



MIDWEST WIRELINE

**DUAL COMP POROSITY
MICRO & DUAL IND LOG**

Company **EPOC, LLC**
 Well **Eck 'A' #2**
 Field **Hazlett**
 County **Butler** State **Kansas**

Company **EPOC, LLC**
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Location: **API # : 15-015-24166-00-00** Other Services
E/2 E/2 NW/NW
660 FNL & 1235 FWL
SEC 32 TWP 23S RGE 5E
 Permanent Datum **Ground Level** Elevation **1480**
 Log Measured From **Kelly Bushing**
 Drilling Measured From **Kelly Bushing** K.B. **1486**
 D.F. **1480**
 G.L.

Date	9/11/2022						
Run Number	One						
Type Log	CNL/CDL/ML/DIL						
Depth Driller	2552						
Depth Logger	2552						
Bottom Logged Interval	2551						
Top Logged Interval	1500						
Type Fluid In Hole	Chemical						
Salinity, PPM CL							
Density							
Level	Full						
Max. Rec. Temp. F	102						
Operating Rig Time	2 Hours						
Equipment -- Location	P-24 Hays						
Recorded By	D. Schmidt						
Witnessed By	Ray Gilbert						
Borehole Record							
Run No.	Bit	From	To	Size	Wgt.	From	To
One	12.25	0	212	8.625	23	0	212
Two	7.875	212	TD				
Casing Record							

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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.

**Newton,
East on 1st St to Purity Springs Rd, South to 130, 1/4 East,
South into**

Log Measured From: Kelly Bushing 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: **Ray Gilbert**
 Secondary Witness:
 Secondary Witness:
 Secondary Witness:

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.33		GR-M&W (106)	3.00	3.50	50.00
CNLSC CNSSC	37.23 36.48		CNT-M&W (207-MW)	5.00	3.50	100.00
LSD DCAL SSD	28.18 28.17 27.68		CDL-M&W (307-11)	8.50	4.00	250.00
MCAL MI MN	19.58 19.58 19.58		ML-PSIML (402)	7.58	4.00	65.00
RLL3F RLL3	15.50 15.50					
CILD	8.33		DIL-M&W (501 HT)	18.25	3.50	220.00
CILM	4.50					
SP	0.20					

Dataset: epoc_eck a 2.db: field/well/stkml/pass3.10
 Total length: 42.33 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\epoc_eck a 2.db
Dataset field/well/stkml/pass3.10/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	102	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	-38	70	Off	2552

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



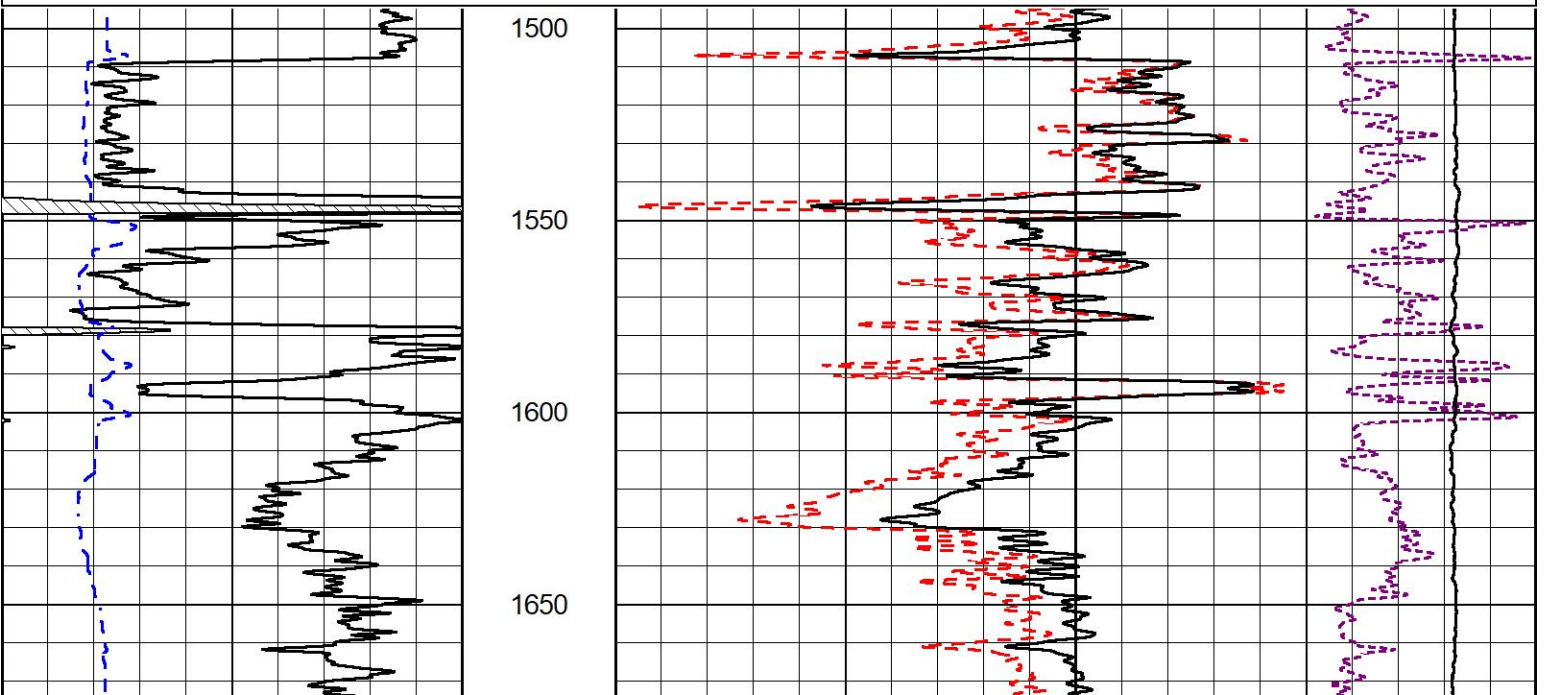
2" SCALE BULK DENSITY

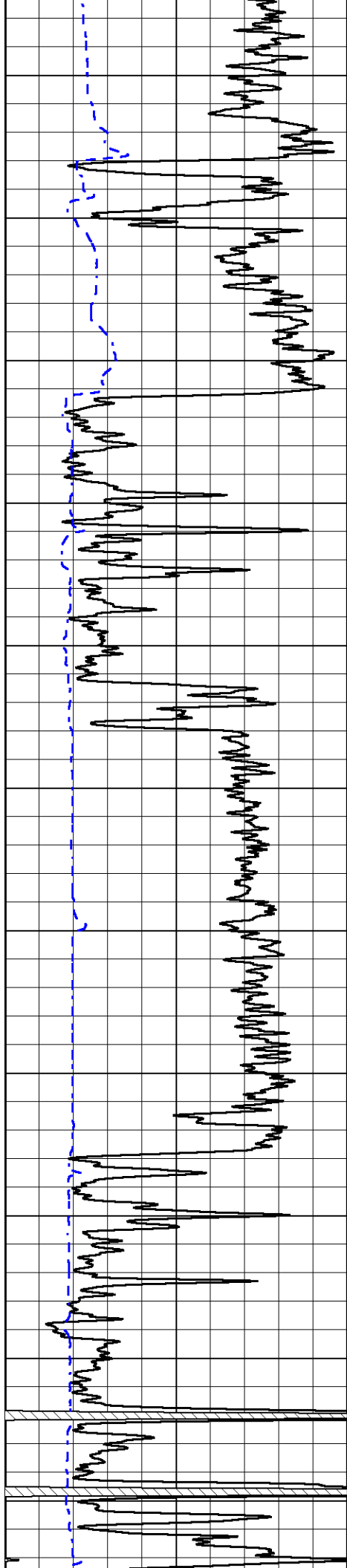
MAIN PASS

Database File epoc_eck a 2.db
Dataset Pathname stkml/pass3.2
Presentation Format _cdl
Dataset Creation Sun Sep 11 12:01:42 2022
Charted by Depth in Feet scaled 1:600

0	Gamma Ray (GAPI)	150
6	Caliper (in)	16

30	Compensated Density (pu)	-10
2	Bulk Density (g/cc)	3
10000	Line Tension (lb)	0
-0.25	Correction (g/cc)	0.25





1700

1750

1800

1850

1900

1950

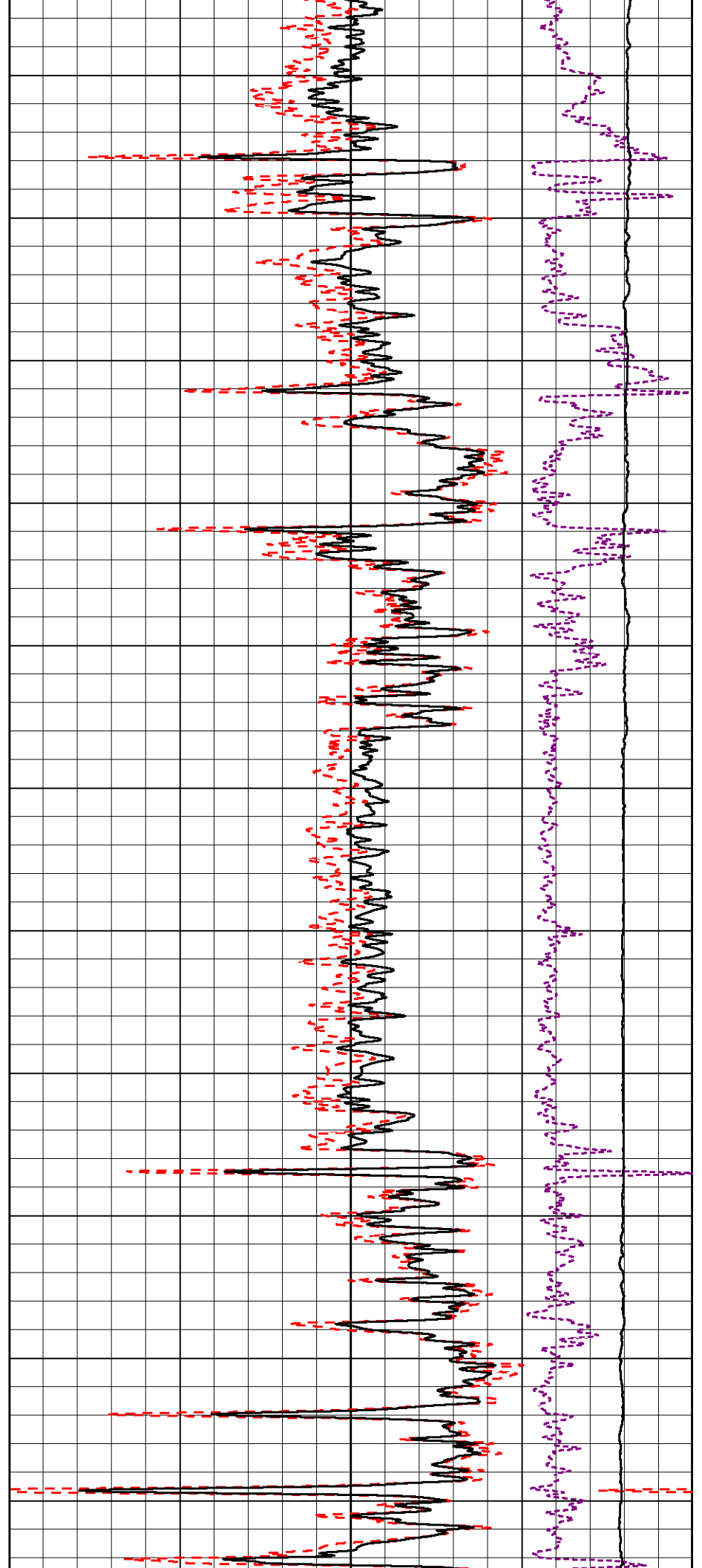
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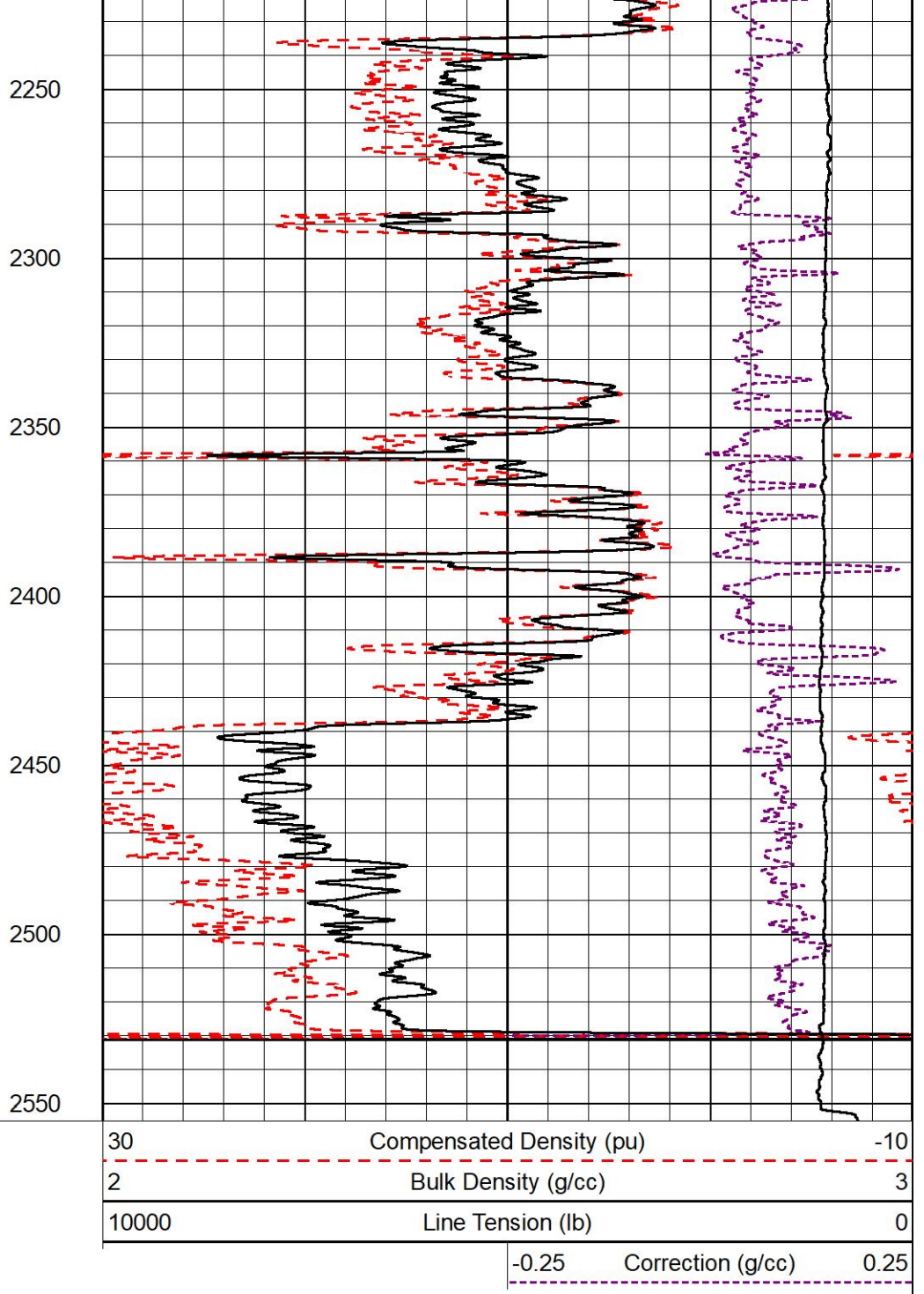
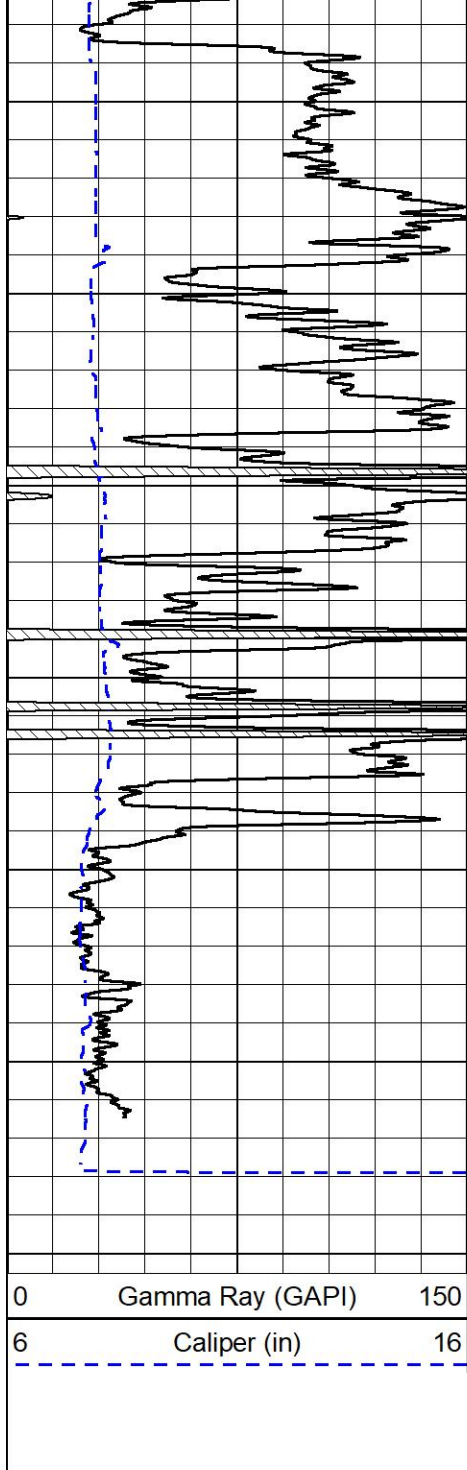
2050

2100

2150

2200





MIDWEST WIRELINE

DETAIL SECTION

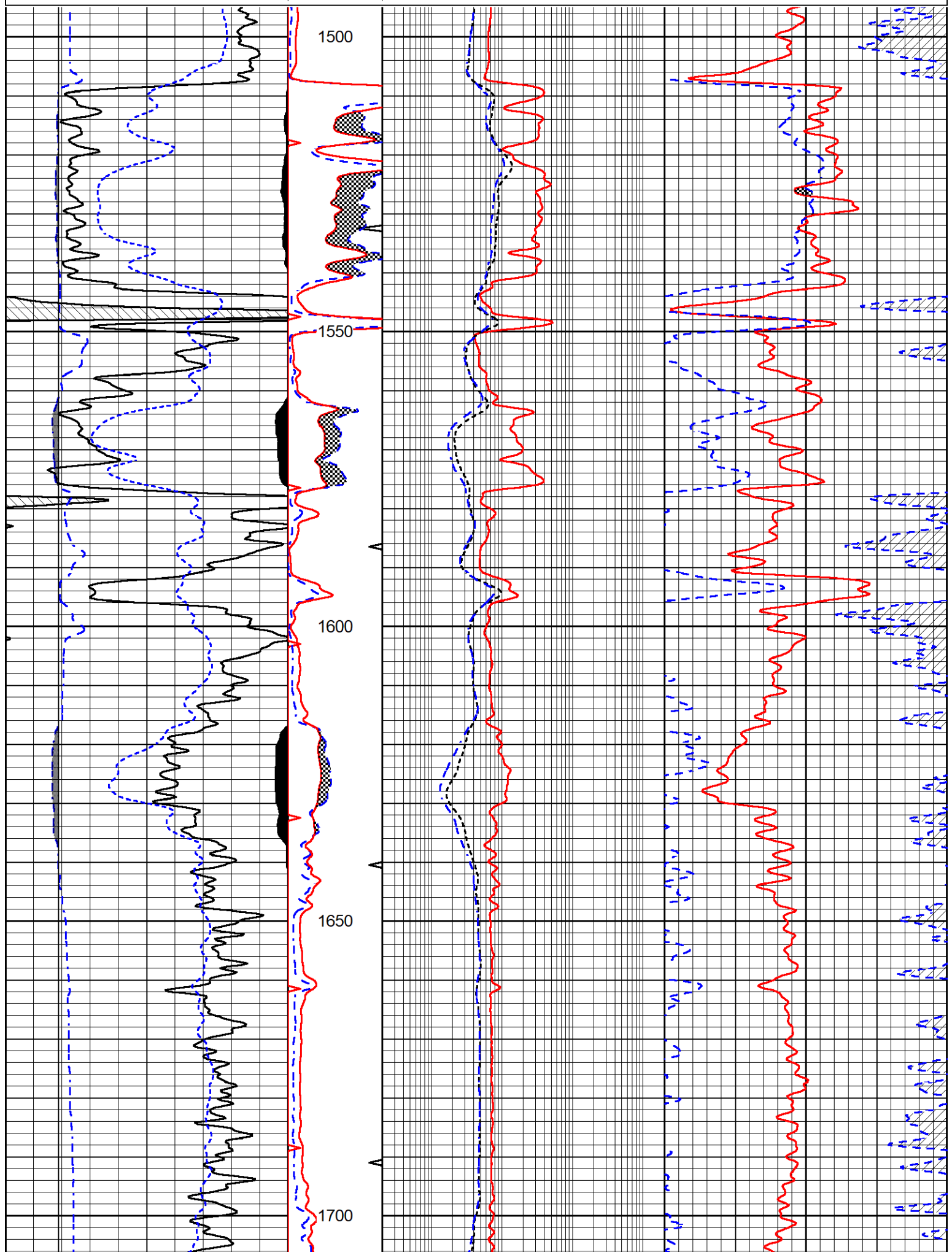
MAIN PASS

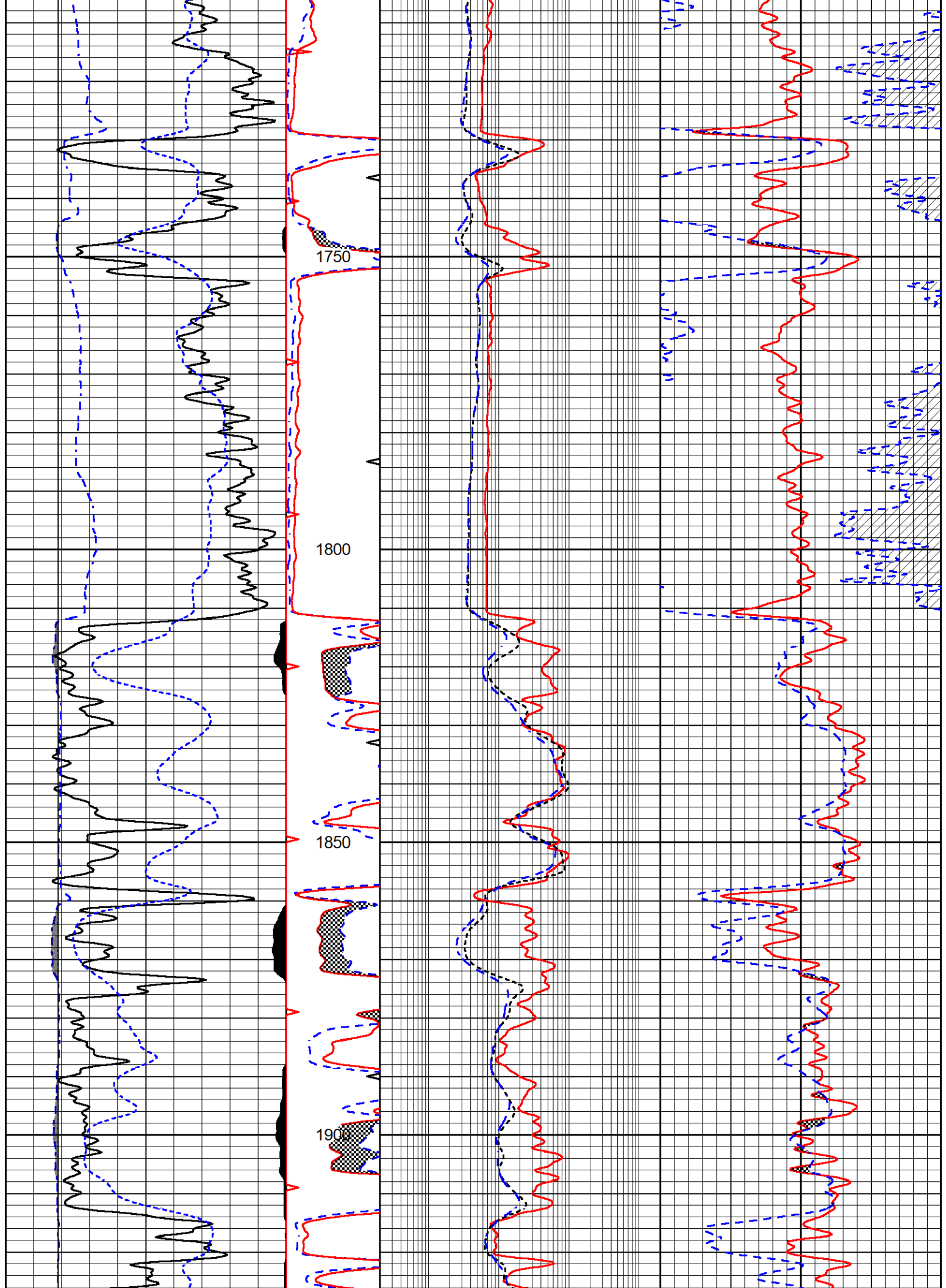
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 Dataset Pathname stkml/pass3.1
 Presentation Format jamex
 Dataset Creation Sun Sep 11 12:22:30 2022
 Charted by Depth in Feet scaled 1:240

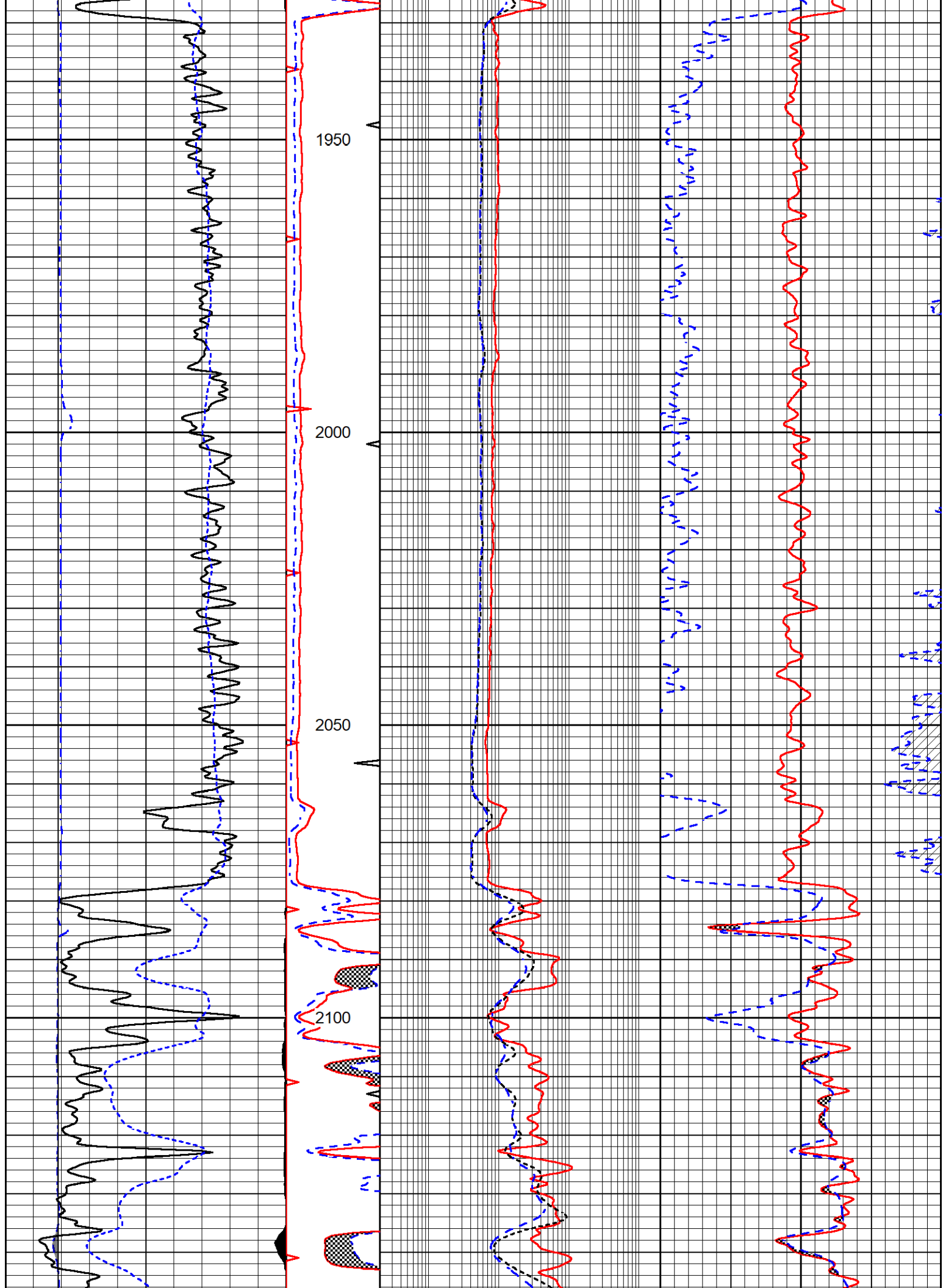
0	Gamma Ray (GAPI)	150	MN	0.2	Shallow Guard (Ohm-m)	2000	30	Density Porosity (pu)	-10
6	Caliper (in)	16	(Ohm-m)	0.2	Medium Induction (Ohm-m)	2000	30	Neutron Porosity (pu)	-10
-200	SP (mV)	0	0	20	0.2	Deep Induction (Ohm-m)	2000		
6	Bit Size	16	MI						
			(Ohm m)						

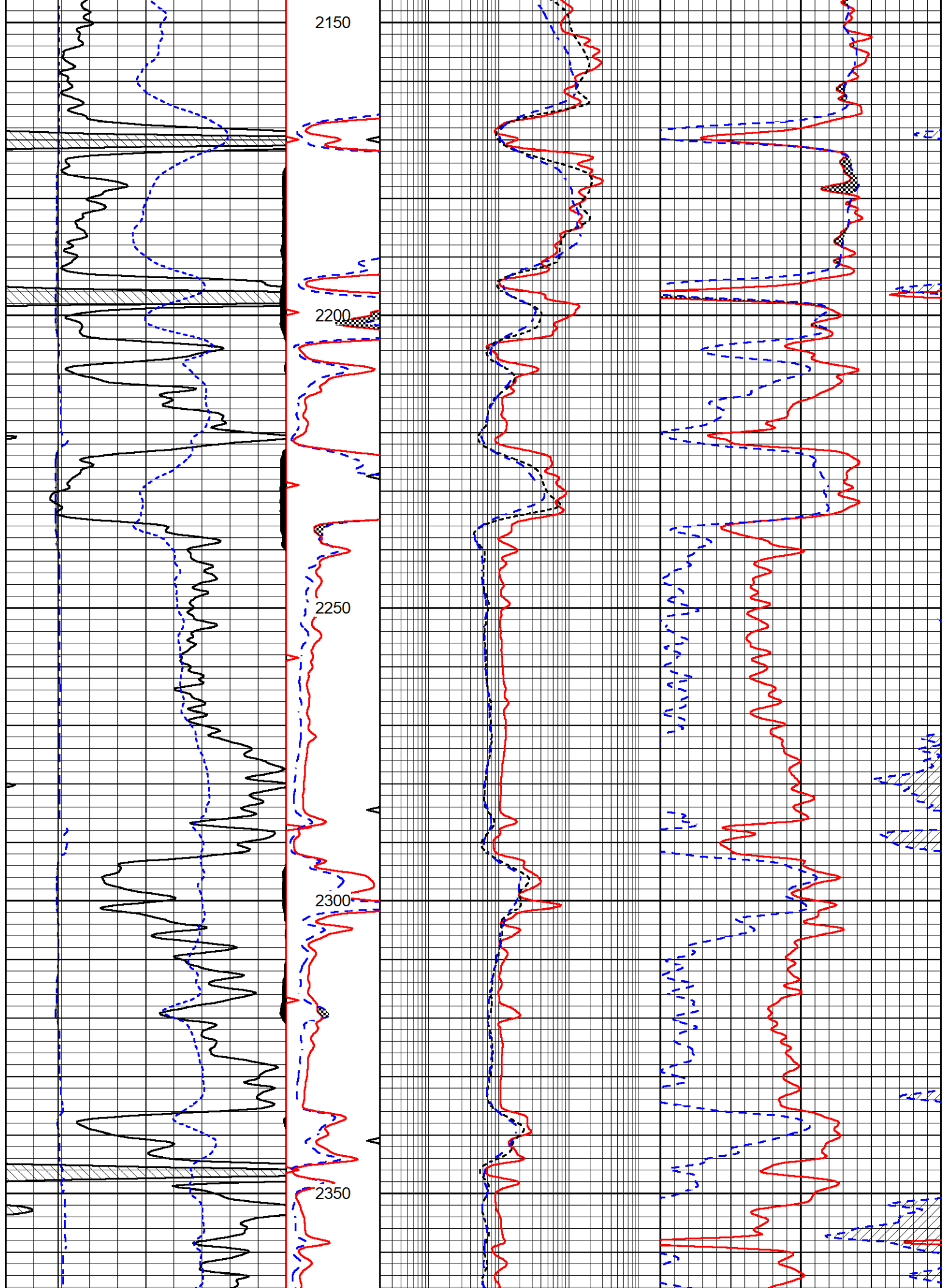
(Cm/Min)

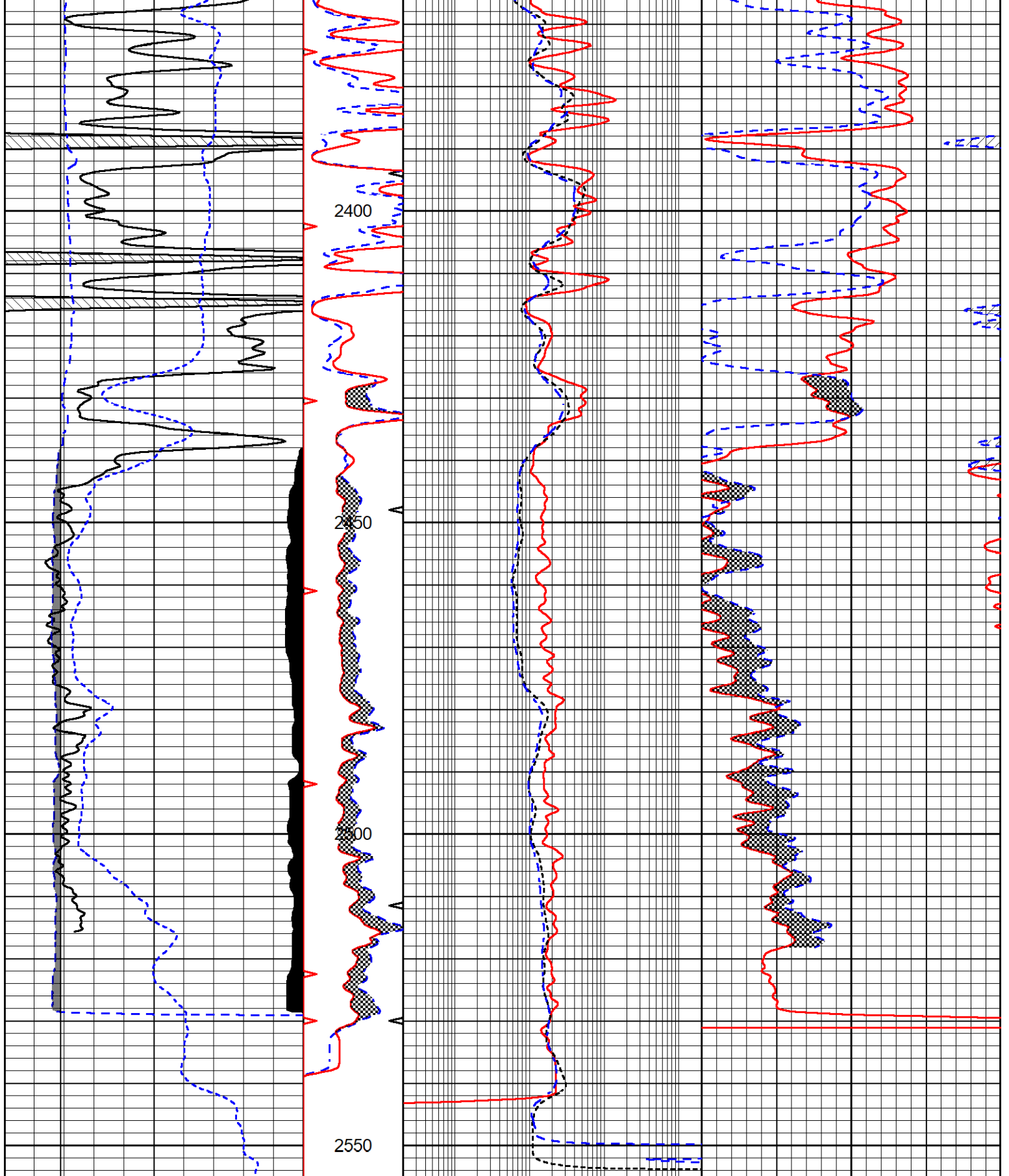
0 20











0	Gamma Ray (GAPI)	150	MN	0.2	Shallow Guard (Ohm-m)	2000	30	Density Porosity (pu)	-10
6	Caliper (in)	16	(Ohm-m)	0.2	Medium Induction (Ohm-m)	2000	30	Neutron Porosity (pu)	-10
-200	SP (mV)	0	0	20	0.2	Deep Induction (Ohm-m)	2000		
6	Bit Size	16	MI						
			(Ohm-m)						
			0	20					

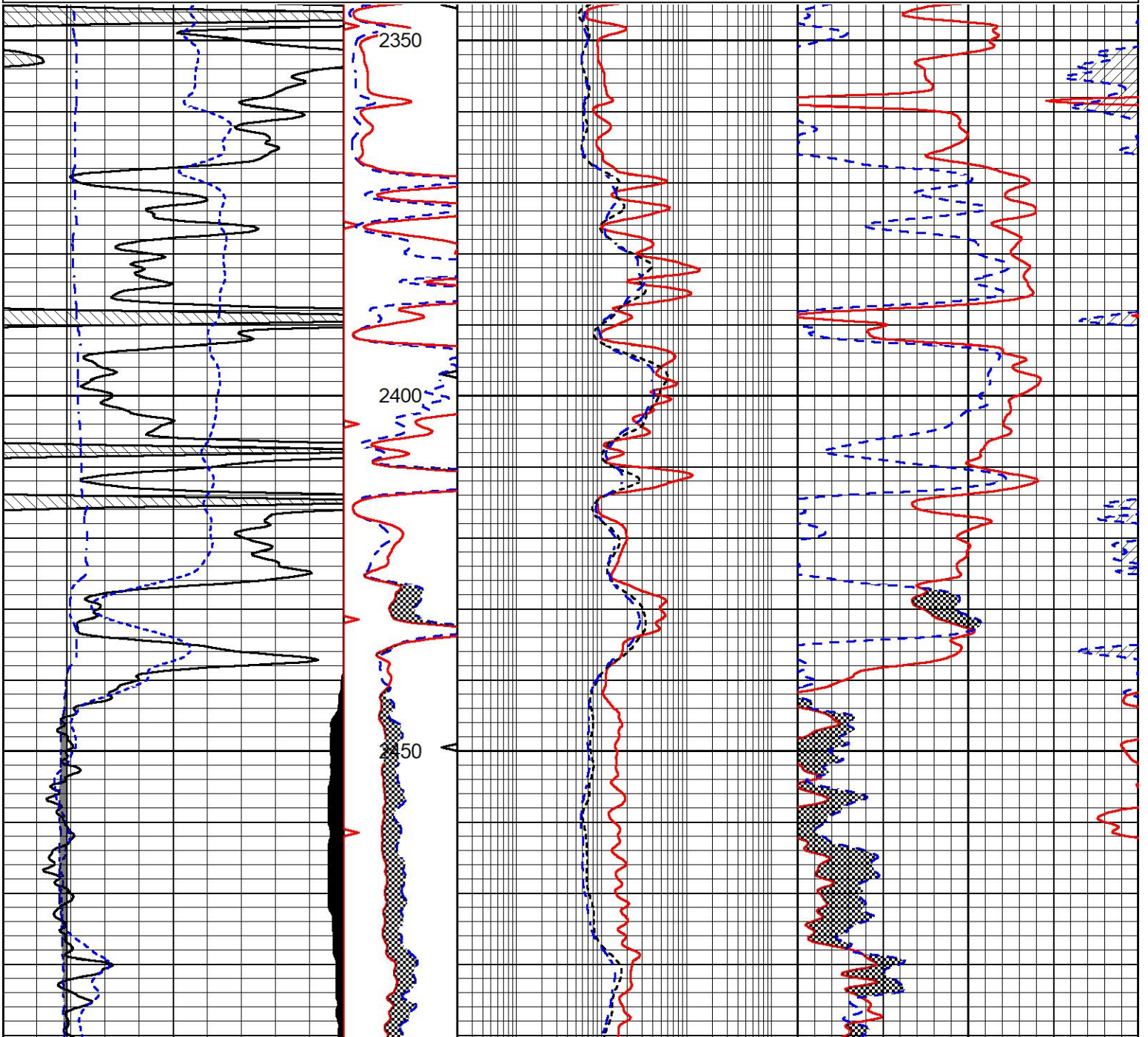


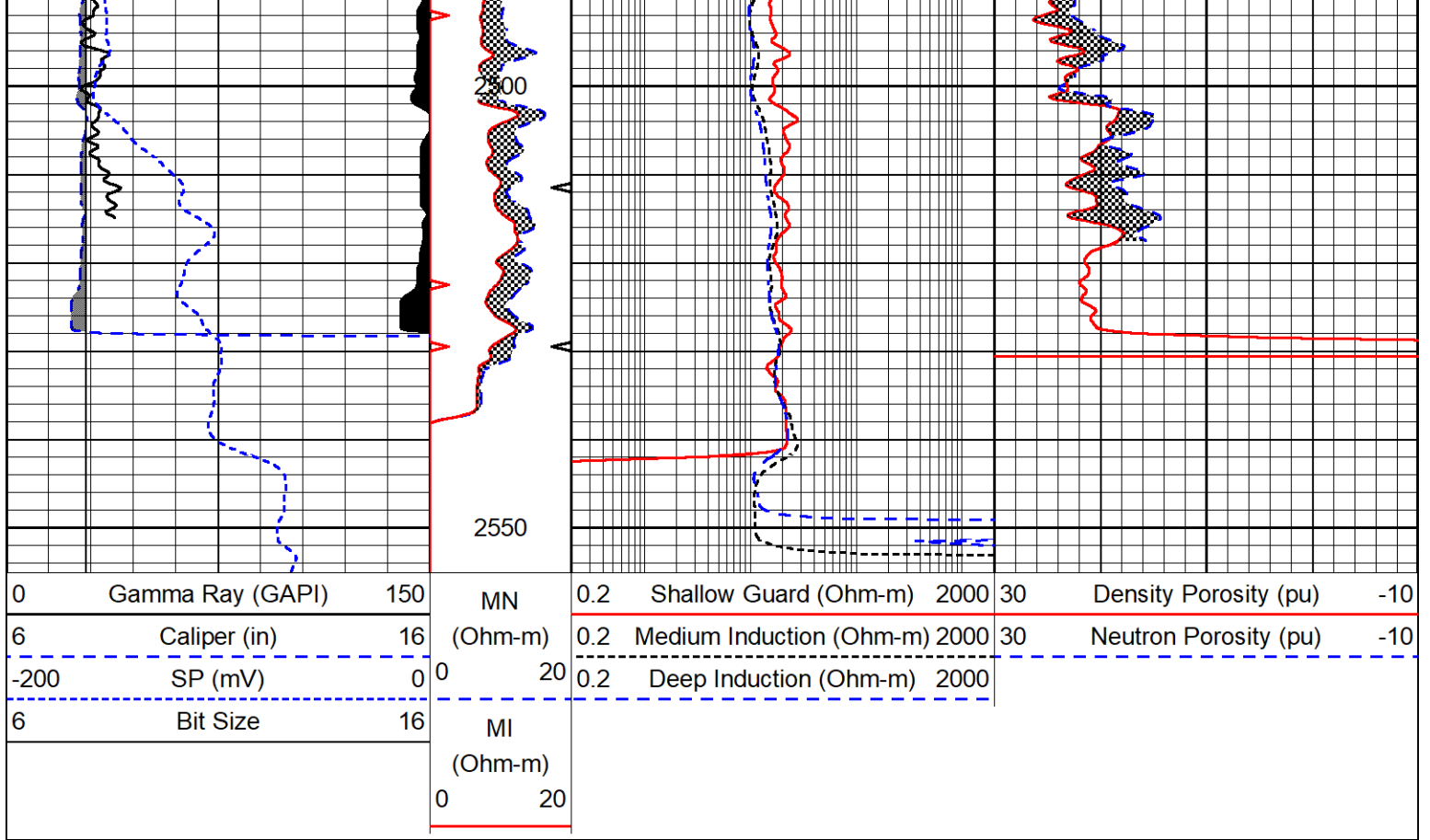
REPEAT SECTION

REPEAT PASS

Database File epoc_eck a 2.db
 Dataset Pathname stkml/pass2.10
 Presentation Format jamex
 Dataset Creation Sun Sep 11 12:04:14 2022
 Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150	MN	0.2	Shallow Guard (Ohm-m)	2000	30	Density Porosity (pu)	-10
6	Caliper (in)	16	(Ohm-m)	0.2	Medium Induction (Ohm-m)	2000	30	Neutron Porosity (pu)	-10
-200	SP (mV)	0	0	20	0.2	Deep Induction (Ohm-m)	2000		
6	Bit Size	16	MI						
			(Ohm-m)						
			0	20					





Calibration Report

Database File: epoc_eck a 2.db
 Dataset Pathname: stkml/pass3.10
 Dataset Creation: Sun Sep 11 11:57:52 2022

Dual Induction Calibration Report

Serial-Model: 501 HT-M&W
 Surface Cal Performed: Sun Sep 11 11:20:04 2022

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		m	b
Deep	83.639	487.104	0.000	183.000	mmho/m	0.455	-39.000
Medium	113.335	1585.690	0.000	442.000	mmho/m	0.305	-35.000

Microlog Calibration Report

Serial-Model: 402-PSIML
 Performed: Fri Sep 9 11:18:26 2022

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	9000.0000	-1.5000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	9000.0000	-1.0000
Caliper	1.0052	1.0858	5.0000	16.5000	in	80.0000	-74.6800

Compensated Density Calibration Report

Serial-Model: 307-11-M&W
 Source #: 20762B
 Master Calibration Performed: Sat Aug 27 10:20:16 2022

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	3600.52	4768.22	cps
Aluminum	2.670	g/cc	693.98	3106.20	cps
Spine Angle = 75.41			Density/Spine Ratio = 0.538		
	Size		Reading		
Small Ring	6.00	in	1.16		
Large Ring	18.00	in	1.01		

Compensated Neutron Calibration Report

Serial Number: 207-MW
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: 106
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	EPOC, LLC
Well	Eck 'A' #2
Field	Hazlett
County	Butler
State	Kansas