



PIONEER
Pioneer Energy Services

MICRORESISTIVITY LOG

Company AMERICAN WARRIOR, INC.
Well GANO #4-17 TWIN
Field N/A
County KEARNY
State KANSAS

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Well GANO #4-17 TWIN
Field N/A
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State KANSAS

Location: API #: 15-093-21946-00-00

2273' FSL & 1806' FWL

SEC 17 TWP 25S RGE 36W

Permanent Datum GROUND LEVEL Elevation 3025'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 3036'
D.F. N/A
G.L. 3025'

Date 11/30/2016

Run Number ONE

Depth Driller 5050'

Depth Logger 5055'

Bottom Logged Interval 5054'

Top Log Interval 1750'

Casing Driller 8.625" @ 1772'

Casing Logger 1770'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 3900

Density / Viscosity 9.3 56

pH / Fluid Loss 9.5 8.0

Source of Sample FLOWLINE

Rm @ Meas. Temp 0.65 @ 40

Rmf @ Meas. Temp 0.49 @ 40

Rmc @ Meas. Temp 0.88 @ 40

Source of Rmf / Rmc CHARTS

Rm @ BHT 0.21 @ 127

Operating Rig Time 4 HOURS

Max Rec. Temp. F 127

Equipment Number 91

Location COLBY

Recorded By D. SCHMIDT

Witnessed By LUKE THOMPSON

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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.

LAKIN,
3 SOUTH TO 120 RD,
3 WEST, 1 SOUTH, 1 1/2 WEST,
SOUTH INTO

Log Measured From: KELLY BUSHING 11 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew

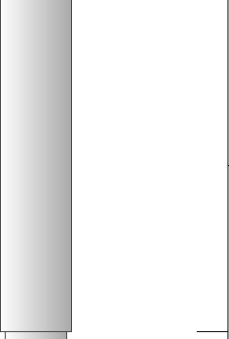
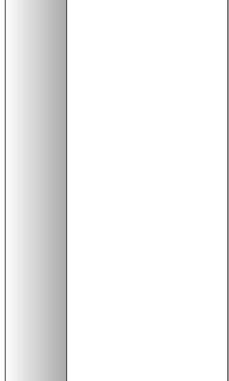
Engineer: D. SCHMIDT
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: LUKE THOMPSON
Secondary Witness:
Secondary Witness:
Secondary Witness:

Top - Bottom

M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	290	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	40	0	5.5	0	5055	127	7.875

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (90-1031)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSIML (PSI-01) GO Micro log tools converted to Simplec electronics	7.58	4.00	65.00
RLL3F RLL3	15.80 15.80					

			DIL-M&W (PSI 13)	18.50	3.50	220.00
CILD	8.00					
CILM	4.70					
SP	0.20					
Dataset: american warrior_gano_4-27_twin.db: field/well/STKML/pass3.14 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in						



PIONEER

Pioneer Energy Services

MAIN PASS

Database File

american warrior_gano_4-27_twin.db

Dataset Pathname

STKML/pass3.14

Presentation Format

micro

Dataset Creation

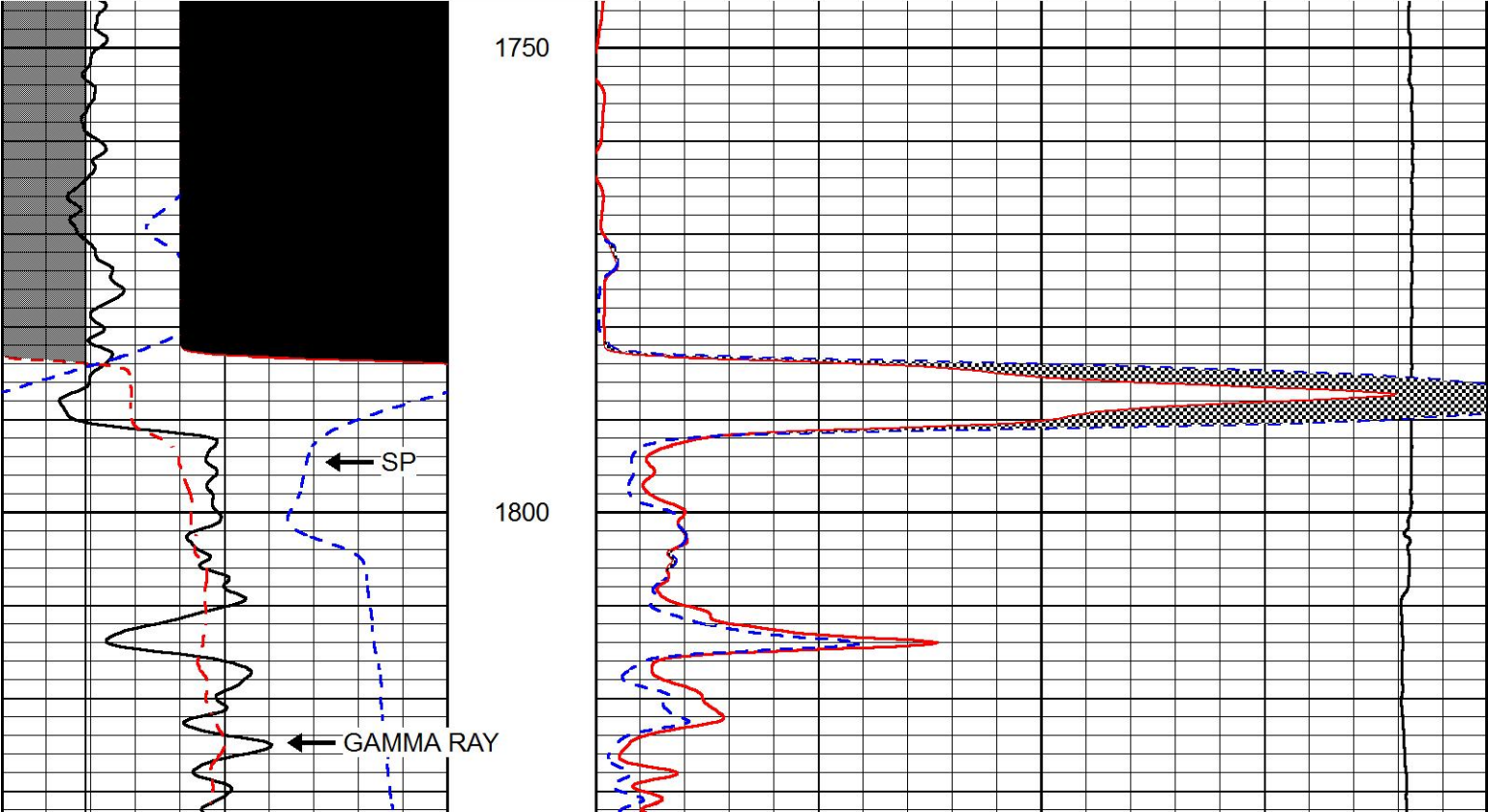
Wed Nov 30 21:14:34 2016

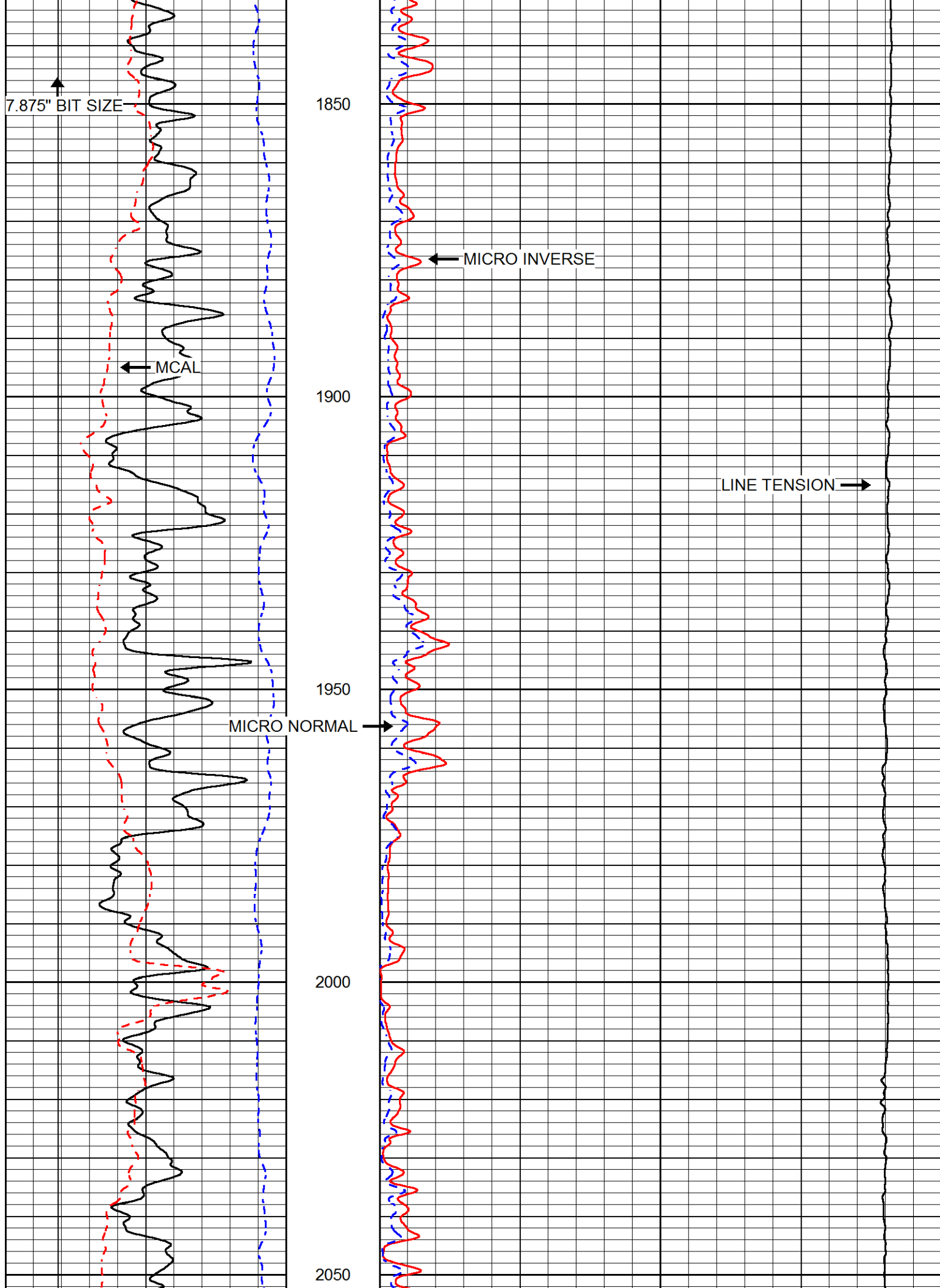
Charted by

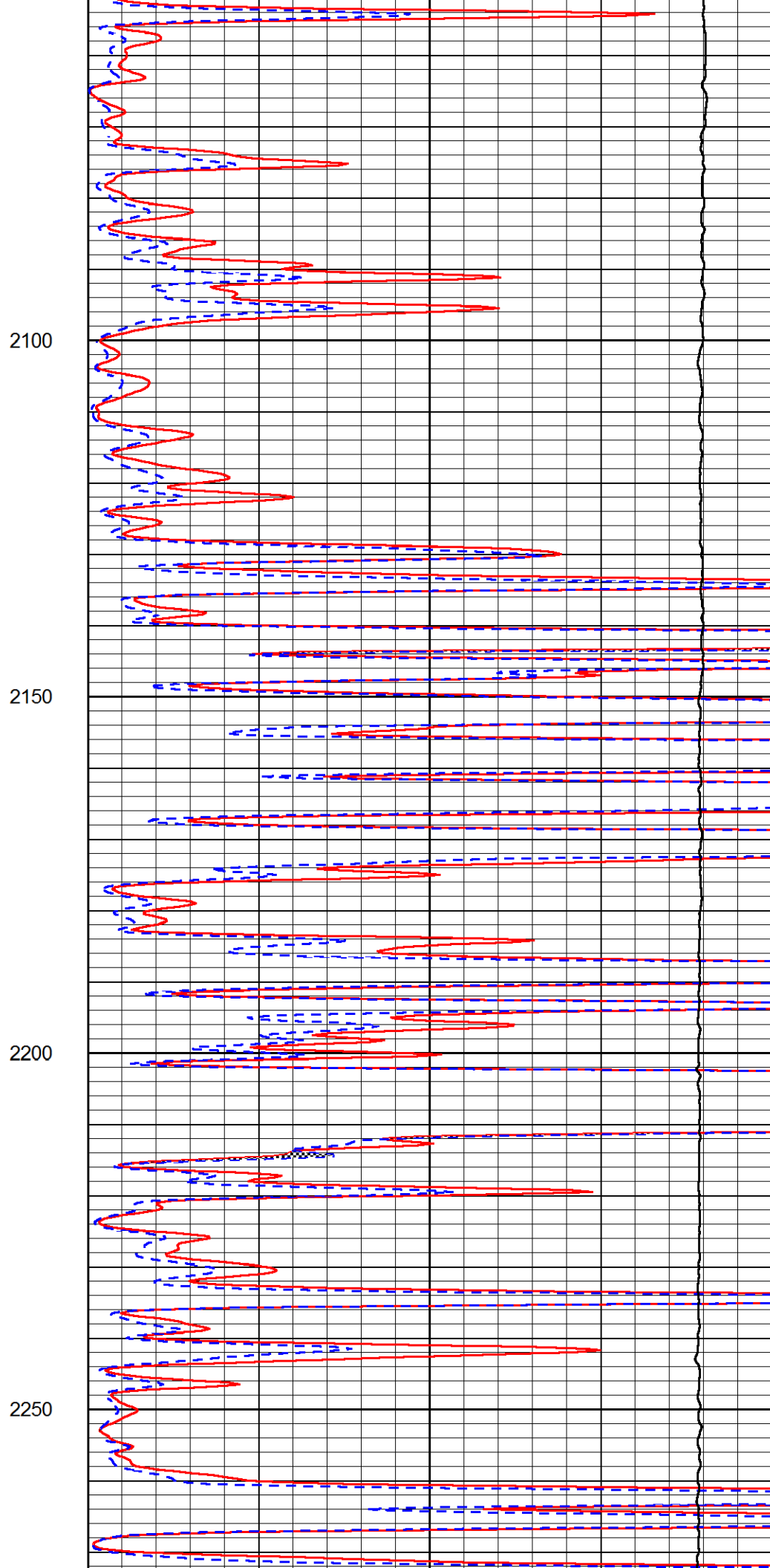
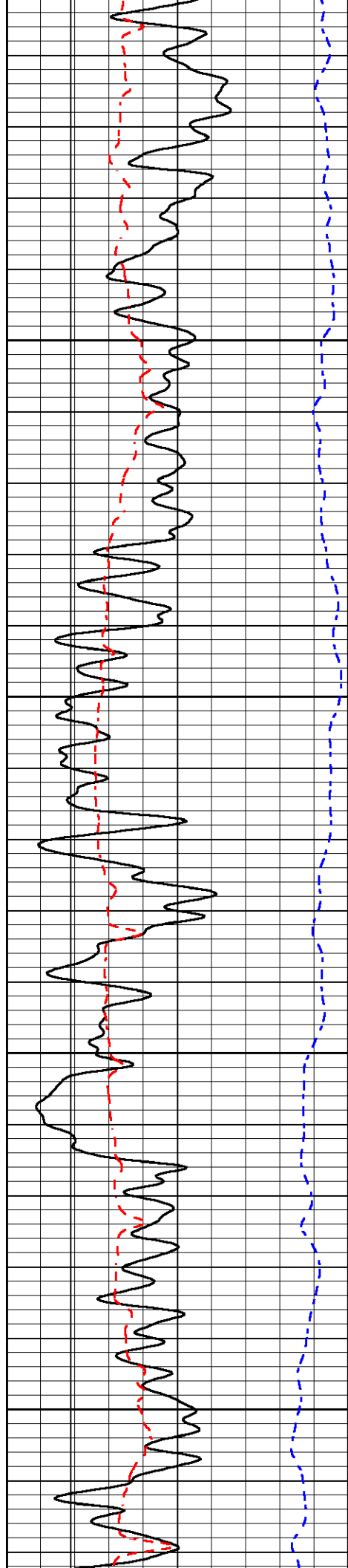
Depth in Feet scaled 1:240

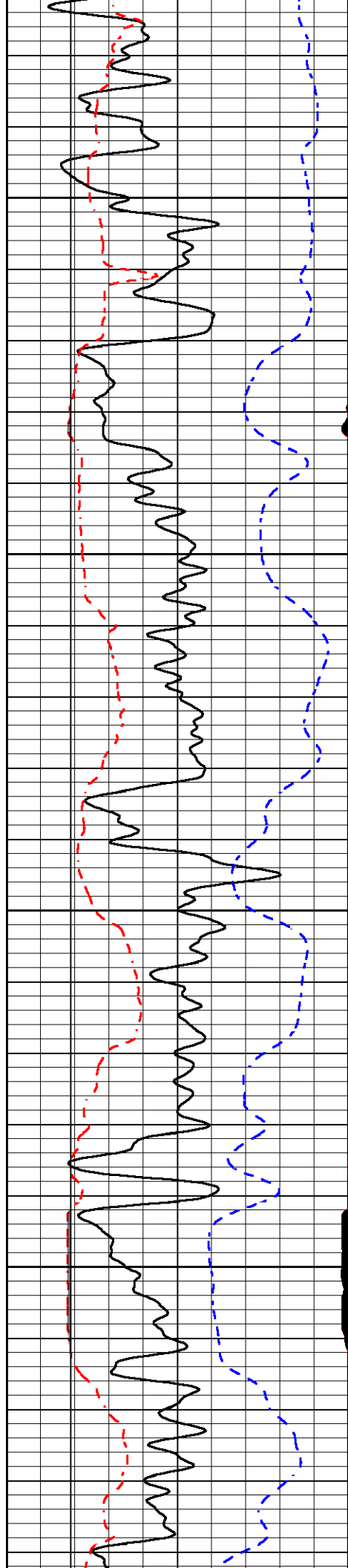
0	Gamma Ray (GAPI)	150
6	MCAL (in)	16
2.875	mcals (in)	7.875
6	Bit Size (in)	16
-200	SP (mV)	0

0	Micro Inverese 1 X 1 (Ohm-m)	40
0	Micro Normal 2" (Ohm-m)	40
10000	Line Weight (lb)	0







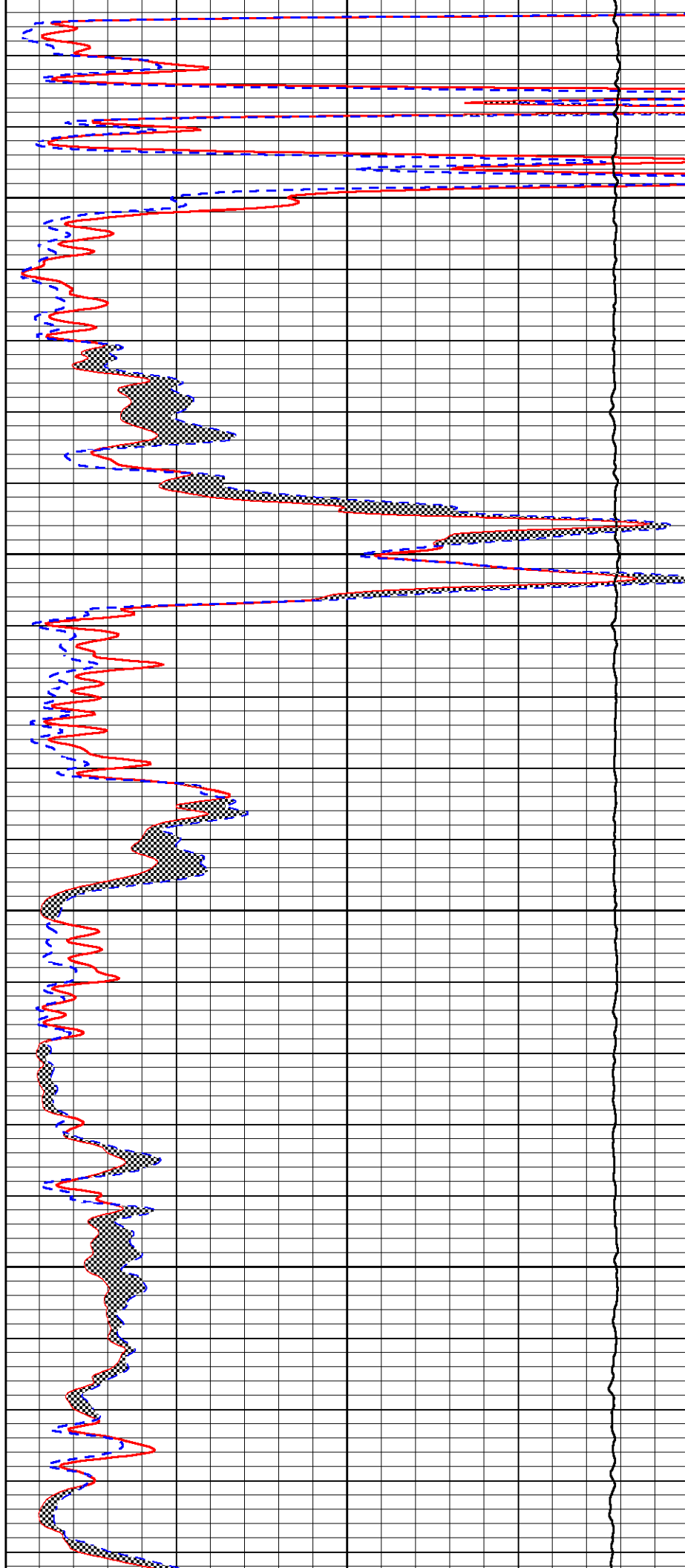


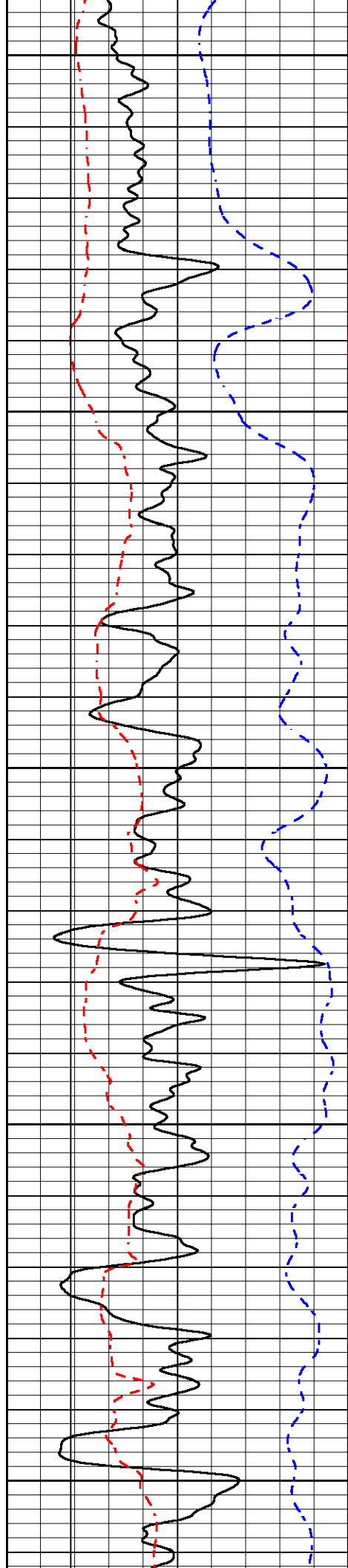
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2350

2400

2450





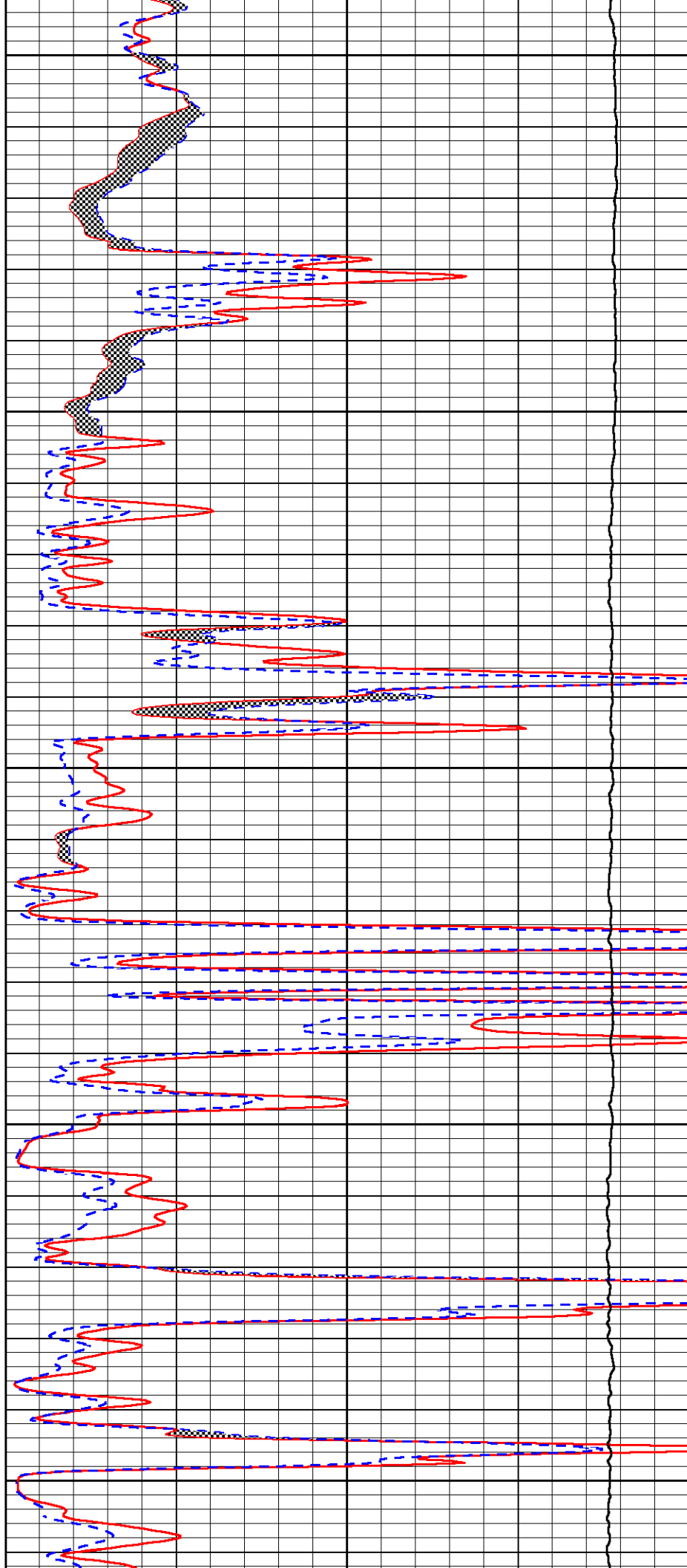
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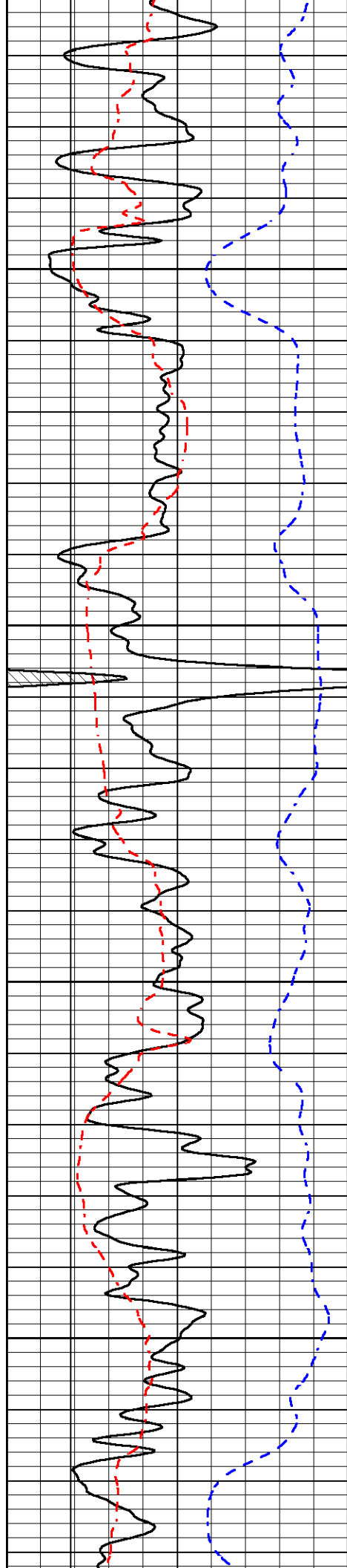
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2600

2650

2700



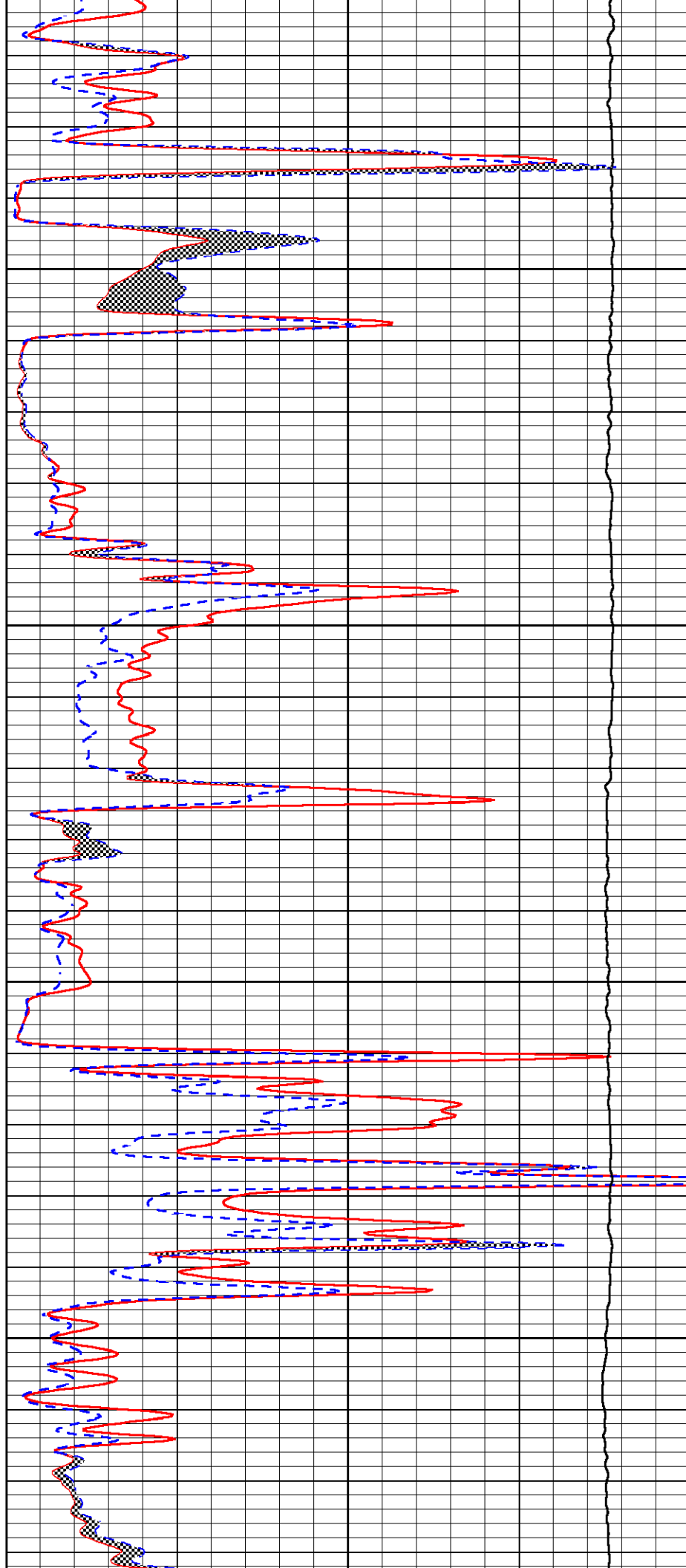


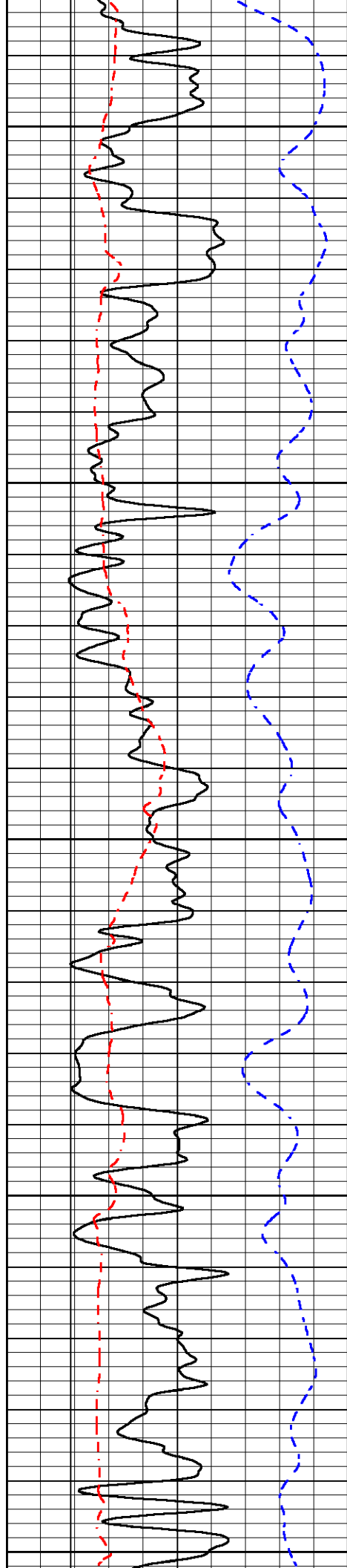
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2850

2900





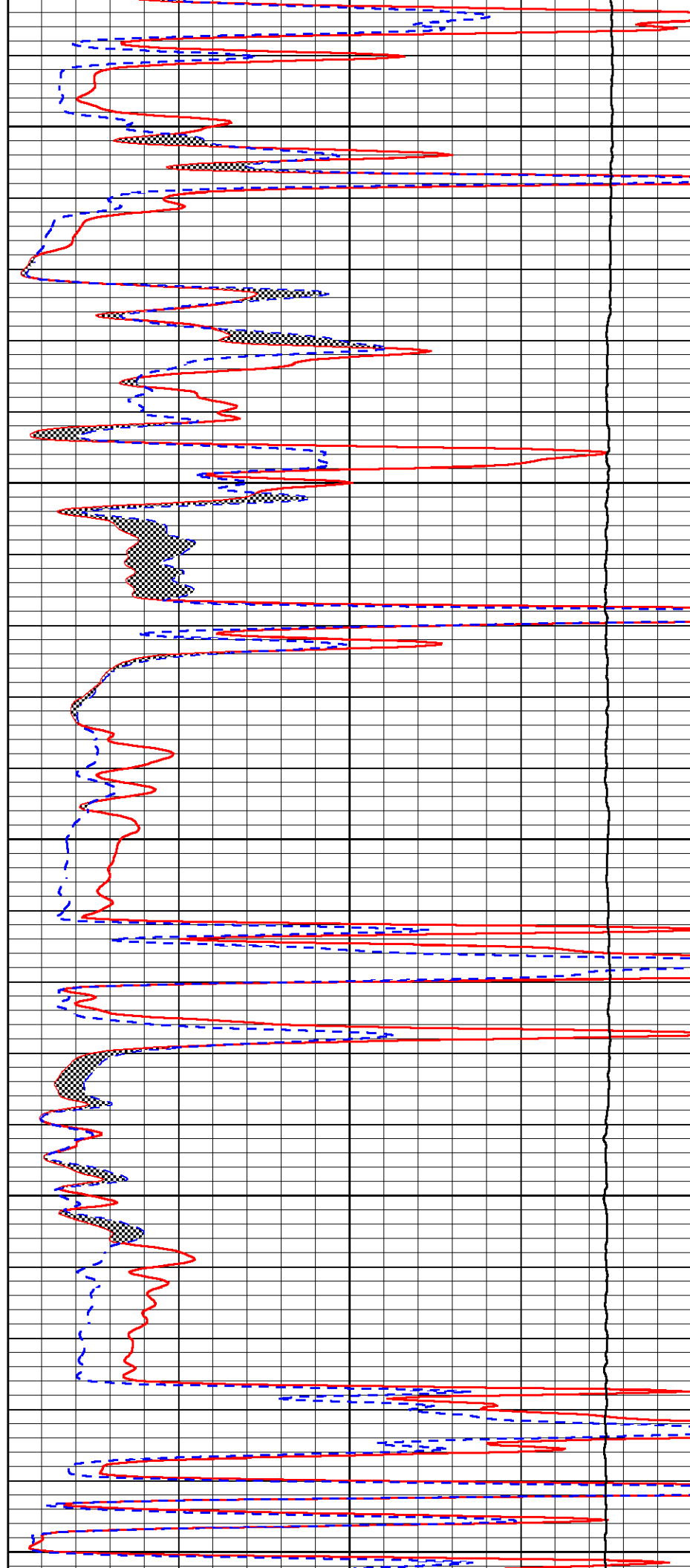
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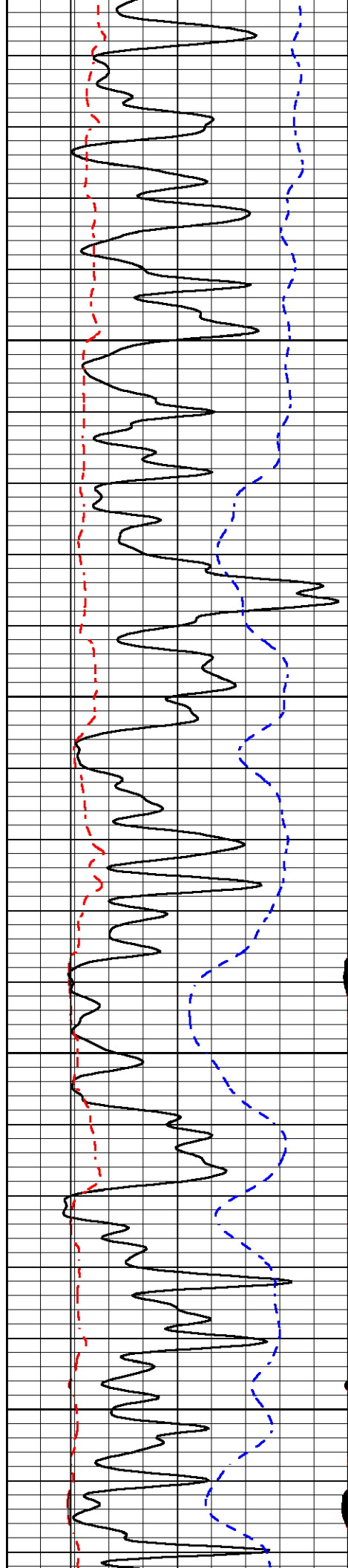
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3050

3100

3150



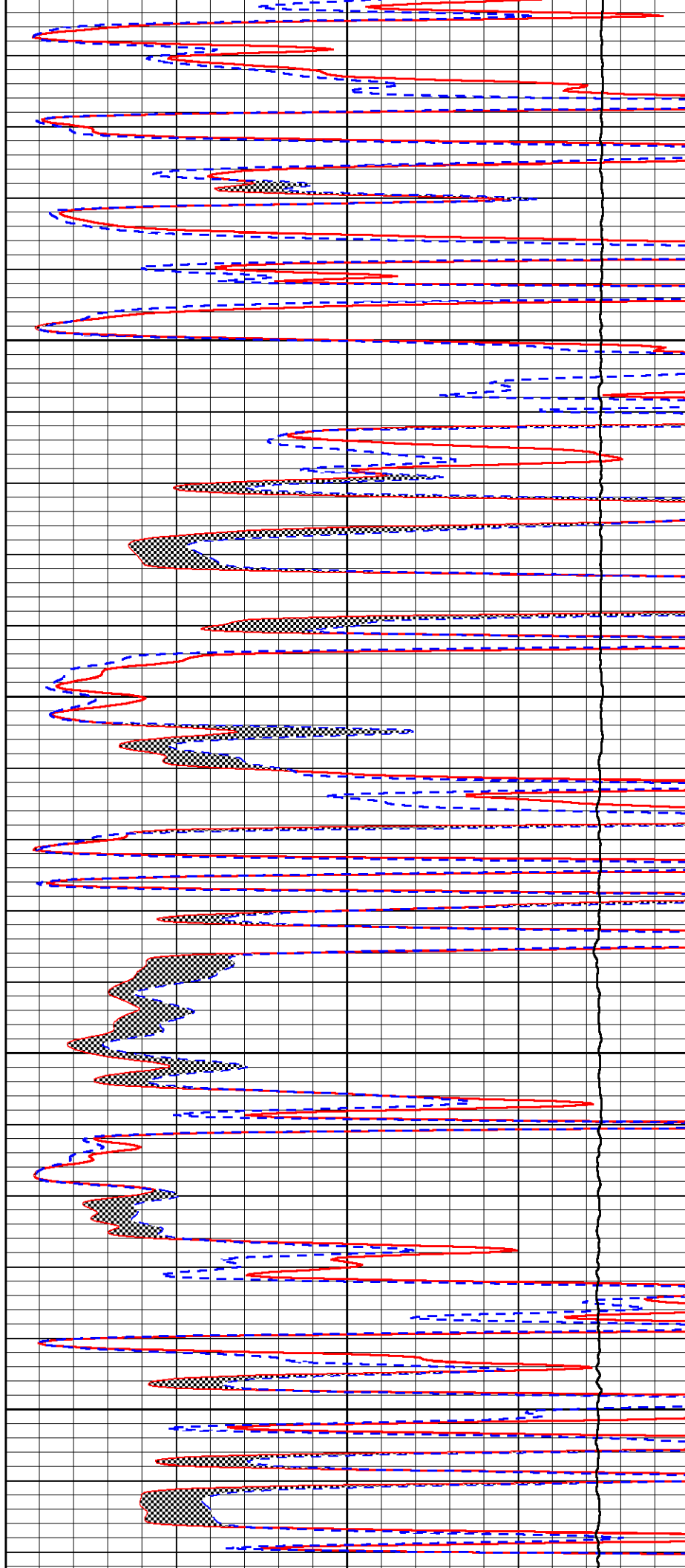


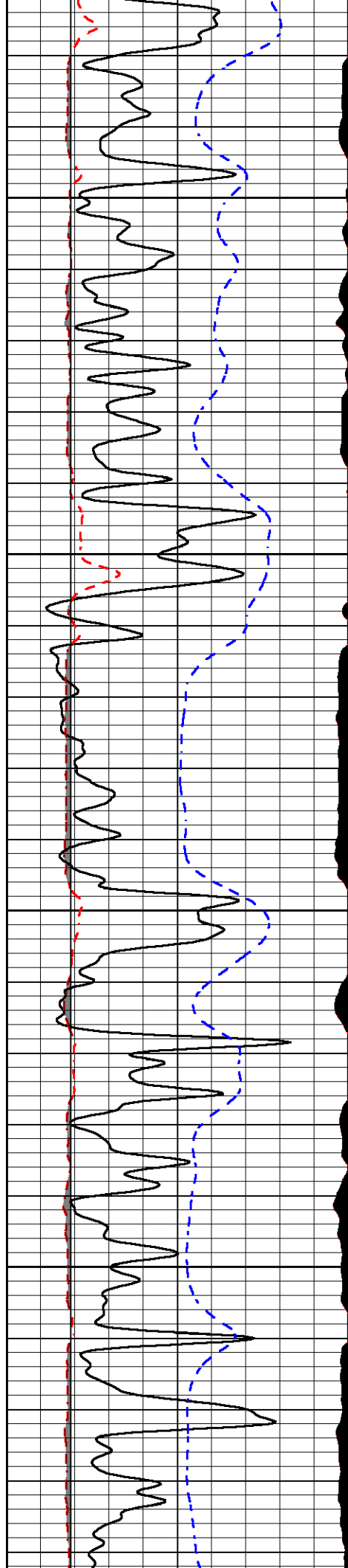
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3250

3300

3350



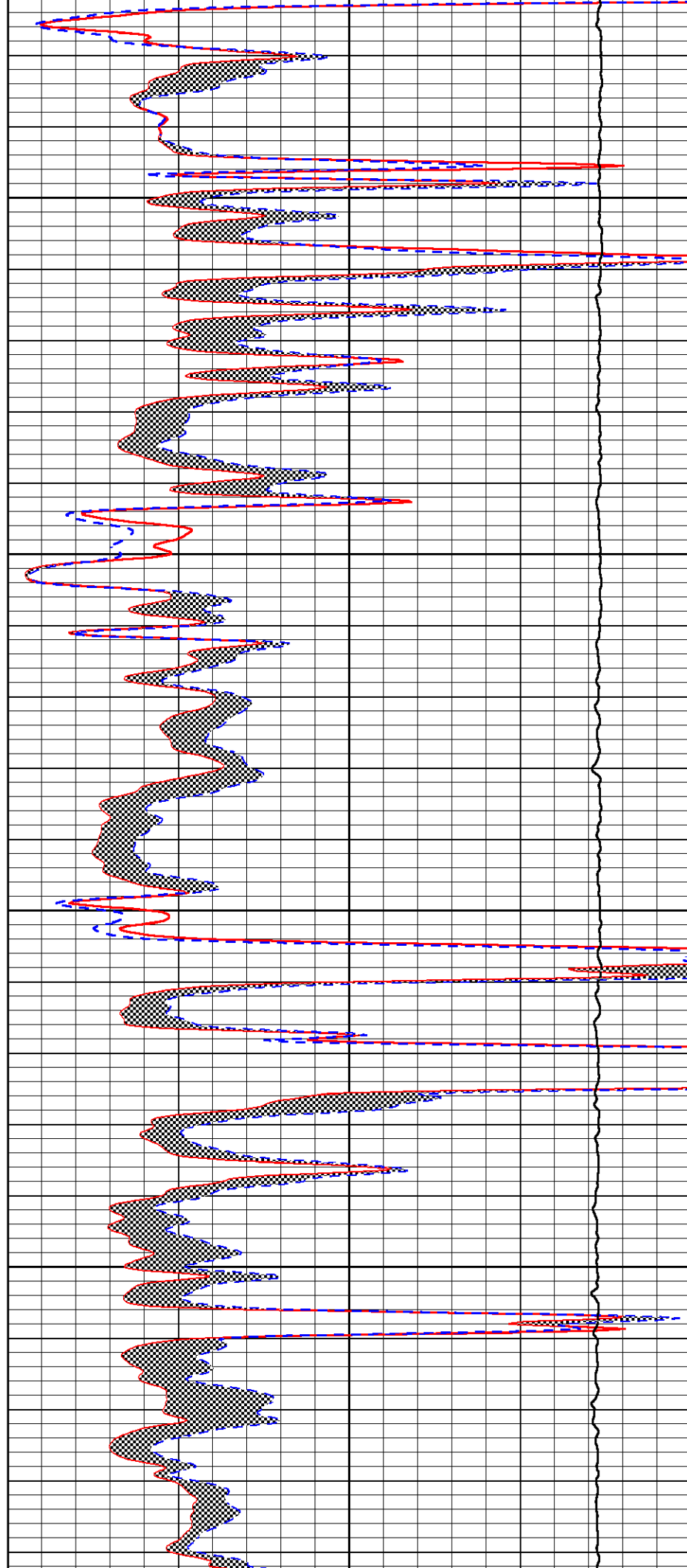


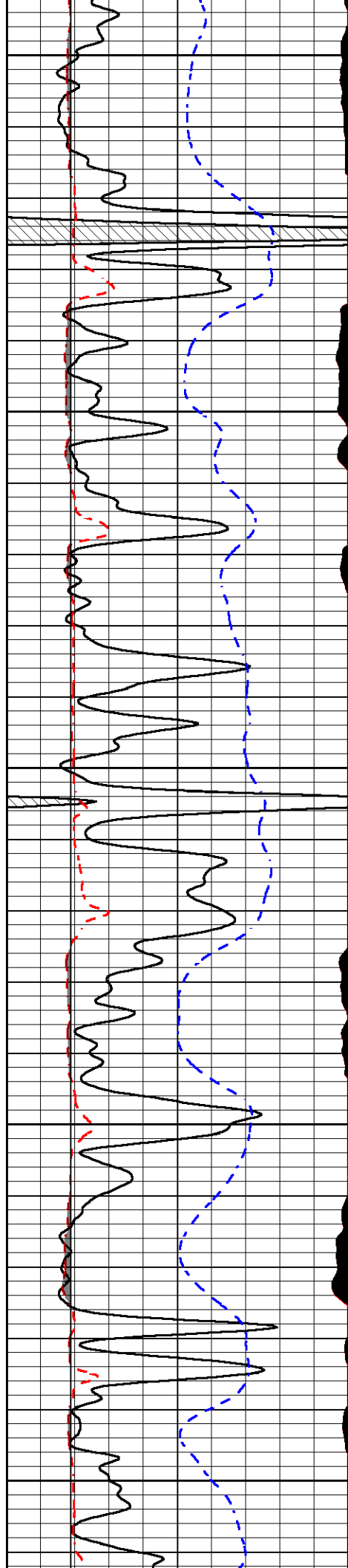
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3450

3500

3550





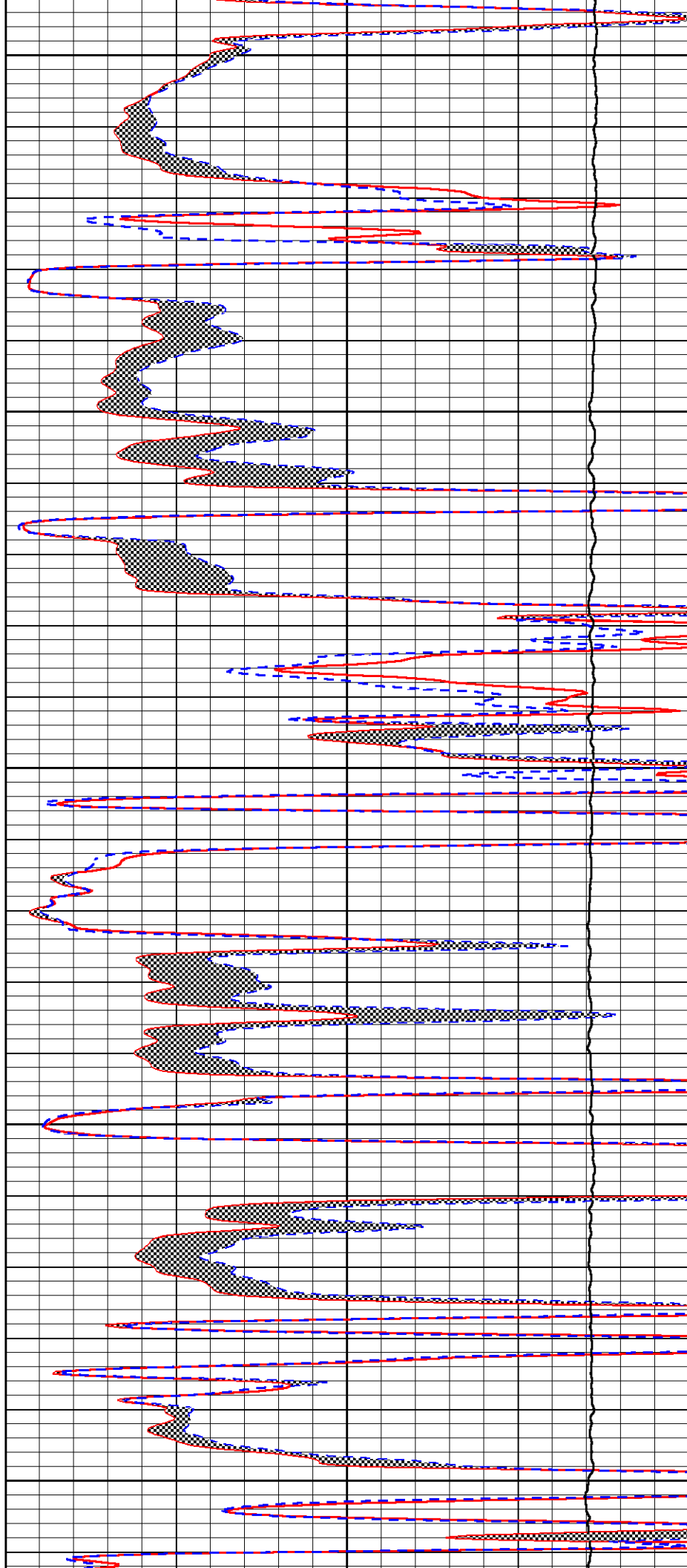
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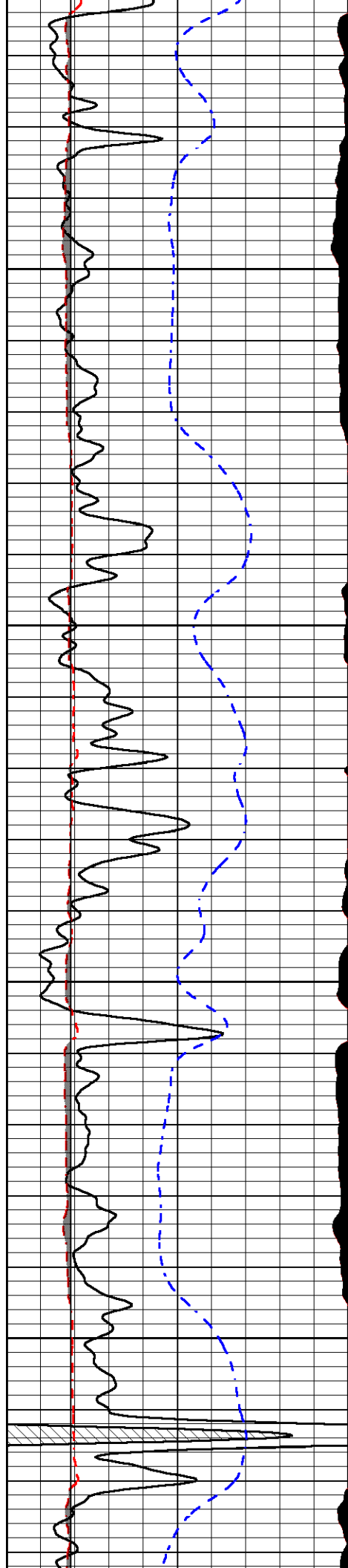
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3750

3800



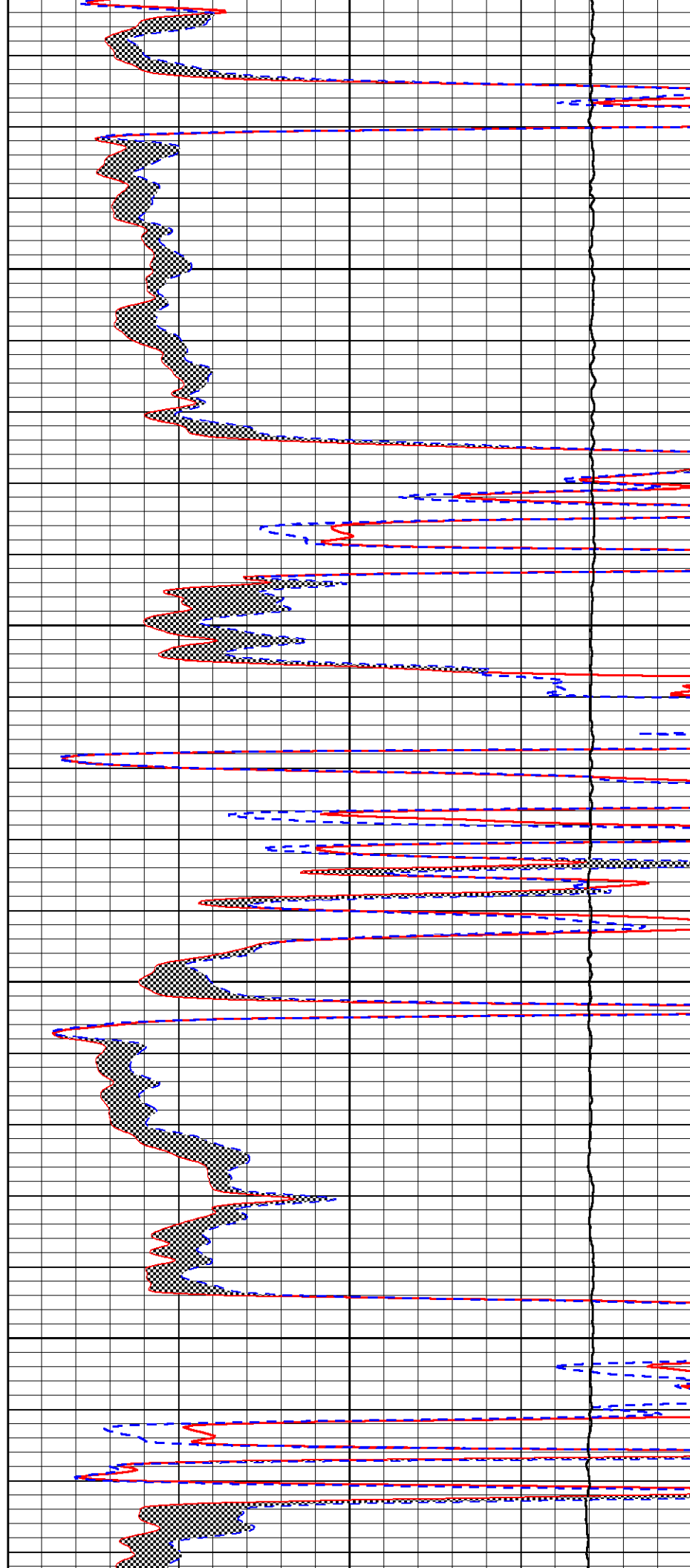


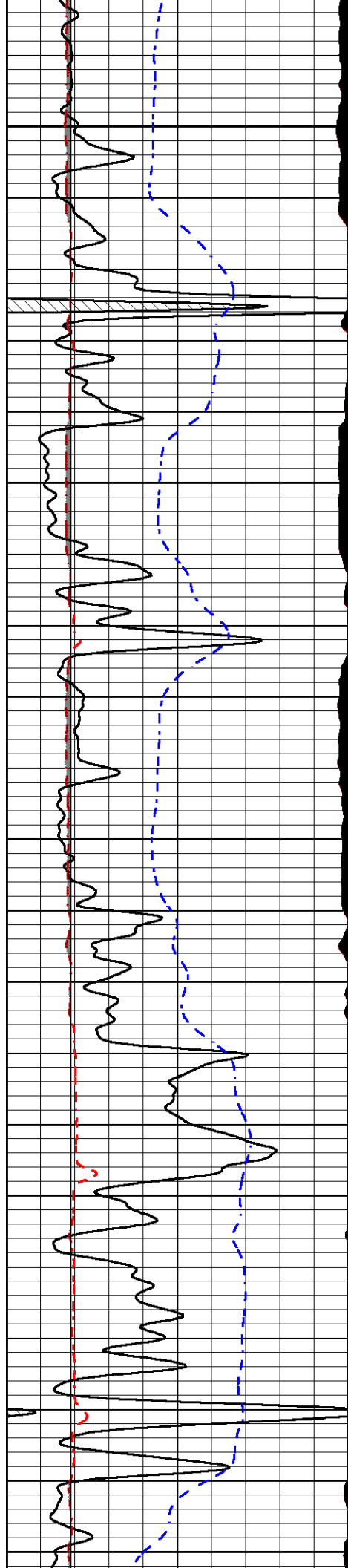
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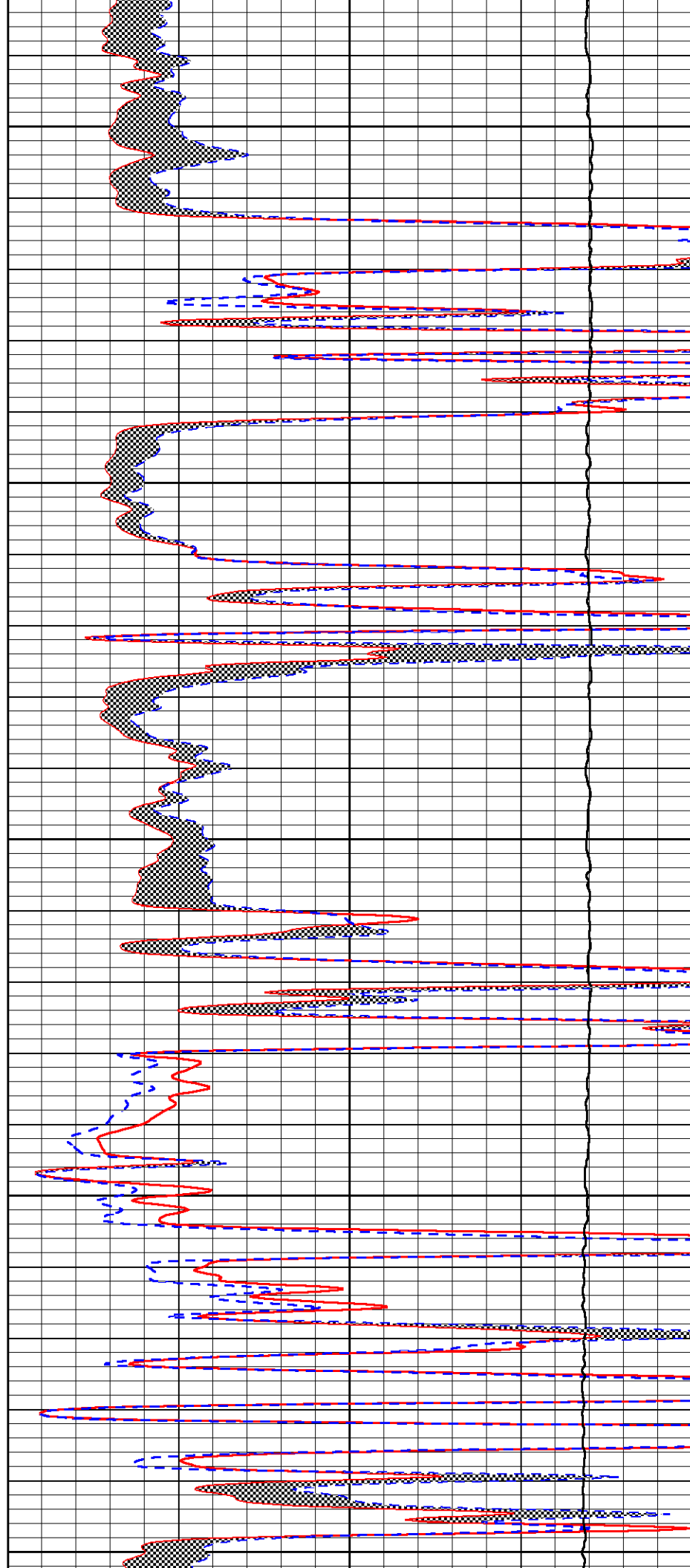
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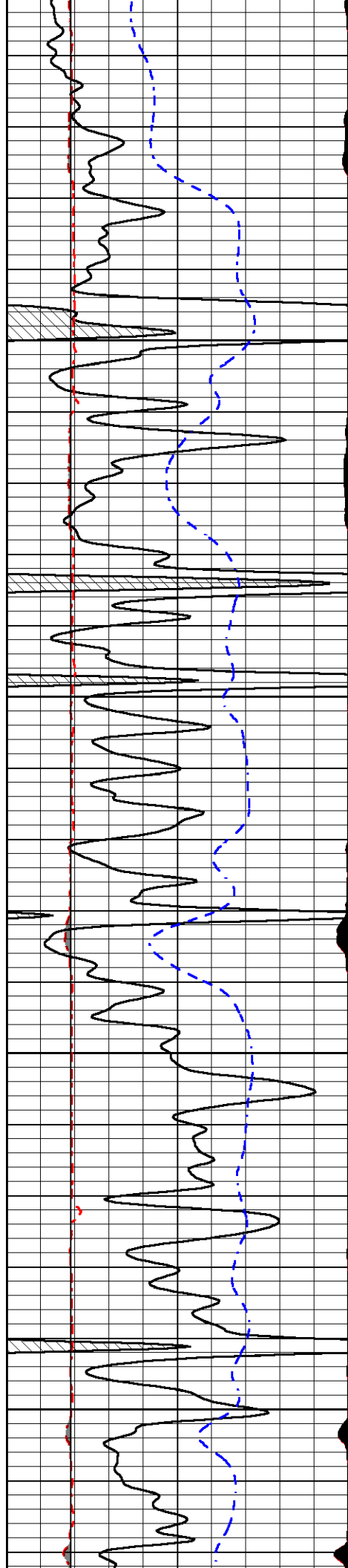
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4150

4200

4250



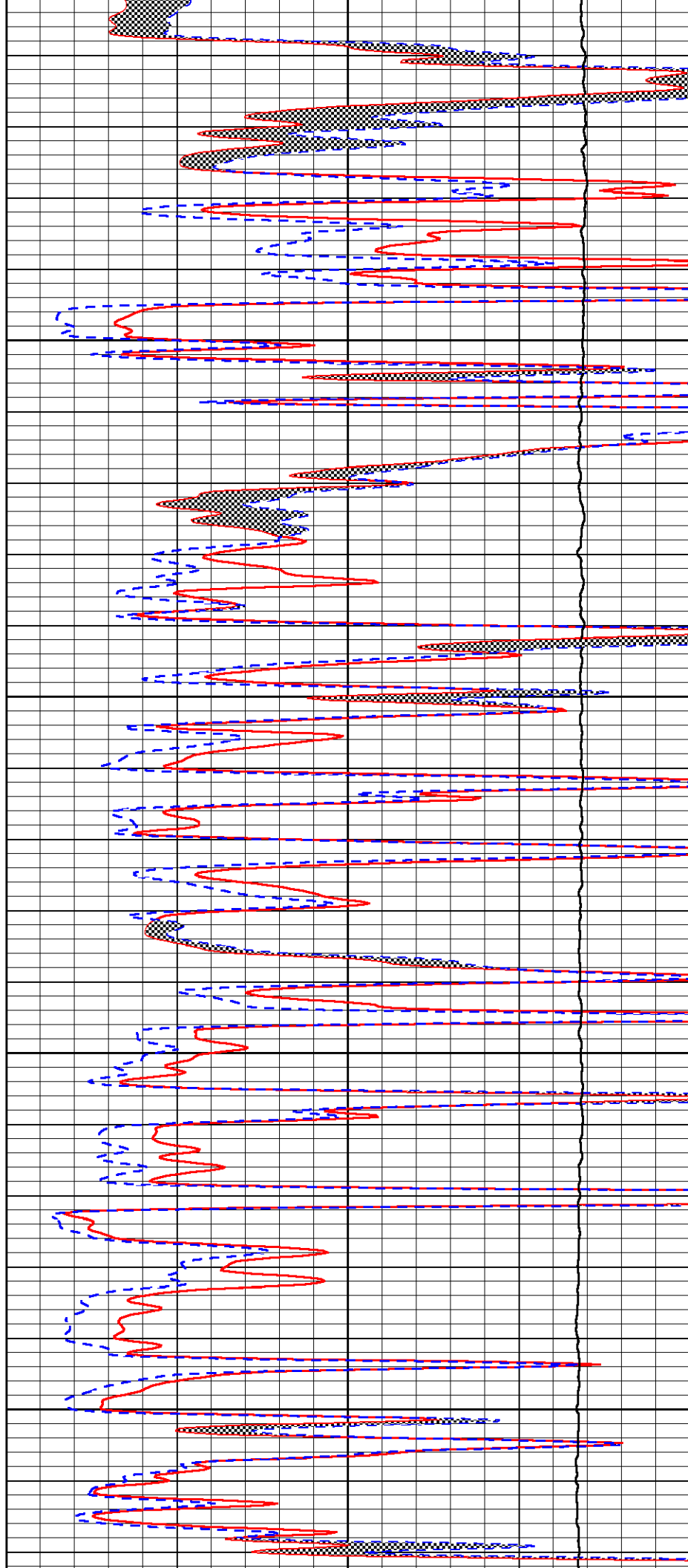


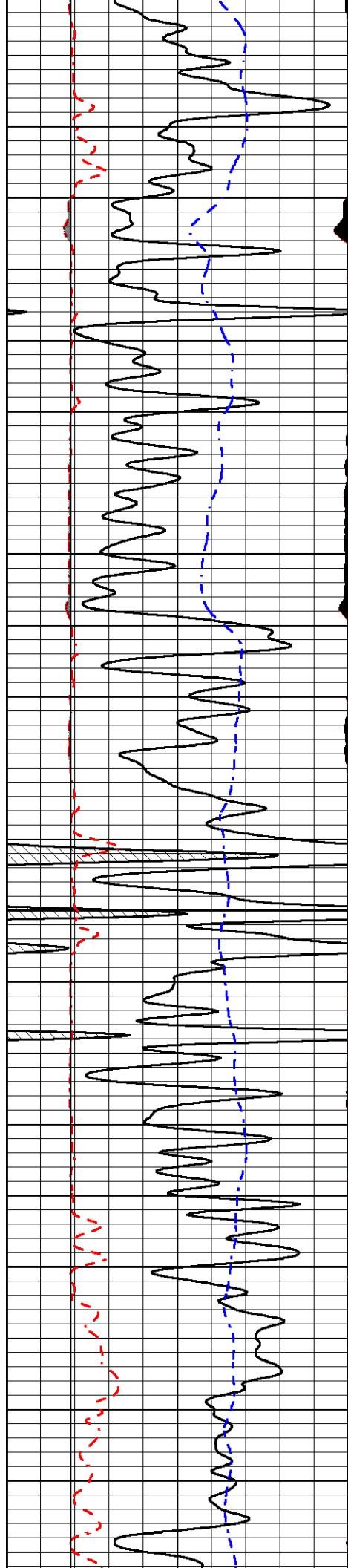
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4400

4450



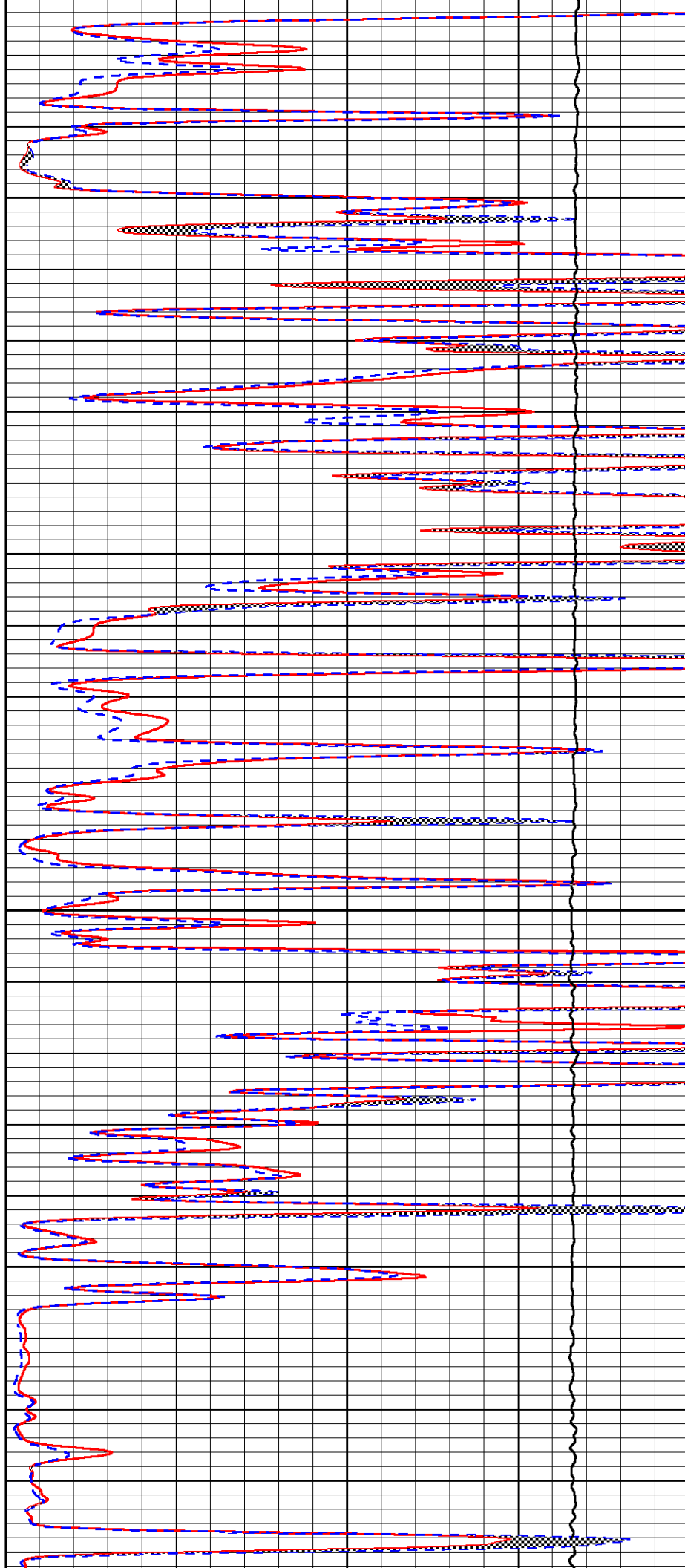


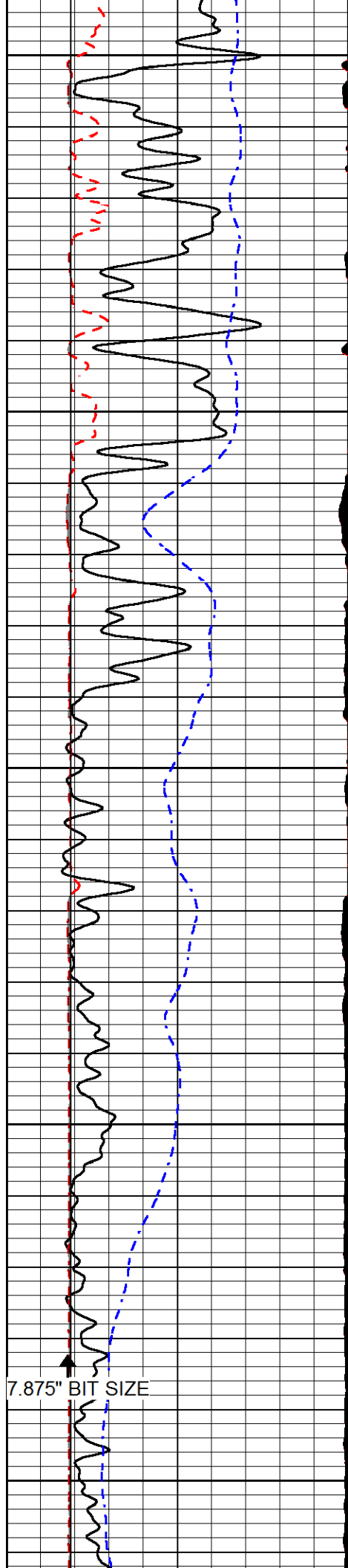
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4550

4600

4650





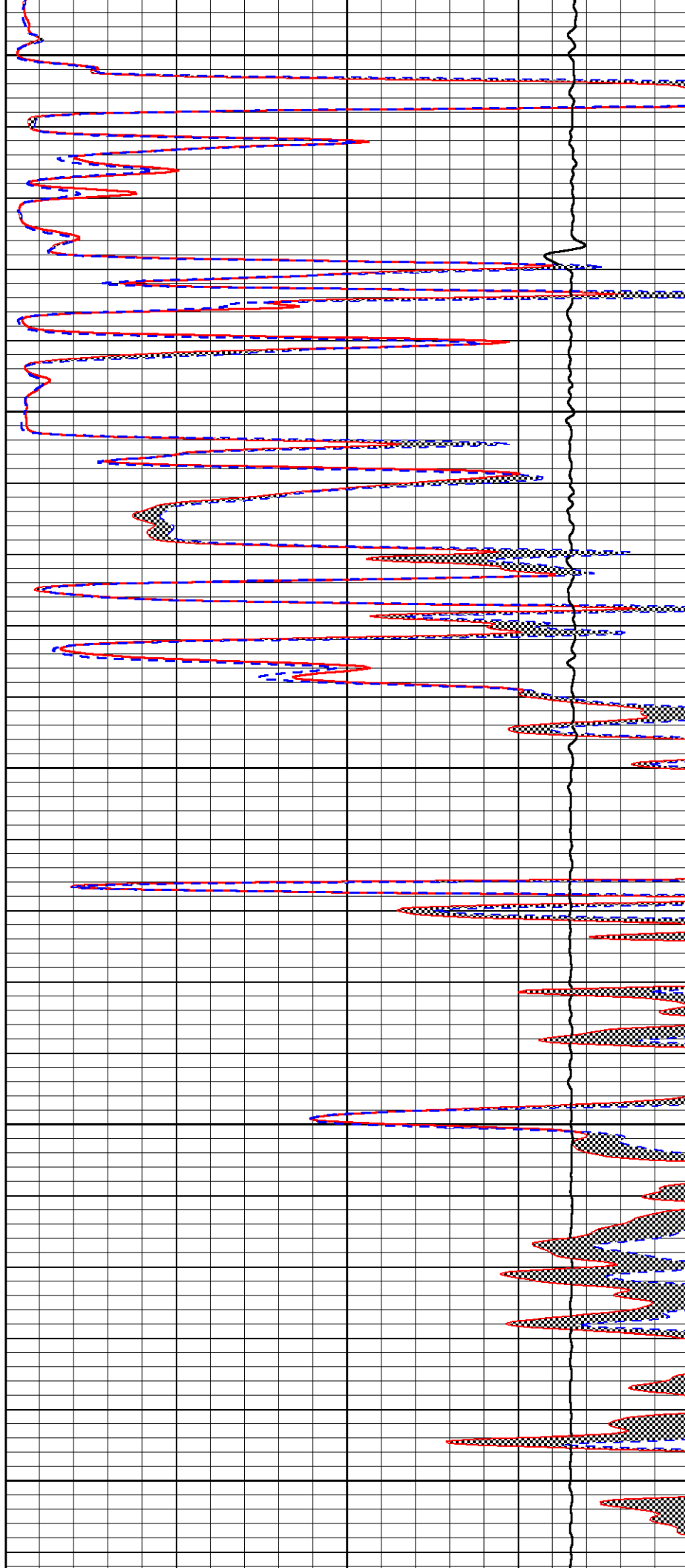
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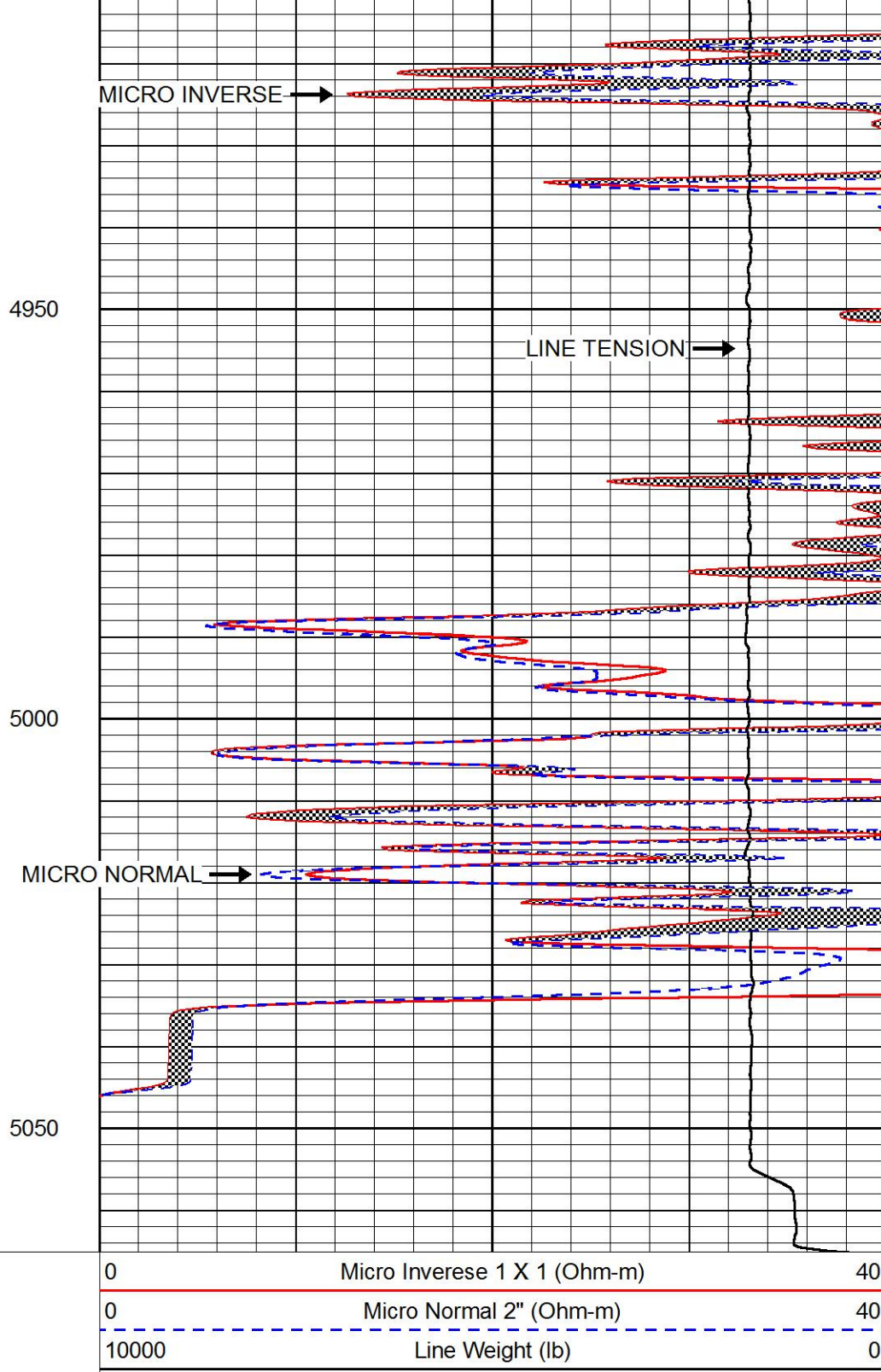
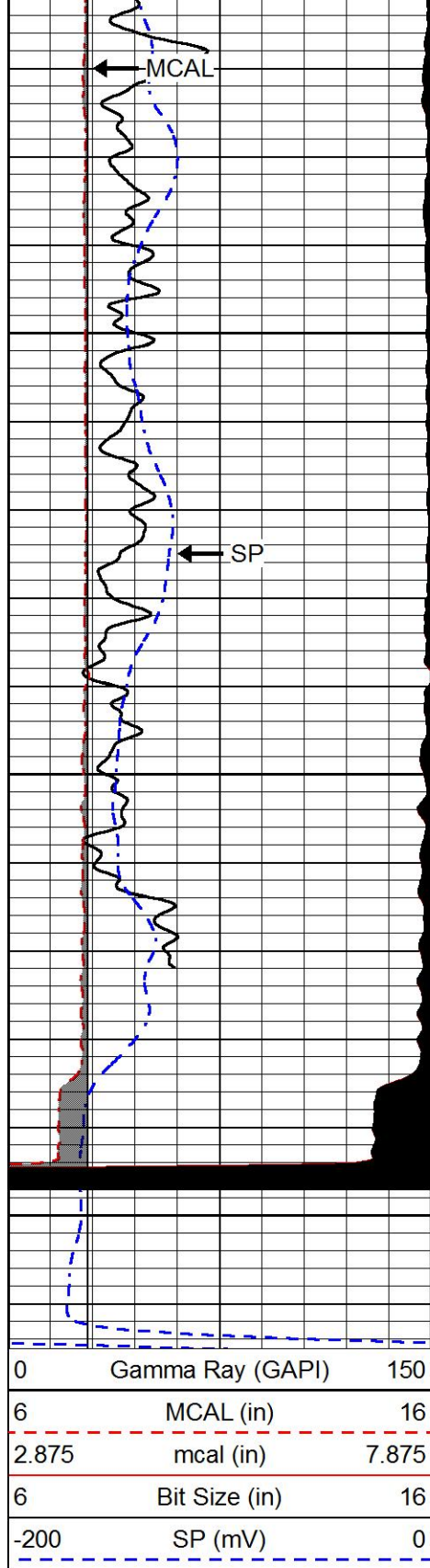
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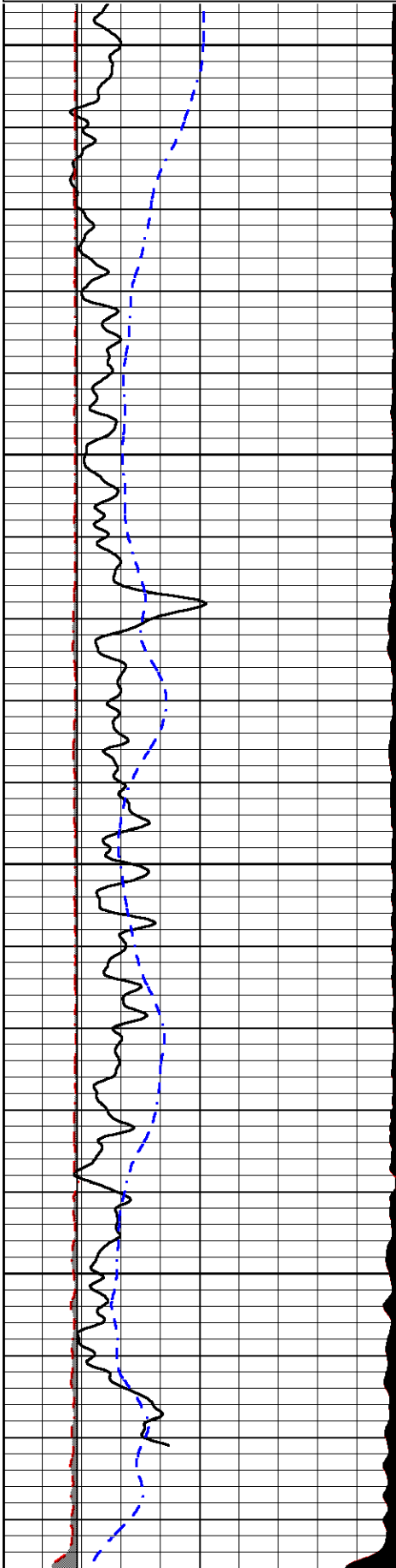


REPEAT SECTION

Database File american_warrior_gano_4-27_twin.db
 Dataset Pathname STKML/pass2.1
 Presentation Format micro
 Dataset Creation Wed Nov 30 21:00:23 2016
 Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150
6	MCAL (in)	16
2.875	mcals (in)	7.875
6	Bit Size (in)	16
-200	SP (mV)	0

0	Micro Inverse 1 X 1 (Ohm-m)	40
0	Micro Normal 2" (Ohm-m)	40
10000	Line Weight (lb)	0

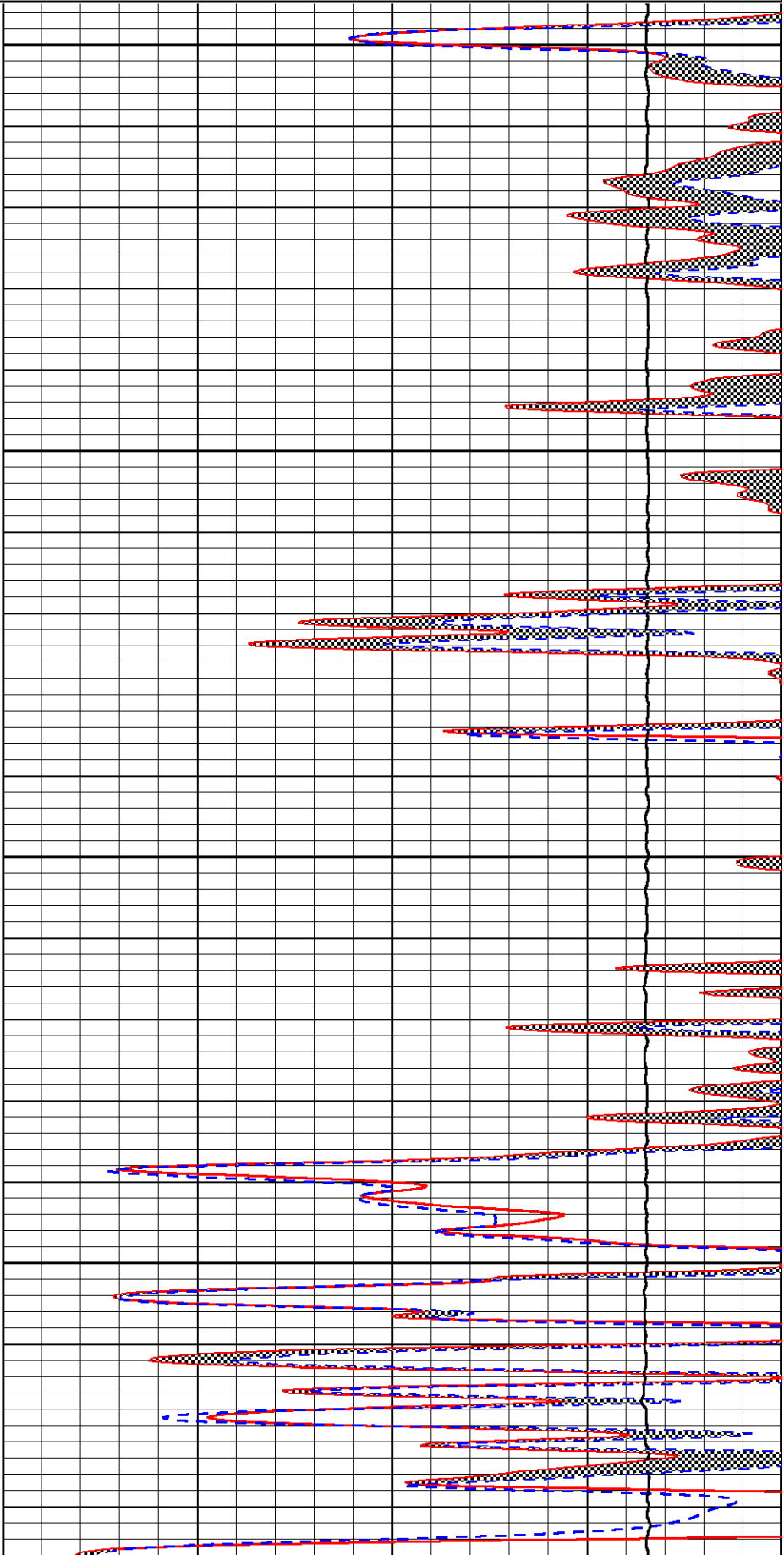


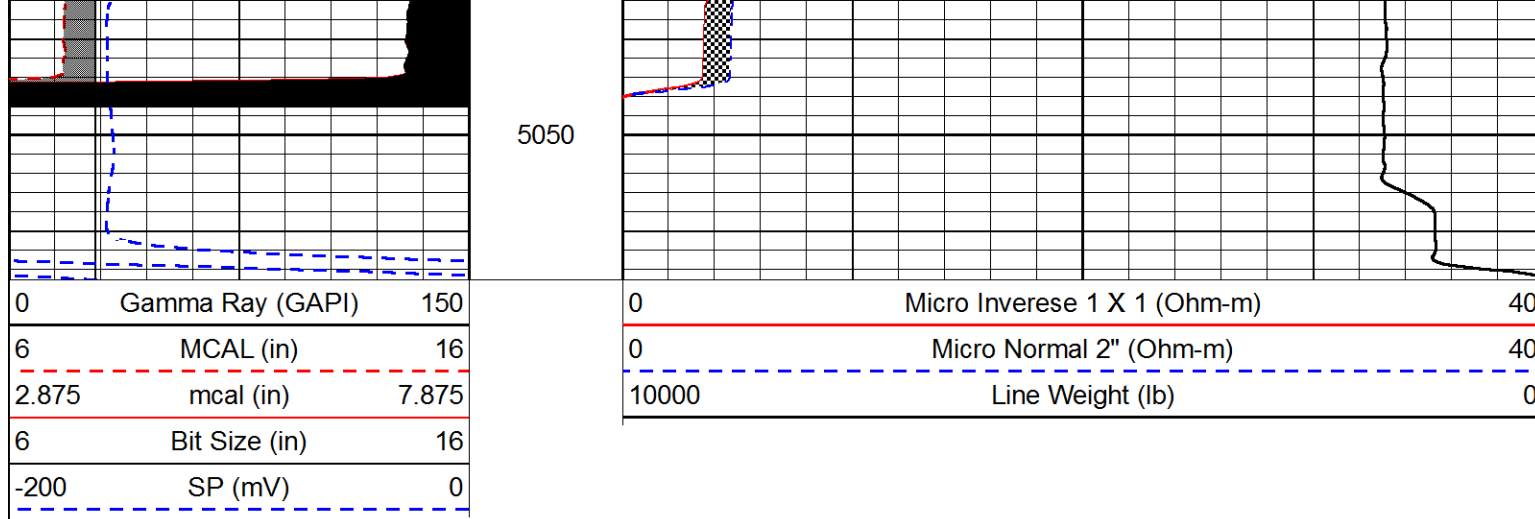
4850

4900

4950

5000





Calibration Report	
Database File	american warrior_gano_4-27_twin.db
Dataset Pathname	STKML/pass3.14
Dataset Creation	Wed Nov 30 21:14:34 2016

Dual Induction Calibration Report

Serial-Model:	PSI 13-M&W
Calibration Performed:	Thu Nov 17 12:38:24 2016

Readings			References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	166.796	835.089	0.000	255.800	mmho/m	0.820	-28.500
Medium	142.009	1348.560	0.000	255.800	mmho/m	0.700	-28.000

Microlog Calibration Report

Serial-Model:	PSI-01-PSIML
Performed:	Sat Nov 12 11:19:33 2016

Readings			References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	16500.0000	-0.5000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	19500.0000	-0.3000
Caliper	1.0001	1.1397	6.5000	18.5000	in	90.0000	-86.7000

Compensated Density Calibration Report
--

Serial-Model:	90-1031-M&W
Source / Verifier:	16955B / 2ci
Master Calibration Performed:	Thu Nov 17 12:39:05 2016

Master Calibration					
	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	5174.18	6425.27	cps
Aluminum	2.670	g/cc	963.17	4037.42	cps
Spine Angle = 74.55			Density/Spine Ratio = 0.525		

	Size		Reading
Small Ring	6.00	in	1.83
Large Ring	16.00	in	1.48

Compensated Neutron Calibration Report
--

Serial Number:	207-MW
Tool Model:	M&W
Calibration Performed:	Sat Nov 12 10:30:30 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	
Tool Model:	M&W	
Calibration Performed:	Sat Nov 12 11:20:06 2016	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.6000	GAPI/cps

 PIONEER Pioneer Energy Services	Company	AMERICAN WARRIOR, INC.
	Well	GANO #4-17 TWIN
	Field	N/A
	County	KEARNY
	State	KANSAS