



DUAL INDUCTION LOG

Company HARTMAN OIL CO., INC.
 Well DAMME #50
 Field DAMME
 County FINNEY
 State KANSAS

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 Well DAMME #50
 Field DAMME
 County FINNEY
 State KANSAS

Location: 2258' FNL & 1225' FEL
 SEC 21 TWP 22S RGE 33W
 Permanent Datum GROUND LEVEL Elevation 2885'
 Log Measured From KELLY BUSHING
 Drilling Measured From KELLY BUSHING
 Other Services CNL/CDL MEL
 Elevation 2893'
 D.F. N/A
 G.L. 2885'

Date	02/12/2018
Run Number	ONE
Depth Driller	4825'
Depth Logger	4822'
Bottom Logged Interval	4821'
Top Log Interval	1800'
Casing Driller	8.625" @ 1800'
Casing Logger	1804'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	7100
Density / Viscosity	9.2 48
pH / Fluid Loss	9.0 10.8
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.40 @ 40
Rmt @ Meas. Temp	0.30 @ 40
Rmc @ Meas. Temp	0.54 @ 40
Source of Rmf / Rmc	CHARTS
Rm @ BHT	0.13 @ 124
Operating Rig Time	3 HOURS
Max Rec. Temp. F	124
Equipment Number	91
Location	HAYS
Recorded By	D. SCHMIDT
Witnessed By	KITT NOAH

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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.
 GARDEN CITY,
 NORTH TO BARLOW ROAD, 3 1/2 WEST
 SOUTH AND EAST 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	This Log Record Was Witnessed By
Engineer: D. SCHMIDT	Primary Witness: KITT NOAH
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Log Variables

Database C:\ProgramData\Warrior\Data\hartmanoil_damme#50.db
 Dataset field/well/STKML/pass4.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	124	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	-117	40	Off	4822

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	37.48		CNT-M&W (207-MW)	5.50	3.50	100.00	
CNSSC	36.73						
LSD	28.43		CDL-M&W (182-152)	8.50	4.00	250.00	
DCAL	28.42						
SSD	27.93						
ML-PSIML (PSI-01)			ML-PSIML (PSI-01) GO Micro log tools converted to Simplec electronics	7.58	4.00	65.00	
MCAL	19.83						
MI	19.83						
MN	19.83						
RLL3F	15.80						
RLL3	15.80						

CILD	8.00		DIL-PSI HIGH TEMP (933 (HT))	18.50	3.50	220.00
CILM	4.70					
SP	0.20					

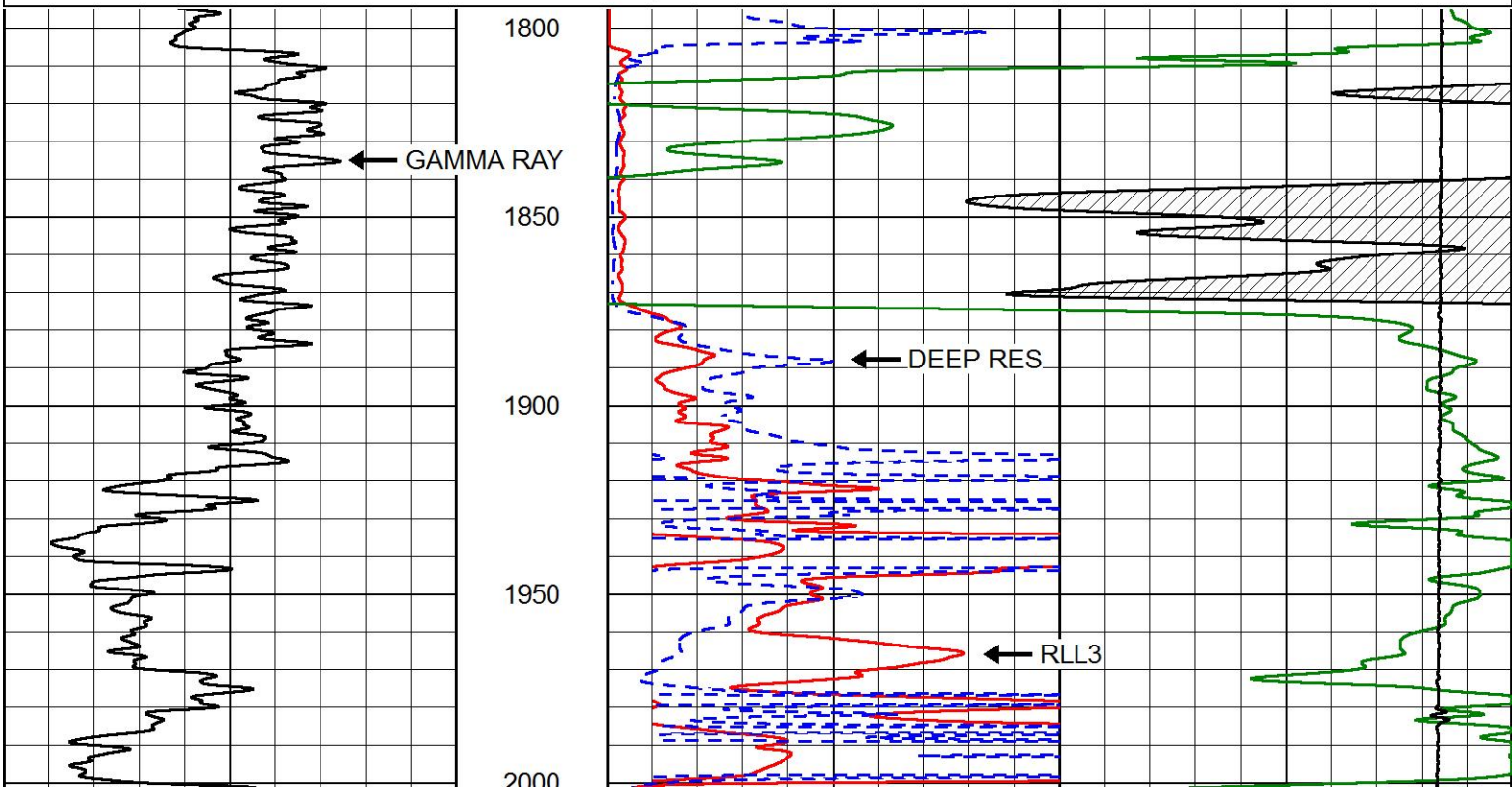
Dataset: hartmanoil_damme#50.db: field/well/STKML/pass4.1
 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

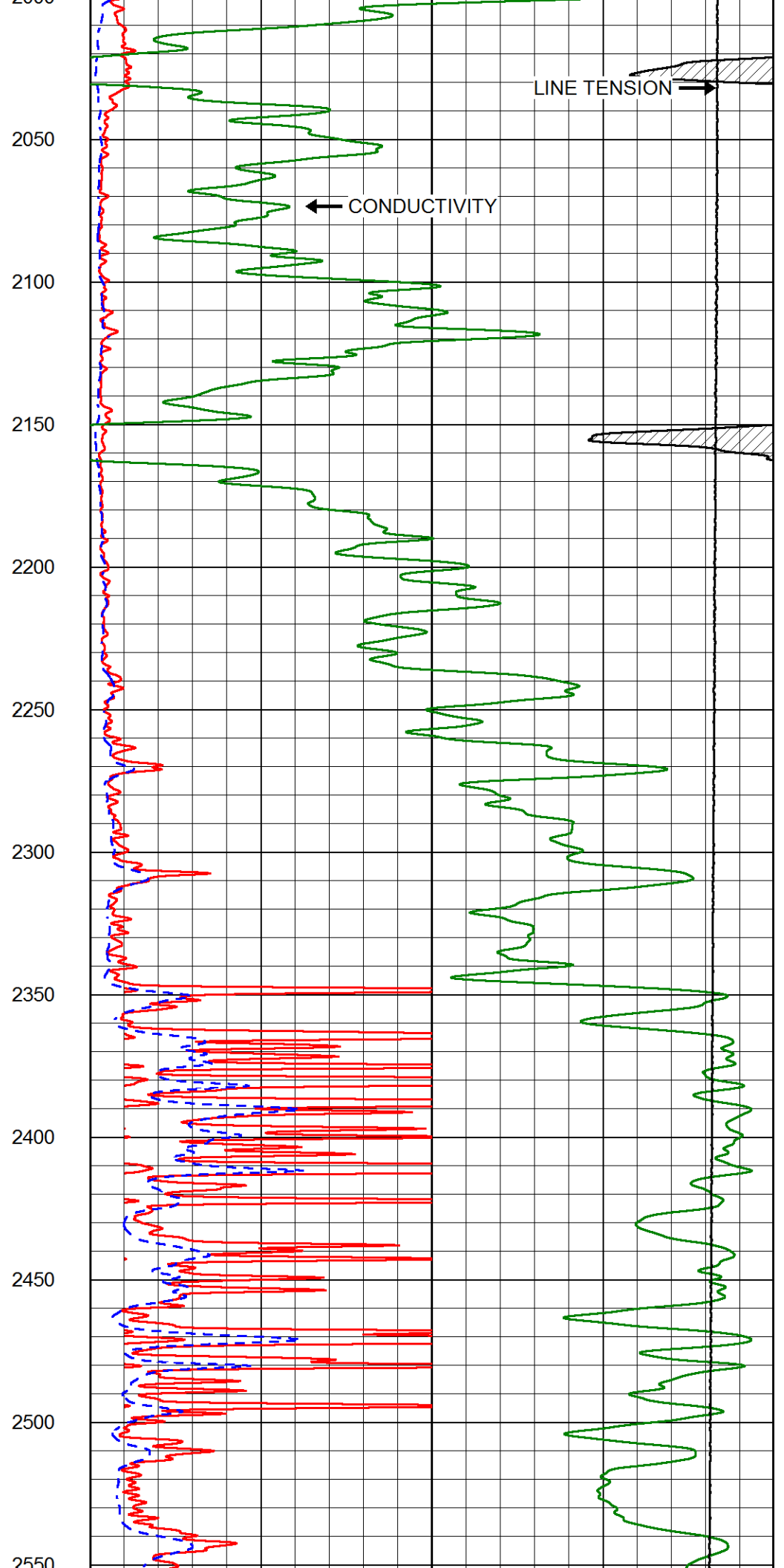
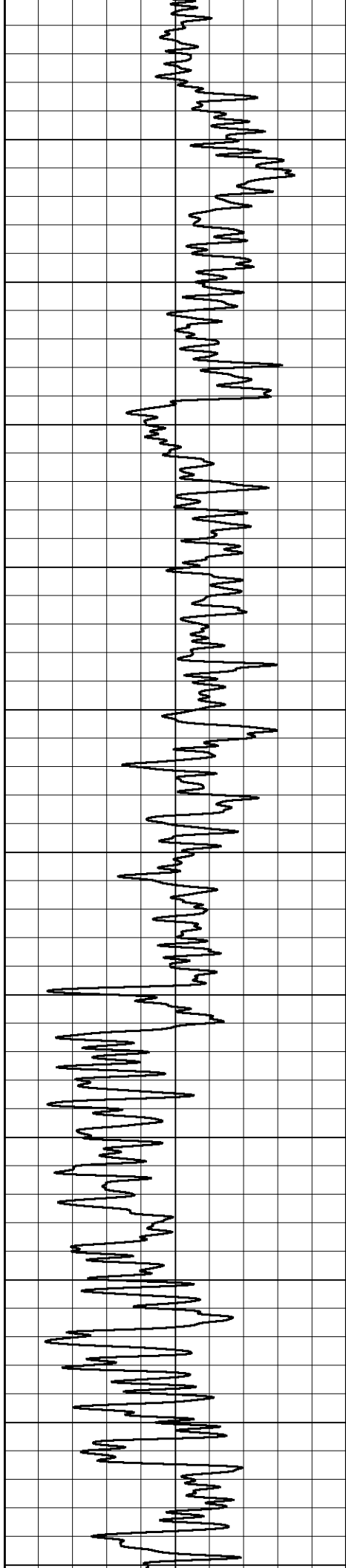


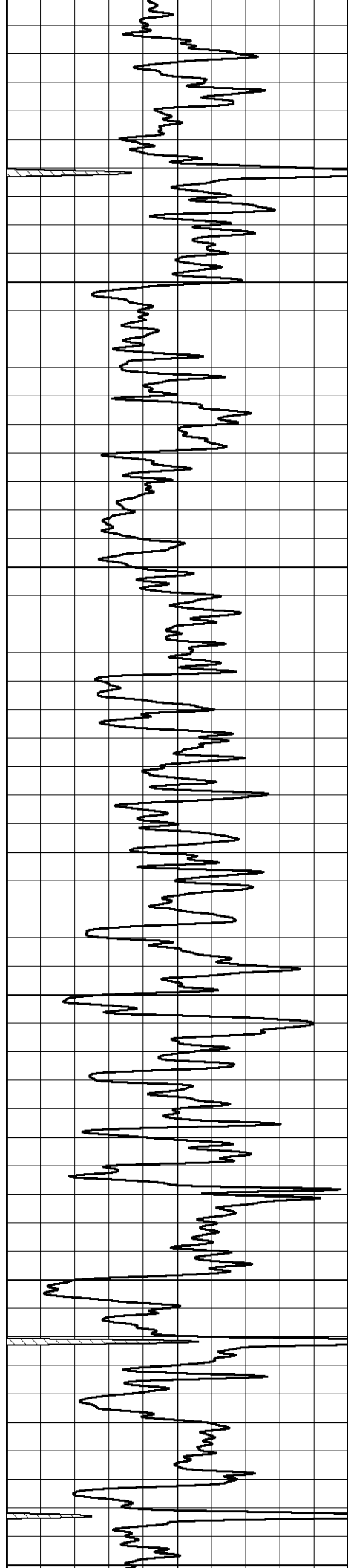
MAIN PASS

Database File	hartmanoil_damme#50.db
Dataset Pathname	STKML/pass5.1
Presentation Format	dil2in
Dataset Creation	Mon Feb 12 18:48:07 2018
Charted by	Depth in Feet scaled 1:600

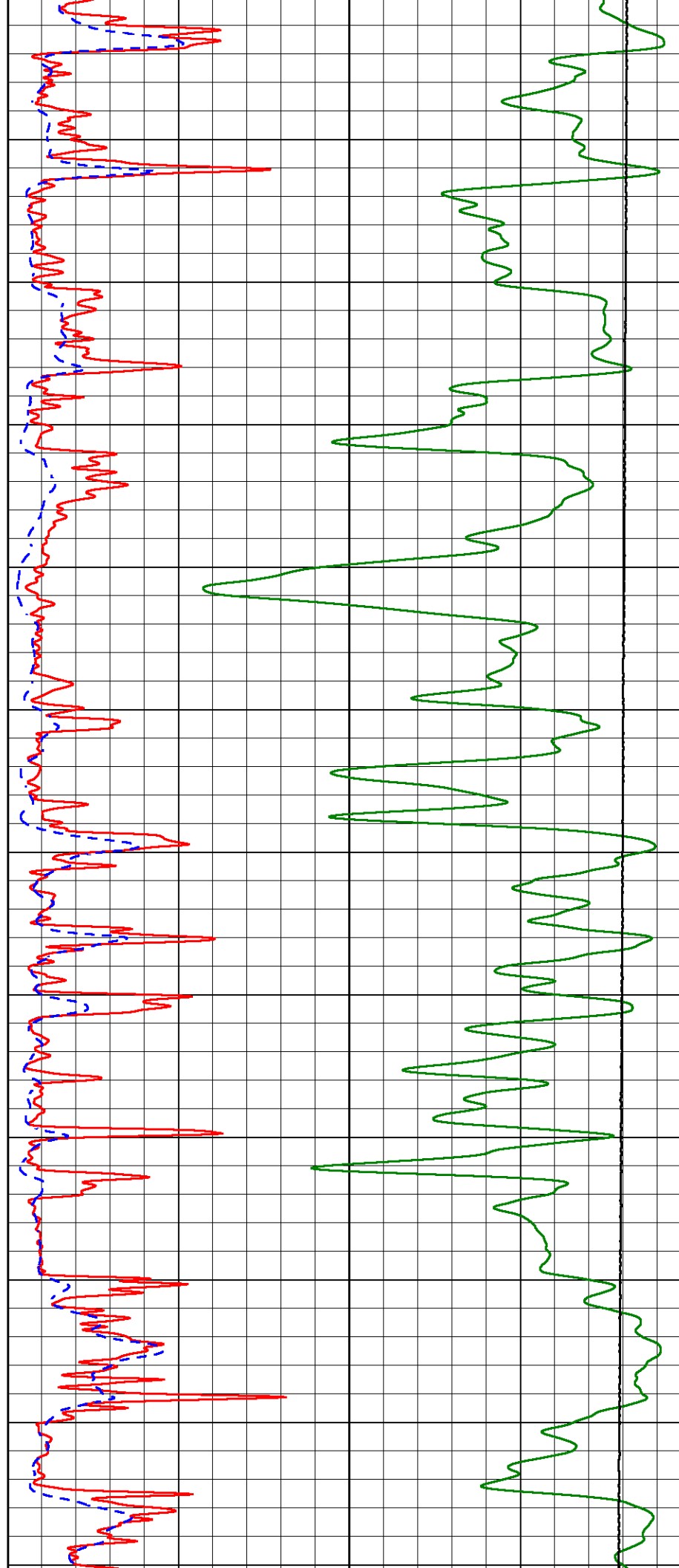
0	Gamma Ray (GAPI)	150	1000	Conductivity (mmho/m)	0
			15000	Line Tension (lb)	0
			0	RLL3 (Ohm-m)	50
			0	Deep Resistivity (Ohm-m)	50
			50	RLL3 (Ohm-m)	500
			50	Deep Resistivity (Ohm-m)	500

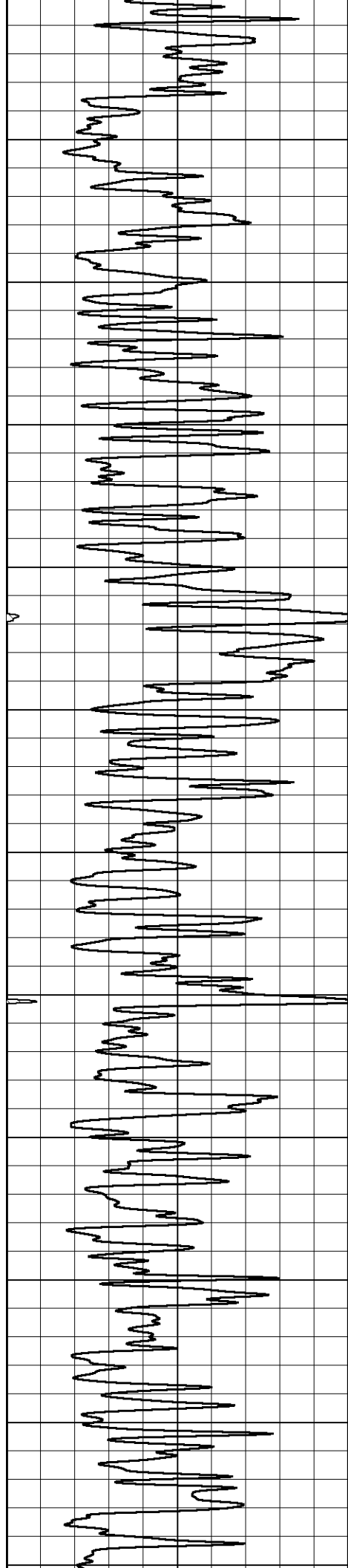




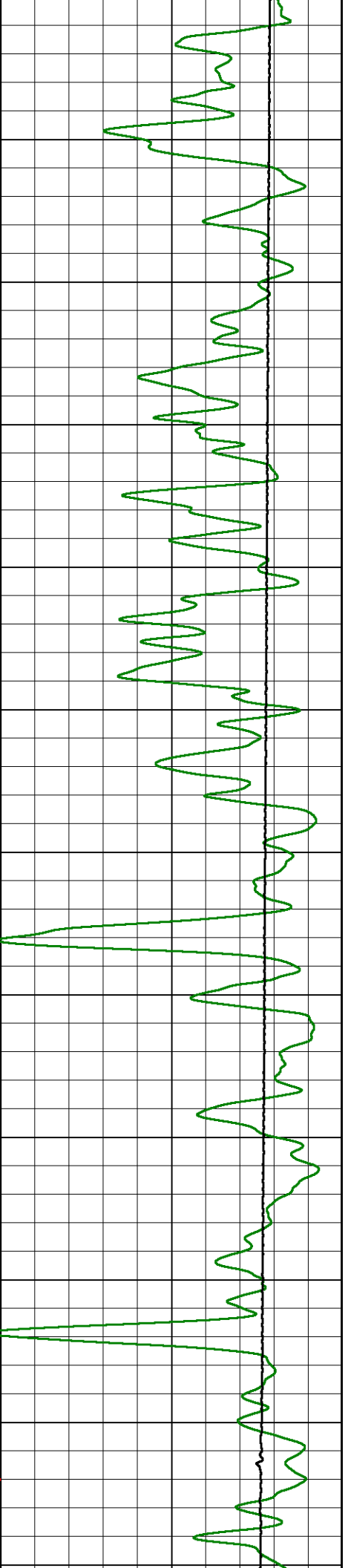
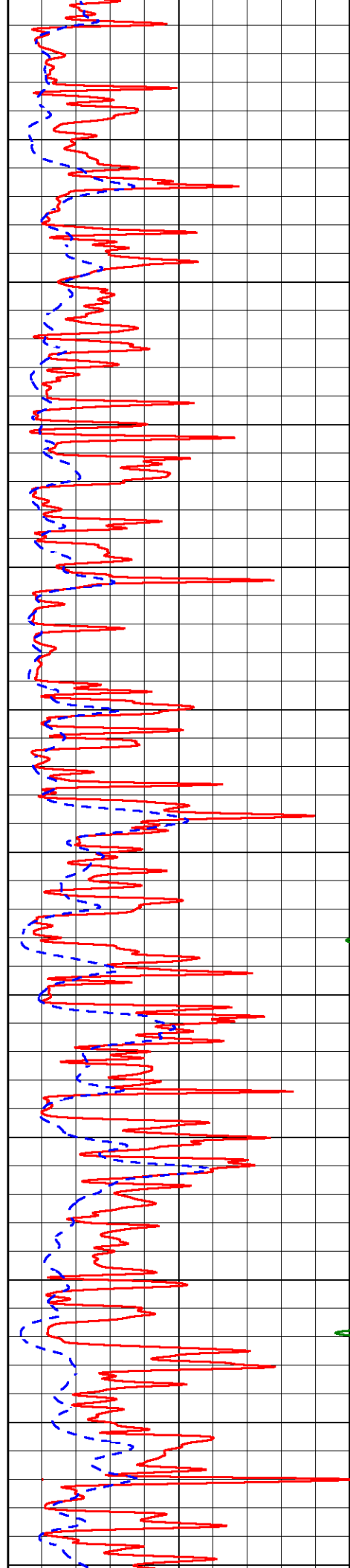


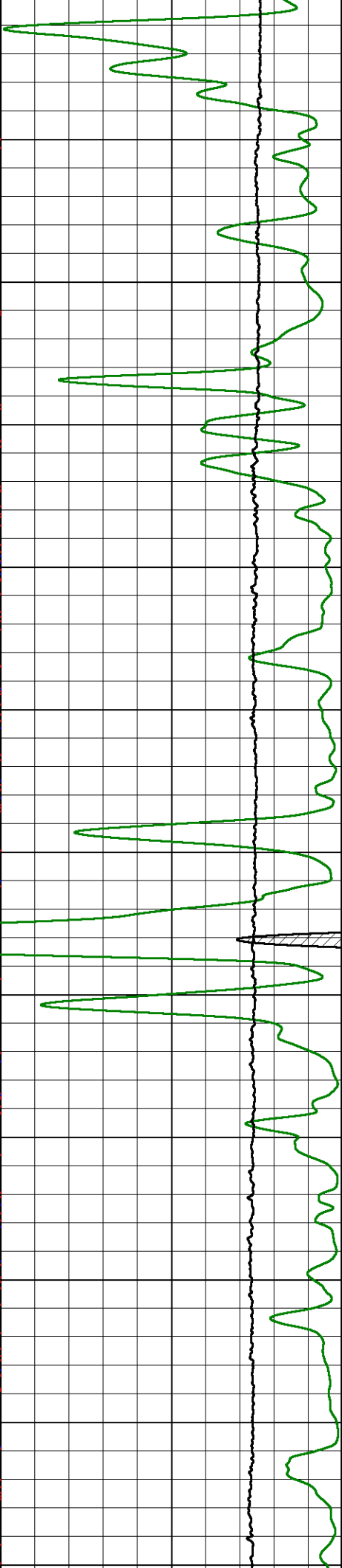
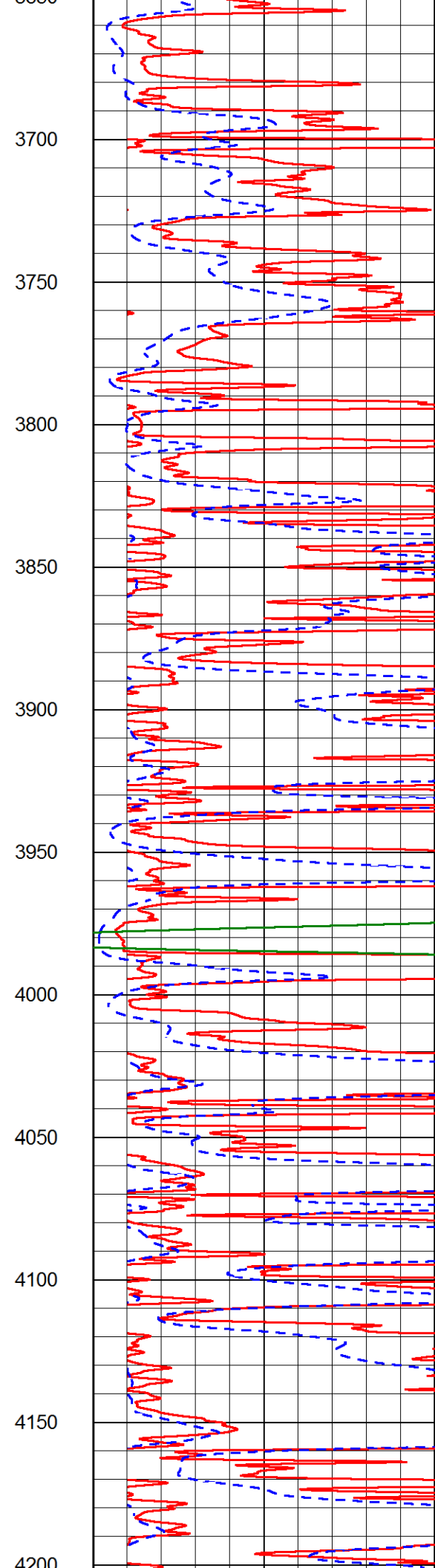
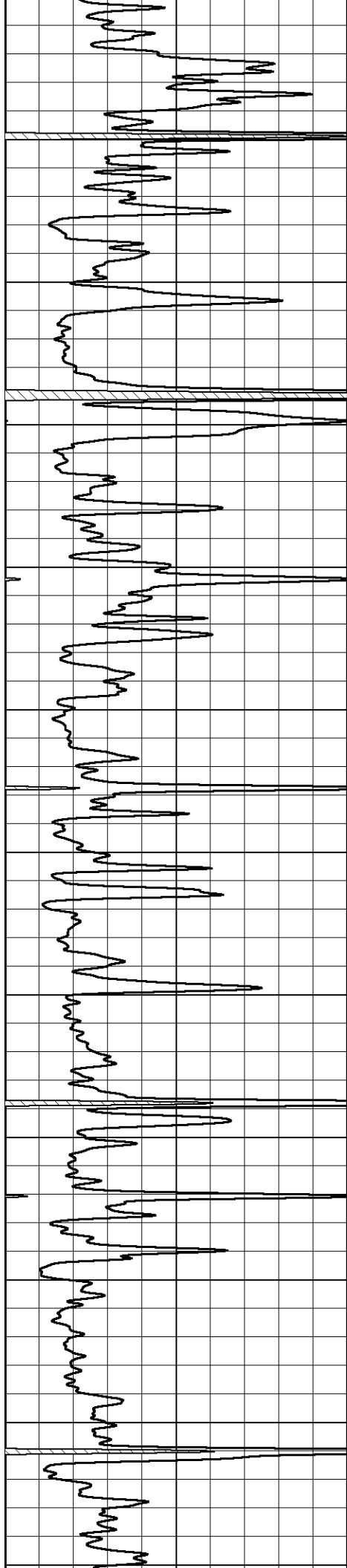
2550
2600
2650
2700
2750
2800
2850
2900
2950
3000
3050
3100

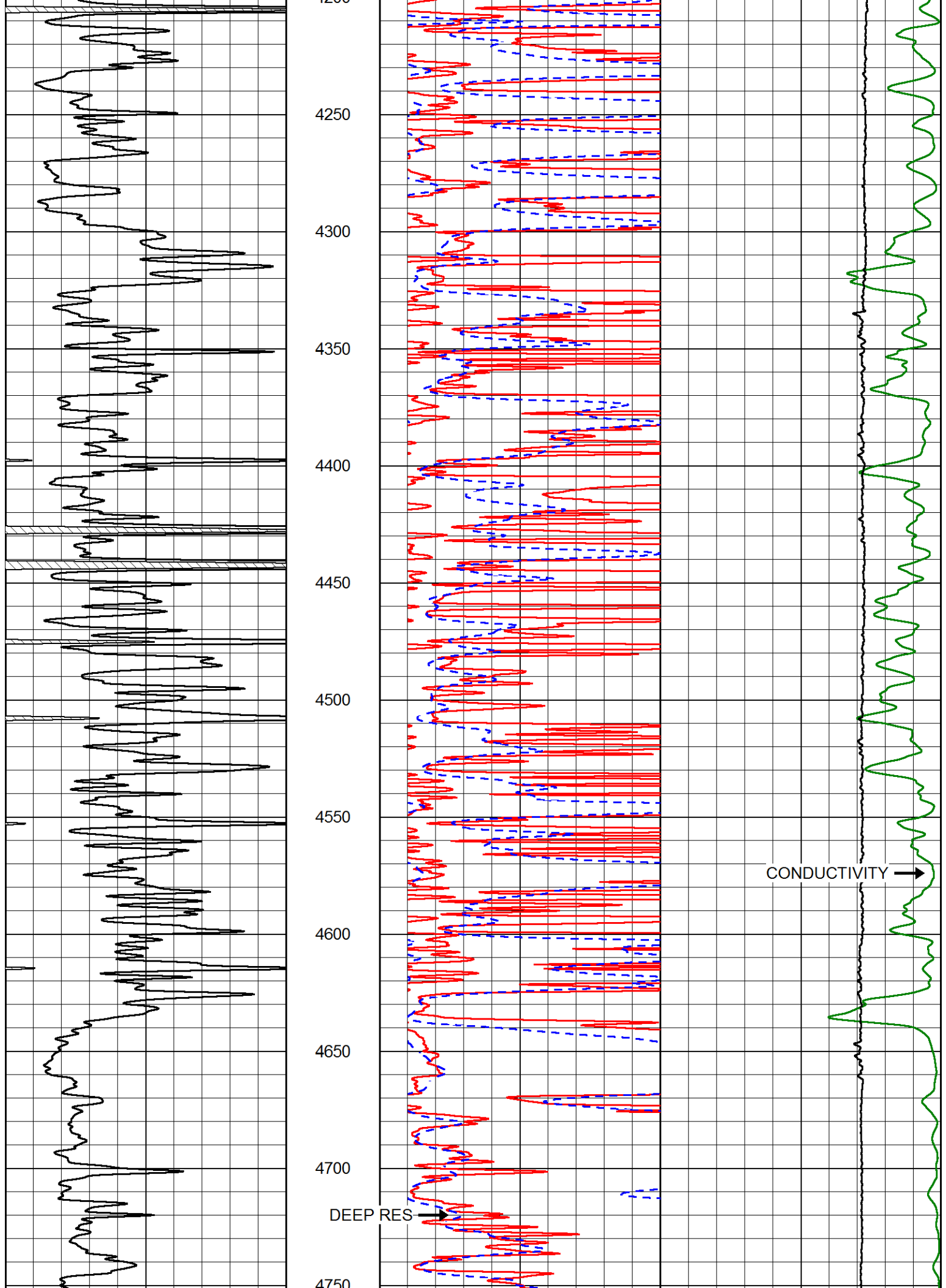


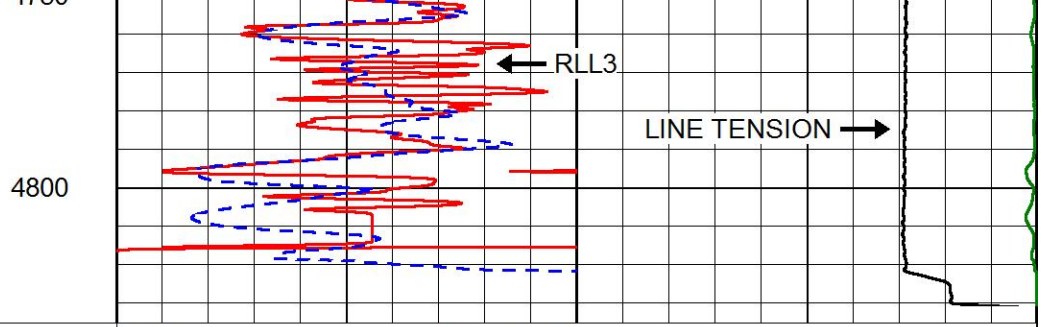
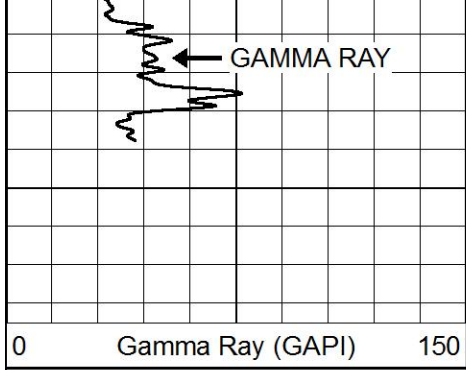


3100
3150
3200
3250
3300
3350
3400
3450
3500
3550
3600
3650









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 hartmanoil_damme#50.db
 Dataset Pathname STKML/pass5.1
 Presentation Format dil
 Dataset Creation Mon Feb 12 18:48:07 2018
 Charted by Depth in Feet scaled 1:240

0 Gamma Ray (GAPI) 150

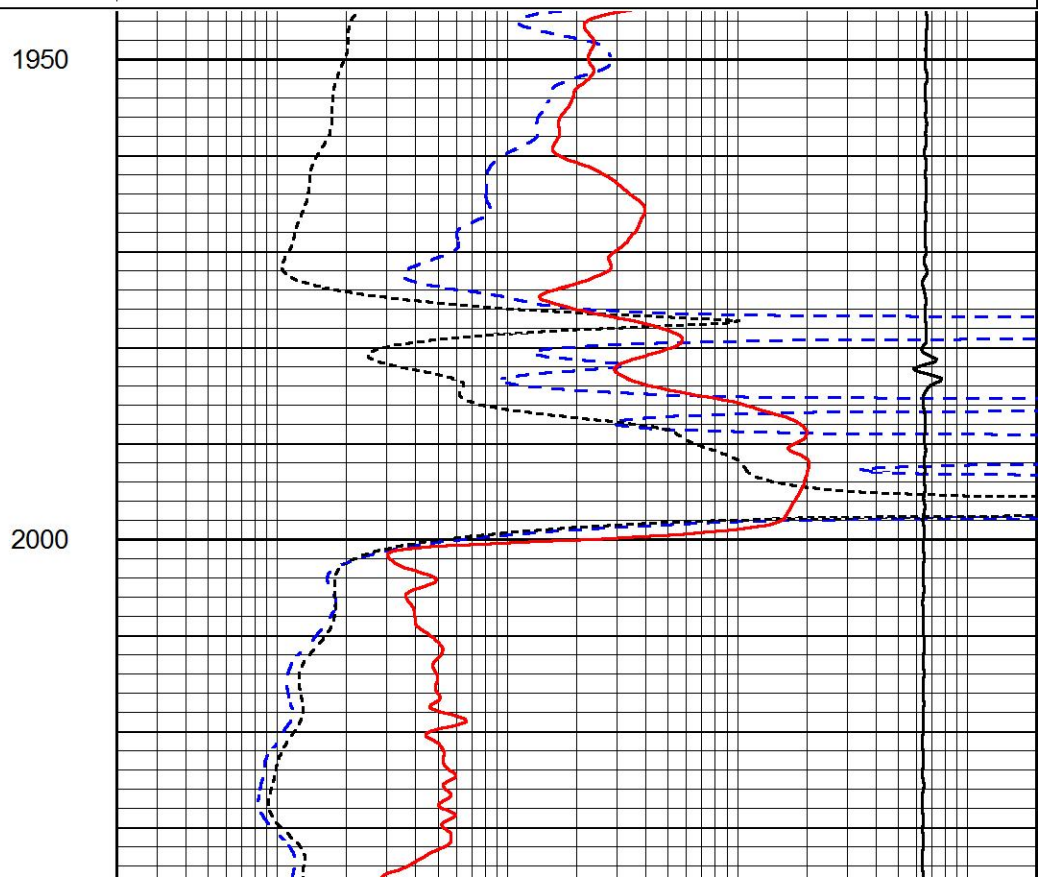
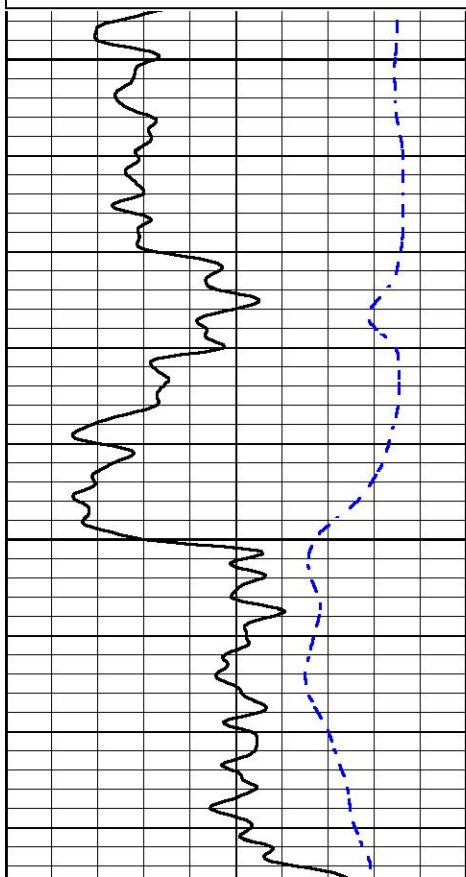
-200 SP (mV) 0

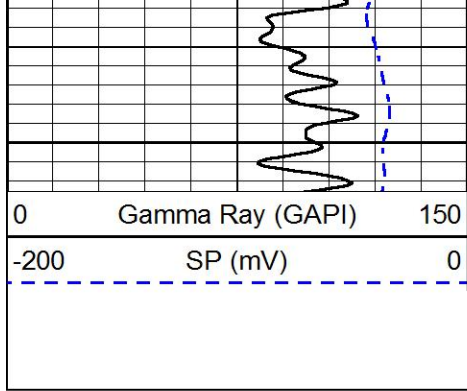
0.2 Deep Resistivity (Ohm-m) 2000

0.2 Medium Resistivity (Ohm-m) 2000

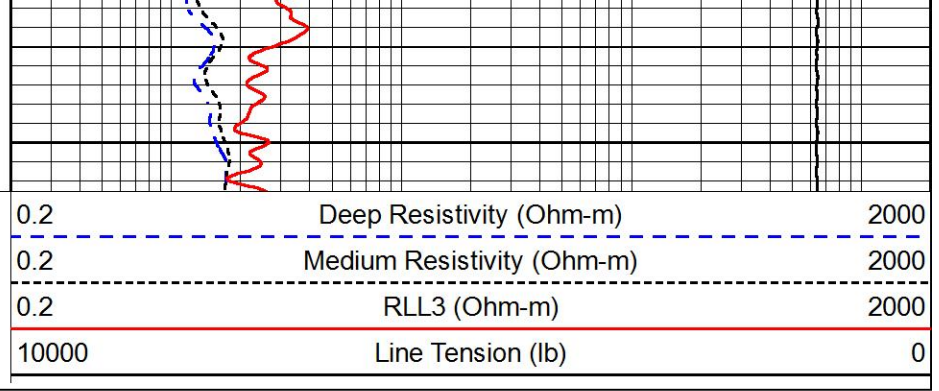
0.2 RLL3 (Ohm-m) 2000

10000 Line Tension (lb) 0



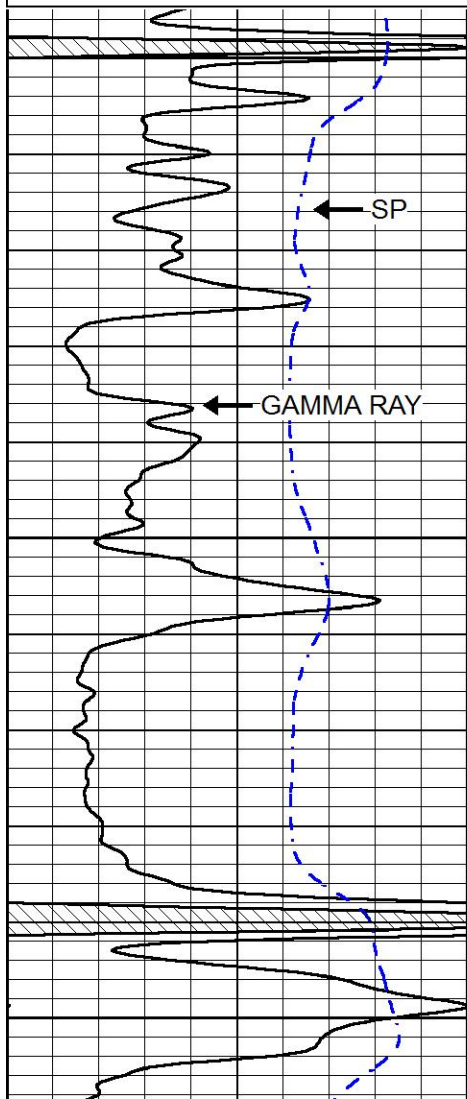
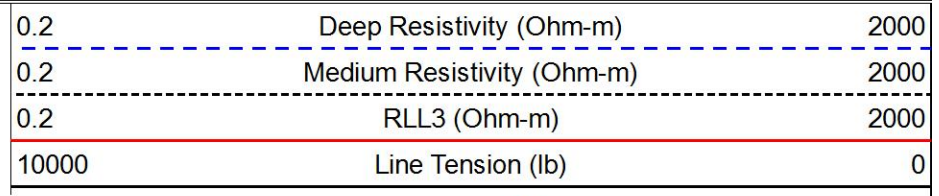
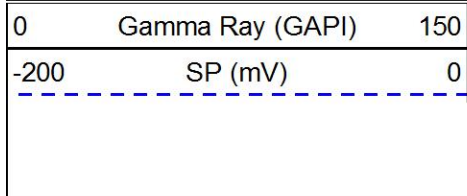


2050



MAIN PASS

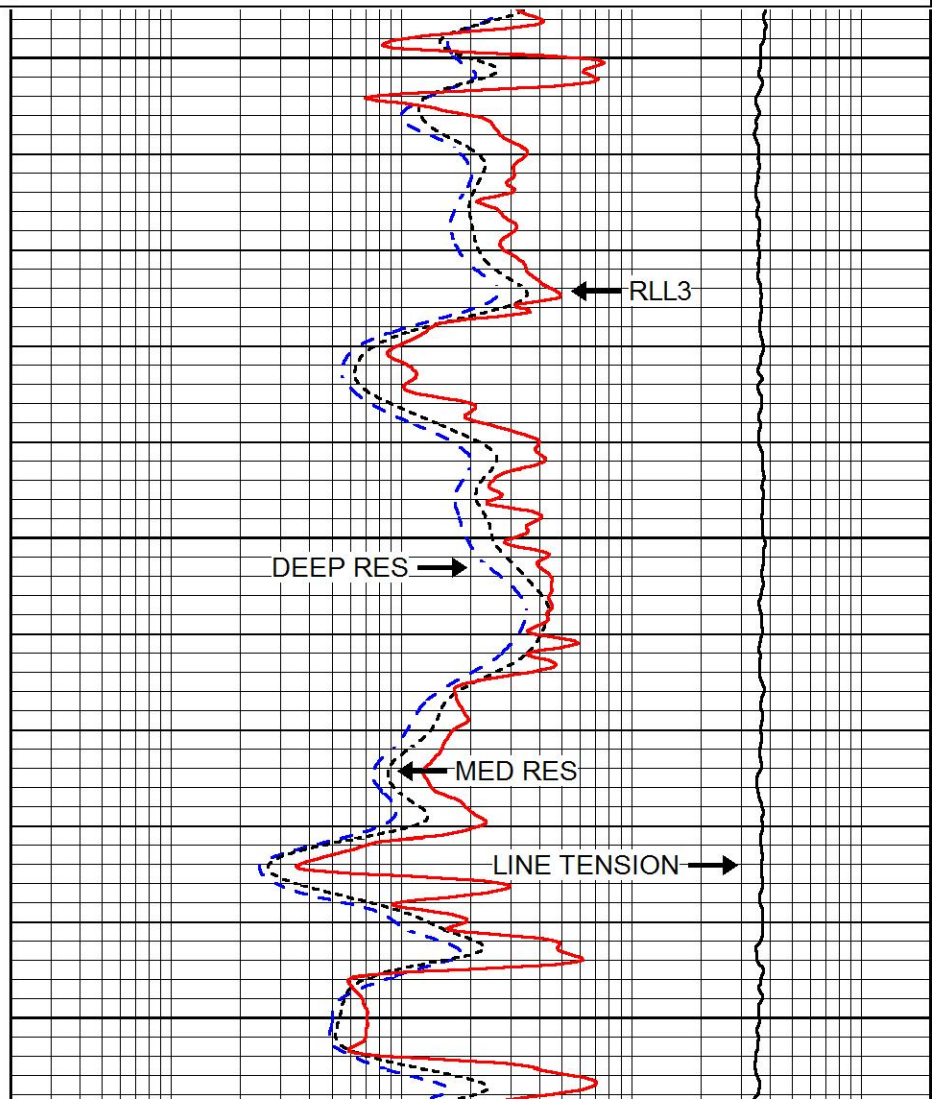
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 Dataset Pathname STKML/pass4.1
 Presentation Format dil
 Dataset Creation Mon Feb 12 18:47:59 2018
 Charted by Depth in Feet scaled 1:240

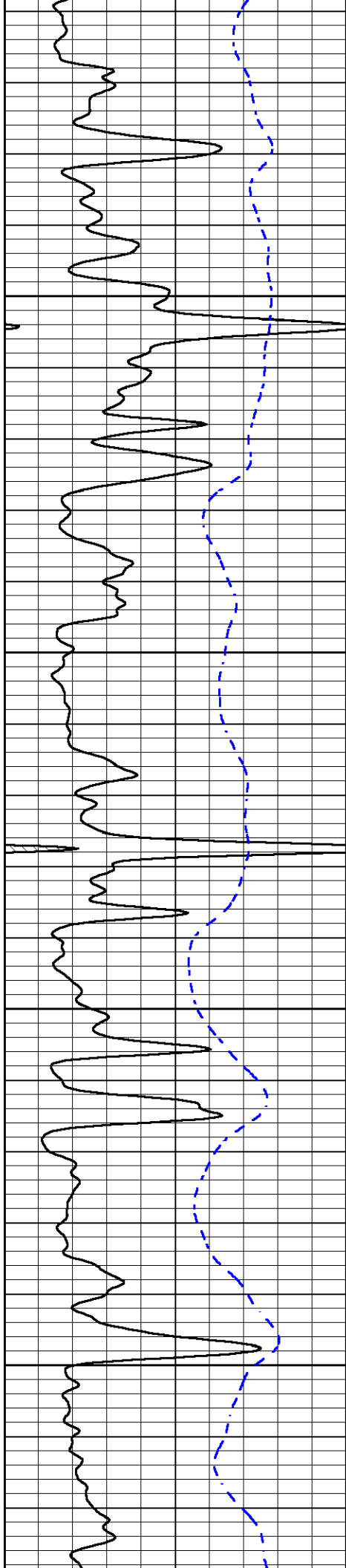


3700

3750

3800



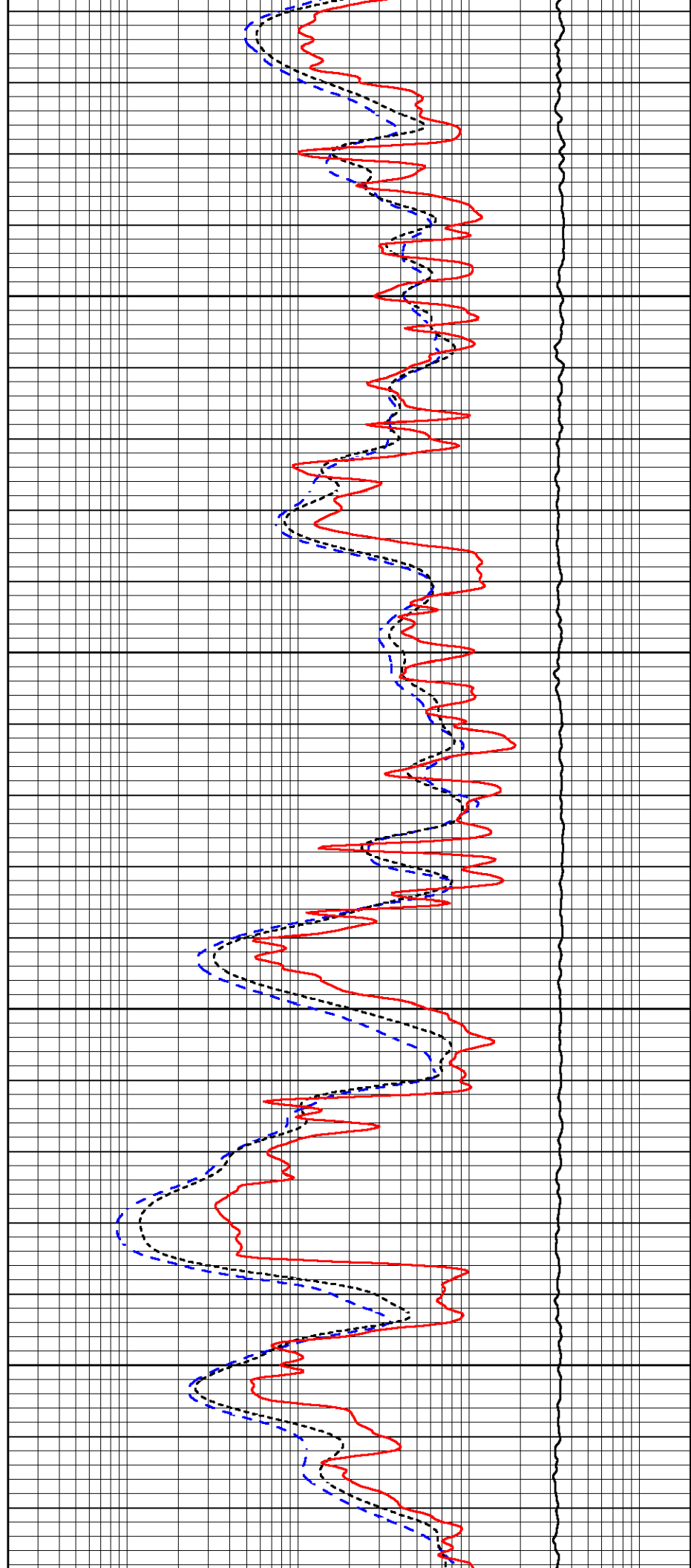


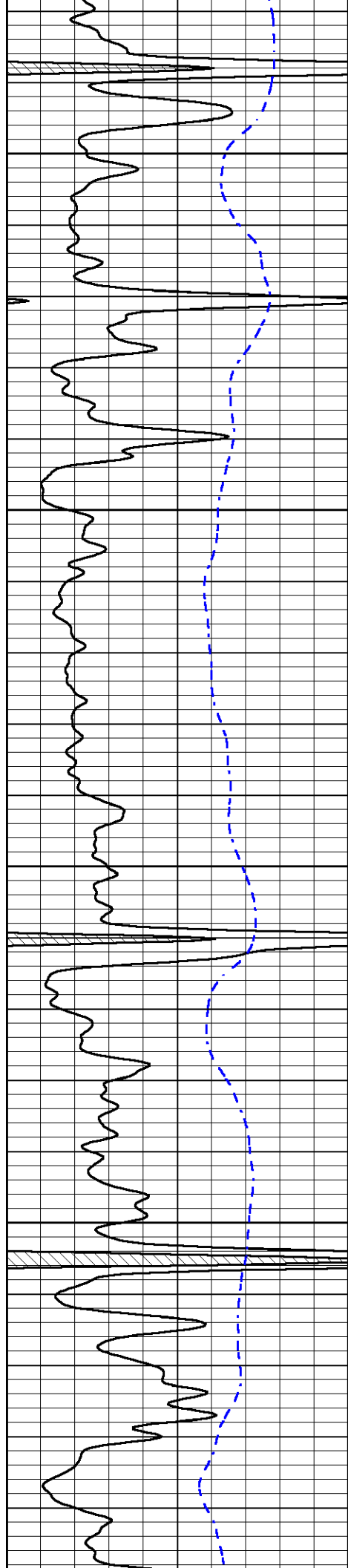
3850

3900

3950

4000



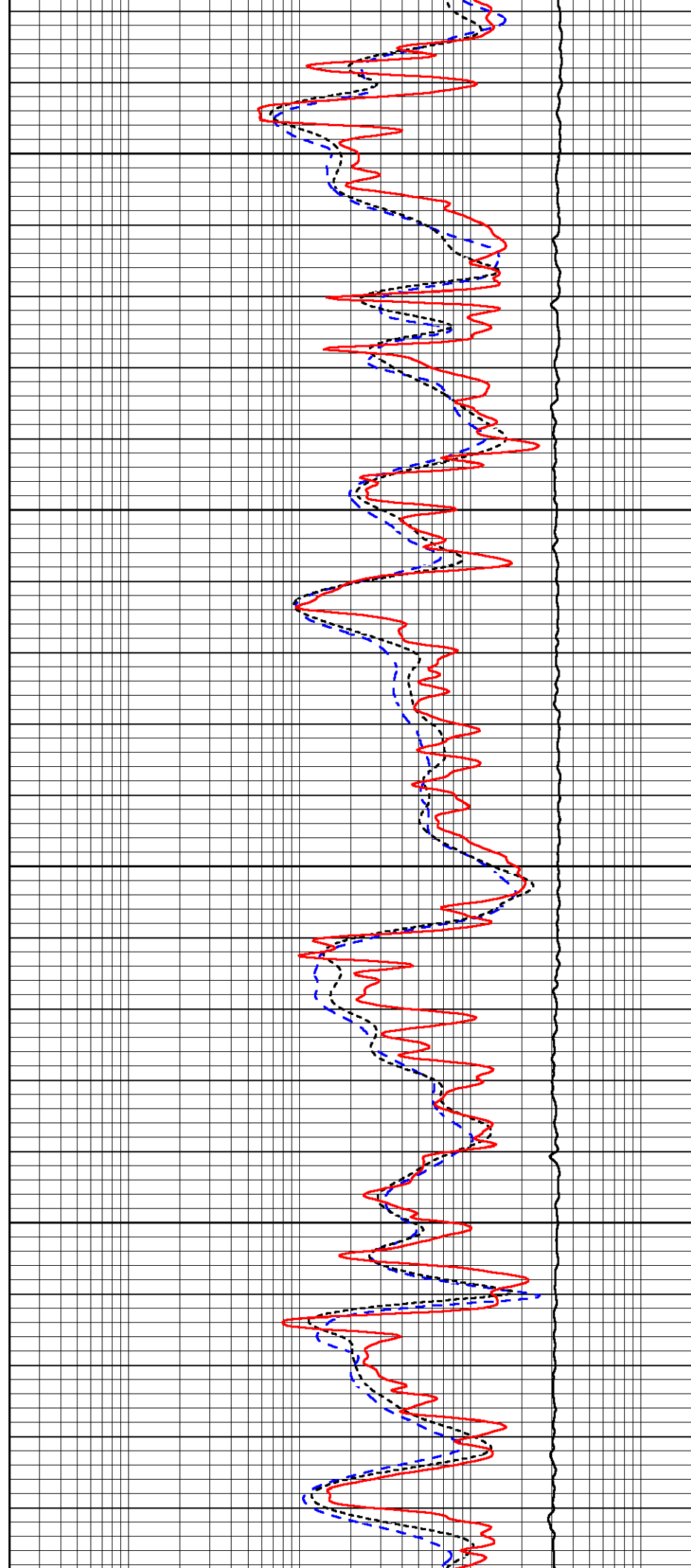


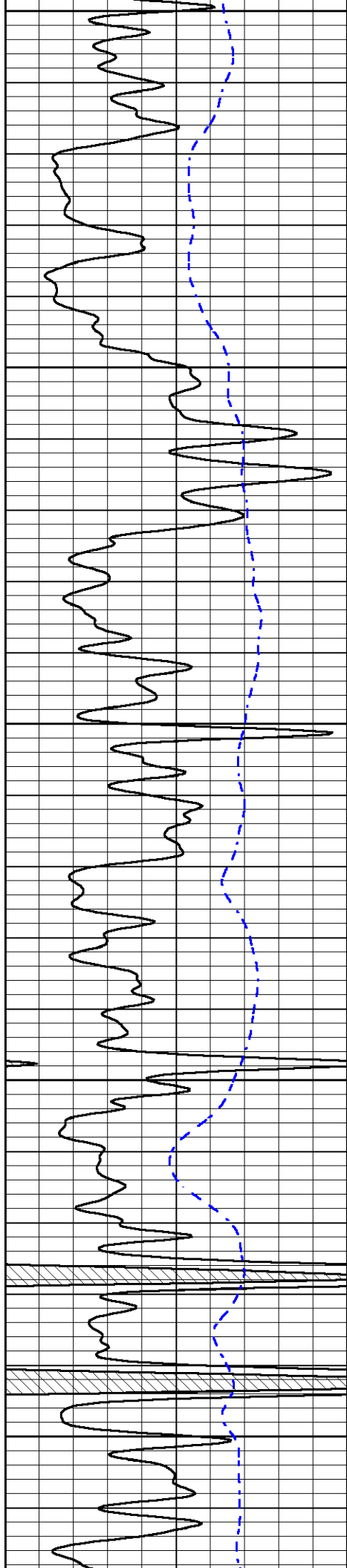
4050

4100

4150

4200





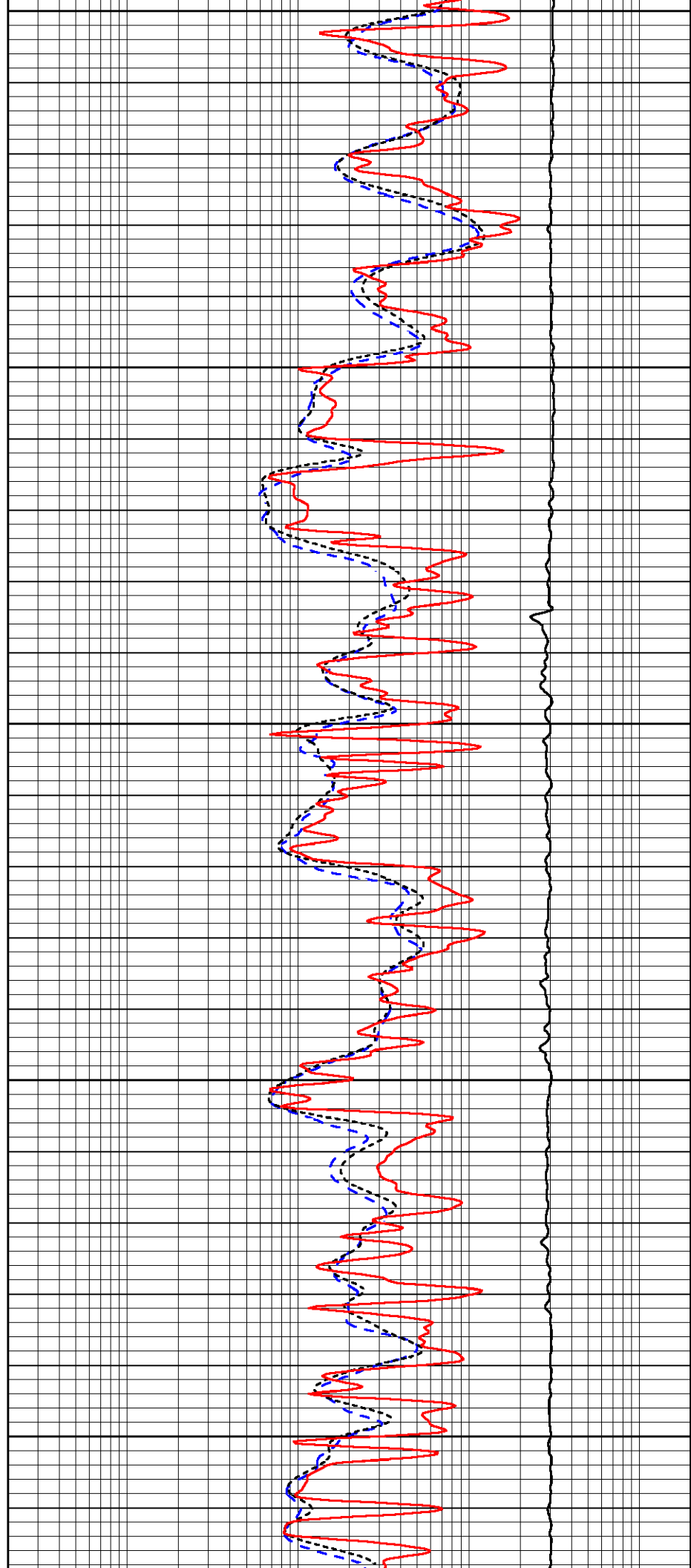
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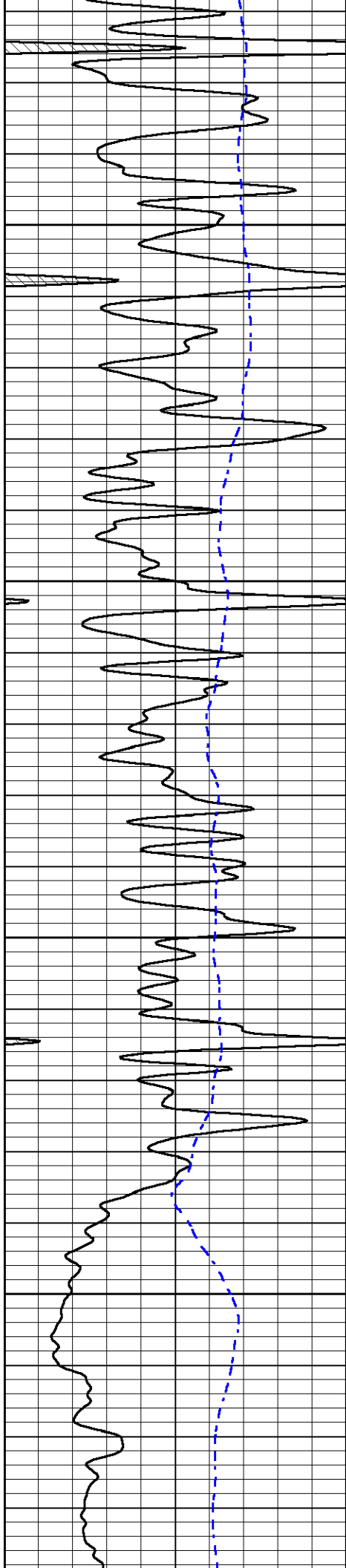
4300

4350

4400

4450



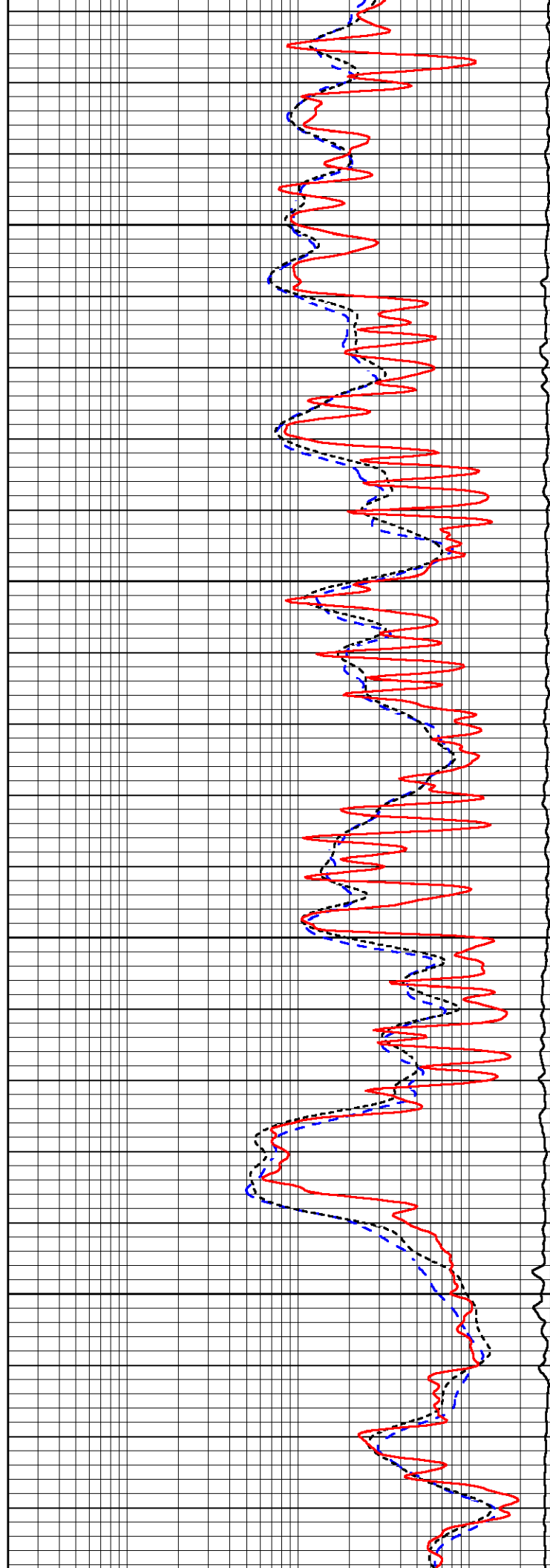


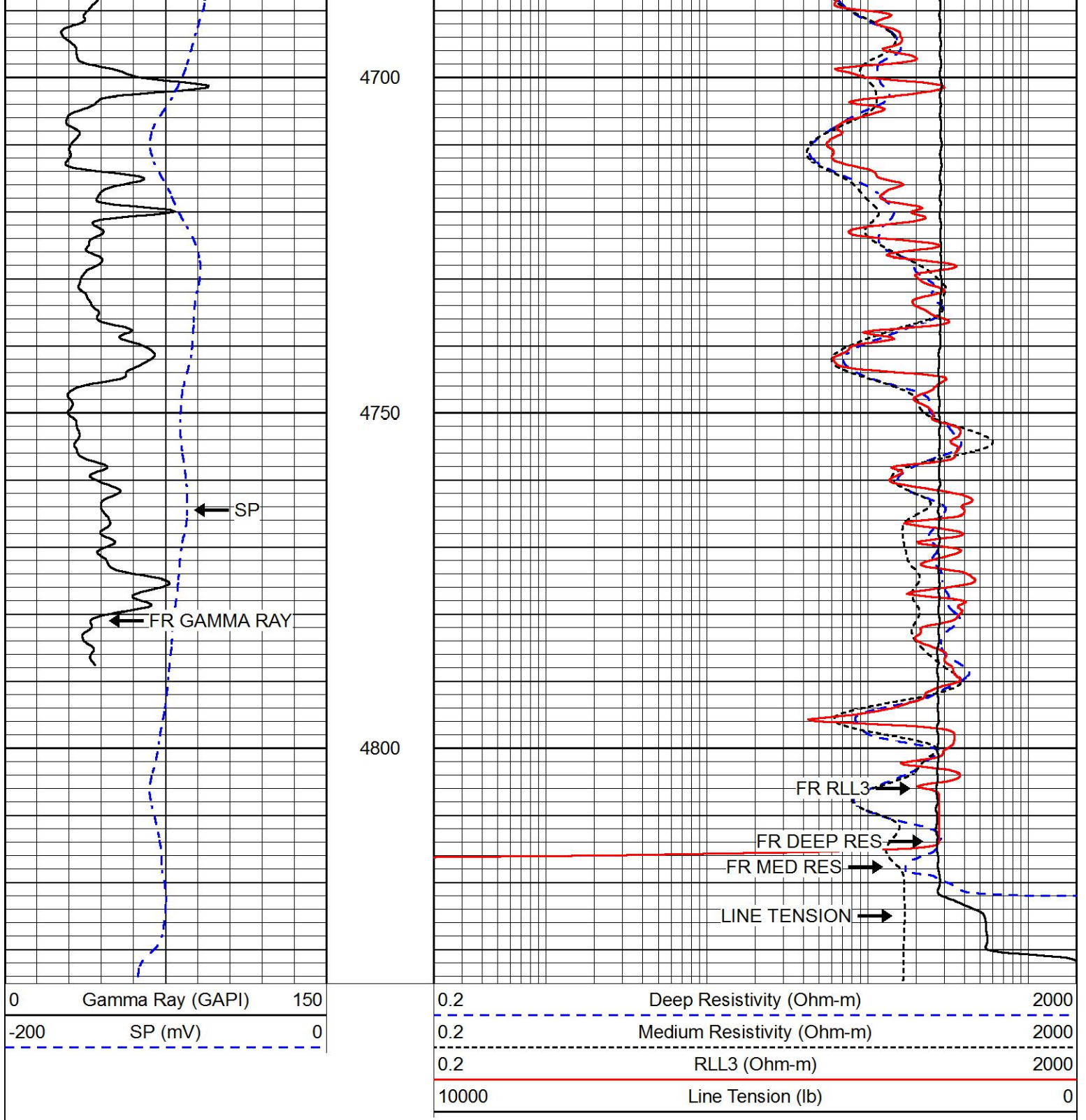
4500

4550

4600

4650





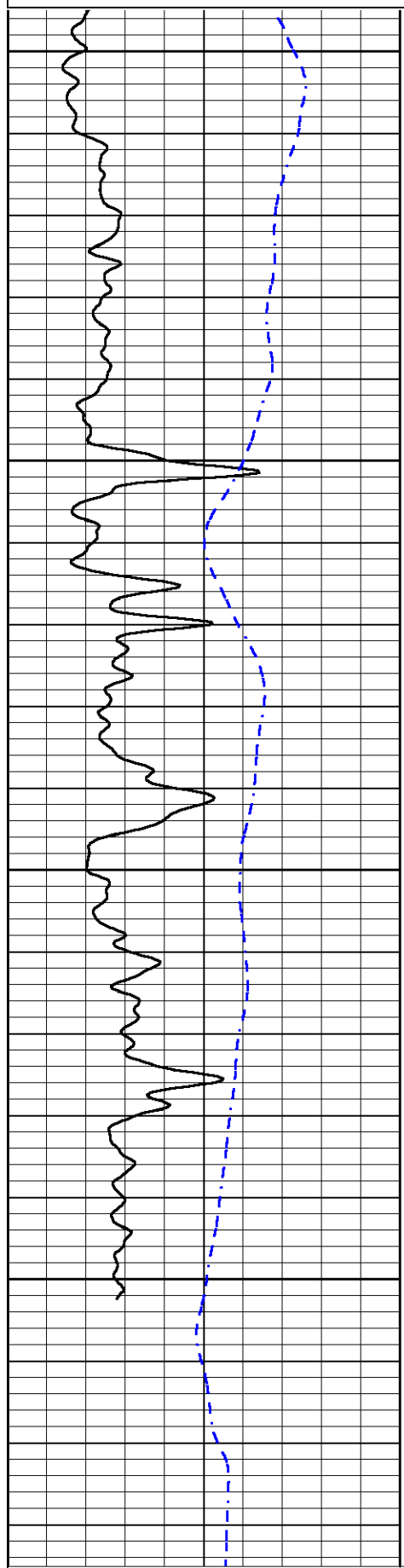
REPEAT SECTION

Database File hartmanoil_damme#50.db
 Dataset Pathname STKML/pass3.1
 Presentation Format dil
 Dataset Creation Mon Feb 12 18:52:50 2018
 Charted by Depth in Feet scaled 1:240

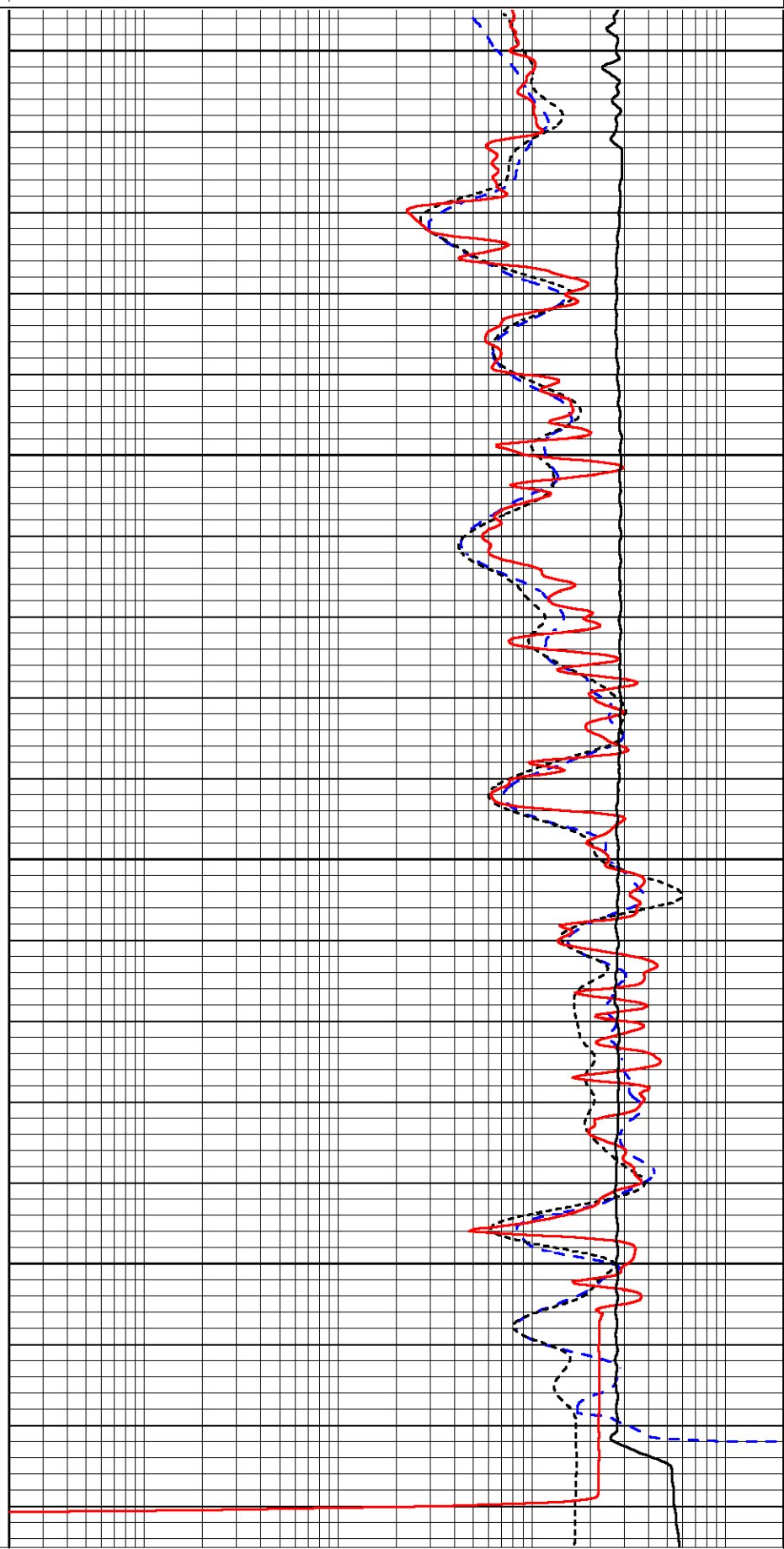


0.2
Medium Resistivity (Ohm-m)
10000
Line Tension (lb)

0.2 RLL3 (Ohm-m) 2000
10000 Line Tension (lb) 0



4650
4700
4750
4800



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 hartmanoil_damme#50.db
 Dataset Pathname STKML/pass4.1
 Dataset Creation Mon Feb 12 18:47:59 2018

Dual Induction Calibration Report

Serial-Model: 933 (HT)-PSI HIGH TEMP
 Calibration Performed: Mon Feb 12 17:16:25 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.720	-18.750
Medium	142.000	1349.000	0.000	255.000	mmho/m	0.560	-61.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Mon Jan 15 11:19:55 2018

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	28000.0000	-1.5000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	31000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	100.0000	-97.3500

Compensated Density Calibration Report

Serial-Model: 182-152-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Mon Feb 12 16:20:26 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4992.81	6098.44	cps
Aluminum	2.675	g/cc	945.67	3945.60	cps
Spine Angle = 75.33			Density/Spine Ratio = 0.535		
	Size		Reading		
Small Ring	4.50	in	1.09		
Large Ring	15.00	in	1.03		

Compensated Neutron Calibration Report

Serial Number: 207-MW
 Tool Model: M&W
 Calibration Performed: MON JAN 15 10:30:30 2018

Detector	Readings	Target	Normalization
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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 15 11:20:44 2018	
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	HARTMAN OIL CO., INC.
Well	DAMME #50
Field	DAMME
County	FINNEY
State	KANSAS