



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company AMERICAN WARRIOR, INC.
Well HUBIN NO. 1-10
Field LIPPOLDT WEST
County HODGEMAN
State KANSAS

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Well HUBIN NO. 1-10
Field LIPPOLDT WEST
County HODGEMAN State KANSAS

Location: API #: 15-083-21952-00-00

Other Services

SEC 10 TWP 23S RGE 23W
1394' FSL & 2240' FWL

Permanent Datum GROUND LEVEL Elevation 2344'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 2355'
D.F. N/A
G.L. 2344'

Date	7/18/2018		
Run Number	ONE		
Depth Driller	4720'		
Depth Logger	4719'		
Bottom Logged Interval	4718'		
Top Log Interval	250'		
Casing Driller	8.625" @ 265'		
Casing Logger	264'		
Bit Size	7.875"		
Type Fluid in Hole	CHEMICAL		
Salinity, ppm CL	6300		
Density / Viscosity	9.35 60		
pH / Fluid Loss	9.5 10.0		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	.65 @ 89		
Rmt @ Meas. Temp	.49 @ 89		
Rmc @ Meas. Temp	.88 @ 89		
Source of Rmt / Rmc	CHARTS		
Rm @ BHT	.47 @ 123		
Operating Rig Time	4 HOURS		
Max Rec. Temp. F	123 DEGF		
Equipment Number	108		
Location	HAYS		
Recorded By	J. HENRICKSON		
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.

JETMORE KANSAS

EAST TO 224 ROAD, SOUTH TO K ROAD, 2 1/4 WEST
NORTH 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: J. HENRICKSON

Operator:

Operator:

Operator:

This Log Record Was Witnessed By

Primary Witness: LUKE THOMPSON

Secondary Witness:

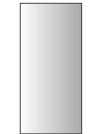
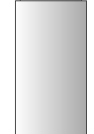
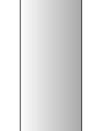
Secondary Witness:

Secondary Witness:

DatabaseC:\ProgramData\Warrior\Data\american_warrior_hubin_1_10.db
Dataset field/well/stackml/pass3.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	123	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	0	-5	47	91	Off	4719

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (979-229)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSI STKBL ML (PSI-01) Stackable Microlog Tools	7.58	4.00	65.00
RLL3 RLL3F	15.80 15.79		DIL-M&W (1987)	18.50	3.50	220.00
CILD	8.00					

CILM

4.70

SP

0.20

Dataset: american_warrior_hubin_1_10.db: field/well/stackml/pass3.1
Total length: 43.08 ft
Total weight: 685.00 lb
O.D.: 4.00 in



MAIN PASS

Database File american_warrior_hubin_1_10.db
Dataset Pathname stackml/pass3.1
Presentation Format dil2in
Dataset Creation Wed Jul 18 14:33:26 2018
Charted by Depth in Feet scaled 1:600

0 GAMMA RAY (GAPI) 150

2000 CONDUCTIVITY (mmho/m) 0

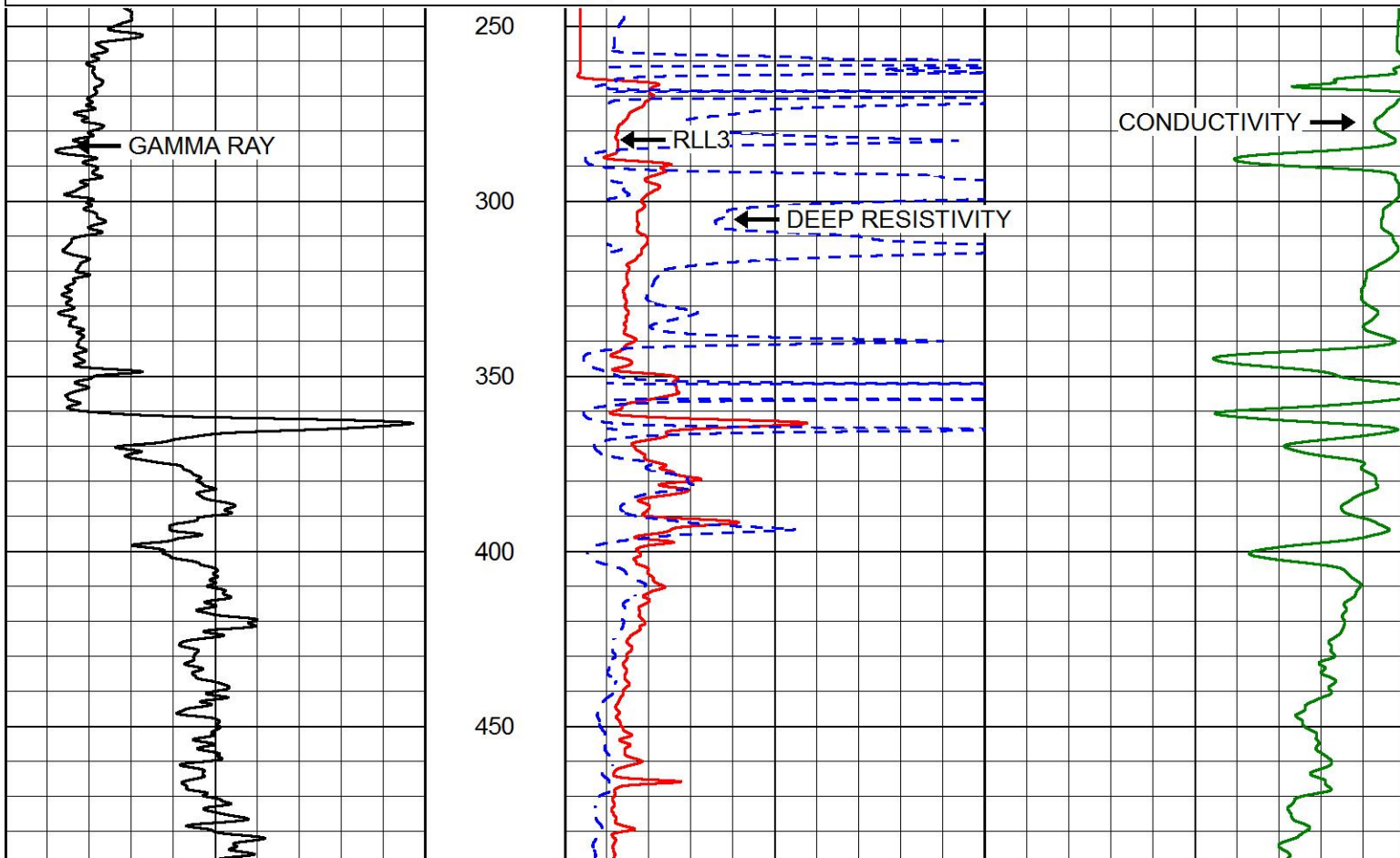
0 RLL3 (Ohm-m) 50

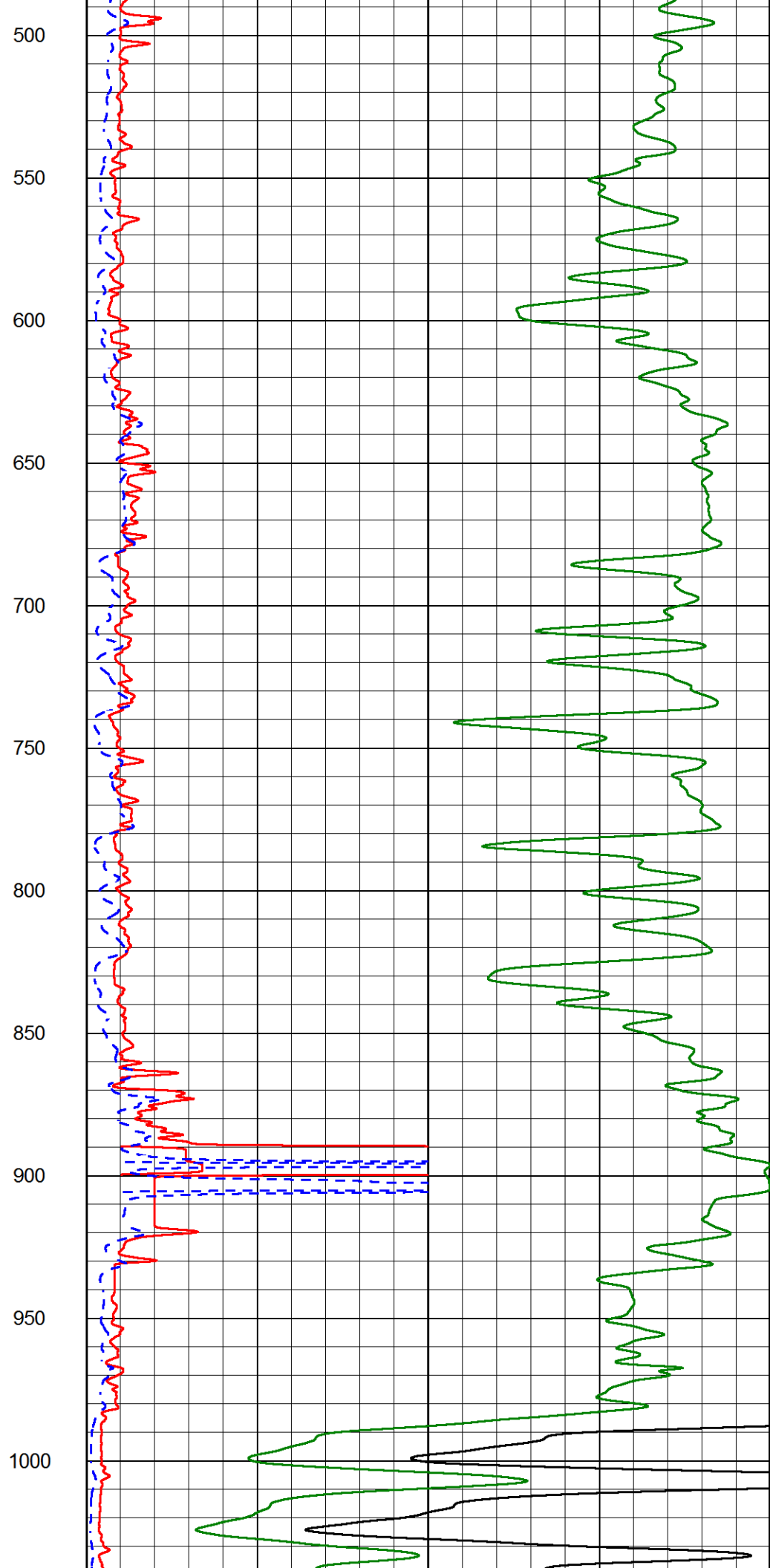
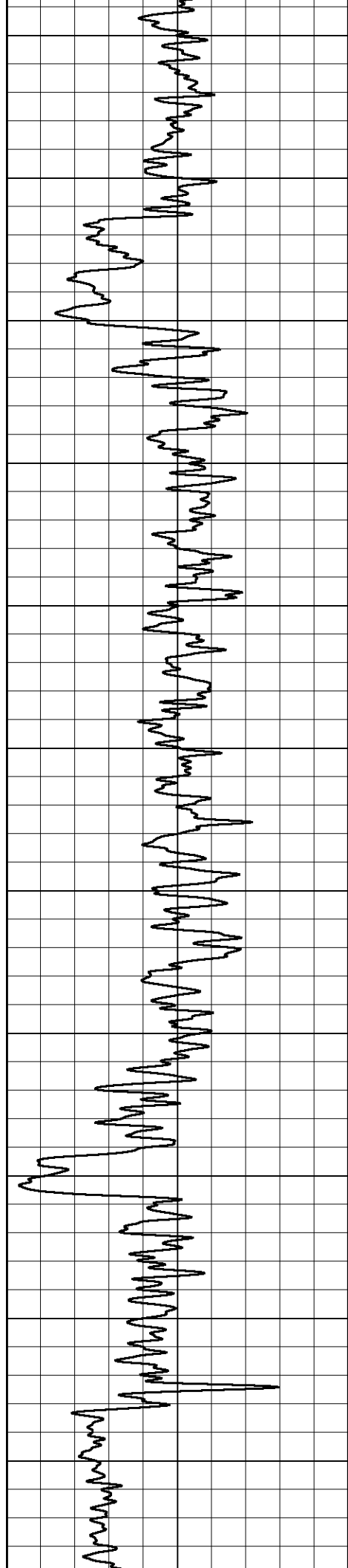
0 DEEP RESISTIVITY (Ohm-m) 50

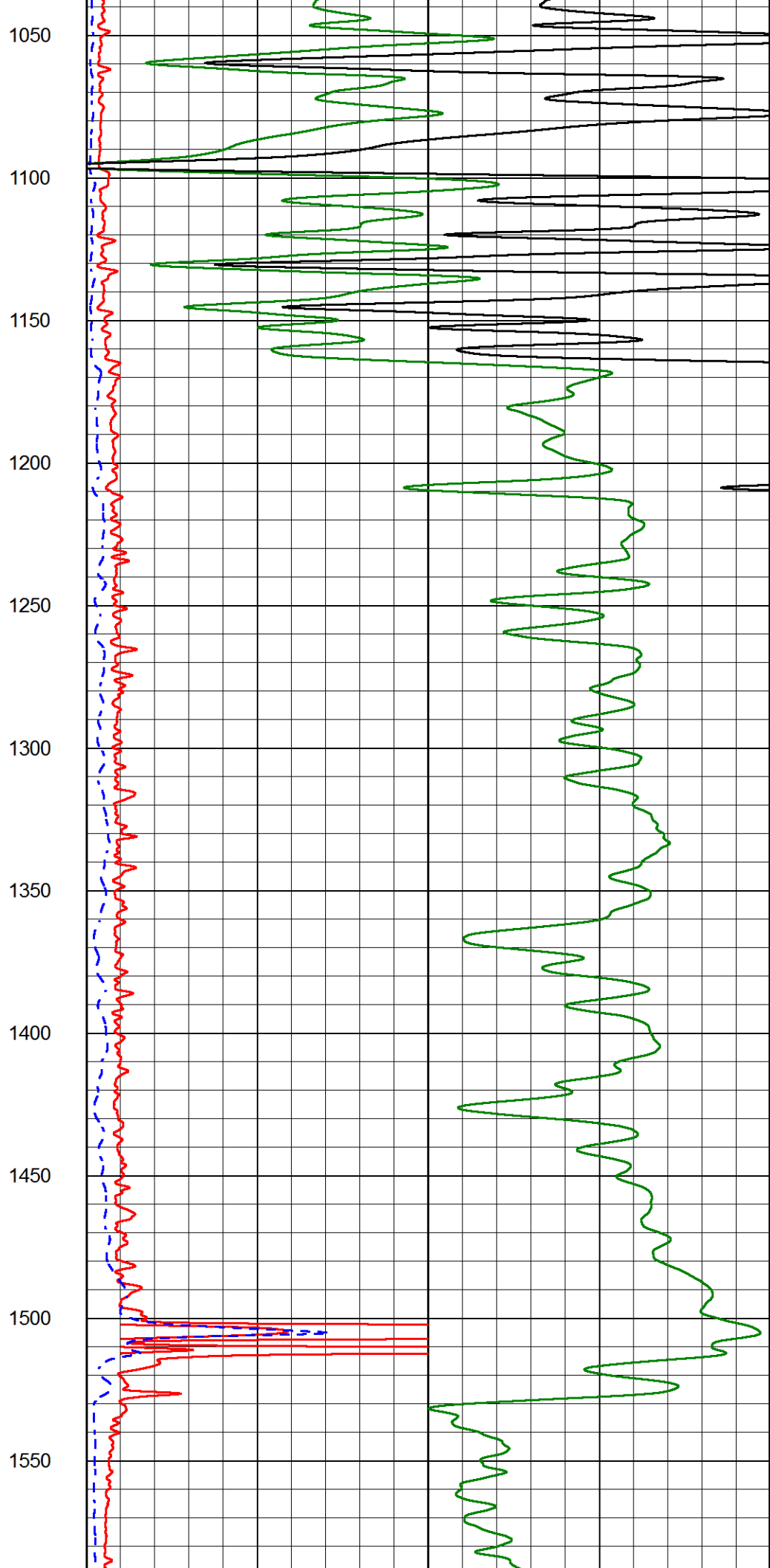
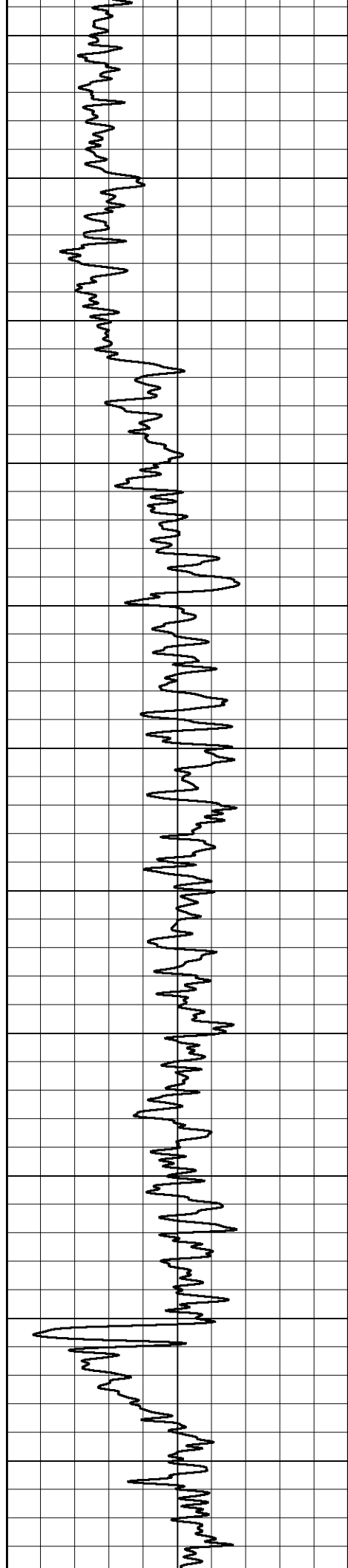
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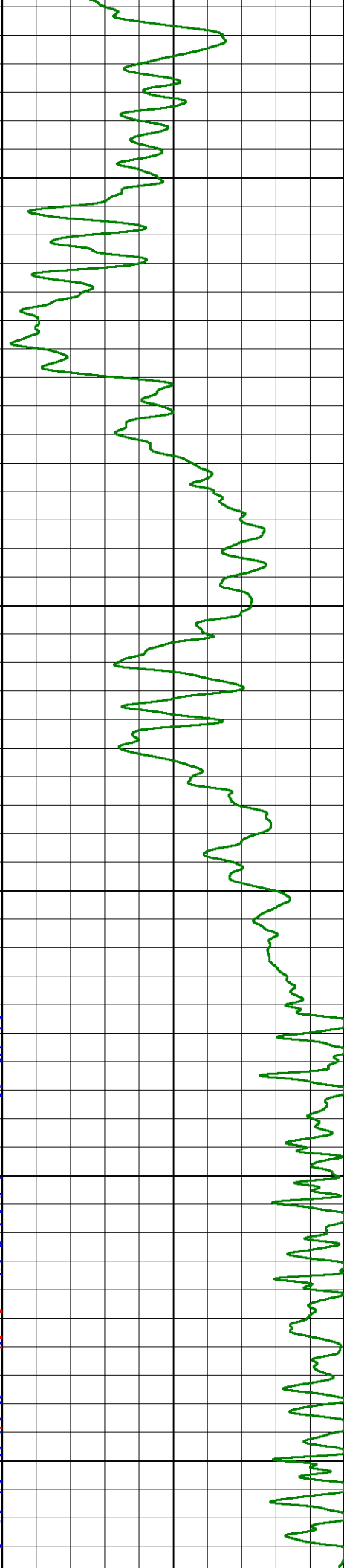
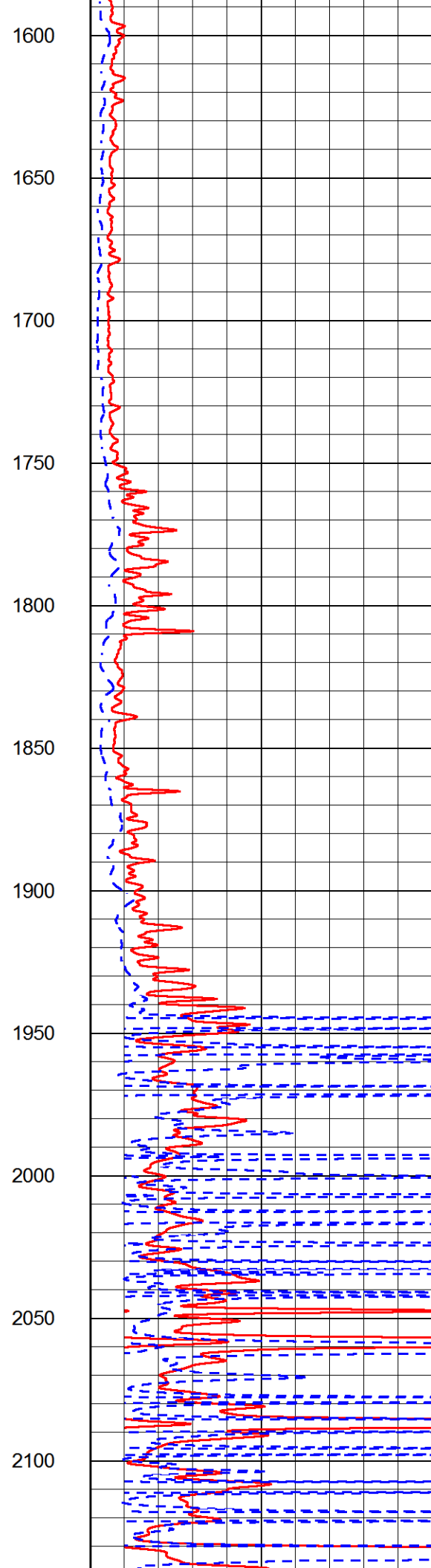
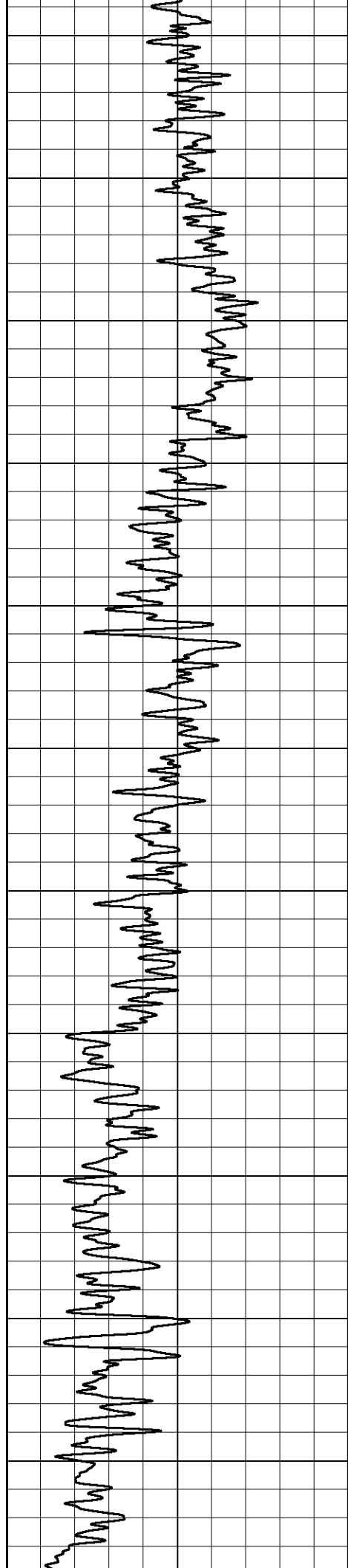
DEEP RESISTIVITY

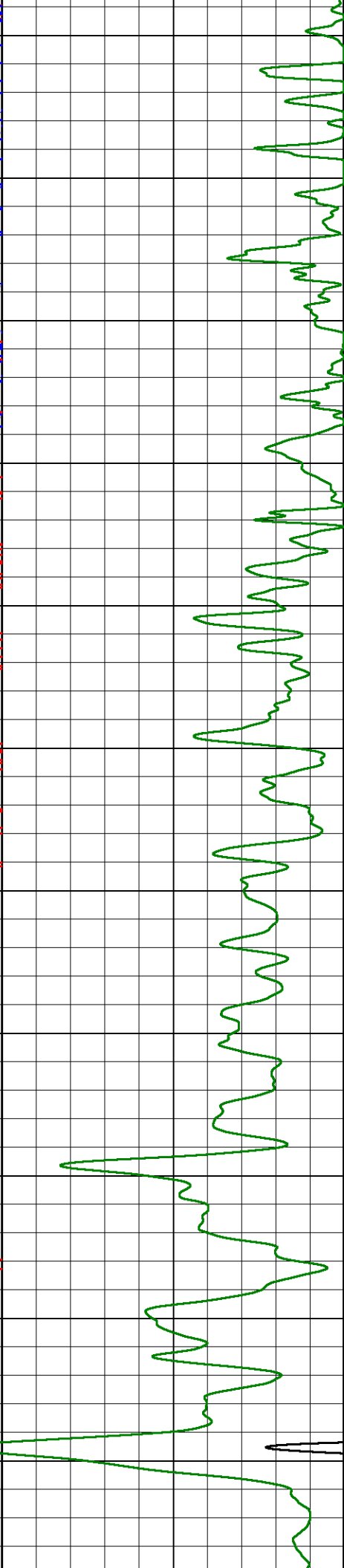
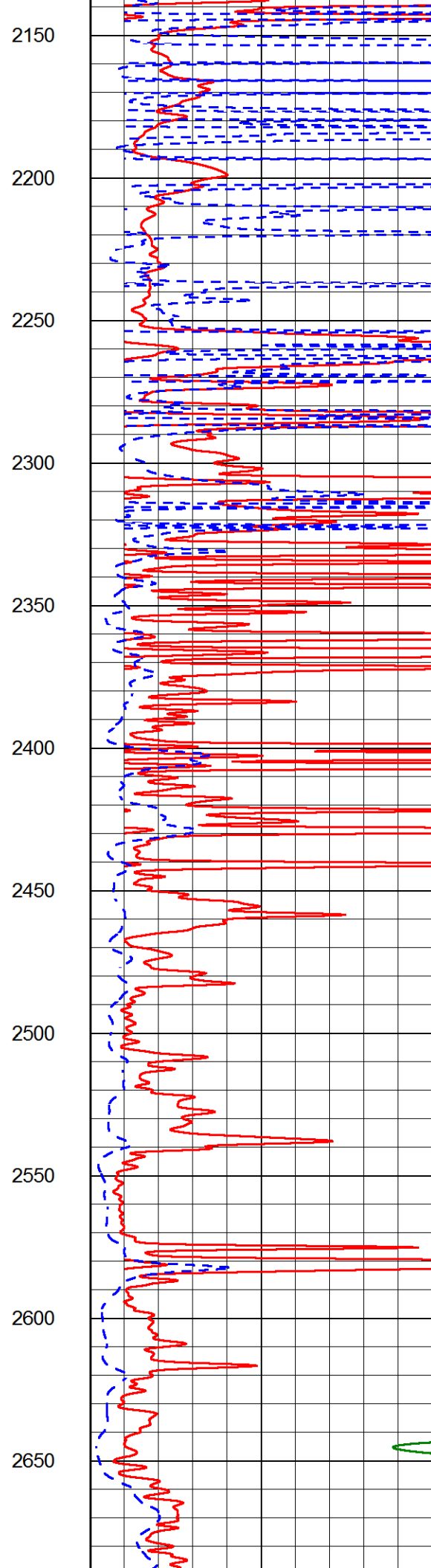
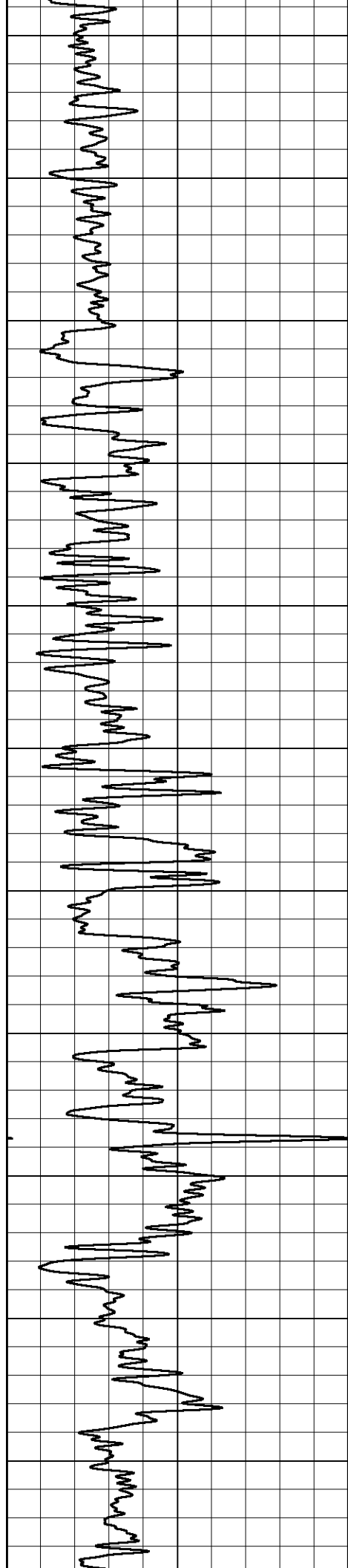
50 (Ohm-m) 500

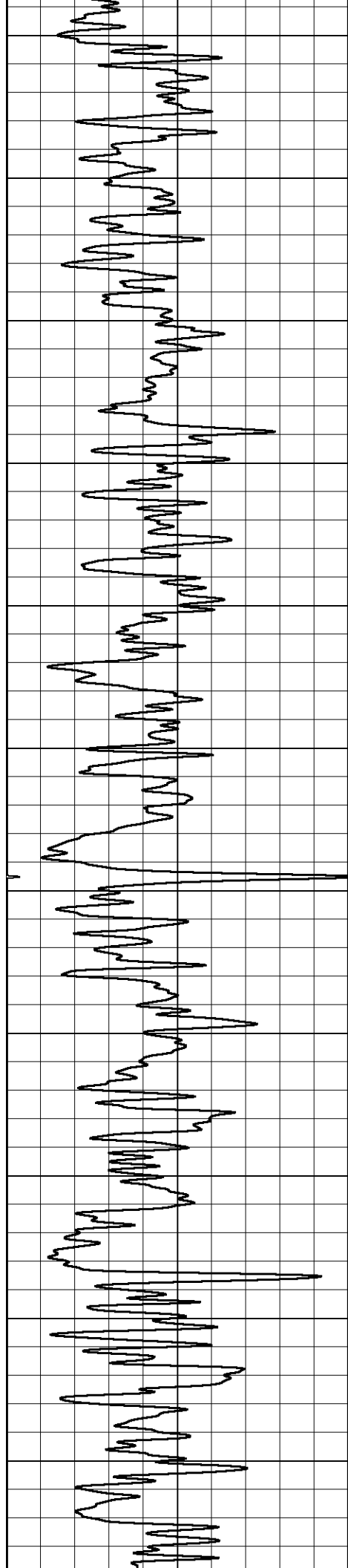




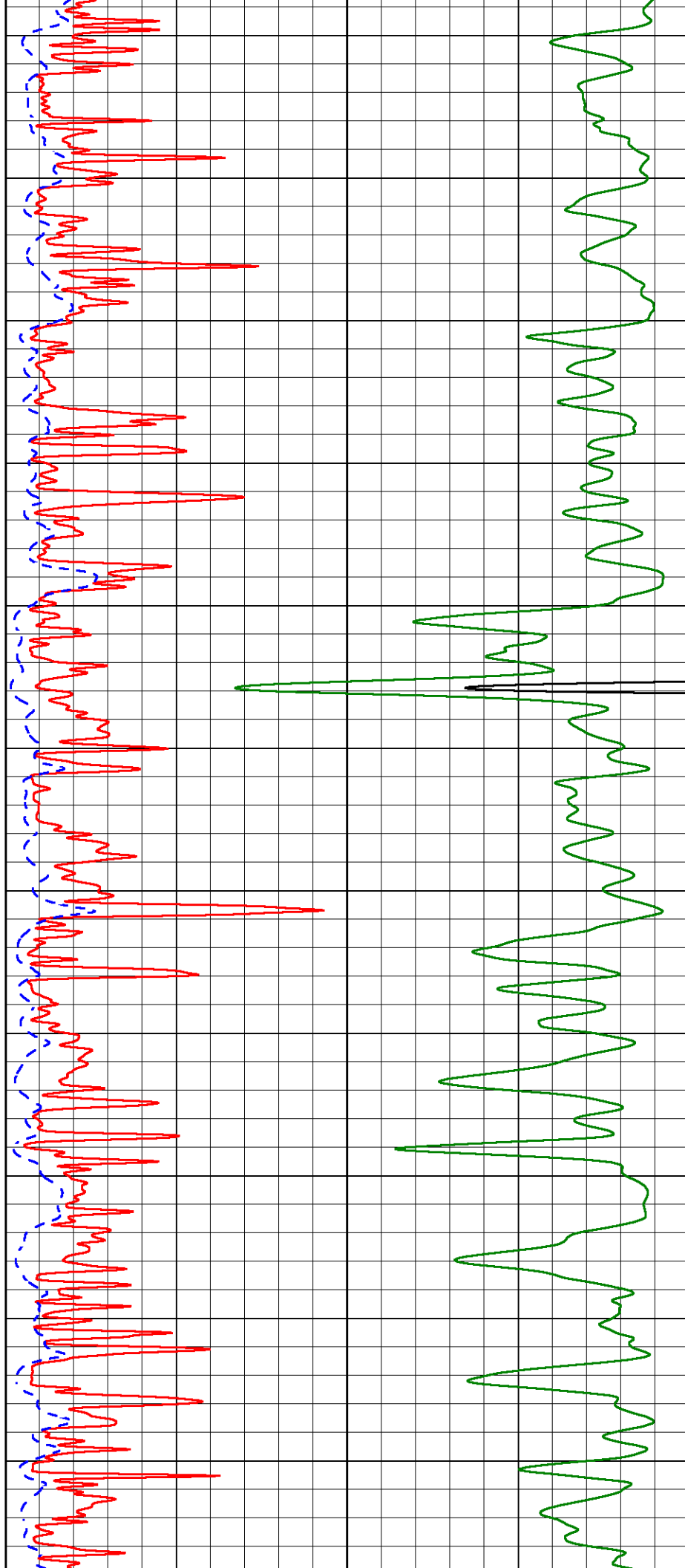


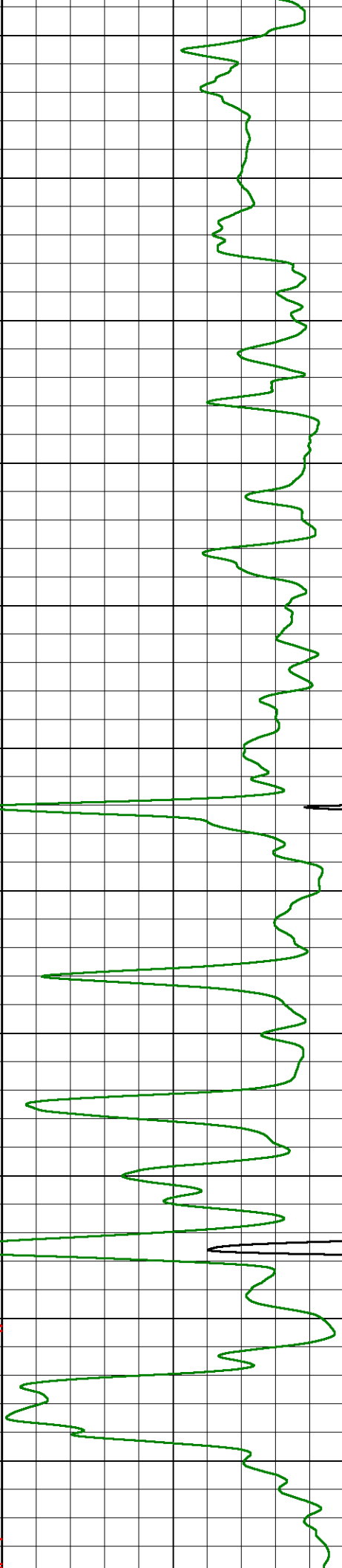
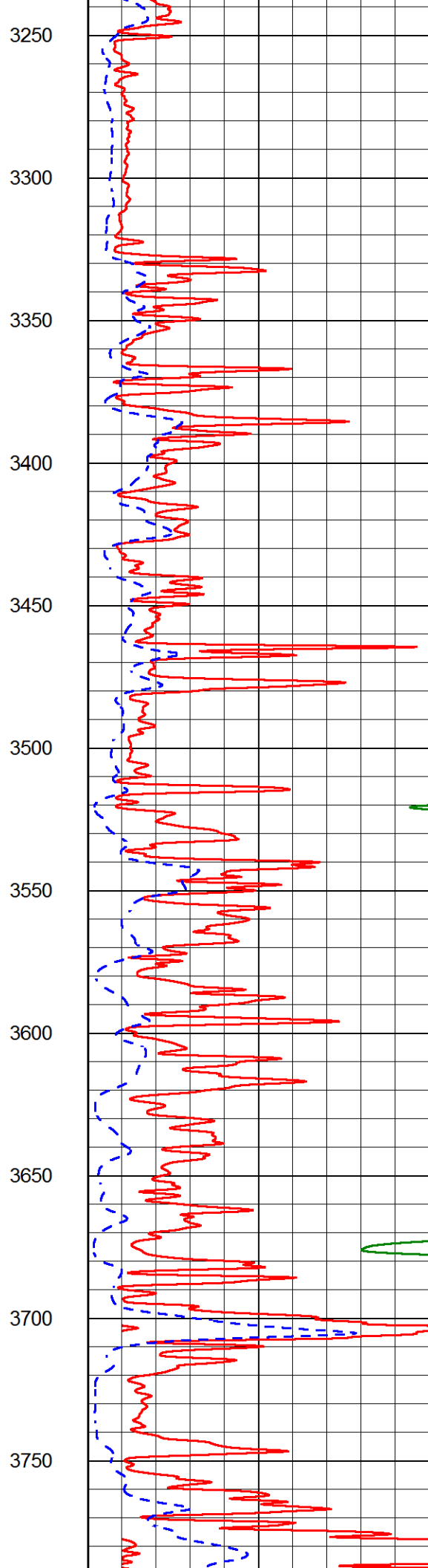
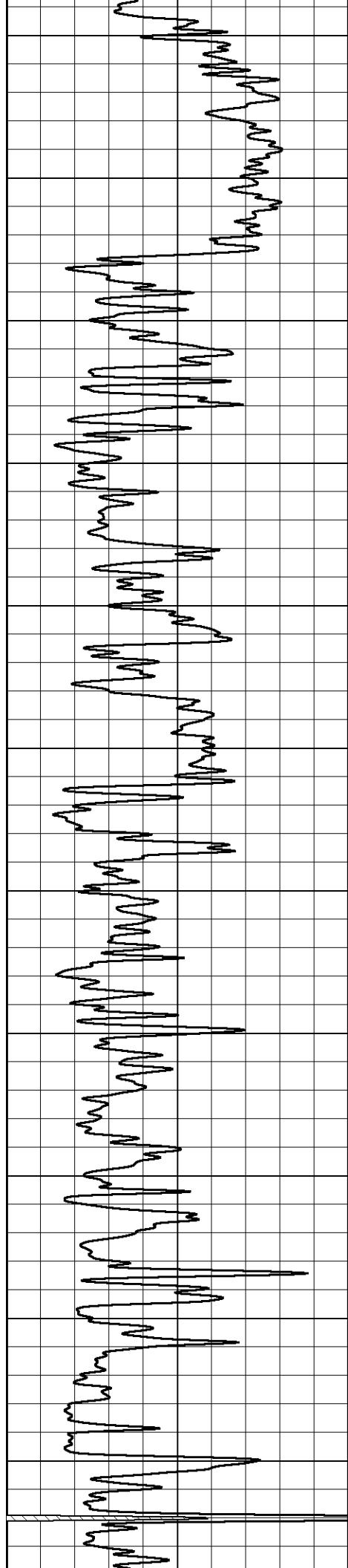


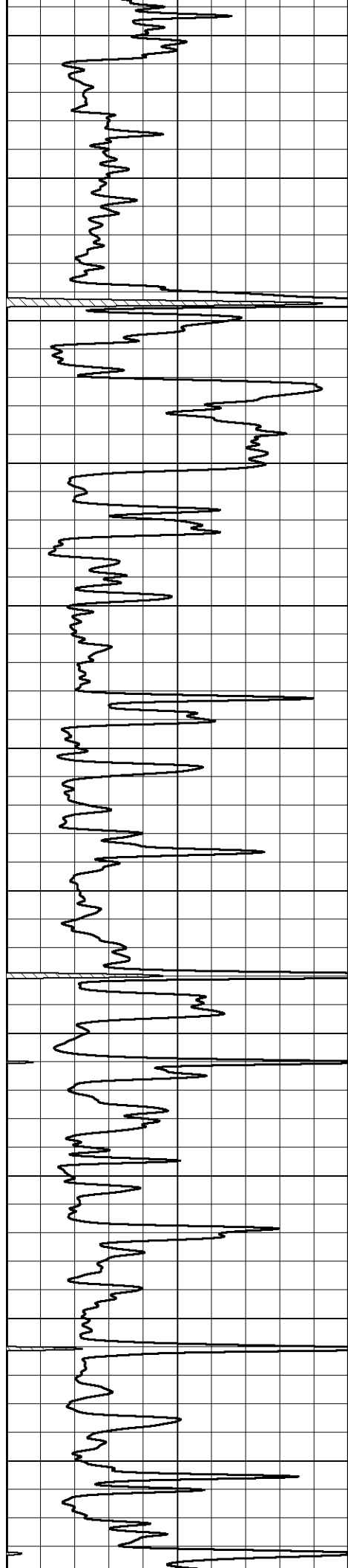




2700
2750
2800
2850
2900
2950
3000
3050
3100
3150
3200







3800

3850

3900

3950

4000

4050

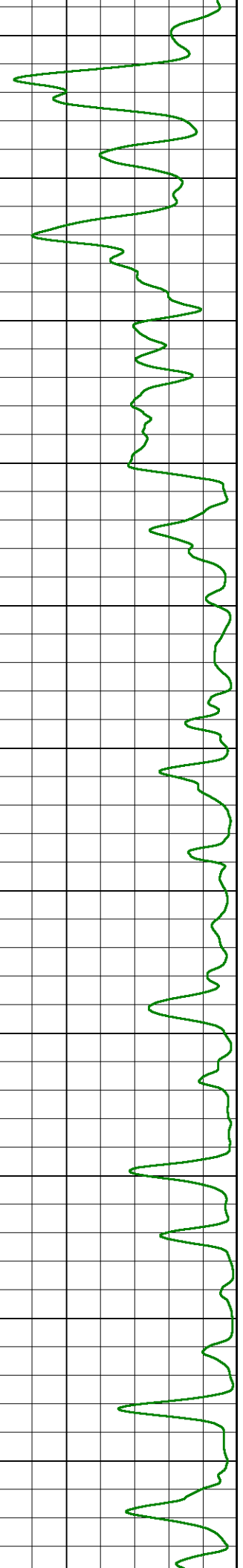
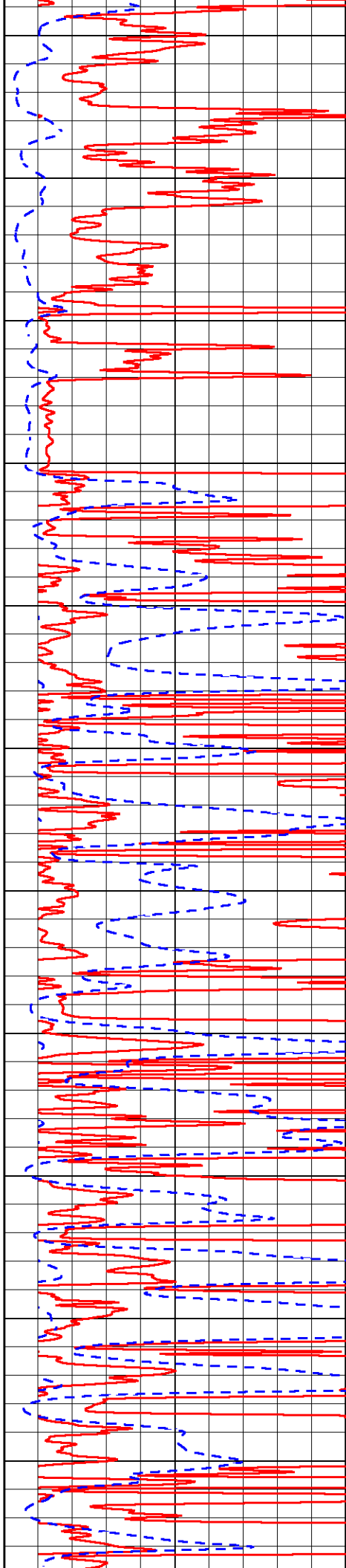
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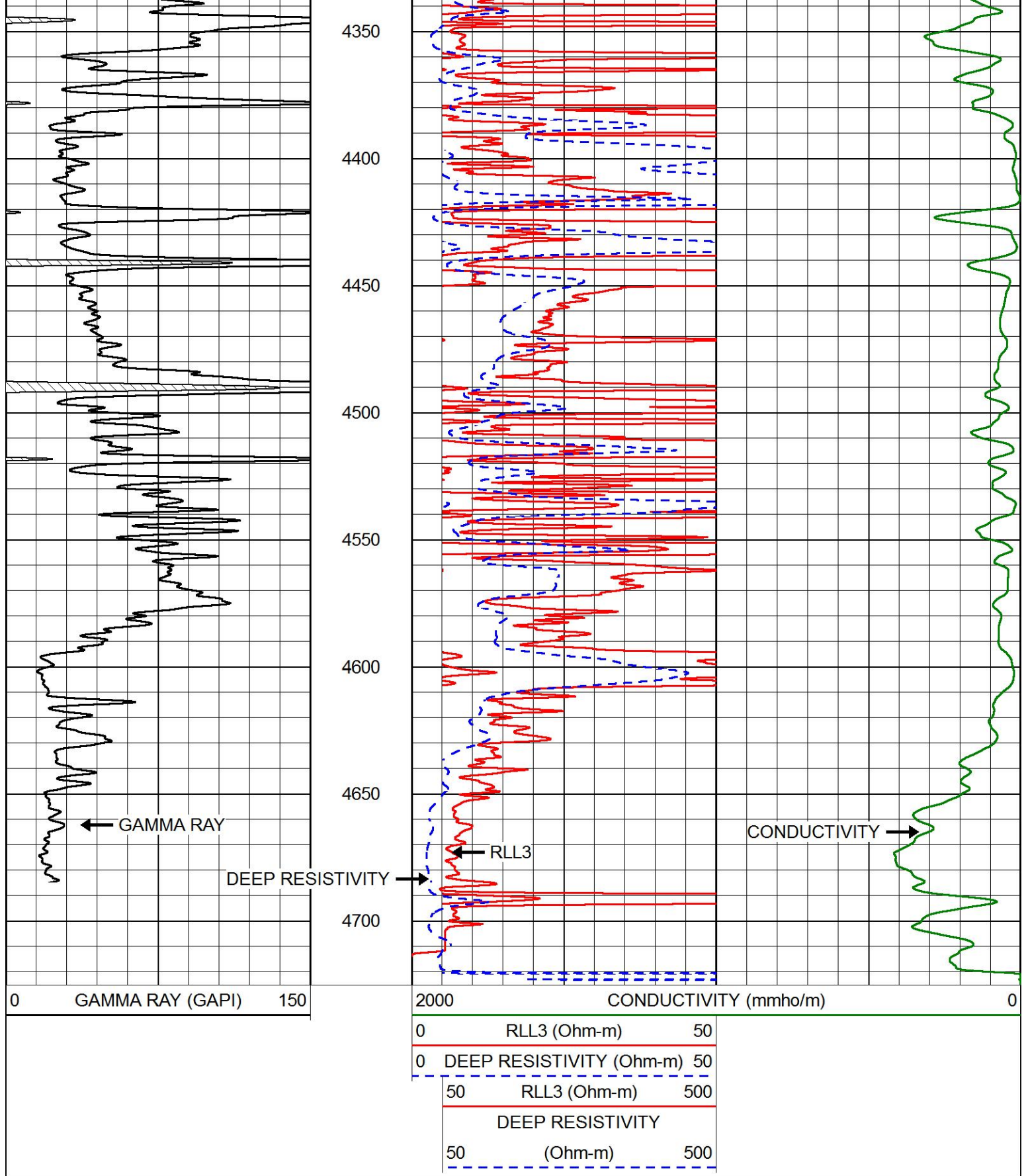
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4200

4250

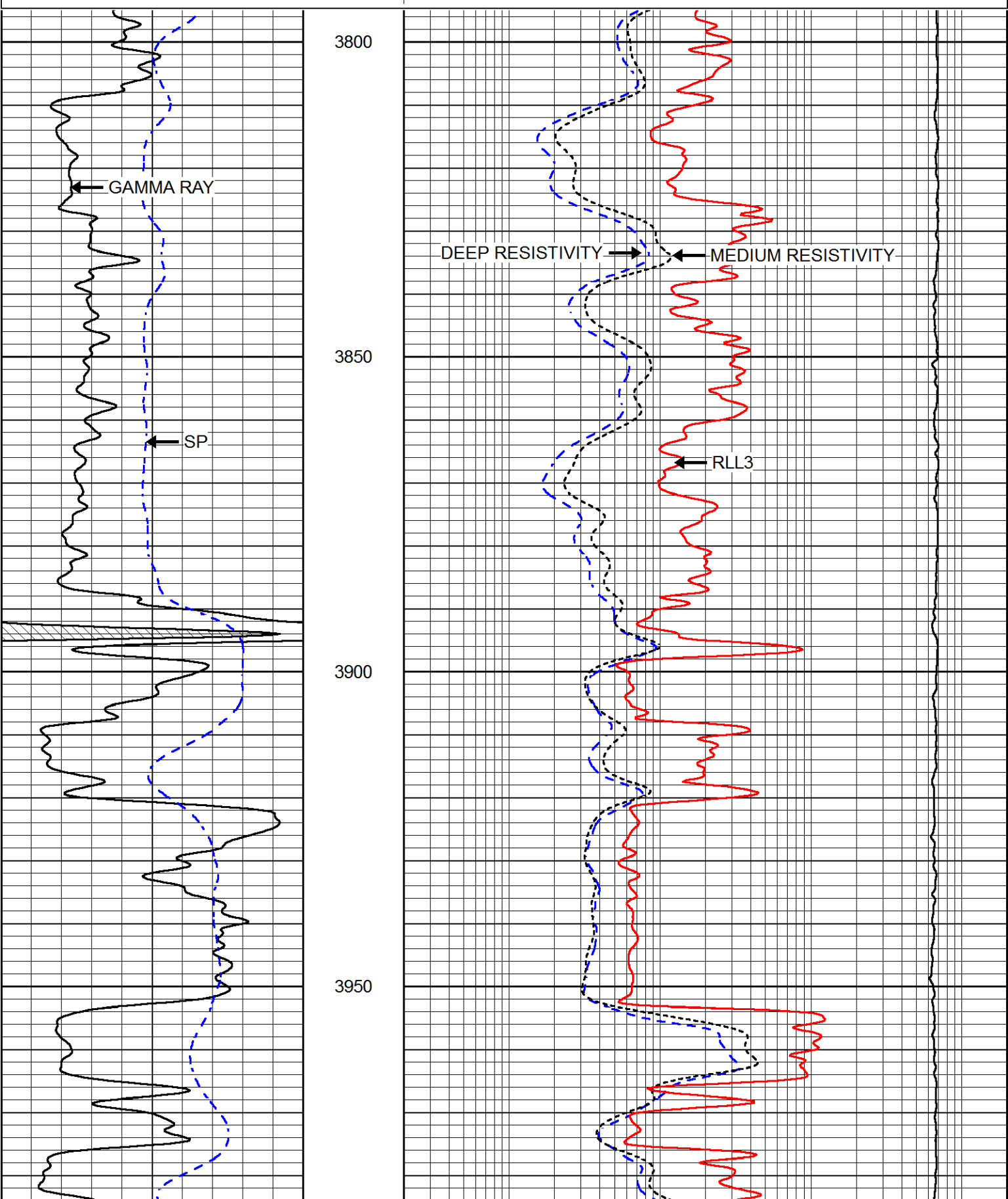
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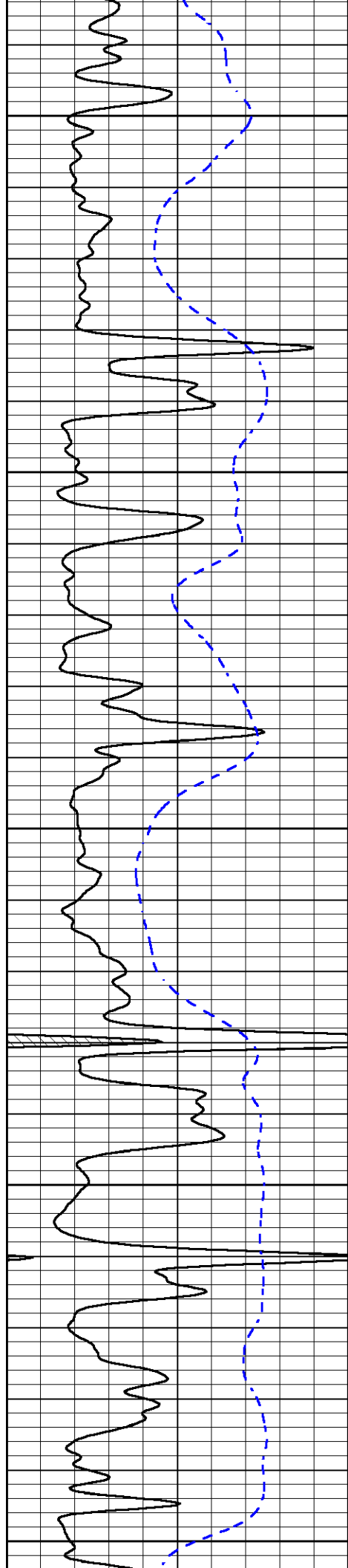




MAIN PASS

0	GAMMA RAY (GAPI)	150	0.2	DEEP RESISTIVITY (Ohm-m)	2000
-200	SP (mV)	0	0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
			0.2	RLL3 (Ohm-m)	2000
			15000	LINE TENSION (lb)	0





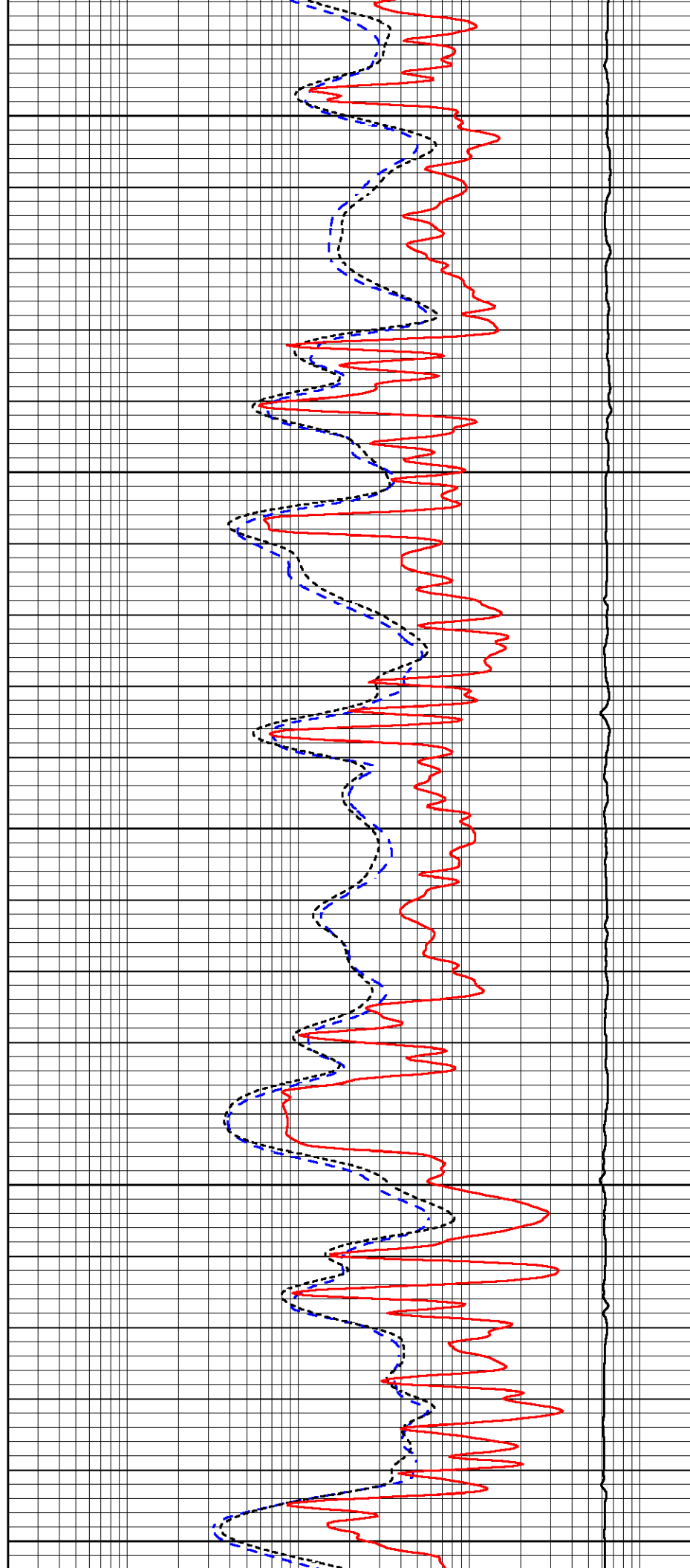
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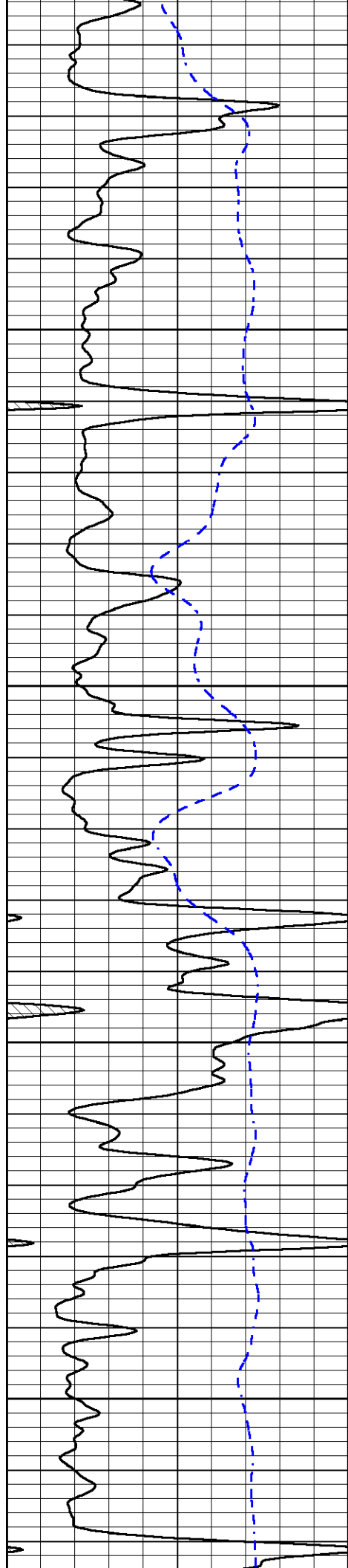
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4150

4200



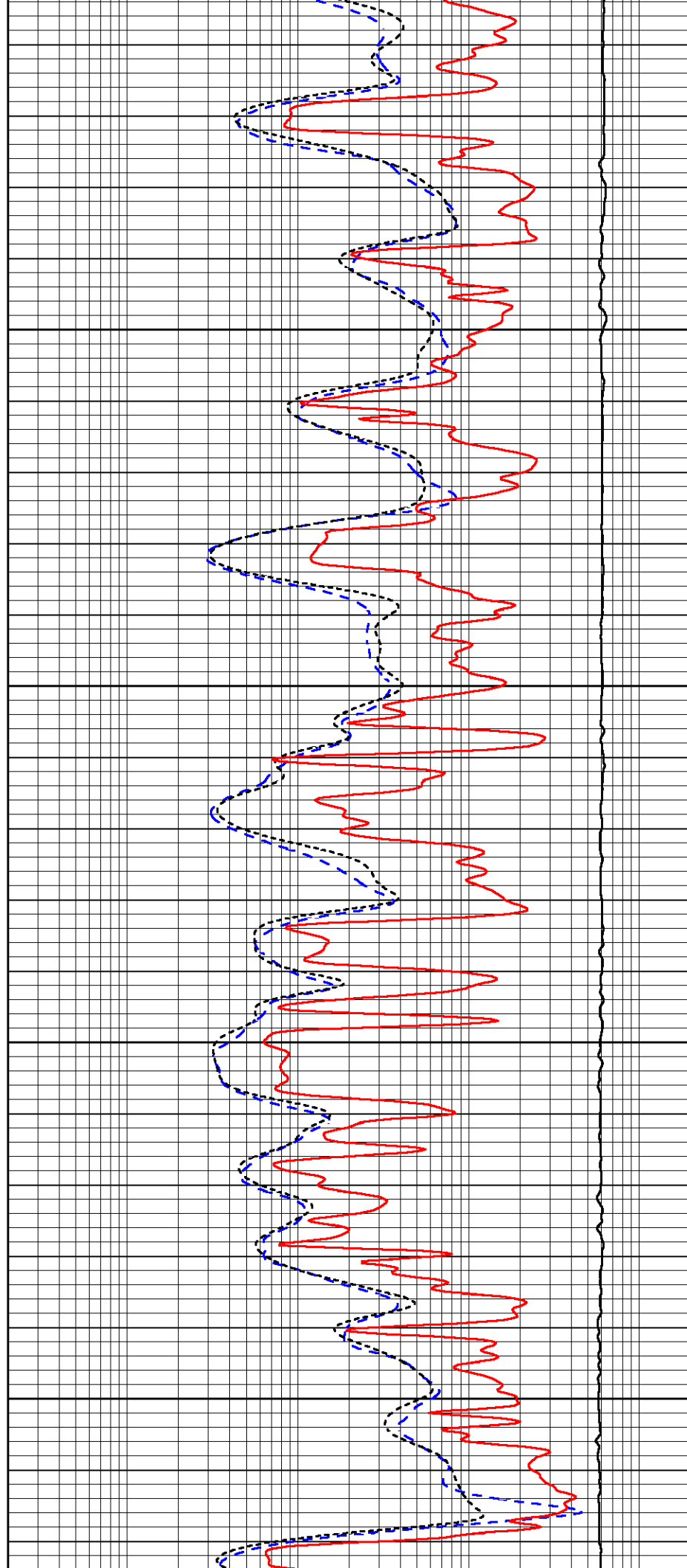


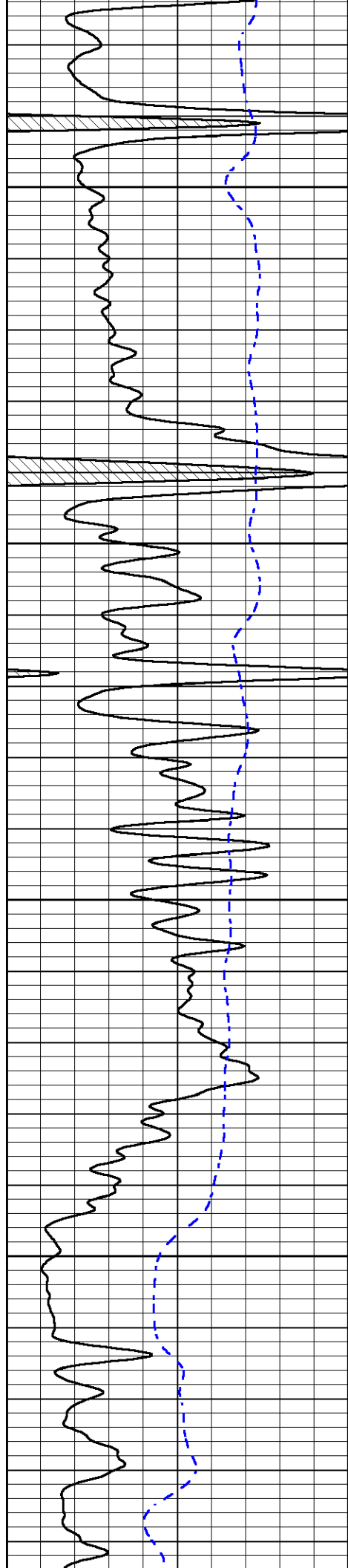
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4300

4350

4400



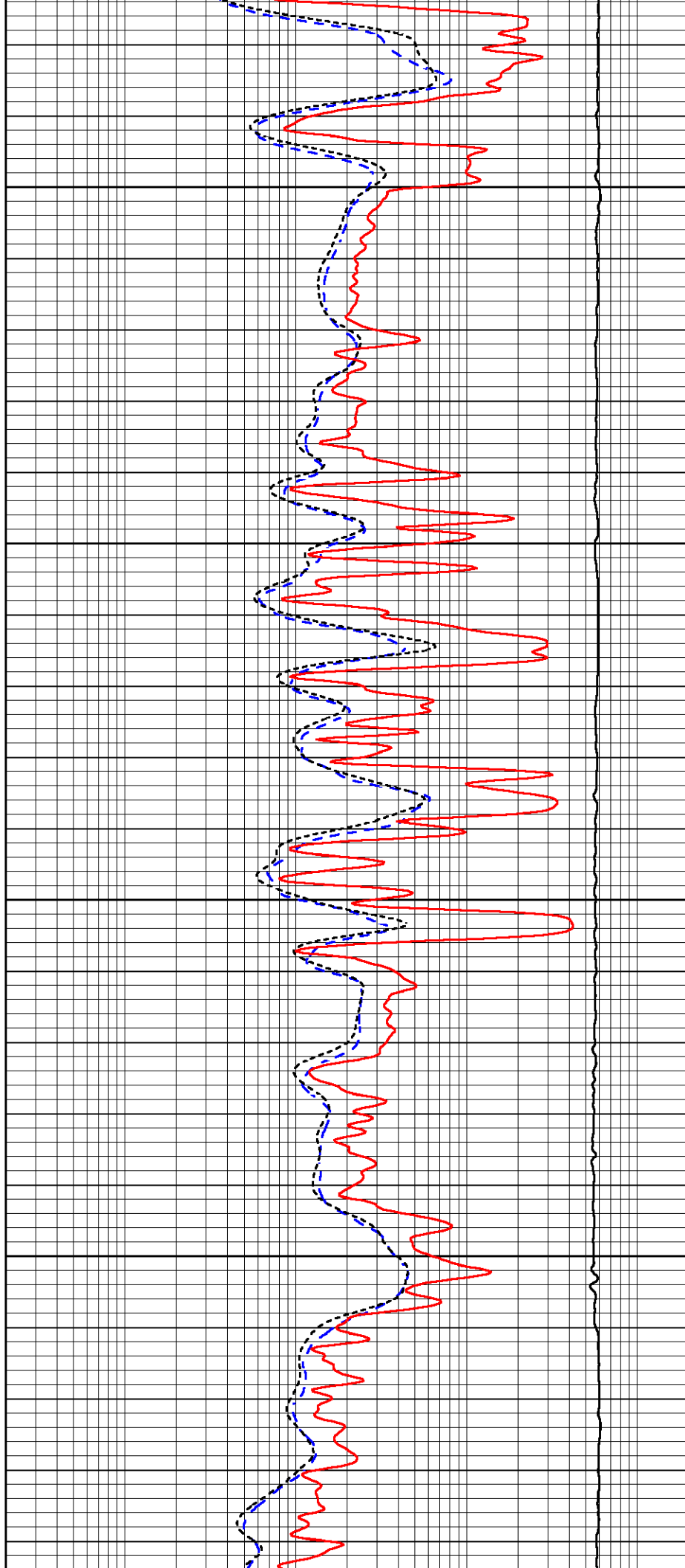


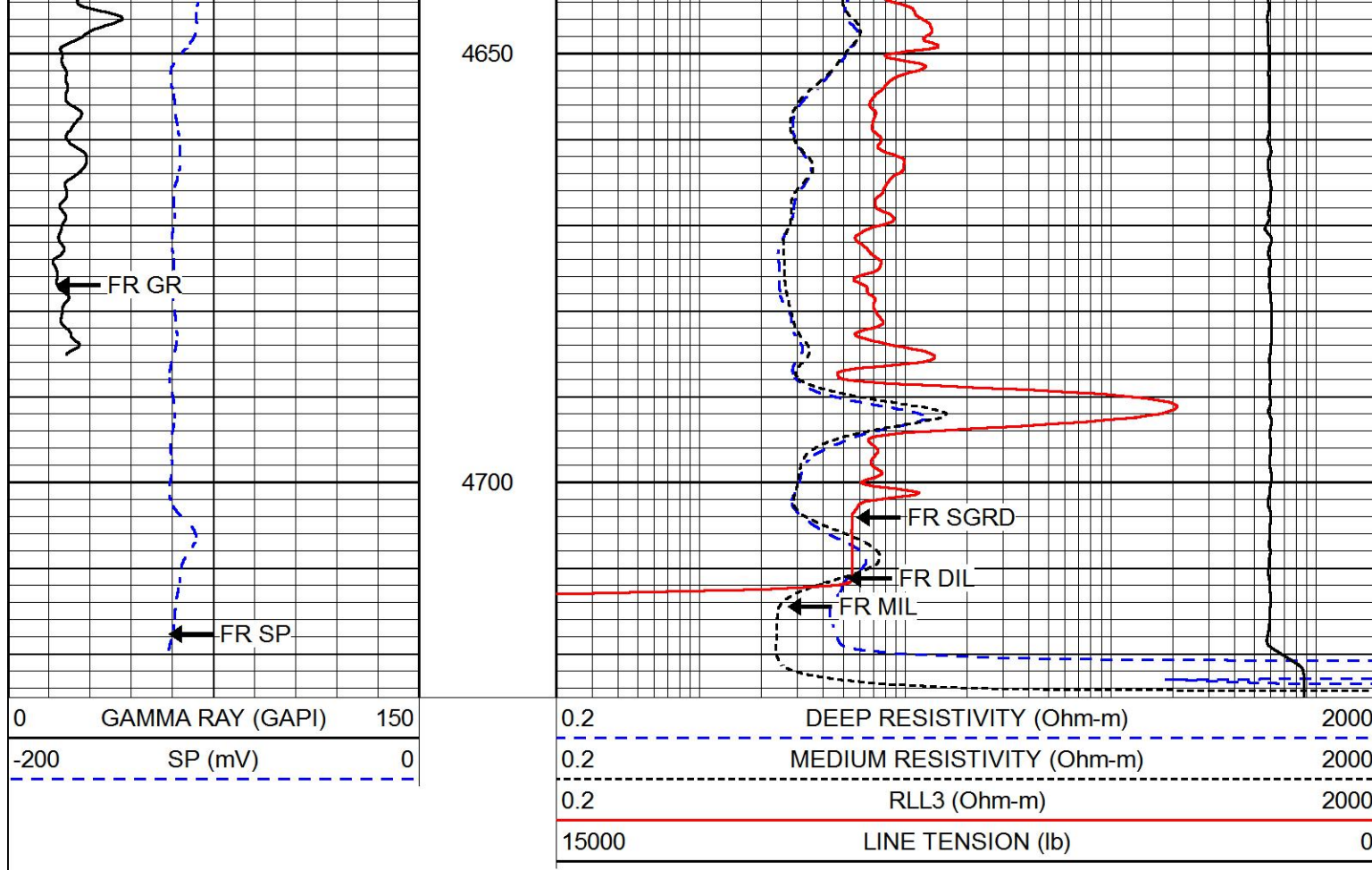
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4500

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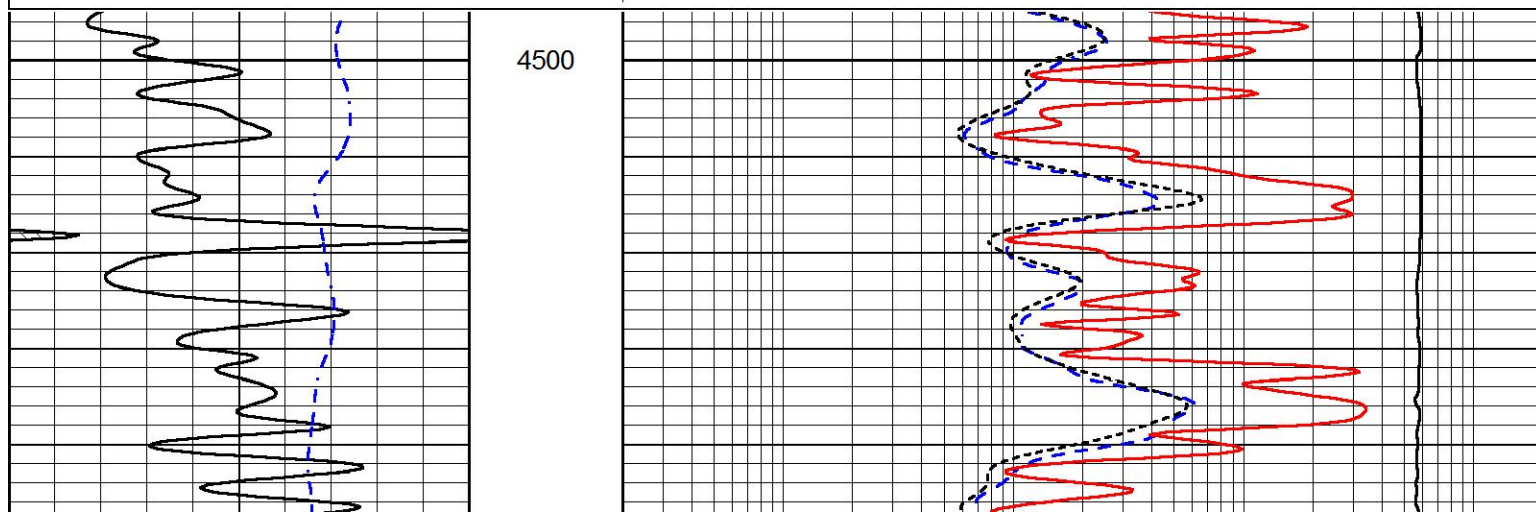
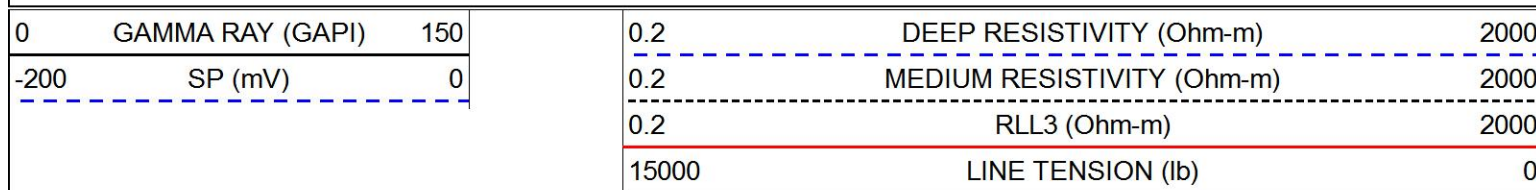
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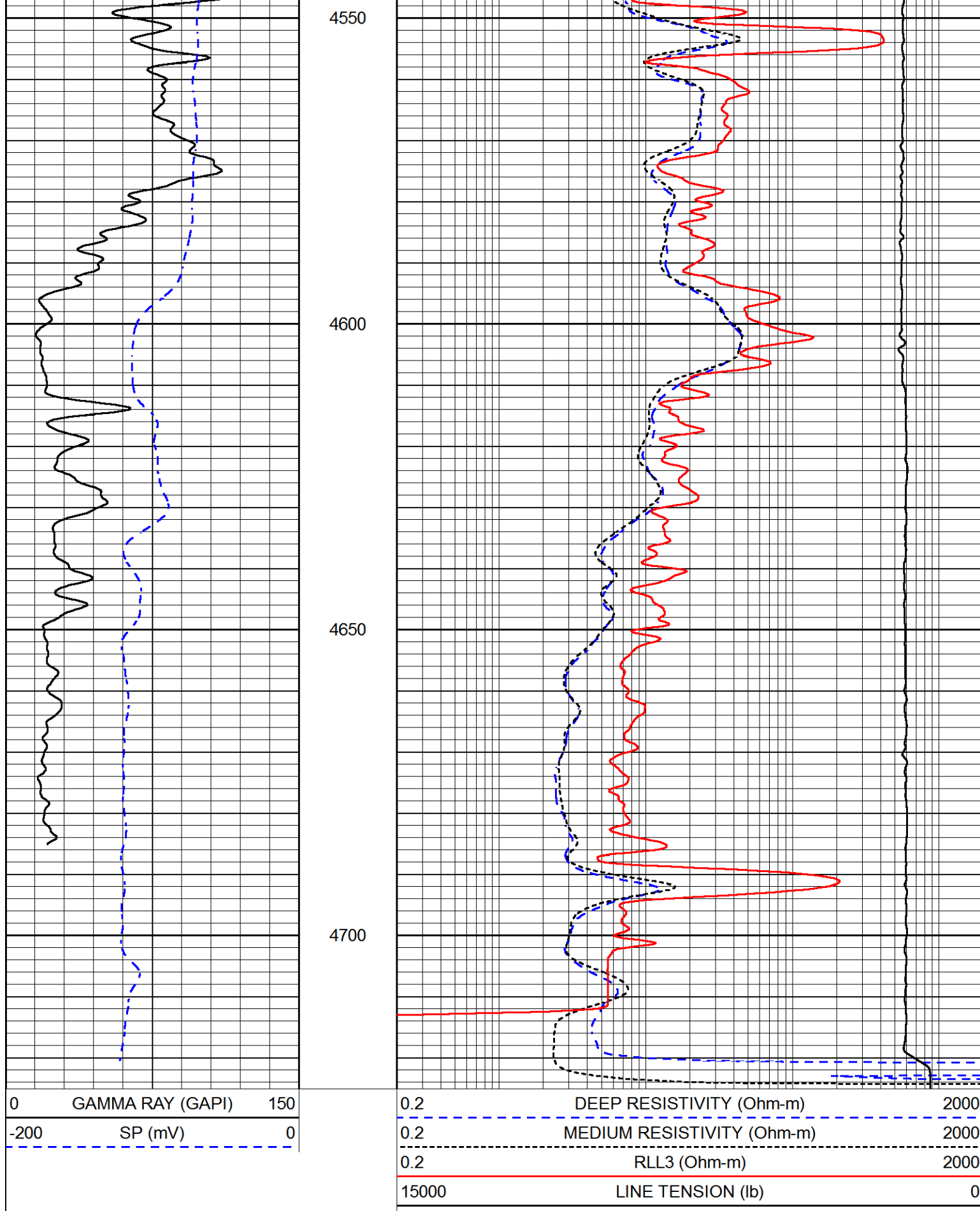




REPEAT SECTION

Database File: american_warrior_hubin_1_10.db
 Dataset Pathname: stackml/pass2.1
 Presentation Format: dil
 Dataset Creation: Wed Jul 18 14:31:50 2018
 Charted by: Depth in Feet scaled 1:240





Calibration Report

Database File american_warrior_hubin_1_10.db
Dataset Pathname stackml/pass3.1
Dataset Creation Wed Jul 18 14:33:26 2018

Dual Induction Calibration Report								
Serial-Model: Calibration Performed:				1987-M&W Tue Apr 11 17:07:38 2017				
Loop:	Readings			References			Results	
	Air	Loop		Air	Loop		Gain	Offset
	Deep	178.615	710.235	0.000	255.800	mmho/m	0.530	-36.500
	Medium	161.982	1441.110	0.000	255.800	mmho/m	0.440	-110.500
Microlog Calibration Report								
Serial-Model: Performed:				PSI-01-PSI STKBL ML Thu Mar 31 18:14:32 2016				
	Readings			References			Results	
	Zero	Cal		Zero	Cal		m	b
	Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	25000.0000	-1.0000
	Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	29500.0000	-1.0000
Caliper	1.0001	1.1397	6.5000	18.5000	in	86.0000	-82.6500	
Compensated Density Calibration Report								
Serial-Model: Source / Verifier: Master Calibration Performed:				979-229-M&W 21170B / Tue Jun 26 07:59:32 2018				
Master Calibration								
	Density			Far Detector		Near Detector		
	Magnesium	1.755	g/cc	7726.98		9910.47	cps	
	Aluminum	2.680	g/cc	1442.93		6391.03	cps	
	Spine Angle = 75.35			Density/Spine Ratio = 0.533				
	Size			Reading				
	Small Ring	4.00	in	1.16				
	Large Ring	16.00	in	1.03				
Compensated Neutron Calibration Report								
Serial Number: Tool Model: Calibration Performed:				tk10-MW M&W Wed Nov 16 11:21:36 2016				
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: Tool Model: Calibration Performed:				89-M&W M&W Tue Apr 11 17:08:01 2017				

Calibrator / Sensor

1000 cps / 1000000000

Calibrator Value:

1000.0

GAPI

Background Reading:

0.0

cps

Calibrator Reading:

6.2

cps

Sensitivity:

0.5200

GAPI/cps



PIONEER

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Company

AMERICAN WARRIOR, INC.

Well

HUBIN NO. 1-10

Field

LIPPOLDT WEST

County

HODGEMAN

State

KANSAS