



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company **RENEGADE OIL & GAS**
Well **STATE OF COLORADO #3-33**
Field **BRAVE**
County **ARAPAHOE** State **COLORADO**

Location: API #: 05-005-07364-00

Other Services

600' FNL & 720' FWL
SEC 33 TWP 5S RGE 64W

CNL/CDL
MEL

Permanent Datum GROUND LEVEL Elevation 6067'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 6077'
D.F. N/A
G.L. 6067'

Date	10/3/2018		
Run Number	ONE		
Depth Driller	8650'		
Depth Logger	8655'		
Bottom Logged Interval	8654'		
Top Log Interval	2450'		
Casing Driller	8.625" @ 2470'		
Casing Logger	2455'		
Bit Size	7.875"		
Type Fluid in Hole	CHEMICAL		
Salinity, ppm CL	300		
Density / Viscosity	9.2 42		
pH / Fluid Loss	9.0 9.0		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.20 @ 62		
Rmt @ Meas. Temp	.90 @ 62		
Rmc @ Meas. Temp	1.62 @ 62		
Source of Rmt / Rmc	CHARTS		
Rm @ BHT	.46 @ 163		
Operating Rig Time	4 HOURS		
Max Rec. Temp. F	163 DEGF		
Equipment Number	108		
Location	HAYS		
Recorded By	J. HENRICKSON		
Witnessed By	ED INGVE		

<<< Fold Here >>>

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.

SO# 657B

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:

Operator:

Operator:

This Log Record Was Witnessed By

Primary Witness: ED INGVE

Secondary Witness:

Secondary Witness:











Secondary Witness:

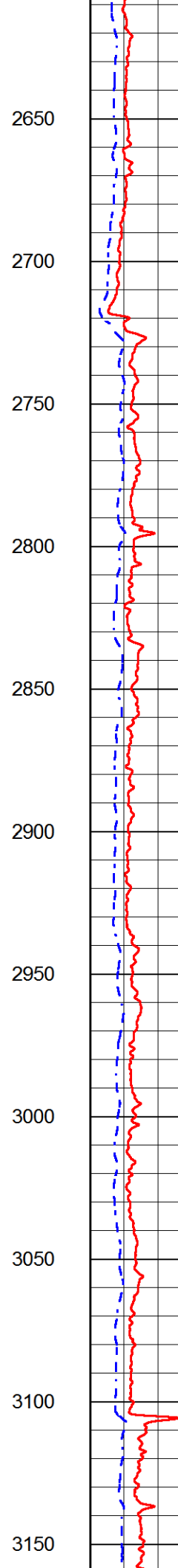
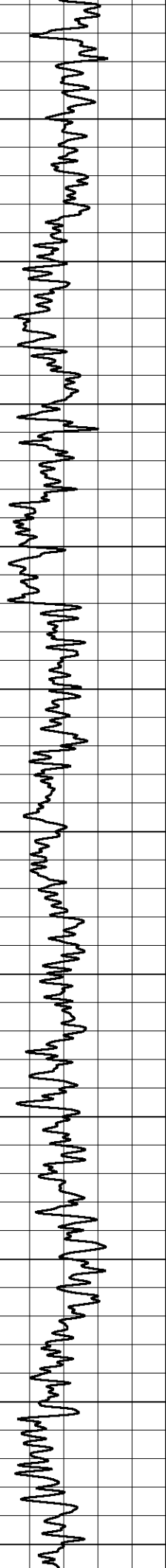
Top - 8072.00 ft

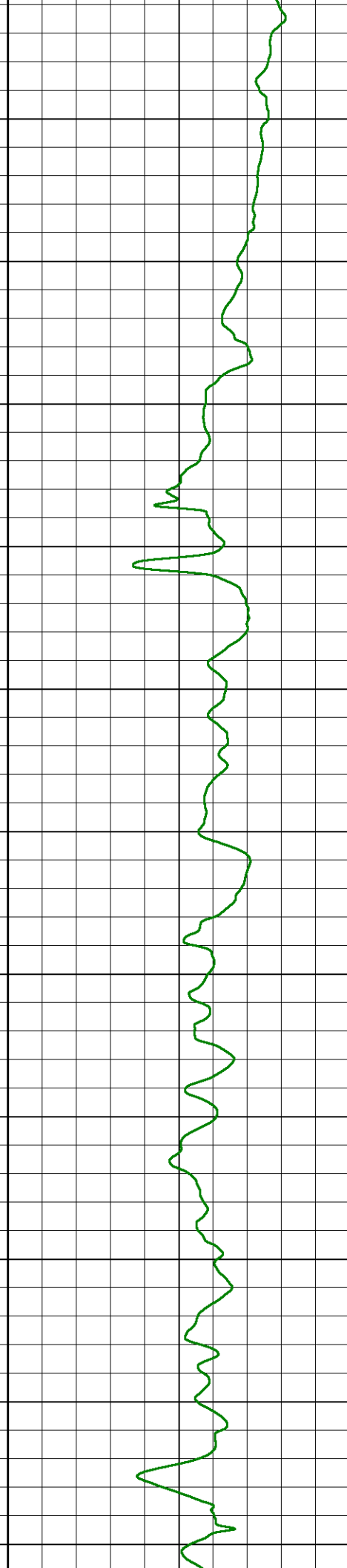
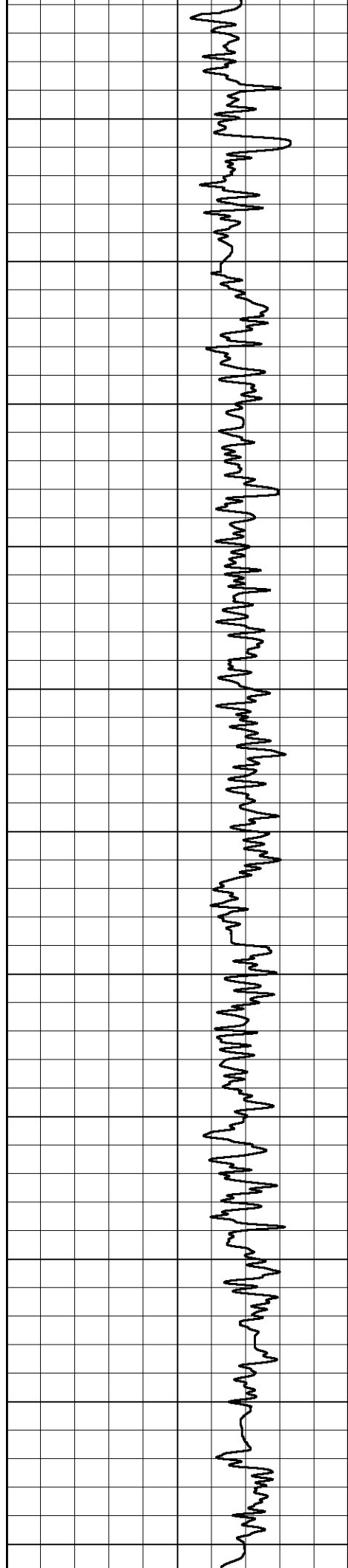
A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in	degF	in	in	g/cc		g/cc
	7.875	156	4.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m	mmho/m	mV	degF	Off	ft
		19	0	-124	0		8655

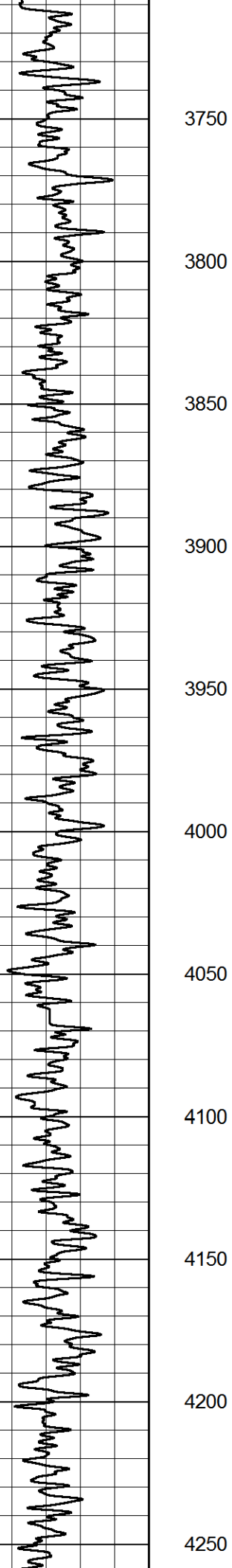
8072.00 ft - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in	degF	in	in	g/cc		g/cc
	7.875	156	4.5	0	1	2	2.65
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Sandstone	0	mmho/m	mmho/m	mV	degF	Off	ft
		19	0	-124	0		8655

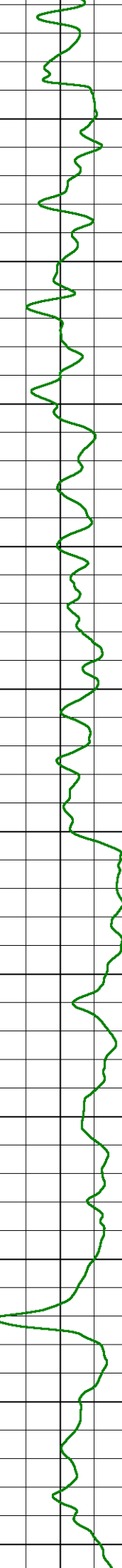
Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC	37.48		CNT-M&W (tk10-MW)	5.50	3.50	100.00
CNSSC	36.73					
						
			CDL-M&W (934-5002)	8.50	4.00	250.00
LSD	28.43					
DCAL	28.42					
SSD	27.93					
			ML-PSI STKBL ML (PSI-02) Stackable Microlog Tools	7.58	4.00	65.00
MCAL	19.83					
MI	19.83					
MN	19.83					
RLL3	15.80					
RLL3F	15.79					

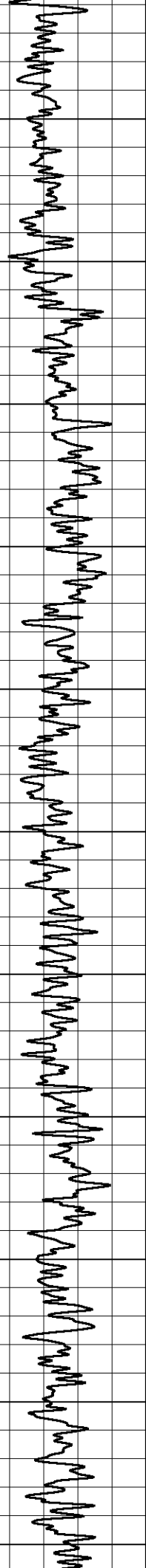






3750
3800
3850
3900
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4000
4050
4100
4150
4200
4250





4300

4350

4400

4450

4500

4550

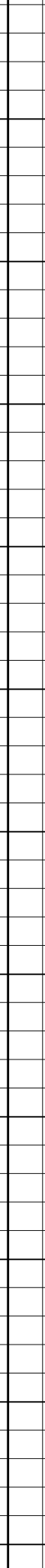
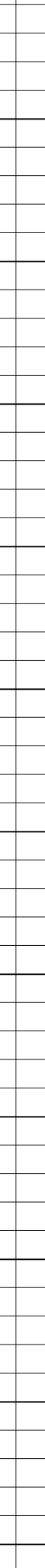
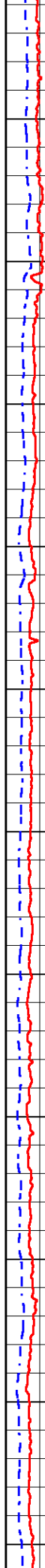
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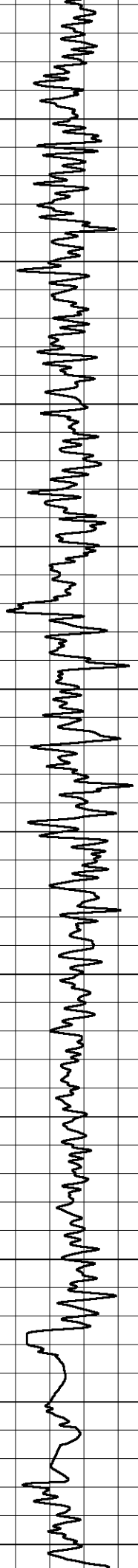
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4700

4750

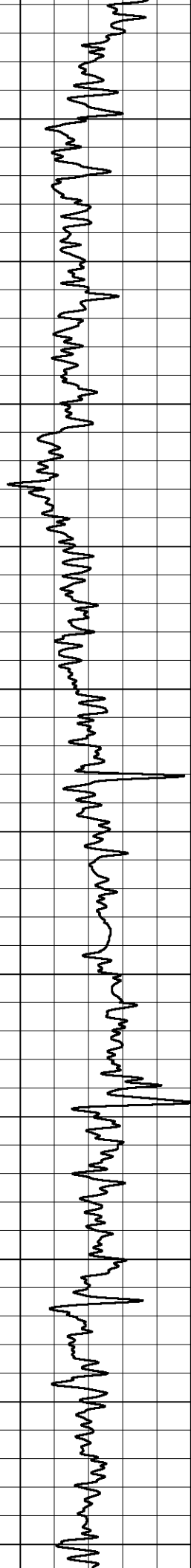
4800





4850
4900
4950
5000
5050
5100
5150
5200
5250
5300
5350





5400

5450

5500

5550

5600

5650

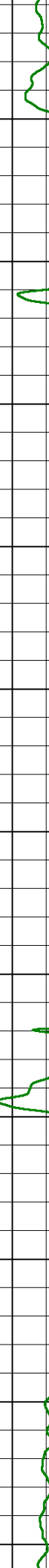
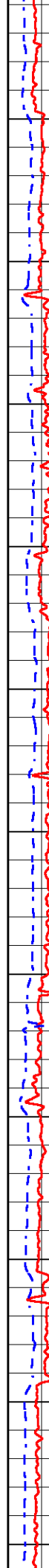
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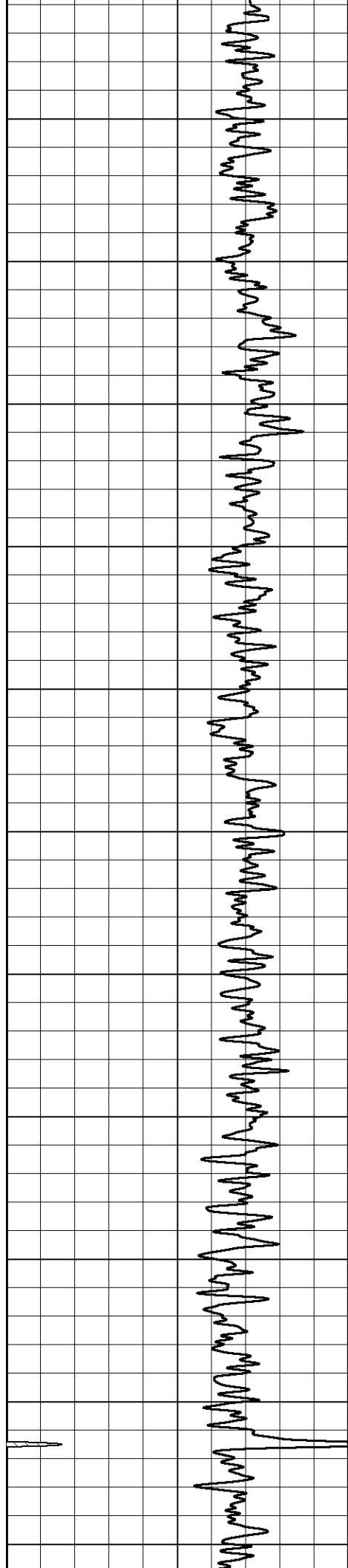
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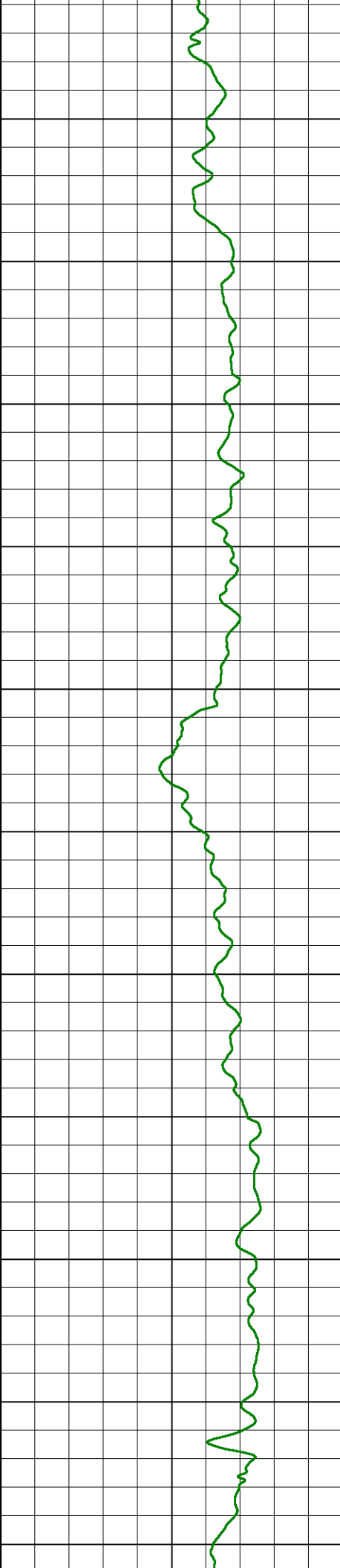
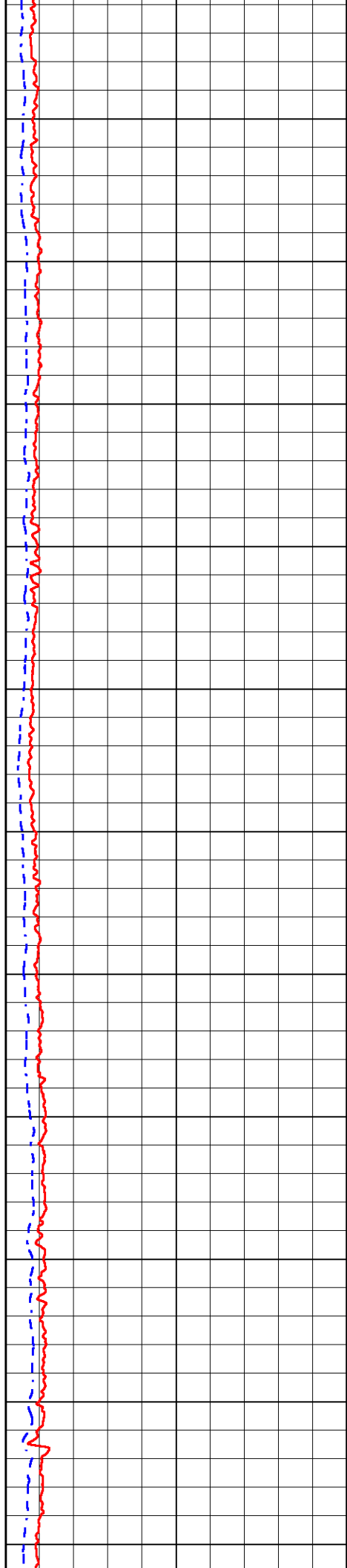
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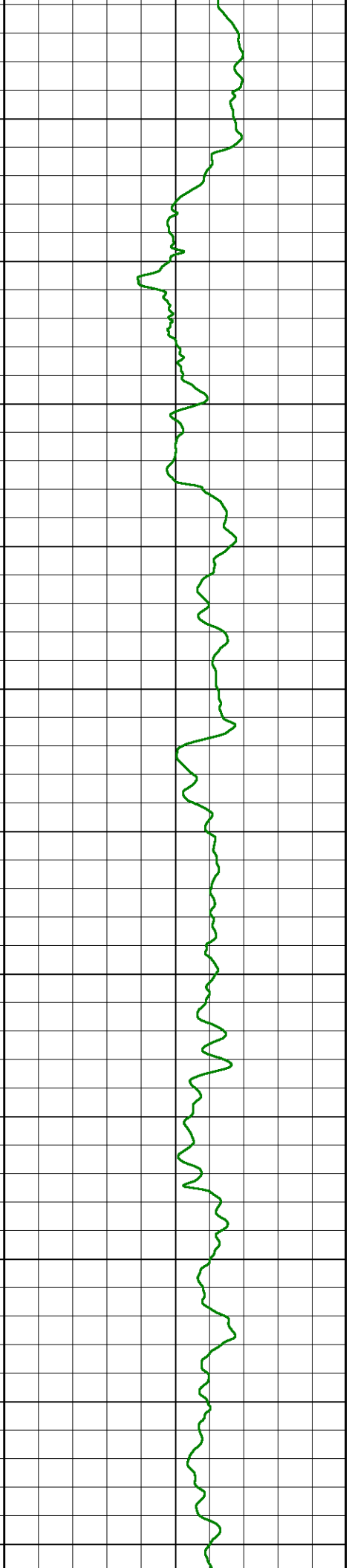
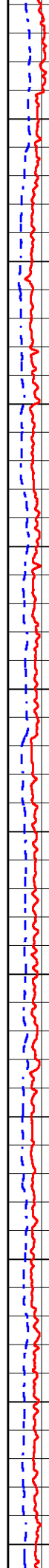
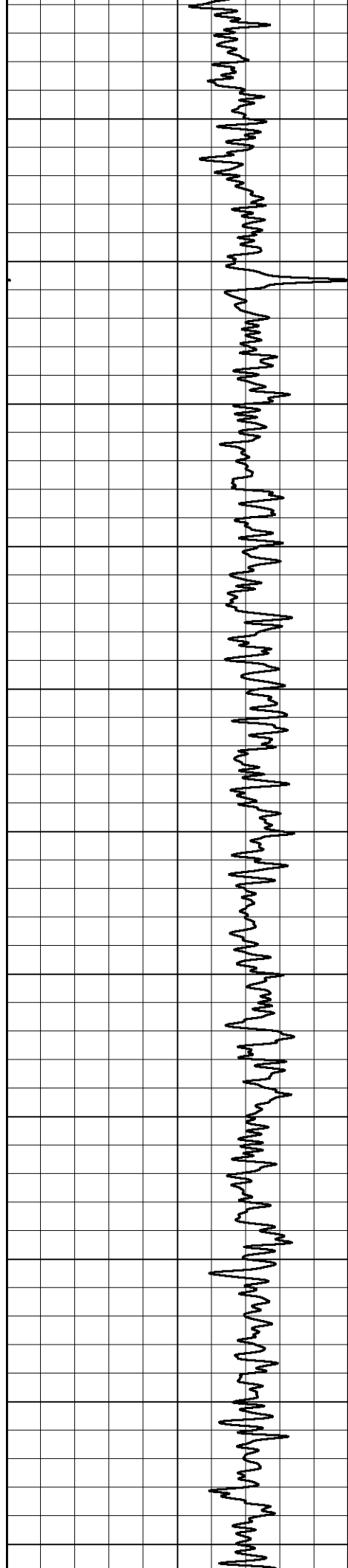
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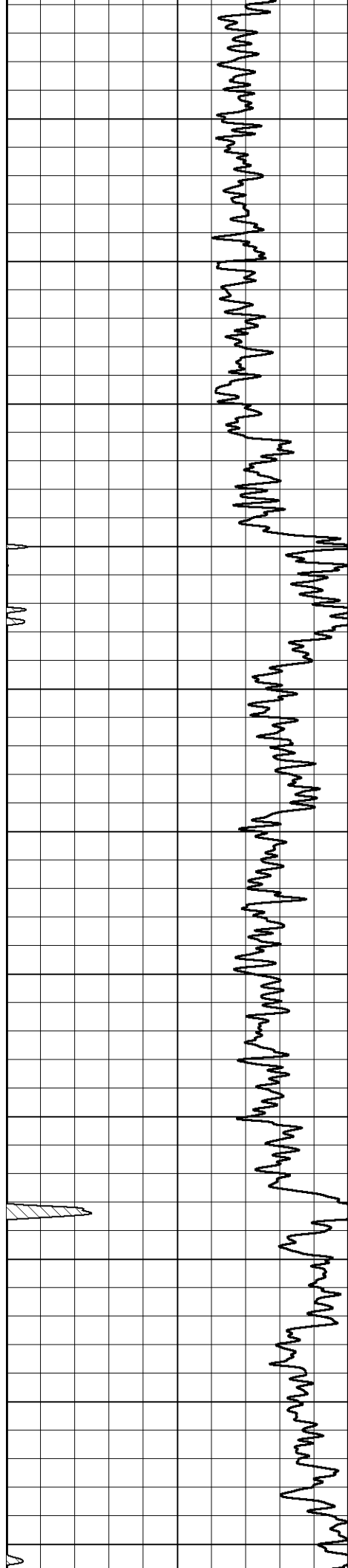




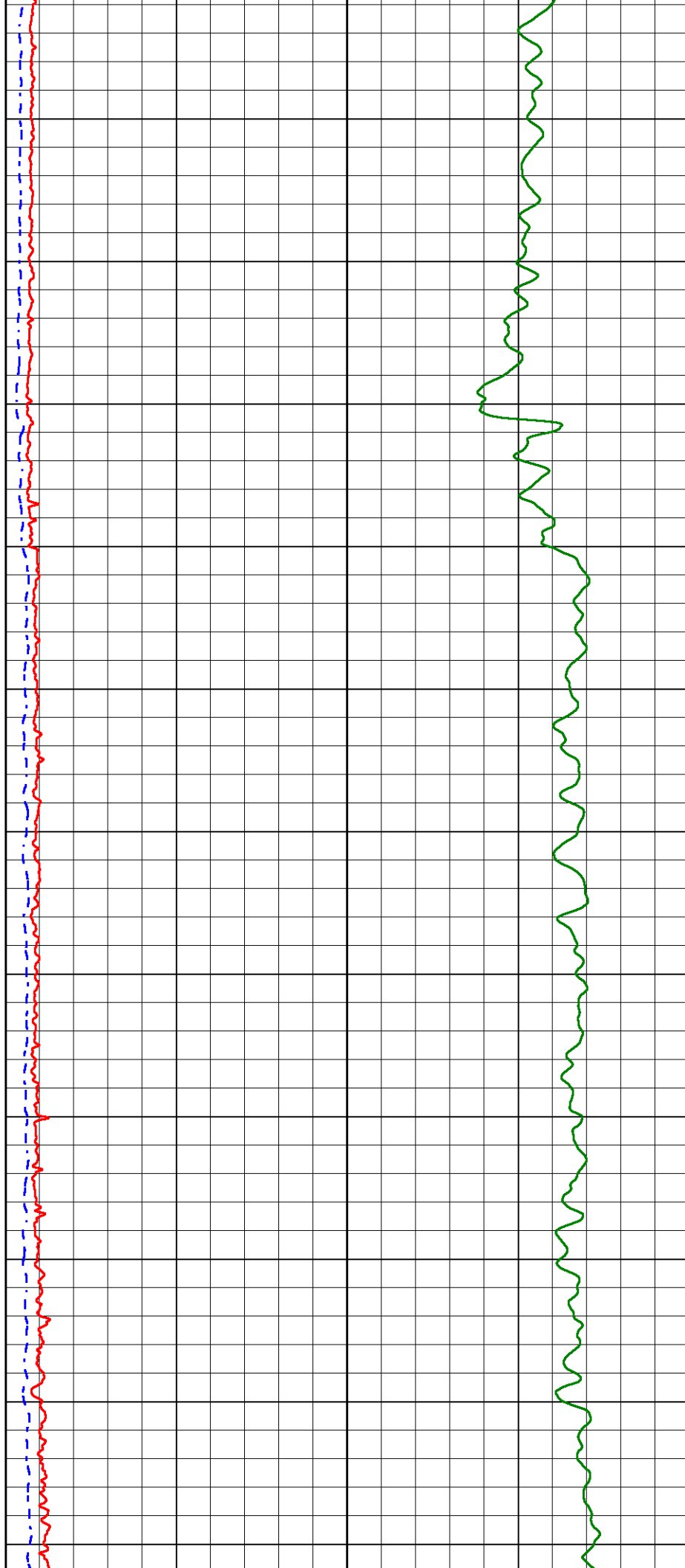
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6400
6450

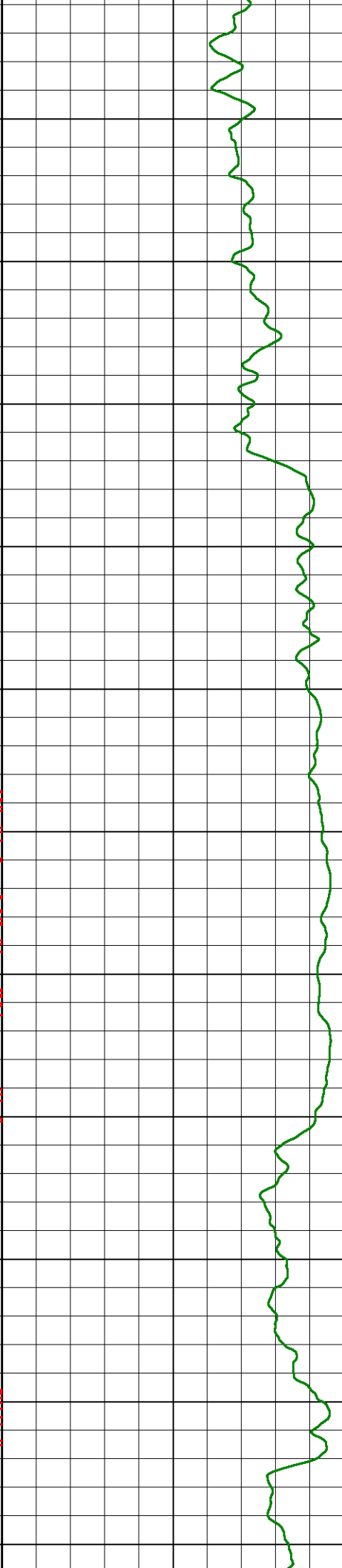
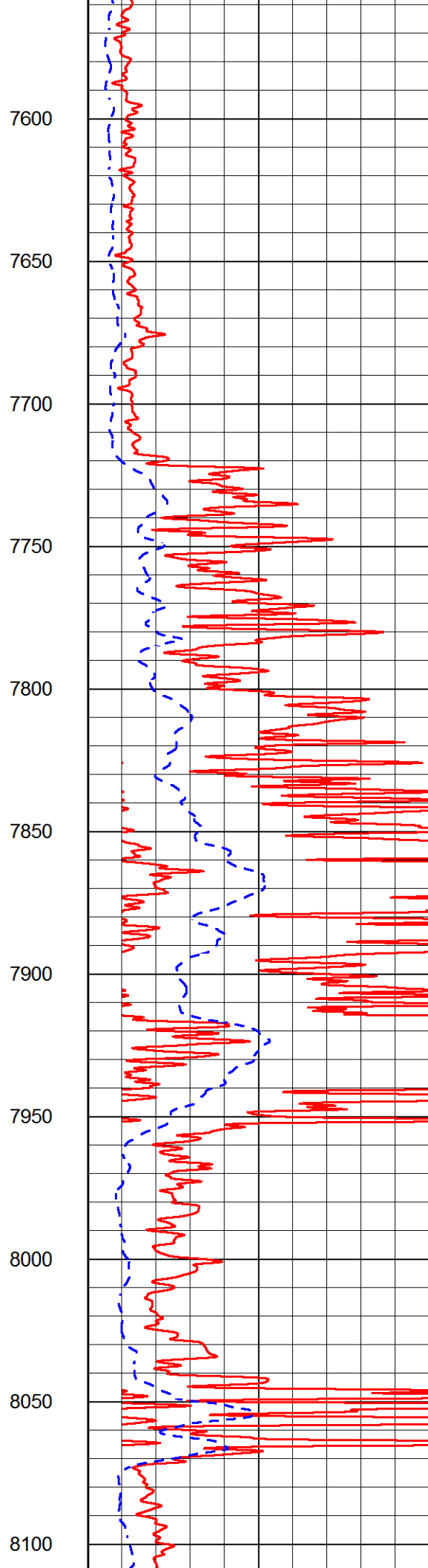
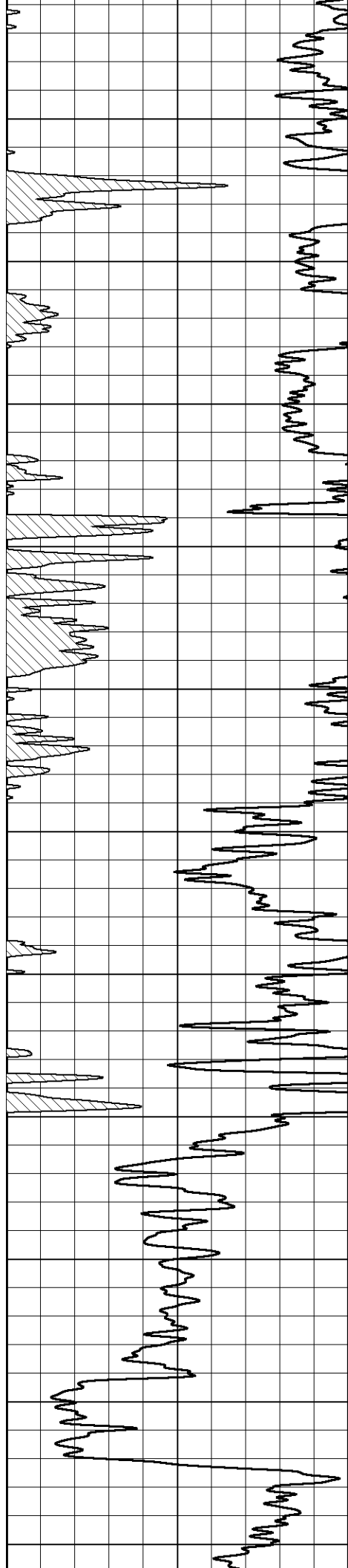


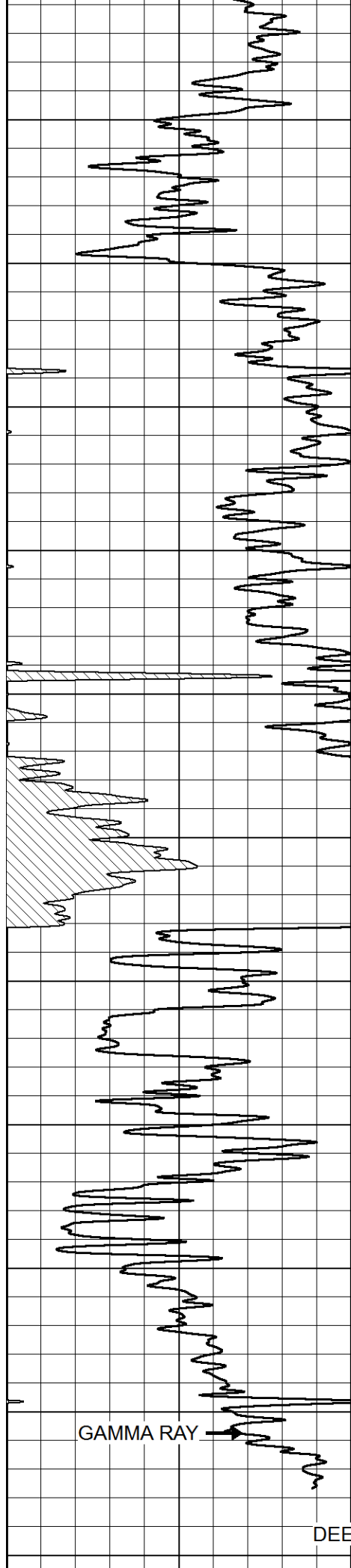




7050
7100
7150
7200
7250
7300
7350
7400
7450
7500
7550







GAMMA RAY

DEEP RESISTIVITY

8150

8200

8250

8300

8350

8400

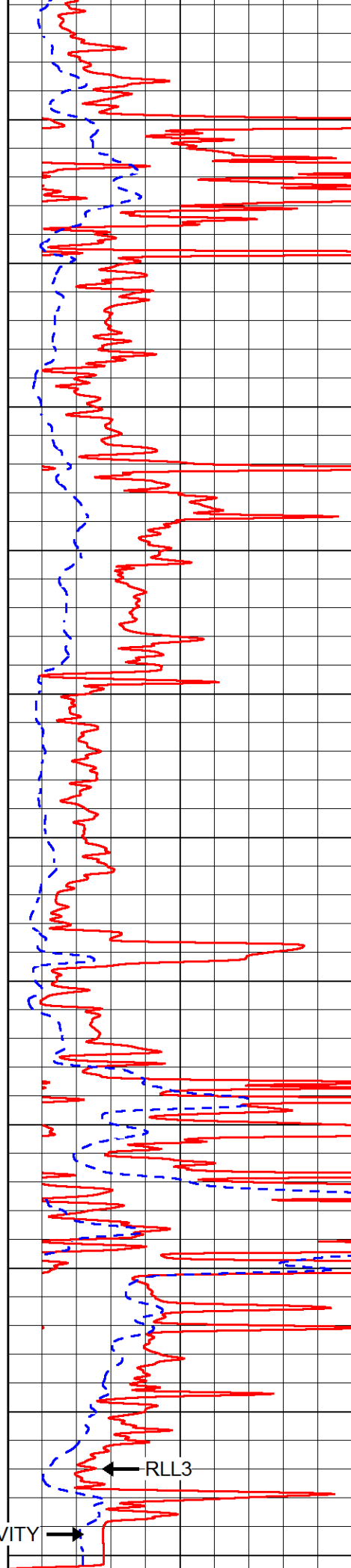
8450

8500

8550

8600

8650



RLL3

CONDUCTIVITY



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)	500
50	RILD (Ohm-m)	500

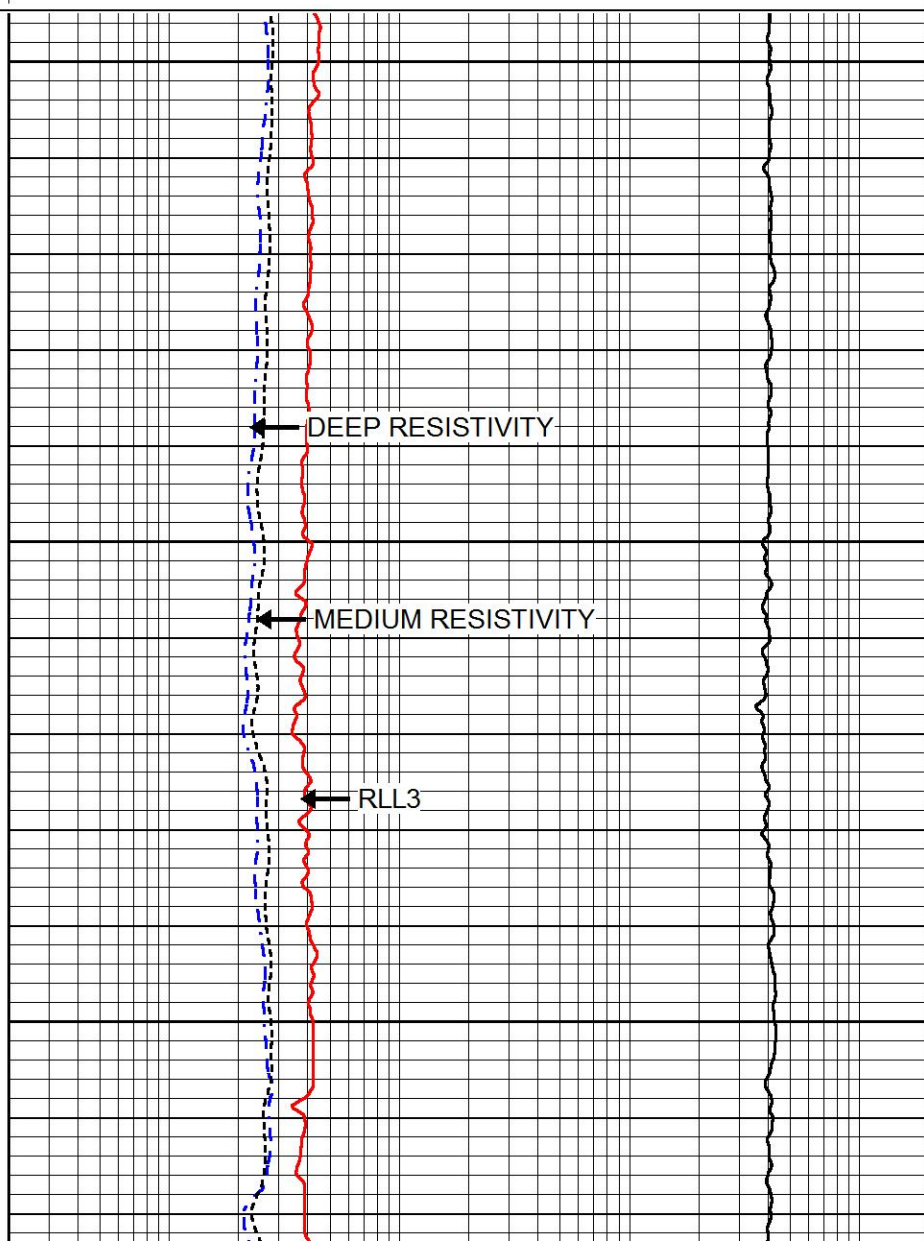
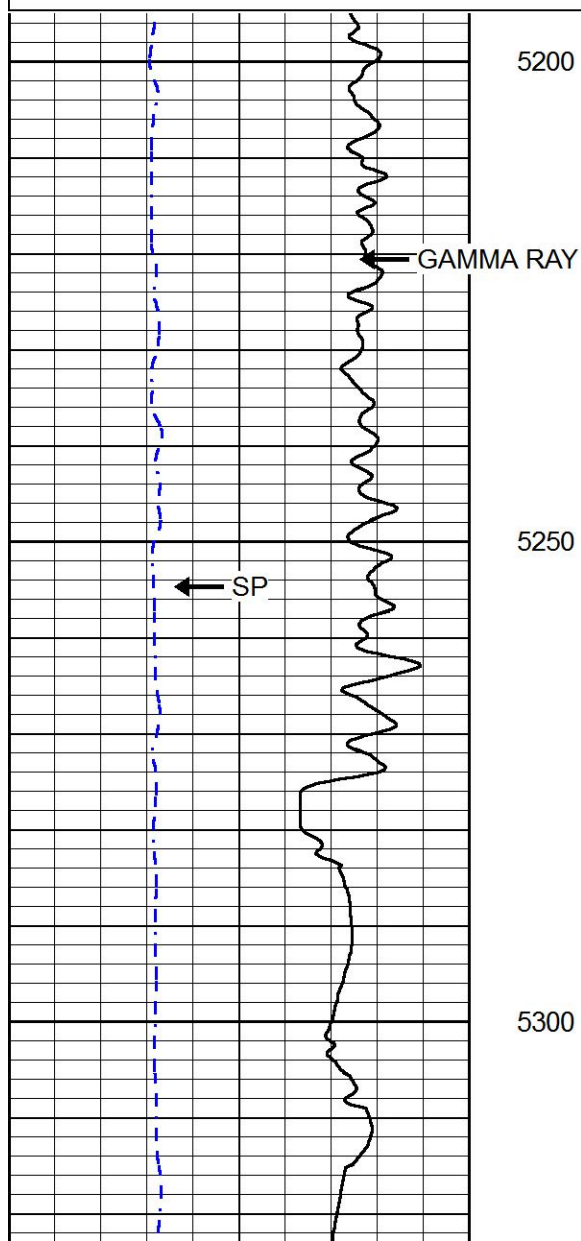


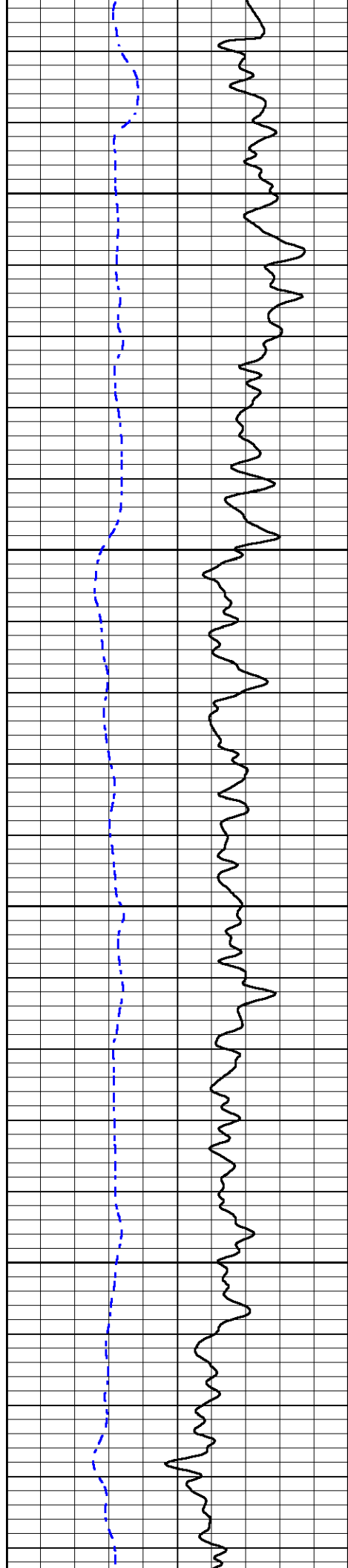
MAIN PASS

Database File renegade_state_3_33.db
Dataset Pathname stackml/pass2.1
Presentation Format dil
Dataset Creation Wed Oct 03 05:10:29 2018
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



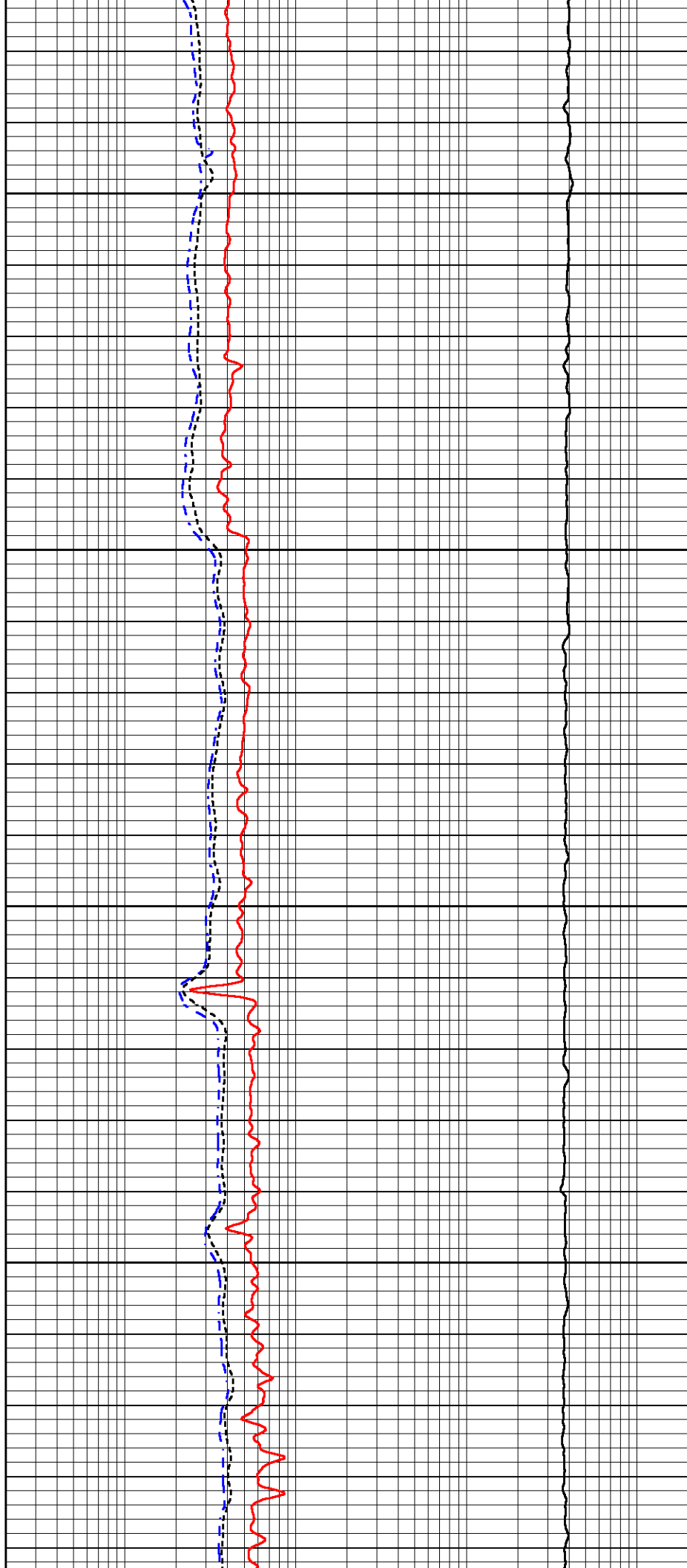


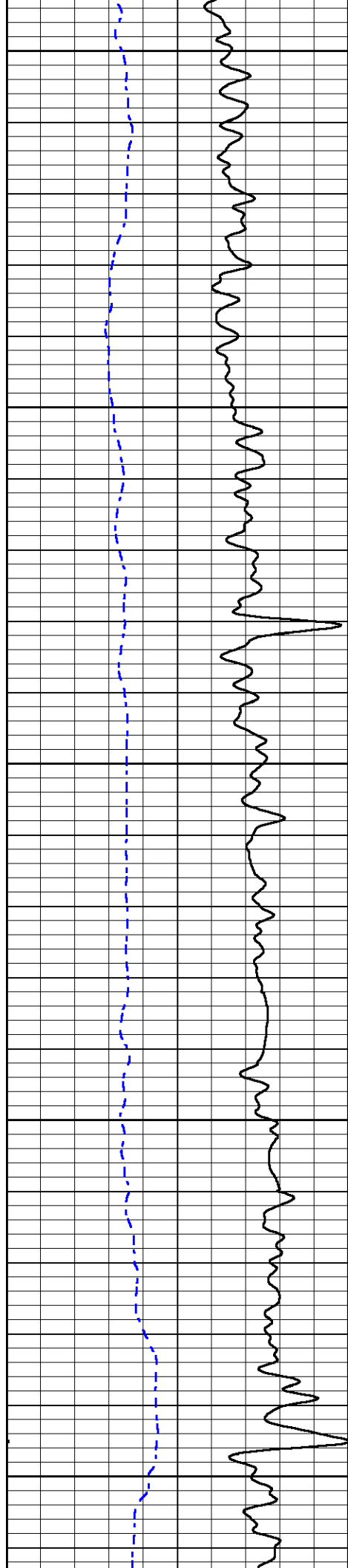
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5400

5450

5500





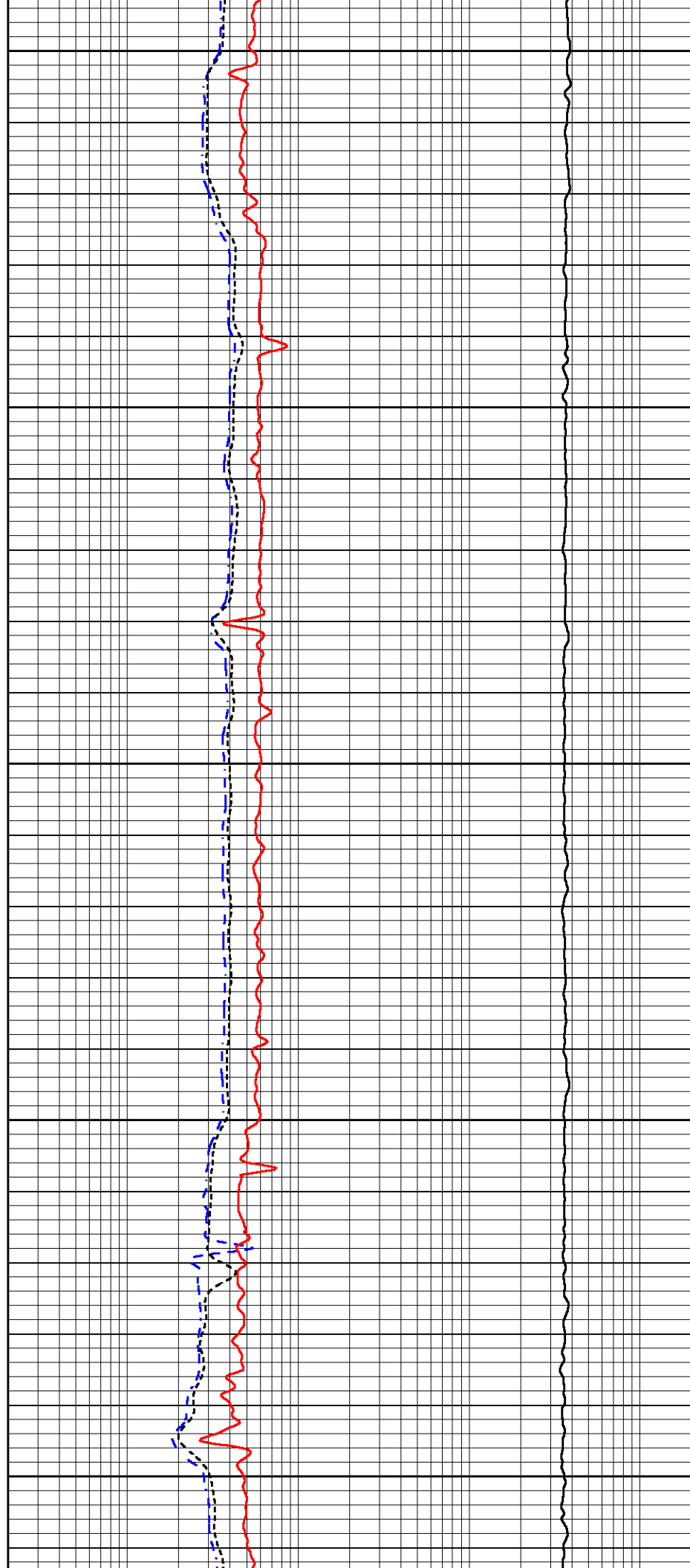
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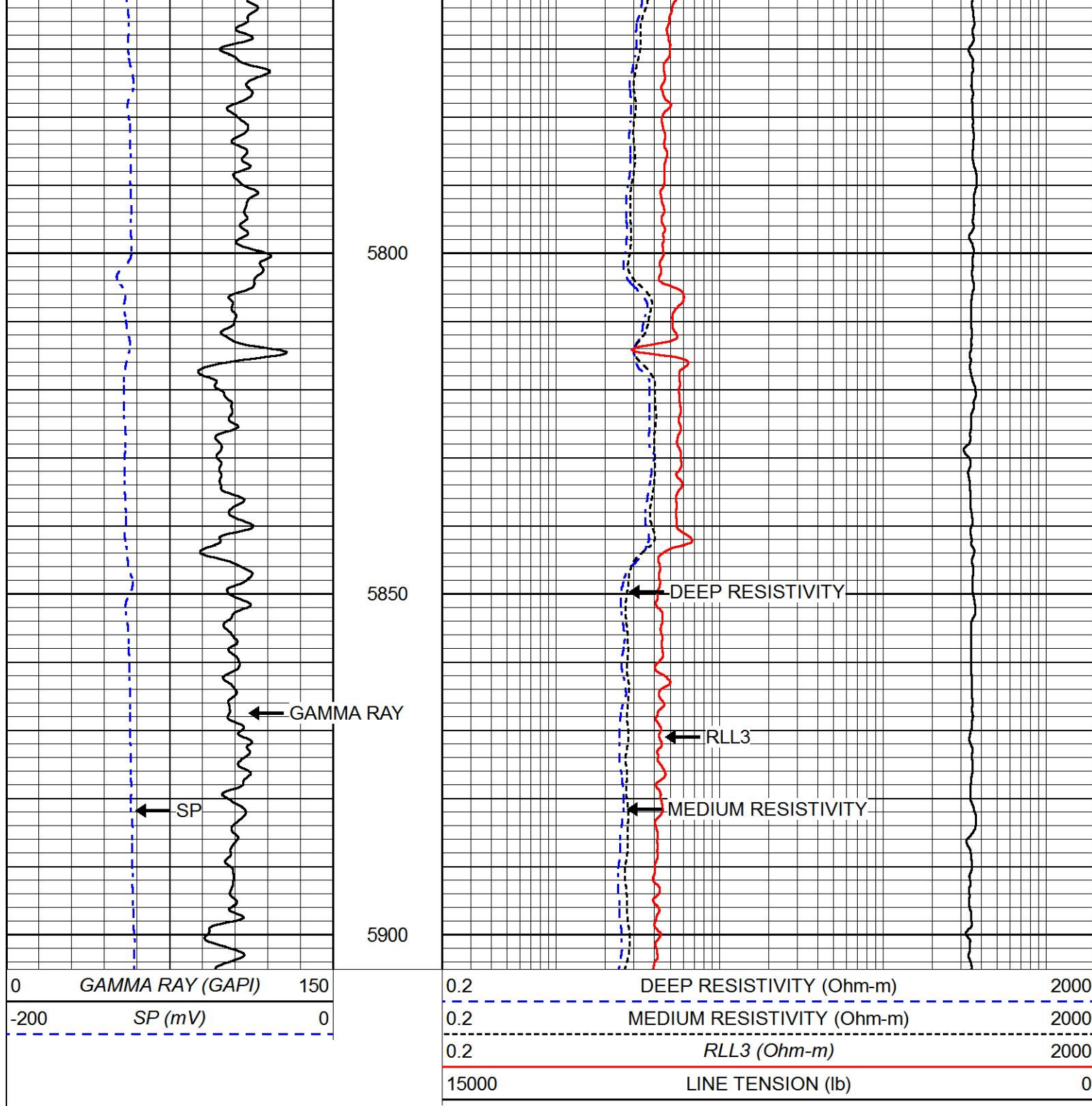
5600


5650

5700

5750







PIONEER
Pioneer Energy Services

MAIN PASS

Database File: renegade_state_3_33.db

Dataset Pathname: stackml/pass2.1

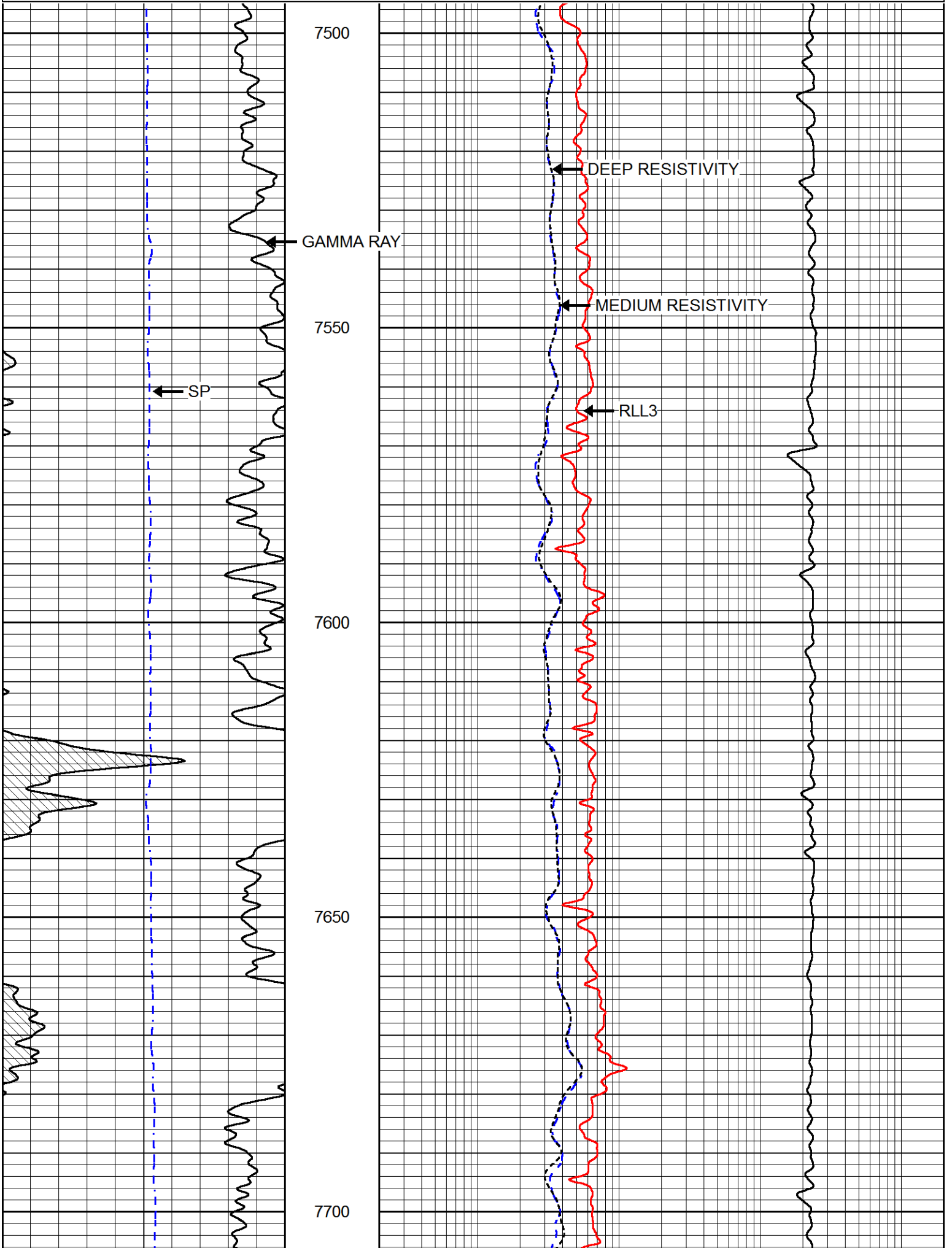
Presentation Format: dil

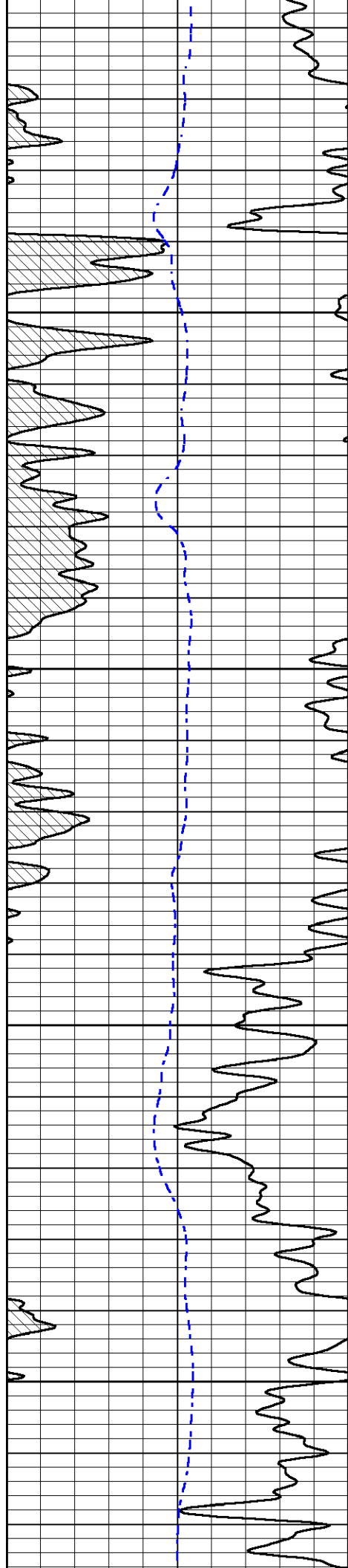
Dataset Creation: Wed Oct 03 05:10:29 2018

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



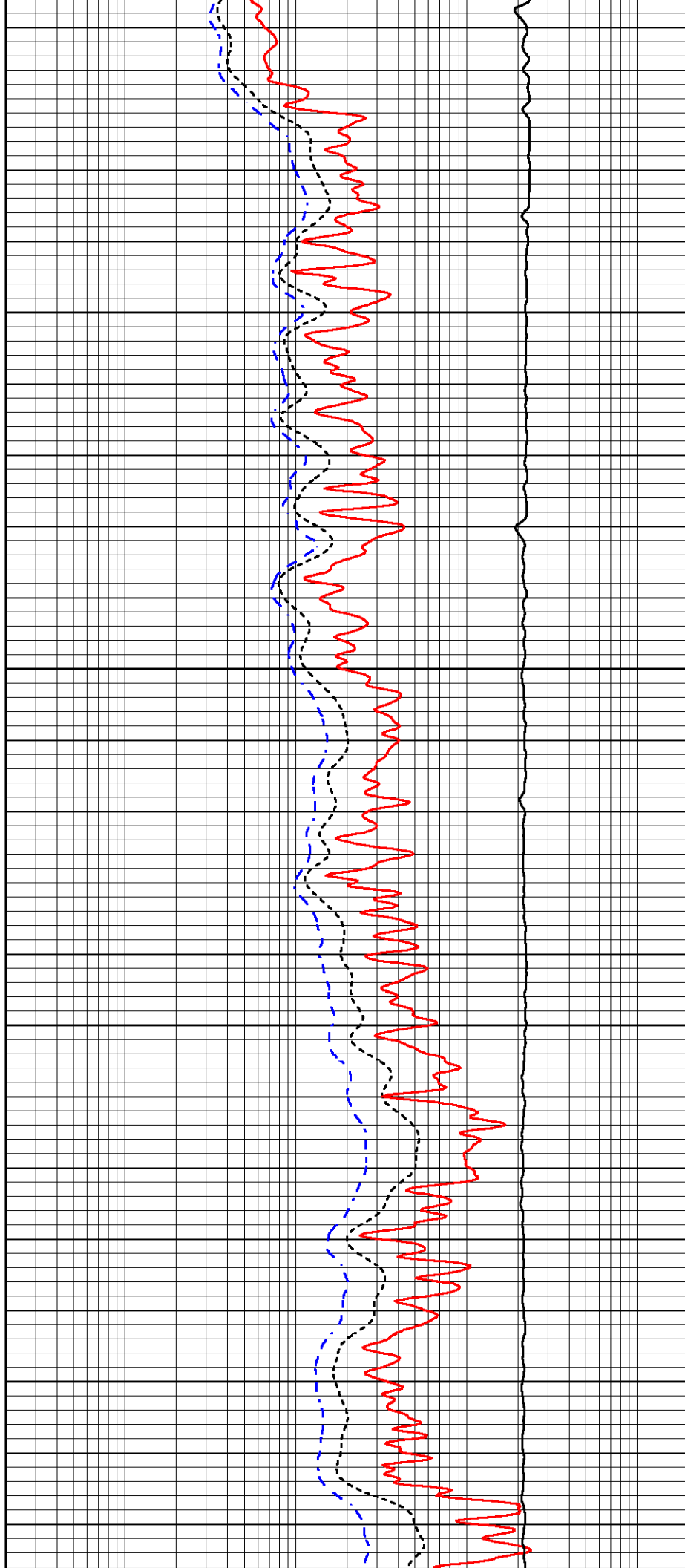


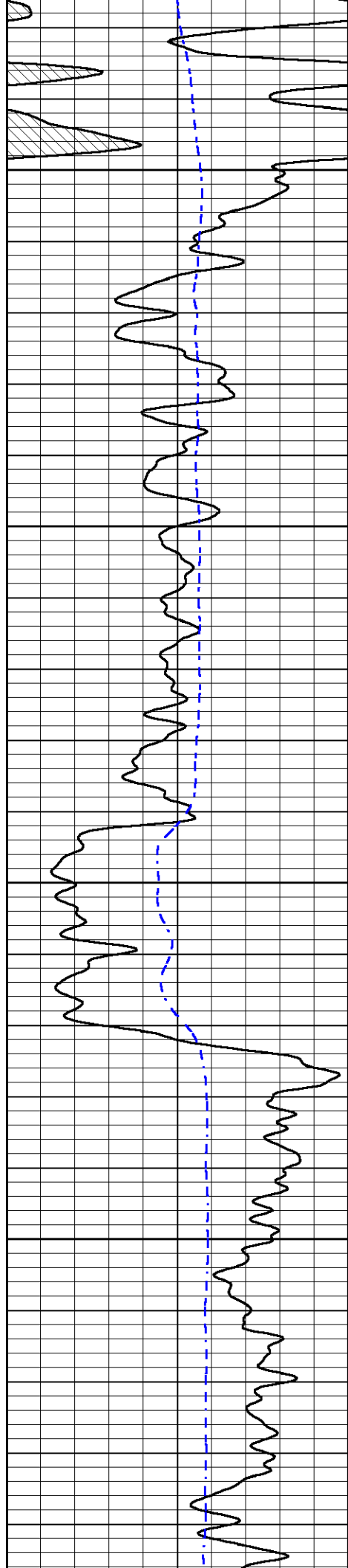
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7800

7850

7900



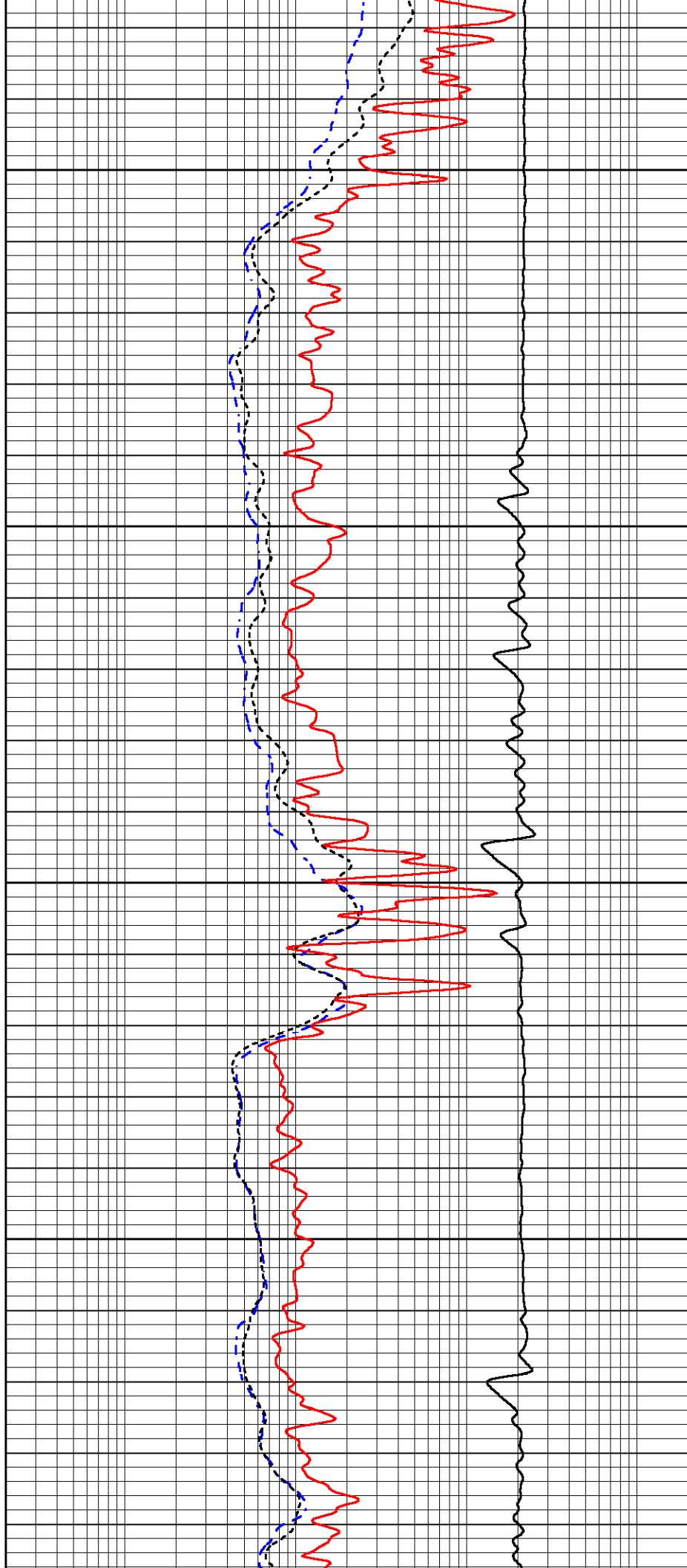


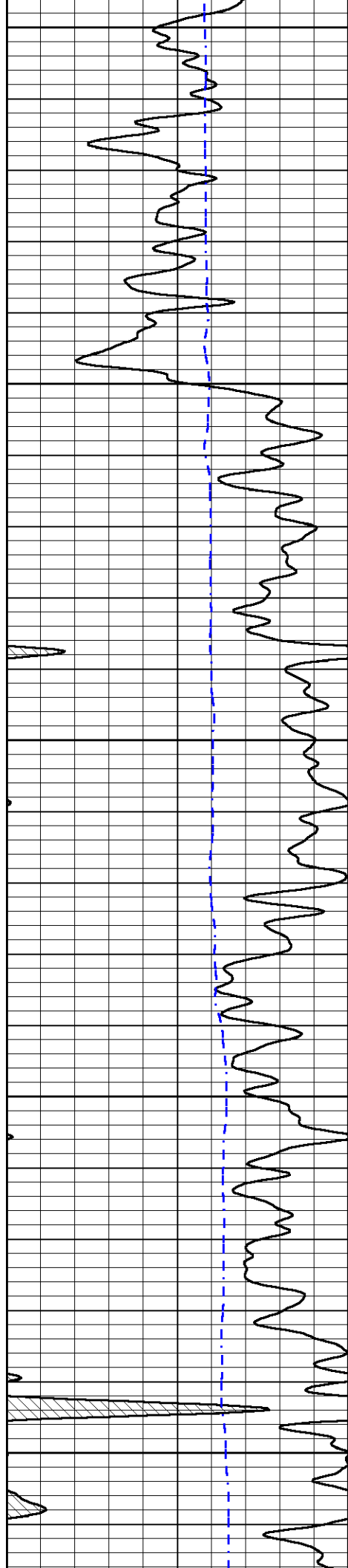
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8000

8050

8100





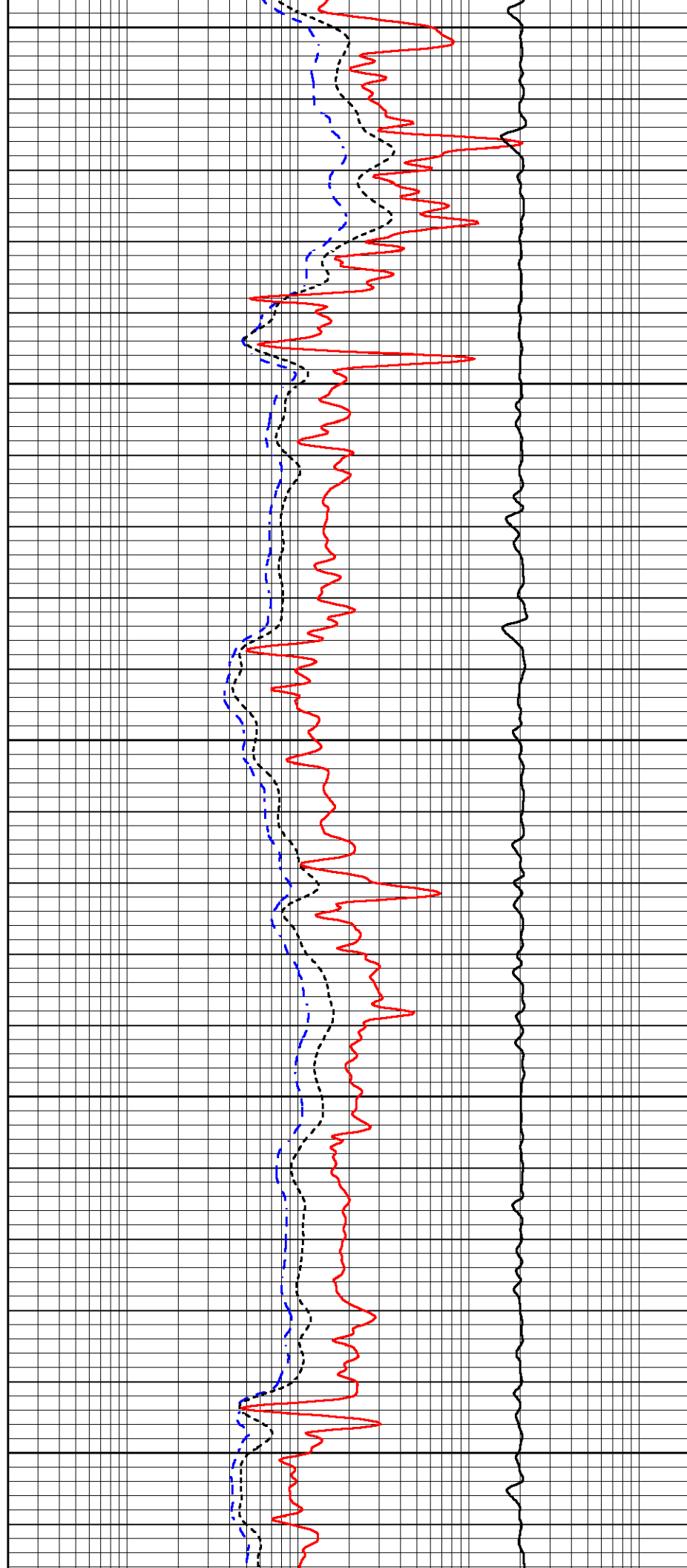
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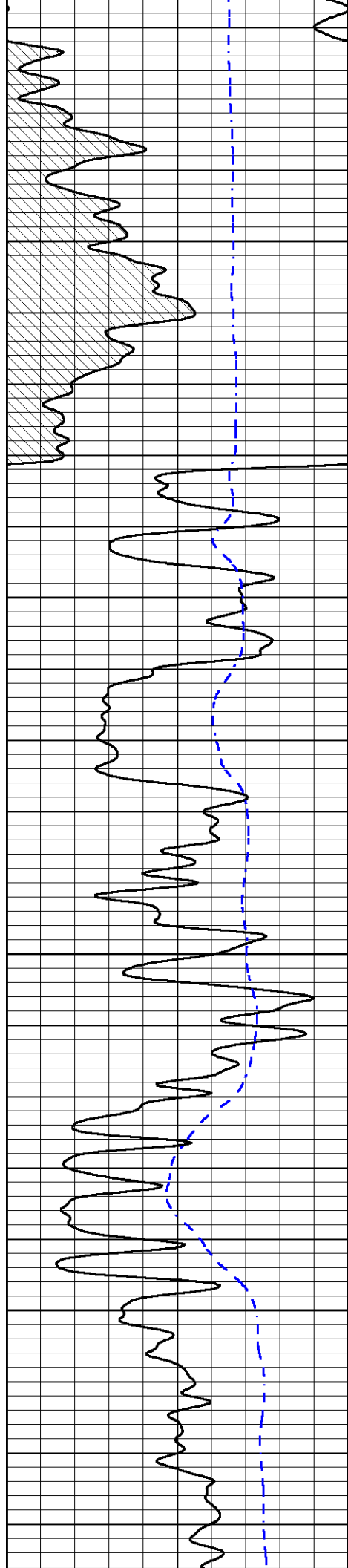
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8250

8300

8350



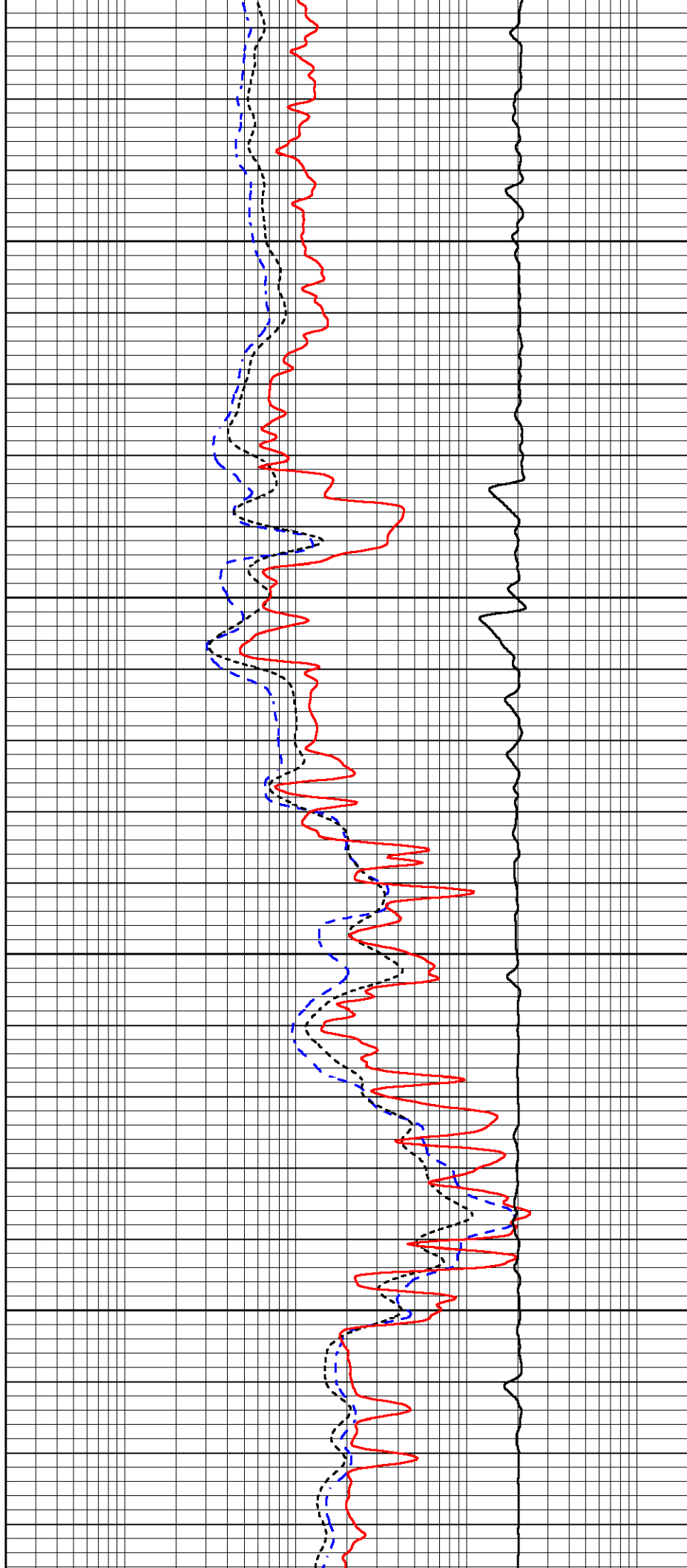


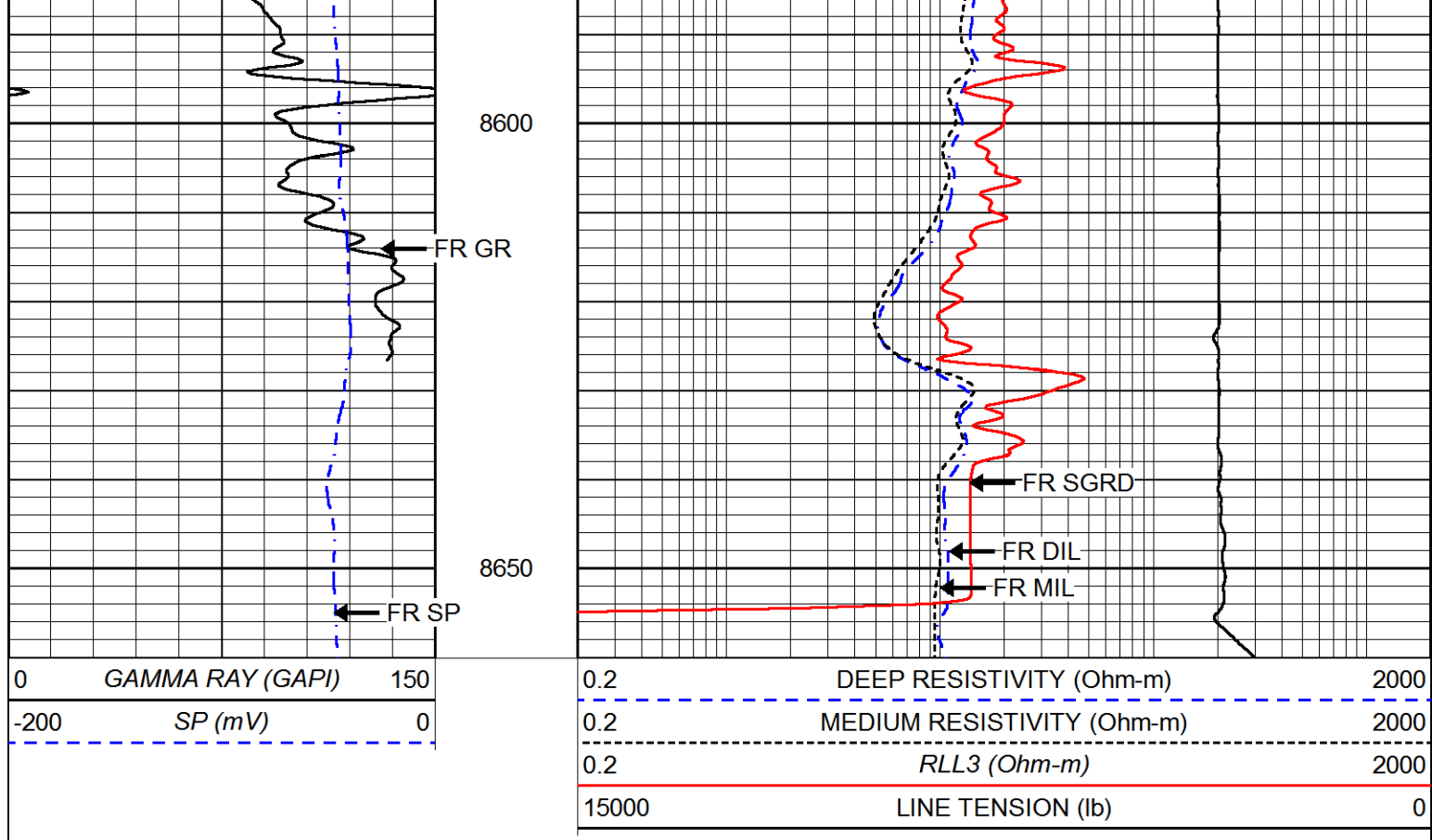
8400

8450

8500

8550





Calibration Report

Database File: renegade_state_3_33.db
 Dataset Pathname: stackml/pass2.1
 Dataset Creation: Wed Oct 03 05:10:29 2018

Dual Induction Calibration Report

Serial-Model: 1987-M&W
 Calibration Performed: Thu Aug 09 22:42:18 2018

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

Microlog Calibration Report

Serial-Model: PSI-02-PSI STKBL ML
 Performed: Sat Apr 07 12:01:20 2018

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0031	0.0043	0.0000	10.0000	Ohm-m	34000.0000	-1.0000
Inverse	0.0000	0.0013	0.0000	10.0000	Ohm-m	34000.0000	0.0000
Caliper	1.0020	1.0834	5.5000	16.5000	in	135.1560	-131.5000

Compensated Density Calibration Report

Serial-Model: 934-5002-M&W
 Source / Verifier: /

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	3720.16	2661.79	cps
Aluminum	2.685	g/cc	696.57	1725.83	cps
Spine Angle = 75.50			Density/Spine Ratio = 0.537		
	Size		Reading		
Small Ring	4.00	in	1.16		
Large Ring	16.00	in	1.01		

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



Company RENEGADE OIL & GAS
 Well STATE OF COLORADO #3-33
 Field BRAVE
 County ARAPAHOE
 State COLORADO