



MICRORESISTIVITY LOG

Company: AMERICAN WARRIOR, INC.
 Well: HUBIN #2-10B
 Field: LIPPOLDT WEST
 County: HODGMAN
 State: KANSAS

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 Field: LIPPOLDT WEST
 County: HODGMAN
 State: KANSAS

Location: 455' FSL & 2220' FWL
 SEC 10 TWP 23S RGE 23W
 Permanent Datum: GROUND LEVEL Elevation 2318'
 Log Measured From: KELLY BUSHING
 Drilling Measured From: KELLY BUSHING
 Other Services: CNL/CDL DIL
 Elevation: K.B. 2329', D.F. N/A, G.L. 2318'

Date	8/11/2018
Run Number	ONE
Depth Driller	4650'
Depth Logger	4650'
Bottom Logged Interval	4649'
Top Log Interval	3800'
Casing Driller	8.625" @ 265'
Casing Logger	265'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	4600'
Density / Viscosity	9.35 48
pH / Fluid Loss	10.5 9.2
Source of Sample	FLOWLINE
Rm @ Meas. Temp	.65 @ 65
Rmt @ Meas. Temp	.49 @ 65
Rmc @ Meas. Temp	.88 @ 65
Source of Rmf / Rmc	CHARTS
Rm @ BHT	.38 @ 111
Operating Rig Time	3 HOURS
Max Rec. Temp. F	111 DEGF
Equipment Number	108
Location	HAYS
Recorded By	IAN MABB
Witnessed By	KEVIN TIMSON

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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.
 SOUTH SIDE 283 & L RD EAST .7 MILES,
 TO RD 219, SOUTH 1 MILE TO RD K, EAST 2.2 MILE NORTH INTO

Log Measured From: KELLY BUSHING 11 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: KEVIN TIMSON Secondary Witness: Secondary Witness: Secondary Witness:
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Log Variables

DatabaseC:\ProgramData\Warrior\Data\American_warrior_hubin_2_10.db
 Dataset field/well/stackmel/pass3.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	110	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	30	-4	-274	0	Off	4650

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (168-130)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSI STKBL ML (PSI-01) Stackable Microlog Tools	7.58	4.00	65.00
RLL3 RLL3F	15.80 15.79					
CILD	8.00		DIL-M&W (1987)	18.50	3.50	220.00

CILM 4.70

SP 0.20

Dataset: american_warrior_hubin_2_10.db: field/well/stackmel/pass3.1
 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

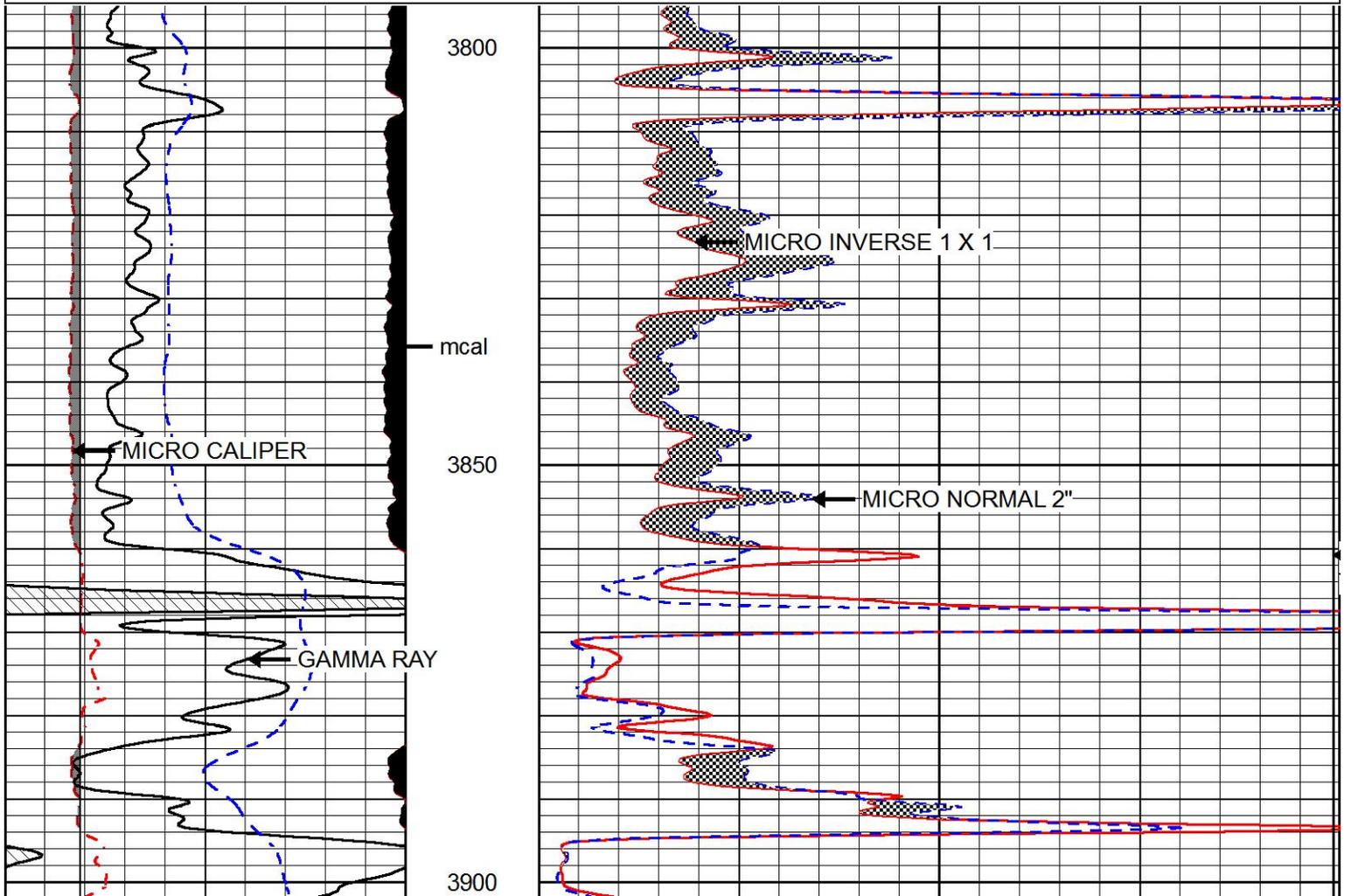


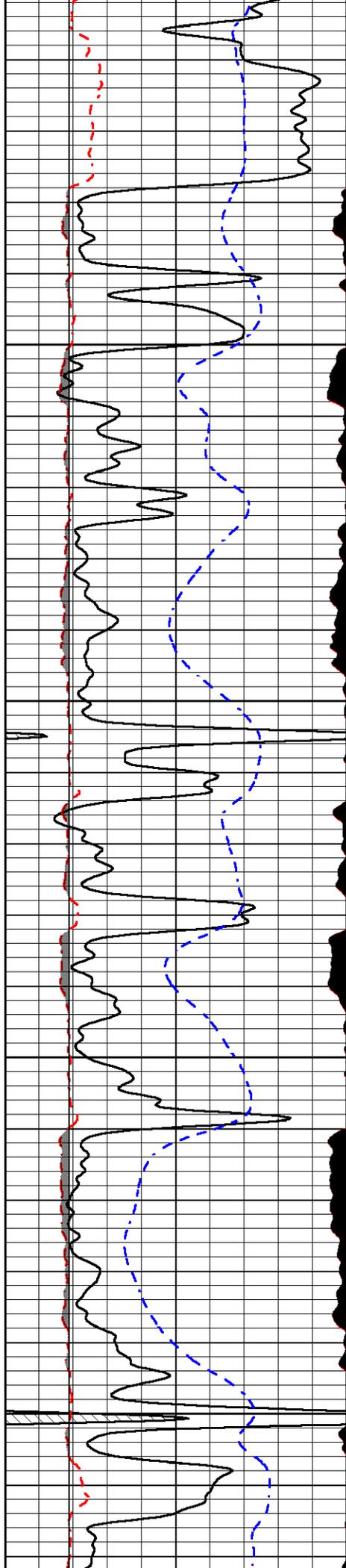
MAIN PASS

Database File american_warrior_hubin_2_10.db
 Dataset Pathname stackmel/pass3.1
 Presentation Format micro
 Dataset Creation Sat Aug 11 10:26:24 2018
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
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
15000	LINE TENSION (lb)	0



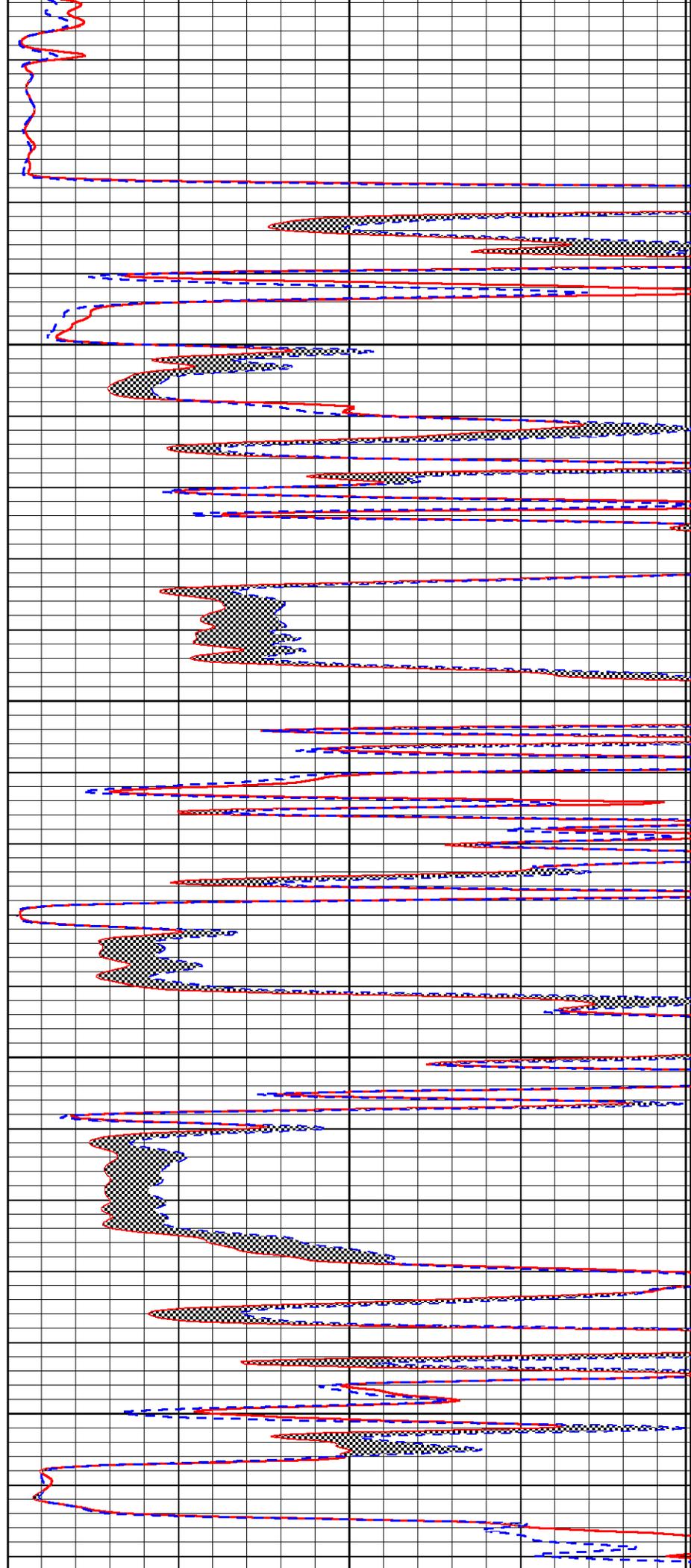


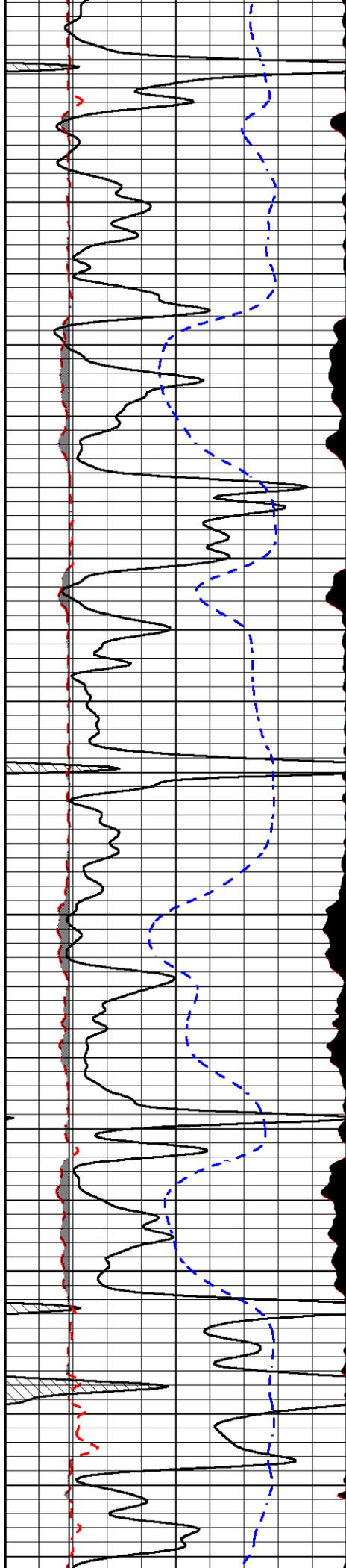
3950

4000

4050

4100



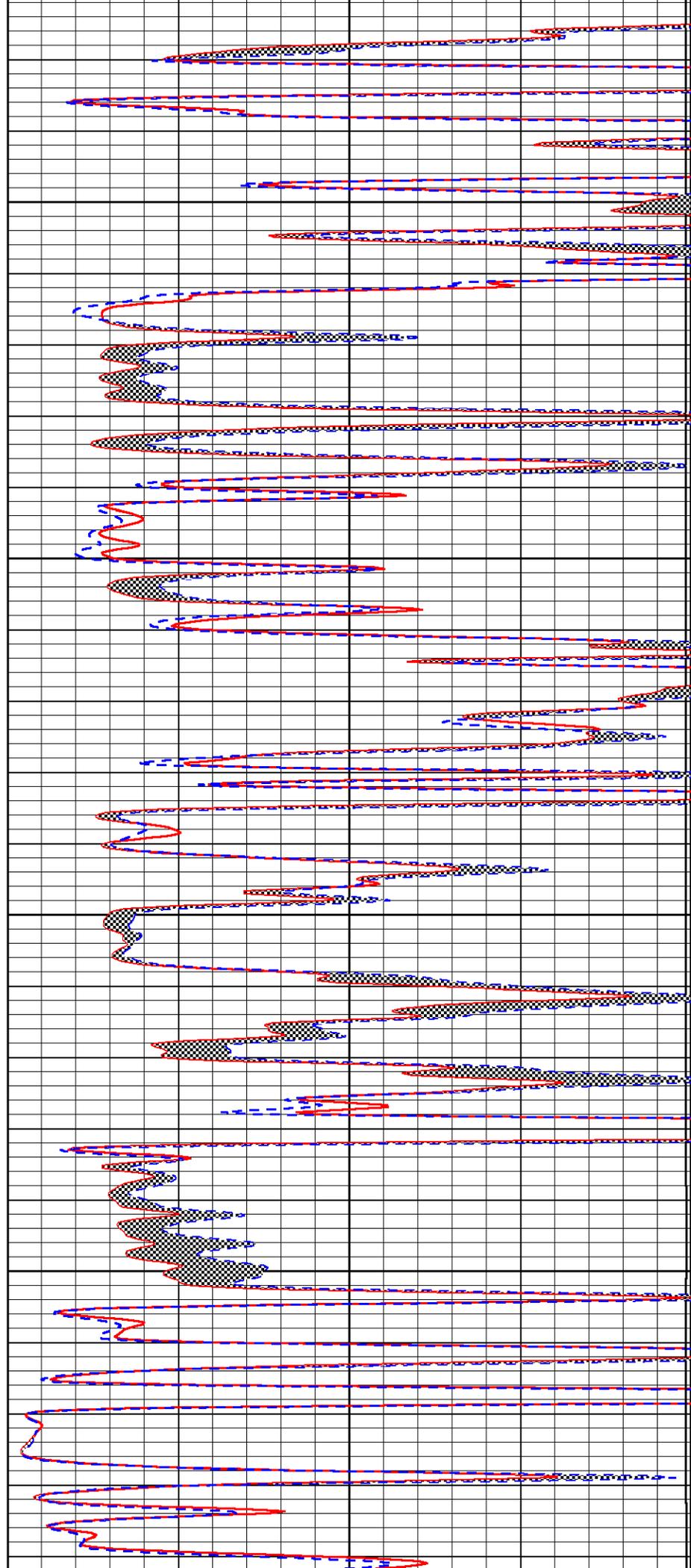


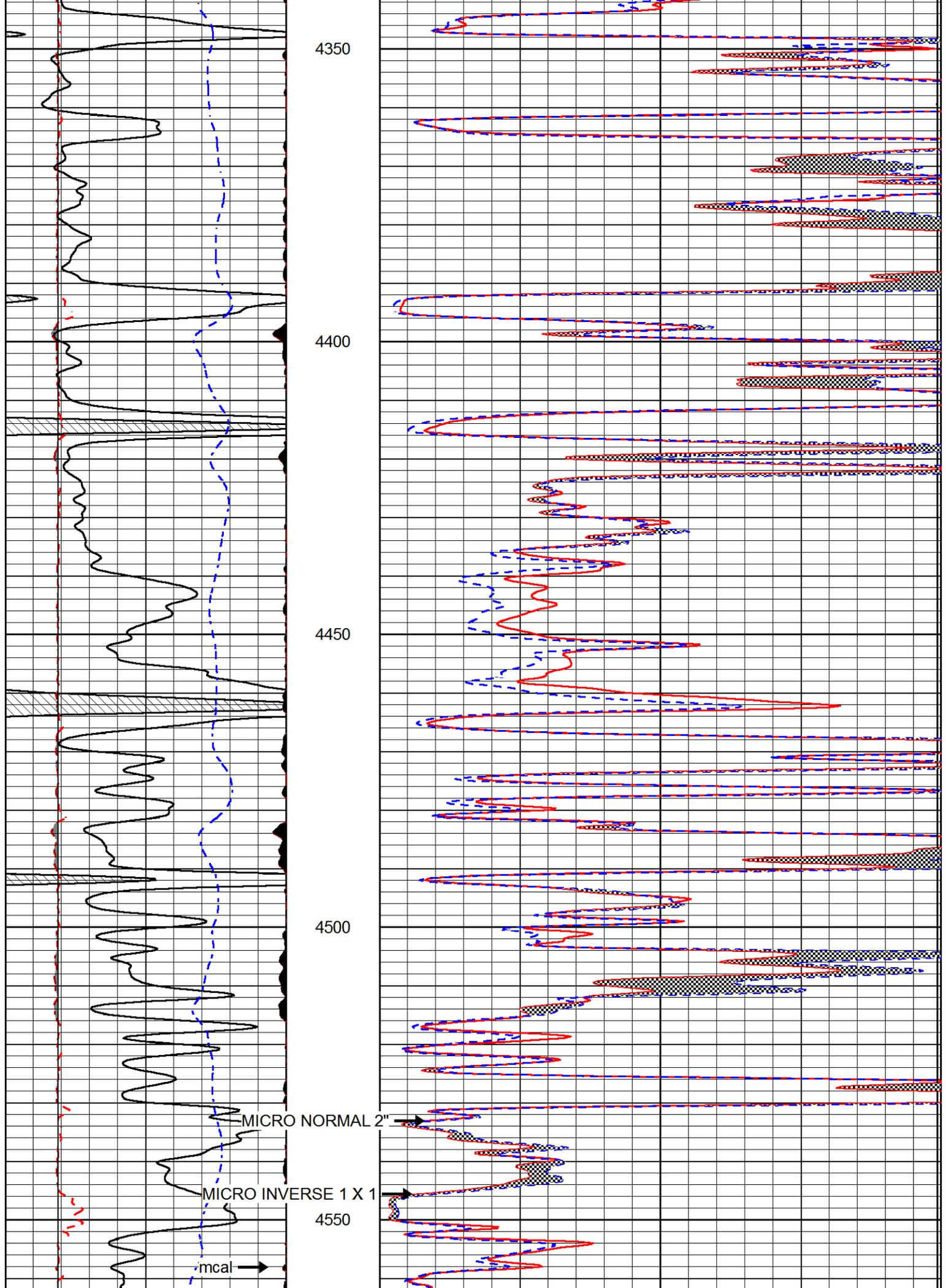
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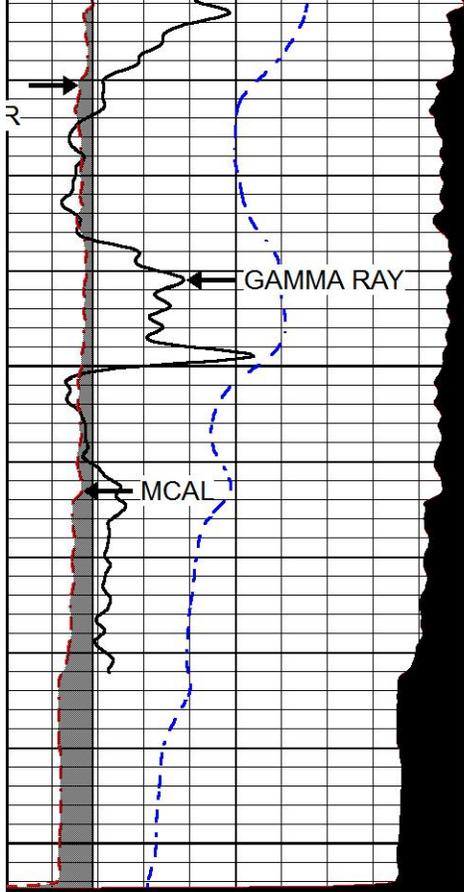
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4250

4300



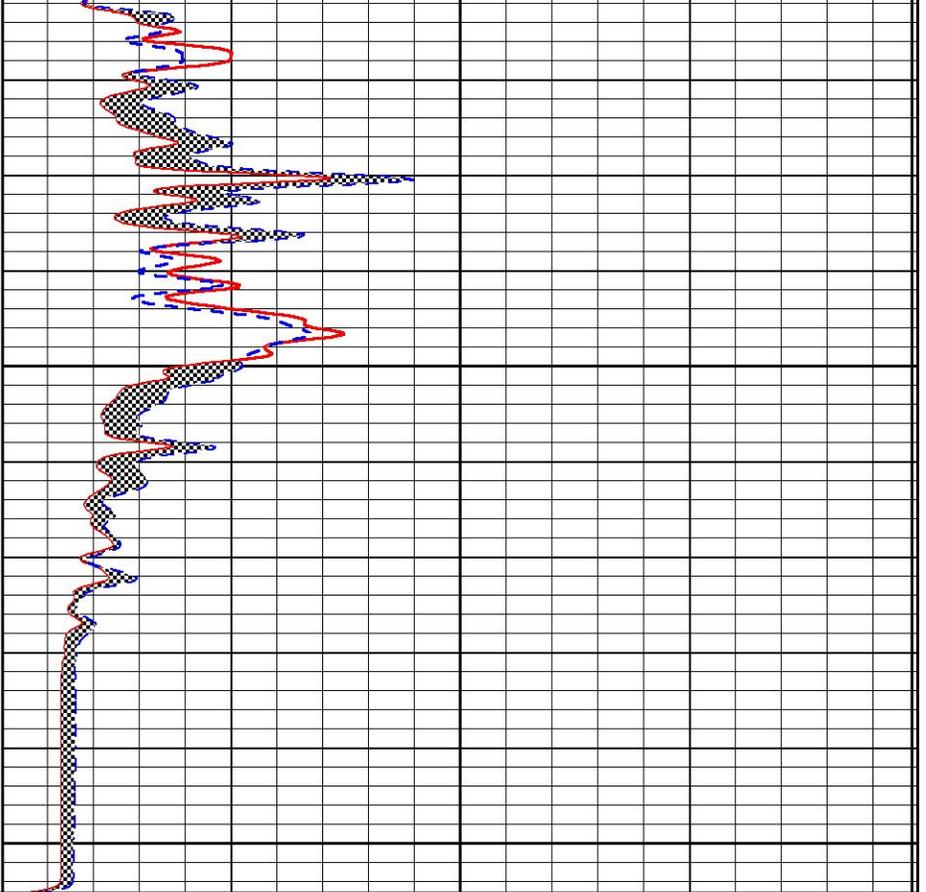




0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0

4600

4650



0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0

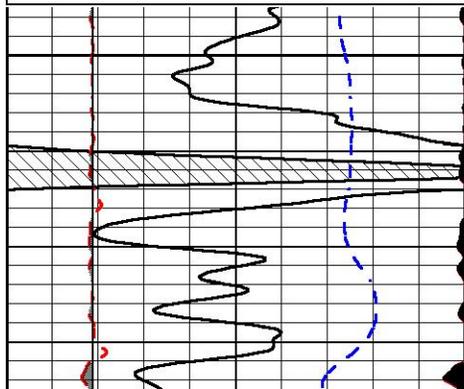


REPEAT SECTION

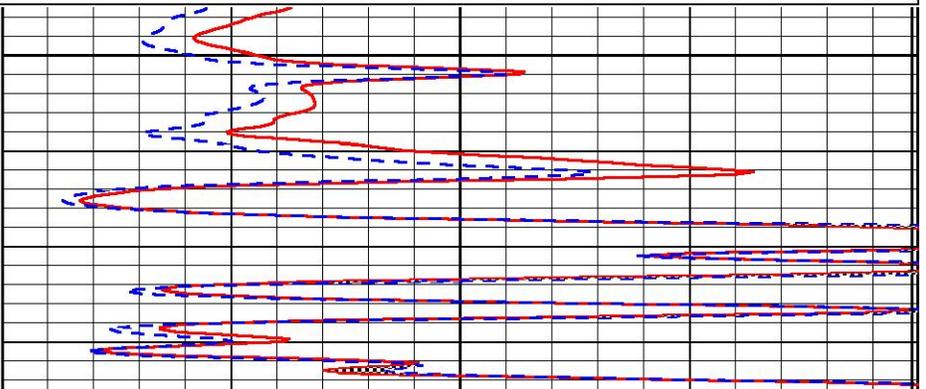
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 Presentation Format micro
 Dataset Creation Sat Aug 11 10:27:07 2018
 Charted by Depth in Feet scaled 1:240

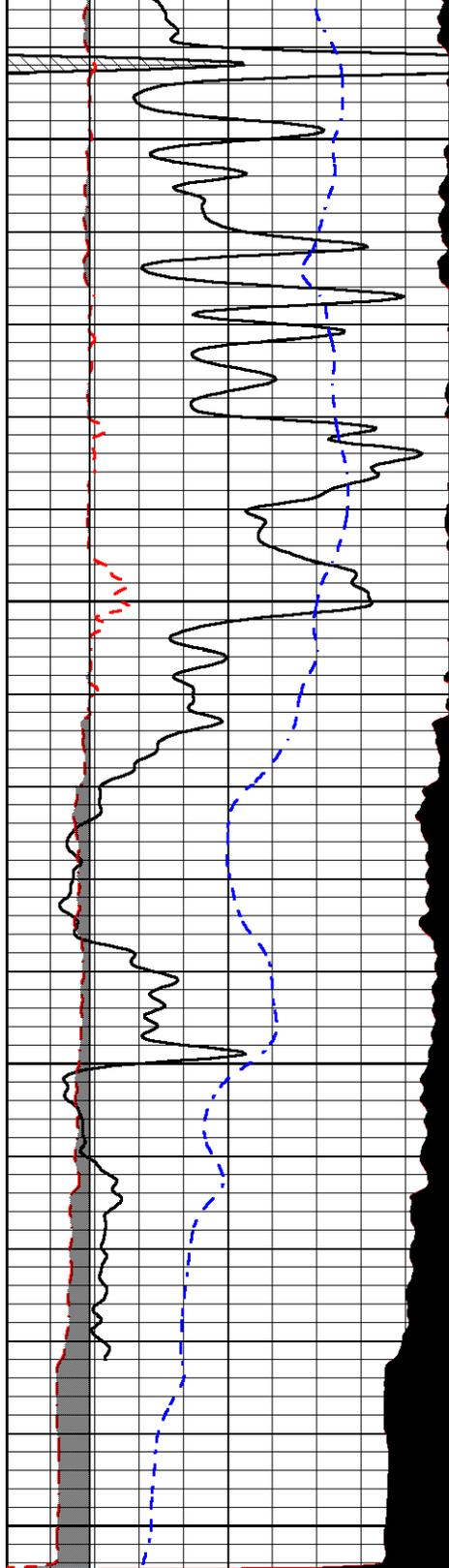
0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0

0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0



4450





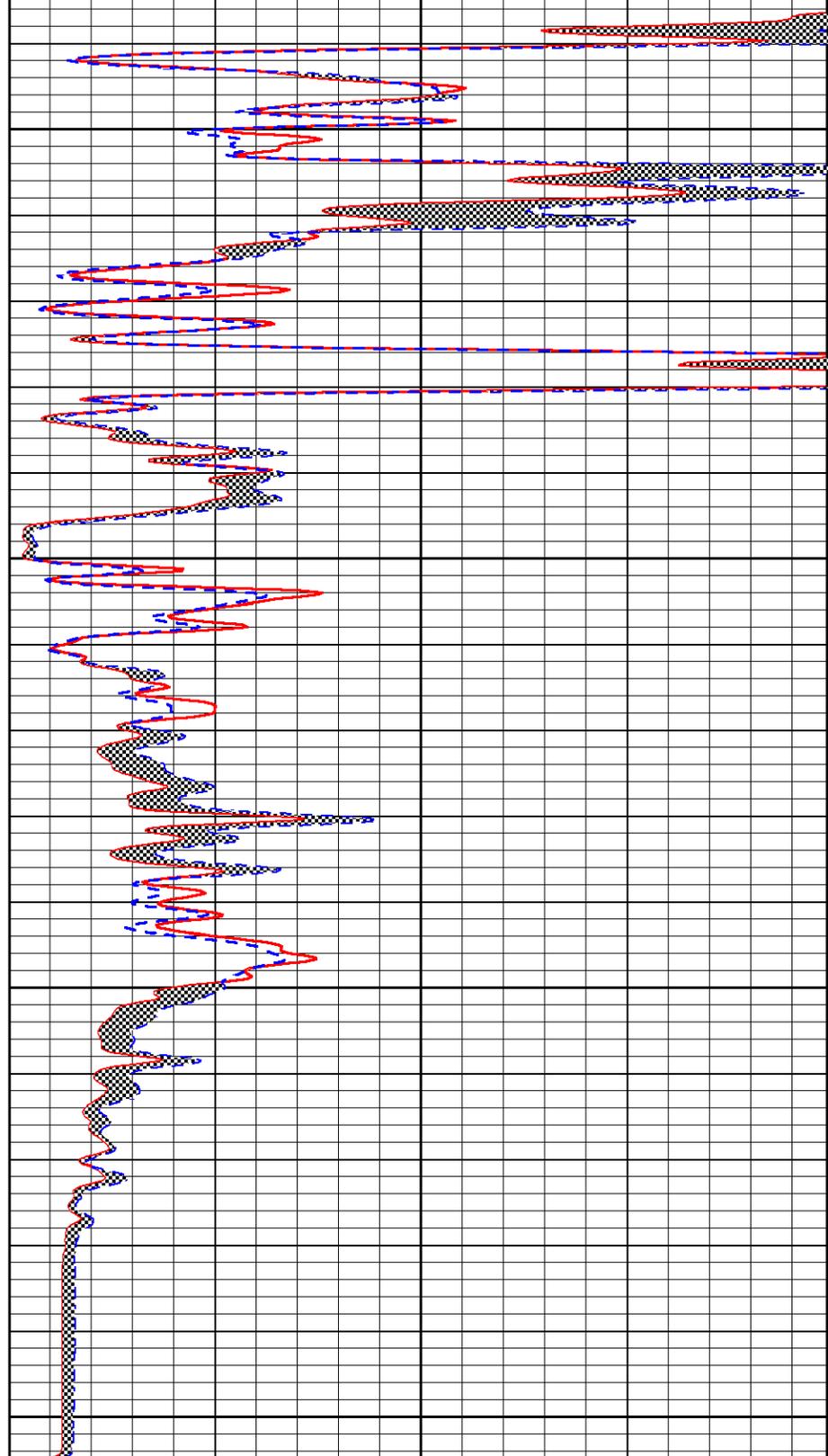
4500

4550

4600

4650

0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
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
15000	LINE TENSION (lb)	0

Calibration Report

Database File american_warrior_hubin_2_10.db
 Dataset Pathname stackmel/pass3.1
 Dataset Creation Sat Aug 11 10:26:24 2018

Serial-Model:
Calibration Performed:

1987-M&W
Thu Aug 09 22:42:18 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.530	-36.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.440	-110.500

Microlog Calibration Report

Serial-Model:
Performed:

PSI-01-PSI STKBL ML
Thu Mar 31 18:14:32 2016

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	22500.0000	-1.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	29500.0000	-1.0000
Caliper	1.0001	1.1397	6.5000	18.5000	in	86.0000	-82.8000

Compensated Density Calibration Report

Serial-Model:
Source / Verifier:
Master Calibration Performed:

168-130-M&W
/
Thu Aug 09 22:42:28 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4659.47	5064.14	cps
Aluminum	2.680	g/cc	853.93	3180.74	cps
Spine Angle = 74.67			Density/Spine Ratio = 0.526		
	Size		Reading		
Small Ring	4.00	in	0.88		
Large Ring	16.00	in	0.22		

Compensated Neutron Calibration Report

Serial Number: tk10-MW
Tool Model: M&W
Calibration Performed: Wed Nov 16 11:21:36 2016

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: 89-M&W
Tool Model: M&W
Calibration Performed: Tue Apr 11 17:08:01 2017

Calibrator Value: 1000.0 GAPI

Background Reading:

0.0

cps

Calibrator Reading:

6.2

cps

Sensitivity:

0.5200

GAPI/cps



PIONEER

Pioneer Energy Services

Company AMERICAN WARRIOR, INC.

Well HUBIN #2-10B

Field LIPPOLDT WEST

County HODGMAN

State KANSAS