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BOREHOLE COMPENSATED SONIC LOG

Company MURFIN DRILLING COMPANY, INC.
Well HAMIT UNIT #2-20
Field WILDCAT
County ROOKS State KANSAS
Location: API #: 15-163-24349-00-00
330' FSL & 1330' FWL
SEC 20 TWP 6S RGE 19W

Other Services: CNL/CDL, DIL/MEL

Elevation: K.B. 2130', D.F. N/A, G.L. 2125'

Permanent Datum: GROUND LEVEL Elevation 2125'
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING

Date	11/14/2017
Run Number	TWO
Type Log	BHCS
Depth Driller	3686'
Depth Logger	3687'
Bottom Logged Interval	3675'
Top Logged Interval	200'
Type Fluid In Hole	CHEMICAL
Salinity, PPM CL	1000
Density	9.0
Level	FULL
Max. Rec. Temp. F	113
Operating Rig Time	4 HOURS
Equipment -- Location	91 HAYS
Recorded By	D. SCHMIDT
Witnessed By	ROBERT HENDRIX

Borehole Record

Run No.	Bit	From	To
ONE	12.25"	0'	218'
TWO	7.875"	218'	TD

Casing Record

Size	Wgt.	From	To
8.625'	23#	0'	218'

<<< Fold Here >>>

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.

STOCKTON,
NORTH TO E RD, 9 1/2 WEST,
NORTH INTO

Log Measured From: KELLY BUSHING 5 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: D. SCHMIDT	Primary Witness: ROBERT HENDRIX
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Log Variables

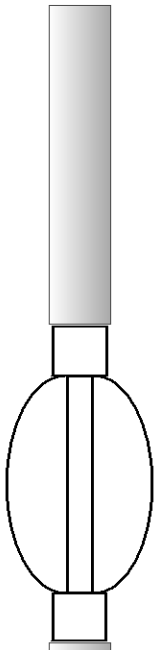
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Dataset field/well/STACK/pass5.1/_vars_

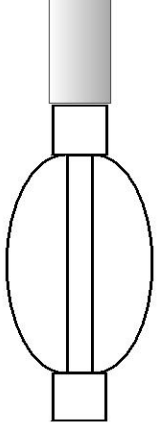
Top - Bottom

M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	327	0

SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	55	0	5.5	0	3687	113	7.875

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb
			ML-Armadillo (ARM001) Pengo Mandrel & Armadillo ML Electronics (2014)	5.50	3.50	100.00
MCAL	28.00					
MI	28.00					
MN	28.00					
			CENT-PENGO (4-PENGO)	5.50	3.00	70.00
WVF4	13.50		SLT-PENGO (0001)	16.00	3.50	300.00
WVF1	13.50					
WVF3	11.50					
WVF2	11.50					





CENT-PENGO (3-PENGO)	5.50	3.00	70.00

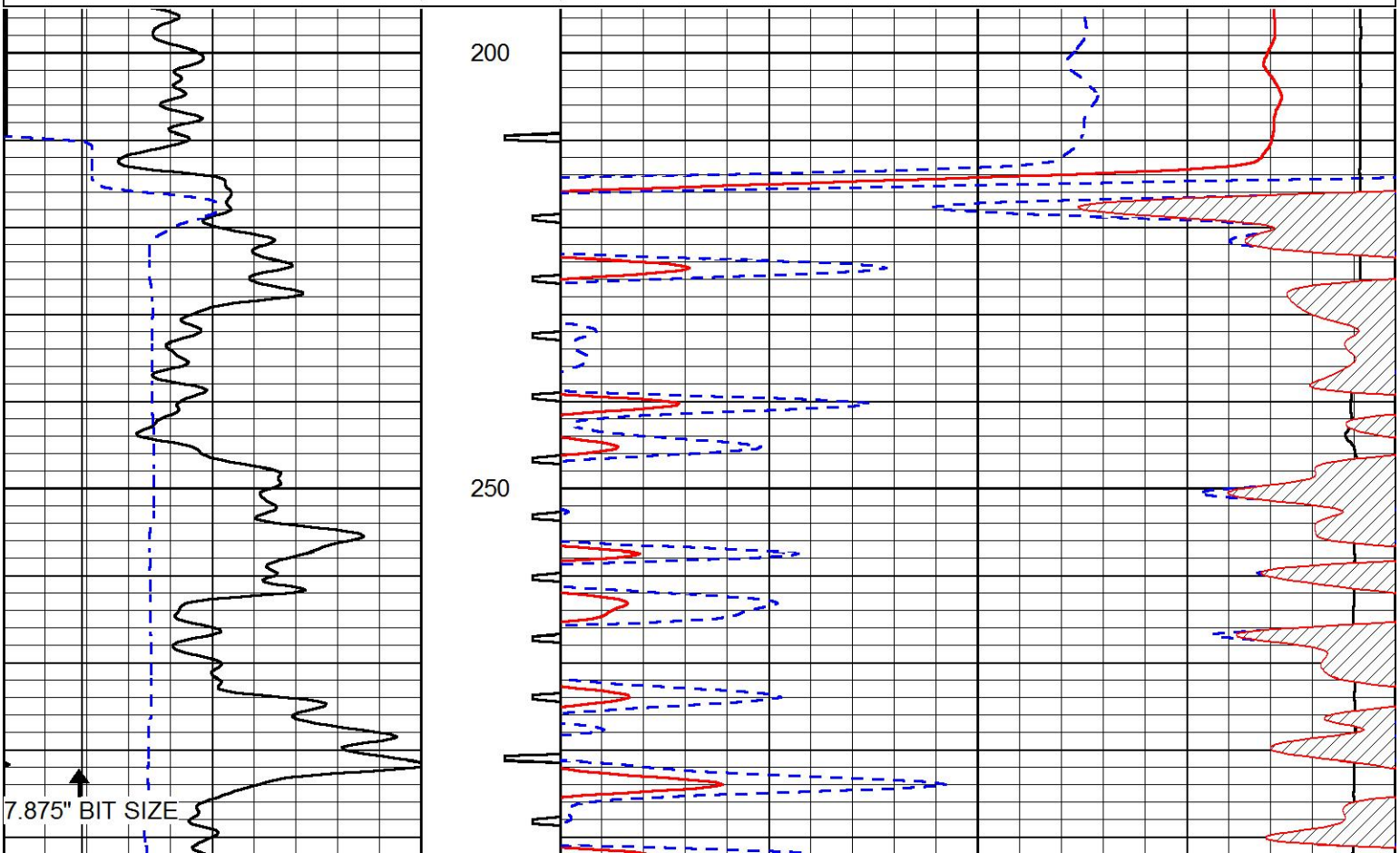
Dataset: murfin_hamit_2-20.db: field/well/SONMEL/pass2
Total length: 32.50 ft
Total weight: 540.00 lb
O.D.: 3.50 in

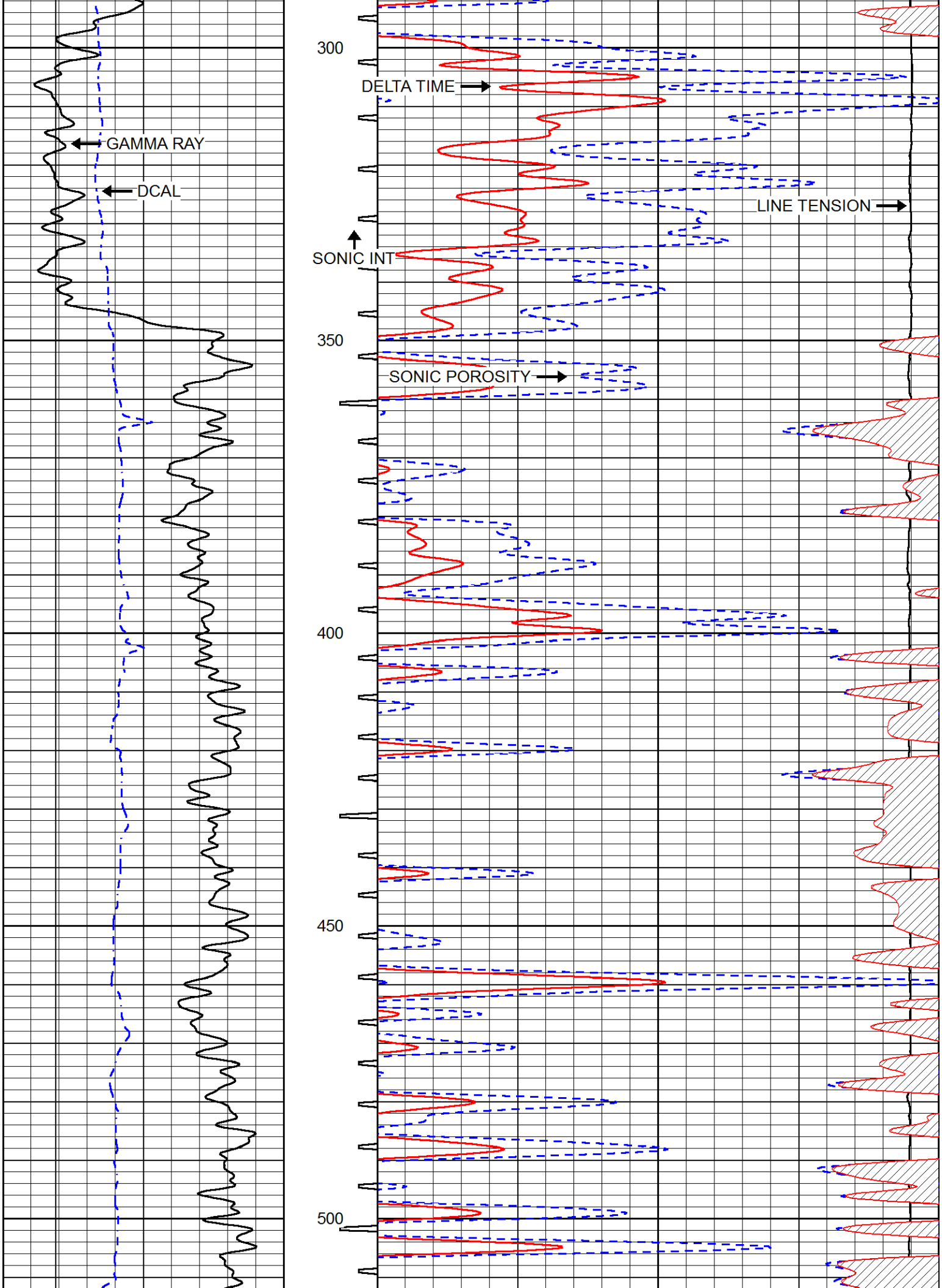
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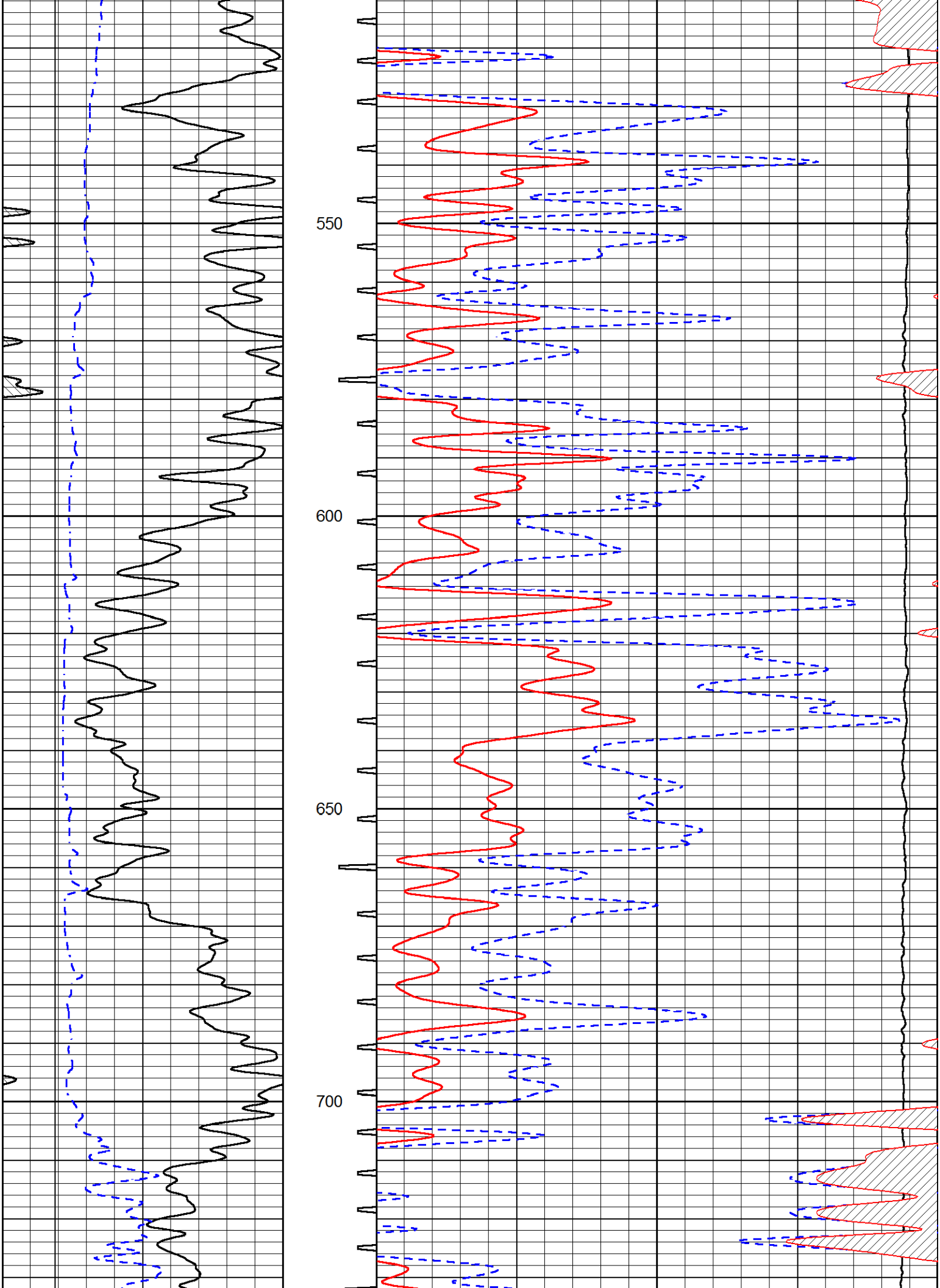
MAIN PASS

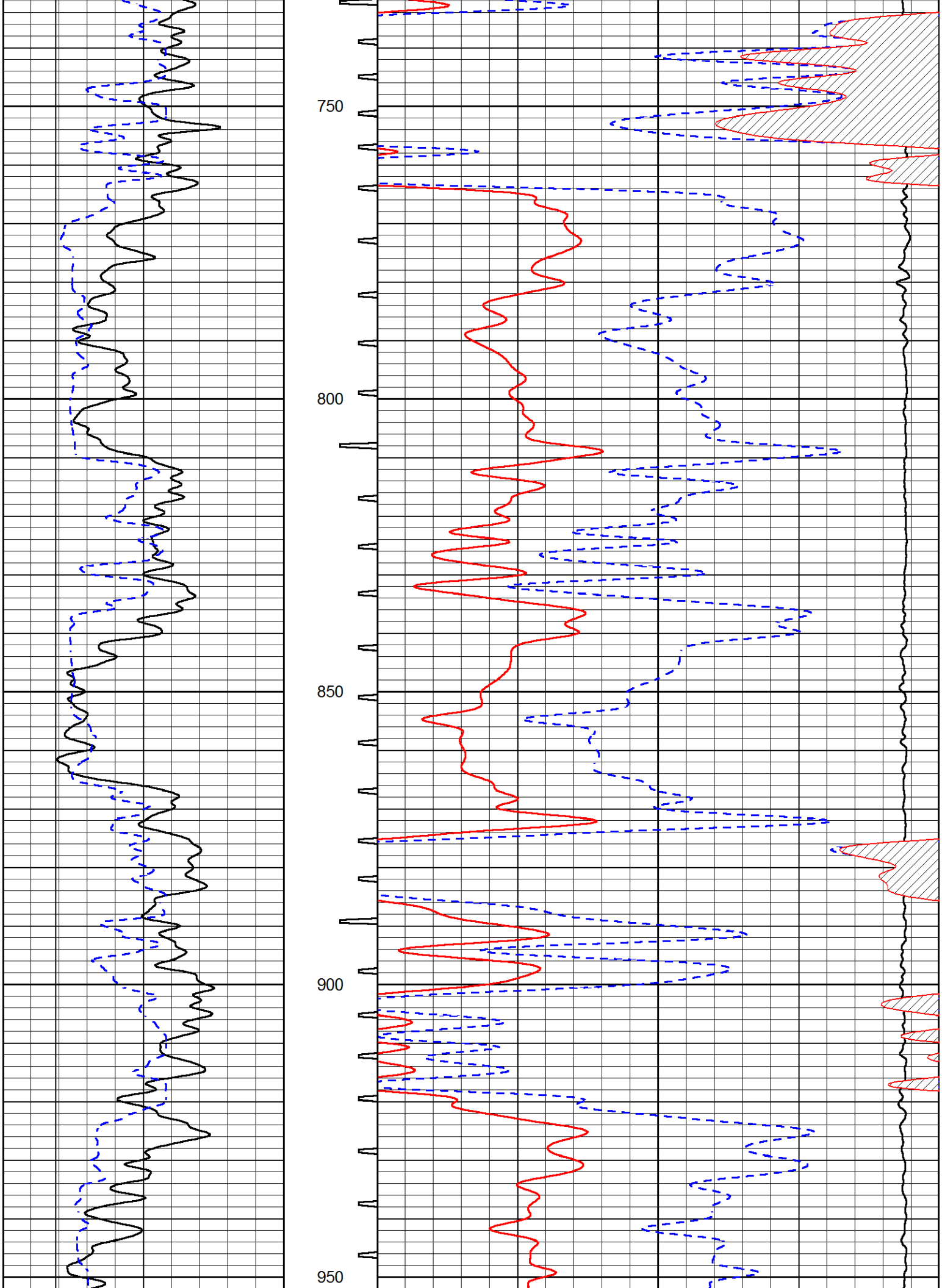
Database File murfin_hamit_2-20.db
Dataset Pathname STACK/pass9.1
Presentation Format sonic
Dataset Creation Tue Nov 14 07:27:01 2017
Charted by Depth in Feet scaled 1:240

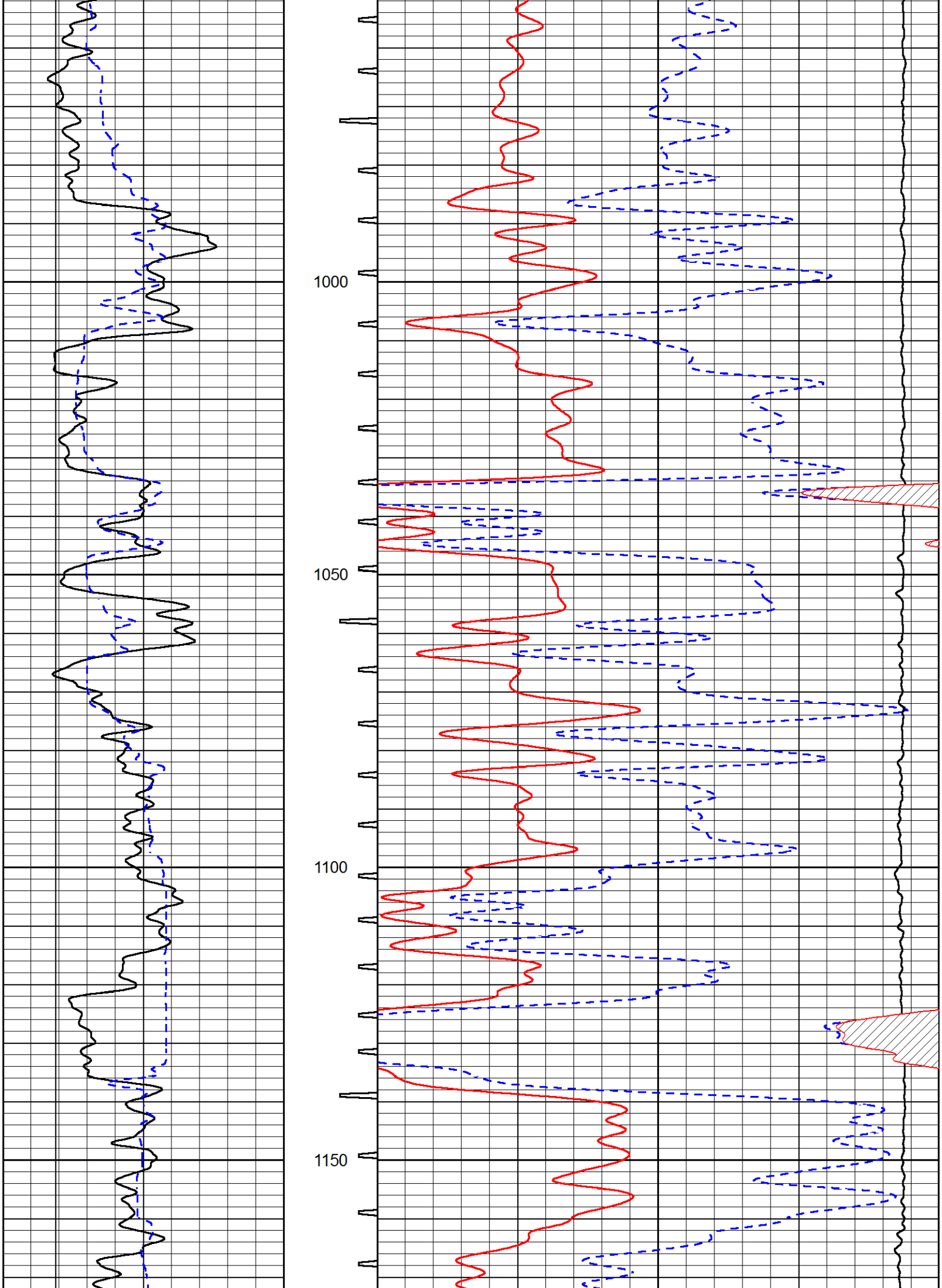
0	Gamma Ray (GAPI)	150	Sonic Int	140	Delta Time (usec/ft) (usec/ft)	40
150	GR (GAPI)	300	5 (msec) 0	30	Sonic Porosity (pu)	-10
6	DCAL (in)	16		15000	LTEN (lb) (lb)	0

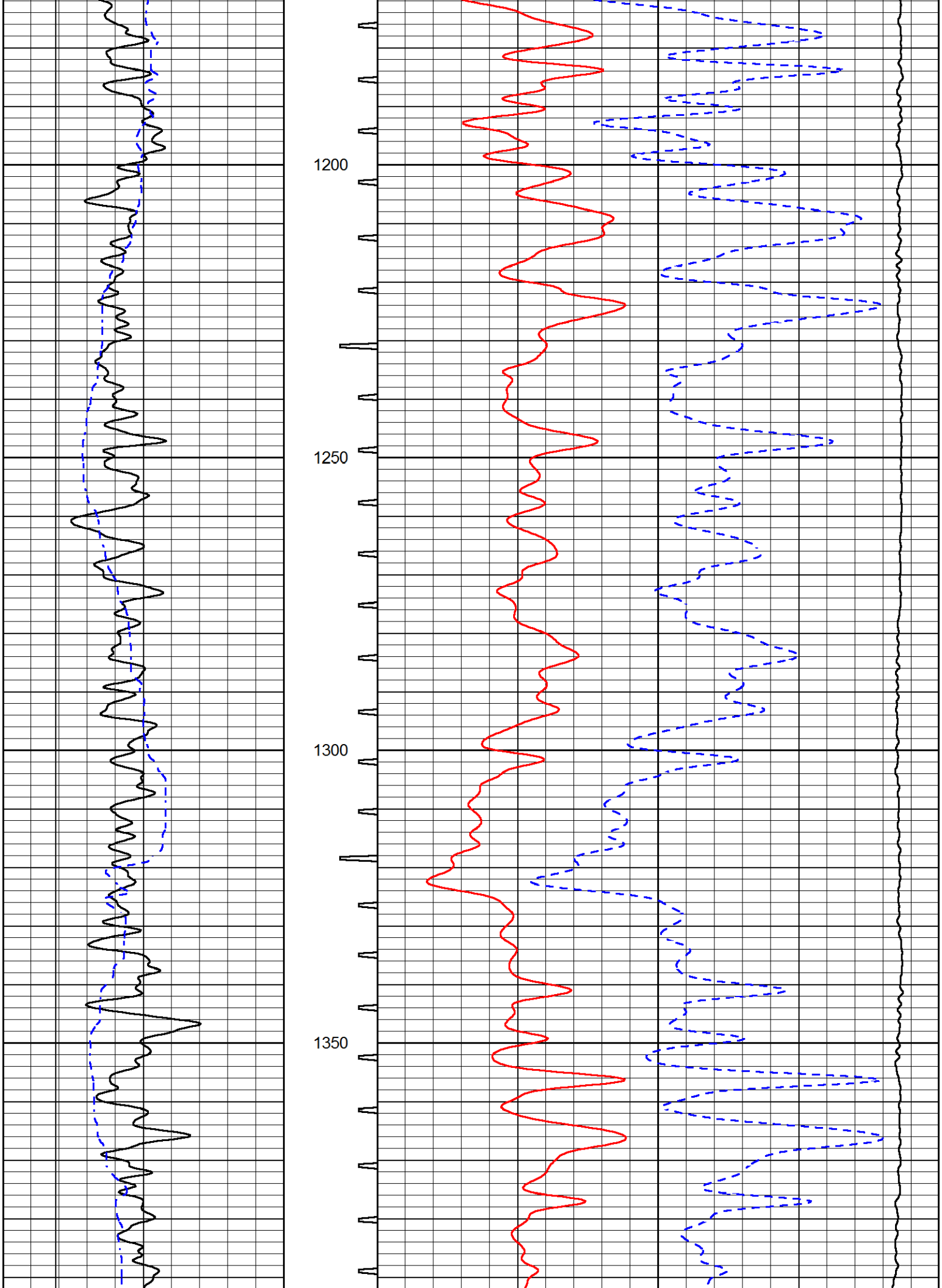


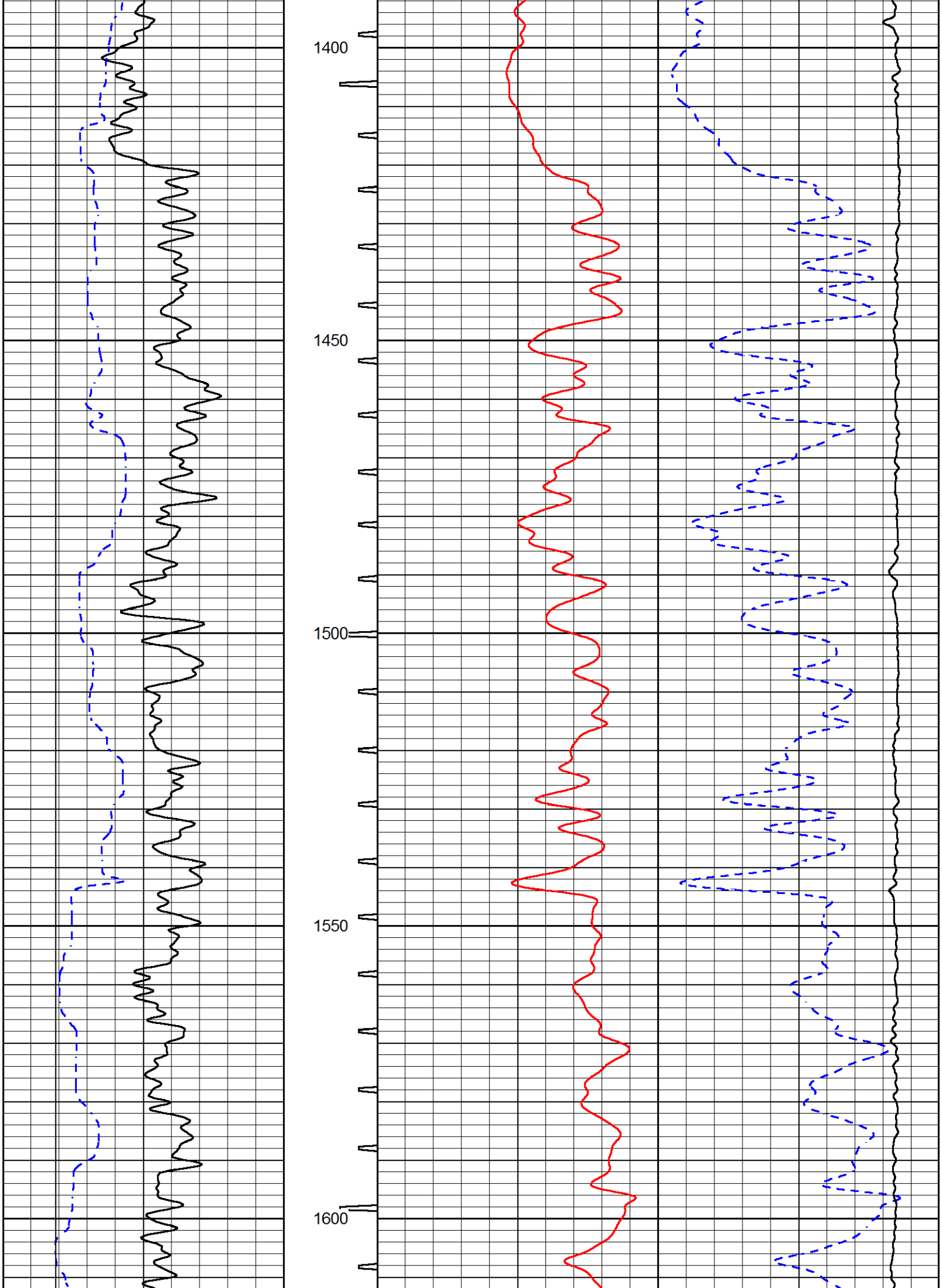

GAMMA RAY
DCAL
300
DELTA TIME
LINE TENSION
SONIC INT
350
SONIC POROSITY
400
450
500

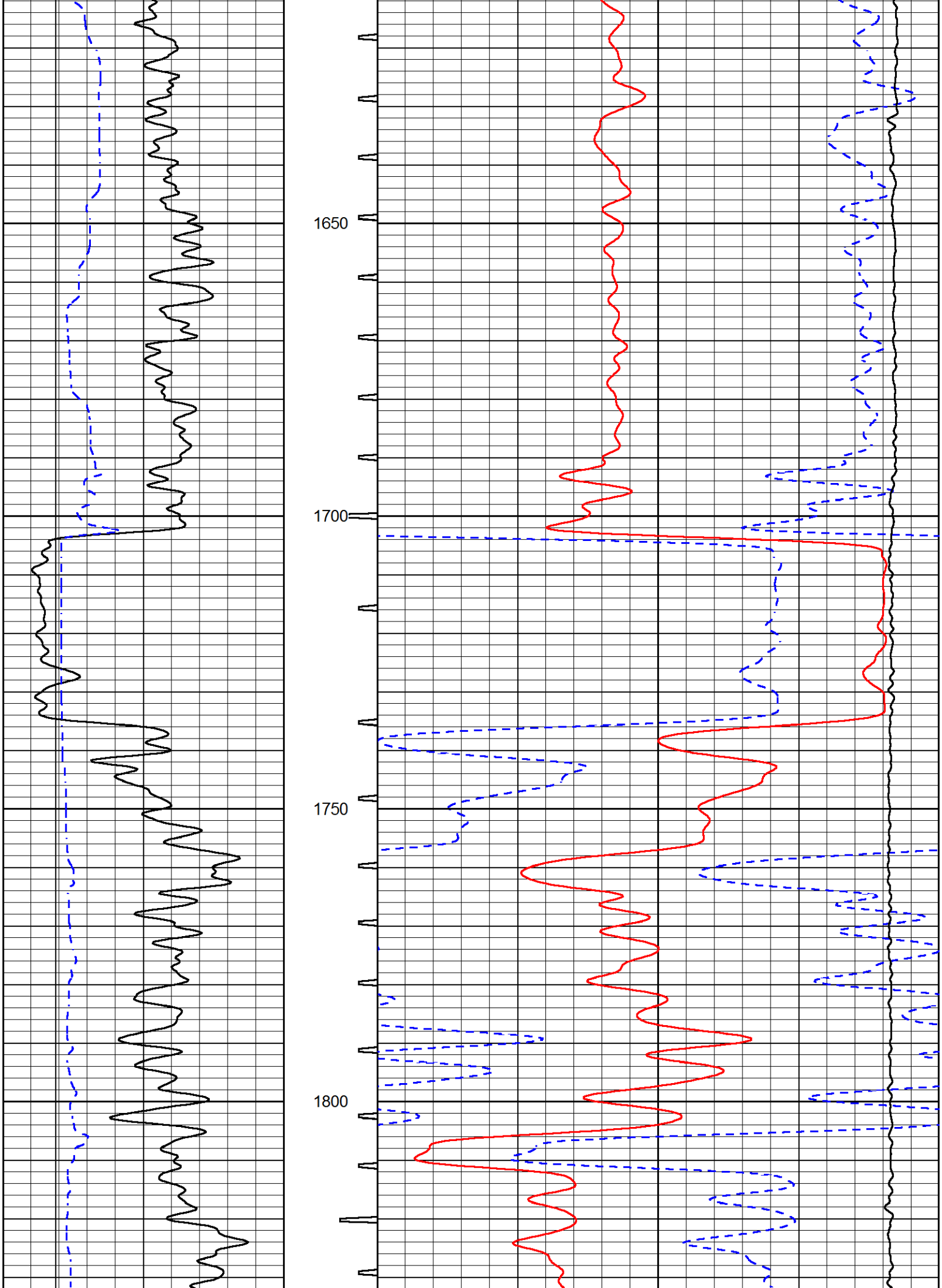

550
600
650
700

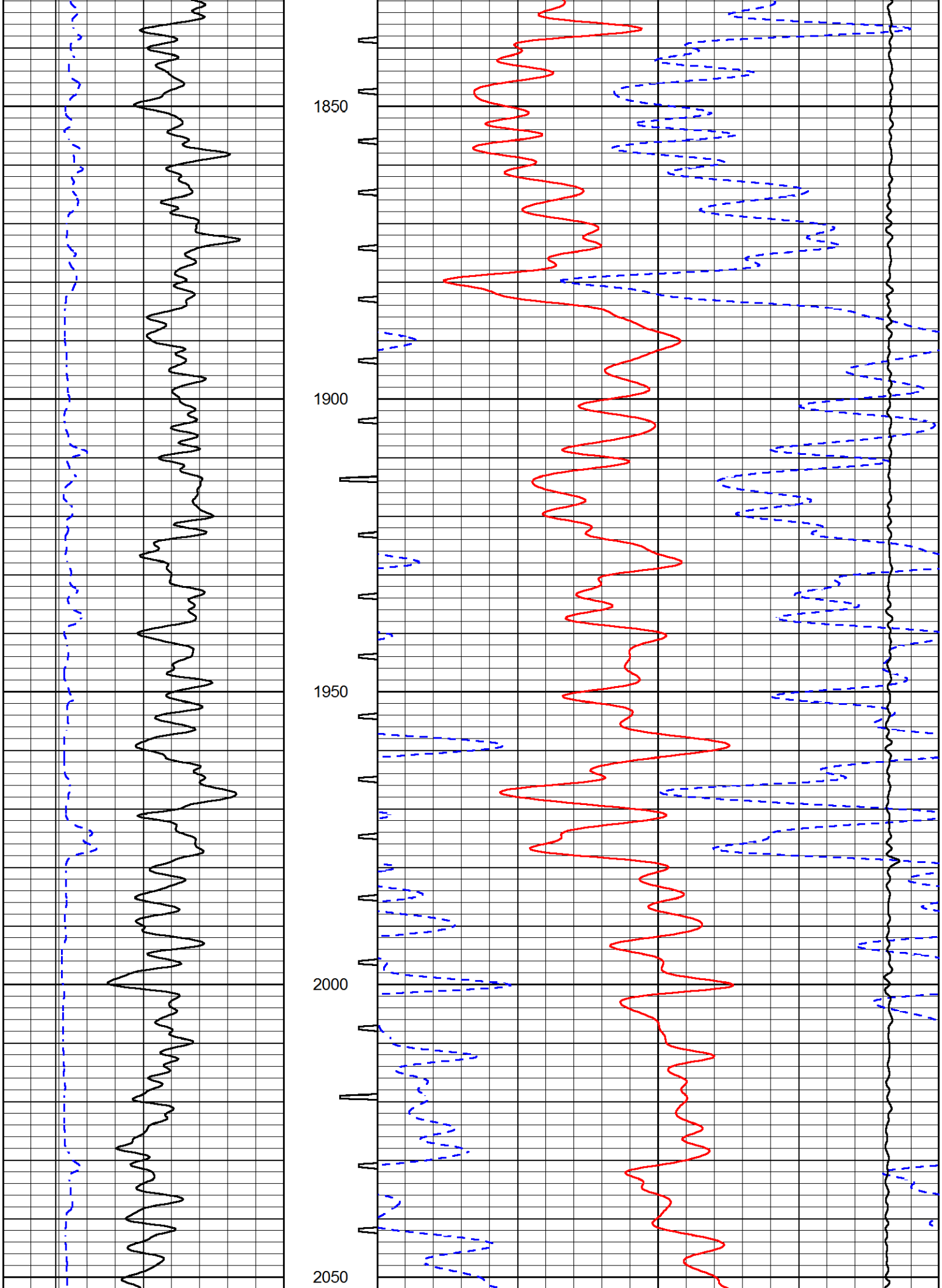

750
800
850
900
950

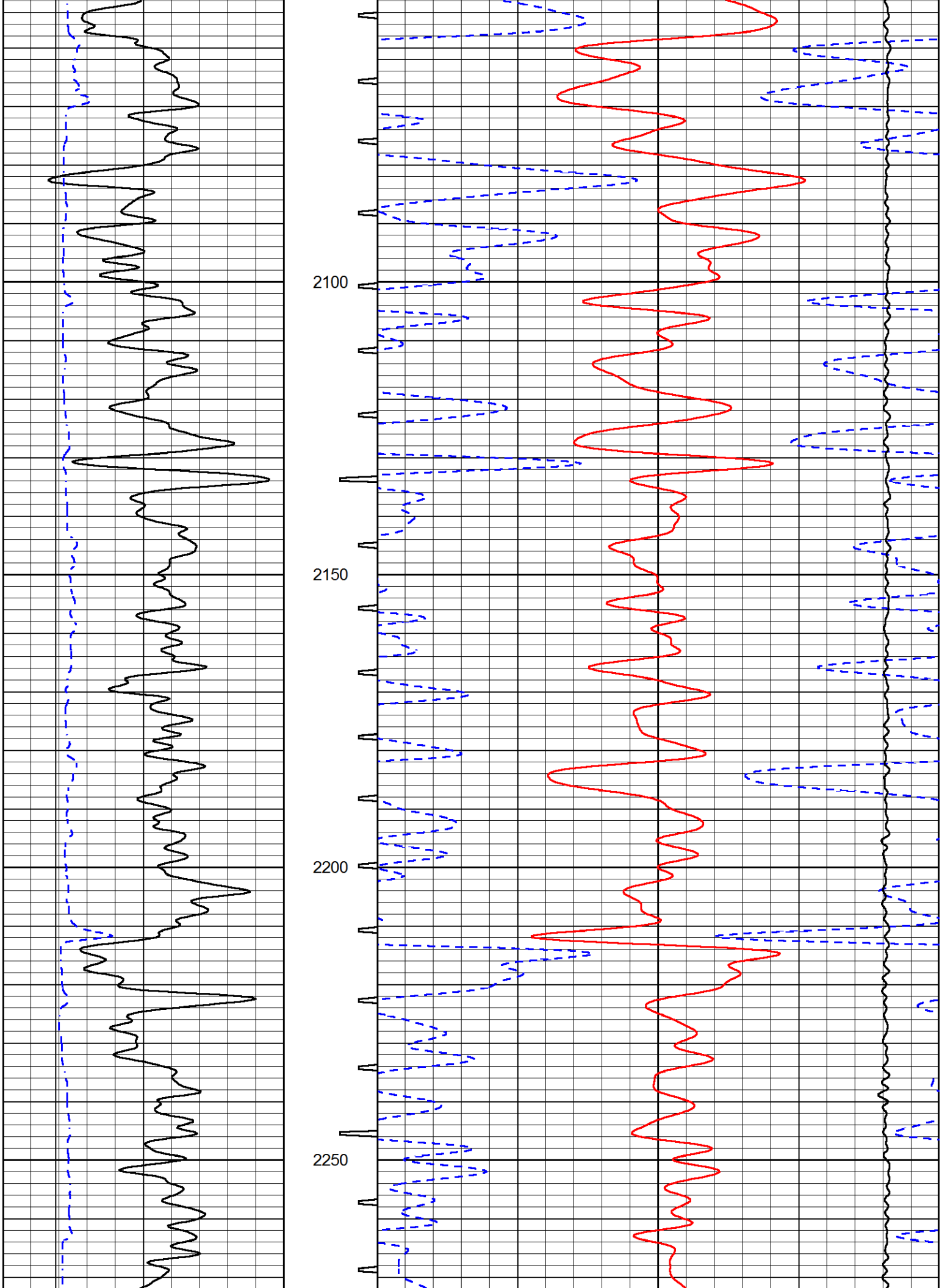

1000
1050
1100
1150

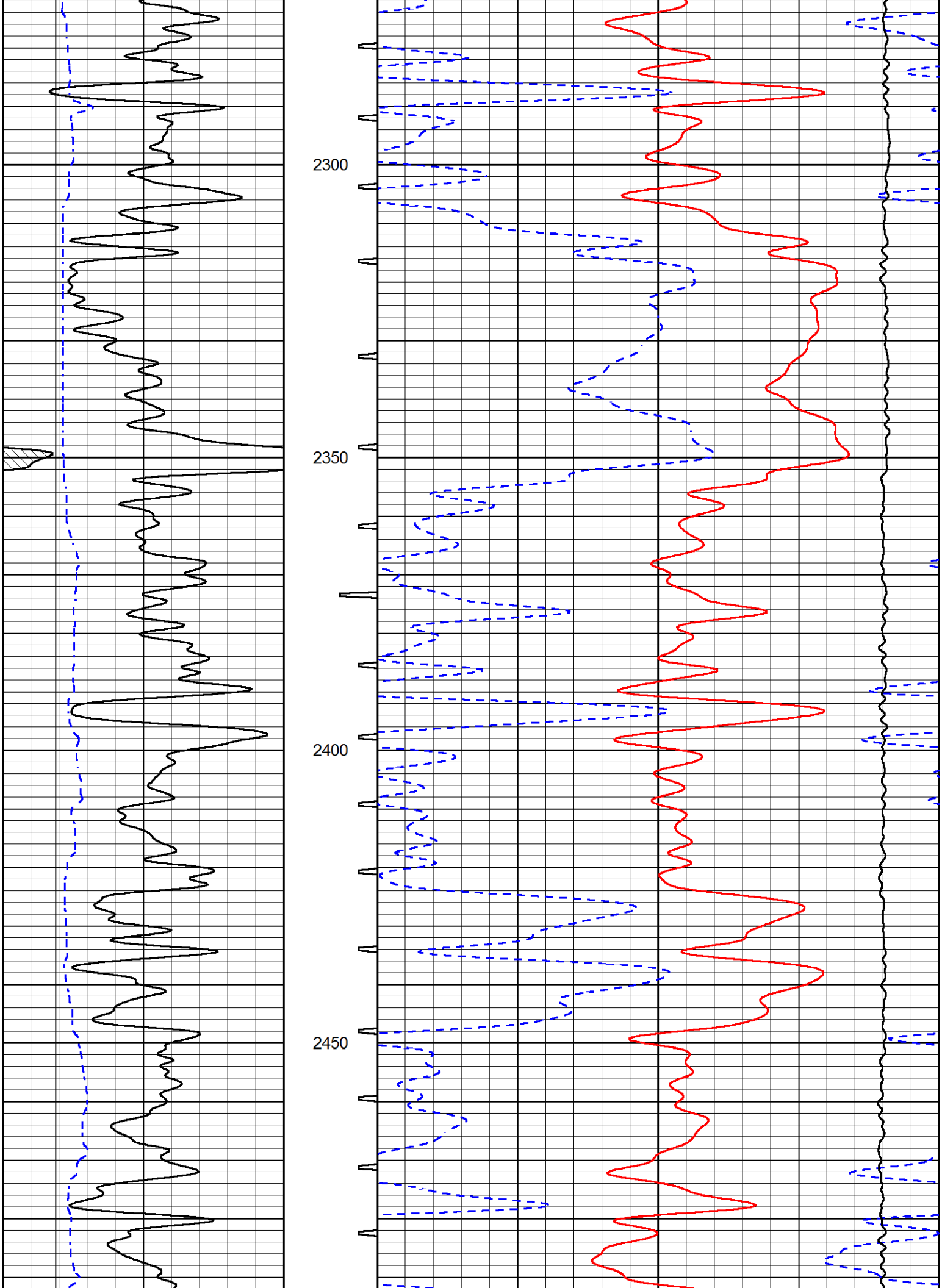

1200
1250
1300
1350

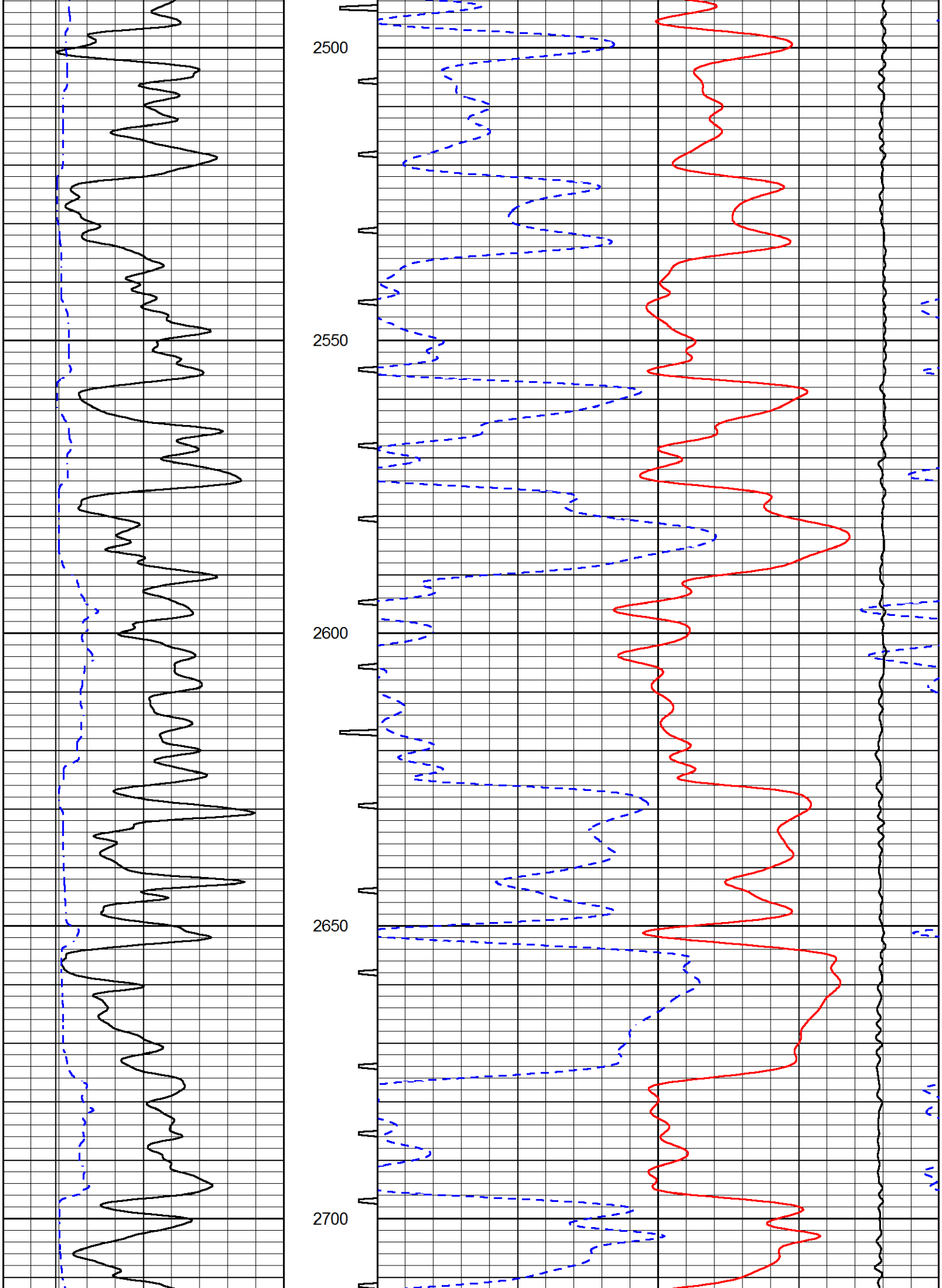

1400
1450
1500
1550
1600

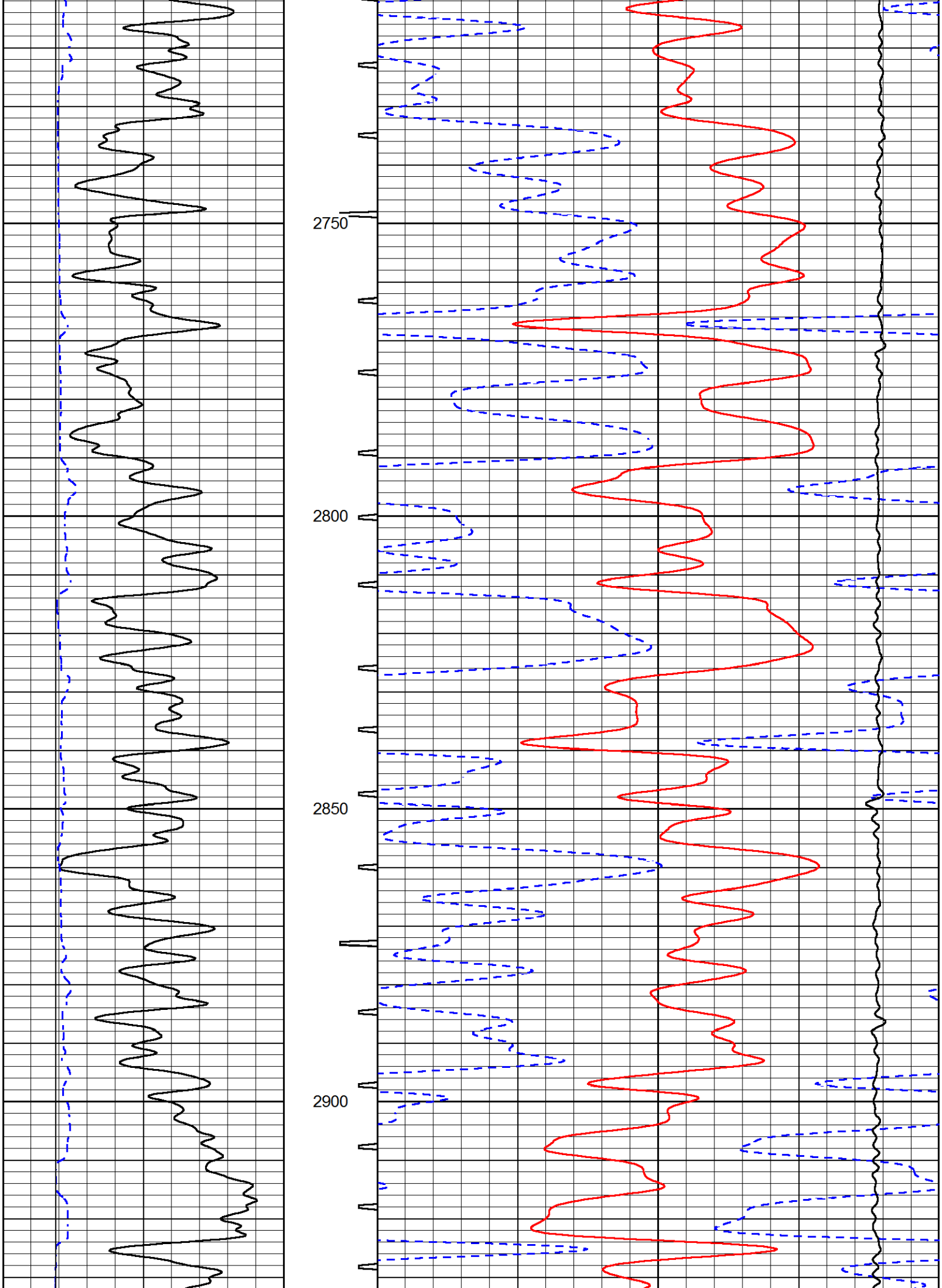

1650
1700
1750
1800

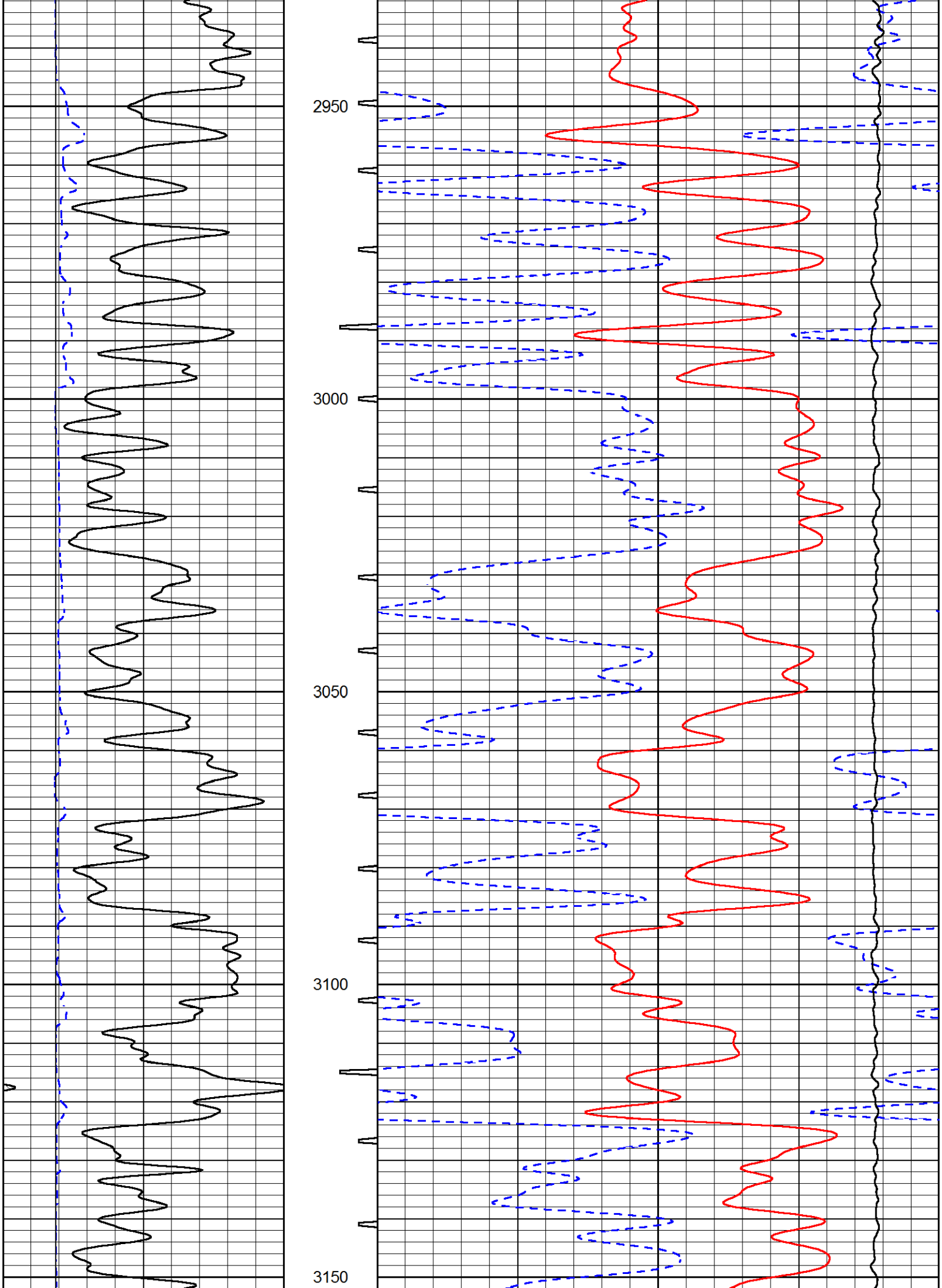

1850
1900
1950
2000
2050

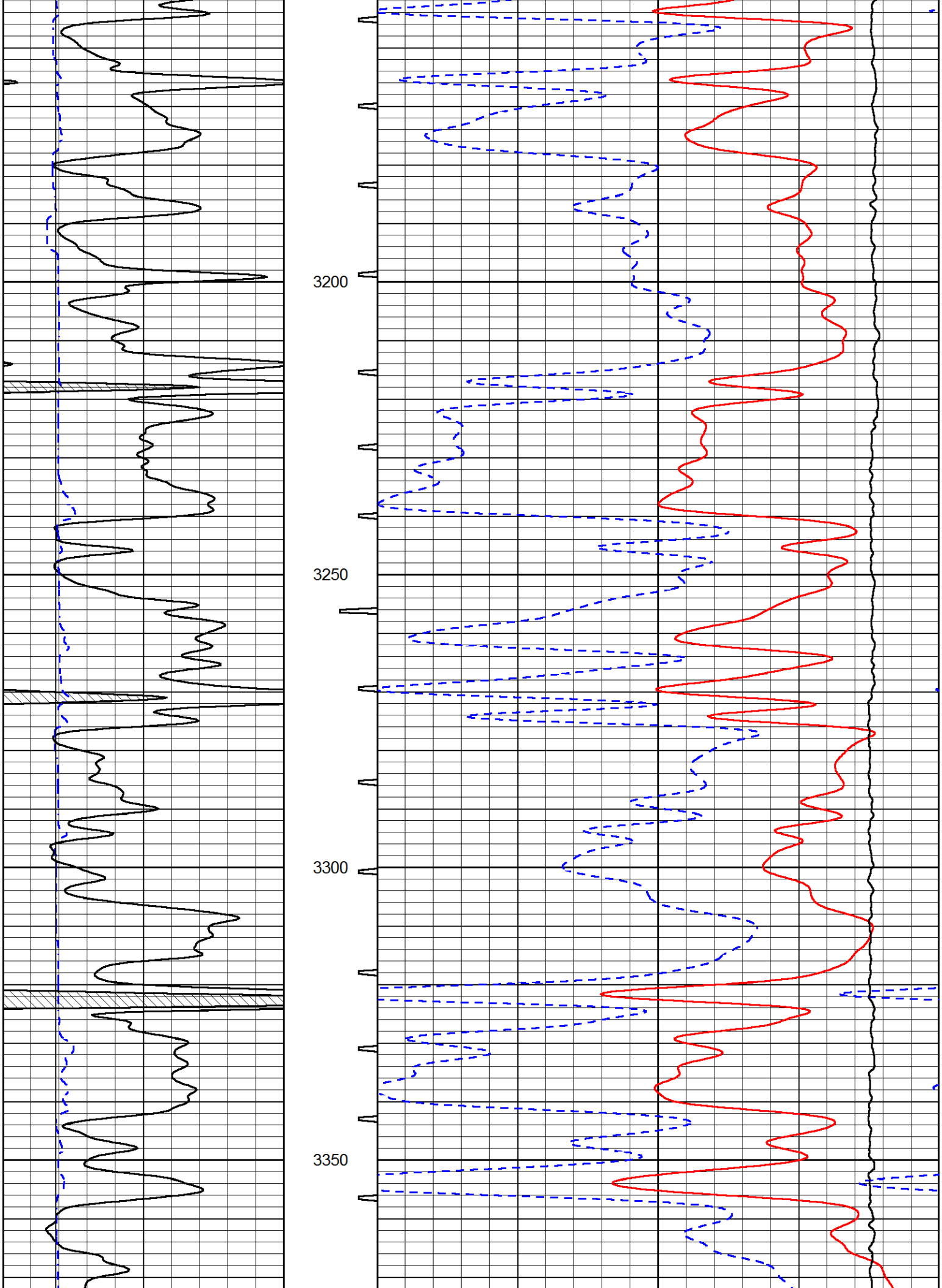

2100
2150
2200
2250

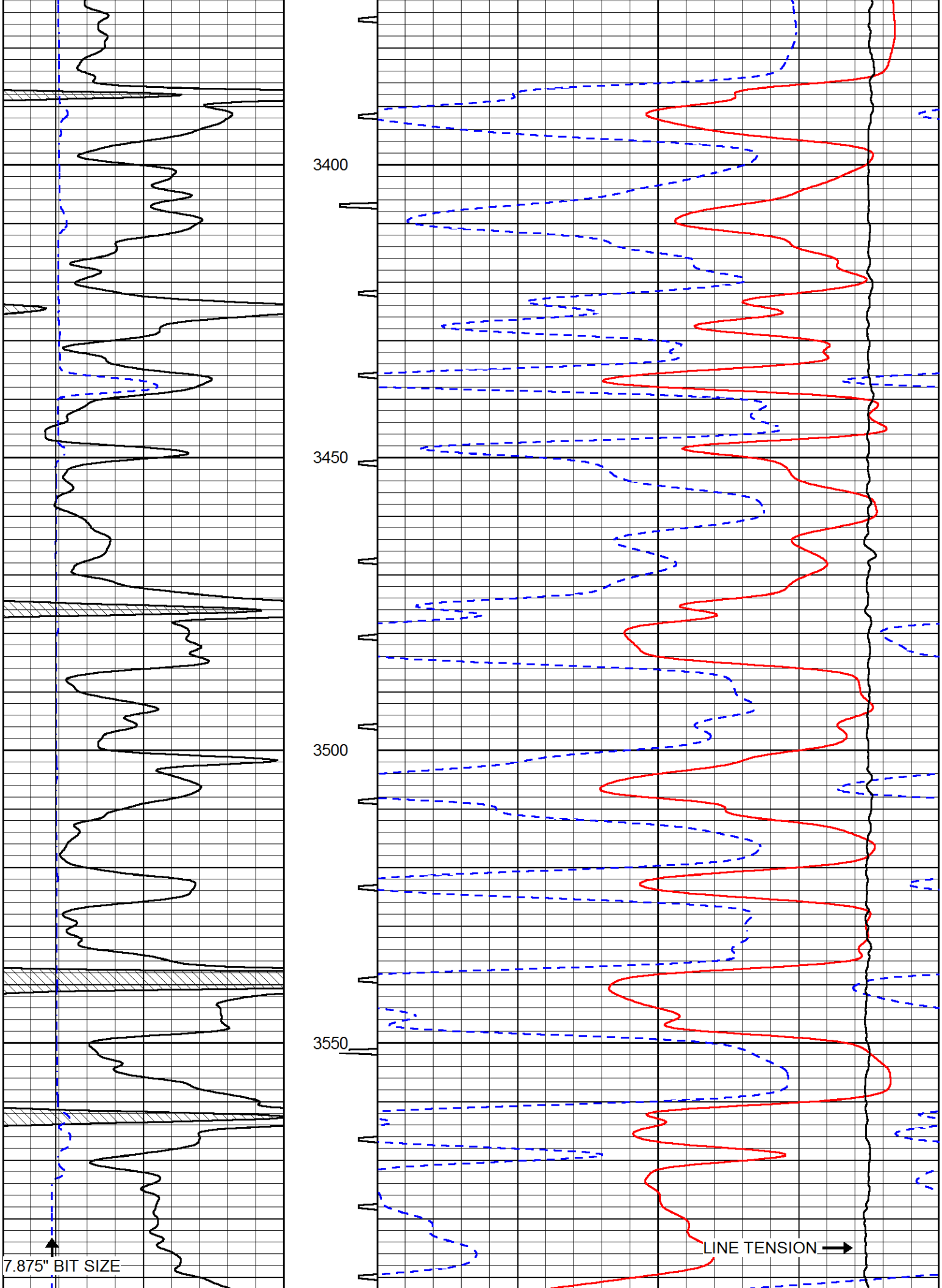

2300
2350
2400
2450

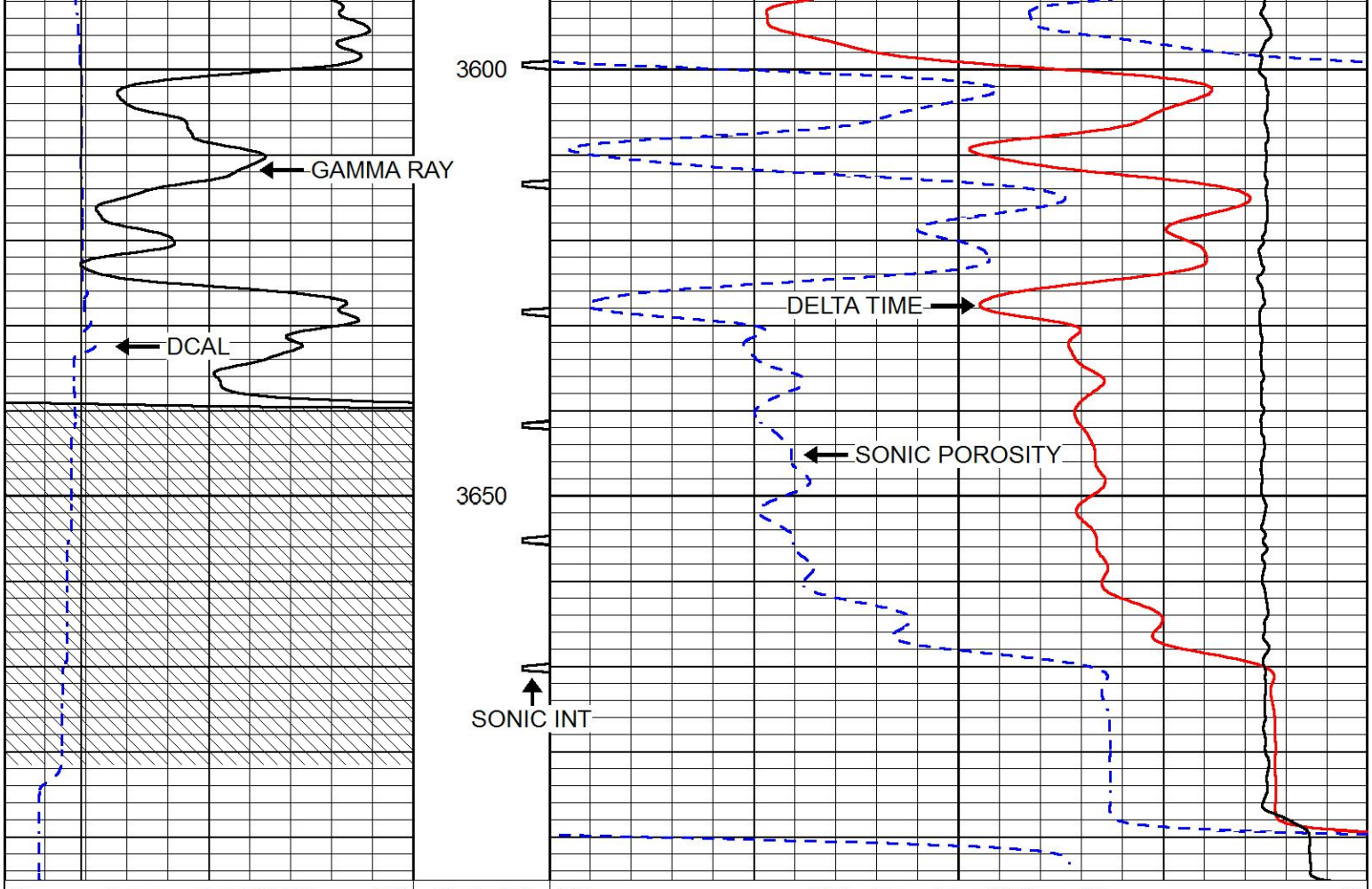

2500
2550
2600
2650
2700


2750
2800
2850
2900


2950
3000
3050
3100
3150


3200
3250
3300
3350


3400
3450
3500
3550
7.875" BIT SIZE
LINE TENSION



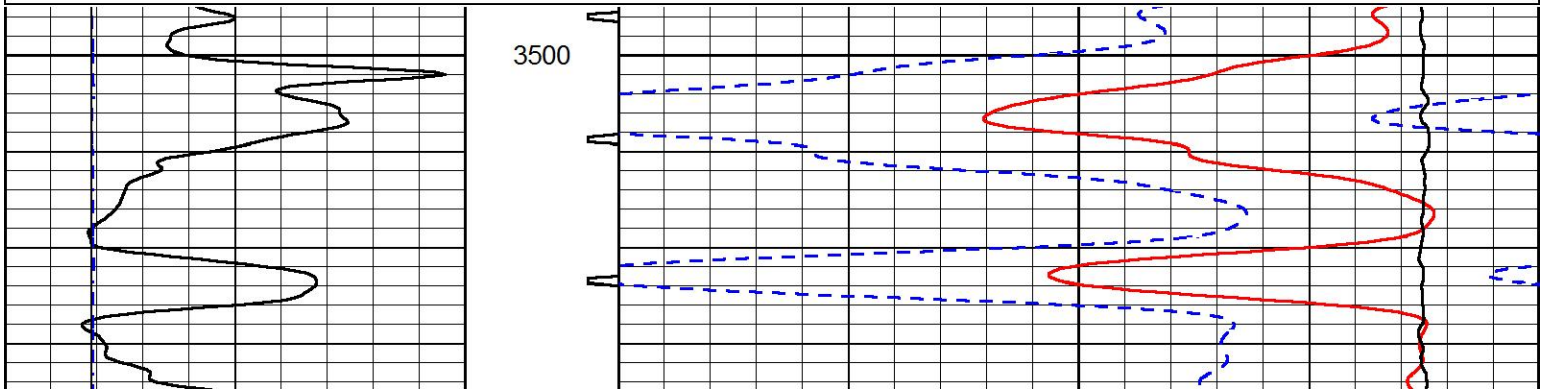
0	Gamma Ray (GAPI)	150	Sonic Int	140	Delta Time (usec/ft) (usec/ft)	40
150	GR (GAPI)	300	5 (msec) 0	30	Sonic Porosity (pu)	-10
6	DCAL (in)	16		15000	LTEN (lb) (lb)	0

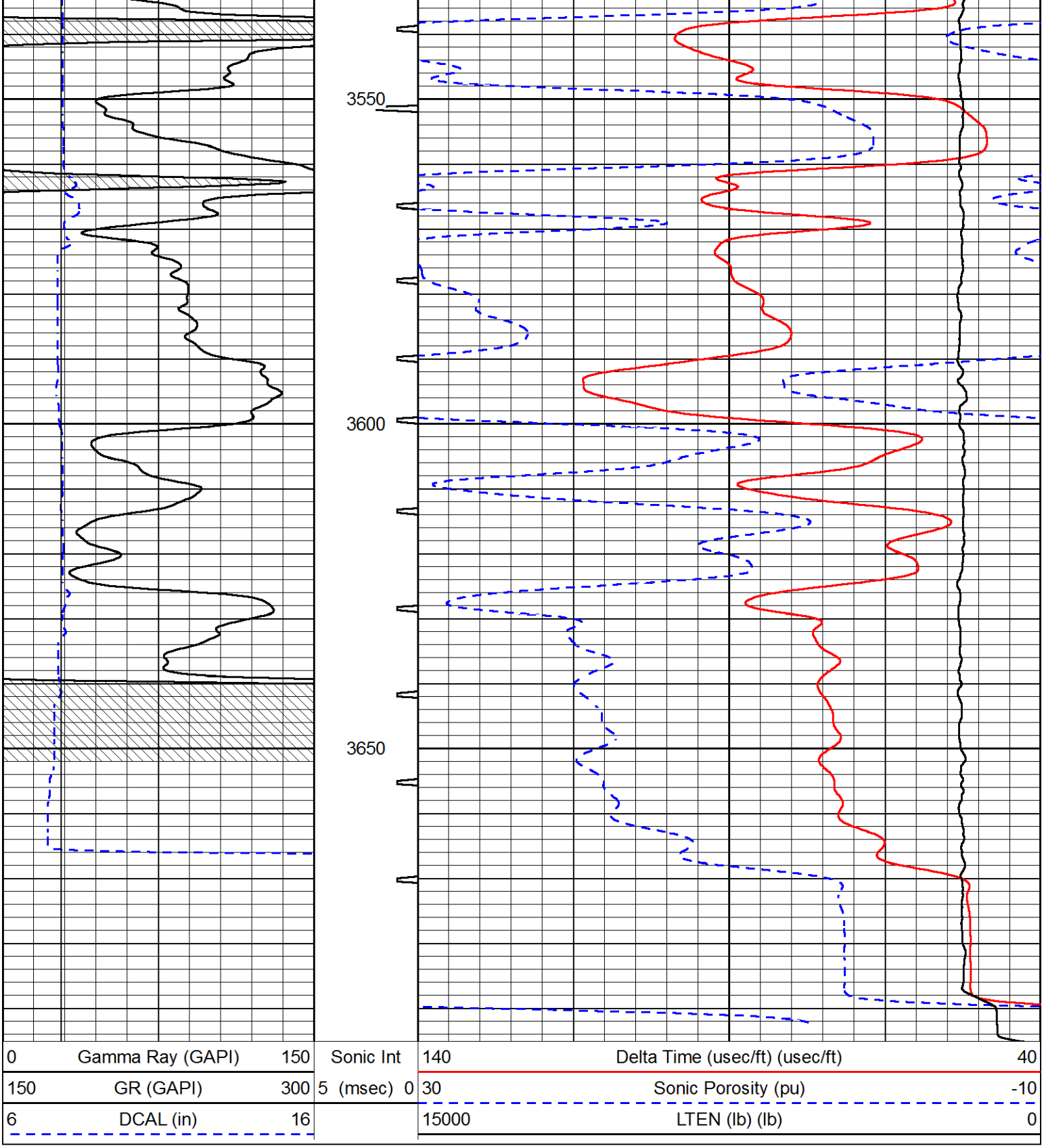
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REPEAT SECTION

Database File	murfin_hamit_2-20.db
Dataset Pathname	STACK/pass3.1
Presentation Format	sonic
Dataset Creation	Tue Nov 14 07:34:22 2017
Charted by	Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150	Sonic Int	140	Delta Time (usec/ft) (usec/ft)	40
150	GR (GAPI)	300	5 (msec) 0	30	Sonic Porosity (pu)	-10
6	DCAL (in)	16		15000	LTEN (lb) (lb)	0





Calibration Report

Database File	murfin_hamit_2-20.db
Dataset Pathname	STACK/pass9.1
Dataset Creation	Tue Nov 14 07:27:01 2017

Dual Induction Calibration Report

Serial-Model:	PSI 91-M&W
Calibration Performed:	Thu Nov 09 00:57:24 2017

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	166.796	835.089	0.000	255.800	mmho/m	0.430	-31.500
Medium	142.009	1348.560	0.000	255.800	mmho/m	0.360	-31.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
Performed: Wed Nov 08 02:36:52 2017

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	25000.0000	-1.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	31000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	100.0000	-97.3500

Compensated Density Calibration Report

Serial-Model: 90-1031-M&W
Source / Verifier: 16955B / 2ci
Master Calibration Performed: Wed Nov 08 23:24:34 2017

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4903.44	6153.79	cps
Aluminum	2.640	g/cc	934.50	4021.31	cps

Spine Angle = 75.61 Density/Spine Ratio = 0.517

	Size		Reading
Small Ring	8.00	in	1.84
Large Ring	22.00	in	1.46

Compensated Neutron Calibration Report

Serial Number: 207-MW
Tool Model: M&W
Calibration Performed: WED SEP 6 10:30:30 2017

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
Tool Model: M&W
Calibration Performed: Wed Sep 06 19:51:14 2017

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



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Company	MURFIN DRILLING COMPANY, INC.
Well	HAMIT UNIT #2-20
Field	WILDCAT
County	ROOKS
State	KANSAS