



DUAL INDUCTION LOG

Company	PHILLIPS EXPLORATION COMPANY, L.C.		
Well	HAFLIGER UNIT # C19		
Field	WILDCAT		
County	TREGO	State	KANSAS
Location:	API # : 15-195-23104-0000		Other Services CDL/CNL
2438' FNL & 202' FWL			
Permanent Datum	SEC 32	TWP 12S	RGE 23W
Log Measured From	GROUND LEVEL Elevation 2417		
Drilling Measured From	KELLY BUSHING 5' A.G.L KELLY BUSHING		
Elevation	K.B. 2422 D.F. 2420 G.L. 2417		
Date	6/15/20		
Run Number	ONE		
Depth Driller	4460		
Depth Logger	4458		
Bottom Logged Interval	4456		
Top Log Interval	00		
Casing Driller	8 5/8" @ 208'		
Casing Logger	208'		
Bit Size	7 7/8		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES	4900 PPM
Density / Viscosity	9.3/53		
pH / Fluid Loss	11.0/6.0		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.20 @ 74F		
Rmf @ Meas. Temp	0.90 @ 74F		
Rmc @ Meas. Temp	1.08 @ 74F		
Source of Rmf / Rmc	MEASUREMENT		
Rm @ BHT	0.74 @ 120F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom	////		
Maximum Recorded Temperature	120F		
Equipment Number	3802		
Location	HAYS, KANSAS		
Recorded By	JASON CAPPELLUCCI		
Witnessed By	PAT DEENIHAN		

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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.

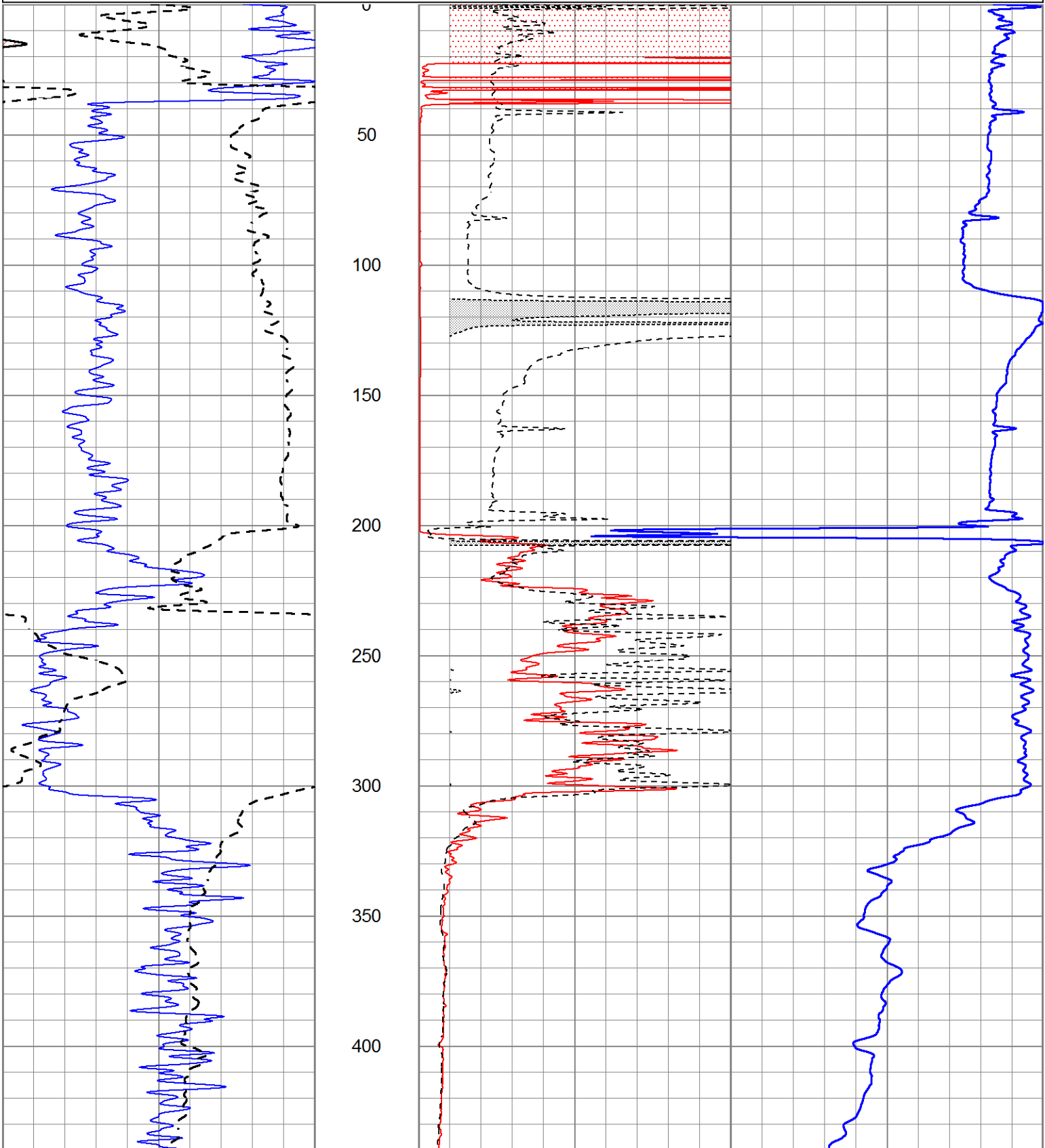
Comments

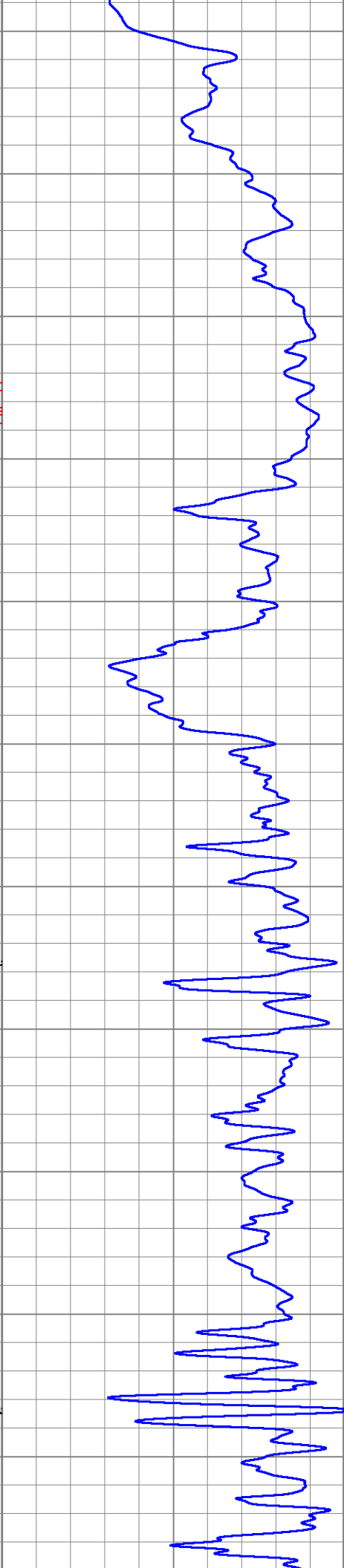
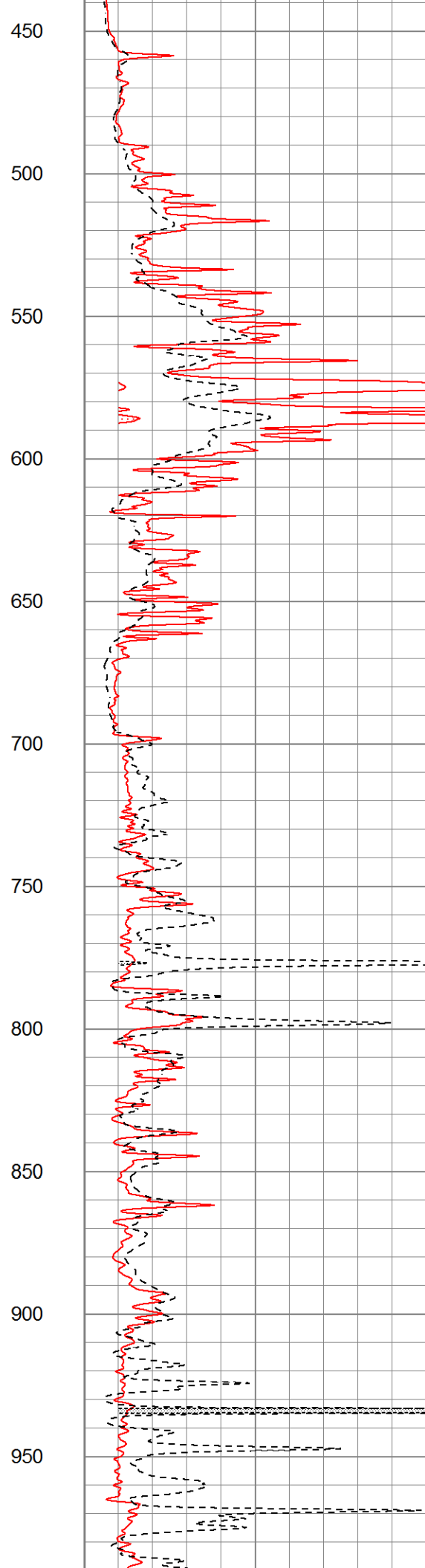
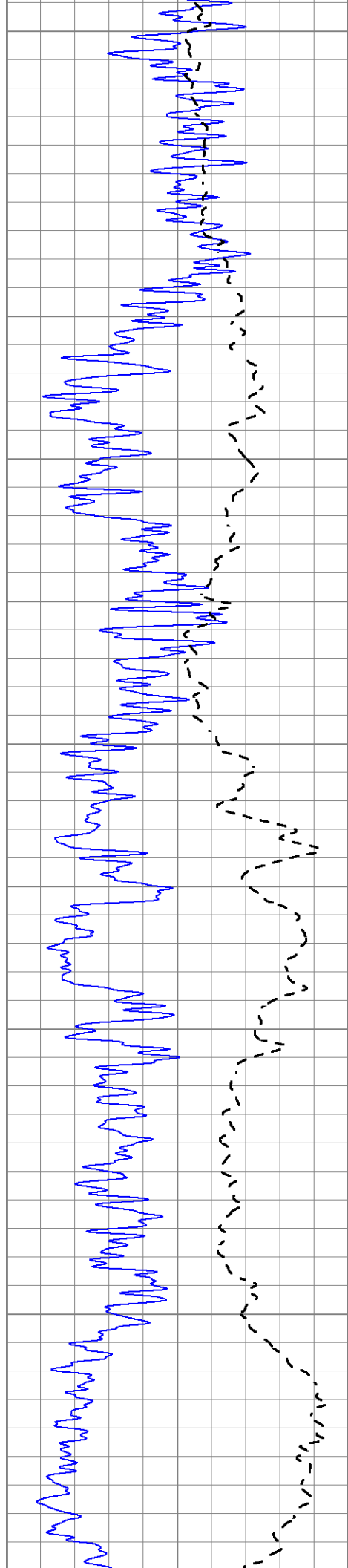
THANK YOU FOR USING ELI WIRELINE SERVICES, HAYS, KS. (785) 628-6395
DIRECTIONS
WAKEENEY, KS. - 4 SOUTH TO LANDFILL RD. - 1 WEST - 1/4 NORTH - EAST INTO

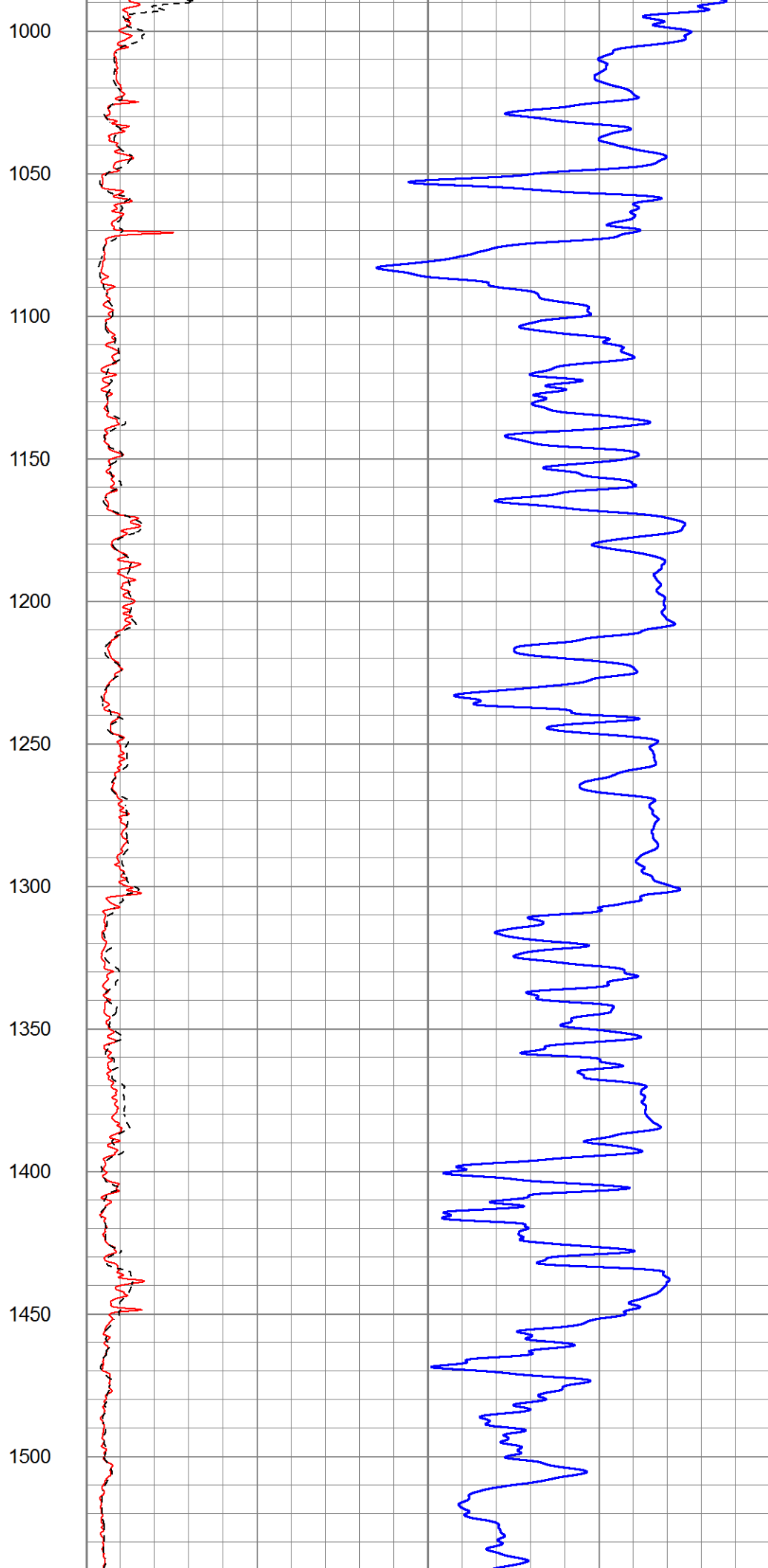
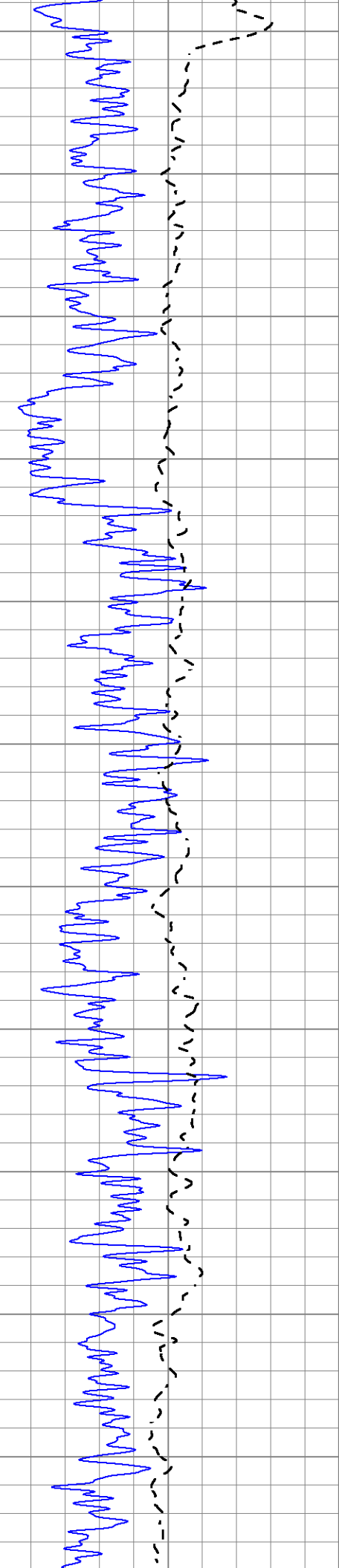


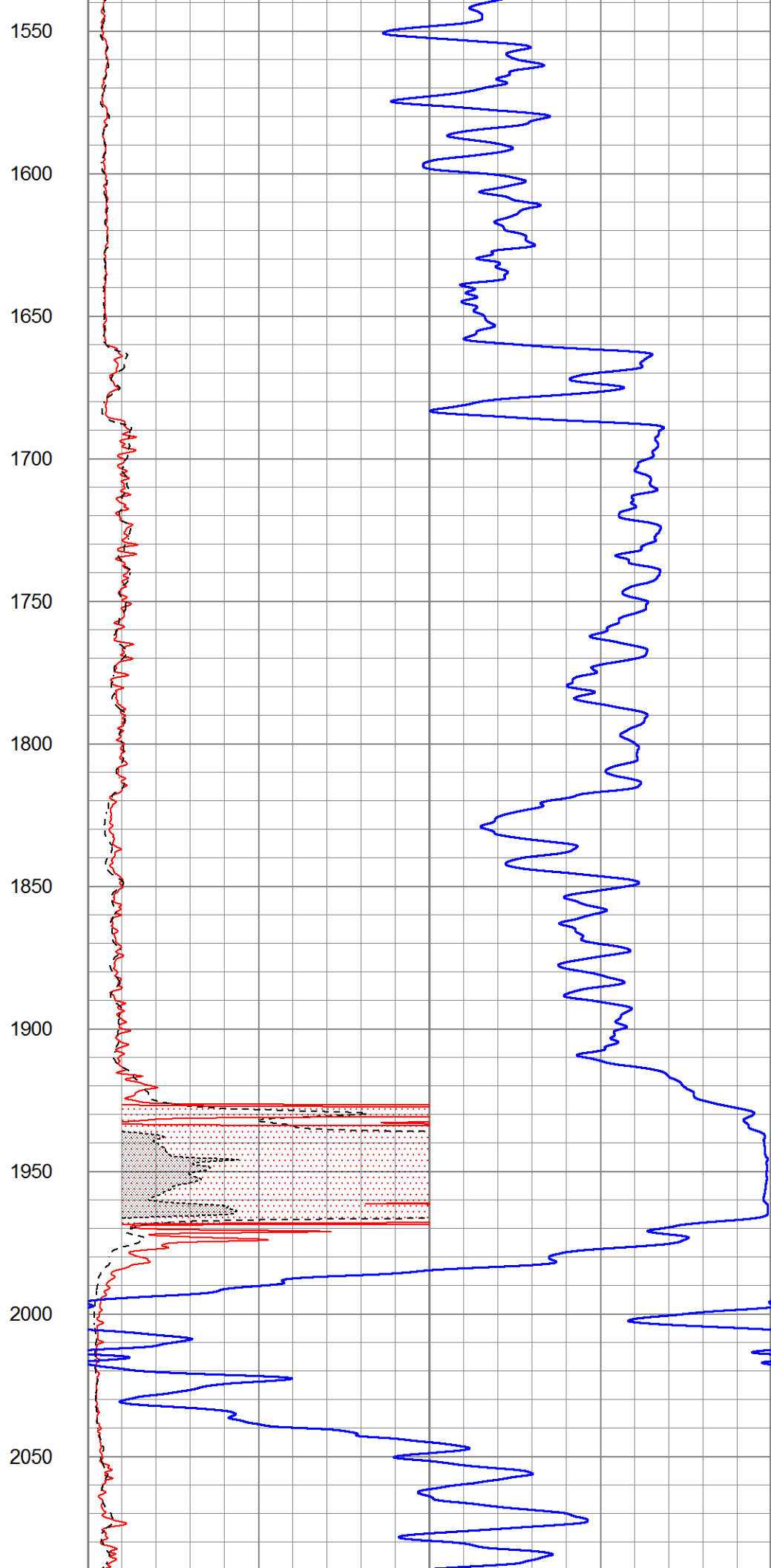
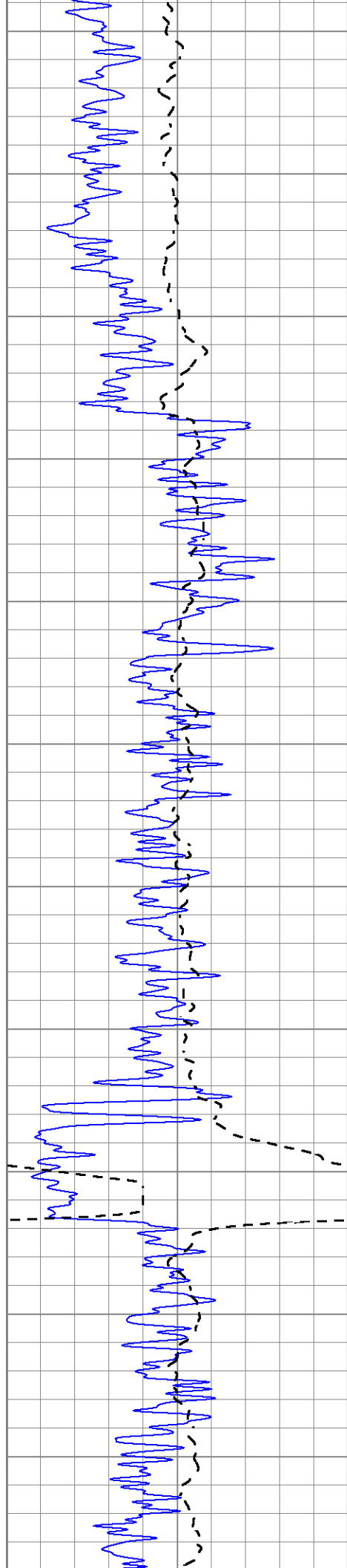
MAIN SECTION

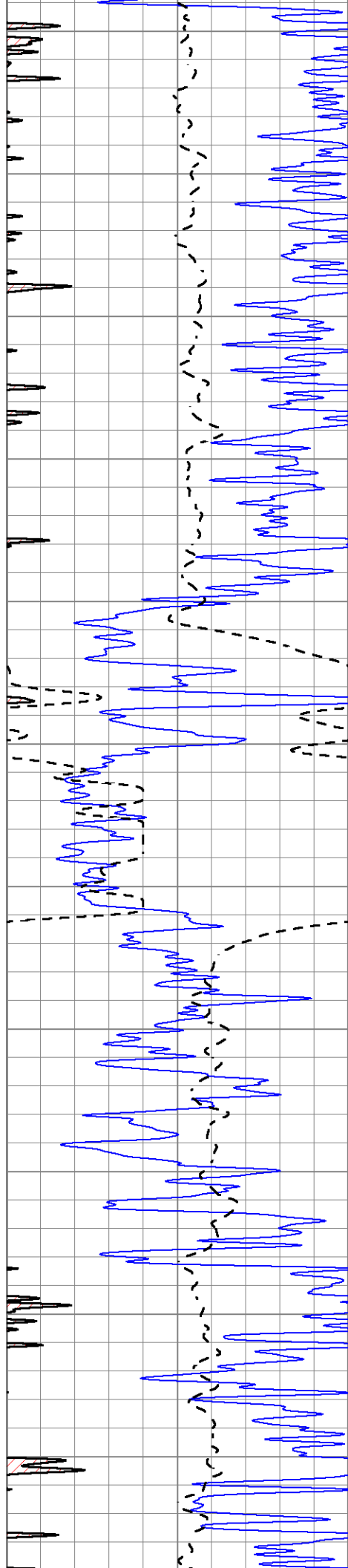
0	Gamma Ray (GAPI)	150	1000	CILD (mmho/m)	0
-100	SP (mV)	100	0	RLL3 (Ohm-m)	50
-----			0	Deep Induction (Ohm-m)	50
			50	RILD X10 (Ohm-m)	500
			50	RLL3 X10 (Ohm-m)	500











2100

2150

2200

2250

2300

2350

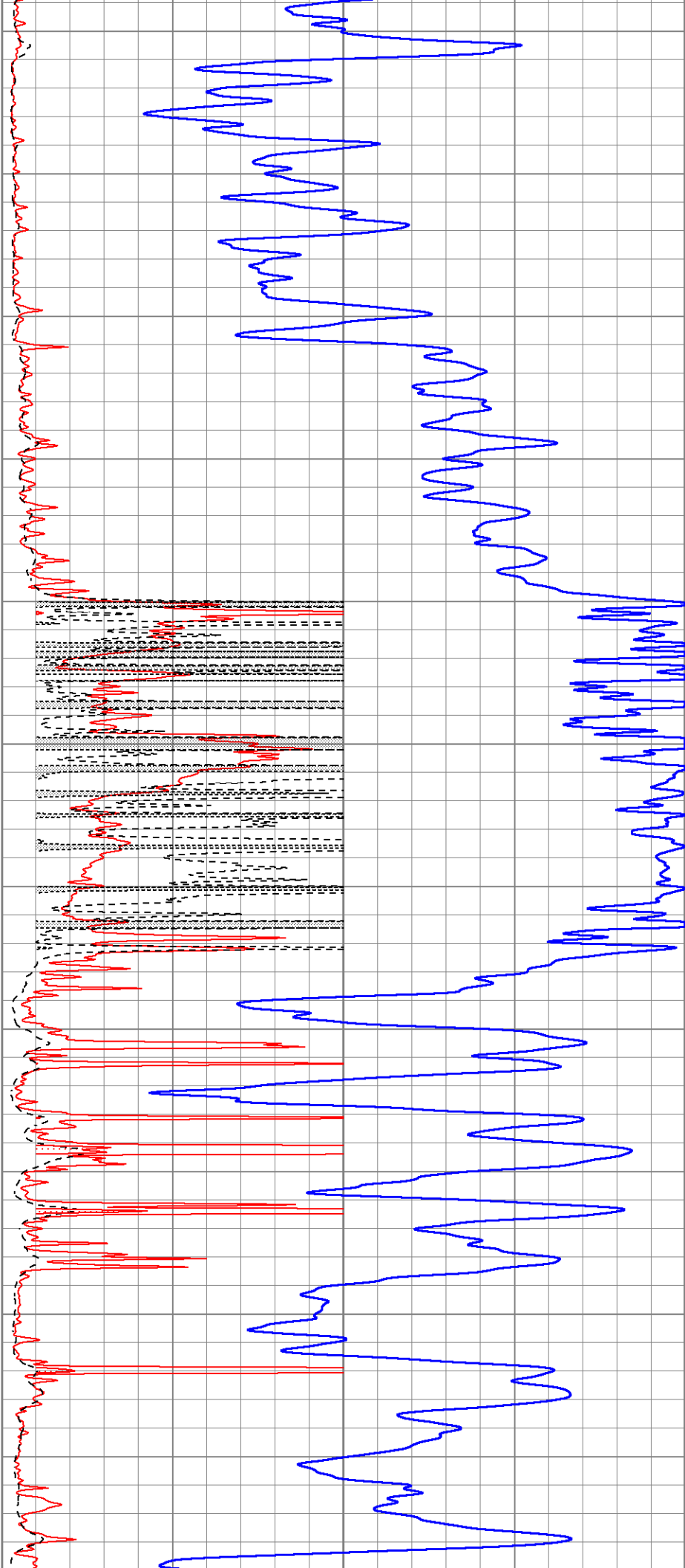
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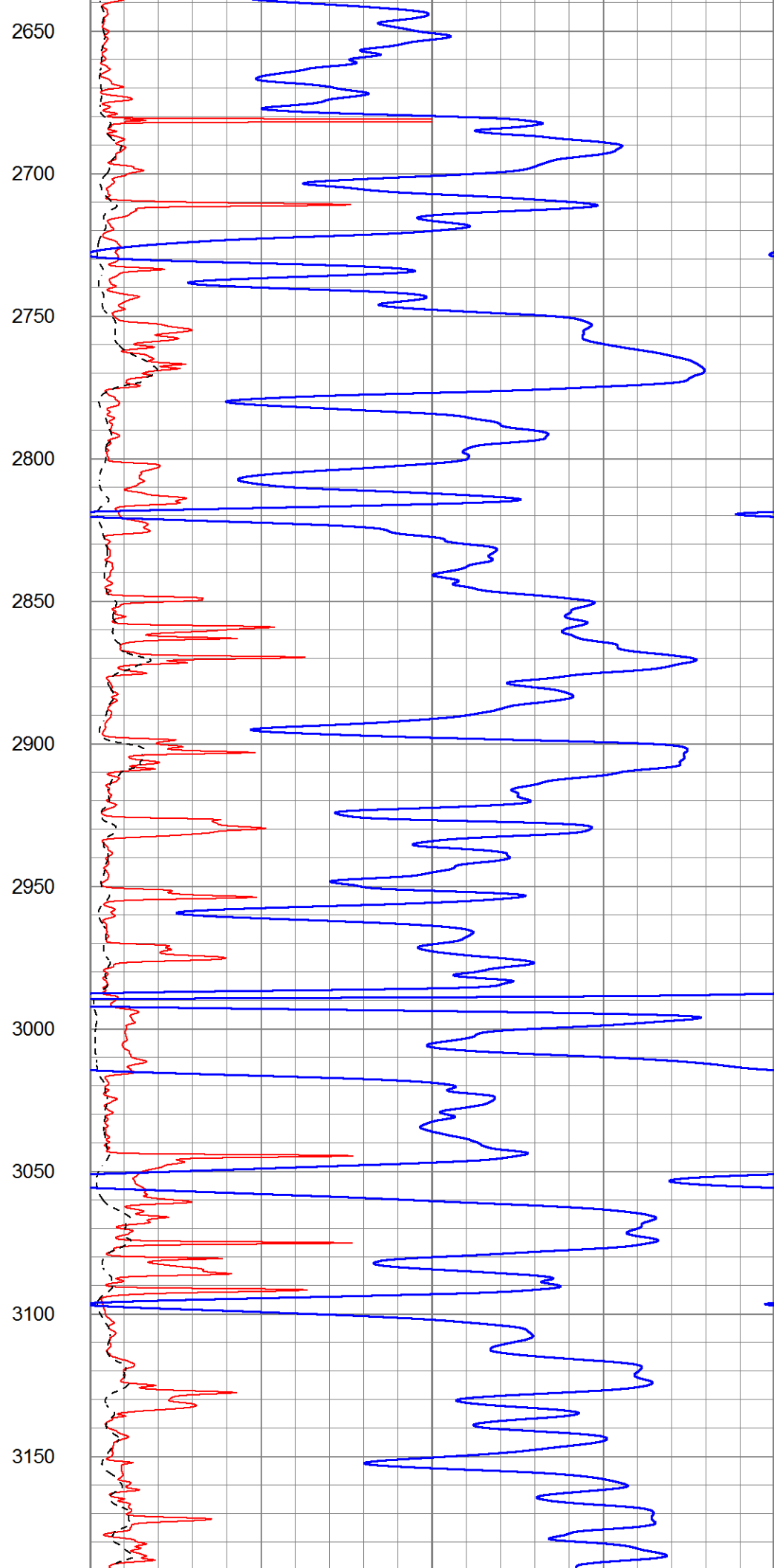
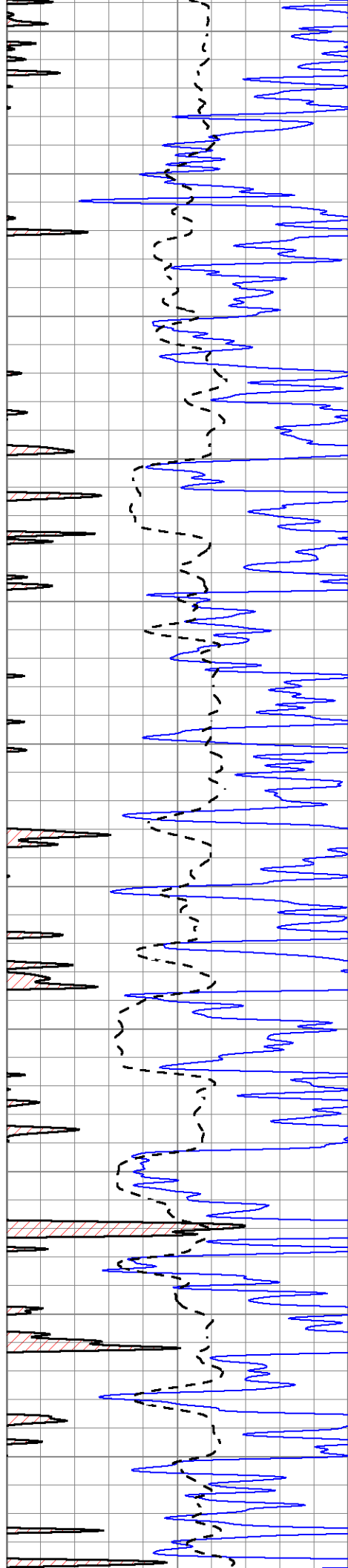
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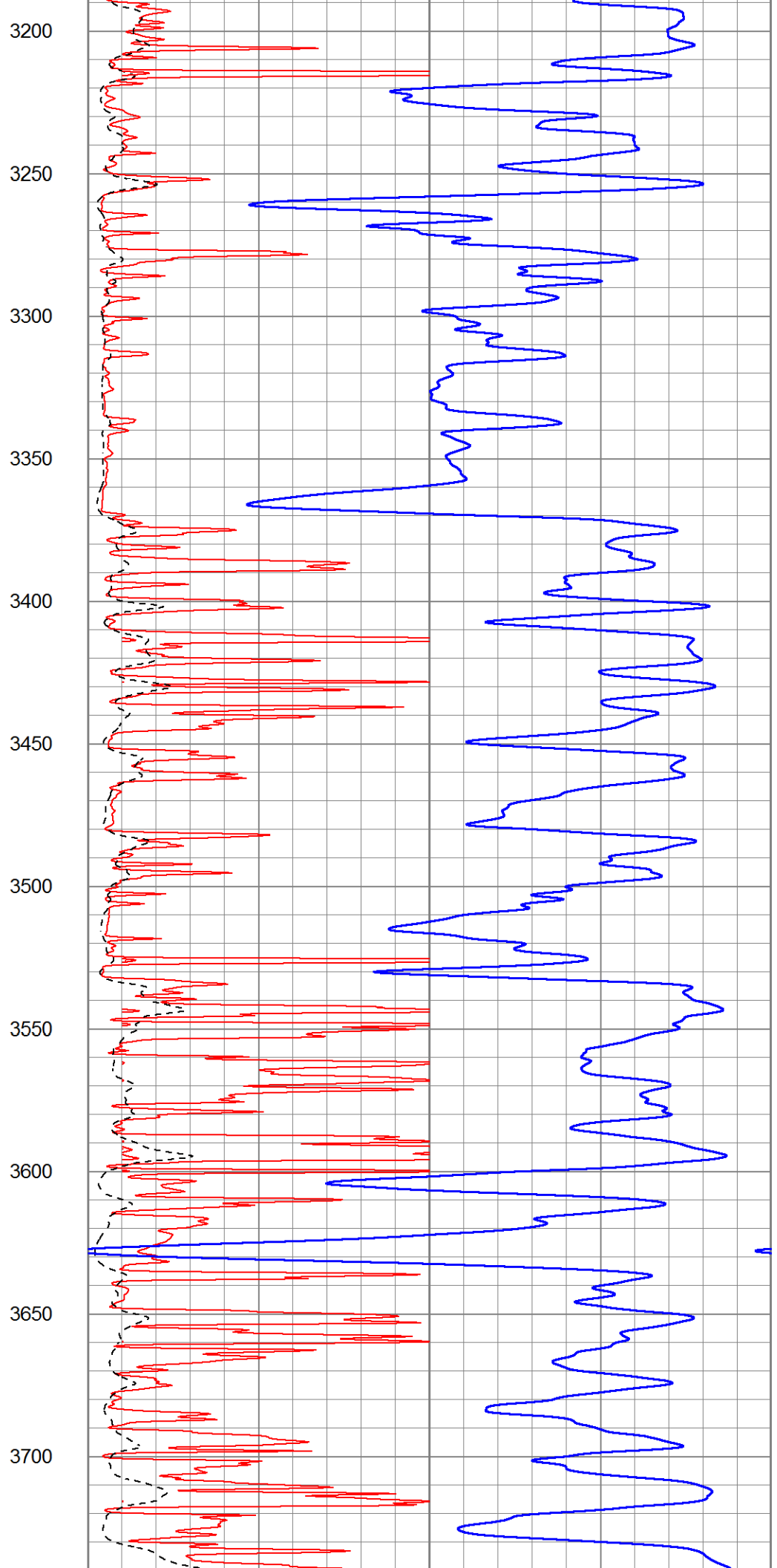
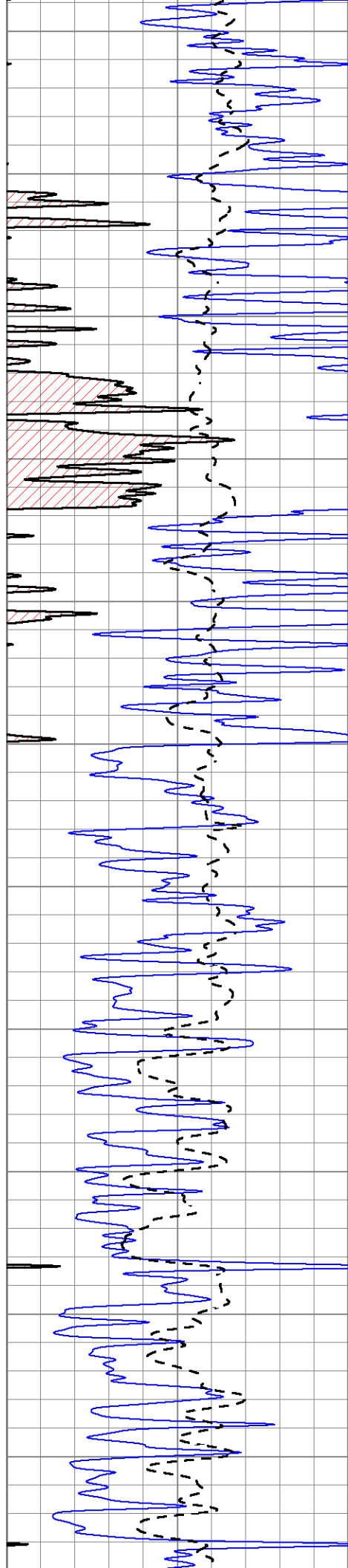
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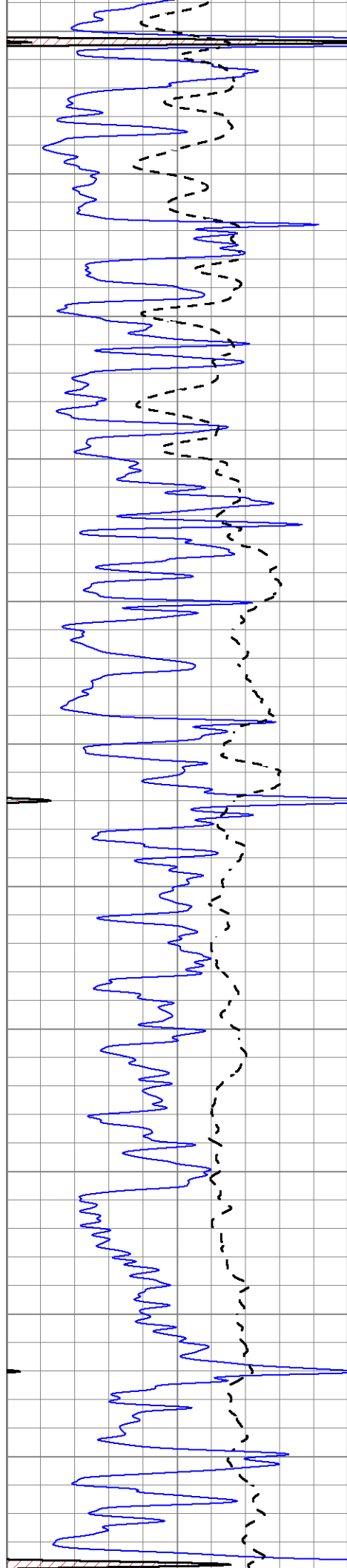
2550

2600









3750

3800

3850

3900

3950

4000

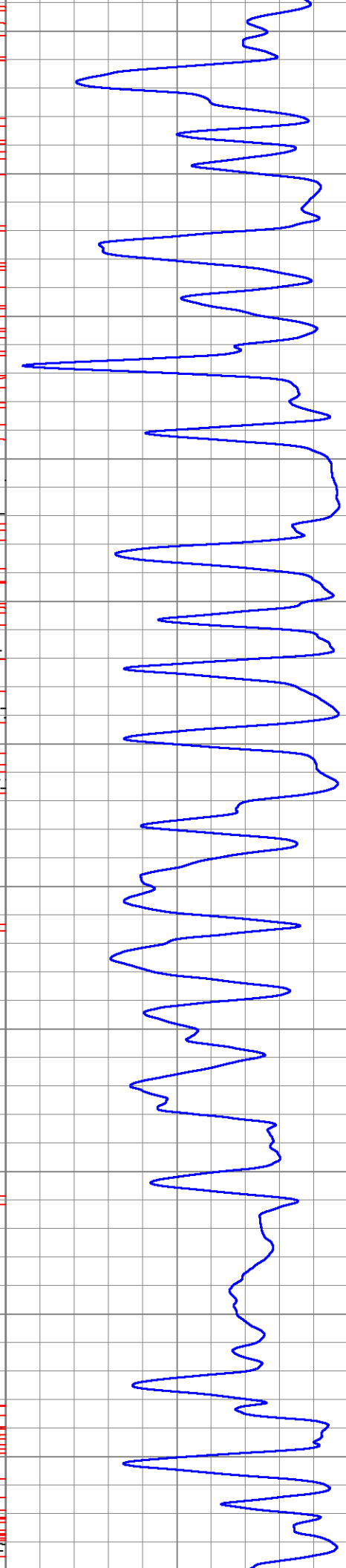
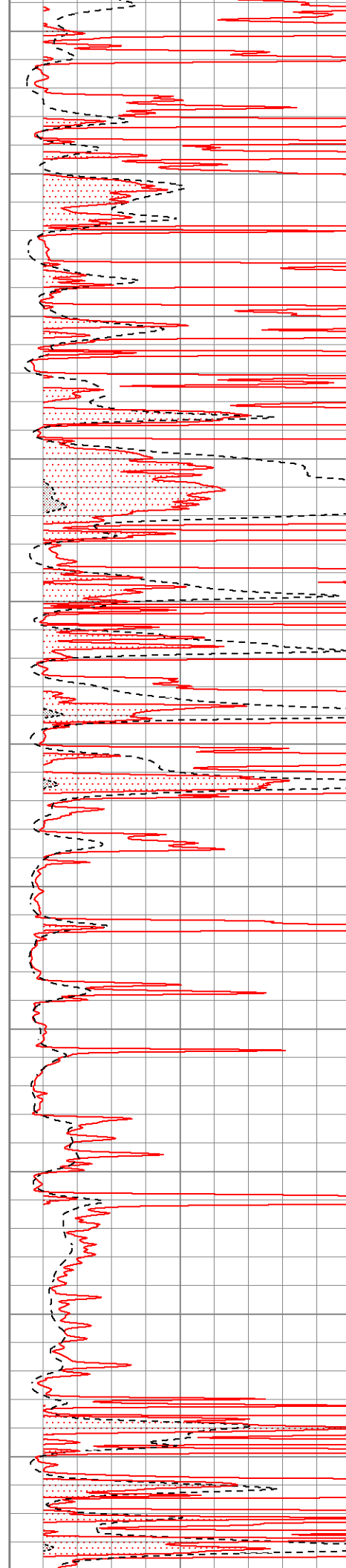
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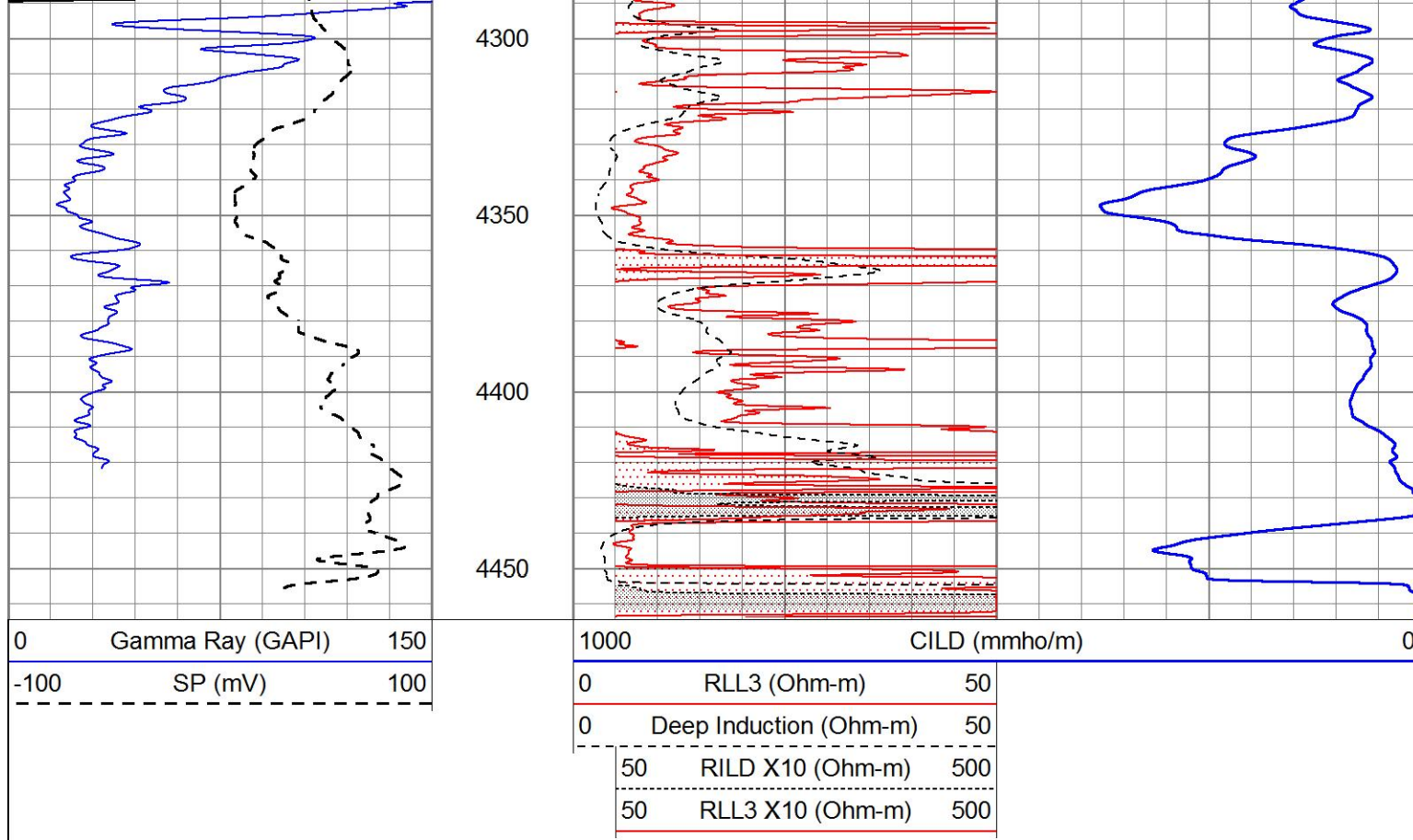
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4150

4200

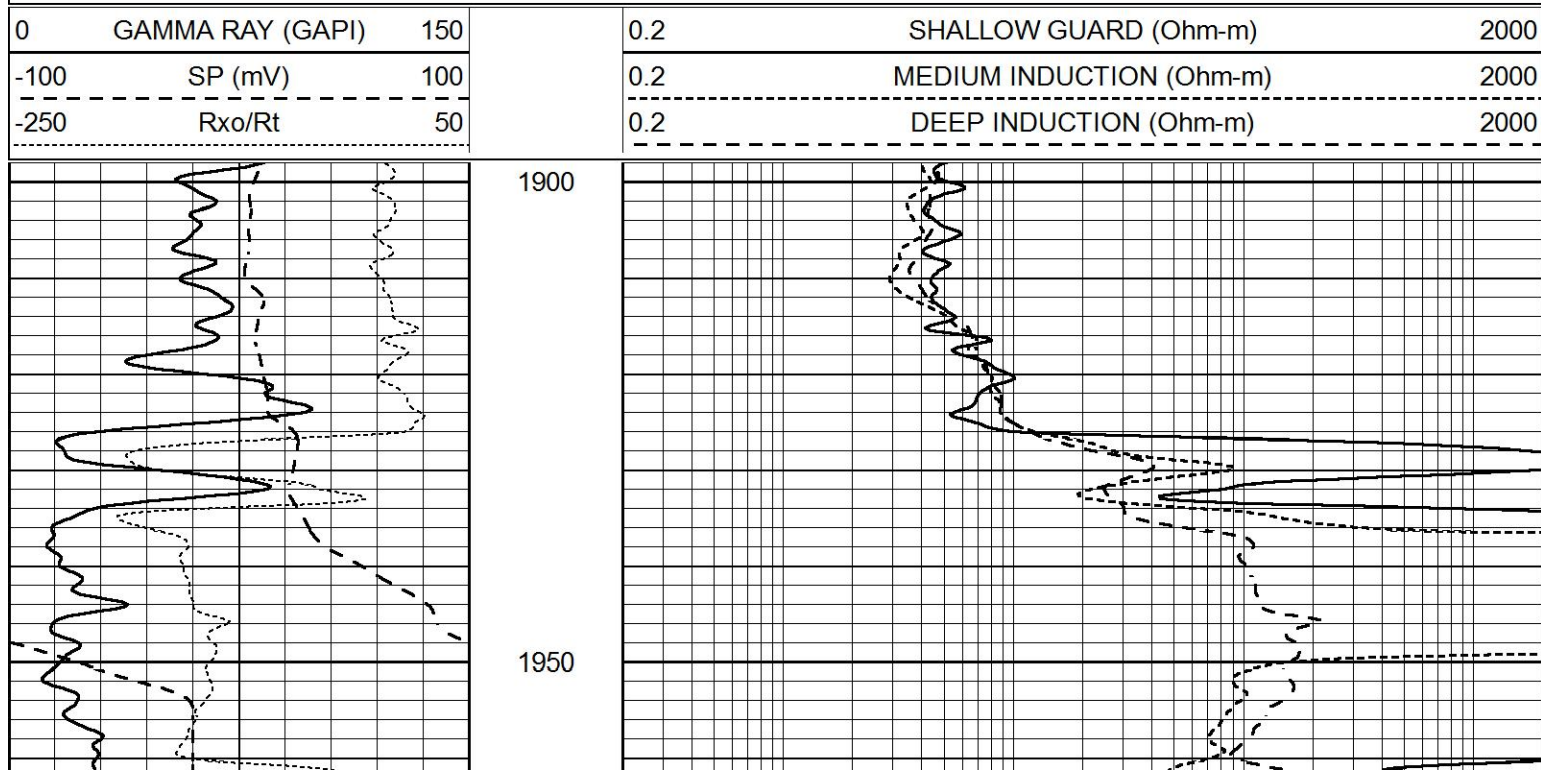
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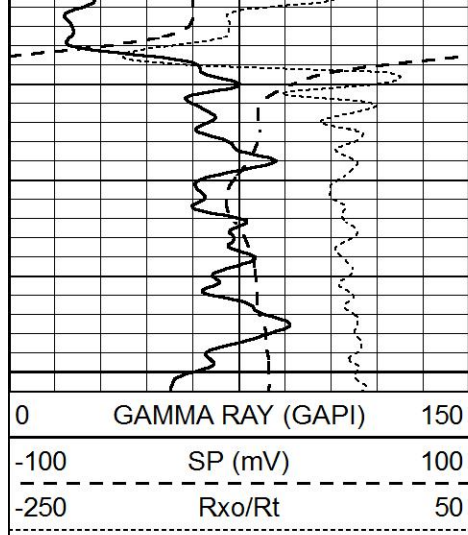




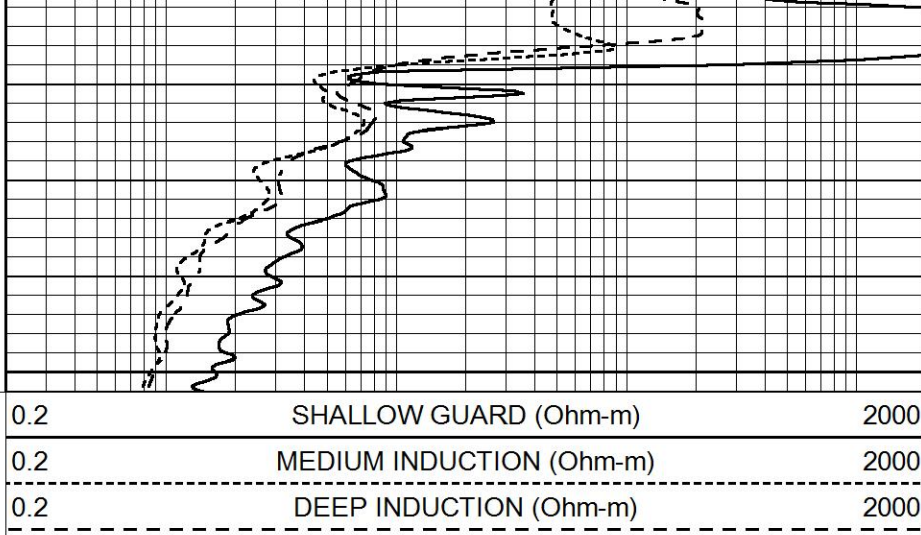
ANHYDRITE

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 Presentation Format _dil
 Dataset Creation Mon Jun 15 23:07:55 2020
 Charted by Depth in Feet scaled 1:240



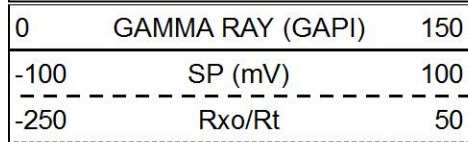


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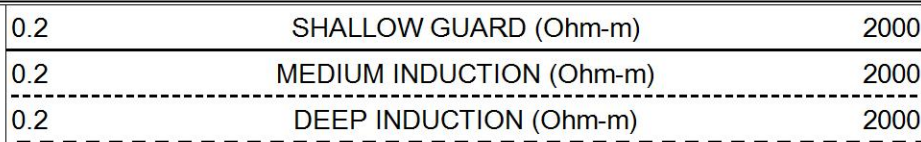


MAIN SECTION

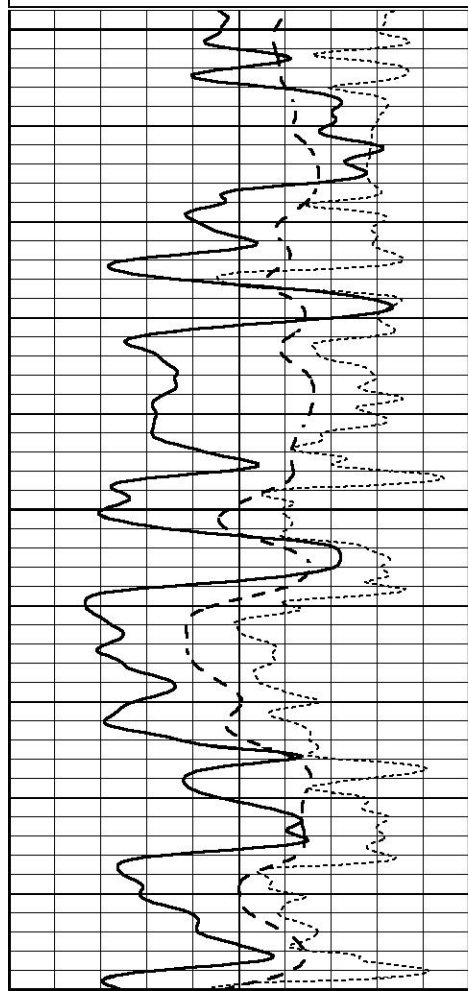
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 Dataset Pathname pass3.1
 Presentation Format _dil
 Dataset Creation Mon Jun 15 22:50:10 2020
 Charted by Depth in Feet scaled 1:240



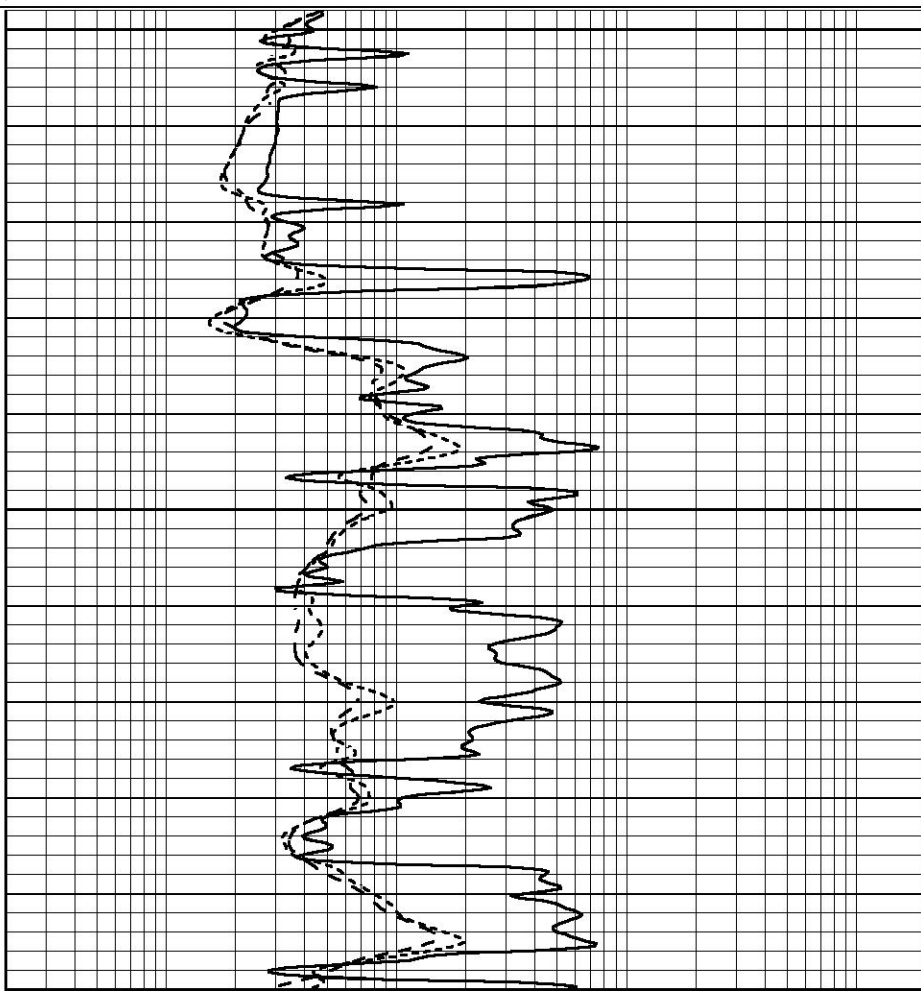
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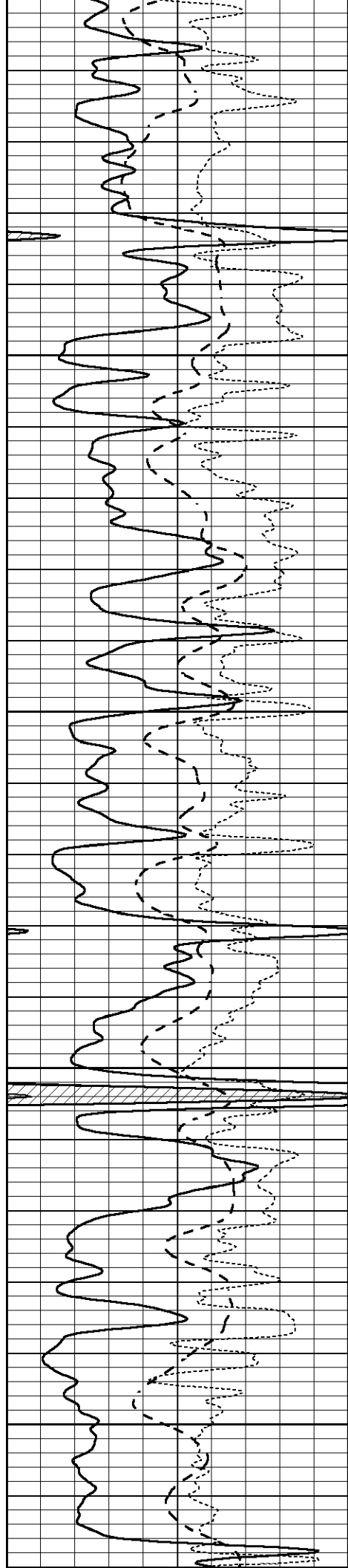


3550



3600





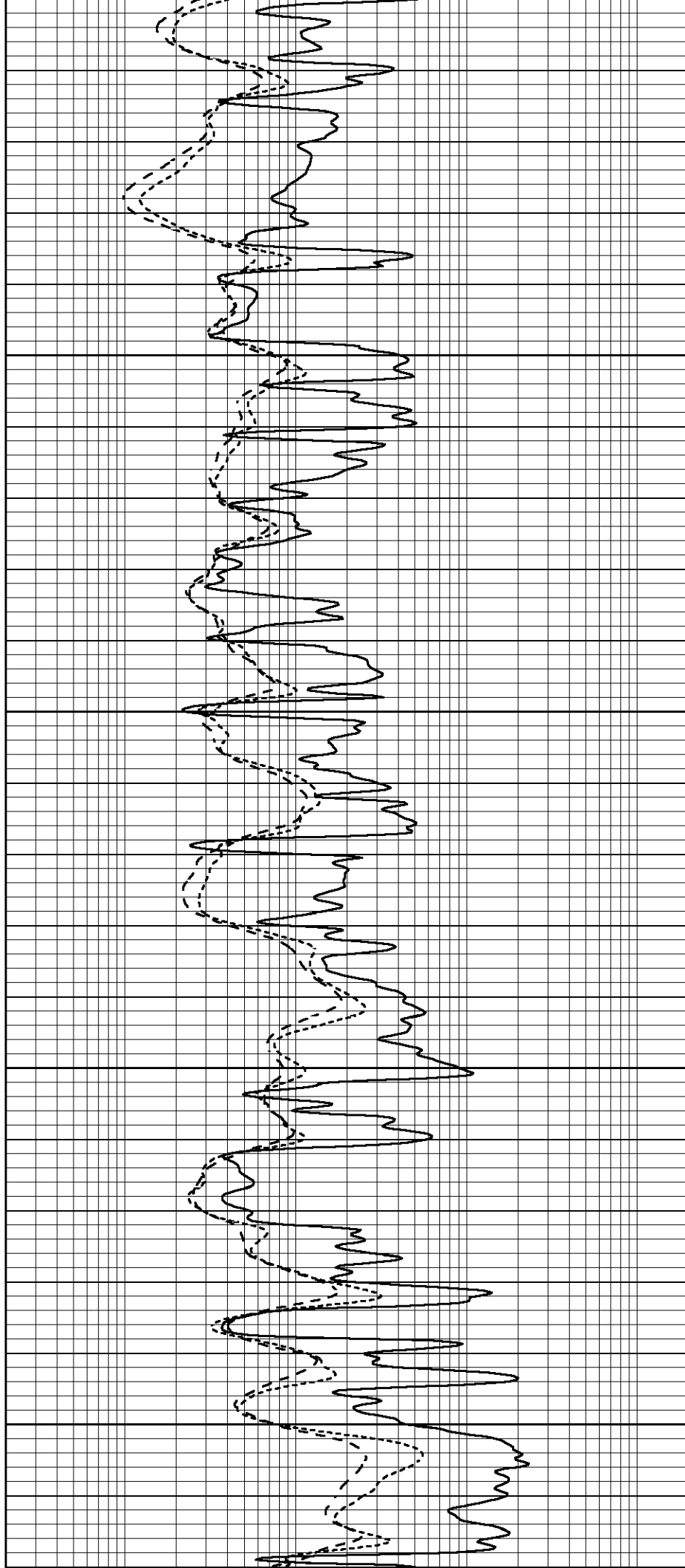
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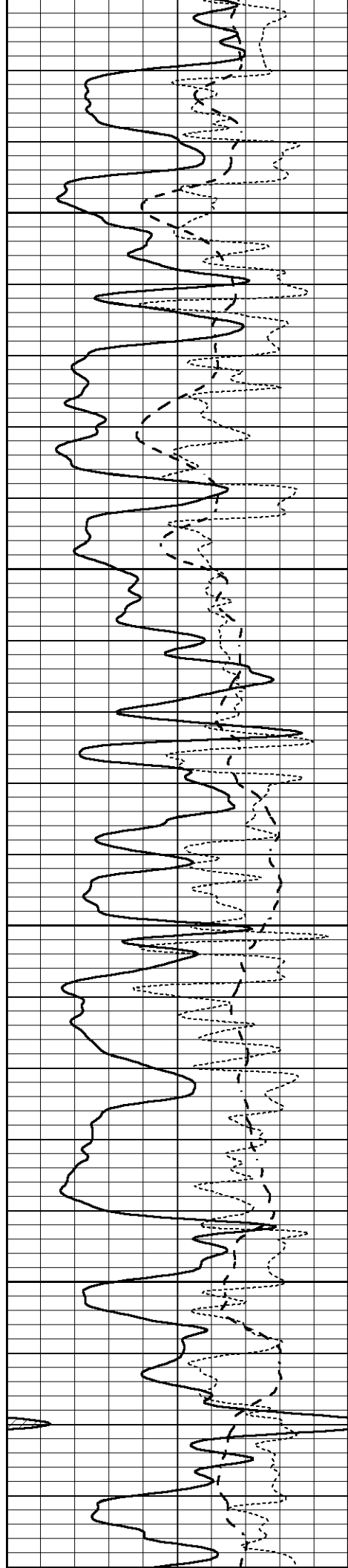
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3700

3750

3800



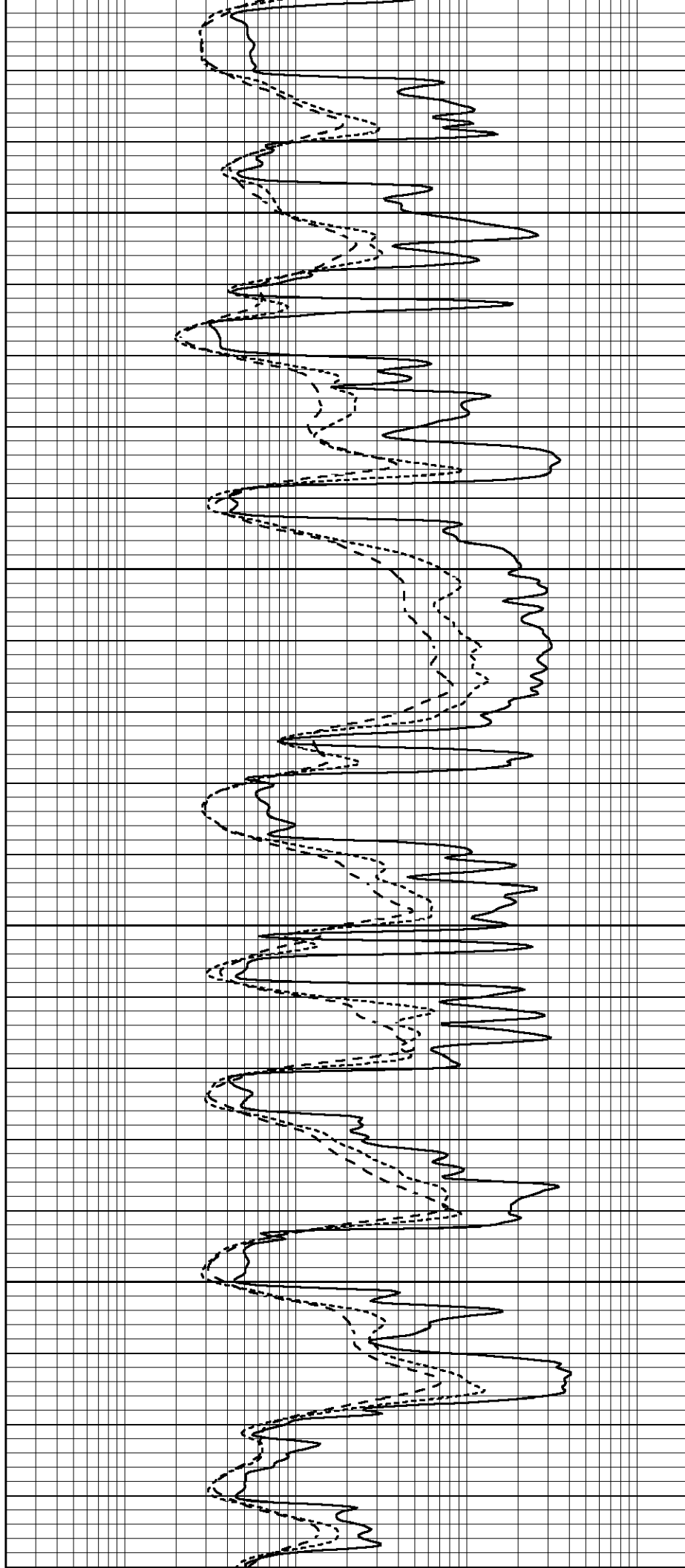


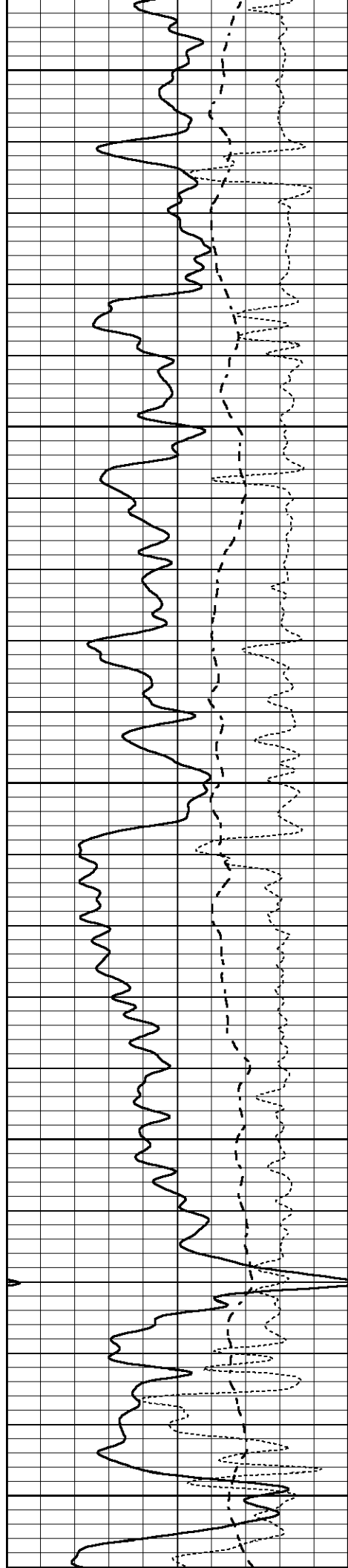
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3900

3950

4000





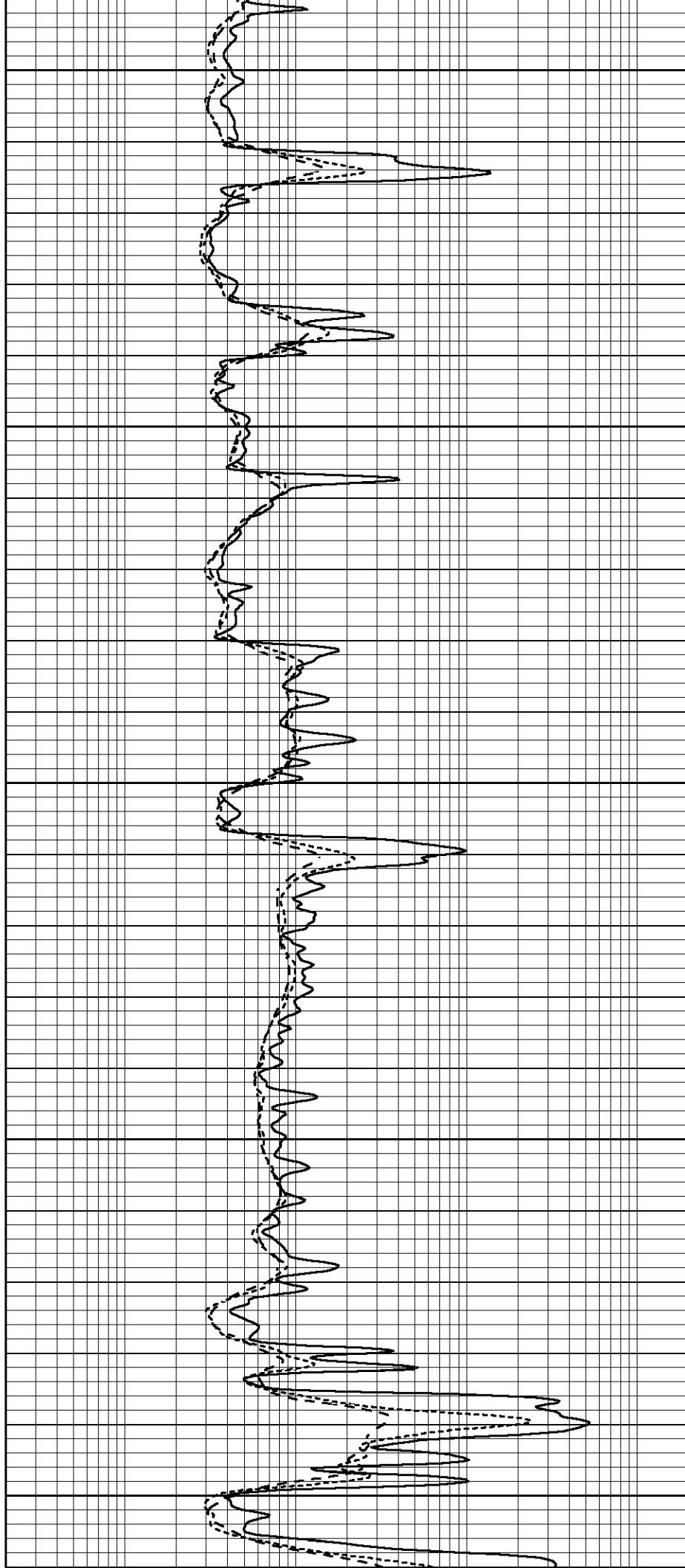
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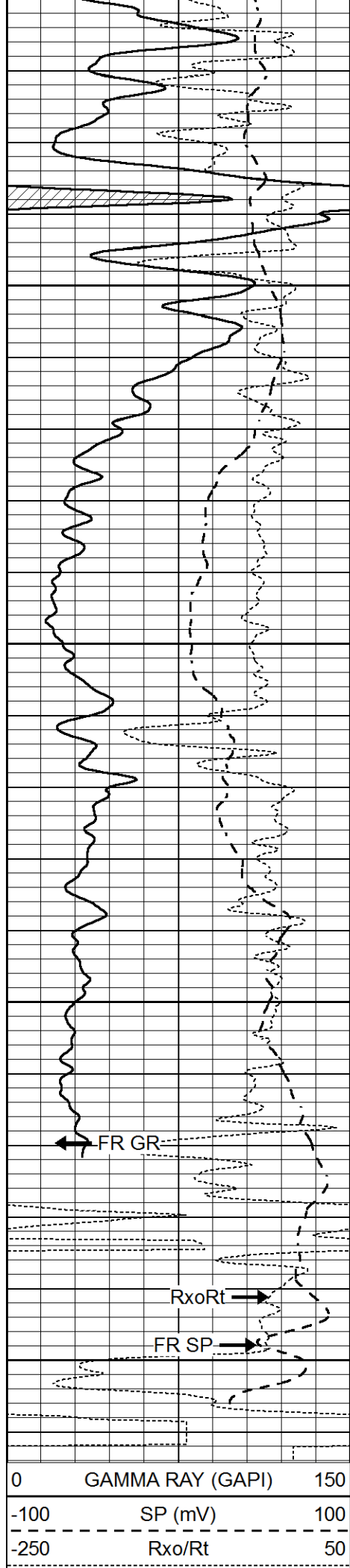
4100

4150

4200

4250





4300

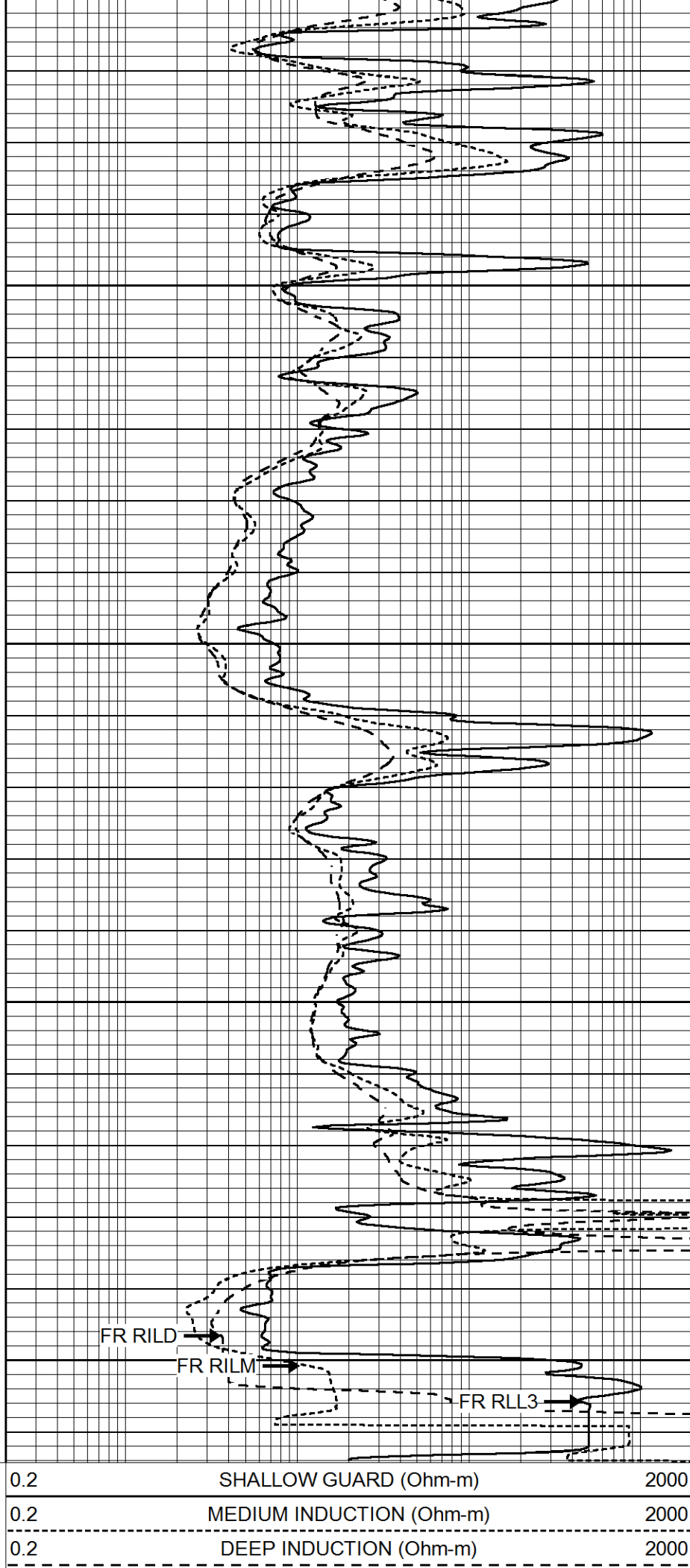
4350

4400

4450

LTD 4458

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

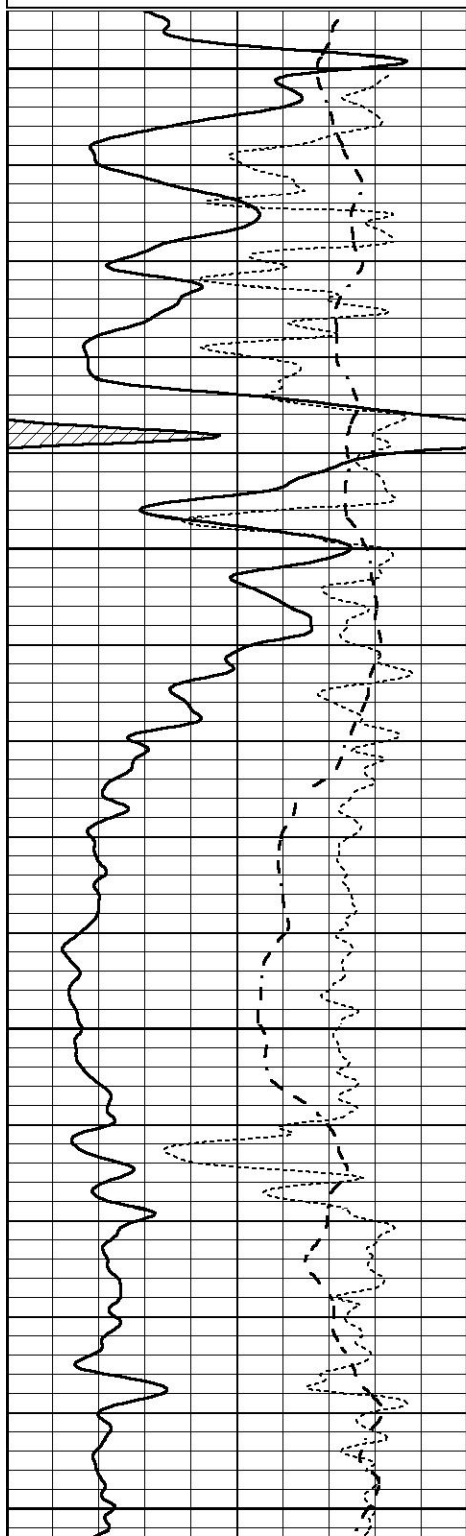


REPEAT SECTION

Database File 4739ddn.db
Dataset Pathname pass2.1
Presentation Format _dil
Dataset Creation Mon Jun 15 22:48:28 2020
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

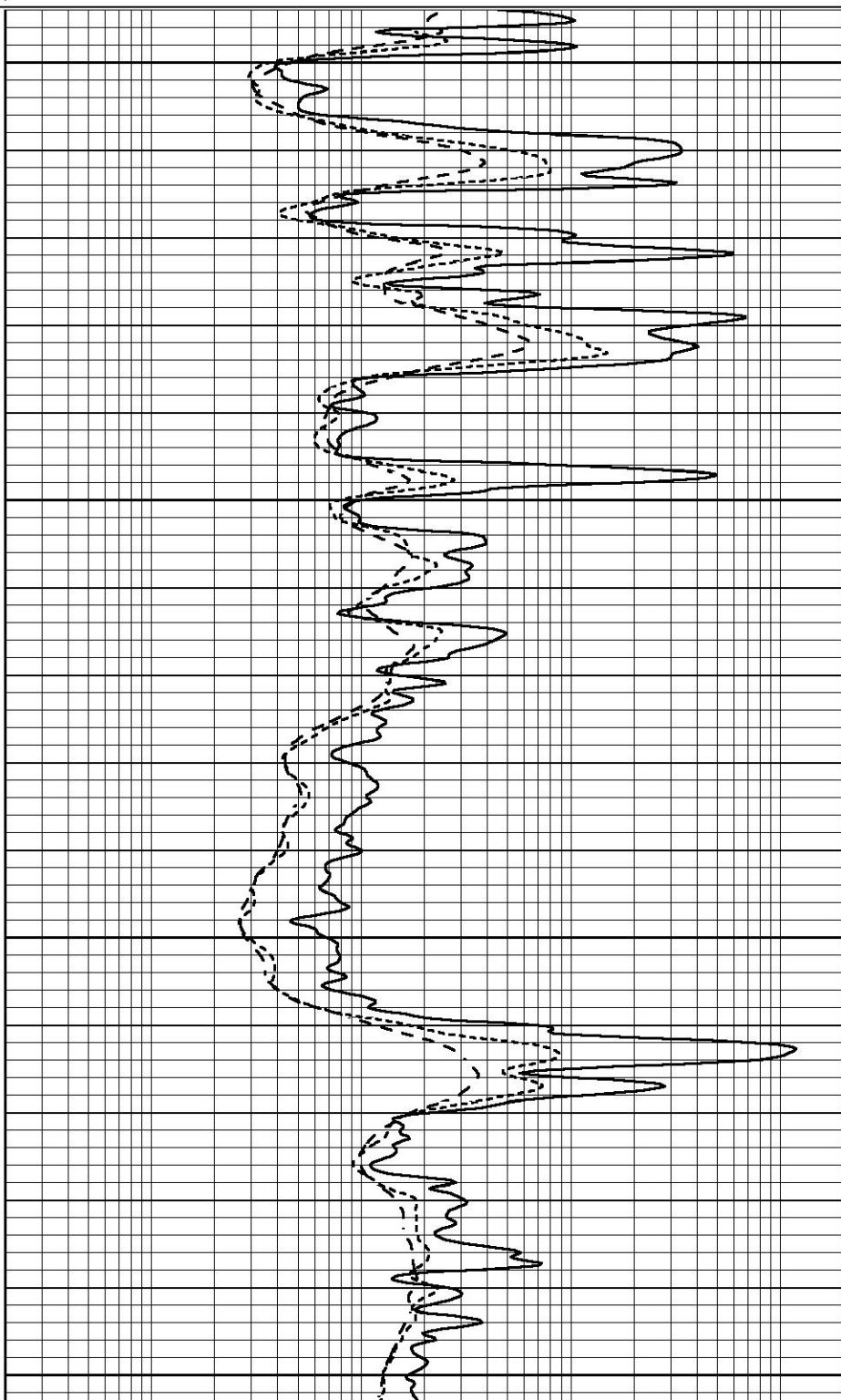


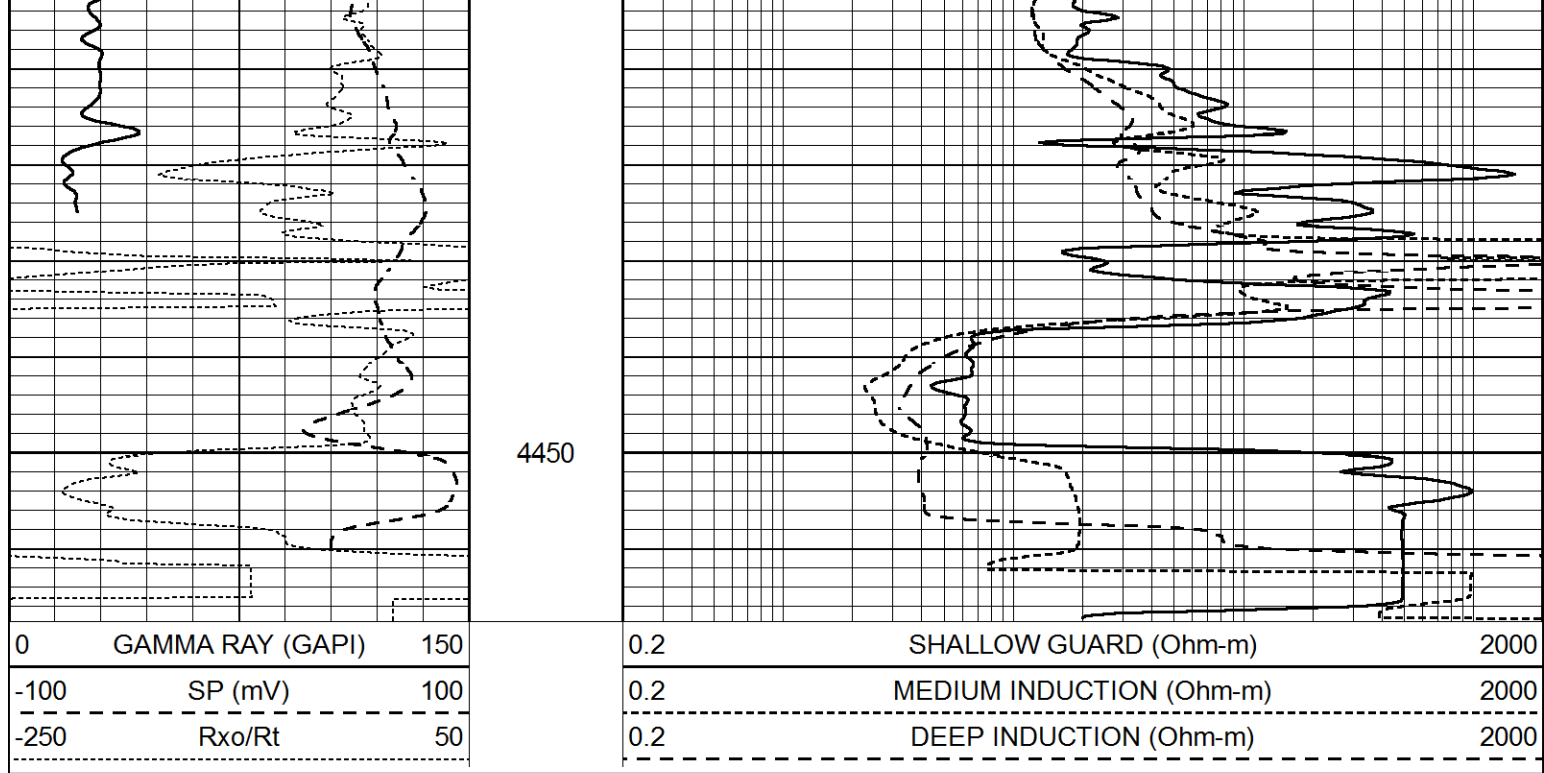
4250

4300

4350

4400





Calibration Report									
Database File	4739ddn.db								
Dataset Pathname	pass2.1								
Dataset Creation	Mon Jun 15 22:48:28 2020								
Dual Induction Calibration Report									
Serial-Model:				FW1410-56-Probe					
Surface Cal Performed:				Tue Jul 25 12:15:33 2017					
Downhole Cal Performed:				Tue Jul 25 12:15:37 2017					
After Survey Verification Performed:				Tue Jul 25 12:15:38 2017					
Surface Calibration									
		Readings			References			Results	
Loop:	Air	Loop		Air	Loop		m	b	
Deep	0.008	0.765	V	1.000	400.000	mmho/m	400.061	-3.201	
Medium	-0.056	0.761	V	1.000	464.000	mmho/m	425.187	32.510	
Internal:	Zero	Cal		Zero	Cal		m	b	
Deep	0.005	0.624	V	0.000	400.000	mmho/m	645.611	-3.034	
Medium	0.012	0.721	V	0.000	464.000	mmho/m	653.591	-7.532	
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		5000.000	mmho-m			
After Survey Verification									
		Readings			Targets			Results	
	Zero	Cal		Zero	Cal		m'	b'	
Deep	0.000	0.000	mmho/m	0.000	0.000	mmho/m	1.000	0.000	
Medium	0.000	0.000	mmho/m	0.000	0.000	mmho/m	1.000	0.000	
LL3		0.000	V		0.000	Ohm-m			
		0.000	V		0.000	Ohm-m			
		0.000	V		0.000	mmho-m			

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: 140703 Model: V4_10P Source Number: 74GBq-19								
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Master Calibration				Performed: Thu May 21 10:43:15 2020				
	Background	Aluminum	Magnesium					
Window 1	531.08	5459.71	23833.72	cps				
Window 2	42.08	1230.06	5814.64	cps				
Window 4	232.81	1236.34	5296.40	cps				
Window 5	564.62	8687.43	16546.07	cps				
Window 6	44.20	1453.03	2846.27	cps				
Window 8	270.67	2786.28	5209.33	cps				
Bulk Density	-	2.6020	1.6830	g/cc				
Pe	-	3.0000	2.5070	b/e				
LS Alpha:	: -1.8459	SS Alpha:	: -0.7701	LS CPE:	: 1.1427			
LS Beta:	: 125609.8082	SS Beta:	: 19396.7594	SS CPE:	: 1.5007			

Before Survey Background Counts Verification				Performed: Wed Dec 31 18:00:00 1969				
Window 1	0.00	cps						
Window 2	0.00	cps						
Window 4	0.00	cps						
Window 5	0.00	cps						
Window 6	0.00	cps						
Window 8	0.00	cps						

After Survey Background Counts Verification				Performed: Wed Dec 31 18:00:00 1969				
Window 1	0.00	cps						
Window 2	0.00	cps						
Window 4	0.00	cps						
Window 5	0.00	cps						
Window 6	0.00	cps						
Window 8	0.00	cps						

Lithodensity Caliper Calibration				Performed: Thu May 21 10:43:15 2020				
Results	Readings		References (in)					
	Low	High	Low	High	Gain	Offset		
	4564.4	7712.2	8.0	14.0	0.0	-1.1		

Before Survey Caliper Verification				Performed:				
	Reference	Reading						
Caliper (in)								

After Survey Caliper Verification				Performed:				
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	Reference	Reading
Caliper (in)		
Compensated Neutron Calibration Report		
	Serial Number: Tool Model:	080621PMC 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:	7	
Tool Model:	Probe1	
Performed:	Tue Dec 10 10:02:55 2019	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.4800	GAPI/cps