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MICRORESISTIVITY LOG

Company RANEY OIL COMPANY, LLC
Well WOLF NO.4
Field ASHTON SE
County SUMNER State KANSAS

Location: API # : 15-191-22801-00-00
2310' FNL & 650' FWL
SEC 29 TWP 34S RGE 2E

Other Services: CNL/CDL, DIL

Permanent Datum: GROUND LEVEL Elevation 1198'
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING

Elevation: K.B. 1206', D.F. N/A, G.L. 1198'

Date	4/19/2018			
Run Number	ONE			
Depth Driller	3892'			
Depth Logger	3890'			
Bottom Logged Interval	3889'			
Top Log Interval	2300'			
Casing Driller	8.625" @ 265'			
Casing Logger	263'			
Bit Size	7.875"			
Type Fluid in Hole	CHEMICAL			
Salinity,ppm CL	2000			
Density / Viscosity	9.4 53			
pH / Fluid Loss	10.5 8.8			
Source of Sample	FLOWLINE			
Rm @ Meas. Temp	.90 @ 63			
Rmf @ Meas. Temp	.68 @ 63			
Rmc @ Meas. Temp	1.22 @ 63			
Source of Rmf / Rmc	CHARTS			
Rm @ BHT	.49 @ 115			
Operating Rig Time	2 HOURS			
Max Rec. Temp. F	115 DEG/F			
Equipment Number	108			
Location	HAYS			
Recorded By	J. HENRICKSON			
Witnessed By	DAN JOHNSON			

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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.

SOUTH HAVEN EXIT
EAST TO ASHTON ROAD, 1 NORTH, EAST INTO

Log Measured From: KELLY BUSHING 8 Ft. Above Permanent Datum

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

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

Log Variables

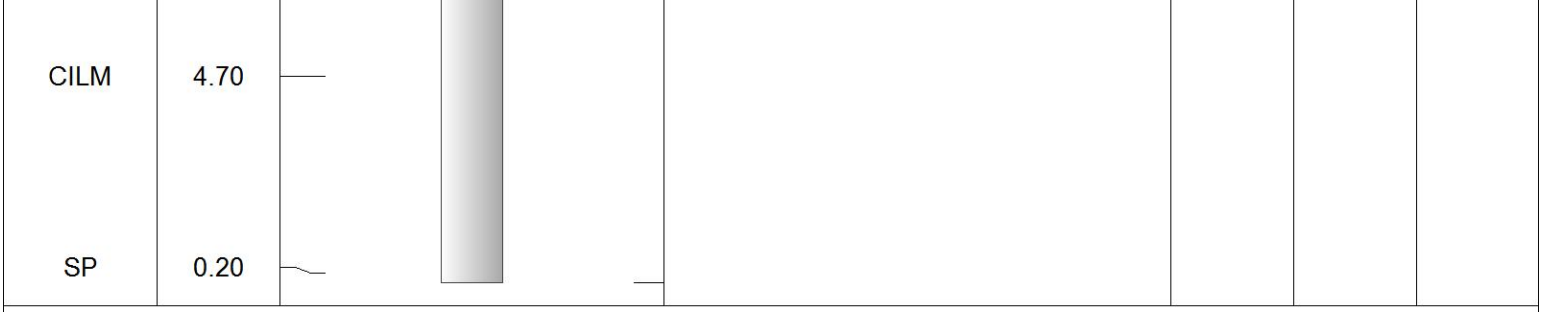
DatabaseC:\ProgramData\Warrior\Data\raney_wolf_4.db
Dataset field/well/stackml/pass3.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	115	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	2	-210	51	Off	3890

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb
			GR-M&W (89-M&W)	3.00	3.50	50.00
GR	40.58					
CNLSC	37.48		CNT-M&W (tk10-MW)	5.50	3.50	100.00
CNSSC	36.73					
			CDL-M&W (168-986)	8.50	4.00	250.00
LSD	28.43					
DCAL	28.42					
SSD	27.93					
			ML-PSI STKBL ML (PSI-02) Stackable Microlog Tools	7.58	4.00	65.00
MCAL	19.83					
MI	19.83					
MN	19.83					
RLL3	15.80					
RLL3F	15.79					
			DIL-M&W (PSI 978)	18.50	3.50	220.00
CILD	8.00					



Dataset:	raney_wolf_4.db: field/well/stackml/pass3.1
Total length:	43.08 ft
Total weight:	685.00 lb
O.D.:	4.00 in

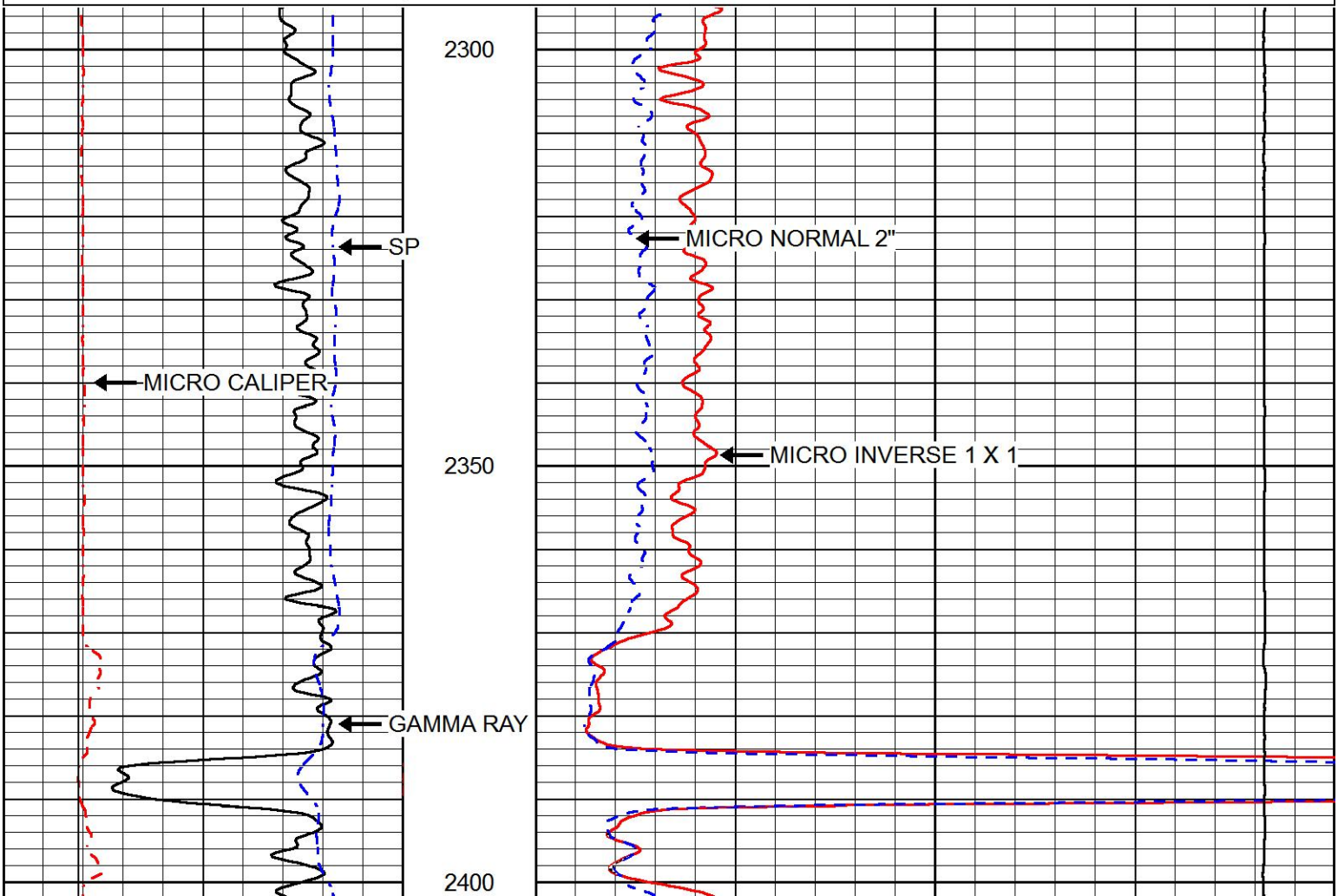
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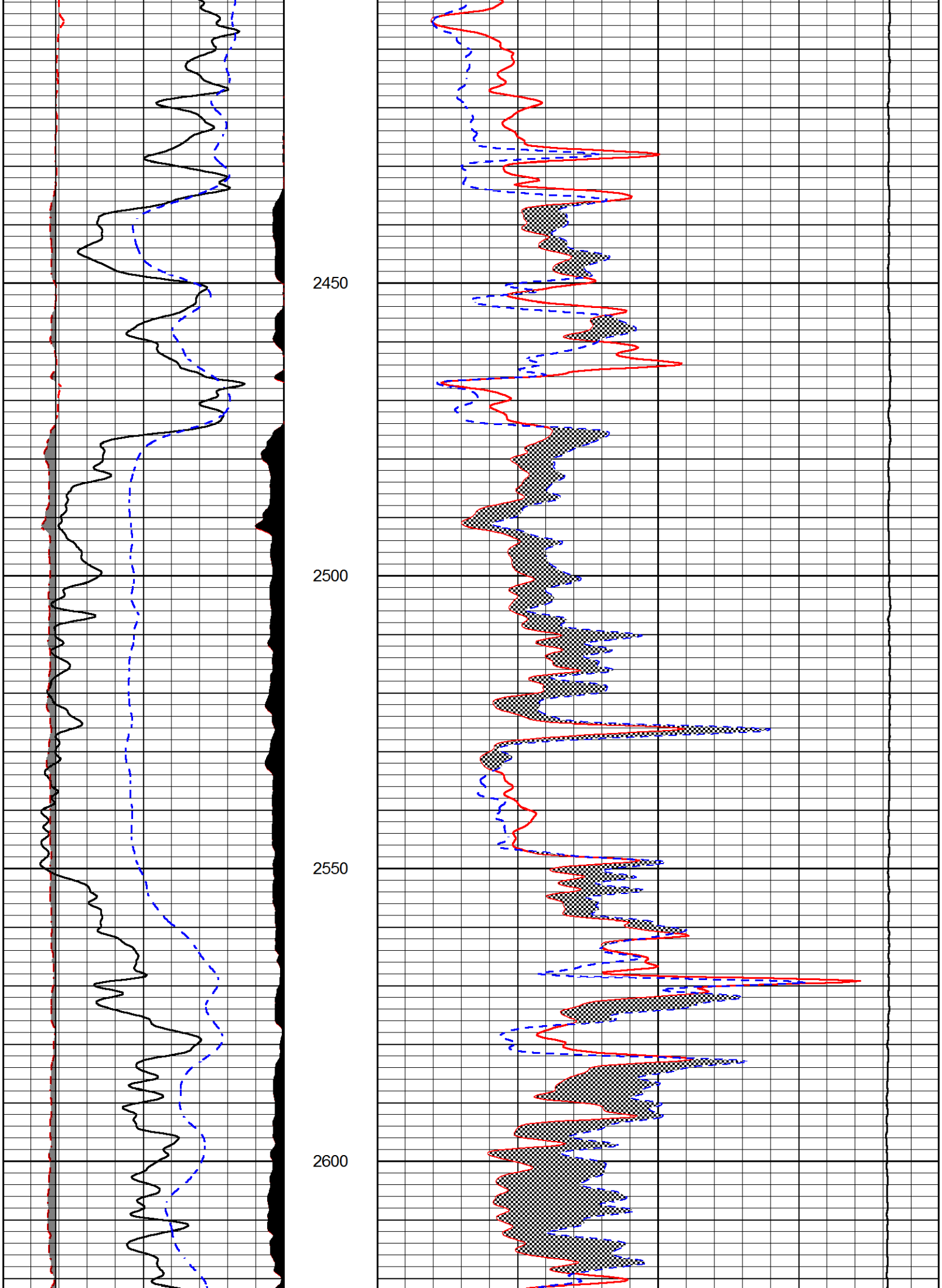
MAIN PASS

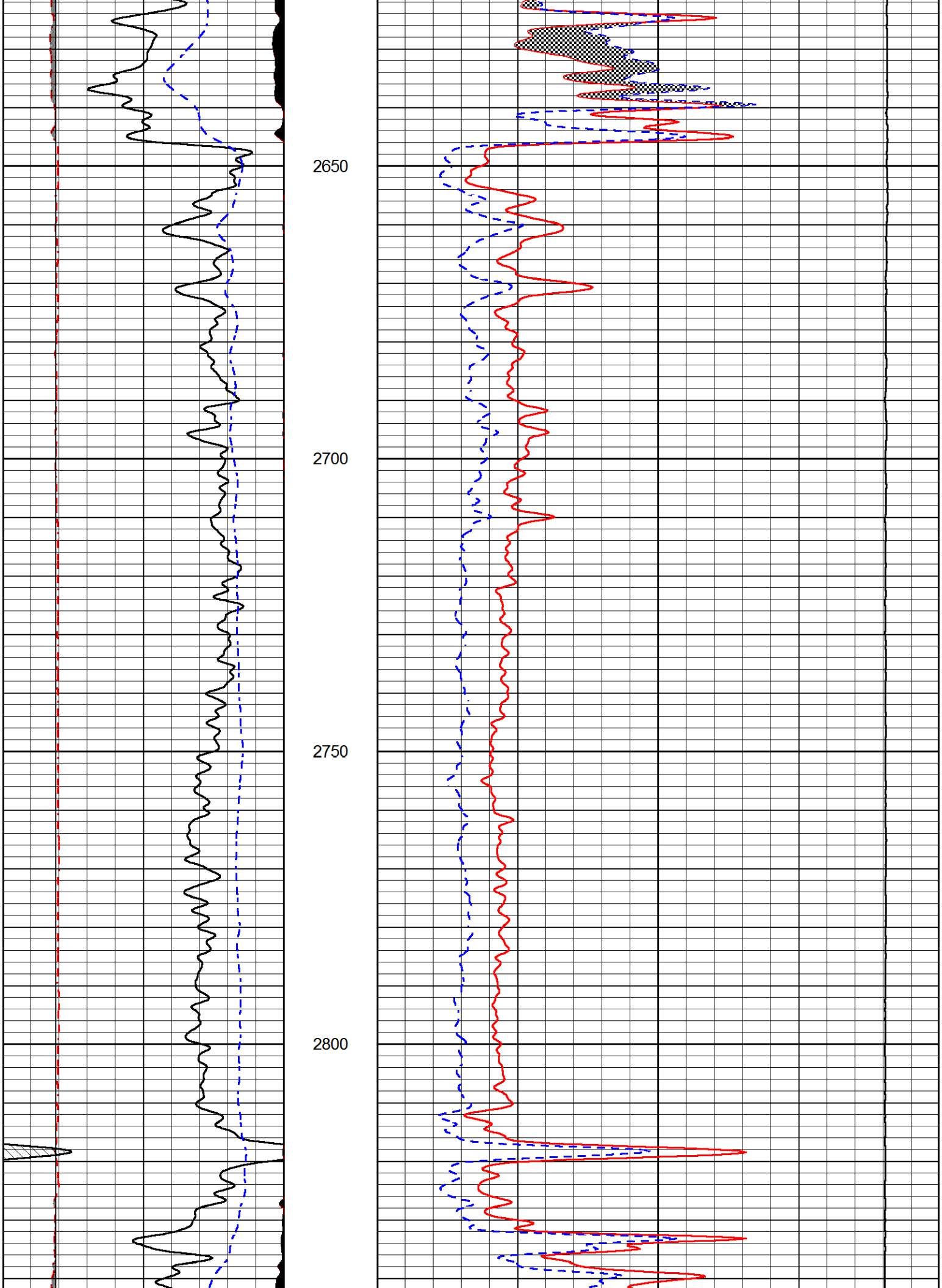
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Dataset Pathname	stackml/pass3.1
Presentation Format	micro
Dataset Creation	Thu Apr 19 10:59:30 2018
Charted by	Depth in Feet scaled 1:240

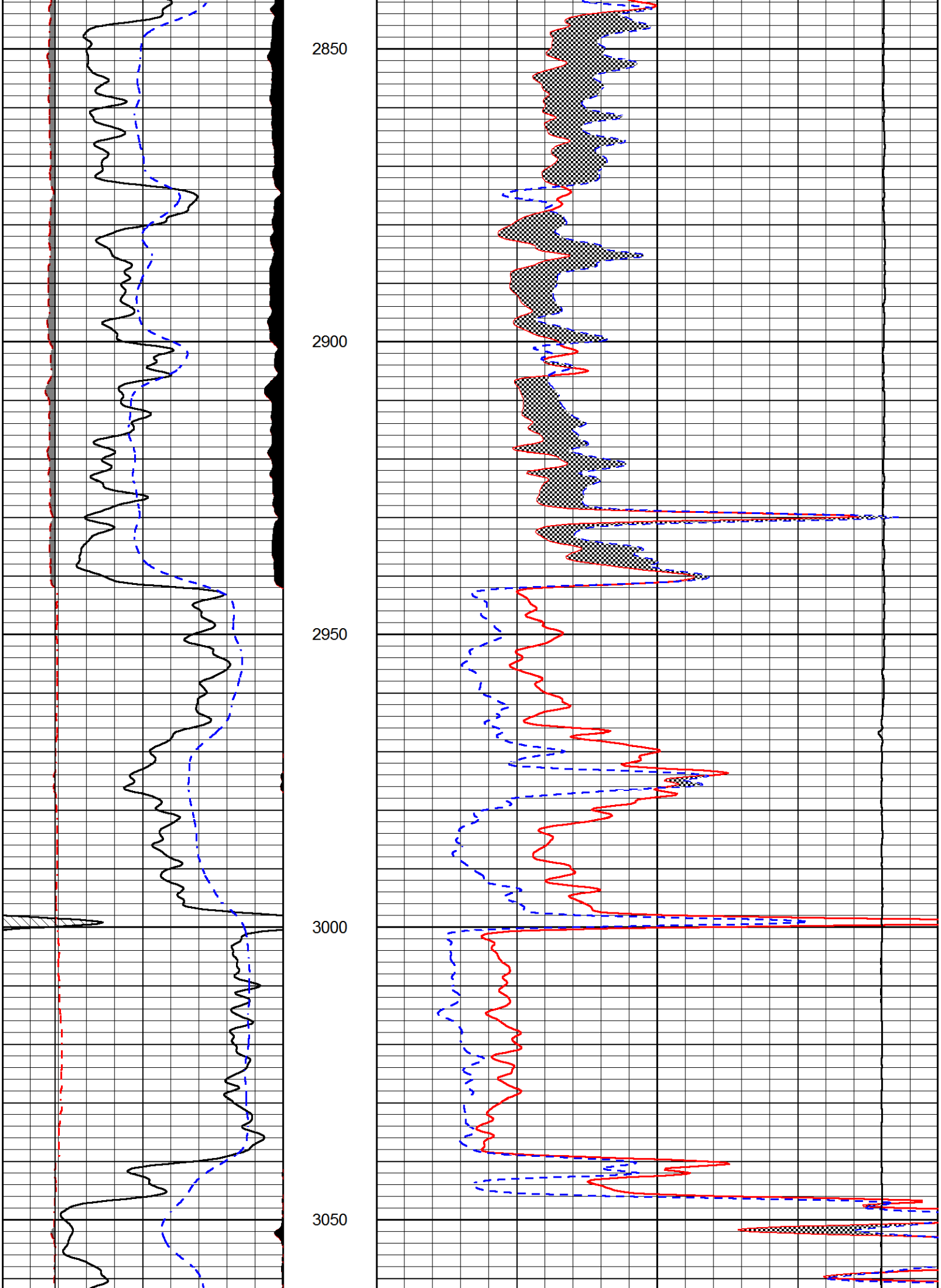
0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0

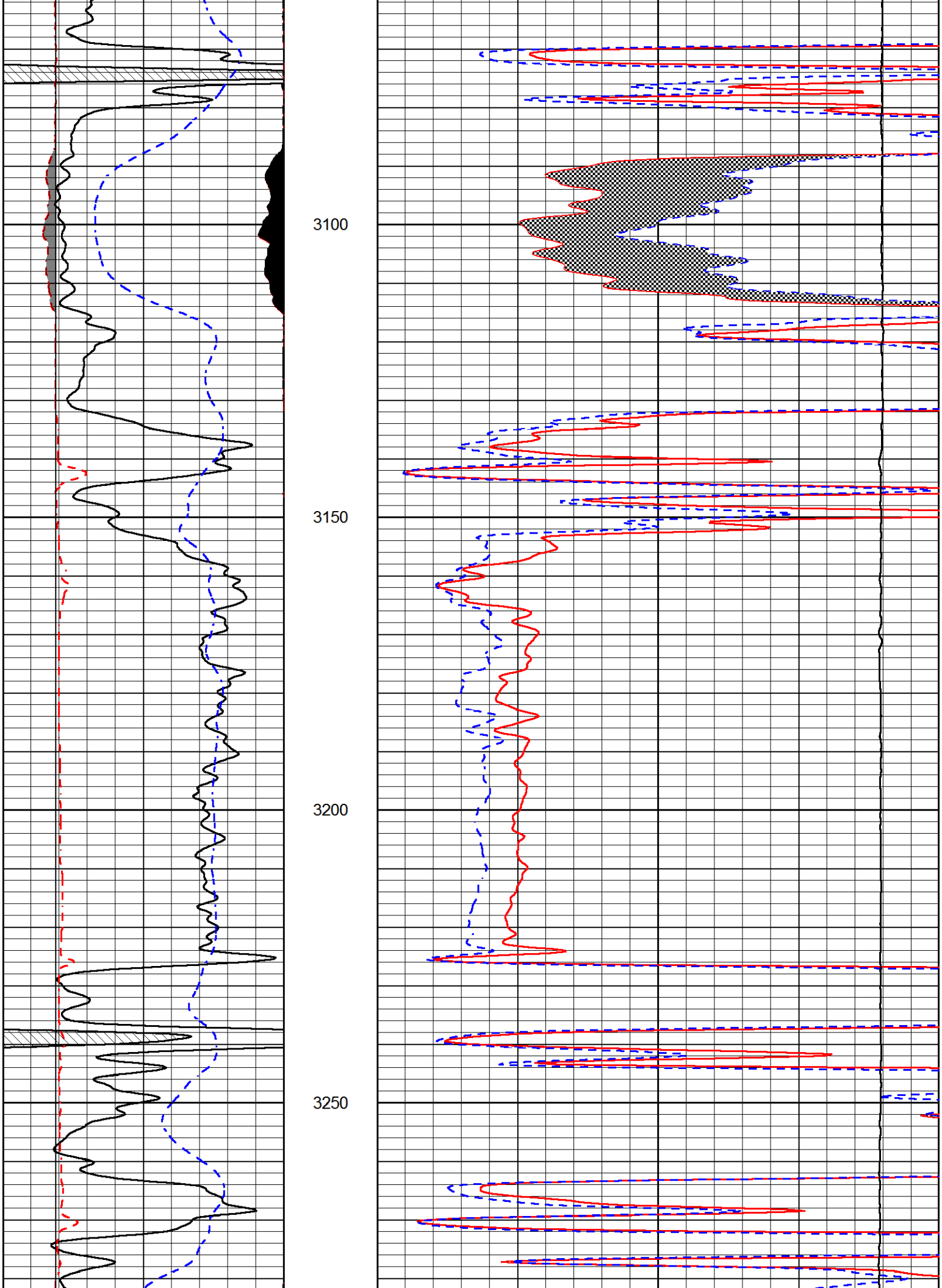
0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0

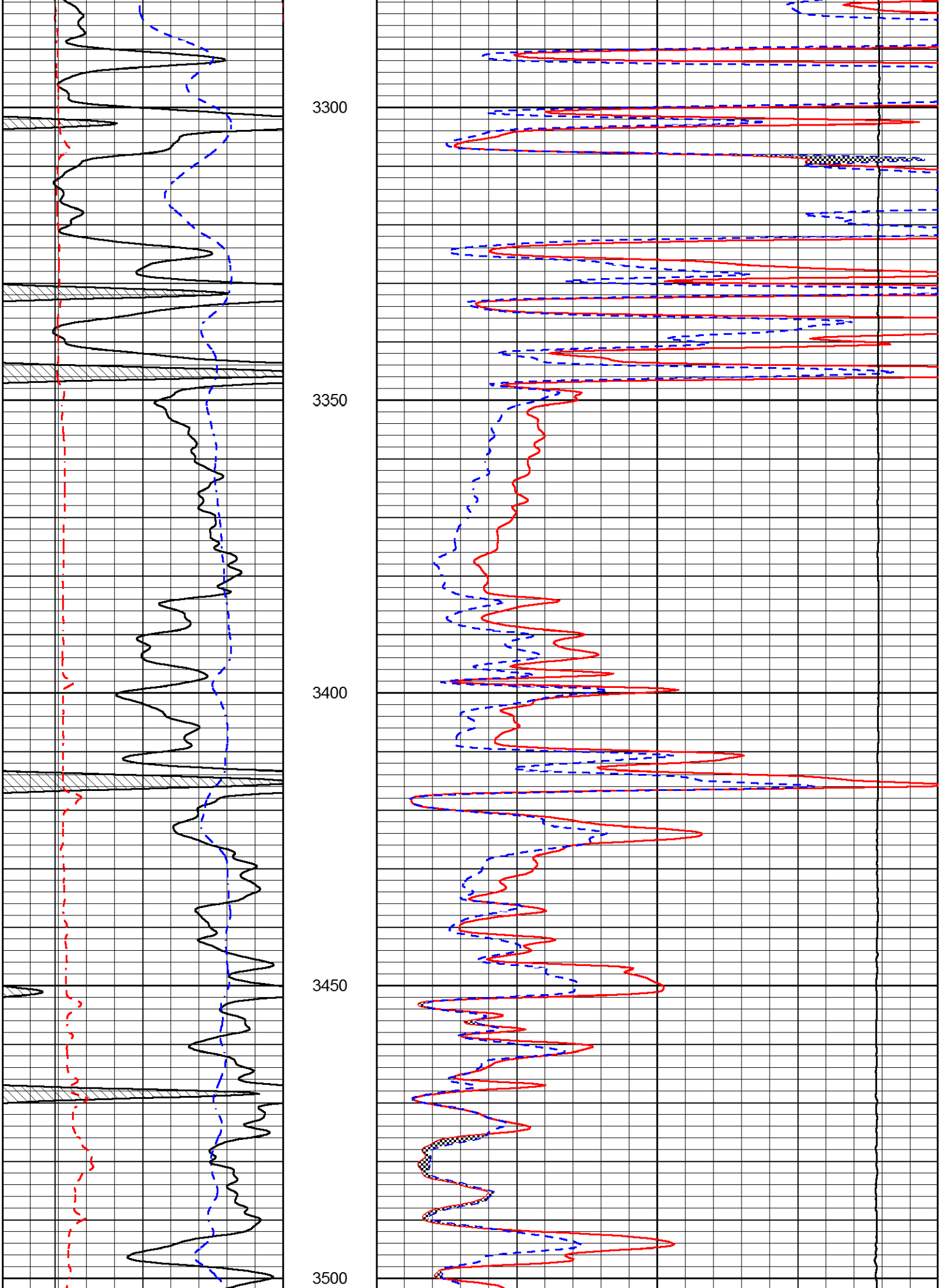


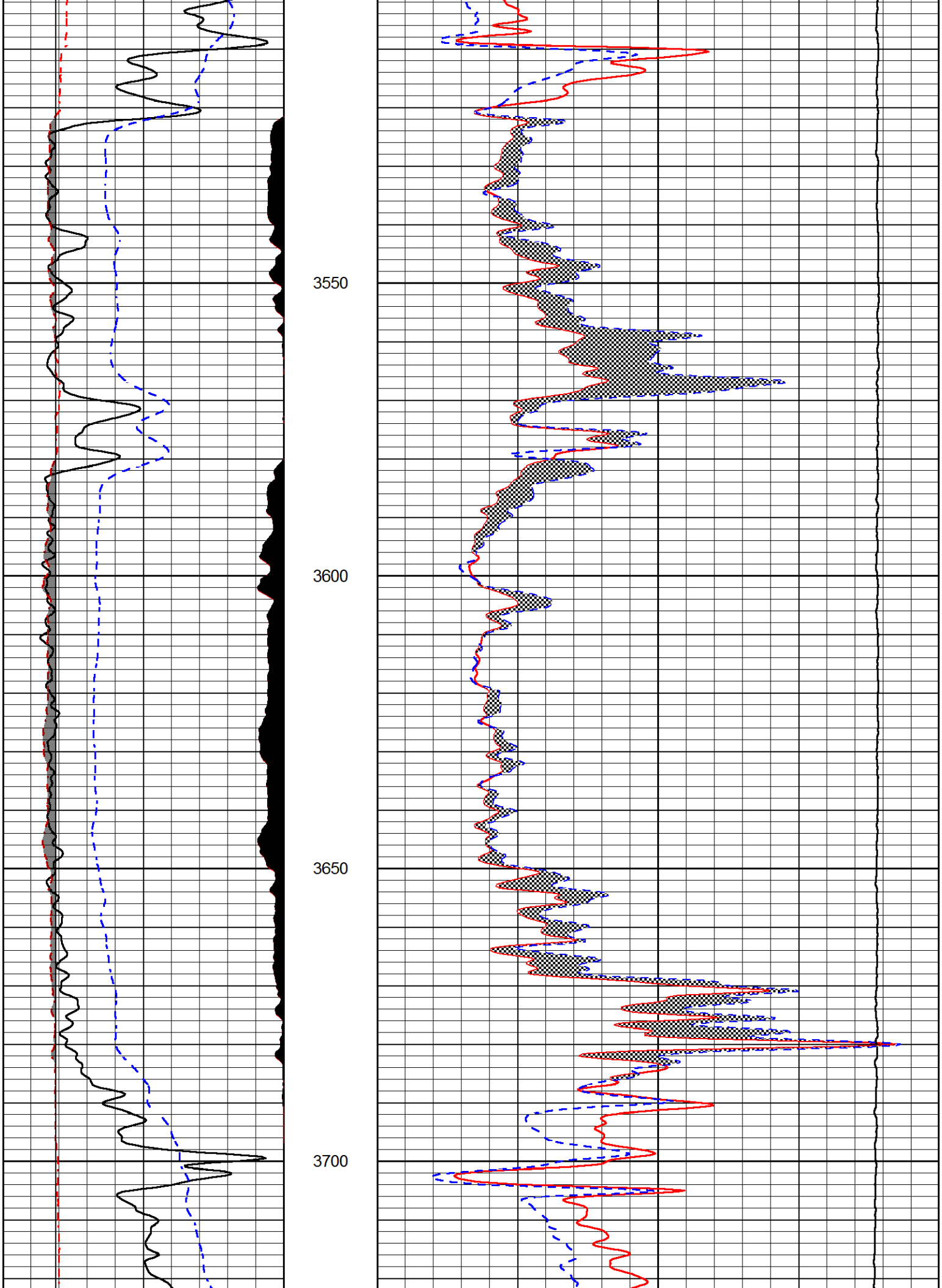

2450
2500
2550
2600

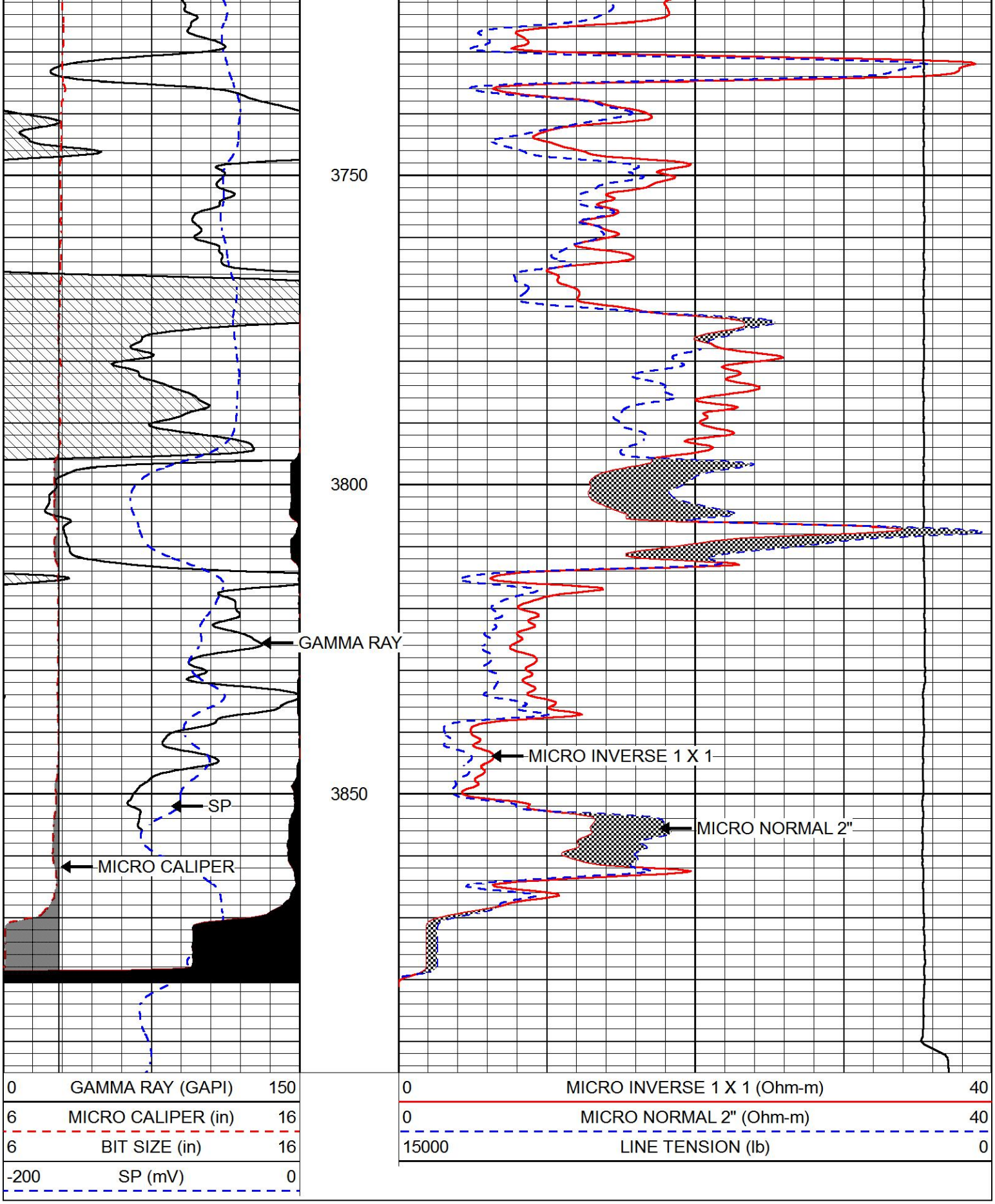

2650
2700
2750
2800


2850
2900
2950
3000
3050


3100
3150
3200
3250


3300
3350
3400
3450
3500


3550
3600
3650
3700



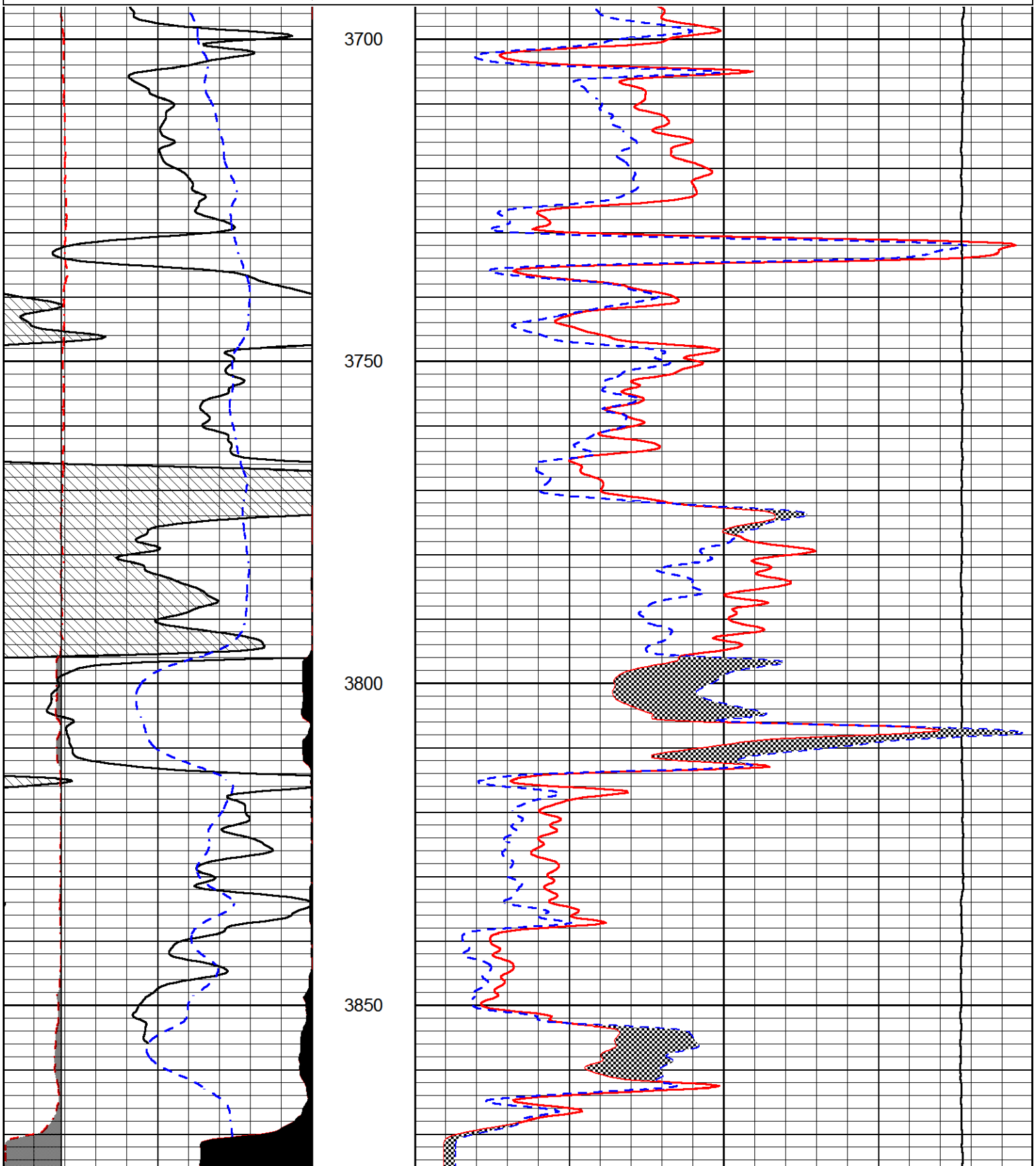
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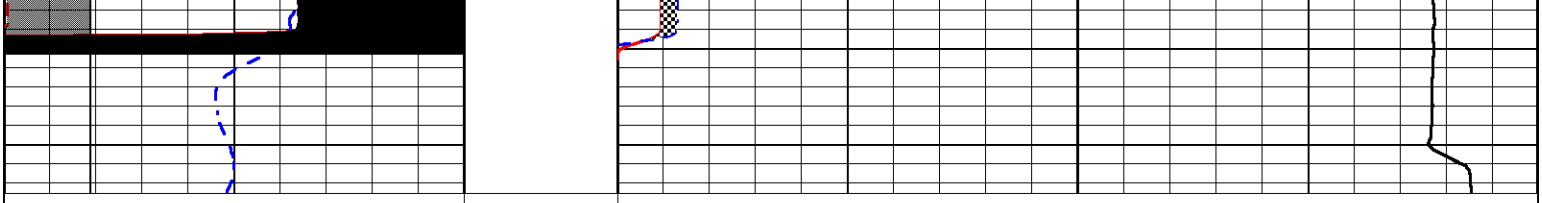
REPEAT SECTION

Database File	raney_wolf_4.db
Dataset Pathname	stackml/pass2.1
Presentation Format	micro
Dataset Creation	Thu Apr 19 10:59:45 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





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 raney_wolf_4.db
Dataset Pathname stackml/pass3.1
Dataset Creation Thu Apr 19 10:59:30 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	-40.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.400	-37.000

Microlog Calibration Report

Serial-Model: PSI-02-PSI STKBL ML
Performed: Sat Apr 07 12:01:20 2018

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0031	0.0043	0.0000	10.0000	Ohm-m	17000.0000	-1.0000
Inverse	0.0000	0.0013	0.0000	10.0000	Ohm-m	14000.0000	0.0000
Caliper	1.0020	1.0834	5.5000	16.5000	in	135.1560	-131.8000

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	2.690	g/cc	859.57	3020.22	cps

Spine Angle = 74.61
Density/Spine Ratio = 0.531

	Size		Reading
Small Ring	4.00	in	1.00
Large Ring	14.00	in	1.20

Large Ring	14.00	in	1.20

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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Company	RANEY OIL COMPANY, LLC
Well	WOLF NO.4
Field	ASHTON SE
County	SUMNER
State	KANSAS