



MICRORESISTIVITY LOG

PIONEER
Pioneer Energy Services

Company AMERICAN WARRIOR, INC.
Well GLUNT #2-23
Field WILDCAT
County HODGEMAN
State KANSAS

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Well GLUNT #2-23
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Location: API #: 15-083-21972-00-00

1072' FSL & 582' FWL

SEC 23 TWP 22S RGE 24W

Permanent Datum GROUND LEVEL Elevation 2395'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Other Services
CNL/CDL
DIL
Elevation
K.B. 2403'
D.F. N/A
G.L. 2395'

Date 10/12/2019

Run Number ONE

Depth Driller 4630'

Depth Logger 4636'

Bottom Logged Interval 4635'

Top Log Interval 3750'

Casing Driller 8.625" @ 223'

Casing Logger 224'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 5600

Density / Viscosity 9.4 45

pH / Fluid Loss 10.0 8.8

Source of Sample FLOWLINE

Rm @ Meas. Temp 0.65 @ 72

Rmt @ Meas. Temp 0.49 @ 72

Rmc @ Meas. Temp 0.88 @ 72

Source of Rmt / Rmc CHARTS

Rm @ BHT 0.38 @ 72

Operating Rig Time 3 HOURS

Max Rec. Temp. F 122

Equipment Number P-24

Location HAYS

Recorded By IAN MABB

Witnessed By JASON T. ALM

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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.

JETMORE, KS.
NORTH 2 MILES TO RD O,
WEST 1 3/4 MILES, & NORTH INTO

Log Measured From: KELLY BUSHING 8 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew

Engineer: IAN MABB
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: JASON T. ALM
Secondary Witness:
Secondary Witness:
Secondary Witness:

Top - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in 7.875	degF 122	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 3	mmho/m 1	mV -17	degF 0	Off	ft 4636

Sensor	Offset (ft)	Schematic		Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58			GR-M&W (233-M&W)	3.00	3.50	50.00
CNLSC	37.48			CNT-M&W (207-MW)	5.50	3.50	100.00
CNSSC	36.73						
LSD	28.43			CDL-M&W (96-916)	8.50	4.00	250.00
	28.42						
	27.93						
MCAL	19.83			ML-PSIML (PSI-01)	7.58	4.00	65.00
	19.83			GO Micro log tools converted to Simplec electronics			
	19.83						
RLL3F	15.80						
RLL3	15.80						
CILD	8.00			DIL-PSI HIGH TEMP (952-828)	18.50	3.50	220.00

CILM

4.70

SP

0.20

Dataset: american_warrior_glunt_2_23.db: field/well/stackmel/pass5.1
 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

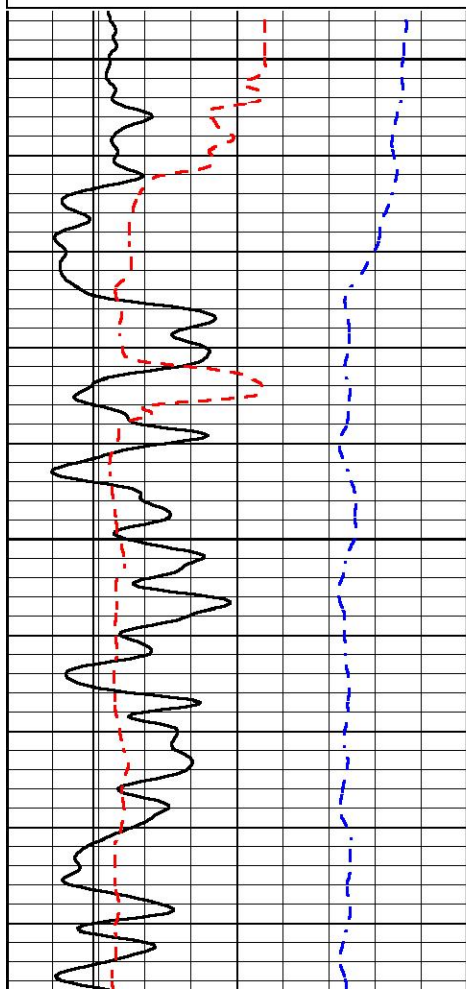


MAIN PASS

Database File american_warrior_glunt_2_23.db
 Dataset Pathname stackmel/pass5.1
 Presentation Format _micro
 Dataset Creation Sat Oct 12 22:15:55 2019
 Charted by Depth in Feet scaled 1:240

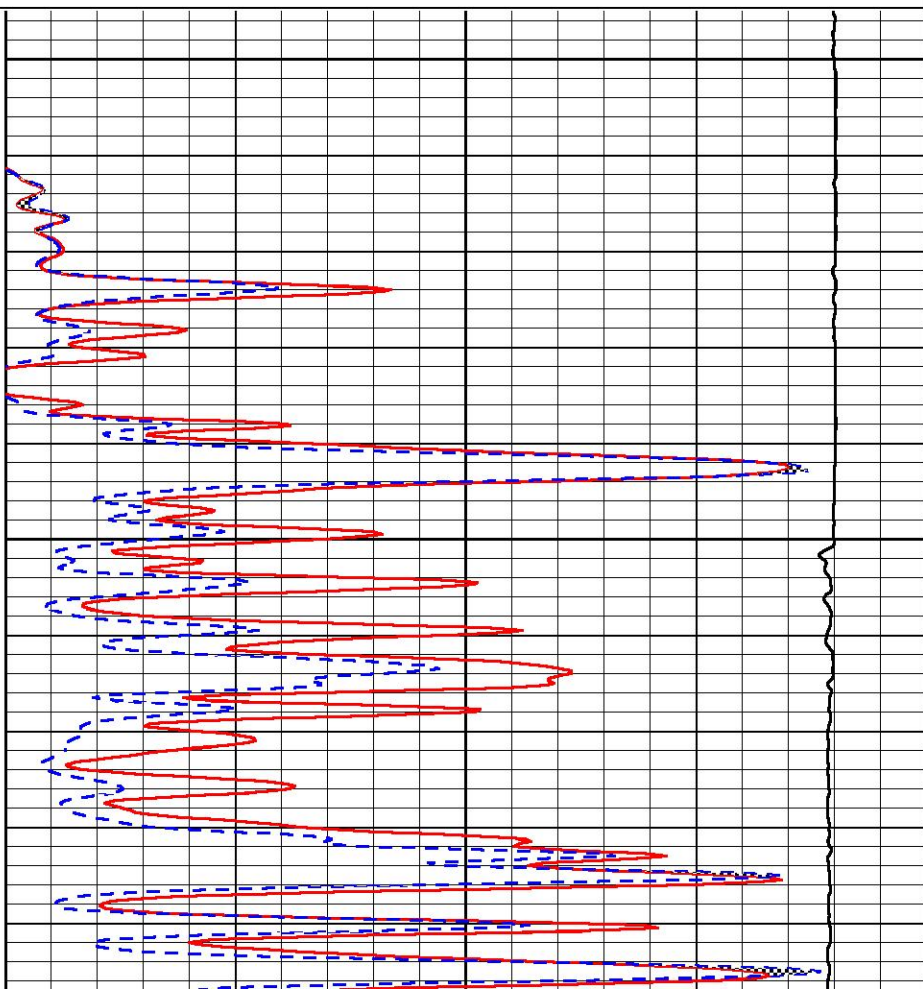
0	GAMMA RAY (GAPI)	150
6	MCAL (in)	16
2.875	mcAl (in)	7.875
6	Bit Size (in)	16
-200	SP (mV)	0

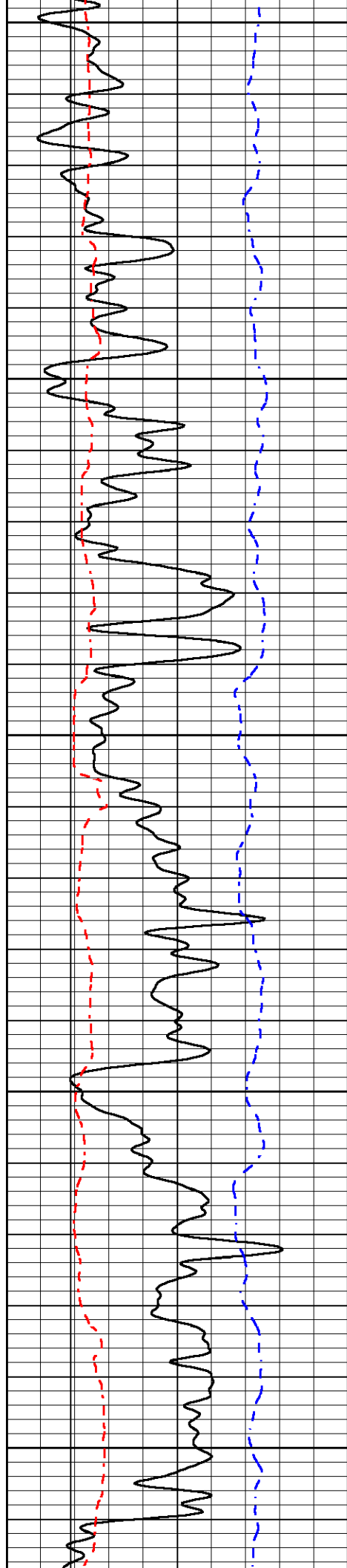
0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
10000	Line Weight (lb)	0



2300

2350





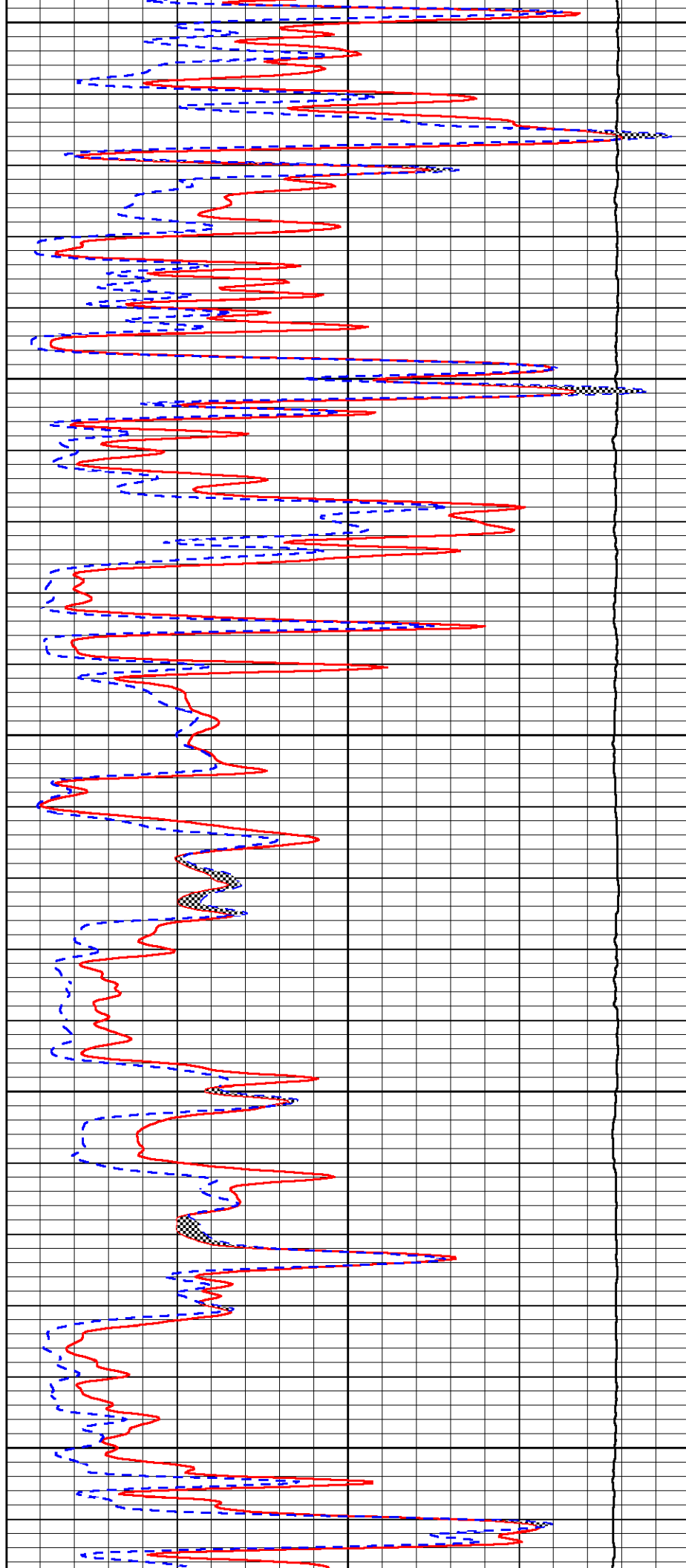
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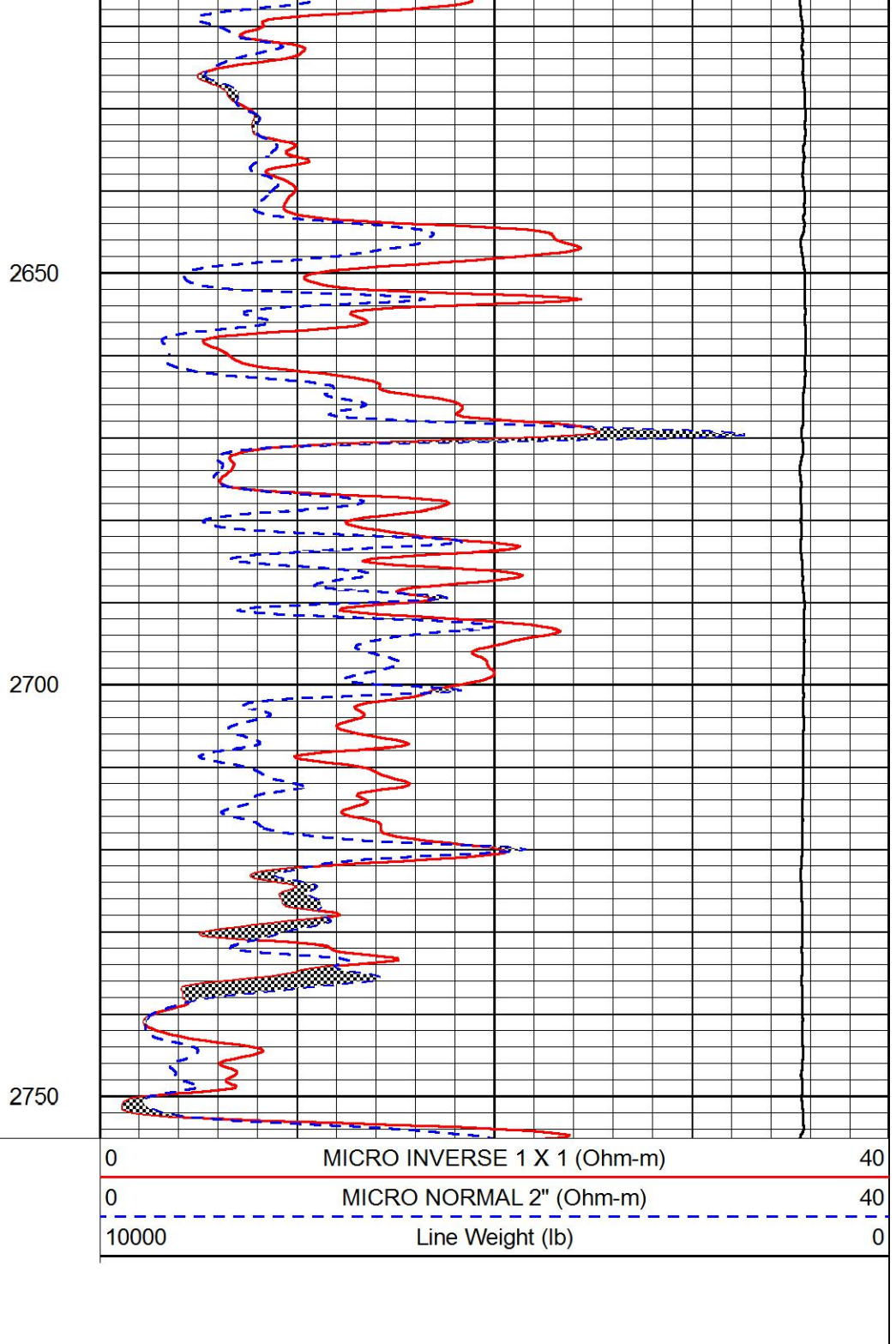
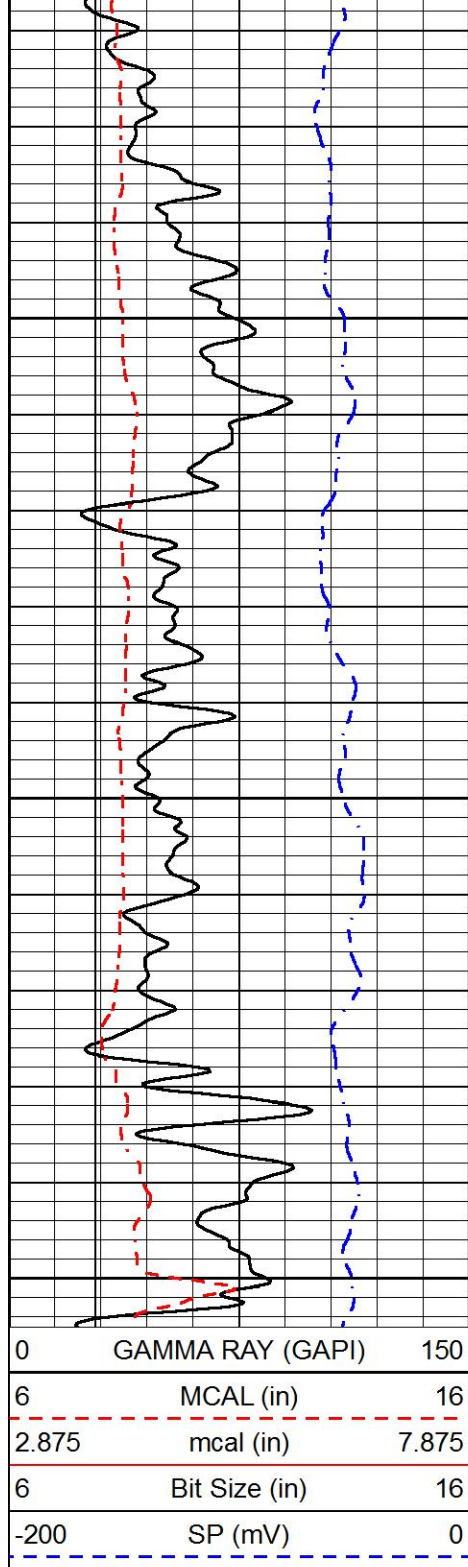
2450

2500

2550

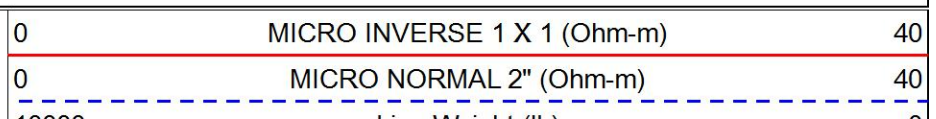
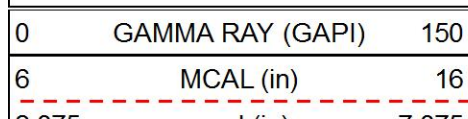
2600



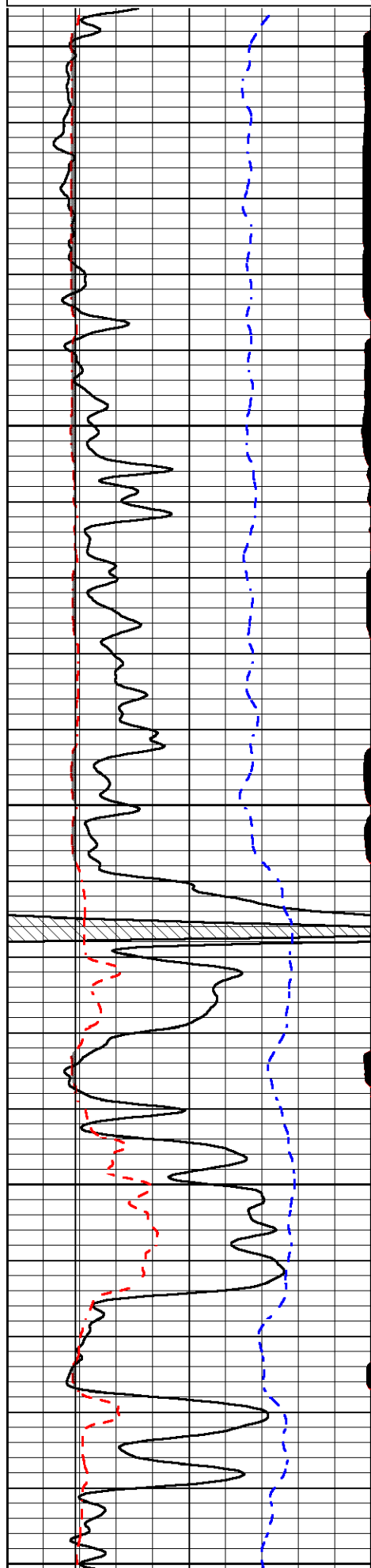


MAIN PASS

Database File american_warrior_glunt_2_23.db
 Dataset Pathname stackmel/pass5.1
 Presentation Format _micro
 Dataset Creation Sat Oct 12 22:15:55 2019
 Charted by Depth in Feet scaled 1:240



2.875	mcal (in)	7.875
6	Bit Size (in)	16
-200	SP (mV)	0



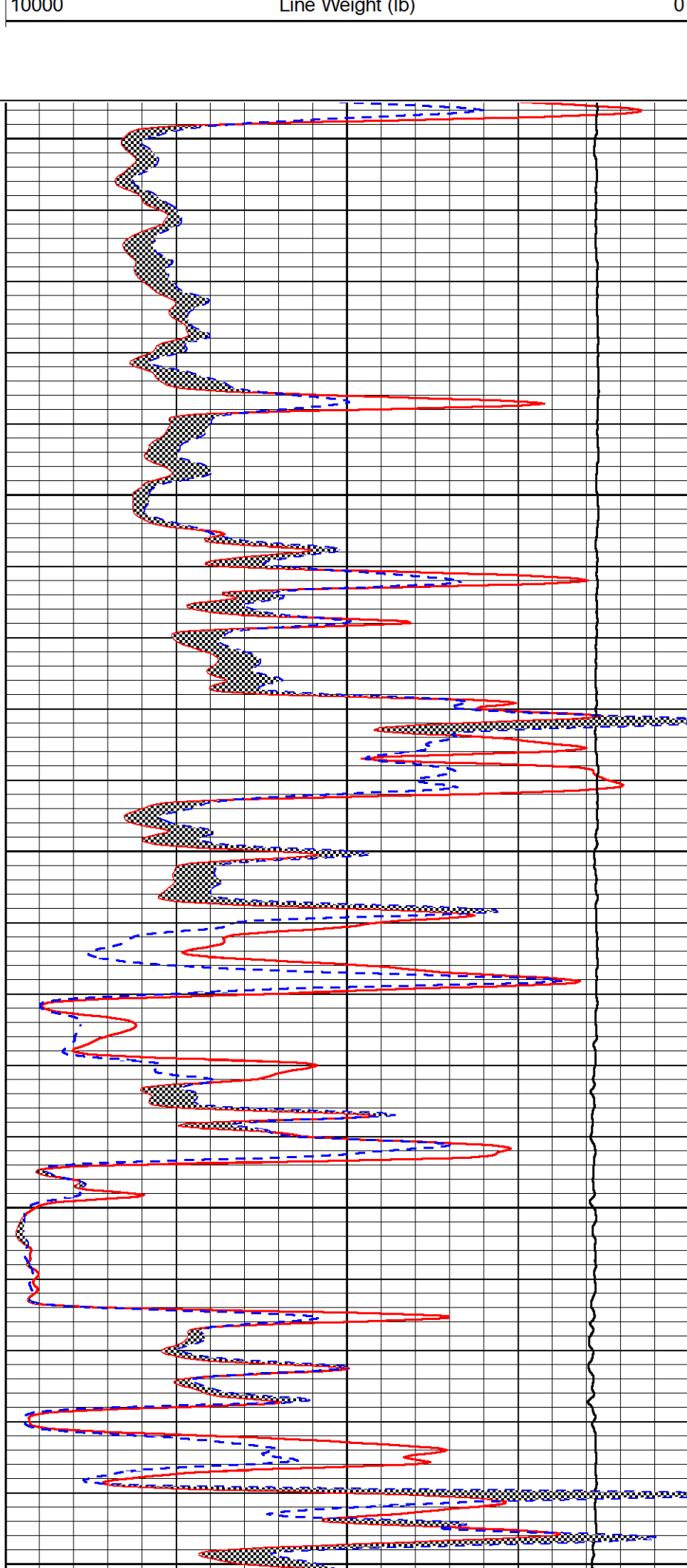
3750

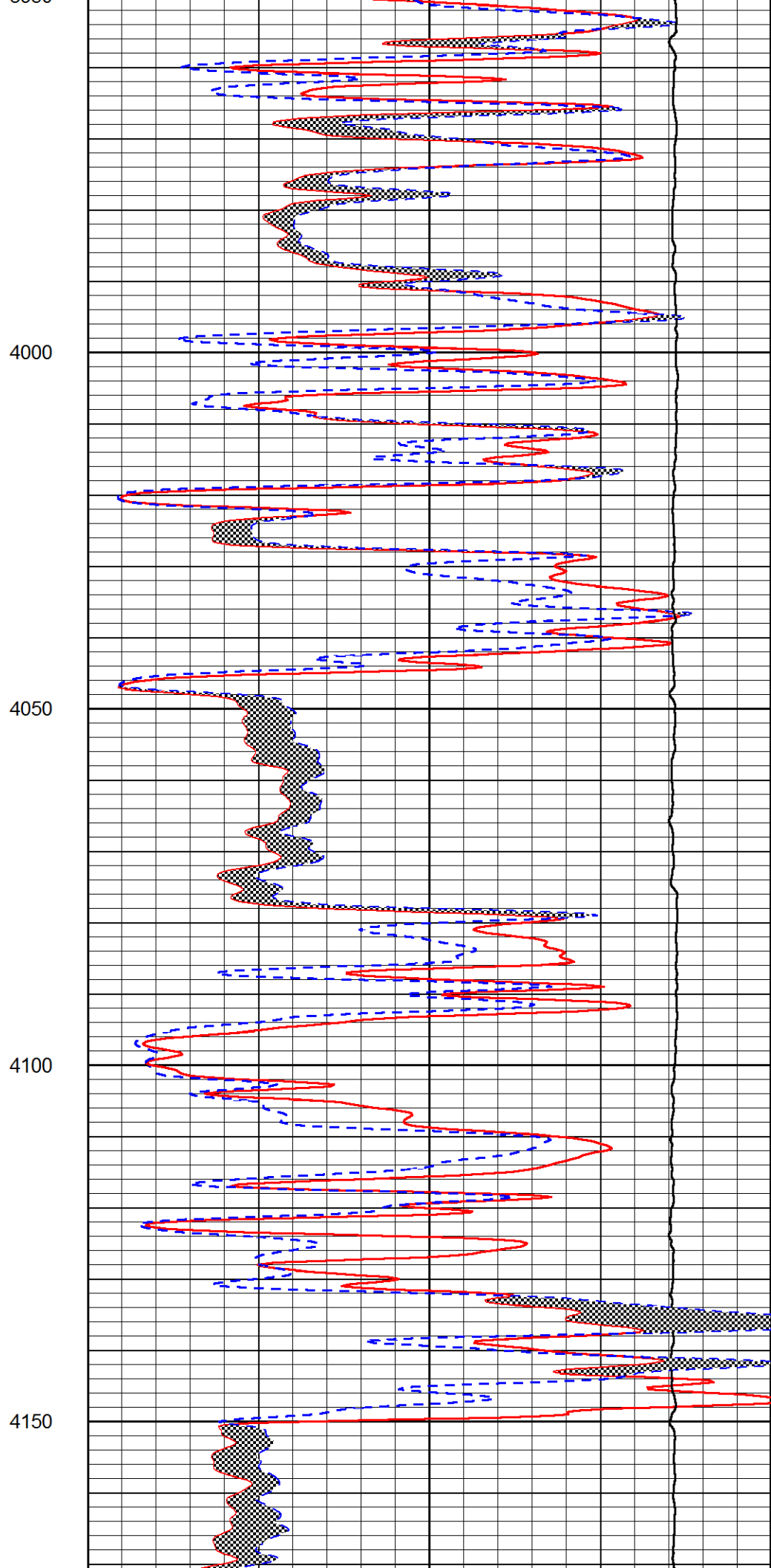
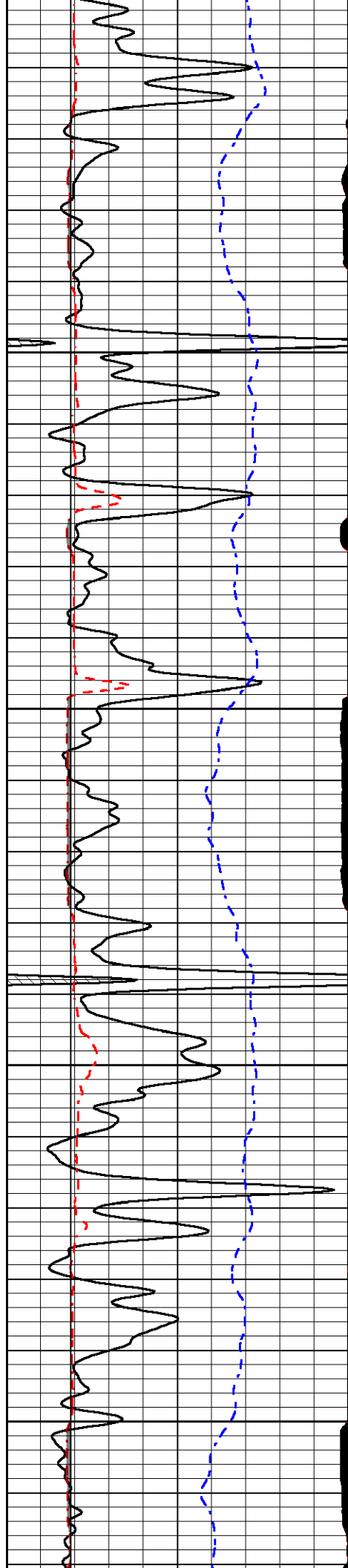
3800

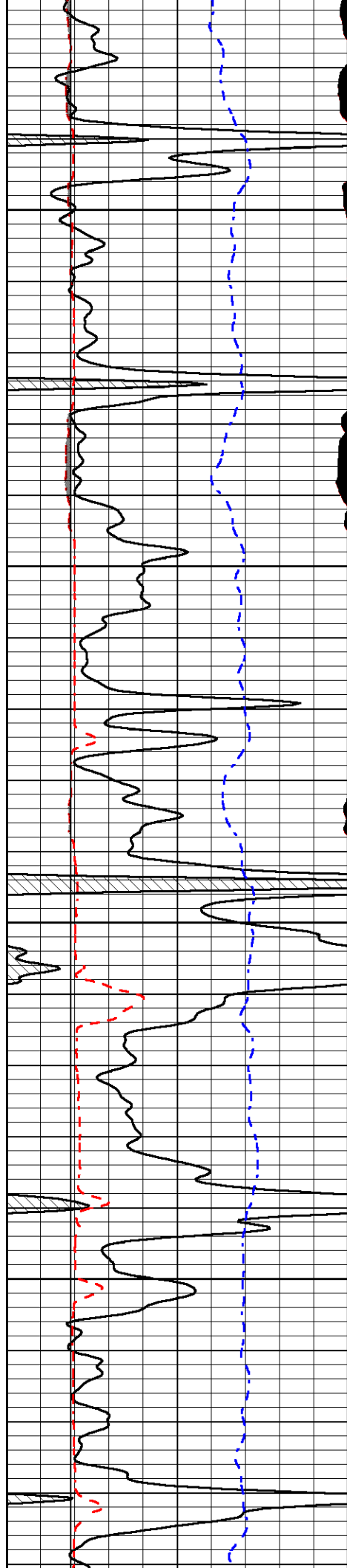
3850

3900

3950





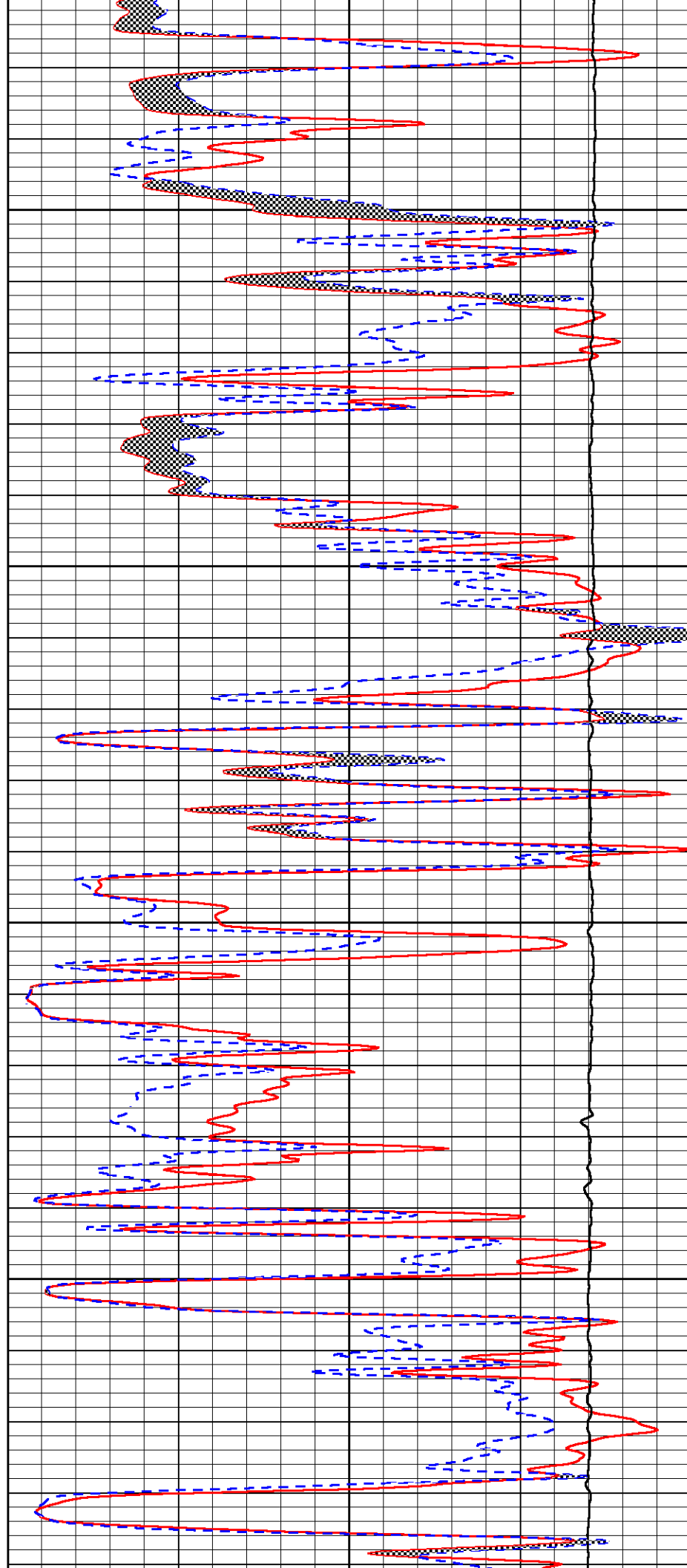


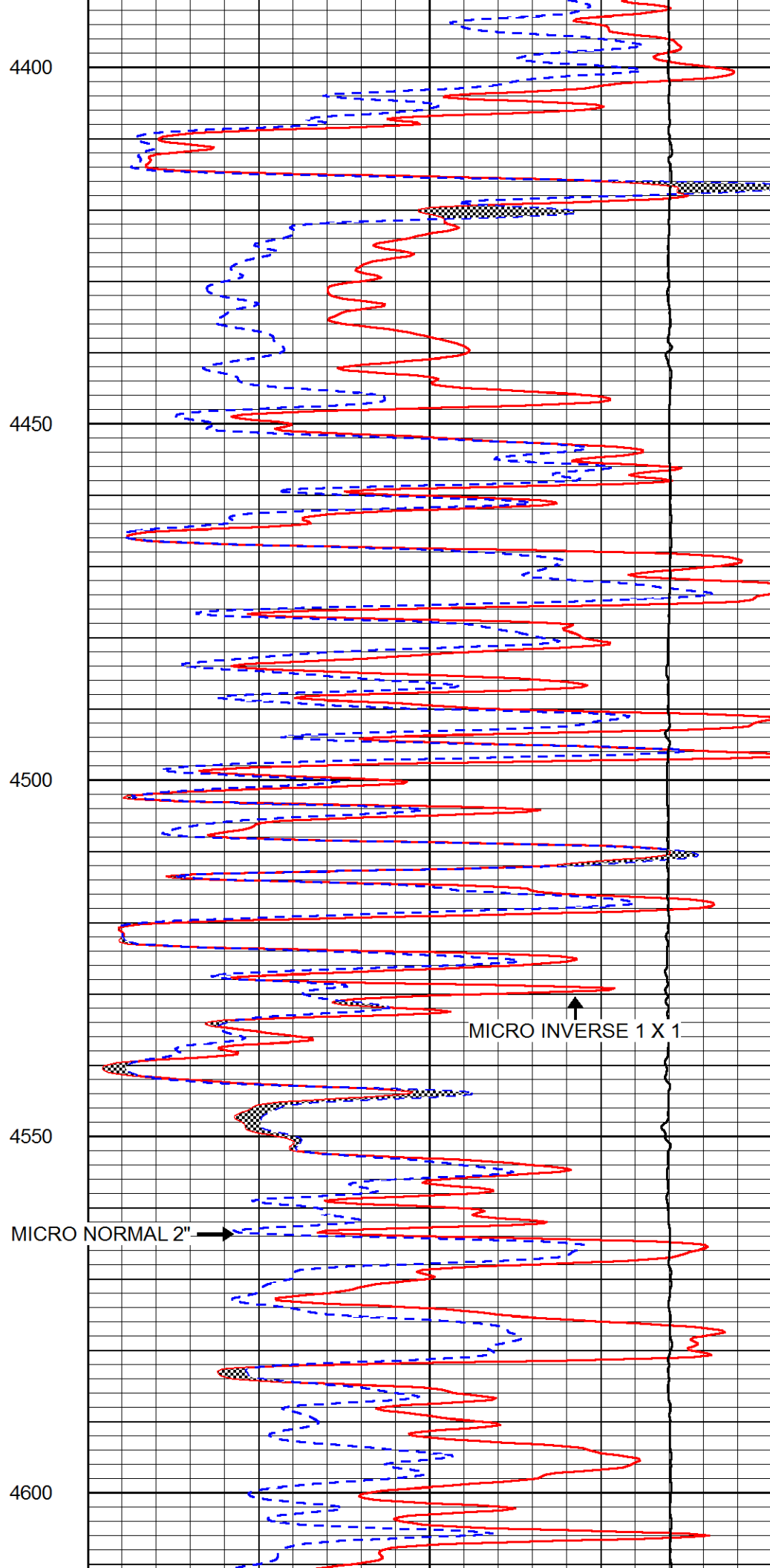
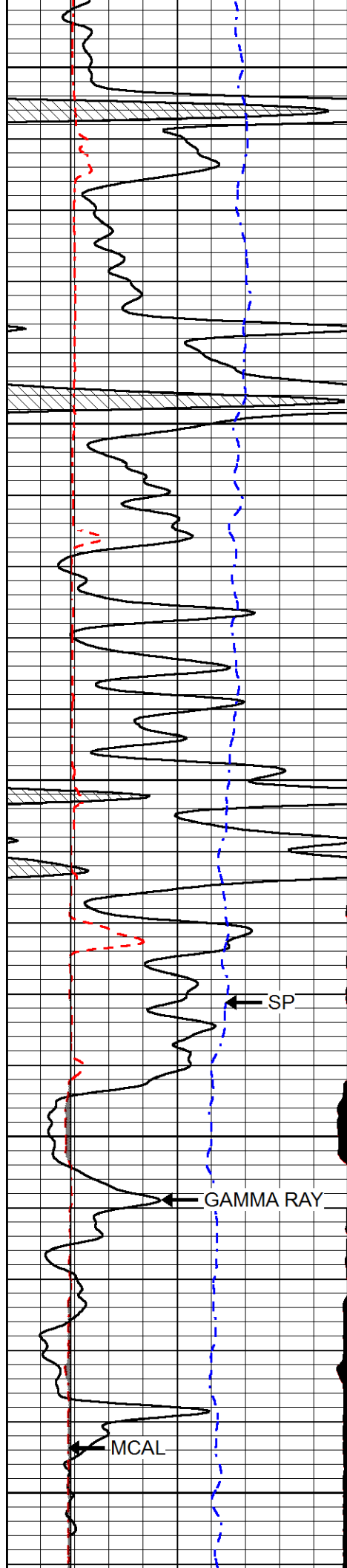
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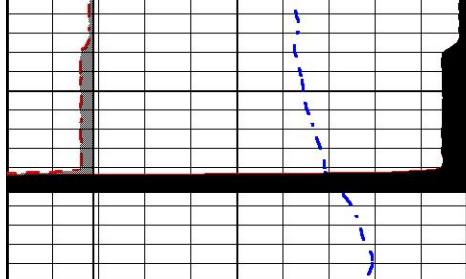
4250

4300

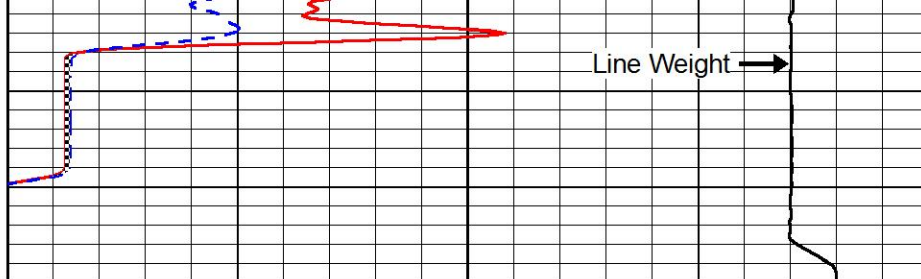
4350







0	GAMMA RAY (GAPI)	150
6	MCAL (in)	16
2.875	mcals (in)	7.875
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
10000	Line Weight (lb)	0

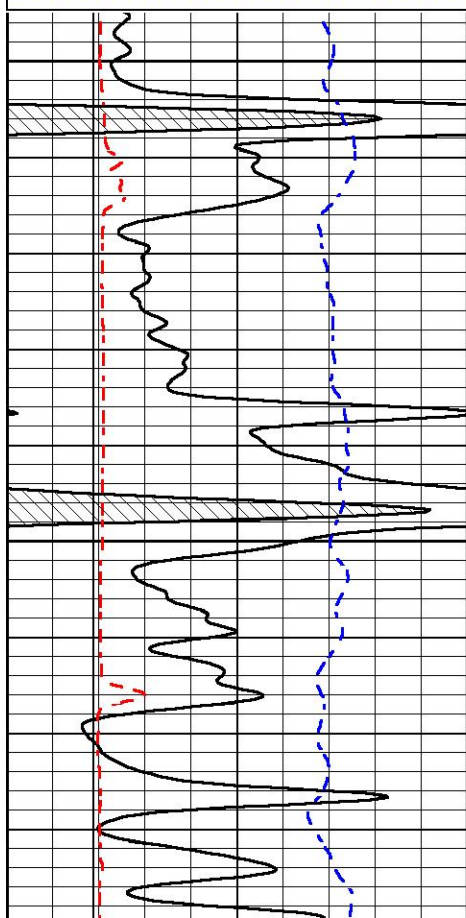


REPEAT SECTION

Database File: american_warrior_glunt_2_23.db
 Dataset Pathname: stackmel/pass4.1
 Presentation Format: _micro
 Dataset Creation: Sat Oct 12 21:35:55 2019
 Charted by: Depth in Feet scaled 1:240

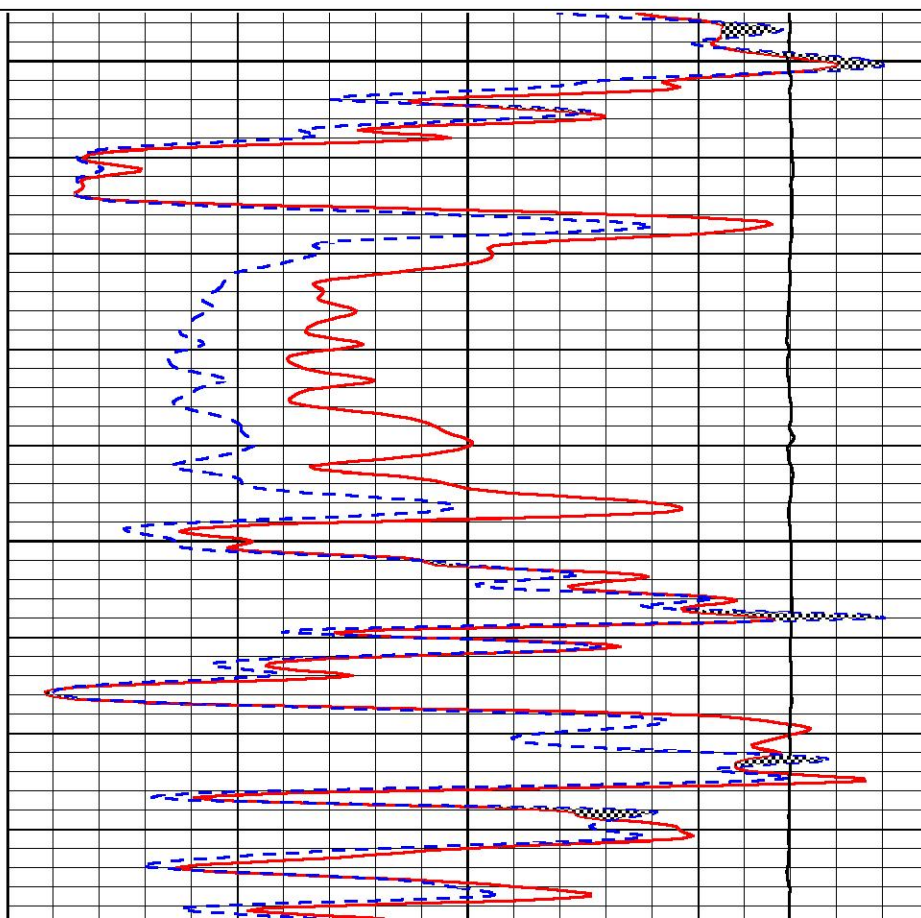
0	GAMMA RAY (GAPI)	150
6	MCAL (in)	16
2.875	mcals (in)	7.875
6	Bit Size (in)	16
-200	SP (mV)	0

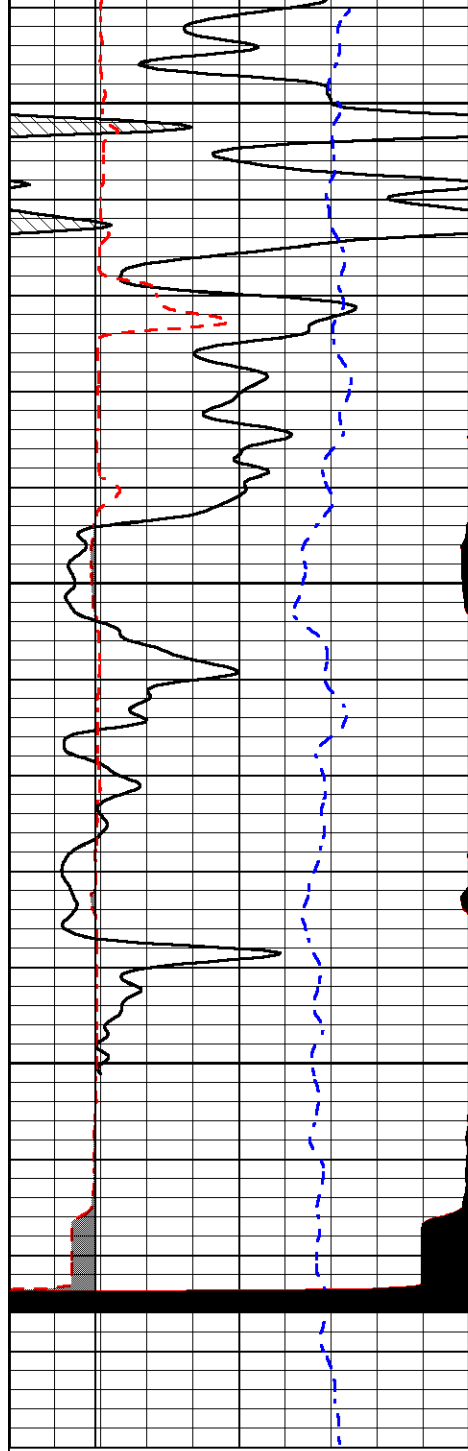
0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
10000	Line Weight (lb)	0



4400

4450



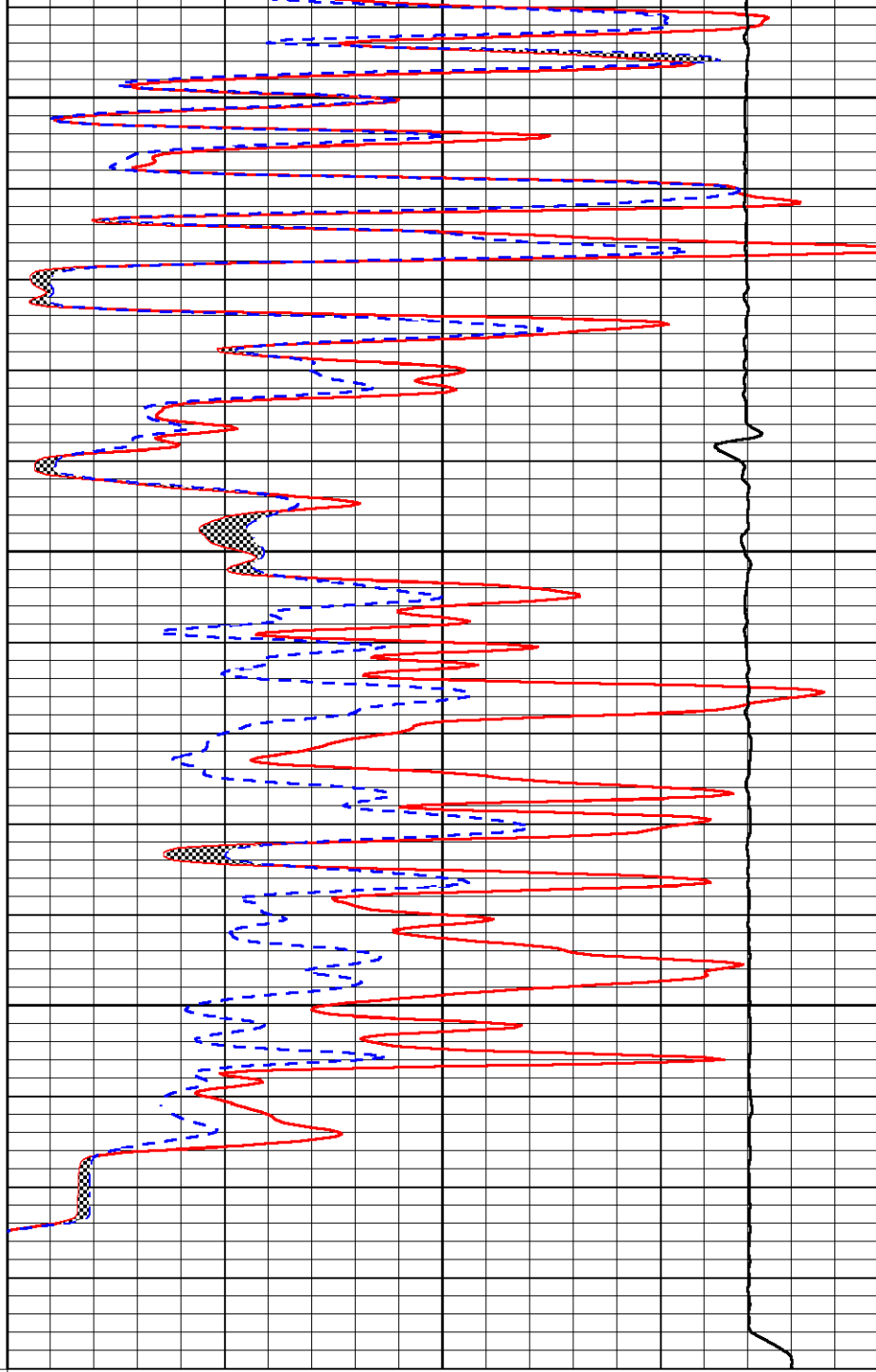


4500

4550

4600

0	GAMMA RAY (GAPI)	150
6	MCAL (in)	16
2.875	mcal (in)	7.875
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
10000	Line Weight (lb)	0

Calibration Report

Database File american_warrior_glunt_2_23.db
 Dataset Pathname stackmel/pass5.1
 Dataset Creation Sat Oct 12 22:15:55 2019

Dual Induction Calibration Report

Serial-Model: 952-828-PSI HIGH TEMP
 Calibration Performed: Wed Oct 09 13:38:53 2019

Readings

References

Results

Readings			References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.470	-41.000
Medium	0.000	1348.000	142.000	255.000	mmho/m	0.360	-15.000

Microlog Calibration Report							
Serial-Model: Performed:			PSI-01-PSIML Thu Aug 01 07:57:13 2019				
Readings		References			Results		
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	17000.0000	-0.7000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	21000.0000	-0.8000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-64.4500

Compensated Density Calibration Report							
Serial-Model: Source / Verifier: Master Calibration Performed:			96-916-M&W 16955B / 2ci Sat Oct 12 17:38:31 2019				
Master Calibration							
	Density		Far Detector		Near Detector		
Magnesium	1.755	g/cc	8943.64		10054.60	cps	
Aluminum	2.660	g/cc	1595.61		6242.82	cps	
Spine Angle = 74.54			Density/Spine Ratio = 0.506				
	Size		Reading				
Small Ring	6.00	in	1.75				
Large Ring	15.00	in	1.40				

Compensated Neutron Calibration Report							
Serial Number: Tool Model: Calibration Performed:			207-MW M&W WED FEB 13 10:30:30 2019				
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: Tool Model: Calibration Performed:		233-M&W M&W Fri Feb 07 01:42:40 2014					
Calibrator Value:		1.0	GAPI				
Background Reading:		0.0	cps				
Calibrator Reading:		1.0	cps				
Sensitivity:		0.5500	GAPI/cps				



Company	AMERICAN WARRIOR, INC.
Well	GLUNT #2-23
Field	WILDCAT
County	HODGEMAN
State	KANSAS