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DUAL INDUCTION LOG

Company RITCHIE EXPLORATION, INC.
Well WHITHAM 35ABD NO.1
Field UNKNOWN
County WICHITA State KANSAS
Location: API #: 15-203-20315-00-00
335' FNL & 2470' FEL
SEC 35 TWP 16S RGE 37W

Other Services: CNL/CDL

Elevation: K.B. 3345' D.F. N/A G.L. 3340'

Permanent Datum: GROUND LEVEL Elevation 3340'
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING

Company	RITCHIE EXPLORATION, INC.			
Well	WHITHAM 35ABD NO.1			
Field	UNKNOWN			
County	WICHITA			
State	KANSAS			
Date	4/21/17			
Run Number	ONE			
Depth Driller	4950'			
Depth Logger	4951'			
Bottom Logged Interval	4950'			
Top Log Interval	250'			
Casing Driller	8.625" @ 259'			
Casing Logger	260'			
Bit Size	7.875"			
Type Fluid in Hole	CHEMICAL			
Salinity,ppm CL	7,000			
Density / Viscosity	9.4	54		
pH / Fluid Loss	9.5	9.6		
Source of Sample	FLOWLINE			
Rm @ Meas. Temp	.35 @ 68			
Rmf @ Meas. Temp	.26 @ 68			
Rmc @ Meas. Temp	.47 @ 68			
Source of Rmf / Rmc	CHARTS			
Rm @ BHT	.19 @ 126			
Operating Rig Time	2 HOURS			
Max Rec. Temp. F	126 DEG/F			
Equipment Number	108			
Location	HAYS			
Recorded By	J. HENRICKSON			
Witnessed By	MAY LOVELY			

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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.

LEOTI KANSAS
10 NORTH, 1/2 WEST, SOUTH 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: J. HENRICKSON	Primary Witness: MAY LOVELY
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Log Variables

DatabaseC:\ProgramData\Warrior\Data\ritchie_whitham_35abd_1.db
Dataset field/well/stack/pass2.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	126	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	-305	42	Off	4951

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	33.00					
CNLSC	29.90		CNT-M&W (tk10-MW)	5.50	3.50	100.00
CNSSC	29.15					
			CDL-M&W (168-986)	8.50	4.00	250.00
LSD	20.85					
DCAL	20.83					
SSD	20.35					
RLL3	15.80					
RLL3F	15.79					
			DIL-M&W (1987)	18.50	3.50	220.00
CILD	8.00					

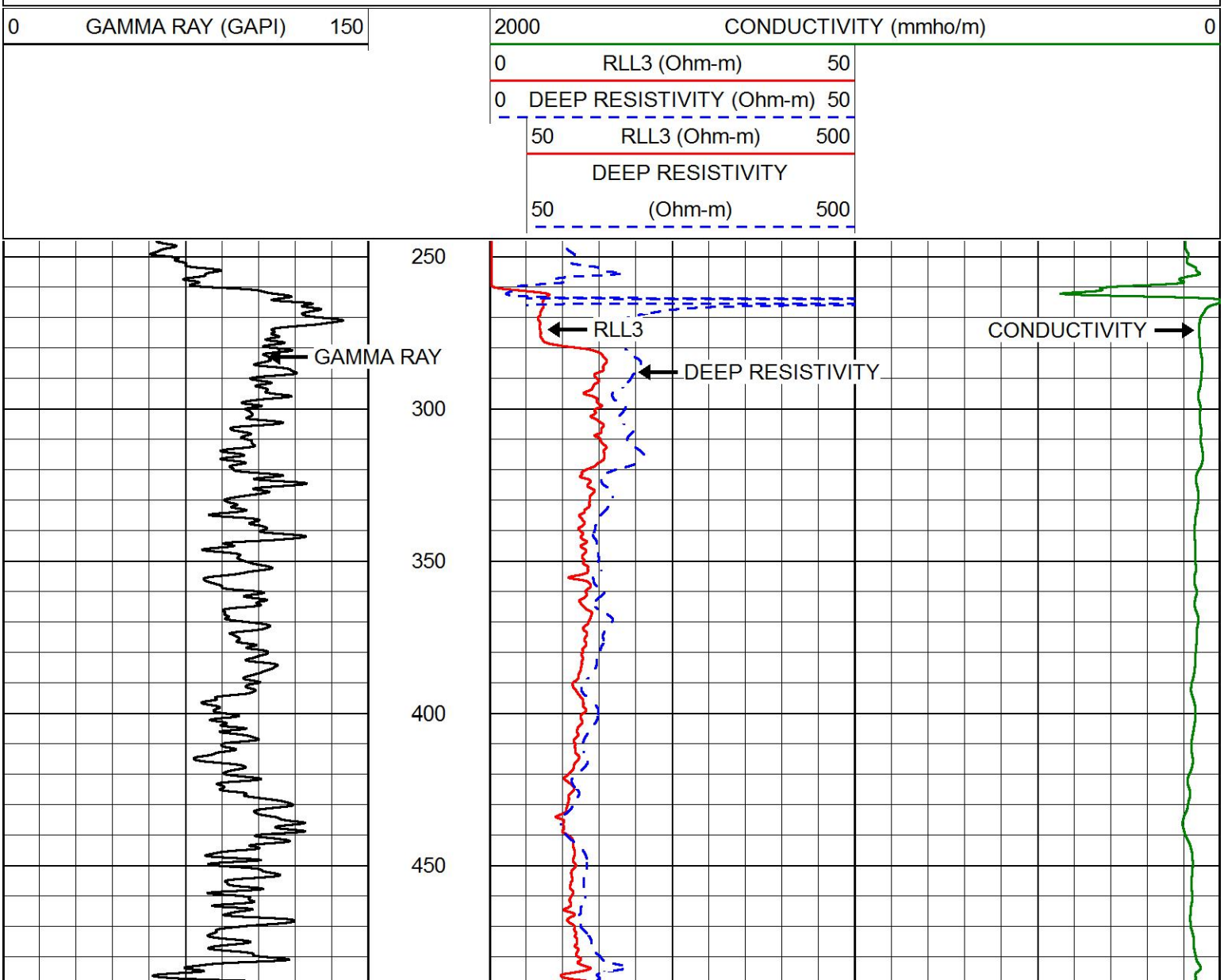
CILM	4.70	
SP	0.20	

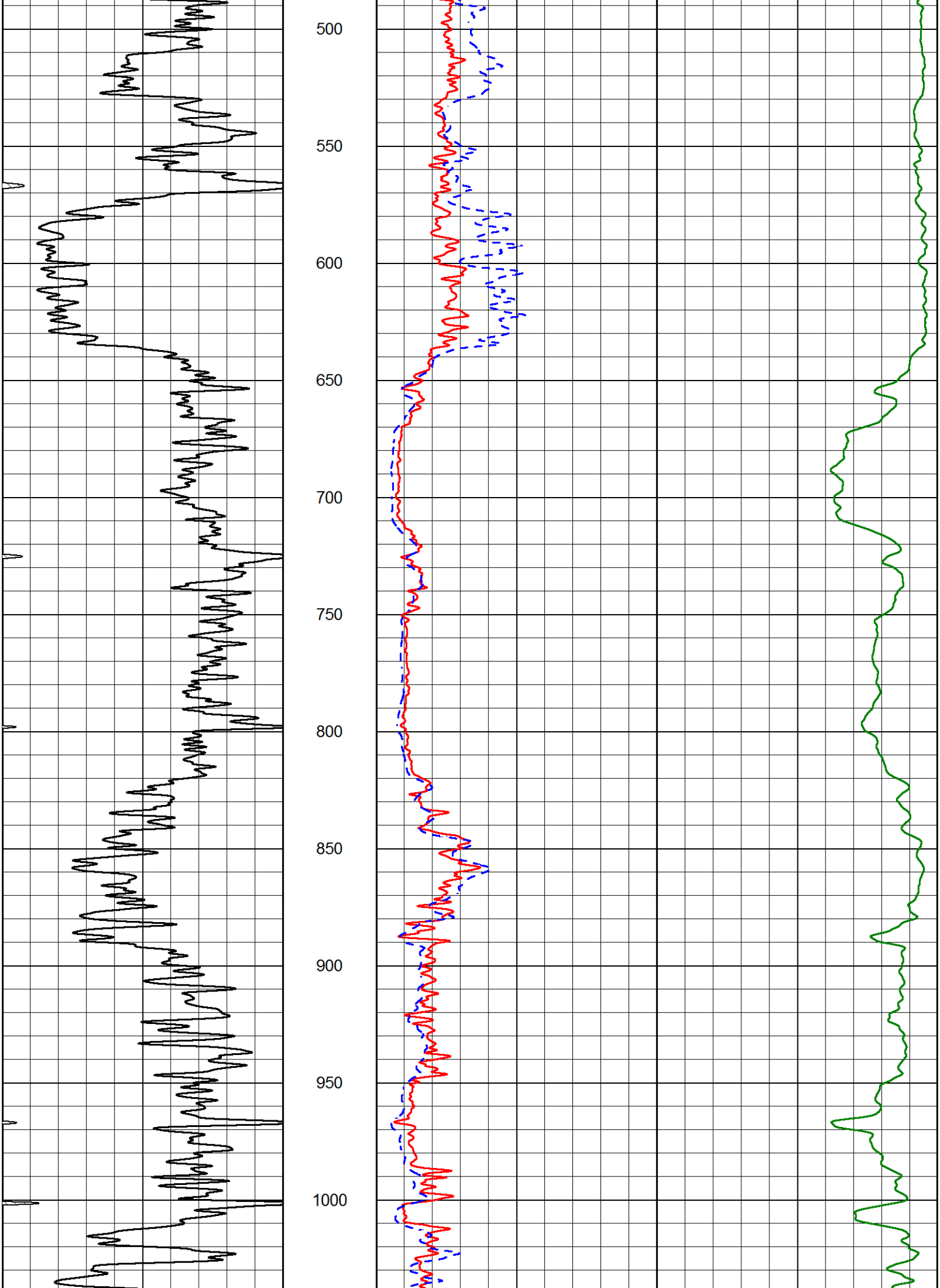
Dataset: ritchie_whitham_35abd_1.db: field/well/stack/pass2.1
Total length: 35.50 ft
Total weight: 620.00 lb
O.D.: 4.00 in

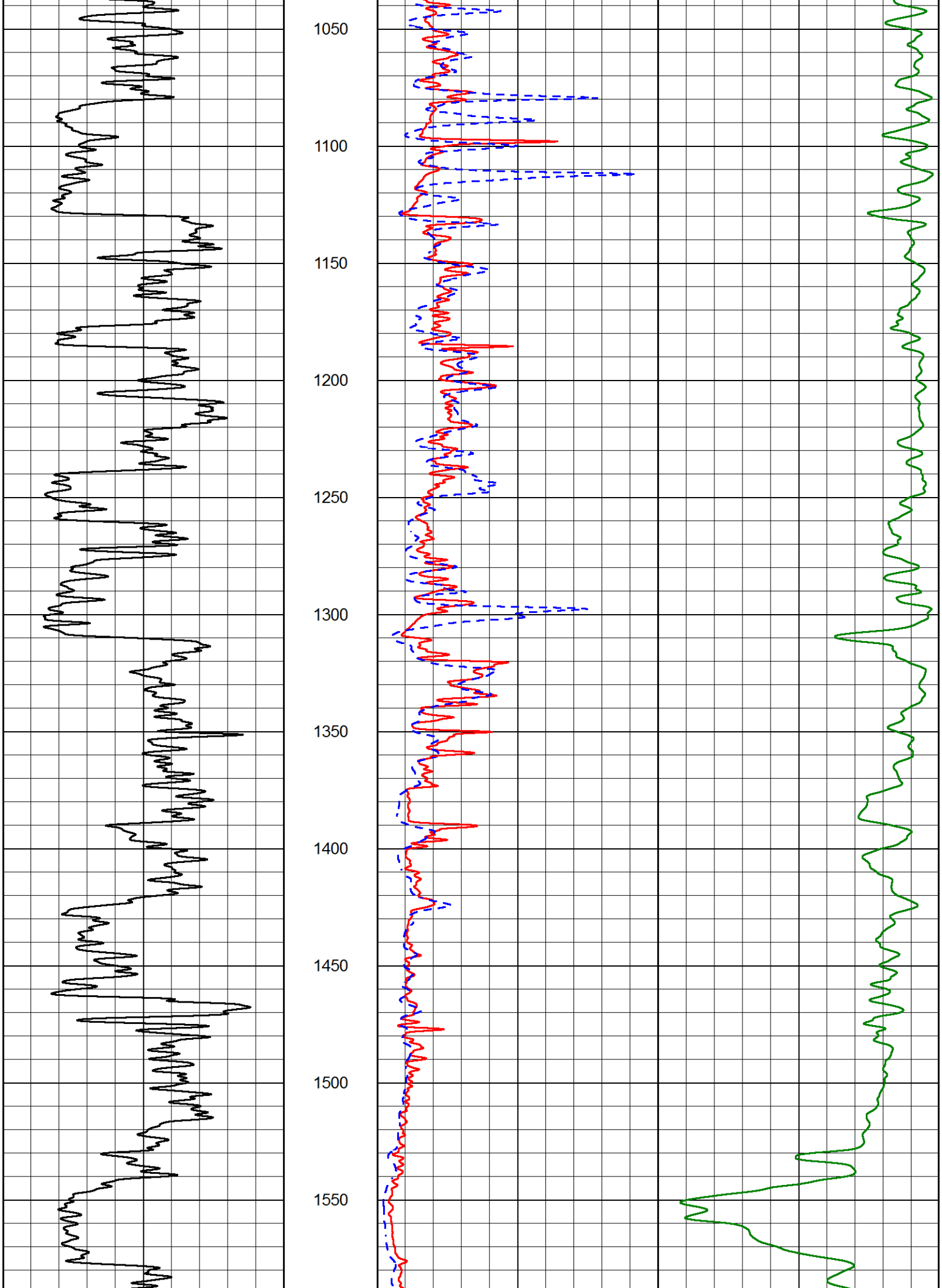
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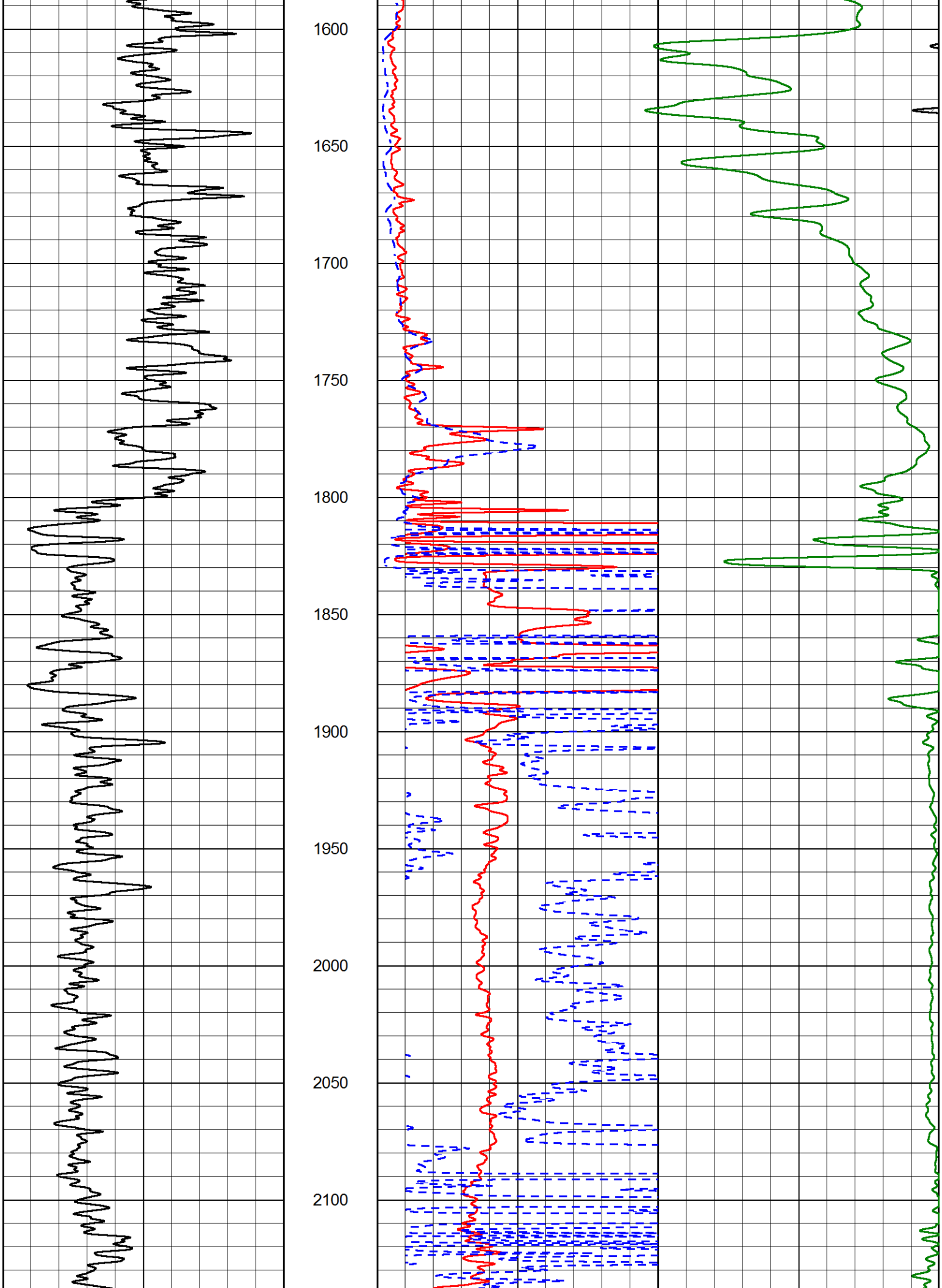
MAIN PASS

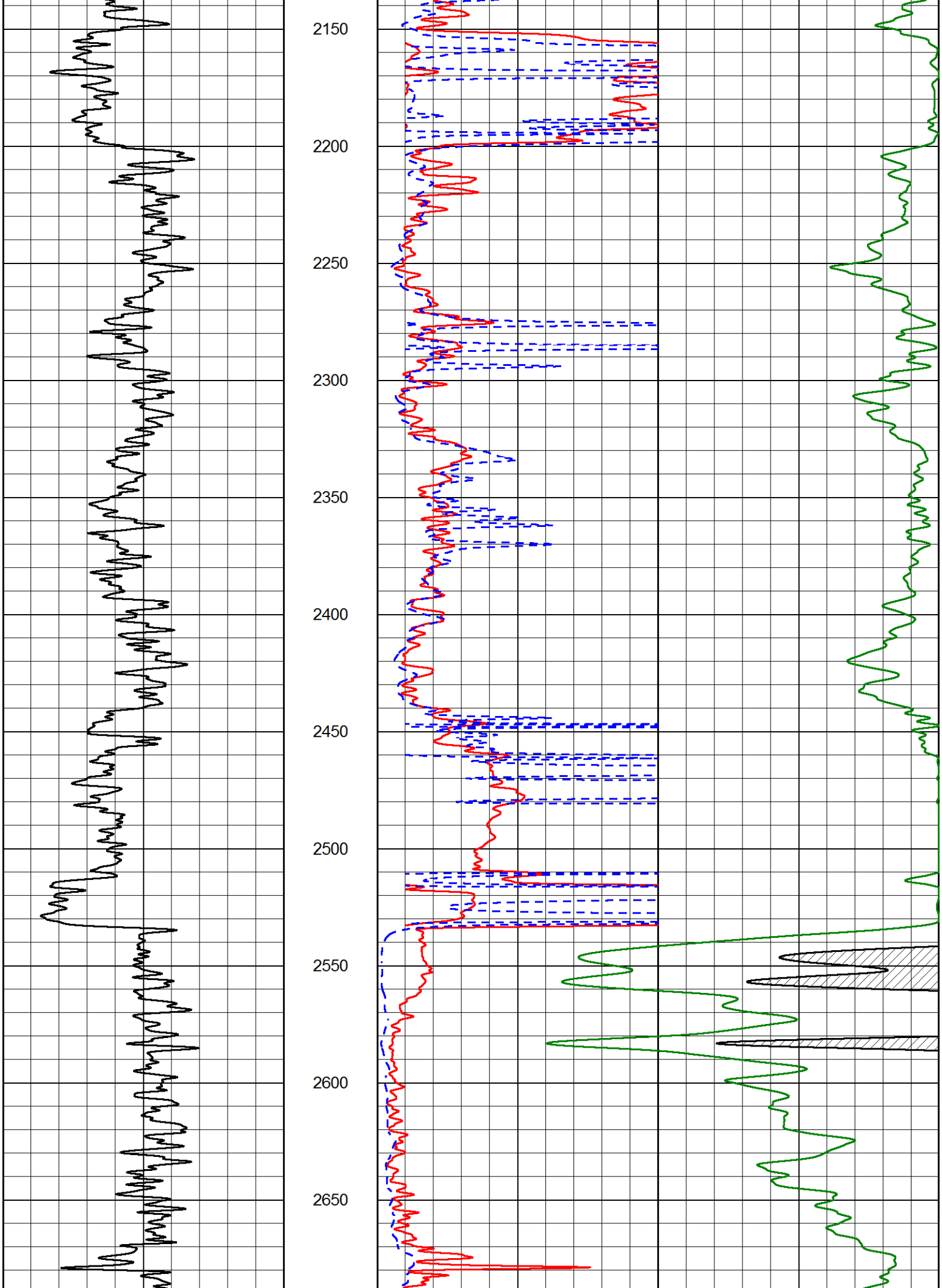
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Dataset Pathname	stack/pass3.1
Presentation Format	dil2in
Dataset Creation	Fri Apr 21 01:56:39 2017
Charted by	Depth in Feet scaled 1:600

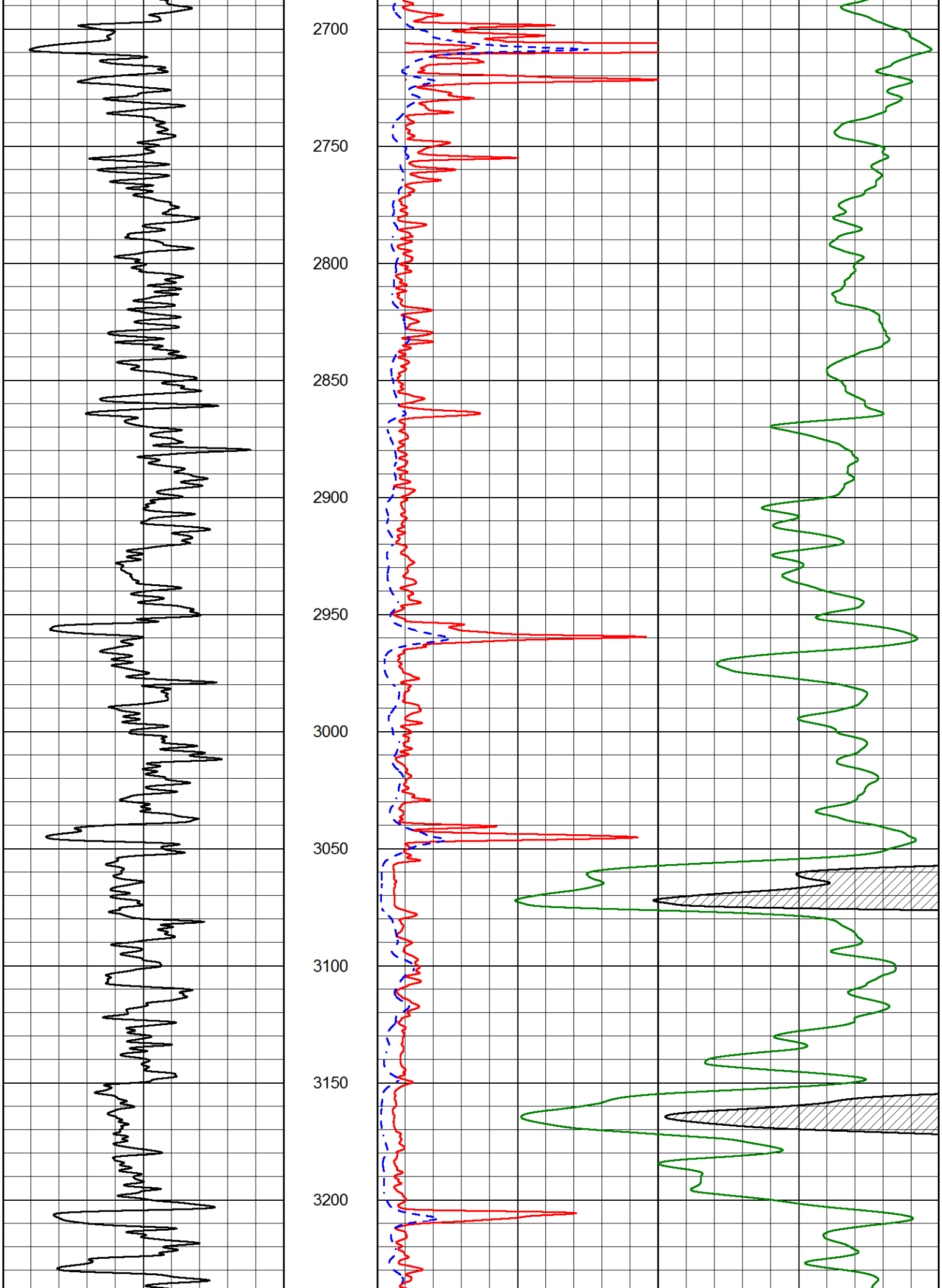


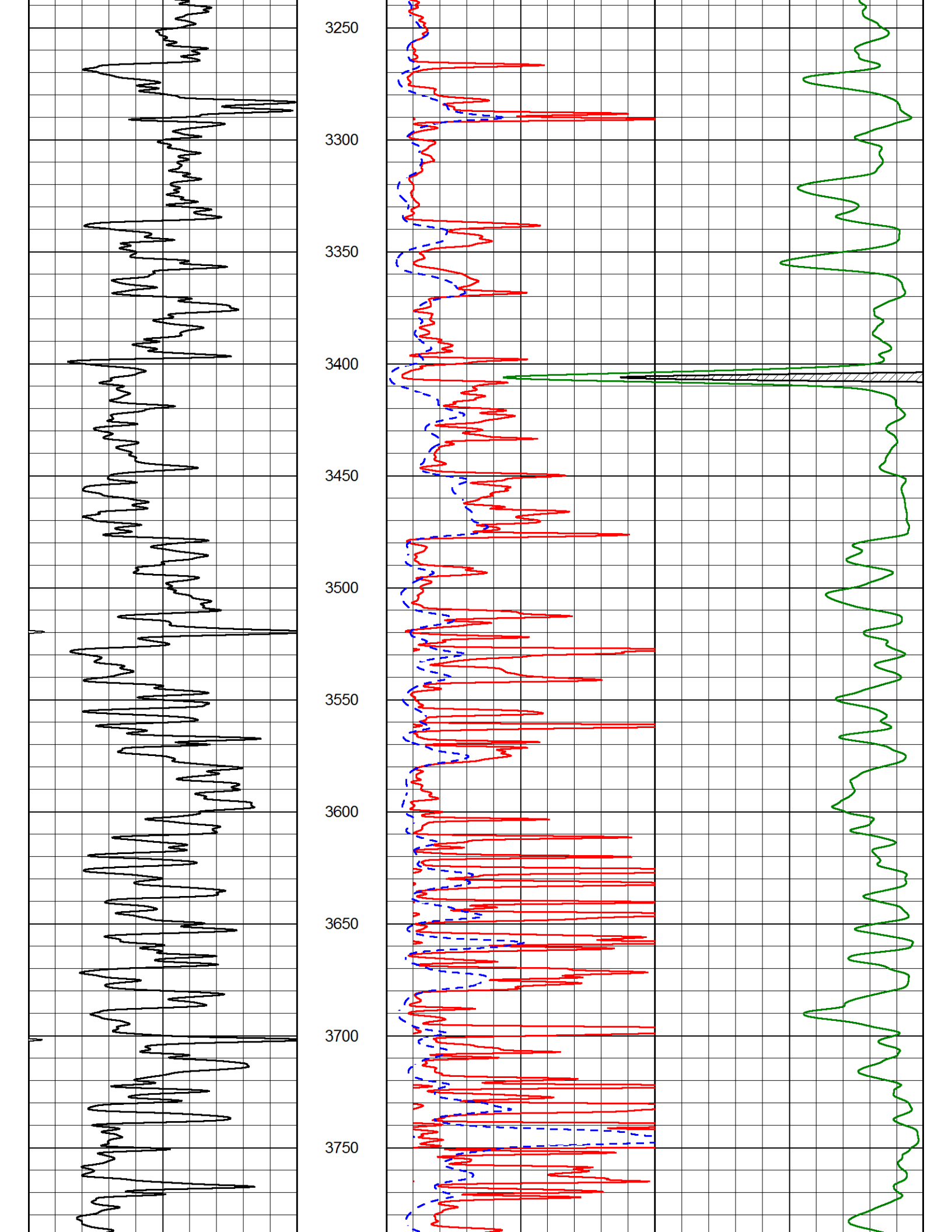

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550
600
650
700
750
800
850
900
950
1000

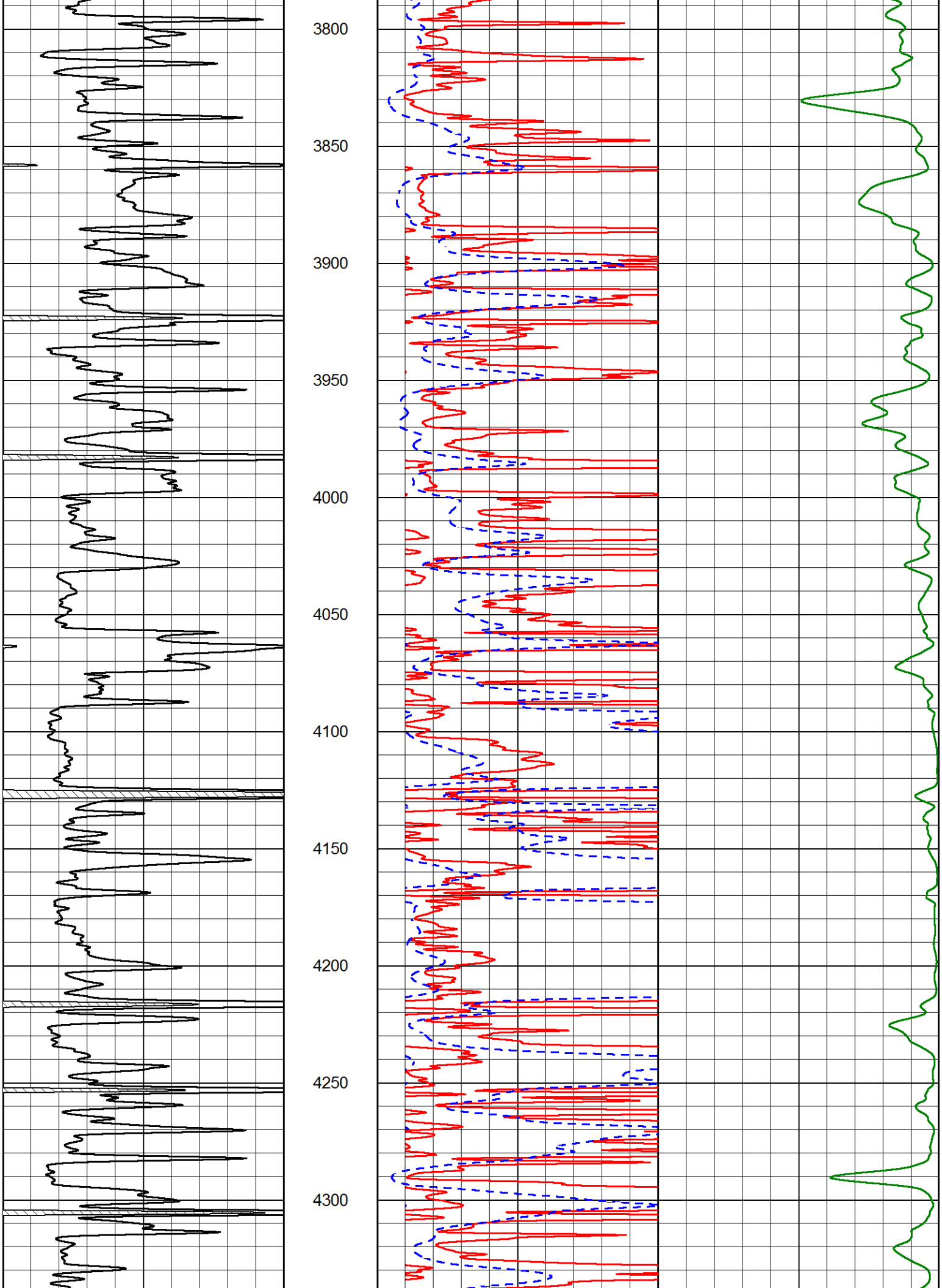

1050
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550

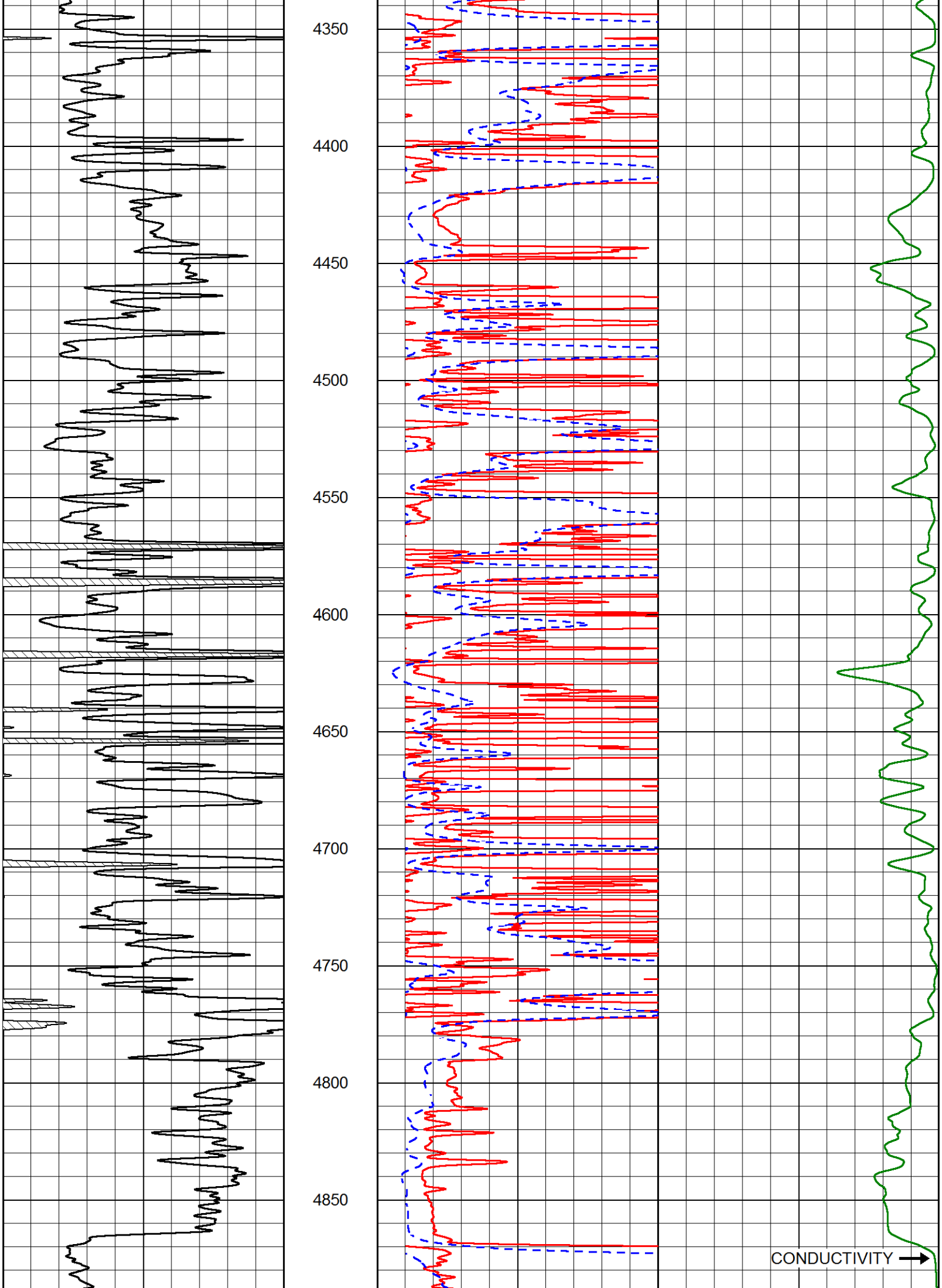

1600
1650
1700
1750
1800
1850
1900
1950
2000
2050
2100

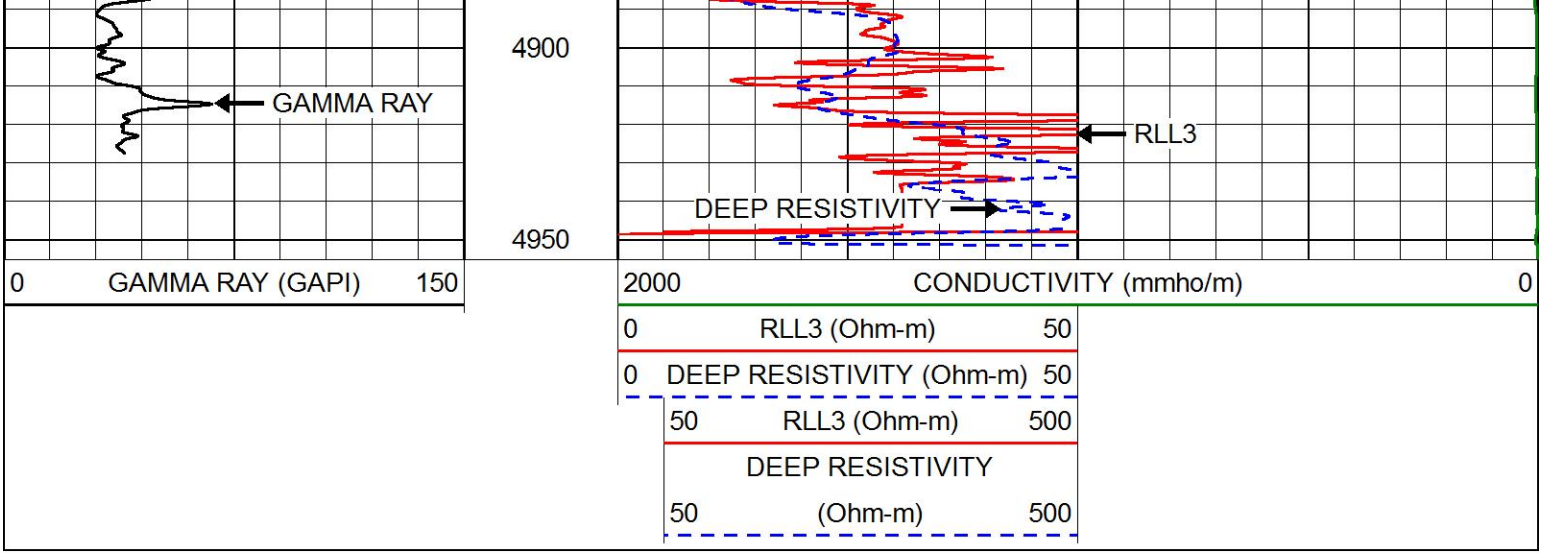

2150
2200
2250
2300
2350
2400
2450
2500
2550
2600
2650


2700
2750
2800
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2900
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3000
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3100
3150
3200


3250
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4100
4150
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4300


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4800
4850
CONDUCTIVITY



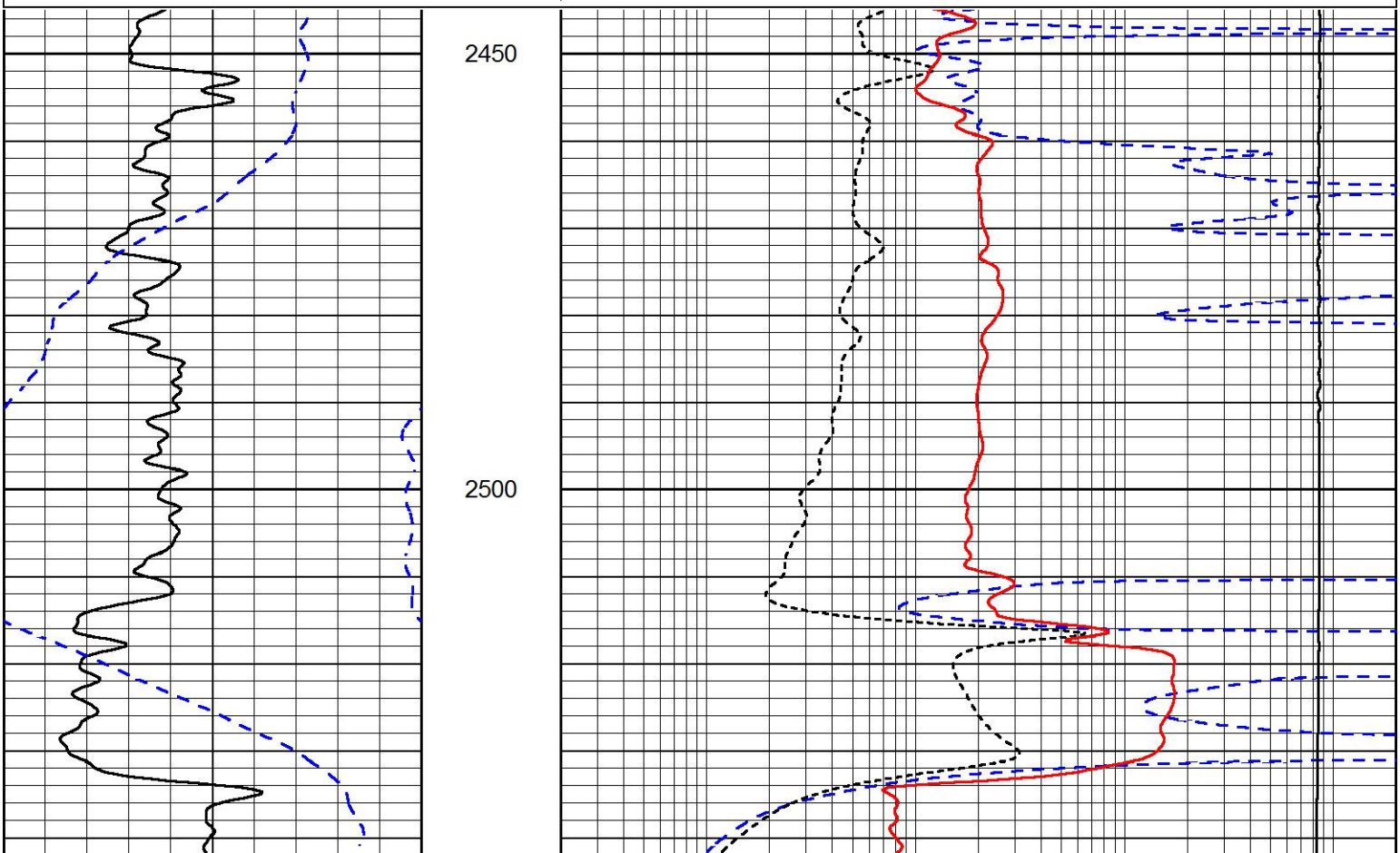
0	GAMMA RAY (GAPI)	150
2000	CONDUCTIVITY (mmho/m)	0
0	RLL3 (Ohm-m)	50
0	DEEP RESISTIVITY (Ohm-m)	50
50	RLL3 (Ohm-m)	500
50	DEEP RESISTIVITY (Ohm-m)	500

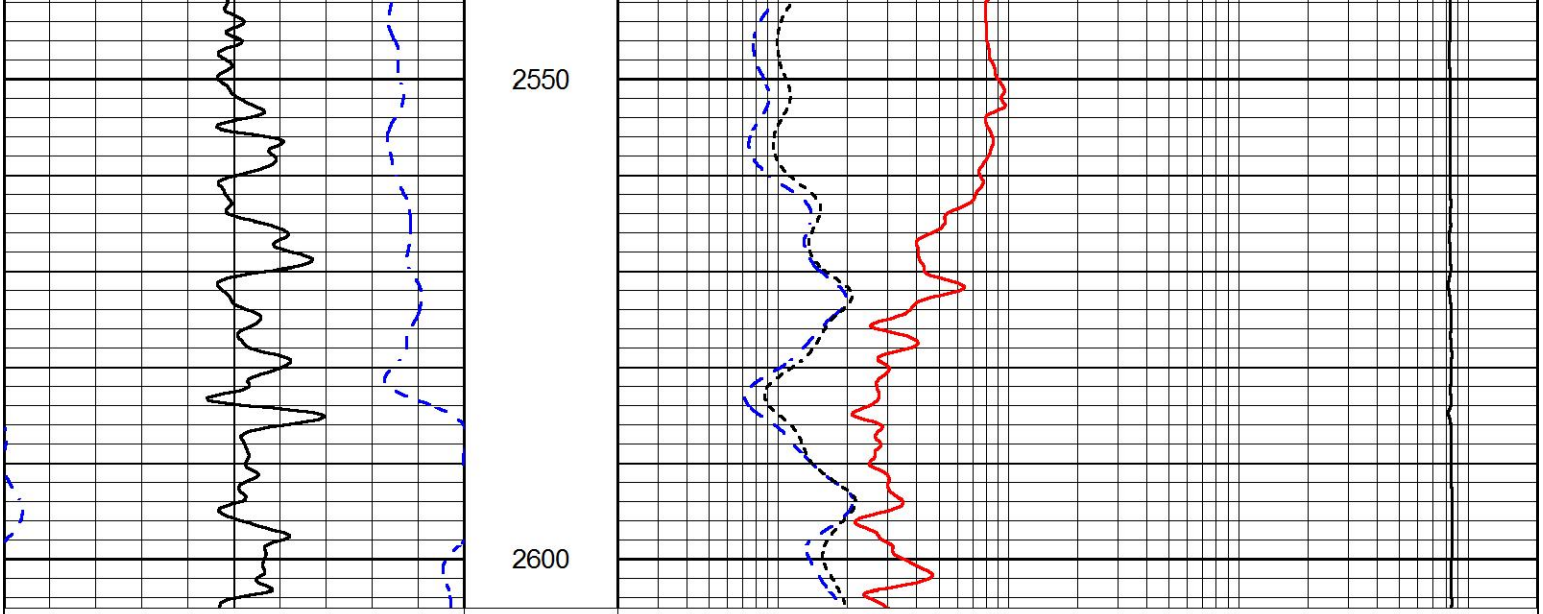
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MAIN PASS

Database File	ritchie_whitham_35abd_1.db
Dataset Pathname	stack/pass3.1
Presentation Format	dil
Dataset Creation	Fri Apr 21 01:56:39 2017
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
15000	LINE TENSION (lb)	0





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
15000	LINE TENSION (lb)	0

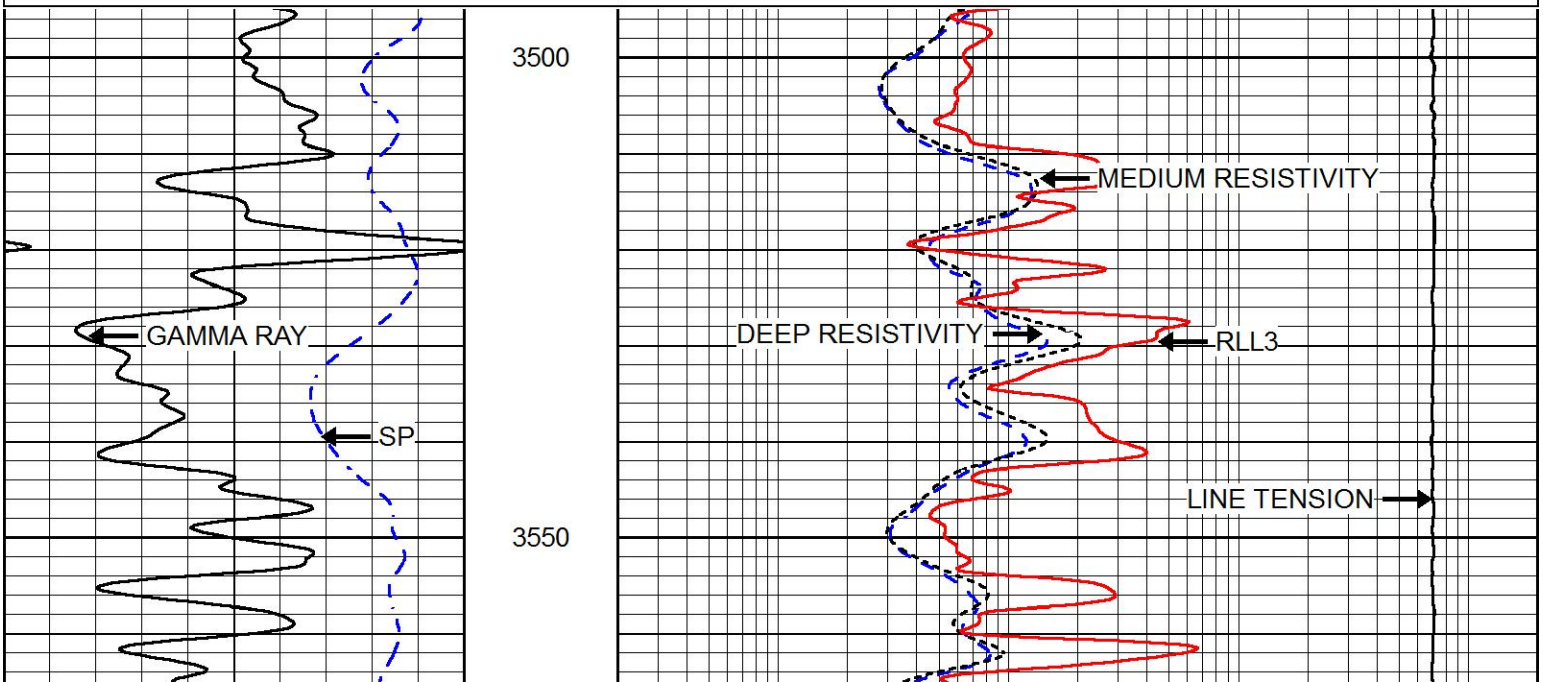
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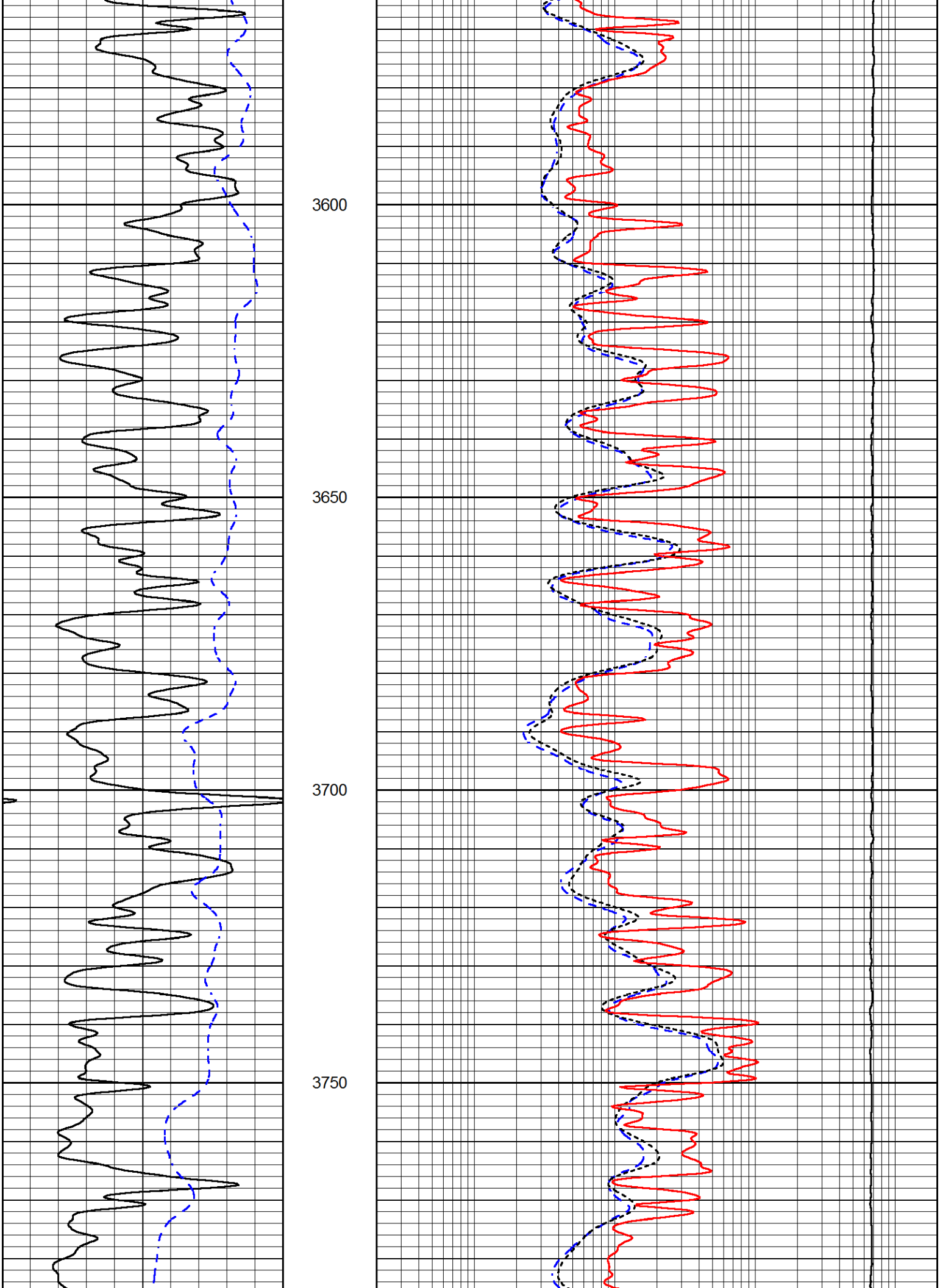
MAIN PASS

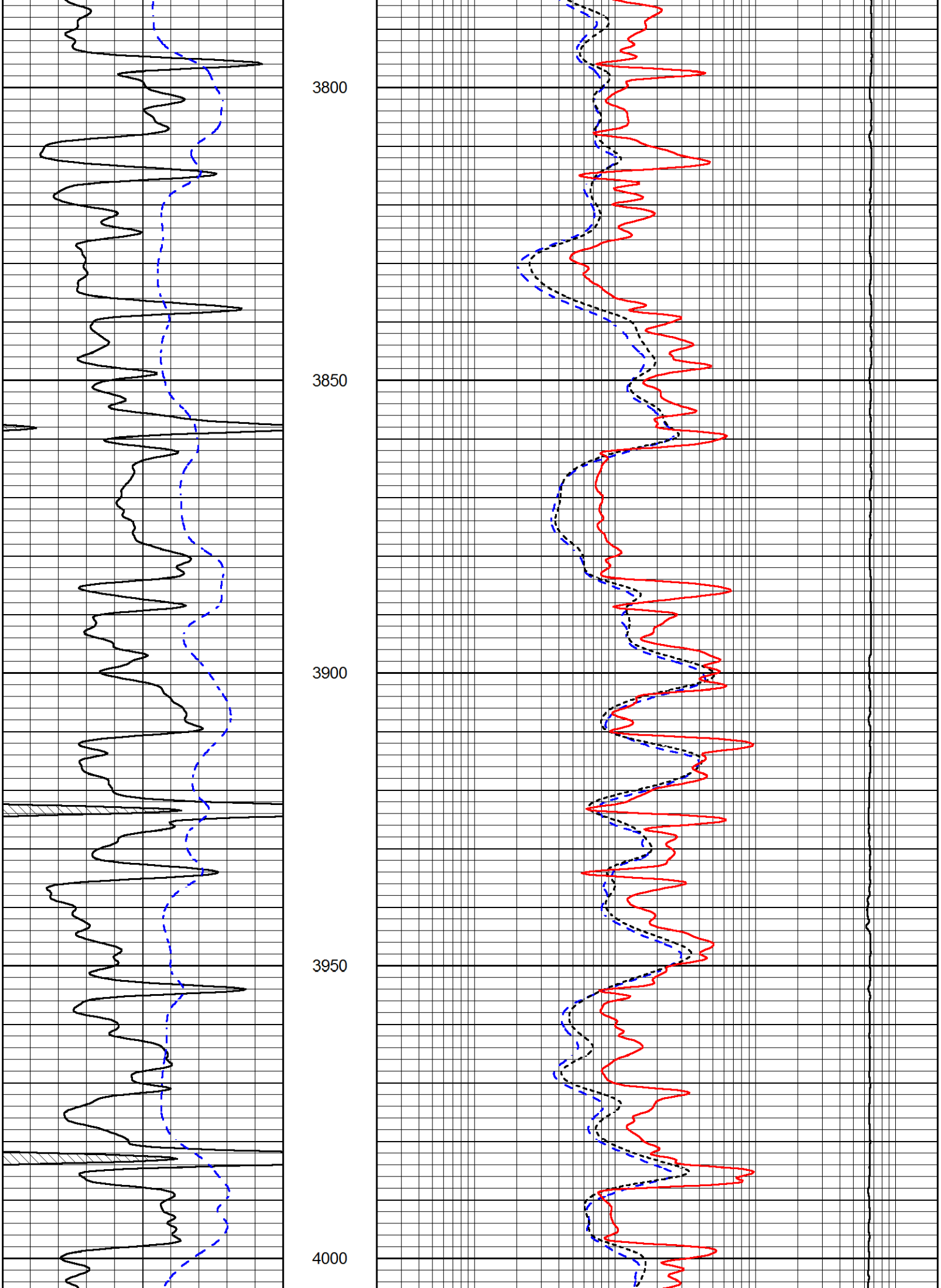
Database File	ritchie_whitham_35abd_1.db
Dataset Pathname	stack/pass3.1
Presentation Format	dil
Dataset Creation	Fri Apr 21 01:56:39 2017
Charted by	Depth in Feet scaled 1:240

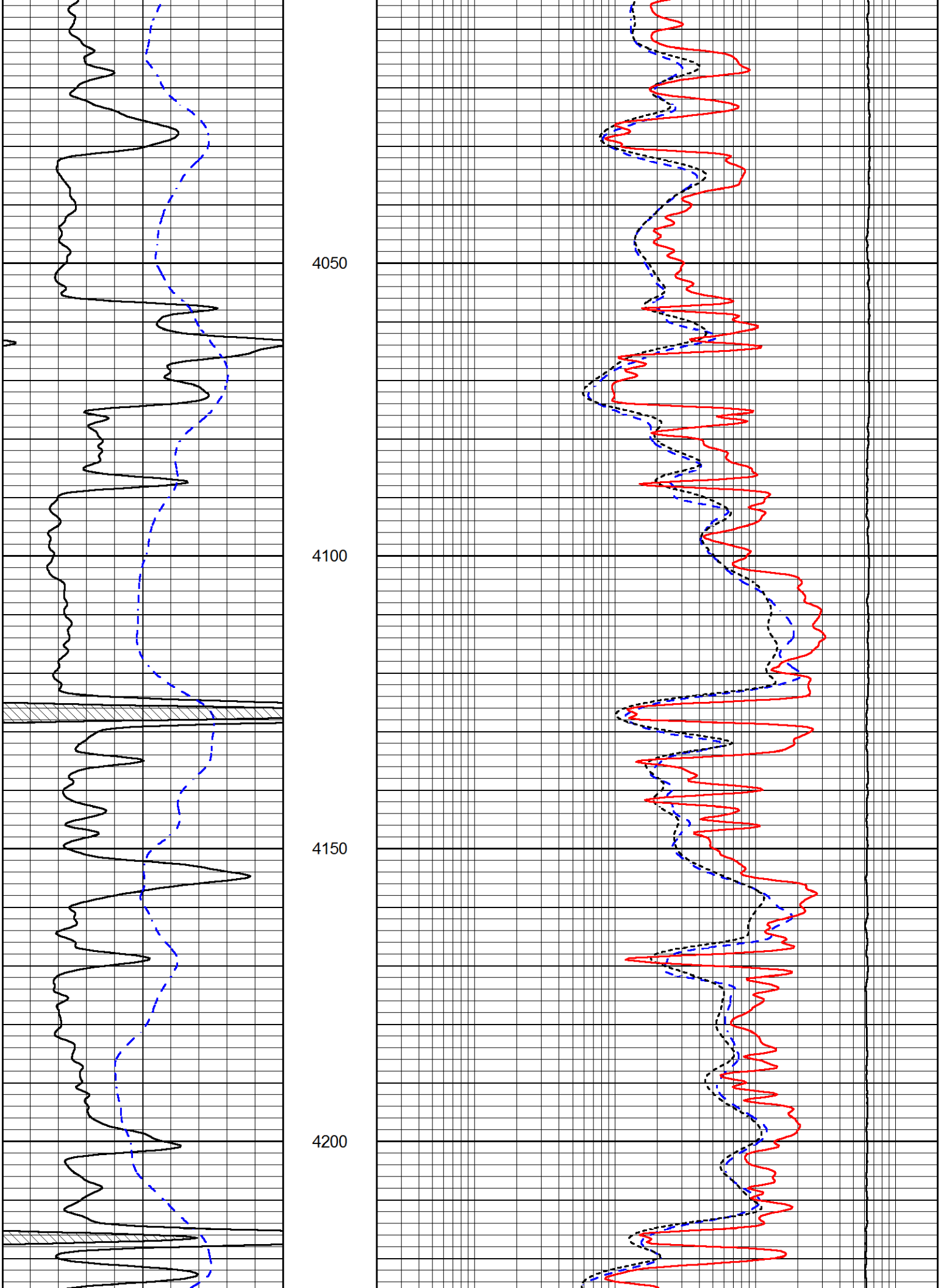
0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

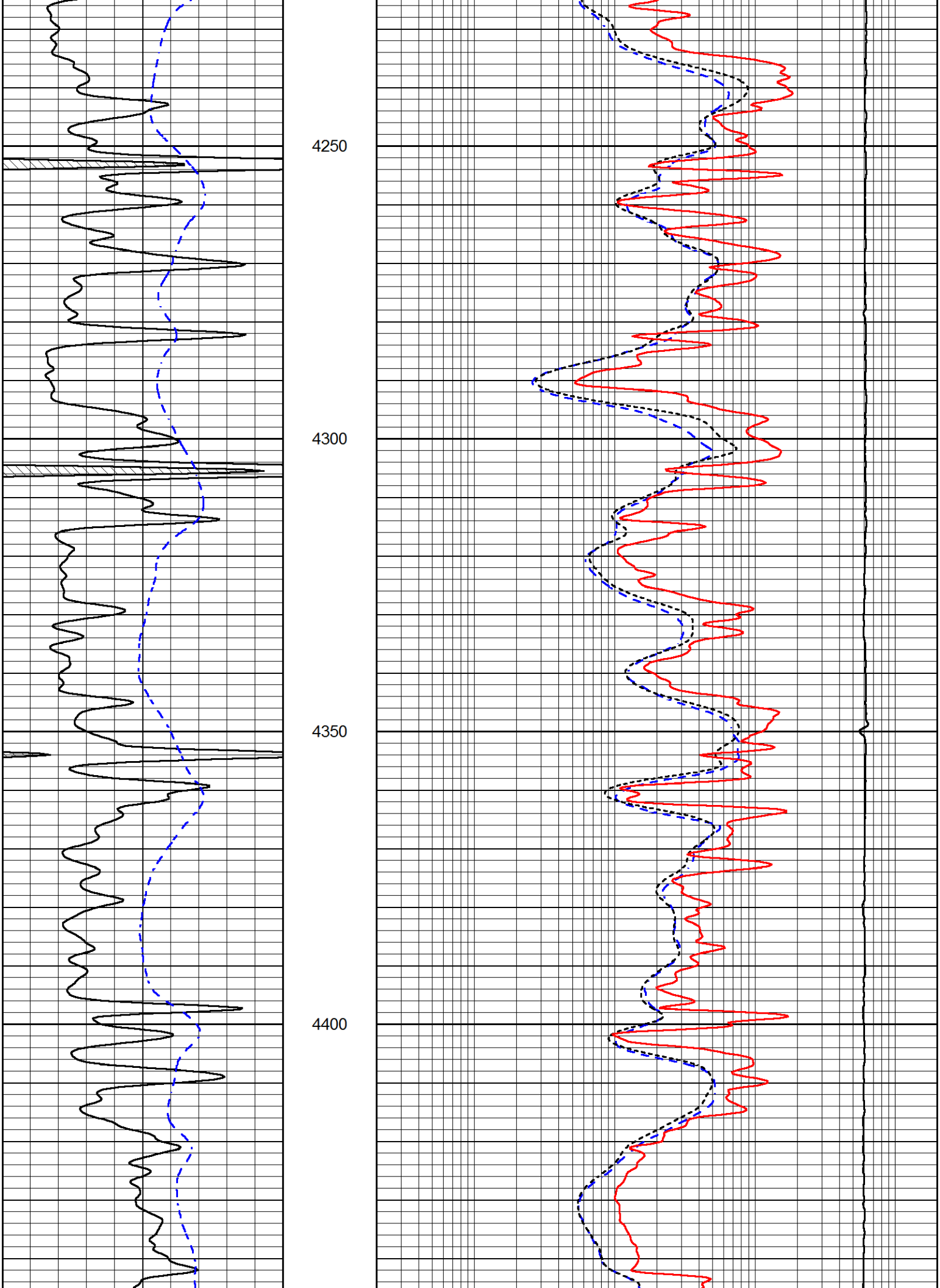
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0

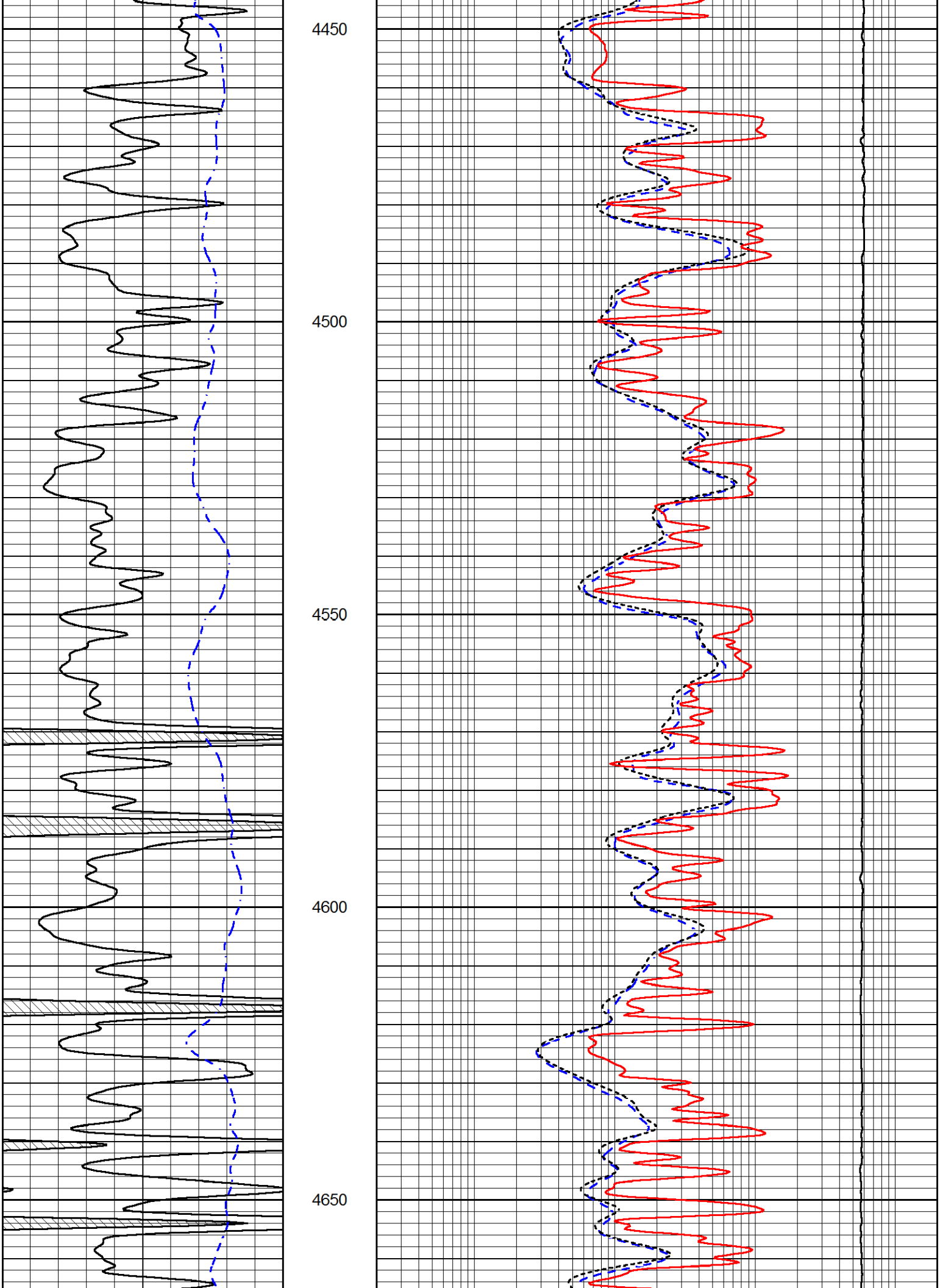


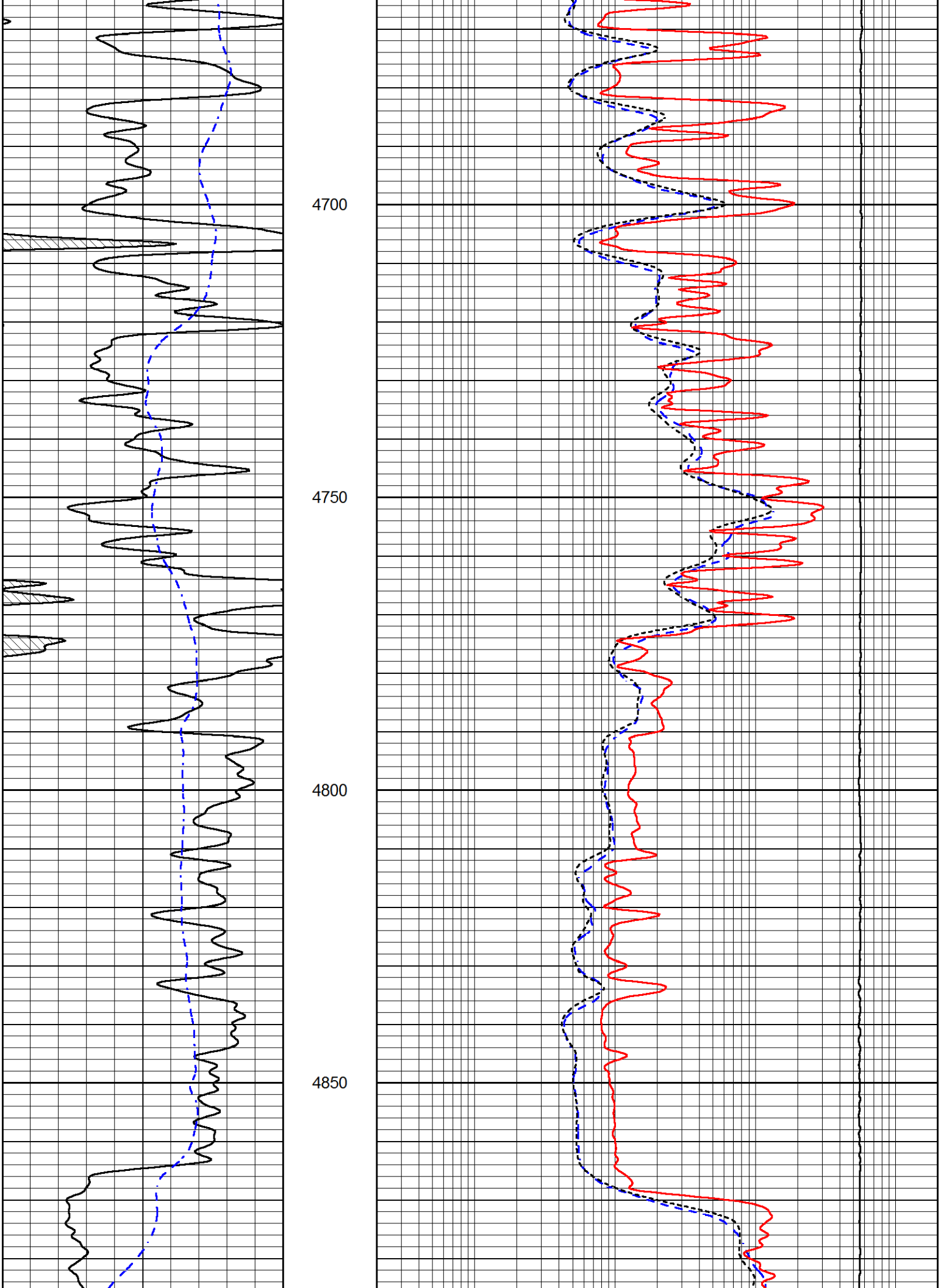

3600
3650
3700
3750

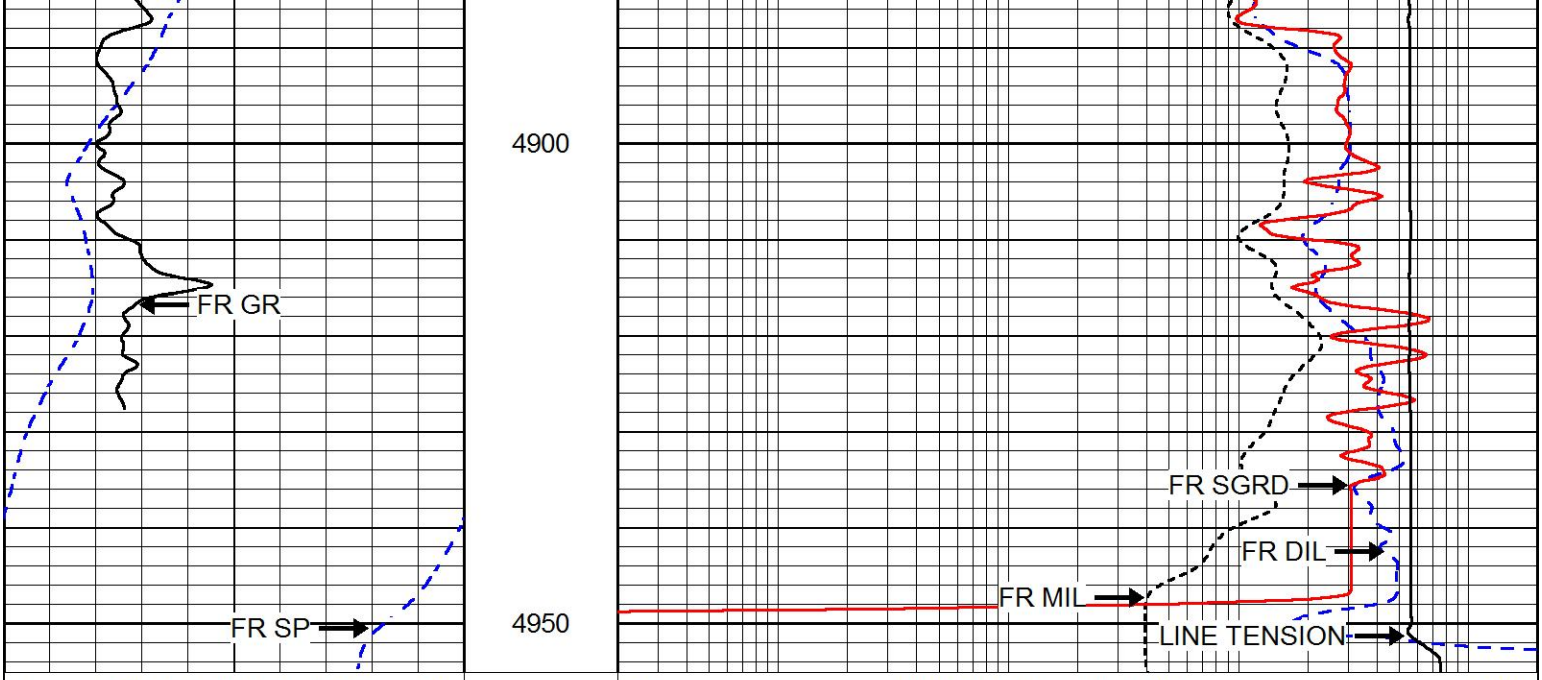

3800
3850
3900
3950
4000


4050
4100
4150
4200


4250
4300
4350
4400


4450
4500
4550
4600
4650


4700
4750
4800
4850



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
15000	LINE TENSION (lb)	0

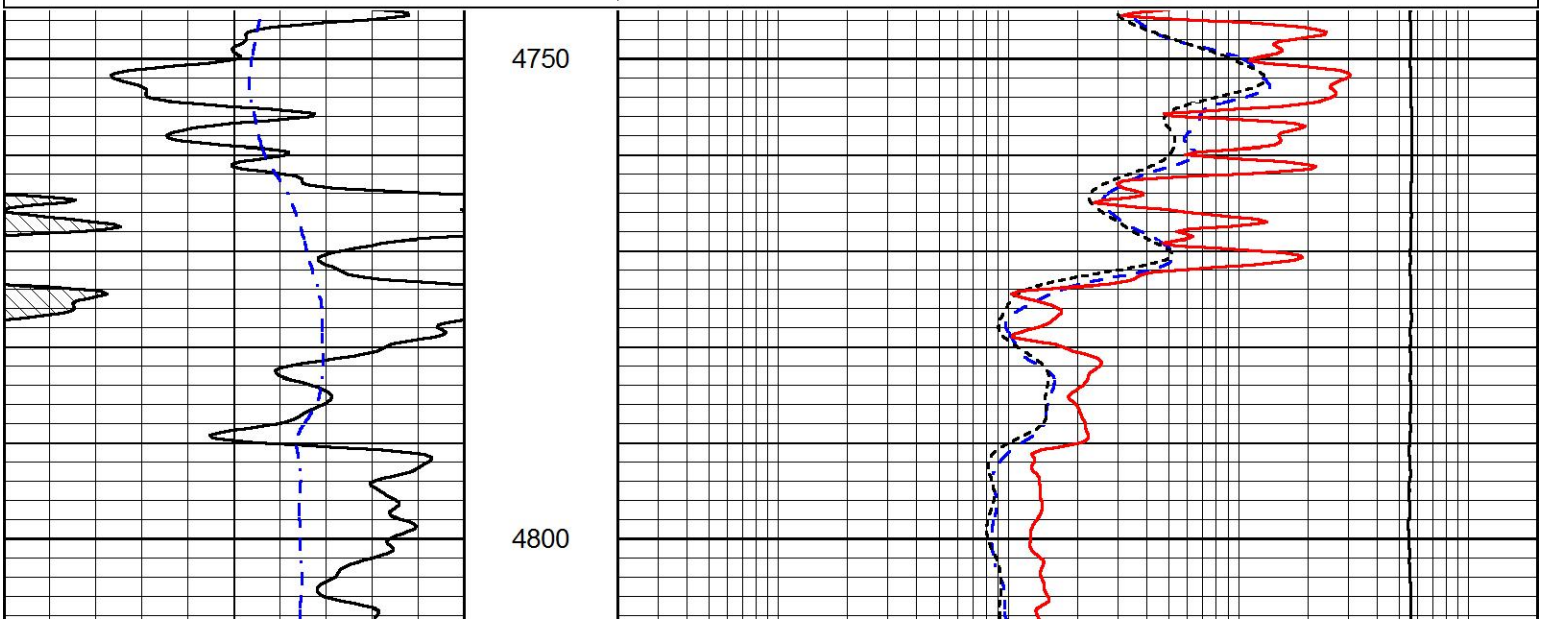
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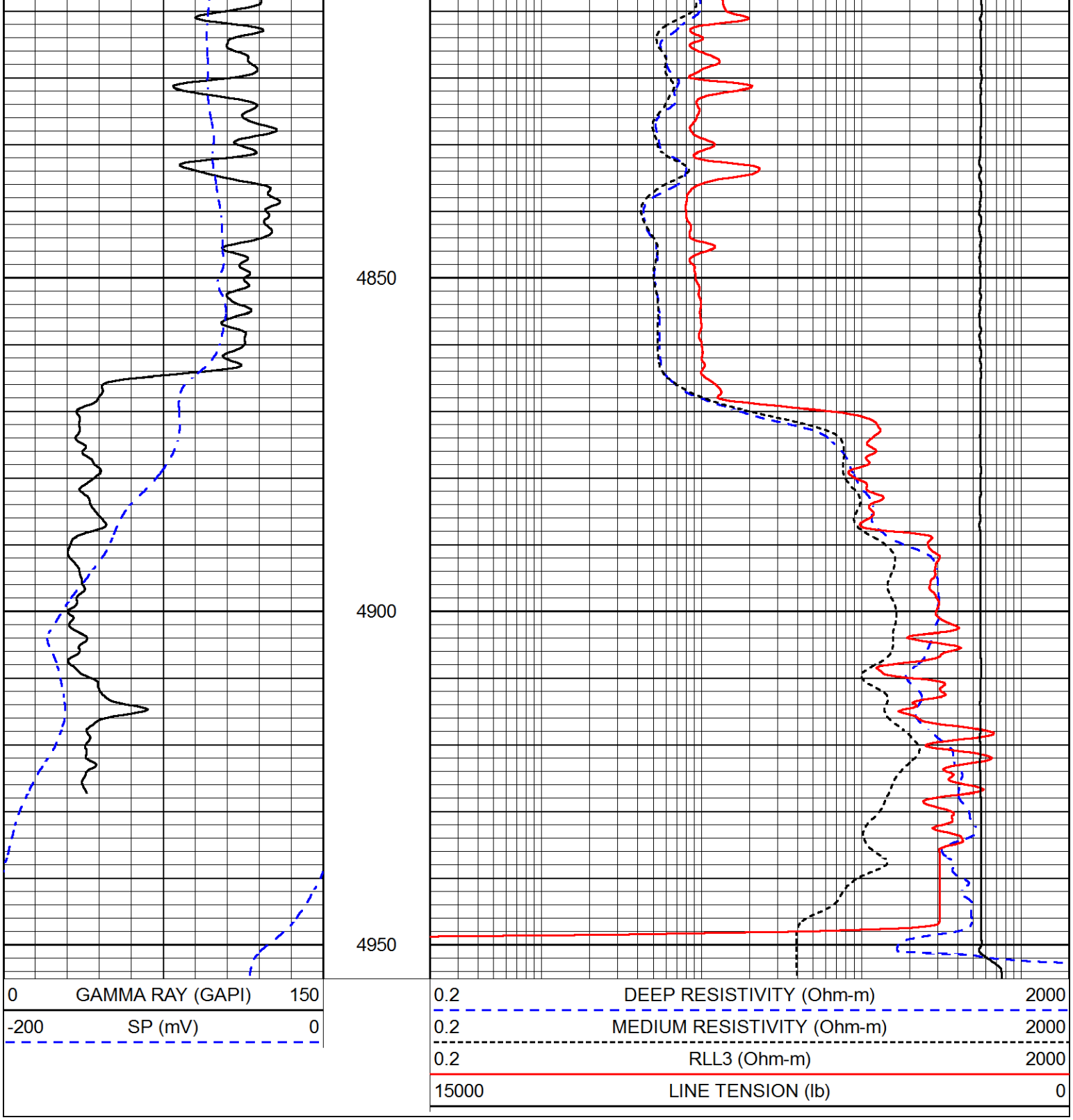
REPEAT SECTION

Database File	ritchie_whitham_35abd_1.db
Dataset Pathname	stack/pass2.1
Presentation Format	dil
Dataset Creation	Fri Apr 21 01:55:41 2017
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
15000	LINE TENSION (lb)	0





Calibration Report

Database File	ritchie_whitham_35abd_1.db
Dataset Pathname	stack/pass3.1
Dataset Creation	Fri Apr 21 01:56:39 2017

Dual Induction Calibration Report

Serial-Model:	1987-M&W
Calibration Performed:	Tue Apr 11 16:07:38 2017

	Readings		References		Results	
Loop:	Air	Loop	Air	Loop	Gain	Offset

Deep	178.615	710.235	0.000	255.800	mmho/m	0.530	-36.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.440	-110.500

Compensated Density Calibration Report

Serial-Model: 168-986-M&W
Source / Verifier: /
Master Calibration Performed: Tue Apr 11 16:07:47 2017

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4691.86	4818.19	cps
Aluminum	2.675	g/cc	859.57	3020.22	cps

Spine Angle = 74.61 Density/Spine Ratio = 0.523

	Size		Reading
Small Ring	4.00	in	1.03
Large Ring	14.00	in	1.23

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 16:08:01 2017

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps

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Company	RITCHIE EXPLORATION, INC.
Well	WHITHAM 35ABD NO.1
Field	UNKNOWN
County	WICHITA
State	KANSAS