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BOREHOLE COMPENSATED SONIC LOG

Company AMERICAN WARRIOR, INC.
Well RUFF UNIT #1-11
Field LIPPOLDT NORTHWEST
County HODGEMAN State KANSAS
Location: API #: 15-083-21959-00-00
259' FNL & 121' FWL
SEC 11 TWP 23S RGE 23W

Other Services
CNL/CDL
DIL/MEL

Elevation
K.B. 2290'
D.F. N/A
G.L. 2279'

Permanent Datum GROUND LEVEL Elevation 2279'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Company	AMERICAN WARRIOR, INC.
Well	RUFF UNIT #1-11
Field	LIPPOLDT NORTHWEST
County	HODGEMAN
State	KANSAS
Date	9/1/2018
Run Number	TWO
Type Log	BHCS
Depth Driller	5300'
Depth Logger	5296'
Bottom Logged Interval	5284'
Top Logged Interval	250'
Type Fluid In Hole	CHEMICAL
Salinity, PPM CL	6100
Density	9.7
Level	FULL
Max. Rec. Temp. F	129
Operating Rig Time	5 HOURS
Equipment -- Location	108 HAYS
Recorded By	D. SCHMIDT
Witnessed By	LUKE THOMPSON

Borehole Record

Run No.	Bit	From	To
ONE	12.25"	0'	270'
TWO	7.875"	270	TD

Casing Record

Size	Wgt.	From	To
8.625"	23#	0'	270'

<<< 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.

JETMORE,
1 EAST TO 219, SOUTH TO K RD, 3 EAST,
NORTH 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: LUKE THOMPSON
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Log Variables

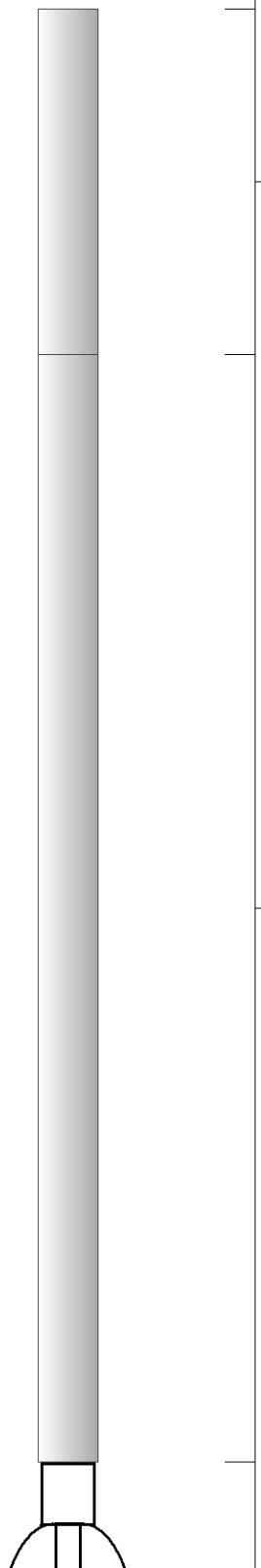
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Dataset field/well/STACK/pass4.1/_vars_

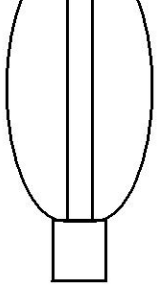
Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	129	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	0	-110	80	Off	5296

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb
			ML-Armadillo (Armadillo-1) Pengo micro log tool mandrel with Armadillo Electronics	5.00	3.50	100.00
MCAL	22.50					
MI	22.50					
MN	22.50					
WVF4	13.50		SLT-PENGO (0001)	16.00	3.50	300.00
WVF1	13.50					
WVF3	11.50					
WVF2	11.50					





CENT-PENGO	5.50	3.00	70.00

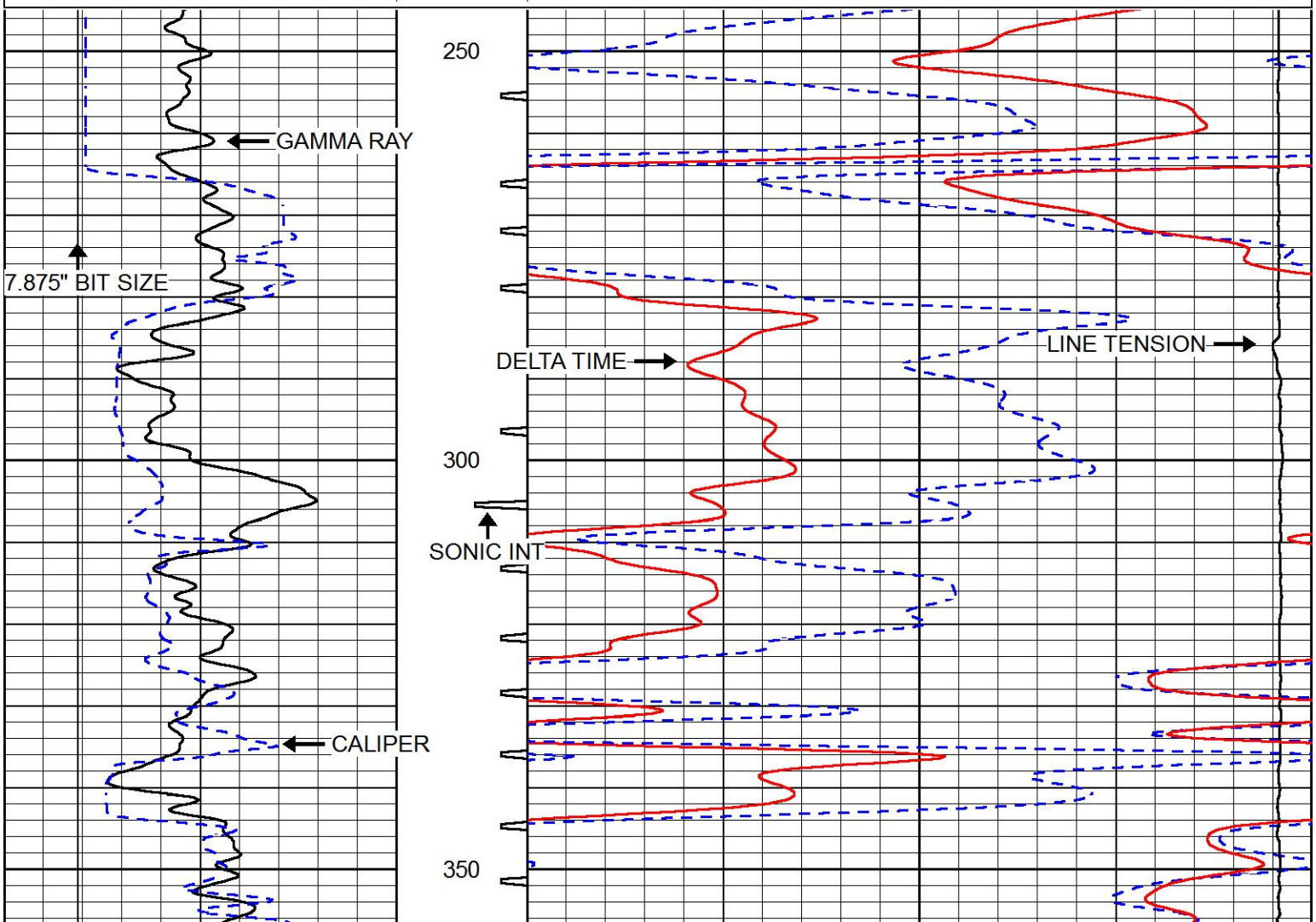
Dataset: american warrior_ruff unit 1-11.db: field/well/SONMEL/pass4
Total length: 26.50 ft
Total weight: 470.00 lb
O.D.: 3.50 in

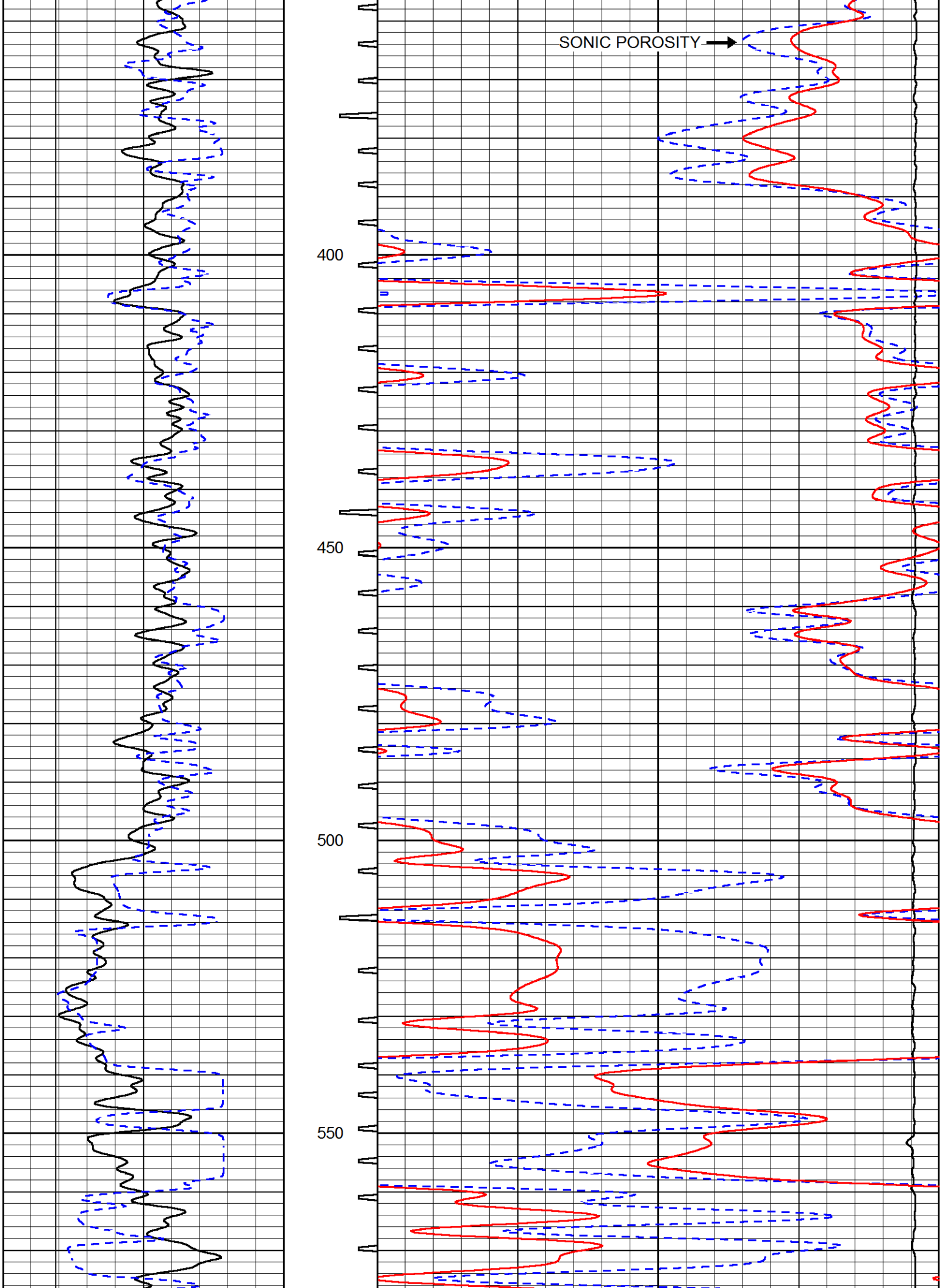
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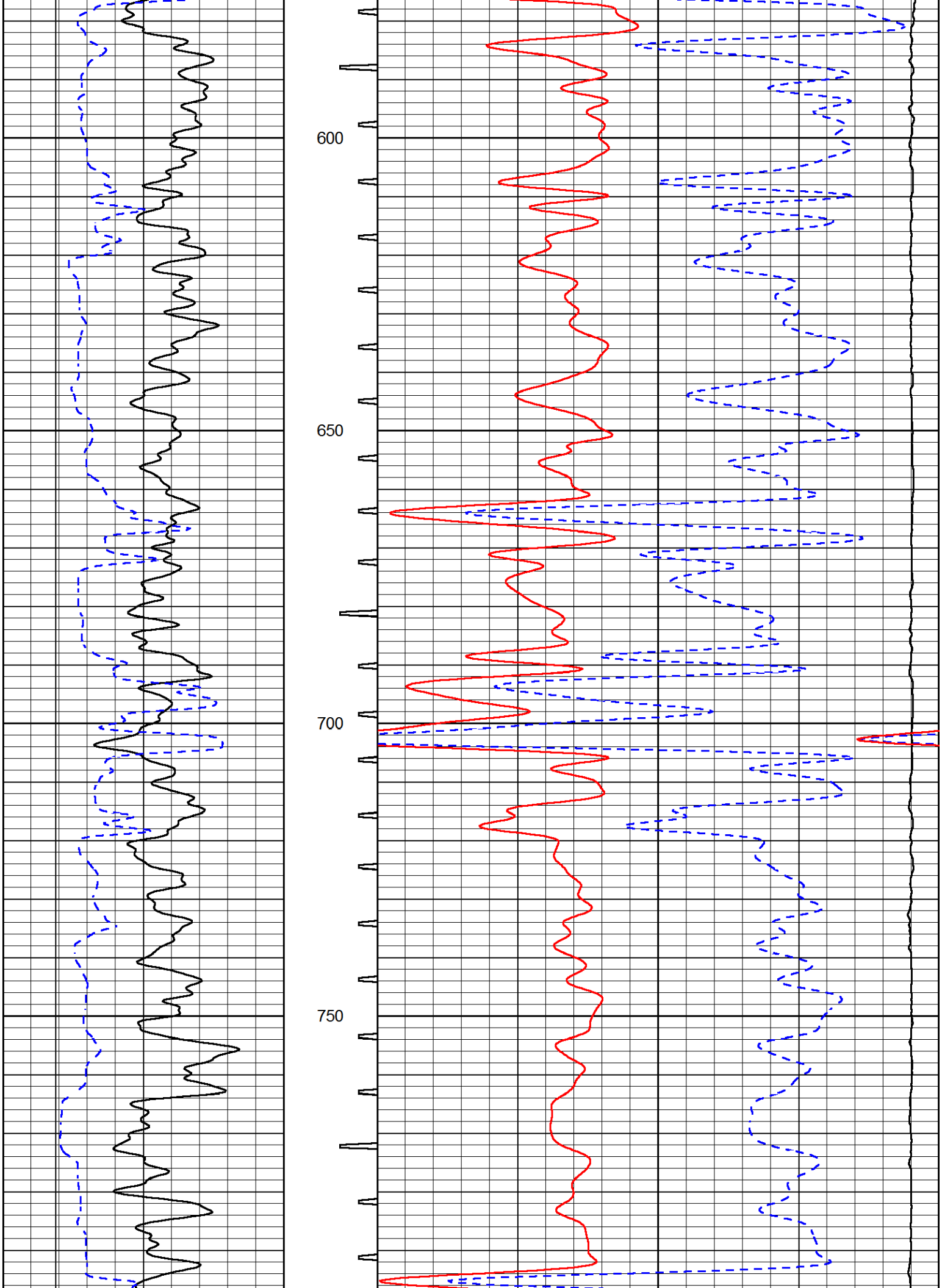
MAIN PASS

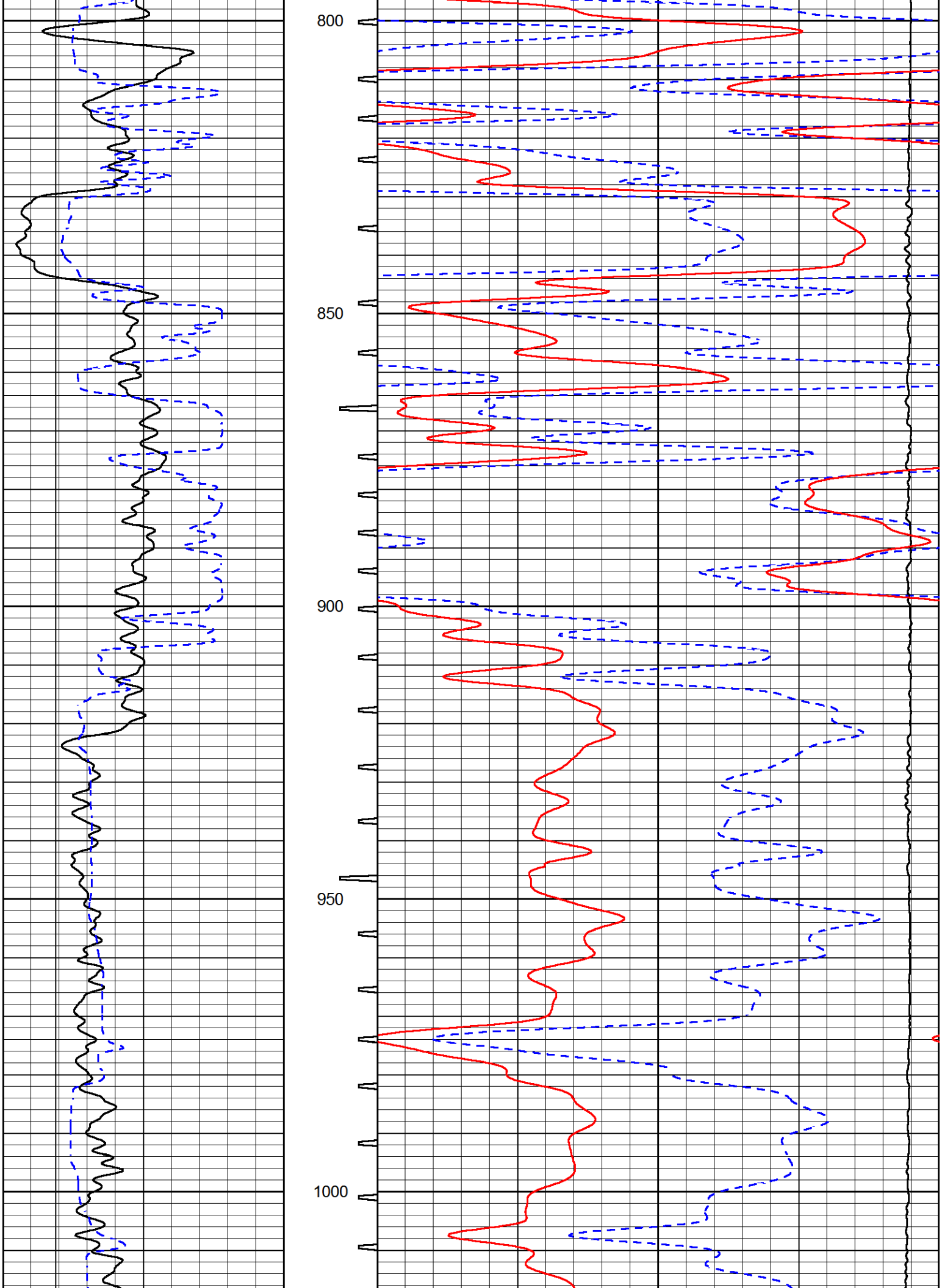
Database File	american warrior_ruff unit 1-11.db
Dataset Pathname	STACK/pass4.1
Presentation Format	sonic
Dataset Creation	Sat Sep 01 03:17:45 2018
Charted by	Depth in Feet scaled 1:240

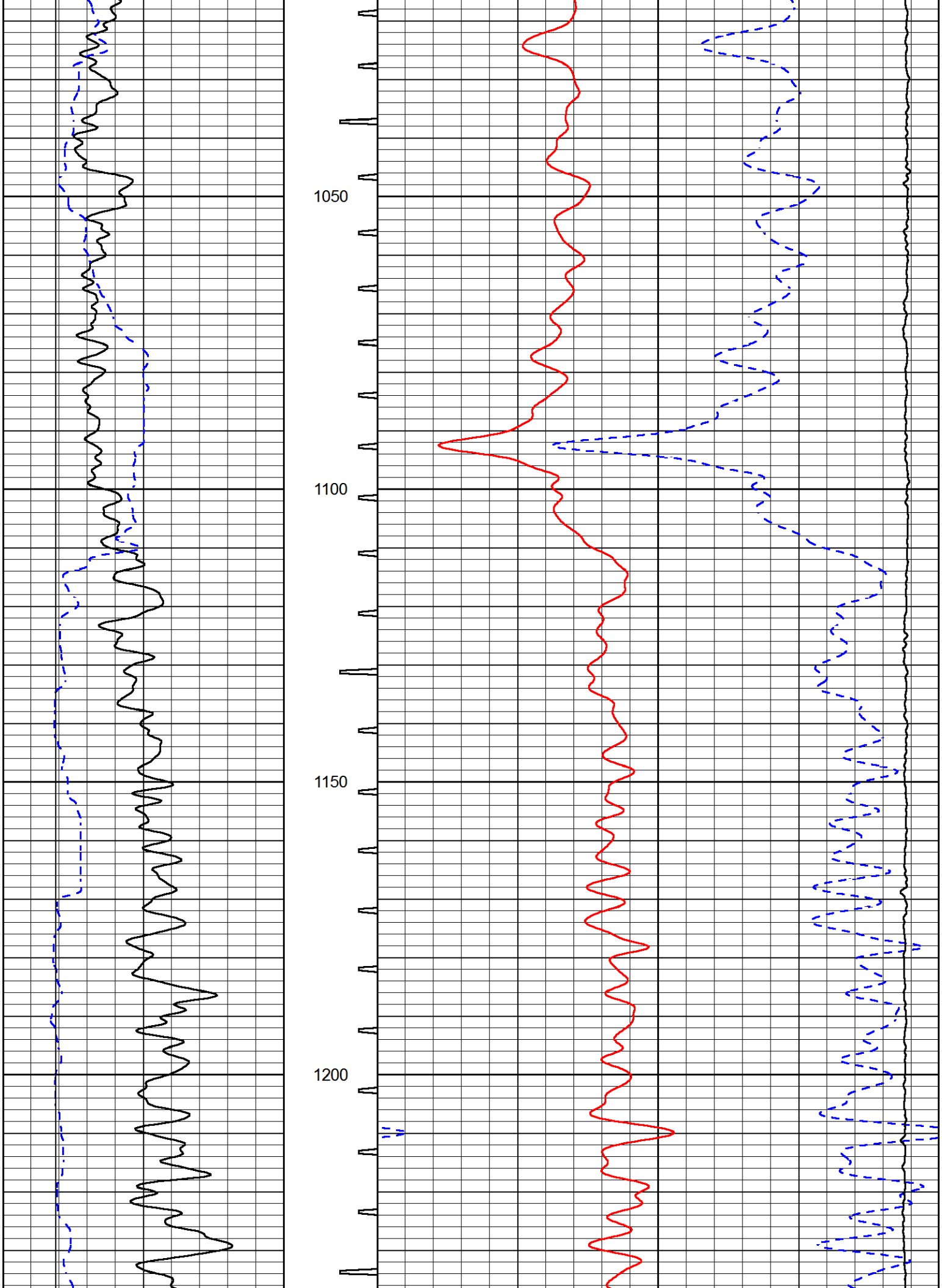
0	GAMMA RAY (GAPI)	150	SONIC INT TRAVEL TIME (msec)	140	DELTA TIME (usec/ft) (usec/ft) 40
6	CALIPER (in)	16		30	SONIC POROSITY (pu) -10
6	BIT SIZE	16		15000	LINE TENSION (lb) 0

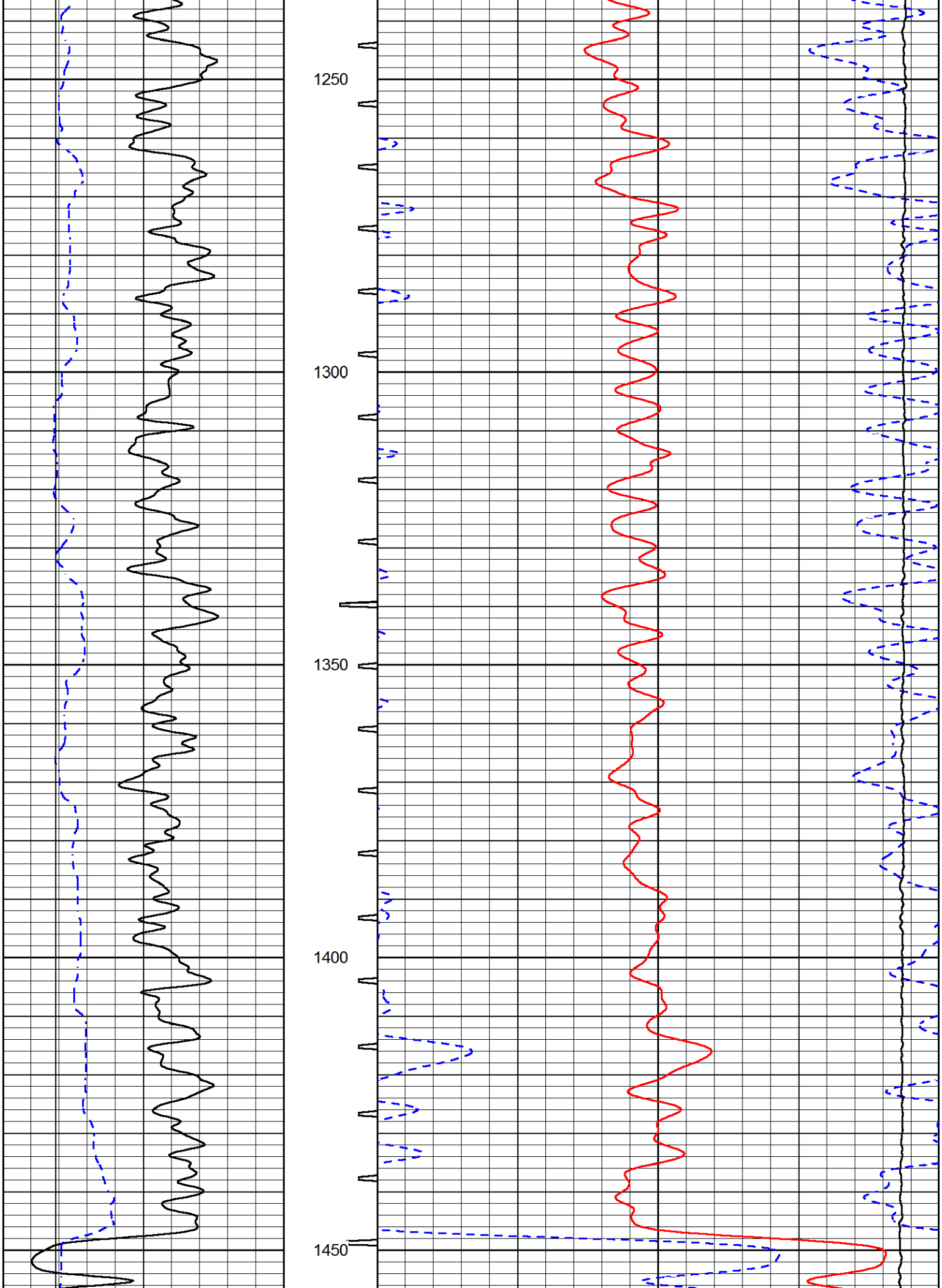


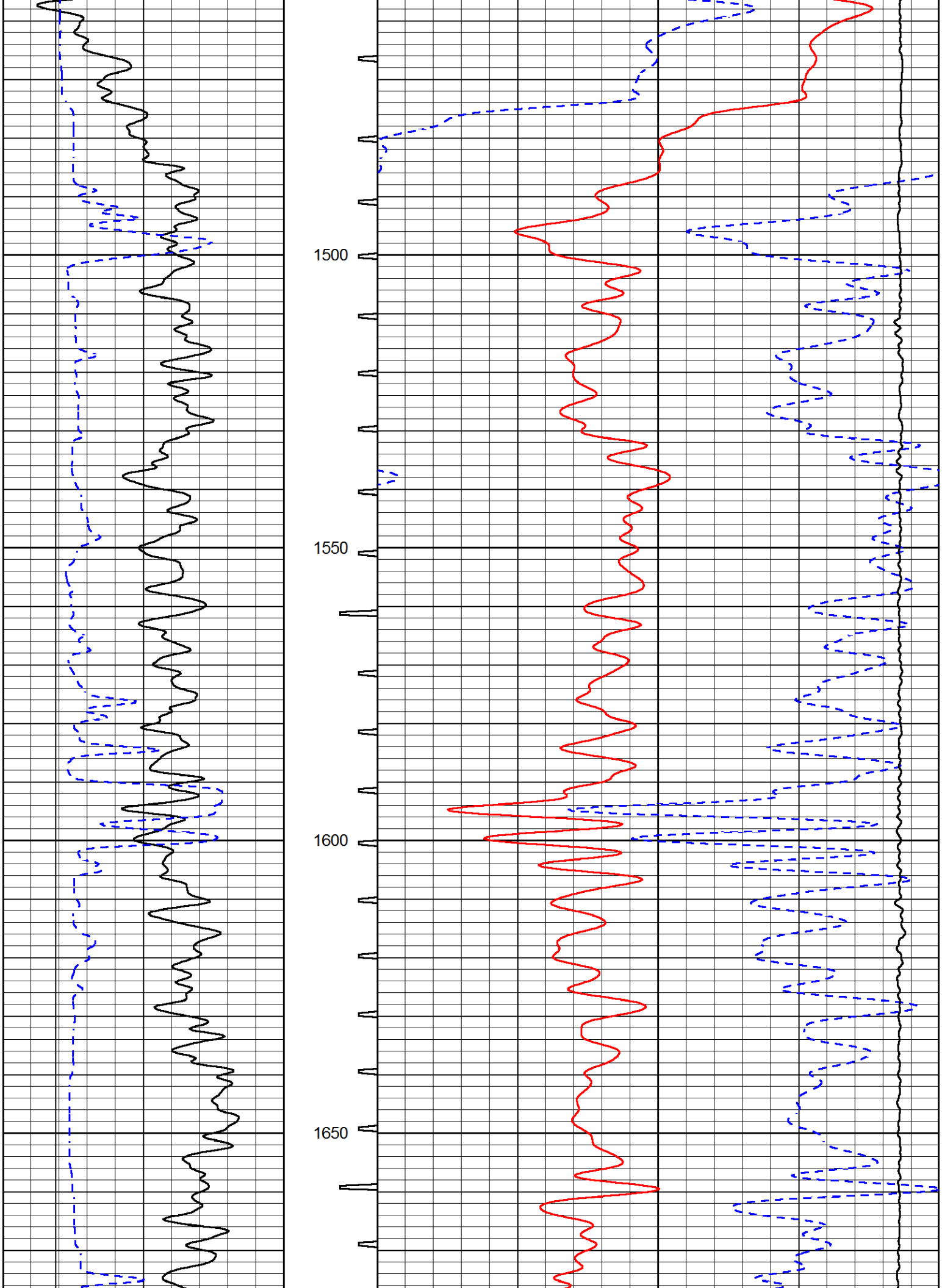

SONIC POROSITY
400
450
500
550

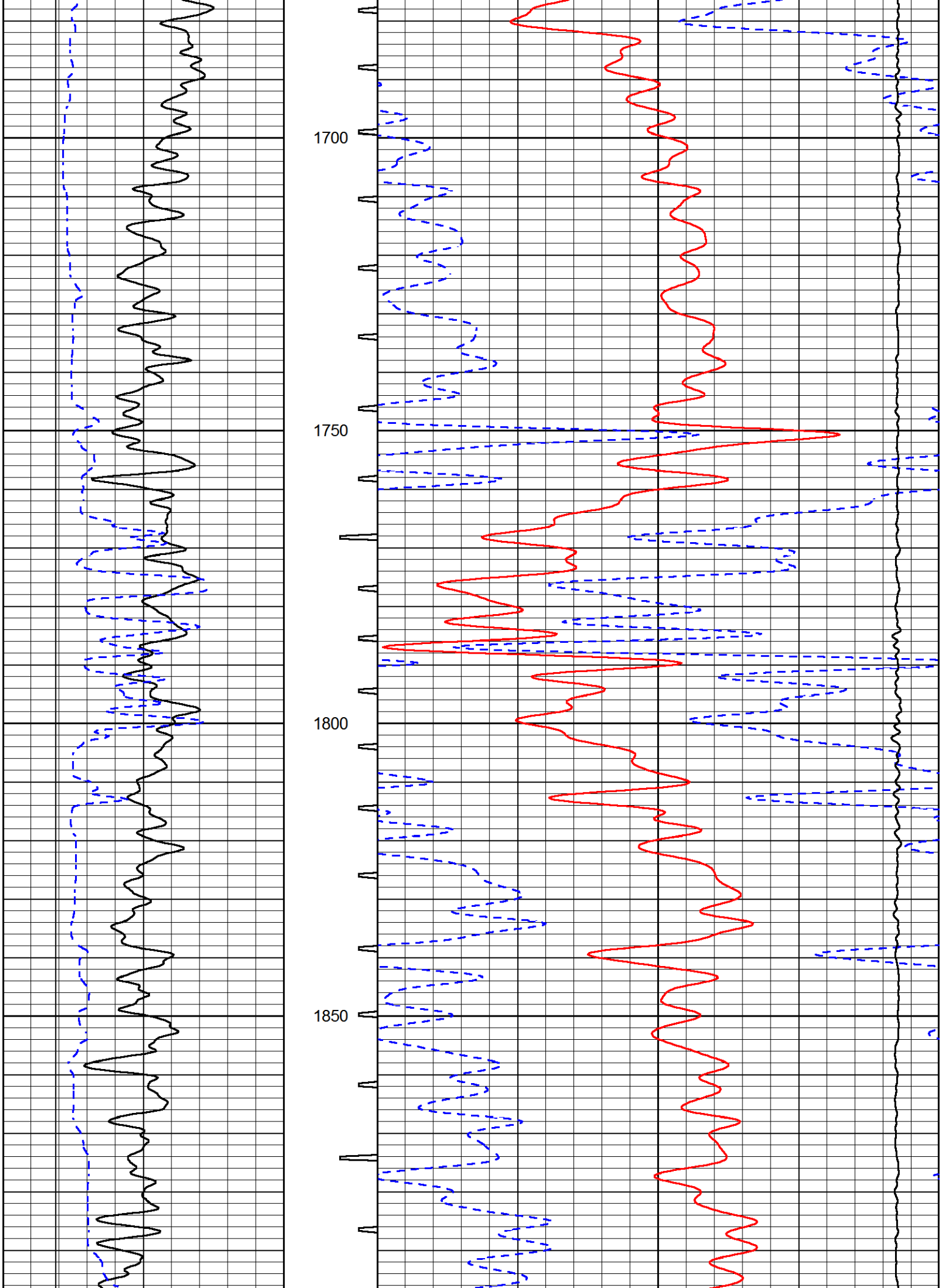

600
650
700
750

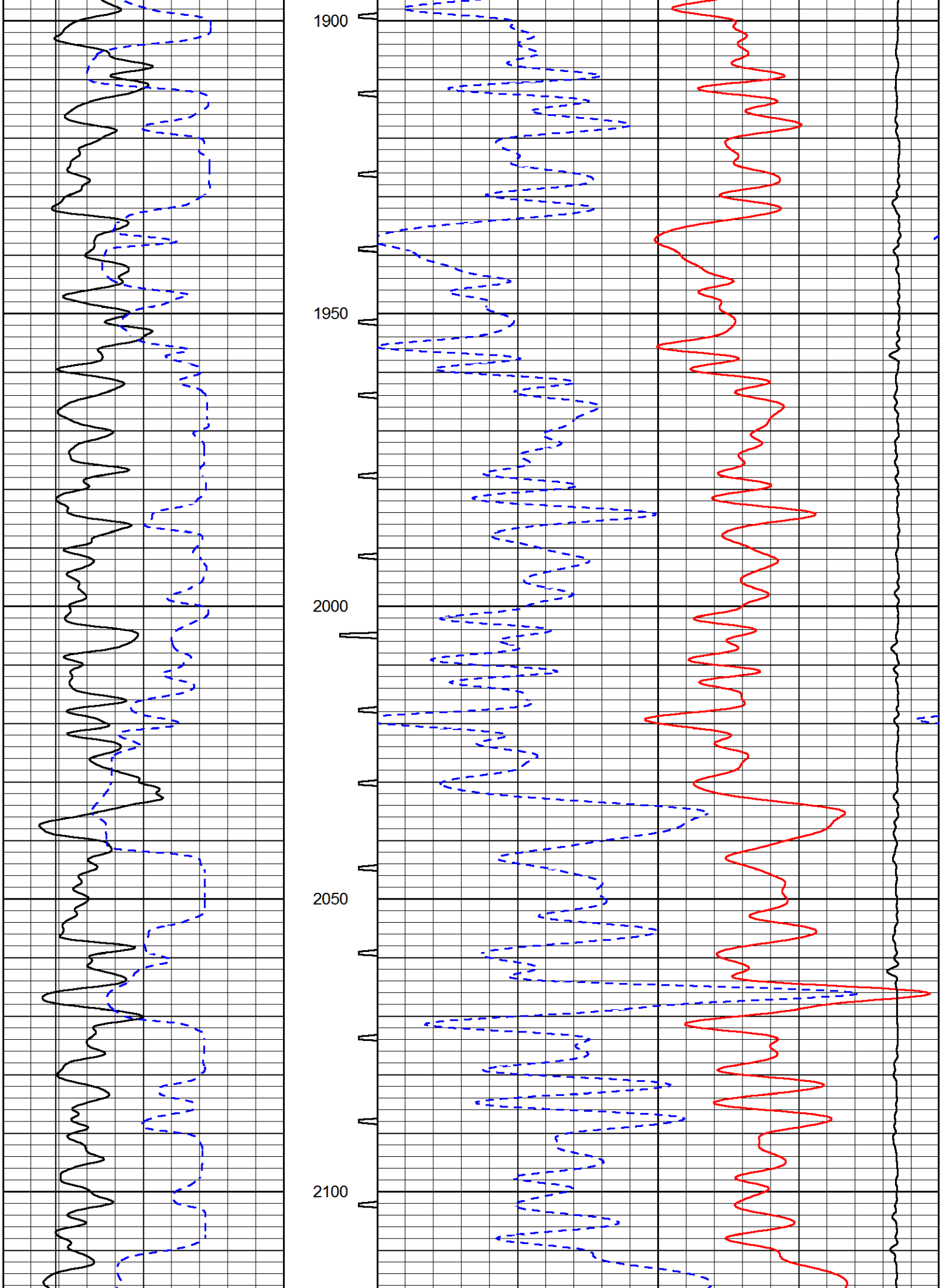

800
850
900
950
1000

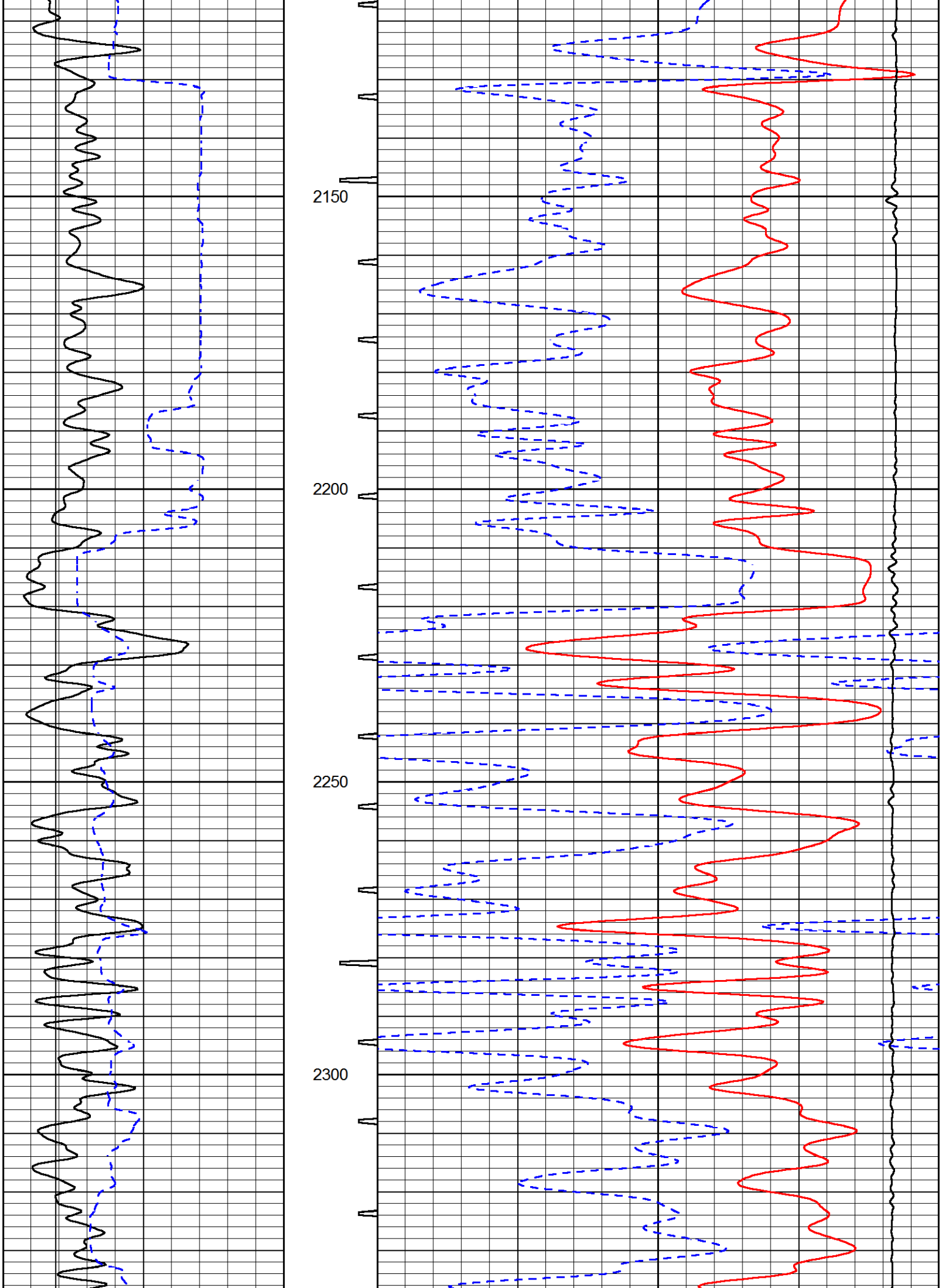

1050
1100
1150
1200

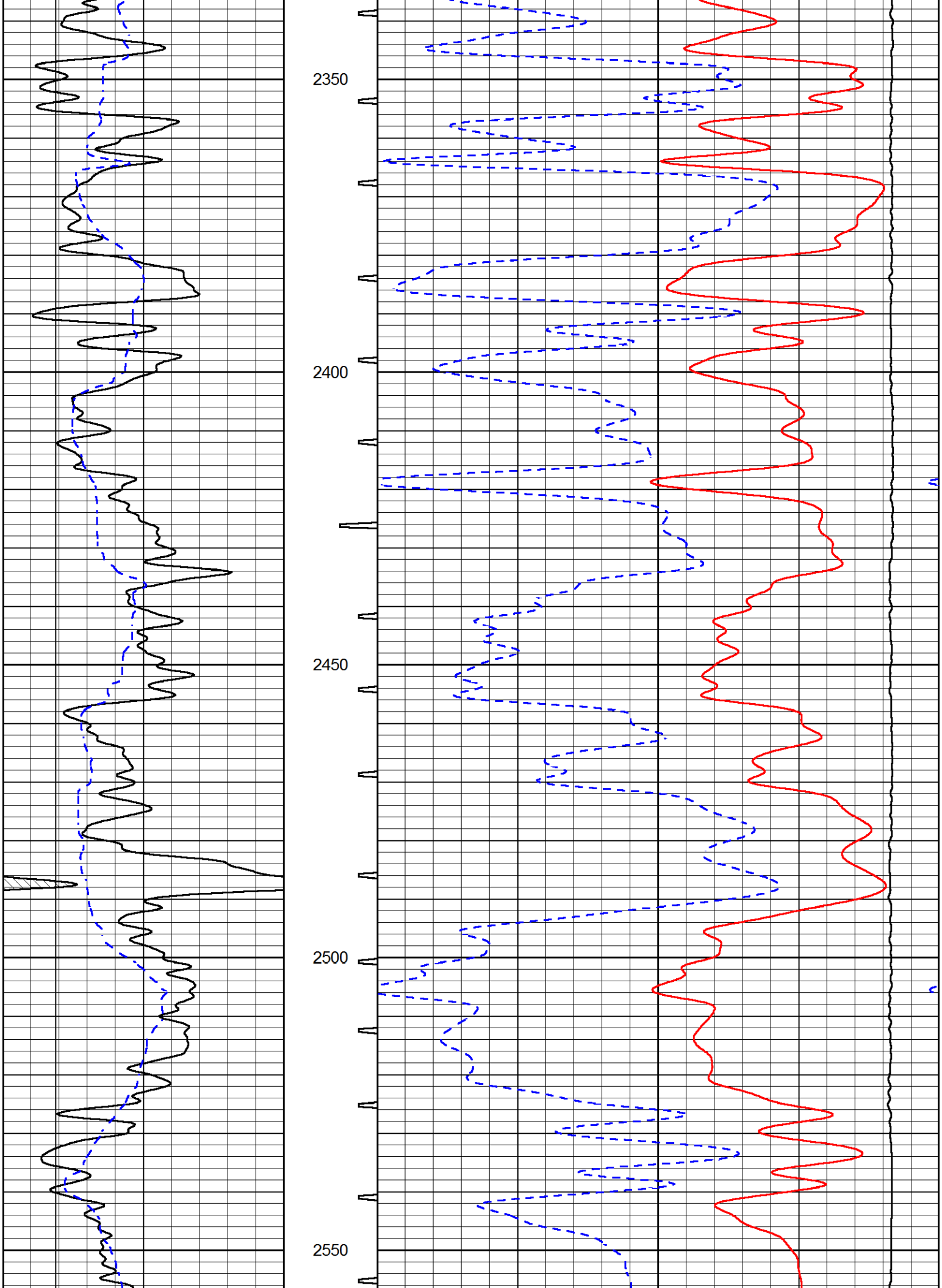

1250
1300
1350
1400
1450

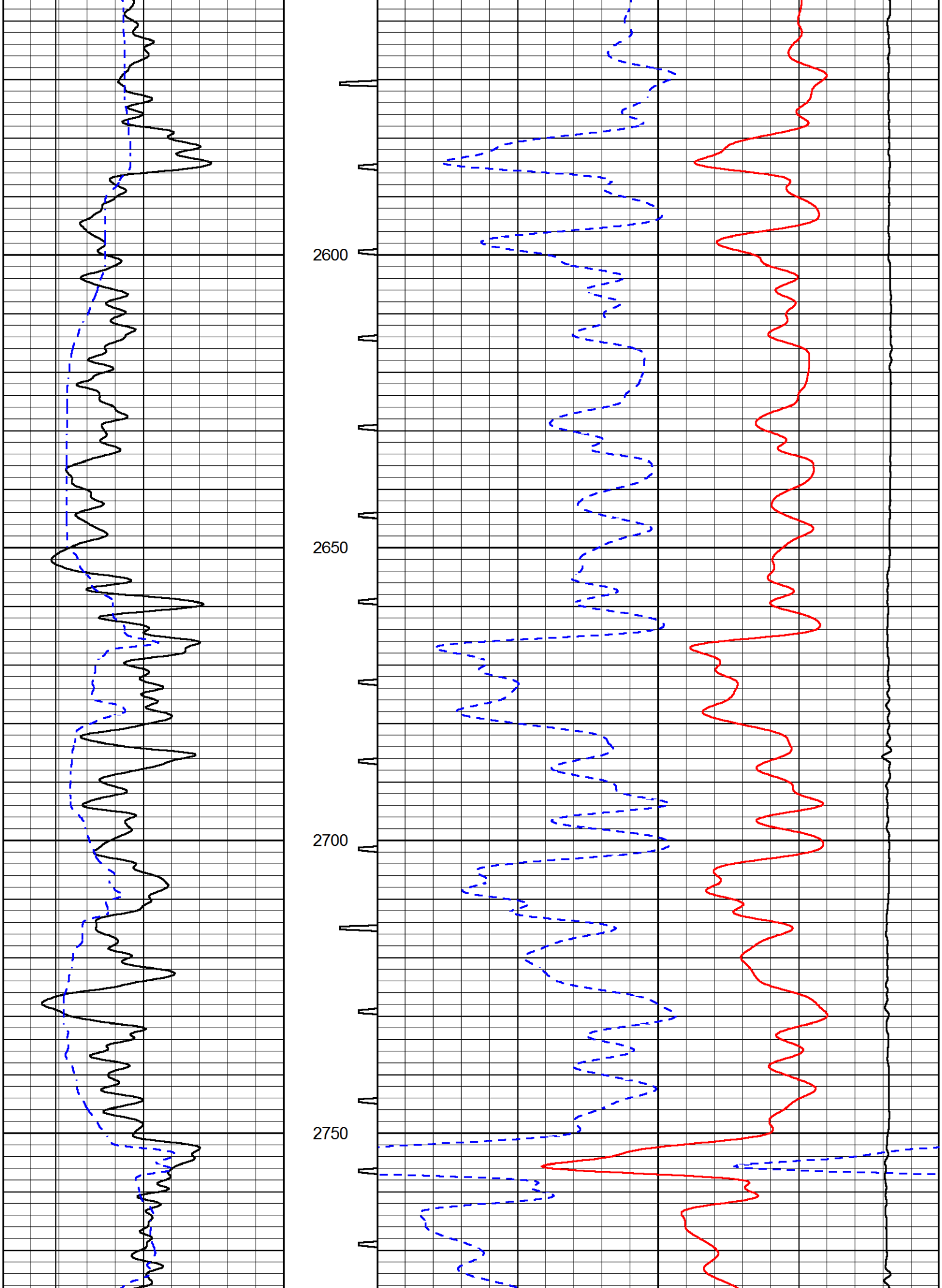

1500
1550
1600
1650

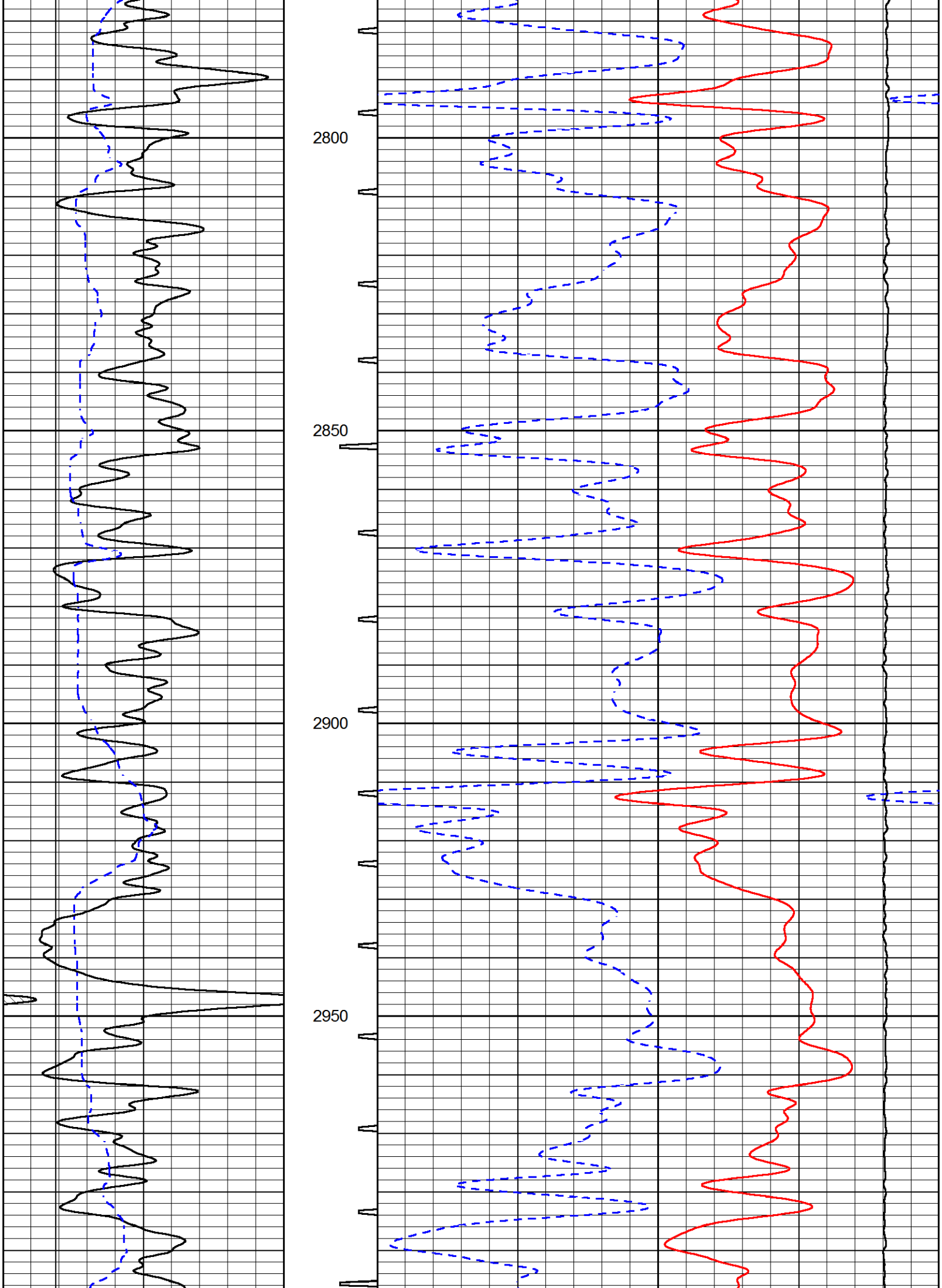

1700
1750
1800
1850

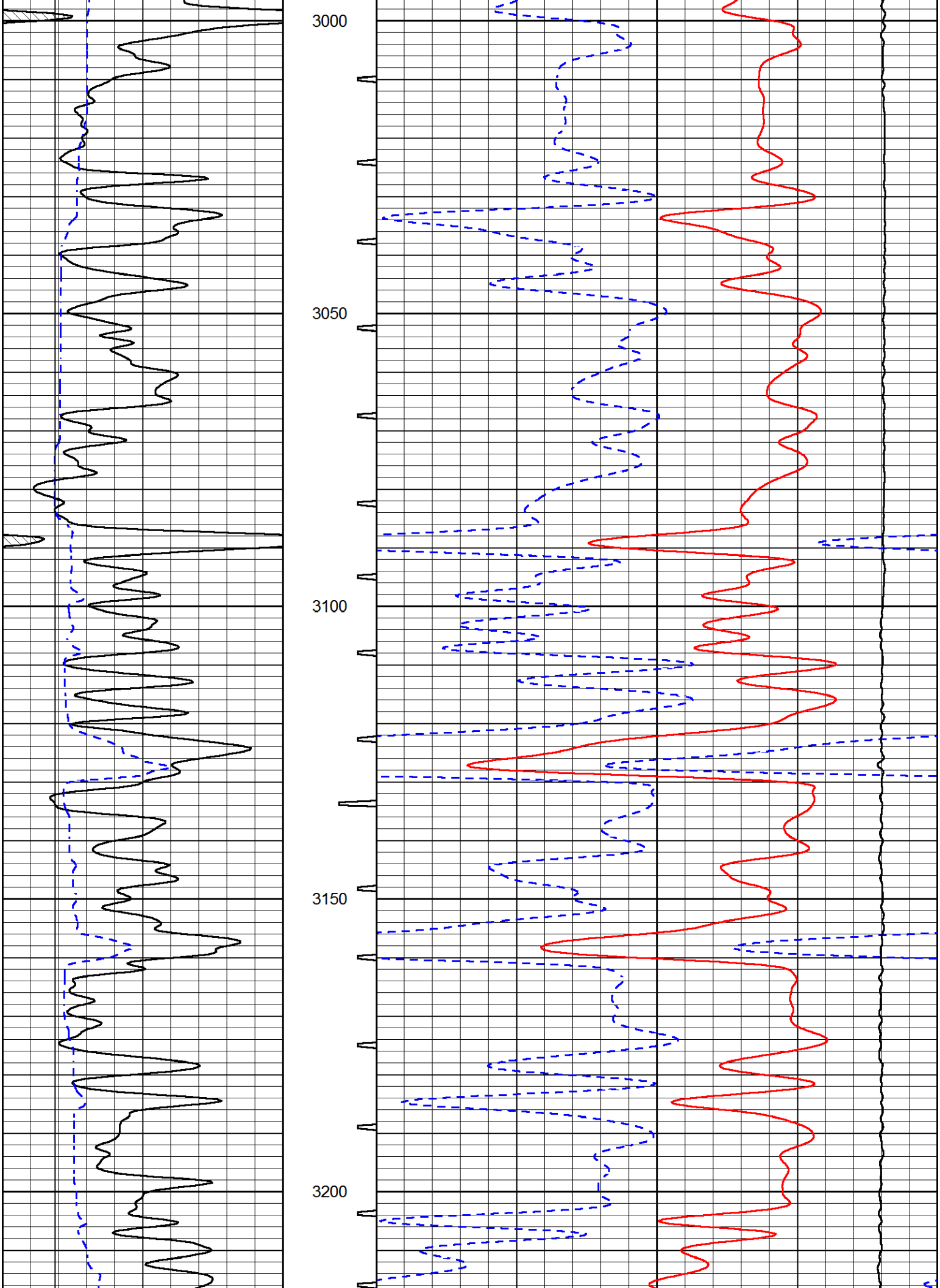

1900
1950
2000
2050
2100

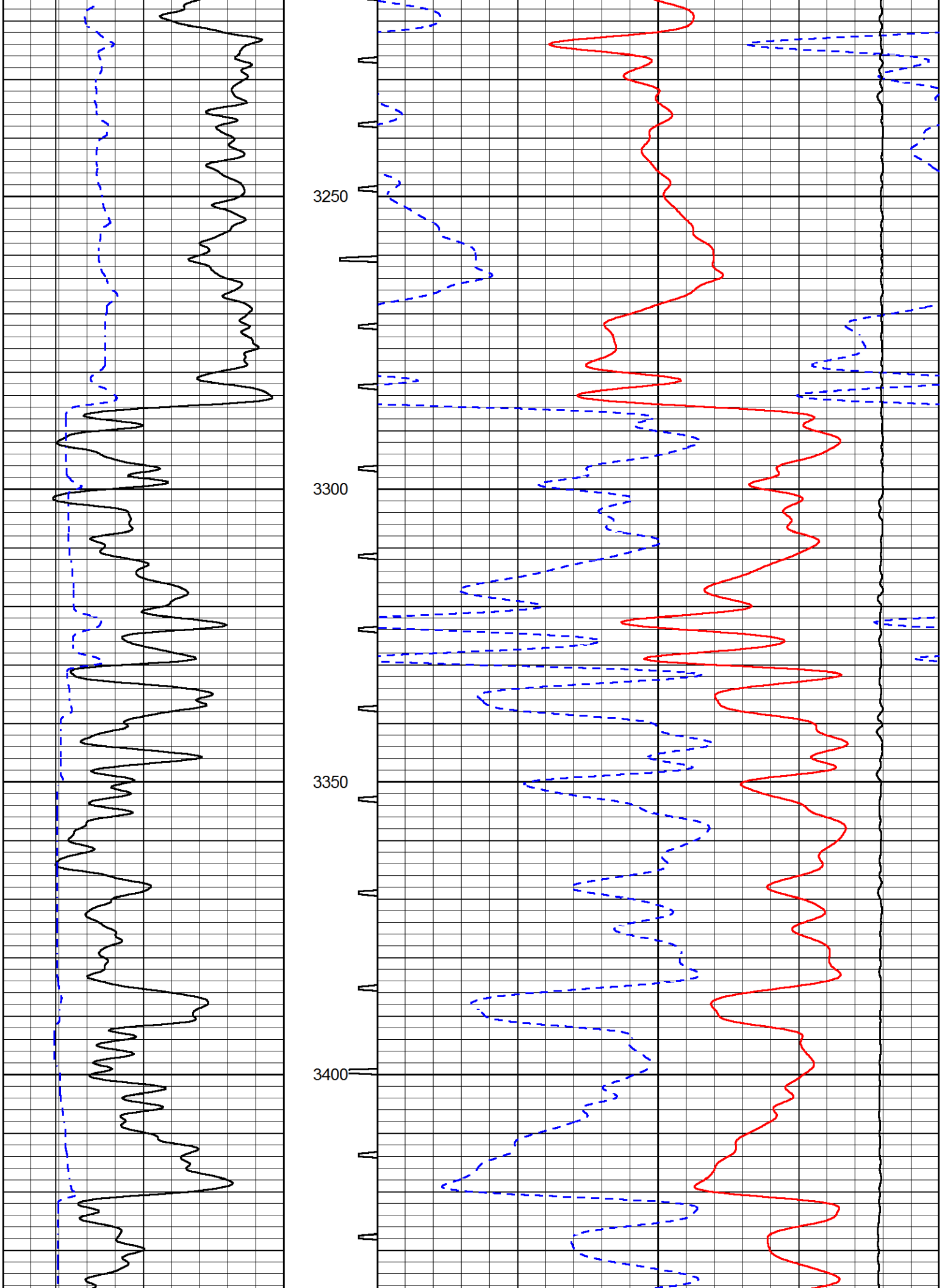

2150
2200
2250
2300

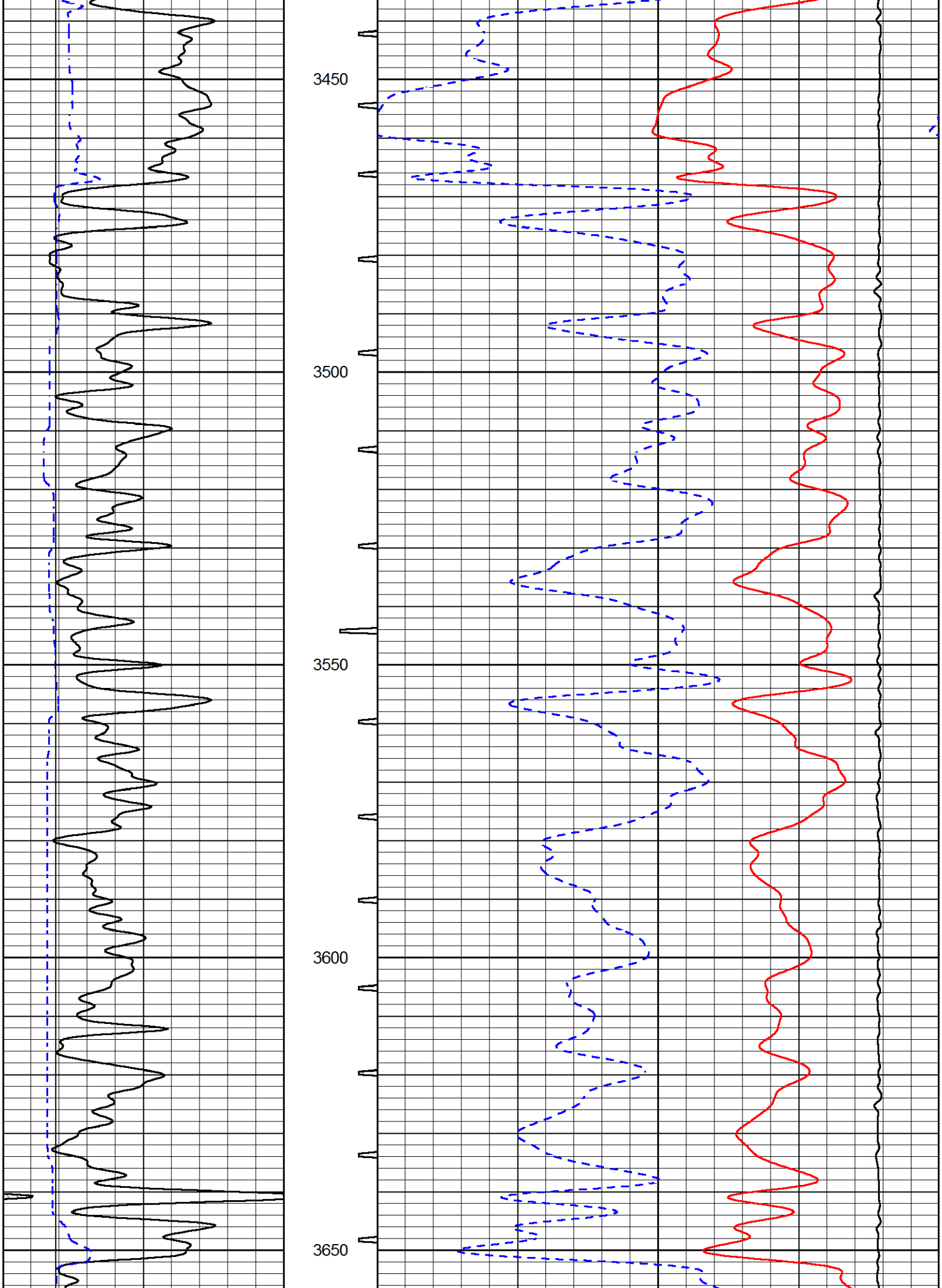

2350
2400
2450
2500
2550

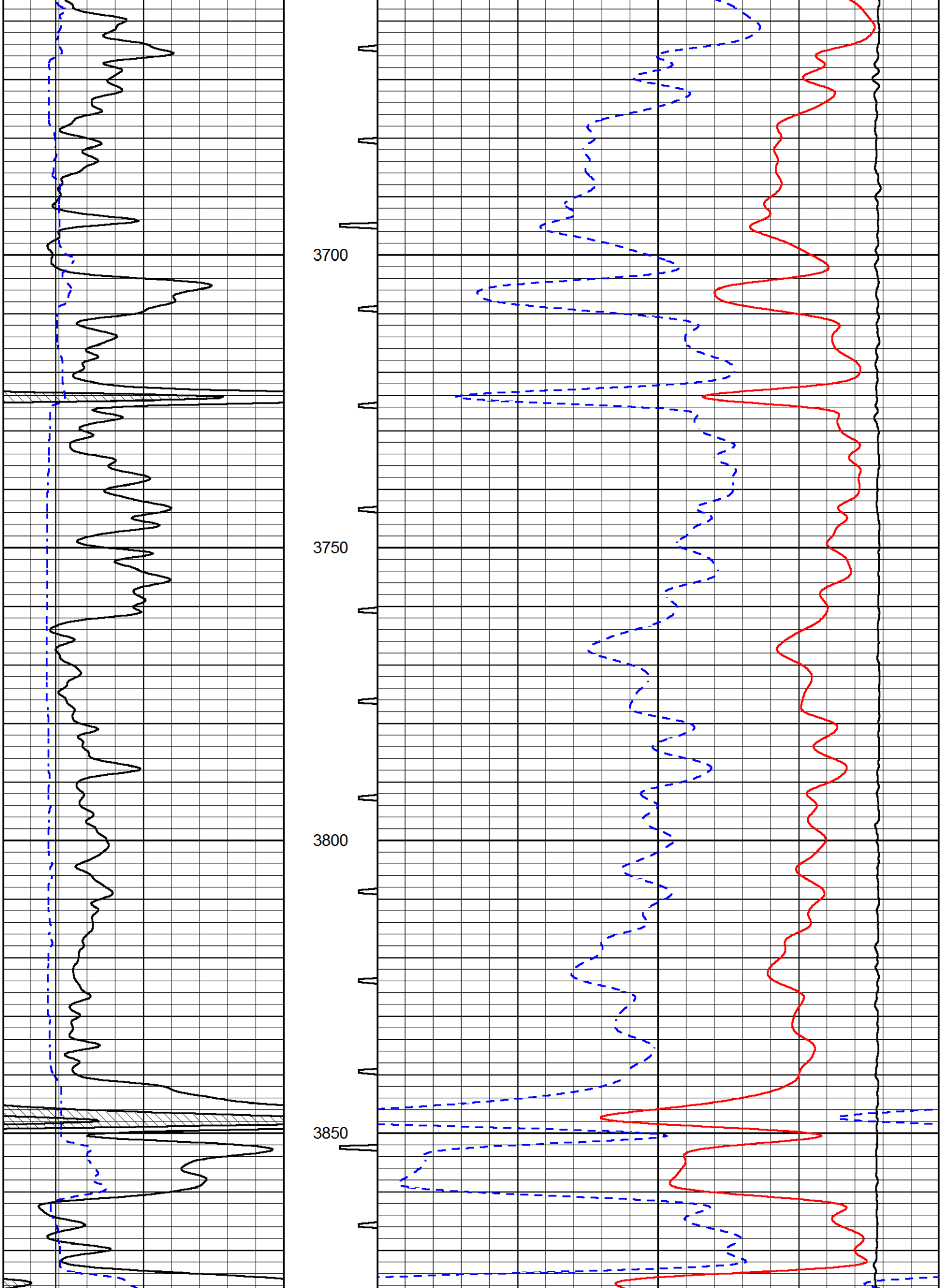

2600
2650
2700
2750

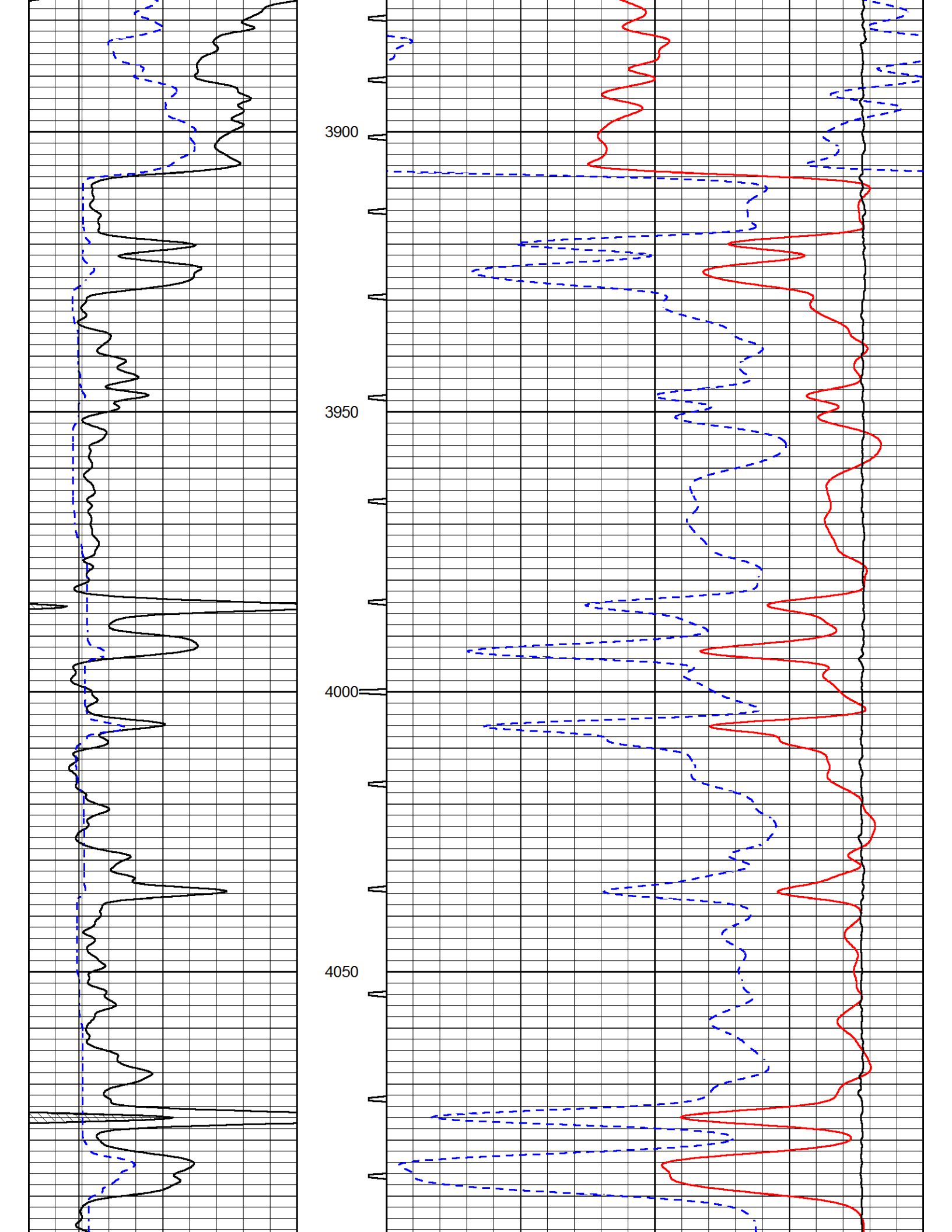

2800
2850
2900
2950

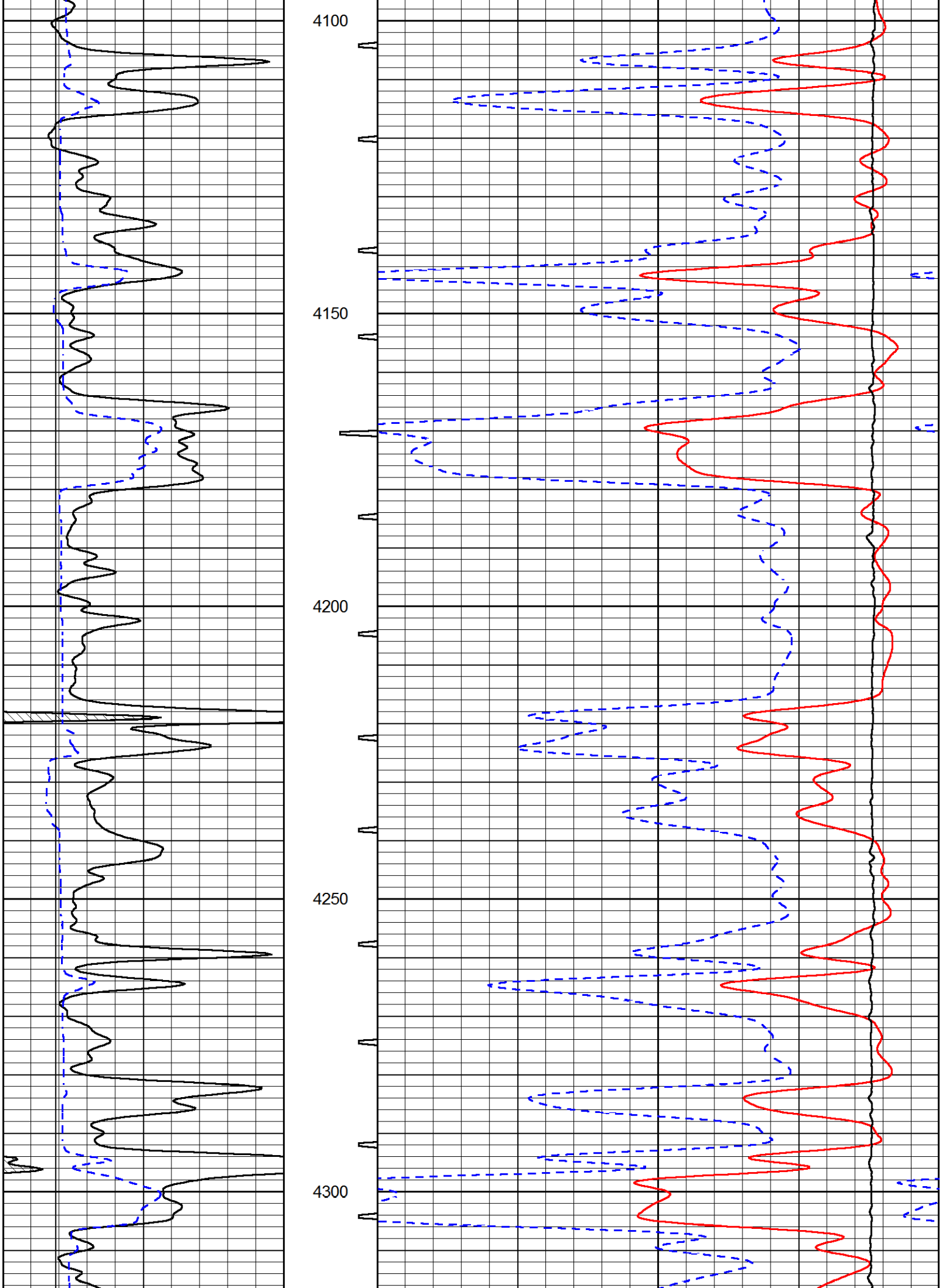

3000
3050
3100
3150
3200

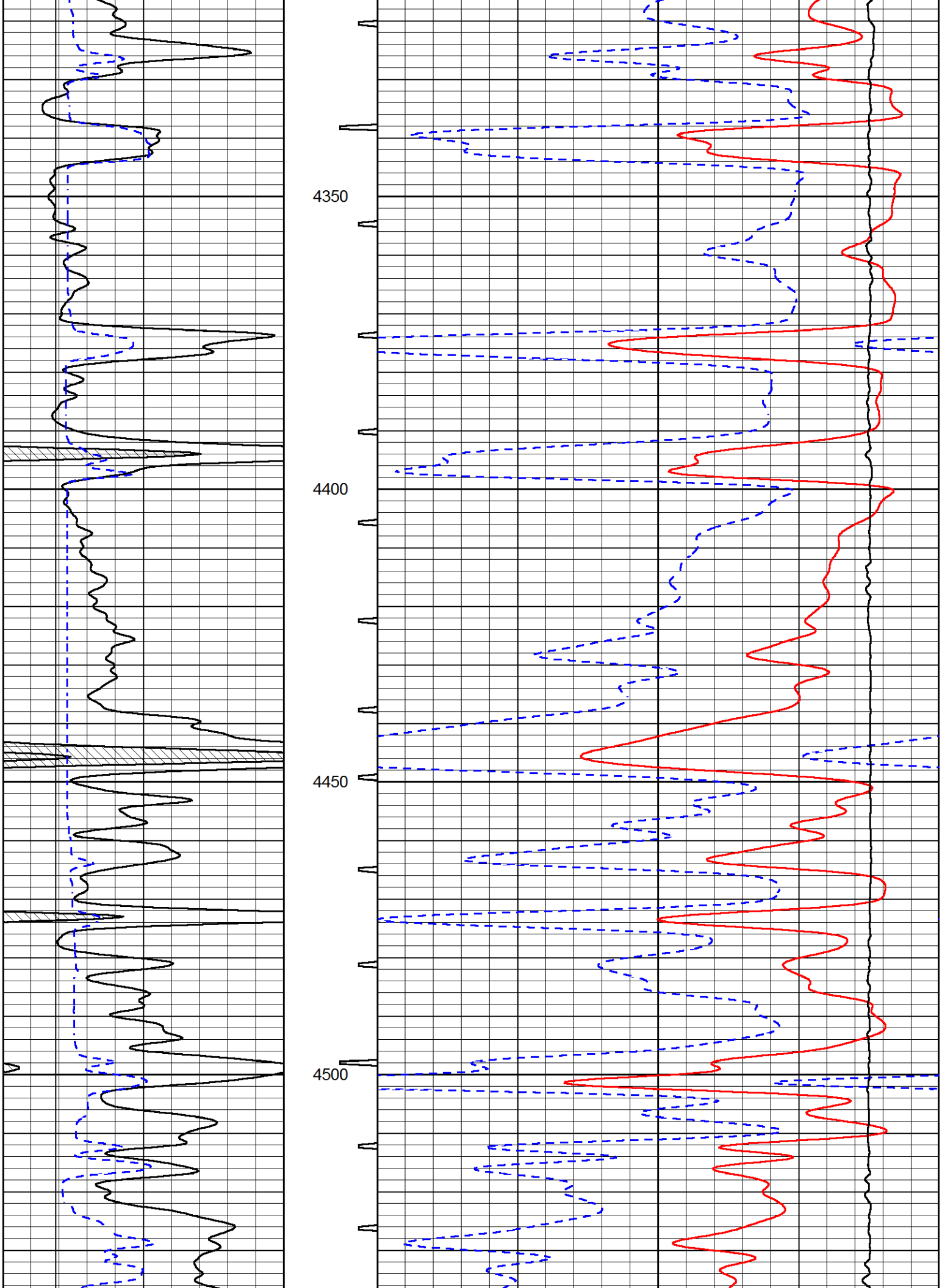

3250
3300
3350
3400

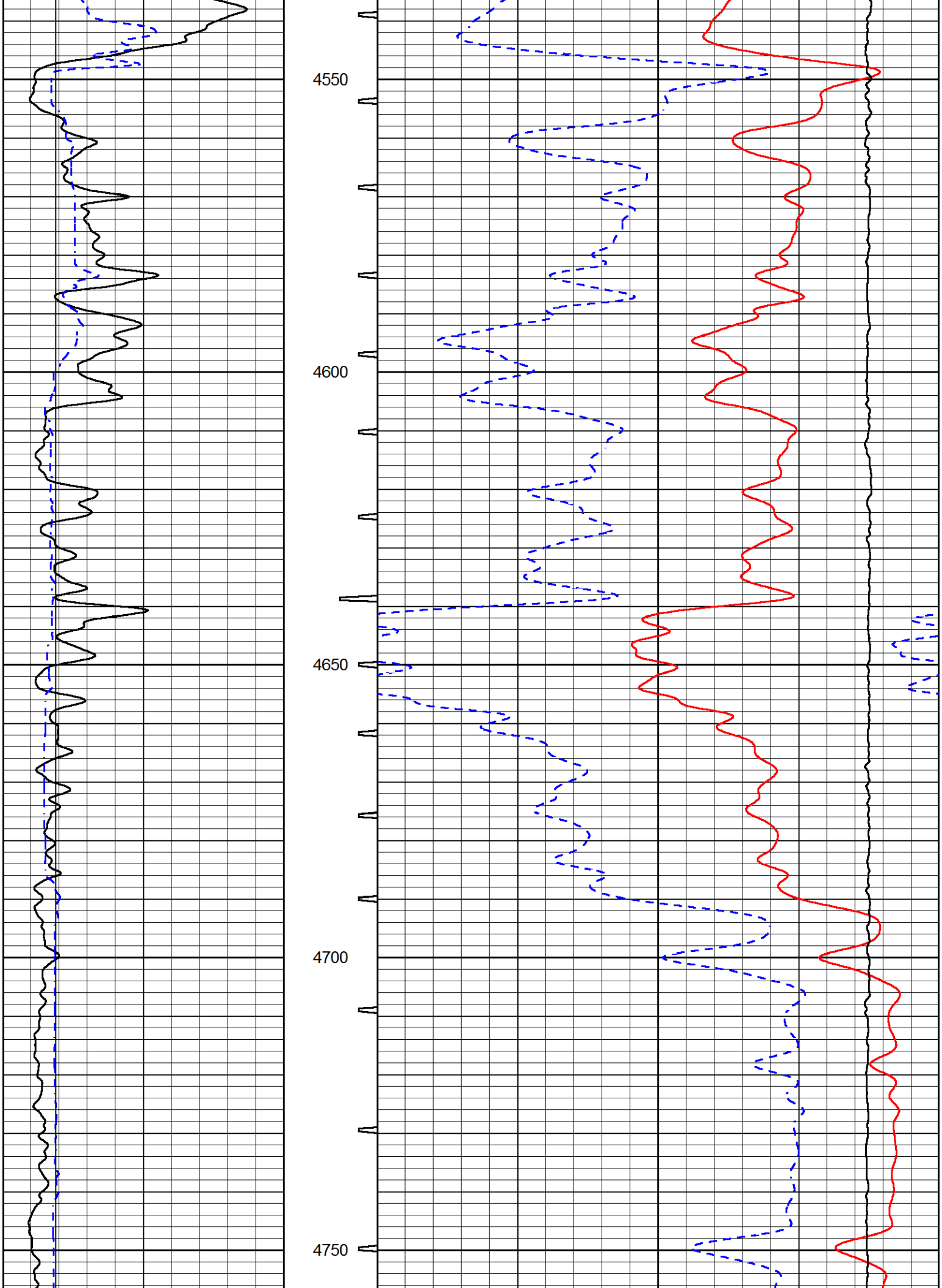

3450
3500
3550
3600
3650

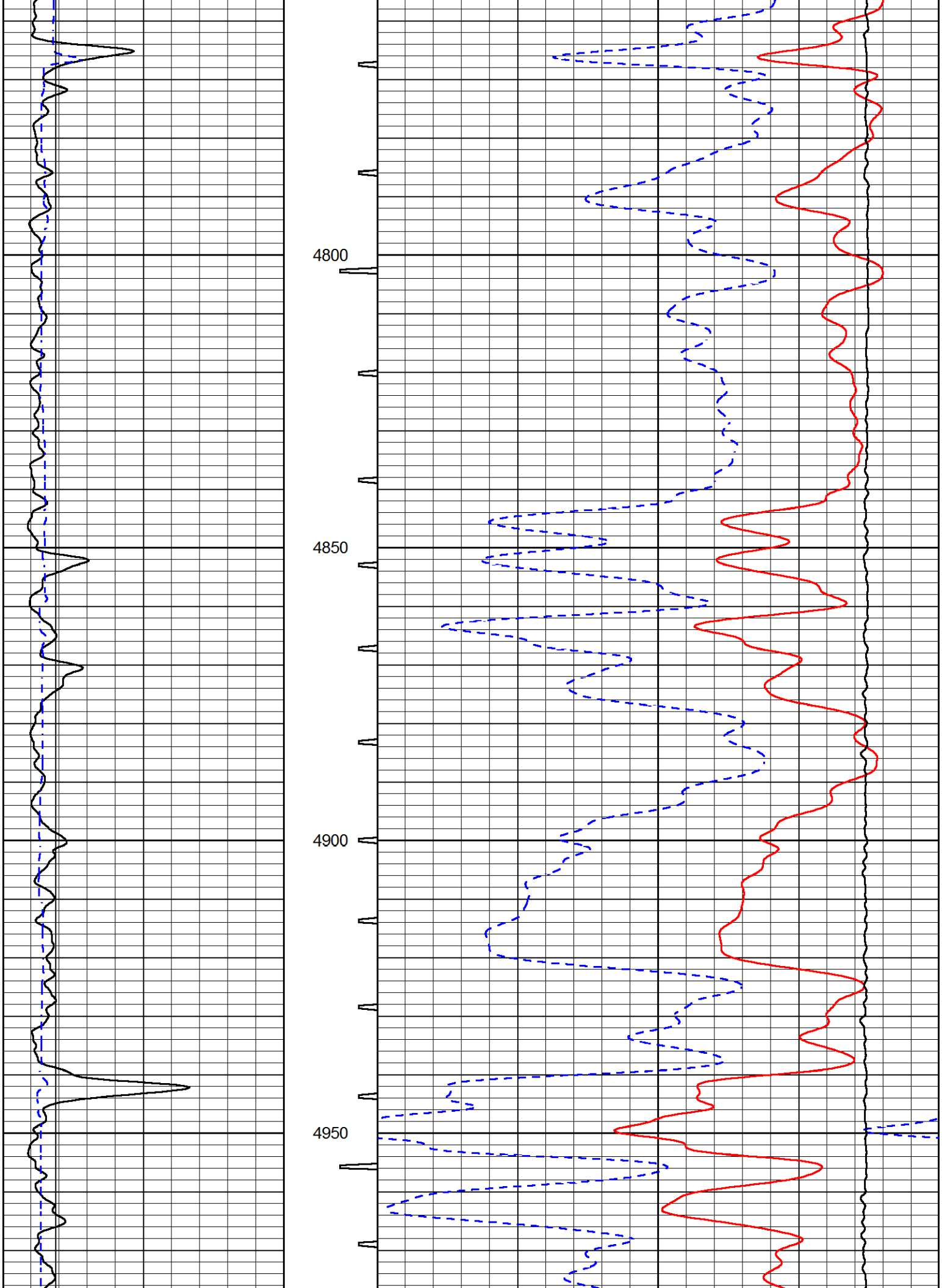

3700
3750
3800
3850

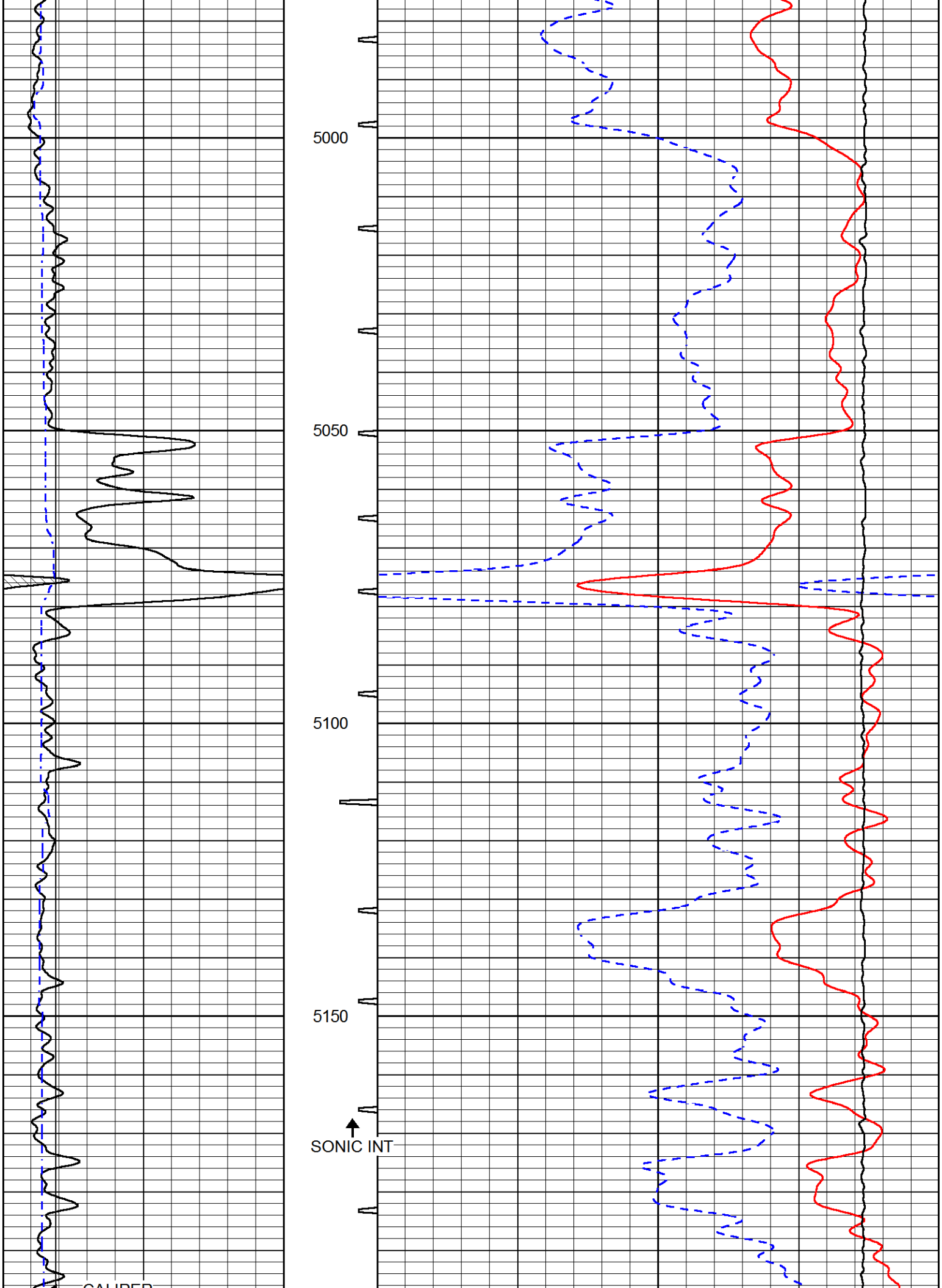

3900
3950
4000
4050

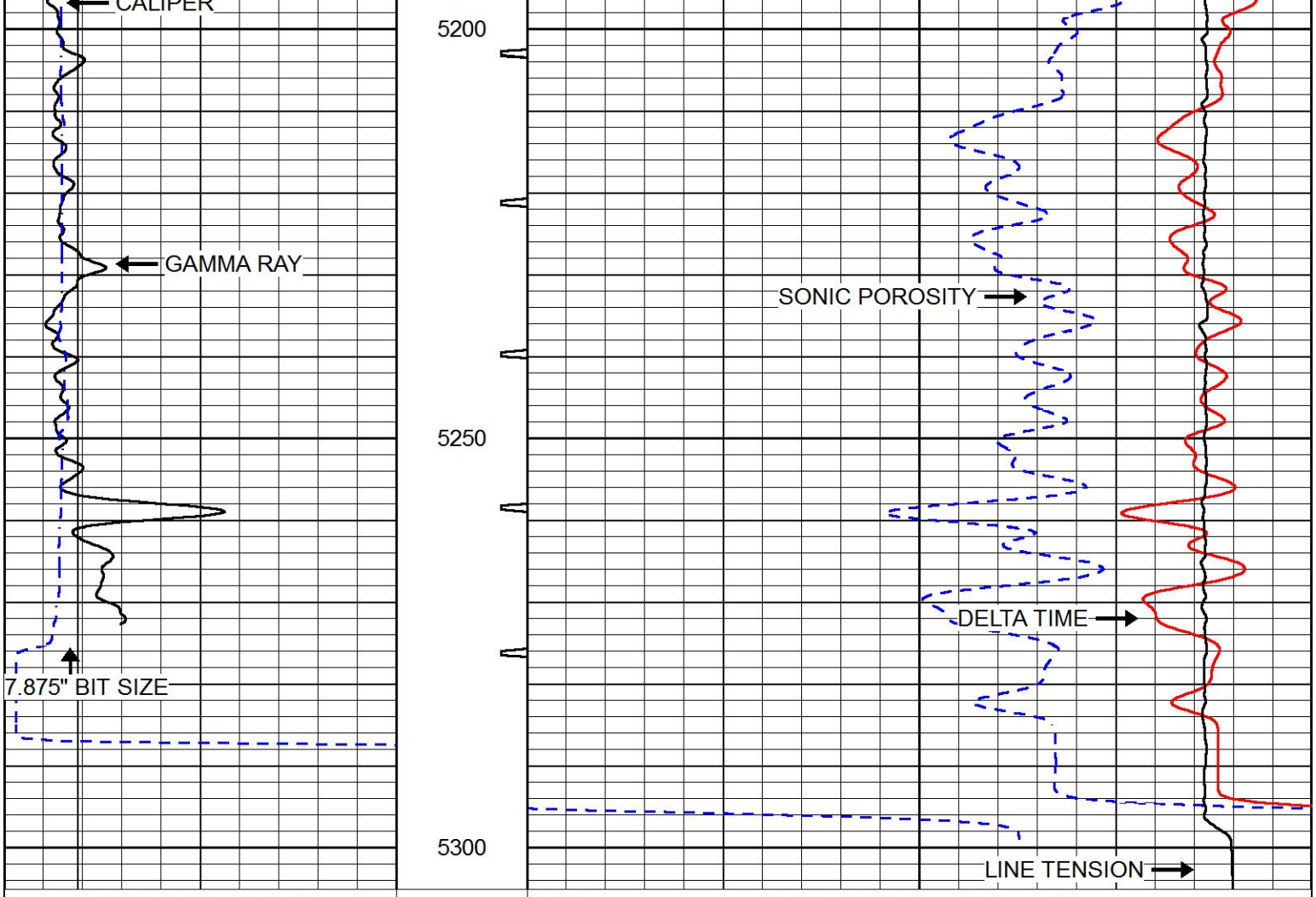

4100
4150
4200
4250
4300


4350
4400
4450
4500


4550
4600
4650
4700
4750


4800
4850
4900
4950


5000
5050
5100
5150
SONIC INT



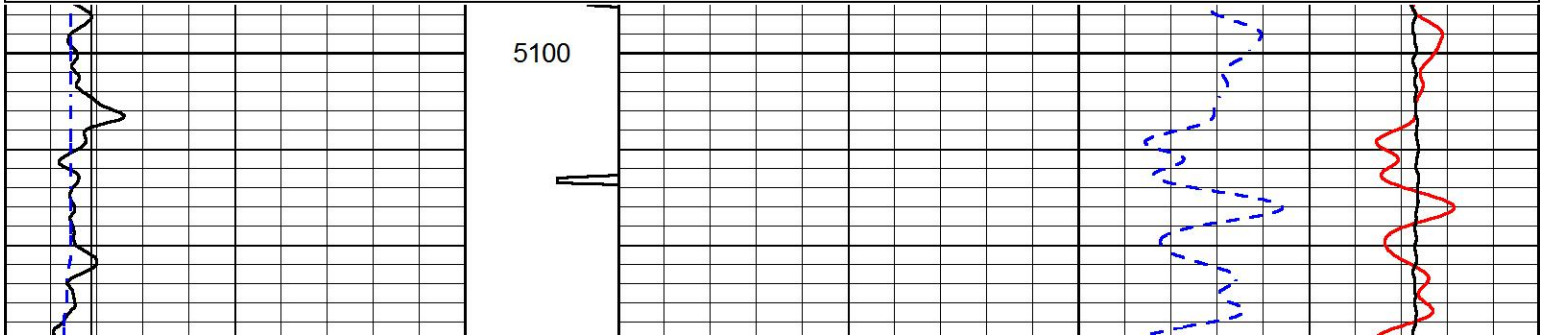
0	GAMMA RAY (GAPI)	150	SONIC INT TRAVEL TIME (msec)	140	DELTA TIME (usec/ft) (usec/ft)	40
6	CALIPER (in)	16		30	SONIC POROSITY (pu)	-10
6	BIT SIZE	16		15000	LINE TENSION (lb)	0

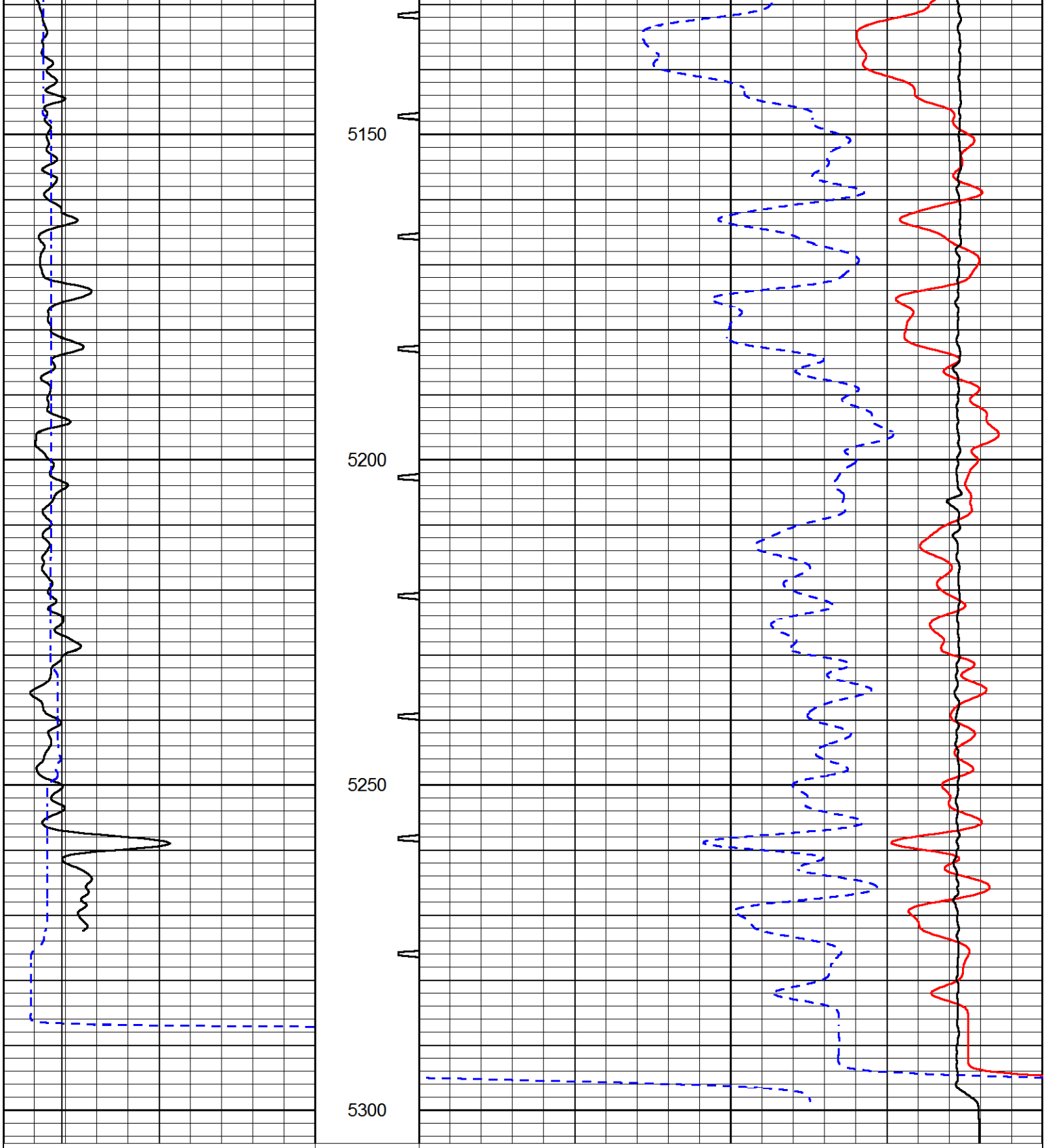
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REPEAT SECTION

Database File	american warrior_ruff unit 1-11.db
Dataset Pathname	STACK/pass2.1
Presentation Format	sonic
Dataset Creation	Sat Sep 01 02:48:31 2018
Charted by	Depth in Feet scaled 1:240

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6	CALIPER (in)	16		30	SONIC POROSITY (pu)	-10
6	BIT SIZE	16		15000	LINE TENSION (lb)	0





Calibration Report

Database File	american warrior_ruff unit 1-11.db
Dataset Pathname	STACK/pass4.1
Dataset Creation	Sat Sep 01 03:17:45 2018

Dual Induction Calibration Report

Serial-Model:	1987-M&W
Calibration Performed:	Thu Aug 09 22:42:18 2018

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.505	-40.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.390	-110.000

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	2.670	g/cc	836.60	3999.09	cps

Spine Angle = 74.70 Density/Spine Ratio = 0.531

	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

Company	AMERICAN WARRIOR, INC.
Well	RUFF UNIT #1-11
Field	LIPPOLDT NORTHWEST
County	HODGEMAN

Pioneer Energy Services

State KANSAS