



MICRORESISTIVITY LOG

Company: AMERICAN WARRIOR, INC.
 Well: GANO NO. 9-17
 Field: LAKIN NORTHWEST
 County: KEARNY
 State: KANSAS

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 Field: LAKIN NORTHWEST
 County: KEARNY
 State: KANSAS

Location: API #: 15-093-21965-00-00
 544' FSL & 1098' FEL
 SEC 17 TWP 25S RGE 36W
 Permanent Datum: GROUND LEVEL Elevation 3016'
 Log Measured From: KELLY BUSHING
 Drilling Measured From: KELLY BUSHING
 Other Services: CNL/CDL DIL
 Elevation: K.B. 3027', D.F. N/A, G.L. 3016'

Date	1/24/2018
Run Number	ONE
Depth Driller	5100'
Depth Logger	5098'
Bottom Logged Interval	5097'
Top Log Interval	3400'
Casing Driller	8.625" @ 1785'
Casing Logger	1784'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	1400
Density / Viscosity	9.5 49
pH / Fluid Loss	9.0 8.0
Source of Sample	FLOWLINE
Rm @ Meas. Temp	1.0 @ 58
Rmt @ Meas. Temp	.75 @ 58
Rmc @ Meas. Temp	1.35 @ 58
Source of Rmf / Rmc	CHARTS
Rm @ BHT	.38 @ 127
Operating Rig Time	2 HOURS
Max Rec. Temp. F	127 DEGF
Equipment Number	108
Location	HAYS
Recorded By	J. HENRICKSON
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 KANSAS
 3 1/2 SOUTH TO 120 RD, 1 WEST, 1 SOUTH TO CURVE, 1 WEST
 1 1/2 SOUTH TO TANK BATTERY, WEST THEN 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

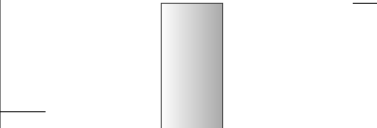
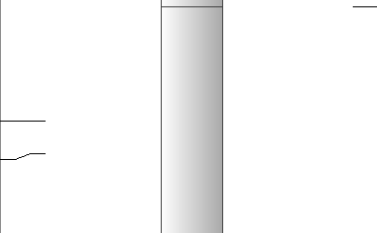
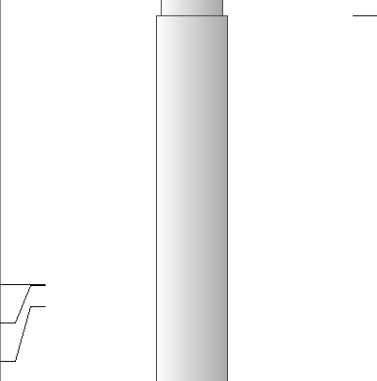
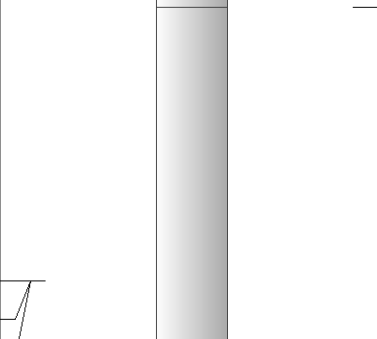
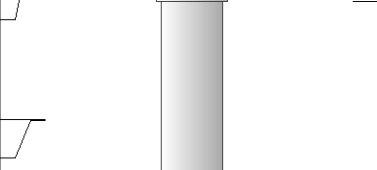
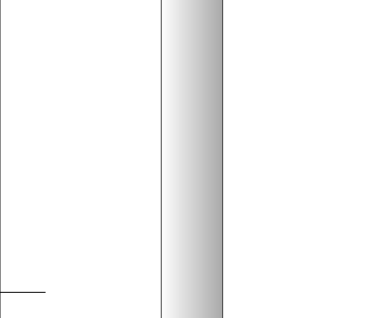
Your Pioneer Energy Services Crew Engineer: J. HENRICKSON Operator: Operator: Operator:	This Log Record Was Witnessed By Primary Witness: LUKE THOMPSON Secondary Witness: Secondary Witness: Secondary Witness:
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Log Variables

DatabaseC:\ProgramData\Warrior\Data\american_warrior_gano_9_17.db
Dataset field/well/stackml/pass3.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	127	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	-14	25	Off	5098

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 CNSSC	37.48 36.73		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (168-986)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSI STKBL ML (PSI-02) Stackable Microlog Tools	7.58	4.00	65.00
RLL3 RLL3F	15.80 15.79					
CILD	8.00		DIL-M&W (PSI 978)	18.50	3.50	220.00

CILM 4.70

SP 0.20

Dataset: american_warrior_gano_9_17.db: field/well/stackml/pass3.1
 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

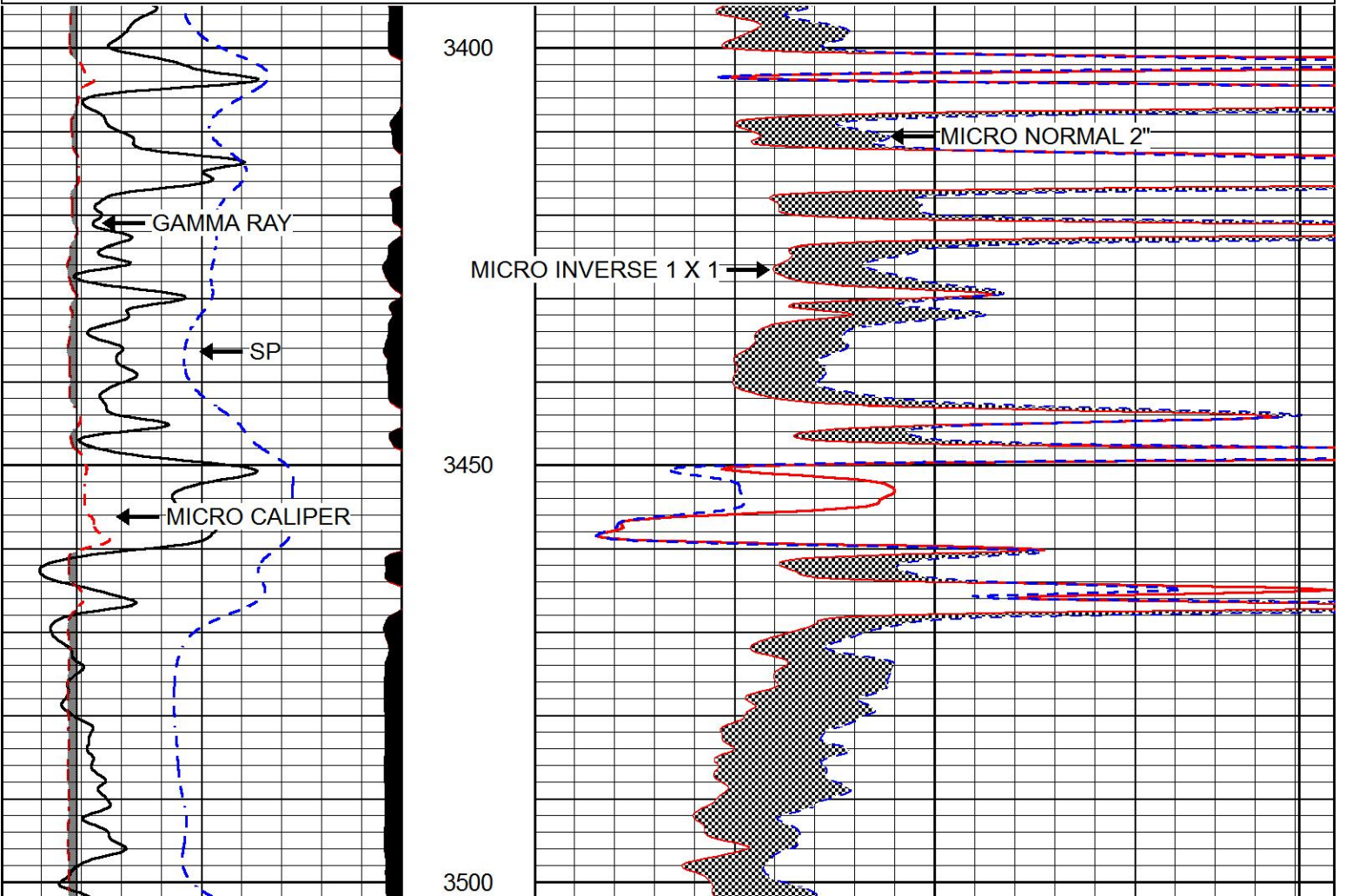


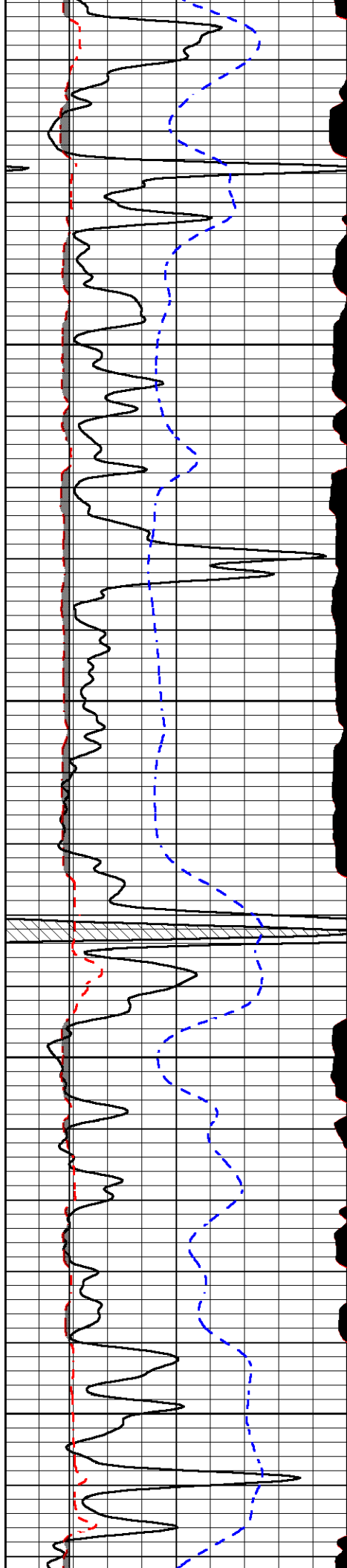
MAIN PASS

Database File american_warrior_gano_9_17.db
 Dataset Pathname stackml/pass3.1
 Presentation Format micro
 Dataset Creation Wed Jan 24 02:36:40 2018
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
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
15000	LINE TENSION (lb)	0



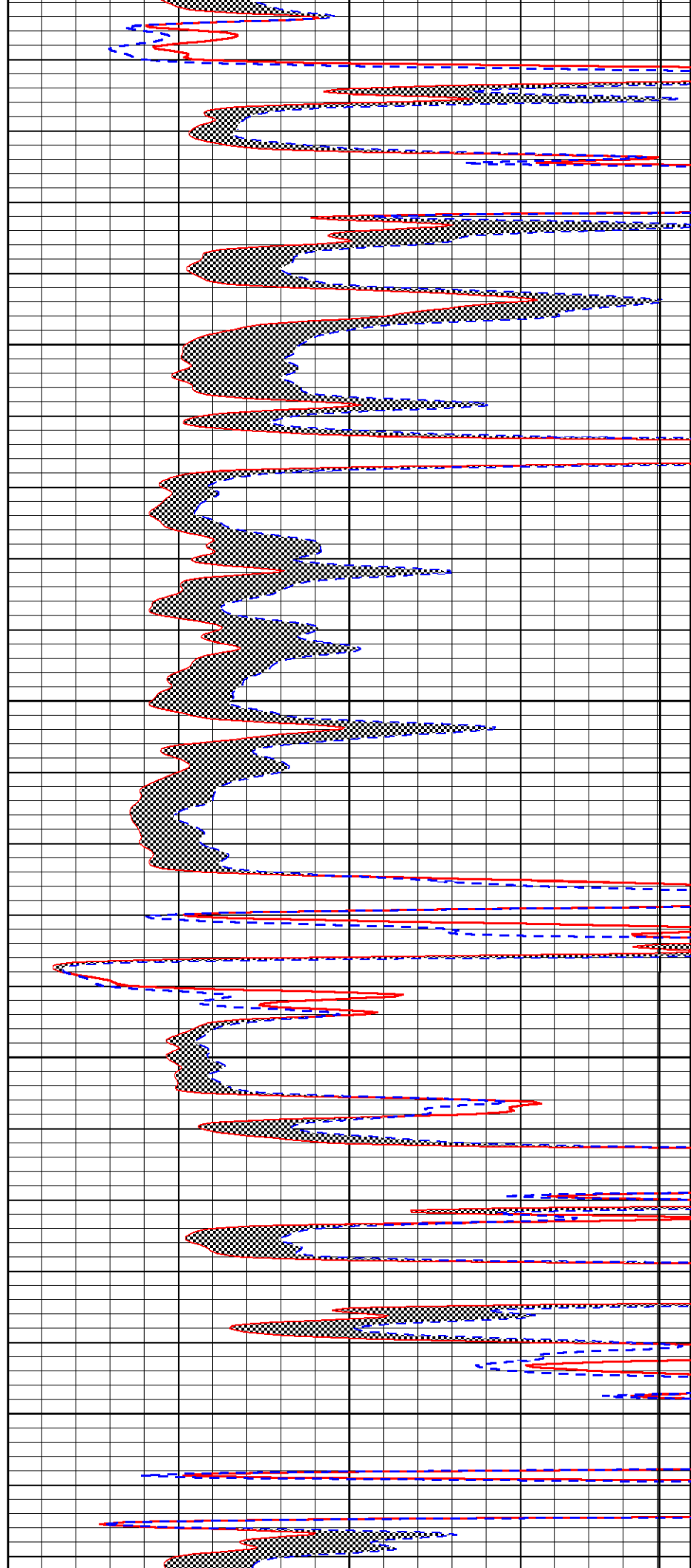


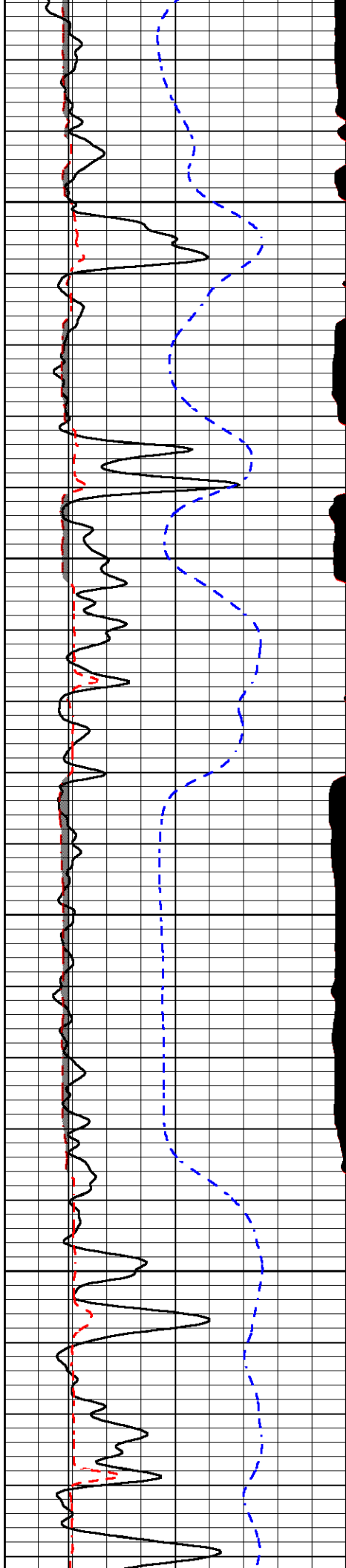
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3600

3650

3700



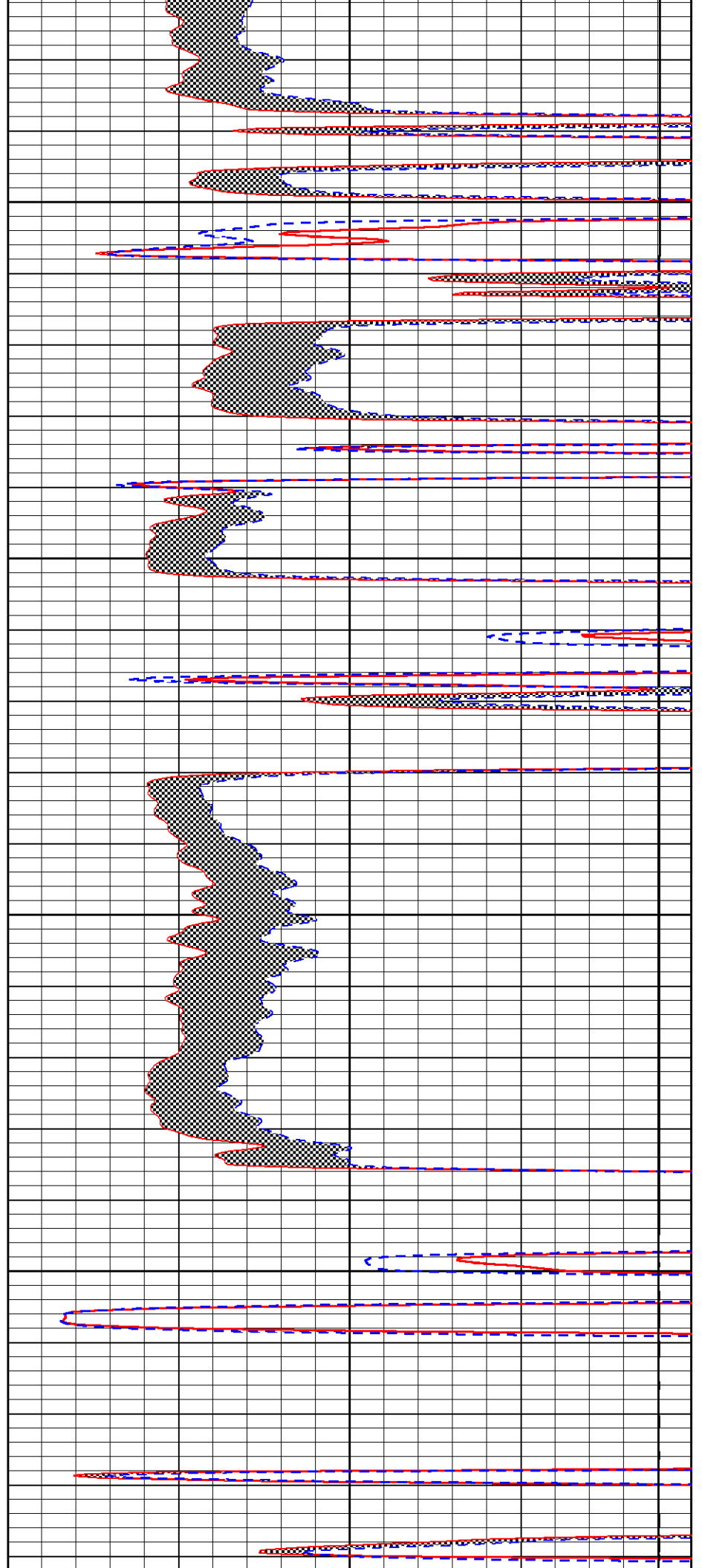


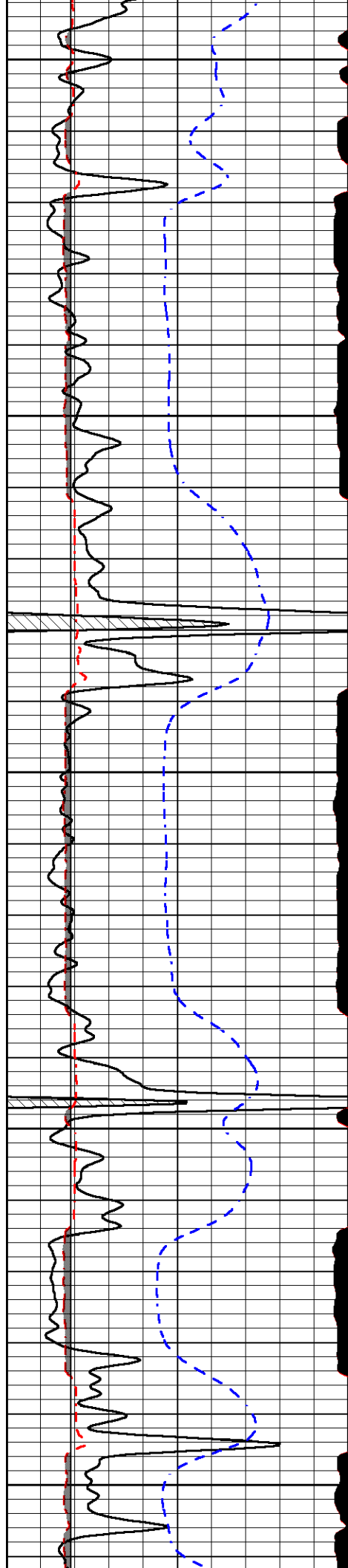
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3800

3850

3900





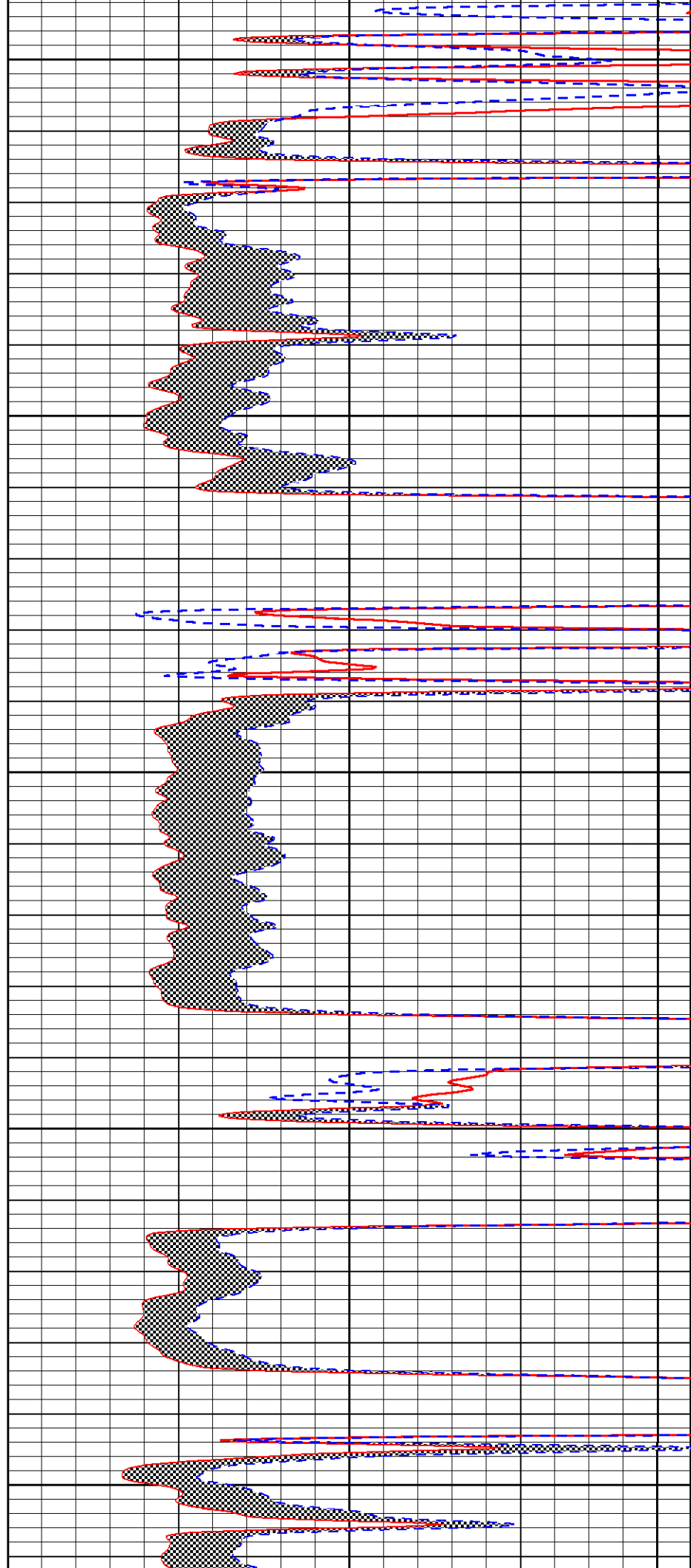
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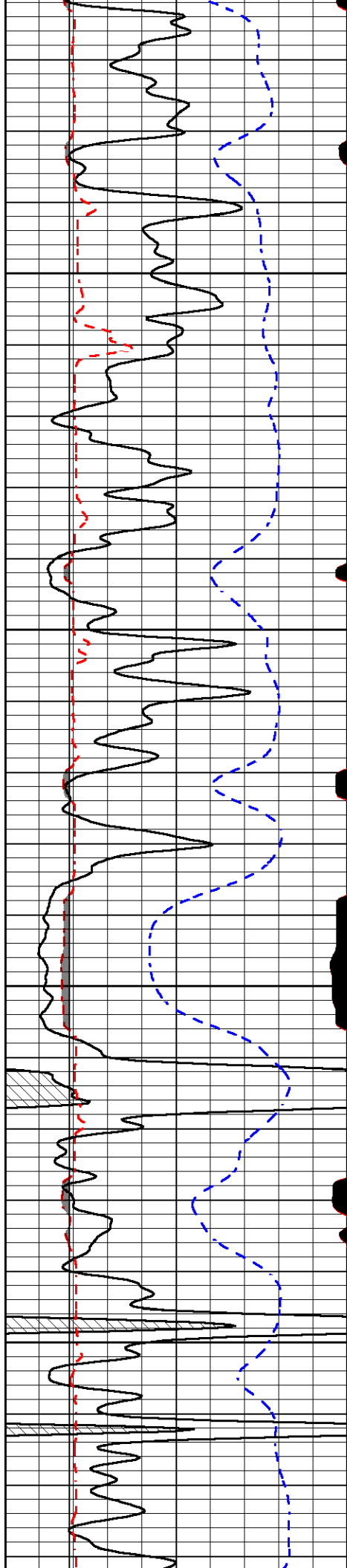
4000

4050

4100

4150



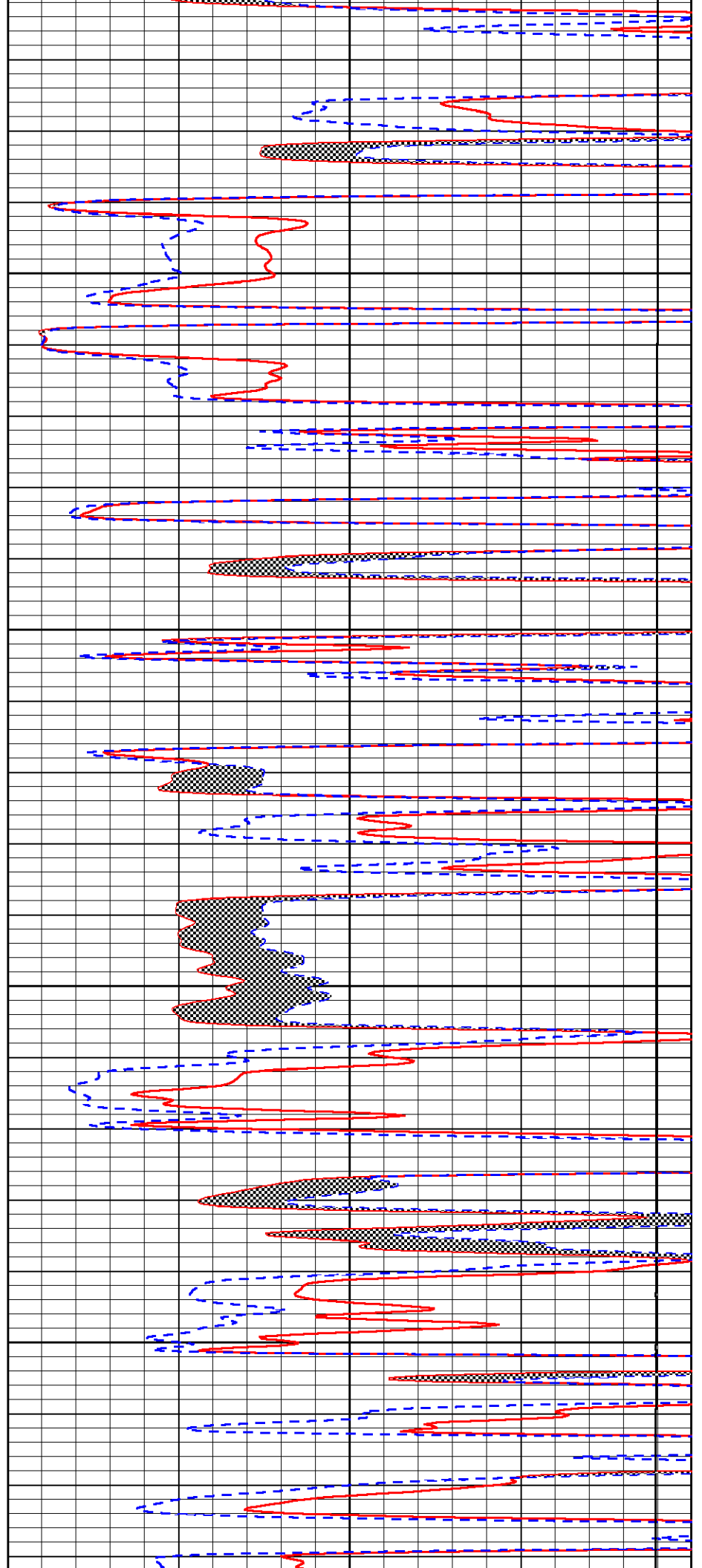


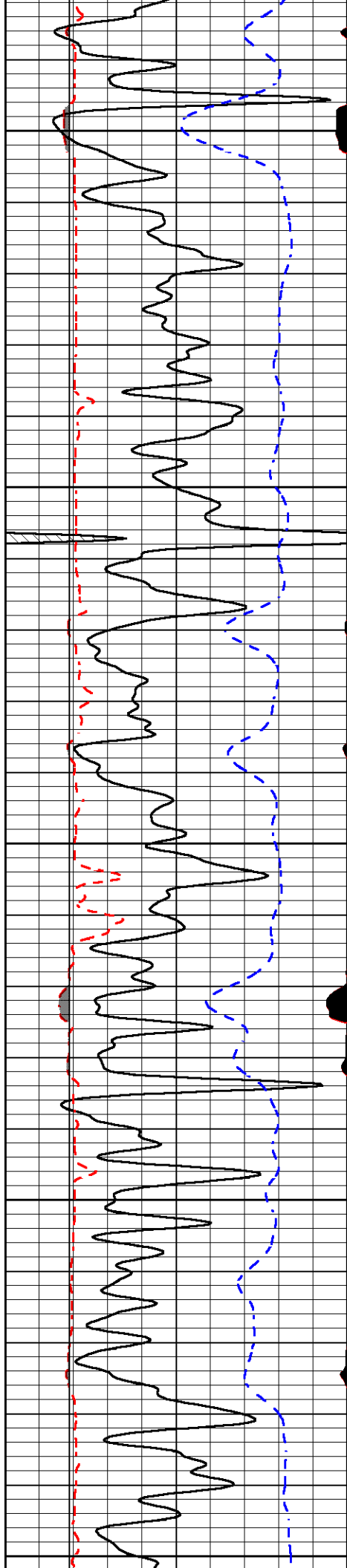
4200

4250

4300

4350





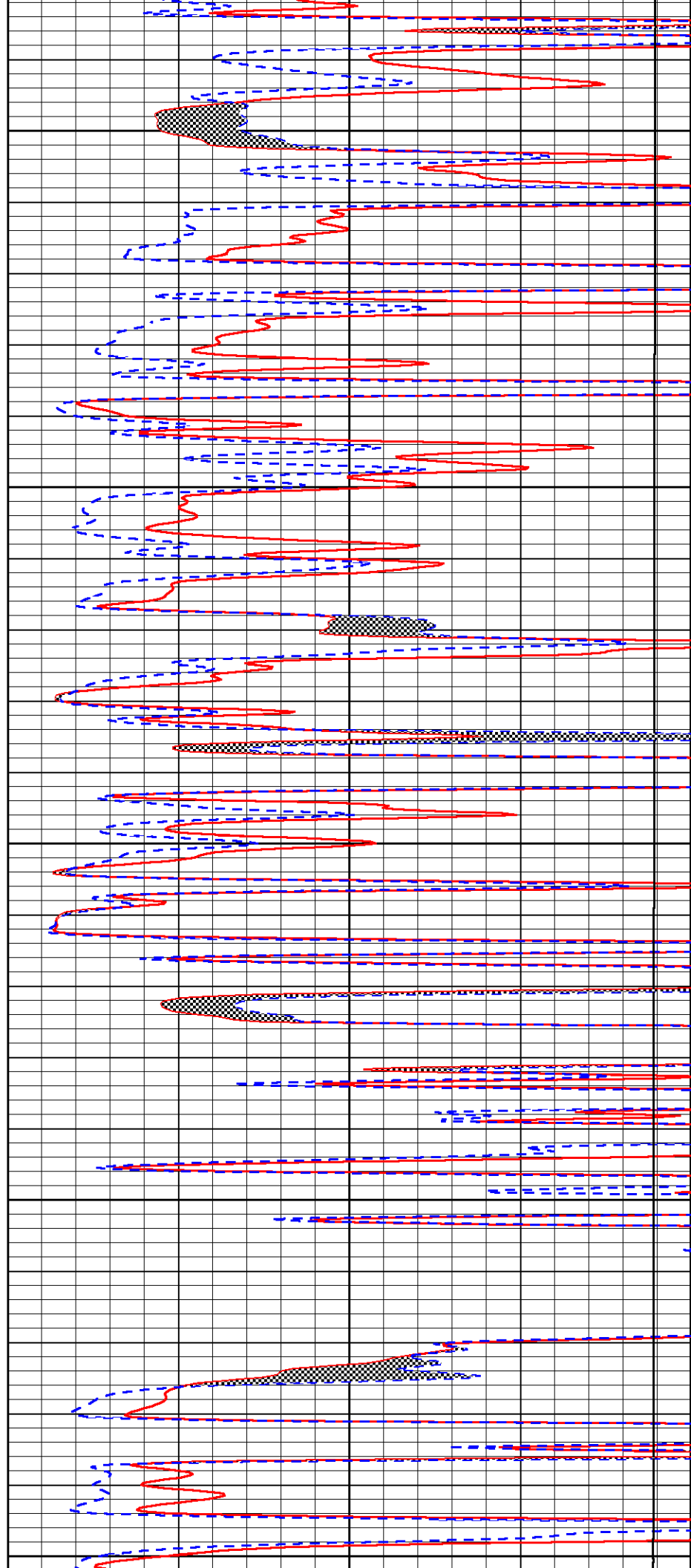
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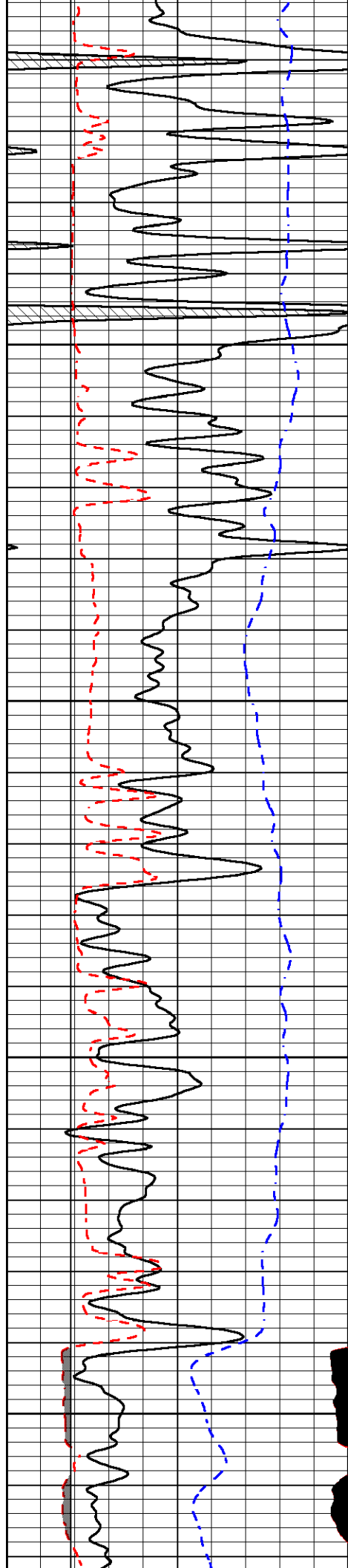
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4500

4550

4600



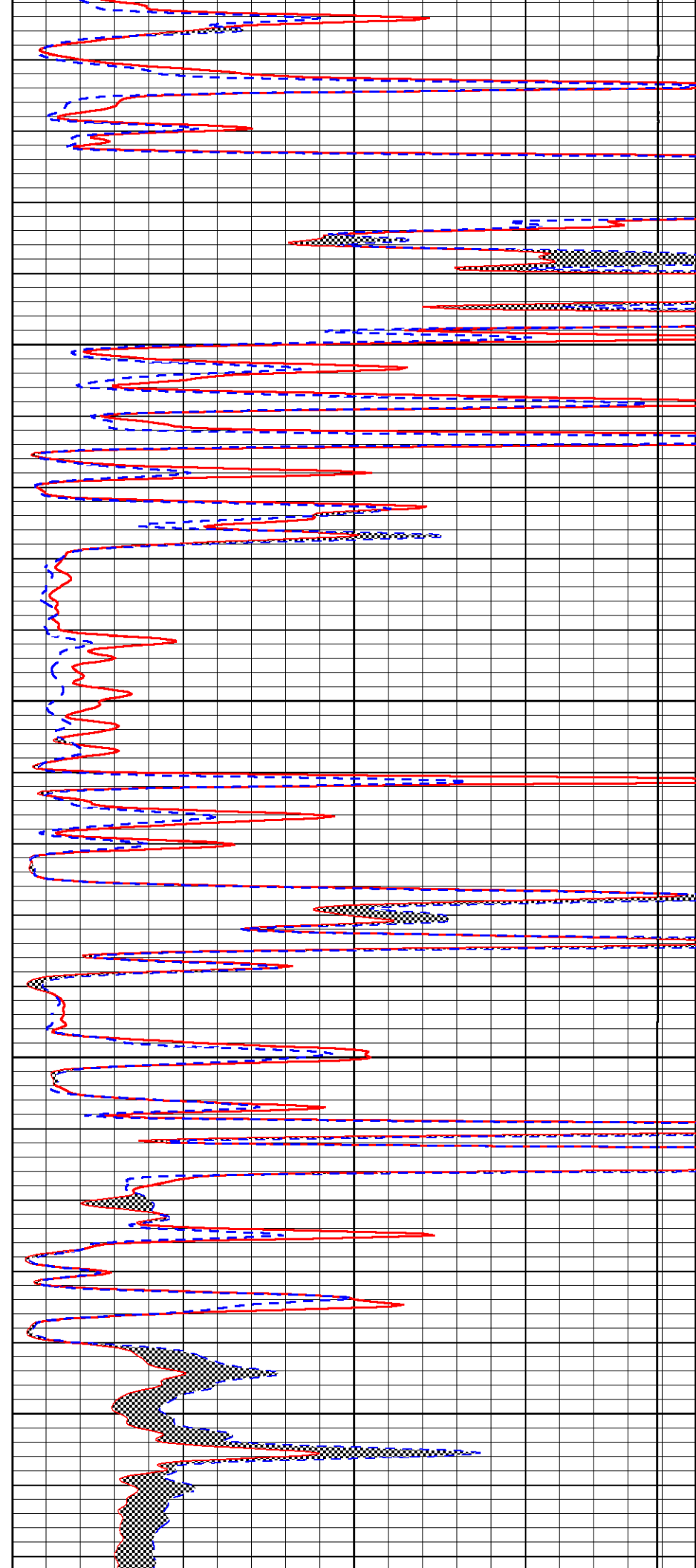


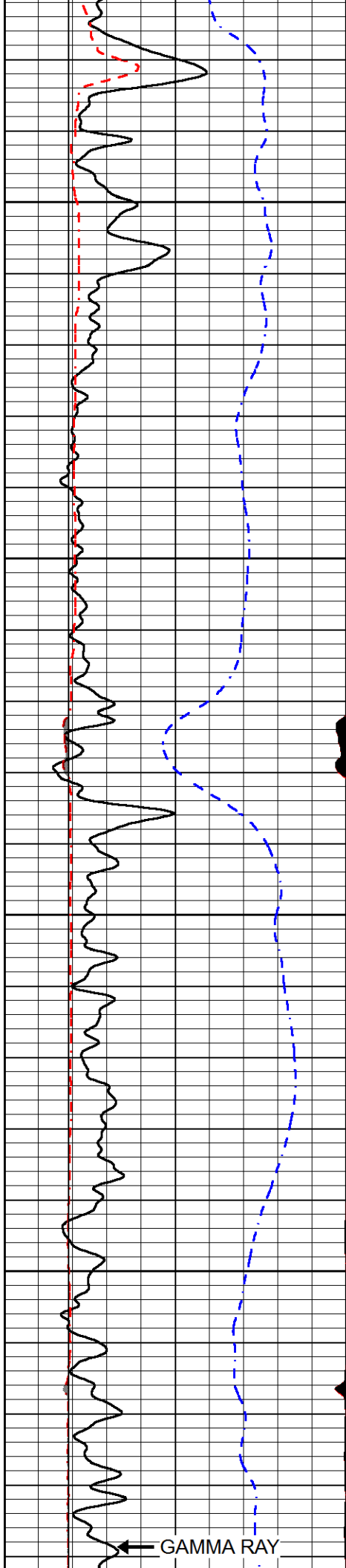
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4700

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4800





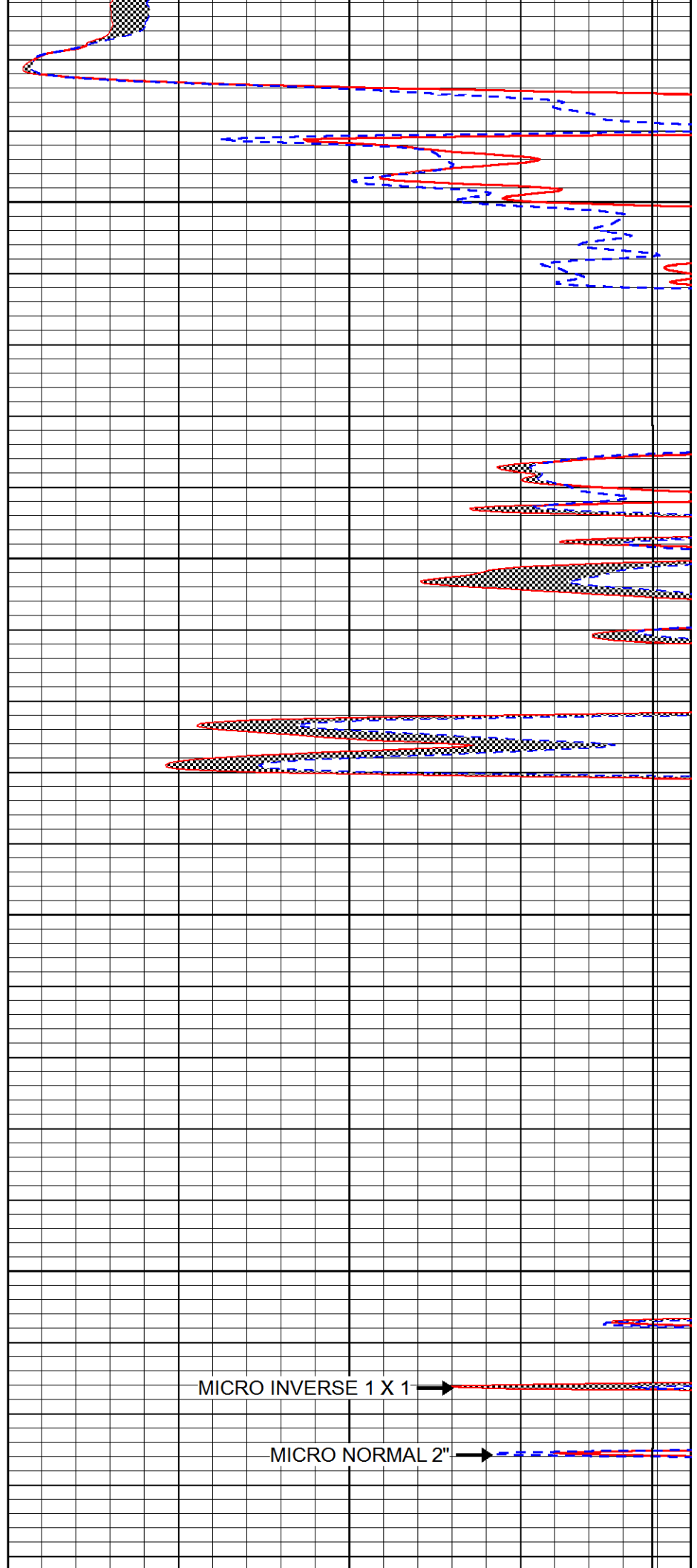
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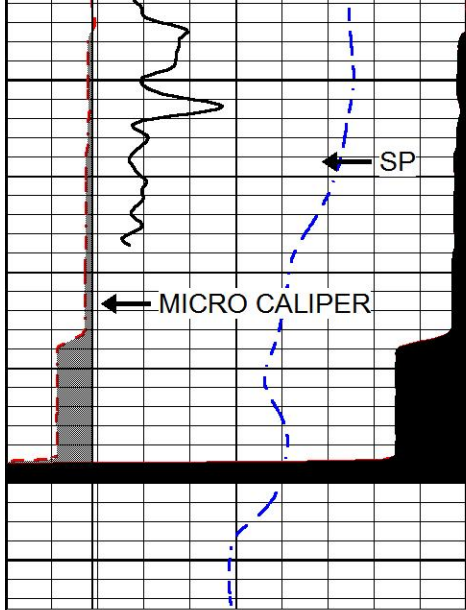
5000

GAMMA RAY



MICRO INVERSE 1 X 1

MICRO NORMAL 2"



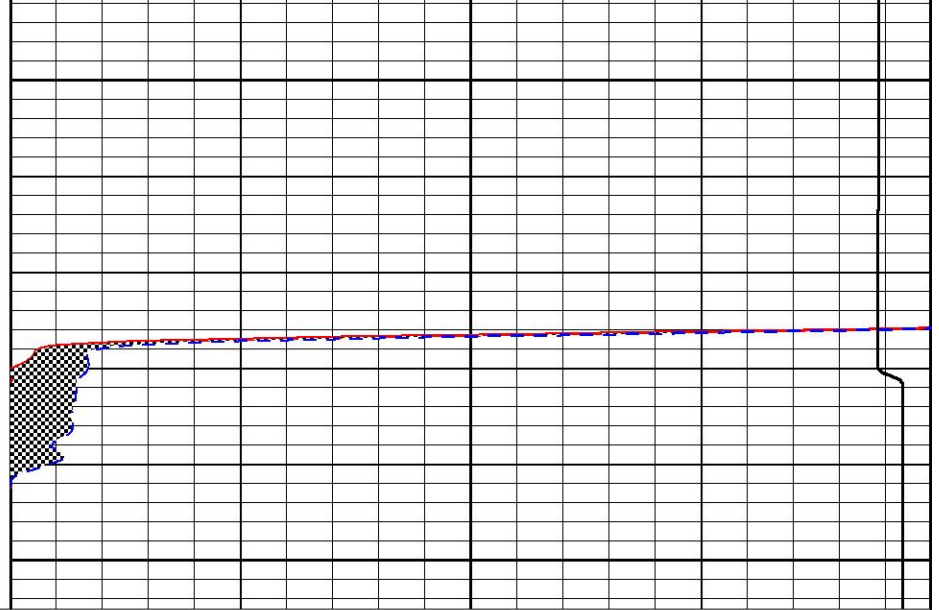
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← SP

← MICRO CALIPER

5100

0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
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
15000	LINE TENSION (lb)	0

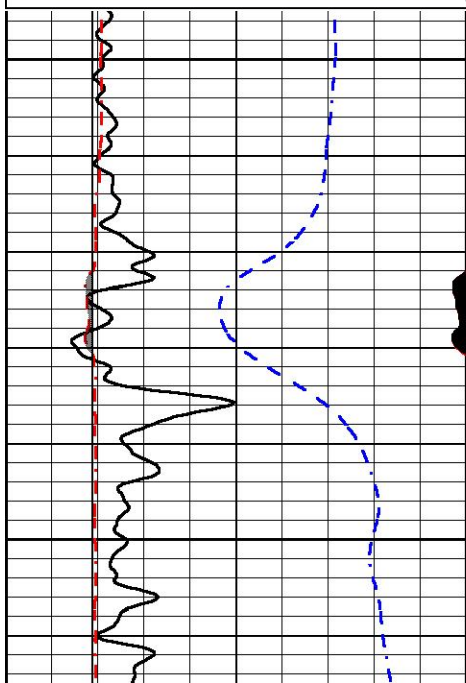


REPEAT SECTION

Database File american_warrior_gano_9_17.db
 Dataset Pathname stackml/pass2.1
 Presentation Format micro
 Dataset Creation Wed Jan 24 02:36:50 2018
 Charted by Depth in Feet scaled 1:240

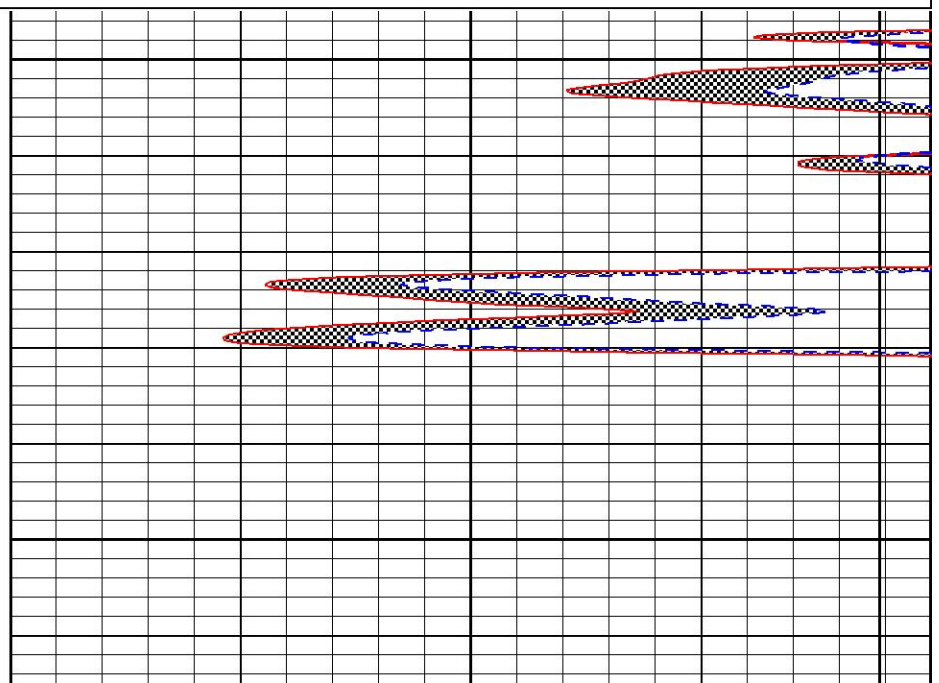
0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0

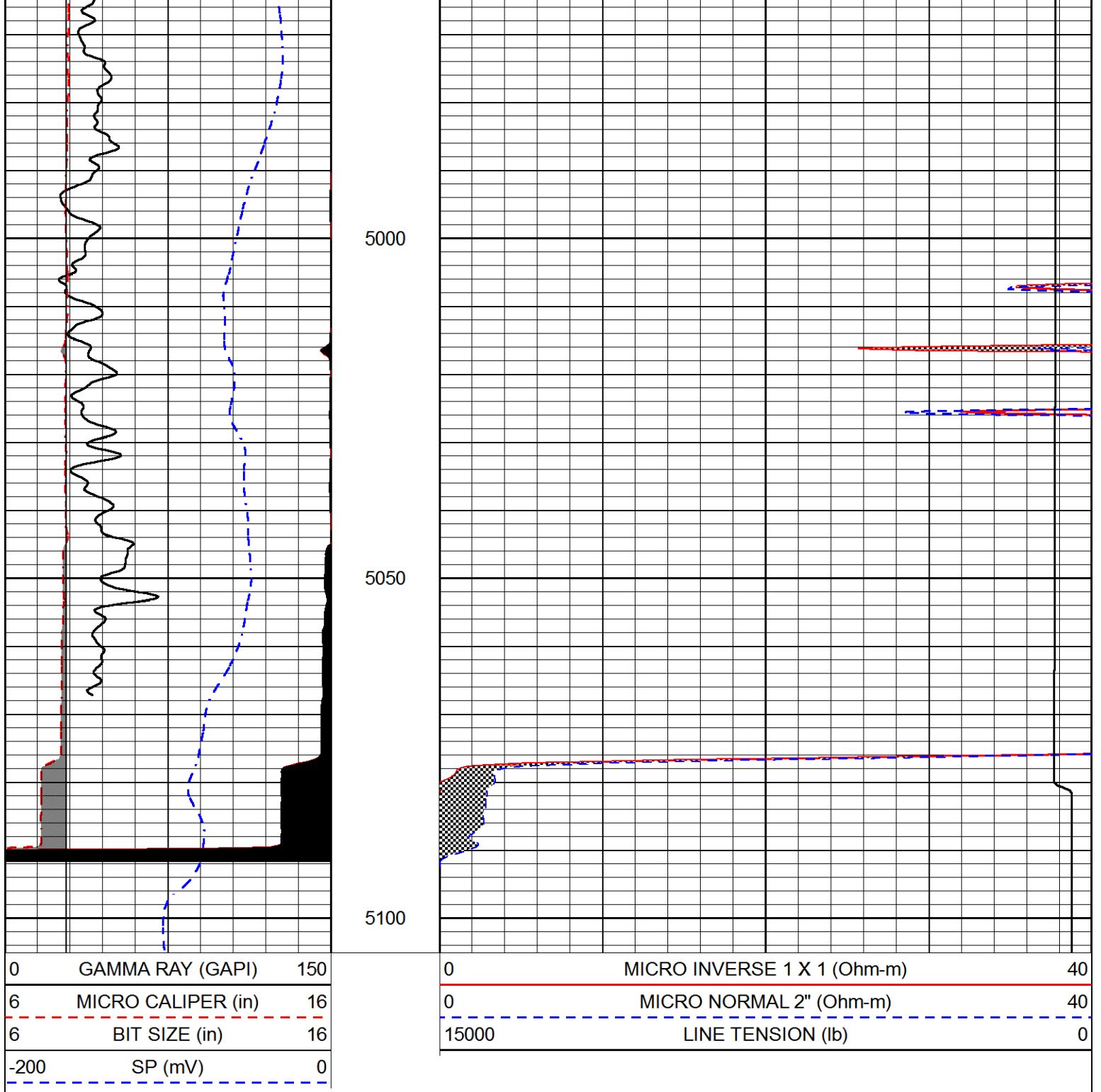
0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0



4900

4950





Calibration Report

Database File american_warrior_gano_9_17.db
 Dataset Pathname stackml/pass3.1
 Dataset Creation Wed Jan 24 02:36:40 2018

Dual Induction Calibration Report

Serial-Model: PSI 978-M&W
 Calibration Performed: Wed Dec 13 12:45:09 2017

Loop:	Readings		References		Results	
	Air	Loop	Air	Loop	Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m 0.570	-36.500

Microlog Calibration Report

Serial-Model: PSI-02-PSI STKBL ML
 Performed: Fri Jun 23 01:25:19 2017

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0031	0.0043	0.0000	10.0000	Ohm-m	14000.0000	0.0000
Inverse	0.0000	0.0013	0.0000	10.0000	Ohm-m	16000.0000	0.0000
Caliper	1.0020	1.0834	5.5000	16.5000	in	135.1560	-131.4500

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	2.700	g/cc	859.57	3020.22	cps
Spine Angle = 74.61			Density/Spine Ratio = 0.537		
	Size		Reading		
Small Ring	4.00	in	1.00		
Large Ring	14.00	in	1.20		

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





PIONEER

Pioneer Energy Services

Well

GANO NO. 9-17

Field

LAKIN NORTHWEST

County

KEARNY

State

KANSAS