



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company **COBALT ENERGY, LLC**
Well **MOLLHAGEN TRUST A #1-6**
Field **WILDCAT**
County **GRAHAM** State **KANSAS**

Location: API #: 15-065-24170-00-00

Other Services

SEC 6 TWP 8S RGE 25W
2438' FSL & 422' FEL

CNL/CDL
MEL

Permanent Datum GROUND LEVEL Elevation 2454'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 2459'
D.F. N/A
G.L. 2454'

Date 8/23/2019

Run Number ONE

Depth Driller 3995'

Depth Logger 3997'

Bottom Logged Interval 3996'

Top Log Interval 200'

Casing Driller 8.625" @ 218'

Casing Logger 218'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 1100

Density / Viscosity 9.0 48

pH / Fluid Loss 11.0 7.2

Source of Sample FLOWLINE

Rm @ Meas. Temp 0.90 @ 80

Rmf @ Meas. Temp 0.60 @ 80

Rmc @ Meas. Temp 1.08 @ 80

Source of Rmf / Rmc CHARTS

Rm @ BHT 0.41 @ 116

Operating Rig Time 3 HOURS

Max Rec. Temp. F 116

Equipment Number P-24

Location HAYS

Recorded By D. SCHMIDT

Witnessed By COREY BAKER

<<< Fold Here >>>

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.

STUDLEY,
1.4 EAST, NORTH INTO ABOUT 1 1/2 MILES

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

Engineer: D. SCHMIDT
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: COREY BAKER
Secondary Witness:
Secondary Witness:
Secondary Witness:

Log Variables

DatabaseC:\ProgramData\Warrior\Data\cobalt_mollhagen trust a 1-6.db
Dataset field/well/STKML/pass3.1/_vars_

Top - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in	degF	in	in	g/cc	2	g/cc
	7.875	100	5.5	0	1		2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m	mmho/m	mV	degF	Off	ft
		0	0	225	0		0



MAIN PASS

Database File cobalt_mollhagen trust a 1-6.db
Dataset Pathname STKML/pass3.1
Presentation Format _dil2in
Dataset Creation Fri Aug 23 16:44:41 2019
Charted by Depth in Feet scaled 1:600

GAMMA RAY

0 (GAPI) 150

1000 CONDUCTIVITY (mmho/m) 0

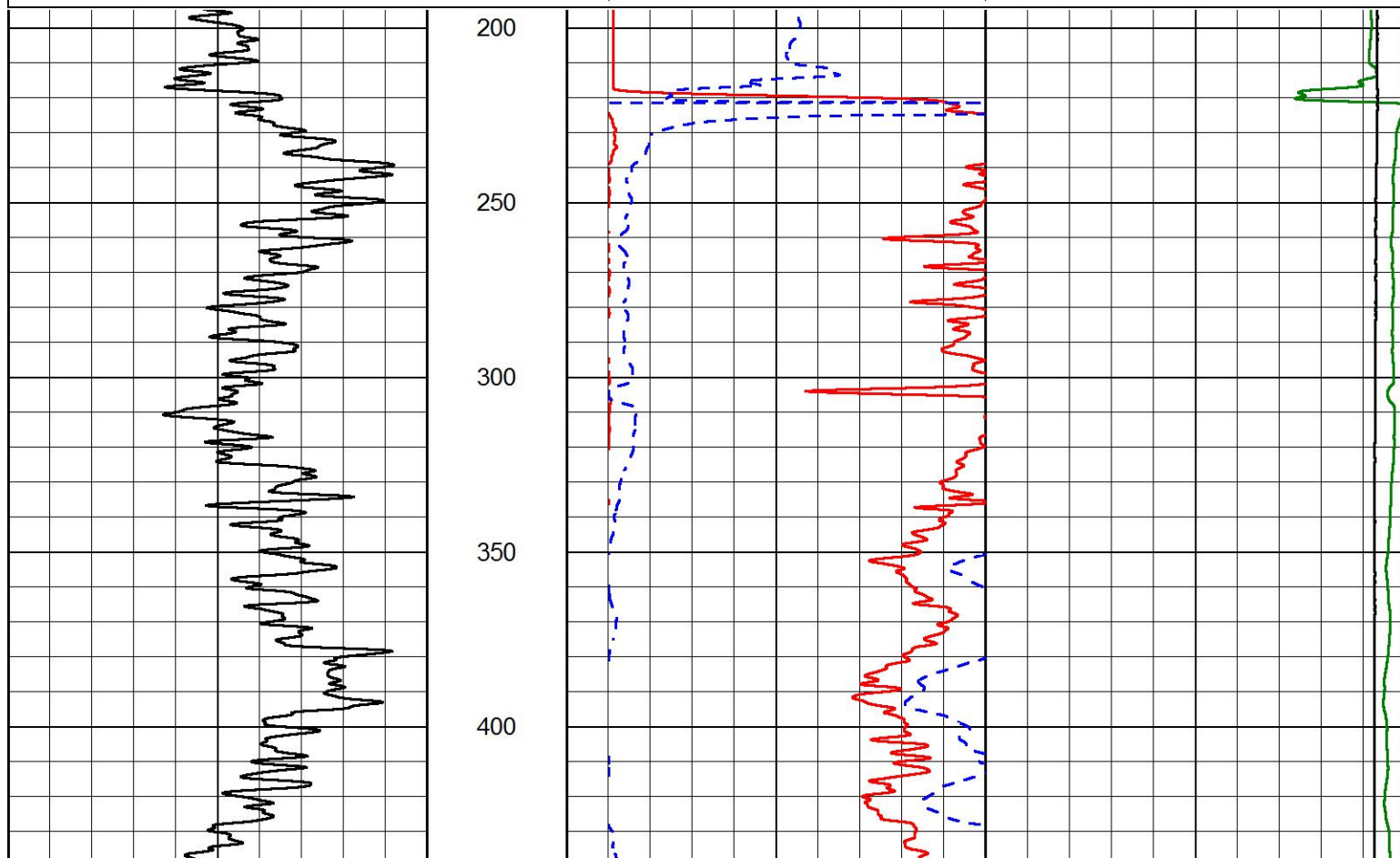
15000 Line Tension (lb) 0

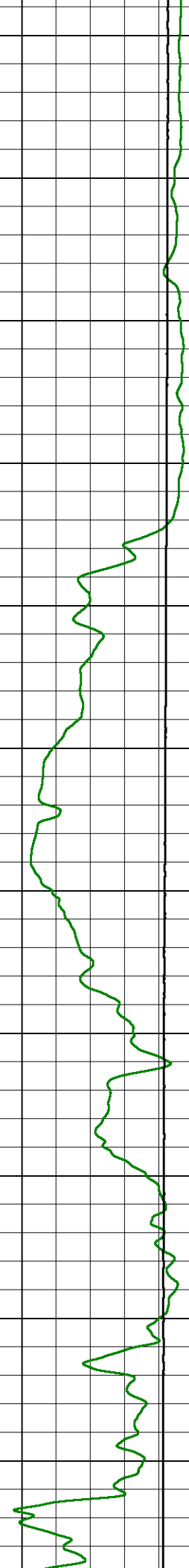
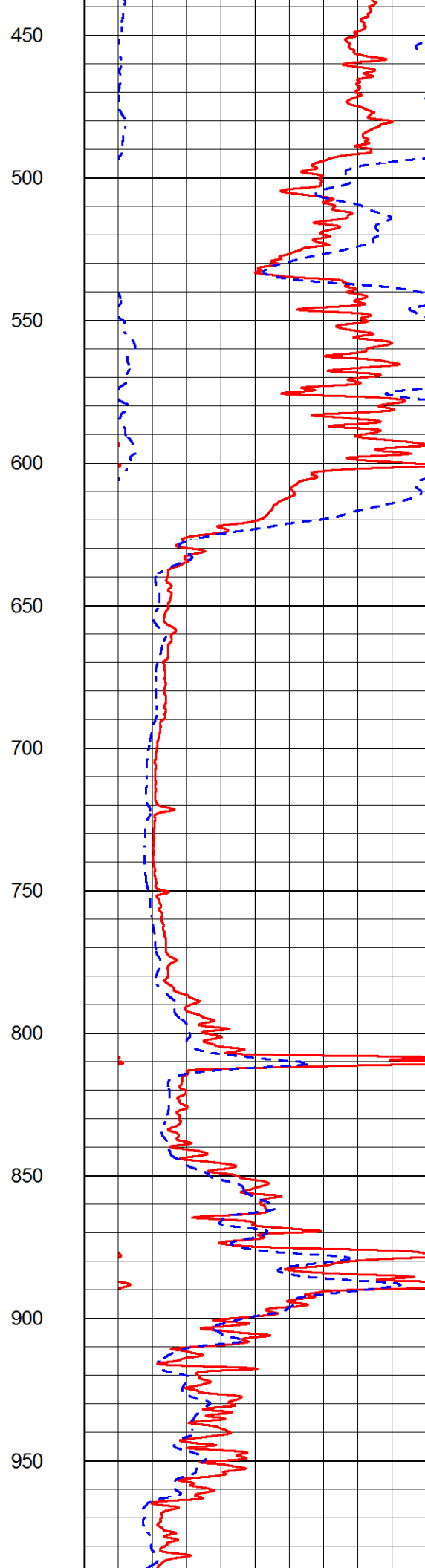
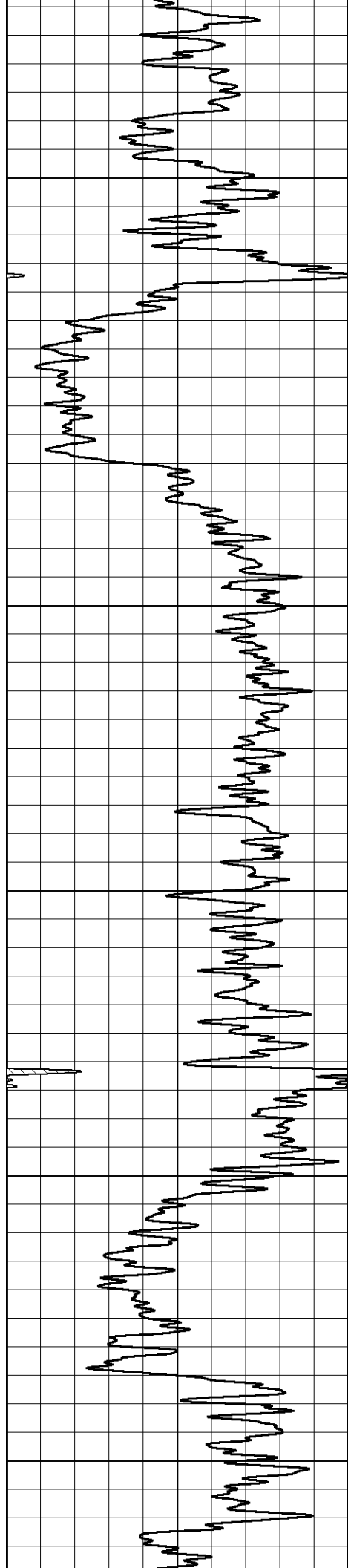
0 RLL3 (Ohm-m) 50

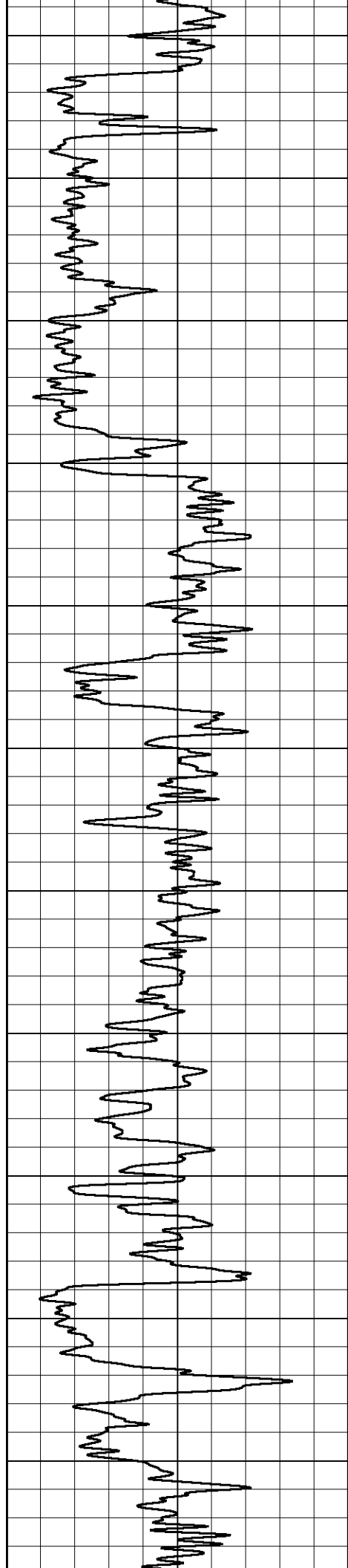
50 RLL3 (Ohm-m) 500

0 RILD (Ohm-m) 50

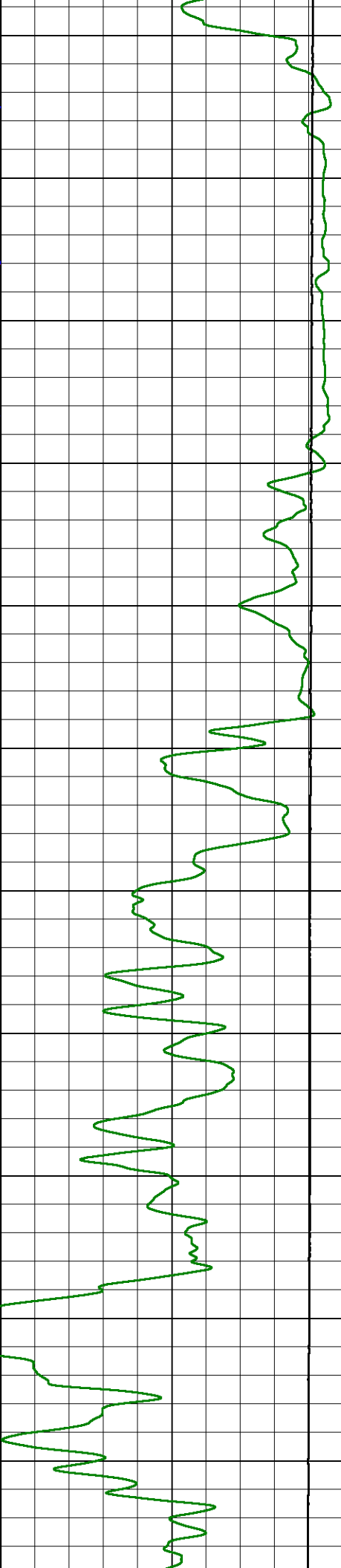
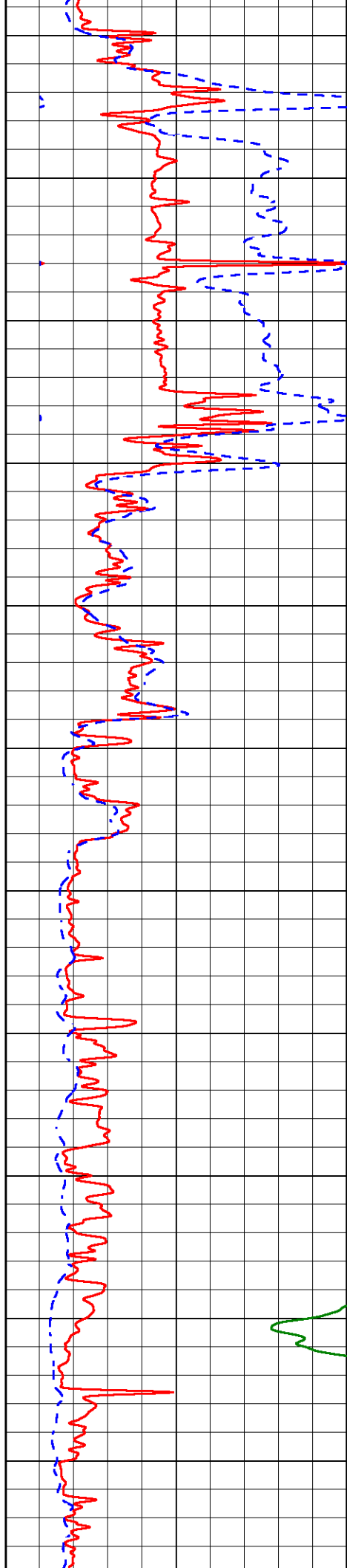
50 Deep Resistivity (Ohm-m) 500

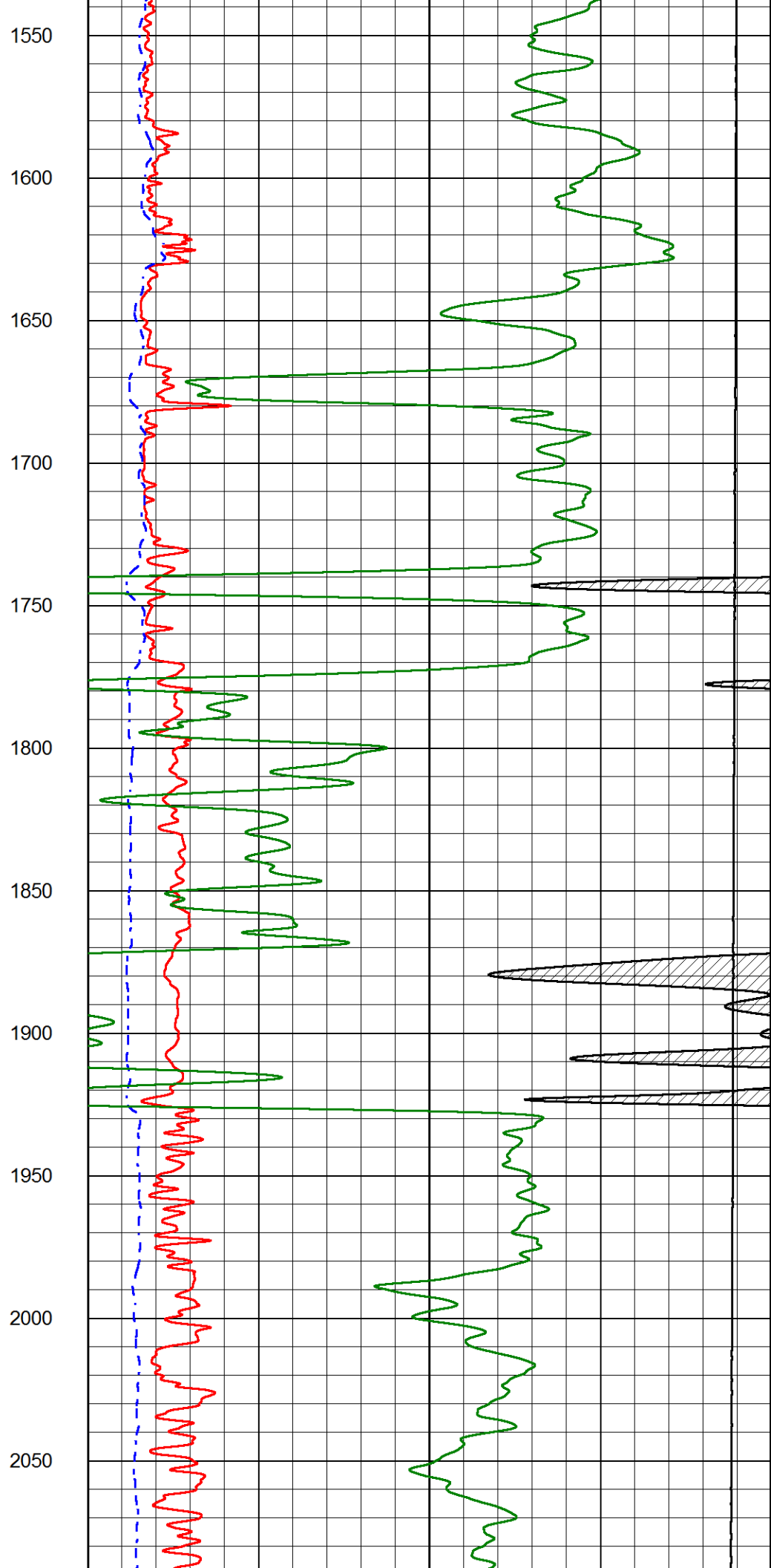
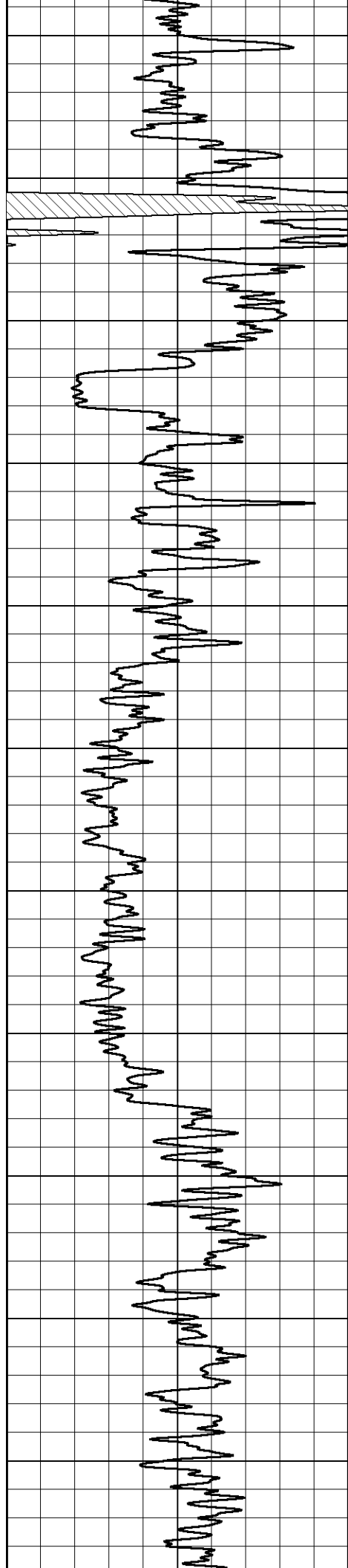


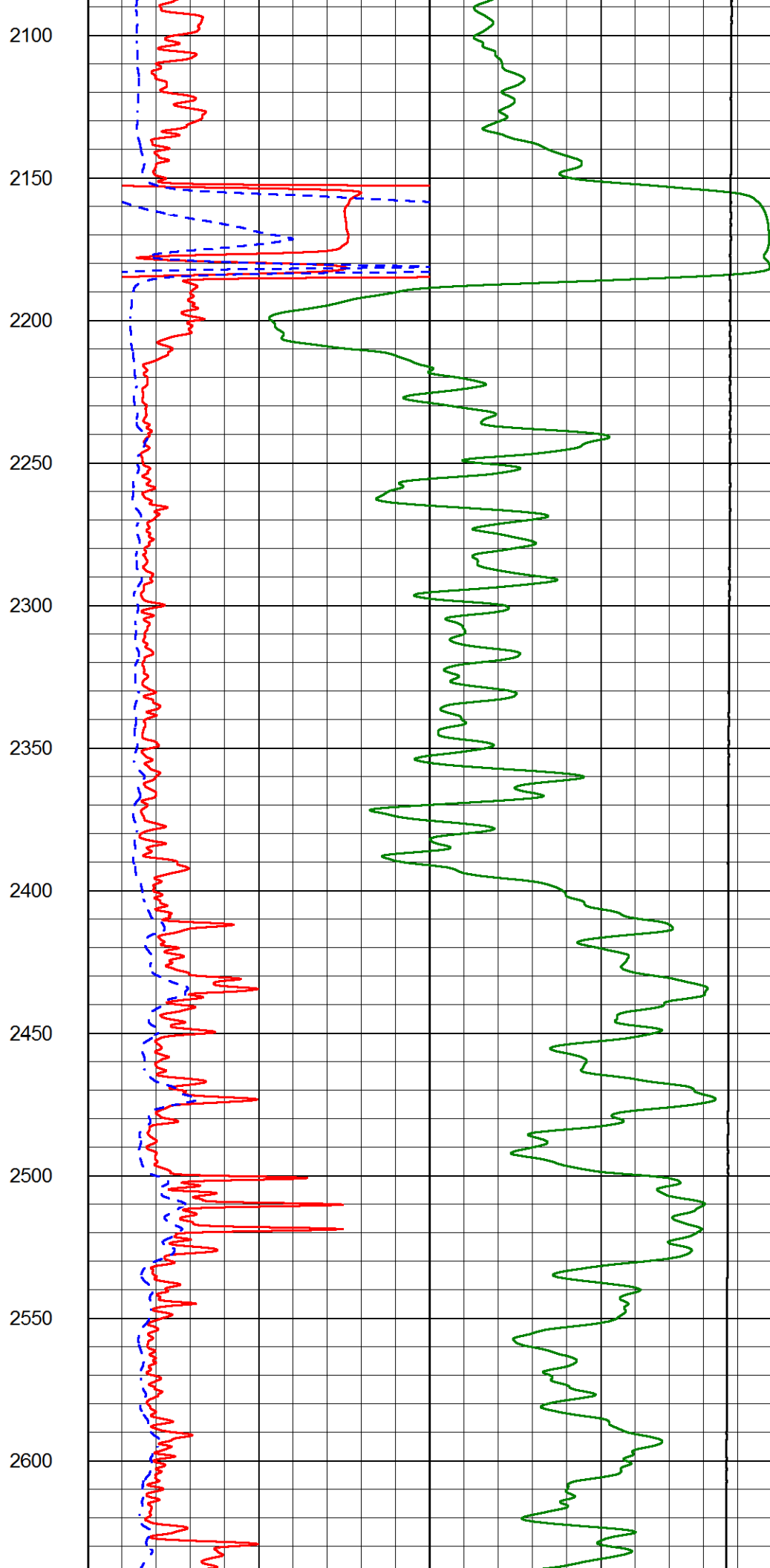
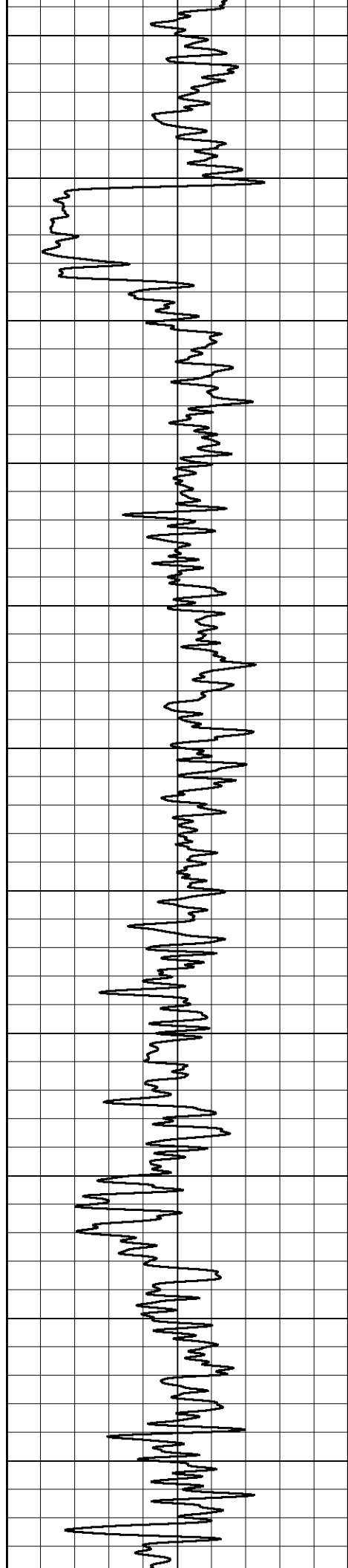


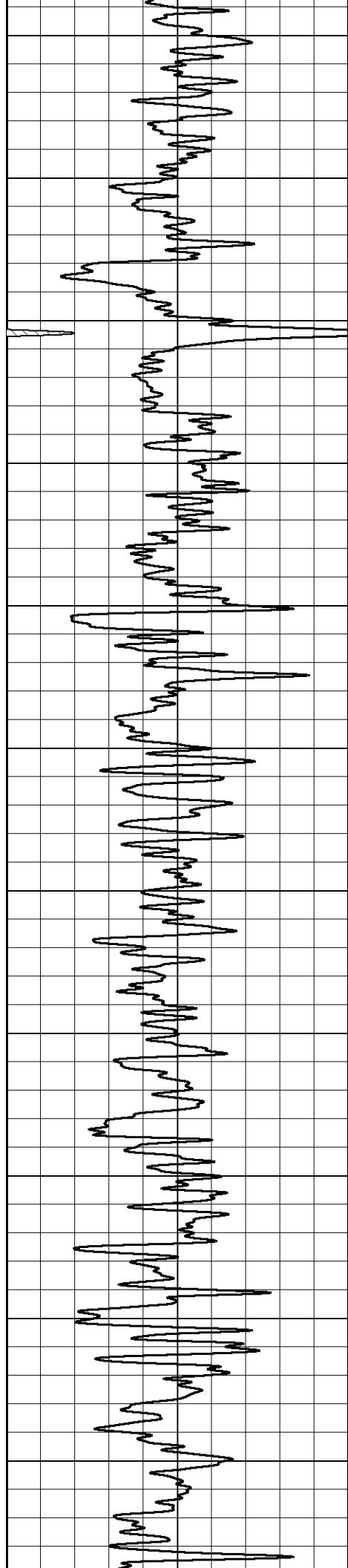


1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
1500

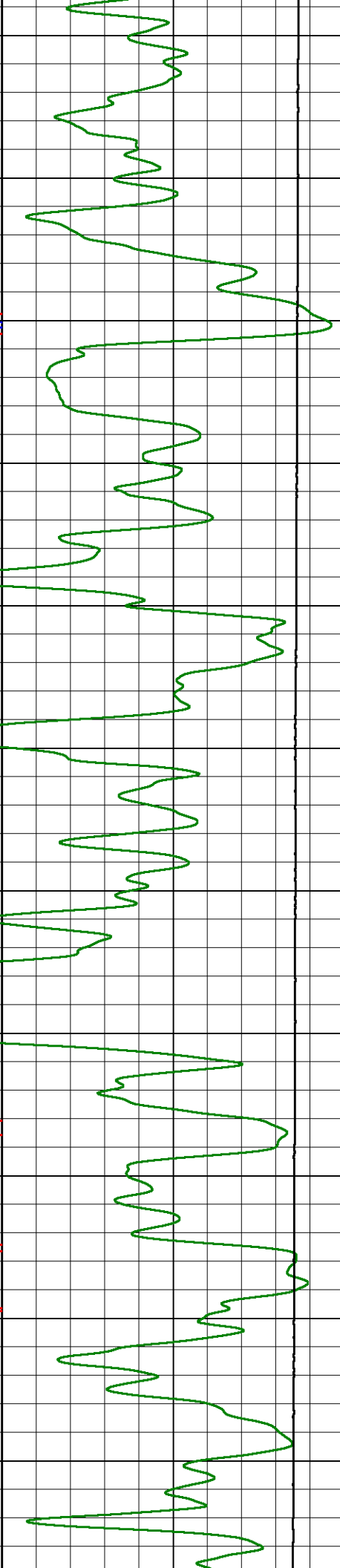
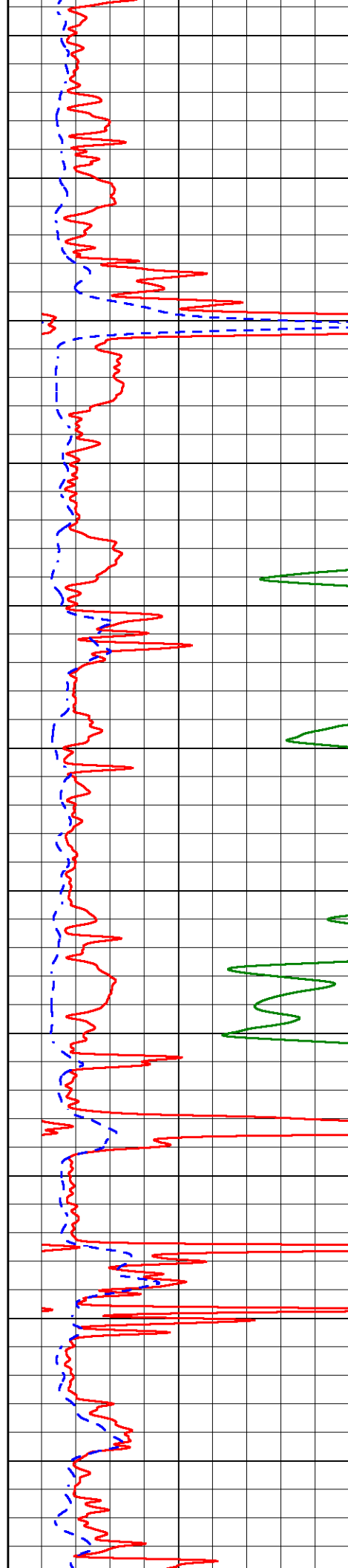


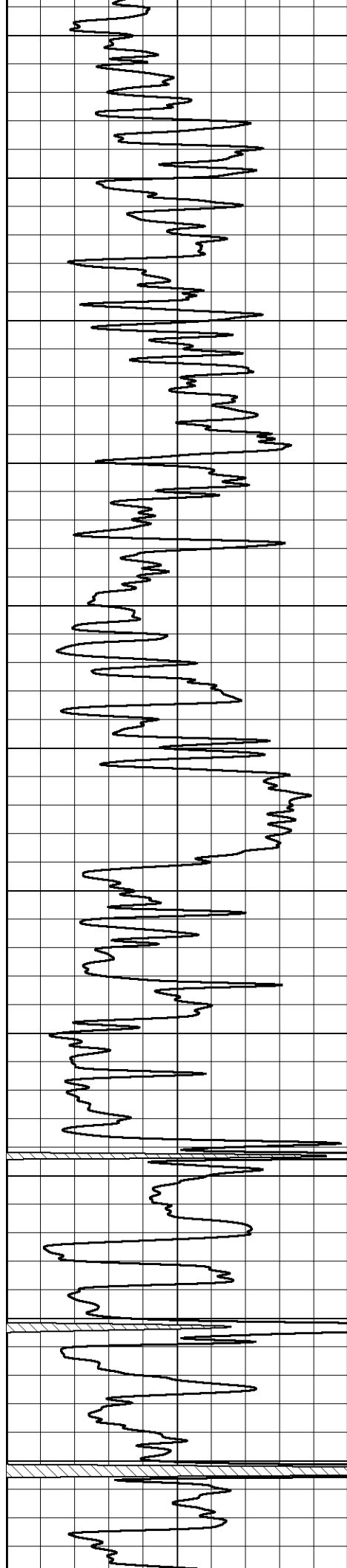






2650
2700
2750
2800
2850
2900
2950
3000
3050
3100
3150





3200

3250

3300

3350

3400

3450

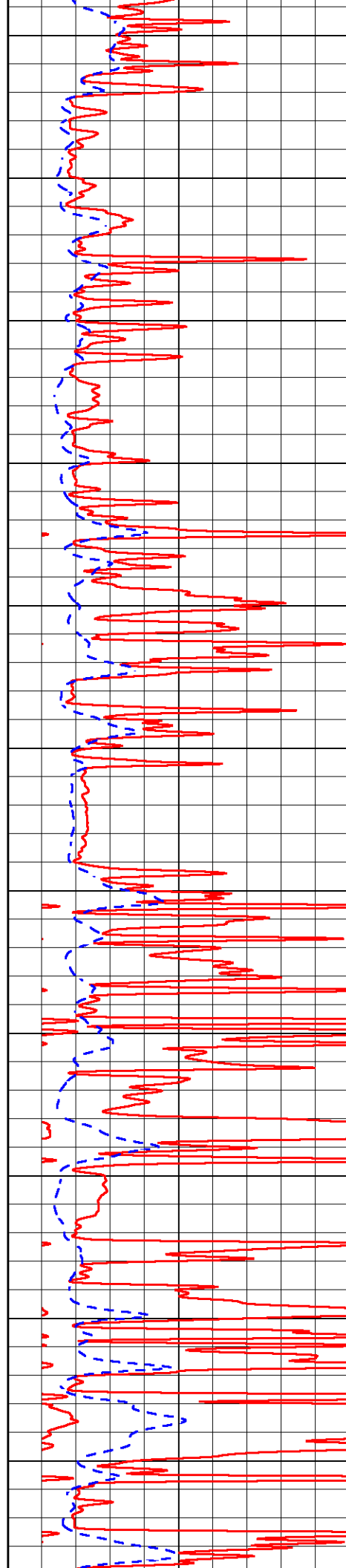
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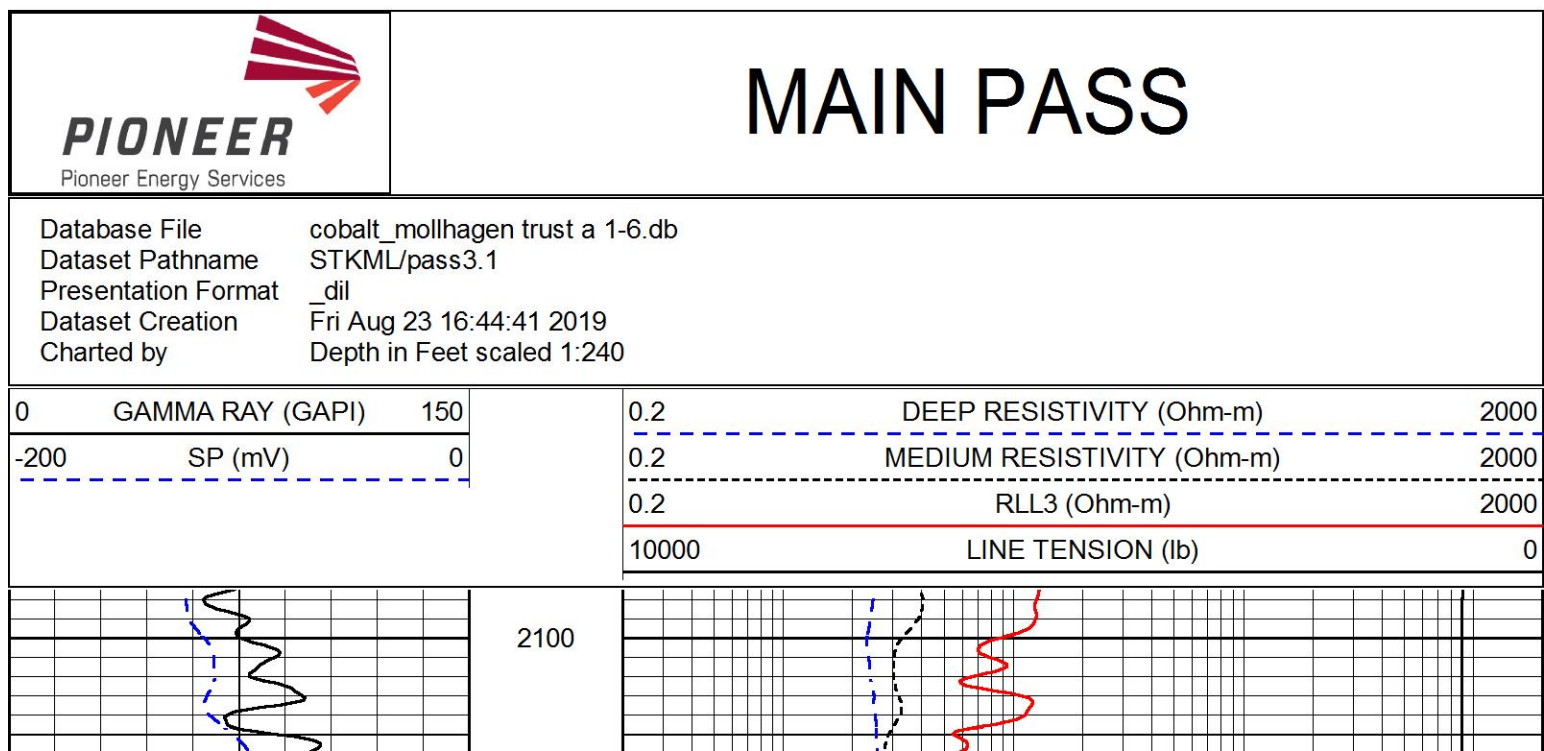
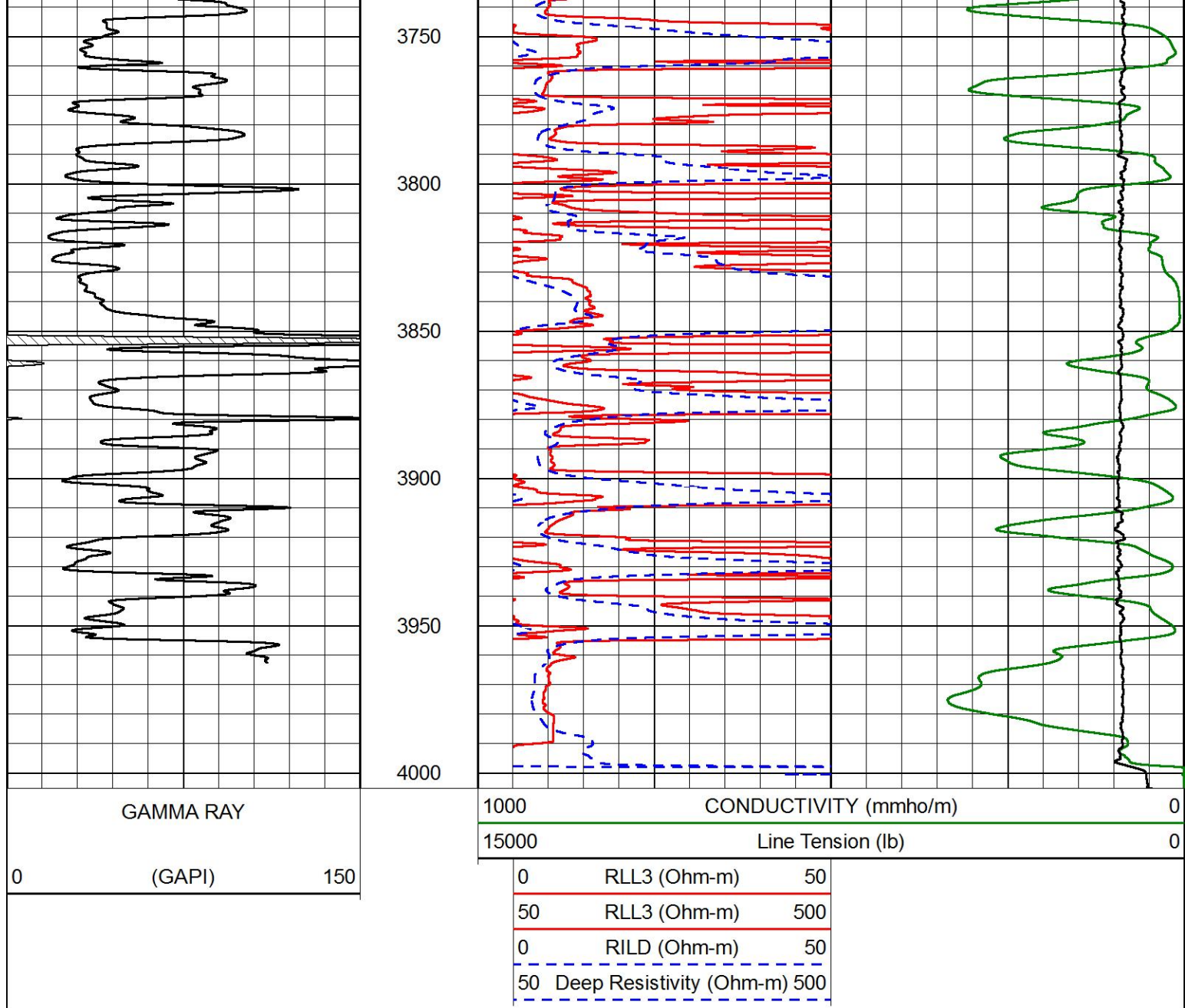
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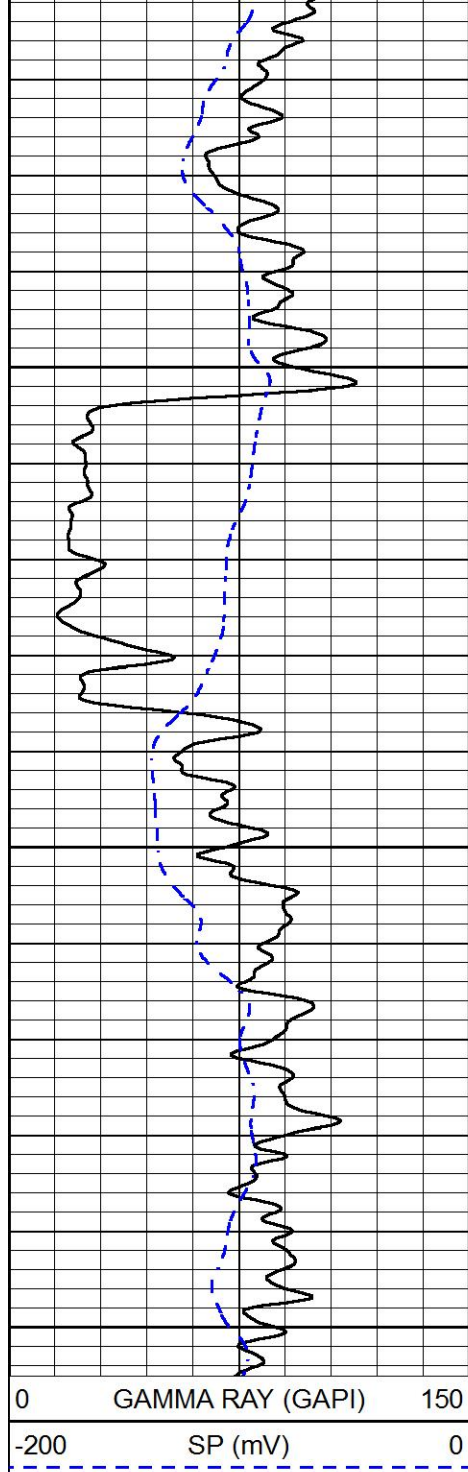
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3650

3700



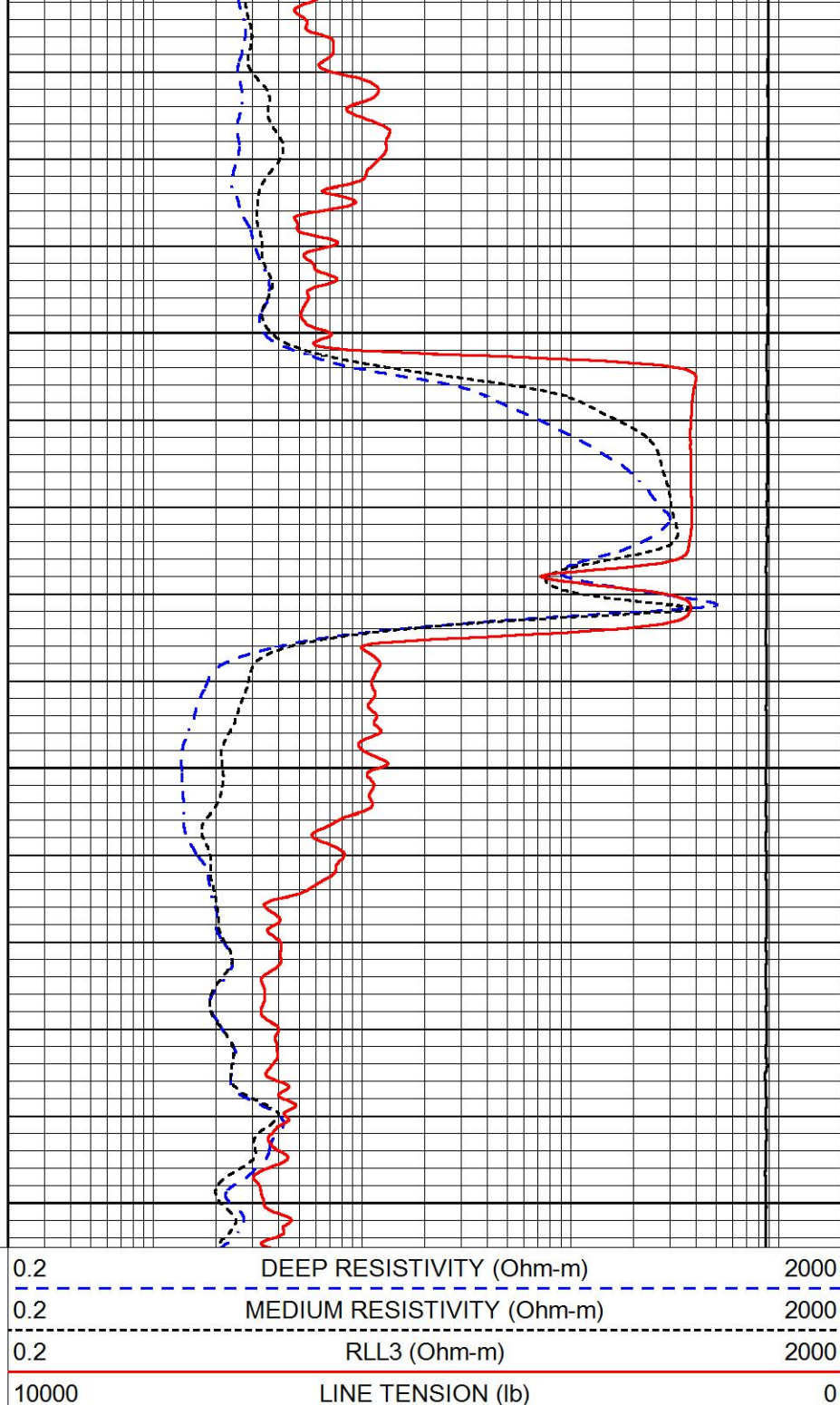




2150

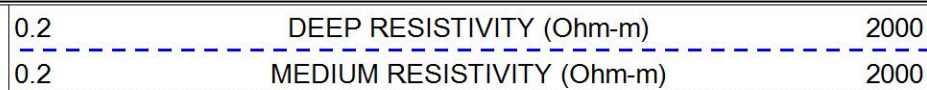
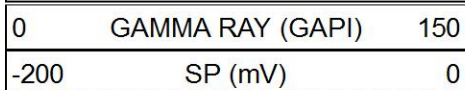
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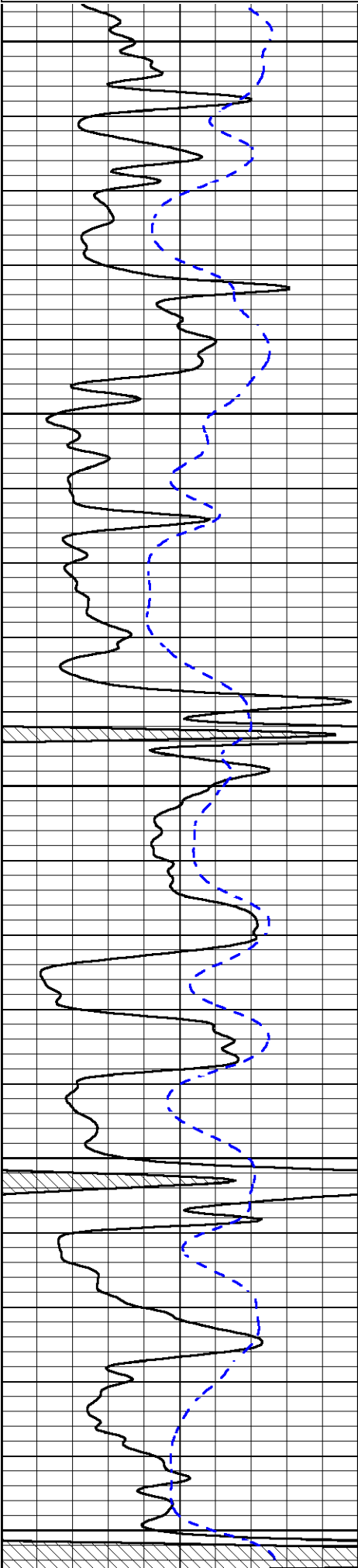
2250



MAIN PASS

Database File cobalt_mollhagen trust a 1-6.db
 Dataset Pathname STKML/pass3.1
 Presentation Format _dil
 Dataset Creation Fri Aug 23 16:44:41 2019
 Charted by Depth in Feet scaled 1:240





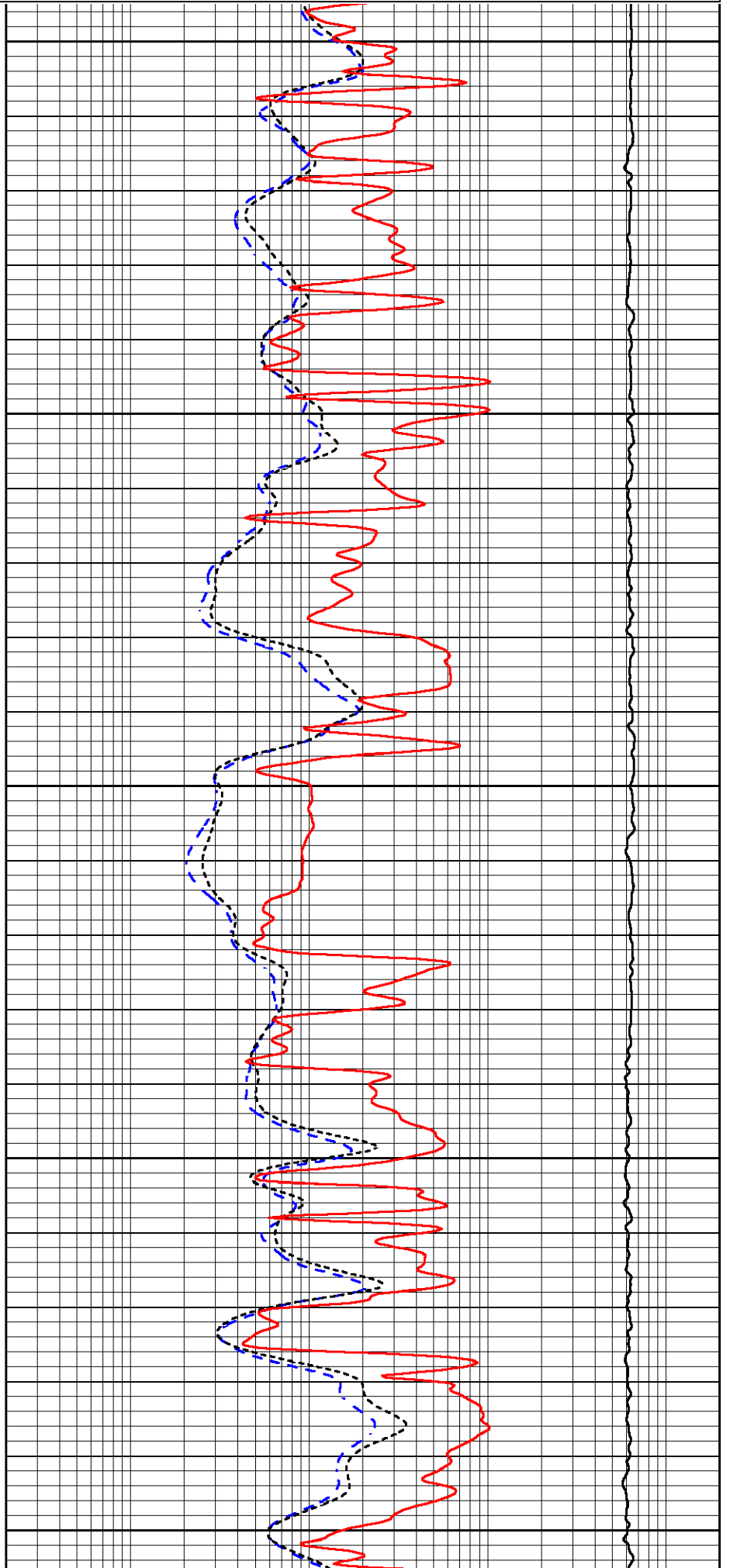
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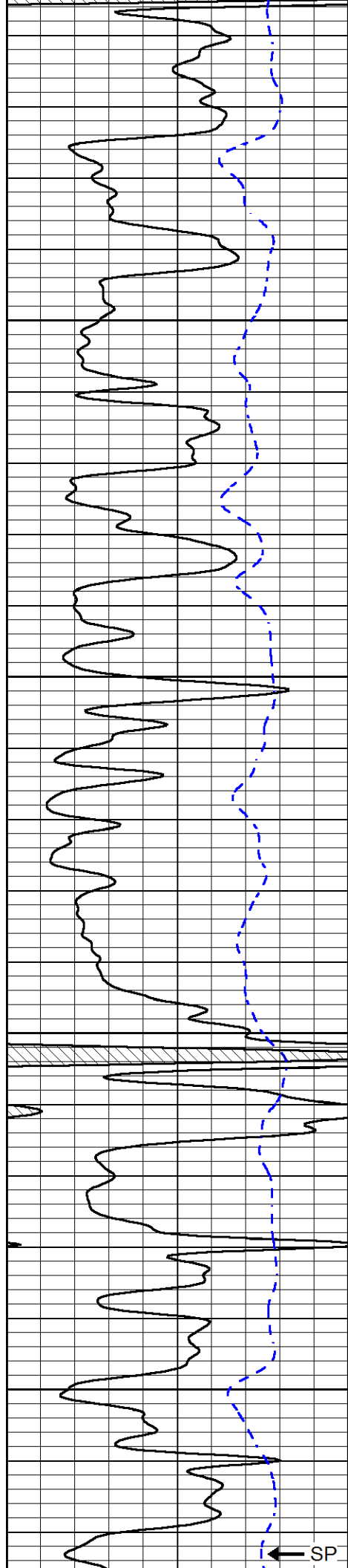
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3600

3650

3700





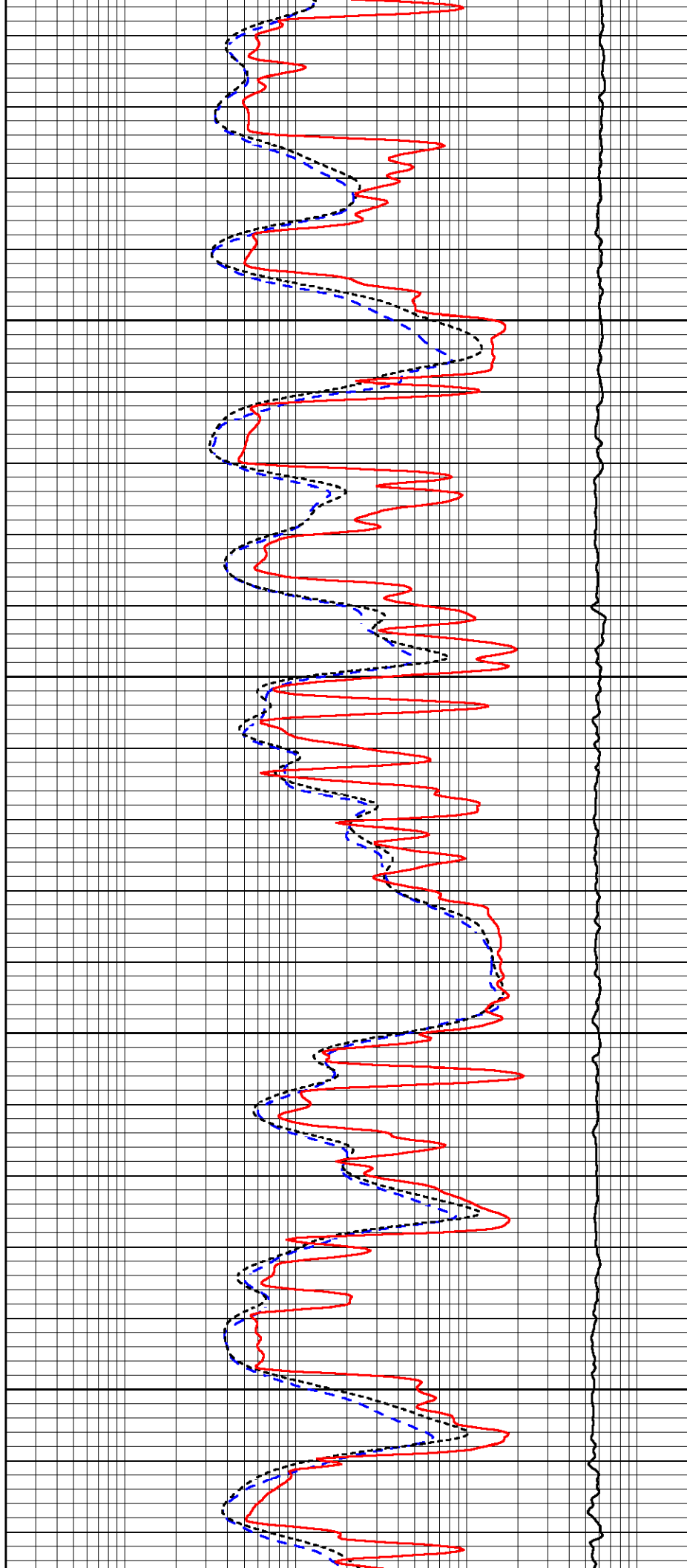
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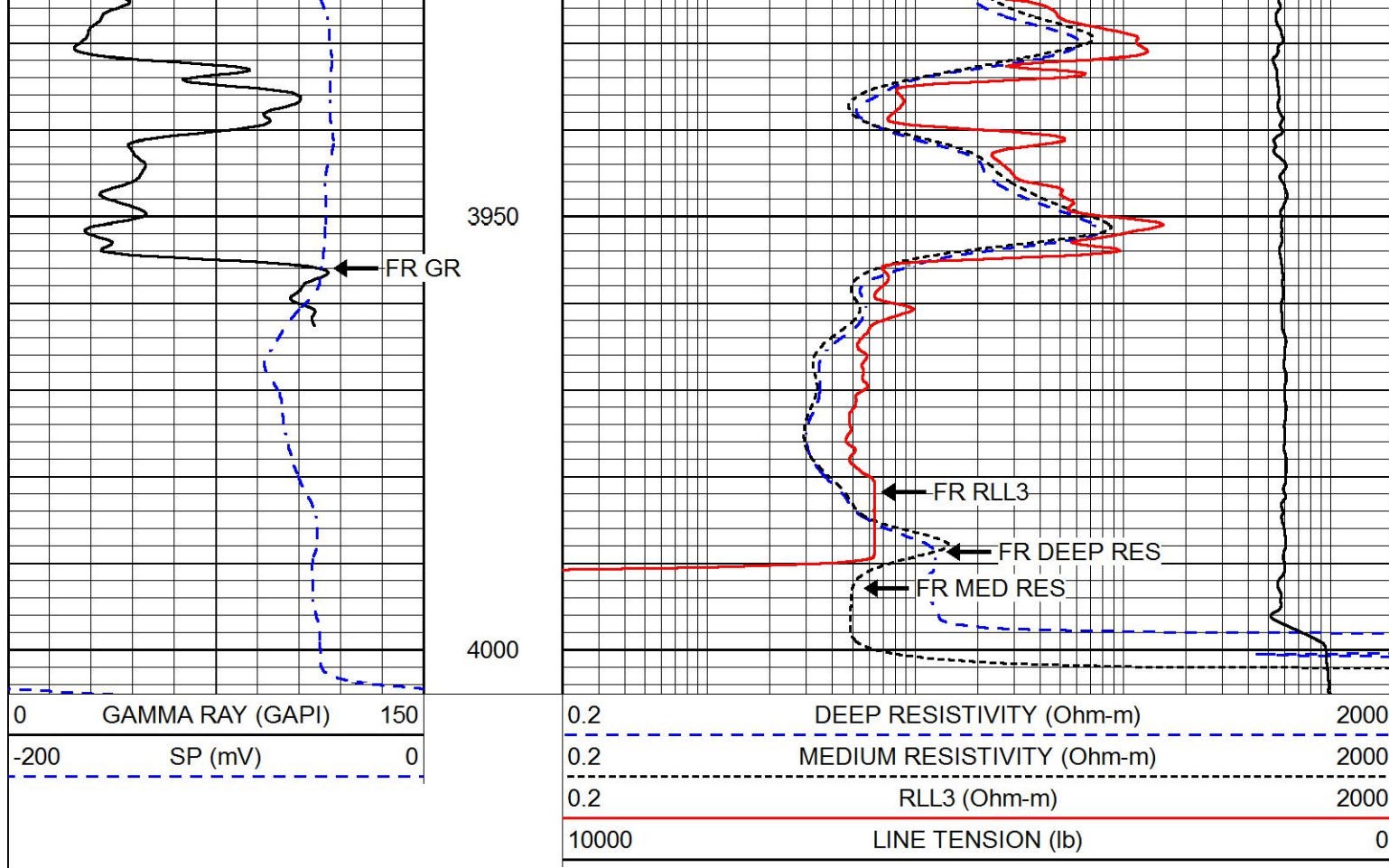
3800

3850

3900

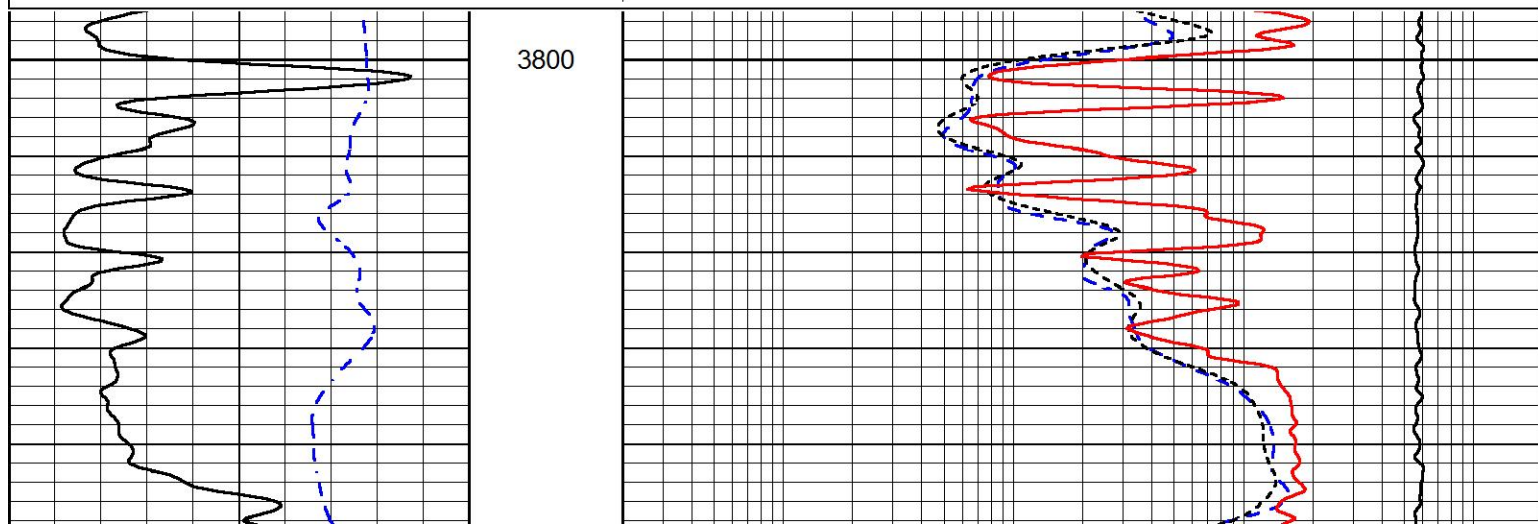
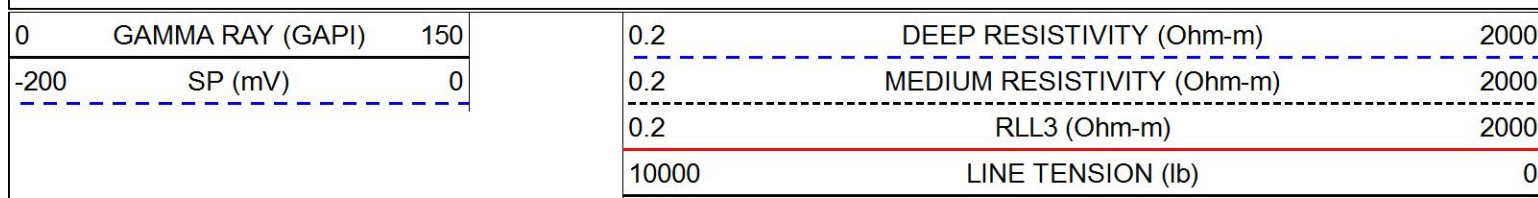
← SP

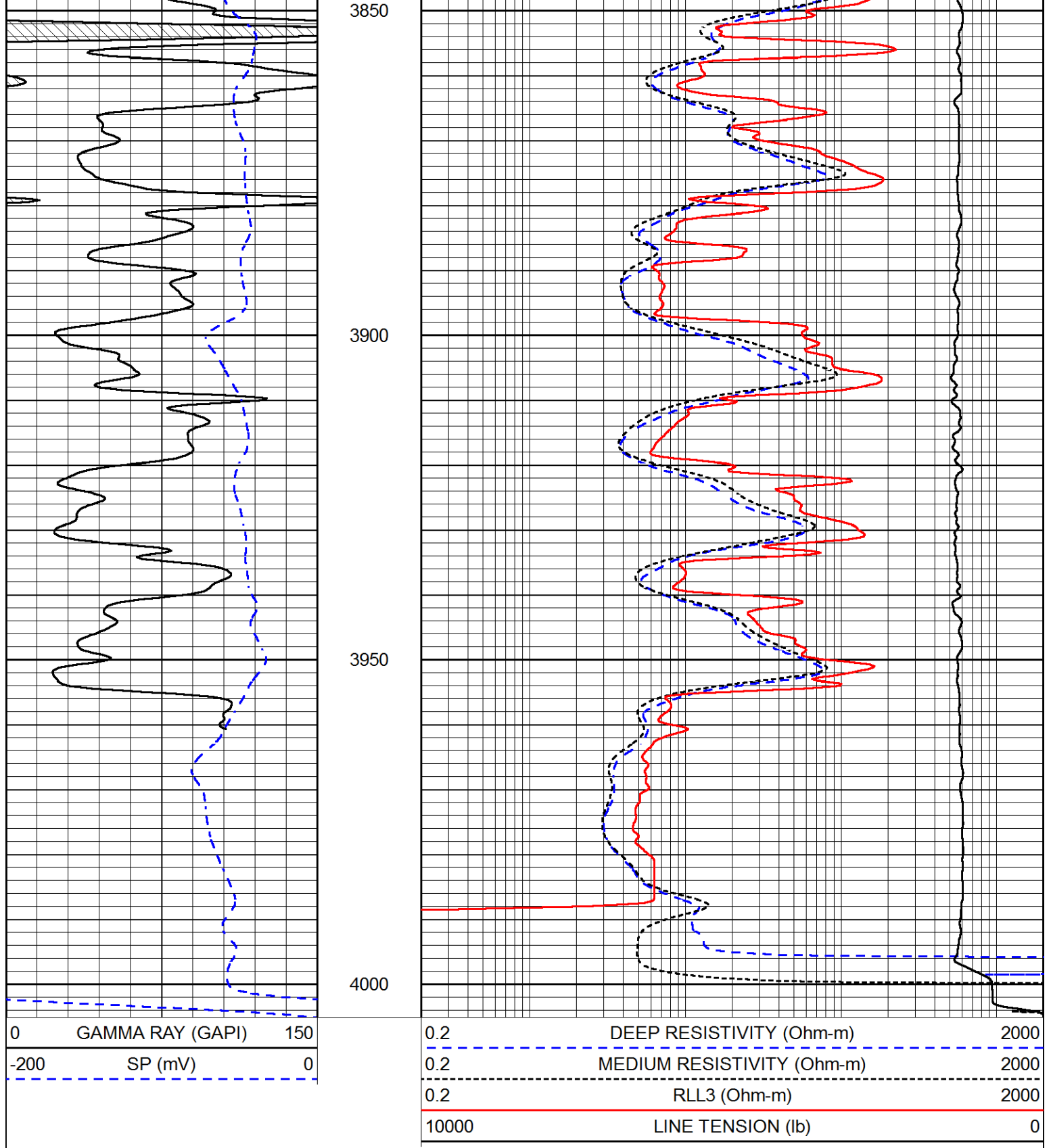




REPEAT SECTION

Database File cobalt_mollhagen trust a 1-6.db
 Dataset Pathname STKML/pass2.4
 Presentation Format _dil
 Dataset Creation Fri Aug 23 16:49:51 2019
 Charted by Depth in Feet scaled 1:240





Calibration Report

Database File cobalt_mollhagen trust a 1-6.db
Dataset Pathname STKML/pass3.1
Dataset Creation Fri Aug 23 16:44:41 2019

Dual Induction Calibration Report

Serial-Model: 1039-PSI HIGH TEMP
Calibration Performed: Tue Jul 09 07:46:05 2019

Readings			References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.800	mmho/m	0.445	-51.000
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.380	-58.000

Microlog Calibration Report

Serial-Model:	PSI-01-PSIML
Performed:	Thu Aug 01 07:57:13 2019

Readings			References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	13000.0000	-0.7000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	14000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-64.1000

Compensated Density Calibration Report

Serial-Model:	817-947-M&W
Source / Verifier:	16955B / 2ci
Master Calibration Performed:	Fri Aug 24 11:16:00 2018

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	15.00	in		1.15			

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:	Fri Feb 07 01:42:40 2014	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.5500	GAPI/cps

Sensitivity.

0.5500

GAPI/cps



PIONEER

Pioneer Energy Services

Company	COBALT ENERGY, LLC
Well	MOLLHAGEN TRUST A #1-6
Field	WILDCAT
County	GRAHAM
State	KANSAS