



MIDWEST WIRELINE

**DUAL COMPENSATED
POROSITY W/PE**

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
DIL/MEL
K.B. 2345
D.F.
G.L. 2340

Date	9/26/2023						
Run Number	One						
Type Log	CNL/CDL						
Depth Driller	3860						
Depth Logger	3859						
Bottom Logged Interval	3830						
Top Logged Interval	3200						
Type Fluid In Hole	Chemical						
Salinity, PPM CL	1900						
Density	9.2						
Level	Full						
Max. Rec. Temp. F	115						
Operating Rig Time	2 Hours						
Equipment -- Location	P-24 Hays						
Recorded By	T. Martin						
Witnessed By	Larry Nicholson						
Borehole Record							
Run No.	Bit	From	To	Size	Wgt.	From	To
One	12.25	00	217	8.625	23	00	217
Two	7.875	217	TD				
Casing Record							

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All interpretations are opinions based on inferences from electrical or other measurements and Midwest Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Midwest 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.

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
LCAL	28.21		MWLith-STEP LITHO (704-10) Long Litho Mandrel	8.92	5.00	250.00
LLW8N	28.21		ML-PSIML (401)	7.58	4.00	65.00
LLW7N	28.21					
LLW6N	28.21					
LLW5N	28.21					
LLW4N	28.21					
LLW3N	28.21					
LLW2N	28.21					
LLW1N	28.21					
LSLOCK	27.96		DIL-M&W (507)	18.25	3.50	220.00
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					
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

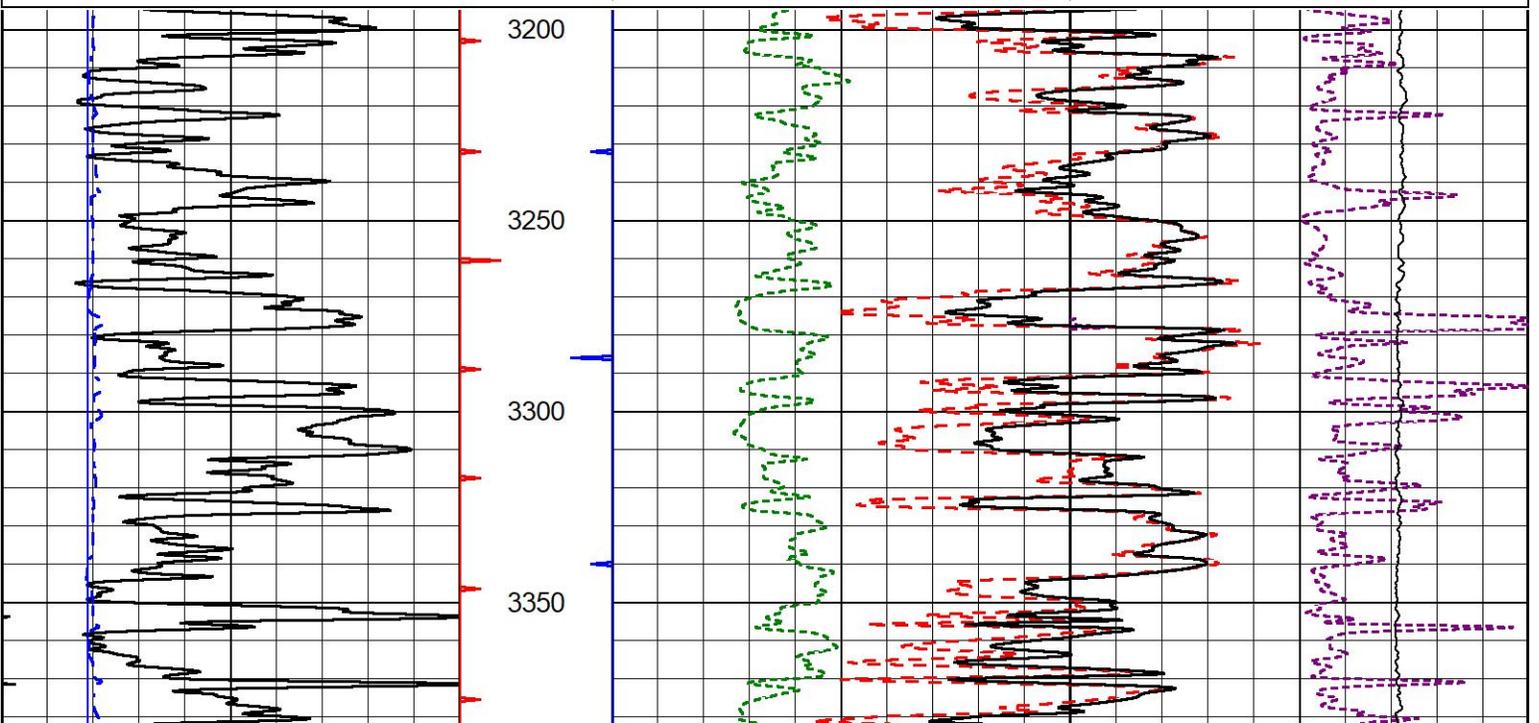


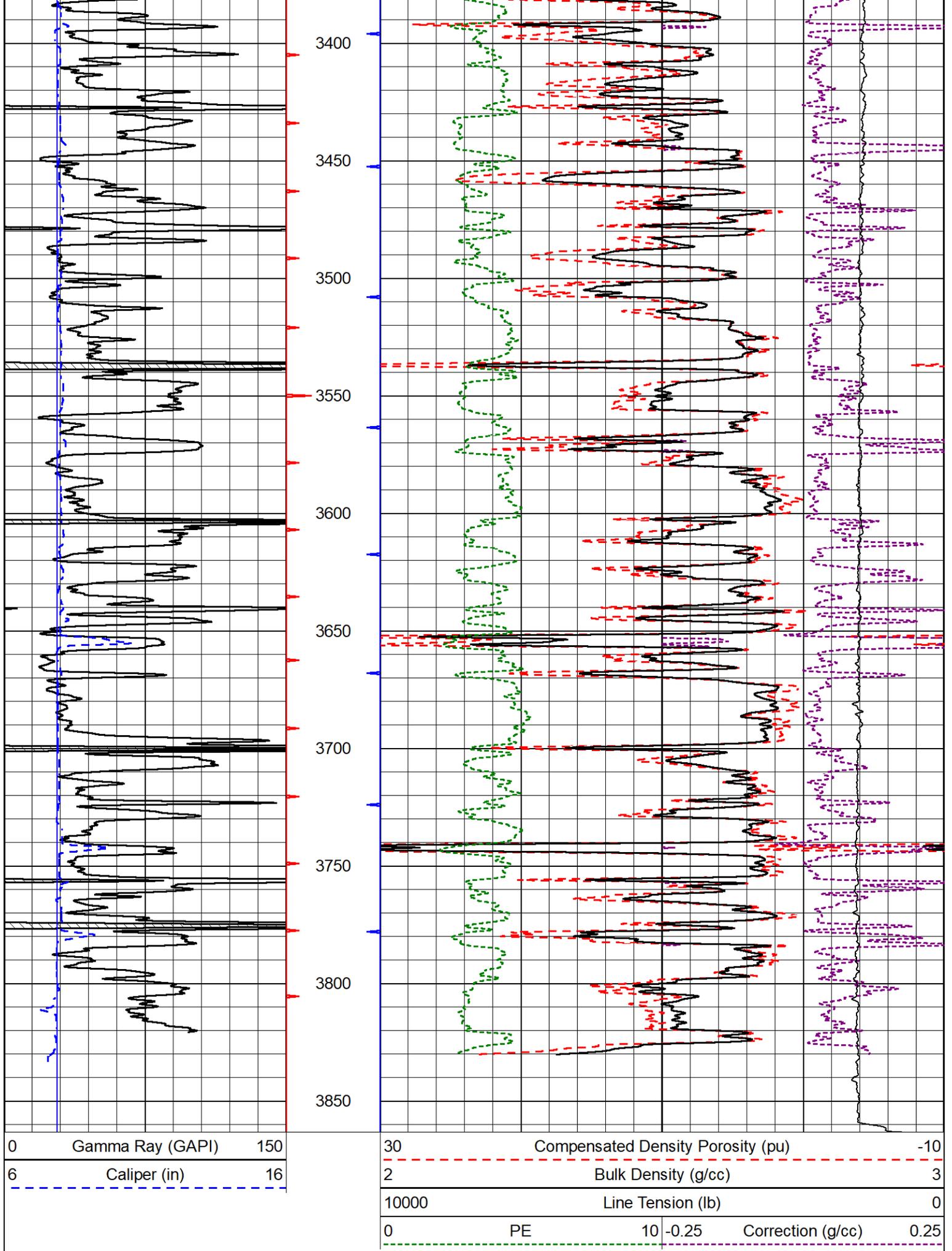
2" SCALE BULK DENSITY

MAIN PASS

Database File cobalt_sisters unit #1-2.db
 Dataset Pathname StkMI/pass3.3
 Presentation Format _cdlpe
 Dataset Creation Tue Sep 26 15:02:18 2023
 Charted by Depth in Feet scaled 1:600

0	Gamma Ray (GAPI)	150	30	Compensated Density Porosity (pu)	-10
6	Caliper (in)	16	2	Bulk Density (g/cc)	3
			10000	Line Tension (lb)	0
			0	PE	10 -0.25
				Correction (g/cc)	0.25





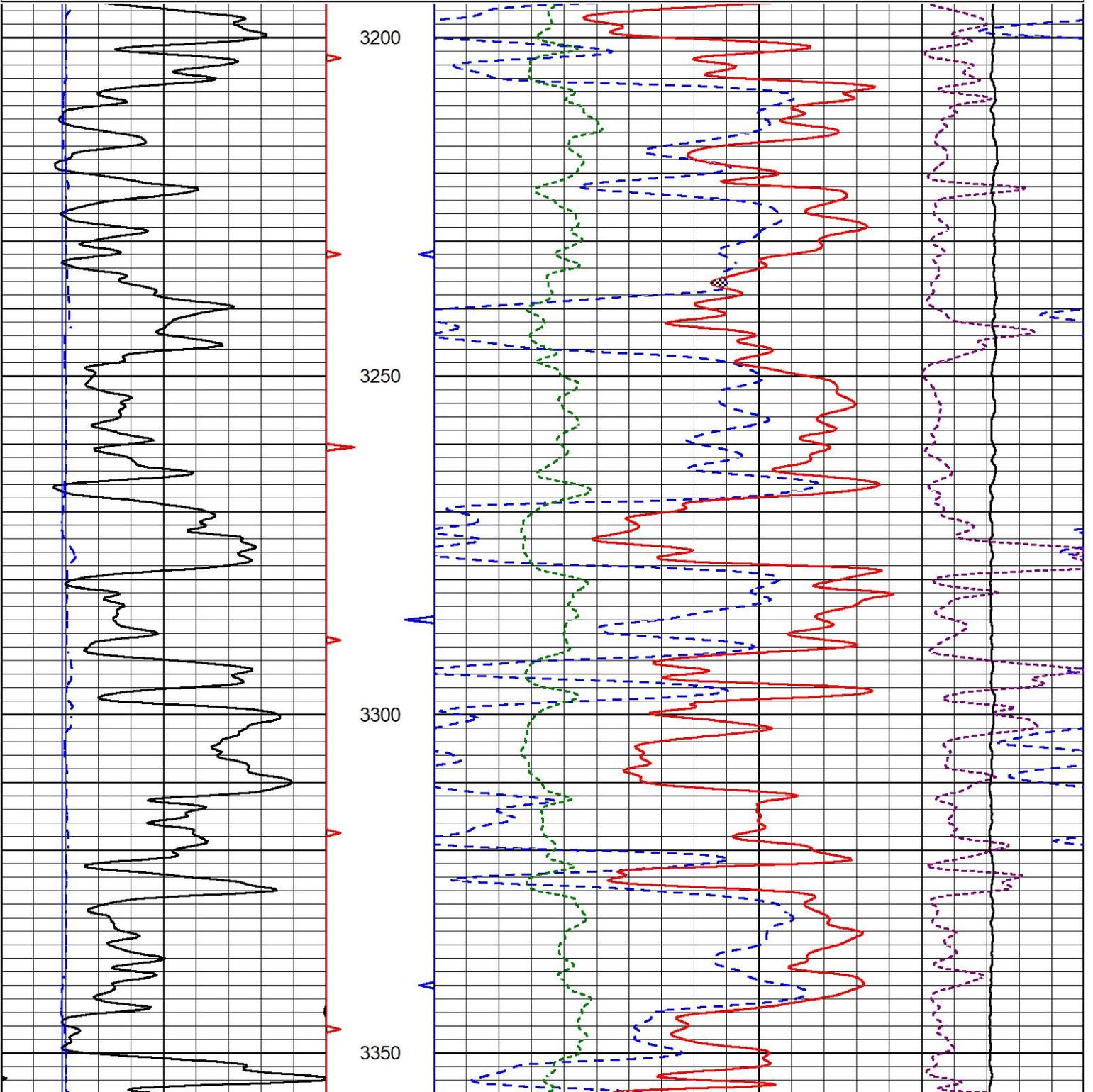


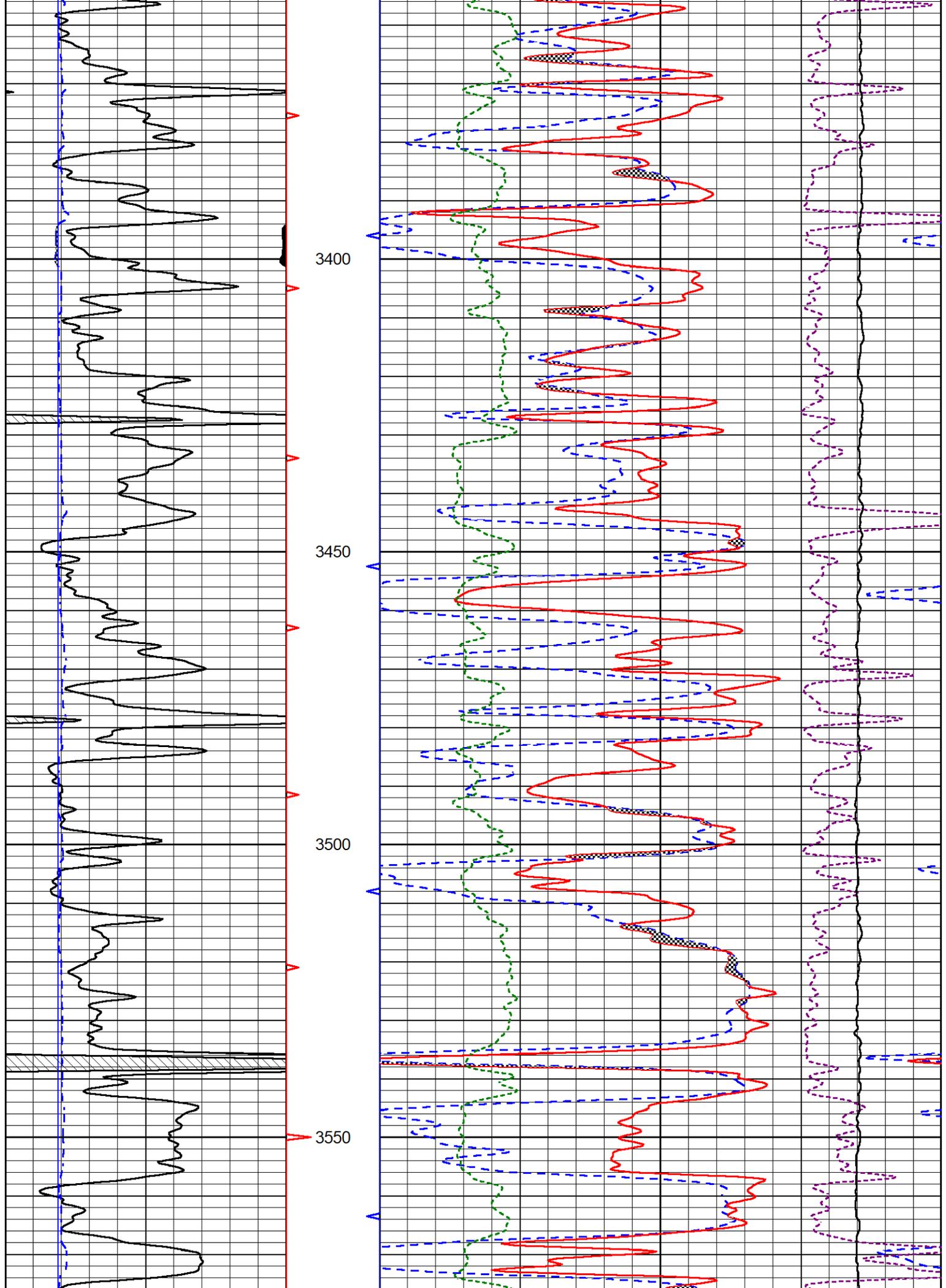
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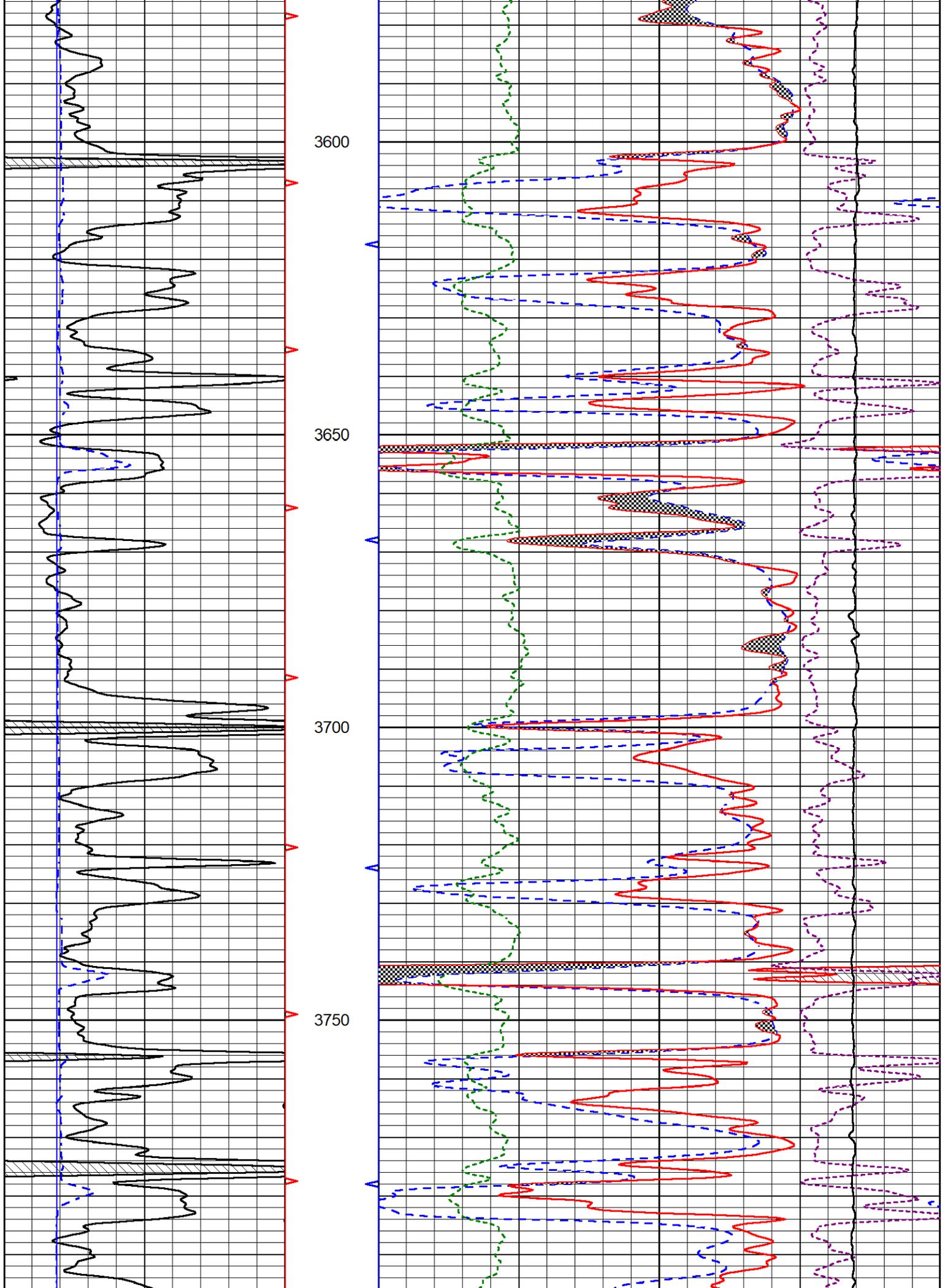
MAIN PASS

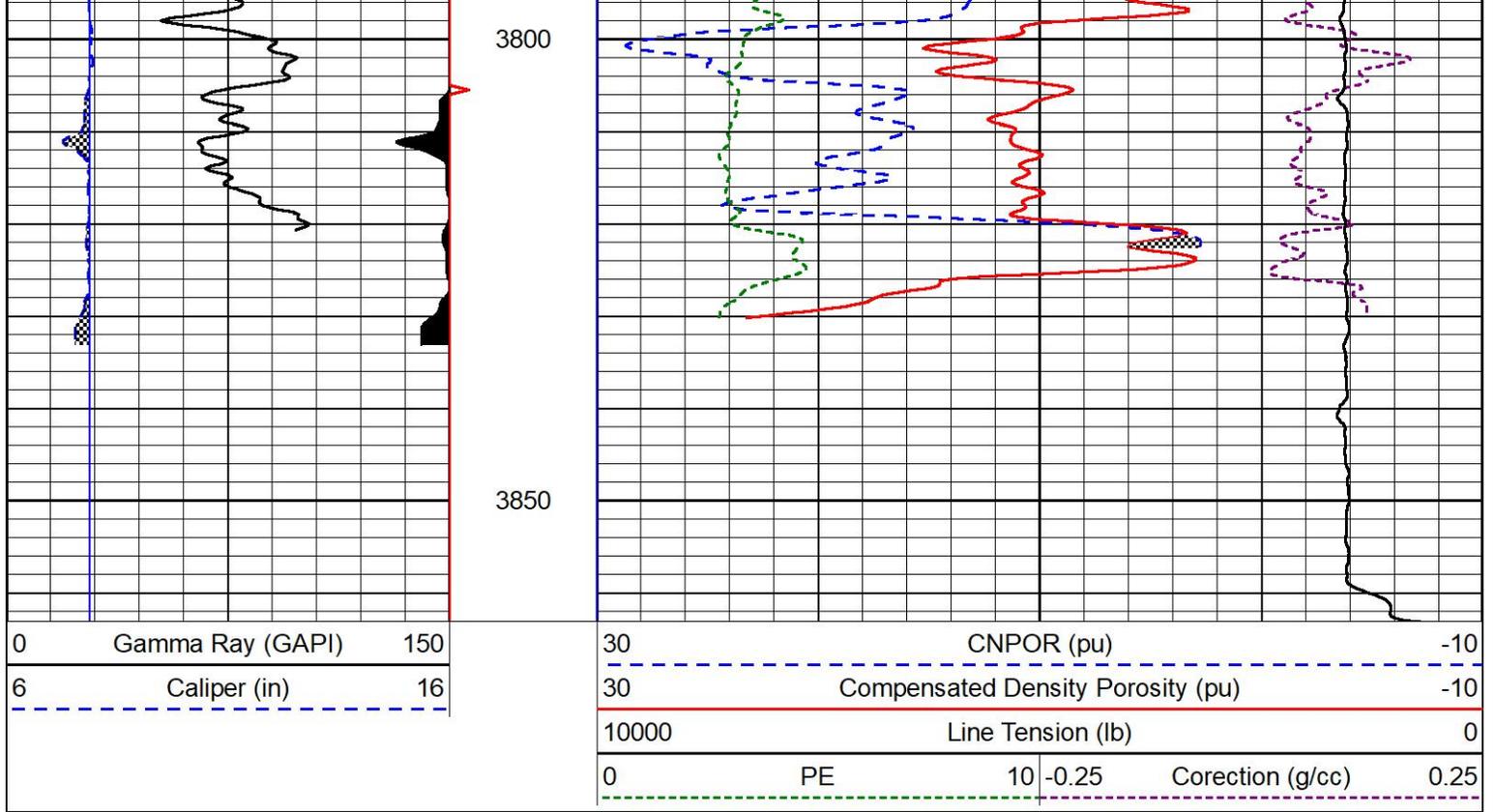
Database File cobalt_sisters unit #1-2.db
 Dataset Pathname StkMI/pass3.1
 Presentation Format _CNDLS~4
 Dataset Creation Tue Sep 26 15:42:18 2023
 Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150	30	CNPOR (pu)	-10
6	Caliper (in)	16	30	Compensated Density Porosity (pu)	-10
			10000	Line Tension (lb)	0
			0	PE	10 -0.25
				Corection (g/cc)	0.25





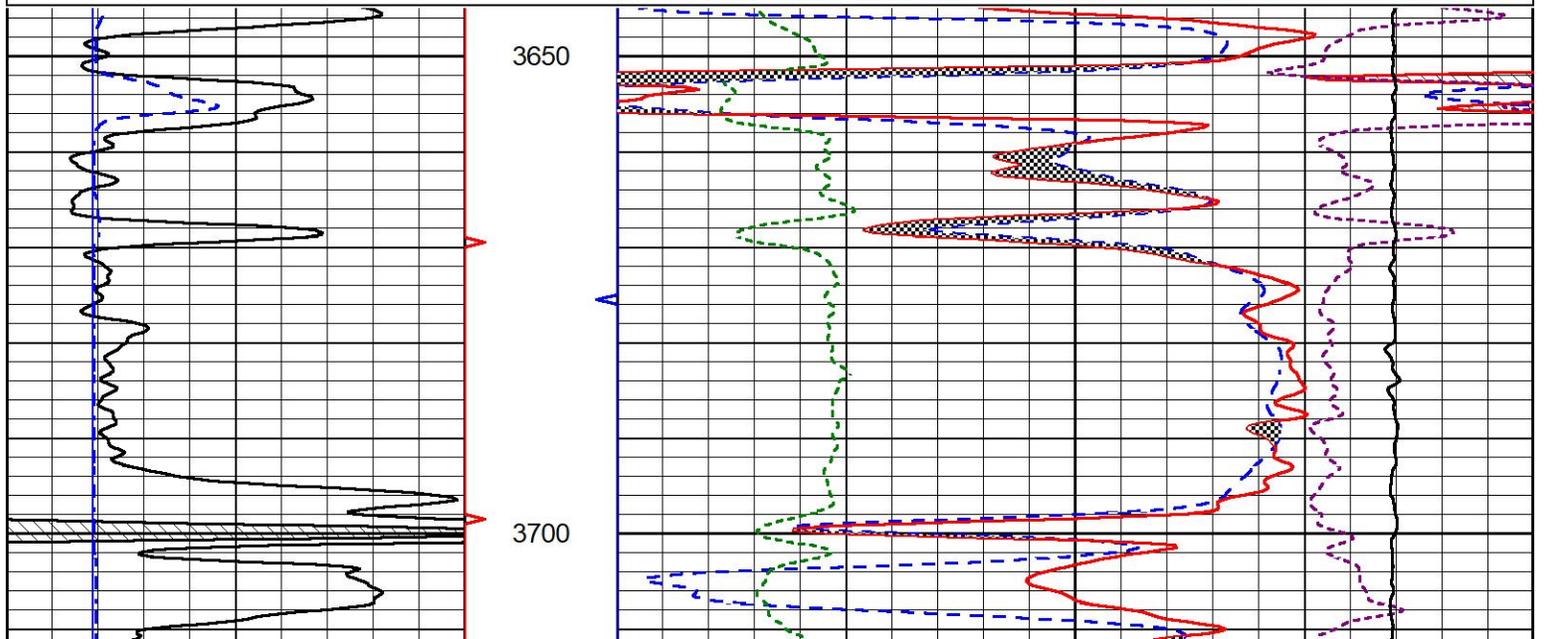
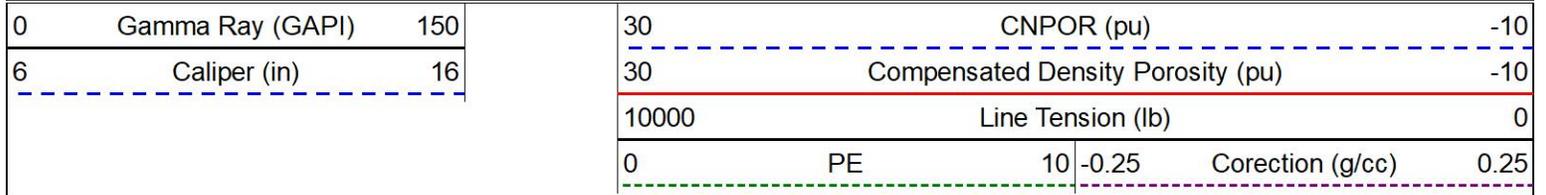


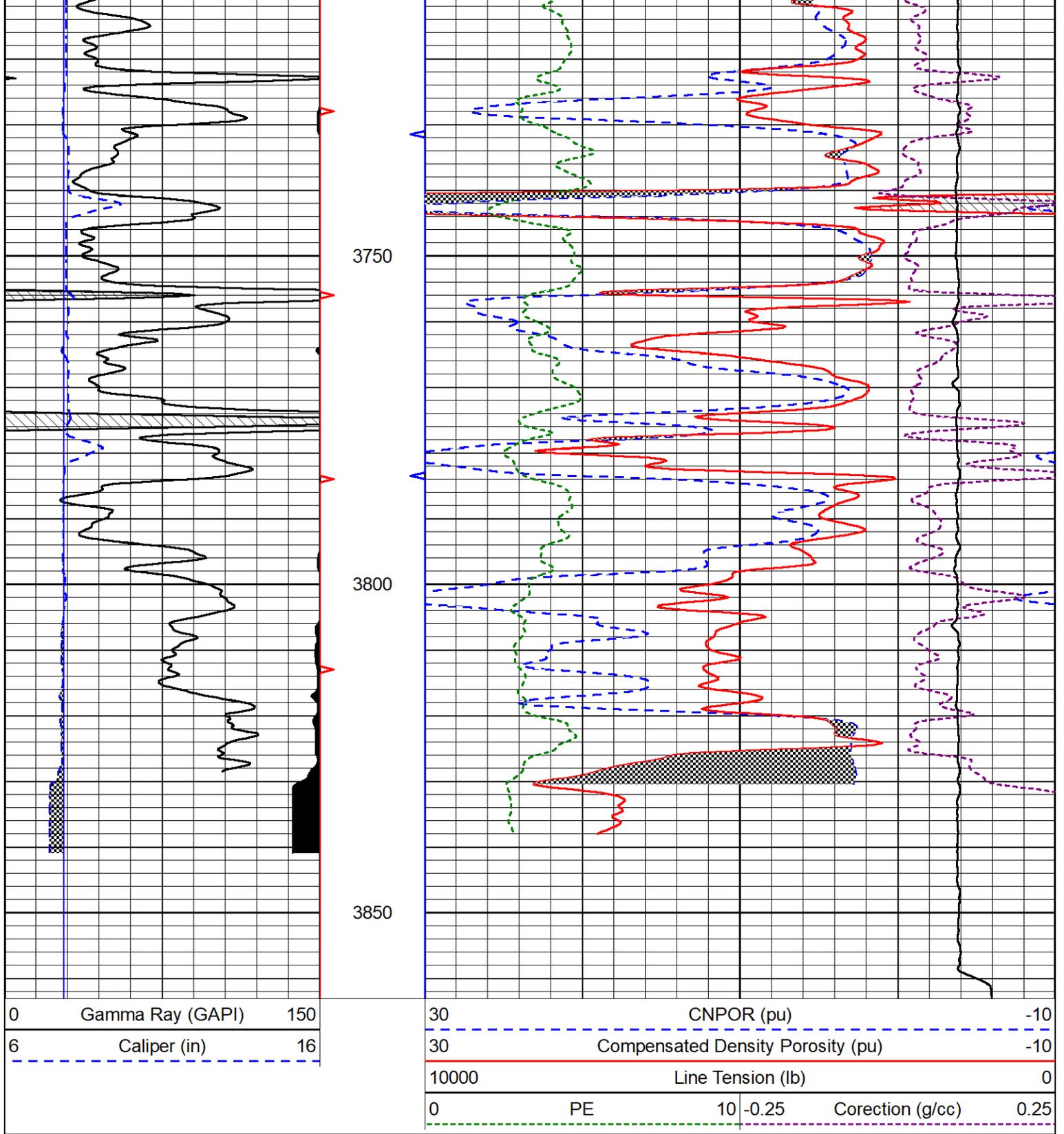


REPEAT SECTION

REPEAT PASS

Database File cobalt_sisters unit #1-2.db
 Dataset Pathname StkMI/pass2.1
 Presentation Format _CNDLS~4
 Dataset Creation Tue Sep 26 14:55:34 2023
 Charted by Depth in Feet scaled 1:240





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:

Readings

References

Results

Loop:	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	cps		
	Long Space	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



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

