



DUAL INDUCTION LOG

Pioneer Energy Services

Company **CHOLLA PRODUCTION, LLC**
 Well **ZIMMERMAN #1-3**
 Field **WILDCAT**
 County **RUSH** State **KANSAS**

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 Well **ZIMMERMAN #1-3**
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Location: **API #: 15-165-22166-00-00**
735' FNL & 2065' FWL
SEC 3 TWP 16S RGE 20W
 Permanent Datum **GROUND LEVEL Elevation 2166'**
 Log Measured From **KELLY BUSHING**
 Drilling Measured From **KELLY BUSHING**
 Other Services **CNL/CDL MEL/BHCS**
 Elevation **K.B. 2173' D.F. N/A G.L. 2166'**

Date	10/4/2019
Run Number	ONE
Depth Driller	3900'
Depth Logger	3900'
Bottom Logged Interval	3899'
Top Log Interval	250'
Casing Driller	8.625" @ 258'
Casing Logger	258'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	3900
Density / Viscosity	9.2 53
pH / Fluid Loss	10.0 8.0
Source of Sample	FLOWLINE
Rm @ Meas. Temp	.75 @ 81
Rmt @ Meas. Temp	.56 @ 81
Rmc @ Meas. Temp	1.01 @ 81
Source of Rmf / Rmc	CHARTS
Rm @ BHT	.53 @ 115
Operating Rig Time	4 HOURS
Max Rec. Temp. F	115 DEGF
Equipment Number	P-108
Location	HAYS
Recorded By	J. HENRICKSON
Witnessed By	CHARLIE STURDAVANT

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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.
 ELLIS, KANSAS
 SOUTH TO RUSH COUNTY LINE, 2 1/2 EAST, SOUTH INTO

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

THANK YOU FOR USING PIONEER ENERGY SERVICES
www.pioneerenergy.com 785-625-3858


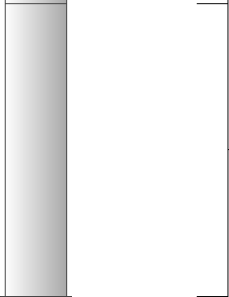
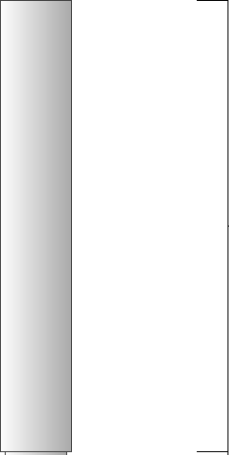

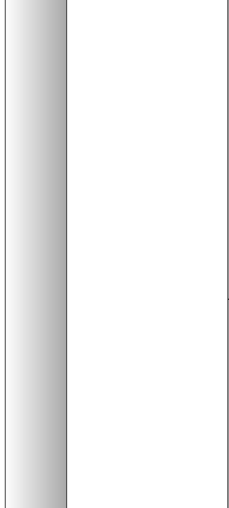
Your Pioneer Energy Services Crew Engineer: J. HENRICKSON Operator: Operator: Operator:	This Log Record Was Witnessed By Primary Witness: CHARLIE STURDAVANT Secondary Witness: Secondary Witness: Secondary Witness:
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Log Variables

DatabaseC:\ProgramData\Warrior\Data\cholla_zimmerman_1_3.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	0	0	Off	3900

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 (979-229)	8.50	4.00	250.00
RLL3 RLL3F	15.80 15.79					
CILD	8.00		DIL-M&W (976)	18.50	3.50	220.00

CILM 4.70

SP 0.20

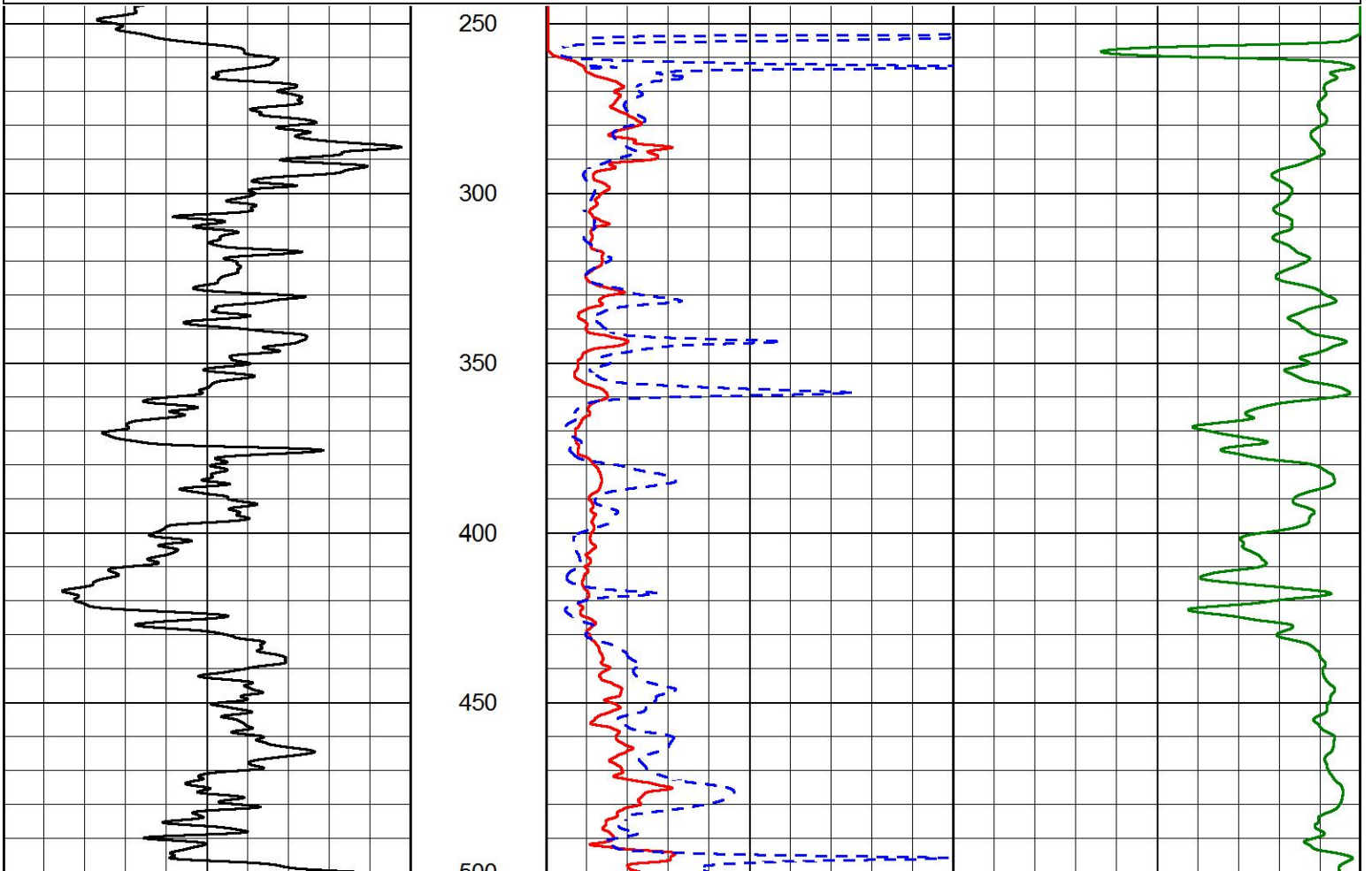
Dataset: cholla_zimmerman_1_3.db: field/well/stack/pass4.1
 Total length: 35.50 ft
 Total weight: 620.00 lb
 O.D.: 4.00 in

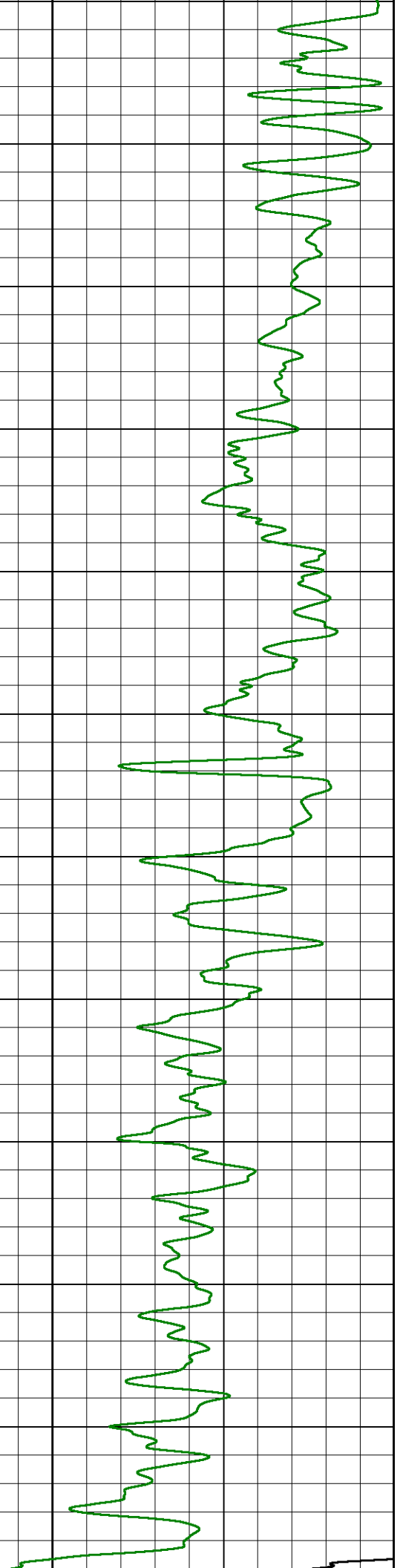
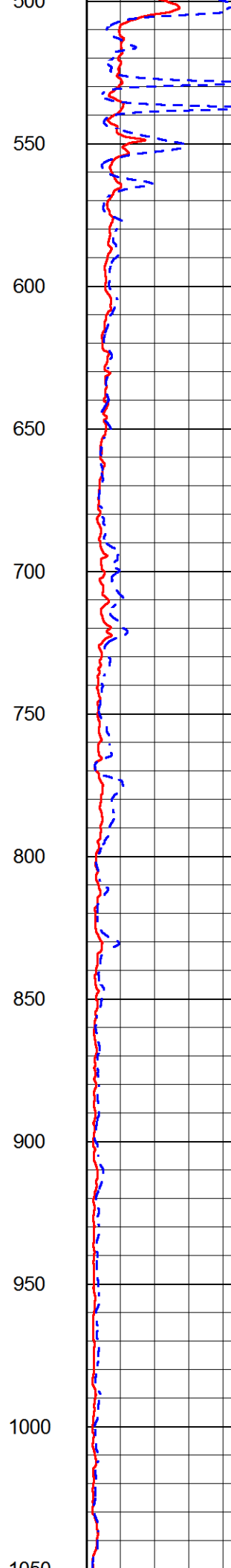
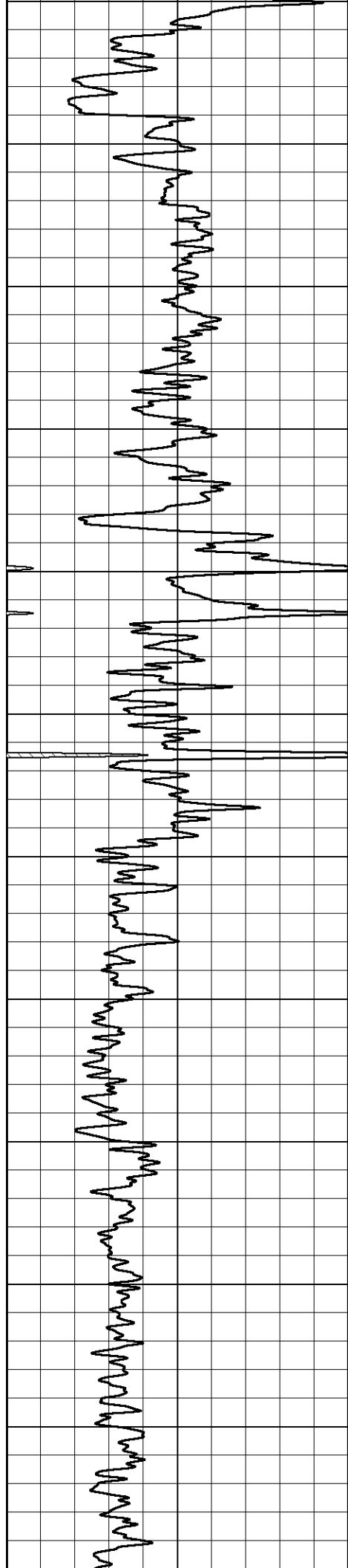


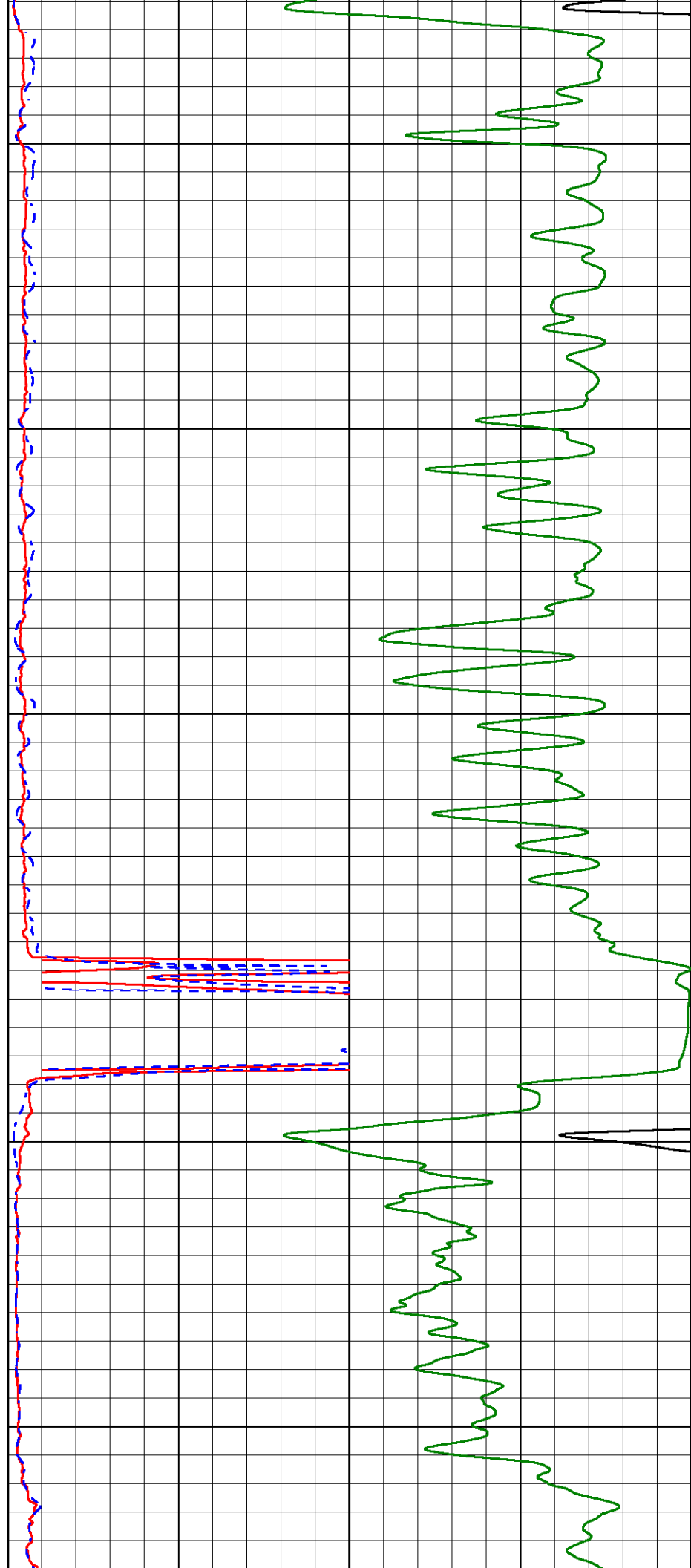
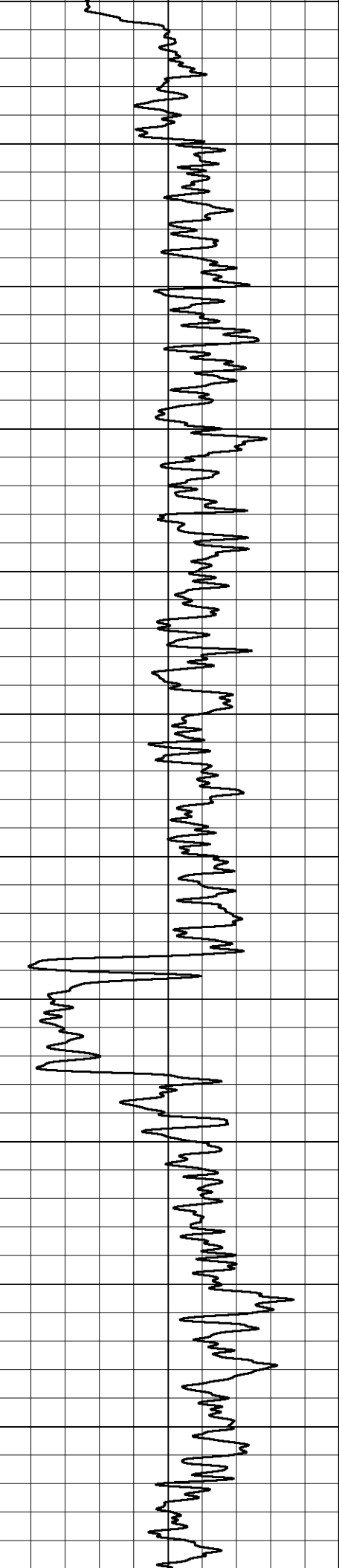
MAIN PASS

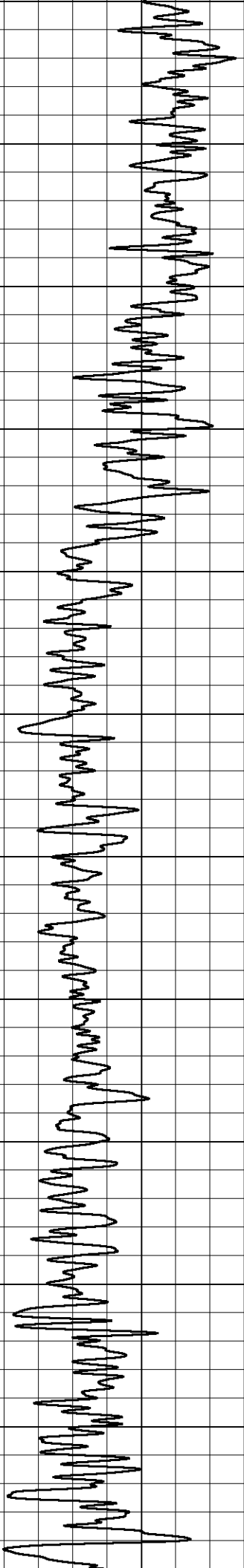
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 Dataset Pathname stack/pass4.1
 Presentation Format dil2in
 Dataset Creation Fri Oct 04 06:23:11 2019
 Charted by Depth in Feet scaled 1:600

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

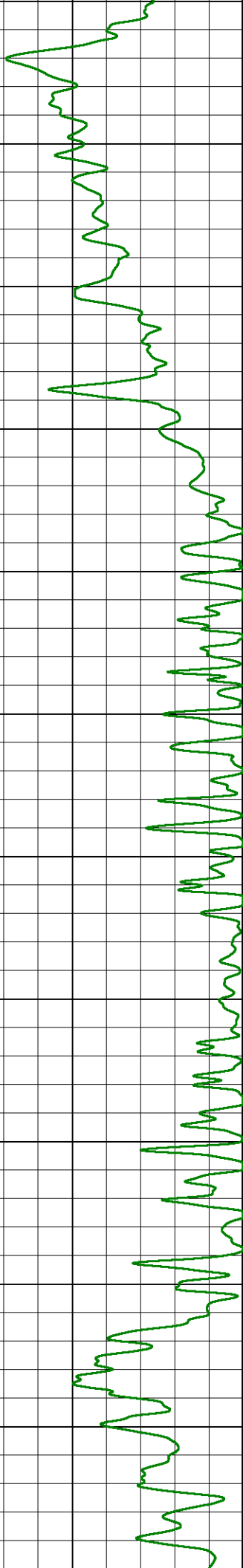
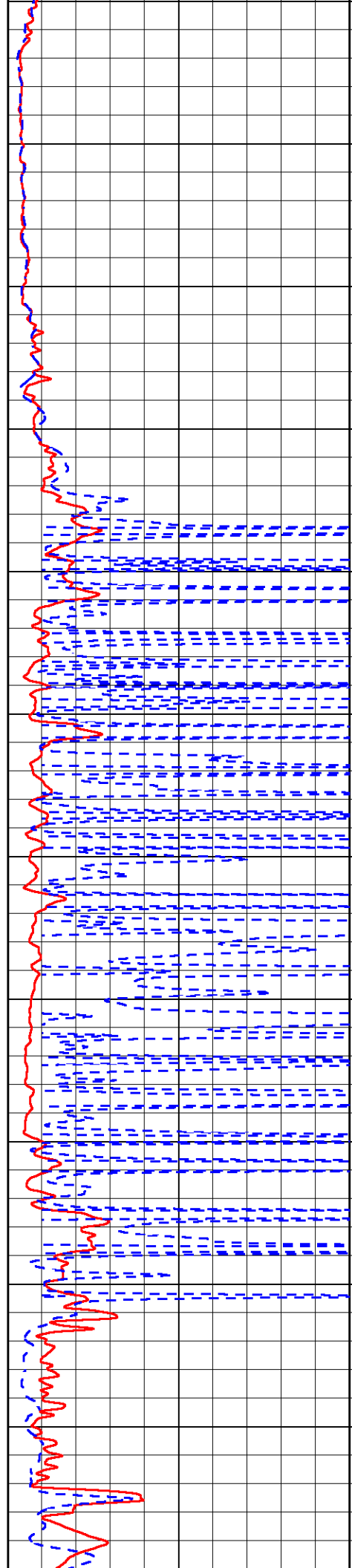


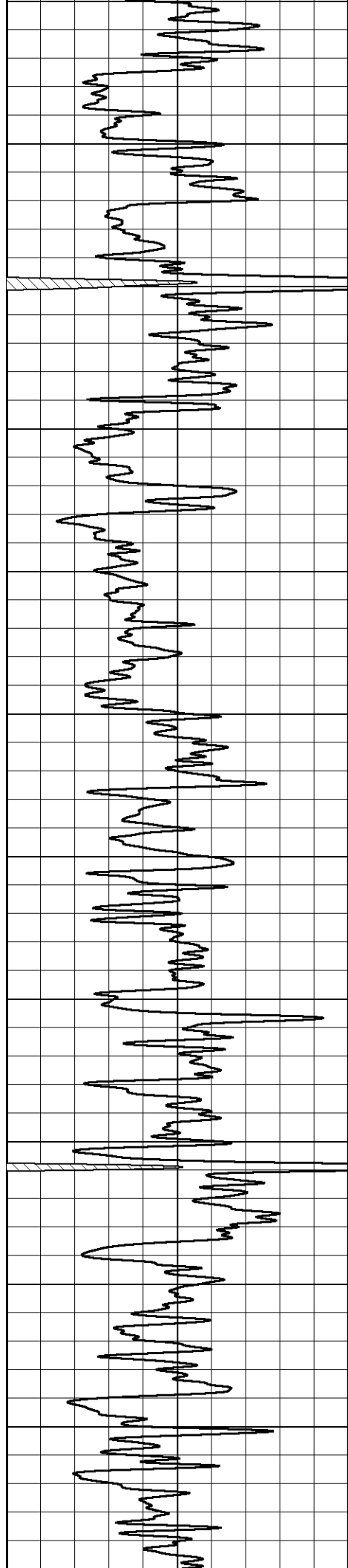




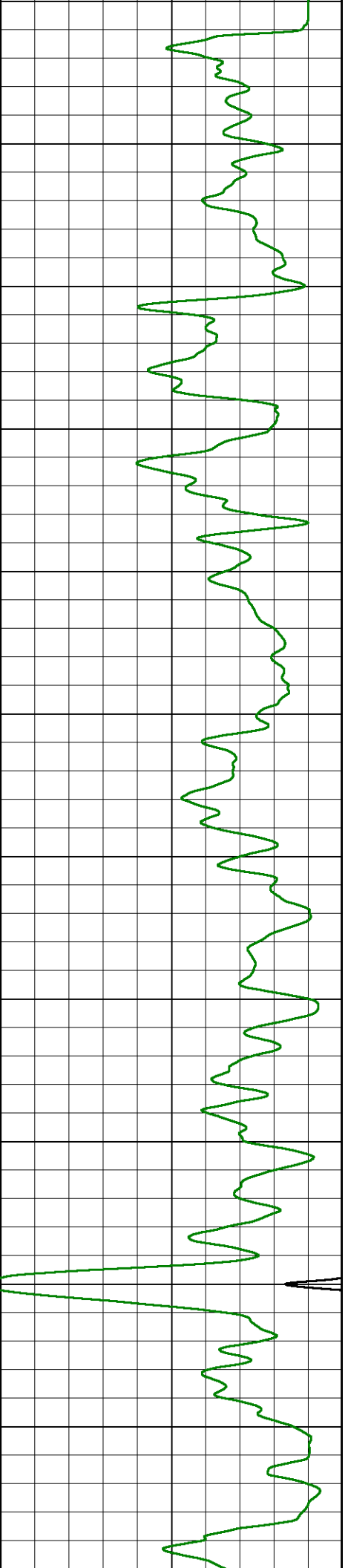
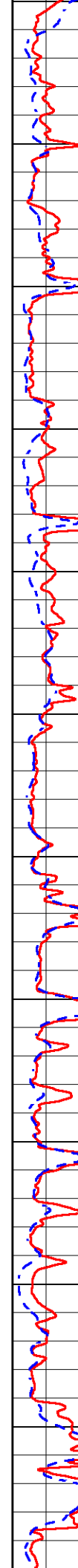


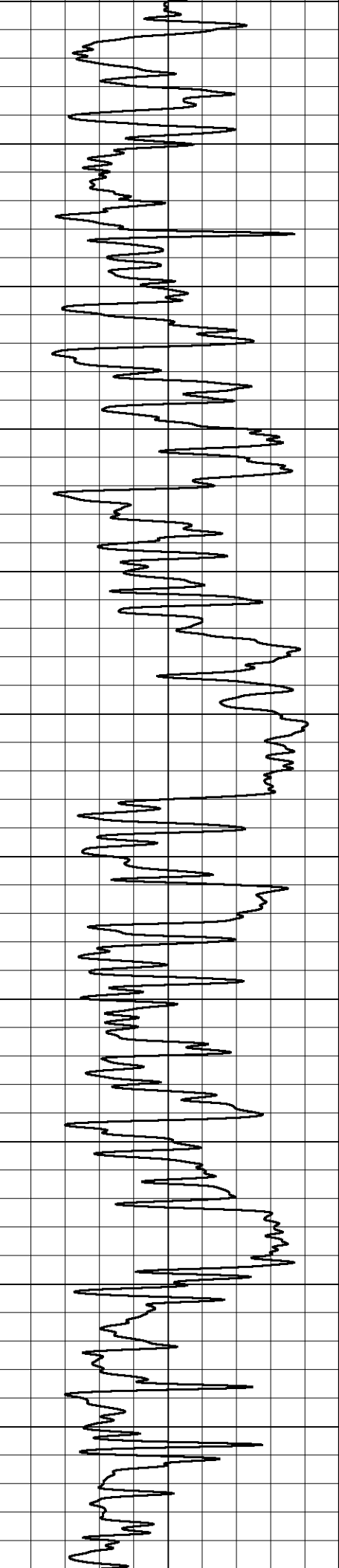
1600
1650
1700
1750
1800
1850
1900
1950
2000
2050
2100
2150



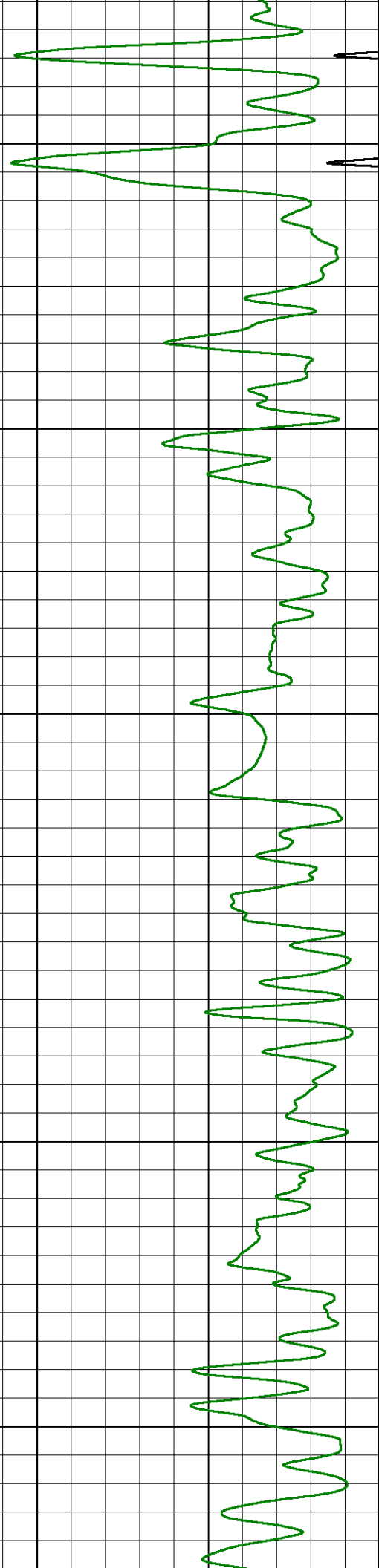
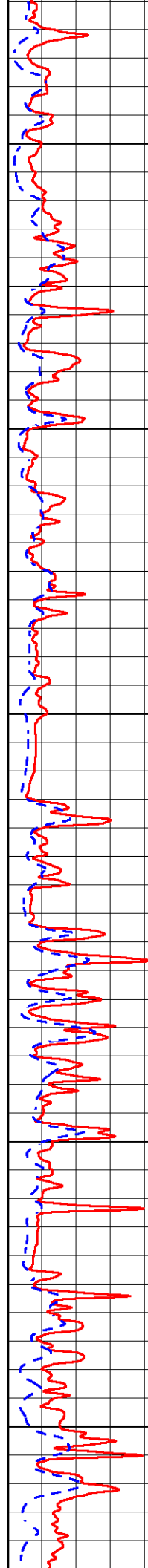


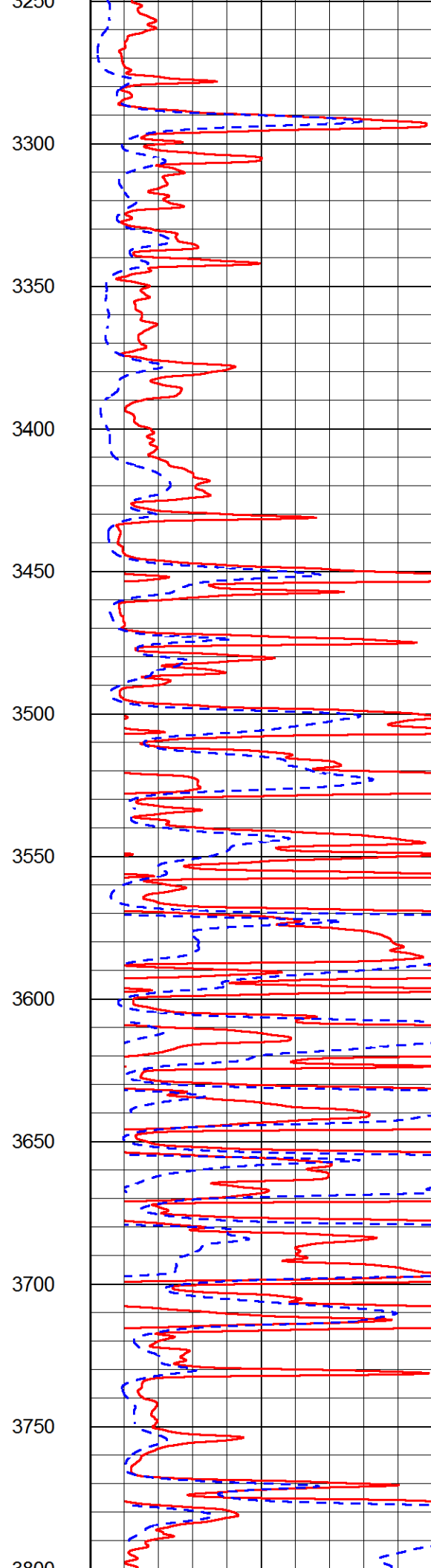
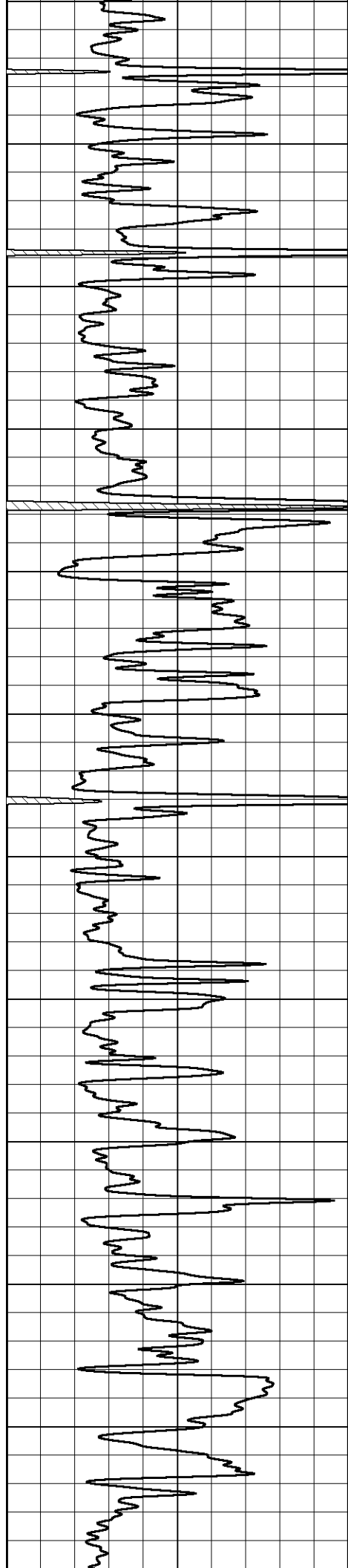
2150
2200
2250
2300
2350
2400
2450
2500
2550
2600
2650
2700

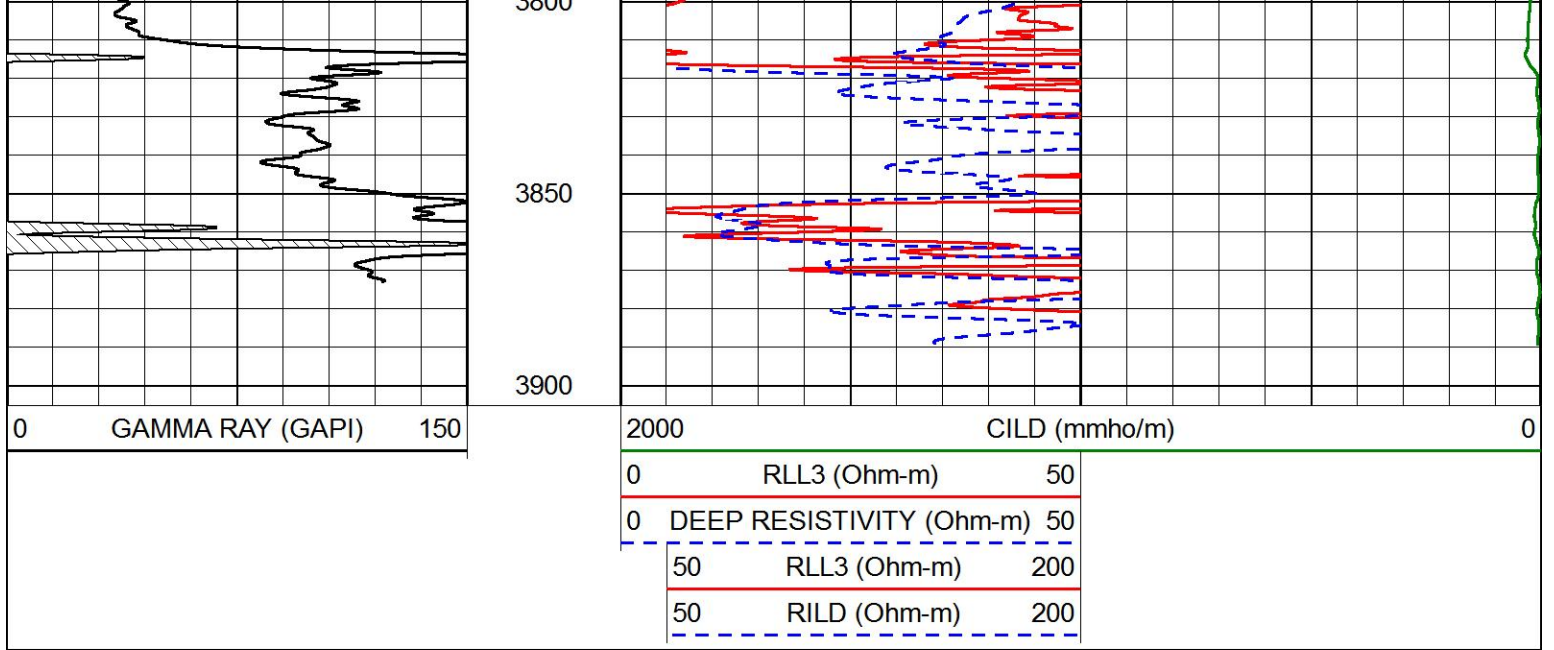




2700
2750
2800
2850
2900
2950
3000
3050
3100
3150
3200
3250

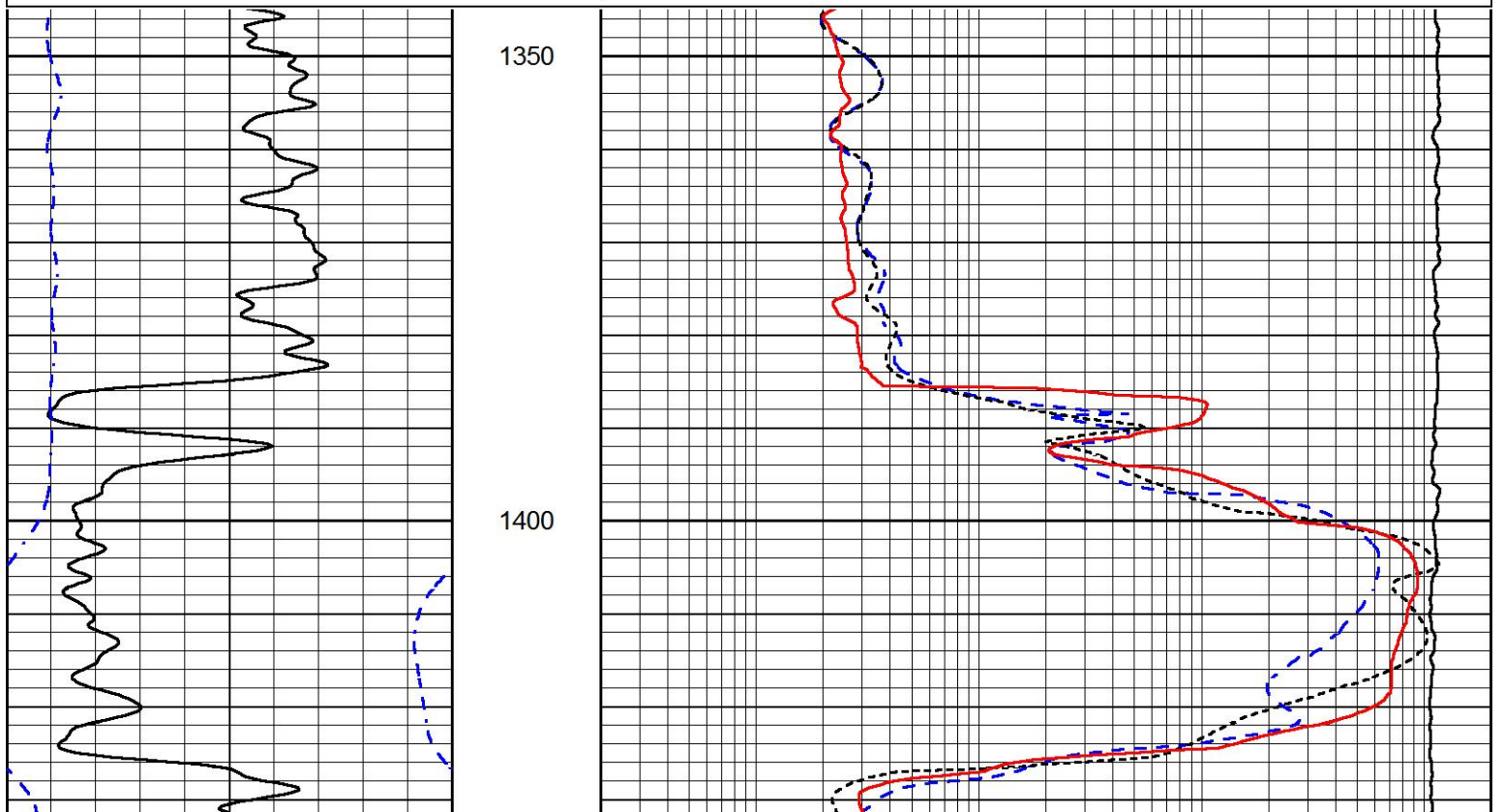
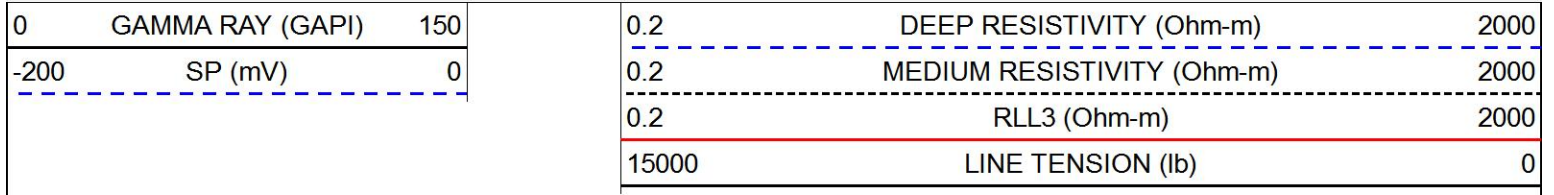


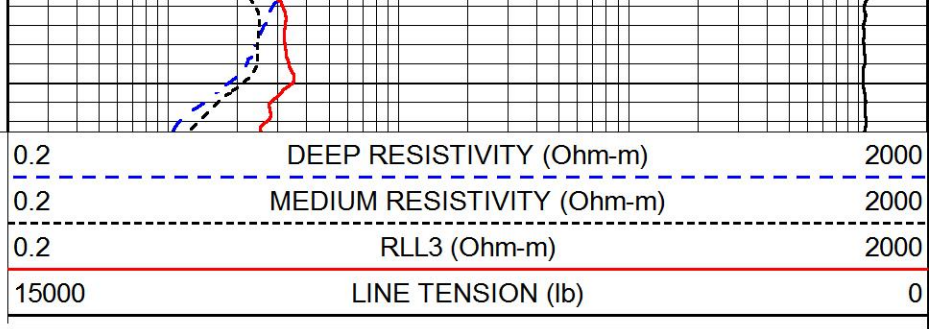
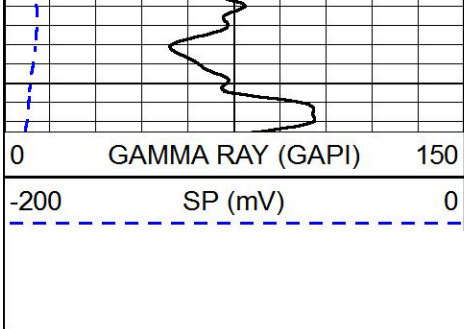




MAIN PASS

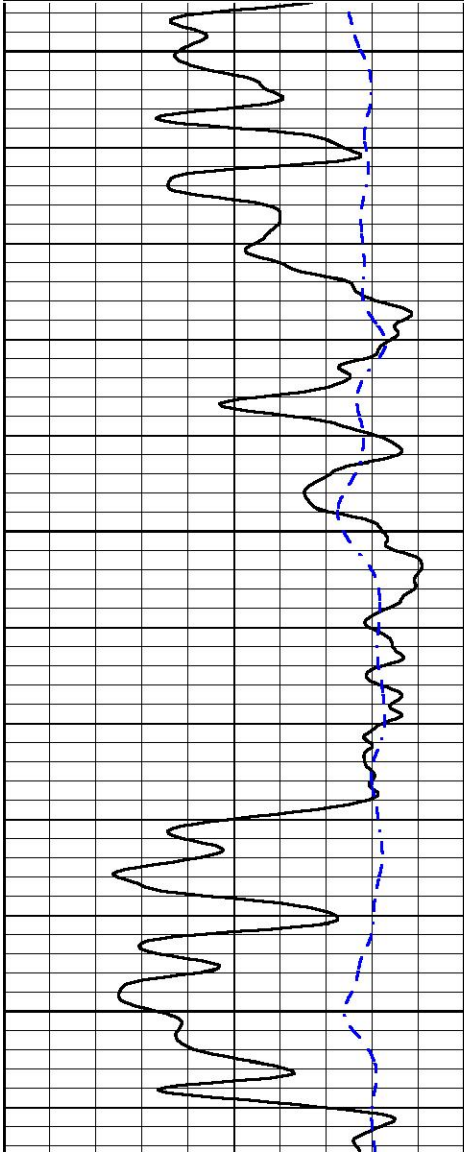
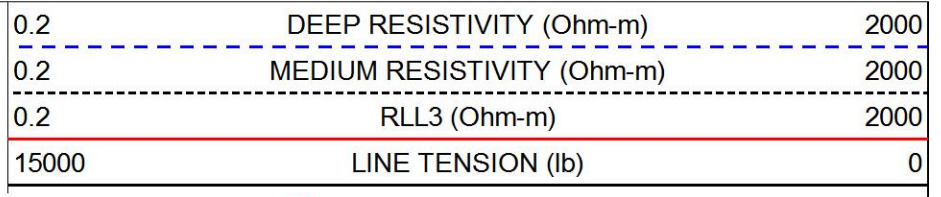
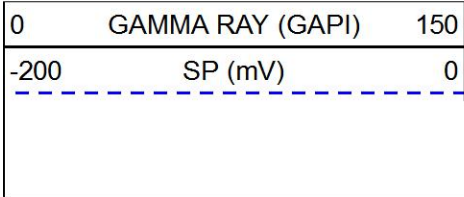
Database File cholla_zimmerman_1_3.db
 Dataset Pathname stack/pass4.1
 Presentation Format dil
 Dataset Creation Fri Oct 04 06:23:11 2019
 Charted by Depth in Feet scaled 1:240





MAIN PASS

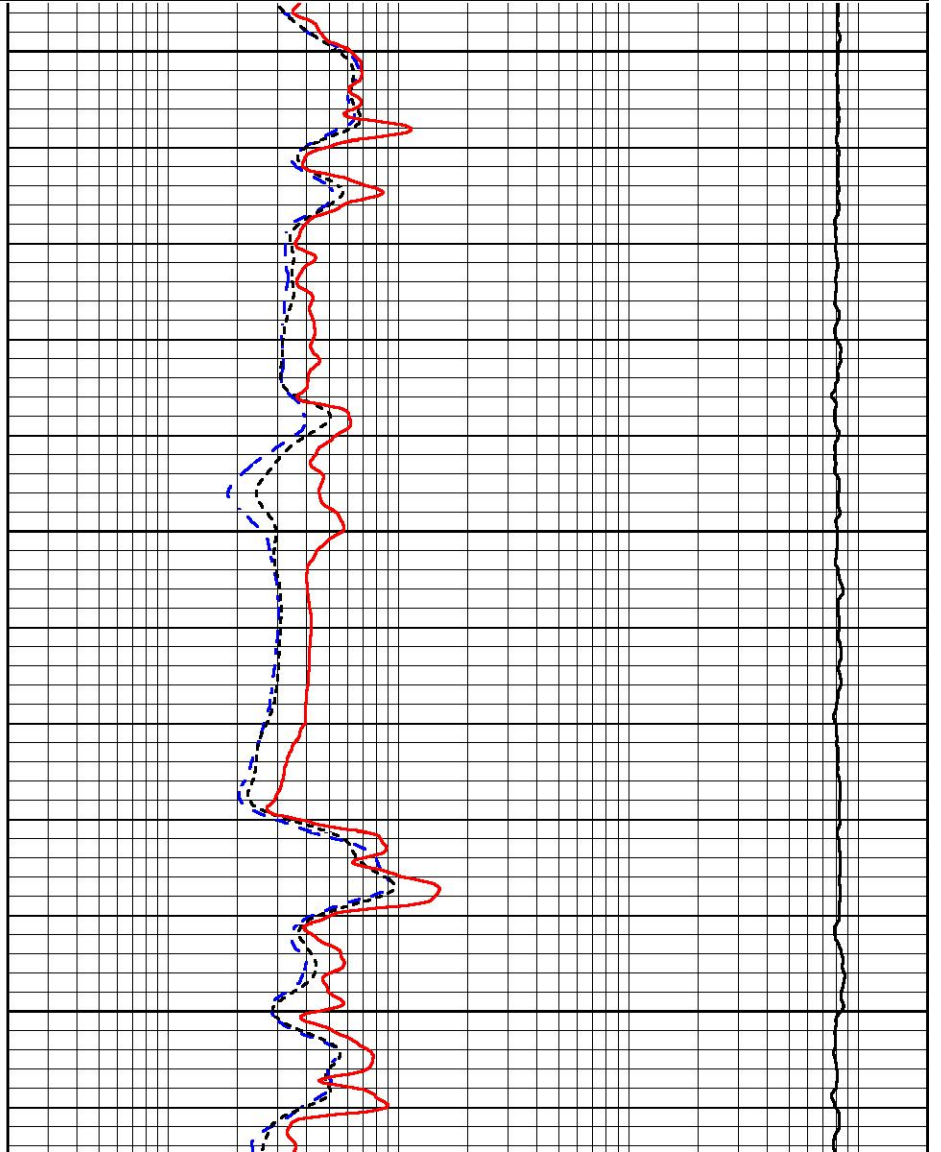
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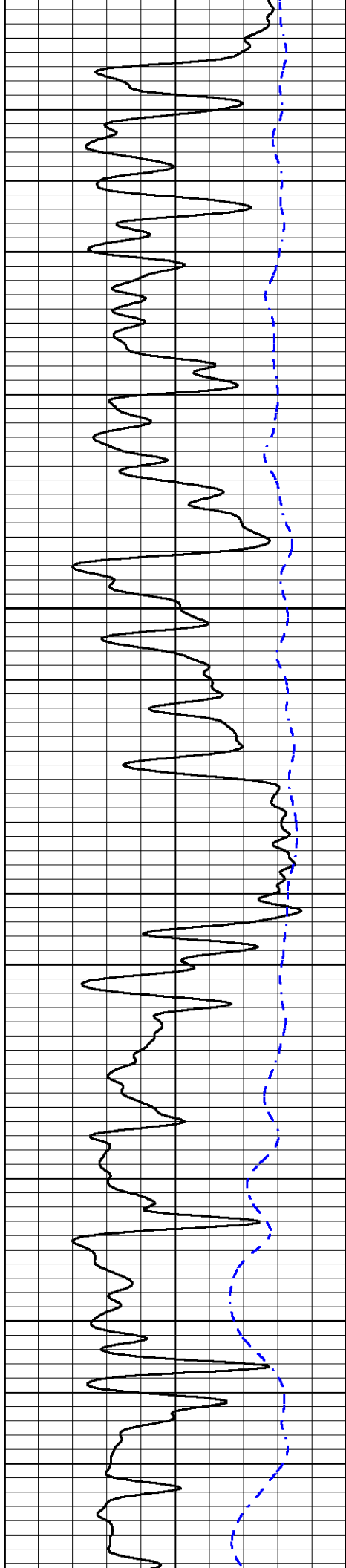


2900

2950

3000



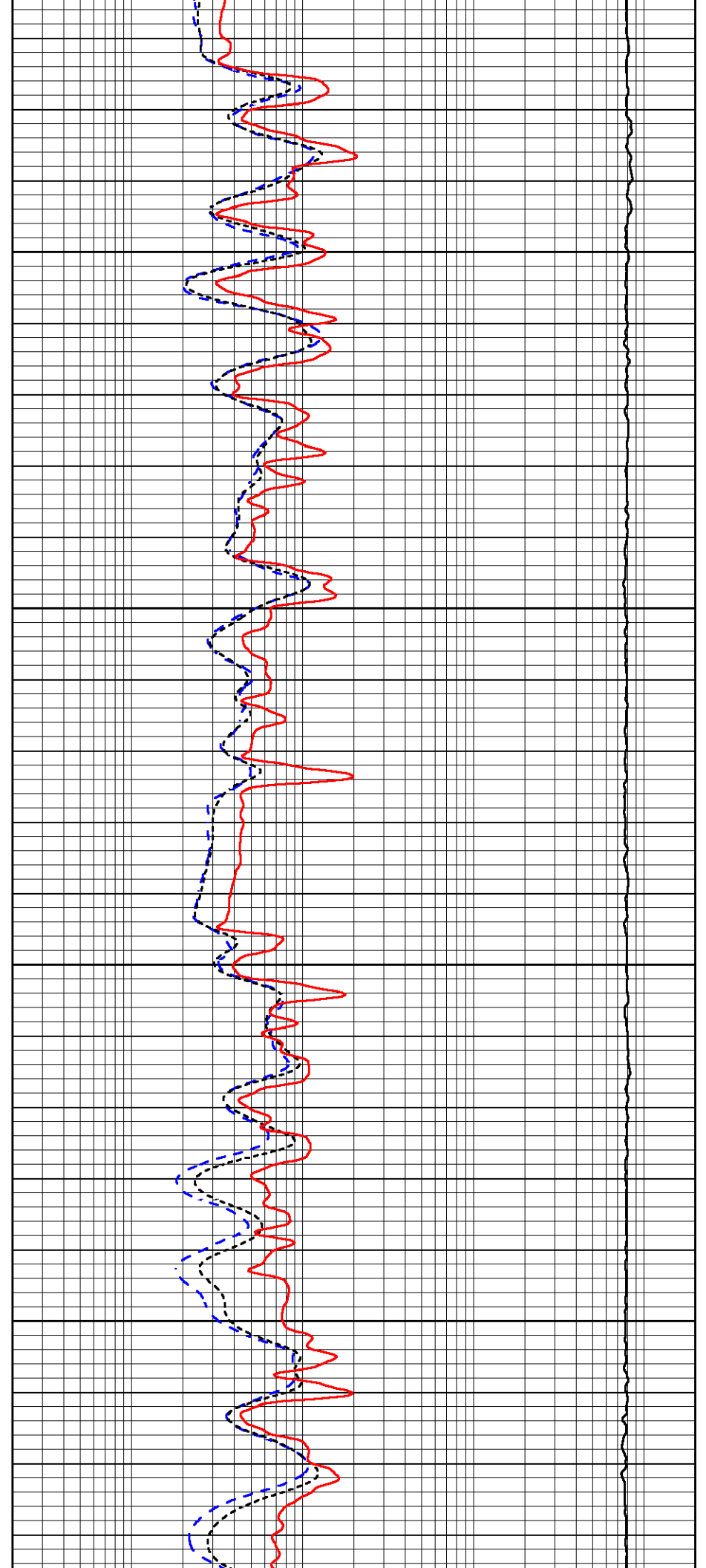


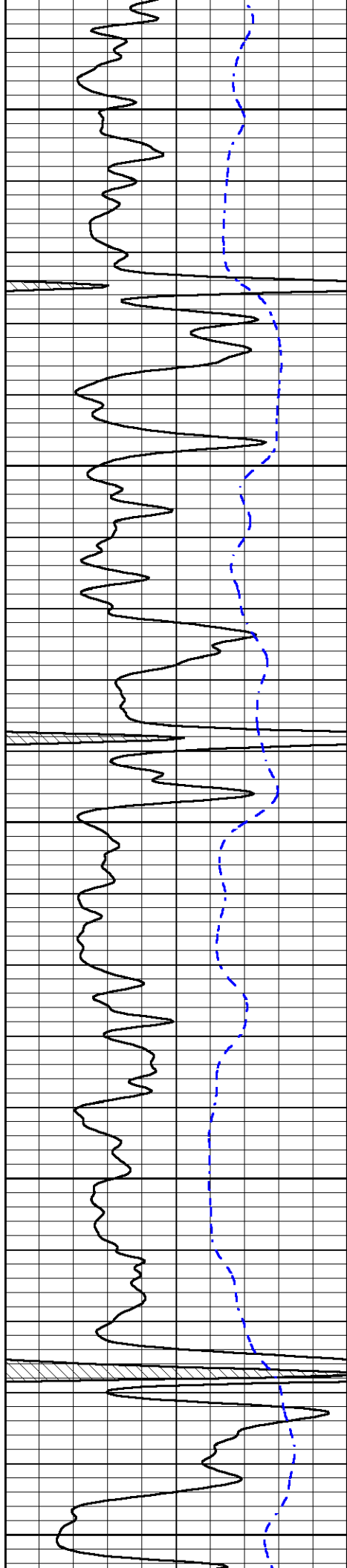
3050

3100

3150

3200





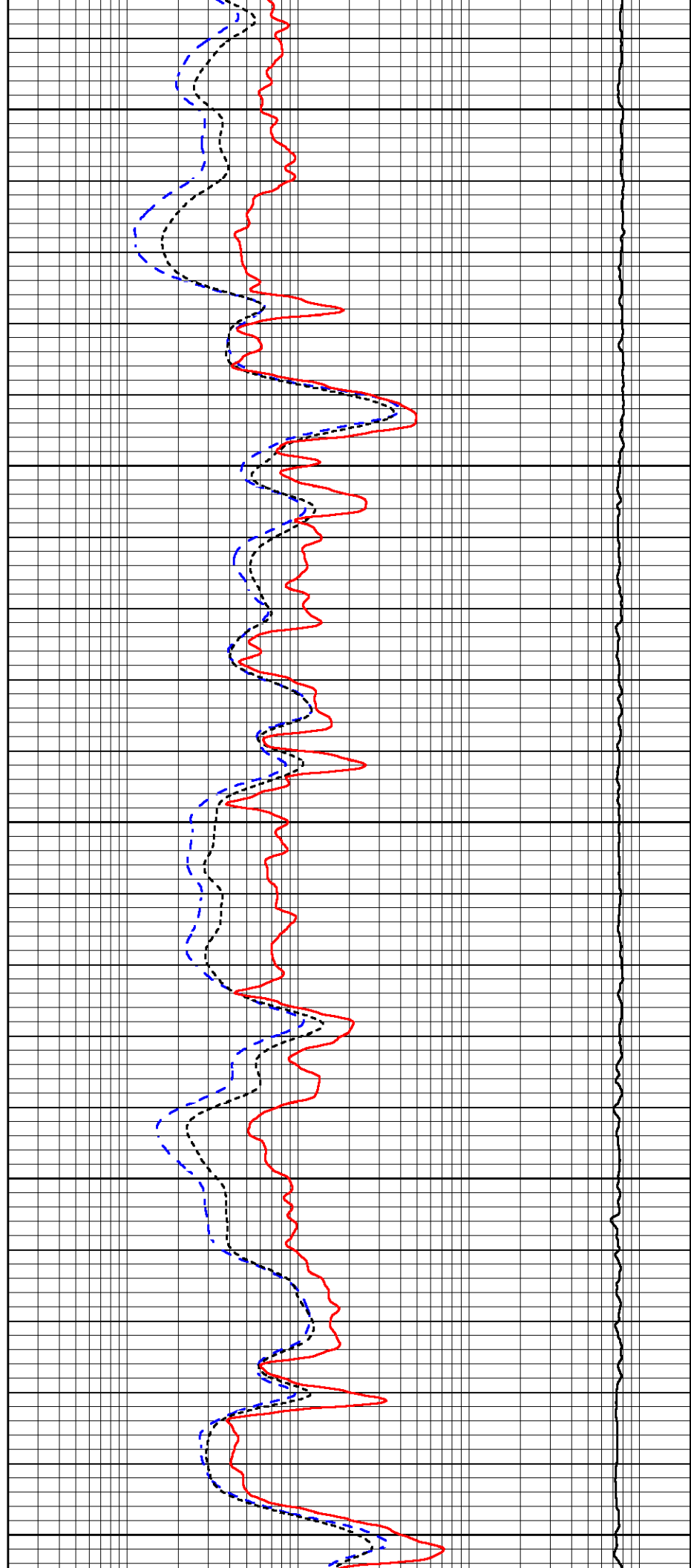
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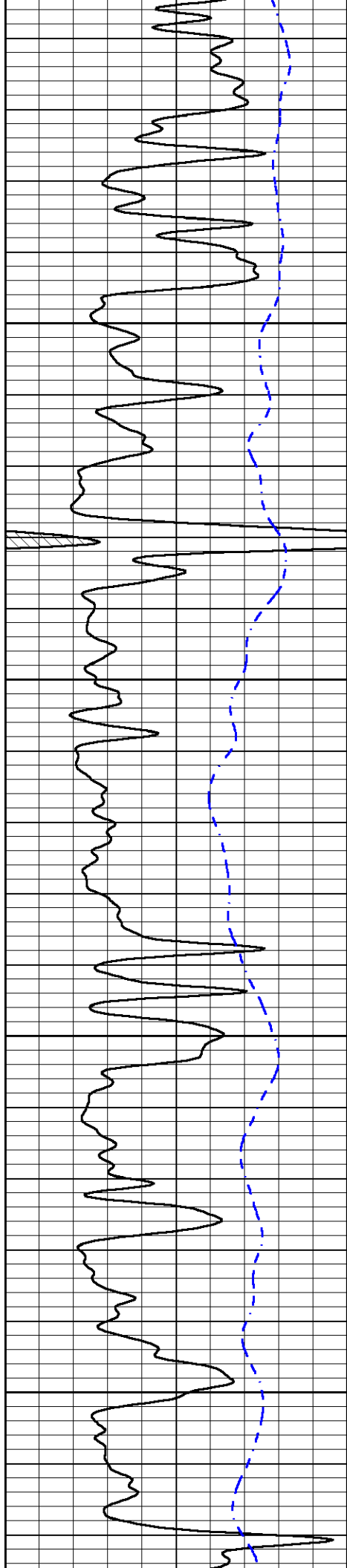
3300

3350

3400

3450



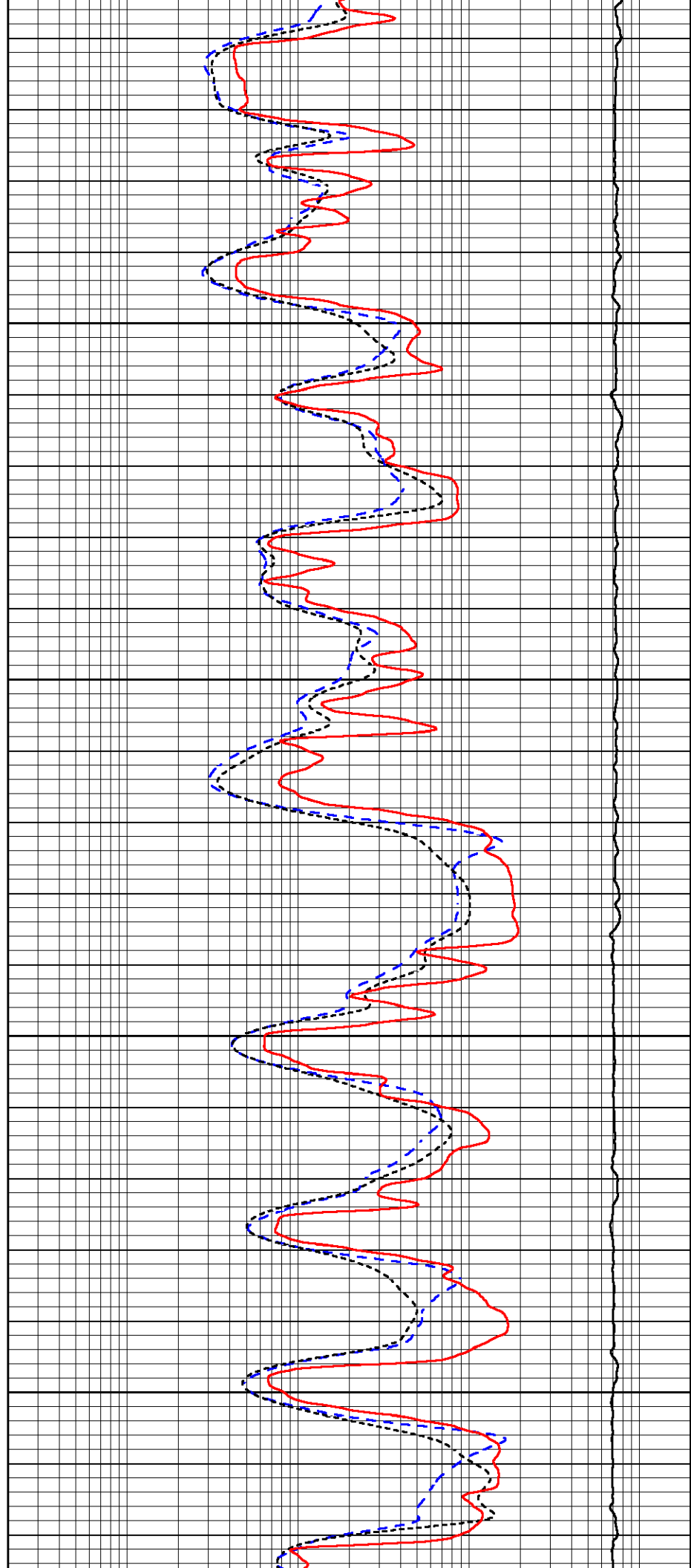


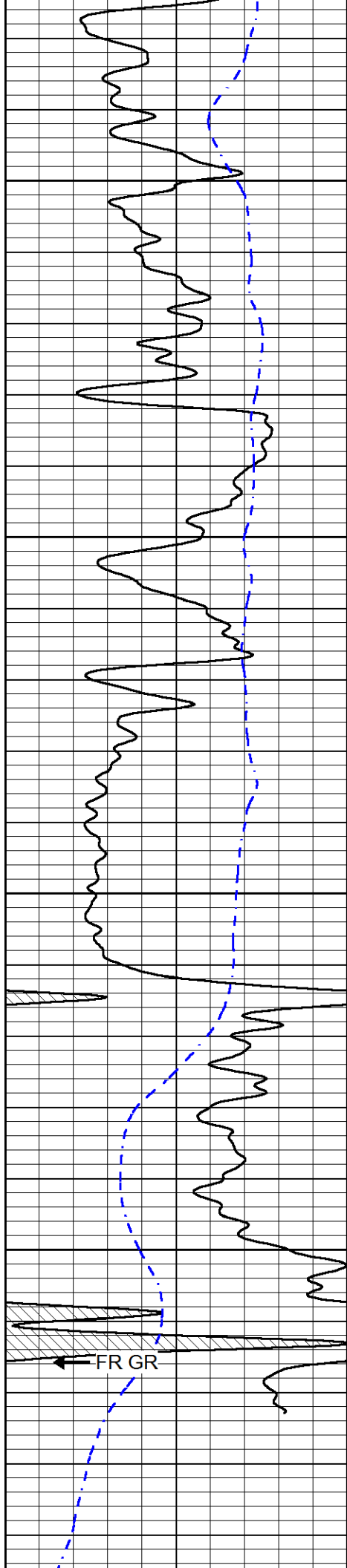
3500

3550

3600

3650





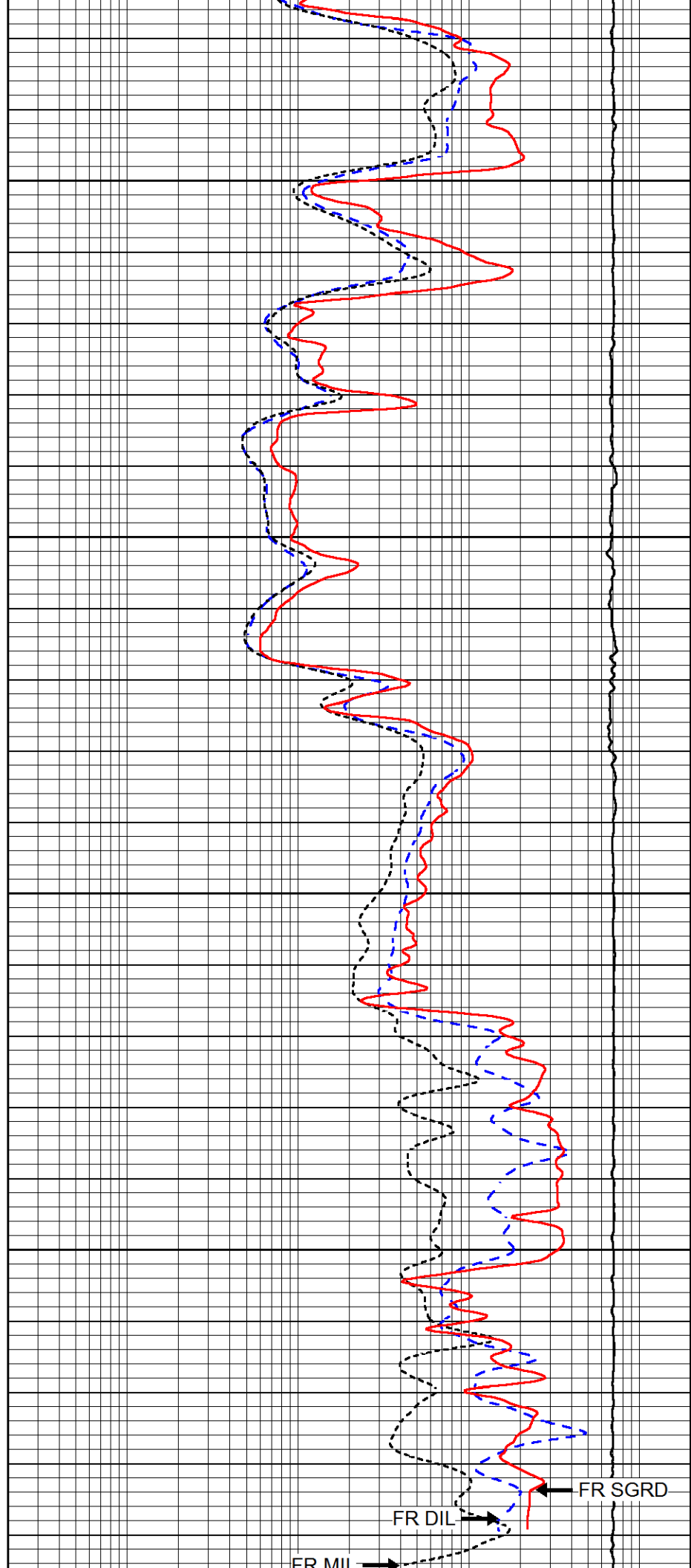
3700

3750

3800

3850

FR GR



FR SGRD

FR DIL

FR MII

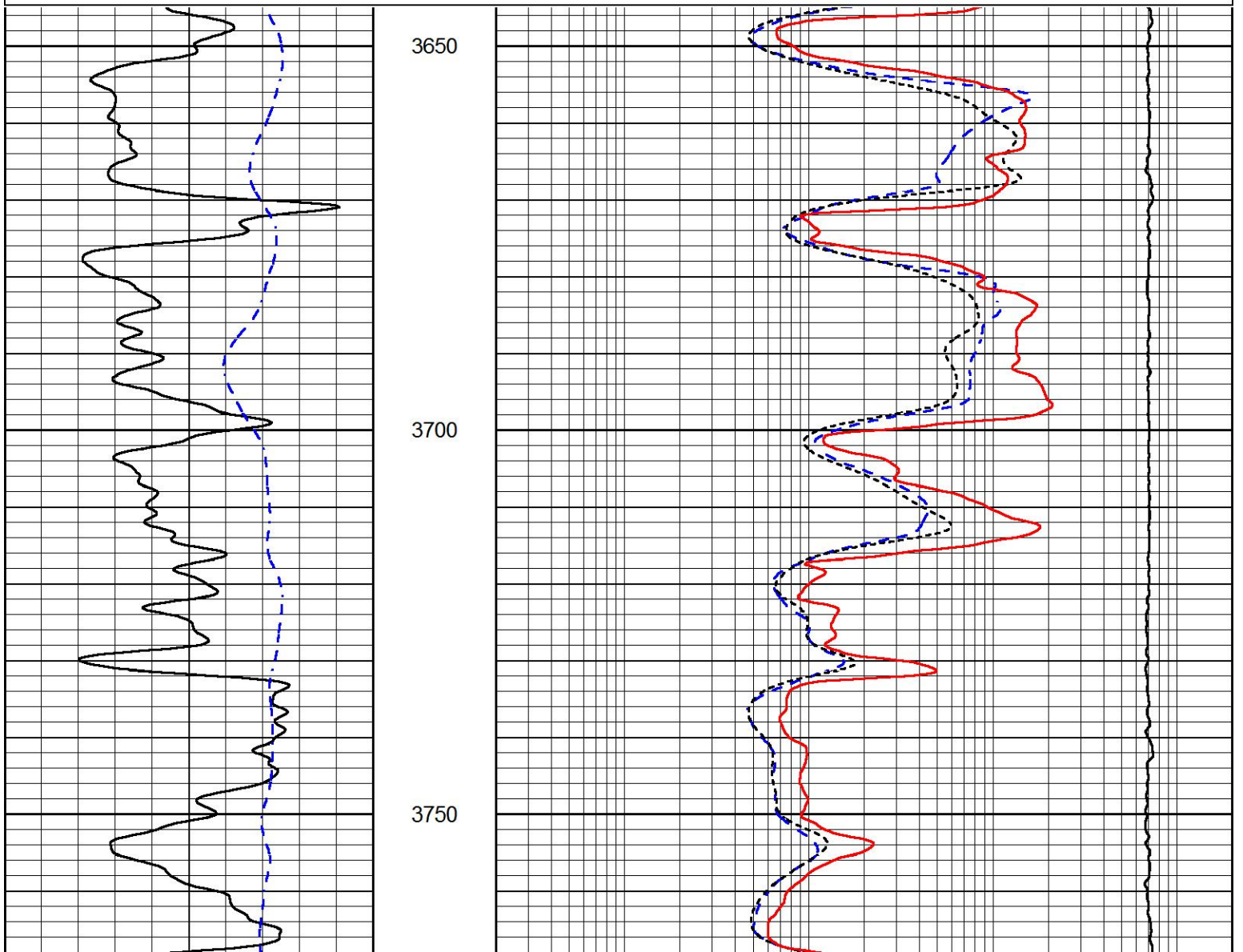
FR SP		3900	FR MILE		
0	GAMMA RAY (GAPI)	150	0.2	DEEP RESISTIVITY (Ohm-m)	2000
-200	SP (mV)	0	0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
			0.2	RLL3 (Ohm-m)	2000
			15000	LINE TENSION (lb)	0

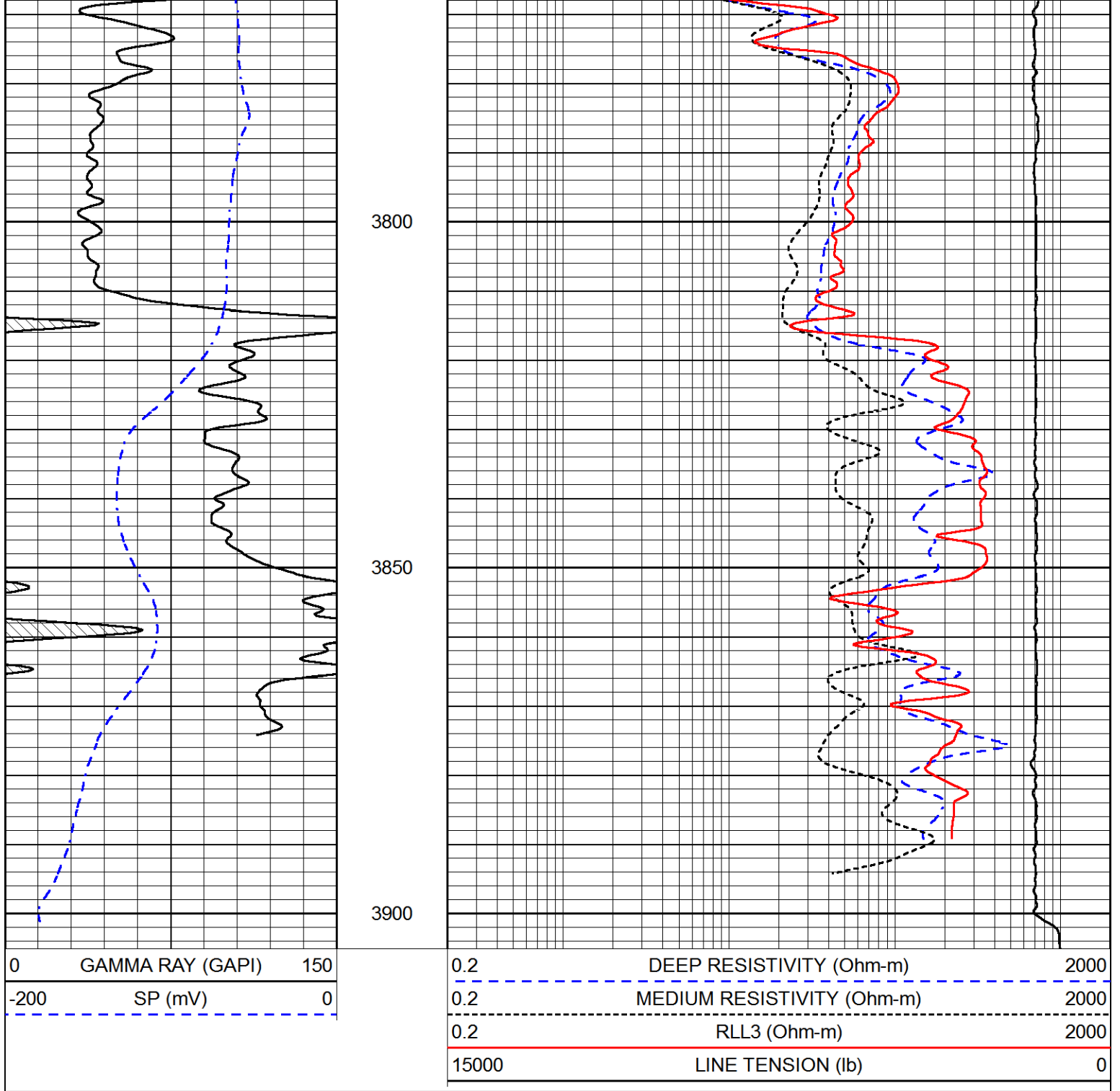


REPEAT SECTION

Database File	cholla_zimmerman_1_3.db
Dataset Pathname	stack/pass2.1
Presentation Format	dil
Dataset Creation	Fri Oct 04 05:37:31 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





Calibration Report

Database File cholla_zimmerman_1_3.db
 Dataset Pathname stack/pass4.1
 Dataset Creation Fri Oct 04 06:23:11 2019

Dual Induction Calibration Report

Serial-Model: 976-M&W
 Calibration Performed: Thu Nov 15 20:52:51 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.800	mmho/m	0.565	-17.500
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.390	-40.000

Compensated Density Calibration Report

Serial-Model: 979-229-M&W
 Source / Verifier: 21170B /
 Master Calibration Performed: Tue Jul 23 10:17:03 2019

Master Calibration

	<u>Density</u>		<u>Far Detector</u>	<u>Near Detector</u>	
Magnesium	1.755	g/cc	7680.82	9959.08	cps
Aluminum	2.690	g/cc	1424.07	6427.19	cps
Spine Angle = 75.43			Density/Spine Ratio = 0.537		
	<u>Size</u>		<u>Reading</u>		
Small Ring	4.00	in	1.15		
Large Ring	14.00	in	1.02		

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
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