MIDWEST WIRELINE

MICRORESISTIVITY LOG

Company Murfin Drilling Company, Inc.
Well Helene #1-10
Field Unnamed
County Cheyenne State Kansas
Location: API # : 15-023-21548-00-00
500' FNL & 660' FEL
SEC 10 TWP 3S RGE 39W

Other Services: CNL/CDL, DIL/BHCS

Permanent Datum: Ground Level Elevation 3399'
Log Measured From: Kelly Bushing
Drilling Measured From: Kelly Bushing

Elevation: K.B. 3404', D.F. N/A, G.L. 3399'

Date	3/26/2021		
Run Number	One		
Depth Driller	5200'		
Depth Logger	5196'		
Bottom Logged Interval	5195'		
Top Log Interval	3000'		
Casing Driller	8.625" @ 305'		
Casing Logger	302'		
Bit Size	7.875"		
Type Fluid in Hole	Chemical		
Salinity,ppm CL	600		
Density / Viscosity	9.2 / 53		
pH / Fluid Loss	11.5 / 6.4		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.2 @ 64		
Rmf @ Meas. Temp	.90 @ 64		
Rmc @ Meas. Temp	1.62 @ 64		
Source of Rmf / Rmc	CHARTS		
Rm @ BHT	.60 @ 128		
Operating Rig Time	6 Hours		
Max Rec. Temp. F	128 Deg/F		
Equipment Number	P-108		
Location	HAYS		
Recorded By	J. Henrickson		
Witnessed By	Saman Sharifaie		

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All interpretations are opinions based on inferences from electrical or other measurements and Midwest Wireline LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Midwest Wireline 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.

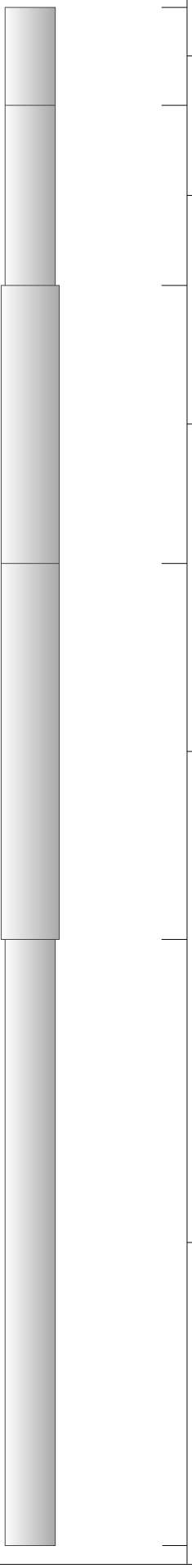
Wheeler Kansas, 3 North, 2 East, South Into

Log Measured From: Kelly Bushing 5 Ft. Above Permanent Datum

THANK YOU FOR USING MIDWEST WIRELINE LLC
785-625-3858

Your Midwest Wireline Crew	This Log Record Was Witnessed By
Engineer: J. Henrickson	Primary Witness: Saman Sharifaie
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb

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	44.50					
CNLSC	41.40		CNT-M&W (tk10-MW)	5.50	3.50	100.00
CNSSC	40.65					
			CDL-M&W (915-956)	8.50	4.00	250.00
LSD	32.35					
DCAL	32.33					
SSD	31.85					
			ML-PSI UDM ML (UDM-01) Stackable Microlog Tools	11.50	4.00	215.00
MCAL	20.87					
MI	20.87					
MN	20.87					
RLL3F	15.80					
RLL3	15.80					
			DIL-PSI HIGH TEMP (952-828)	18.50	3.50	220.00
CILD	8.00					
CILM	4.70					
SP	0.20					

Dataset: murfin_helena_1_10.db: field/well/stackml/pass4.1
Total length: 47.00 ft
Total weight: 835.00 lb
O.D.: 4.00 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\murfin_helena_1_10.db
Dataset field/well/stackml/pass4.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	128	5.5	0	1	2	2.71
NPORSEL	**PERFS**	**SNDERR mmho/m**	**SNDERRM mmho/m**	**SPSHIFT mV**	**SRFTEMP degF**	**SZCOR**	**TDEPTH ft**
Limestone	0	10	0	610	64	Off	5196

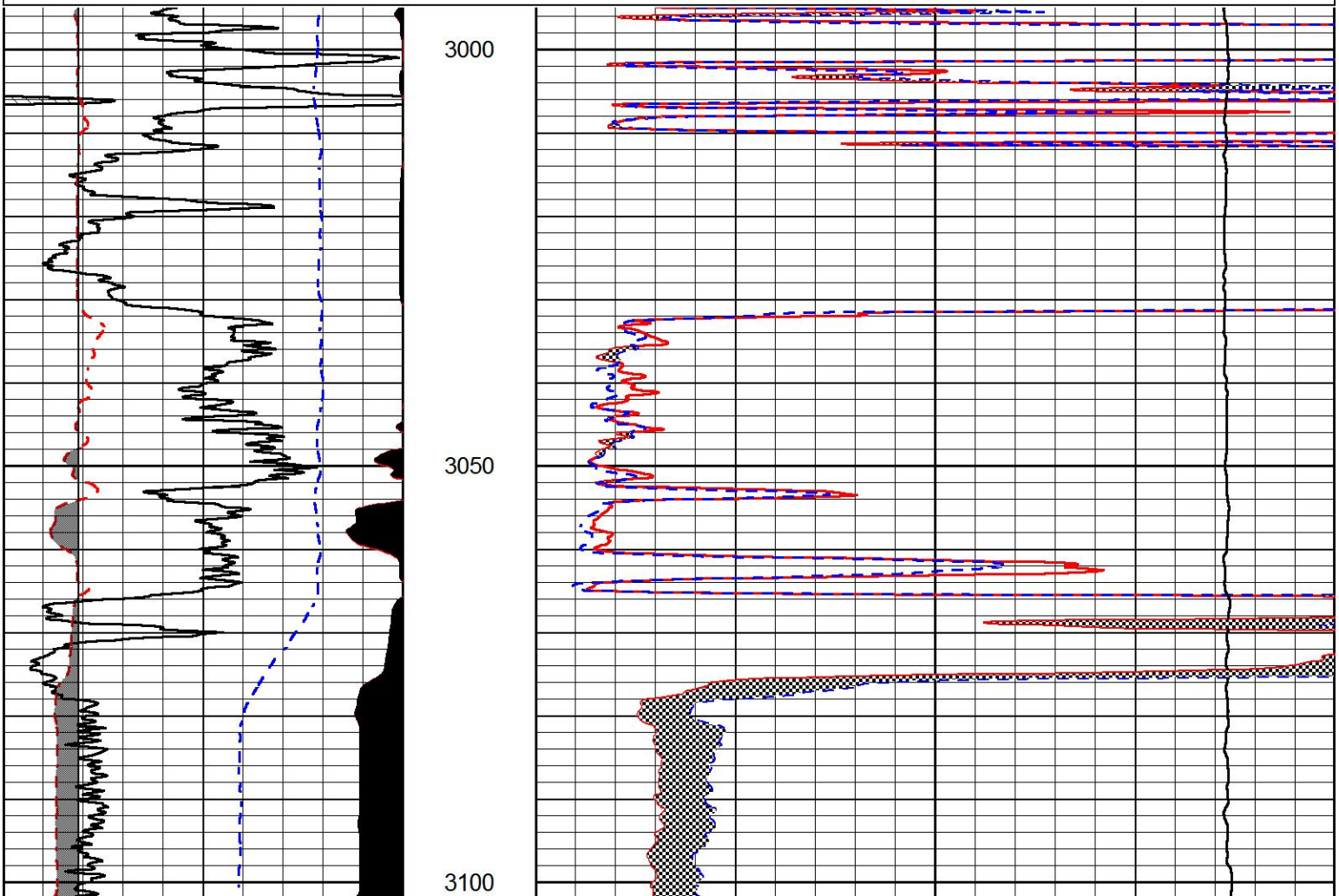
MIDWEST WIRELINE

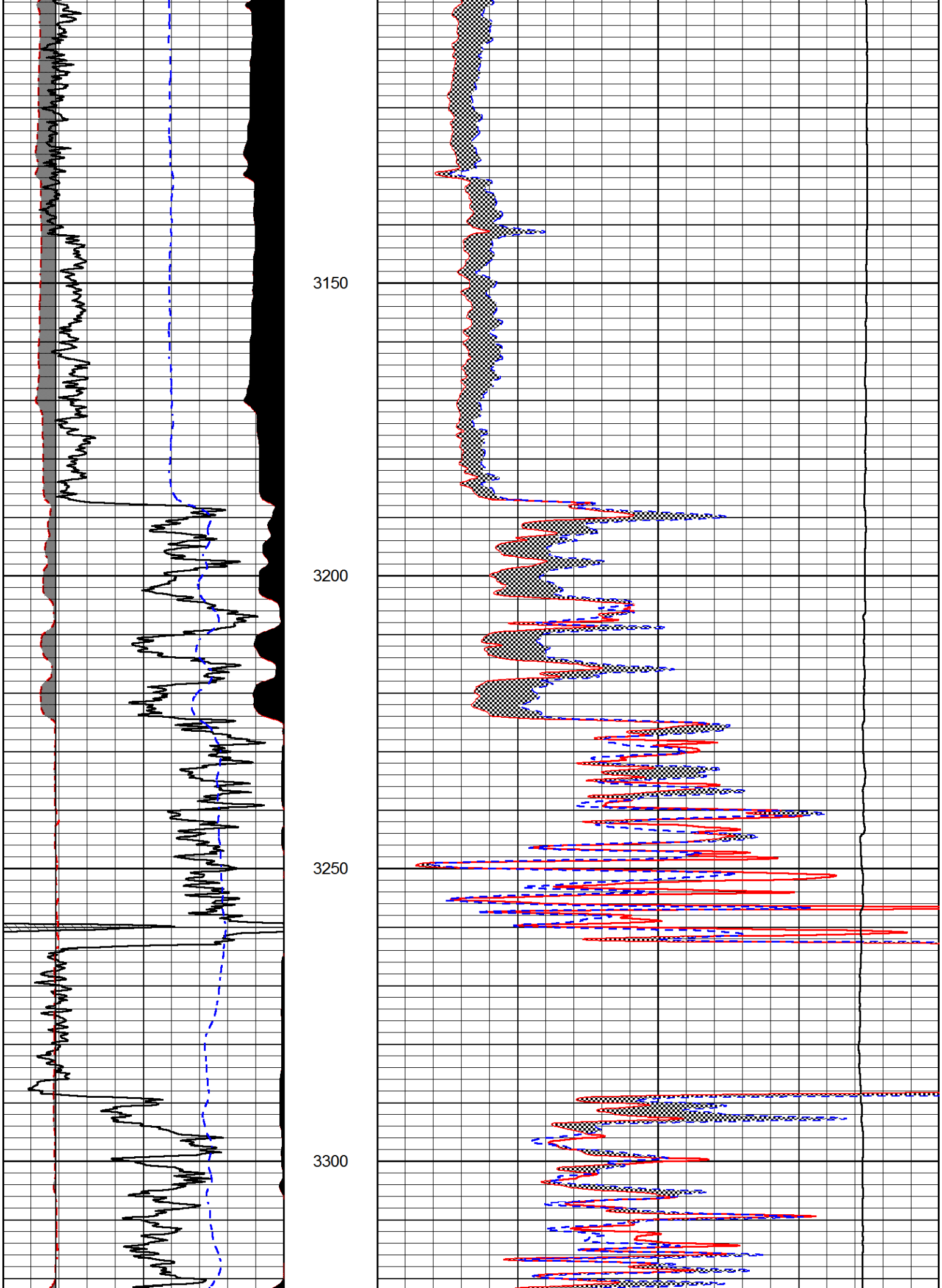
MAIN PASS

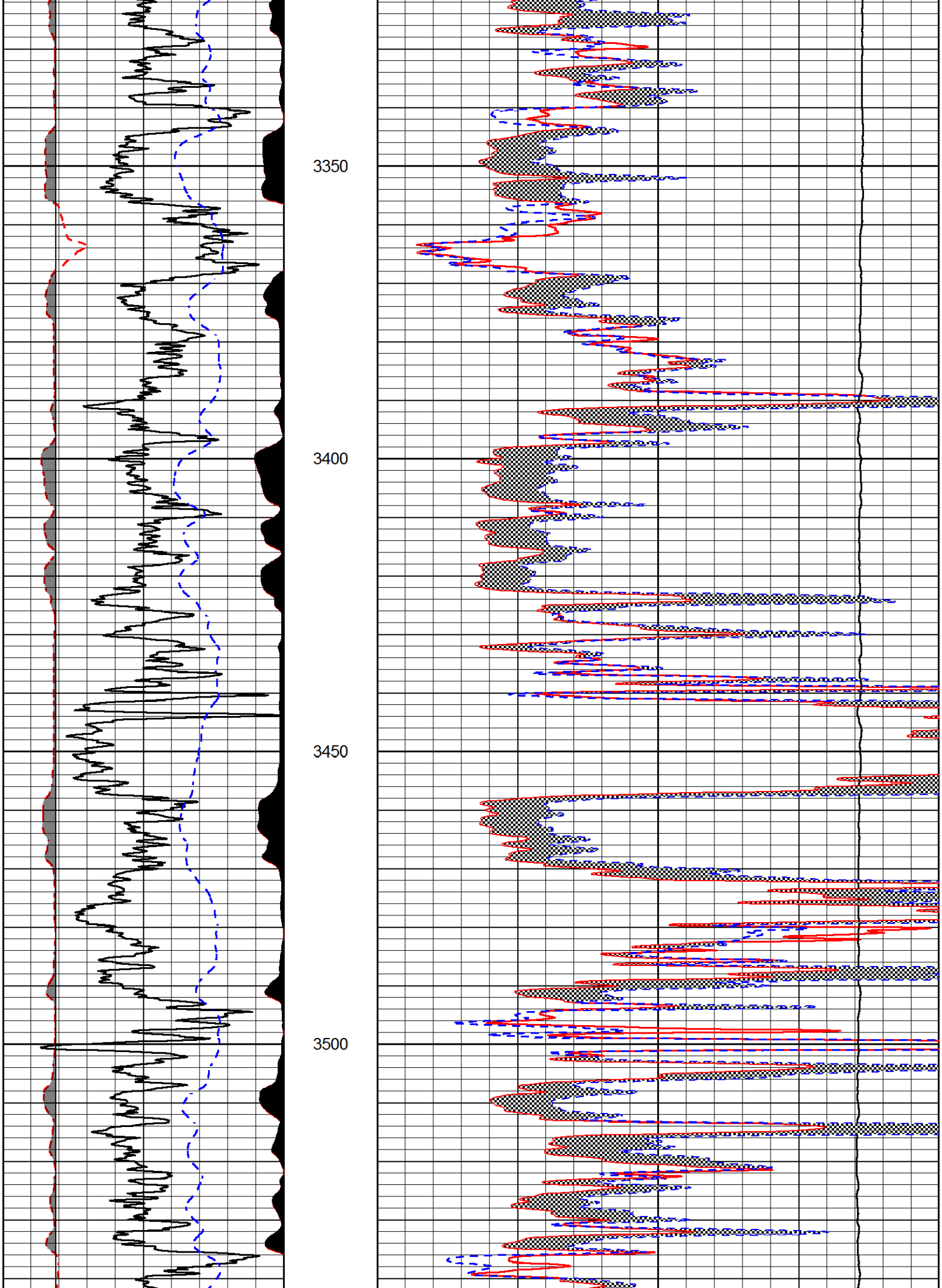
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Dataset Pathname	stackml/pass7.1
Presentation Format	micro
Dataset Creation	Fri Mar 26 21:02:51 2021
Charted by	Depth in Feet scaled 1:240

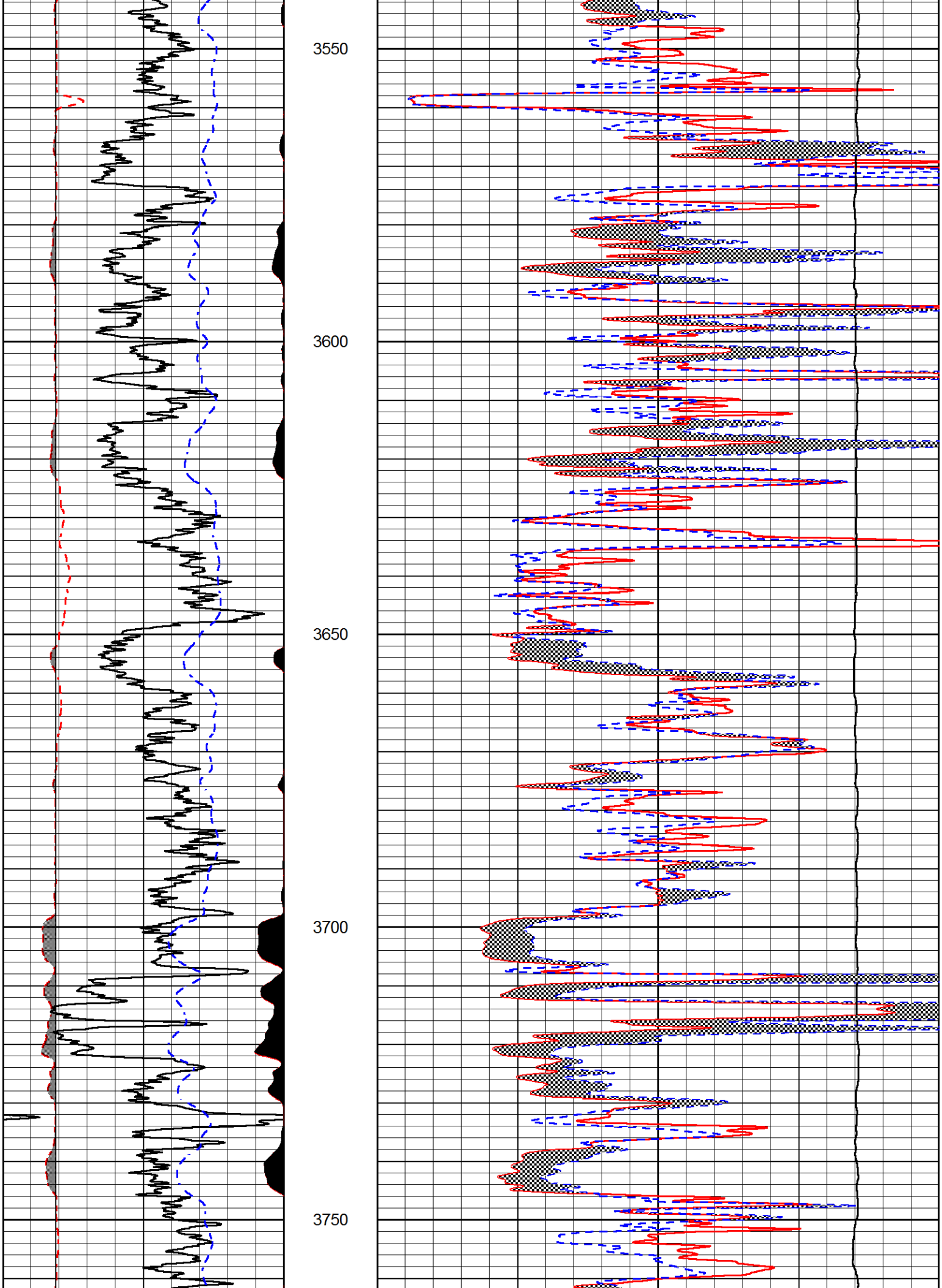
0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0

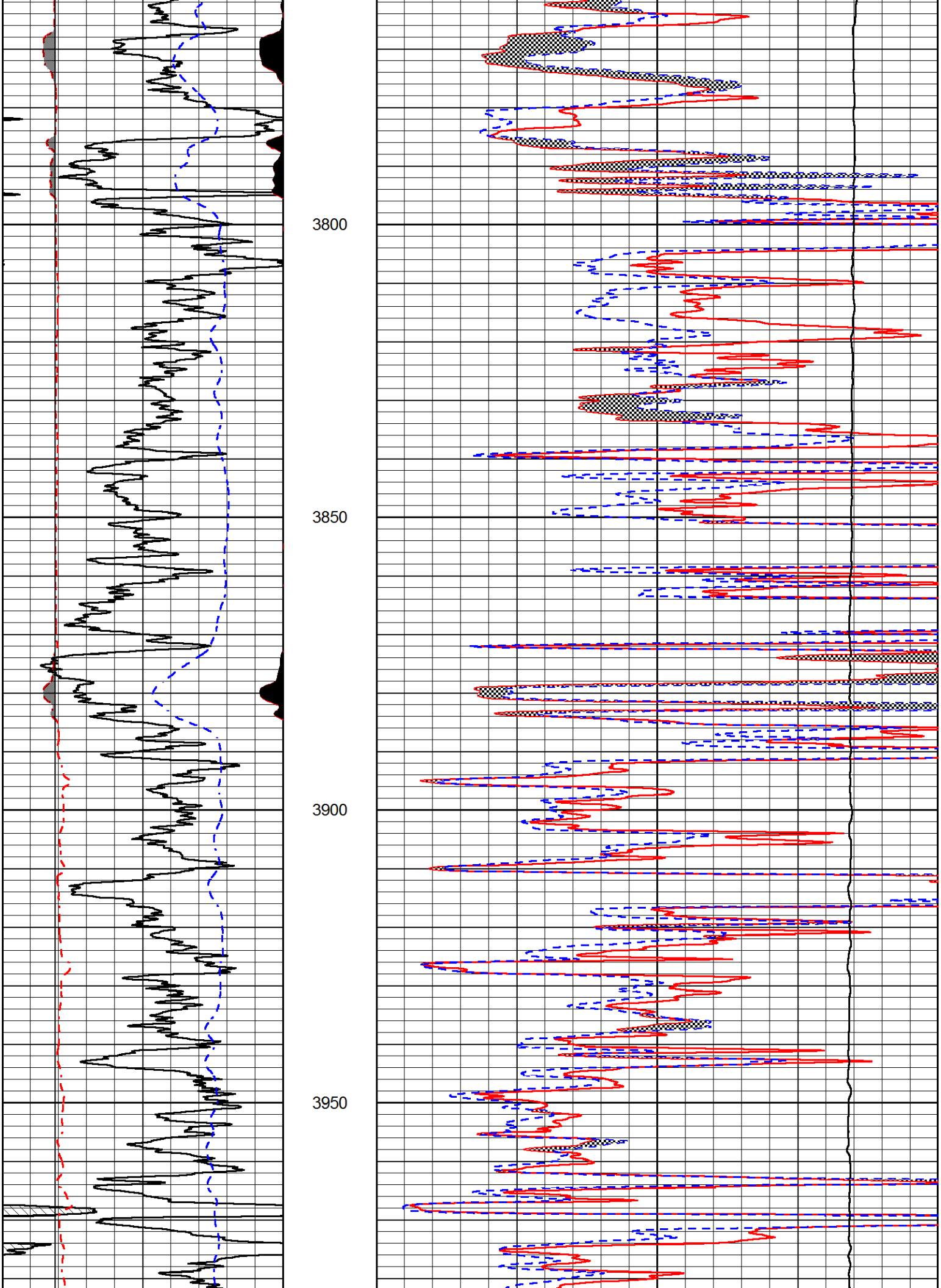
0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0

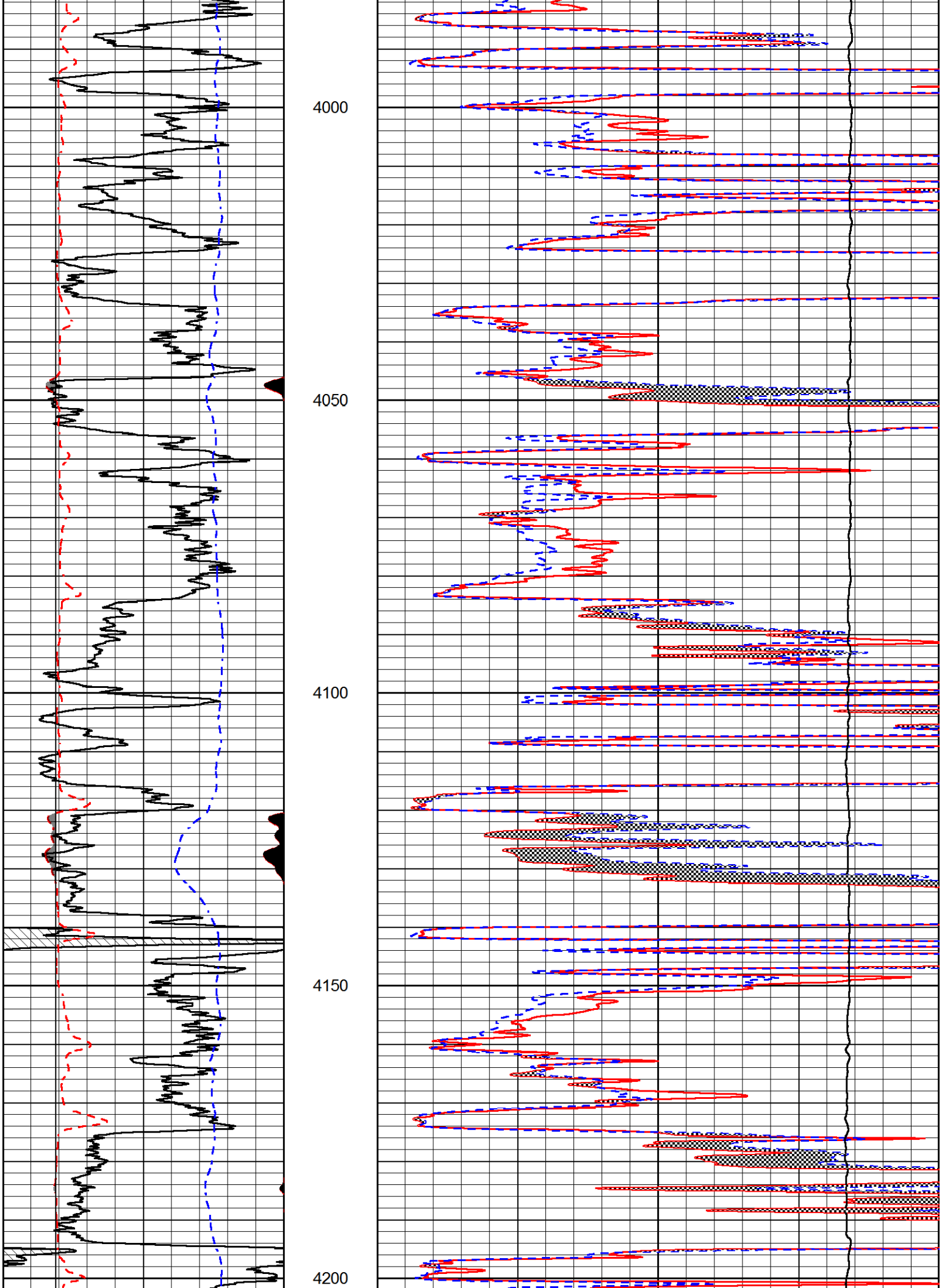


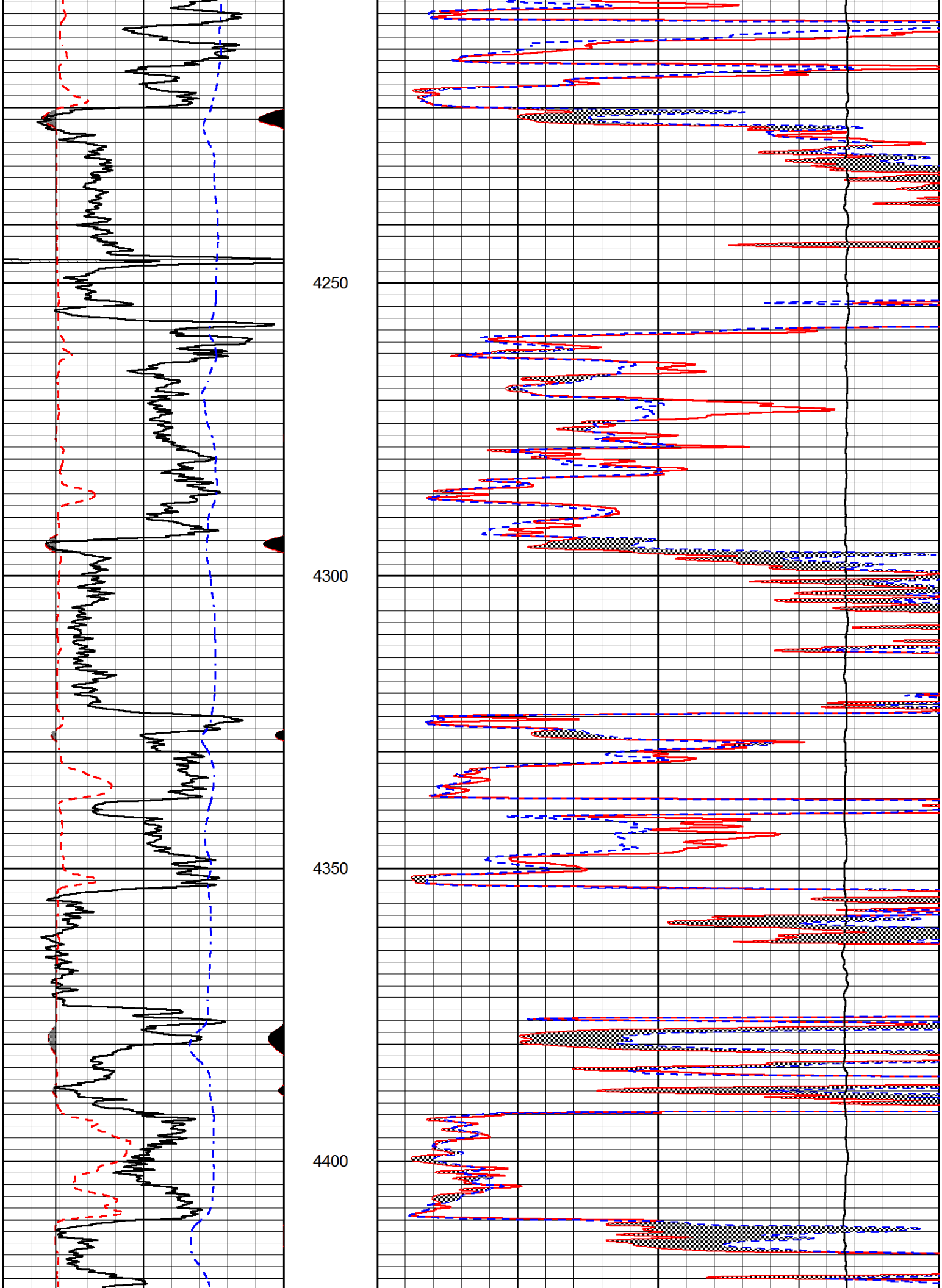

3150
3200
3250
3300

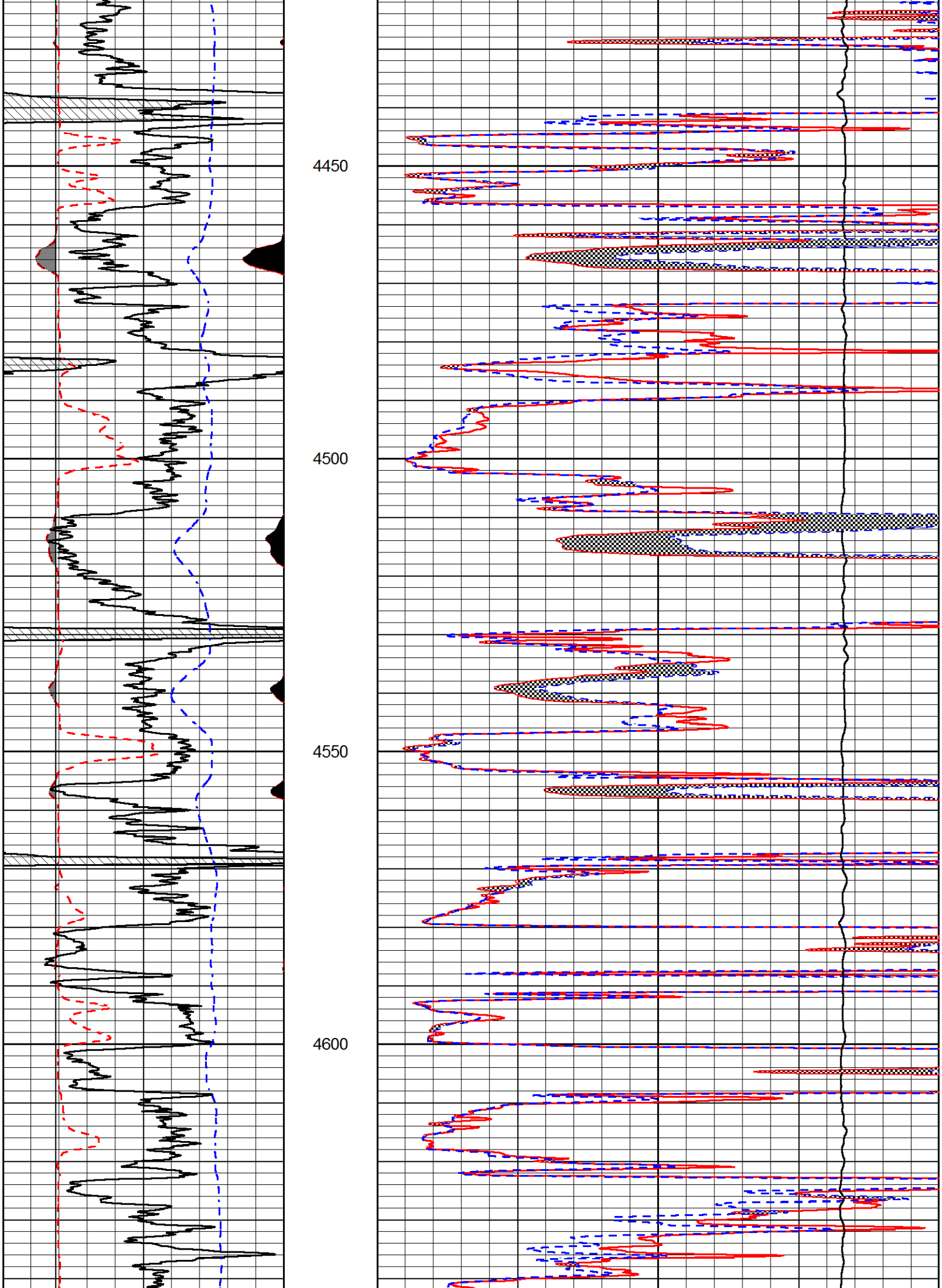

3350
3400
3450
3500

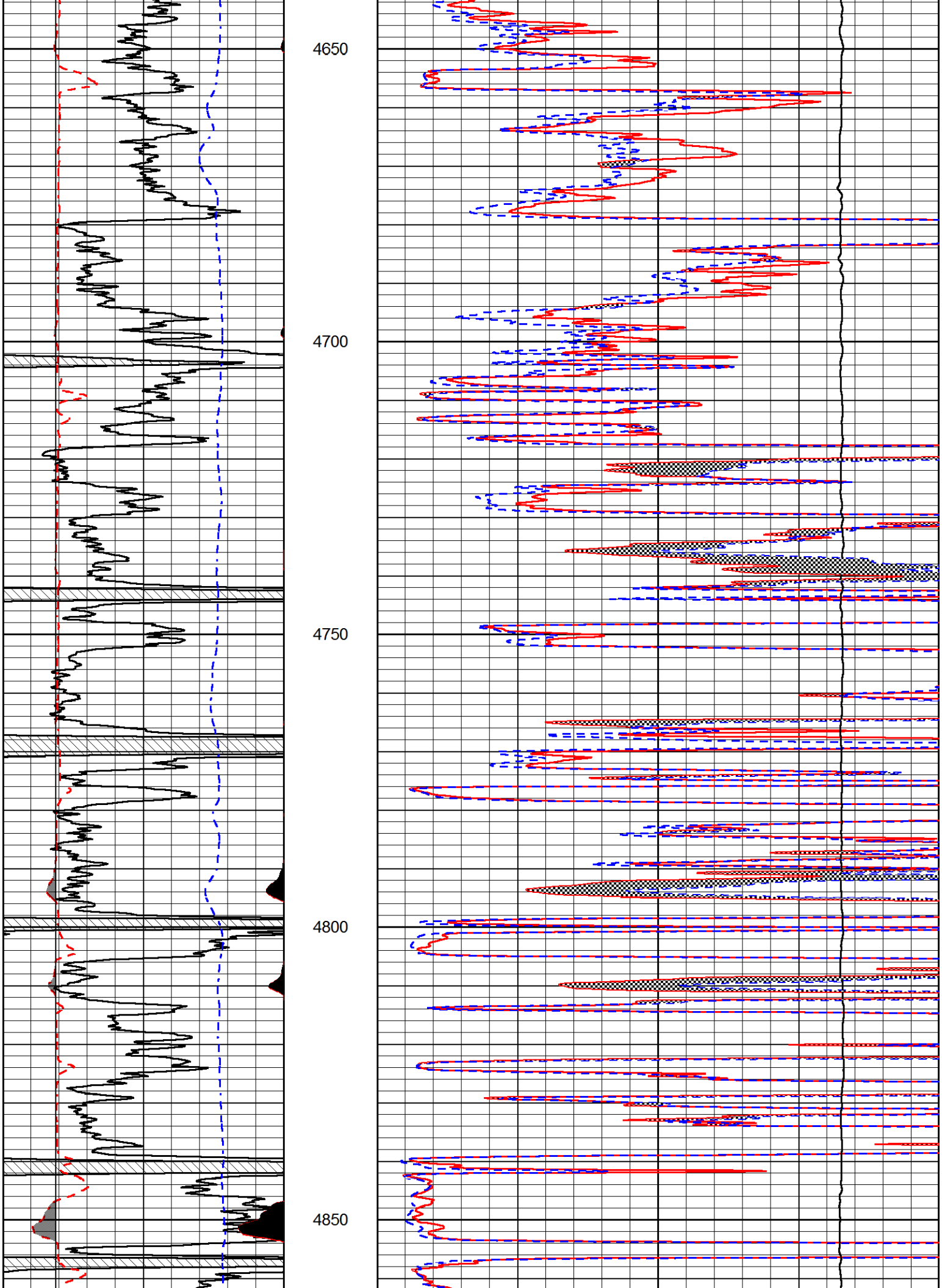

3550
3600
3650
3700
3750

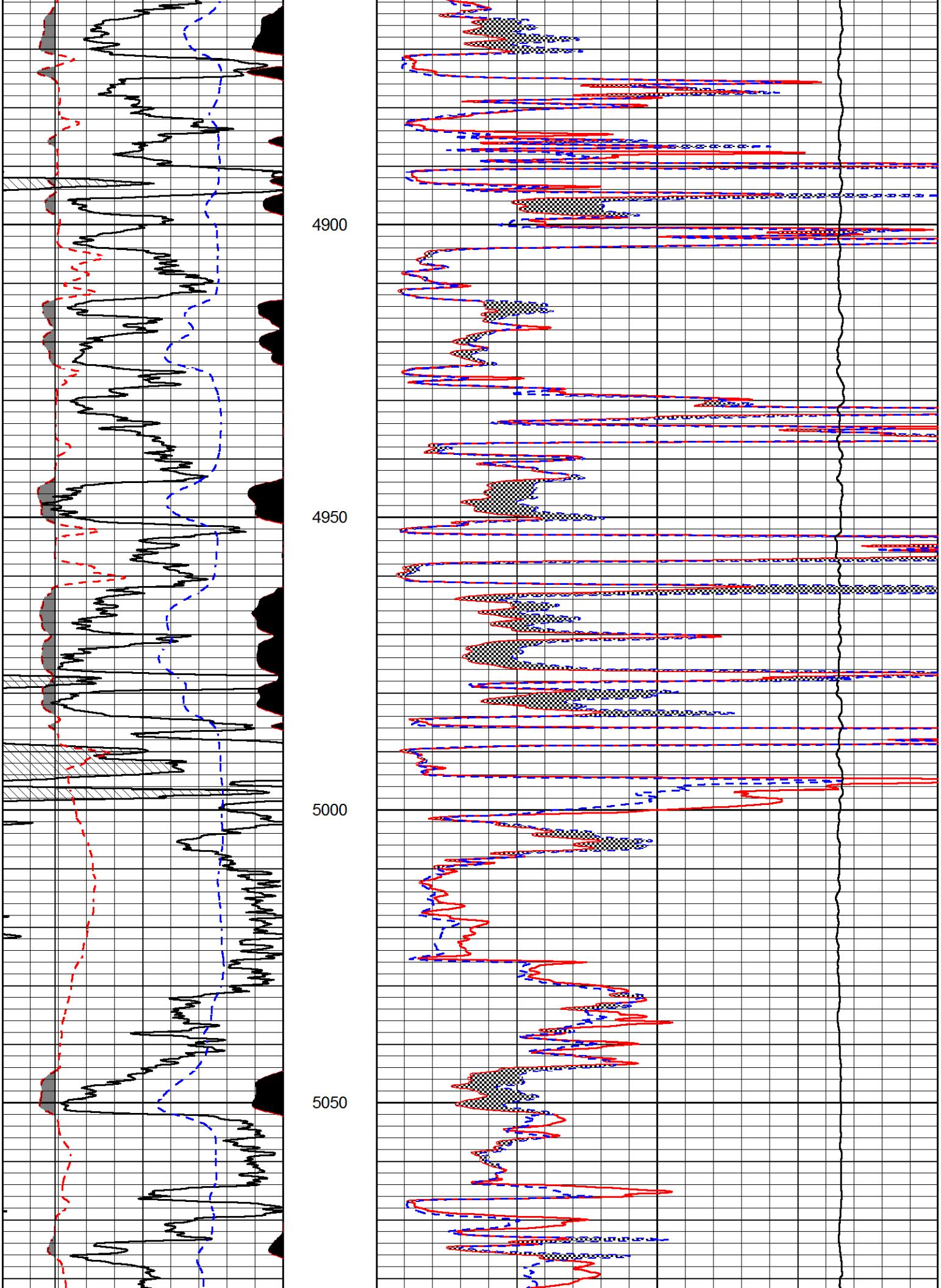

3800
3850
3900
3950

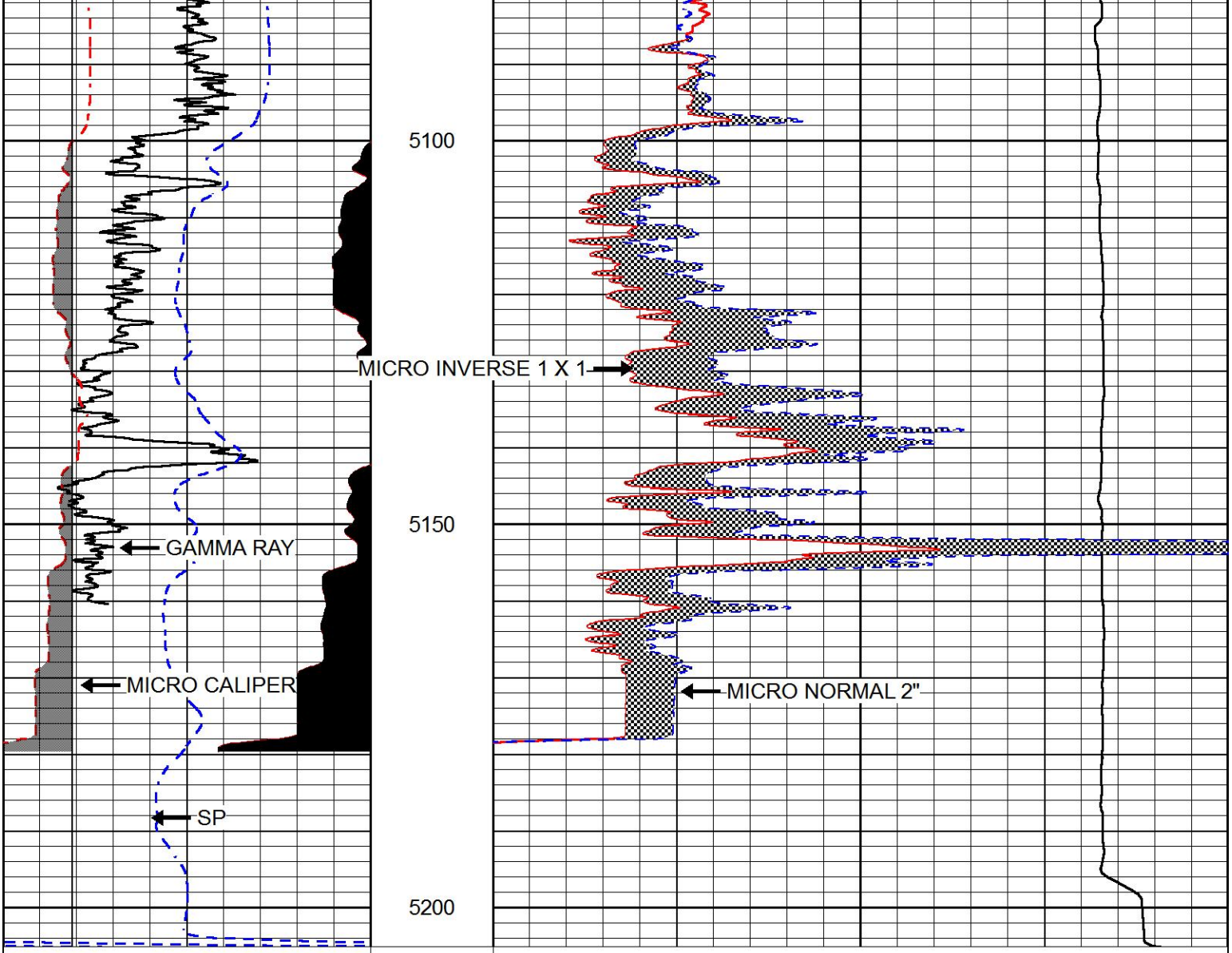

4000
4050
4100
4150
4200


4250
4300
4350
4400


4450
4500
4550
4600


4650
4700
4750
4800
4850


4900
4950
5000
5050



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

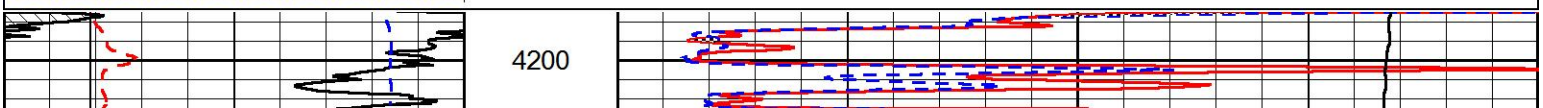
MIDWEST WIRELINE

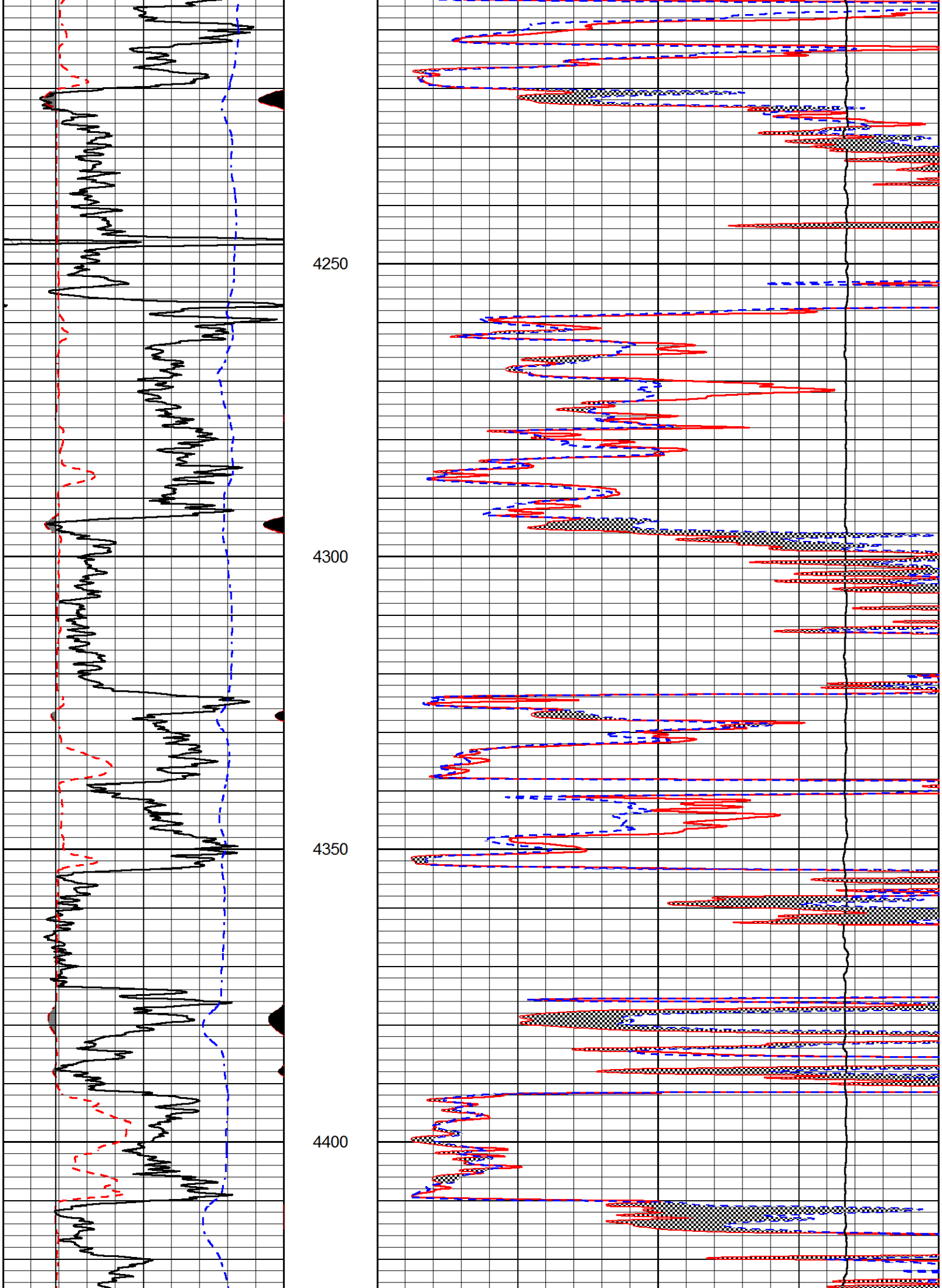
Repeat Section

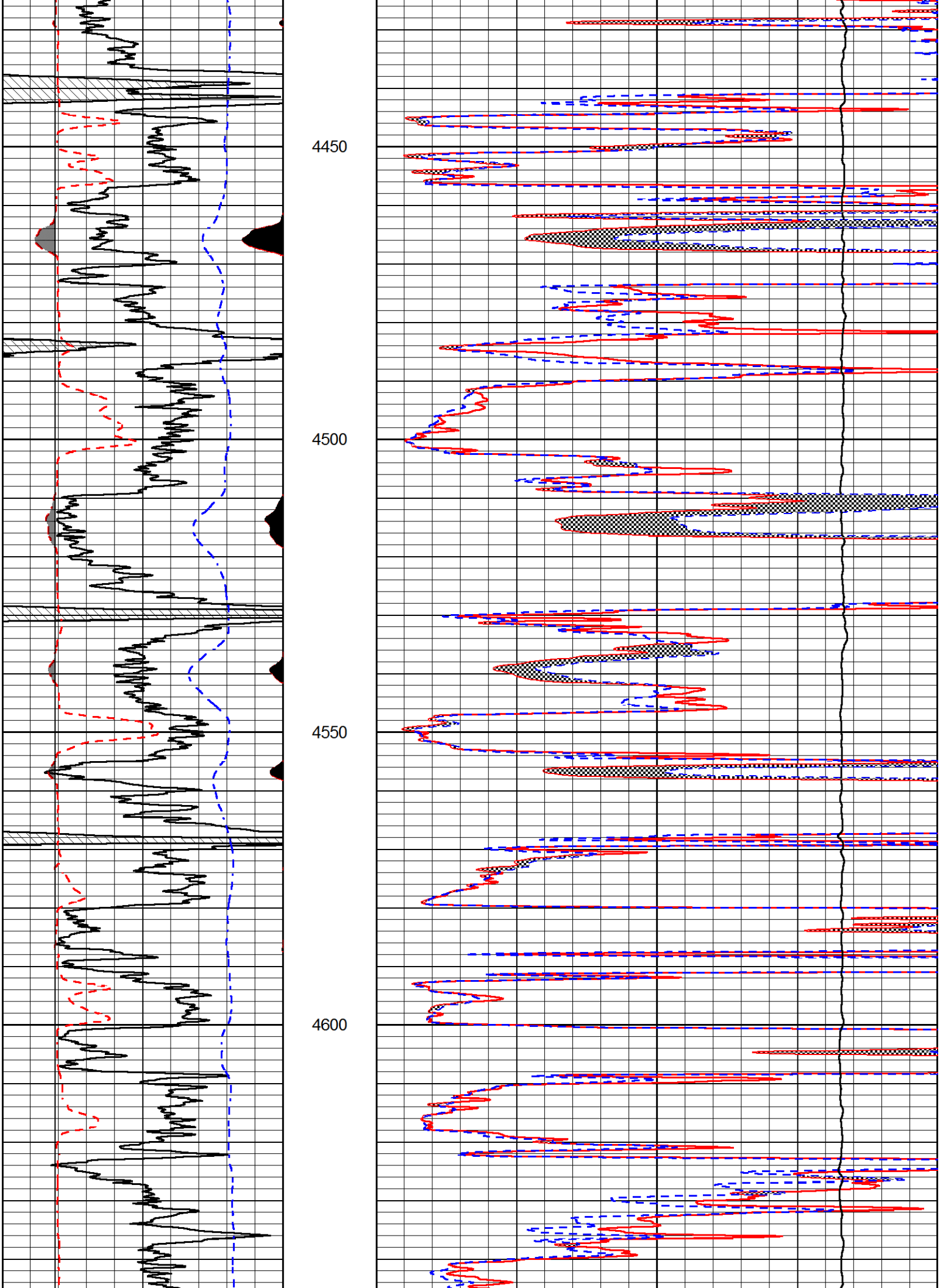
Database File	murfin_helena_1_10.db
Dataset Pathname	stackml/pass3.1
Presentation Format	micro
Dataset Creation	Fri Mar 26 19:20:09 2021
Charted by	Depth in Feet scaled 1:240

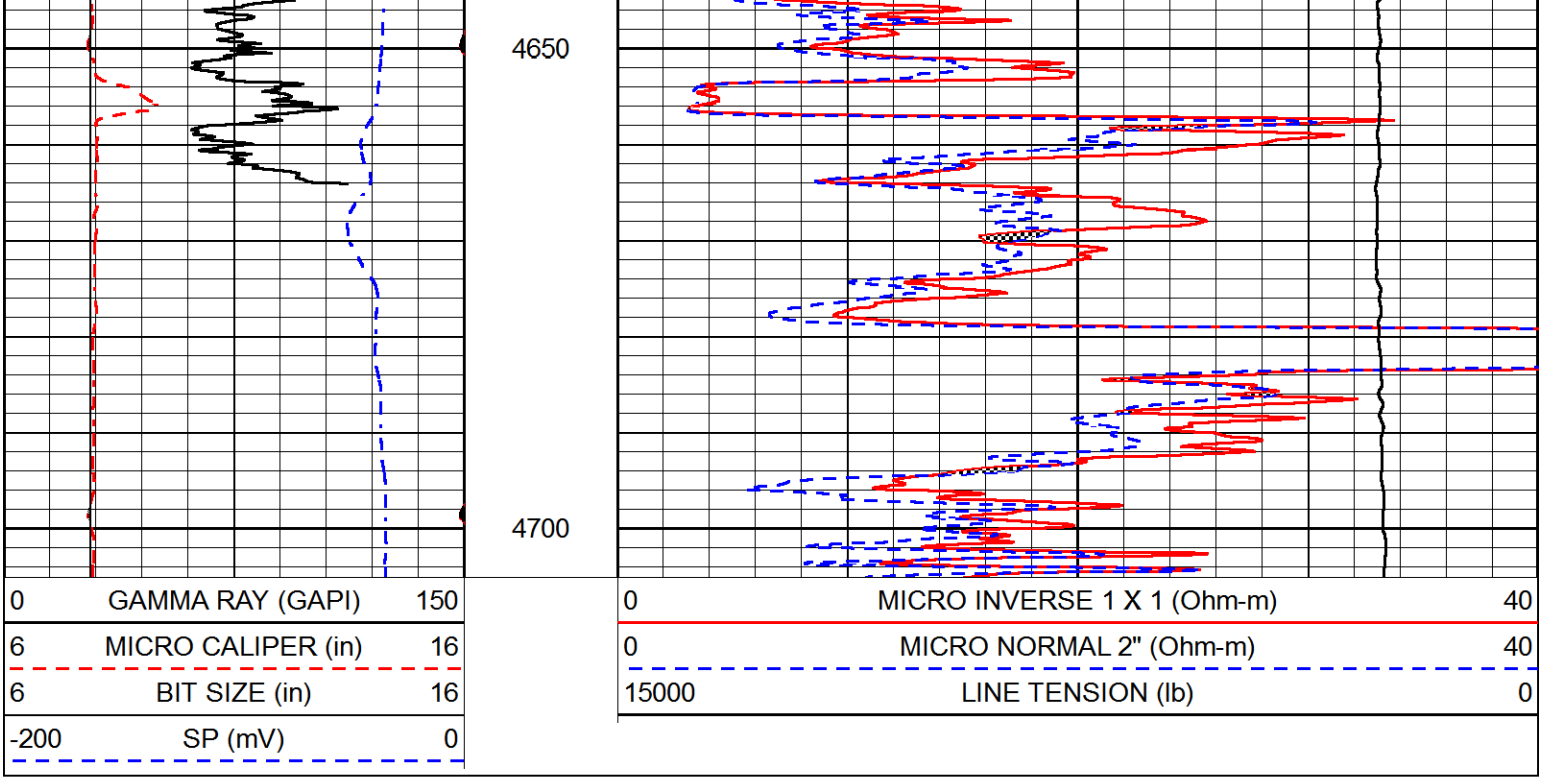
0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0

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




4250
4300
4350
4400


4450
4500
4550
4600



Calibration Report

Database File	murfin_helena_1_10.db
Dataset Pathname	stackml/pass4.1
Dataset Creation	Fri Mar 26 21:00:01 2021

Dual Induction Calibration Report

Serial-Model:	952-828-PSI HIGH TEMP
Calibration Performed:	Fri Mar 26 18:10:57 2021

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.500	-32.000
Medium	0.000	1348.000	142.000	255.000	mmho/m	0.335	-36.000

Microlog Calibration Report

Serial-Model:	UDM-01-PSI UDM ML
Performed:	Fri Mar 26 17:51:08 2021

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	55000.0000	0.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	48000.0000	0.0000
Caliper	1.3802	1.0814	6.0000	22.0000	in	-53.5473	79.9032

Compensated Density Calibration Report

Serial-Model:	915-956-M&W
Source / Verifier:	/
Master Calibration Performed:	Fri Mar 26 17:51:14 2021

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	3668.53	4669.61	cps
Aluminum	2.675	g/cc	710.88	3056.05	cps

Spine Angle = 75.51

Density/Spine Ratio = 0.543

	Size		Reading
Small Ring	4.00	in	1.17
Large Ring	14.00	in	1.05

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:	Fri Mar 26 17:51:23 2021	
Calibrator Value:	1000.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	6.2	cps
Sensitivity:	0.5200	GAPI/cps