PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company THOMAS GARNER, INC.
Well GARNER #8
Field LEISS NW
County STAFFORD State KANSAS

Location: API # : 15-185-24037-00-00
NE SW NE
1716' FNL & 1737' FEL
SEC 15 TWP 25S RGE 13W

Other Services
CNL/CDL
MEL

Permanent Datum GROUND LEVEL Elevation 1926'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 1937'
D.F. N/A
G.L. 1926'

Date	11/20/2018		
Run Number	ONE		
Depth Driller	4320'		
Depth Logger	4318'		
Bottom Logged Interval	4317'		
Top Log Interval	300'		
Casing Driller	8.625" @ 307'		
Casing Logger	308'		
Bit Size	7.875"		
Type Fluid in Hole	CHEMICAL		
Salinity,ppm CL	6200		
Density / Viscosity	9.0 65		
pH / Fluid Loss	10.5 9.2		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	0.40 @ 50		
Rmf @ Meas. Temp	0.30 @ 50		
Rmc @ Meas. Temp	0.54 @ 50		
Source of Rmf / Rmc	CHARTS		
Rm @ BHT	0.17 @ 119		
Operating Rig Time	3 HOURS		
Max Rec. Temp. F	119		
Equipment Number	108		
Location	HAYS		
Recorded By	D. SCHMIDT		
Witnessed By	THOMAS GARNER		

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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.

ST JOHN,
5 SOUTH, 1/2 EAST,
SOUTH 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: THOMAS GARNER
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb

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 (934-5002)	8.50	4.00	250.00
LSD	20.85					
DCAL	20.83					
SSD	20.35					
RLL3	15.80					
RLL3F	15.79					
			DIL-M&W (PSI 988)	18.50	3.50	220.00
CILD	8.00					
CILM	4.70					
SP	0.20					

Dataset: thomas garner_garner 8.db: field/well/STACK/pass3.4
Total length: 35.50 ft
Total weight: 620.00 lb
O.D.: 4.00 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\thomas garner_garner 8.db
Dataset field/well/STACK/pass3.4/_vars_

Top - Bottom

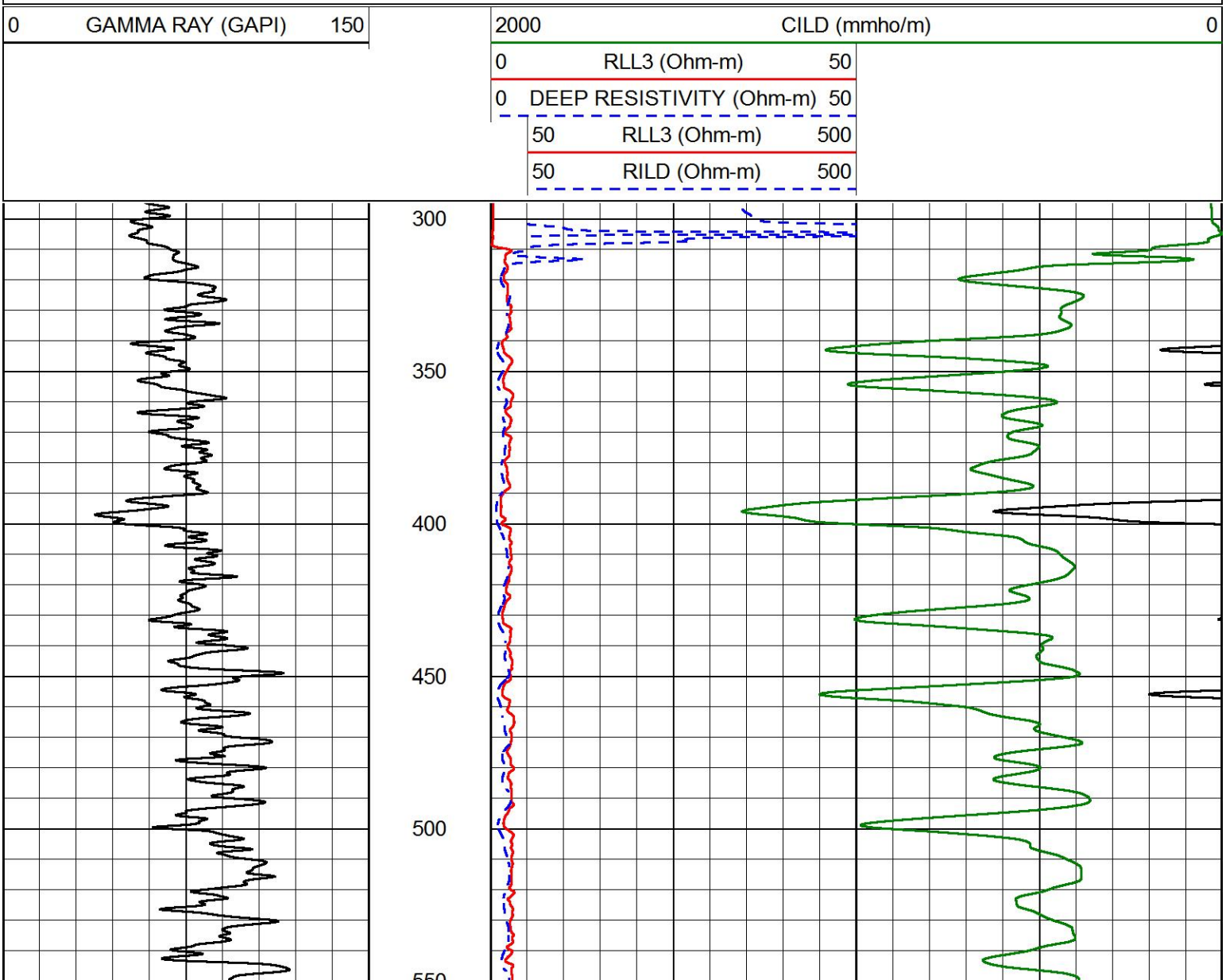
A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	119	5.5	0	1	2	2.71

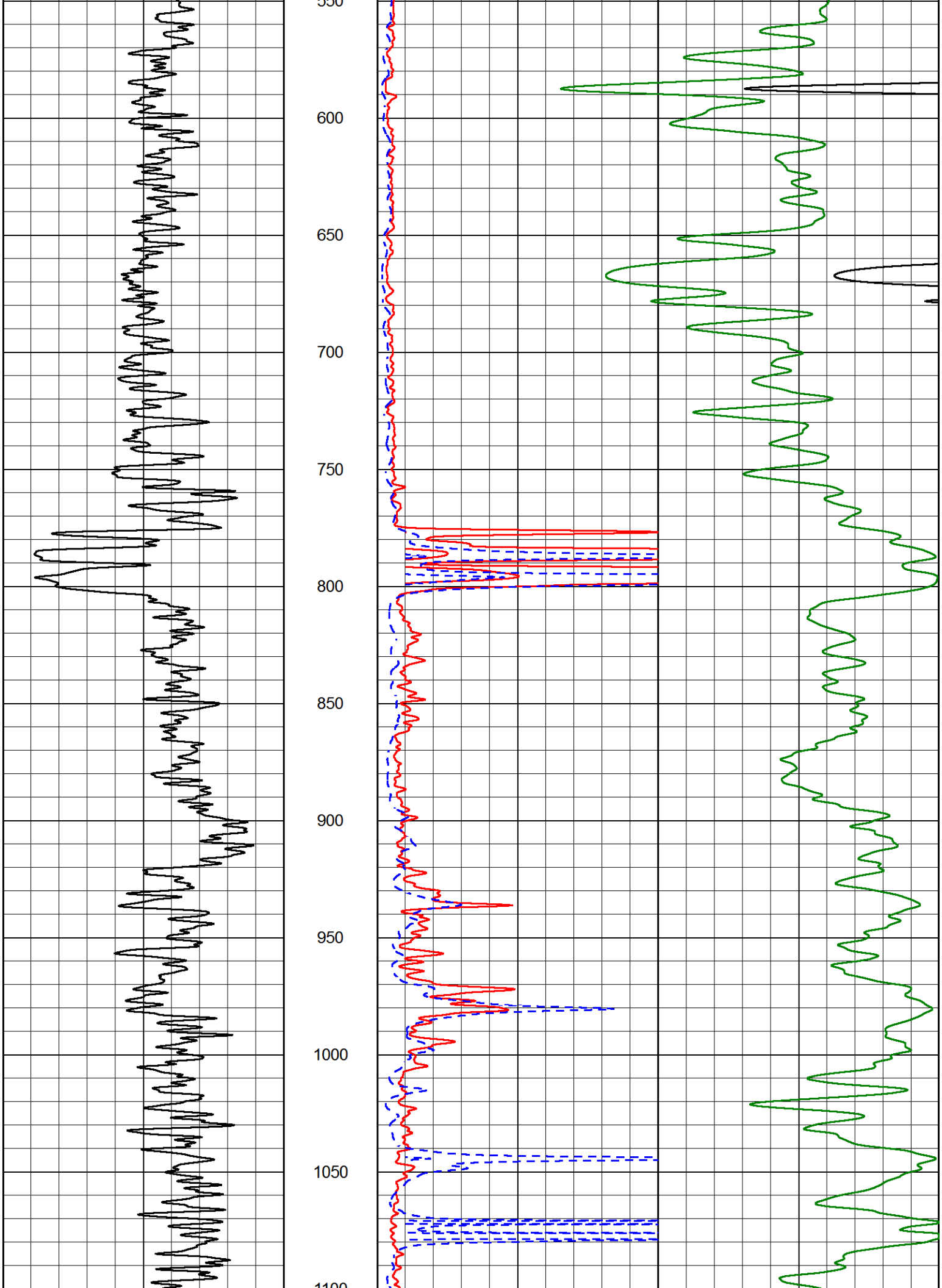
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	0	0	-230	50	Off	4318

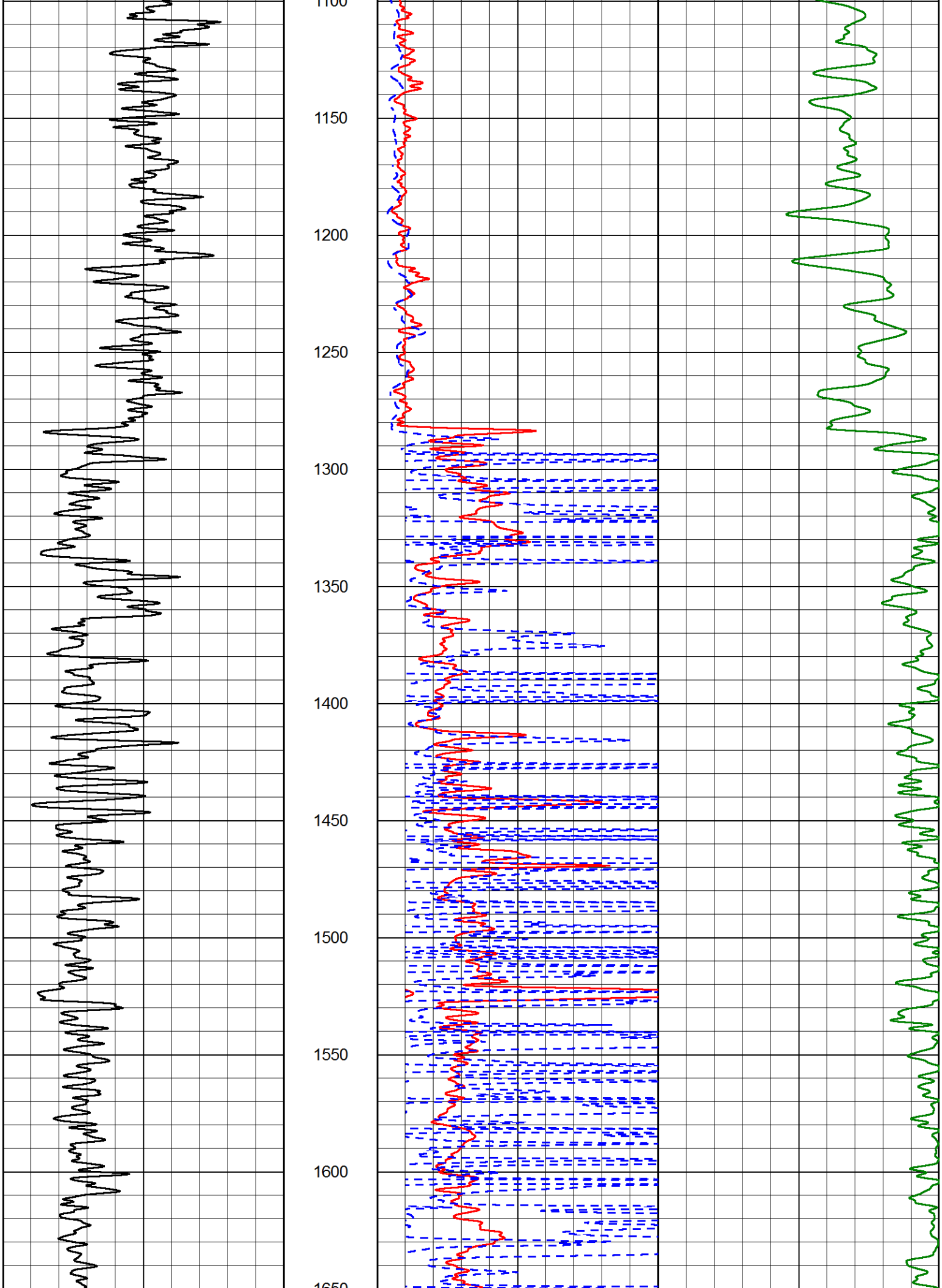
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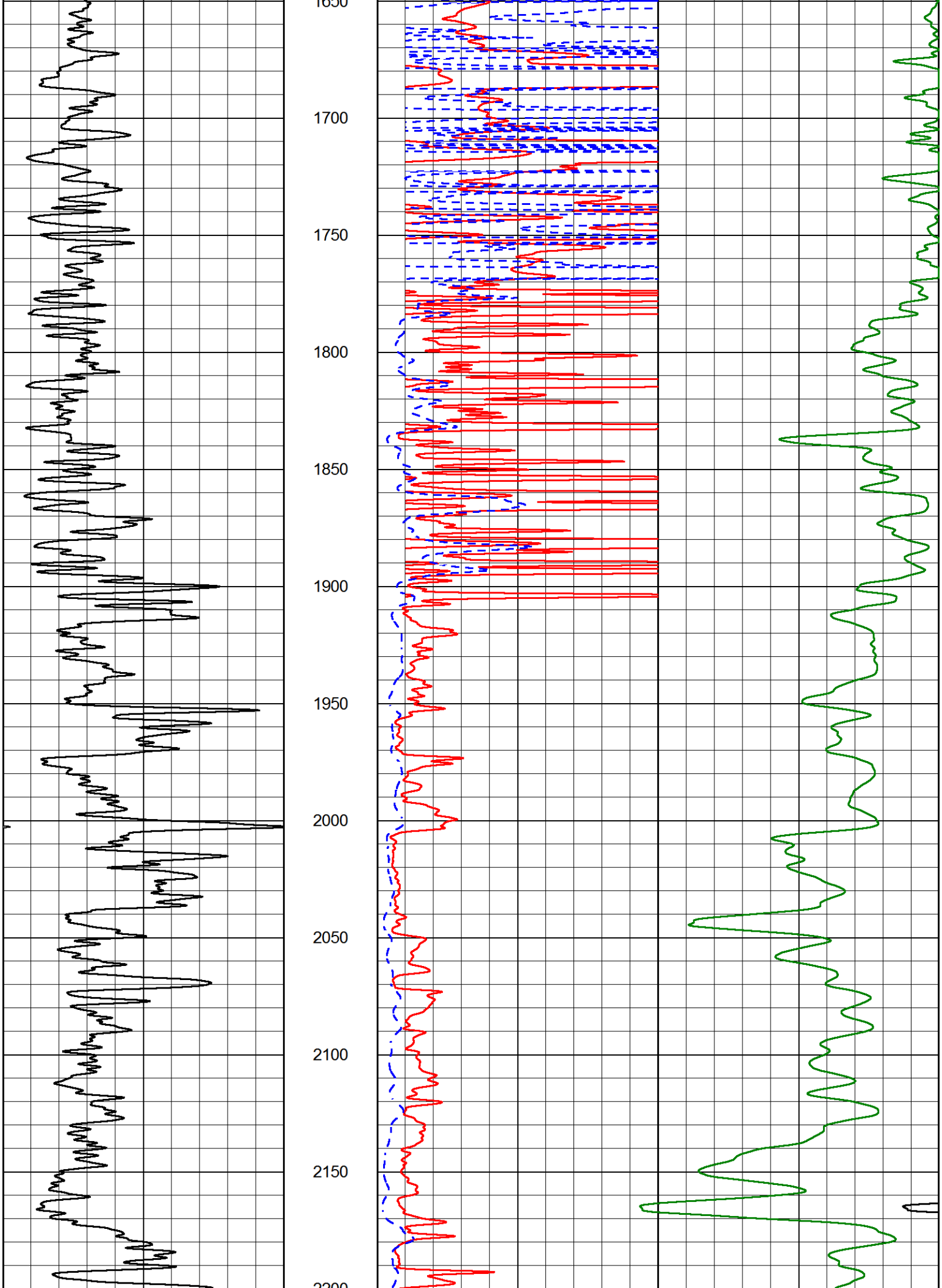
MAIN PASS

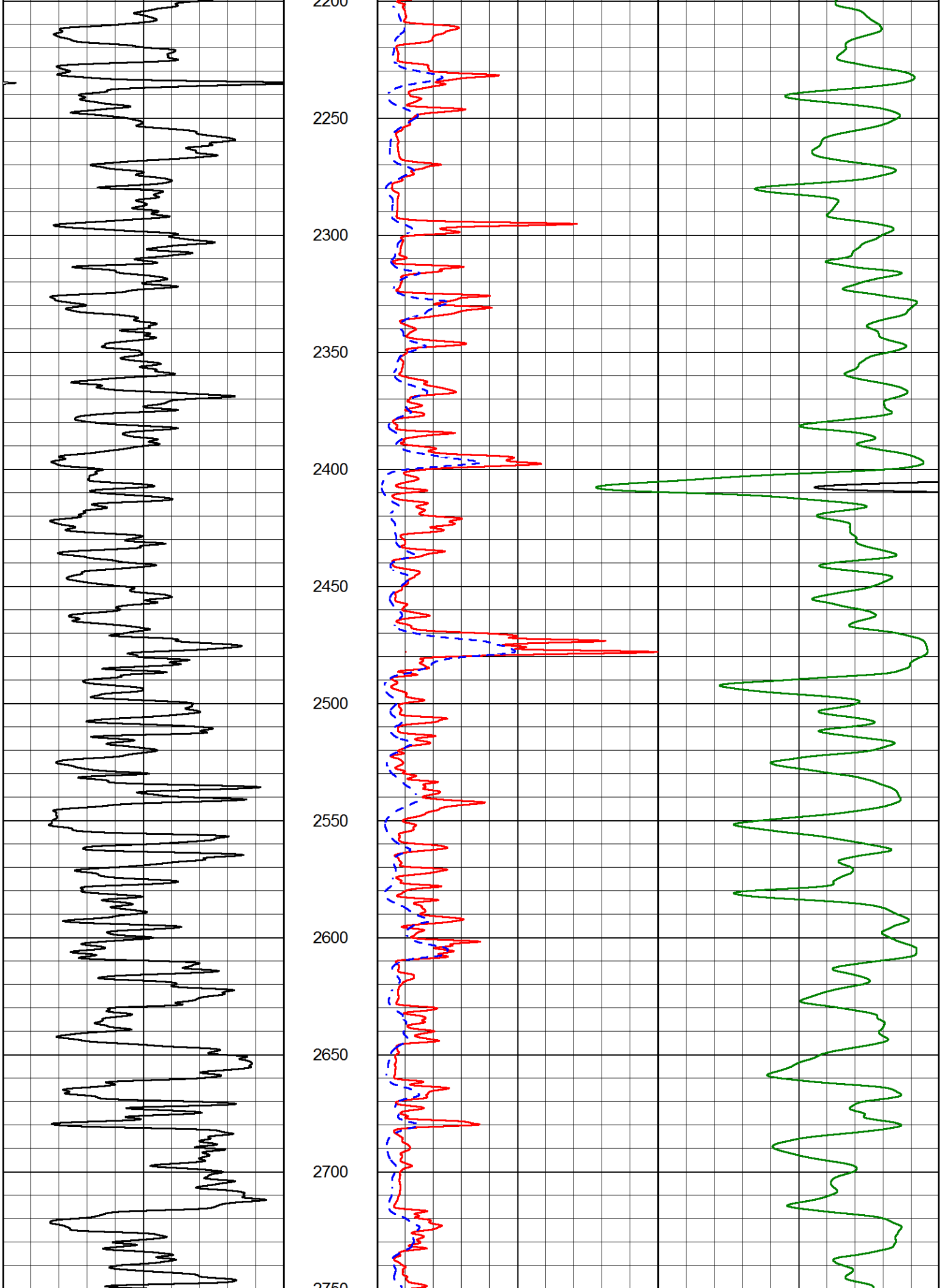
Database File	thomas garner_garner 8.db
Dataset Pathname	STACK/pass4.1
Presentation Format	dil2in
Dataset Creation	Tue Nov 20 10:58:10 2018
Charted by	Depth in Feet scaled 1:600

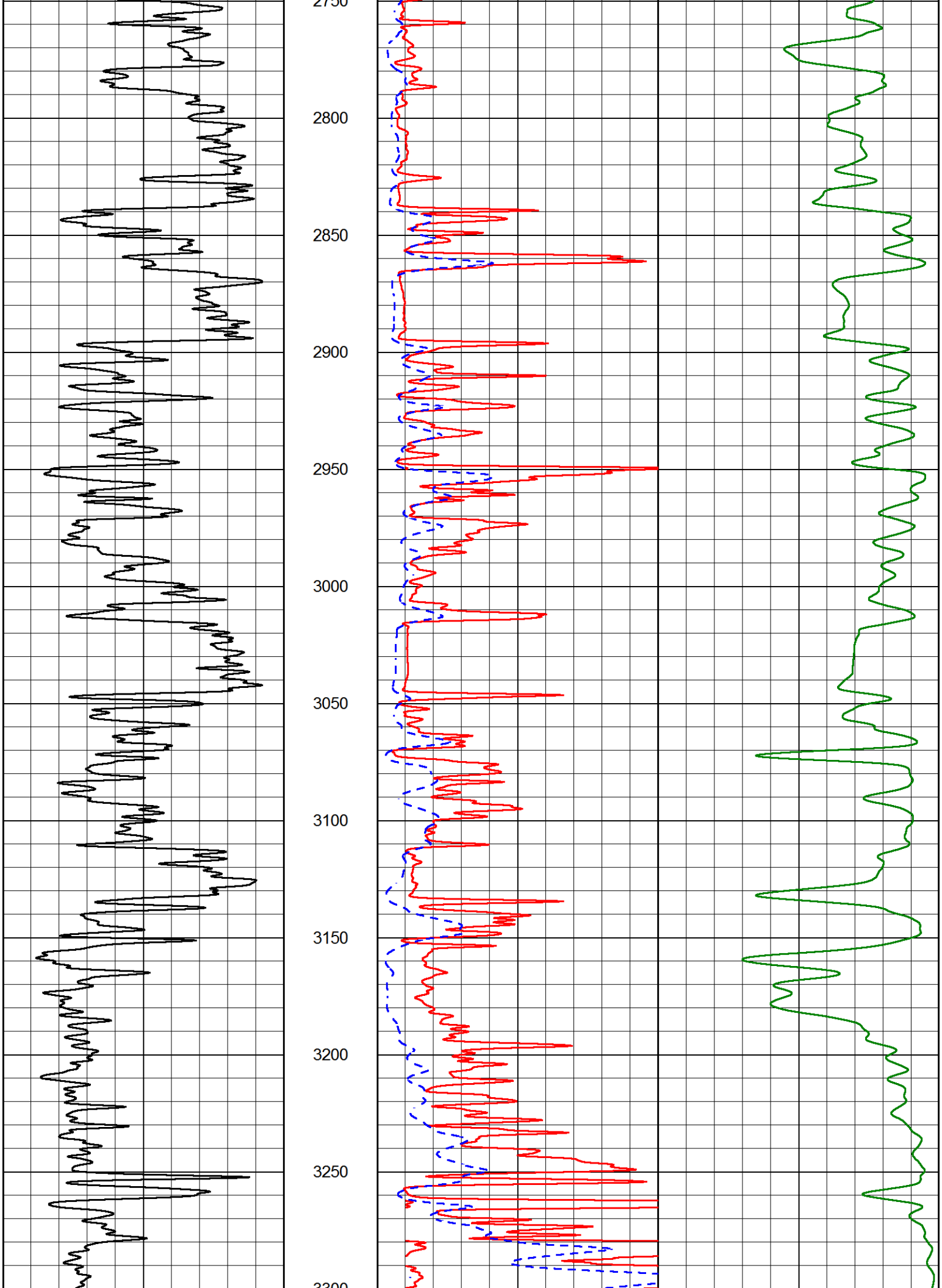


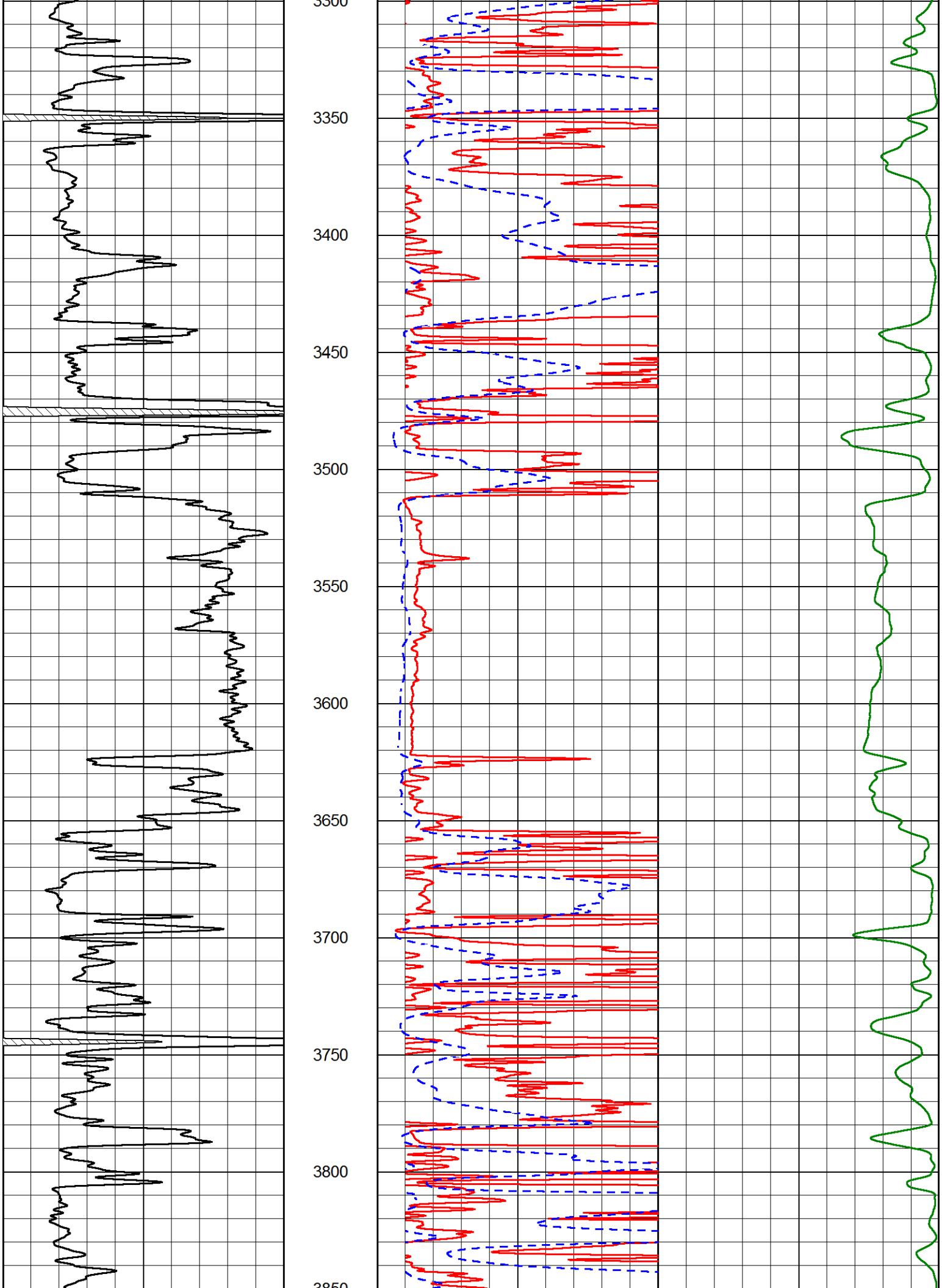

550
600
650
700
750
800
850
900
950
1000
1050
1100

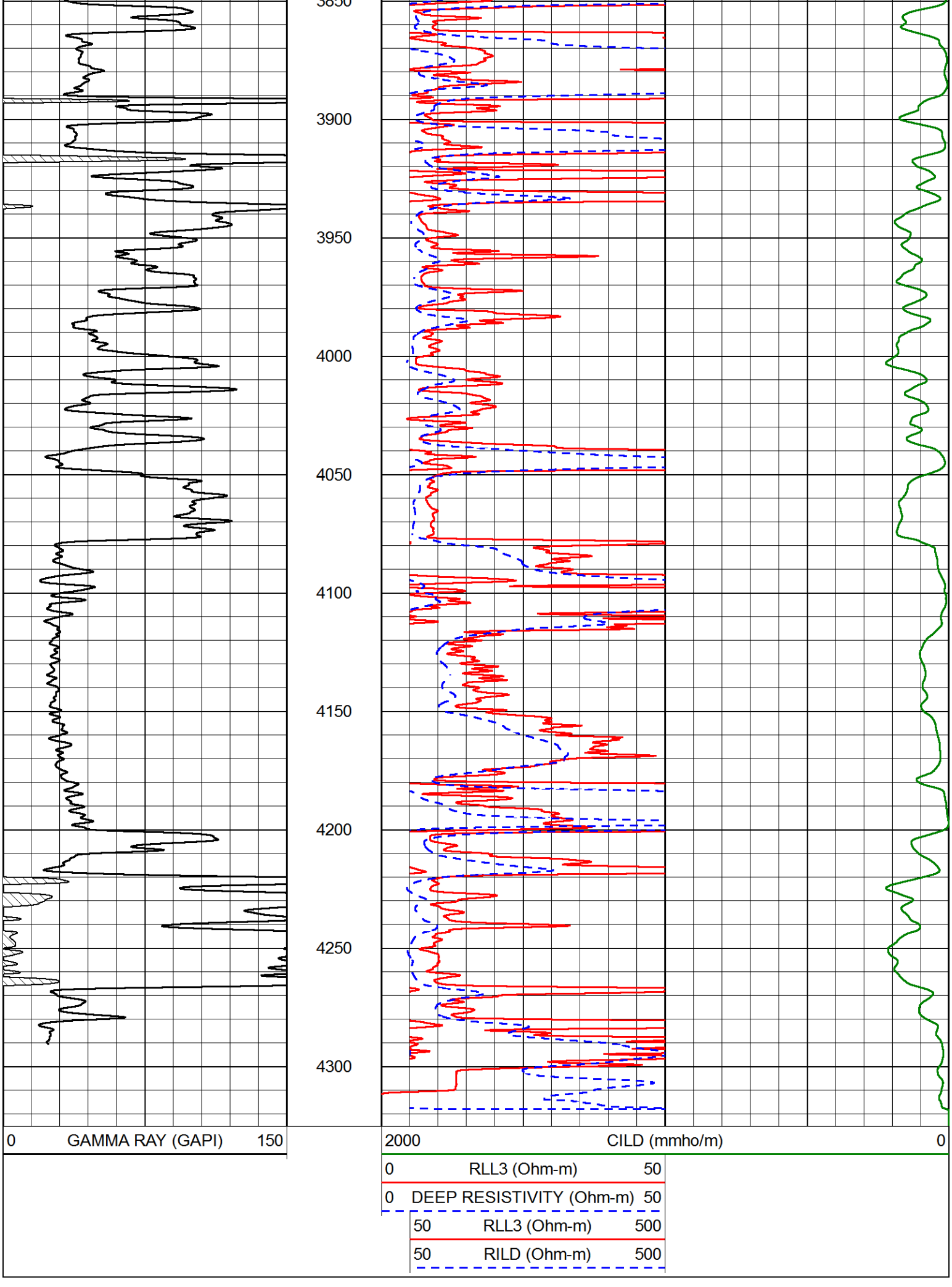

1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
1600
1650


1650
1700
1750
1800
1850
1900
1950
2000
2050
2100
2150
2200


2200
2250
2300
2350
2400
2450
2500
2550
2600
2650
2700
2750


2750
2800
2850
2900
2950
3000
3050
3100
3150
3200
3250


3300
3350
3400
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3500
3550
3600
3650
3700
3750
3800
3850


3850
3900
3950
4000
4050
4100
4150
4200
4250
4300
0
GAMMA RAY (GAPI)
150
2000
CILD (mmho/m)
0
0
RLL3 (Ohm-m)
50
0
DEEP RESISTIVITY (Ohm-m)
50
50
RLL3 (Ohm-m)
500
50
RILD (Ohm-m)
500

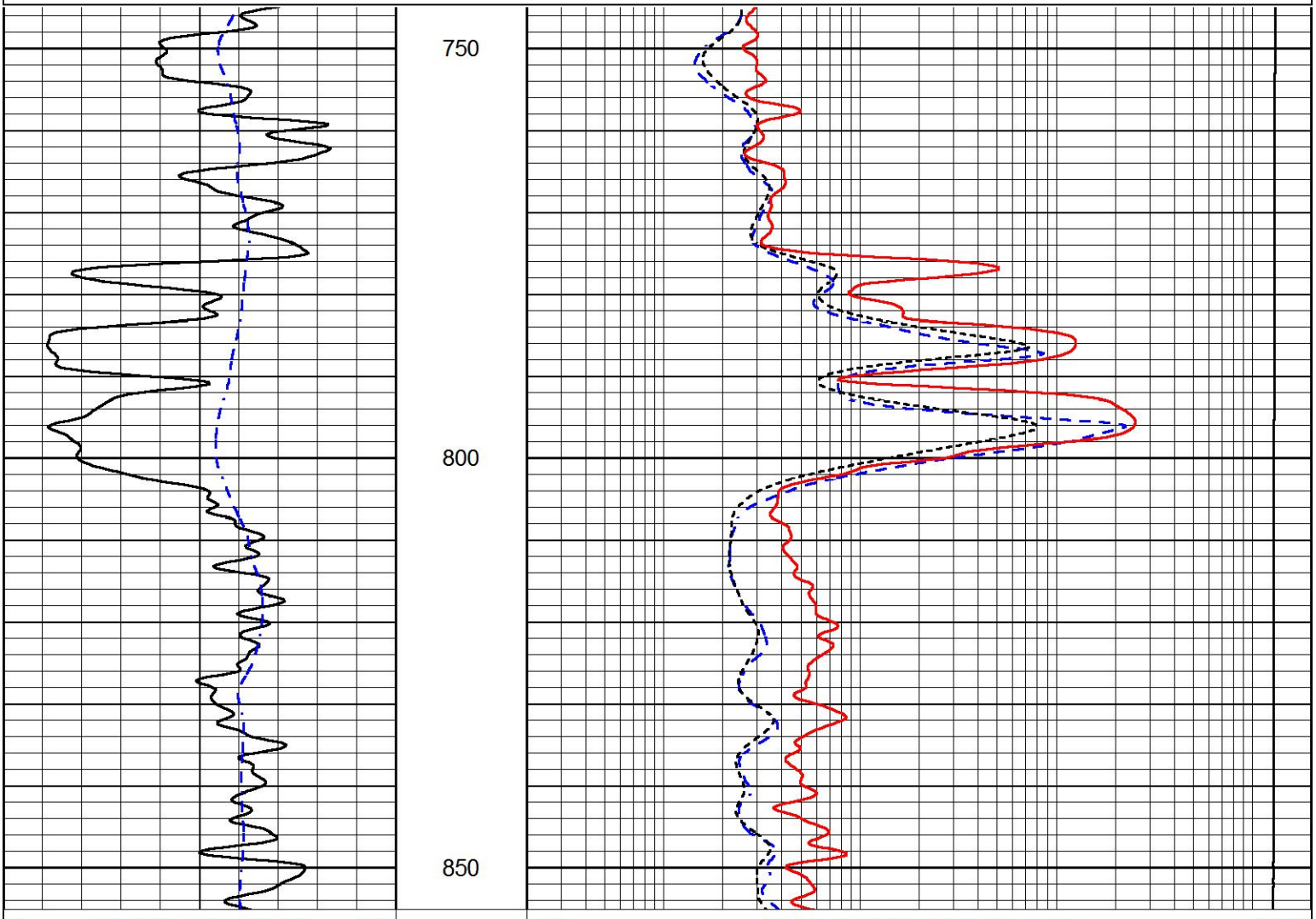
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MAIN PASS

Database File	thomas garner_garner 8.db
Dataset Pathname	STACK/pass4.1
Presentation Format	dil
Dataset Creation	Tue Nov 20 10:58:10 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
15000	LINE TENSION (lb)	0



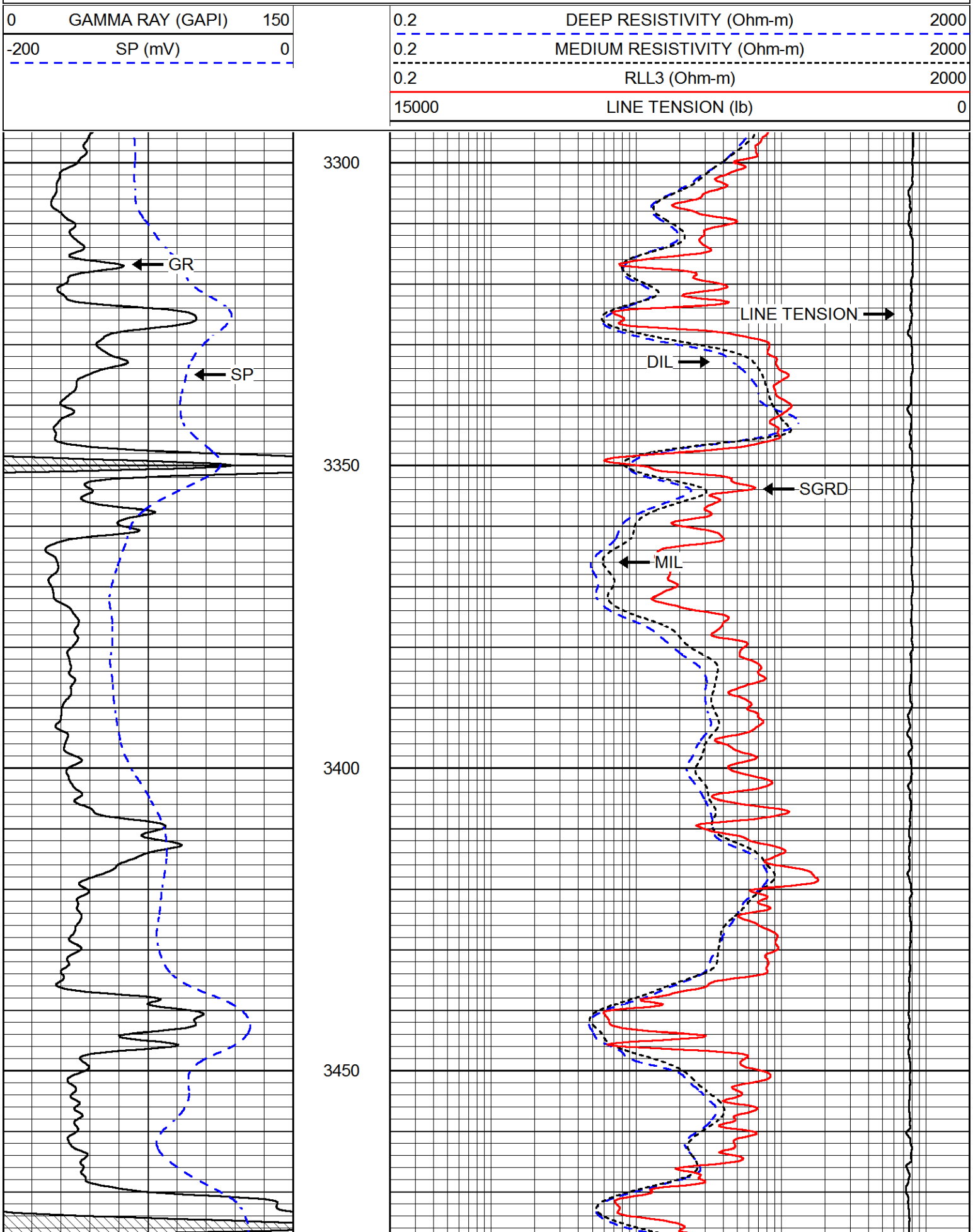
0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

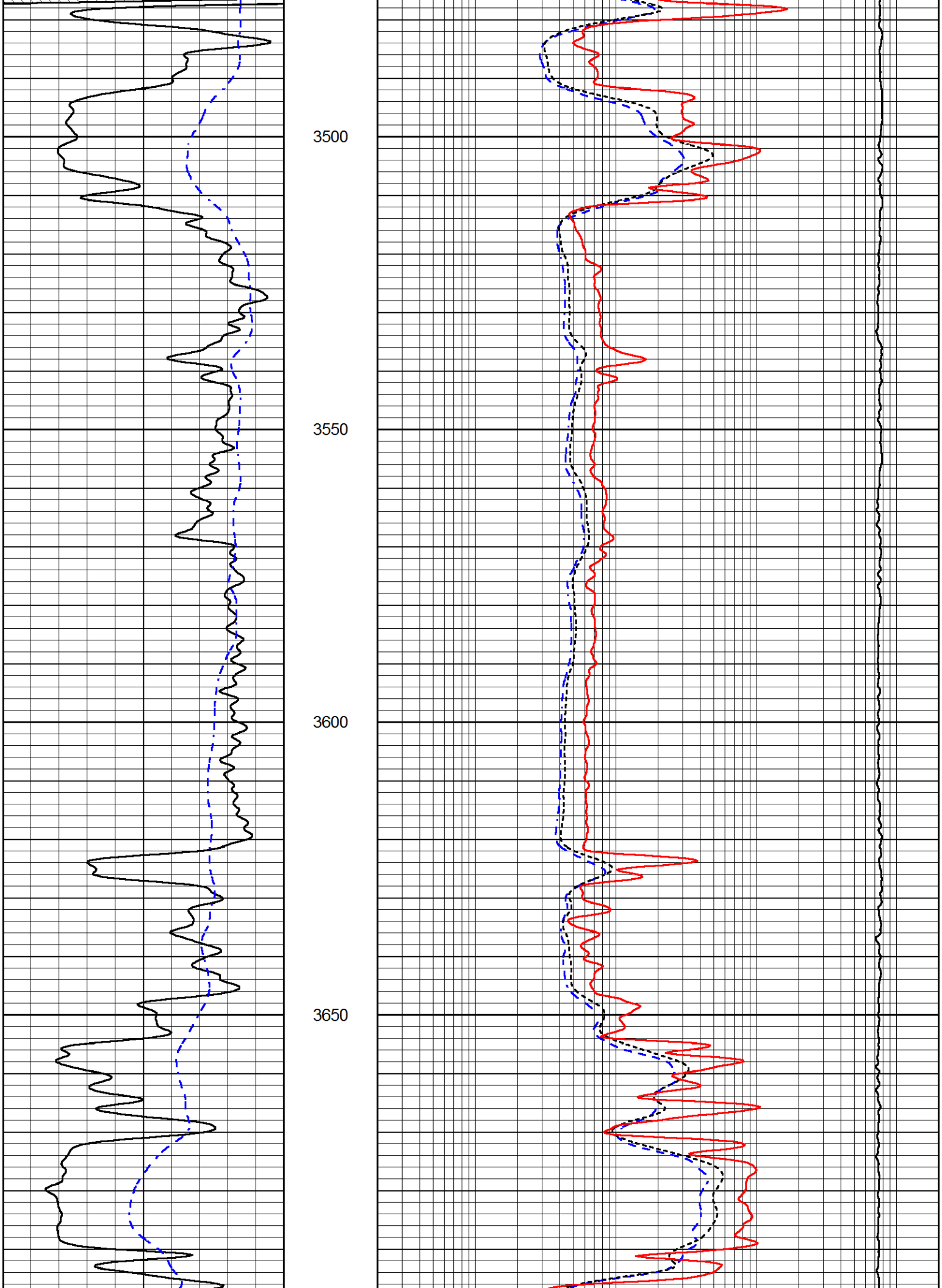
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0

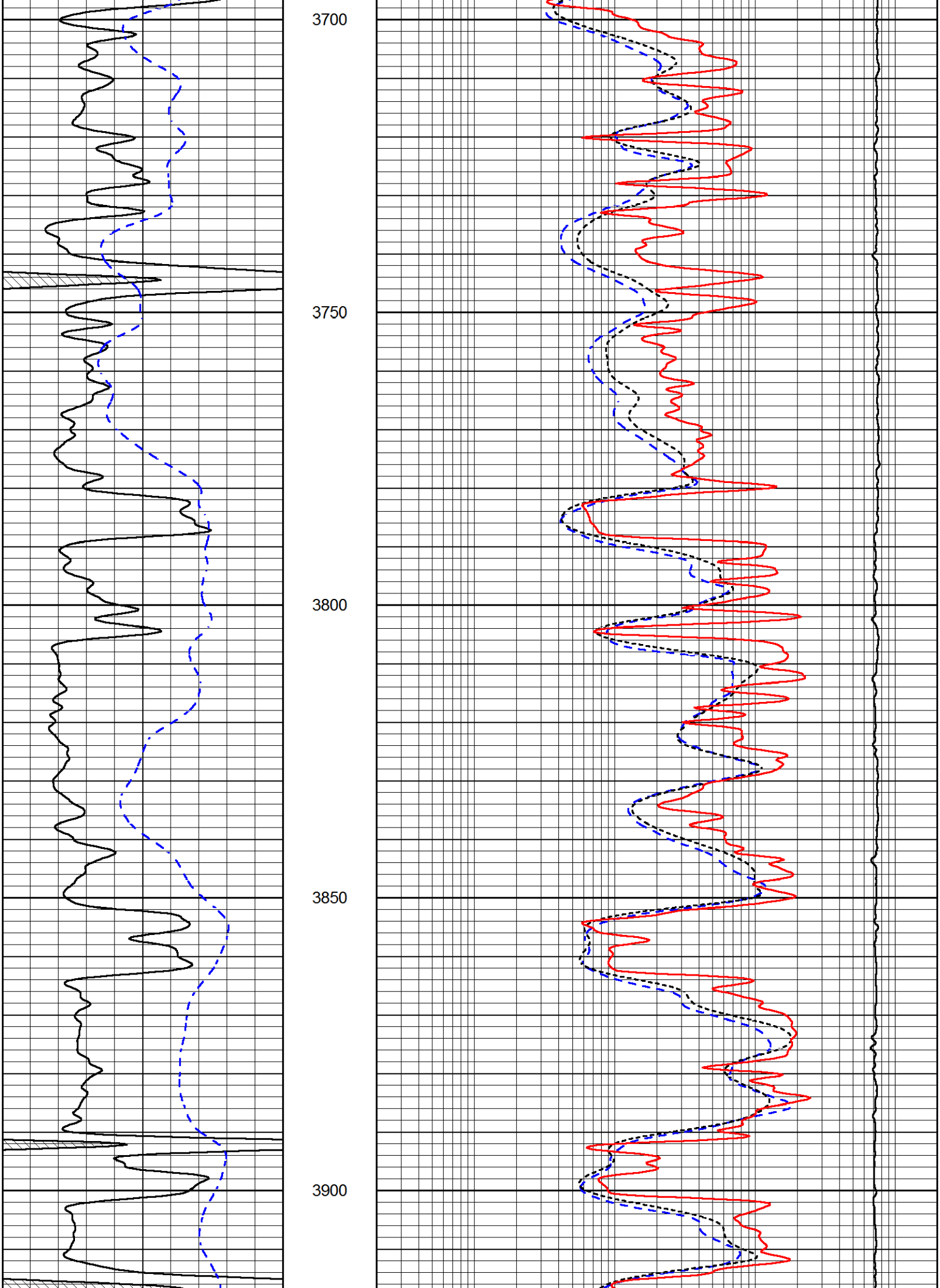
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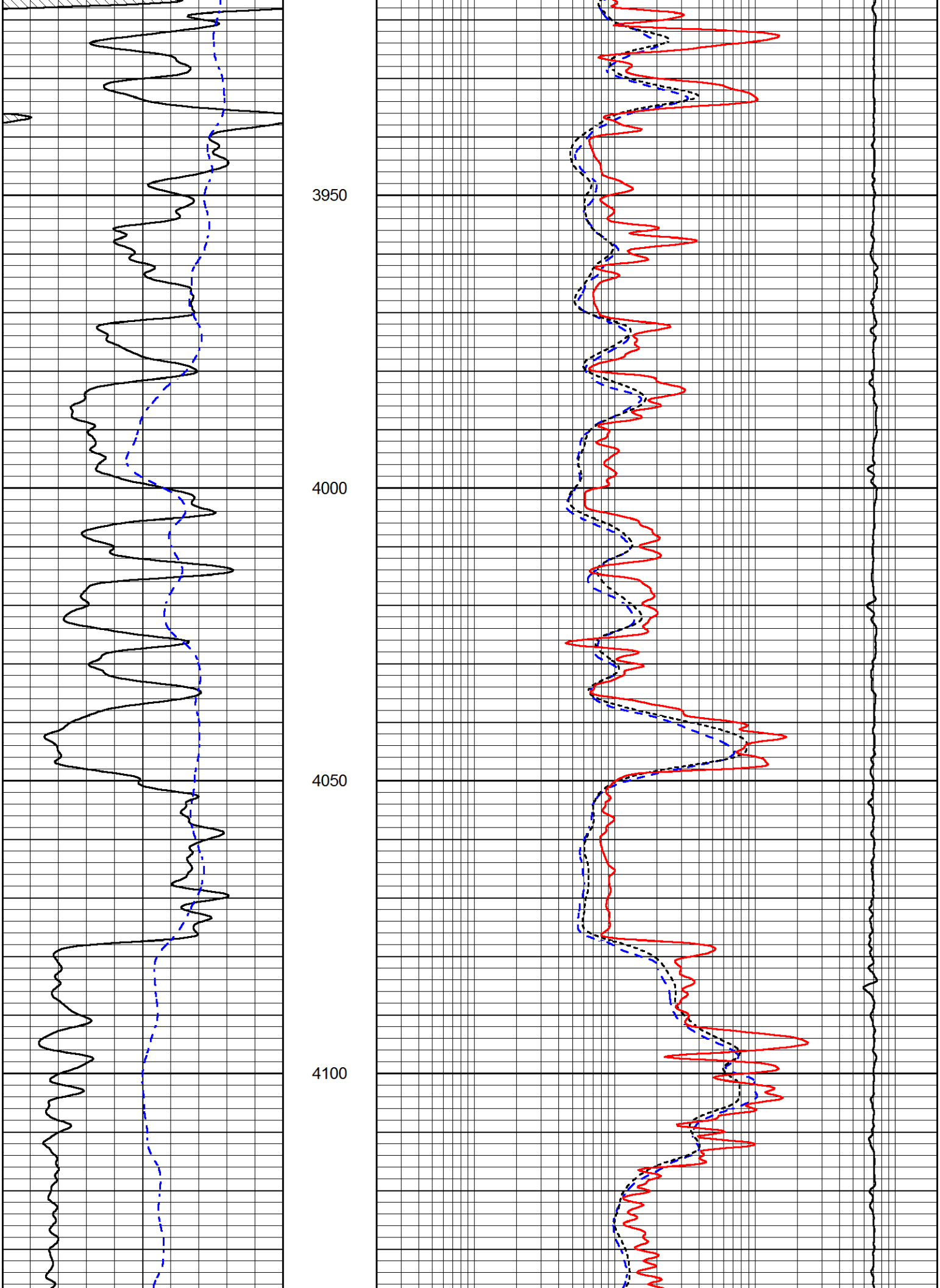
MAIN PASS

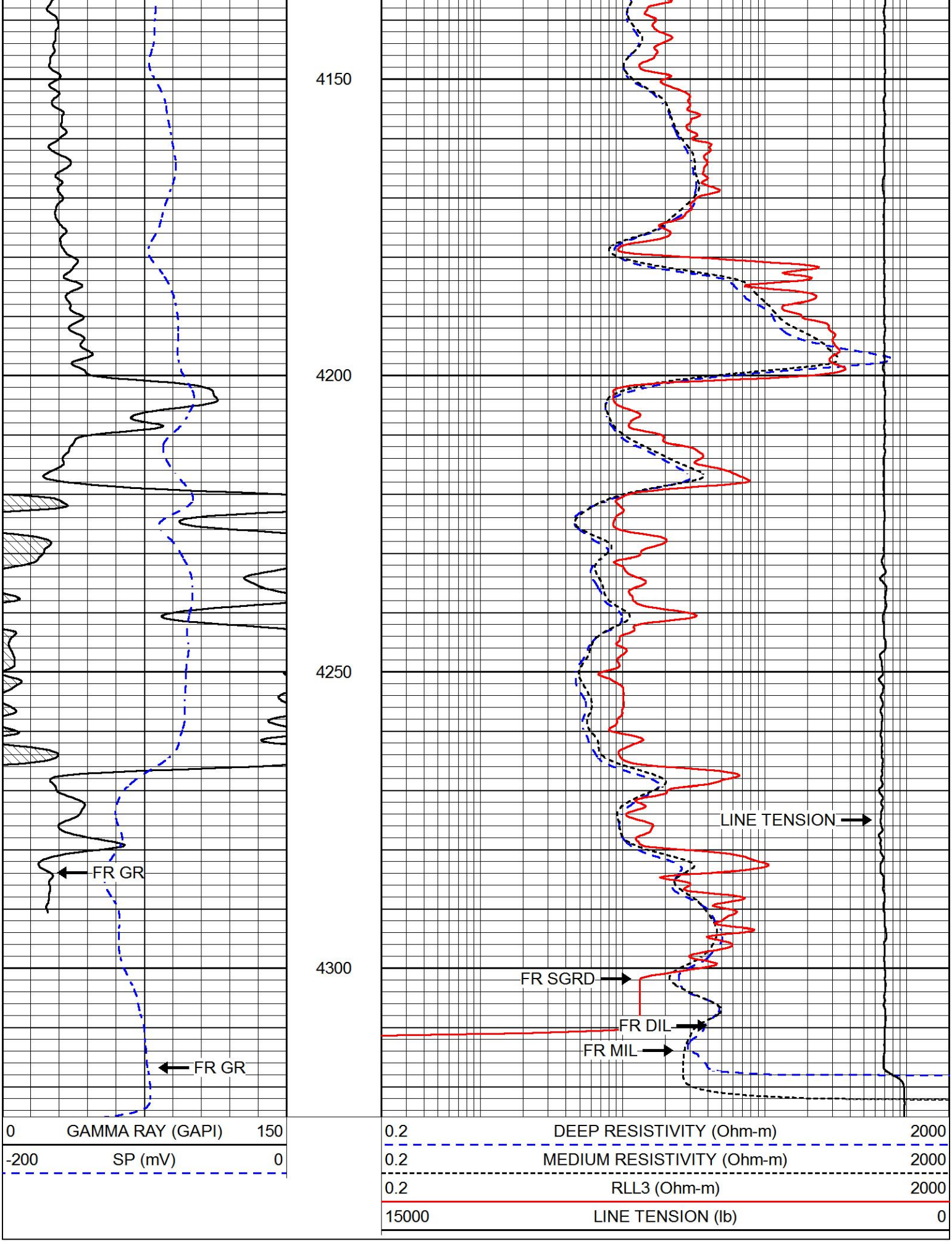
Database File	thomas garner_garner 8.db
Dataset Pathname	STACK/pass3.1
Presentation Format	dil
Dataset Creation	Tue Nov 20 10:34:38 2018
Charted by	Depth in Feet scaled 1:240




3500
3550
3600
3650


3700
3750
3800
3850
3900


3950
4000
4050
4100


4150
4200
4250
4300
FR GR
FR GR
LINE TENSION
FR SGRD
FR DIL
FR MIL
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

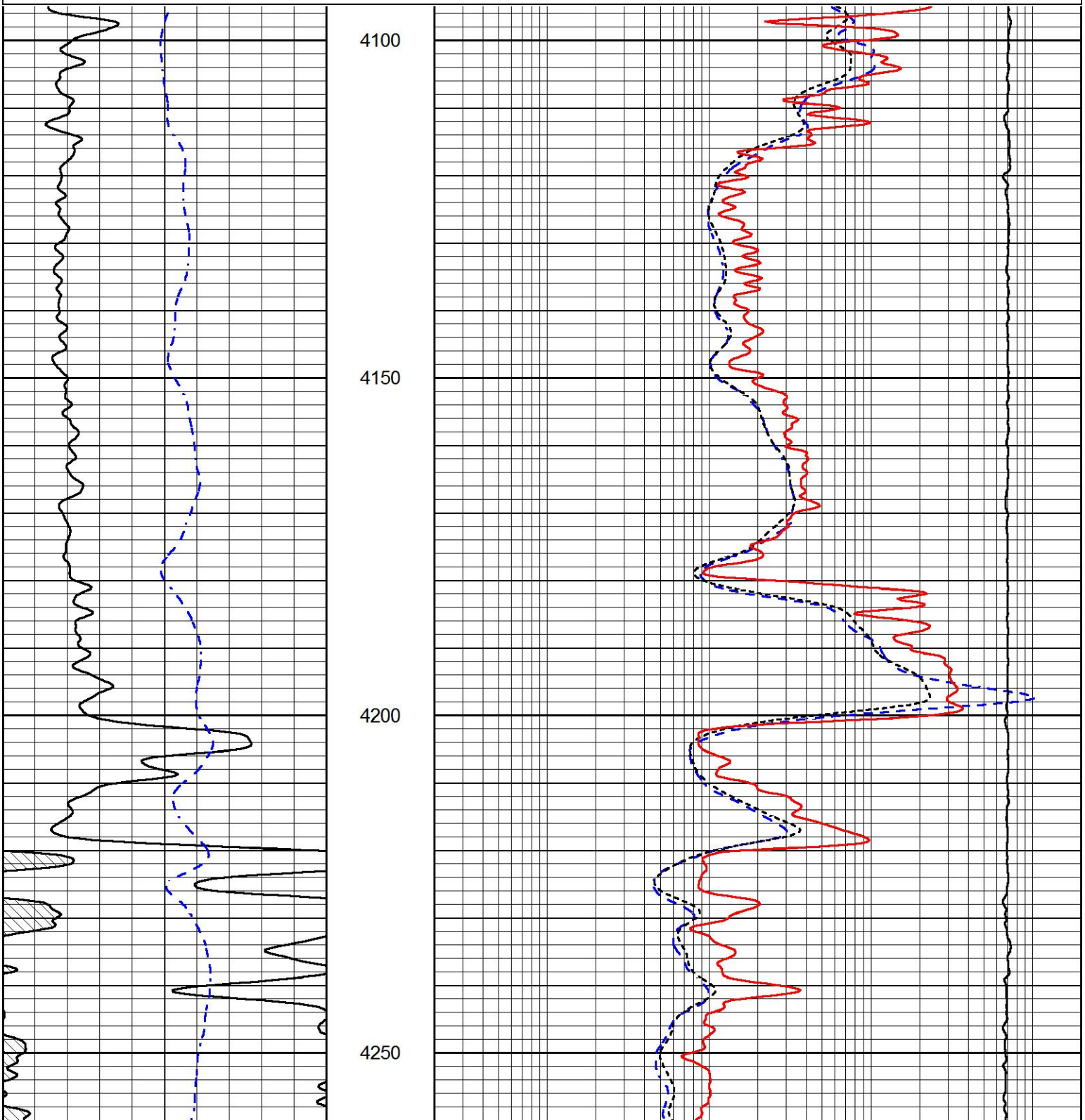
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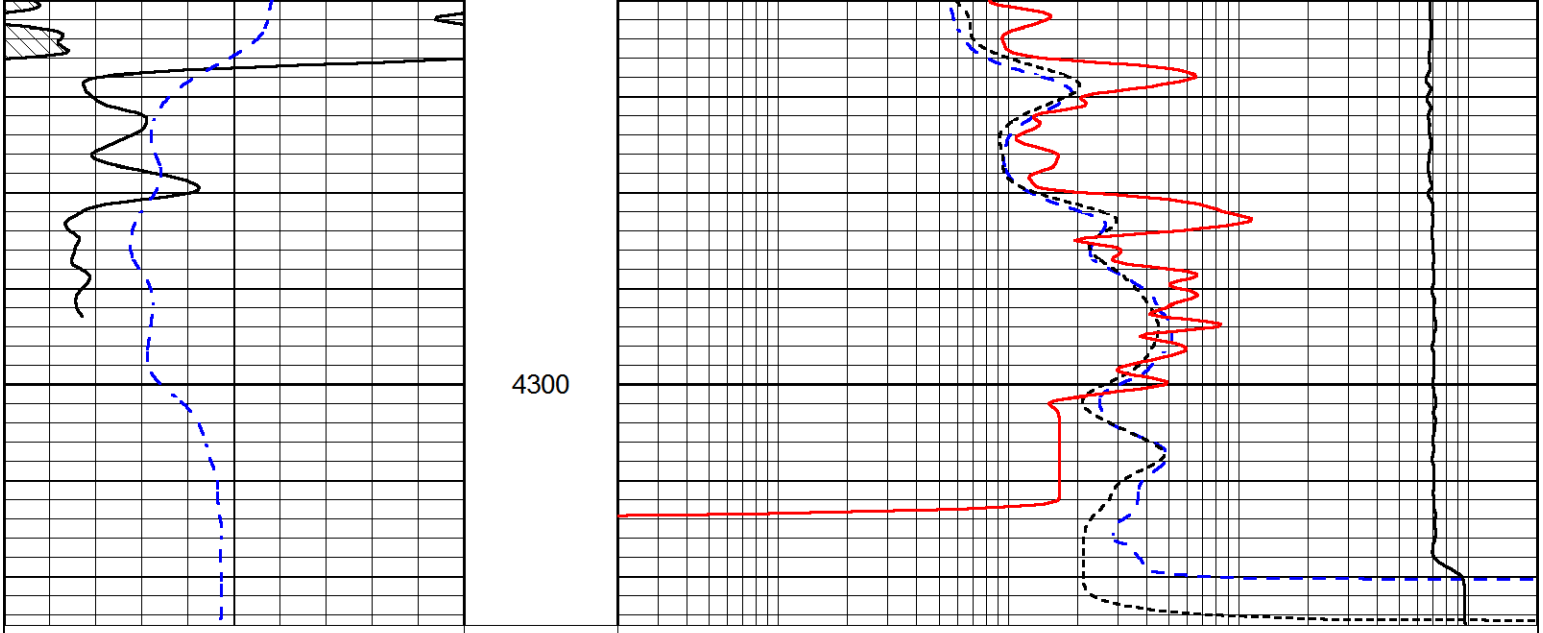
REPEAT SECTION

Database File	thomas garner_garner 8.db
Dataset Pathname	STACK/pass2.6
Presentation Format	dil
Dataset Creation	Tue Nov 20 10:21:14 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
15000	LINE TENSION (lb)	0





Calibration Report

Database File	thomas garner_garner 8.db
Dataset Pathname	STACK/pass3.4
Dataset Creation	Tue Nov 20 10:18:45 2018

Dual Induction Calibration Report

Serial-Model:	PSI 988-M&W
Calibration Performed:	Thu Sep 06 14:52:38 2018

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.525	-44.000
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.380	-16.500

Compensated Density Calibration Report

Serial-Model:	934-5002-M&W
Source / Verifier:	/
Master Calibration Performed:	Wed Aug 29 11:03:55 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	3720.16	2661.79	cps
Aluminum	2.685	g/cc	696.57	1725.83	cps

Spine Angle = 75.50 Density/Spine Ratio = 0.537

	Size		Reading
Small Ring	4.00	in	1.16
Large Ring	16.00	in	1.01

Large Ring	16.00	in	1.01

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

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Company	THOMAS GARNER, INC.
Well	GARNER #8
Field	LEISS NW
County	STAFFORD
State	KANSAS