



DUAL INDUCTION LOG

PIONEER
Pioneer Energy Services

Company **AMERICAN WARRIOR, INC.**

Well **GLUNT #2-23**

Field **WILDCAT**

County **HODGEMAN** State **KANSAS**

Location: API #: 15-083-21972-00-00

1072' FSL & 582' FWL

SEC 23 TWP 22S RGE 24W

Permanent Datum **GROUND LEVEL** Elevation **2395'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**

Elevation
K.B. **2403'**
D.F. **N/A**
G.L. **2395'**

Company **AMERICAN WARRIOR, INC.**
Well **GLUNT #2-23**
Field **WILDCAT**
County **HODGEMAN**
State **KANSAS**

Date **10/12/2019**

Run Number **ONE**

Depth Driller **4630'**

Depth Logger **4636'**

Bottom Logged Interval **4635'**

Top Log Interval **200'**

Casing Driller **8.625" @ 223'**

Casing Logger **224'**

Bit Size **7.875"**

Type Fluid in Hole **CHEMICAL**

Salinity, ppm CL **5600**

Density / Viscosity **9.4 45**

pH / Fluid Loss **10.0 8.8**

Source of Sample **FLOWLINE**

Rm @ Meas. Temp **0.65 @ 72**

Rmf @ Meas. Temp **0.49 @ 72**

Rmc @ Meas. Temp **0.88 @ 72**

Source of Rmf / Rmc **CHARTS**

Rm @ BHT **0.38 @ 72**

Operating Rig Time **3 HOURS**

Max Rec. Temp. F **122**

Equipment Number **P-24**

Location **HAYS**

Recorded By **IAN MABB**

Witnessed By **JASON T. ALM**

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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.

**JETMORE, KS.
NORTH 2 MILES TO RD O,
WEST 1 3/4 MILES, & NORTH INTO**

Log Measured From: KELLY BUSHING 8 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew

**Engineer: IAN MABB
Operator:
Operator:
Operator:**

This Log Record Was Witnessed By

**Primary Witness: JASON T. ALM
Secondary Witness:
Secondary Witness:
Secondary Witness:**

Top - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in 7.875	degF 122	in 5.5	in 0	g/cc 1	2	g/cc 2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m 3	mmho/m 1	mV -17	degF 0	Off	ft 4636

Sensor	Offset (ft)	Schematic		Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58			GR-M&W (233-M&W)	3.00	3.50	50.00
CNLSC	37.48			CNT-M&W (207-MW)	5.50	3.50	100.00
CNSSC	36.73						
LSD	28.43			CDL-M&W (96-916)	8.50	4.00	250.00
	28.42						
	27.93						
MCAL	19.83			ML-PSIML (PSI-01)	7.58	4.00	65.00
	19.83			GO Micro log tools converted to Simplec electronics			
	19.83						
RLL3F	15.80						
RLL3	15.80						
CILD	8.00			DIL-PSI HIGH TEMP (952-828)	18.50	3.50	220.00

CILM

4.70

SP

0.20

Dataset: american_warrior_glunt_2_23.db: field/well/stackmel/pass5.1
Total length: 43.08 ft
Total weight: 685.00 lb
O.D.: 4.00 in



MAIN PASS

Database File american_warrior_glunt_2_23.db
Dataset Pathname stackmel/pass6.1
Presentation Format _dil2in
Dataset Creation Sat Oct 12 23:25:36 2019
Charted by Depth in Feet scaled 1:600

GAMMA RAY

0

(GAPI)

150

1000 CONDUCTIVITY (mmho/m) 0

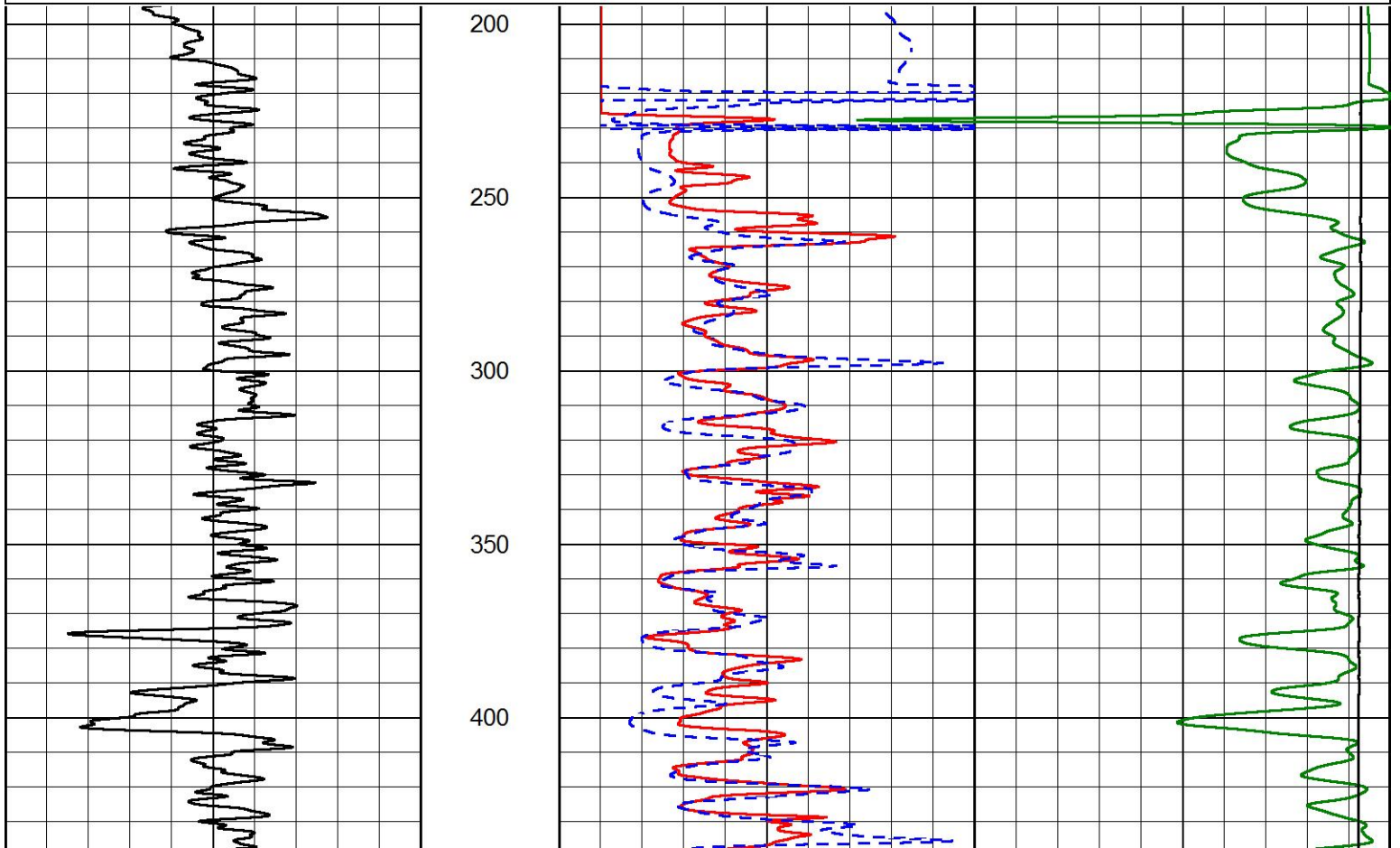
15000 Line Tension (lb) 0

0 RLL3 (Ohm-m) 50

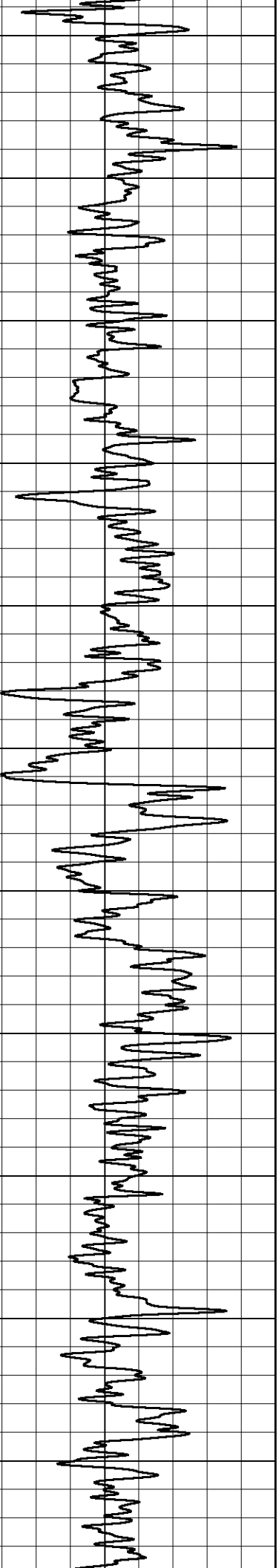
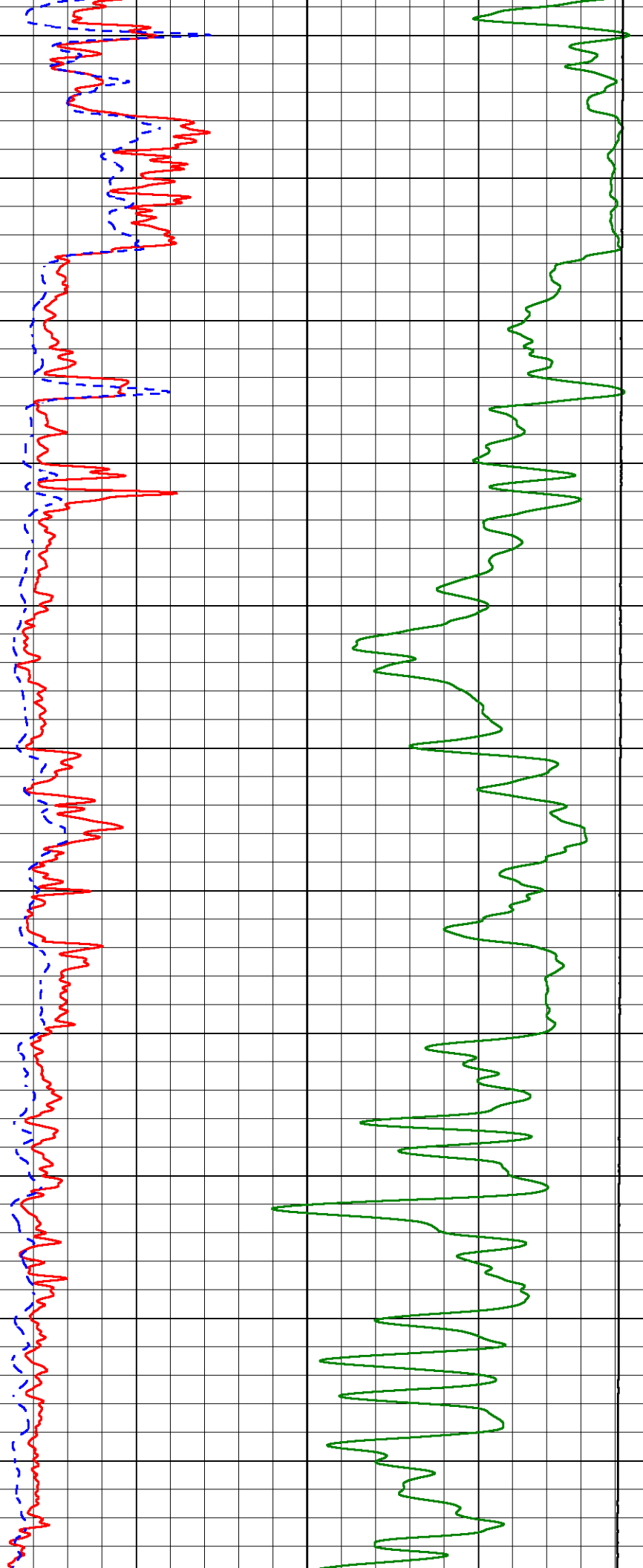
50 RLL3 (Ohm-m) 500

0 RILD (Ohm-m) 50

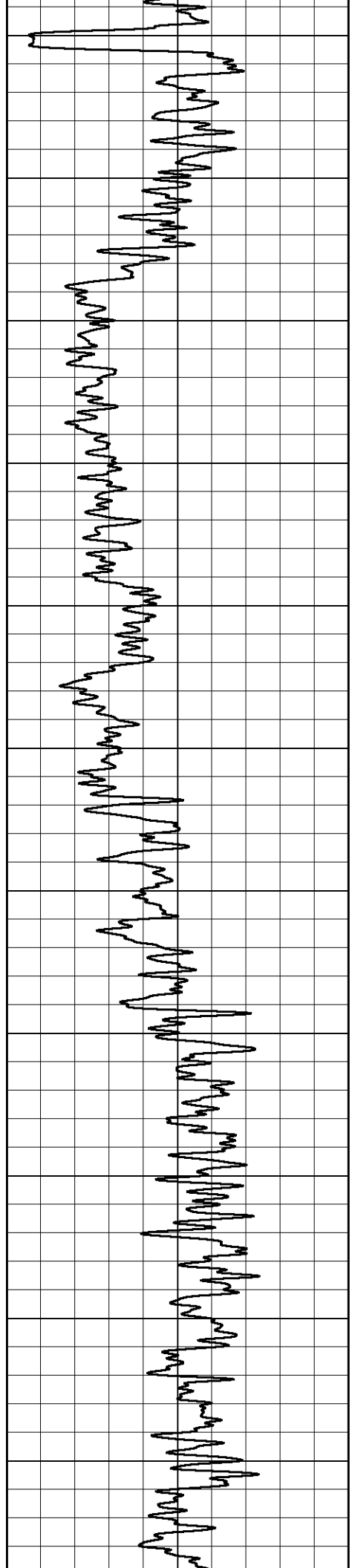
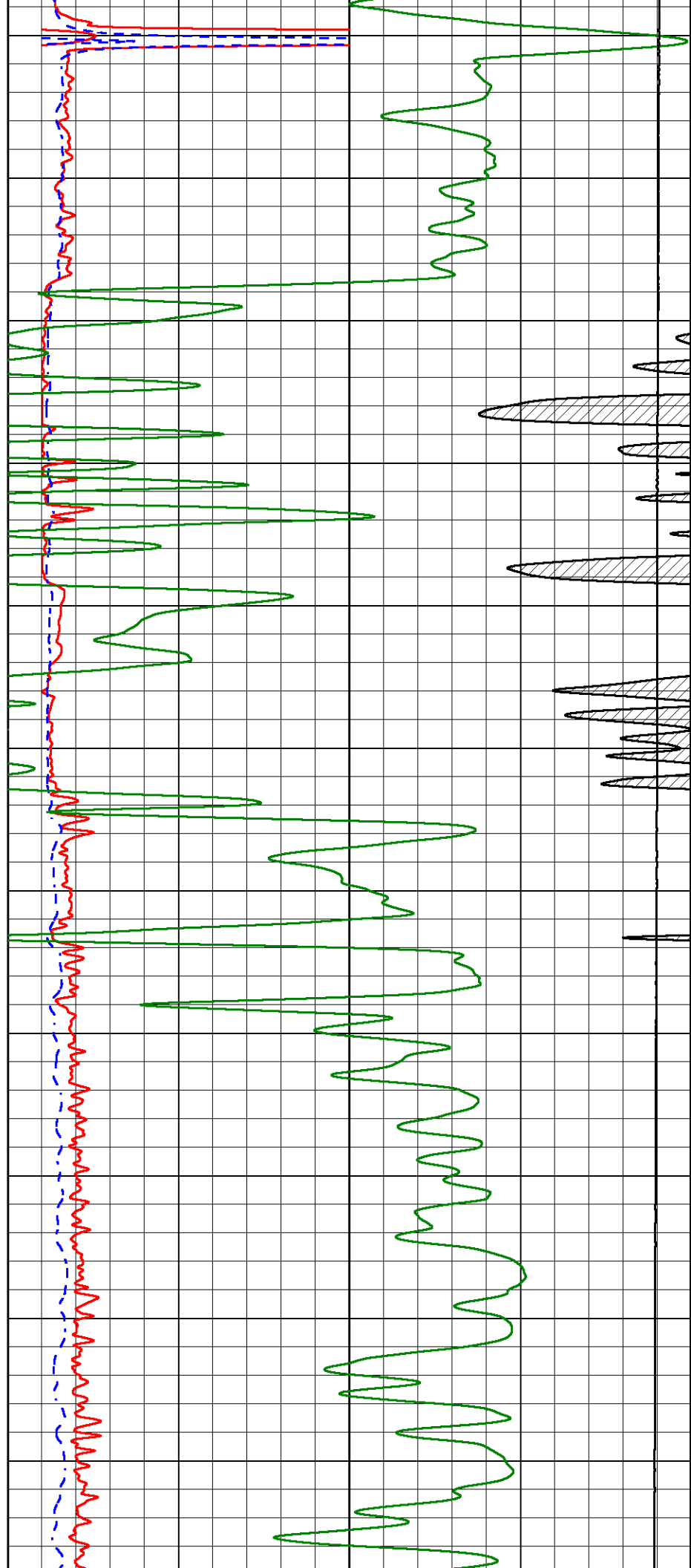
50 Deep Resistivity (Ohm-m) 500

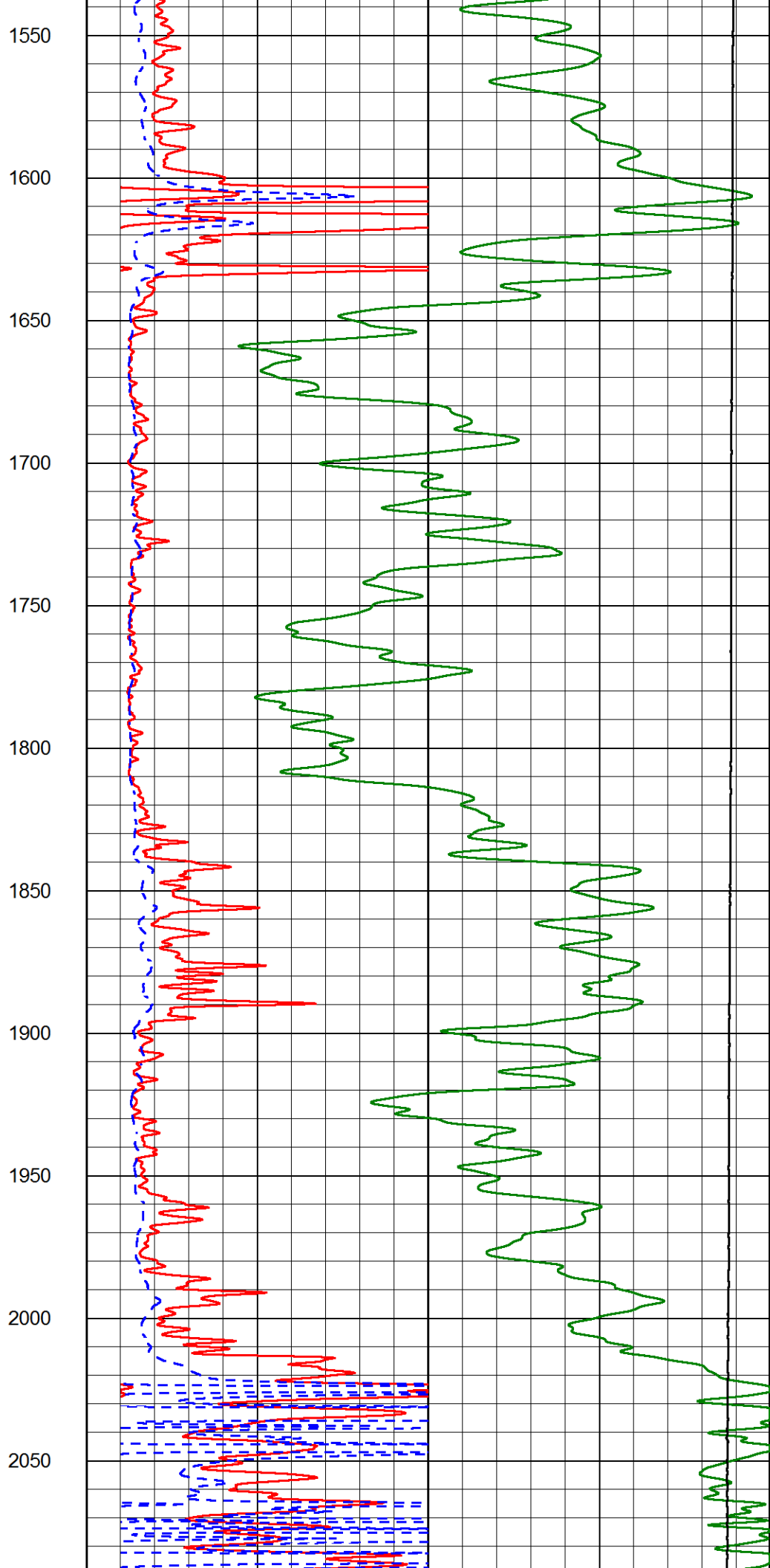
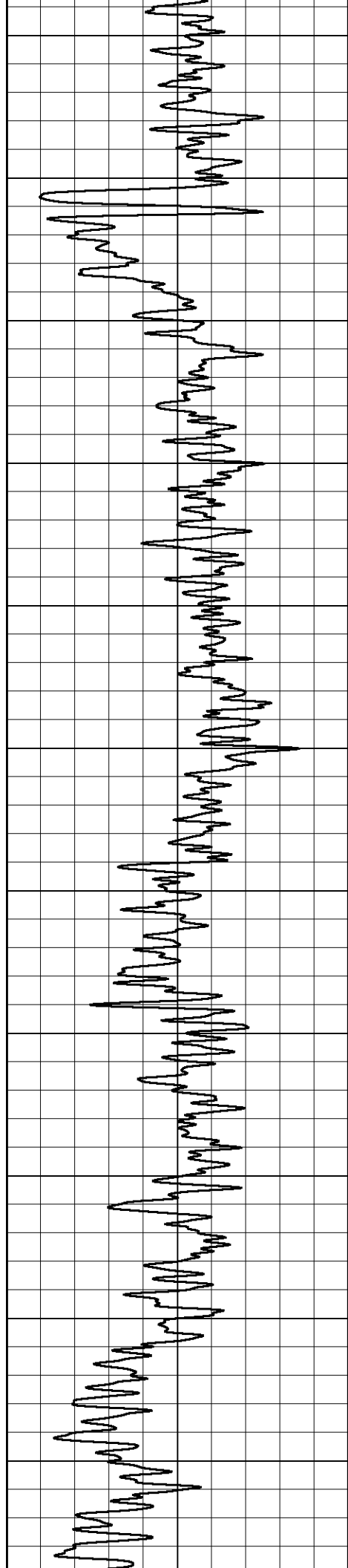


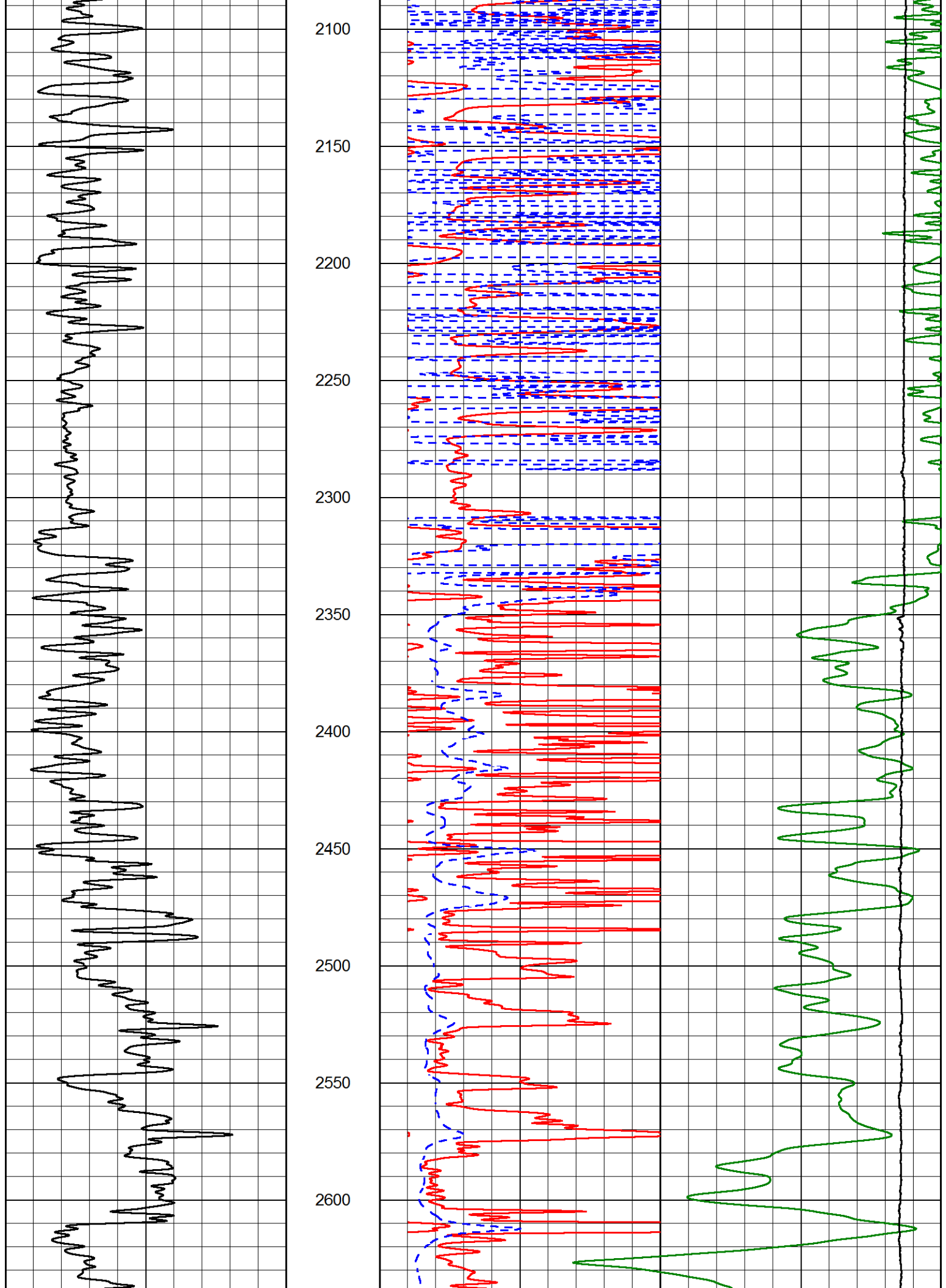
450
500
550
600
650
700
750
800
850
900
950

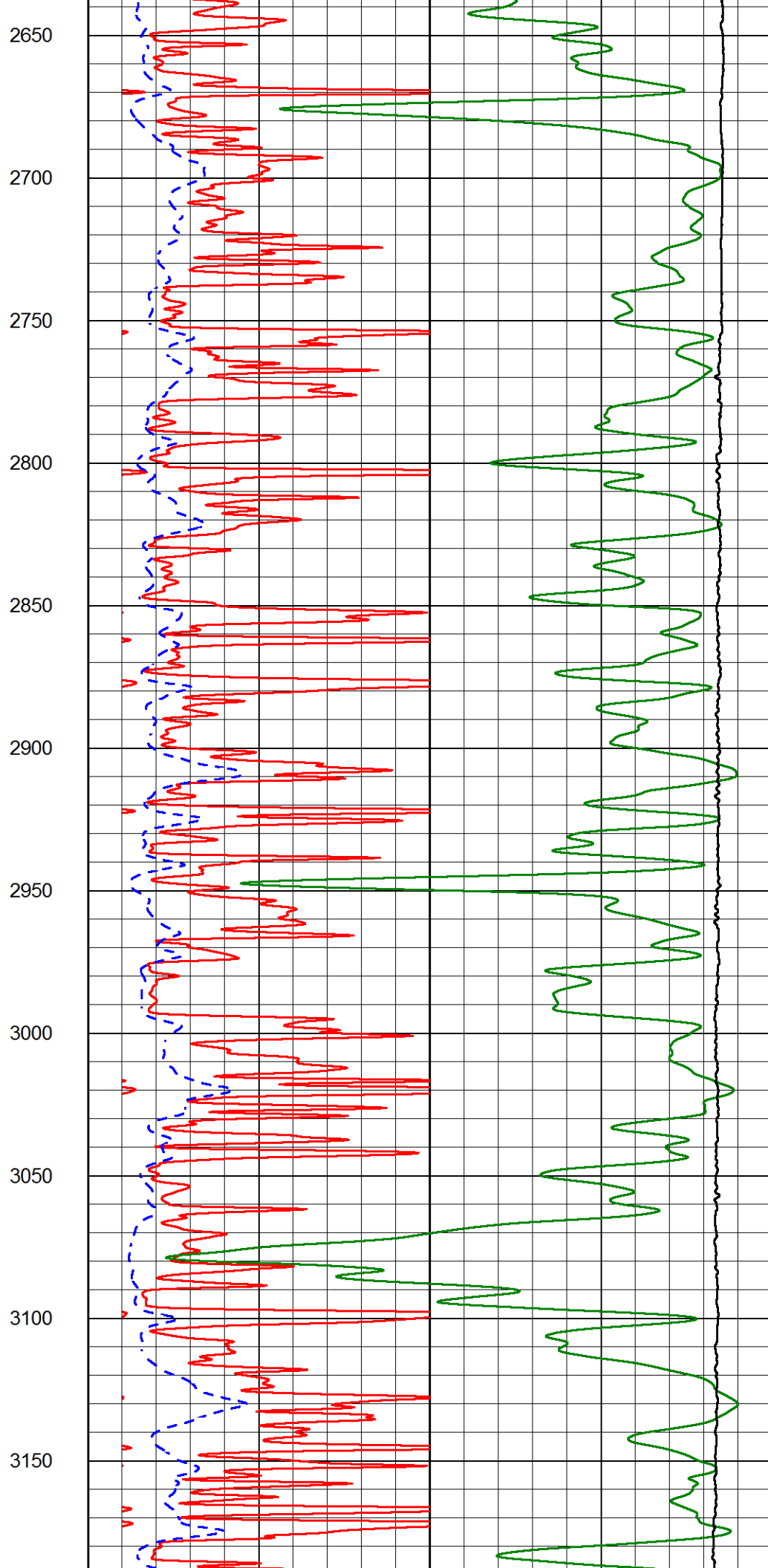
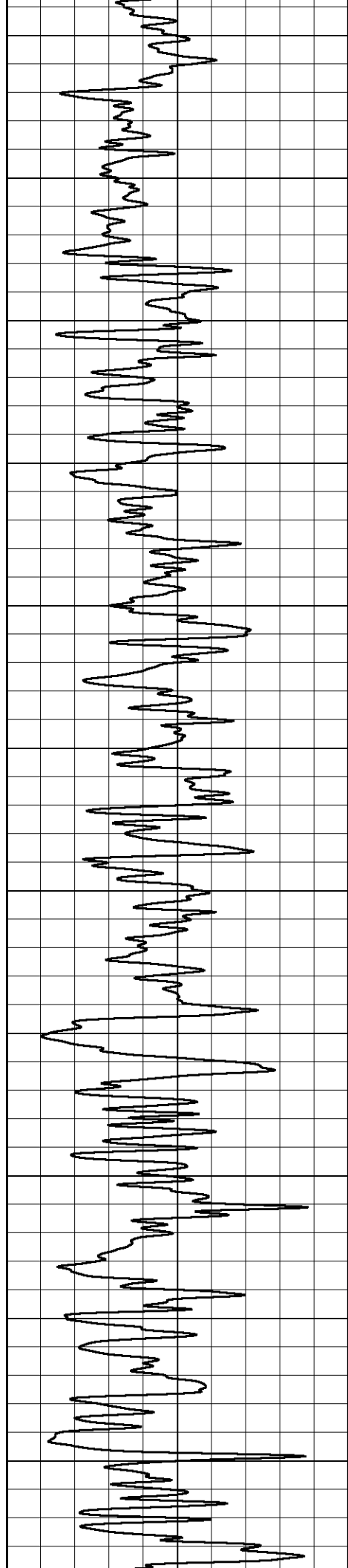


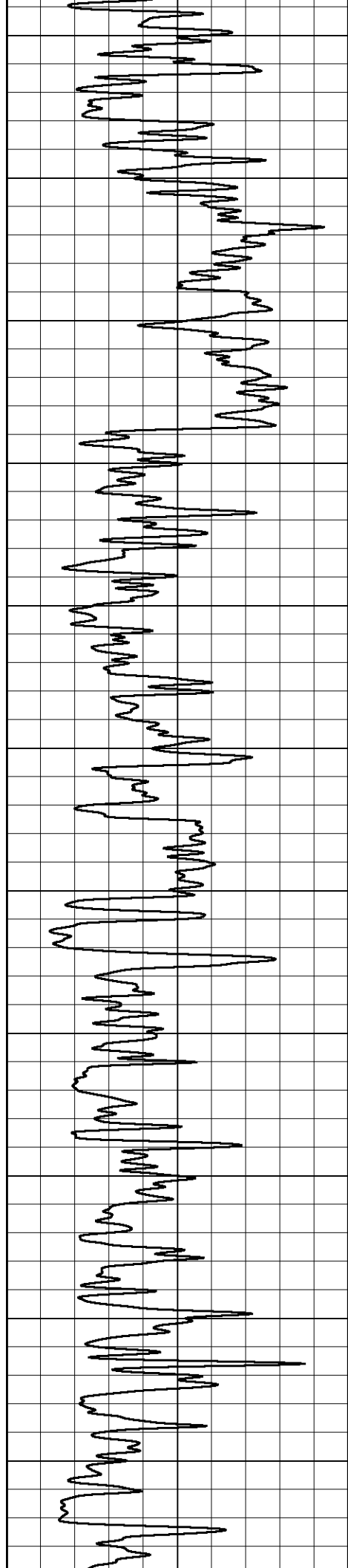
1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
1500











3200

3250

3300

3350

3400

3450

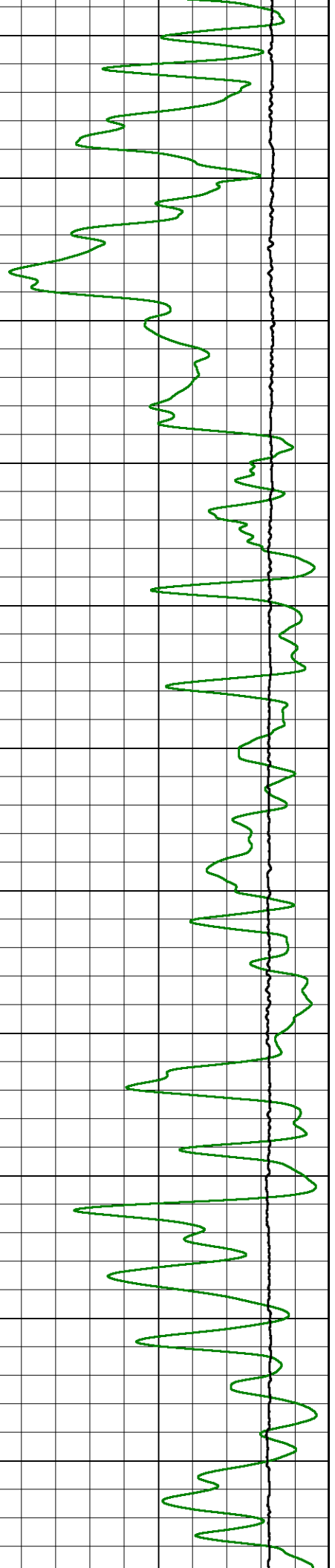
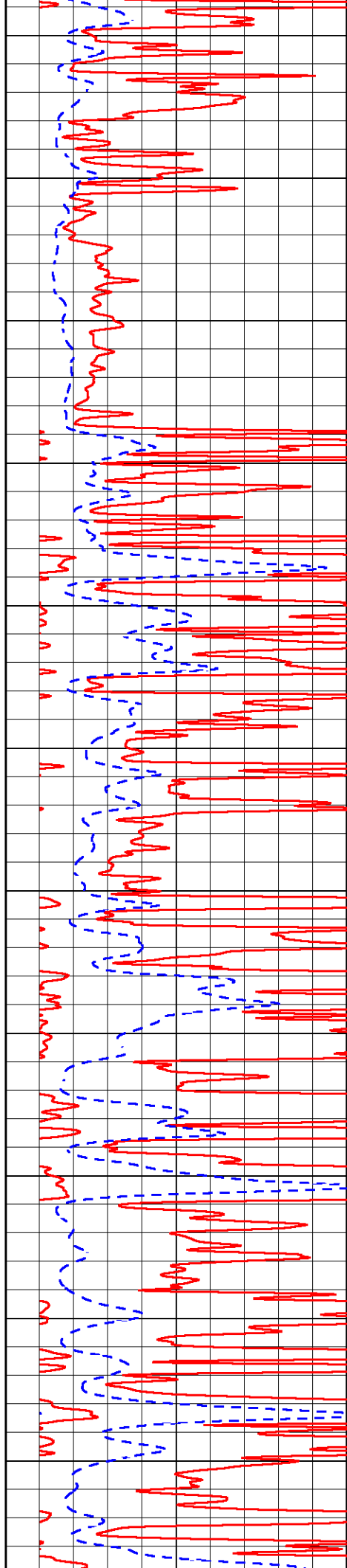
3500

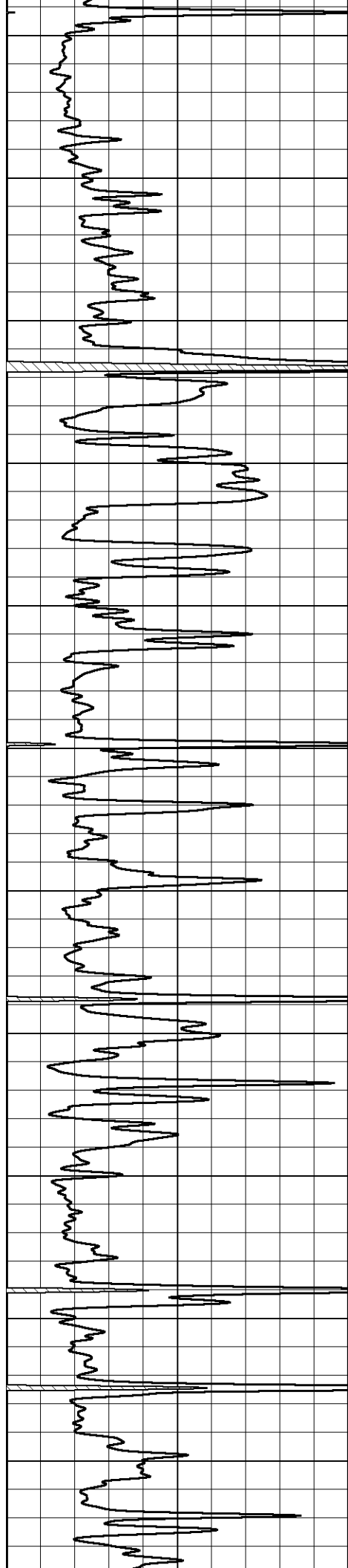
3550

3600

3650

3700





3750

3800

3850

3900

3950

4000

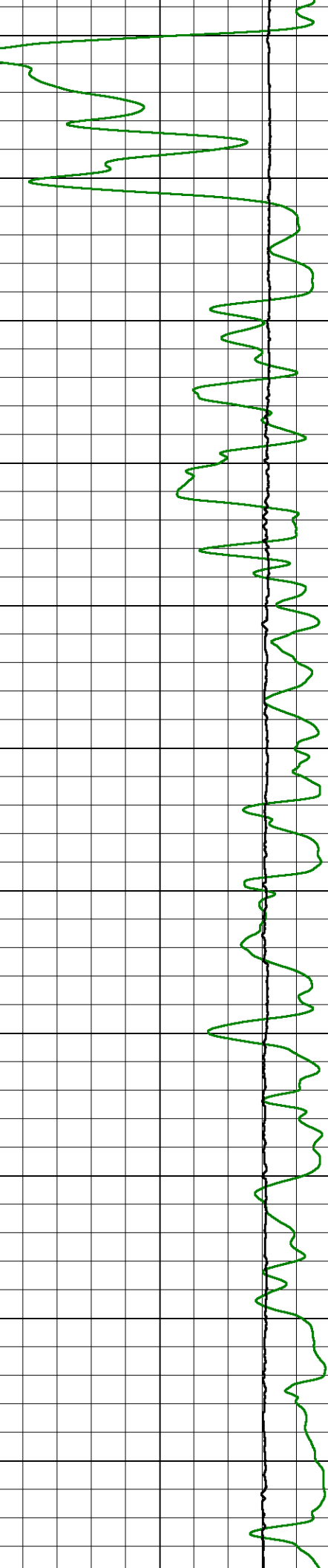
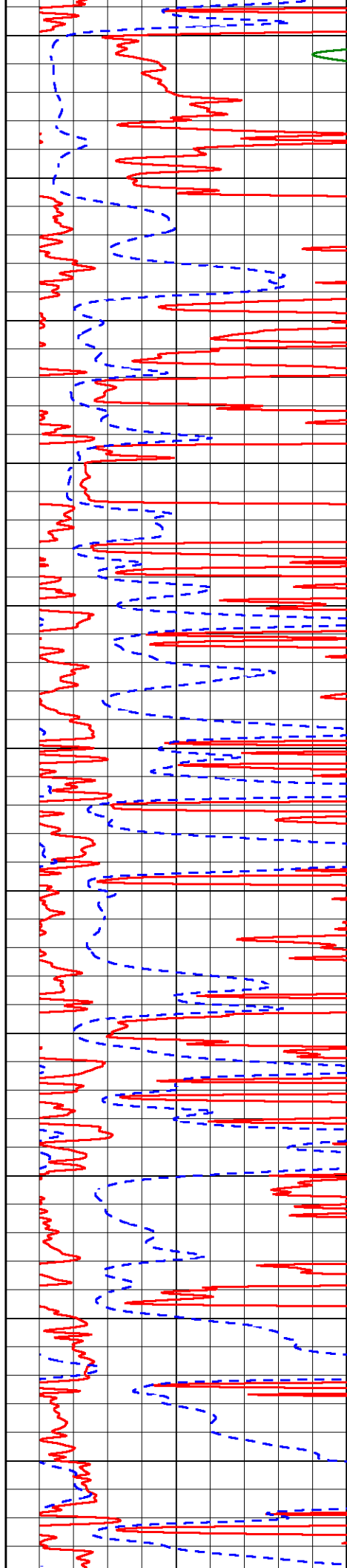
4050

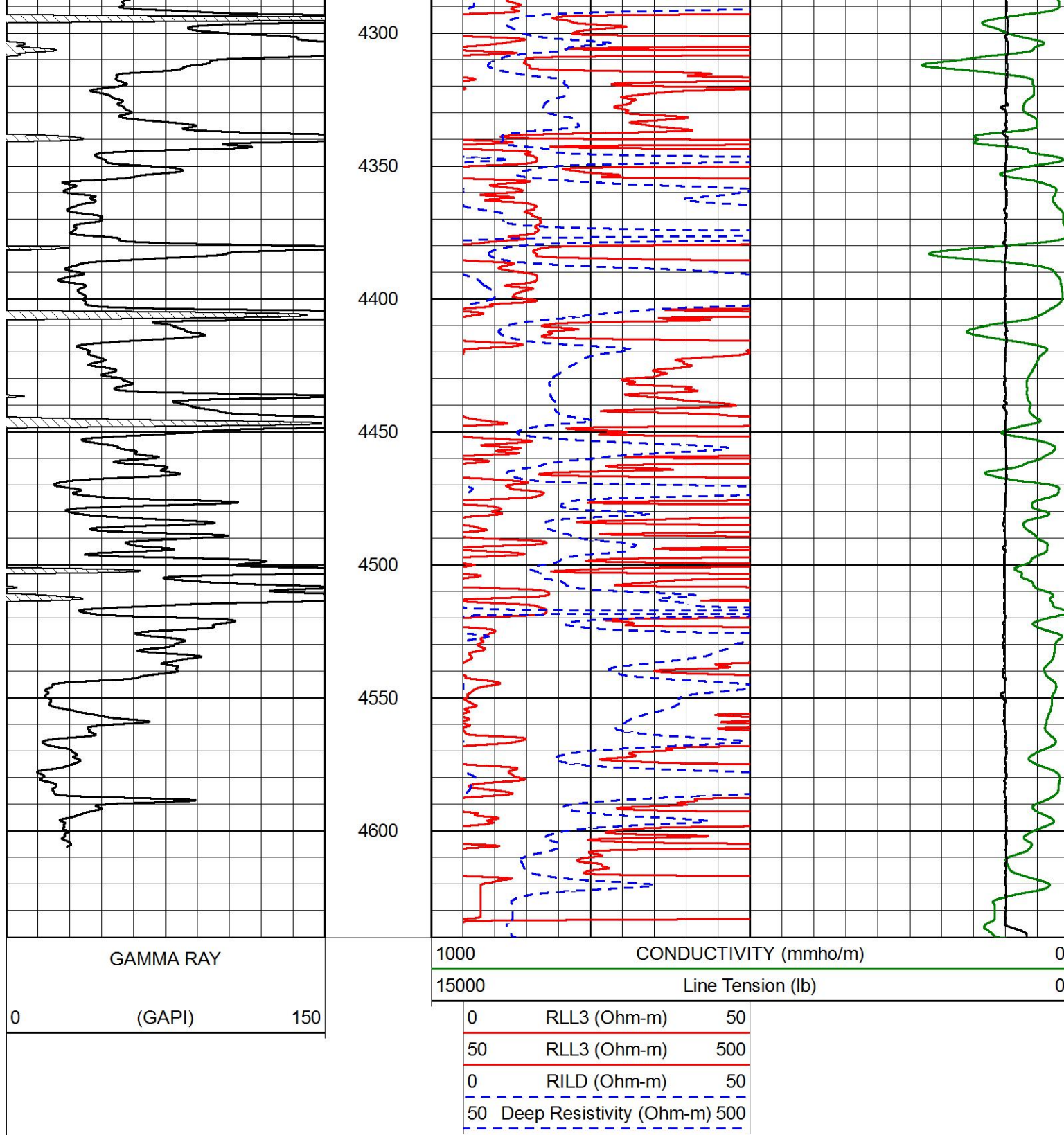
4100

4150

4200

4250







MAIN PASS

Database File	american_warrior_glunt_2_23.db
Dataset Pathname	stackmel/pass6.1
Presentation Format	_dil
Dataset Creation	Sat Oct 12 23:25:36 2019
Charted by	Depth in Feet scaled 1:240

0

GAMMA RAY (GAPI)

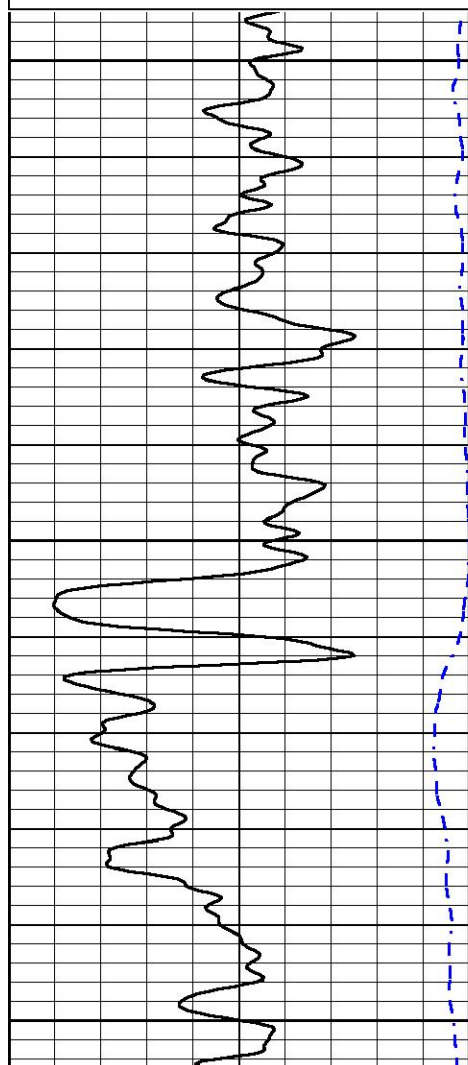
150

0.2

DEEP RESISTIVITY (Ohm-m)

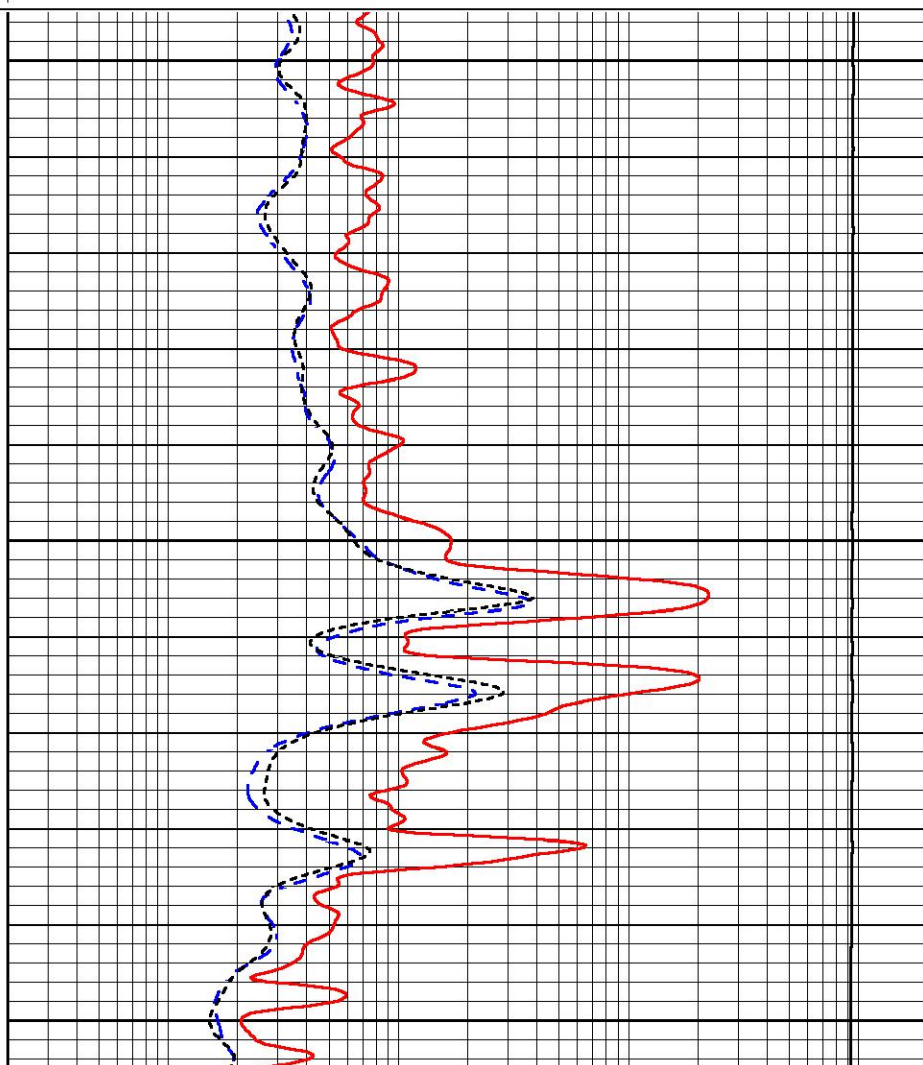
2000

-200	SP (mV)	0
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0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0



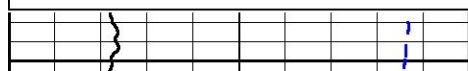
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0



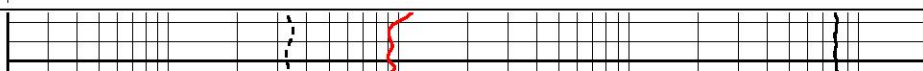
MAIN PASS

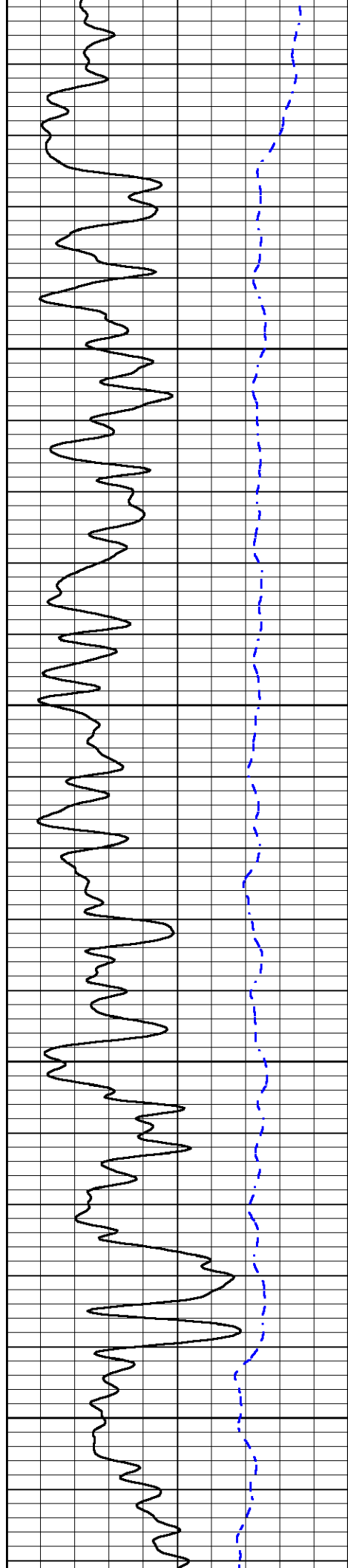
Database File american_warrior_glunt_2_23.db
Dataset Pathname stackmel/pass6.1
Presentation Format _dil
Dataset Creation Sat Oct 12 23:25:36 2019
Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0



0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0



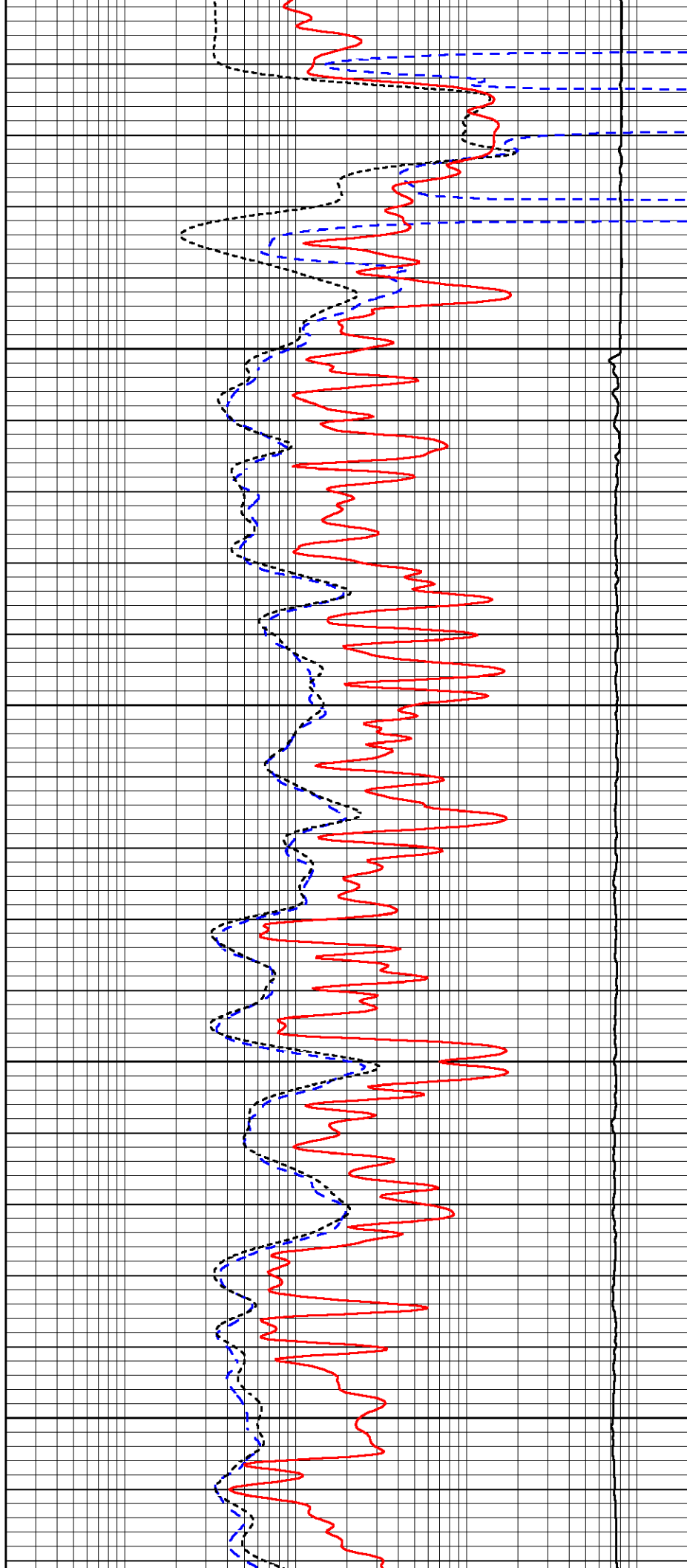


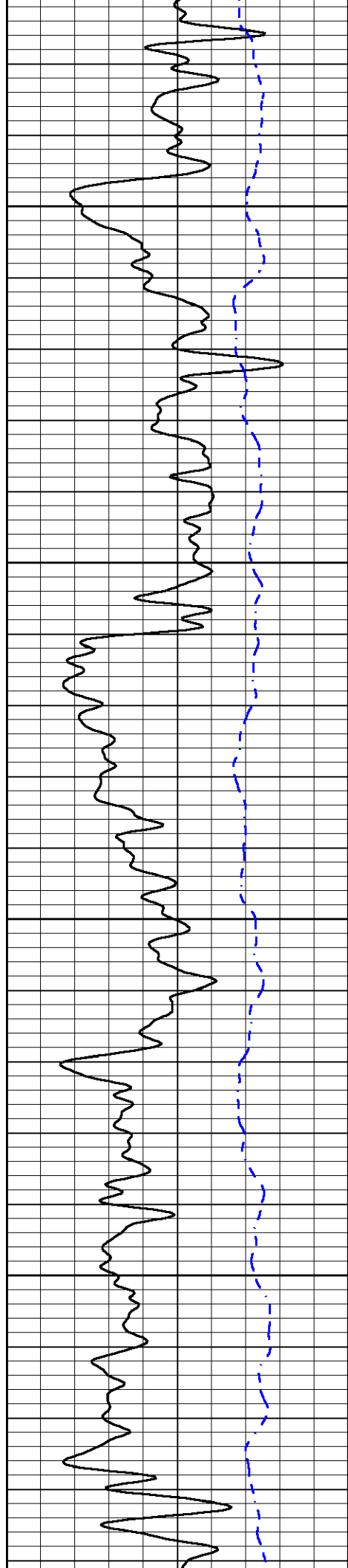
2350

2400

2450

2500



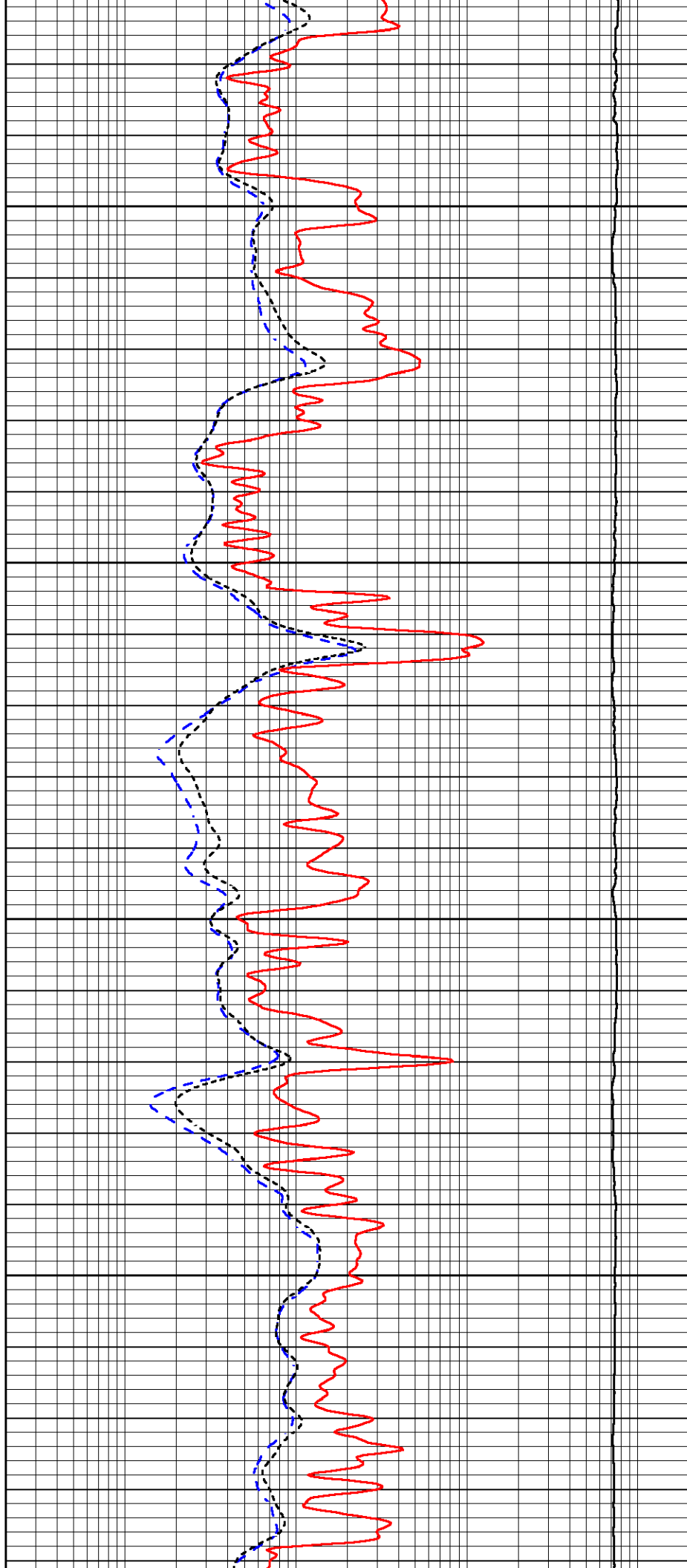


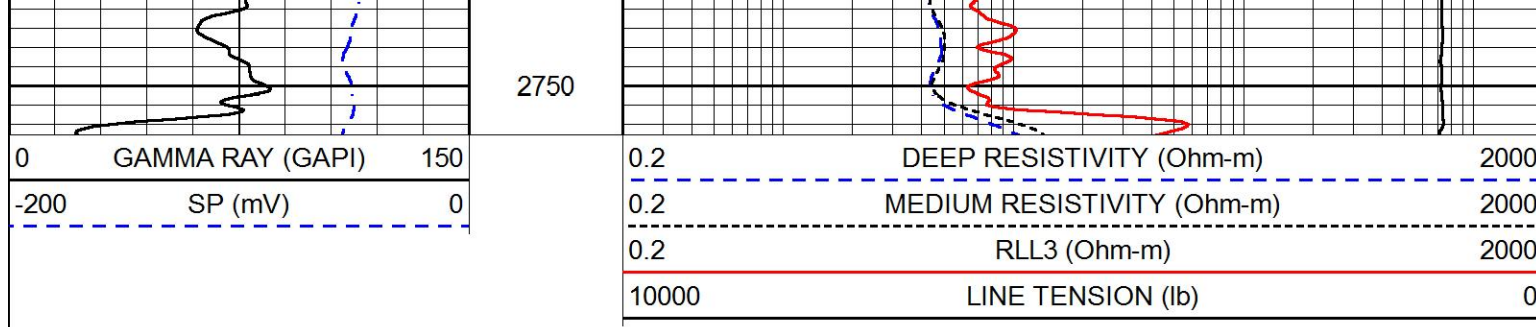
2550

2600

2650

2700



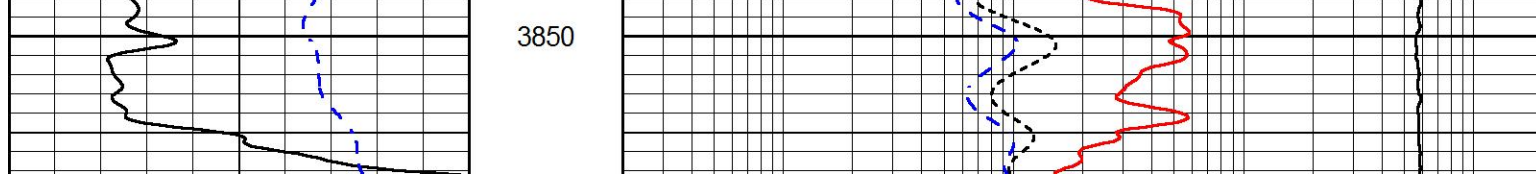
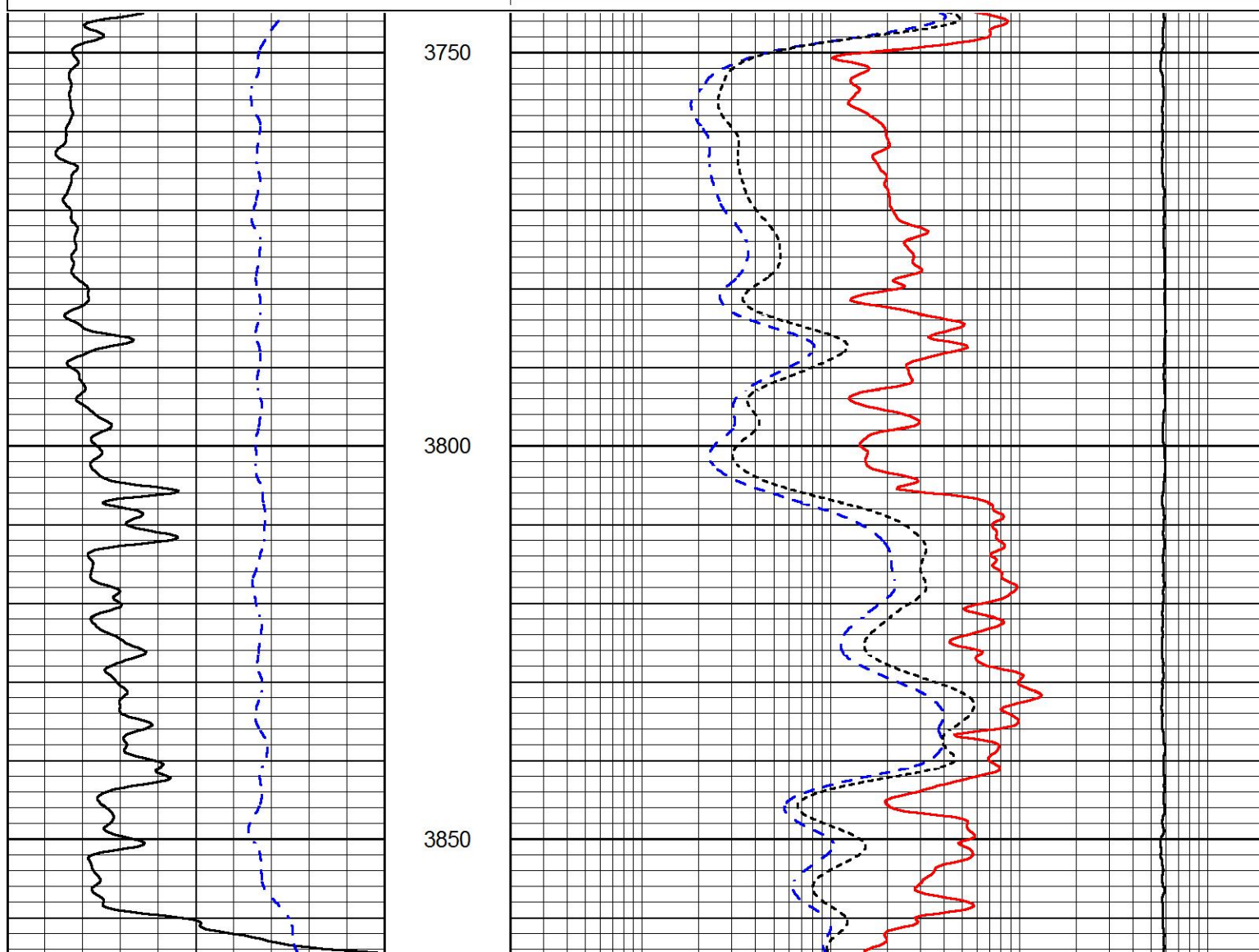
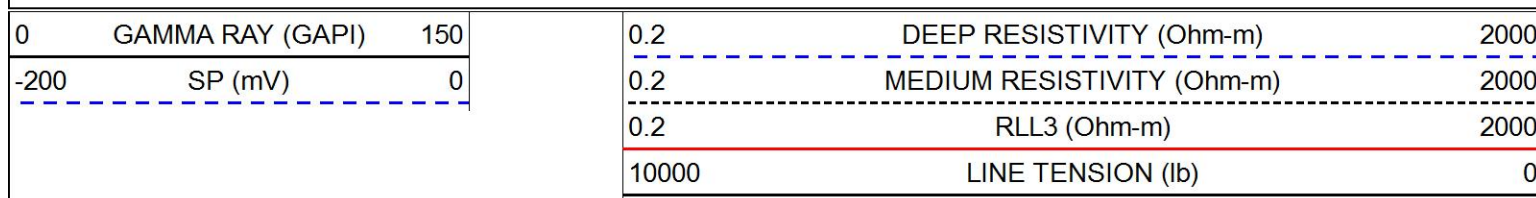


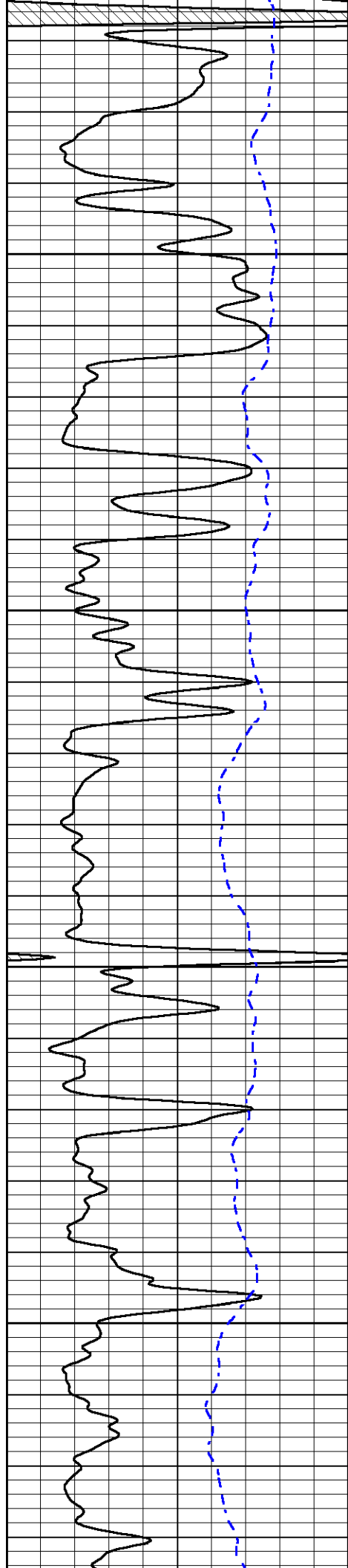


PIONEER
Pioneer Energy Services

MAIN PASS

Database File	american_warrior_glunt_2_23.db
Dataset Pathname	stackmel/pass6.1
Presentation Format	_dil
Dataset Creation	Sat Oct 12 23:25:36 2019
Charted by	Depth in Feet scaled 1:240



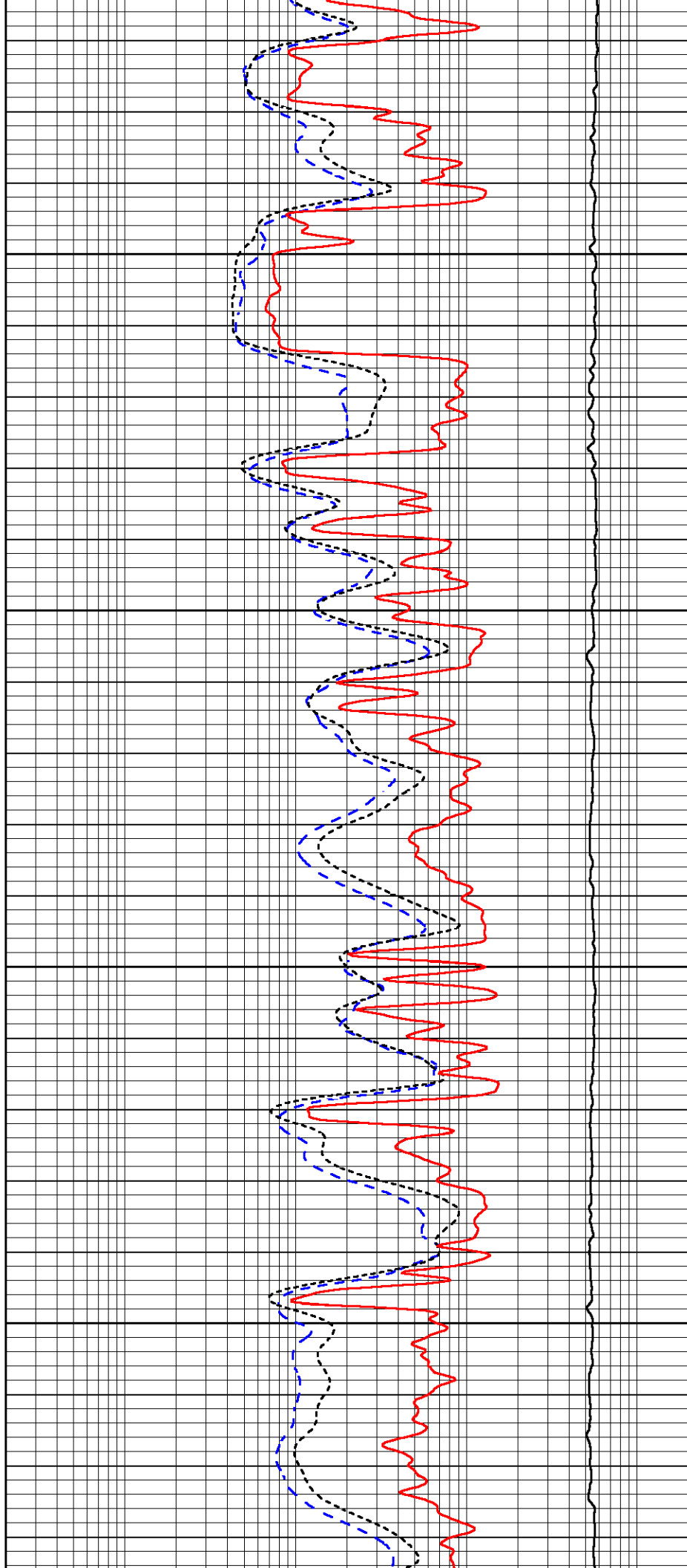


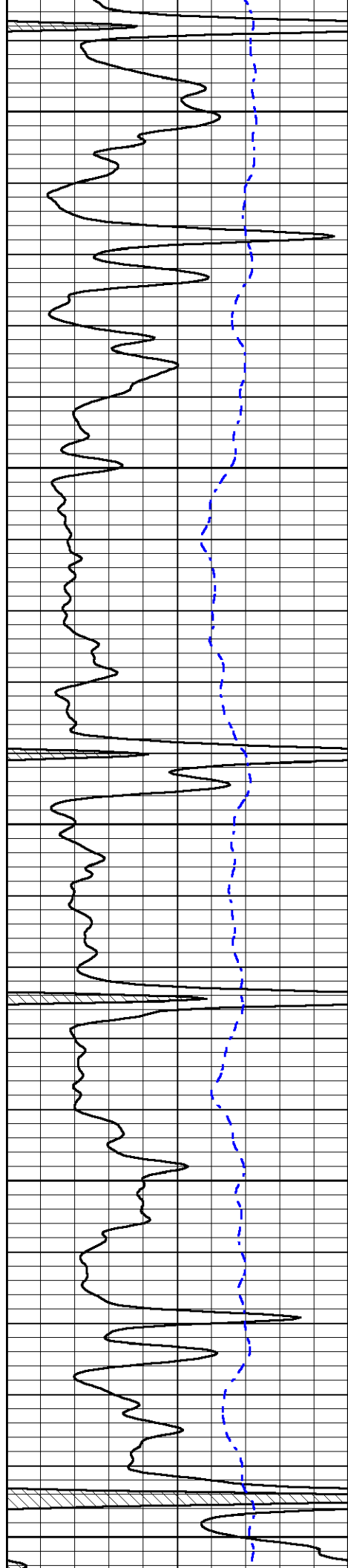
3900

3950

4000

4050





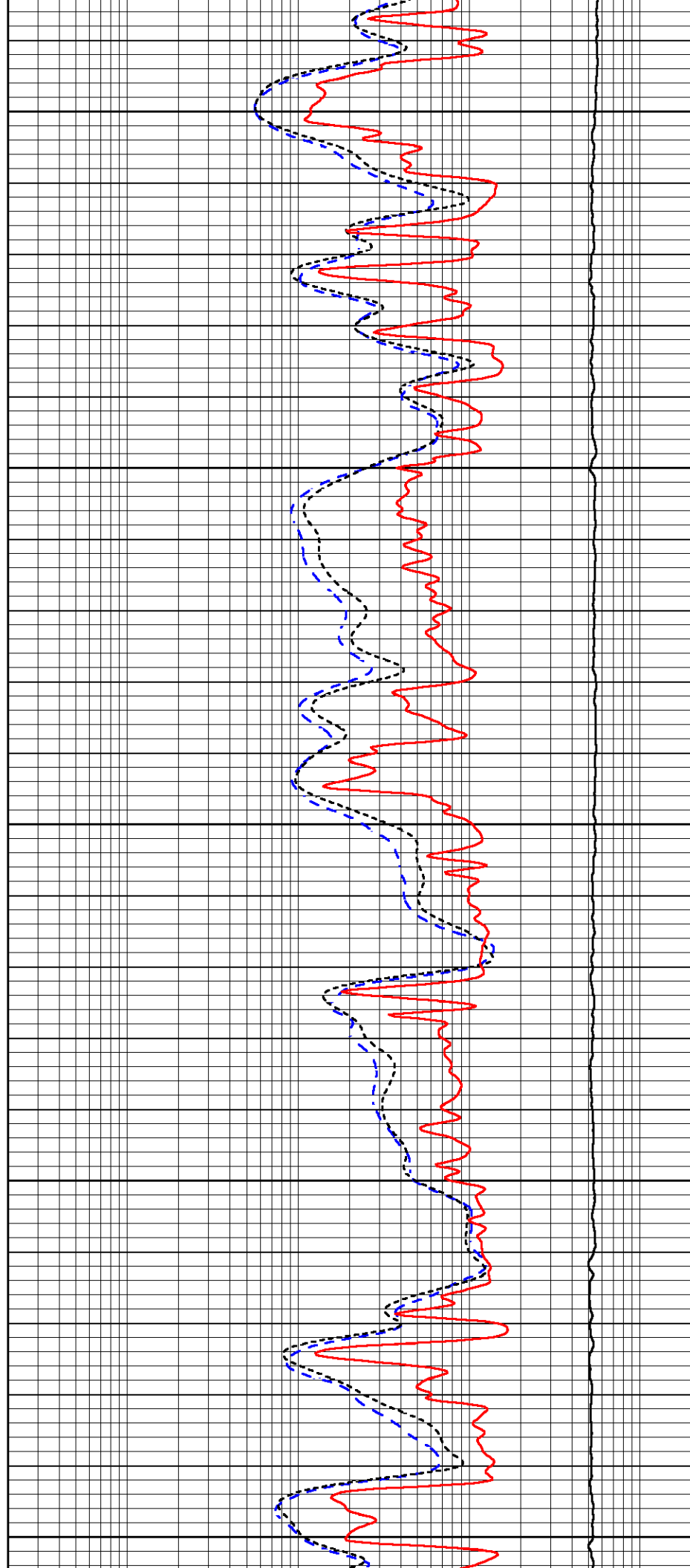
4100

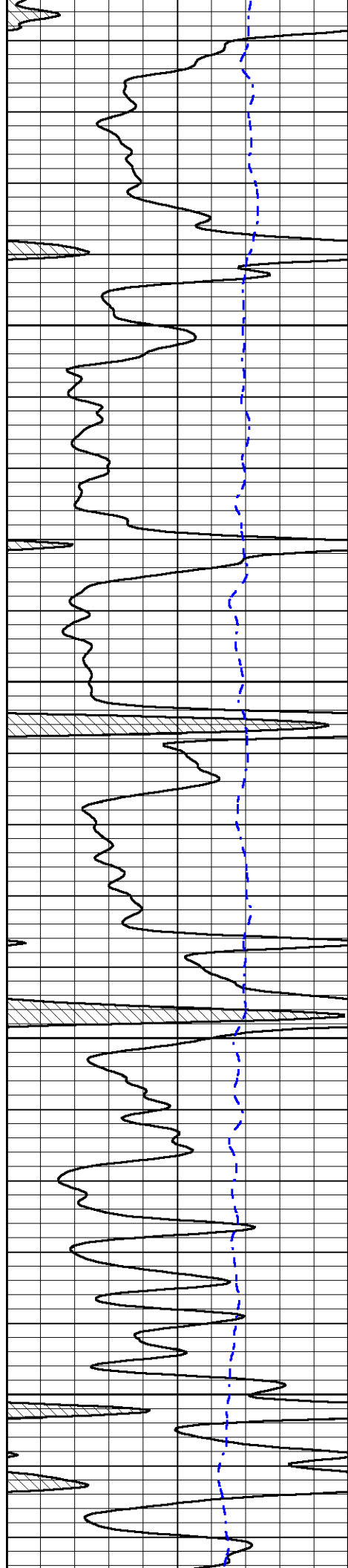
4150

4200

4250

4300



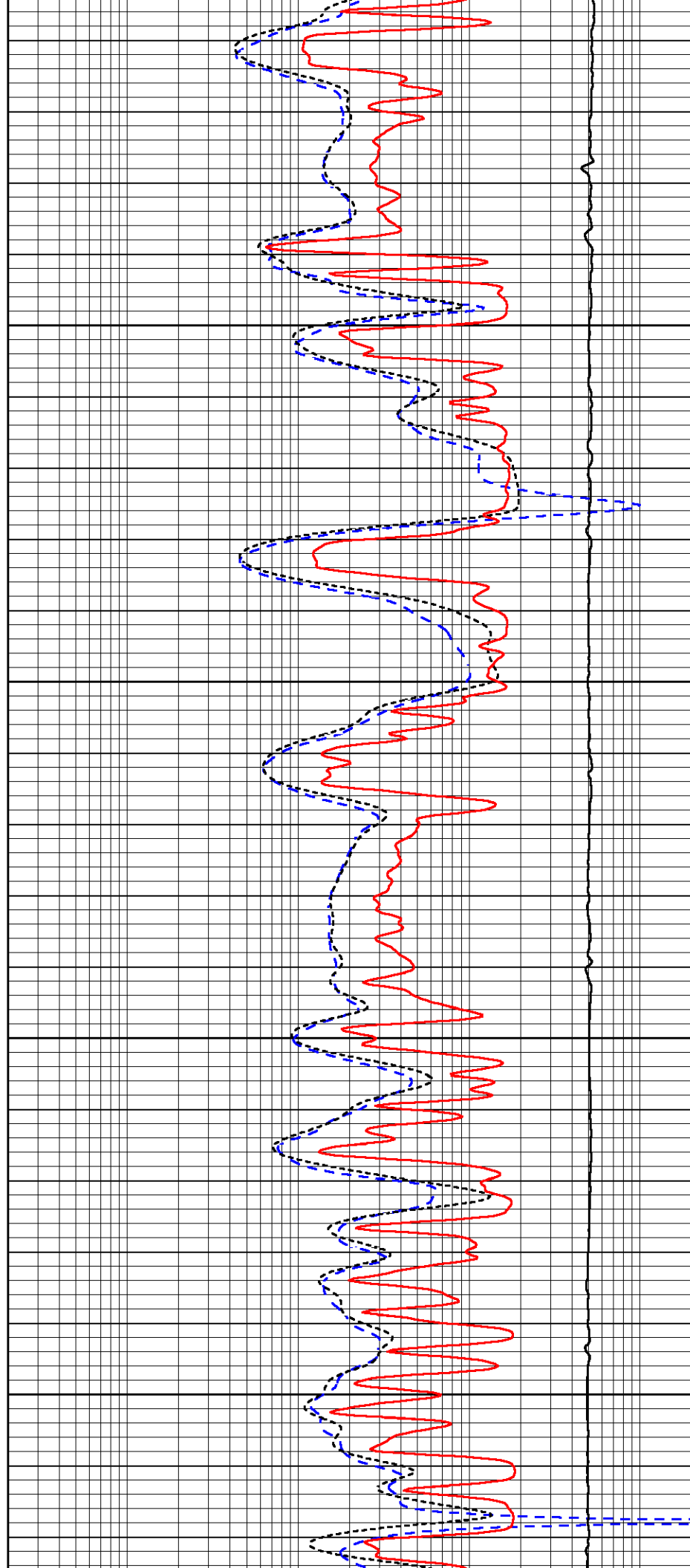


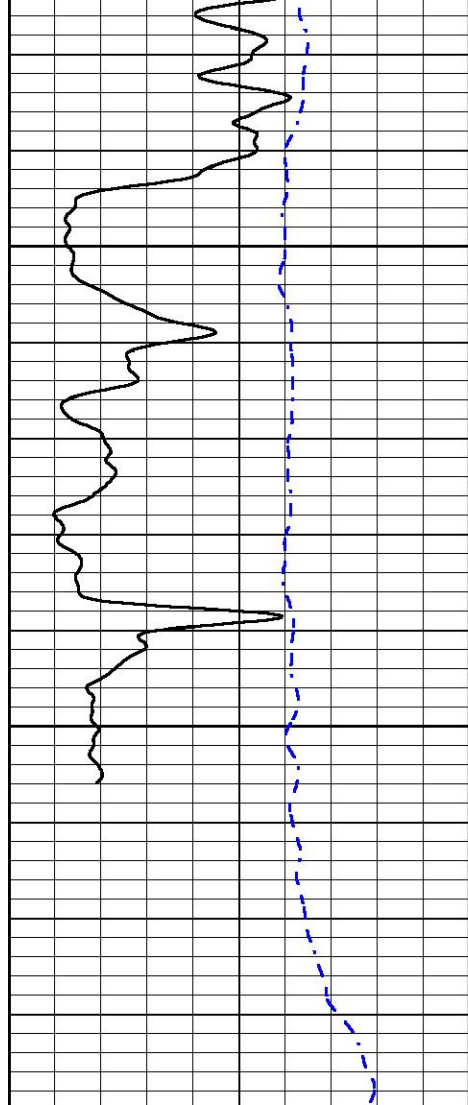
4350

4400

4450

4500

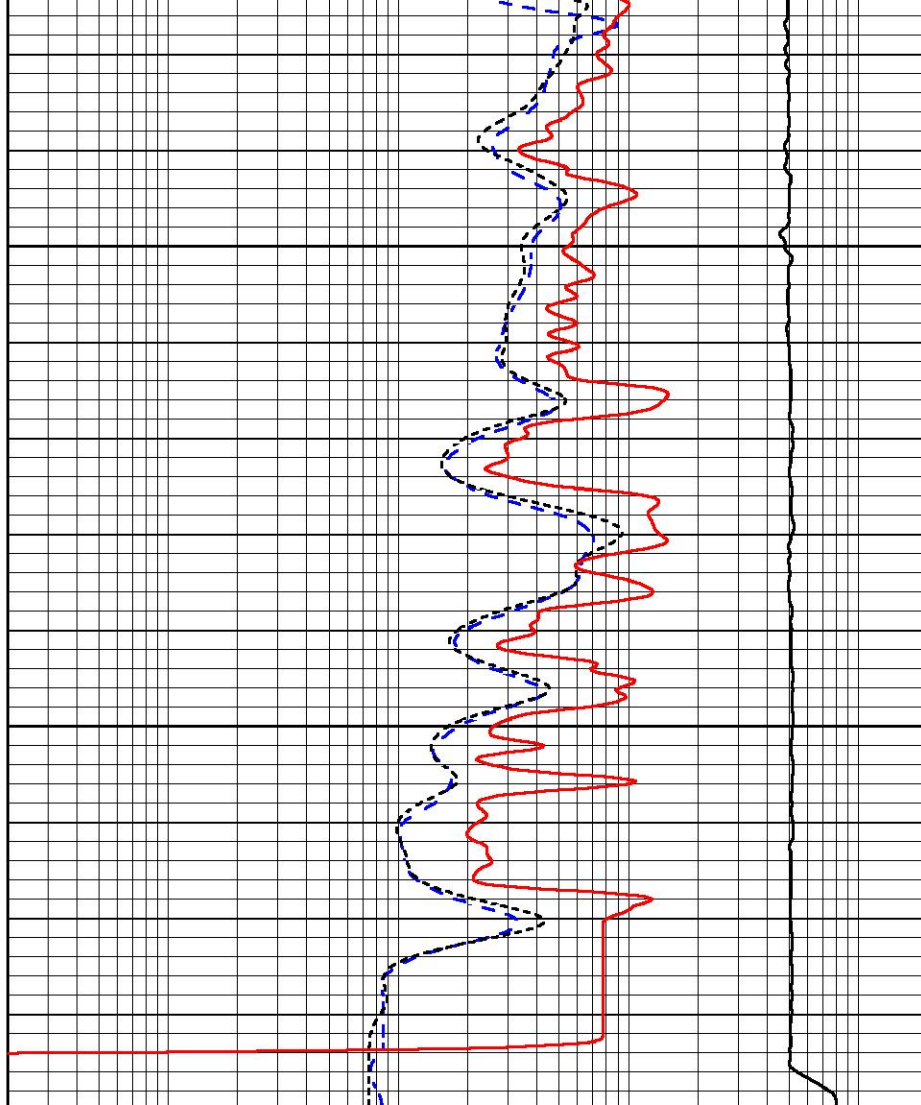




4550

4600

0 GAMMA RAY (GAPI) 150
-200 SP (mV) 0



0.2 DEEP RESISTIVITY (Ohm-m) 2000
0.2 MEDIUM RESISTIVITY (Ohm-m) 2000
0.2 RLL3 (Ohm-m) 2000
10000 LINE TENSION (lb) 0

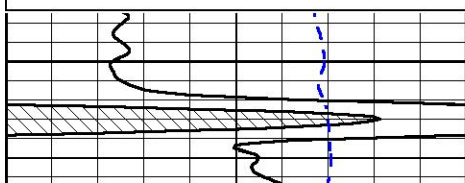


REPEAT SECTION

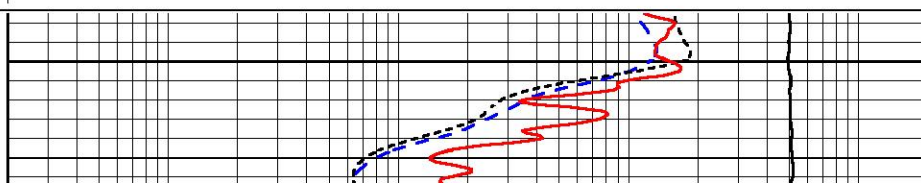
Database File american_warrior_glunt_2_23.db
Dataset Pathname stackmel/pass4.1
Presentation Format _dil
Dataset Creation Sat Oct 12 21:35:55 2019
Charted by Depth in Feet scaled 1:240

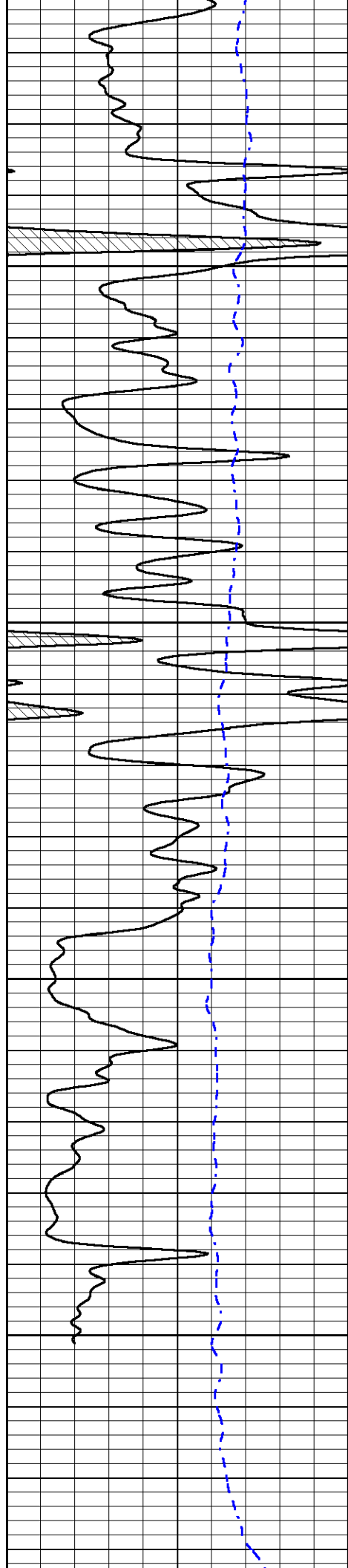
0 GAMMA RAY (GAPI) 150
-200 SP (mV) 0

0.2 DEEP RESISTIVITY (Ohm-m) 2000
0.2 MEDIUM RESISTIVITY (Ohm-m) 2000
0.2 RLL3 (Ohm-m) 2000
10000 LINE TENSION (lb) 0



4400



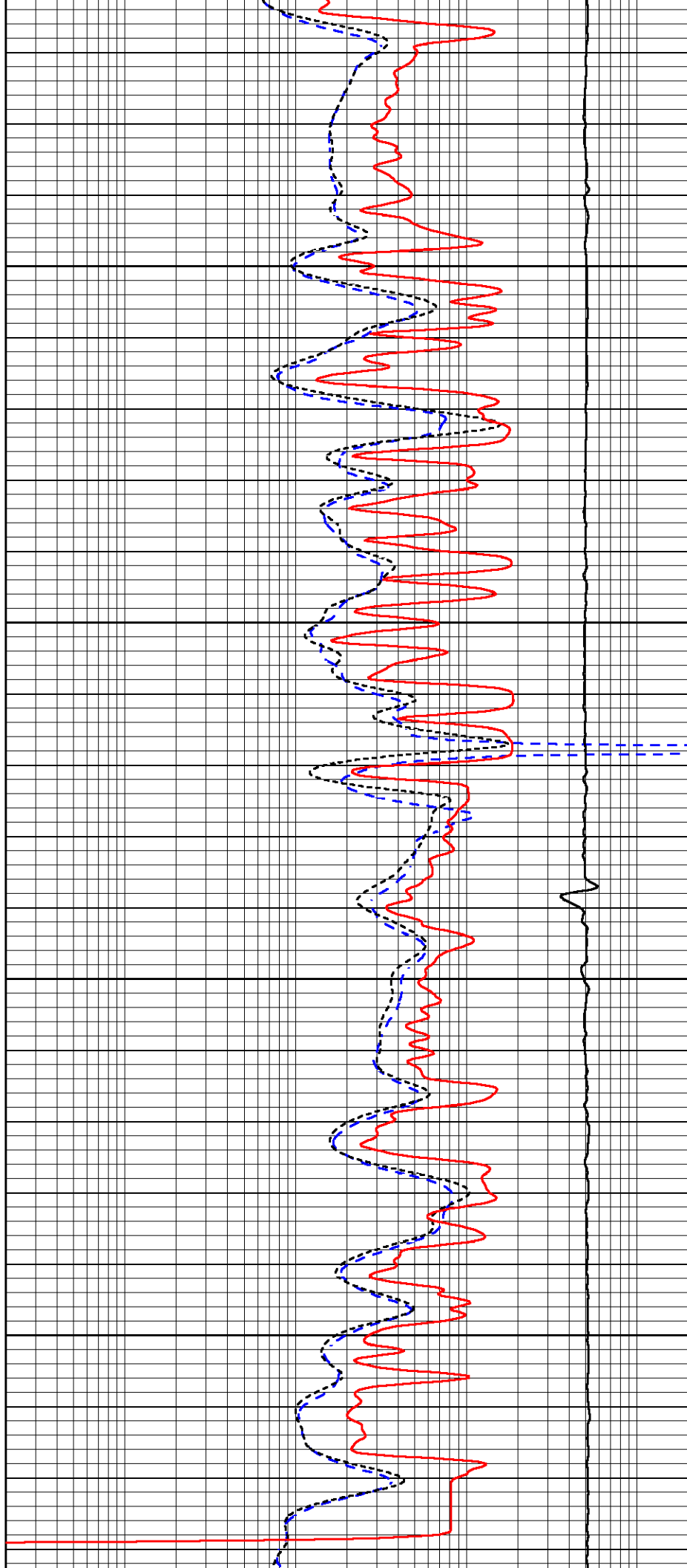


4450

4500

4550

4600



Calibration Report

Dual Induction Calibration Report

Serial-Model: 952-828-PSI HIGH TEMP
Calibration Performed: Wed Oct 09 13:38:53 2019

Readings			References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.470	-41.000
Medium	0.000	1348.000	142.000	255.000	mmho/m	0.360	-15.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
Performed: Thu Aug 01 07:57:13 2019

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	17000.0000	-0.7000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	21000.0000	-0.8000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-64.4500

Compensated Density Calibration Report

Serial-Model: 96-916-M&W
Source / Verifier: 16955B / 2ci
Master Calibration Performed: Sat Oct 12 17:38:31 2019

Master Calibration					
	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	8943.64	10054.60	cps
Aluminum	2.660	g/cc	1595.61	6242.82	cps
Spine Angle = 74.54			Density/Spine Ratio = 0.506		
	Size		Reading		
Small Ring	6.00	in	1.75		
Large Ring	15.00	in	1.40		

Compensated Neutron Calibration Report

Serial Number:	207-MW
Tool Model:	M&W
Calibration Performed:	WED FEB 13 10:30:30 2019

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:	233-M&W	
Tool Model:	M&W	
Calibration Performed:	Fri Feb 07 01:42:40 2014	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.5500	GAPI/cps



Company	AMERICAN WARRIOR, INC.
Well	GLUNT #2-23
Field	WILDCAT
County	HODGEMAN
State	KANSAS