



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company **AMERICAN WARRIOR, INC.**

Well **GANO #10-17**

Field **LAKIN NORTHWEST**

County **KEARNY** State **KANSAS**

Location: API #: 15-093-21966-00-00

SEC 17 TWP 25S RGE 36W

Permanent Datum GROUND LEVEL Elevation 3027'

Log Measured From KELLY BUSHING

Drilling Measured From KELLY BUSHING

Other Services

CNL/CDL
MEL

Elevation
K.B. 3038'
D.F. N/A
G.L. 3027'

Date 03/26/2018

Run Number ONE

Depth Driller 5050'

Depth Logger 5048'

Bottom Logged Interval 5047'

Top Log Interval 1750'

Casing Driller 8.625" @ 1788'

Casing Logger 1789'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 2200

Density / Viscosity 9.35 53

pH / Fluid Loss 10.5 8.0

Source of Sample FLOWLINE

Rm @ Meas. Temp 0.60 @ 43

Rmf @ Meas. Temp 0.45 @ 43

Rmc @ Meas. Temp 0.81 @ 43

Source of Rmf / Rmc CHARTS

Rm @ BHT 0.21 @ 122

Operating Rig Time 3 HOURS

Max Rec. Temp. F 122

Equipment Number 91

Location HAYS

Recorded By D. SCHMIDT

Witnessed By LUKE THOMPSON

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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.

LAKIN,
3 SOUTH TO 120 ROAD, 1 WEST,
1 SOUTH, 1 1/2 WEST
SOUTH INTO

Log Measured From: KELLY BUSHING 11 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew

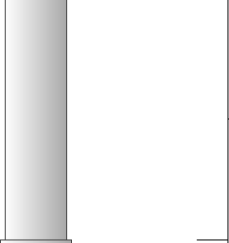
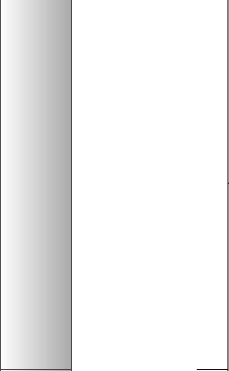
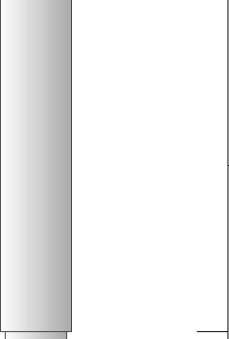
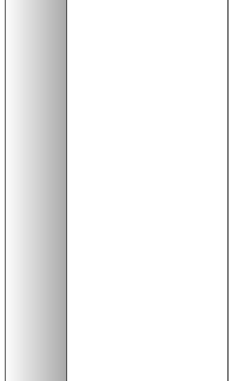
Engineer: D. SCHMIDT
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: LUKE THOMPSON
Secondary Witness:
Secondary Witness:
Secondary Witness:

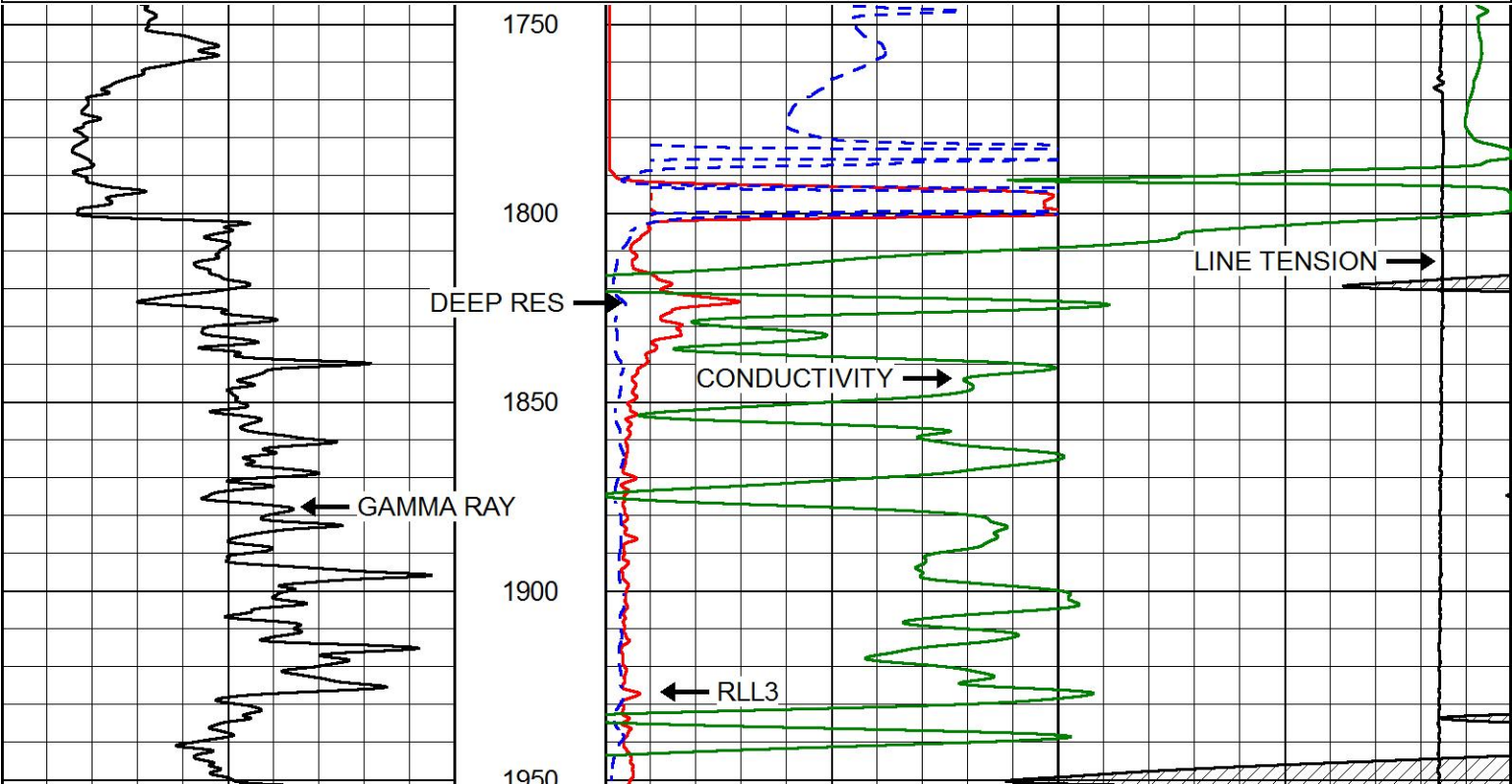
Top - Bottom

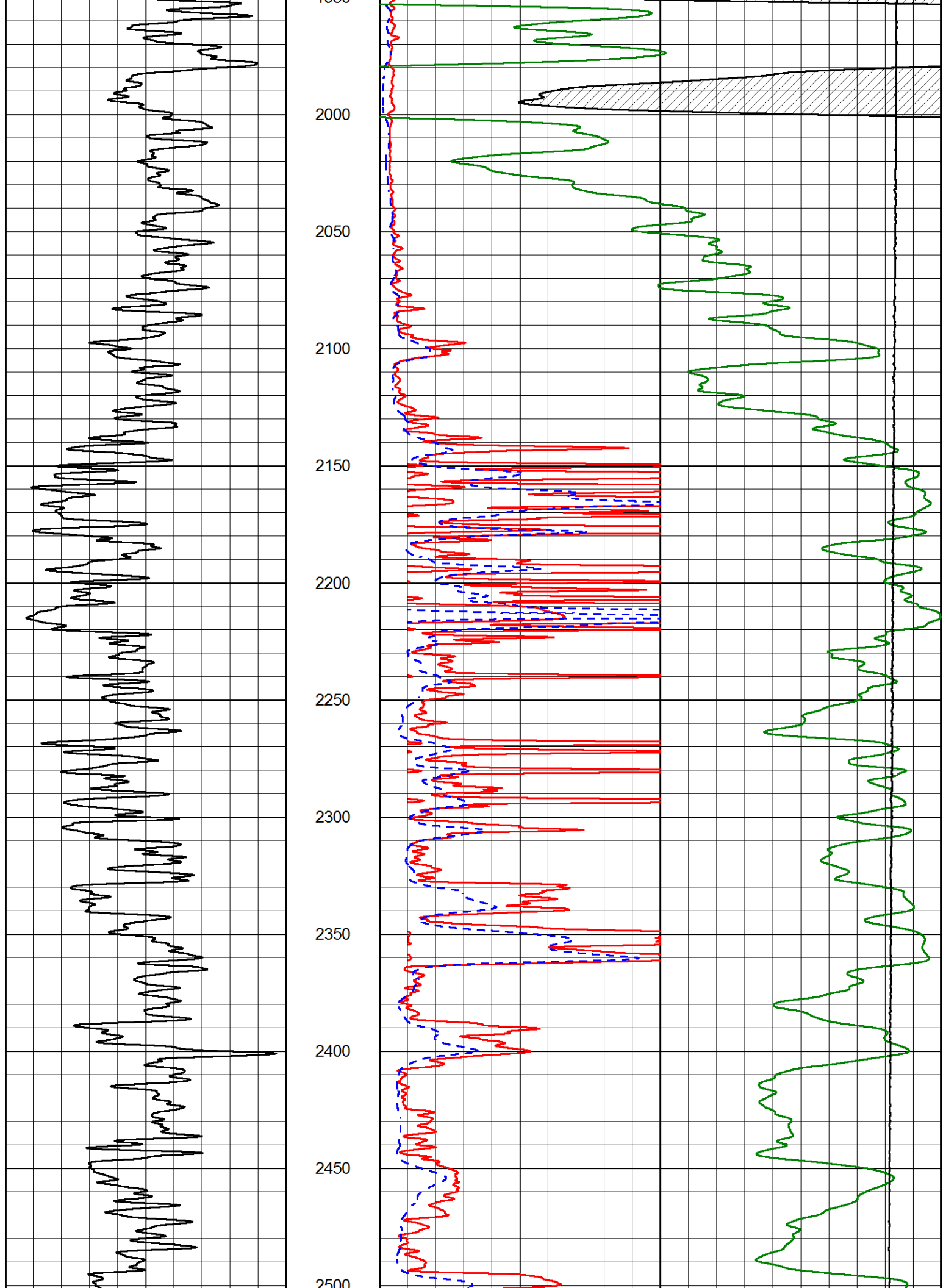
M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	-123	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	0	0	5.5	0	5048	122	7.875

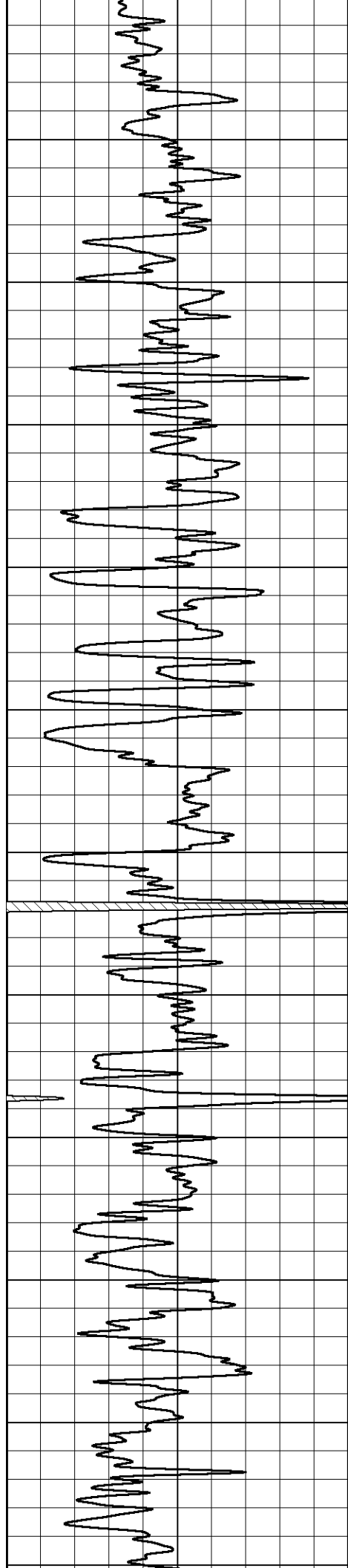
Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (227-771)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSIML (PSI-01) GO Micro log tools converted to Simplec electronics	7.58	4.00	65.00
RLL3F RLL3	15.80 15.80					

				DIL-PSI HIGH TEMP (933 (HT))	18.50	3.50	220.00
CILD	8.00						
CILM	4.70						
SP	0.20						
Dataset: americanwarrior_gano#10-17.db: field/well/STKML/pass4.1 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in							

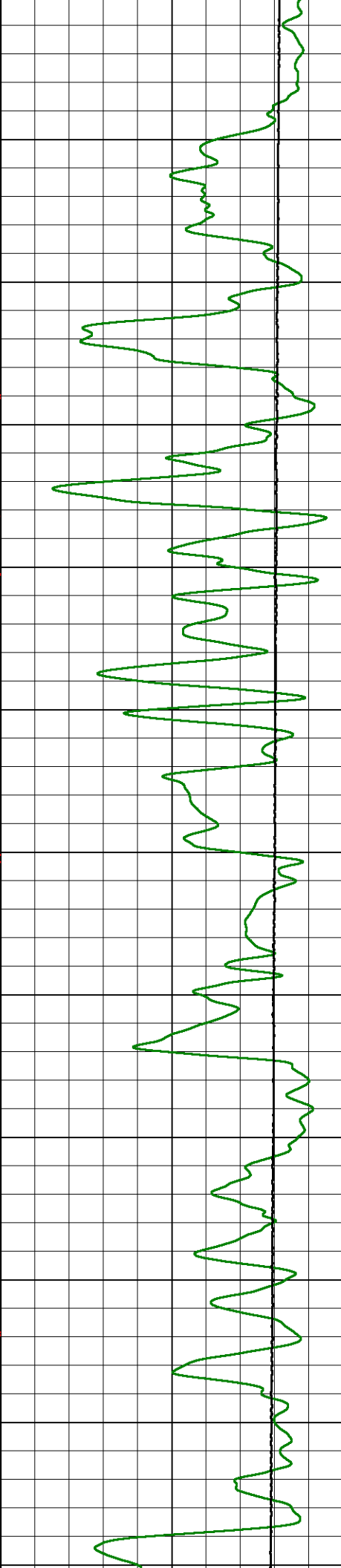
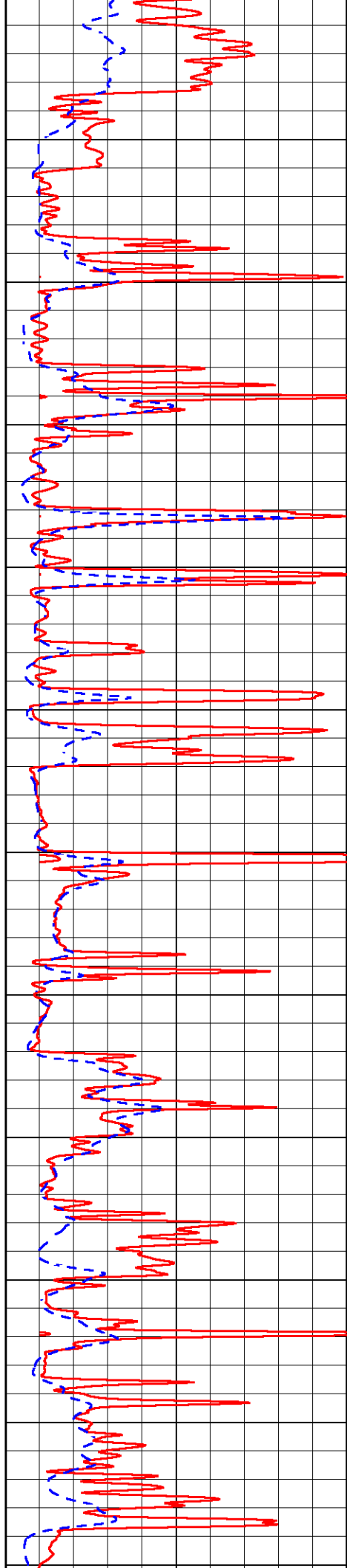
		MAIN PASS	
Database File	americanwarrior_gano#10-17.db		
Dataset Pathname	STKML/pass5.1		
Presentation Format	dil2in		
Dataset Creation	Mon Mar 26 14:14:02 2018		
Charted by	Depth in Feet scaled 1:600		
0	Gamma Ray (GAPI)	150	
		1000	Conductivity (mmho/m) 0
		15000	Line Tension (lb) 0
		0	RLL3 (Ohm-m) 50
		0	Deep Resistivity (Ohm-m) 50
		50	RLL3 (Ohm-m) 500
		50	Deep Resistivity (Ohm-m) 500

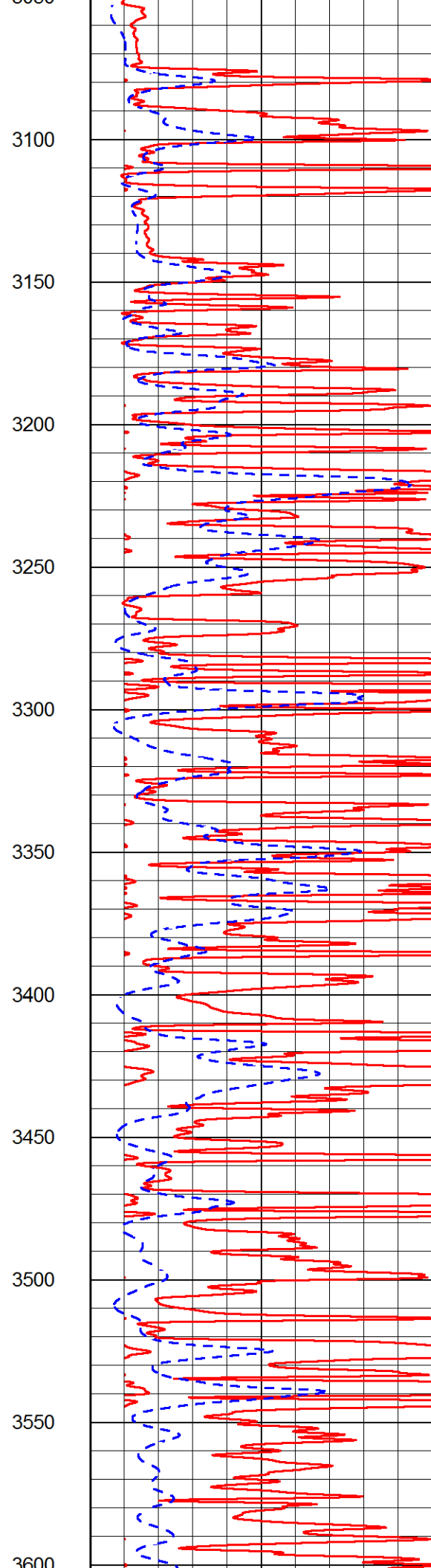
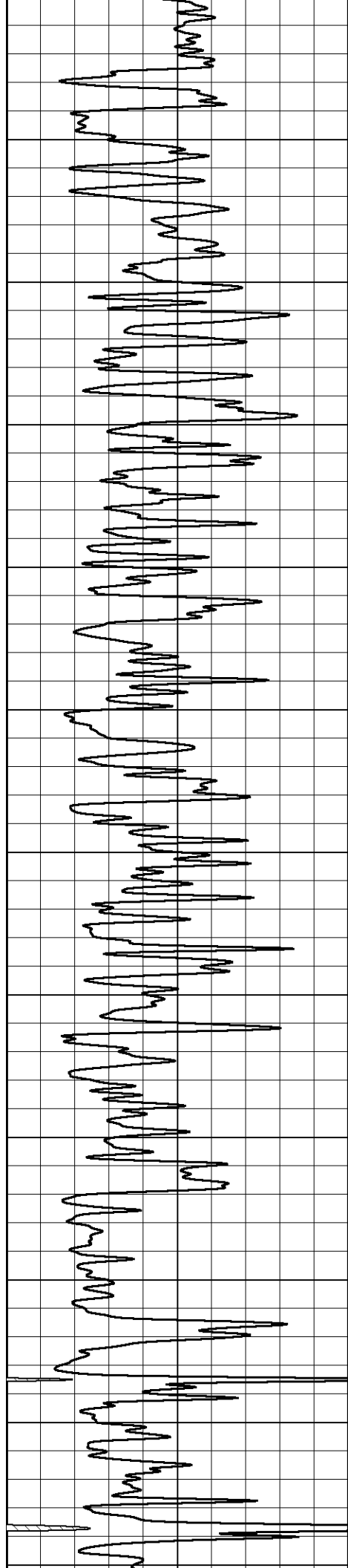


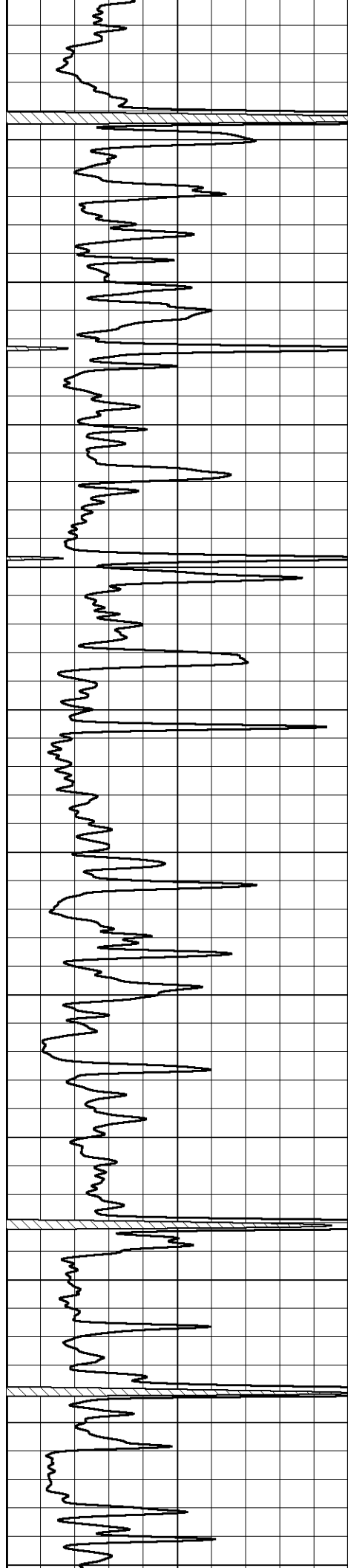




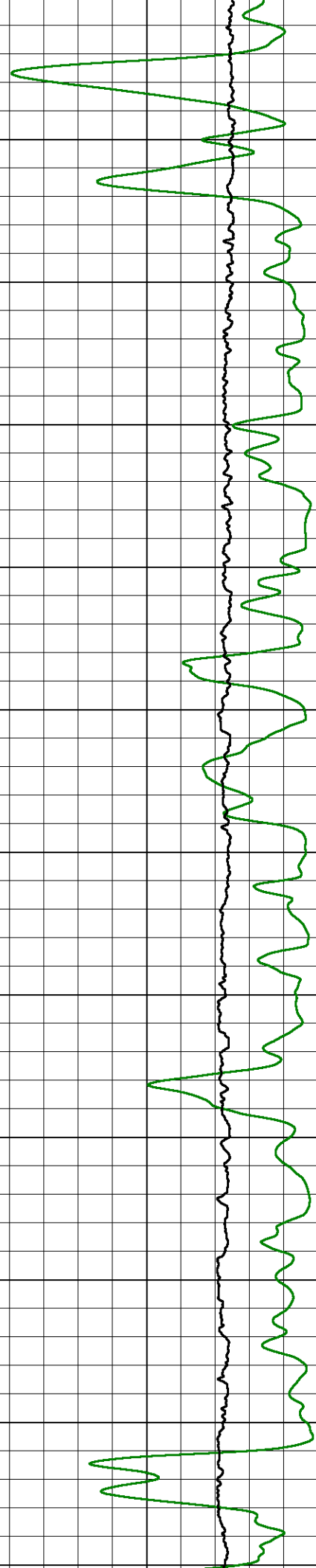
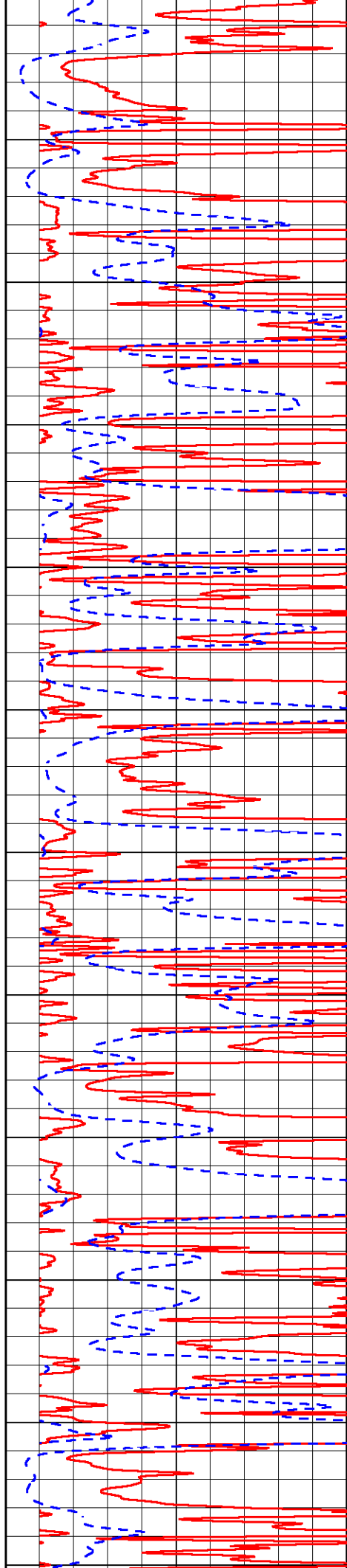
2500
2550
2600
2650
2700
2750
2800
2850
2900
2950
3000
3050

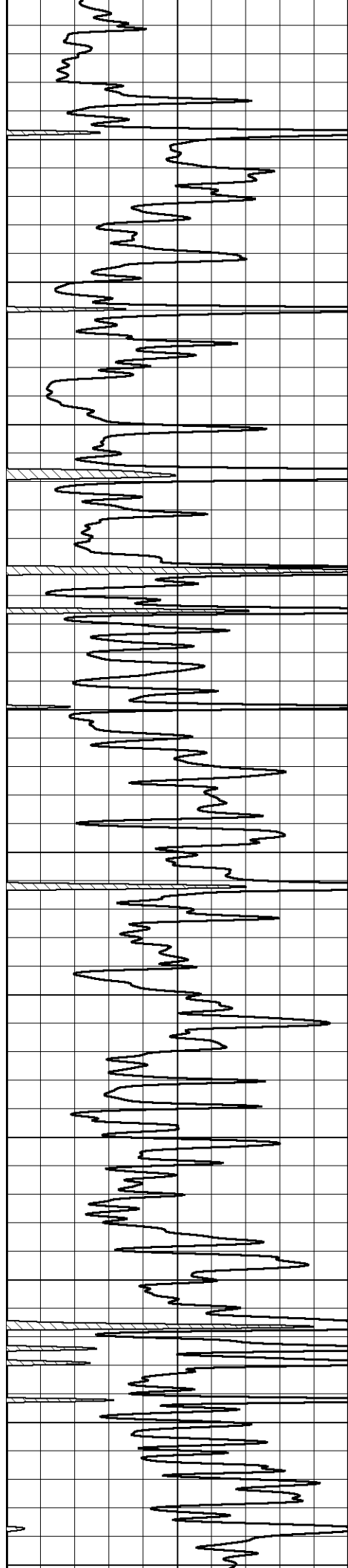




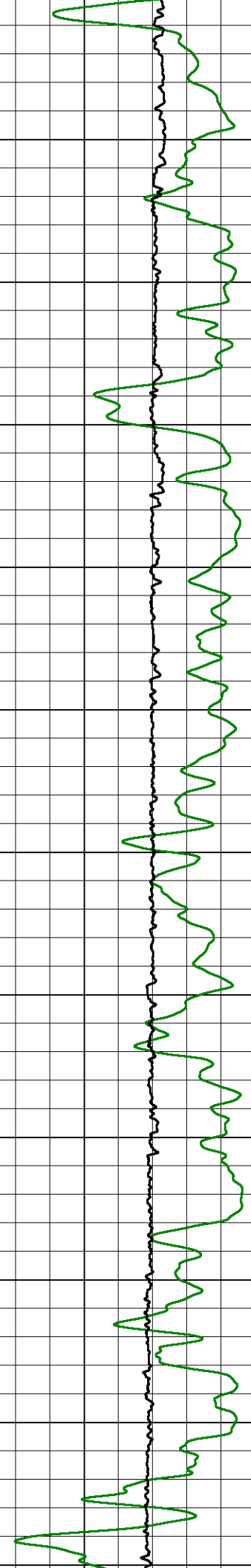
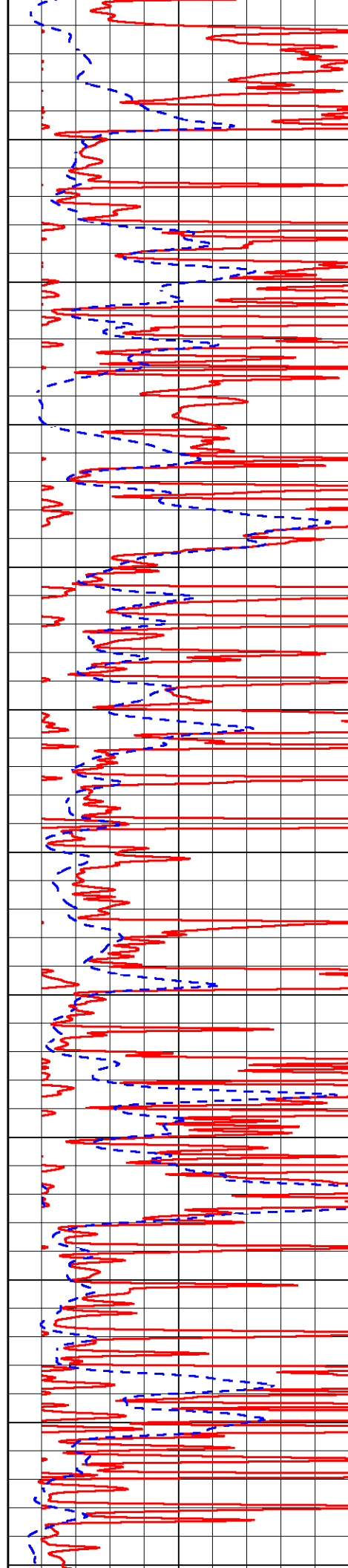


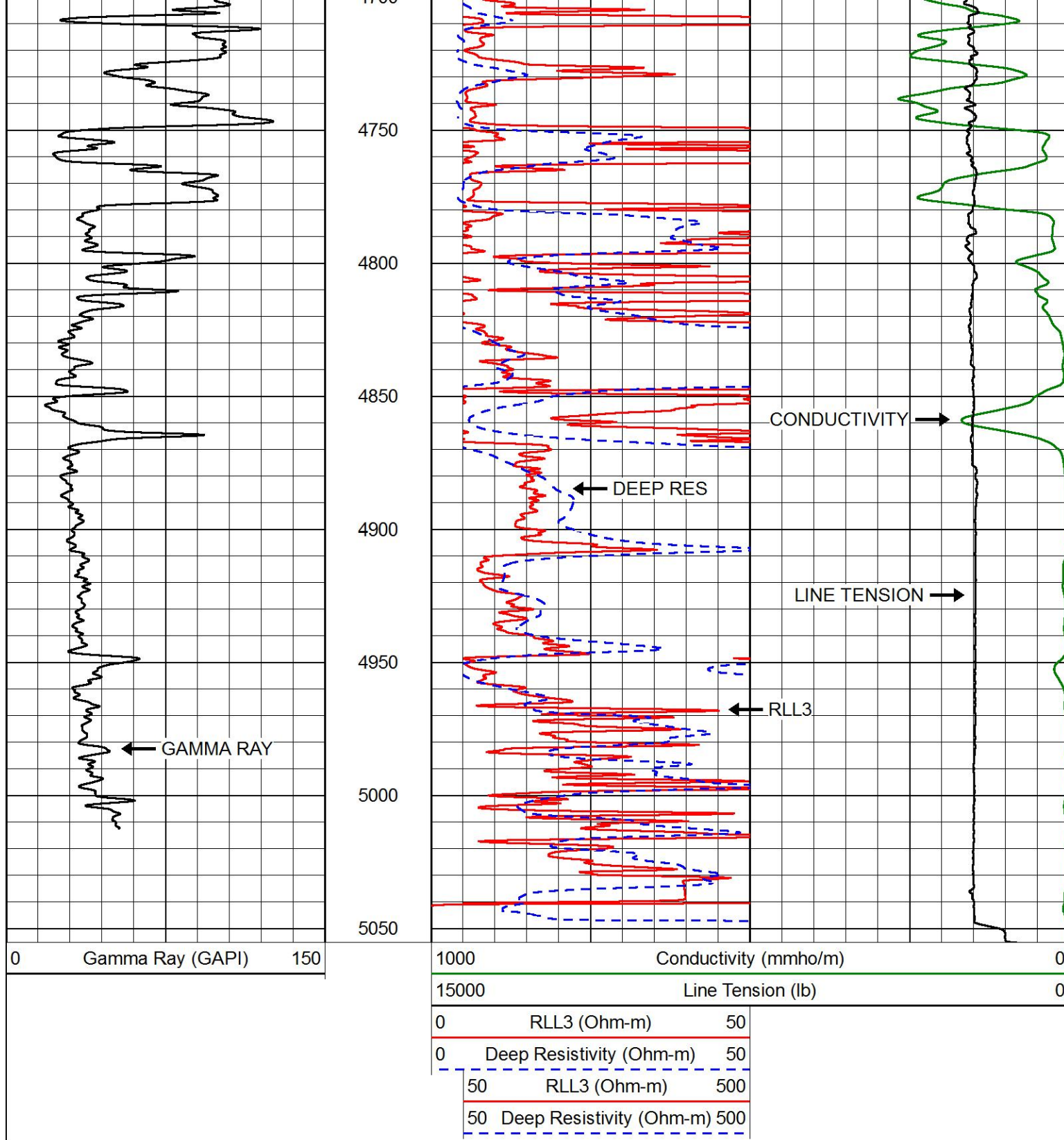
3650
3700
3750
3800
3850
3900
3950
4000
4050
4100
4150





4100
4200
4250
4300
4350
4400
4450
4500
4550
4600
4650
4700





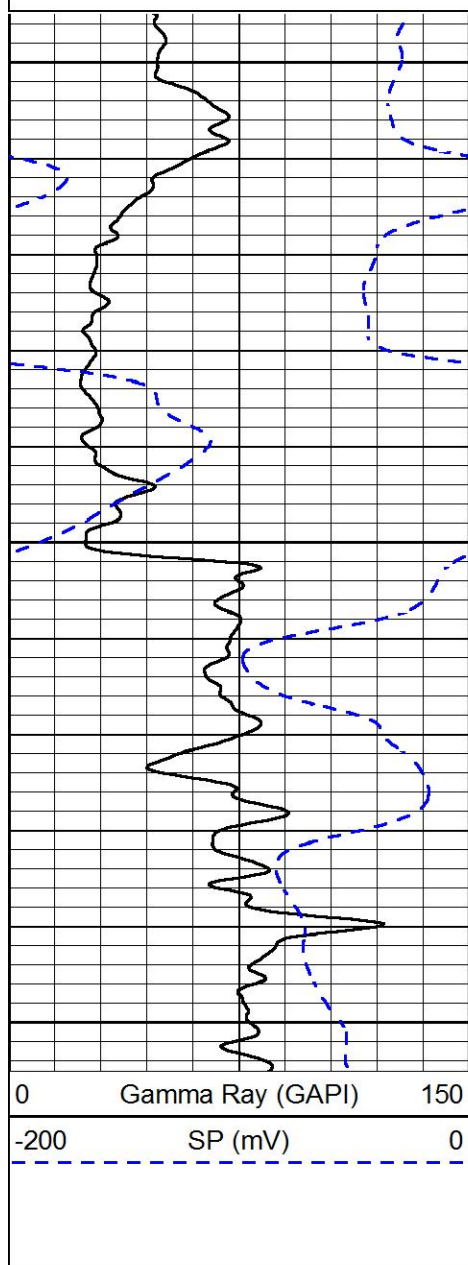


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MAIN PASS

Database File	americanwarrior_gano#10-17.db
Dataset Pathname	STKML/pass5.1
Presentation Format	dil
Dataset Creation	Mon Mar 26 14:14:02 2018
Charted by	Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150
-200	SP (mV)	0

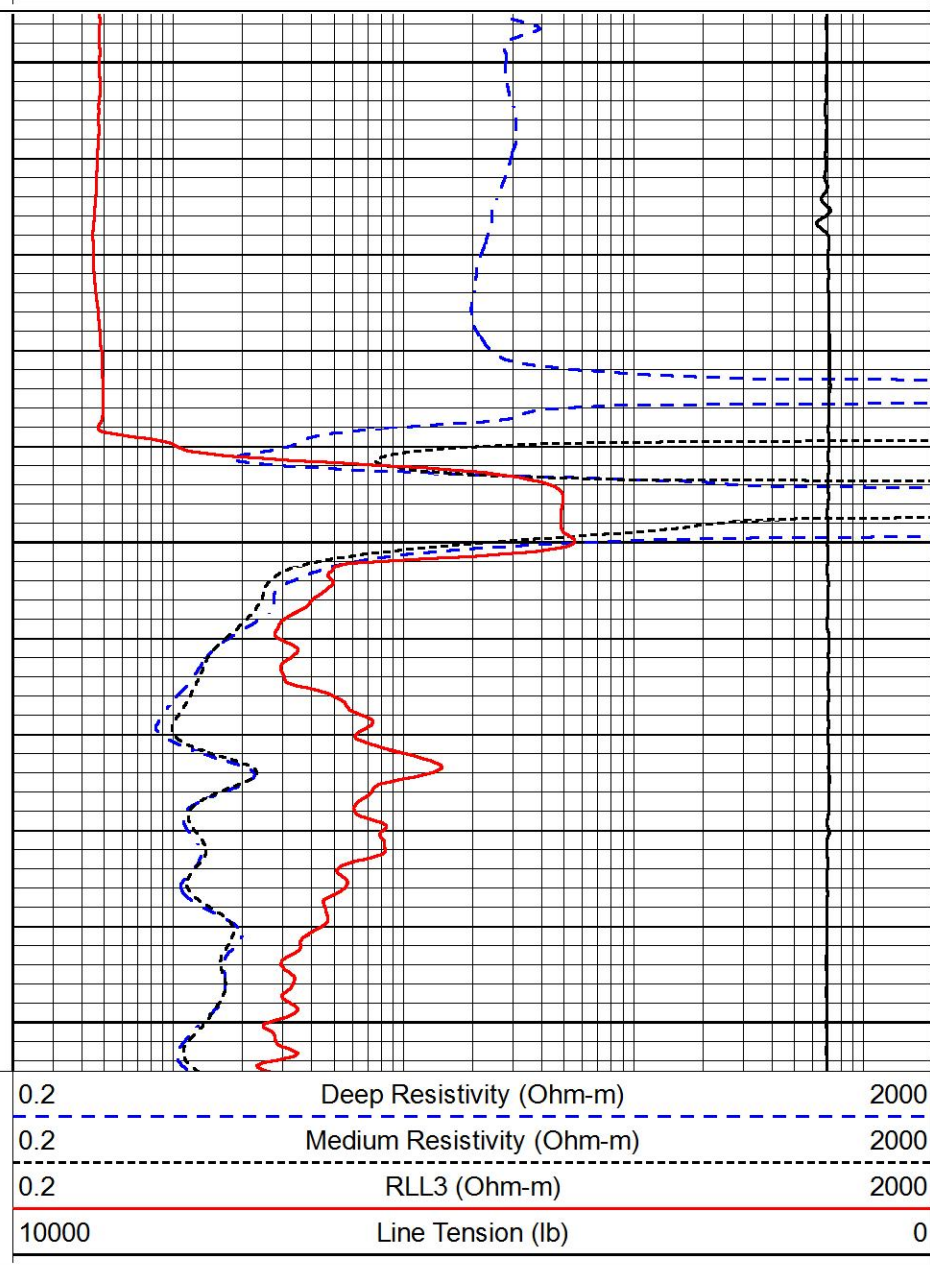


1750

1800

1850

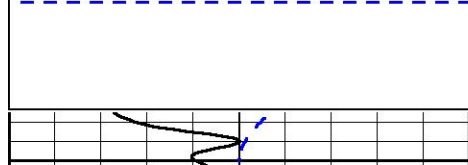
0.2	Medium Resistivity (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	Line Tension (lb)	0



MAIN PASS

Database File: americanwarrior_gano#10-17.db
 Dataset Pathname: STKML/pass5.1
 Presentation Format: dil
 Dataset Creation: Mon Mar 26 14:14:02 2018
 Charted by: Depth in Feet scaled 1:240

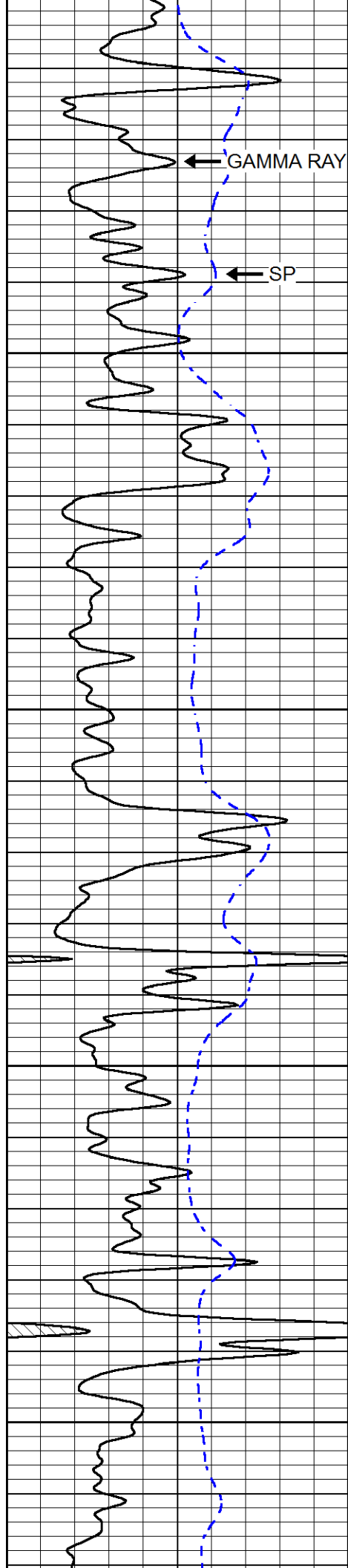
0	Gamma Ray (GAPI)	150
-200	SP (mV)	0



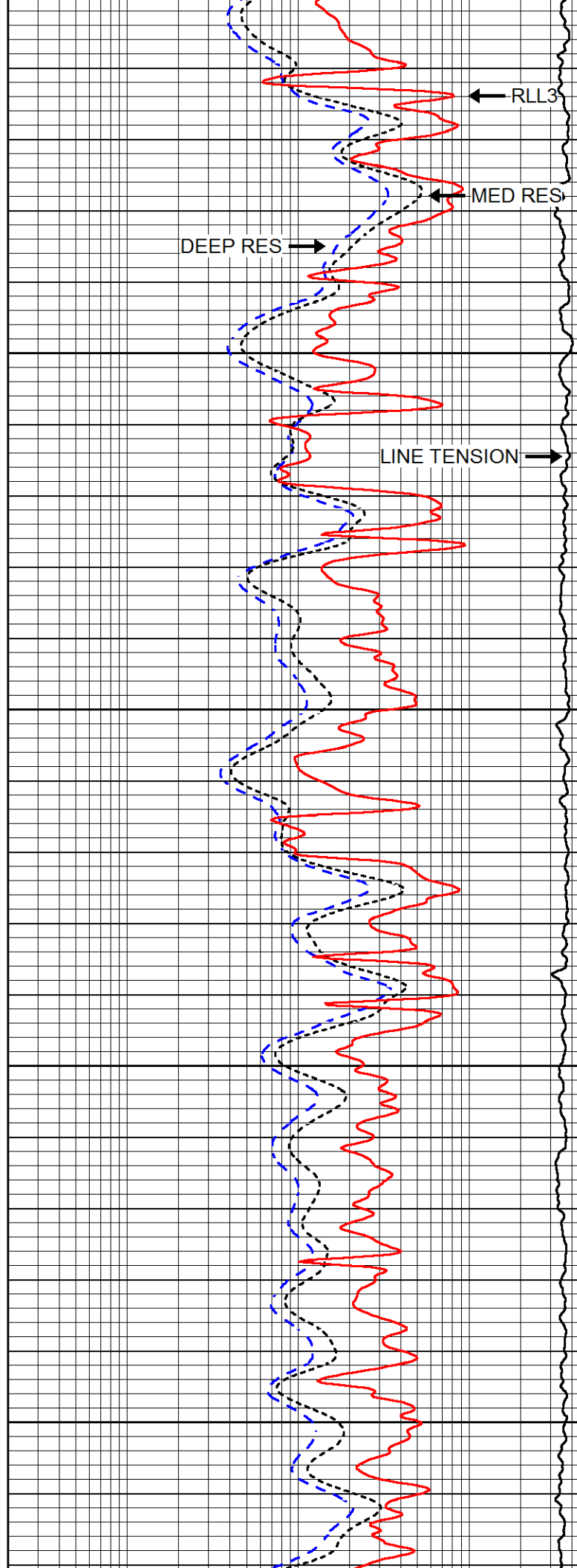
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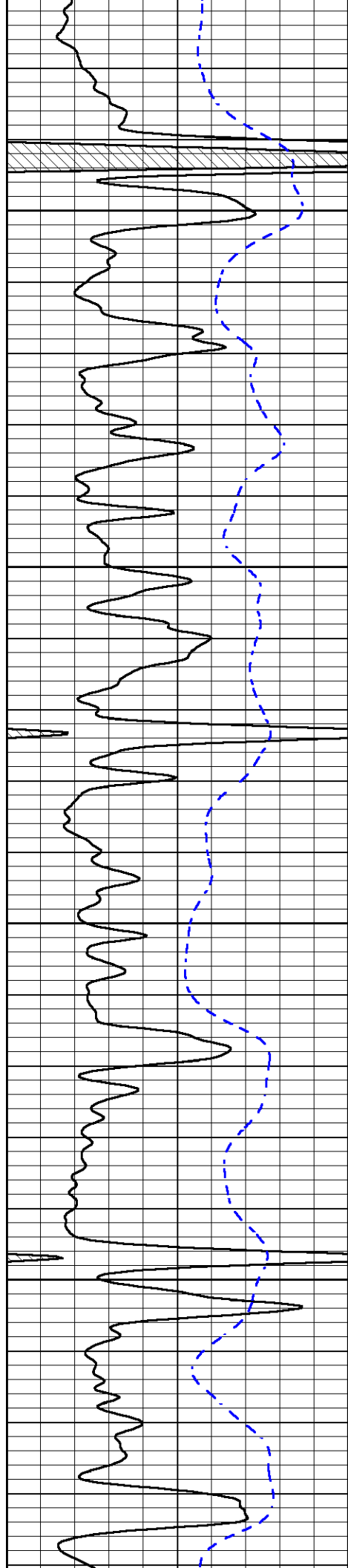
0.2	Deep Resistivity (Ohm-m)	2000
0.2	Medium Resistivity (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	Line Tension (lb)	0





3400
3450
3500
3550
3600



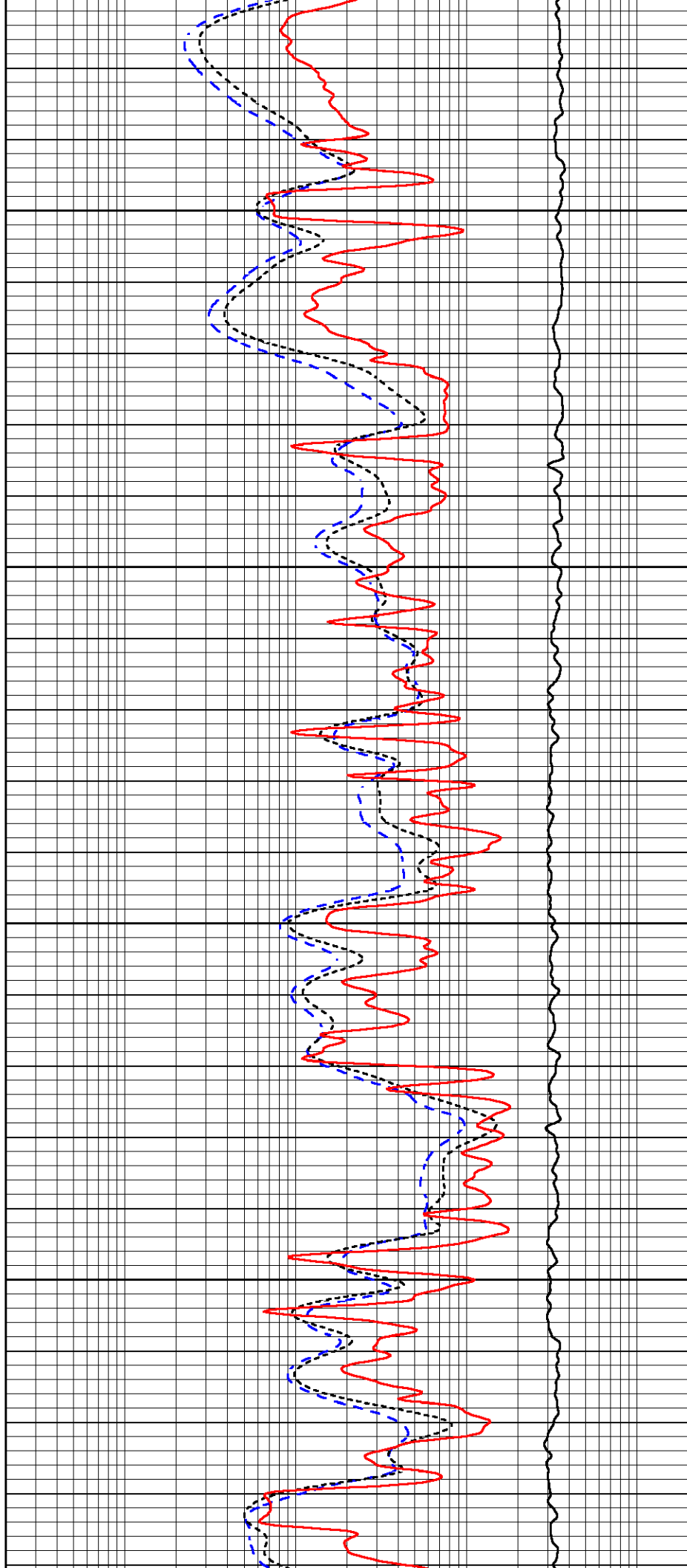


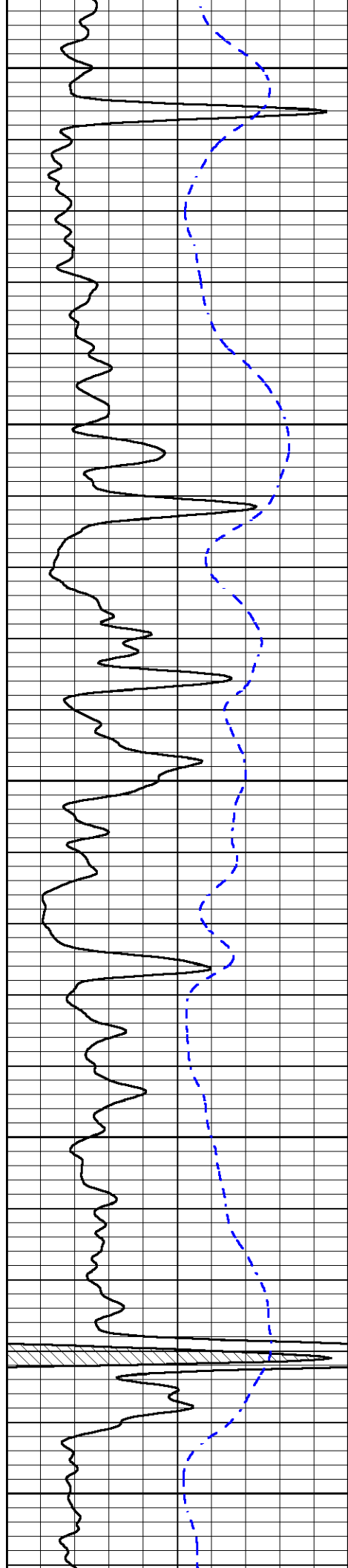
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3700

3750

3800





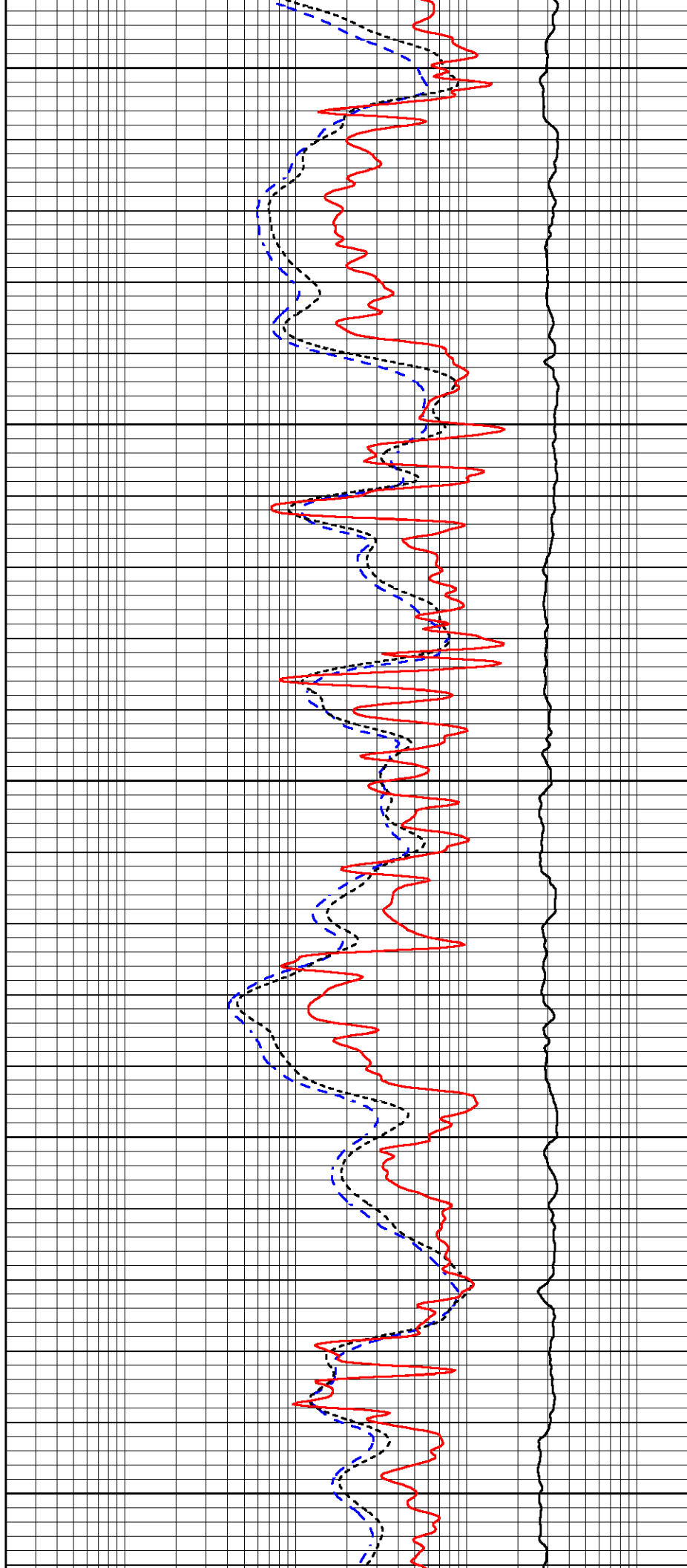
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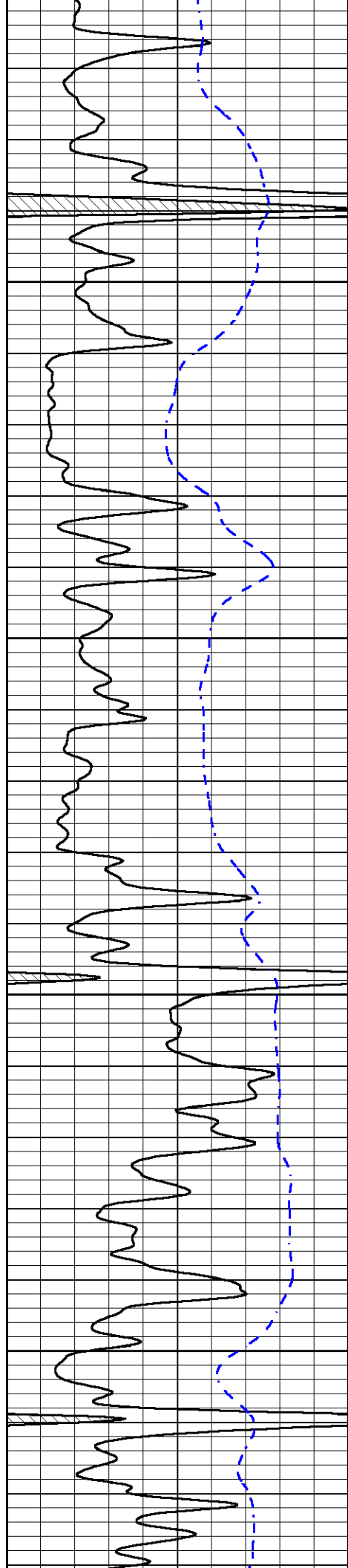
3900

3950

4000

4050



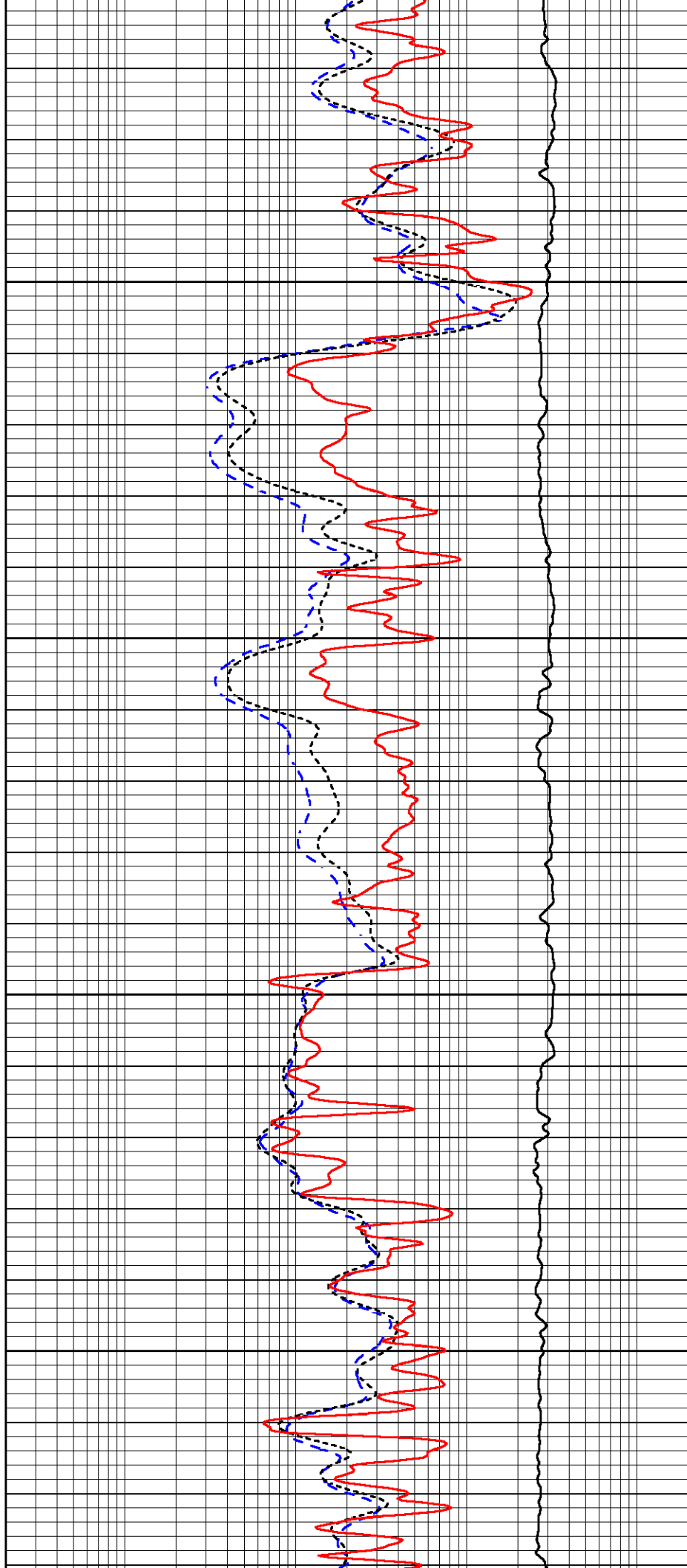


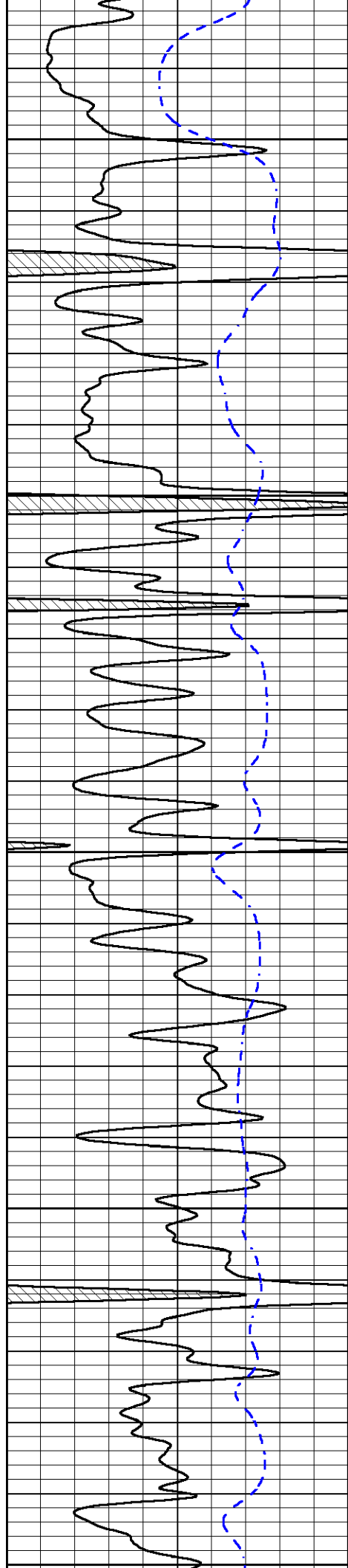
4100

4150

4200

4250





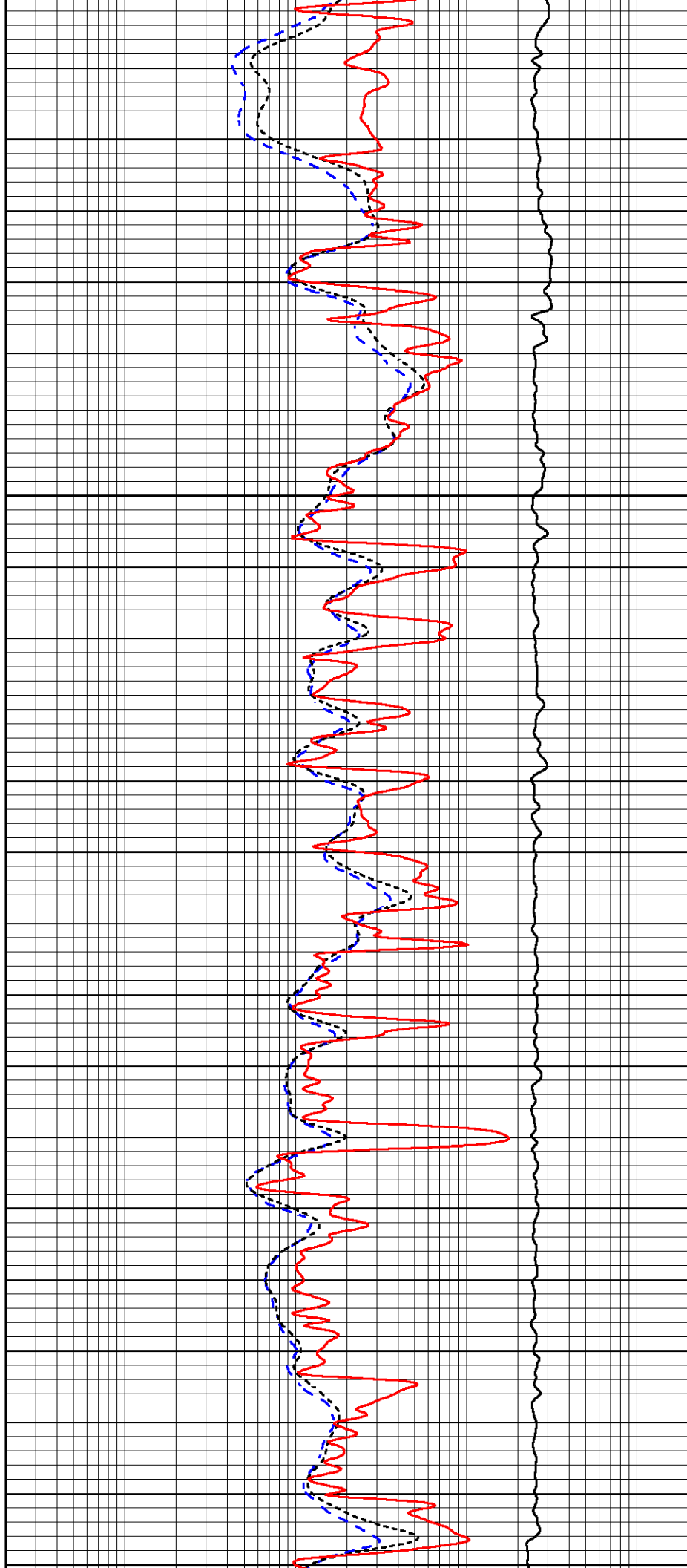
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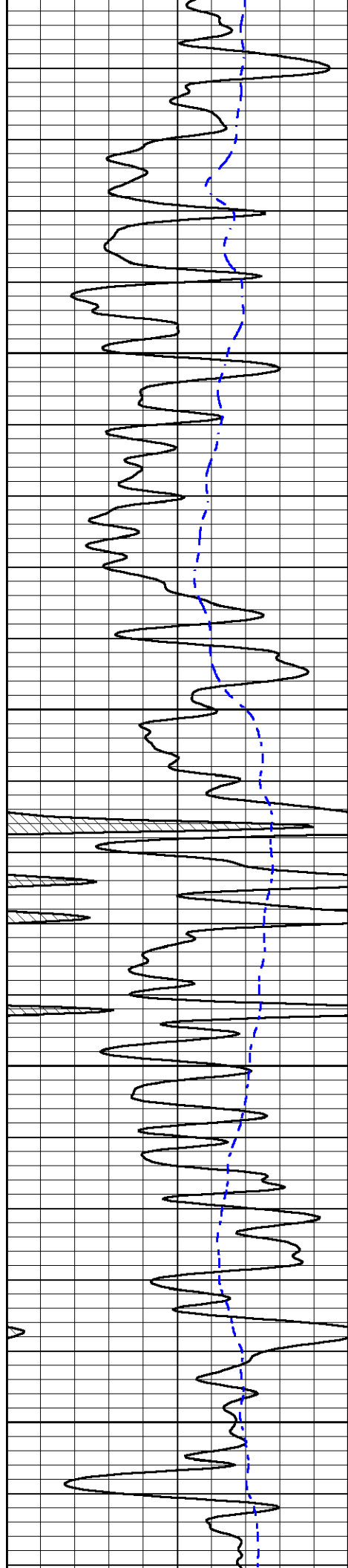
4350

4400

4450

4500



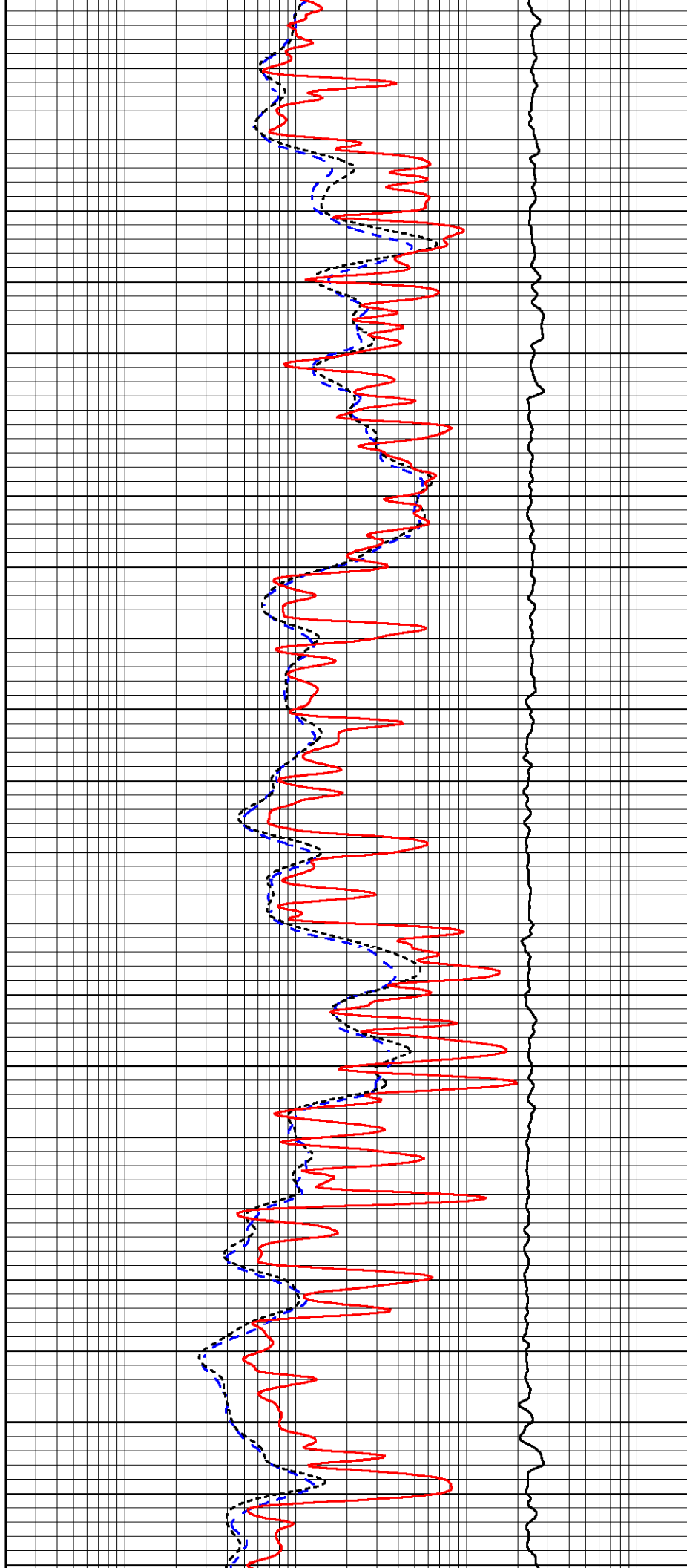


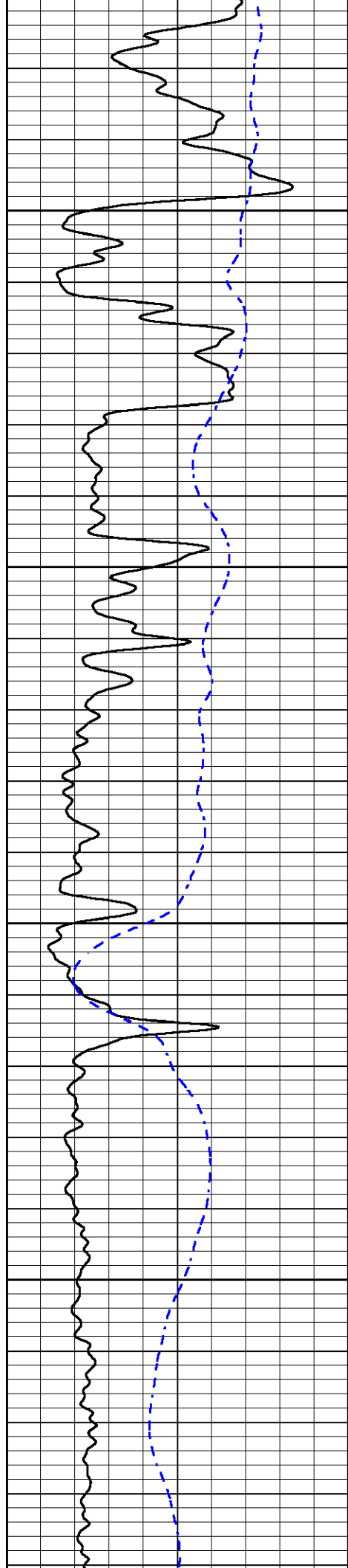
4550

4600

4650

4700



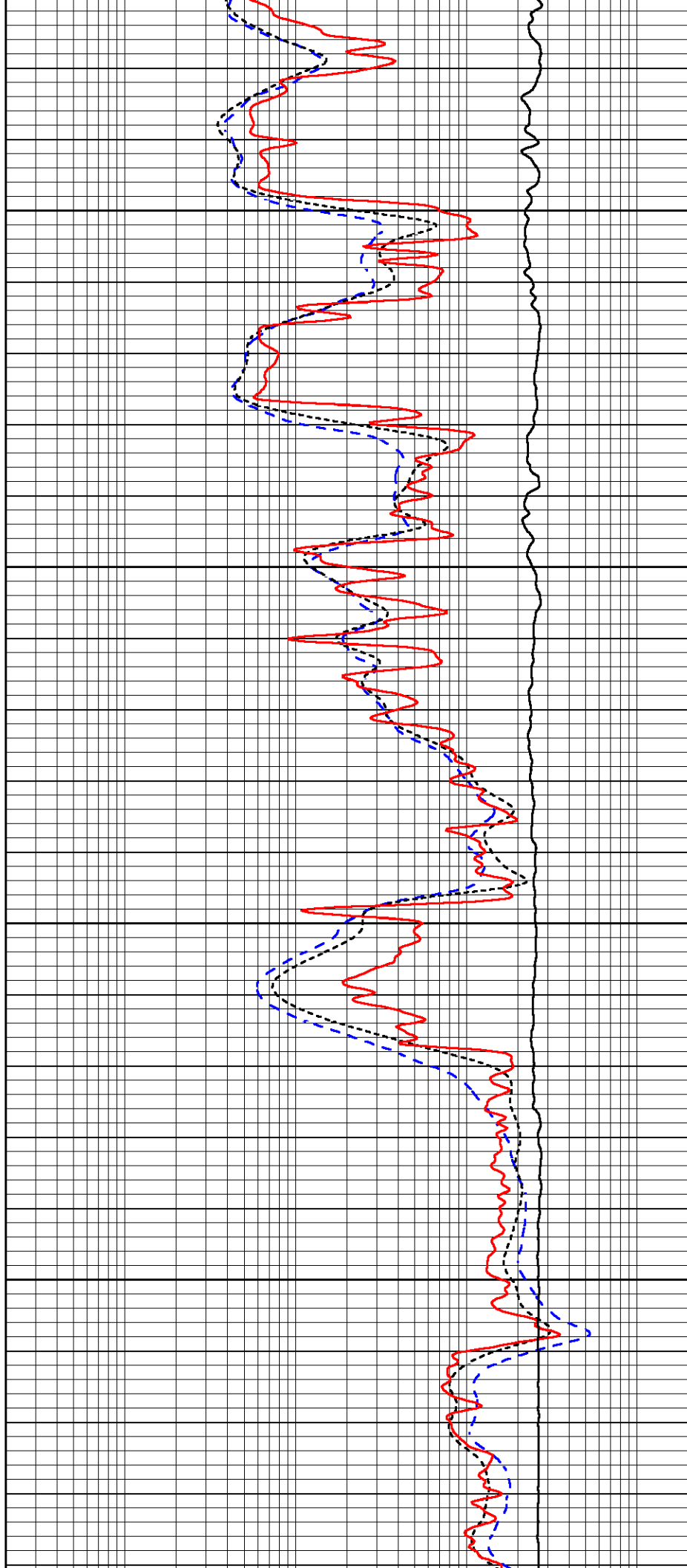


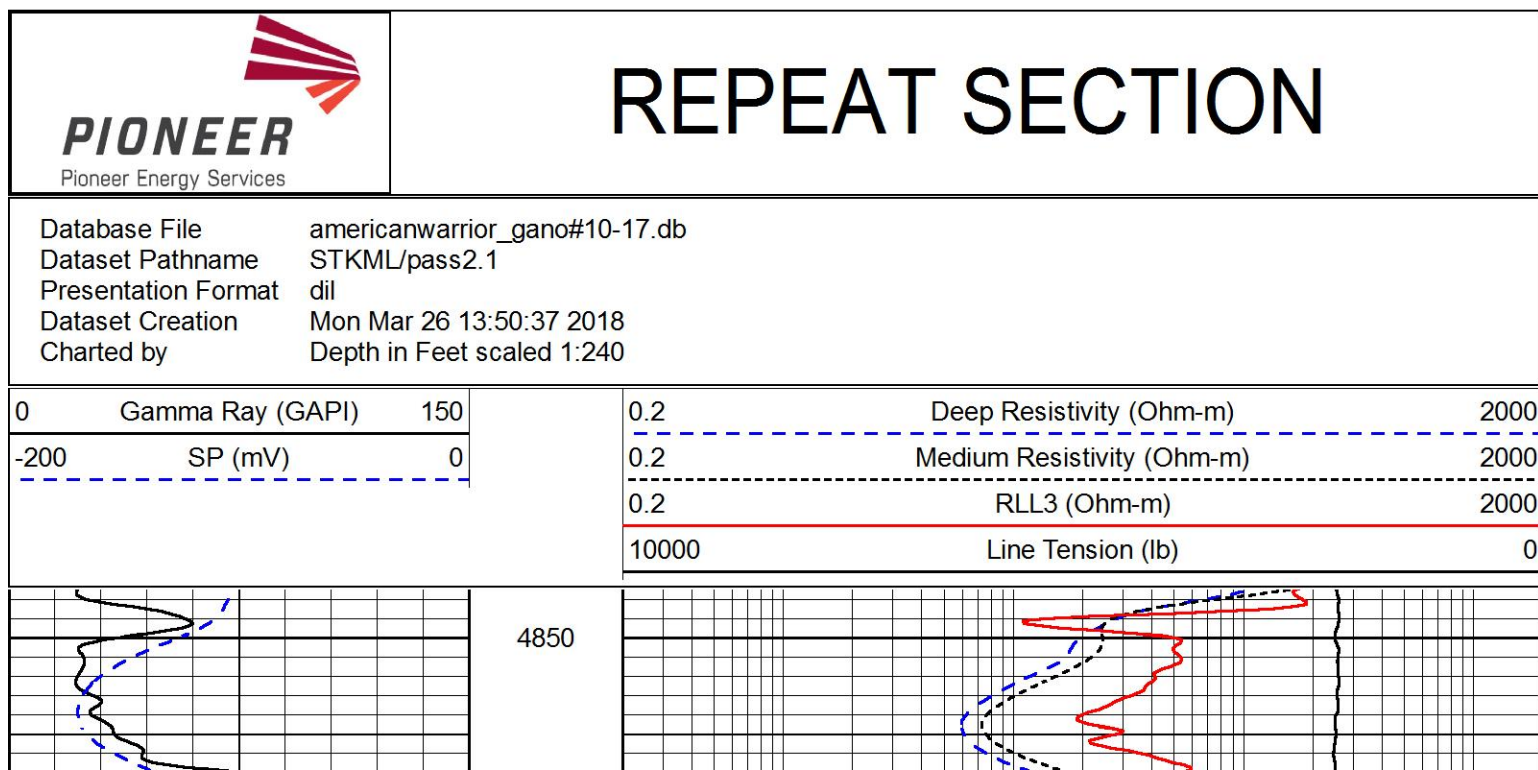
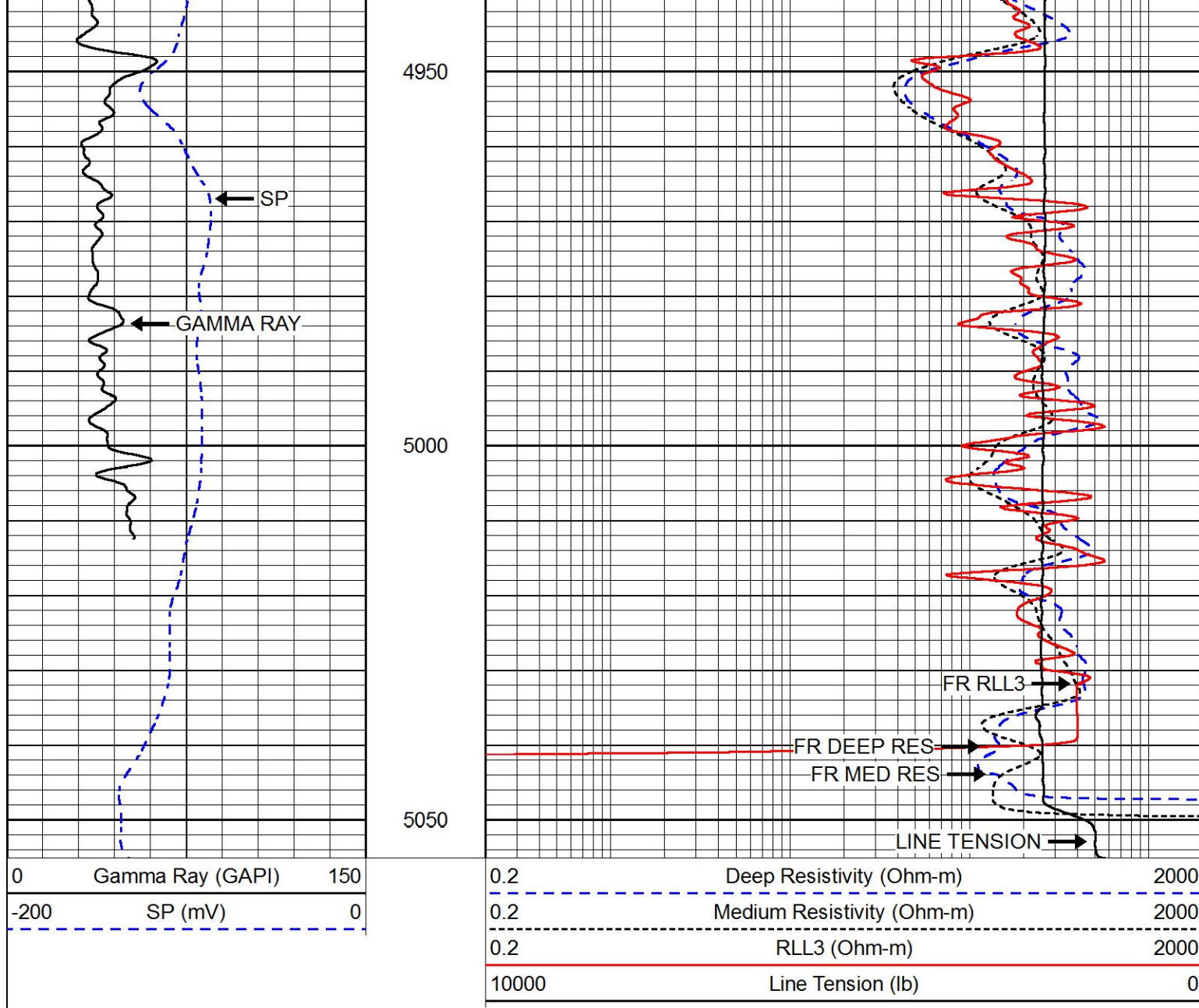
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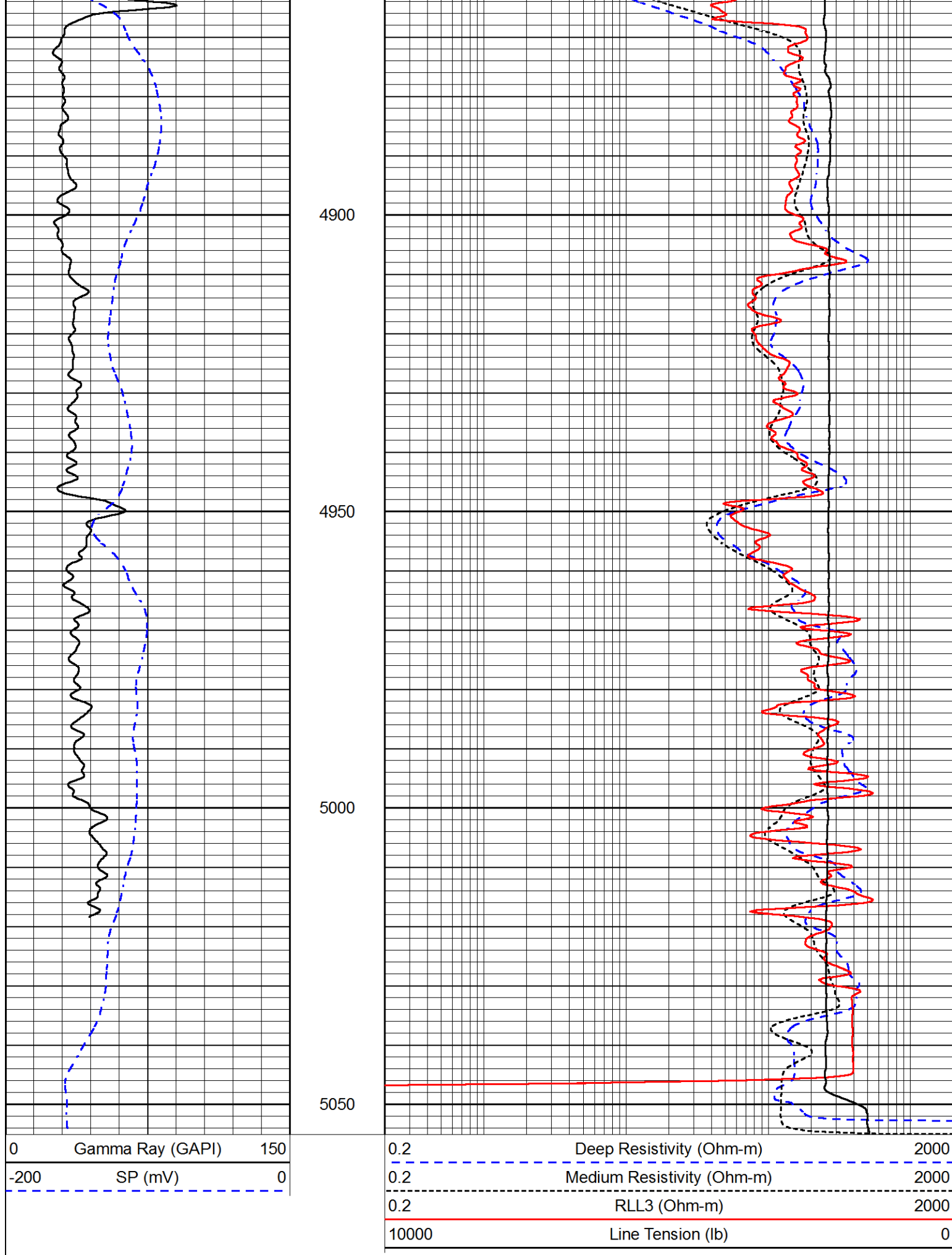
4800

4850

4900







Calibration Report

Database File americanwarrior_gano#10-17.db
 Dataset Pathname STKML/pass4.1
 Dataset Creation Mon Mar 26 13:43:25 2018

Dual Induction Calibration Report

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

	Readings		References			Results	
Loop:	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	-61.000

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	19000.0000	-0.7000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	24000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-65.8500

Compensated Density Calibration Report

Serial-Model: 227-771-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Fri Mar 09 21:14:39 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4919.18	6345.34	cps
Aluminum	2.665	g/cc	911.94	4081.94	cps
Spine Angle = 75.33			Density/Spine Ratio = 0.522		
	Size		Reading		
Small Ring	8.00	in	1.84		
Large Ring	22.00	in	1.46		

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



Company	AMERICAN WARRIOR, INC.
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Field	LAKIN NORTHWEST
County	KEARNY
State	KANSAS