



DUAL INDUCTION LOG

Company HOWELL OIL CO., INC.
 Well SABIN B #14
 Field BURRTON
 County RENO
 State KANSAS

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 Well SABIN B #14
 Field BURRTON
 County RENO State KANSAS

Location: API #: 15-155-21757-00-00
 S/2 NE/4 NE/4
 990' FNL & 660' FEL
 SEC 13 TWP 23S RGE 4W
 Permanent Datum GROUND LEVEL Elevation 1470'
 Log Measured From KELLY BUSHING
 Drilling Measured From KELLY BUSHING
 Other Services
 CNL/CDL
 MEL
 Elevation
 K.B. 1482'
 D.F. N/A
 G.L. 1470'

Date	9/10/2018
Run Number	ONE
Depth Driller	3500'
Depth Logger	3498'
Bottom Logged Interval	3497'
Top Log Interval	300'
Casing Driller	8.625" @ 311'
Casing Logger	310'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	1000
Density / Viscosity	9.15 62
pH / Fluid Loss	11.5 8.8
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.90 @ 80
Rmt @ Meas. Temp	0.68 @ 80
Rmc @ Meas. Temp	1.22 @ 80
Source of Rmf / Rmc	CHARTS
Rm @ BHT	0.65 @ 111
Operating Rig Time	3 HOURS
Max Rec. Temp. F	111
Equipment Number	91
Location	HAYS
Recorded By	D. SCHMIDT
Witnessed By	TERRY MCLEOD

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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.

BURRTON,
 2 WEST, 2 NORTH, 1/8 WEST,
 SOUTH INTO

Log Measured From: KELLY BUSHING 12 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew		This Log Record Was Witnessed By	
Engineer: D. SCHMIDT	Operator:	Primary Witness: TERRY MCLEOD	Secondary Witness:
Operator:	Operator:	Secondary Witness:	Secondary Witness:
Operator:		Secondary Witness:	

Operator	Offset (ft)	Schematic	Description	Length (ft)	C.D. (in)	Weight (lb)
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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 (96-916)	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					
CILD	8.00		DIL-PSI HIGH TEMP (967 (HT))	18.50	3.50	220.00
CILM	4.70					
SP	0.20					

Dataset: howell_sabin b 14.db: field/well/STKML/pass2.4
 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\howell_sabin b 14.db

Dataset field/well/STKML/pass2.4/_vars_

Top - Bottom

M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	40	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	80	0	5.5	0	3498	111	7.875

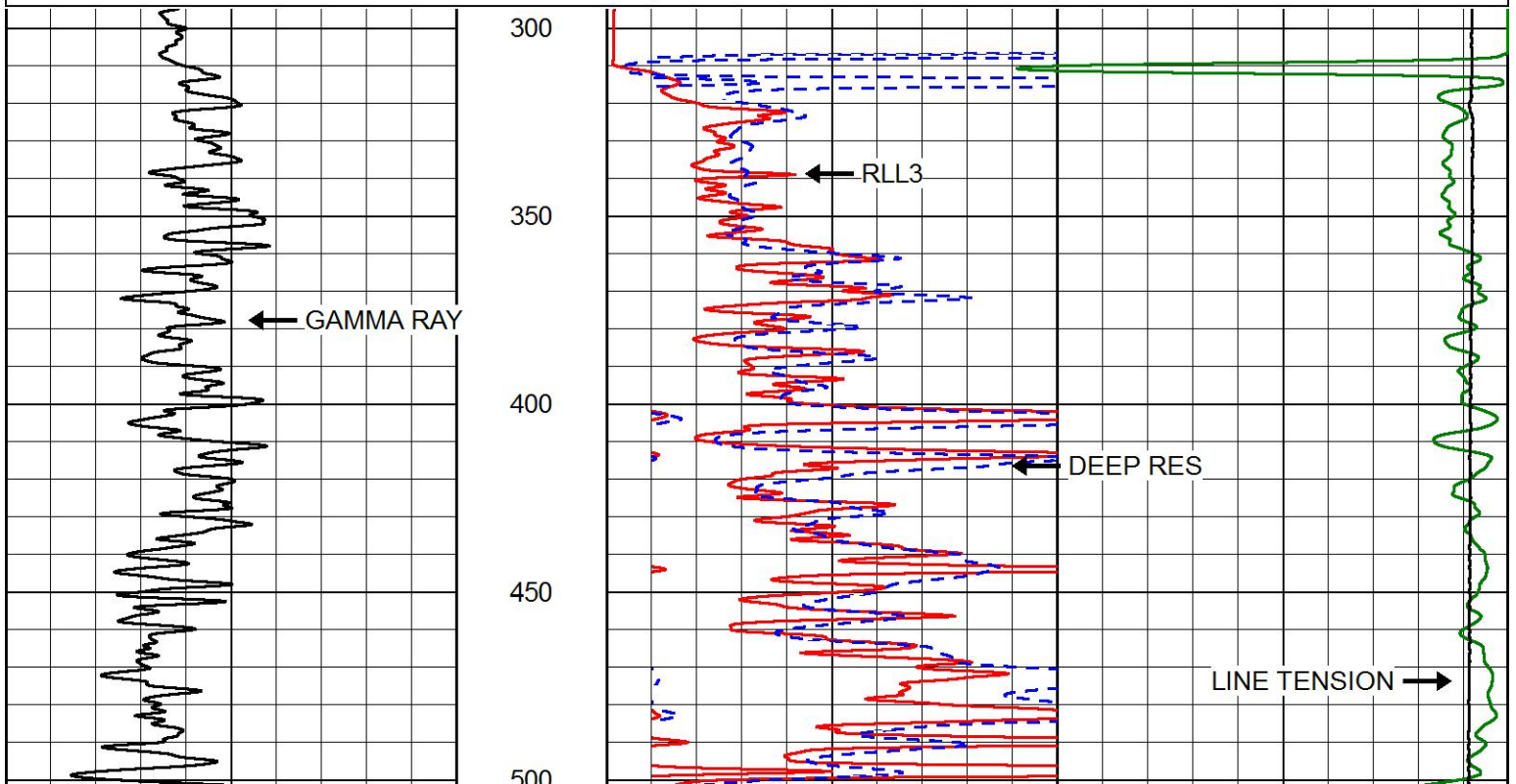


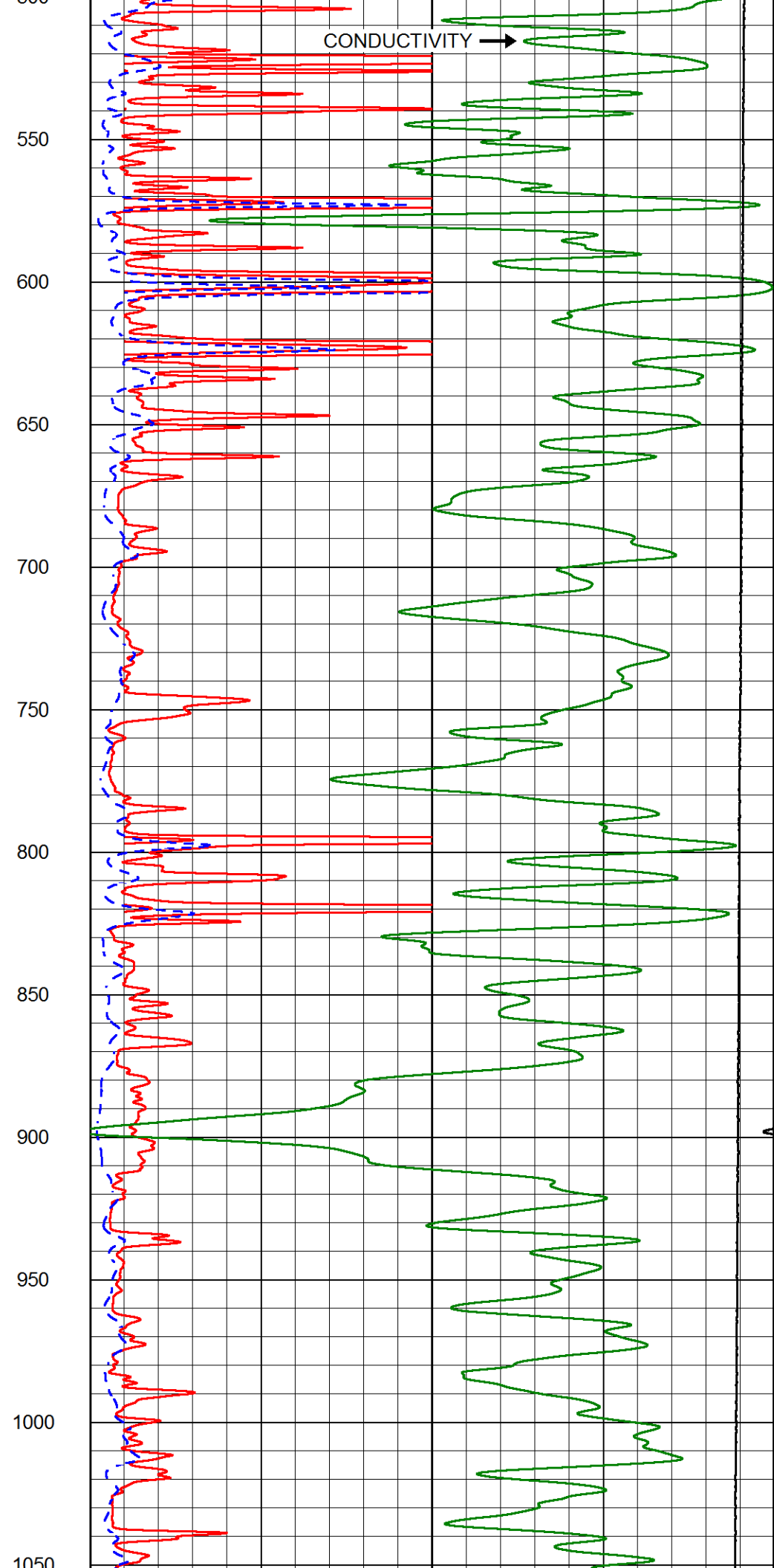
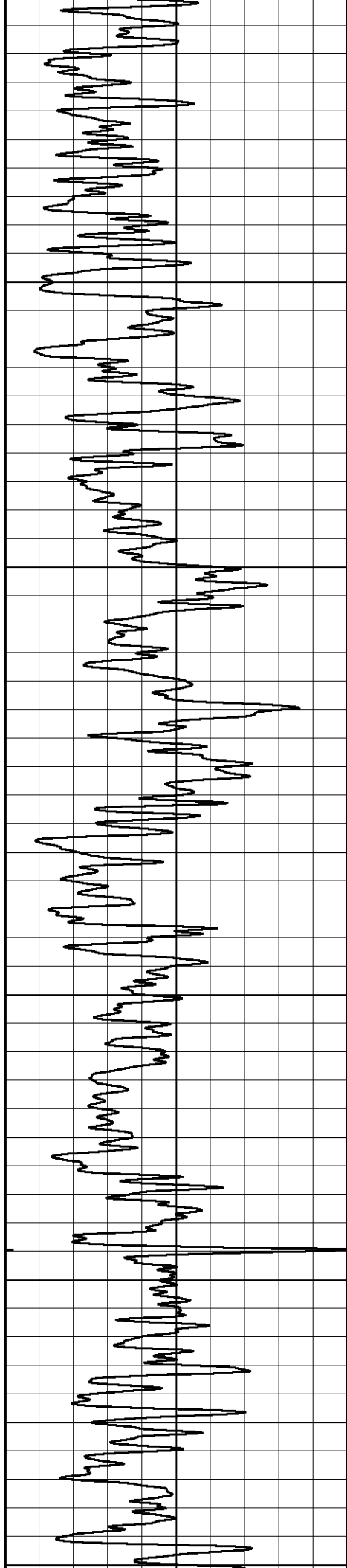
PIONEER
Pioneer Energy Services

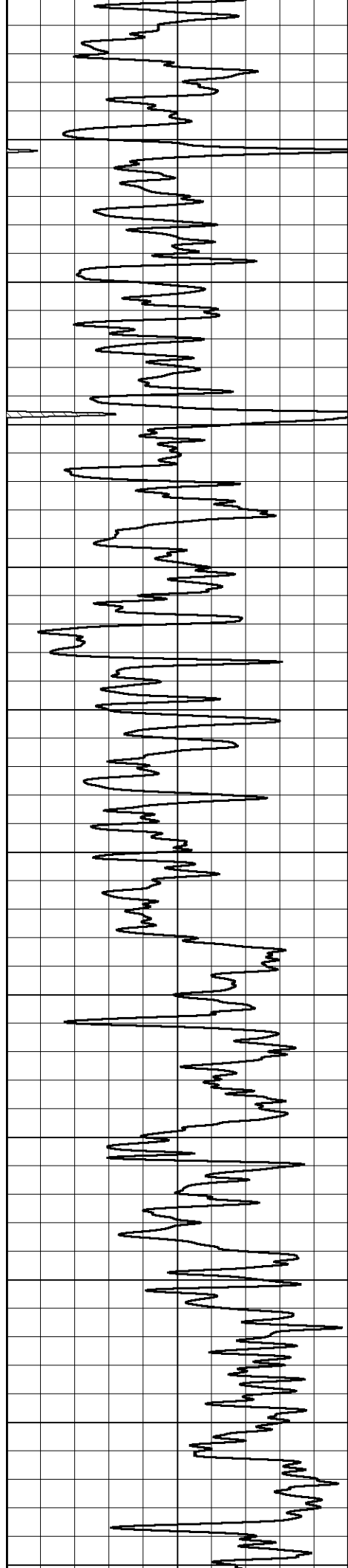
MAIN PASS

Database File howell_sabin b 14.db
 Dataset Pathname STKML/pass4.1
 Presentation Format dil2in
 Dataset Creation Mon Sep 10 15:06:27 2018
 Charted by Depth in Feet scaled 1:600

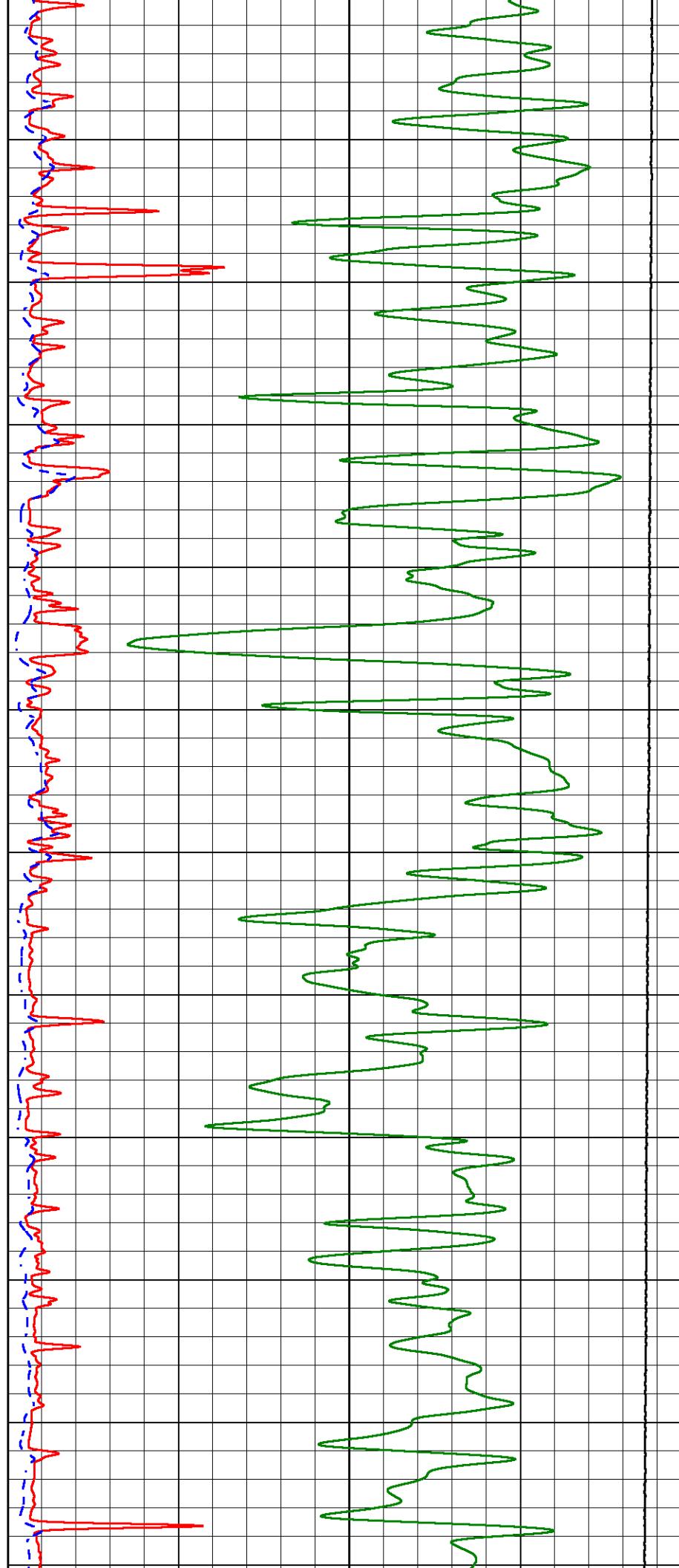
GAMMA RAY		1000	CONDUCTIVITY (mmho/m)	0
(GAPI)		15000	Line Tension (lb)	0
0	150	0	RLL3 (Ohm-m)	50
		0	DEEP RESISTIVITY (Ohm-m)	50
		50	RLL3 (Ohm-m)	500
		50	Deep Resistivity (Ohm-m)	500

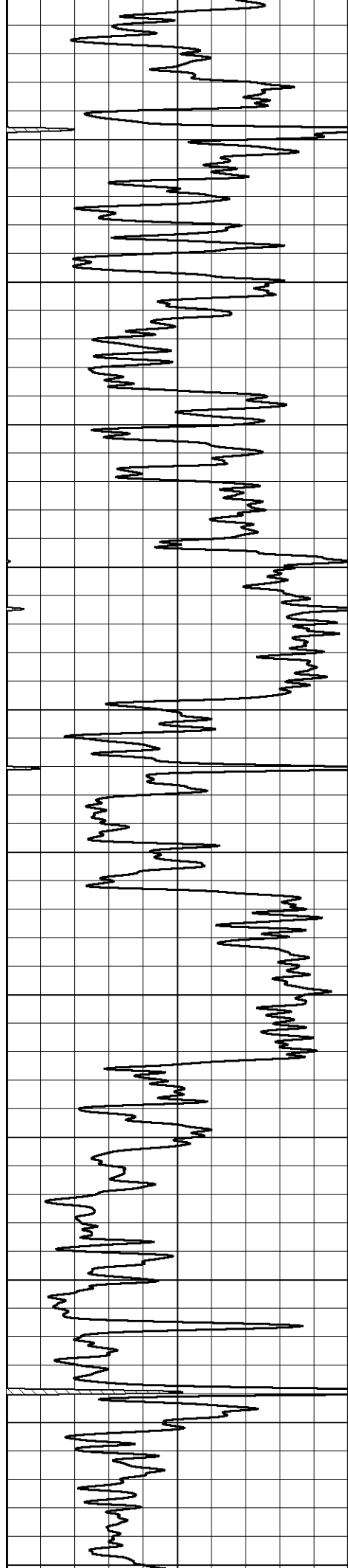




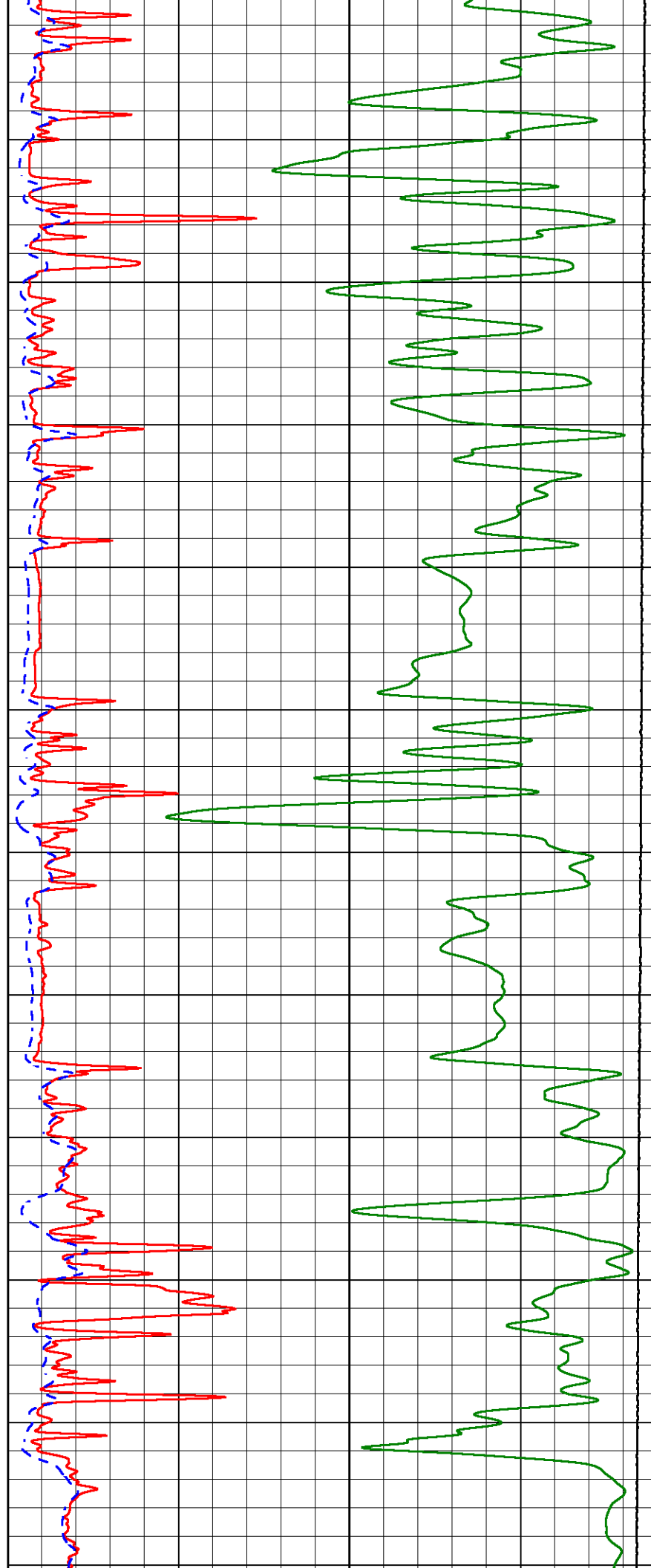


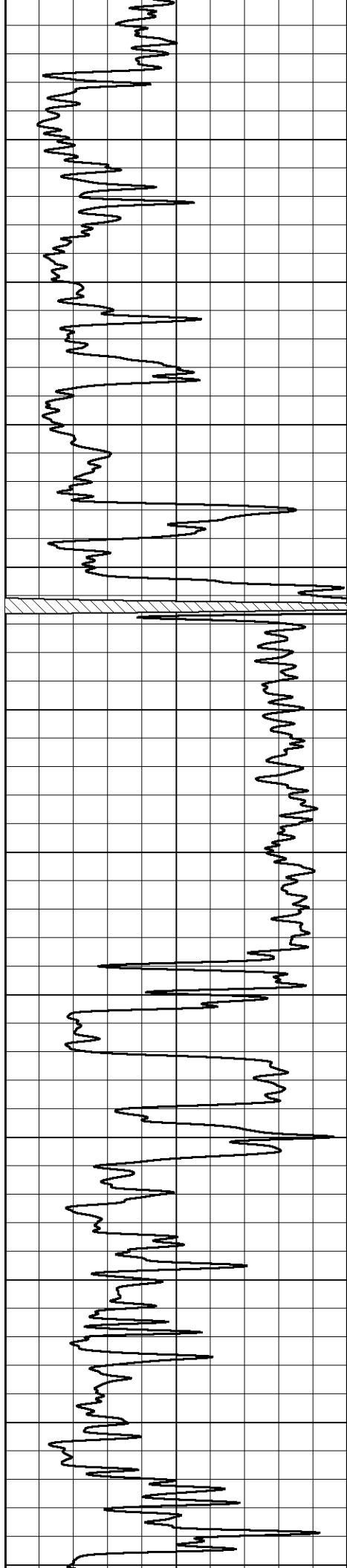
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1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
1600



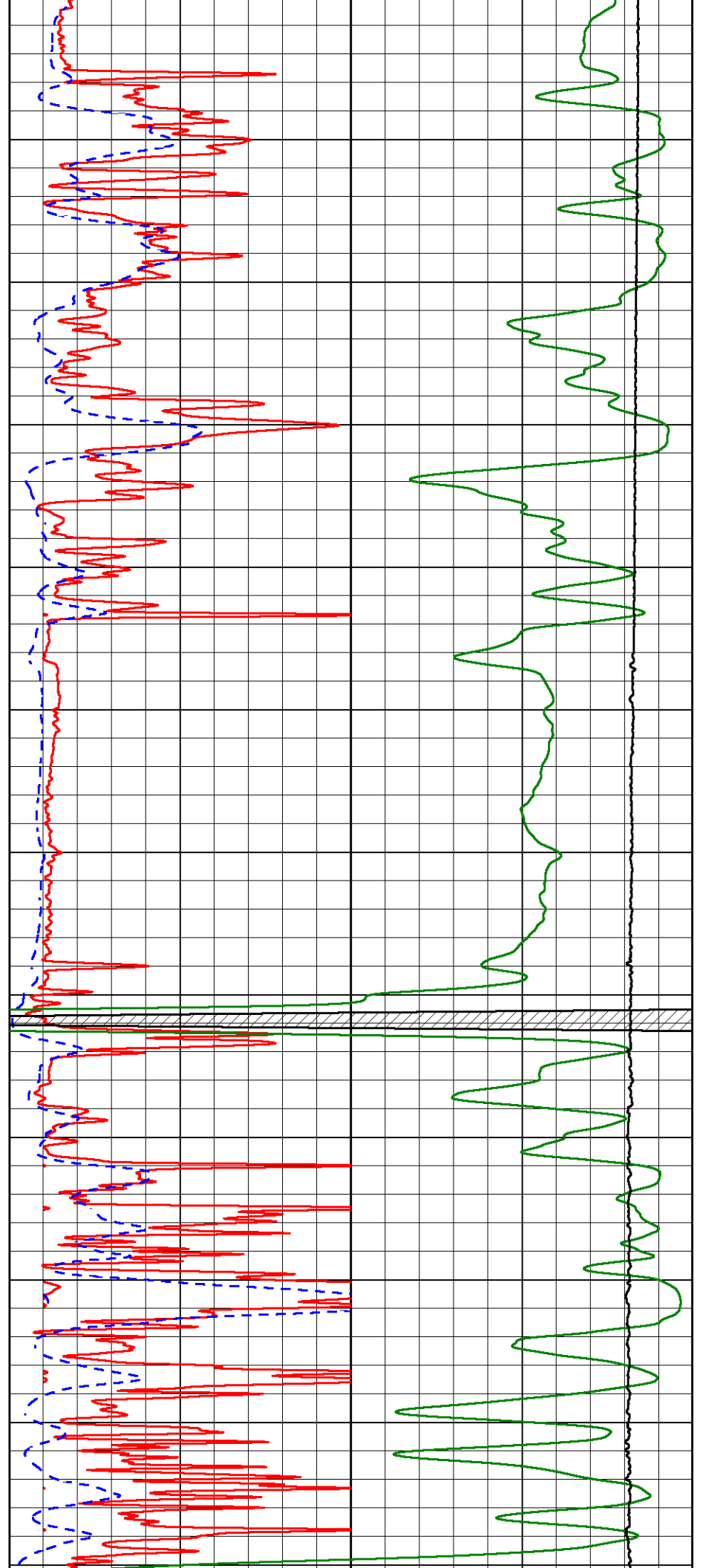


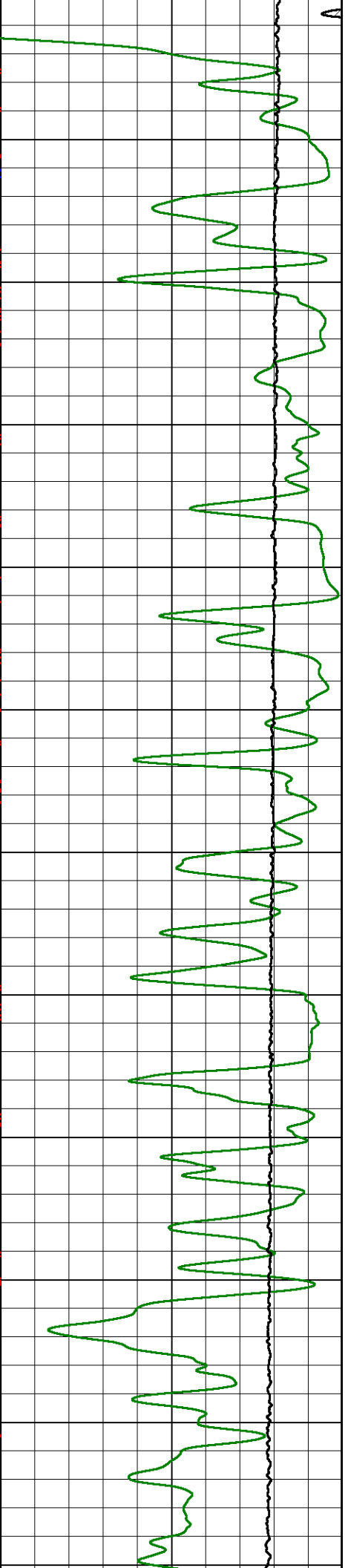
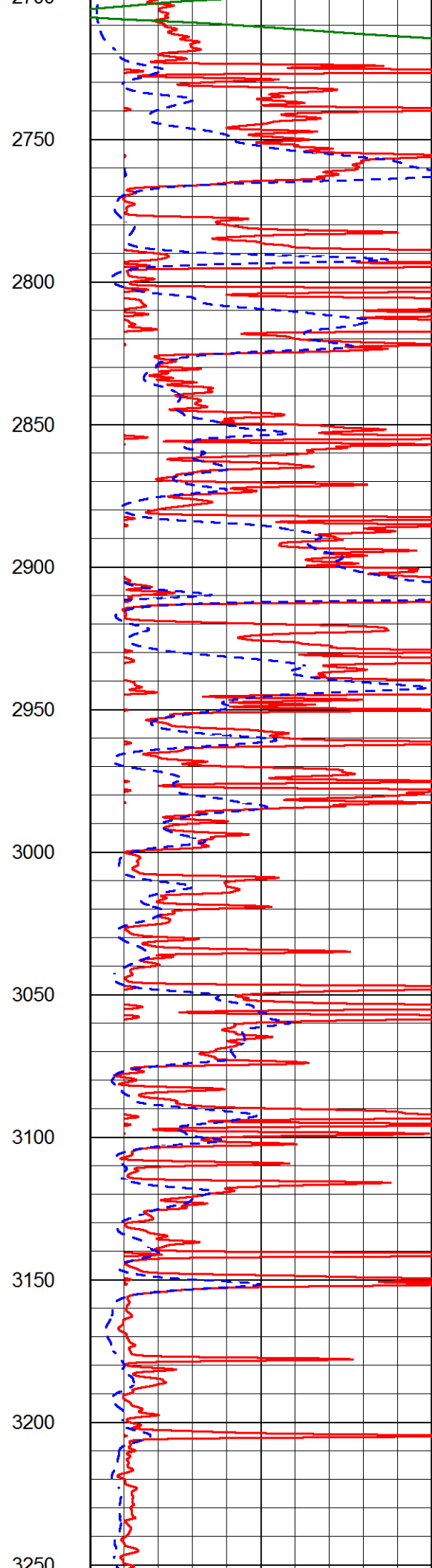
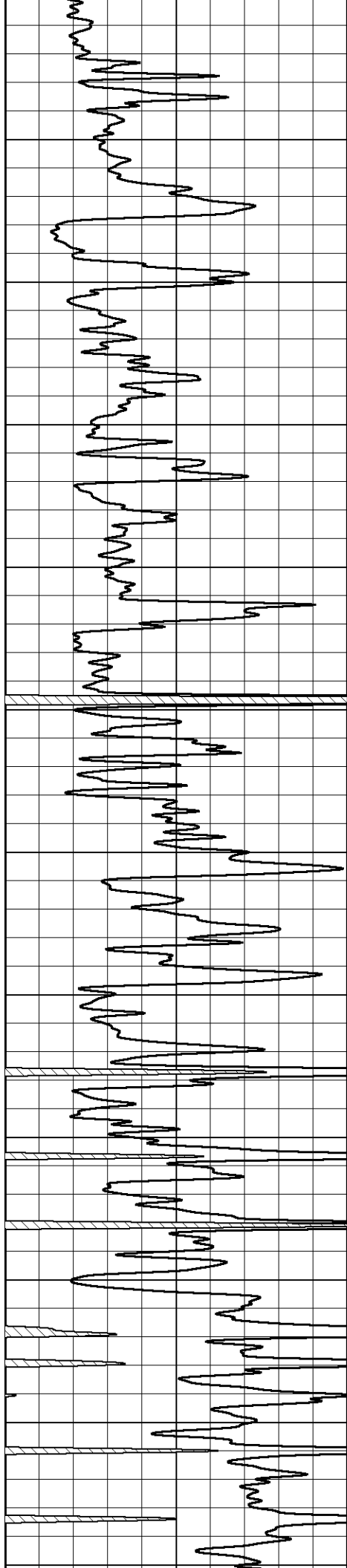
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1650
1700
1750
1800
1850
1900
1950
2000
2050
2100
2150

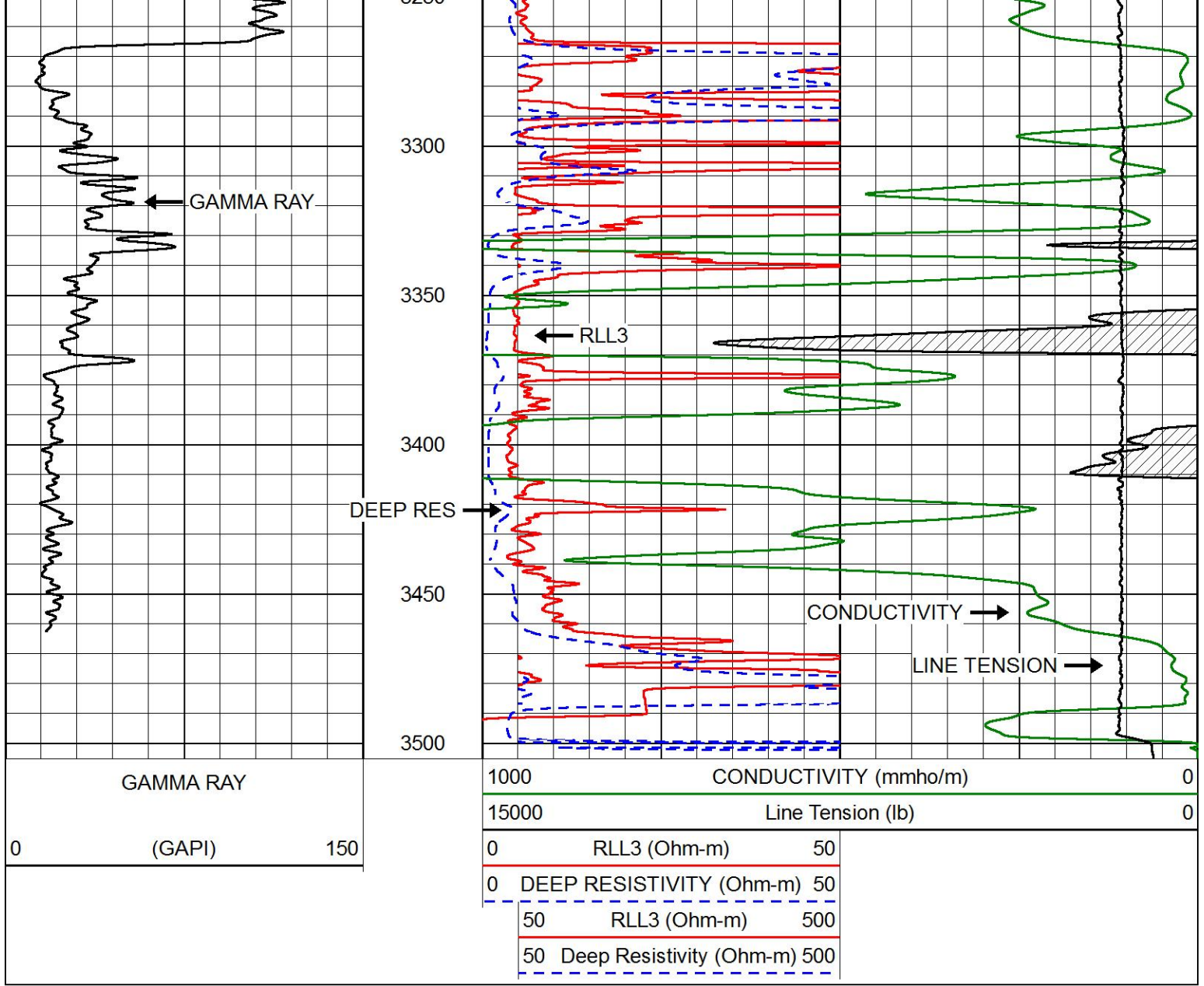




2100
2200
2250
2300
2350
2400
2450
2500
2550
2600
2650
2700





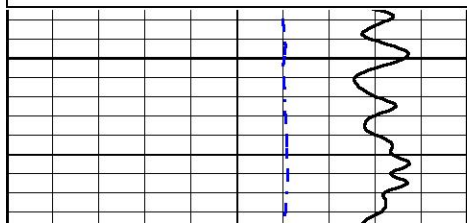


MAIN PASS

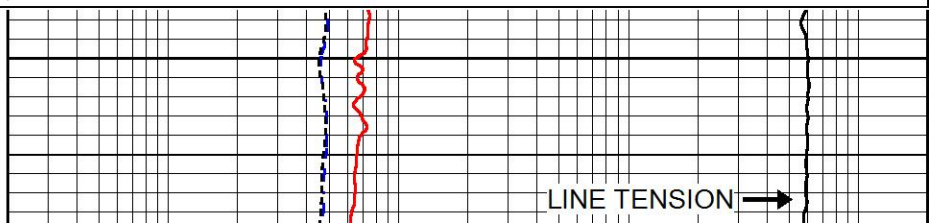
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 Presentation Format dil
 Dataset Creation Mon Sep 10 14:47:40 2018
 Charted by Depth in Feet scaled 1:240

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

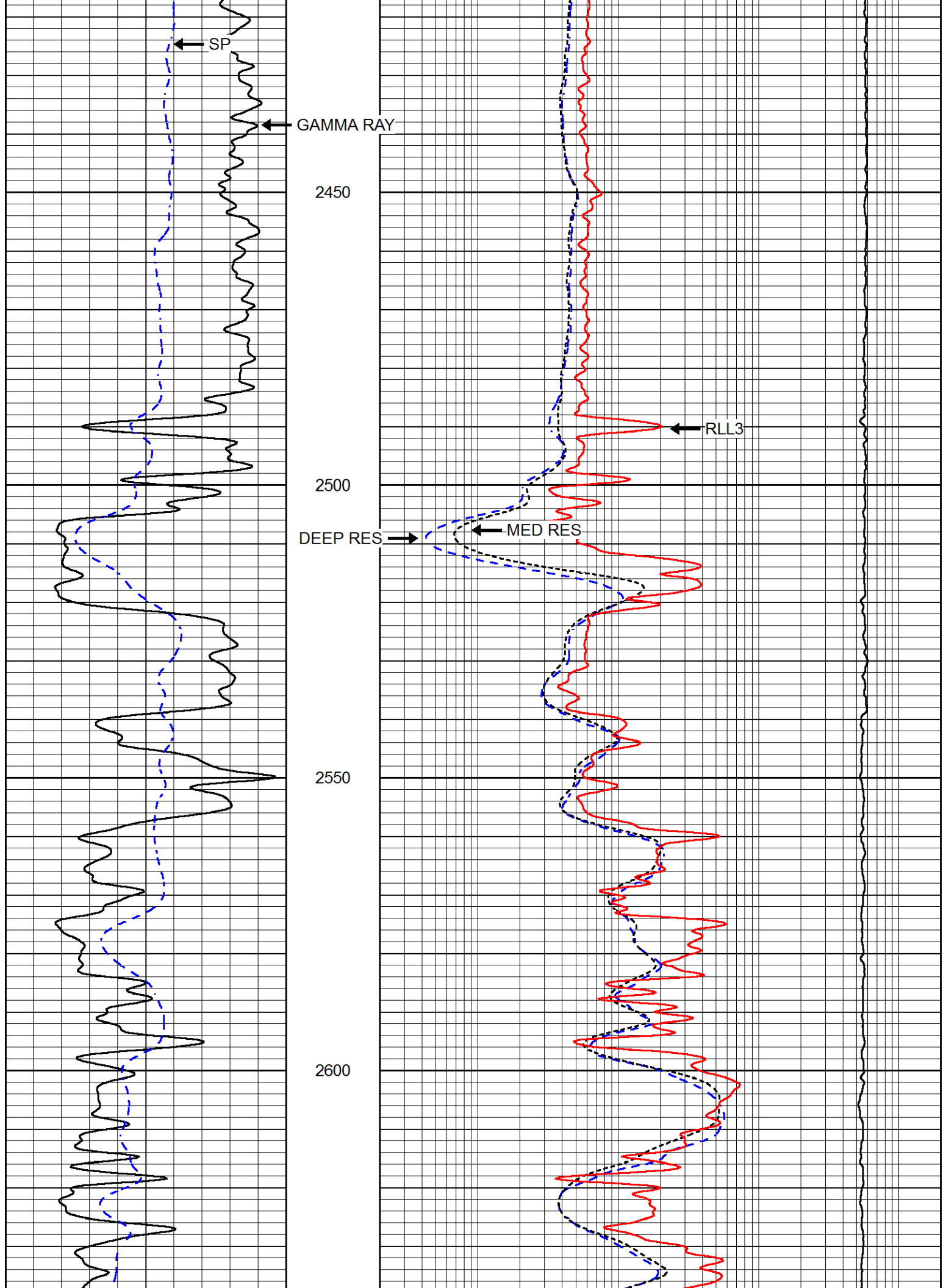
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0

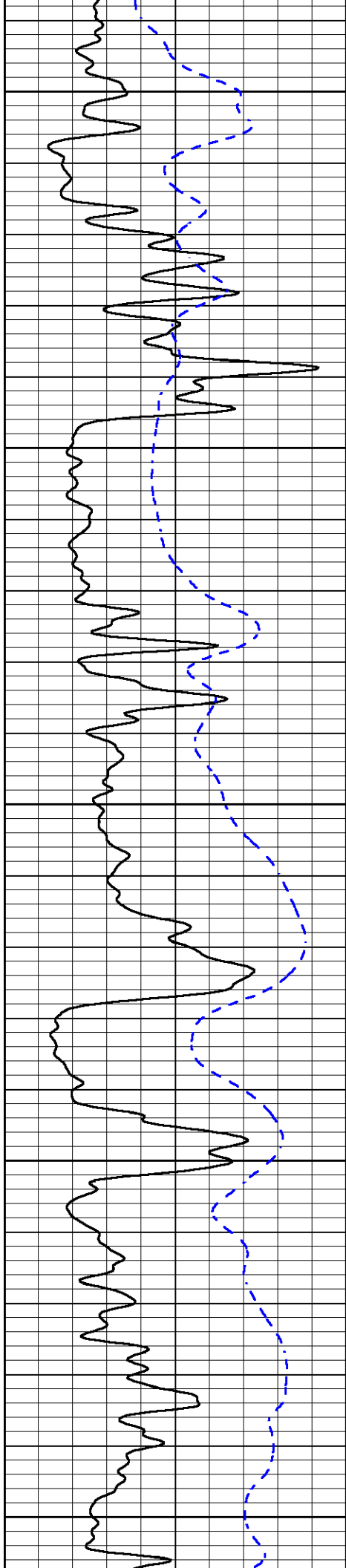


2400



LINE TENSION →





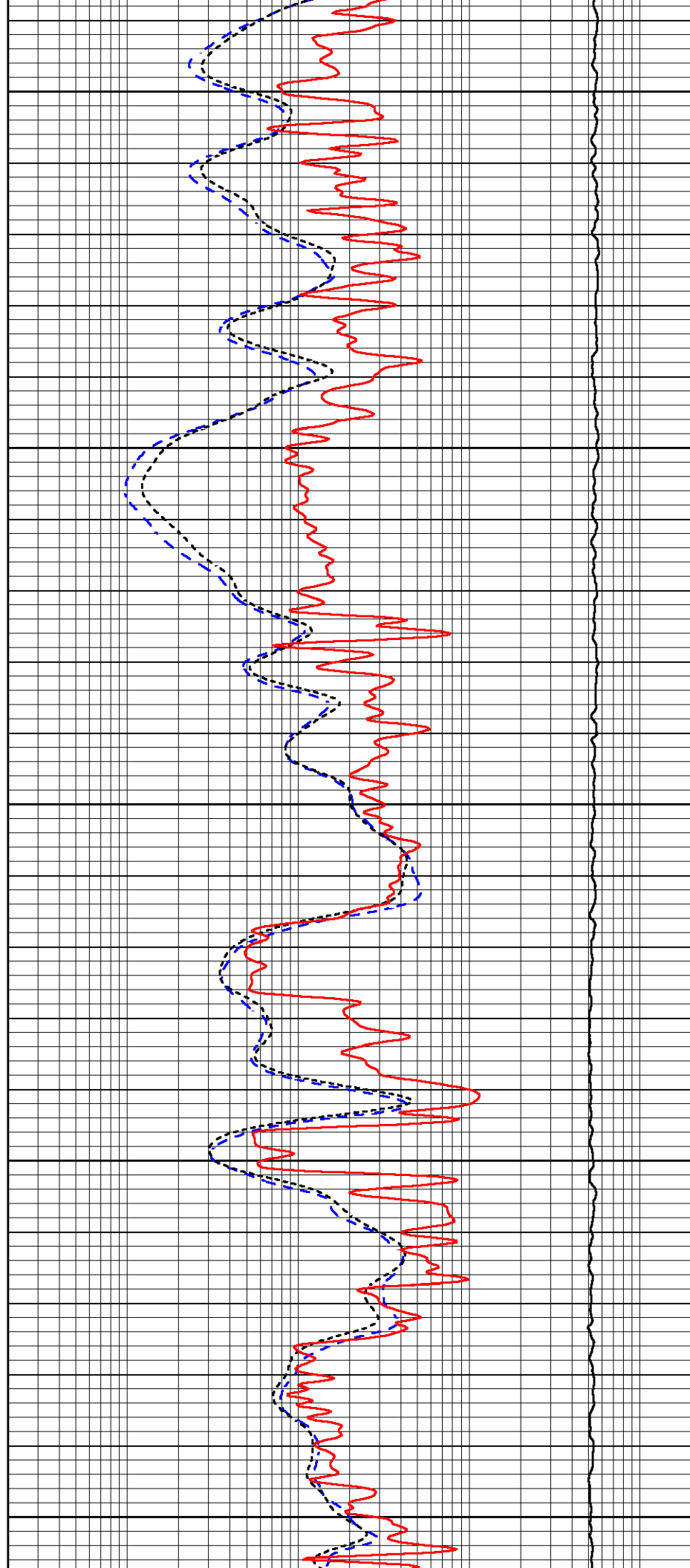
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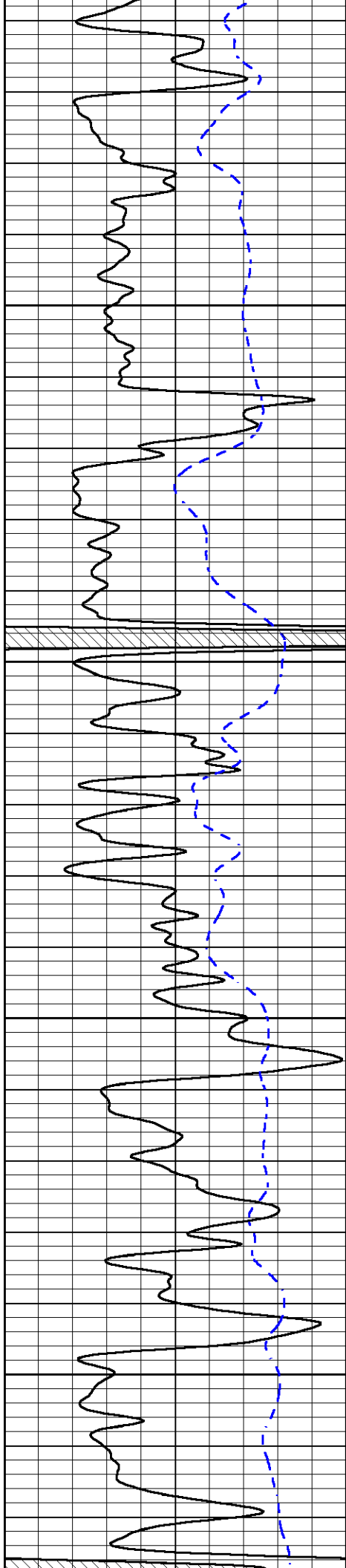
2700

2750

2800

2850



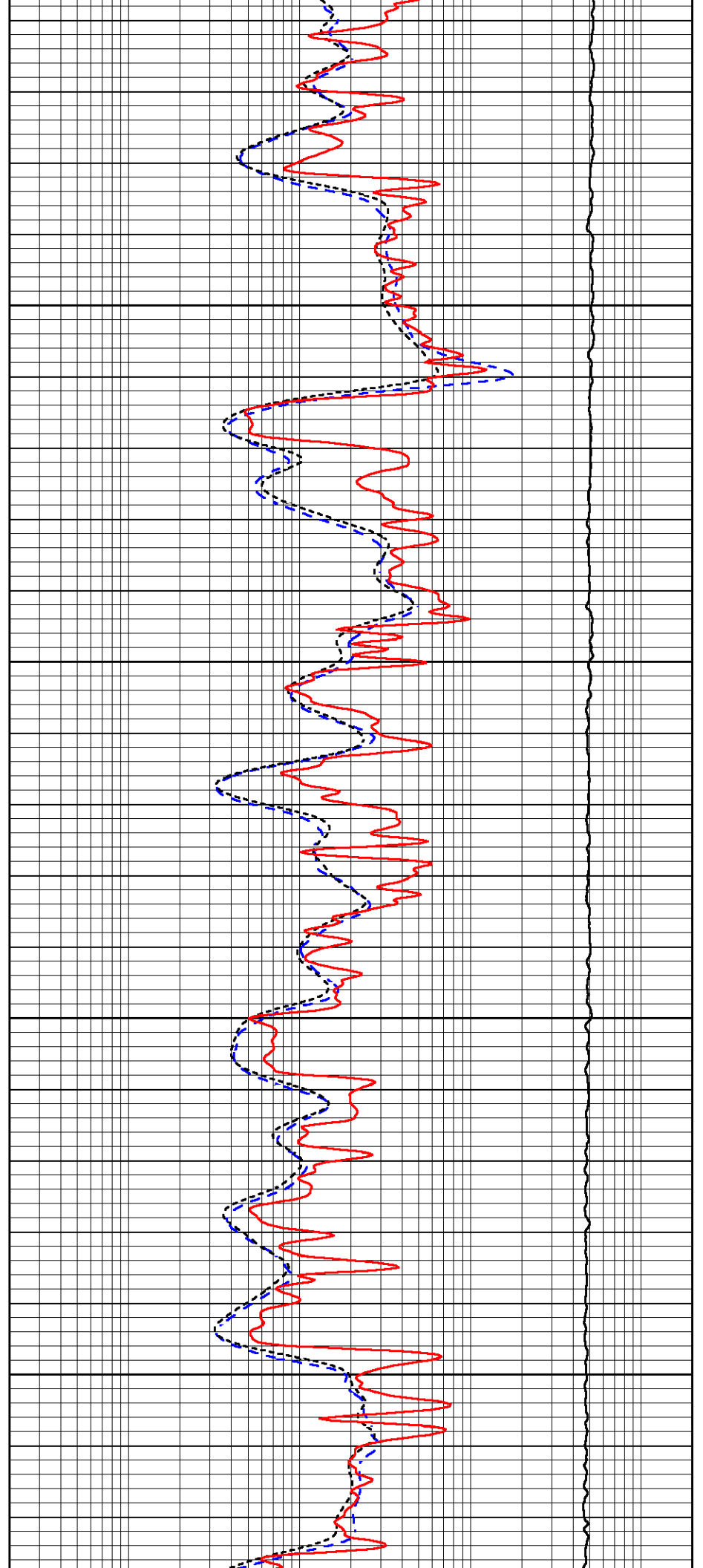


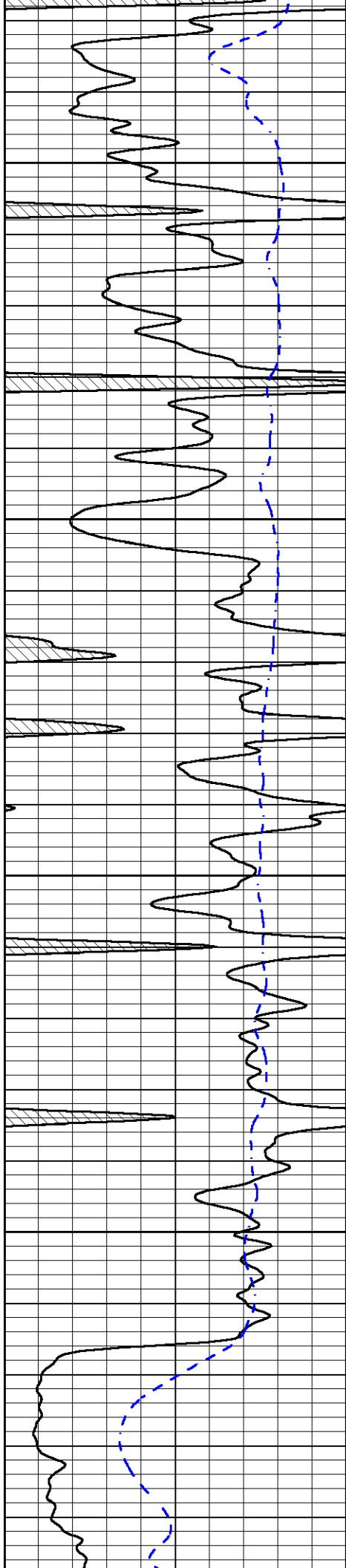
2900

2950

3000

3050



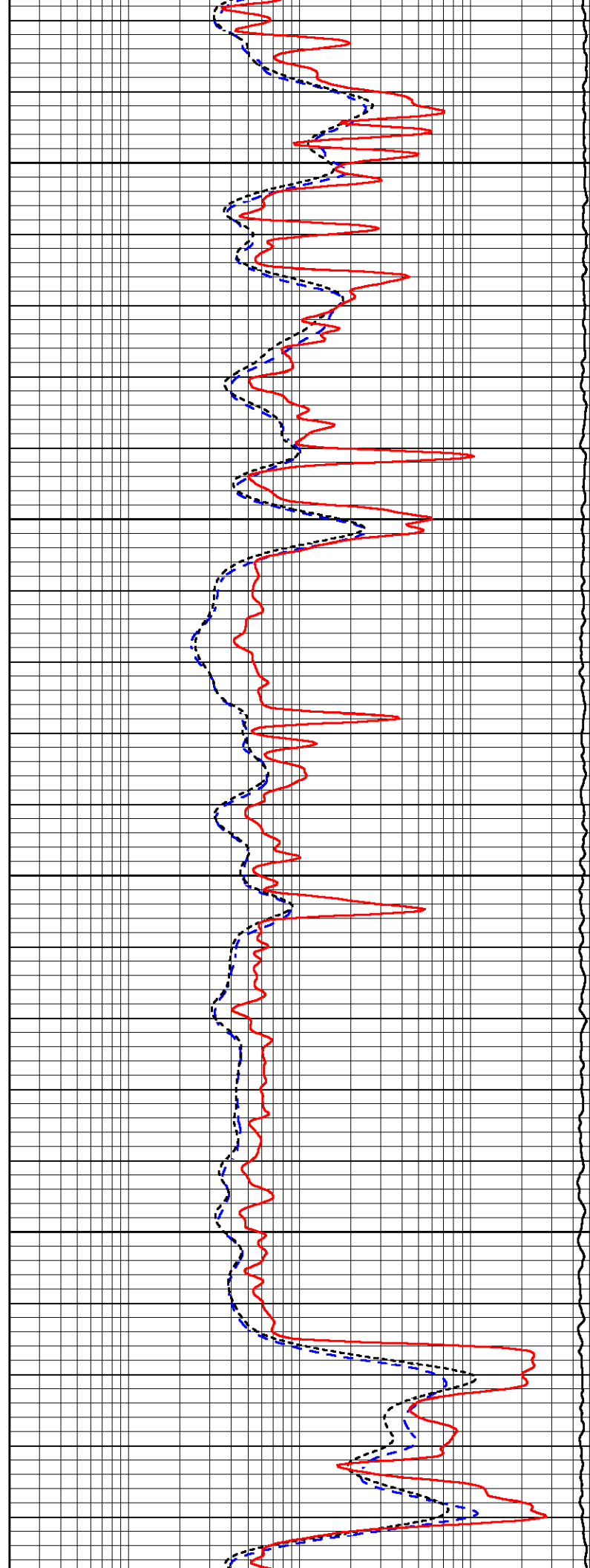


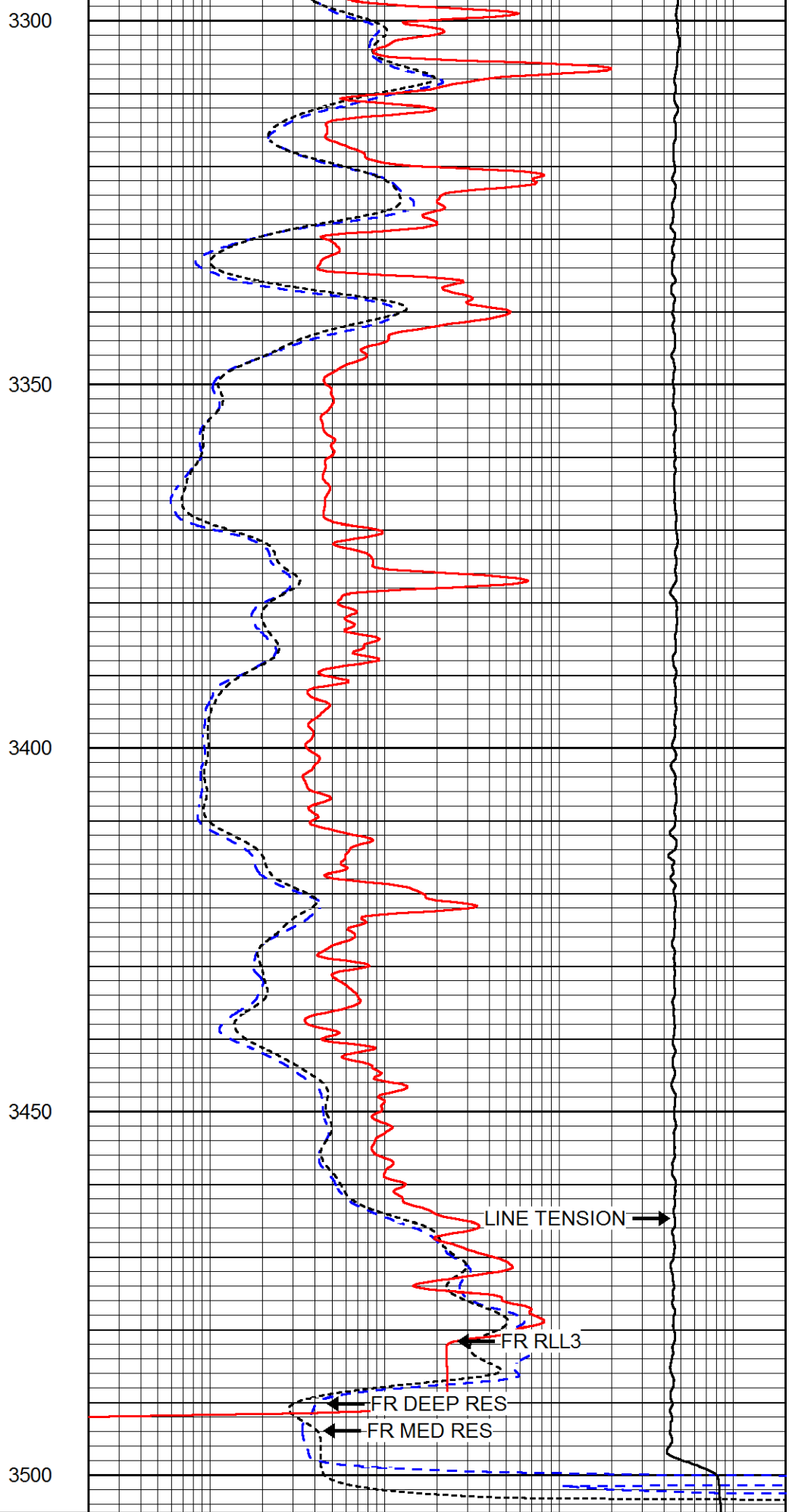
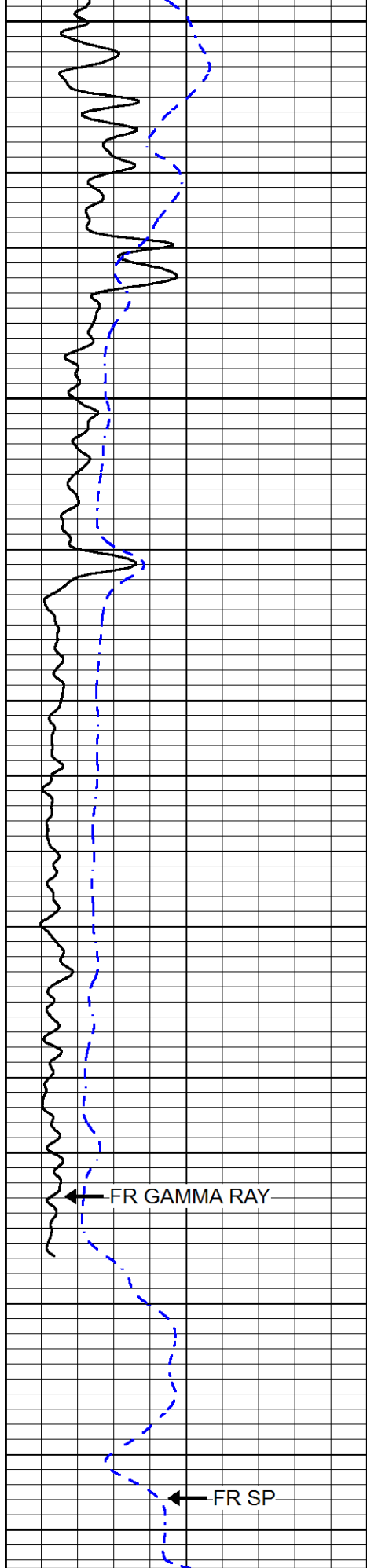
3100

3150

3200

3250





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

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

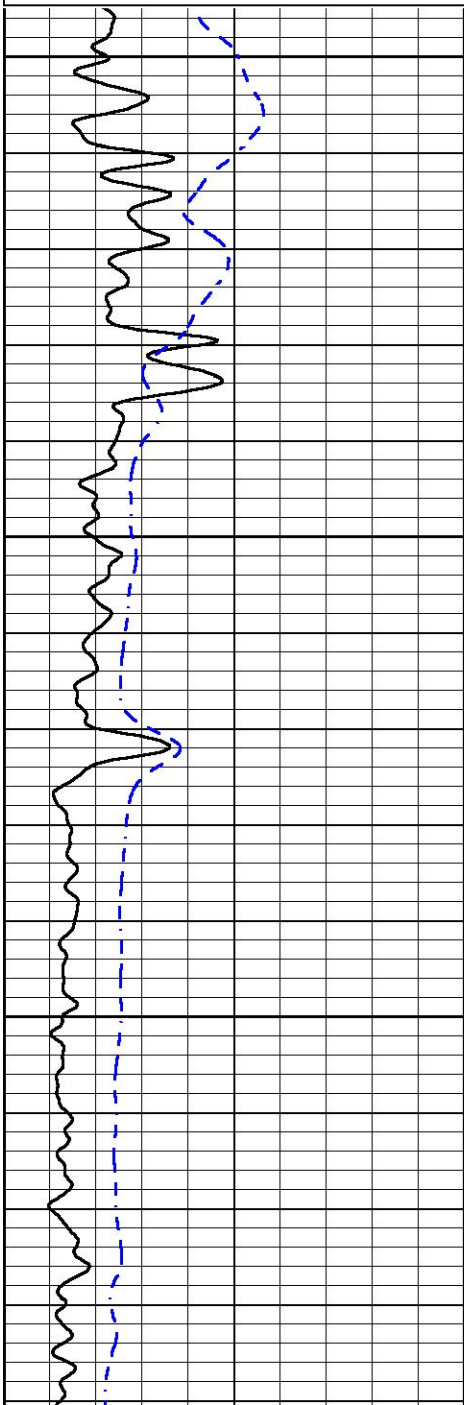


REPEAT SECTION

Database File howell_sabin b 14.db
 Dataset Pathname STKML/pass2.1
 Presentation Format dil
 Dataset Creation Mon Sep 10 14:33:23 2018
 Charted by Depth in Feet scaled 1:240

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

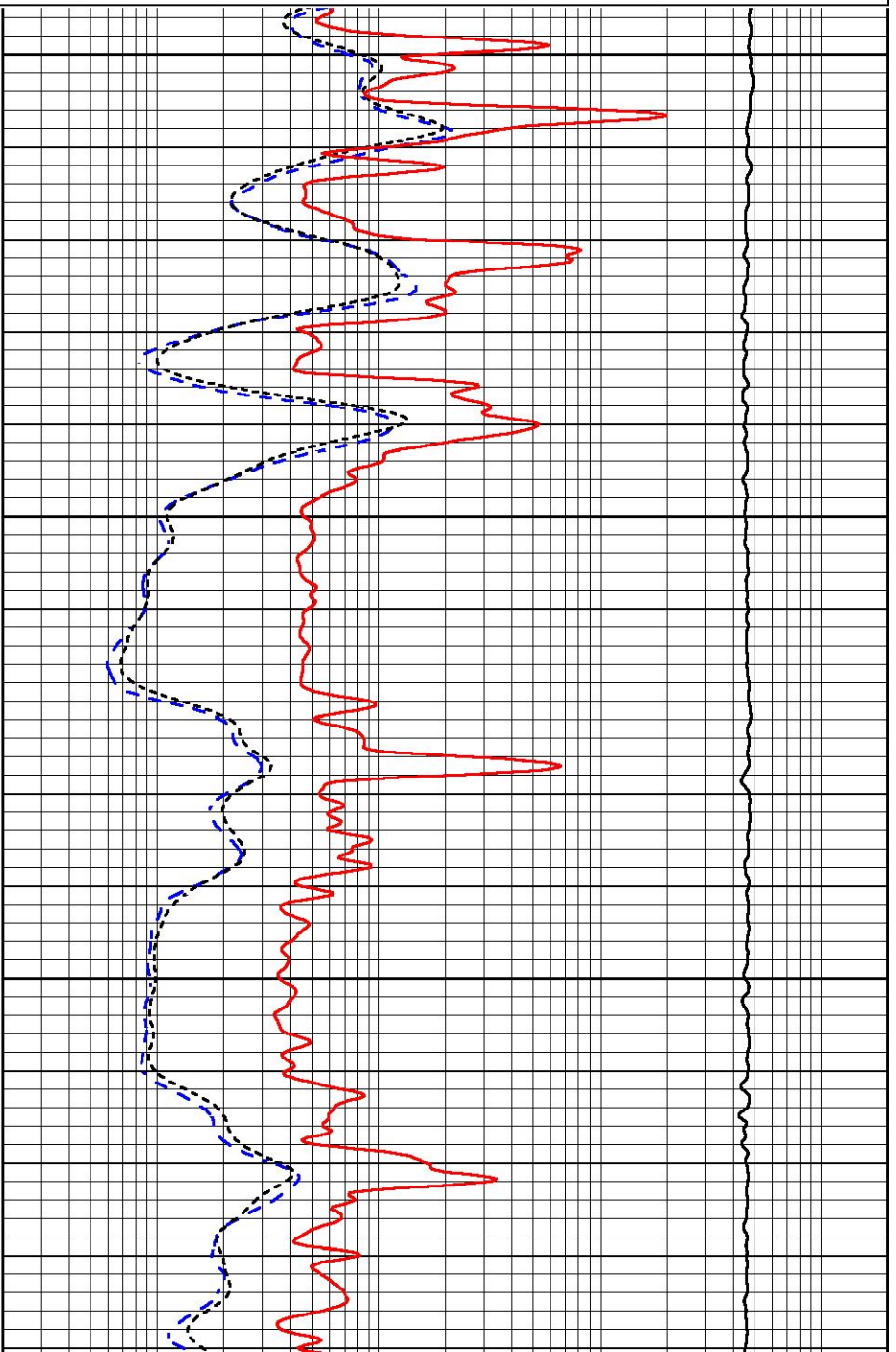
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0

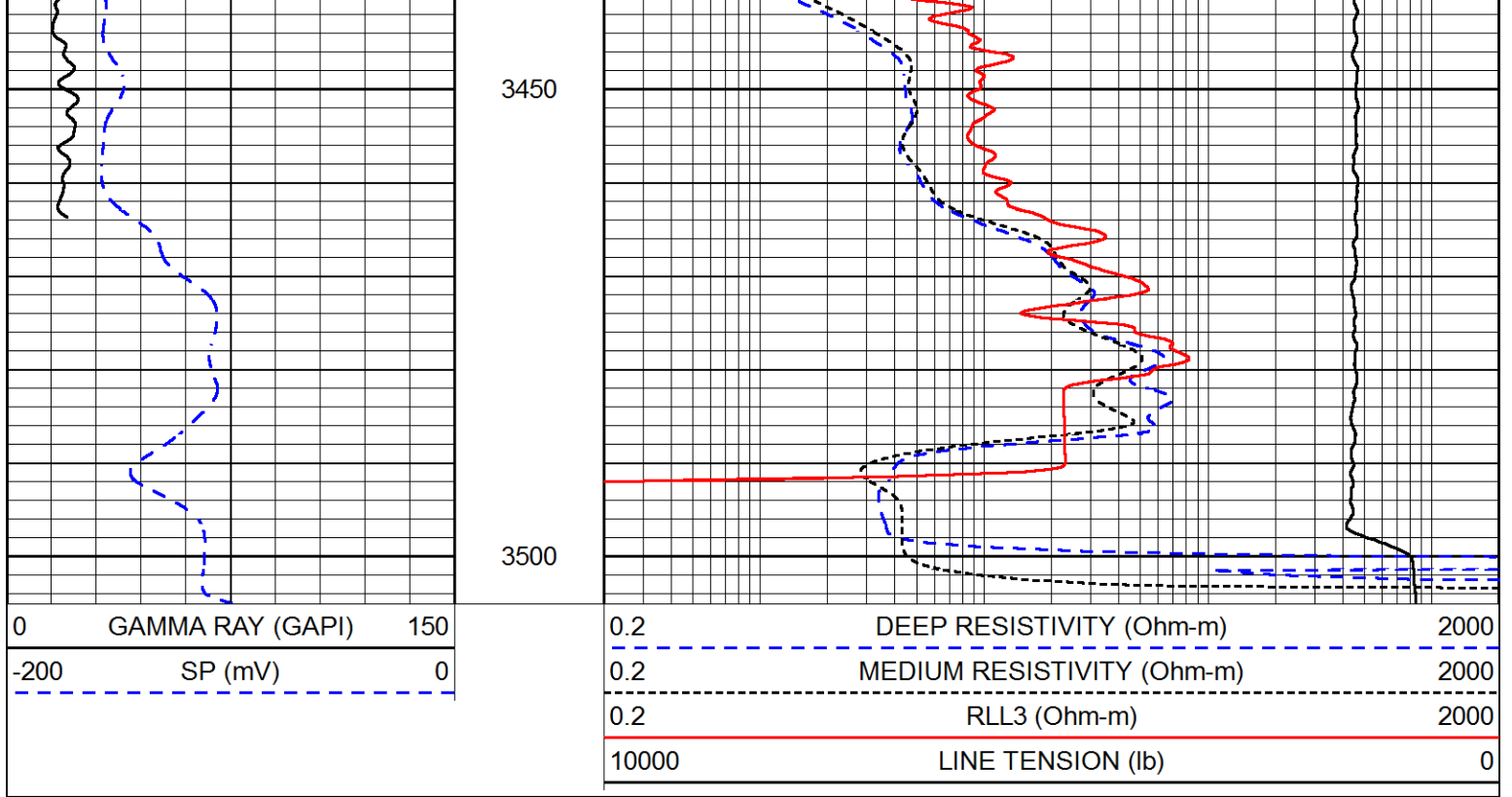


3300

3350

3400





Calibration Report

Database File howell_sabin b 14.db
 Dataset Pathname STKML/pass2.4
 Dataset Creation Mon Sep 10 14:41:43 2018

Dual Induction Calibration Report

Serial-Model: 967 (HT)-PSI HIGH TEMP
 Calibration Performed: Sun Aug 26 00:41:13 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.800	mmho/m	0.565	-20.000
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.390	-40.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Sat Sep 08 05:17:35 2018

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	17000.0000	-0.8000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	20000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-65.9250

Compensated Density Calibration Report

Serial-Model: 96-916-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Thu Aug 30 10:33:27 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	8943.64	10054.60	cps
Aluminum	2.650	g/cc	1595.61	6242.82	cps
Spine Angle = 74.54			Density/Spine Ratio = 0.500		
	Size		Reading		
Small Ring	6.00	in	1.75		
Large Ring	16.00	in	1.38		

Compensated Neutron Calibration Report

Serial Number: 207-MW
 Tool Model: M&W
 Calibration Performed: FRI AUG 24 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: Fri Aug 24 11:16:10 2018

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



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