



MIDWEST WIRELINE

DUAL INDUCTION LOG

Company TDI, Inc.
 Well Kay #1
 Field
 County Ellis State Kansas

Location: API #: 15-051-26991-00-00
 NE NW NE SW
 2370' FSL & 1840' FWL
 SEC 32 TWP 14S RGE 19W
 Permanent Datum Ground Level Elevation 2076'
 Log Measured From Kelly Bushing
 Drilling Measured From Kelly Bushing
 Other Services
 CNL/CDL
 MEL
 Elevation
 K.B. 2086'
 D.F.
 G.L. 2076'

Date	10/18/2020
Run Number	One
Depth Driller	3850'
Depth Logger	3847'
Bottom Logged Interval	3846'
Top Log Interval	200'
Casing Driller	8.625" @ 223'
Casing Logger	222'
Bit Size	7.875"
Type Fluid in Hole	Chemical
Salinity, ppm CL	9800
Density / Viscosity	9.2 60
pH / Fluid Loss	10.0 6.0
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.75 @ 60
Rmt @ Meas. Temp	0.56 @ 60
Rmc @ Meas. Temp	1.01 @ 60
Source of Rmf / Rmc	CHARTS
Rm @ BHT	0.39 @ 115
Operating Rig Time	3 Hours
Max Rec. Temp. F	115 Deg F
Equipment Number	P-24
Location	HAYS
Recorded By	T. Martin
Witnessed By	Tom Denning

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All interpretations are opinions based on inferences from electrical or other measurements and Midwest Wireline LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Midwest Wireline 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.

Antonino, KS, 4 W to 170th Ave, 1/4 N, E into

Log Measured From: Kelly Bushing Ft. Above Permanent Datum

THANK YOU FOR USING MIDWEST WIRELINE LLC
 785-625-3858

Your Midwest Wireline Crew

Engineer: T. Martin
 Operator:
 Operator:
 Operator:

This Log Record Was Witnessed By

Primary Witness: Tom Denning
 Secondary Witness:
 Secondary Witness:
 Secondary Witness:

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 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 (817-947)	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 (952-828)	18.50	3.50	220.00
CILM	4.70					
SP	0.20					

Dataset: tdi_kay#1_20201018.db: field/well/StkMI/pass3.1
 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\tdi_kay#1_20201018.db
 Dataset field/well/StkMI/pass3.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	115	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	0	150	0	Off	3847

Variable Description

A : Cement Factor (a)
 BOREID : Borehole I.D.
 BOTTEMP : Bottom Hole Temperature
 CASEOD : Casing O.D.
 CASETHCK : Casing Thickness
 FLUIDDEN : Fluid Density
 M : Cement Exp (m)
 MATRXDEN : Matrix Density

NPORSEL : Neutron Porosity Curve Select
 PERFS : Perforation Flag
 SNDERR : Deep Sonde Error Correction
 SNDERRM : Medium Sonde Error Correction
 SPSHIFT : S.P. Baseline Offset
 SRFTEMP : Surface Temperature
 SZCOR : CN Size Cor. ?
 TDEPTH : Total Depth

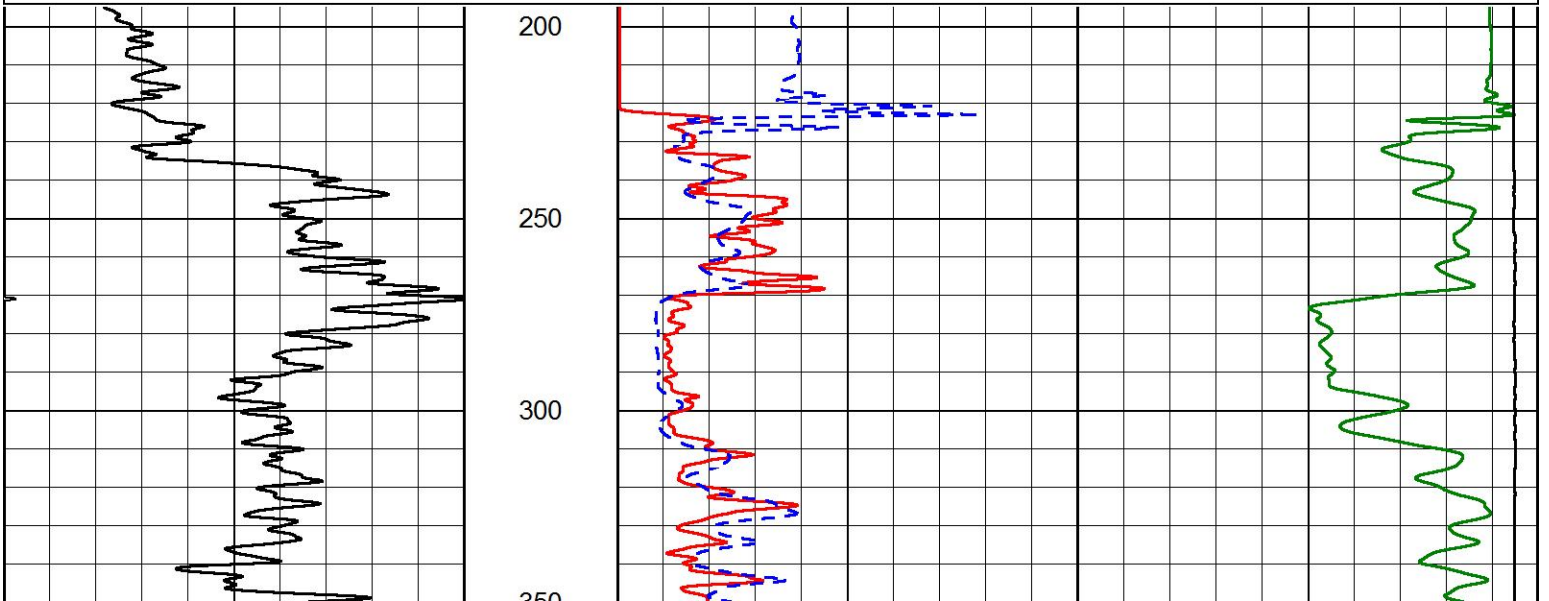


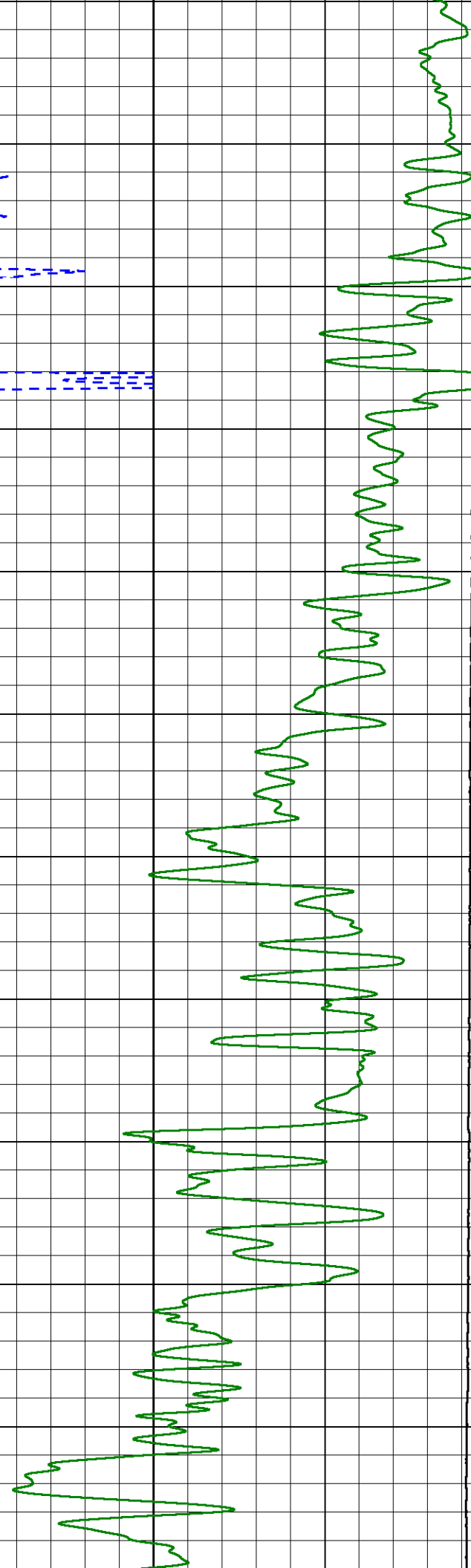
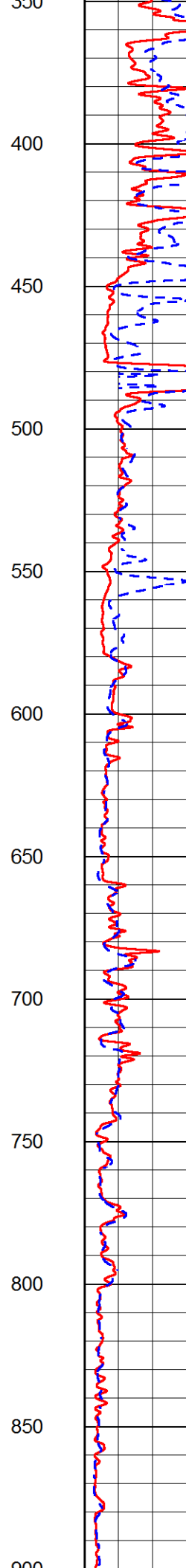
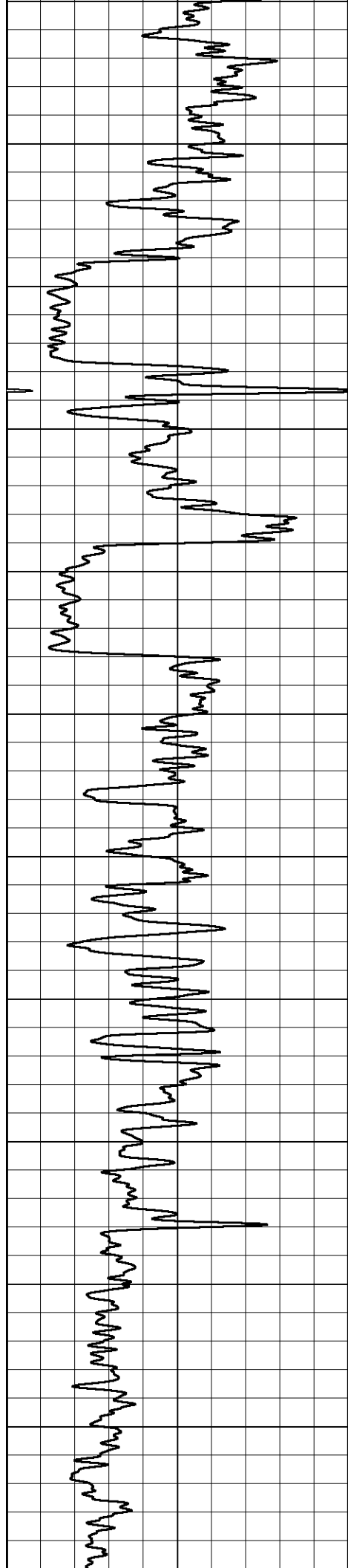
2" SCALE RESISTIVITY

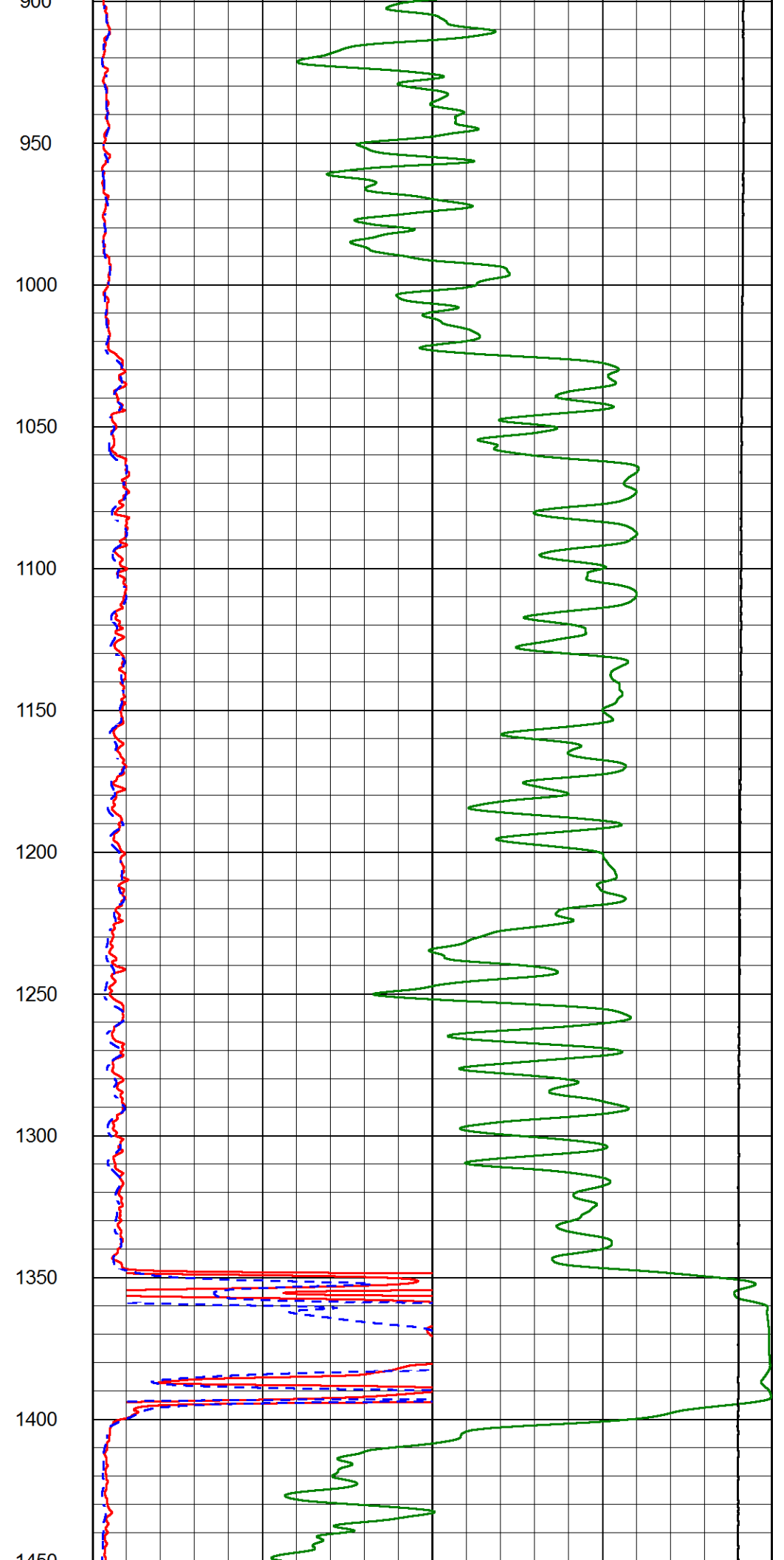
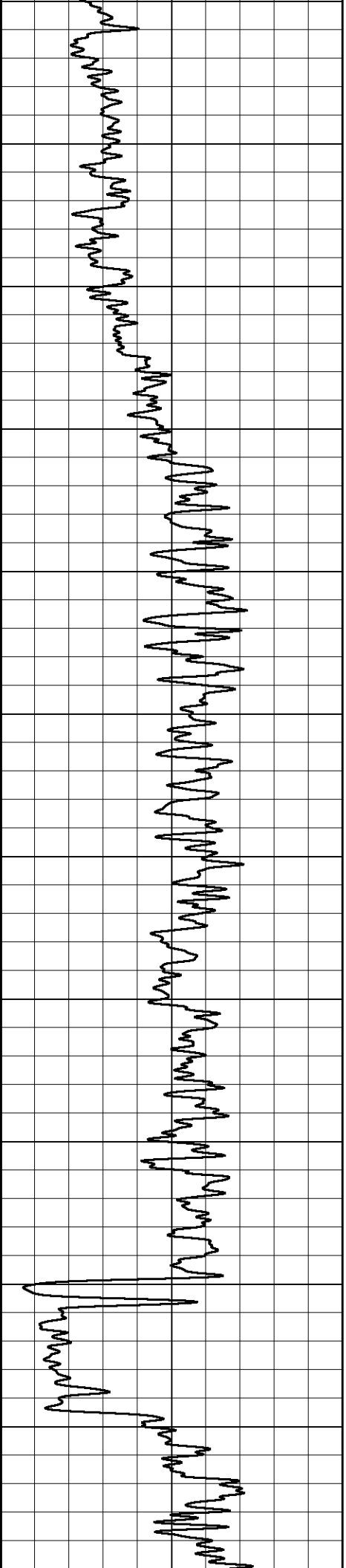
MAIN PASS

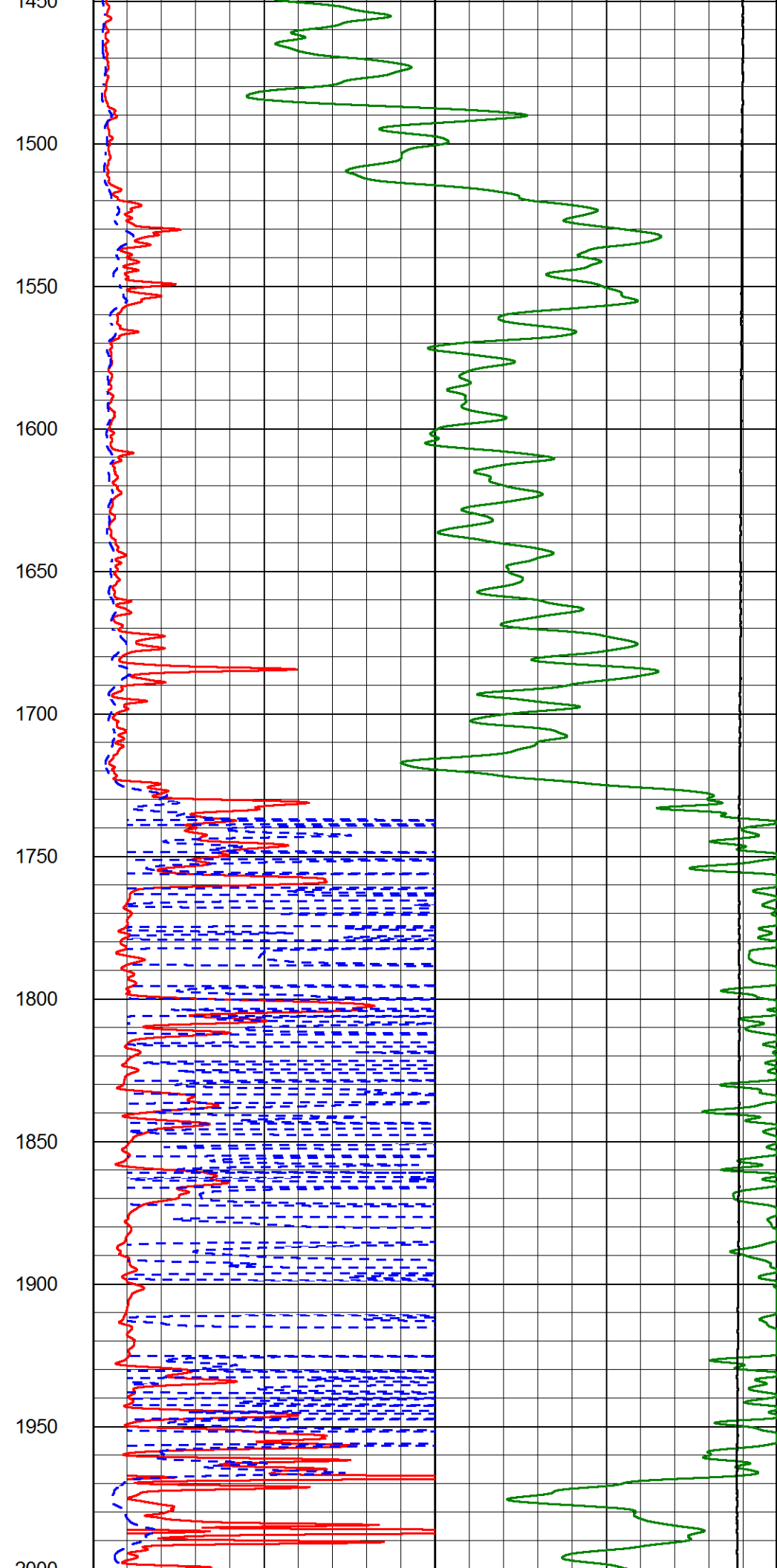
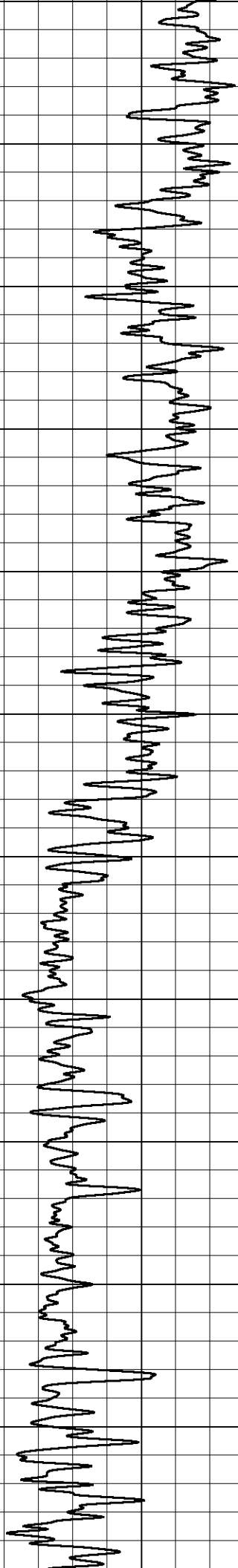
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 Dataset Creation Sun Oct 18 18:29:54 2020
 Charted by Depth in Feet scaled 1:600

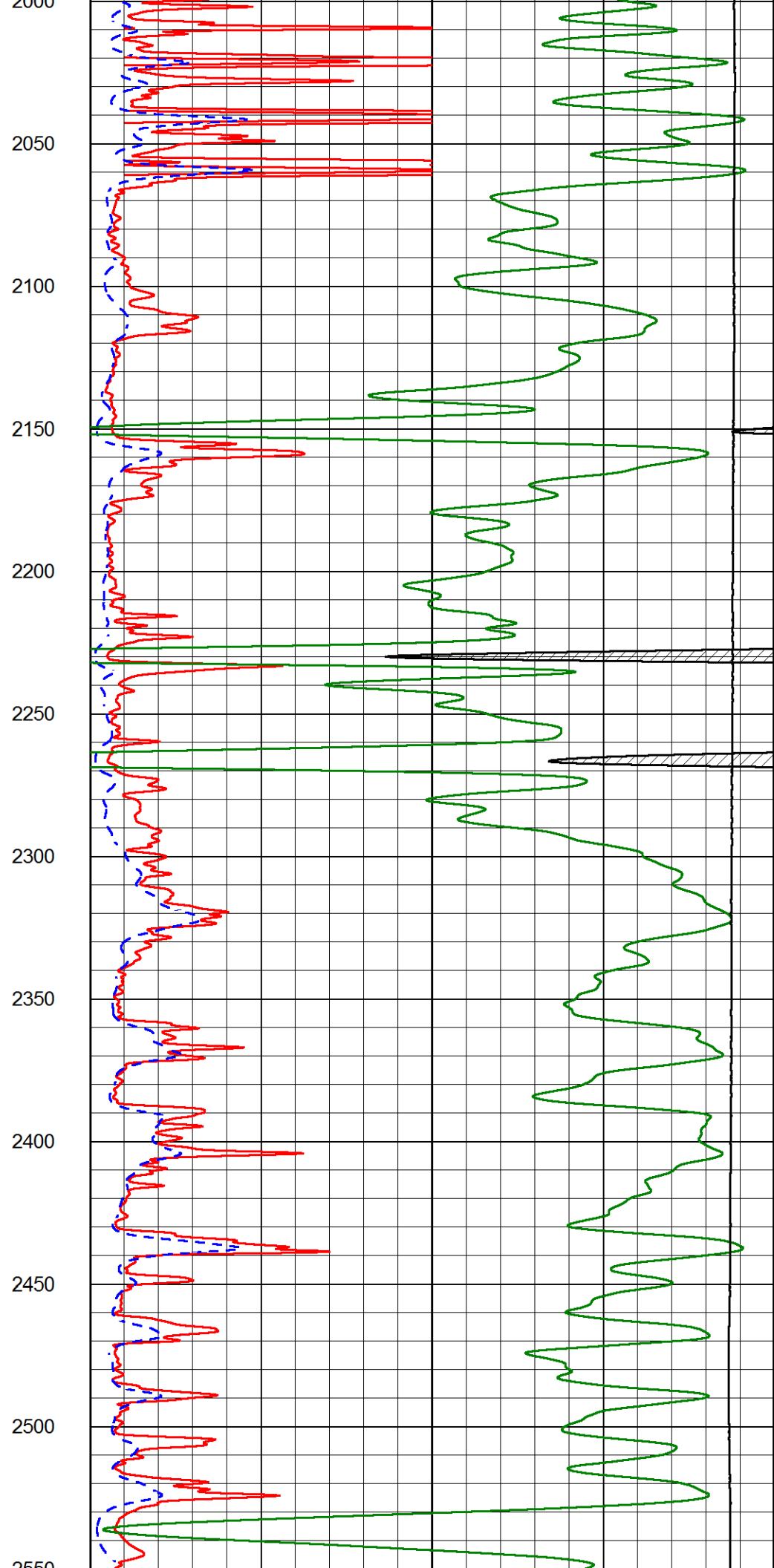
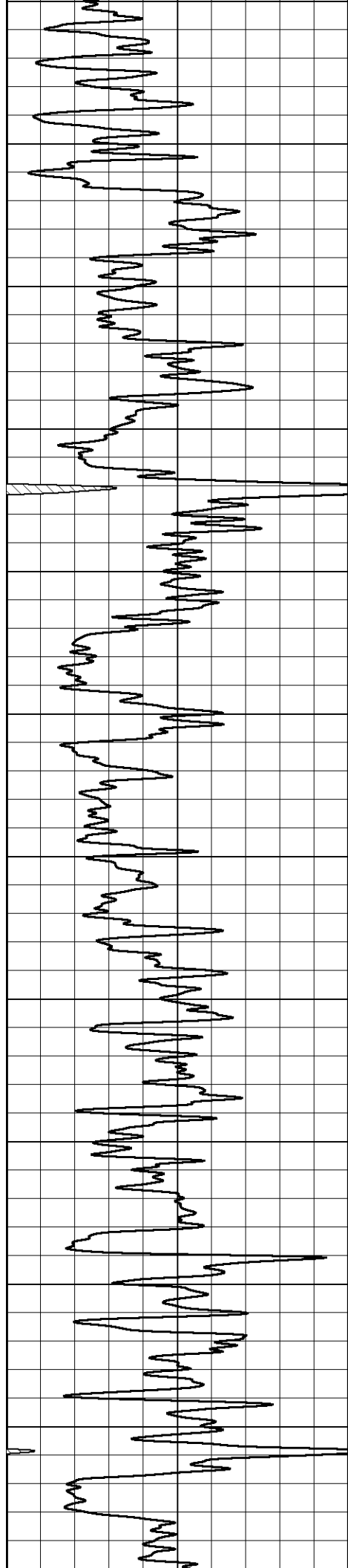
GAMMA RAY (GAPI) 150	1000	CONDUCTIVITY (mmho/m)	0
	15000	Line Tension (lb)	0
	0	RLL3 (Ohm-m)	50
	0	RILD (Ohm-m)	50
	50	RLL3 (Ohm-m)	200
	50	Deep Resistivity (Ohm-m)	200

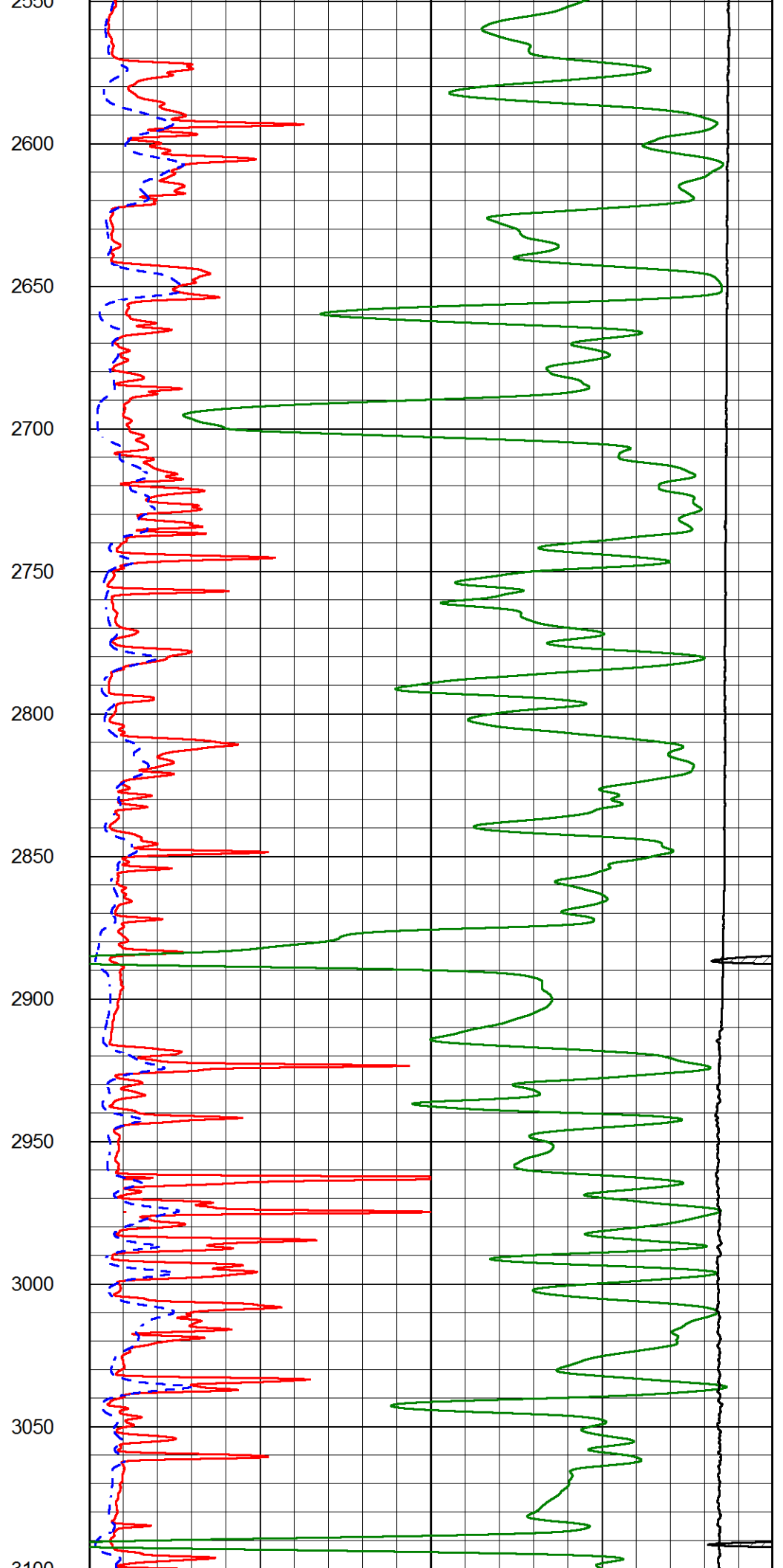
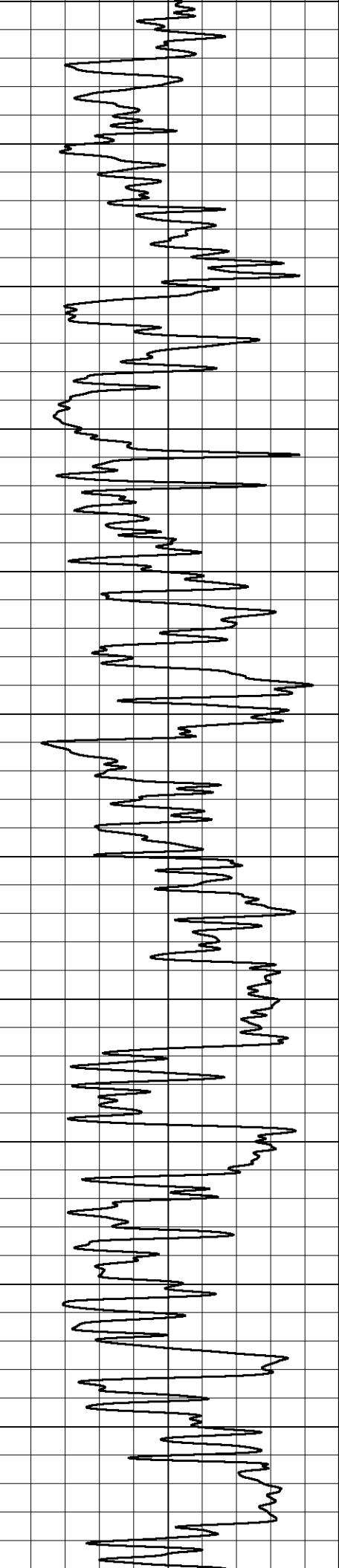


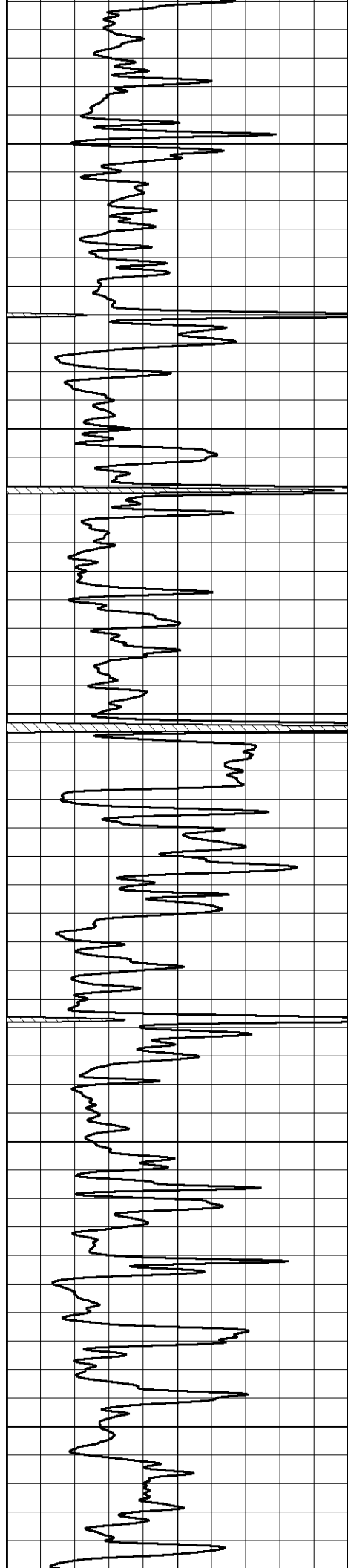




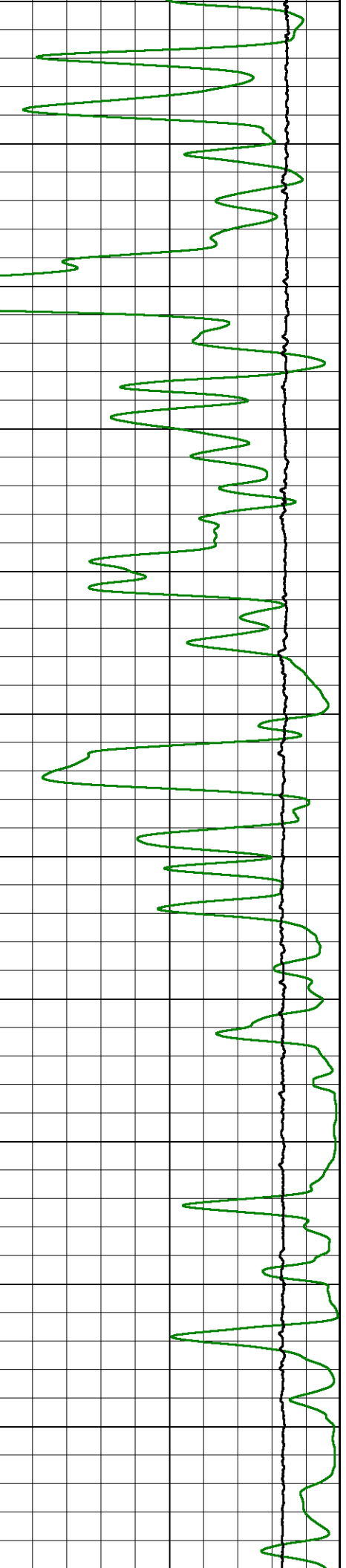
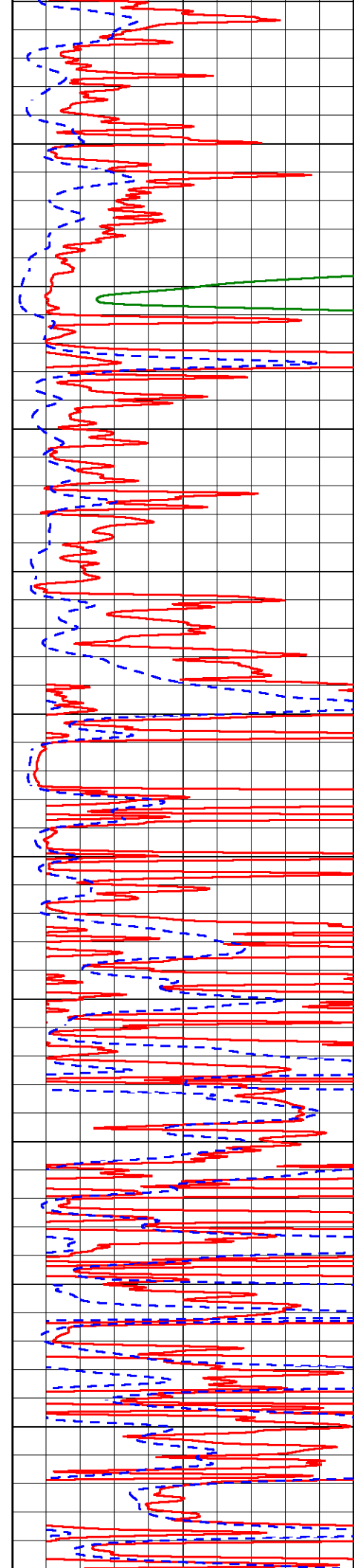


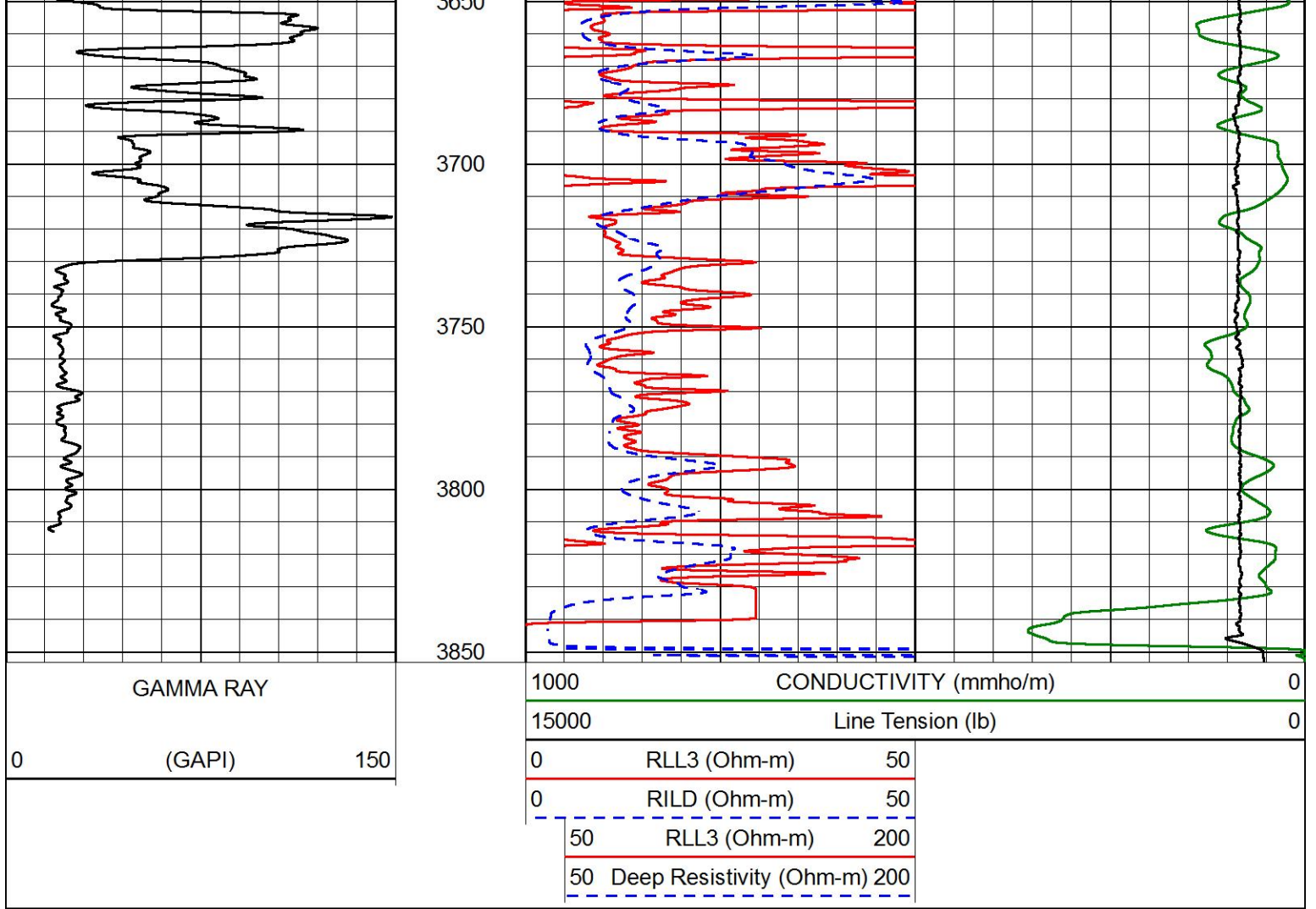






3100
3150
3200
3250
3300
3350
3400
3450
3500
3550
3600
3650





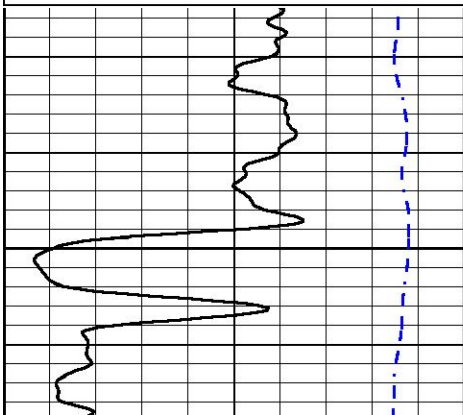
ANHYDRITE SECTION

MAIN PASS

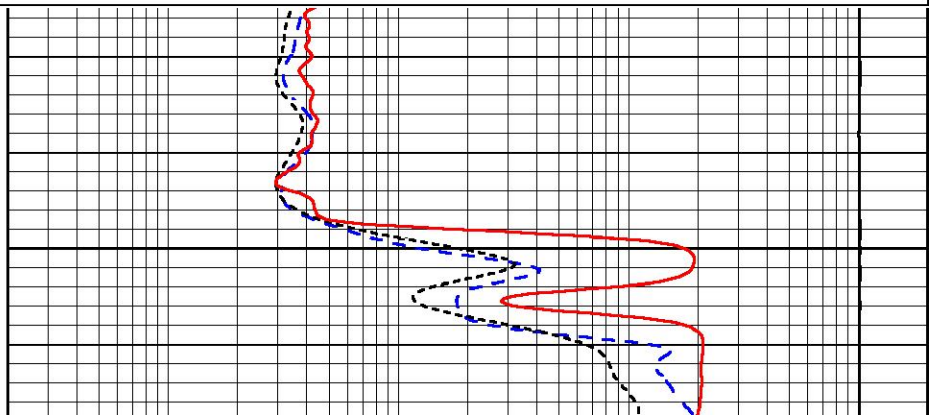
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 Presentation Format _dil
 Dataset Creation Sun Oct 18 18:14:54 2020
 Charted by Depth in Feet scaled 1:240

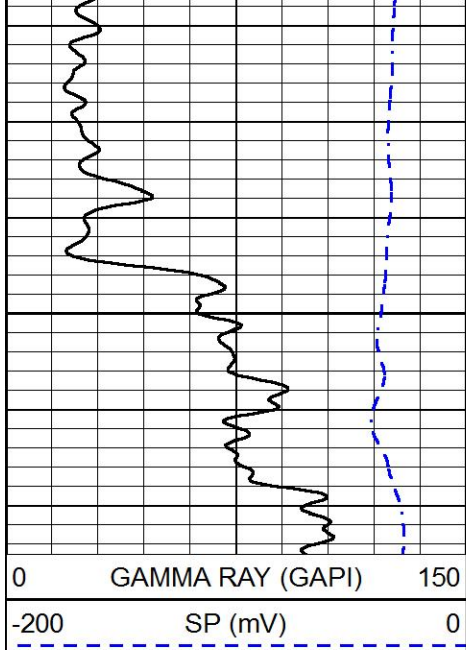
0 GAMMA RAY (GAPI) 150
 -200 SP (mV) 0

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



1350





1400



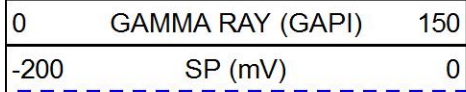
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0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0



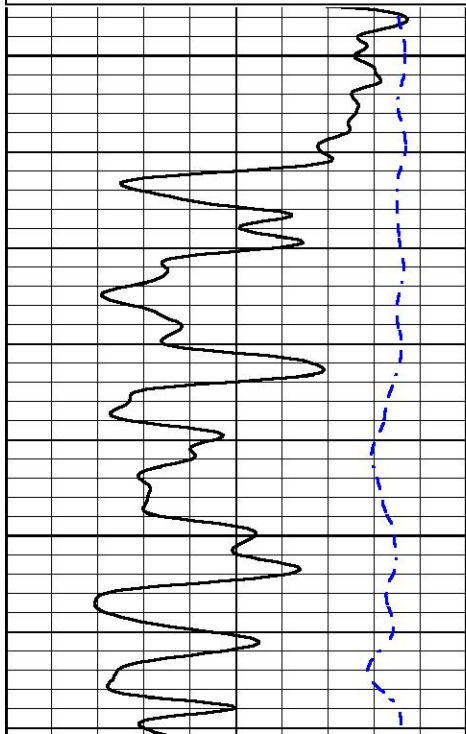
MIDWEST WIRELINE

MAIN PASS

Database File tdi_kay#1_20201018.db
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 Presentation Format _dil
 Dataset Creation Sun Oct 18 18:30:07 2020
 Charted by Depth in Feet scaled 1:240

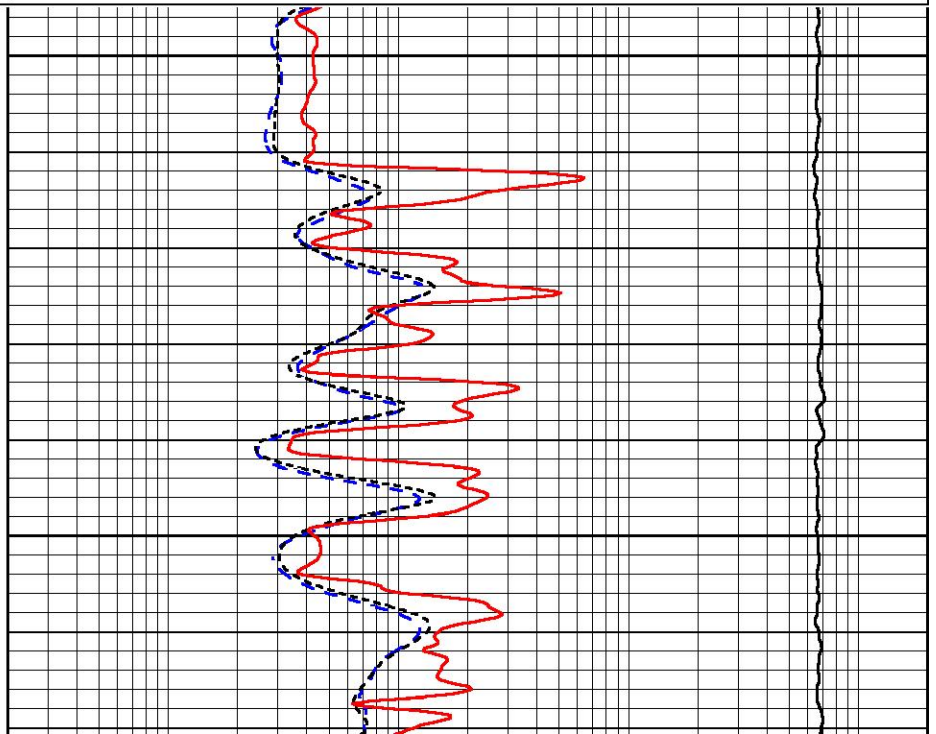


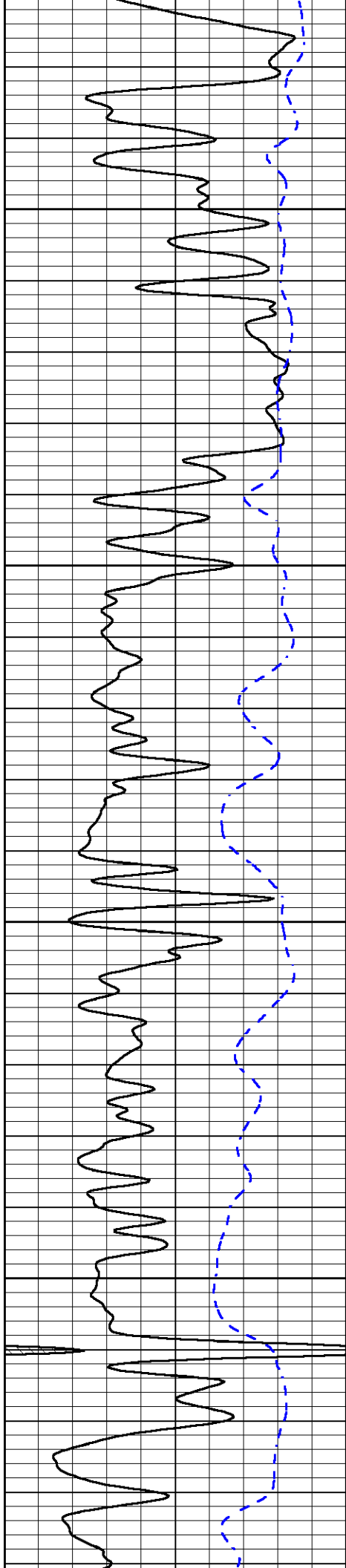
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0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0



2950

3000



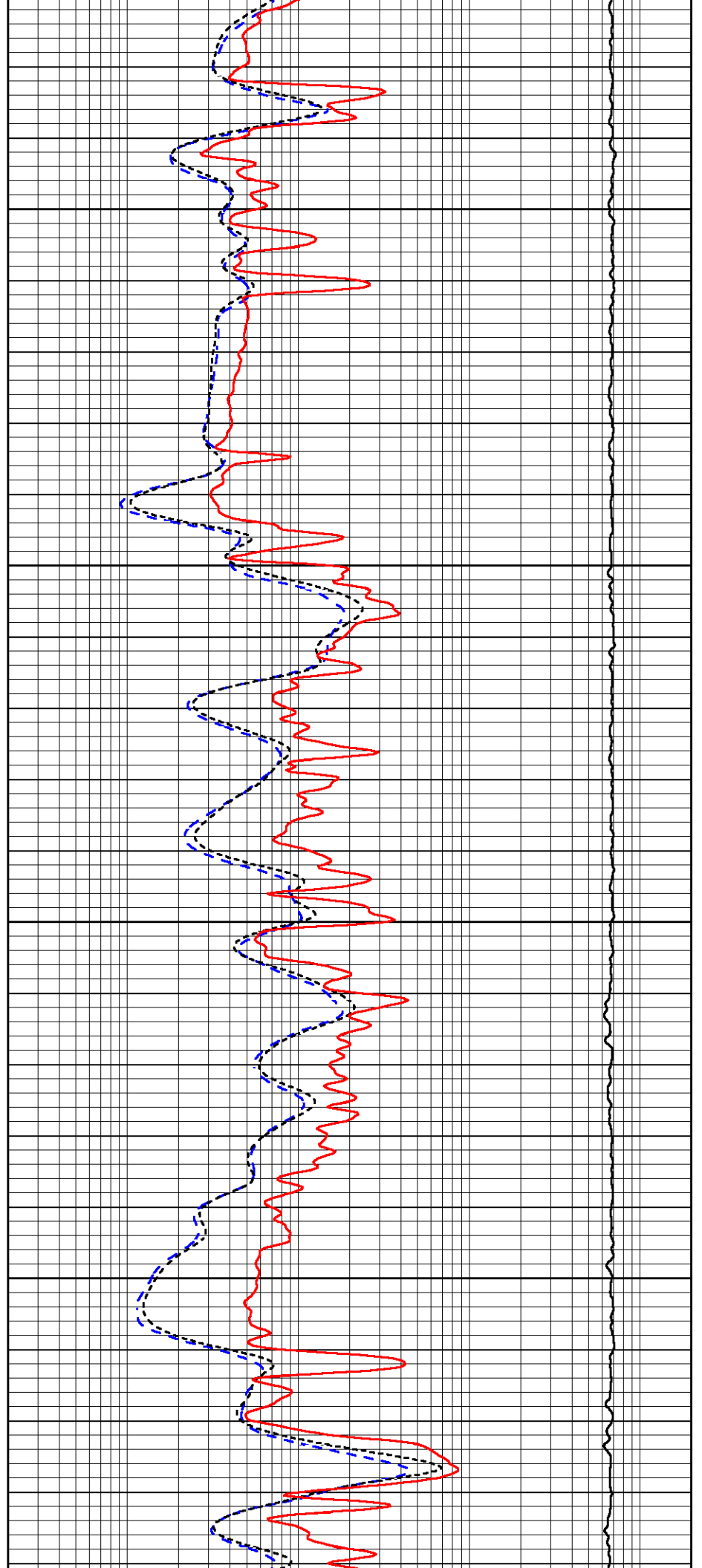


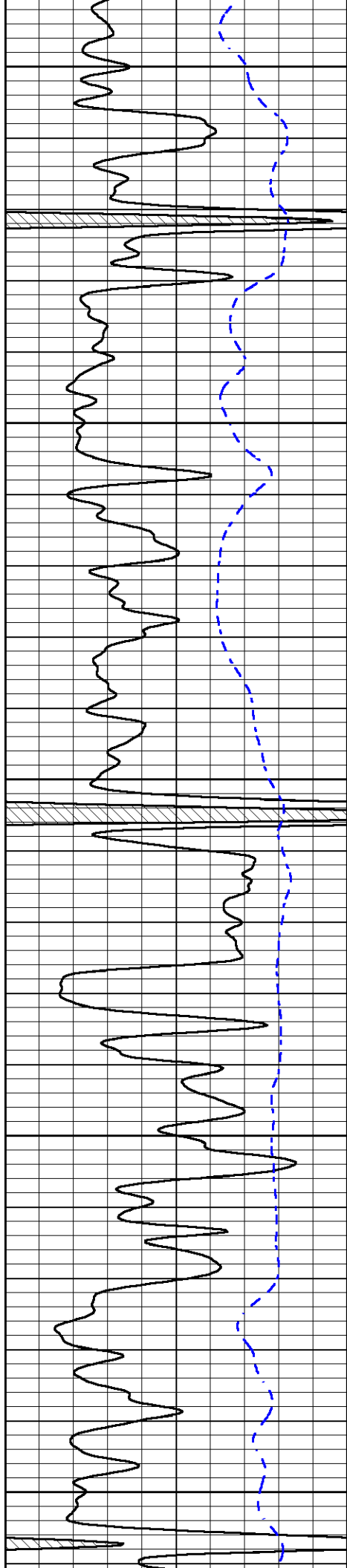
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3100

3150

3200





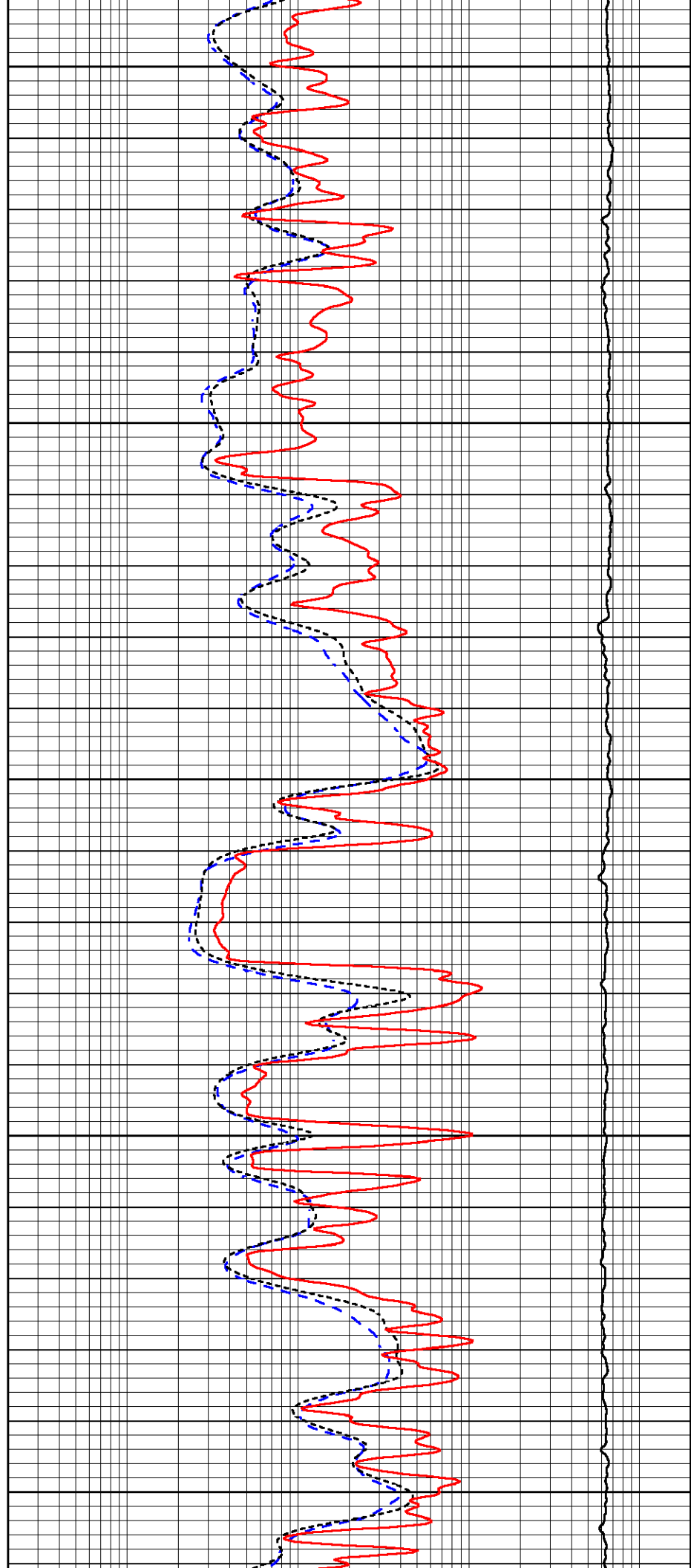
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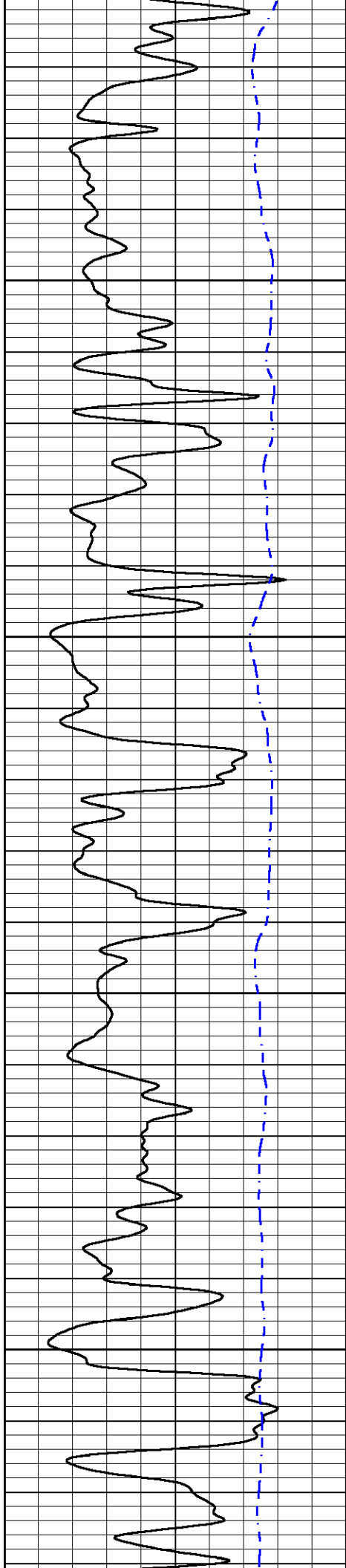
3300

3350

3400

3450



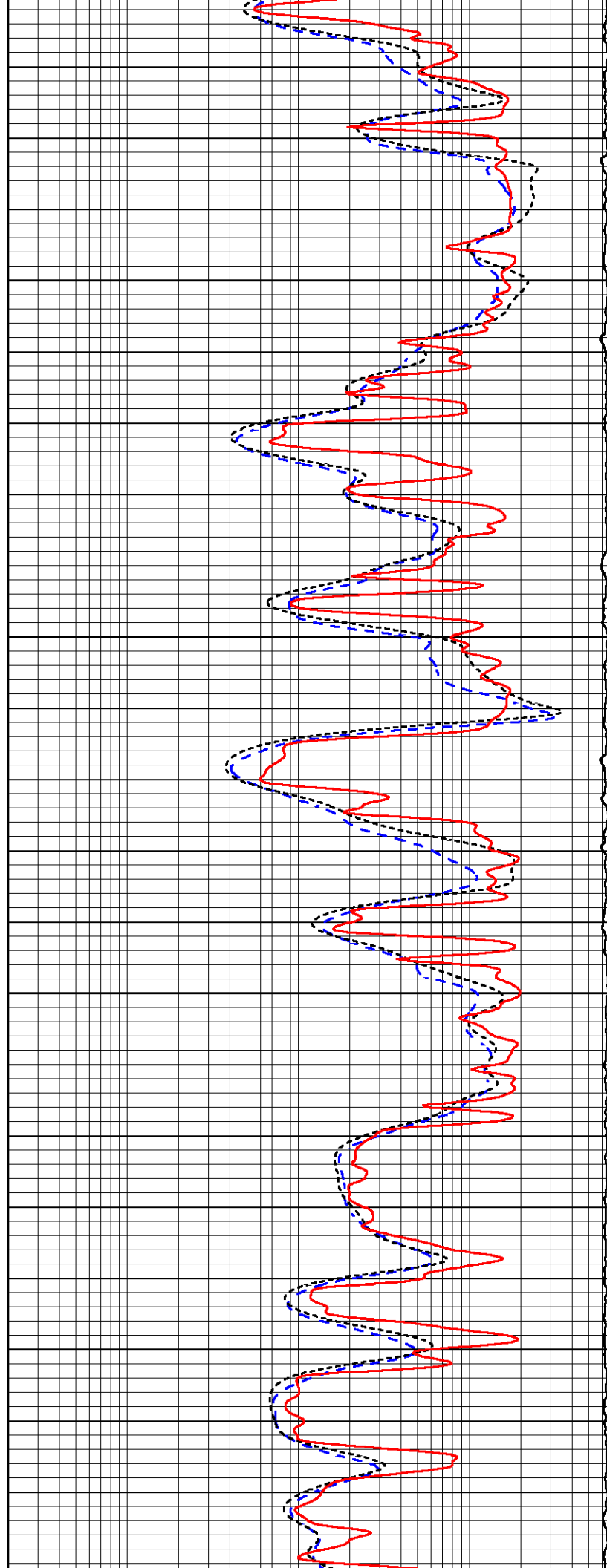


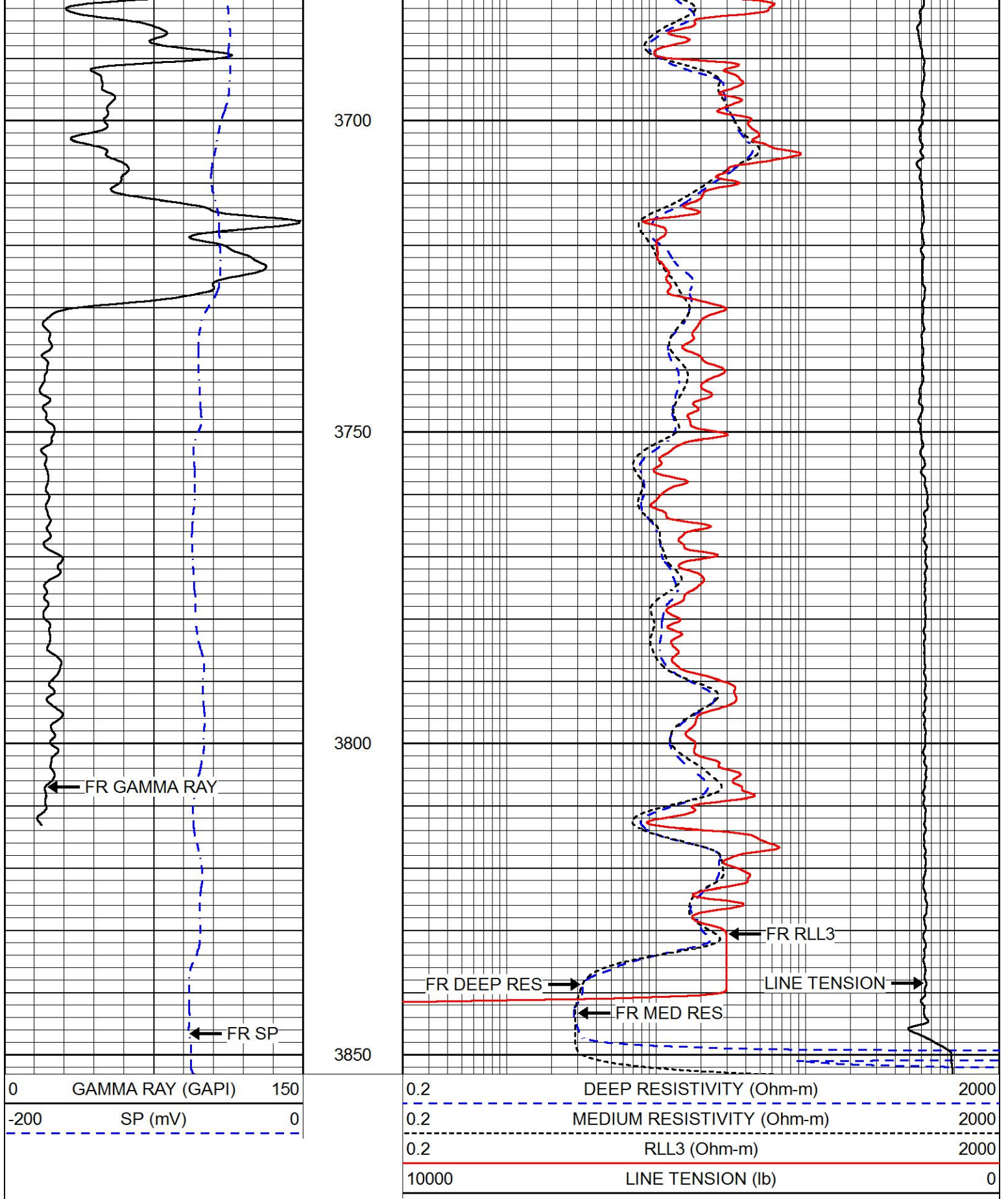
3500

3550

3600

3650



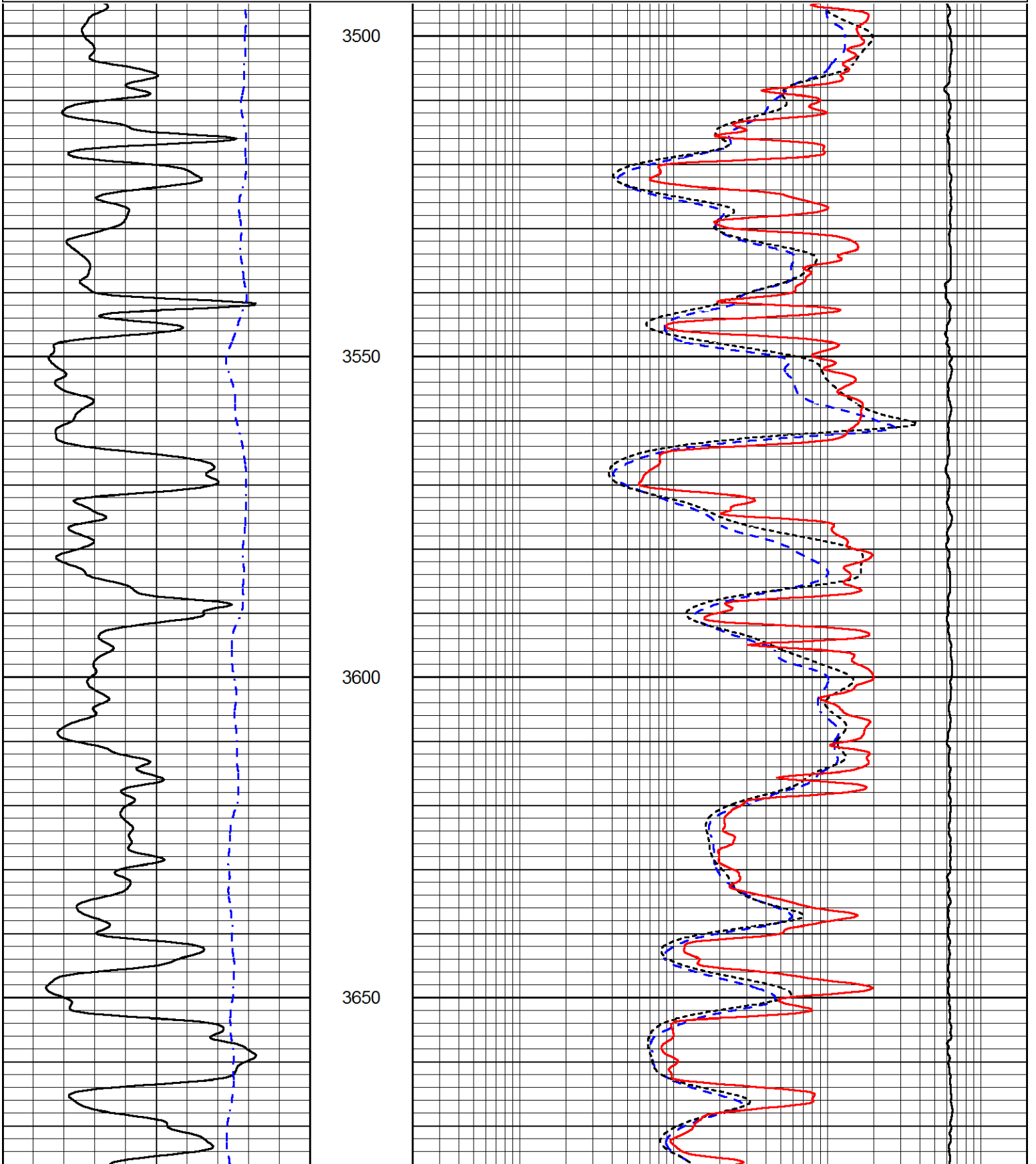


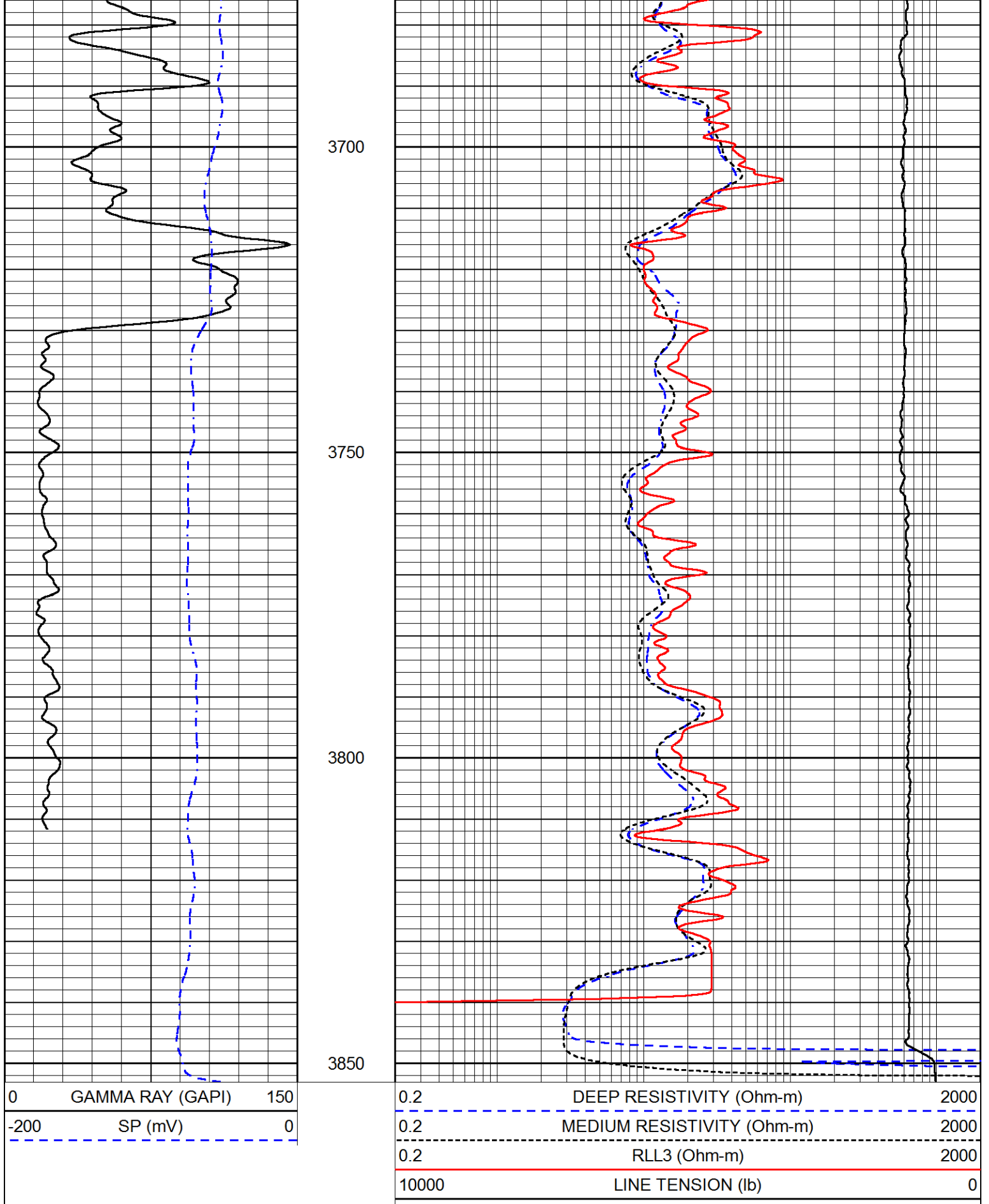
REPEAT SECTION

Database File tdi_kay#1_20201018.db
 Dataset Pathname StkMI/pass2.1
 Presentation Format _dil
 Dataset Creation Sun Oct 18 18:00:08 2020
 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





Calibration Report

Database File tdi_kay#1_20201018.db
 Dataset Pathname StkMI/pass3.4
 Dataset Creation Sun Oct 18 18:14:54 2020

Dual Induction Calibration Report

Serial-Model: 952-828-PSI HIGH TEMP
 Calibration Performed: Sun Jun 28 08:39:24 2020

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.455	-30.000
Medium	0.000	1348.000	142.000	255.000	mmho/m	0.325	-28.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Tue Sep 29 10:01:17 2020

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	14000.0000	-0.5000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	16500.0000	-0.3000
Caliper	1.0033	1.0841	5.0000	16.5000	in	142.3500	-138.4500

Compensated Density Calibration Report

Serial-Model: 817-947-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Sun Sep 20 22:09:47 2020

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	6127.15	5922.31	cps
Aluminum	2.670	g/cc	1141.85	3762.09	cps
Spine Angle = 74.89			Density/Spine Ratio = 0.526		
	Size		Reading		
Small Ring	4.50	in	1.02		
Large Ring	14.50	in	1.23		

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: Sun Sep 20 22:10:24 2020

Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.5500	GAPI/cps



Company	TDI, Inc.
Well	Kay #1
Field	
County	Ellis
State	Kansas