



DUAL INDUCTION LOG

Company CHARLES N. GRIFFIN
Well WOOD #1
Field TROUSDALE NORTHEAST
County EDWARDS **State** KANSAS

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Well WOOD #1
Field TROUSDALE NORTHEAST
County EDWARDS
State KANSAS

Location: API #: 15-047-21655-00-00
 SW NW SE
 1650' FSL & 2310' FEL
 SEC 22 TWP 26S RGE 16W
 Permanent Datum GROUND LEVEL Elevation 2076'
 Log Measured From KELLY BUSHING
 Drilling Measured From KELLY BUSHING

Other Services
 CNL/CDL
 MEL

Date	1/22/2017
Run Number	ONE
Depth Driller	4630'
Depth Logger	4629'
Bottom Logged Interval	4628'
Top Log Interval	400'
Casing Driller	8.625" @ 405'
Casing Logger	404'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	6000
Density / Viscosity	9.3 75
pH / Fluid Loss	10.5 9.6
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.72 @ 52
Rmt @ Meas. Temp	0.54 @ 52
Rmc @ Meas. Temp	0.97 @ 52
Source of Rmf / Rmc	CHARTS
Rm @ BHT	0.30 @ 124
Operating Rig Time	2 1/2 HOURS
Max Rec. Temp. F	124 DEG F
Equipment Number	91
Location	COLBY
Recorded By	T. MARTIN
Witnessed By	BRUCE REED

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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.

TROUSDALE, KS, 1/2 S TO T RD, 2 E TO 290TH,
3 S, 1/2 W INTO ON S SIDE OF TREES, 1/4 N TO LOCATION

Log Measured From: KELLY BUSHING 5 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: T. MARTIN	Operator:	Primary Witness: BRUCE REED	Secondary Witness: ELI FELTS
Operator:	Operator:	Secondary Witness:	Secondary Witness:

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					
CILD	8.00		DIL-M&W (PSI 13)	18.50	3.50	220.00
CILM	4.70					
SP	0.20					

Dataset: griffin_wood_#1.db: field/well/stckml/pass4.1
 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\griffin_wood_#1.db
 Dataset field/well/stckml/pass4.1/_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	70	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	45	0	5.5	0	4629	124	7.875



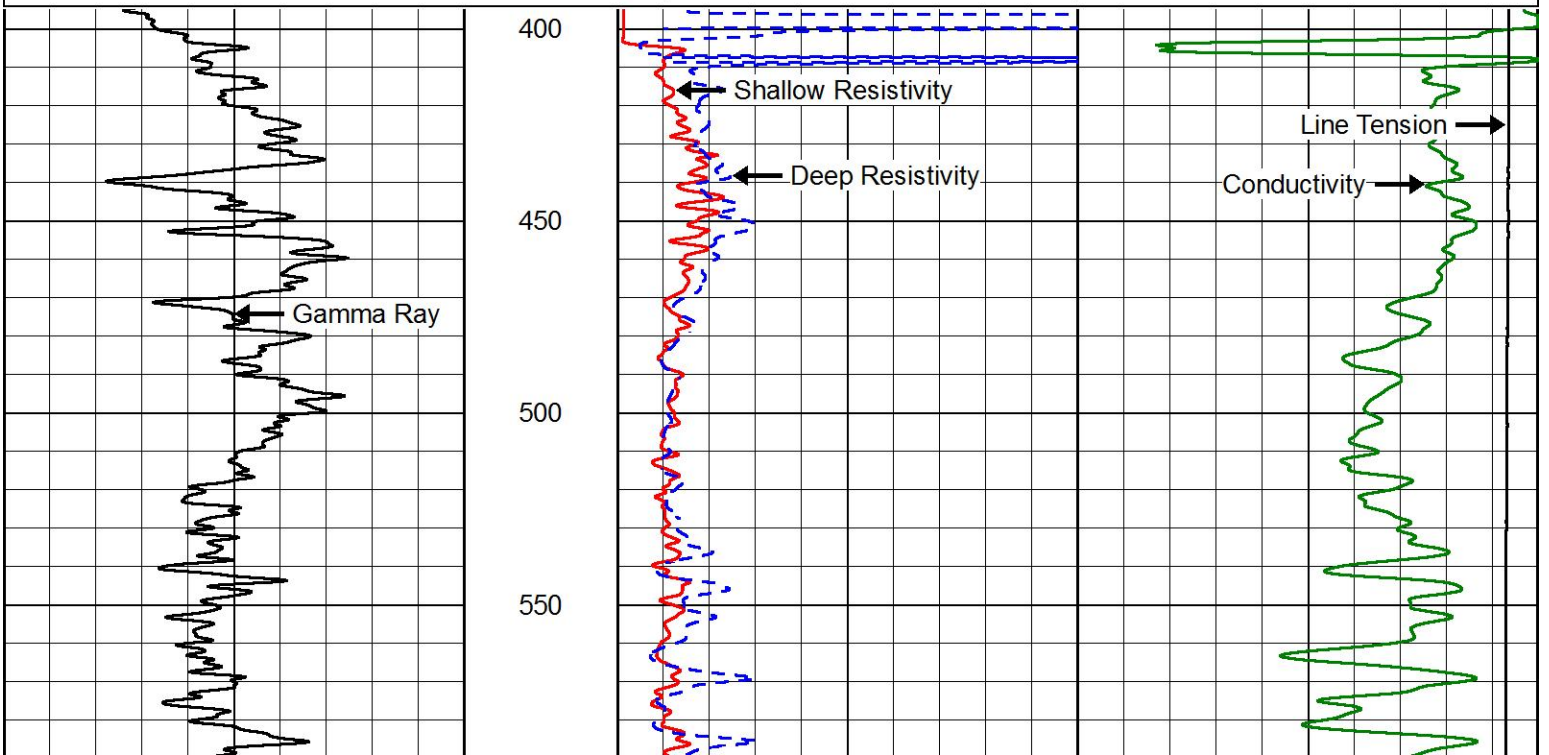
PIONEER
Pioneer Energy Services

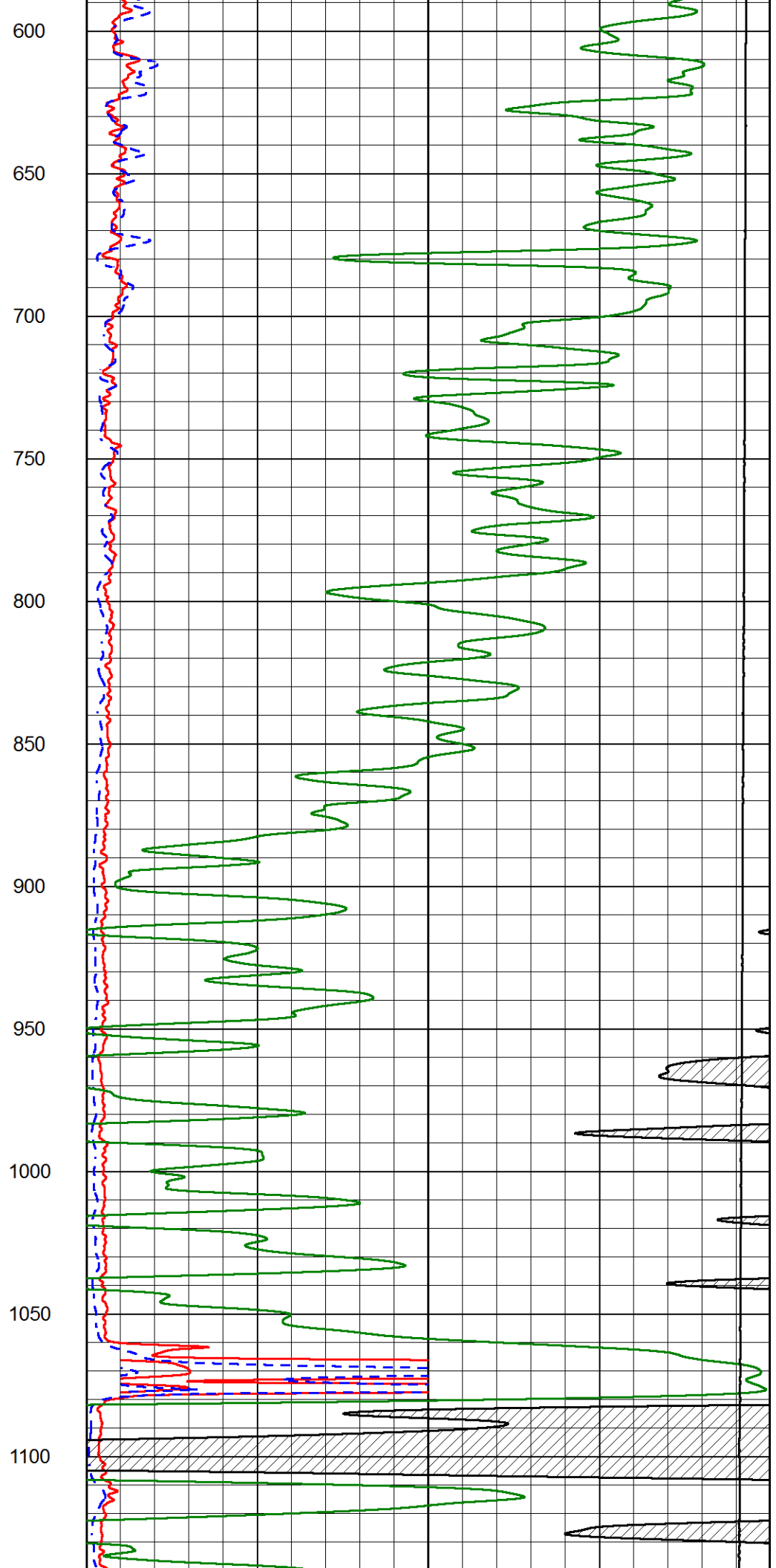
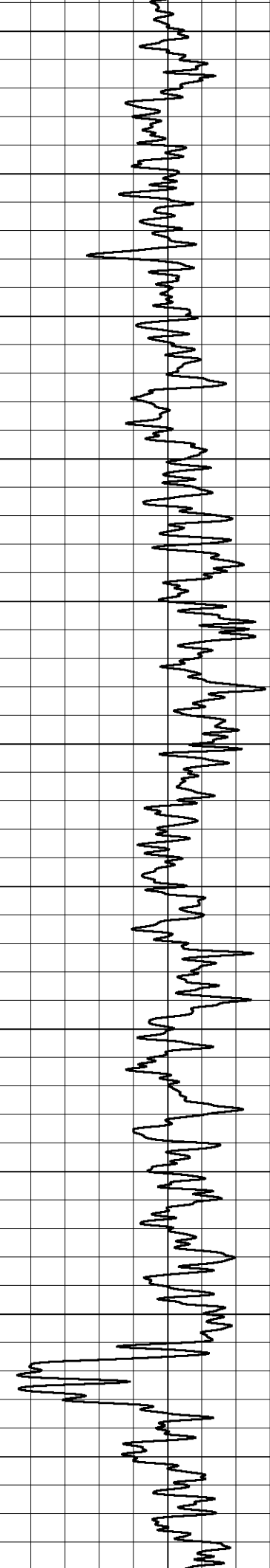
2" SCALE RESISTIVITY

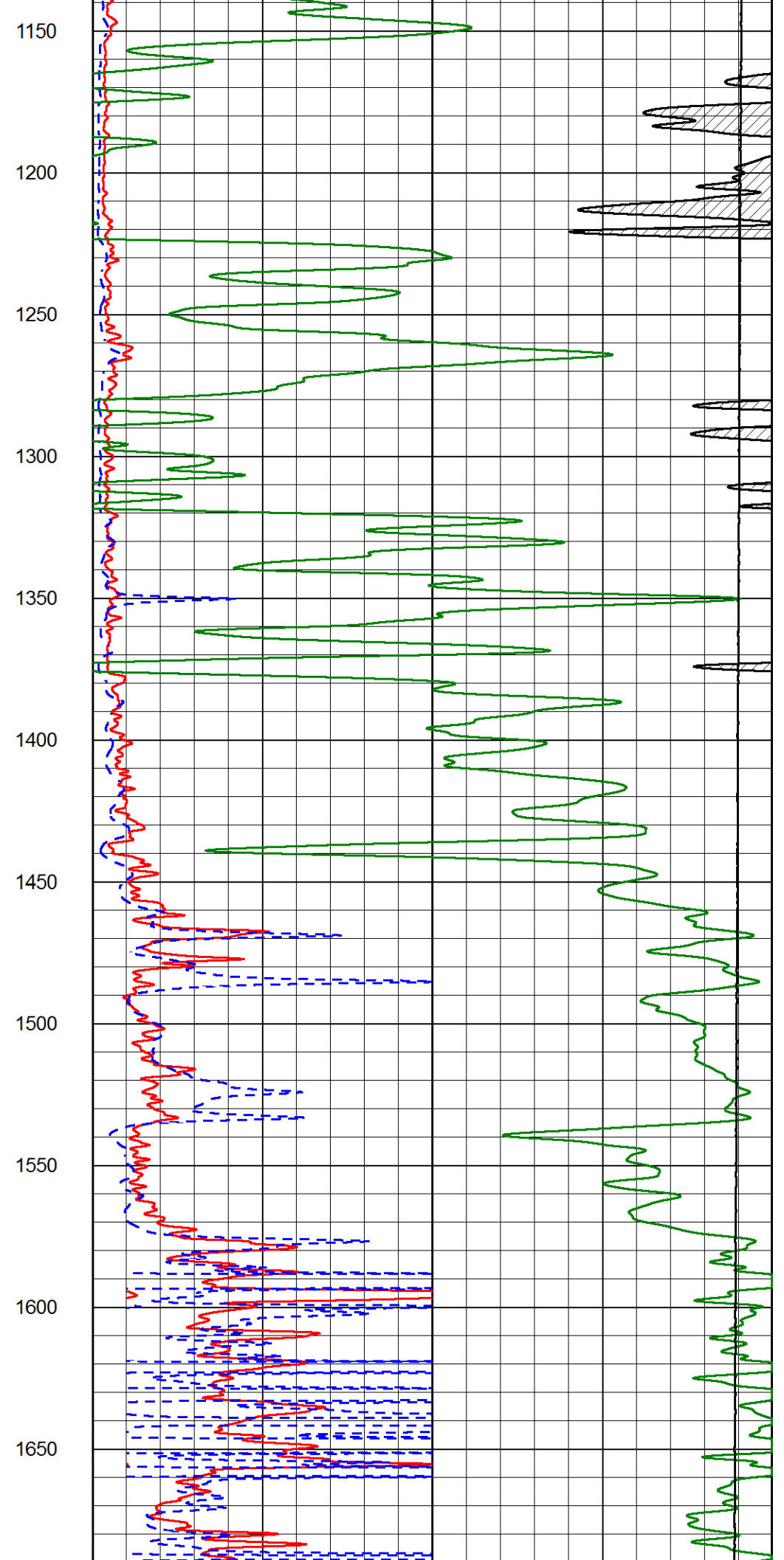
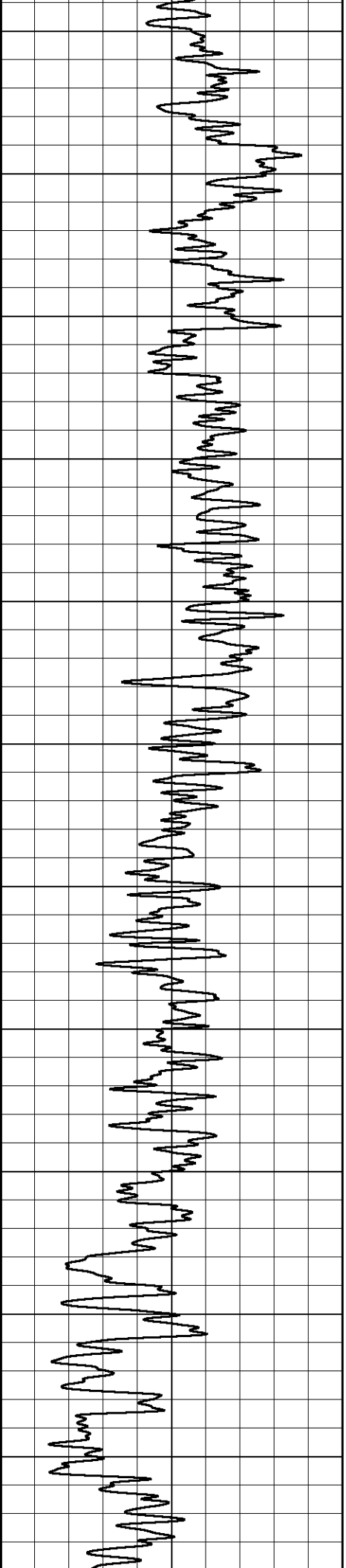
MAIN PASS

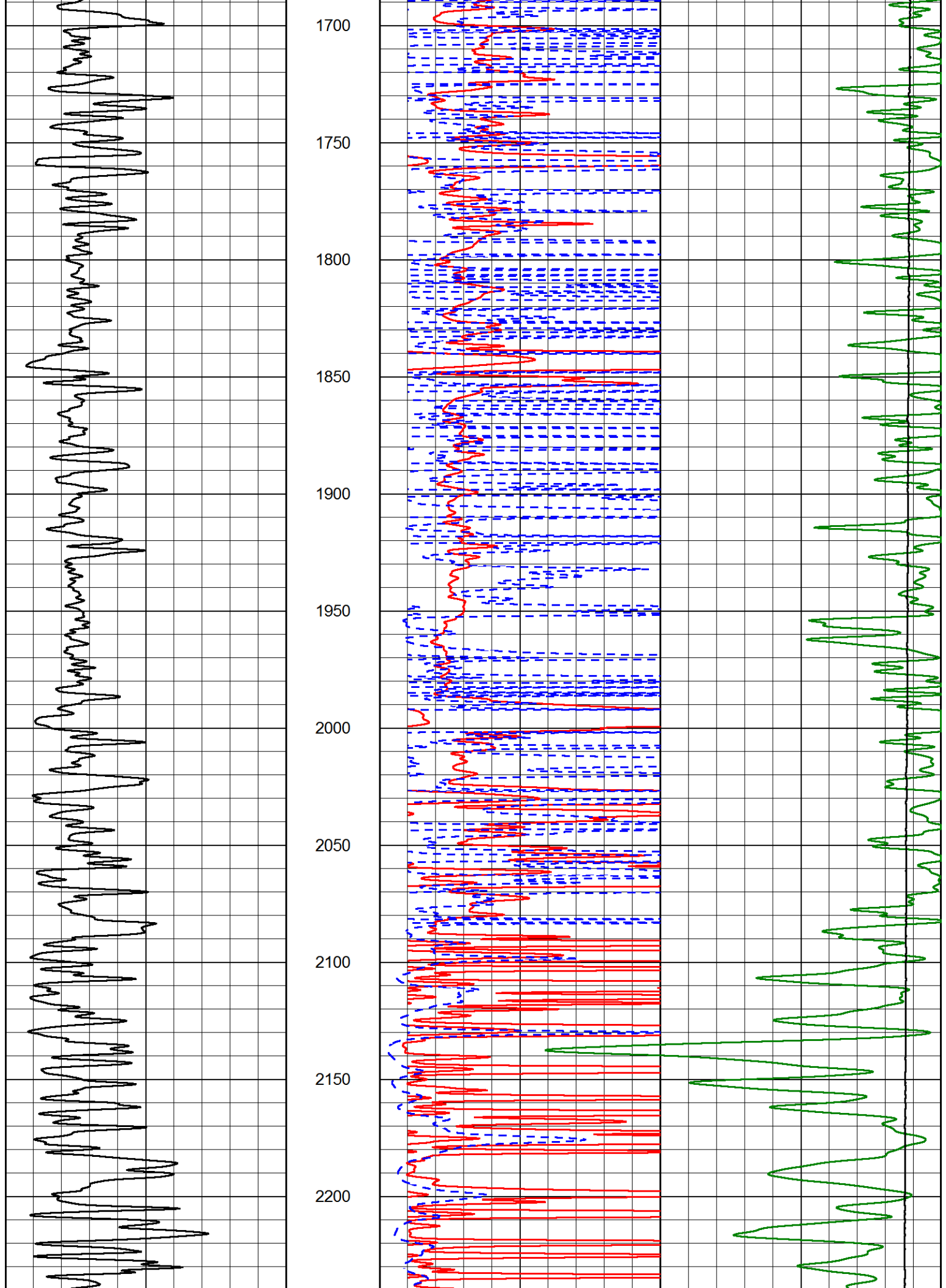
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 Presentation Format dil2in
 Dataset Creation Sun Jan 22 19:25:37 2017
 Charted by Depth in Feet scaled 1:600

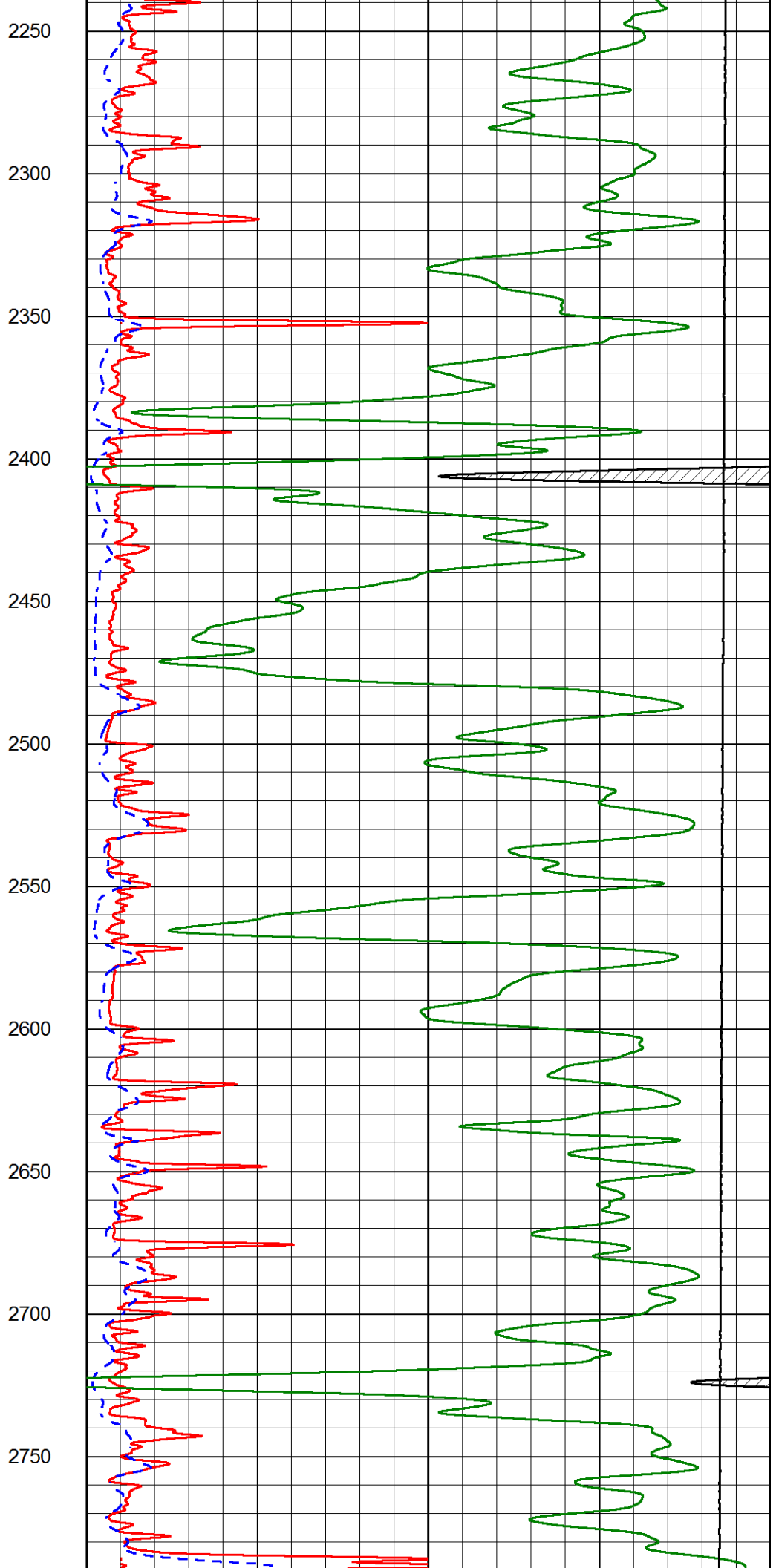
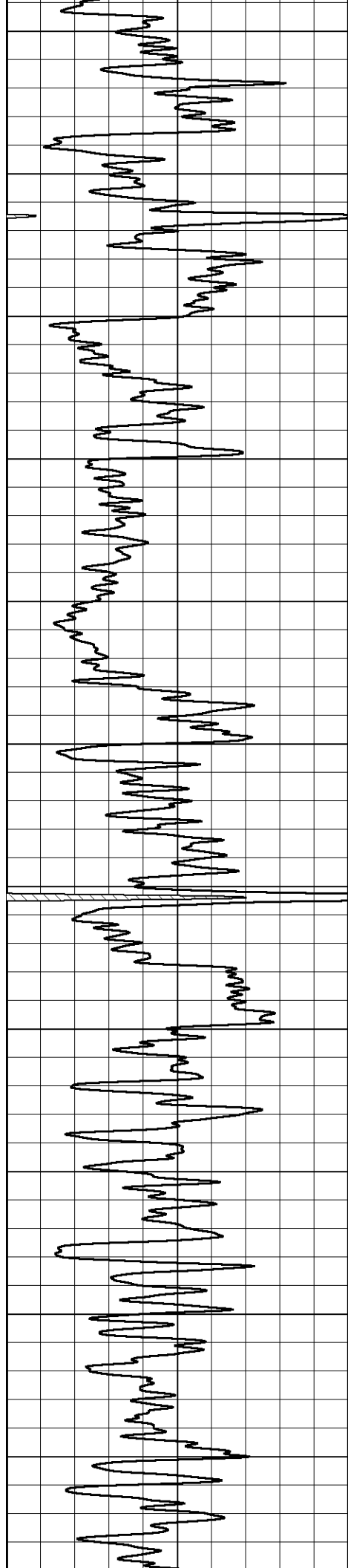
0	Gamma Ray (GAPI)	150	1000	Conductivity (mmho/m)	0
			15000	Line Tension (lb)	0
			0	Shallow Resistivity (Ohm-m)	50
			0	Deep Resistivity (Ohm-m)	50
				Shallow Resistivity	
			50	(Ohm-m)	500
			50	Deep Resistivity (Ohm-m)	500

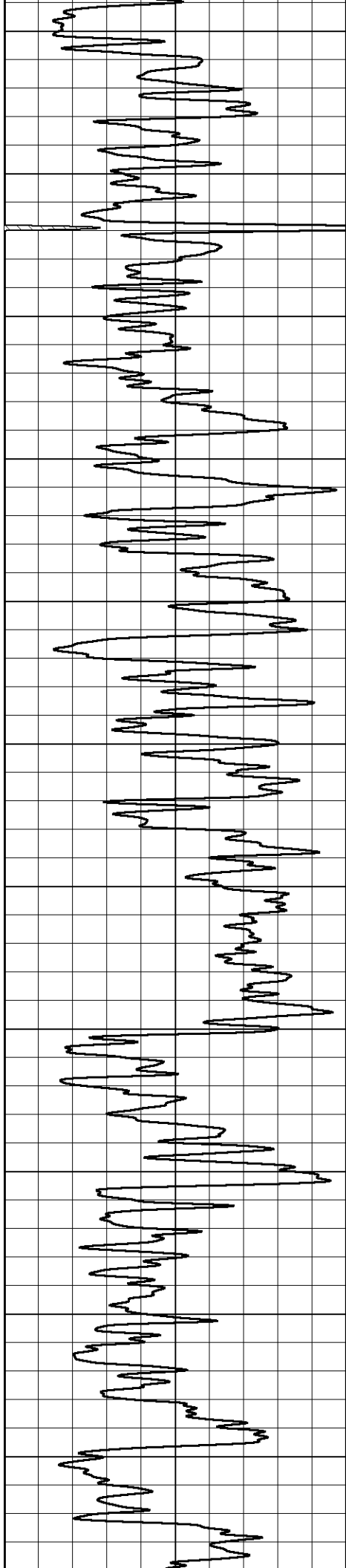




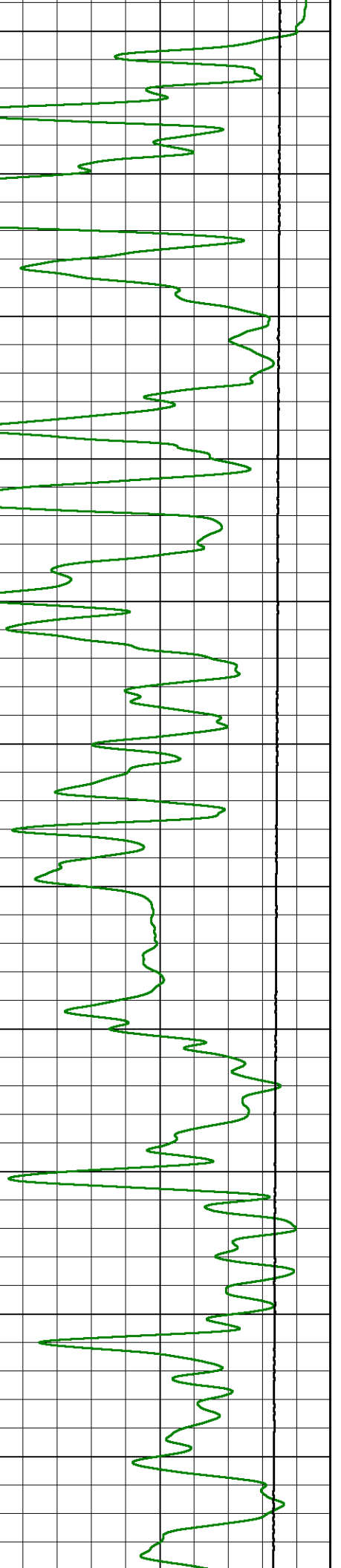
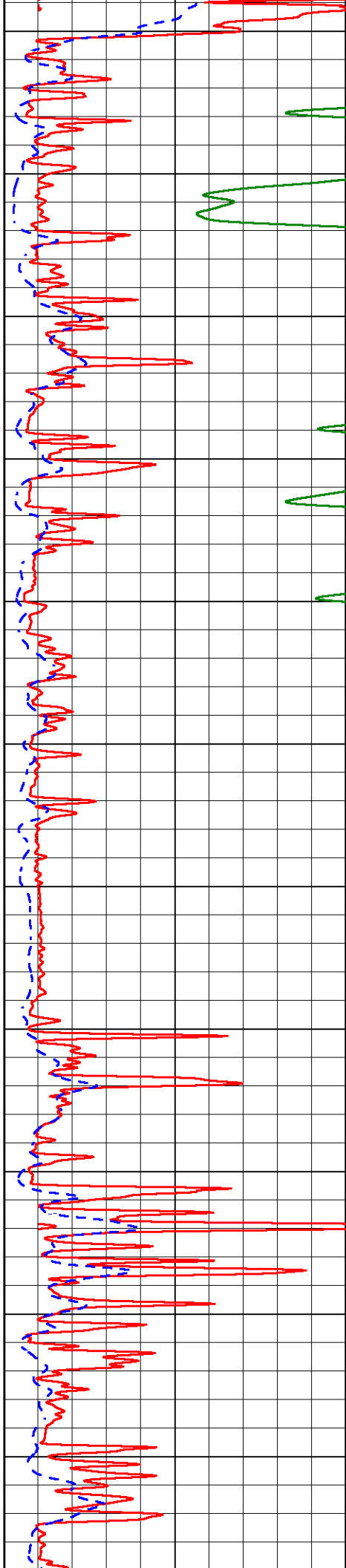


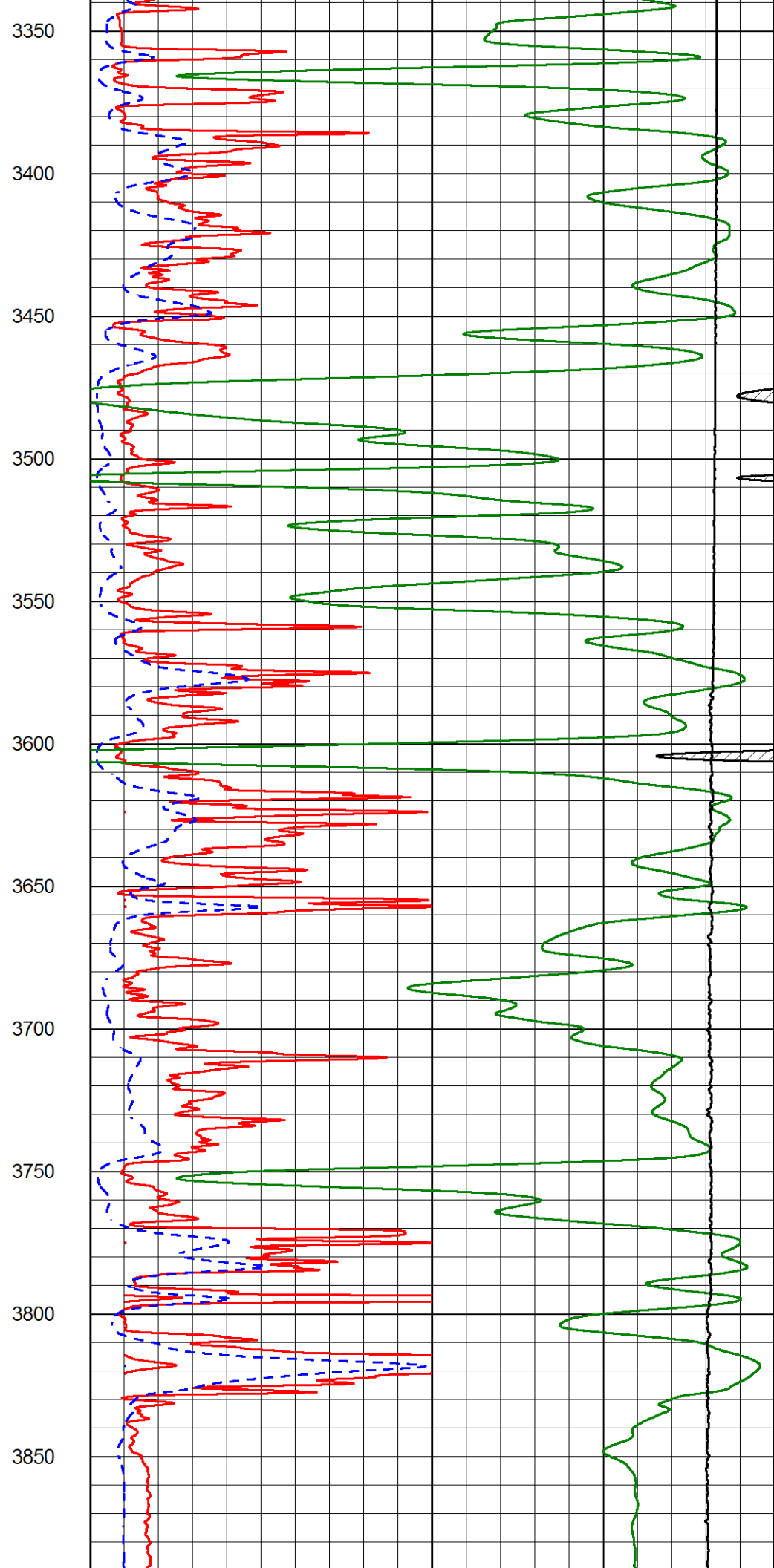
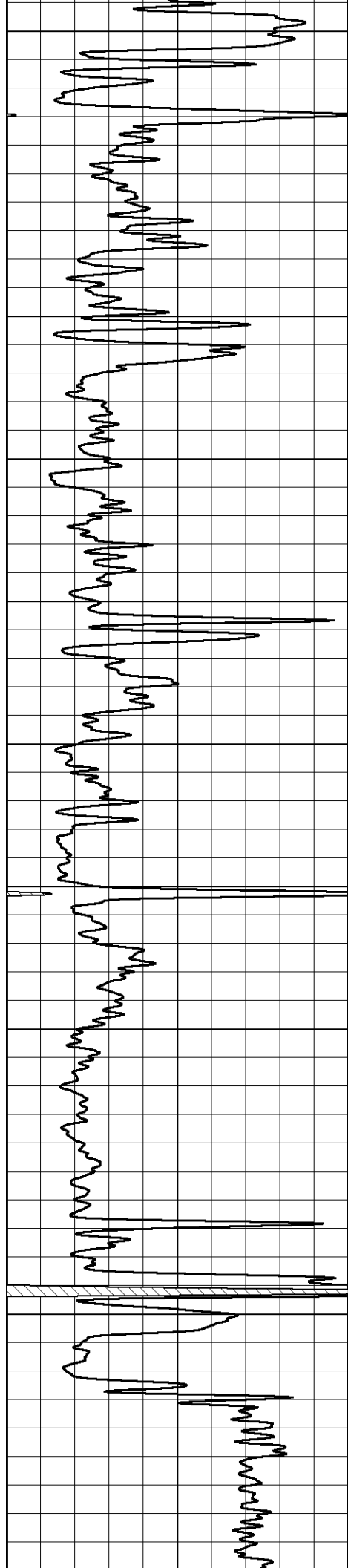


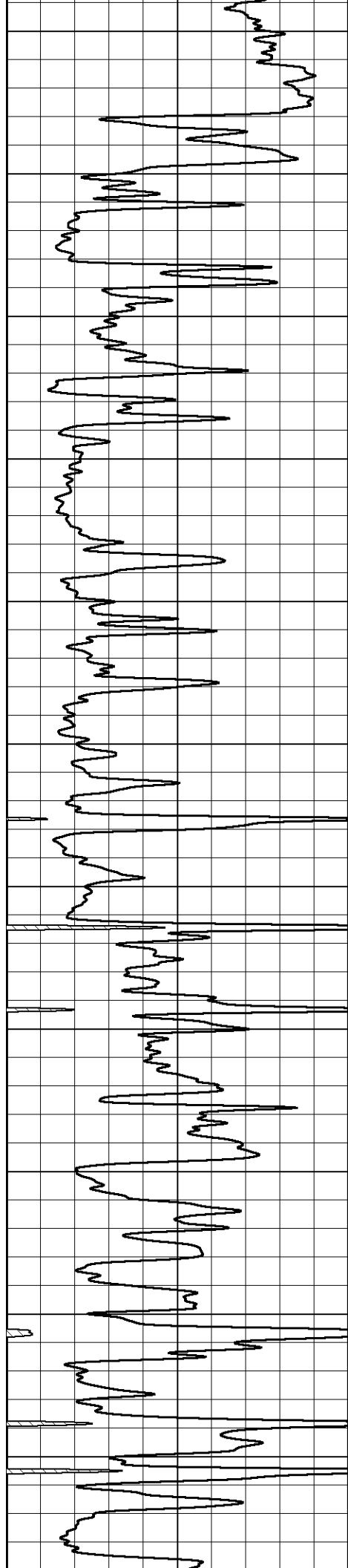




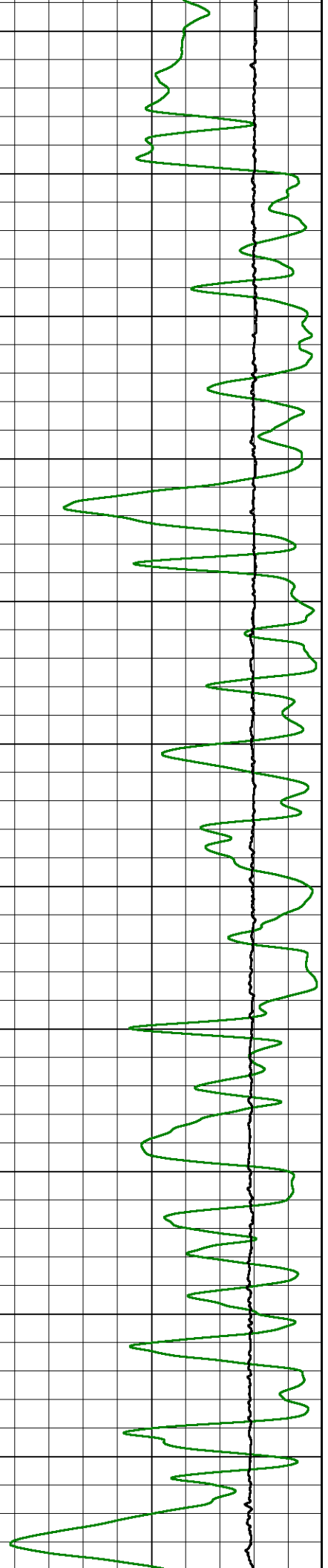
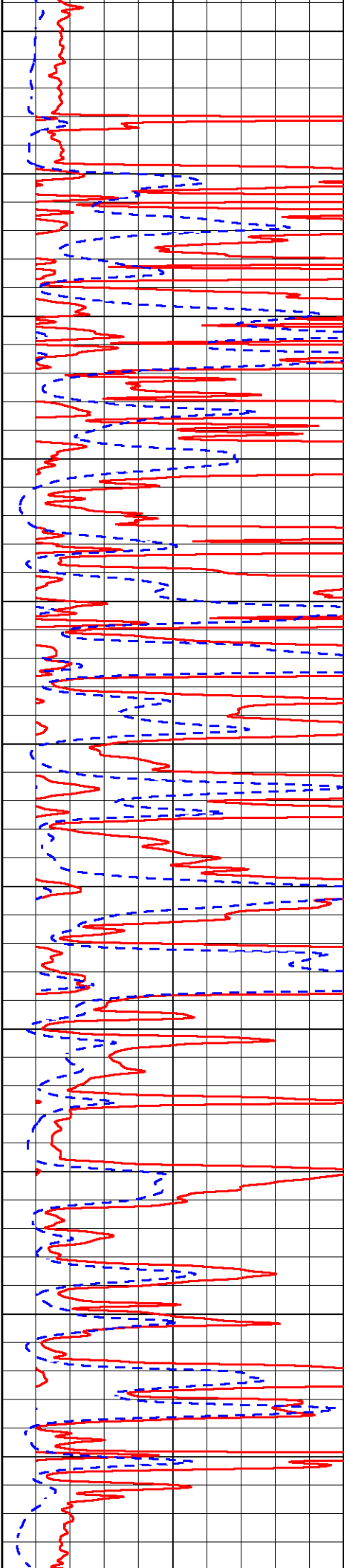
2800
2850
2900
2950
3000
3050
3100
3150
3200
3250
3300

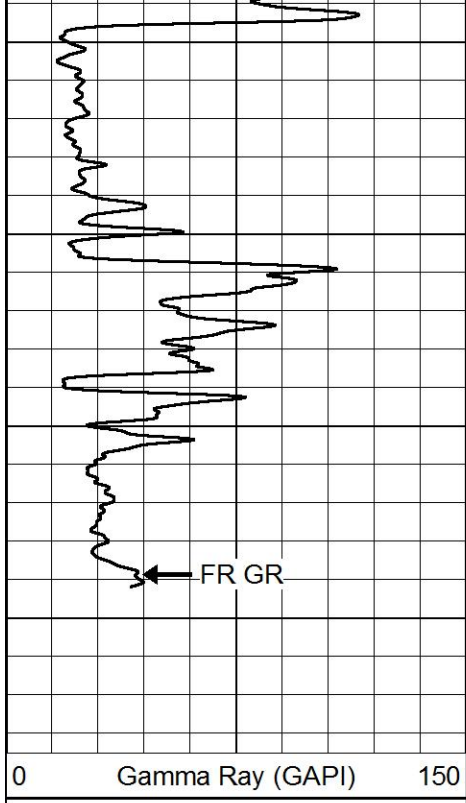




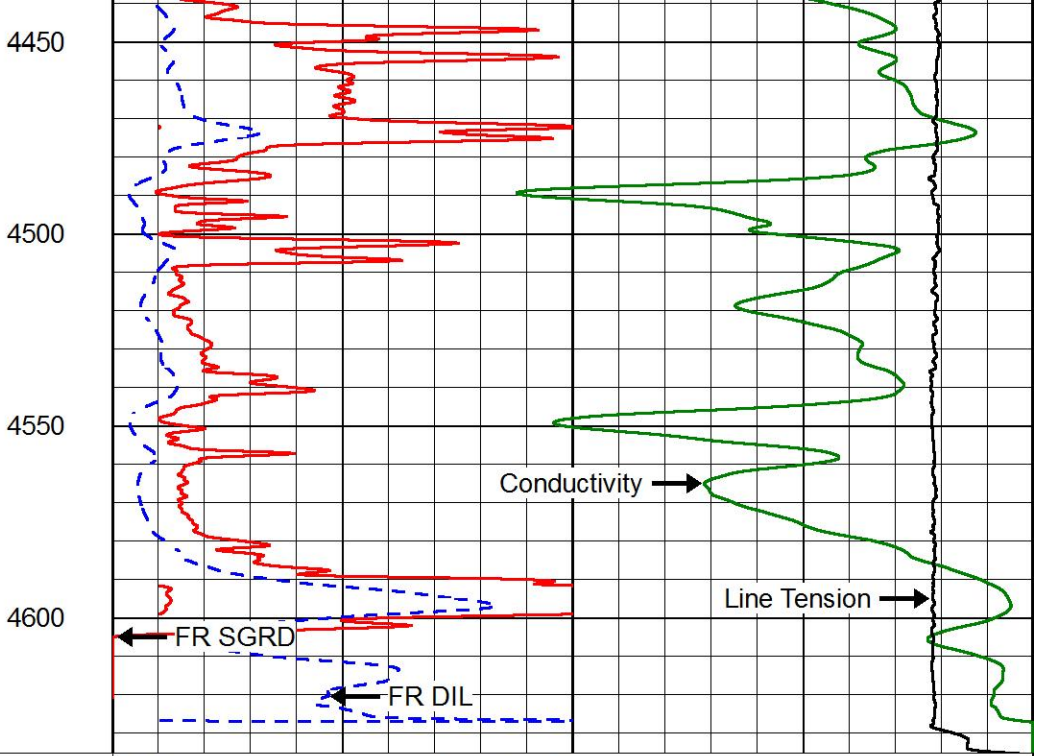


3900
3950
4000
4050
4100
4150
4200
4250
4300
4350
4400





0 Gamma Ray (GAPI) 150



1000 Conductivity (mmho/m) 0

15000 Line Tension (lb) 0

0 Shallow Resistivity (Ohm-m) 50

0 Deep Resistivity (Ohm-m) 50

Shallow Resistivity
50 (Ohm-m) 500

50 Deep Resistivity (Ohm-m) 500



ANHYDRITE SECTION

MAIN PASS

Database File griffin_wood_#1.db
 Dataset Pathname stckml/pass4.4
 Presentation Format dil
 Dataset Creation Sun Jan 22 19:17:48 2017
 Charted by Depth in Feet scaled 1:240

0 Gamma Ray (GAPI) 150

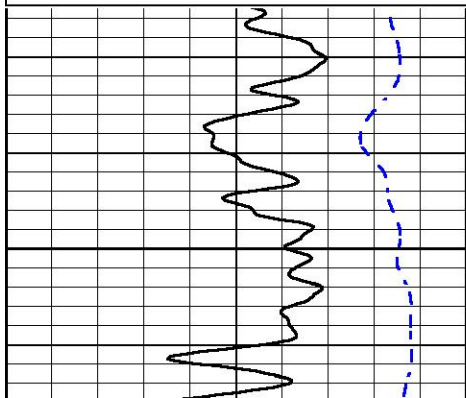
-200 SP (mV) 0

0.2 Deep Resistivity (Ohm-m) 2000

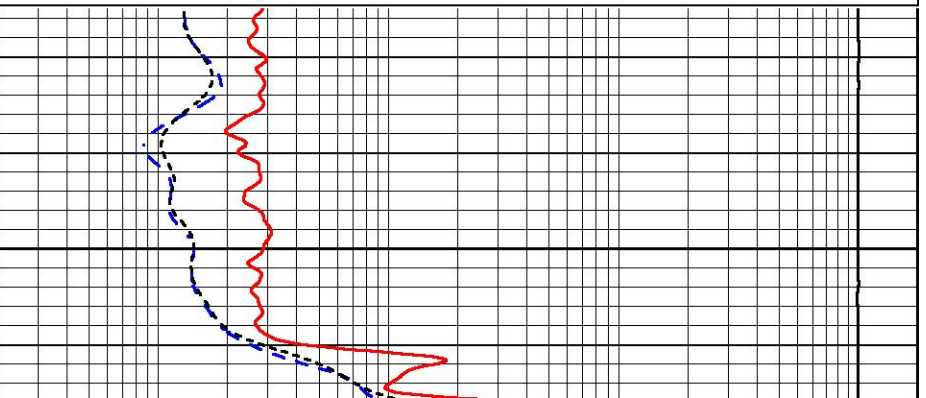
0.2 Medium Resistivity (Ohm-m) 2000

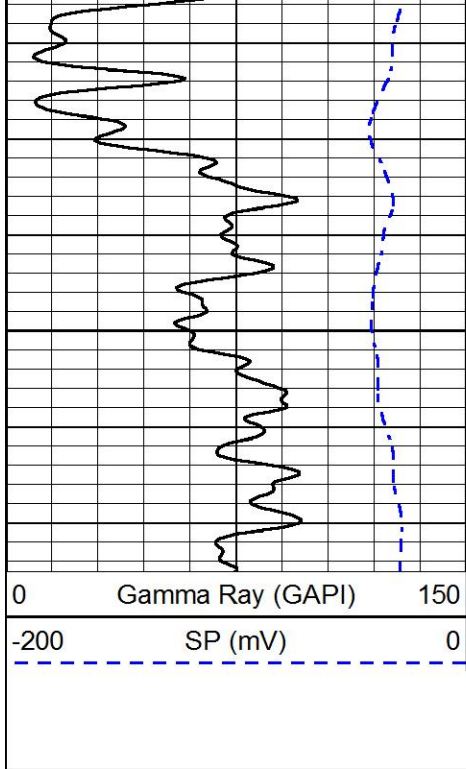
0.2 RLL3 (Ohm-m) 2000

10000 Line Tension (lb) 0

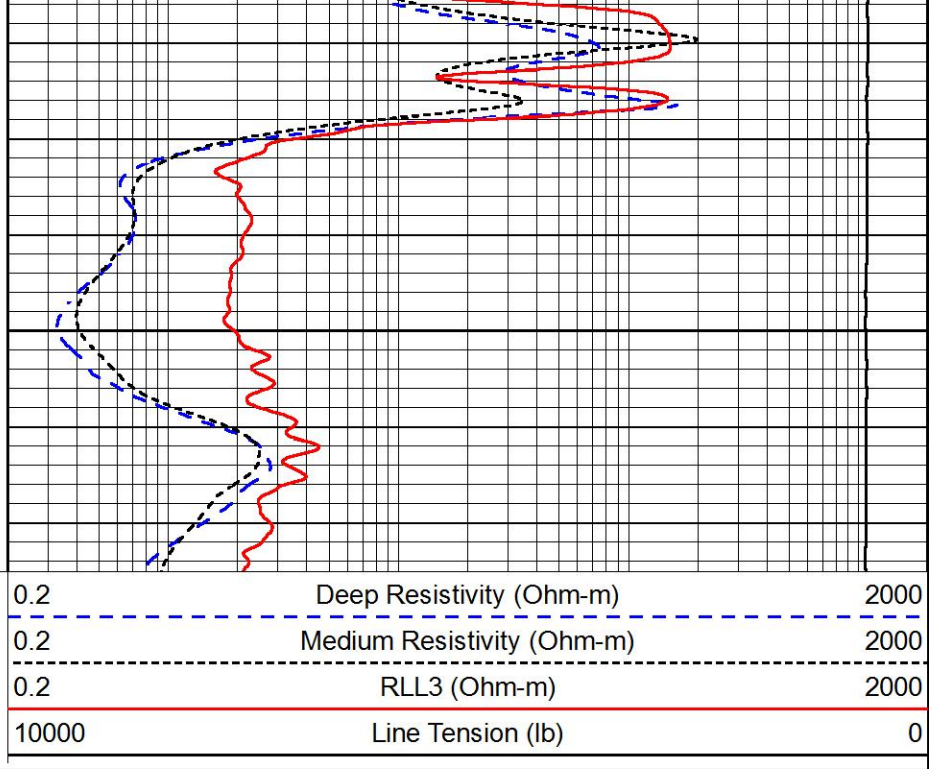


1050



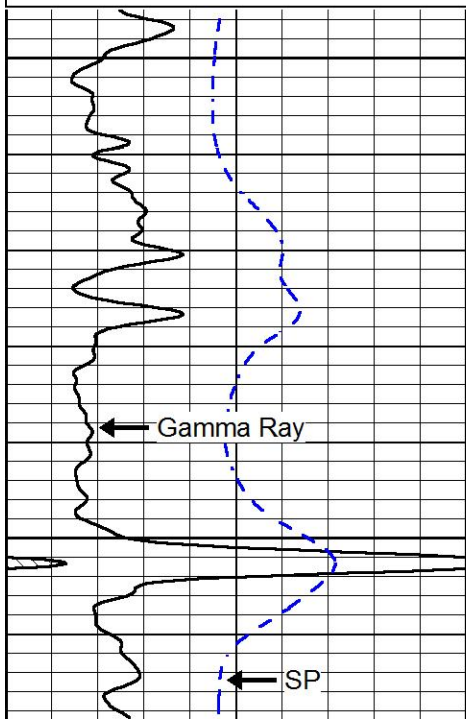
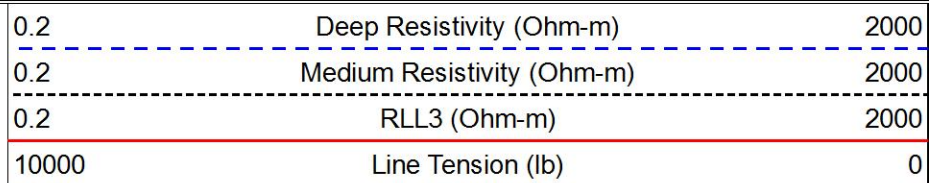
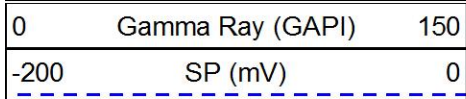


1100



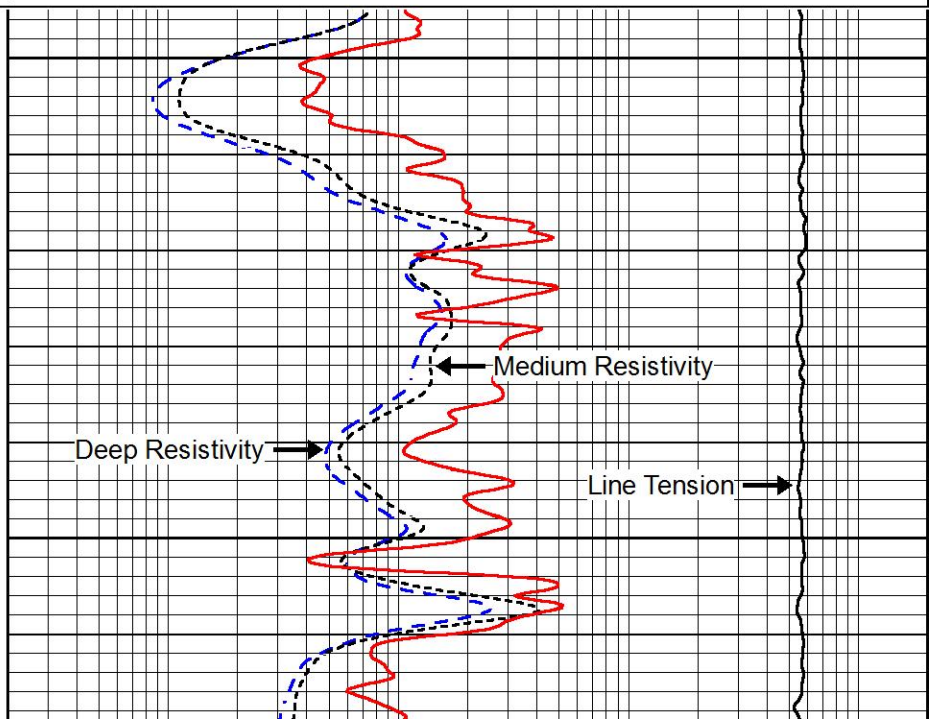
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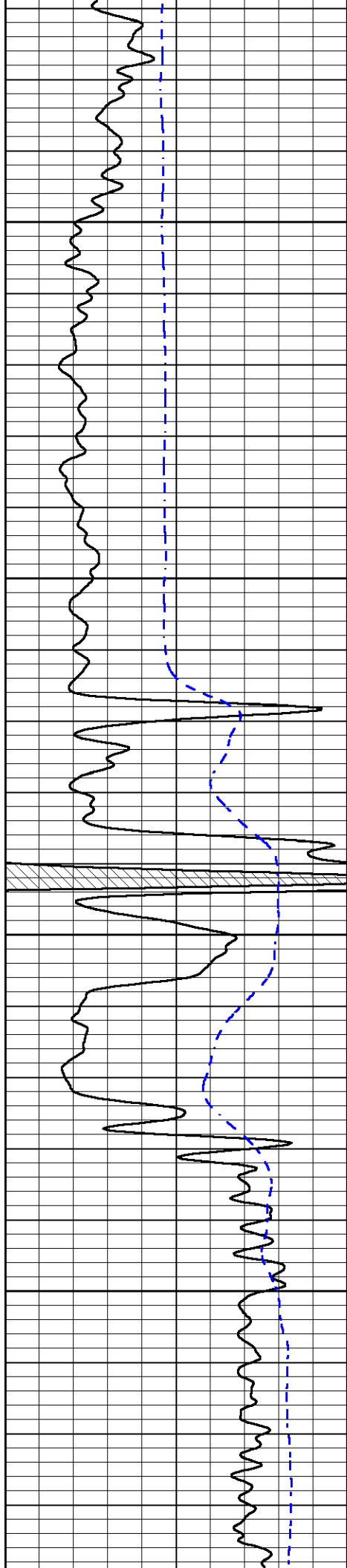
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 Presentation Format dil
 Dataset Creation Sun Jan 22 19:25:51 2017
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3600

3650



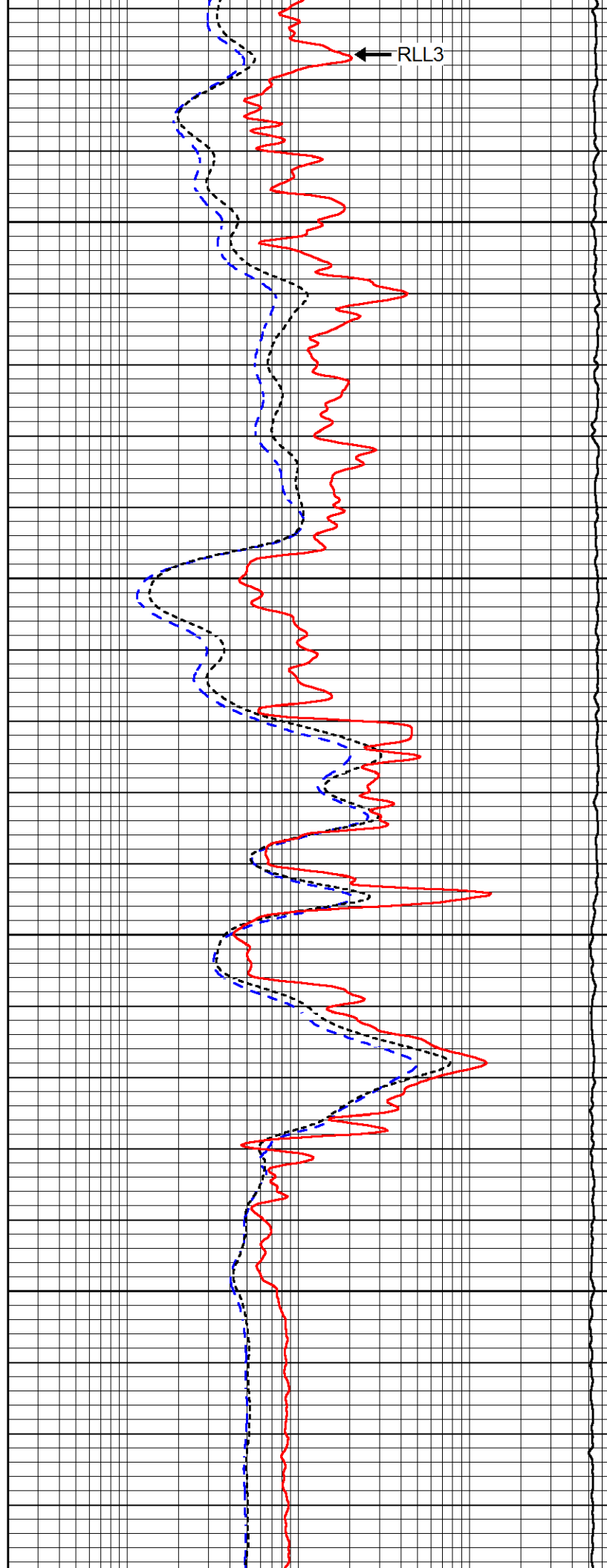


3700

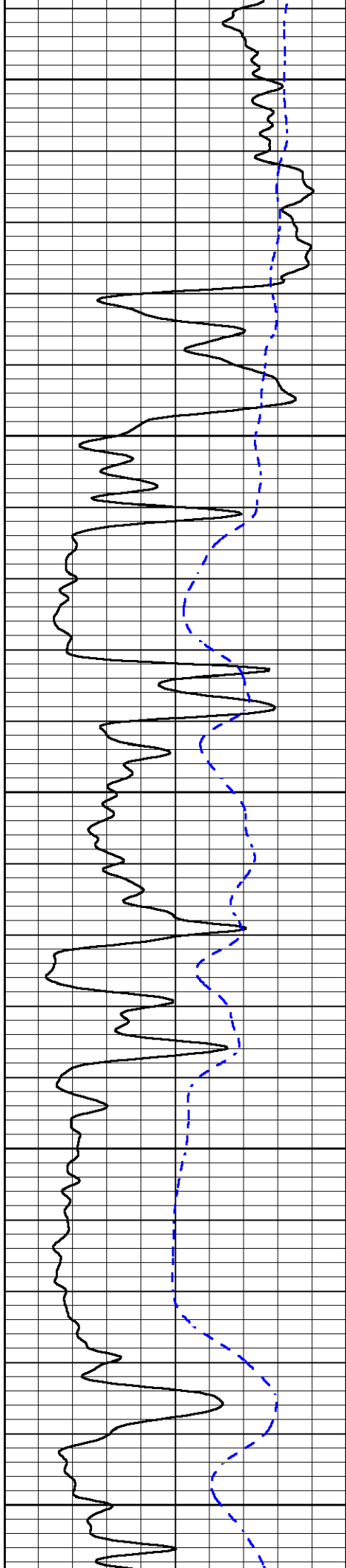
3750

3800

3850



RL13



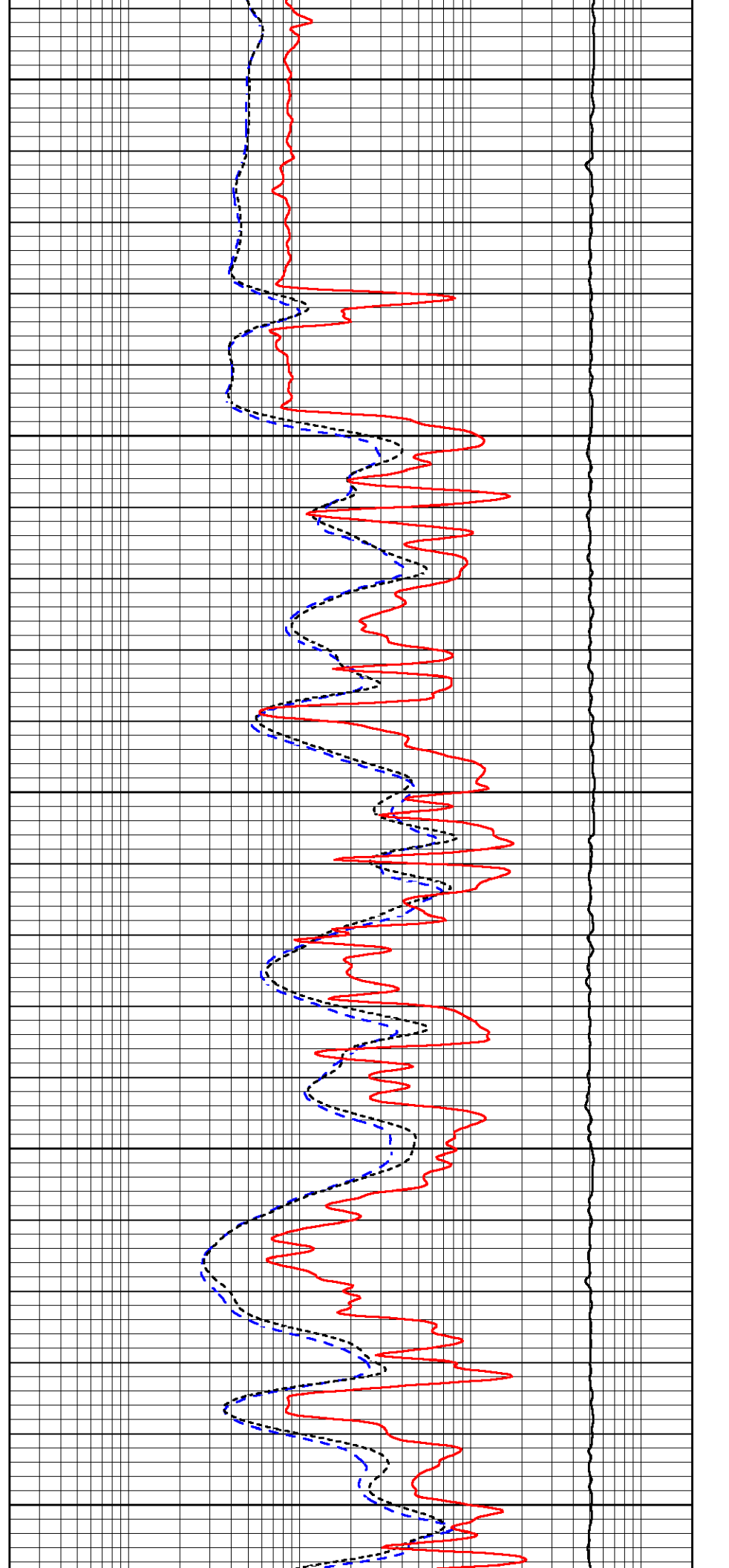
3900

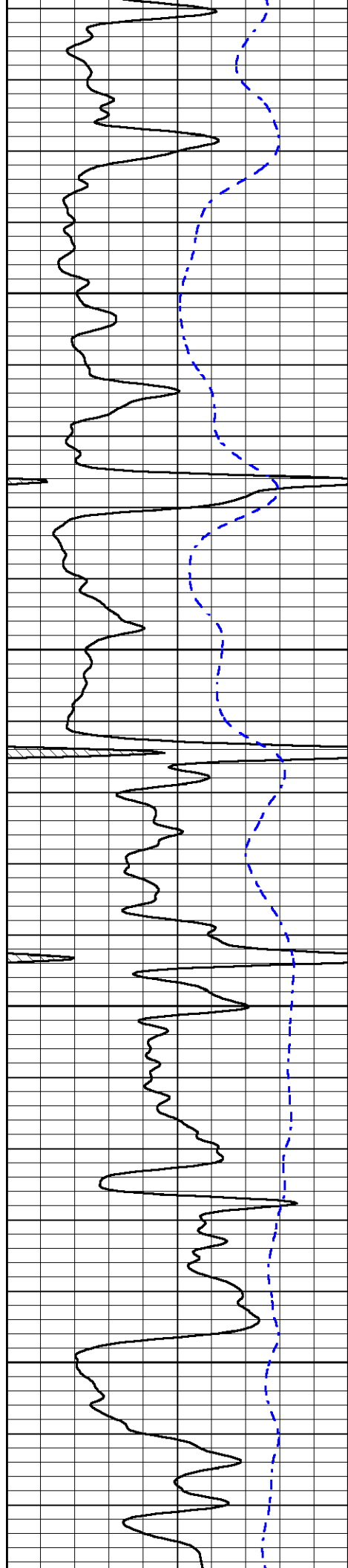
3950

4000

4050

4100



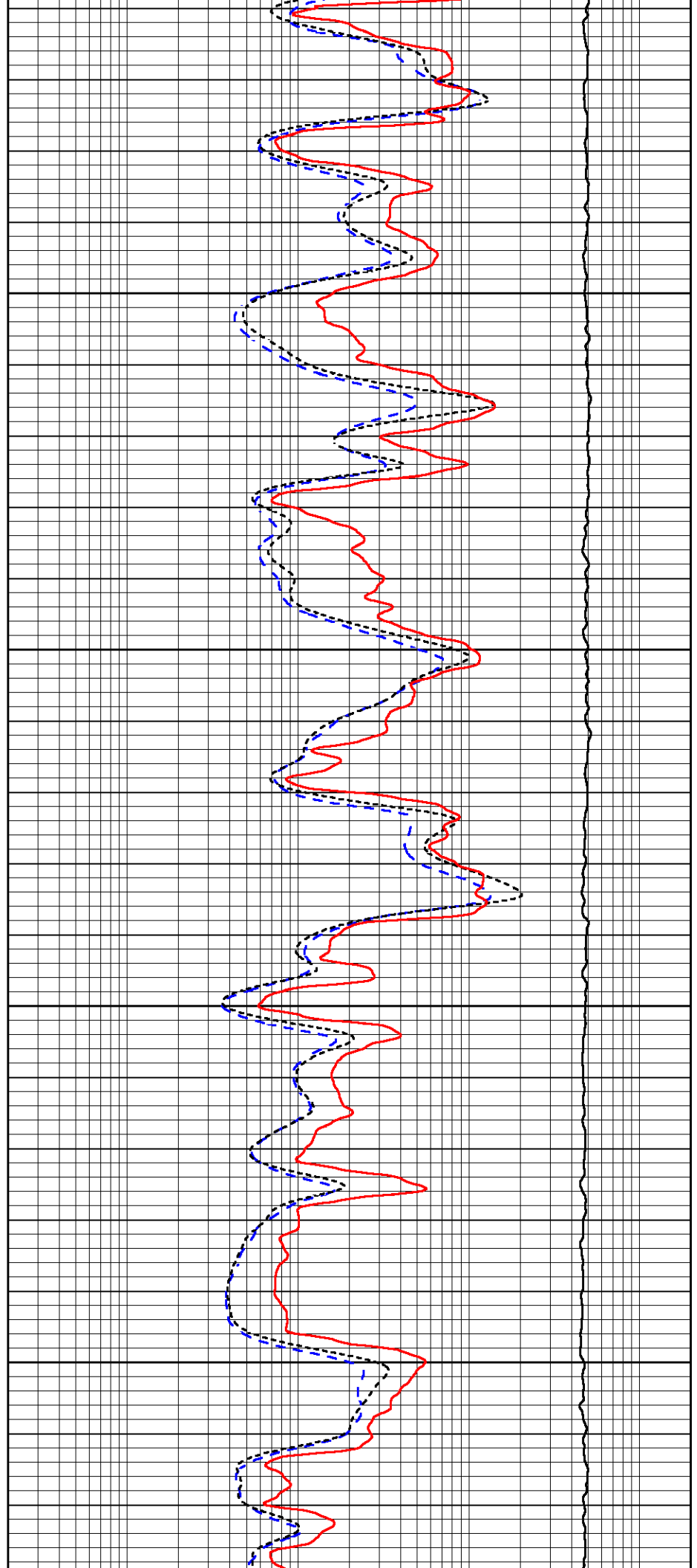


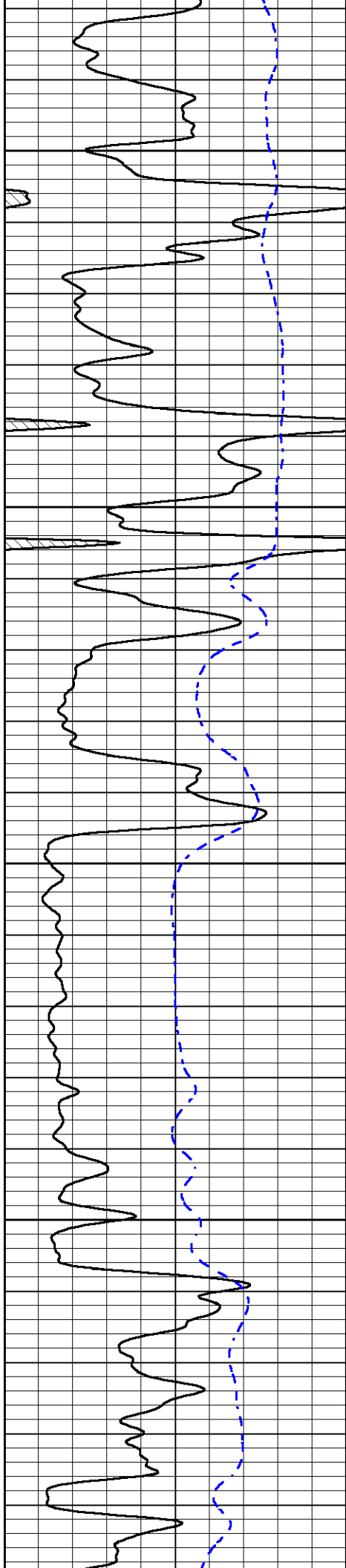
4150

4200

4250

4300



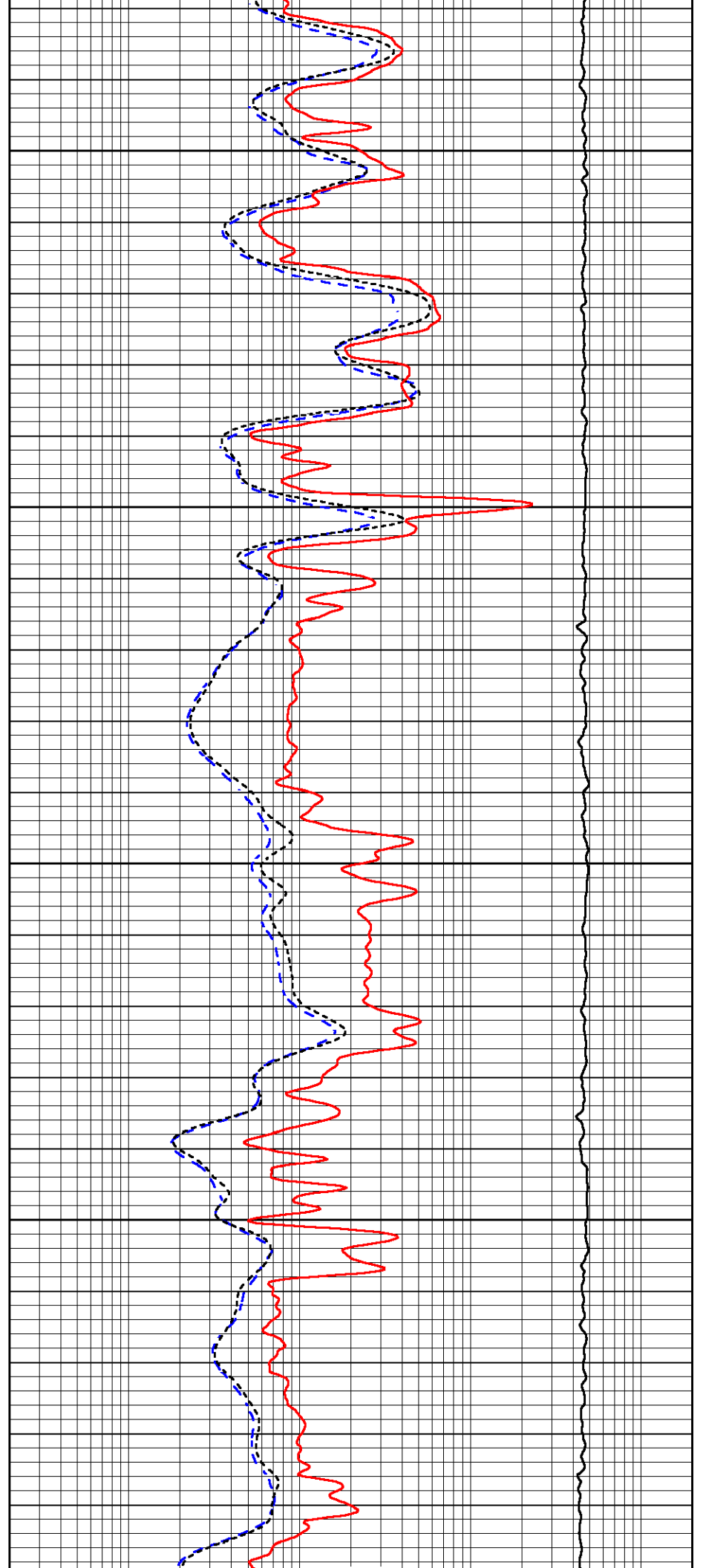


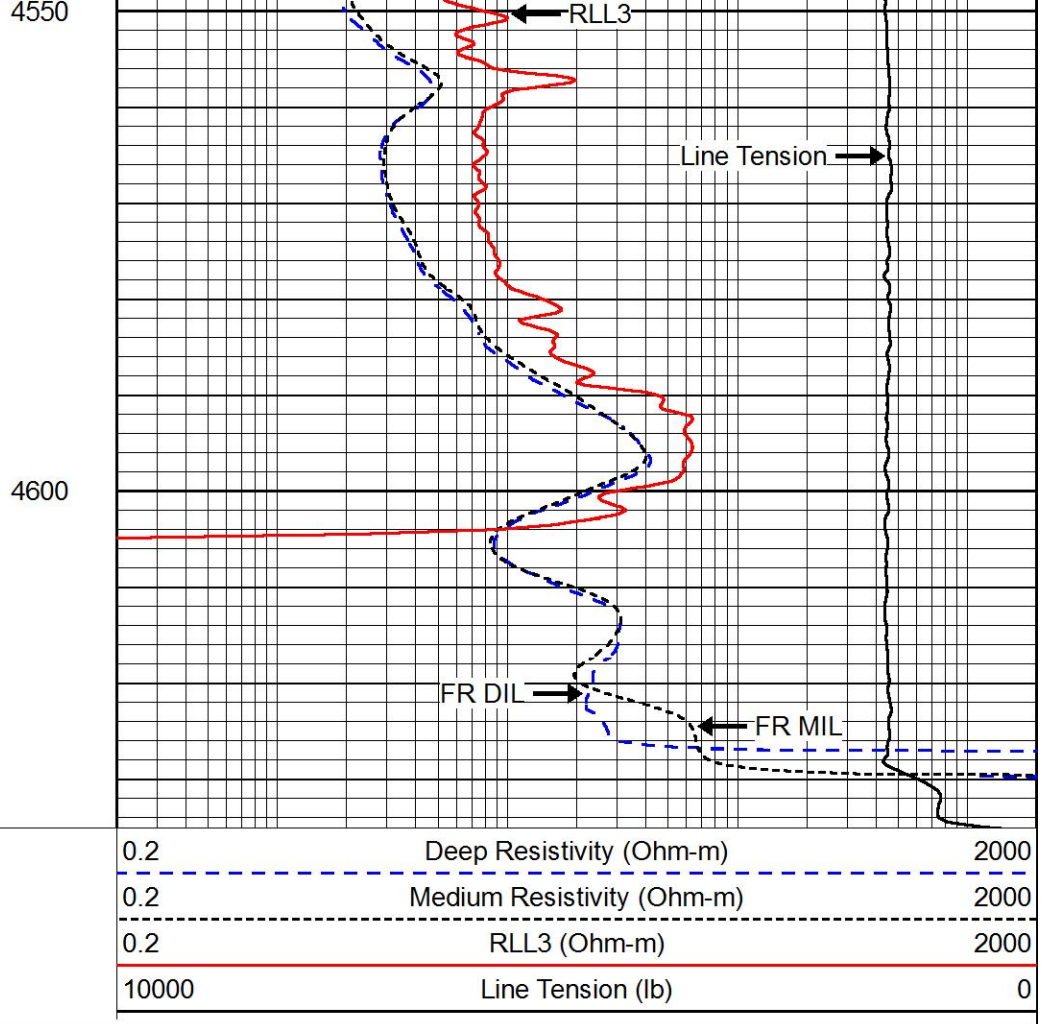
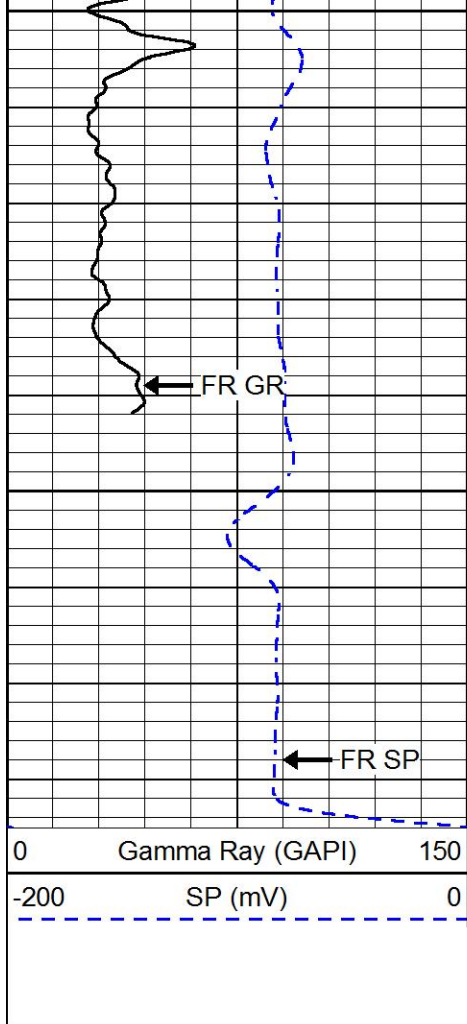
4350

4400

4450

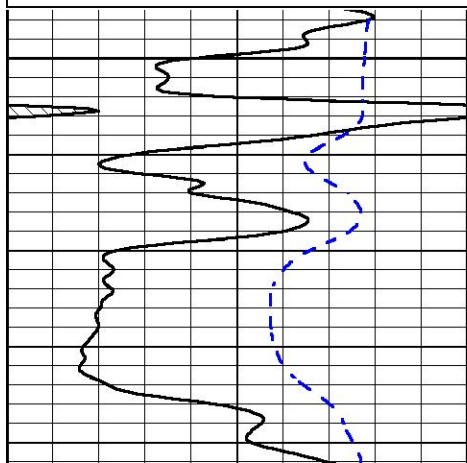
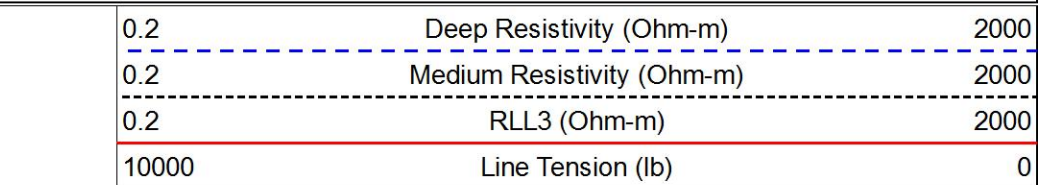
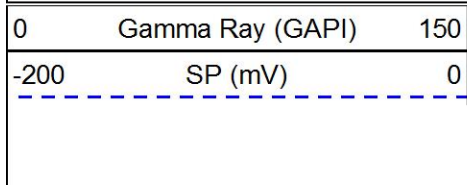
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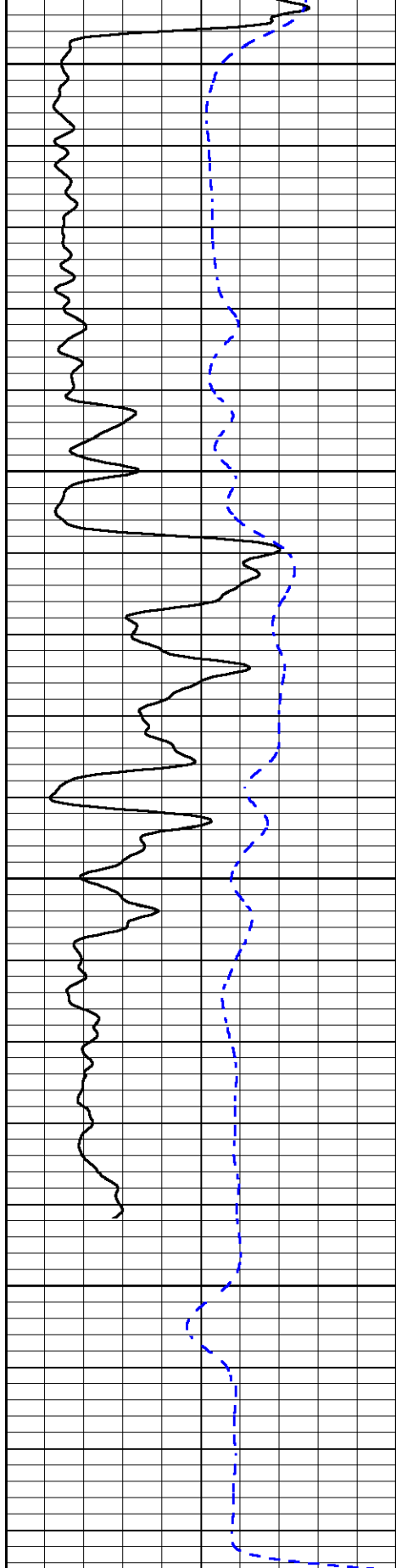




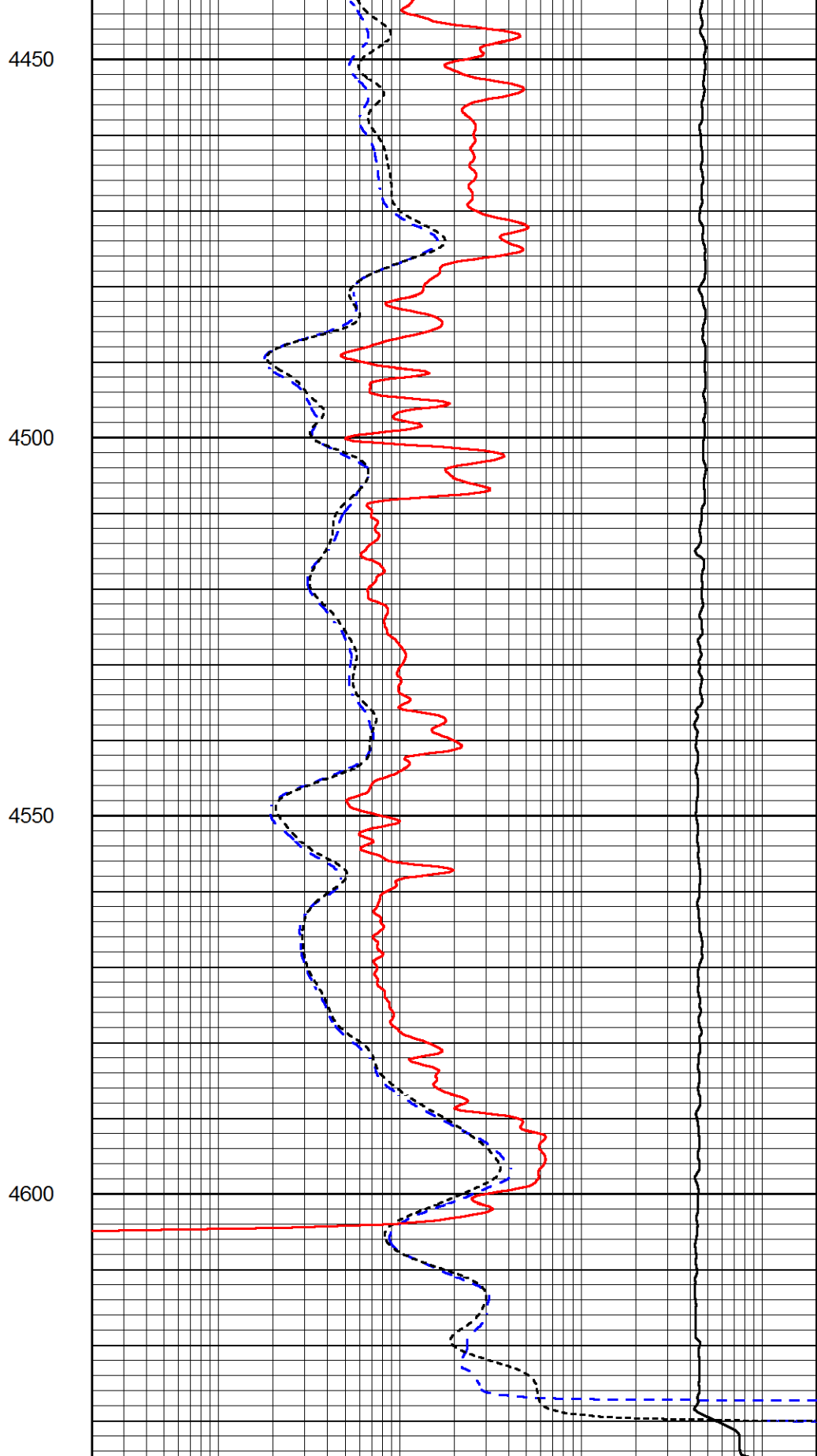
REPEAT SECTION

Database File griffin_wood_#1.db
 Dataset Pathname stckml/pass2.1
 Presentation Format dil
 Dataset Creation Sun Jan 22 19:03:32 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

Calibration Report

Database File griffin_wood_#1.db
 Dataset Pathname stckml/pass4.1
 Dataset Creation Sun Jan 22 19:25:51 2017

Dual Induction Calibration Report

Serial-Model: PSI 13-M&W
 Calibration Performed: Mon Jan 02 18:08:07 2017

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	166.796	835.089	0.000	255.800	mmho/m	0.950	-38.000
Medium	142.009	1348.560	0.000	255.800	mmho/m	0.830	-35.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Mon Jan 02 18:08:17 2017

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	18000.0000	0.1000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	20000.0000	0.2000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-65.8500

Compensated Density Calibration Report

Serial-Model: 90-1031-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Mon Jan 02 18:08:22 2017

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	5174.18	6425.27	cps
Aluminum	2.670	g/cc	963.17	4037.42	cps
Spine Angle = 74.55			Density/Spine Ratio = 0.525		
	Size		Reading		
Small Ring	6.00	in	1.83		
Large Ring	16.00	in	1.48		

Compensated Neutron Calibration Report

Serial Number: 207-MW
 Tool Model: M&W
 Calibration Performed: Mon Jan 2 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:	Mon Jan 02 18:08:34 2017	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.6000	GAPI/cps



PIONEER
Pioneer Energy Services

Company	CHARLES N. GRIFFIN
Well	WOOD #1
Field	TROUSDALE NORTHEAST
County	EDWARDS
State	KANSAS