



PIONEER
Pioneer Energy Services

MICRORESISTIVITY LOG

Company COBALT ENERGY, LLC		Company COBALT ENERGY, LLC	
Well WETZEL UNIT A #1-14		Well WETZEL UNIT A #1-14	
Field NA		Field NA	
County FORD		County FORD	
State KANSAS		State KANSAS	
Location: API #: 15-057-21009-00-00		Other Services	
Permanent Datum NE NE NW SW		CNL/CDL	
Log Measured From 2389' FSL & 1268' FWL		DIL	
Drilling Measured From SEC 14 TWP 26S RGE 21W		Elevation	
GROUND LEVEL Elevation 2275'		K.B. 2282'	
KELLY BUSHING		D.F. N/A	
KELLY BUSHING		G.L. 2275'	
Date	5/26/2019		
Run Number	TWO		
Depth Driller	4895'		
Depth Logger	4898'		
Bottom Logged Interval	4897'		
Top Log Interval	3800'		
Casing Driller	8.625" @ 371'		
Casing Logger	371'		
Bit Size	7.875"		
Type Fluid in Hole	CHEMICAL		
Salinity, ppm CL	5500		
Density / Viscosity	9.4 47		
pH / Fluid Loss	10.0 9.2		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	0.40 @ 60		
Rmf @ Meas. Temp	0.30 @ 60		
Rmc @ Meas. Temp	0.54 @ 60		
Source of Rmf / Rmc	CHARTS		
Rm @ BHT	0.19 @ 125		
Operating Rig Time	3 HOURS		
Max Rec. Temp. F	125		
Equipment Number	P-24		
Location	HAYS		
Recorded By	D. SCHMIDT		
Witnessed By	LARRY NICHOLSON		

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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.

OFFERLE,
EAST TO 20 AVE, SOUTH TO THE T, 1/2 EAST,
SOUTH TO V RD, WEST TO 340 RD, 1/4 NORTH,
EAST INTO

Log Measured From: KELLY BUSHING 7 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: LARRY NICHOLSON
Secondary Witness:
Secondary Witness:
Secondary Witness:

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
MCAL MI MN	1.00 1.00 1.00		ML-Armadillo (ARM001) Pengo Mandrel & Armadillo ML Electronics (2014)	5.50	3.50	100.00
Dataset: cobalt_wetzel unit a 1-14.db: field/well/MEL/pass2 Total length: 5.50 ft Total weight: 100.00 lb O.D.: 3.50 in						

Log Variables

DatabaseC:\ProgramData\Warrior\Data\cobalt_wetzel unit a 1-14.db
Dataset field/well/STACK/pass3.3/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	125	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	630	60	Off	4897

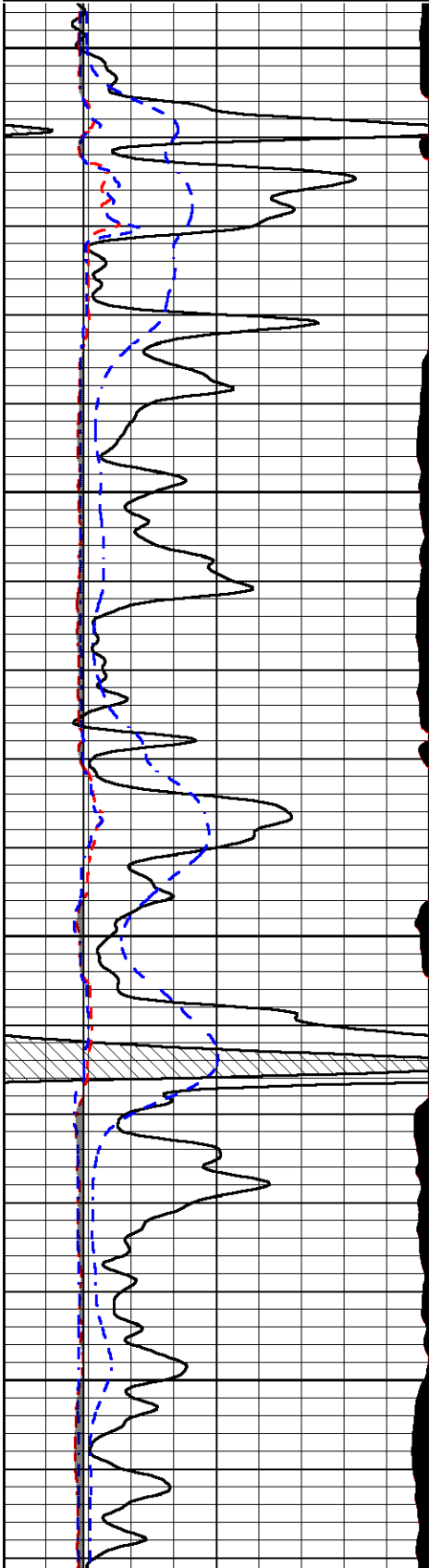


MAIN PASS

Database File	cobalt_wetzel unit a 1-14.db
Dataset Pathname	STACK/pass4.1

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

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

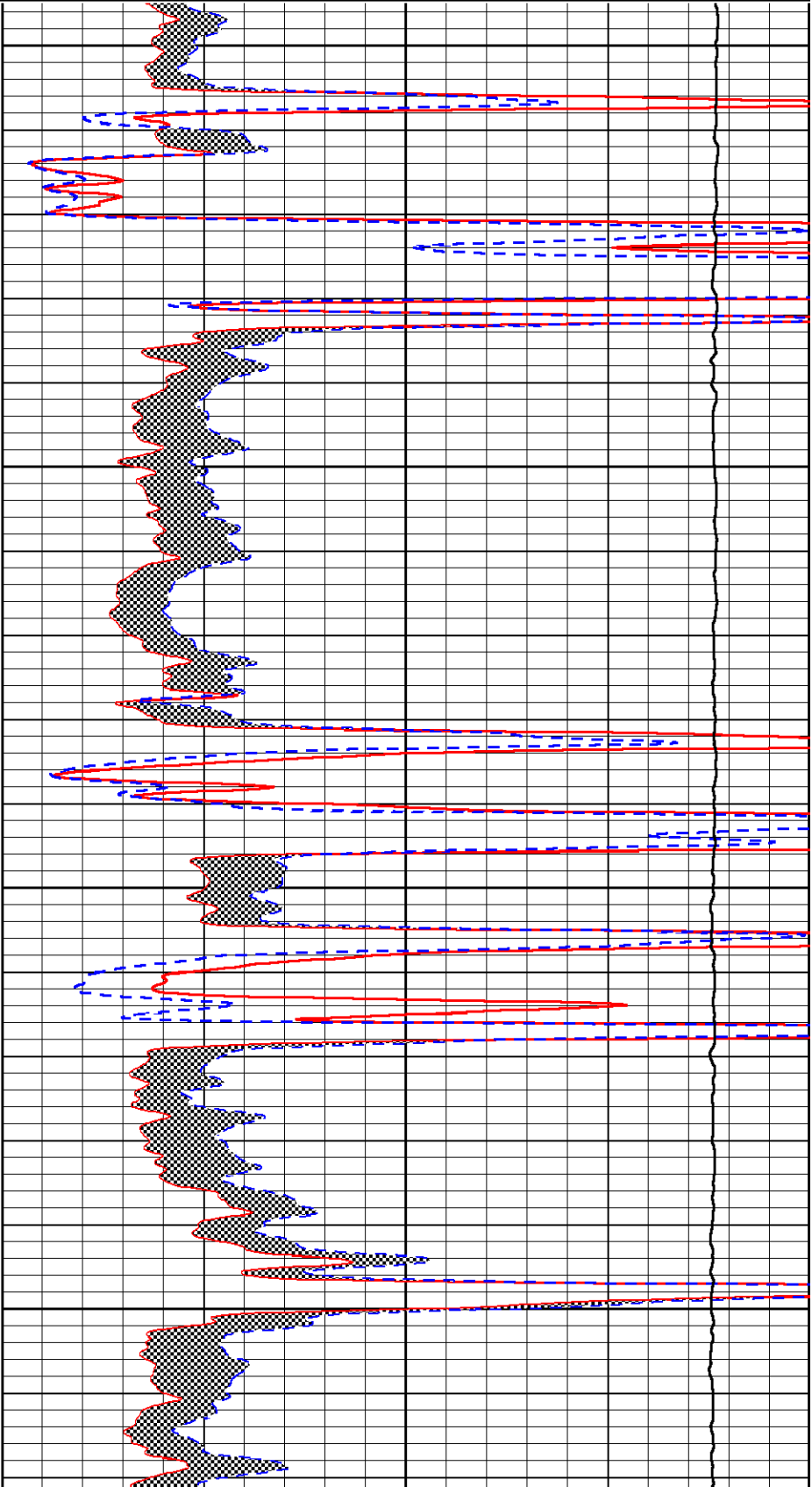


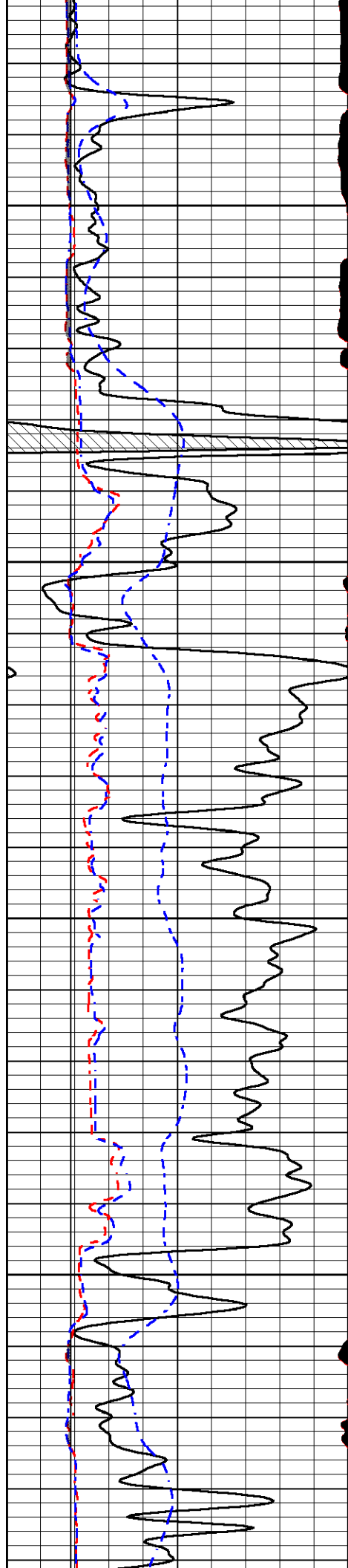
3800

3850

3900

3950



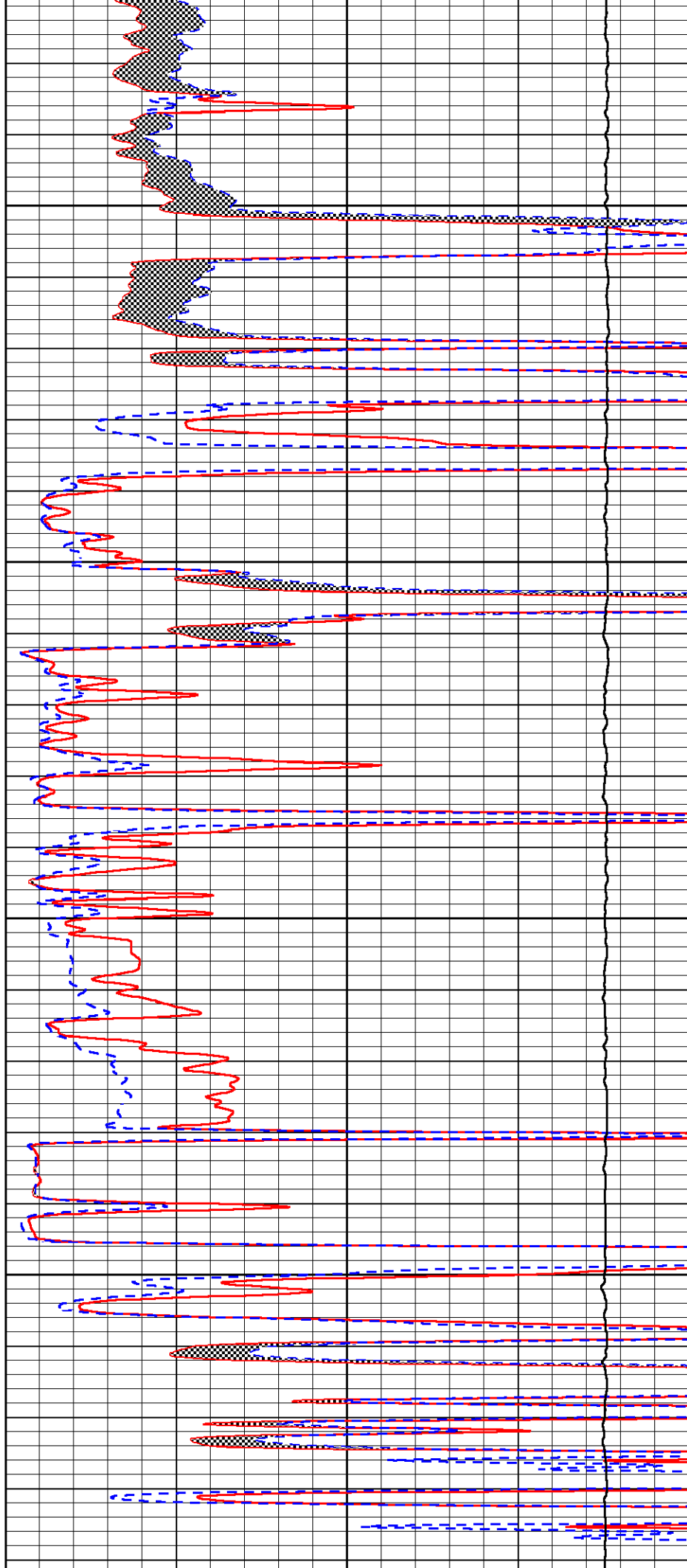


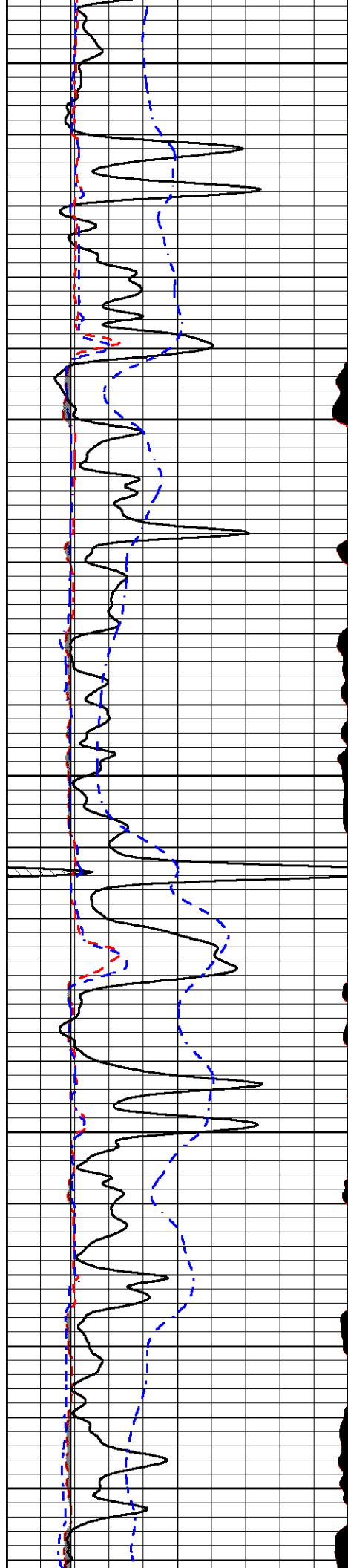
4000

4050

4100

4150





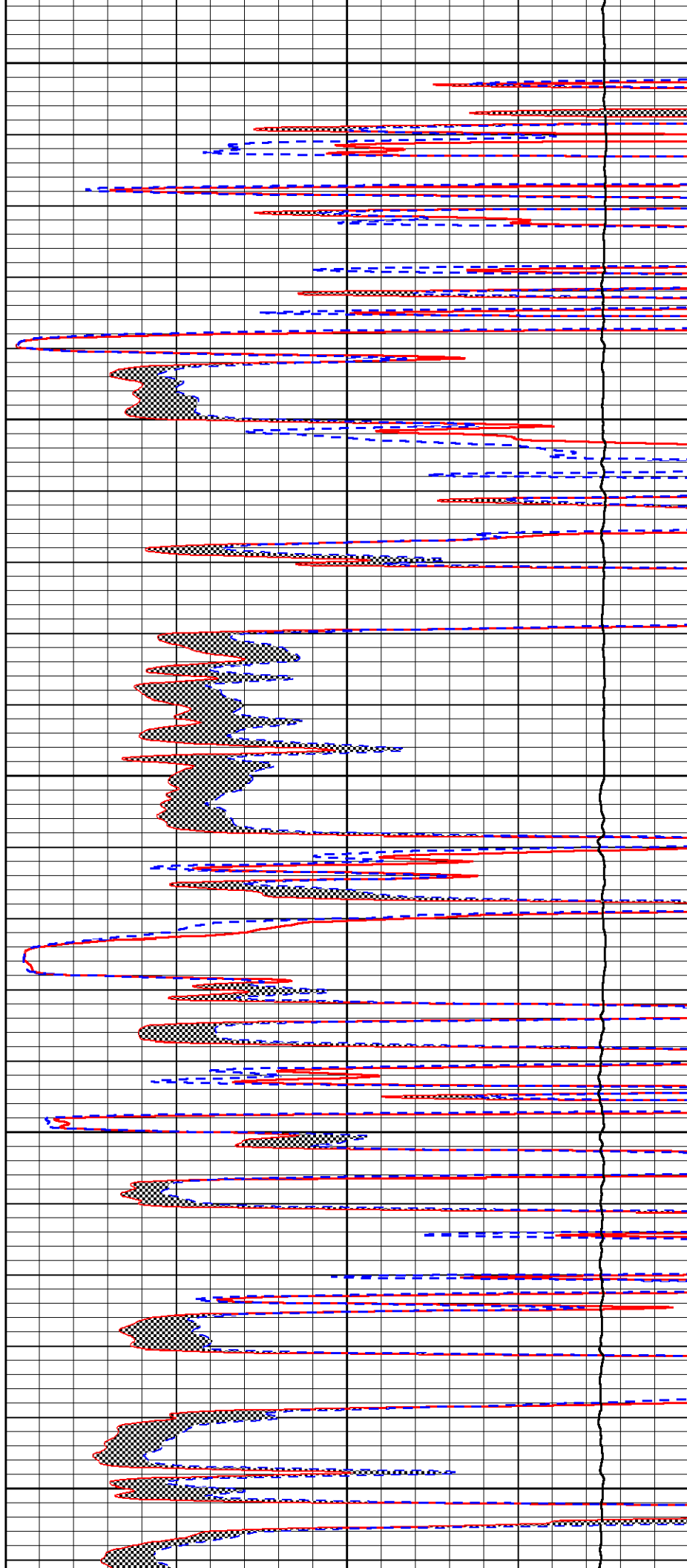
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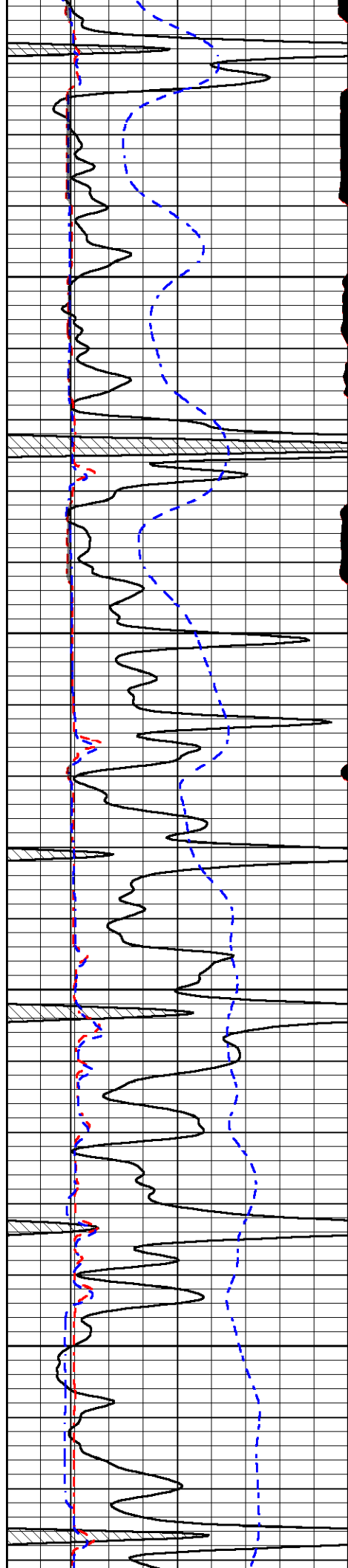
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4300

4350

4400



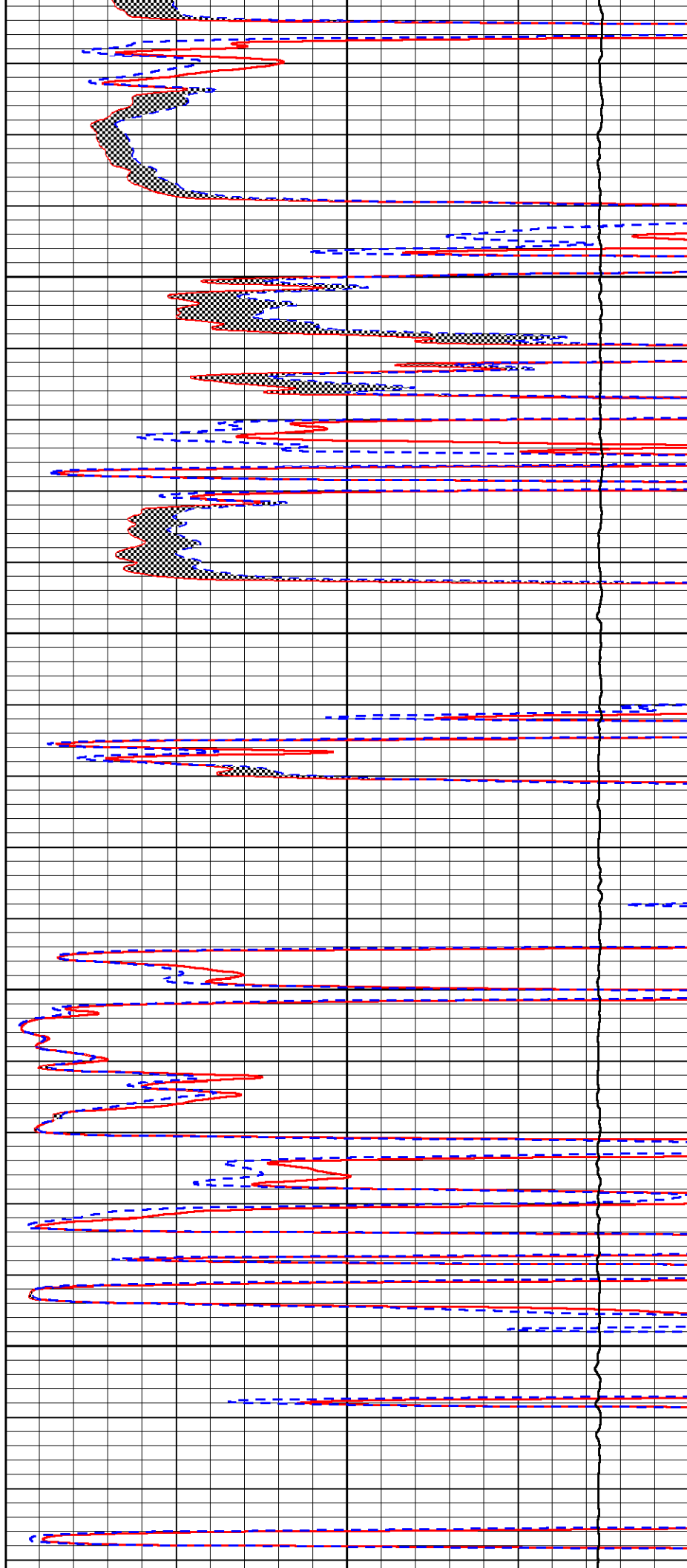


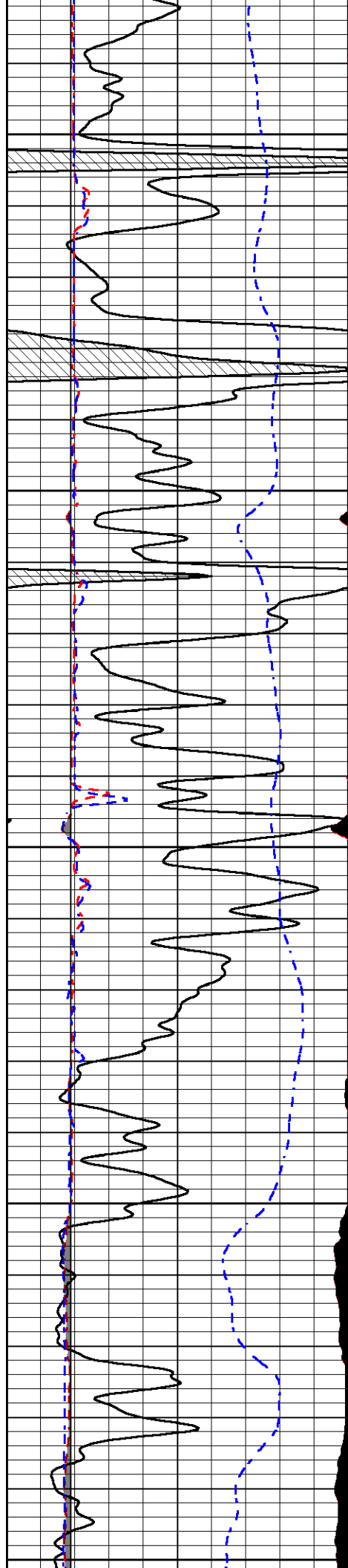
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4500

4550

4600





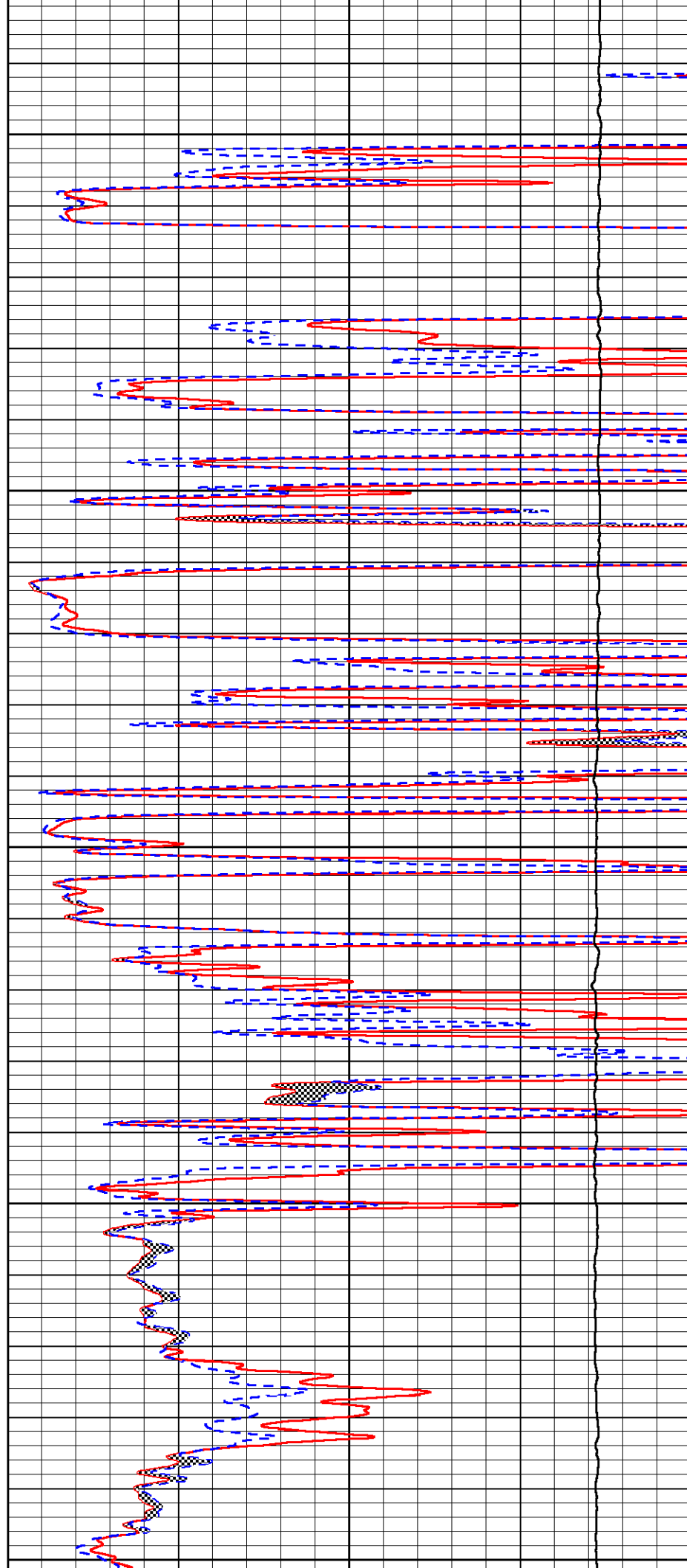
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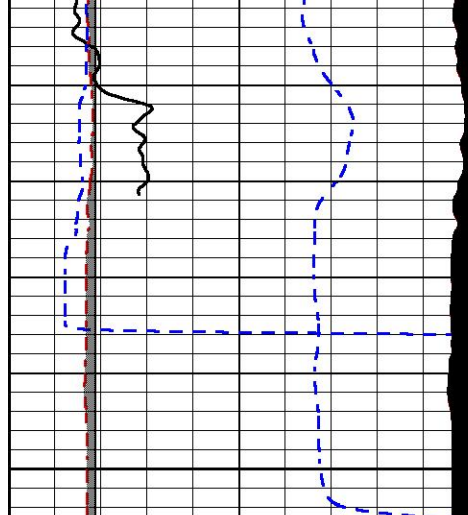
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4750

4800

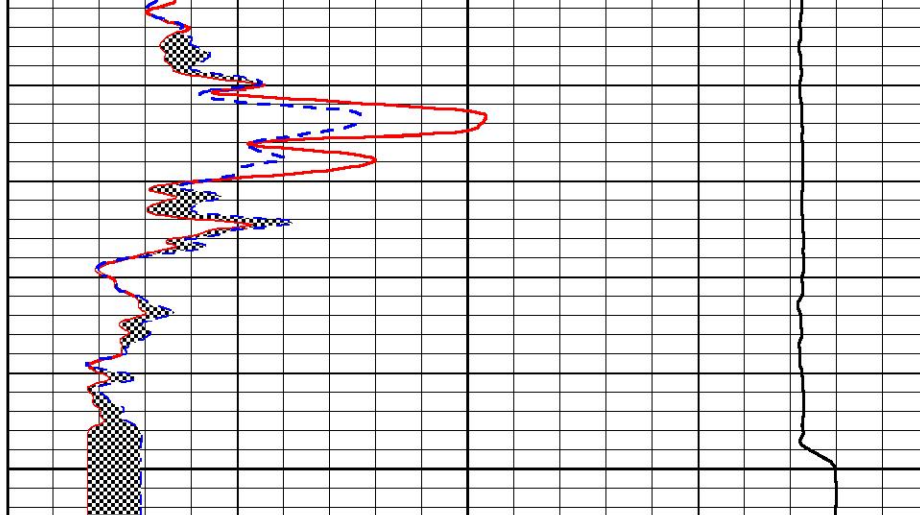
4850





4900

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



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

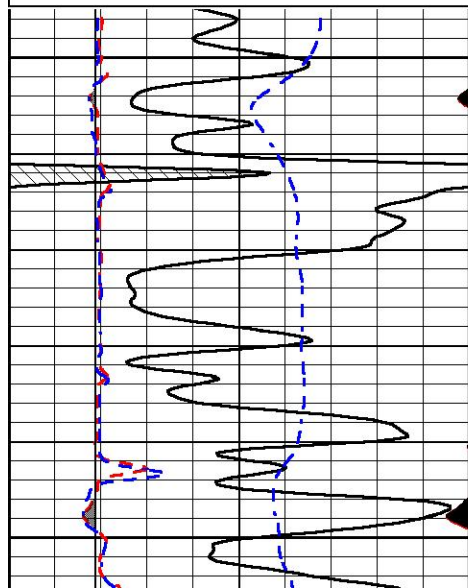


REPEAT SECTION

Database File cobalt_wetzel unit a 1-14.db
 Dataset Pathname STACK/pass2.1
 Presentation Format _micro
 Dataset Creation Sun May 26 03:00:07 2019
 Charted by Depth in Feet scaled 1:240

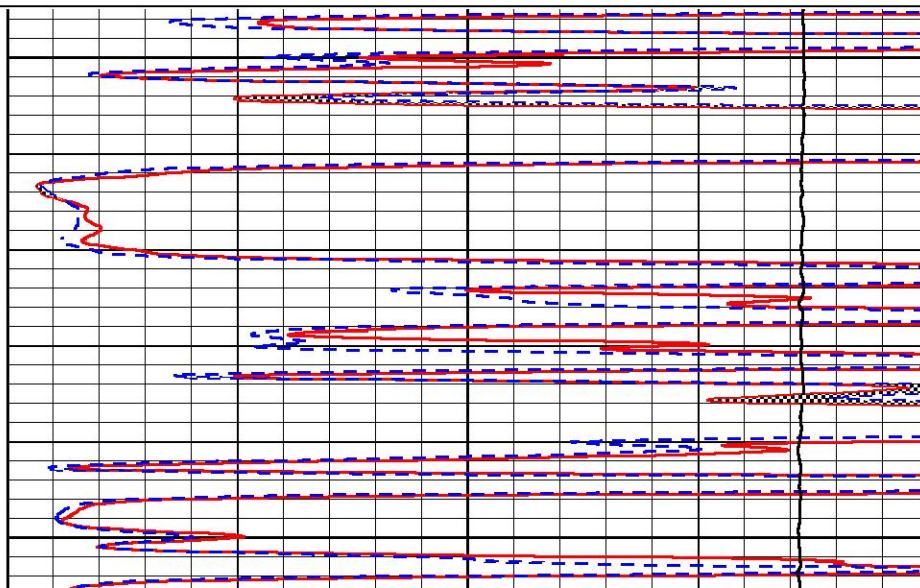
0	GAMMA RAY (GAPI)	150
6	MCAL (in)	16
2.875	mcal (in)	7.875
6	Bit Size (in)	16
-200	SP (mV)	0
6	dcal (in)	16

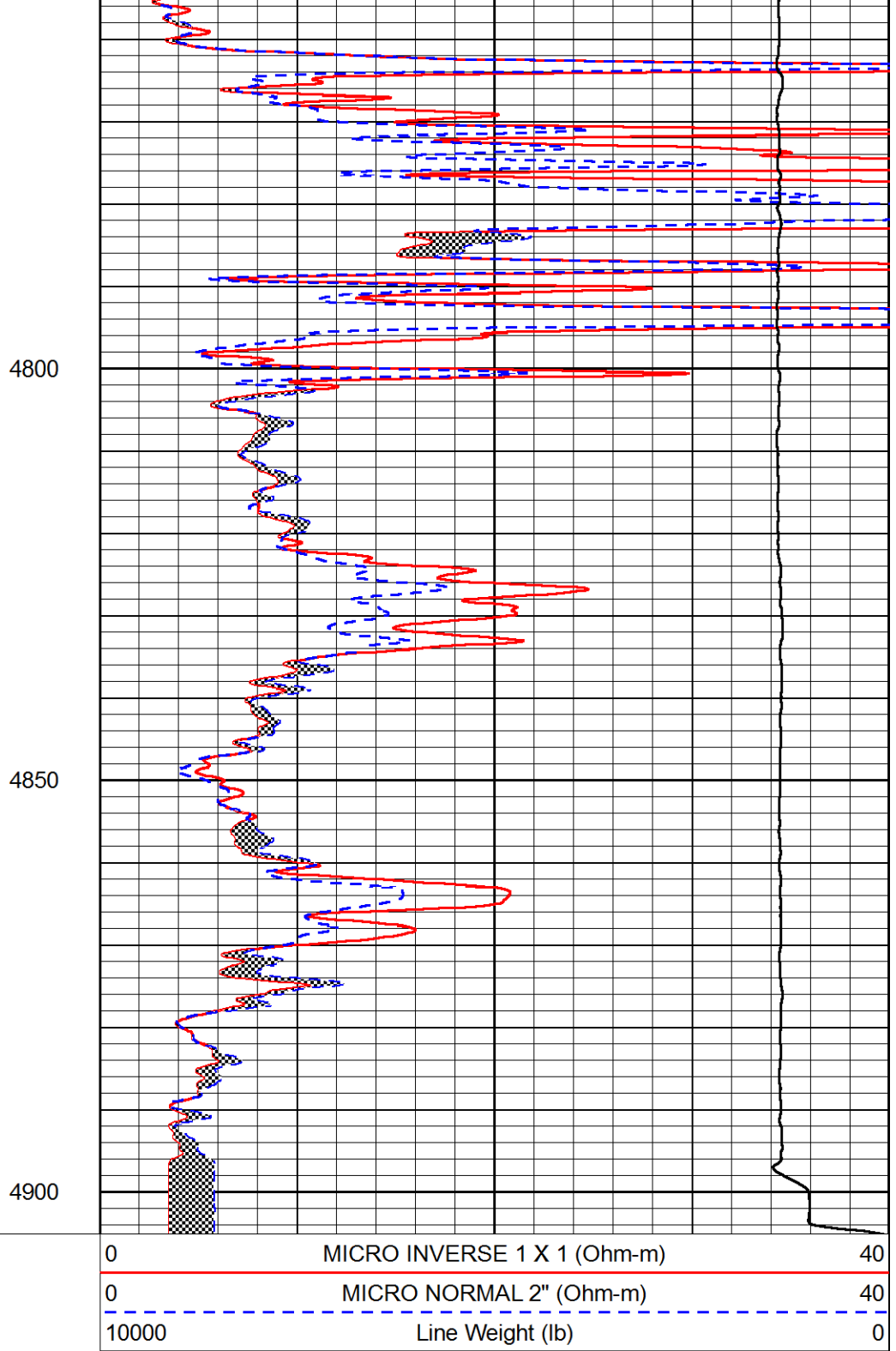
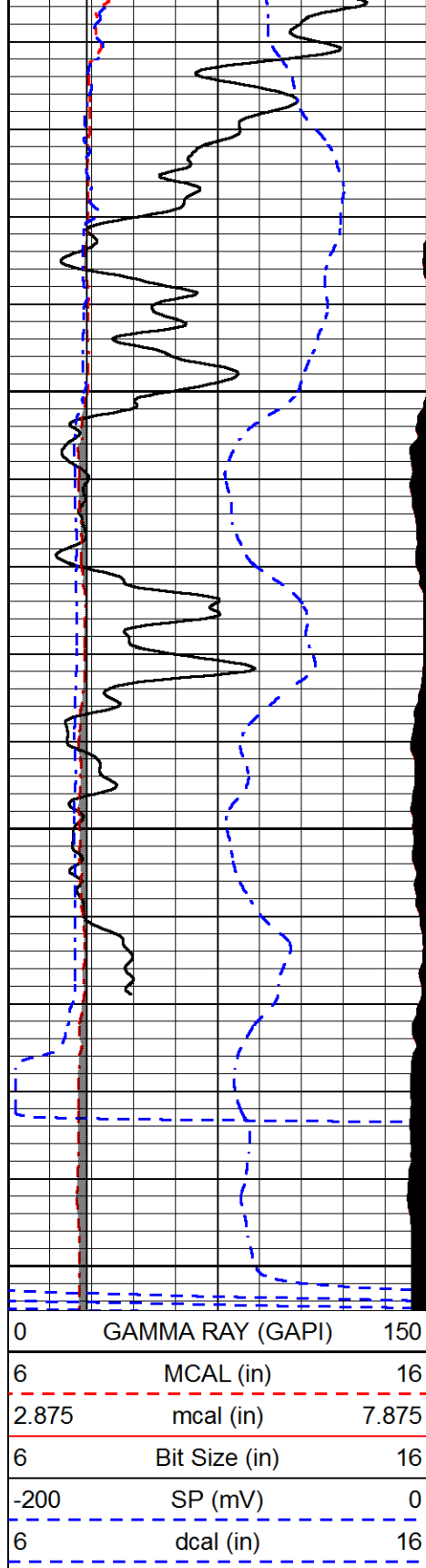
0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
10000	Line Weight (lb)	0



4700

4750





Calibration Report

Database File cobalt_wetzel unit a 1-14.db
 Dataset Pathname STACK/pass3.3
 Dataset Creation Sun May 26 02:27:45 2019

Dual Induction Calibration Report

Serial-Model: 967 (HT)-PSI HIGH TEMP
 Calibration Performed: Fri Apr 12 09:37:07 2019

		Readings		References			Results	
Loop:	Air	Loop		Air	Loop		Gain	Offset
Deep	167.000	835.000		0.000	255.800	mmho/m	0.565	-17.500
Medium	0.000	1348.000		142.000	255.800	mmho/m	0.390	-40.000

Compensated Density Calibration Report

Serial-Model: 96-916-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Wed Mar 27 11:00:53 2019

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	8943.64	10054.60	cps
Aluminum	2.655	g/cc	1595.61	6242.82	cps

Spine Angle = 74.54 Density/Spine Ratio = 0.503

	Size		Reading
Small Ring	6.00	in	1.75
Large Ring	16.00	in	1.46

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: 89
 Tool Model: M&W
 Calibration Performed: Fri Aug 24 11:16:10 2018

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps

Calibration Report

Database File cobalt_wetzel unit a 1-14.db
 Dataset Pathname MEL/pass2
 Dataset Creation Sun May 26 04:02:09 2019

Microlog Calibration Report

Serial-Model: ARM001-Armadillo
 Performed: Fri May 24 12:40:08 2019

	Readings			References			Results	
	Zero	Cal		Zero	Cal		m	b
Normal	0.0127	0.6730	V	0.0000	10.0000	Ohm-m	29.0000	-2.4000
Inverse	0.0029	0.8729	V	0.0000	10.0000	Ohm-m	21.0000	-1.5000
Caliper	0.6693	6.5160	V	6.0000	19.0000	in	2.2235	4.5118

			Company	COBALT ENERGY, LLC
			Well	WETZEL UNIT A #1-14
			Field	NA
			County	FORD
			State	KANSAS