



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company **LARSON ENGINEERING, INC.**

Well **VOSHELL NO. 3**

Field **PARIS**

County **LANE**

State **KANSAS**

Location: API #: 15-101-22590-00-00

Other Services

NW SW NE SW
1813' FSL & 1646' FWL
SEC 13 TWP 19S RGE 29W

CNL/CDL
MEL

Permanent Datum GROUND LEVEL Elevation 2812'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 2822'
D.F. N/A
G.L. 2812'

Date 3/31/17

Run Number ONE

Depth Driller 4660'

Depth Logger 4661'

Bottom Logged Interval 4660'

Top Log Interval 250'

Casing Driller 8.625" @ 261'

Casing Logger 260'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 4,000

Density / Viscosity 9.4 57

pH / Fluid Loss 9.5 7.2

Source of Sample FLOWLINE

Rm @ Meas. Temp .60 @ 53

Rmf @ Meas. Temp .45 @ 53

Rmc @ Meas. Temp .81 @ 53

Source of Rmf / Rmc CHARTS

Rm @ BHT .26 @ 123

Operating Rig Time 3 1/2 HOURS

Max Rec. Temp. F 123 DEGF

Equipment Number 108

Location HAYS

Recorded By J. HENRICKSON

Witnessed By VERN SCHRAG

Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.

DIGHTON KANSAS
6 SOUTH, 1 WEST, 1/3 NORTH, EAST INTO

Log Measured From: KELLY BUSHING

10 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: C. PFEIFER

Operator:

Operator:

This Log Record Was Witnessed By

Primary Witness: VERN SCHRAG

Secondary Witness: TOM LARSON

Secondary Witness:

Secondary Witness:

Top - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in 7.875	degF 123	in 4.5	in 0	g/cc 1	2	g/cc 2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m 0	mmho/m 0	mV -460	degF 52	Off	ft 4661

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	29.90			CNT-M&W (tk10-MW)	5.50	3.50	100.00
CNSSC	29.15						
LSD DCAL SSD	20.85			CDL-M&W (168-986)	8.50	4.00	250.00
	20.83						
	20.35						
RLL3	15.80			DIL-M&W (1987)	18.50	3.50	220.00
RLL3F	15.79						
CILD	8.00						

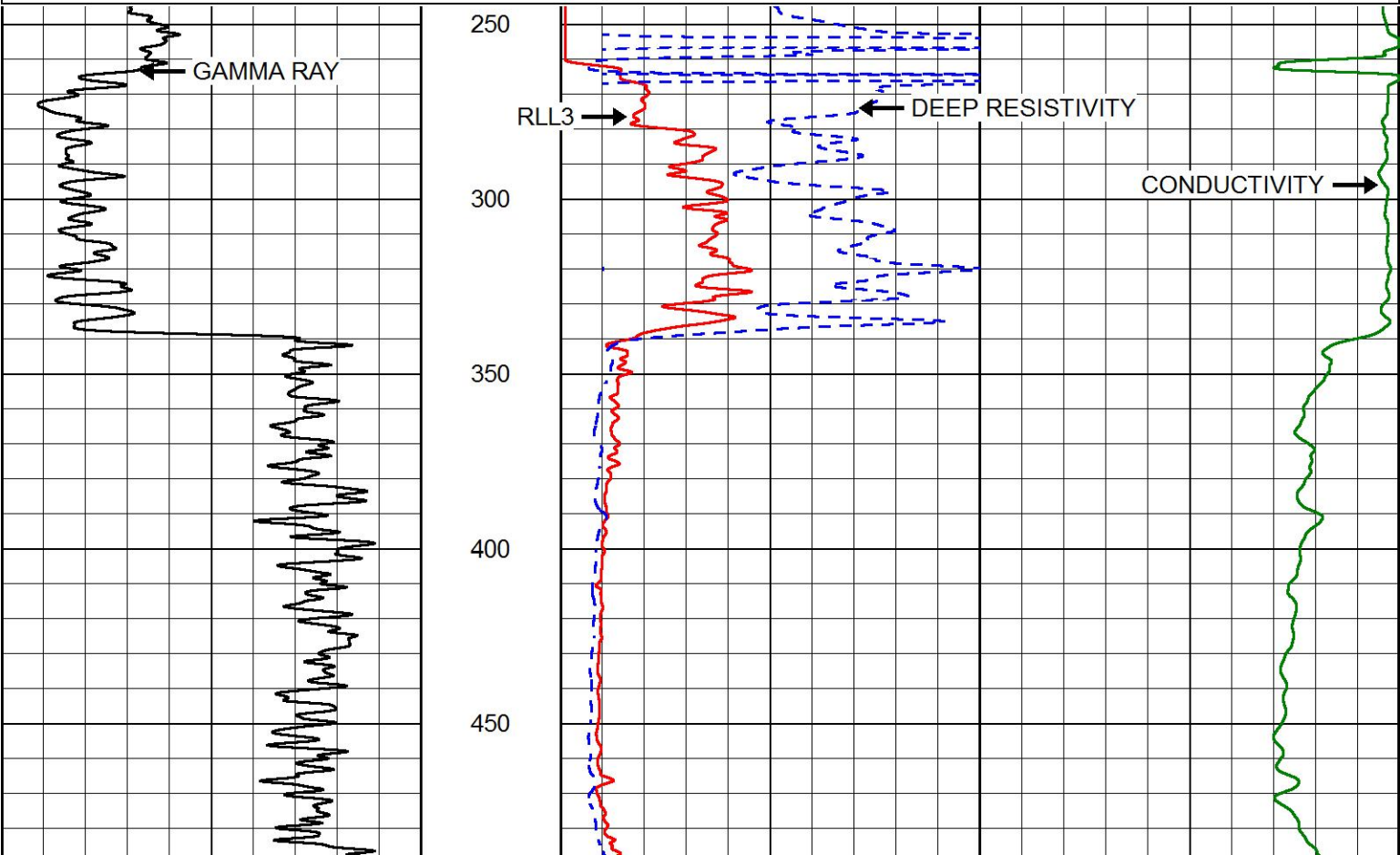
CILM	4.70								
SP	0.20								
Dataset: larson_voshell_3.db: field/well/stack/pass3.1 Total length: 35.50 ft Total weight: 620.00 lb O.D.: 4.00 in									

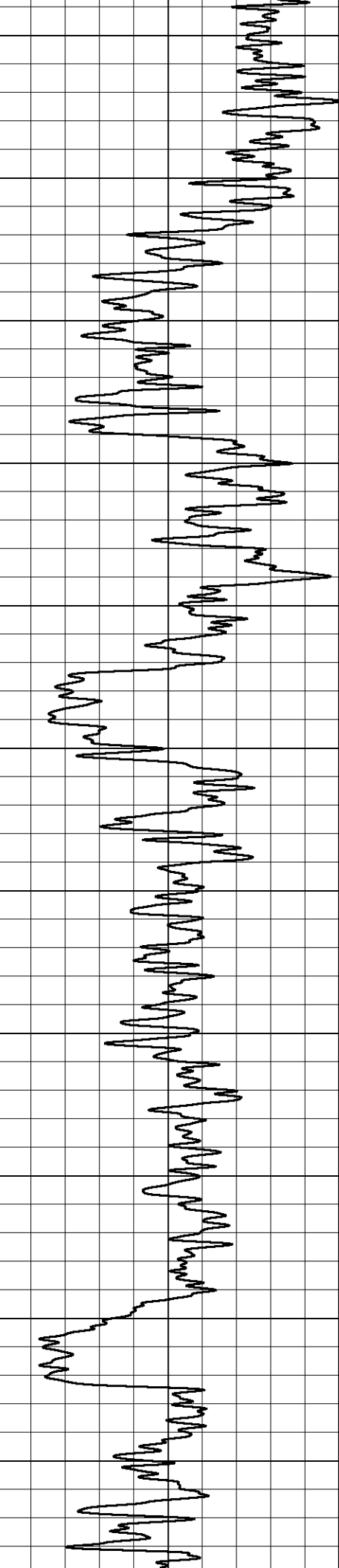


MAIN PASS

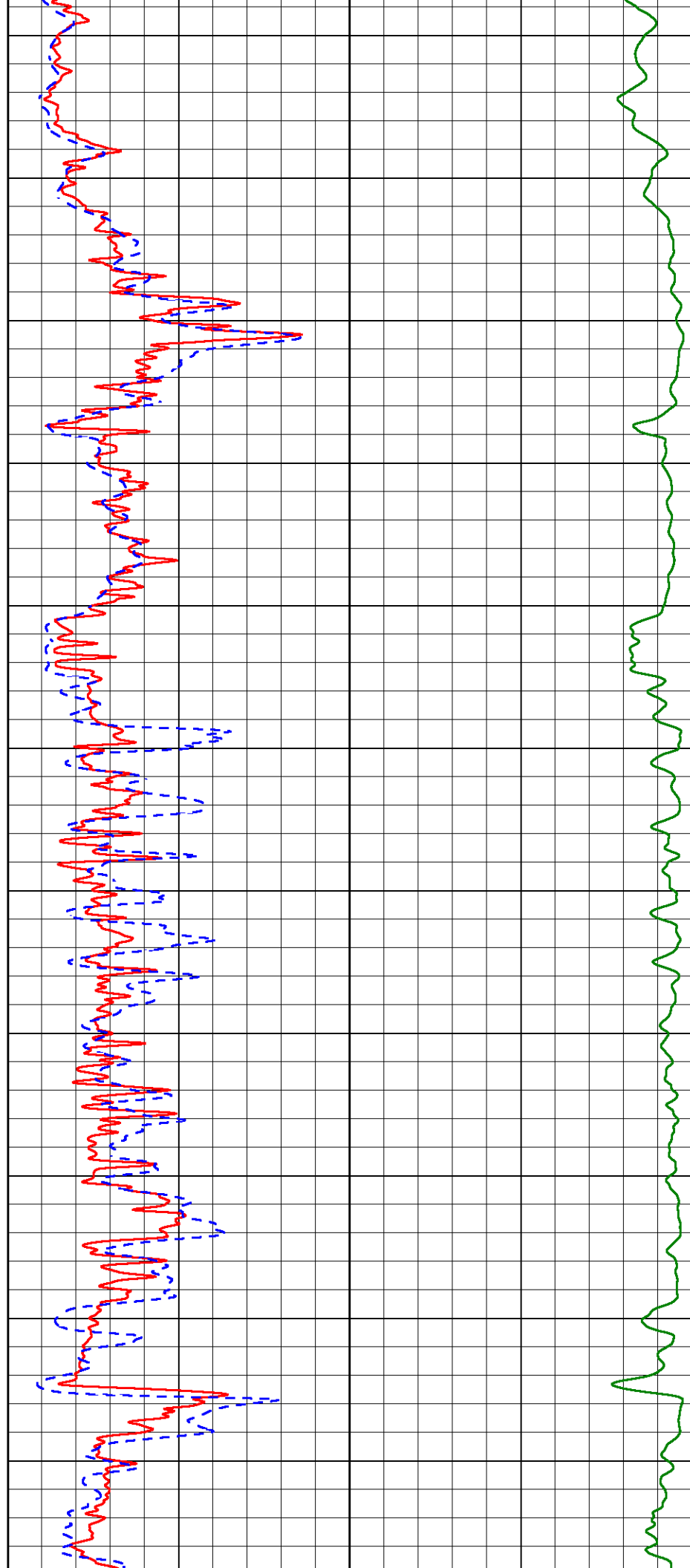
Database File	larson_voshell_3.db
Dataset Pathname	stack/pass3.1
Presentation Format	dil2in
Dataset Creation	Fri Mar 31 16:28:26 2017
Charted by	Depth in Feet scaled 1:600

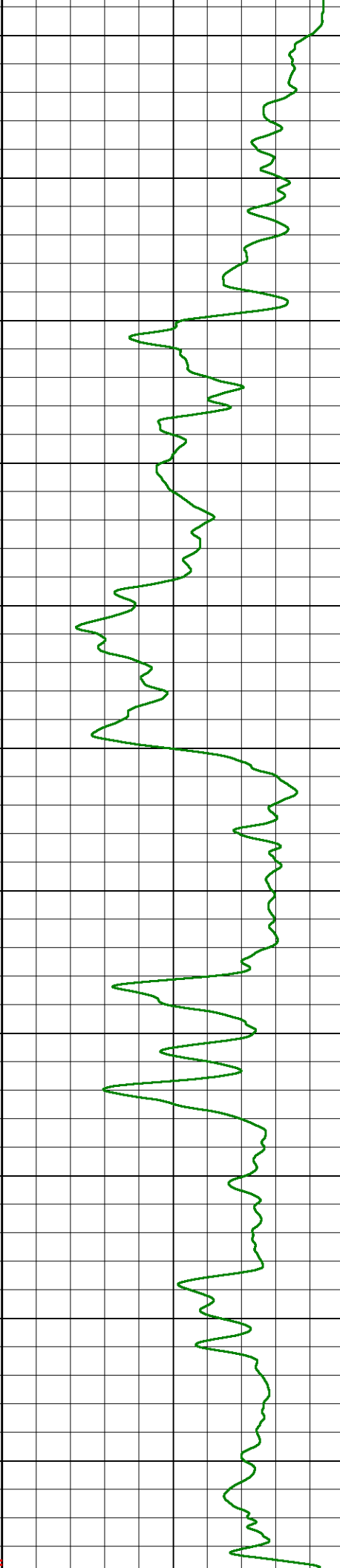
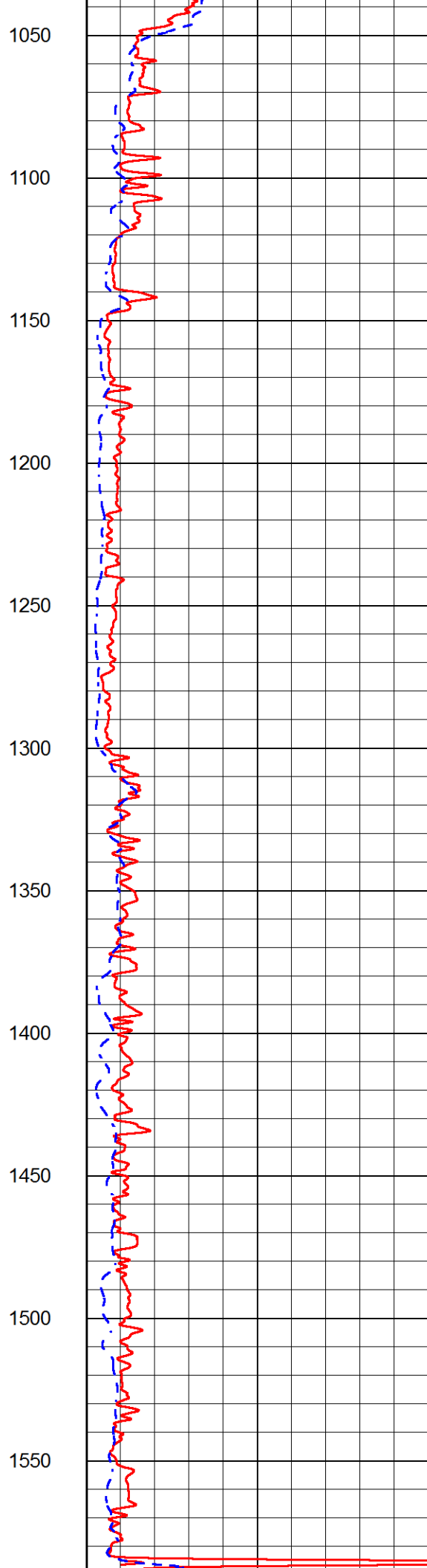
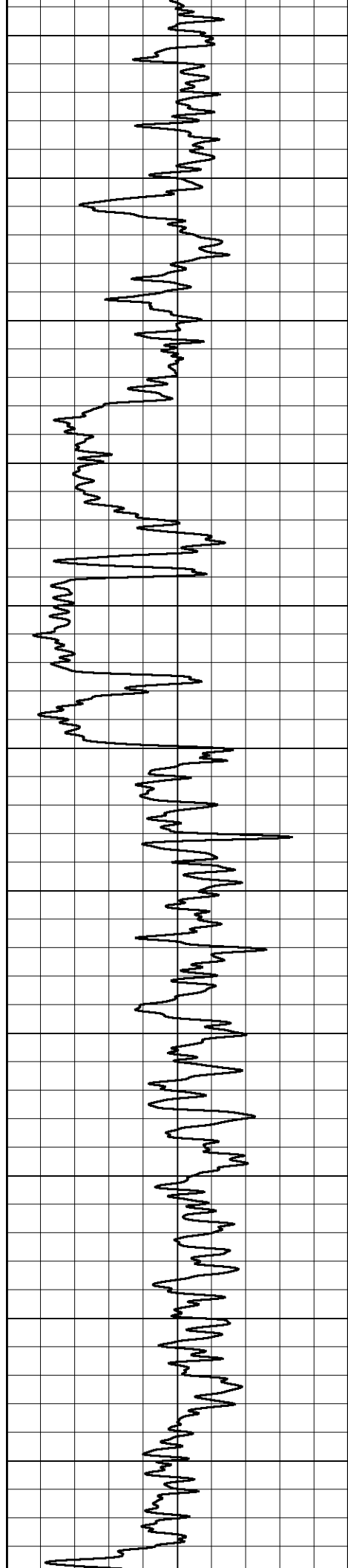
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			0	RLL3 (Ohm-m)	50
			0	DEEP RESISTIVITY (Ohm-m)	50
			50	RLL3 (Ohm-m)	500
				DEEP RESISTIVITY	
			50	(Ohm-m)	500

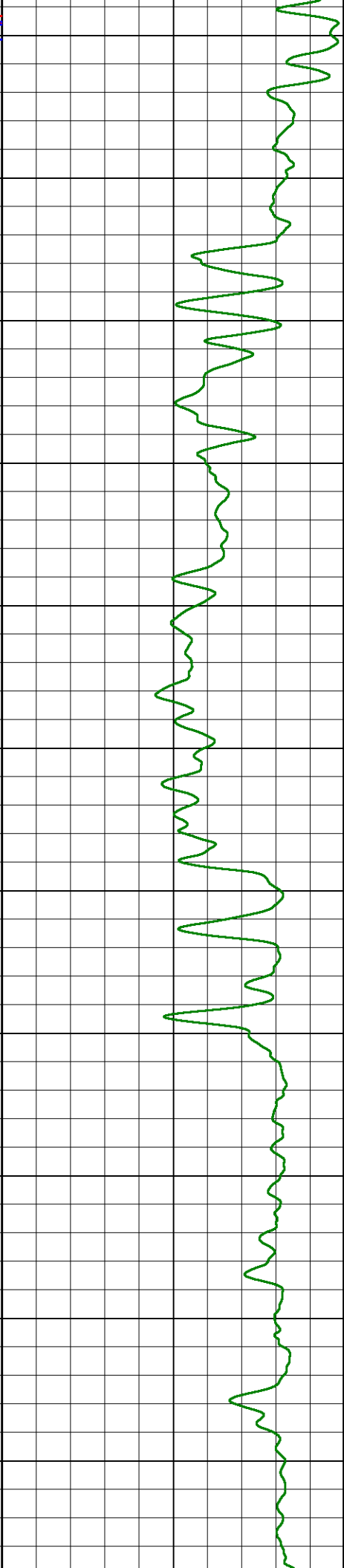
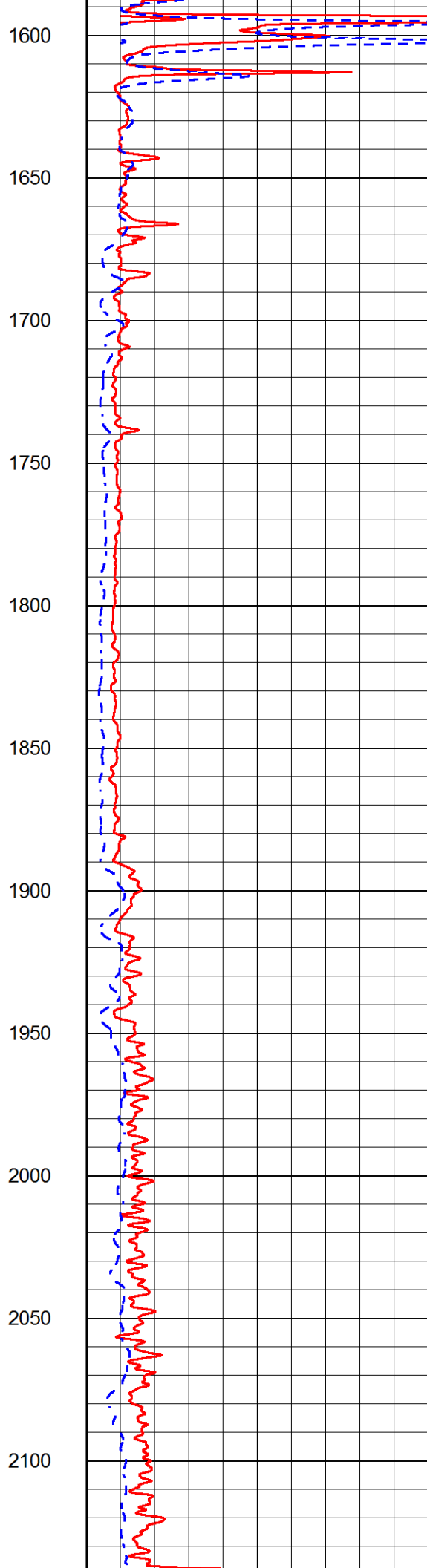
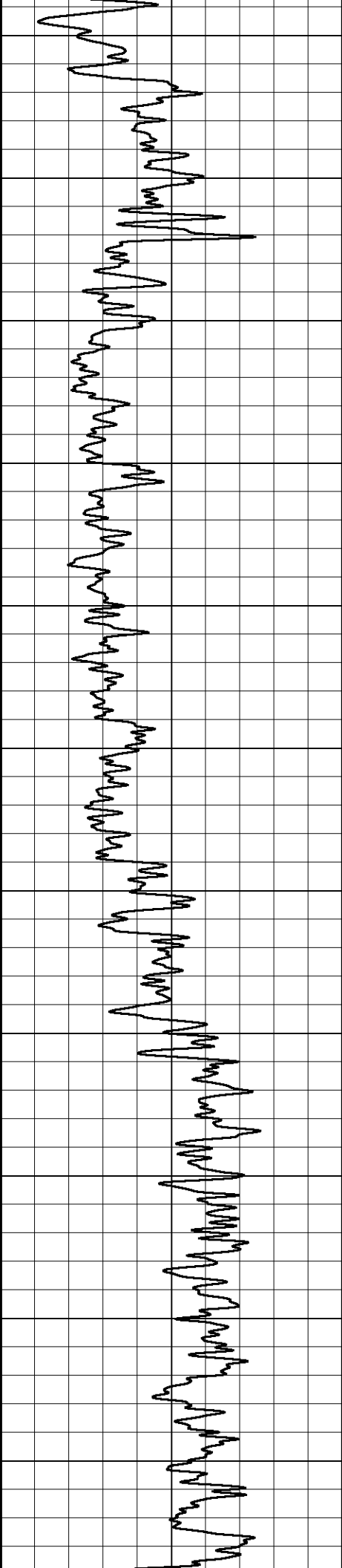


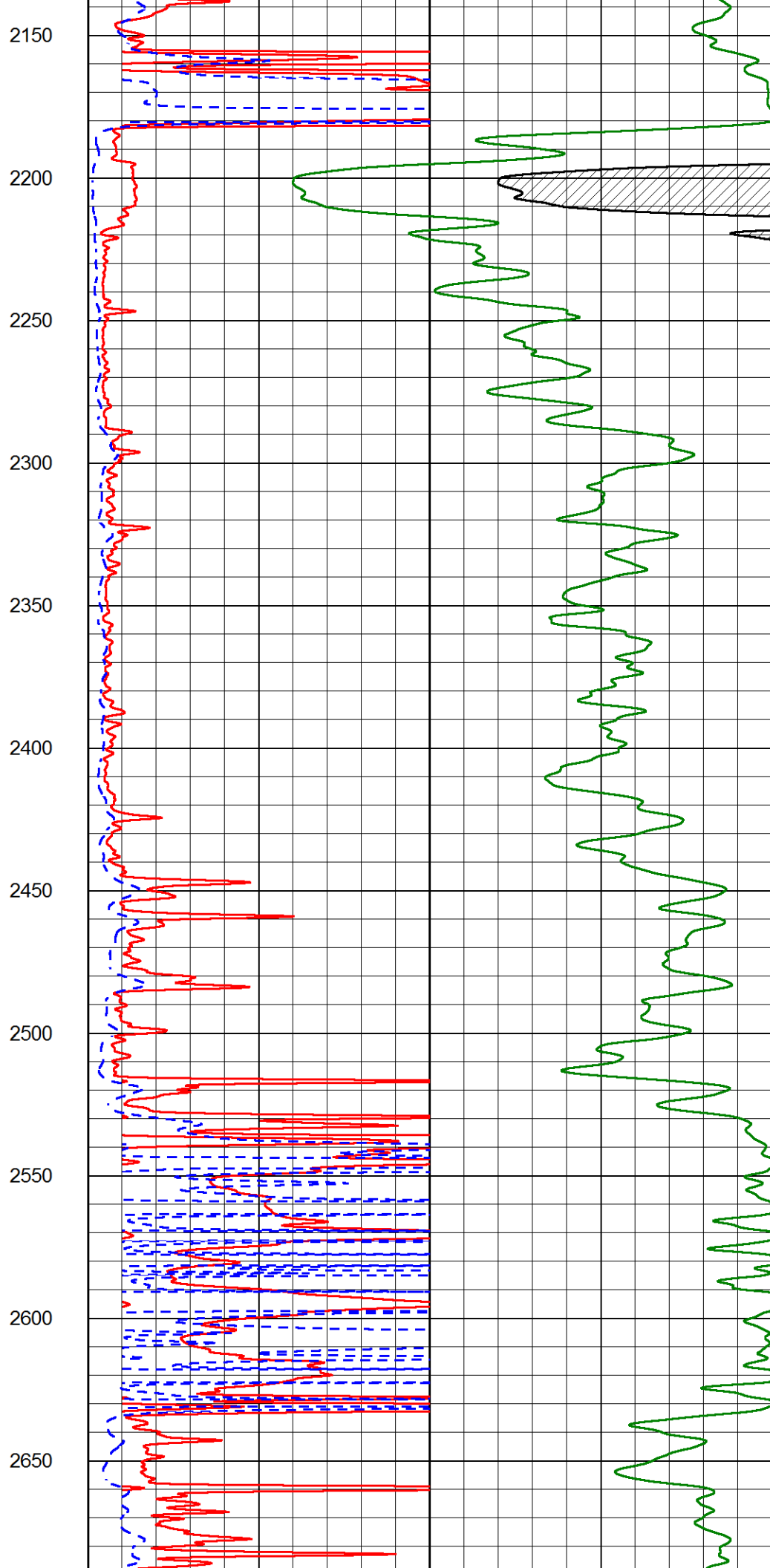
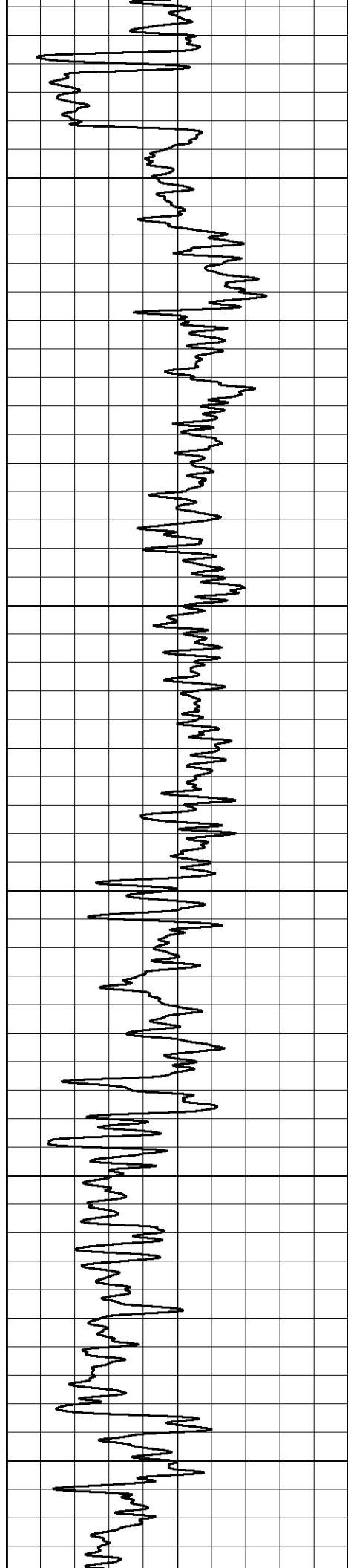


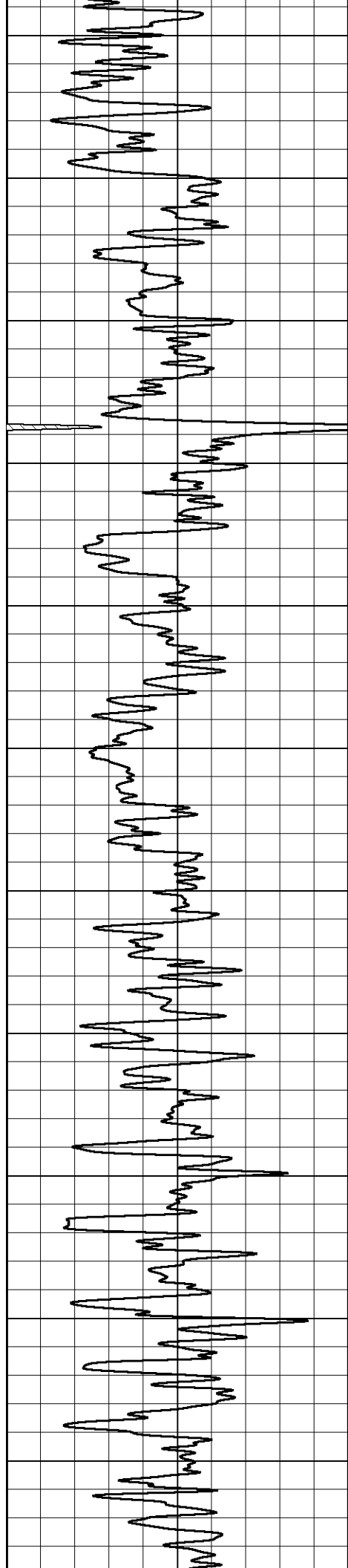
500
550
600
650
700
750
800
850
900
950
1000











2700

2750

2800

2850

2900

2950

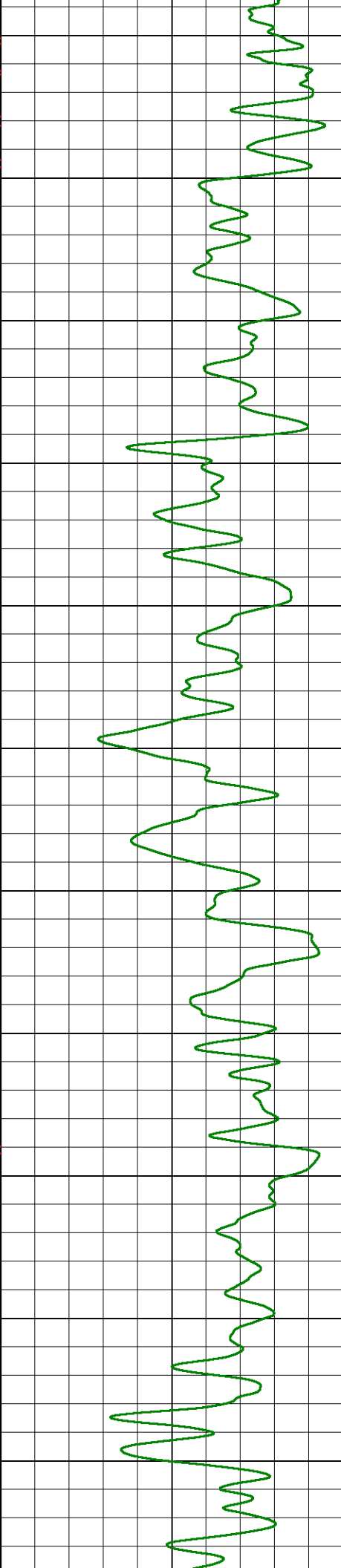
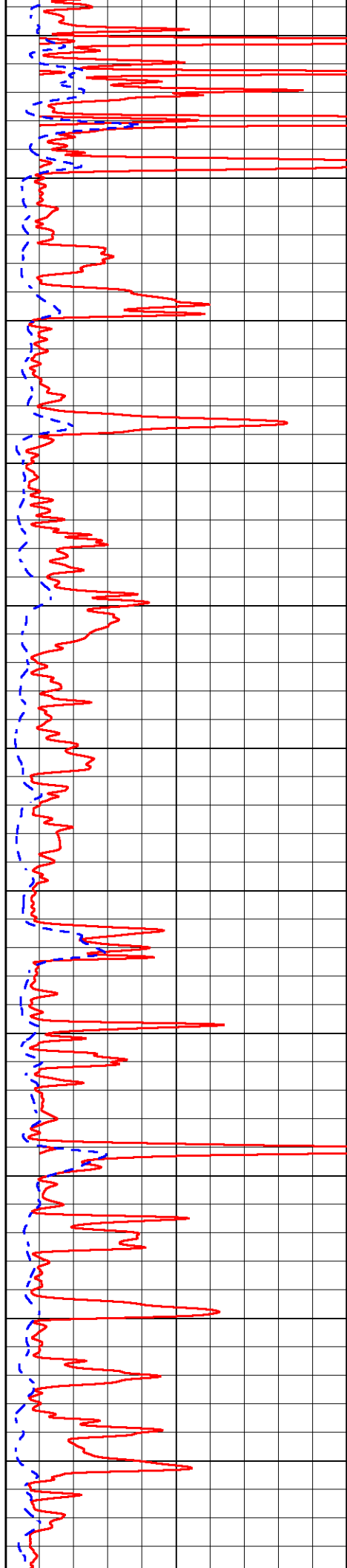
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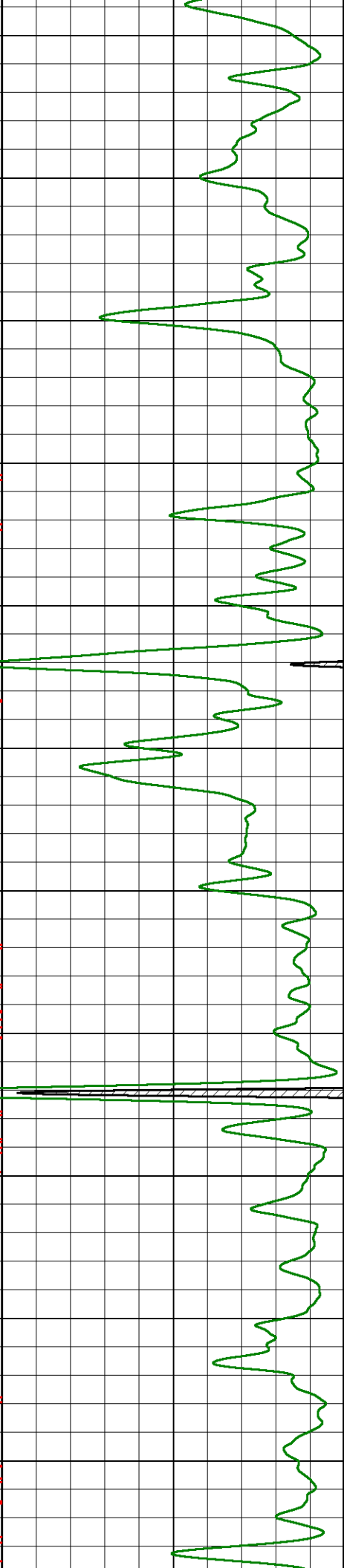
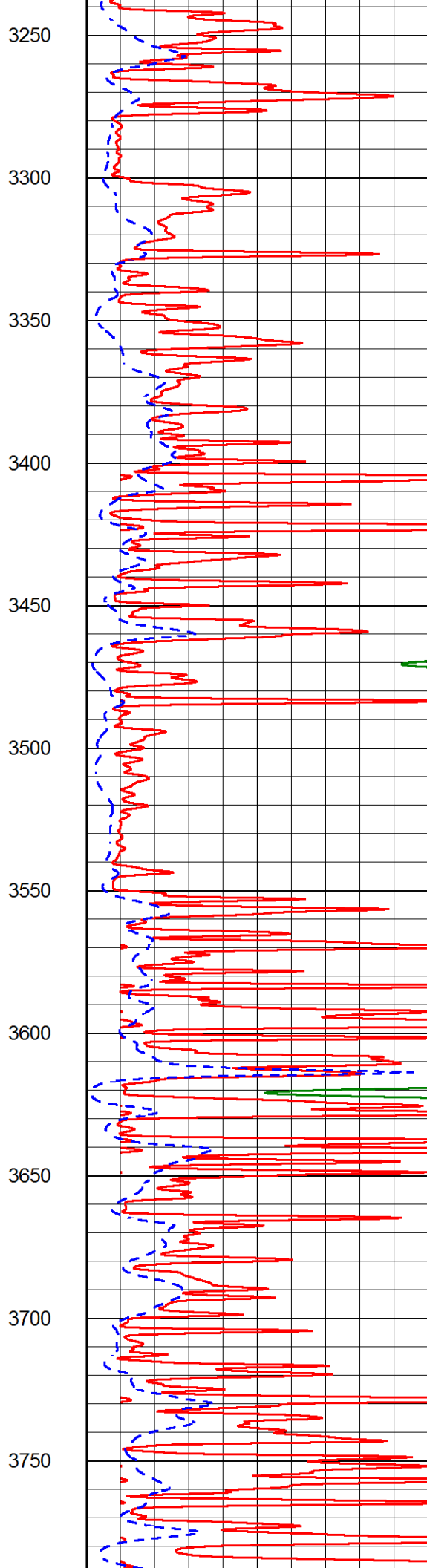
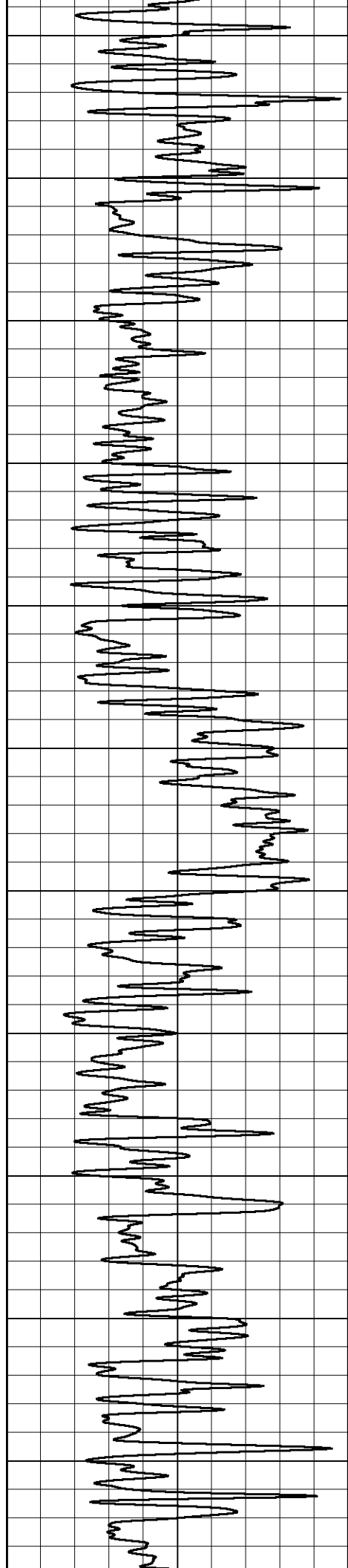
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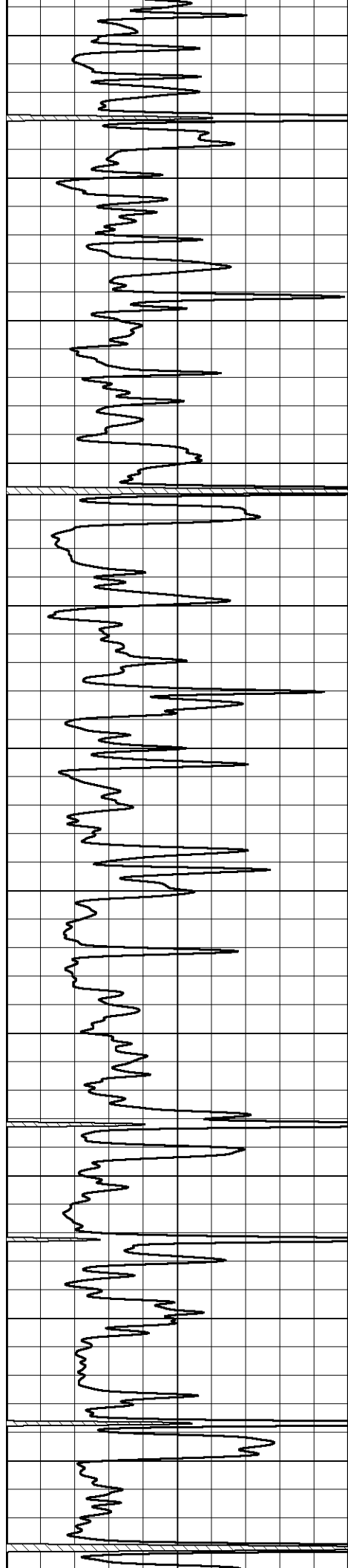
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3150

3200







3800

3850

3900

3950

4000

4050

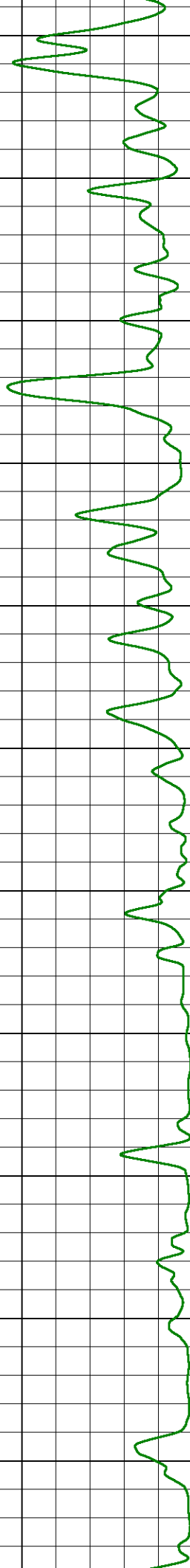
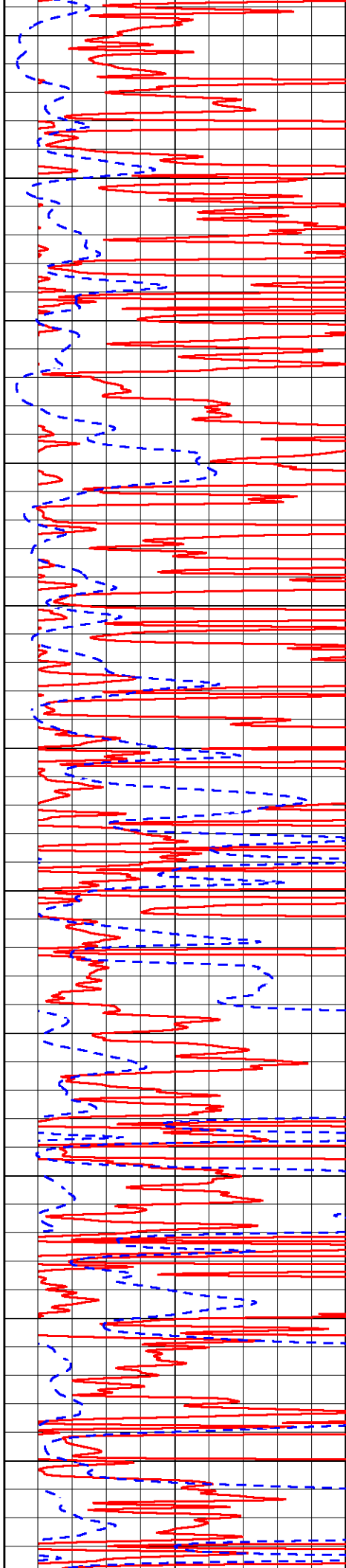
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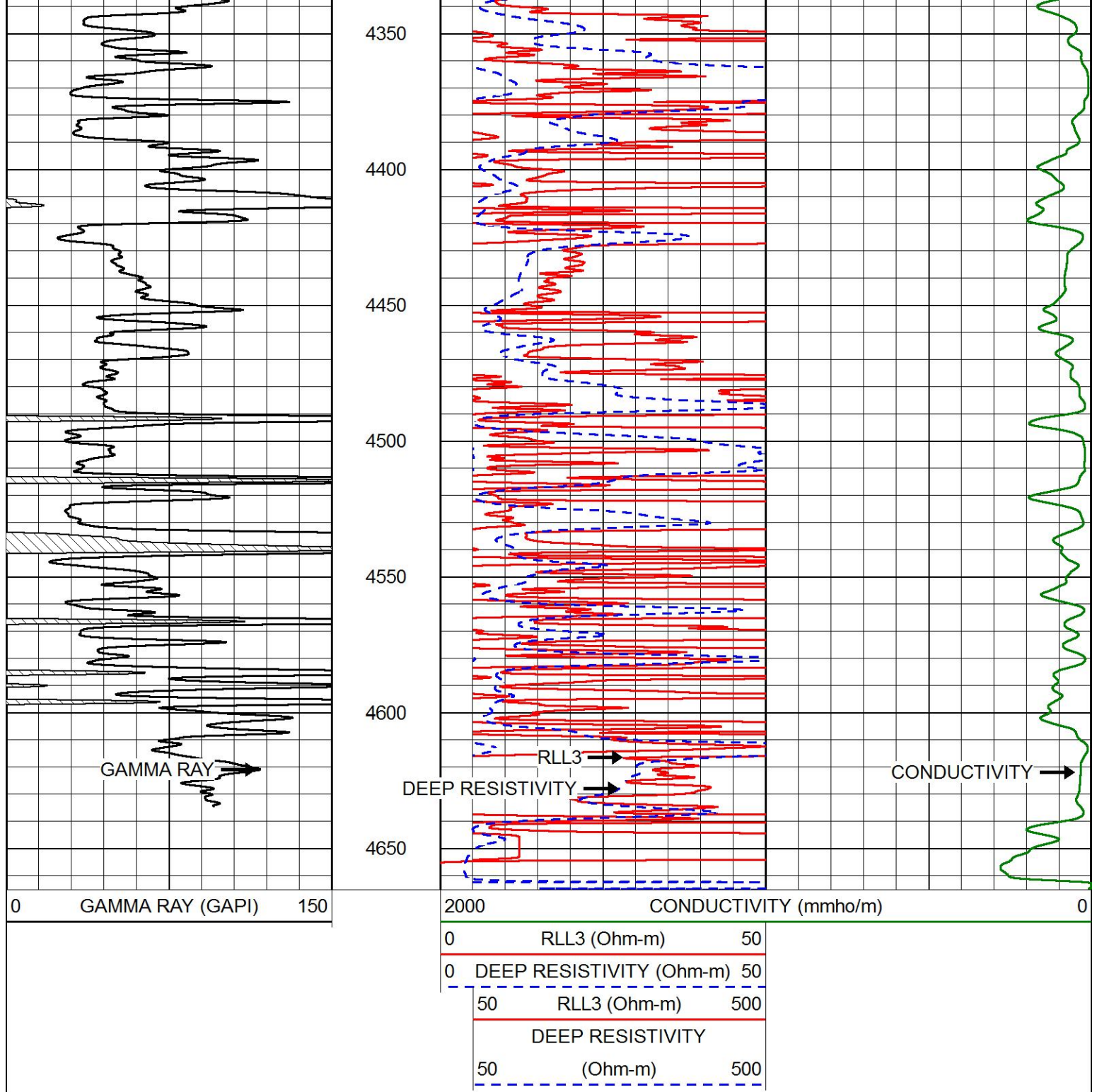
4150

4200

4250

4300





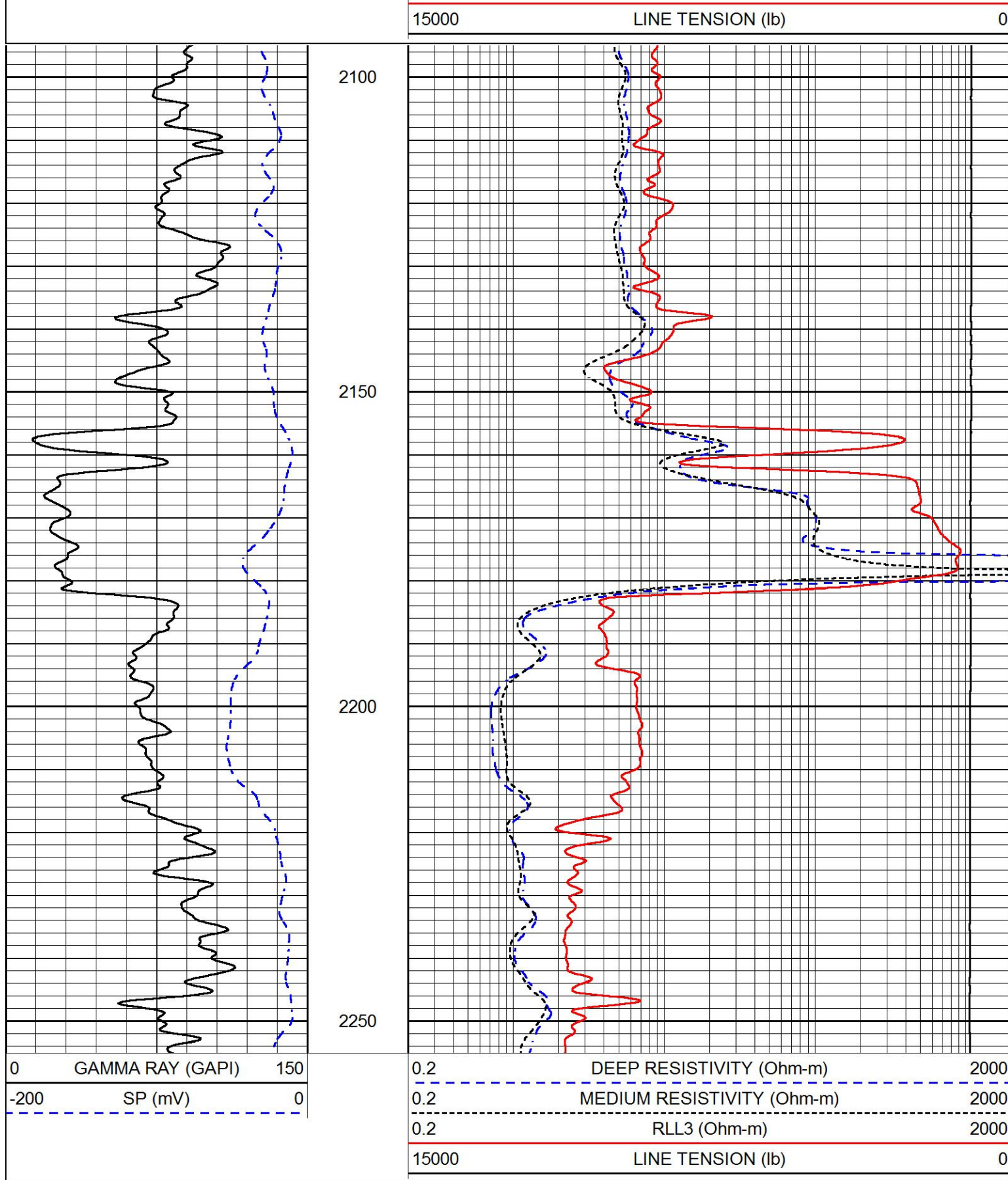


PIONEER
Pioneer Energy Services

MAIN PASS

Database File	larson_voshell_3.db		
Dataset Pathname	stack/pass3.1		
Presentation Format	dil		
Dataset Creation	Fri Mar 31 16:28:26 2017		
Charted by	Depth in Feet scaled 1:240		

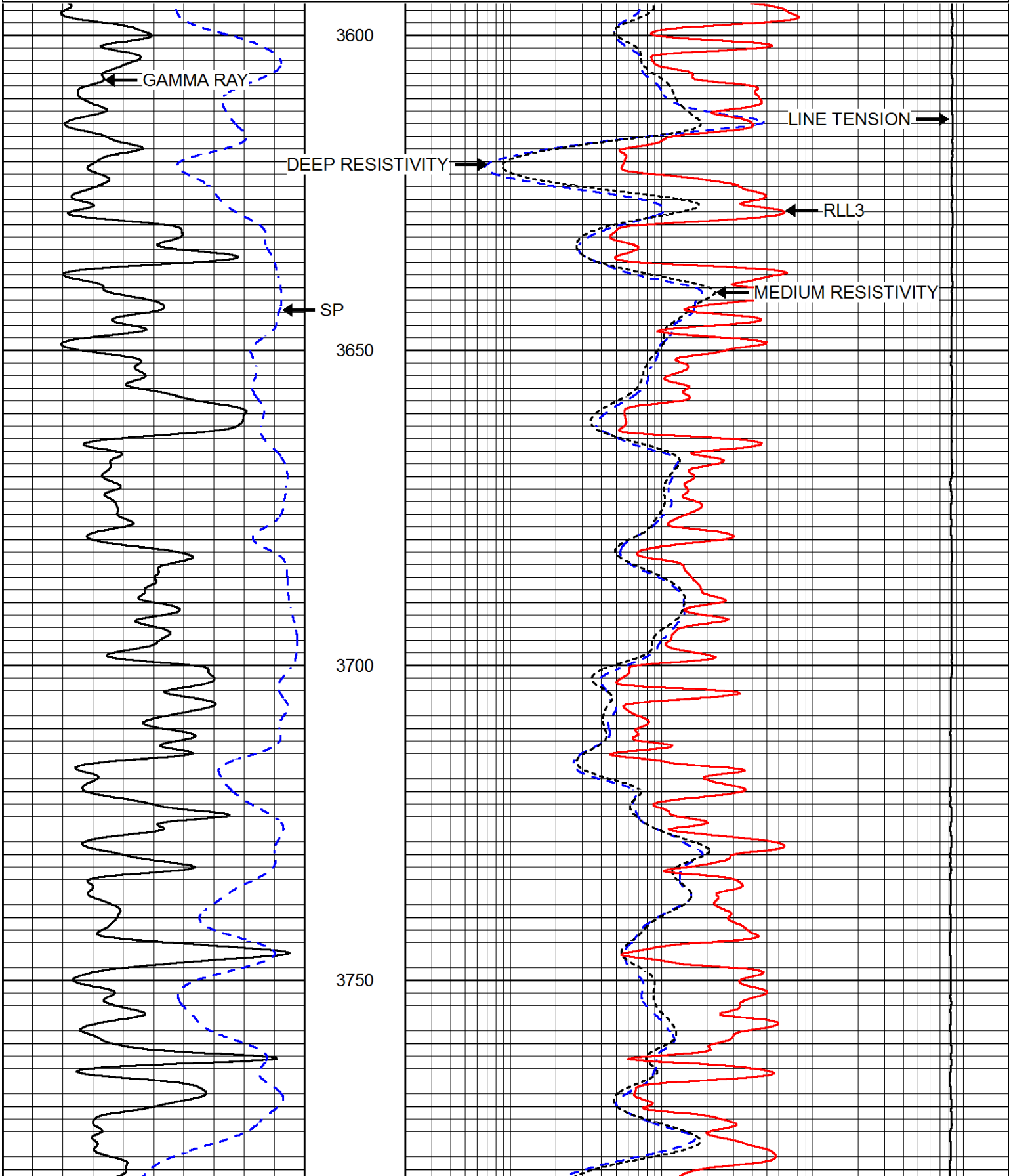
0	GAMMA RAY (GAPI)	150	
-200	SP (mV)	0	
0.2	DEEP RESISTIVITY (Ohm-m)	2000	
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000	
0.2	RLL3 (Ohm-m)	2000	

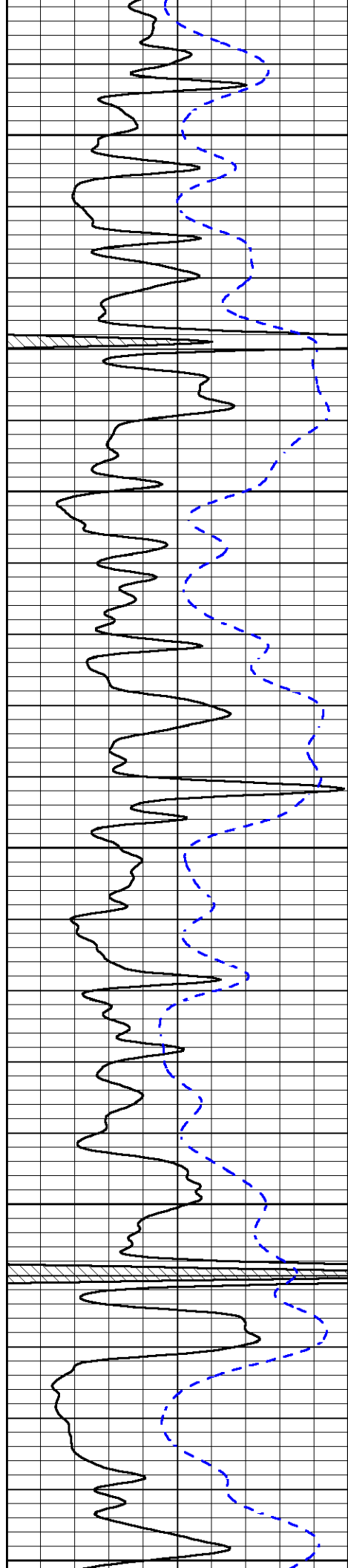


MAIN PASS

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





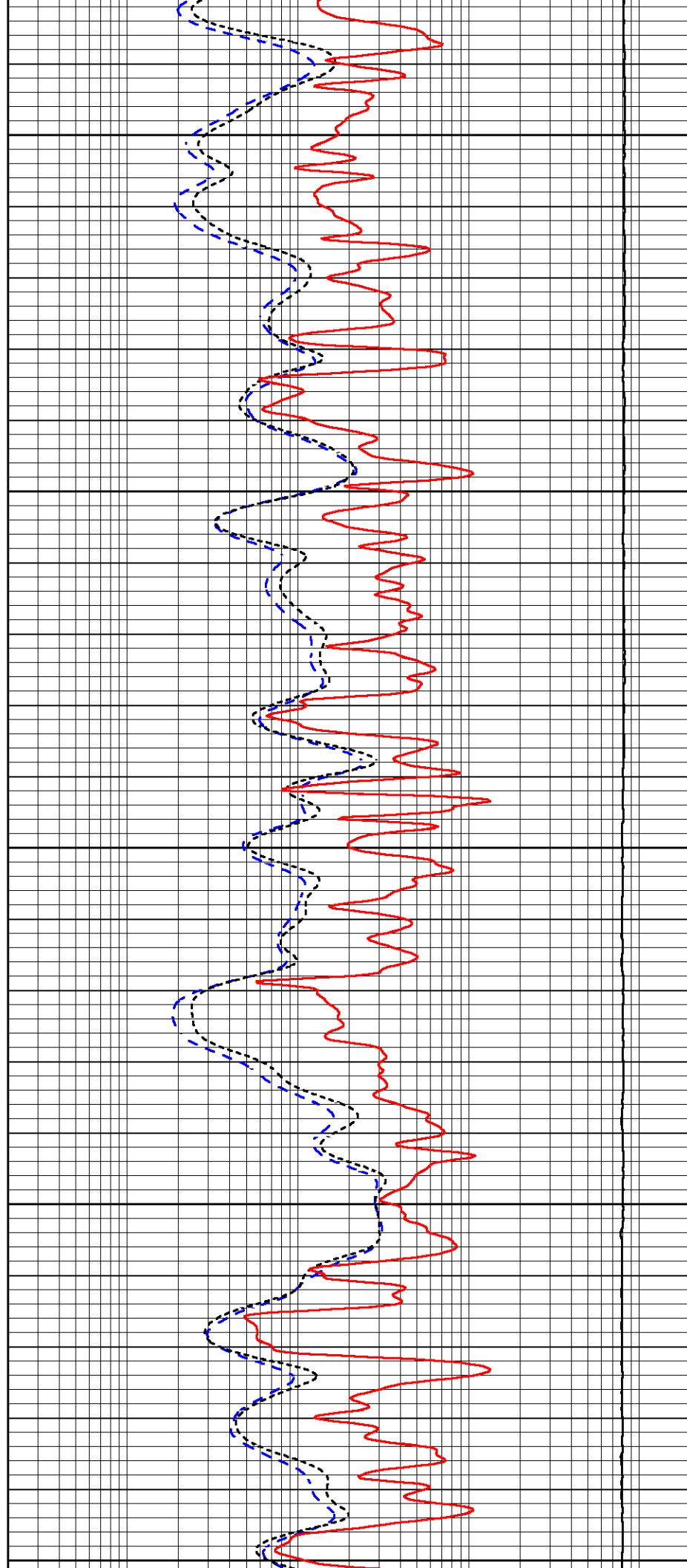
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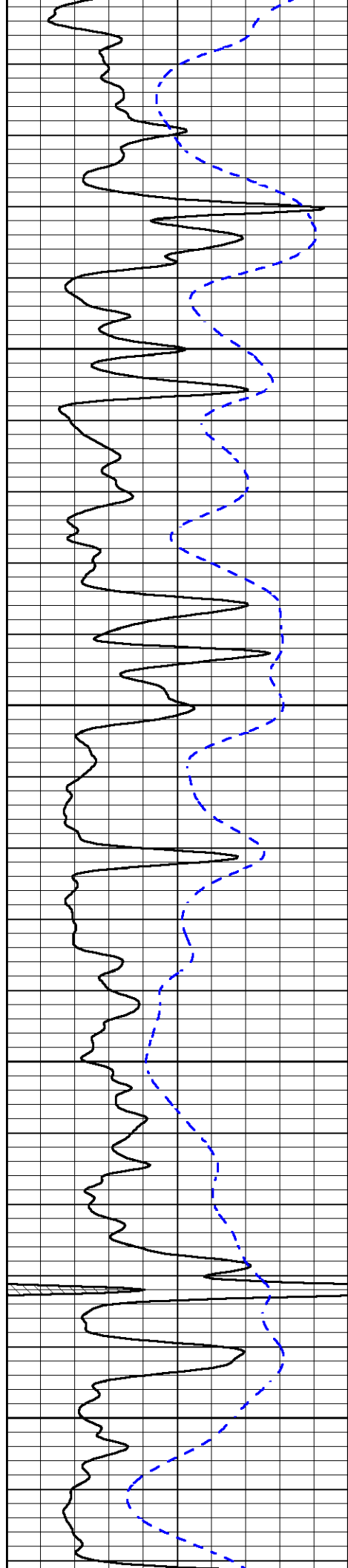
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3900

3950

4000



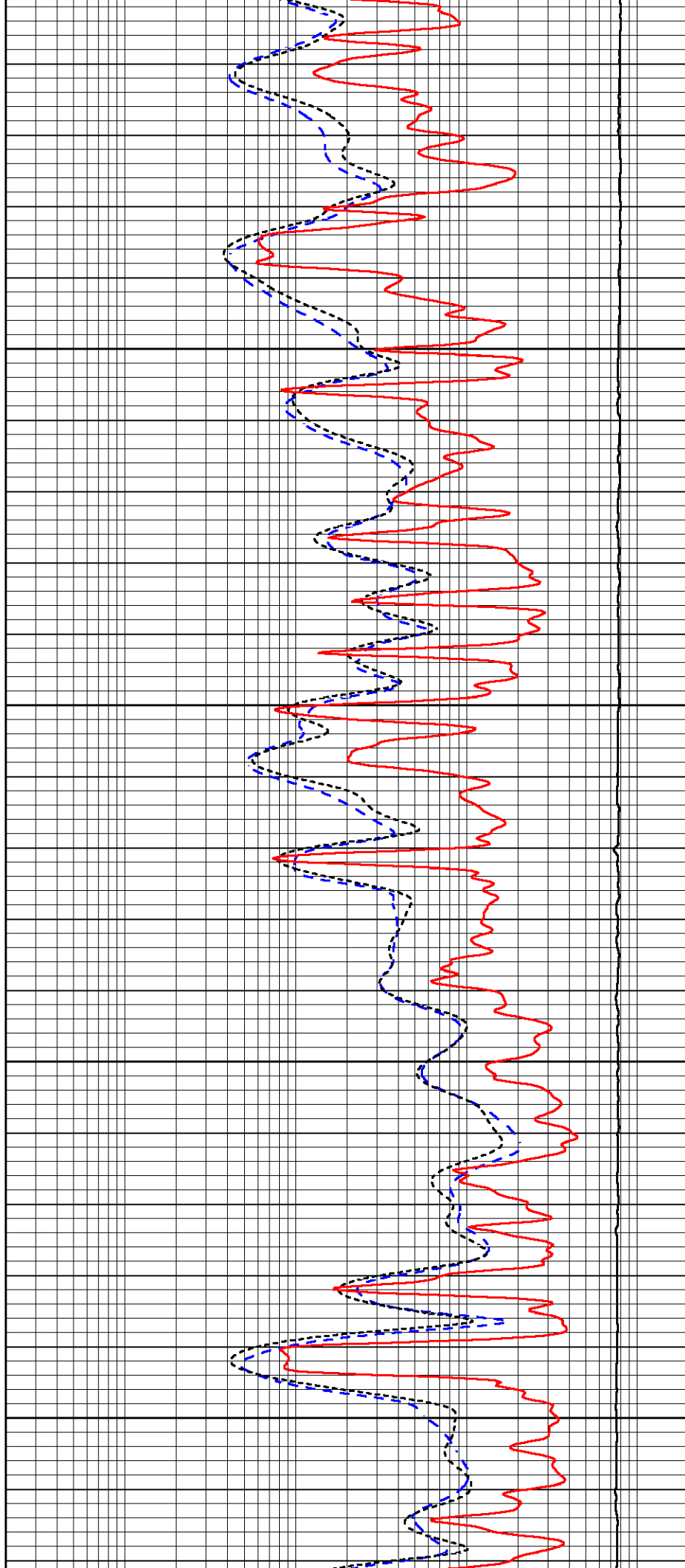


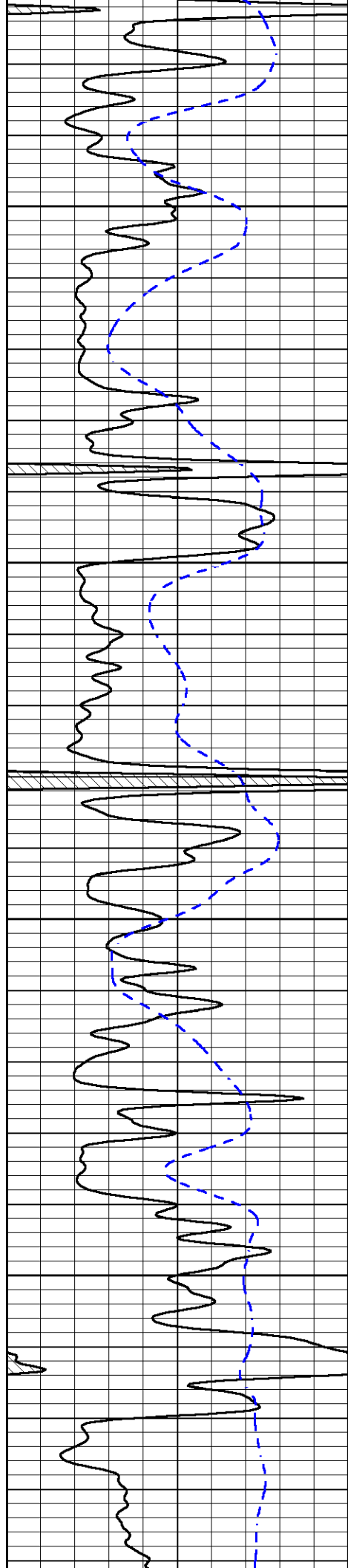
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4100

4150

4200



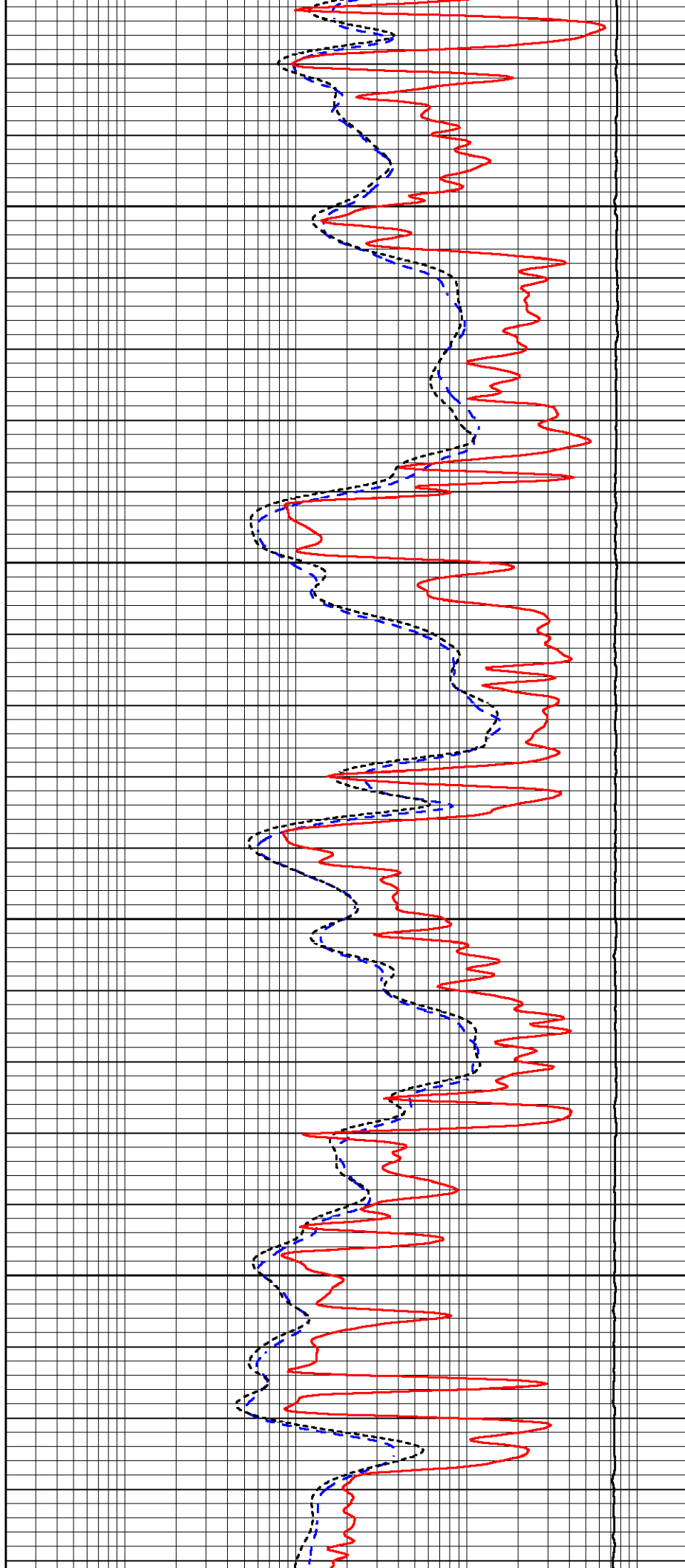


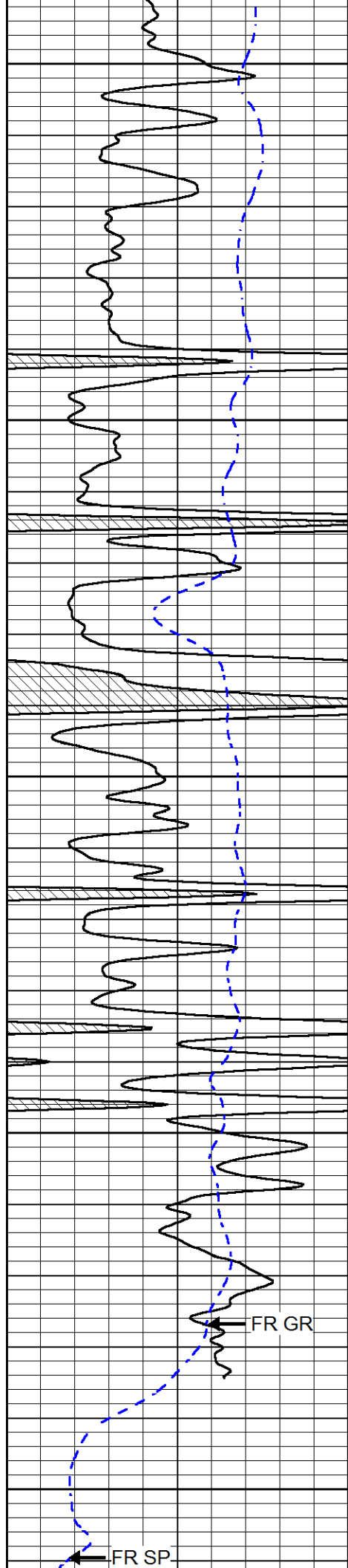
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4300

4350

4400





4450

4500

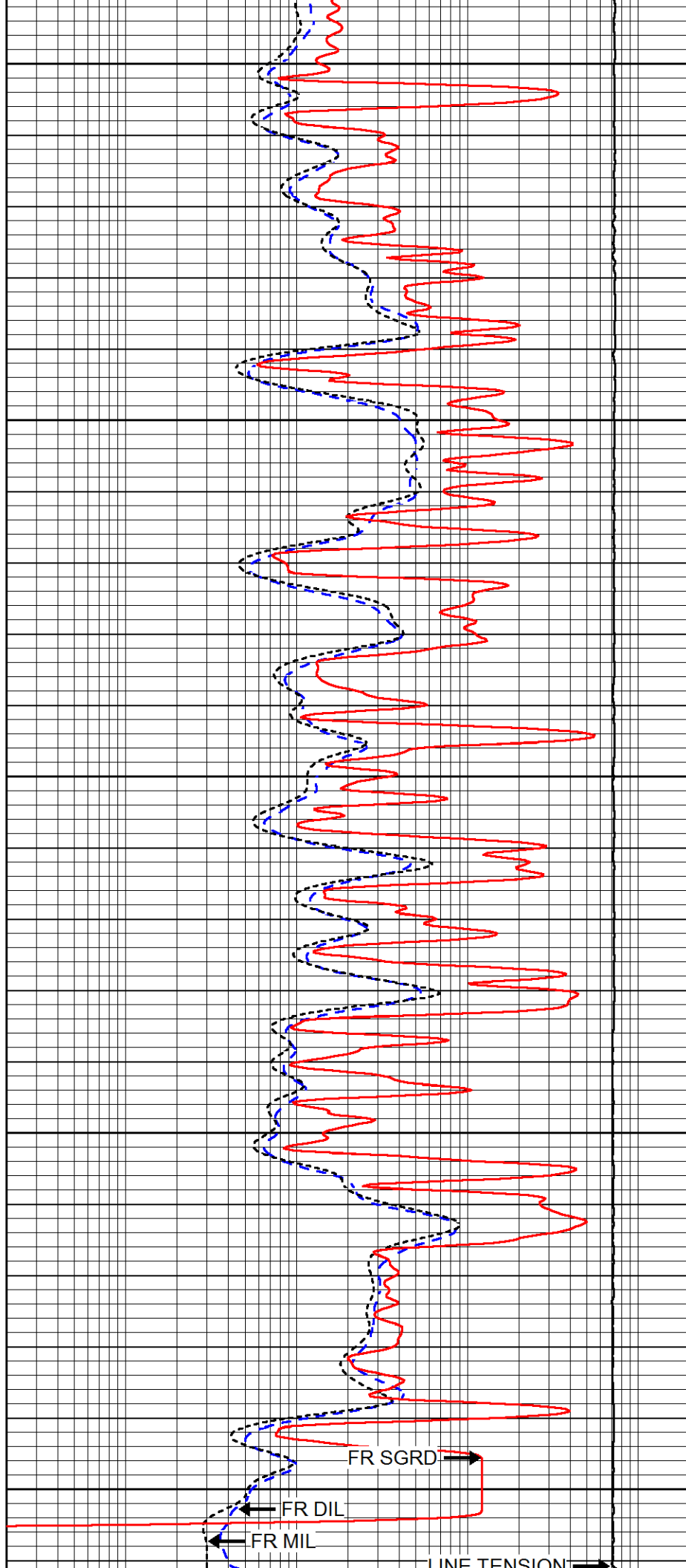
4550

4600

4650

FR GR

FR SP



FR SGRD

FR DIL

FR MIL

LINE TENSION

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

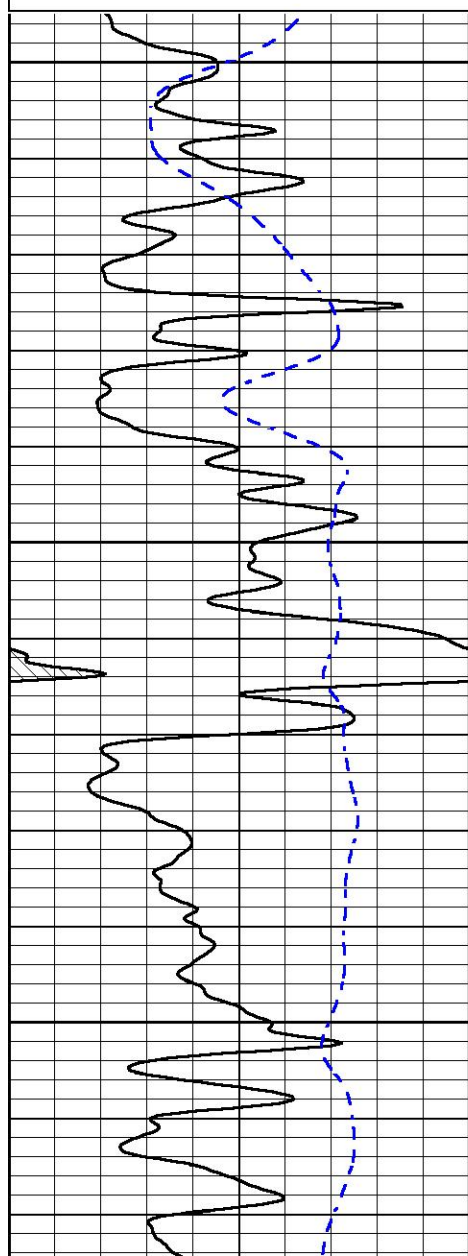


REPEAT SECTION

Database File laron_voshell_3.db
Dataset Pathname stack/pass2.1
Presentation Format dil
Dataset Creation Fri Mar 31 15:58:28 2017
Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

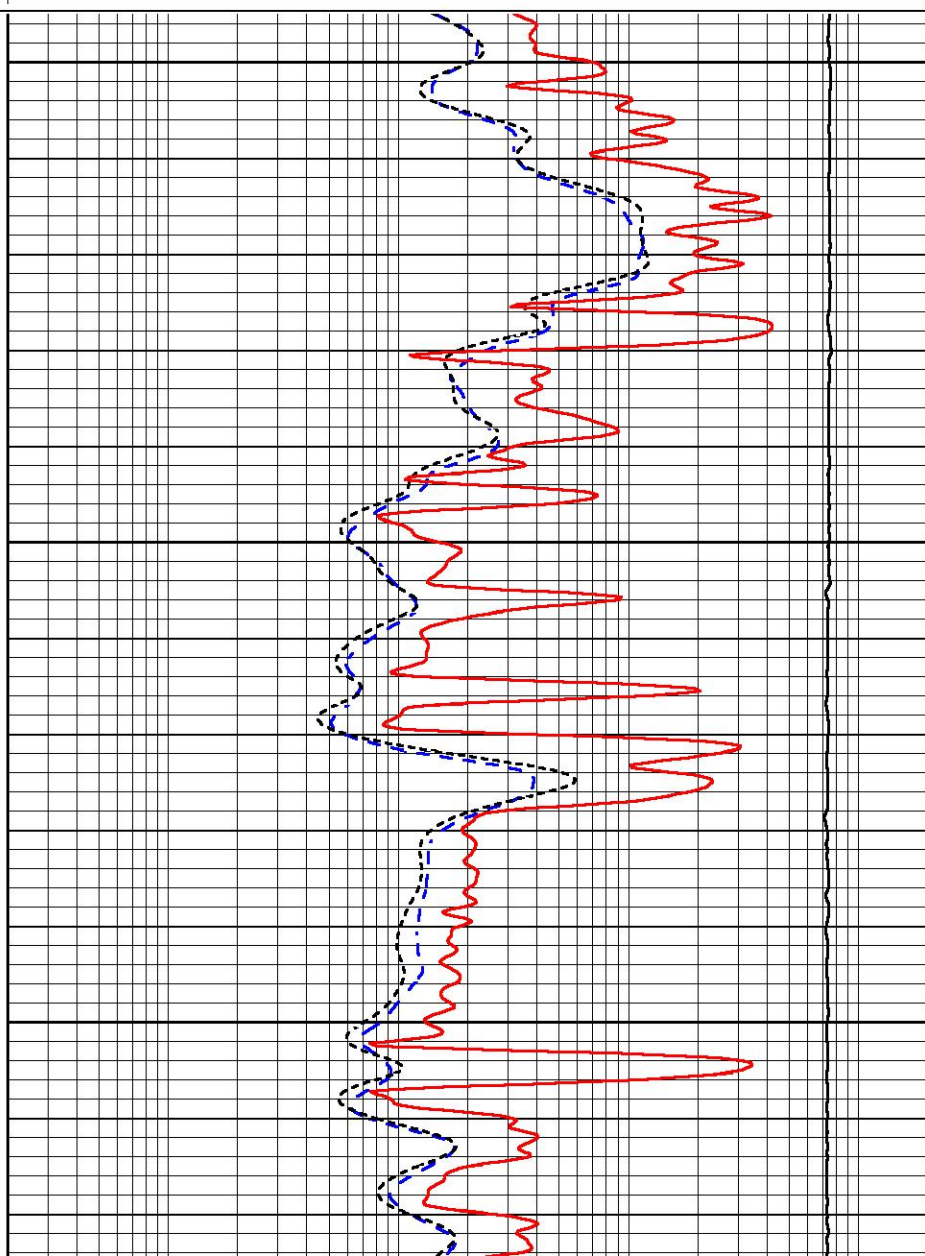
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0

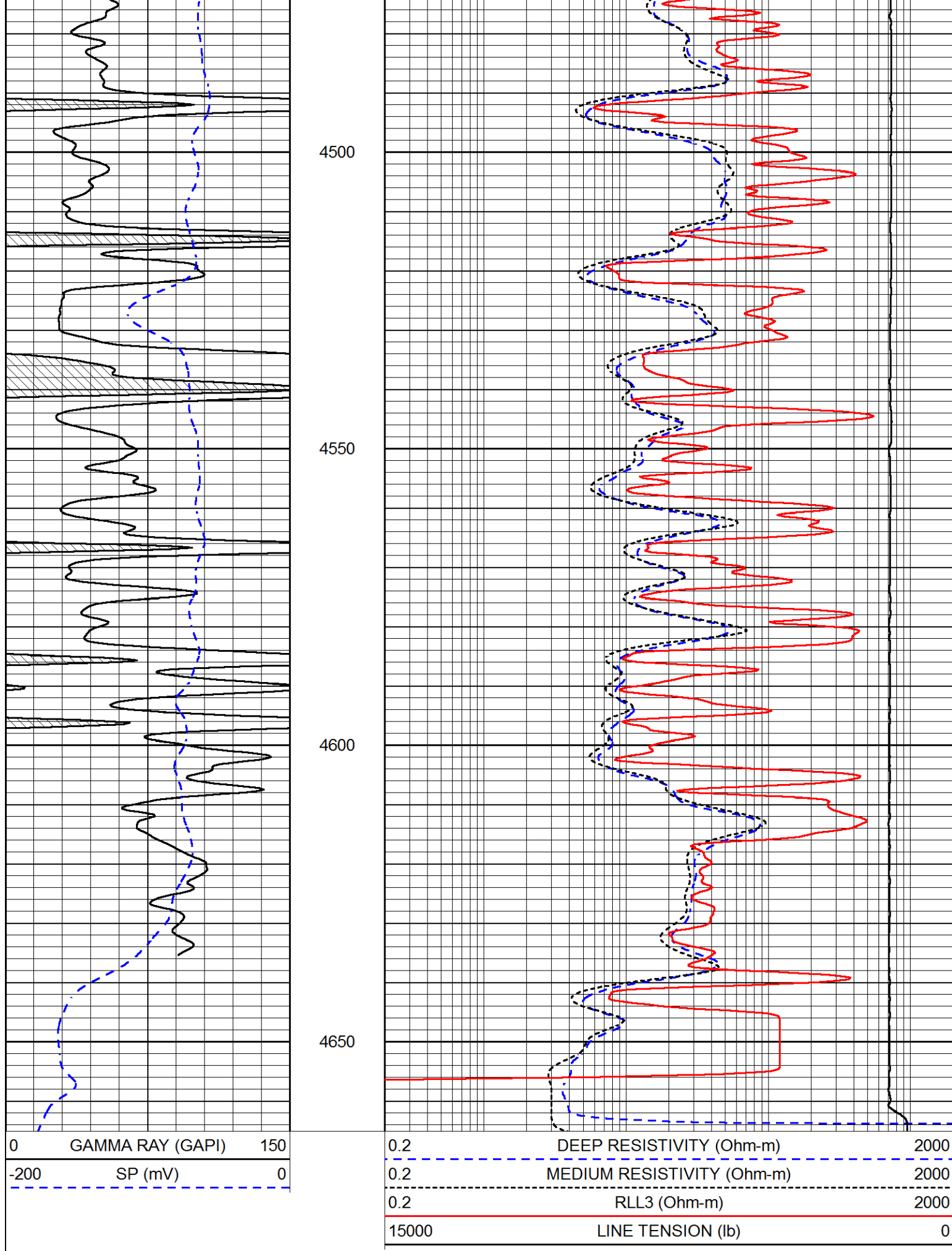


4350

4400

4450





Database File laron_voshell_3.db
 Dataset Pathname stack/pass3.1
 Dataset Creation Fri Mar 31 16:28:26 2017

Dual Induction Calibration Report

Serial-Model: 1987-M&W
 Calibration Performed: Fri Dec 23 14:41:51 2016

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.530	-36.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.460	-110.500

Compensated Density Calibration Report

Serial-Model: 168-986-M&W
 Source / Verifier: /
 Master Calibration Performed: Fri Nov 18 10:05:18 2016

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4691.86	4818.19	cps
Aluminum	2.675	g/cc	859.57	3020.22	cps
Spine Angle = 74.61			Density/Spine Ratio = 0.523		
	Size		Reading		
Small Ring	4.00	in	1.03		
Large Ring	14.00	in	1.23		

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: Fri Dec 23 14:43:38 2016

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps



Company	LARSON ENGINEERING, INC.
Well	VOSHELL NO. 3
Field	PARIS
County	LANE
State	KANSAS