



MICRORESISTIVITY

MIDWEST WIRELINE

Company Cobalt Energy LLC
 Well Sisters Unit #1-2
 Field Brassfield South
 County Graham
 State Kansas

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 County Graham State Kansas

Location: API #: 15-065-24274-00-00
 SE SE NE SW
 1347 FSL & 2423 FWL
 SEC 2 TWP 10S RGE 22W
 Permanent Datum Ground Level Elevation 2340
 Log Measured From Kelly Bushing
 Drilling Measured From Kelly Bushing
 Other Services
 CNL/CDL
 DIL
 Elevation
 K.B. 2345
 D.F.
 G.L. 2340

Date	9/26/2023
Run Number	One
Depth Driller	3860
Depth Logger	3859
Bottom Logged Interval	3858
Top Log Interval	3200
Casing Driller	8:625 @ 217
Casing Logger	217
Bit Size	7.875
Type Fluid in Hole	Chemical
Salinity, ppm CL	1900
Density / Viscosity	9.2 53
pH / Fluid Loss	10.0 6.0
Source of Sample	Flowline
Rm @ Meas. Temp	0.75 @ 74
Rmt @ Meas. Temp	0.56 @ 74
Rmc @ Meas. Temp	1.01 @ 74
Source of Rmf / Rmc	Charts
Rm @ BHT	0.48 @ 115
Operating Rig Time	2.5 Hours
Max Rec. Temp. F	115
Equipment Number	P-24
Location	Hays
Recorded By	T. Martin
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.

Hill City, KS, S to Rd H, 5 E to Rd 310,
 2 S to Rd F, 1.5 E, N into at cedar line

39.208614974 & -99.745805786

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: T. Martin
 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	40.75		GR-M&W (107)	3.00	3.50	50.00	
CNLSC CNSSC	37.65 36.90		CNT-M&W (207)	5.00	3.50	100.00	
			MWLith-STEP LITHO (704-10) Long Litho Mandrel	8.92	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-PSIML (401)	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 (507)	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_sisters unit #1-2.db: field/well/StkMI/pass3.1
 Total length: 42.75 ft
 Total weight: 685.00 lb
 O.D.: 5.00 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\cobalt_sisters unit #1-2.db
 Dataset field/well/StkMI/pass3.1/_vars_

Top - Bottom

BOREID in 7.875	BOTTEMP degF 115	CASEOD in 5.5	CASETHCK in 0	FLUIDDEN g/cc 1	MATRXDEN g/cc 2.71	NPORSEL Limestone	PERFS No
SNDERR mmho/m 1	SNDERRM mmho/m -2	SPSHIFT mV 250	SRFTEMP degF 90	SZCOR Off	TDEPTH ft 3859		

Variable Description

BOREID : Borehole I.D.
 BOTTEMP : Bottom Hole Temperature
 CASEOD : Casing O.D.
 CASETHCK : Casing Thickness
 FLUIDDEN : Fluid Density
 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



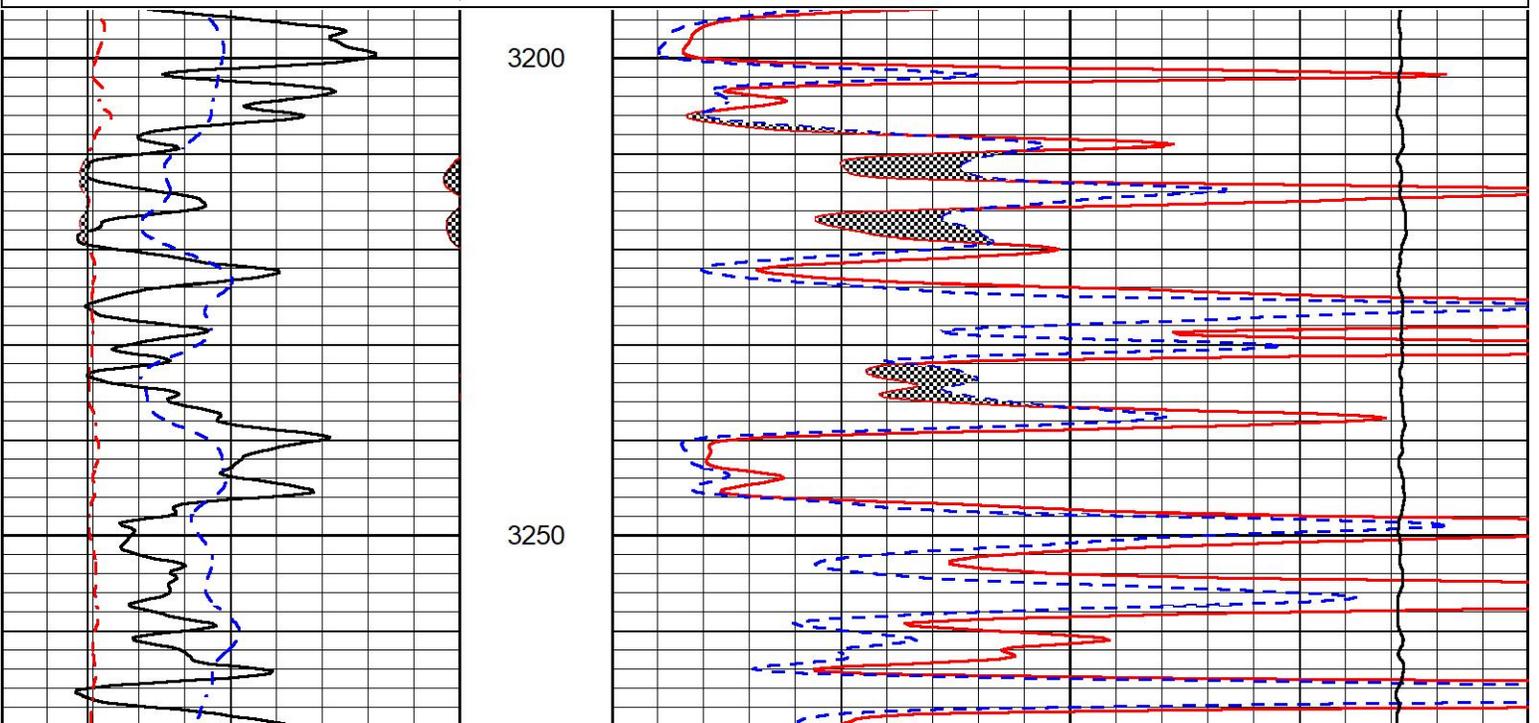
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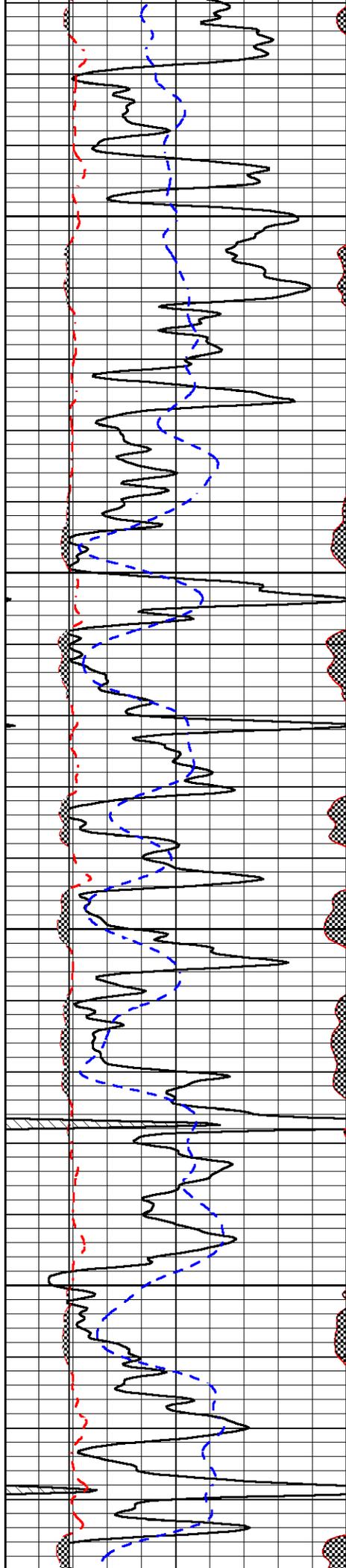
MAIN PASS

Database File cobalt_sisters unit #1-2.db
 Dataset Pathname StkMI/pass3.1
 Presentation Format _micro
 Dataset Creation Tue Sep 26 15:42:18 2023
 Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150
6	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



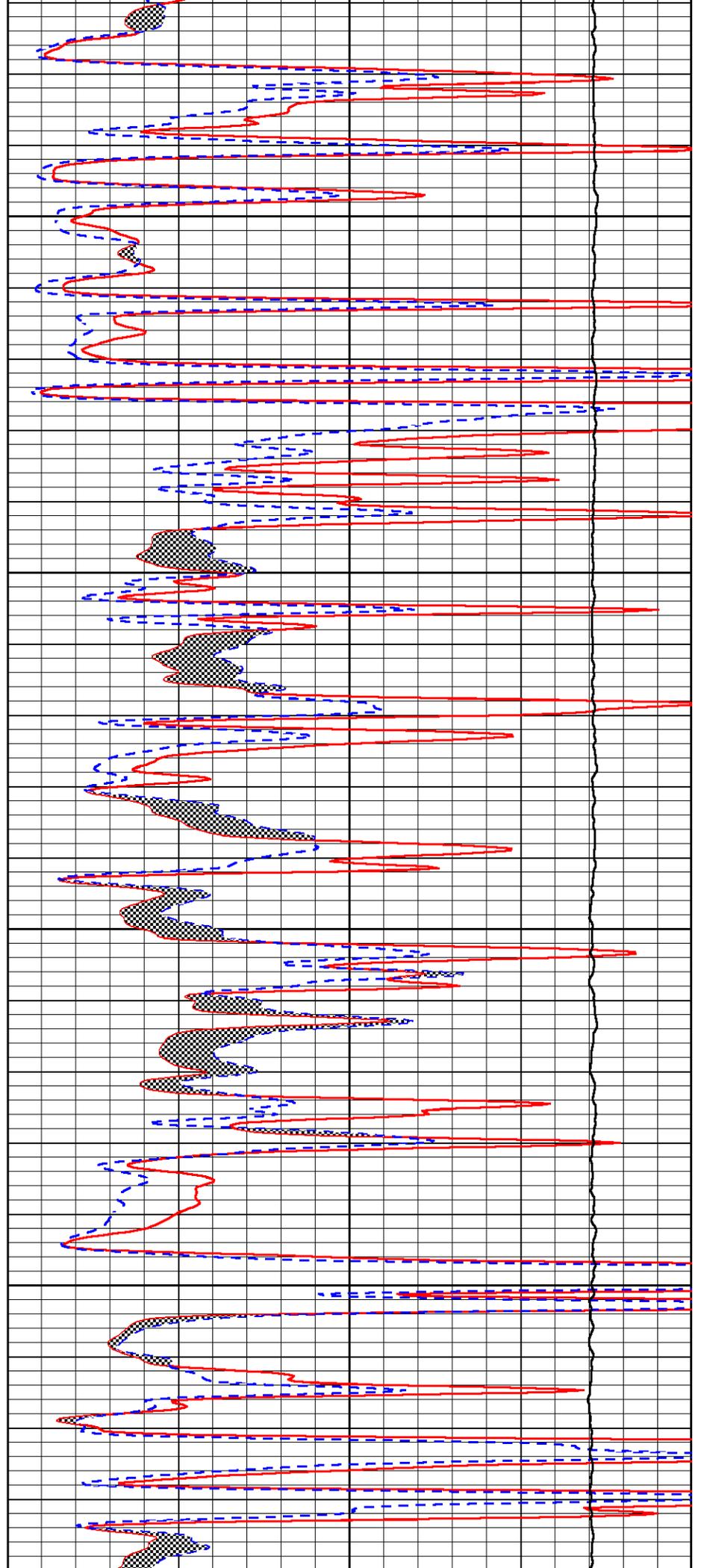


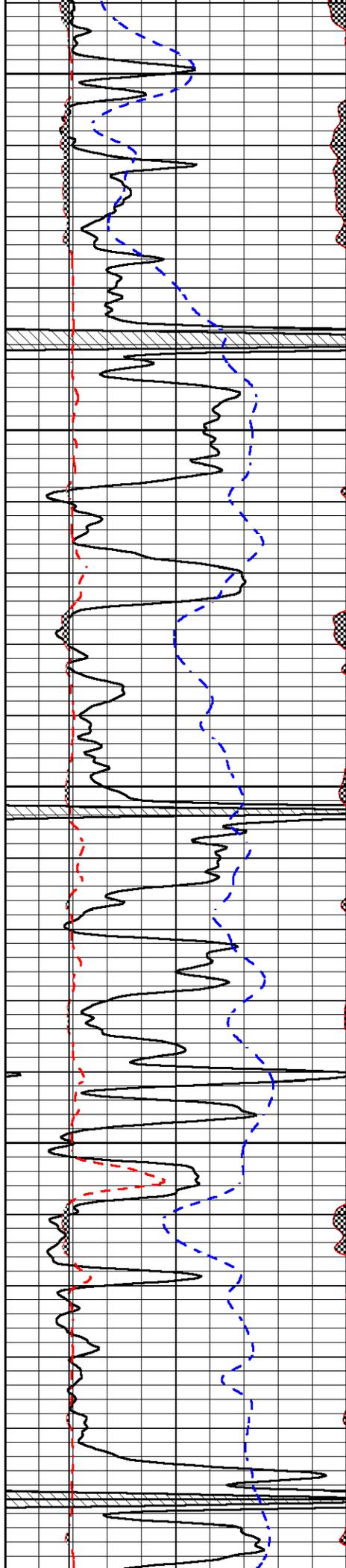
3300

3350

3400

3450





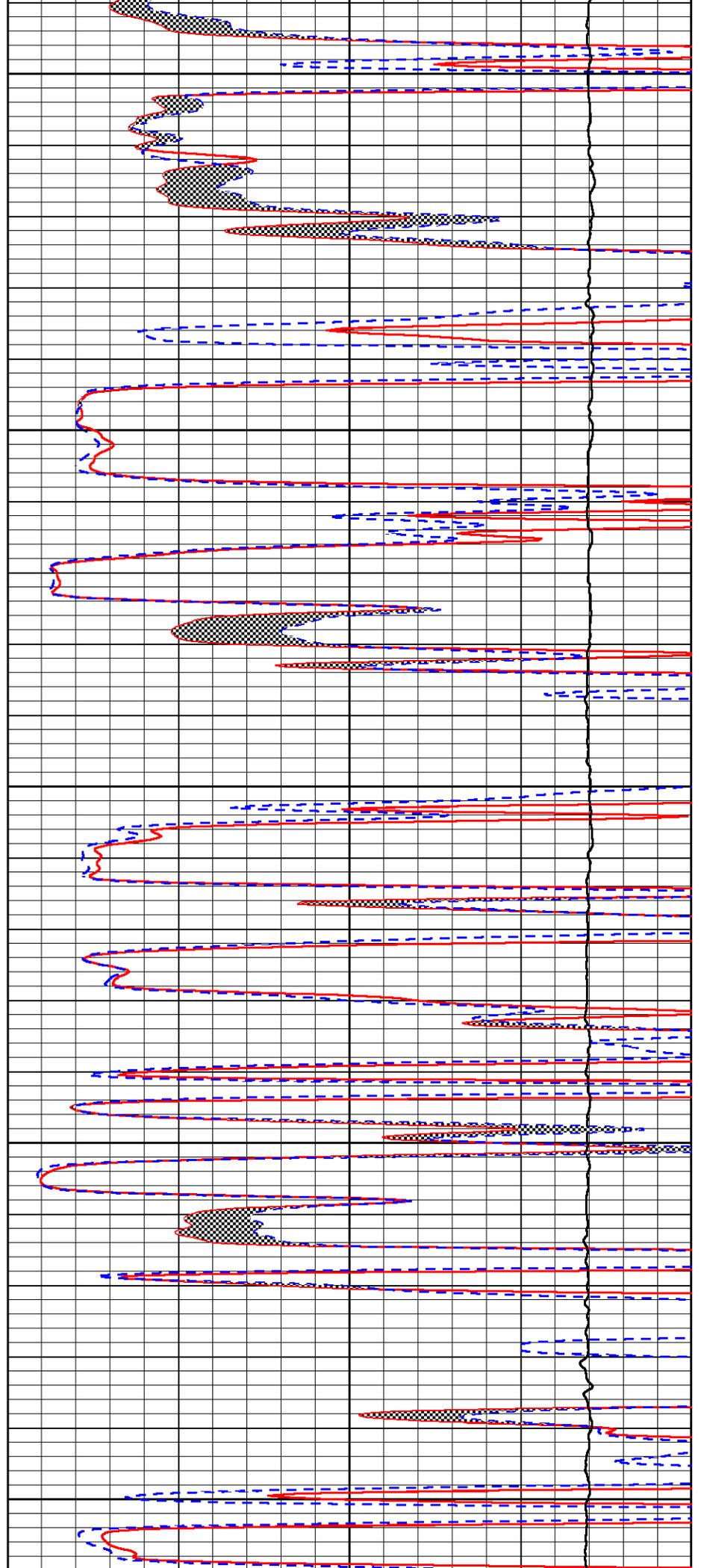
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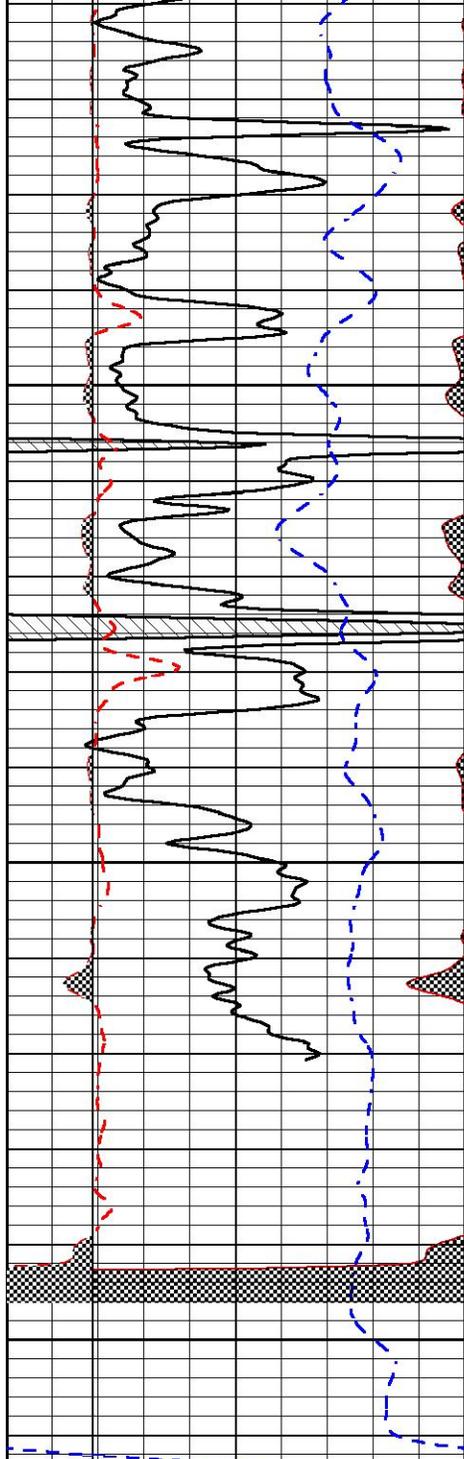
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3600

3650

3700



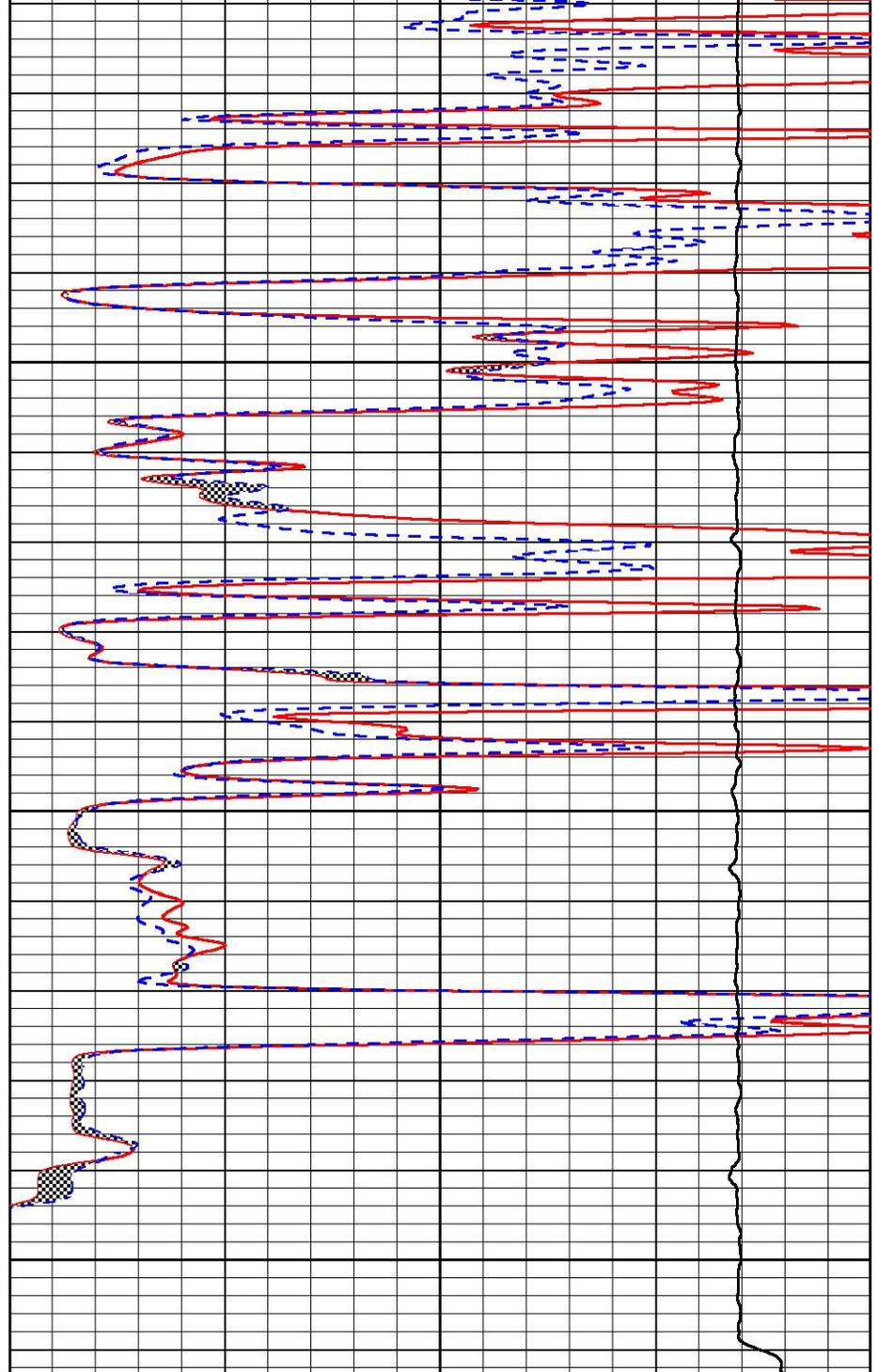


3750

3800

3850

0	Gamma Ray (GAPI)	150
6	Caliper (in)	16
2.875	mcal (in)	7.875
-200	sp (mV)	0



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MIDWEST WIRELINE

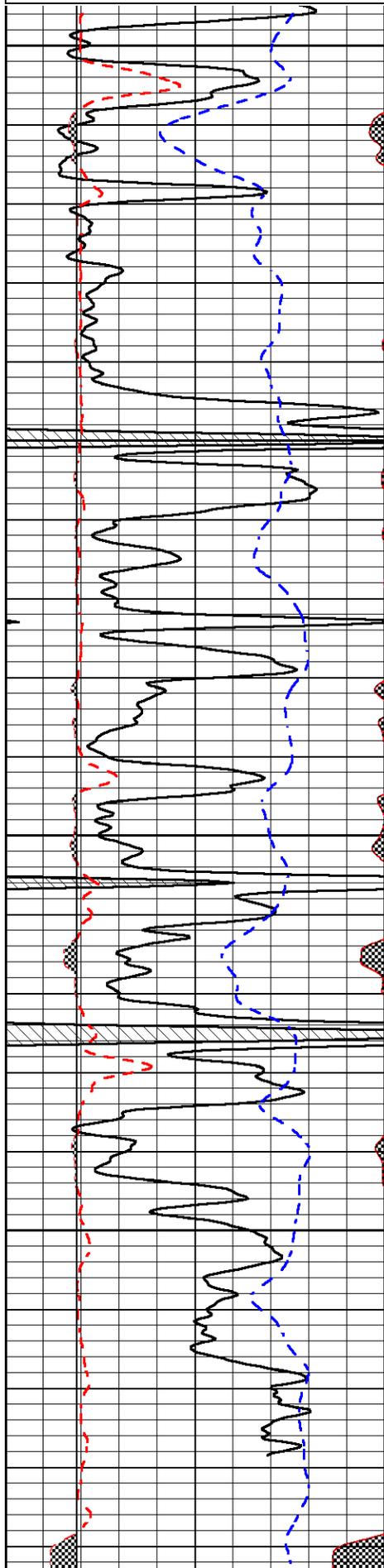
REPEAT SECTION

REPEAT PASS

Database File cobalt_sisters unit #1-2.db
 Dataset Pathname StkMI/pass2.1
 Presentation Format _micro
 Dataset Creation Tue Sep 26 14:55:34 2023
 Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150
6	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

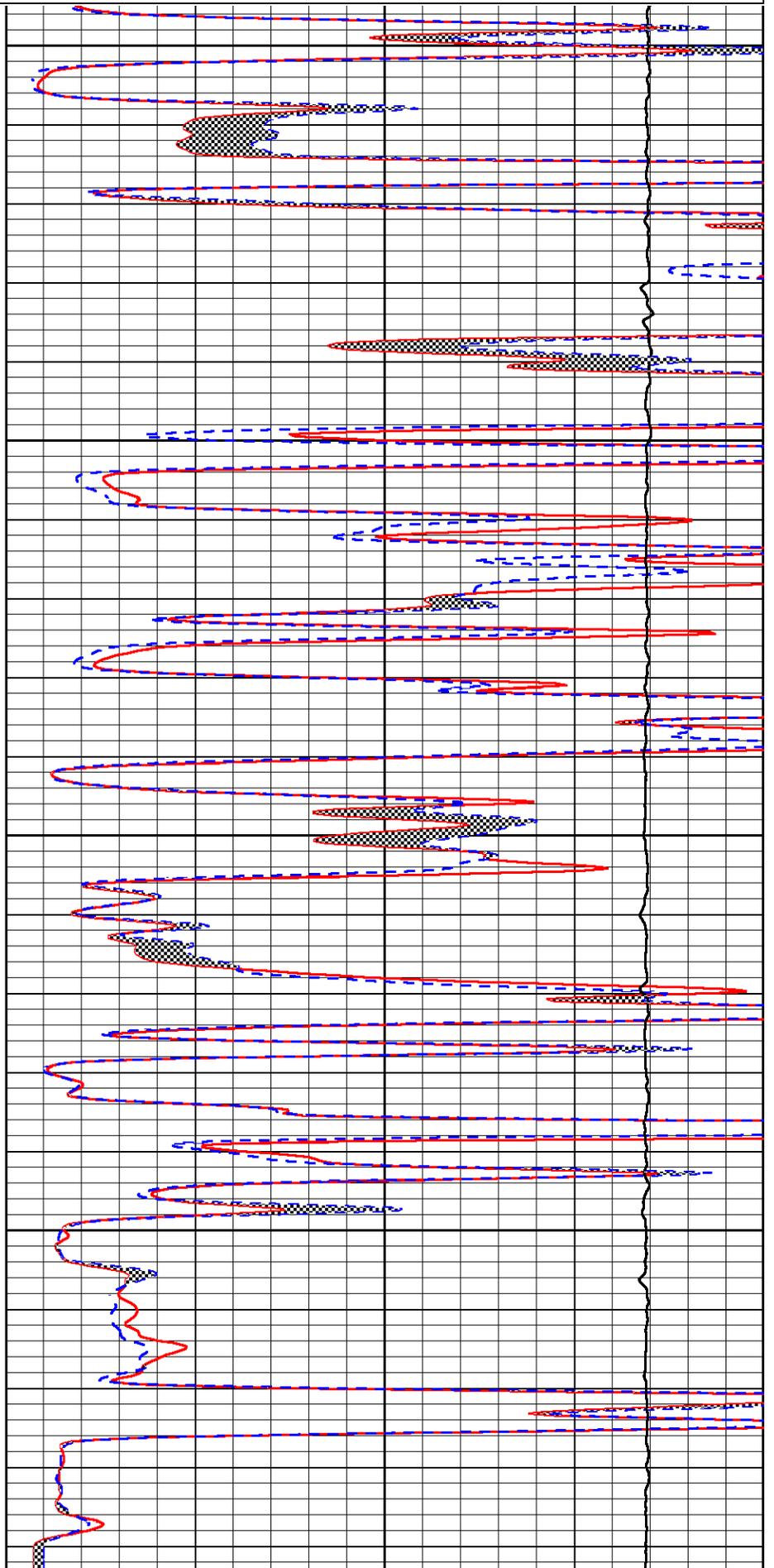


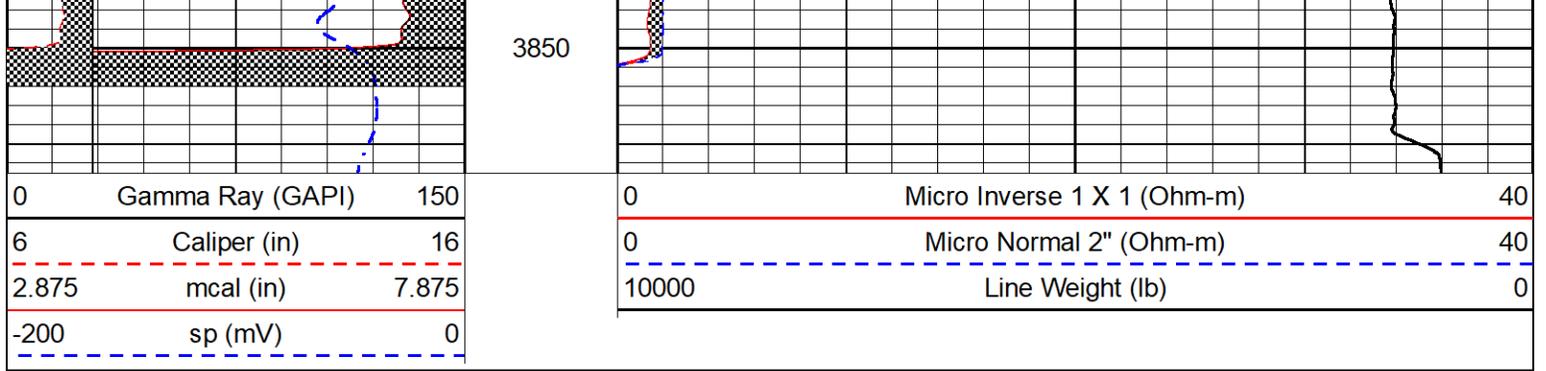
3650

3700

3750

3800





Calibration Report

Database File cobalt_sisters unit #1-2.db
 Dataset Pathname StkMI/pass3.1
 Dataset Creation Tue Sep 26 15:42:18 2023

Dual Induction Calibration Report

Serial-Model: 507-M&W
 Surface Cal Performed:

Loop:	Readings		References		Results		
	Air	Loop	Air	Loop	m	b	
Deep	68.570	638.100	0.000	255.800	mmho/m	0.500	-37.000
Medium	184.288	716.191	0.000	255.800	mmho/m	0.430	-75.000

Microlog Calibration Report

Serial-Model: 401-PSIML
 Performed: Mon Sep 25 22:02:56 2023

	Readings		References		Results		
	Zero	Cal	Zero	Cal	m	b	
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	21000.0000	-1.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	17000.0000	-0.7500
Caliper	1.0052	1.0858	5.0000	16.5000	in	142.7190	-138.7500

LITHODENSITY Calibration Report

Serial Number: 704-10
 Tool Model: STEP LITHO
 Performed: Fri Jun 23 15:26:01 2023

Source:

	Win1	Win2	Win3	Win4	Win5	Win6	Win7	Win8	
Background:									
SS:	51	54	202	252	21	70	42	1	cps
LS:	85	96	363	462	53	147	97	3	cps

Aluminum:

SS:	870	1018	2321	2004	37	71	43	2	cps
LS:	1057	1828	3315	1570	61	147	91	5	cps

Magnesium:

SS:	1459	1669	3829	2914	42	70	46	3	cps
LS:	4526	7550	13047	4982	98	135	93	13	cps

Aluminum+Iron:

SS: 553 719 1939 1750 37 72 45 2 cps
 LS: 613 1297 2812 1404 60 146 96 4 cps

	Density			PE					
	Actual	Calibrated		Actual	Calibrated	Quality			
Background:									
SS:						0.245			
LS:						0.205			
Aluminum:									
SS:	2.6000	2.6000	g/cc			0.240			
LS:	2.6000	2.6000	g/cc			0.236			
Magnesium:									
SS:	1.6800	1.6800	g/cc	2.5700	2.5700	0.210			
LS:	1.6800	1.6800	g/cc	2.5700	2.5700	0.184			
Aluminum+Iron:									
SS:						6.1800	0.228		
LS:						6.1800	0.206		

Before Survey
 Performed: Wed Feb 9 13:15:42 2022

SS:	0	0	0	0	0	0	0	0	cps
LS:	1370	1580	3705	3037	48	80	50	4	cps

After Survey
 Performed: Wed Feb 9 13:16:02 2022

SS:	0	0	0	0	0	0	0	0	cps
LS:	1400	1600	3800	3100	60	100	70	6	cps

Caliper:	Reference:	Reading:
Small Ring:	6.0 in	0.2
Large Ring:	15.0 in	0.8
Gain:	16.161	
Offset:	1.080	

Compensated Neutron Calibration Report

Serial Number:	207
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

PRE-SURVEY VERIFICATION

	Detector	Readings	Measured	Target
1)	Short Space	cps		
	Long Space	cps	pu	pu
2)	Short Space	cps		
	Long Space	cps	pu	
3)	Short Space	cps		
	Long Space	cps	pu	

POST-SURVEY VERIFICATION

	Detector	Readings	Measured	Target
1)	Short Space	cps		
	Long Space	cps	pu	pu
2)	Short Space	cps		
	Long Space	cps	pu	pu

3) Short Space
Long Space

cps
cps

pu

pu

Gamma Ray Calibration Report

Serial Number:	107	
Tool Model:	M&W	
Performed:	Fri Dec 3 15:10:46 2021	
Calibrator Value:	500.0	GAPI
Background Reading:	24.0	cps
Calibrator Reading:	637.0	cps
Sensitivity:	0.5500	GAPI/cps



MIDWEST WIRELINE

Company	Cobalt Energy LLC
Well	Sisters Unit #1-2
Field	Brassfield South
County	Graham
State	Kansas