



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company **RJM OIL COMPANY**
Well **RIEDL NO. 4**
Field **LARKIN**
County **BARTON** State **KANSAS**

Location: API #: 15-009-26190-00-00

Other Services

SEC 10 TWP 17S RGE 14W
1980' FNL & 330' FEL

CNL/CDL
MEL/BHCS

Permanent Datum GROUND LEVEL Elevation 1978'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 1986'
D.F. N/A
G.L. 1978'

Date 11/21/2017

Run Number ONE

Depth Driller 3550'

Depth Logger 3552'

Bottom Logged Interval 3551'

Top Log Interval 550'

Casing Driller 8.625" @ 558'

Casing Logger 556'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 8000

Density / Viscosity 9.2 59

pH / Fluid Loss 9.5 8.0

Source of Sample FLOWLINE

Rm @ Meas. Temp .76 @ 56

Rmf @ Meas. Temp .56 @ 56

Rmc @ Meas. Temp 1.01 @ 56

Source of Rmf / Rmc CHARTS

Rm @ BHT .38 @ 112

Operating Rig Time 4 HOURS

Max Rec. Temp. F 112 DEGF

Equipment Number 108

Location HAYS

Recorded By J. HENRICKSON

Witnessed By JIM MUSGROVE

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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.

RUSSELL KANSAS
25 SOUTH, WEST INTO
(3 NORTH OF HWY 4)

Log Measured From: KELLY BUSHING 8 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: JIM MUSGROVE
Secondary Witness:
Secondary Witness:
Secondary Witness:

Top - Bottom

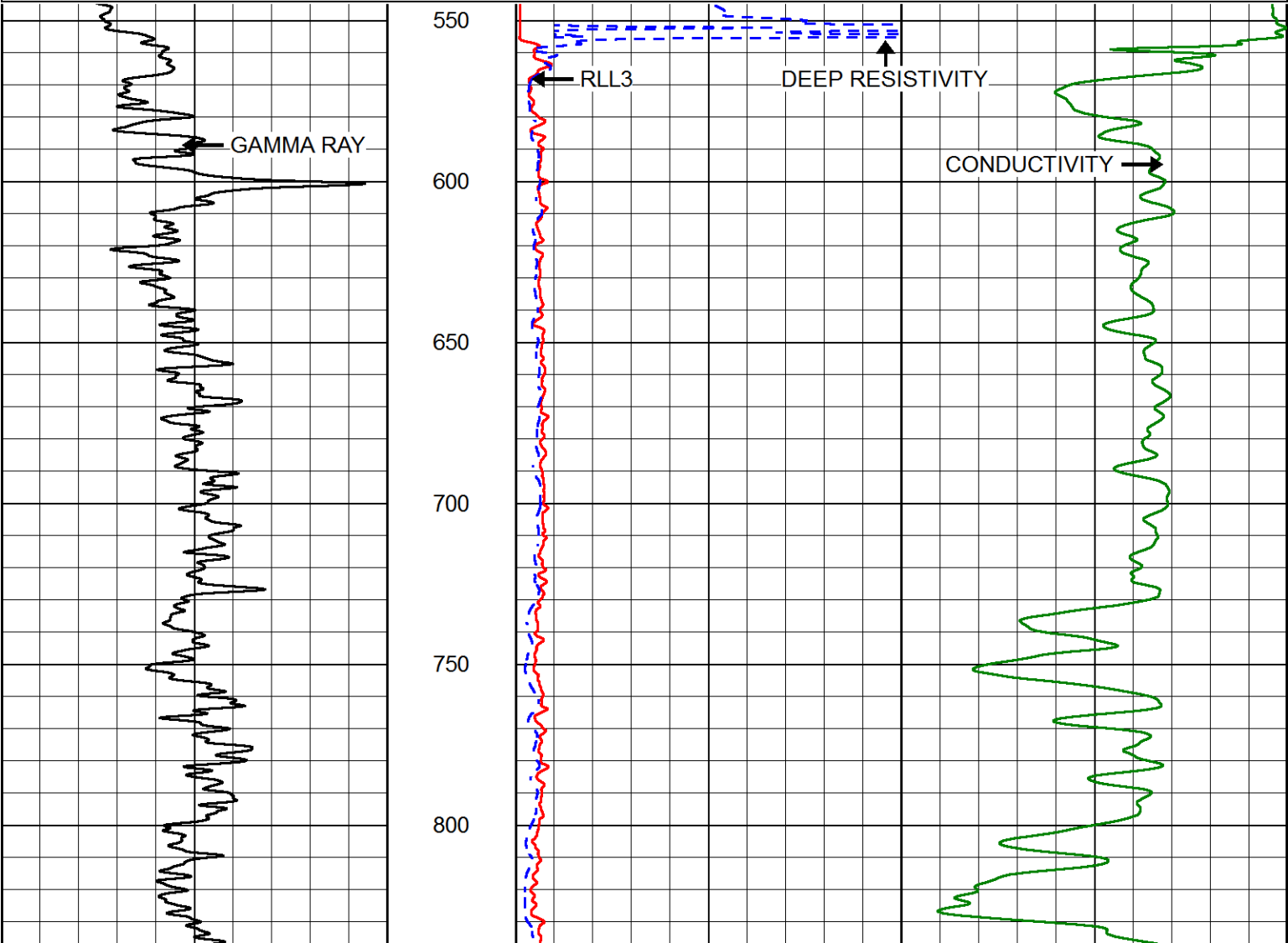
A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in 7.875	degF 100	in 5.5	in 0	g/cc 1	2	g/cc 2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m 0	mmho/m 0	mV 0	degF 0	Off	ft 0

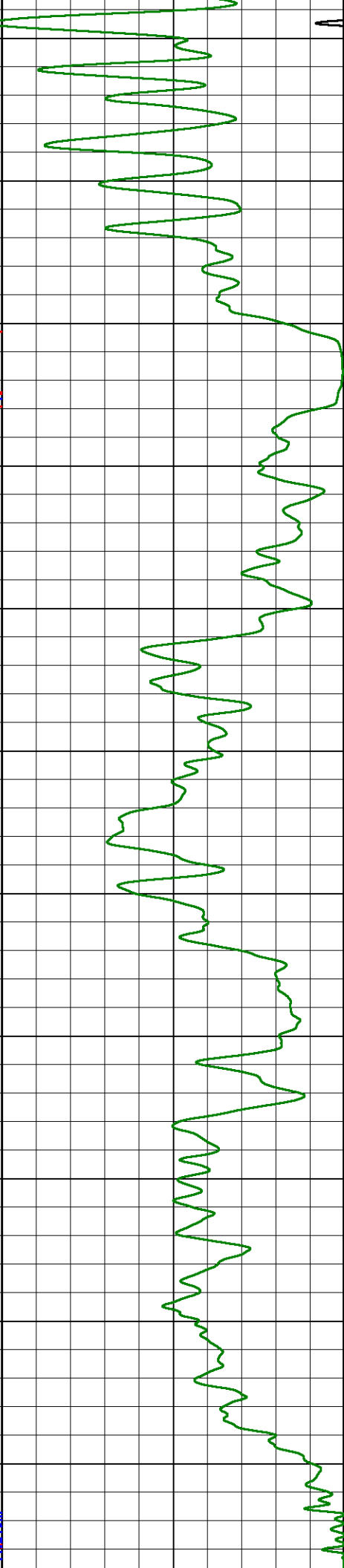
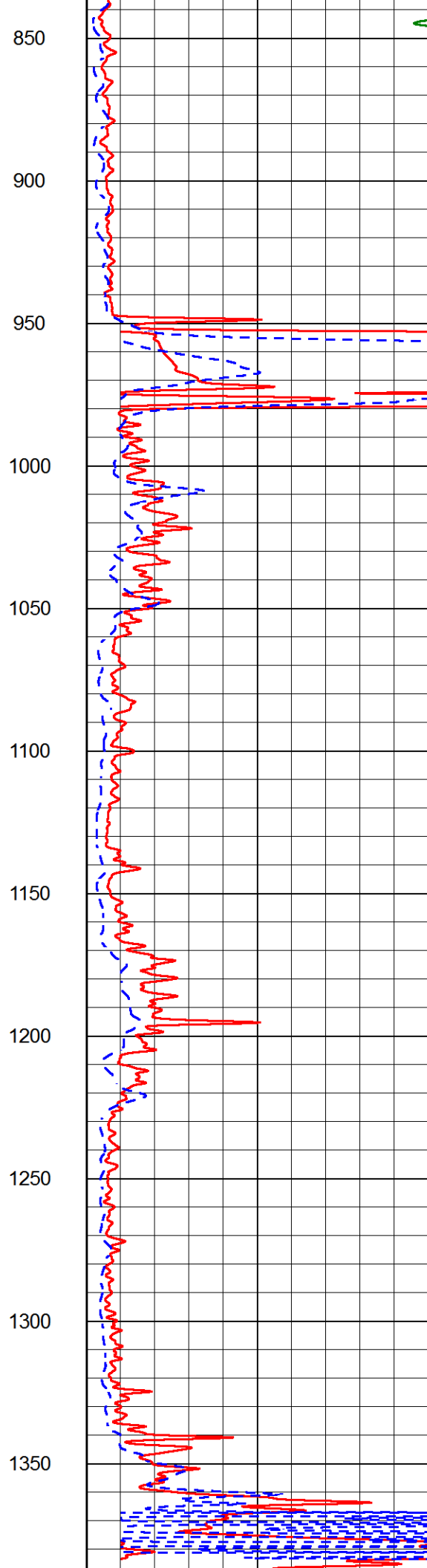
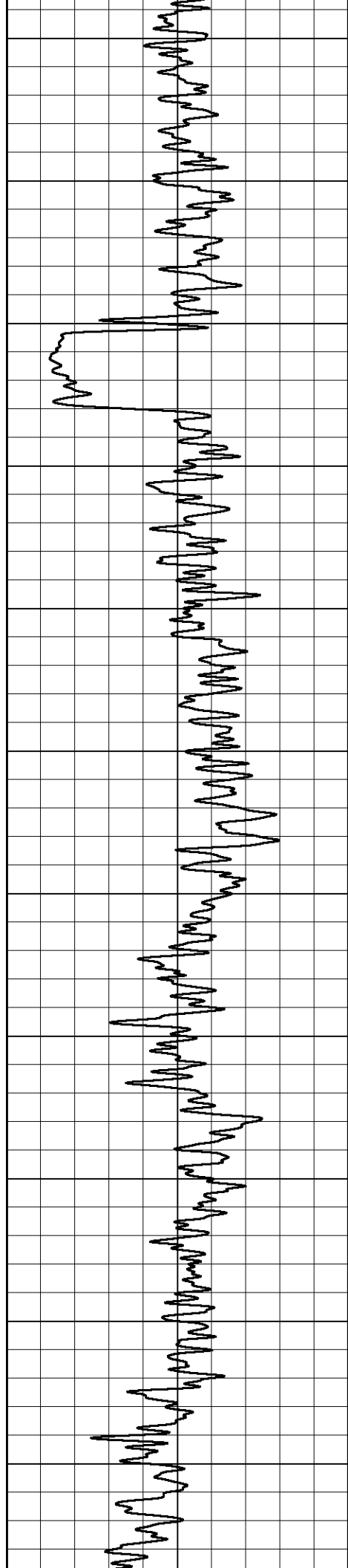
Sensor	Offset (ft)	Schematic		Description	Length (ft)	O.D. (in)	Weight (lb)
GR	33.00			GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	29.90			CNT-M&W (tk10-MW)	5.50	3.50	100.00
	29.15						
LSD DCAL SSD	20.85			CDL-M&W (168-986)	8.50	4.00	250.00
	20.83						
	20.35						
RLL3 RLL3F	15.80 15.79			DIL-M&W (1987)	18.50	3.50	220.00
CILD	8.00						

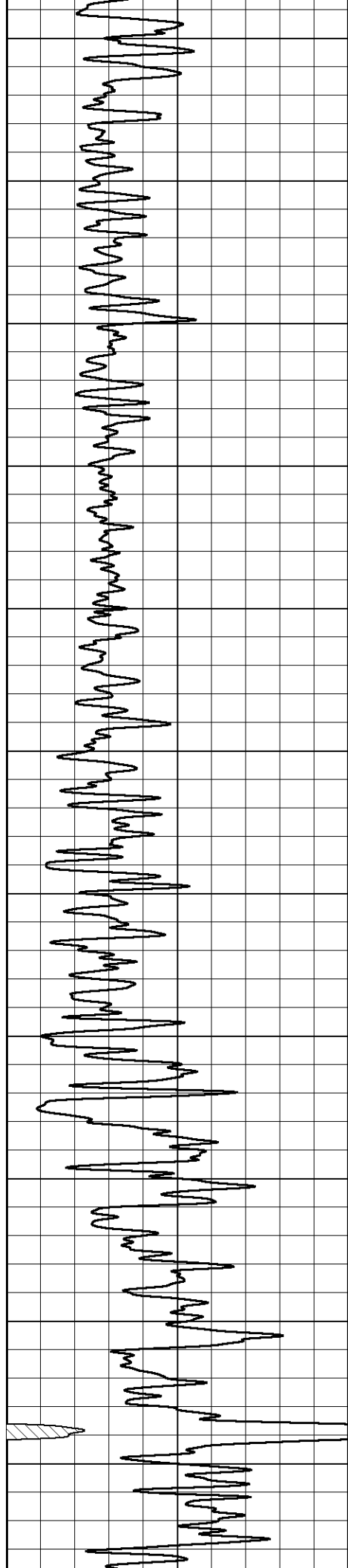
CILM	4.70								
SP	0.20								
Dataset: rjm_riedl_4.db: field/well/stack/pass3.1 Total length: 35.50 ft Total weight: 620.00 lb O.D.: 4.00 in									

Database File	rjm_riedl_4.db
Dataset Pathname	stack/pass3.1
Presentation Format	dil2in
Dataset Creation	Tue Nov 21 09:14:41 2017
Charted by	Depth in Feet scaled 1:600

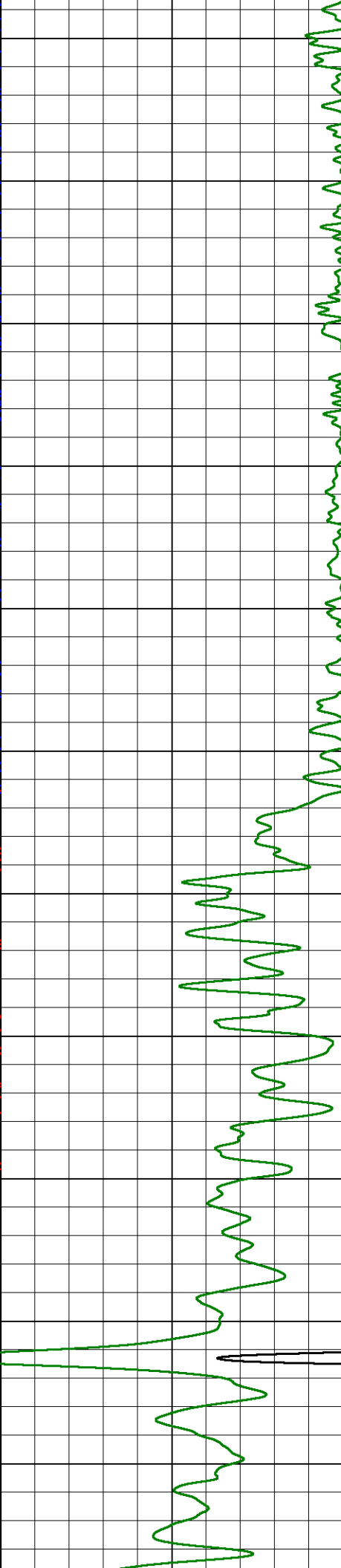
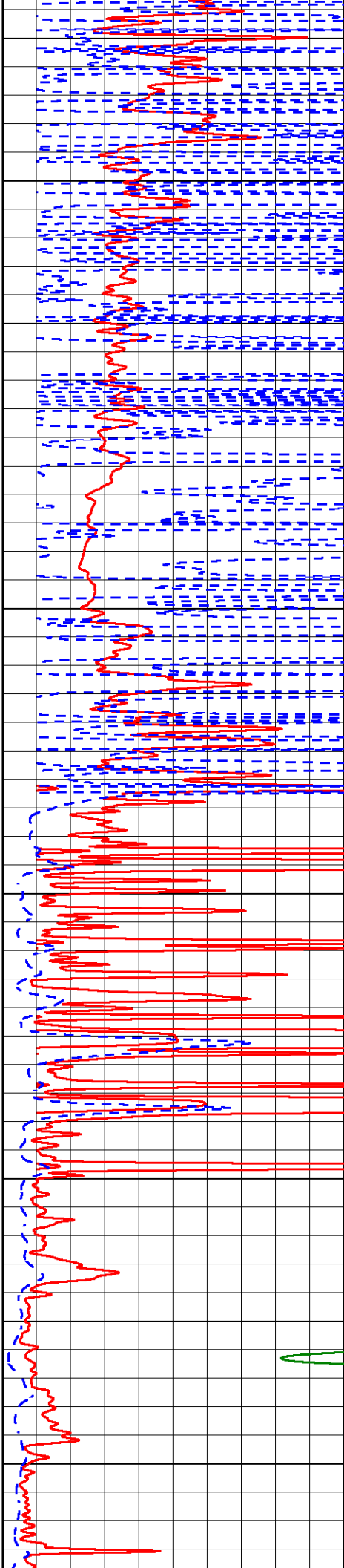
0	GAMMA RAY (GAPI)	150	2000	CONDUCTIVITY (mmho/m)	0
			0	RLL3 (Ohm-m)	50
			0	DEEP RESISTIVITY (Ohm-m)	50
			50	RLL3 (Ohm-m)	500
				DEEP RESISTIVITY	
			50	(Ohm-m)	500

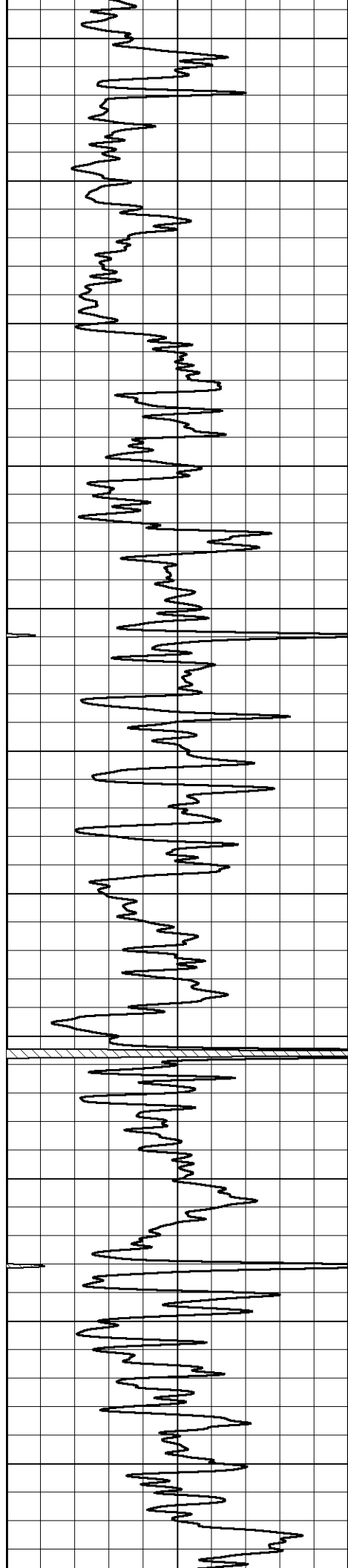






1400
1450
1500
1550
1600
1650
1700
1750
1800
1850
1900





1950

2000

2050

2100

2150

2200

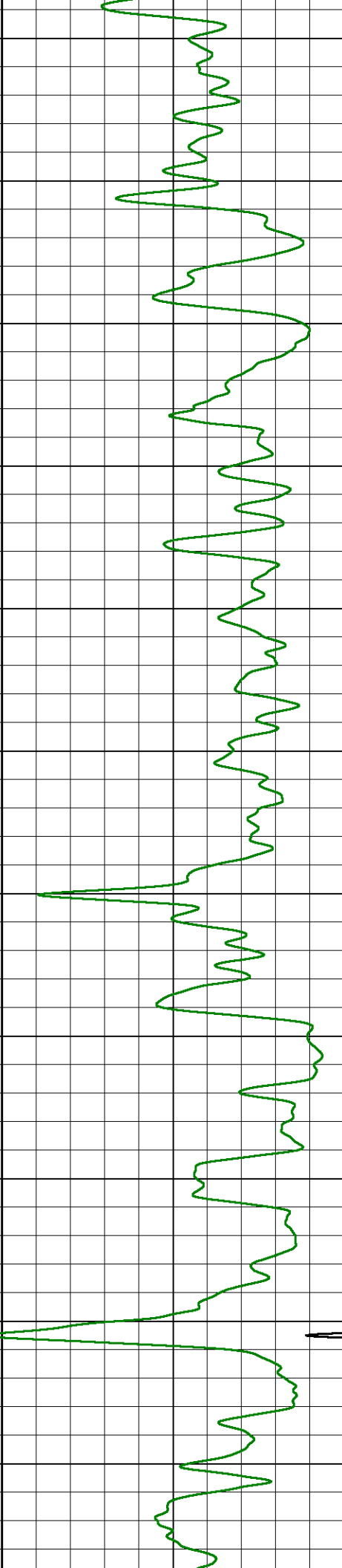
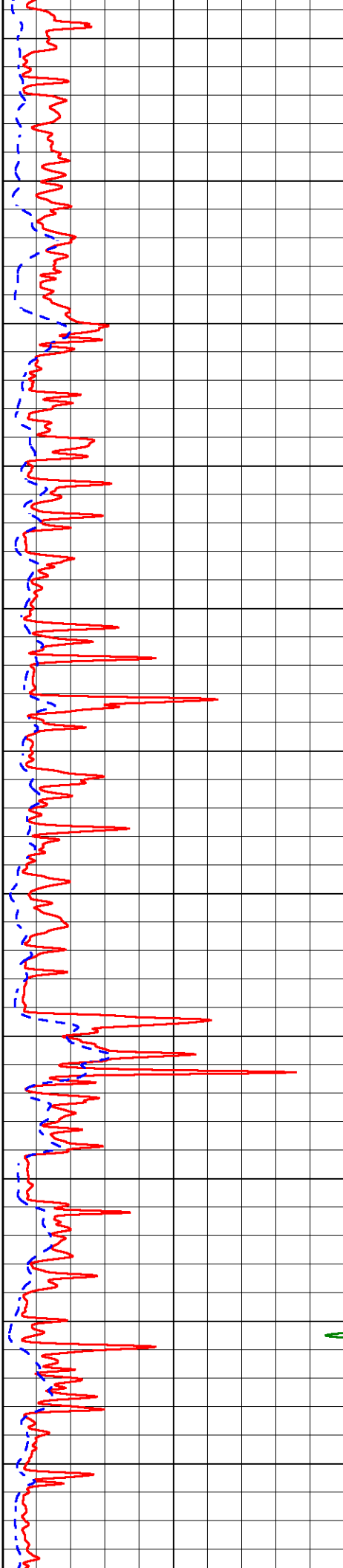
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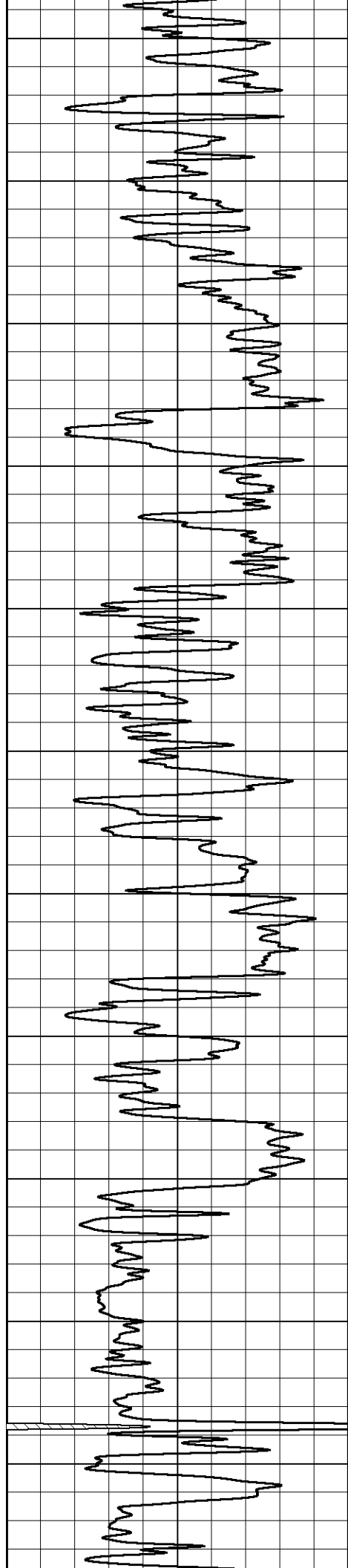
2300

2350

2400

2450





2500

2550

2600

2650

2700

2750

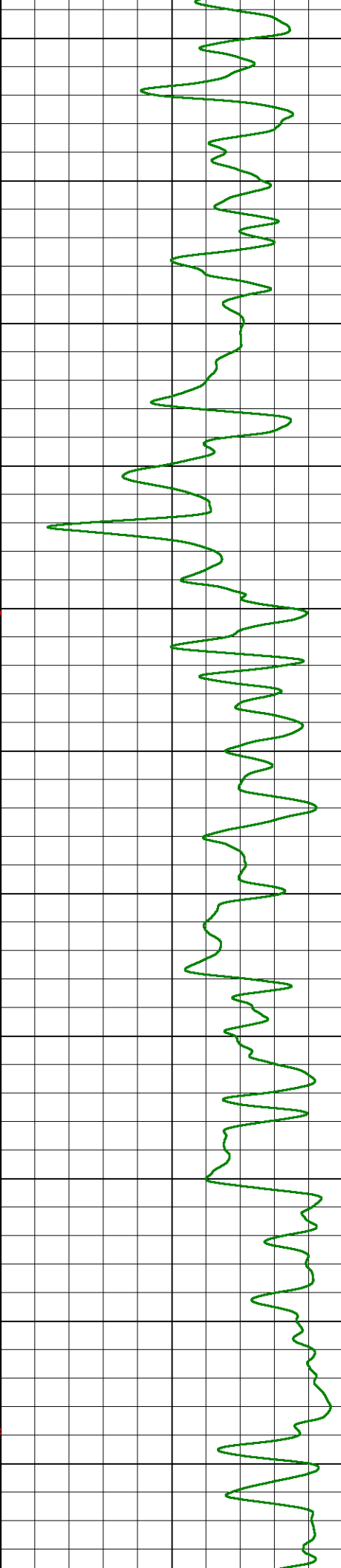
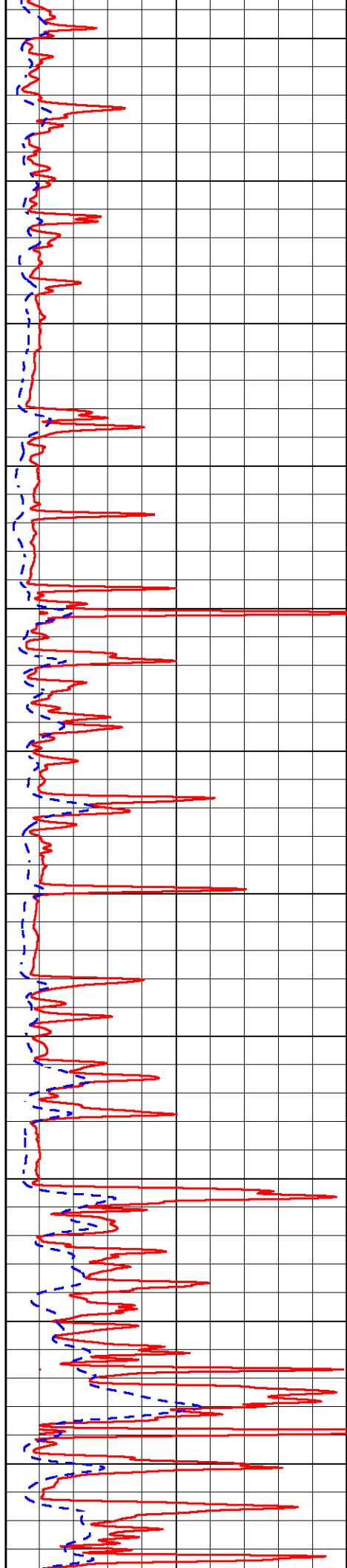
2800

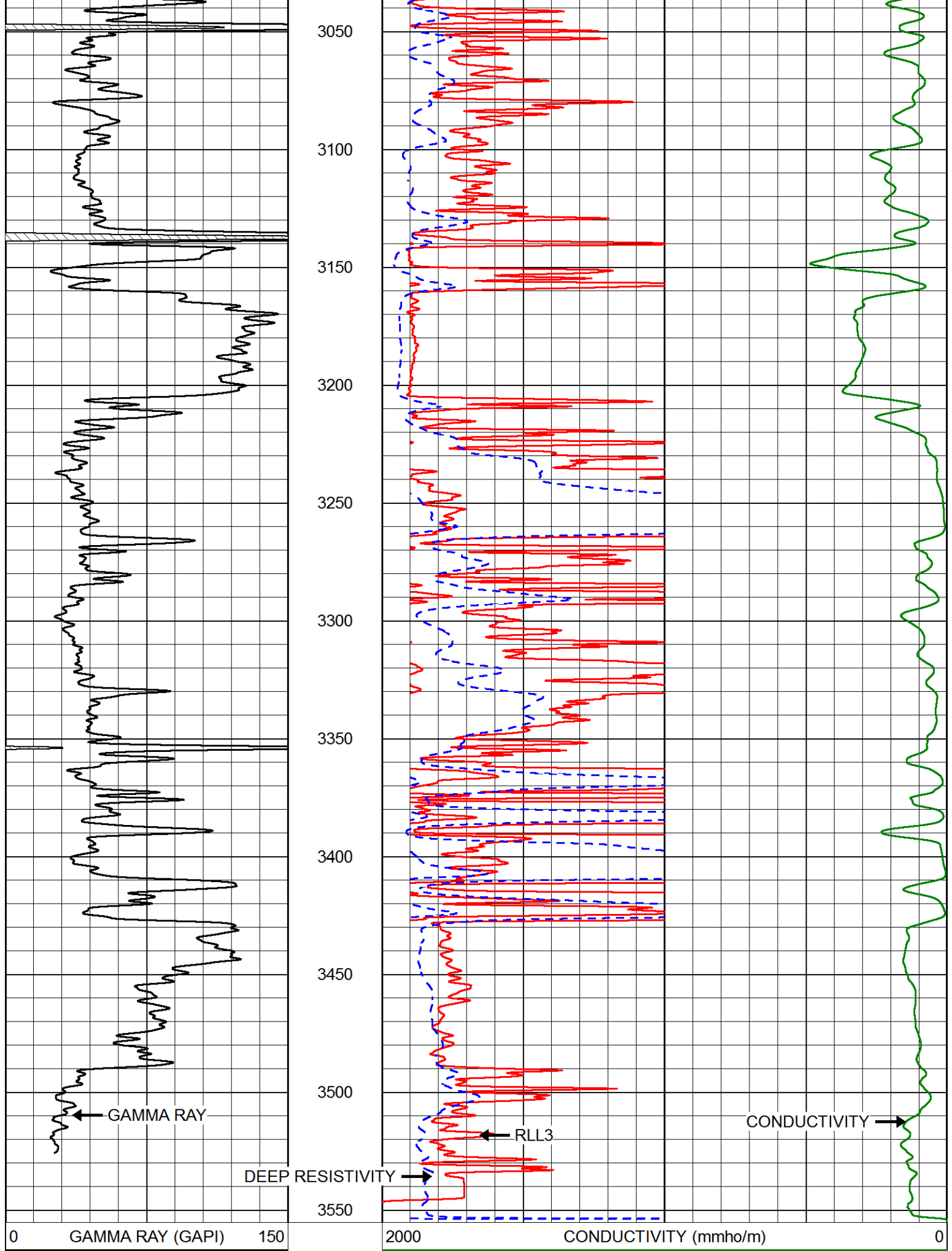
2850

2900

2950

3000





0 GAMMA RAY (GAPI) 150

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

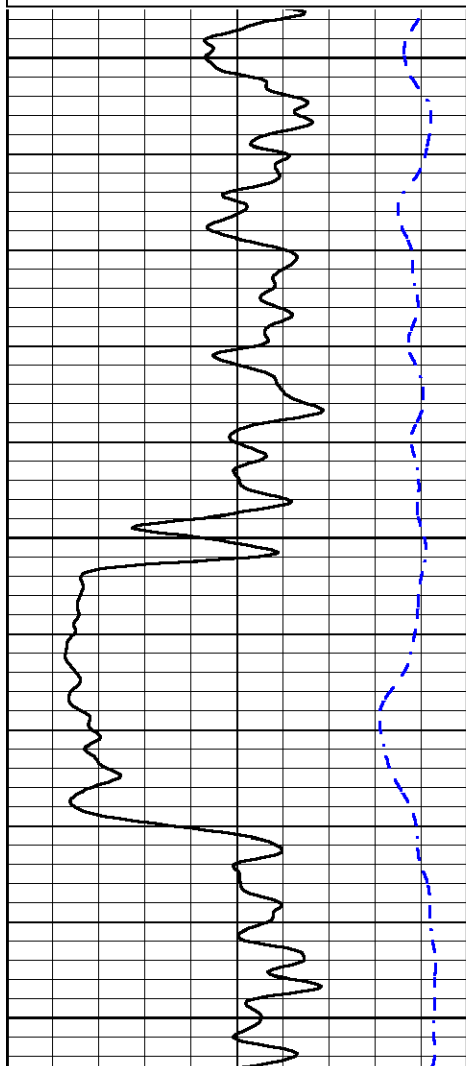
2000 CONDUCTIVITY (mmho/m) 0

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

Database File rjm_riedl_4.db
Dataset Pathname stack/pass3.1
Presentation Format dil
Dataset Creation Tue Nov 21 09:14:41 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

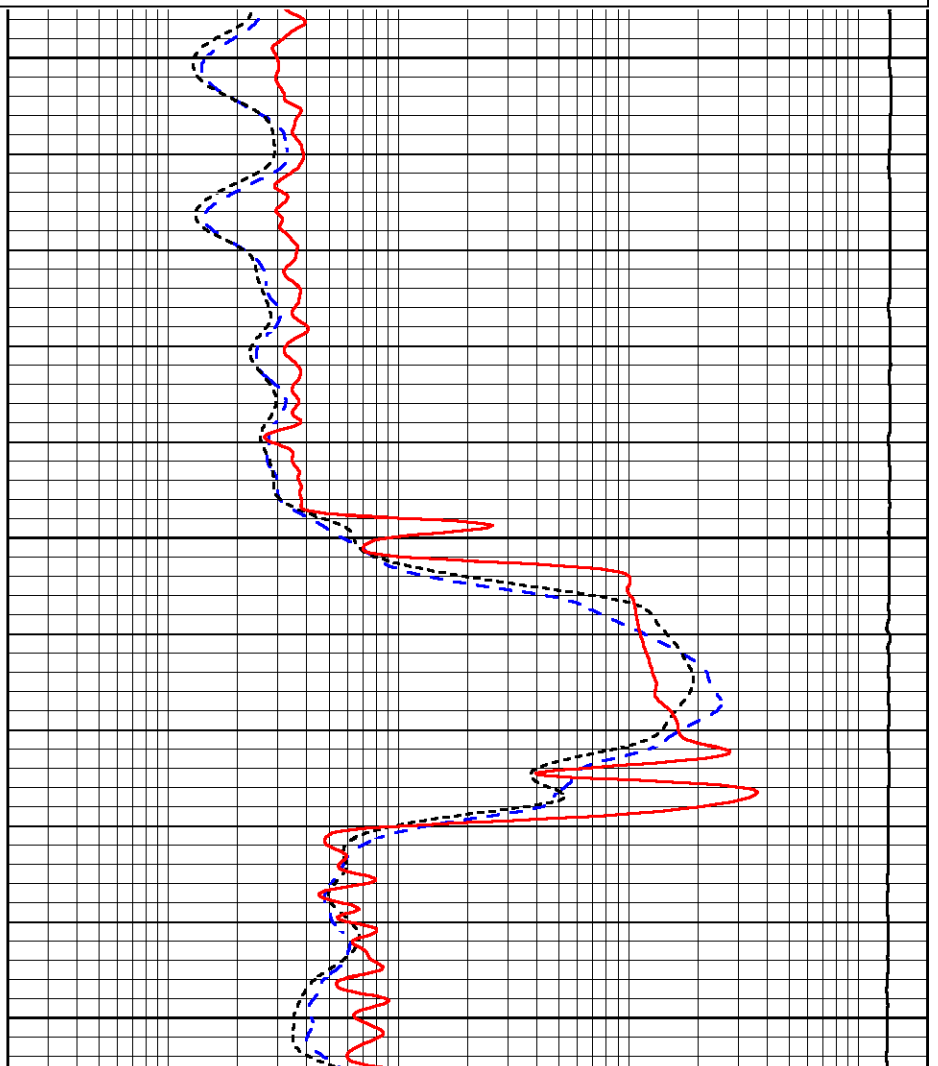


900

950

1000

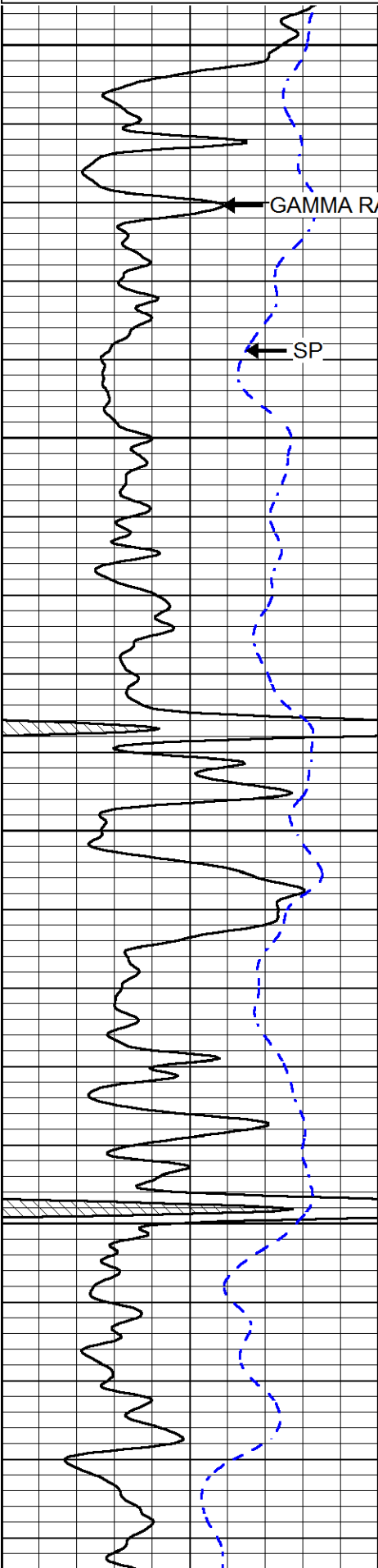
0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0



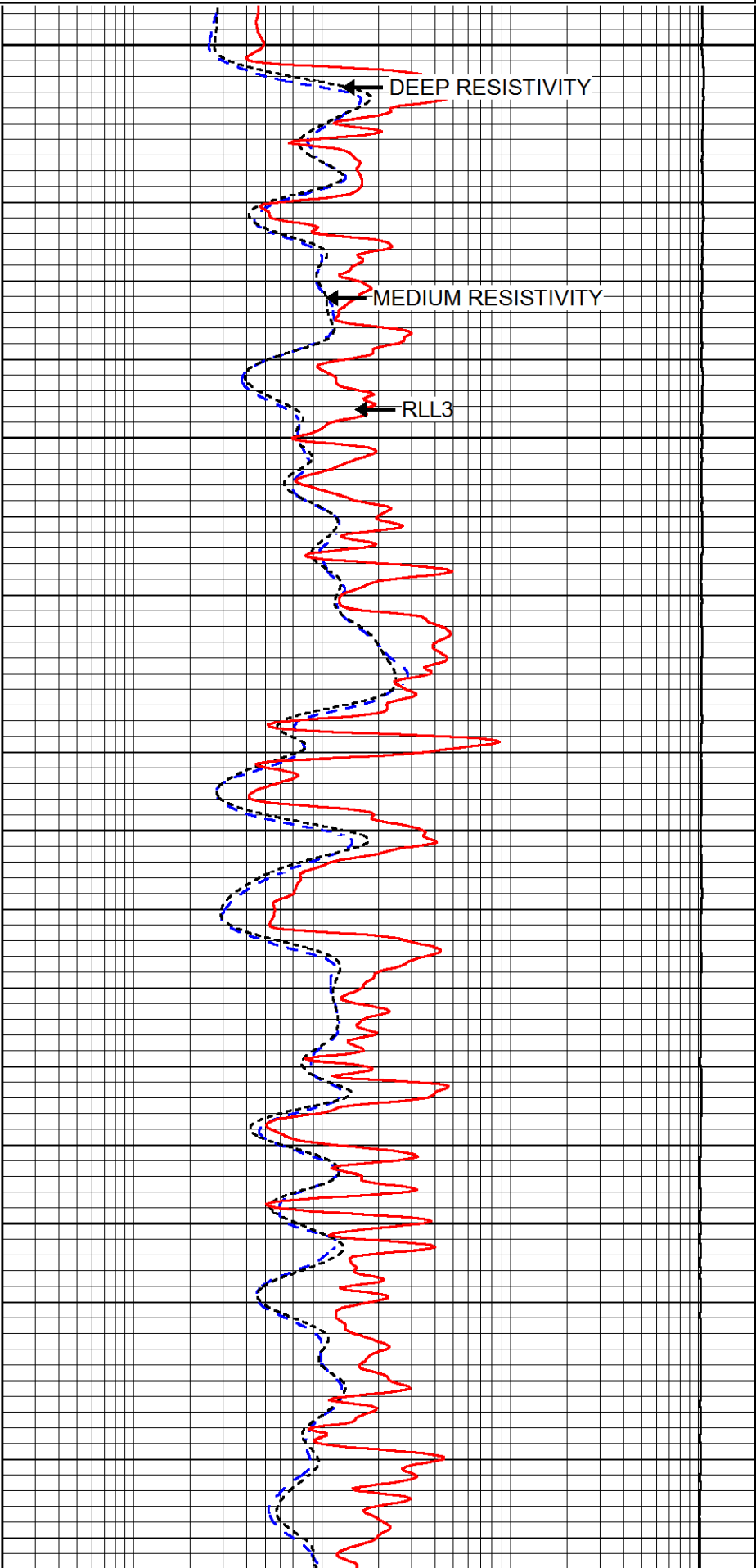
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0

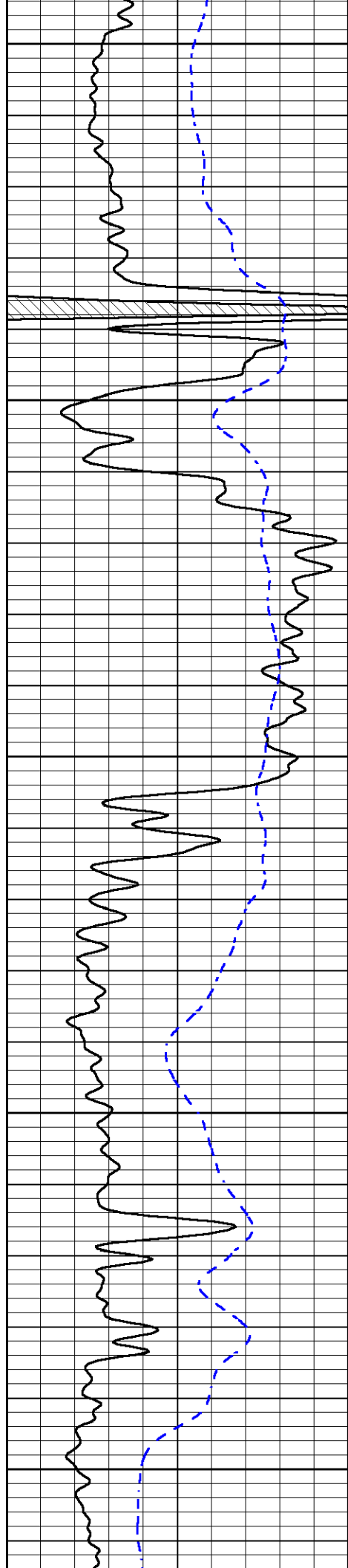
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Presentation Format dil
Dataset Creation Tue Nov 21 09:14:41 2017
Charted by Depth in Feet scaled 1:240

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





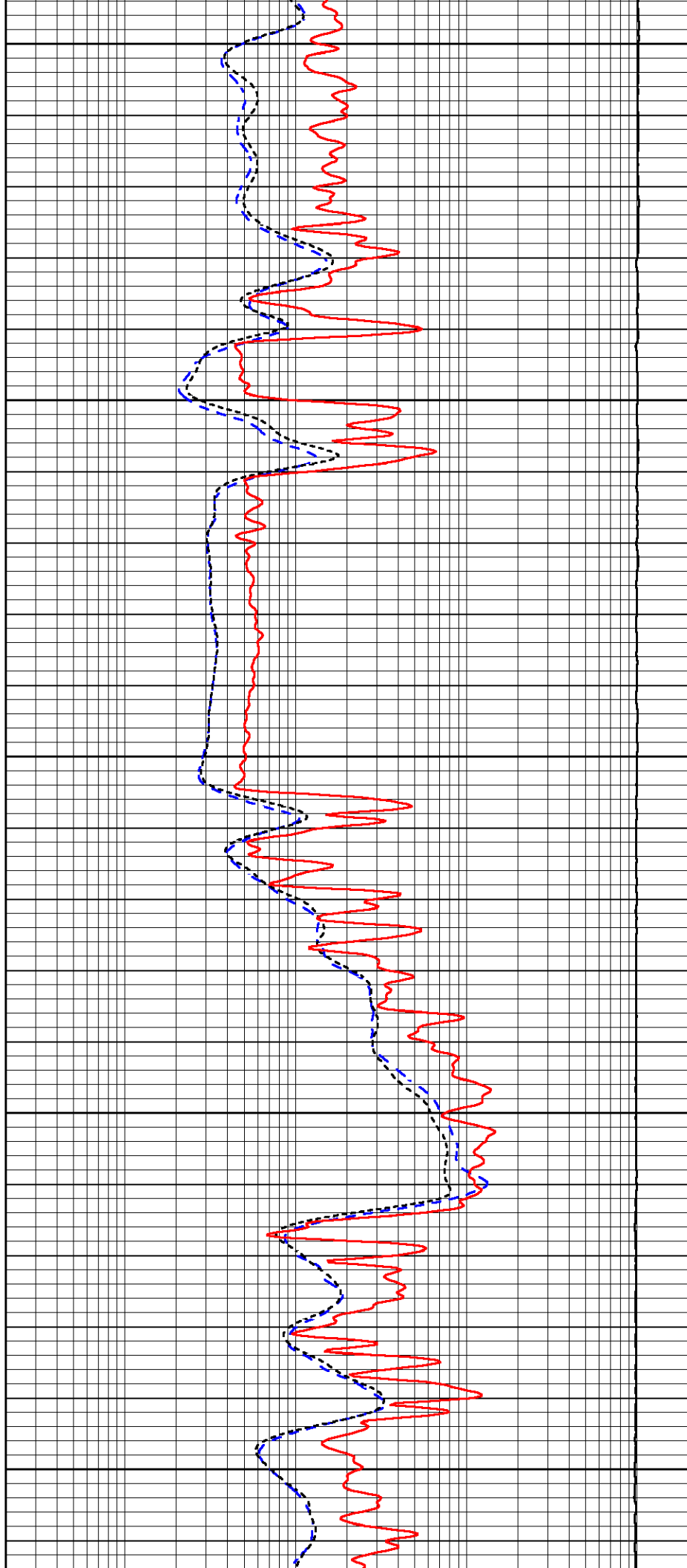
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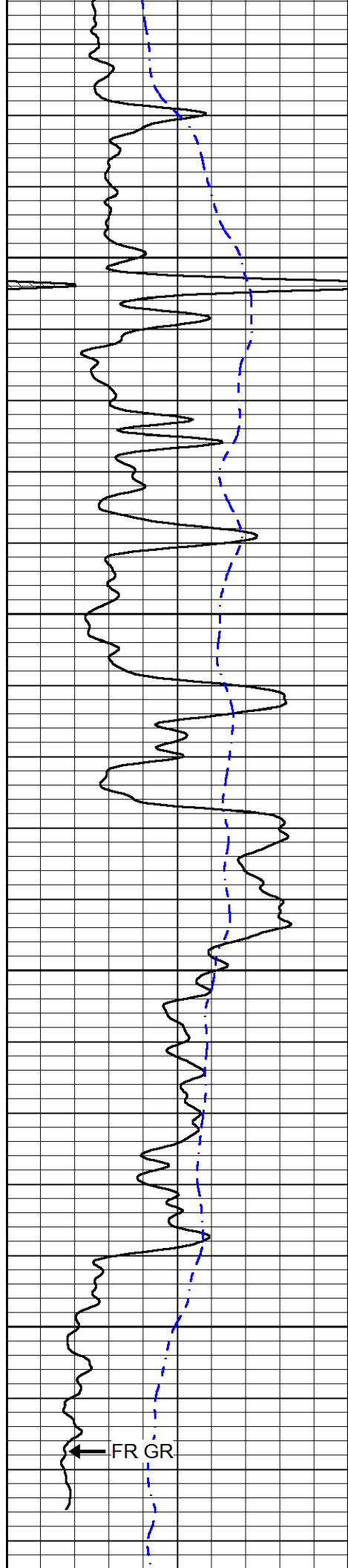
3150

3200

3250

3300





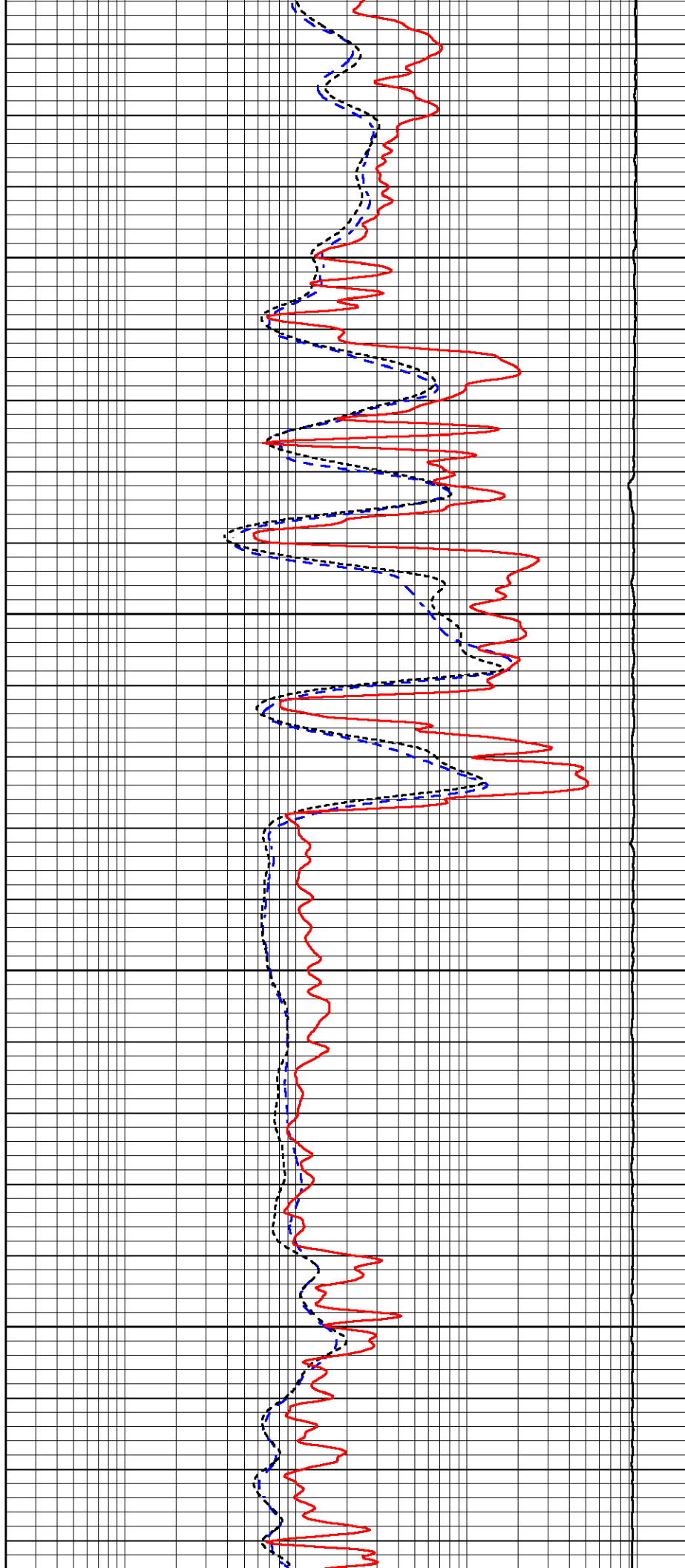
3350

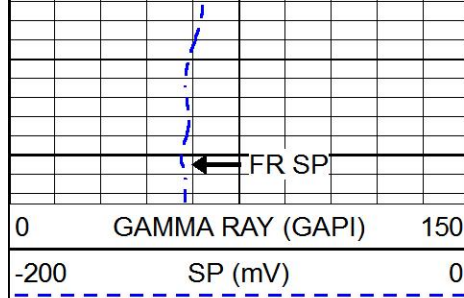
3400

3450

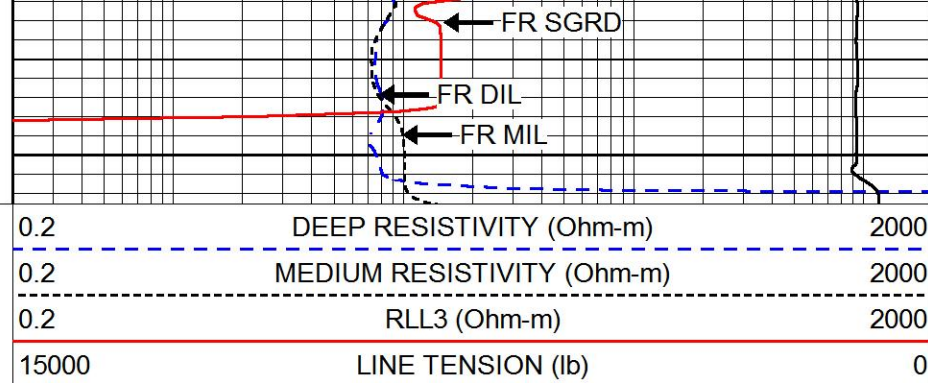
3500

FR GR



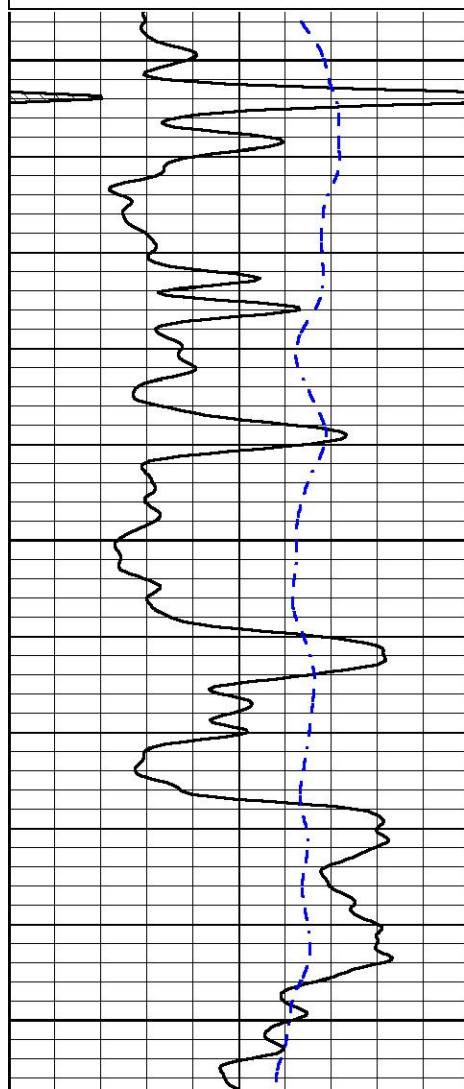
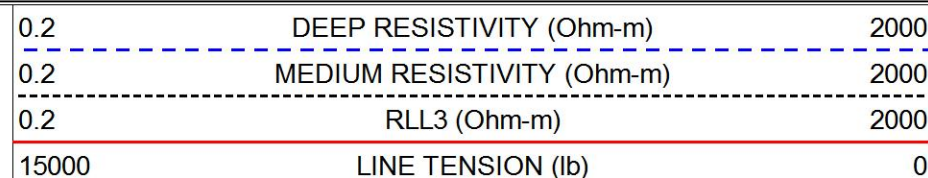
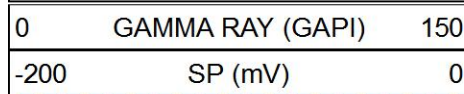


3550



REPEAT SECTION

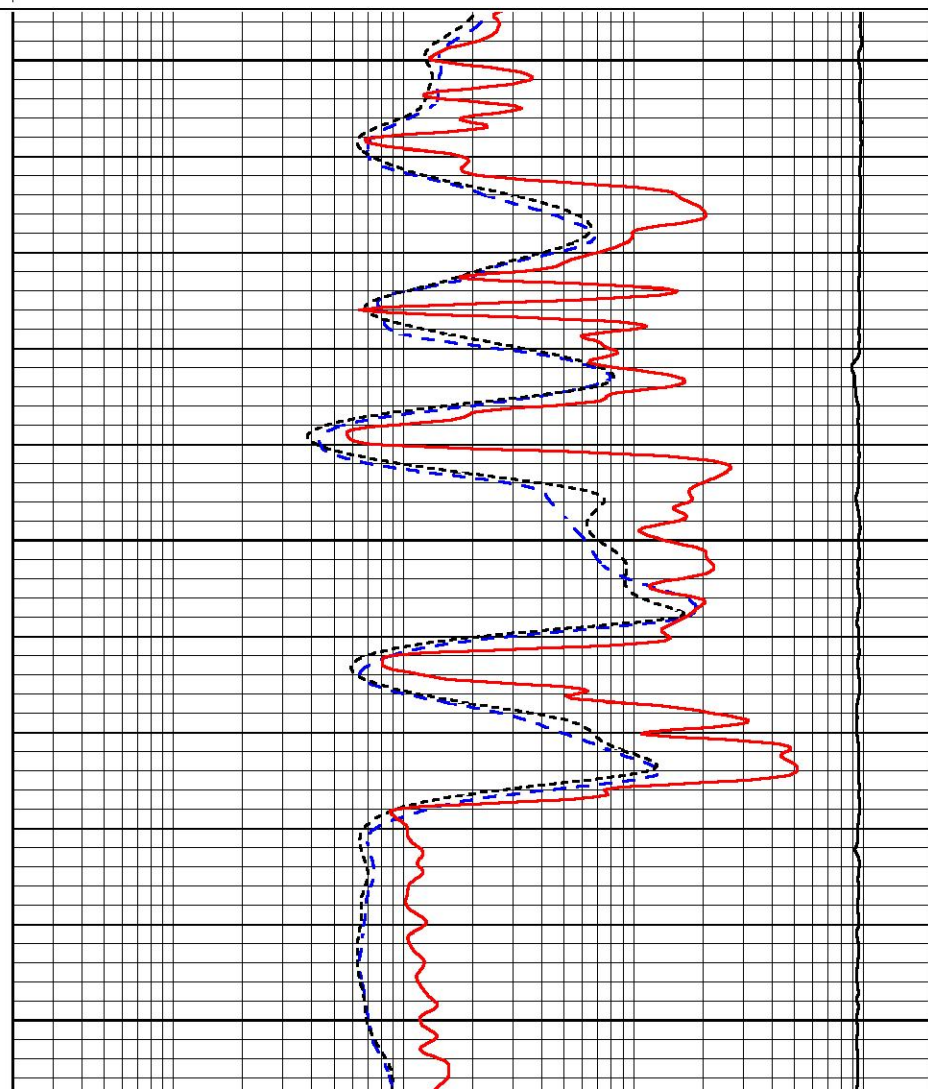
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 Presentation Format dil
 Dataset Creation Tue Nov 21 09:14:54 2017
 Charted by Depth in Feet scaled 1:240

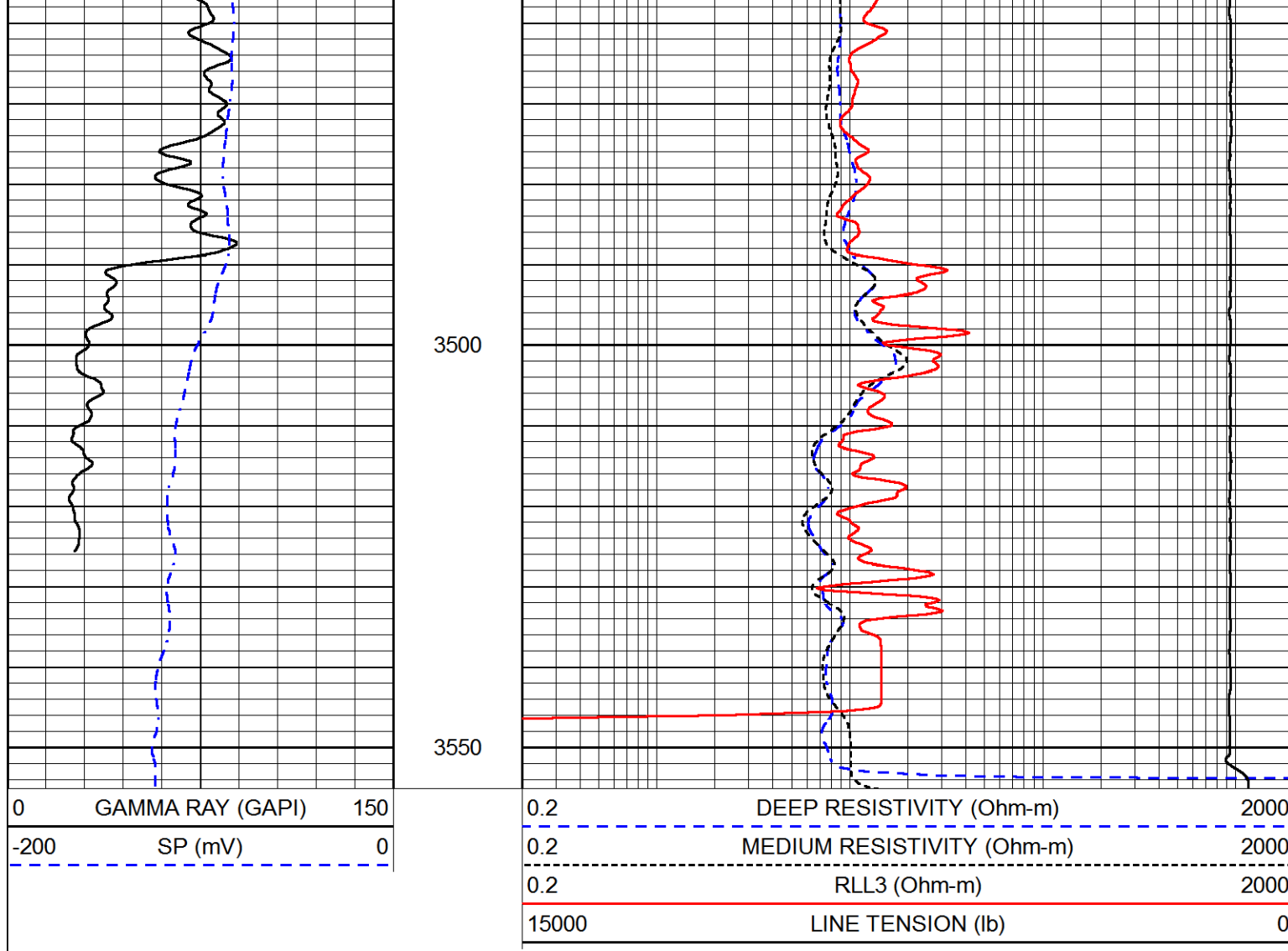


3350

3400

3450





Calibration Report

Database File rjm_riedl_4.db
 Dataset Pathname stack/pass3.1
 Dataset Creation Tue Nov 21 09:14:41 2017

Dual Induction Calibration Report

Serial-Model: 1987-M&W
 Calibration Performed: Tue Apr 11 17:07:38 2017

Loop:	Readings		References			Results	
	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	0.440	-110.500

Compensated Density Calibration Report

Serial-Model: 168-986-M&W
 Source / Verifier: /
 Master Calibration Performed: Tue Apr 11 17:07:47 2017

Master Calibration

	Density			Far Detector	Near Detector	
Magnesium	1.755	g/cc		4691.86	4818.19	cps
Aluminum	2.695	g/cc		859.57	3020.22	cps
Spine Angle = 74.61			Density/Spine Ratio = 0.534			
	Size			Reading		
Small Ring	4.00	in		1.03		
Large Ring	14.00	in		1.23		

Compensated Neutron Calibration Report
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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

	Company	RJM OIL COMPANY
	Well	RIEDL NO. 4
	Field	LARKIN
	County	BARTON
	State	KANSAS