



DUAL INDUCTION LOG

PIONEER
Pioneer Energy Services

Company BLACK ROCK RESOURCES, LLC
Well POLIFKA #18-1
Field WILDCAT
County GOVE
State KANSAS

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Well POLIFKA #18-1
Field WILDCAT
County GOVE State KANSAS

Location: API #: 15-063-22364-00-00

505' FSL & 2070' FEL

SEC 18 TWP 13S RGE 26W

Permanent Datum GROUND LEVEL Elevation 2505'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Other Services
CNL/CDL
MEL/BHCS
Elevation
K.B. 2515'
D.F. N/A
G.L. 2505'

Date 9/10/2019

Run Number ONE

Depth Driller 4400'

Depth Logger 4402'

Bottom Logged Interval 4401'

Top Log Interval 250'

Casing Driller 8.625" @ 274'

Casing Logger 272'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 3900

Density / Viscosity 9.2 57

pH / Fluid Loss 11.5 7.2

Source of Sample FLOWLINE

Rm @ Meas. Temp 0.75 @ 74

Rmf @ Meas. Temp 0.56 @ 74

Rmc @ Meas. Temp 1.01 @ 74

Source of Rmf / Rmc CHARTS

Rm @ BHT 0.46 @ 120

Operating Rig Time 4 HOURS

Max Rec. Temp. F 120

Equipment Number P-24

Location HAYS

Recorded By IAN MABB

Witnessed By CHAD COUNTS

<<< Fold Here >>>

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.

QUINTER, KS.
SOUTH 10 MILES TO P RD,
WEST 1/2 MILE, AND NORTH INTO

Log Measured From: KELLY BUSHING 10' 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: CHAD COUNTS
Secondary Witness:
Secondary Witness:
Secondary Witness:

Top - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in 7.875	degF 120	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 0	mmho/m 0	mV 238	degF 0	Off	ft 4402

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 (1039)	18.50	3.50	220.00

CILM

4.70

SP

0.20

Dataset: black_rock_18_1.db: field/well/stackmel/pass3.1
Total length: 43.08 ft
Total weight: 685.00 lb
O.D.: 4.00 in



MAIN PASS

Database File black_rock_18_1.db
Dataset Pathname stackmel/pass4.1
Presentation Format _dil2in
Dataset Creation Tue Sep 10 10:24:17 2019
Charted by Depth in Feet scaled 1:600

GAMMA RAY

0

(GAPI)

150

1000 CONDUCTIVITY (mmho/m) 0

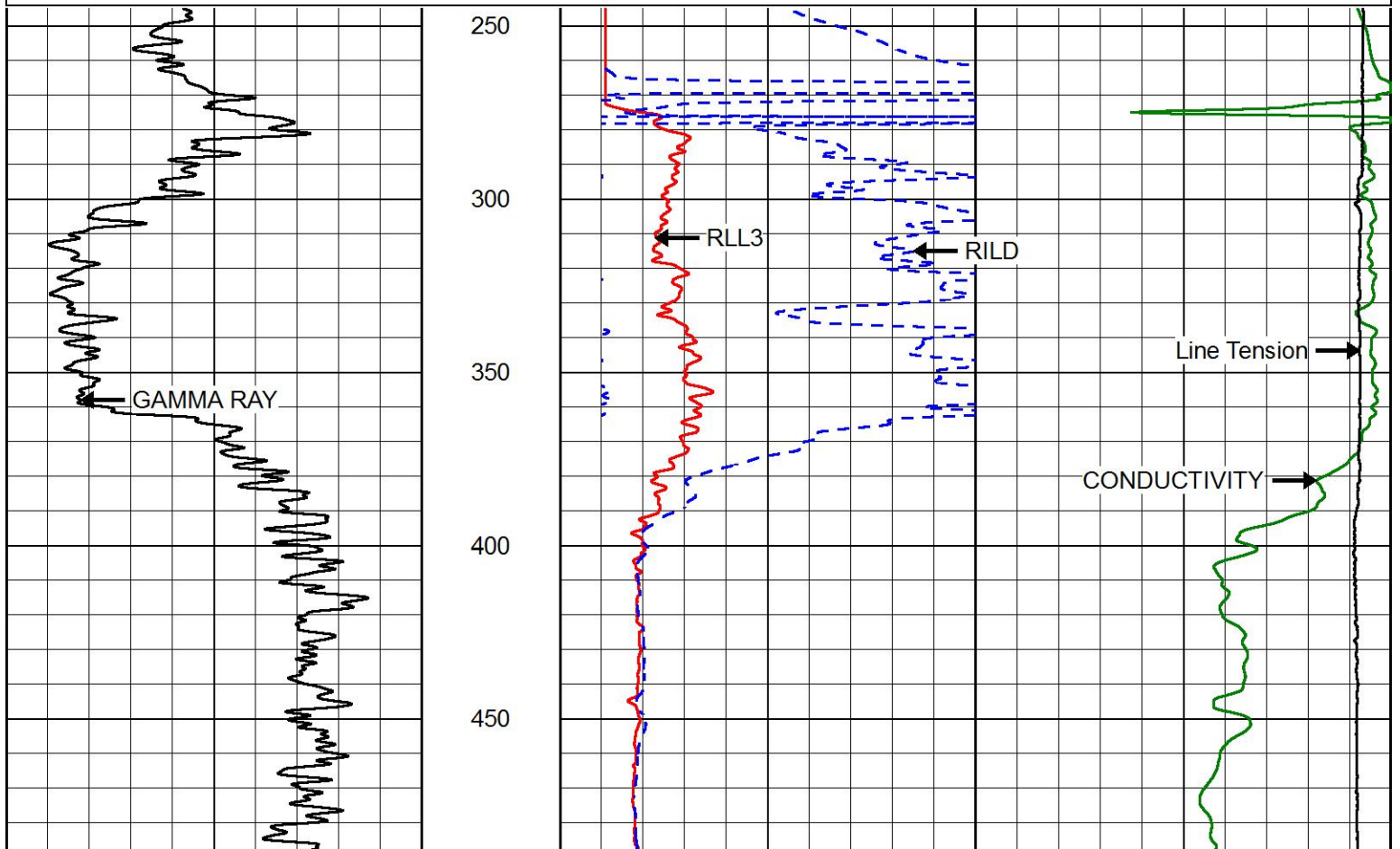
15000 Line Tension (lb) 0

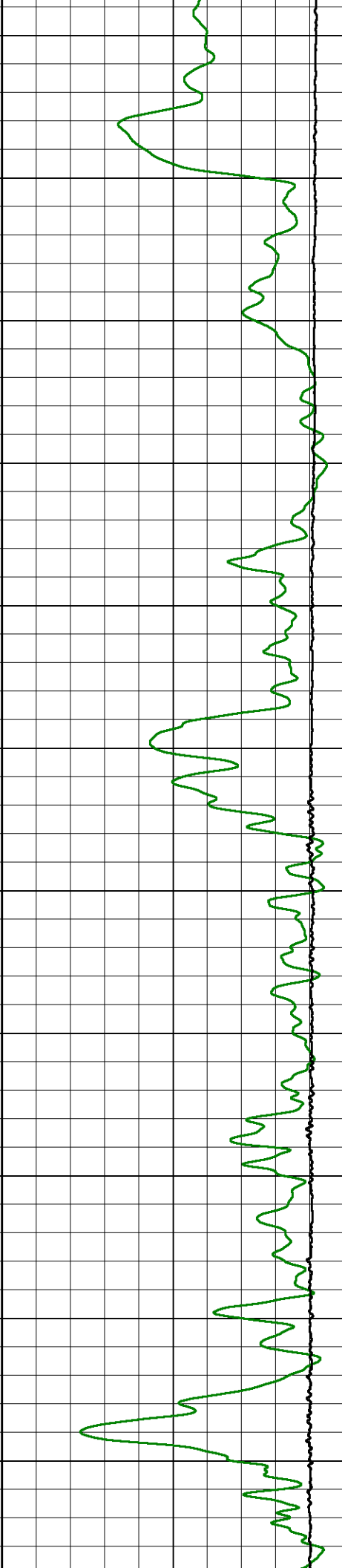
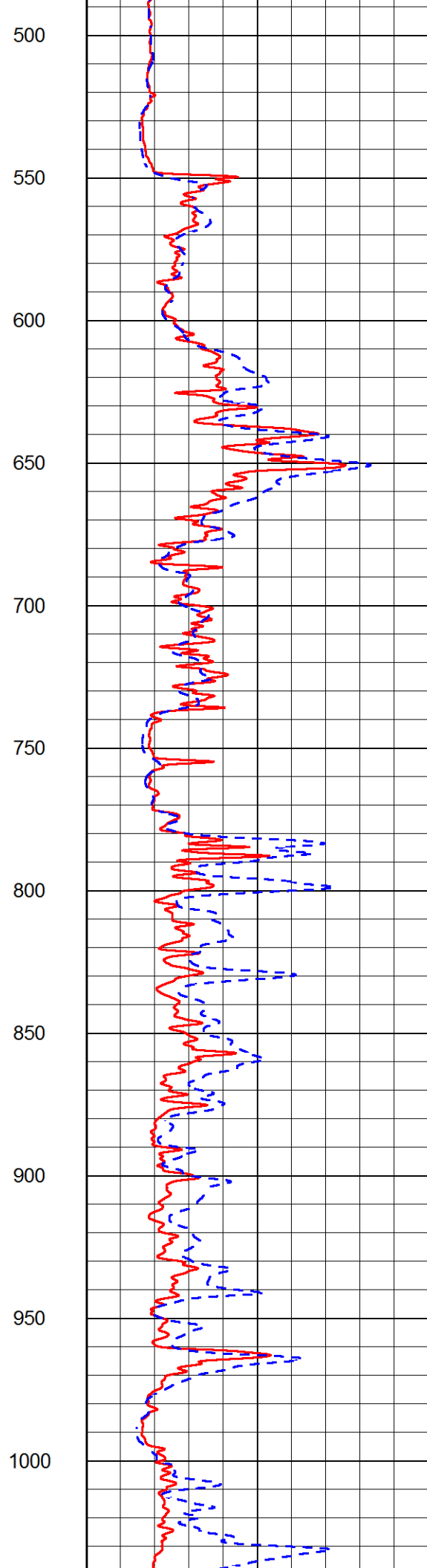
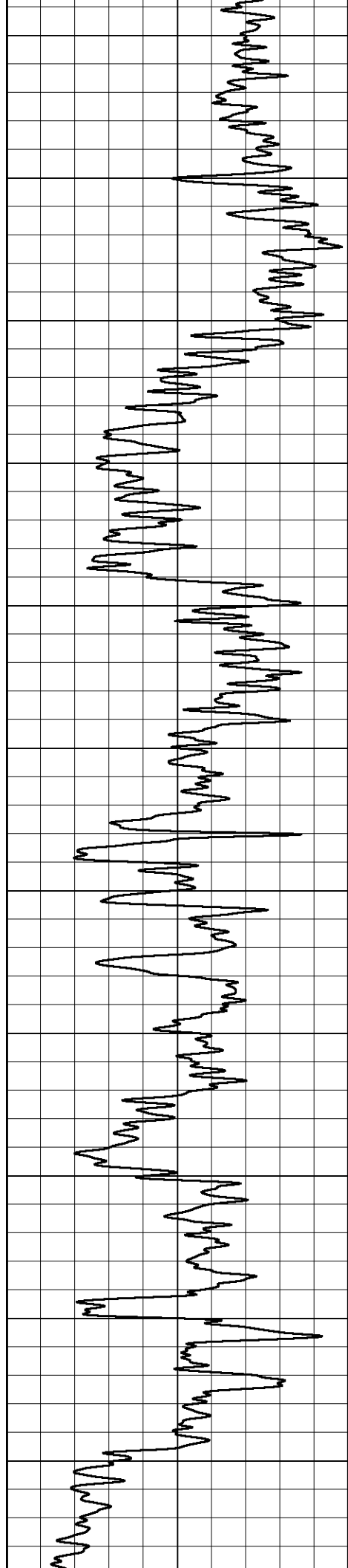
0 RLL3 (Ohm-m) 50

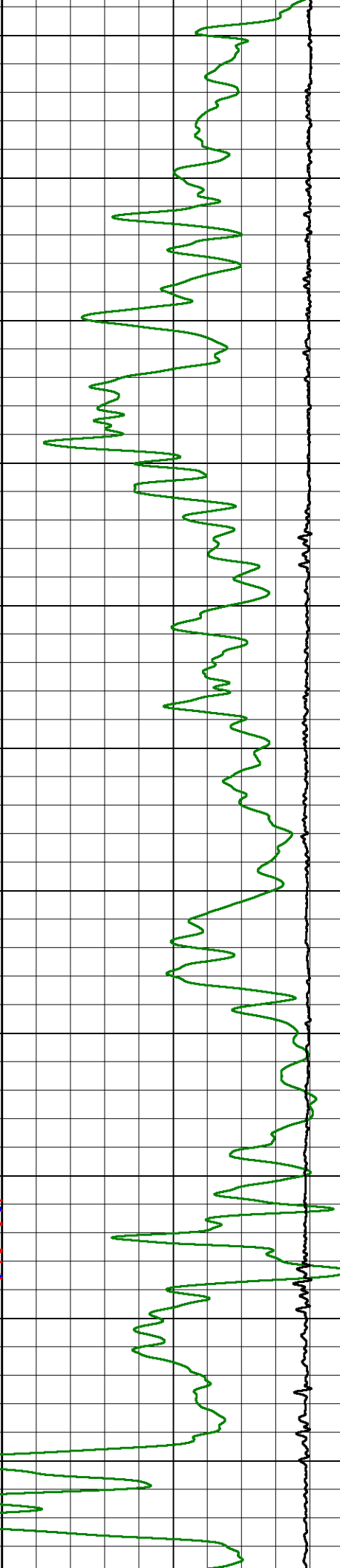
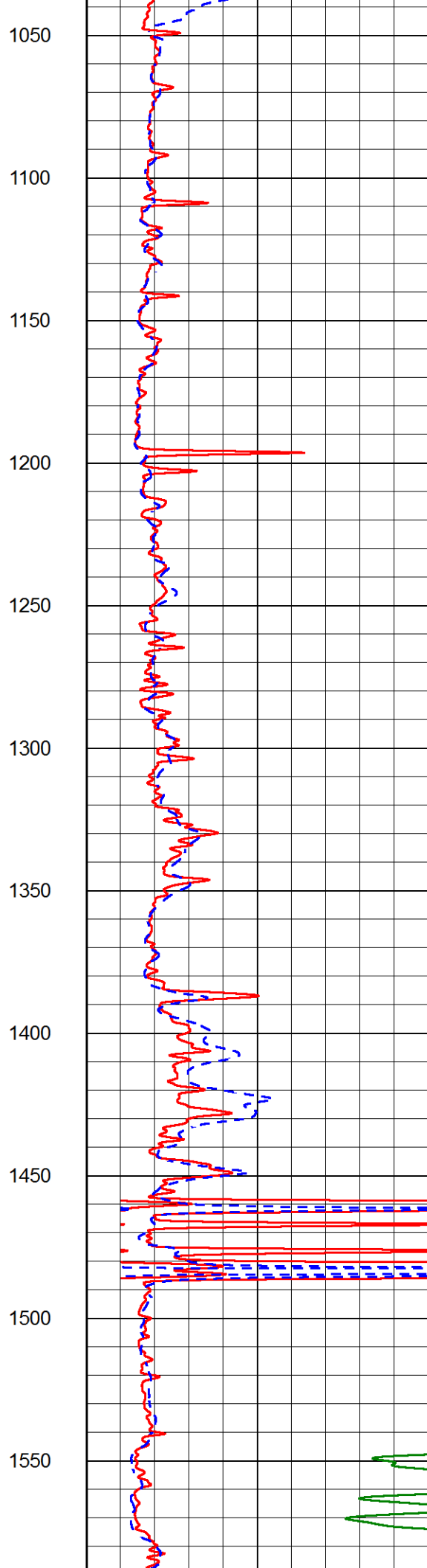
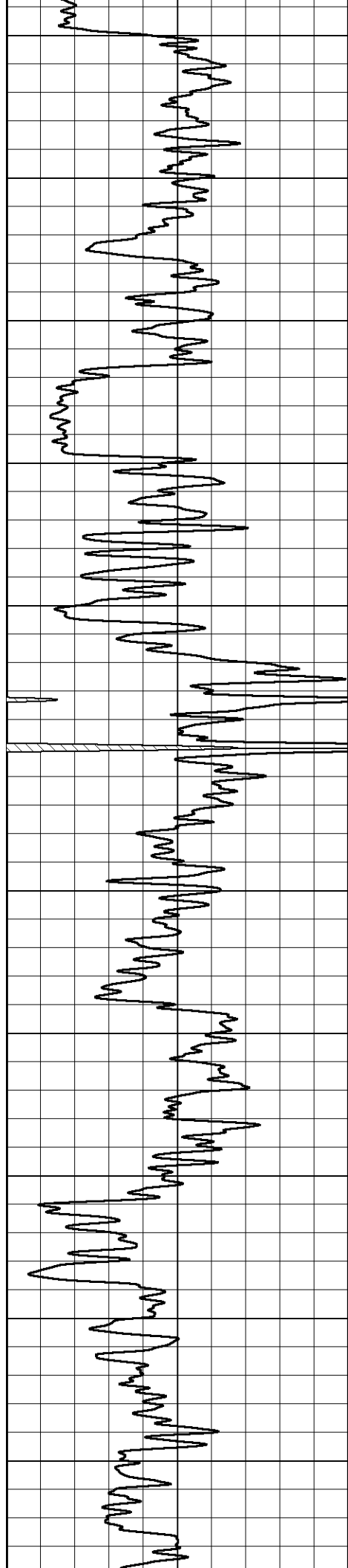
50 RLL3 (Ohm-m) 500

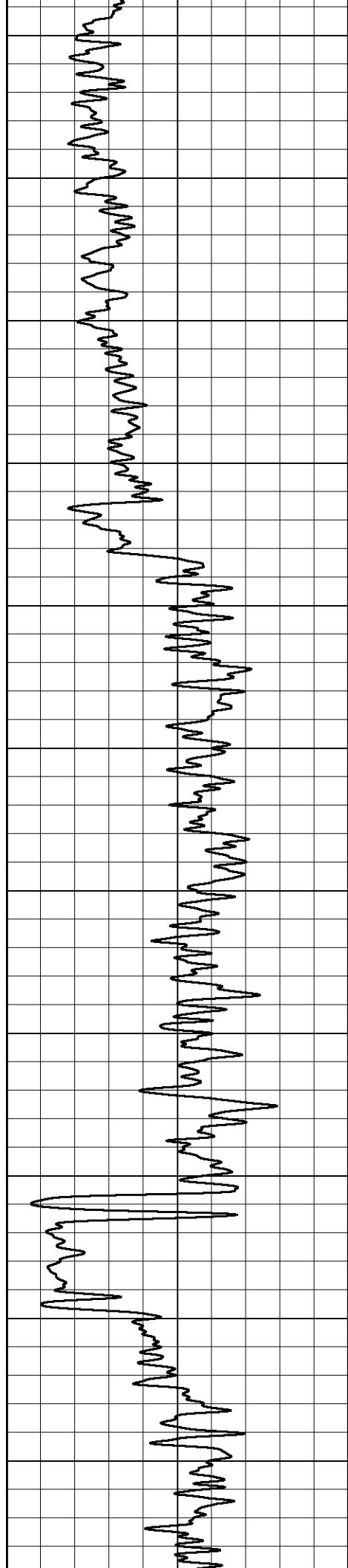
0 RILD (Ohm-m) 50

50 Deep Resistivity (Ohm-m) 500









1600

1650

1700

1750

1800

1850

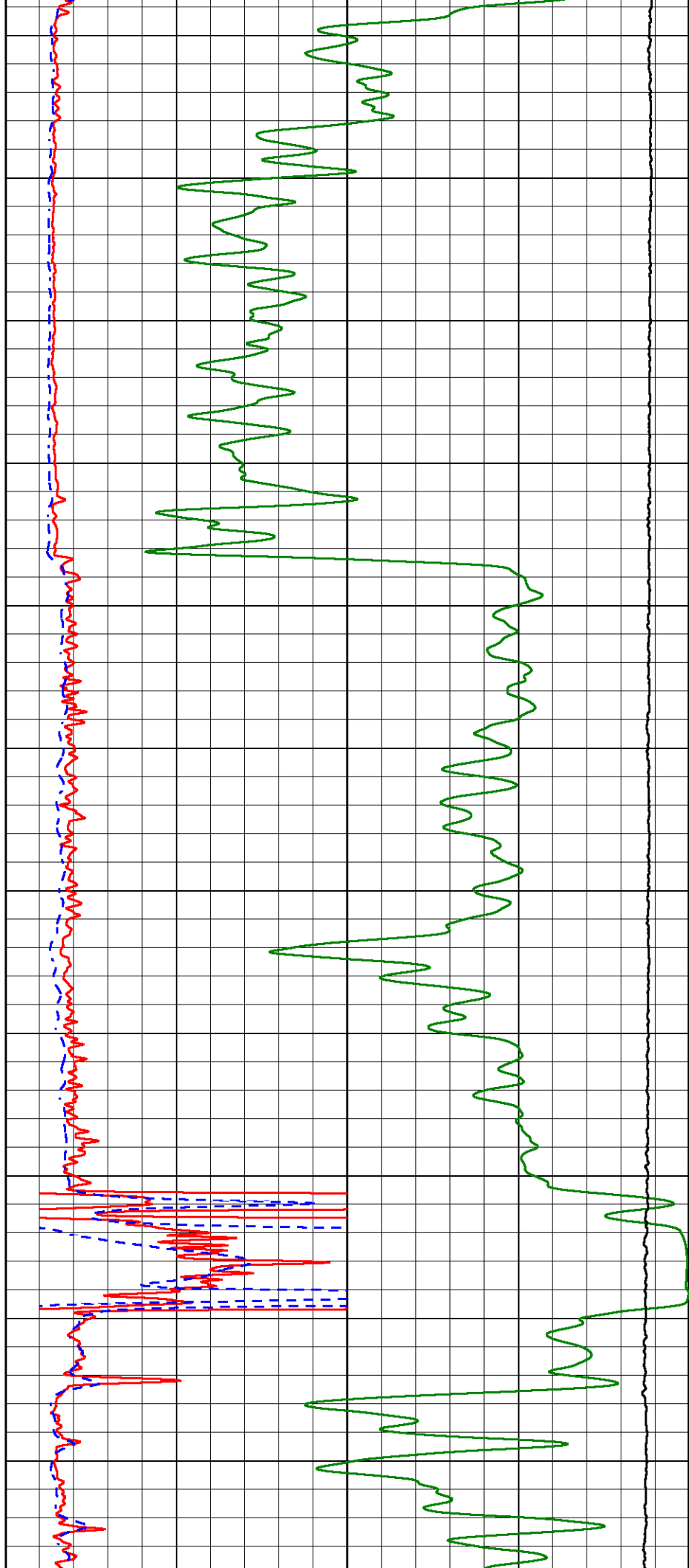
1900

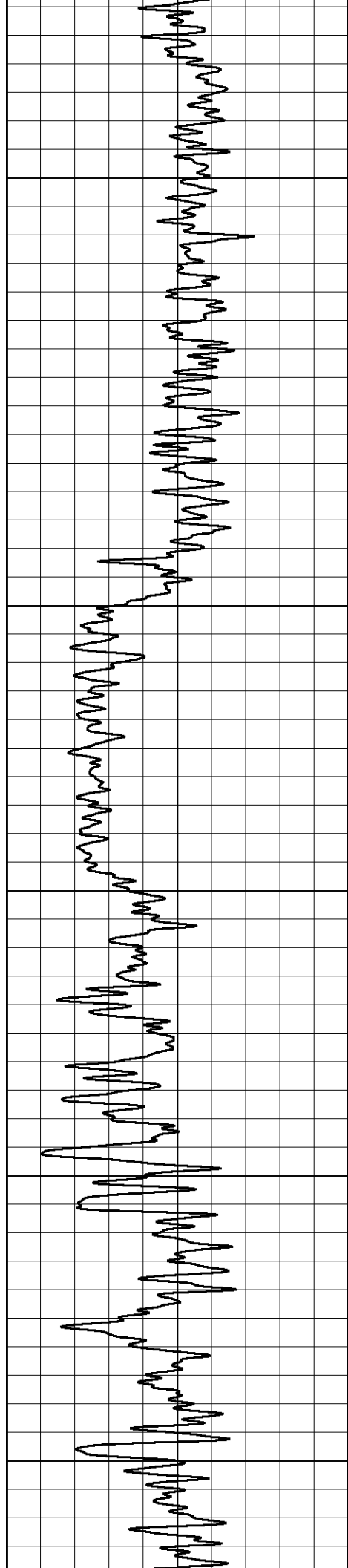
1950

2000

2050

2100





2150

2200

2250

2300

2350

2400

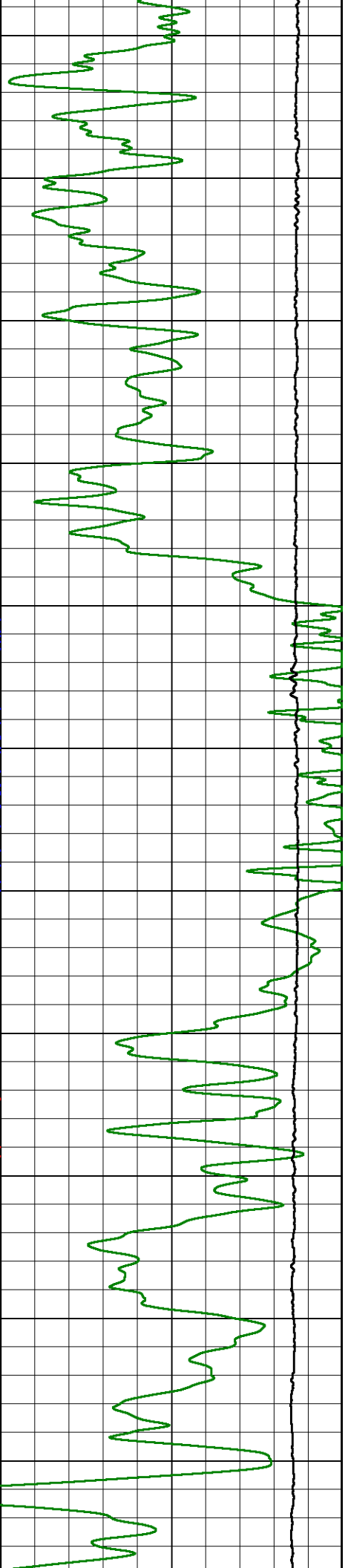
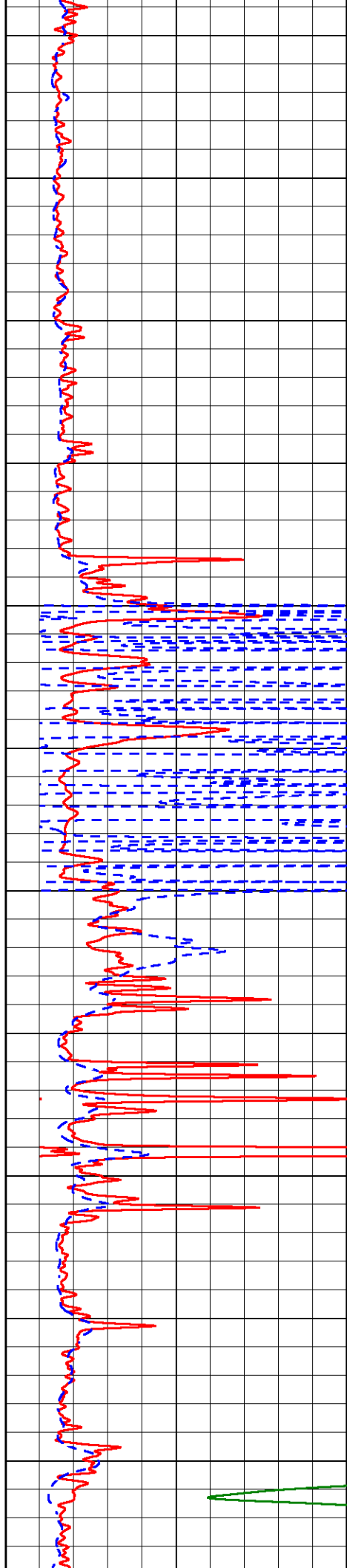
2450

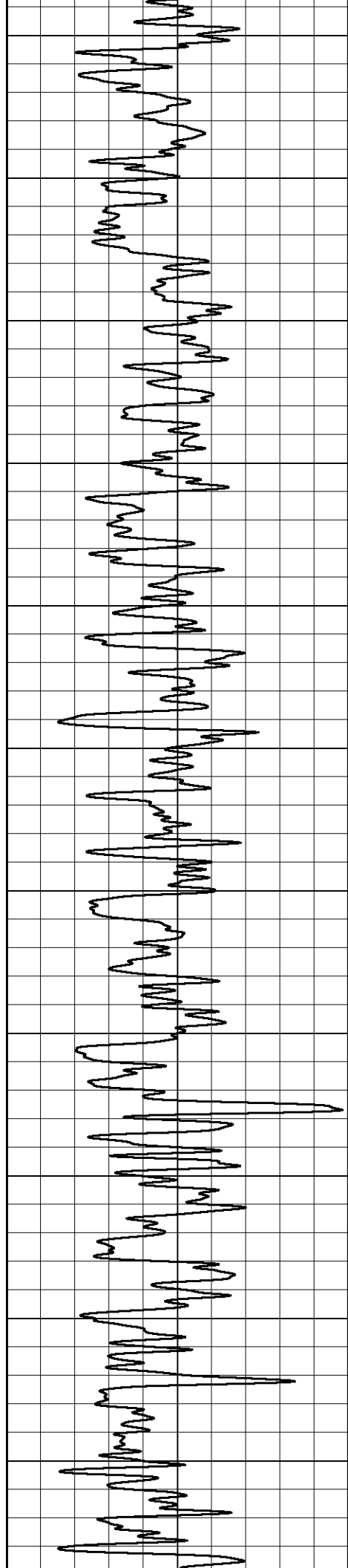
2500

2550

2600

2650





2700

2750

2800

2850

2900

2950

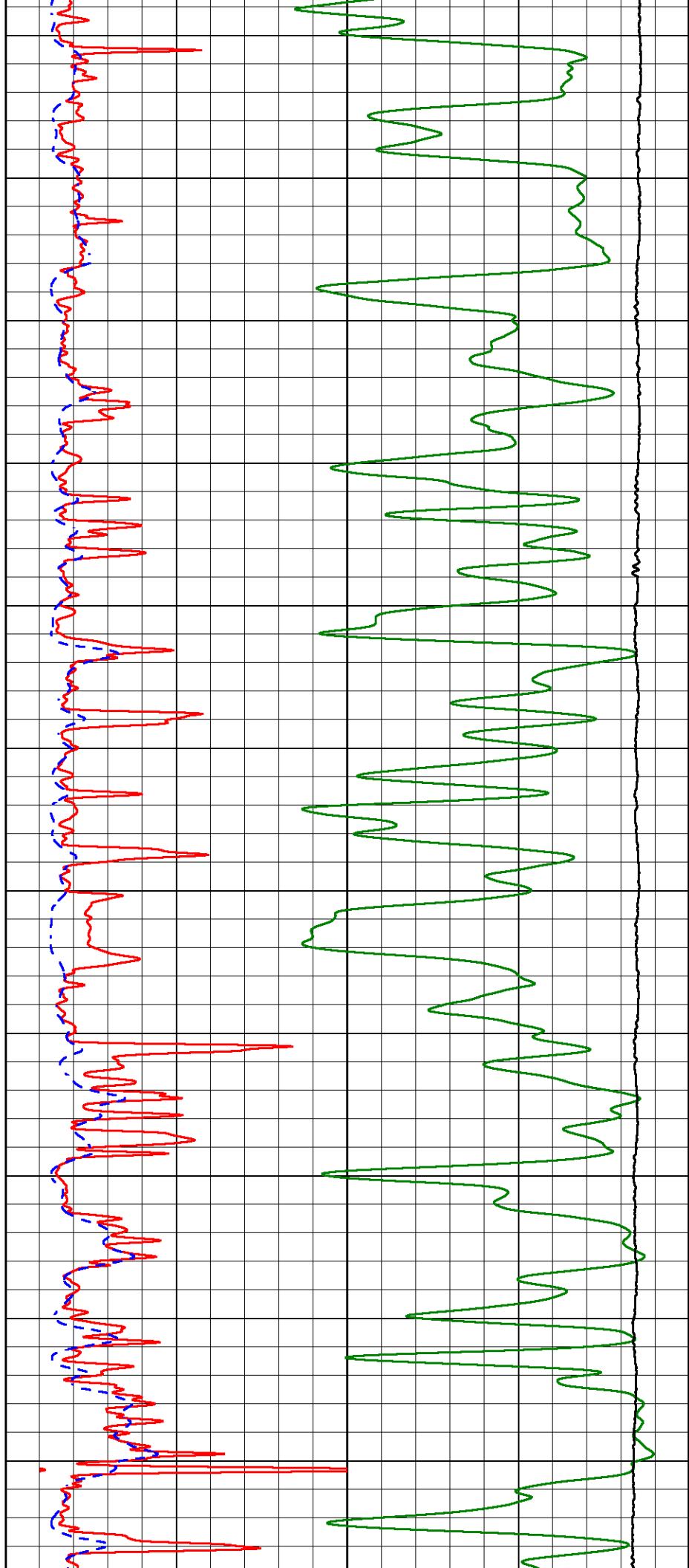
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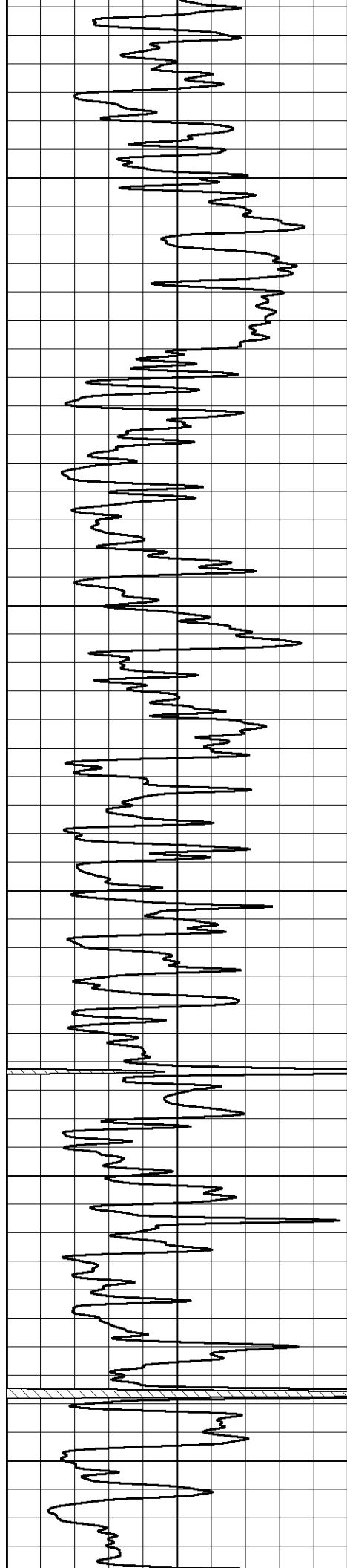
3050

3100

3150

3200





3250

3300

3350

3400

3450

3500

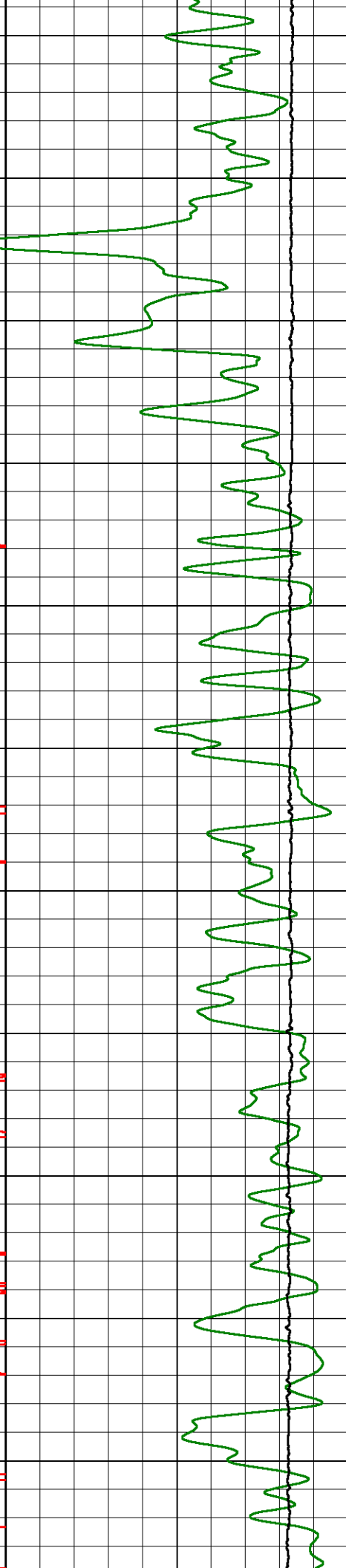
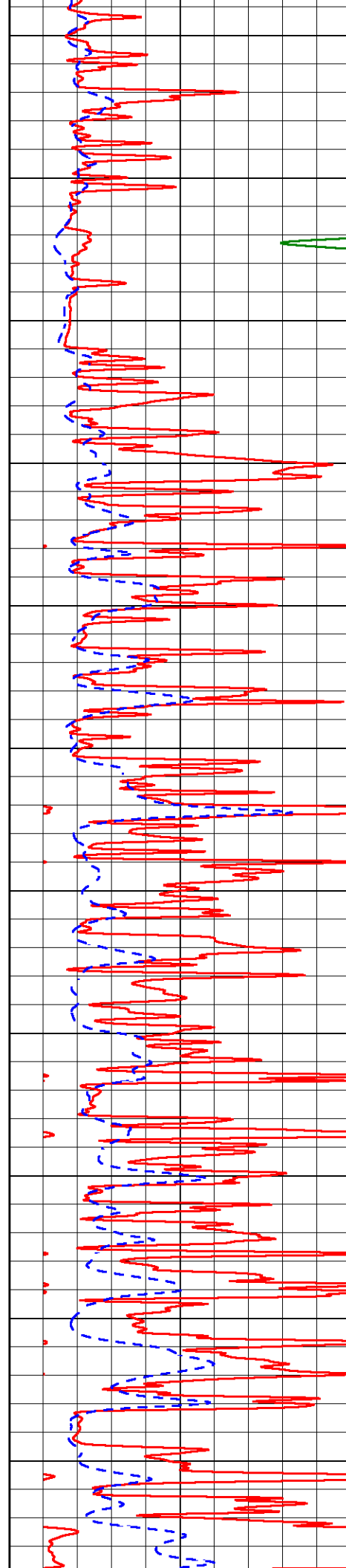
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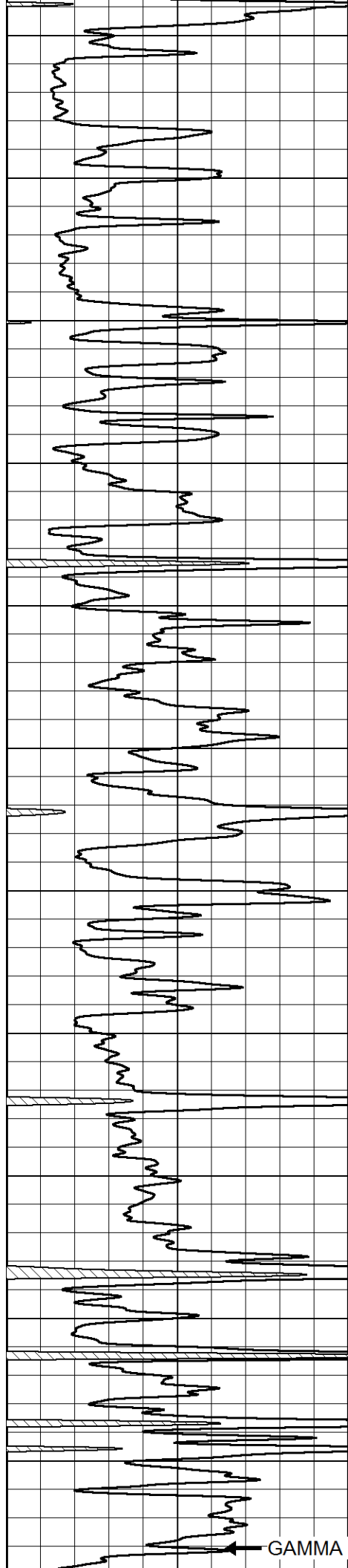
3600

3650

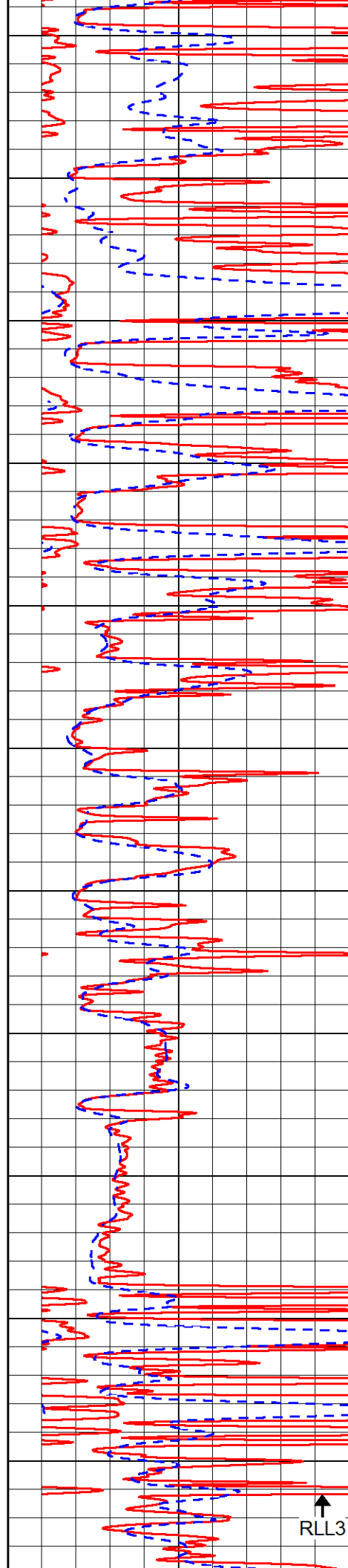
3700

3750

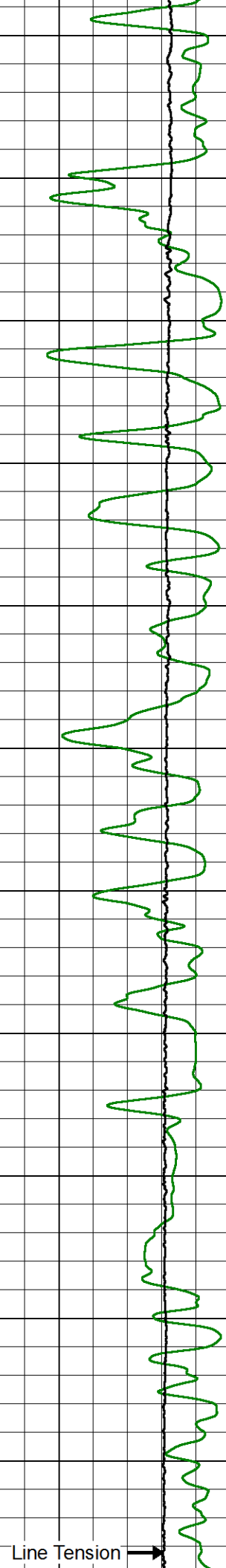




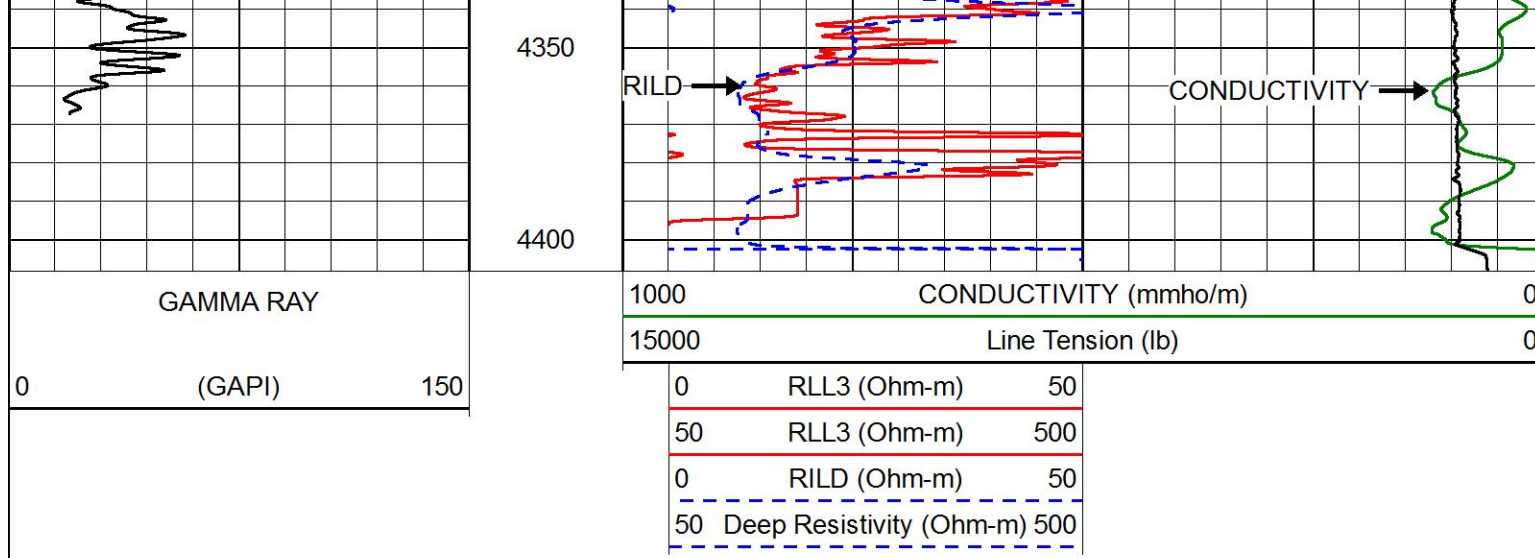
3800
3850
3900
3950
4000
4050
4100
4150
4200
4250
4300



RLL3



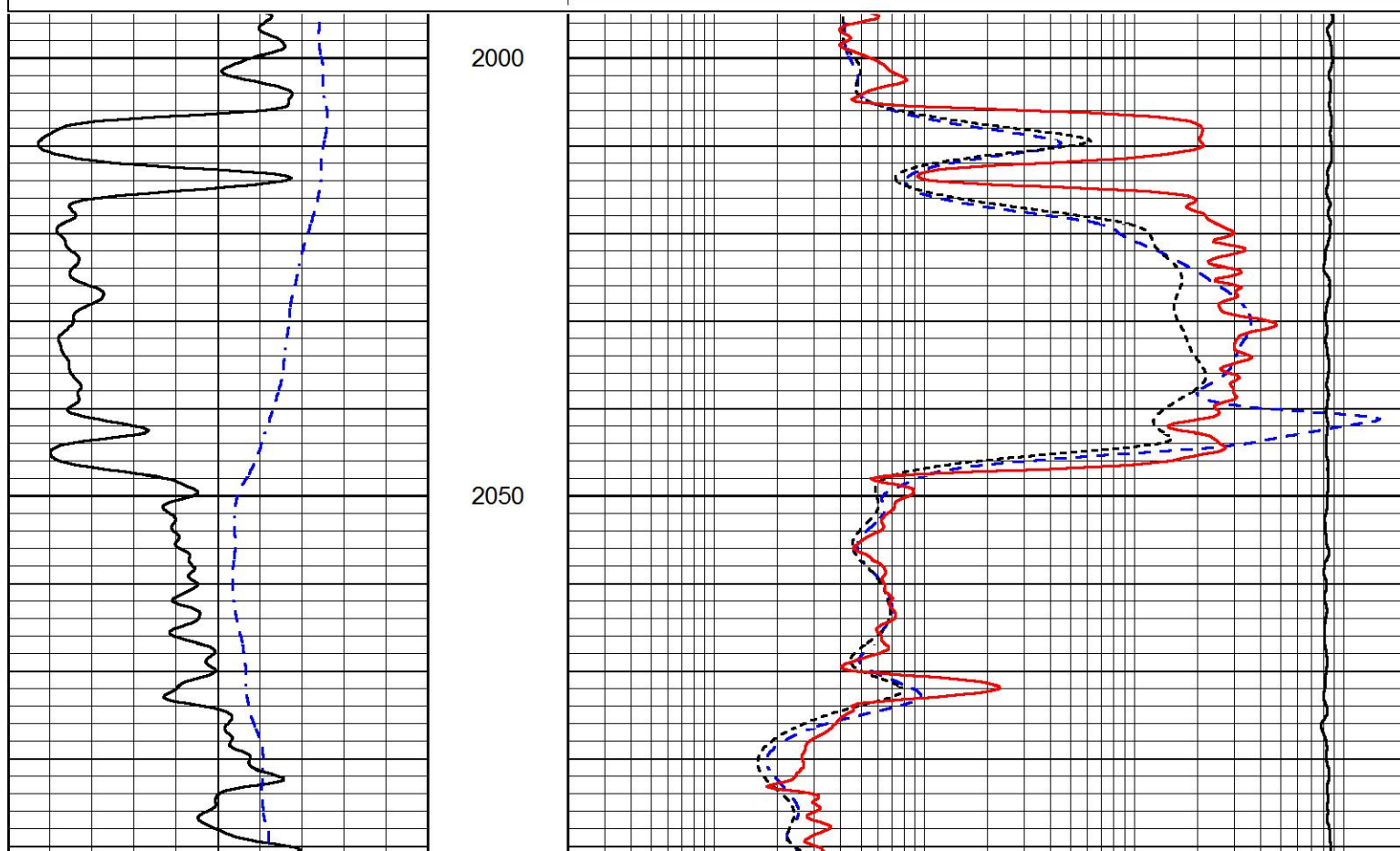
Line Tension

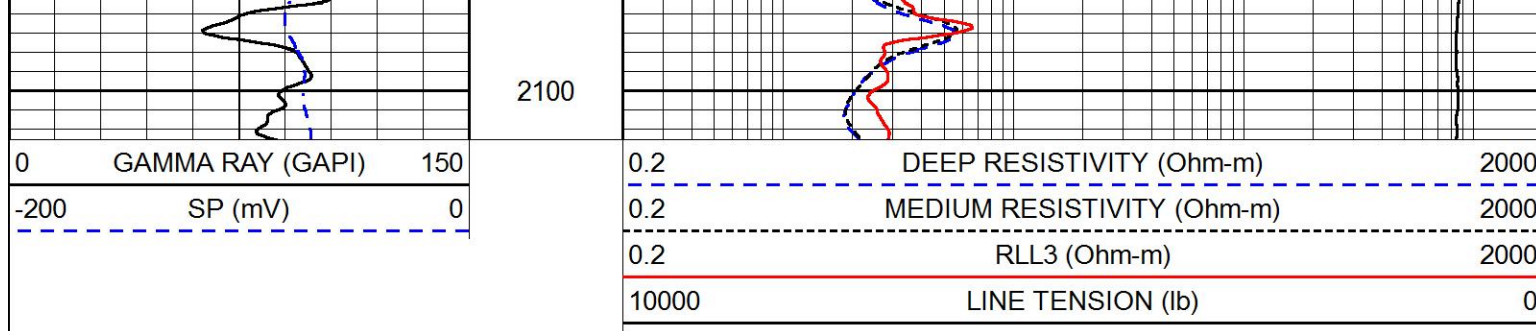


MAIN PASS

Database File	black_rock_18_1.db
Dataset Pathname	stackmel/pass4.1
Presentation Format	_dil
Dataset Creation	Tue Sep 10 10:24:17 2019
Charted by	Depth in Feet scaled 1:240

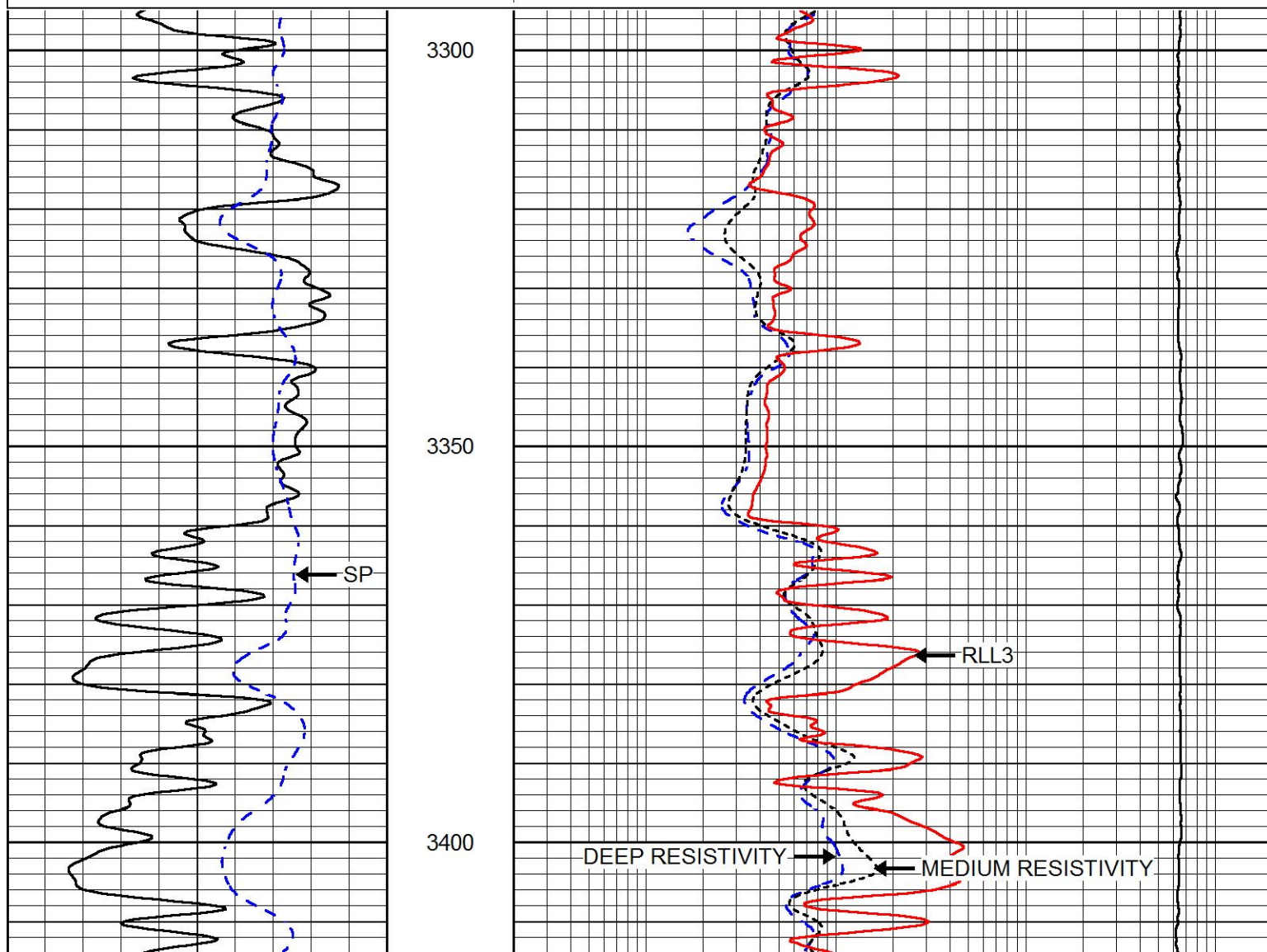
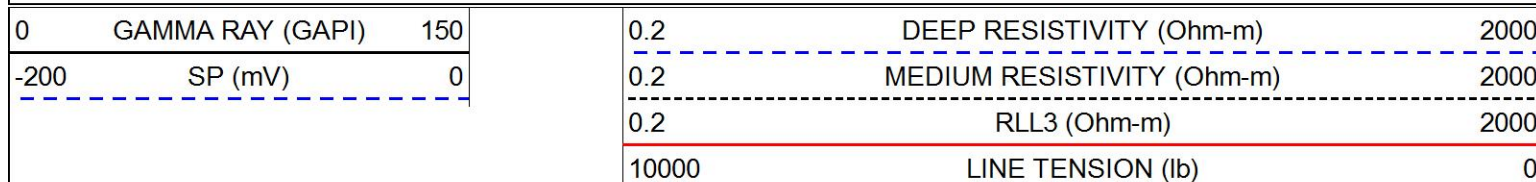
0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0

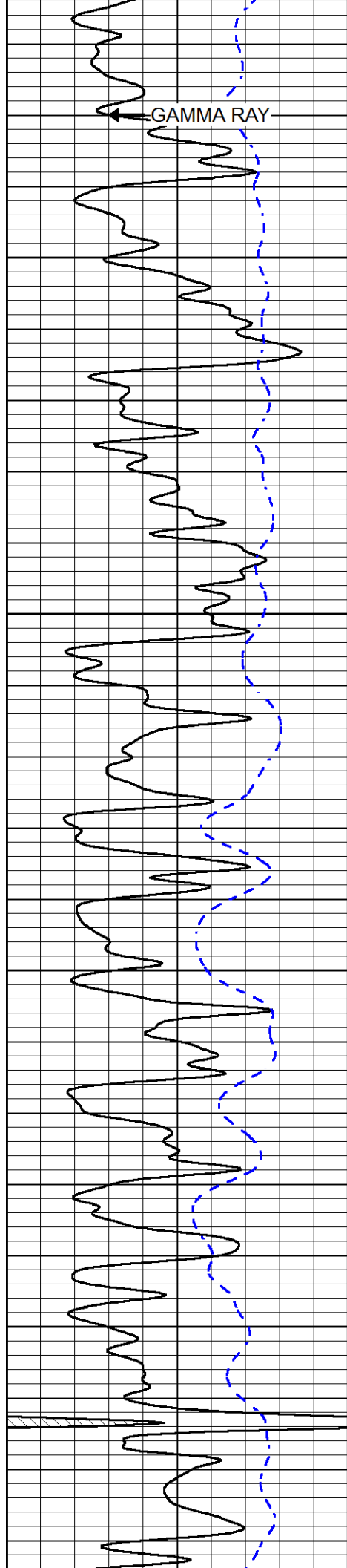




MAIN PASS

Database File black_rock_18_1.db
Dataset Pathname stackmel/pass3.1
Presentation Format _dil
Dataset Creation Tue Sep 10 09:39:03 2019
Charted by Depth in Feet scaled 1:240



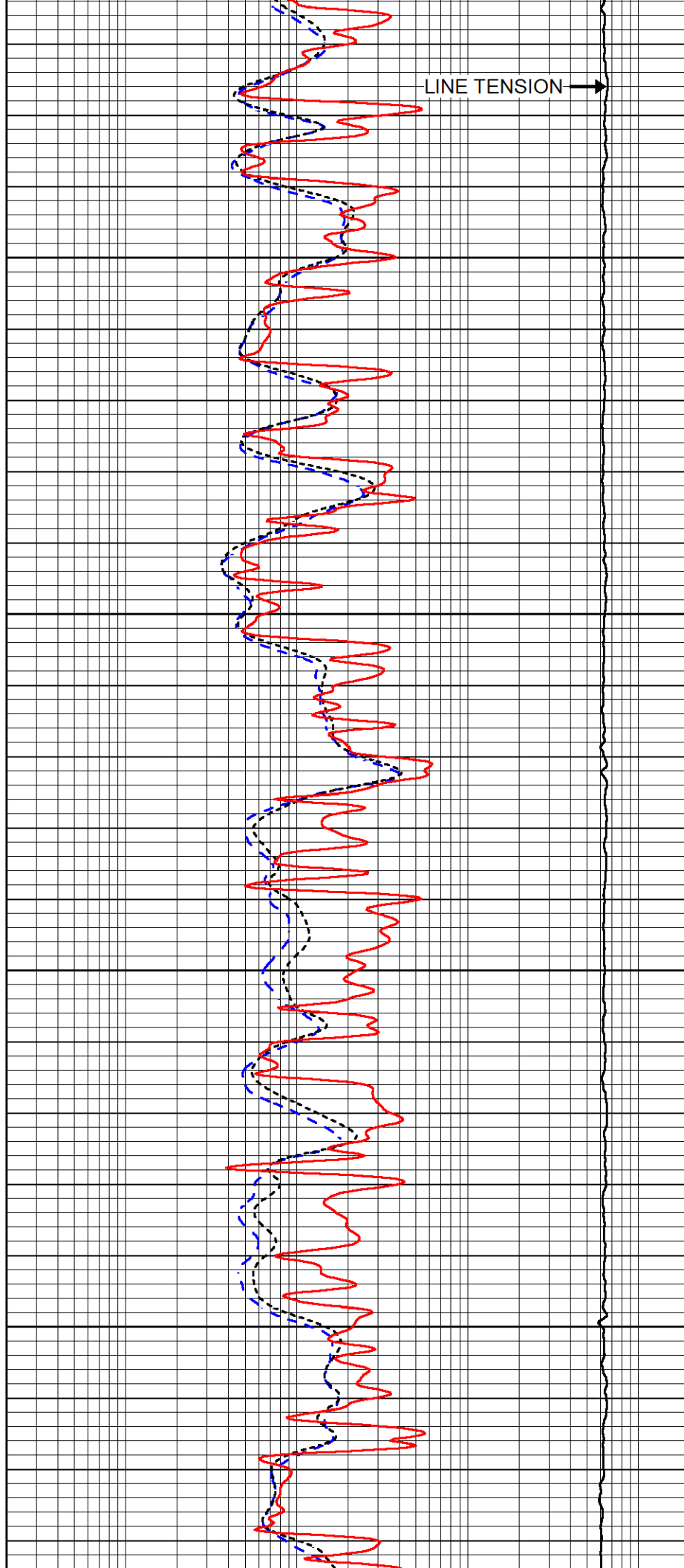


3450

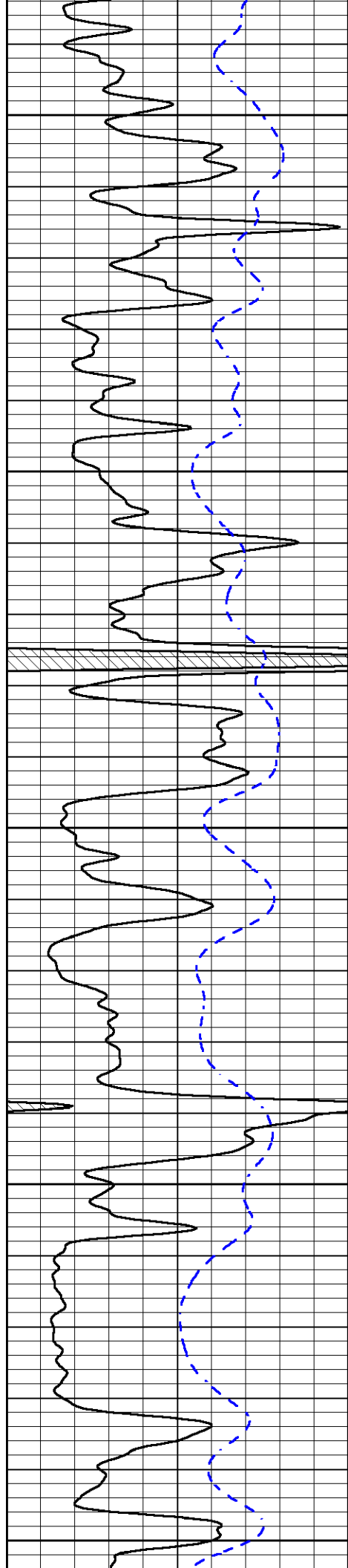
3500

3550

3600



LINE TENSION



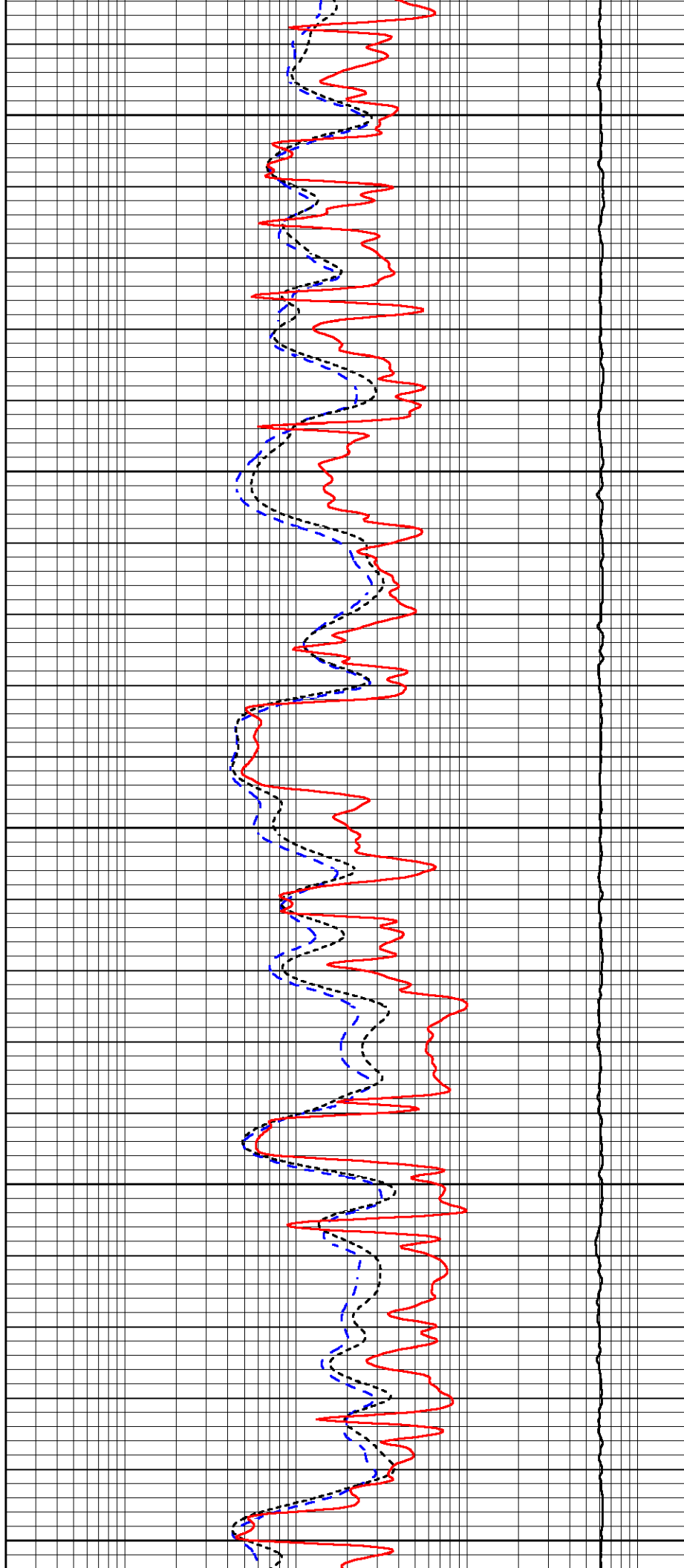
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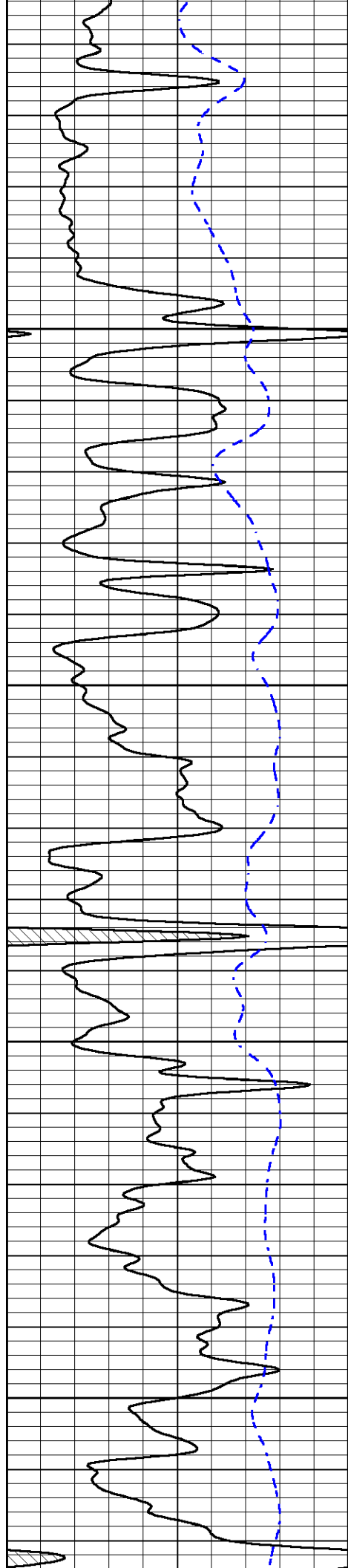
3700

3750

3800

3850



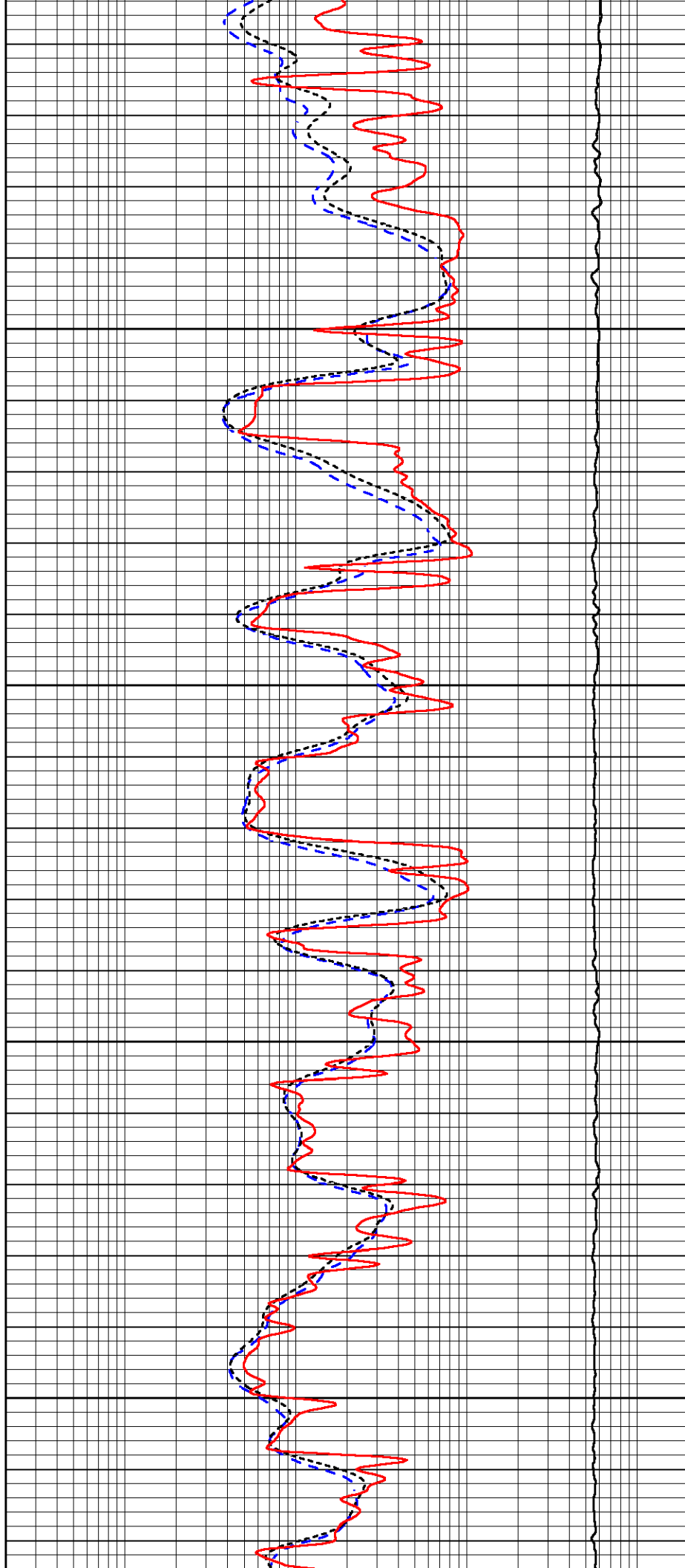


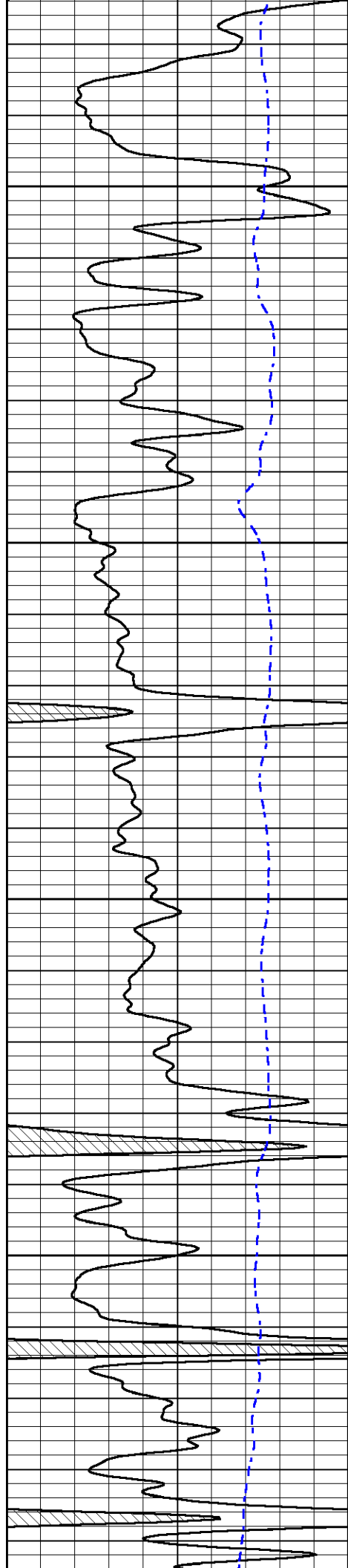
3900

3950

4000

4050



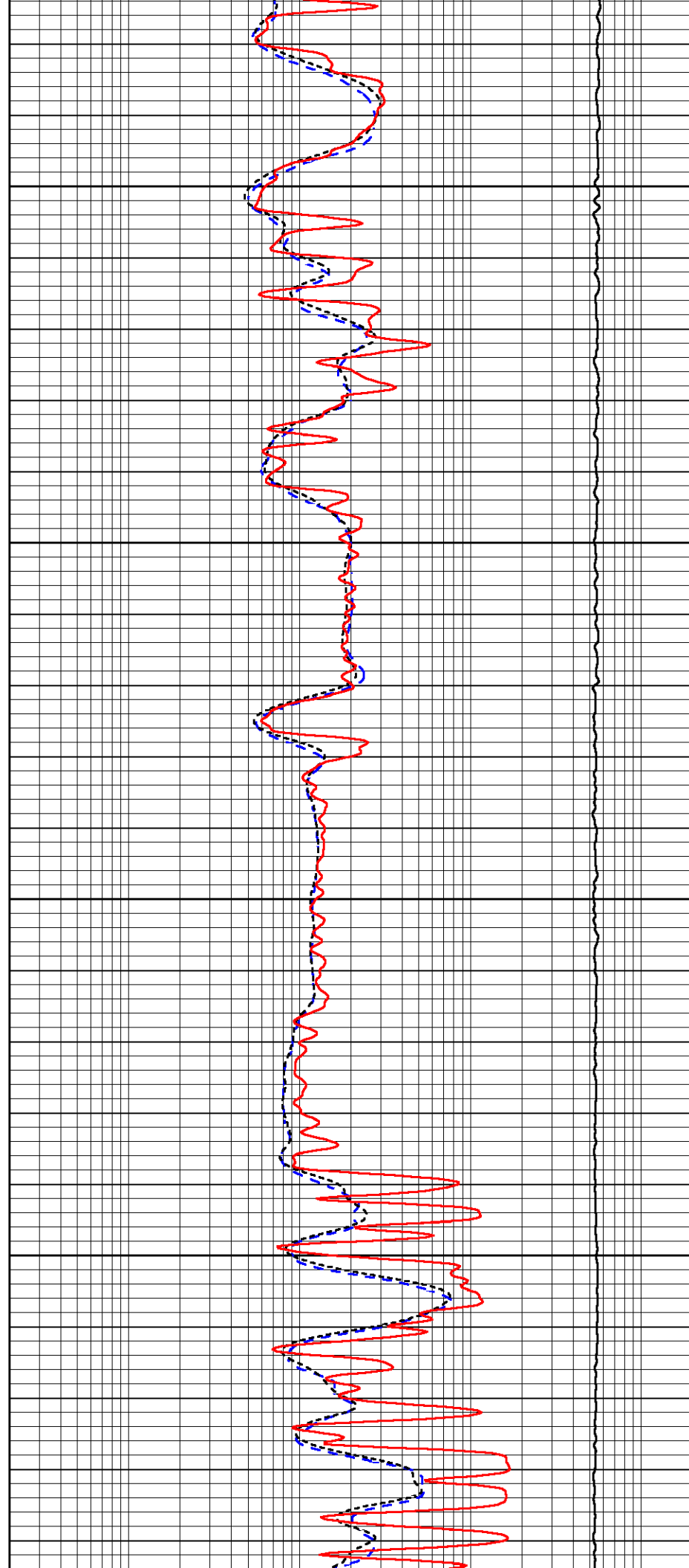


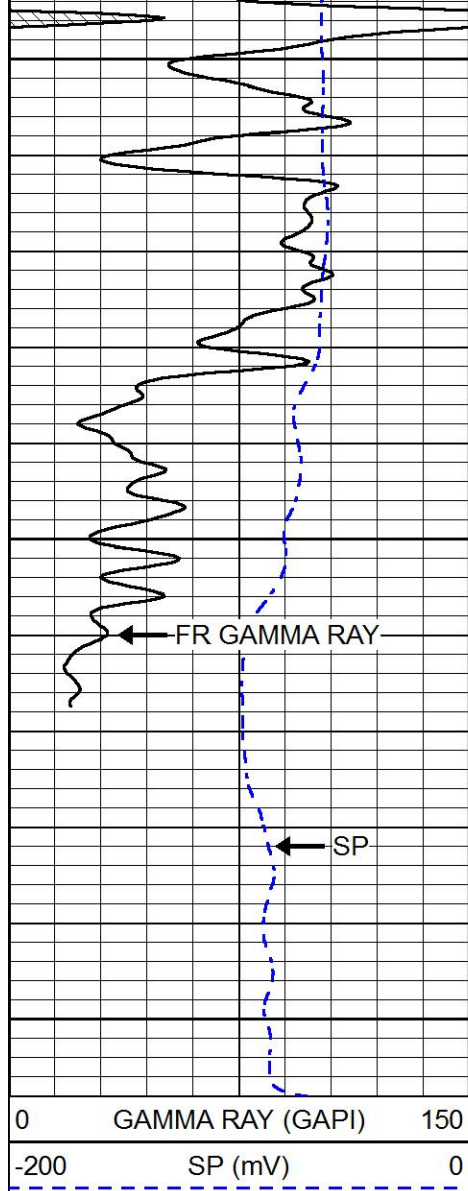
4100

4150

4200

4250

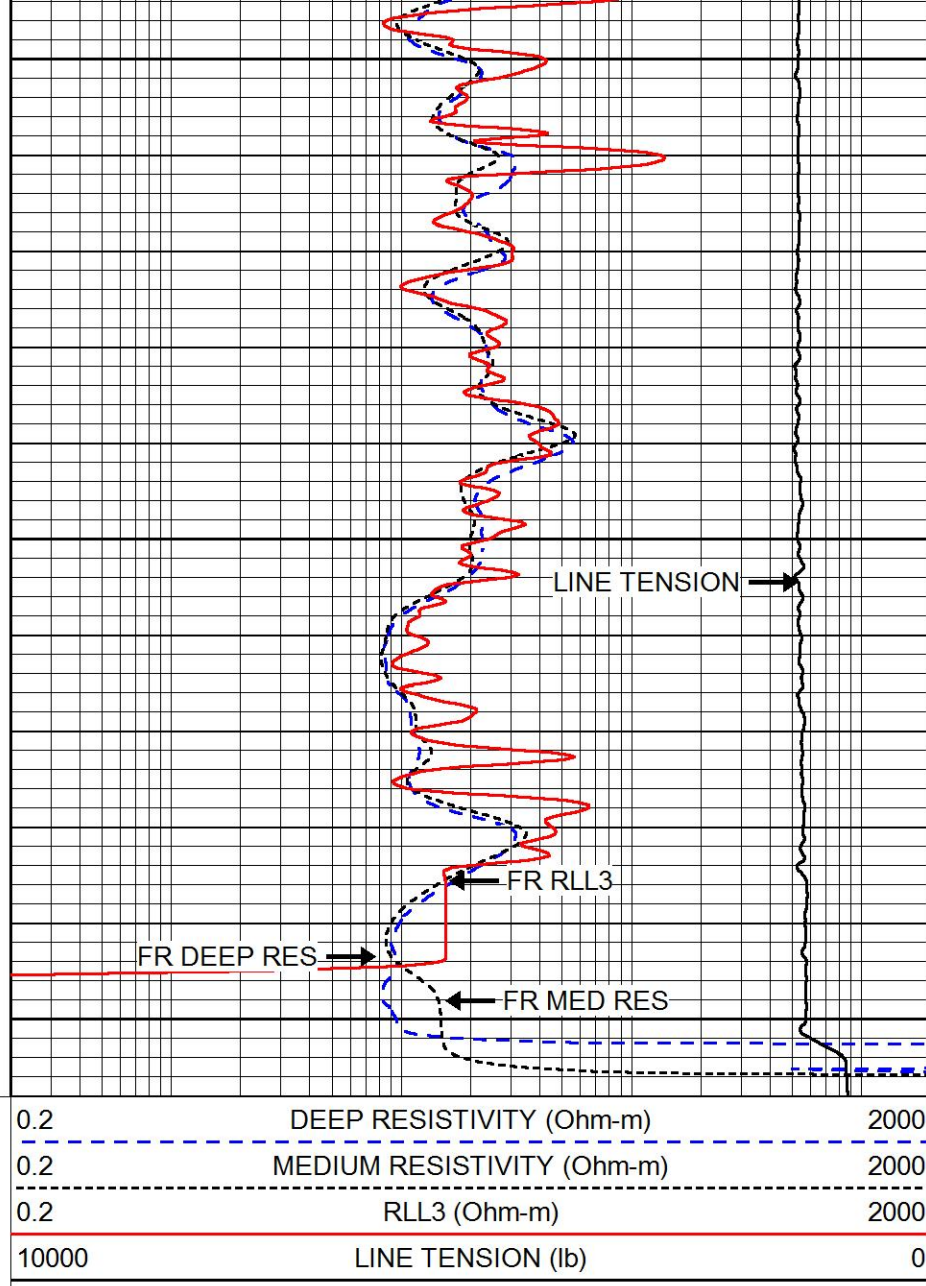




4300

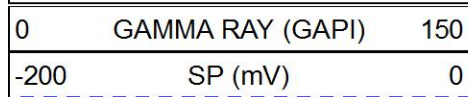
4350

4400

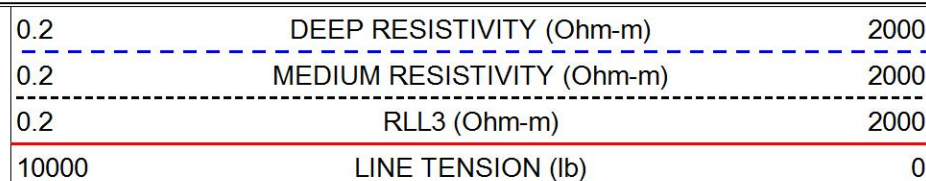


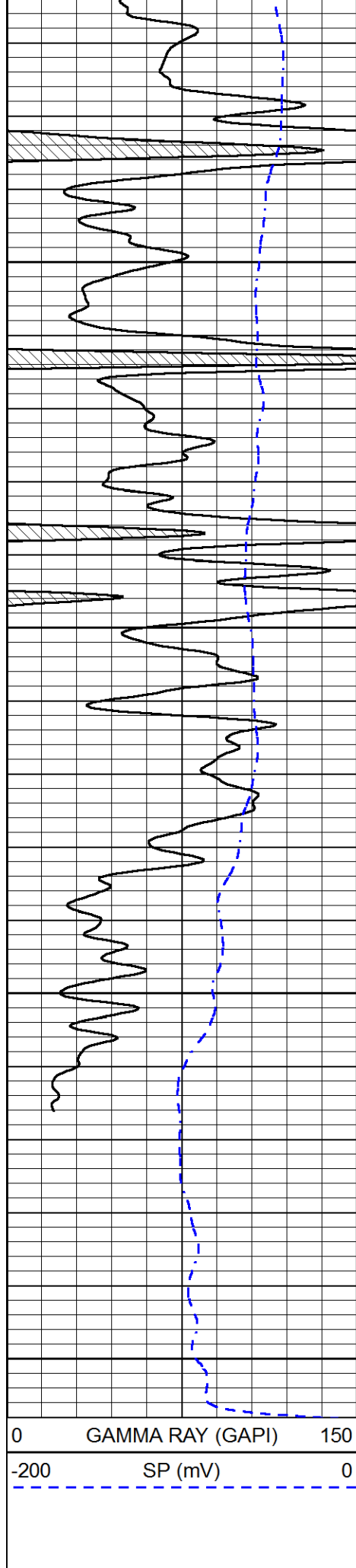
REPEAT SECTION

Database File black_rock_18_1.db
 Dataset Pathname stackmel/pass2.1
 Presentation Format _dil
 Dataset Creation Tue Sep 10 09:44:08 2019
 Charted by Depth in Feet scaled 1:240



4200



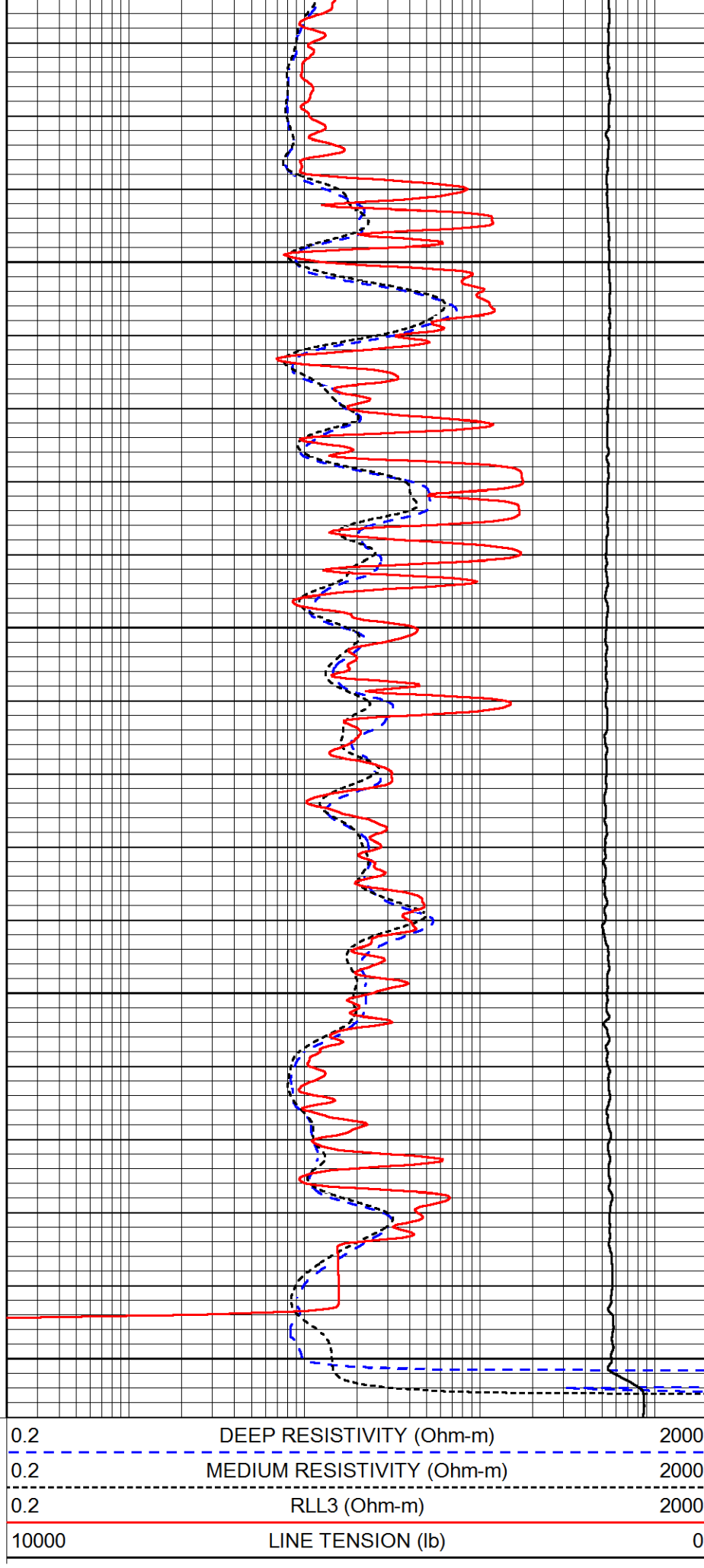


4250

4300

4350

4400



Calibration Report

Database File black_rock_18_1.db
 Dataset Pathname stackmel/pass3.1
 Dataset Creation Tue Sep 10 09:39:03 2019

Dual Induction Calibration Report

Serial-Model: 1039-PSI HIGH TEMP
 Calibration Performed: Tue Sep 10 08:34:01 2019

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.800	mmho/m	0.450	-51.000
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.365	-49.000

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	18000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-64.2000

Compensated Density Calibration Report

Serial-Model: 96-916-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Wed Mar 27 11:00:53 2019

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	8943.64	10054.60	cps
Aluminum	2.655	g/cc	1595.61	6242.82	cps
Spine Angle = 74.54			Density/Spine Ratio = 0.503		
	Size		Reading		
Small Ring	4.00	in	1.74		
Large Ring	16.00	in	1.38		

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	BLACK ROCK RESOURCES, LLC
Well	POLIFKA #18-1
Field	WILDCAT
County	GOVE
State	KANSAS