



# DUAL INDUCTION LOG

**Company** BEREXCO, LLC  
**Well** STURGEON A #1-25  
**Field** UNNAMED  
**County** CHEYENNE **State** KANSAS

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**Well** STURGEON A #1-25  
**Field** UNNAMED  
**County** CHEYENNE  
**State** KANSAS

**Location:** API #: 15-023-21536-00-00  
 830' FNL & 2180' FWL  
 SEC 25 TWP 2S RGE 38W  
 Permanent Datum GROUND LEVEL Elevation 3372'  
 Log Measured From KELLY BUSHING  
 Drilling Measured From KELLY BUSHING

Other Services  
 CNL/CDL  
 MEL/BHCS

Date	5/21/2020
Run Number	ONE
Depth Driller	4980'
Depth Logger	4980'
Bottom Logged Interval	4979'
Top Log Interval	300'
Casing Driller	8.625" @ 327'
Casing Logger	321'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	600
Density / Viscosity	9.5 95
pH / Fluid Loss	11.0 7.6
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.90 @ 64
Rmt @ Meas. Temp	0.68 @ 64
Rmc @ Meas. Temp	1.22 @ 64
Source of Rmf / Rmc	CHARTS
Rm @ BHT	0.46 @ 126
Operating Rig Time	5 HOURS
Max Rec. Temp. F	126
Equipment Number	P-24
Location	HAYS
Recorded By	D. SCHMIDT
Witnessed By	BRYAN BYNOG

<<< 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.

BIRD CITY,  
7 NORTH TO U RD, 1/2 EAST,  
SOUTH INTO

Log Measured From: KELLY BUSHING 8 Ft. Above Permanent Datum

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

<b>Your Pioneer Energy Services Crew</b> Engineer: D. SCHMIDT Operator: Operator: Operator:	<b>This Log Record Was Witnessed By</b> Primary Witness: BRYAN BYNOG Secondary Witness: Secondary Witness: Secondary Witness:
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Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	44.50		GR-M&W (233-M&W)	3.00	3.50	50.00
CNLSC CNSSC	41.40 40.65		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	32.35 32.33 31.85		CDL-M&W (817-947)	8.50	4.00	250.00
MCAL MI MN	20.87 20.87 20.87		ML-PSI UDM ML (UDM-01) Stackable Microlog Tools	11.50	4.00	215.00
RLL3F RLL3	15.80 15.80					
CILD	8.00		DIL-PSI HIGH TEMP (952-828)	18.50	3.50	220.00
CILM	4.70					
SP	0.20					

Dataset: berexco\_sturgeon a 1-25.db: field/well/STKML/pass6.1  
 Total length: 47.00 ft  
 Total weight: 835.00 lb  
 O.D.: 4.00 in

# Log Variables

DatabaseC:\ProgramData\Warrior\Data\berexco\_sturgeon a 1-25.db  
 Dataset field/well/STKML/pass3.1/\_vars\_

## Top - Bottom

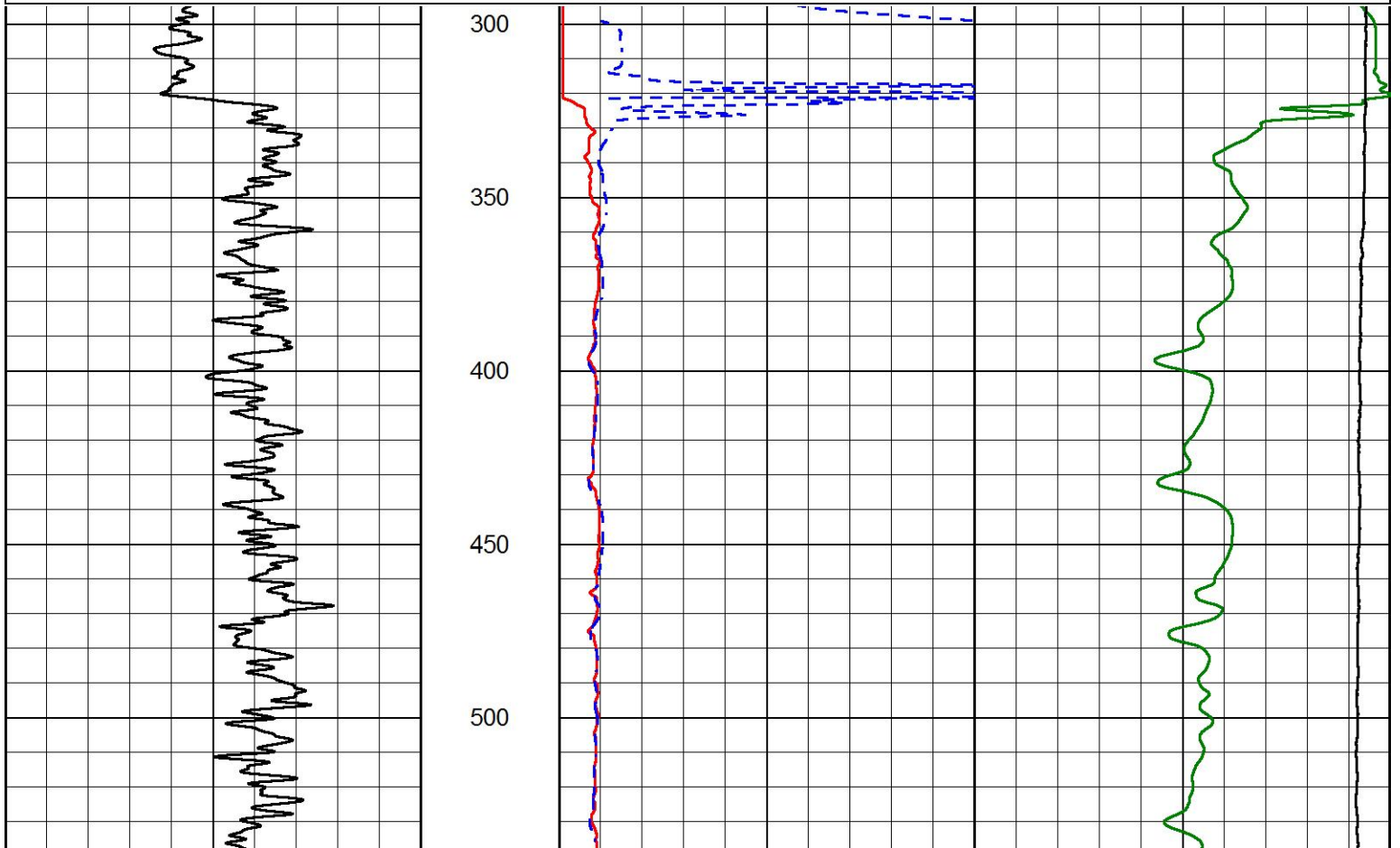
A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	100	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	0	0	1050	0	Off	0

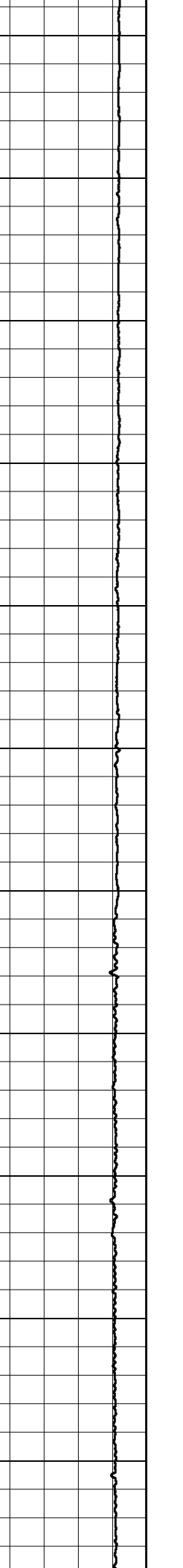
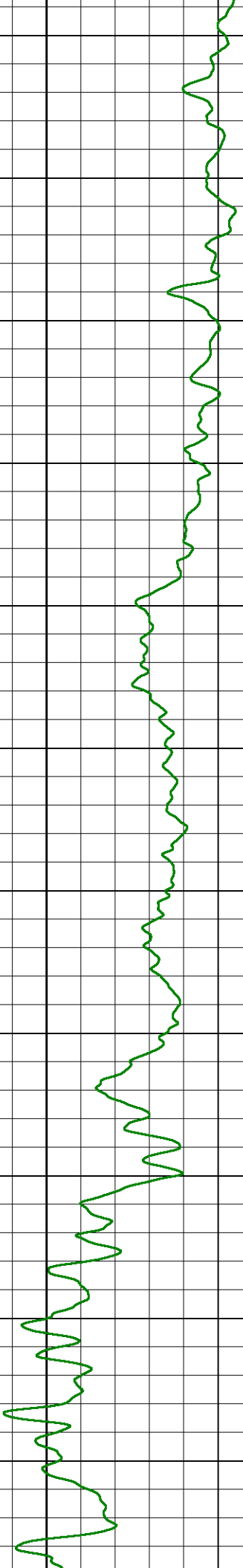
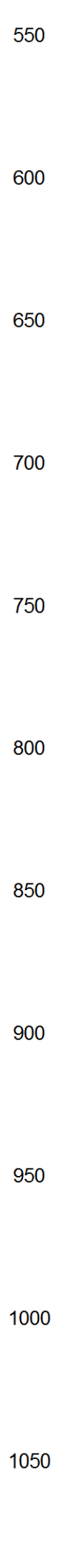
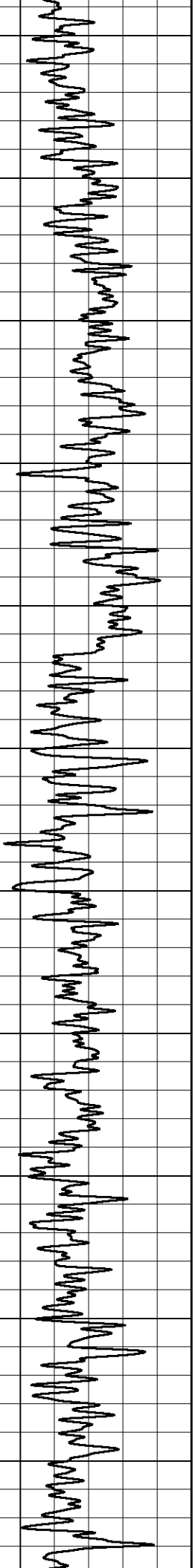


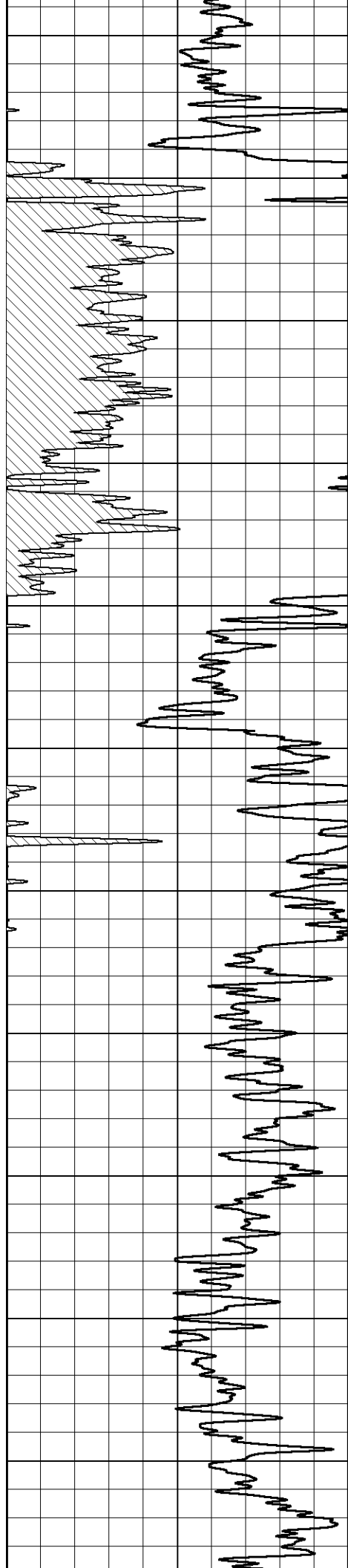
# MAIN PASS

Database File berexco\_sturgeon a 1-25.db  
 Dataset Pathname STKML/pass6.1  
 Presentation Format \_dil2in  
 Dataset Creation Thu May 21 04:16:50 2020  
 Charted by Depth in Feet scaled 1:600

GAMMA RAY  (GAPI)	1000	CONDUCTIVITY (mmho/m)	0
	15000	Line Tension (lb)	0
	0	RLL3 (Ohm-m)	50
	0	RILD (Ohm-m)	50
	50	RLL3 (Ohm-m)	200
	50	Deep Resistivity (Ohm-m)	200







1100

1150

1200

1250

1300

1350

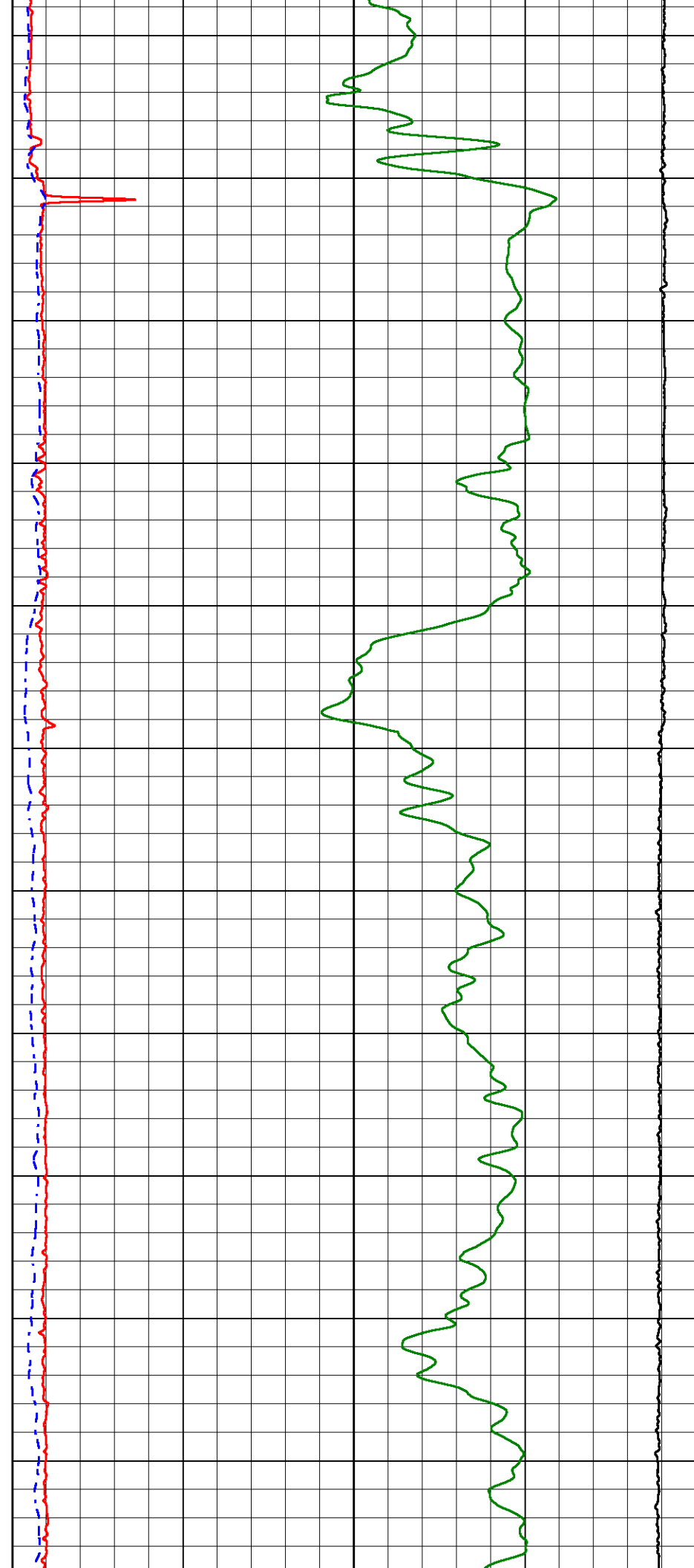
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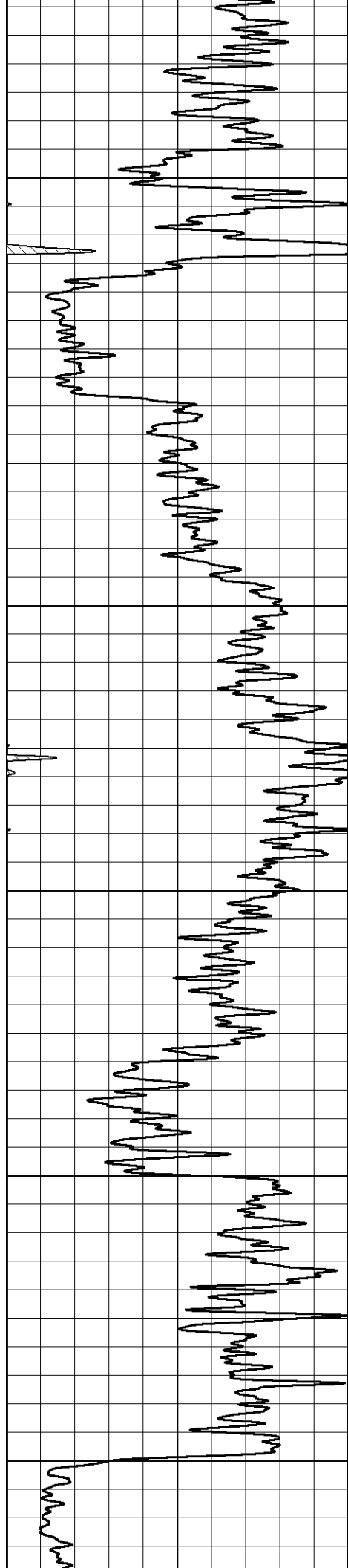
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1500

1550

1600





1650

1700

1750

1800

1850

1900

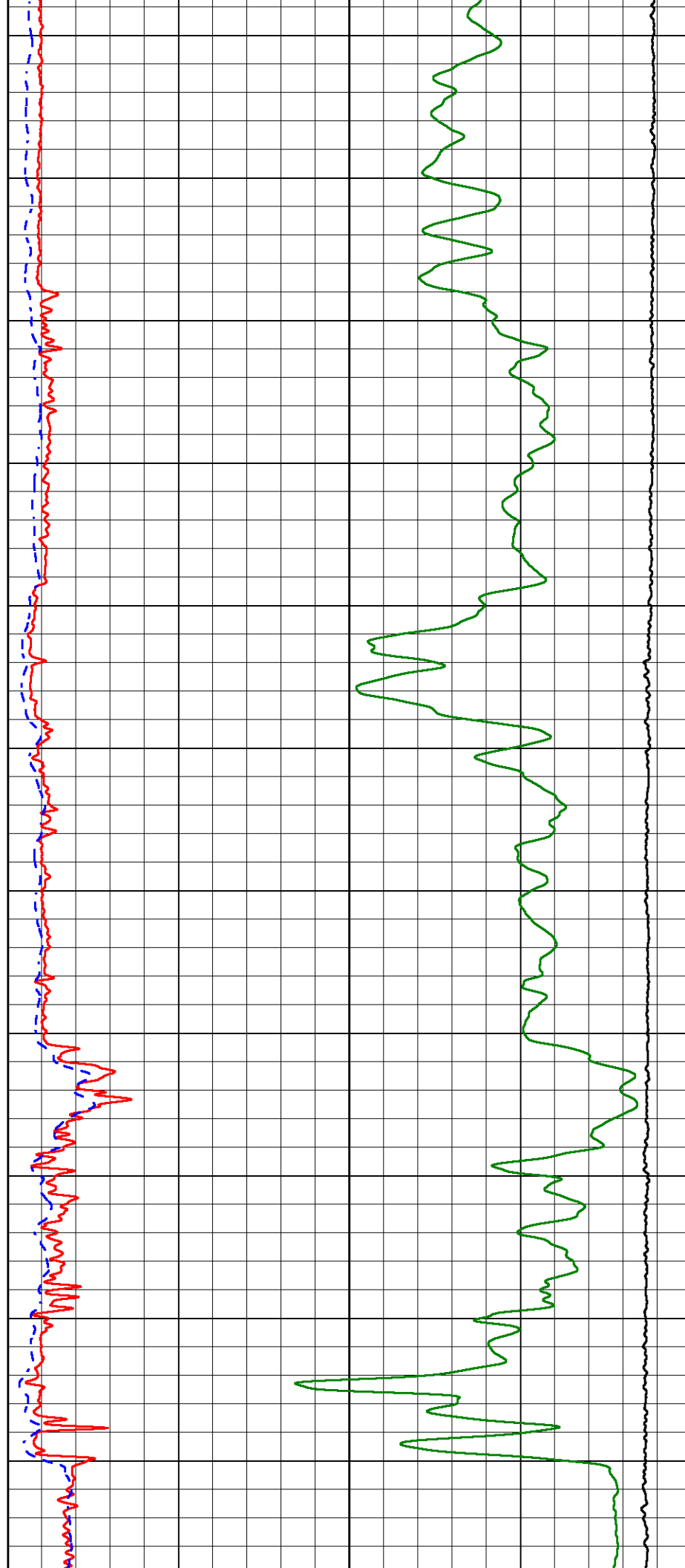
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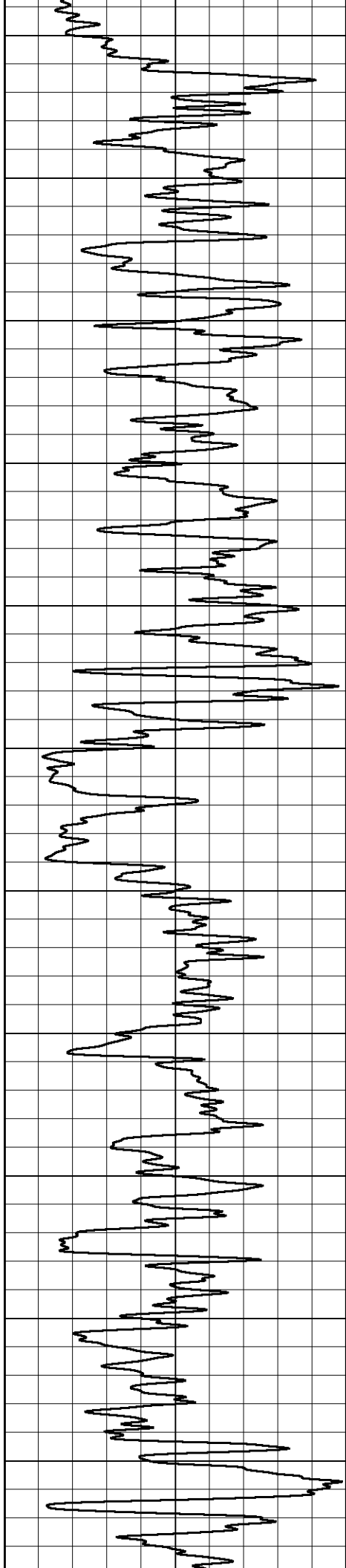
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2050

2100

2150





2200

2250

2300

2350

2400

2450

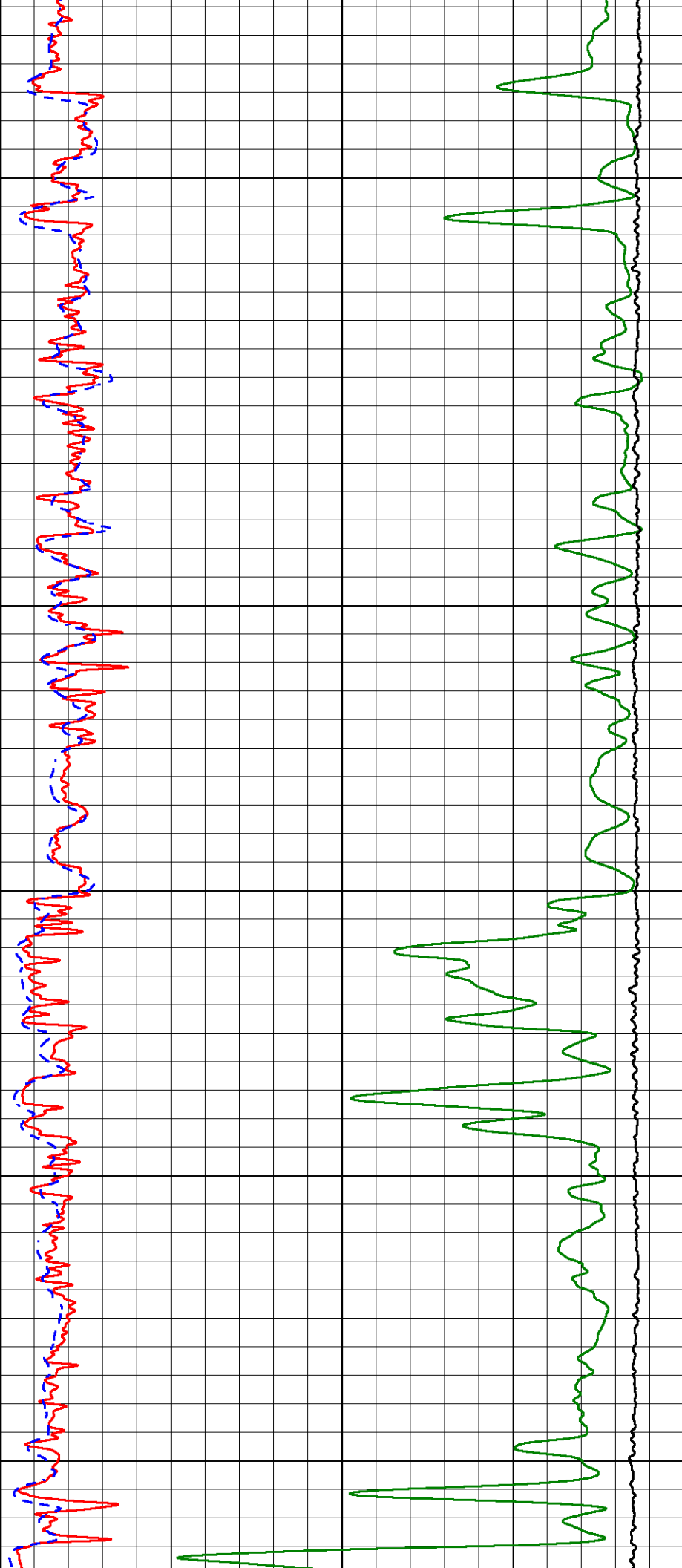
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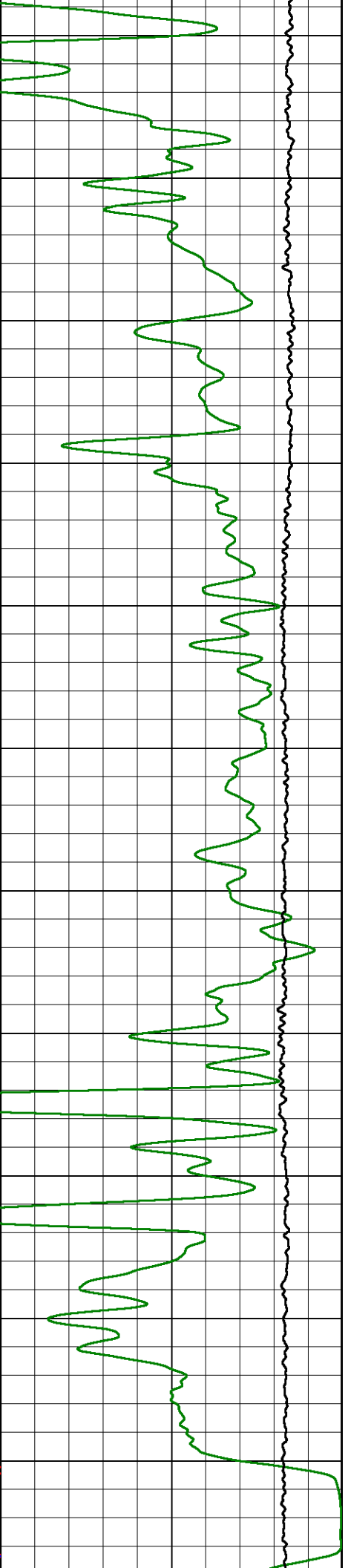
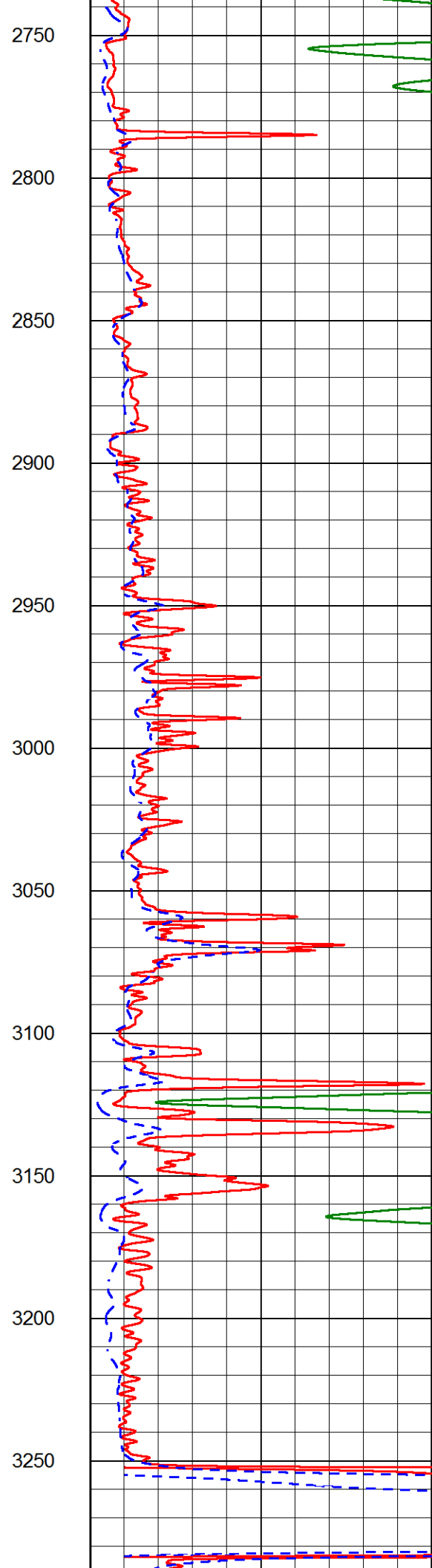
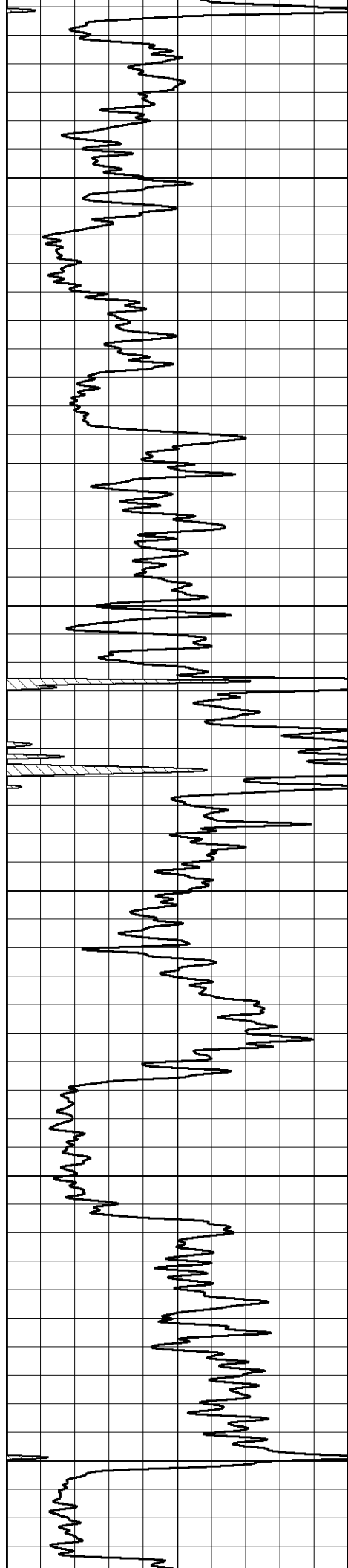
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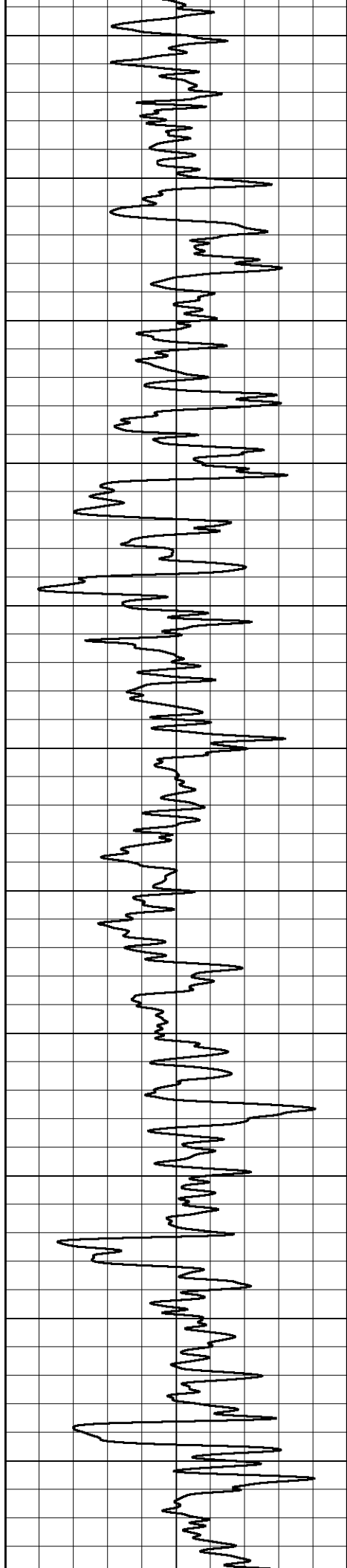
2600

2650

2700







3300

3350

3400

3450

3500

3550

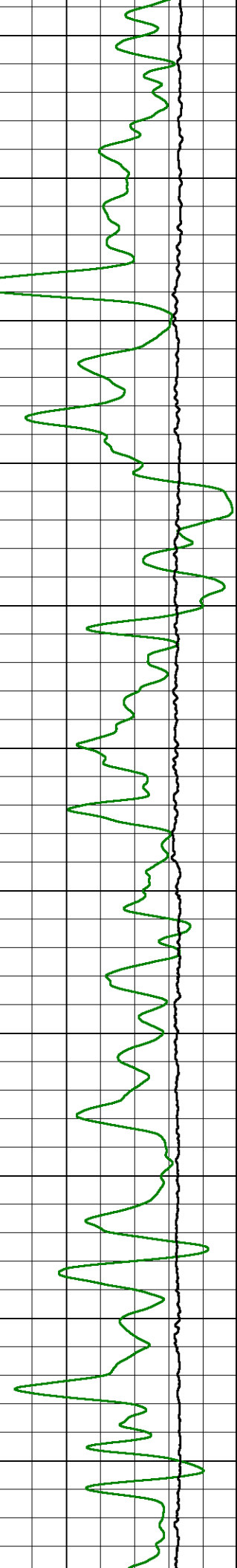
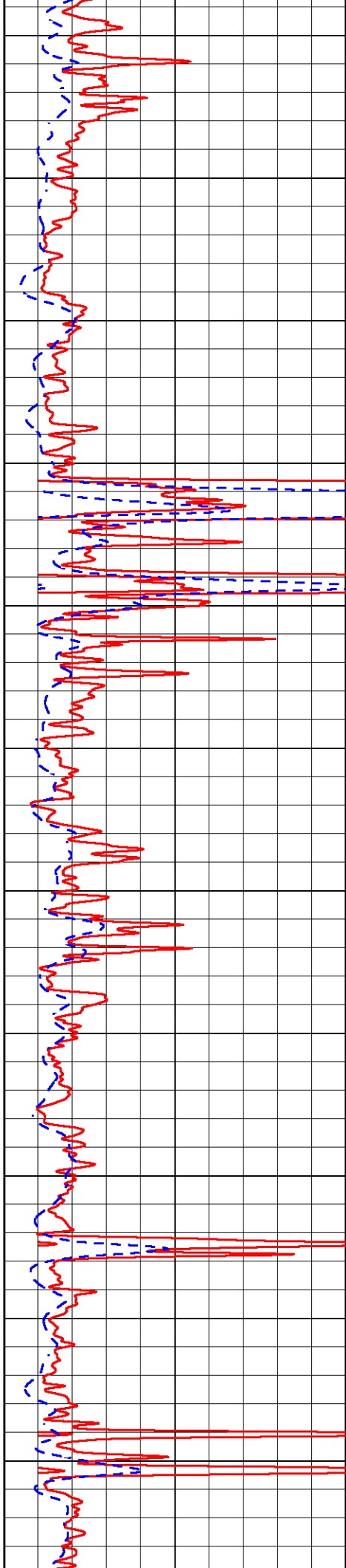
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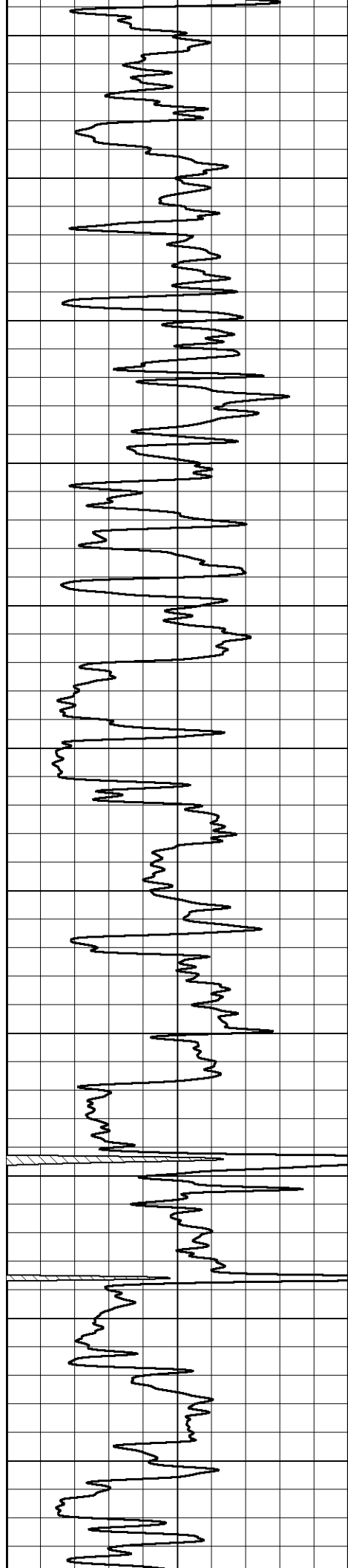
3650

3700

3750

3800





3850

3900

3950

4000

4050

4100

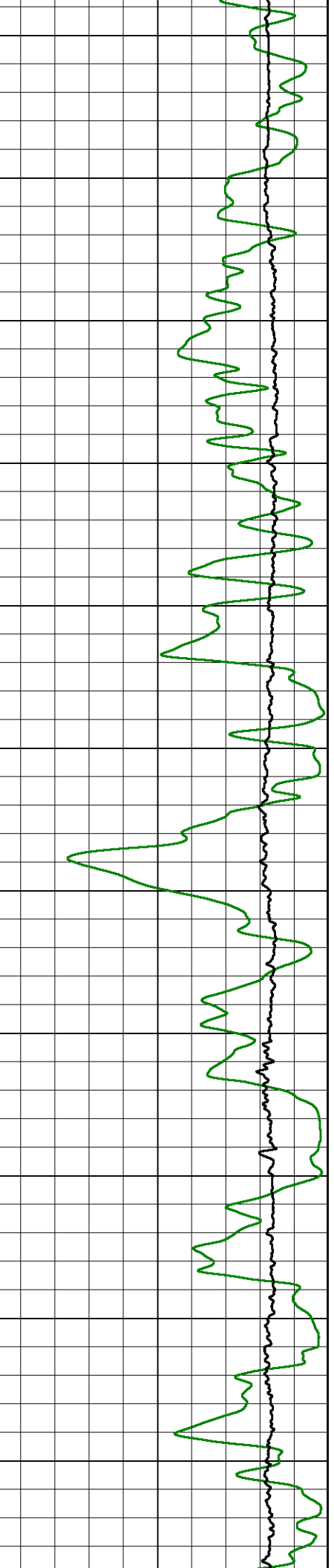
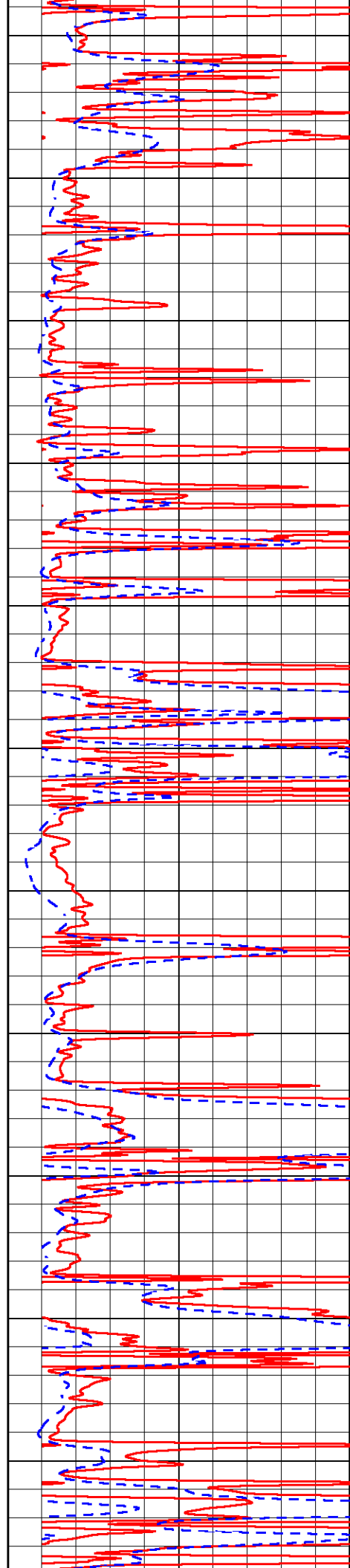
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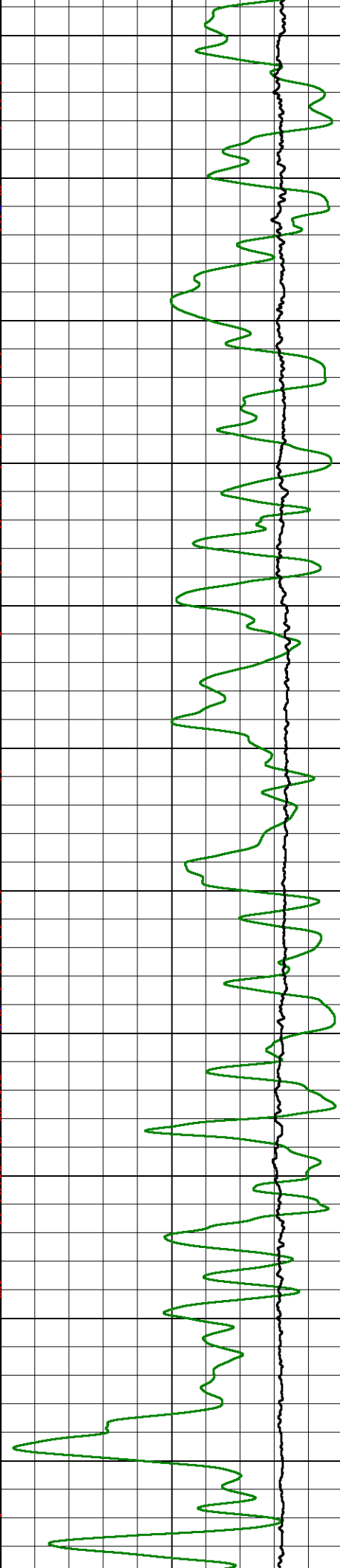
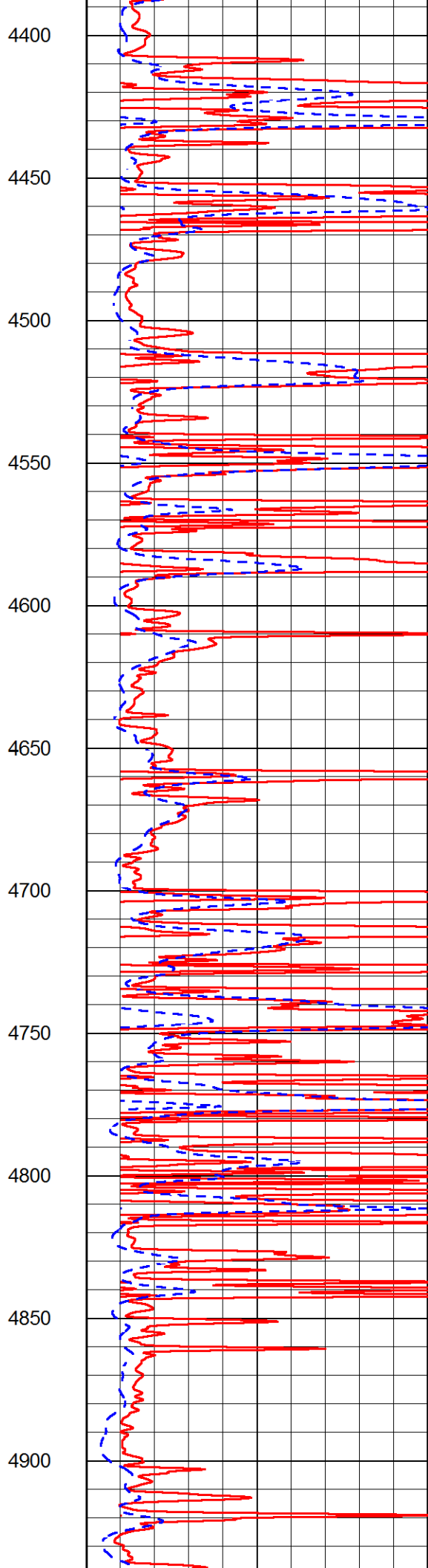
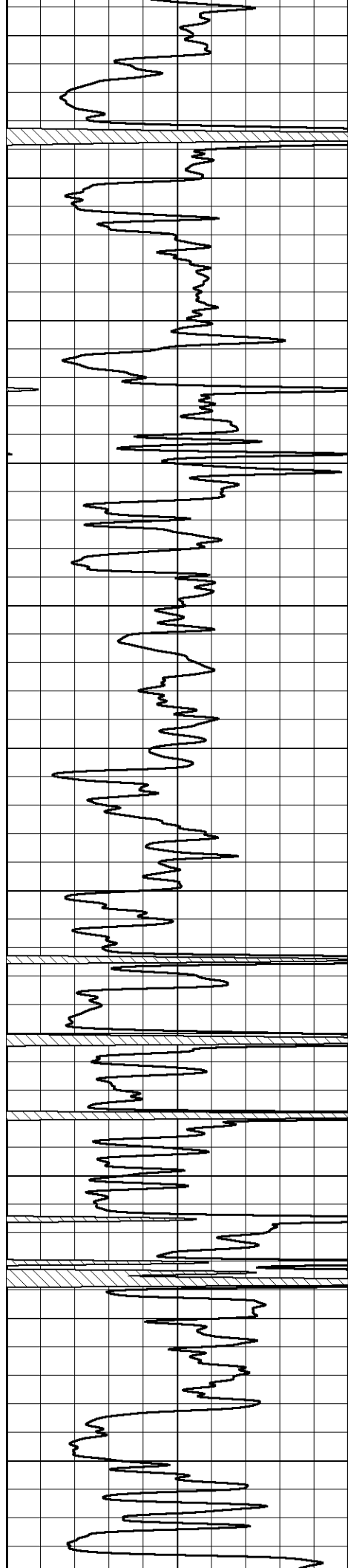
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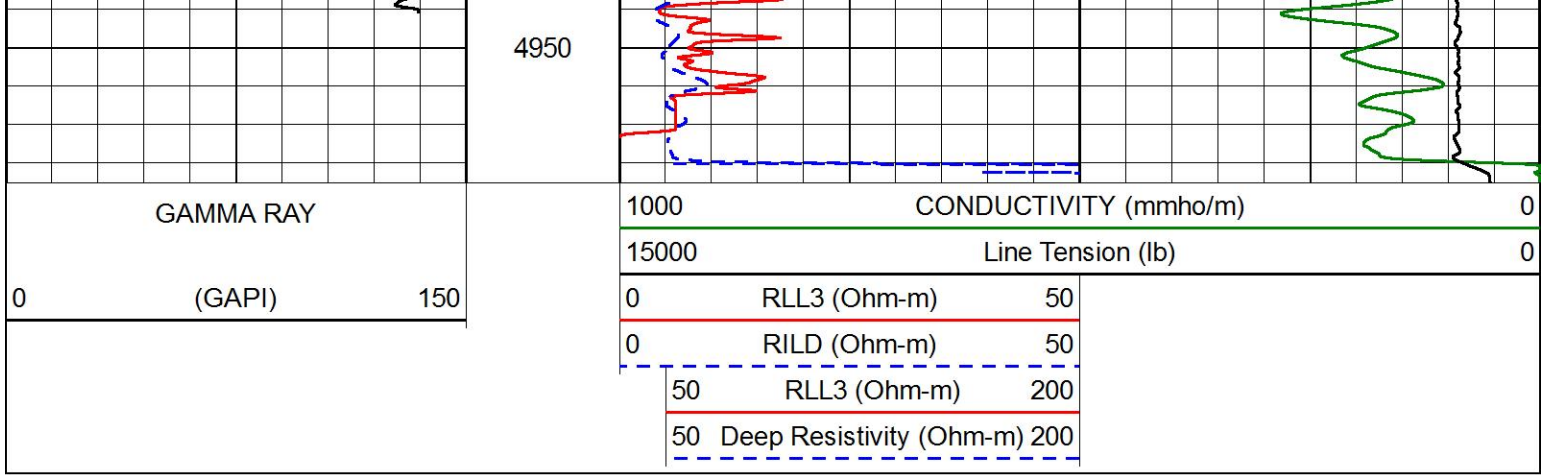
4250

4300

4350



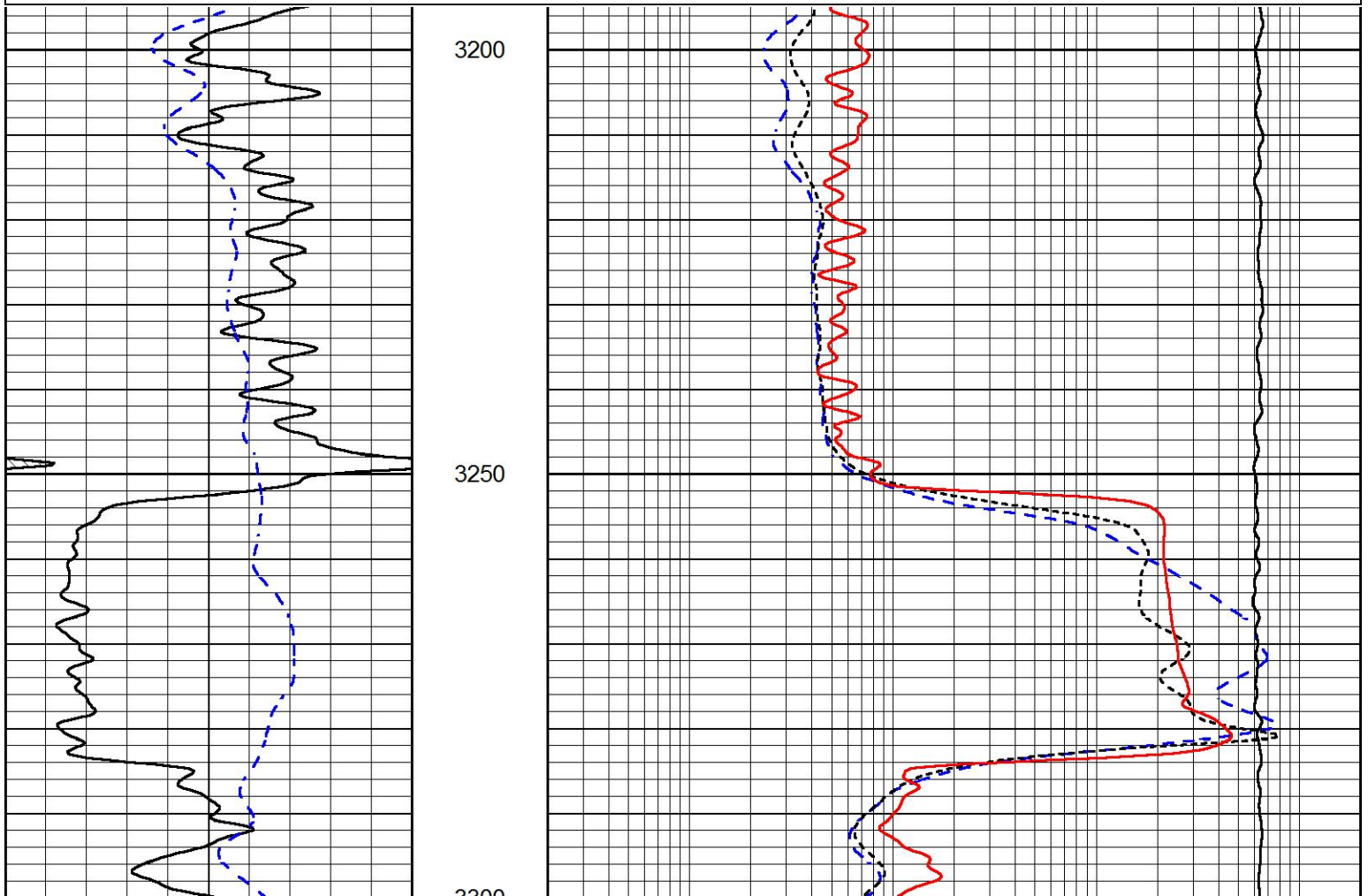


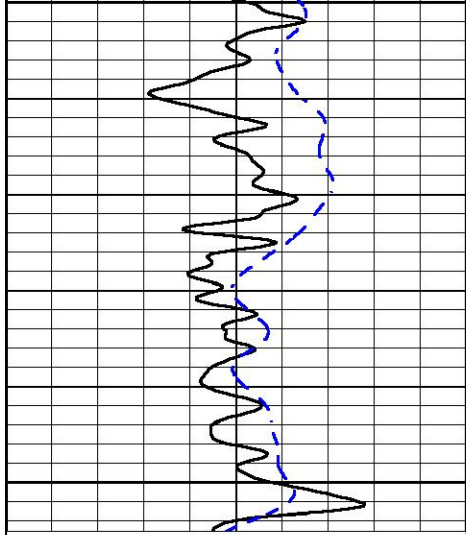


# MAIN PASS

Database File berexco\_sturgeon a 1-25.db  
 Dataset Pathname STKML/pass6.1  
 Presentation Format \_dil  
 Dataset Creation Thu May 21 04:16:50 2020  
 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
			10000	LINE TENSION (lb)	0

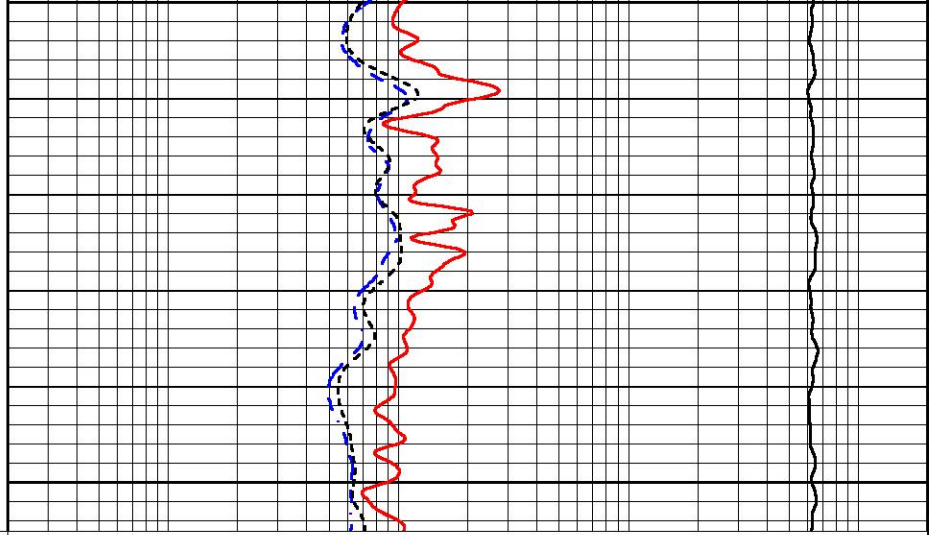




3500

3350

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
10000	LINE TENSION (lb)	0

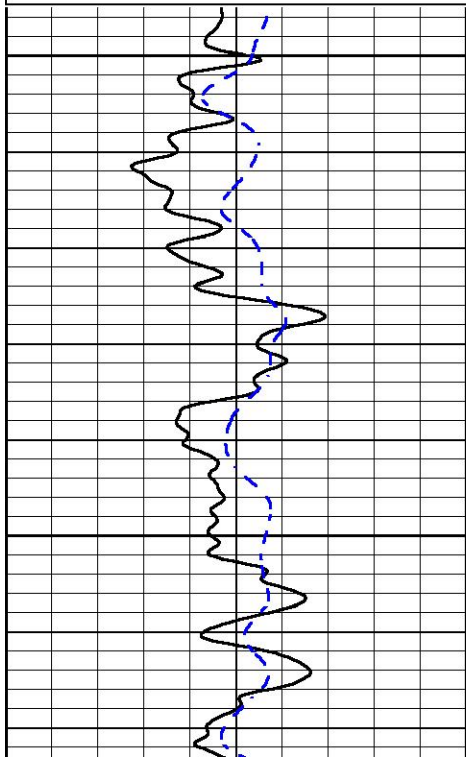


# MAIN PASS

Database File berexco\_sturgeon a 1-25.db  
 Dataset Pathname STKML/pass6.1  
 Presentation Format \_dil  
 Dataset Creation Thu May 21 04:16:50 2020  
 Charted by Depth in Feet scaled 1:240

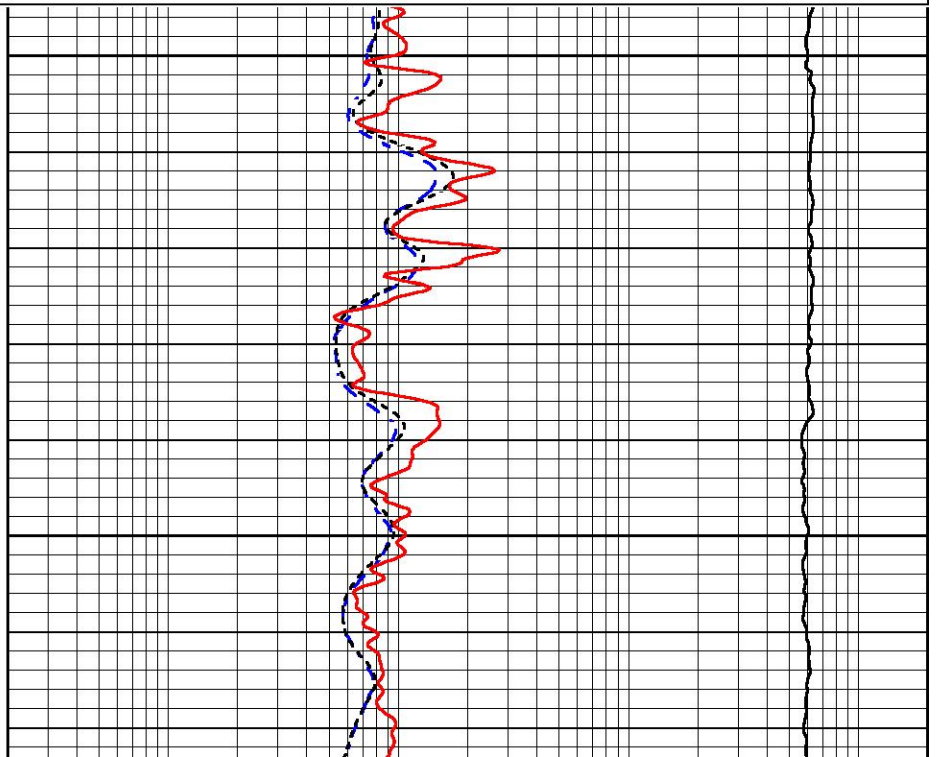
0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

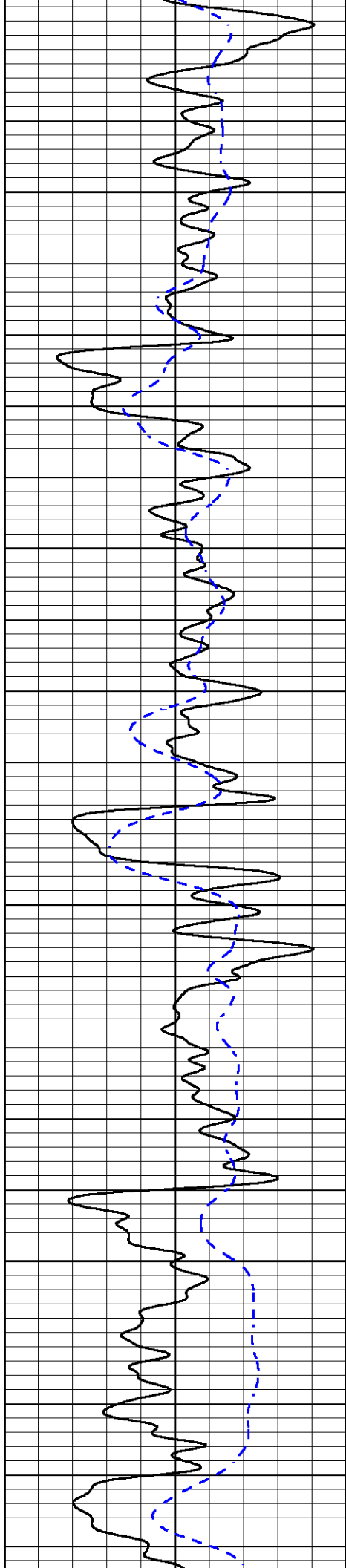
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0



3600

3650



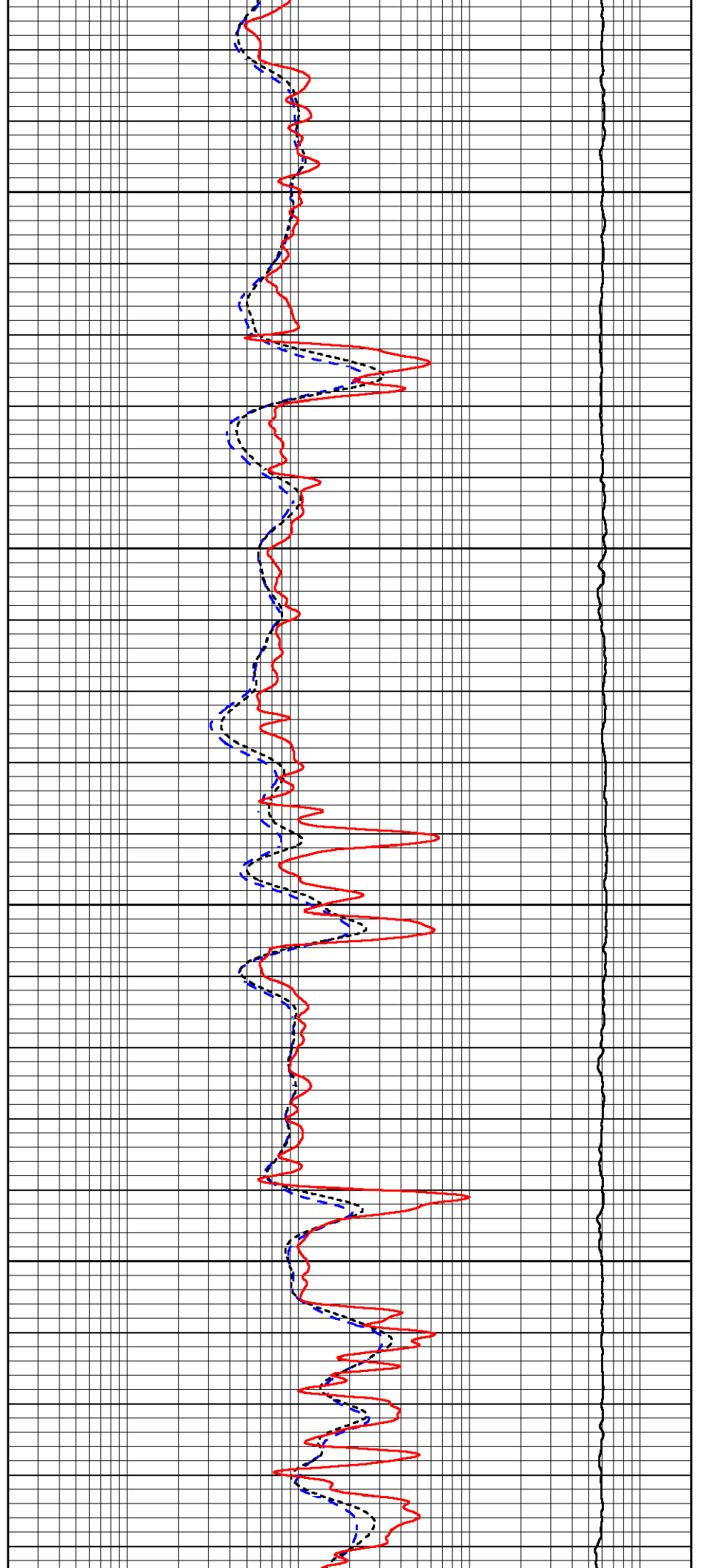


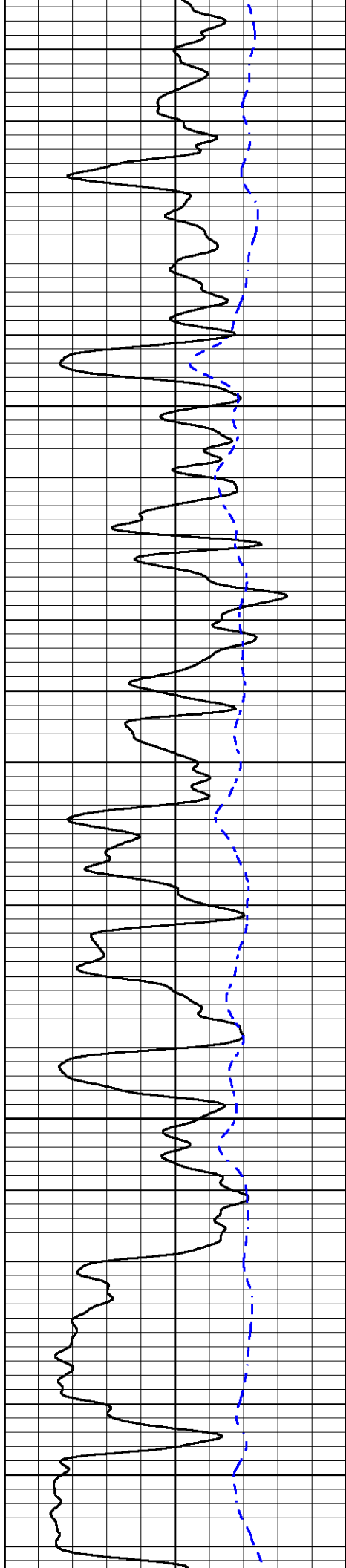
3700

3750

3800

3850





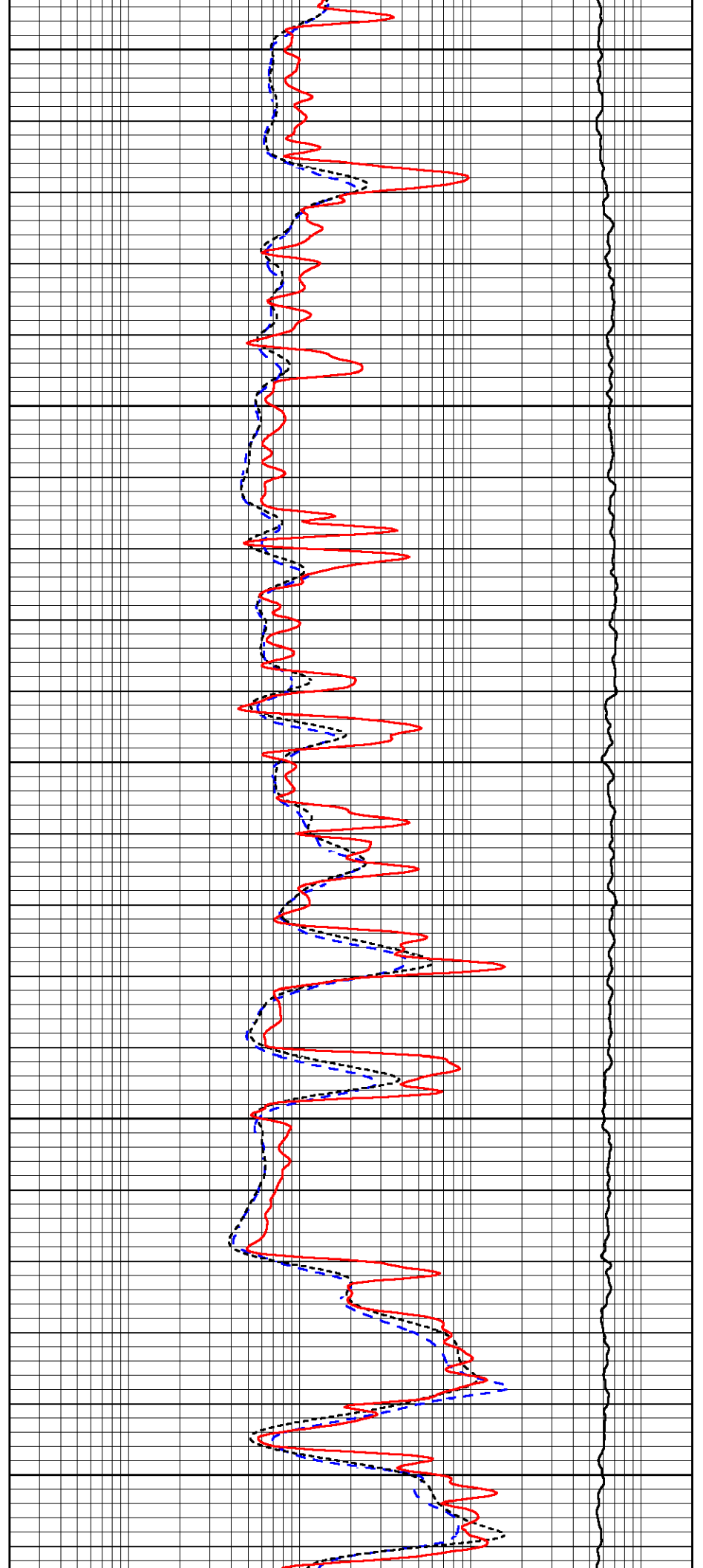
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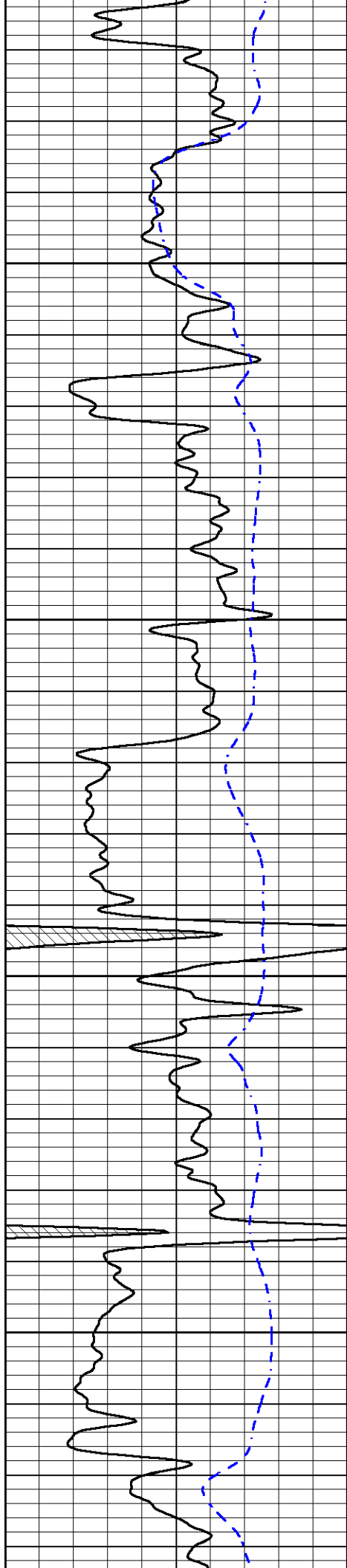
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4000

4050

4100



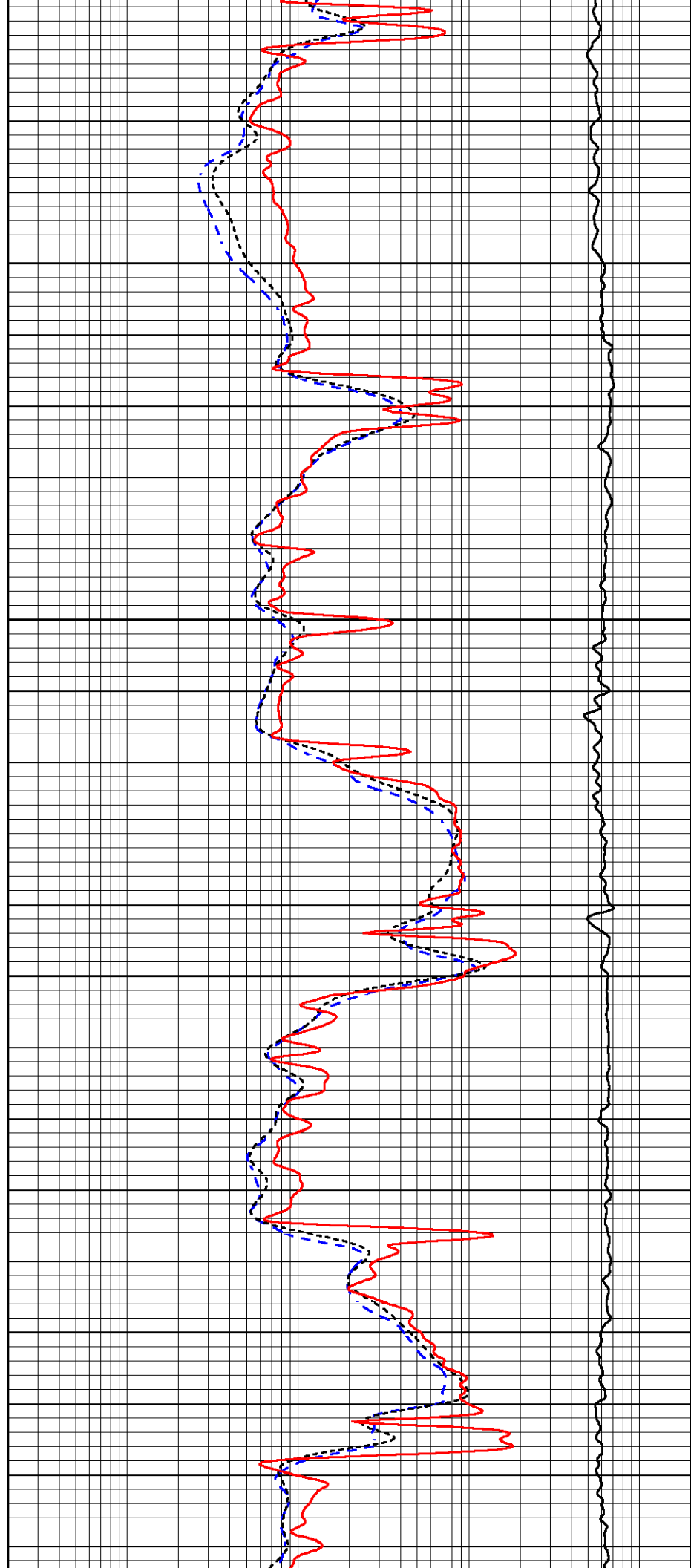


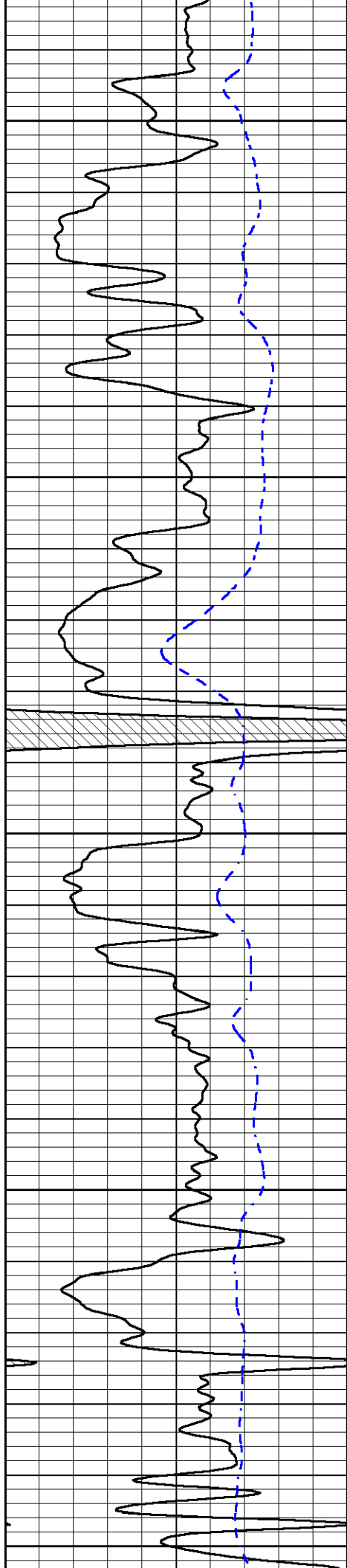
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4200

4250

4300





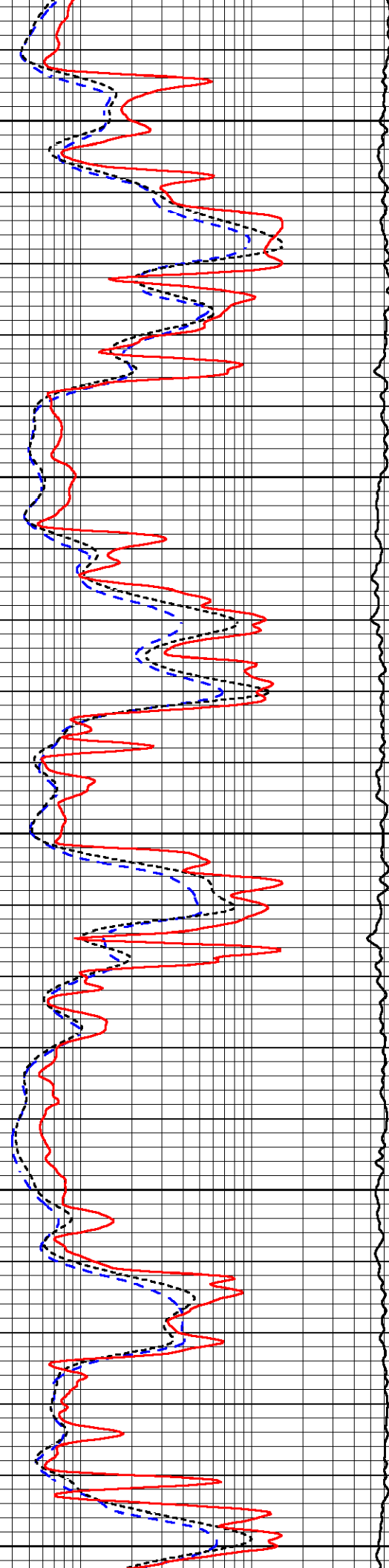
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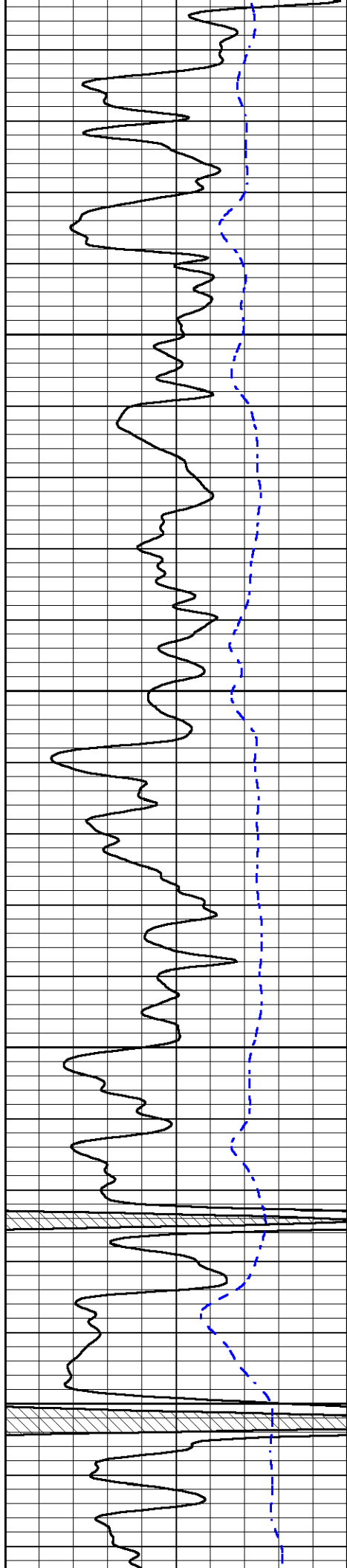
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4450

4500

4550



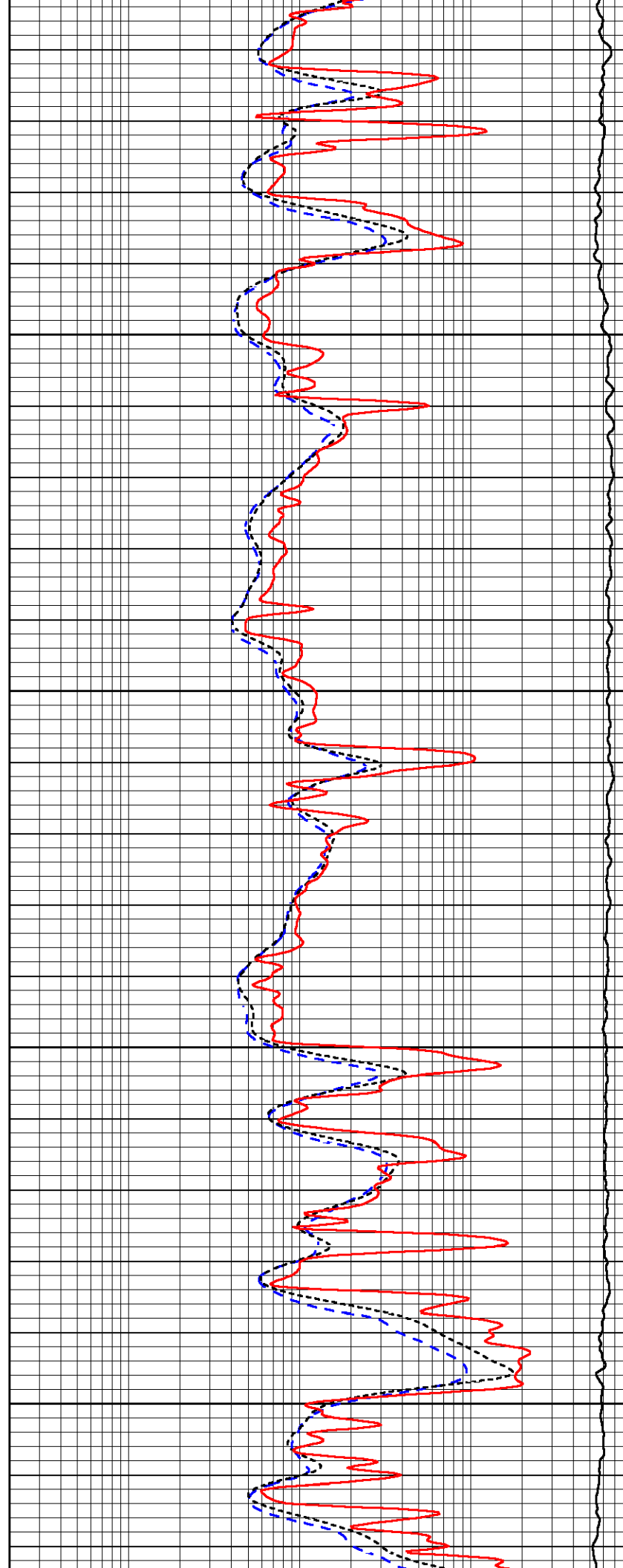


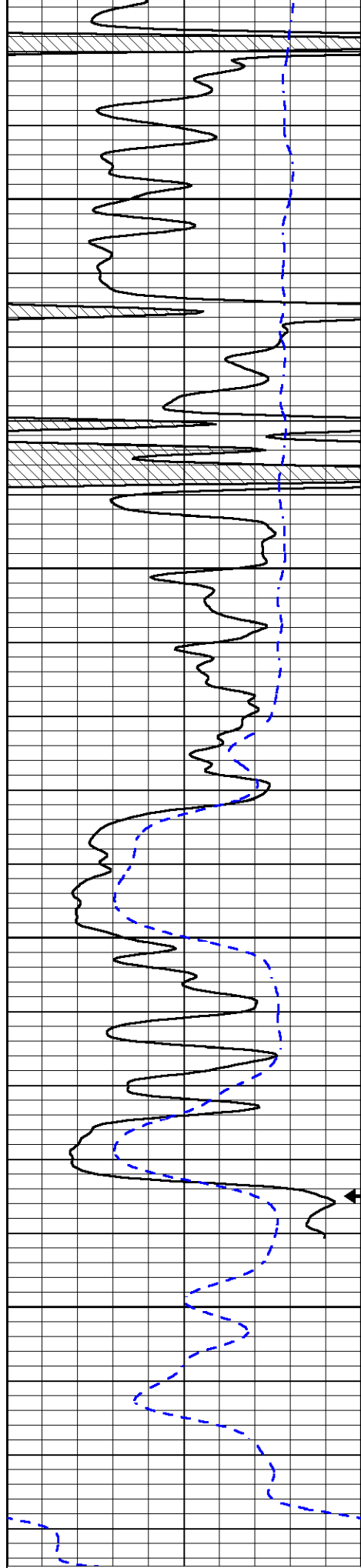
4600

4650

4700

4750





4800

4850

4900

4950

0 150

-200 0

FR GR

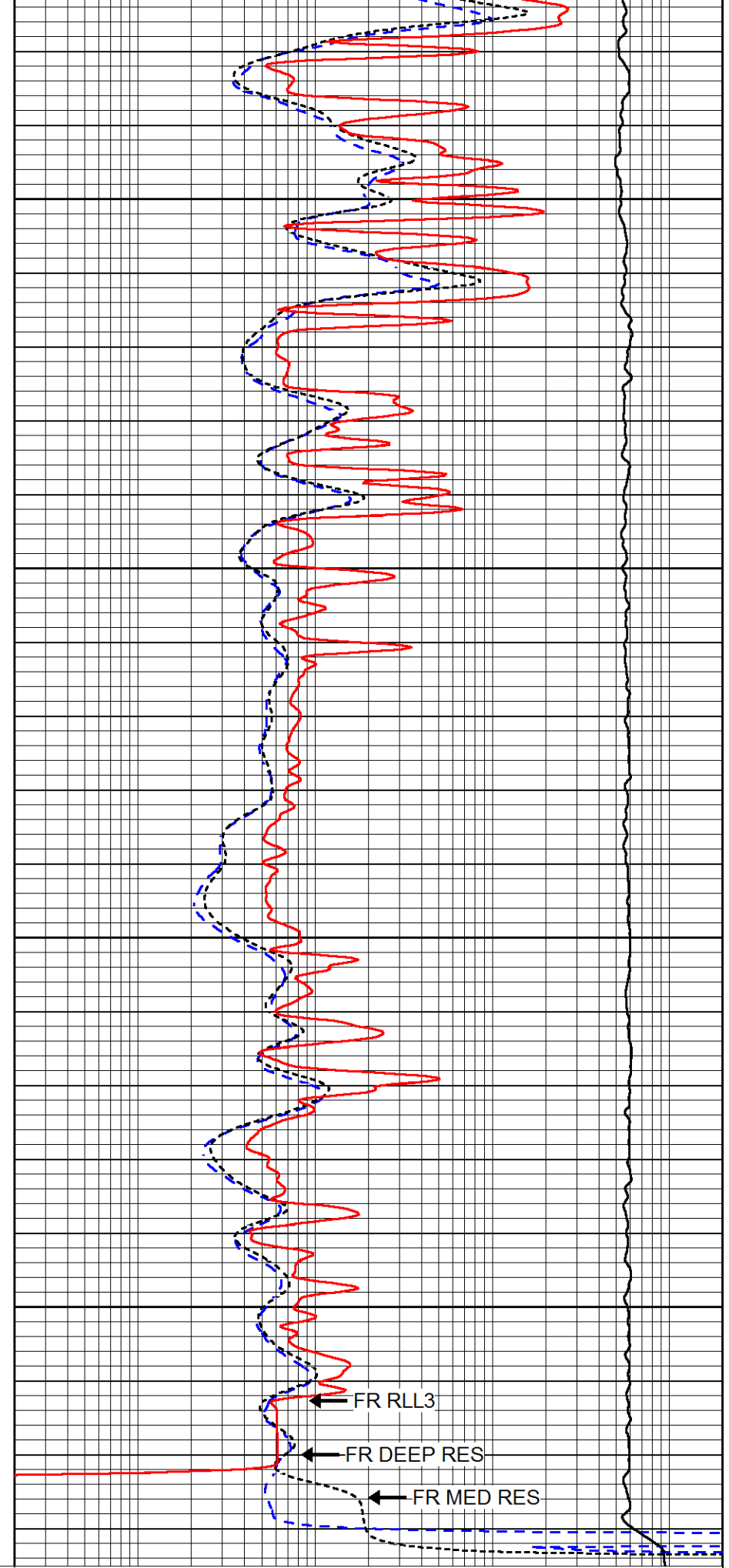
FR RLL3

FR DEEP RES

FR MED RES

0.2 2000

0.2 2000



FR RLL3

FR DEEP RES

FR MED RES

0.2 2000

0.2 2000

GAMMA RAY (GAPI)

SP (mV)

DEEP RESISTIVITY (Ohm-m)

MEDIUM RESISTIVITY (Ohm-m)

0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0

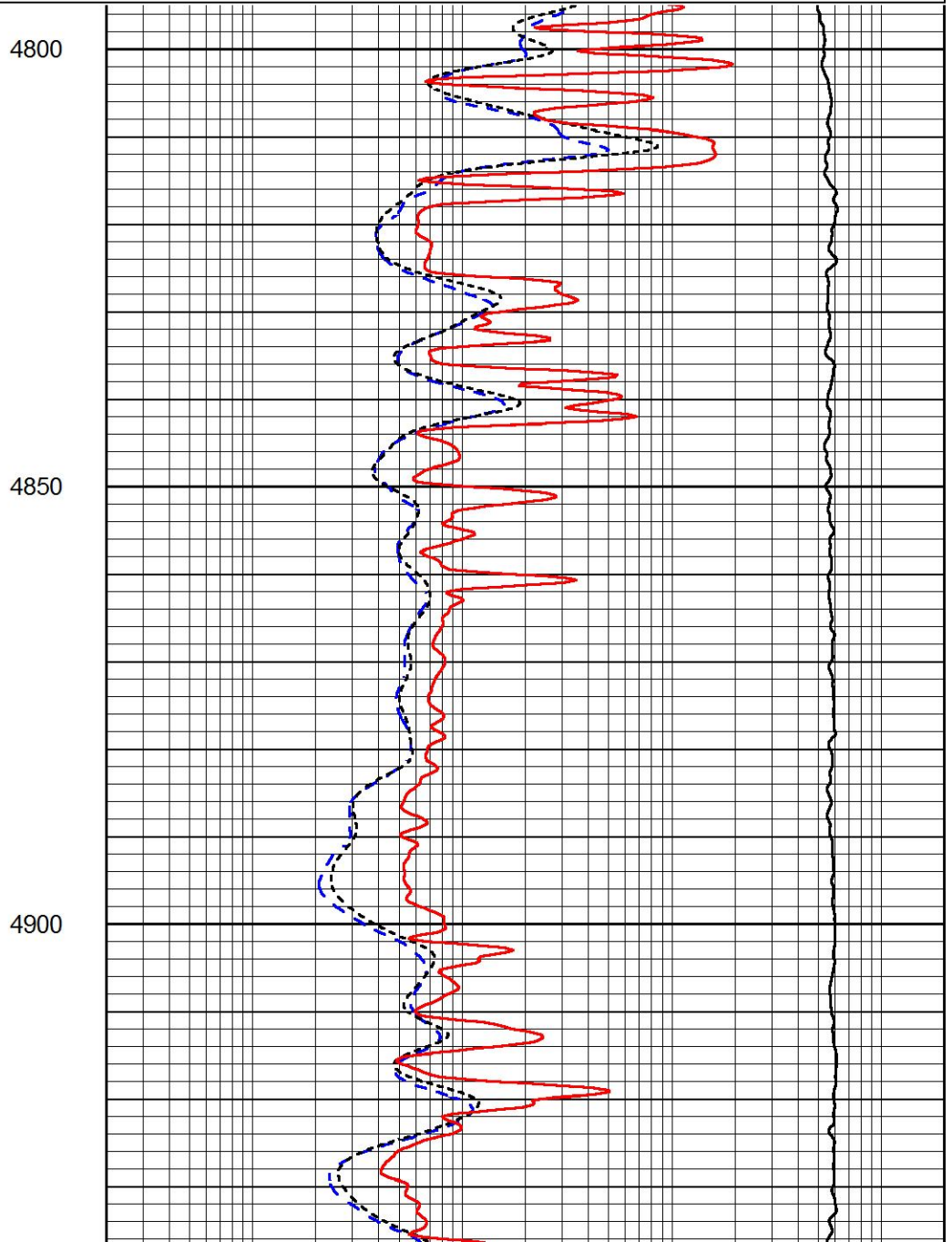
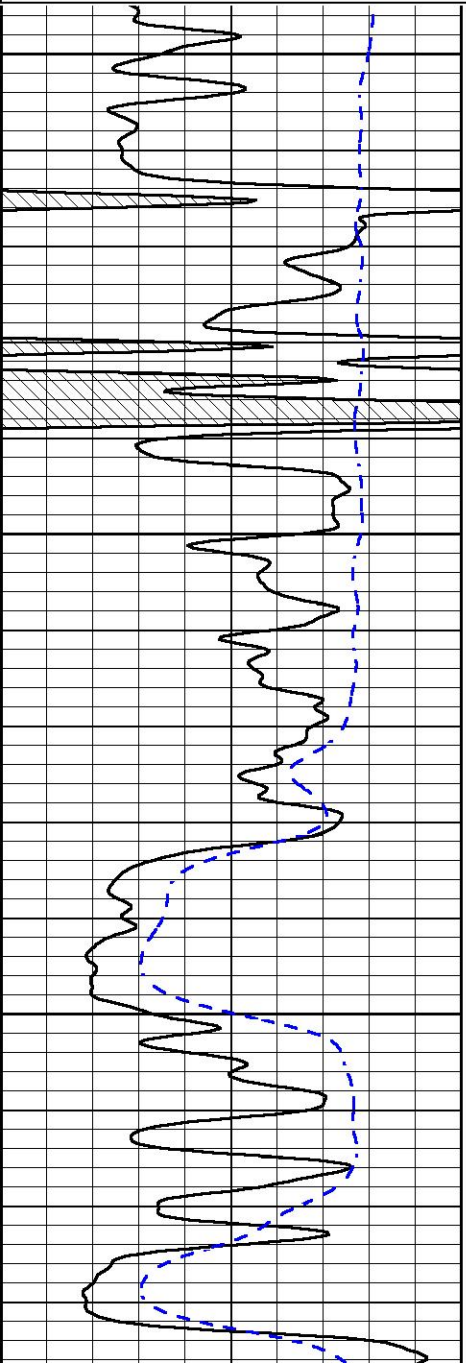


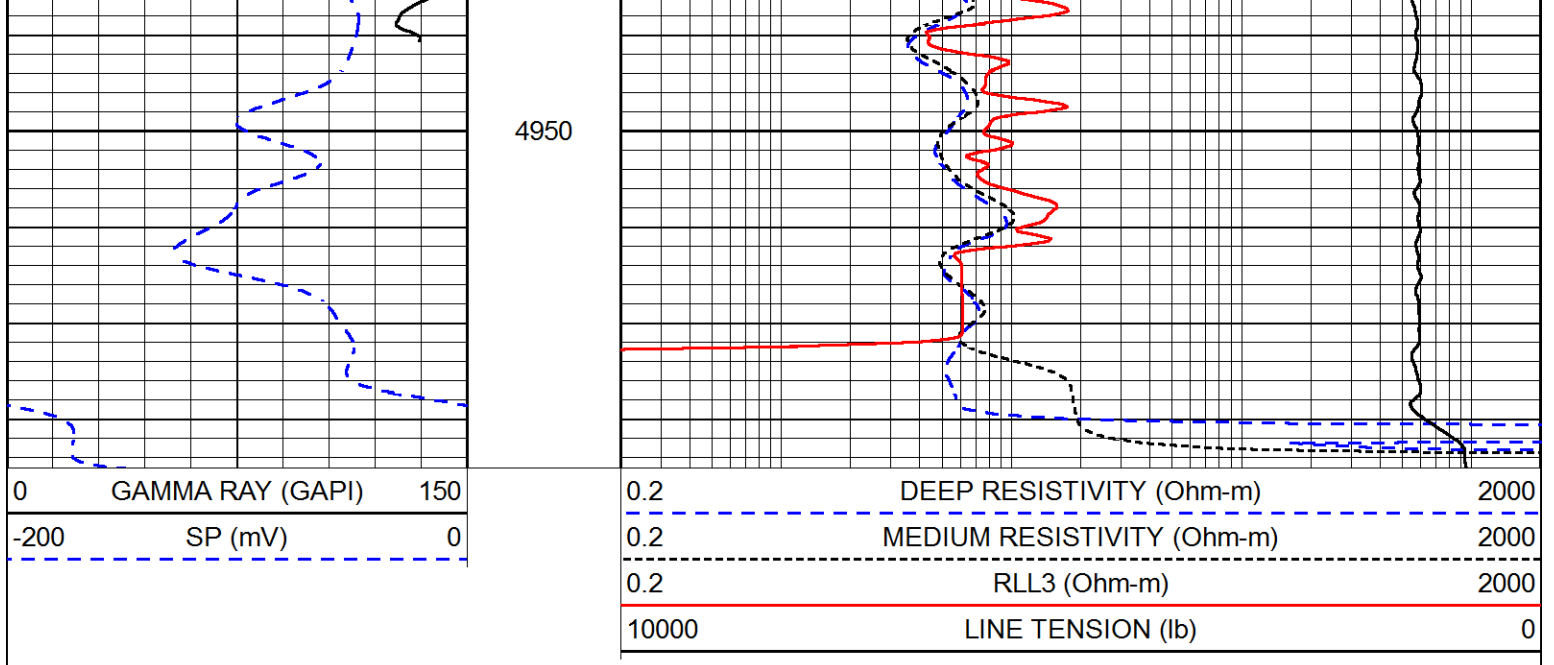
# REPEAT SECTION

Database File berexco\_sturgeon a 1-25.db  
 Dataset Pathname STKML/pass2.1  
 Presentation Format \_dil  
 Dataset Creation Thu May 21 02:49:38 2020  
 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
10000	LINE TENSION (lb)	0





### Calibration Report

Database File      berexco\_sturgeon a 1-25.db  
 Dataset Pathname    STKML/pass3.1  
 Dataset Creation    Thu May 21 02:58:35 2020

### Dual Induction Calibration Report

Serial-Model:                      952-828-PSI HIGH TEMP  
 Calibration Performed:            Sun Mar 01 09:43:59 2020

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.470	-33.000
Medium	0.000	1348.000	142.000	255.000	mmho/m	0.320	-31.000

### Microlog Calibration Report

Serial-Model:                      UDM-01-PSI UDM ML  
 Performed:                         Sun Jan 05 15:35:23 2020

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	29000.0000	-0.1000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	25000.0000	0.0000
Caliper	1.0020	1.2631	6.5000	21.0000	in	55.5374	-70.0000

### Compensated Density Calibration Report

Serial-Model:                      817-947-M&W  
 Source / Verifier:                16955B / 2ci  
 Master Calibration Performed:    Tue Sep 24 21:18:50 2019

### Master Calibration

Density                                      Far Detector                      Near Detector

Magnesium  
Aluminum

1.755 g/cc  
2.670 g/cc

6127.15  
1141.85

5922.31 cps  
3762.09 cps

Spine Angle = 74.89

Density/Spine Ratio = 0.526

	Size		Reading
Small Ring	4.50	in	1.02
Large Ring	14.50	in	1.23

Compensated Neutron Calibration Report

Serial Number: 207-MW  
Tool Model: M&W  
Calibration Performed: WED FEB 13 10:30:30 2019

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: 233-M&W  
Tool Model: M&W  
Calibration Performed: Fri Feb 07 01:42:40 2014

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps  
Calibrator Reading: 1.0 cps

Sensitivity: 0.5500 GAPI/cps



**PIONEER**  
Pioneer Energy Services

Company BEREXCO, LLC  
Well STURGEON A #1-25  
Field UNNAMED  
County CHEYENNE  
State KANSAS