



MICRORESISTIVITY LOG

Company HARTMAN OIL COMPANY, INC.
 Well HADLEY NO.1 TWIN
 Field TRICO
 County TREGO
 State KANSAS

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Location: API #: 15-195-23069-00-00
 2260' FSL & 760' FEL
 SEC 3 TWP 11S RGE 21W
 Permanent Datum GROUND LEVEL Elevation 2080'
 Log Measured From KELLY BUSHING
 Drilling Measured From KELLY BUSHING
 Other Services
 CNL/CDL
 DIL
 Elevation
 K.B. 2091'
 D.F. N/A
 G.L. 2080'

Date	9/8/2018
Run Number	TWO
Depth Driller	3760'
Depth Logger	3756'
Bottom Logged Interval	3755'
Top Log Interval	3000'
Casing Driller	8.625" @ 273'
Casing Logger	274'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	6600
Density / Viscosity	9.4 58
pH / Fluid Loss	10.0 8.0
Source of Sample	FLOWLINE
Rm @ Meas. Temp	.75 @ 71
Rmt @ Meas. Temp	.56 @ 71
Rmc @ Meas. Temp	1.01 @ 71
Source of Rmf / Rmc	CHARTS
Rm @ BHT	.47 @ 114
Operating Rig Time	4 HOURS
Max Rec. Temp. F	114 DEGF
Equipment Number	108
Location	HAYS
Recorded By	J. HENRICKSON
Witnessed By	KITT NOAH

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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.
 RIGA EXIT I 70
 NORTH TO B ROAD, 1 EAST, 1/2 NORTH, WEST INTO

Log Measured From: KELLY BUSHING 11 Ft. Above Permanent Datum

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

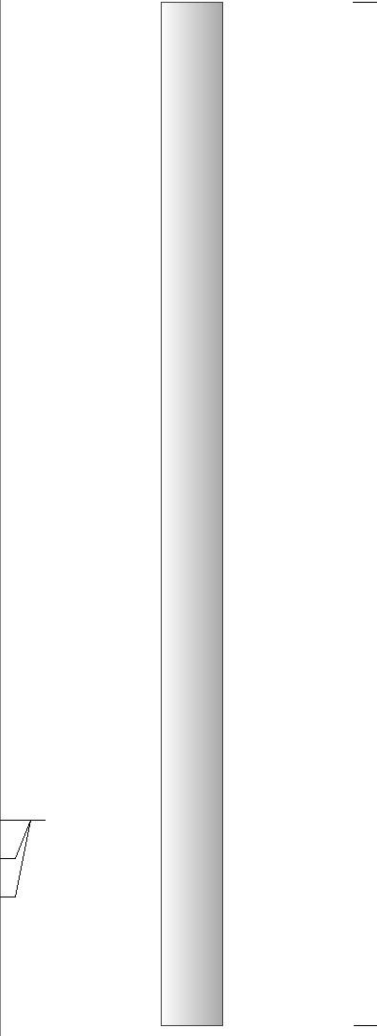
Your Pioneer Energy Services Crew Engineer: J. HENRICKSON Operator: Operator: Operator:	This Log Record Was Witnessed By Primary Witness: KITT NOAH Secondary Witness: Secondary Witness: Secondary Witness:
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Log Variables

DatabaseC:\ProgramData\Warrior\Data\hartman_hadley_twin_1.db
Dataset field/well/stack/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	22	-400	60	Off	3756

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
MCAL MI MN	1.00 1.00 1.00		ML-Armadillo (Armadillo-1) Pengo micro log tool mandrel with Armadillo Electronics	5.00	3.50	100.00

Dataset: hartman_hadley_twin_1.db: field/well/MICRO/pass2
Total length: 5.00 ft
Total weight: 100.00 lb
O.D.: 3.50 in

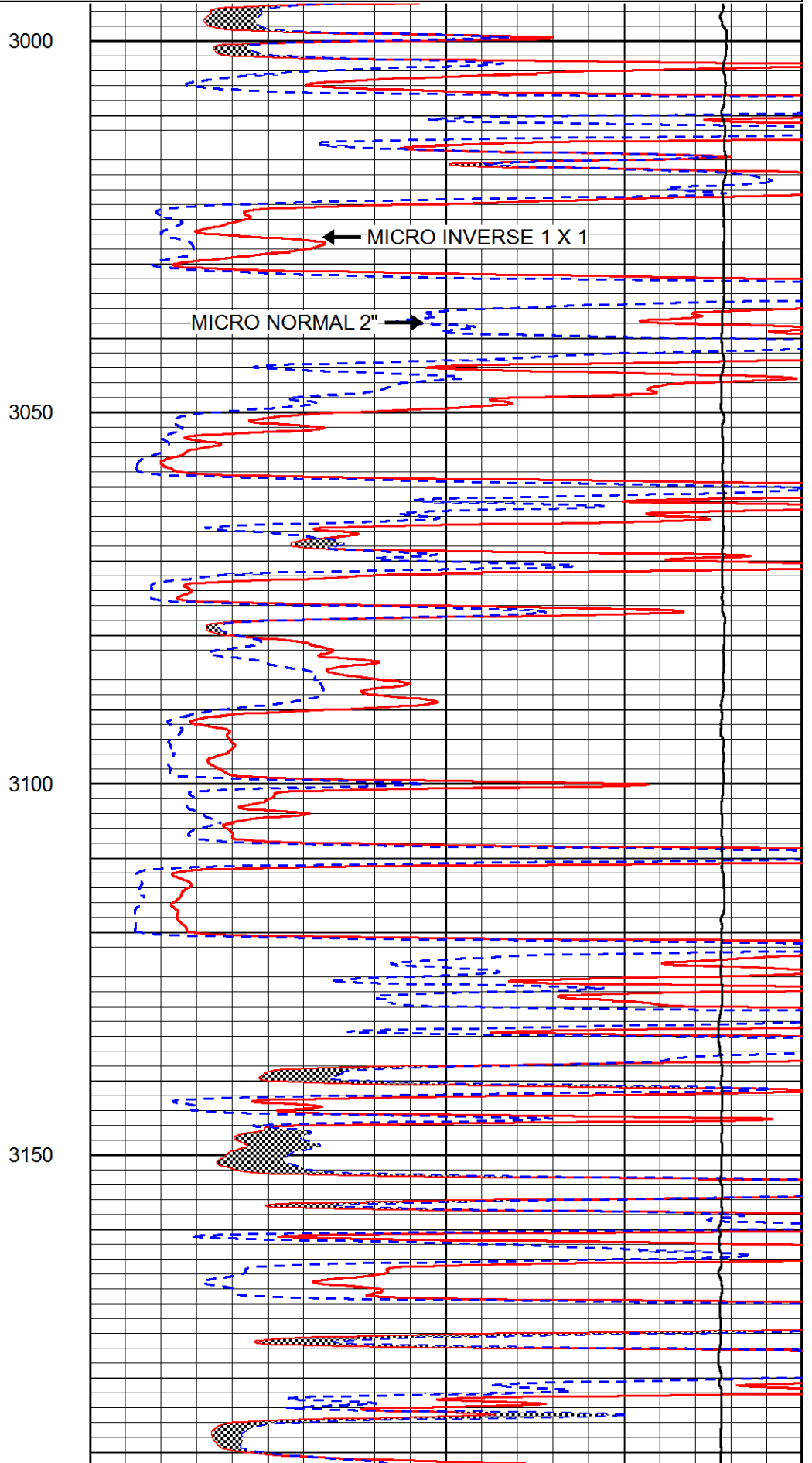
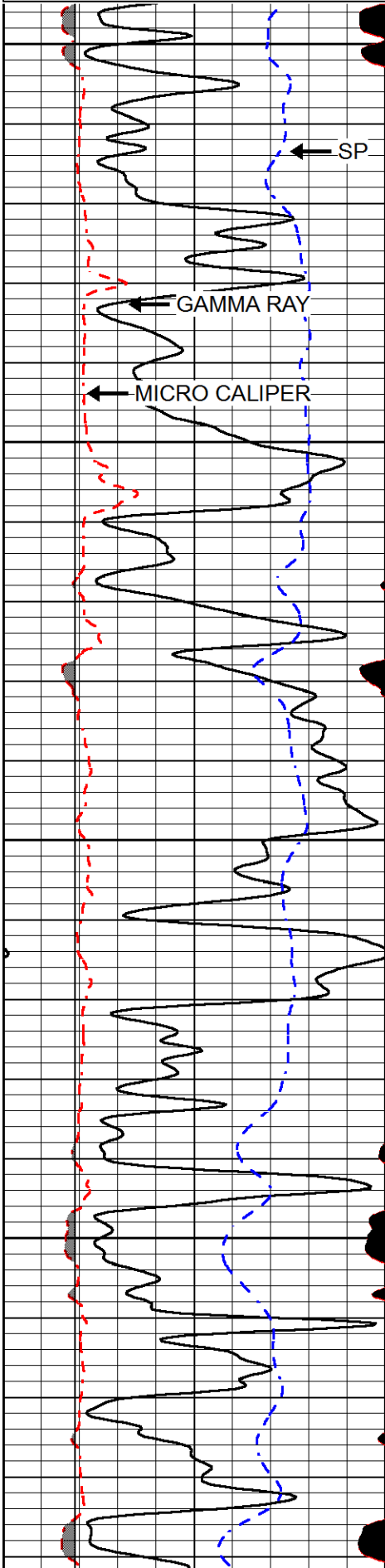


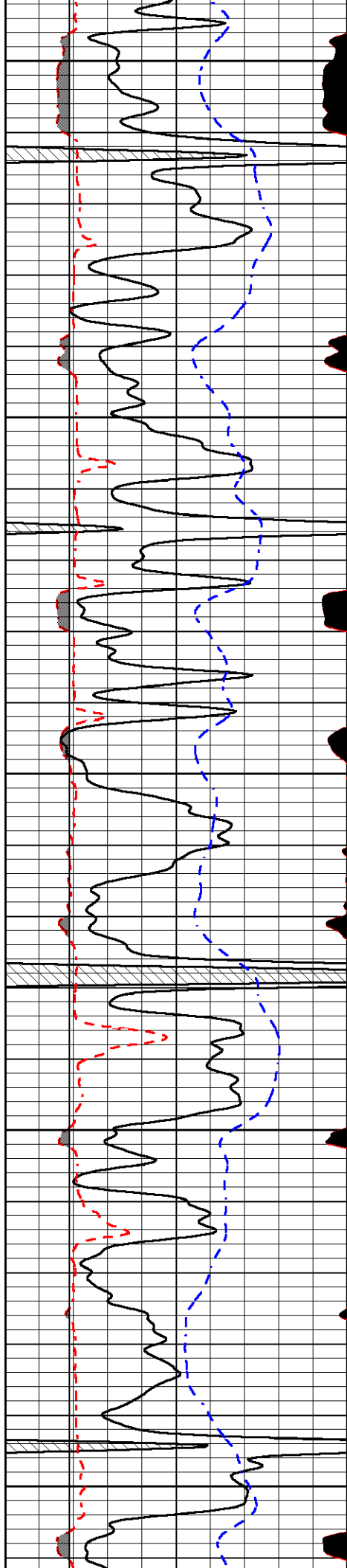
MAIN PASS

Database File hartman_hadley_twin_1.db
Dataset Pathname stack/pass3.1
Presentation Format micro
Dataset Creation Sat Sep 08 02:52:28 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





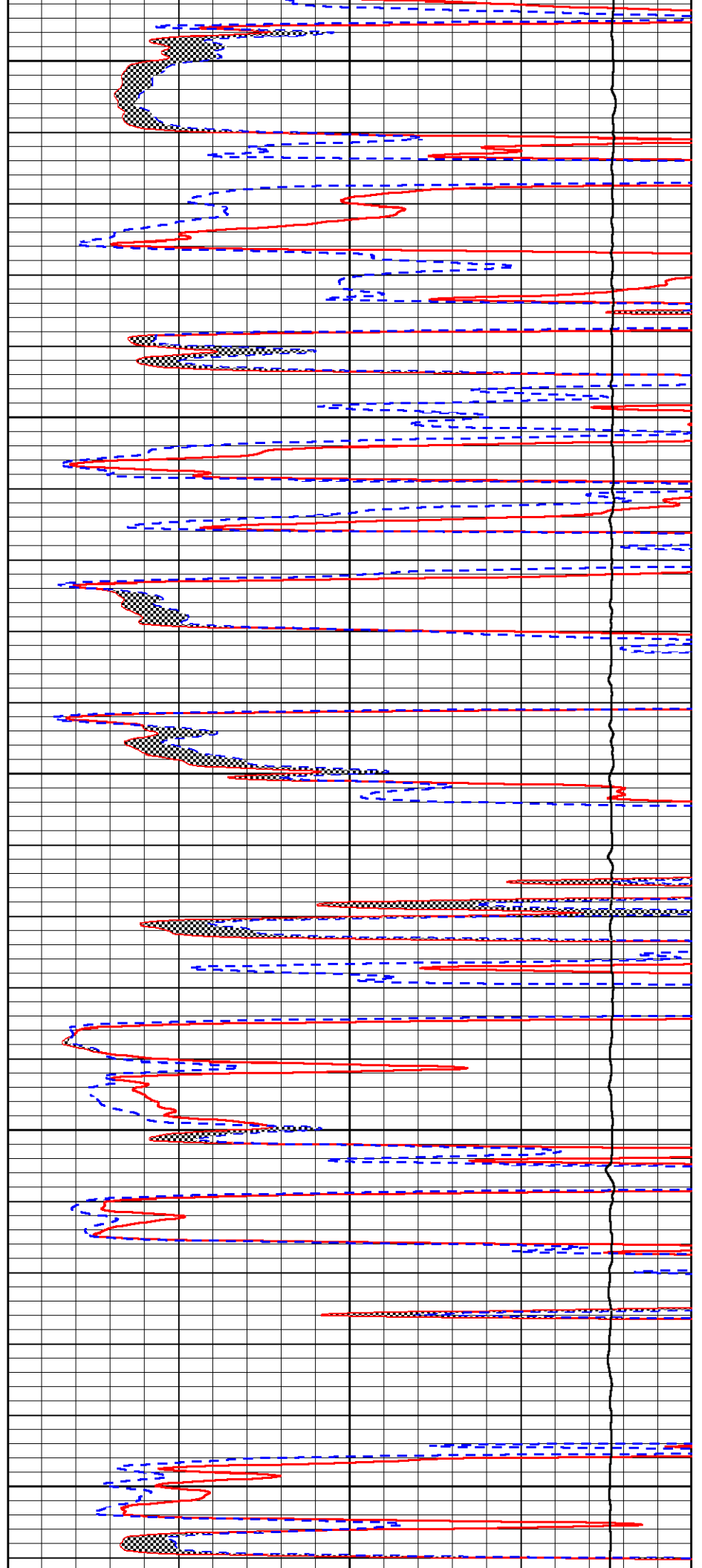
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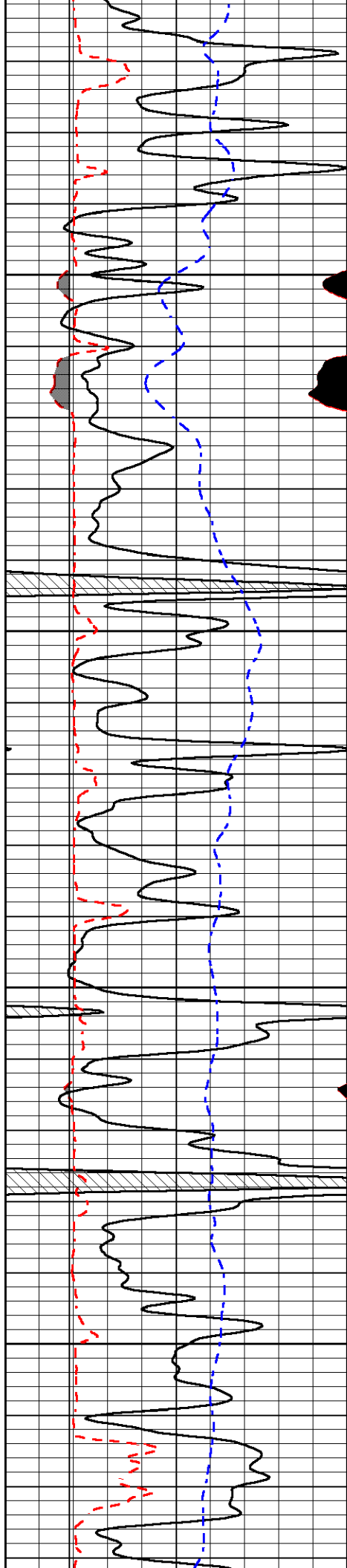
3250

3300

3350

3400



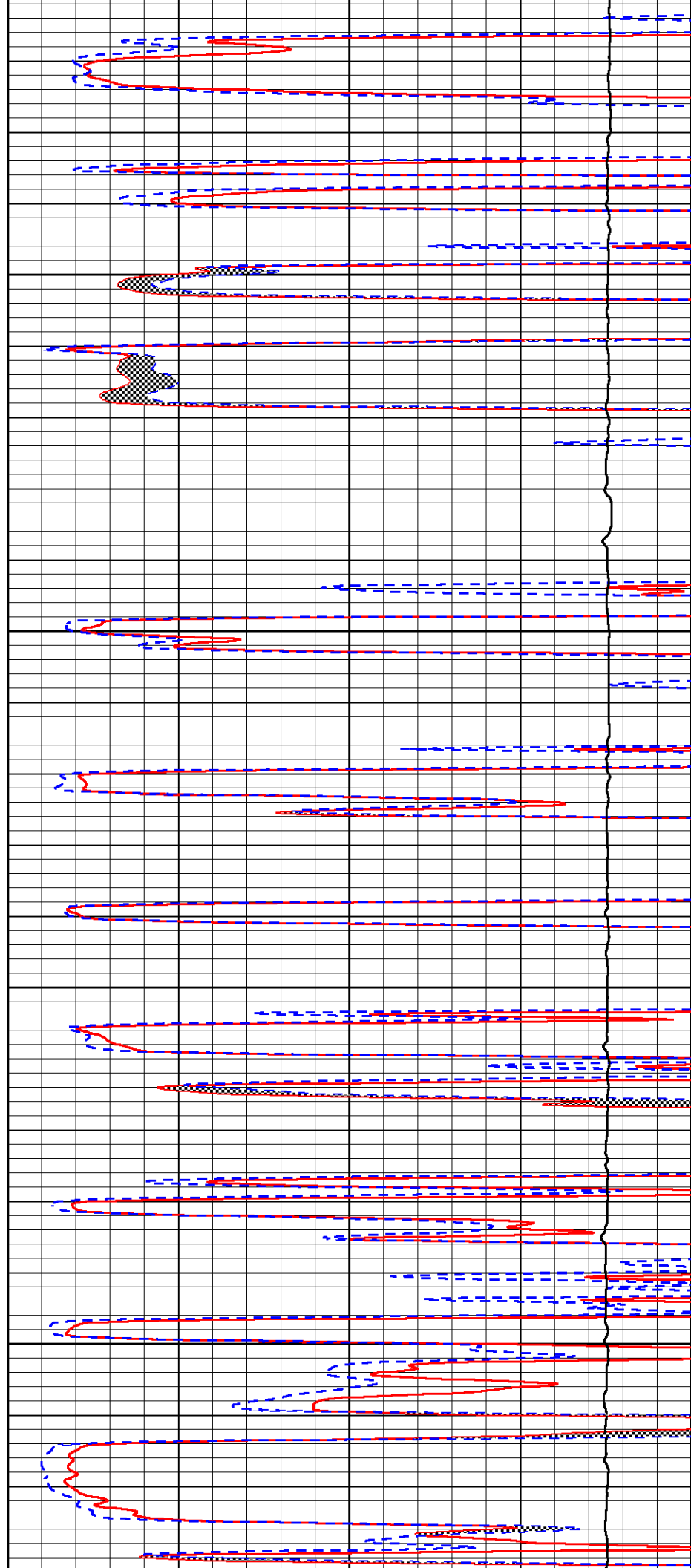


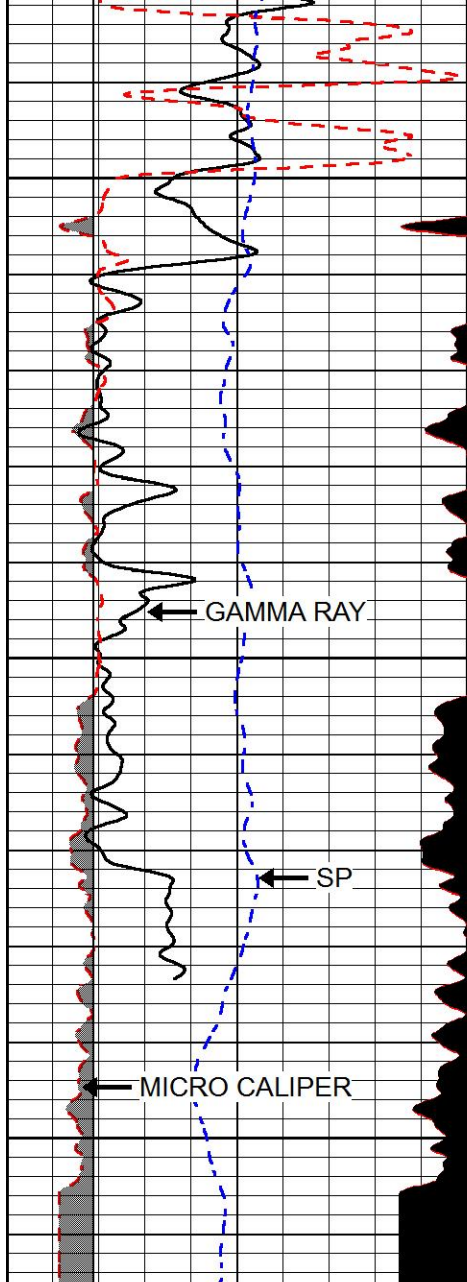
3450

3500

3550

3600





3650

3700

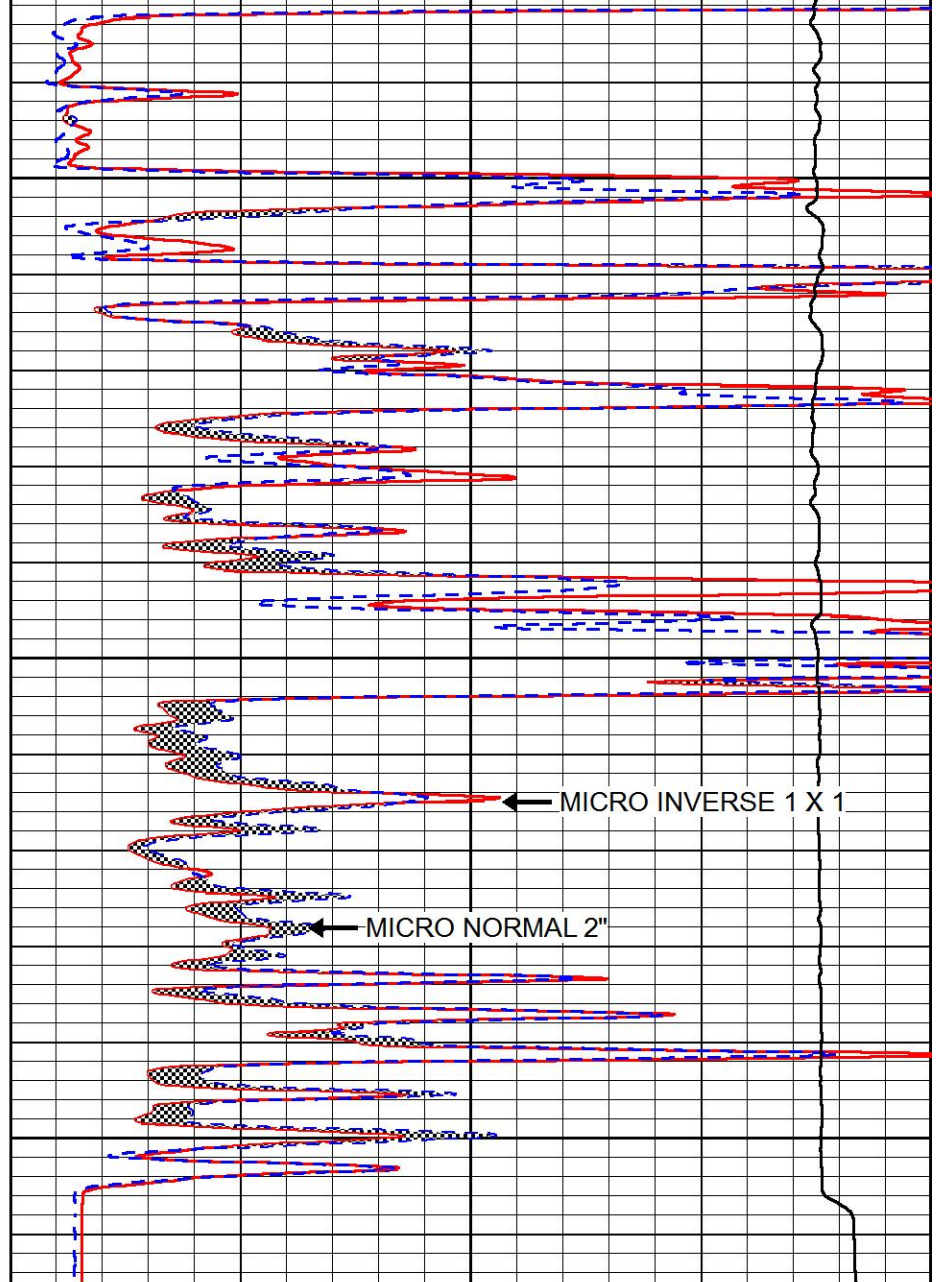
3750

GAMMA RAY

SP

MICRO CALIPER

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



MICRO INVERSE 1 X 1

MICRO NORMAL 2"

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

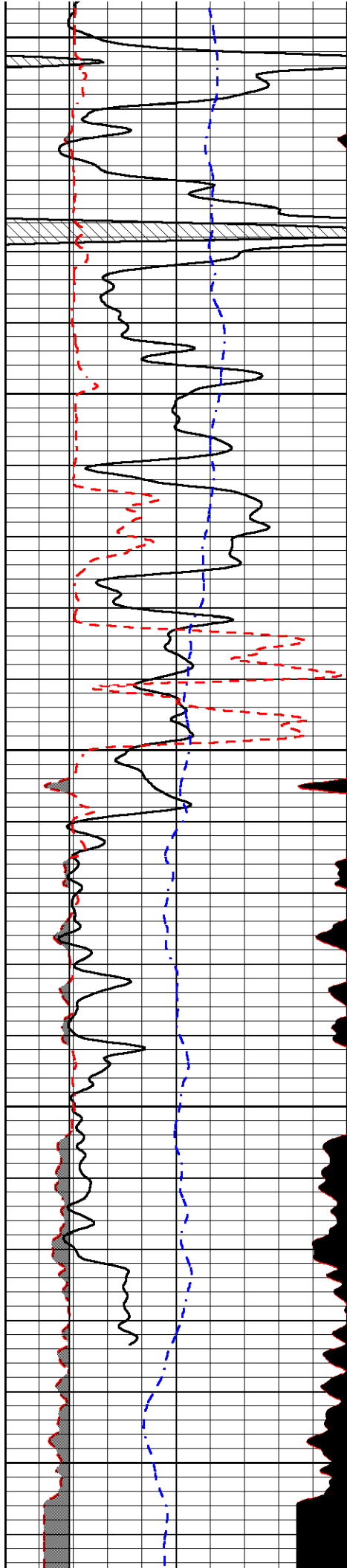


REPEAT SECTION

Database File hartman_hadley_twin_1.db
 Dataset Pathname stack/pass2.1
 Presentation Format micro
 Dataset Creation Sat Sep 08 02:54:24 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



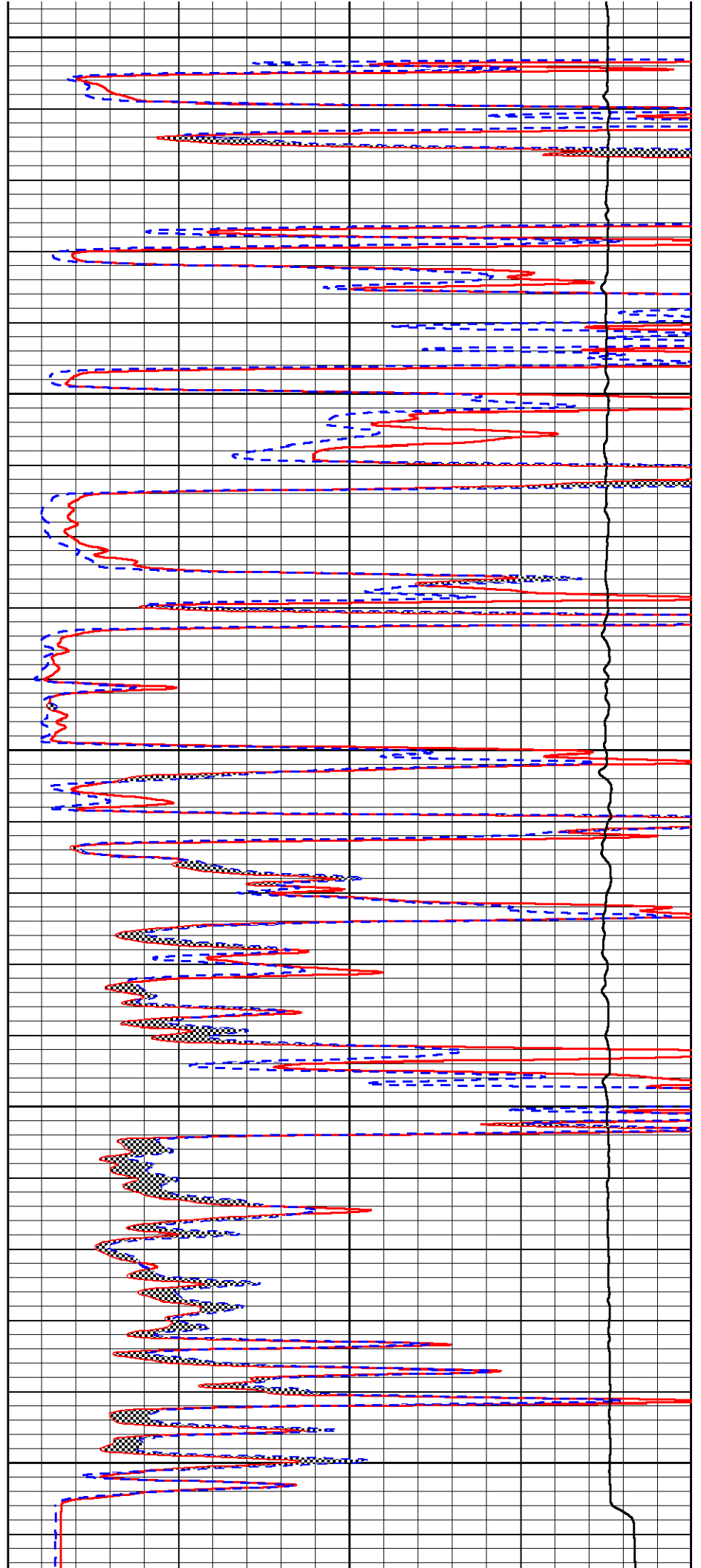
3550

3600

3650

3700

3750



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			

Calibration Report

Database File hartman_hadley_twin_1.db
Dataset Pathname stack/pass3.1
Dataset Creation Sat Sep 08 02:52:28 2018

Dual Induction Calibration Report

Serial-Model: PSI 988-M&W
Calibration Performed: Thu Sep 06 14:52:38 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.570	-40.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.400	-37.000

Compensated Density Calibration Report

Serial-Model: 126-186-M&W
Source / Verifier: /
Master Calibration Performed: Wed Aug 29 10:37:15 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4403.06	6298.47	cps
Aluminum	2.660	g/cc	836.60	3999.09	cps
Spine Angle = 74.70			Density/Spine Ratio = 0.526		
	Size		Reading		
Small Ring	4.00	in	2.62		
Large Ring	16.00	in	1.66		

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	HARTMAN OIL COMPANY, INC.
Well	HADLEY NO.1 TWIN
Field	TRICO
County	TREGO
State	KANSAS