



**BOREHOLE COMPENSATED  
SONIC LOG**

**Company** ROCK CREEK CRUDE, LLC  
**Well** BAUMAN #3  
**Field** STRAHM  
**County** NEMAHA **State** KANSAS

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**Location:** API #: 15-131-20245-00-00  
 3170' FSL & 4750' FEL  
 SEC 27 TWP 2S RGE 14E  
 Permanent Datum GROUND LEVEL Elevation 1313'  
 Log Measured From KELLY BUSHING  
 Drilling Measured From KELLY BUSHING  
 Other Services  
 CNL/CDL  
 DIL/MEL  
 Elevation  
 K.B. 1319'  
 D.F. N/A  
 G.L. 1313'

Date	4/5/2018						
Run Number	TWO						
Type Log	BHCS						
Depth Driller	2962'						
Depth Logger	2962'						
Bottom Logged Interval	2950'						
Top Logged Interval	200'						
Type Fluid In Hole	CHEMICAL						
Salinity, PPM CL	N/A						
Density	9.1						
Level	FULL						
Max. Rec. Temp. F	106						
Operating Rig Time	4 HOURS						
Equipment -- Location	91 HAYS						
Recorded By	D. SCHMIDT						
Witnessed By	DOUG DAVIS						
Borehole Record							
Run No.	Bit	From	To	Size	Wgt.	From	To
ONE	12.25"	0'	248'	8.625"	23#	0'	248'
TWO	7.875"	248'	TD				
Casing Record							

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All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, 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.

SABETHA,  
SOUTH TO HWY 36, 6 WEST, 1/2 NORTH,  
EAST INTO

Log Measured From: KELLY BUSHING      6 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES  
www.pioneerenergy.com      785-625-3858

Your Pioneer Energy Services Crew	This Log Record Was Witnessed By
Engineer: D. SCHMIDT	Primary Witness: DOUG DAVIS
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

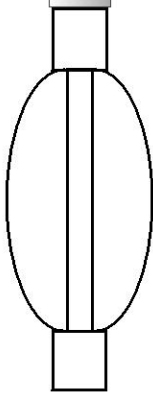
# Log Variables

Database C:\ProgramData\Warrior\Data\rock creek\_bauaman 3.db  
 Dataset field/well/STKML/pass4.1/\_vars\_

## Top - Bottom

M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	-30	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	30	0	5.5	0	3962	106	7.875

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			CENT-PENGO (3-PENGO)	5.50	3.00	70.00
WVF4 WVF1	13.50 13.50		SLT-PENGO (0001)	16.00	3.50	300.00
WVF3 WVF2	11.50 11.50					



CENT-PENGO (4-PENGO)

5.50

3.00

70.00

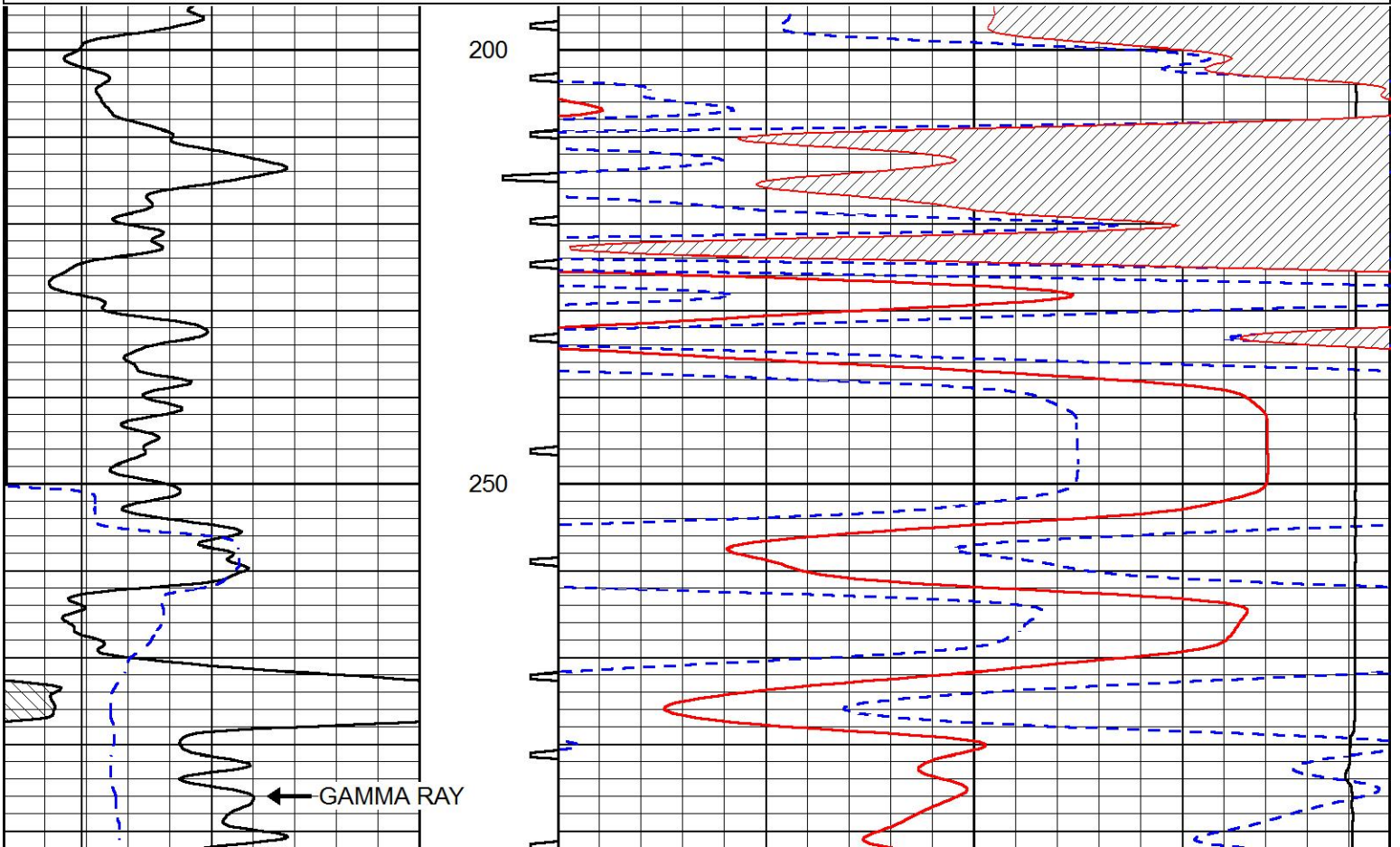
Dataset: rock creek\_bauaman 3.db: field/well/SON/pass2  
 Total length: 27.00 ft  
 Total weight: 440.00 lb  
 O.D.: 3.50 in

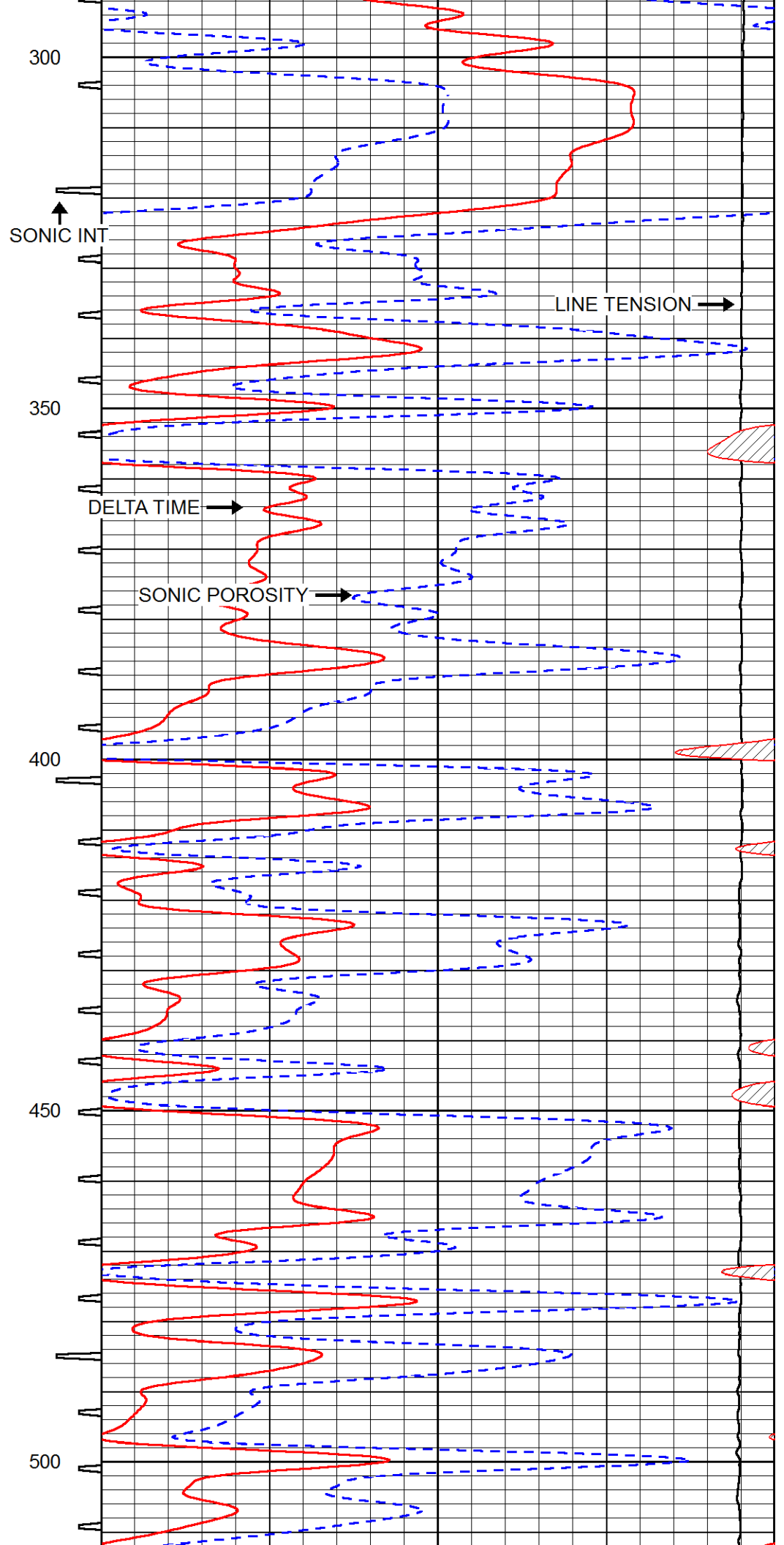
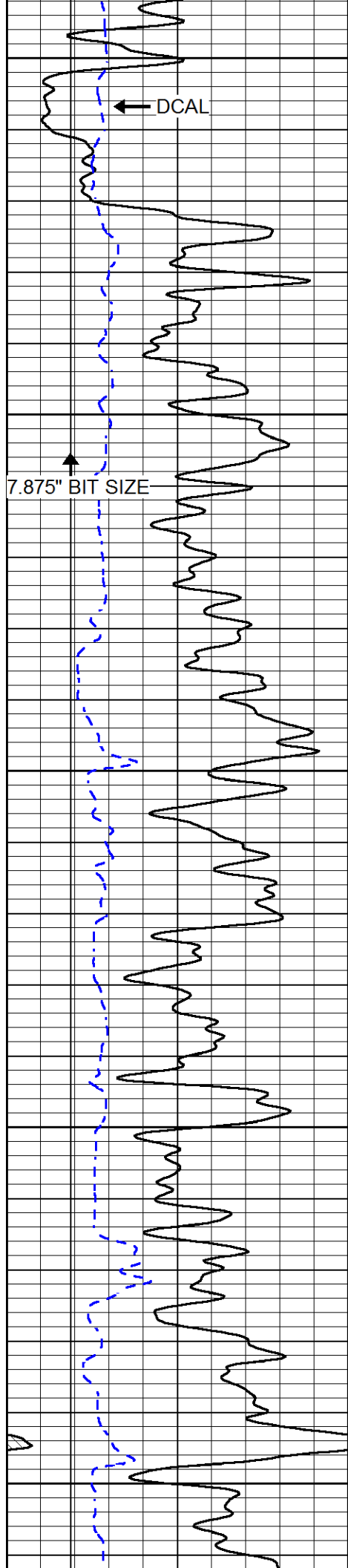


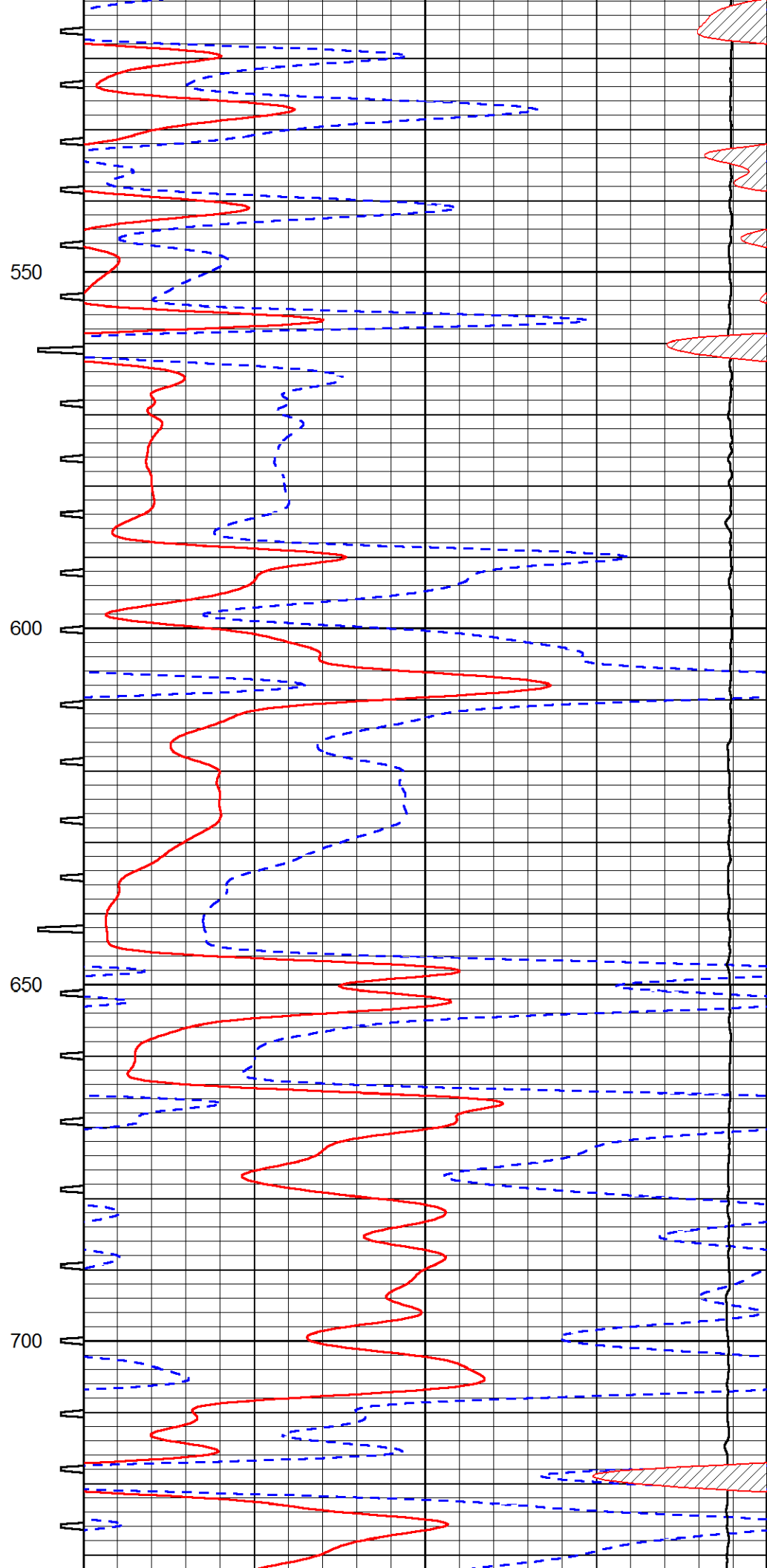
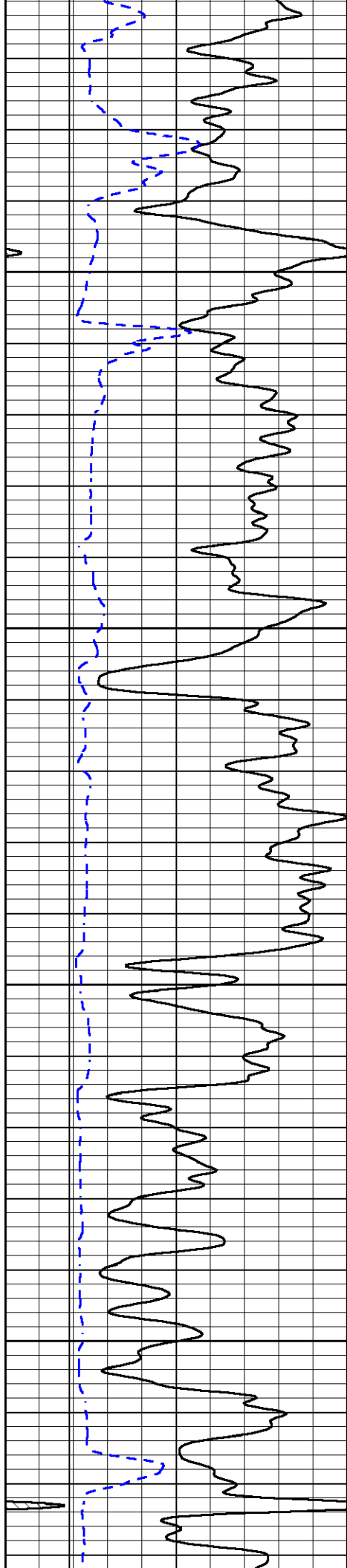
# MAIN PASS

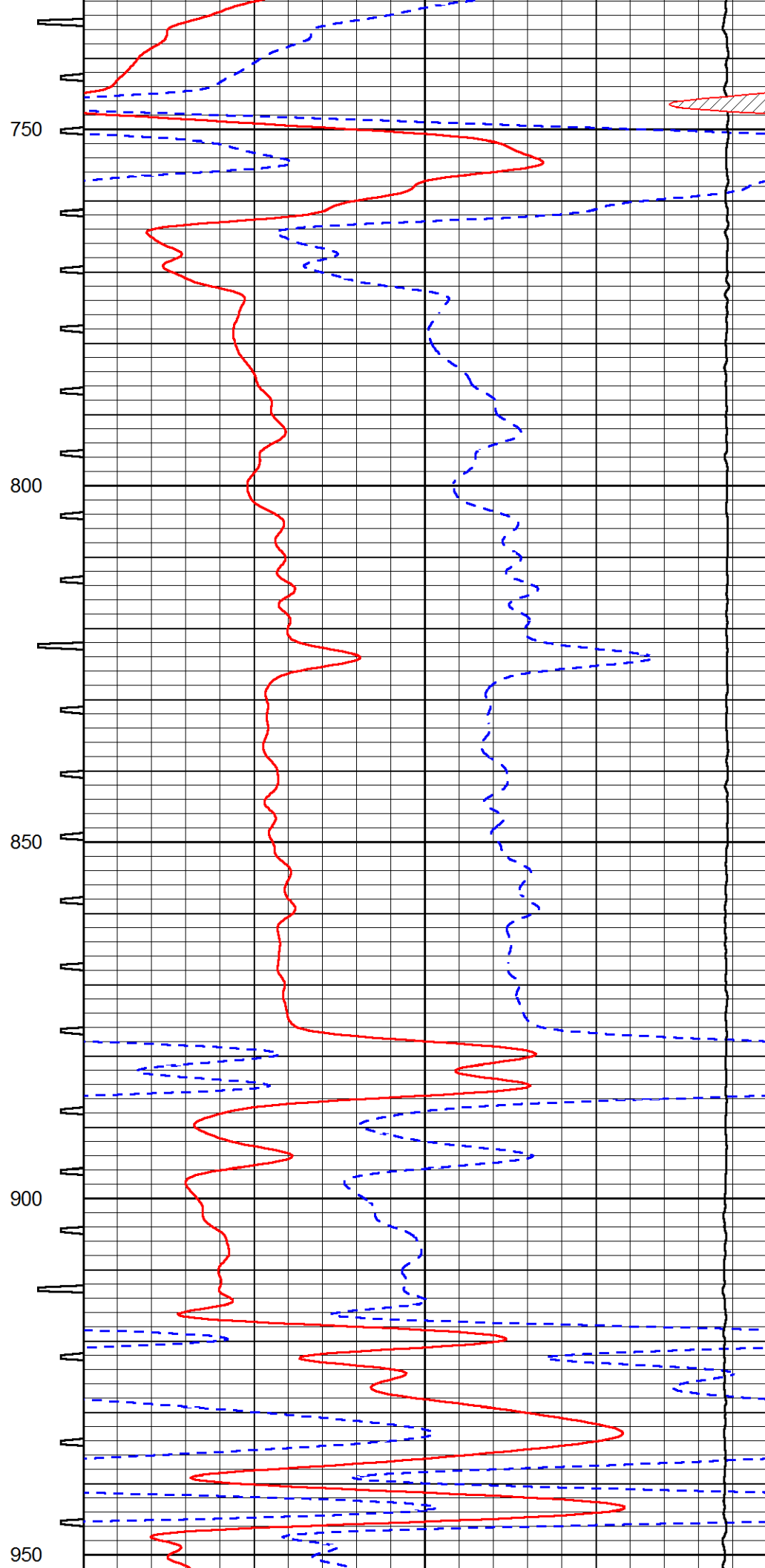
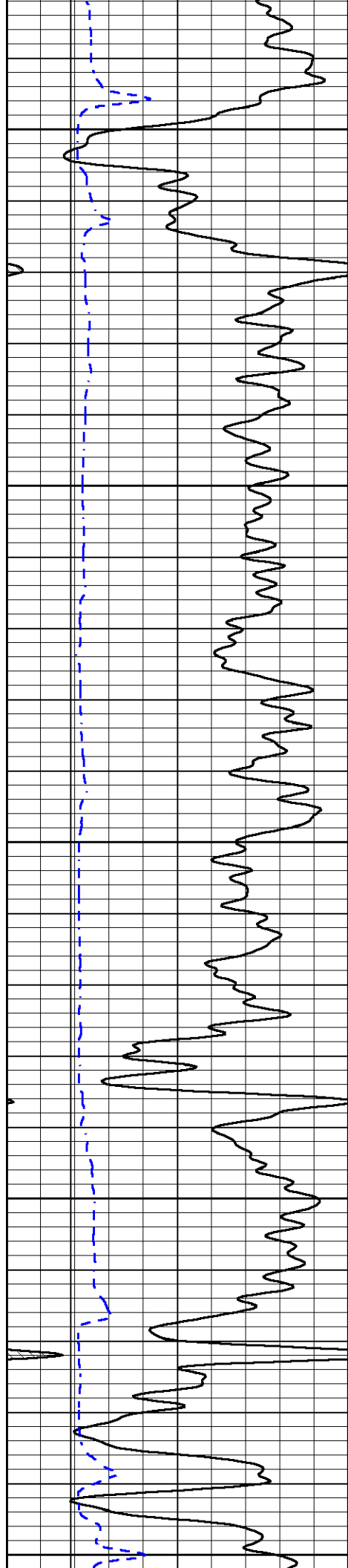
Database File: rock creek\_bauaman 3.db  
 Dataset Pathname: STKML/pass4.1  
 Presentation Format: sonic  
 Dataset Creation: Thu Apr 05 08:46:28 2018  
 Charted by: Depth in Feet scaled 1:240

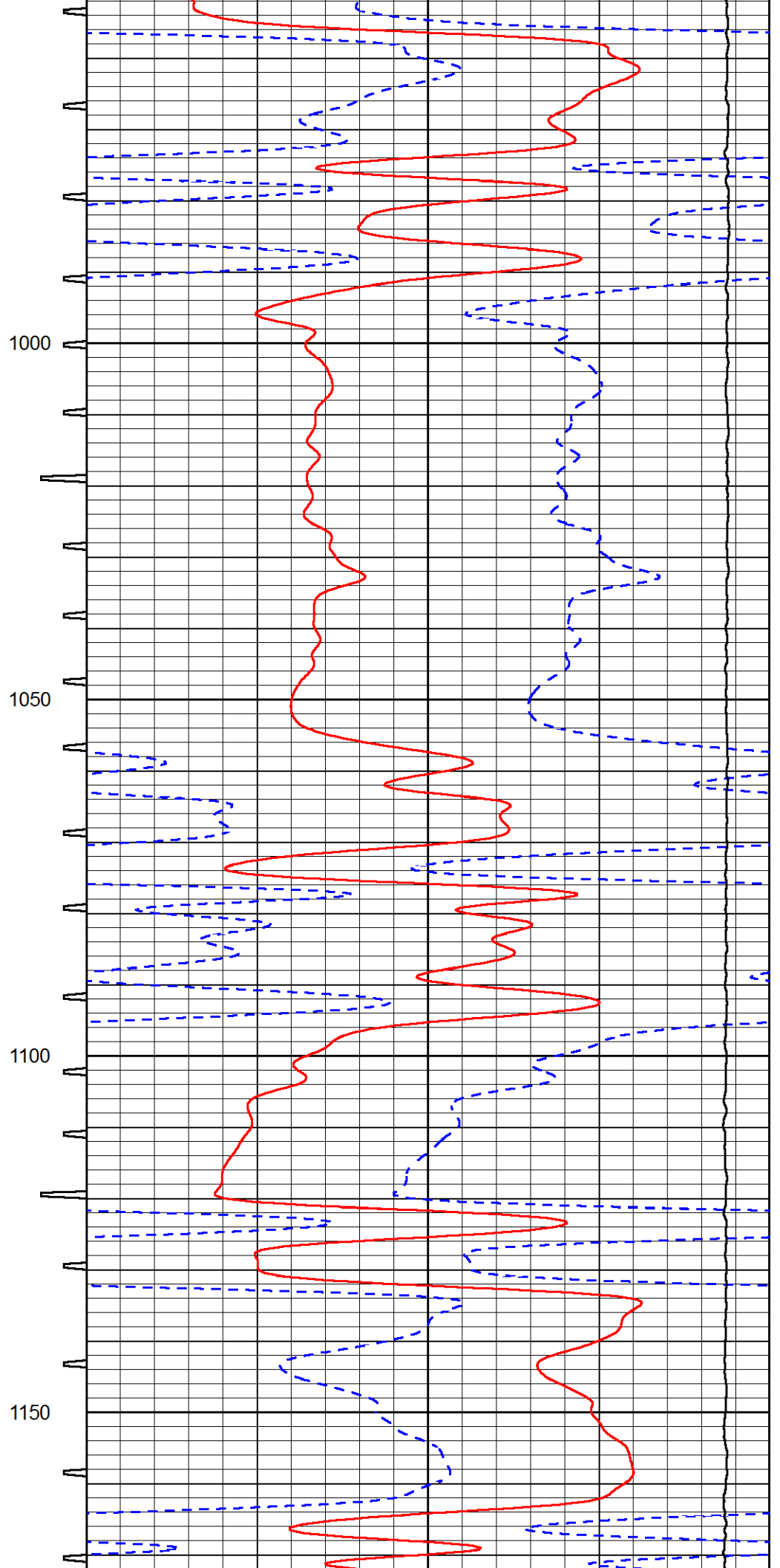
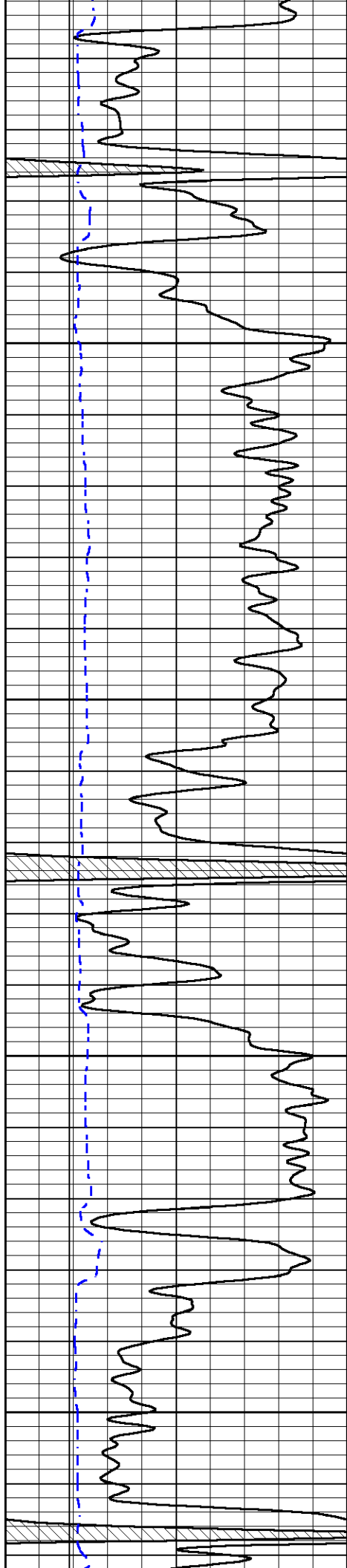
0	Gamma Ray (GAPI)	150	Sonic Int	140	Delta Time (usec/ft) (usec/ft)	40
150	GR (GAPI)	300	5 (msec) 0	30	Sonic Porosity (pu)	-10
6	DCAL (in)	16		15000	LTEN (lb) (lb)	0

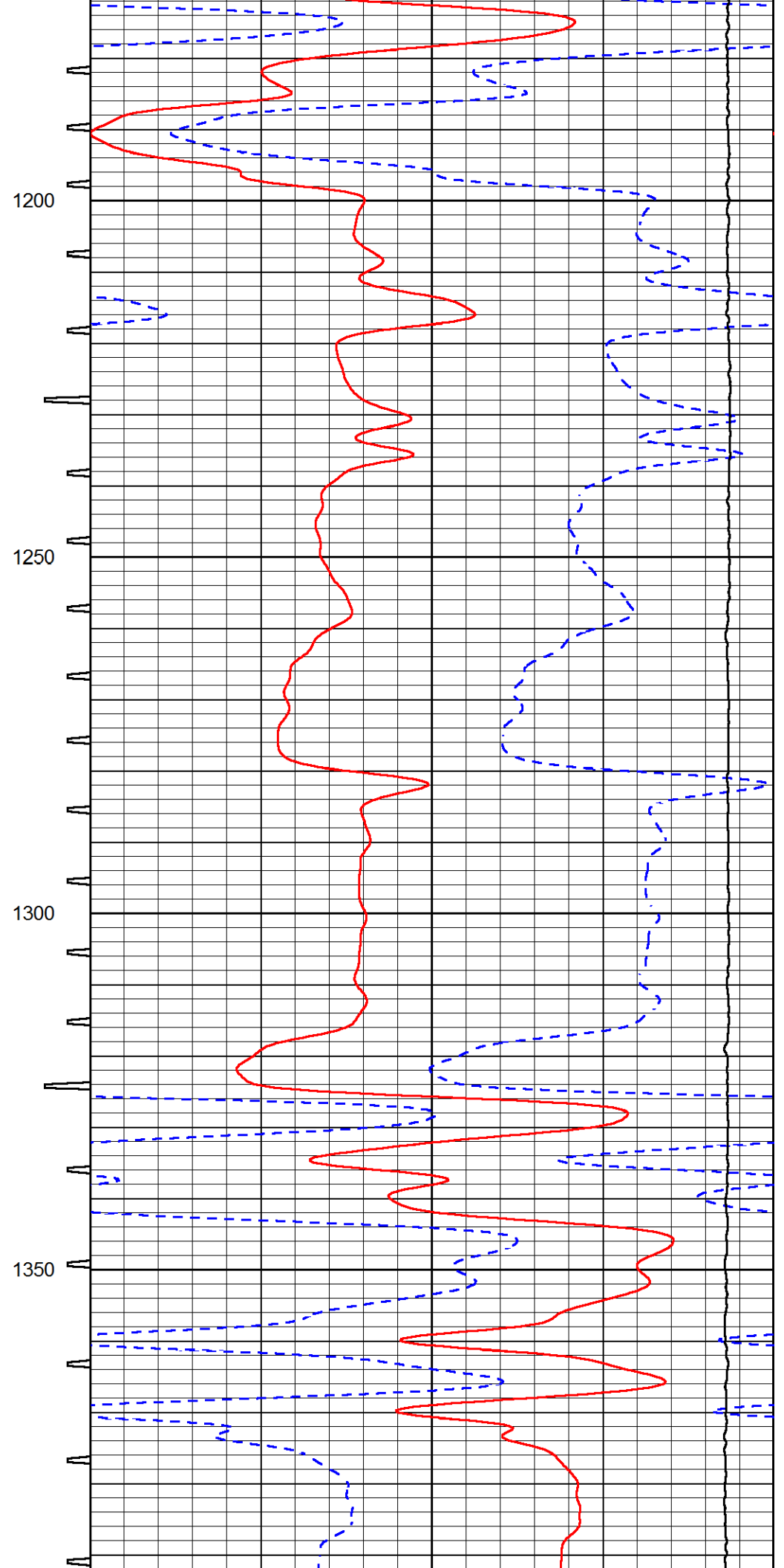
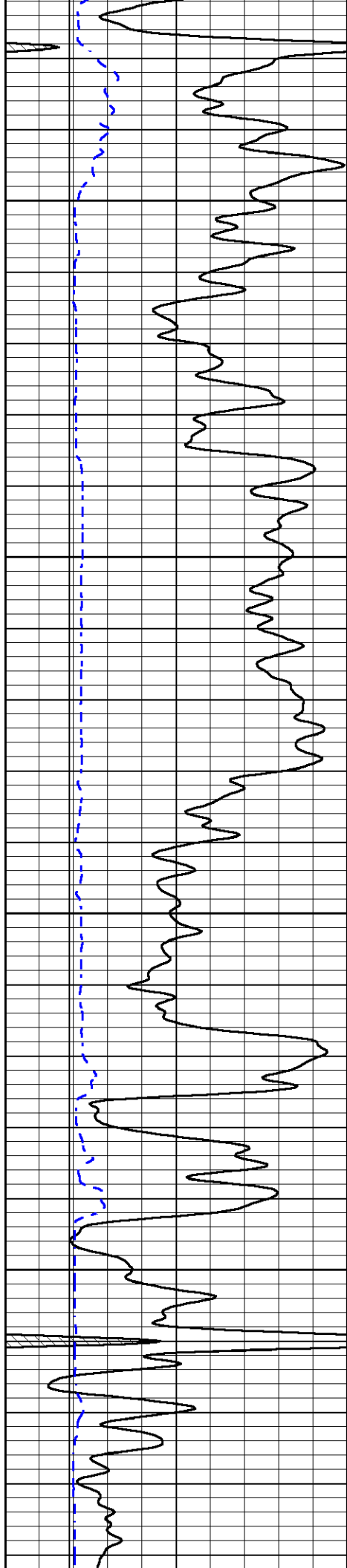


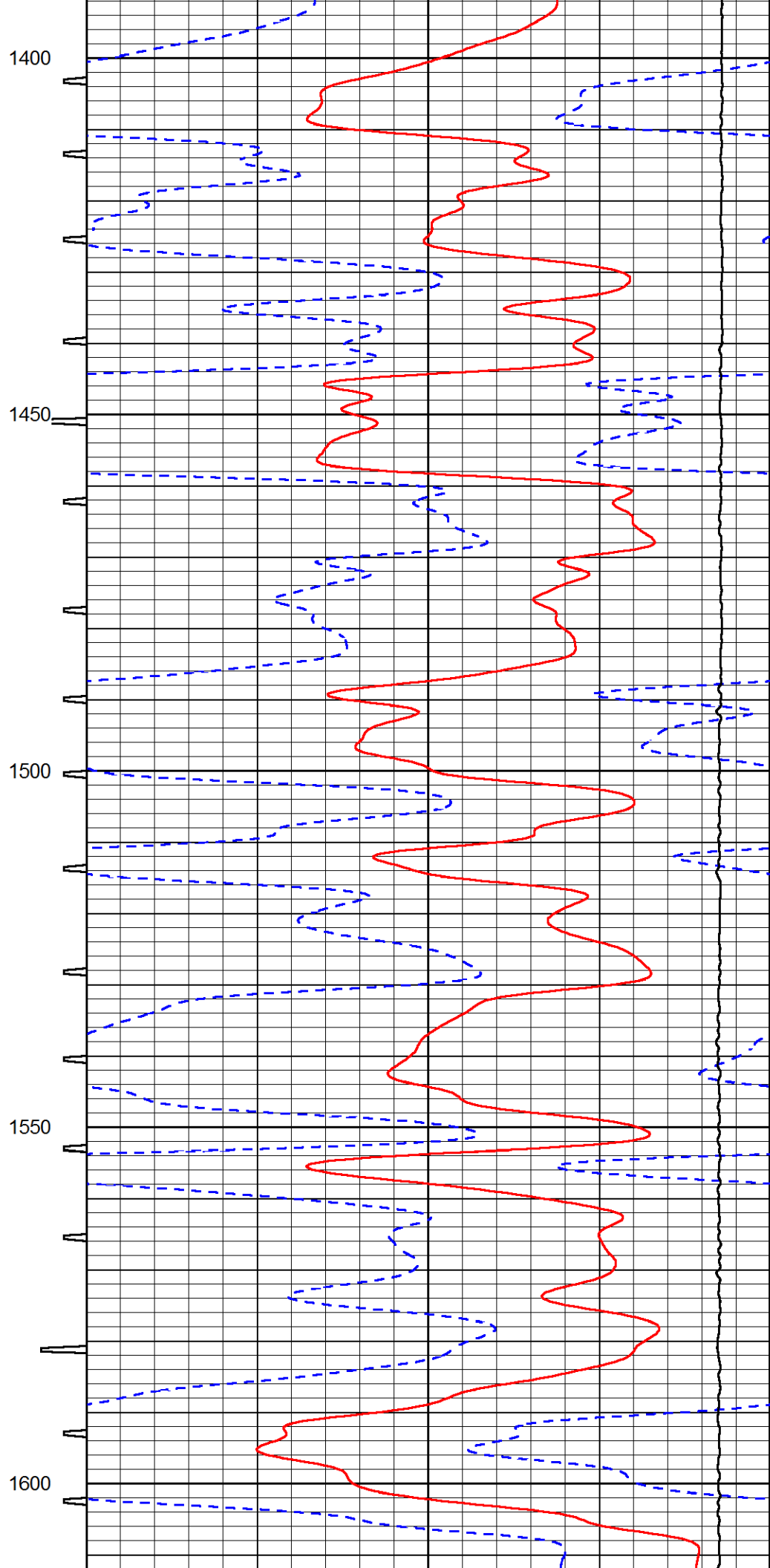
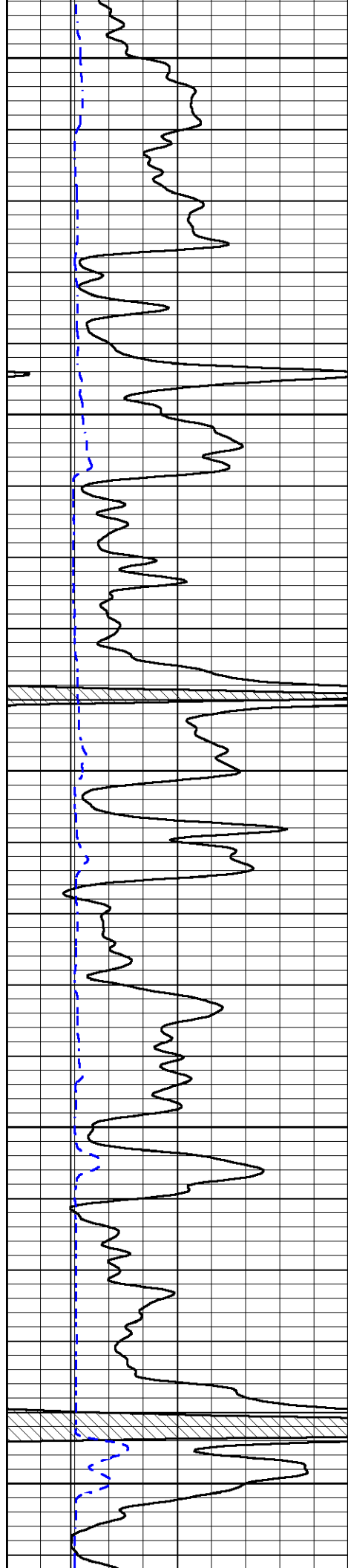


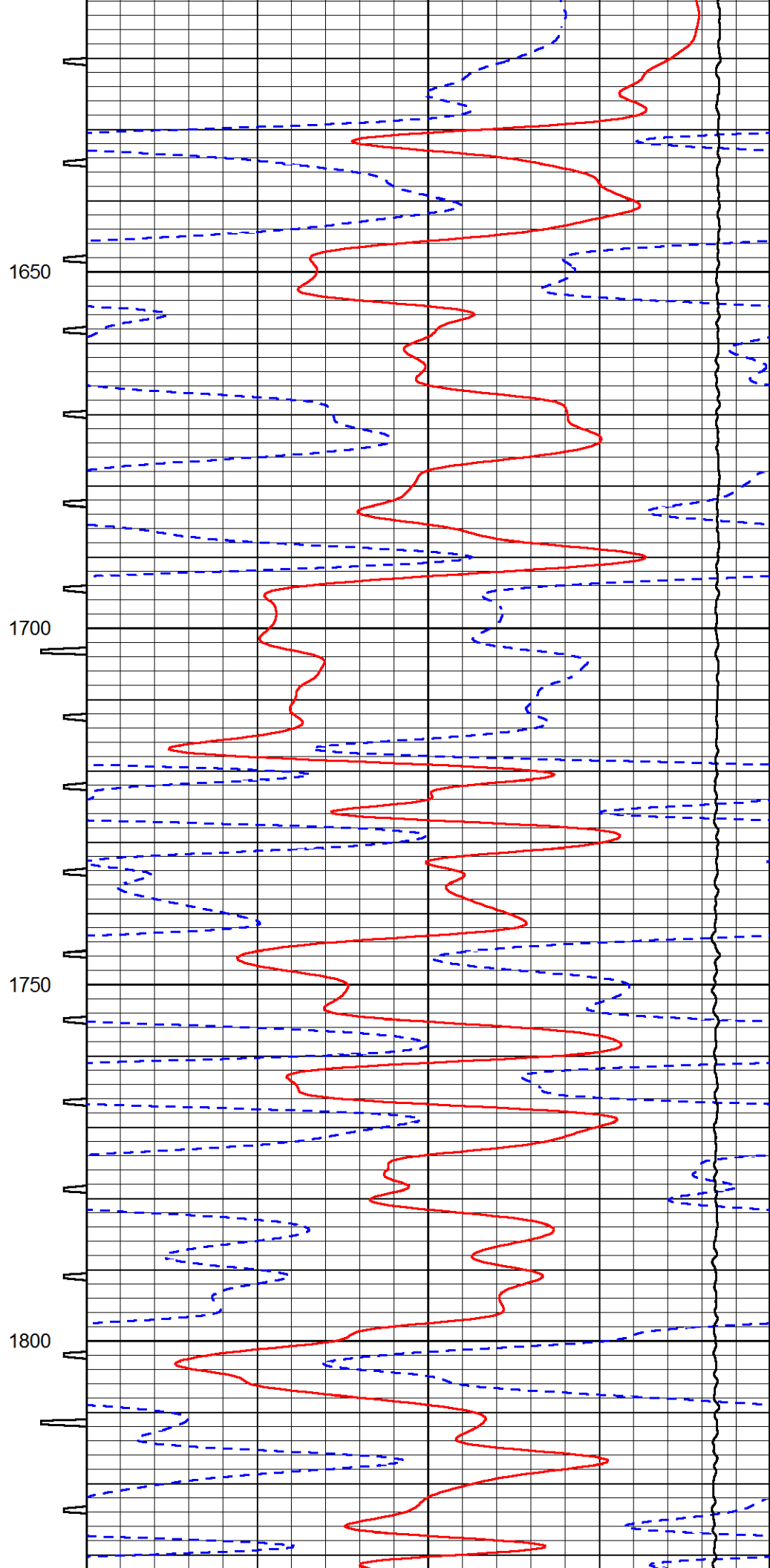
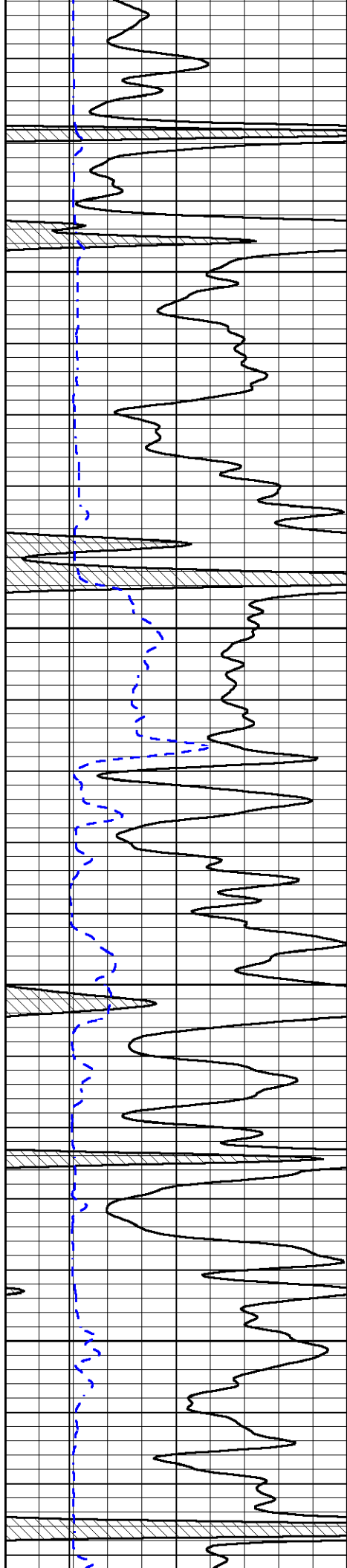


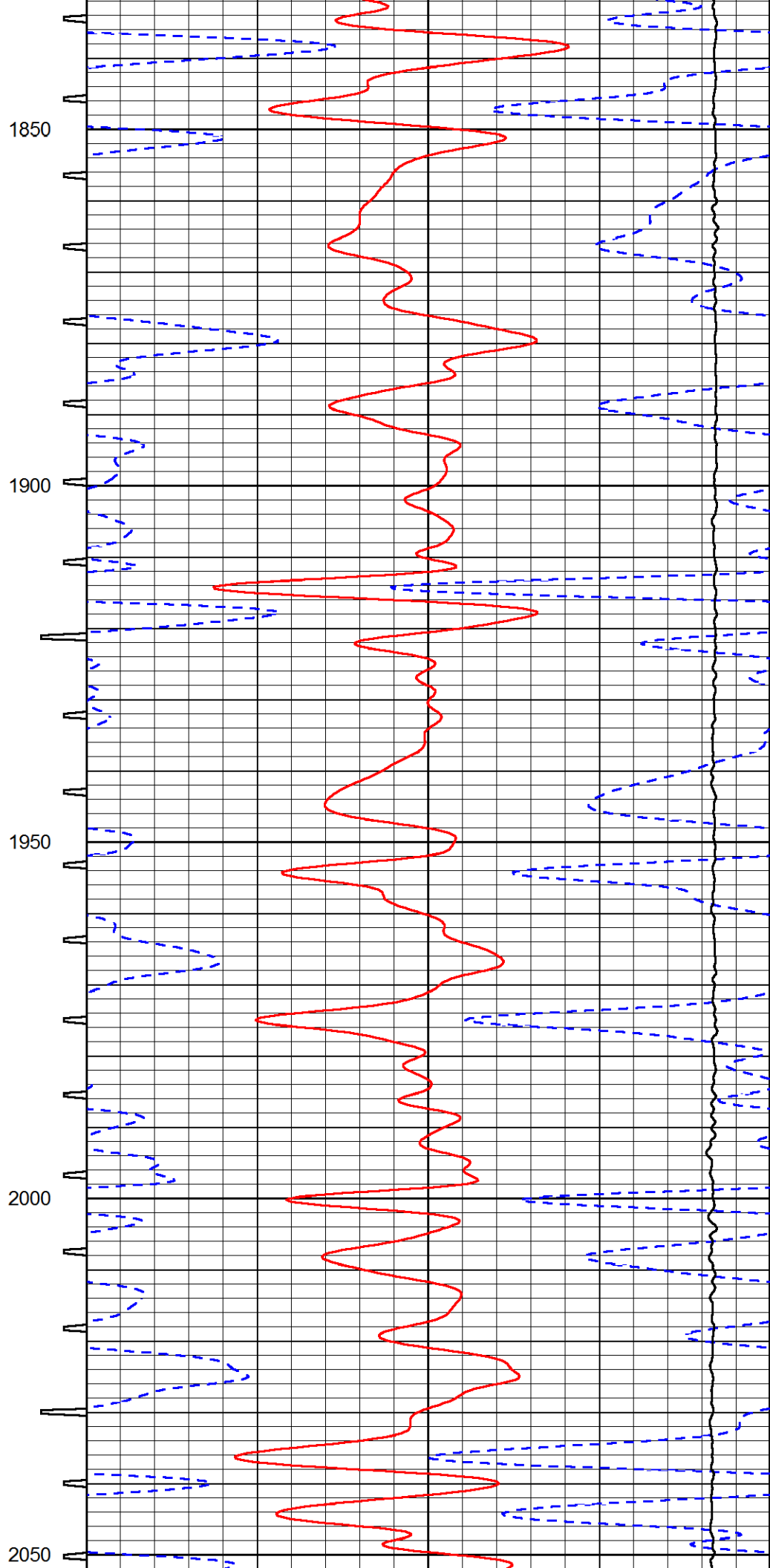
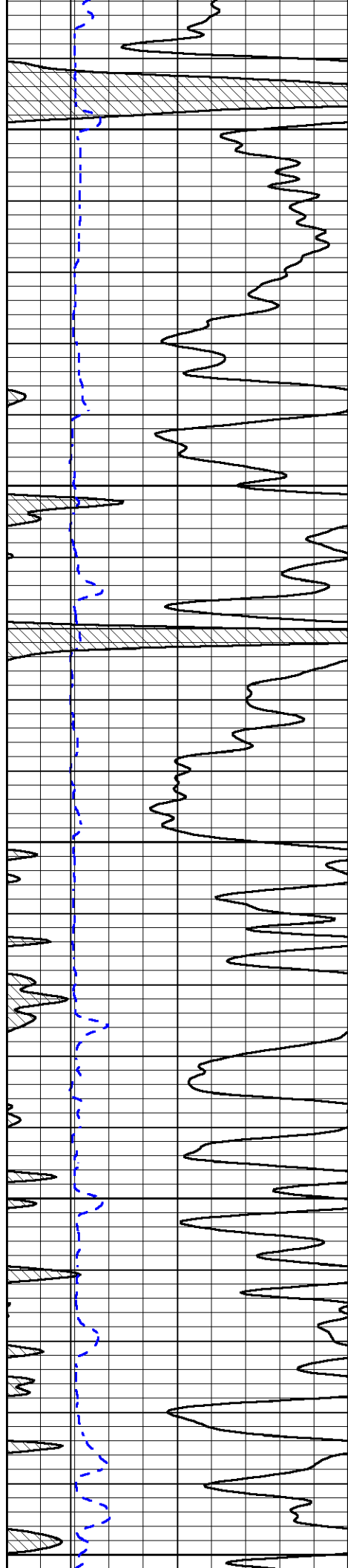


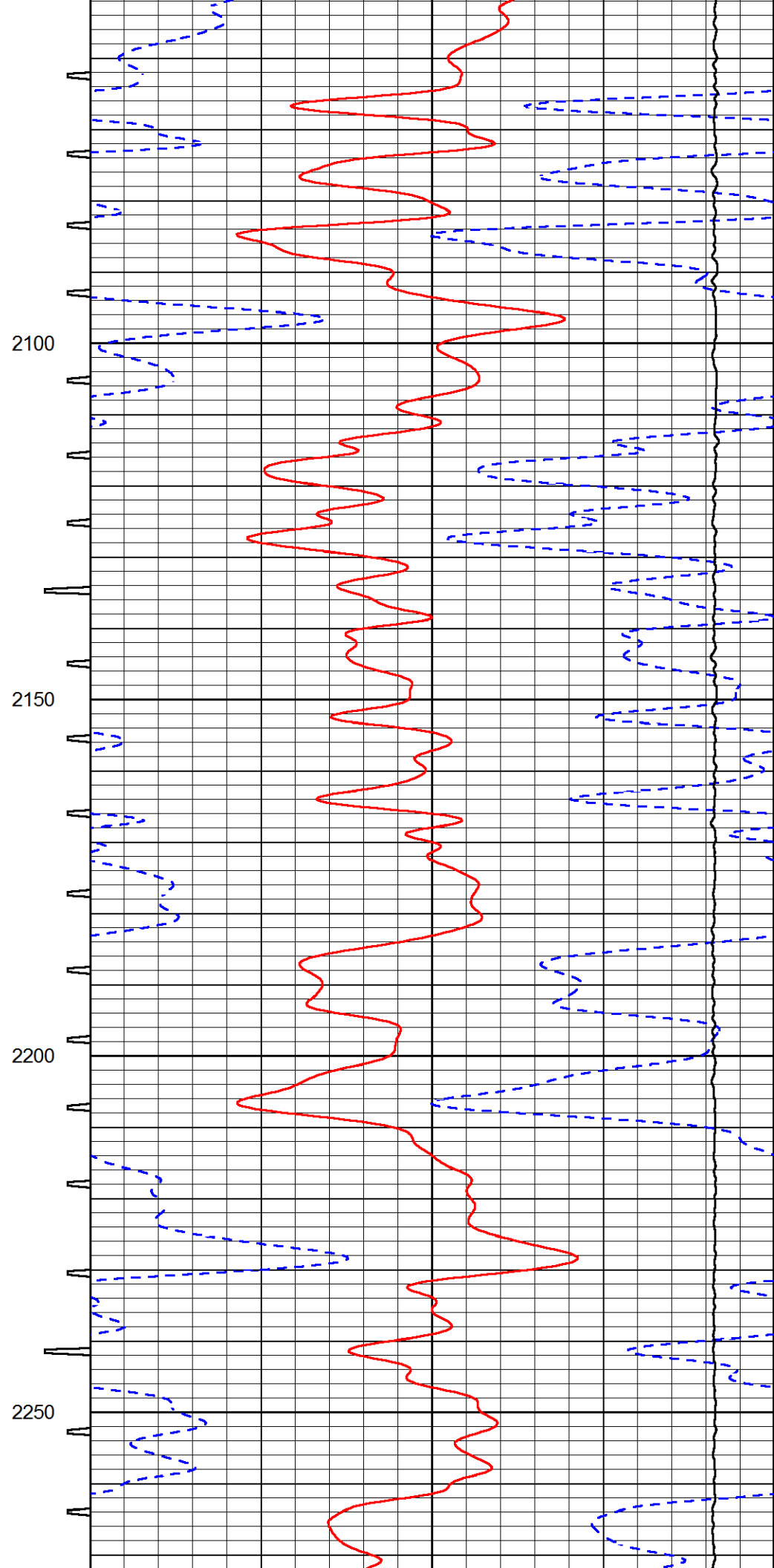
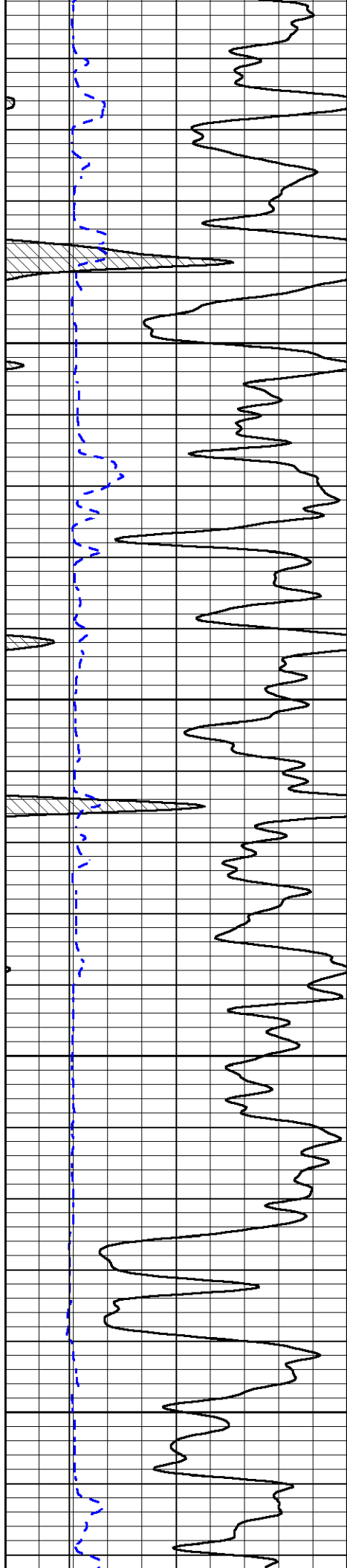


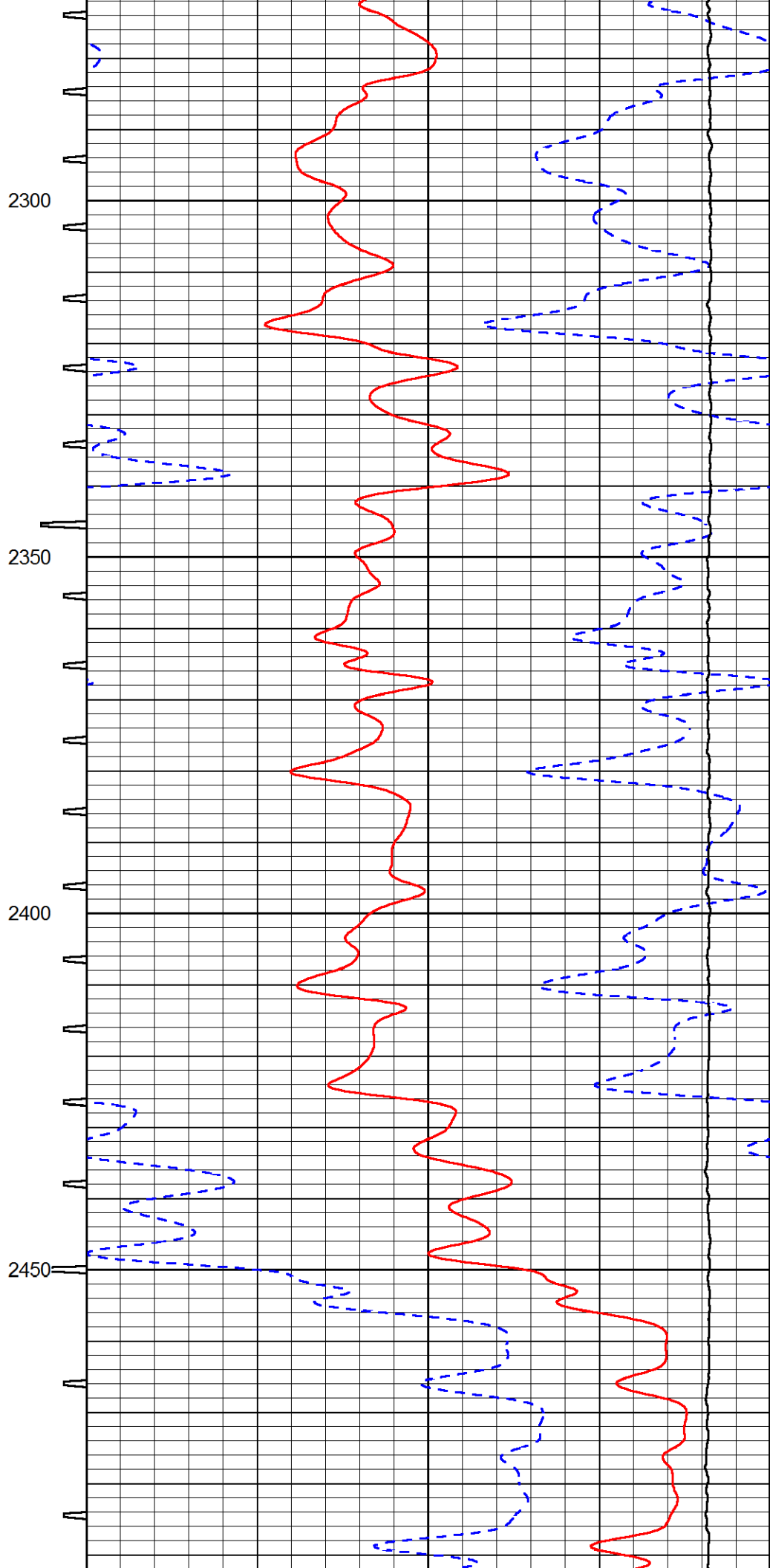
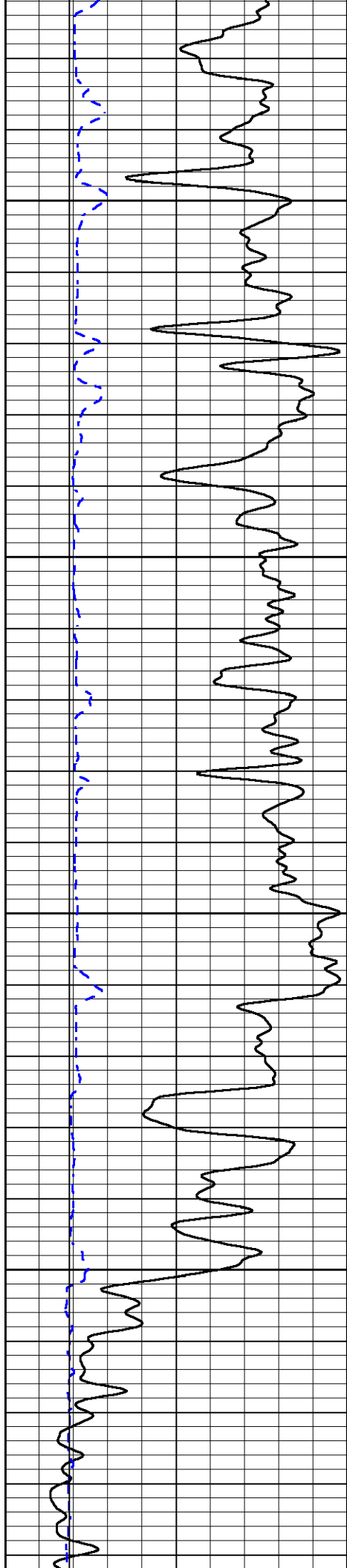


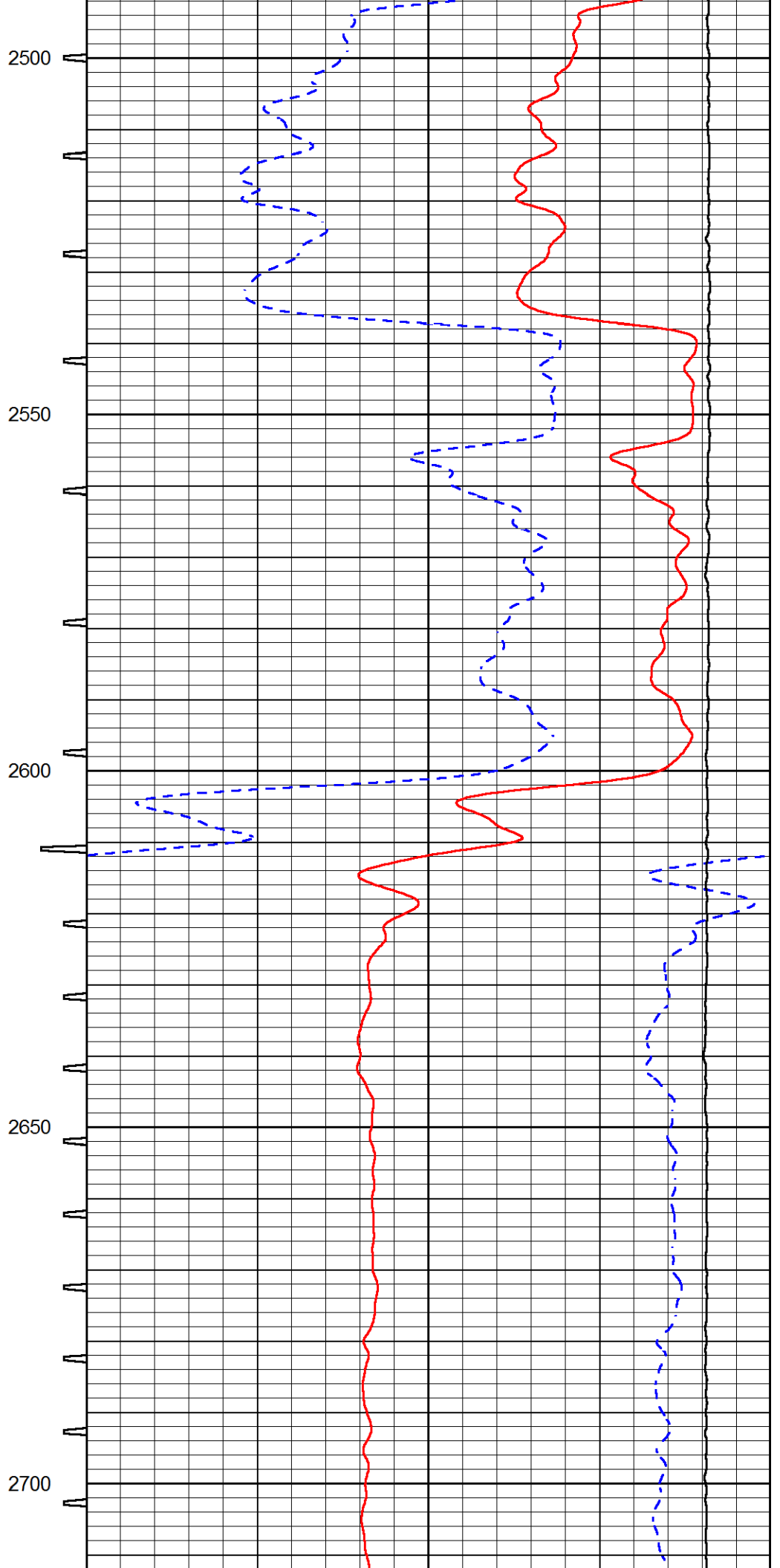
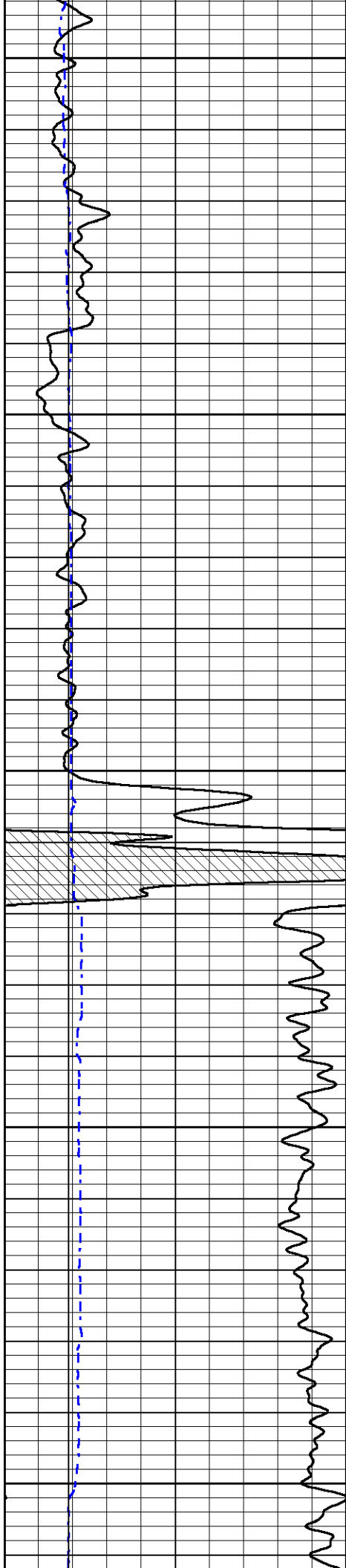


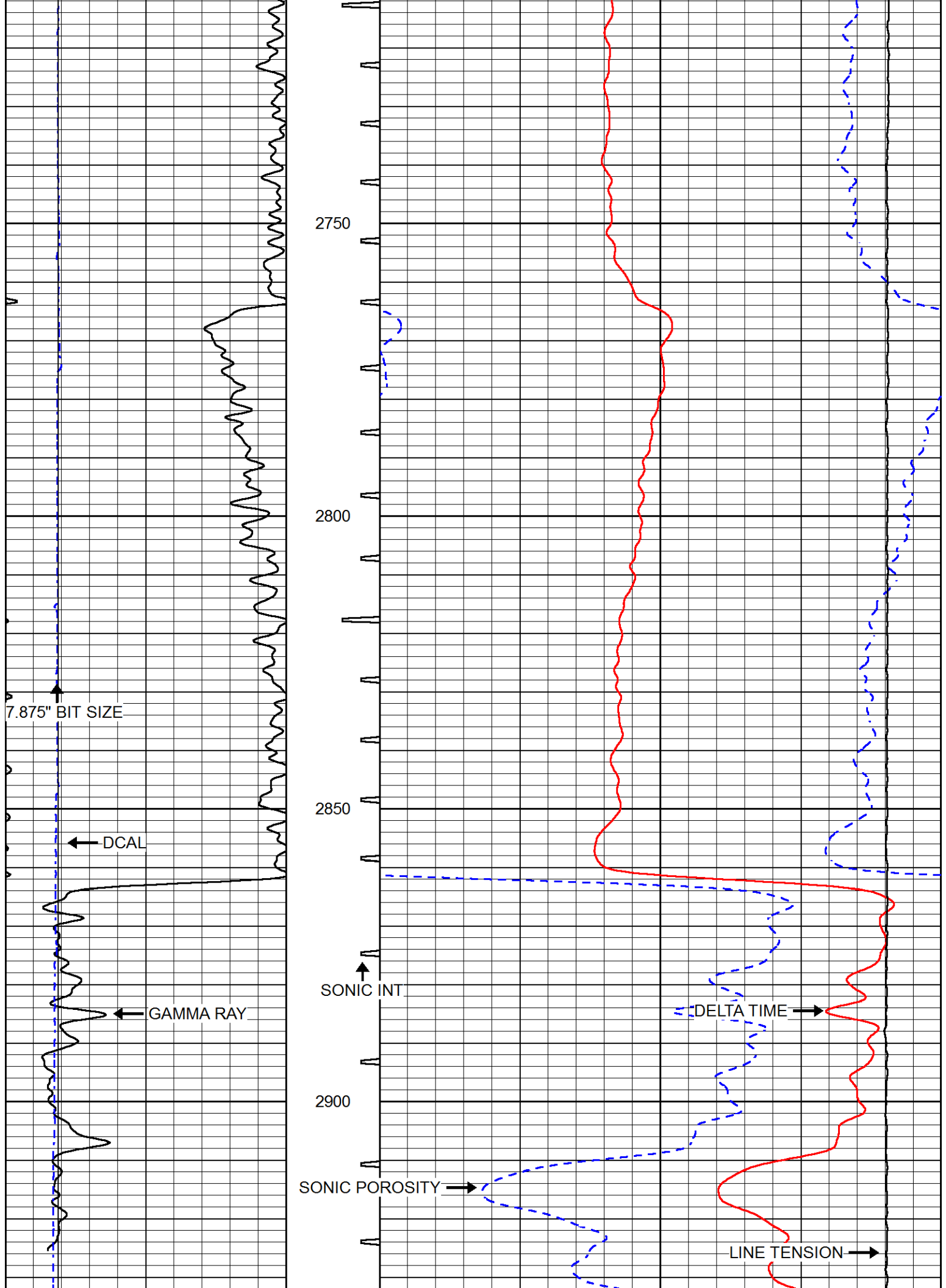


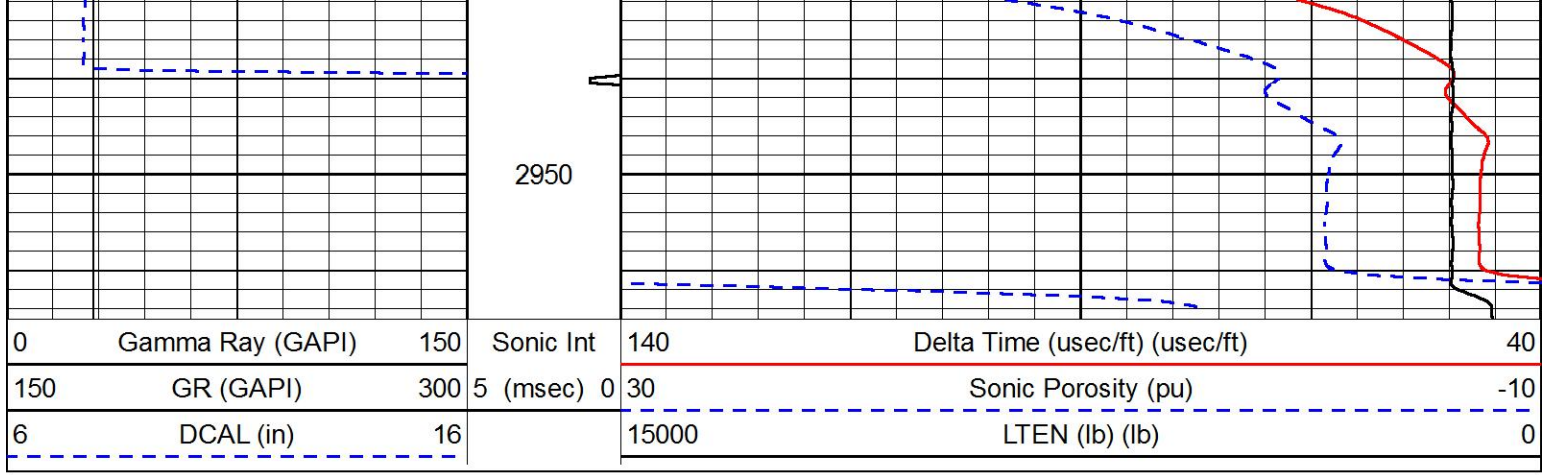








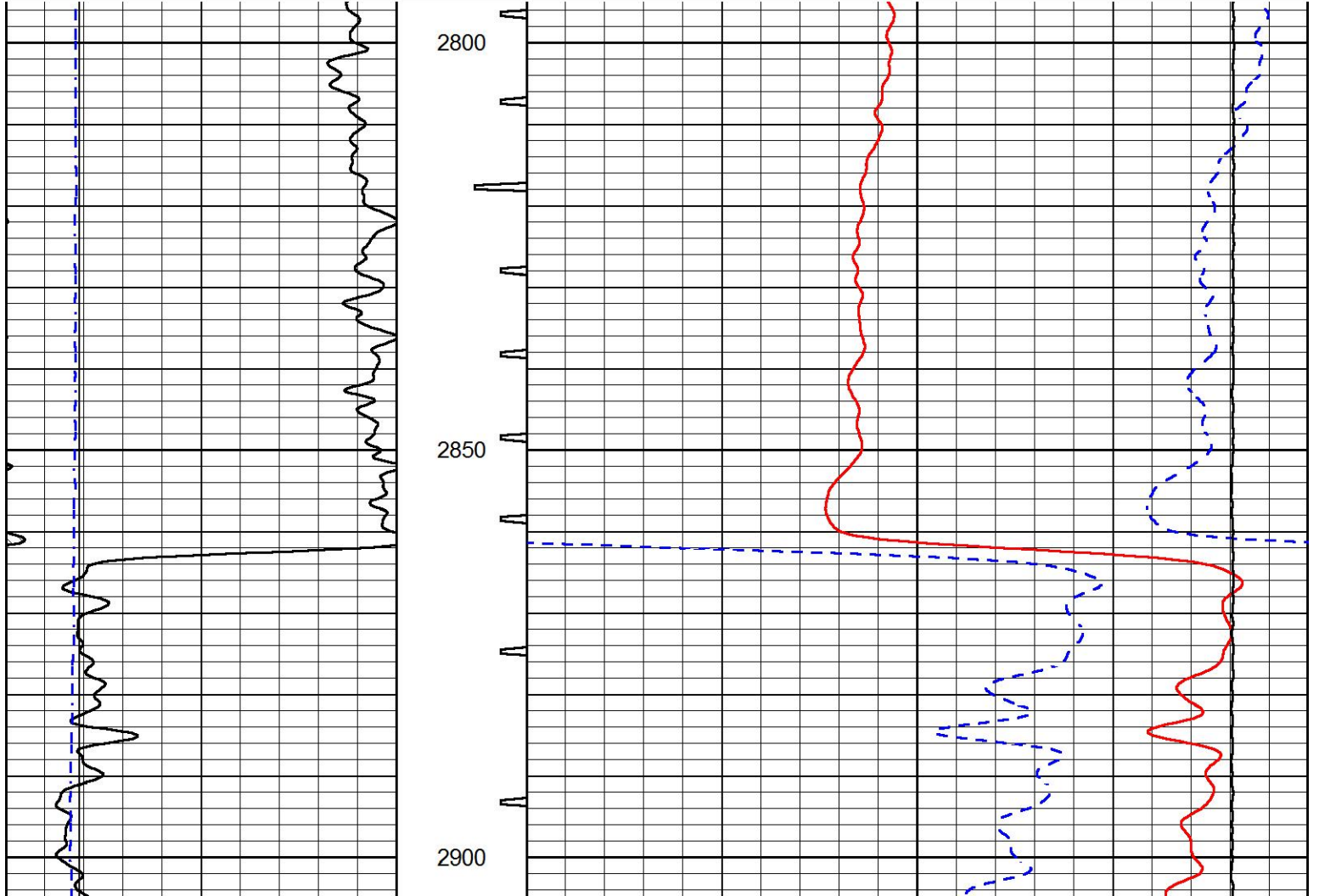


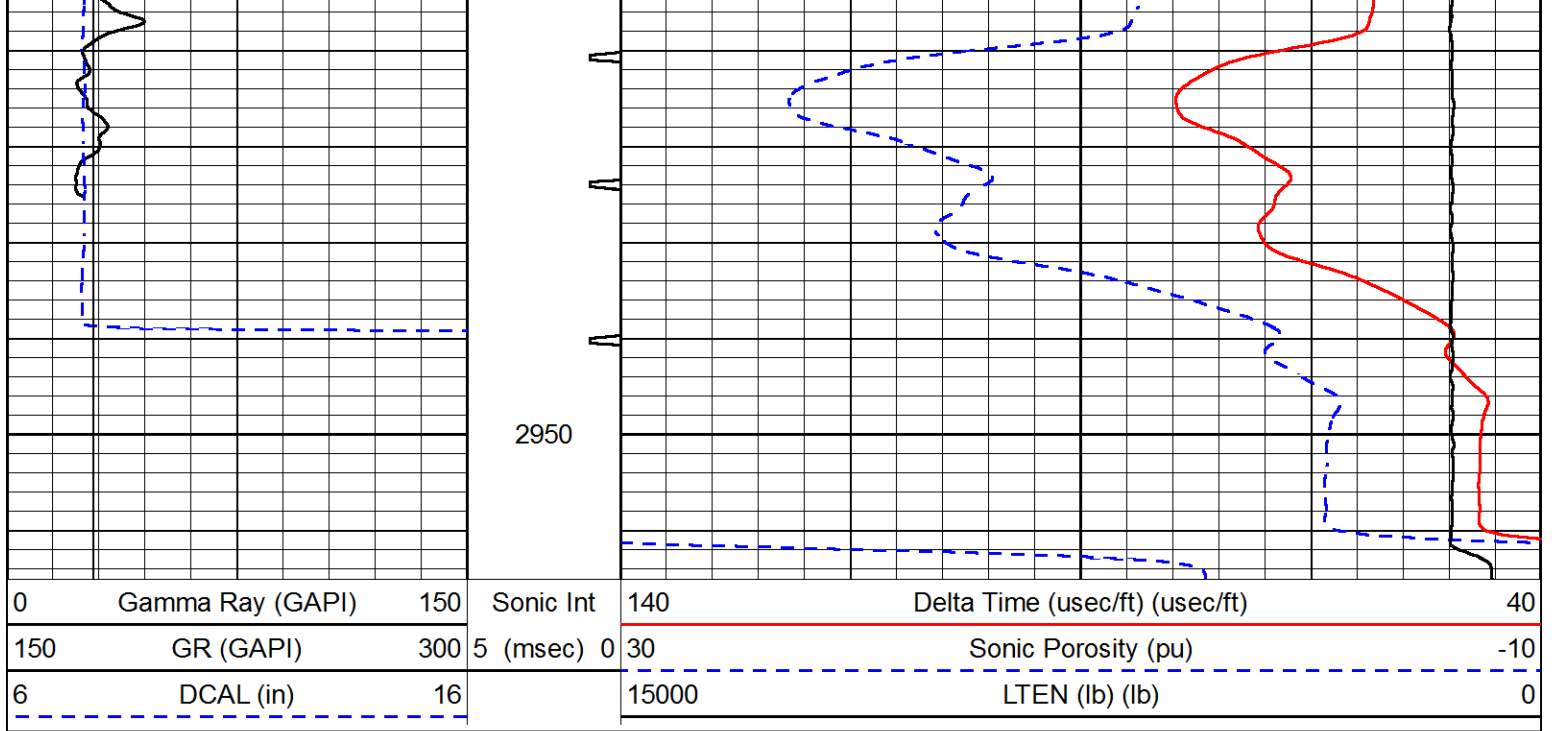


# REPEAT SECTION

Database File rock\_creek\_bauaman 3.db  
 Dataset Pathname STKML/pass2.1  
 Presentation Format sonic  
 Dataset Creation Thu Apr 05 08:32:25 2018  
 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)	-10
6	DCAL (in)	16		15000	LTEN (lb) (lb)	0





### Calibration Report

Database File rock creek\_bauaman 3.db  
 Dataset Pathname STKML/pass4.1  
 Dataset Creation Thu Apr 05 08:46:28 2018

### Dual Induction Calibration Report

Serial-Model: 933 (HT)-PSI HIGH TEMP  
 Calibration Performed: Sun Feb 18 17:32:17 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.700	-18.350
Medium	142.000	1349.000	0.000	255.000	mmho/m	0.565	-63.000

### Microlog Calibration Report

Serial-Model: PSI-01-PSIML  
 Performed: Sun Mar 18 23:48:42 2018

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	18500.0000	-1.9000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	19500.0000	-1.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-65.8500

### Compensated Density Calibration Report

Serial-Model: 182-152-M&W  
 Source / Verifier: 16955B / 2ci  
 Master Calibration Performed: Wed Mar 28 03:05:33 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4992.81	6098.44	cps
Aluminum	2.670	g/cc	945.67	3945.60	cps
Spine Angle = 75.33			Density/Spine Ratio = 0.532		
	Size		Reading		
Small Ring	4.50	in	1.09		
Large Ring	15.00	in	1.03		

**Compensated Neutron Calibration Report**

Serial Number: 207-MW  
Tool Model: M&W  
Calibration Performed: FRI MAR 9 10:30:30 2018

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: 89  
Tool Model: M&W  
Calibration Performed: Mon Jan 15 11:20:44 2018

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps  
Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



**PIONEER**  
Pioneer Energy Services

Company ROCK CREEK CRUDE, LLC  
Well BAUMAN #3  
Field STRAHM  
County NEMAHA  
State KANSAS