



DUAL INDUCTION LOG

Company COBALT ENERGY, LLC
Well CHERYL NO.1-17
Field ALLODIUM NORTHEAST
County GRAHAM **State** KANSAS

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Location: API #: 15-065-24180-00-00
 1845' FSL & 2065' FWL
 SEC 17 TWP 6S RGE 25W
 Permanent Datum GROUND LEVEL Elevation 2541'
 Log Measured From KELLY BUSHING
 Drilling Measured From KELLY BUSHING
 Other Services
 CNL/CDL
 MEL
 Elevation
 K.B. 2546'
 D.F. N/A
 G.L. 2541'

Date	2/13/2020
Run Number	ONE
Depth Driller	3880'
Depth Logger	3884'
Bottom Logged Interval	3882'
Top Log Interval	200'
Casing Driller	8.625" @ 220'
Casing Logger	220'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	900
Density / Viscosity	9.0 59
pH / Fluid Loss	11.0 6.0
Source of Sample	FLOWLINE
Rm @ Meas. Temp	1.0 @ 60
Rmt @ Meas. Temp	0.75 @ 60
Rmc @ Meas. Temp	1.35 @ 60
Source of Rmf / Rmc	CHARTS
Rm @ BHT	0.52 @ 115
Operating Rig Time	2 HOURS
Max Rec. Temp. F	115 DEG. F.
Equipment Number	P-108
Location	HAYS
Recorded By	M. HISS
Witnessed By	COREY BAKER
	J. HENRICKSON

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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.

STUDLEY KANSAS,
 NORTH 13 MILES ON RD 100 TO RD CC,
 1 1/2 EAST, SOUTH INTO

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: M. HISS Operator: Operator: Operator:	This Log Record Was Witnessed By Primary Witness: COREY BAKER Secondary Witness: Secondary Witness: Secondary Witness:
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Log Variables

DatabaseC:\ProgramData\Warrior\Data\cobalt_cheryl_#1_17.db
Dataset field/well/stackmel/pass4.1/_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	213	50	Off	3884

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	44.50		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	41.40 40.65		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	32.35 32.33 31.85		CDL-M&W (934-229)	8.50	4.00	250.00
MCAL MI MN	20.87 20.87 20.87		ML-PSI UDM ML (UDM-01) Stackable Microlog Tools	11.50	4.00	215.00
RLL3 RLL3F	15.80 15.79					
CILD	8.00		DIL-M&W (55-222)	18.50	3.50	220.00

CILM 4.70

SP 0.20

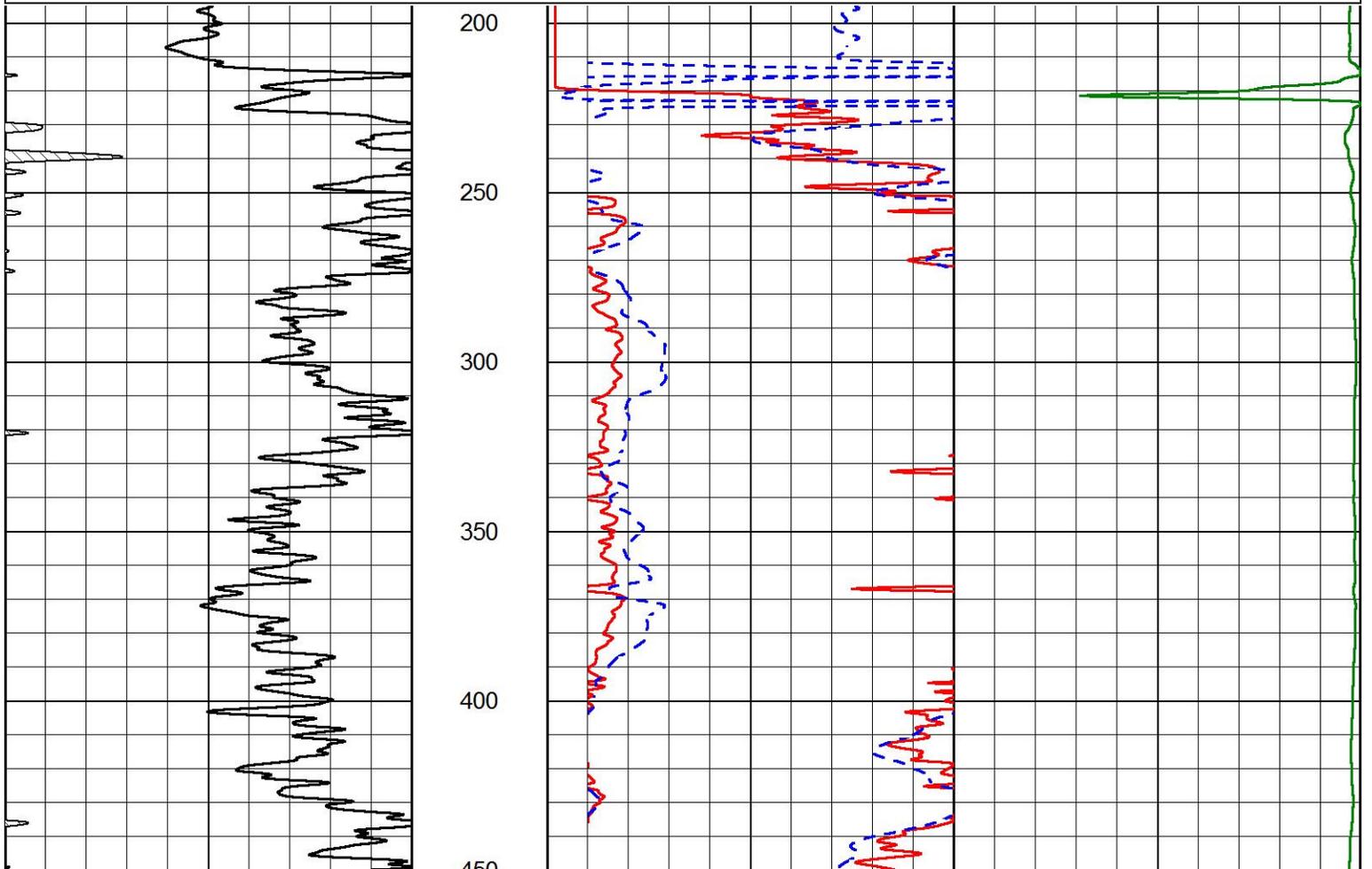
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 Total length: 47.00 ft
 Total weight: 835.00 lb
 O.D.: 4.00 in

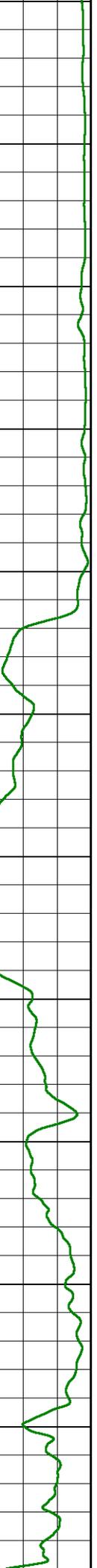
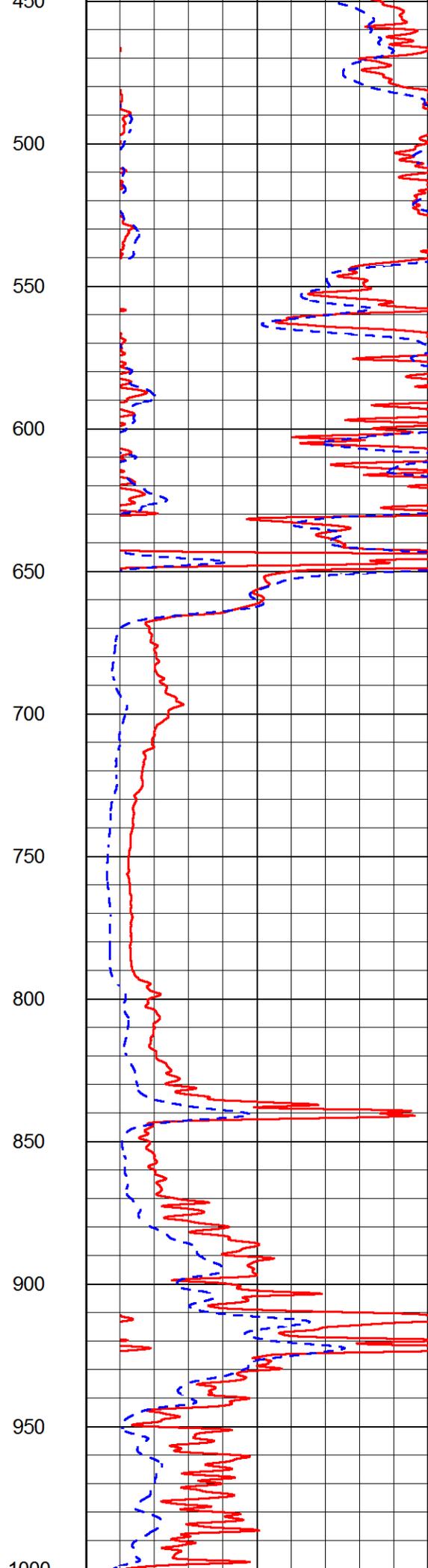
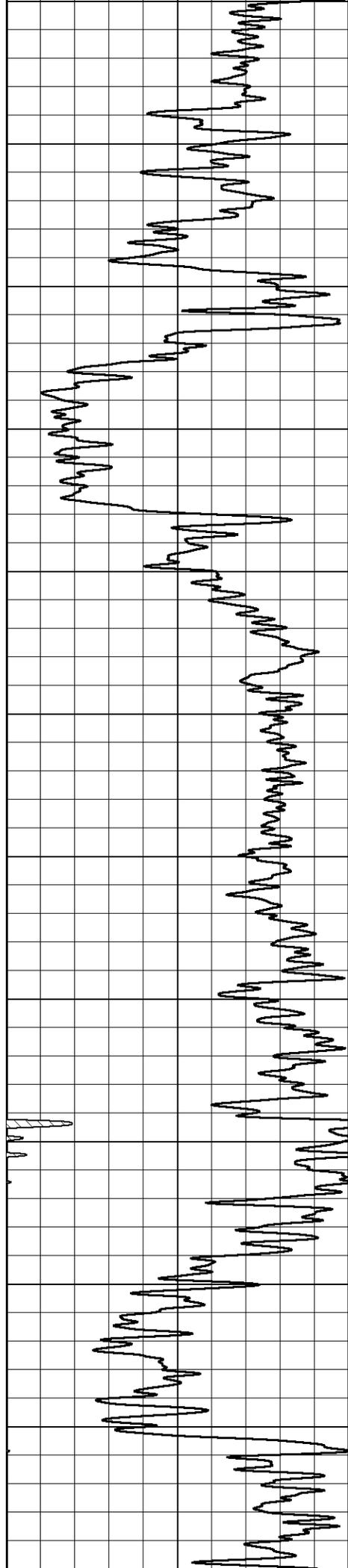


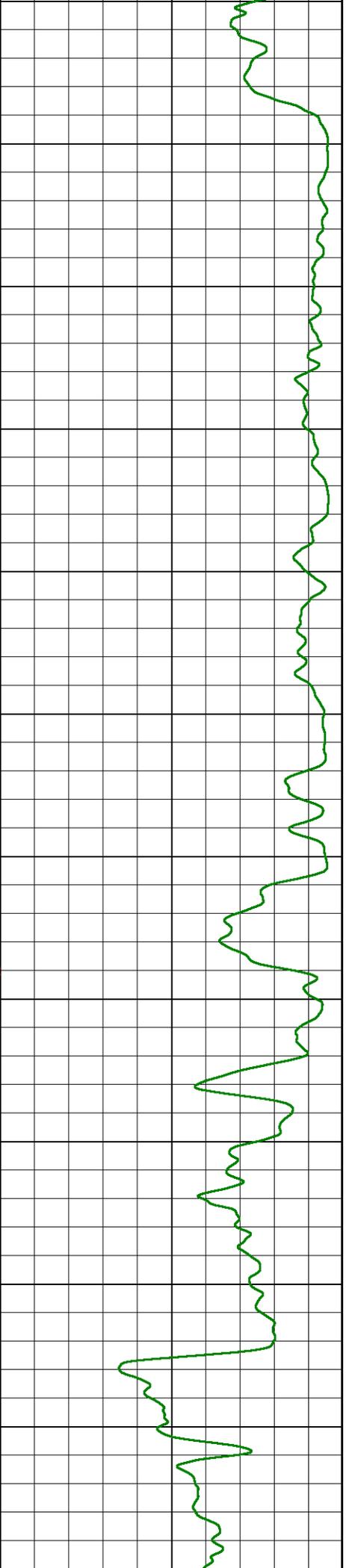
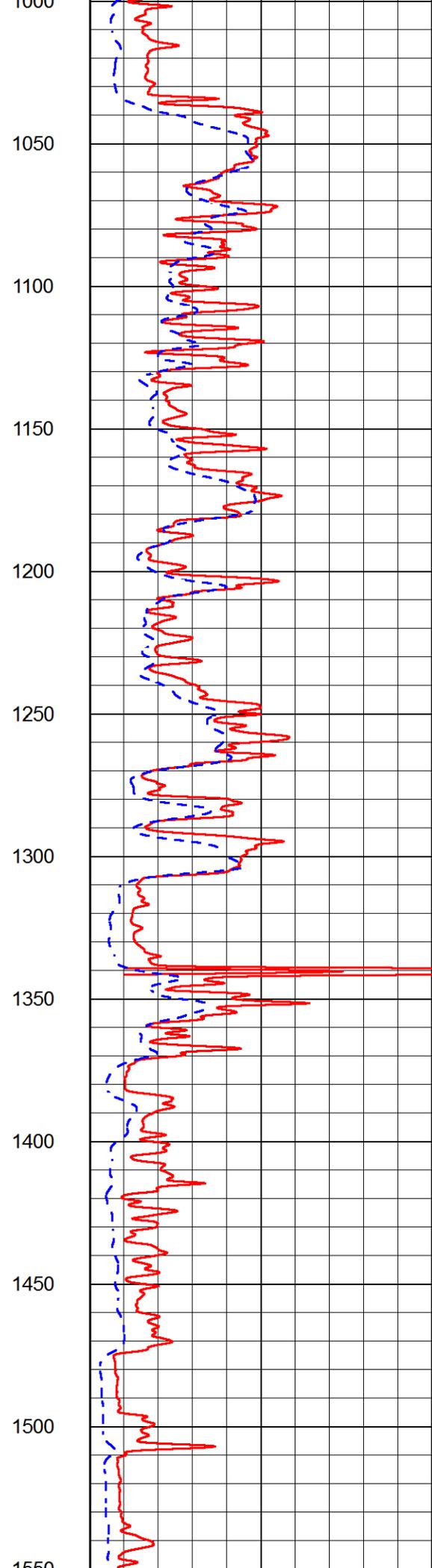
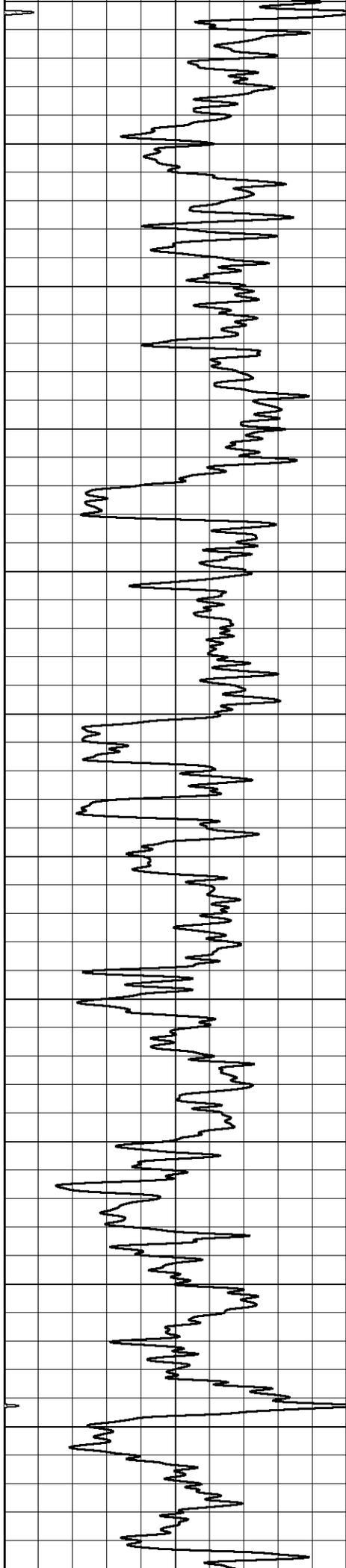
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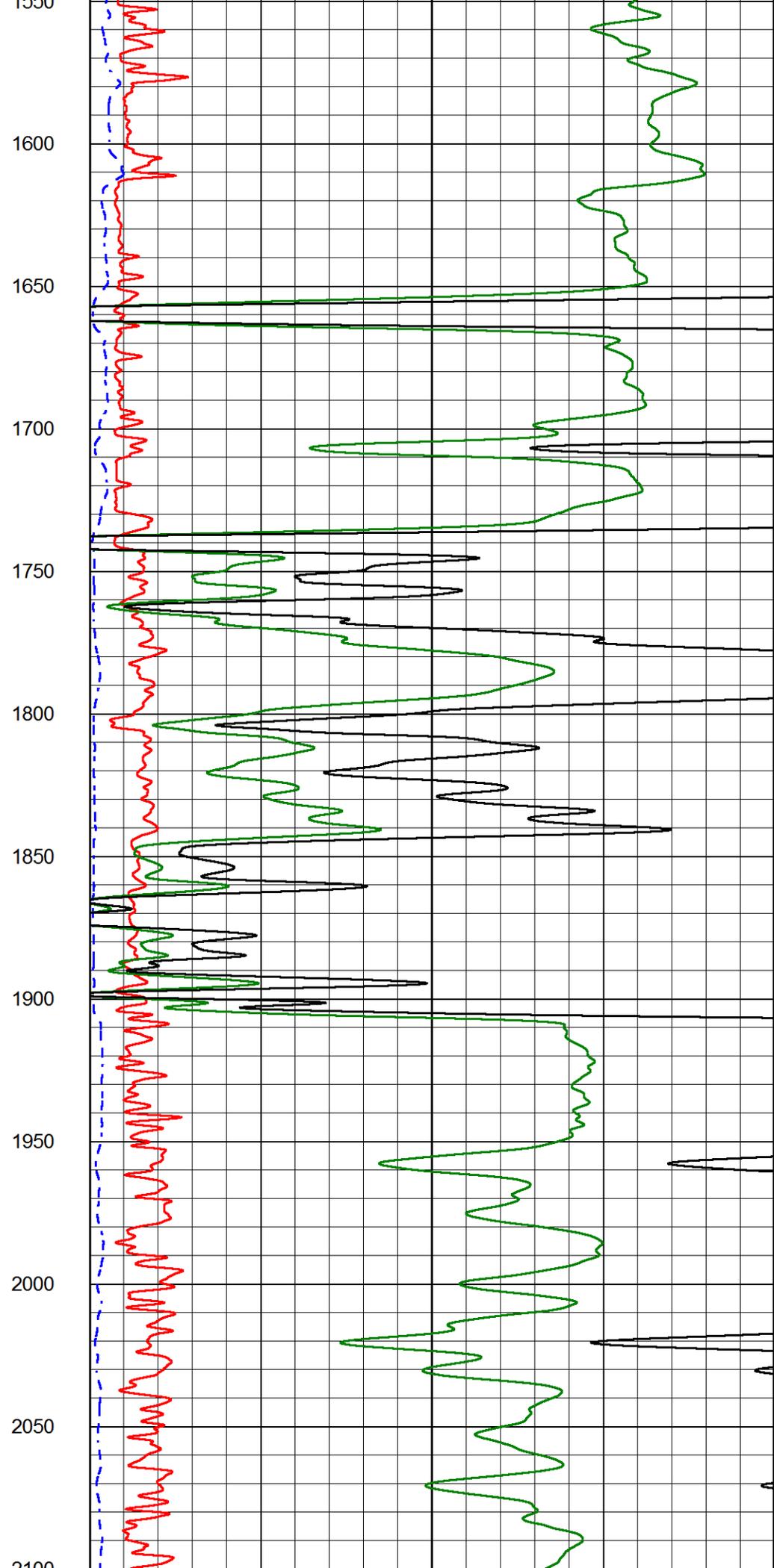
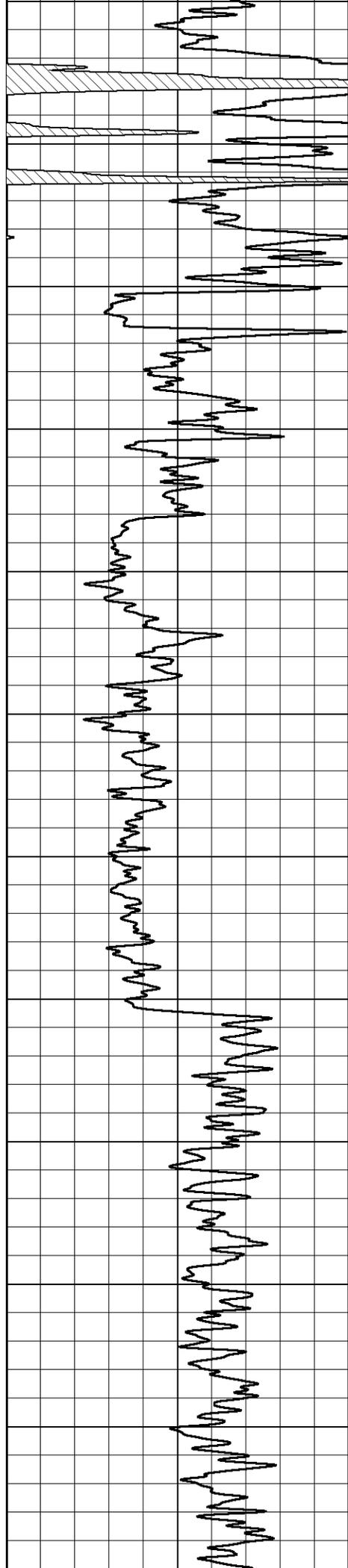
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 Charted by Depth in Feet scaled 1:600

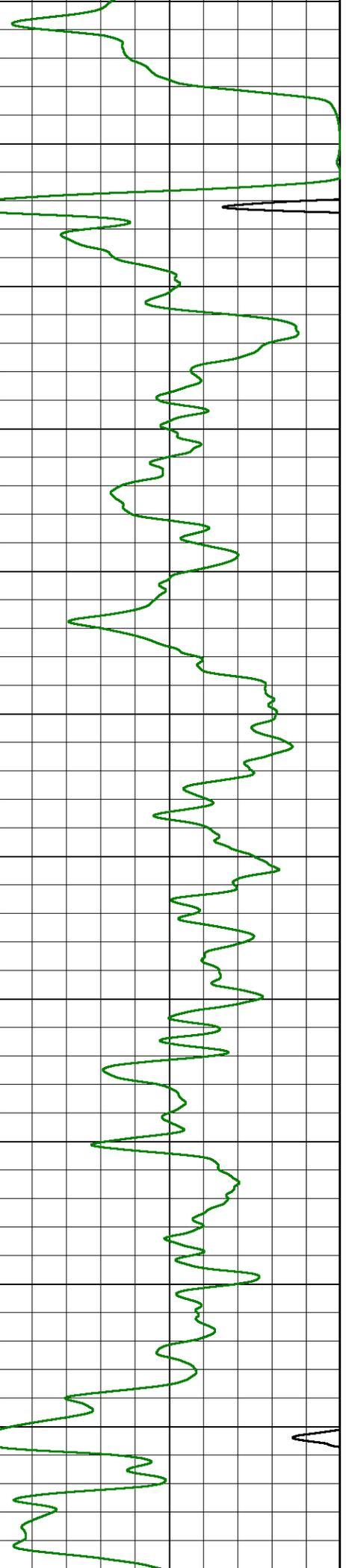
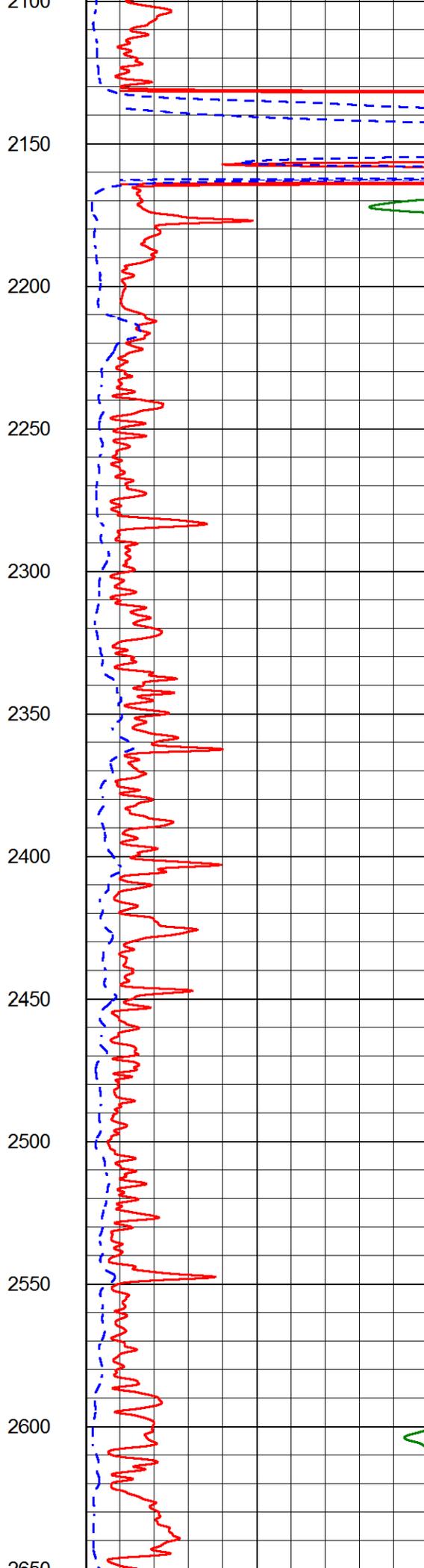
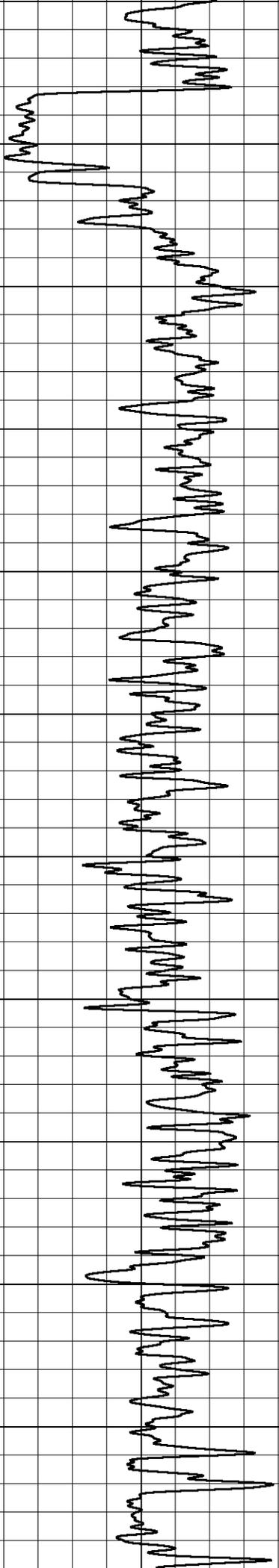
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			0	RLL3 (Ohm-m)	50
			0	DEEP RESISTIVITY (Ohm-m)	50
			50	RLL3 (Ohm-m)	200
			50	RILD (Ohm-m)	200

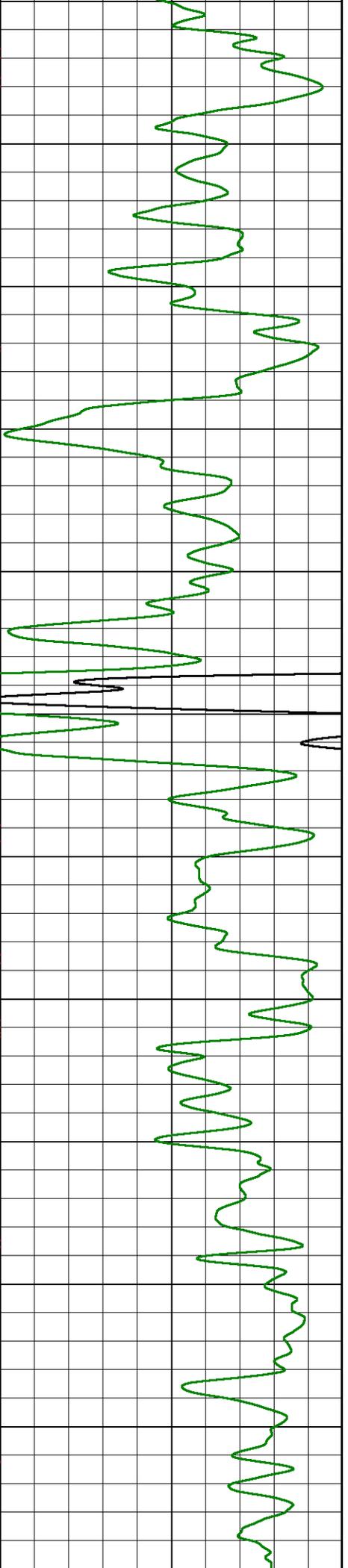
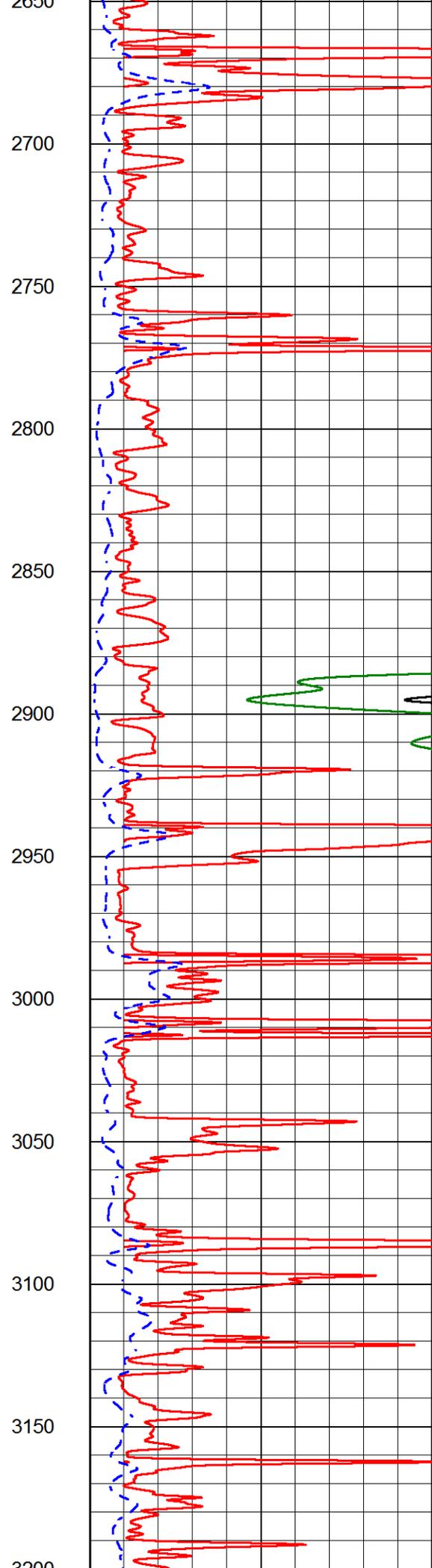
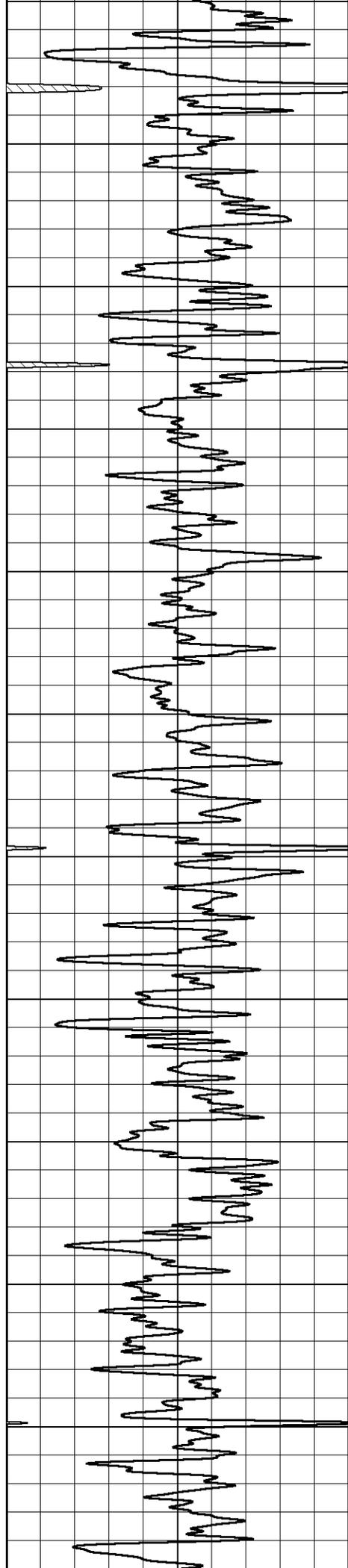


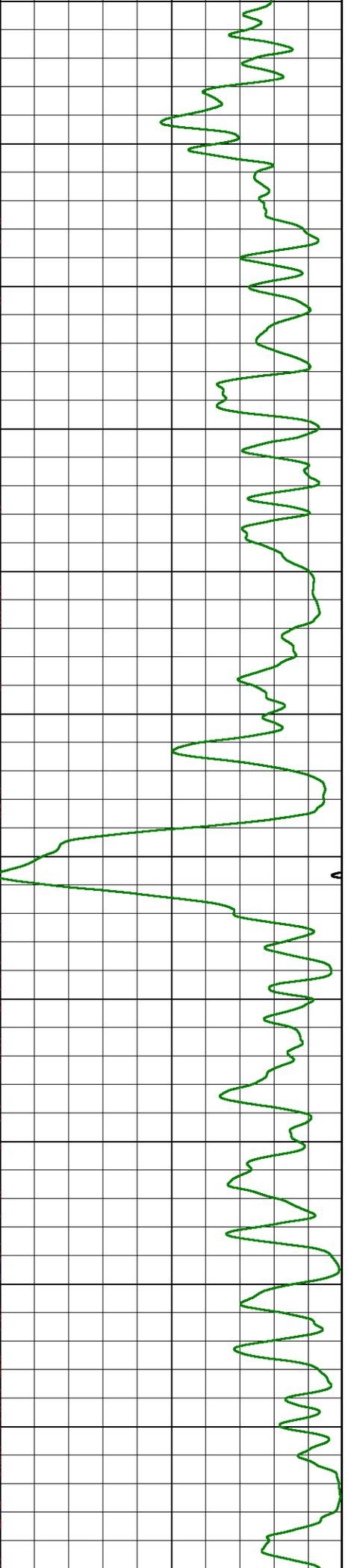
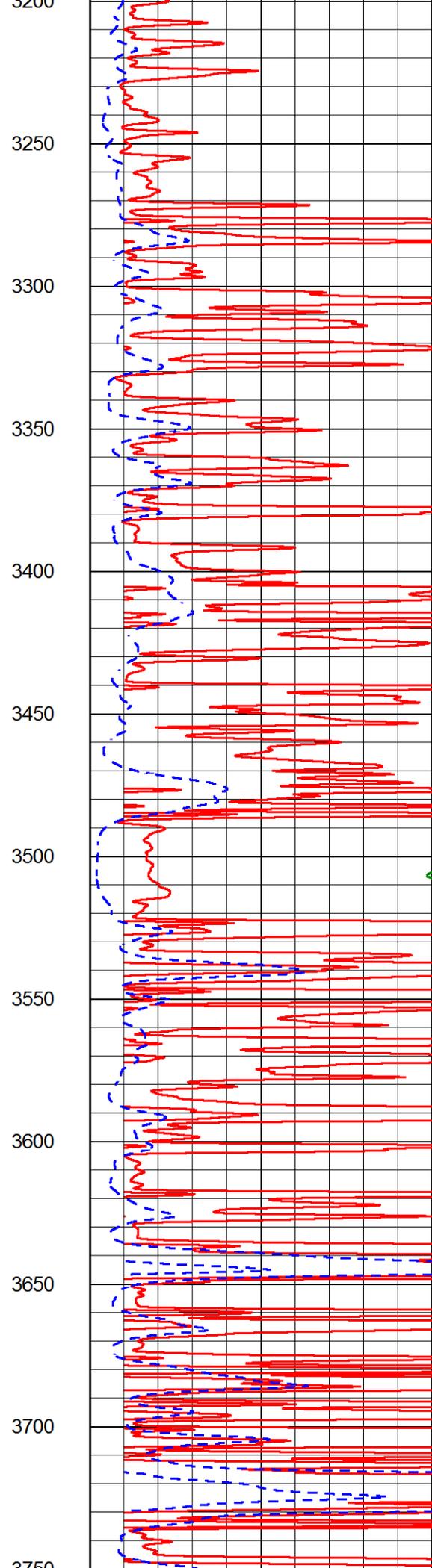
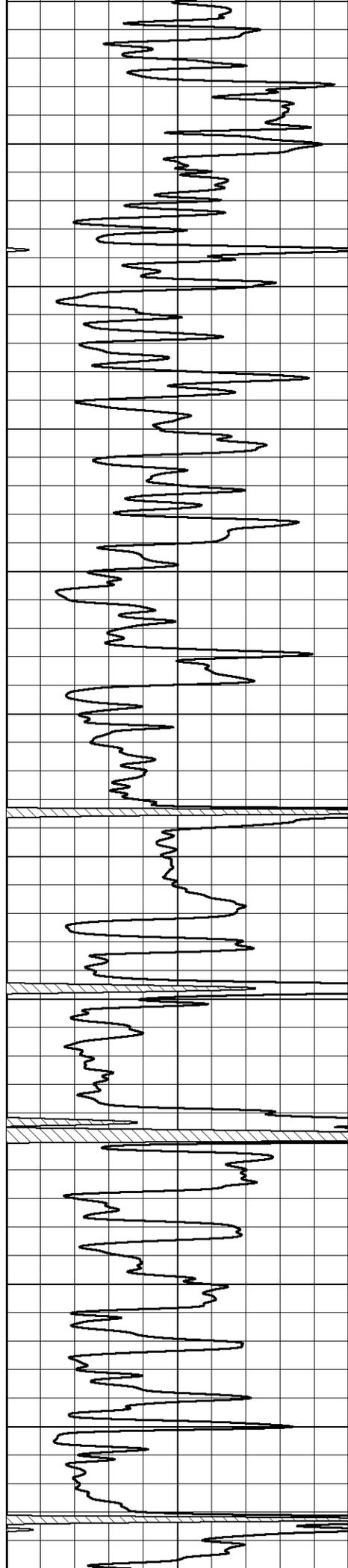


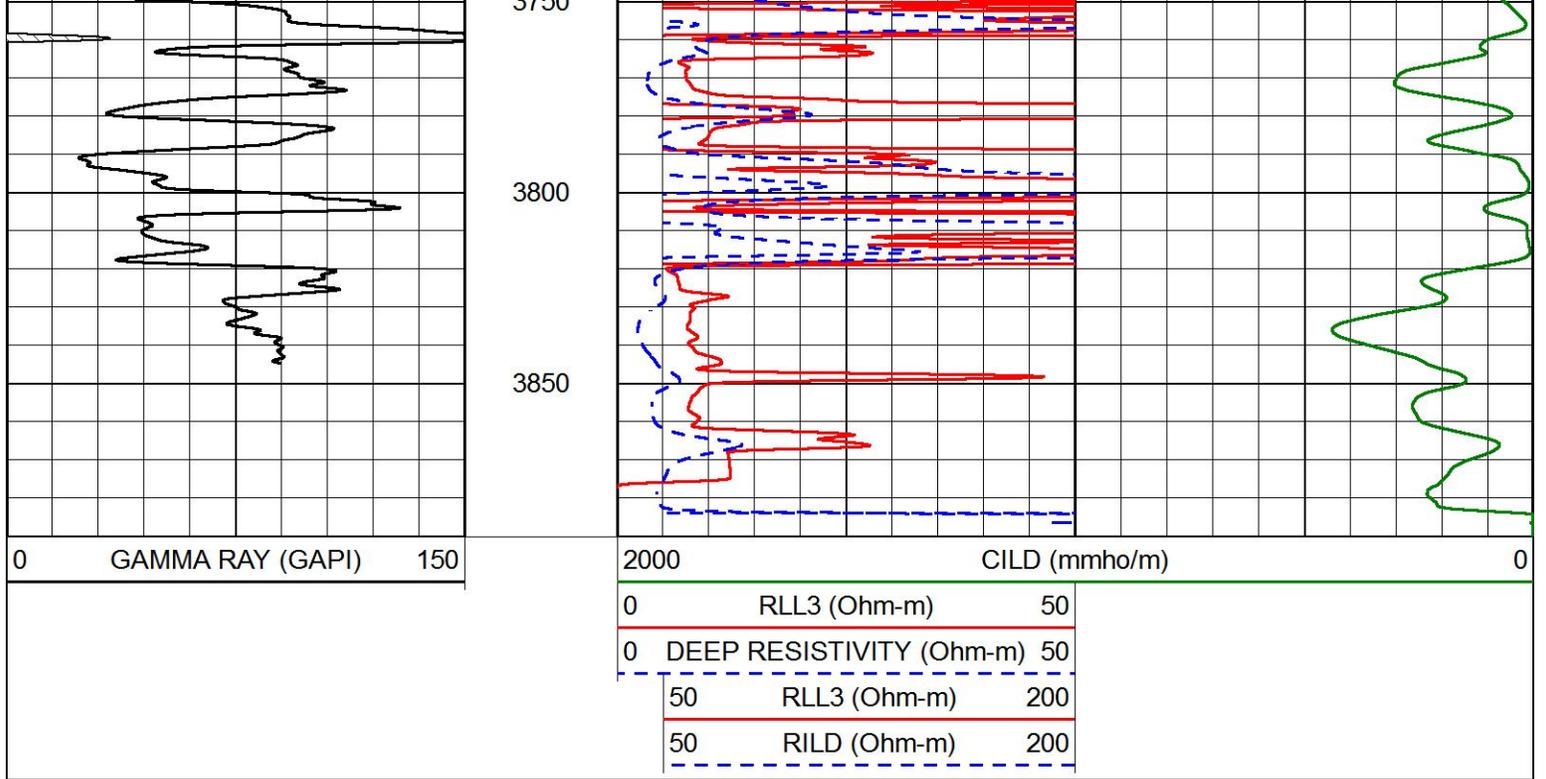








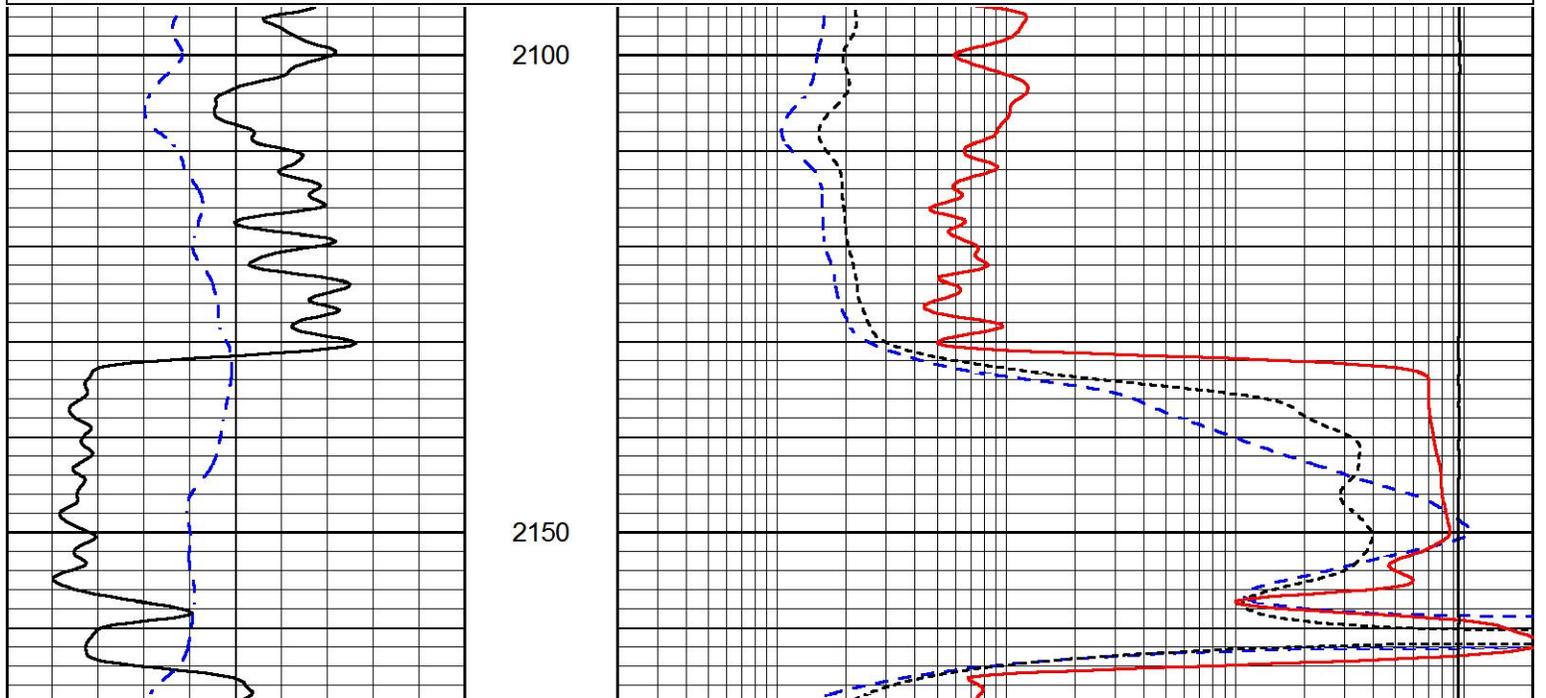


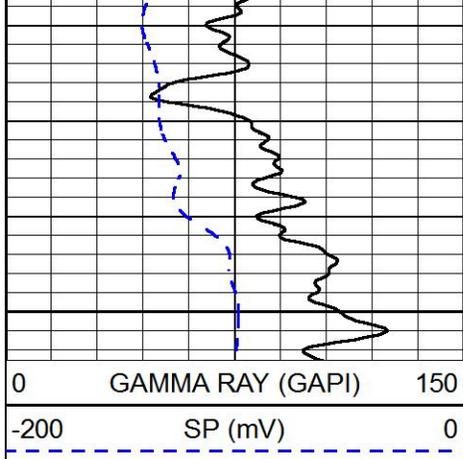


MAIN PASS

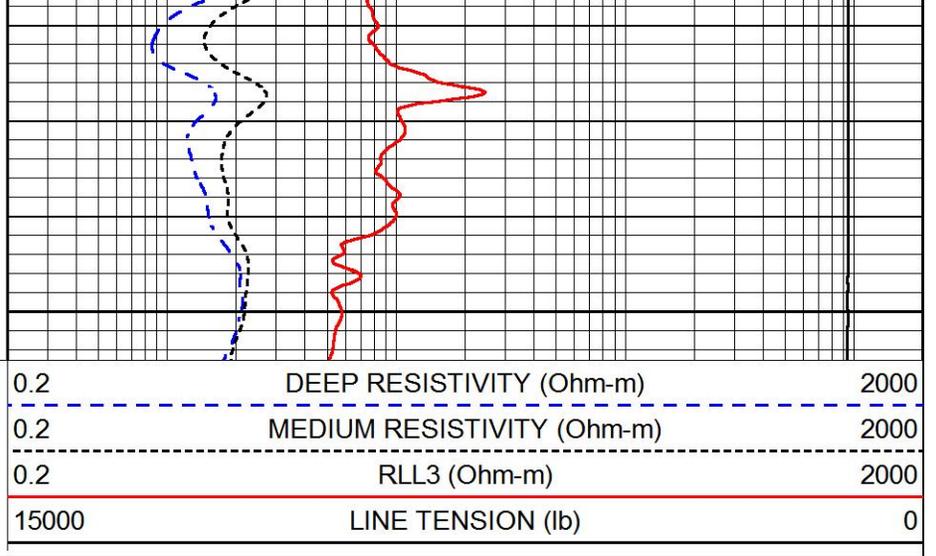
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 Presentation Format dil
 Dataset Creation Thu Feb 13 03:20:08 2020
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	0.2	DEEP RESISTIVITY (Ohm-m)	2000
-200	SP (mV)	0	0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
			0.2	RLL3 (Ohm-m)	2000
			15000	LINE TENSION (lb)	0



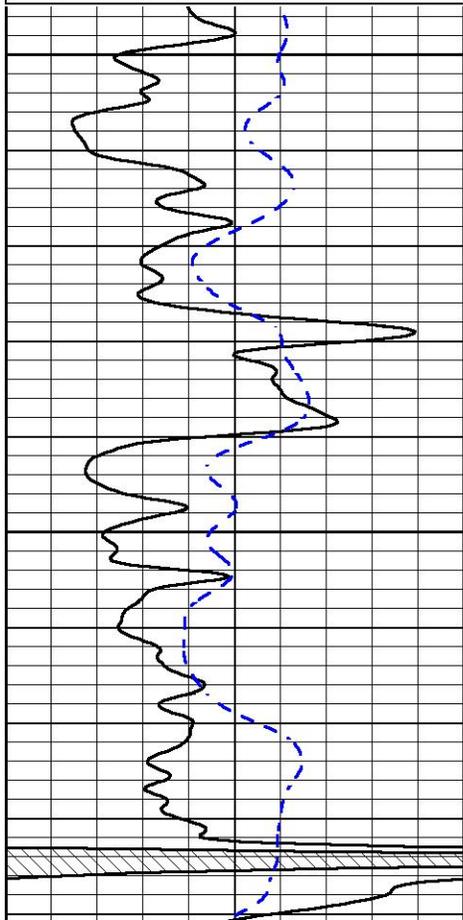
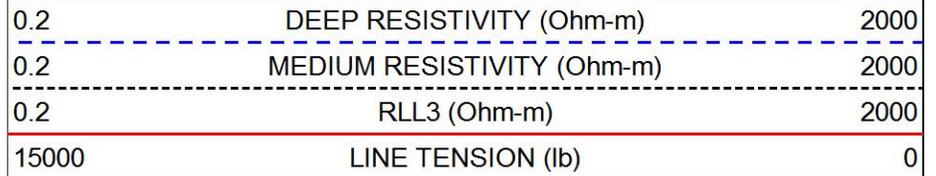
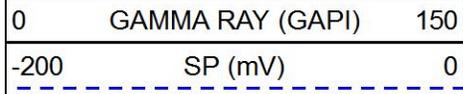


2200



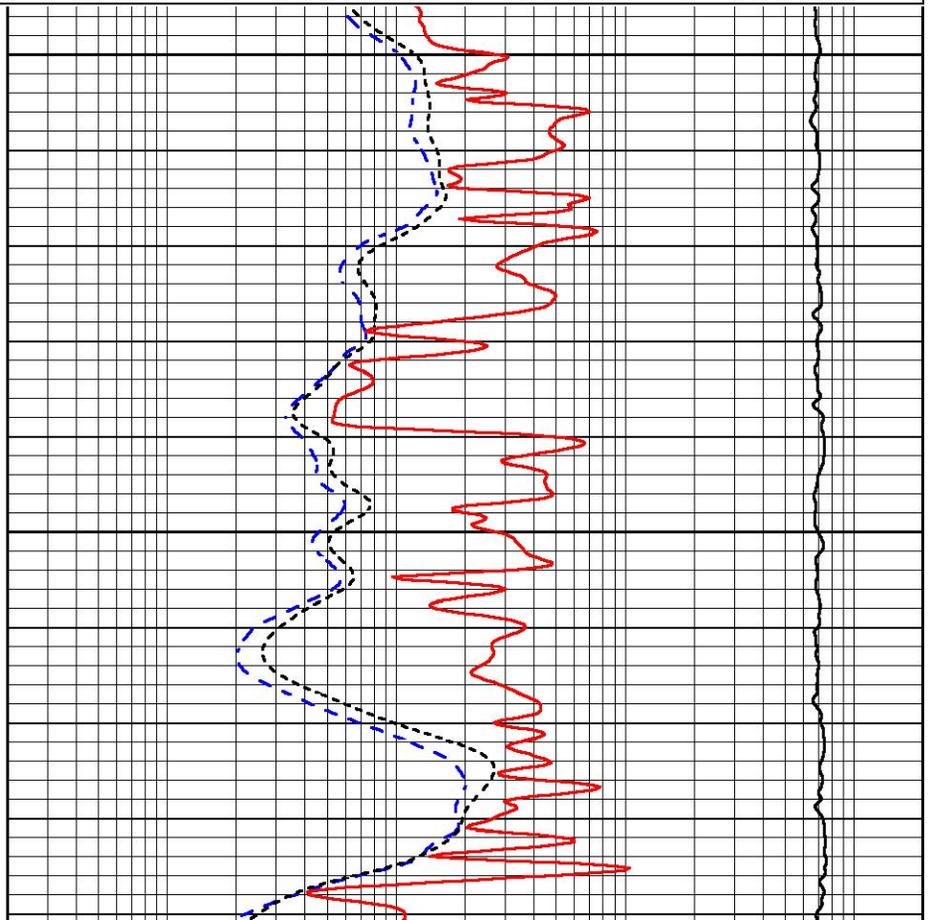
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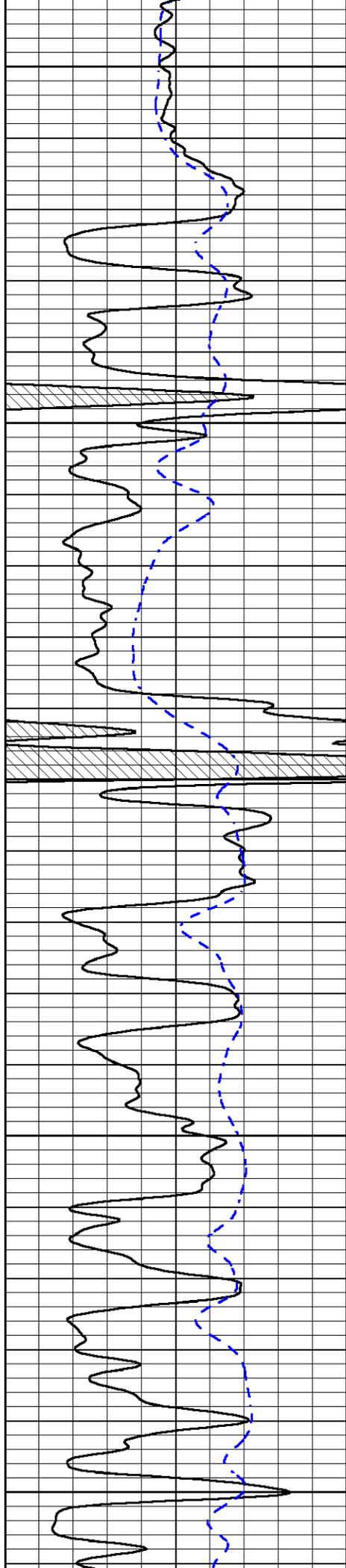
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3400

3450





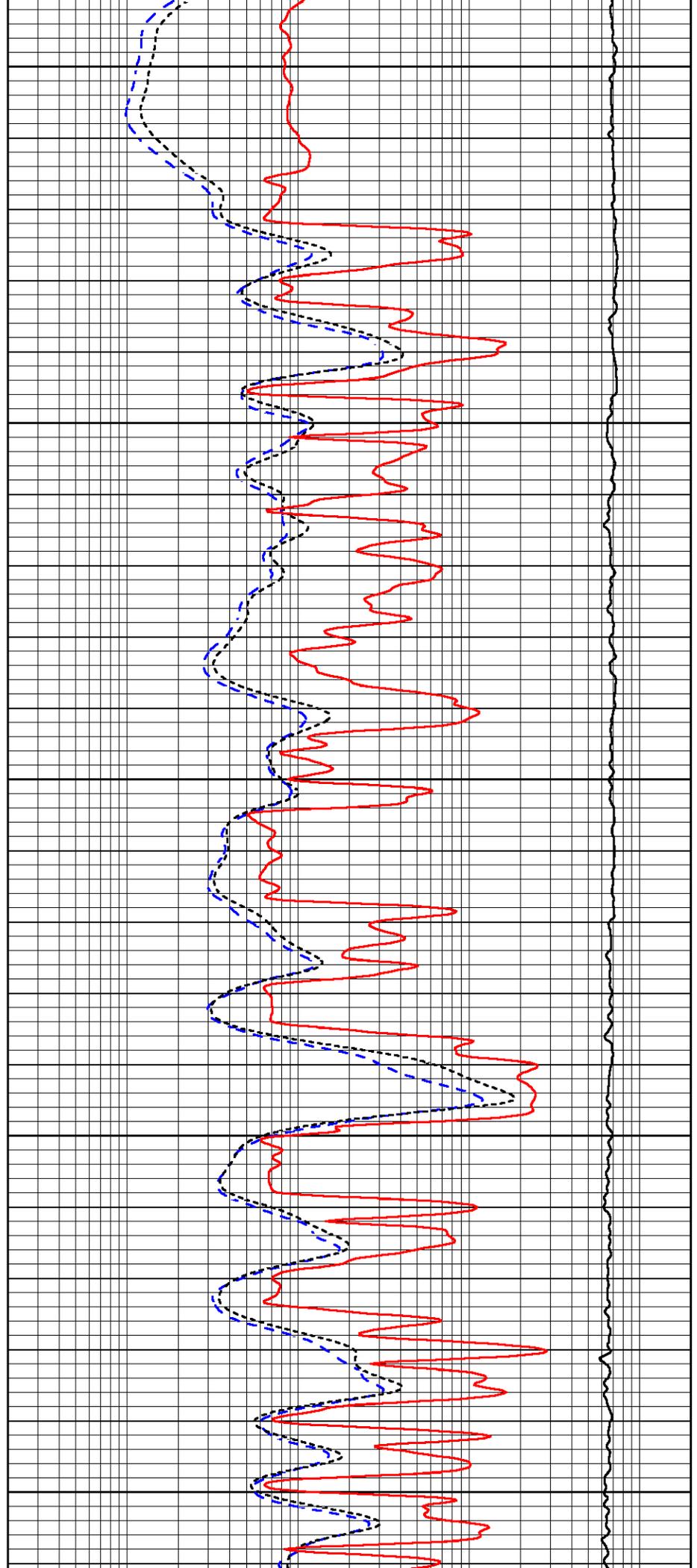
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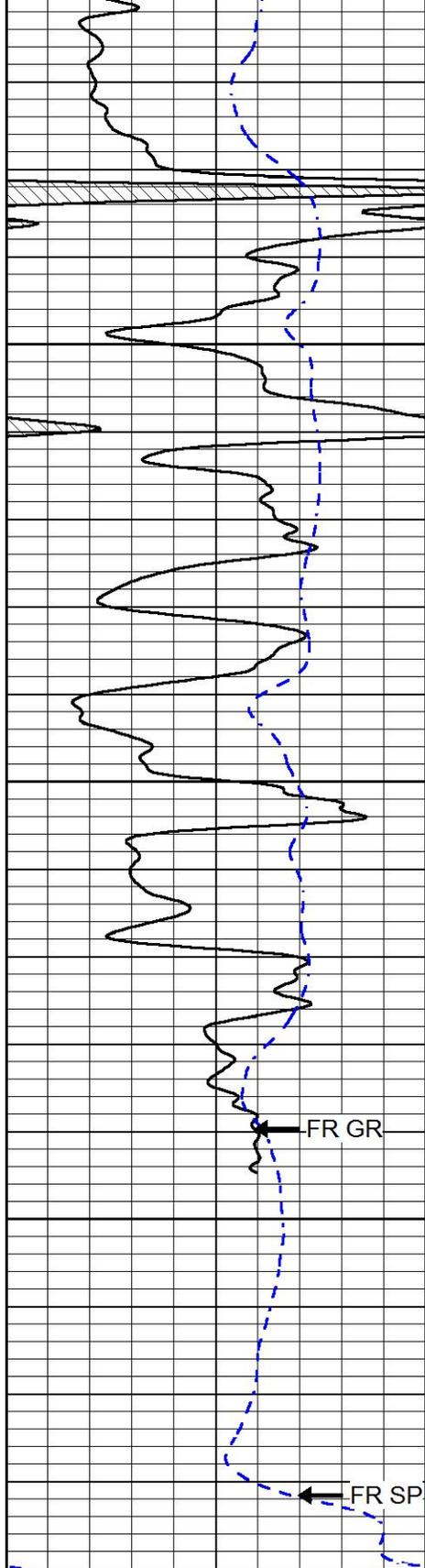
3550

3600

3650

3700





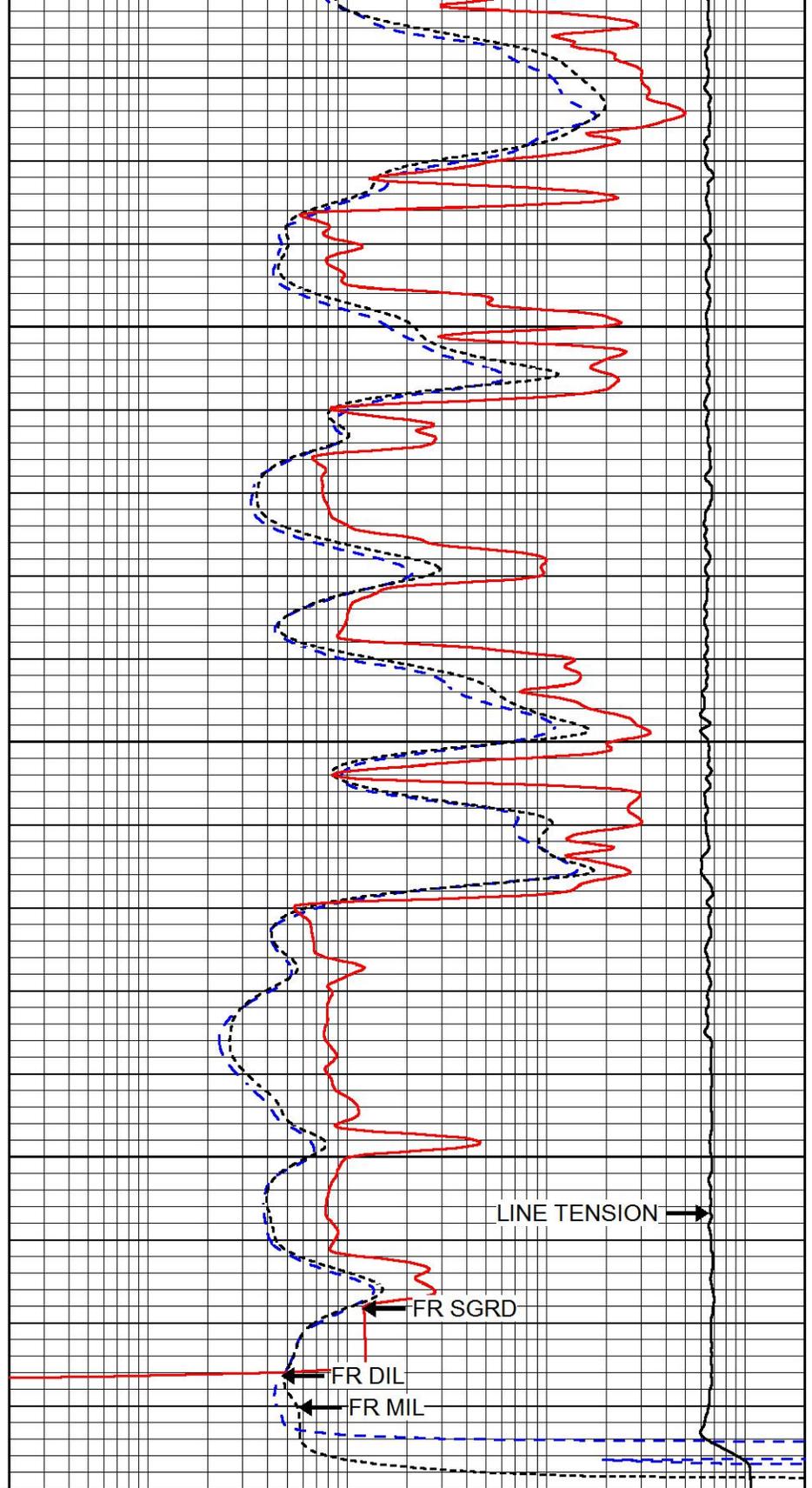
3750

3800

3850

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
 15000 LINE TENSION (lb) 0



LINE TENSION →

← FR SGRD

← FR DIL

← FR MIL

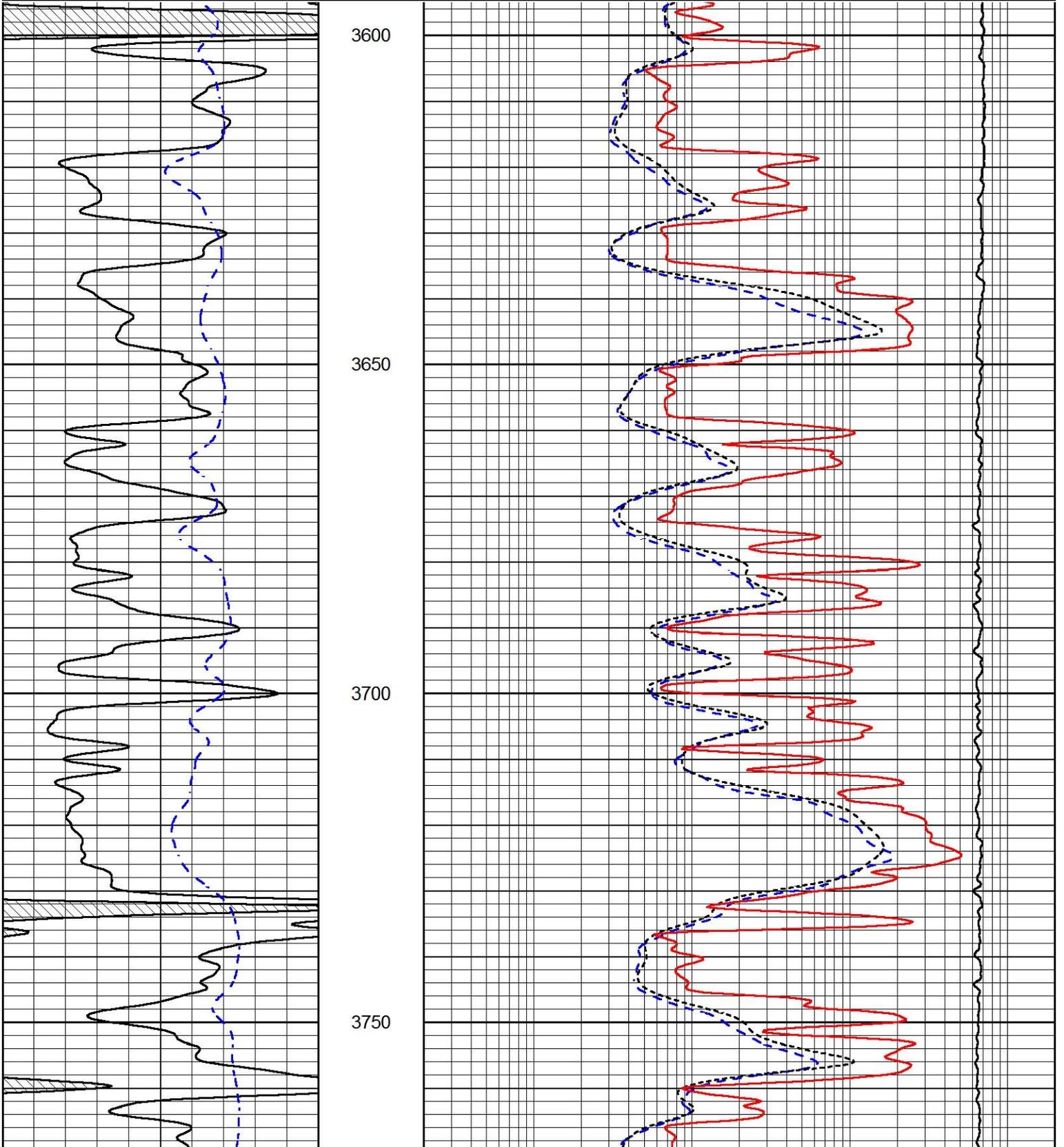


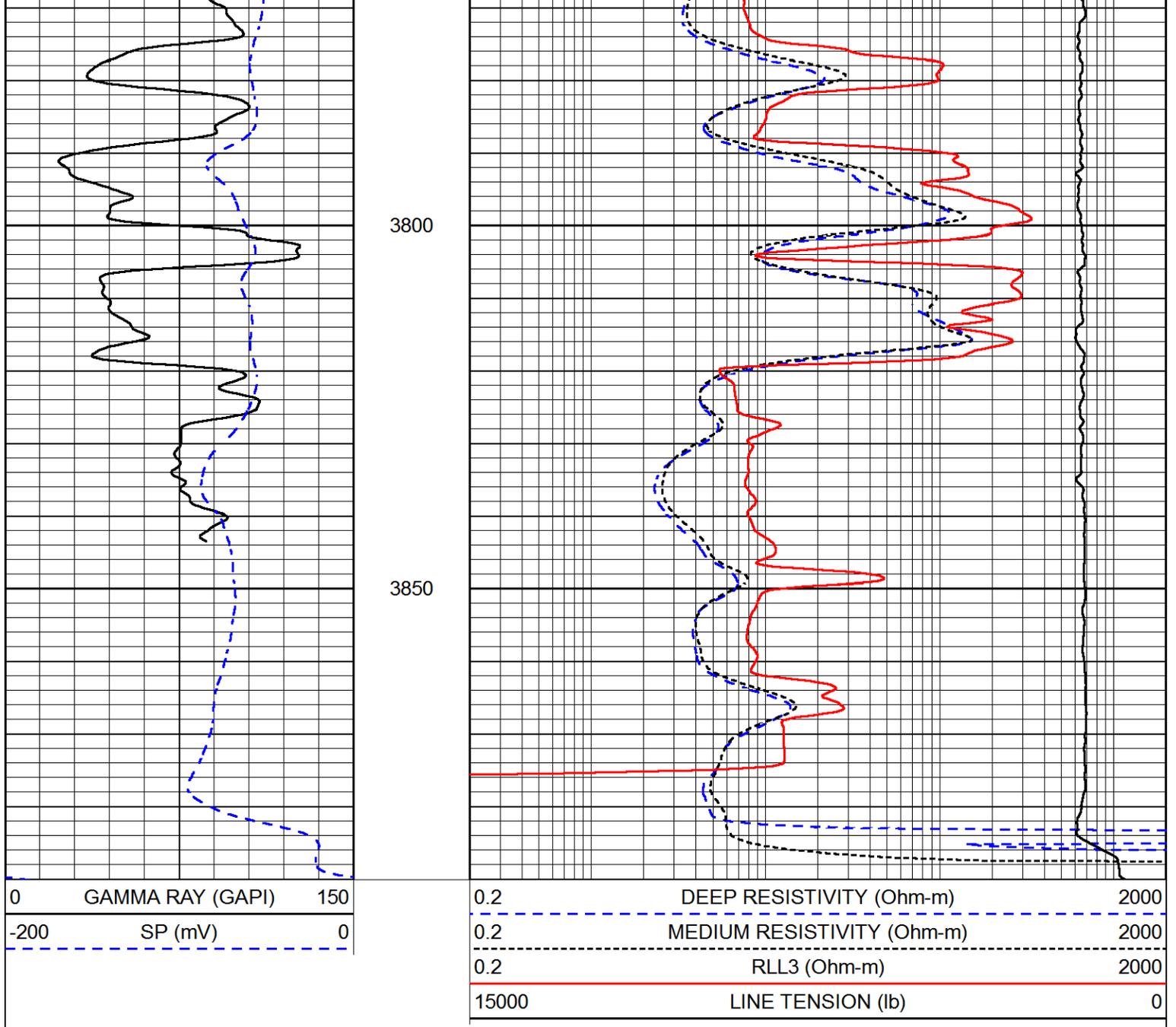
REPEAT SECTION

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 Presentation Format dil
 Dataset Creation Thu Feb 13 03:06:17 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
15000	LINE TENSION (lb)	0





Calibration Report

Database File cobalt_cheryl_#1_17.db
Dataset Pathname stackmel/pass4.11
Dataset Creation Thu Feb 13 02:45:23 2020

Dual Induction Calibration Report

Serial-Model: 55-222-M&W
Calibration Performed: Tue Dec 10 05:11:10 2019

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.800	mmho/m	0.500	-41.000
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.370	-15.000

Microlog Calibration Report

Serial-Model: UDM-01-PSI UDM ML

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	17000.0000	-1.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	17000.0000	-1.0000
Caliper	1.0019	1.2642	8.0000	22.0000	in	53.3774	-47.5000

Compensated Density Calibration Report

Serial-Model: 934-229-M&W
 Source / Verifier: 21170B /
 Master Calibration Performed: Thu Dec 19 15:46:53 2019

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	3391.68	2392.26	cps
Aluminum	2.670	g/cc	645.86	1568.99	cps
Spine Angle = 75.73			Density/Spine Ratio = 0.535		
	Size		Reading		
Small Ring	4.00	in	1.39		
Large Ring	14.00	in	1.04		

Compensated Neutron Calibration Report

Serial Number: tk10-MW
 Tool Model: M&W
 Calibration Performed: Wed Nov 16 11:21:36 2016

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-M&W
 Tool Model: M&W
 Calibration Performed: Tue Dec 10 05:11:34 2019

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps



PIONEER

Pioneer Energy Services

Company COBALT ENERGY, LLC
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