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BOREHOLE COMPENSATED SONIC LOG

Company AMERICAN WARRIOR, INC.
Well SUNRAY #1-12
Field UNKNOWN
County GREELEY State KANSAS

Location: API #: 15-071-20881-00-00
2324' FNL & 1117' FWL
SEC 12 TWP 16S RGE 42W

Other Services
CNL/CDL
DIL/MEL

Elevation
K.B. 3791'
D.F. N/A
G.L. 3780'

Company	AMERICAN WARRIOR, INC.
Well	SUNRAY #1-12
Field	UNKNOWN
County	GREELEY
State	KANSAS
Location:	API #: 15-071-20881-00-00
	2324' FNL & 1117' FWL
	SEC 12 TWP 16S RGE 42W
Other Services	CNL/CDL, DIL/MEL
Elevation	K.B. 3791', D.F. N/A, G.L. 3780'
Permanent Datum	GROUND LEVEL Elevation 3780'
Log Measured From	KELLY BUSHING
Drilling Measured From	KELLY BUSHING

Date	4/16/2018
Run Number	TWO
Type Log	BHCS
Depth Driller	5240'
Depth Logger	5243'
Bottom Logged Interval	5221'
Top Logged Interval	400'
Type Fluid In Hole	CHEMICAL
Salinity, PPM CL	4000
Density	9.5
Level	FULL
Max. Rec. Temp. F	128
Operating Rig Time	5 HOURS
Equipment -- Location	91 HAYS
Recorded By	D. SCHMIDT
Witnessed By	KEVIN TIMSON

Borehole Record

Run No.	Bit	From	To
ONE	12.25"	0'	441'
TWO	7.875"	441'	TD

Casing Record

Size	Wgt.	From	To
8.625"	23#	0'	441'

<<< 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.

TRIBUNE,
NORTH TO D RD, 8 WEST, 1 NORTH, 1 WEST, 1/4 NORTH,
EAST INTO

Log Measured From: KELLY BUSHING 11 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: KEVIN TIMSON
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

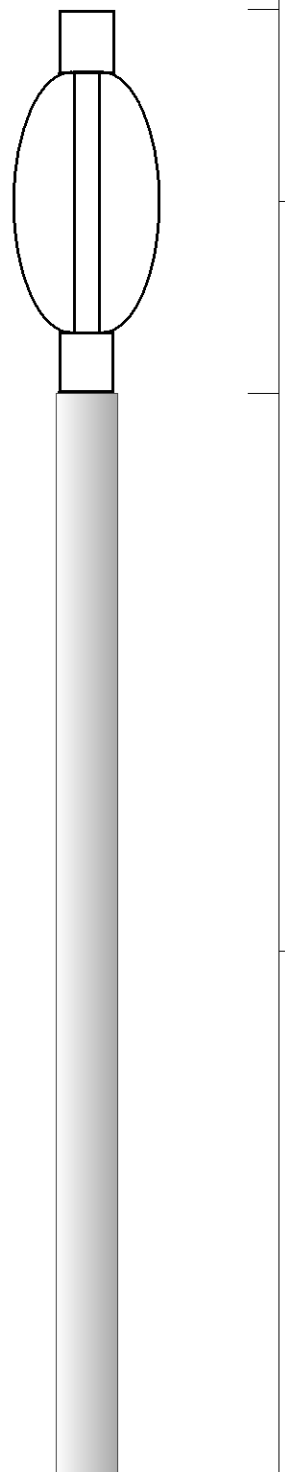
Log Variables

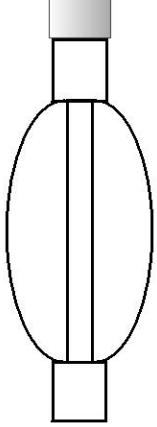
DatabaseC:\ProgramData\Warrior\Data\american warrior_sunray 1-12.db
Dataset field/well/STKML/pass3.8/_vars_

Top - Bottom

M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	-105	0

SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	50	0	5.5	0	5242	128	7.875

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb
			CENT-PENGO (3-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 (4-PENGO)	5.50	3.00	70.00

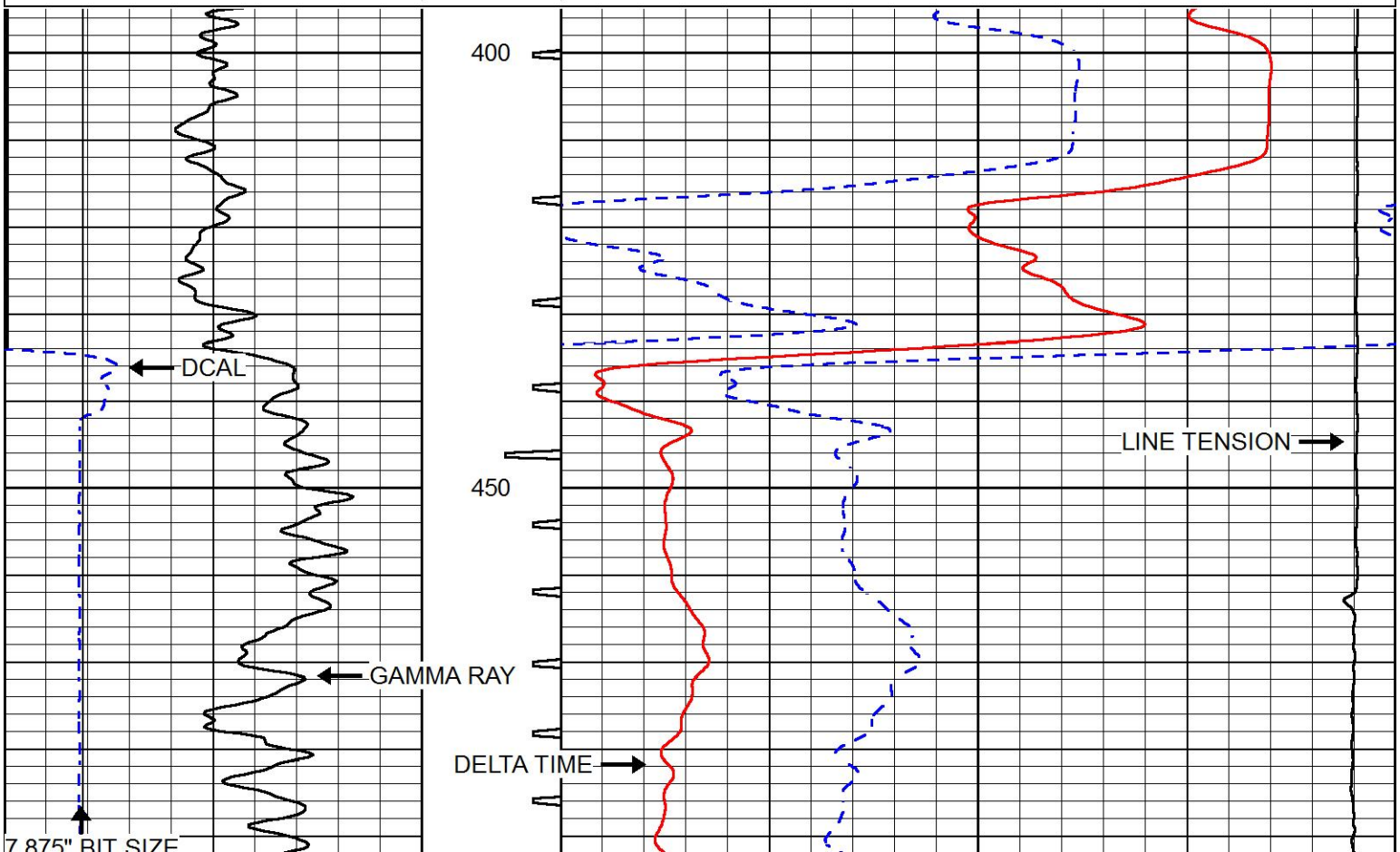
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Total length: 27.00 ft
Total weight: 440.00 lb
O.D.: 3.50 in

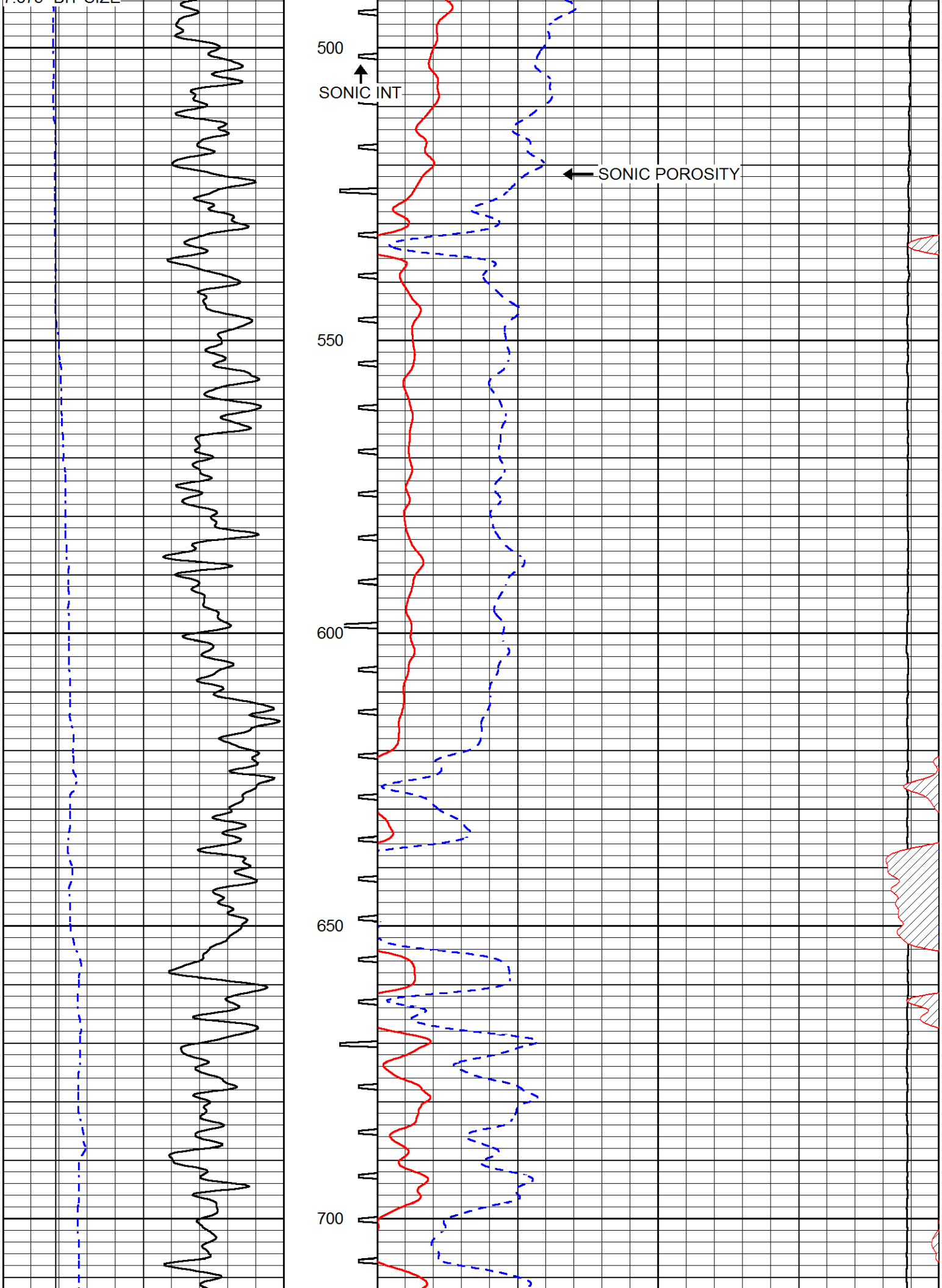
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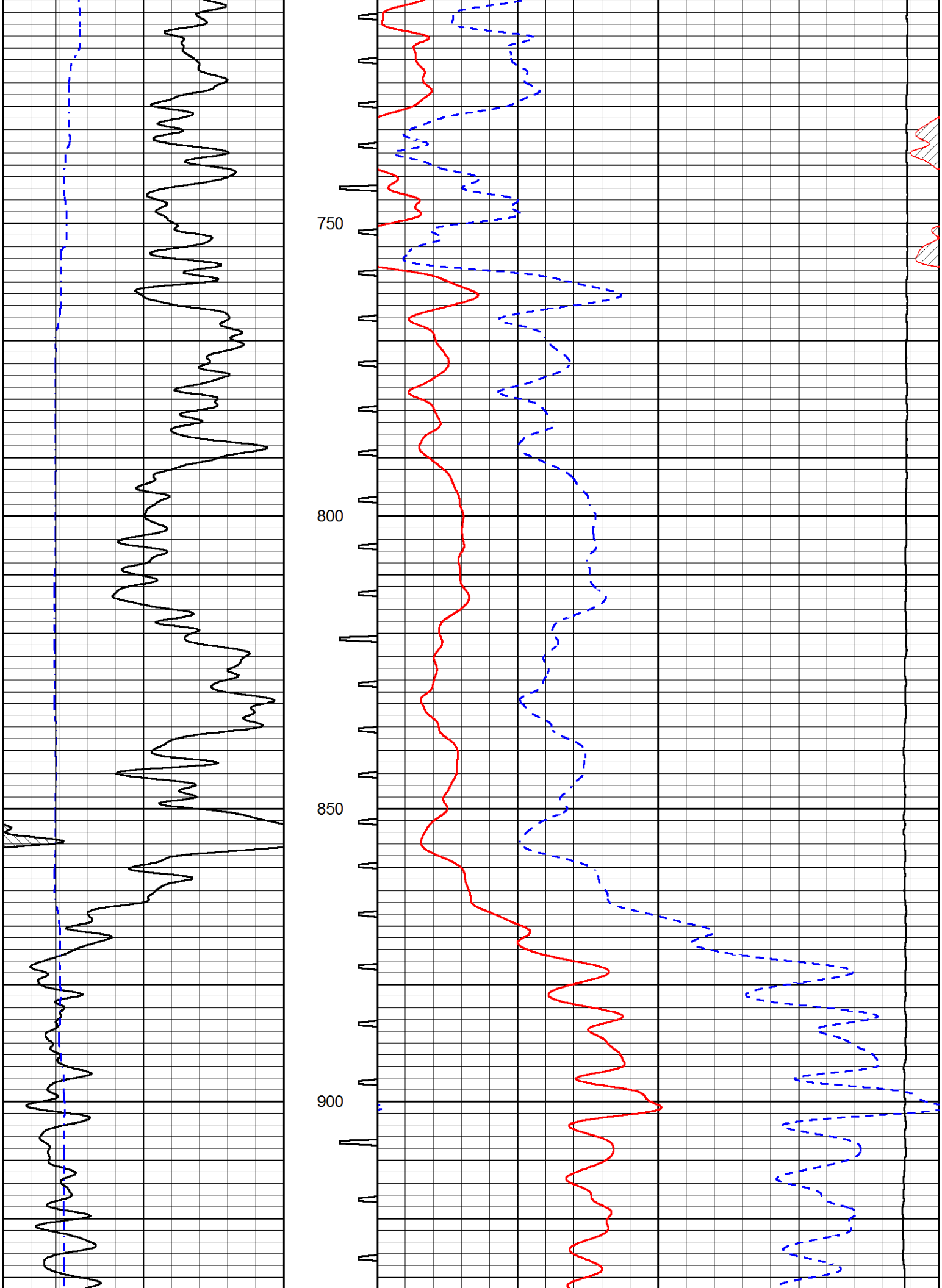
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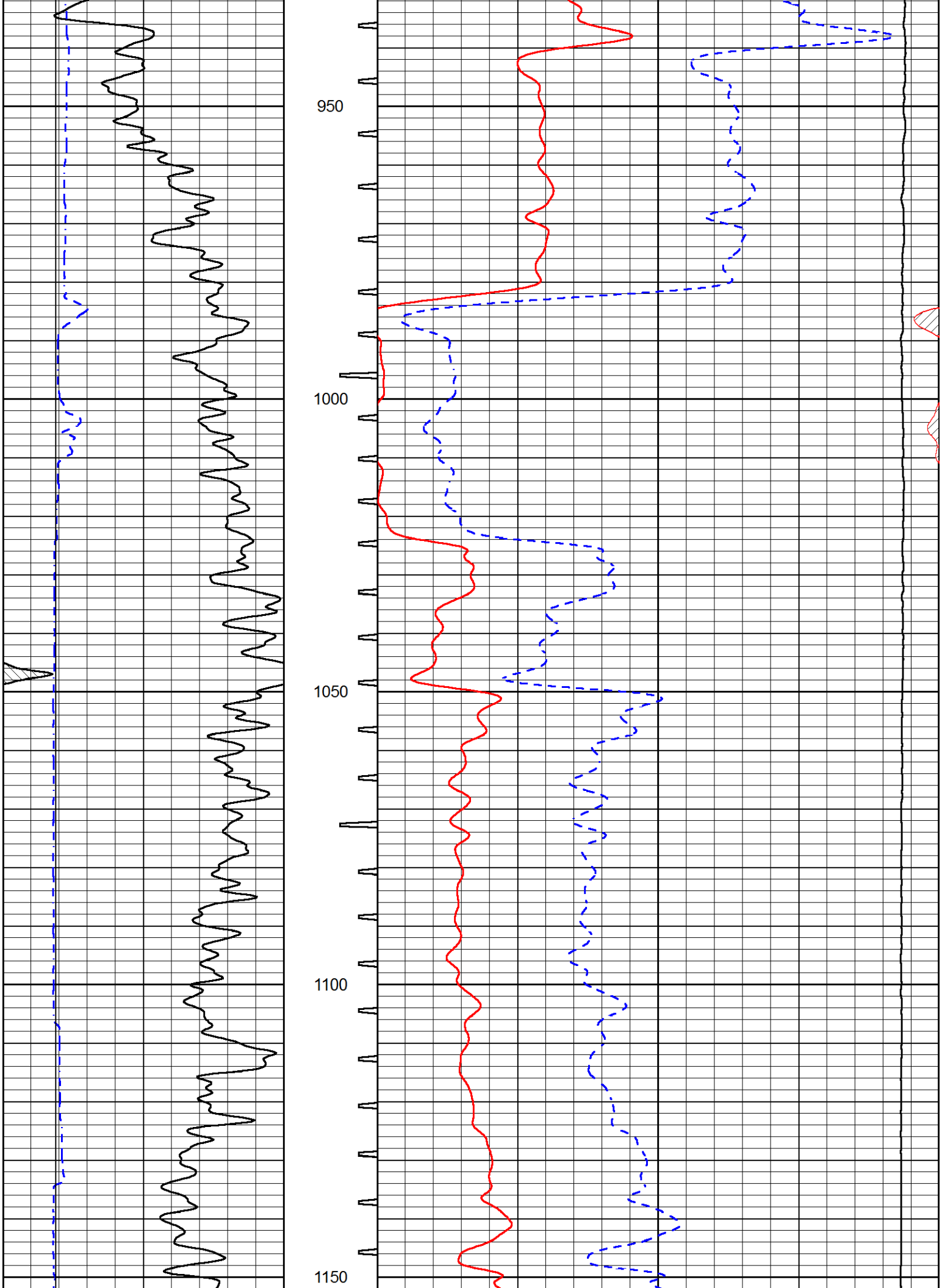
Database File: american warrior_sunray 1-12.db
Dataset Pathname: STKML/pass4.1
Presentation Format: sonic
Dataset Creation: Mon Apr 16 22:41:25 2018
Charted by: Depth in Feet scaled 1:240

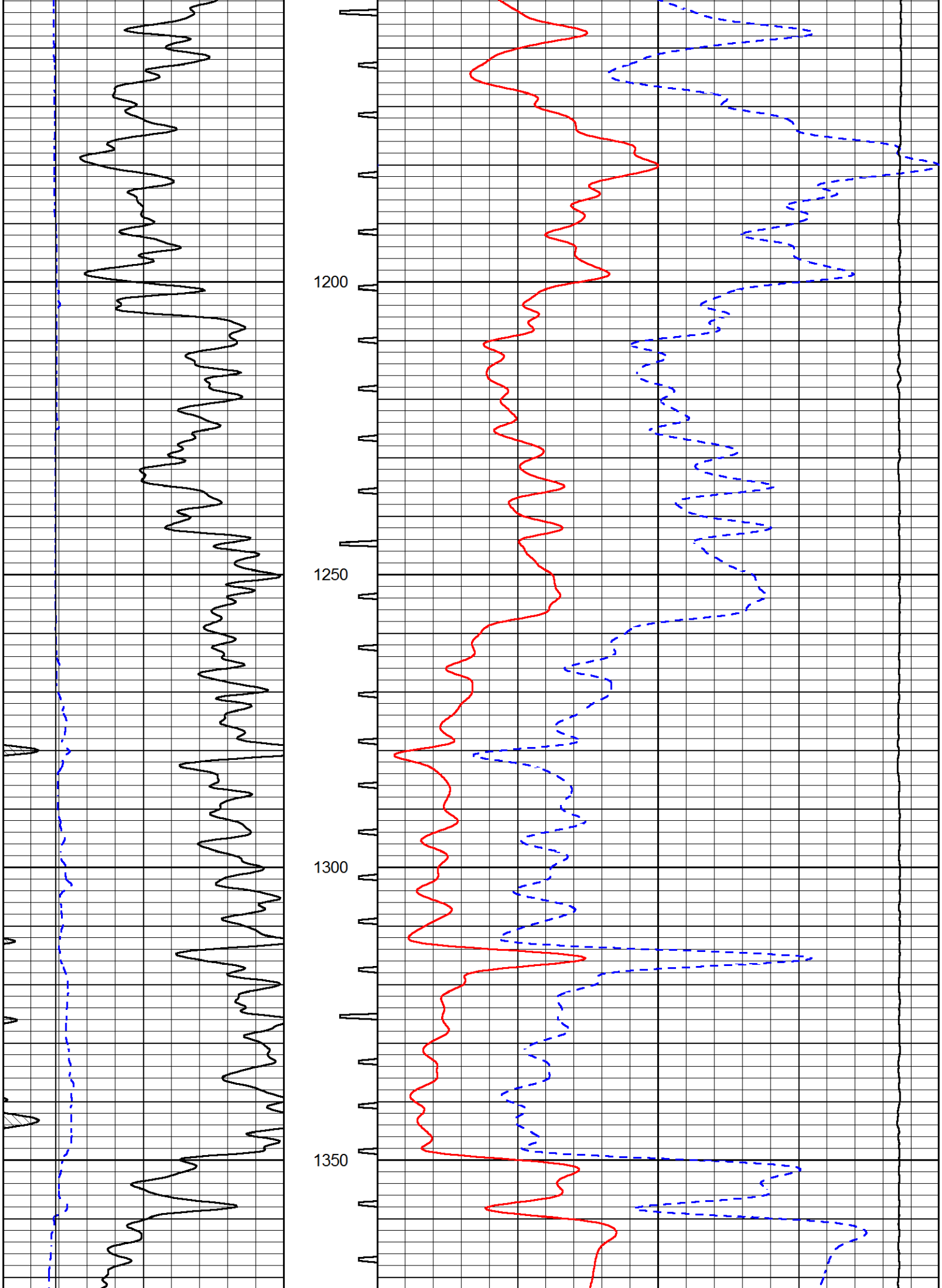
0	Gamma Ray (GAPI)	150	Sonic Int	140	Delta Time (usec/ft) (usec/ft)	40
150	GR (GAPI)	300	5 (msec) 0	30	Sonic Porosity (pu)	-10
6	DCAL (in)	16		15000	LTEN (lb) (lb)	0

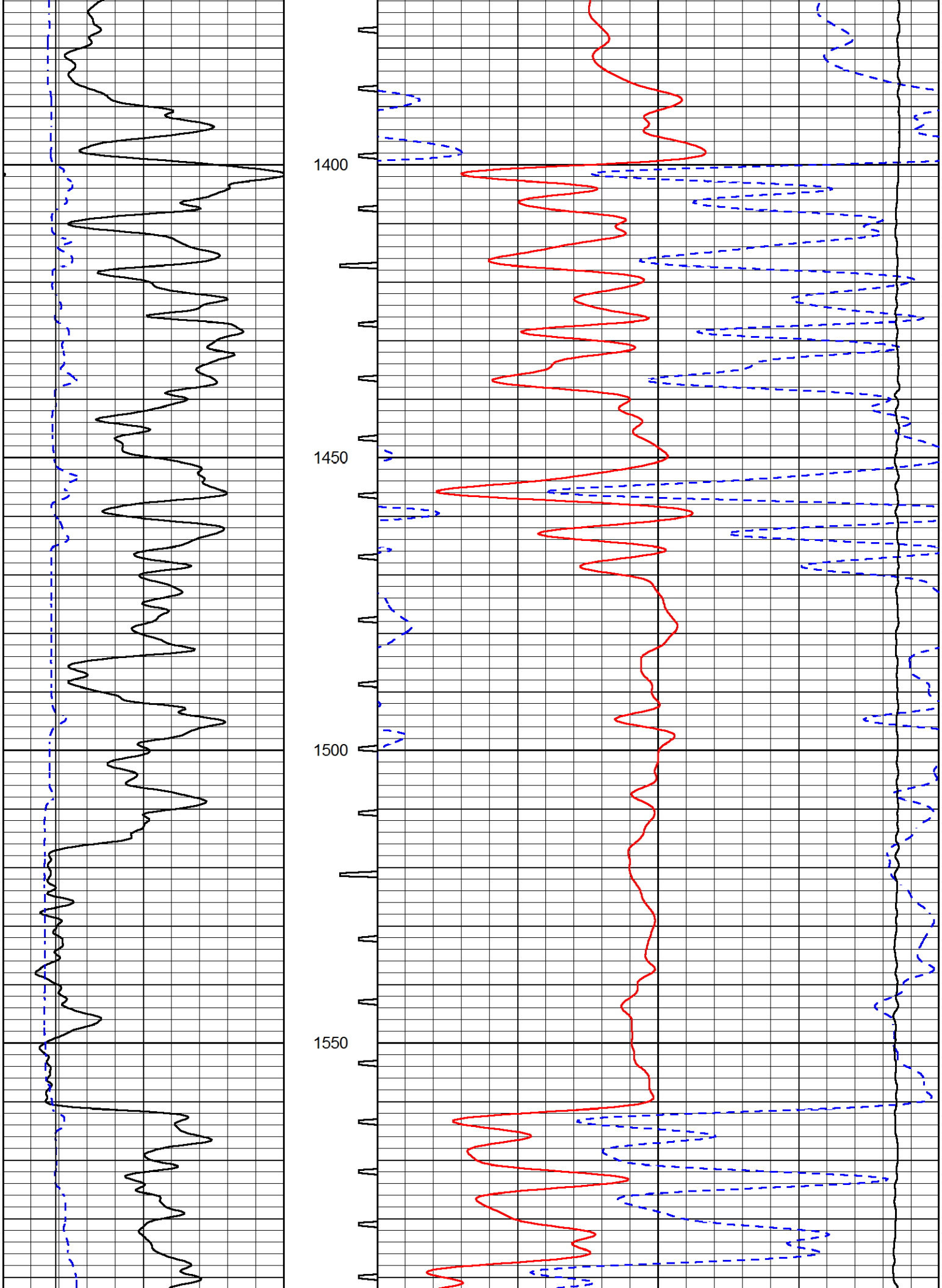


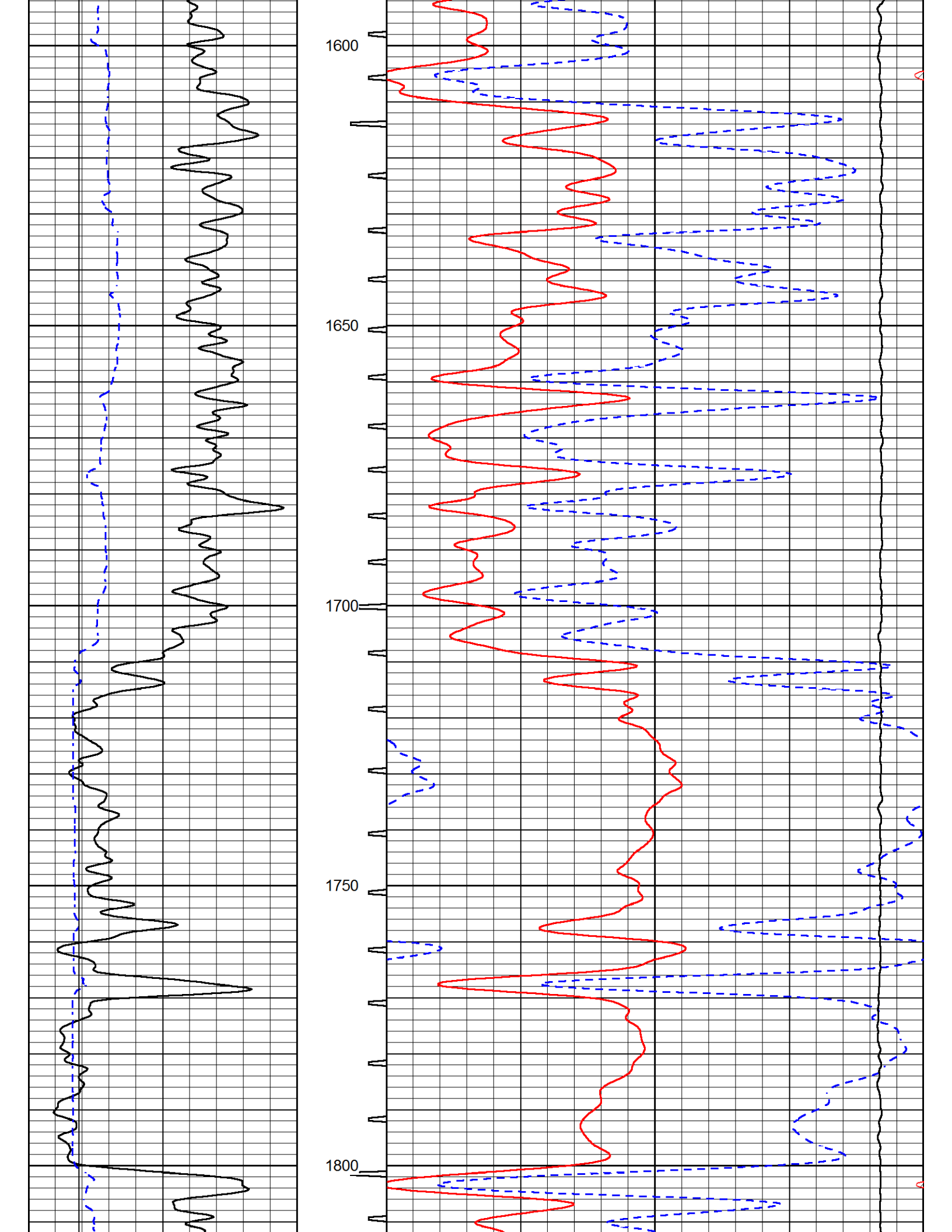

500
SONIC INT
SONIC POROSITY
550
600
650
700

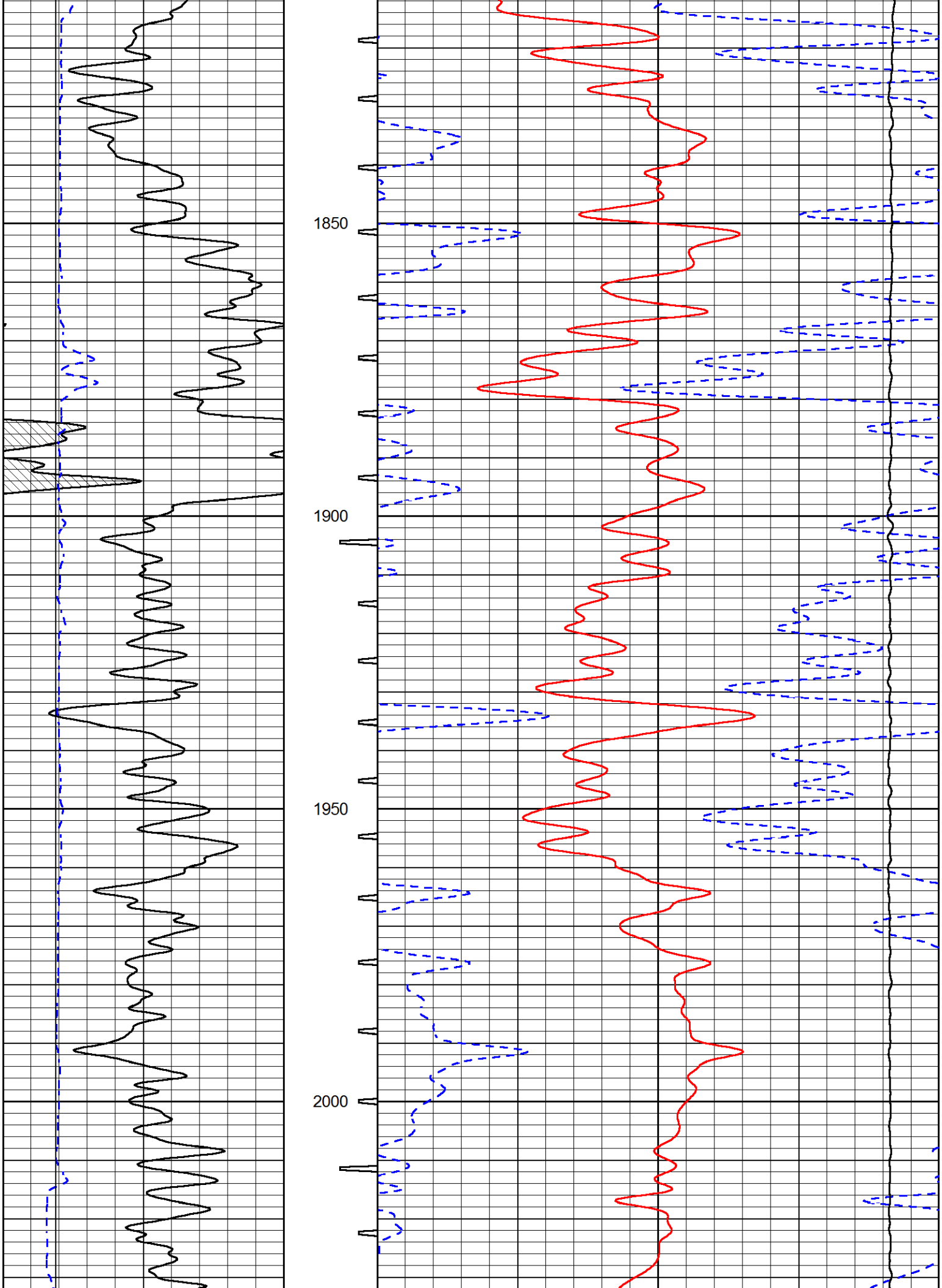

750
800
850
900

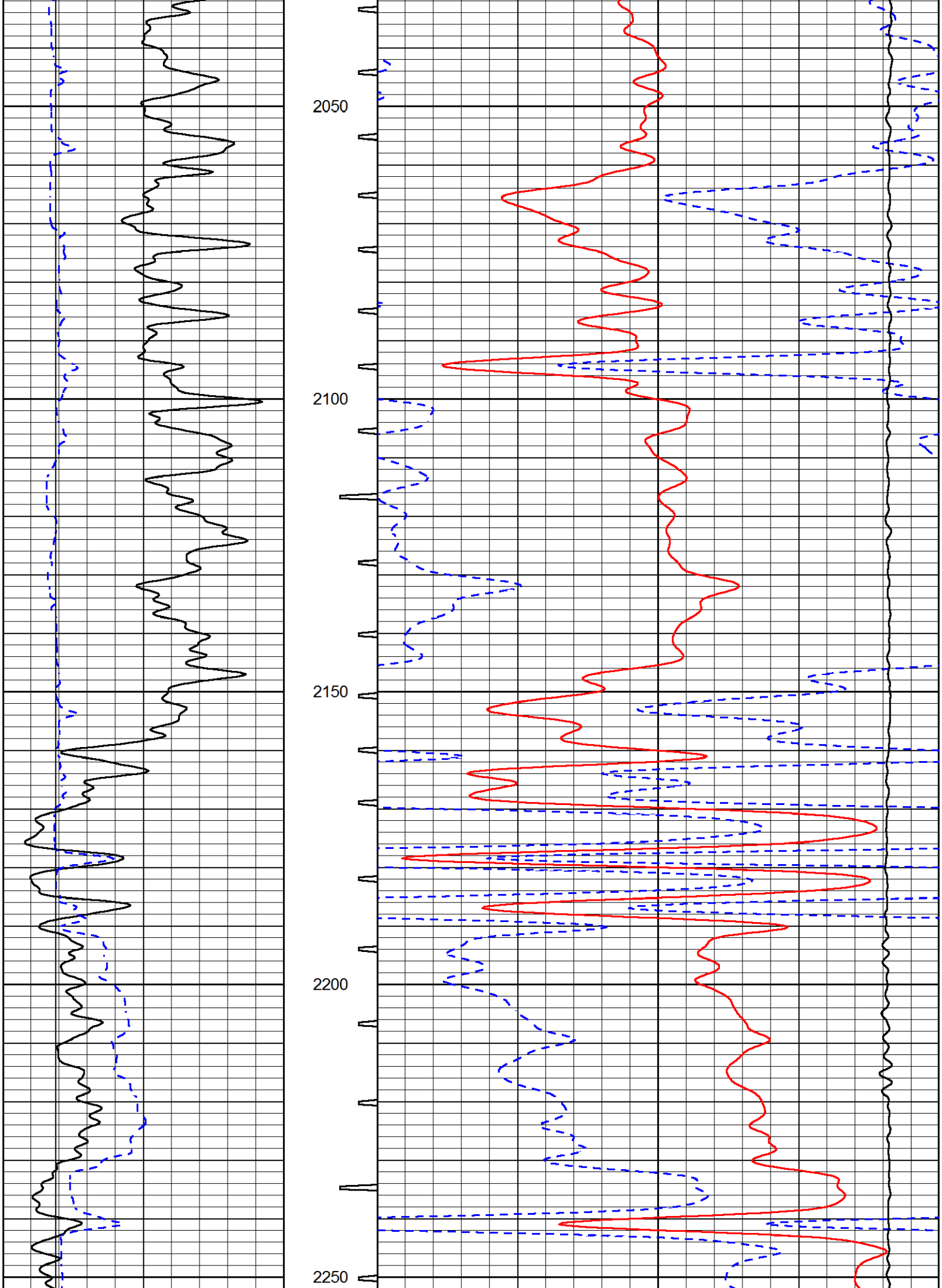

950
1000
1050
1100
1150

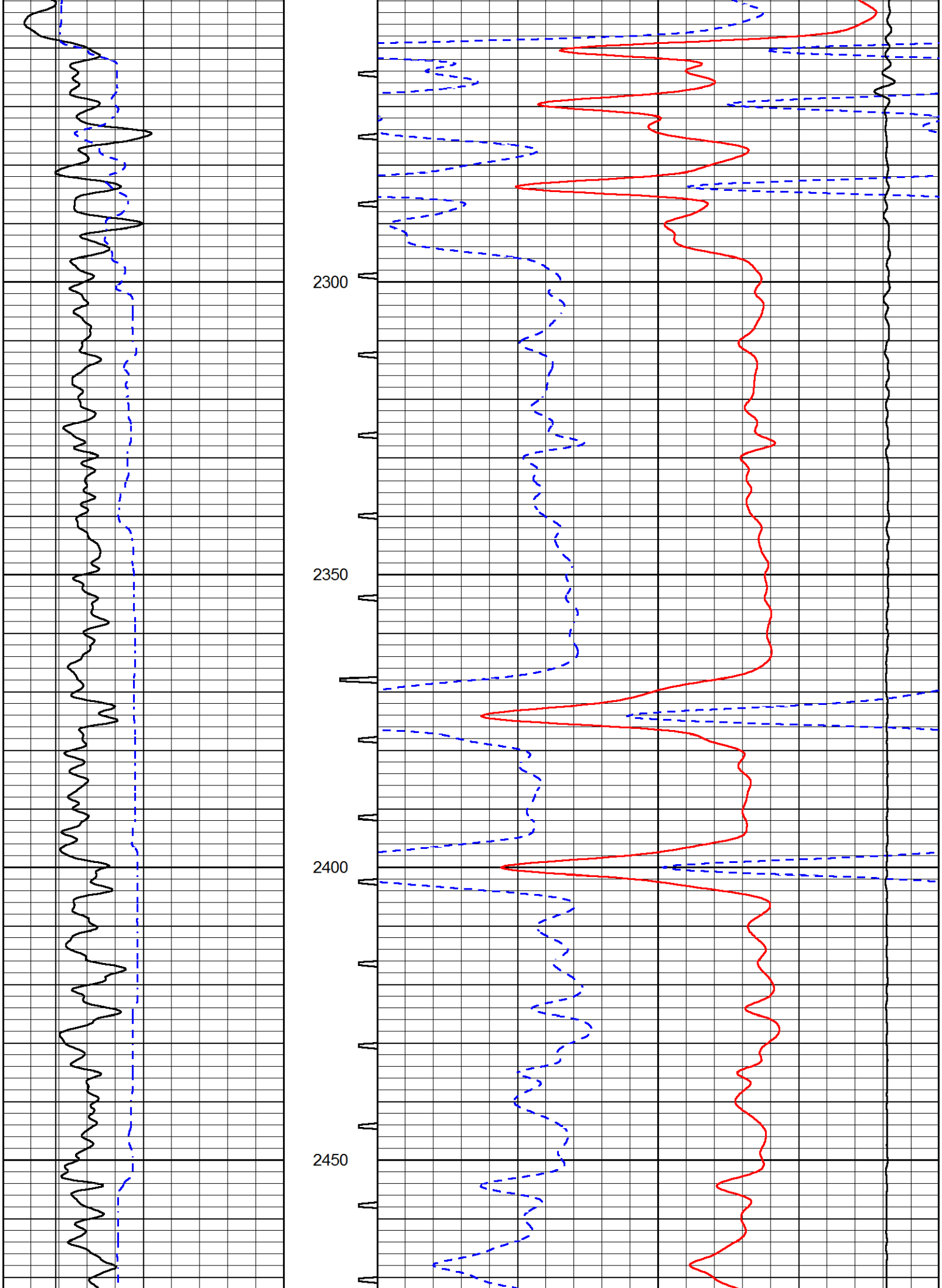

1200
1250
1300
1350

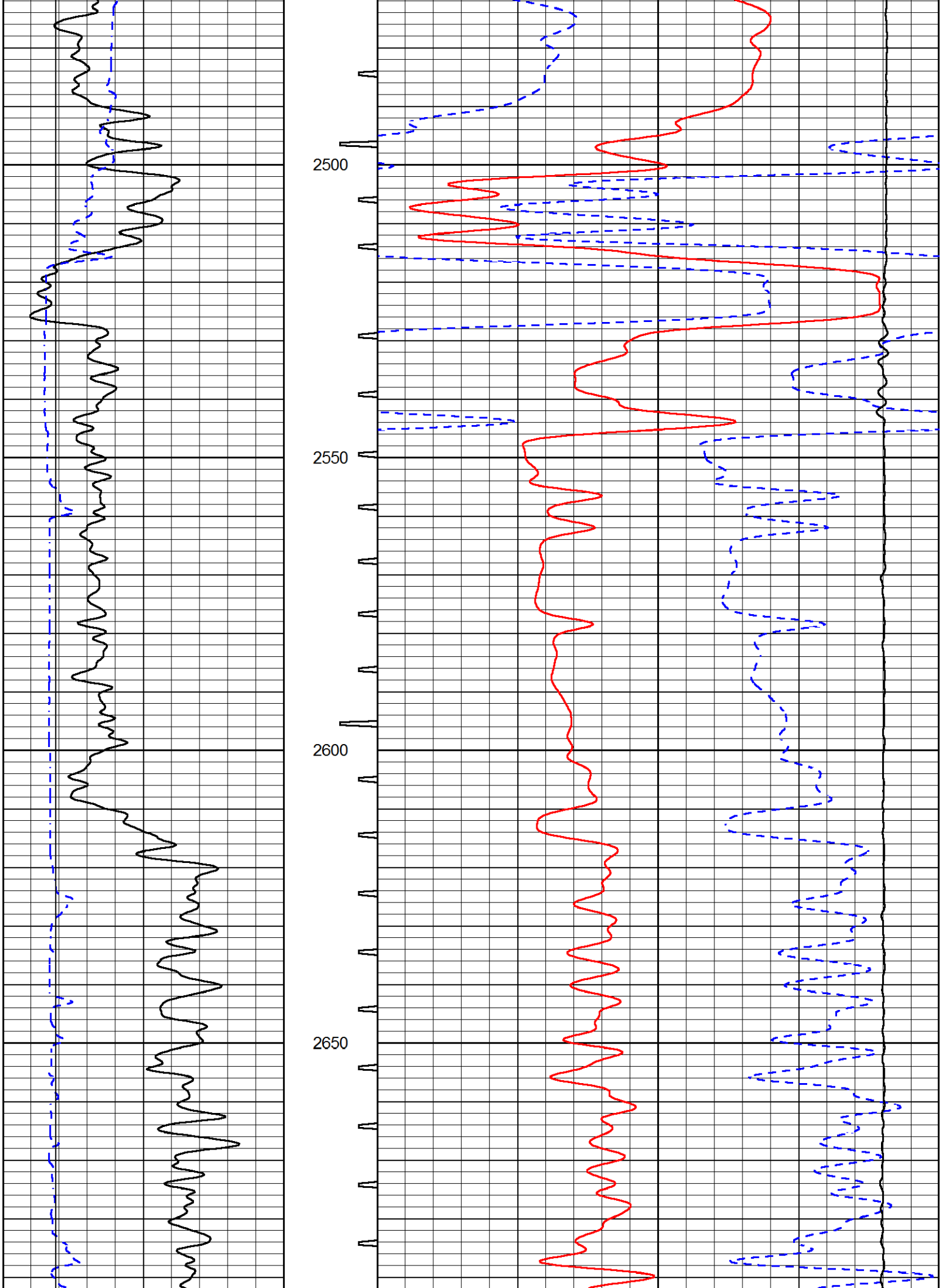

1400
1450
1500
1550

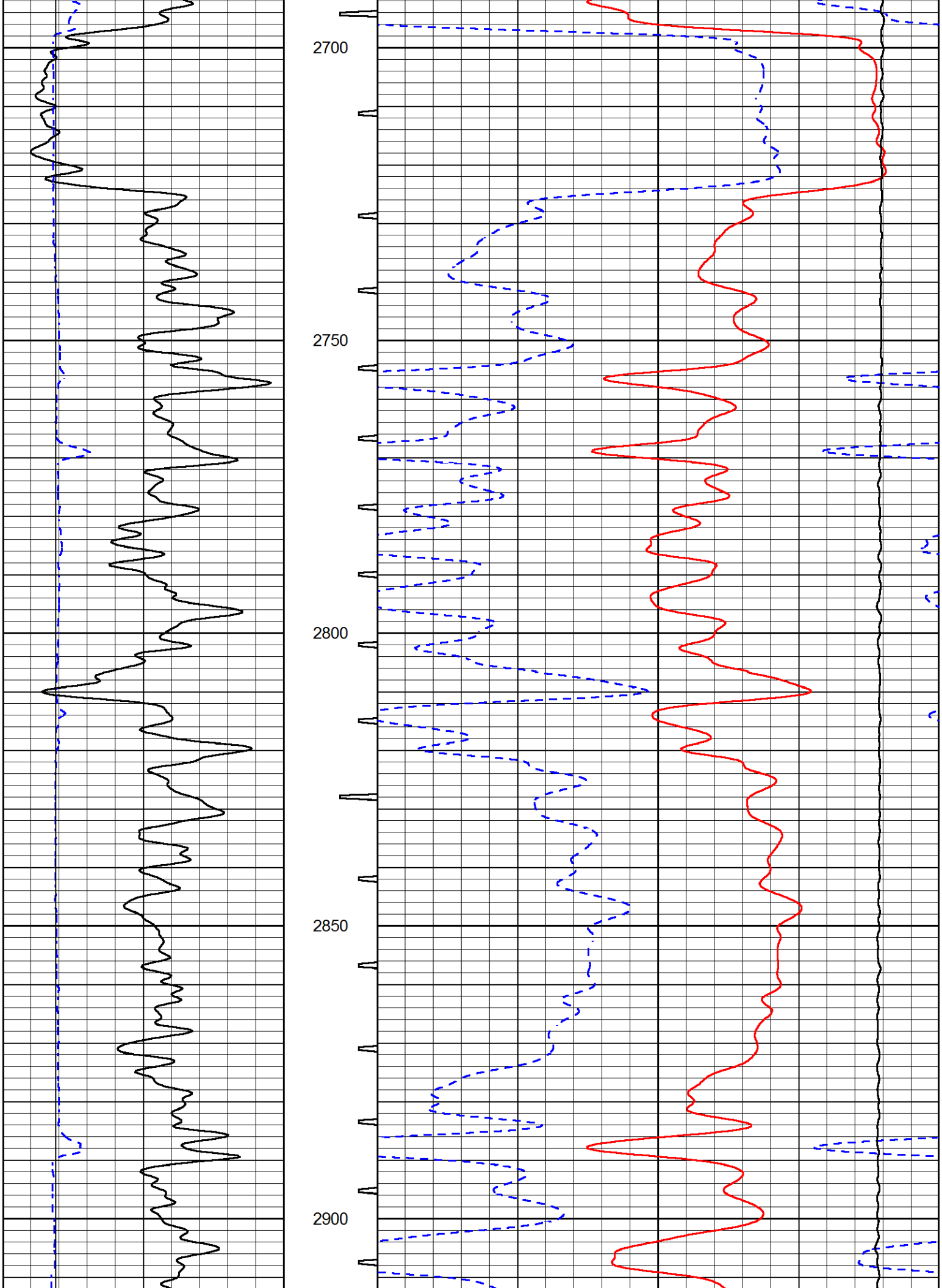

1600
1650
1700
1750
1800

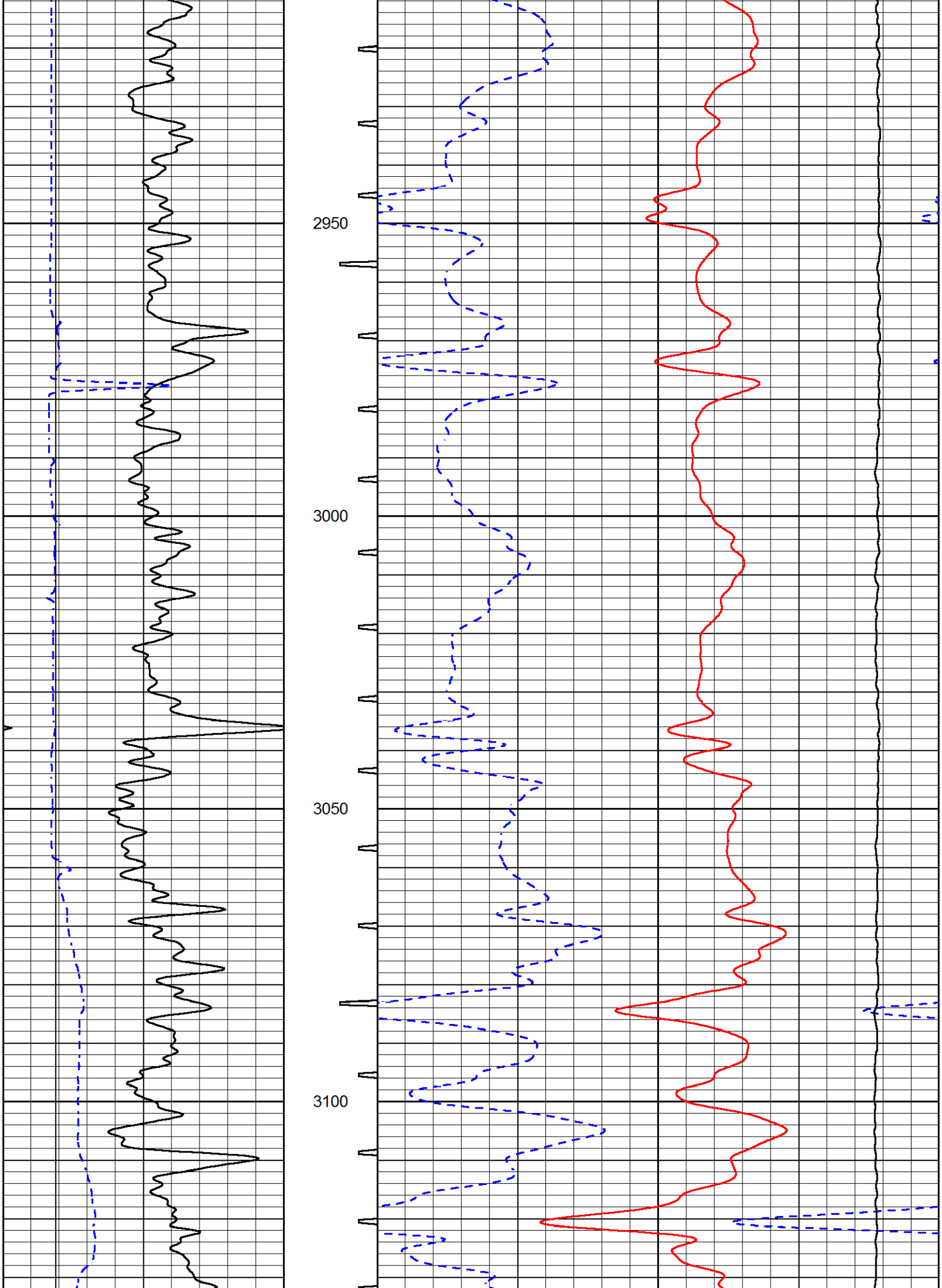

1850
1900
1950
2000

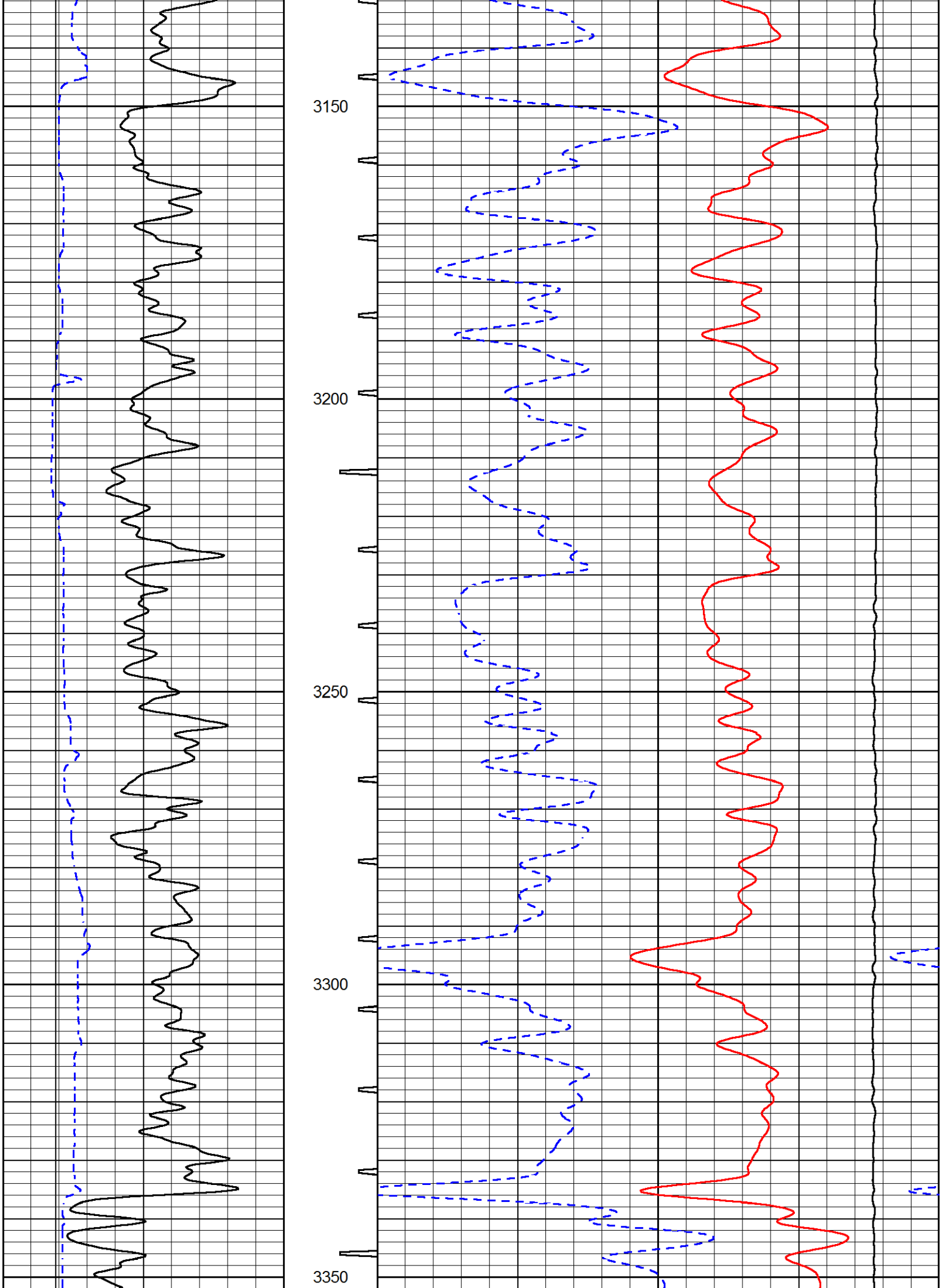

2050
2100
2150
2200
2250

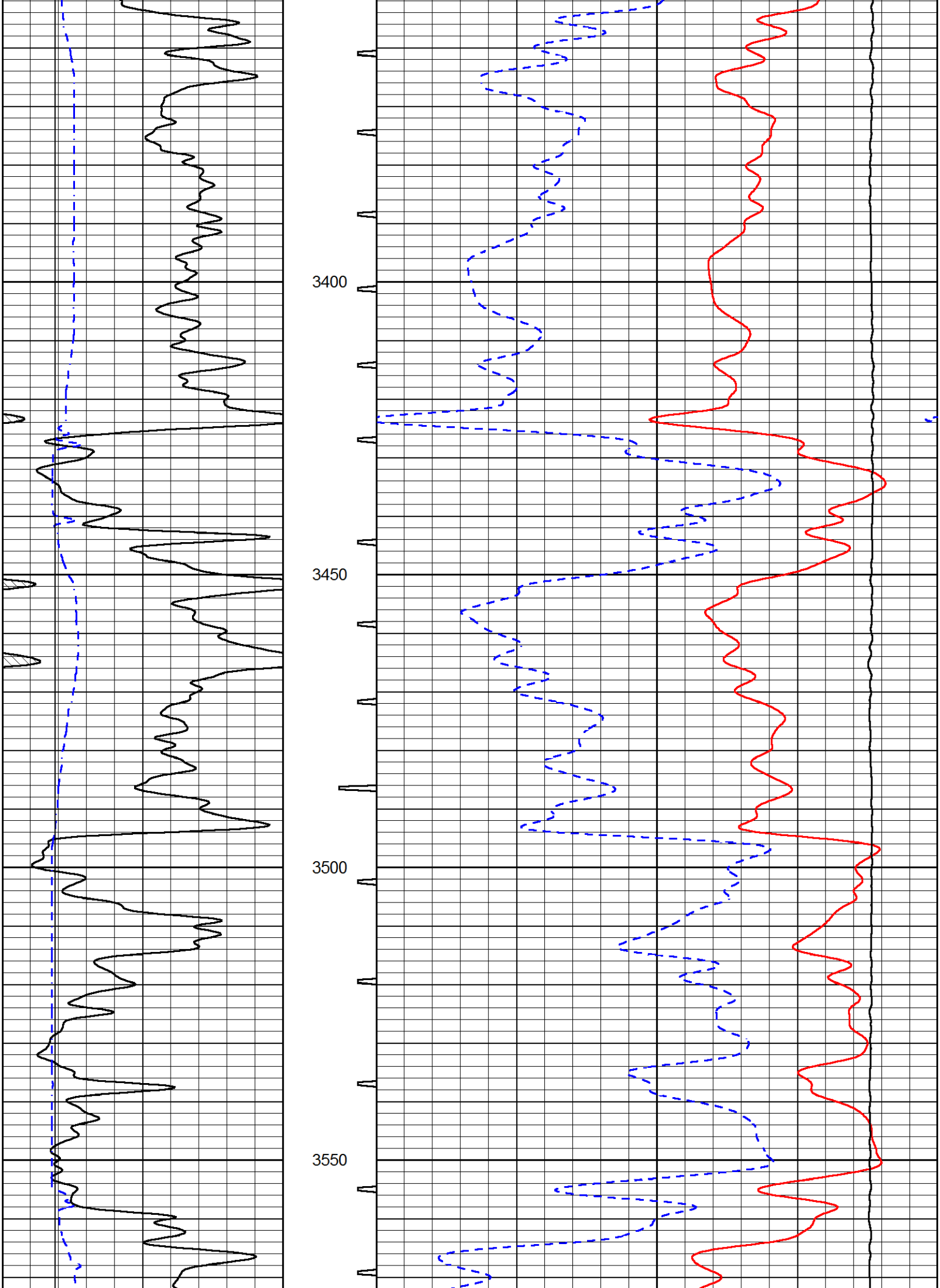

2300
2350
2400
2450

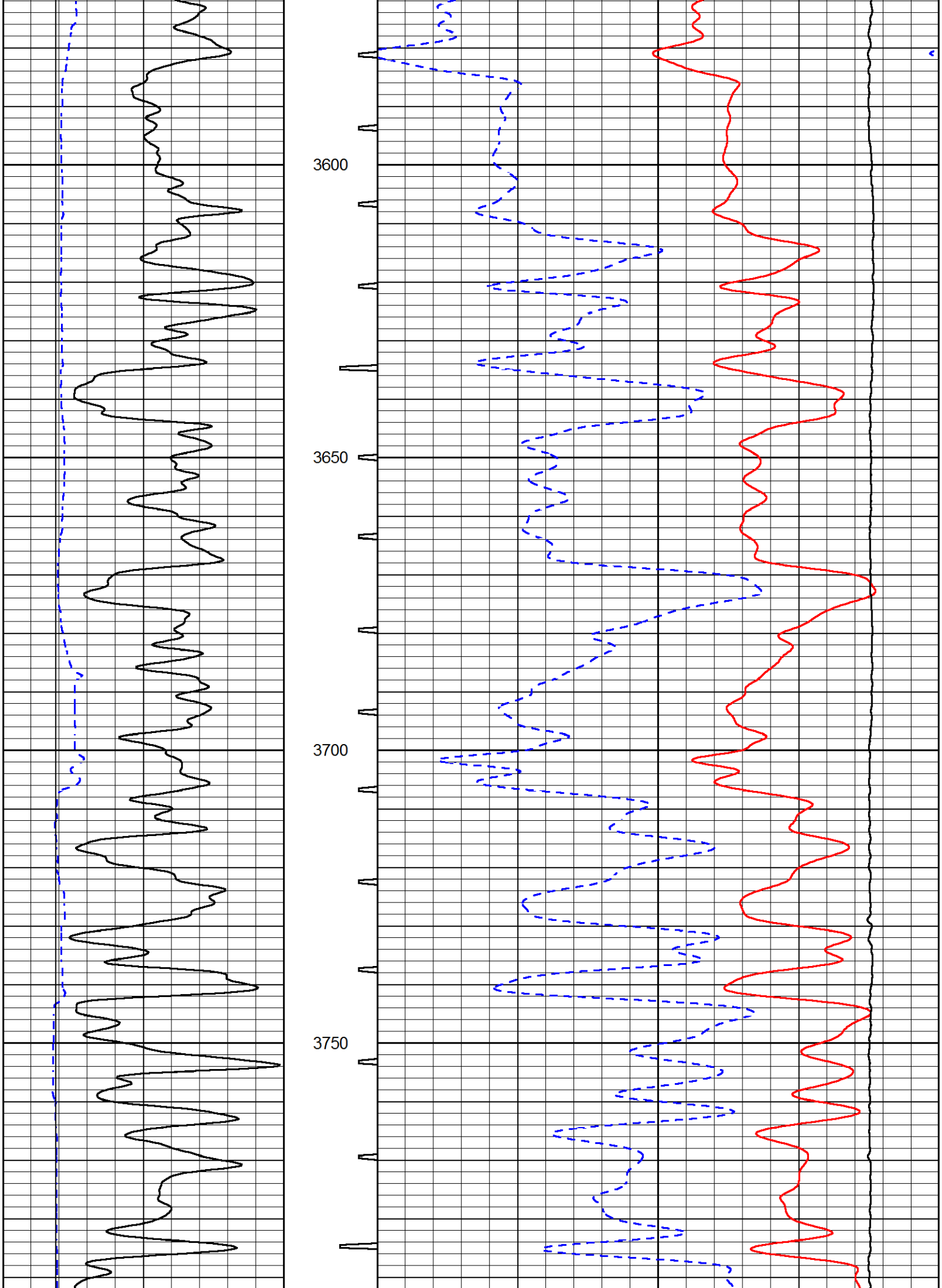

2500
2550
2600
2650

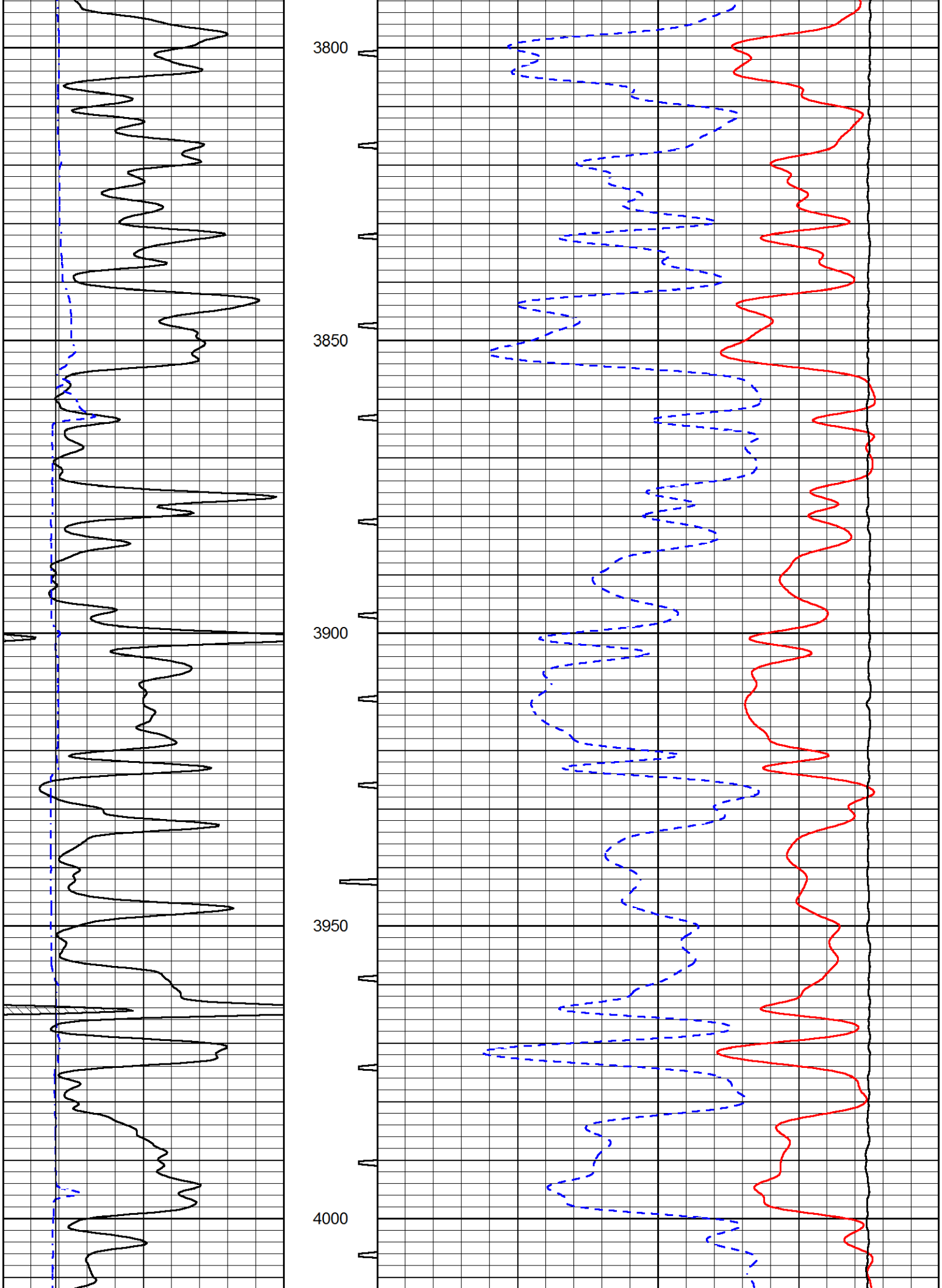

2700
2750
2800
2850
2900

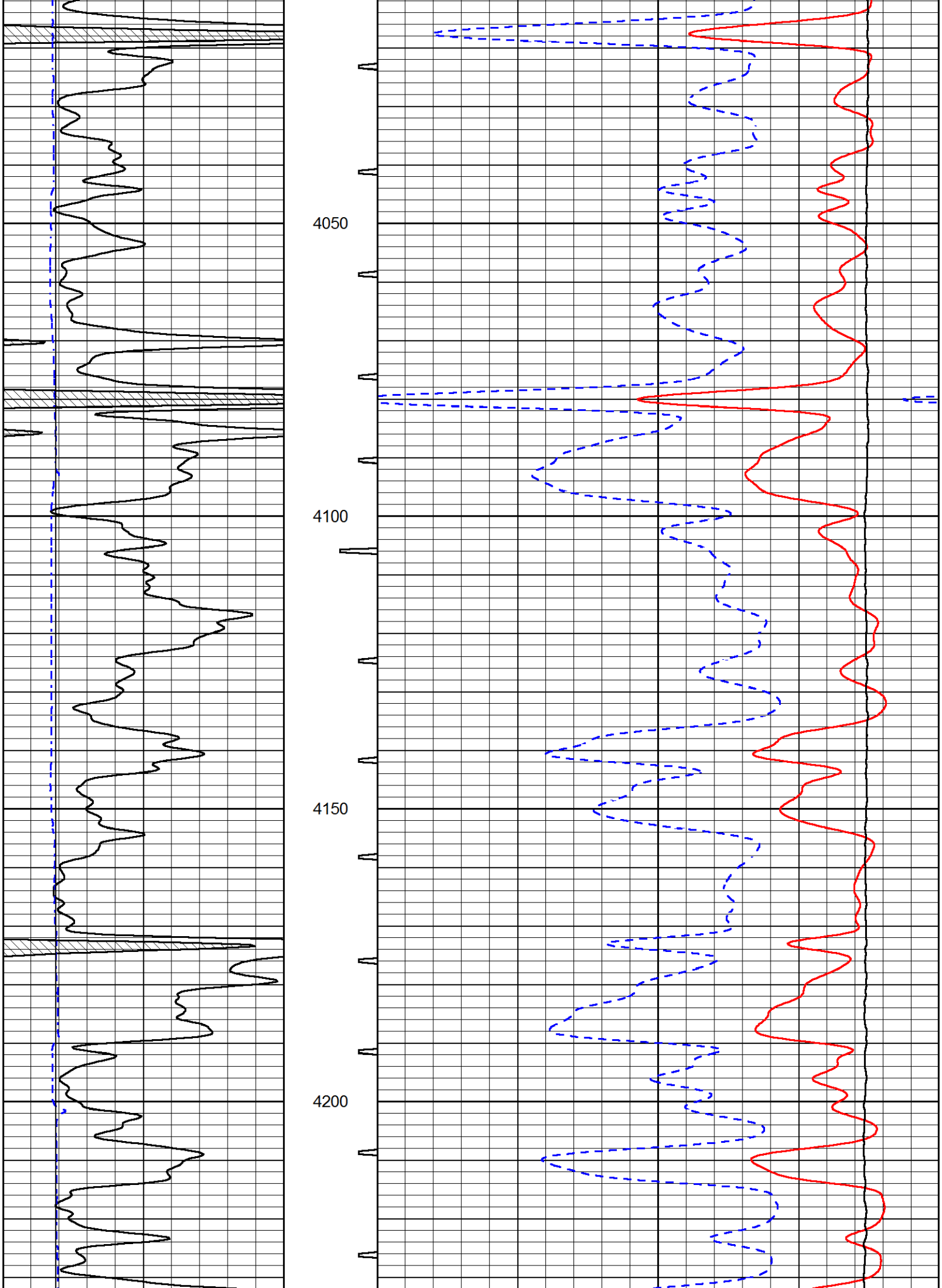

2950
3000
3050
3100

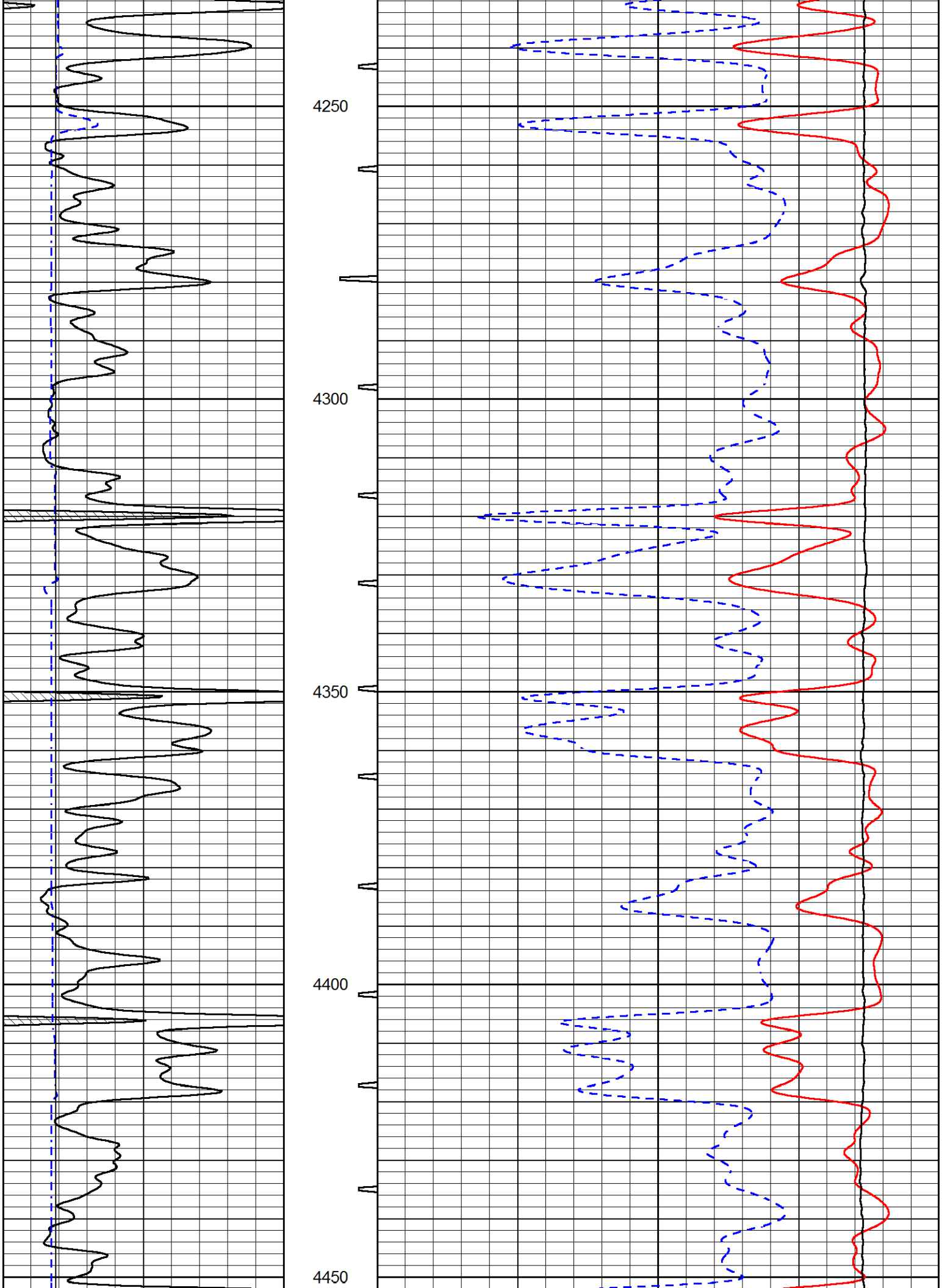

3150
3200
3250
3300
3350

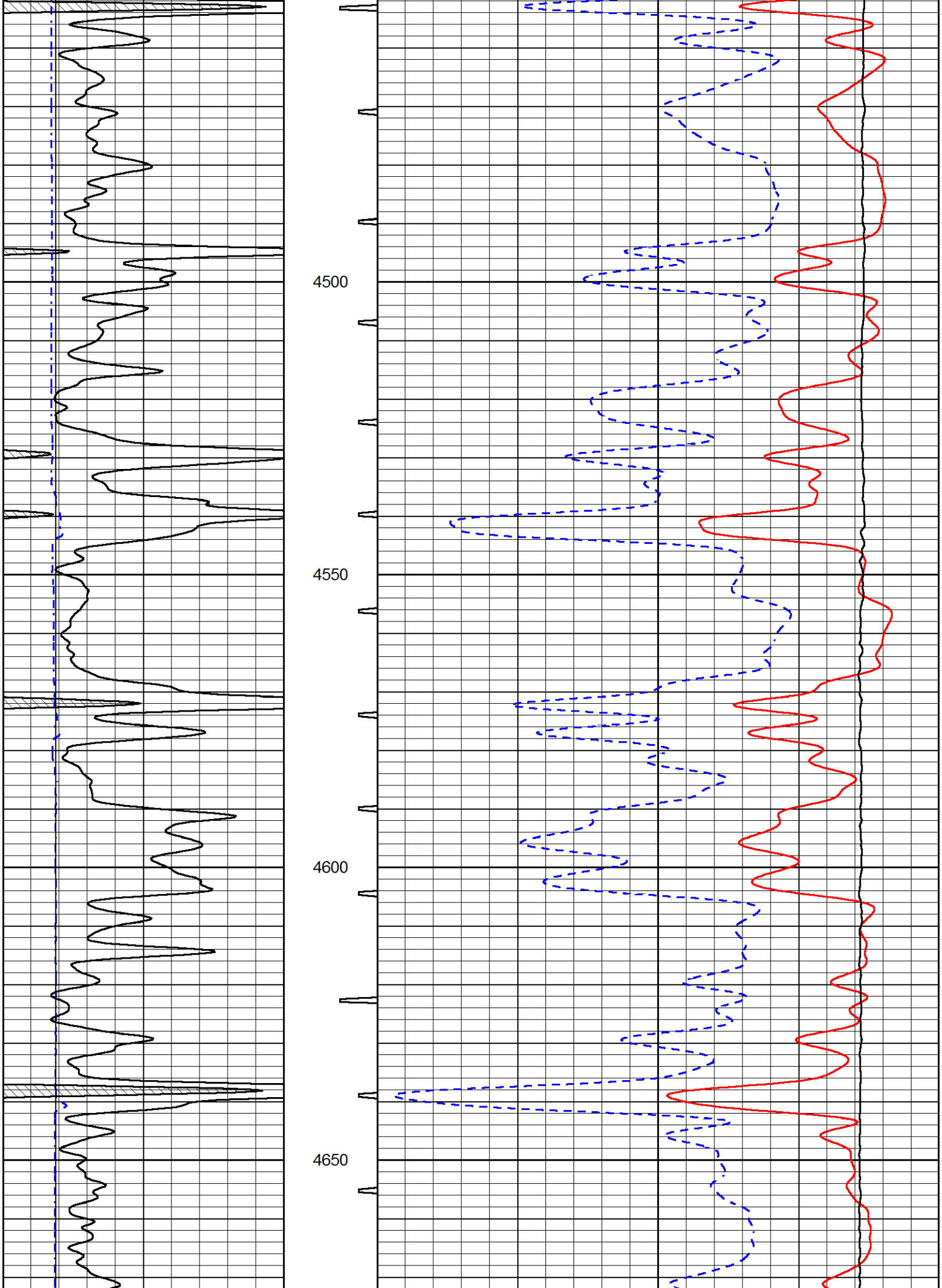

3400
3450
3500
3550

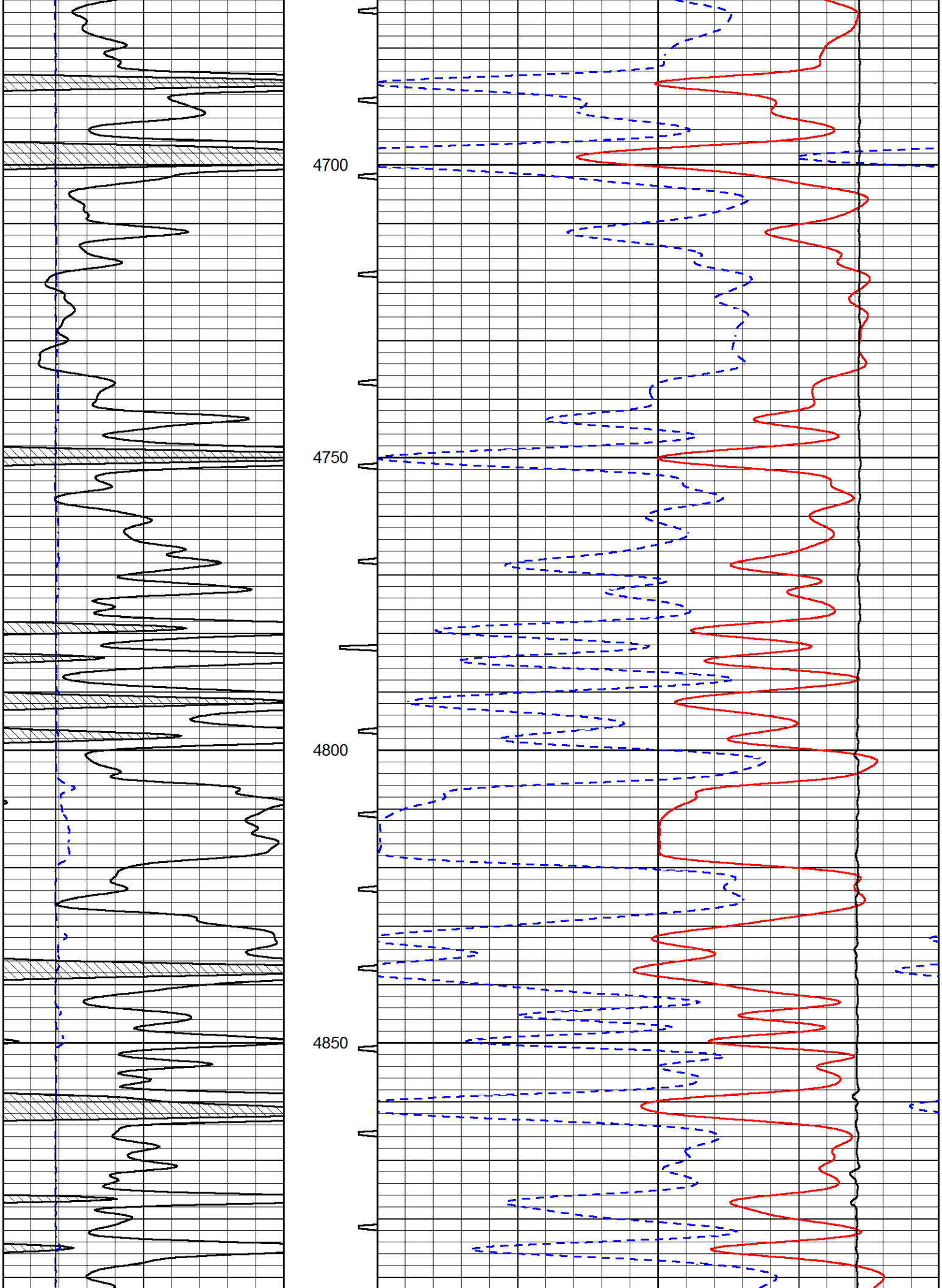

3600
3650
3700
3750

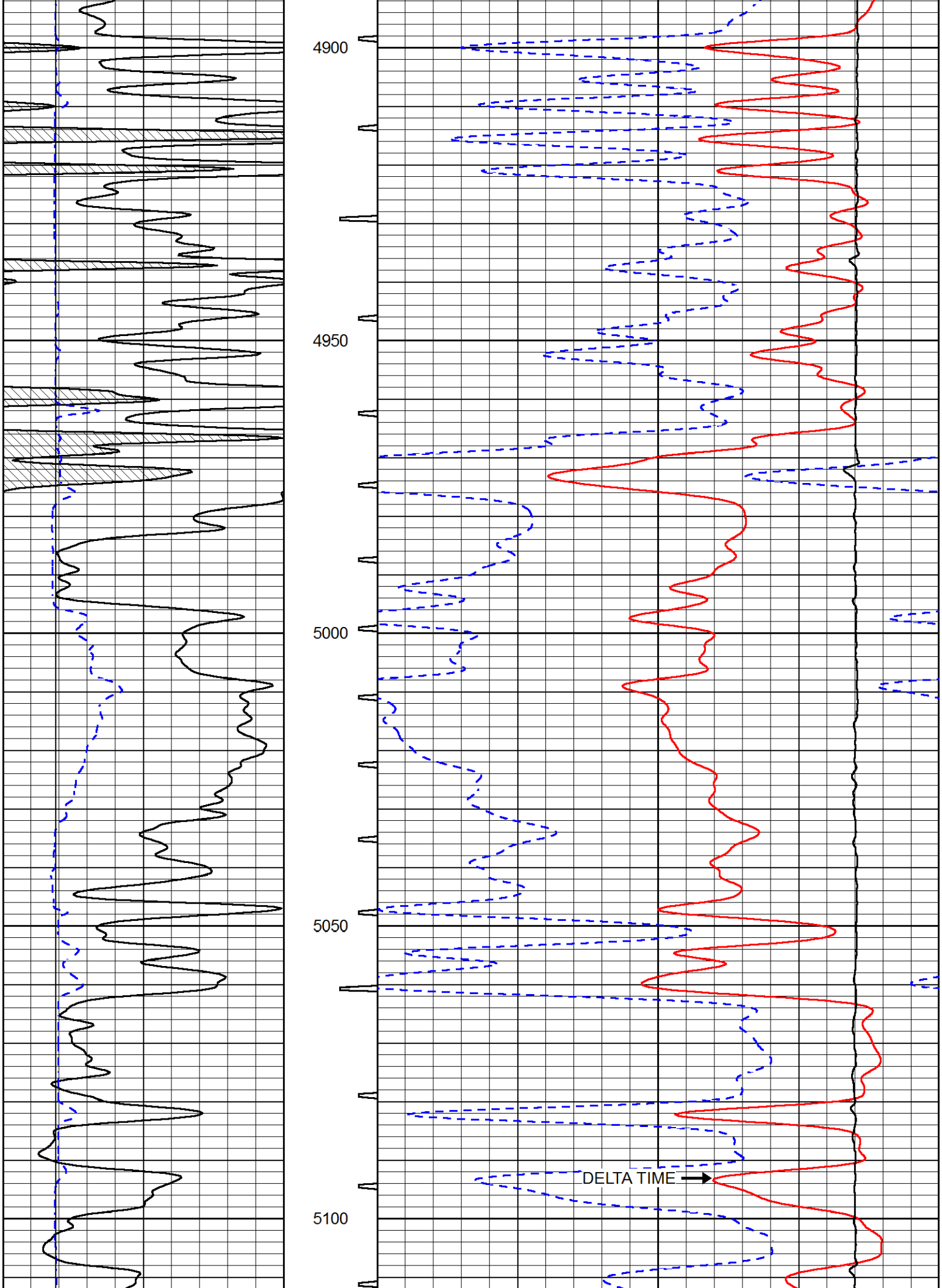

3800
3850
3900
3950
4000

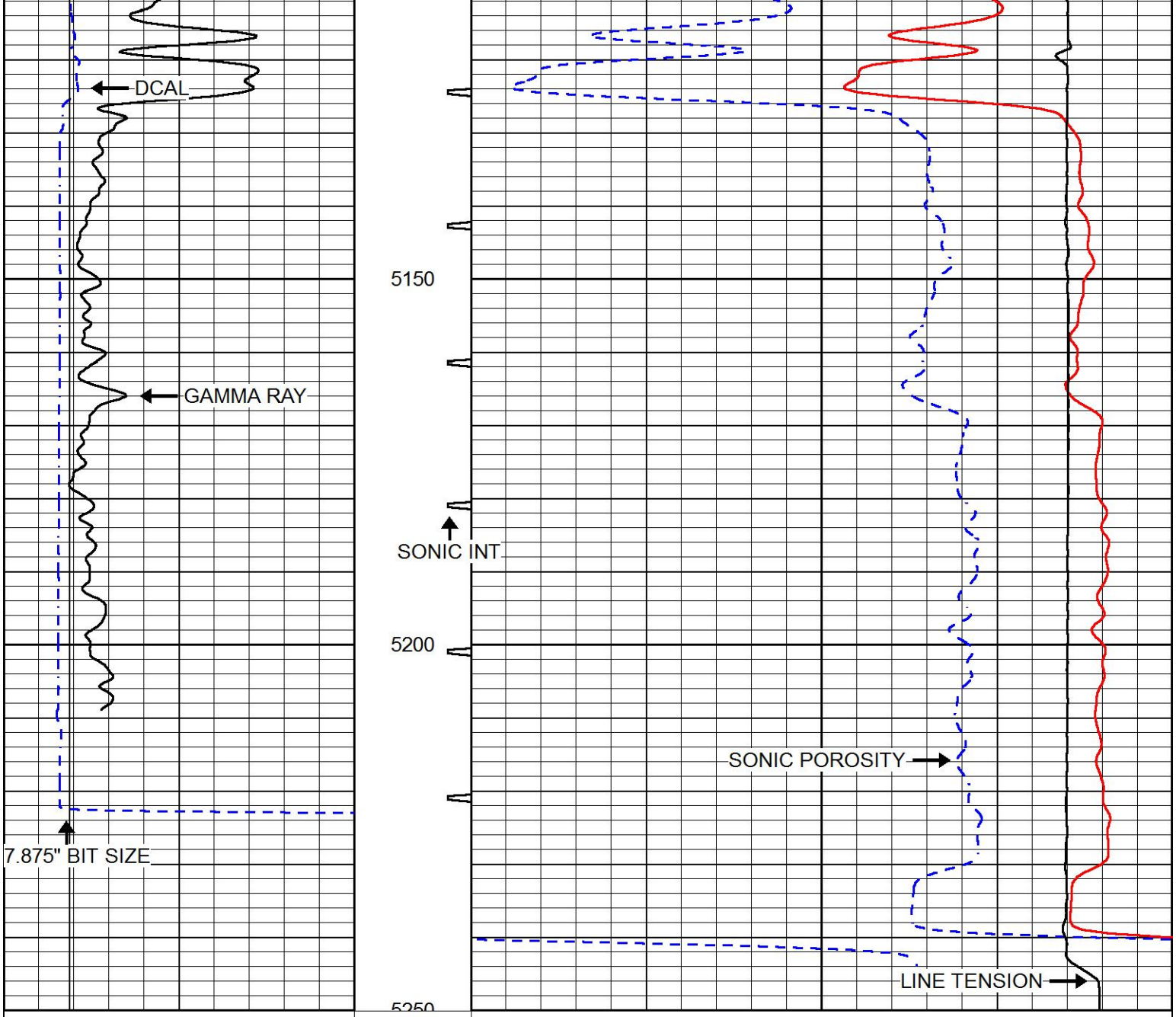

4050
4100
4150
4200


4250
4300
4350
4400
4450


4500
4550
4600
4650


4700
4750
4800
4850


4900
4950
5000
5050
5100
DELTA TIME



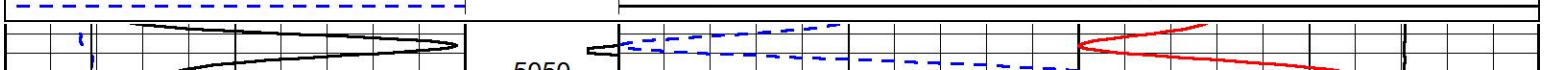
0	Gamma Ray (GAPI)	150	Sonic Int	140	Delta Time (usec/ft) (usec/ft)	40
150	GR (GAPI)	300	5 (msec) 0	30	Sonic Porosity (pu)	-10
6	DCAL (in)	16		15000	LTEN (lb) (lb)	0

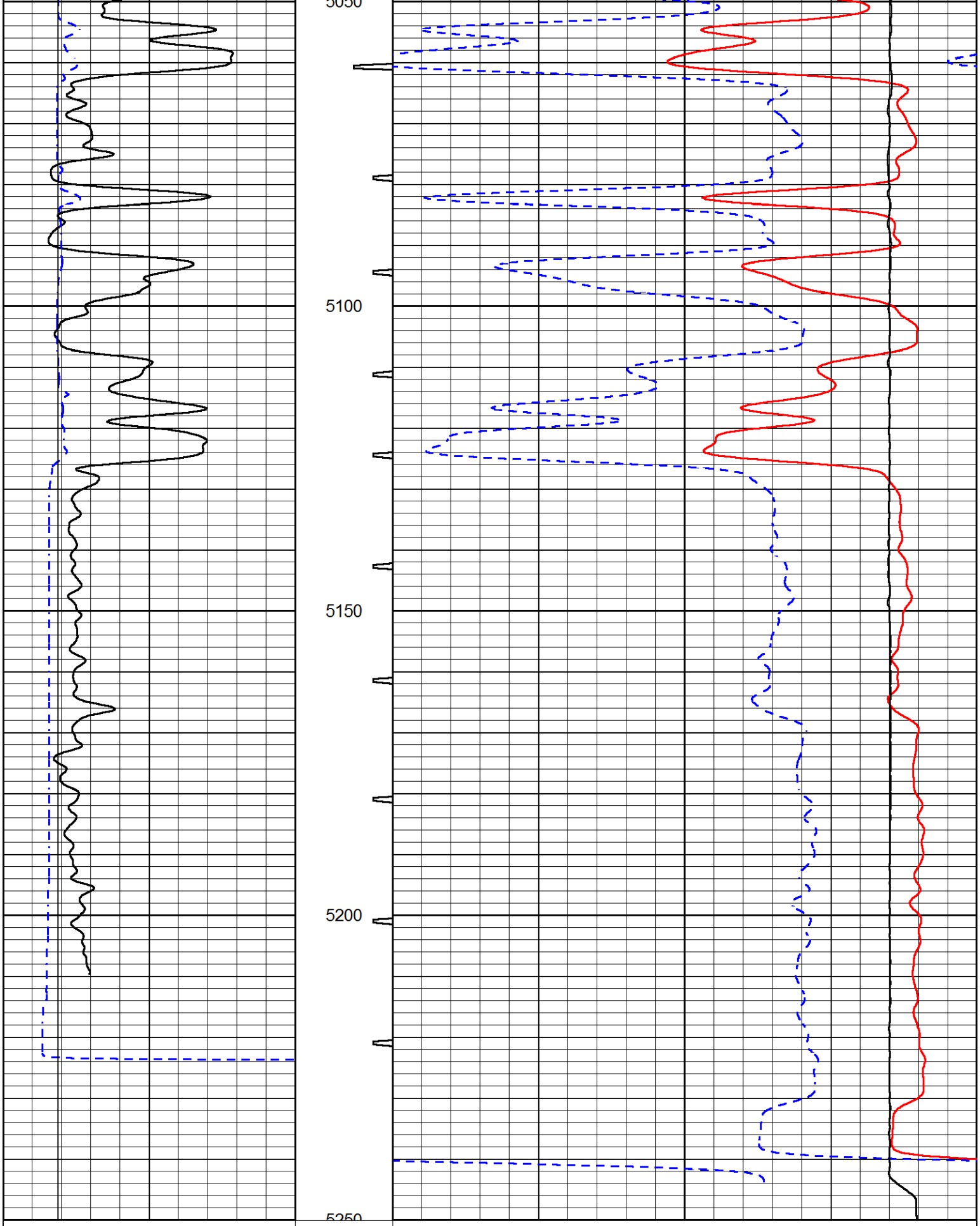
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REPEAT SECTION

Database File	american warrior_sunray 1-12.db
Dataset Pathname	STKML/pass2.1
Presentation Format	sonic
Dataset Creation	Mon Apr 16 22:06:58 2018
Charted by	Depth in Feet scaled 1:240

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150	GR (GAPI)	300	5 (msec) 0	30	Sonic Porosity (pu)	-10
6	DCAL (in)	16		15000	LTEN (lb) (lb)	0





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: american warrior_sunray 1-12.db
Dataset Pathname: STKML/pass3.8
Dataset Creation: Mon Apr 16 21:58:34 2018

Dual Induction Calibration Report

Serial-Model: 933 (HT)-PSI HIGH TEMP
Calibration Performed: Mon Apr 16 20:15:16 2018

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.700	-17.700
Medium	142.000	1349.000	0.000	255.000	mmho/m	0.565	-61.600

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
Performed: Mon Apr 16 11:11:21 2018

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	23500.0000	-1.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	28000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-65.9650

Compensated Density Calibration Report

Serial-Model: 182-152-M&W
Source / Verifier: 16955B / 2ci
Master Calibration Performed: Mon Apr 16 11:11:26 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4992.81	6098.44	cps
Aluminum	2.630	g/cc	945.67	3945.60	cps

Spine Angle = 75.33

Density/Spine Ratio = 0.509

	Size		Reading
Small Ring	4.50	in	1.09
Large Ring	15.00	in	1.03

Compensated Neutron Calibration Report

Serial Number: 207-MW
Tool Model: M&W
Calibration Performed: MON APR 16 10:30:30 2018

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:	Mon Jan 15 11:20:44 2018	
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	AMERICAN WARRIOR, INC.
Well	SUNRAY #1-12
Field	UNKNOWN
County	GREELEY
State	KANSAS