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Pioneer Energy Services

DUAL INDUCTION 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
MEL/BHCS

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

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

Date	4/16/2018			
Run Number	ONE			
Depth Driller	5240'			
Depth Logger	5243'			
Bottom Logged Interval	5242'			
Top Log Interval	400'			
Casing Driller	8.625" @ 441'			
Casing Logger	435'			
Bit Size	7.875"			
Type Fluid in Hole	CHEMICAL			
Salinity,ppm CL	4000			
Density / Viscosity	9.5 52			
pH / Fluid Loss	9.0 8.0			
Source of Sample	FLOWLINE			
Rm @ Meas. Temp	0.80 @ 60			
Rmf @ Meas. Temp	0.60 @ 60			
Rmc @ Meas. Temp	1.08 @ 60			
Source of Rmf / Rmc	CHARTS			
Rm @ BHT	0.37 @ 128			
Operating Rig Time	5 HOURS			
Max Rec. Temp. F	128			
Equipment Number	91			
Location	HAYS			
Recorded By	D. SCHMIDT			
Witnessed By	KEVIN TIMSON			

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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.

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

Database C:\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
			GR-M&W (89)	3.00	3.50	50.00
GR	40.58					
CNLSC	37.48		CNT-M&W (207-MW)	5.50	3.50	100.00
CNSSC	36.73					
			CDL-M&W (182-152)	8.50	4.00	250.00
LSD	28.43					
DCAL	28.42					
SSD	27.93					
			ML-PSIML (PSI-01) GO Micro log tools converted to Simplec electronics	7.58	4.00	65.00
MCAL	19.83					
MI	19.83					
MN	19.83					
RLL3F	15.80					
RLL3	15.80					

			DIL-PSI HIGH TEMP (933 (HT))	18.50	3.50	220.00
CILD	8.00					
CILM	4.70					
SP	0.20					

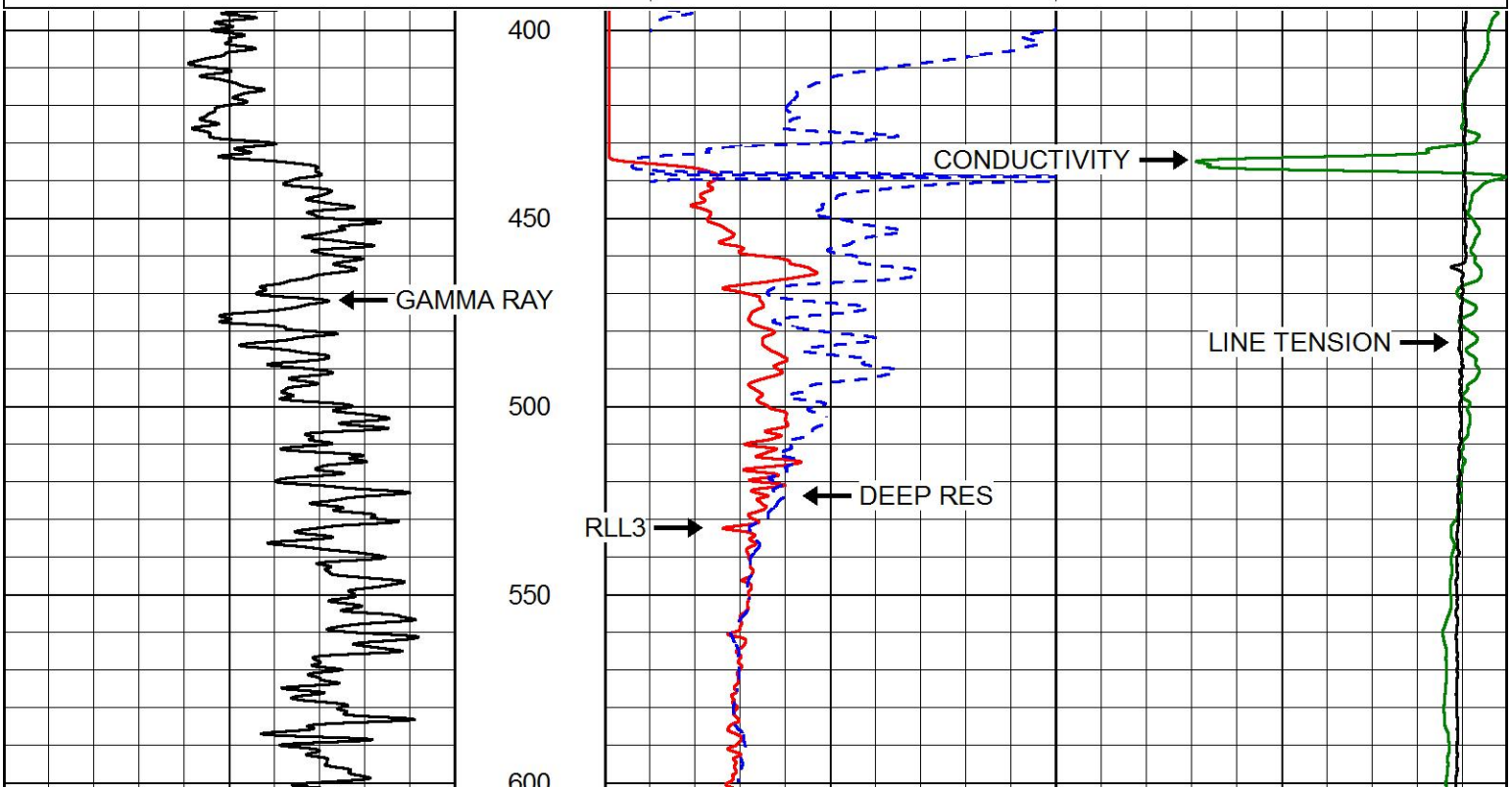
Dataset:	american warrior_sunray 1-12.db: field/well/STKML/pass3.8
Total length:	43.08 ft
Total weight:	685.00 lb
O.D.:	4.00 in

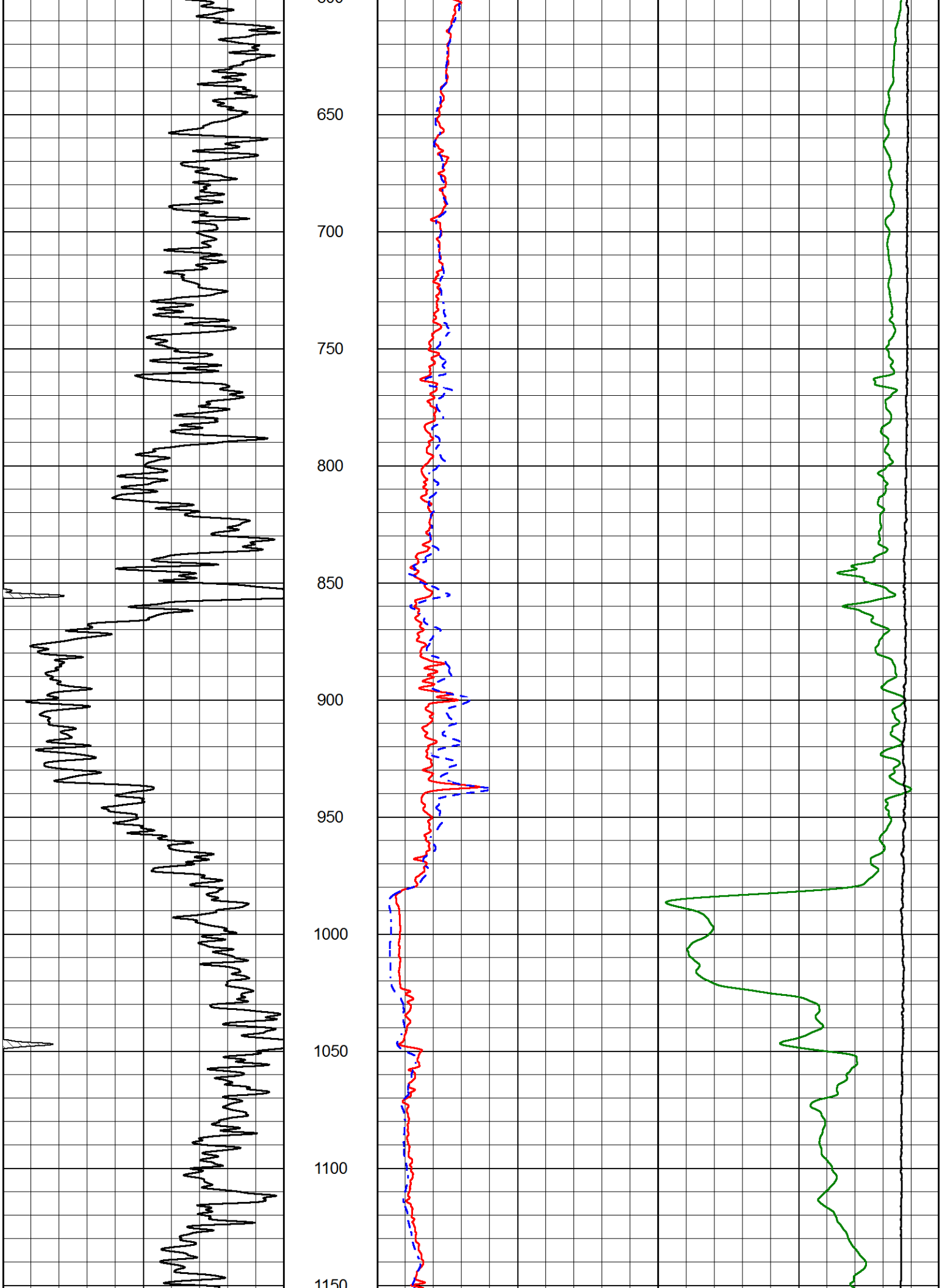
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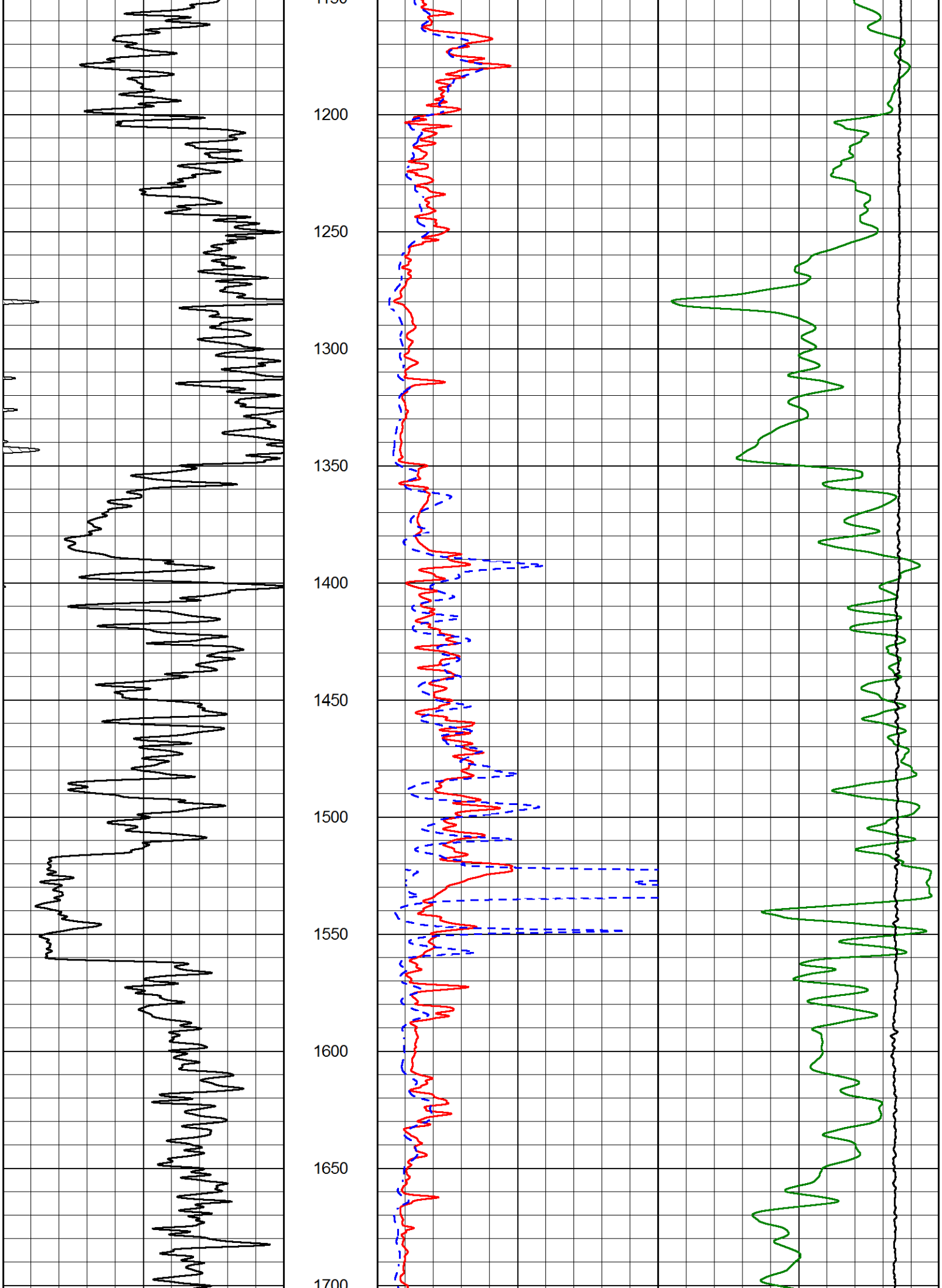
MAIN PASS

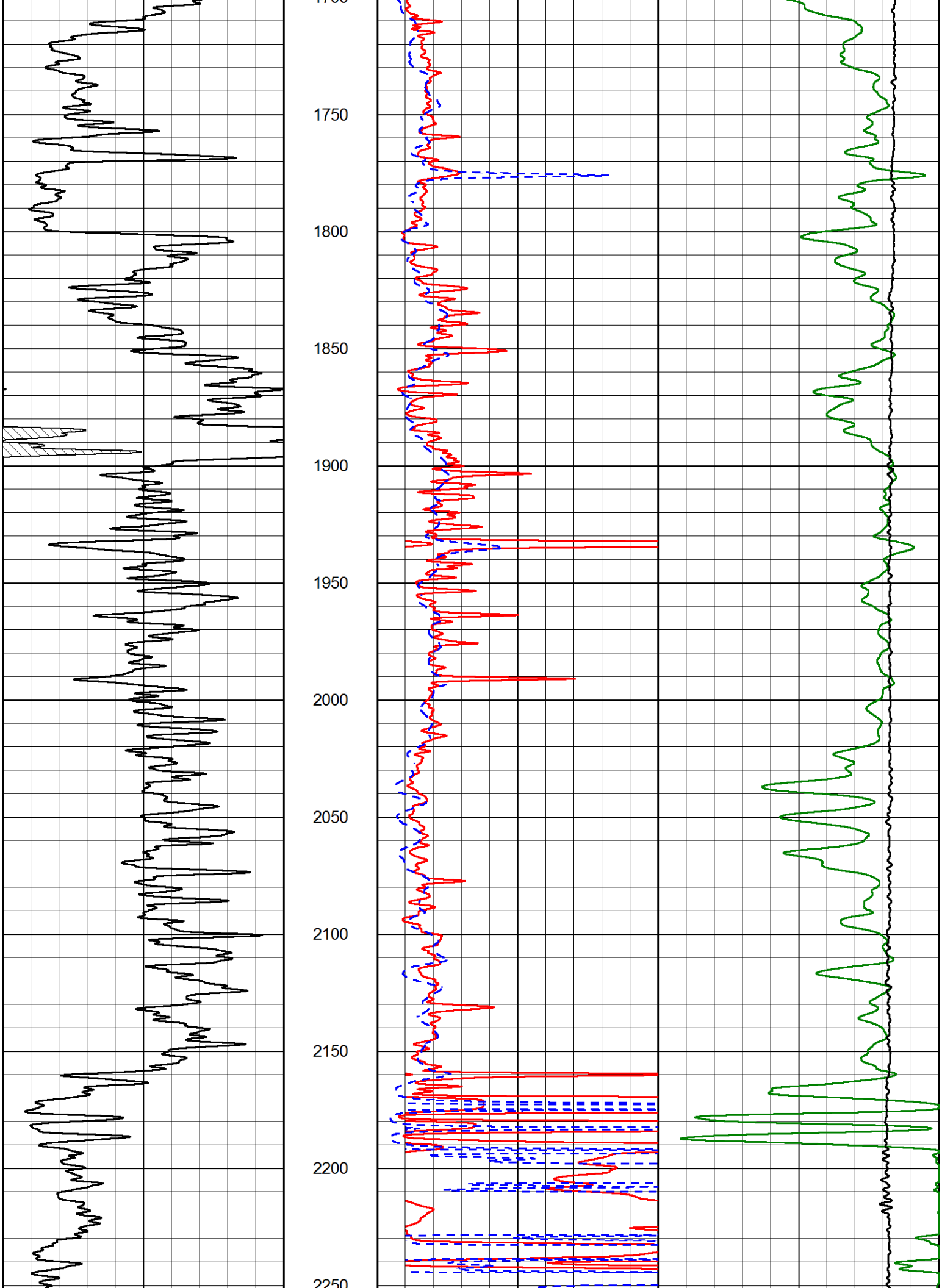
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Dataset Pathname	STKML/pass4.1
Presentation Format	dil2in
Dataset Creation	Mon Apr 16 22:41:25 2018
Charted by	Depth in Feet scaled 1:600

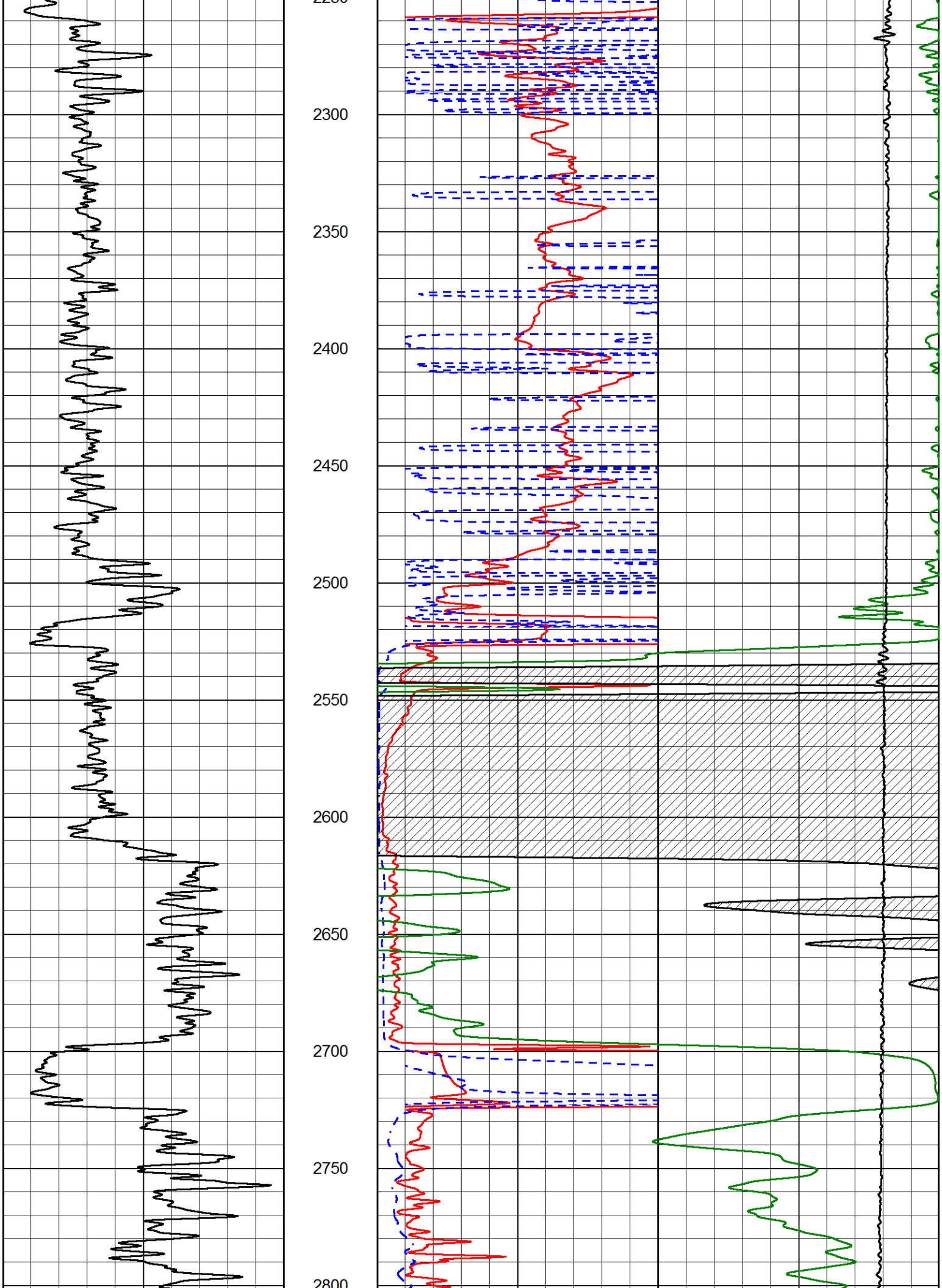
0	Gamma Ray (GAPI)	150
1000	Conductivity (mmho/m)	0
15000	Line Tension (lb)	0
0	RLL3 (Ohm-m)	50
0	Deep Resistivity (Ohm-m)	50
50	RLL3 (Ohm-m)	500
50	Deep Resistivity (Ohm-m)	500

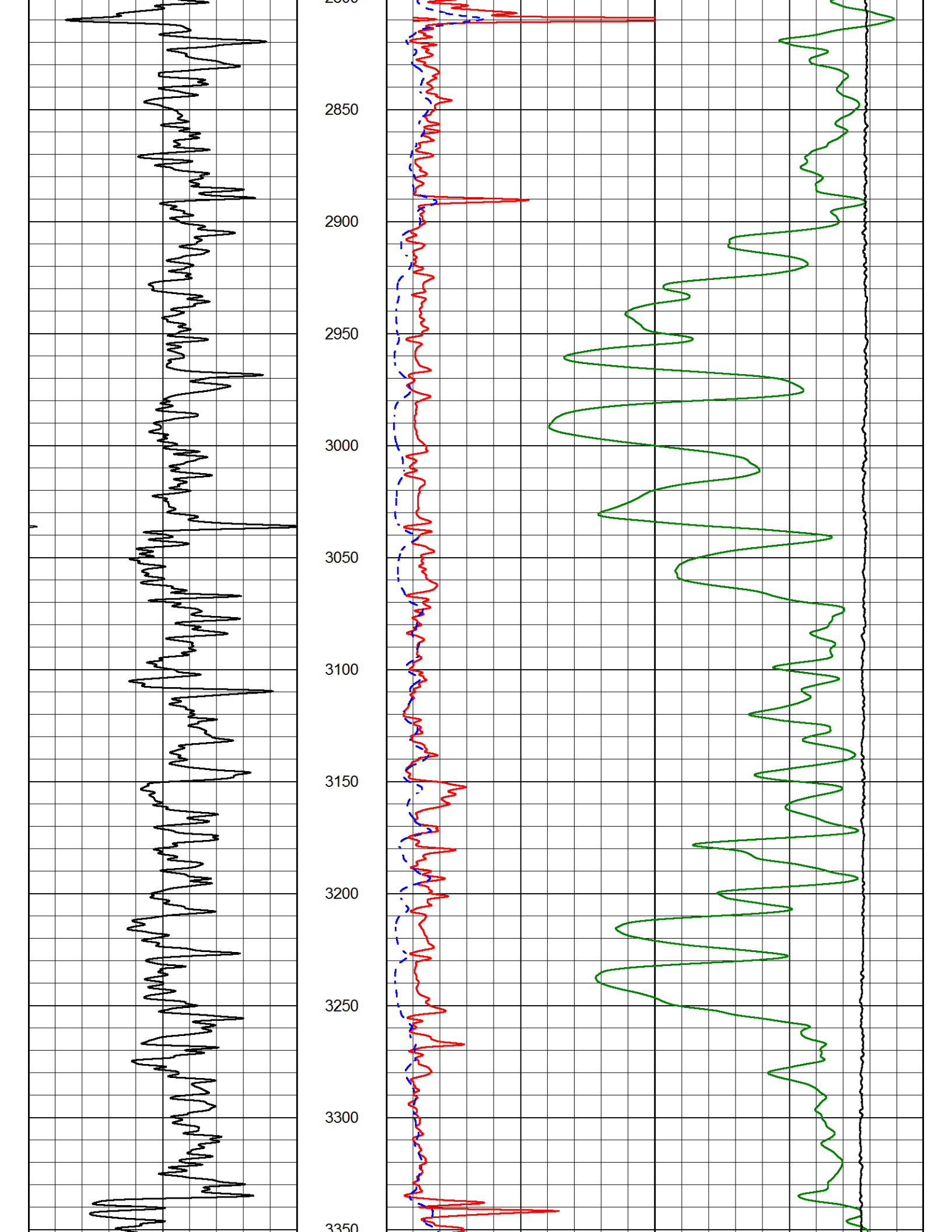


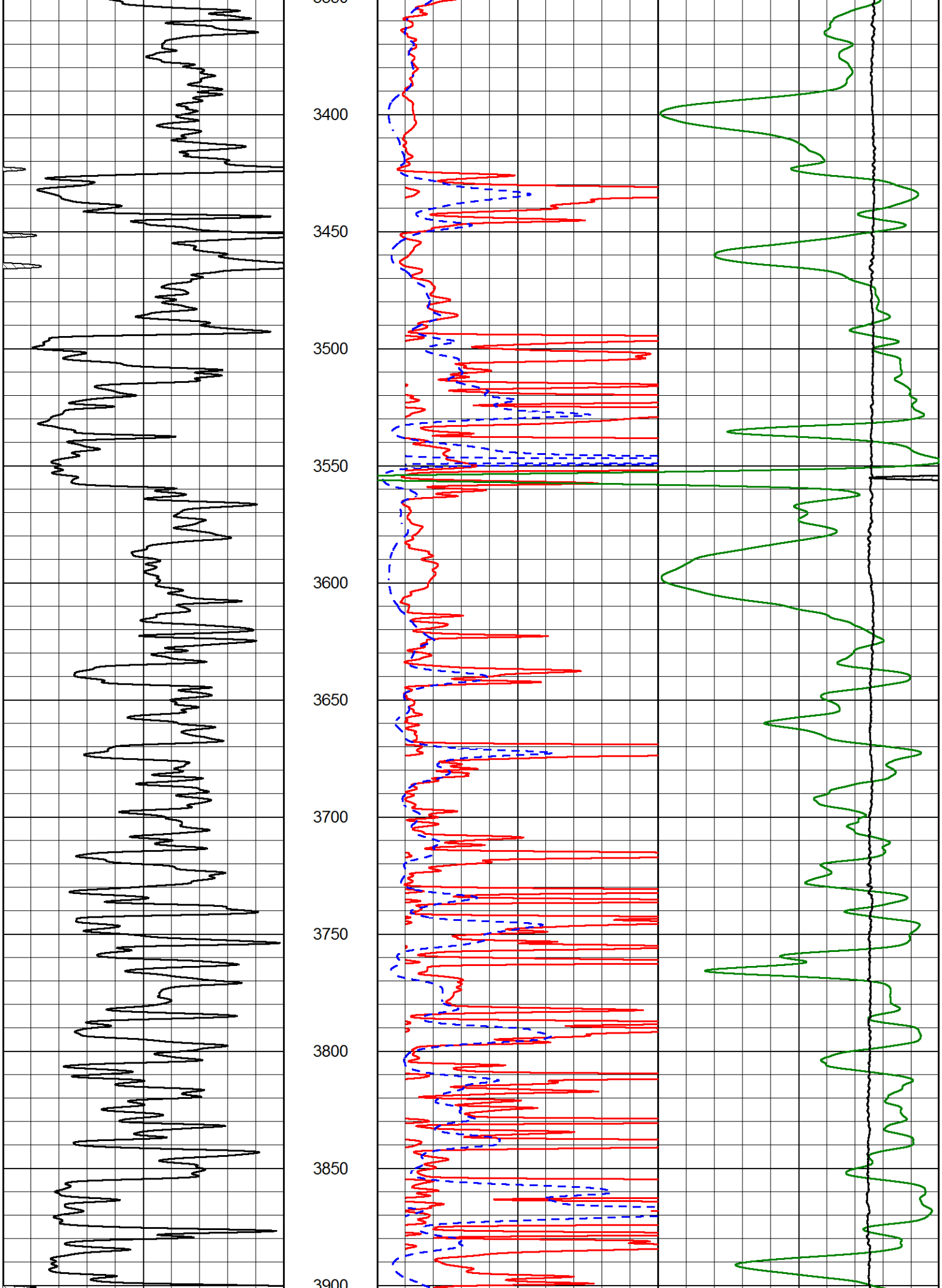

650
700
750
800
850
900
950
1000
1050
1100
1150

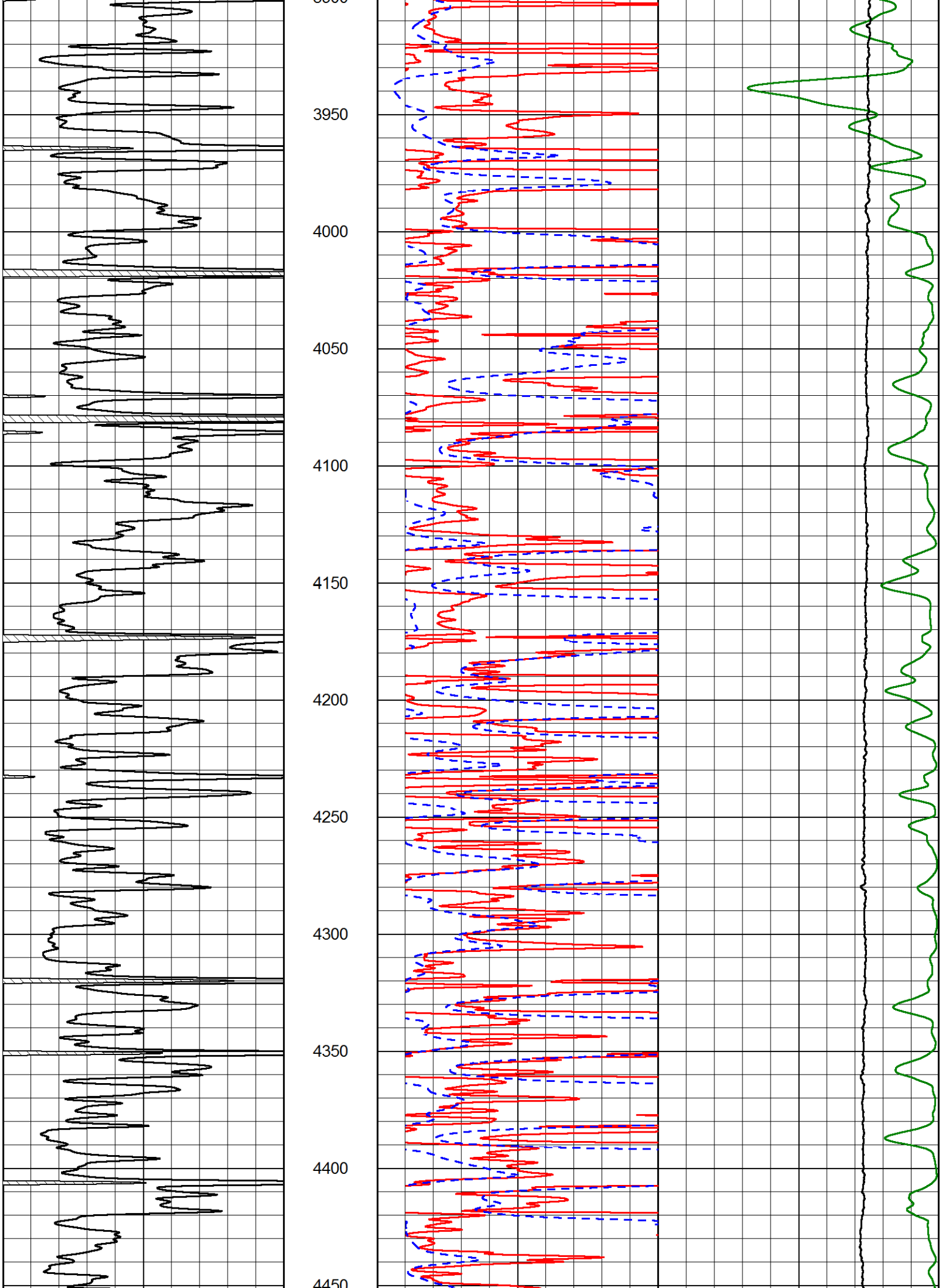

1200
1250
1300
1350
1400
1450
1500
1550
1600
1650
1700

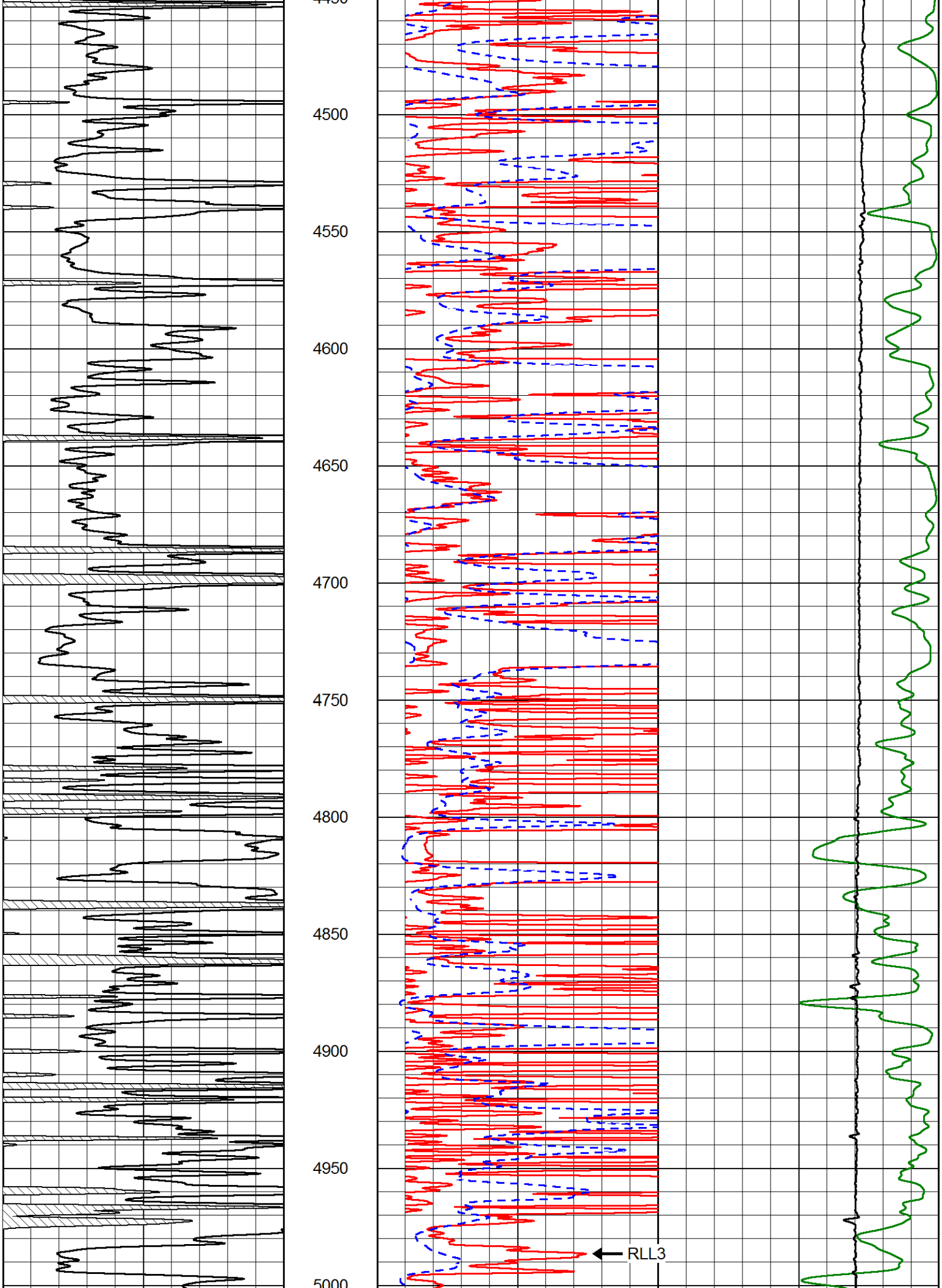

1750
1800
1850
1900
1950
2000
2050
2100
2150
2200
2250

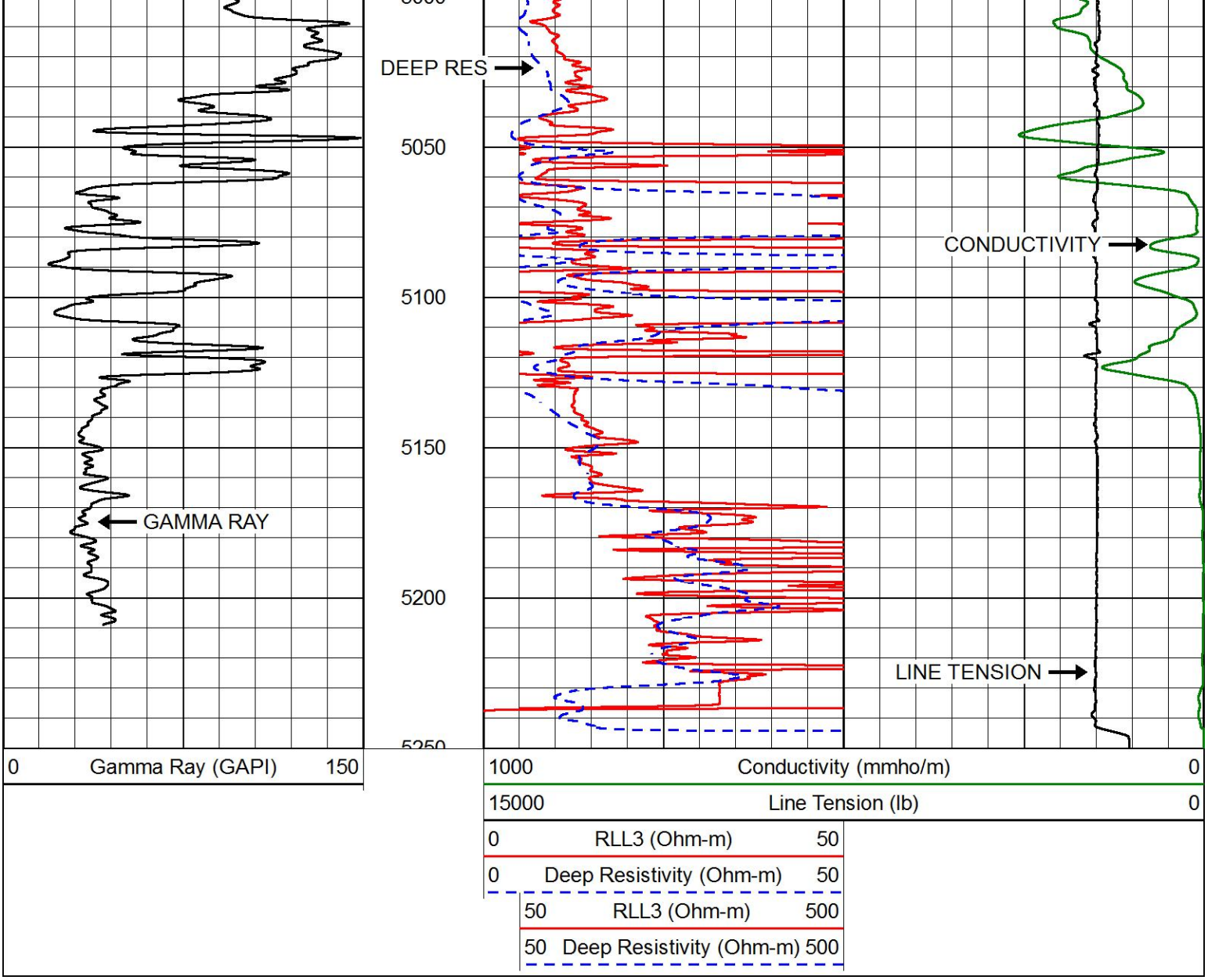

2300
2350
2400
2450
2500
2550
2600
2650
2700
2750
2800


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
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4300
4350
4400
4450

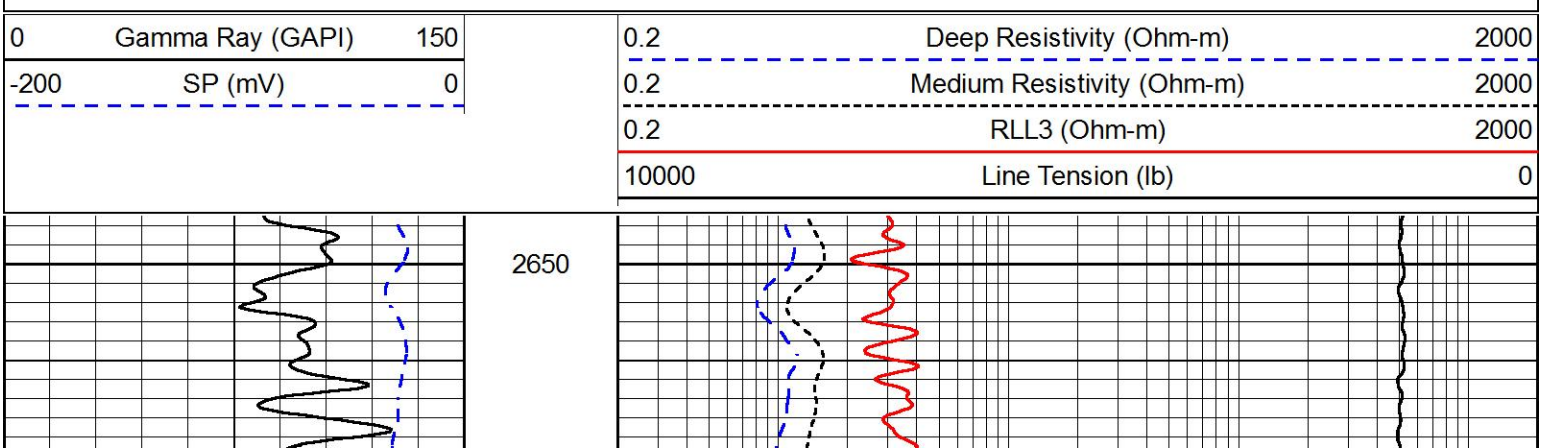

4500
4550
4600
4650
4700
4750
4800
4850
4900
4950
5000
RLL3

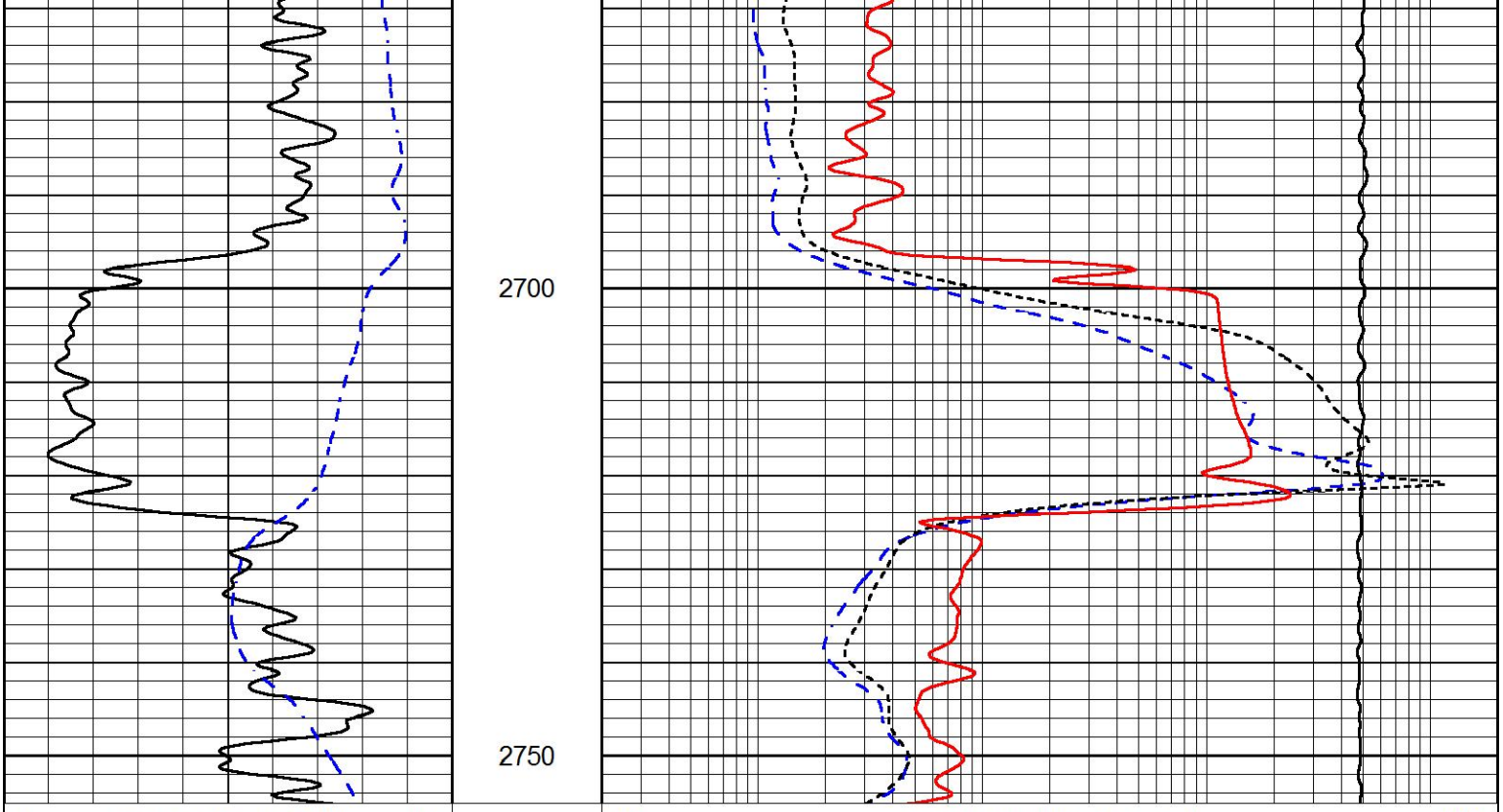


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MAIN PASS

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

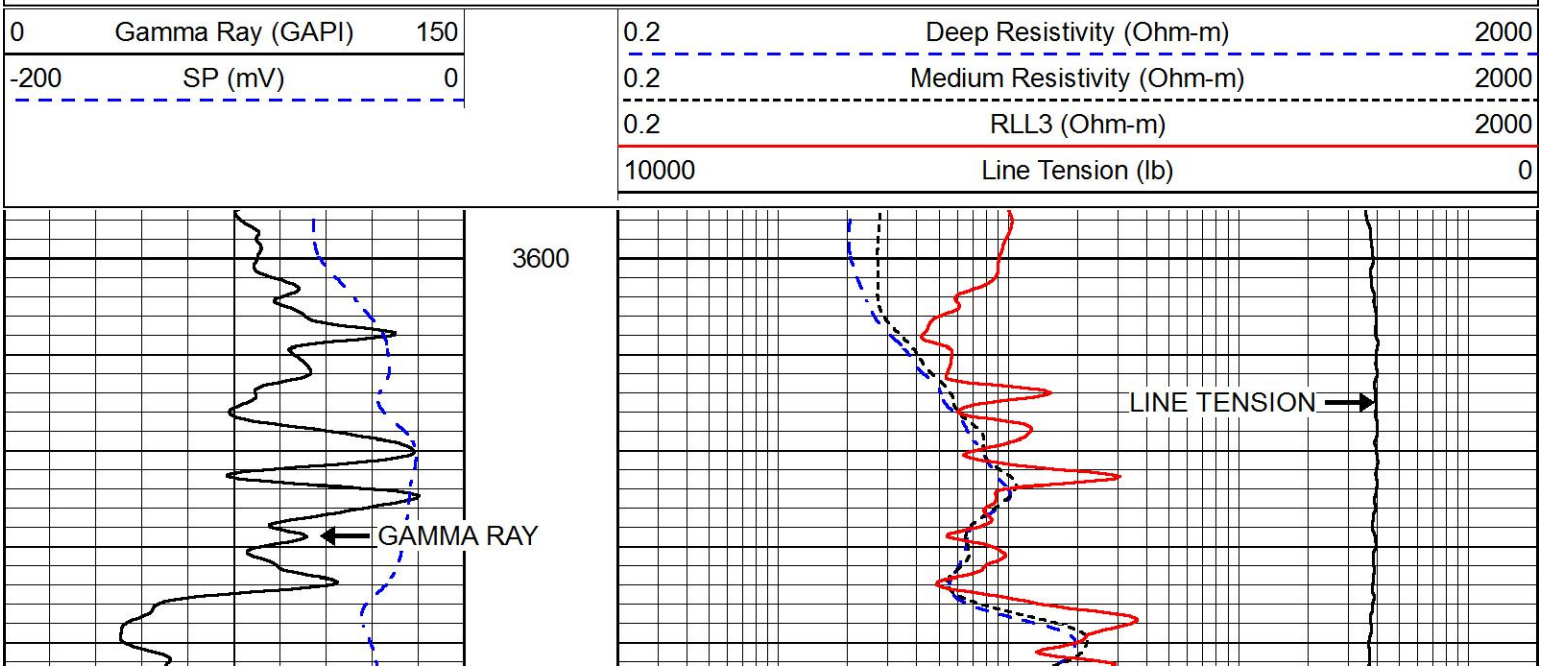


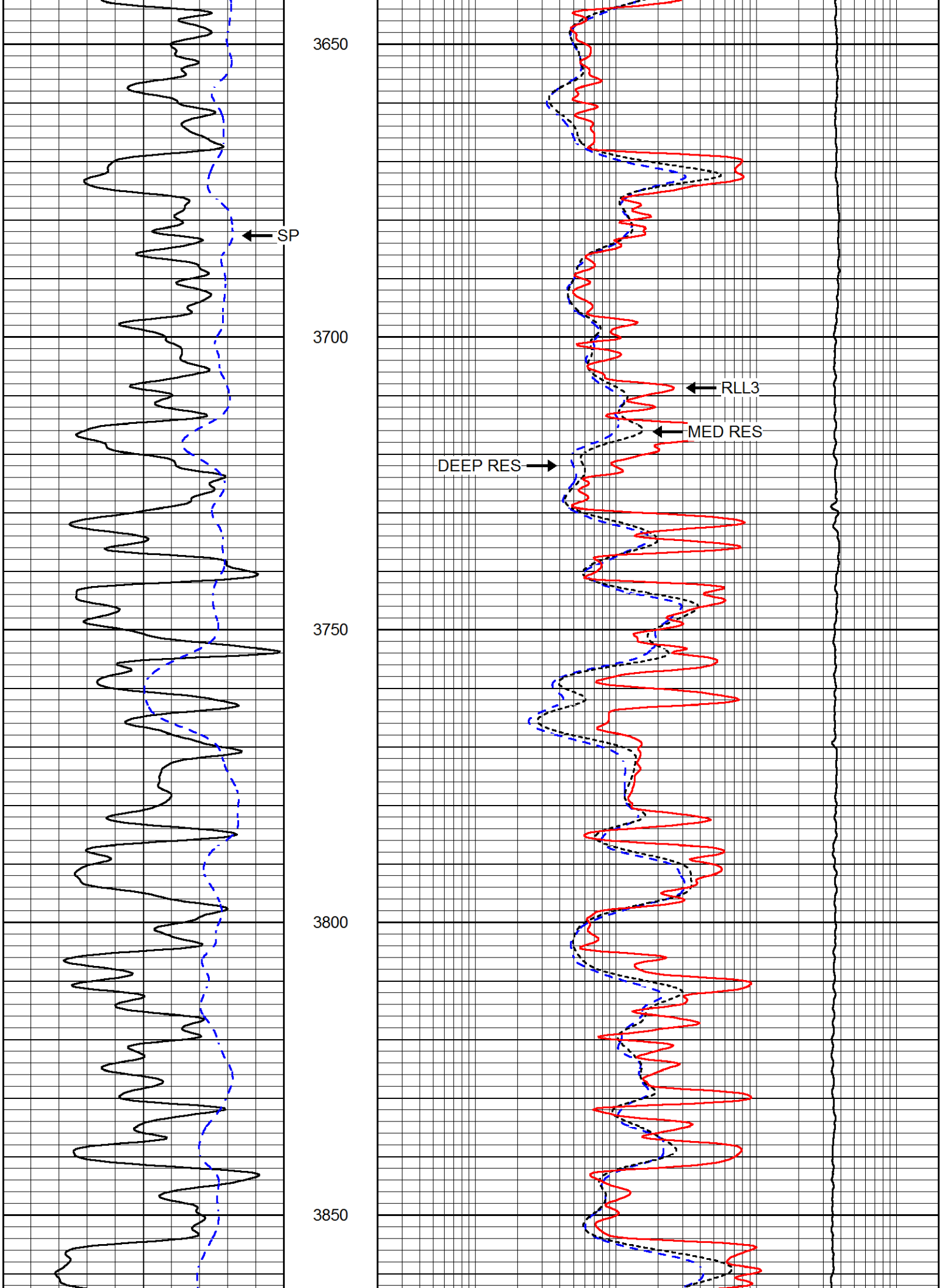


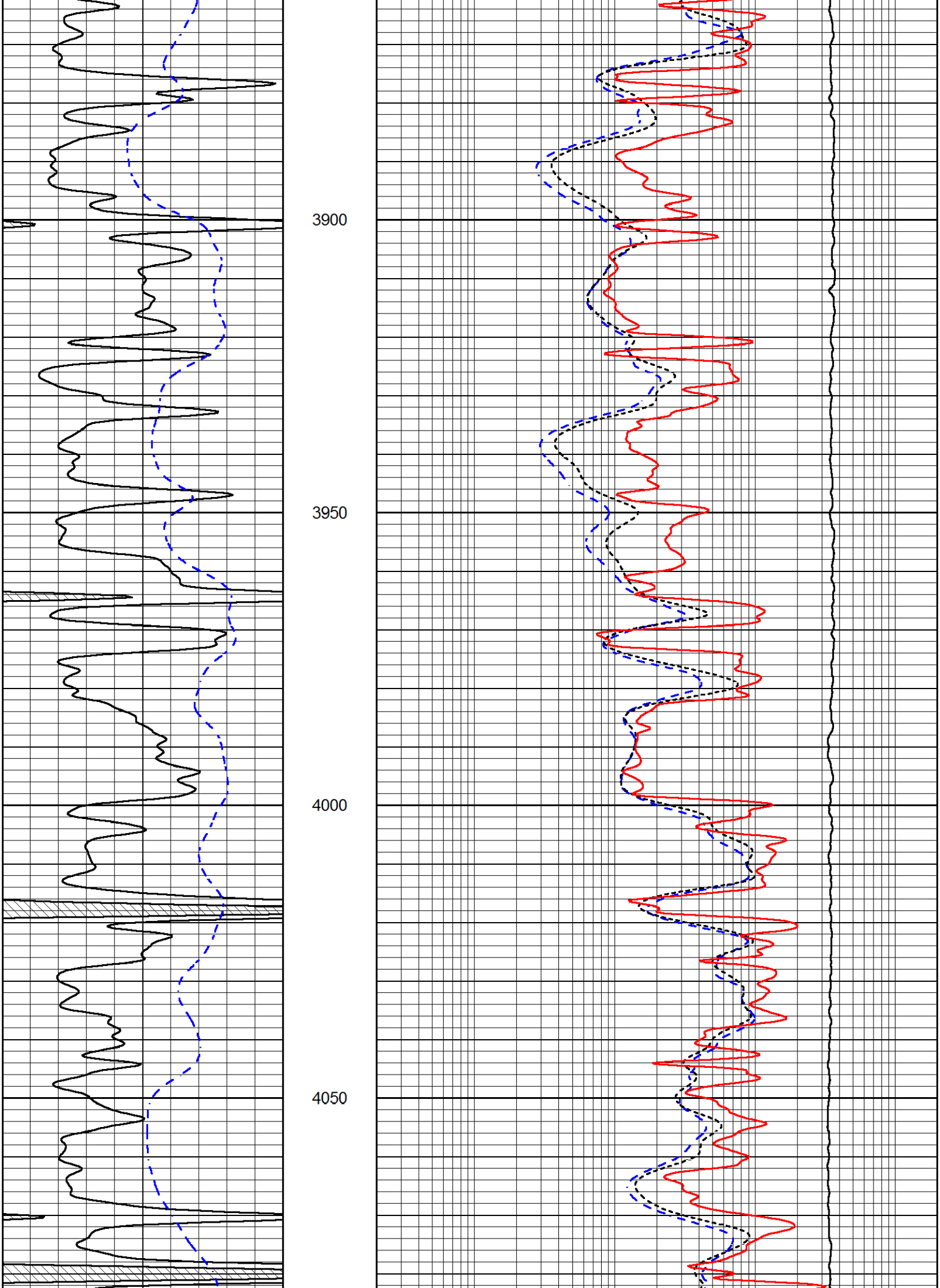
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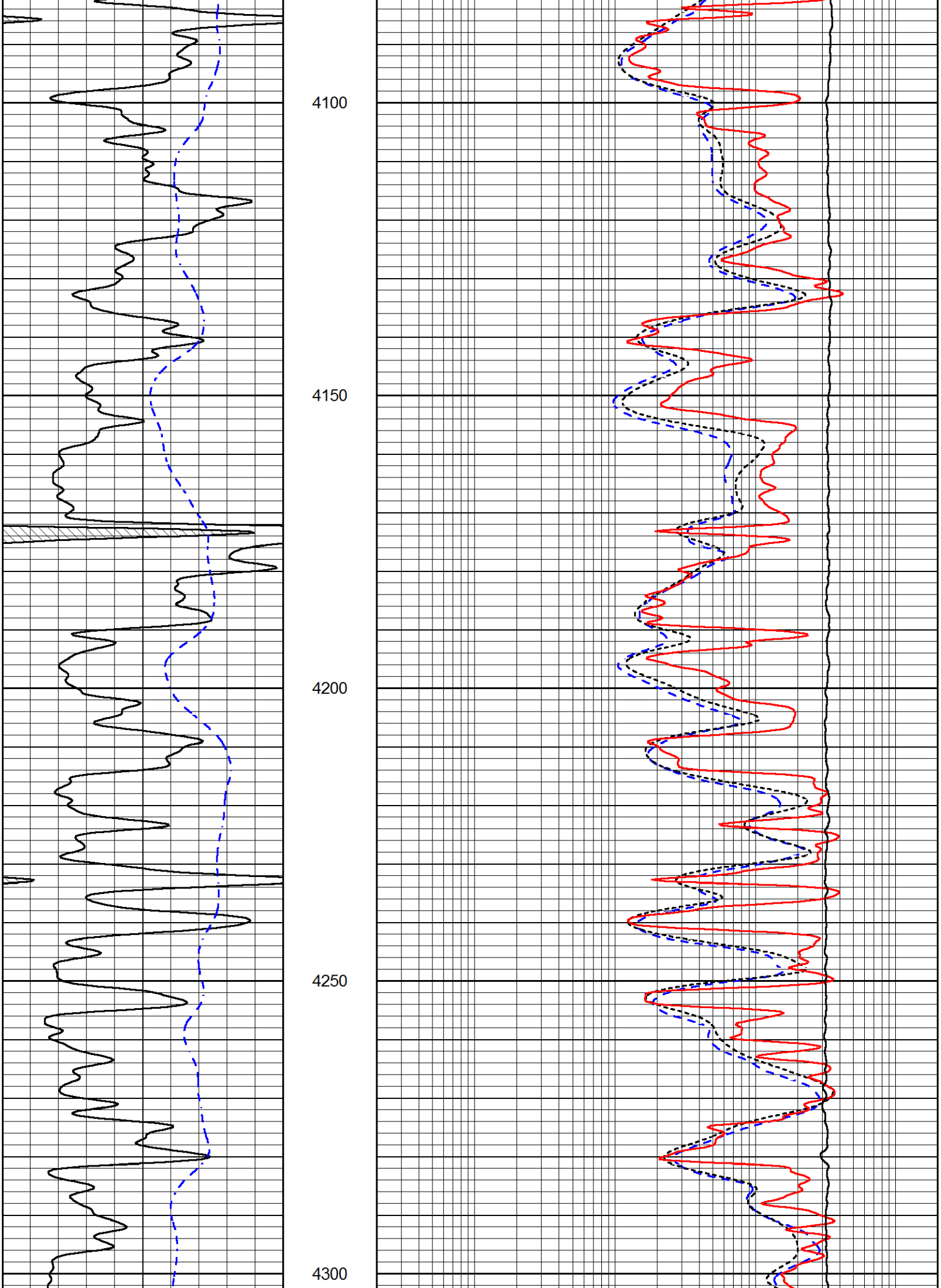
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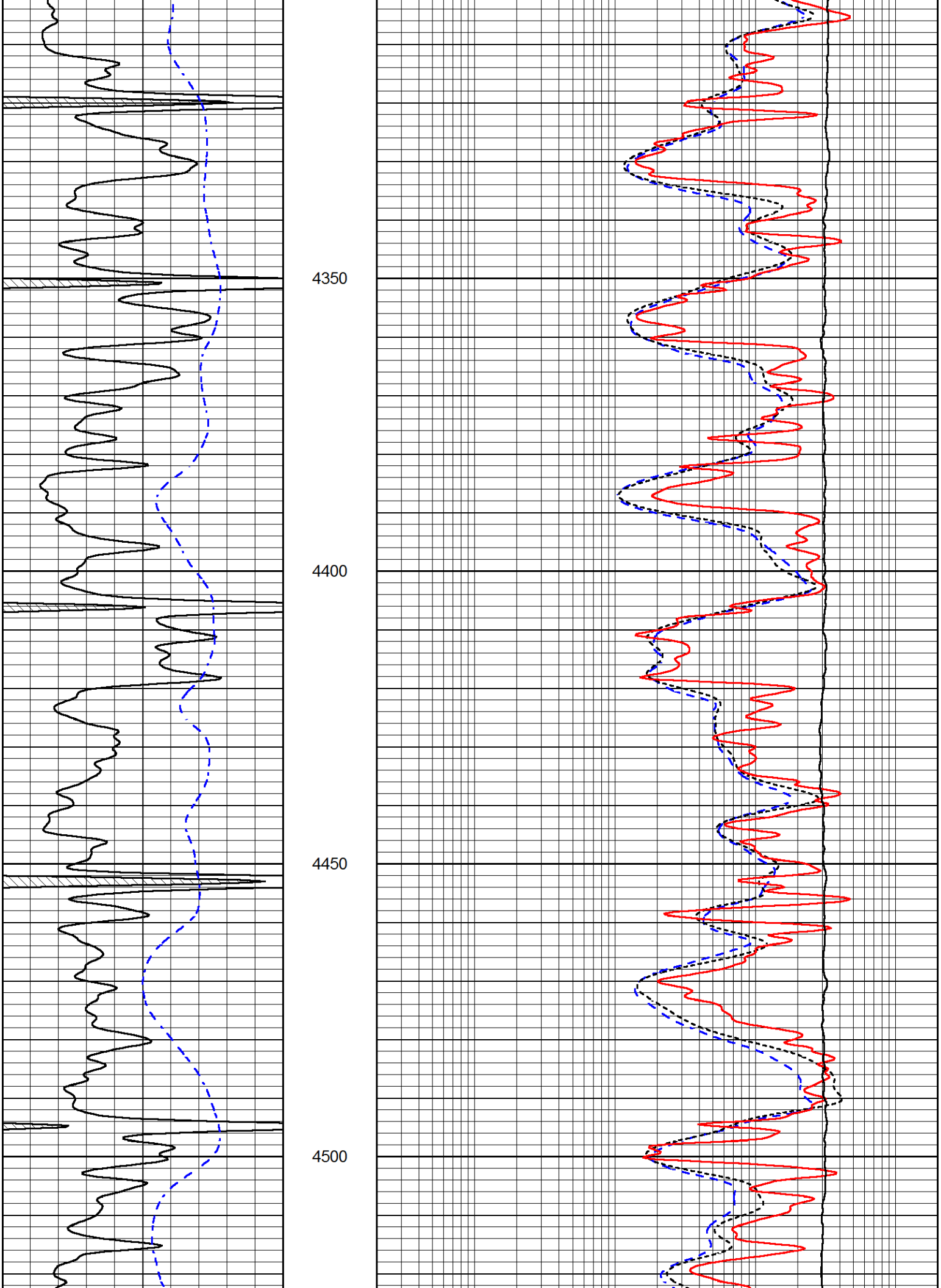
Database File	american warrior_sunray 1-12.db
Dataset Pathname	STKML/pass3.1
Presentation Format	dil
Dataset Creation	Mon Apr 16 22:12:03 2018
Charted by	Depth in Feet scaled 1:240

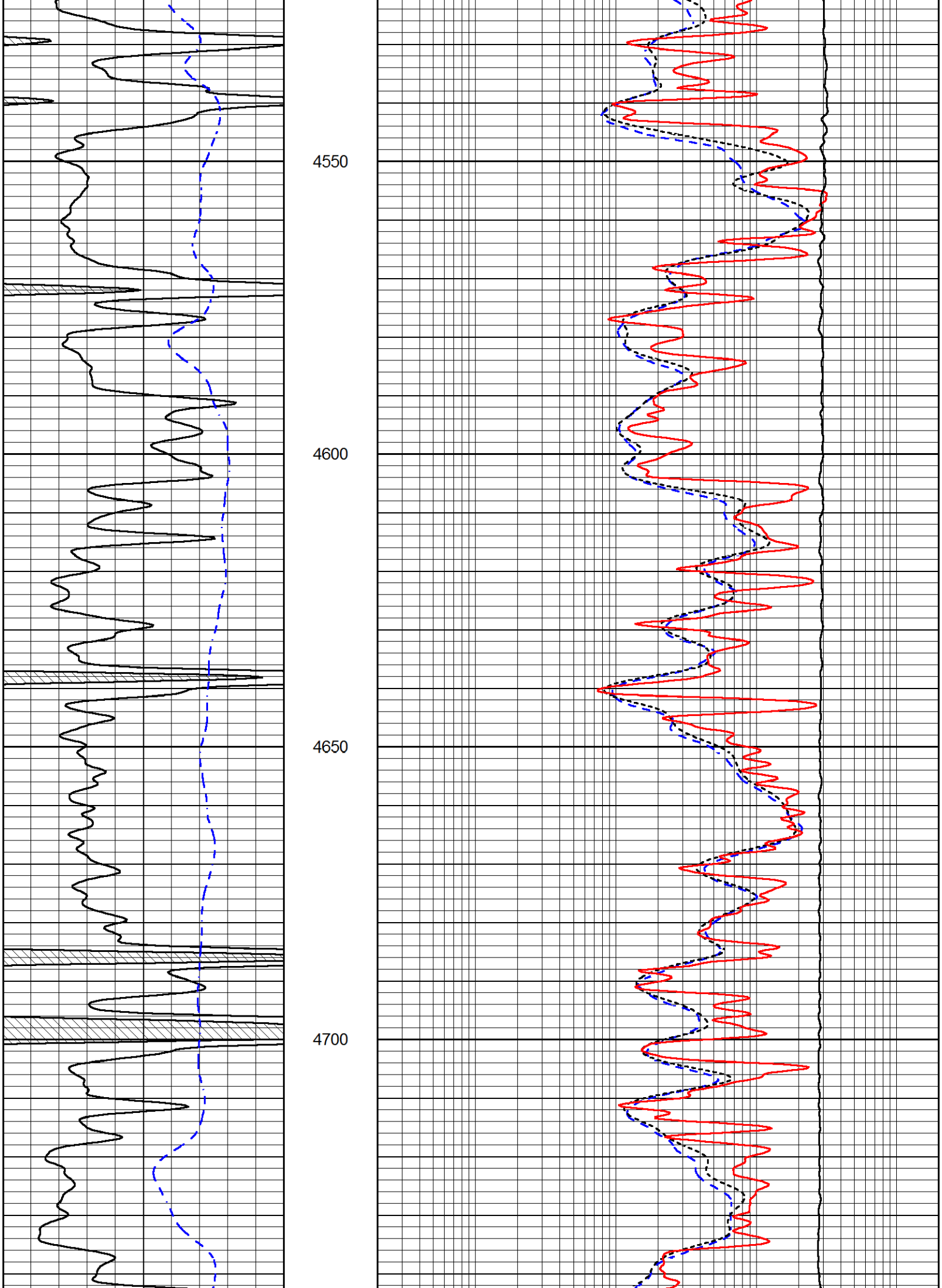


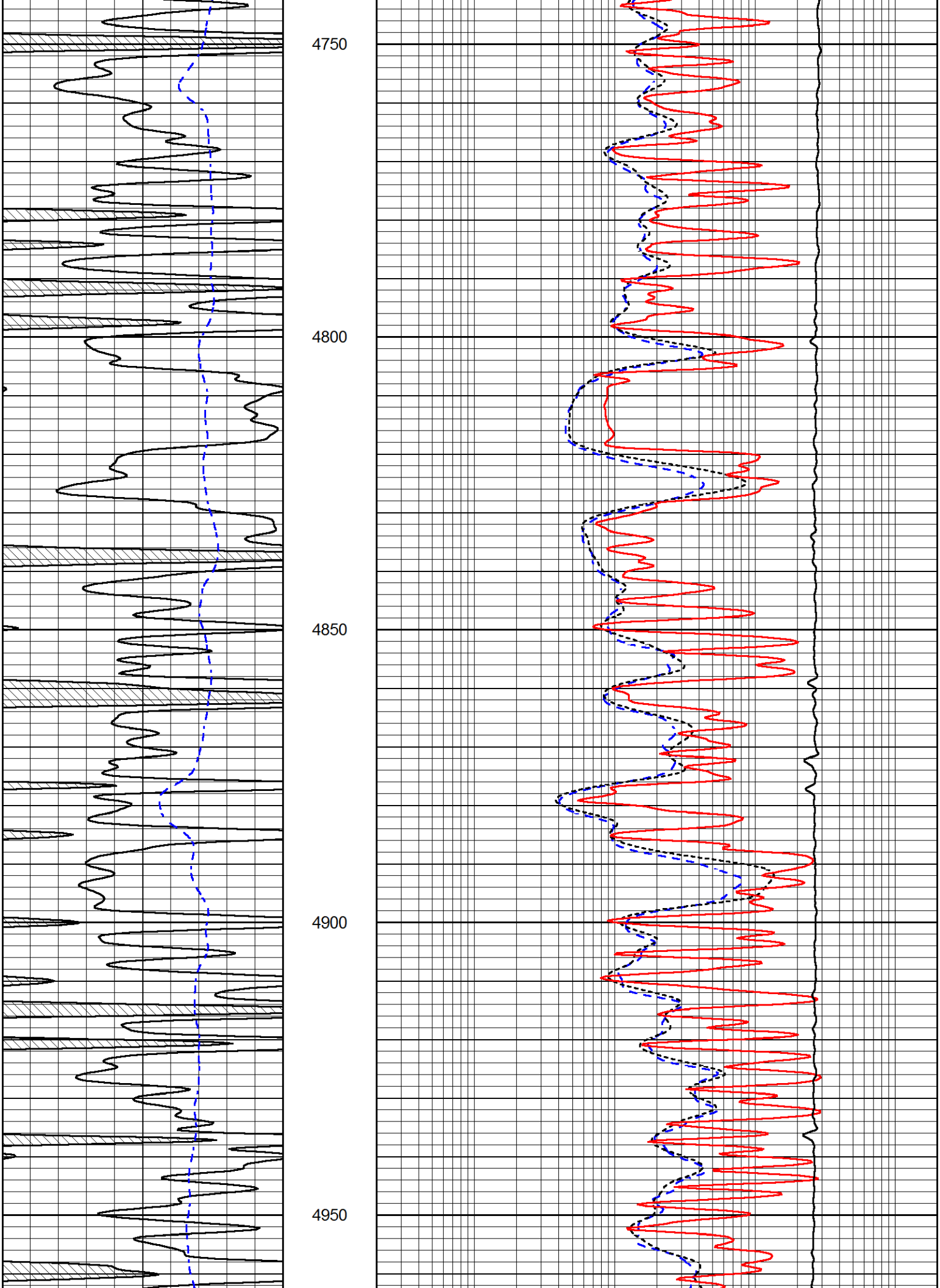

3650
3700
3750
3800
3850
SP
RLL3
MED RES
DEEP RES

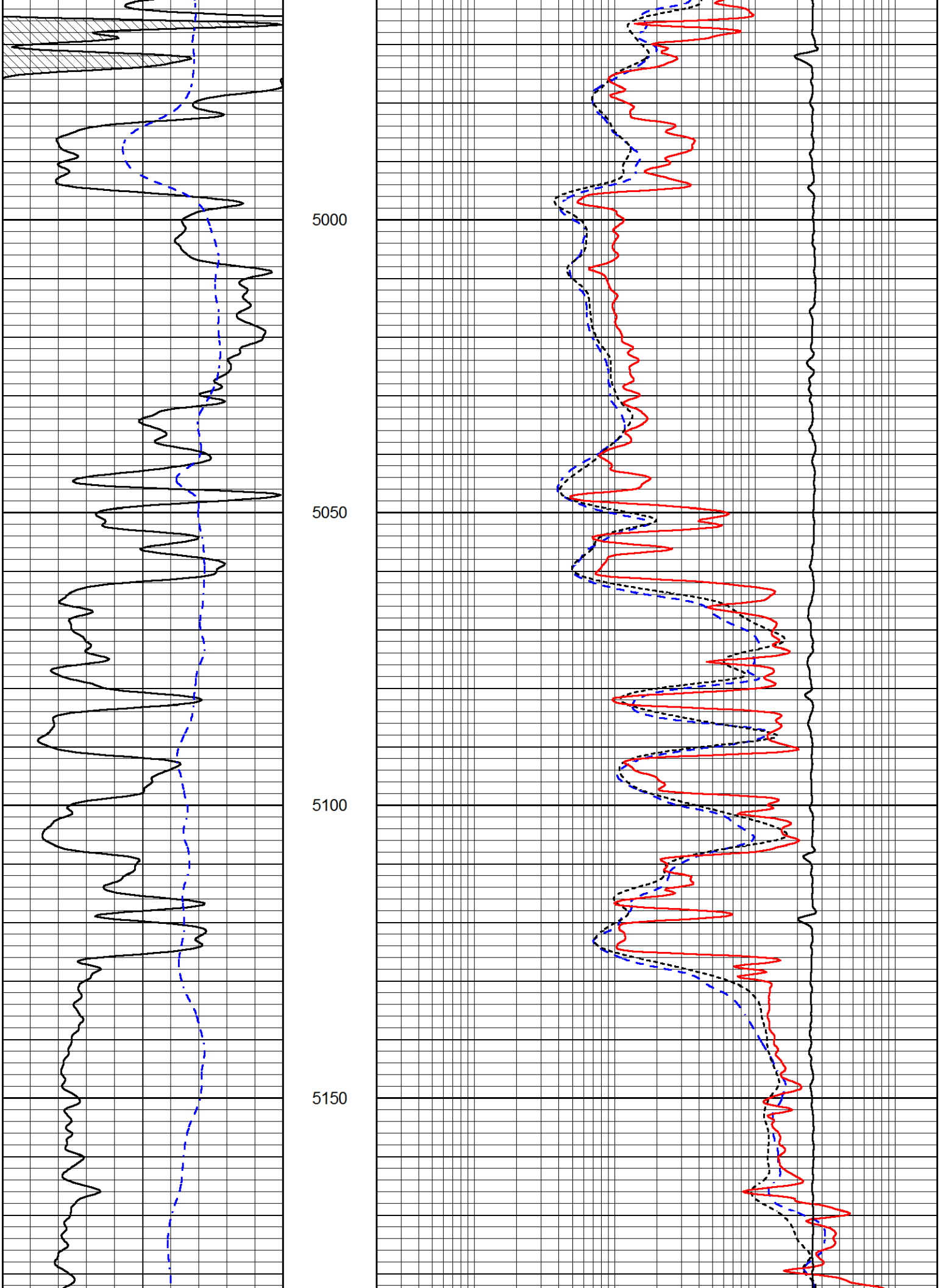

3900
3950
4000
4050

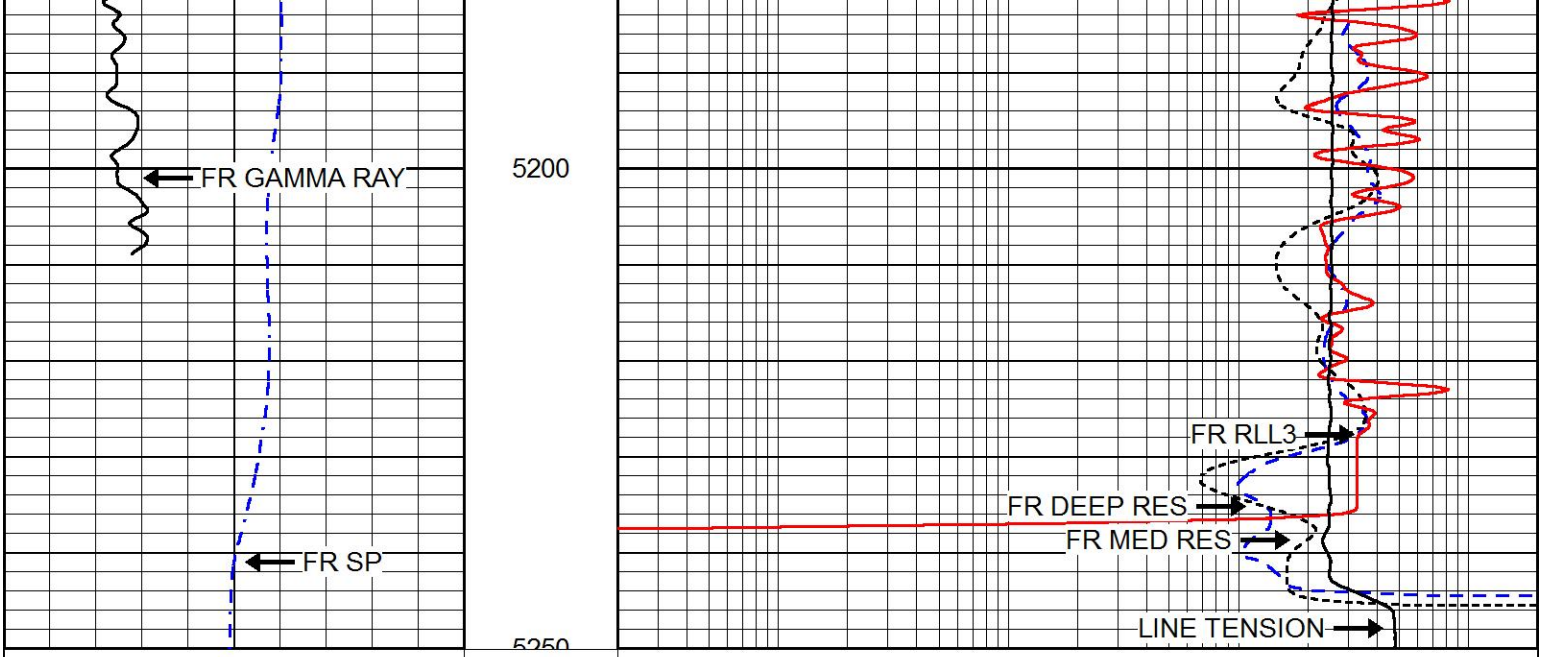

4100
4150
4200
4250
4300


4350
4400
4450
4500


4550
4600
4650
4700


4750
4800
4850
4900
4950


5000
5050
5100
5150



0	Gamma Ray (GAPI)	150
-200	SP (mV)	0

0.2	Deep Resistivity (Ohm-m)	2000
0.2	Medium Resistivity (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	Line Tension (lb)	0

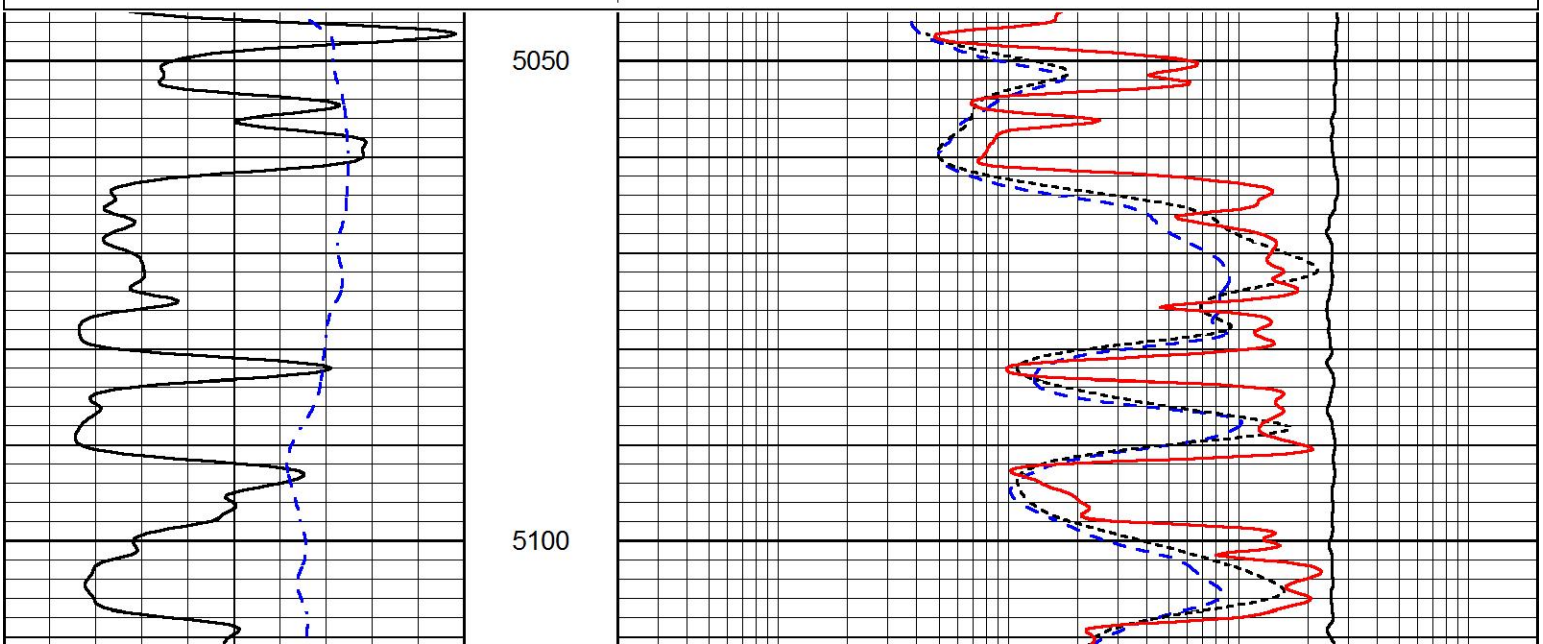
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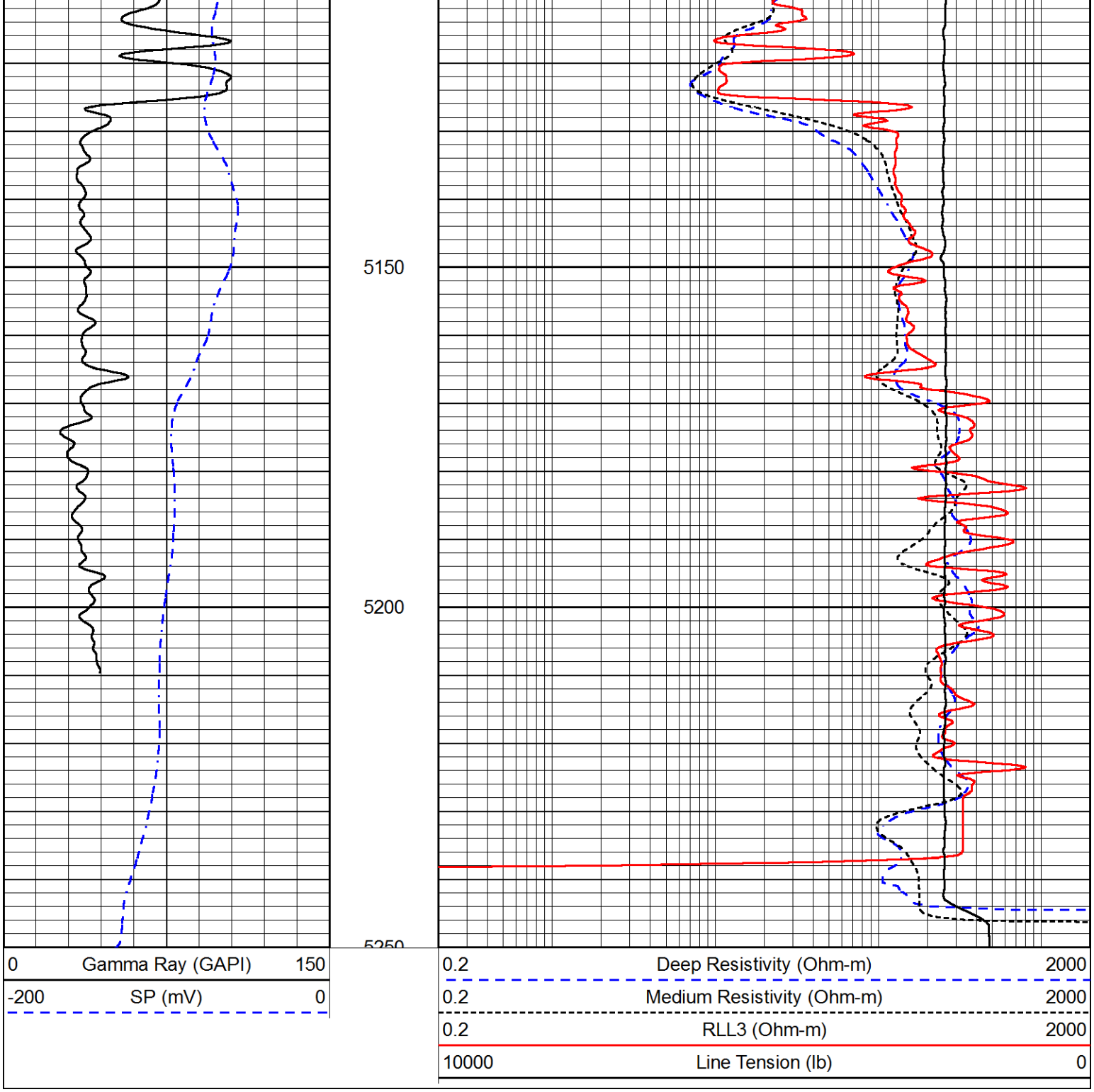
REPEAT SECTION

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

0	Gamma Ray (GAPI)	150
-200	SP (mV)	0

0.2	Deep Resistivity (Ohm-m)	2000
0.2	Medium Resistivity (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	Line Tension (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

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

Company AMERICAN WARRIOR, INC.

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Well	SUNRAY #1-12
Field	UNKNOWN
County	GREELEY
State	KANSAS