



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company **JOHN O. FARMER, INC.**
Well **LANG #3**
Field **POLIFKA**
County **ELLIS** State **KANSAS**

Location: API #: 15-051-26888-00-00

Other Services

SEC 6 TWP 13S RGE 17W
1880' FNL & 330' FEL

CNL/CDL
MEL

Permanent Datum GROUND LEVEL Elevation 2062'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 2070'
D.F. N/A
G.L. 2062'

Date 9/6/2017

Run Number ONE

Depth Driller 3690'

Depth Logger 3689'

Bottom Logged Interval 3688'

Top Log Interval 200'

Casing Driller 8.625" @ 220'

Casing Logger 216'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 11000

Density / Viscosity 9.1 51

pH / Fluid Loss 8.5 10.2

Source of Sample FLOWLINE

Rm @ Meas. Temp 0.42 @ 72

Rmt @ Meas. Temp 0.32 @ 72

Rmc @ Meas. Temp 0.57 @ 72

Source of Rmt / Rmc CHARTS

Rm @ BHT 0.27 @ 113

Operating Rig Time 3 HOURS

Max Rec. Temp. F 113

Equipment Number 91

Location HAYS

Recorded By D. SCHMIDT

Witnessed By AUSTIN KLAUS

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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.

HAYS, (I-70 & TOULON)
NORTH TO FEEDLOT RD, 1/2 NORTH,
WEST INTO

Log Measured From: KELLY BUSHING 8 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew

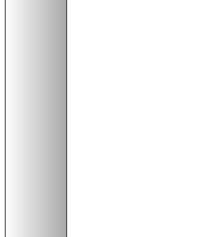
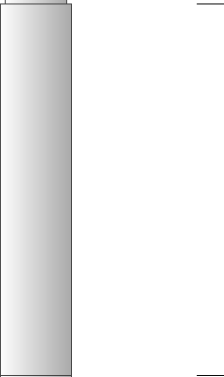
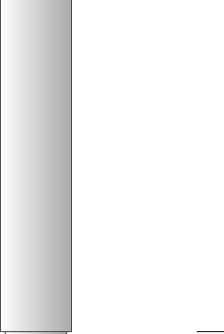
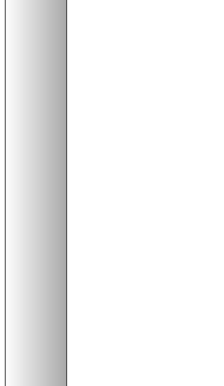
Engineer: D. SCHMIDT
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: AUSTIN KLAUS
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	30	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	80	0	5.5	0	3689	113	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					

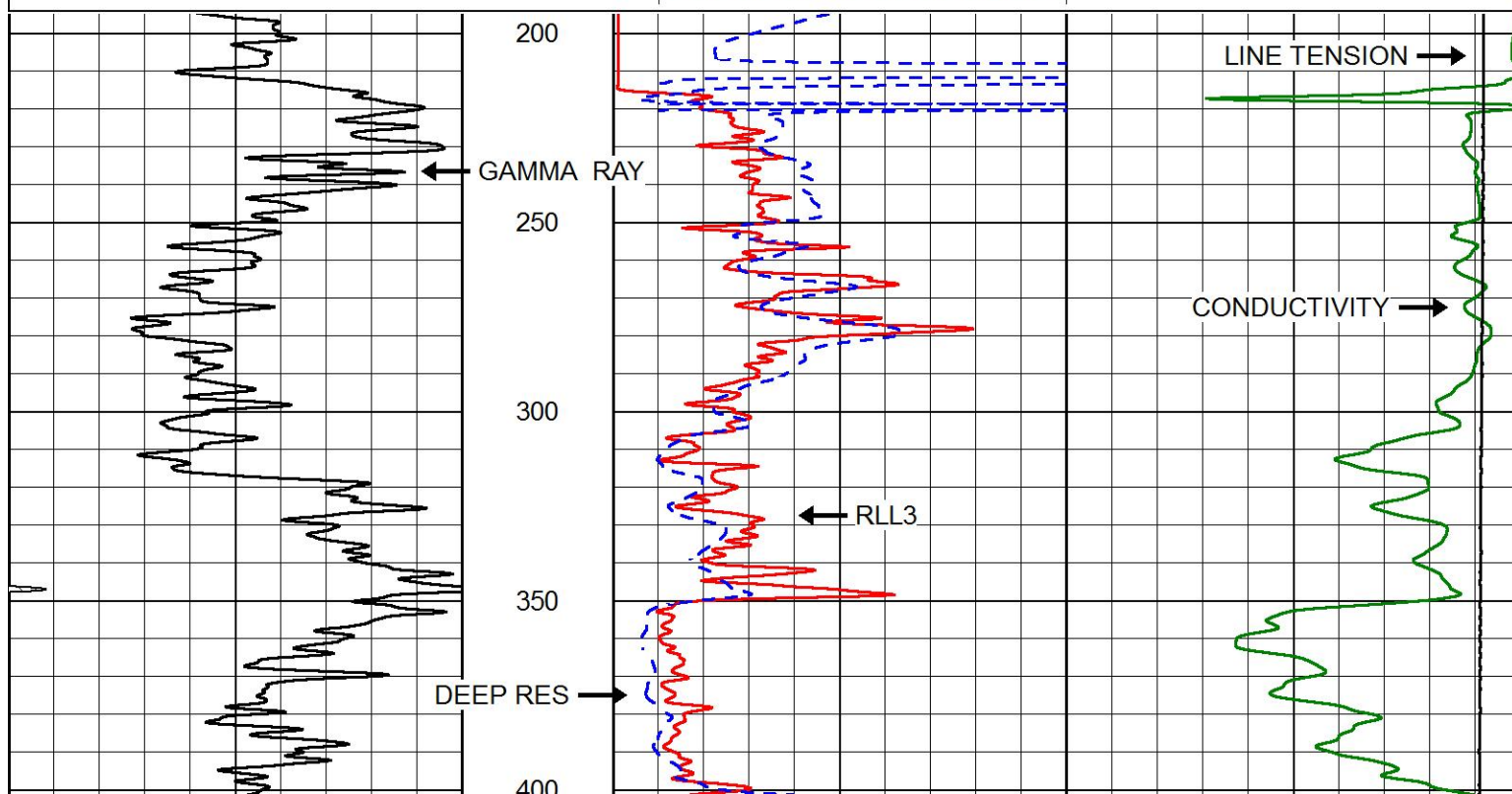
			DIL-M&W (PSI 91)	18.50	3.50	220.00
CILD	8.00					
CILM	4.70					
SP	0.20					
Dataset: john o farmer_lang 3.db: field/well/STKML/pass3.4 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in						

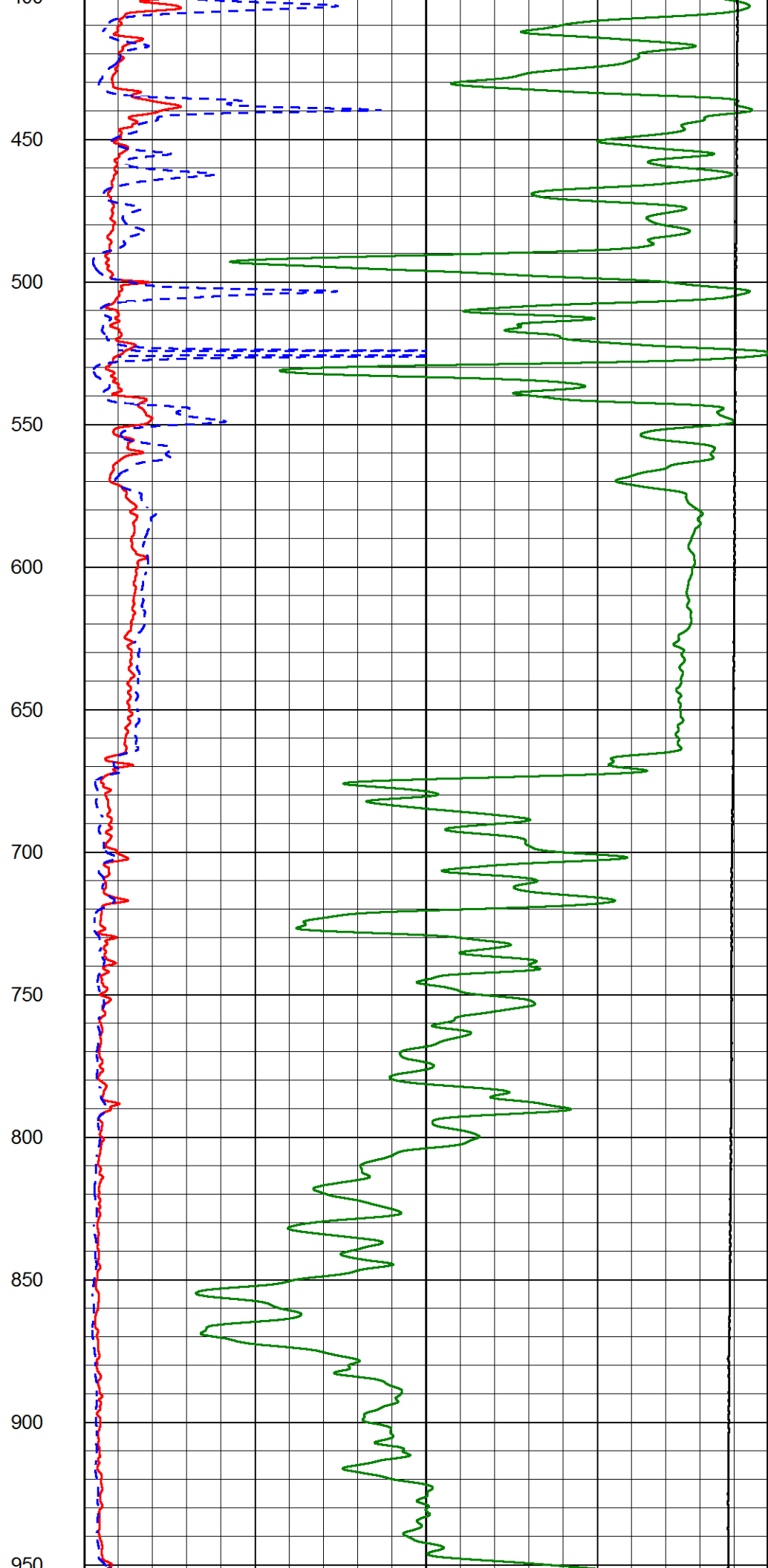
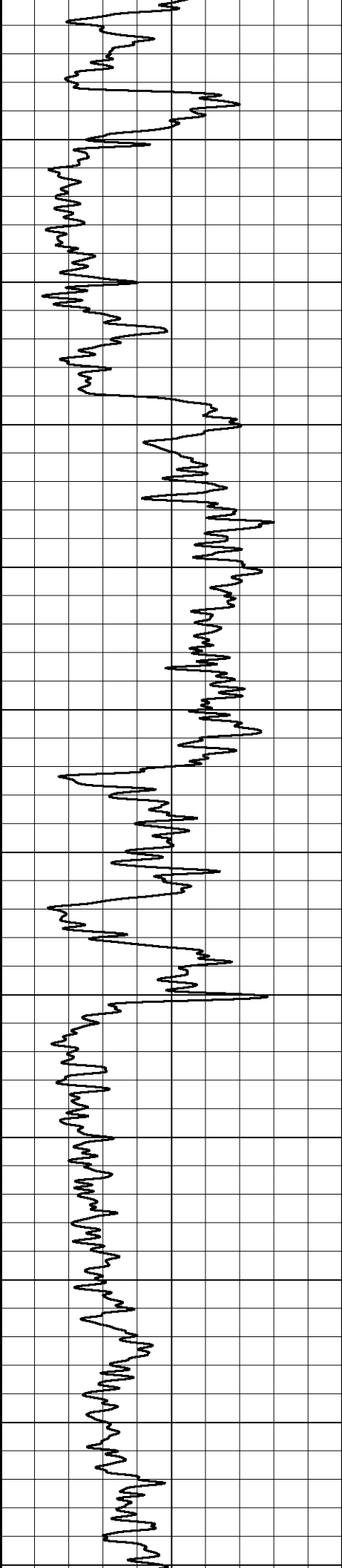


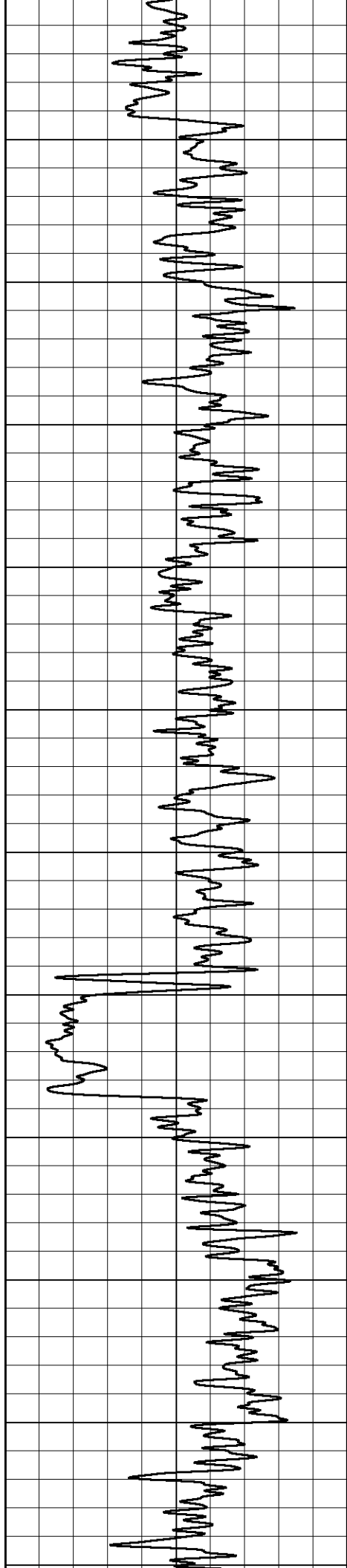
MAIN PASS

Database File	john o farmer_lang 3.db
Dataset Pathname	STKML/pass3.1
Presentation Format	dil2in
Dataset Creation	Wed Sep 06 21:07:46 2017
Charted by	Depth in Feet scaled 1:600

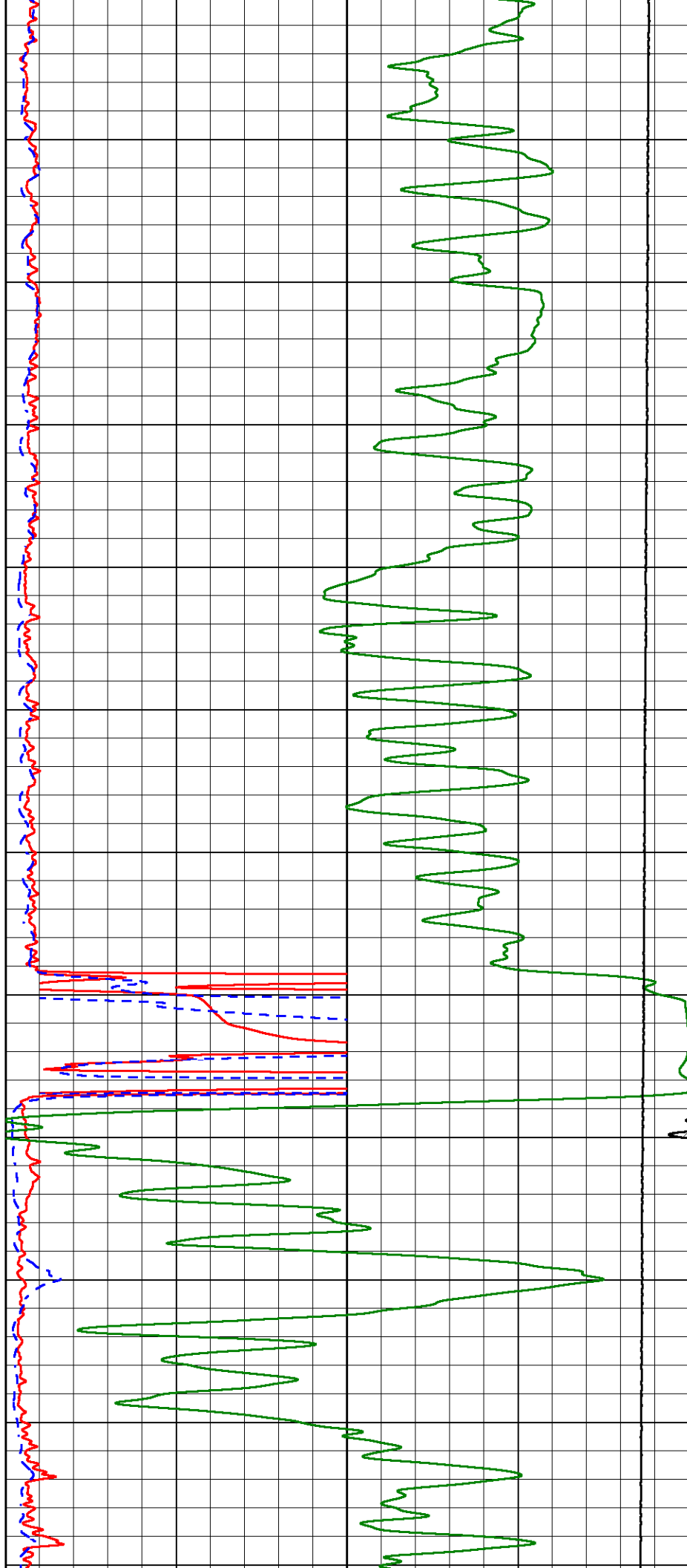
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			15000	Line Tension (lb)	0
			0	RLL3 (Ohm-m)	50
			0	Deep Resistivity (Ohm-m)	50
			50	RLL3 (Ohm-m)	500
			50	Deep Resistivity (Ohm-m)	500

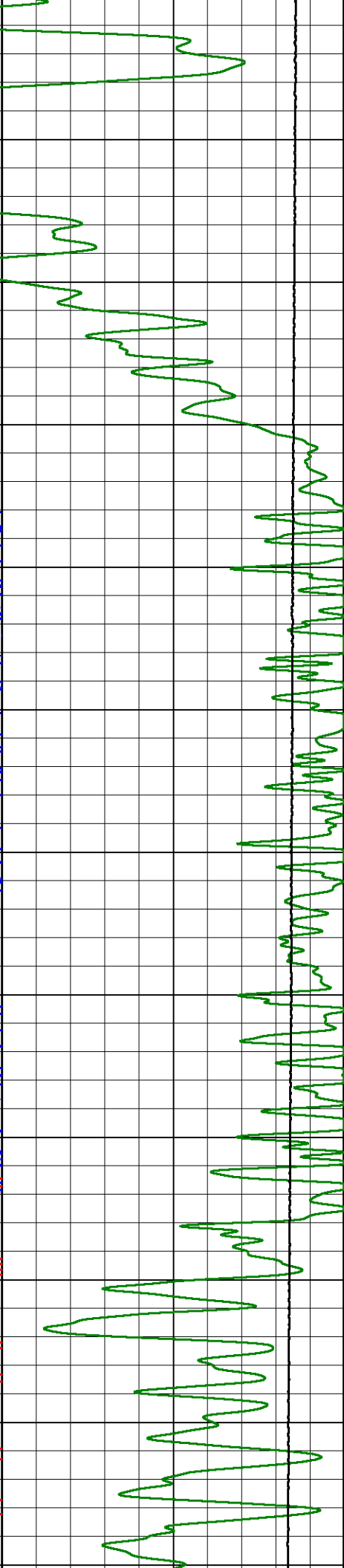
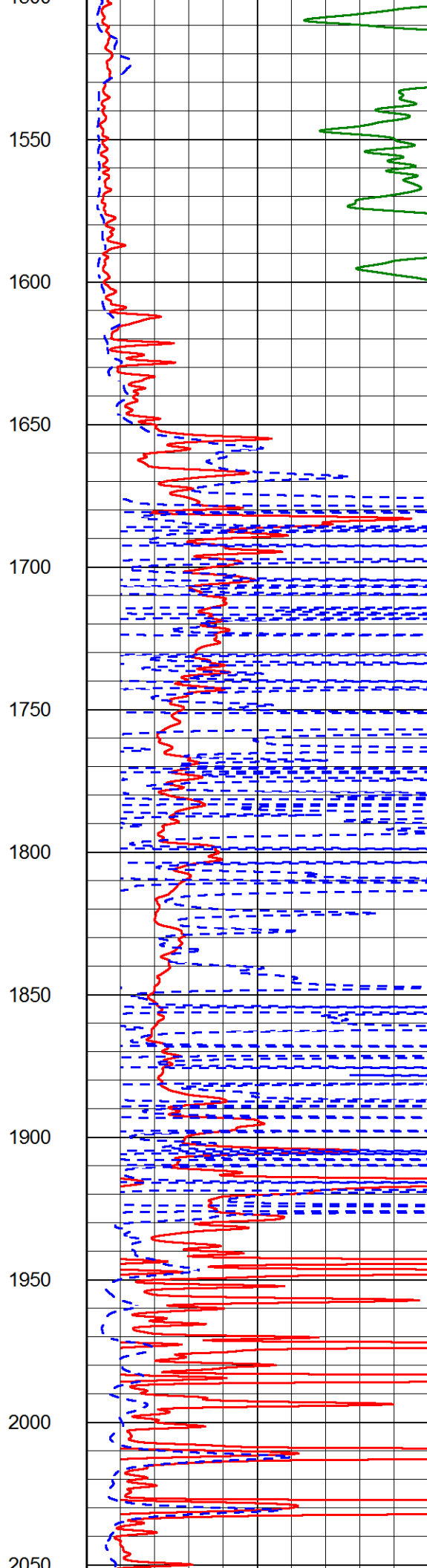
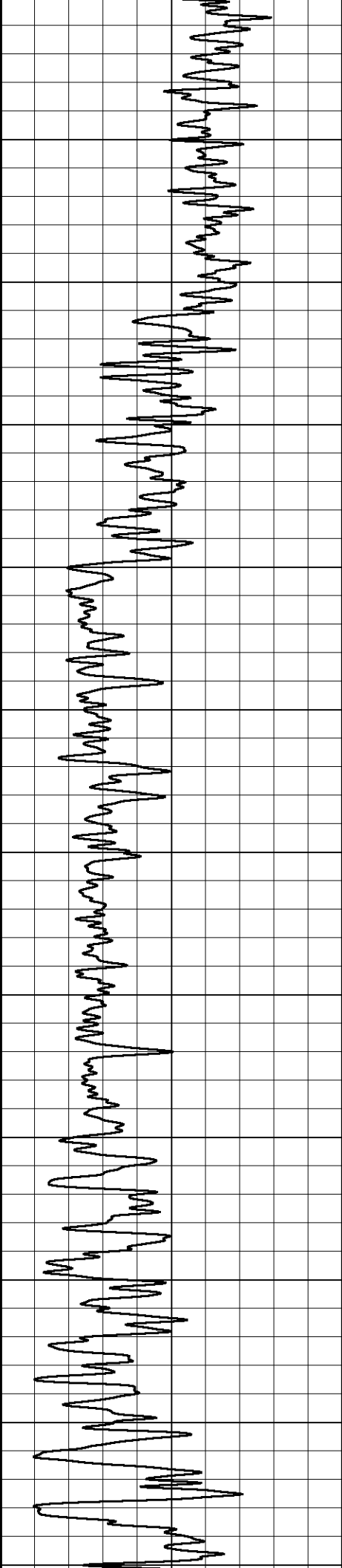


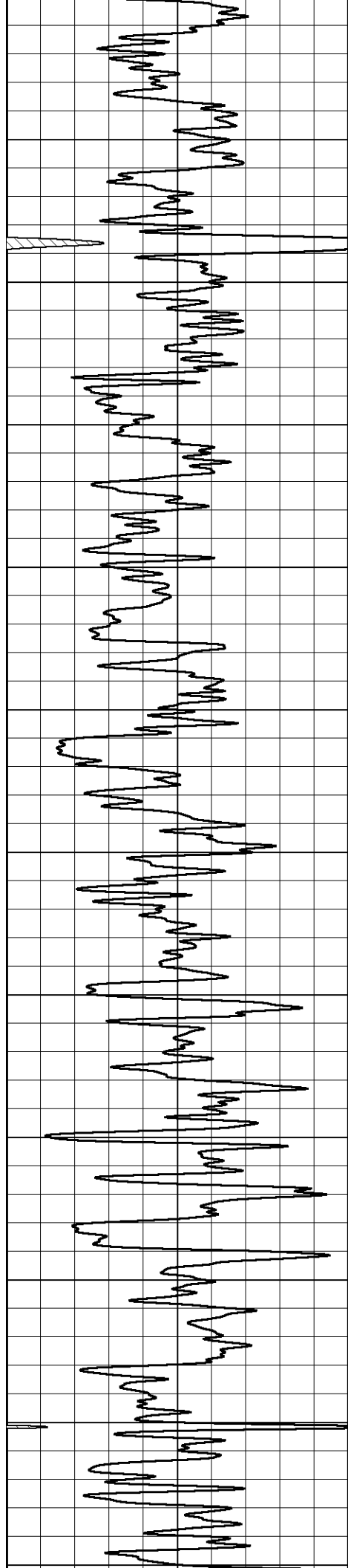




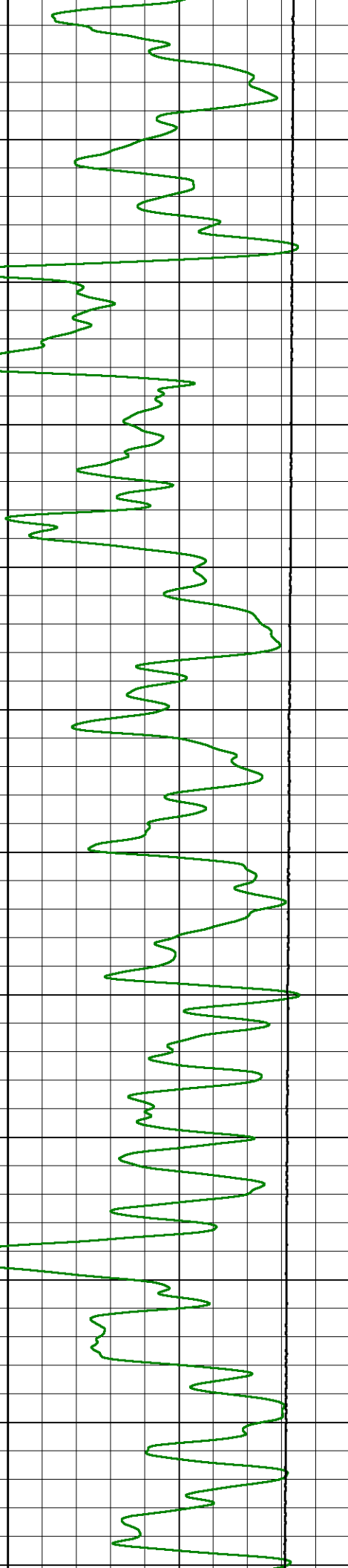
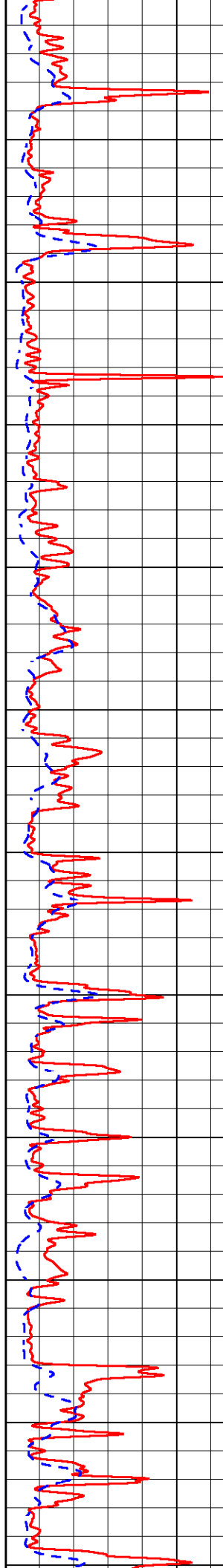
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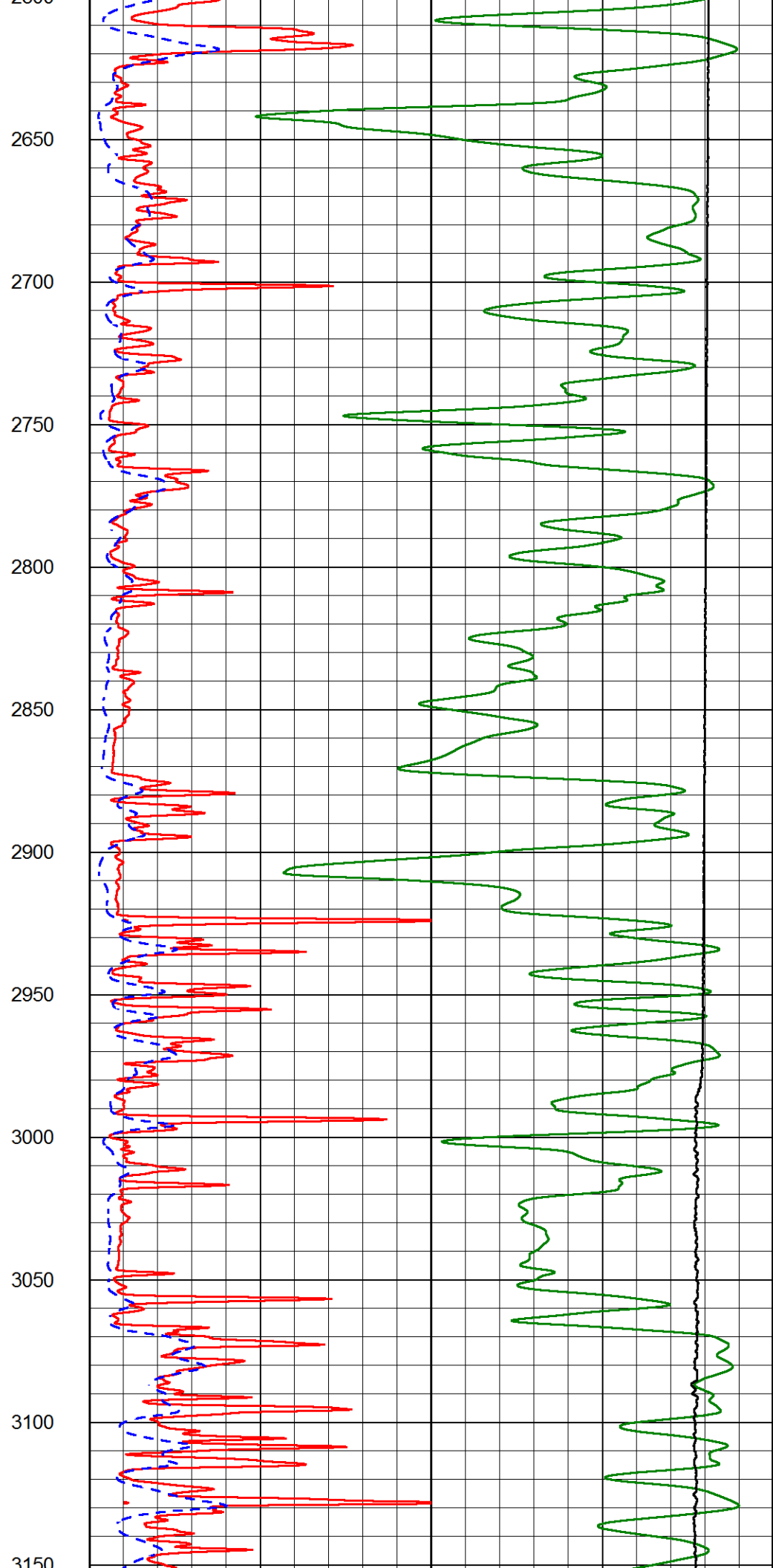
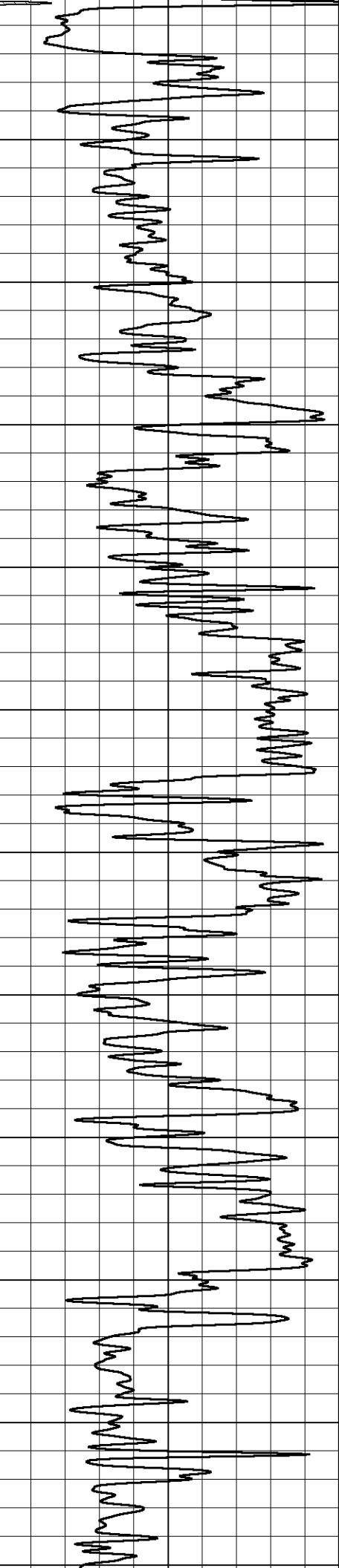


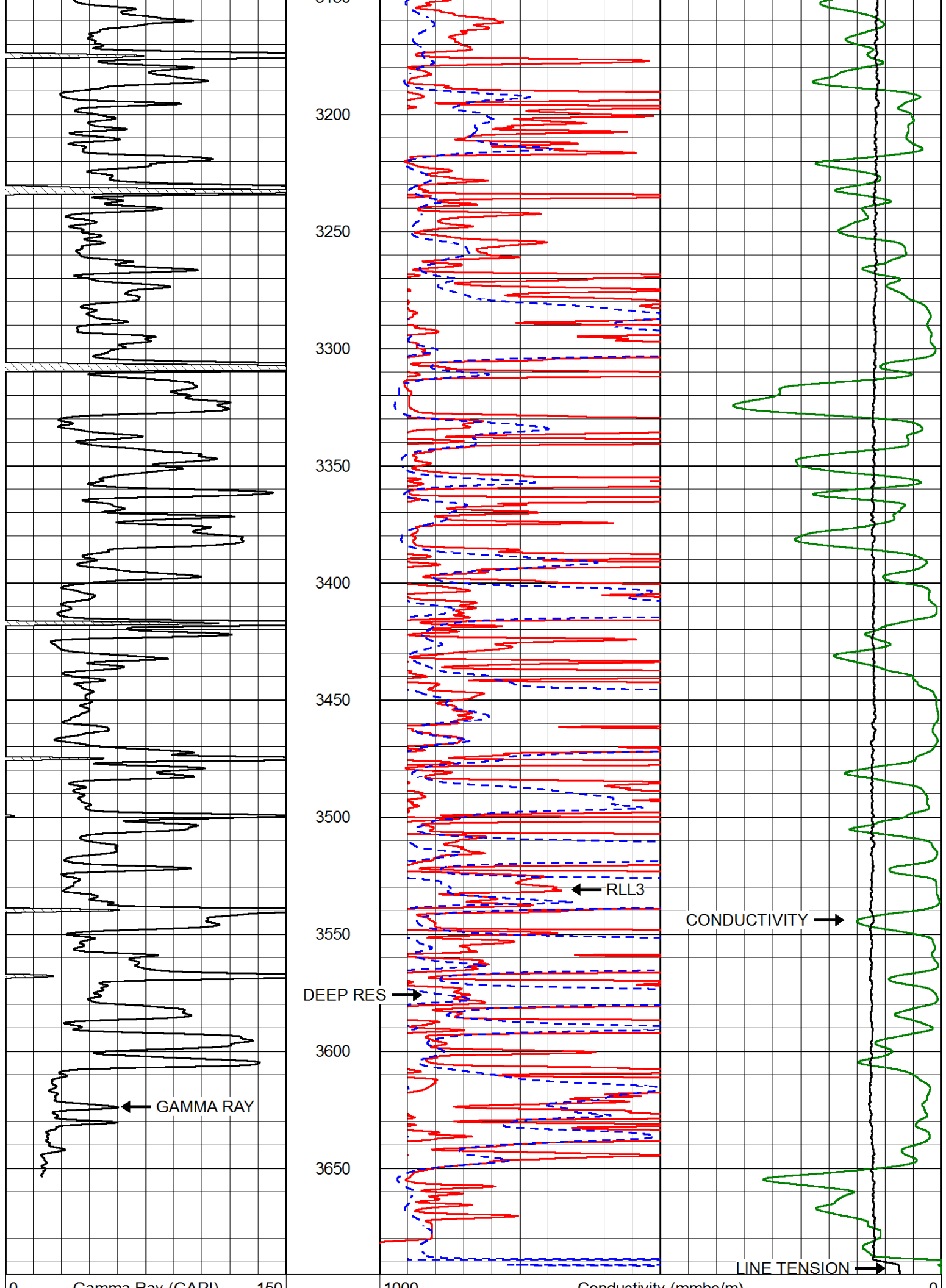




2000
2100
2150
2200
2250
2300
2350
2400
2450
2500
2550
2600







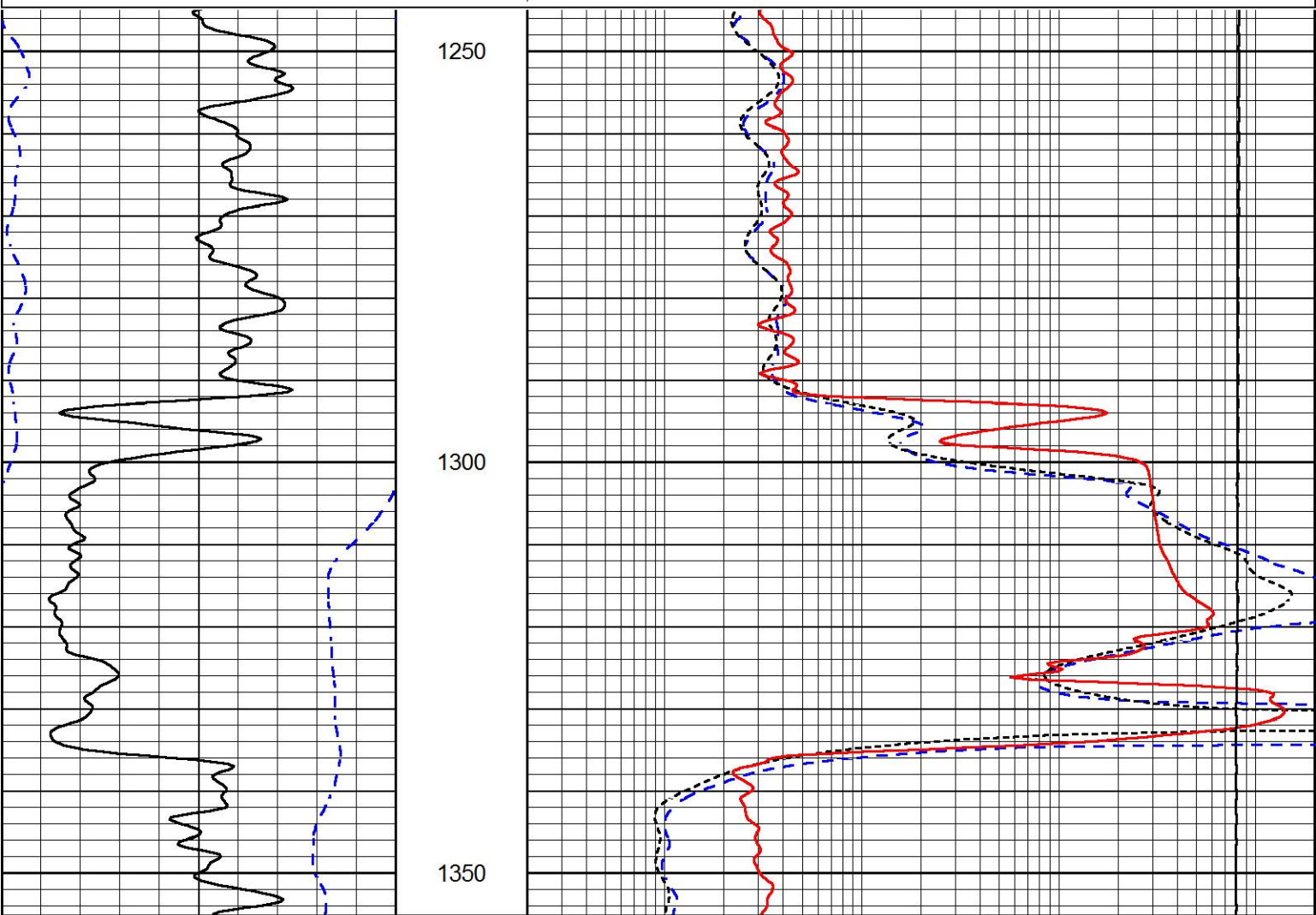
0	Gamma Ray (GAPI)	150	1000	Conductivity (mmho/m)	0
			15000	Line Tension (lb)	0
0	RLL3 (Ohm-m)	50			
0	Deep Resistivity (Ohm-m)	50			
50	RLL3 (Ohm-m)	500			
50	Deep Resistivity (Ohm-m)	500			



MAIN PASS

Database File	john o farmer_lang 3.db
Dataset Pathname	STKML/pass3.1
Presentation Format	dil
Dataset Creation	Wed Sep 06 21:07:46 2017
Charted by	Depth in Feet scaled 1:240

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
			10000	Line Tension (lb)	0



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
			10000	Line Tension (lb)	0

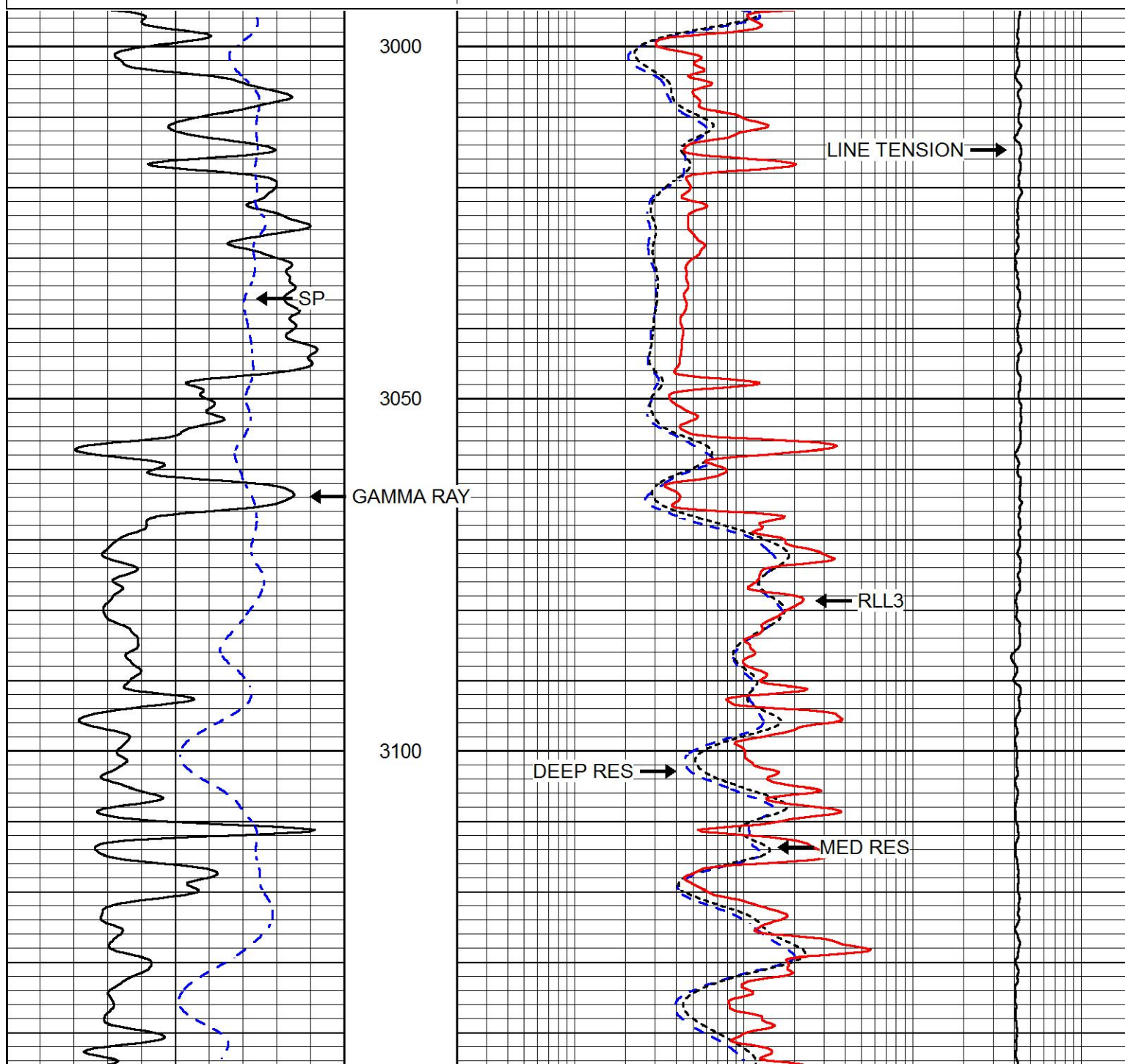


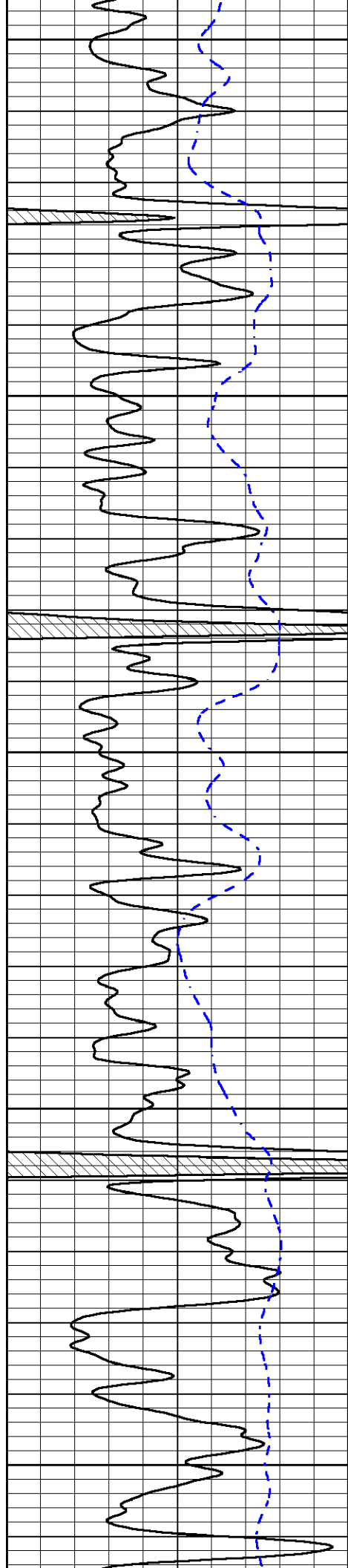
MAIN PASS

Database File john o farmer_lang 3.db
Dataset Pathname STKML/pass3.1
Presentation Format dil
Dataset Creation Wed Sep 06 21:07:46 2017
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





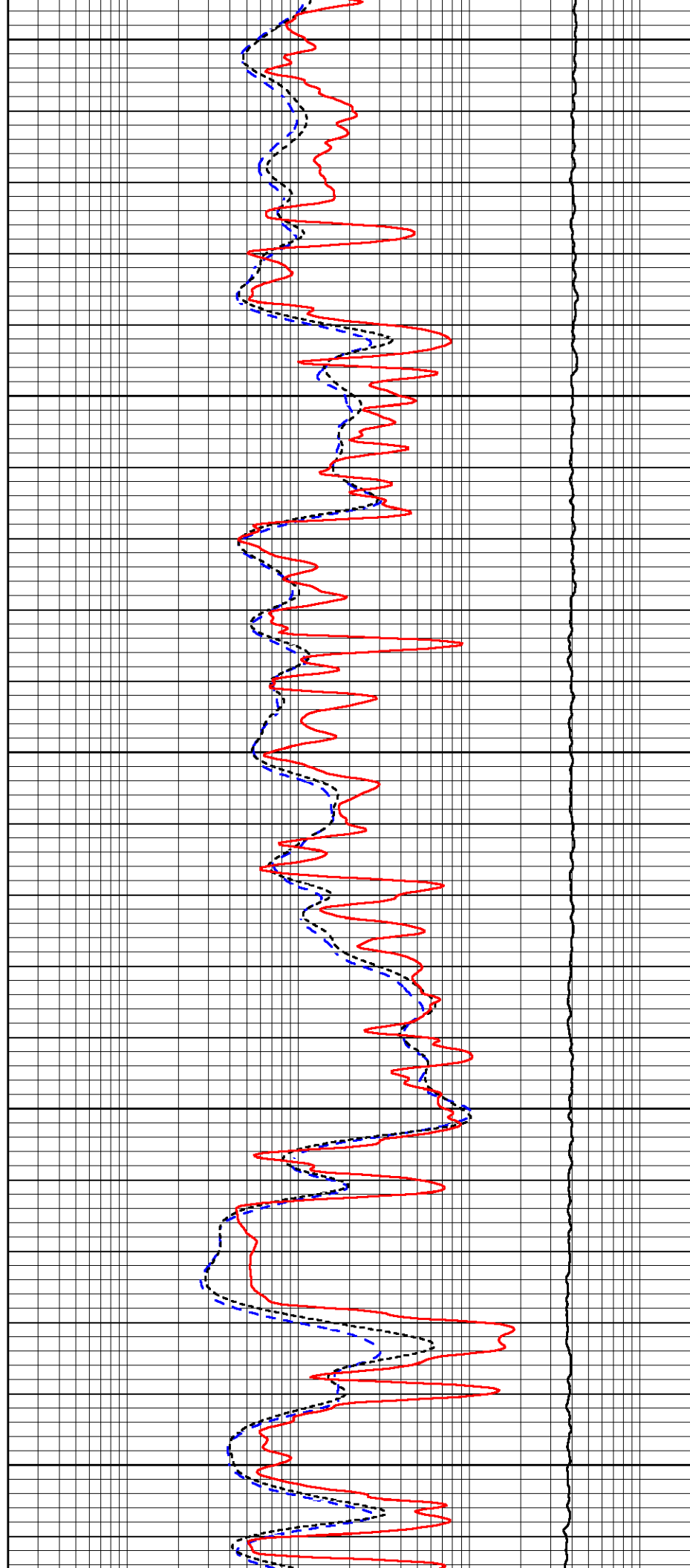
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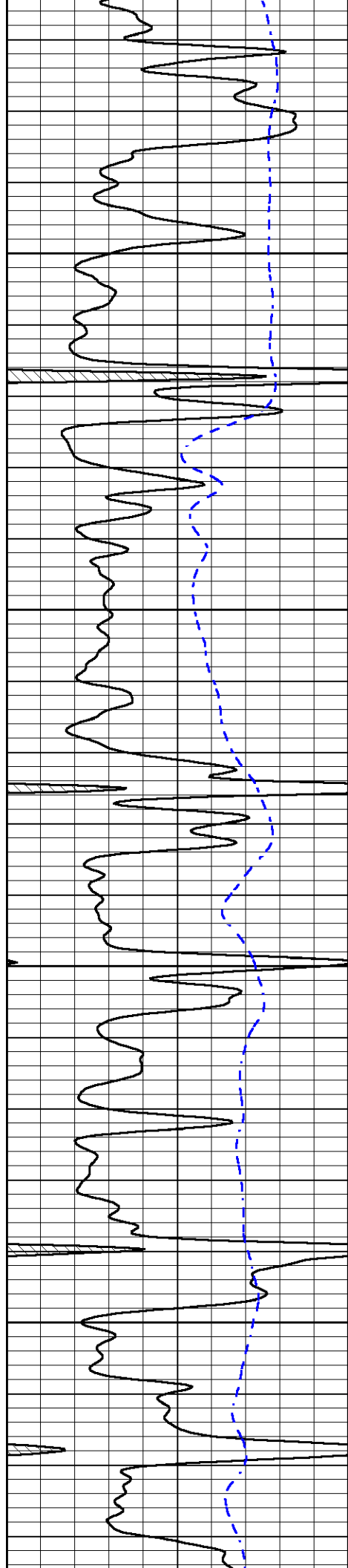
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3250

3300

3350



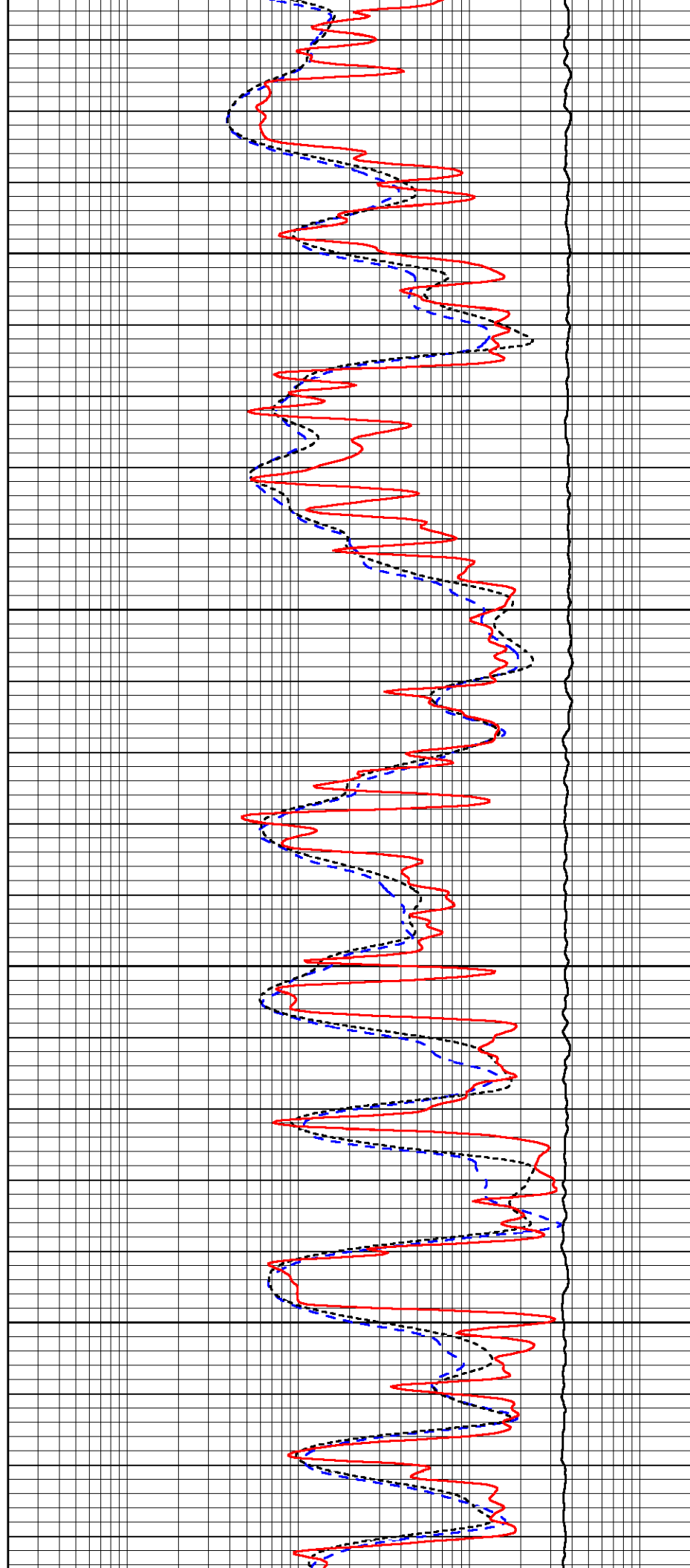


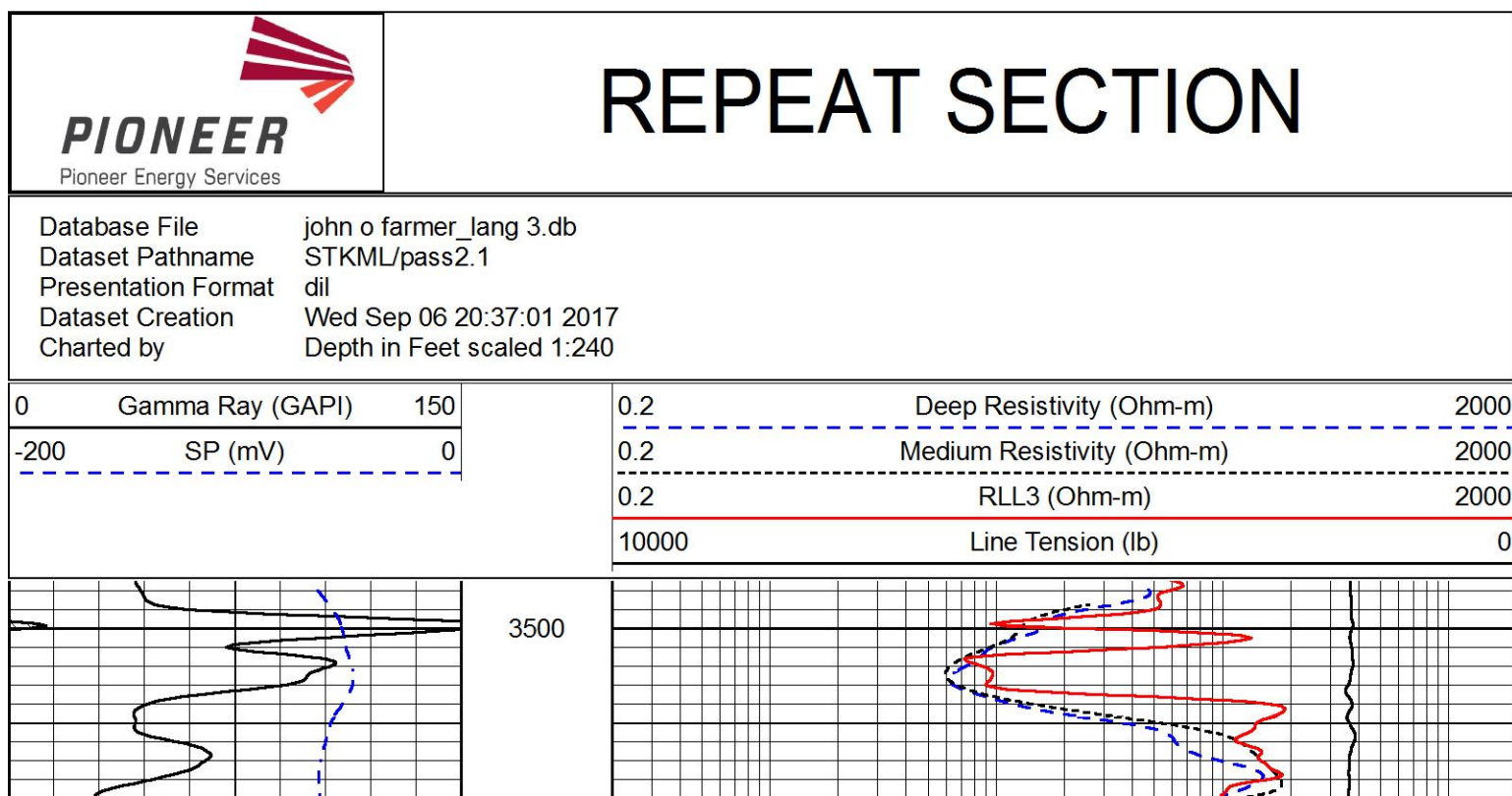
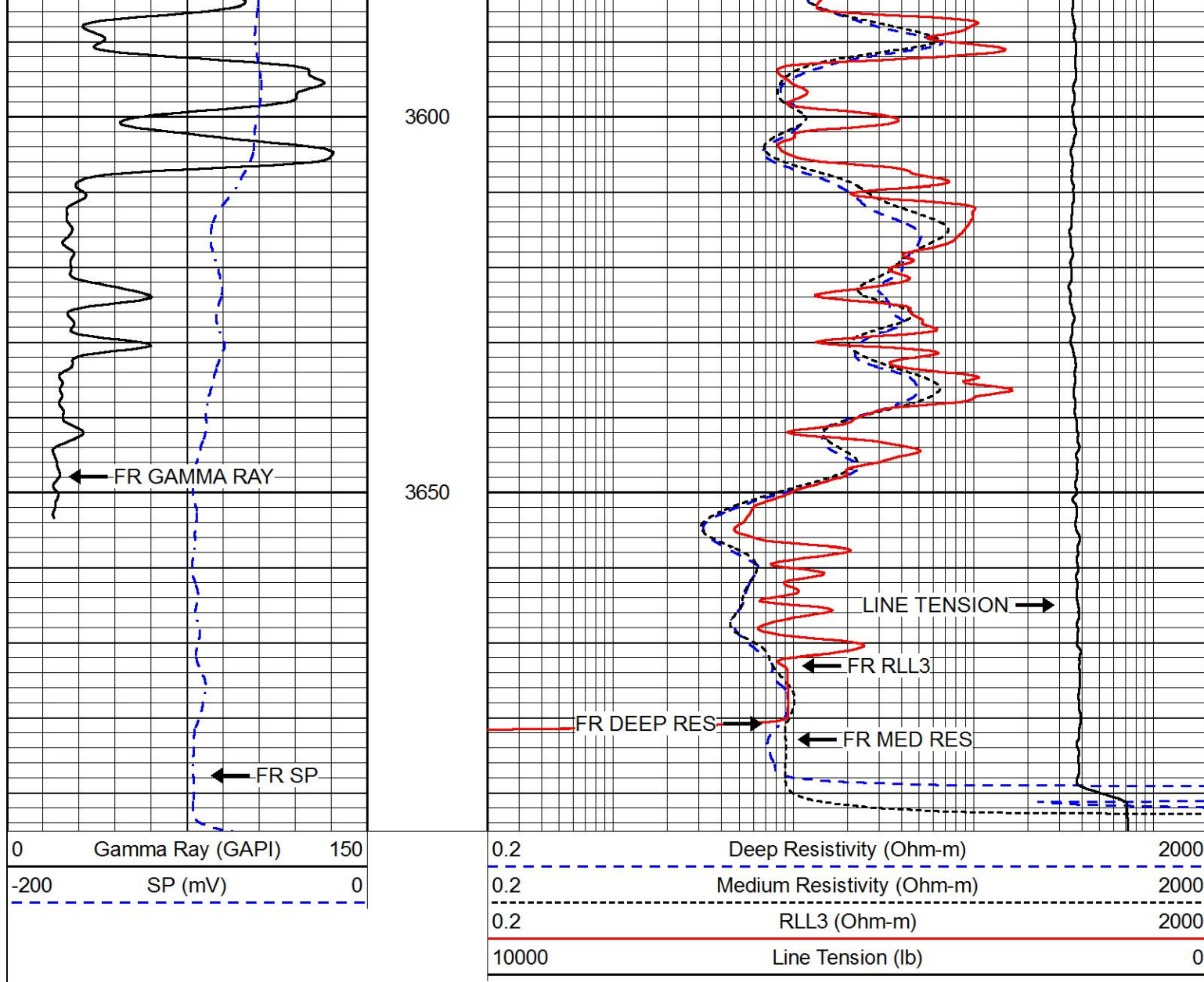
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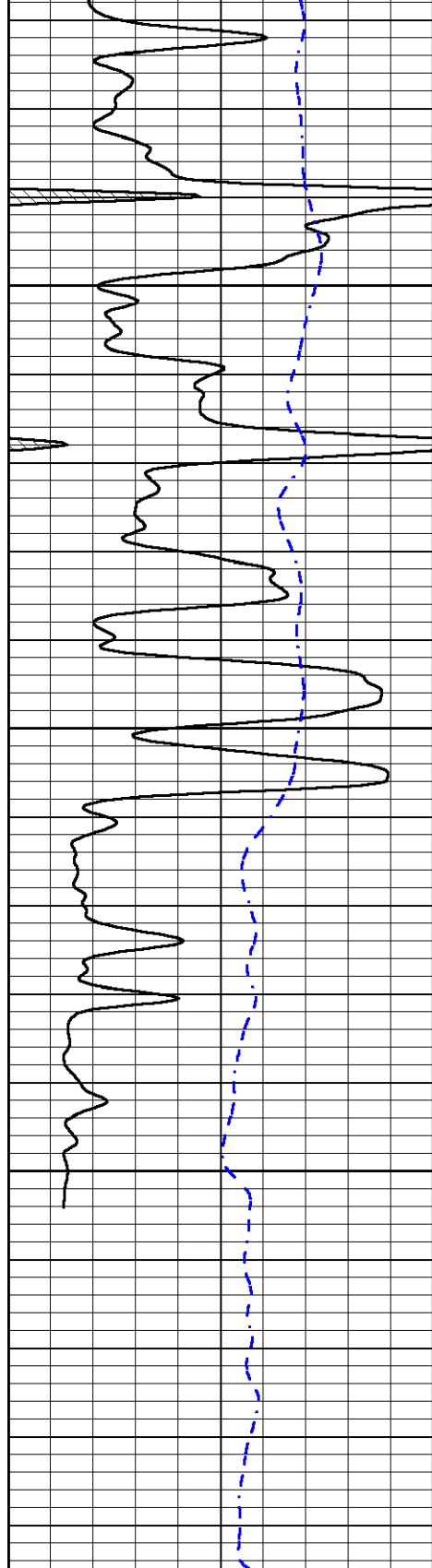
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3500

3550





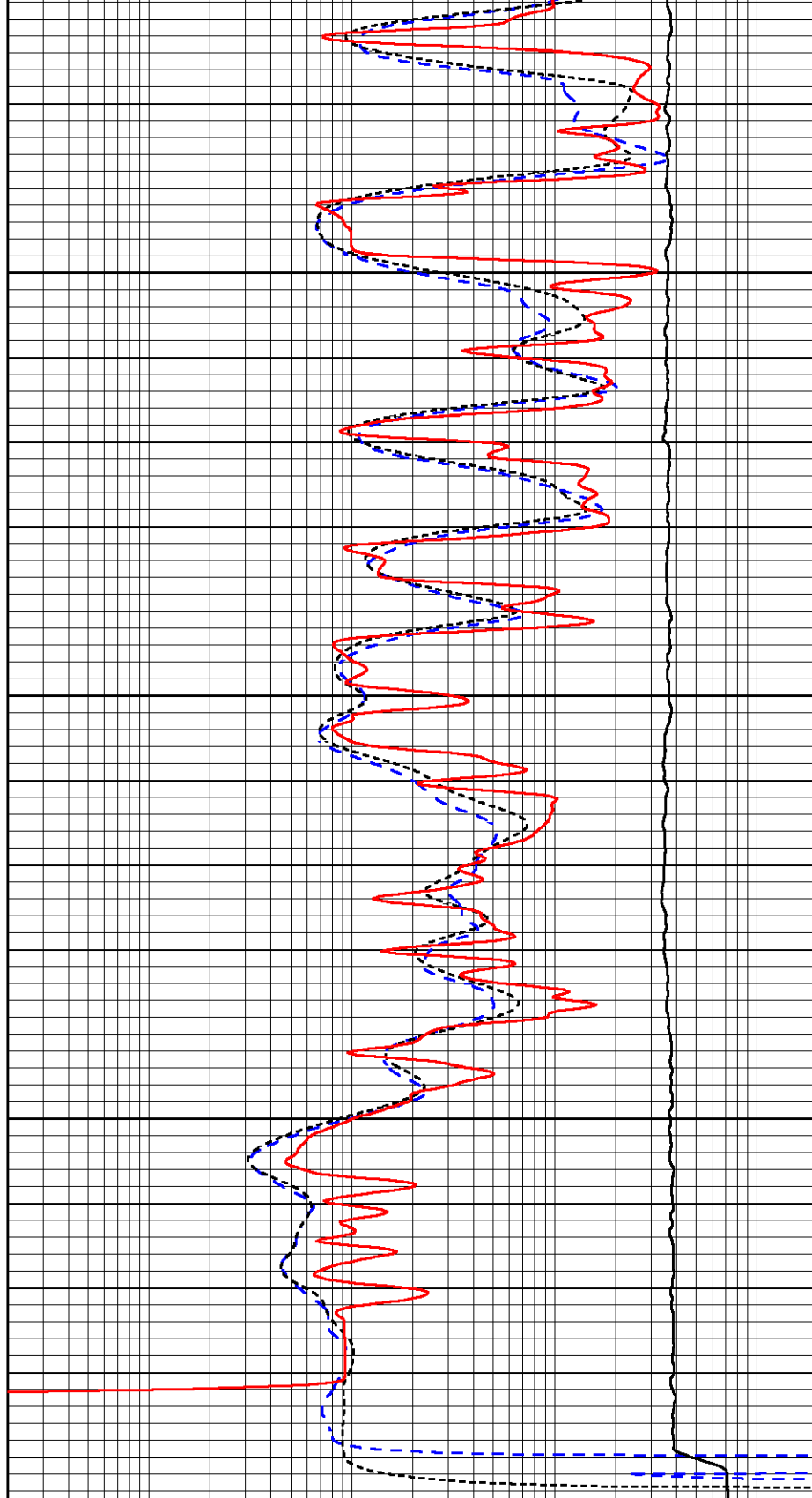


3550

3600

3650

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

Calibration Report

Database File	john o farmer_lang 3.db
Dataset Pathname	STKML/pass3.4
Dataset Creation	Wed Sep 06 20:30:41 2017

Dual Induction Calibration Report

Serial-Model:
Calibration Performed:

PSI 91-M&W
Wed Sep 06 19:50:36 2017

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	166.796	835.089	0.000	255.800	mmho/m	0.430	-32.000
Medium	142.009	1348.560	0.000	255.800	mmho/m	0.360	-30.000

Microlog Calibration Report

Serial-Model:
Performed:

PSI-01-PSIML
Wed Sep 06 19:50:56 2017

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	20000.0000	-0.8000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	23000.0000	-0.3000
Caliper	1.0001	1.1397	6.5000	18.5000	in	100.0000	-97.2500

Compensated Density Calibration Report

Serial-Model:
Source / Verifier:
Master Calibration Performed:

90-1031-M&W
16955B / 2ci
Wed Sep 06 19:51:03 2017

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4903.44	6153.79	cps
Aluminum	2.685	g/cc	934.50	4021.31	cps
Spine Angle = 75.61			Density/Spine Ratio = 0.543		
	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 SEP 6 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	JOHN O. FARMER, INC.
Well	LANG #3
Field	POLIFKA
County	ELLIS
State	KANSAS