



PIONEER
Pioneer Energy Services

MICRORESISTIVITY LOG

Company MURFIN DRILLING CO, INC.
Well ABELL RANCH "B" #4-31
Field GAELAND WEST
County GOVE
State KANSAS

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County GOVE
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Location: API #: 15-063-22332-00-00

SEC 31 TWP 12S RGE 30W

Permanent Datum GROUND LEVEL Elevation 2877'

Log Measured From KELLY BUSHING

Drilling Measured From KELLY BUSHING

Other Services
CNL/CDL
DIL/BHCS

Elevation
K.B. 2877'
D.F. N/A
G.L. 2872'

Date	7/27/2018
Run Number	ONE
Depth Driller	4620'
Depth Logger	4618'
Bottom Logged Interval	4617'
Top Log Interval	3500'
Casing Driller	8.625" @ 305'
Casing Logger	302'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	1800
Density / Viscosity	9.5 60
pH / Fluid Loss	10.5 7.2
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.50 @ 82
Rmt @ Meas. Temp	0.38 @ 82
Rmc @ Meas. Temp	0.68 @ 82
Source of Rmt / Rmc	CHARTS
Rm @ BHT	0.34 @ 122
Operating Rig Time	5 HOURS
Max Rec. Temp. F	122
Equipment Number	91
Location	HAYS
Recorded By	IAN MABB
Witnessed By	PAUL GUNZELMAN

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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.

GRINNEL, KS.

10 MILES SOUTH TO RD. S - WEST 4 MILES -
NORTH 1/4 MILE & EAST INTO

Log Measured From: KELLY BUSHING 5 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew

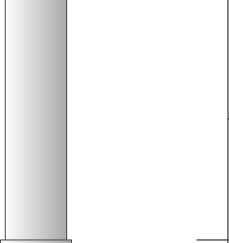
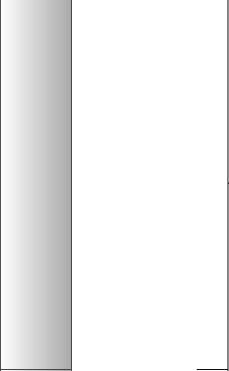
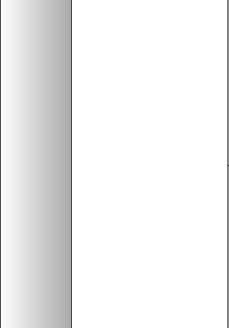
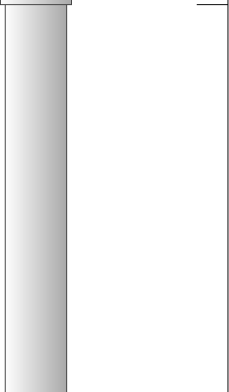
Engineer: IAN MABB
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: PAUL GUNZELMAN
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	-40	3
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
1	79	0	5.5	0	4618	122	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 (817-947)	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-PSI HIGH TEMP (933 (HT))		18.50	3.50	220.00
CILD	8.00					
CILM	4.70					
SP	0.20					
Dataset: murfin_abell_ranch_b_4_31.db: field/well/stackmel/pass3.1 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in						



Database File

Dataset Pathname

Presentation Format

Dataset Creation

Charted by

murfin_abell_ranch_b_4_31.db

stackmel/pass3.1

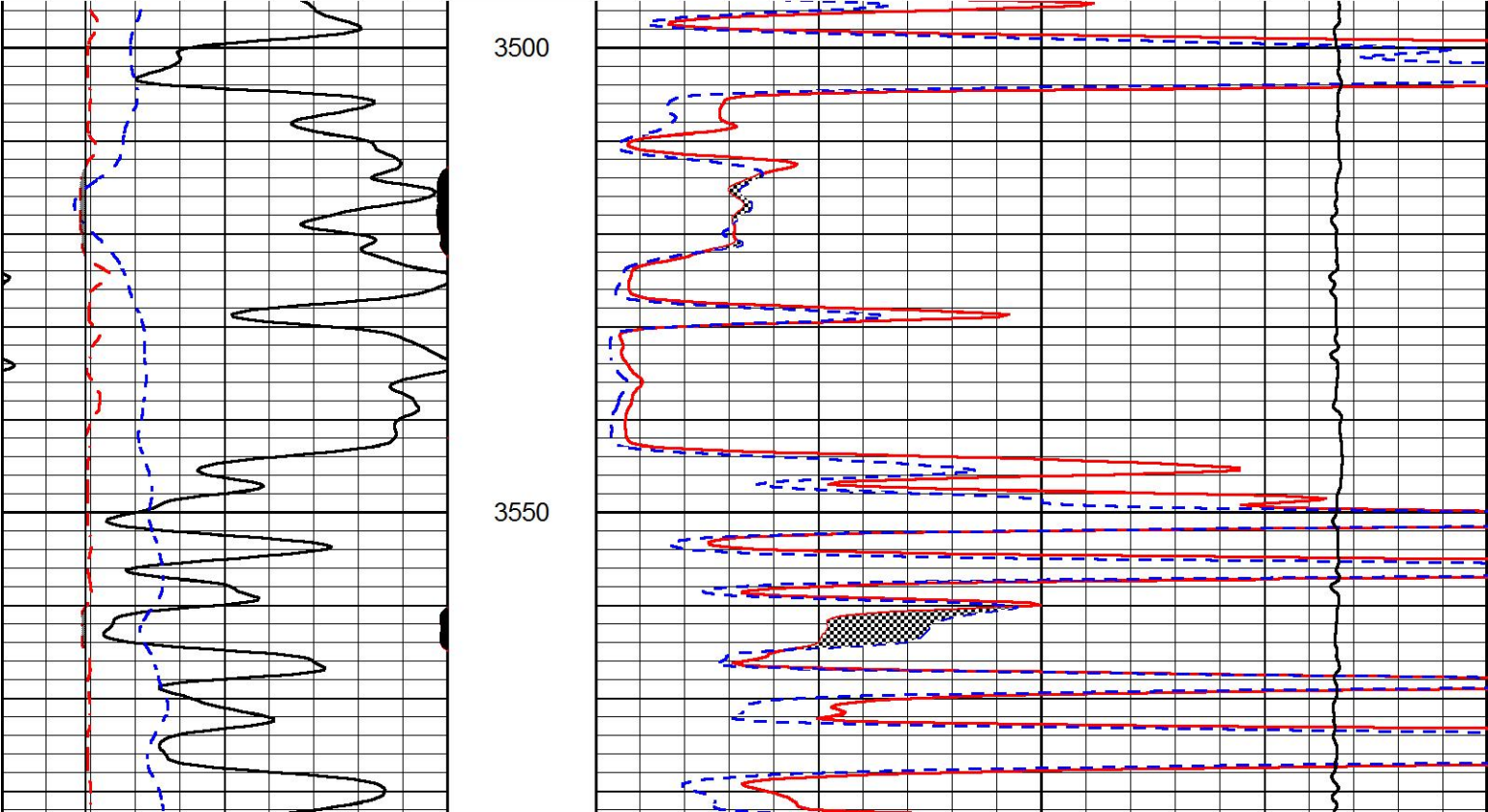
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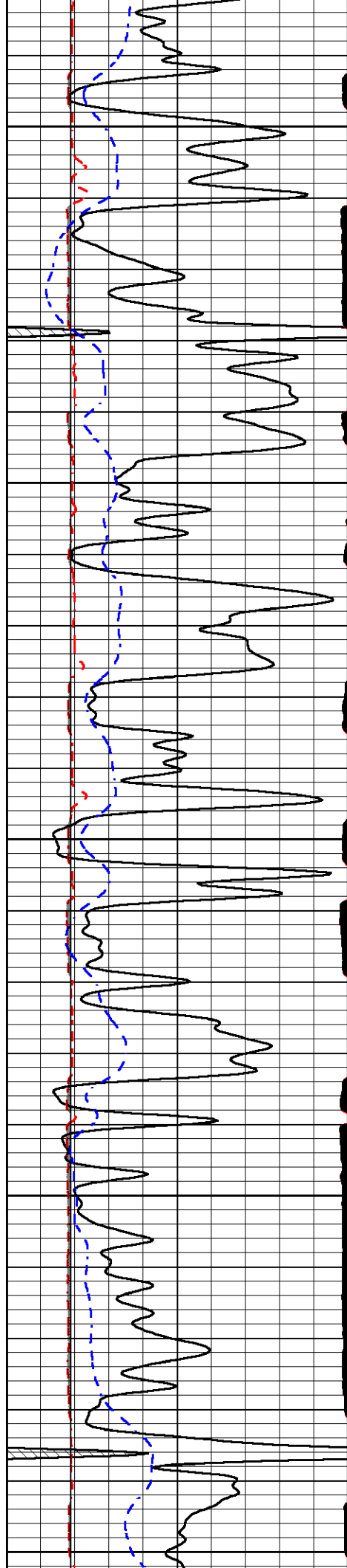
Sat Jul 28 01:22:16 2018

Depth in Feet scaled 1:240

MAIN PASS

0	GAMMA RAY (GAPI)	150	0	MICRO INVERSE 1 X 1 (Ohm-m)	40
6	MCAL (in)	16	0	MICRO NORMAL 2" (Ohm-m)	40
2.875	mcals (in)	7.875	10000	Line Weight (lb)	0
6	Bit Size (in)	16			
-200	SP (mV)	0			





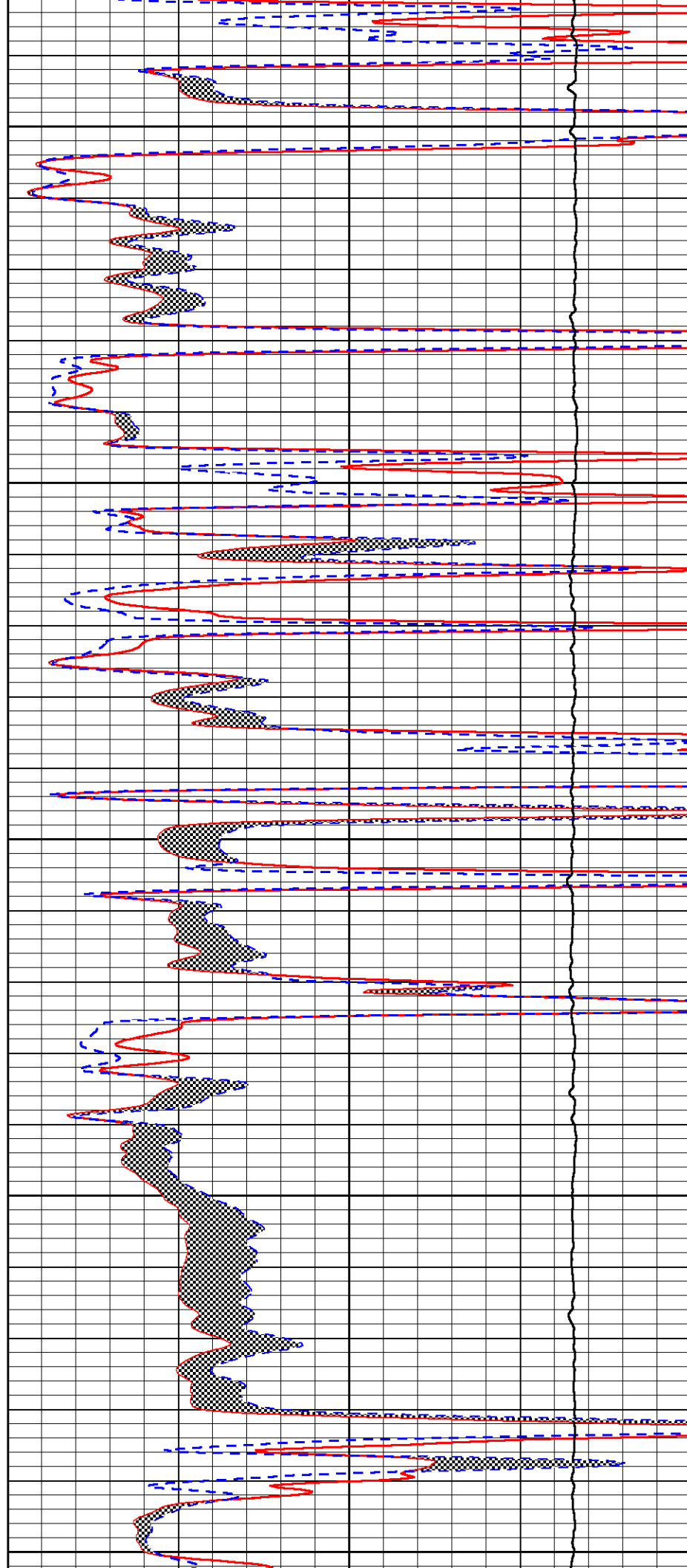
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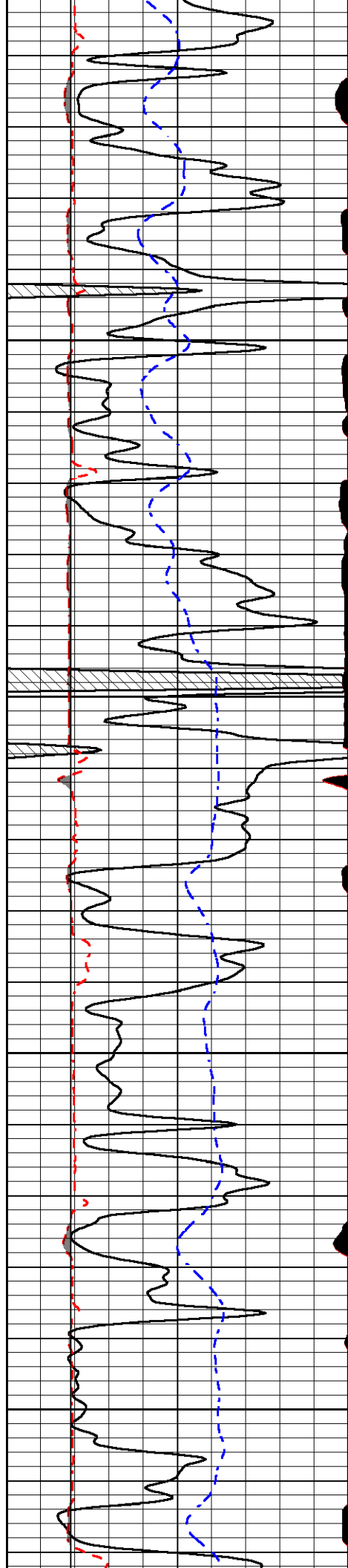
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3800



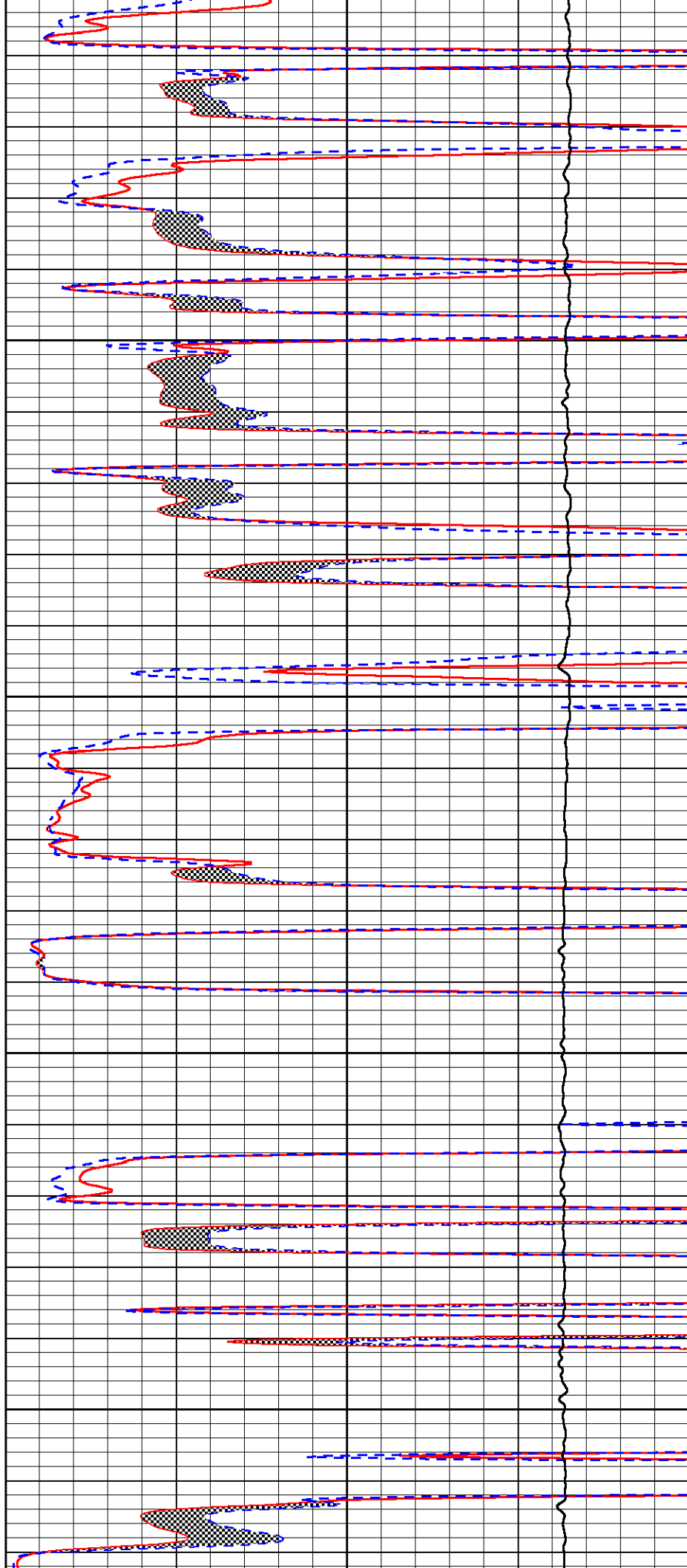


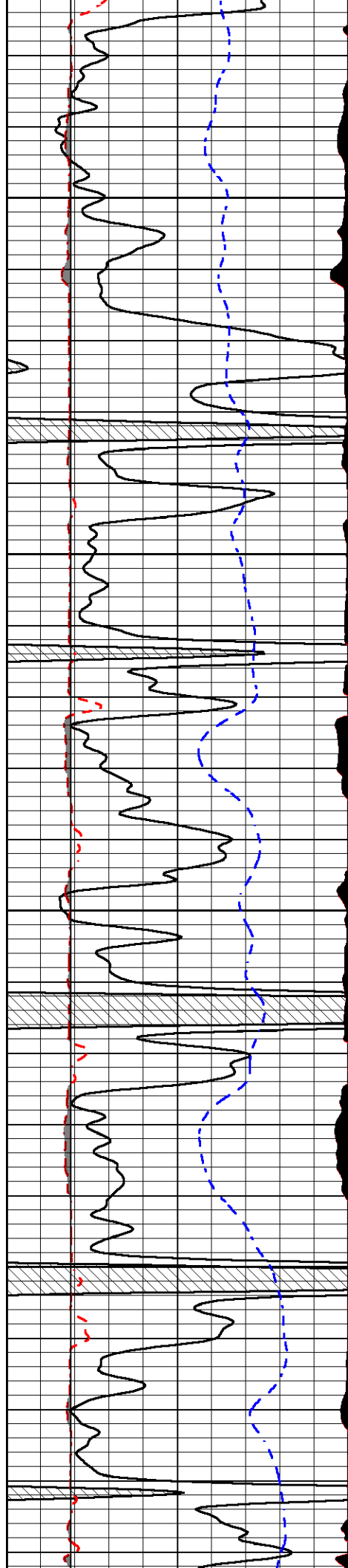
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3900

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4000



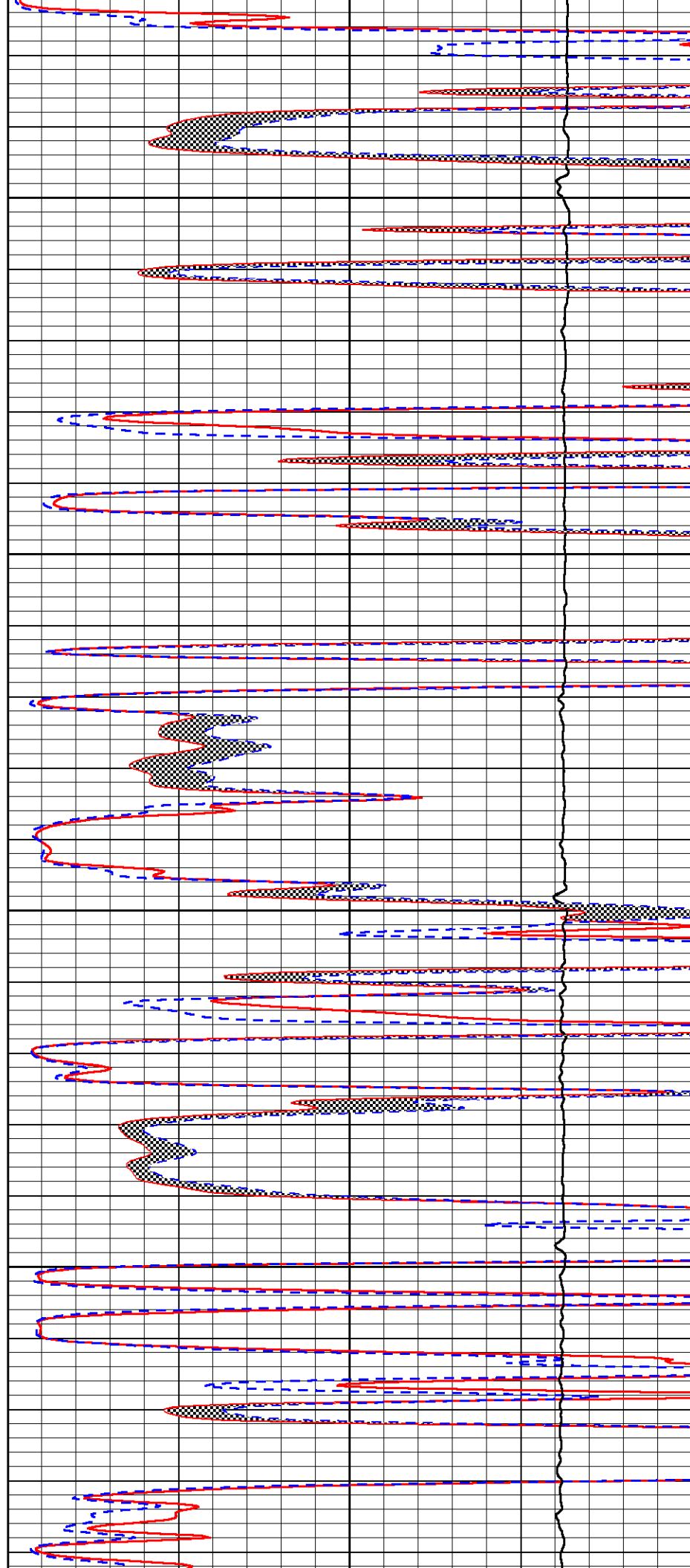


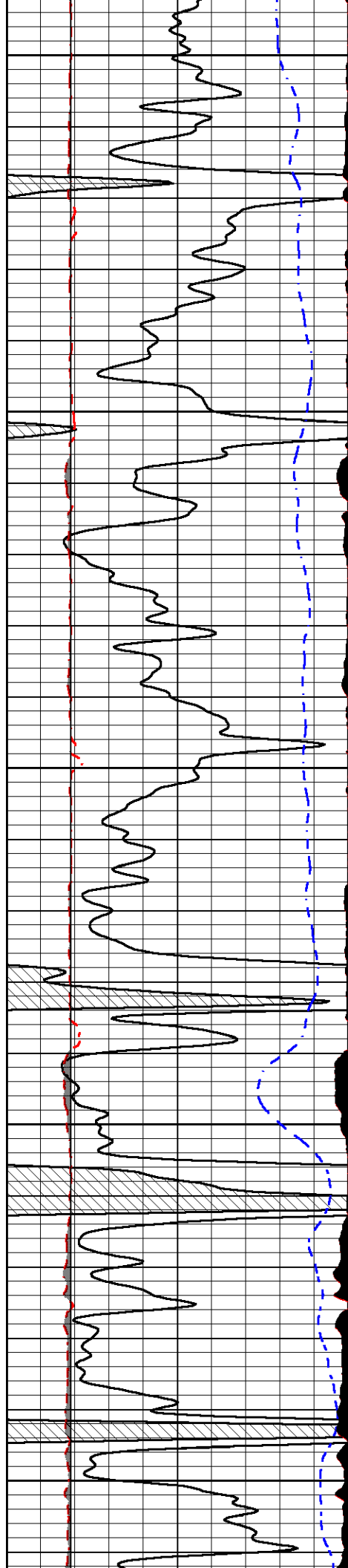
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4100

4150

4200





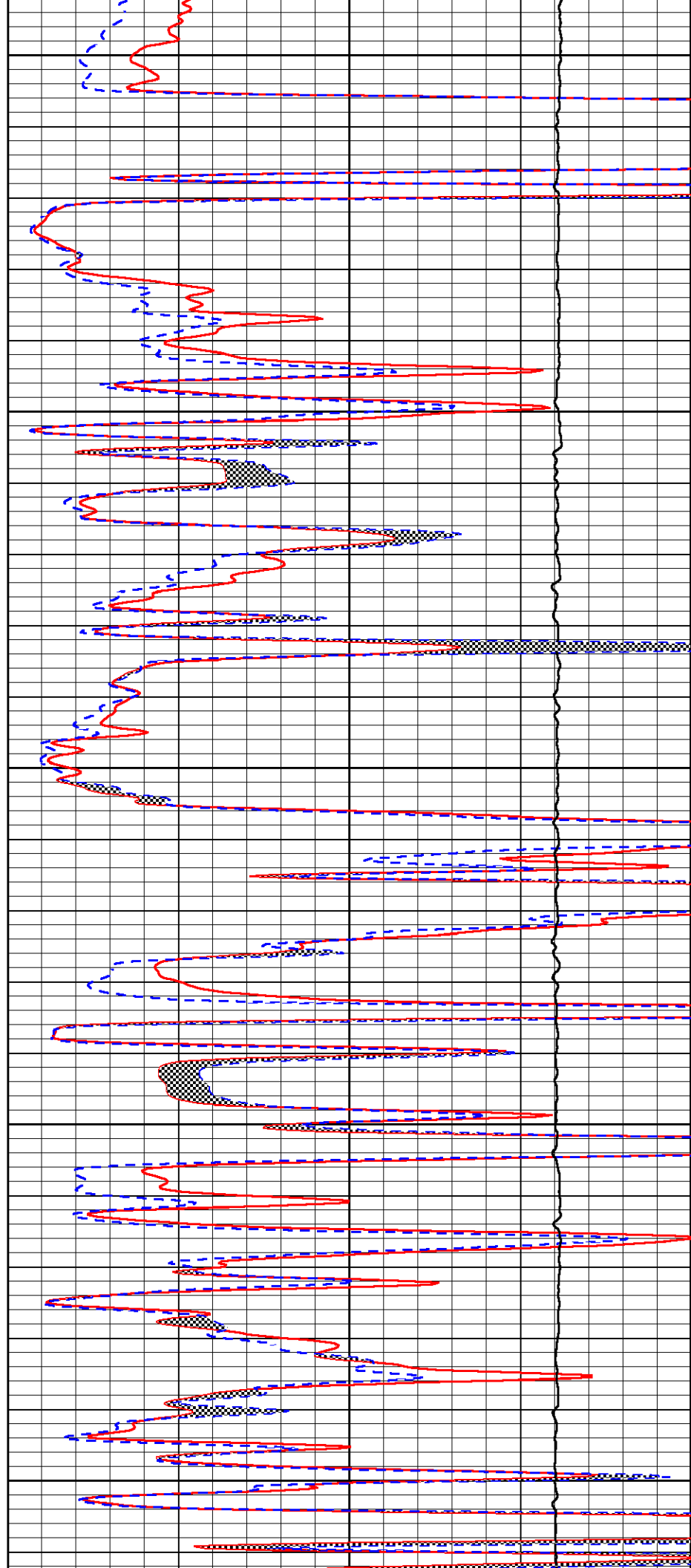
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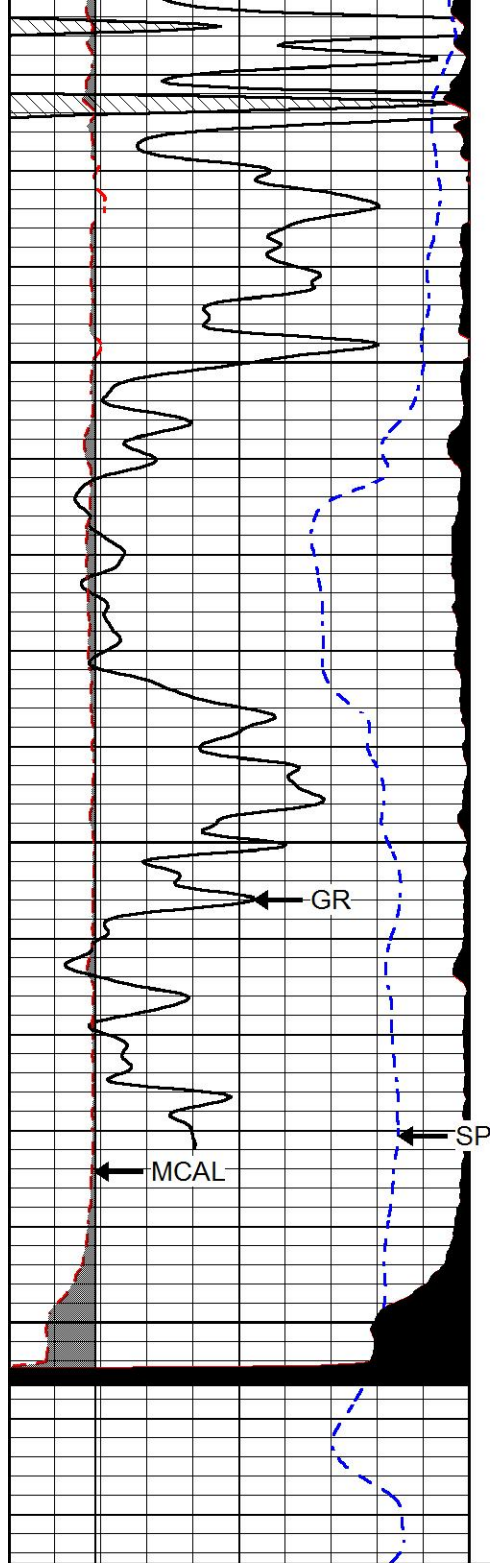
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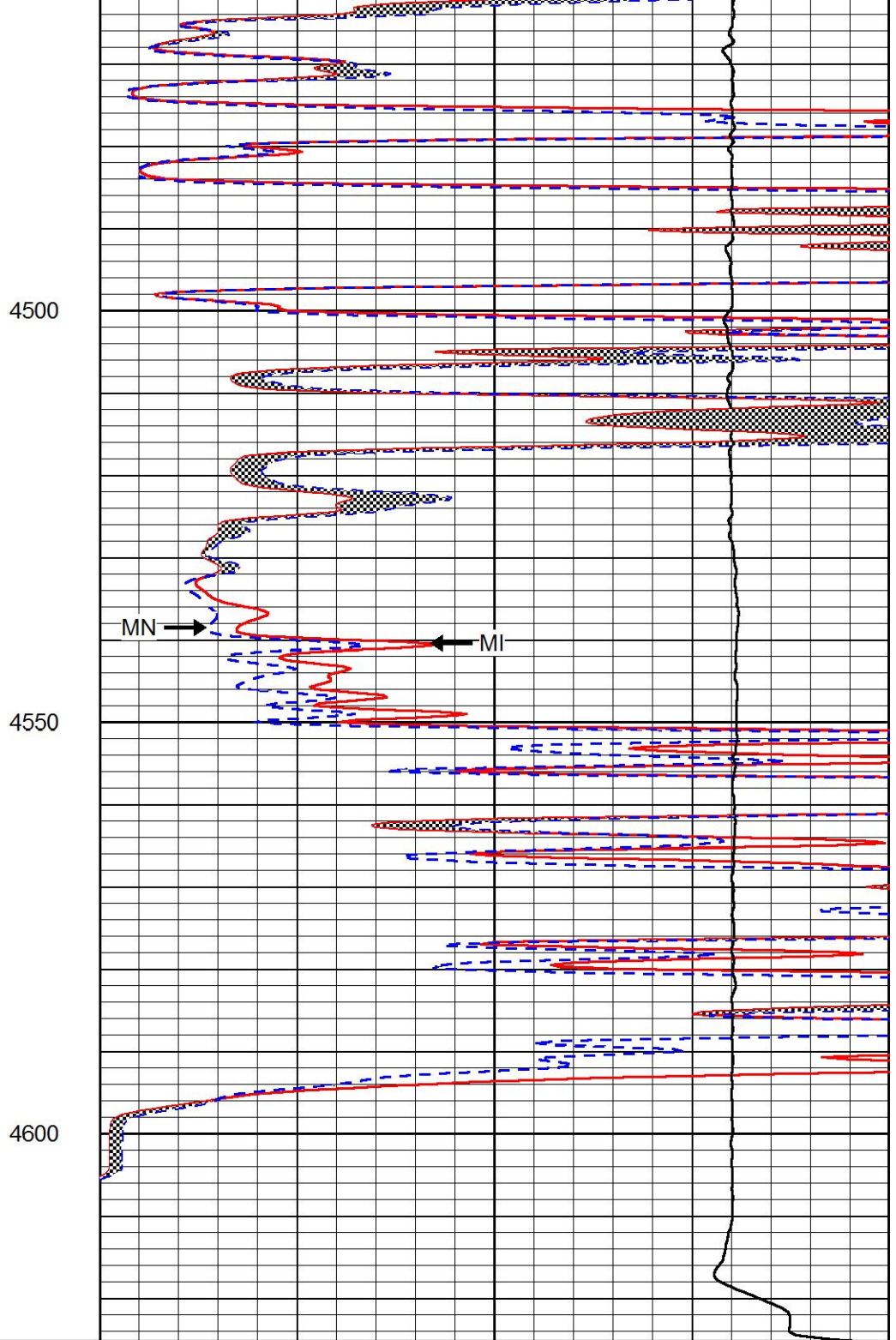
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4450





0	GAMMA RAY (GAPI)	150
6	MCAL (in)	16
2.875	mcal (in)	7.875
6	Bit Size (in)	16
-200	SP (mV)	0



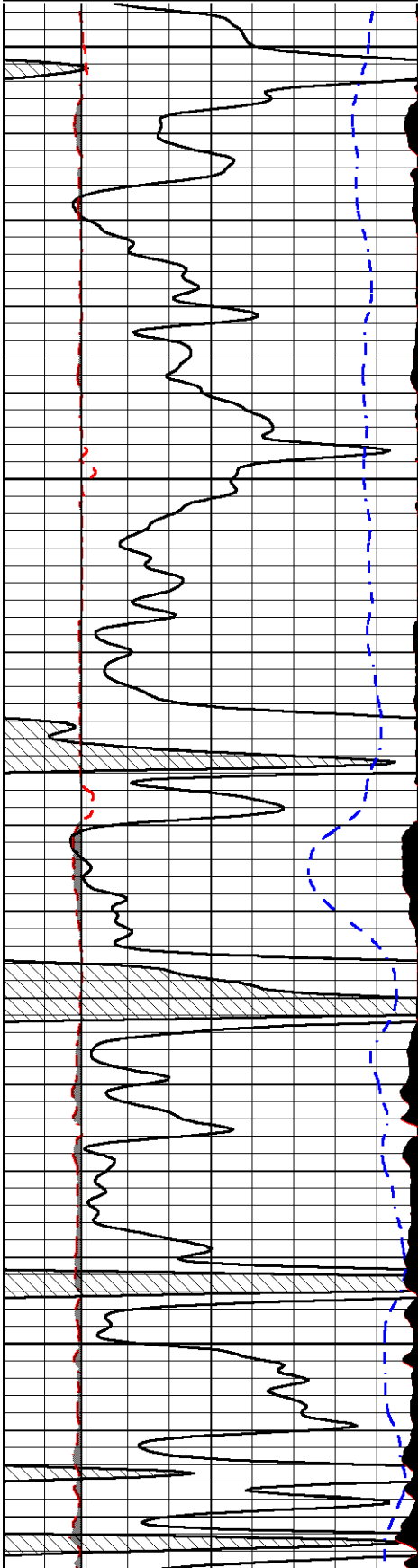
0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
10000	Line Weight (lb)	0



REPEAT SECTION

0	GAMMA RAY (GAPI)	150
6	MCAL (in)	16
2.875	mcal (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

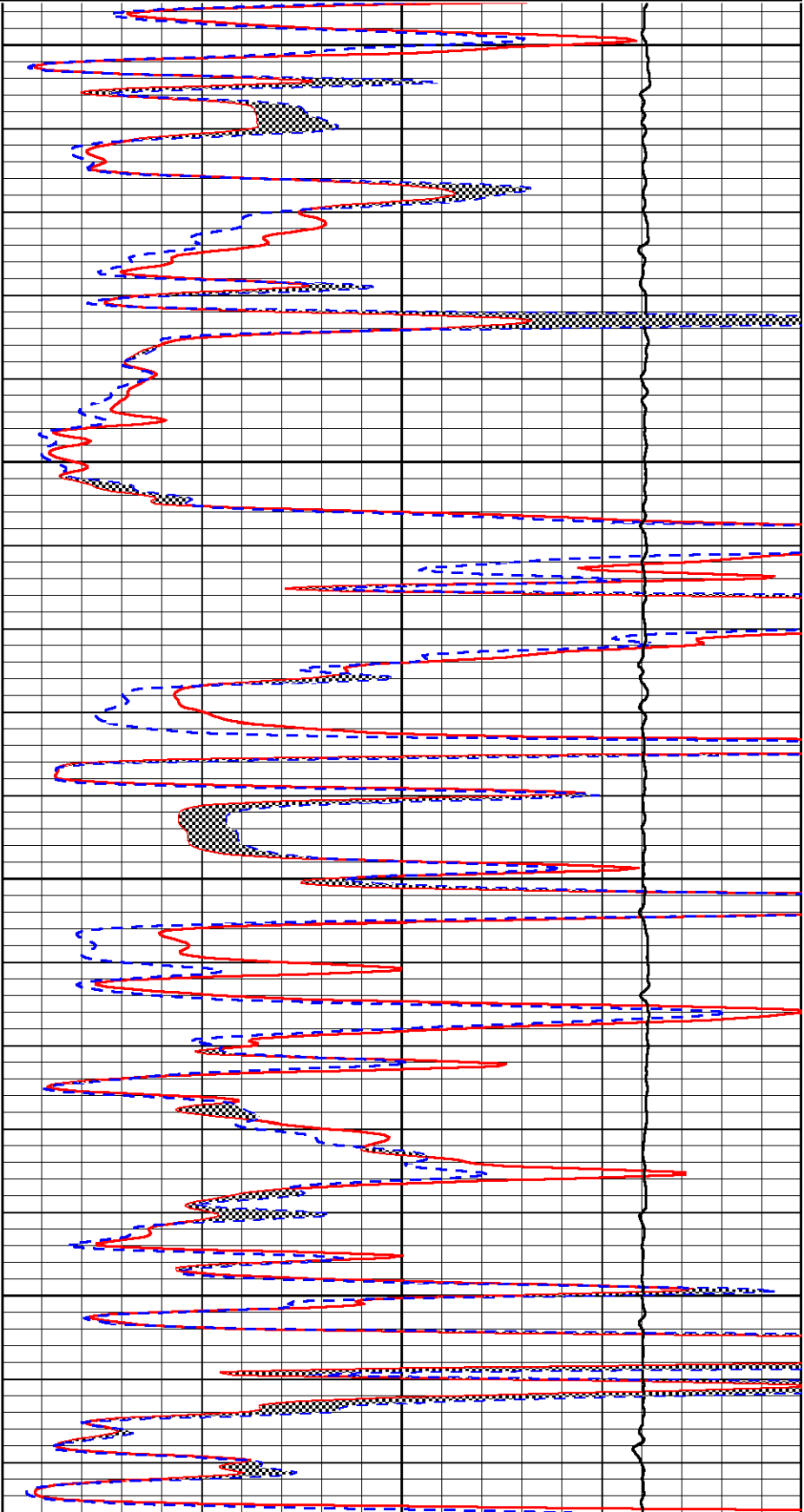


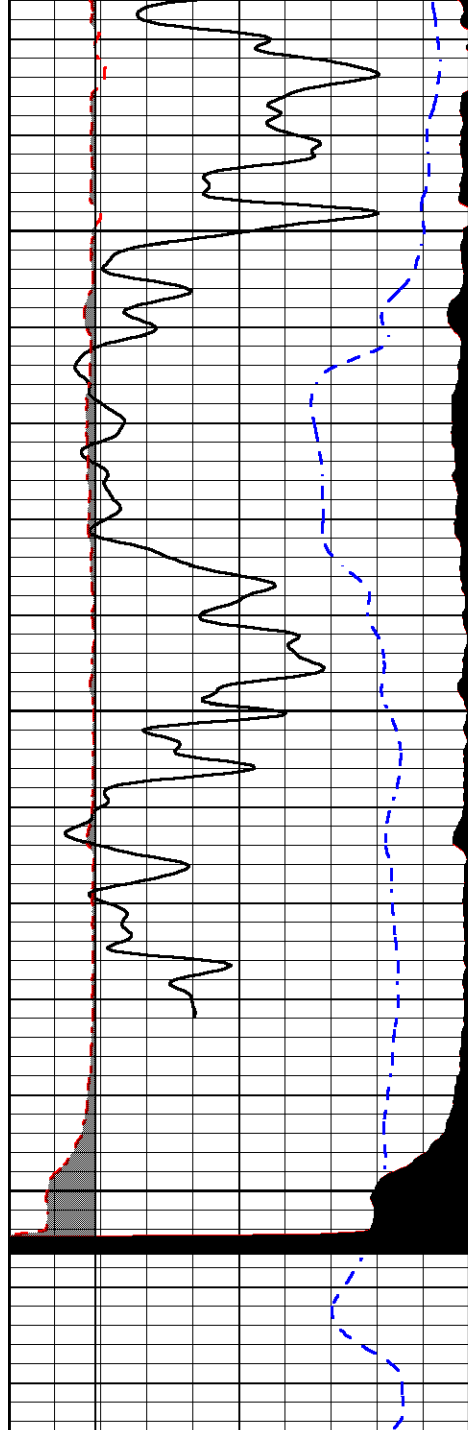
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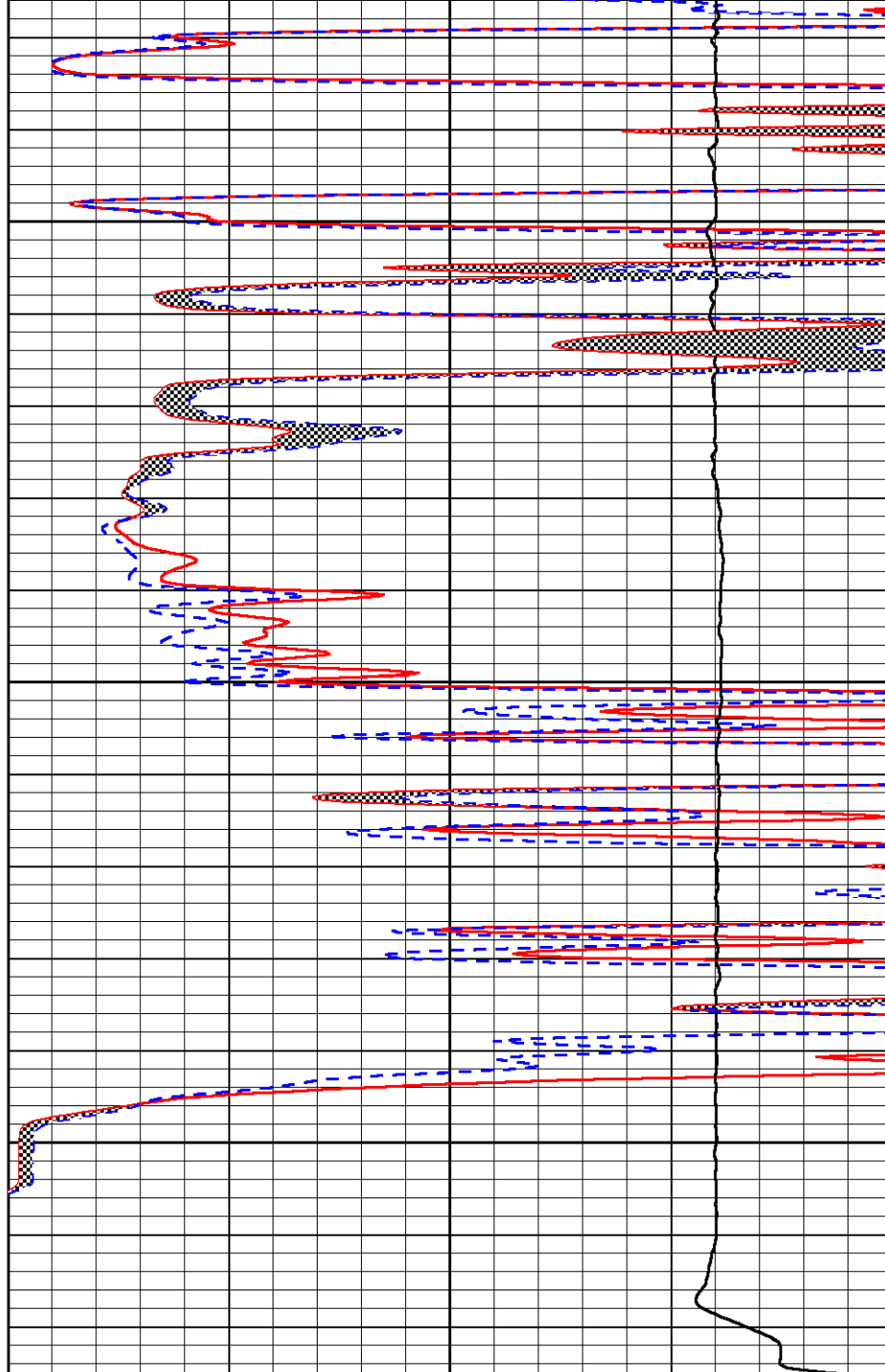


0	GAMMA RAY (GAPI)	150
6	MCAL (in)	16
2.875	mcals (in)	7.875
6	Bit Size (in)	16
-200	SP (mV)	0

4500

4550

4600



0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
10000	Line Weight (lb)	0

Calibration Report

Database File murfin_abell_ranch_b_4_31.db
Dataset Pathname stackmel/pass3.1
Dataset Creation Sat Jul 28 01:22:16 2018

Dual Induction Calibration Report

Serial-Model: 933 (HT)-PSI HIGH TEMP
Calibration Performed: Sun Jul 15 05:36:29 2018

Readings

References

Results

Loop:	Air	Loop		Air	Loop		Gain	Offset
Deep	167.000	835.000		0.000	255.000	mmho/m	0.700	-17.000
Medium	142.000	1349.000		0.000	255.000	mmho/m	0.565	-60.500
Microlog Calibration Report								
Serial-Model: Performed:				PSI-01-PSIML Sun Jul 15 07:40:28 2018				
Readings			References			Results		
	Zero	Cal		Zero	Cal		m	b
Normal	0.0000	1.0000		0.0000	1.0000	Ohm-m	24000.0000	-0.8000
Inverse	0.0000	1.0000		0.0000	1.0000	Ohm-m	30000.0000	-0.6000
Caliper	1.0001	1.1397		6.5000	18.5000	in	70.0000	-65.8100
Compensated Density Calibration Report								
Serial-Model: Source / Verifier: Master Calibration Performed:				817-947-M&W 16955B / 2ci Sun Jul 15 05:36:52 2018				
Master Calibration								
	Density			Far Detector		Near Detector		
Magnesium	1.755	g/cc		6127.15		5922.31	cps	
Aluminum	2.670	g/cc		1141.85		3762.09	cps	
Spine Angle = 74.89			Density/Spine Ratio = 0.526					
	Size			Reading				
Small Ring	4.50	in		1.02				
Large Ring	15.00	in		1.15				
Compensated Neutron Calibration Report								
Serial Number: Tool Model: Calibration Performed:				207-MW M&W SUN JUL 15 10:30:30 2018				
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:		Sun Jul 15 05:37:08 2018						
Calibrator Value:		1.0		GAPI				
Background Reading:		0.0		cps				
Calibrator Reading:		1.0		cps				
Sensitivity:		0.6000		GAPI/cps				



Company	MURFIN DRILLING CO, INC.
Well	ABELL RANCH "B" #4-31
Field	GAELAND WEST
County	GOVE
State	KANSAS