



# DUAL INDUCTION LOG

Company CANYON OPERATING, LLC  
 Well B BAR B # 25-2  
 Field HILL CITY SOUTH  
 County GRAHAM  
 State KANSAS

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Location: API #: 15-065-24167-00-00  
 860' FSL & 1520' FEL  
 SEC 25 TWP 8S RGE 23W  
 Permanent Datum GROUND LEVEL Elevation 2281'  
 Log Measured From KELLY BUSHING  
 Drilling Measured From KELLY BUSHING  
 Other Services  
 CNL/CDL  
 MEL  
 Elevation  
 K.B. 2288'  
 D.F. N/A  
 G.L. 2281'

Date	7/22/2019
Run Number	ONE
Depth Driller	3850'
Depth Logger	3848'
Bottom Logged Interval	3847'
Top Log Interval	200'
Casing Driller	8.625" @ 210'
Casing Logger	208'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	2800
Density / Viscosity	9.3 60
pH / Fluid Loss	10.0 7.8
Source of Sample	FLOWLINE
Rm @ Meas. Temp	.85 @ 75
Rmt @ Meas. Temp	.64 @ 75
Rmc @ Meas. Temp	1.15 @ 75
Source of Rmf / Rmc	CHARTS
Rm @ BHT	.56 @ 115
Operating Rig Time	3 HOURS
Max Rec. Temp. F	115 DEGF
Equipment Number	P-108
Location	HAYS
Recorded By	J. HENRICKSON
Witnessed By	CLAYTON ERICKSON

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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.  
 HILL CITY, KANSAS  
 SOUTH TO N TERRACE ROAD, 1 EAST, SOUTH INTO

Log Measured From: KELLY BUSHING 7 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES  
[www.pioneerenergy.com](http://www.pioneerenergy.com) 785-625-3858

### Your Pioneer Energy Services Crew

Engineer: J. HENRICKSON  
 Operator:  
 Operator:  
 Operator:

### This Log Record Was Witnessed By


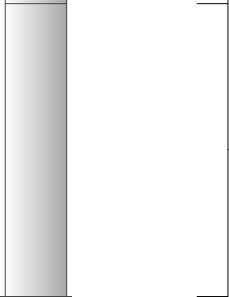
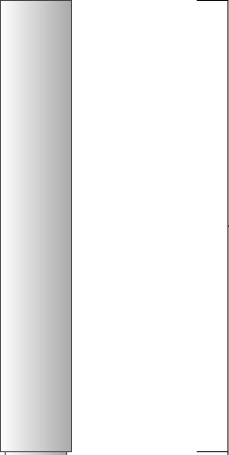

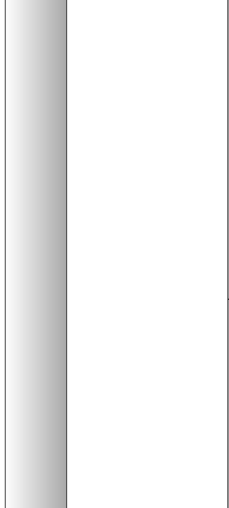
Primary Witness: CLAYTON ERICKSON  
 Secondary Witness:  
 Secondary Witness:  
 Secondary Witness:

# Log Variables

DatabaseC:\ProgramData\Warrior\Data\canyon\_b\_bar\_b\_25\_2.db  
 Dataset field/well/stack/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	135	72	Off	3848

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	33.00		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	29.90 29.15		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	20.85 20.83 20.35		CDL-M&W (144-84)	8.50	4.00	250.00
RLL3 RLL3F	15.80 15.79					
CILD	8.00		DIL-M&W (PSI 988)	18.50	3.50	220.00

CILM 4.70

SP 0.20

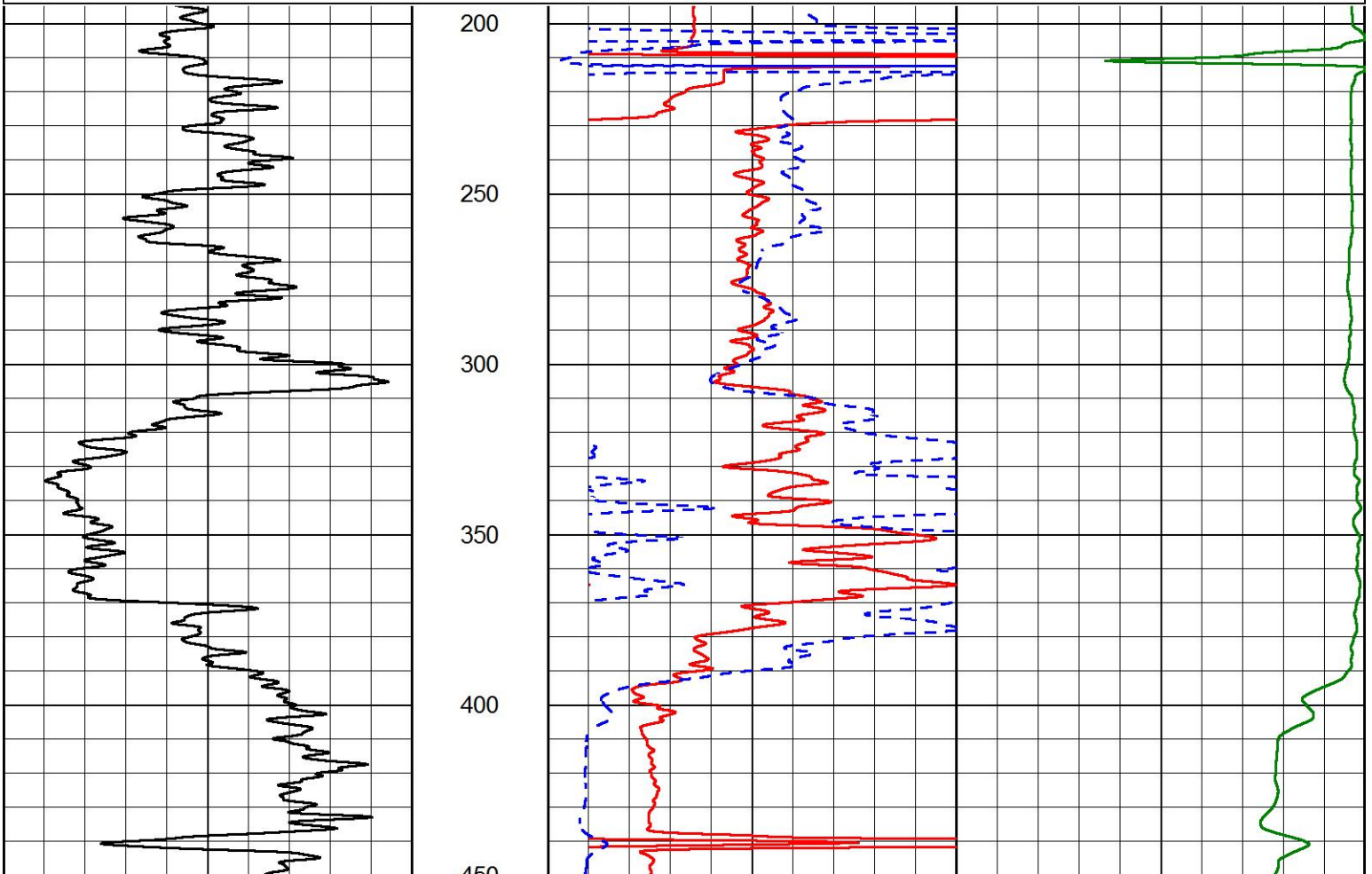
Dataset: canyon\_b\_bar\_b\_25\_2.db: field/well/stack/pass4.1  
 Total length: 35.50 ft  
 Total weight: 620.00 lb  
 O.D.: 4.00 in

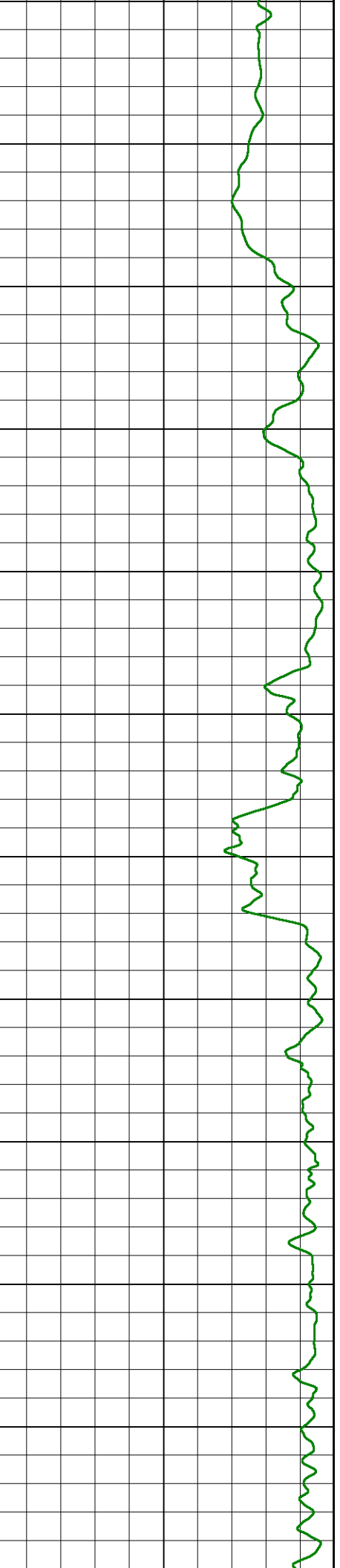
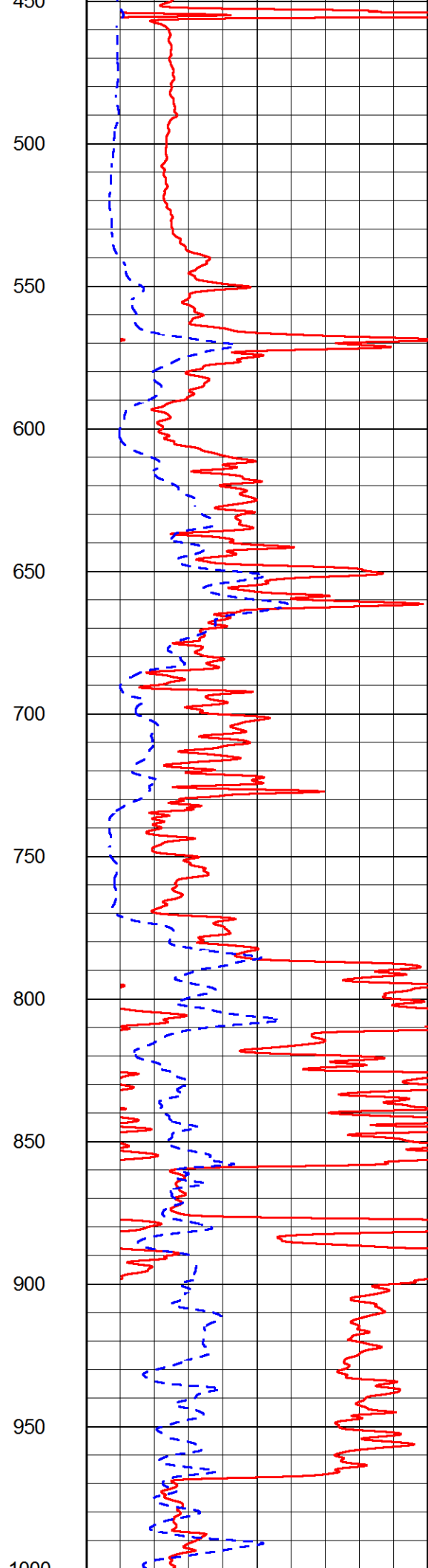
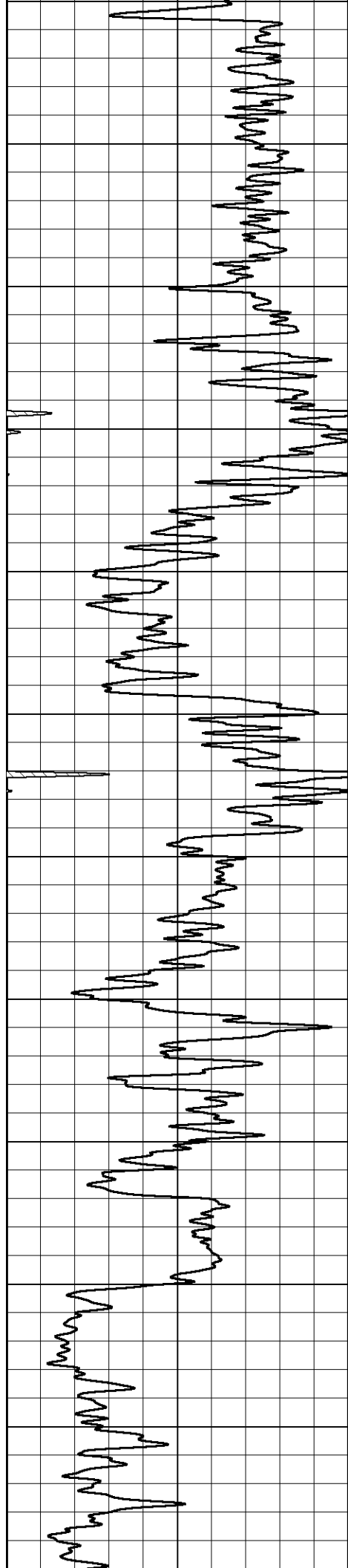


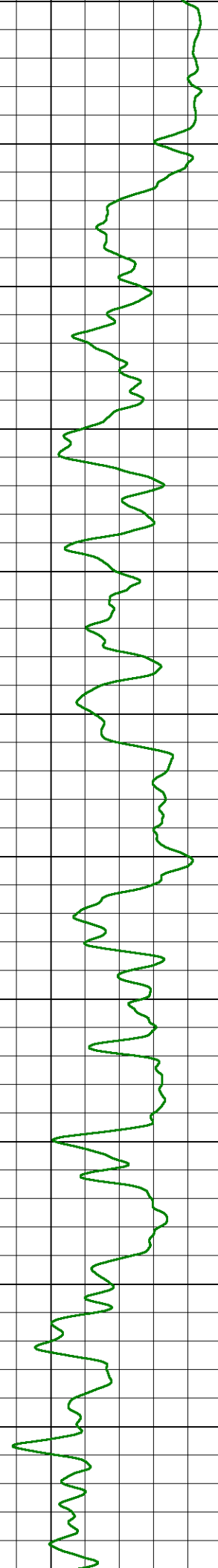
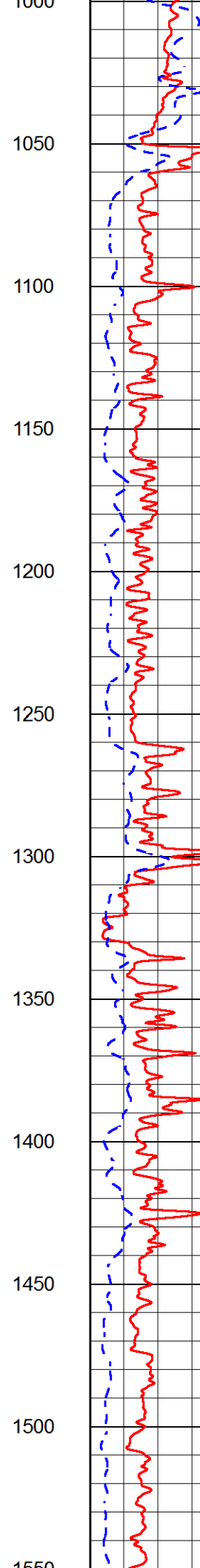
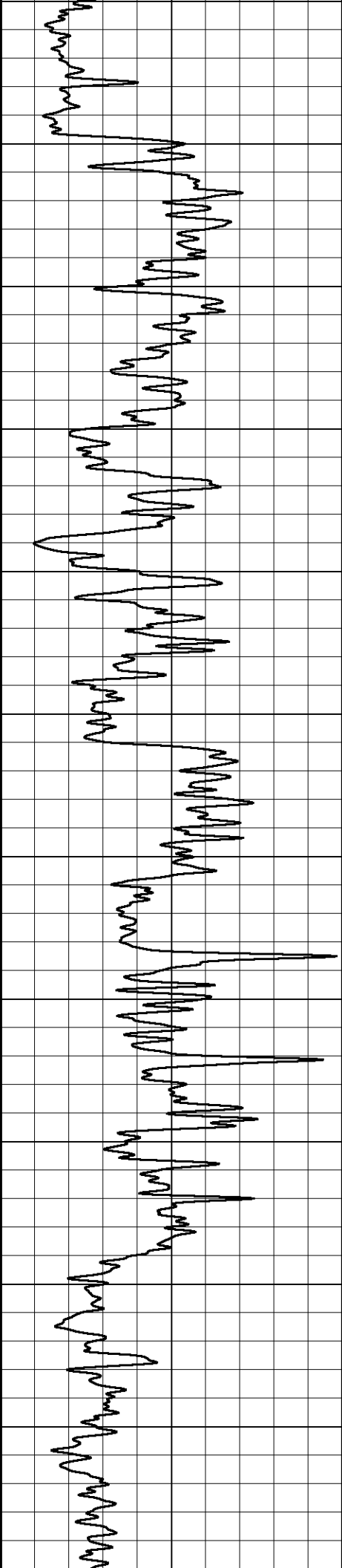
# MAIN PASS

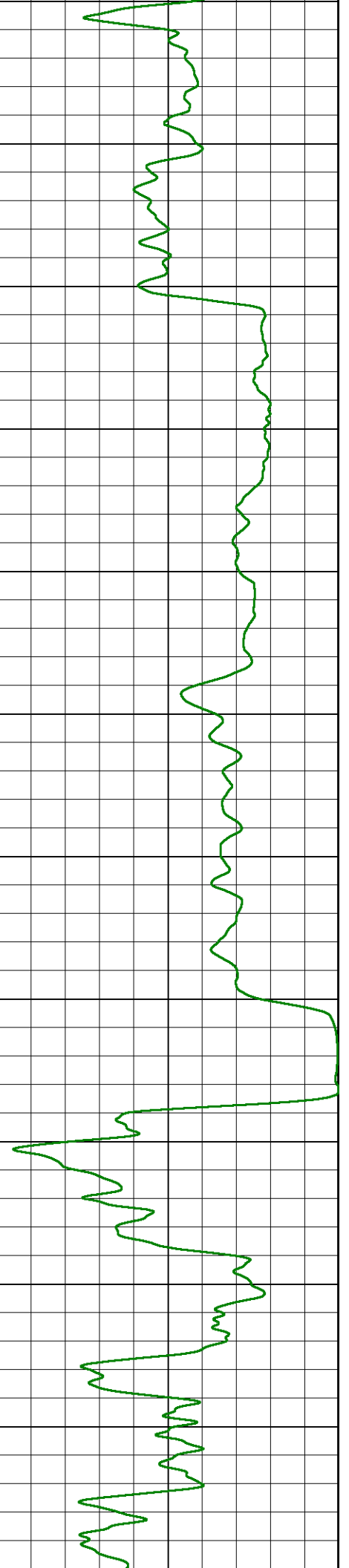
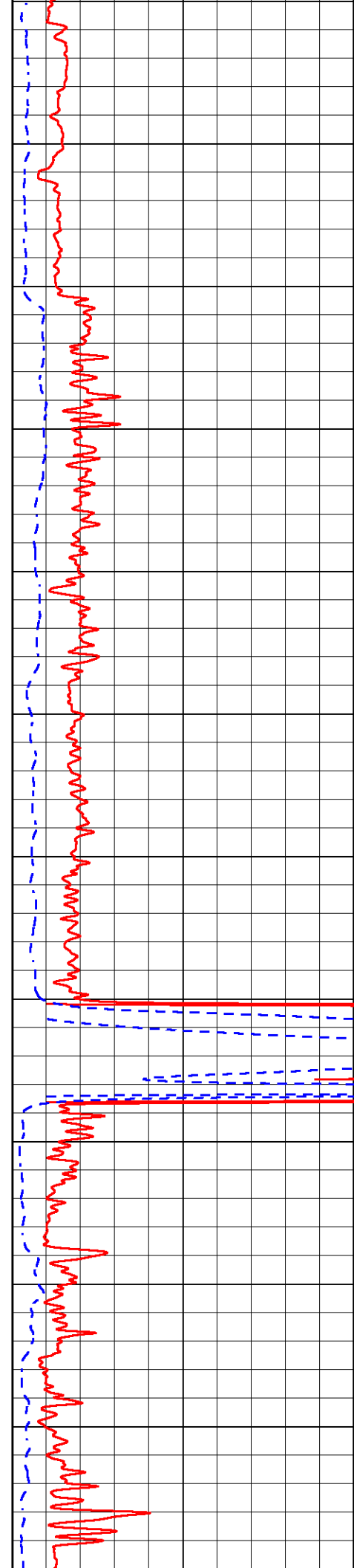
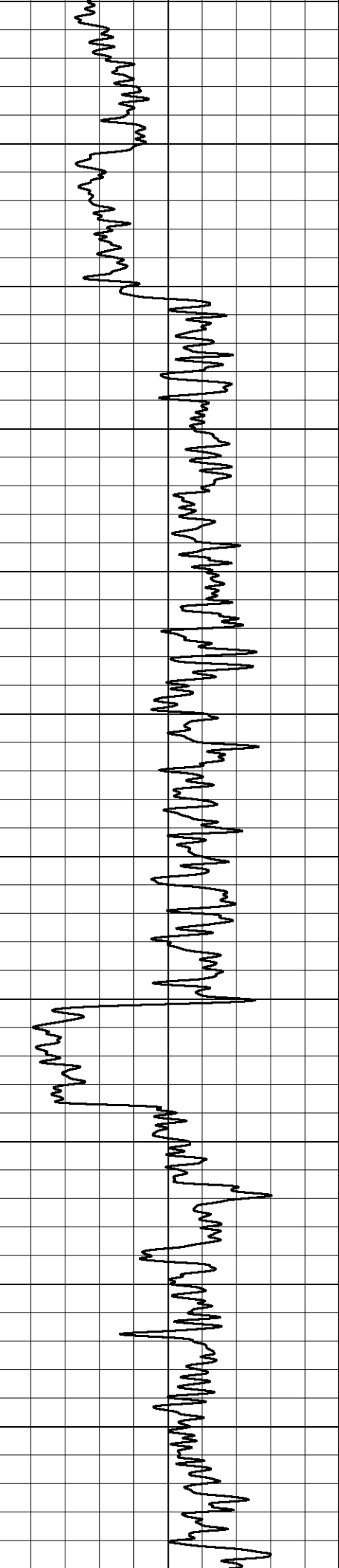
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 Dataset Pathname stack/pass4.1  
 Presentation Format dil2in  
 Dataset Creation Mon Jul 22 15:20:06 2019  
 Charted by Depth in Feet scaled 1:600

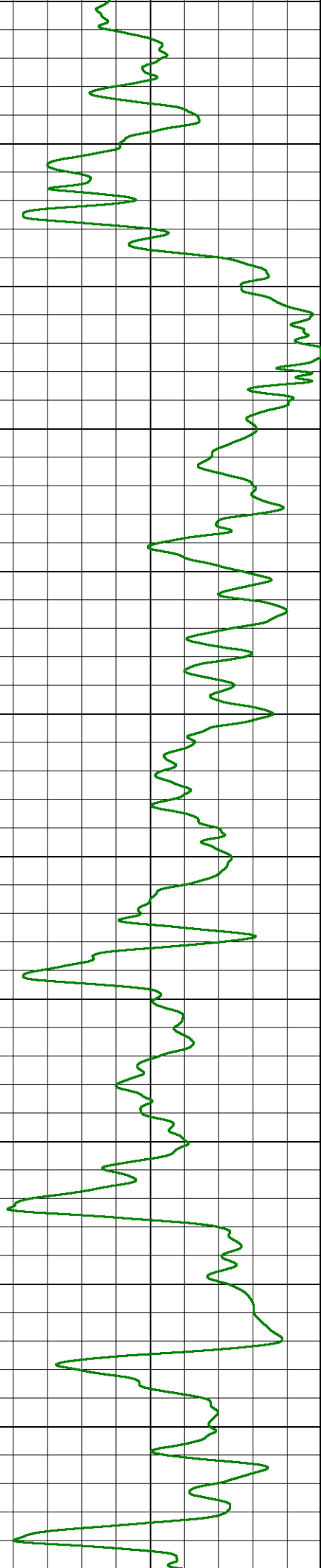
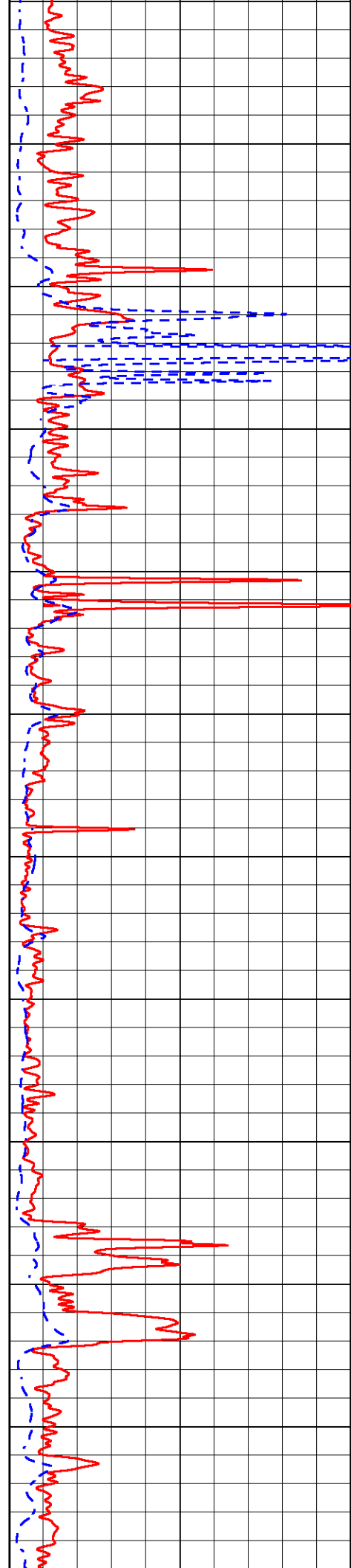
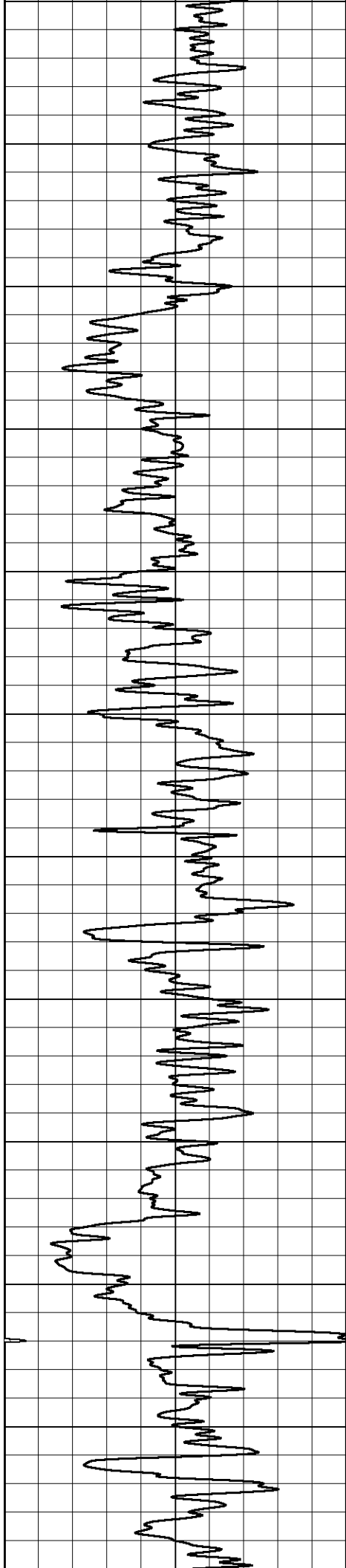
0	GAMMA RAY (GAPI)	150	2000	CILD (mmho/m)	0
			0	RLL3 (Ohm-m)	50
			0	DEEP RESISTIVITY (Ohm-m)	50
			50	RLL3 (Ohm-m)	200
			50	RILD (Ohm-m)	200

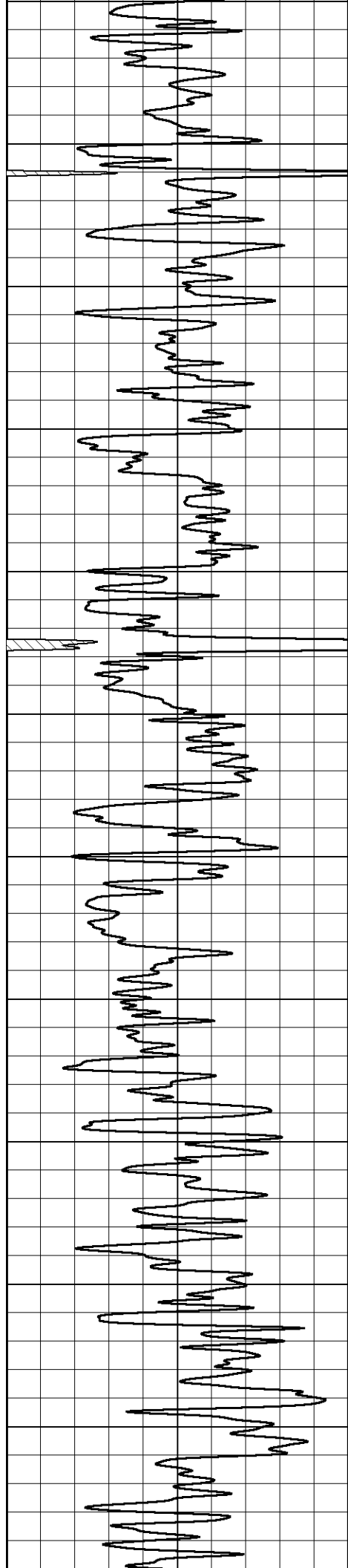




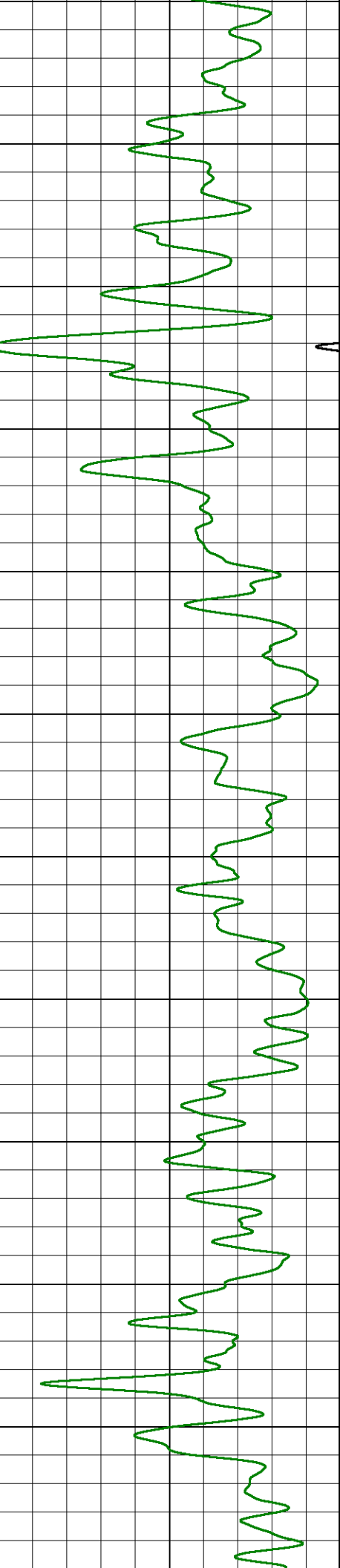
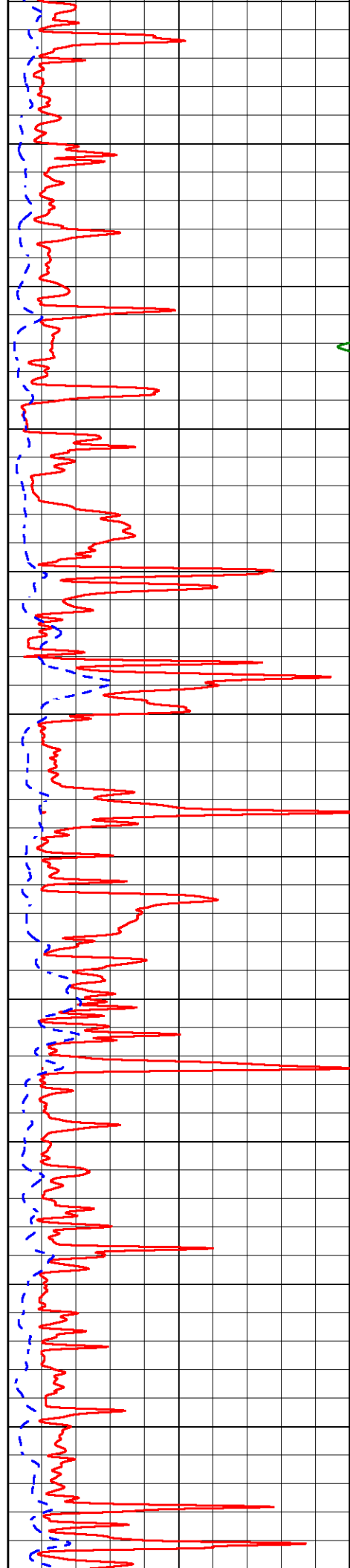


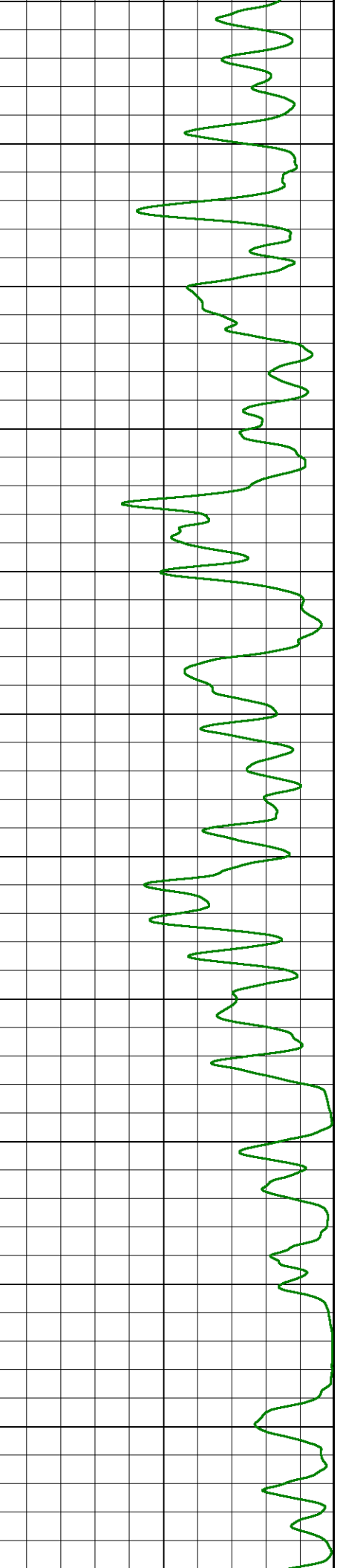
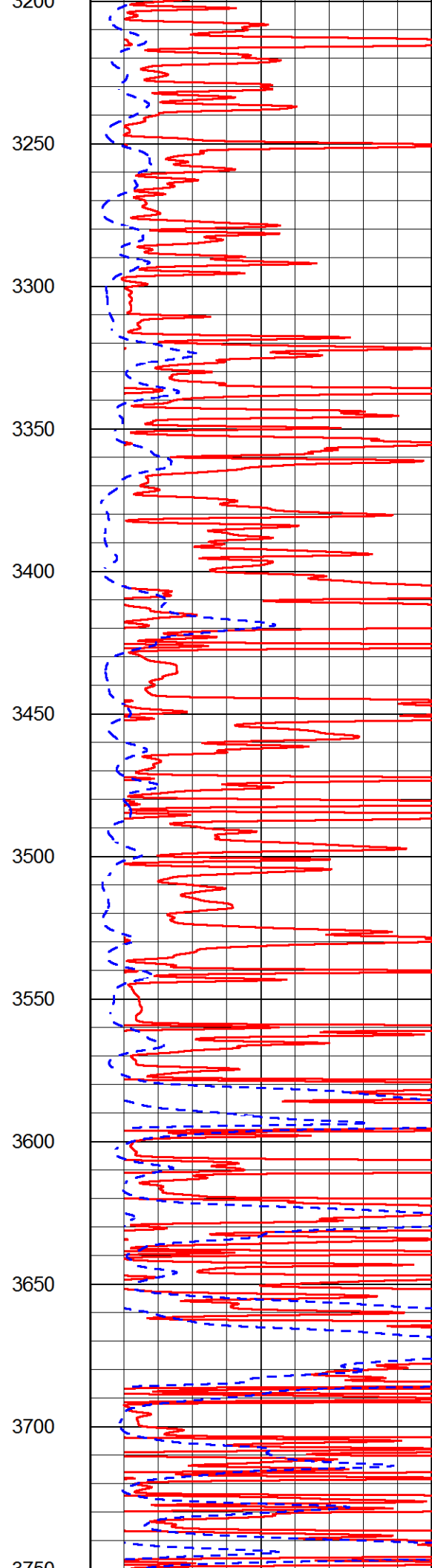
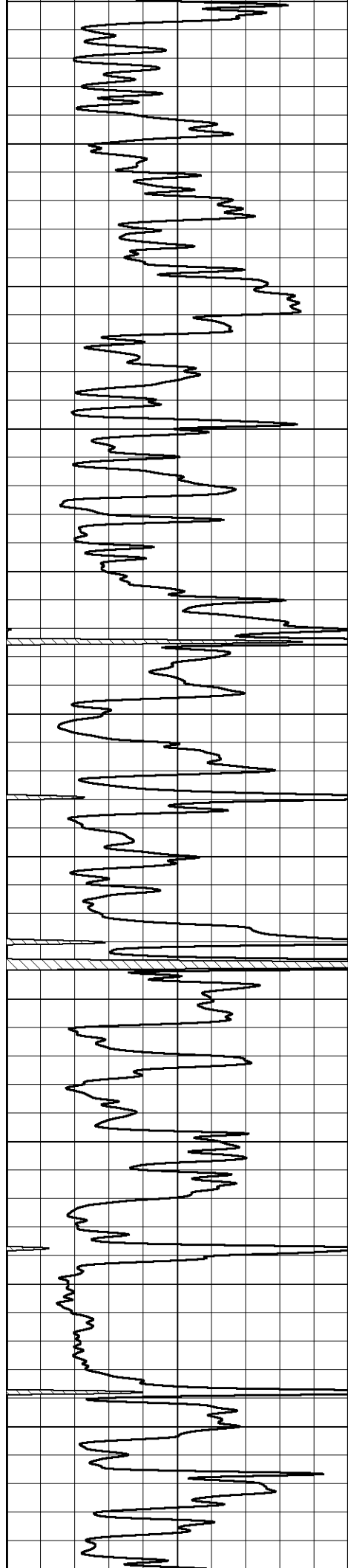


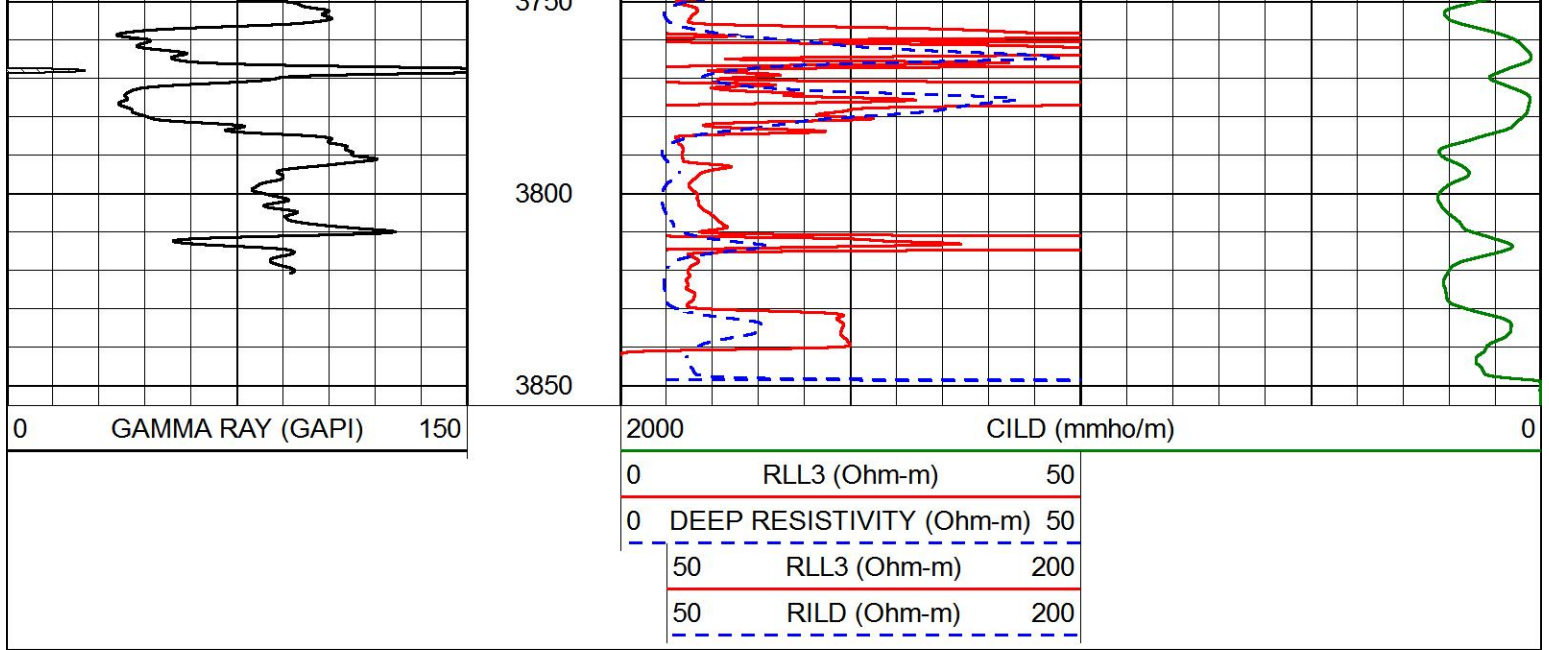




2650  
2700  
2750  
2800  
2850  
2900  
2950  
3000  
3050  
3100  
3150  
3200



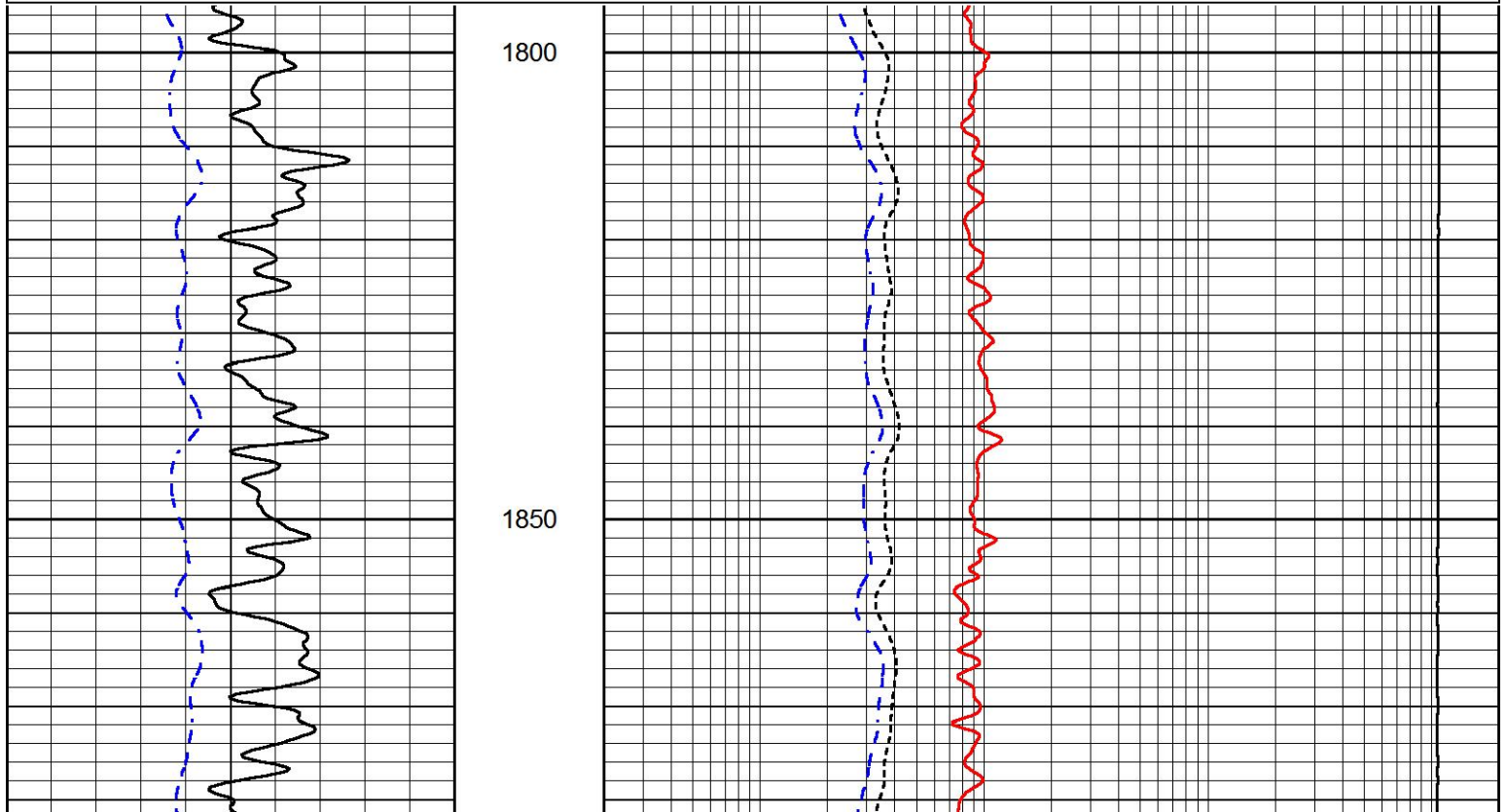


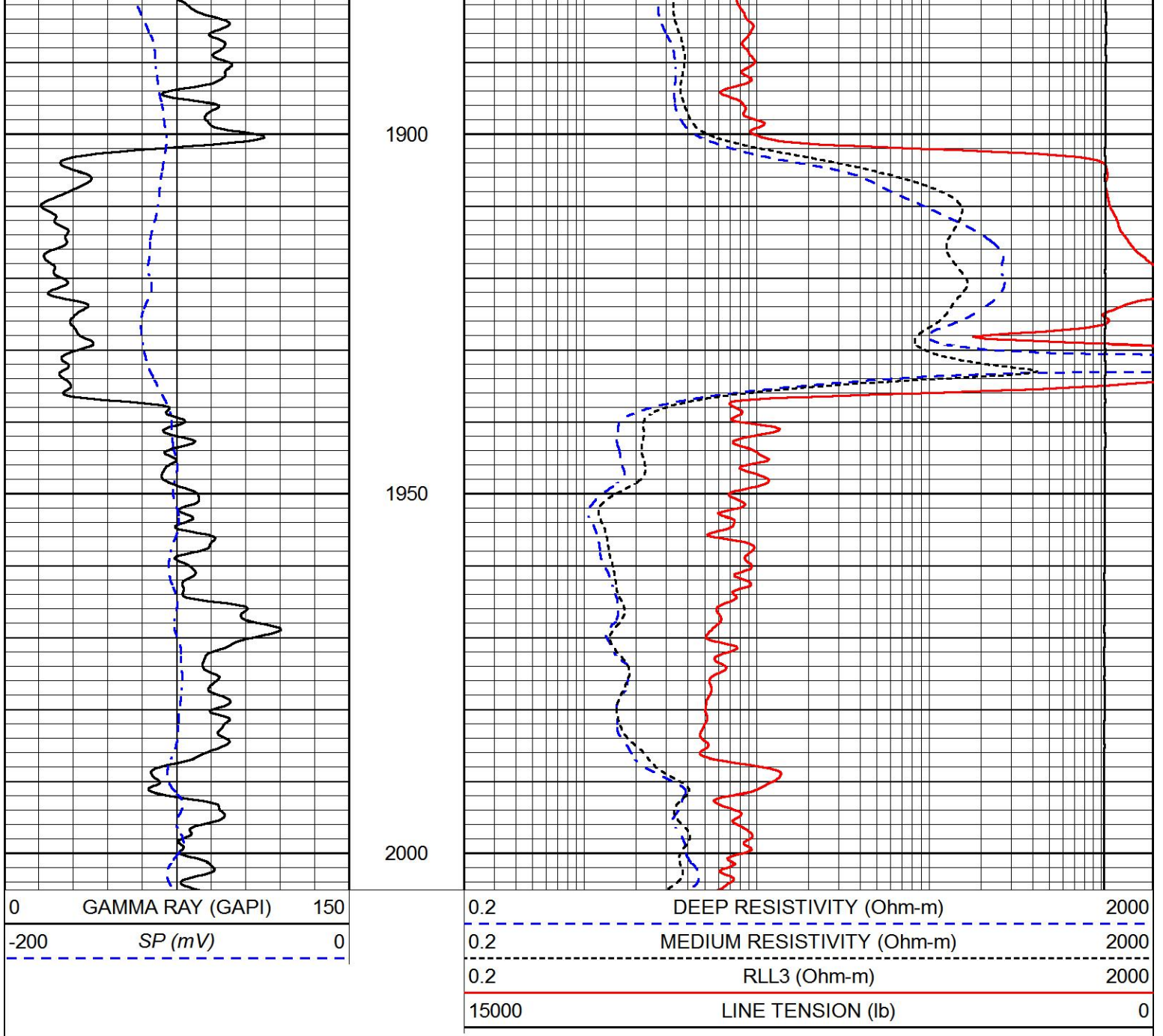


# MAIN PASS

Database File canyon\_b\_bar\_b\_25\_2.db  
 Dataset Pathname stack/pass4.1  
 Presentation Format dil  
 Dataset Creation Mon Jul 22 15:20:06 2019  
 Charted by Depth in Feet scaled 1:240

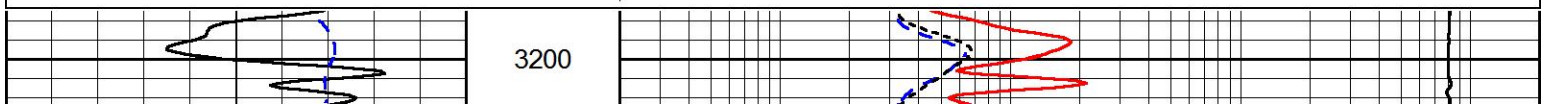
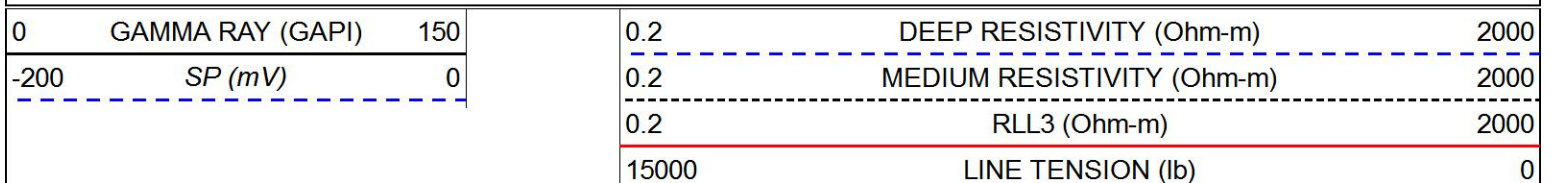
0	GAMMA RAY (GAPI)	150	0.2	DEEP RESISTIVITY (Ohm-m)	2000
-200	SP (mV)	0	0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
			0.2	RLL3 (Ohm-m)	2000
			15000	LINE TENSION (lb)	0

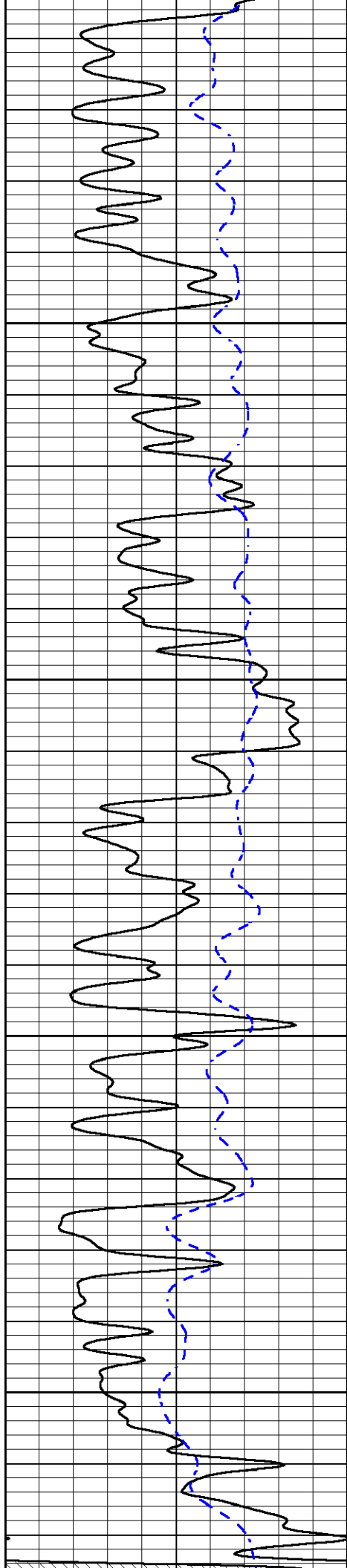




# MAIN PASS

Database File      canyon\_b\_bar\_b\_25\_2.db  
 Dataset Pathname    stack/pass4.1  
 Presentation Format    dil  
 Dataset Creation      Mon Jul 22 15:20:06 2019  
 Charted by            Depth in Feet scaled 1:240



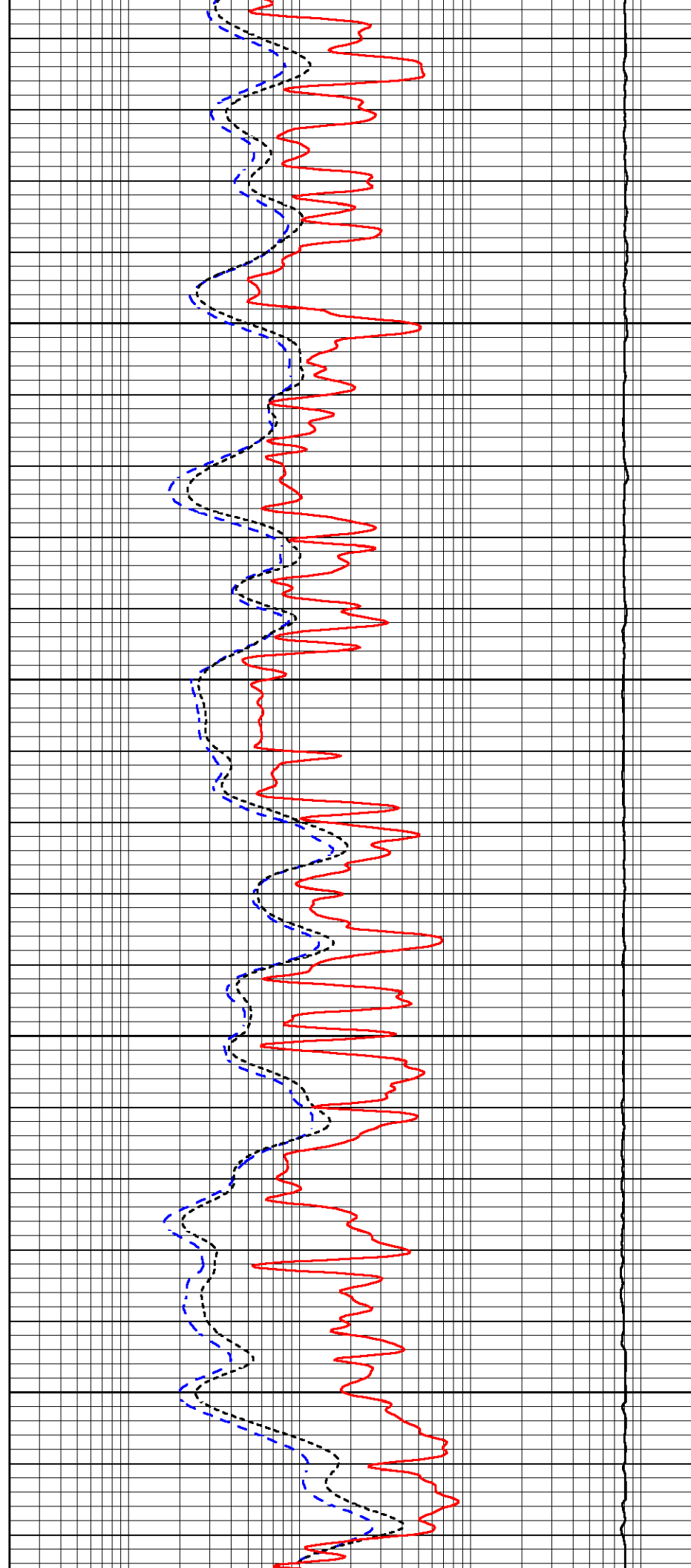


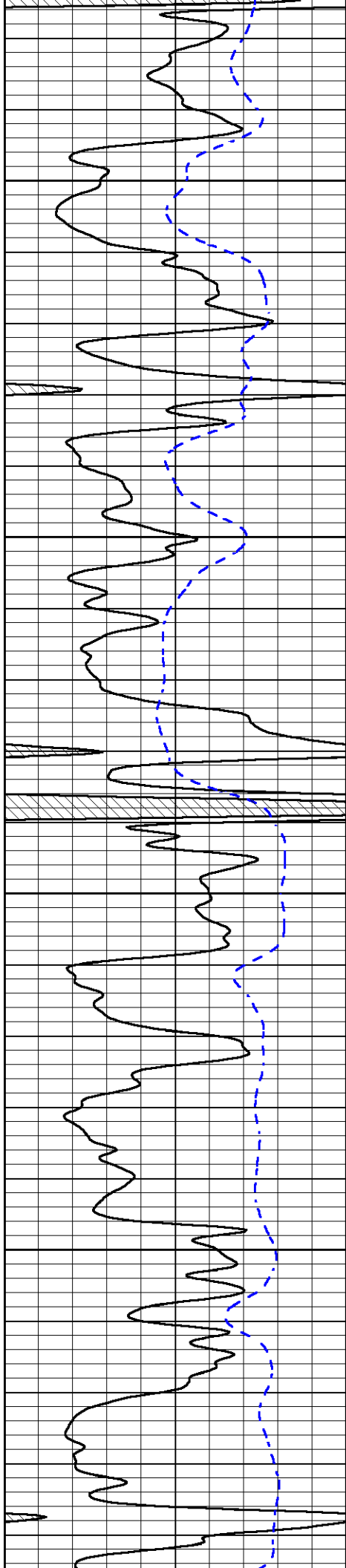
3250

3300

3350

3400



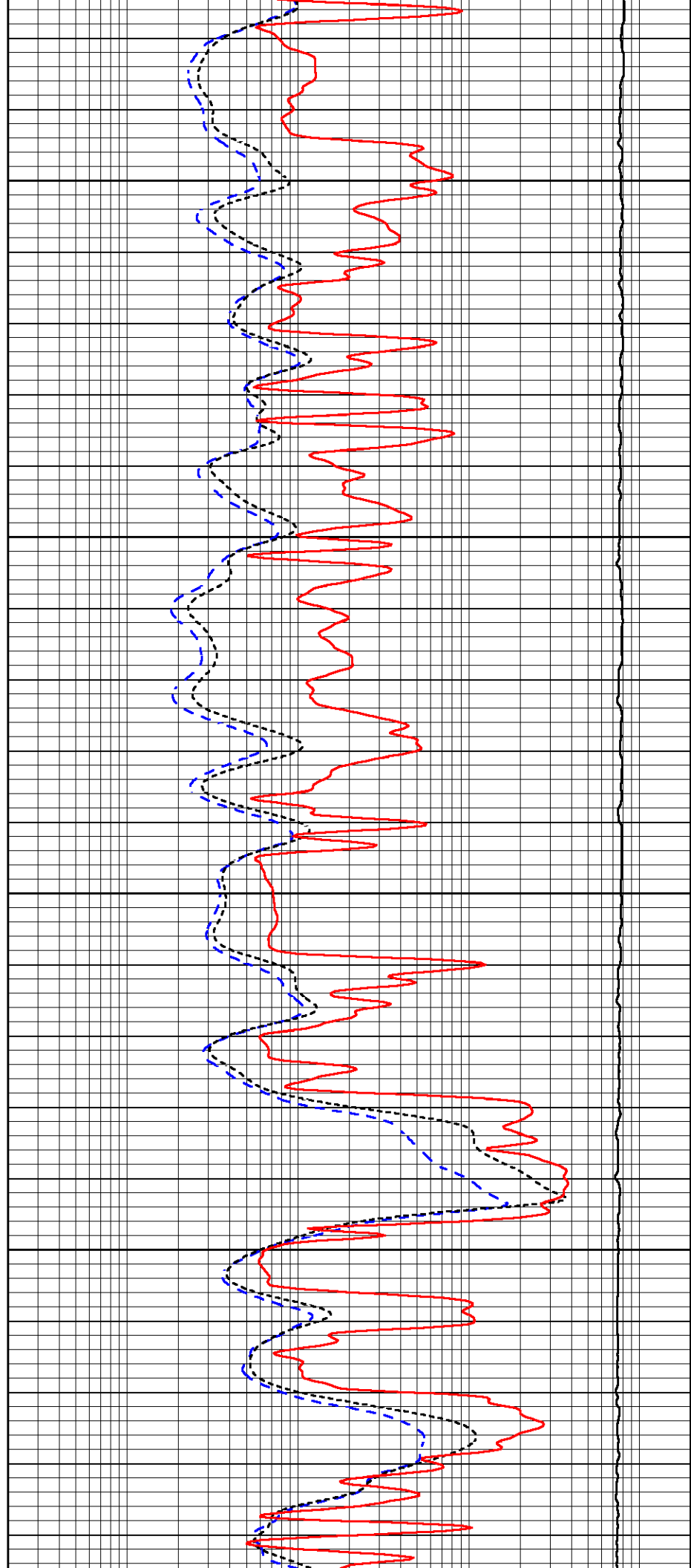


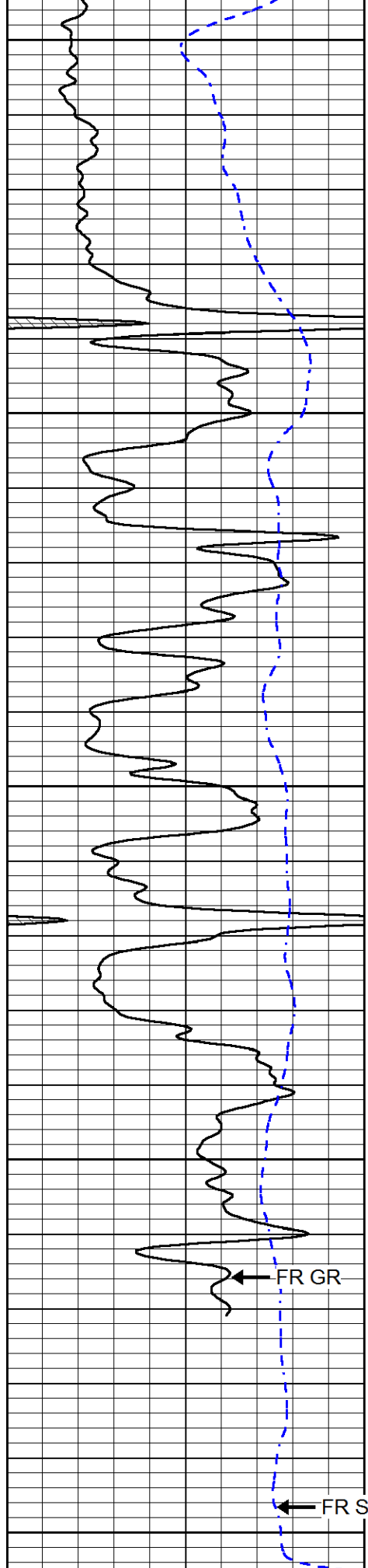
3450

3500

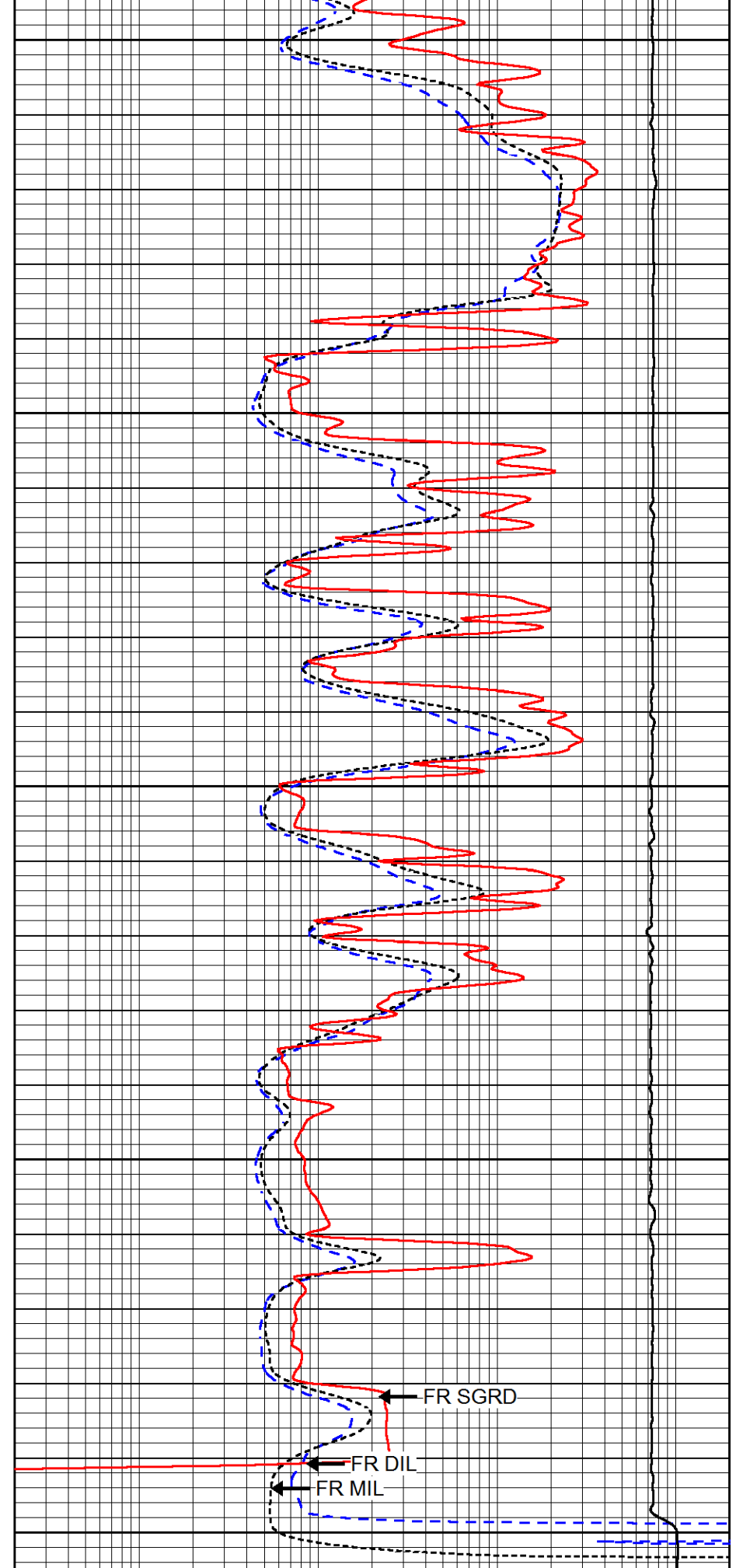
3550

3600





3650  
3700  
3750  
3800  
3850



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

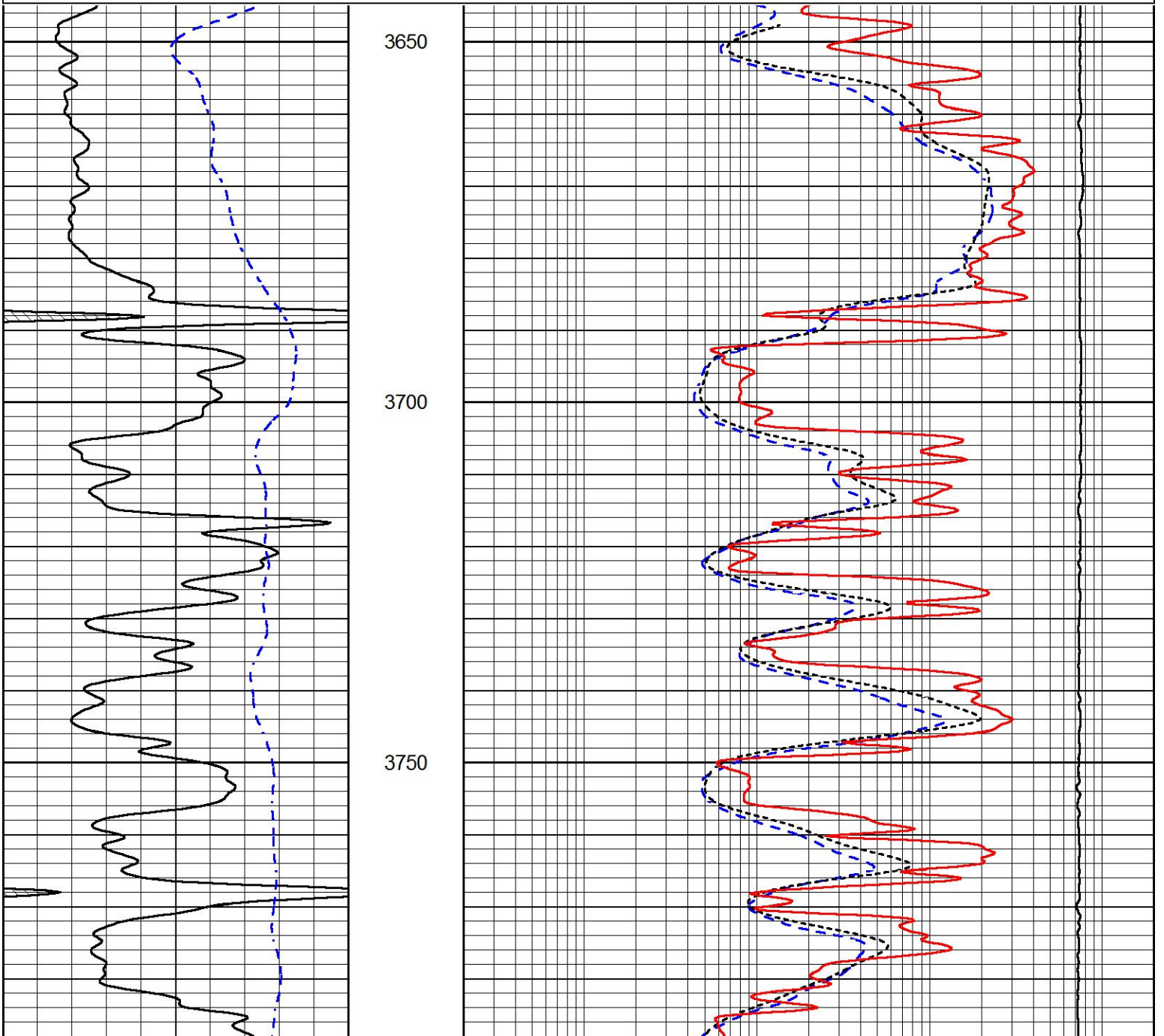


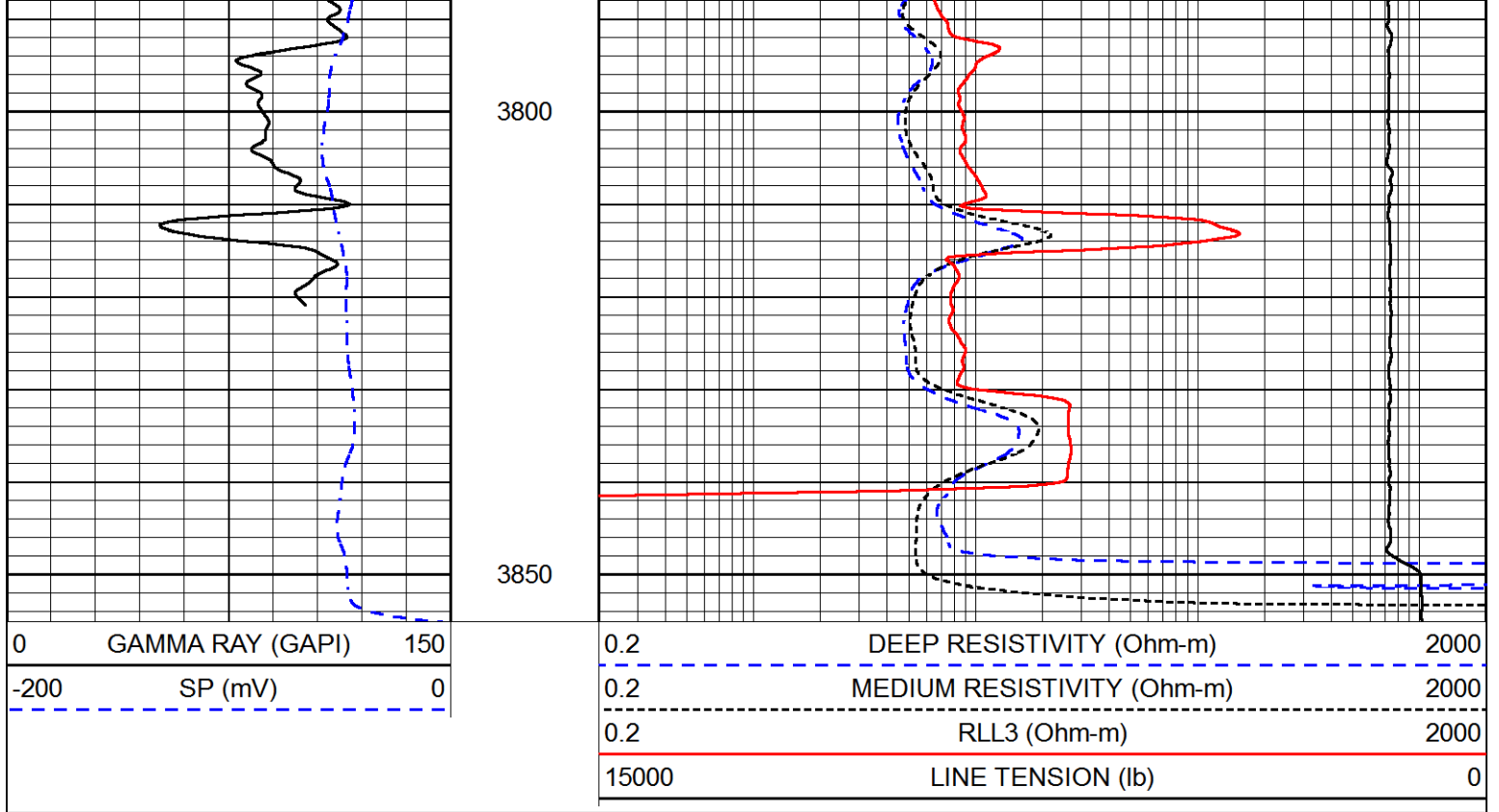
# REPEAT SECTION

Database File canyon\_b\_bar\_b\_25\_2.db  
 Dataset Pathname stack/pass2.1  
 Presentation Format dil  
 Dataset Creation Mon Jul 22 14:43:53 2019  
 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 canyon\_b\_bar\_b\_25\_2.db  
 Dataset Pathname stack/pass4.1  
 Dataset Creation Mon Jul 22 15:20:06 2019

### Dual Induction Calibration Report

Serial-Model: PSI 988-M&W  
 Calibration Performed: Tue Nov 20 10:50:19 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.525	-44.000
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.380	-17.000

### Compensated Density Calibration Report

Serial-Model: 144-84-M&W  
 Source / Verifier: /  
 Master Calibration Performed: Mon Jan 07 15:00:31 2019

### Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4315.49	5309.89	cps
Aluminum	2.675	g/cc	825.26	3443.46	cps

Spine Angle = 75.33

Density/Spine Ratio = 0.538

	Size		Reading
Small Ring	4.00	in	0.69

Large Ring

14.00 in

0.04

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 Apr 11 17:08:01 2017

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps  
 Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps



**PIONEER**  
 Pioneer Energy Services

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