



PIONEER
Pioneer Energy Services

MICRORESISTIVITY LOG

Company	TDI, INC.
Well	ROBBEN FAMILY #1
Field	N/A
County	ELLIS
State	KANSAS
Location:	API #: 15-051-26847-00-00 NW NE SW NE 1360' FNL & 1720' FEL SEC 3 TWP 15S RGE 16W
Permanent Datum	GROUND LEVEL
Log Measured From	KELLY BUSHING
Drilling Measured From	KELLY BUSHING
Elevation	1893'
Other Services	CNL/CDL DIL
K.B.	1903'
D.F.	N/A
G.L.	1893'
Date	11/29/2016
Run Number	ONE
Depth Driller	3575'
Depth Logger	3574'
Bottom Logged Interval	3573'
Top Log Interval	2800'
Casing Driller	8.625" @ 215'
Casing Logger	212'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	5300
Density / Viscosity	9.3 60
pH / Fluid Loss	10.5 7.2
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.7 @ 68
Rmt @ Meas. Temp	0.53 @ 68
Rmc @ Meas. Temp	0.95 @ 68
Source of Rmt / Rmc	CHARTS
Rm @ BHT	0.43 @ 112
Operating Rig Time	2 1/2 HOURS
Max Rec. Temp. F	112 DEG F
Equipment Number	108
Location	COLBY
Recorded By	T. MARTIN
Witnessed By	TOM DENNING
	HERB DEINES

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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.

WALKER, KS, 5.4 MILES S OF I-70
TO ANTONINO RD, 1/2 W, S INTO

Log Measured From: KELLY BUSHING 10 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew

Engineer: T. MARTIN
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: TOM DENNING
Secondary Witness: HERB DEINES
Secondary Witness:
Secondary Witness:

Log Variables

DatabaseC:\ProgramData\Warrior\Data\tdi_robben family_#1.db
Dataset field/well/stkml/pass3.1/_vars_

Top - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in	degF	in	in	g/cc	2	g/cc
	7.875	112	5.5	0	1		2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m	mmho/m	mV	degF	Off	ft
		0	0	-335	40		3574

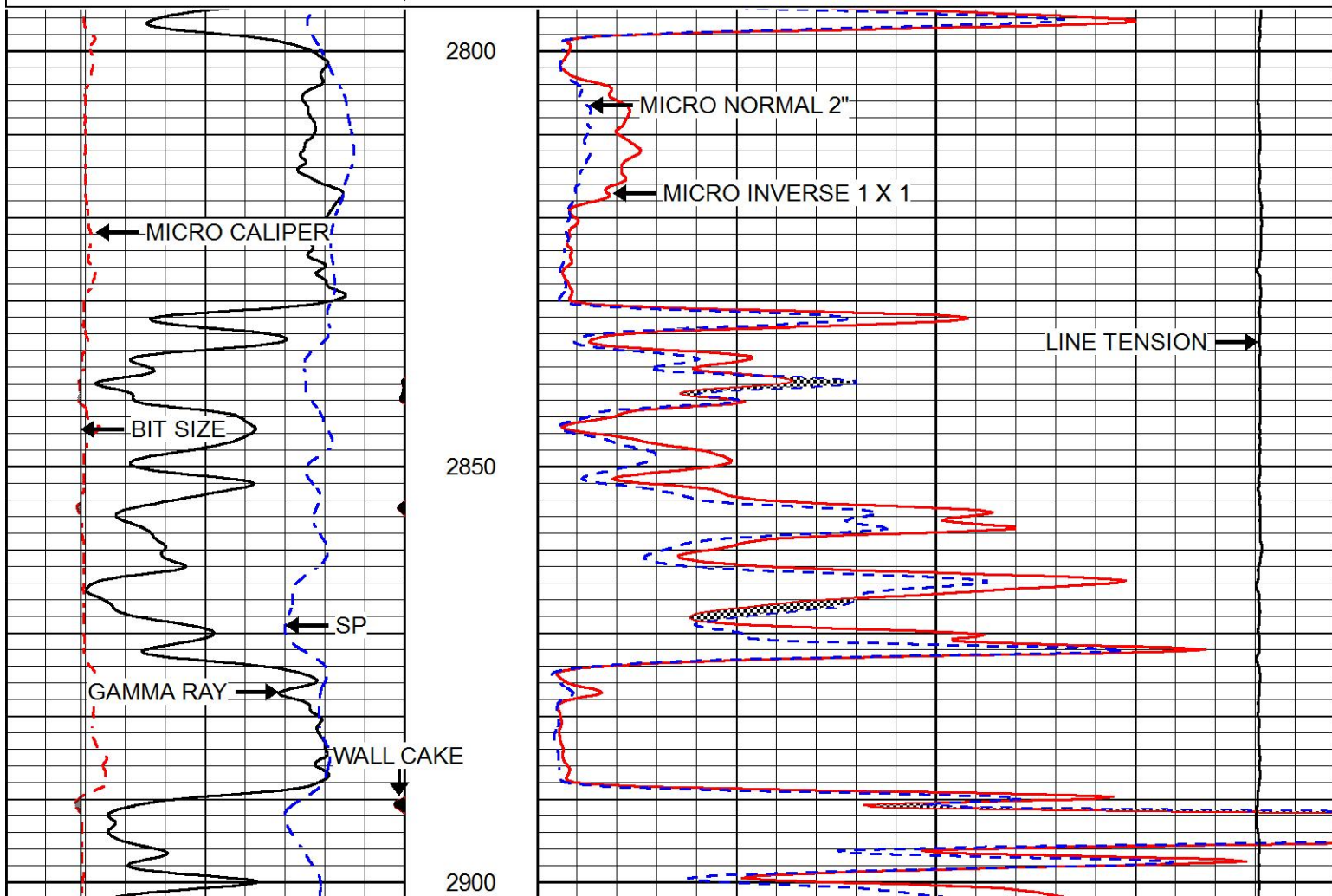


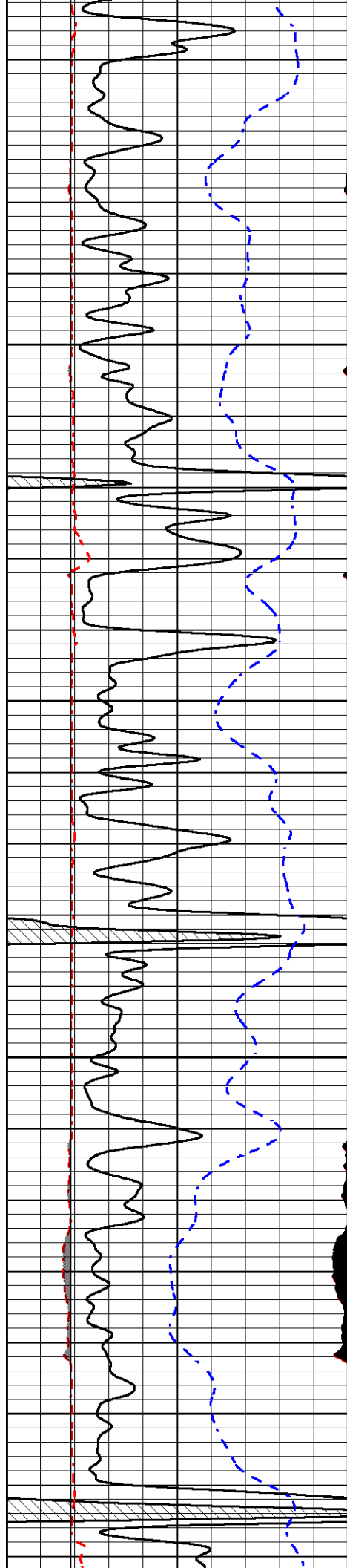
MAIN PASS

Database File tdi_robben family_#1.db
Dataset Pathname stkml/pass3.1
Presentation Format micro
Dataset Creation Tue Nov 29 20:06:47 2016
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



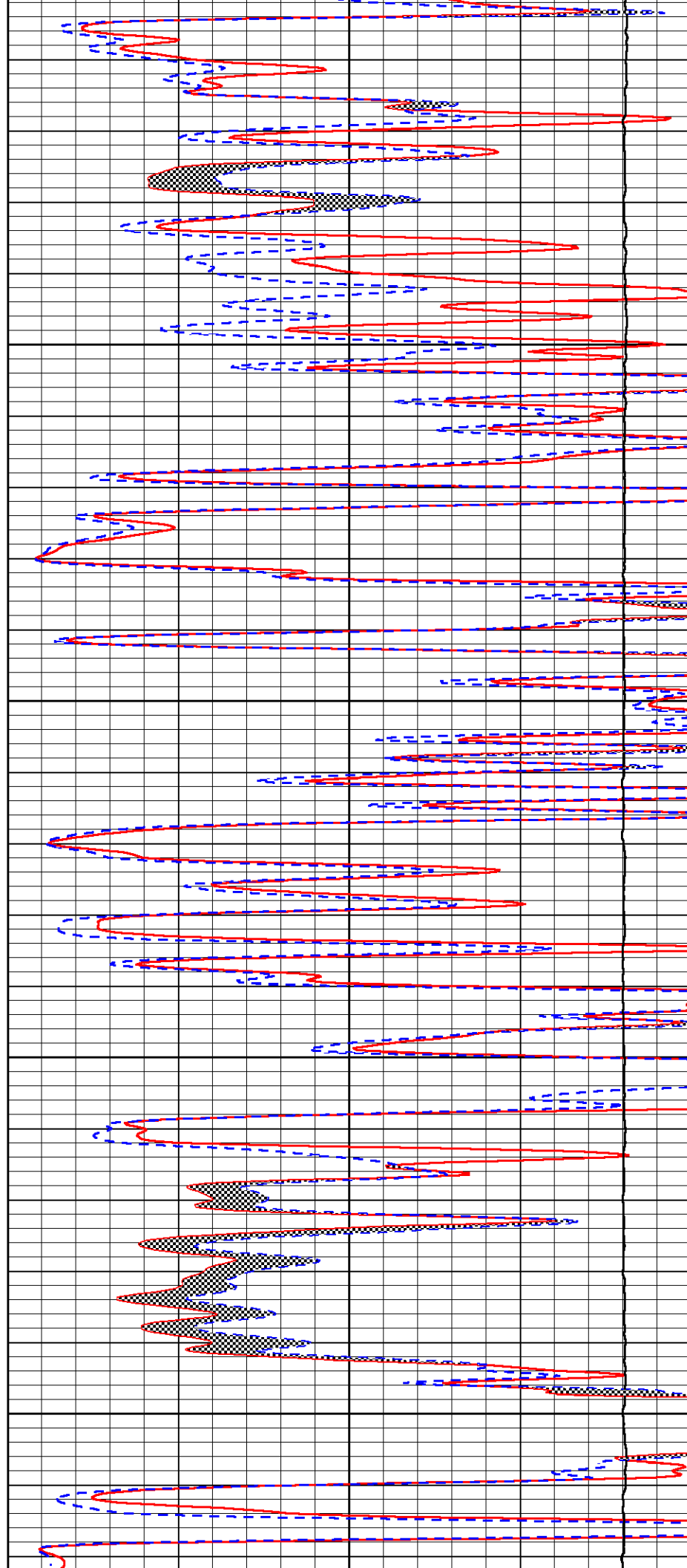


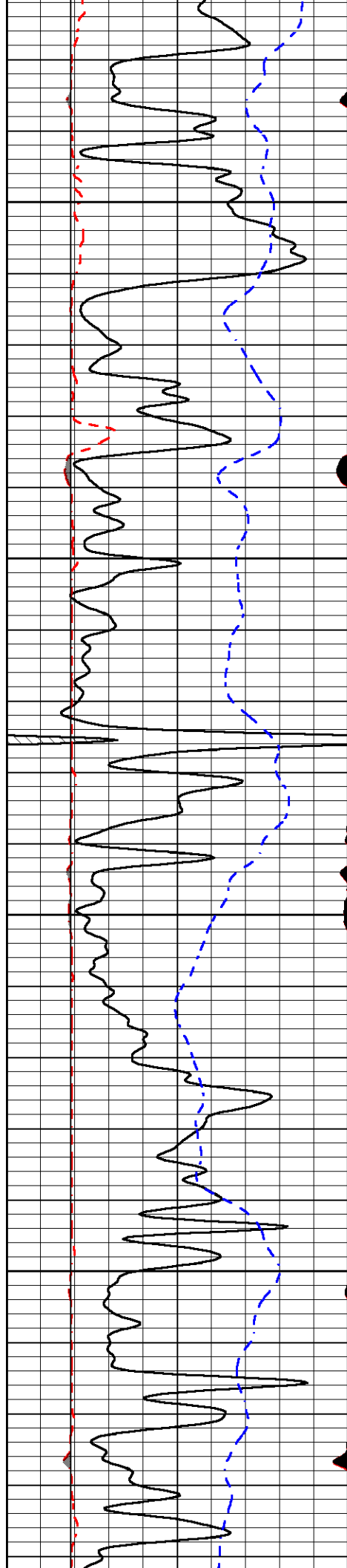
2950

3000

3050

3100



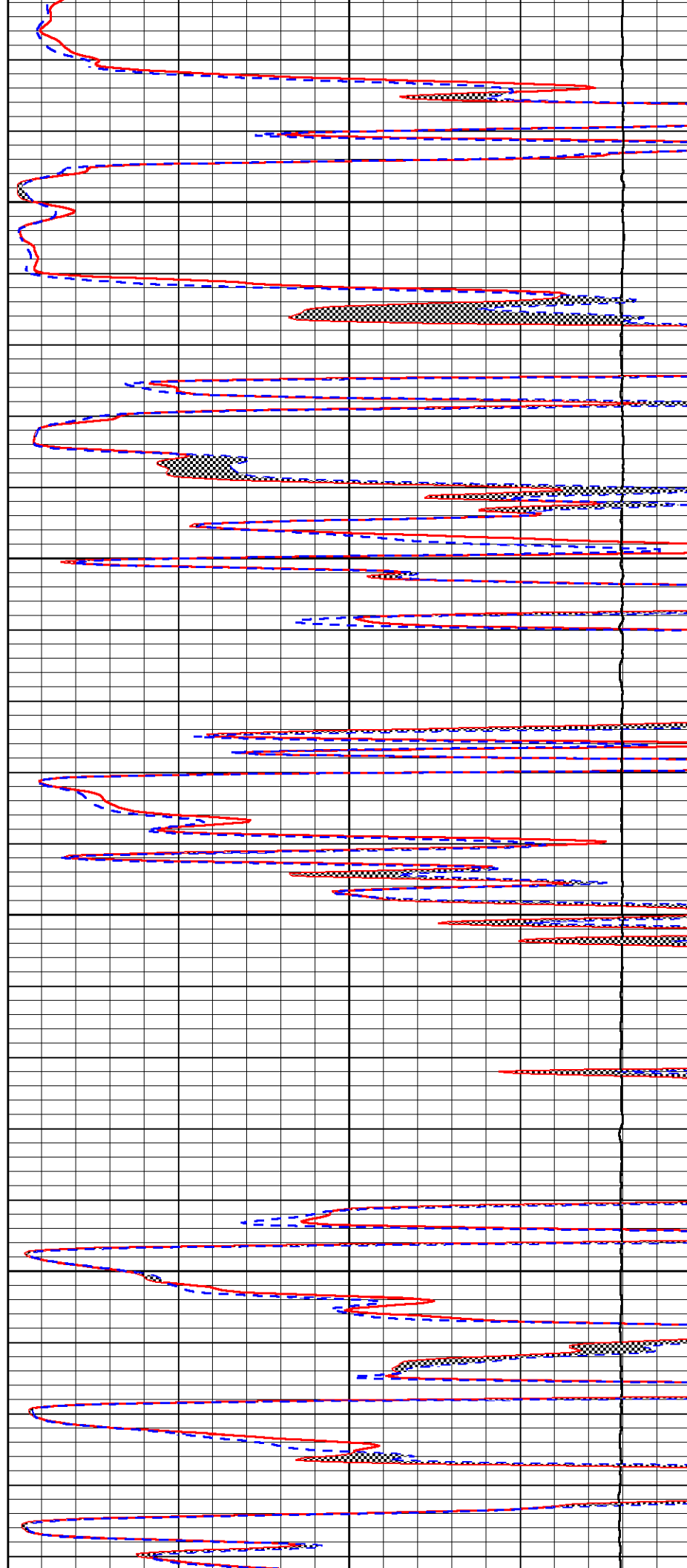


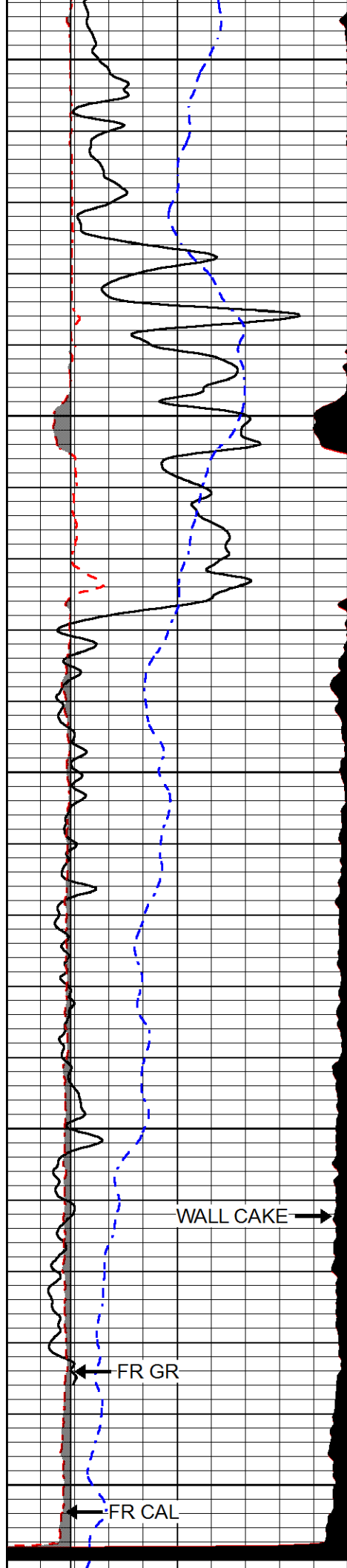
3150

3200

3250

3300





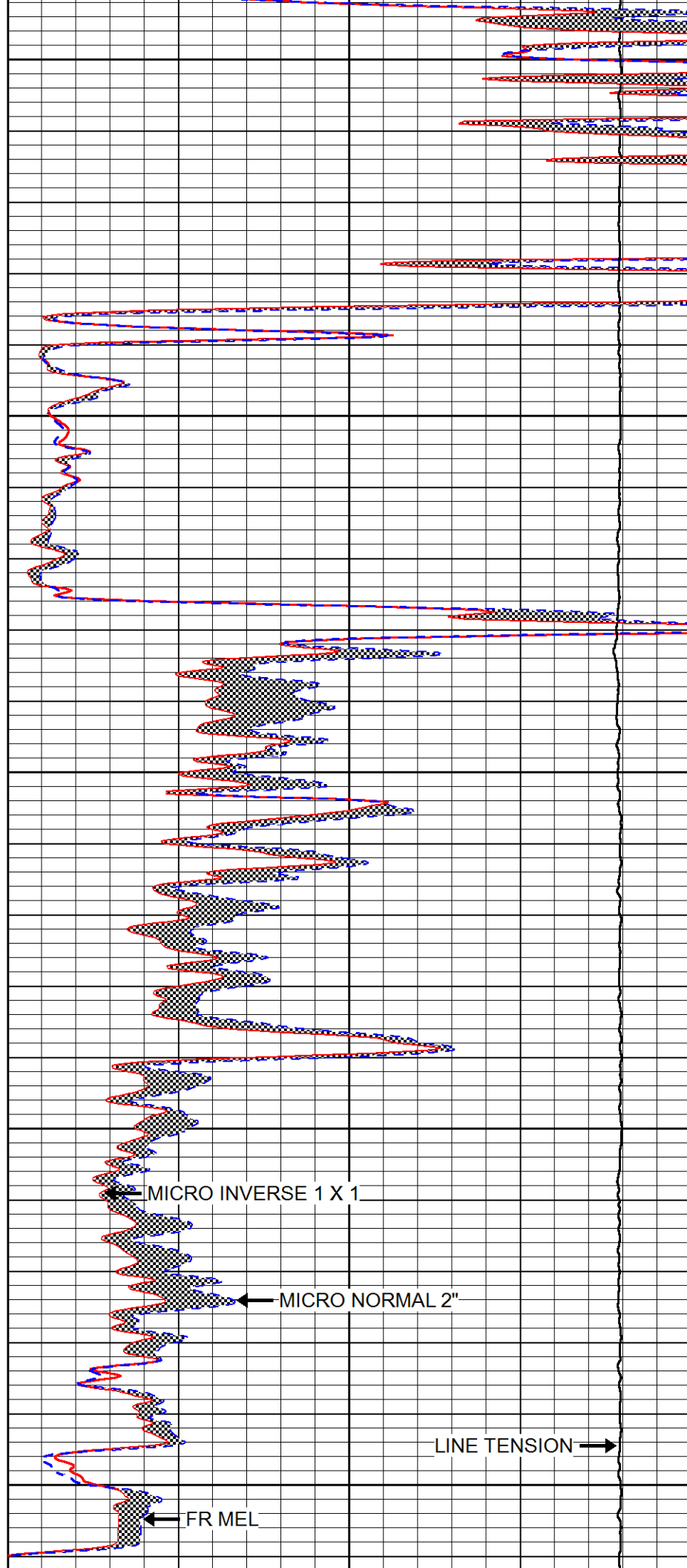
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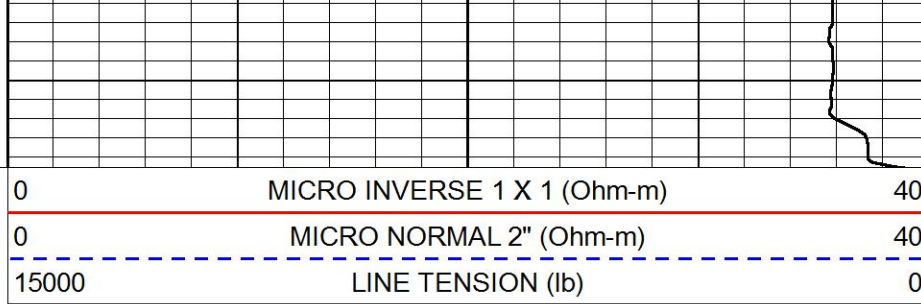
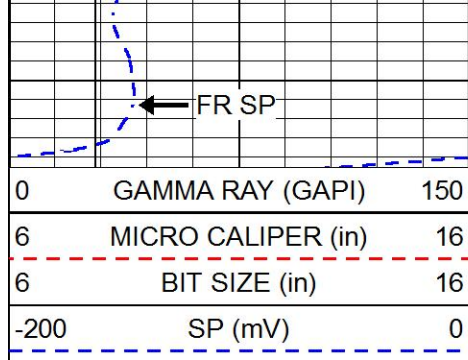
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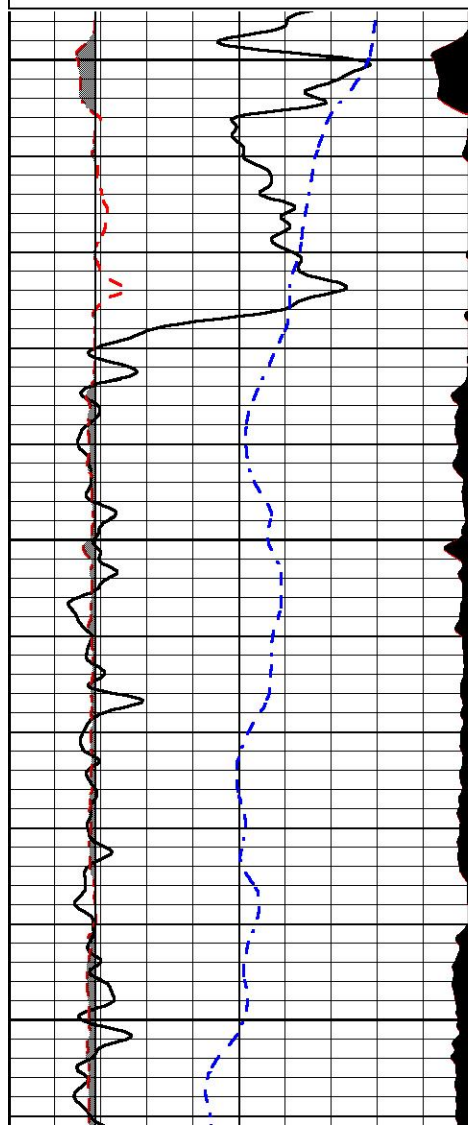
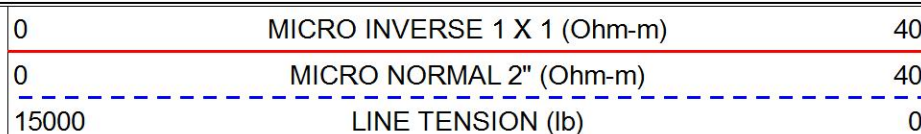
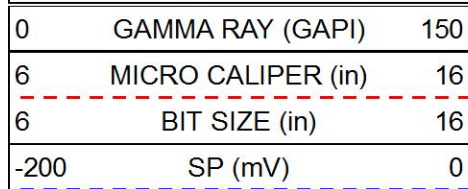
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REPEAT SECTION

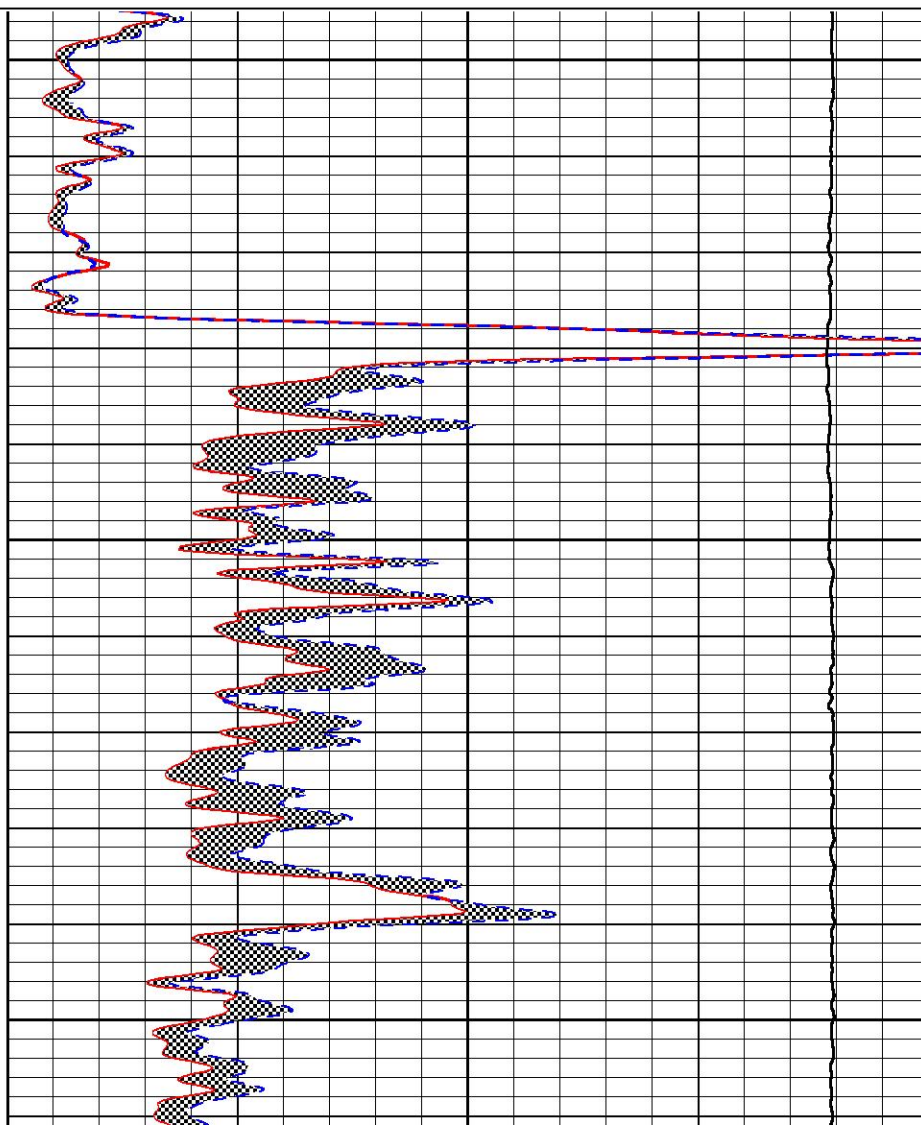
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 Presentation Format micro
 Dataset Creation Tue Nov 29 19:34:21 2016
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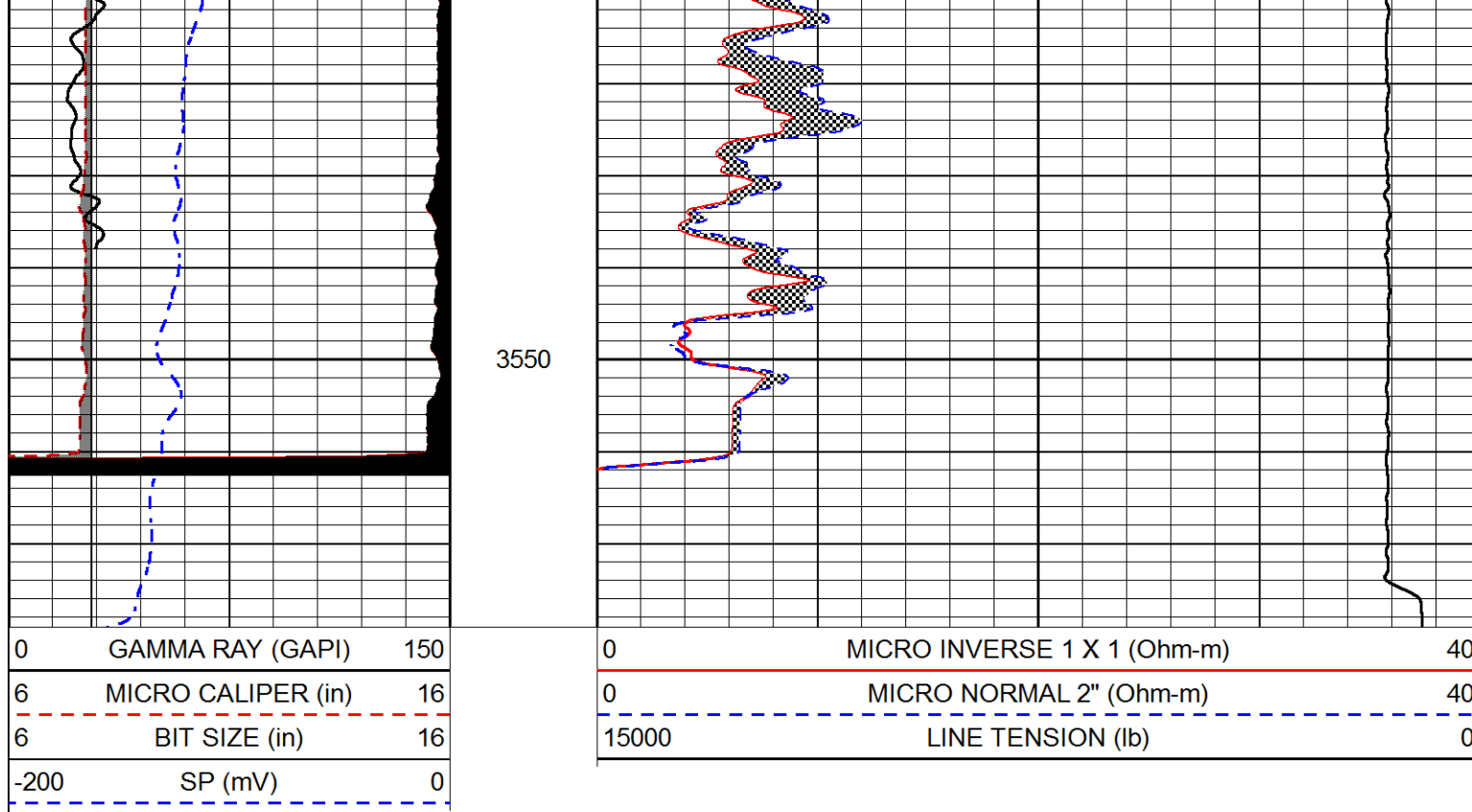


3400

3450

3500





Calibration Report

Database File tdi_robben family_#1.db
Dataset Pathname stkml/pass3.1
Dataset Creation Tue Nov 29 20:06:47 2016

Dual Induction Calibration Report

Serial-Model: 1987-M&W
Calibration Performed: Thu Nov 17 20:52:56 2016

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.530	-35.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.440	-112.000

Microlog Calibration Report

Serial-Model: PSI-01-PSI STKBL ML
Performed: Thu Mar 31 17:14:32 2016

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	24500.0000	-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	-82.5500

Compensated Density Calibration Report

Serial-Model: 71-914-M&W
Source / Verifier: /
Master Calibration Performed: Thu Nov 17 21:42:33 2016

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4314.49	5307.52	cps
Aluminum	2.675	g/cc	822.19	3456.36	cps
Spine Angle = 75.49			Density/Spine Ratio = 0.537		
	Size		Reading		
Small Ring	4.00	in	1.16		
Large Ring	14.00	in	1.57		

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: Thu Nov 17 21:13:32 2016

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps



Company TDI, INC.
Well ROBBEN FAMILY #1
Field N/A
County ELLIS
State KANSAS