



MIDWEST WIRELINE

# MICRORESISTIVITY LOG

Company Cobalt Energy, LLC

Well Braun Unit #1-21

Field

County Graham

State Kansas

Company Cobalt Energy, LLC  
Well Braun Unit #1-21  
Field  
County Graham  
State Kansas

Location: API #: 15-065-24285-00-00

SEC 21 TWP 10S RGE 22W  
NW NW SW NW  
1522 FNL & 259 FWL

Permanent Datum Ground Level Elevation 2315  
Log Measured From Kelly Bushing  
Drilling Measured From Kelly Bushing

Other Services  
CNL/CDL  
DIL  
Elevation  
K.B. 2320  
D.F.  
G.L. 2315

Date	10/8/2023
Run Number	One
Depth Driller	3870
Depth Logger	3868
Bottom Logged Interval	3867
Top Log Interval	3200
Casing Driller	8:625 @ 220
Casing Logger	215
Bit Size	7.875
Type Fluid in Hole	Chemical
Salinity, ppm CL	1800
Density / Viscosity	9.2 57
pH / Fluid Loss	10.0 6.4
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.50 @ 85
Rmt @ Meas. Temp	0.38 @ 85
Rmc @ Meas. Temp	0.68 @ 85
Source of Rmf / Rmc	CHARTS
Rm @ BHT	0.34 @ 126
Operating Rig Time	3 Hours
Max Rec. Temp. F	126
Equipment Number	P-108
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 Midwest Wireline LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Midwest Wireline 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.

Wakeeney,  
North to D Rd (Graham County),  
4 East, South into

39.171756859 -99.791031651

Log Measured From: Kelly Bushing 5 Ft. Above Permanent Datum

THANK YOU FOR USING MIDWEST WIRELINE LLC  
785-625-3858

### Your Midwest Wireline 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)	
GR	40.23		GR-M&W (105)	3.00	3.50	50.00	
CNLSC CNSSC	37.13 36.38		CNT-M&W (210)	5.00	3.50	100.00	
			MWLith-STEP LITHO Short (701-01)	8.40	5.00	250.00	
LCAL	28.21						
LLW8N	28.21						
LLW7N	28.21						
LLW6N	28.21						
LLW5N	28.21						
LLW4N	28.21						
LLW3N	28.21						
LLW2N	28.21			ML-PSI STKBL ML (402)	7.58	4.00	65.00
LLW1N	28.21						
LSLOCK	27.96						
LLLOCK	27.96						
PELTMPR	27.96						
LSHVNG	27.96						
LLHVNG	27.96						
LSW8N	27.71						
LSW7N	27.71						
LSW6N	27.71						
LSW5N	27.71						
LSW4N	27.71						
LSW3N	27.71						
LSW2N	27.71						
LSW1N	27.71						
MCAL	19.58		DIL-M&W (505 HT)	18.25	3.50	220.00	
MI	19.58						
MN	19.58						
RLL3F	15.50						
RLL3	15.50						
CILD	8.33						
CILM	4.50						
SP	0.20						

Dataset: cobalt\_braun unit 1-21.db: field/well/stkml/pass3.5  
 Total length: 42.23 ft  
 Total weight: 685.00 lb  
 O.D.: 5.00 in

# Log Variables

DatabaseC:\ProgramData\Warrior\Data\cobalt\_braun unit 1-21.db  
 Dataset field/well/stkml/pass3.5/\_vars\_

## Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	126	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	No	-13.6	-17	342	85	Off	3868

## Variable Description

A : Cement Factor (a)  
 BOREID : Borehole I.D.  
 BOTTEMP : Bottom Hole Temperature  
 CASEOD : Casing O.D.  
 CASETHCK : Casing Thickness  
 FLUIDDEN : Fluid Density  
 M : Cement Exp (m)  
 MATRXDEN : Matrix Density

NPORSEL : Neutron Porosity Curve Select  
 PERFS : Perforation Flag  
 SNDERR : Deep Sonde Error Correction  
 SNDERRM : Medium Sonde Error Correction  
 SPSHIFT : S.P. Baseline Offset  
 SRFTEMP : Surface Temperature  
 SZCOR : CN Size Cor. ?  
 TDEPTH : Total Depth



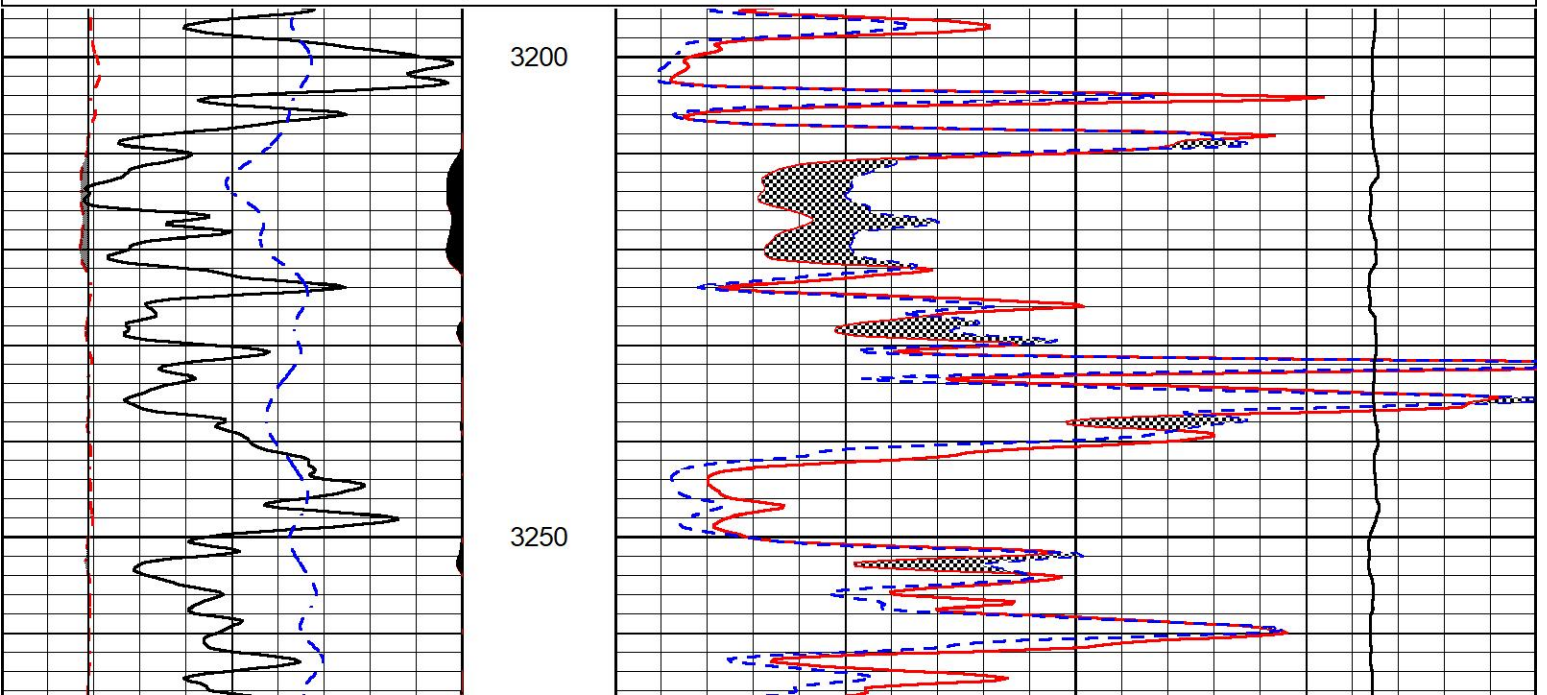
## DETAIL SECTION

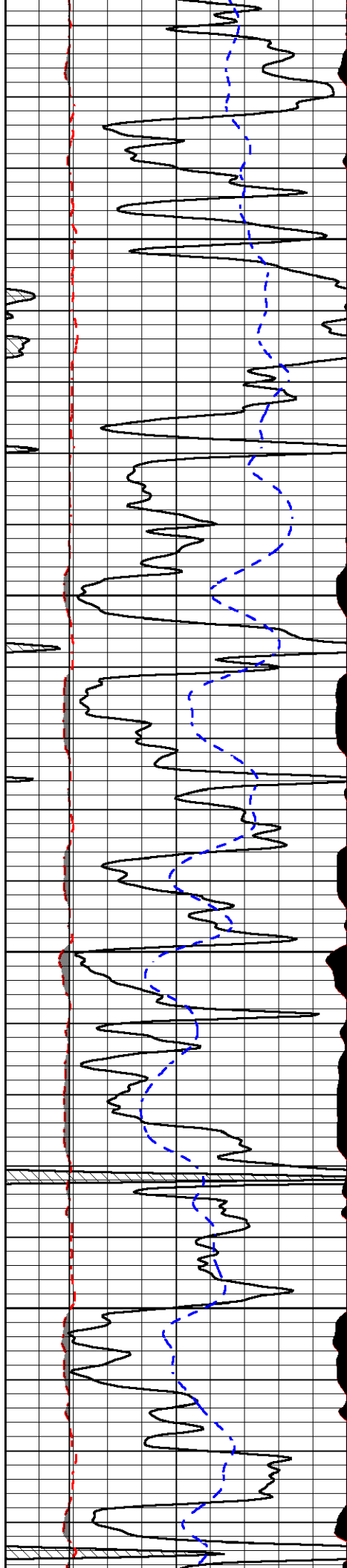
### MAIN PASS

Database File cobalt\_braun unit 1-21.db  
 Dataset Pathname stkml/pass3.1  
 Presentation Format \_micro  
 Dataset Creation Sun Oct 08 17:33:03 2023  
 Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150
6	Micro Caliper (in)	16
2.875	mcal (in)	7.875
-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



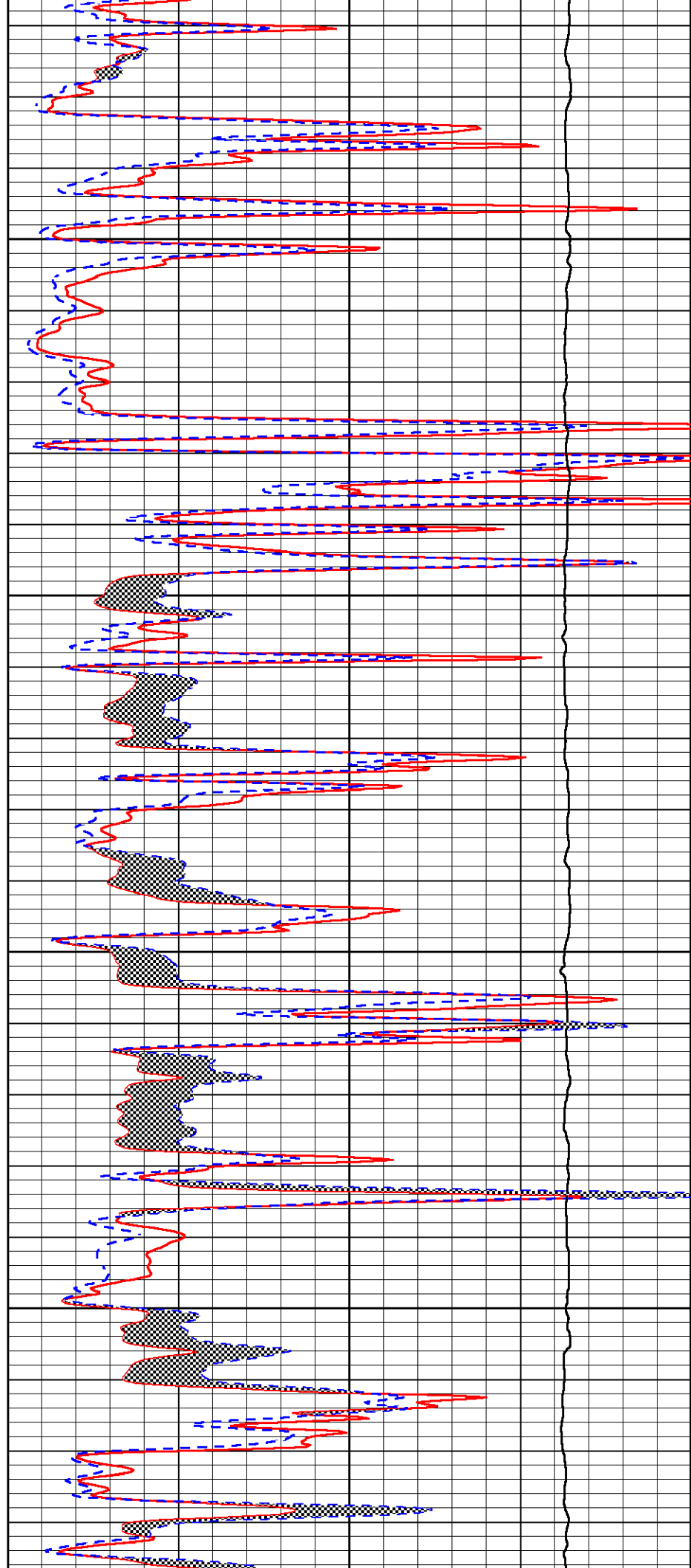


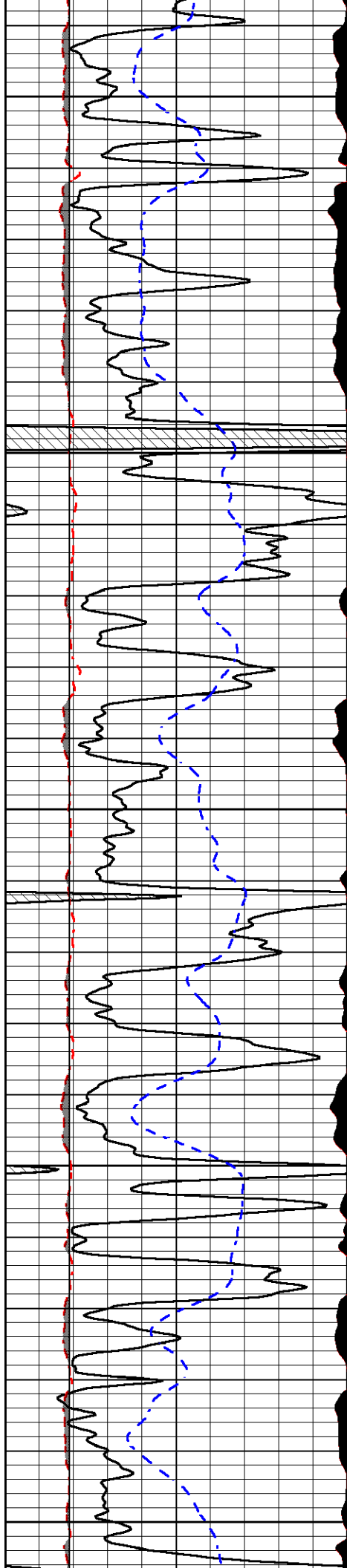
3300

3350

3400

3450





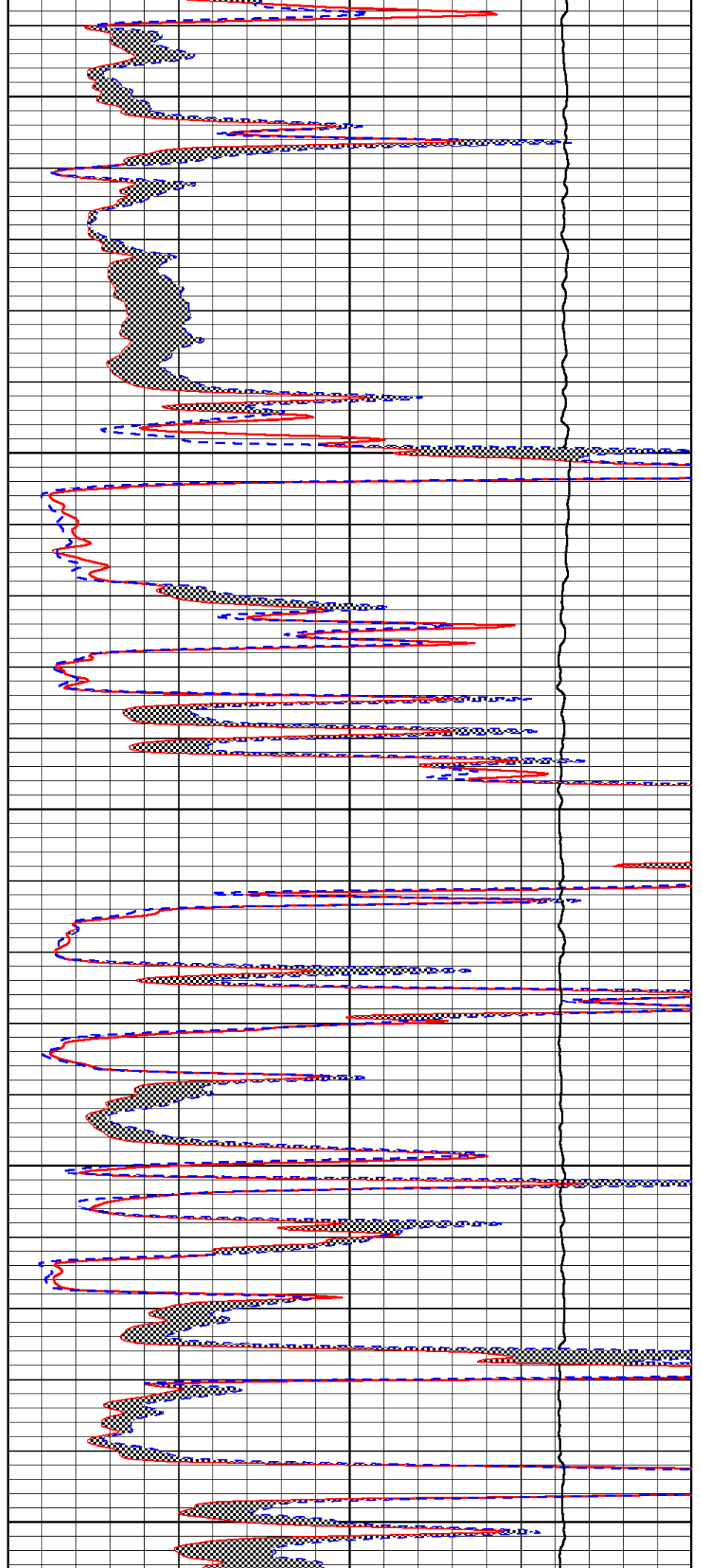
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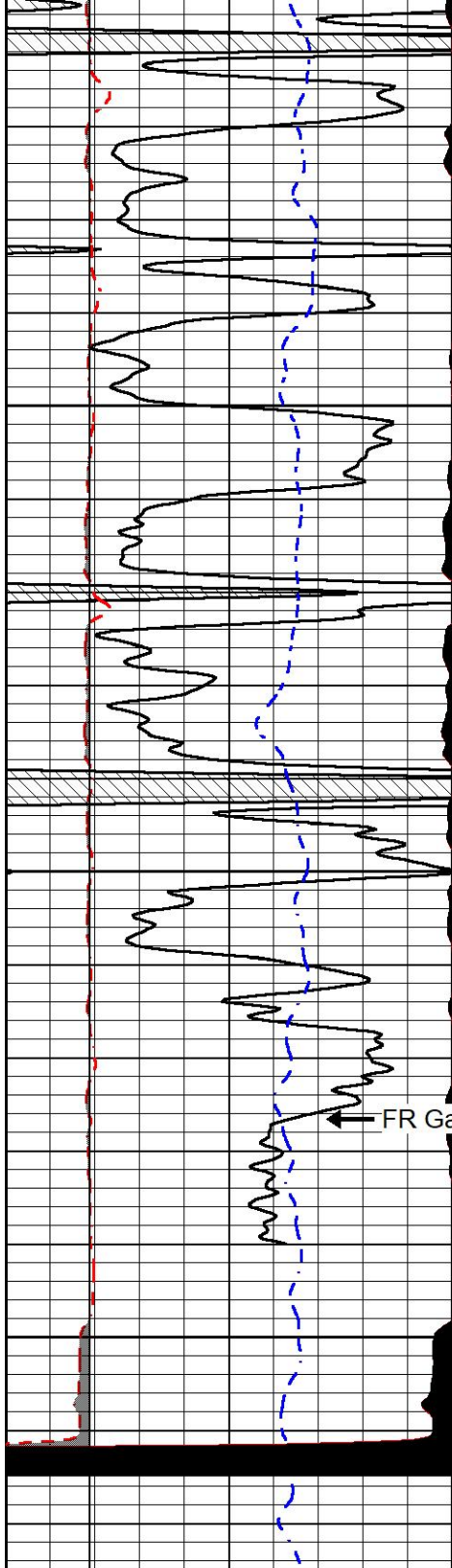
3550

3600

3650

3700



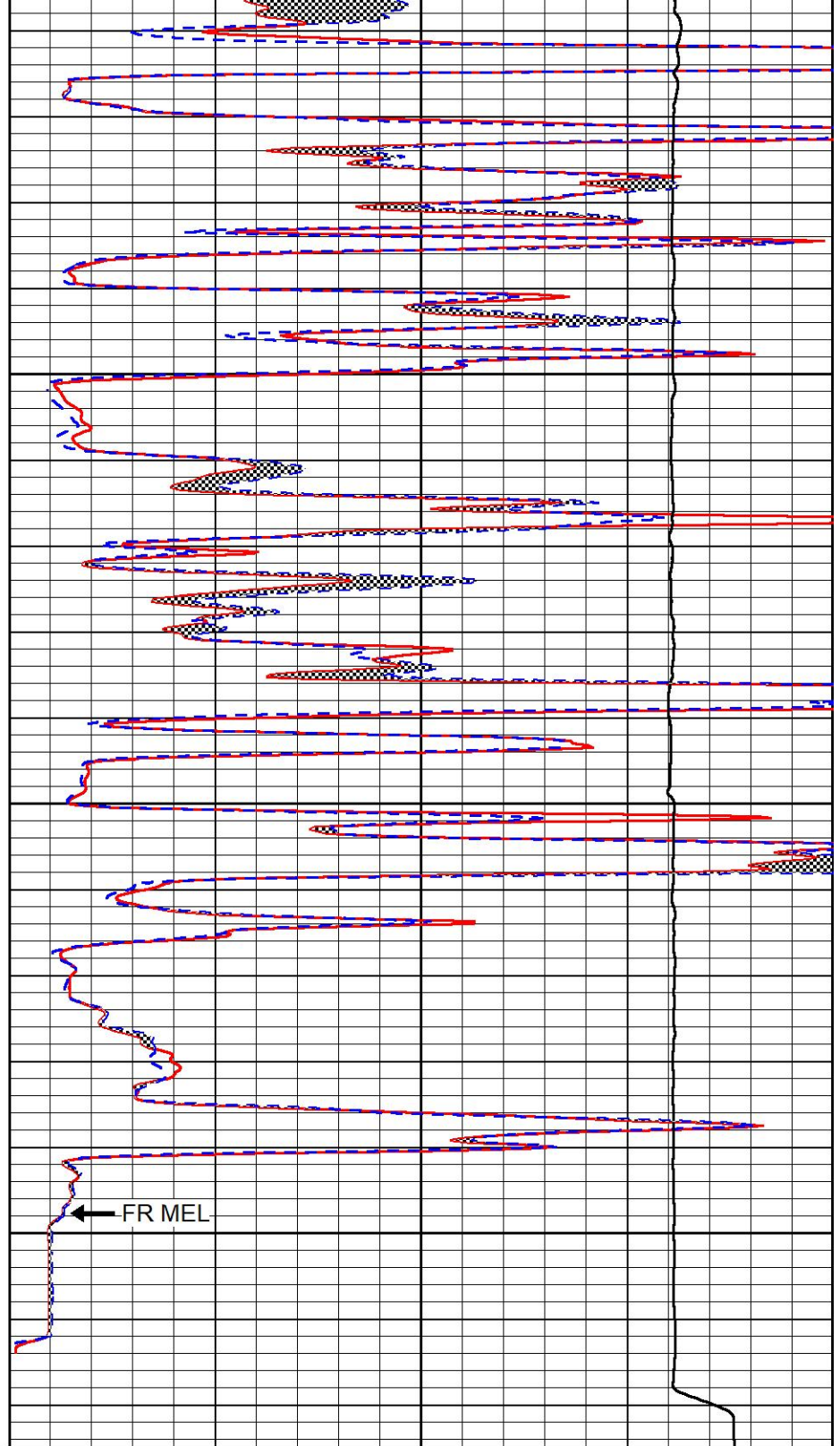


3750

3800

FR Gamma Ray

3850



FR MEL

0	Gamma Ray (GAPI)	150
6	Micro Caliper (in)	16
2.875	mcal (in)	7.875
-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

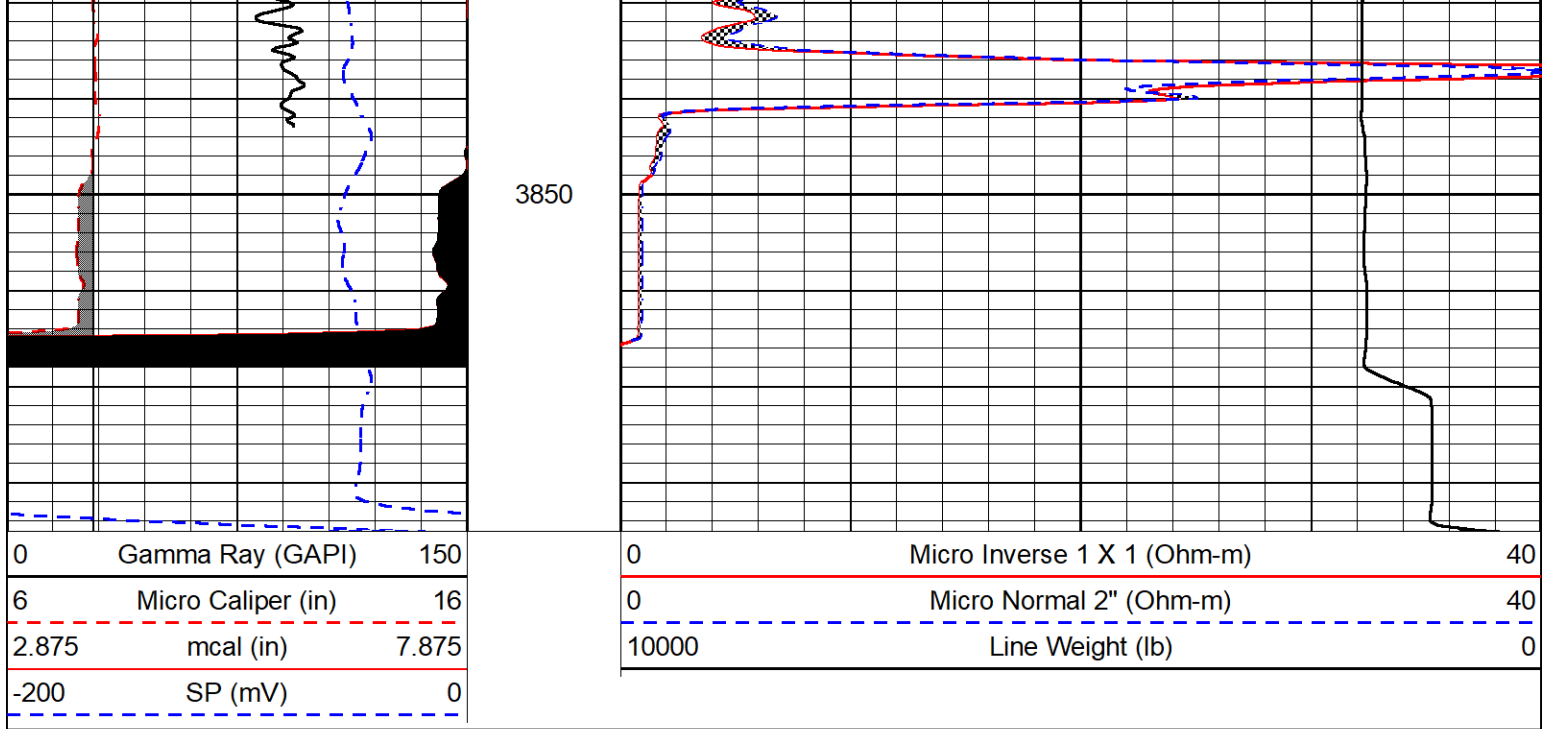


MIDWEST WIRELINE

REPEAT SECTION

REPEAT PASS





### Calibration Report

Database File cobalt\_braun unit 1-21.db  
 Dataset Pathname stkml/pass3.1  
 Dataset Creation Sun Oct 08 17:33:03 2023

### Dual Induction Calibration Report

Serial-Model: 505 HT-M&W  
 Surface Cal Performed: Fri Aug 11 21:22:17 2023

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		m	b
Deep	167.000	835.000	0.000	255.800	mmho/m	0.480	-42.000
Medium	1348.000	1348.000	0.000	255.800	mmho/m	0.410	-40.000

### Microlog Calibration Report

Serial-Model: 402-PSI STKBL ML  
 Performed: Sat Sep 23 14:09:43 2023

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0037	0.0043	0.0000	10.0000	Ohm-m	31000.0000	-0.5000
Inverse	0.1208	0.0013	0.0000	10.0000	Ohm-m	29000.0000	0.3000
Caliper	1.0046	1.1419	5.5000	20.0000	in	50.0000	-44.4400

### LITHODENSITY Calibration Report

Serial Number: 701-01  
 Tool Model: STEP LITHO Short  
 Performed: Wed Aug 16 15:02:56 2023

Source:

Background:	Win1	Win2	Win3	Win4	Win5	Win6	Win7	Win8
SS:	52	53	205	255	24	69	44	1

SS: 52 55 203 233 24 69 44 1 cps  
 LS: 81 85 334 425 46 135 88 2 cps

Aluminum:

SS: 774 936 2171 1967 43 73 44 2 cps  
 LS: 847 1595 3011 1457 56 137 87 5 cps

Magnesium:

SS: 1271 1508 3520 2831 46 71 45 3 cps  
 LS: 3600 6590 11760 4608 88 128 83 13 cps

Aluminum+Iron:

SS: 492 651 1805 1706 40 72 44 2 cps  
 LS: 499 1107 2530 1299 53 134 86 4 cps

	Density		PE			
	Actual	Calibrated	Actual	Calibrated	Quality	
Background:						
SS:					0.222	
LS:					0.212	
Aluminum:						
SS:	2.6000	2.6000	g/cc		0.248	
LS:	2.6000	2.6000	g/cc		0.220	
Magnesium:						
SS:	1.6800	1.6800	g/cc	2.5700	2.5700	0.222
LS:	1.6800	1.6800	g/cc	2.5700	2.5700	0.213
Aluminum+Iron:						
SS:				6.1800	6.1800	0.239
LS:				6.1800	6.1800	0.214

Caliper: Reference: Reading:  
 Small Ring: 6.0 in 100.0  
 Large Ring: 16.0 in 400.0  
 Gain: 18.000  
 Offset: 0.100

Compensated Neutron Calibration Report

Serial Number: 210  
 Tool Model: M&W

CALIBRATION

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: 105  
 Tool Model: M&W  
 Performed: Wed Aug 30 12:31:03 2023

Calibrator Value: 500.0 GAPI

Background Reading: 24.0 cps  
 Calibrator Reading: 637.0 cps

Sensitivity: 0.6500 GAPI/cps



Company Cobalt Energy, LLC  
 Well Braun Unit #1-21  
 Field



Field

County

State

Graham

Kansas