



PIONEER
Pioneer Energy Services

MICRORESISTIVITY LOG

Company COBALT ENERGY, LLC		Company COBALT ENERGY, LLC	
Well HOYT 'A' NO. 1-36		Well HOYT 'A' NO. 1-36	
Field N/A		Field N/A	
County CHEYENNE		County CHEYENNE	
State KANSAS		State KANSAS	
Location: API #: 15-023-21490-00-00		Other Services	
454' FSL & 348' FWL		CNL/CDL DIL/BHCS	
SEC 36 TWP 5S RGE 37W		Elevation	
Permanent Datum GROUND LEVEL		K.B. 3423'	
Log Measured From KELLY BUSHING		D.F. N/A	
Drilling Measured From KELLY BUSHING		G.L. 3418'	
Date	8/1/2018		
Run Number	TWO		
Depth Driller	5060'		
Depth Logger	5059'		
Bottom Logged Interval	5058'		
Top Log Interval	3800'		
Casing Driller	8.625" @ 386'		
Casing Logger	387'		
Bit Size	7.875"		
Type Fluid in Hole	CHEMICAL		
Salinity, ppm CL	3500		
Density / Viscosity	9.1 56		
pH / Fluid Loss	11.0 6.4		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	.70 @ 86		
Rmt @ Meas. Temp	.53 @ 86		
Rmc @ Meas. Temp	.95 @ 86		
Source of Rmt / Rmc	CHARTS		
Rm @ BHT	.48 @ 127		
Operating Rig Time	4 HOURS		
Max Rec. Temp. F	127 DEGF		
Equipment Number	108		
Location	HAYS		
Recorded By	J. HENRICKSON		
Witnessed By	TIM LAUER		

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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.
BREWSTER KANSAS
NORTH TO 80 ROAD, WEST TO ROAD 34, NORTH INTO

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

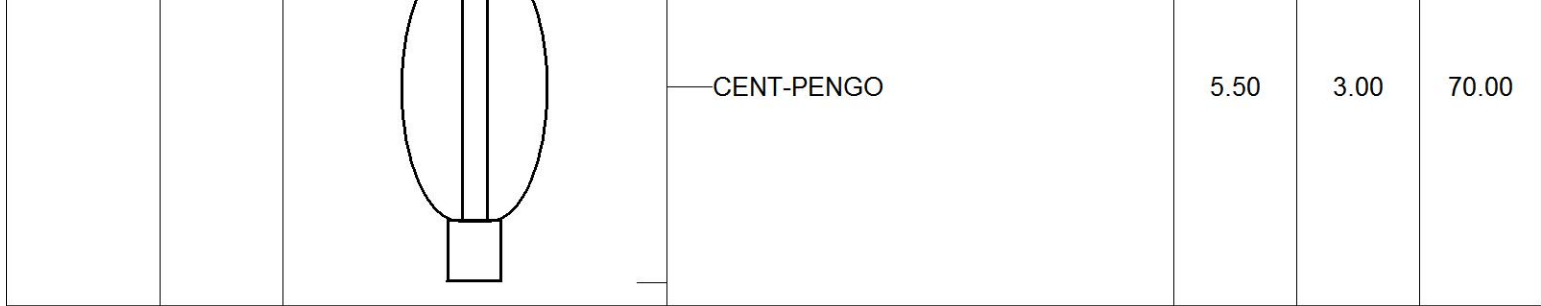
THANK YOU FOR USING PIONEER ENERGY SERVICES
www.pioneerres.com 785-625-3858

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

Top - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in 7.875	degF 127	in 5.5	in 0	g/cc 1	2	g/cc 2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m 0	mmho/m -5	mV -250	degF 98	Off	ft 5059

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
MCAL MI MN	22.50		ML-Armadillo (Armadillo-1) Pengo micro log tool mandrel with Armadillo Electronics	5.00	3.50	100.00
	22.50					
	22.50					
WVF4 WVF1	13.50 13.50		SLT-PENGO (0001)	16.00	3.50	300.00
WVF3 WVF2	11.50 11.50					



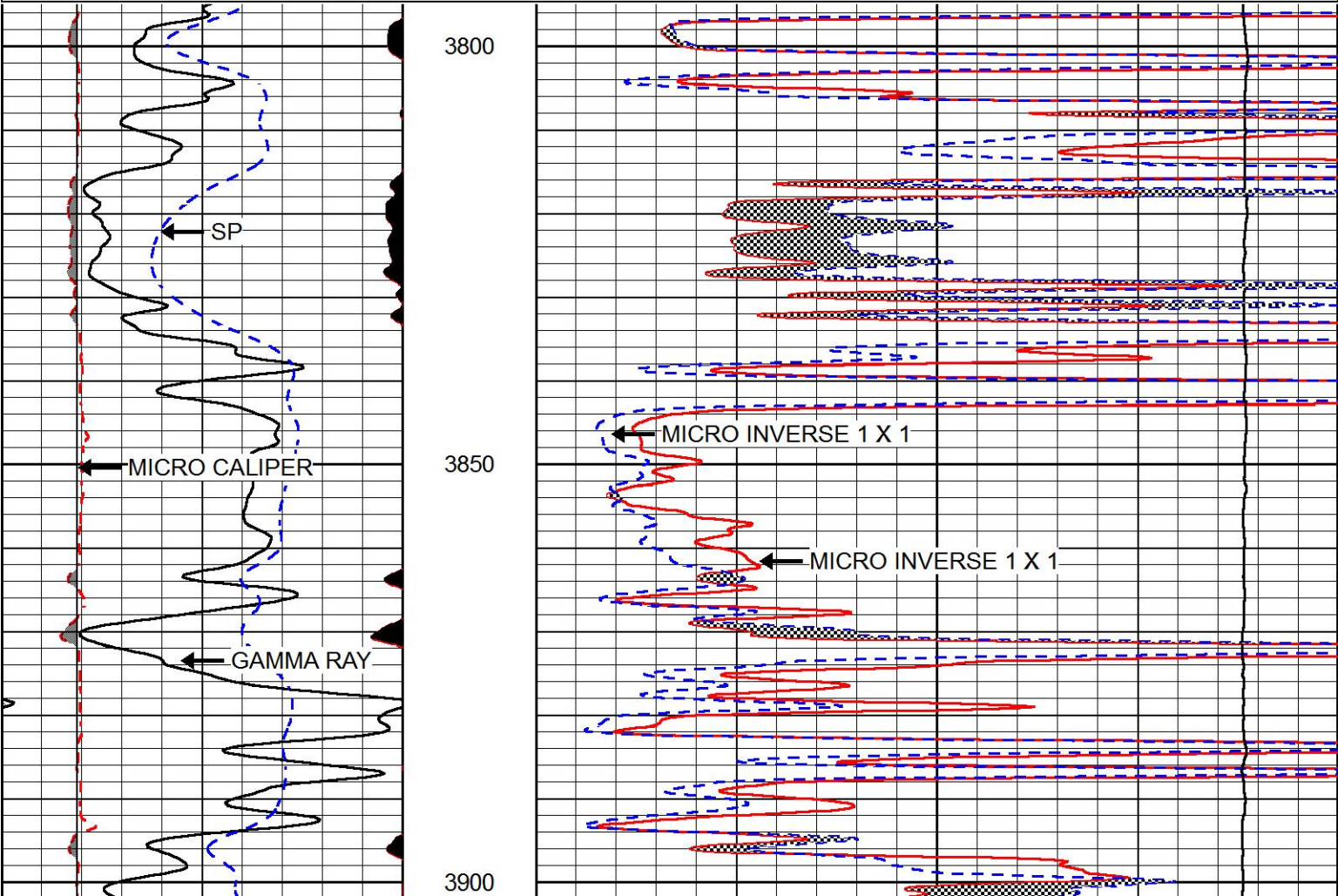
Dataset: cobalt_hoyt_a_1_36.db: field/well/SONMEL/pass3
Total length: 26.50 ft
Total weight: 470.00 lb
O.D.: 3.50 in

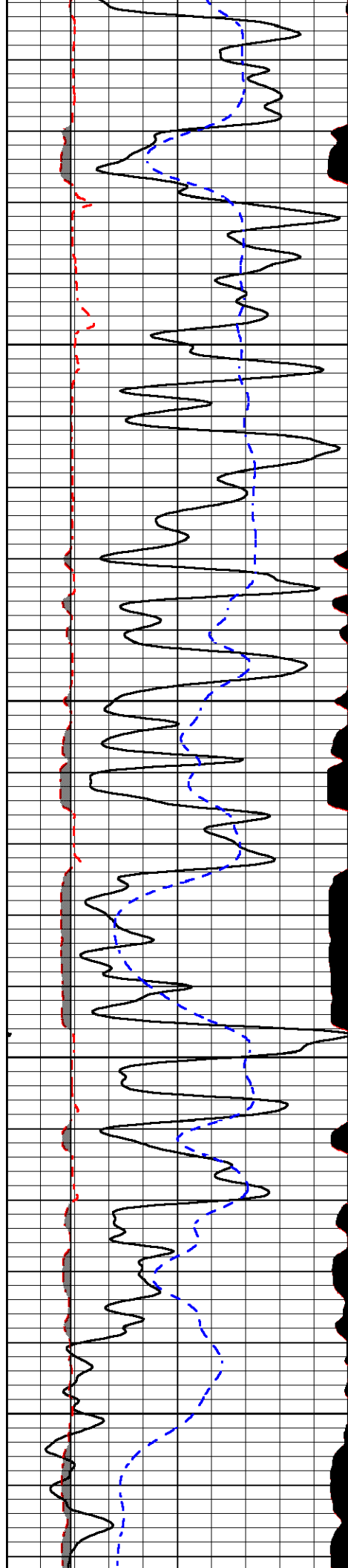


MAIN PASS

Database File	cobalt_hoyt_a_1_36.db
Dataset Pathname	stack/pass3.1
Presentation Format	micro
Dataset Creation	Wed Aug 01 15:46:19 2018
Charted by	Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	0	MICRO INVERSE 1 X 1 (Ohm-m)	40
6	MICRO CALIPER (in)	16	0	MICRO NORMAL 2" (Ohm-m)	40
6	BIT SIZE (in)	16	15000	LINE TENSION (lb)	0
-200	SP (mV)	0			



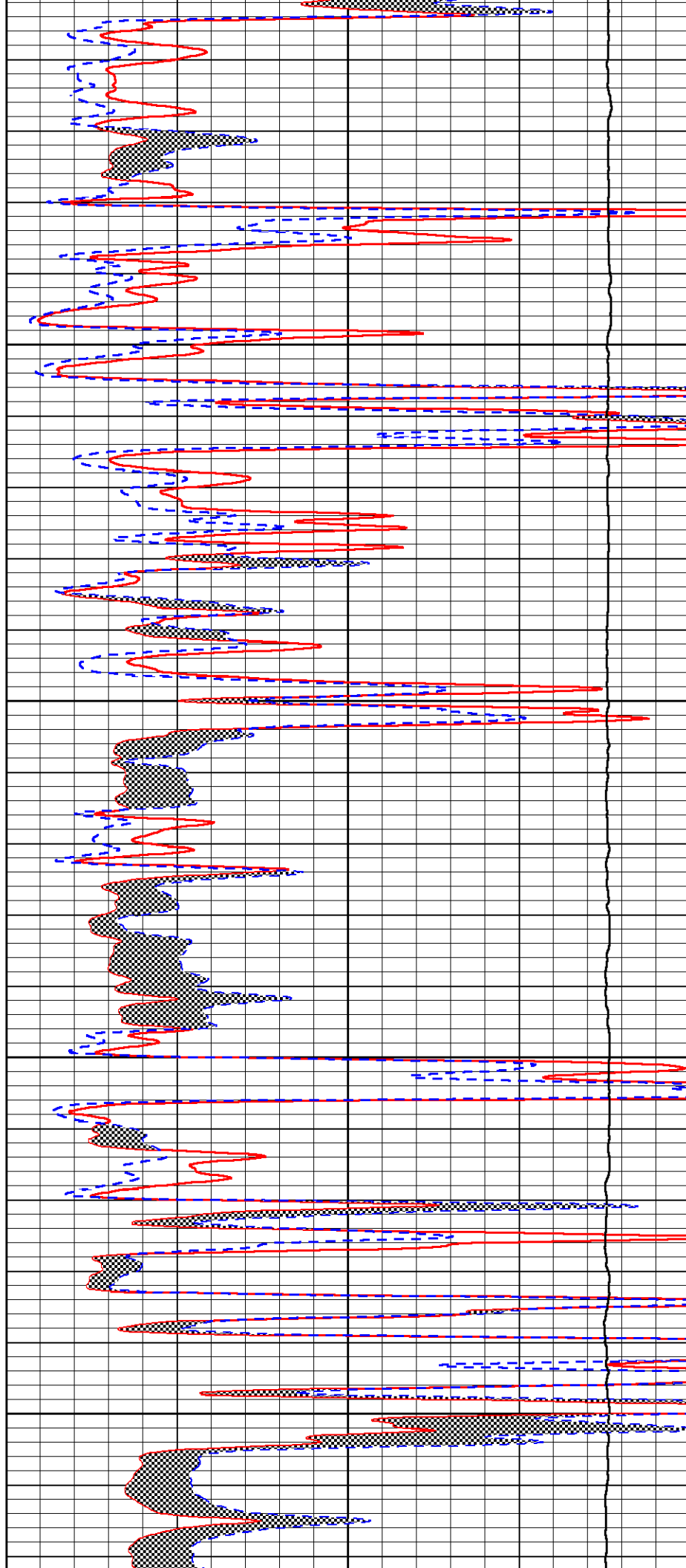


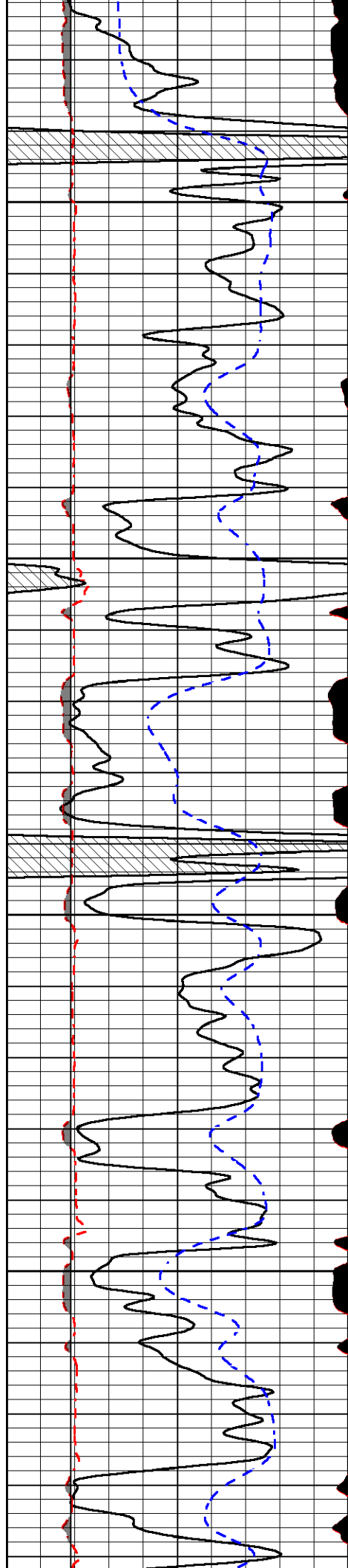
3950

4000

4050

4100



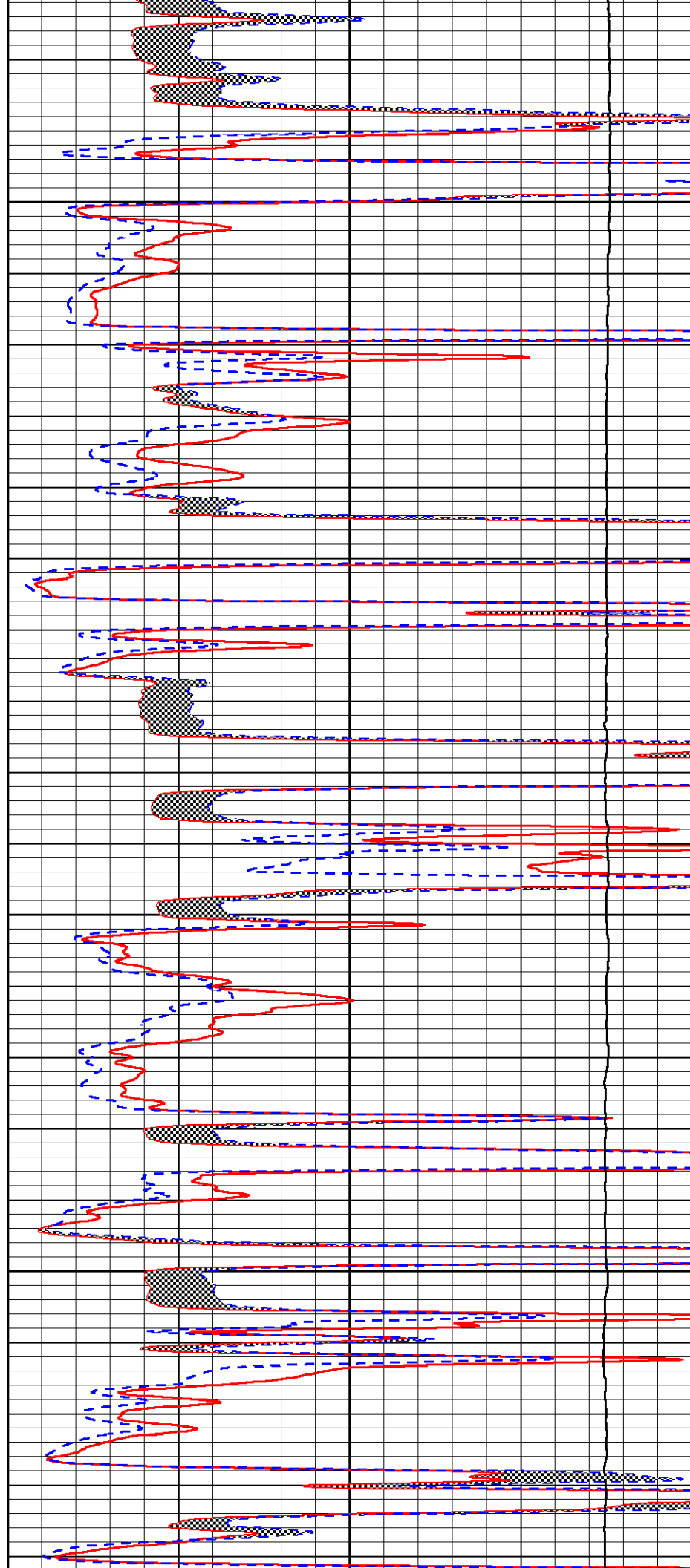


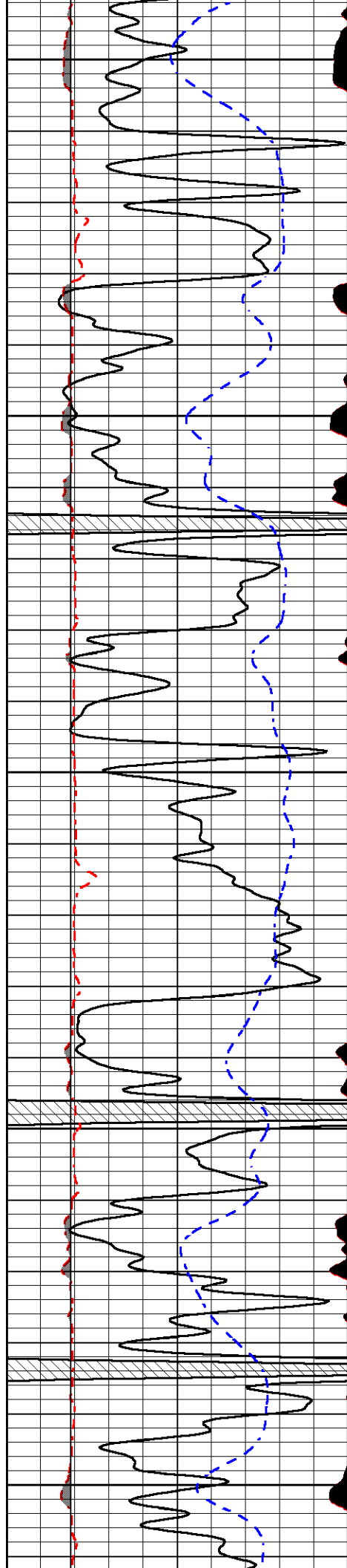
4150

4200

4250

4300





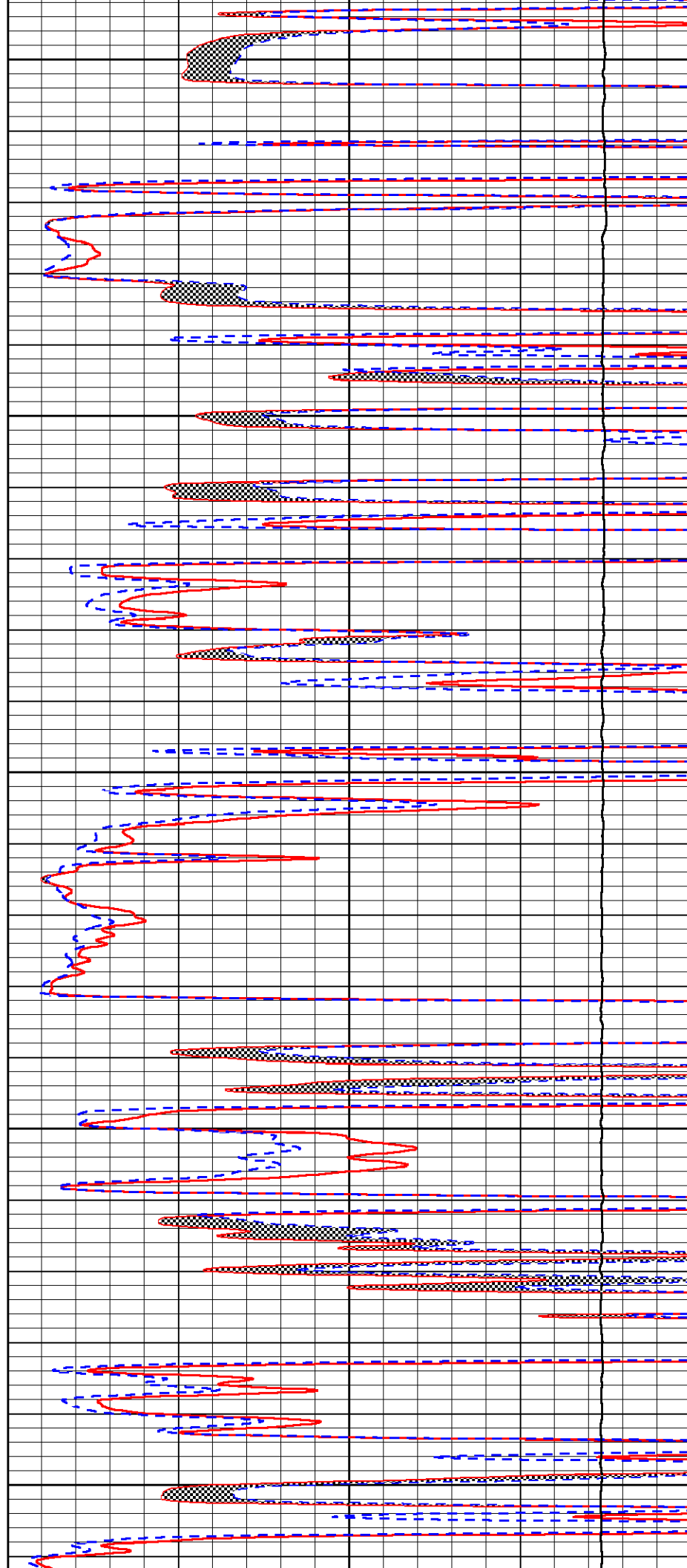
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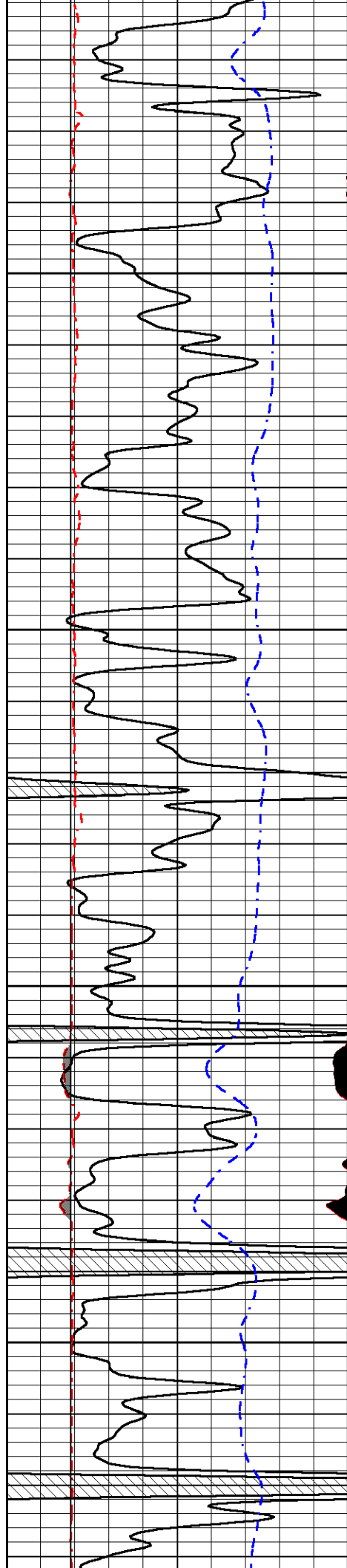
4400

4450

4500

4550



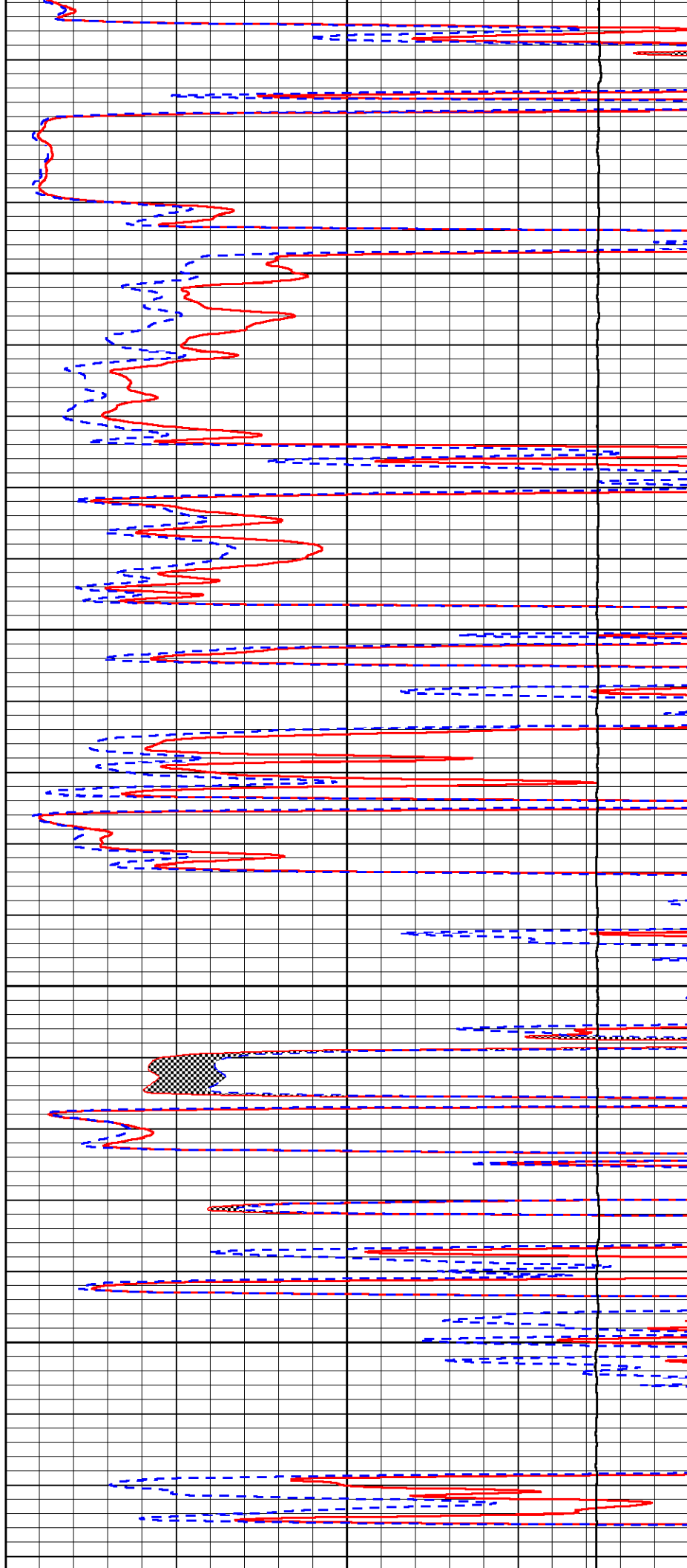


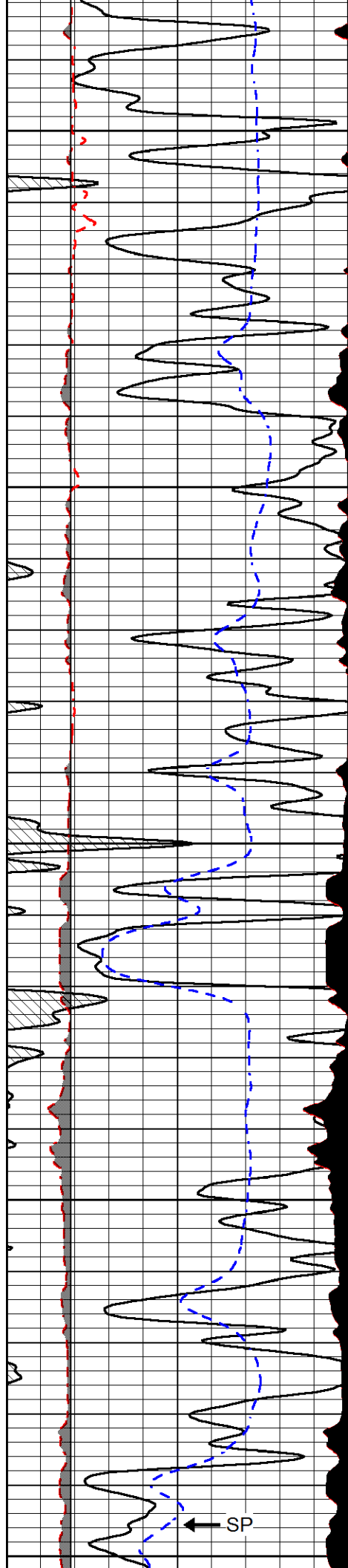
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4650

4700

4750





4800

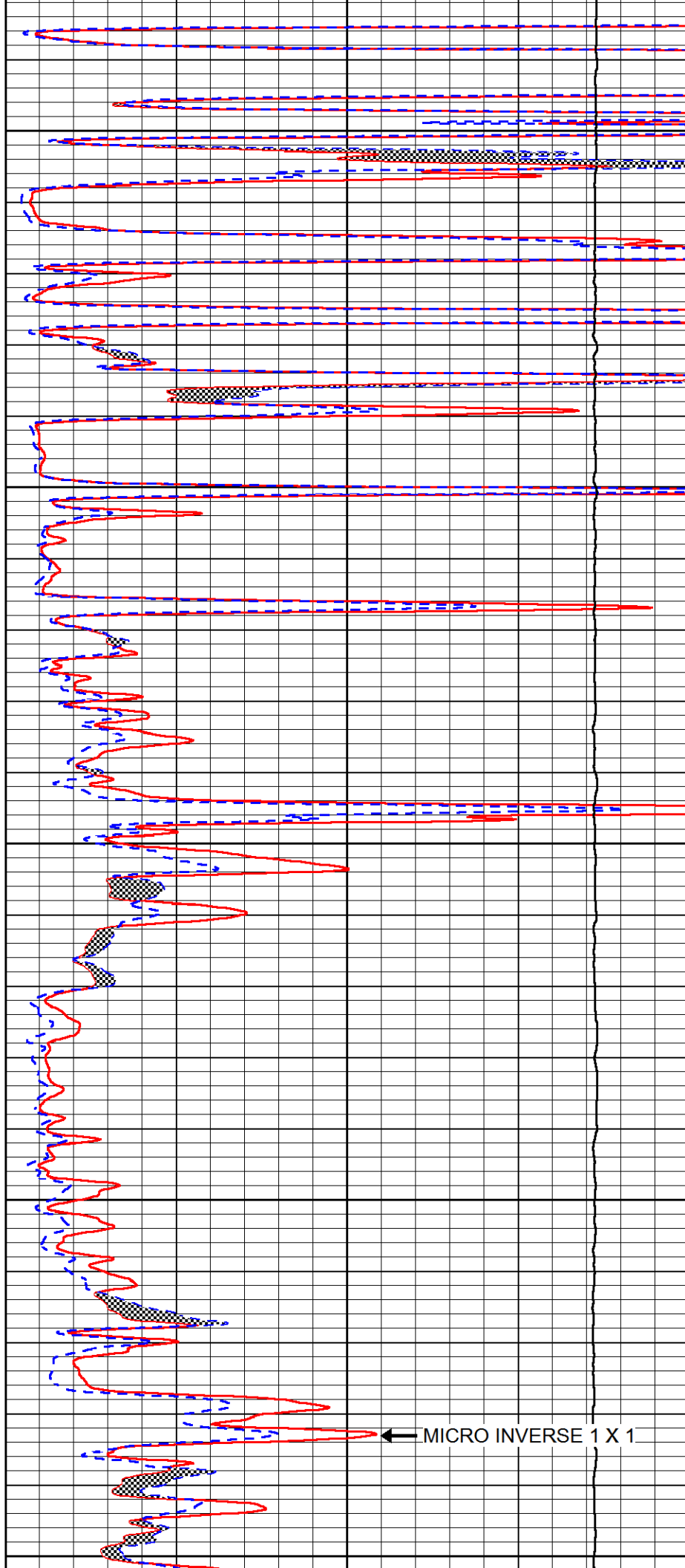
4850

4900

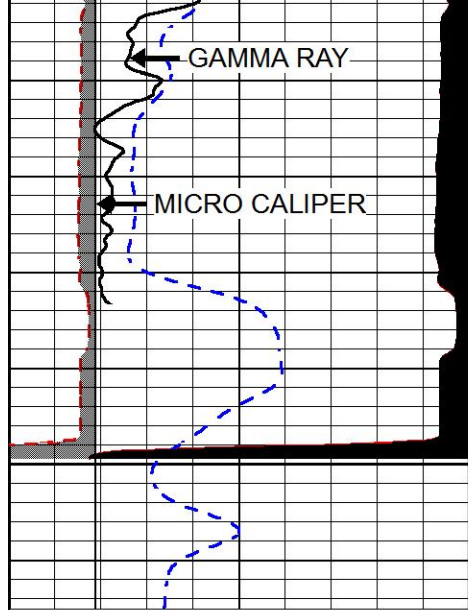
4950

5000

← SP

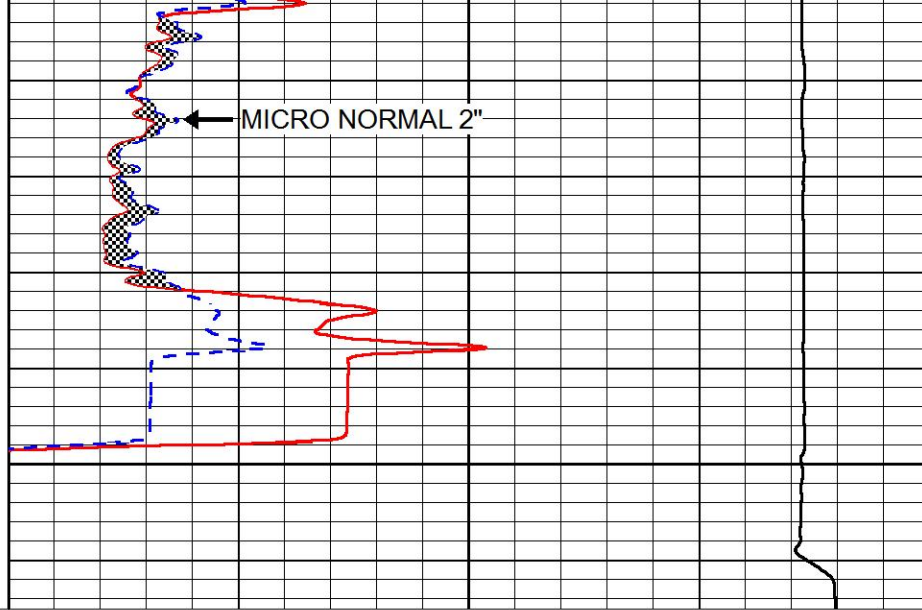


← MICRO INVERSE 1 X 1



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

5050



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

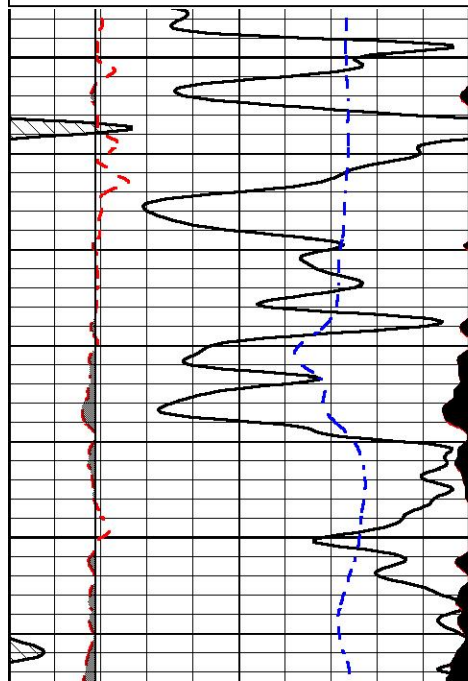


MAIN PASS

Database File cobalt_hoyt_a_1_36.db
 Dataset Pathname stack/pass2.1
 Presentation Format micro
 Dataset Creation Wed Aug 01 15:44:55 2018
 Charted by Depth in Feet scaled 1:240

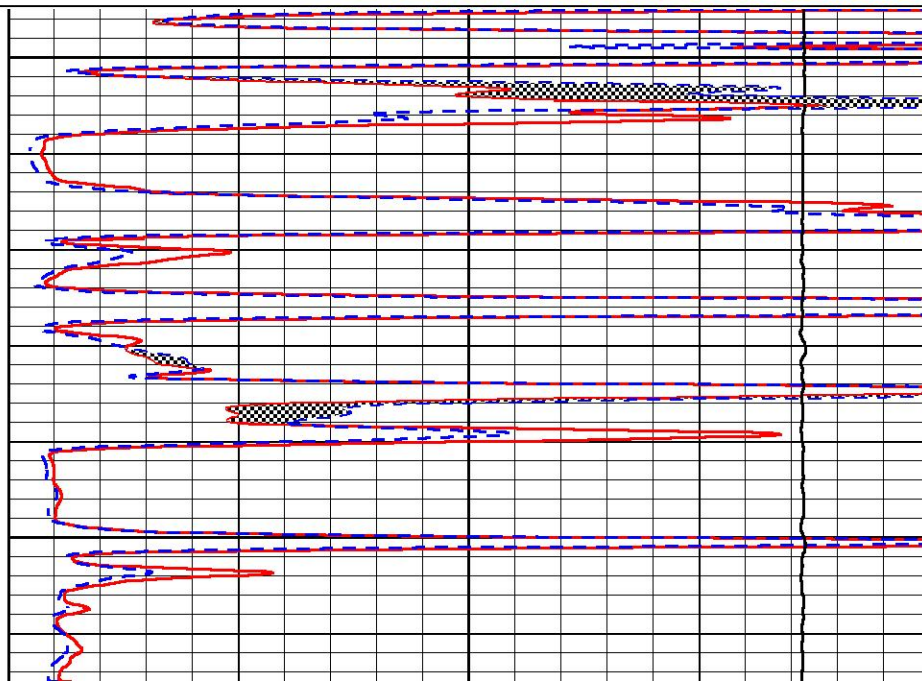
0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0

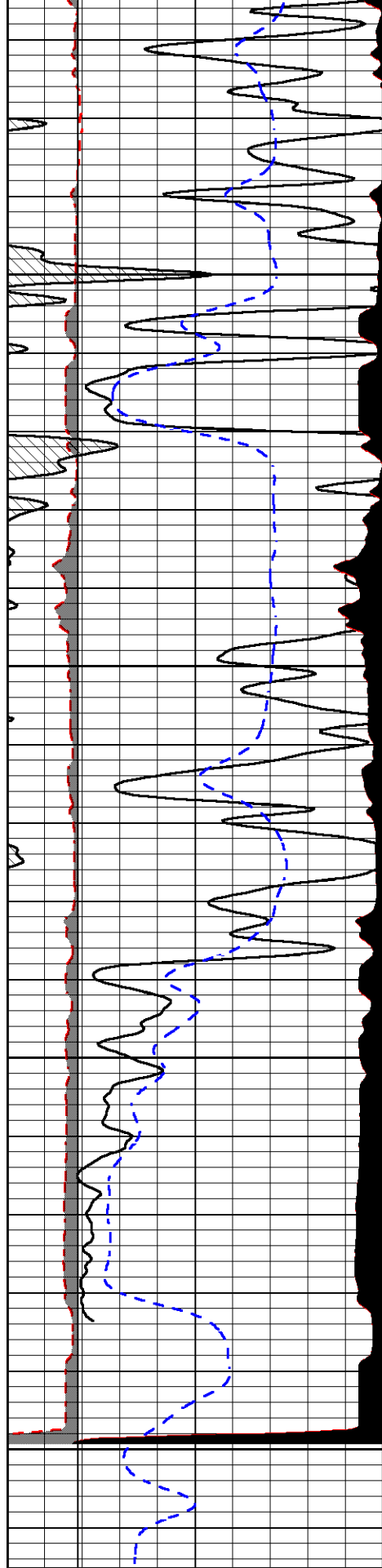
0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0



4800

4850





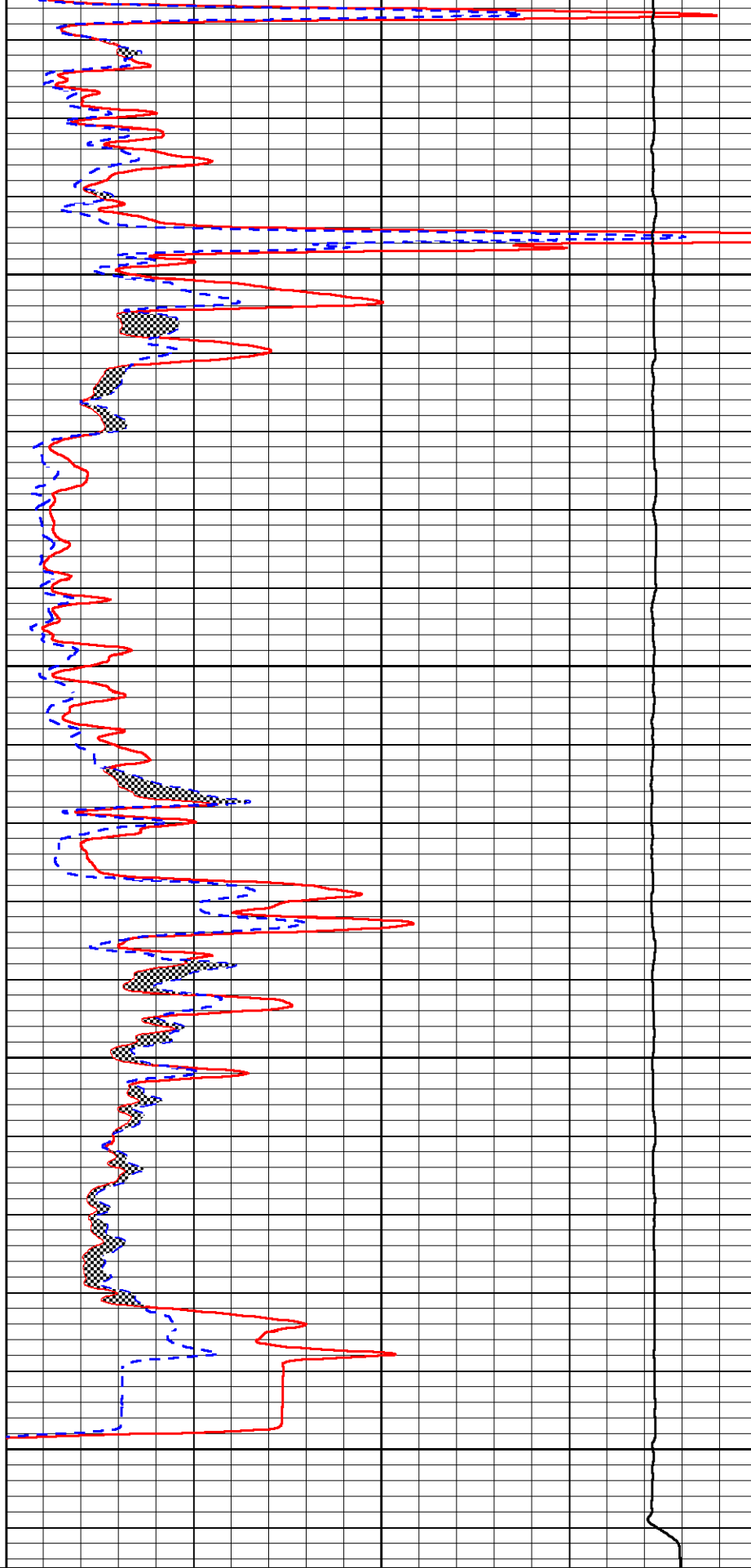
0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0

4900

4950

5000

5050



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

Calibration Report

Database File cobalt_hoyt_a_1_36.db
Dataset Pathname stack/pass3.1
Dataset Creation Wed Aug 01 15:46:19 2018

Dual Induction Calibration Report

Serial-Model: 1987-M&W
Calibration Performed: Tue Apr 11 17:07:38 2017

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.530	-36.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.440	-110.500

Compensated Density Calibration Report

Serial-Model: 168-130-M&W
Source / Verifier: /
Master Calibration Performed: Sun Nov 17 12:46:06 2013

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4659.47	5064.14	cps
Aluminum	2.680	g/cc	853.93	3180.74	cps
Spine Angle = 74.67			Density/Spine Ratio = 0.526		
	Size		Reading		
Small Ring	4.00	in	0.87		
Large Ring	16.00	in	0.22		

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



Company	COBALT ENERGY, LLC
Well	HOYT 'A' NO. 1-36
Field	N/A
County	CHEYENNE
State	KANSAS