



DUAL INDUCTION LOG

Company ST. CROIX OPERATING, INC.

Well LONGKNIFE #1

Field UNNAMED

County WASHINGTON State COLORADO

Location: API #: 05-121-11109-0000

614 FNL & 1846 FWL
NE - NW

SEC 6 TWP 3S RGE 50W

Permanent Datum GROUND LEVEL Elevation 4563

Log Measured From KELLY BUSHING 8' A.G.L

Drilling Measured From KELLY BUSHING

Other Services
CDL/CNL
PE

Elevation

K.B. 4571

D.F. 4569

G.L. 4563

Date	6/18/25		
Run Number	ONE		
Depth Driller	4150		
Depth Logger	4150		
Bottom Logged Interval	4148		
Top Log Interval	00		
Casing Driller	8 625 @ 460		
Casing Logger	460		
Bit Size	7.875		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 300 PPM	
Density / Viscosity	9.1/51		
pH / Fluid Loss	9.5/7.2		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.70 @ 83F		
Rmf @ Meas. Temp	1.28 @ 83F		
Rmc @ Meas. Temp	2.04 @ 83F		
Source of Rmf / Rmc	MEASUREMENT		
Rm @ BHT	1.21 @ 117F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom	4:45 A.M.		
Maximum Recorded Temperature	117F		
Equipment Number	3802		
Location	HAYS, KANSAS	TJ DREILING	
Recorded By	COLE ROBBEN	WESTON LAFON	
Witnessed By	TOM THOMAS		

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, 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. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

THANK YOU FOR USING ELI WIRELINE SERVICES, HAYS, KS. (785) 628-6395

DIRECTIONS:

FROM OTIS, COLORADO -23 MILES SOUTH ON COUNTY ROAD RR TO COUNTY ROAD 17,
- WEST 2 MILES TO COUNTY ROAD PP, - NORTH 1 MILE
- WEST 1/2 MILE, - SOUTH INTO

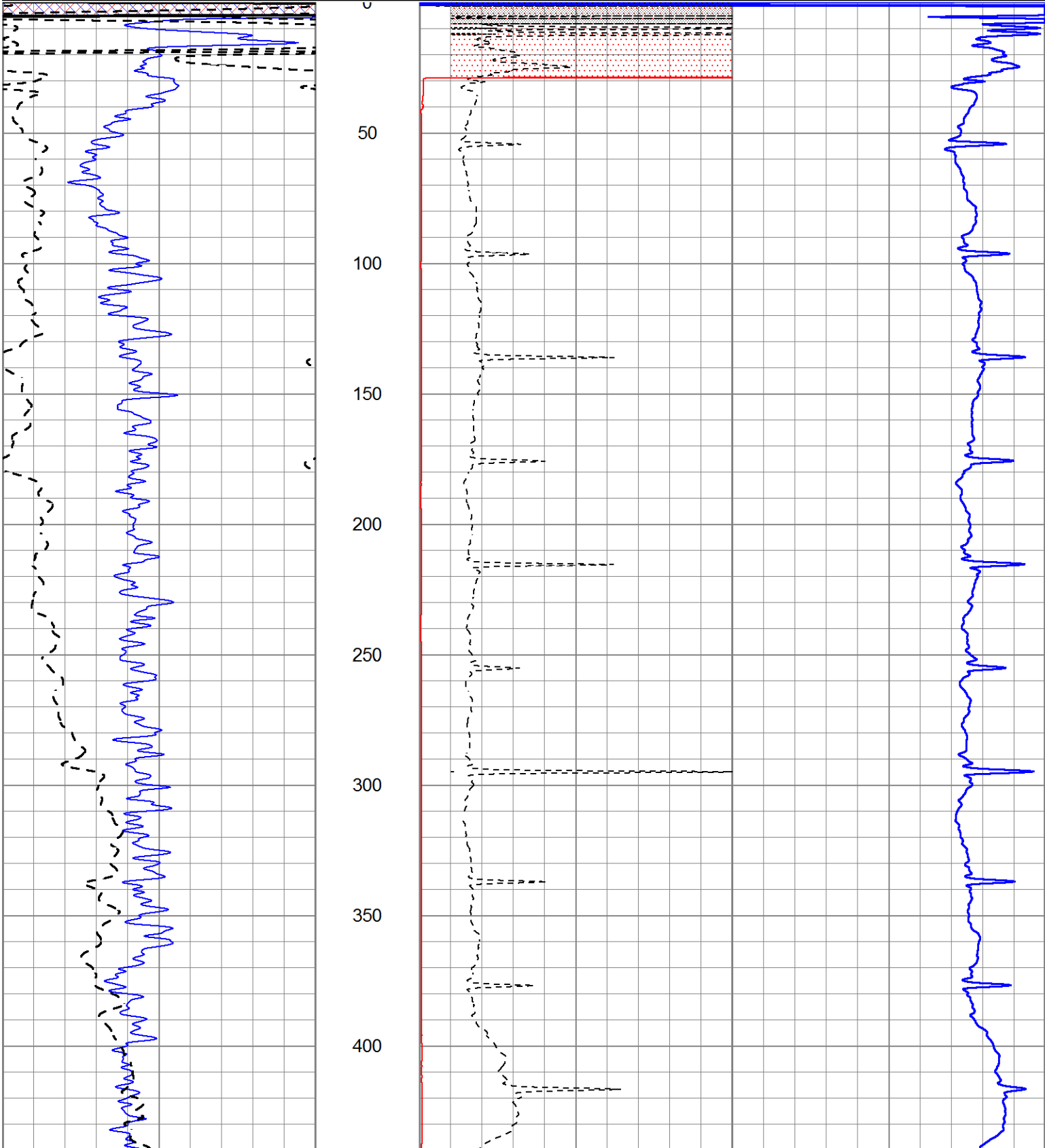


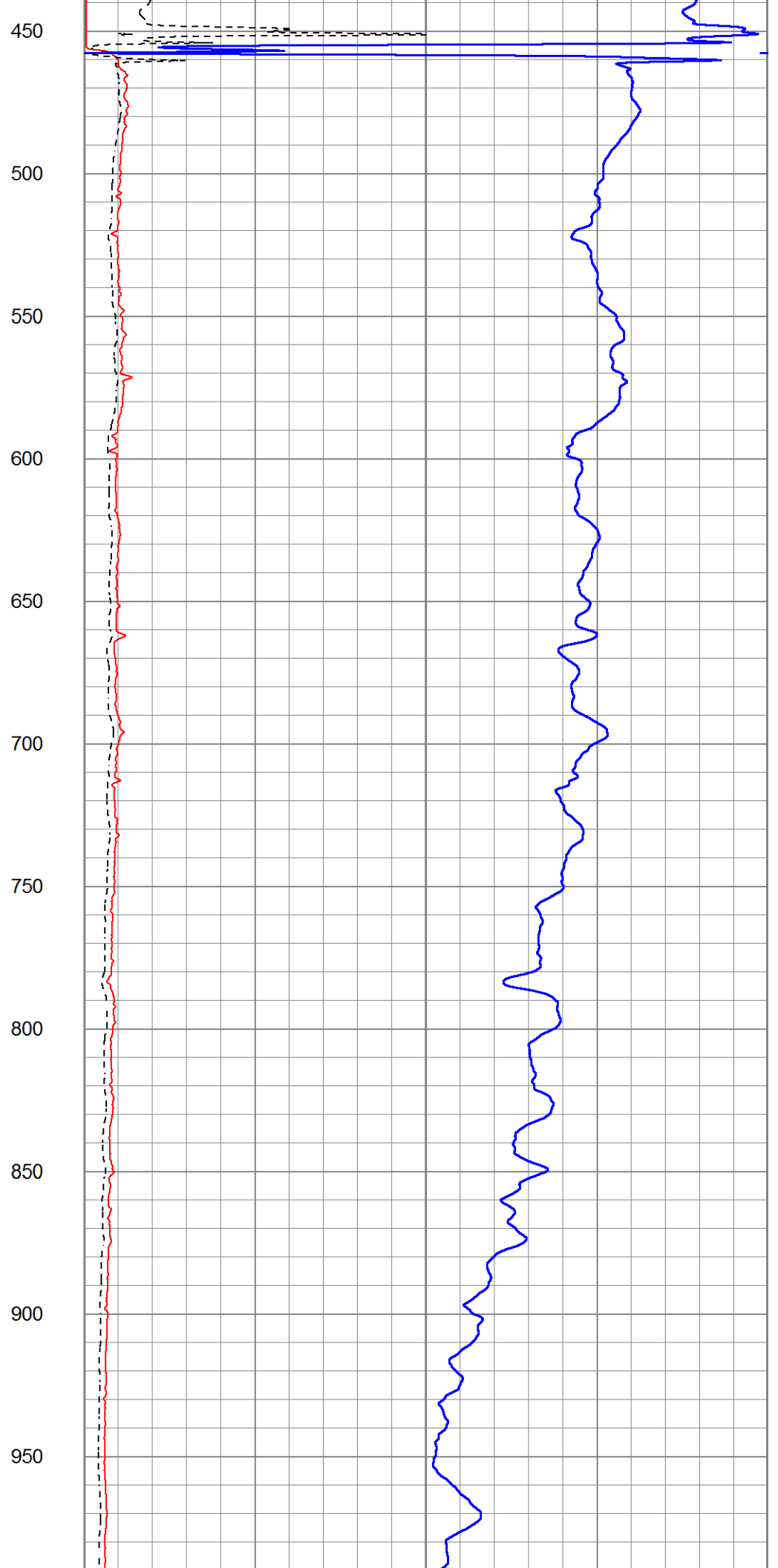
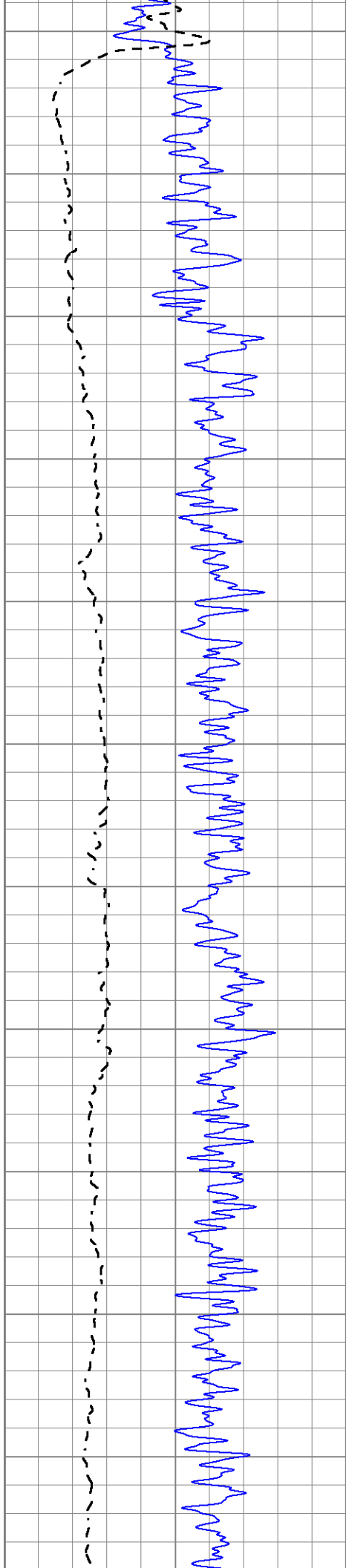
MAIN SECTION

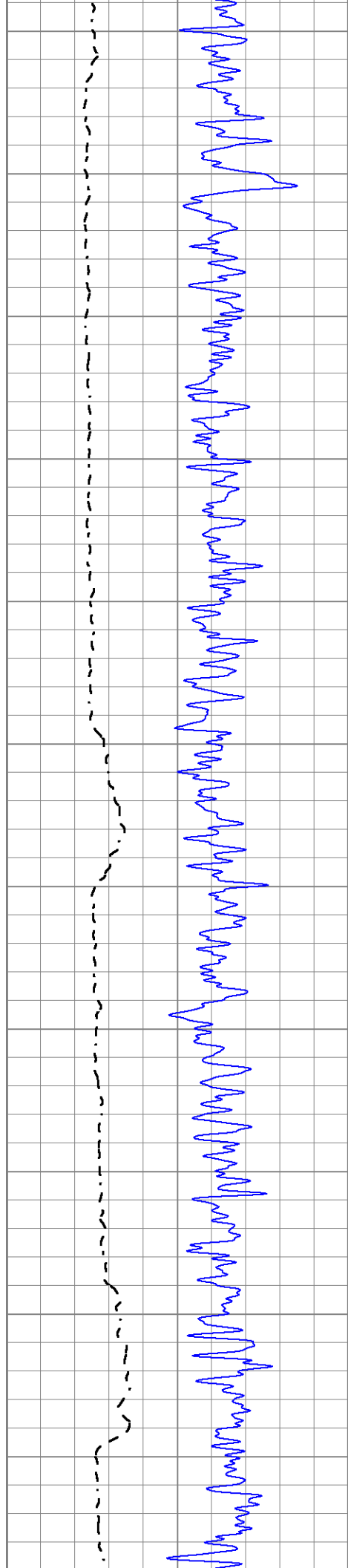
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 Dataset Pathname pass3.M
 Presentation Format _dil2
 Dataset Creation Wed Jun 18 07:25:07 2025
 Charted by Depth in Feet scaled 1:600

0 Gamma Ray (GAPI) 150
 -100 SP (mV) 100

1000 CILD (mmho/m) 0
 0 RLL3 (Ohm-m) 50
 0 Deep Induction (Ohm-m) 50
 50 RILD X10 (Ohm-m) 500
 50 RLL3 X10 (Ohm-m) 500







1000

1050

1100

1150

1200

1250

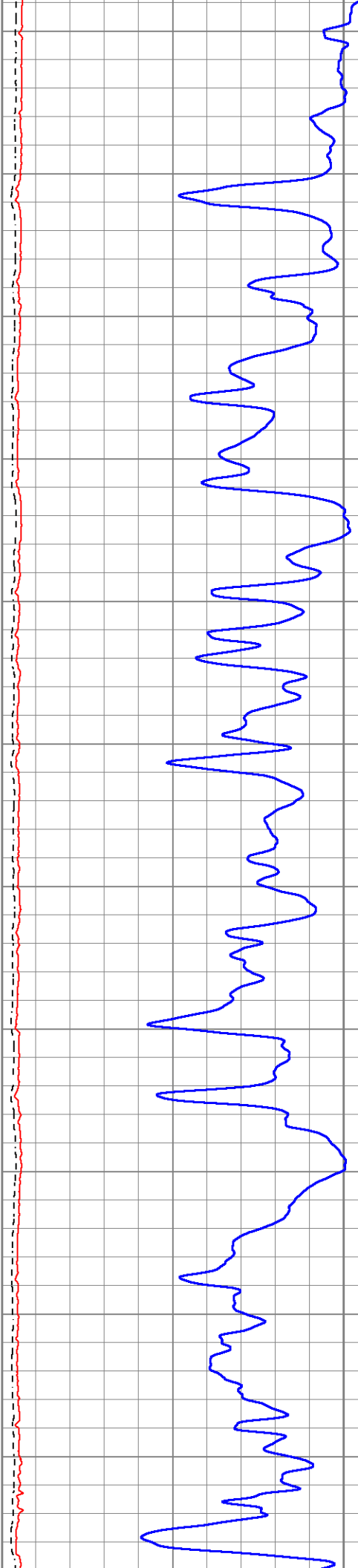
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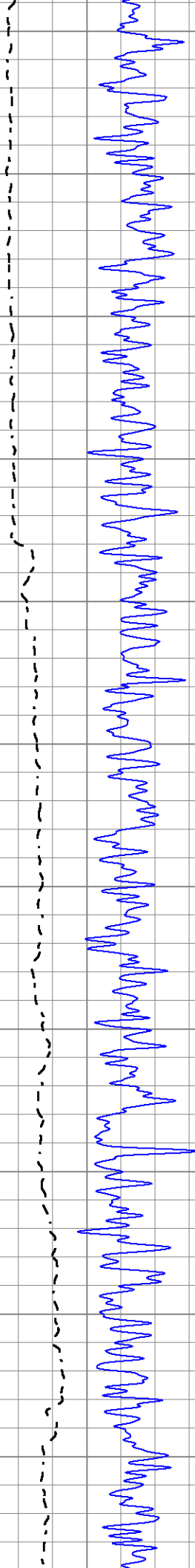
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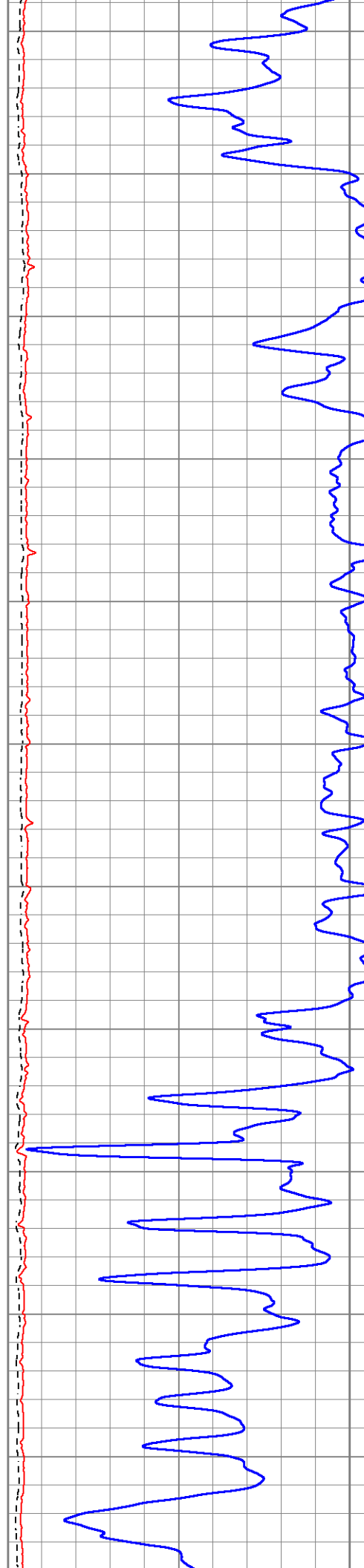
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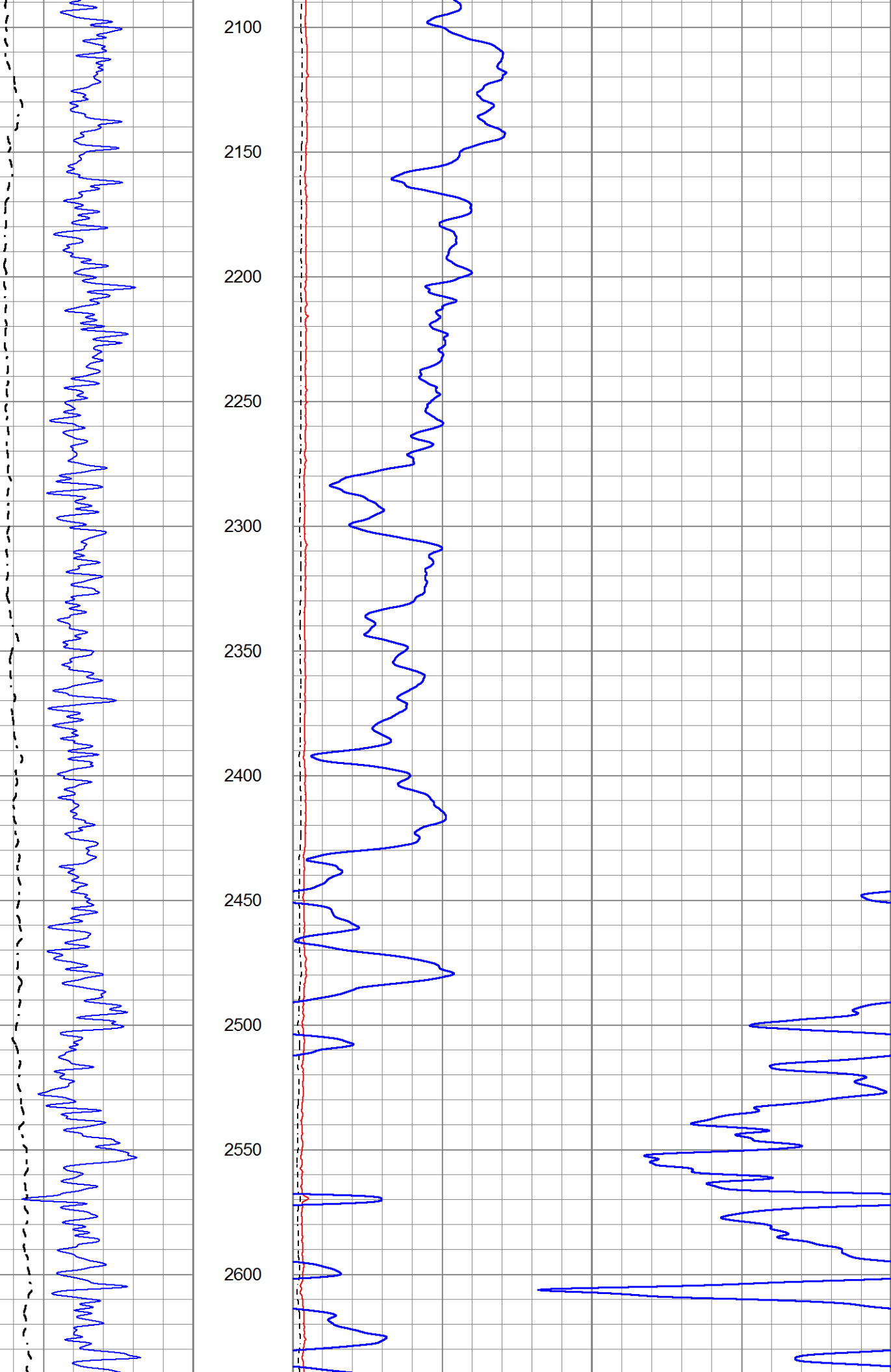
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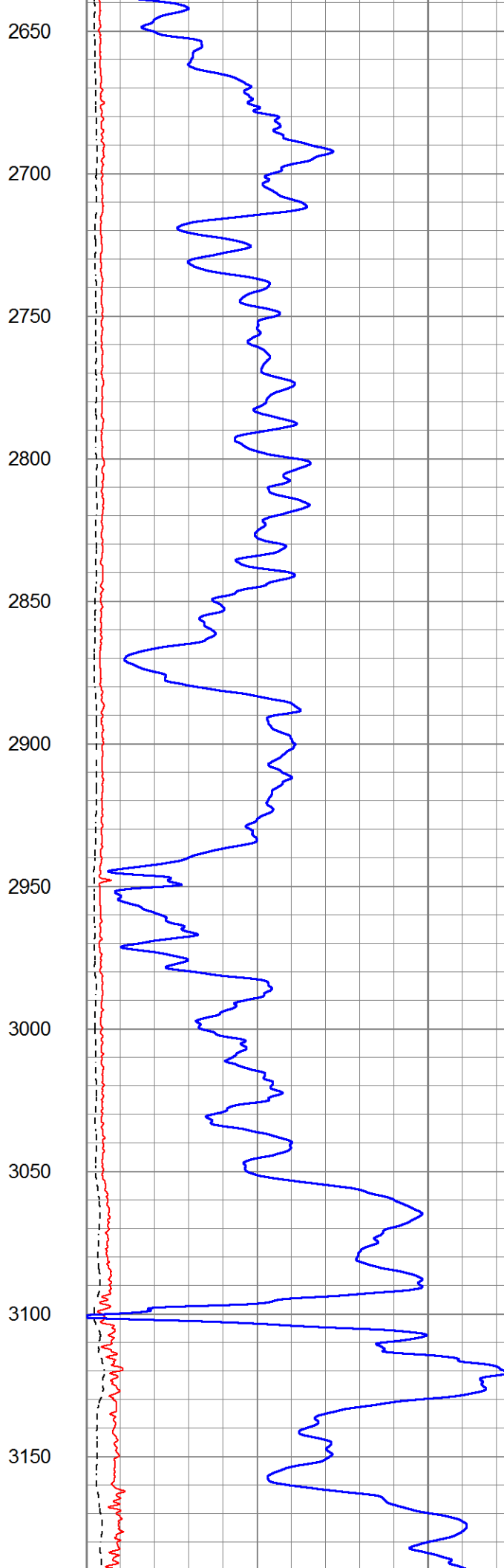
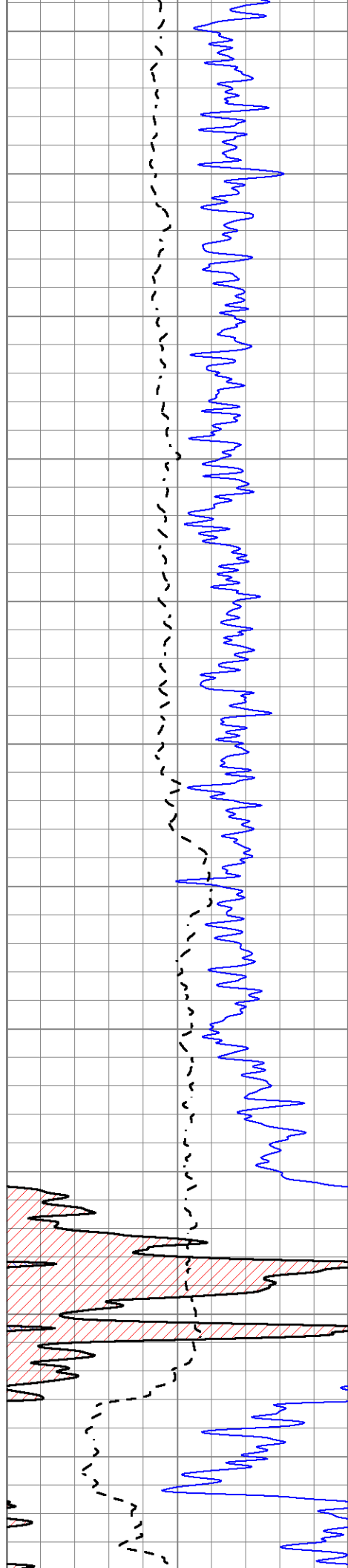


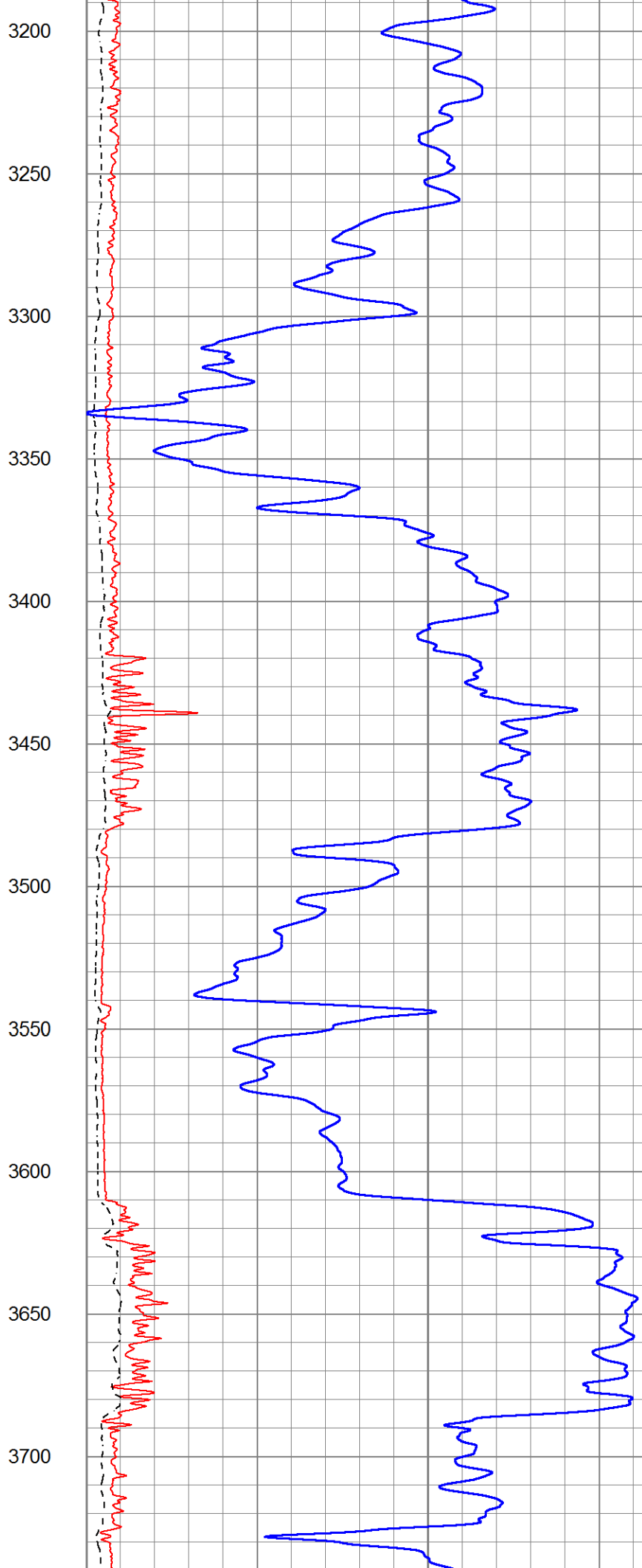
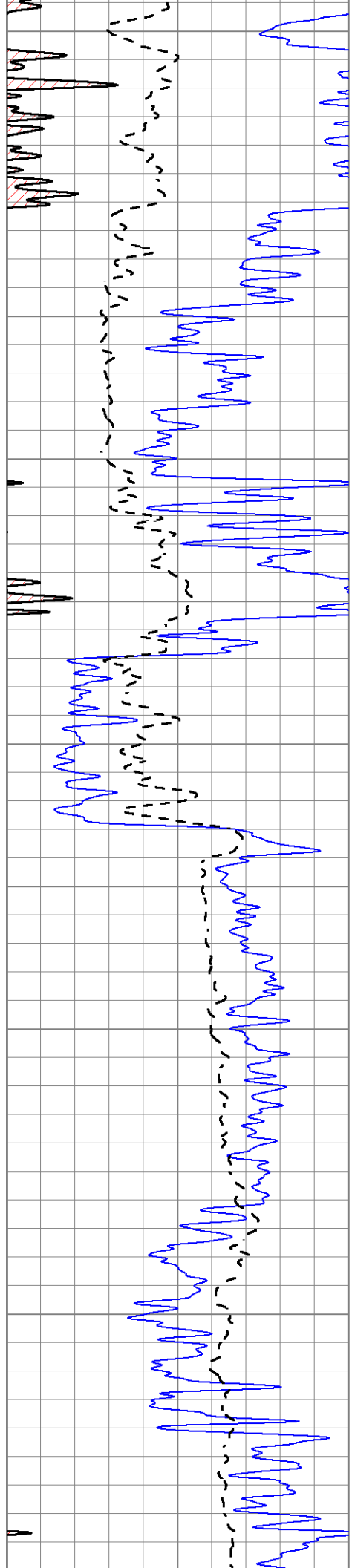


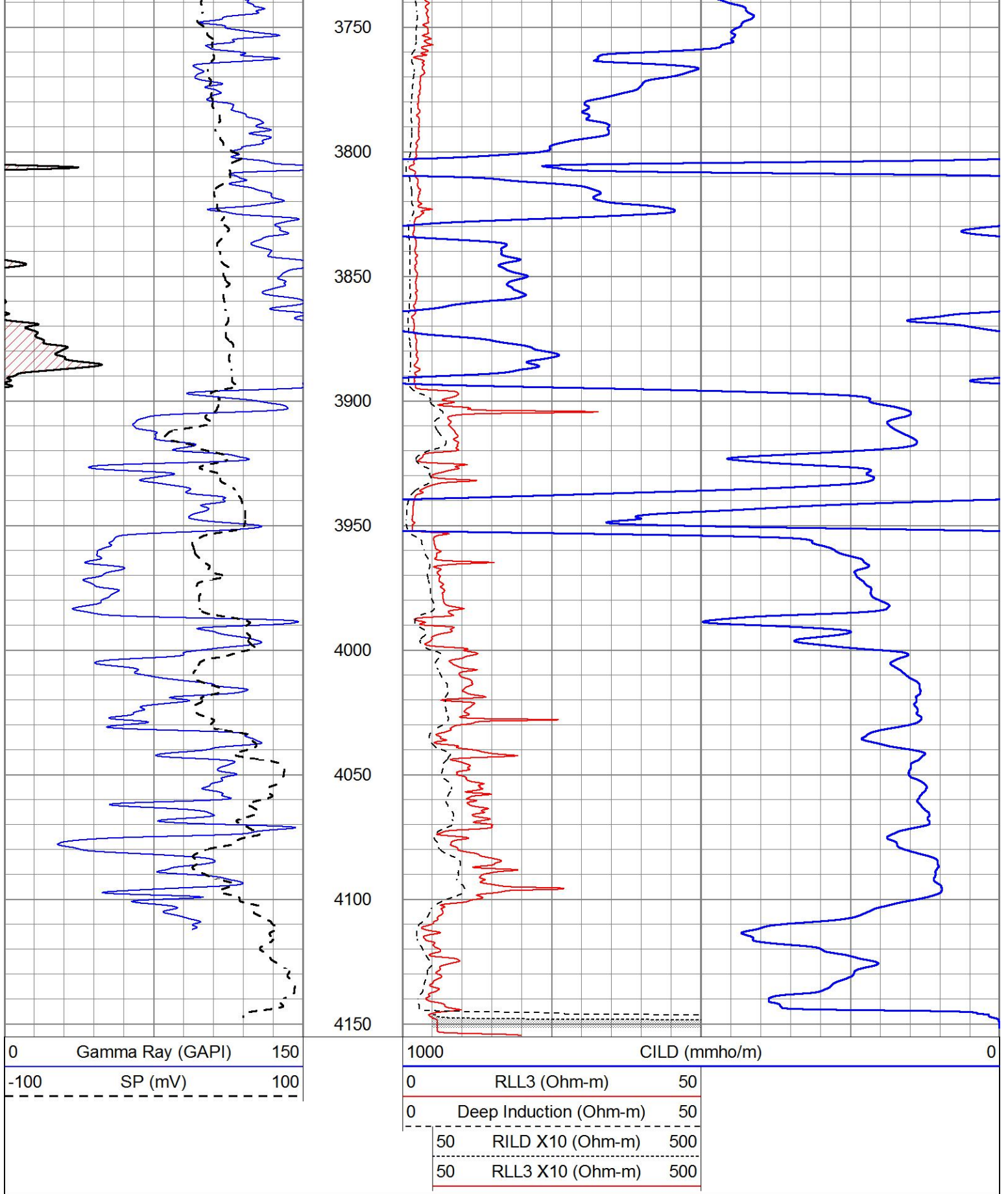
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1600
1650
1700
1750
1800
1850
1900
1950
2000
2050









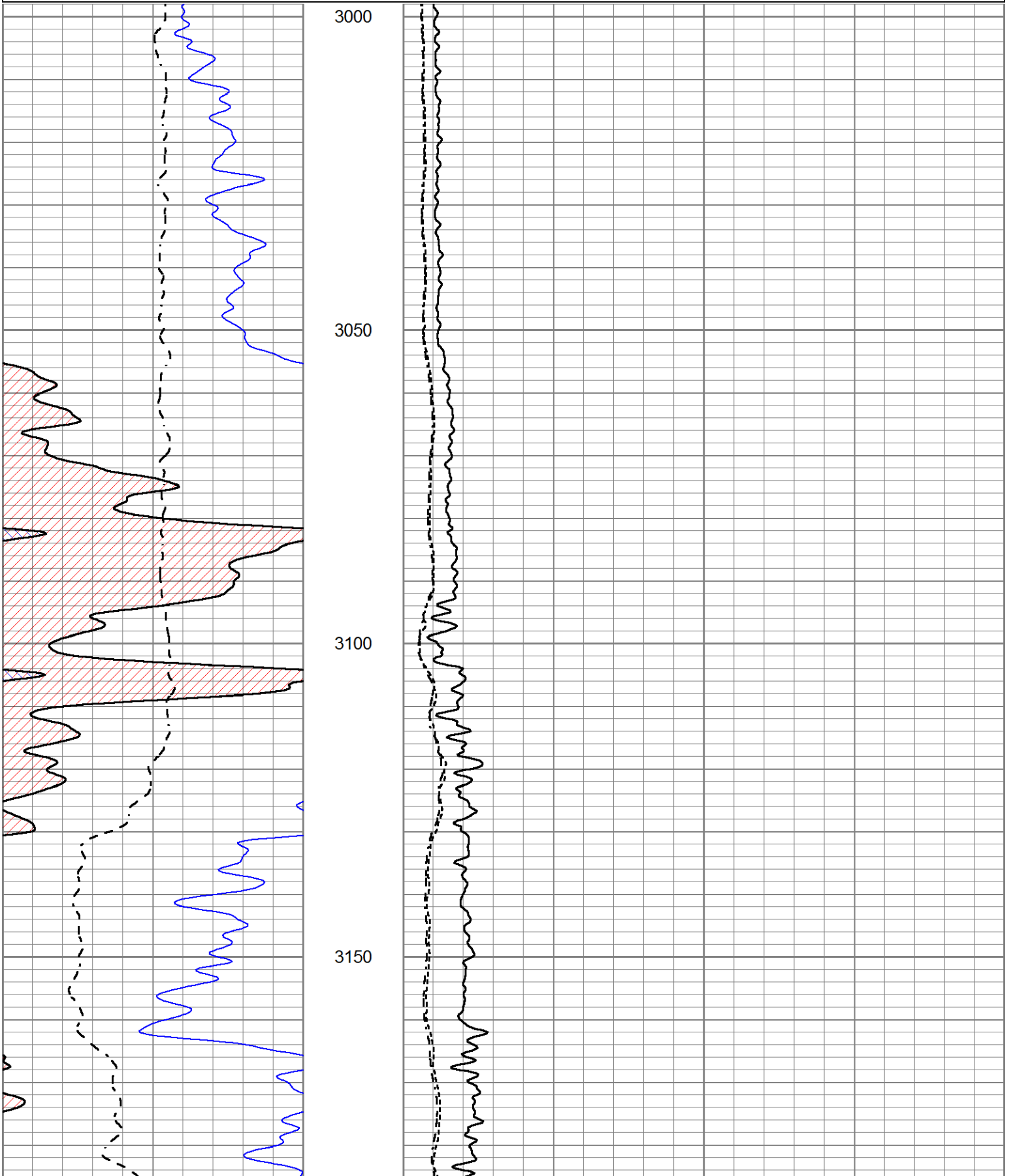


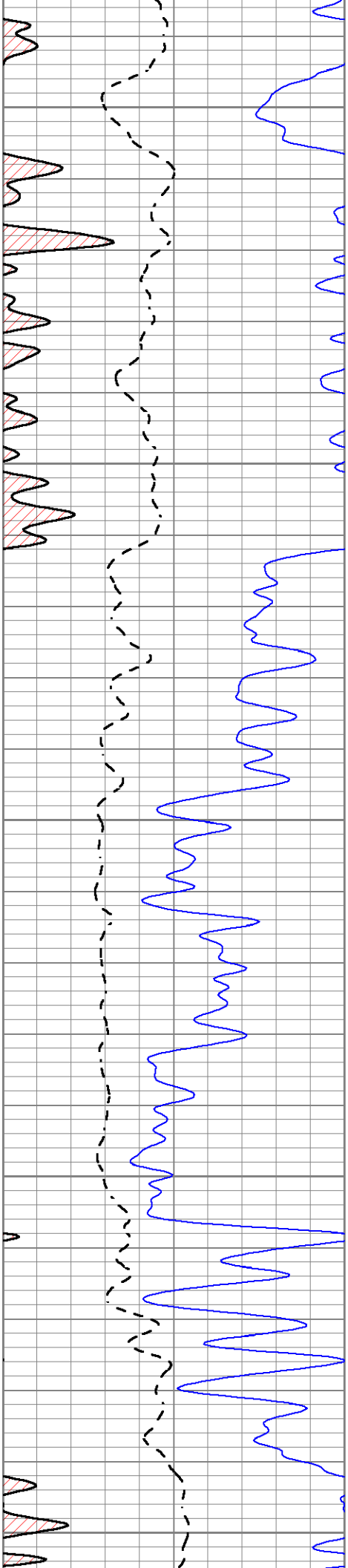
5" LINEAR SCALE MAIN

Database File 9570pe.db
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 Presentation Format _stcroixlin
 Dataset Creation Wed Jun 18 07:39:01 2025
 Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150
-100	SP (mV)	100

0	RLL3 (Ohm-m)	40
0	RILM (Ohm-m)	40
0	RILD (Ohm-m)	40





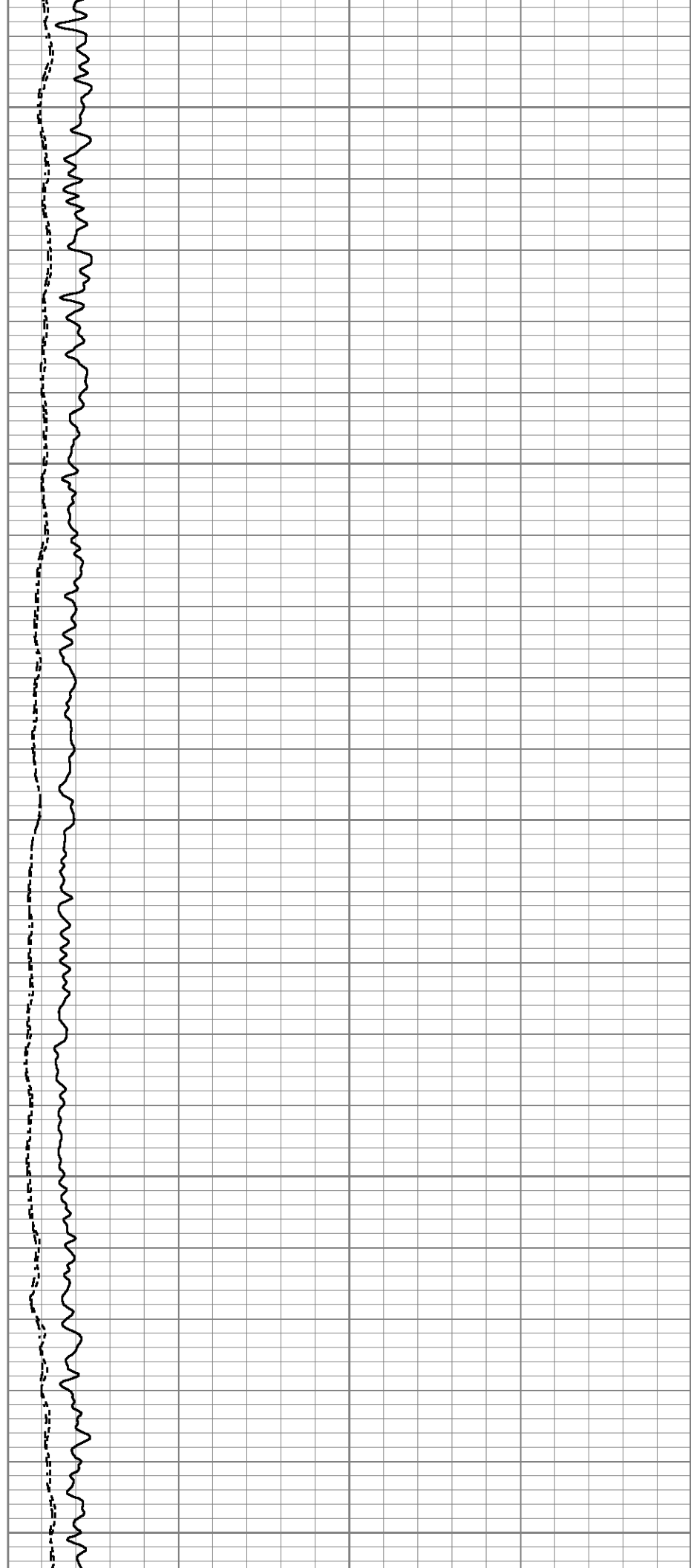
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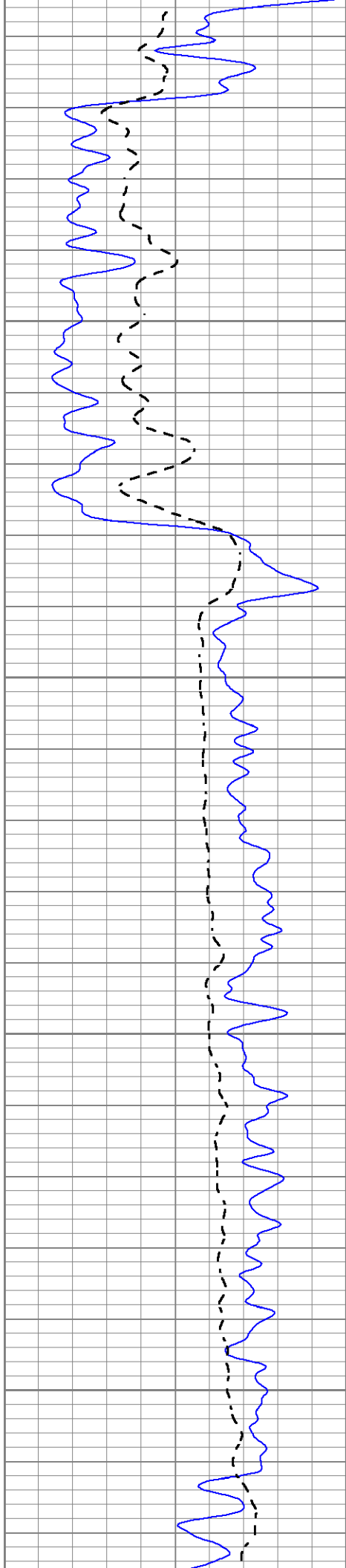
3250

3300

3350

3400



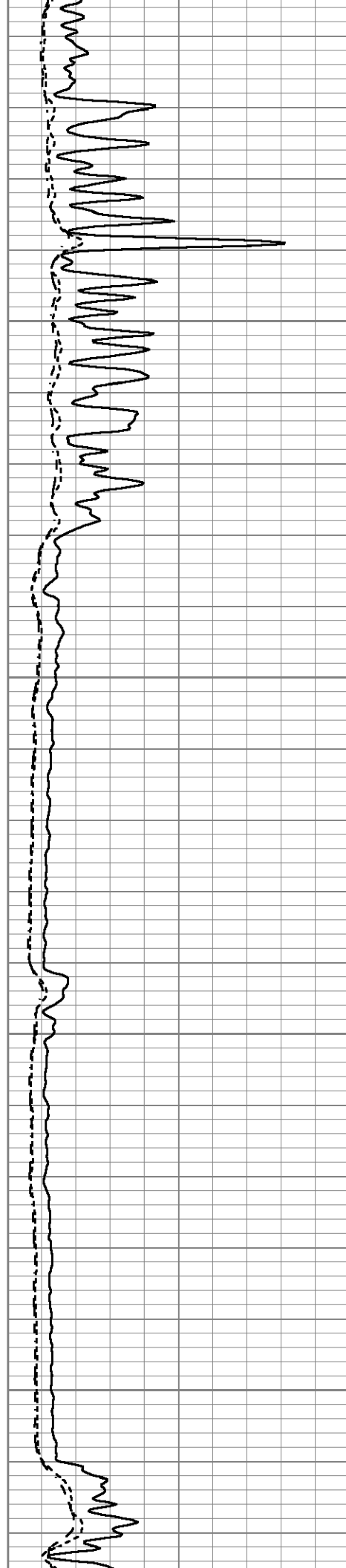


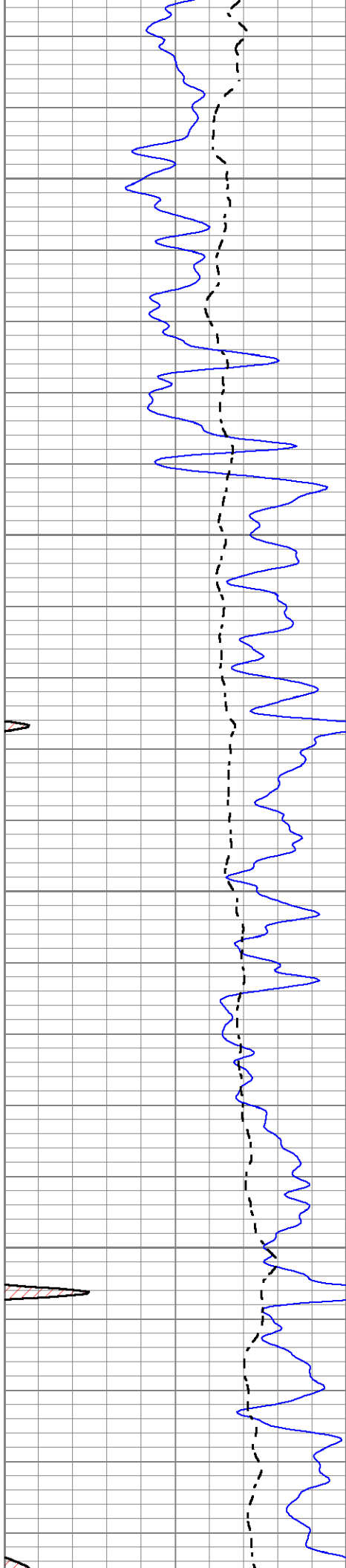
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3500

3550

3600



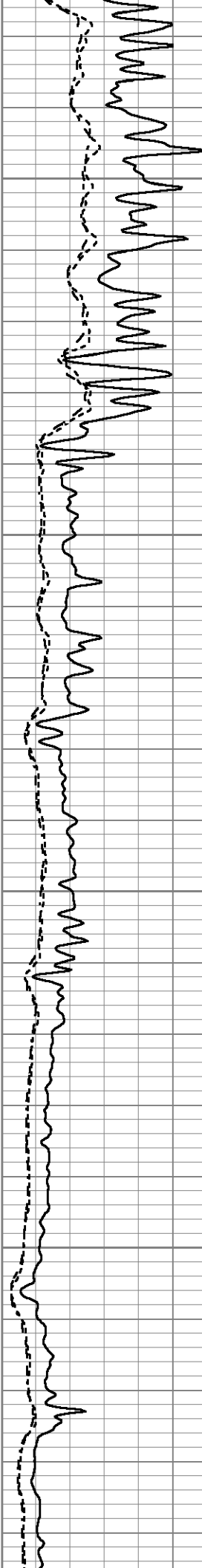


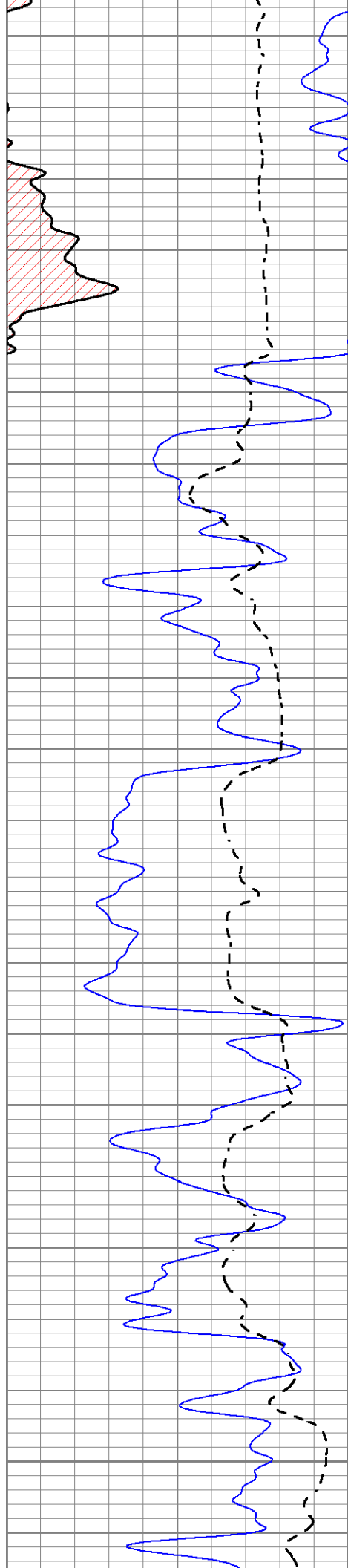
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3700

3750

3800





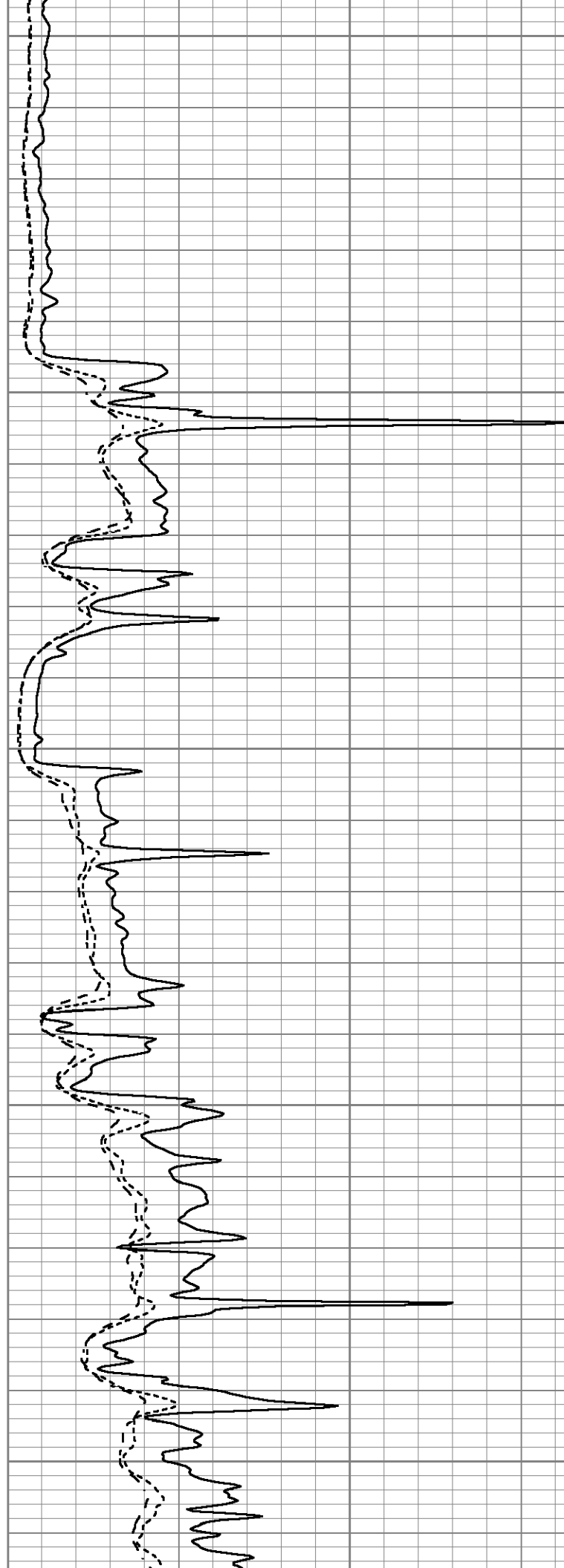
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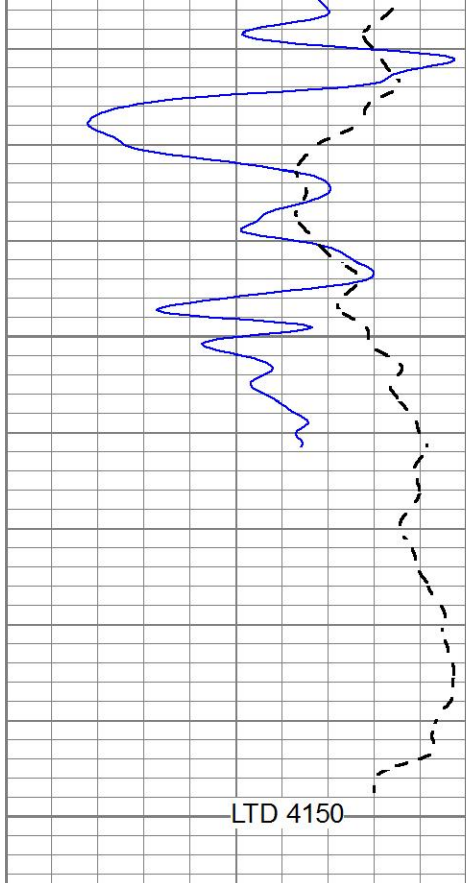
3900

3950

4000

4050



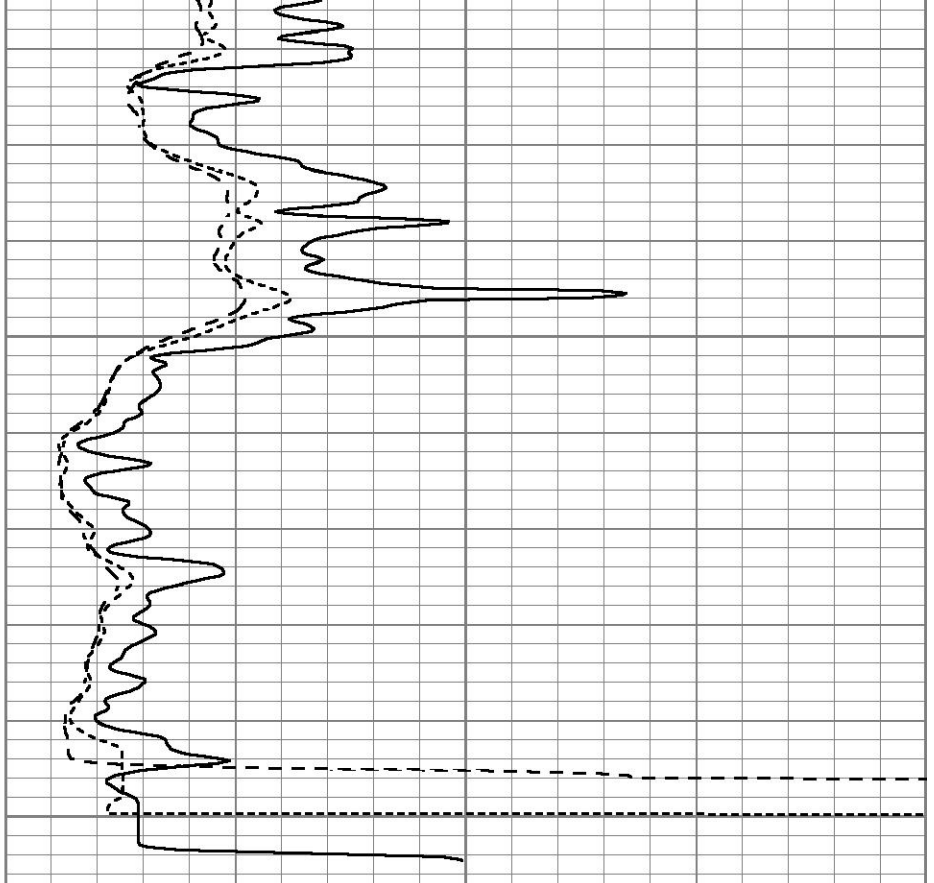


4100

4150

LTD 4150

0	Gamma Ray (GAPI)	150
-100	SP (mV)	100



0	RLL3 (Ohm-m)	40
0	RILM (Ohm-m)	40
0	RILD (Ohm-m)	40

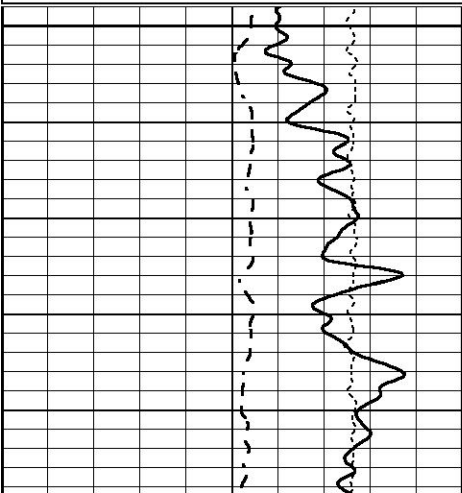


MAIN SECTION

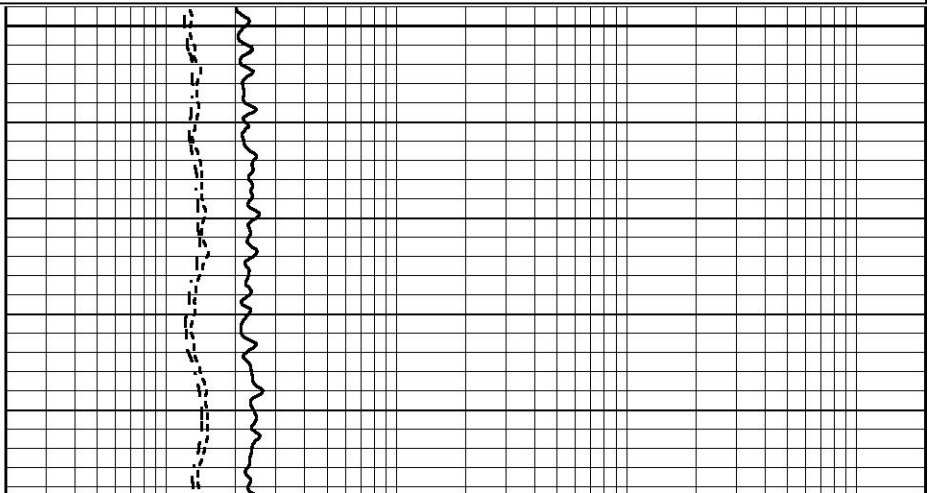
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 Presentation Format _dil
 Dataset Creation Wed Jun 18 07:25:07 2025
 Charted by Depth in Feet scaled 1:240

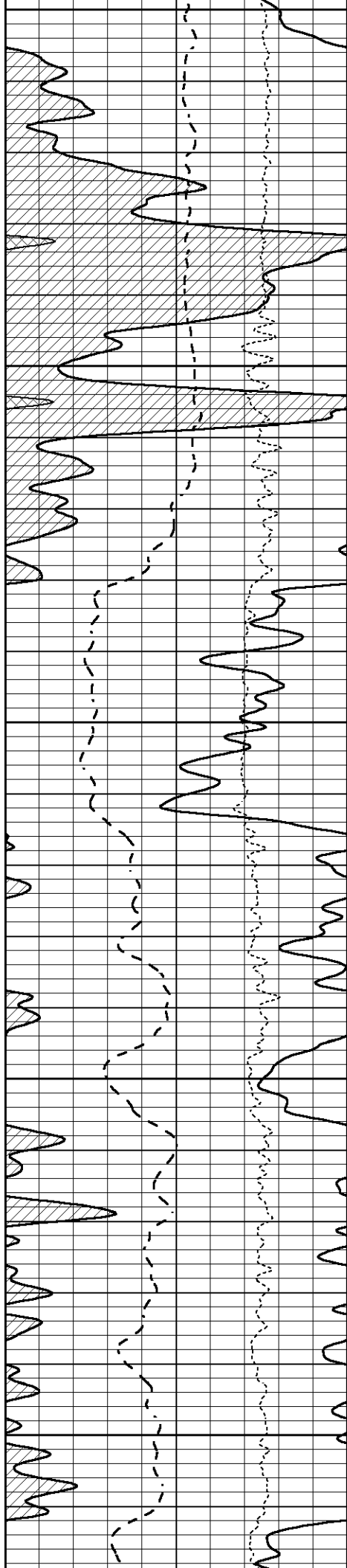
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50

0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000



3000





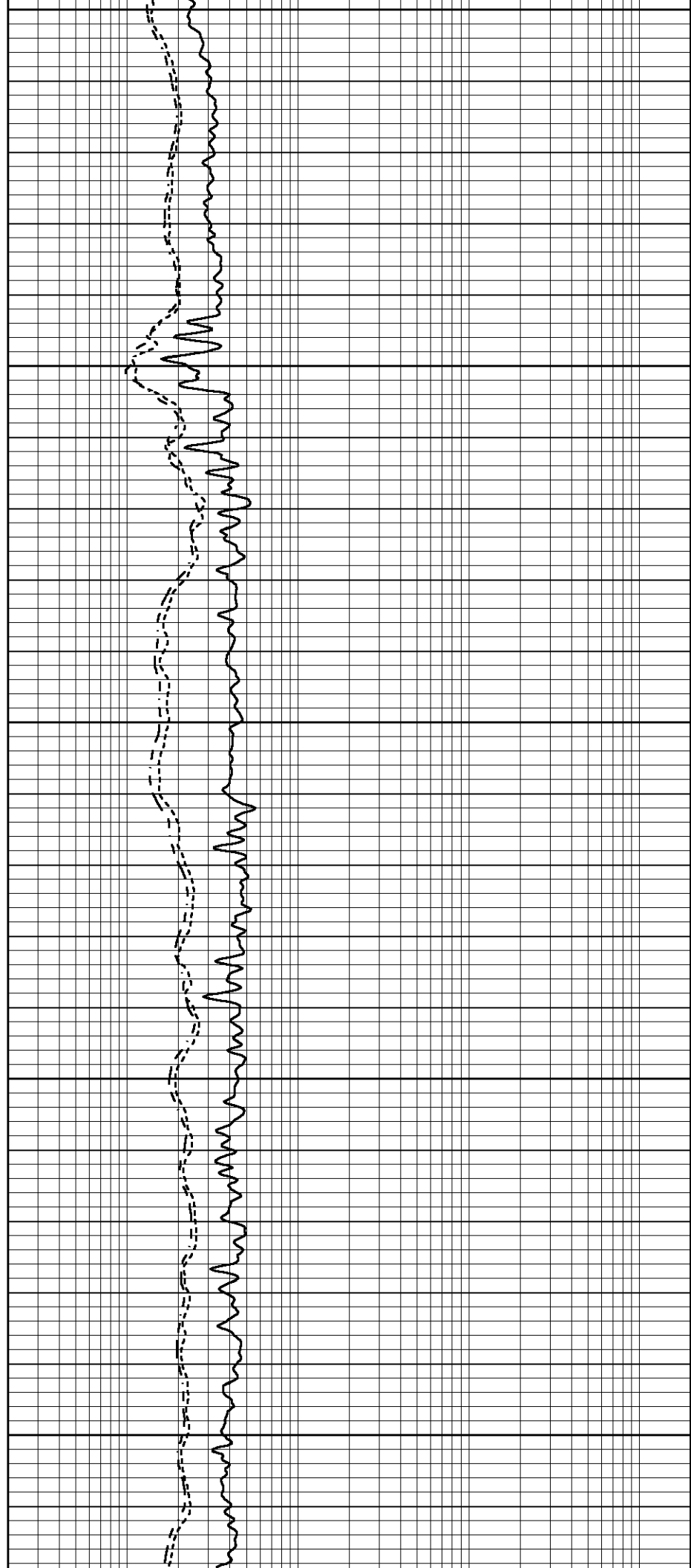
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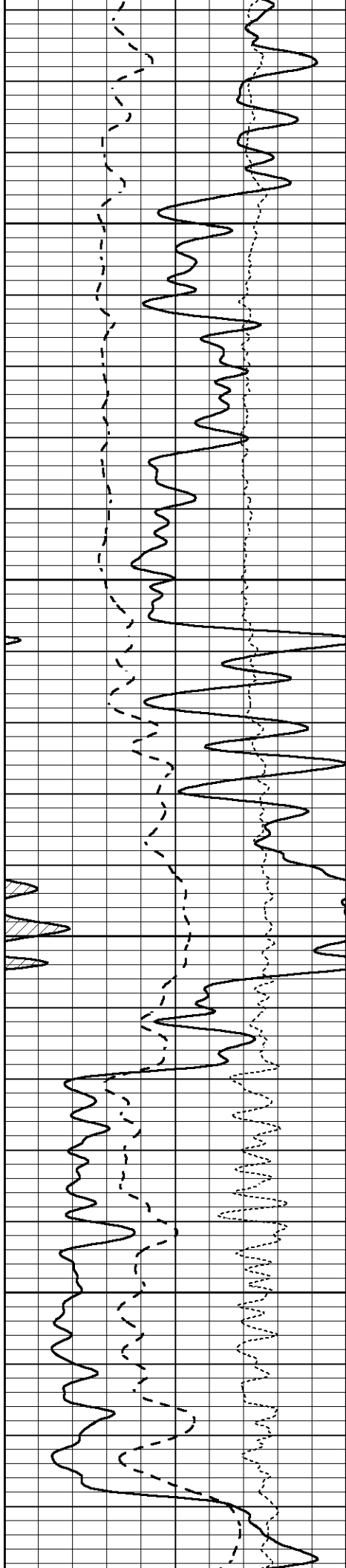
3100

3150

3200

3250



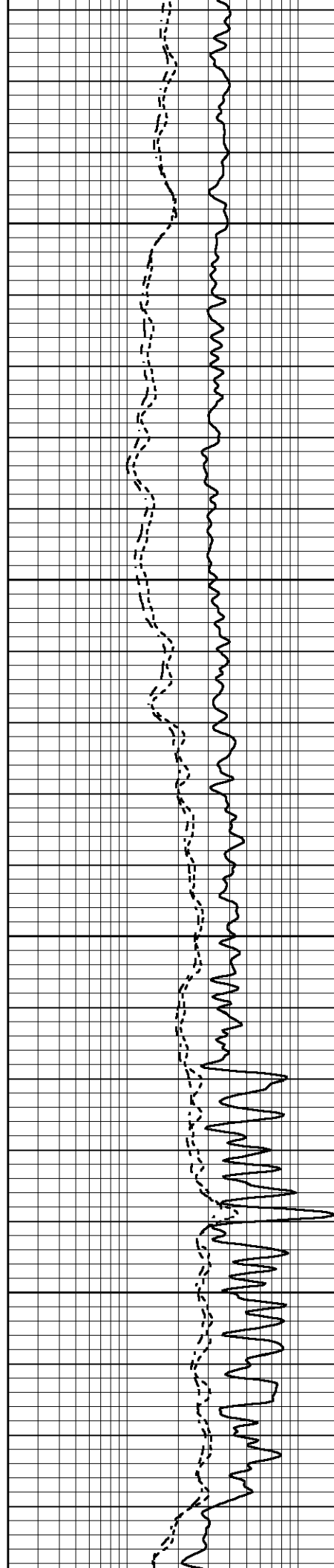


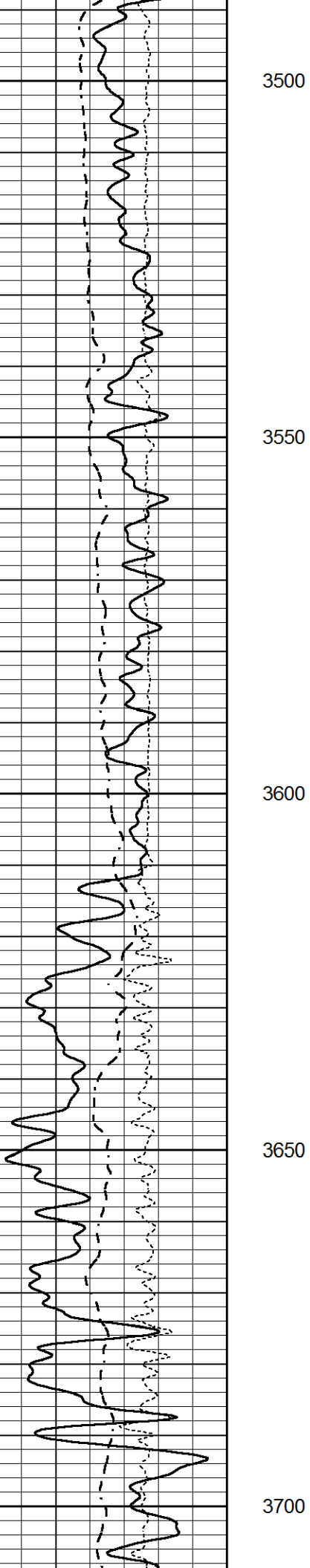
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3350

3400

3450





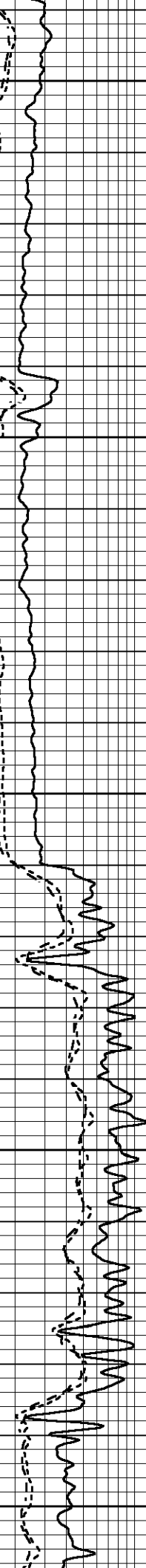
3500

3550

3600

3650

3700



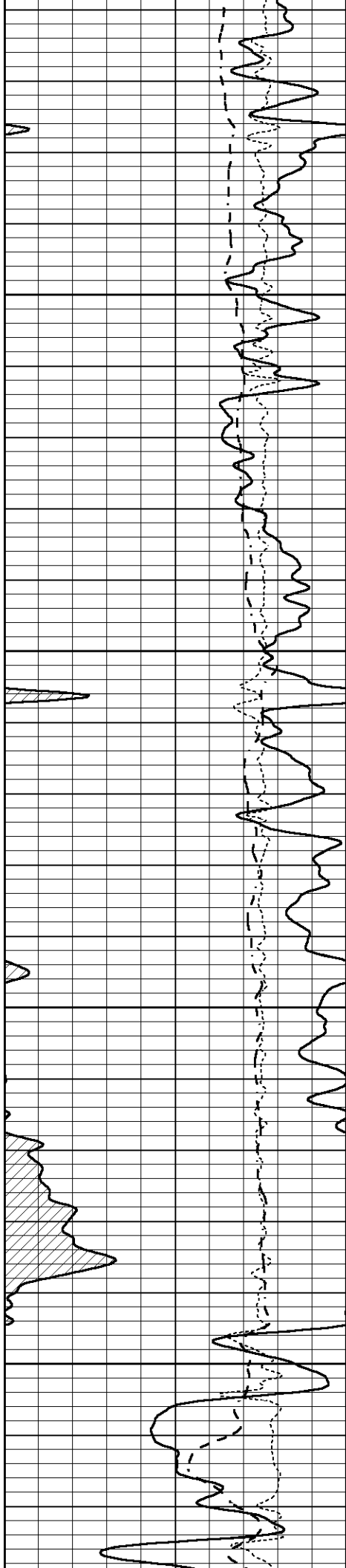
3500

3550

3600

3650

3700

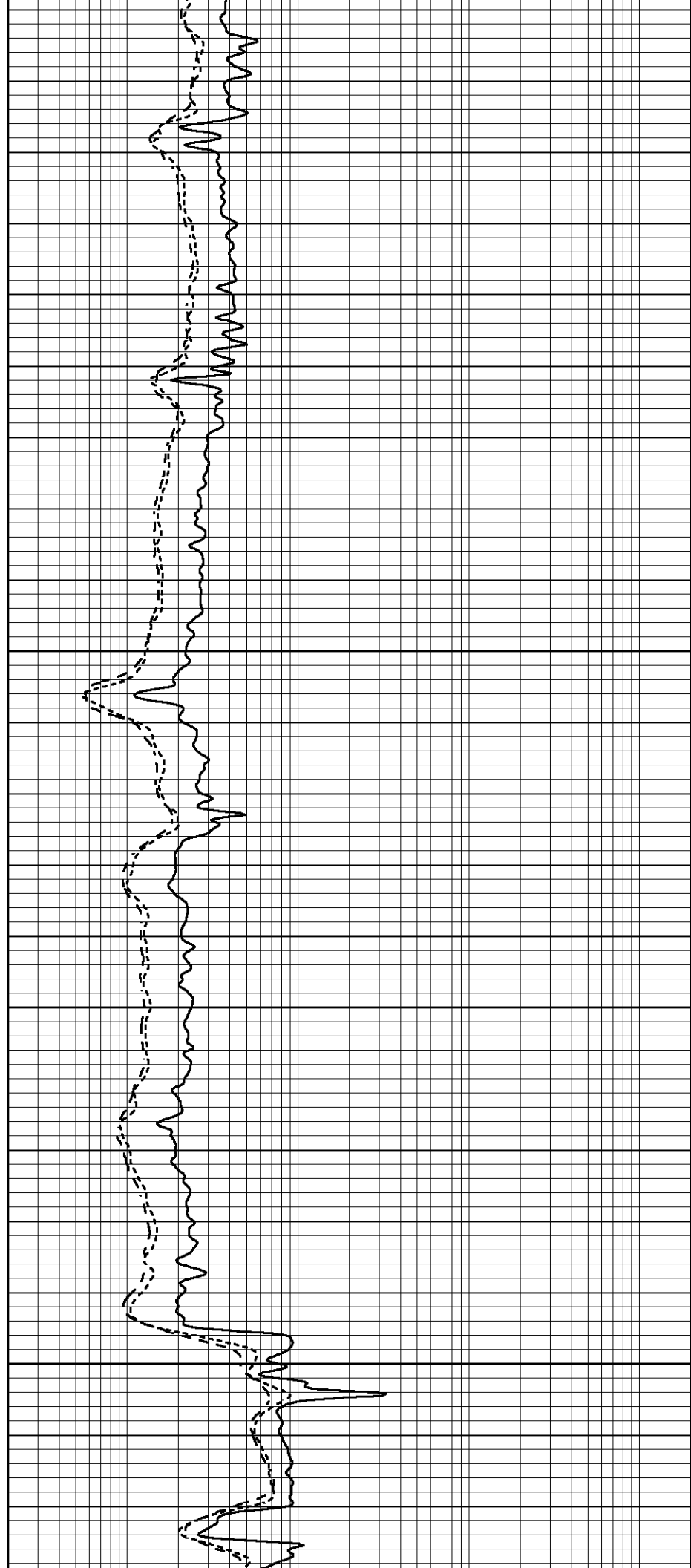


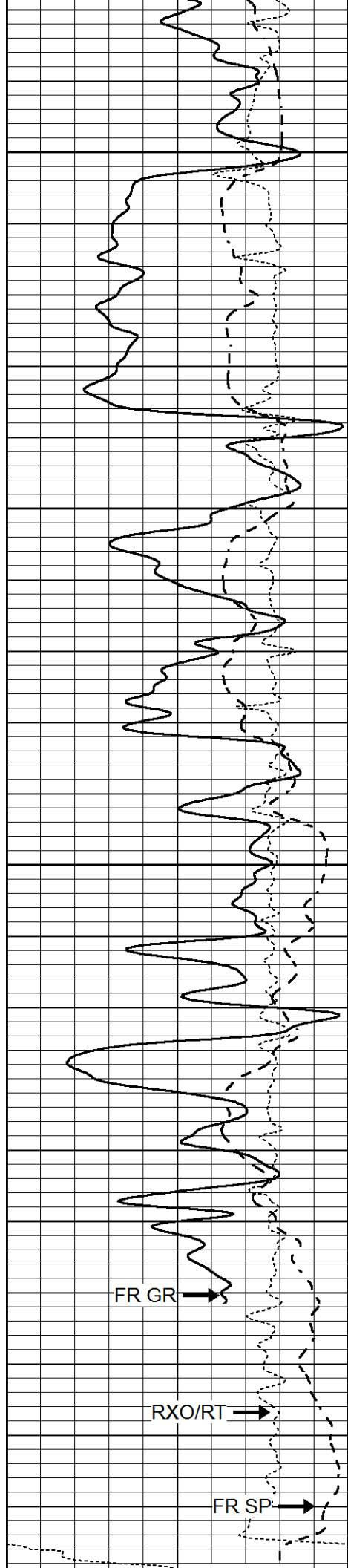
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3800

3850

3900



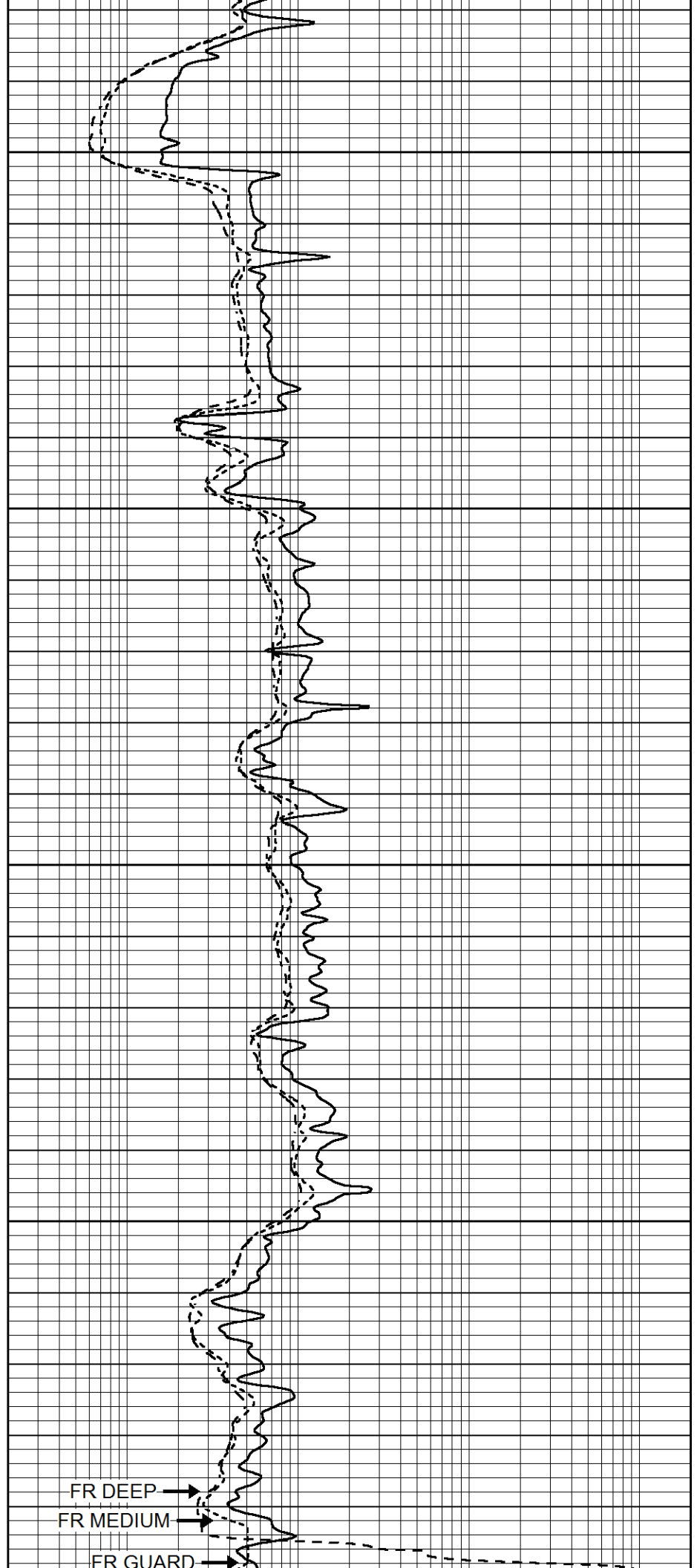


3950

4000

4050

4100



LTD 4150		
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50

4150

0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000

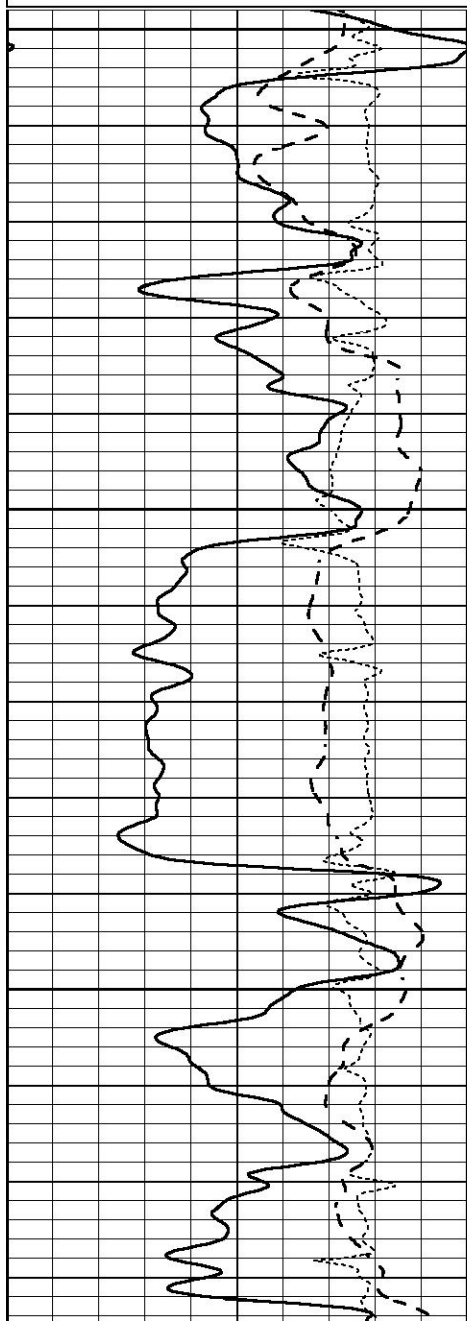


REPEAT SECTION

Database File 9578pe.db
 Dataset Pathname pass2.R
 Presentation Format dil
 Dataset Creation Wed Jun 18 07:09:11 2025
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50

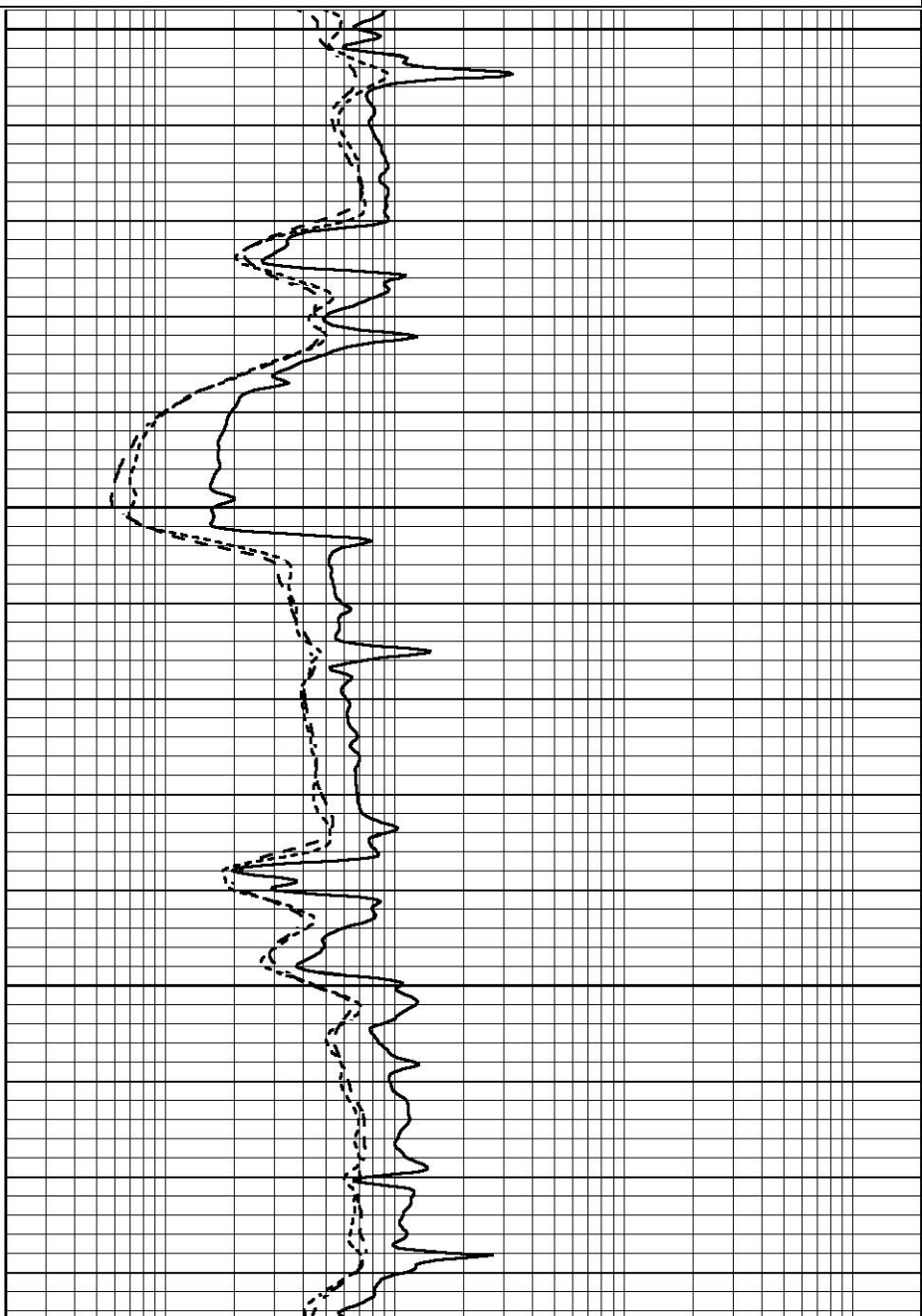
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000

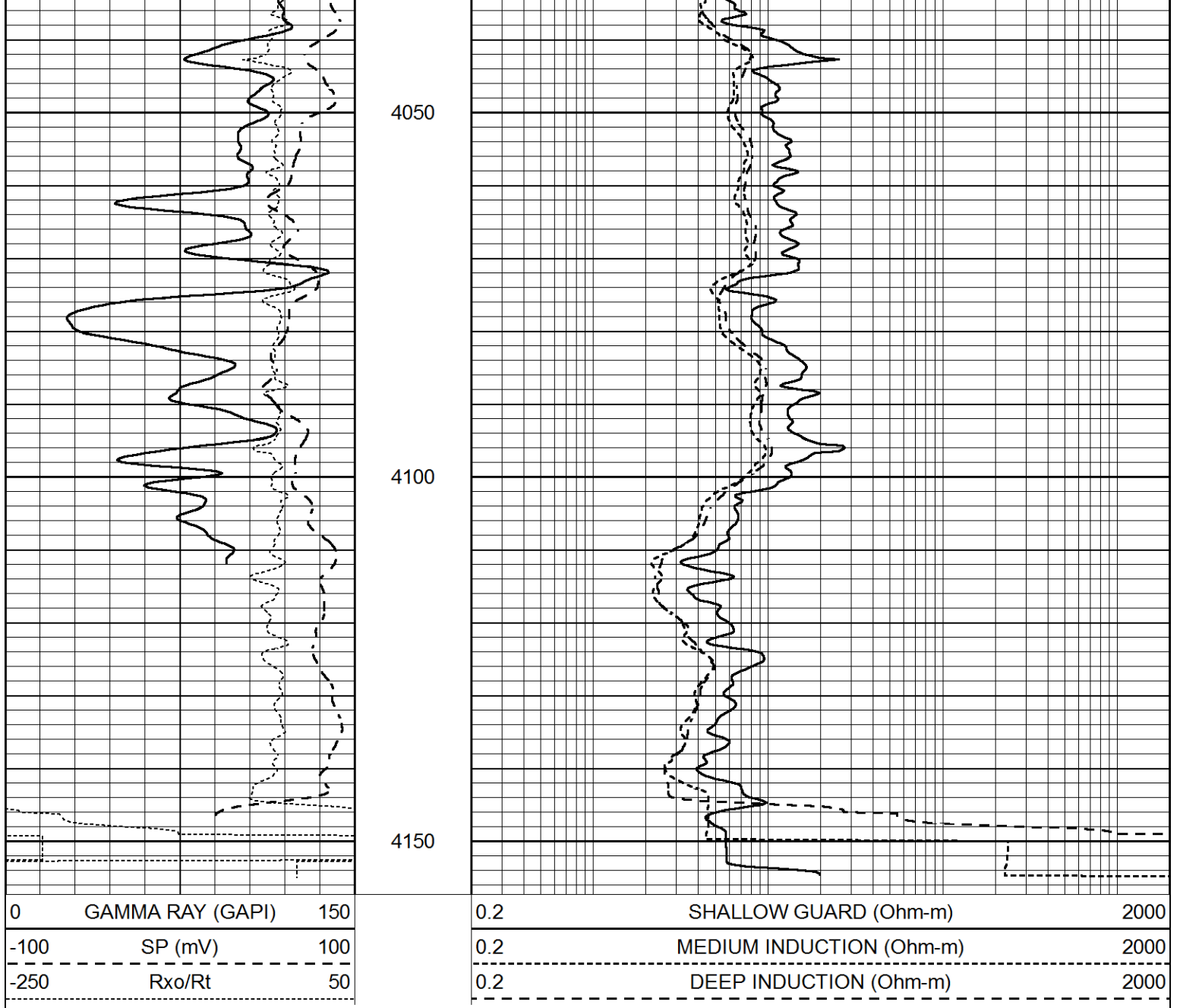


3900

3950

4000





Calibration Report

Database File 9578pe.db
 Dataset Pathname pass3.M
 Dataset Creation Wed Jun 18 07:25:07 2025

Dual Induction Calibration Report

Serial-Model: FW1410-56-Probe
 Surface Cal Performed: Tue Apr 30 11:10:17 2024
 Downhole Cal Performed: Tue Jul 25 12:15:37 2017
 After Survey Verification Performed: Tue Jul 25 12:15:38 2017

Surface Calibration

Loop:	Readings			References			Results	
	Air	Loop		Air	Loop		m	b
Deep	0.008	0.765	V	1.000	400.000	mmho/m	520.000	16.000
Medium	-0.056	0.761	V	1.000	464.000	mmho/m	540.000	201.000
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.005	0.624	V	0.000	400.000	mmho/m	645.611	-3.034

Downhole Calibration		Readings		References			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	-0.647	301.329	mmho/m	-0.780	336.378	mmho/m	1.117	-0.058
Medium	38.256	411.013	mmho/m	39.046	441.706	mmho/m	1.080	-2.280
LL3		7.471	V		2500.000	Ohm-m		
		0.001	V		20.000	Ohm-m		
		-7.085	V		4000.000	mmho-m		

After Survey Verification		Readings		Targets			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	-0.647	301.329	mmho/m	1.000	0.000
Medium	0.000	0.000	mmho/m	38.256	411.013	mmho/m	1.000	0.000
LL3		0.000	Ohm-m		1500.000	Ohm-m		
		0.000	Ohm-m		20.000	Ohm-m		
		0.000	mmho-m		3745.000	mmho-m		

Litho Density Calibration Report
Serial: 003 Model: PRB

Master Calibration		Performed Thu May 01 12:05:47 2025				
	Background	Magnesium	Aluminum	Aluminum+Fe		
Window 1	1438.1	7162.3	2688.3	2433.3	cps	
Window 2	1329.8	6430.3	2447.5	2231.2	cps	
Window 3	1227.9	5033.2	2060.1	1926.9	cps	
Window 4	333.3	332.0	334.4	332.0	cps	
Long Space	0.0	5100.5	1117.7	901.4	cps	
Short Space	2.5	2282.2	1509.3	1239.1	cps	
Rho		1.7100	2.5900	0.0000	g/cc	
Pe		2.0000	2.7500	5.7900		
Rib Angle	: 44.8	Rib Slope	: 0.992	Density/Spine Ratio	: 0.559	
Spine Angle	: 74.8	Spine Slope	: 3.672	Spine Intercept	: -19.9	

Before Survey Verification		Performed Wed Dec 31 18:00:00 1969				
	Background	Magnesium	Aluminum	Aluminum+Fe		
Window 1	0.0	0.0	0.0	0.0	cps	
Window 2	0.0	0.0	0.0	0.0	cps	
Window 3	0.0	0.0	0.0	0.0	cps	
Window 4	0.0	0.0	0.0	0.0	cps	
Long Space	0.0	0.0	0.0	0.0	cps	
Short Space	0.0	0.0	0.0	0.0	cps	
Measured Rho		0.0000	0.0000	0.0000	g/cc	
Measured Correction		0.0000	0.0000	0.0000	g/cc	
Measured Pe			0.0000	0.0000		

After Survey Verification		Performed Wed Dec 31 18:00:00 1969				
	Background	Magnesium	Aluminum	Aluminum+Fe		
Window 1	0.0	0.0	0.0	0.0	cps	
Window 2	0.0	0.0	0.0	0.0	cps	
Window 3	0.0	0.0	0.0	0.0	cps	
Window 4	0.0	0.0	0.0	0.0	cps	
Long Space	0.0	0.0	0.0	0.0	cps	
Short Space	0.0	0.0	0.0	0.0	cps	

Measured Rho	0.0000	0.0000	0.0000	g/cc
Measured Correction	0.0000	0.0000	0.0000	g/cc
Measured Pe		0.0000	0.0000	

Compensated Neutron Calibration Report

Serial Number: 080621PMC
Tool Model: NABORS

PRE-SURVEY VERIFICATION

Detector	Readings	Measured	Target
Short Space	cps		
Long Space	cps	pu	pu

POST-SURVEY VERIFICATION

Detector	Readings	Measured	Target
Short Space	cps		
Long Space	cps	pu	pu

Gamma Ray Calibration Report

Serial Number: 46001
Tool Model: Probe1
Performed: Thu Apr 20 09:55:57 2023

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.4300 GAPI/cps