



PIONEER
Pioneer Energy Services

MICRORESISTIVITY LOG

Company **RICHLAN DRILLING**
Well **HILLERY #1**
Field **WILDCAT**
County **LOGAN** State **KANSAS**

Location: API #: 15-109-21550-00-00

Other Services

SEC 19 TWP 15S RGE 34W
2300' FSL & 2500' FEL

CNL/CDL
DIL/SON

Permanent Datum GROUND LEVEL Elevation 3137'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 3147'
D.F. N/A
G.L. 3137'

Date 6/15/2018

Run Number	ONE	
Depth Driller	4800'	
Depth Logger	4796'	
Bottom Logged Interval	4795'	
Top Log Interval	3600'	
Casing Driller	8.625" @ 374'	
Casing Logger	373'	
Bit Size	12.25"	
Type Fluid in Hole	CHEMICAL	
Salinity, ppm CL	5500	
Density / Viscosity	9.4 57	
pH / Fluid Loss	10.0 9.6	
Source of Sample	FLOWLINE	
Rm @ Meas. Temp	0.80 @ 86	
Rmt @ Meas. Temp	0.60 @ 86	
Rmc @ Meas. Temp	1.08 @ 86	
Source of Rmt / Rmc	CHARTS	
Rm @ BHT	@	
Operating Rig Time	4 HOURS	
Max Rec. Temp. F	124	
Equipment Number	91	
Location	HAYS	
Recorded By	IAN MABB	
Witnessed By	JIM MUSGROVE	

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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.

PENCE, KS.
3 MILES WEST TO COUNTY LINE
NORTH 6 MILES, WEST INTO

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

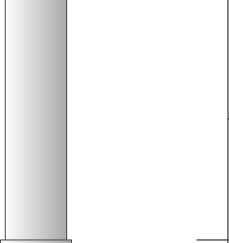
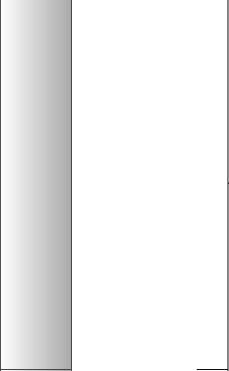
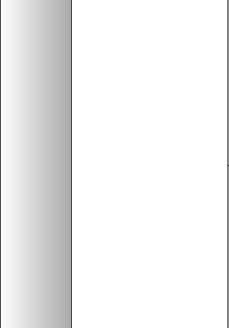
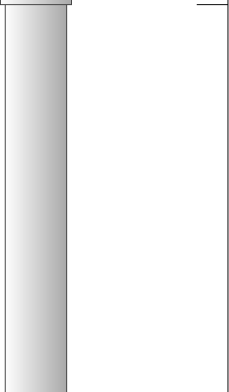
Engineer: IAN MABB
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

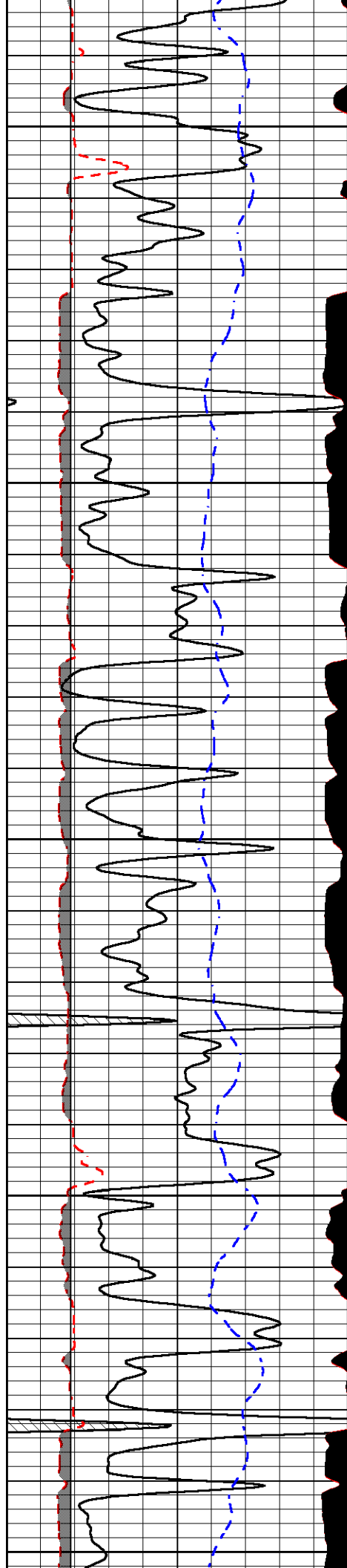
Primary Witness: JIM MUSGROVE
Secondary Witness:
Secondary Witness:
Secondary Witness:

Top - Bottom

M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	140	2
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
6	85	0	5.5	0	4796	124	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 (PSI 971 HT)	18.50	3.50	220.00
CILD	8.00						
CILM	4.70						
SP	0.20						
Dataset: richlan_hillery_1.db: field/well/stkmel/pass3.1 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in							



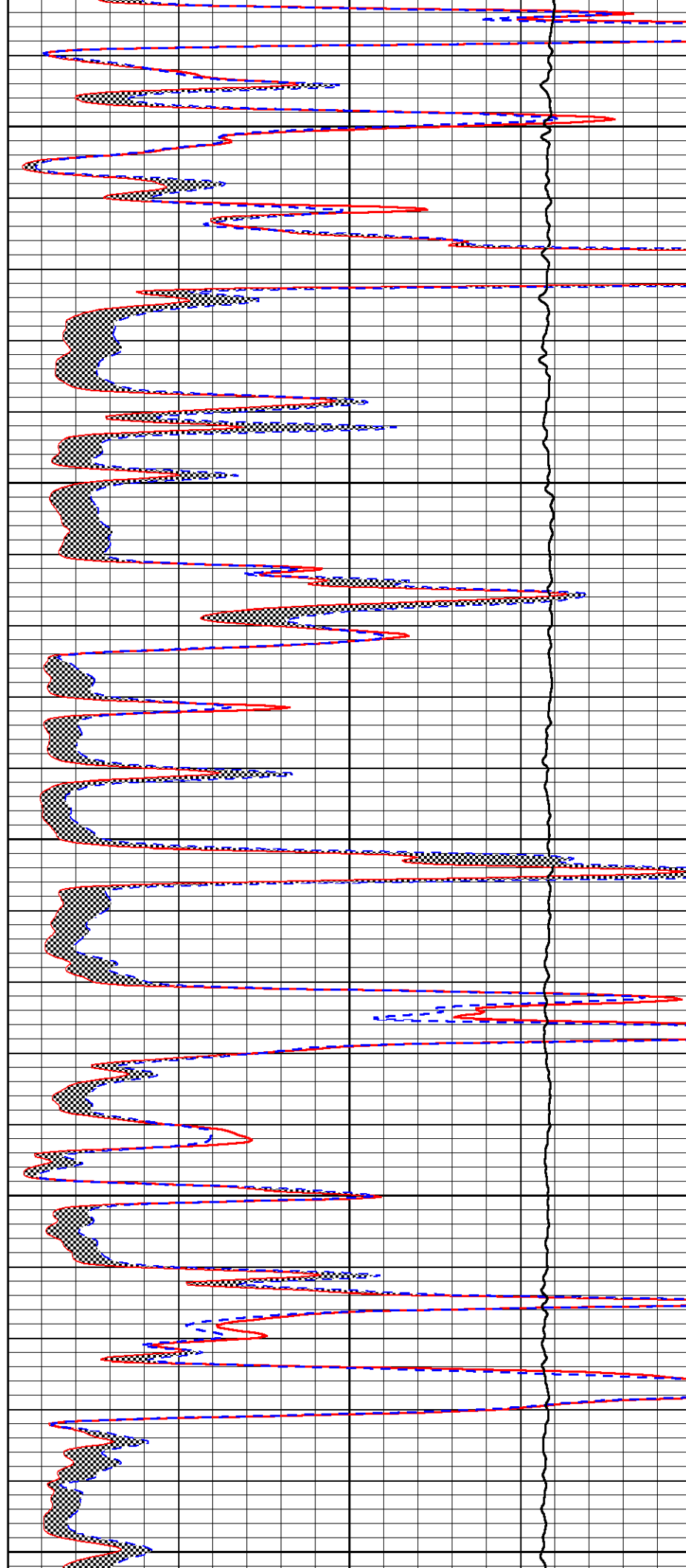
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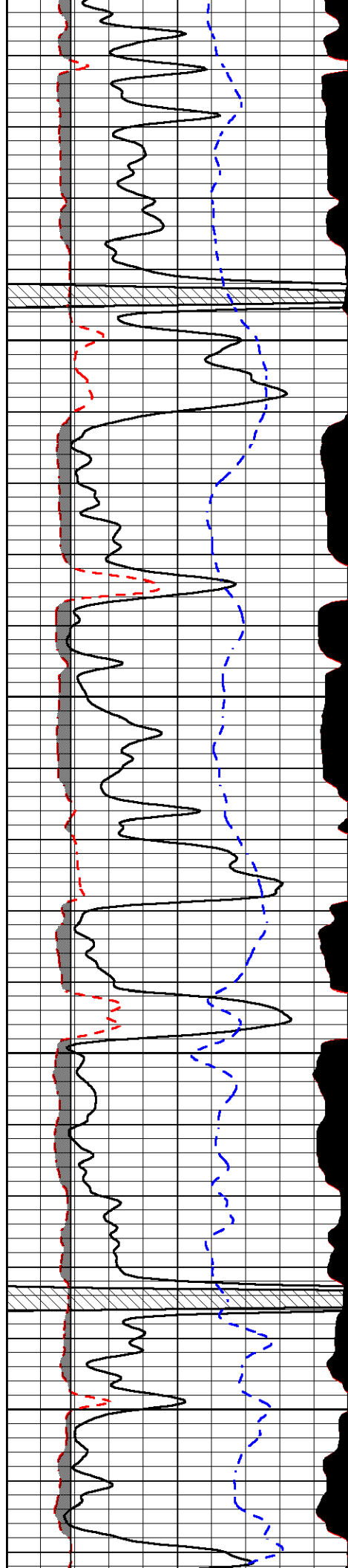
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3800

3850

3900



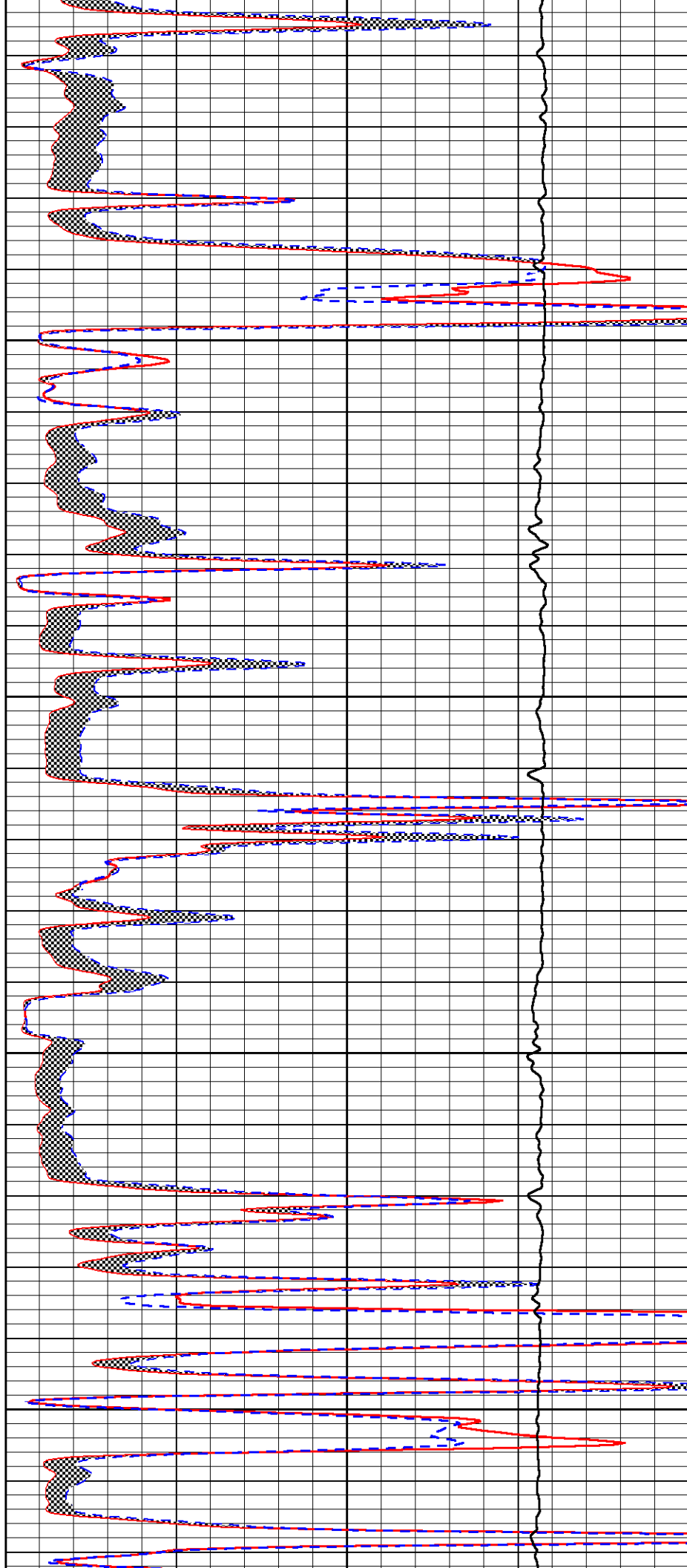


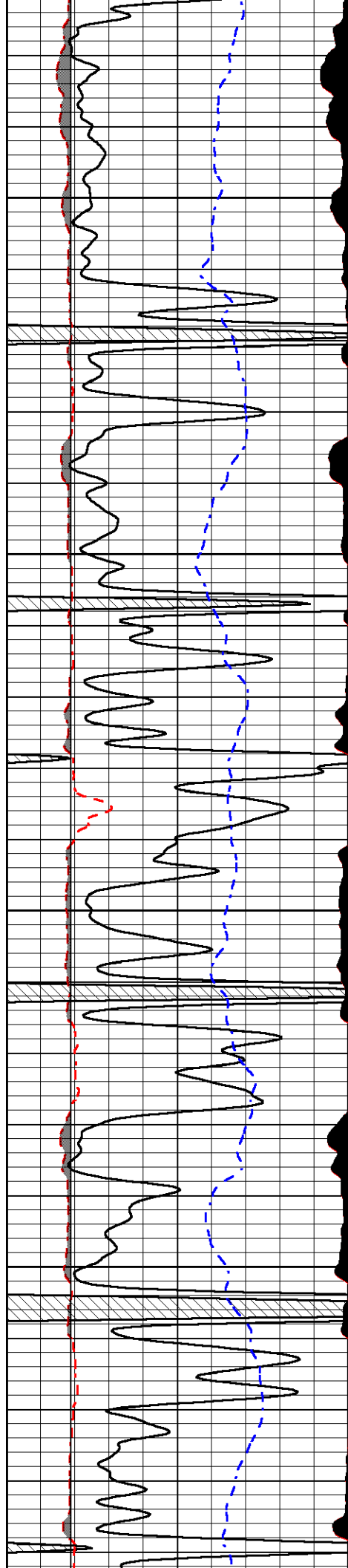
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4000

4050

4100



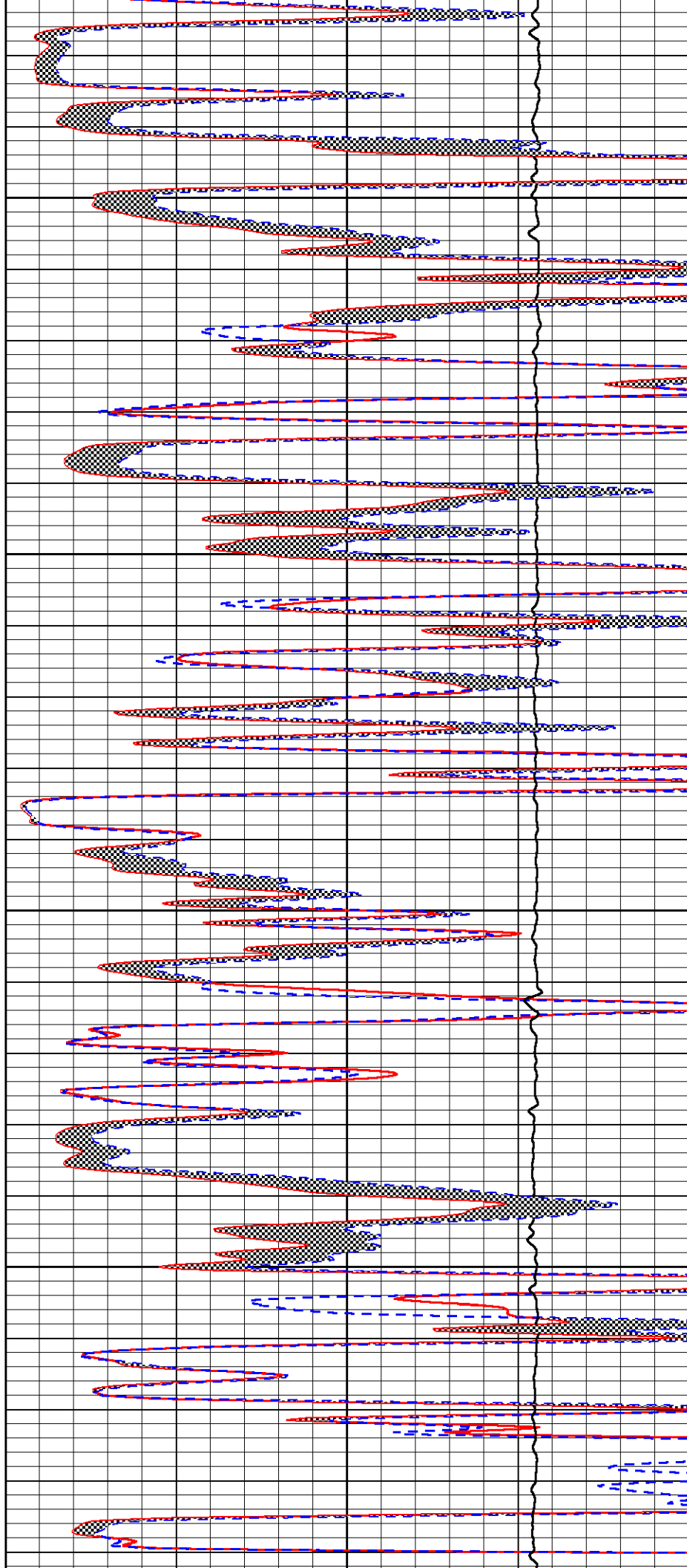


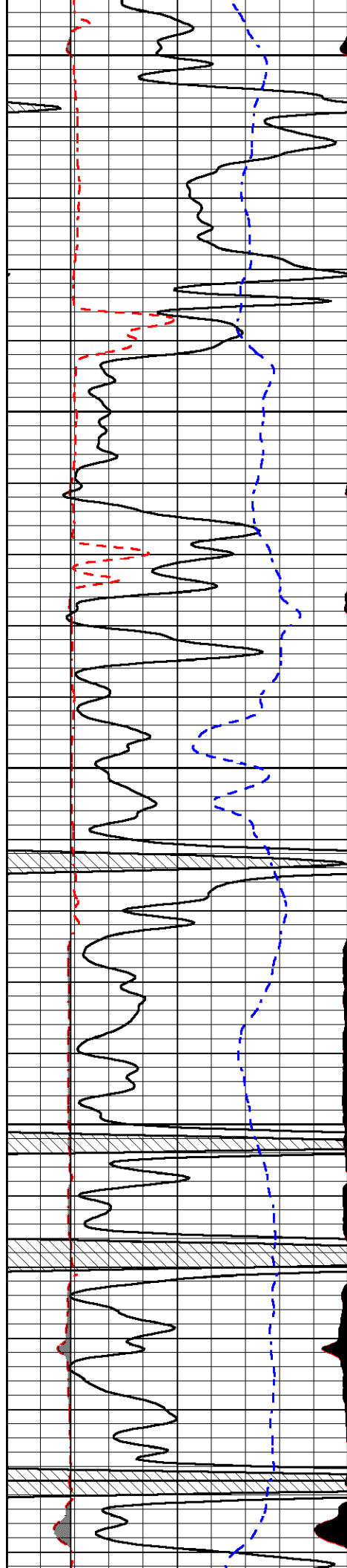
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4200

4250

4300





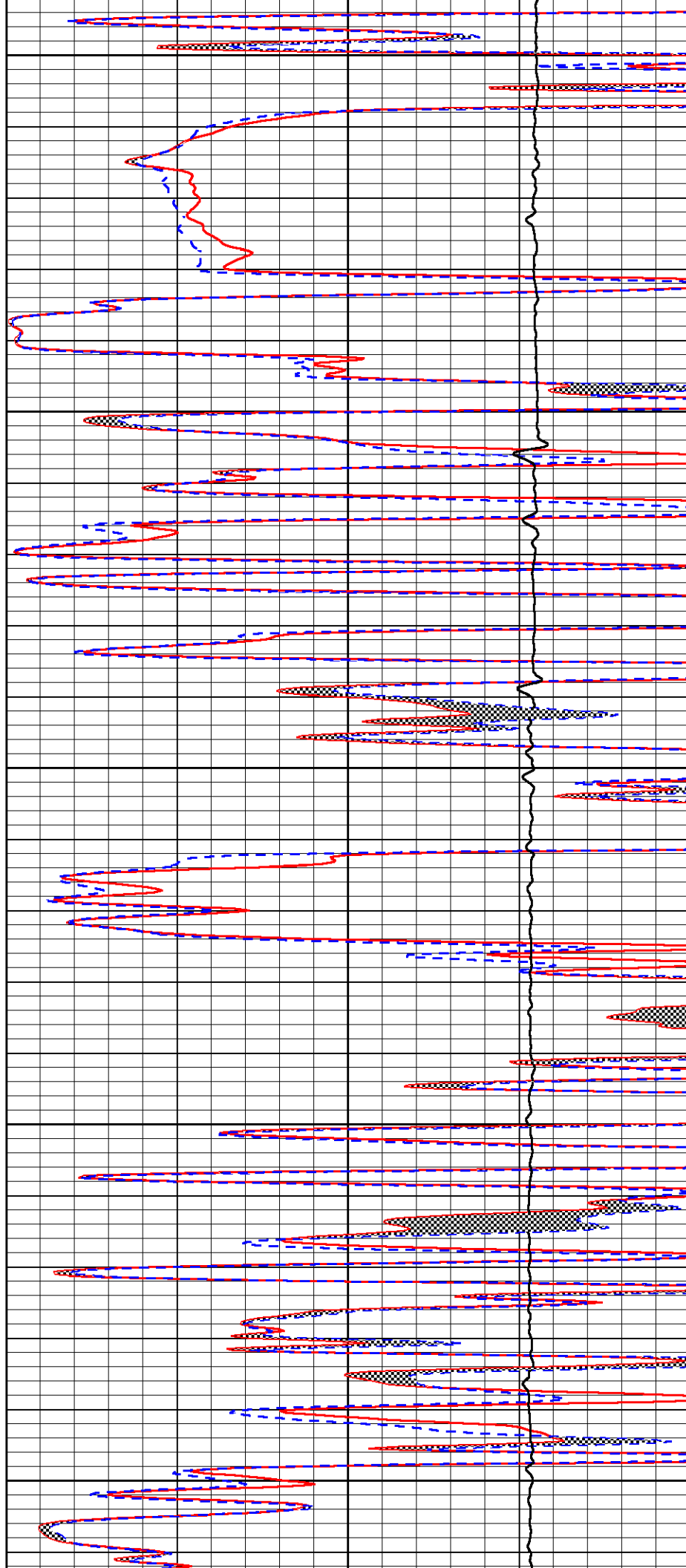
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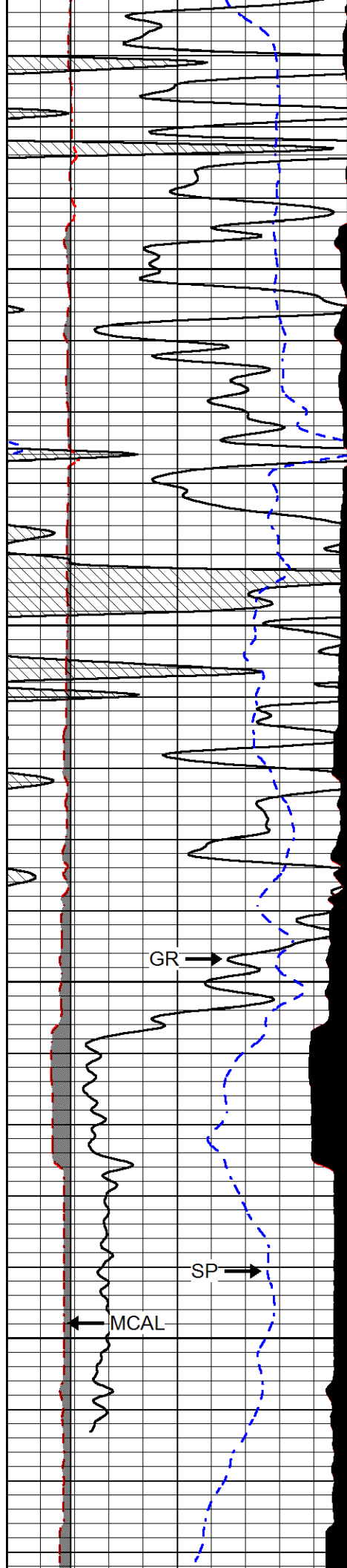
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4450

4500

4550





4600

4650

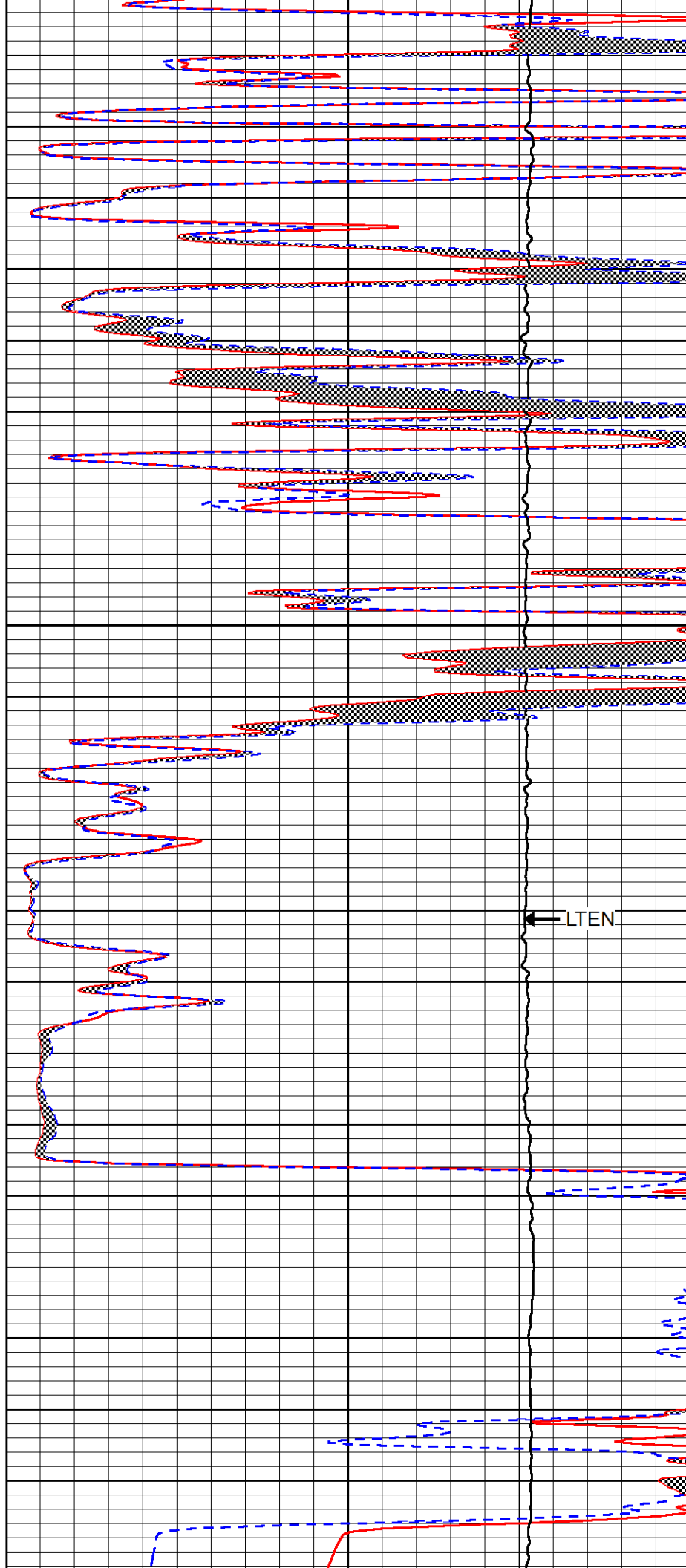
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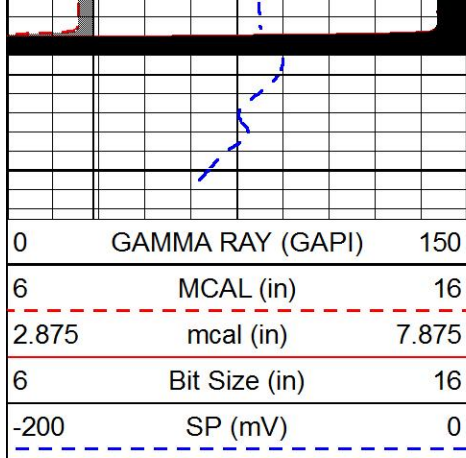
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SP

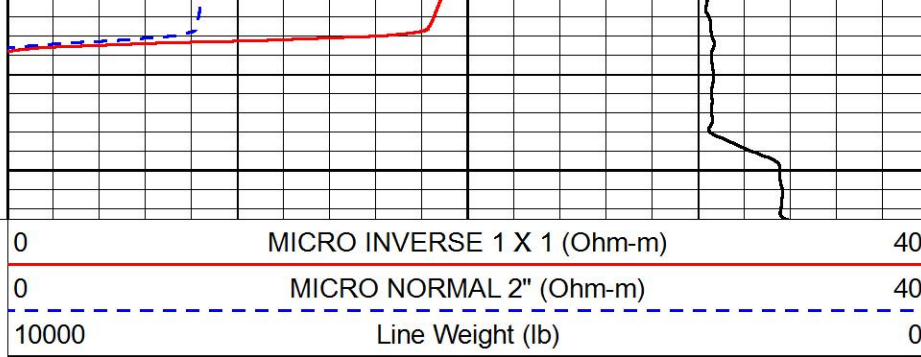
MCAL



LTEN

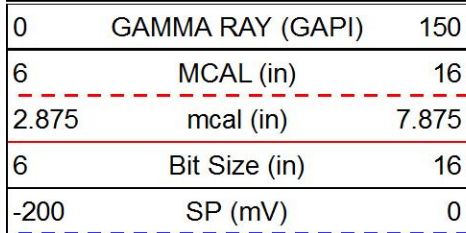


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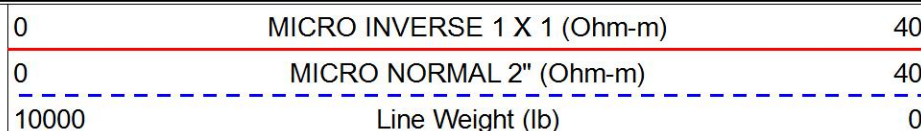


REPEAT SECTION

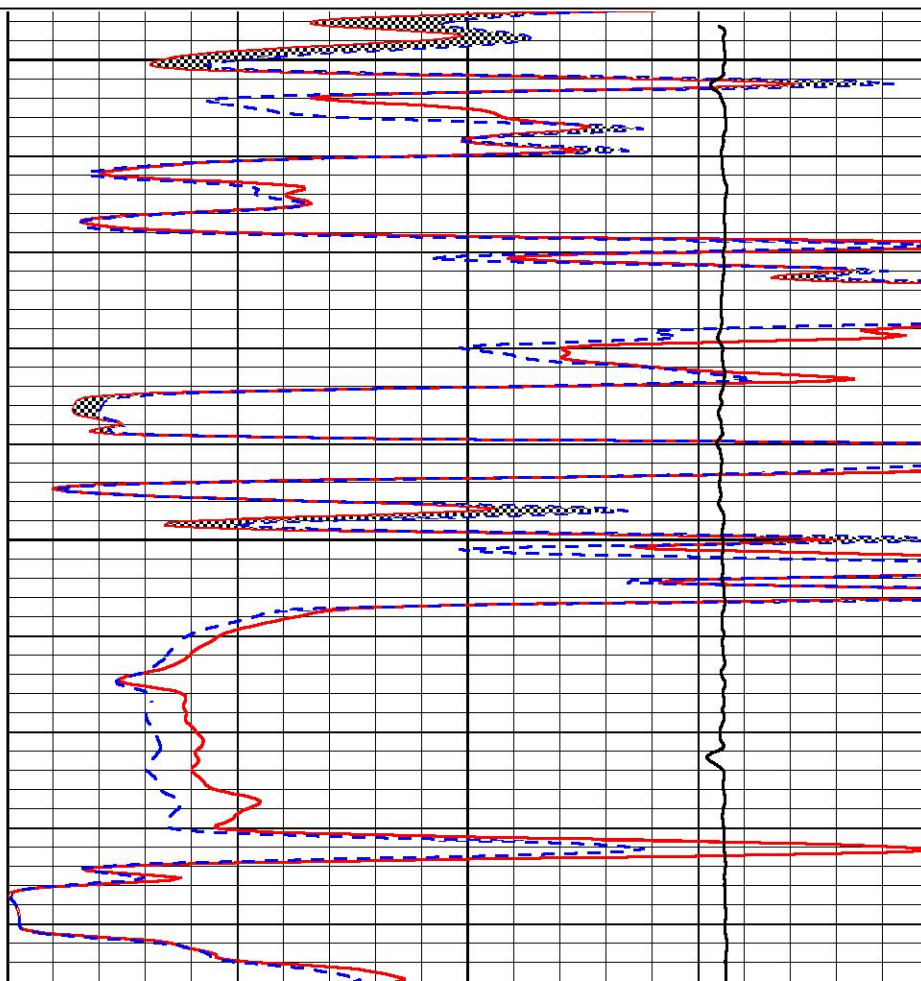
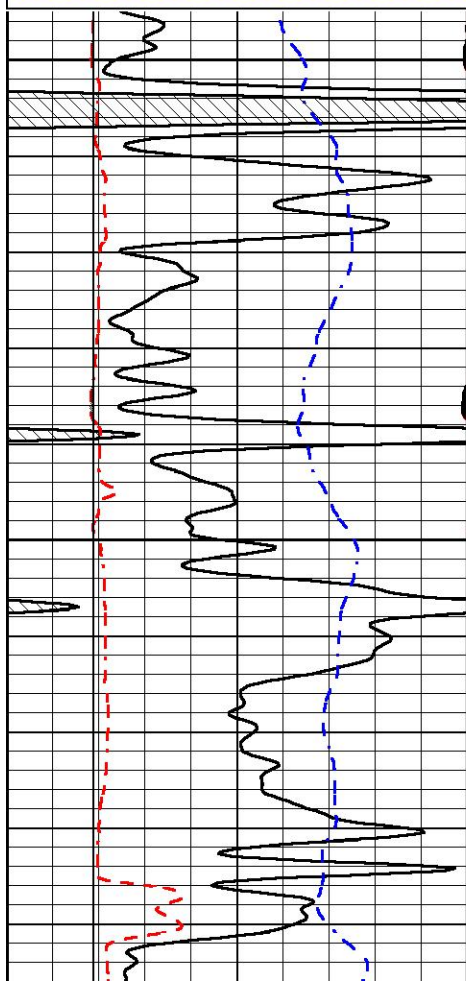
Database File richlan_hillery_1.db
 Dataset Pathname stkmel/pass2.1
 Presentation Format micro
 Dataset Creation Fri Jun 15 13:05:15 2018
 Charted by Depth in Feet scaled 1:240

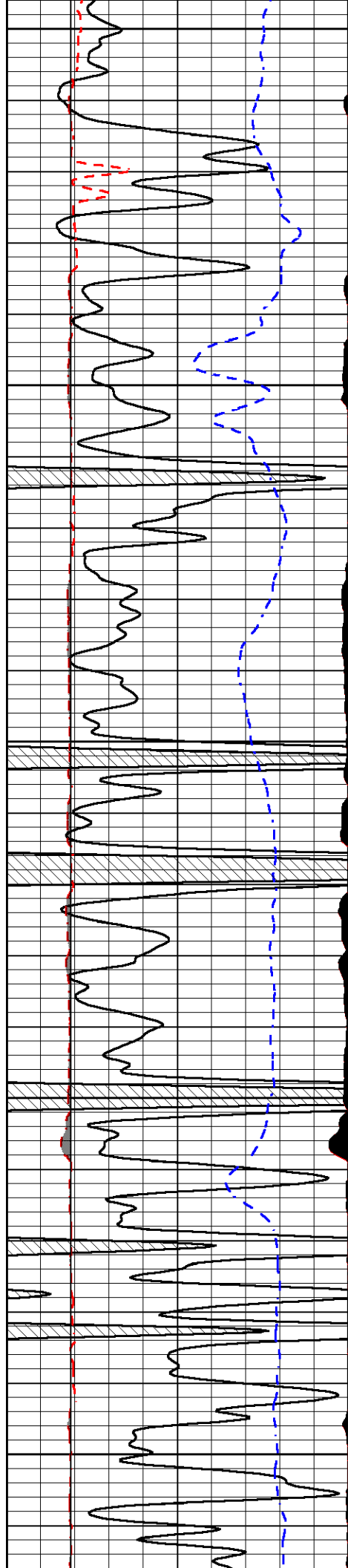


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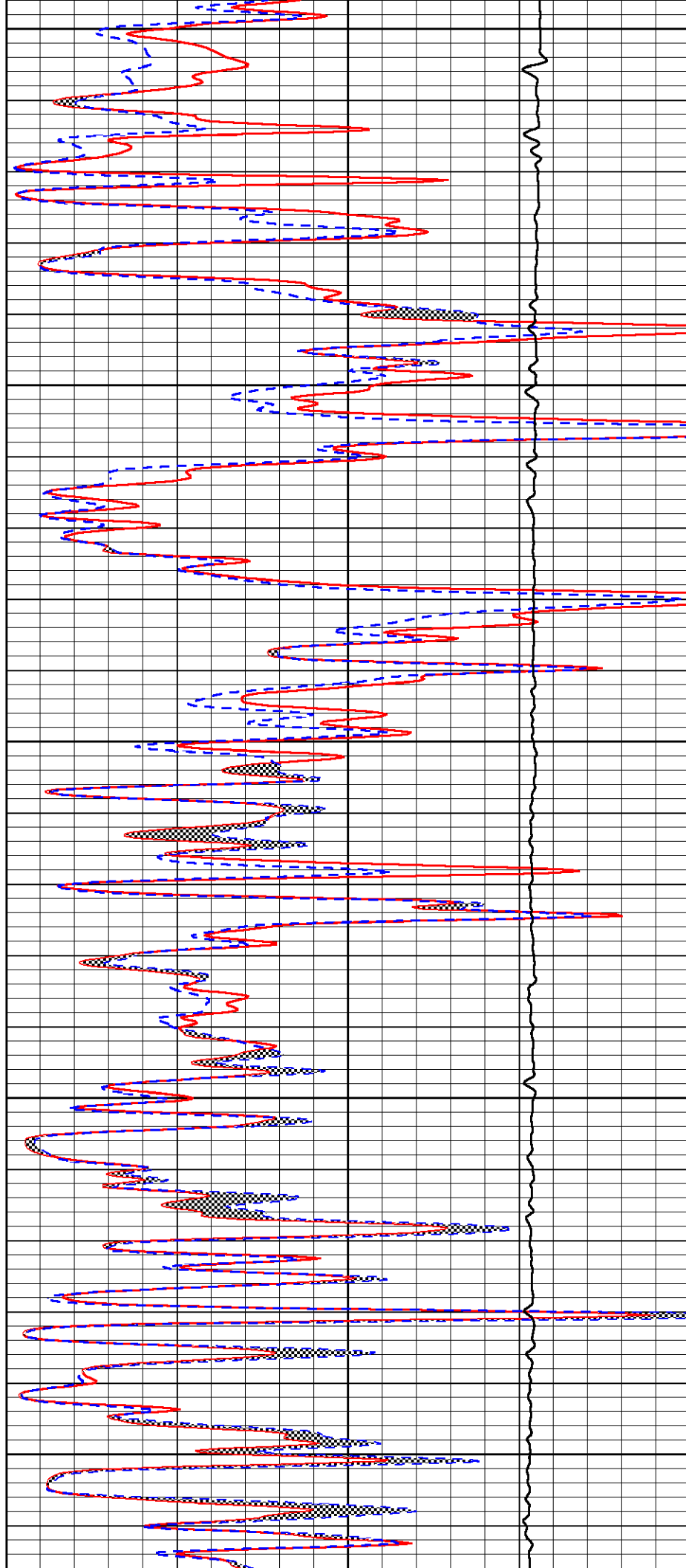
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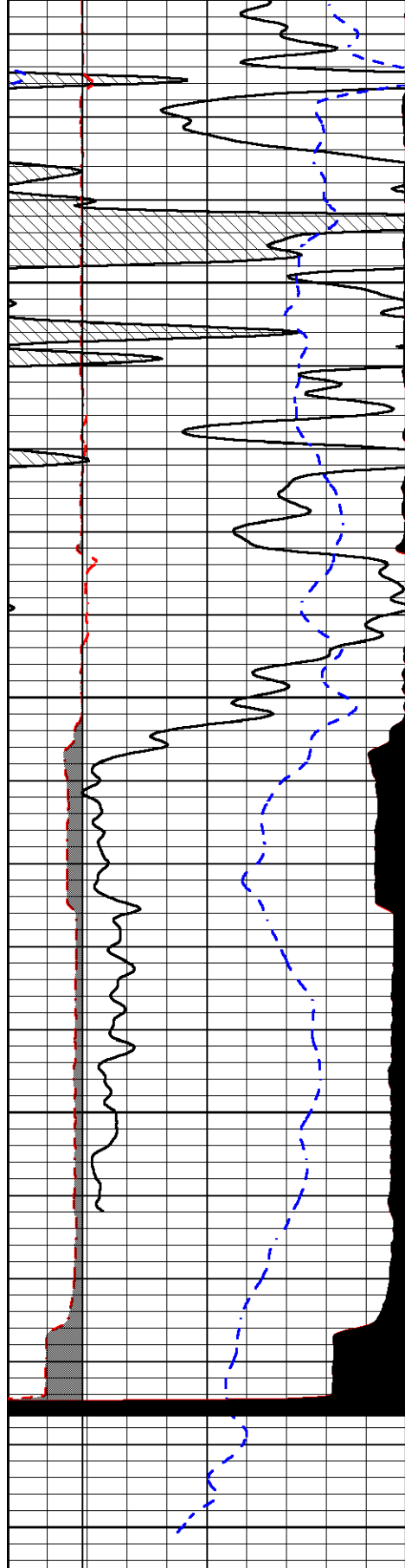
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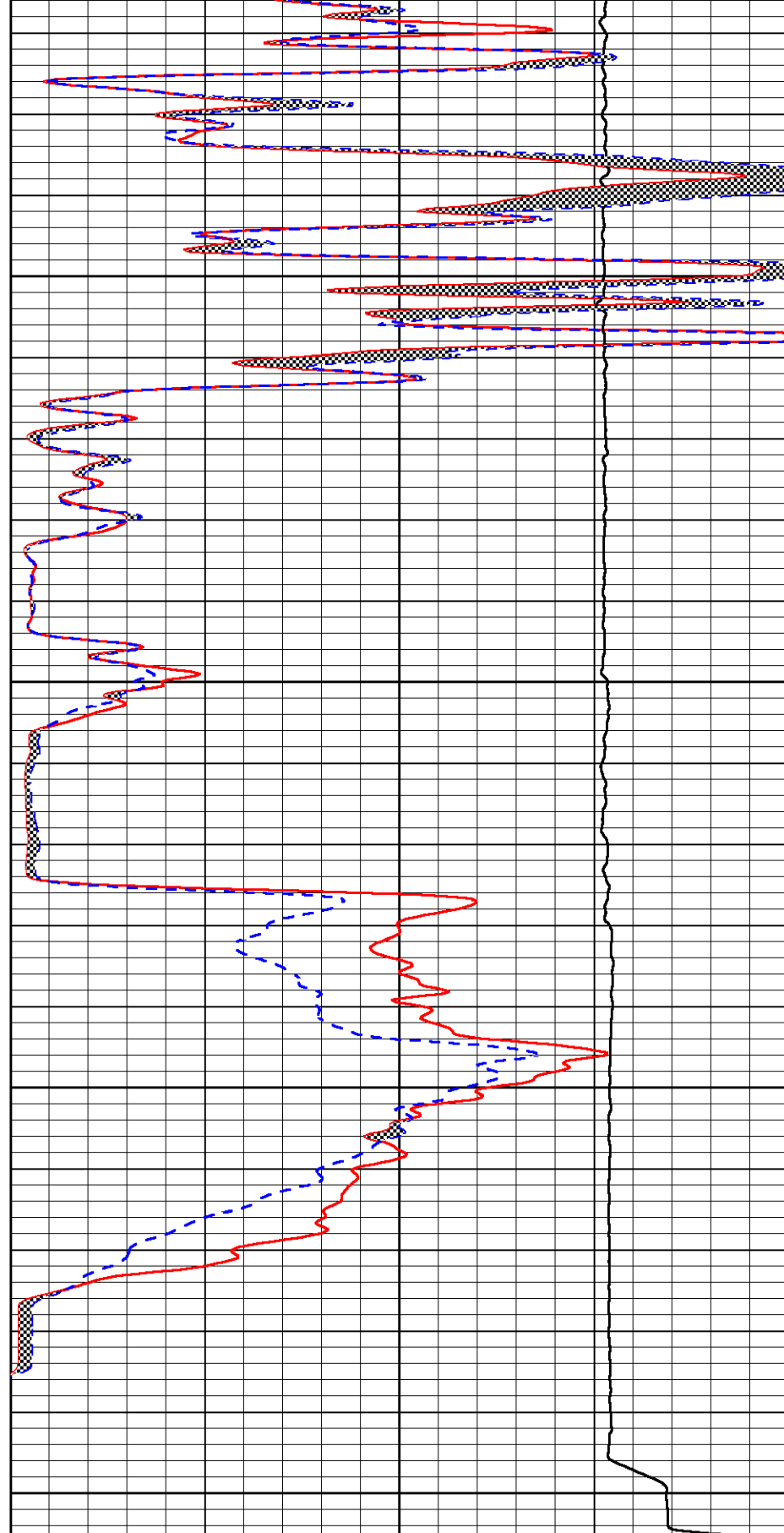
4650

4700

4750

4800

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

Calibration Report

Database File richlan_hillery_1.db
 Dataset Pathname stkmel/pass3.1
 Dataset Creation Fri Jun 15 14:04:20 2018

Dual Induction Calibration Report

Serial-Model: PSI 971 HT-PSI HIGH TEMP
 Calibration Performed: Sun May 27 00:33:10 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.800	mmho/m	0.430	-30.000
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.375	-30.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Sun May 27 00:33:27 2018

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	39000.0000	-0.8000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	40000.0000	-0.4000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-66.7000

Compensated Density Calibration Report

Serial-Model: 817-947-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Tue May 01 14:00:17 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	6127.15	5922.31	cps
Aluminum	2.650	g/cc	1141.85	3762.09	cps
Spine Angle = 74.89			Density/Spine Ratio = 0.514		
	Size		Reading		
Small Ring	4.50	in	1.02		
Large Ring	15.00	in	1.15		

Compensated Neutron Calibration Report

Serial Number: 207-MW
 Tool Model: M&W
 Calibration Performed: MON APR 16 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:	Mon Jan 15 11:20:44 2018	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.6000	GAPI/cps



Company	RICHLAN DRILLING
Well	HILLERY #1
Field	WILDCAT
County	LOGAN
State	KANSAS