



PIONEER
Pioneer Energy Services

MICRORESISTIVITY LOG

Company AMERICAN WARRIOR, INC.
Well WHISLER NO. 1-20
Field STOLTENBERG
County ELLSWORTH
State KANSAS

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Location: API #: 15-053-21361-00-00

Other Services

SEC 20 TWP 16S RGE 10W
1874' FNL & 1134' FWL

CNL/CDL
DIL/BHCS

Permanent Datum GROUND LEVEL Elevation 1875'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 1883'
D.F. N/A
G.L. 1875'

Date 5/6/2018

Run Number TWO

Depth Driller 3474'

Depth Logger 3472'

Bottom Logged Interval 3471'

Top Log Interval 2550'

Casing Driller 8.625" @ 432'

Casing Logger 435'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 9600

Density / Viscosity 9.1 54

pH / Fluid Loss 9.0 12.0

Source of Sample FLOWLINE

Rm @ Meas. Temp .35 @ 64

Rmf @ Meas. Temp .26 @ 64

Rmc @ Meas. Temp .47 @ 64

Source of Rmf / Rmc CHARTS

Rm @ BHT .20 @ 111

Operating Rig Time 4 HOURS

Max Rec. Temp. F 111 DEGF

Equipment Number 108

Location HAYS

Recorded By J. HENRICKSON

Witnessed By JASON ALM

<<< Fold Here >>>

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.

WILSON KANSAS

SOUTH TO P ROAD, 1 EAST, 1/4 SOUTH, EAST 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: J. HENRICKSON

Operator:

Operator:

Operator:

This Log Record Was Witnessed By

Primary Witness: JASON ALM

Secondary Witness:

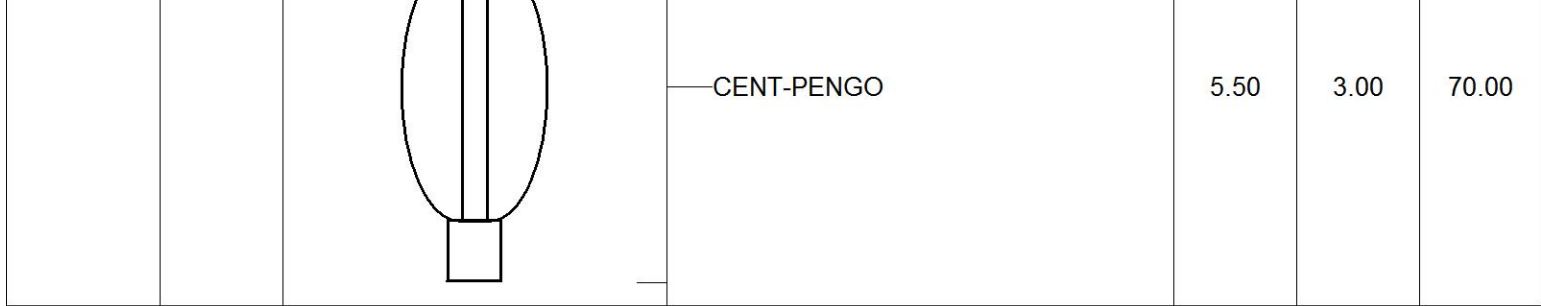
Secondary Witness:

Secondary Witness:

Top - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in 7.875	degF 111	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 0	mmho/m 4	mV -113	degF 53	Off	ft 3472

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
MCAL MI MN	22.50		ML-Armadillo (Armadillo-1) Pengo micro log tool mandrel with Armadillo Electronics	5.00	3.50	100.00
	22.50					
	22.50					
WVF4 WVF1	13.50 13.50		SLT-PENGO (0001)	16.00	3.50	300.00
WVF3 WVF2	11.50 11.50					



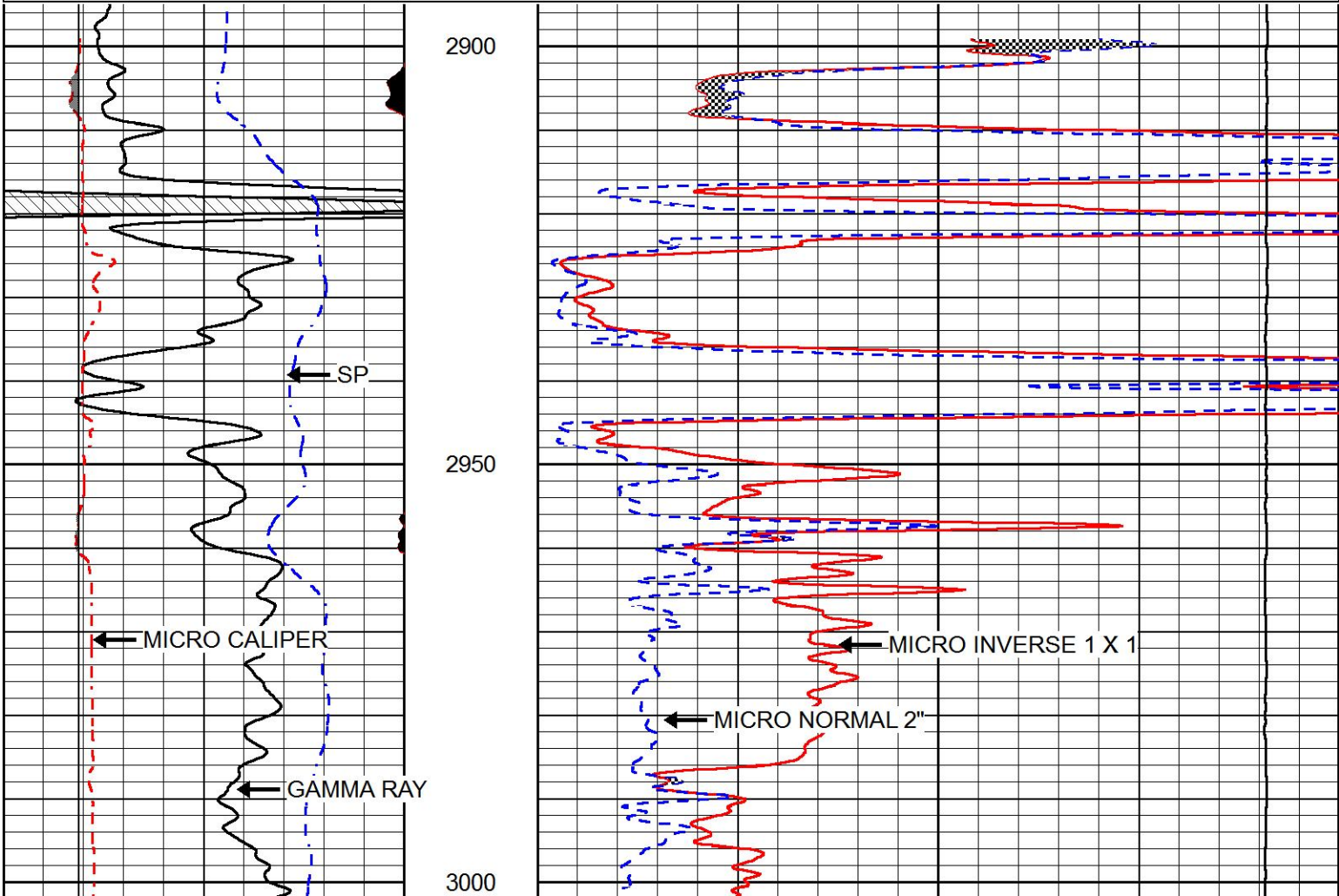
Dataset: american_warrior_whisler_1_20.db: field/well/SONMEL/pass2
Total length: 26.50 ft
Total weight: 470.00 lb
O.D.: 3.50 in

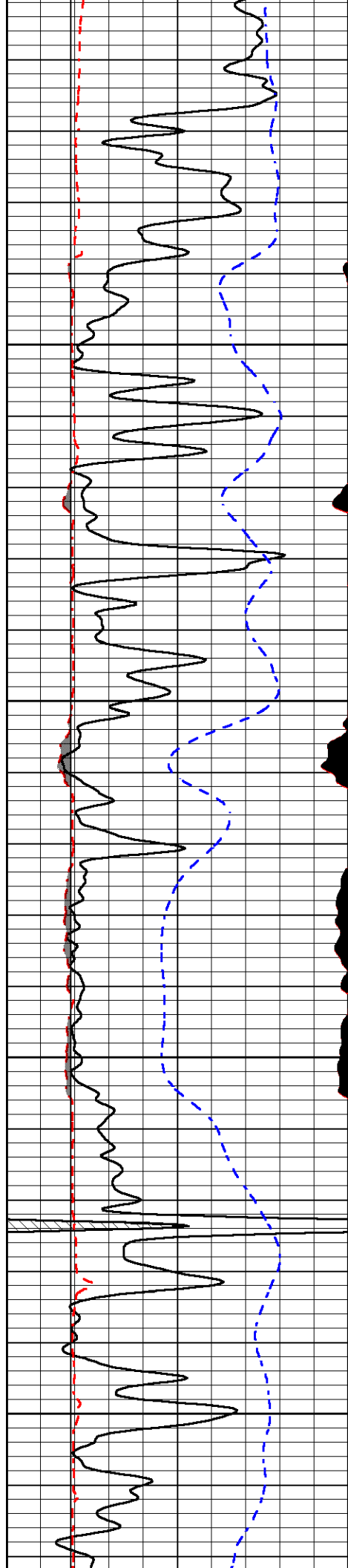


MAIN PASS

Database File	american_warrior_whisler_1_20.db
Dataset Pathname	stack/pass3.1
Presentation Format	micro
Dataset Creation	Sun May 06 09:08:18 2018
Charted by	Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	0	MICRO INVERSE 1 X 1 (Ohm-m)	40
6	MICRO CALIPER (in)	16	0	MICRO NORMAL 2" (Ohm-m)	40
6	BIT SIZE (in)	16	15000	LINE TENSION (lb)	0
-200	SP (mV)	0			



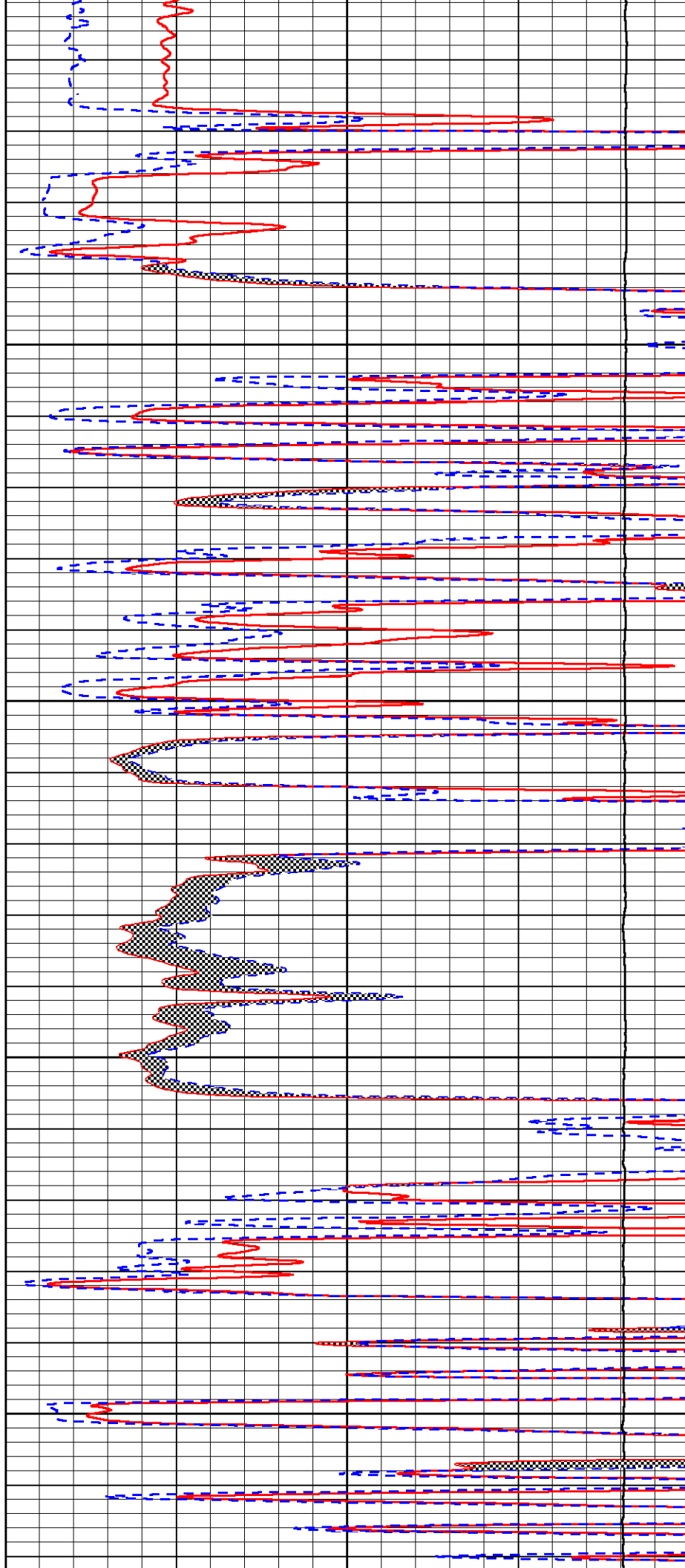


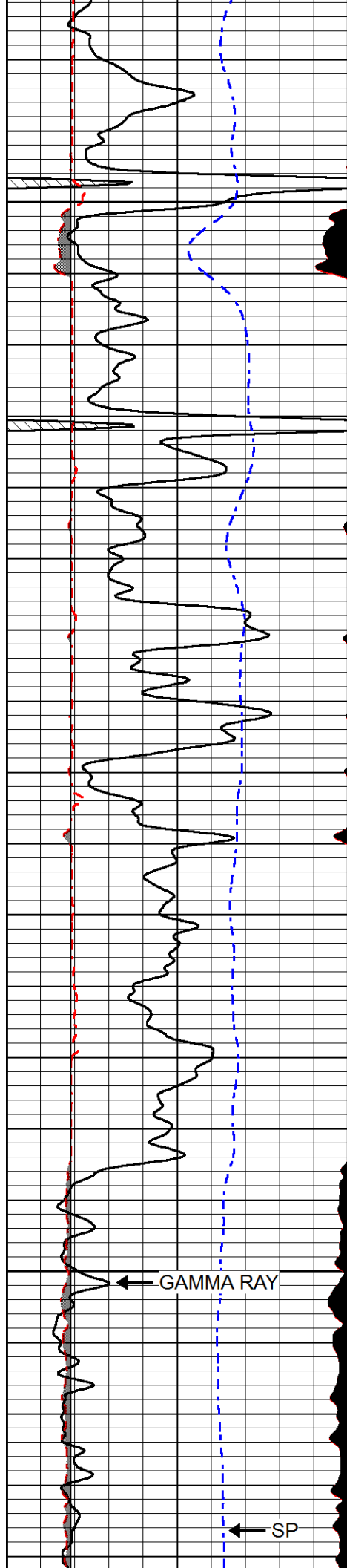
3050

3100

3150

3200





3250

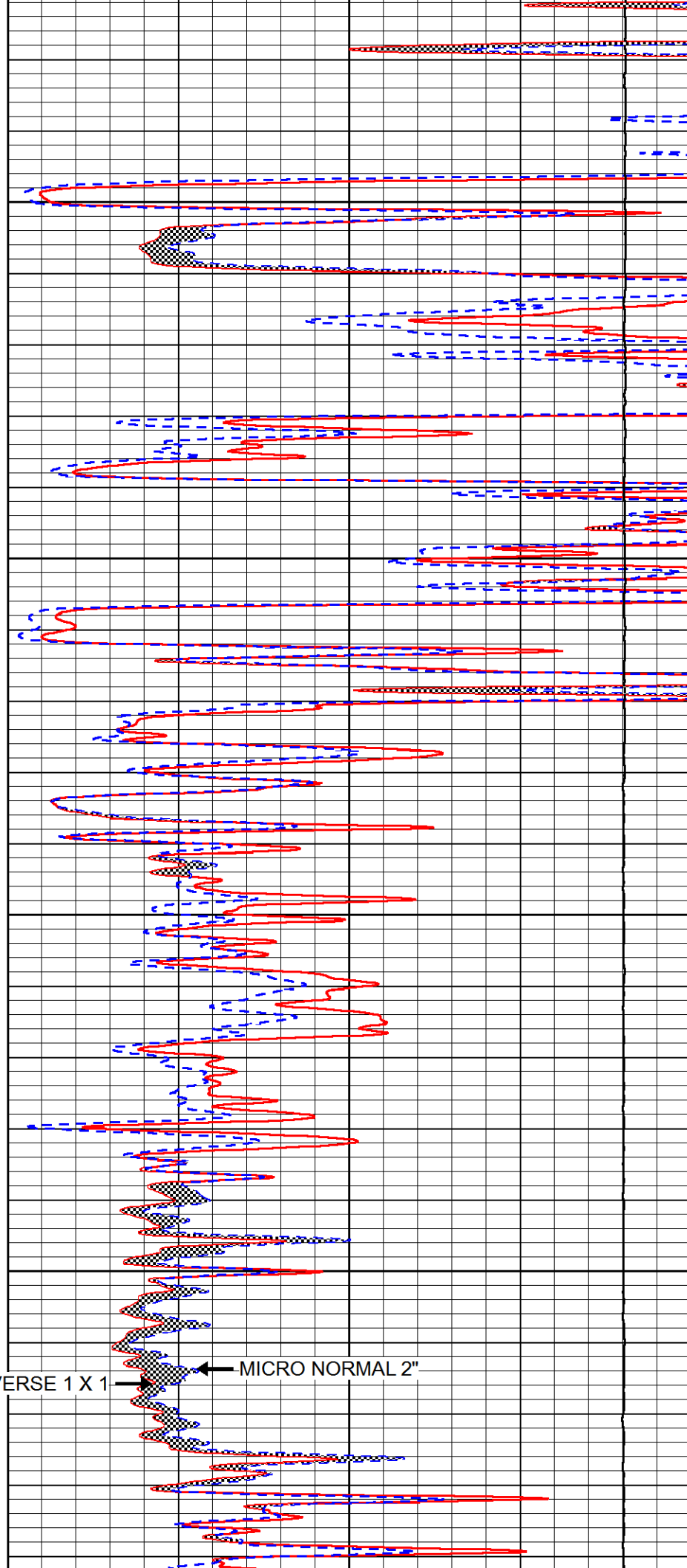
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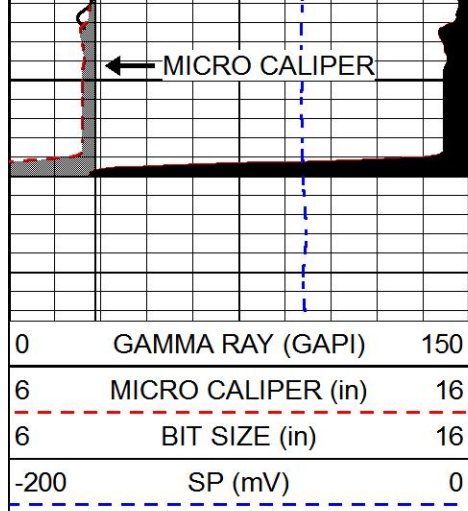
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3400

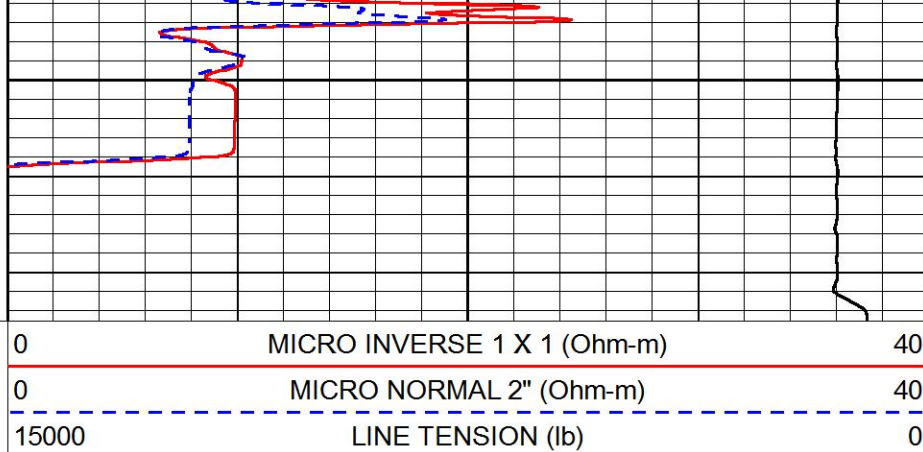
MICRO INVERSE 1 X 1

MICRO NORMAL 2"



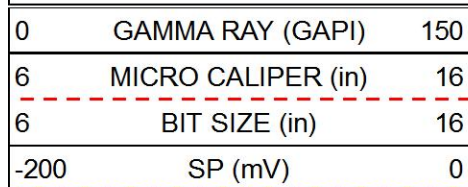


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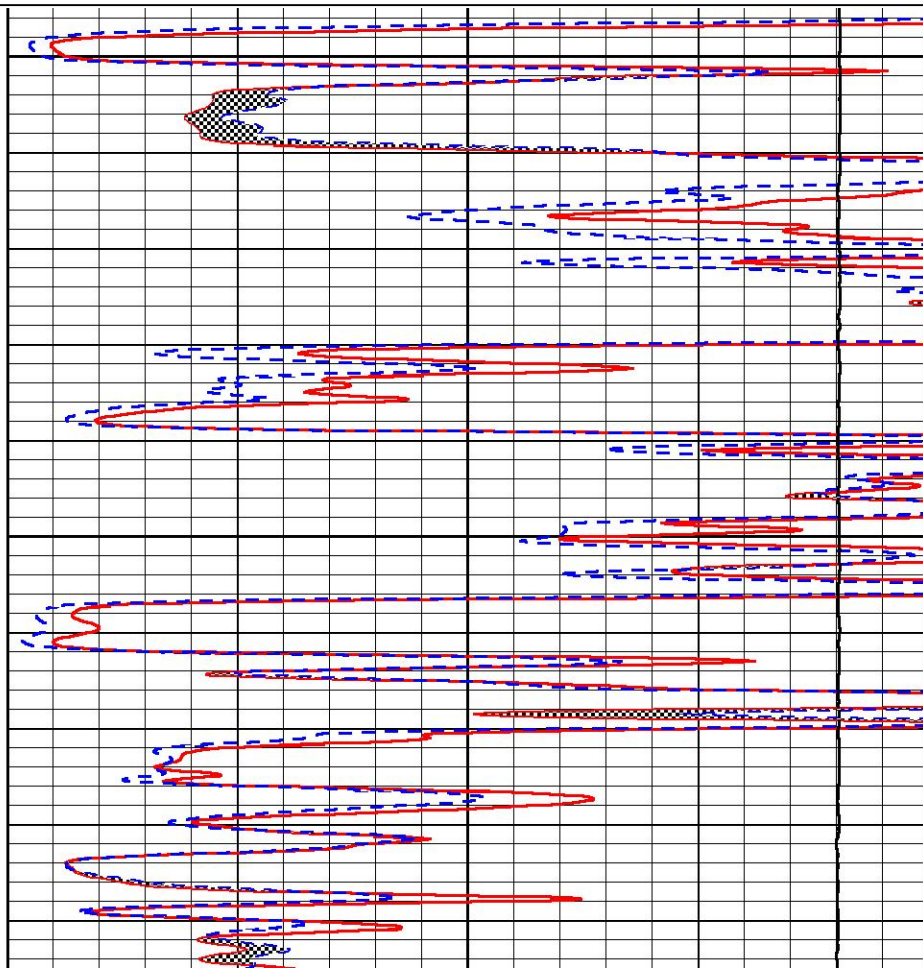
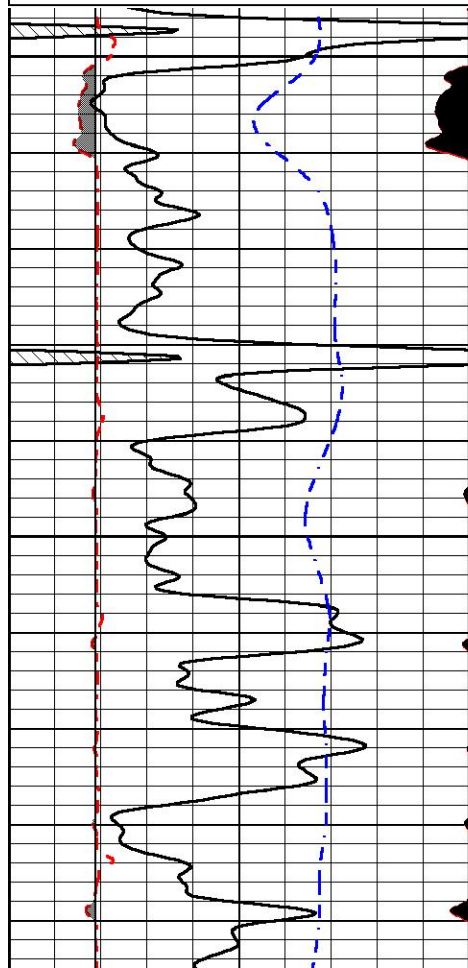
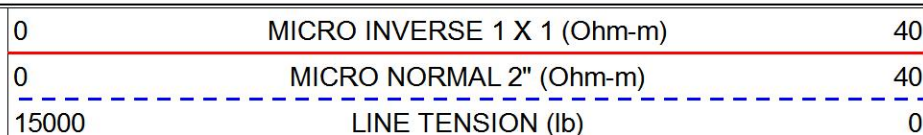
REPEAT SECTION

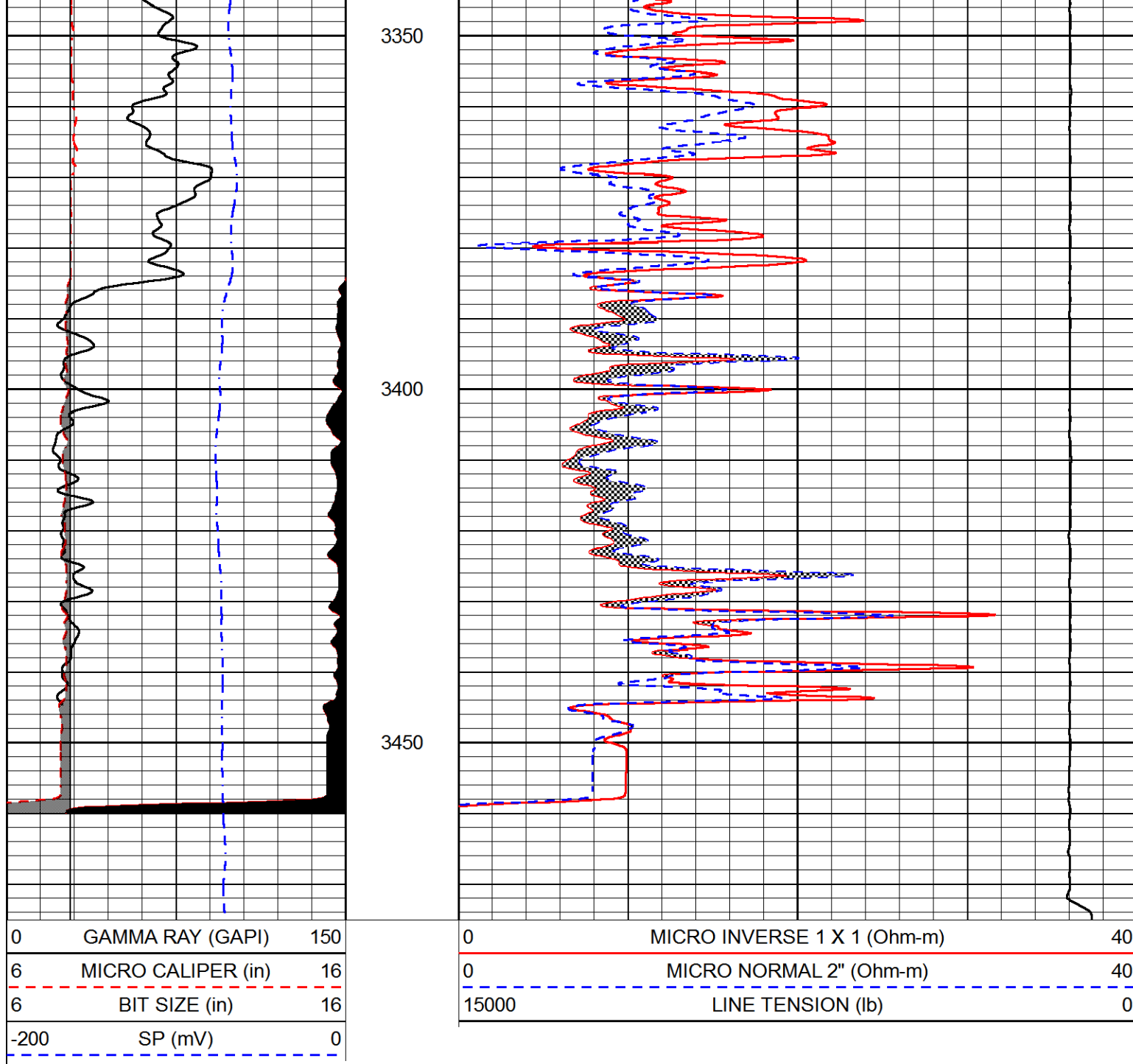
Database File american_warrior_whisler_1_20.db
 Dataset Pathname stack/pass2.1
 Presentation Format micro
 Dataset Creation Sun May 06 09:08:28 2018
 Charted by Depth in Feet scaled 1:240



3250

3300





Calibration Report							
Database File	american_warrior_whisler_1_20.db						
Dataset Pathname	stack/pass3.1						
Dataset Creation	Sun May 06 09:08:18 2018						
Dual Induction Calibration Report							
Serial-Model:				PSI 978-M&W			
Calibration Performed:				Sun Feb 04 11:50:02 2018			
		Readings		References		Results	
Loop:	Air	Loop		Air	Loop	Gain	Offset
Deep	178.615	710.235		0.000	255.800	mmho/m	0.570
Medium	161.982	1441.110		0.000	255.800	mmho/m	-37.000

Compensated Density Calibration Report

Serial-Model:	168-986-M&W
Source / Verifier:	/
Master Calibration Performed:	Tue Apr 11 17:07:47 2017

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4691.86	4818.19	cps
Aluminum	2.675	g/cc	859.57	3020.22	cps
Spine Angle = 74.61			Density/Spine Ratio = 0.523		
	Size		Reading		
Small Ring	4.00	in	1.00		
Large Ring	16.00	in	1.22		

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



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