

**Tucker**  
ENERGY SERVICES

PHASED INDUCTION  
SHALLOW FOCUS SP LOG

Company: QUAILOIL & GAS, LC  
 Well: LEON #1-23  
 Field: MORRISON NORTHEAST  
 County: CLARK  
 State: KANSAS  
 Country: USA  
 API No.: 15-025-21576-0000

File No.: TUL-59631  
 Company: QUAILOIL & GAS, LC  
 Well: LEON #1-23  
 Field: MORRISON NORTHEAST  
 County: CLARK  
 State: KANSAS  
 Country: USA  
 API No.: 15-025-21576-0000

Location:  
 795' FNL & 2200' FWL  
 NW SE NE NW

LSD:                      Sect: 23                      Twp: 32S                      Rge: 21W

Permanent Datum:	GL	Elevations:	Ft	Services:	MLT
Drilling Measured From:	KB	KB 2034.00	Ft	CST	
Log Measured From:	KB	DF 2033.00	Ft	PIT	
Above Permanent Datum:	1200 Ft	GL 2032.00	Ft		
Date:	06-24-2014				
Run Number	1				
Depth--Driller	6650.0 Ft				
Depth--Logger	6664.0 Ft				
First Reading	6664.0 Ft				
Last Reading	626.0 Ft				
Casing--Driller	626.0 Ft				
Casing--Logger	626.0 Ft				
Bit Size	7.875 In				
Casing Size	8.625 In				
Hole Fluid Type	CHEM-GEL				
Density	8.7				
Fluid Loss	9.2				
PH/Viscosity	10.5	50.0			
Sample Source	MEASURED				
RM@Measured Temp.	1.500	@ 75 F			
RMF@Measured Temp	1.200	@ 75 F			
RMC@Measured Temp.	1.800	@ 75 F			
Source RMF/RMC	CALCULATED/CALCULATED				
RM@BHT	0.810	@ 145 F			
Time Circulation Stopped	06-24-2014 3:00 pm				
Max Recorded Temp.	145	F			
Equipment/Base	127	TULSA			
Recorded By	SHELDON TYLER				
Witnessed By	ROGER MARTIN				

The customer is hereby warned that by providing the log data herein, T. E. S. does not agree to provide any interpretation of log data, conversion of log data to physical rock parameters or recommendations. T. E. S. does not guarantee or warrant either expressly or impliedly, the accuracy of any interpretation of log data, conversion of log data to physical rock parameters or recommendations which may be given by T. E. S. personnel. Any interpretation, conversion or recommendation is not part of the consideration for the agreement between the parties and is not part of any part of the charge by T. E. S. for its services. Any user of the log data is warned that said user is not entitled to rely on interpretations, conversions or recommendations as aforesaid.

Bitsize Intervals		Casing Strings			
Size (In)	Bottom (Ft)	Size (In)	Weight (Lbs)	Bottom (Ft)	Top (Ft)
7.875	6650.00	8.625	32.00	626.00	0.00

Run Number	1
Date	06-24-2014
Date/Time On Bottom	06-24-2014 8:00 pm
Depth to Fluid	0.0 Ft
Salinity	2100.000
RMF@BHT	0.650 @ 145 F
RMC@BHT	0.970 @ 145 F

Run Number 1

Comments

ALL PRESENTATIONS AS PER CUSTOMER REQUEST  
 GRT, MLT, CST AND PIT RUN IN COMBINATION

CUSTOMER REQUESTED NO REPEAT BAD HOLE

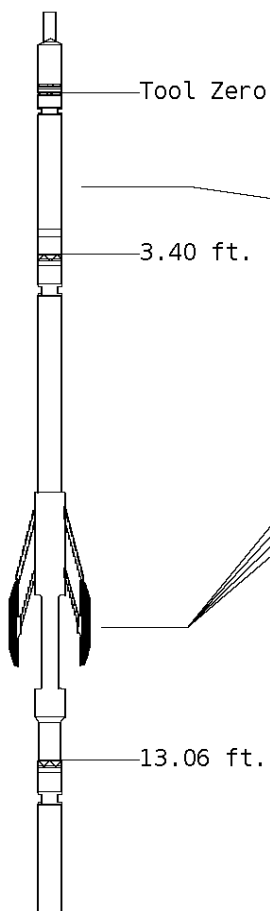
GRT: GRP, GRX  
 CST: PORS, CDTF, TT1PF, TT2PF, TT3PF, TT4PF, ITT

MLT: NOR\_RF, INV\_RF, MSCLPIN  
 PIT: ILD, ILM, SPU, SFLAEC, CIRD

OPERATORS:  
 J.JOHNSON  
 A.DJAHO

### Tool String Schematic

**Total Tool Length** - 48.35 ft.  
**Maximum Outside diameter** - 6.00 in.  
**Net Weight in Air** - 716.00 lbs.



**Tool:** GRT-B      **Length:** 3.40 ft.    **O.D.** 3.60 in.  
 Gamma Ray Controller  
**Sonde ID** :GRT-BB-006

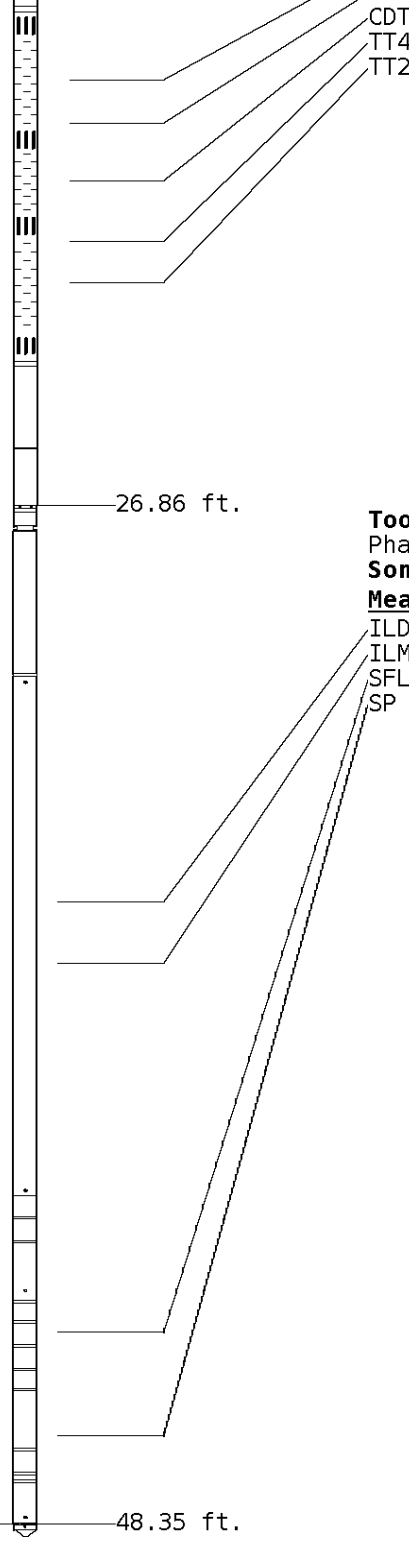
Measure Point	Tool Offset	Stack Offset	Bottom Offset
GRP	2.00	2.00	46.35

**Tool:** MST-DA      **Length:** 9.66 ft.    **O.D.** 6.00 in.  
 Micro Spherically Focused (IC)  
**Sonde ID** :MST-DA-25

Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	11.00	37.35
MSCLP	7.60	11.00	37.35
INV	7.60	11.00	37.35
NOR	7.60	11.00	37.35

**Tool:** CST-AD      **Length:** 13.80 ft.    **O.D.** 3.60 in.  
 Open Hole Sonic  
**Sonde ID** :CST-AB-012

Measure Point	Tool Offset	Stack Offset	Bottom Offset
TT1	4.80	17.86	30.49
TT3	5.80	18.86	29.49



7.30	20.36	27.99
8.80	21.86	26.49
9.80	22.86	25.49

**Tool:** PIT-CA      **Length:** 21.49 ft.    **O.D.** 3.62 in.  
 Phased Dual Induction w/ RM & D  
**Sonde ID** :PIT-CA-062

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	35.78	12.56
ILM	10.10	36.96	11.39
SFLU	17.49	44.35	4.00
SP	20.60	47.46	0.88

LWT ——— 48.35 ft.

**Well File:** QUAIL\_OIL\_LEON\_1-23\_JUNE24\_MLTCSTPIT\_ONLY      **Scale:** 1:600      **Format:** DIL-600  
**Segment:** V1.D2.S4 Reprocess of MAIN      **Acquired:** 2014-06/25 00:32 3.5.0-12850  
**Reference:** 0      **Processed:** 2014-06/25 02:41 3.5.0-12850

<b>TENSION</b> LBS	
10000	0

<b>DEEP INDUCTION</b> OHMM	
0.0	500.0
0.0	50.0

<b>SPONTANEOUS POTENTIAL</b> mV	
→   ←	20

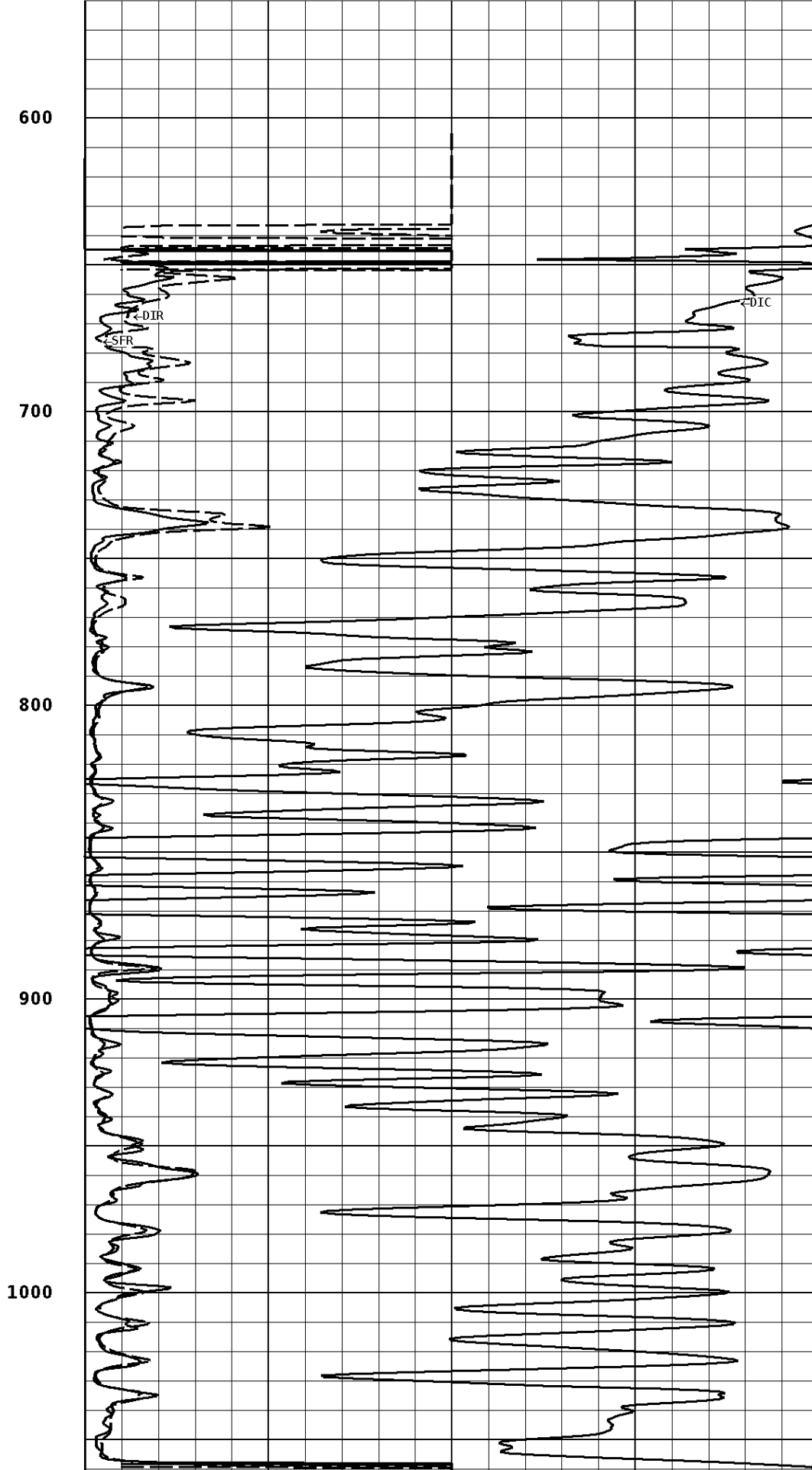
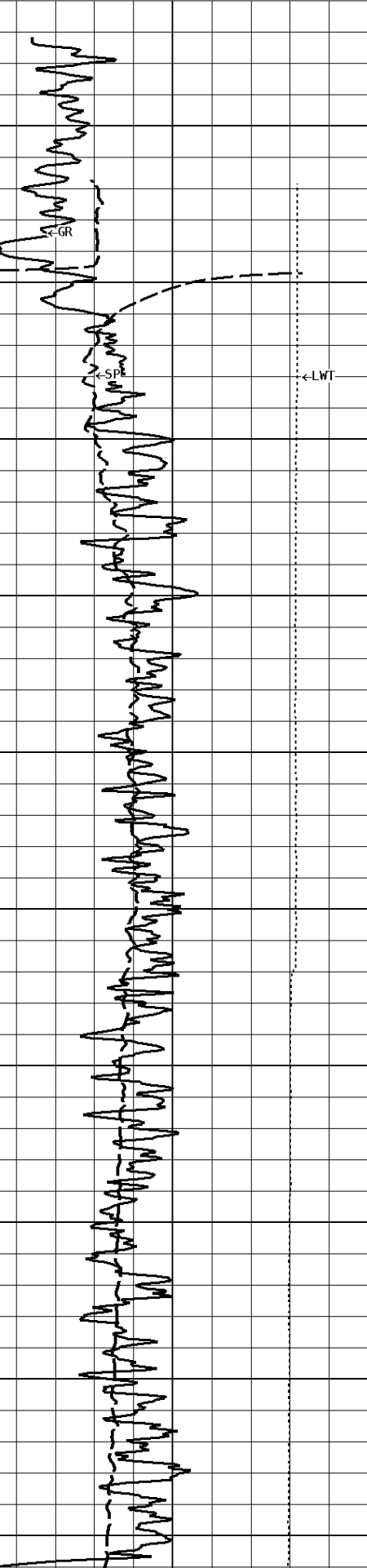
<b>SHALLOW FOCUSED RESISTIVITY</b> OHMM	
0.0	500.0
0.0	50.0

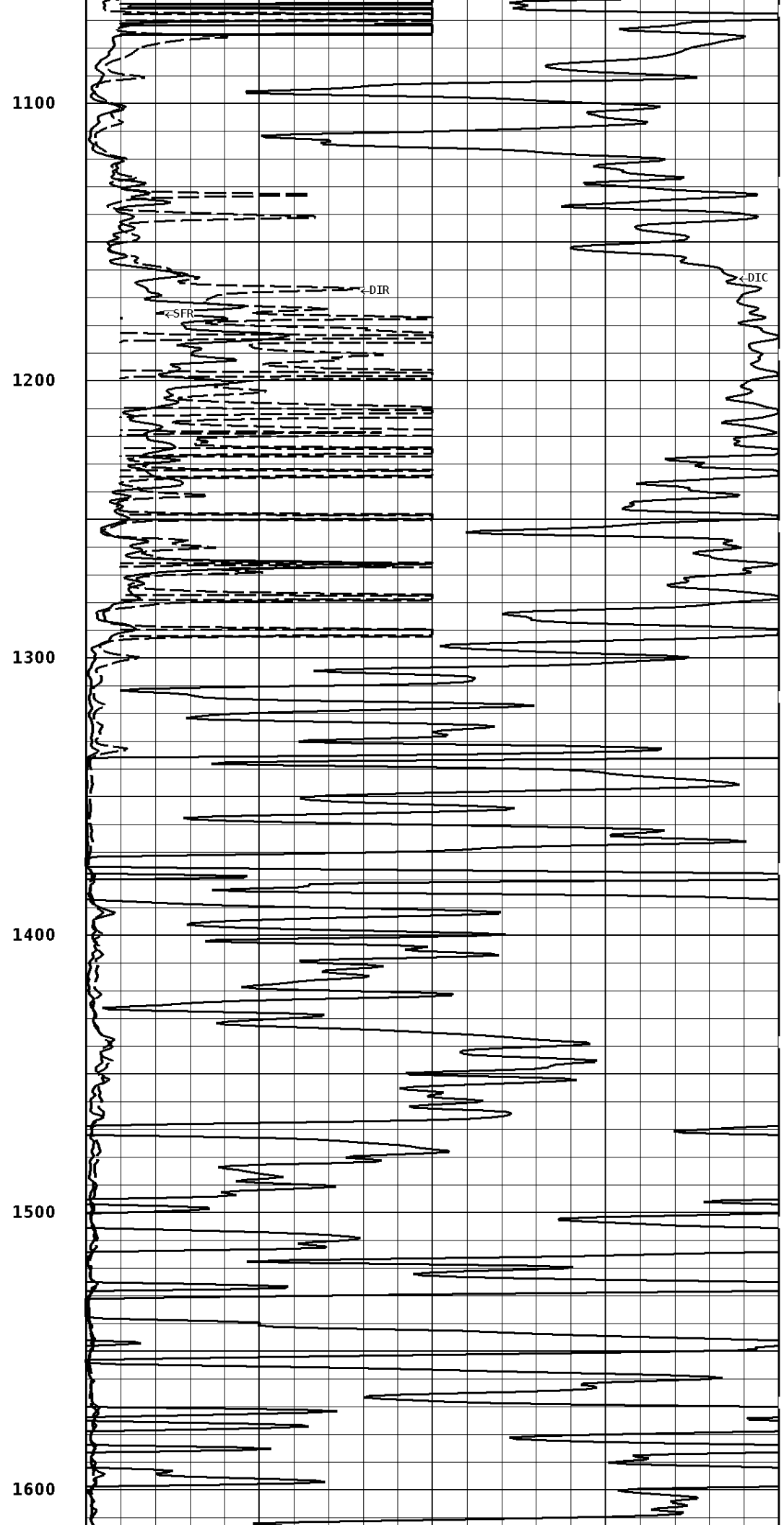
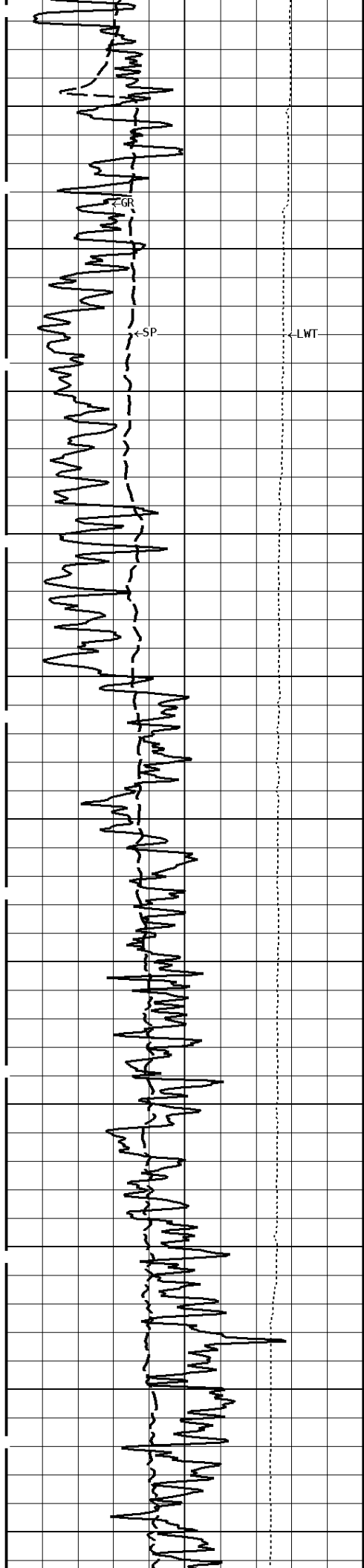
<b>GAMMA RAY</b> API UNITS	
150	300
0	150

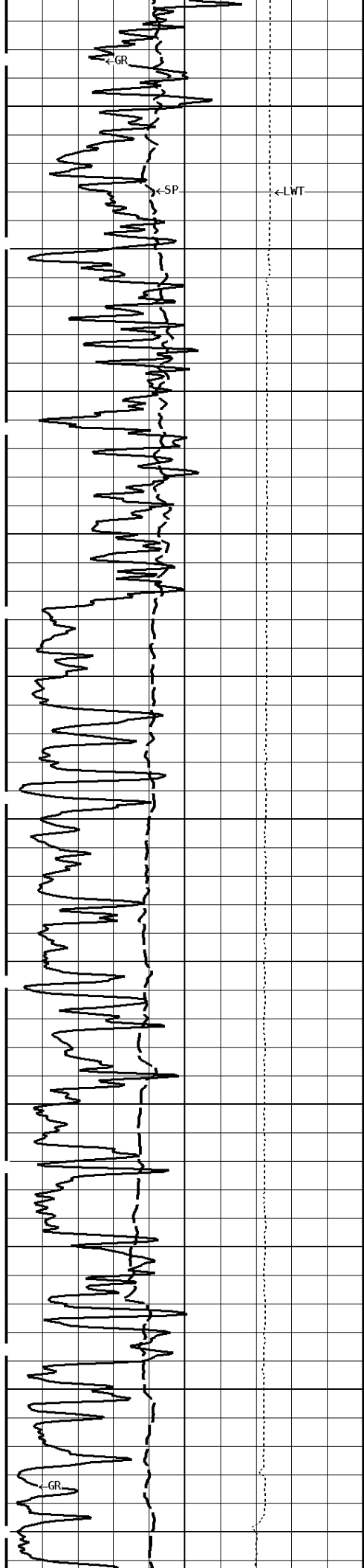
<b>DEEP CONDUCTIVITY</b> MMHO	
2000	1000
1000	0

# 1:600 MAIN SECTION

File #1.2.4







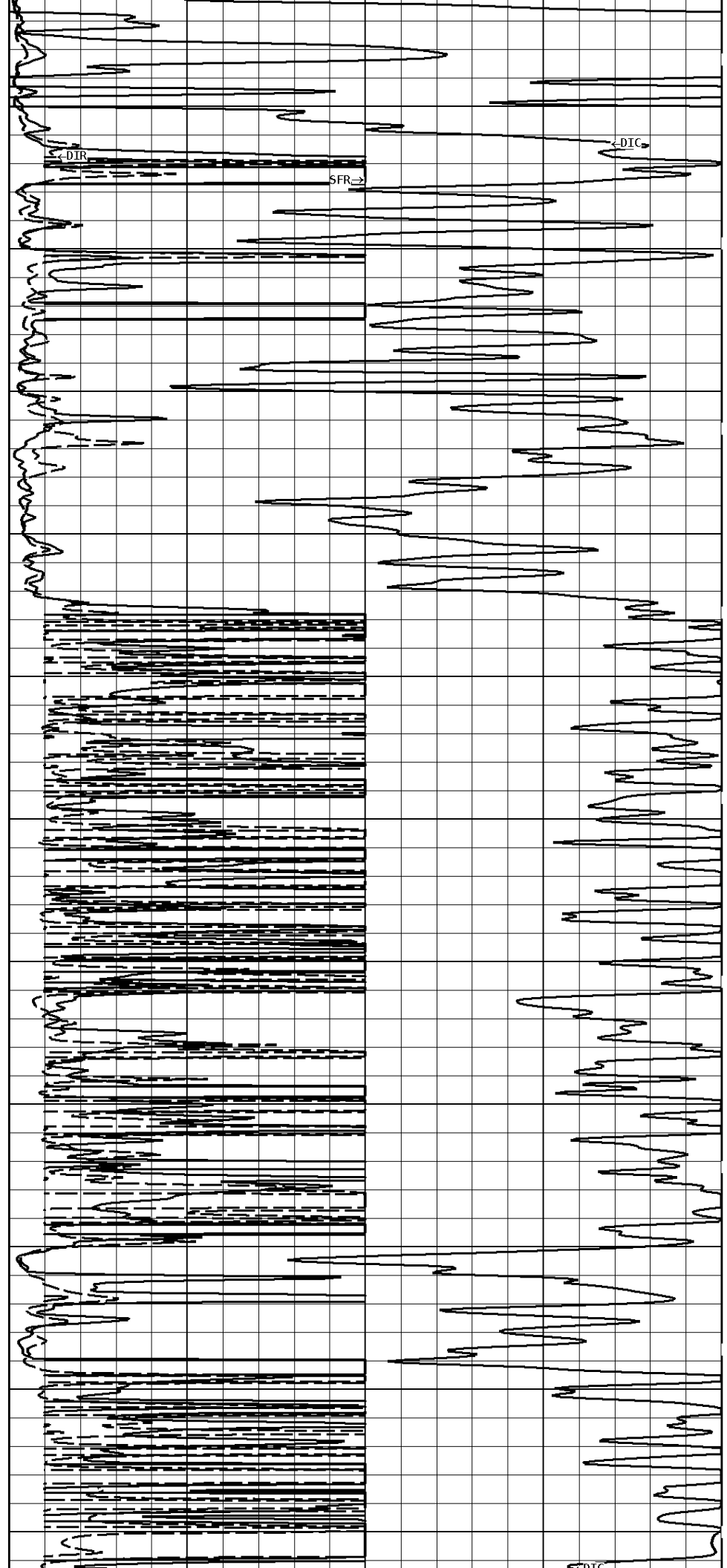
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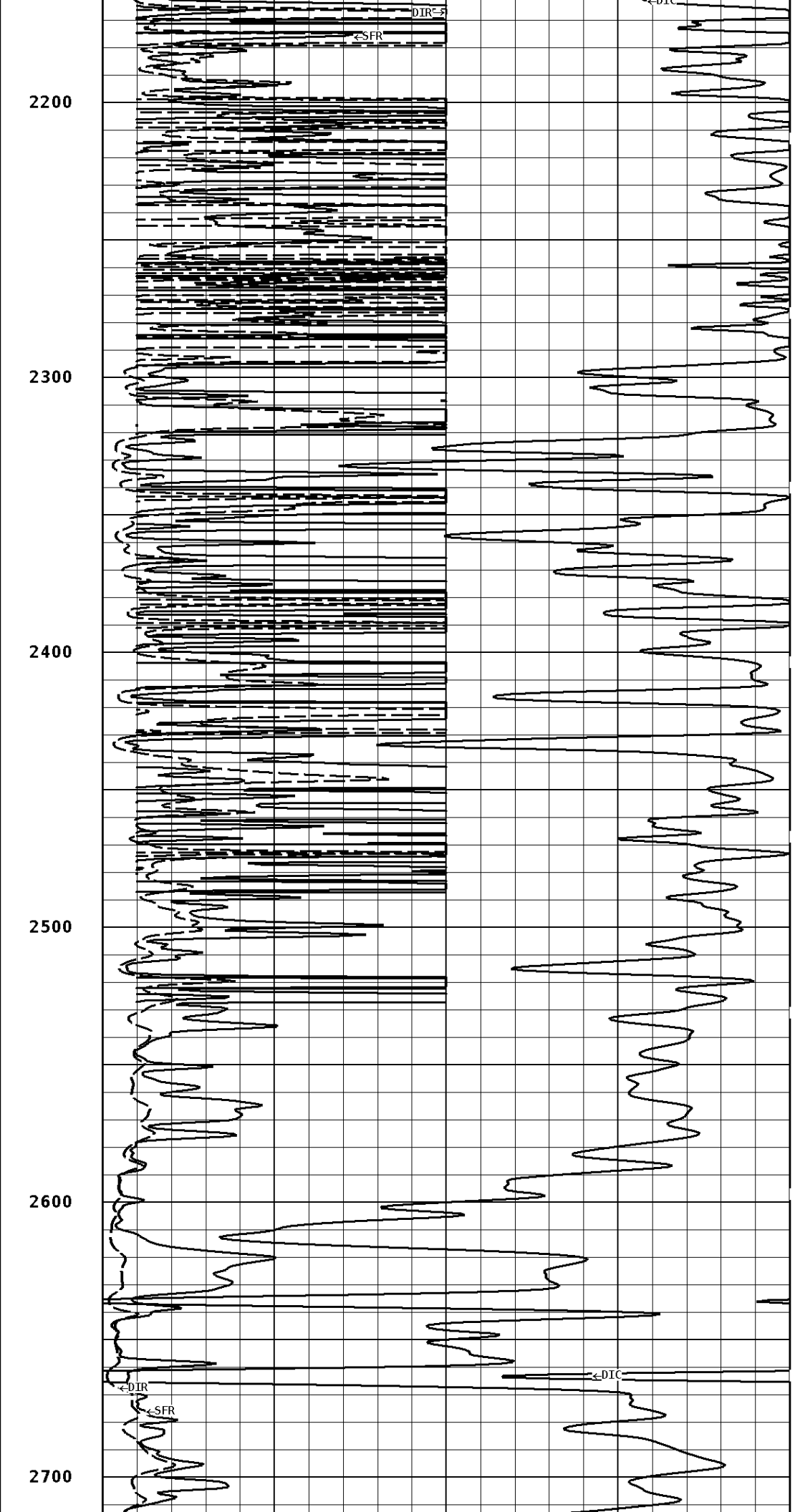
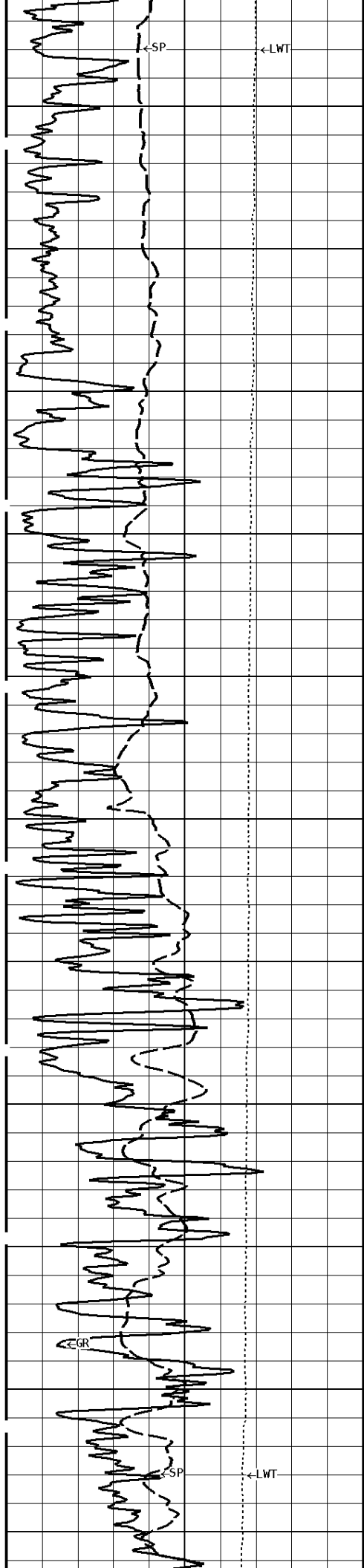
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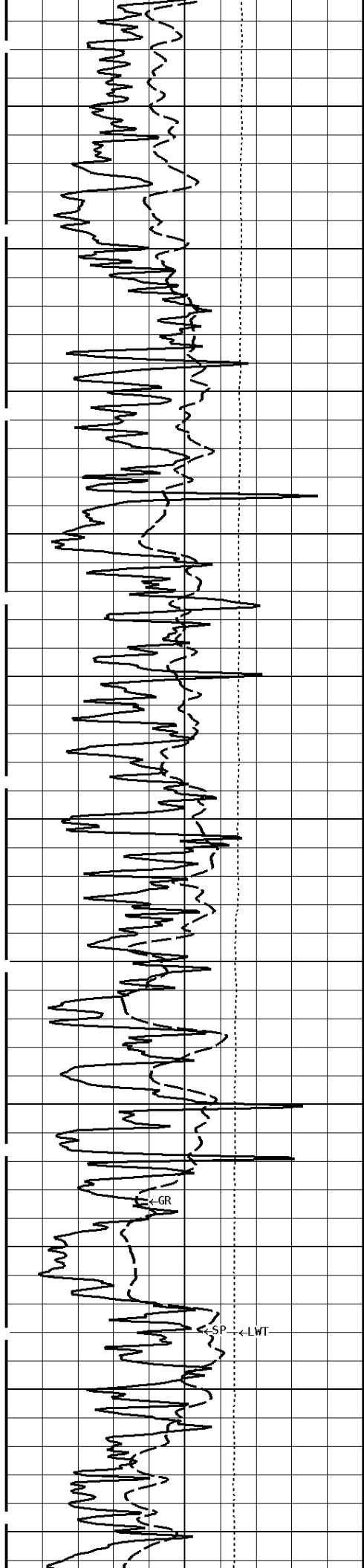
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2000

2100







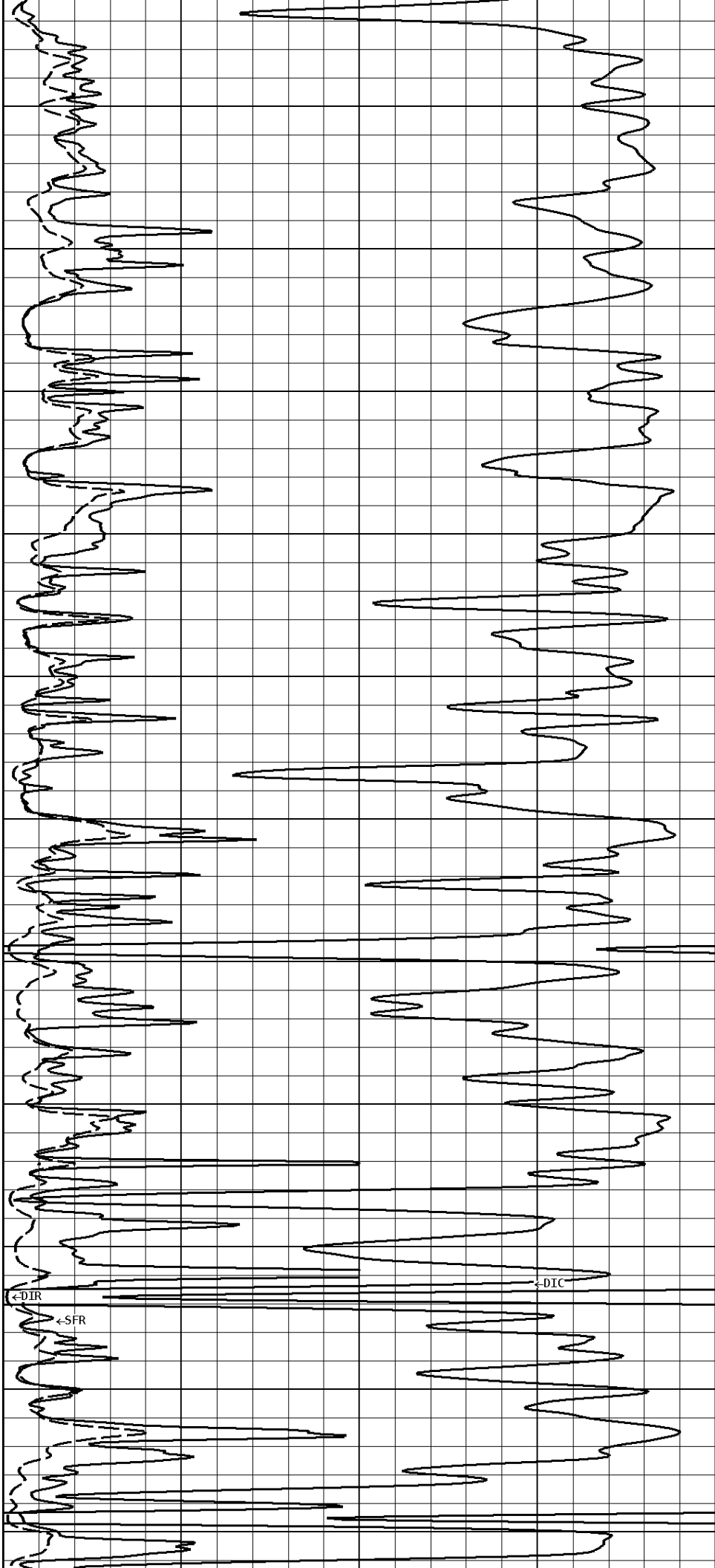
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2900

3000

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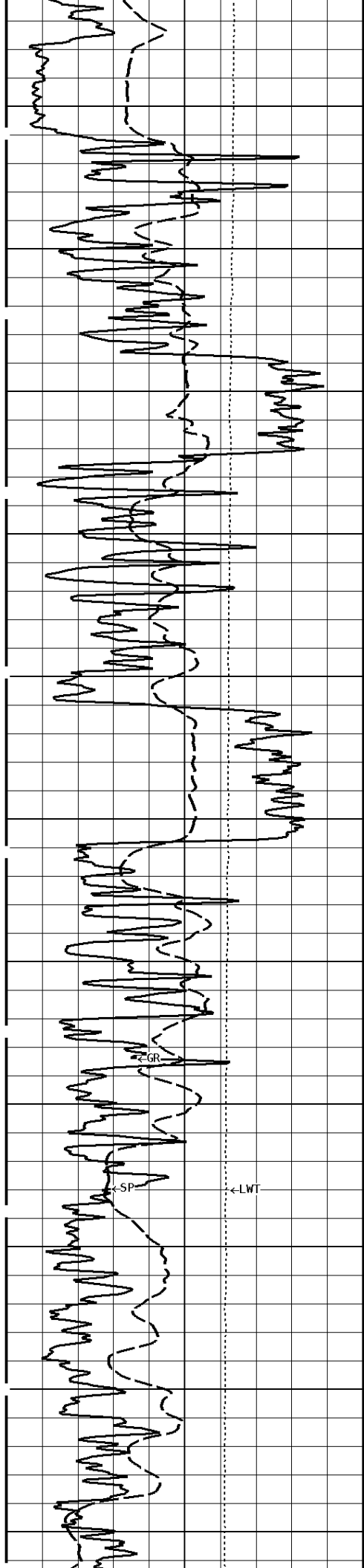
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←DIR

←SFR

←DIC



3300

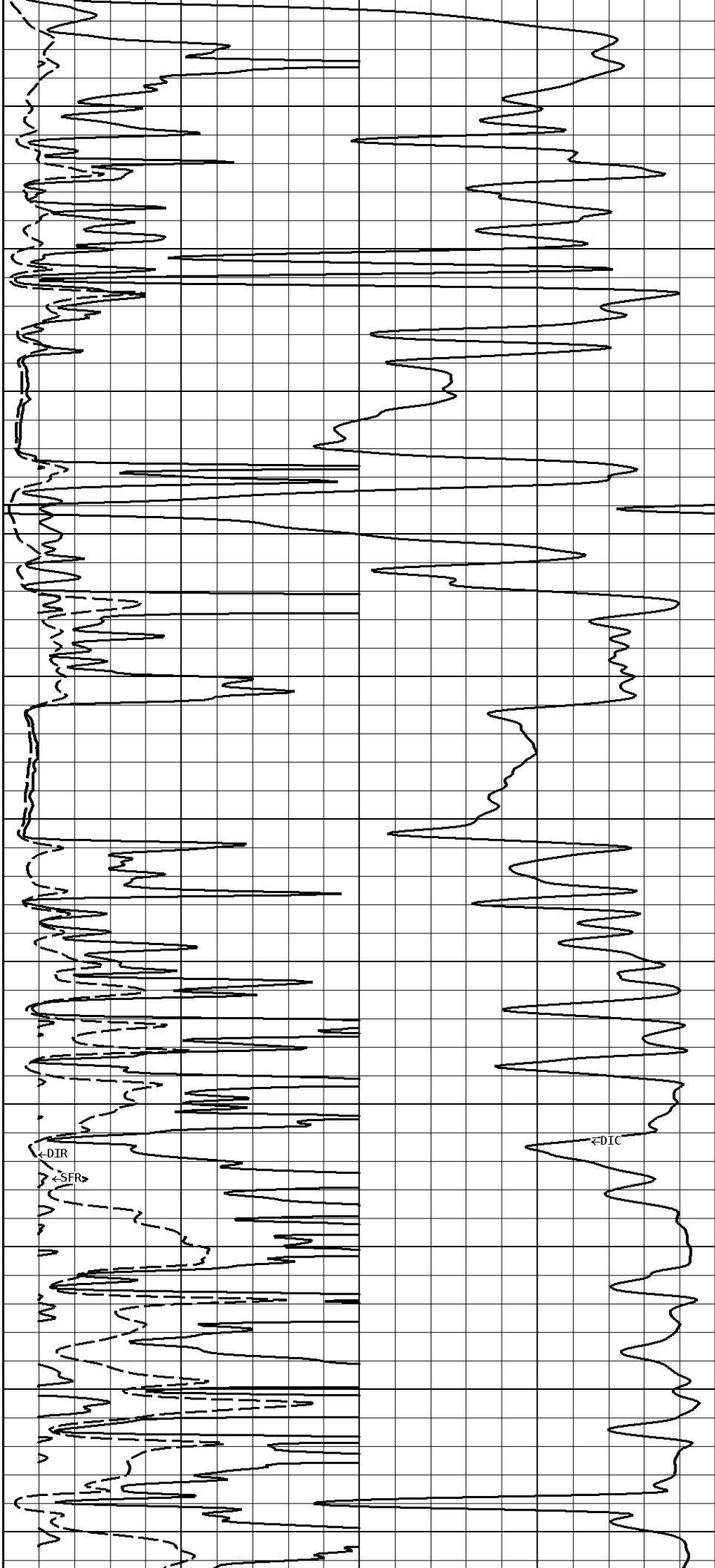
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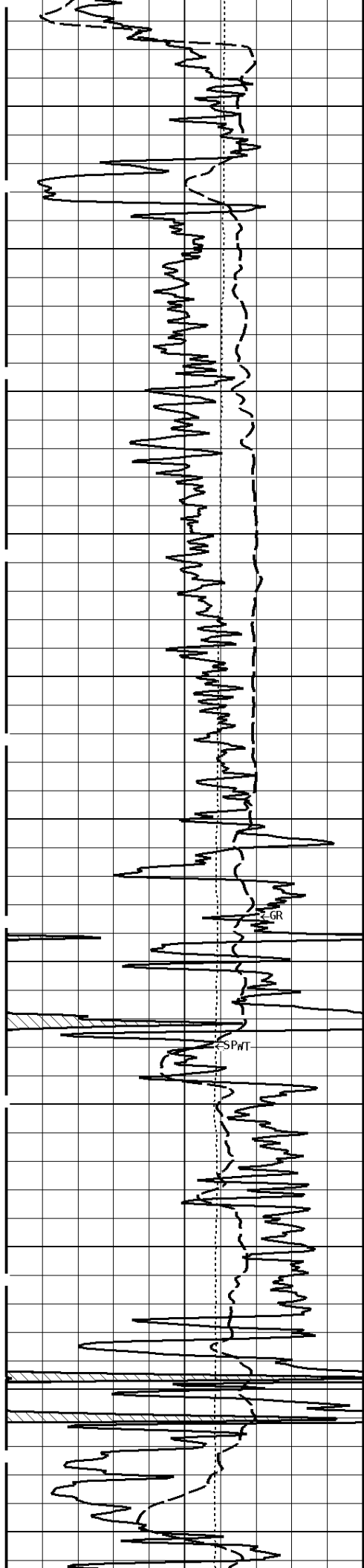
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3700

3800





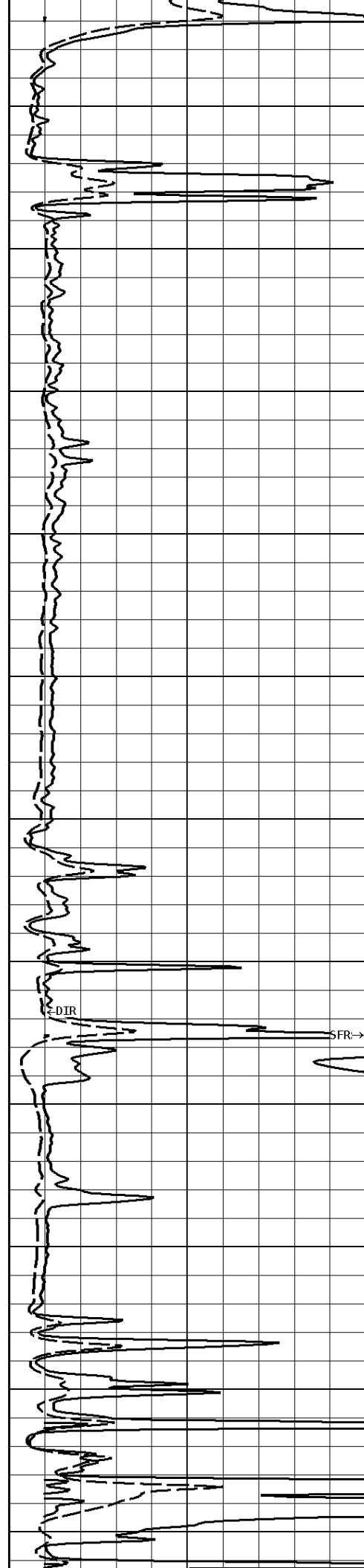
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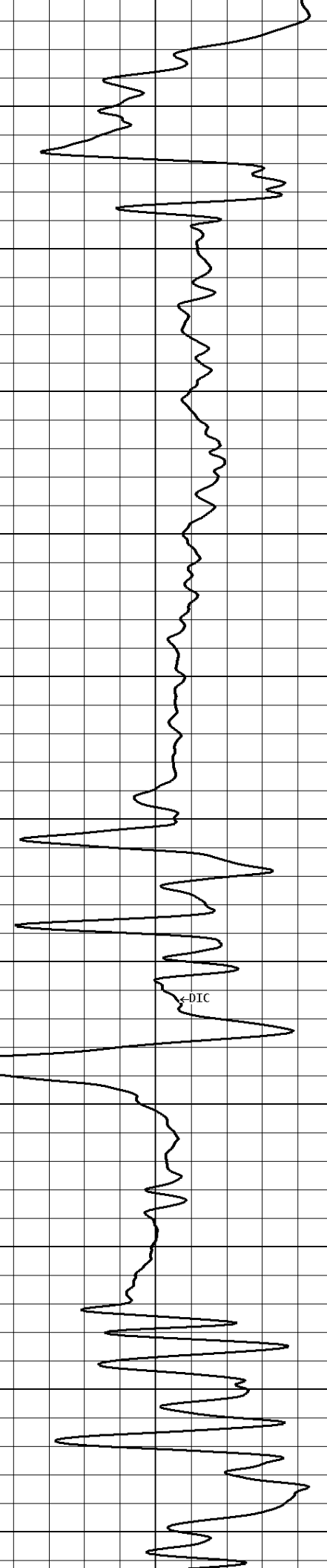
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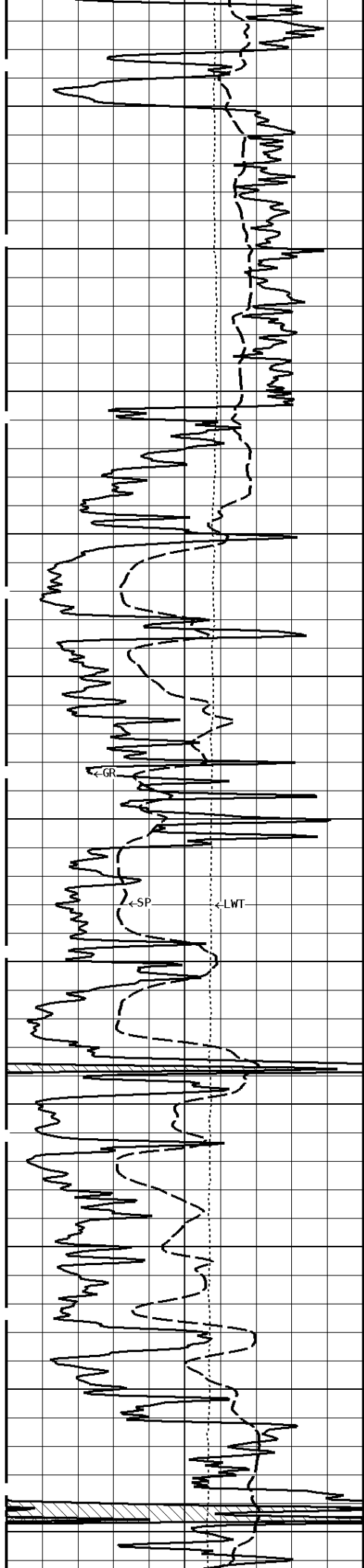


DIR

SFR →



DIC



4400

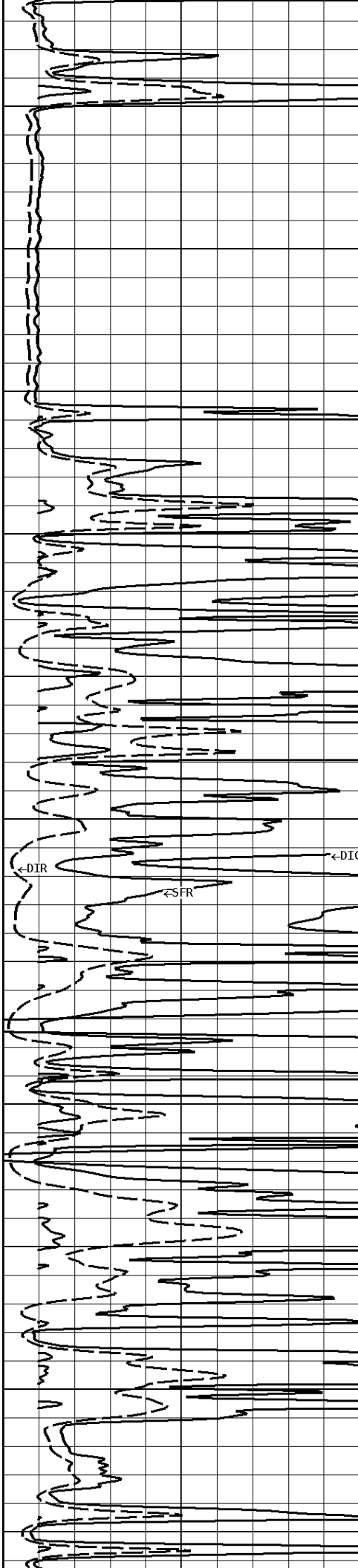
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4600

4700

4800

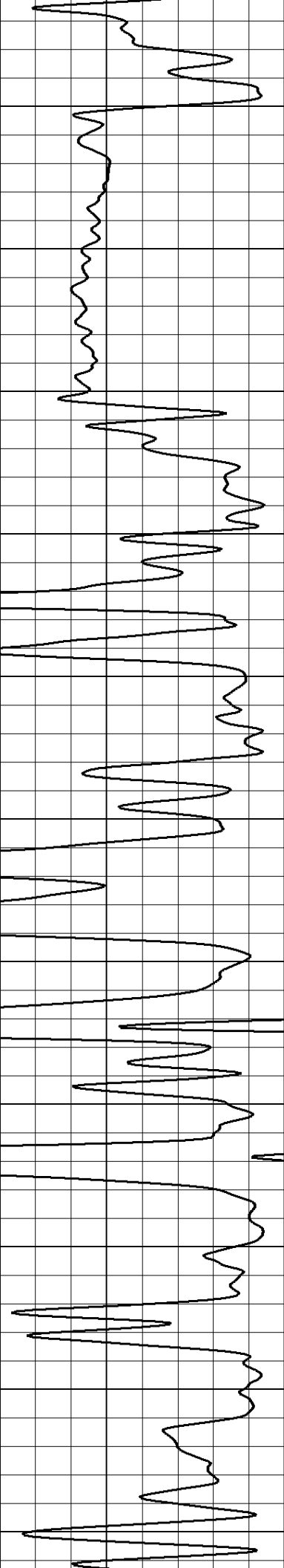
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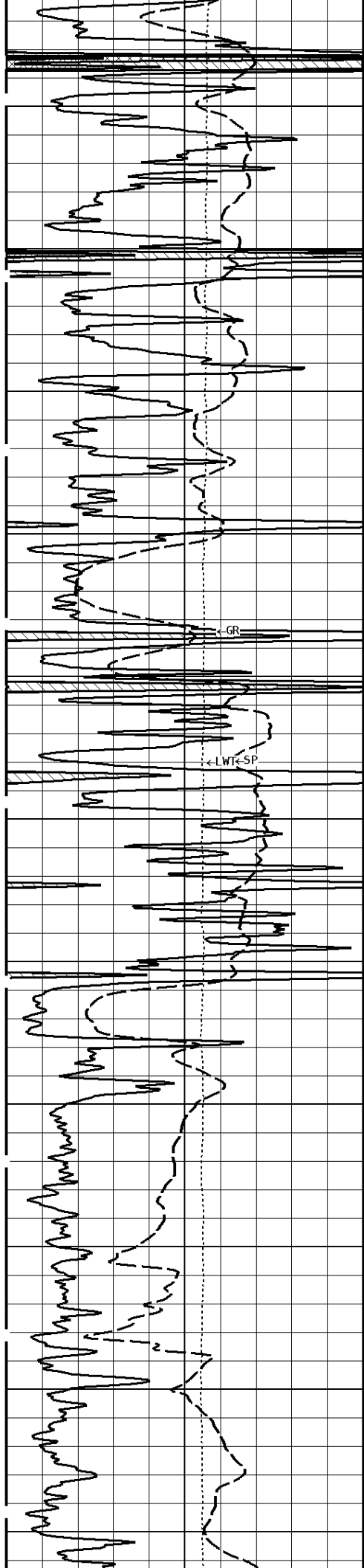


←DIR

←SFR

←DIC





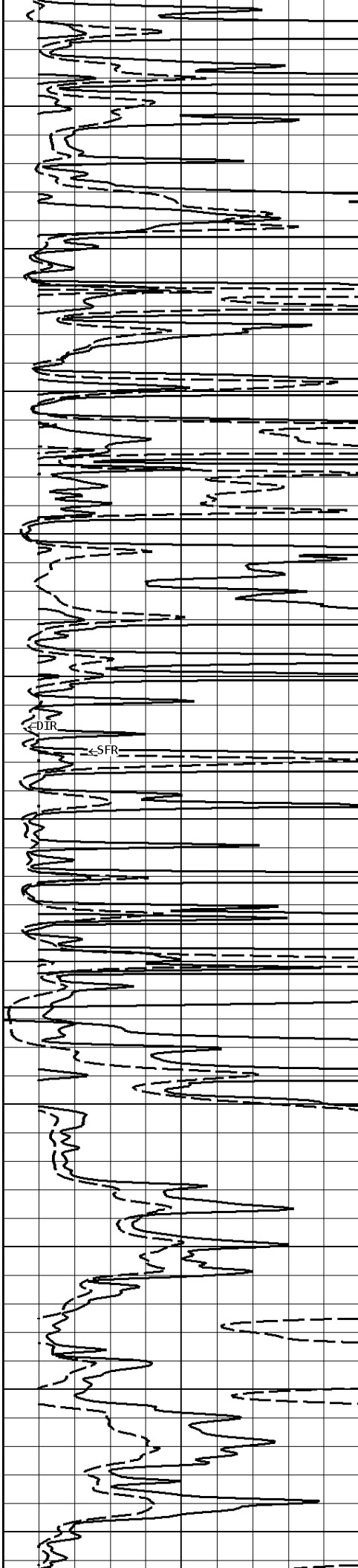
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5100

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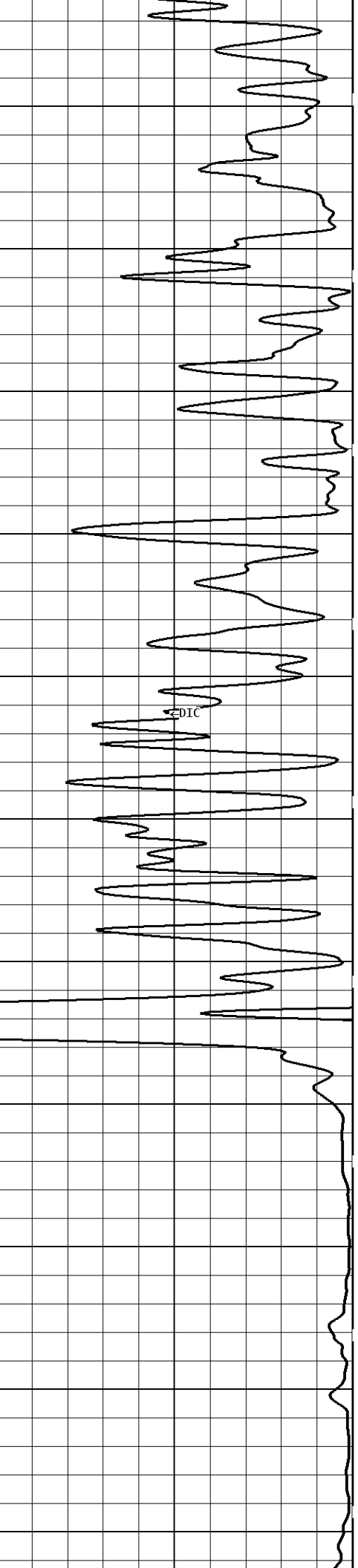
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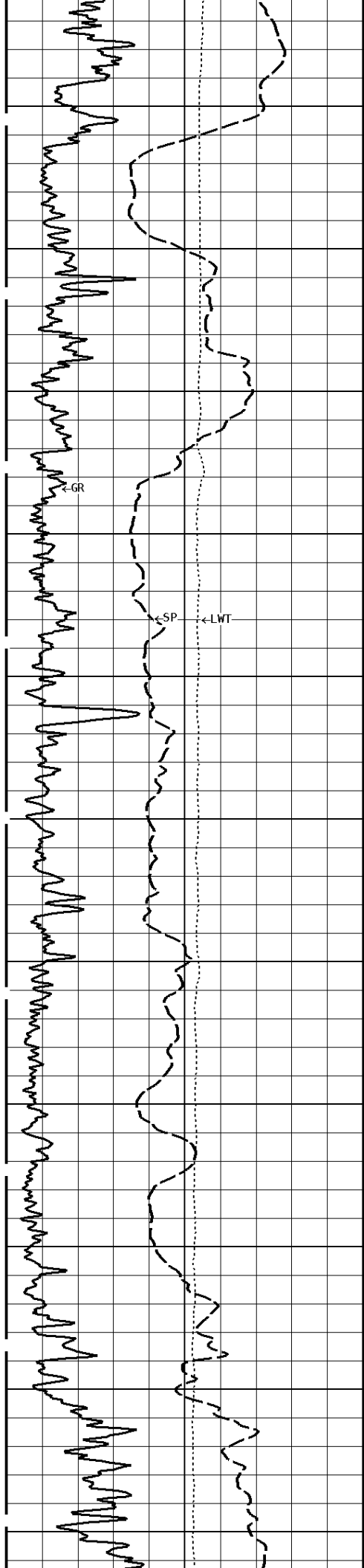


DIR

SFR



DIC



5500

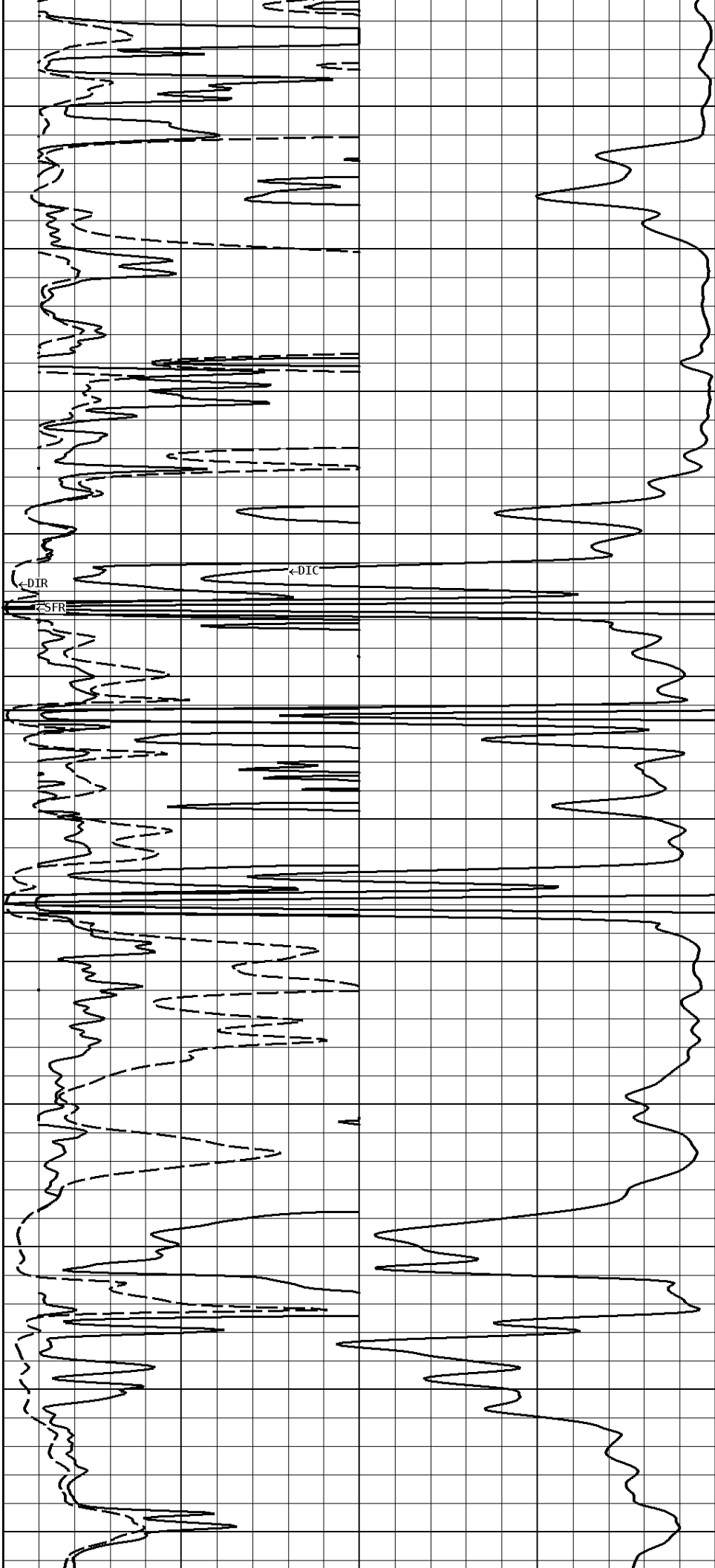
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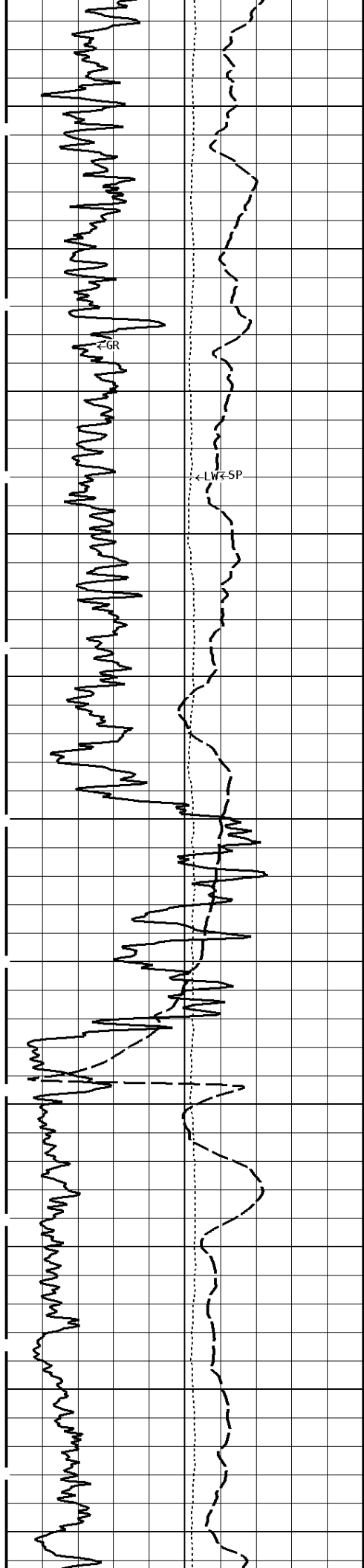
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DIR

CSFR

DIC



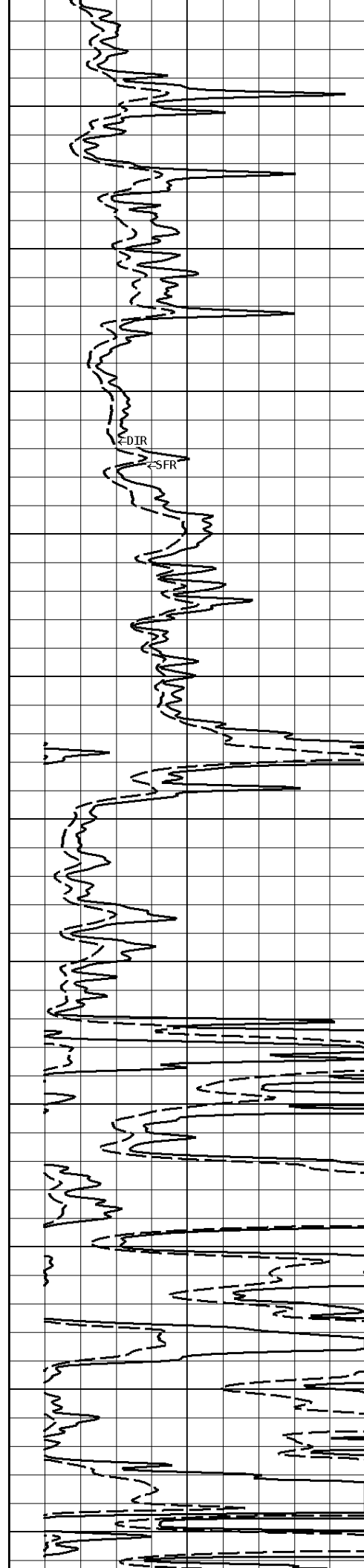
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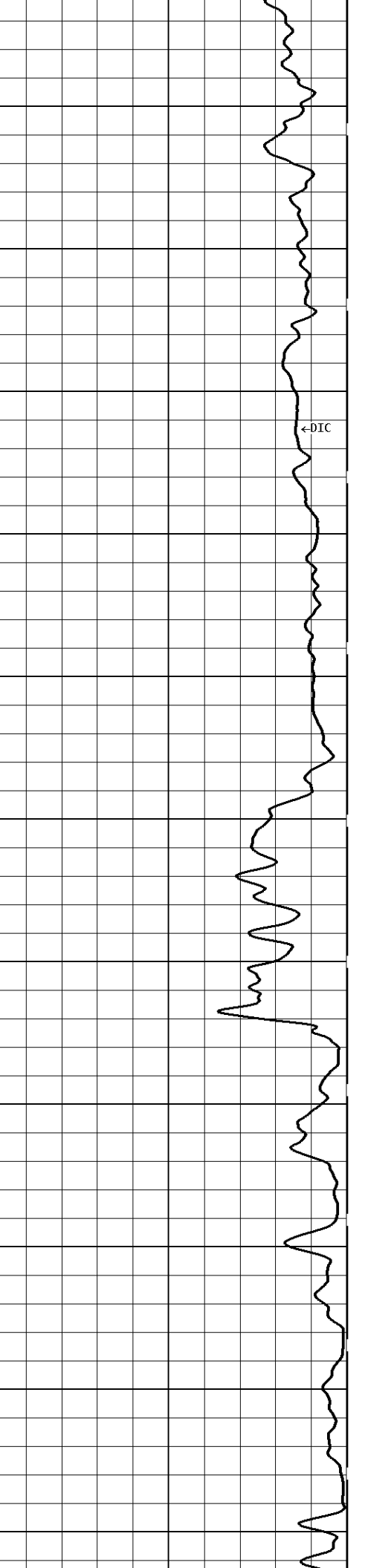
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6400

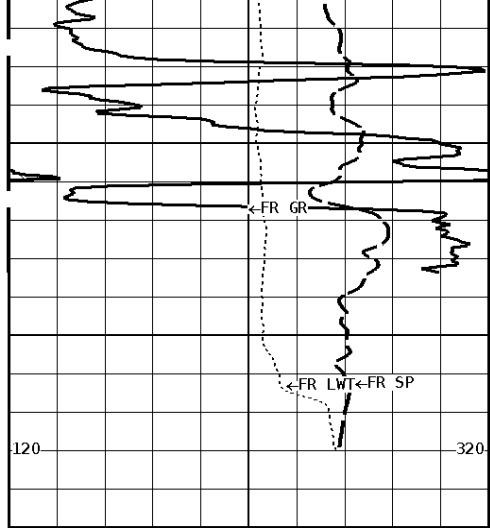
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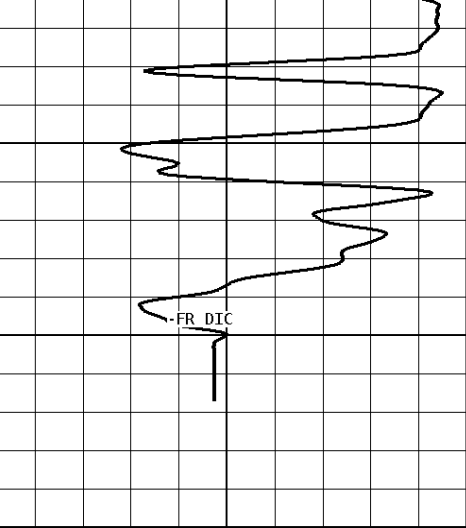
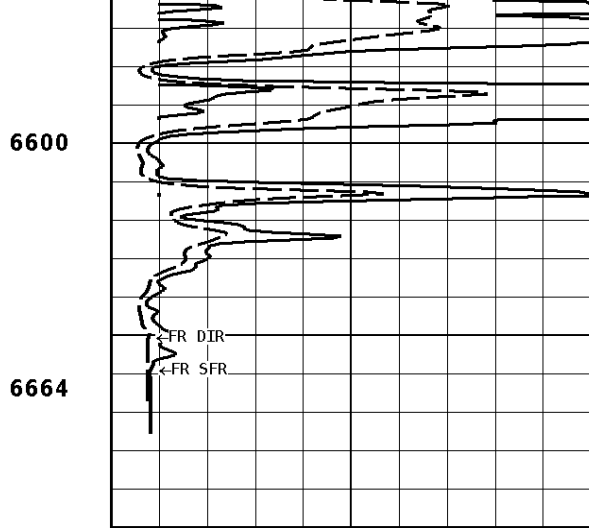
DIR  
SFR



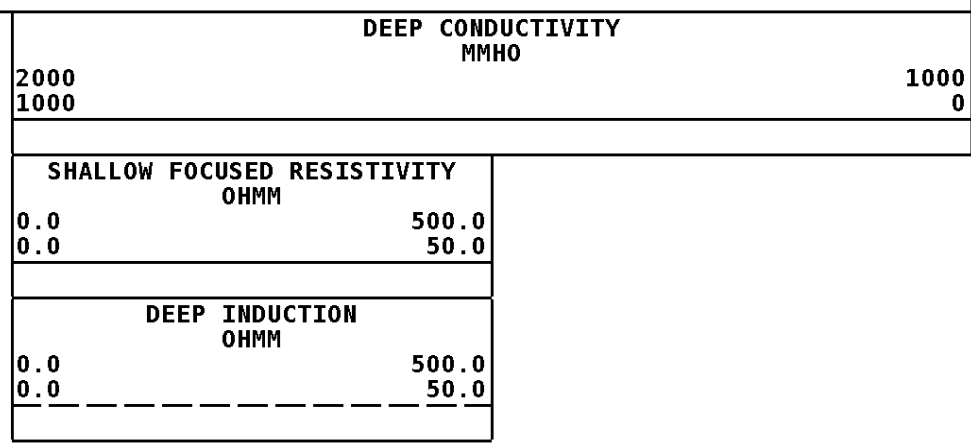
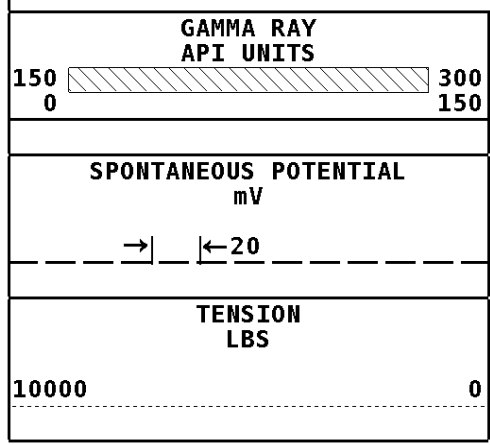
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File #1.2.4

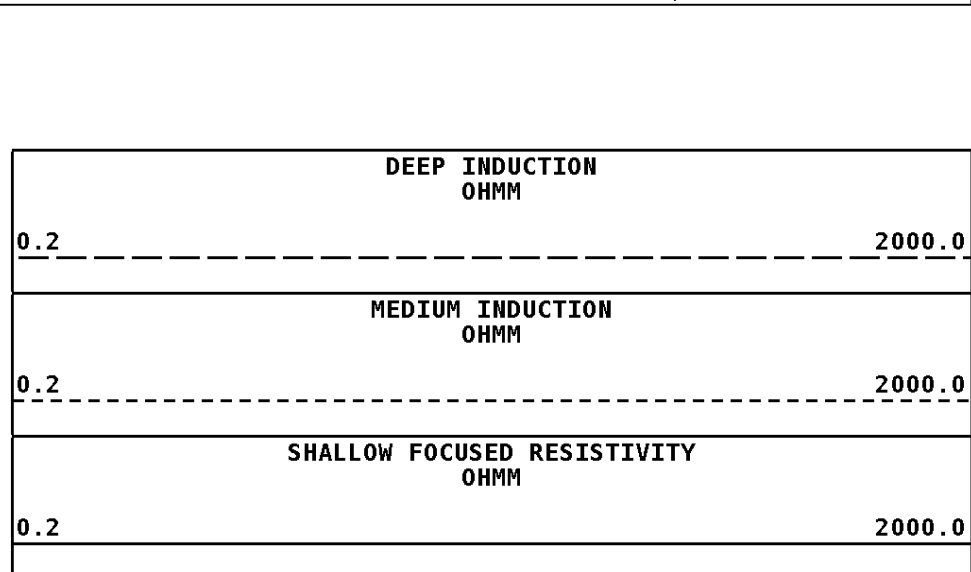
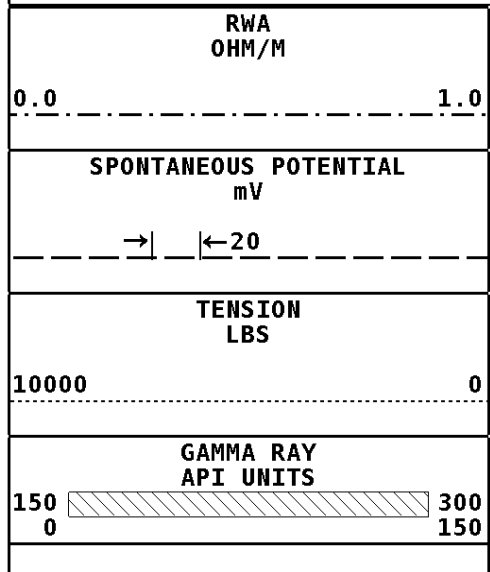


**1:600 MAIN SECTION**

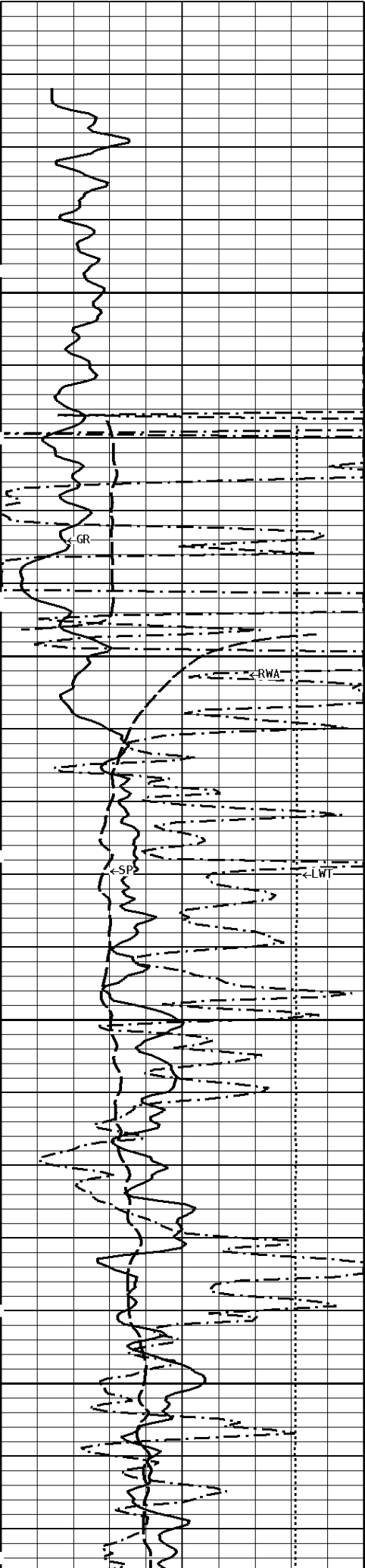


Environmental Corrections	
SHALLOW FOCUSED RESISTIVITY V1.D2.S4 SFLAEC	Mudcake Thickness

Well File: QUAIL\_OIL\_LEON\_1-23\_JUNE24\_MLTCSTPIT\_ONLY      Scale: 1:240      Format: DIL-240  
 Segment: V1.D2.S4 Reprocess of MAIN      Acquired: 2014-06/25 00:32 3.5.0-12850  
 Reference: 0      Processed: 2014-06/25 02:41 3.5.0-12850

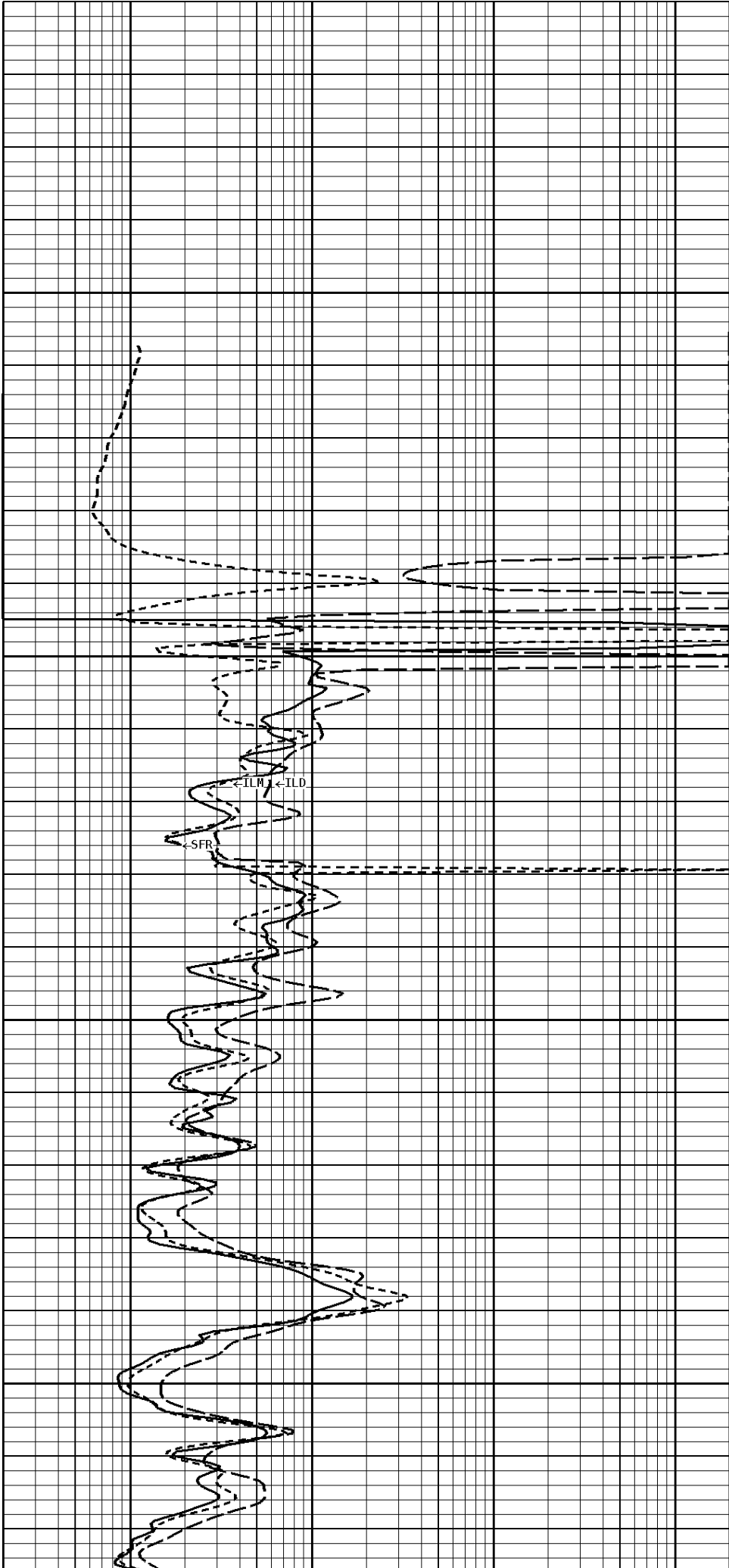


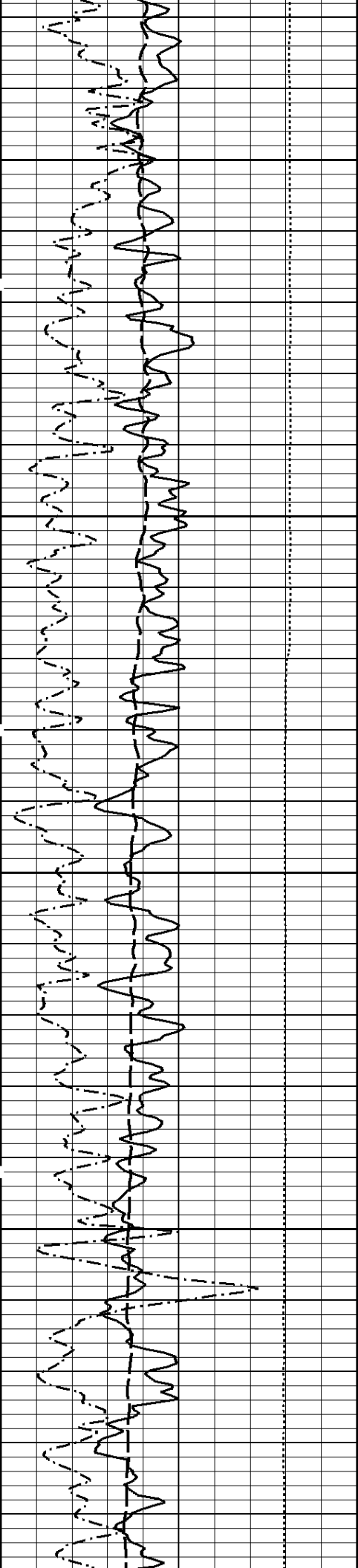
**1:240 MAIN SECTION**



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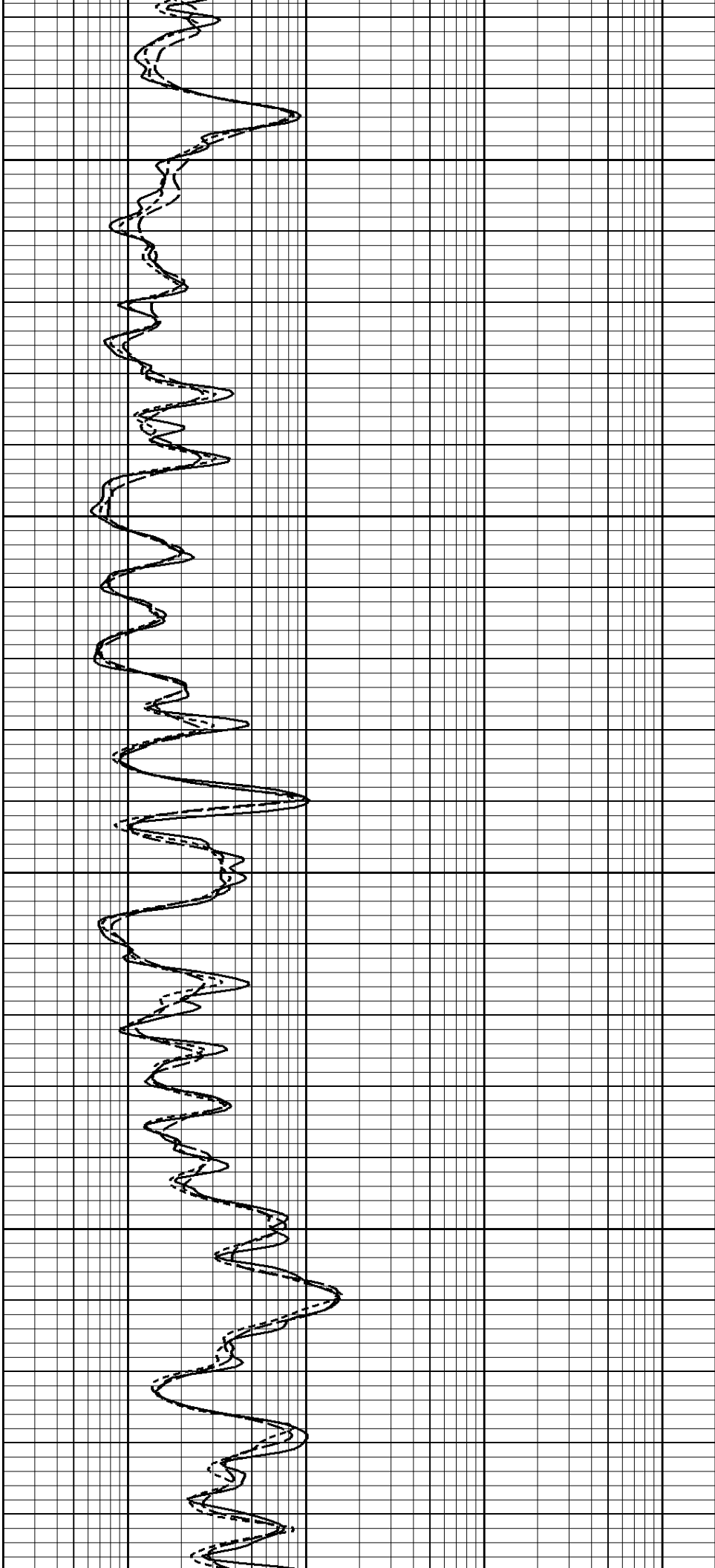
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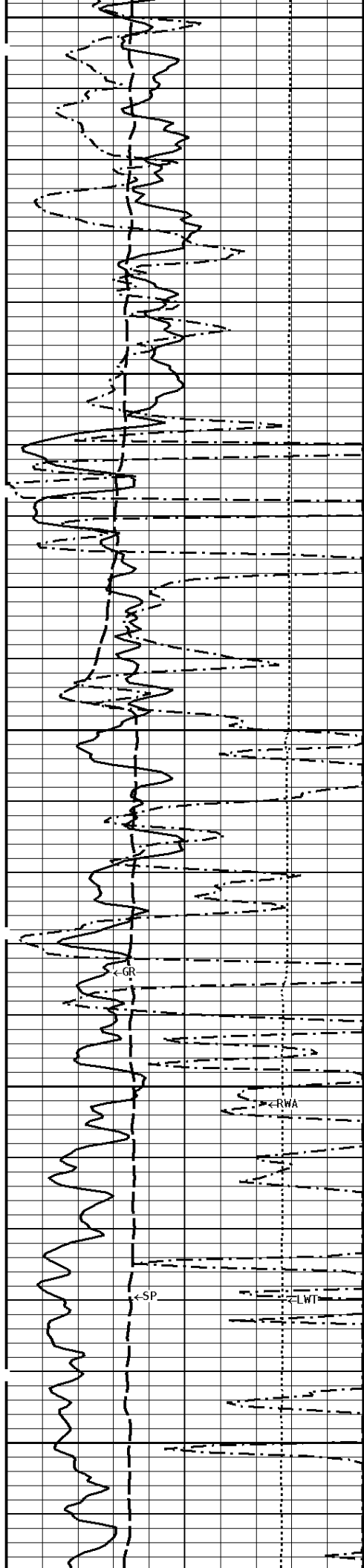




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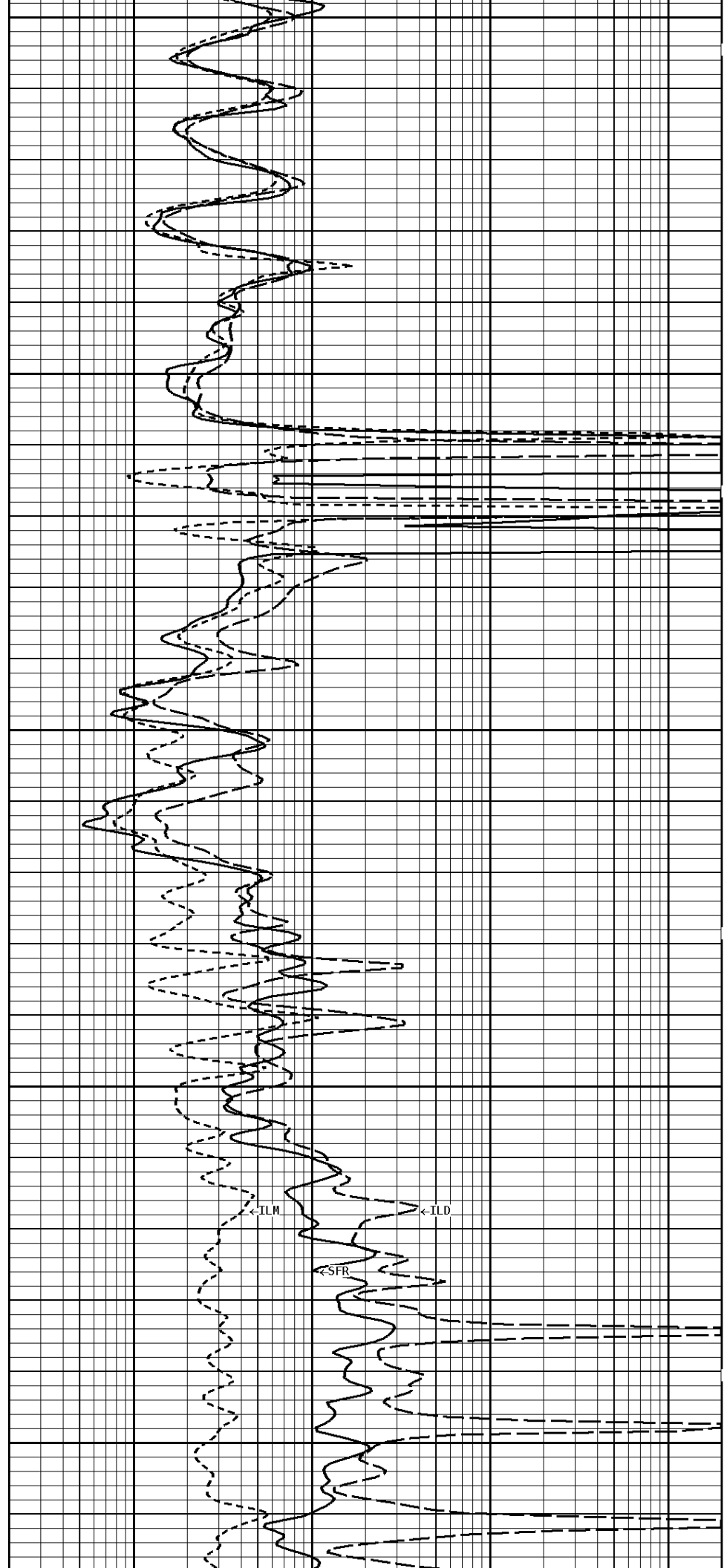


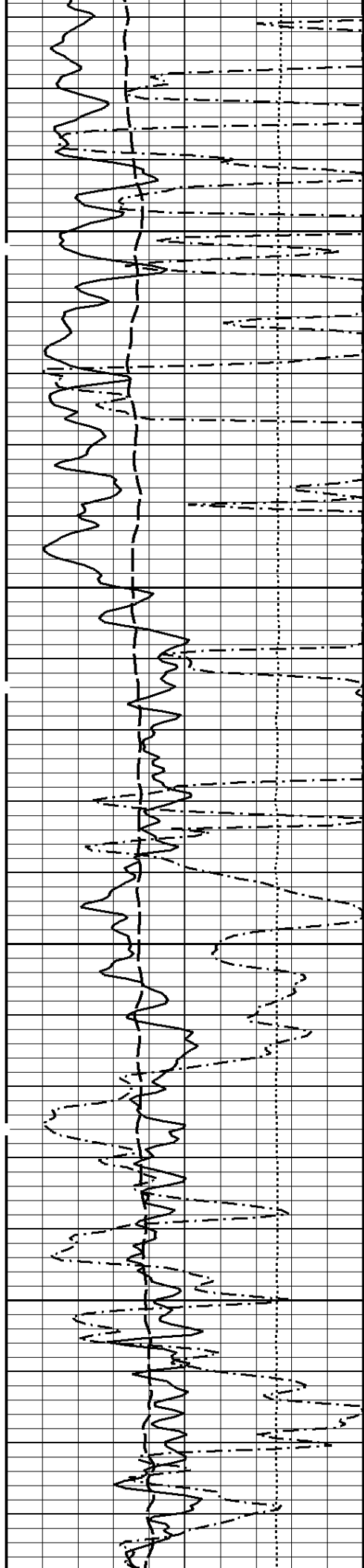


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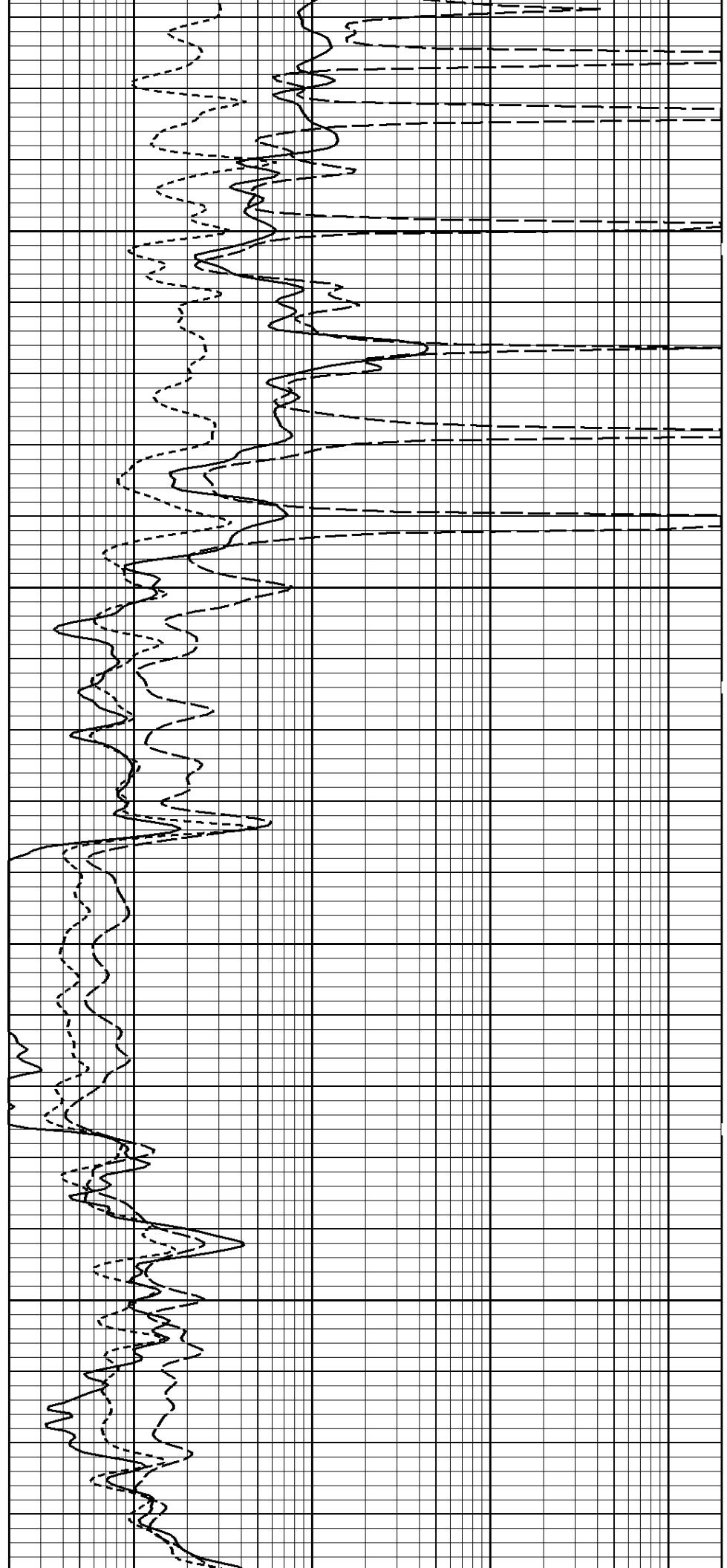
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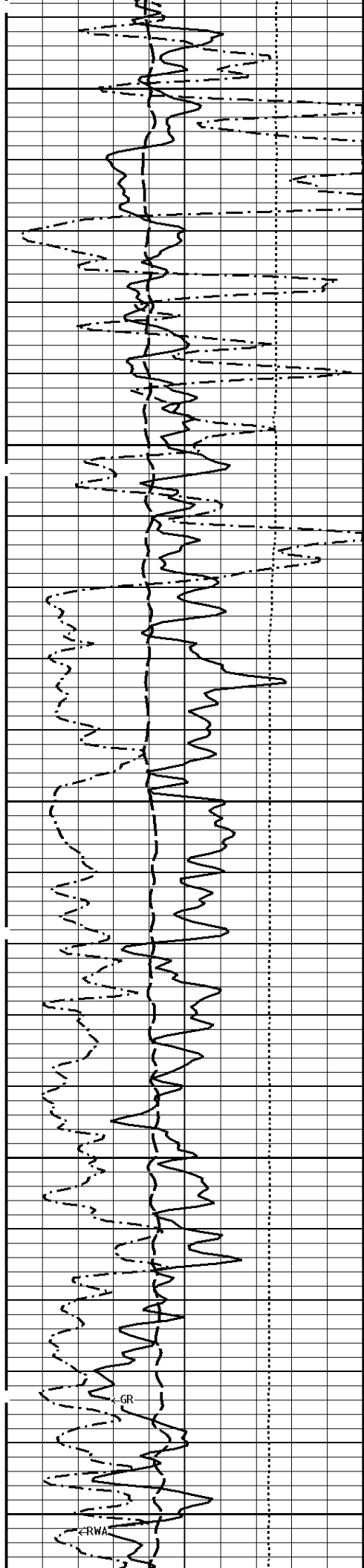




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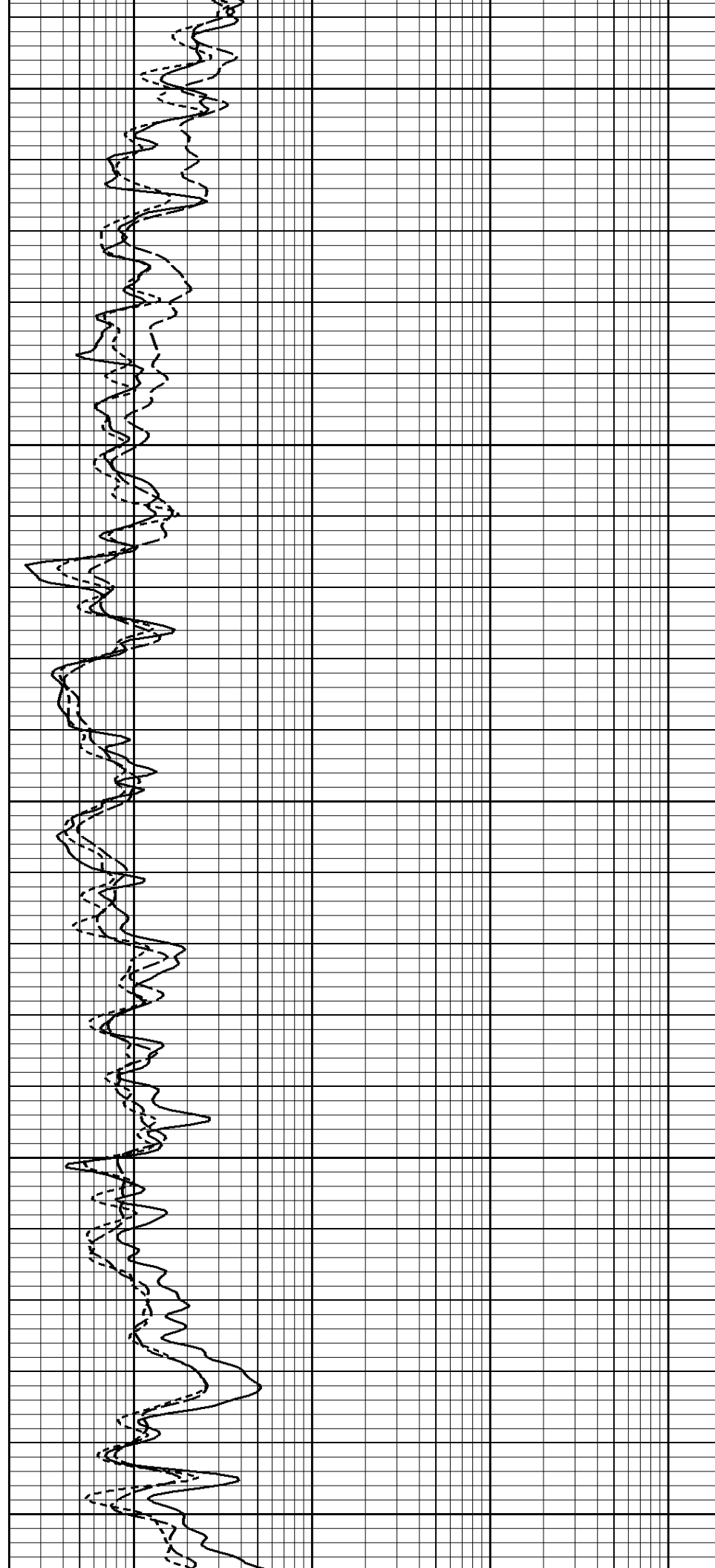
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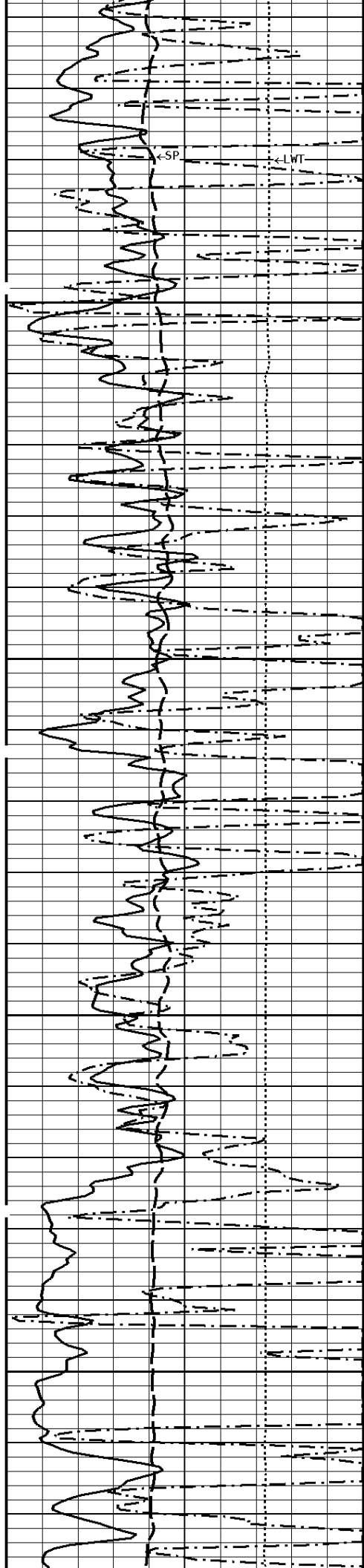




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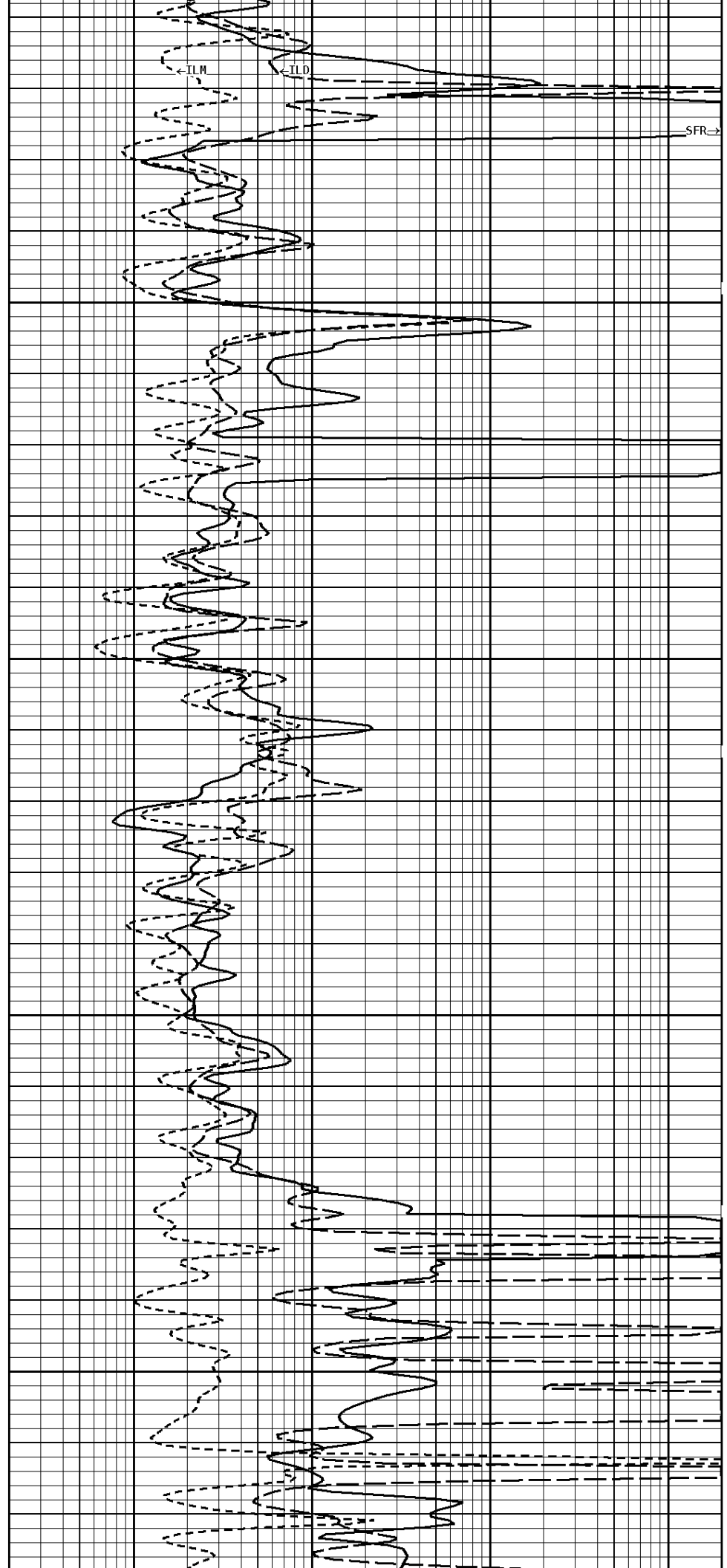
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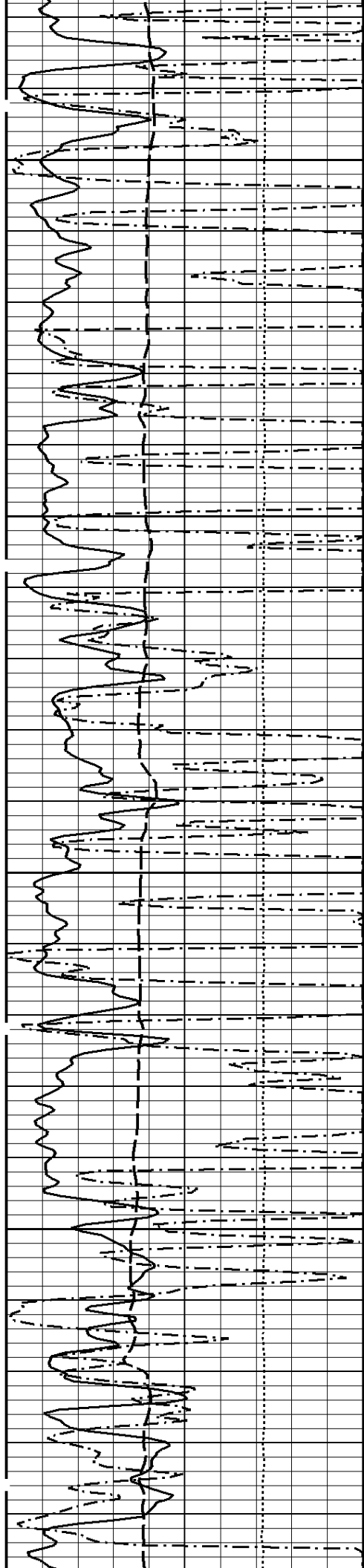




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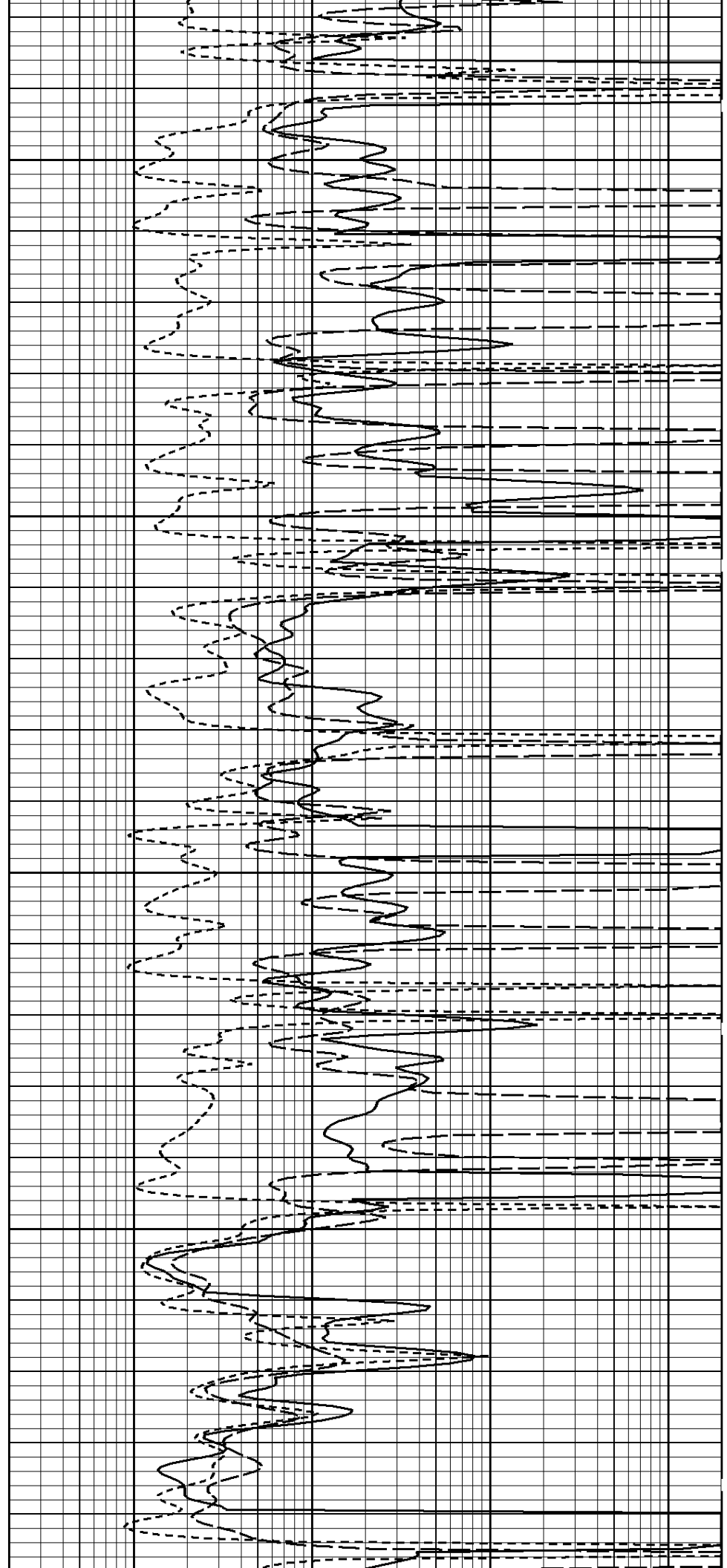
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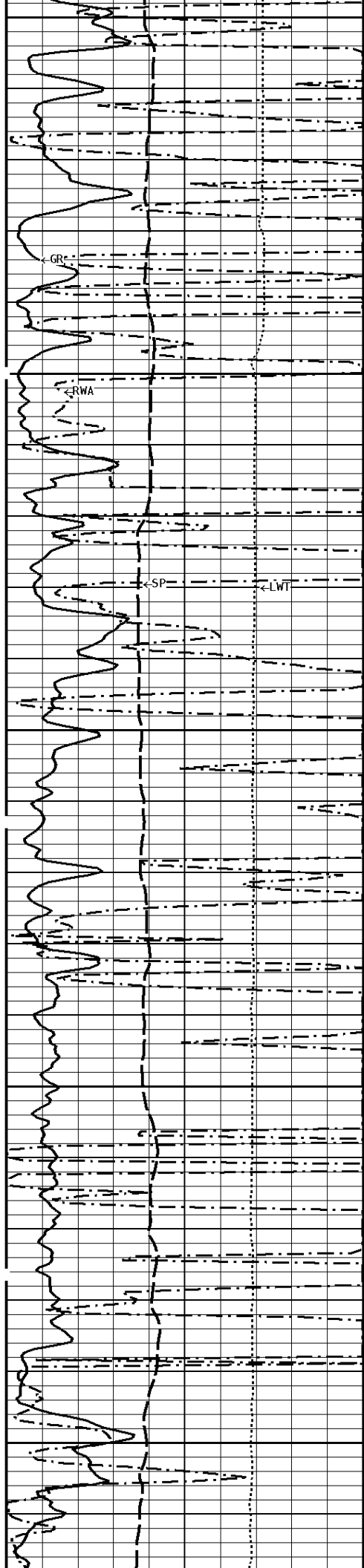


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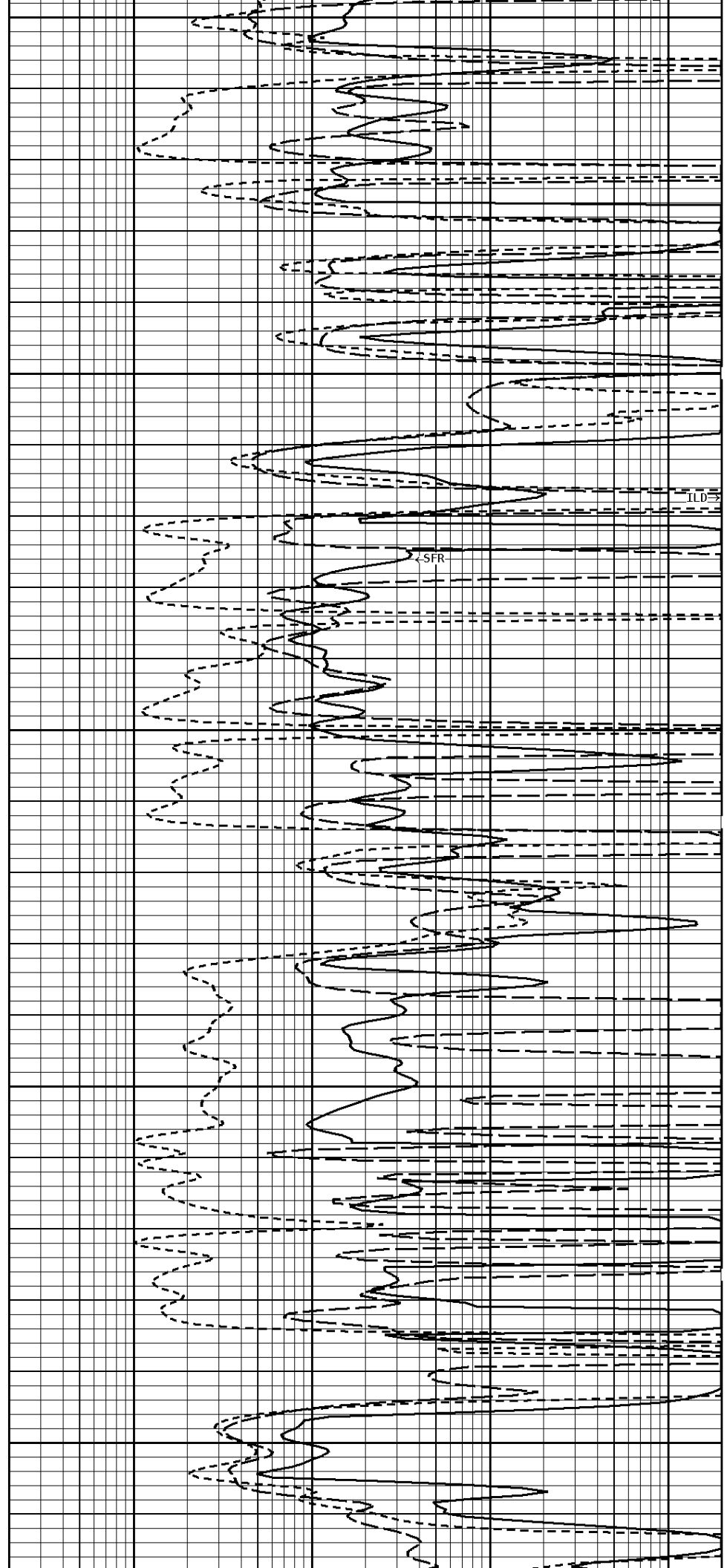


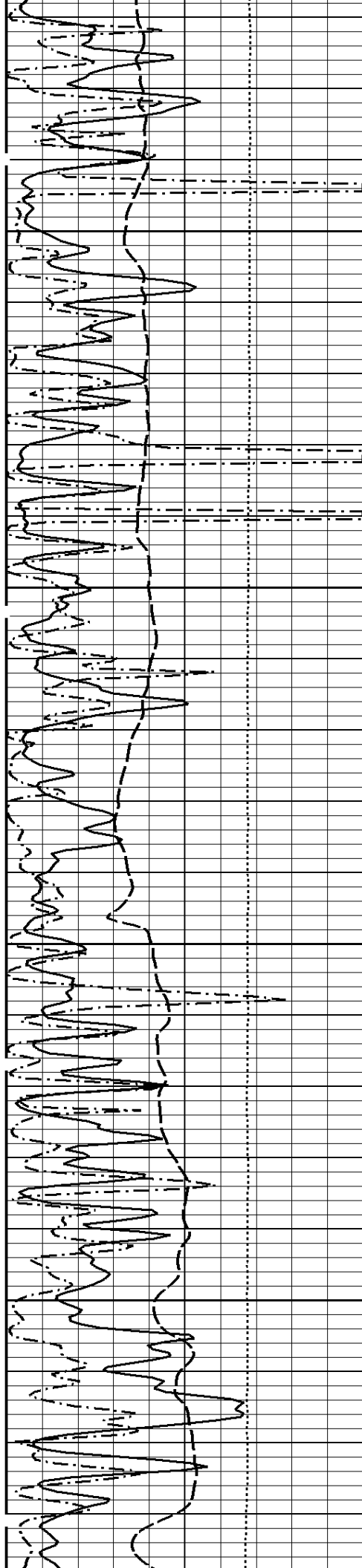
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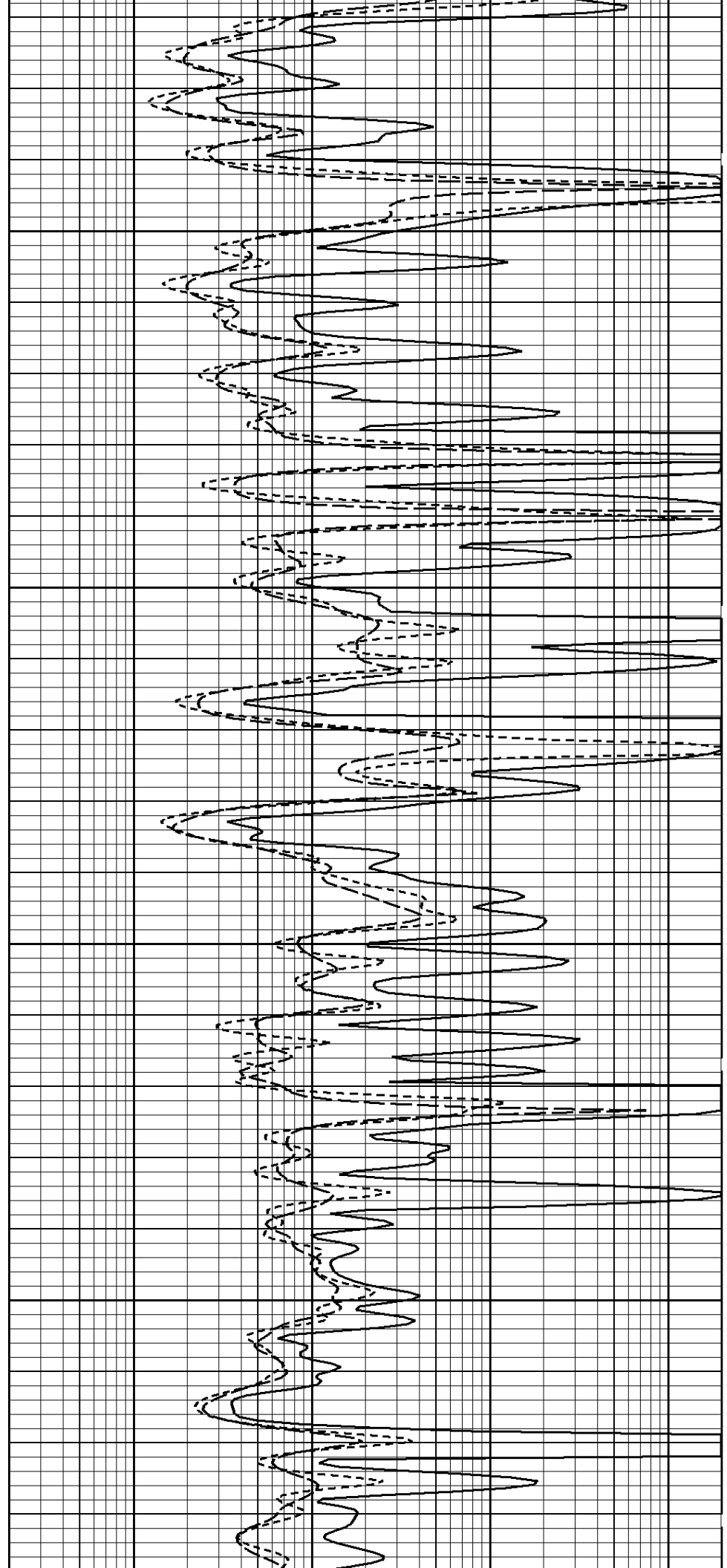
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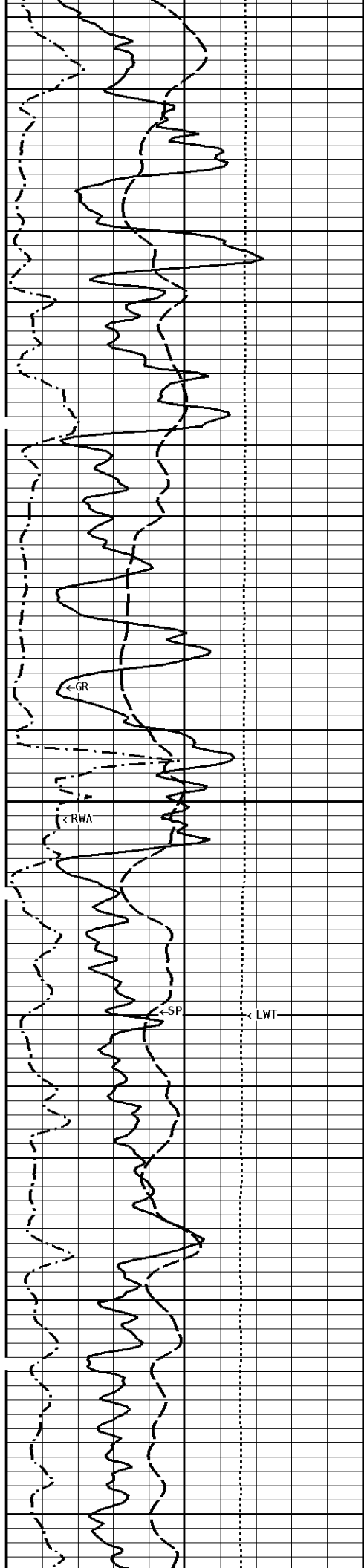




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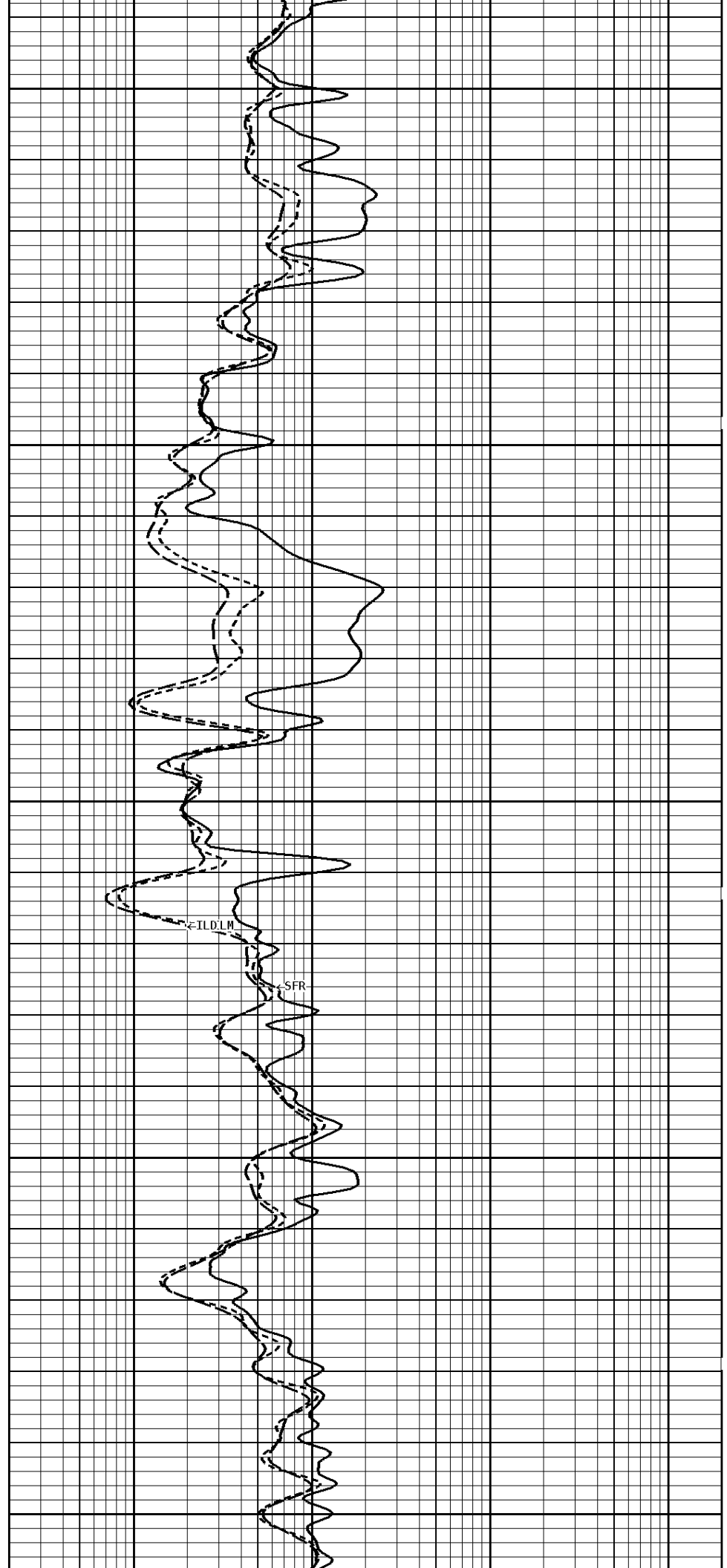
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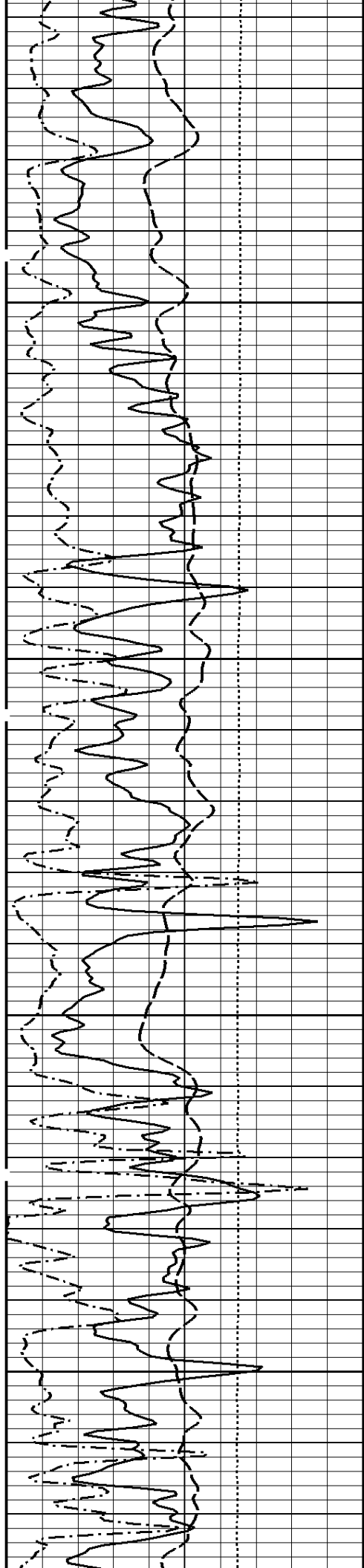




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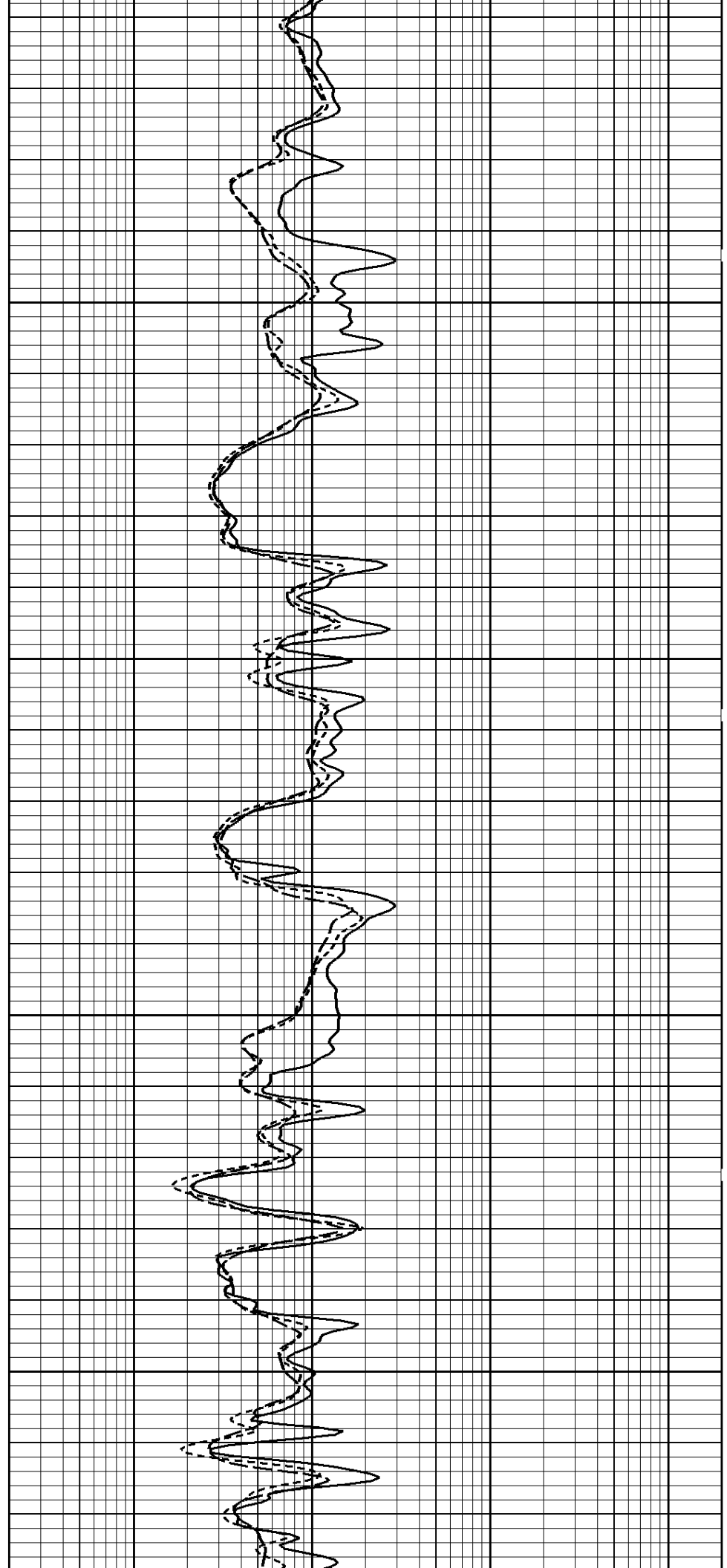
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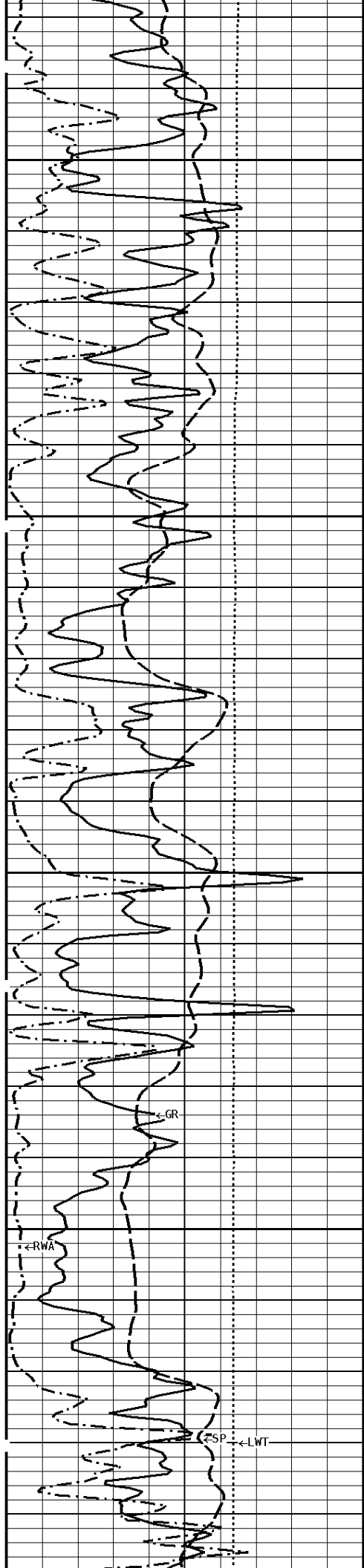




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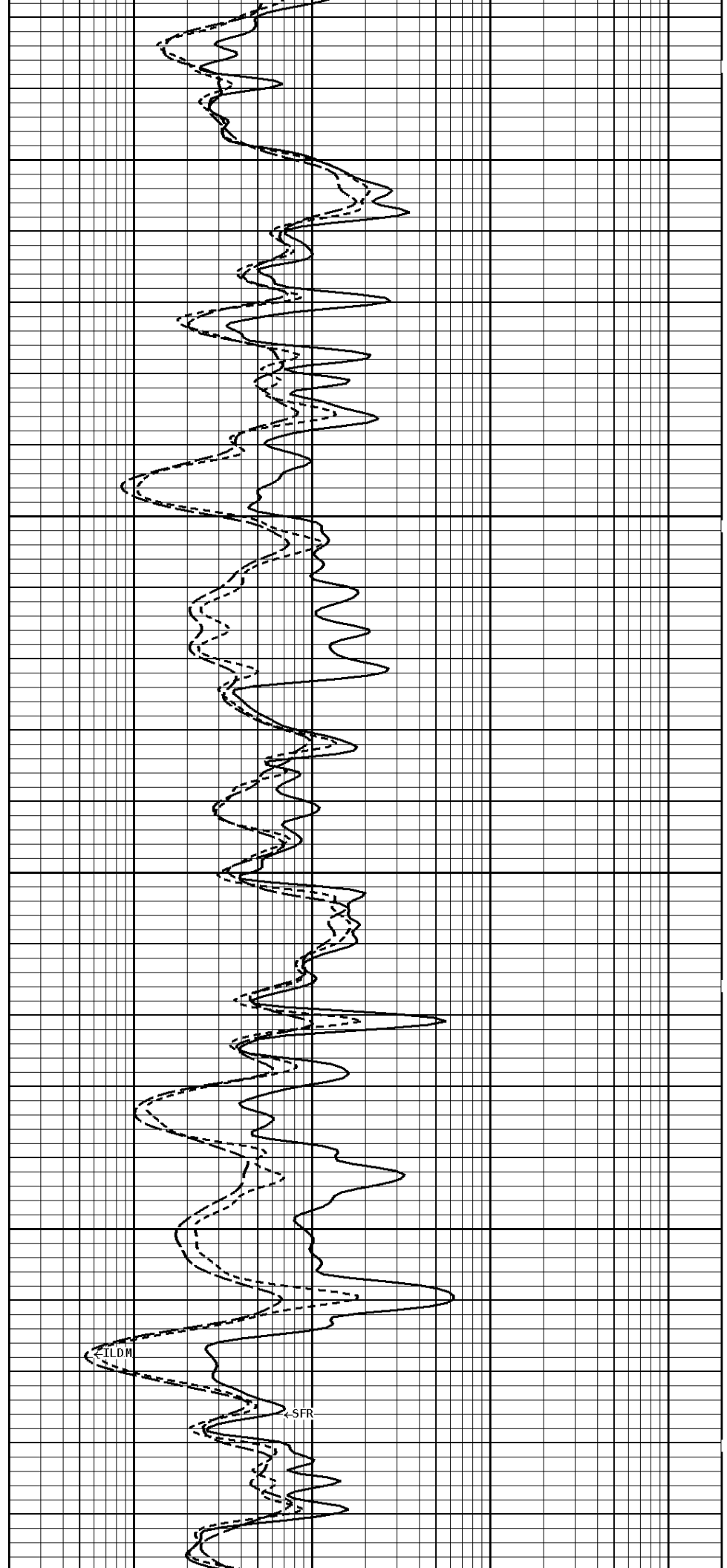
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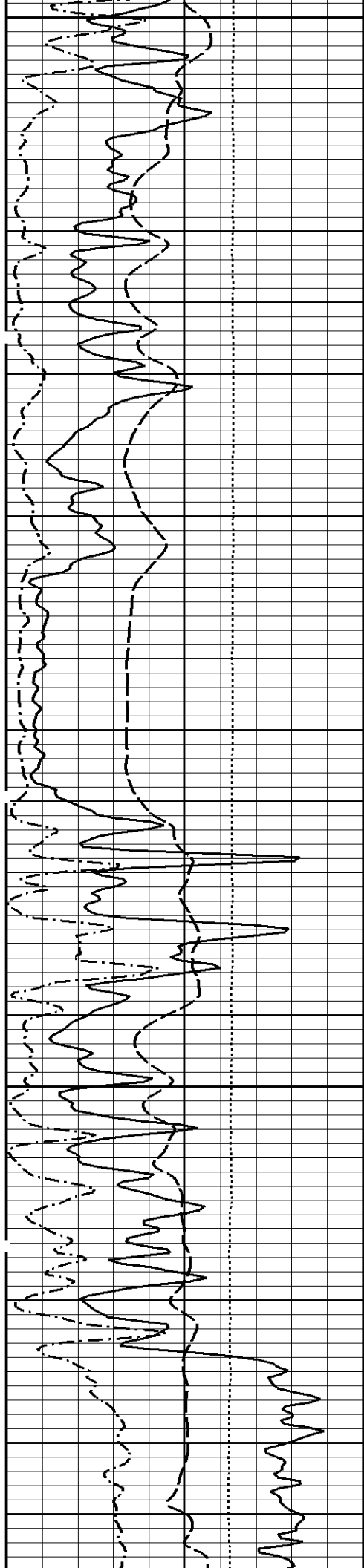




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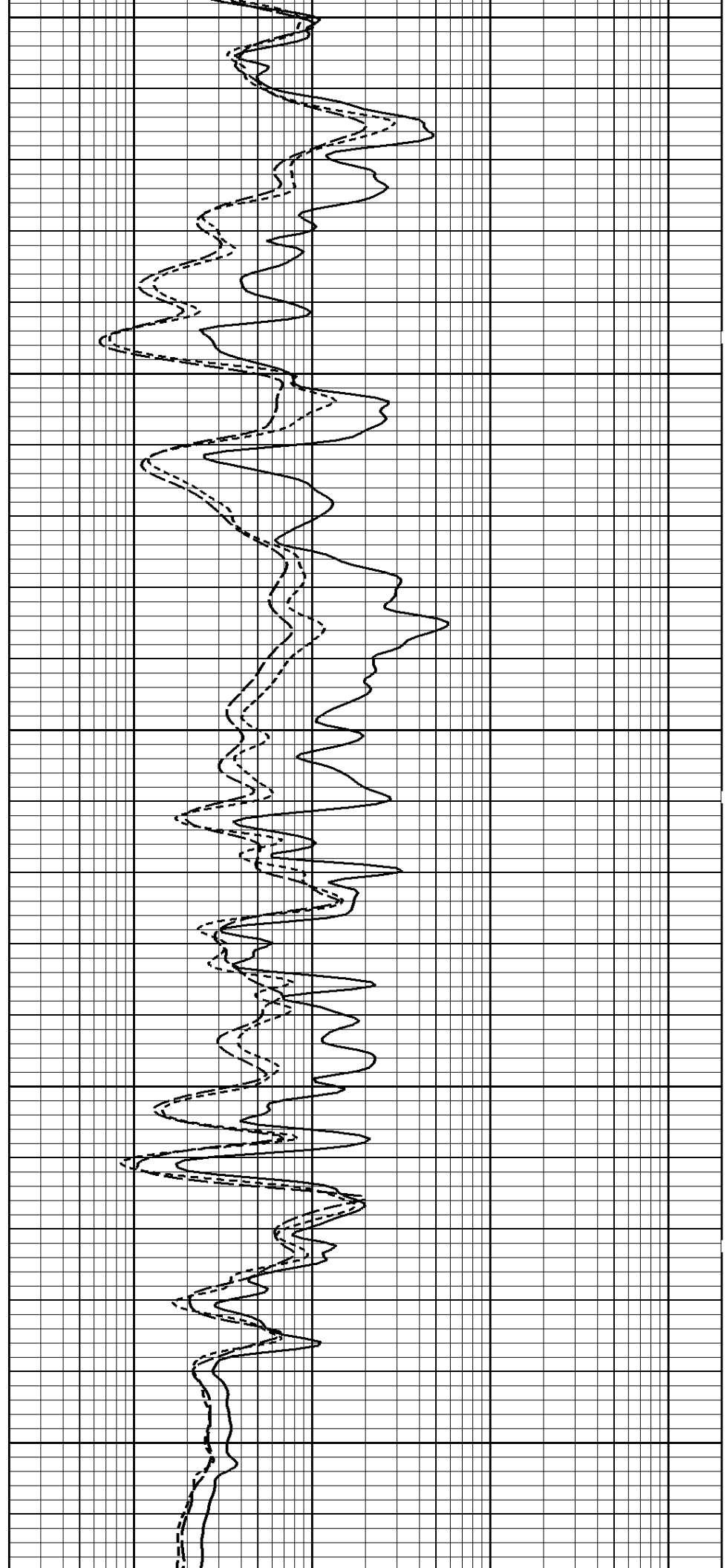


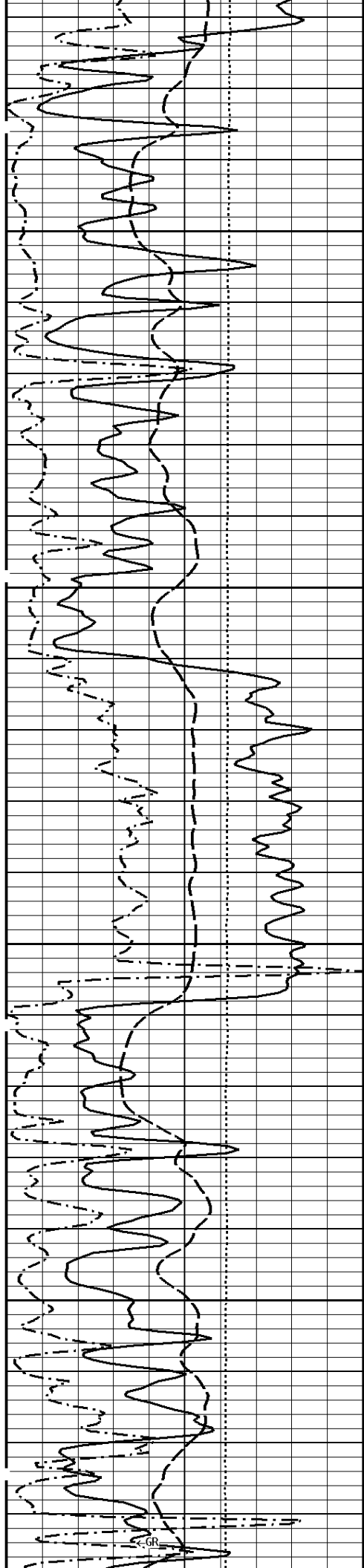


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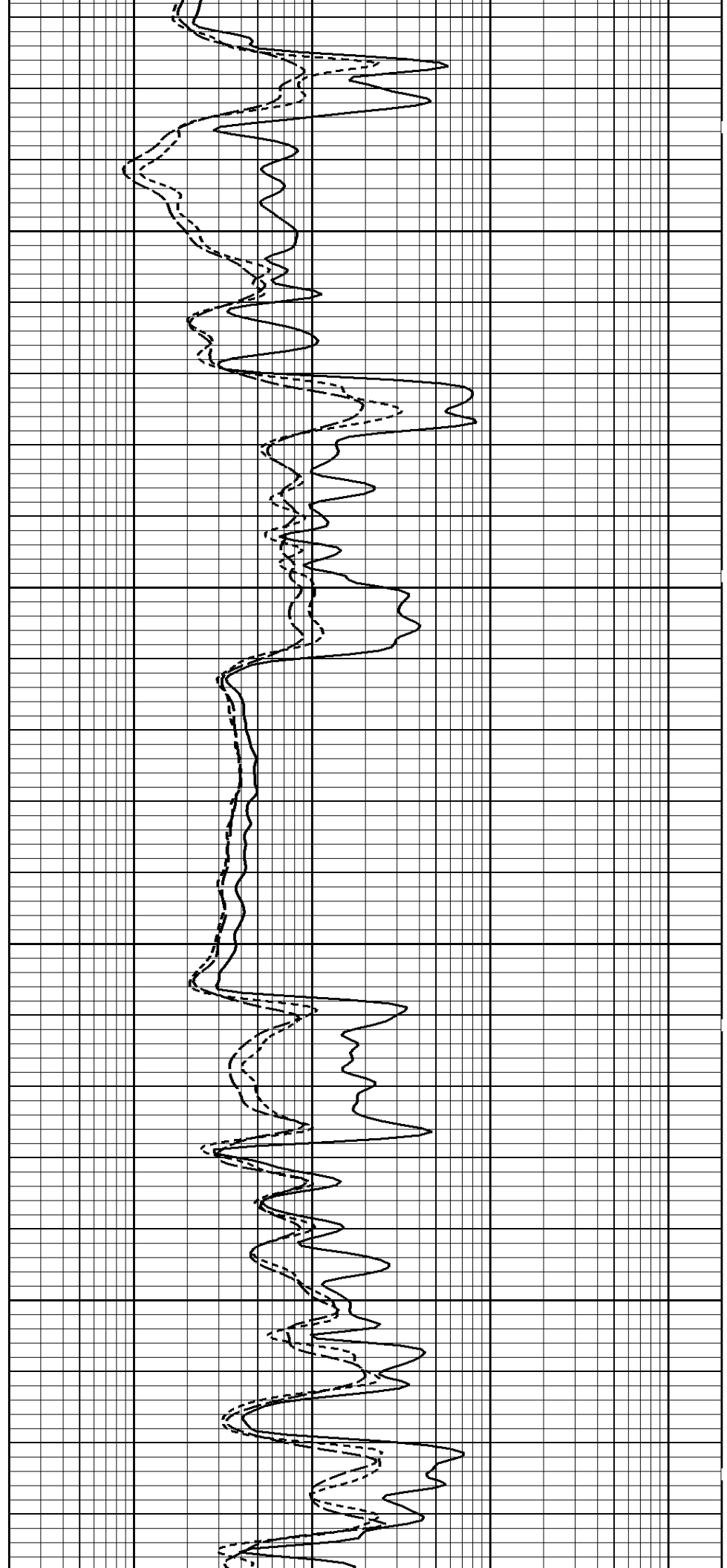
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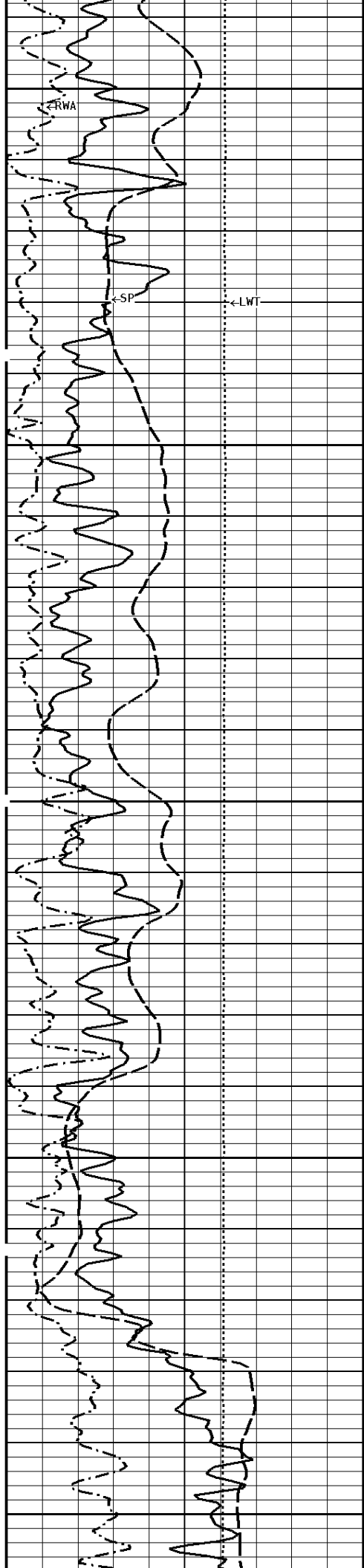




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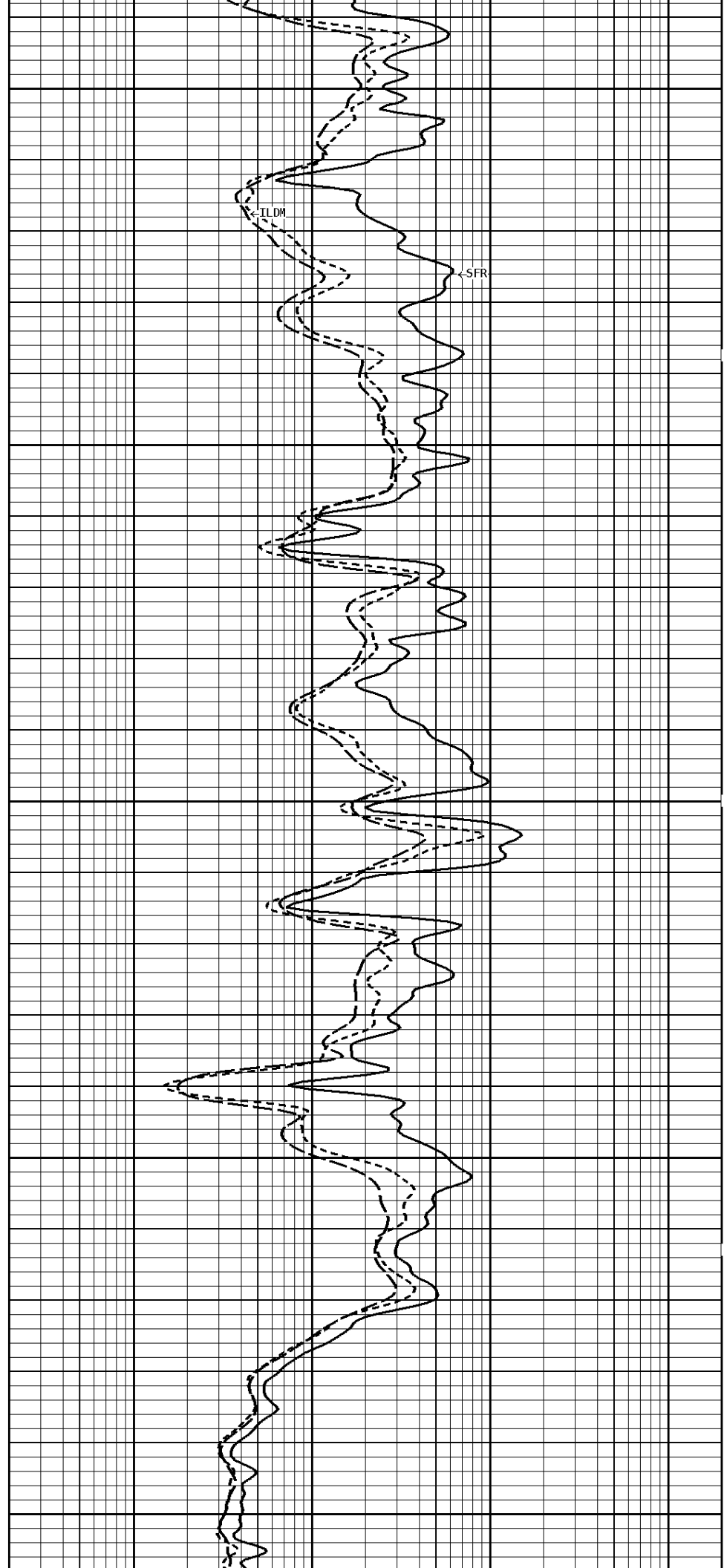
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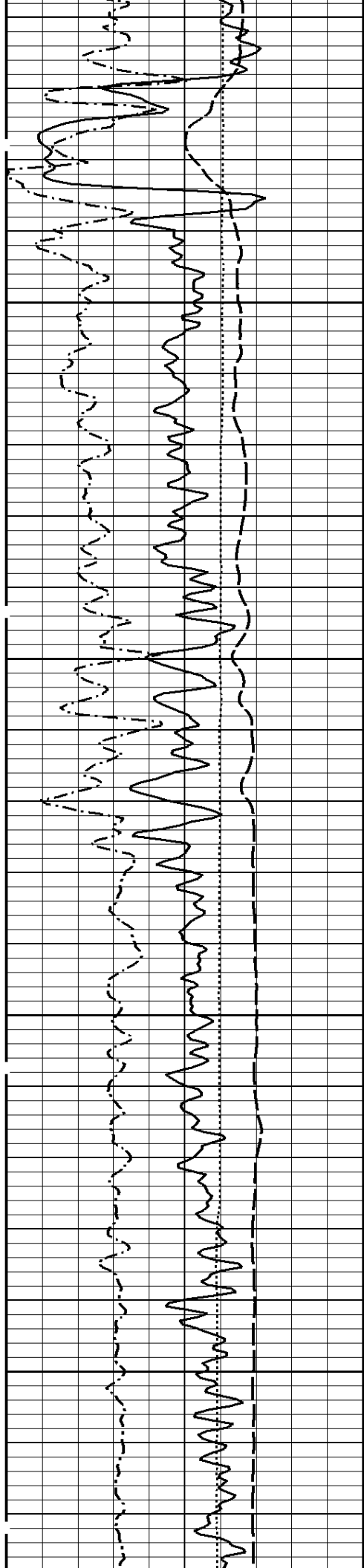




3700

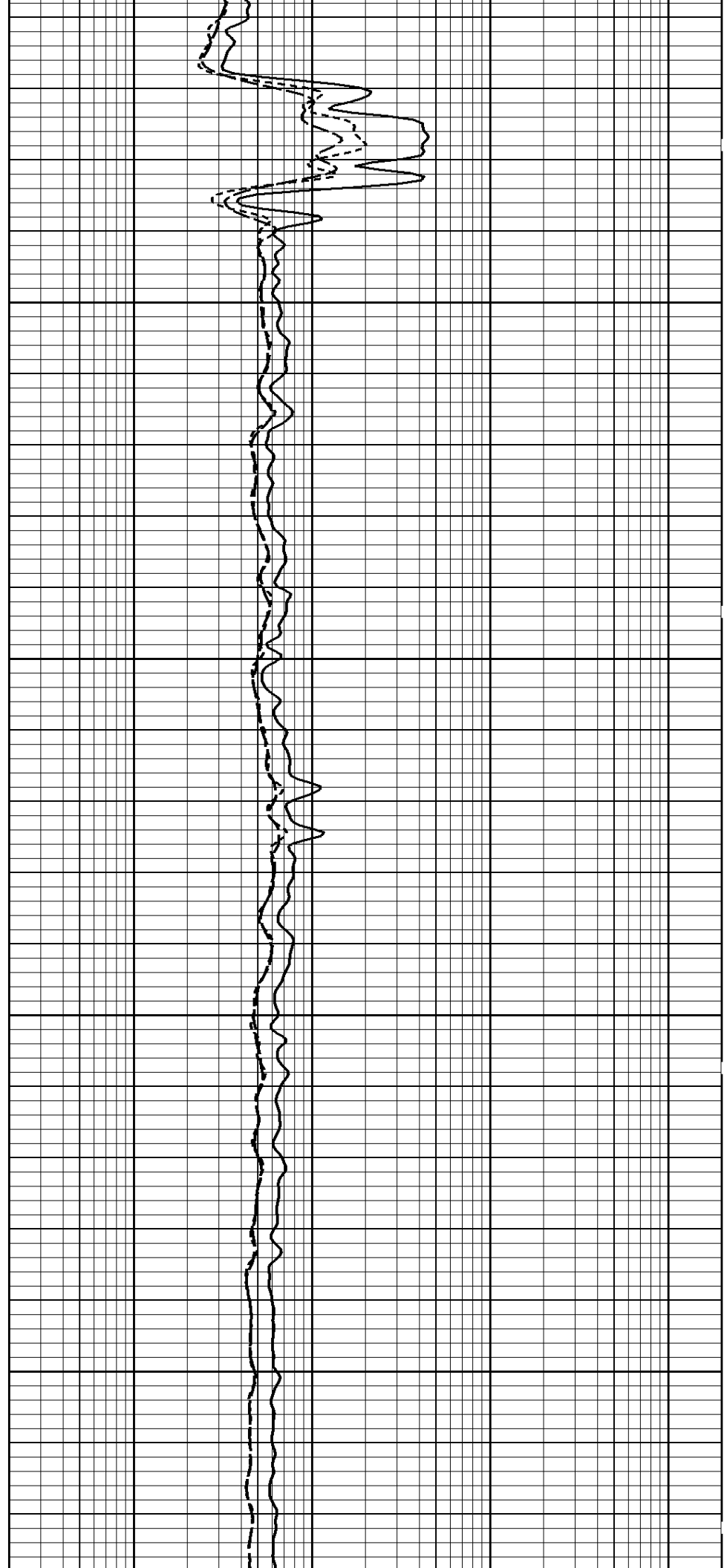
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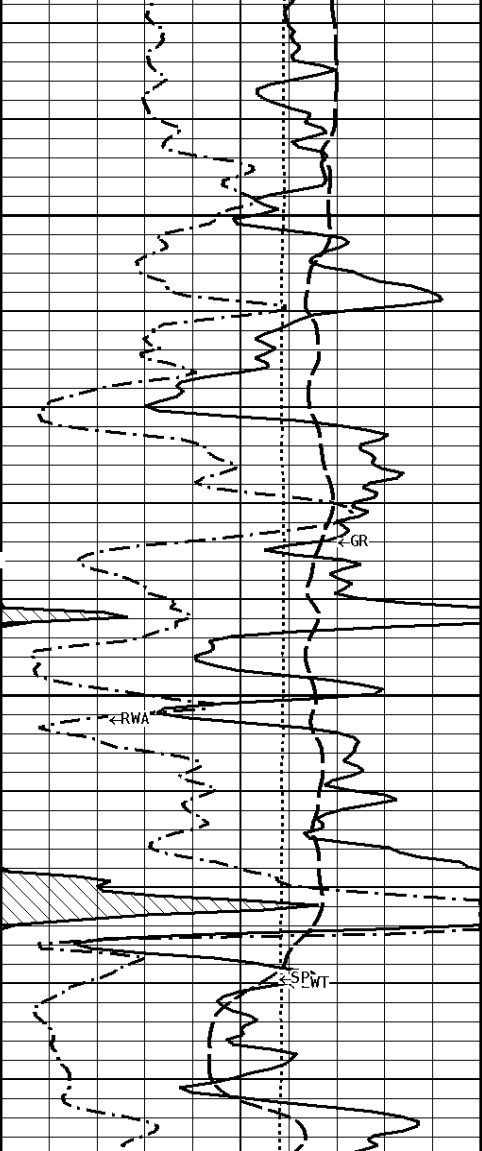


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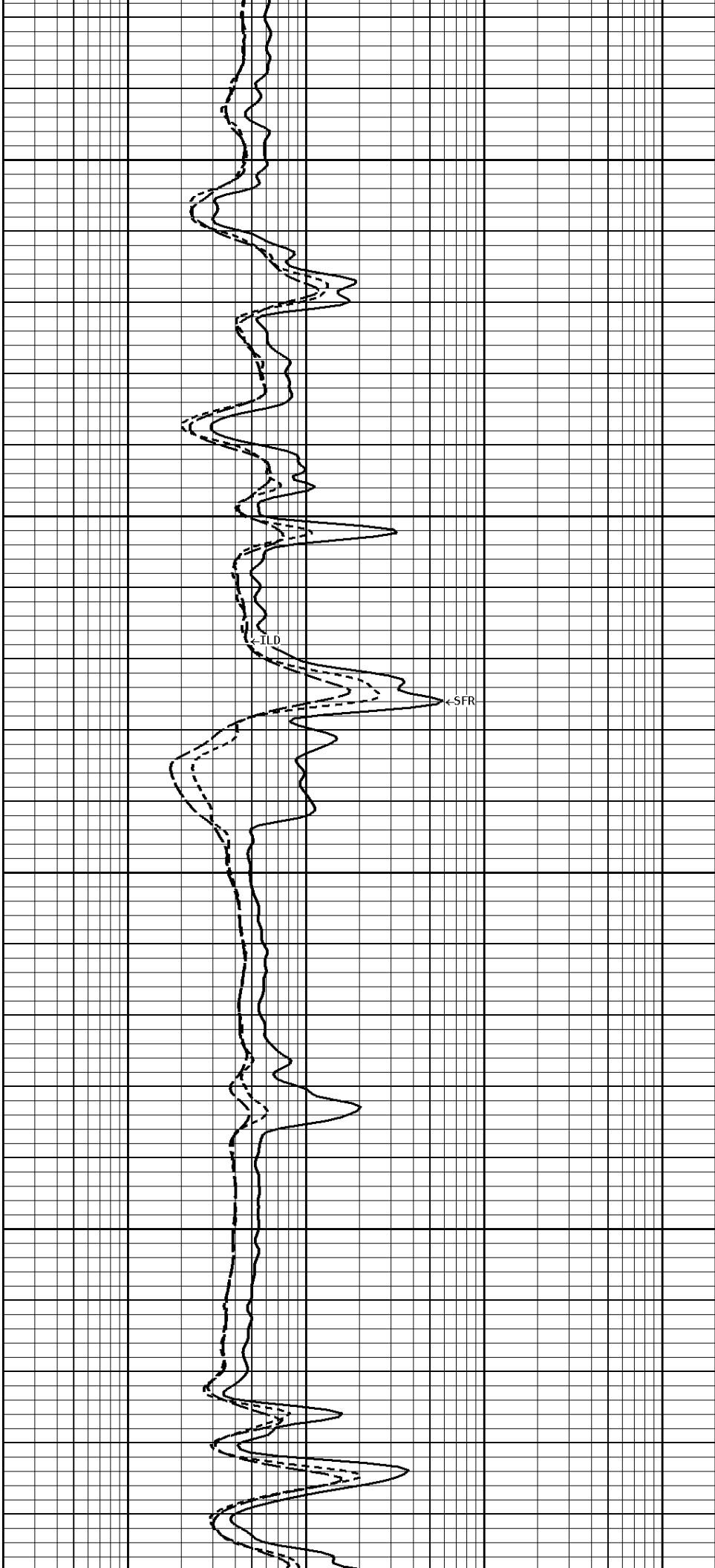
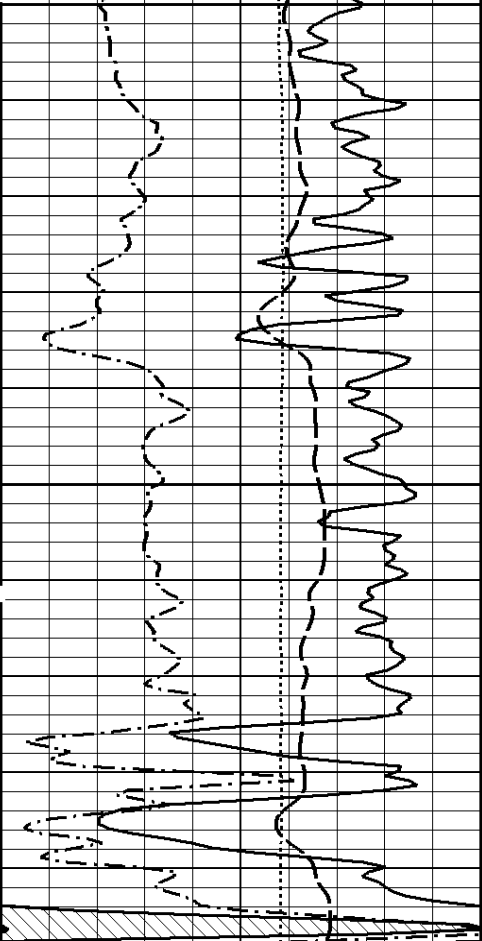
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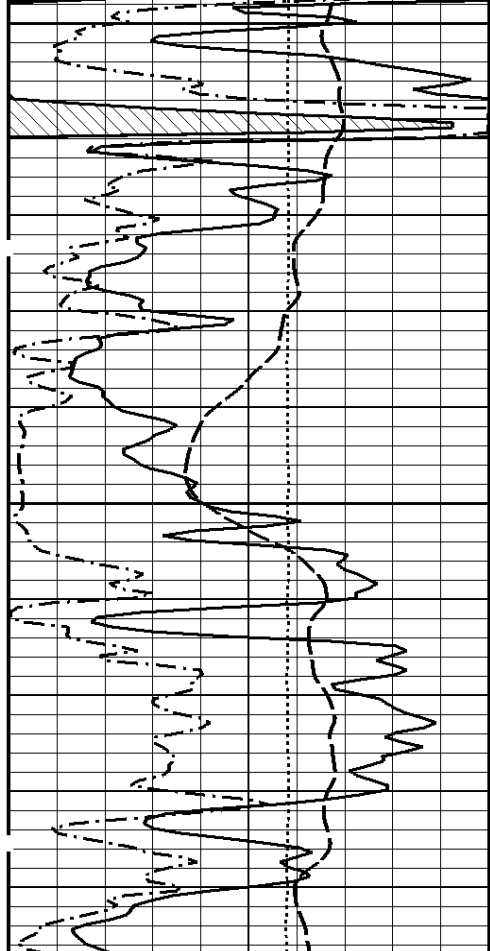
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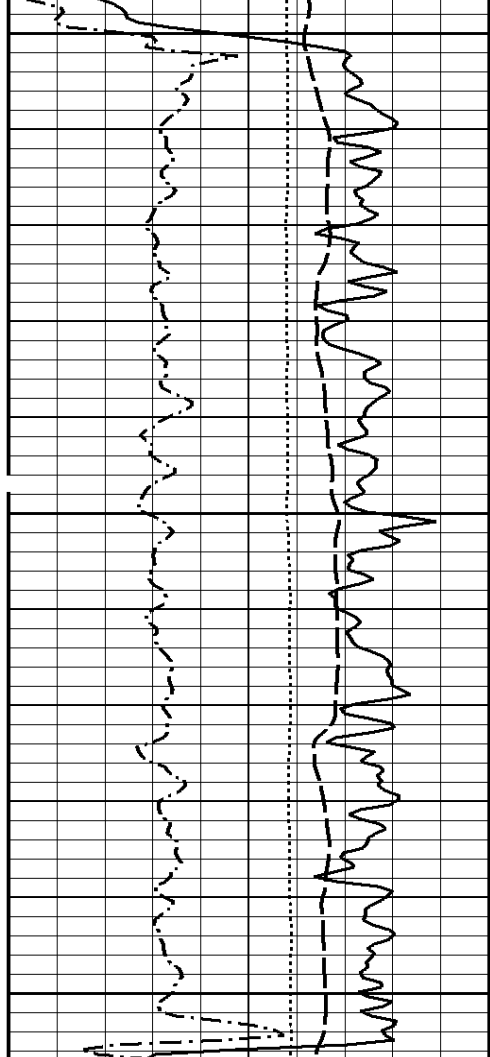
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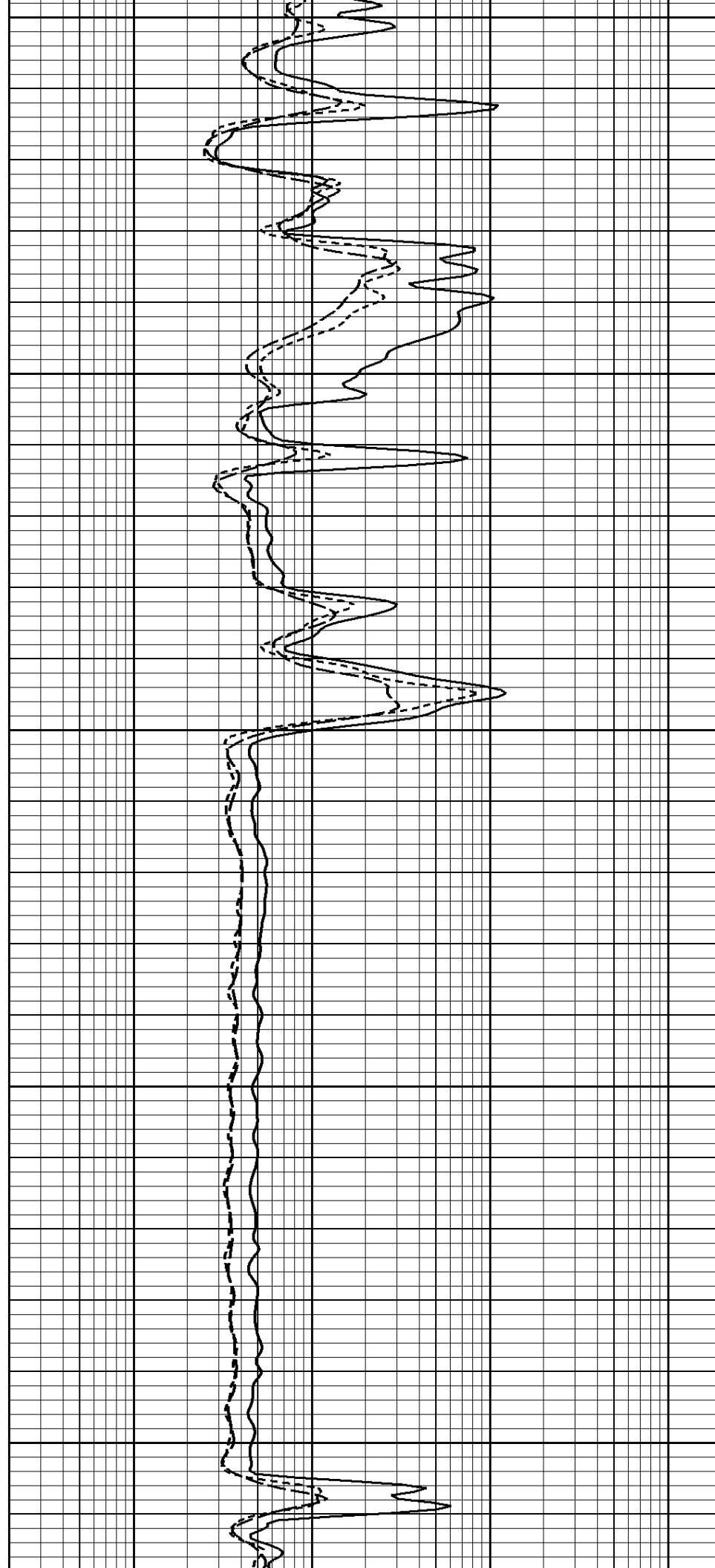
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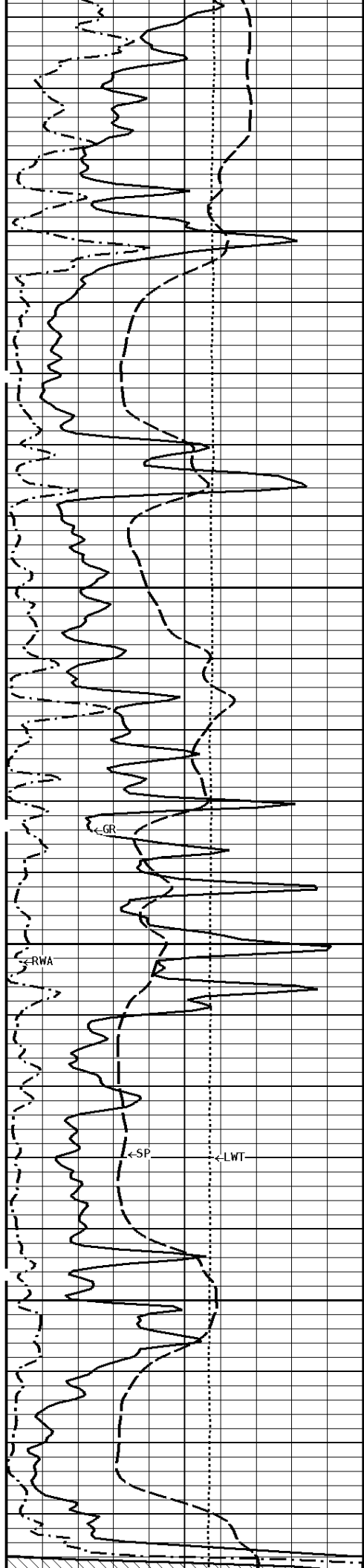


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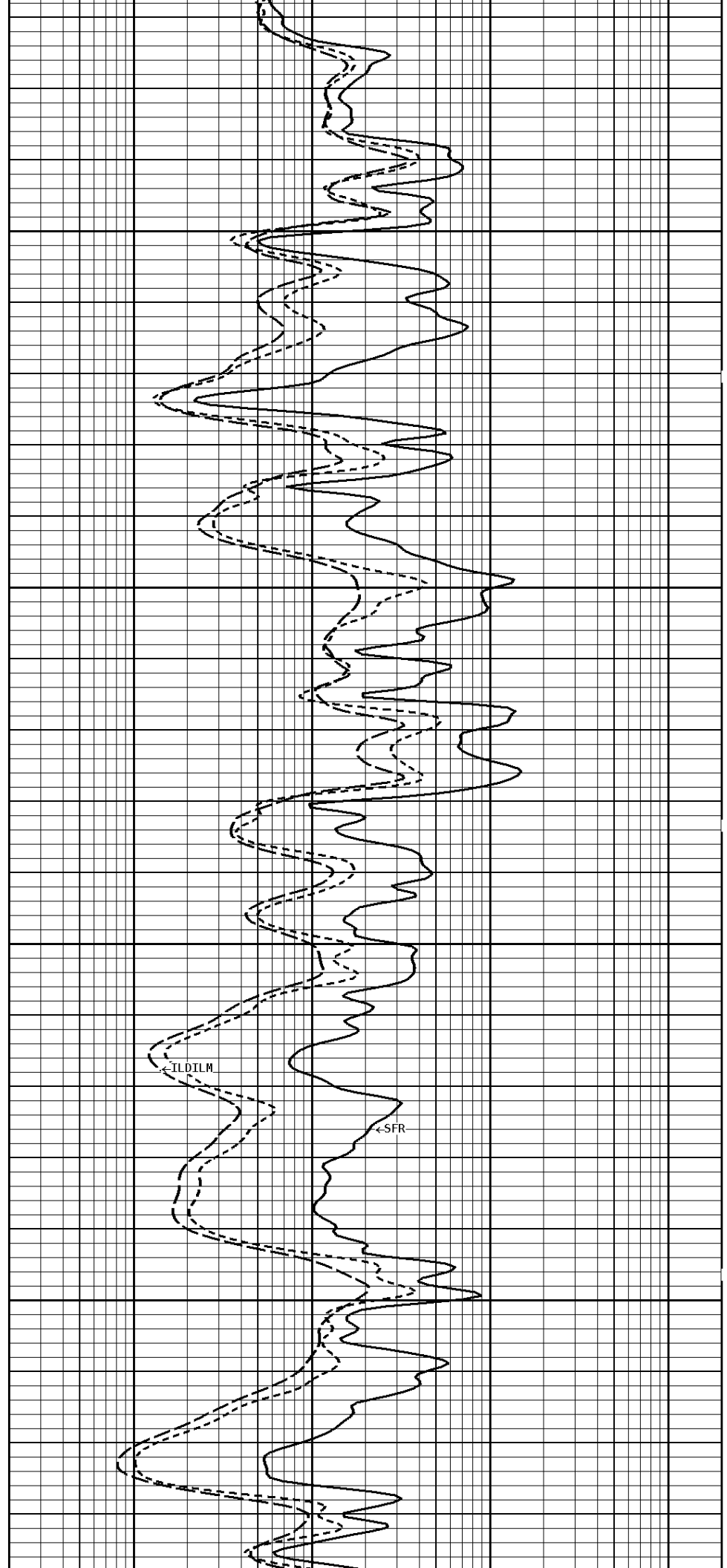
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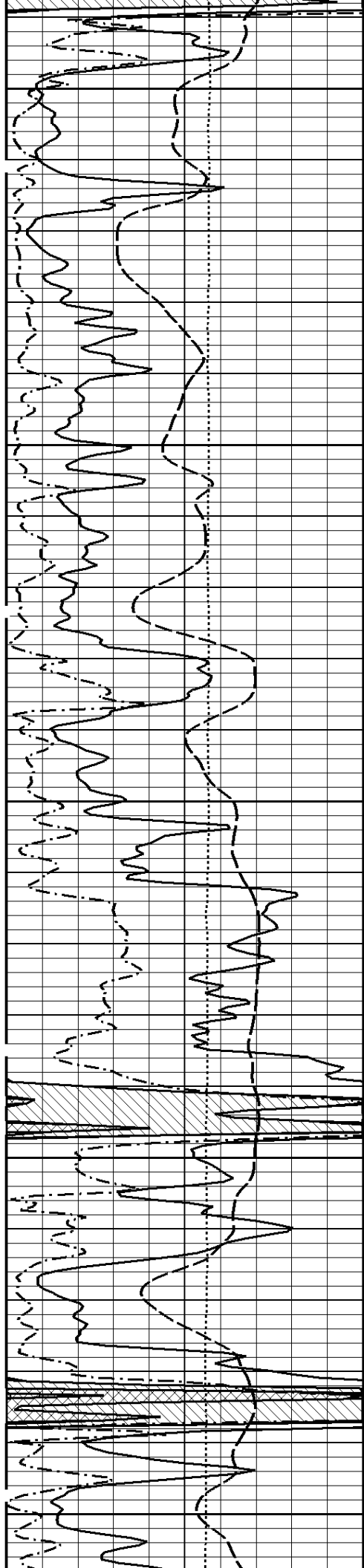




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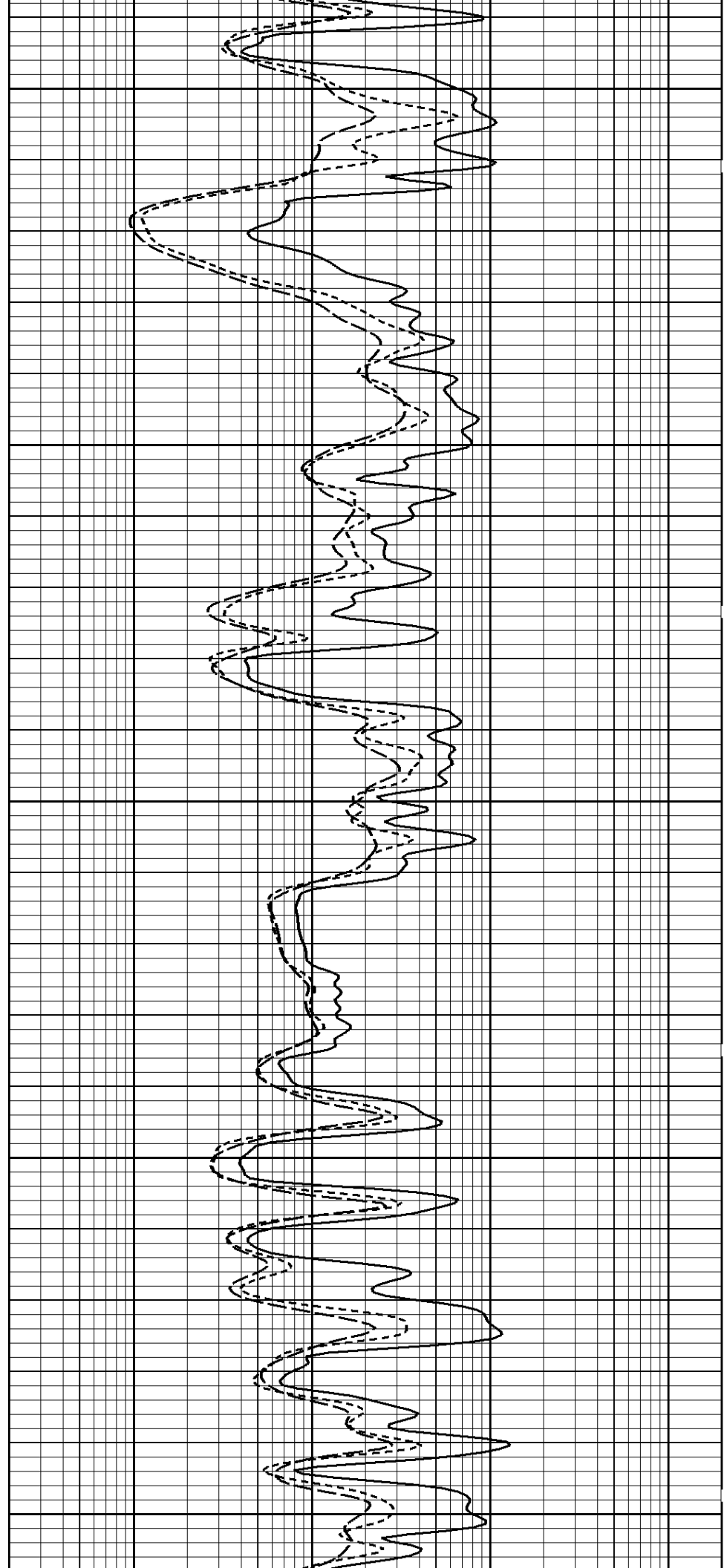
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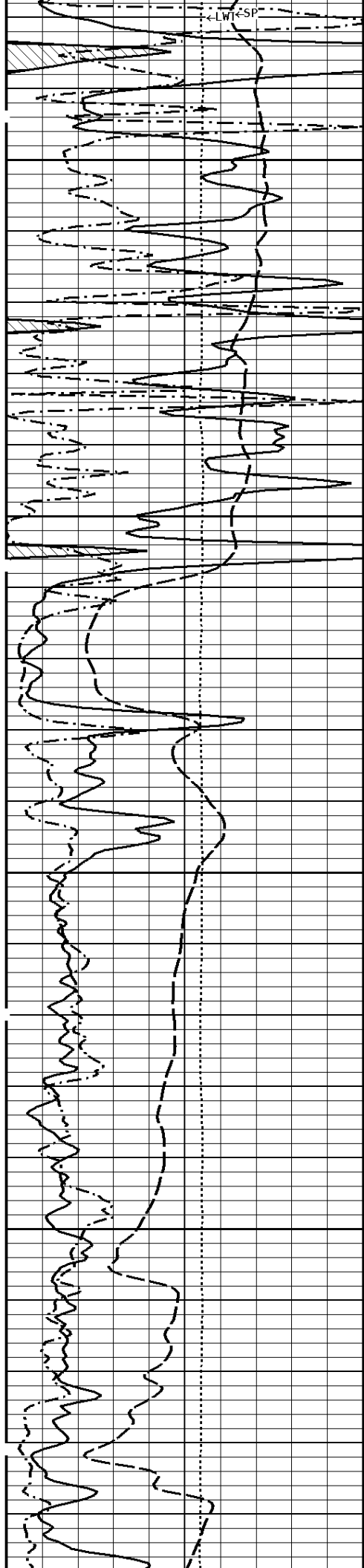


4800

4900

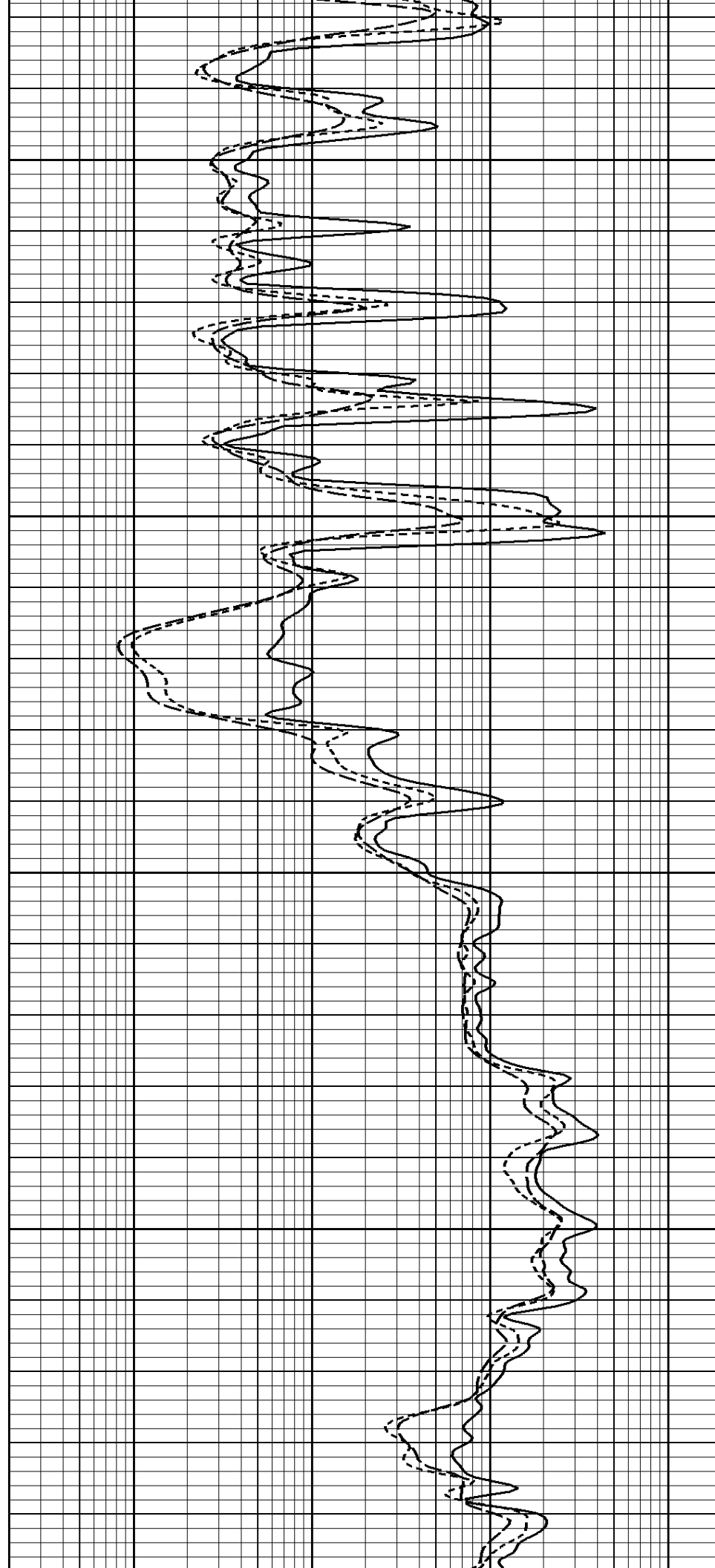


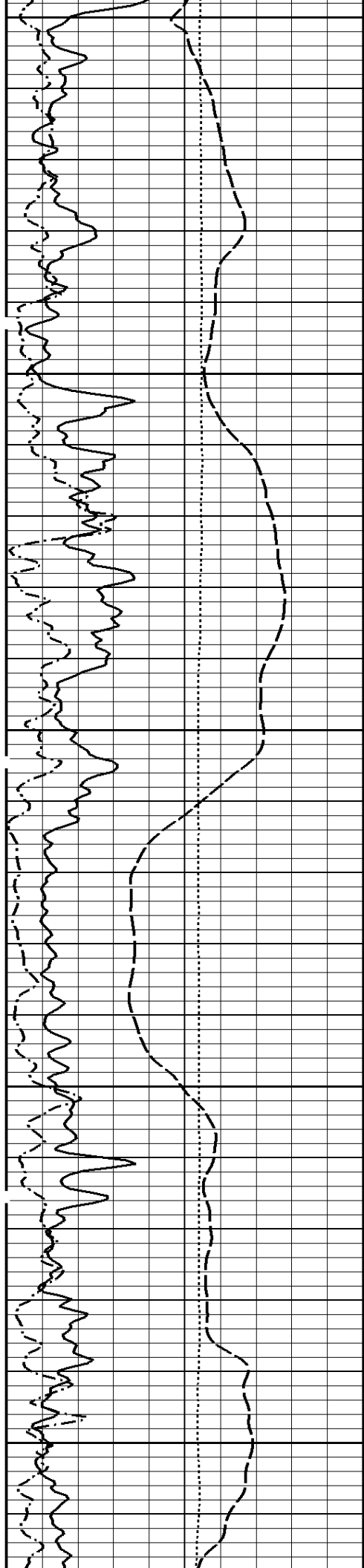




5200

5300

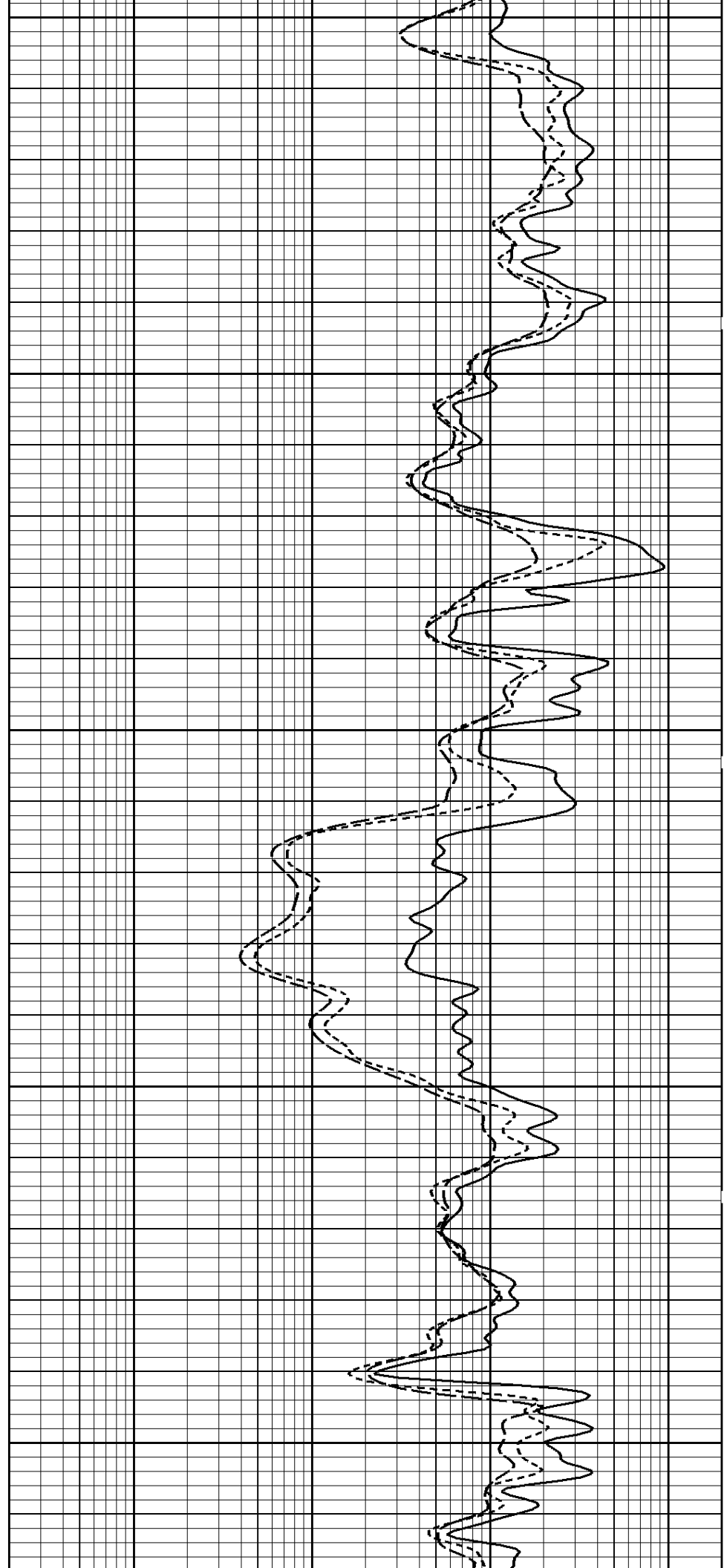


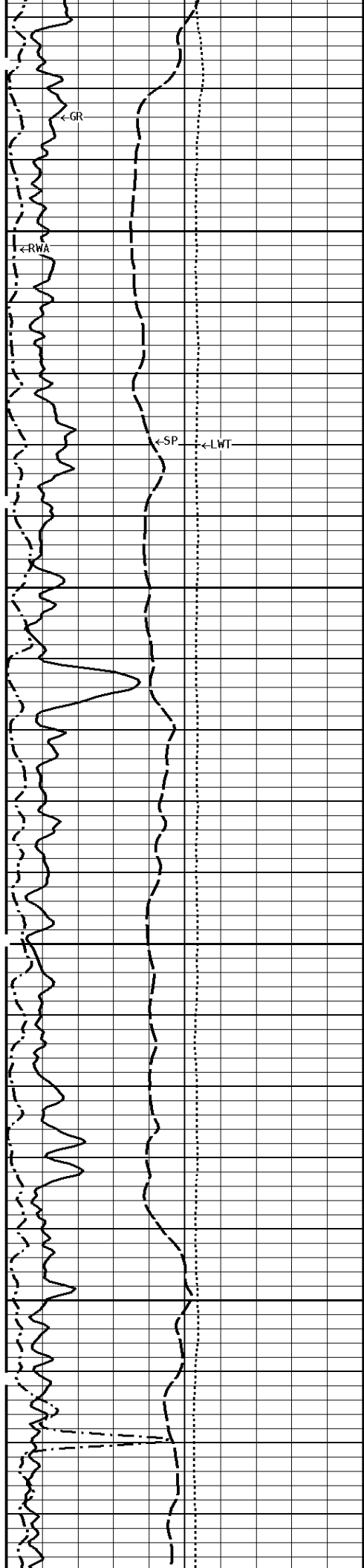


5400

5500

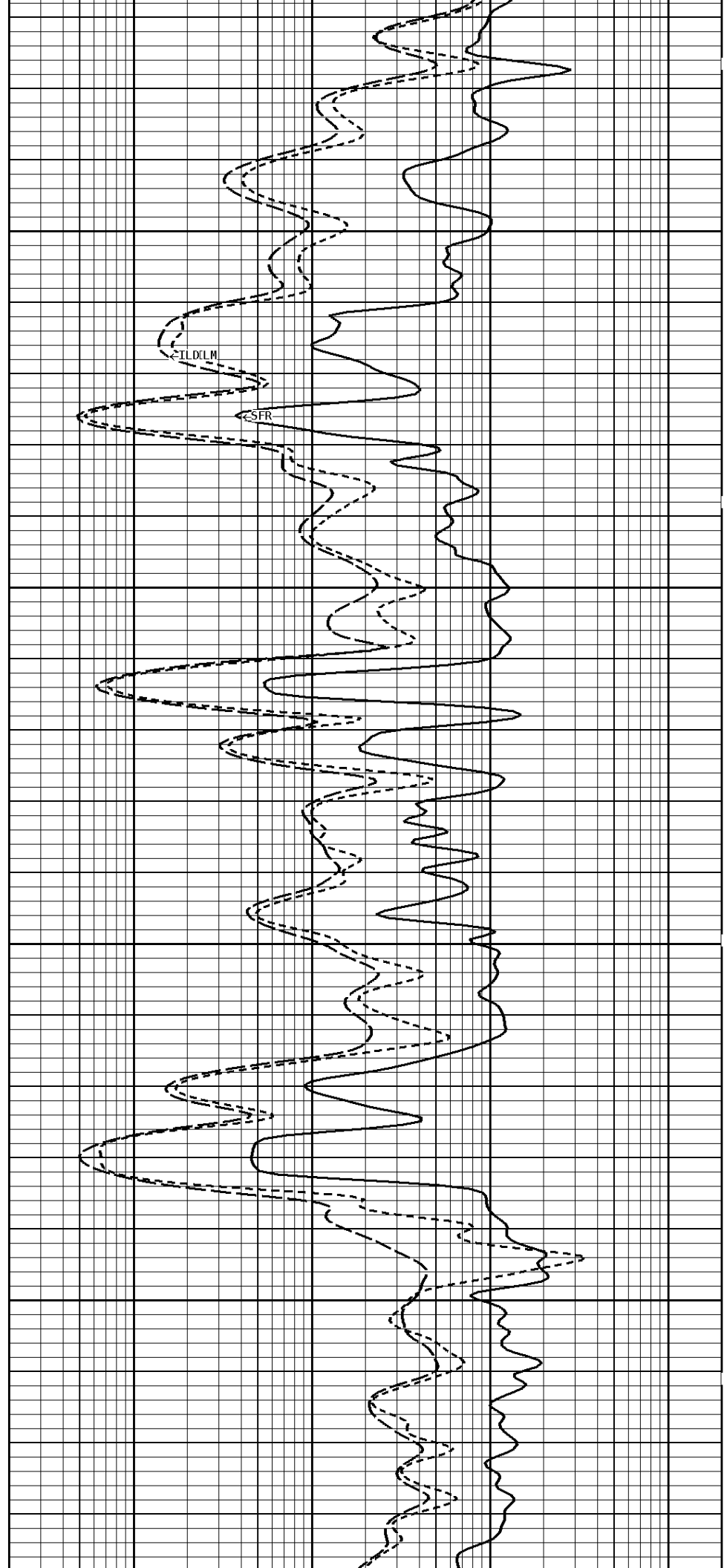
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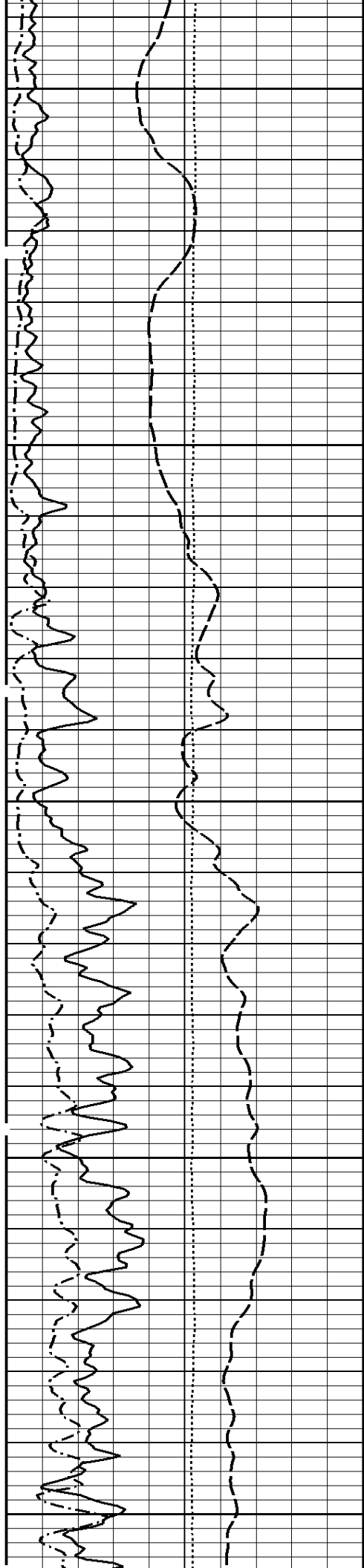




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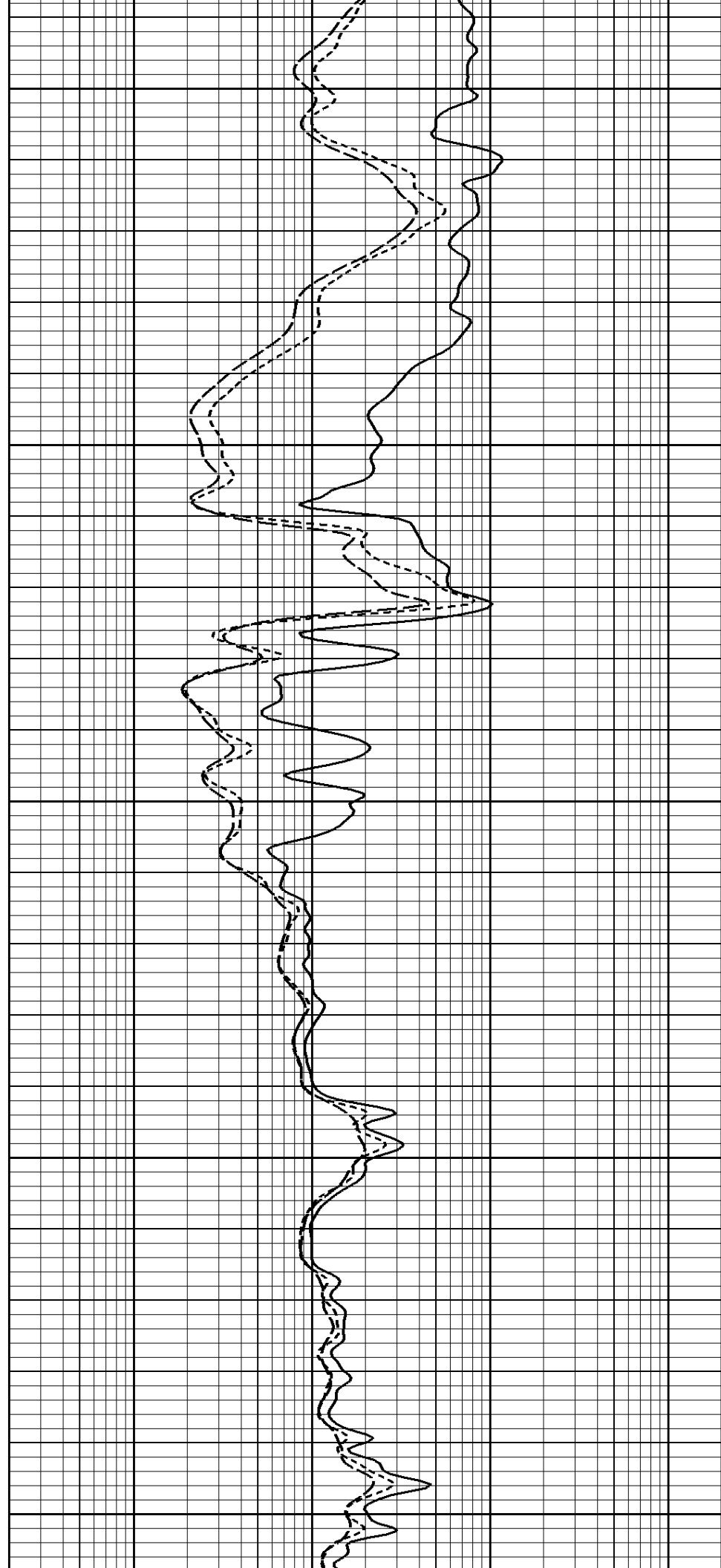
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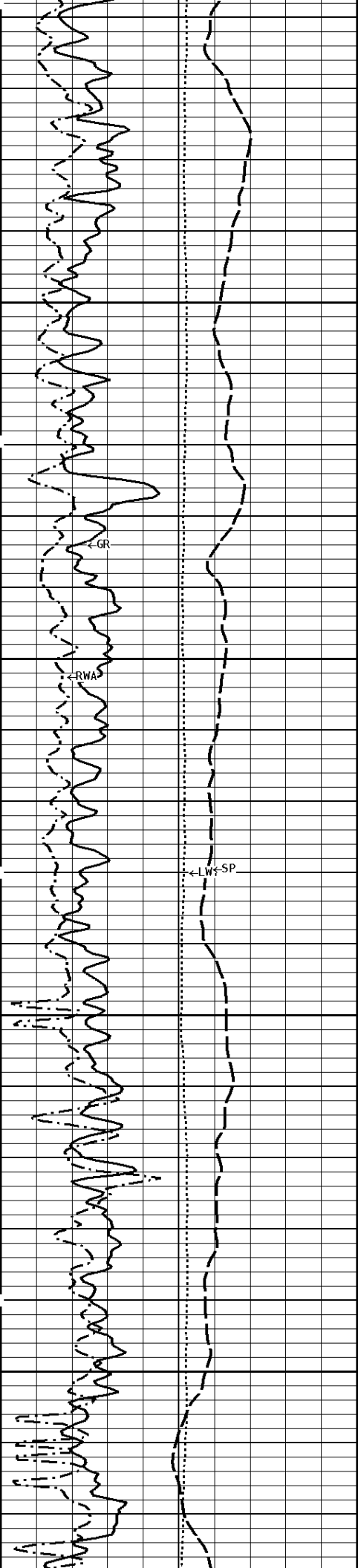




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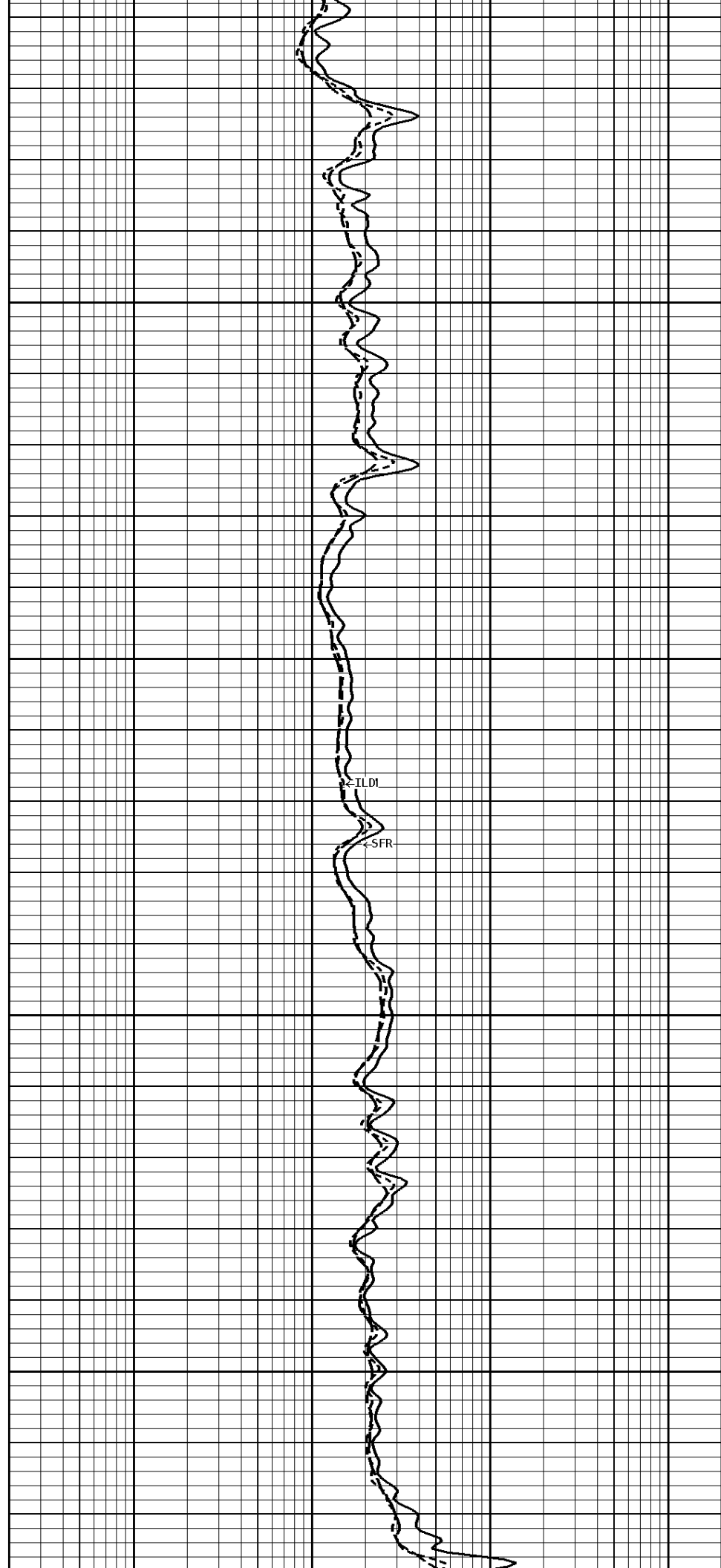
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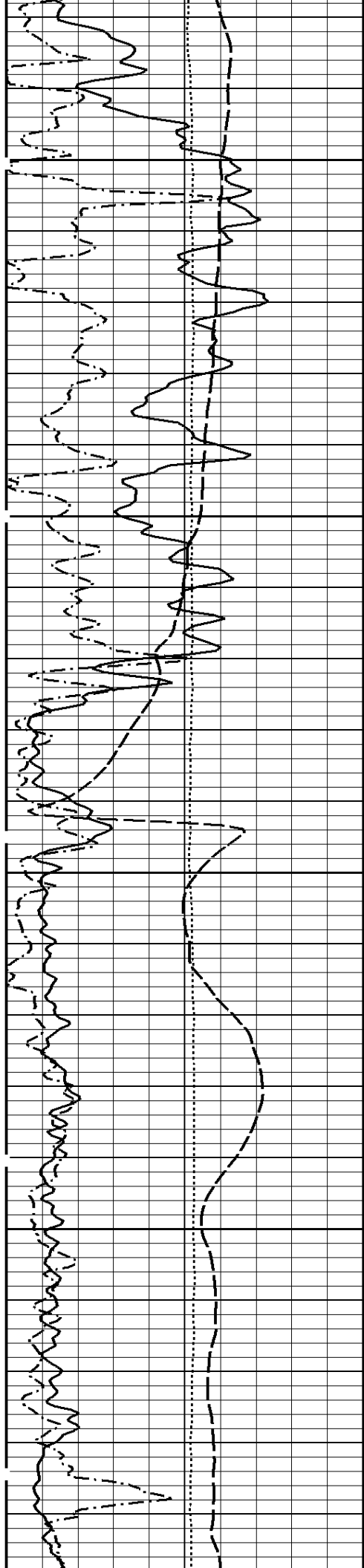




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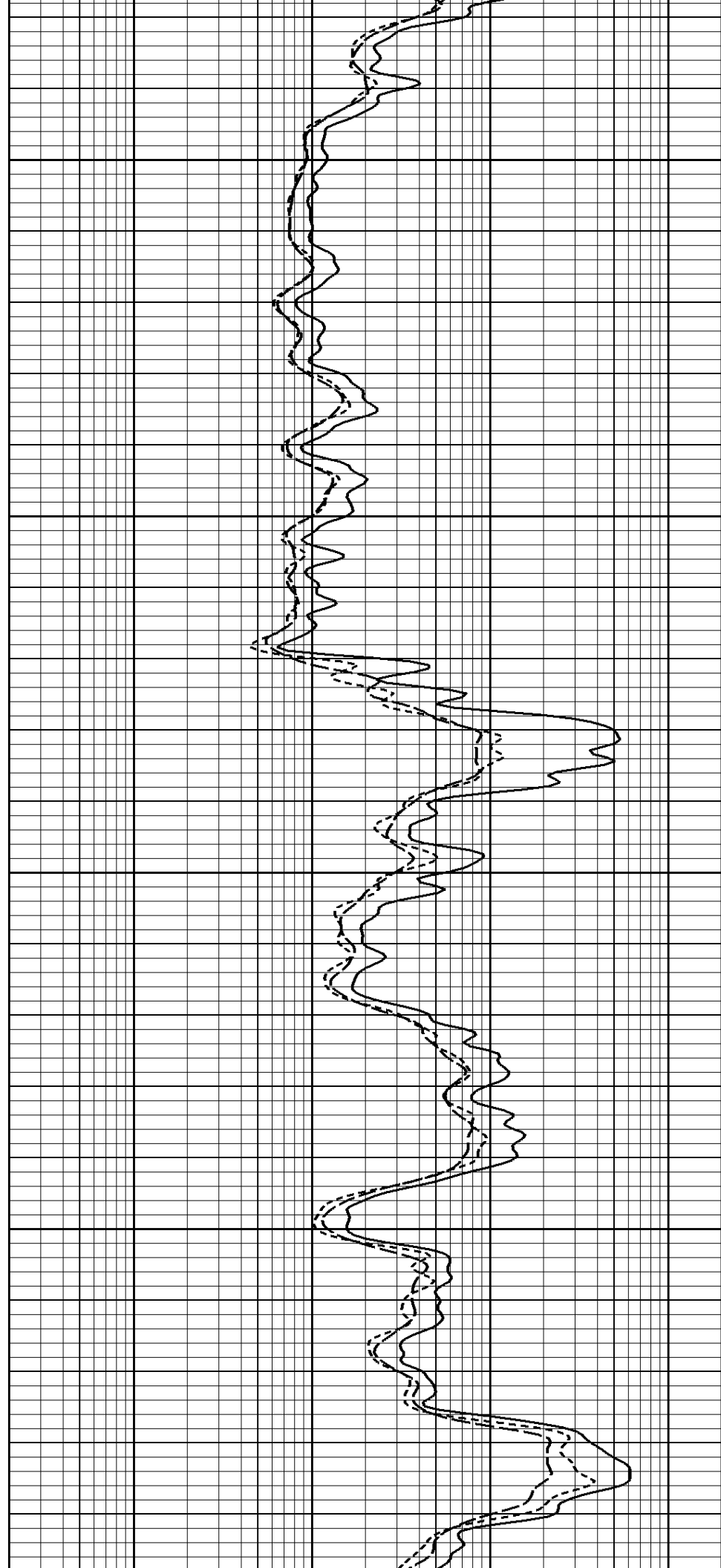
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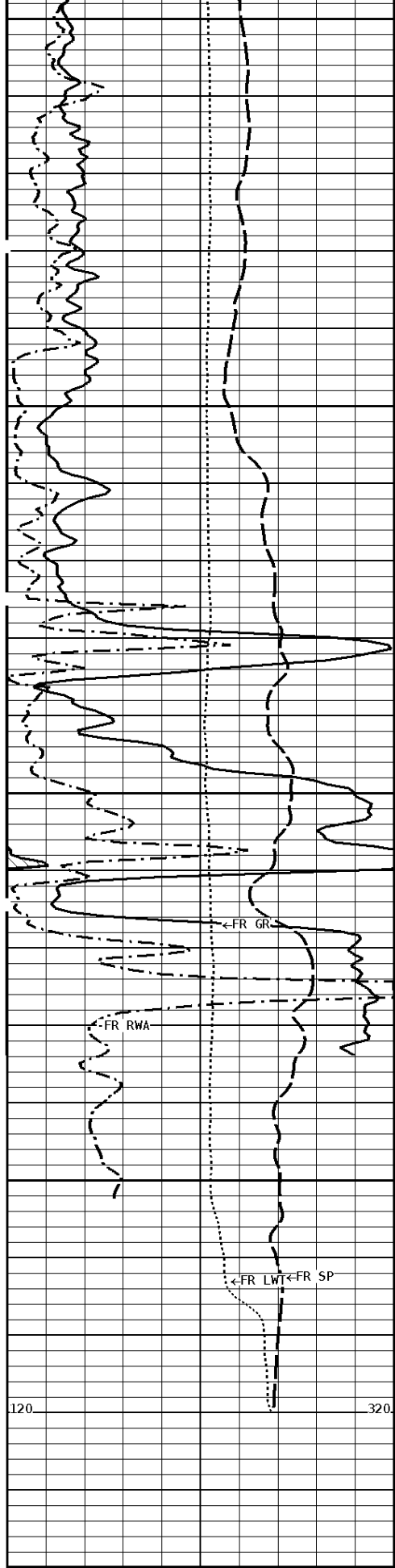




6300

6400





6500

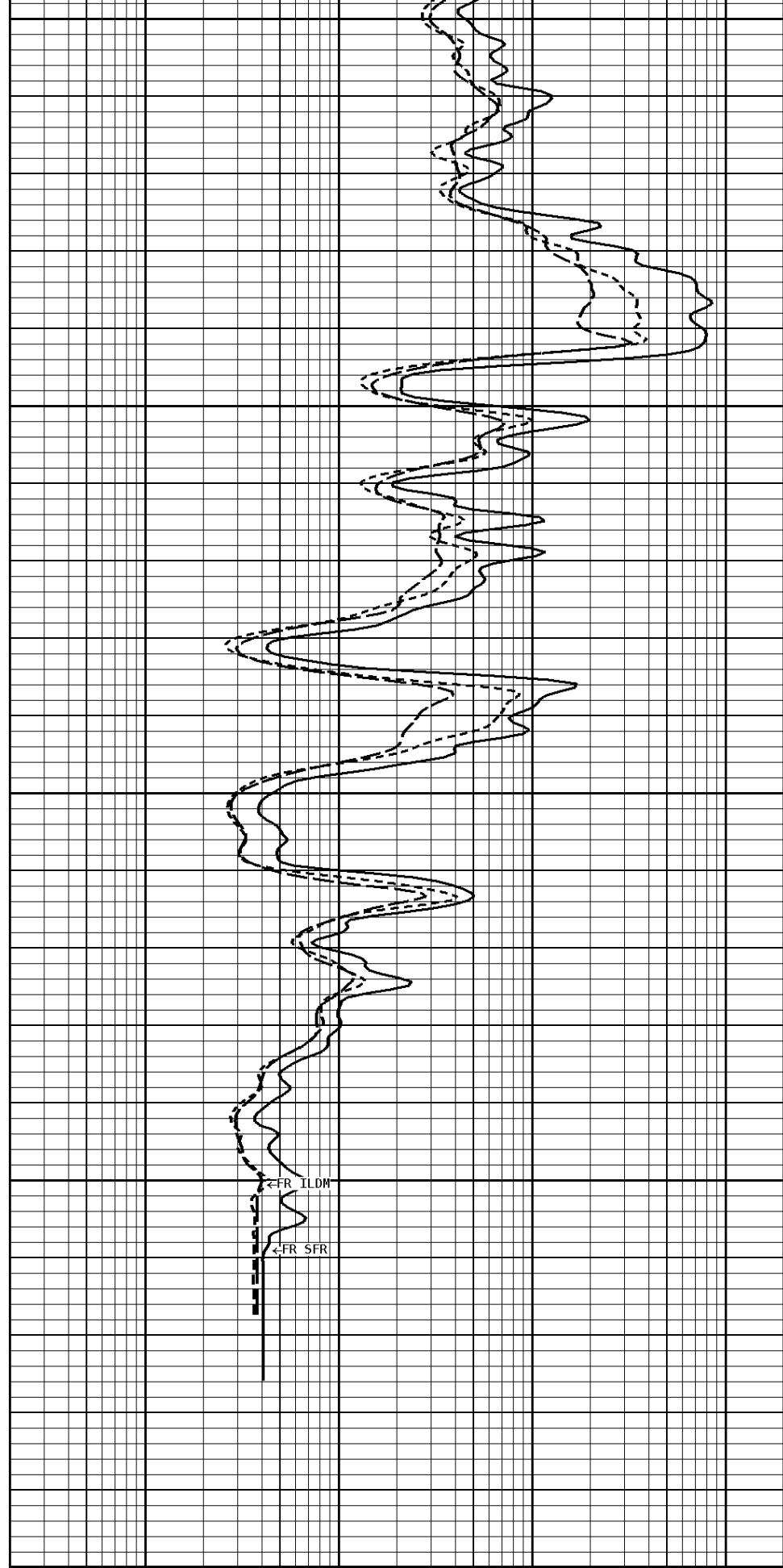
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6664

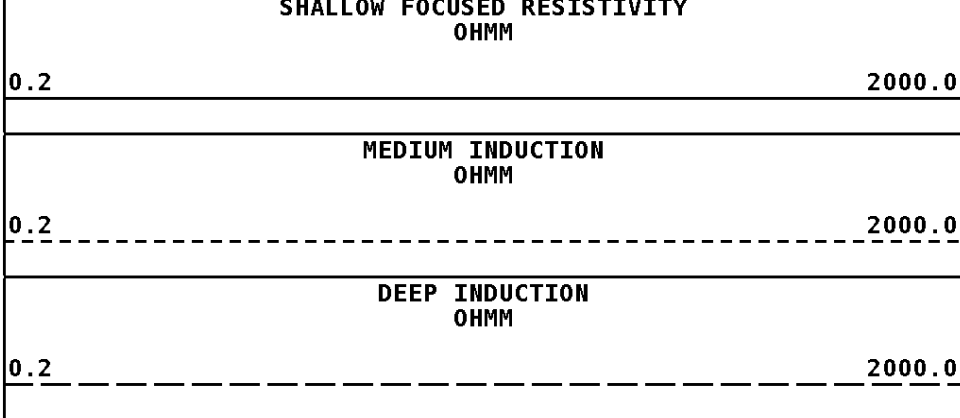
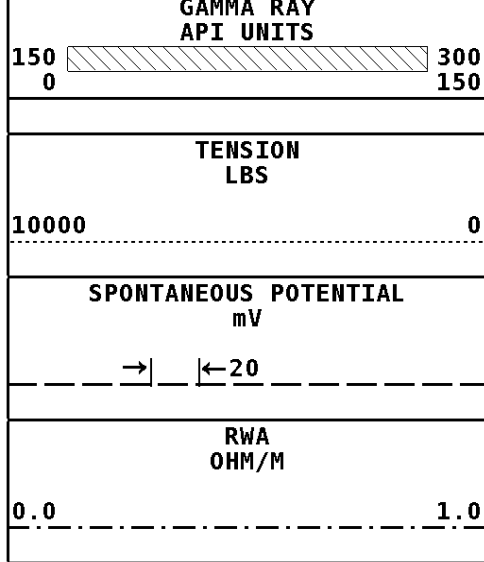
120

320

File #1.2.4



1:240 MAIN SECTION



**\* Borehole Zone Factors \***

Zone 1 99999.0 to 0.0 Feet		
Drill Bit Size		7.875 in
Casing Diameter		5.500 in
BHT Depth		6650.000 ft
Borehole Temperature		145.0 degF
Temperature Gradient		1.00 DFHF
Resistivity Of Mud		1.500 ohm/m
Standoff		1.5
Resistivity Of Mud Temperature		75.00 degF

**Environmental Corrections**

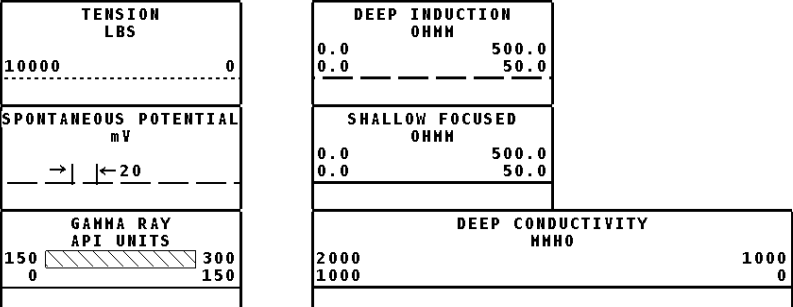
SHALLOW FOCUSED RESISTIVITY V1.D2.S4 SFLAEC	Mudcake Thickness
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**\* Calibration Summary \***

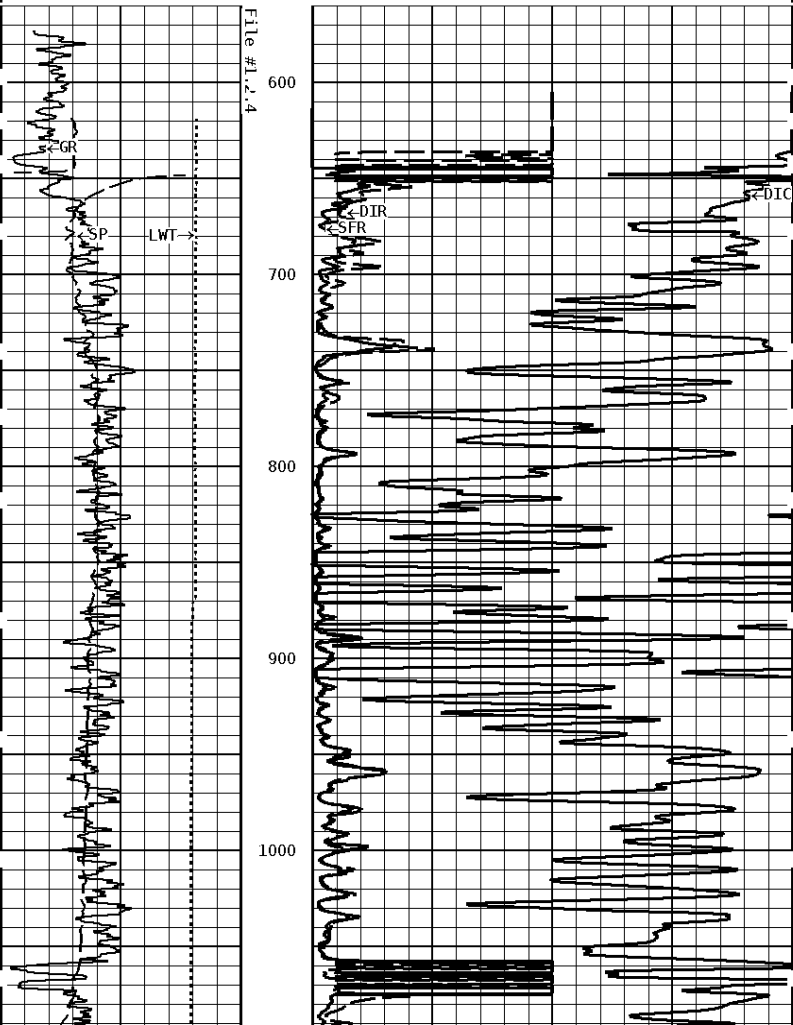
Shop Calibration GRT-B					
Performed : 28-MAY-2014		Time : 09:56			
Sensor Suite : GR-GR5		ID : GRT-BB-006			
	Measured	Units	Calibrated	Units	
GR	Background Jig	CPS	Jig	GRAPI	
	62 374		175		
Shop Calibration PIT-CA					
Performed : 15-APR-2014		Time : 14:04			
Sensor Suite : P-IND-T		ID : PIT-CA-062			
Medium					
	Measured		Calibrated		Units
	R X		R X		
Air	130583 130713		-0.1 -0.1		MMHOS
Zero	131074 131072		27.3 6.4		MMHOS
Reference	253427 250043		5027.3 5006.4		MMHOS
Loop	130592 221688		3823.7 3823.0		MMHOS
Sonde Error			-1.3 -15.8		MMHOS
Cond			5027.3 5006.4		MMHOS
Deep					
	Measured		Calibrated		Units
	R X		R X		
Air	129032 131483		-0.0 0.1		MMHOS
Zero	131074 131059		39.8 -17.0		MMHOS
Reference	233823 231658		2039.8 1983.0		MMHOS
Loop	129039 222242		1804.5 1804.3		MMHOS
Sonde Error			-8.5 -8.7		MMHOS
Cond			2039.8 1983.0		MMHOS
Temperature					
	Measured		Calibrated		Units
	Low High		Low High		

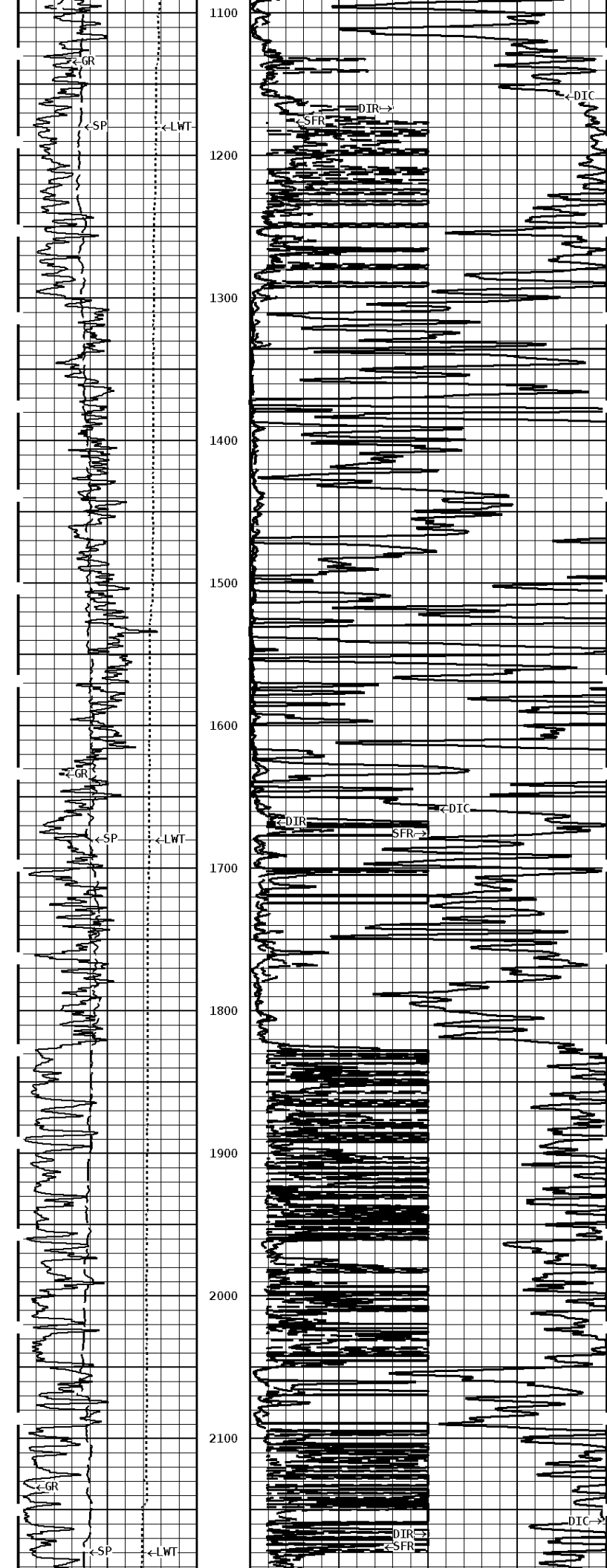
16980.0 56920.0		70.0		350.0		DEGF		
Performed : 15-Apr-2014				Time : 13:51				
Sensor Suite : SFL				ID : PIT-CA-062				
Internal								
	Measured		Calibrated					
	Zero	Reference	Zero	Reference			Units	
Im	32763.3	48949.7	0.0	7028.0			uA	
Ib	32767.3	48756.3	0.0	1750.0			mA	
MOM1	32726.5	57507.3	0.0	175.0			mV	
Equivalent SFL								43.97
Performed : 15-Apr-2014				Time : 13:49				
Sensor Suite : P-SP				ID : PIT-CA-062				
Internal								
	Measured		Calibrated					
	Zero	Reference	Zero	Reference			Units	
	32765.9	58980.4	0.0	1000.0			mV	

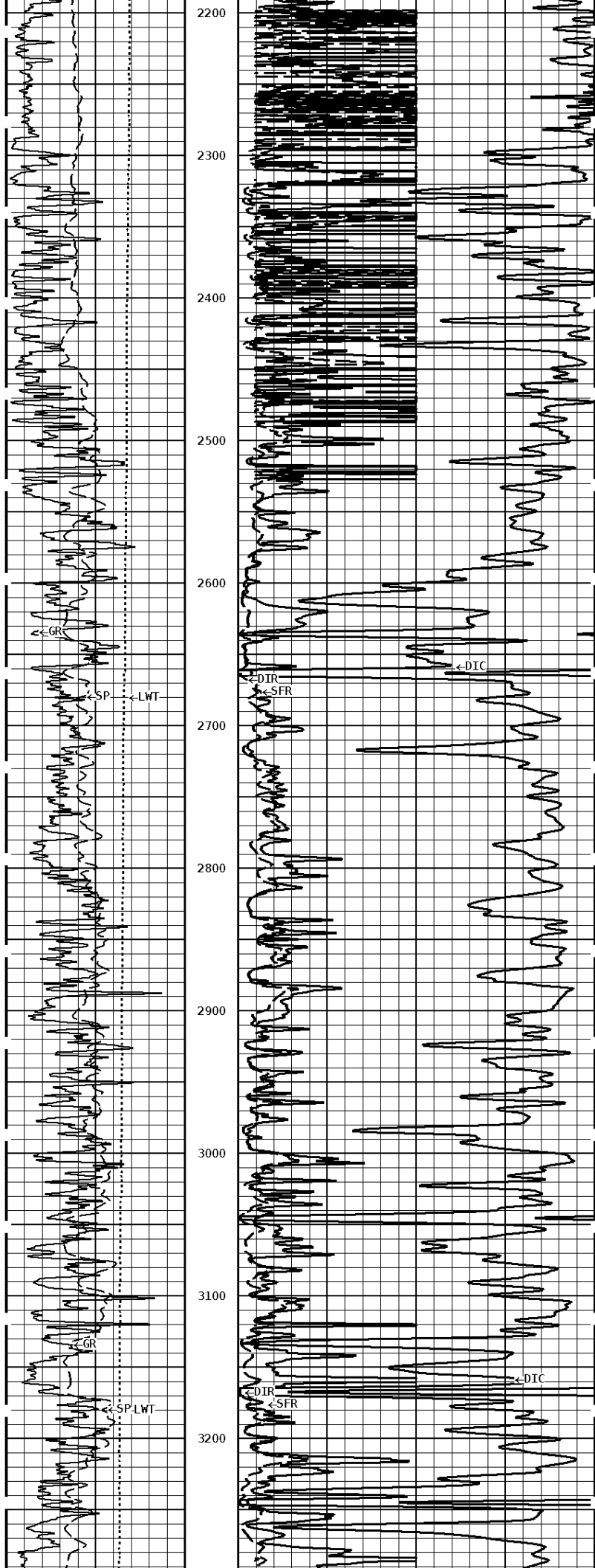
**Well File:** QUAIL OIL LEON 1-23 JUNE24 MLTCSTPIT ONLY **Scale:** 1:1200 **Format:** DIL1200  
**Segment:** V1.D2.S4 Reprocess of MAIN **Acquired:** 2014-06/25 00:32 3.5.0-12850  
**Reference:** 0 **Processed:** 2014-06/25 02:41 3.5.0-12850

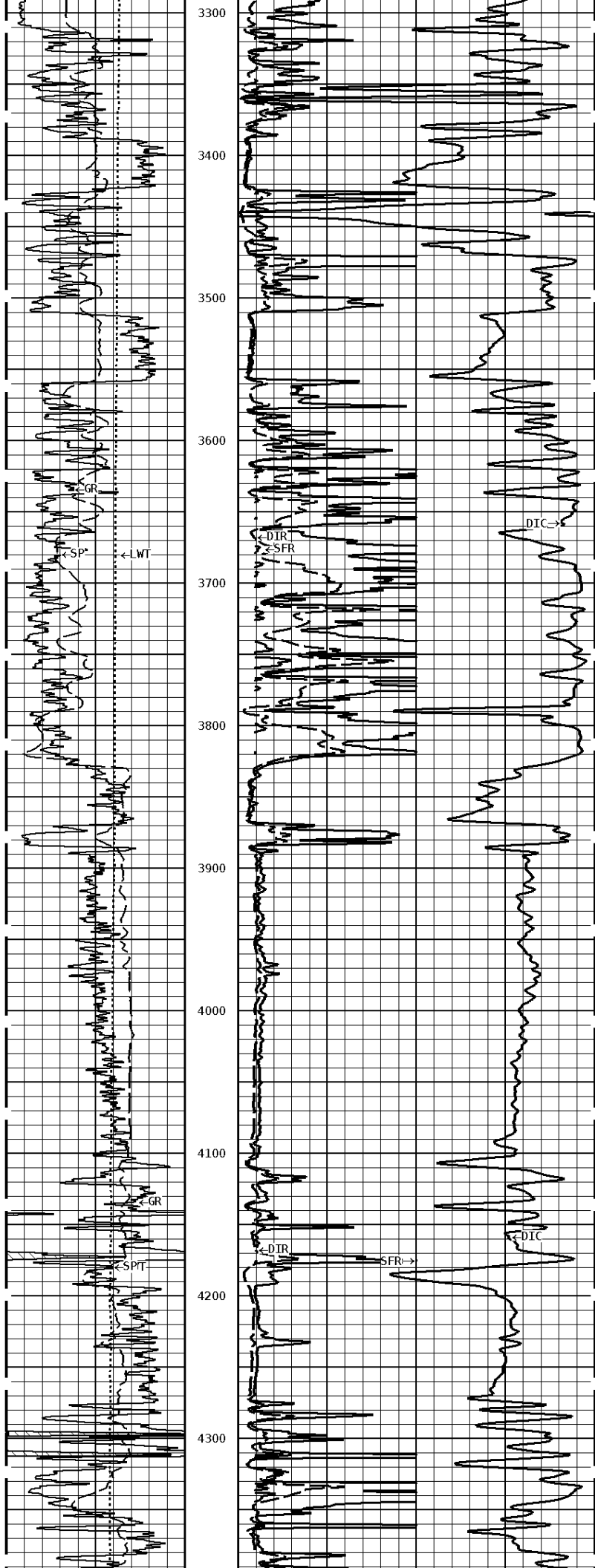


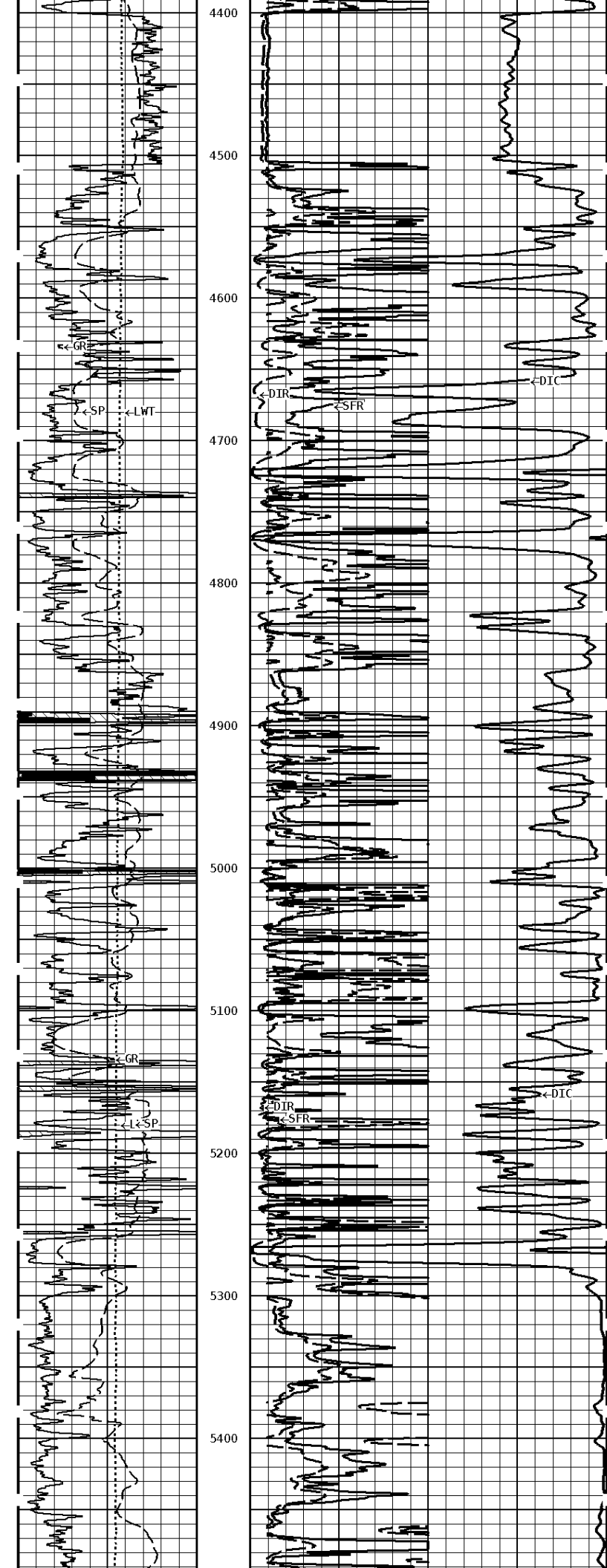
**1:1200 MAIN SECTION**

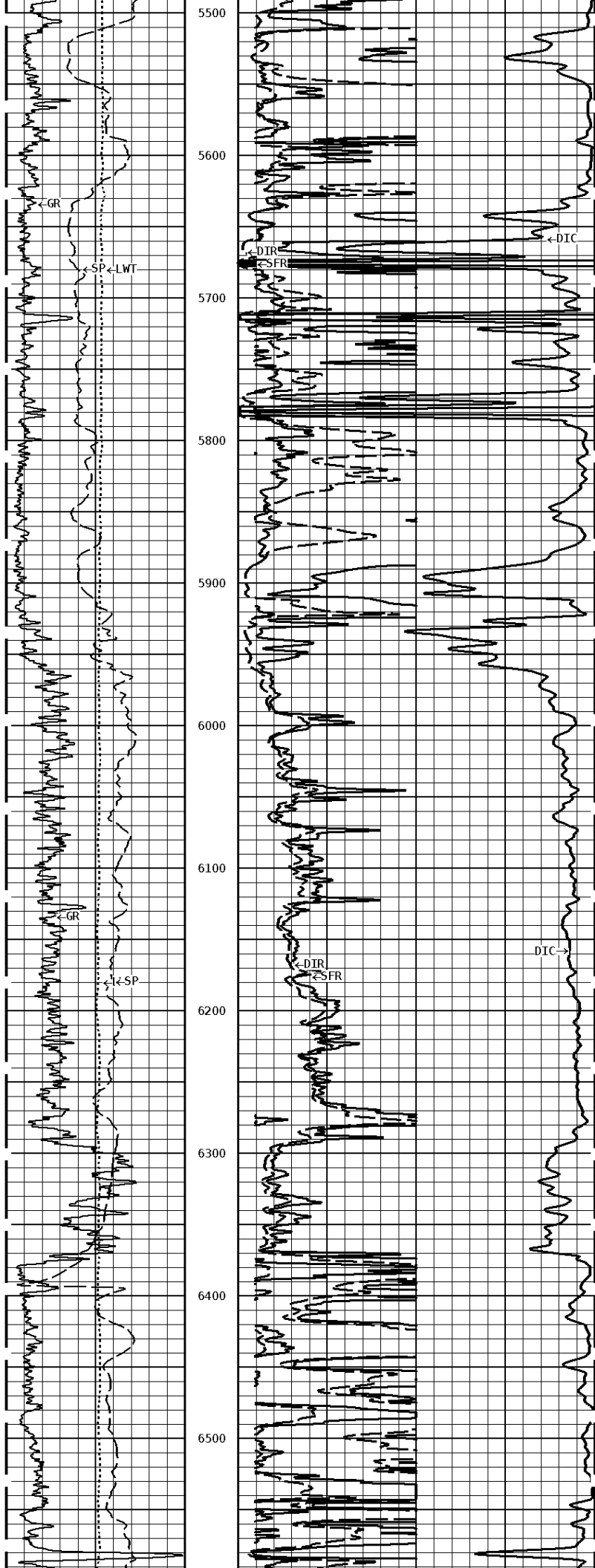


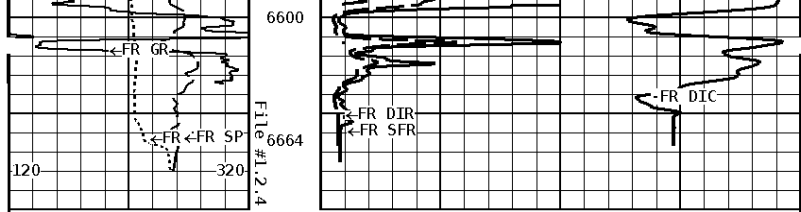












**1:1200 MAIN SECTION**

<b>GAMMA RAY</b> <b>API UNITS</b> 150 300 0 150	<b>DEEP CONDUCTIVITY</b> <b>MHMO</b> 2000 1000 1000 0
<b>SPONTANEOUS POTENTIAL</b> mV →   ← 20	<b>SHALLOW FOCUSED</b> <b>OHMM</b> 0.0 500.0 0.0 50.0
<b>TENSION</b> <b>LBS</b> 10000 0	<b>DEEP INDUCTION</b> <b>OHMM</b> 0.0 500.0 0.0 50.0

**Environmental Corrections**

SHALLOW FOCUSED <b>V1.D2.S4 SFLAEC</b>	Mudcake Thickness
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Company: QUAILOIL & GAS, LC  
 Well: LEON #1-23  
 Location: 795' FNL & 2200' FWL  
 Logged: 06-24-2014  
 K.B. Elev: 2034.0 Ft