



# MICRORESISTIVITY LOG

Pioneer Energy Services

Company **TDI, INC.**  
 Well **HART #1**  
 Field **WILDCAT**  
 County **ELLIS** State **KANSAS**

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Location: **API #: 15-051-26953-00-00**  
**2260' FNL & 550' FEL**  
**SEC 26 TWP 13S RGE 19W**  
 Permanent Datum **GROUND LEVEL Elevation 2096'**  
 Log Measured From **KELLY BUSHING**  
 Drilling Measured From **KELLY BUSHING**  
 Other Services **CNL/CDL DIL**  
 Elevation **K.B. 2105'**  
**D.F. N/A**  
**G.L. 2096'**

Date	6/21/2019
Run Number	ONE
Depth Driller	3800'
Depth Logger	3800'
Bottom Logged Interval	3799'
Top Log Interval	3000'
Casing Driller	8.625" @ 221'
Casing Logger	220'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	4000
Density / Viscosity	9.4 64
pH / Fluid Loss	10.0 6.0
Source of Sample	FLOWLINE
Rm @ Meas. Temp	.70 @ 68
Rmt @ Meas. Temp	.53 @ 68
Rmc @ Meas. Temp	.95 @ 68
Source of Rmf / Rmc	CHARTS
Rm @ BHT	.42 @ 114
Operating Rig Time	2 HOURS
Max Rec. Temp. F	114 DEGF
Equipment Number	P-108
Location	HAYS
Recorded By	J. HENRICKSON
Witnessed By	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.

HAYS KANSAS  
 WEST ON OLD 40 TO 210 ROAD, 1/2 SOUTH,  
 WEST INTO

Log Measured From: **KELLY BUSHING** 9 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES  
[www.pioneerenergy.com](http://www.pioneerenergy.com) 785-625-3858

Your Pioneer Energy Services Crew

Engineer: **J. HENRICKSON**  
 Operator:  
 Operator:  
 Operator:

This Log Record Was Witnessed By

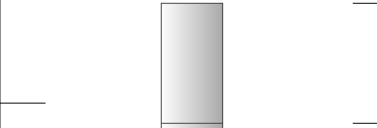
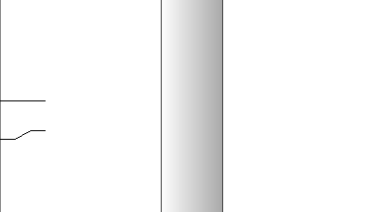
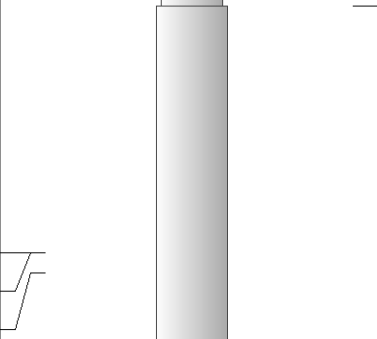
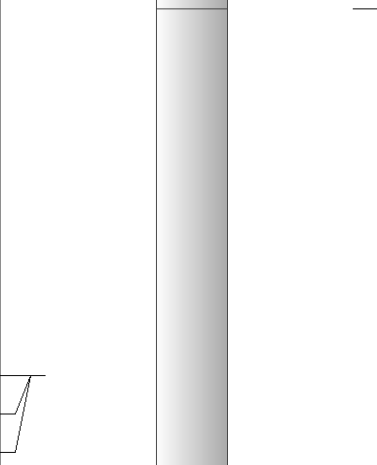
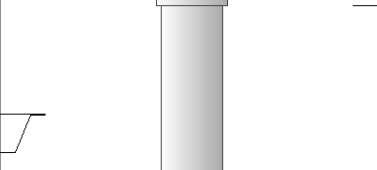
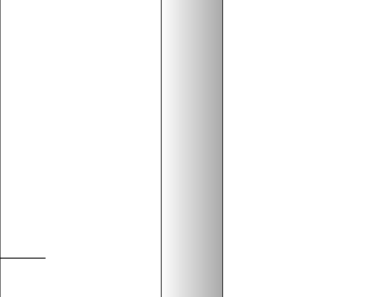
Primary Witness: **HERB DEINES**  
 Secondary Witness: **TOM DENNING**  
 Secondary Witness:  
 Secondary Witness:

# Log Variables

DatabaseC:\ProgramData\Warrior\Data\tdi\_hart\_1.db  
Dataset field/well/stackml/pass3.1/\_vars\_

## Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	114	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	185	51	Off	3800

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	44.50		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	41.40 40.65		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	32.35 32.33 31.85		CDL-M&W (144-84)	8.50	4.00	250.00
MCAL MI MN	20.87 20.87 20.87		ML-PSI UDM ML (UDM-01) Stackable Microlog Tools	11.50	4.00	215.00
RLL3 RLL3F	15.80 15.79					
CILD	8.00		DIL-M&W (PSI 988)	18.50	3.50	220.00

CILM 4.70

SP 0.20

Dataset: tdi\_hart\_1.db: field/well/stackml/pass3.1  
 Total length: 47.00 ft  
 Total weight: 835.00 lb  
 O.D.: 4.00 in

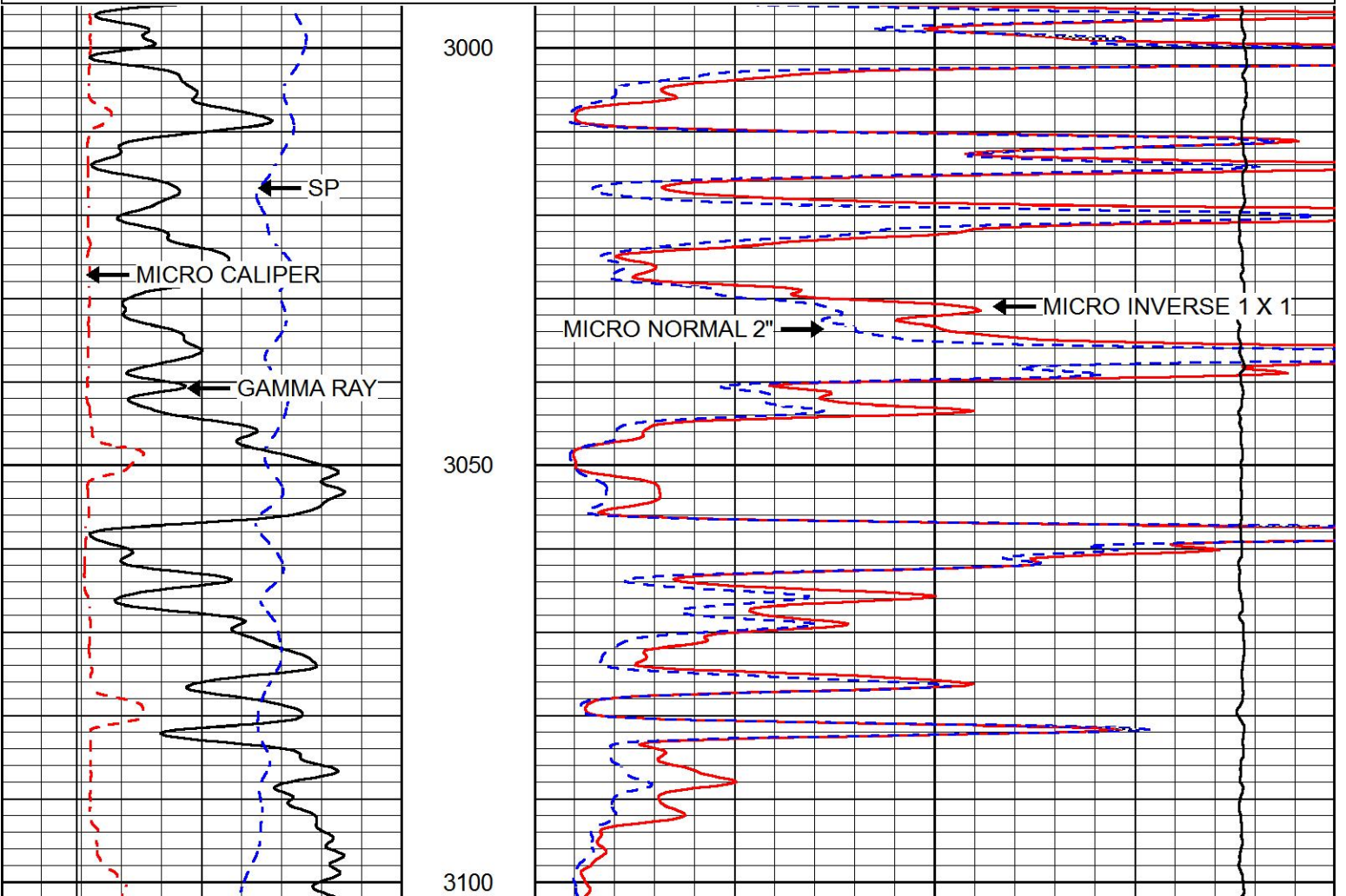


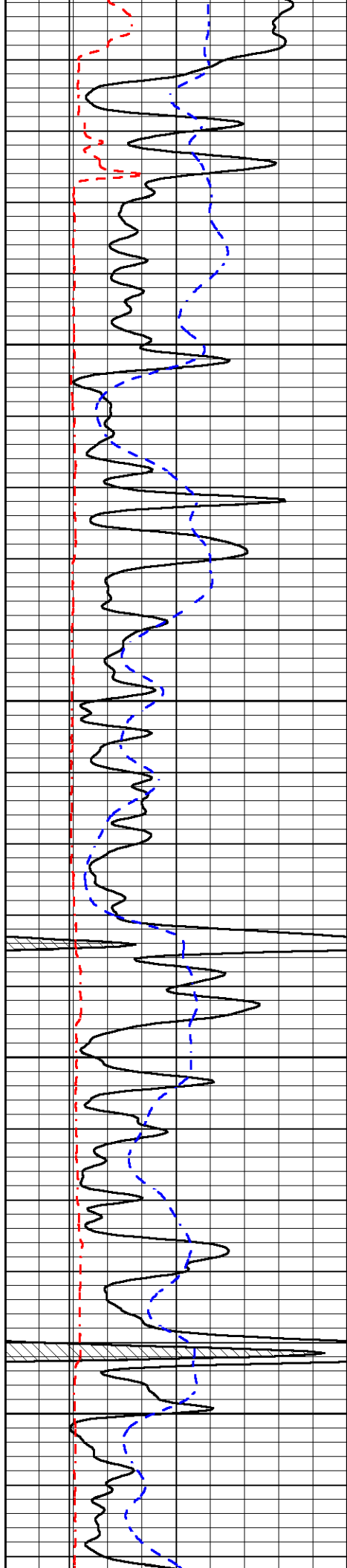
# MAIN PASS

Database File tdi\_hart\_1.db  
 Dataset Pathname stackml/pass3.1  
 Presentation Format micro  
 Dataset Creation Fri Jun 21 07:38:50 2019  
 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



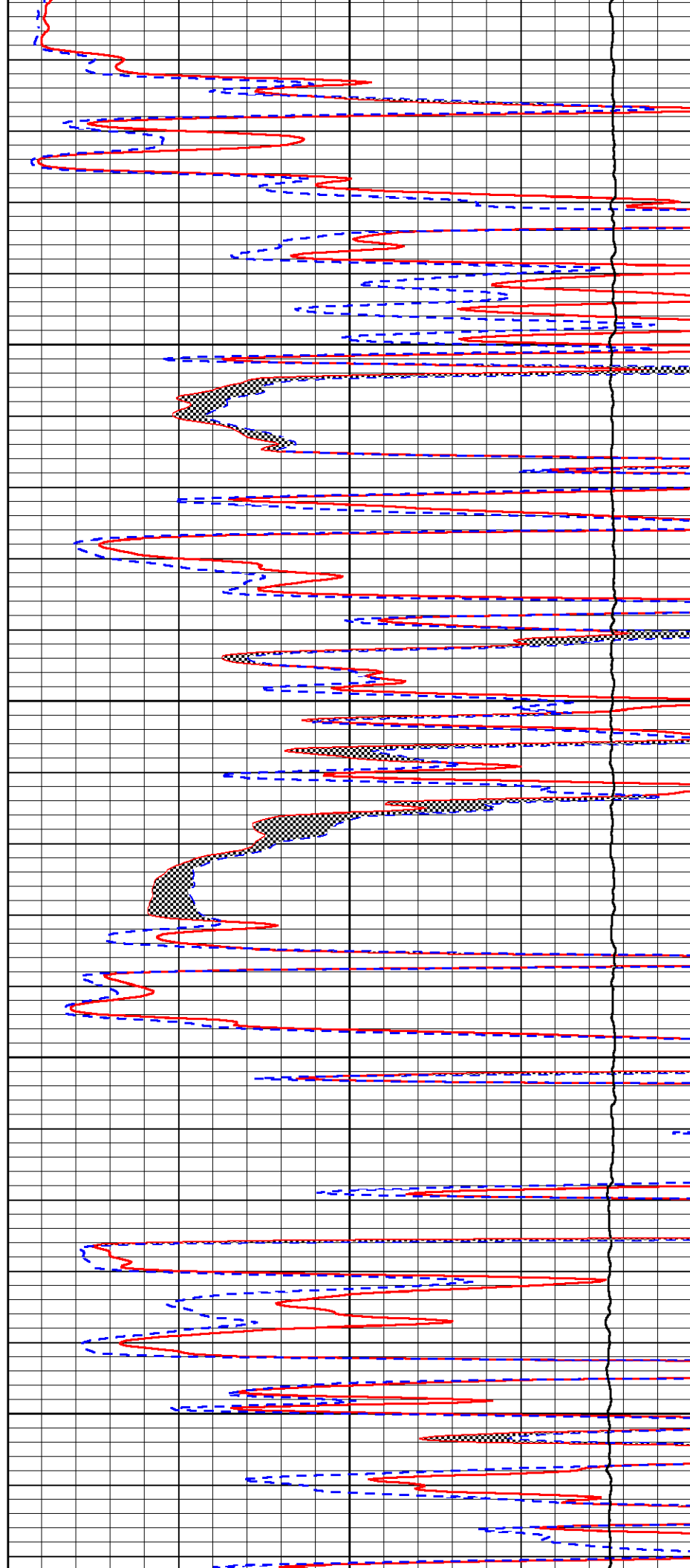


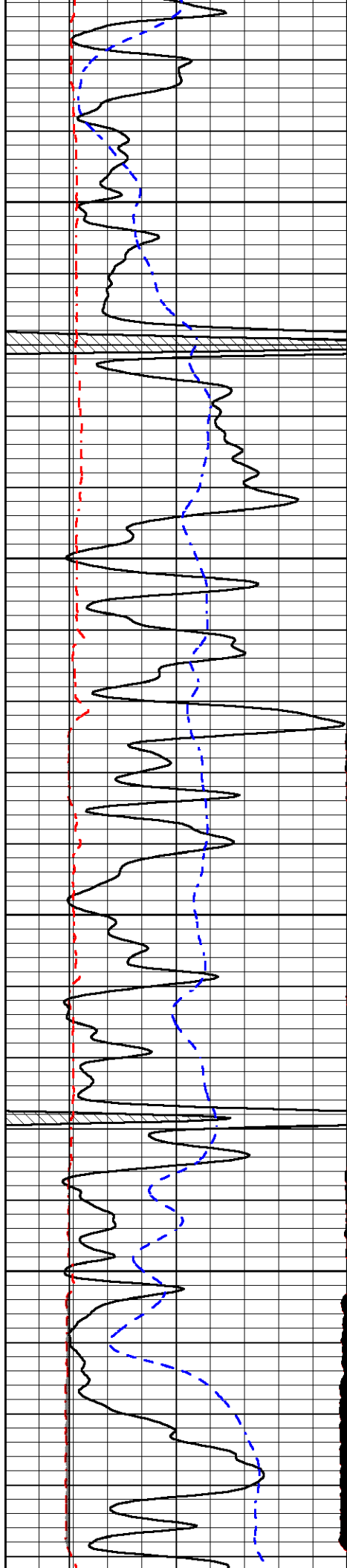
3150

3200

3250

3300



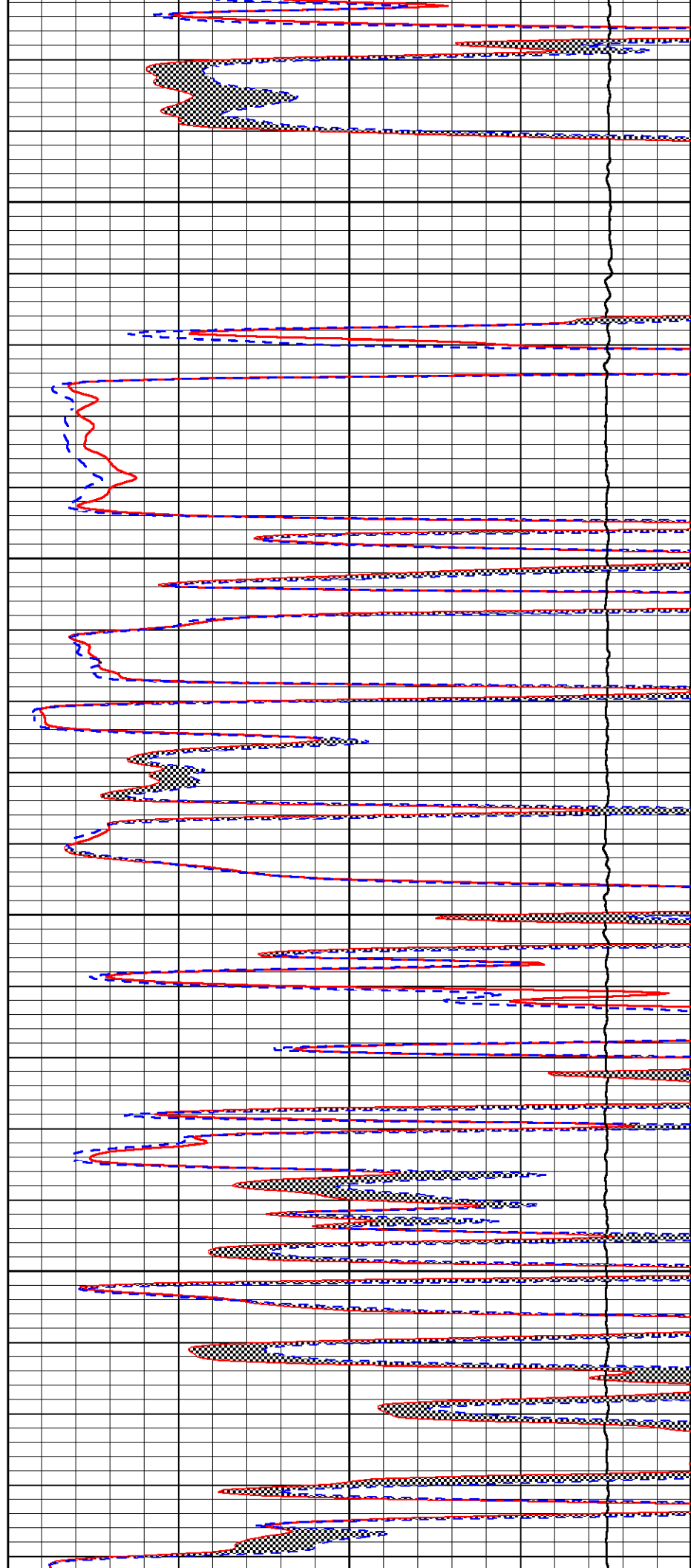


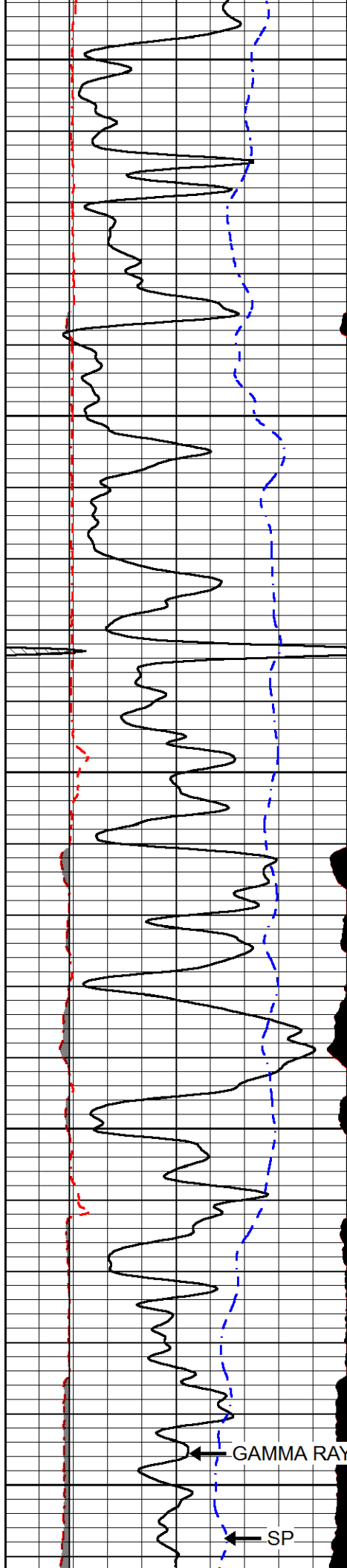
3350

3400

3450

3500





3550

3600

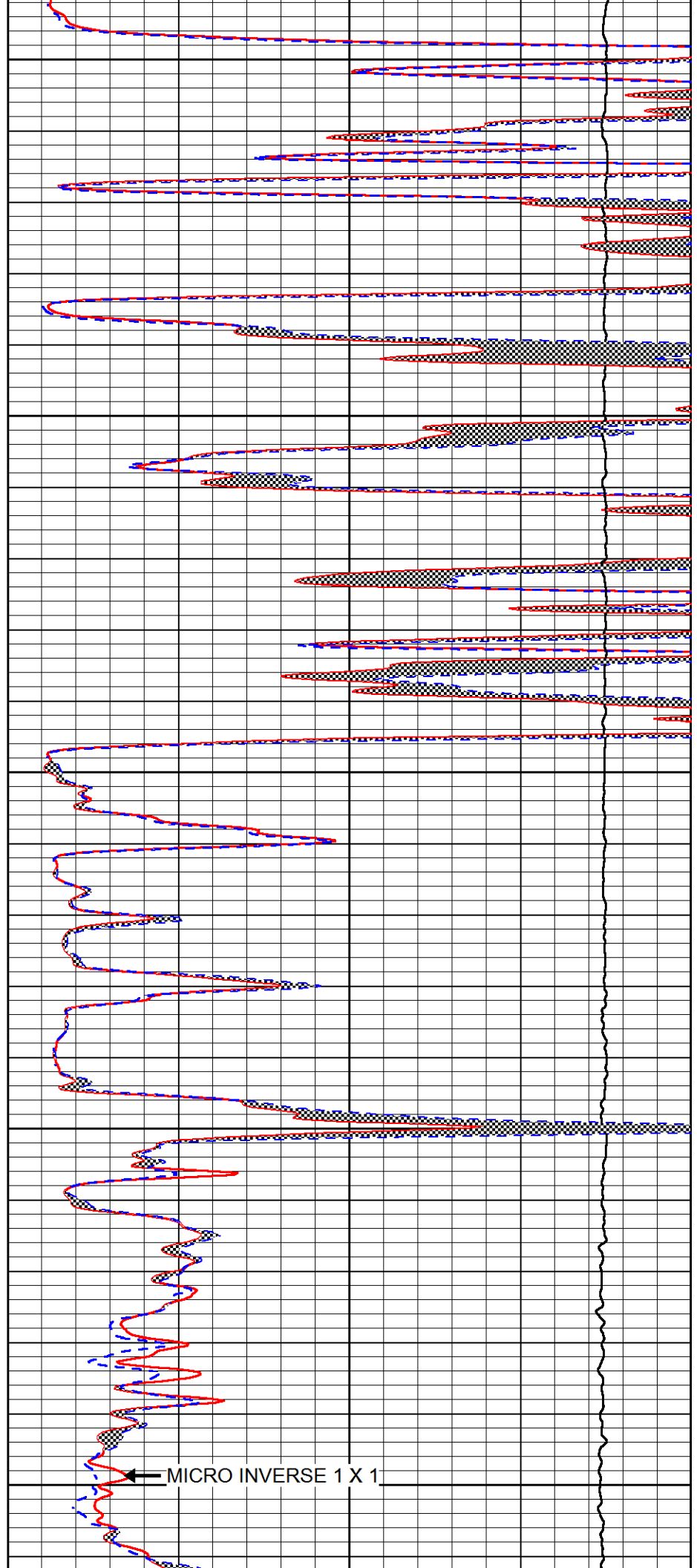
3650

3700

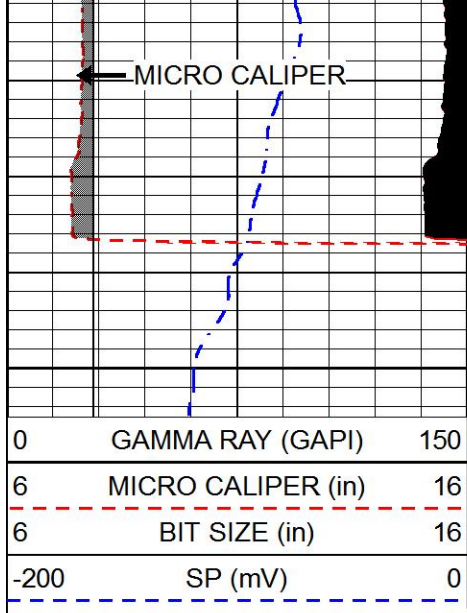
3750

GAMMA RAY

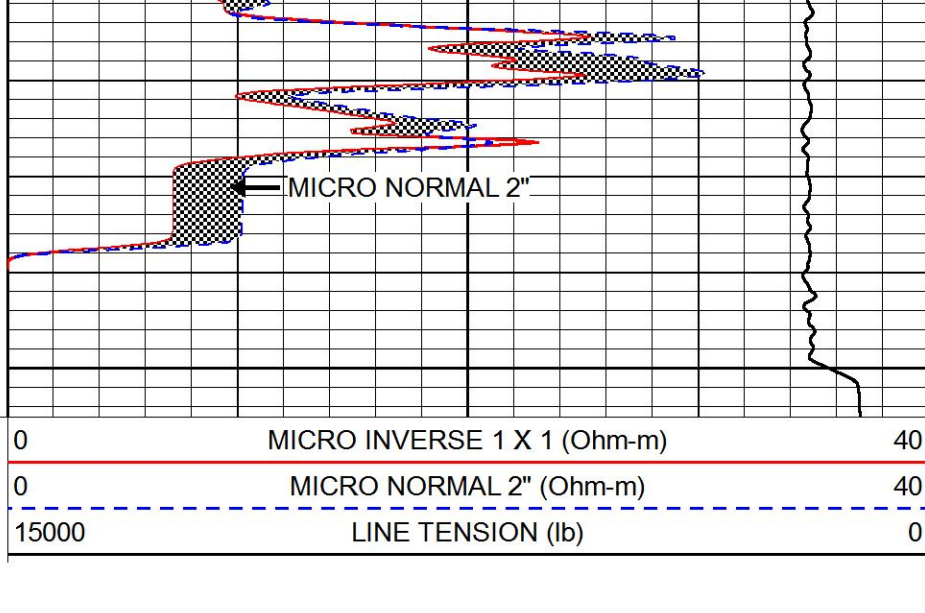
SP



MICRO INVERSE 1 X 1

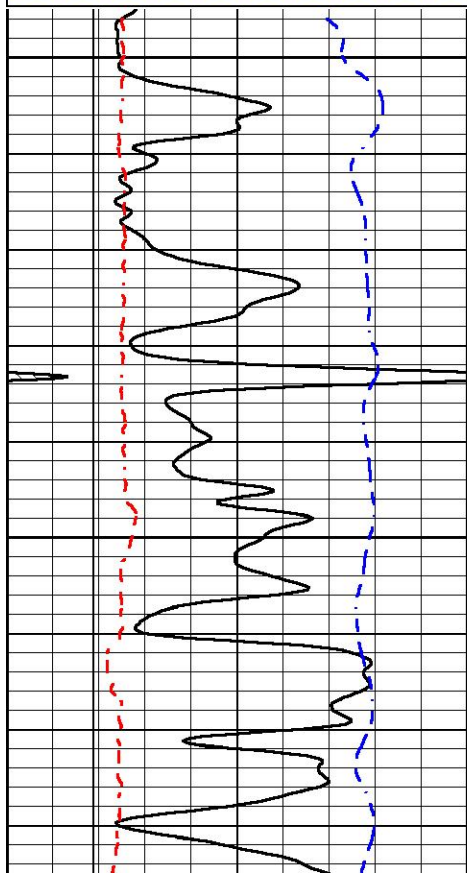
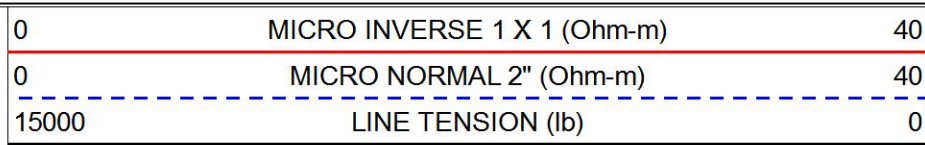
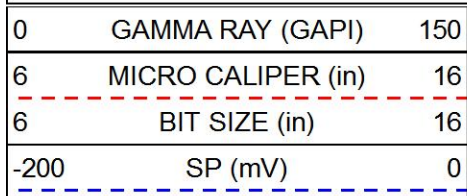


3800



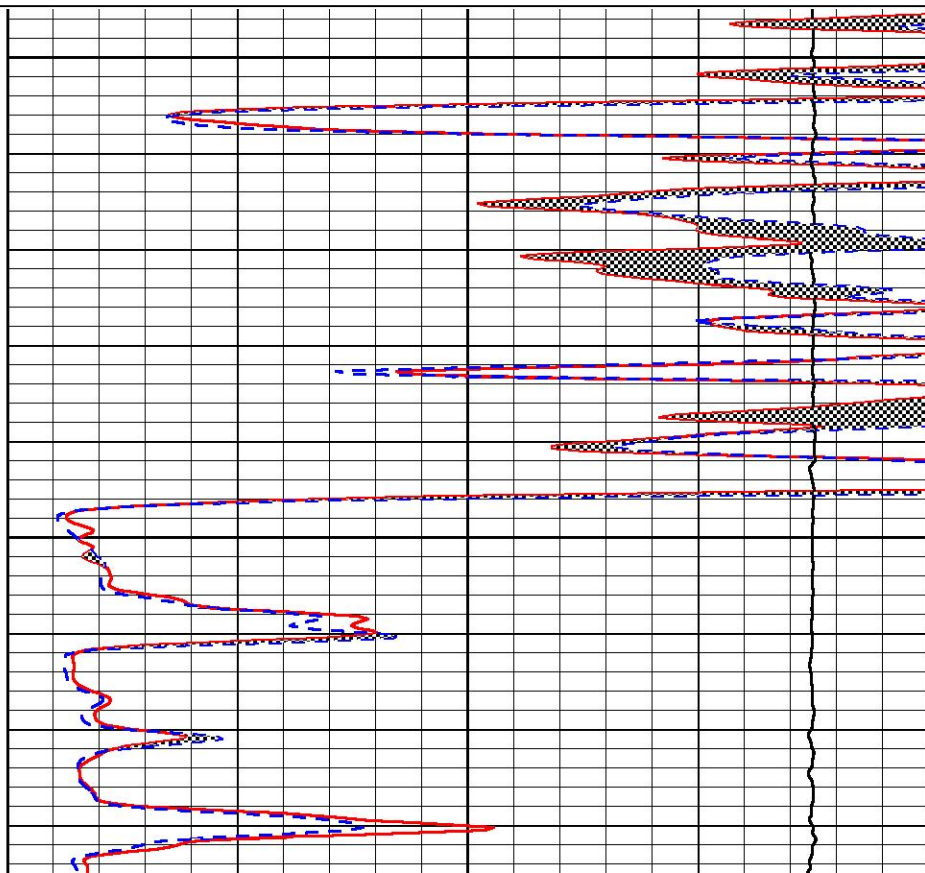
# REPEAT SECTION

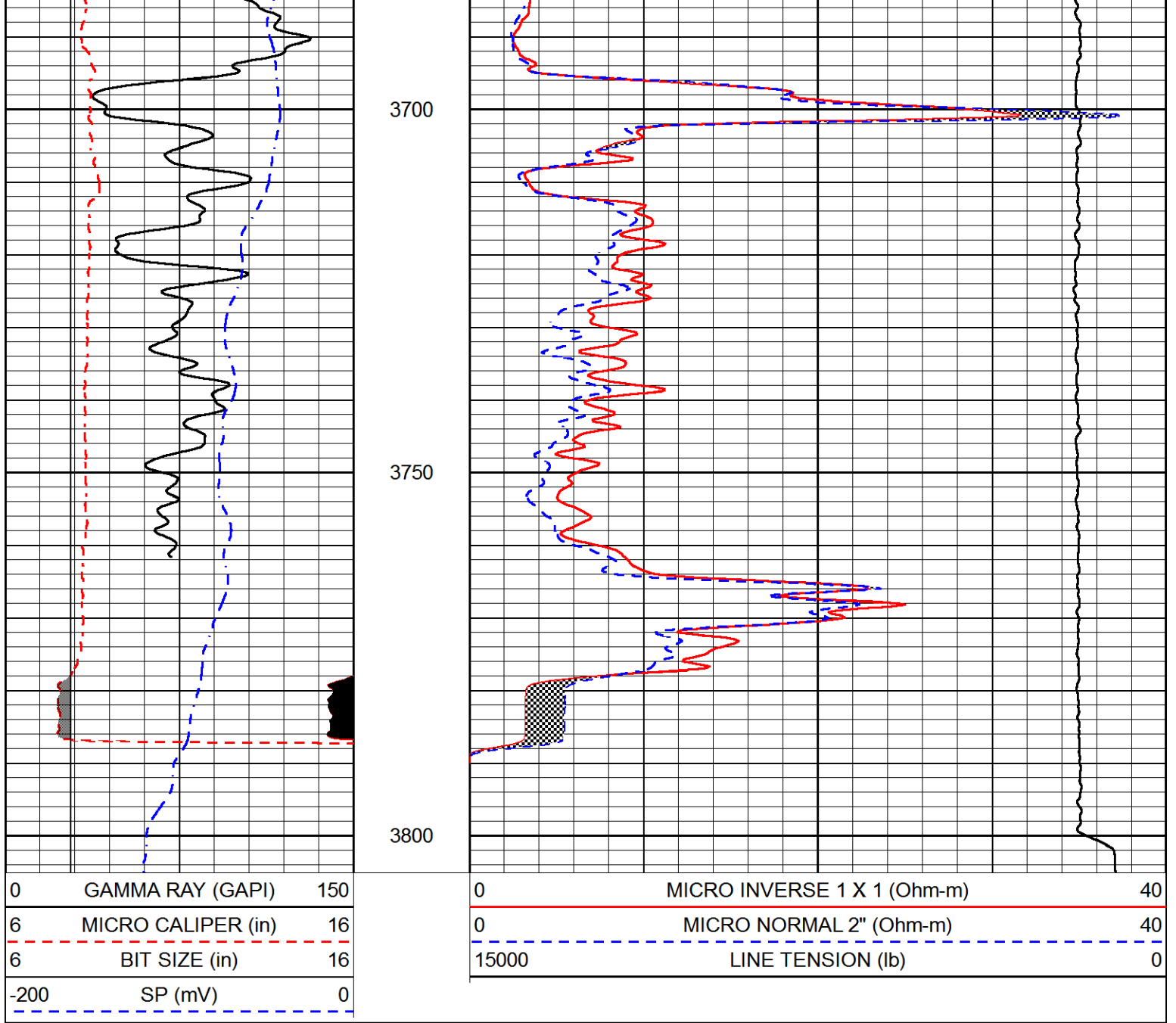
Database File tdi\_hart\_1.db  
 Dataset Pathname stackml/pass2.1  
 Presentation Format micro  
 Dataset Creation Fri Jun 21 07:10:05 2019  
 Charted by Depth in Feet scaled 1:240



3600

3650





### Calibration Report

Database File      tdi\_hart\_1.db  
 Dataset Pathname   stackml/pass3.1  
 Dataset Creation    Fri Jun 21 07:38:50 2019

### Dual Induction Calibration Report

Serial-Model:                      PSI 988-M&W  
 Calibration Performed:            Tue Nov 20 10:50:19 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.525	-44.000
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.380	-17.000

### Microlog Calibration Report

Serial-Model:                      UDM-01-PSI UDM ML  
 Calibration Performed:            Fri May 21 06:10:40 2010

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	30000.0000	-0.3000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	25000.0000	0.0000
Caliper	1.3170	1.1585	8.0000	22.0000	in	-88.3214	123.7000

## Compensated Density Calibration Report

Serial-Model: 144-84-M&W  
Source / Verifier: /  
Master Calibration Performed: Mon Jan 07 15:00:31 2019

## Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4315.49	5309.89	cps
Aluminum	2.665	g/cc	825.26	3443.46	cps
Spine Angle = 75.33			Density/Spine Ratio = 0.532		
	Size		Reading		
Small Ring	4.00	in	0.69		
Large Ring	14.00	in	0.04		

## 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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County ELLIS  
State KANSAS

