



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company **AMERICAN WARRIOR, INC.**

Well **GANO #8-17**

Field **LAKIN NORTHWEST**

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

Location: API #: 15-093-21964-00-00

755' FSL & 2347' FEL

SEC 17 TWP 25S RGE 36W

Permanent Datum **GROUND LEVEL** Elevation **3023'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**

Elevation
K.B. 3034'
D.F. N/A
G.L. 3023'

CNL/CDL
MEL

Date 01/07/2018

Run Number ONE

Depth Driller 5050'

Depth Logger 5050'

Bottom Logged Interval 5049'

Top Log Interval 1750'

Casing Driller 8.625" @ 1785'

Casing Logger 1785'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 2750

Density / Viscosity 9.4 56

pH / Fluid Loss 9.5 9.2

Source of Sample FLOWLINE

Rm @ Meas. Temp 0.70 @ 50

Rmt @ Meas. Temp 0.53 @ 50

Rmc @ Meas. Temp 0.95 @ 50

Source of Rmt / Rmc CHARTS

Rm @ BHT 0.28 @ 127

Operating Rig Time 3 HOURS

Max Rec. Temp. F 127

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 ON HWY. 25 TO RD. 130,
1 WEST TO S ROAD, 2 SOUTH TO THE CURVE,
1 WEST, 3/4 SOUTH,
WEST 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

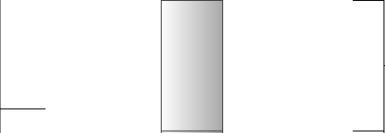
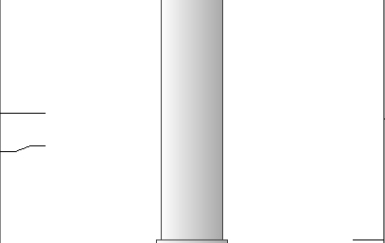
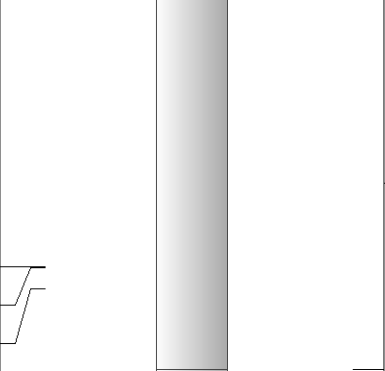
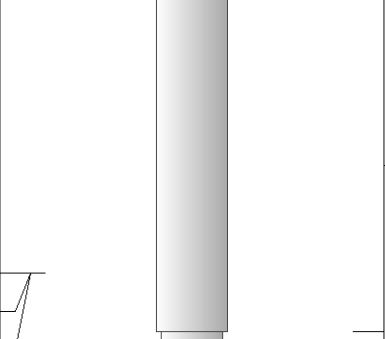
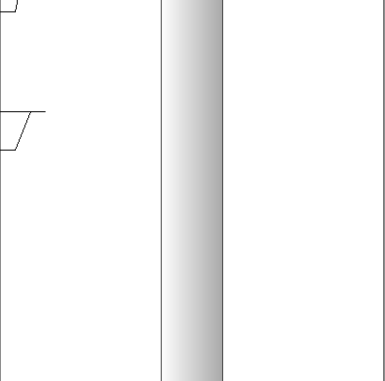
Engineer: D. SCHMIDT
Operator:
Operator:
Operator:

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	290	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	50	0	5.5	0	5050	127	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 (90-1031)	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-M&W (PSI 91)	18.50	3.50	220.00
CILD	8.00					
CILM	4.70					
SP	0.20					
Dataset: americanwarrior_gano8-17.db: field/well/STKML/pass4.1 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in						



Database File

Dataset Pathname

Presentation Format

Dataset Creation

Charted by

americanwarrior_gano8-17.db

STKML/pass4.1

dil2in

Sun Jan 07 13:29:39 2018

Depth in Feet scaled 1:600

MAIN PASS

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

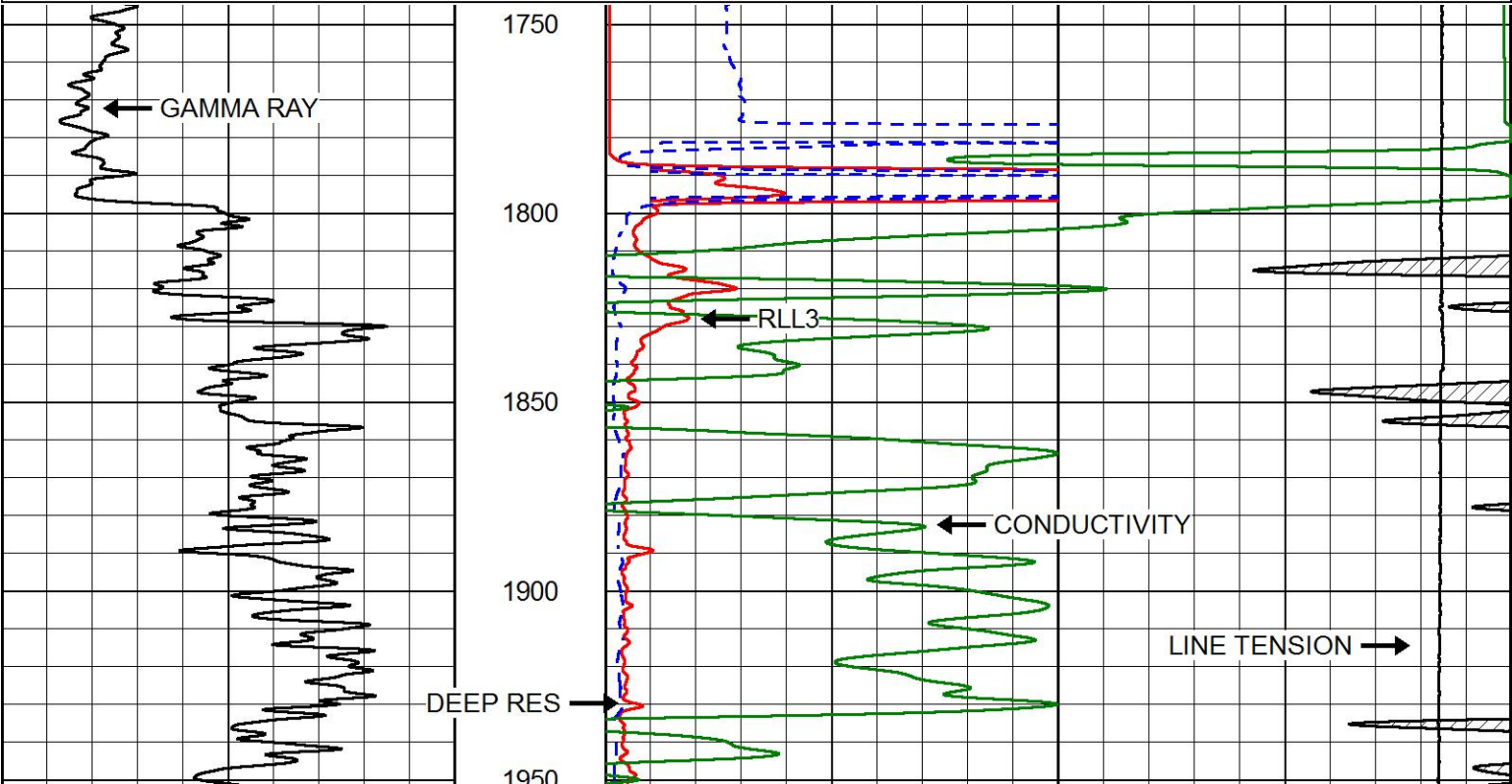
RLL3 (Ohm-m)

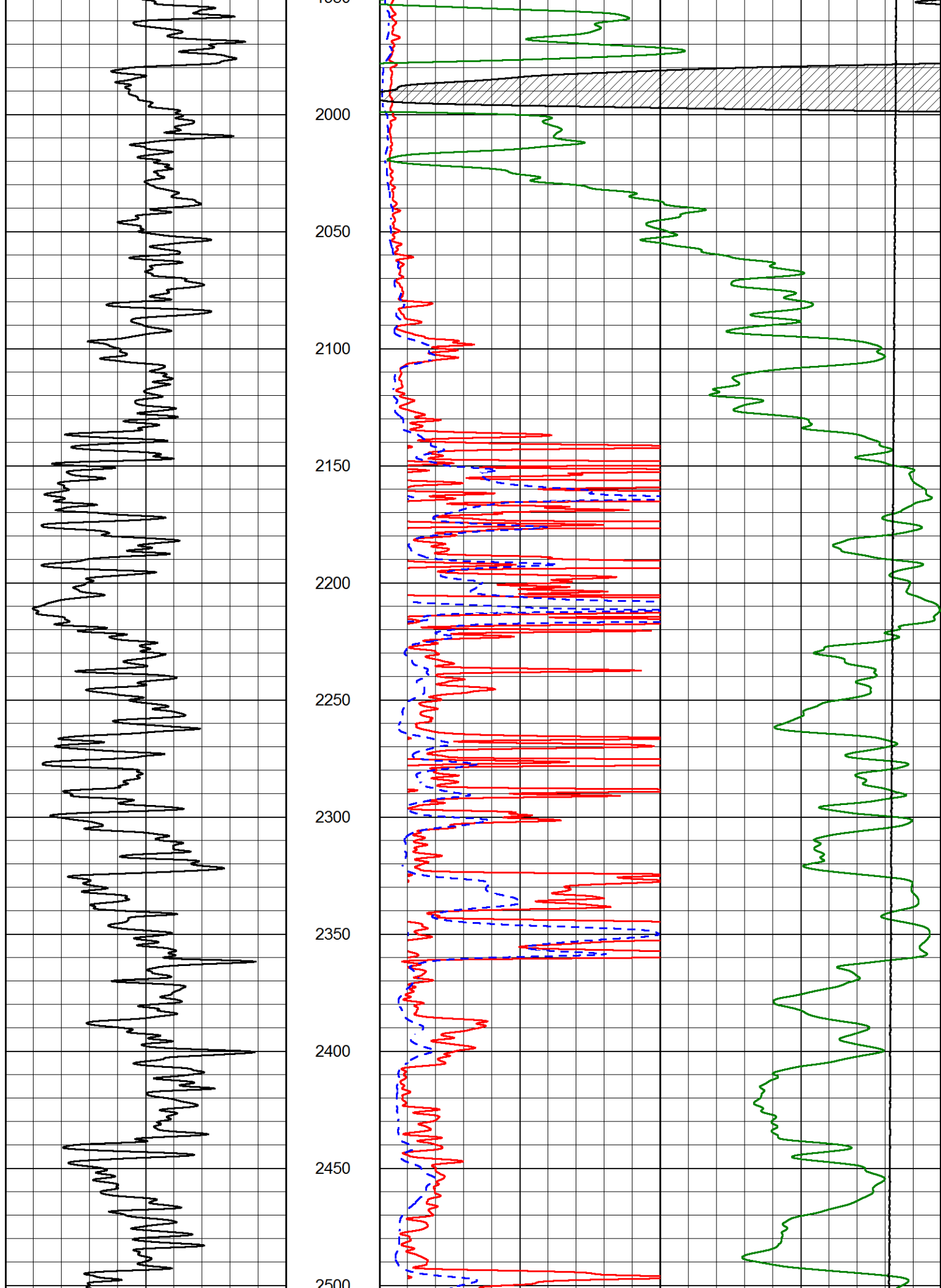
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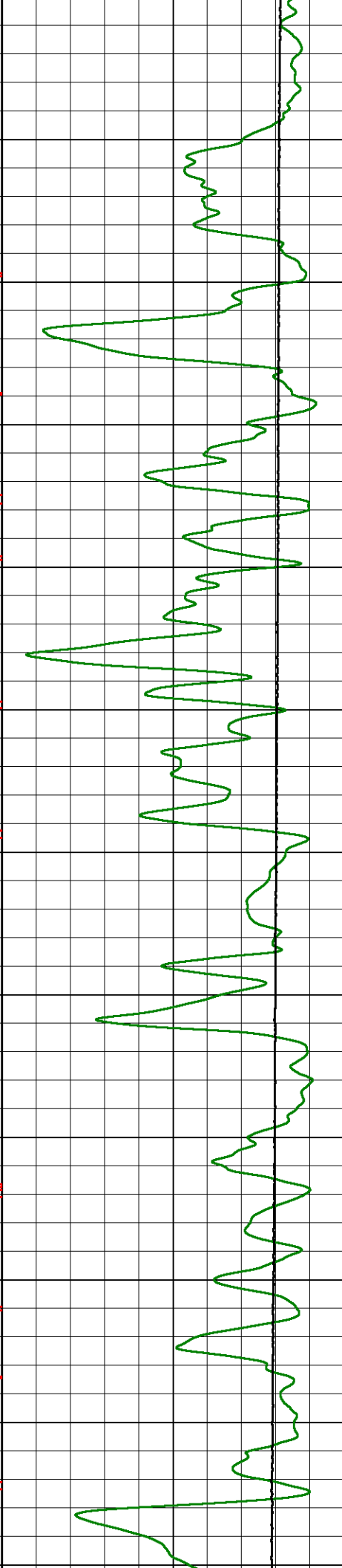
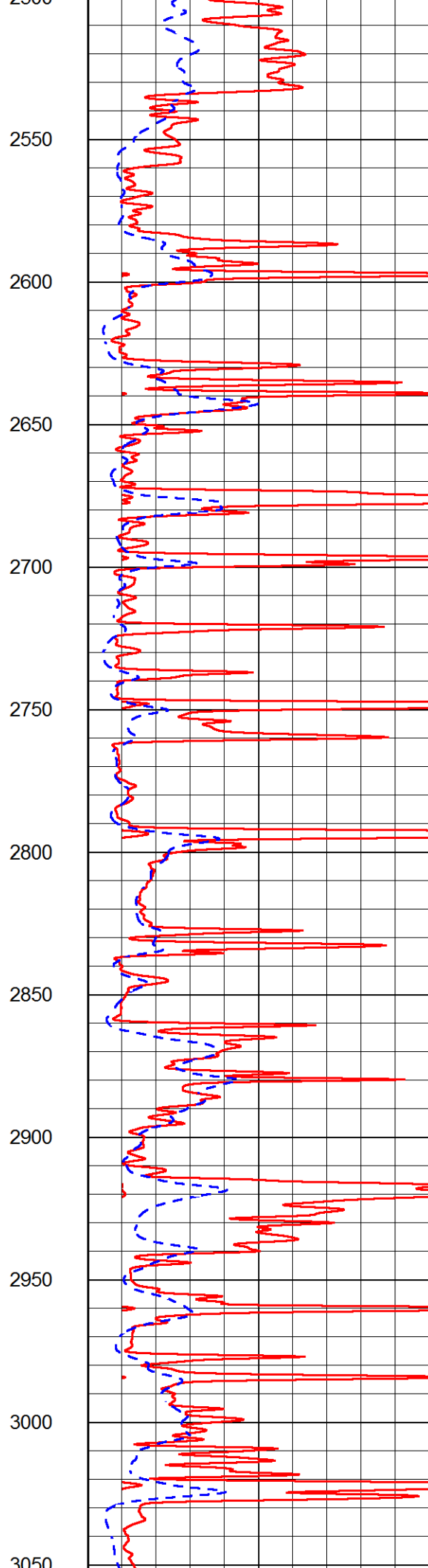
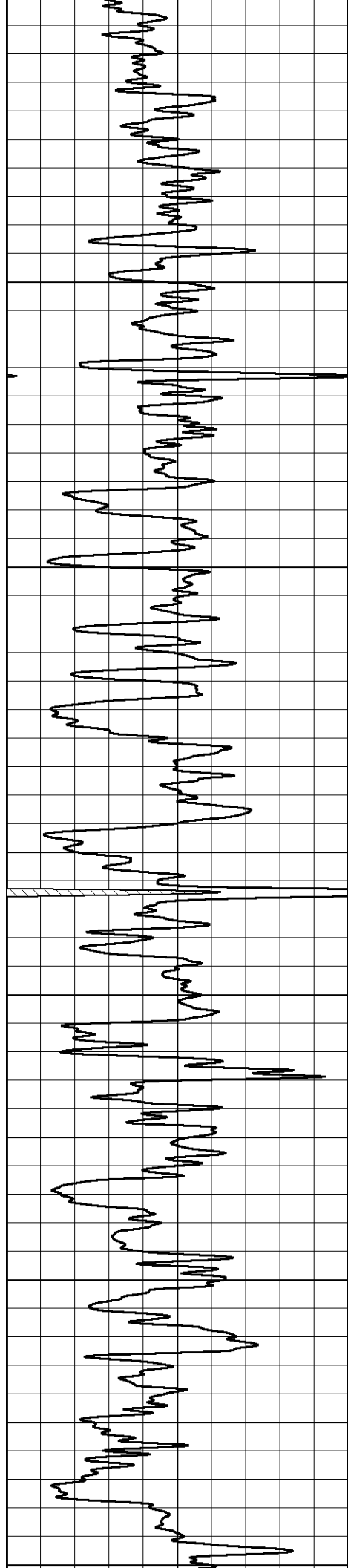
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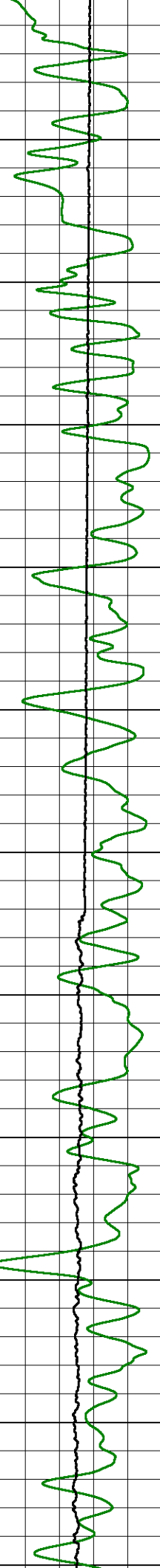
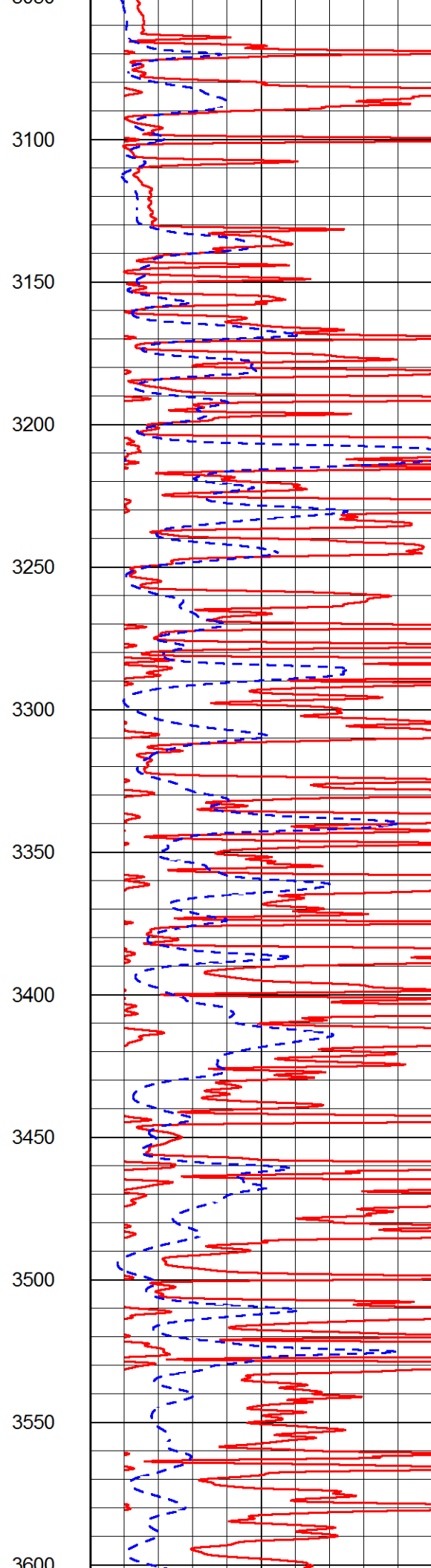
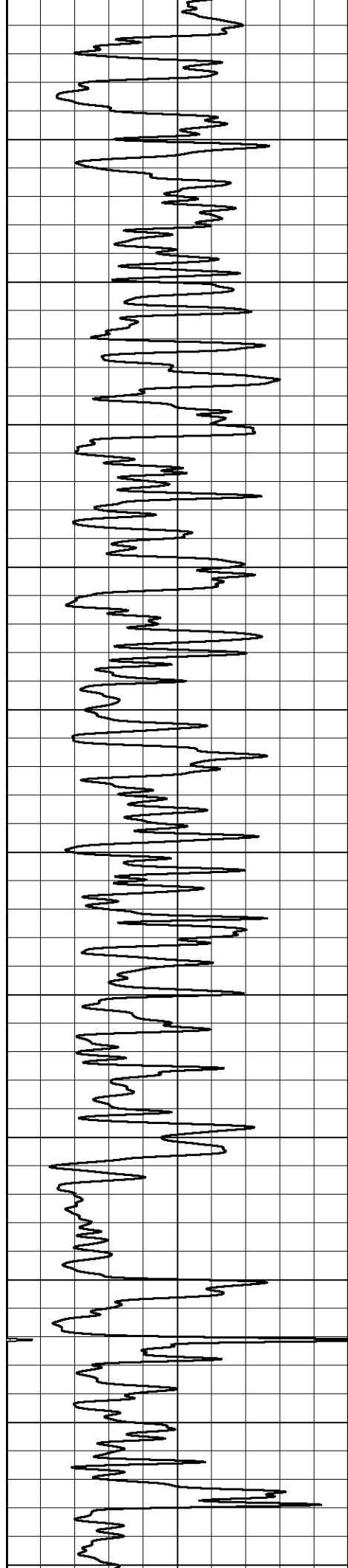
Deep Resistivity (Ohm-m)

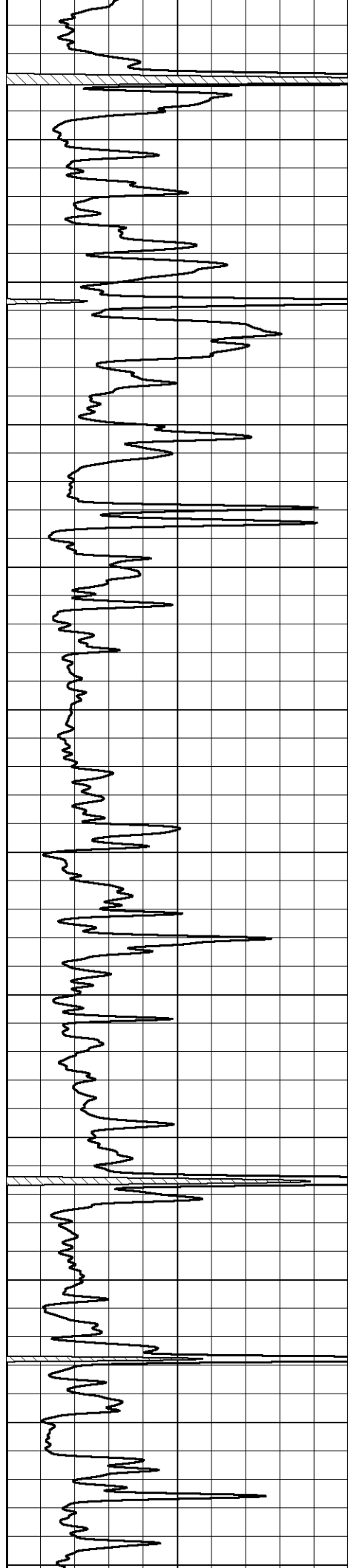
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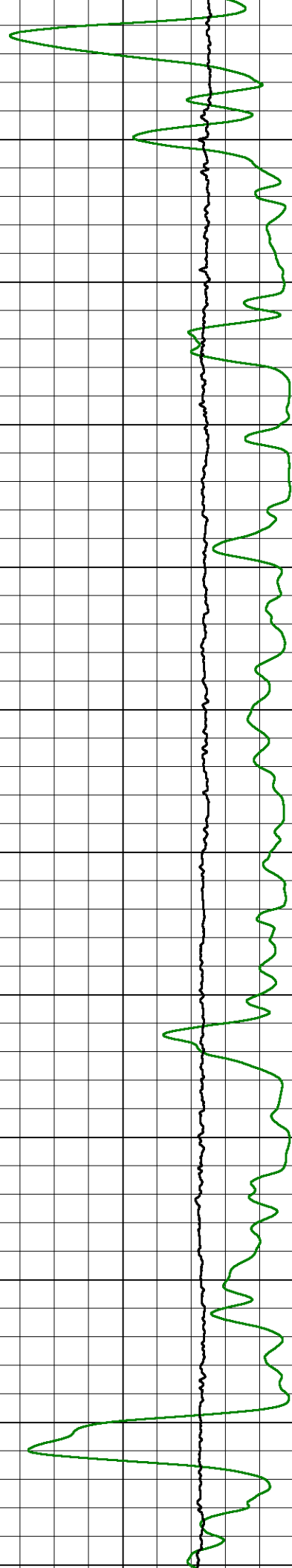
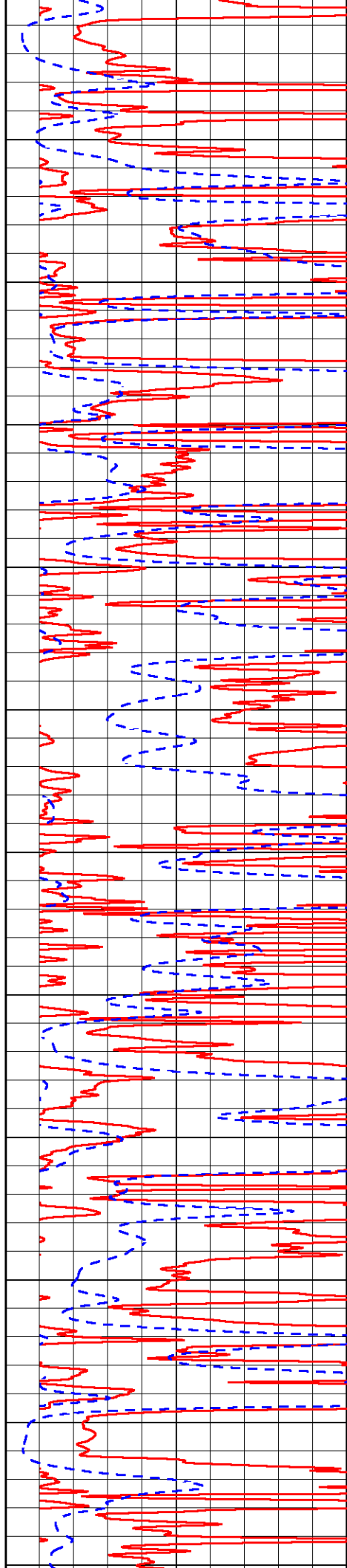


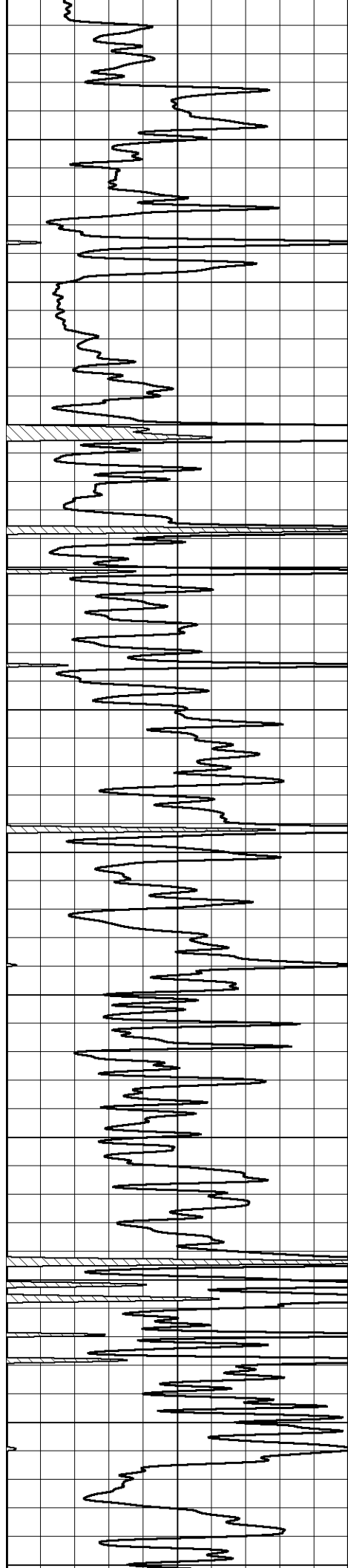




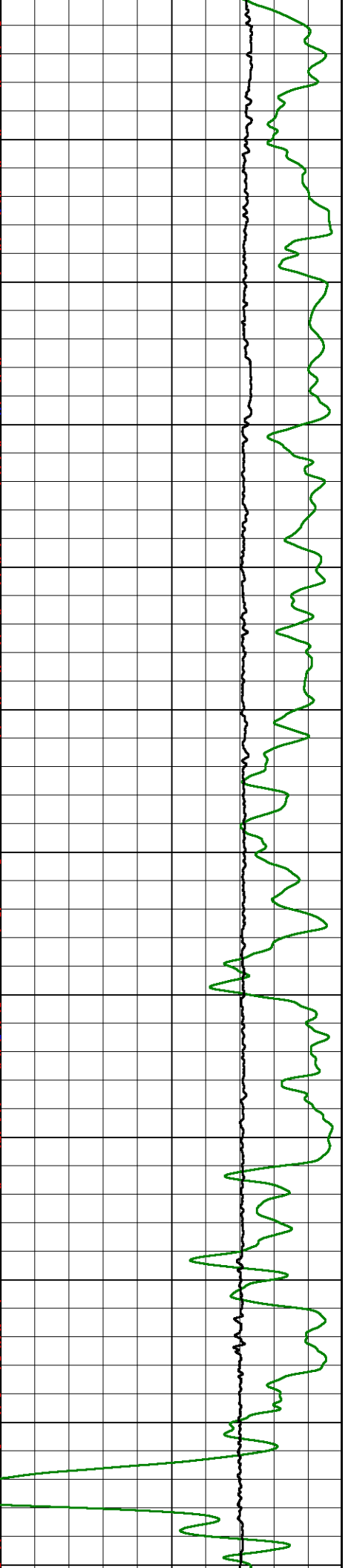
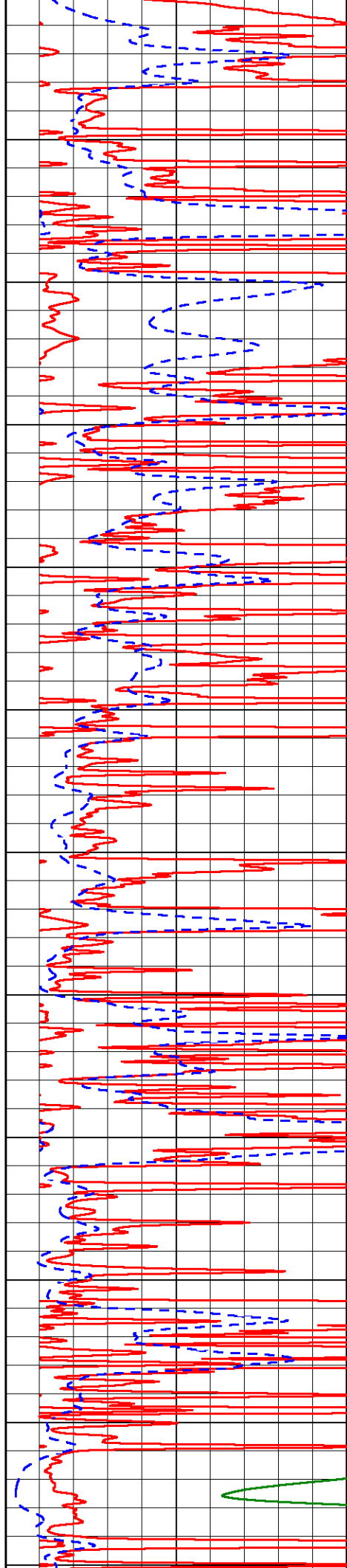


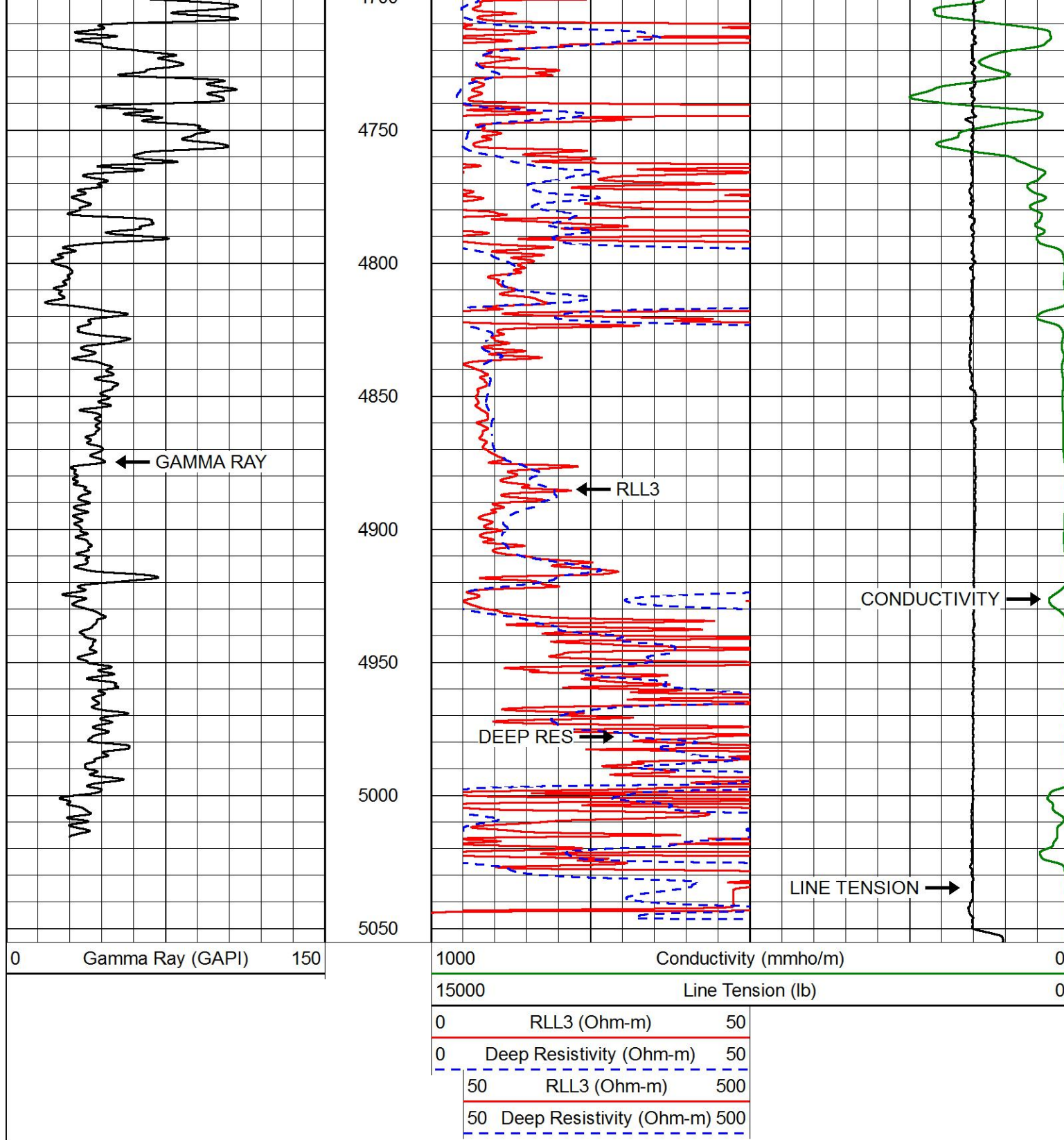
3600
3650
3700
3750
3800
3850
3900
3950
4000
4050
4100
4150





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





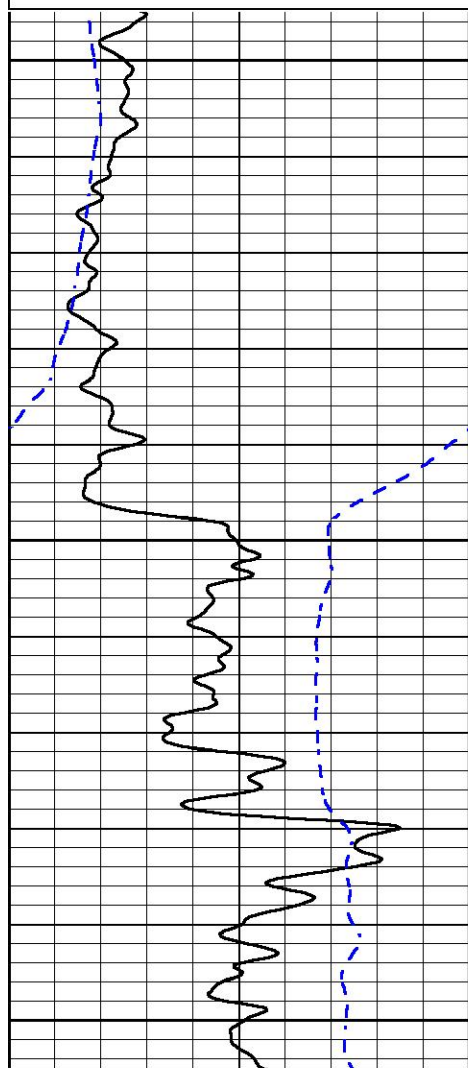


PIONEER
Pioneer Energy Services

MAIN PASS

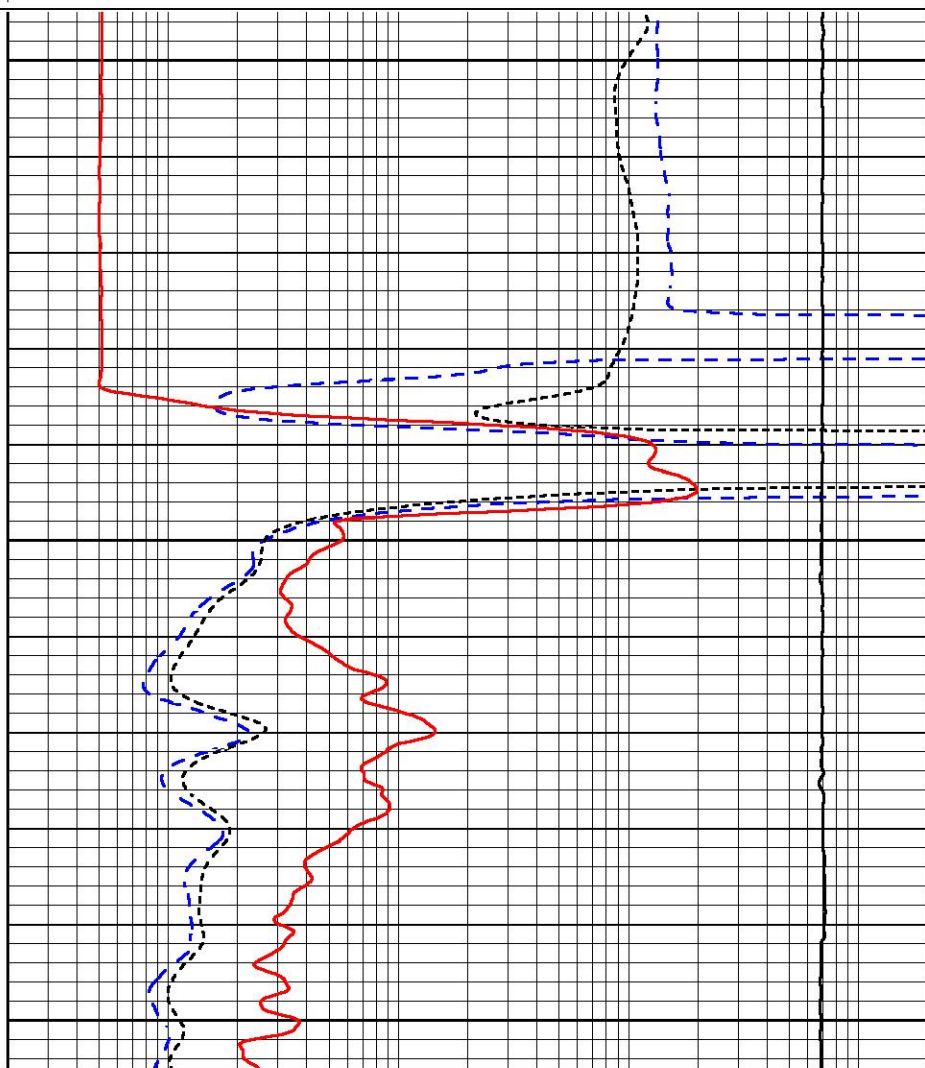
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Dataset Pathname	STKML/pass4.1
Presentation Format	dil
Dataset Creation	Sun Jan 07 13:29:39 2018
Charted by	Depth in Feet scaled 1:240

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



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



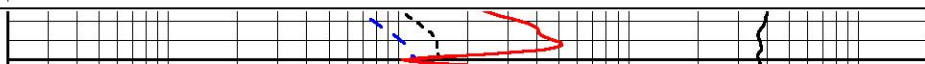
MAIN PASS

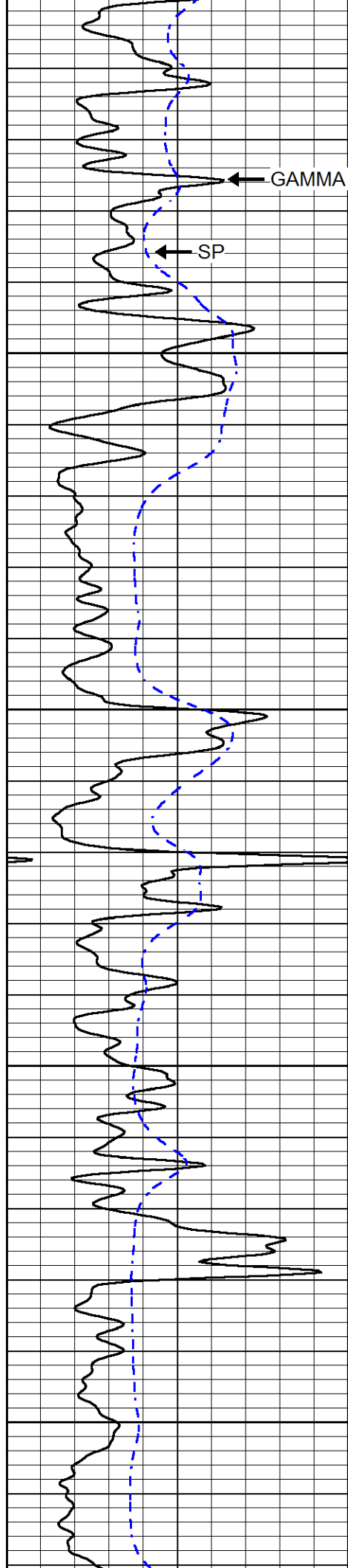
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Dataset Pathname STKML/pass3.1
Presentation Format dil
Dataset Creation Sun Jan 07 13:05:11 2018
Charted by Depth in Feet scaled 1:240

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

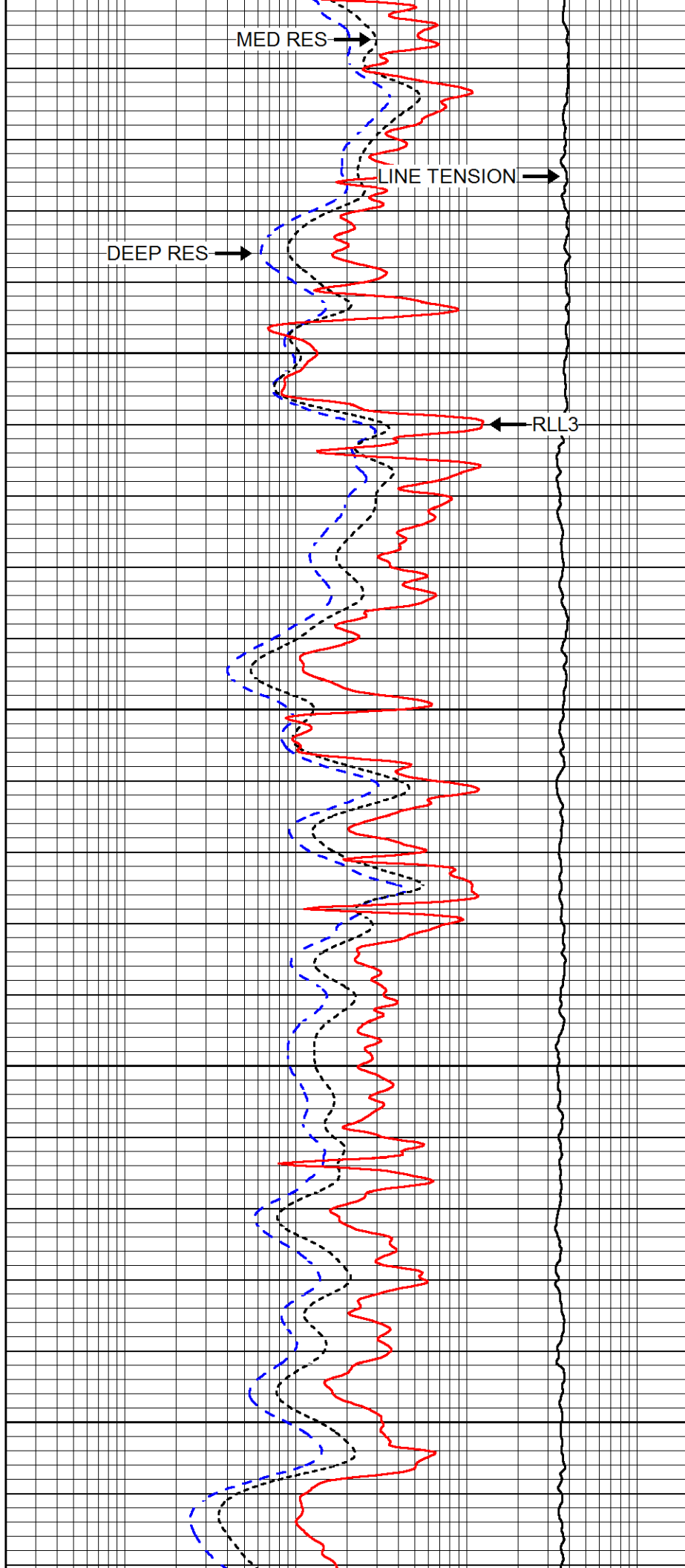


0.2	Deep Resistivity (Ohm-m)	2000
0.2	Medium Resistivity (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	Line Tension (lb)	0

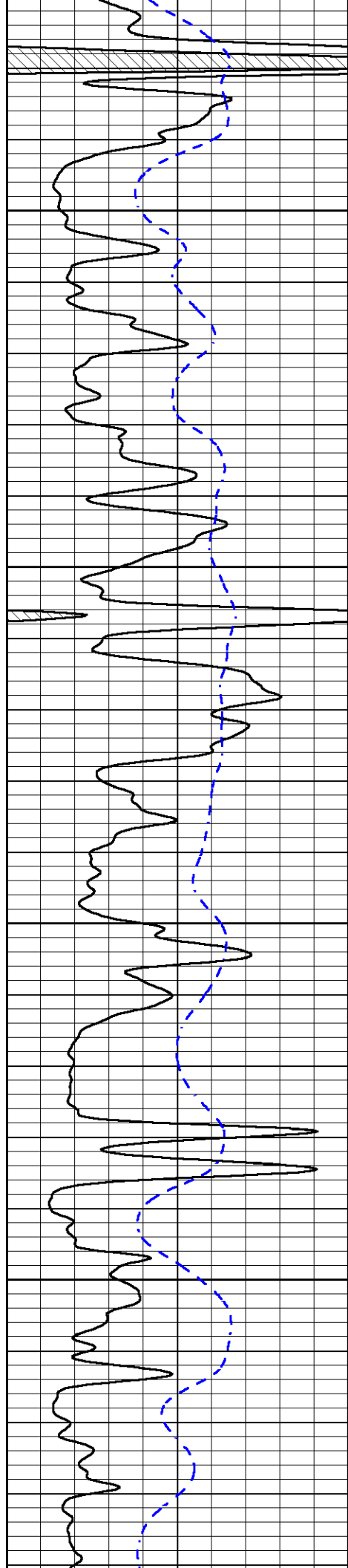




3400
3450
3500
3550
3600



MED RES
DEEP RES
LINE TENSION
RLL3

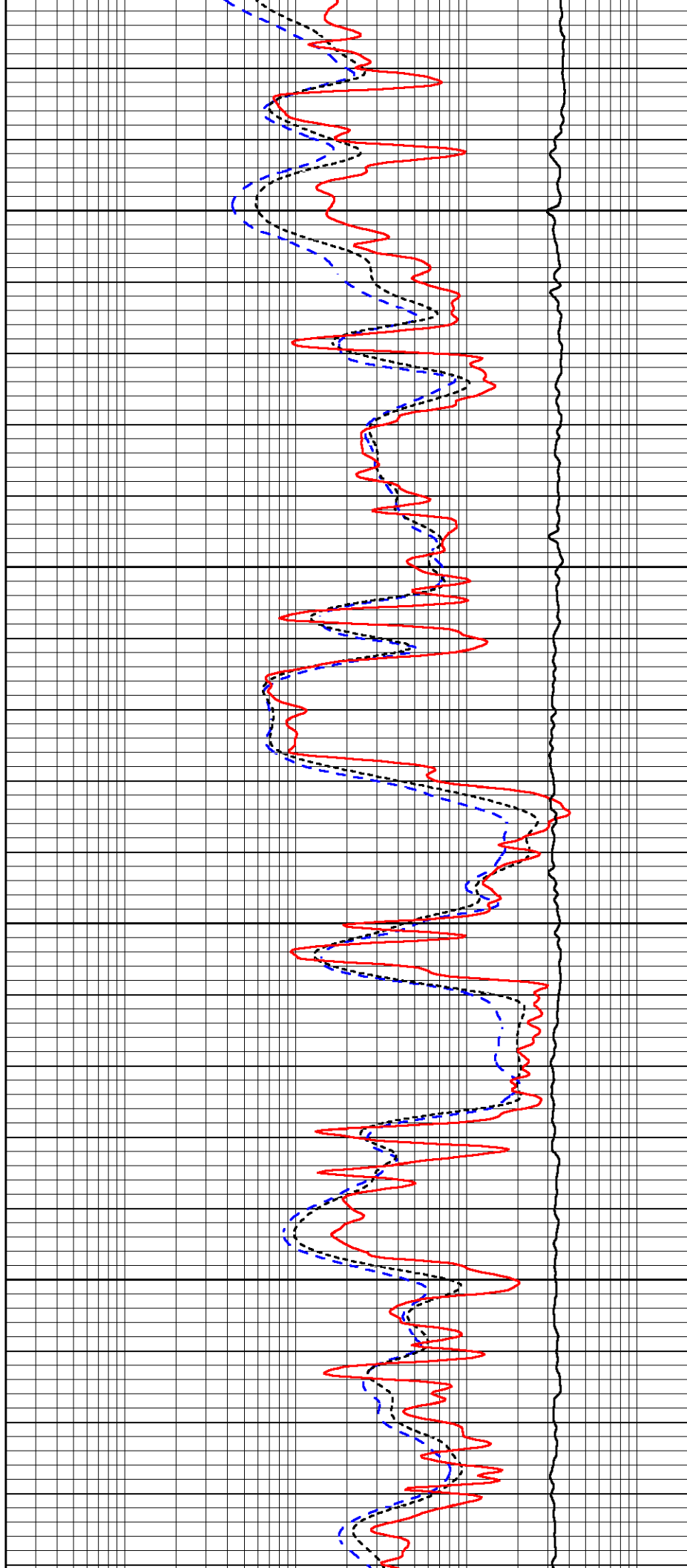


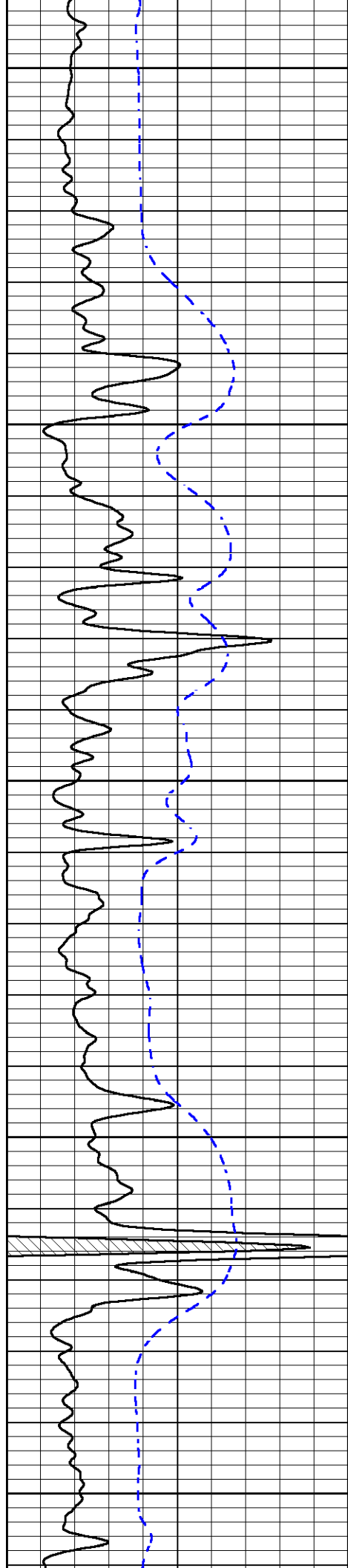
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3700

3750

3800





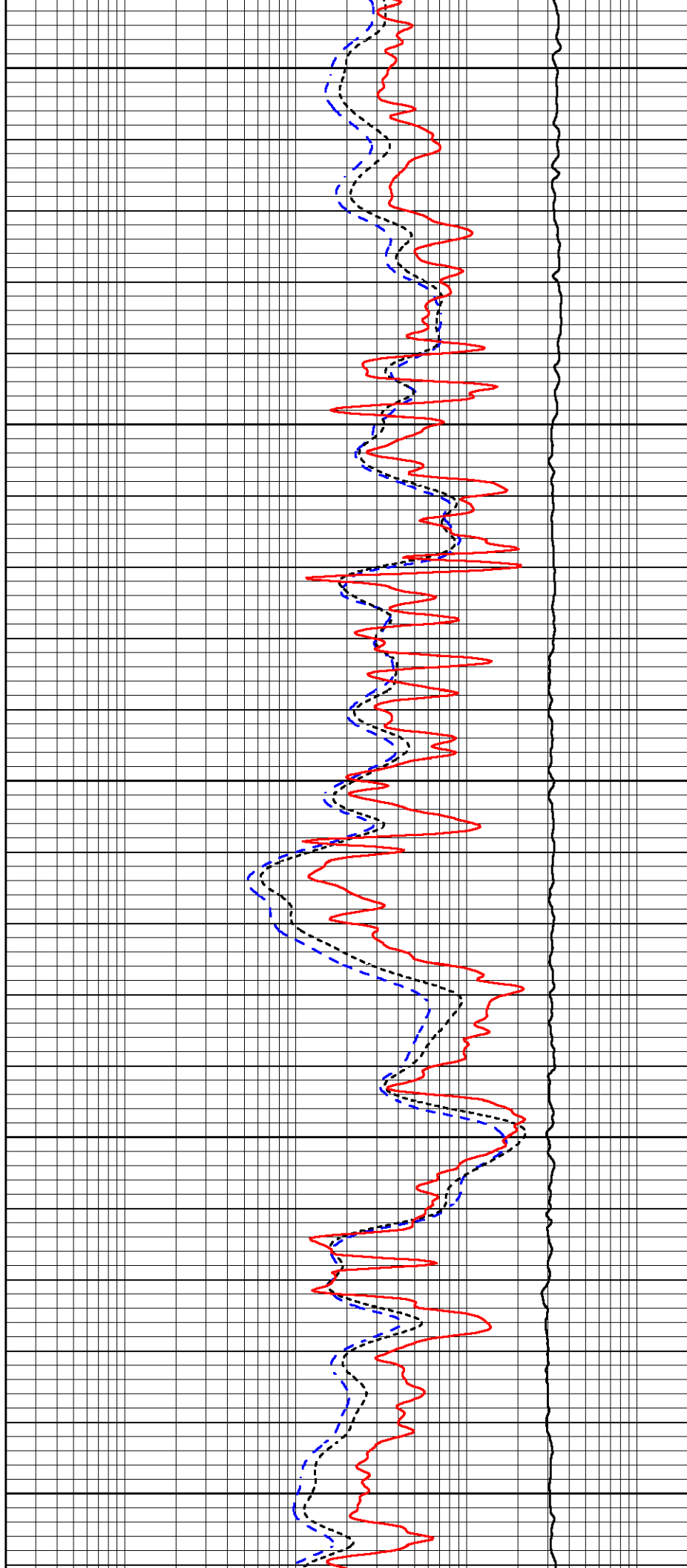
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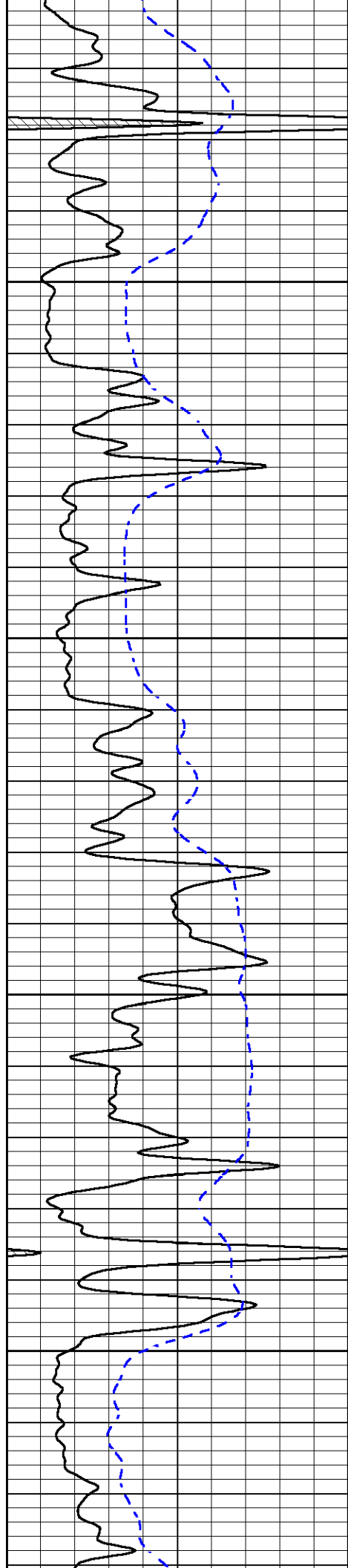
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3950

4000

4050



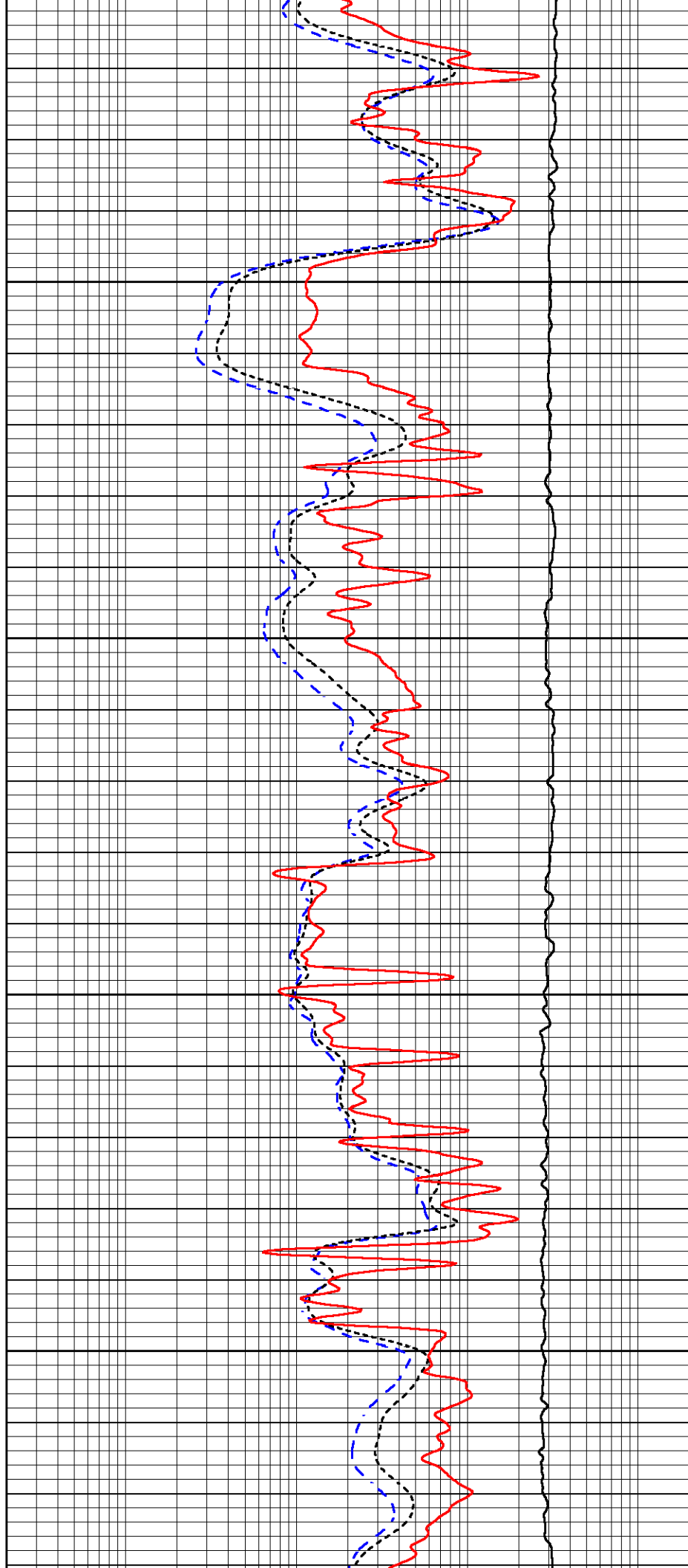


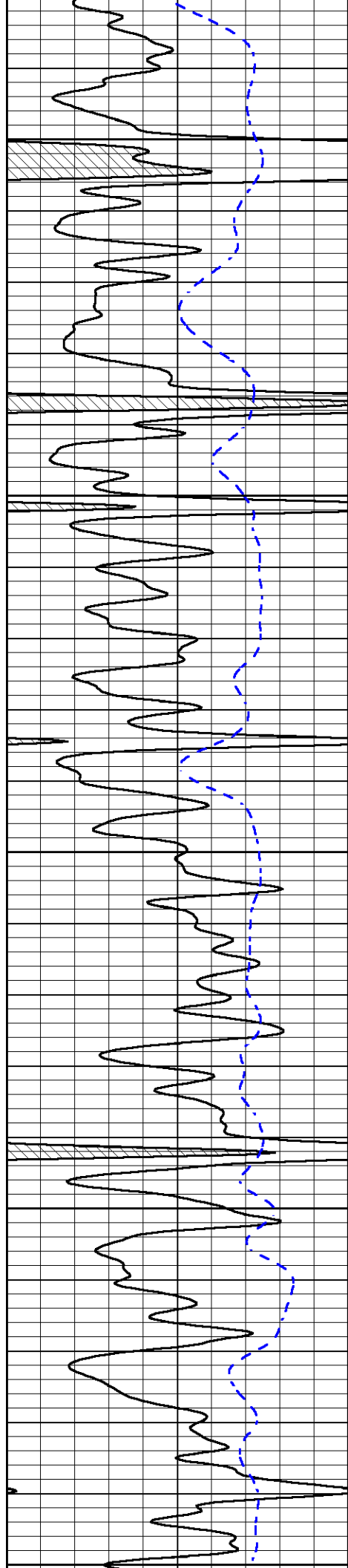
4100

4150

4200

4250





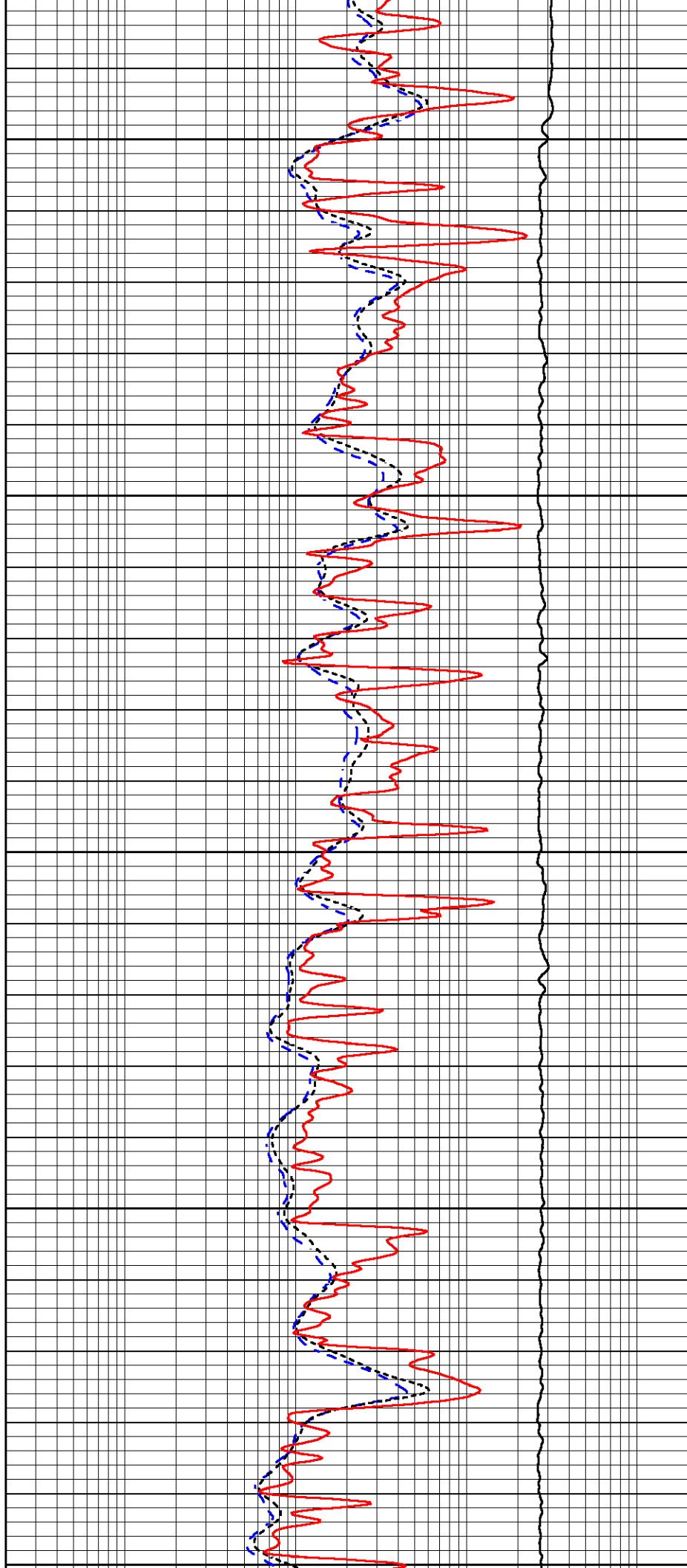
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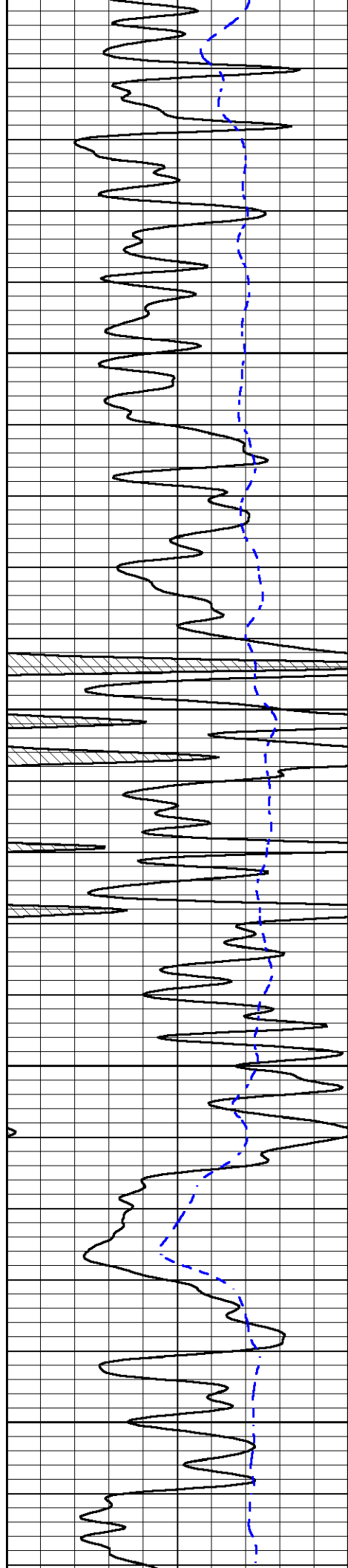
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4400

4450

4500





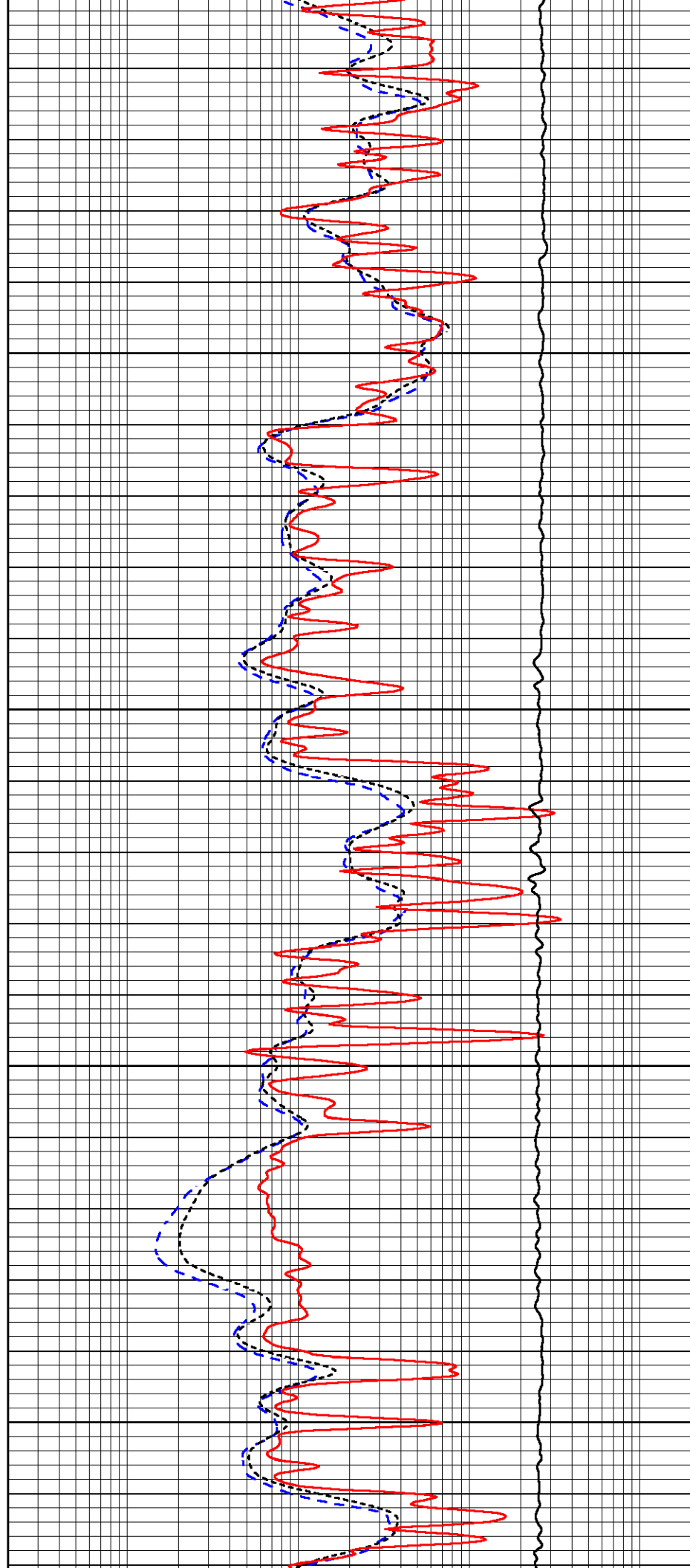
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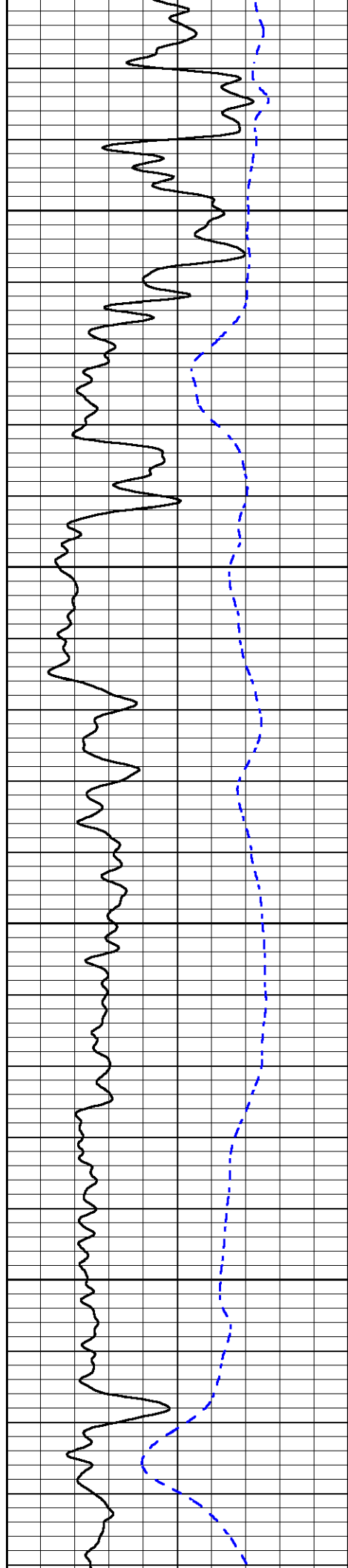
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4650

4700



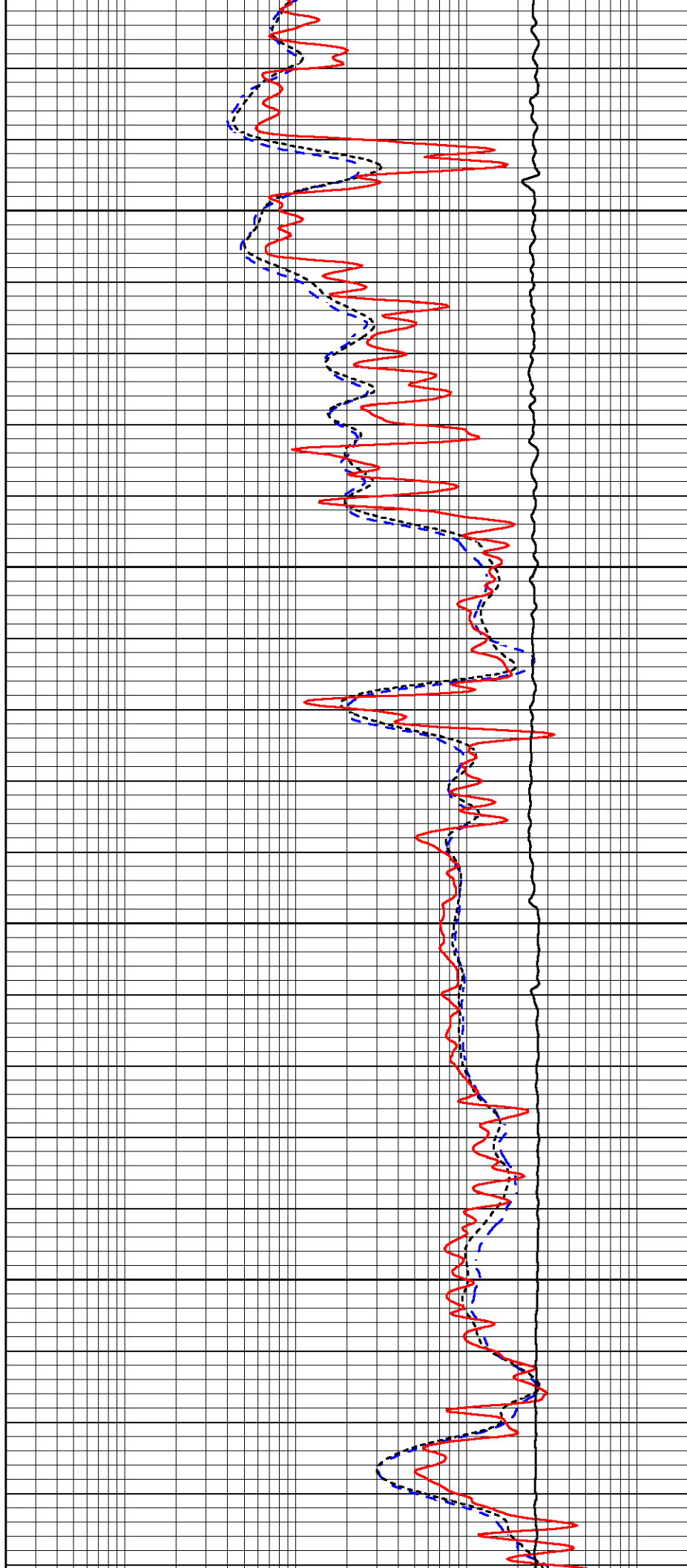


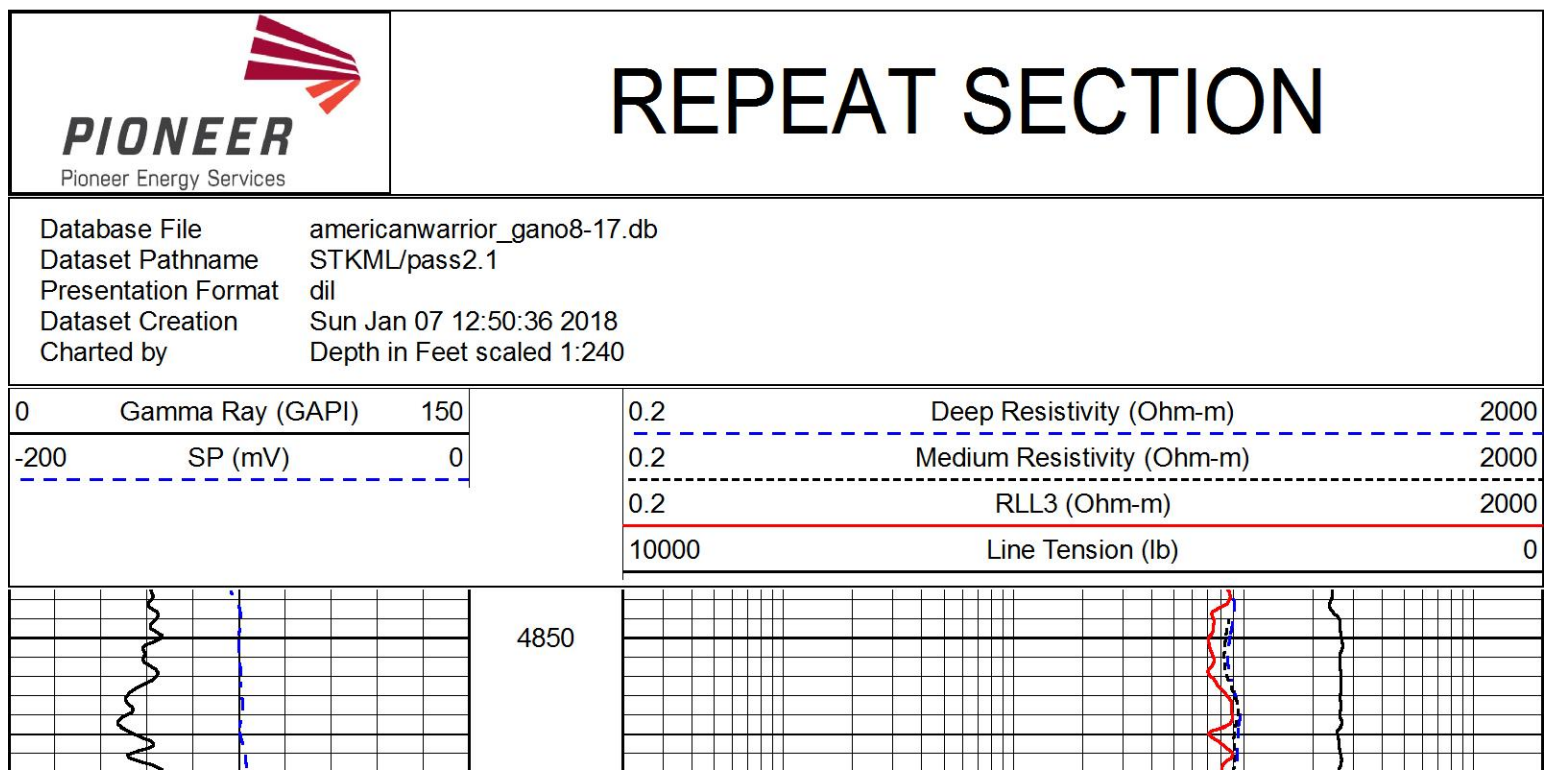
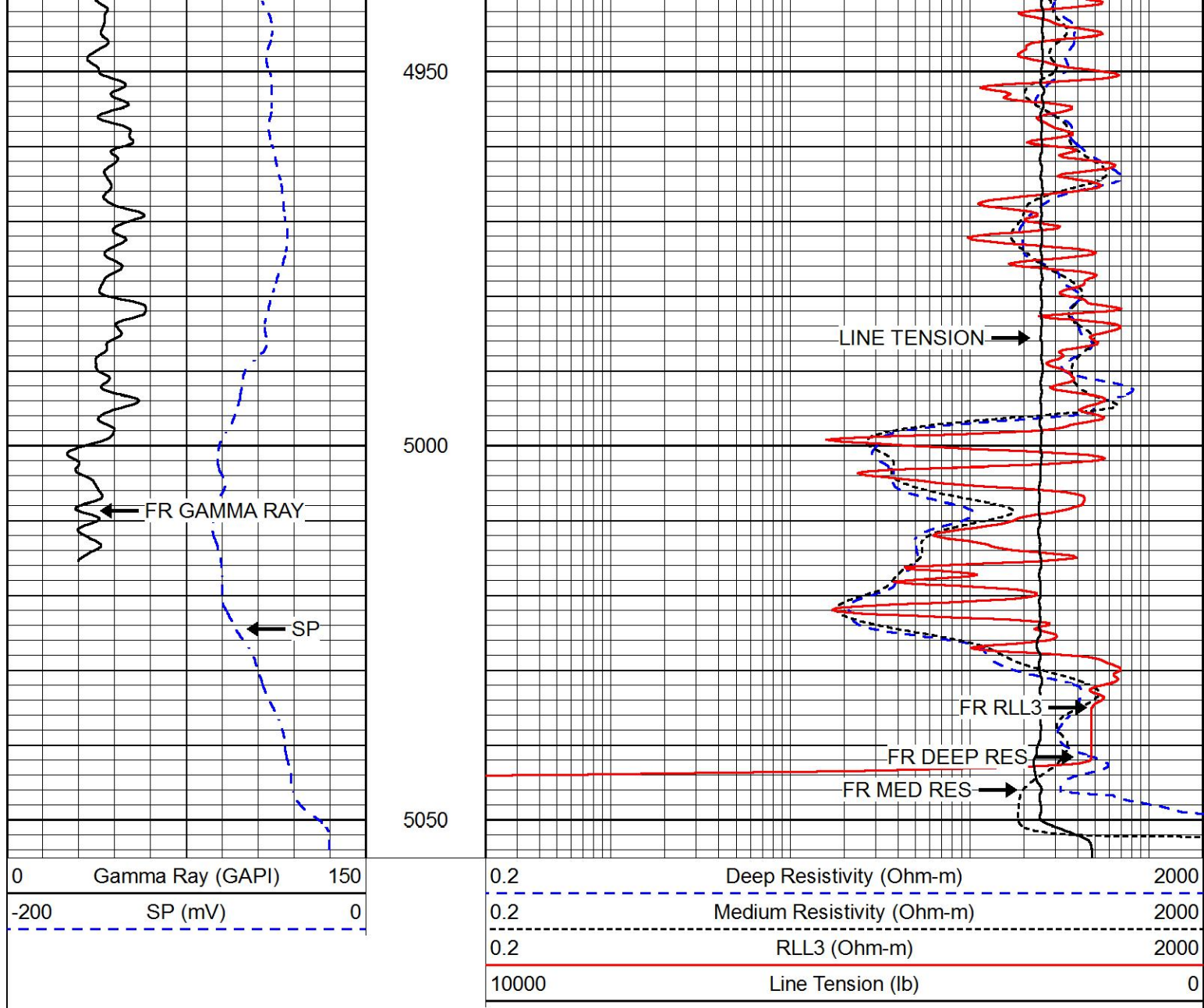
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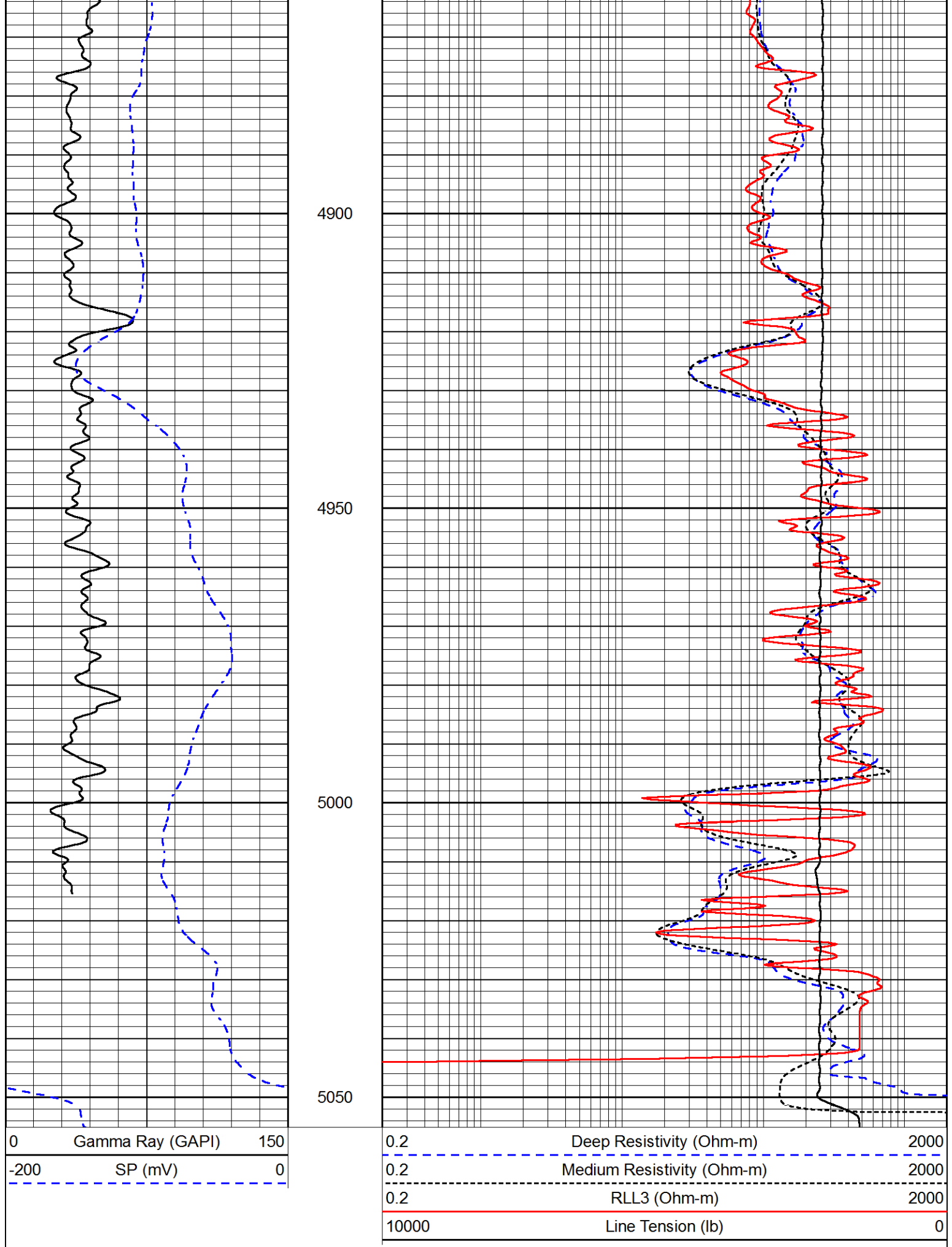
4800

4850

4900







Calibration Report

Database File americanwarrior_gano8-17.db
 Dataset Pathname STKML/pass4.1
 Dataset Creation Sun Jan 07 13:29:39 2018

Dual Induction Calibration Report

Serial-Model: PSI 91-M&W
 Calibration Performed: Wed Jan 03 10:46:51 2018

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	166.796	835.089	0.000	255.800	mmho/m	0.565	-16.000
Medium	142.009	1348.560	0.000	255.800	mmho/m	0.360	-35.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Thu Dec 14 04:11:04 2017

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	21000.0000	-1.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	27000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	100.0000	-97.3500

Compensated Density Calibration Report

Serial-Model: 90-1031-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Sat Dec 02 18:42:45 2017

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4903.44	6153.79	cps
Aluminum	2.640	g/cc	934.50	4021.31	cps
Spine Angle = 75.61			Density/Spine Ratio = 0.517		
	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: WED DEC 13 10:30:30 2017

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:	Wed Sep 06 19:51:14 2017	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.6000	GAPI/cps



Company	AMERICAN WARRIOR, INC.
Well	GANO #8-17
Field	LAKIN NORTHWEST
County	KEARNY
State	KANSAS