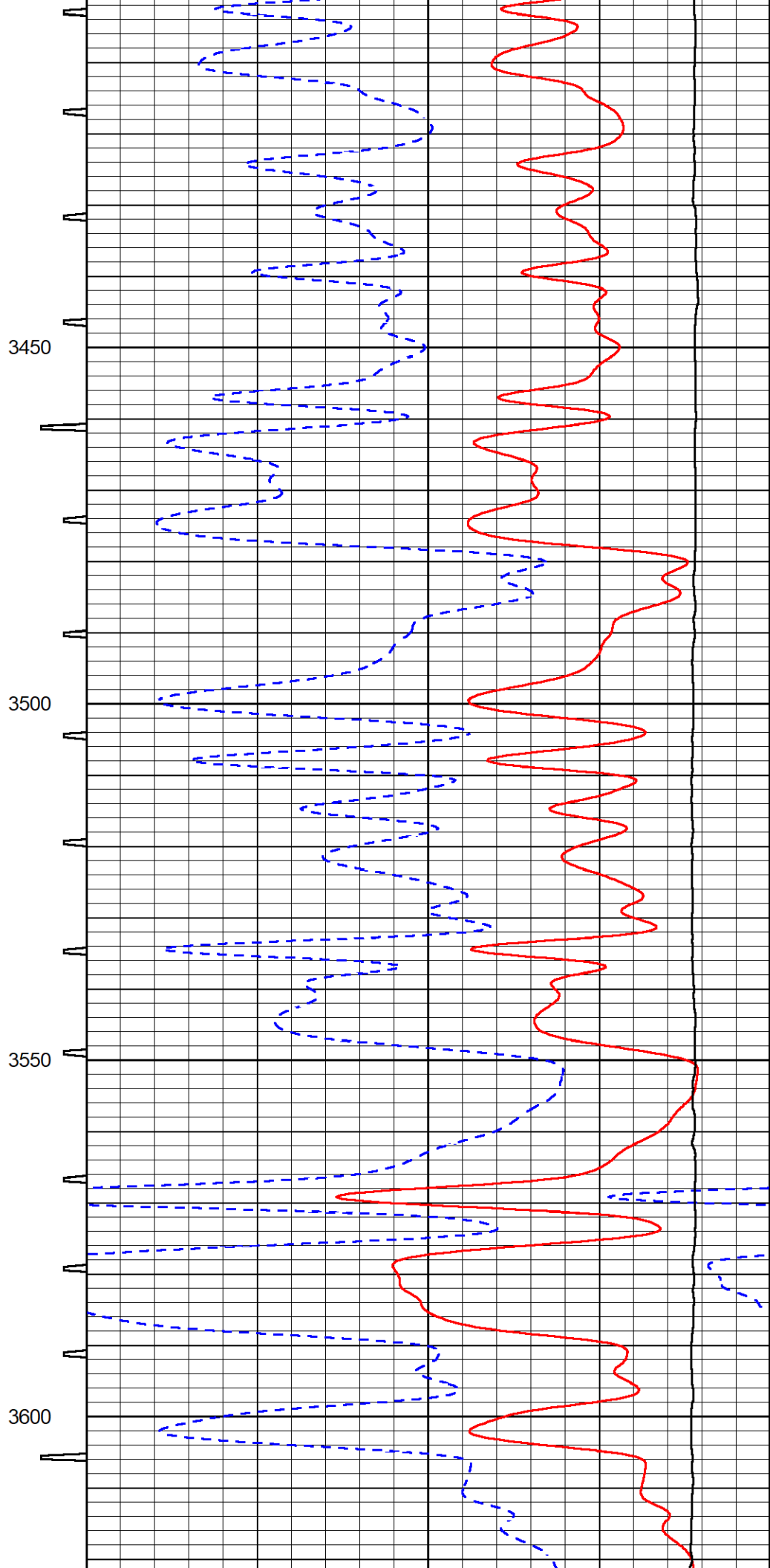
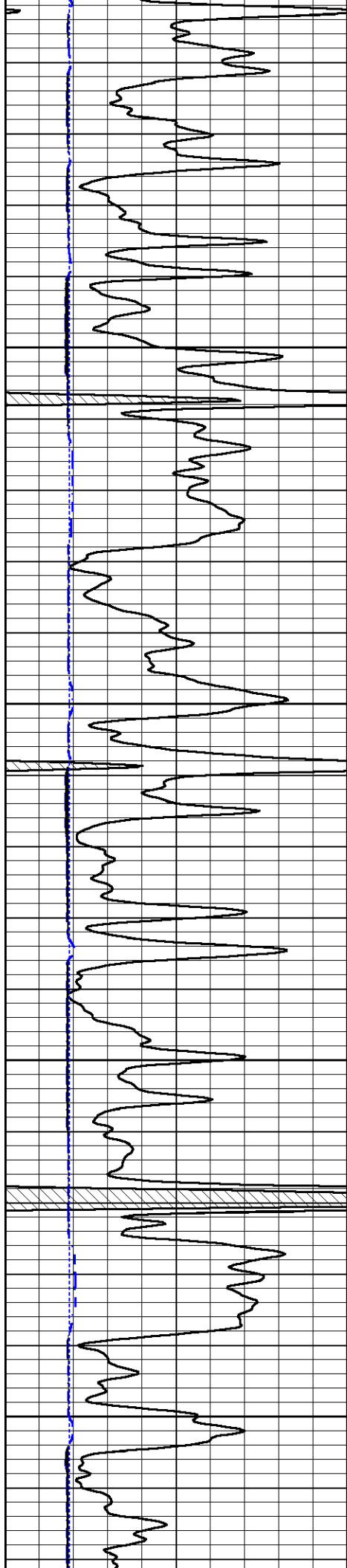


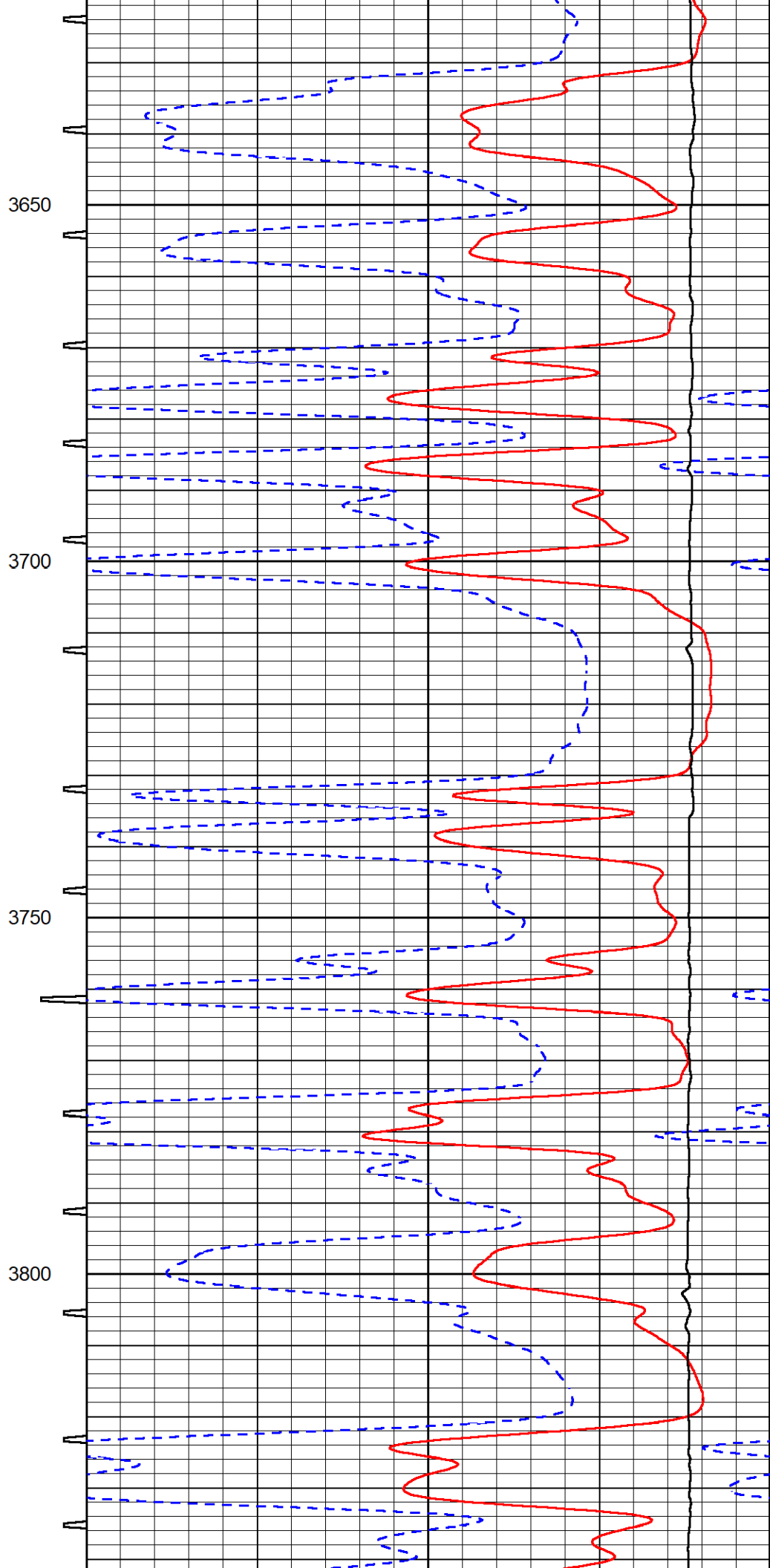
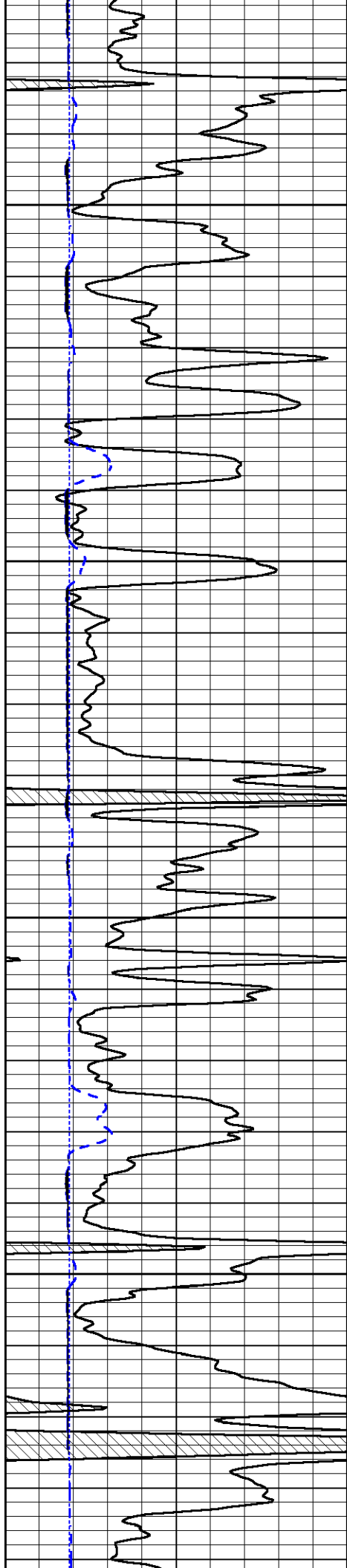


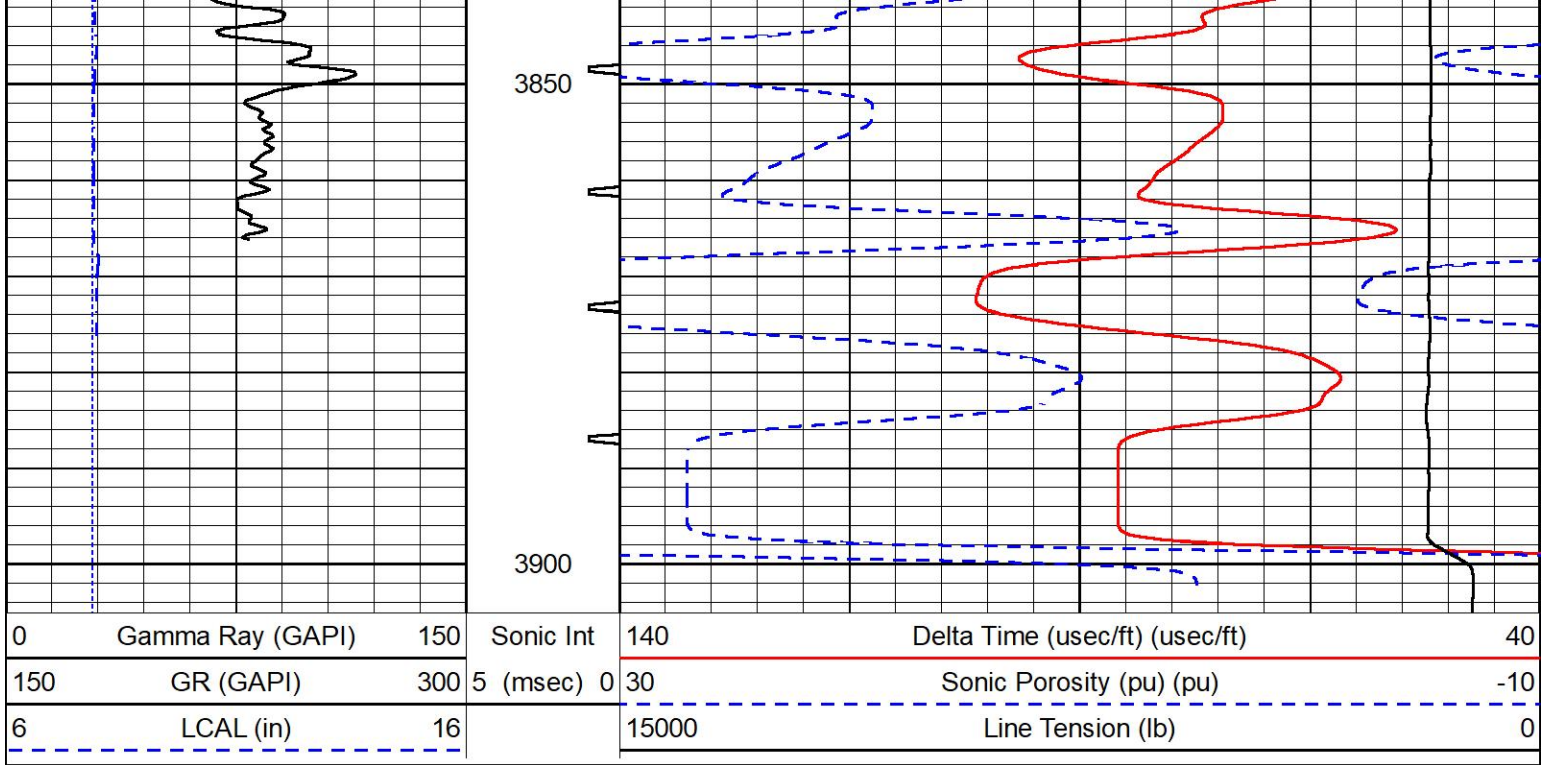










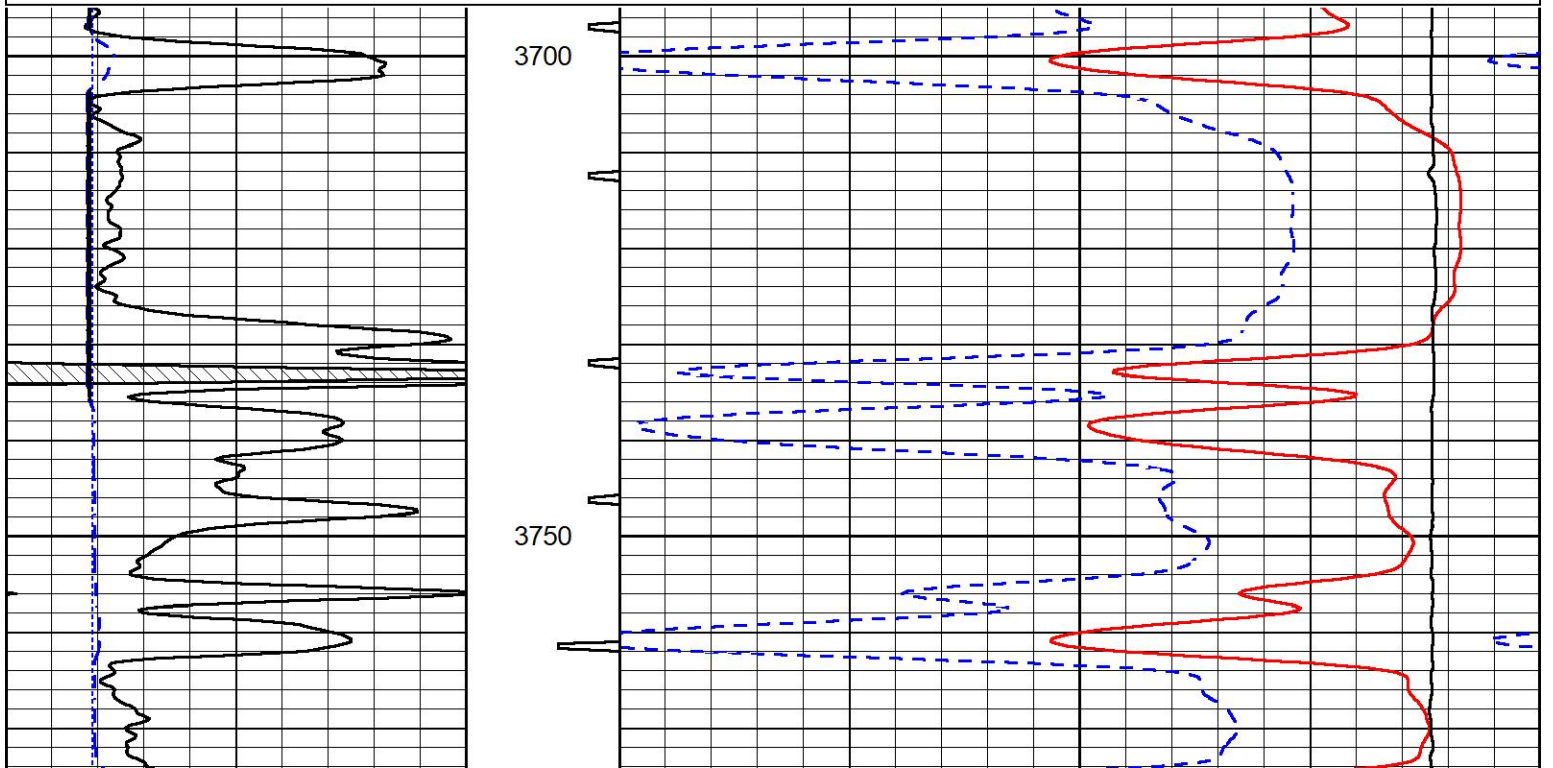


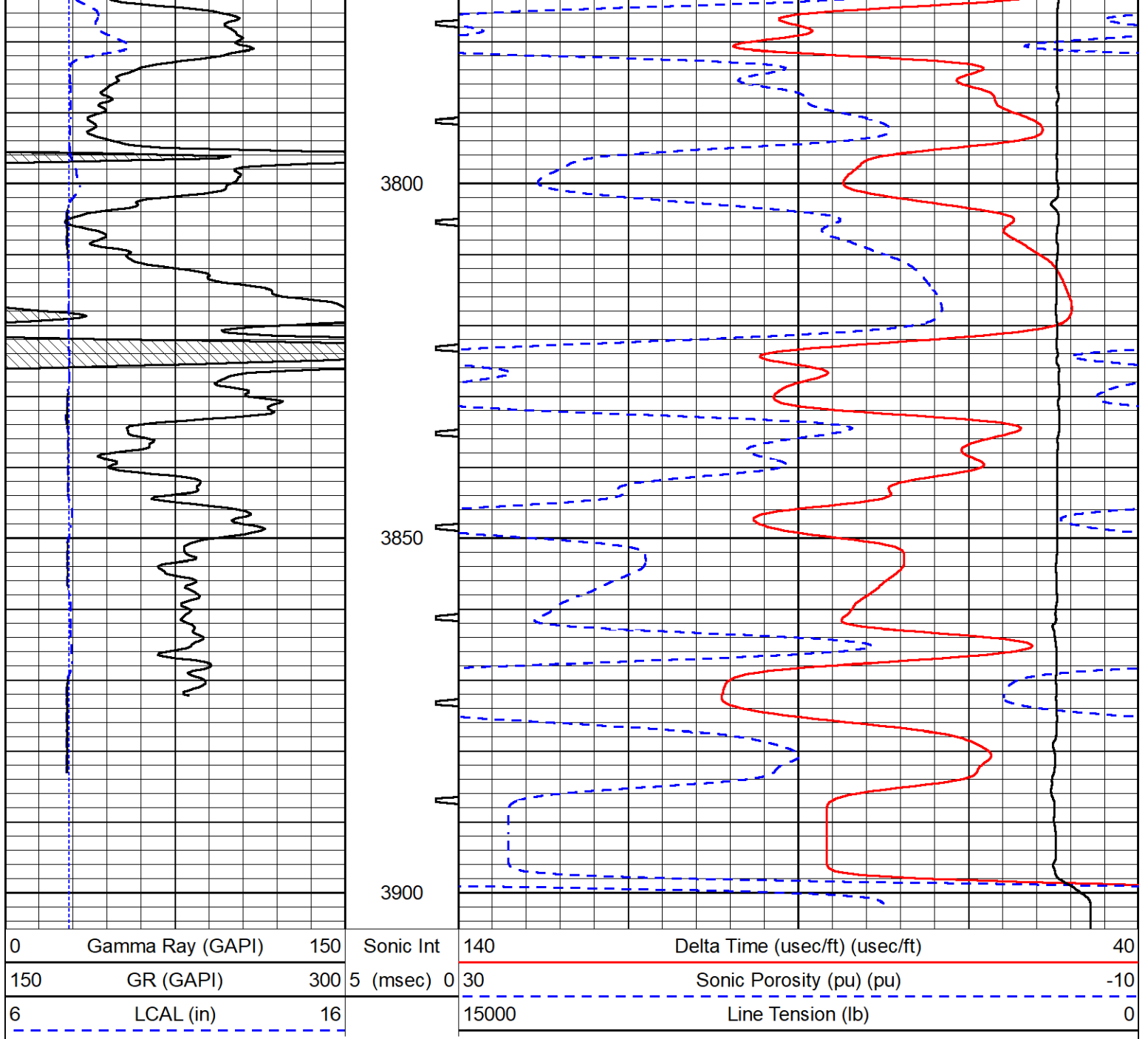
# REPEAT SECTION

## REPEAT PASS

Database File cobalt\_darvin 1-22.db  
 Dataset Pathname stkml/pass3.1  
 Presentation Format \_sonic  
 Dataset Creation Fri Nov 24 17:06:01 2023  
 Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150	Sonic Int	140	Delta Time (usec/ft) (usec/ft)	40
150	GR (GAPI)	300	5 (msec) 0	30	Sonic Porosity (pu) (pu)	-10
6	LCAL (in)	16		15000	Line Tension (lb)	0





### Calibration Report

Database File cobalt\_darvin 1-22.db  
 Dataset Pathname stkml/pass4.1  
 Dataset Creation Fri Nov 24 17:17:58 2023

### Dual Induction Calibration Report

Serial-Model: 505 HT-M&W  
 Surface Cal Performed: Thu Nov 9 13:00:56 2023

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop	mmho/m	m	b
Deep	167.000	835.000	0.000	255.800	mmho/m	0.550	-56.000
Medium	1348.000	1348.000	0.000	255.800	mmho/m	0.450	-55.000

### Microlog Calibration Report

Serial-Model:  
Performed:

402-PSI STKBL ML  
Fri Oct 20 13:01:04 2023

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0037	0.0043	0.0000	10.0000	Ohm-m	23000.0000	-1.0000
Inverse	0.1208	0.0013	0.0000	10.0000	Ohm-m	21000.0000	0.0000
Caliper	1.0046	1.1419	5.5000	20.0000	in	50.0000	-44.4500

LITHODENSITY Calibration Report

Serial Number: 701-01  
Tool Model: STEP LITHO Short  
Performed: Wed Nov 8 15:09:59 2023

Source:

	Win1	Win2	Win3	Win4	Win5	Win6	Win7	Win8	
Background:									
SS:	52	54	204	252	23	67	44	1	cps
LS:	78	87	326	426	46	135	86	3	cps
Aluminum:									
SS:	790	958	2239	2075	45	71	45	2	cps
LS:	877	1656	3109	1518	56	132	85	4	cps
Magnesium:									
SS:	1295	1558	3653	2988	50	71	47	3	cps
LS:	3705	6851	12249	4886	93	127	85	12	cps
Aluminum+Iron:									
SS:	500	668	1858	1761	40	72	47	2	cps
LS:	514	1150	2612	1334	53	134	84	4	cps

	Density Actual	Calibrated	PE Actual	Calibrated	Quality
Background:					
SS:					0.209
LS:					0.223
Aluminum:					
SS:	2.6000	2.6000	g/cc		0.229
LS:	2.6000	2.6000	g/cc		0.218
Magnesium:					
SS:	1.6800	1.6800	g/cc	2.5700	2.5700
LS:	1.6800	1.6800	g/cc	2.5700	2.5700
Aluminum+Iron:					
SS:				6.1800	0.207
LS:				6.1800	0.229

Caliper: Reference: Reading:  
Small Ring: 6.0 in 100.0  
Large Ring: 16.0 in 400.0  
Gain: 14.000  
Offset: 1.960

Compensated Neutron Calibration Report

Serial Number: 210  
Tool Model: M&W

CALIBRATION

Detector	Readings	Target	Normalization
Short Space	6240.00 cps	1000.00 cps	1.6025

Long Space

460.00 cps

1000.00 cps

1.9500

Gamma Ray Calibration Report

Serial Number:	105	
Tool Model:	M&W	
Performed:	Sat Oct 21 23:48:19 2023	
Calibrator Value:	500.0	GAPI
Background Reading:	24.0	cps
Calibrator Reading:	637.0	cps
Sensitivity:	0.6000	GAPI/cps



Company	Cobalt Energy, LLC
Well	Darvin #1-22
Field	Wildcat
County	Graham
State	Kansas