



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company **K-T OIL EXP & LEASING CO.**
Well **SOUTH OF THE BORDER #1**
Field **LEITNER**
County **RAWLINS**
State **KANSAS**

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Location: API #: 15-153-21185-00-00

1455' FNL & 755' FEL

SEC 6 TWP 1S RGE 31W

Permanent Datum **GROUND LEVEL** Elevation **2951'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**

Elevation
K.B. 2959'
D.F. N/A
G.L. 2951'

Date **4/18/2017**

Run Number **ONE**

Depth Driller **44229'**

Depth Logger **44228'**

Bottom Logged Interval **44227'**

Top Log Interval **300'**

Casing Driller **8.625" @ 348'**

Casing Logger **346'**

Bit Size **7.875"**

Type Fluid in Hole **CHEMICAL**

Salinity, ppm CL **2000**

Density / Viscosity **9.4 56**

pH / Fluid Loss **9.5 8.0**

Source of Sample **FLOWLINE**

Rm @ Meas. Temp **0.80 @ 72**

Rmf @ Meas. Temp **0.60 @ 72**

Rmc @ Meas. Temp **1.08 @ 72**

Source of Rmf / Rmc **CHARTS**

Rm @ BHT **0.49 @ 118**

Operating Rig Time **3 HOURS**

Max Rec. Temp. F **118**

Equipment Number **91**

Location **COLBY**

Recorded By **D. SCHMIDT**

Witnessed By **MARC DOWNING**

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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.

HERNDON,
NORTH TO DD RD, 1 WEST, 1/4 NORTH,
1/2 WEST, 1/4 NORTH, WEST TO RD 32, 1/2 NORTH,
WEST AND SOUTH 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

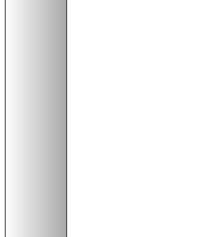
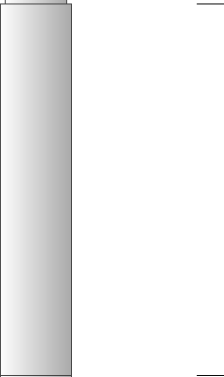
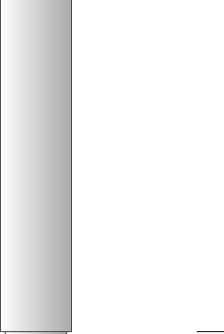
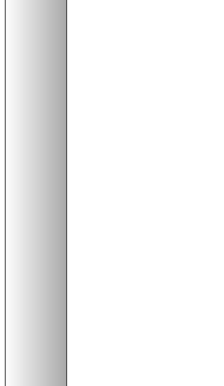
Engineer: **D. SCHMIDT**
Operator:
Operator:
Operator:

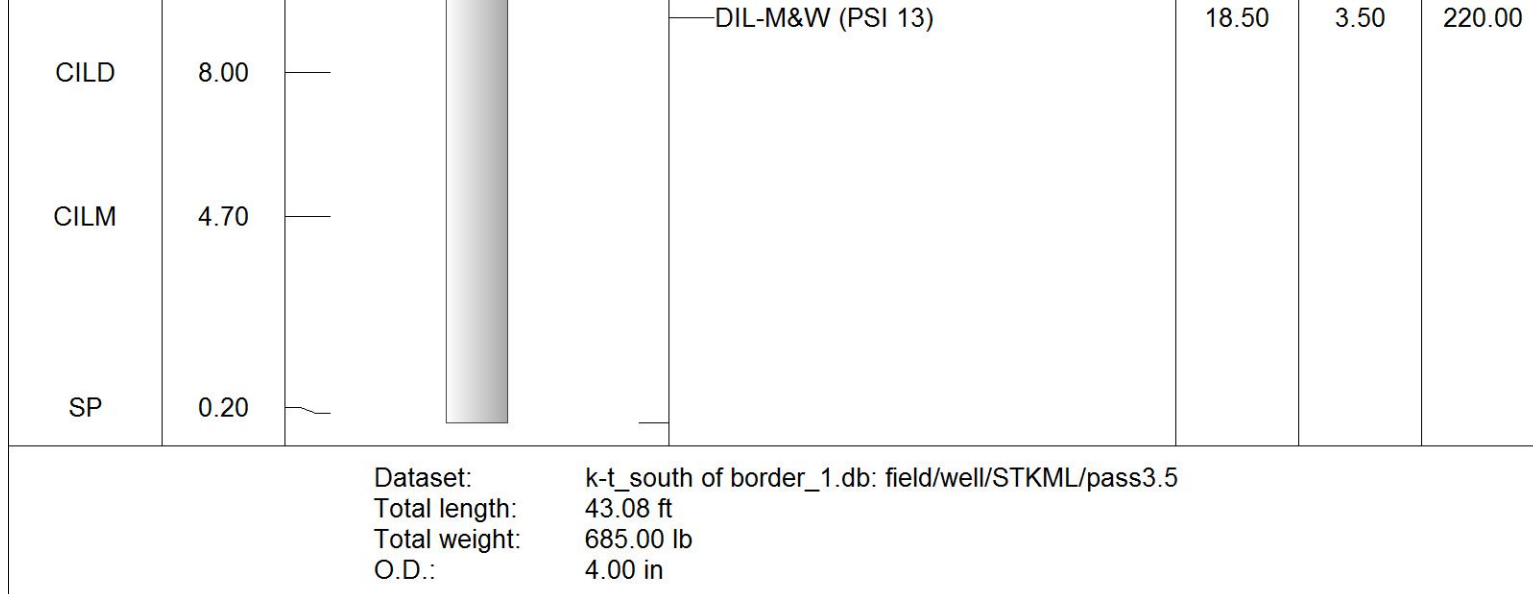
This Log Record Was Witnessed By

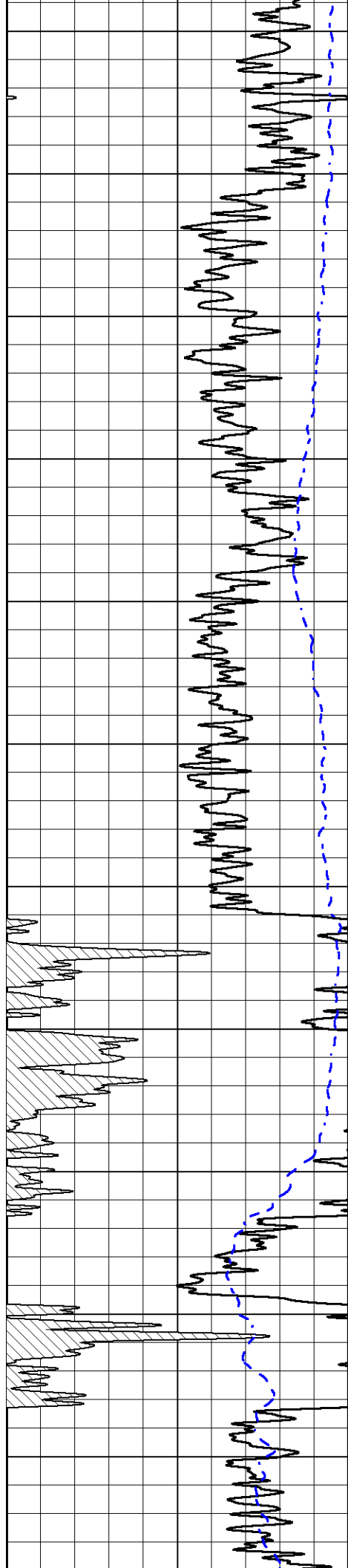
Primary Witness: **MARC DOWNING**
Secondary Witness:
Secondary Witness:
Secondary Witness:

Top - Bottom

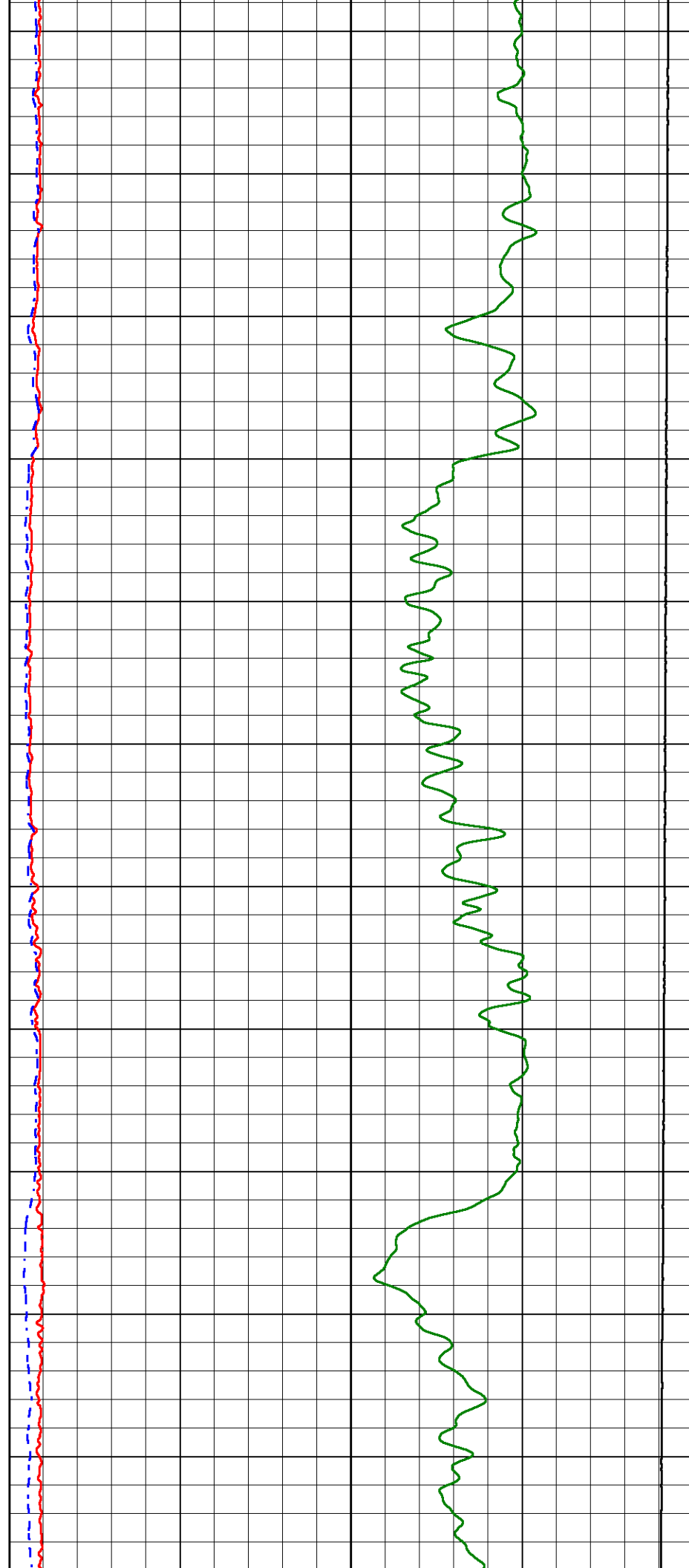
M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	233	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	70	0	5.5	0	4228	118	7.875

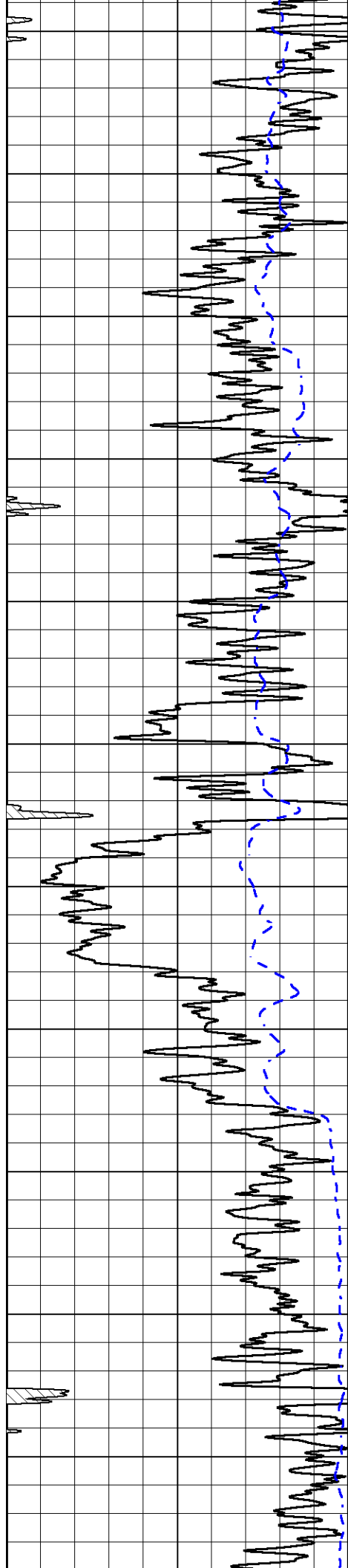
Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (90-1031)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSIML (PSI-01) GO Micro log tools converted to Simplec electronics	7.58	4.00	65.00
RLL3F RLL3	15.80 15.80					



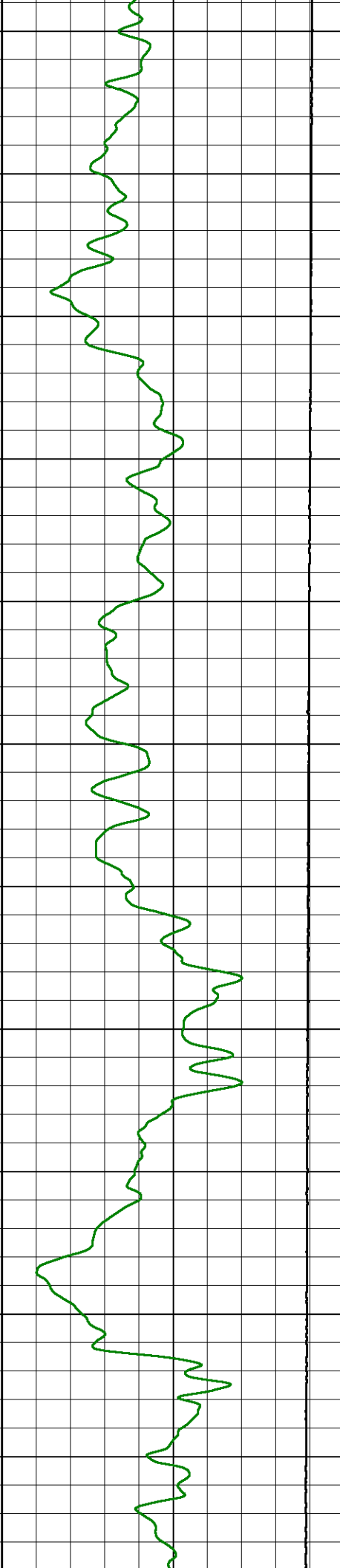
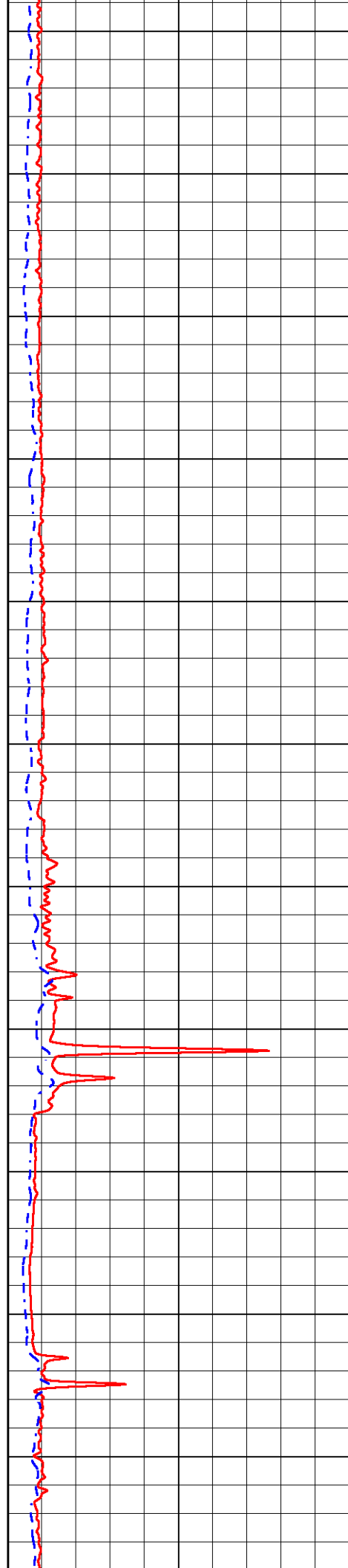


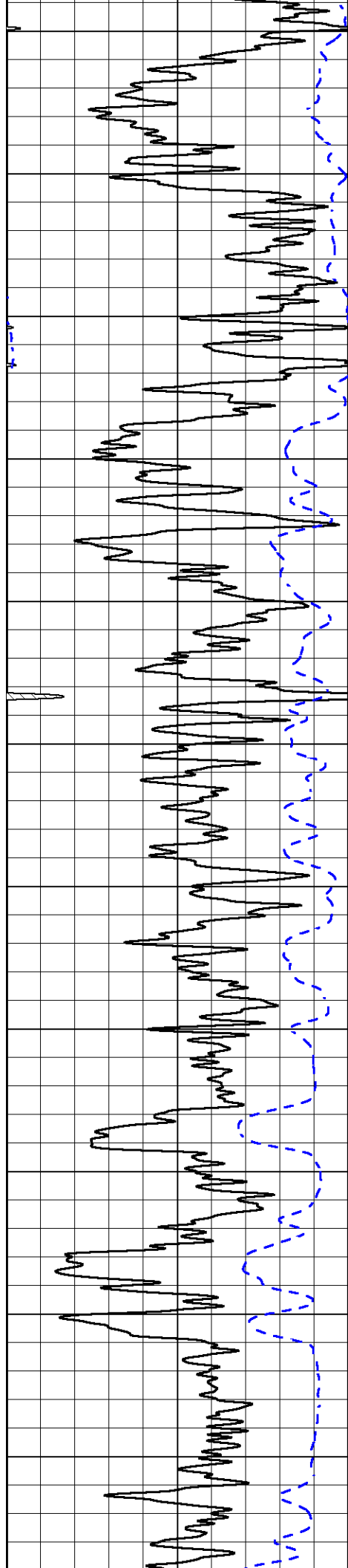
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550
600
650
700
750
800
850
900
950
1000



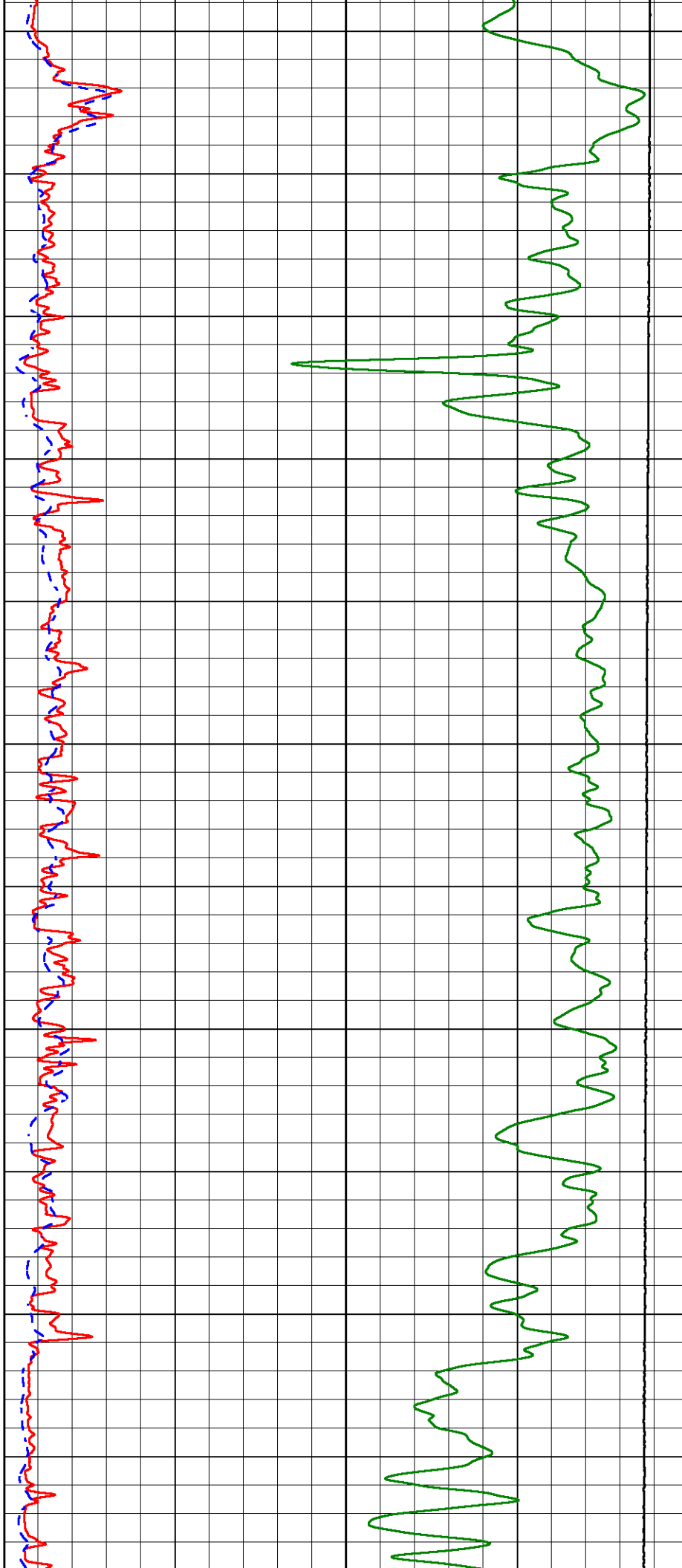


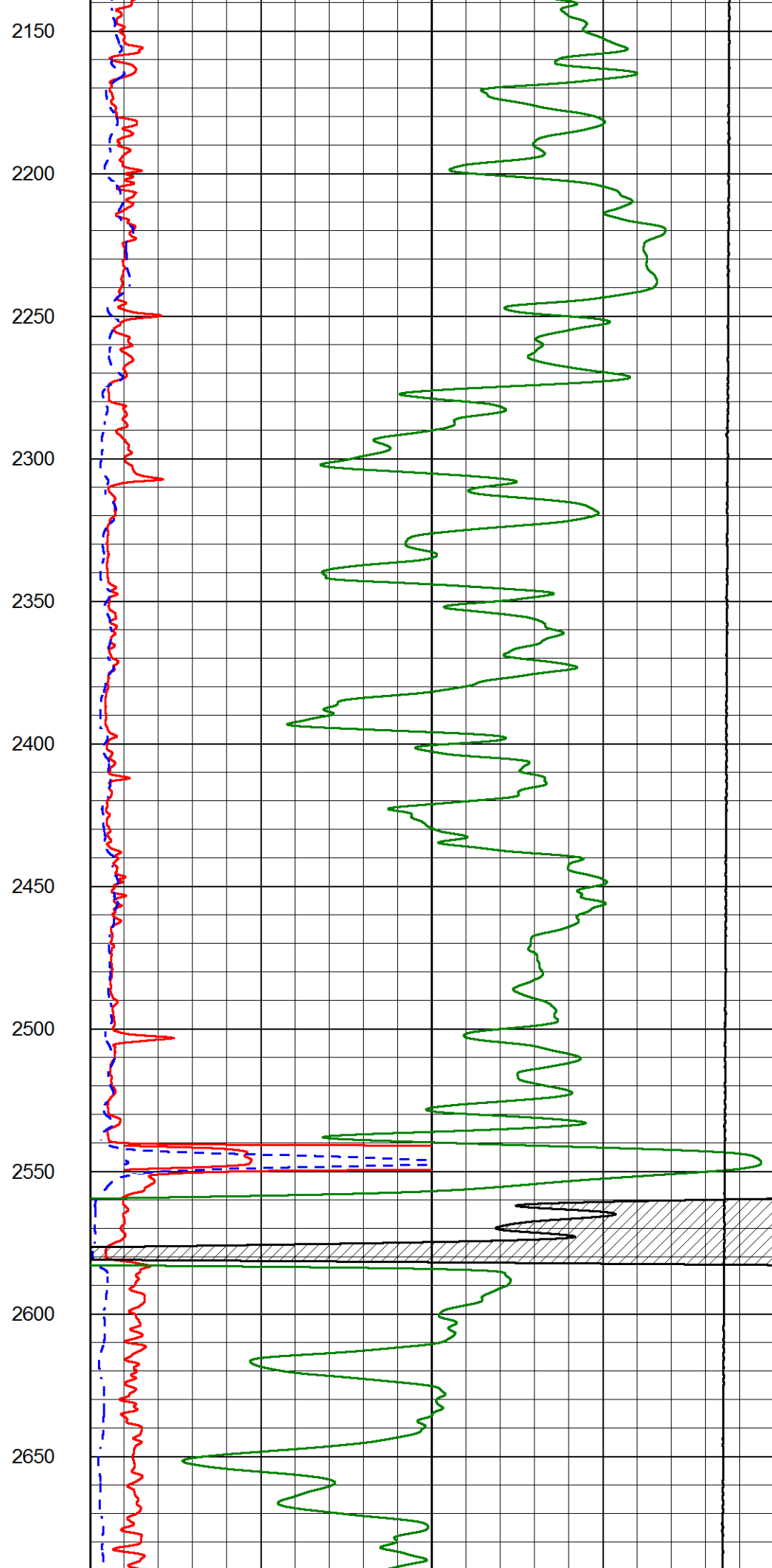
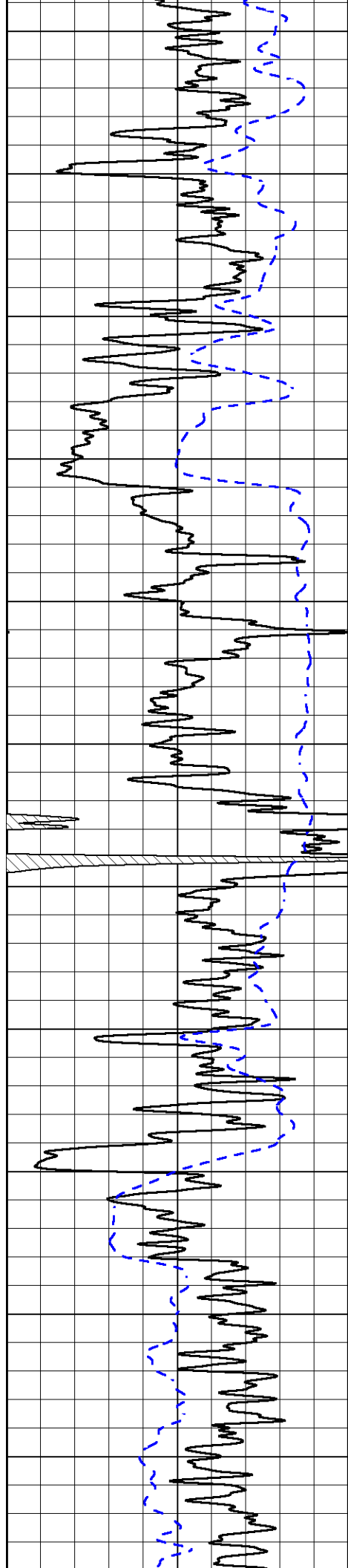
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1100
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1200
1250
1300
1350
1400
1450
1500
1550

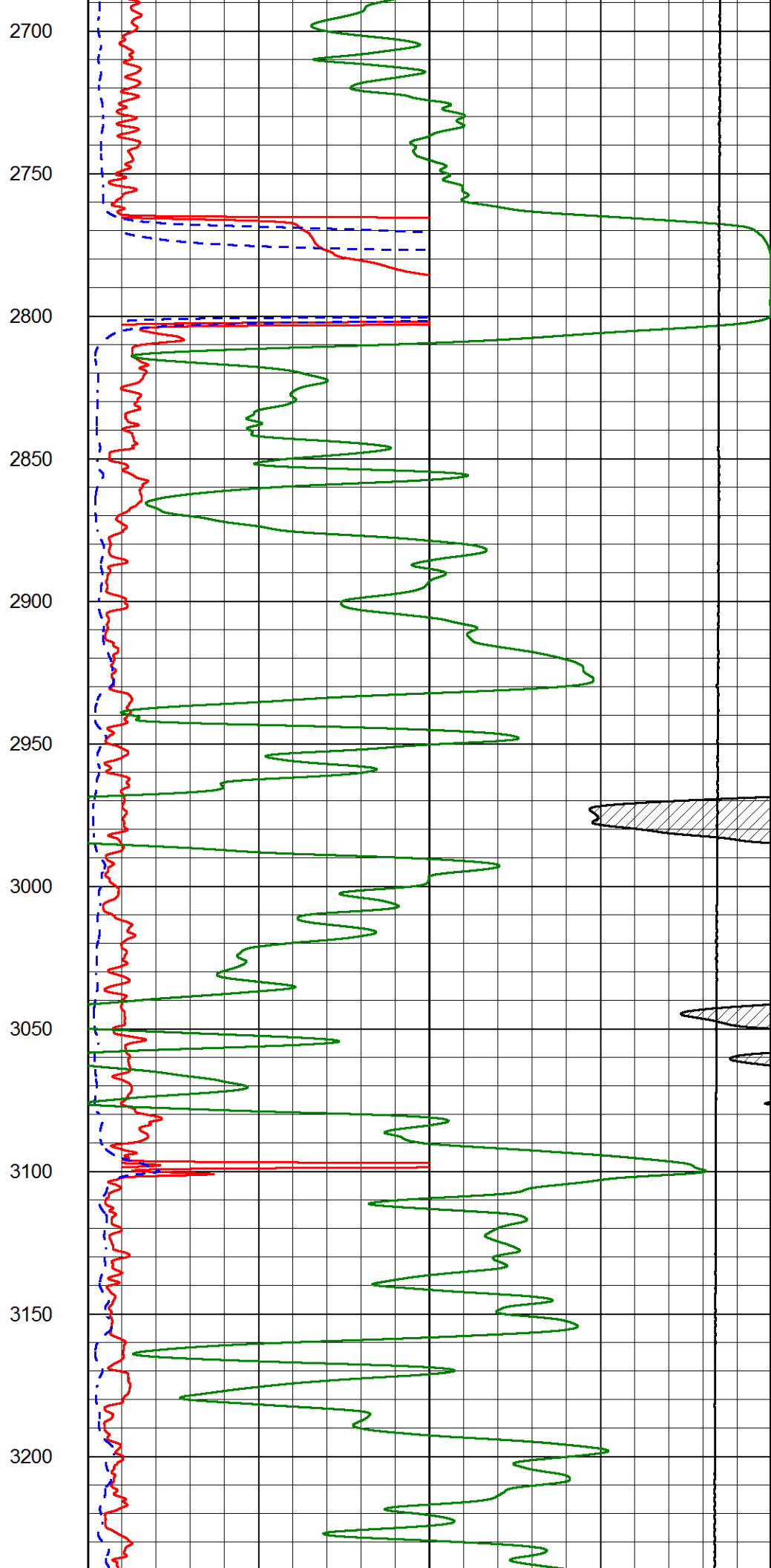
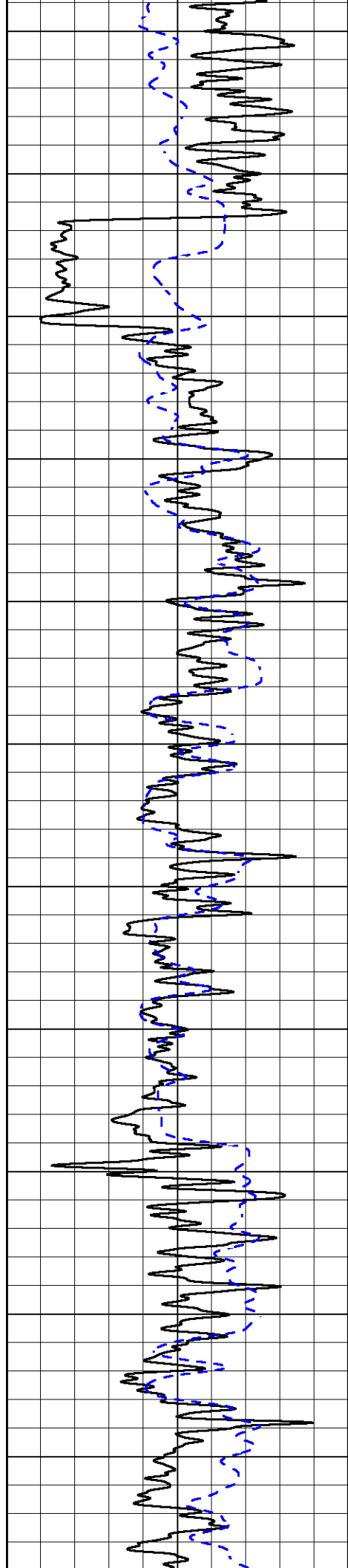


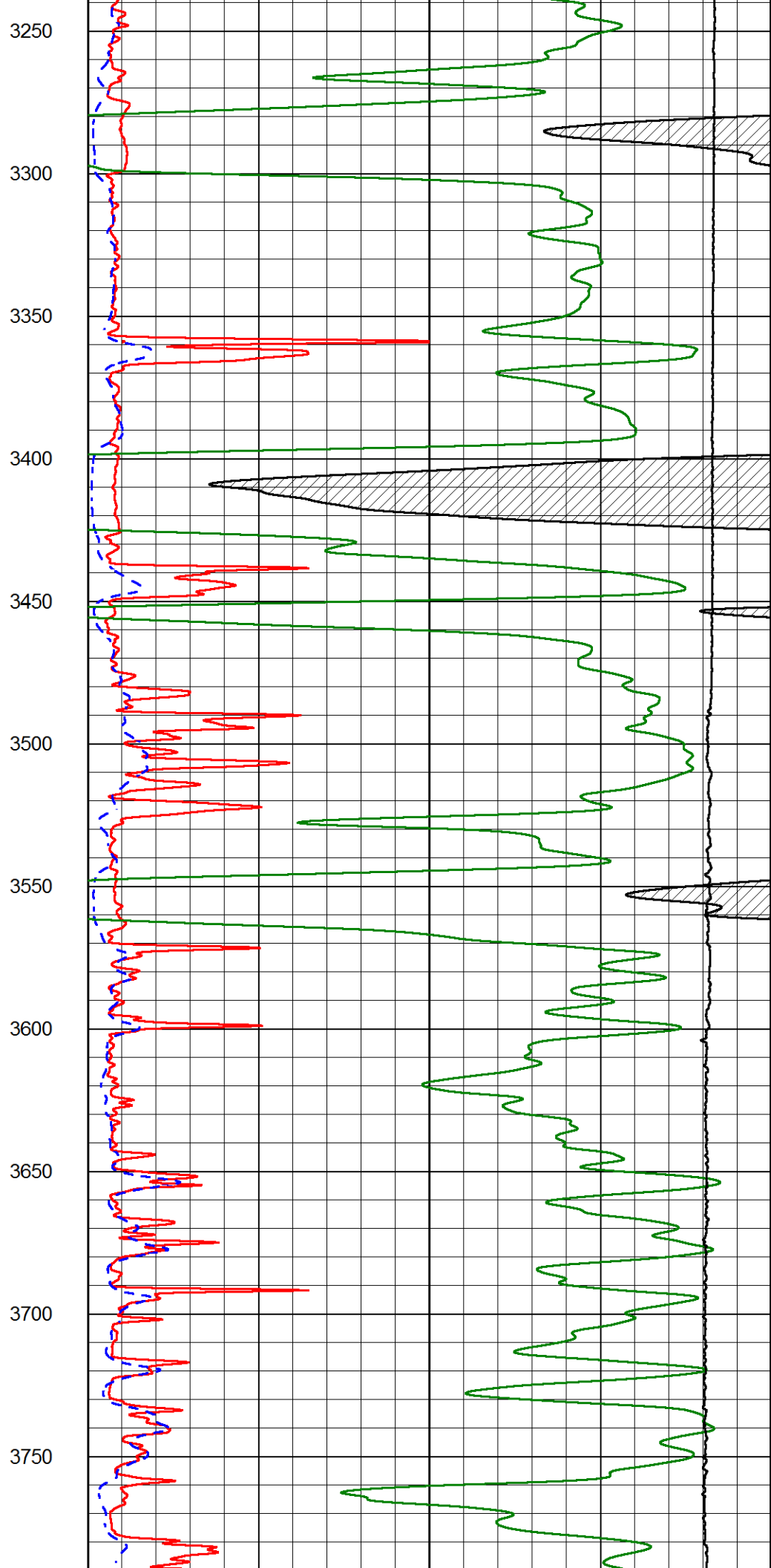
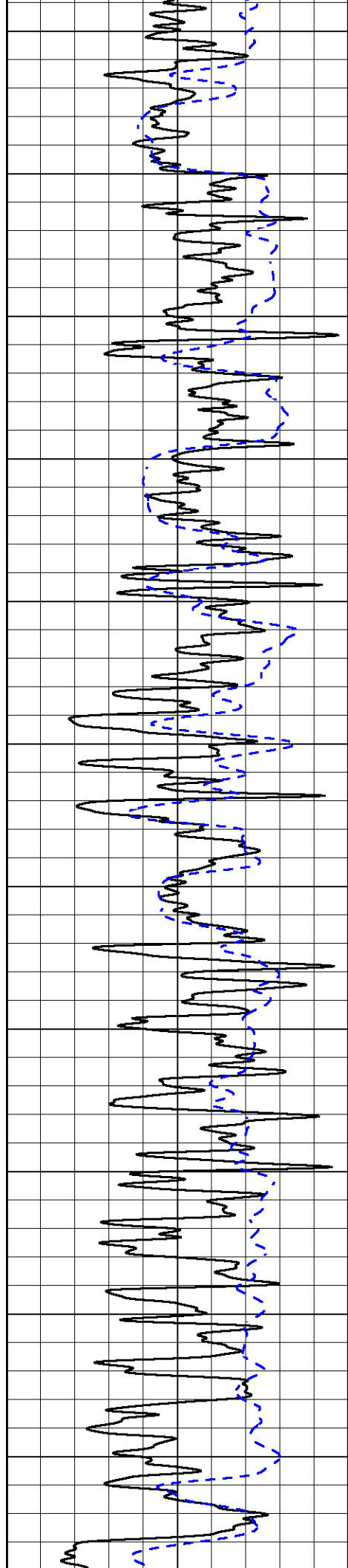


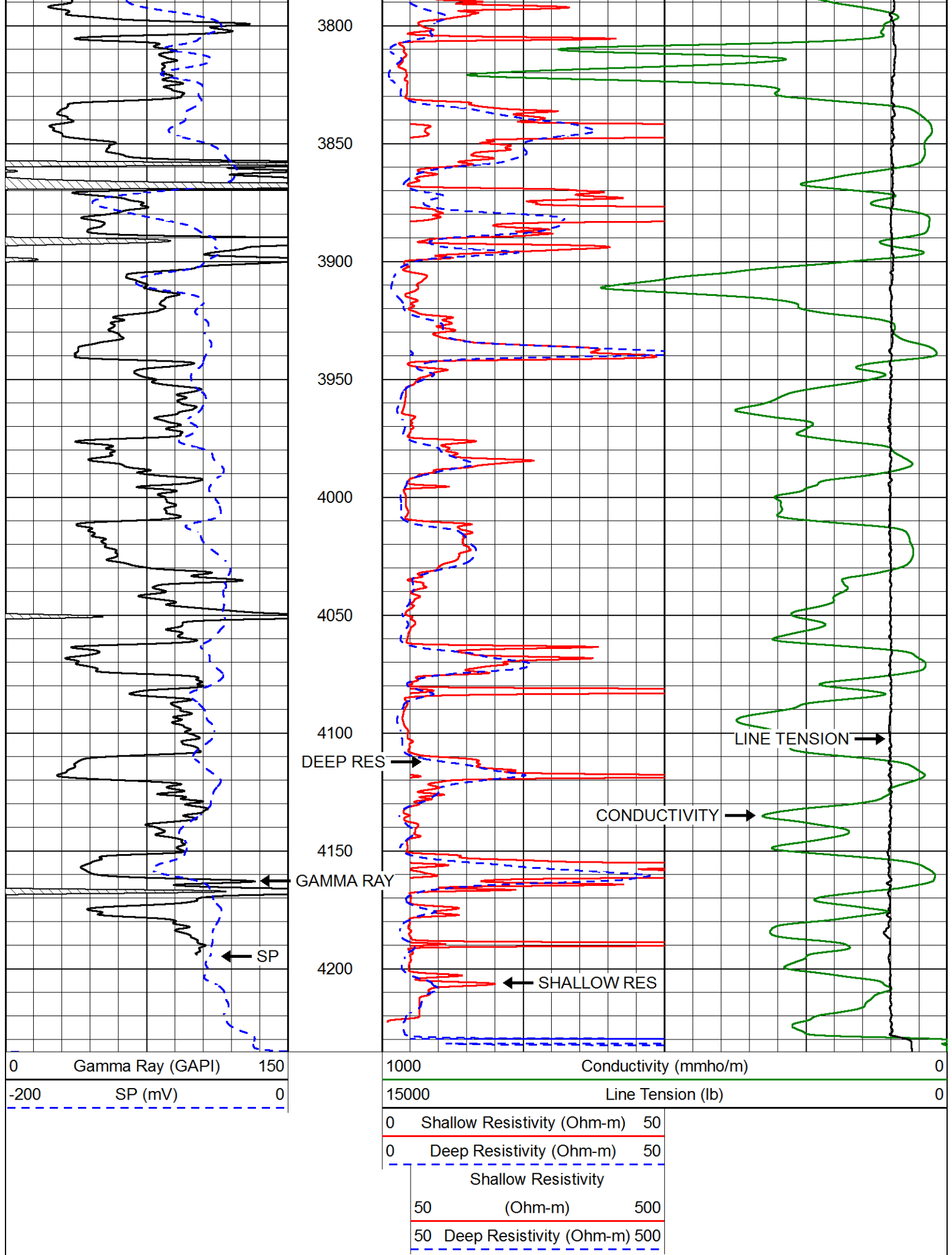
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1800
1850
1900
1950
2000
2050
2100











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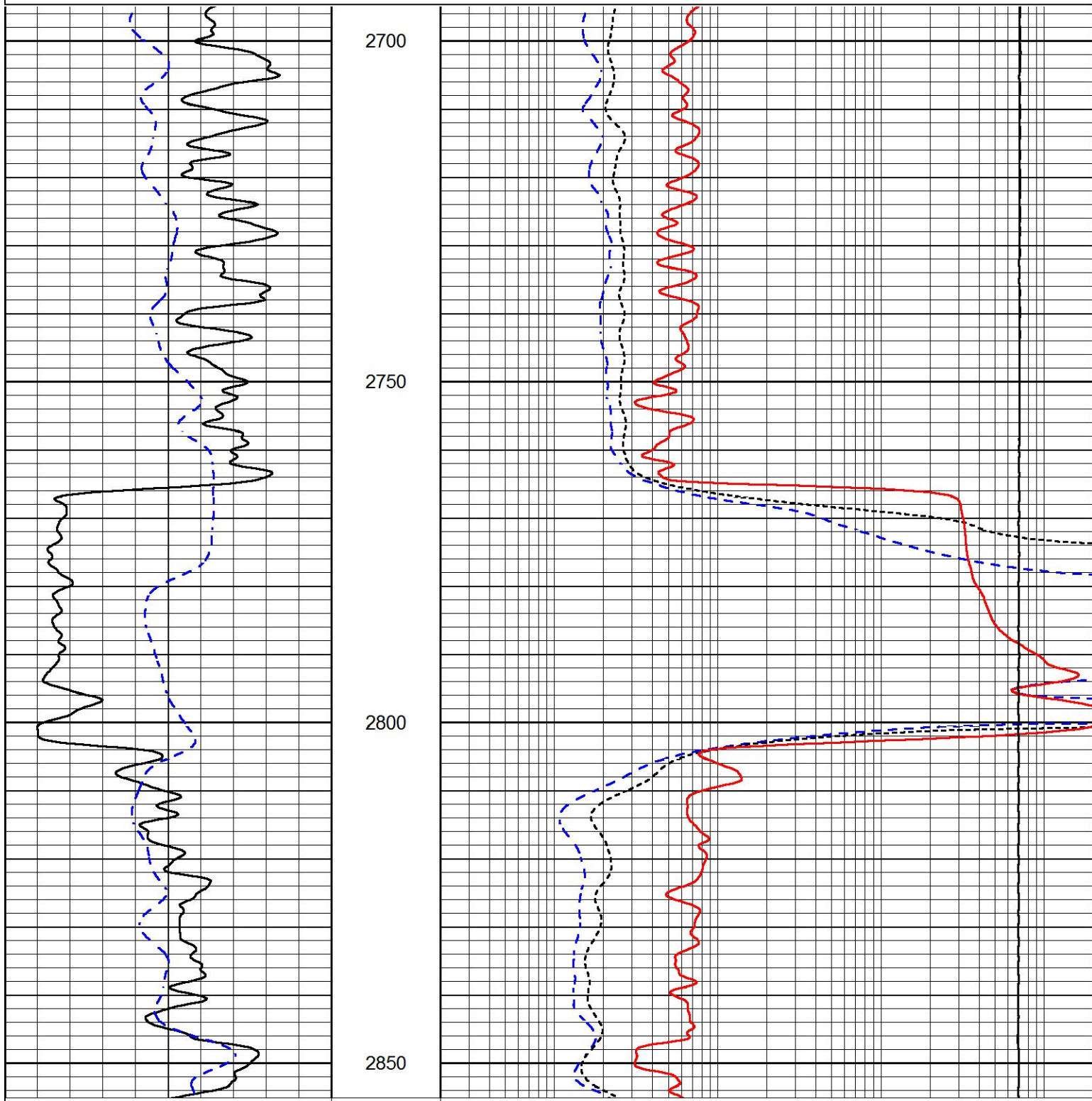
Pioneer Energy Services

MAIN PASS

Database File k-t_south of border_1.db
Dataset Pathname STKML/pass3.1
Presentation Format dil
Dataset Creation Tue Apr 18 13:08:56 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



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

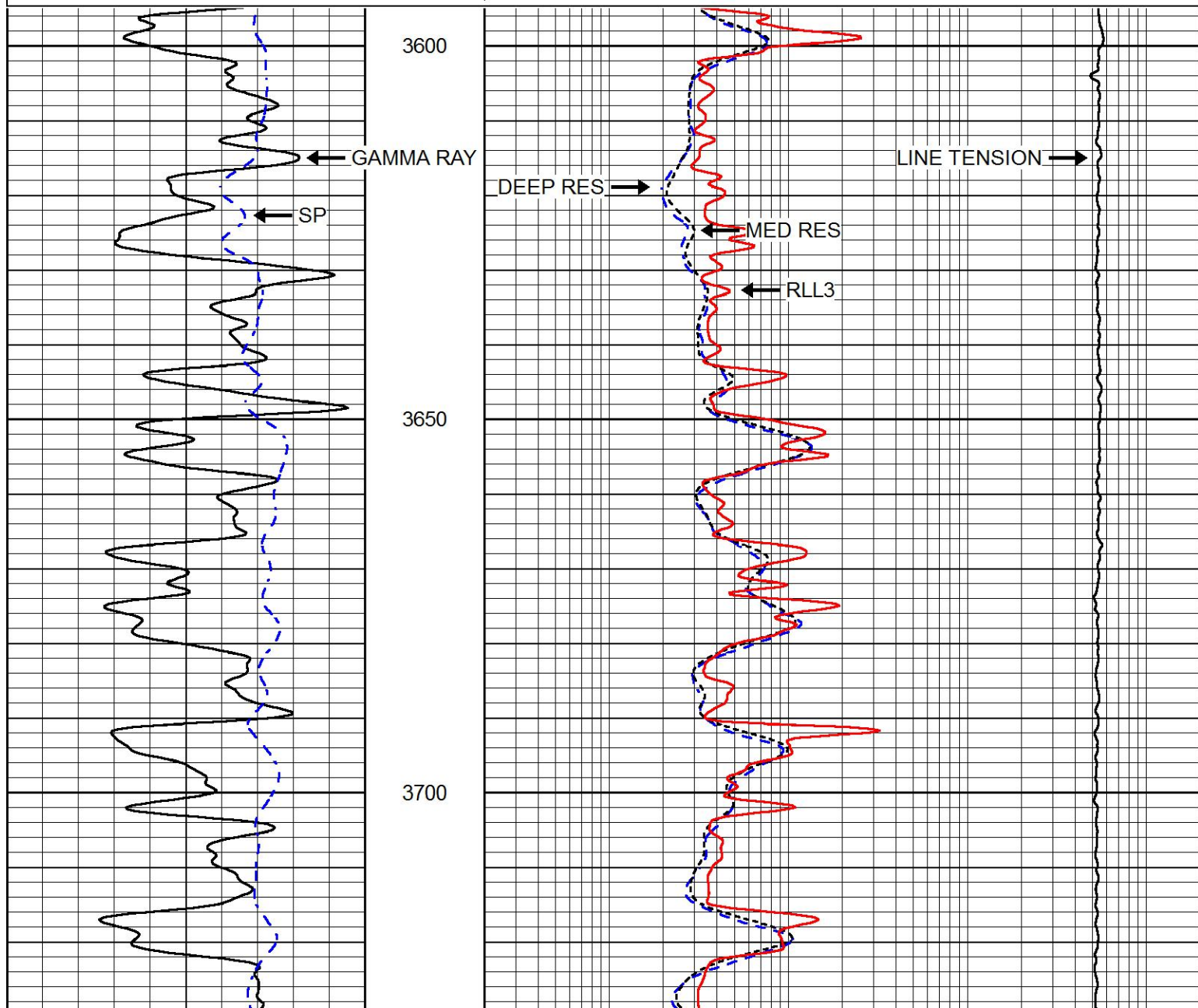


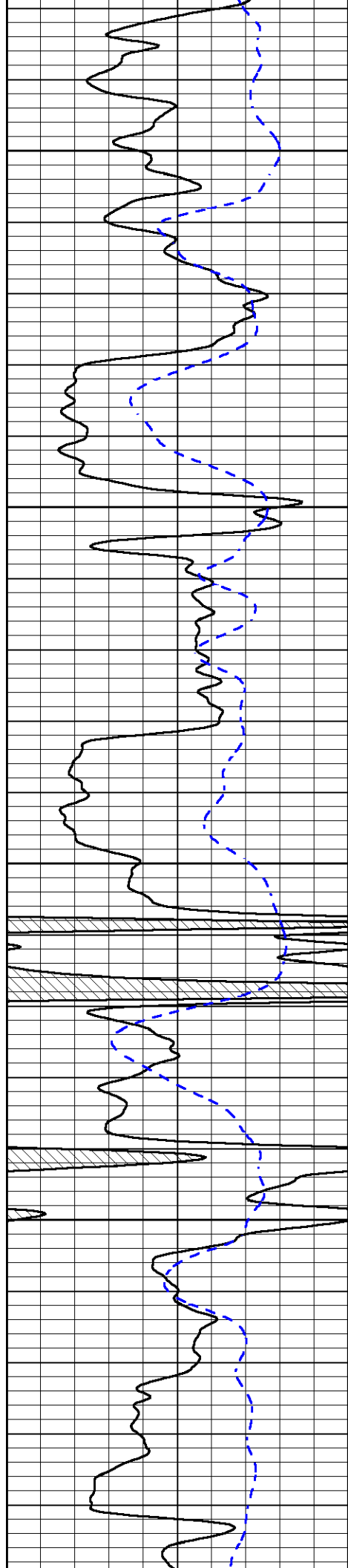
MAIN PASS

Database File k-t_south of border_1.db
Dataset Pathname STKML/pass3.5
Presentation Format dil
Dataset Creation Tue Apr 18 12:29:09 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



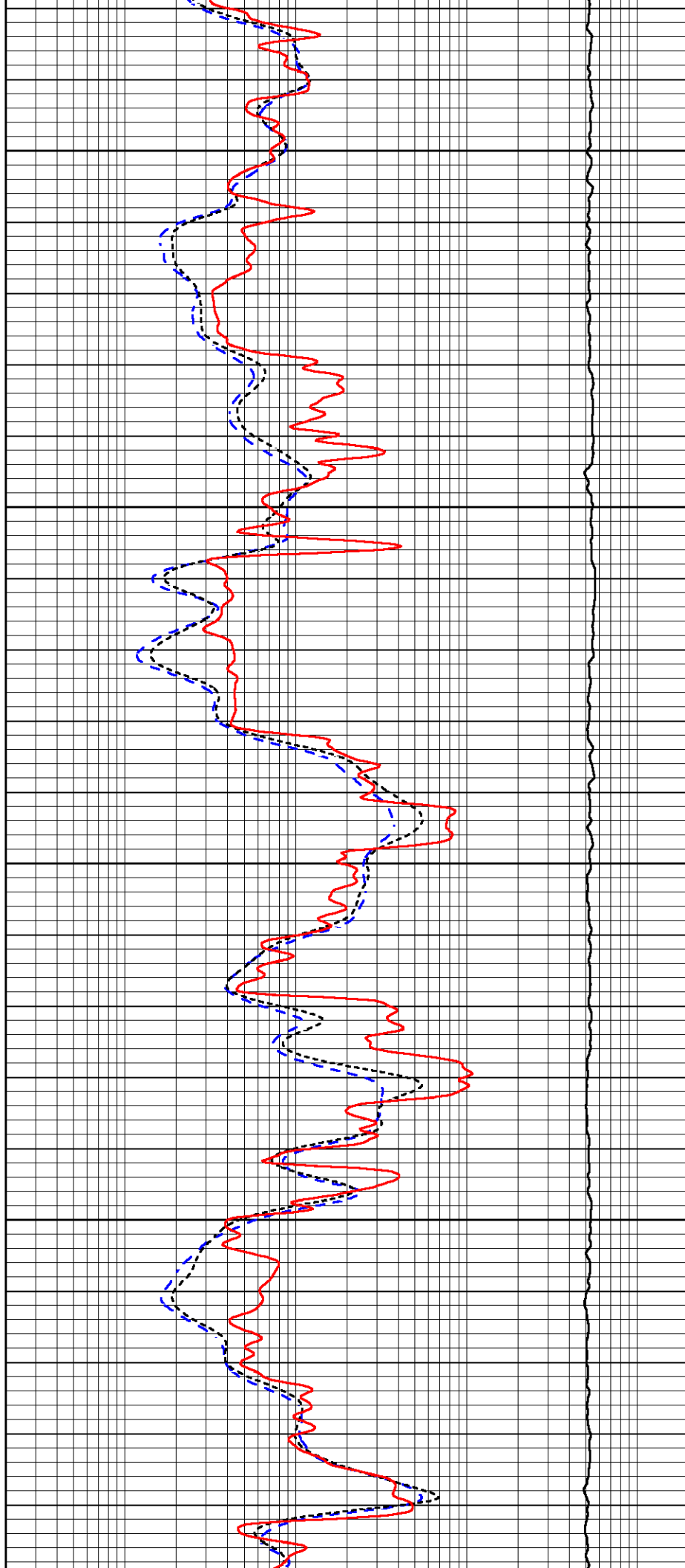


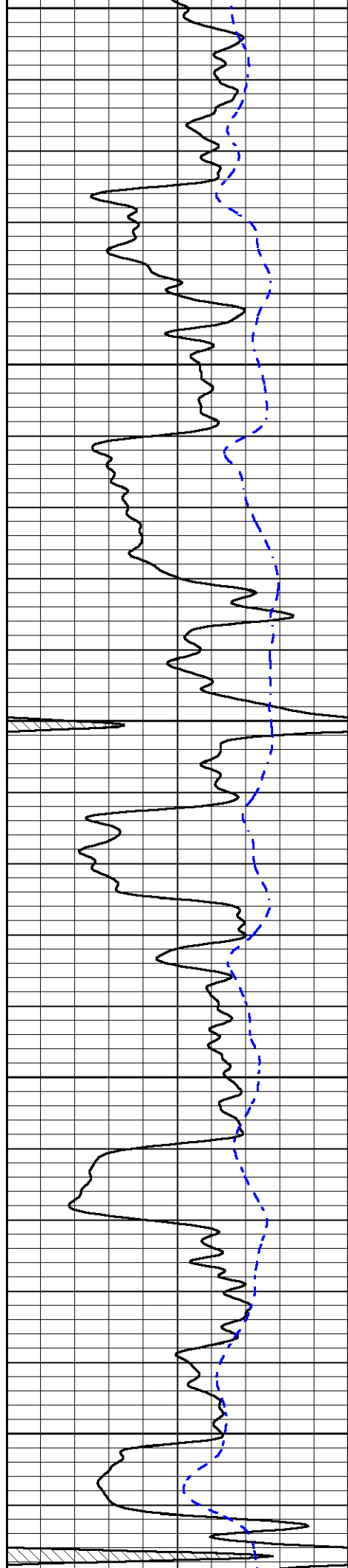
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3800

3850

3900





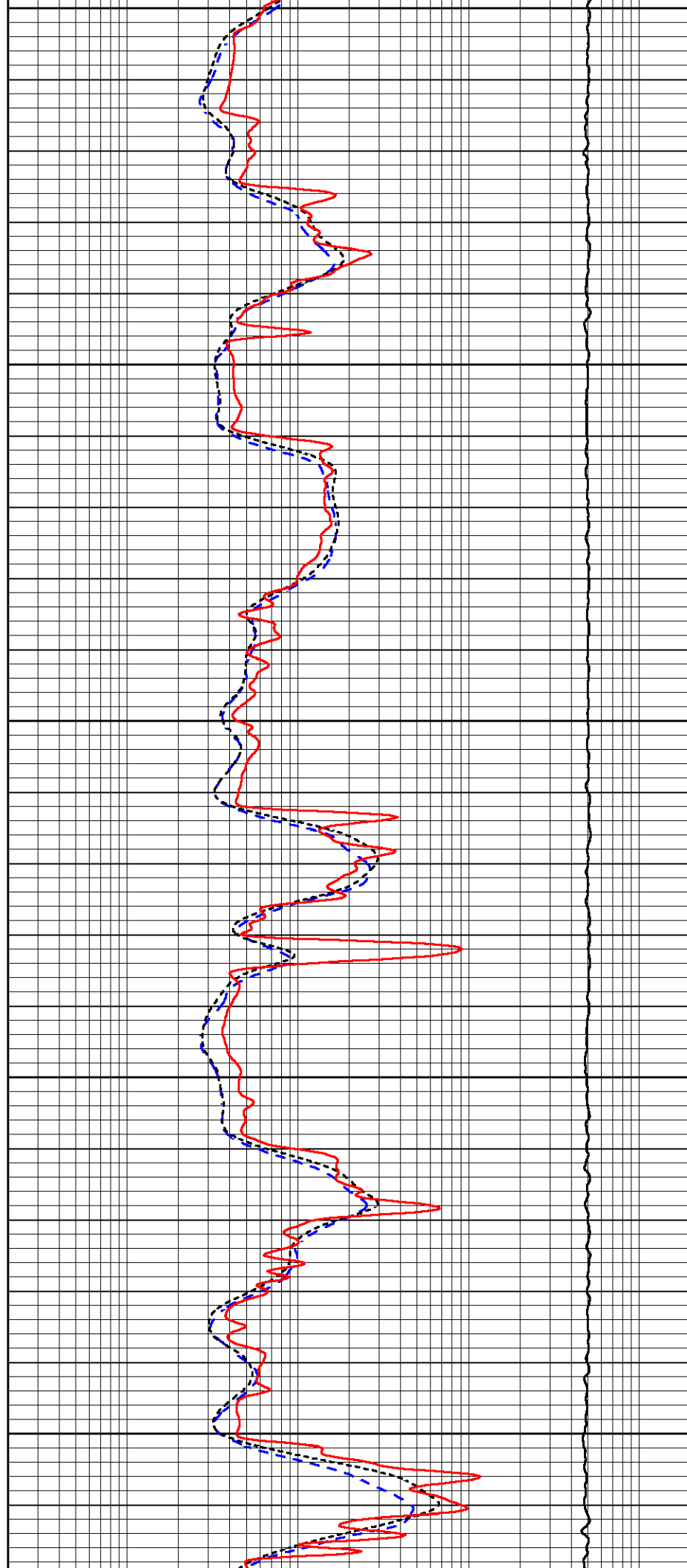
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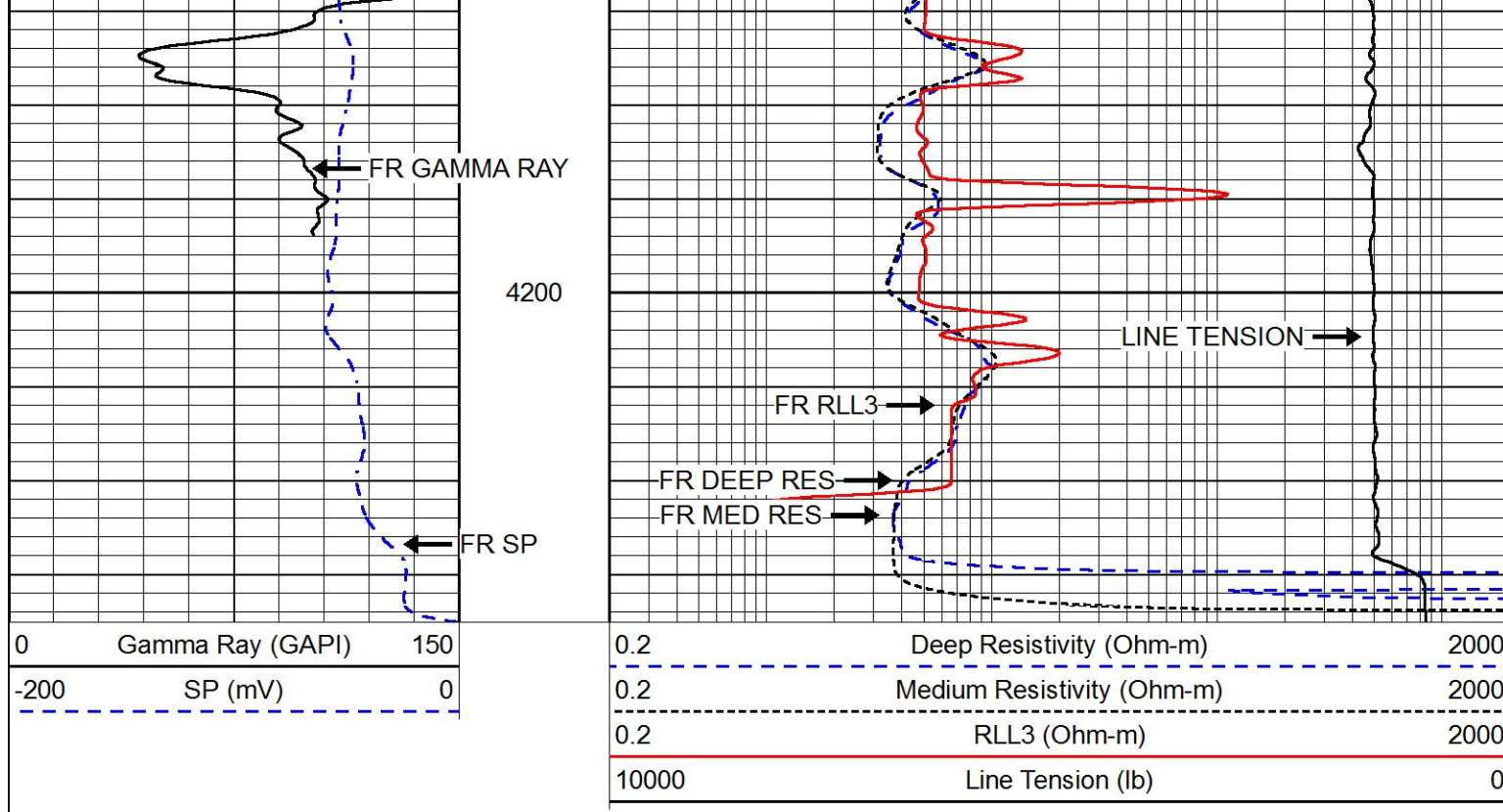
4000

4050

4100

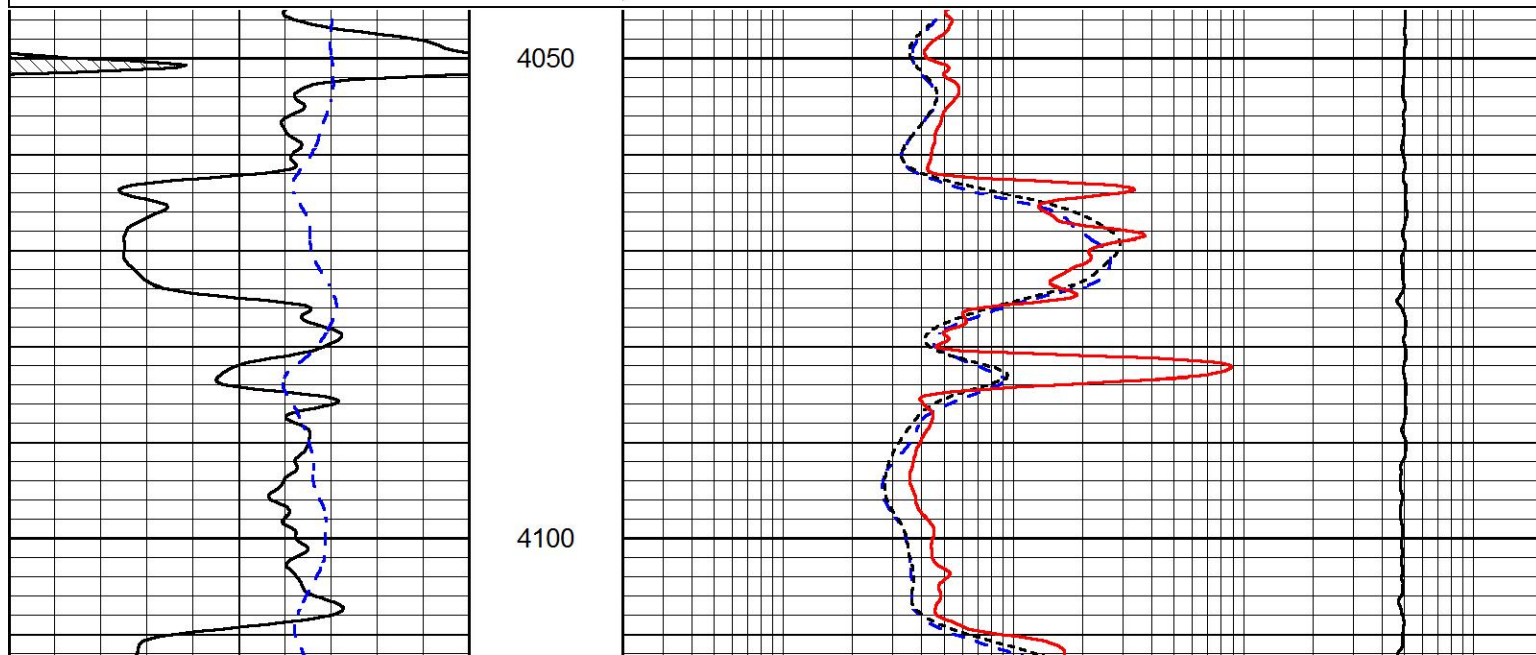
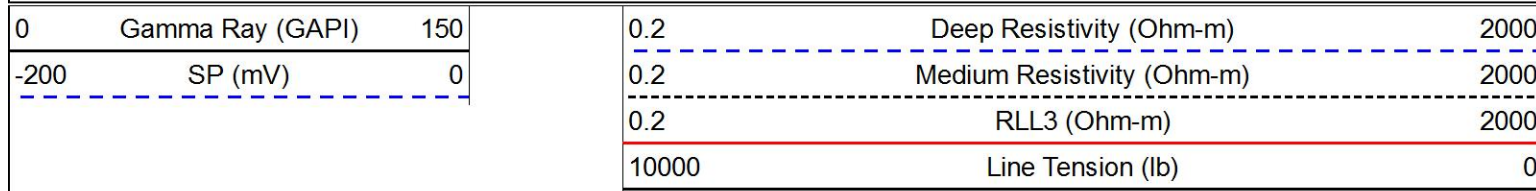
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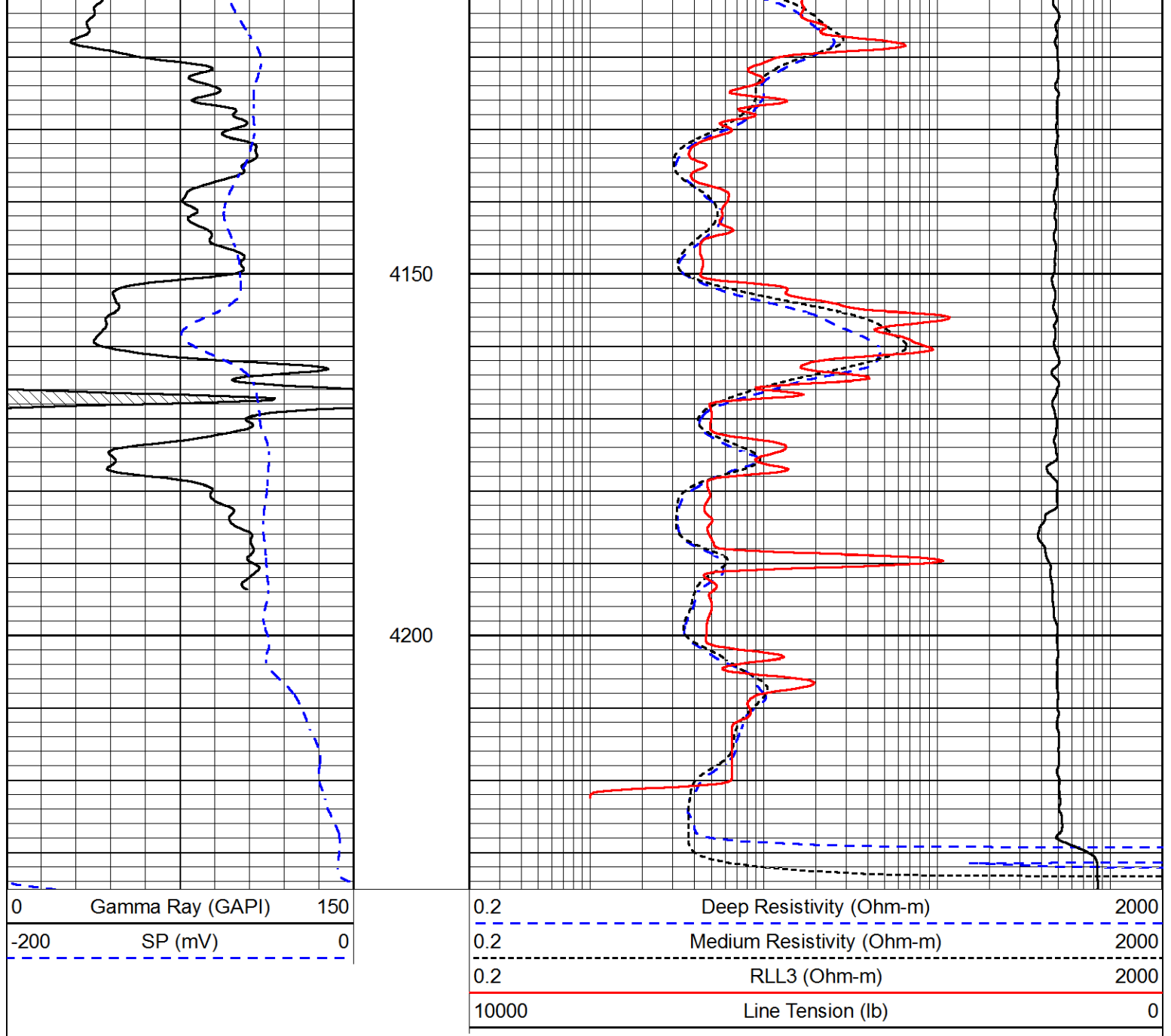




REPEAT SECTION

Database File k-t_south of border_1.db
 Dataset Pathname STKML/pass2.1
 Presentation Format dil
 Dataset Creation Tue Apr 18 12:33:40 2017
 Charted by Depth in Feet scaled 1:240





Calibration Report								
Database File	k-t_south of border_1.db							
Dataset Pathname	STKML/pass3.5							
Dataset Creation	Tue Apr 18 12:29:09 2017							
Dual Induction Calibration Report								
Serial-Model:				PSI 13-M&W				
Calibration Performed:				Fri Mar 31 18:54:31 2017				
		Readings		References		Results		
Loop:	Air	Loop		Air	Loop	Gain	Offset	
Deep	166.796	835.089		0.000	255.800	mmho/m	0.410	-34.000
Medium	142.009	1348.560		0.000	255.800	mmho/m	0.360	-35.000
Microlog Calibration Report								

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	23000.0000	-0.4000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	26000.0000	-0.4000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-65.6000

Compensated Density Calibration Report

Serial-Model: 90-1031-M&W
Source / Verifier: 16955B / 2ci
Master Calibration Performed: Fri Mar 31 18:42:23 2017

Master Calibration

	Density			Far Detector	Near Detector
Magnesium	1.755	g/cc		5174.18	6425.27 cps
Aluminum	2.665	g/cc		963.17	4037.42 cps
Spine Angle = 74.55			Density/Spine Ratio = 0.522		
	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: Fri Mar 31 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: Fri Mar 31 18:42:32 2017

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



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