

Tucker

ENERGY SERVICES

PHASED INDUCTION

SHALLOW FOCUS SP LOG

Company MULL DRILLING COMPANY, INC. Well TJADEN "C" #4		File No : TUL 59797 Company : MULL DRILLING COMPANY, INC. Well : TJADEN "C" #4 Field : County : KINGMAN State : KANSAS Country : USA API No : 15-095-22288	
Location : 1980' FSL & 660' FWL NW/4 SW/4		LSD : Sect : 18 Twp : 30S Rge : 7W	
Permanent Datum:	GL	Elevations:	
Drilling Measured From:	KB	KB	1486.00
Log Measured From:	KB	DF	1485.00
Above Permanent Datum:	10.00 Ft	GL	1476.00
Date	09-25-2014		
Run Number	1		
Depth--Driller	4285.0	Ft	
Depth--Logger	4283.0	Ft	
First Reading	4283.0	Ft	
Last Reading	226.0	Ft	
Casing--Driller	223.0	Ft	
Casing--Logger	226.0	Ft	
Bit Size	7.875	In	
Casing Size	8.625	In	
Hole Fluid Type	CHEM GEL		
Density	9.6	lb/gl	
Fluid Loss	10.8		
PH/Viscosity	9.0	55.0 sec/qt	
Sample Source	MEASURED		
RM@Measured Temp.	0.600	@ 65 F	
RMF@Measured Temp	0.480	@ 65 F	
RM@Measured Temp.	0.720	@ 65 F	
Source RMF/RMC	CALCULATED/CALCULATED		
RM@BHT	0.440	@ 125 F	
Time Circulation Stopped	09-25-2014 11:30 pm		
Max Recorded Temp.	125	F	
Equipment/Base	126	TULSA	
Recorded By	S. K. DAVIS / A. S. DIAHO		
Witnessed By			

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	4285.00	8.625	32.00	226.00	0.00

Run Number	1	
Date	09-25-2014	
Date/Time On Bottom	09-26-2014 4:00 am	
Depth to Fluid	0.0 Ft	
Salinity	3000.000 ppm	
RMF@BHT	0.350 @ 125 F	
RMC@BHT	0.520 @ 125 F	

Run Number 1

Comments

ALL PRESENTATIONS AS PER CUSTOMER REQUEST
 GRT, CNT, LDT, MLT, CST, AND PIT RUN IN COMBINATION
 CALIPERS ORIENTED ON X-Y AXIS
 2.71 G/CC USED TO CALCULATE POROSITY
 ANNULAR HOLE VOLUME CALCULATED USING 5.50" PRODUCTION CASING
 PHIN IS CALIPER CORRECTED
 ANHYDRITE SECTION FROM 1150' TO 800'
 DETAIL SECTION FROM TD TO 2900'

GRT: GRP.
 CNT: PHIN, CLCNIN.
 LDT: PORL, LCORN, PECLN, LDENN, CLLDIN.
 MLT: NOR_RF, INV_RF, MSCLPIN.
 CST: PORS, ITT, CDTF, TT1, TT2, TT3, TT4.
 PIT: ILD, ILM, SFLAEC, CIRD, SPU

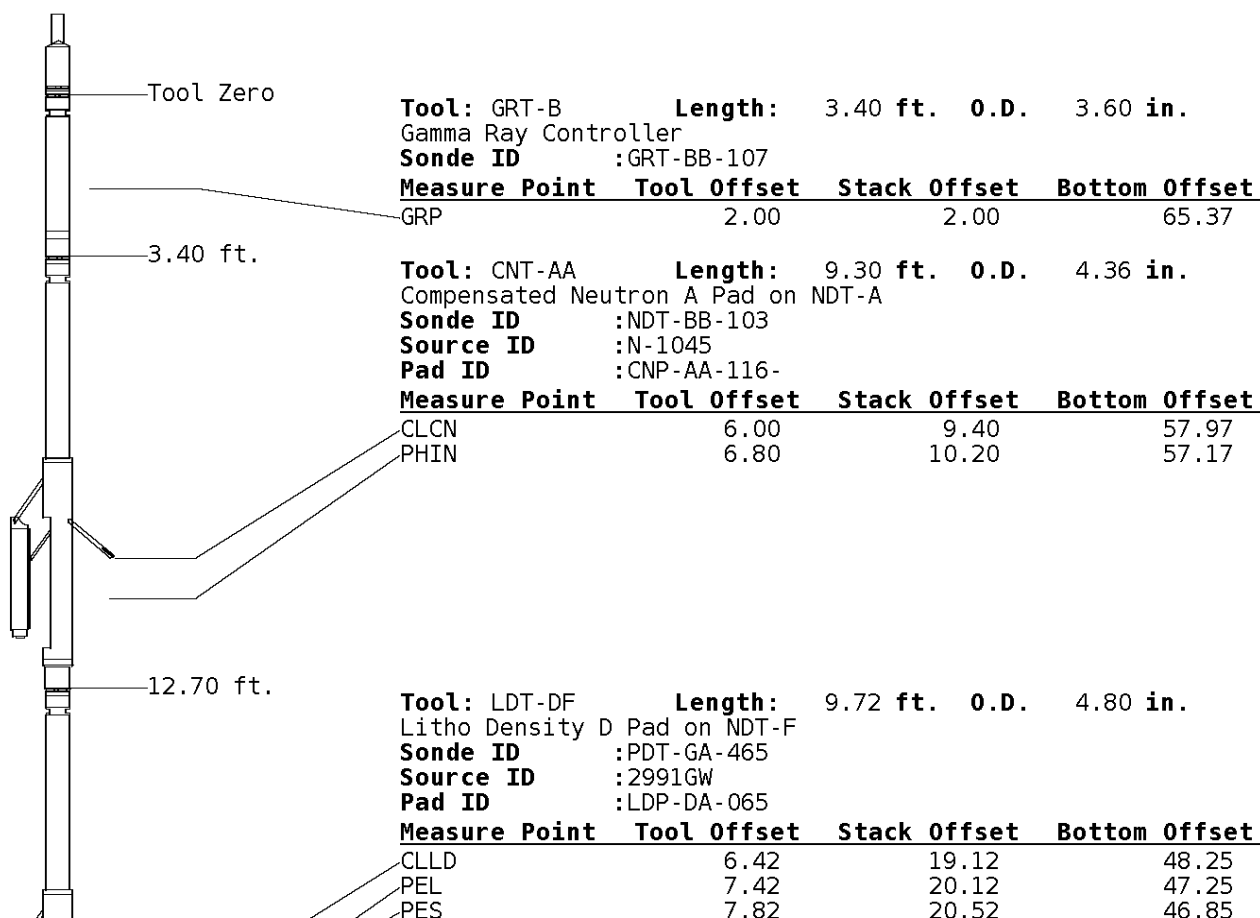
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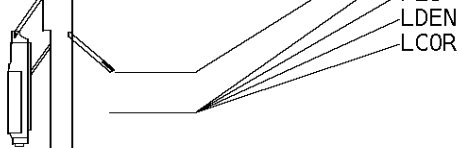
C. GONZALES

J OFFEIBGU

Tool String Schematic

Total Tool Length - 67.37 ft.
Maximum Outside diameter - 6.00 in.
Net Weight in Air - 1171.00 lbs.



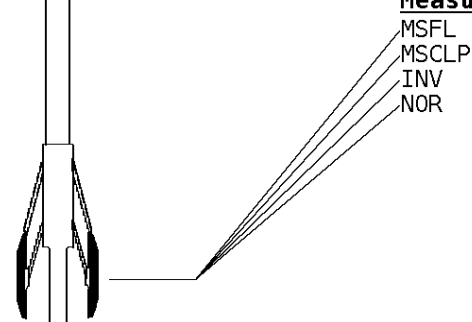


LDEN	7.62	20.32	47.05
LCOR	7.62	20.32	47.05

22.42 ft.

Tool: MST-DA **Length:** 9.66 ft. **O.D.** 6.00 in.
Micro Spherically Focused (IC)
Sonde ID :MST-DA-26

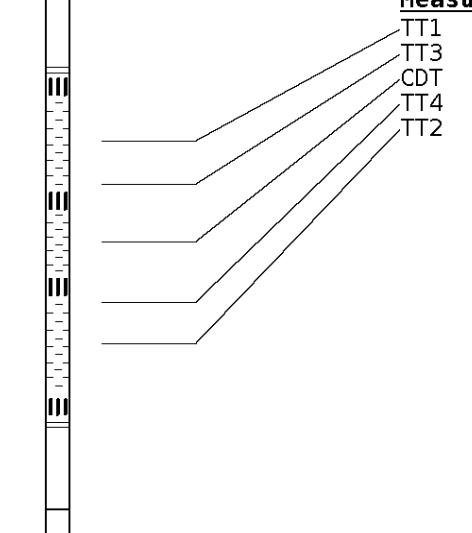
Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	30.02	37.35
MSCLP	7.60	30.02	37.35
INV	7.60	30.02	37.35
NOR	7.60	30.02	37.35



32.08 ft.

Tool: CST-AD **Length:** 13.80 ft. **O.D.** 3.60 in.
Open Hole Sonic
Sonde ID :CST-AB-25

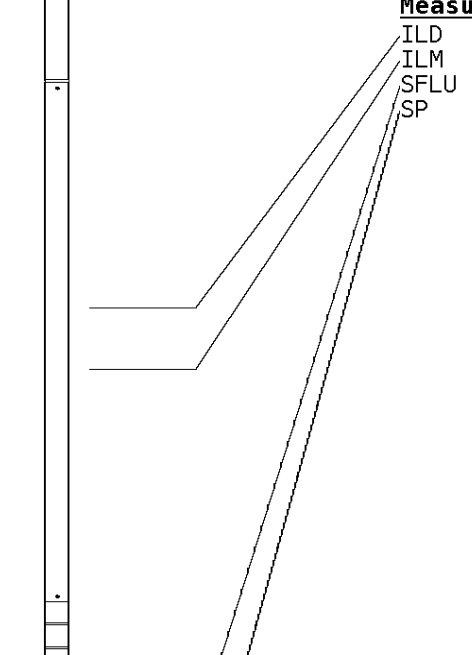
Measure Point	Tool Offset	Stack Offset	Bottom Offset
TT1	4.80	36.88	30.49
TT3	5.80	37.88	29.49
CDT	7.30	39.38	27.99
TT4	8.80	40.88	26.49
TT2	9.80	41.88	25.49



45.88 ft.

Tool: PIT-CA **Length:** 21.49 ft. **O.D.** 3.62 in.
Phased Dual Induction w/ RM & D
Sonde ID :PIT-CA-075

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	54.80	12.56
ILM	10.10	55.98	11.39
SFLU	17.49	63.37	4.00
SP	20.60	66.48	0.88



LWT 67.37 ft.

Well File: MULL TJADEN C4 SEPT25 QUINT

Scale: 1:600

Format: DIL-600

Segment: V1.D1.S5 MN

Acquired: 2014-09/26 04:07 3.3.0-12594

Reference: 0

Processed: 2014-09/26 05:50 3.3.0-12594

TENSION
LBS

10000

0

DEEP INDUCTION
OHMM

0.0

500.0

0.0

50.0

SPONTANEOUS POTENTIAL
mV

→

←25

SHALLOW FOCUSED RESISTIVITY
OHMM

0.0

500.0

0.0

50.0

GAMMA RAY
API UNITS

150

0

300

150

DEEP CONDUCTIVITY
MMHO

2000

1000

1000

0

1:600 MAIN SECTION

File #1.1.5

200

300

400

GR

LWT

DIR

DIC

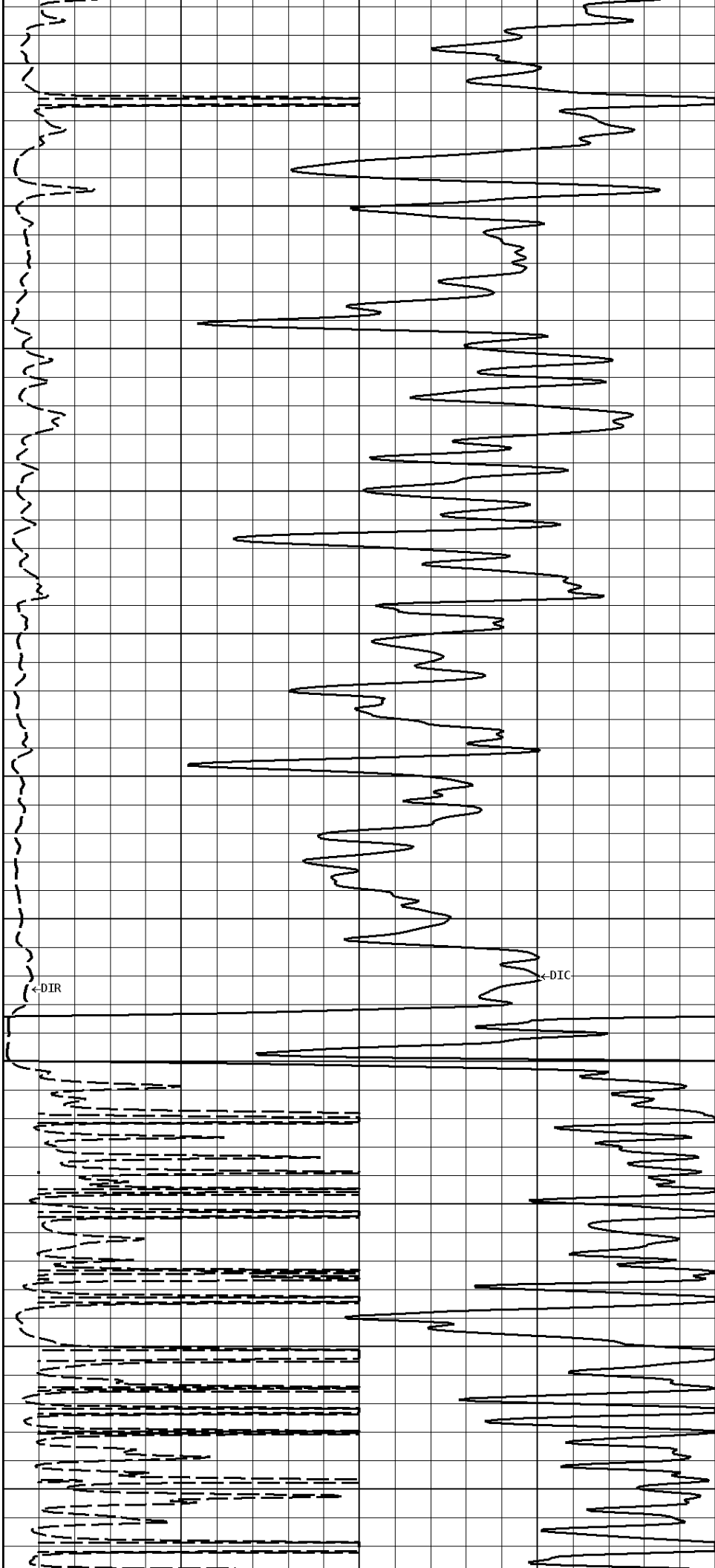
500

600

700

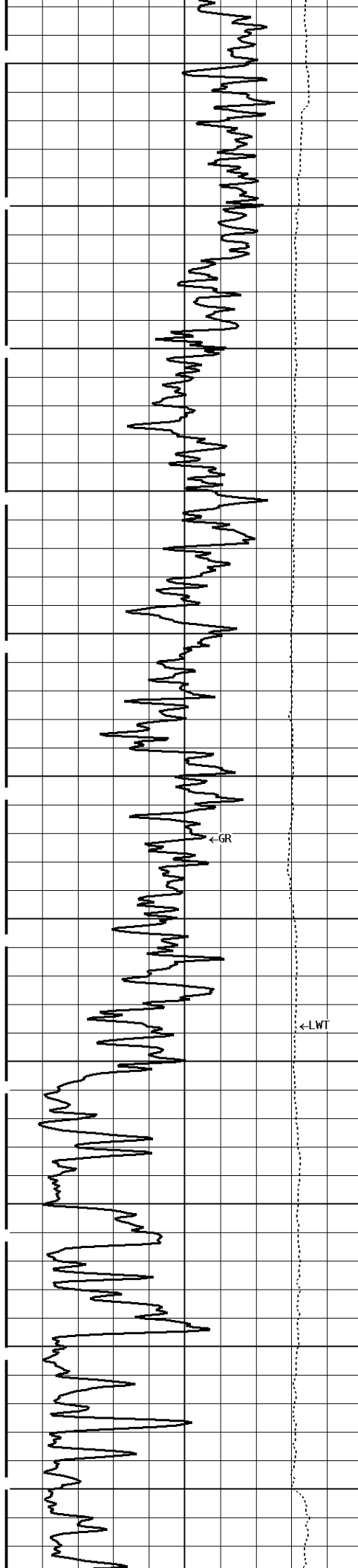
800

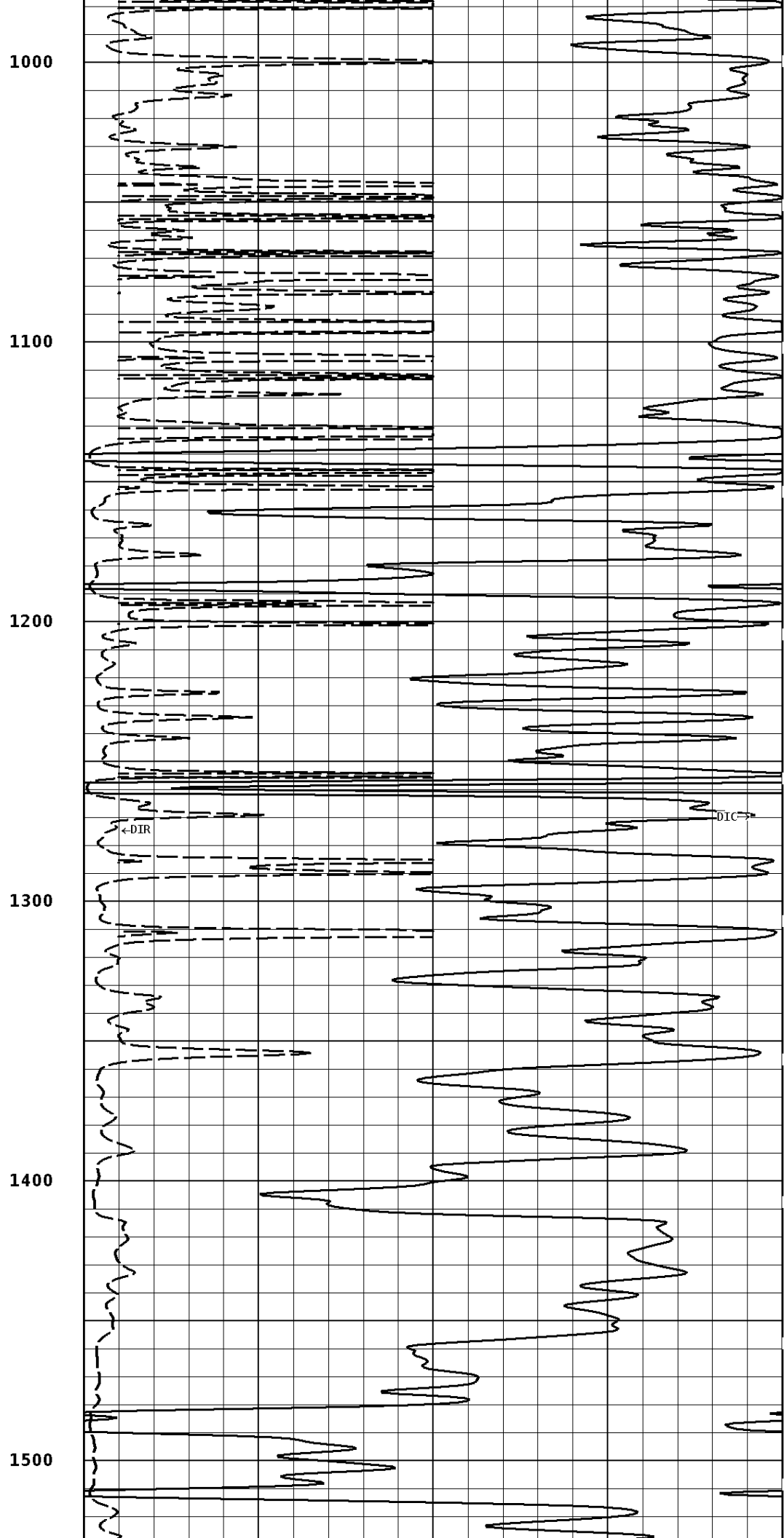
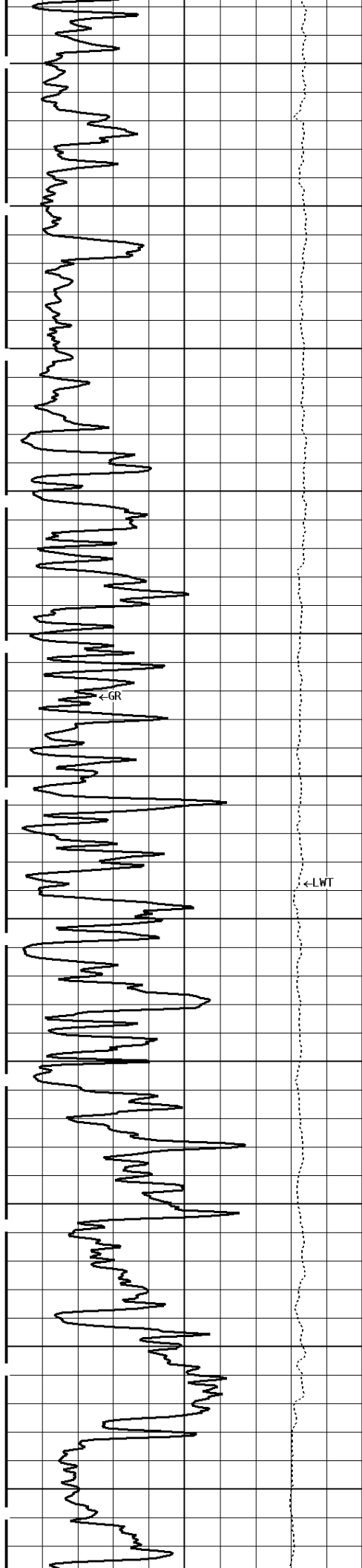
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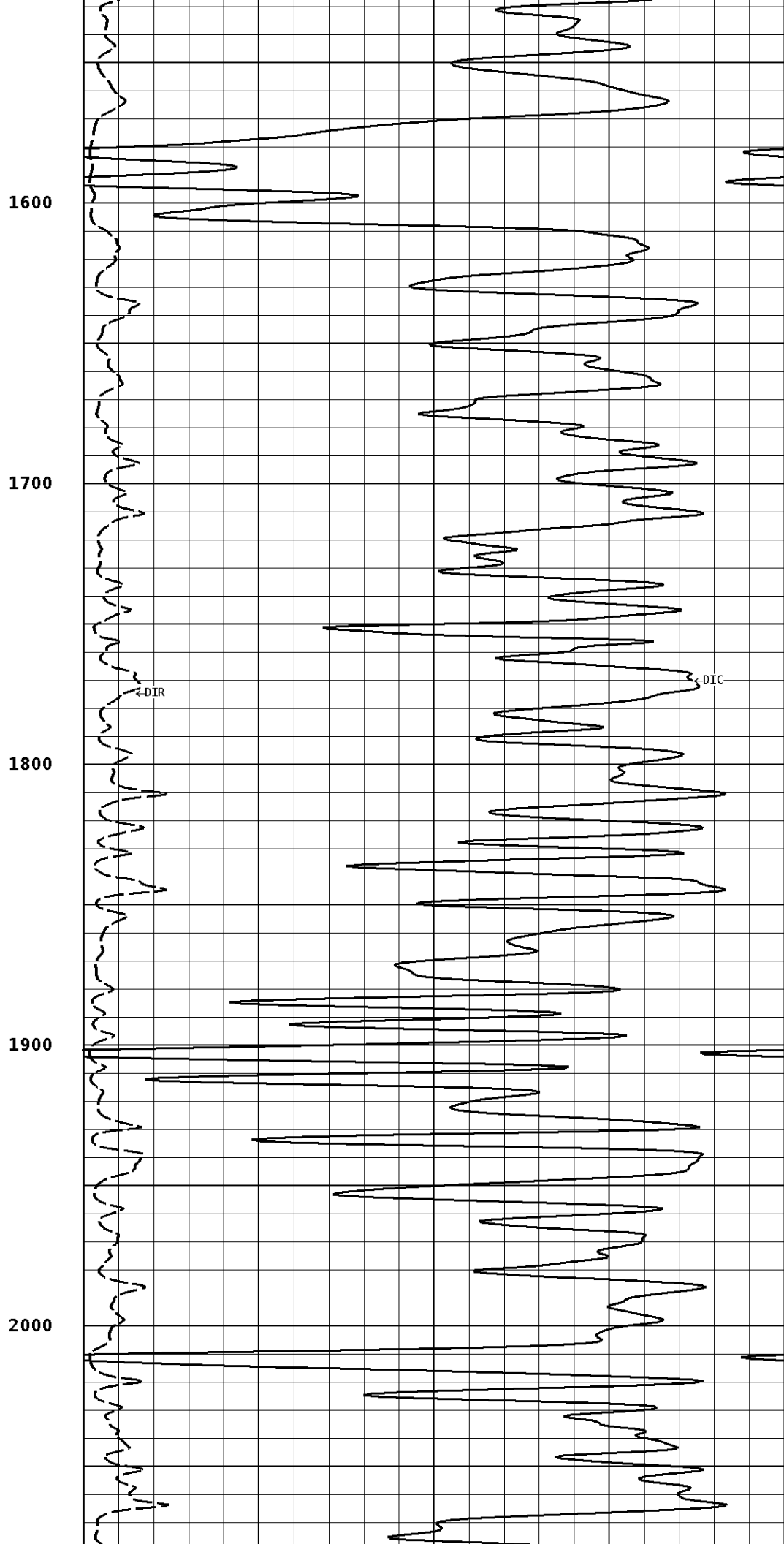
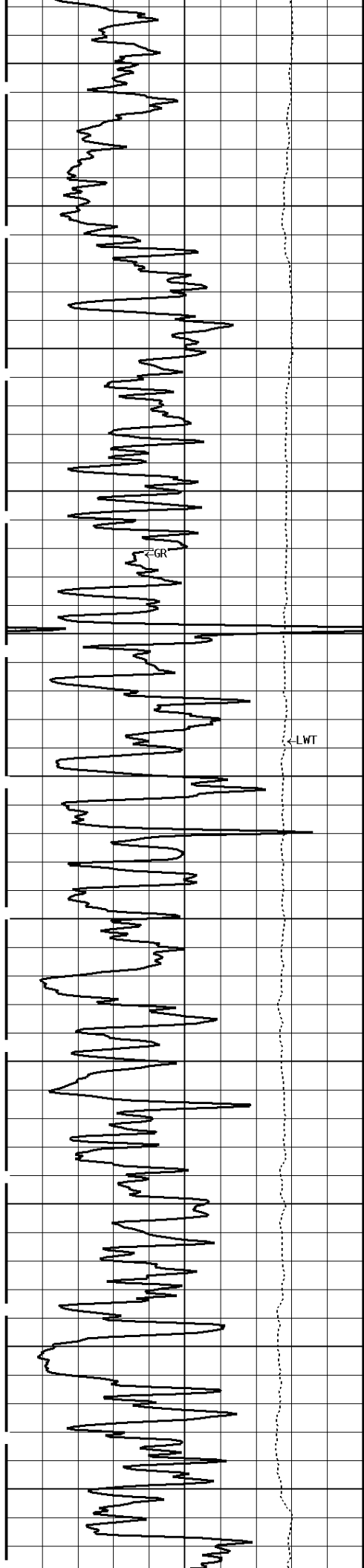


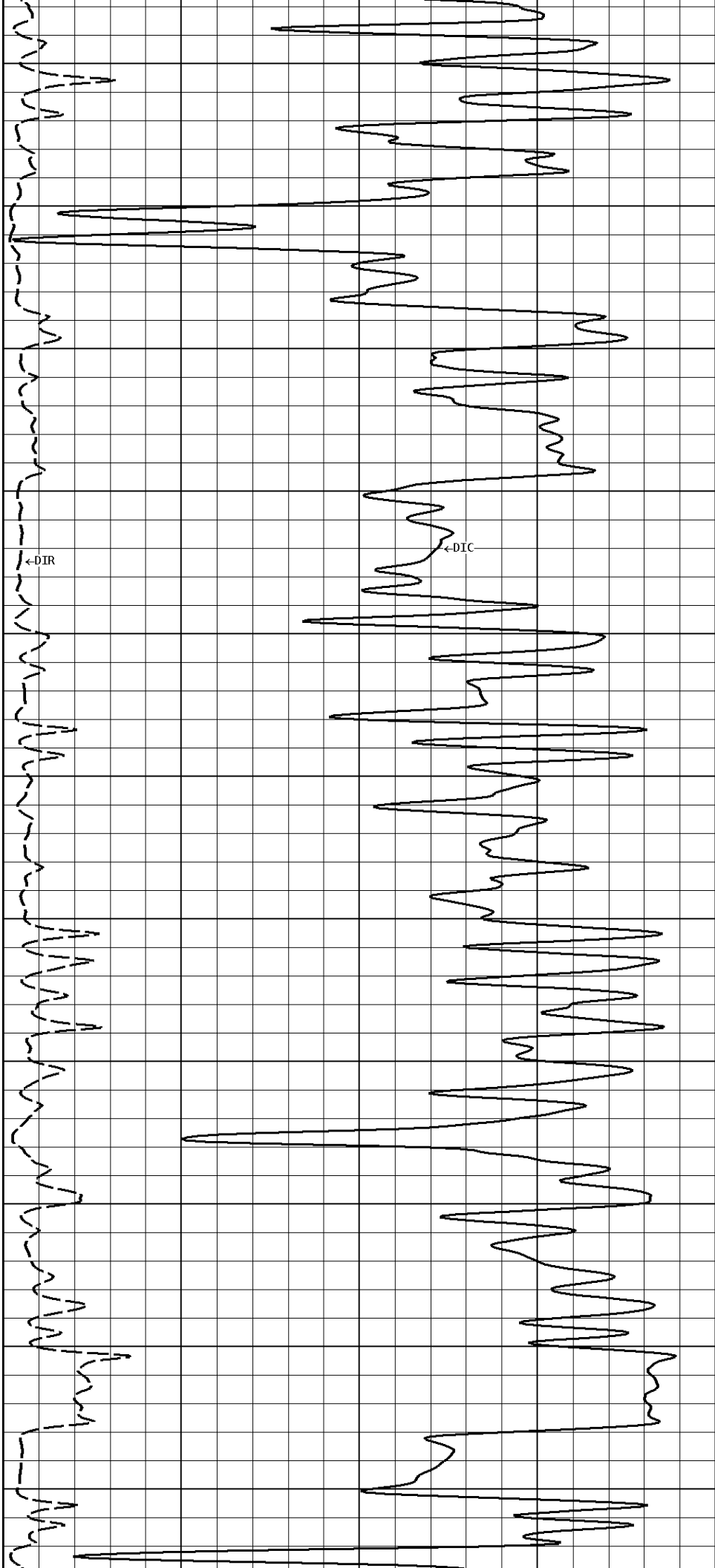
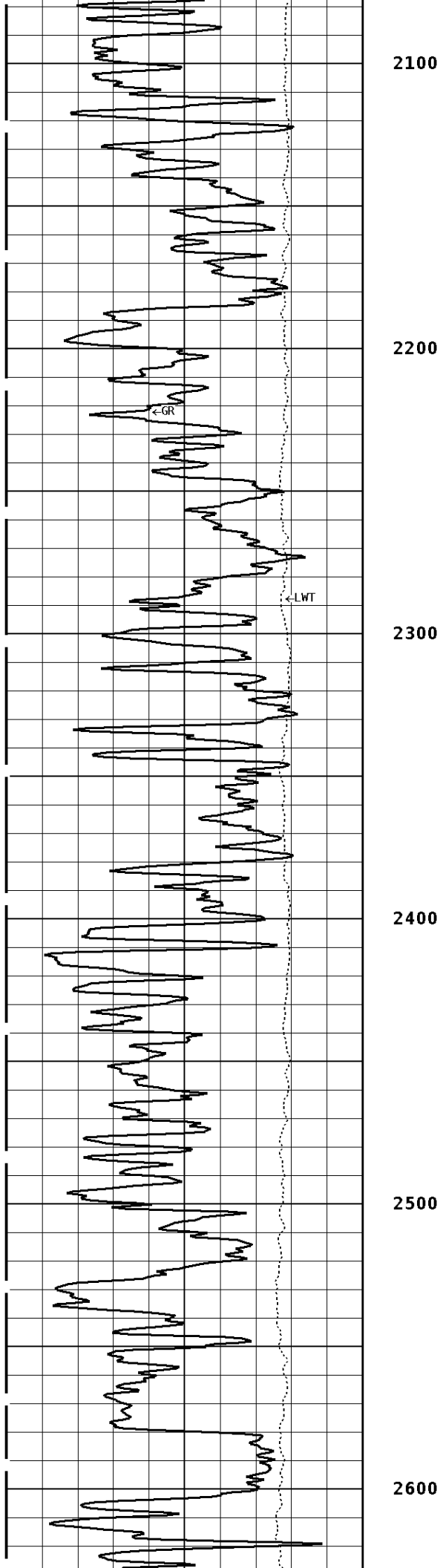
←GR

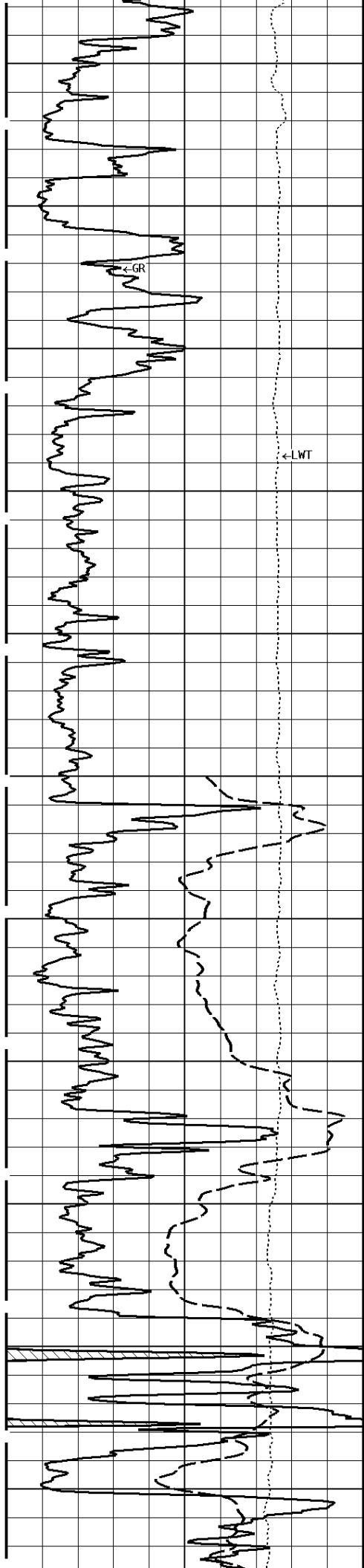
←LWT











2700

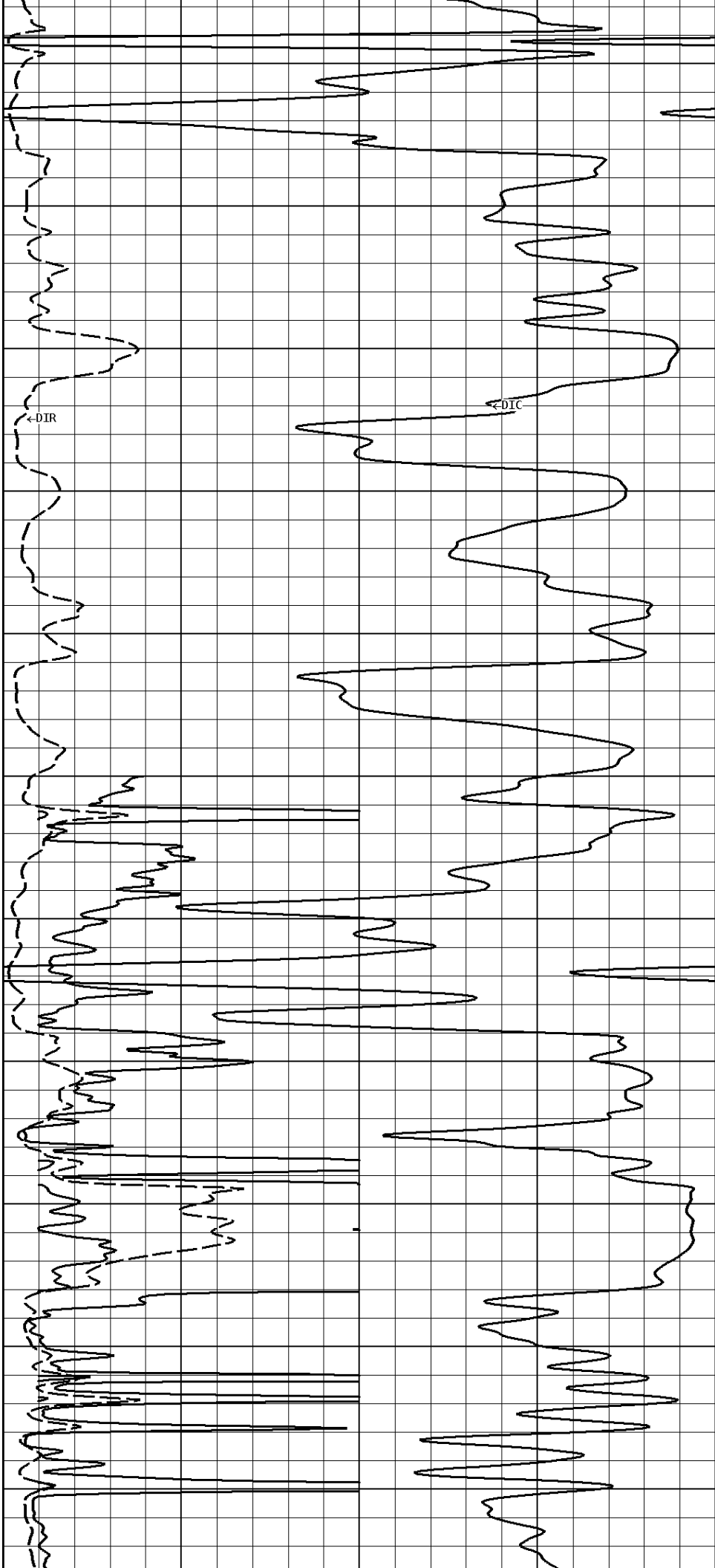
←DIR

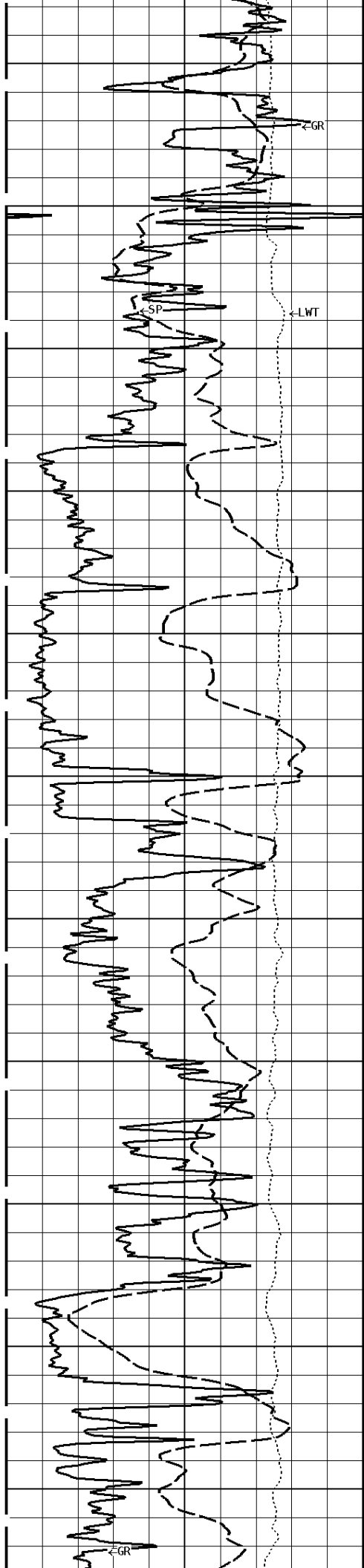
2800

2900

3000

3100





3200

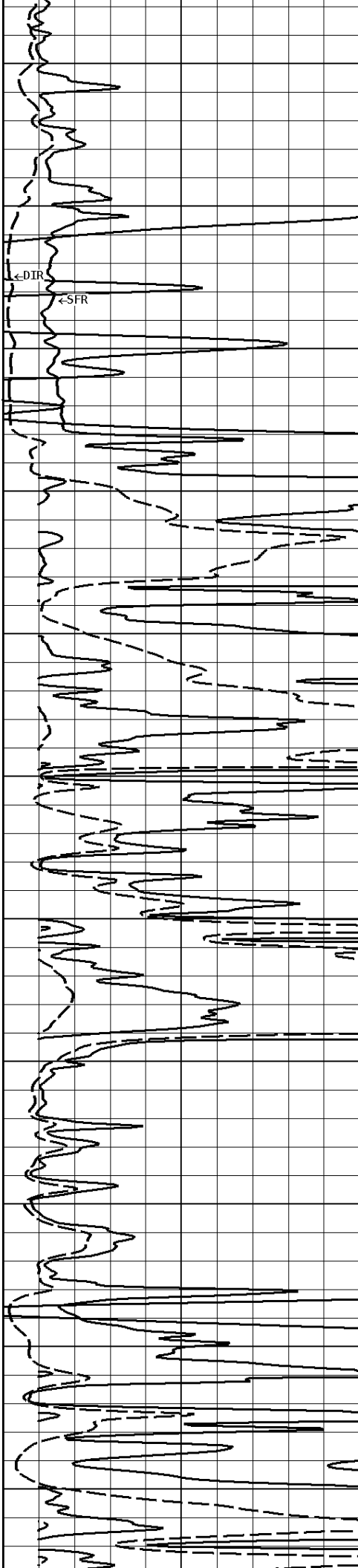
3300

3400

3500

3600

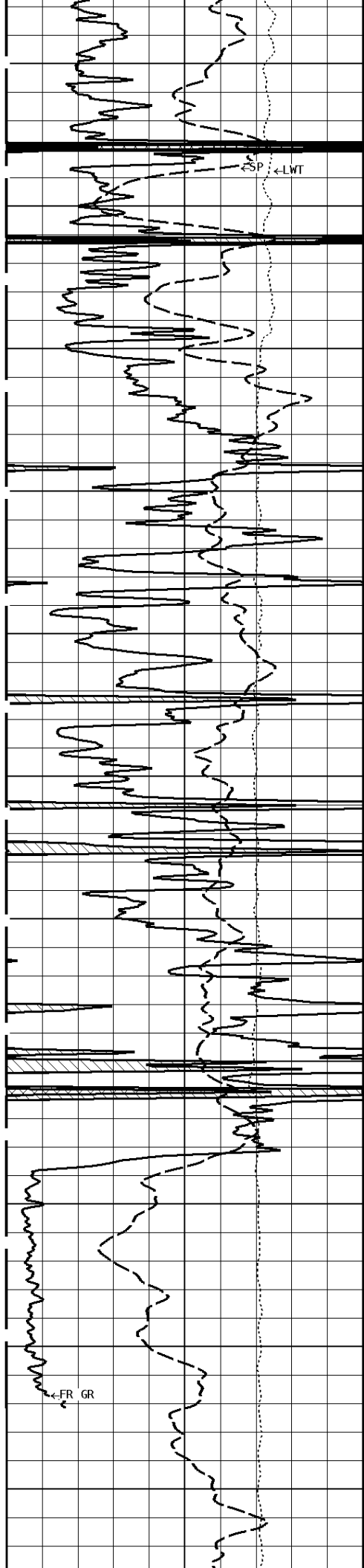
3700



←DTR

←SFR

←DTC



3800

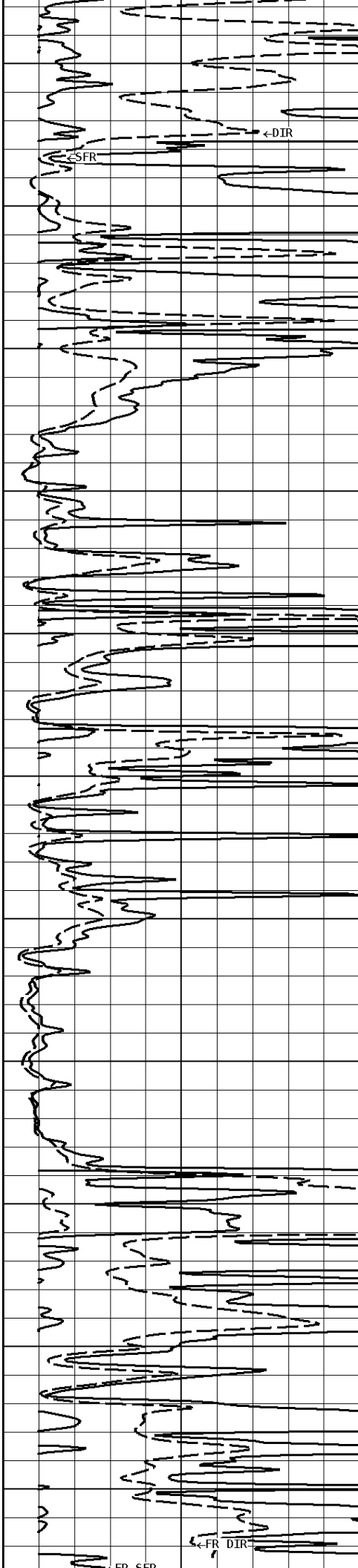
3900

4000

4100

4200

File

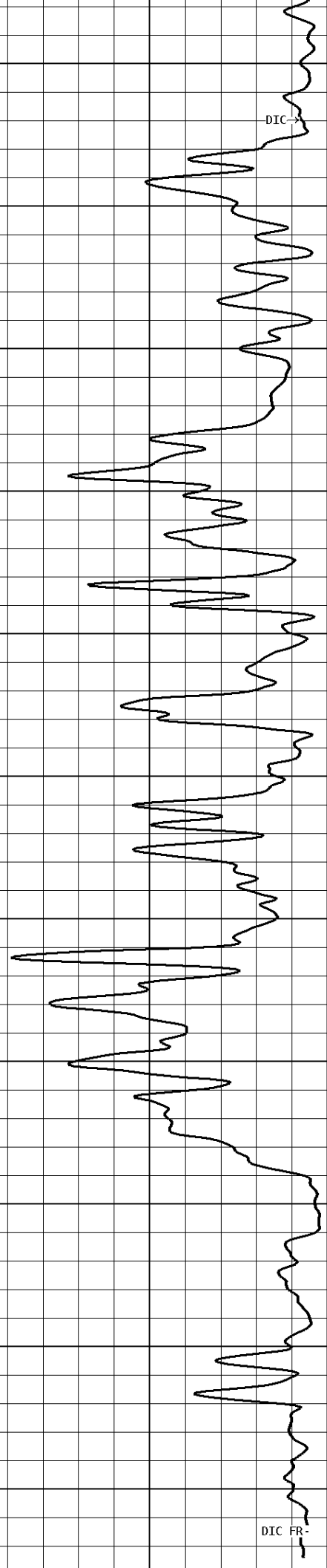


SFR

DIR

FR DIR

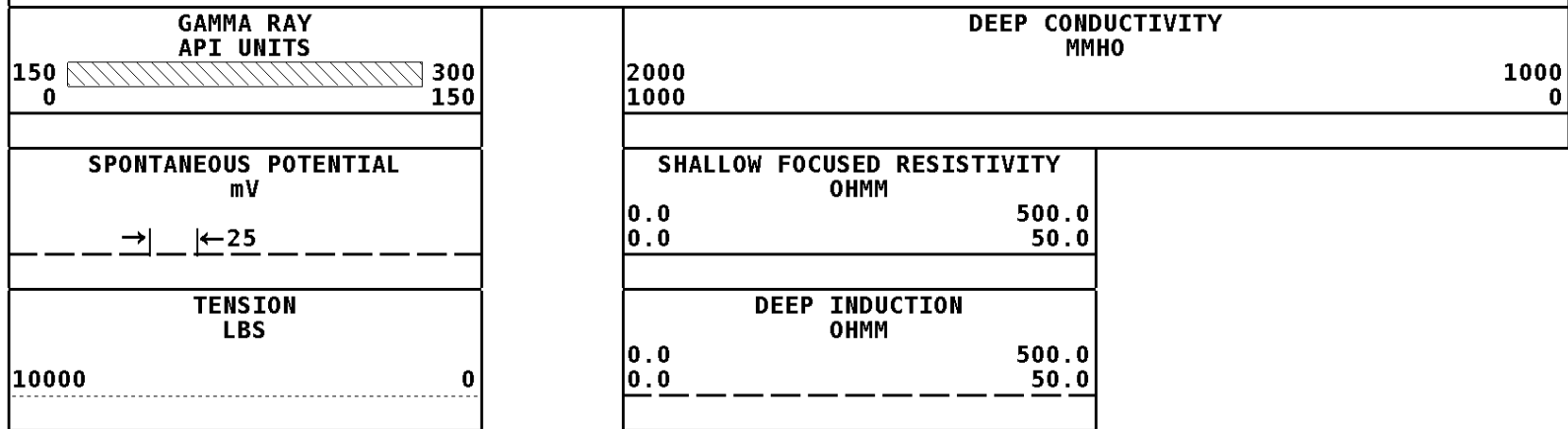
ED SEP



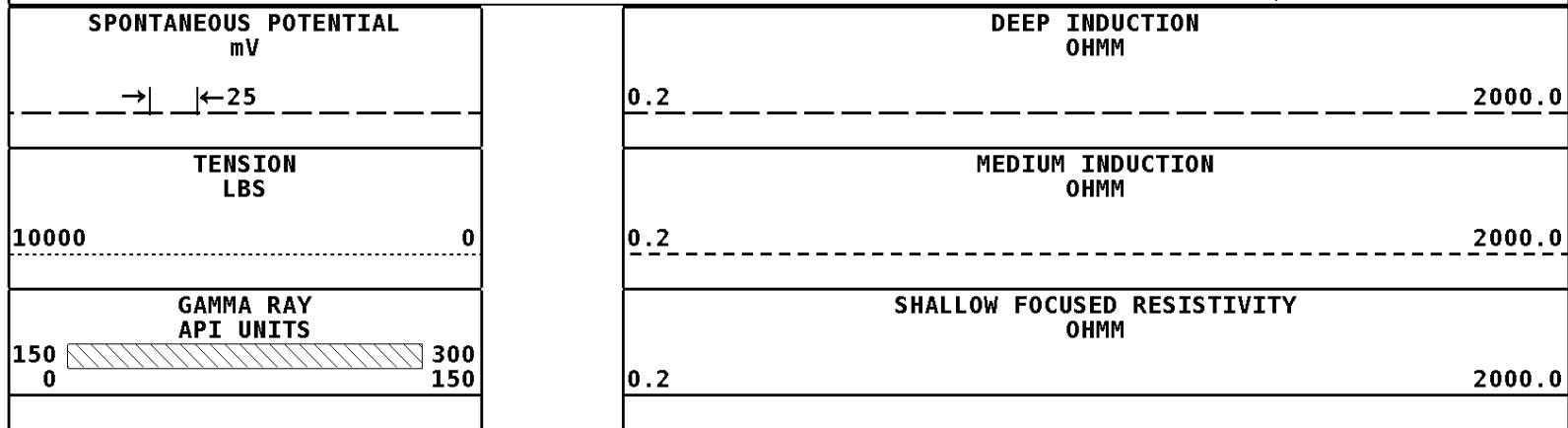
DIC

DIC FR

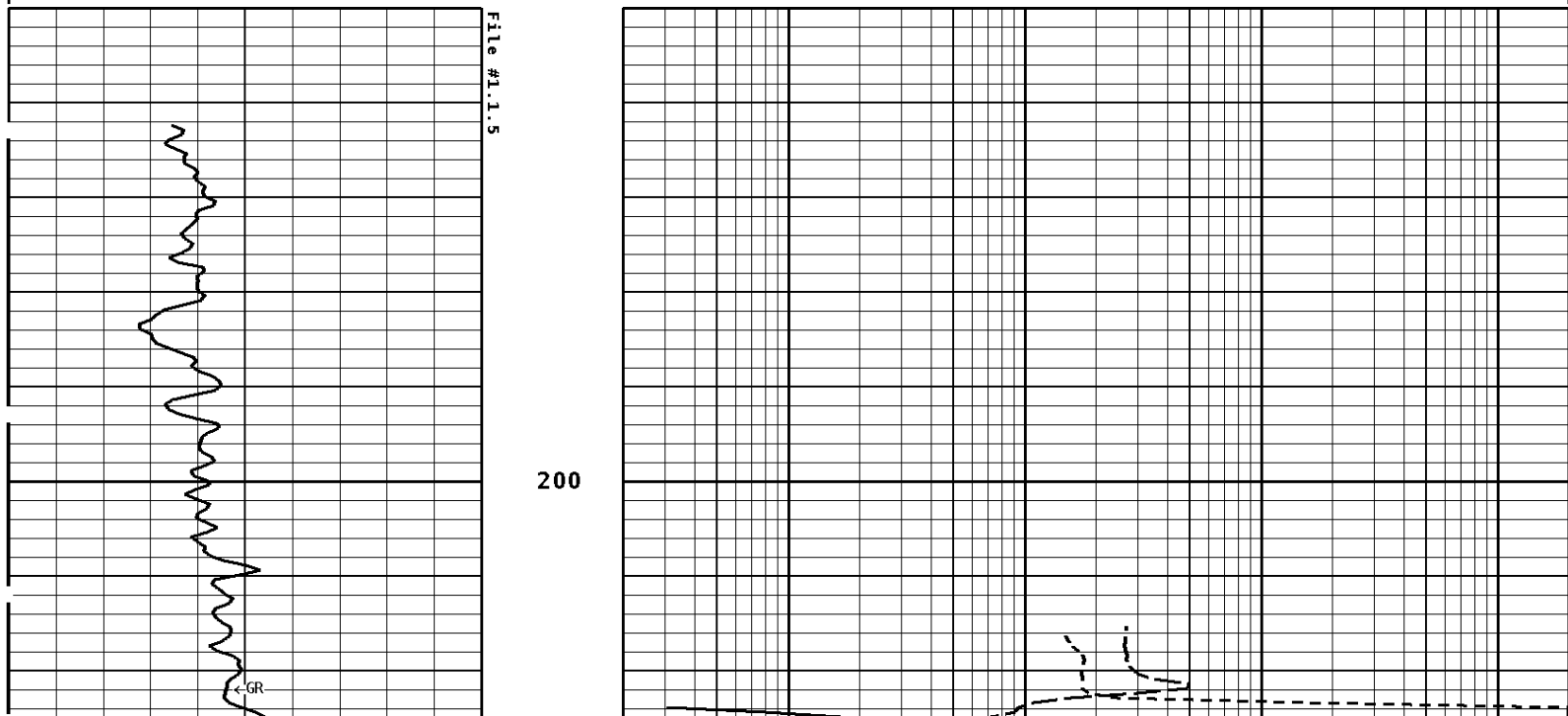
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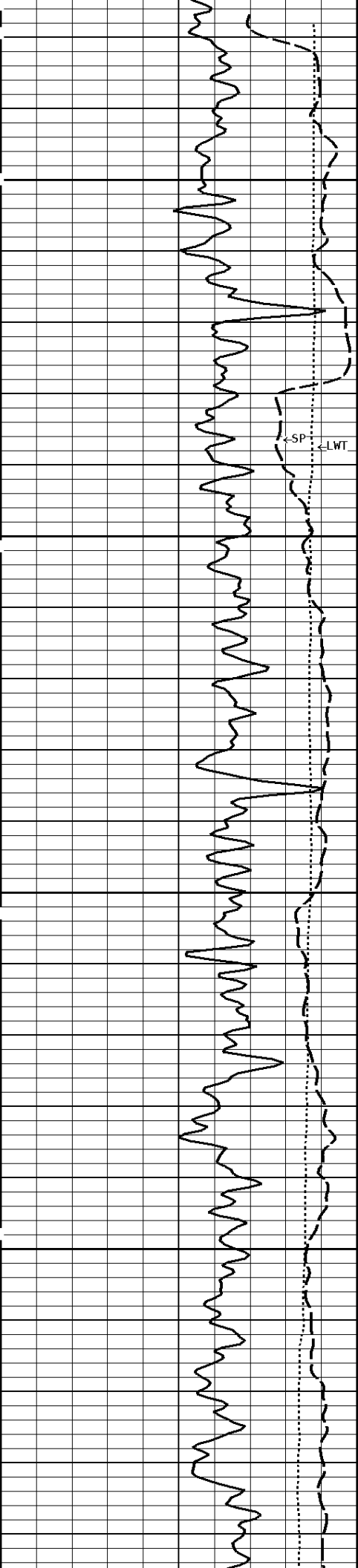


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Segment: V1.D1.S5 MN	Acquired: 2014-09/26 04:07 3.3.0-12594	
Reference: 0	Processed: 2014-09/26 05:50 3.3.0-12594	



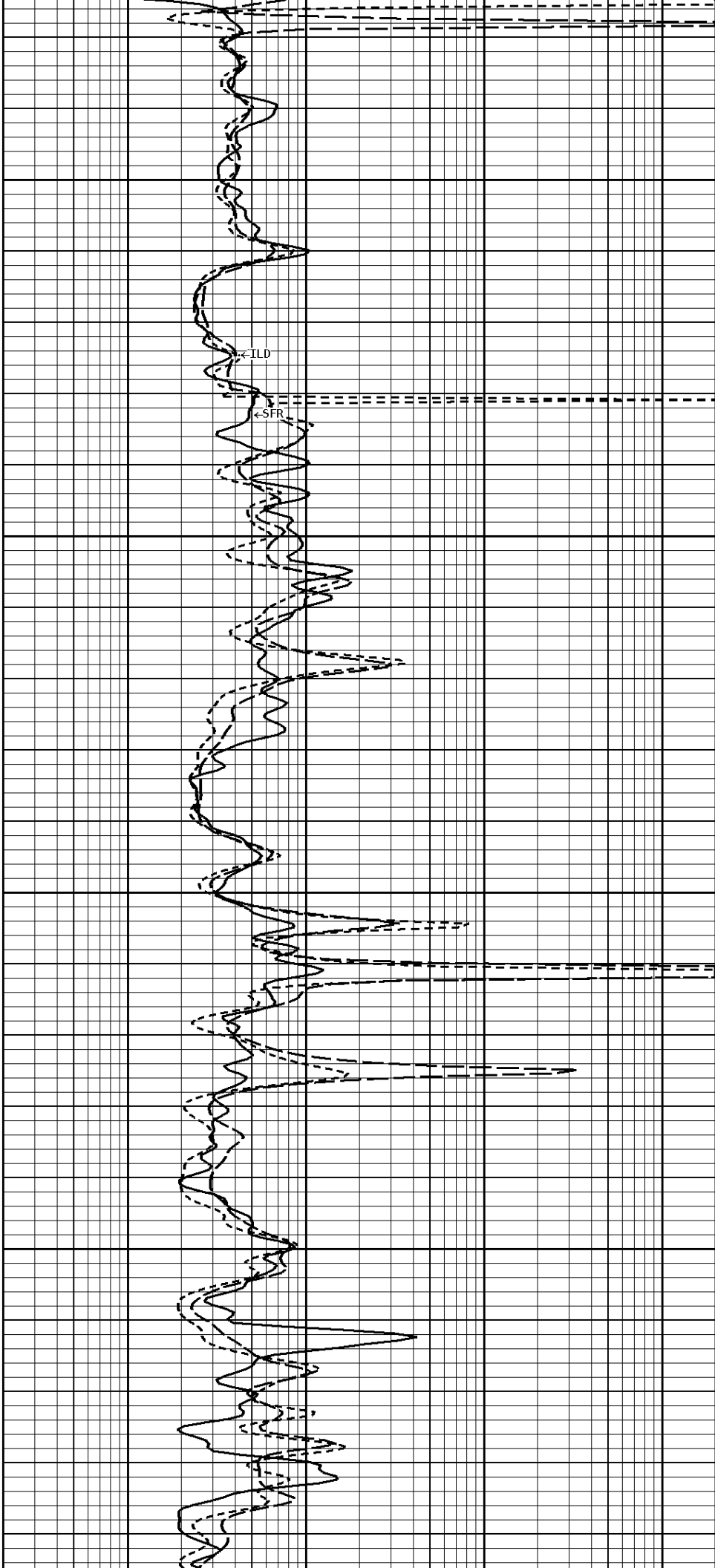
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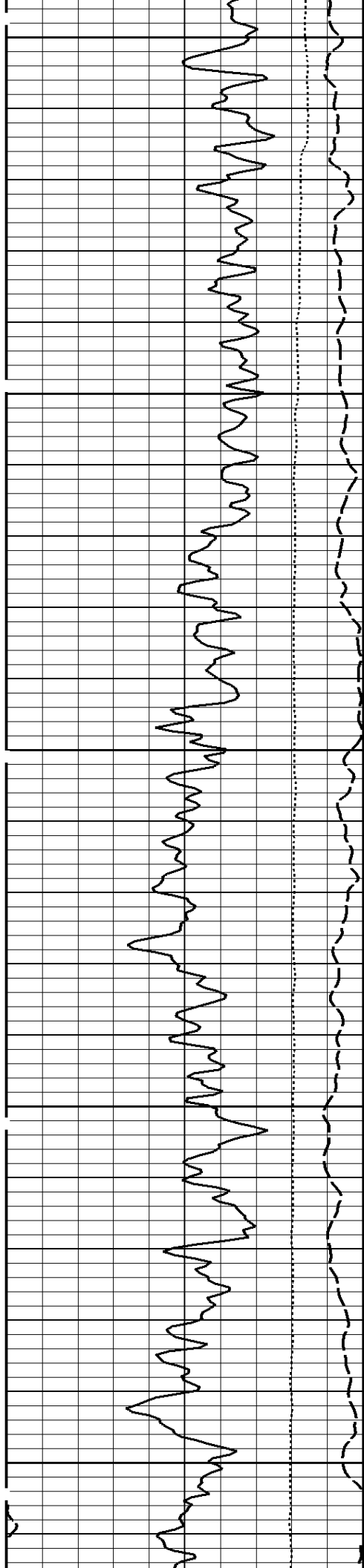




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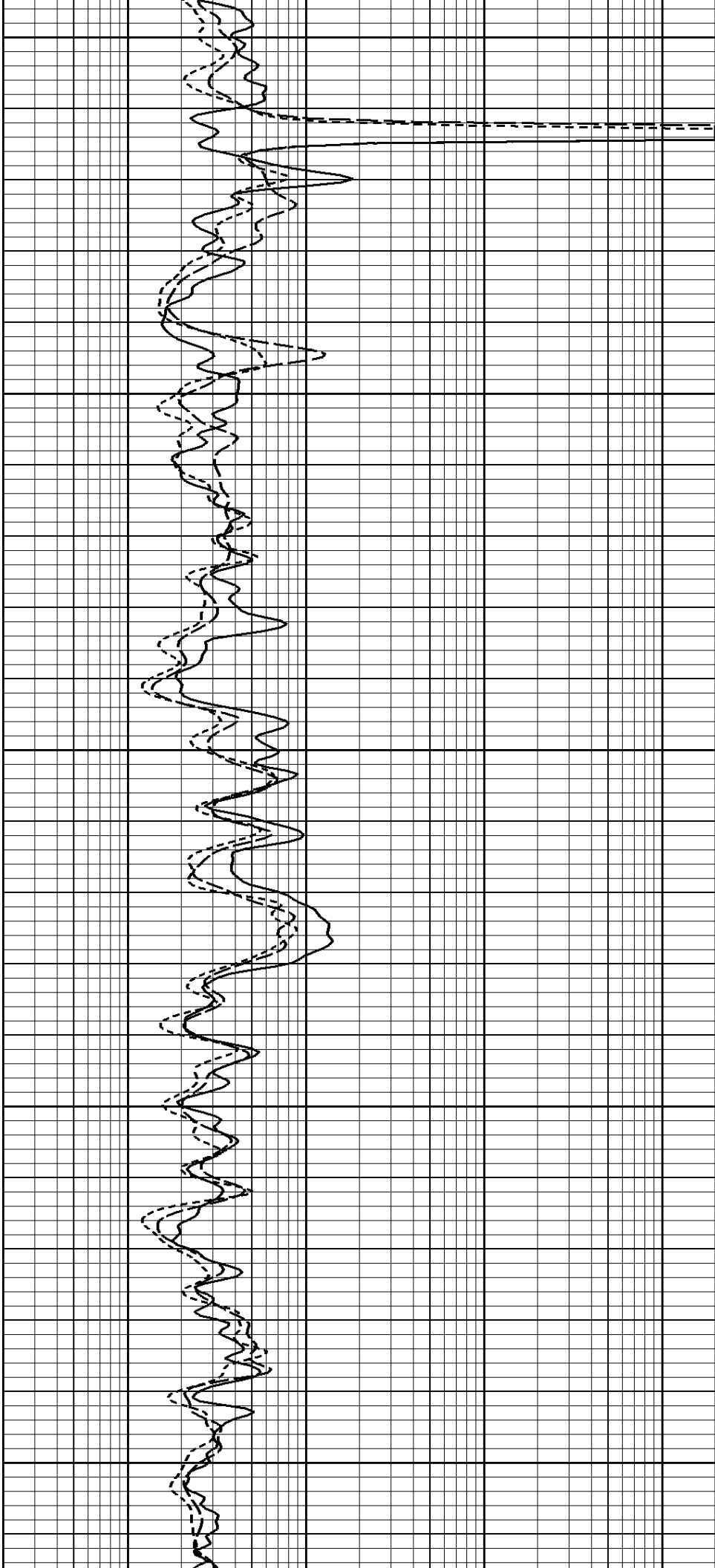
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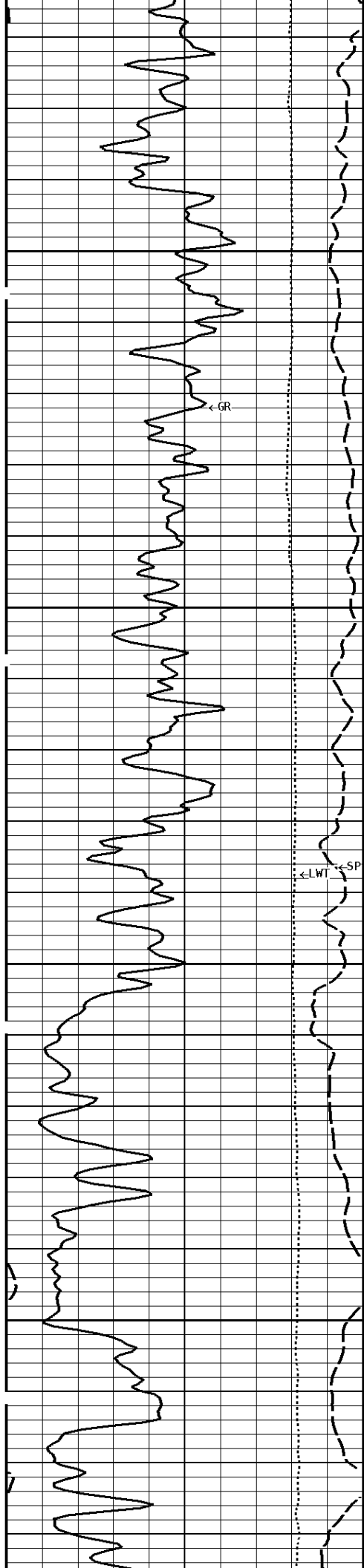




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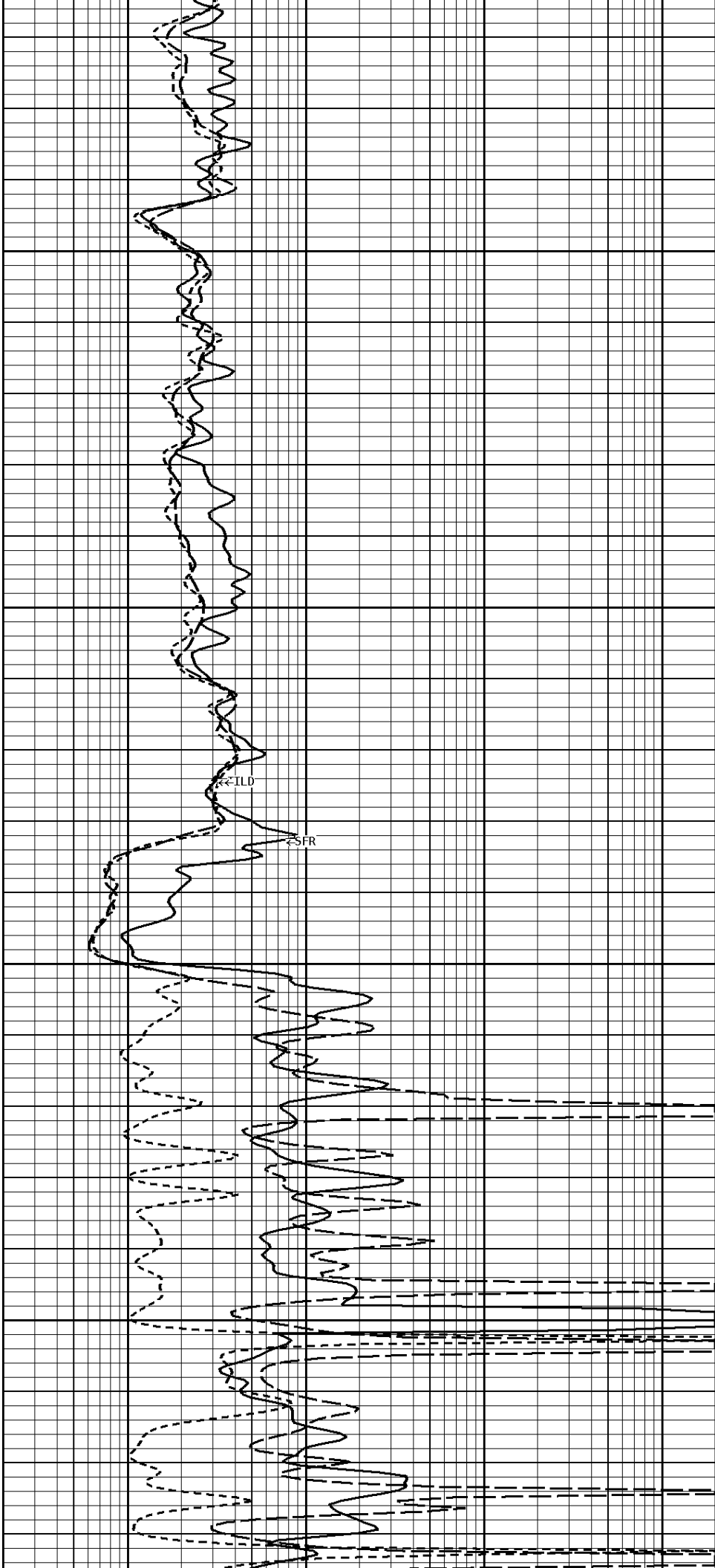
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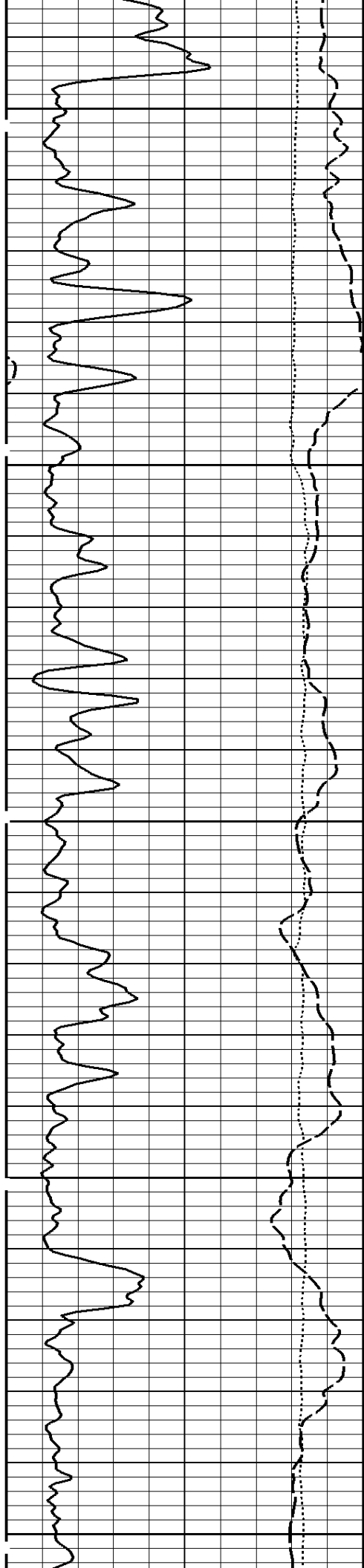




700

800

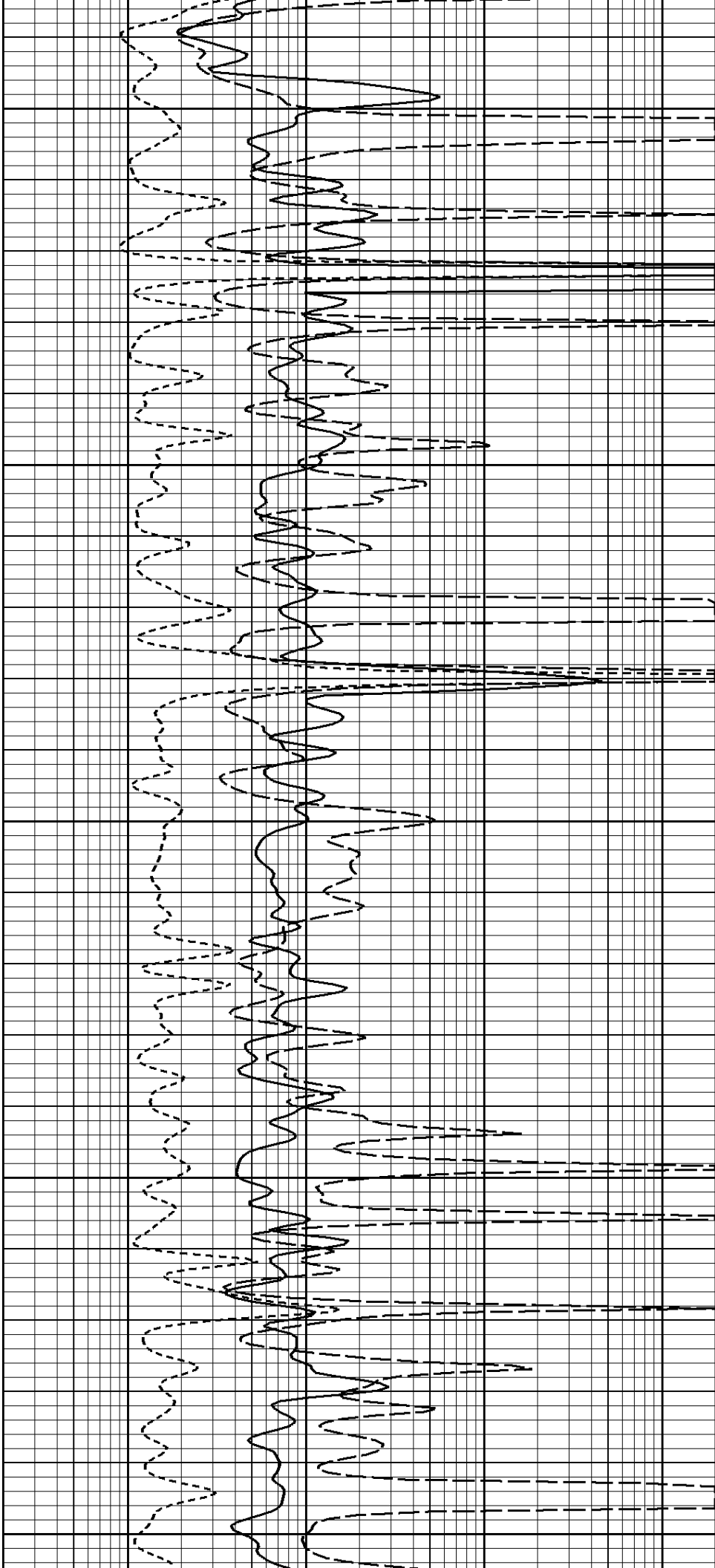


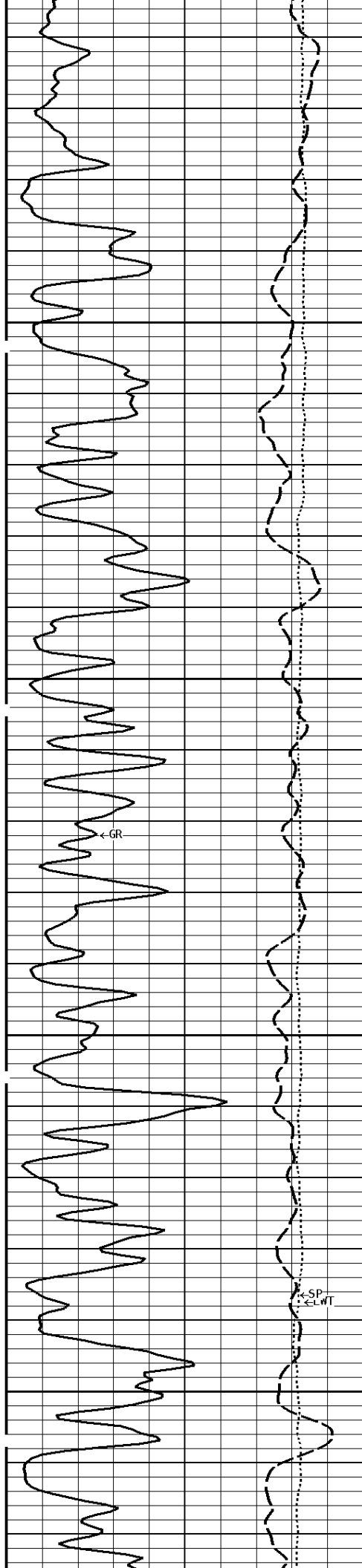


900

1000

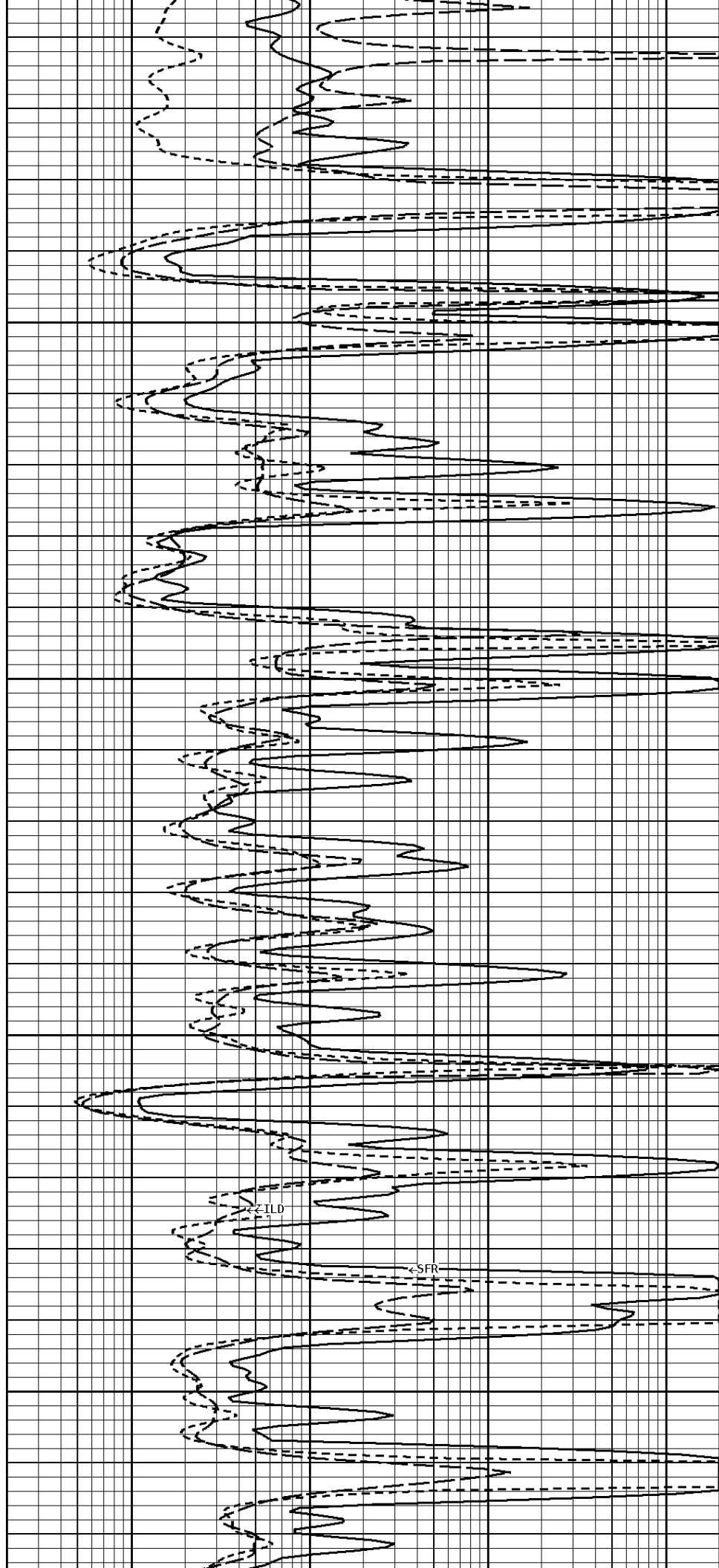
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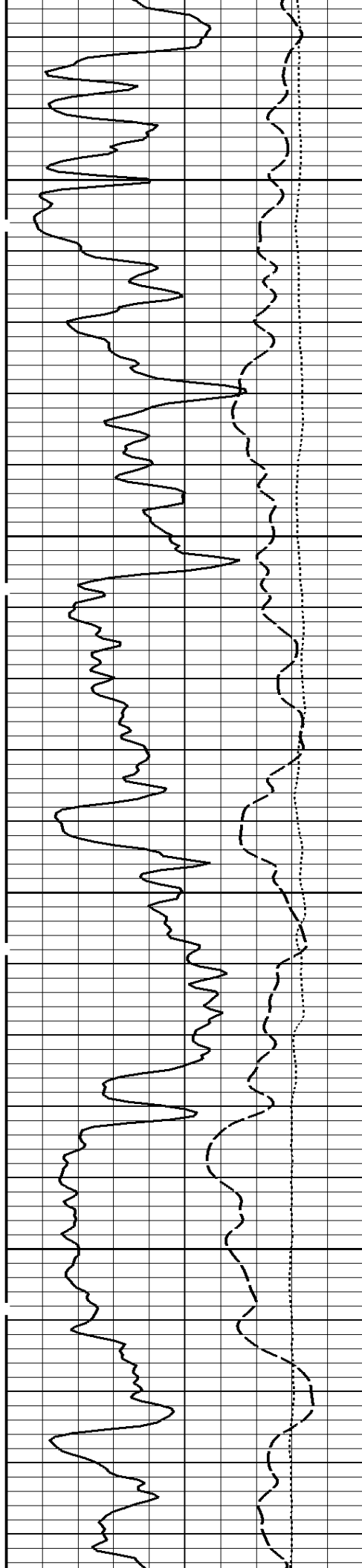




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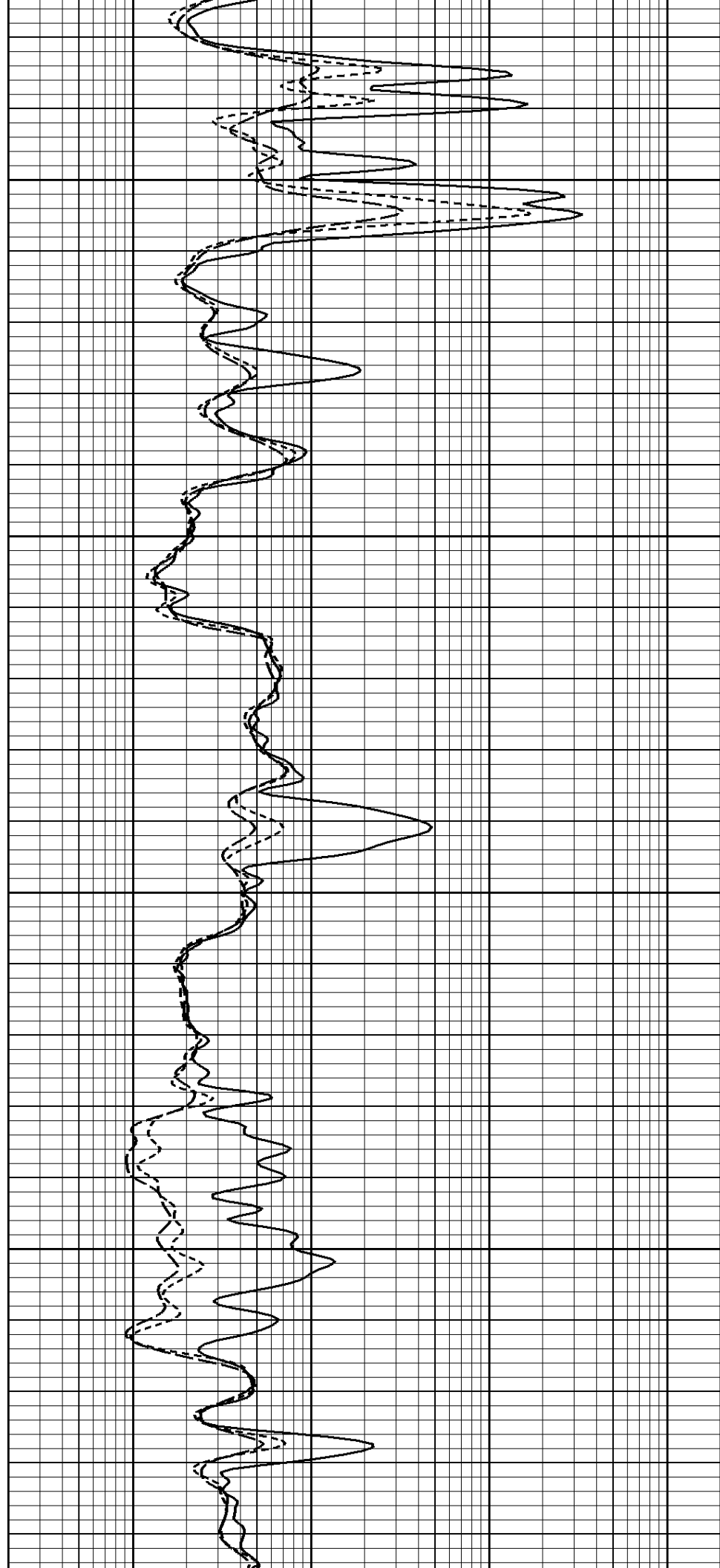
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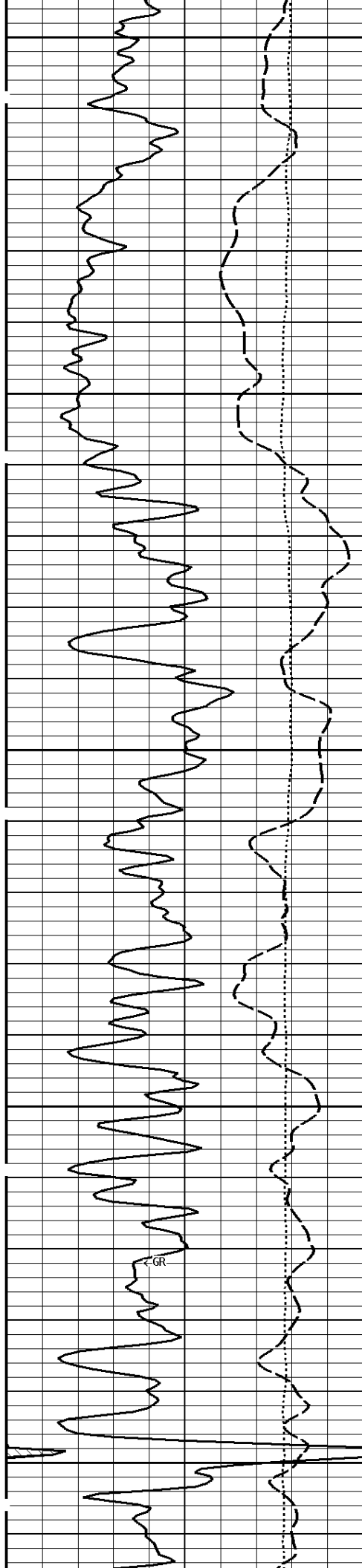




1400

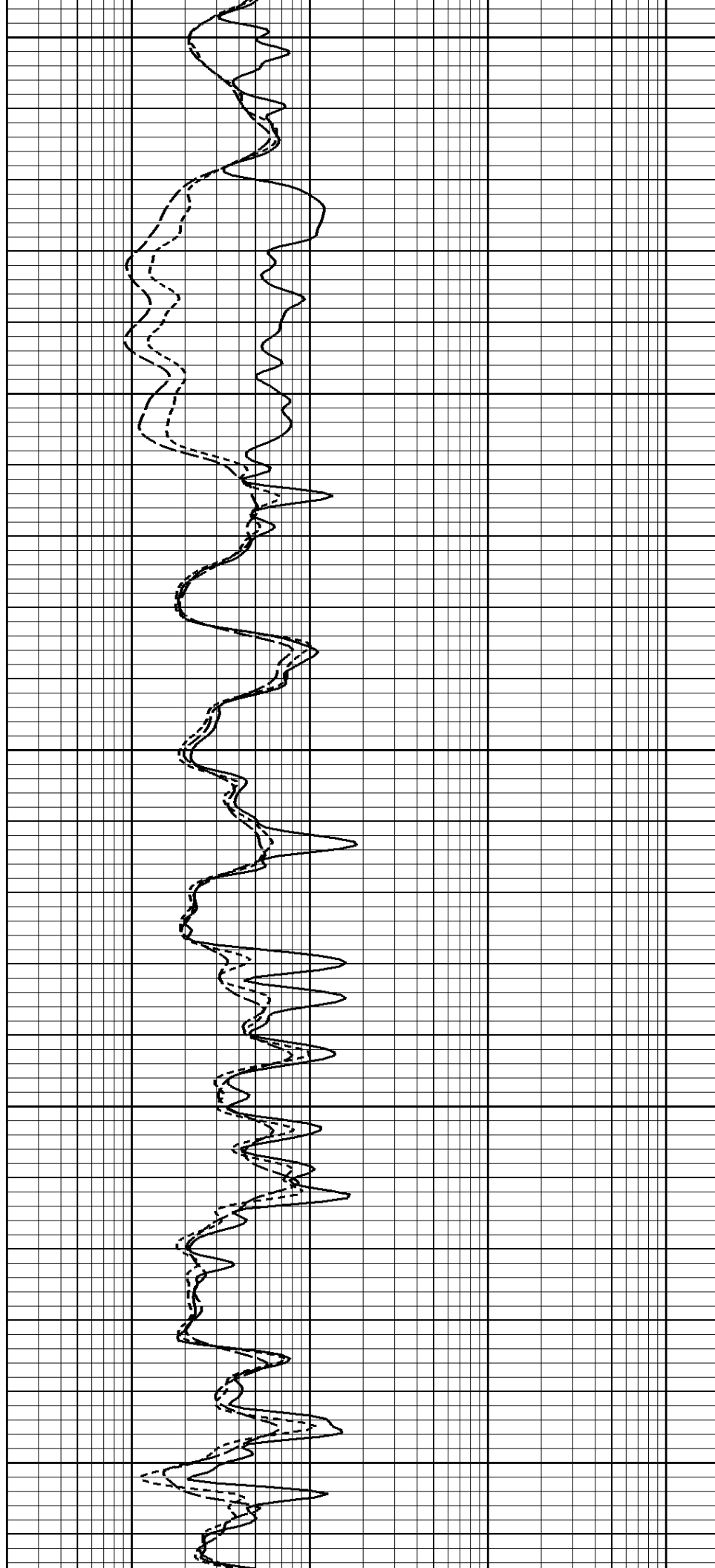
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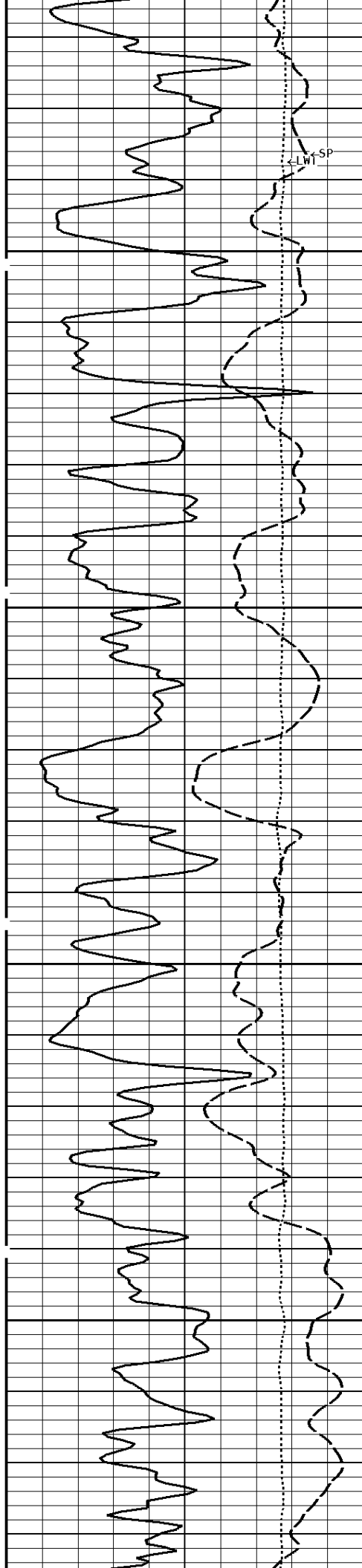




1600

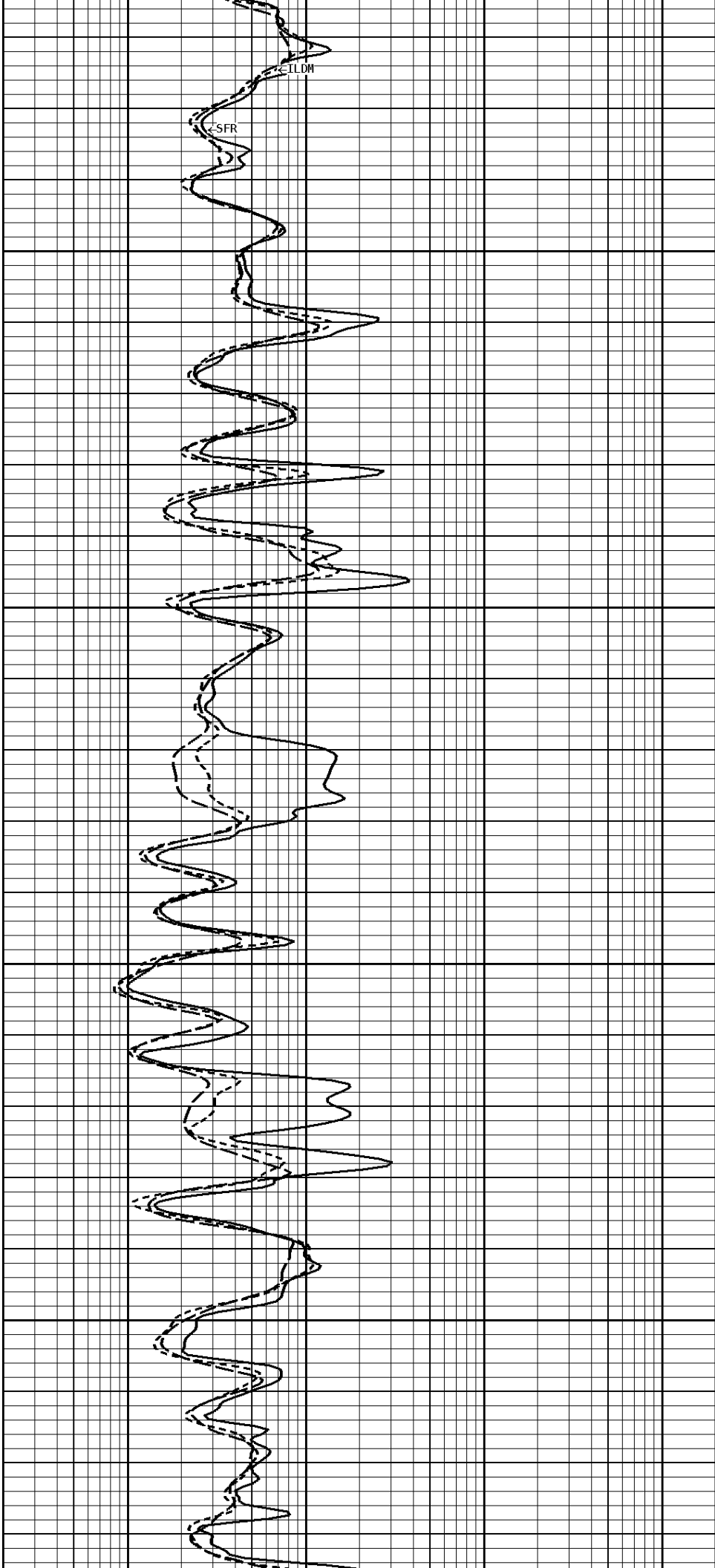
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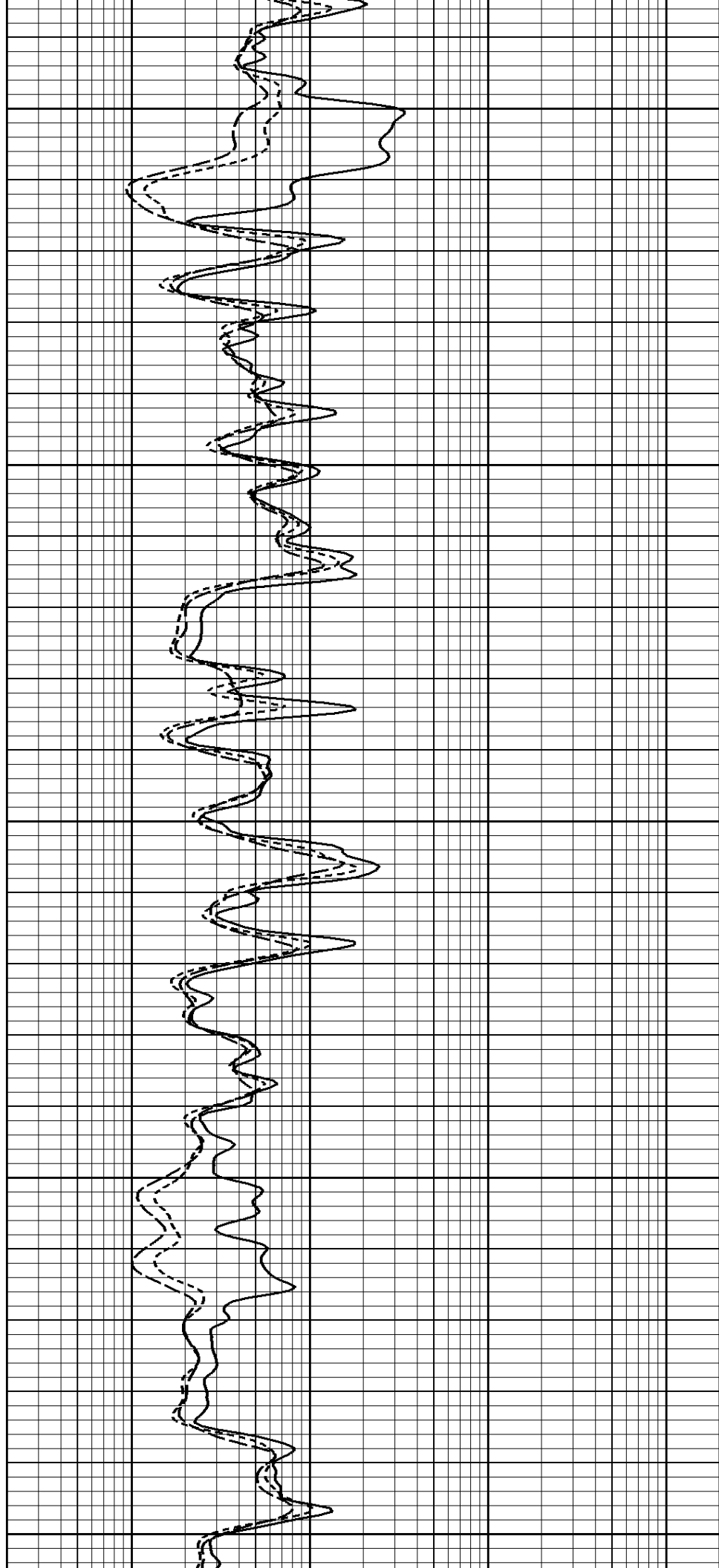
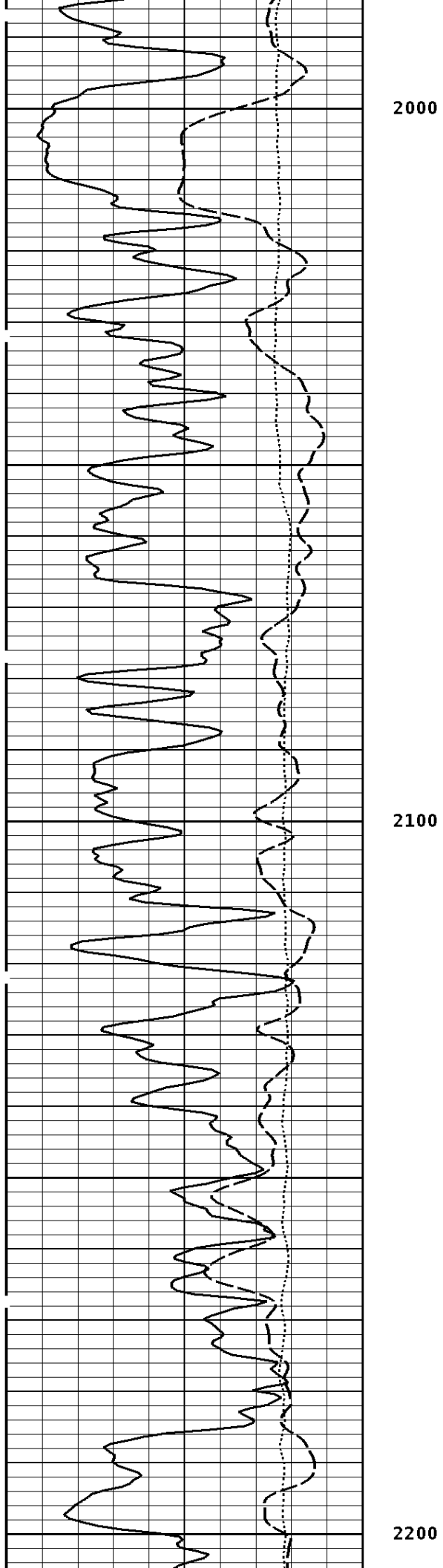


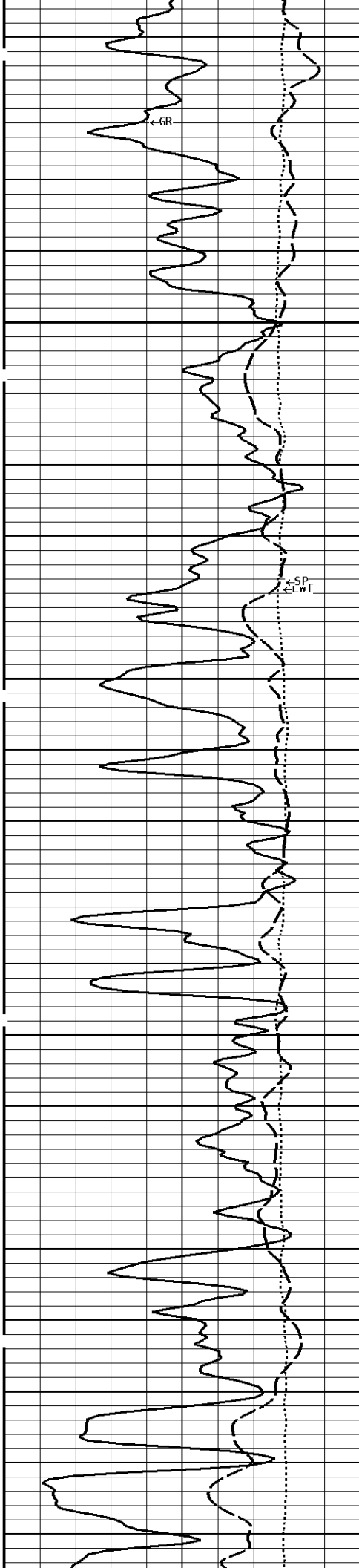


1800

1900

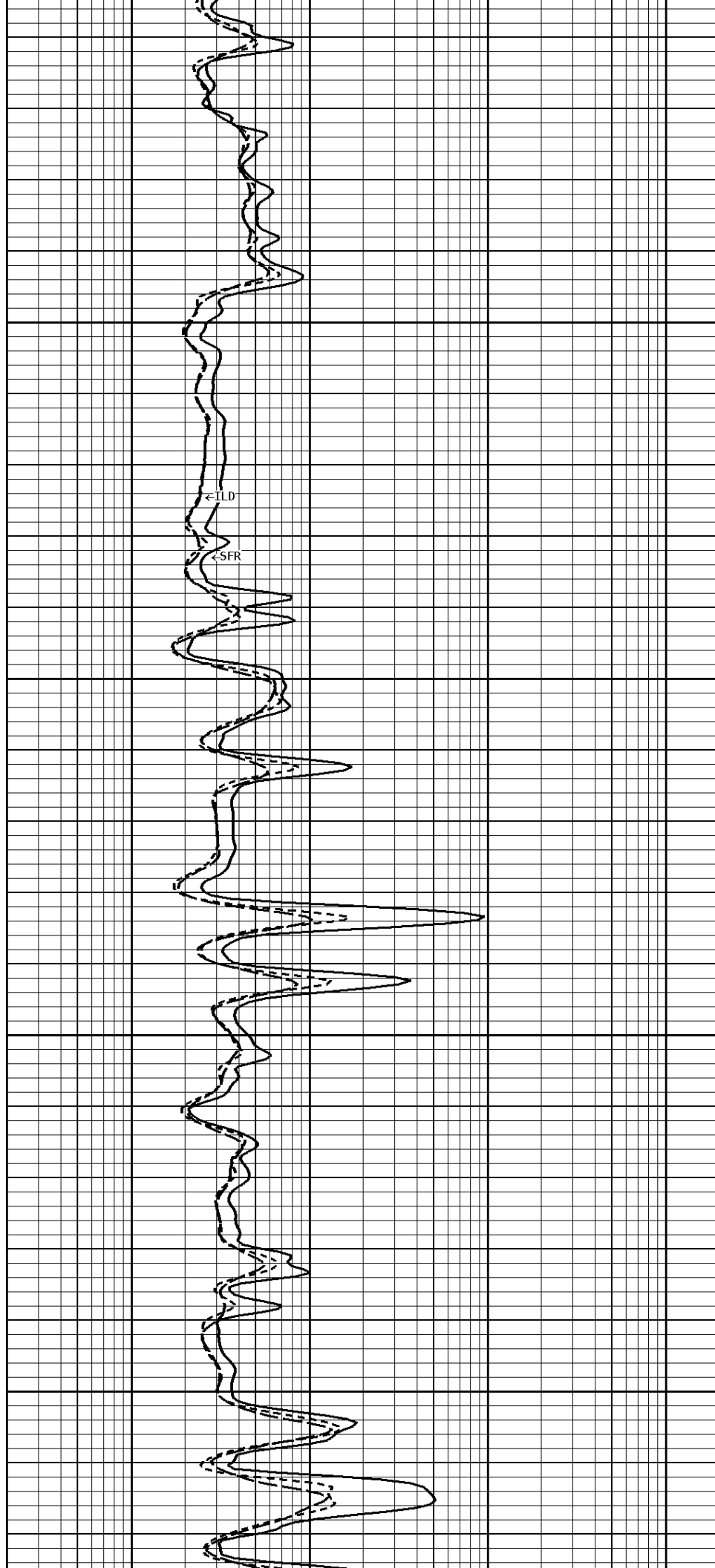


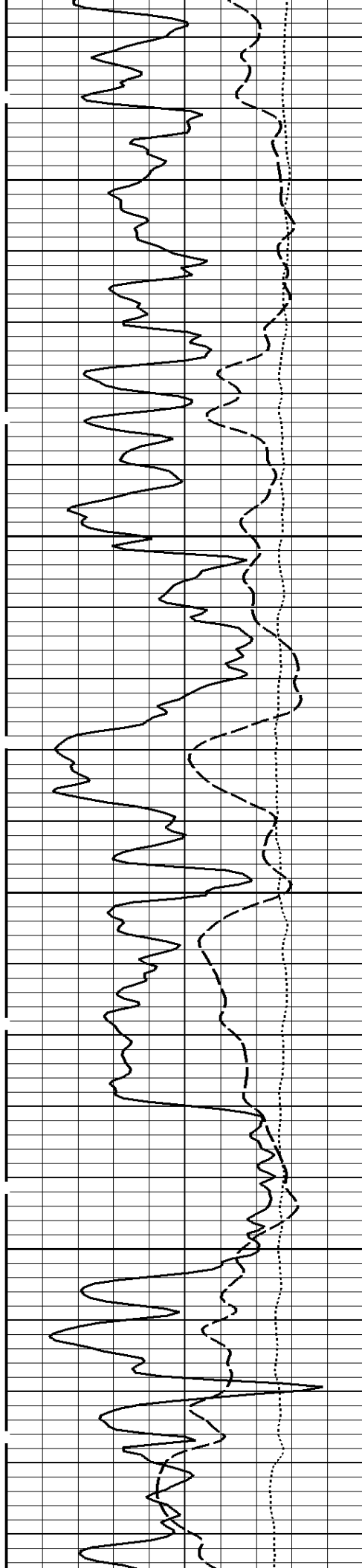




2300

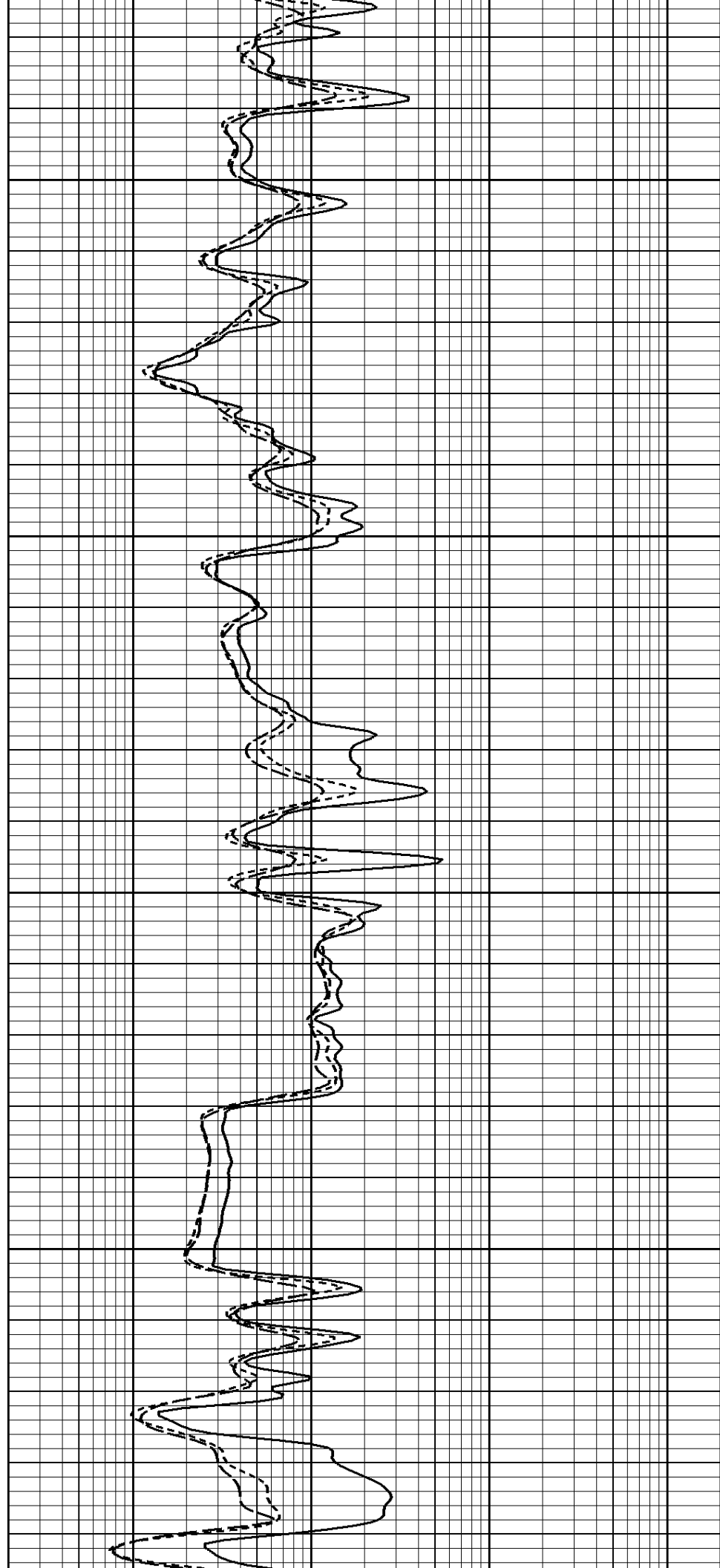
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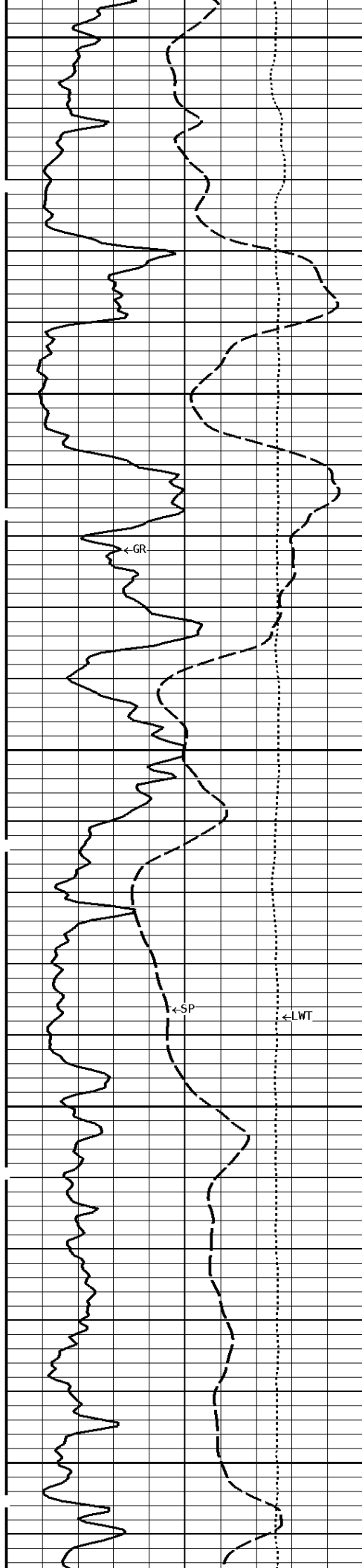




2500

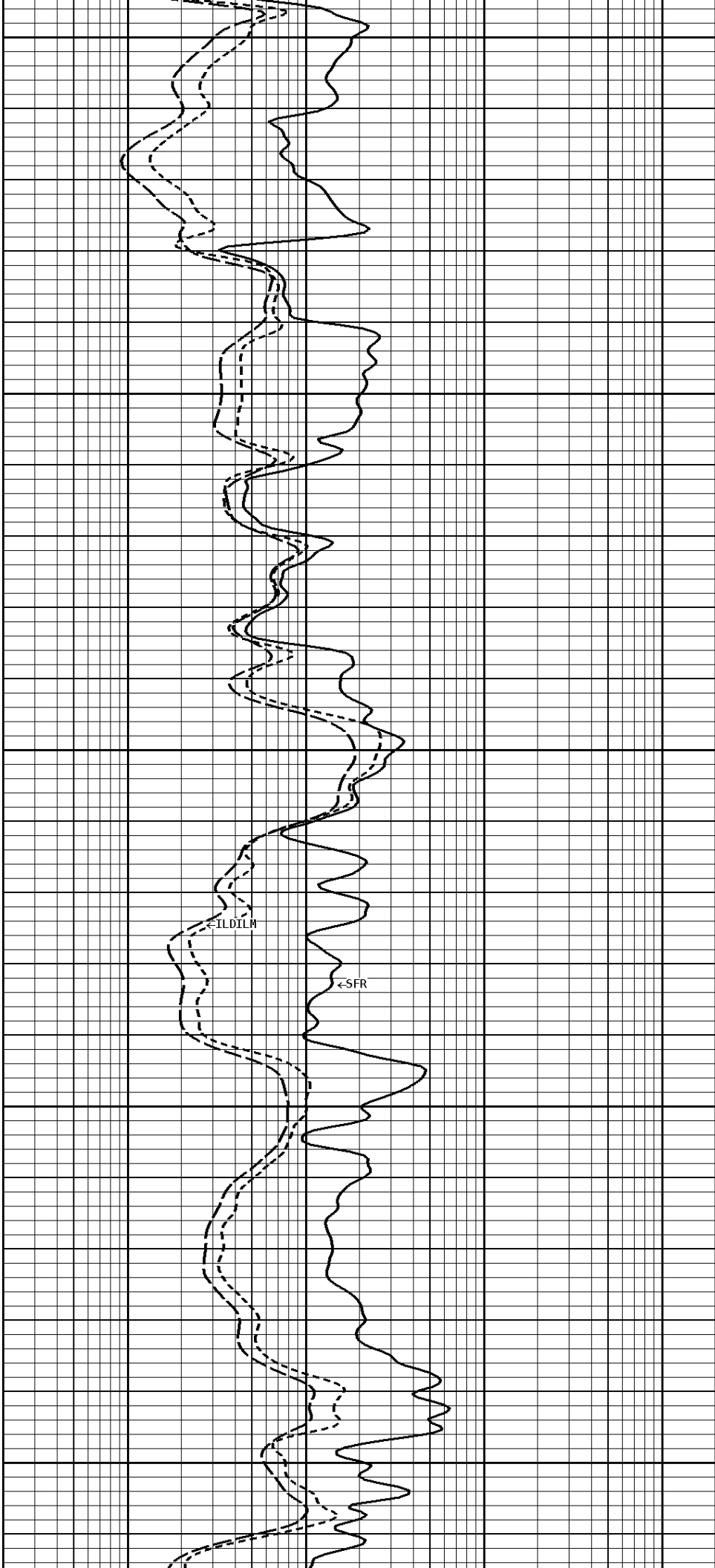
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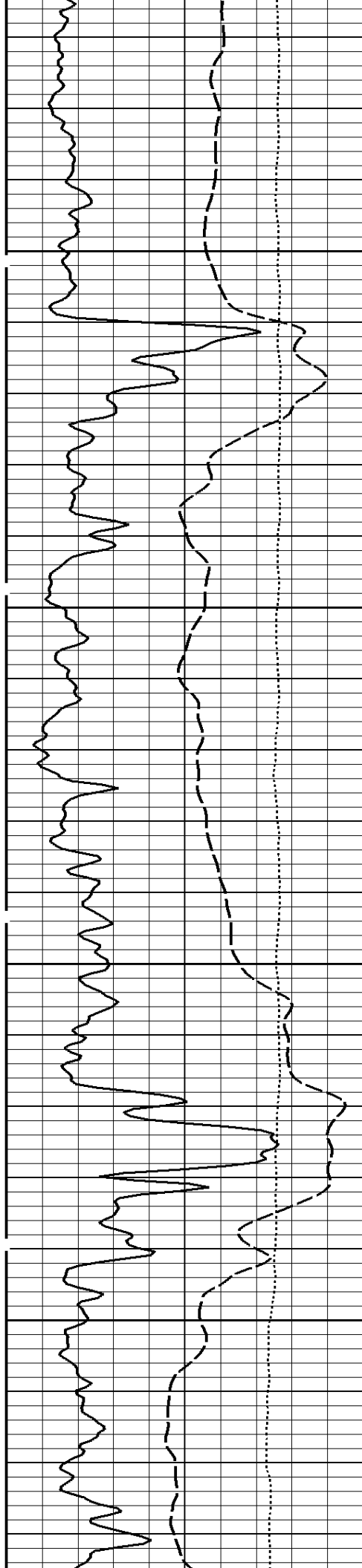
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2800



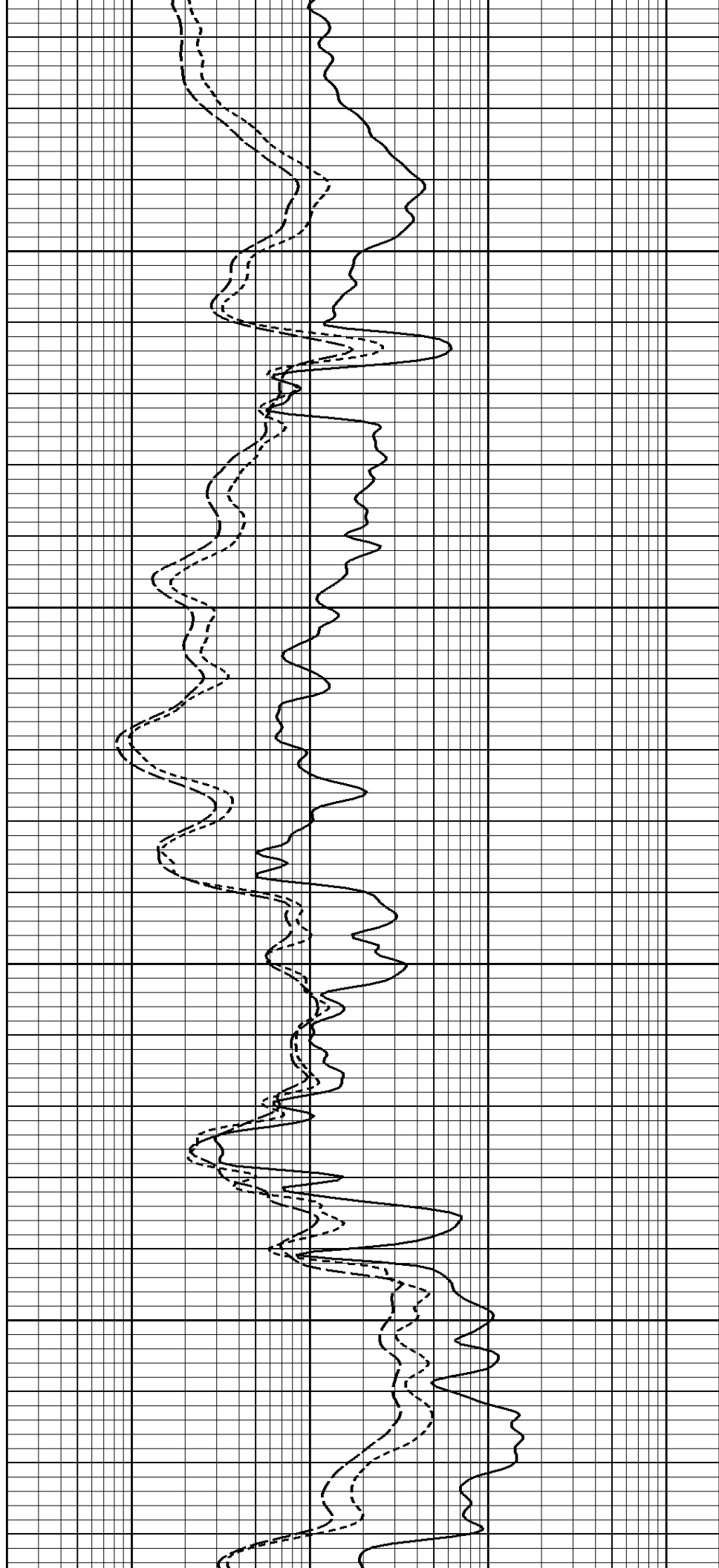
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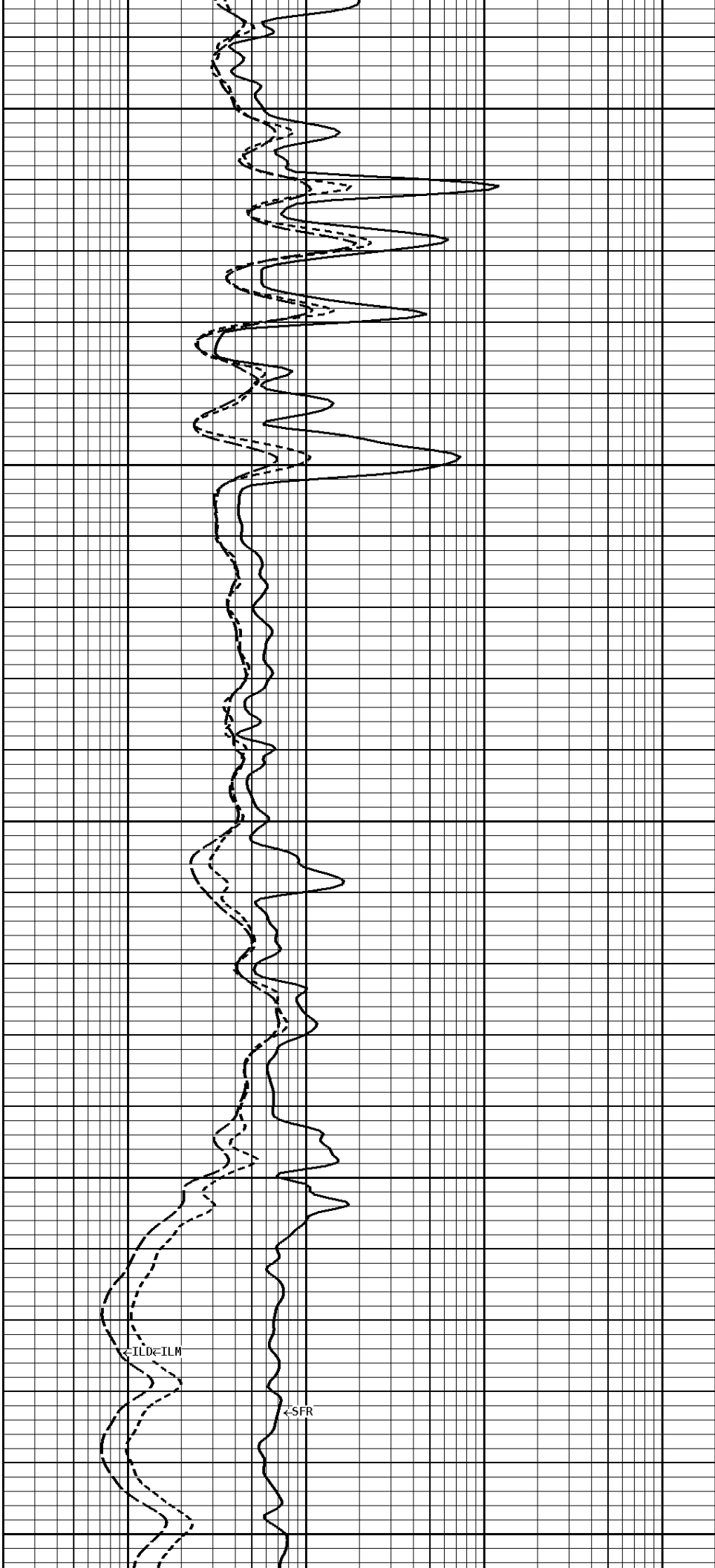
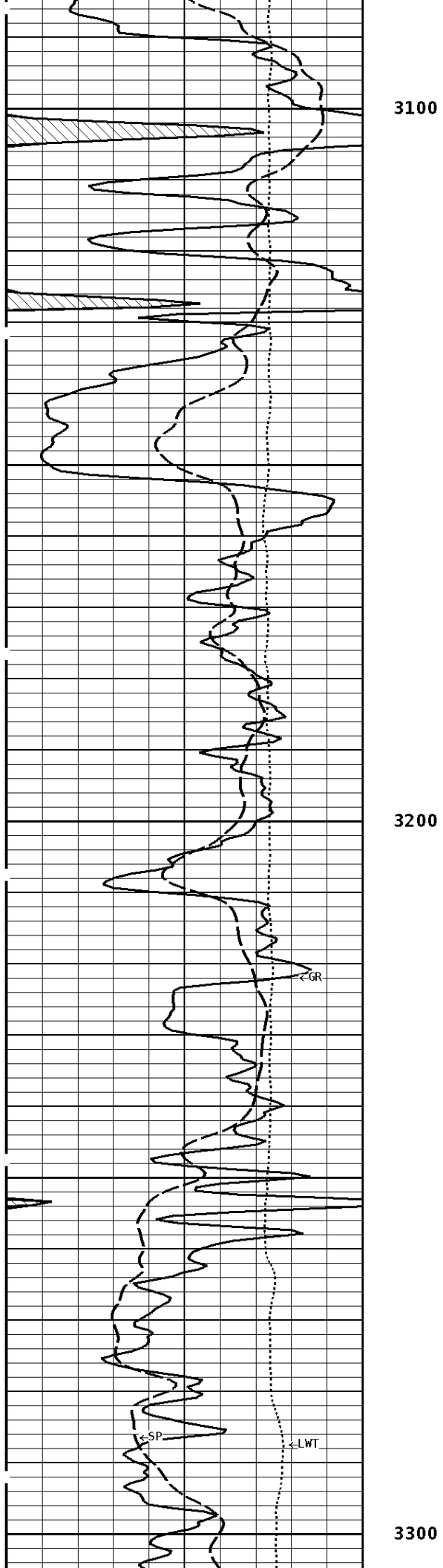
SFR

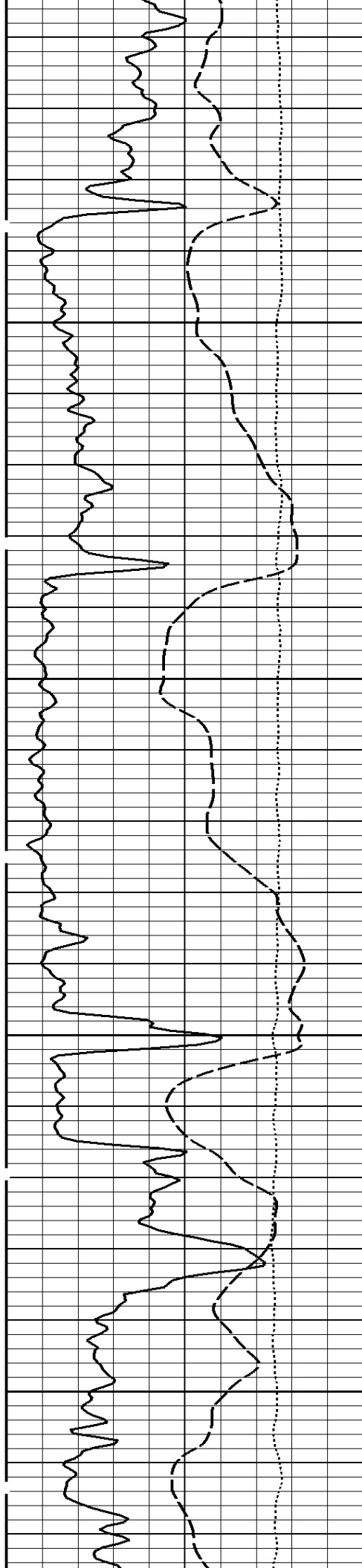


2900

3000

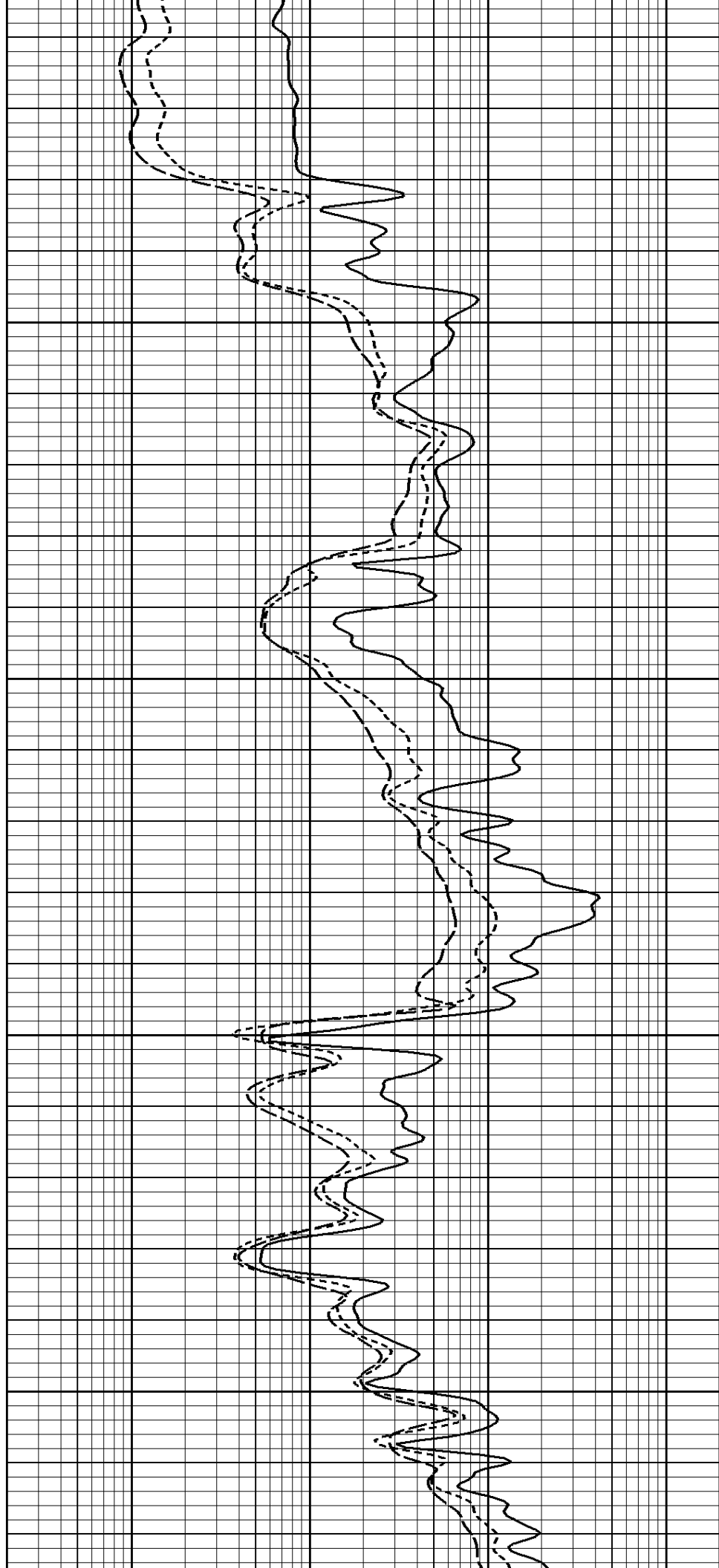






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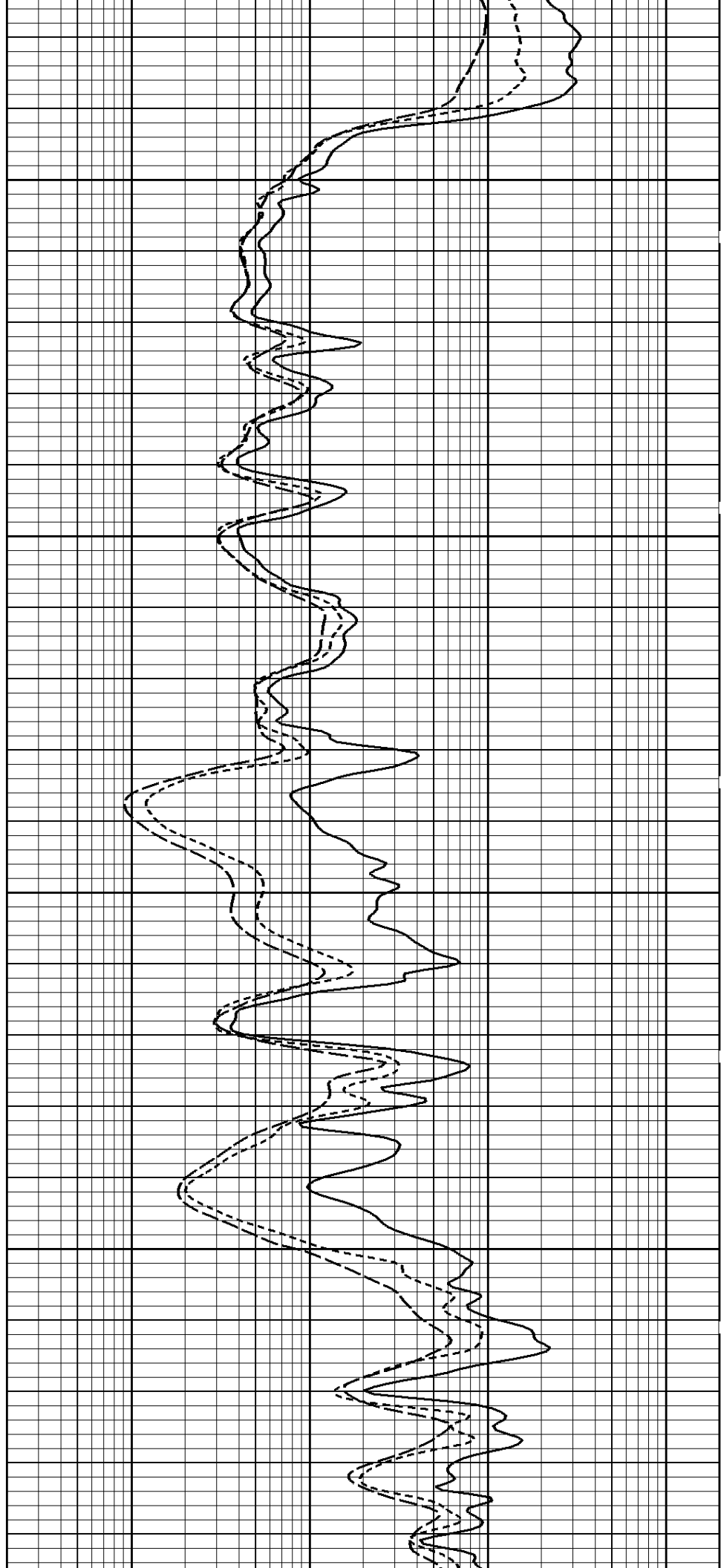
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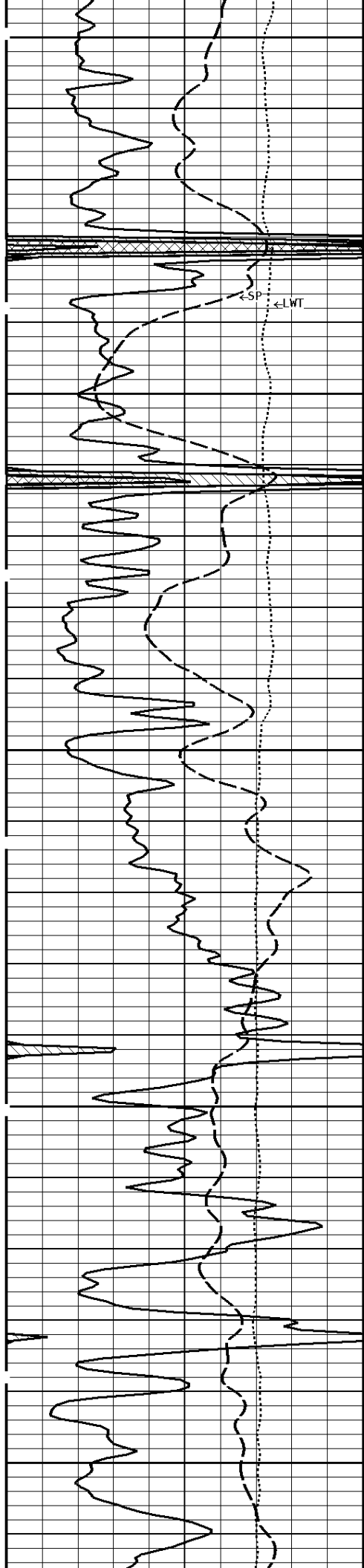




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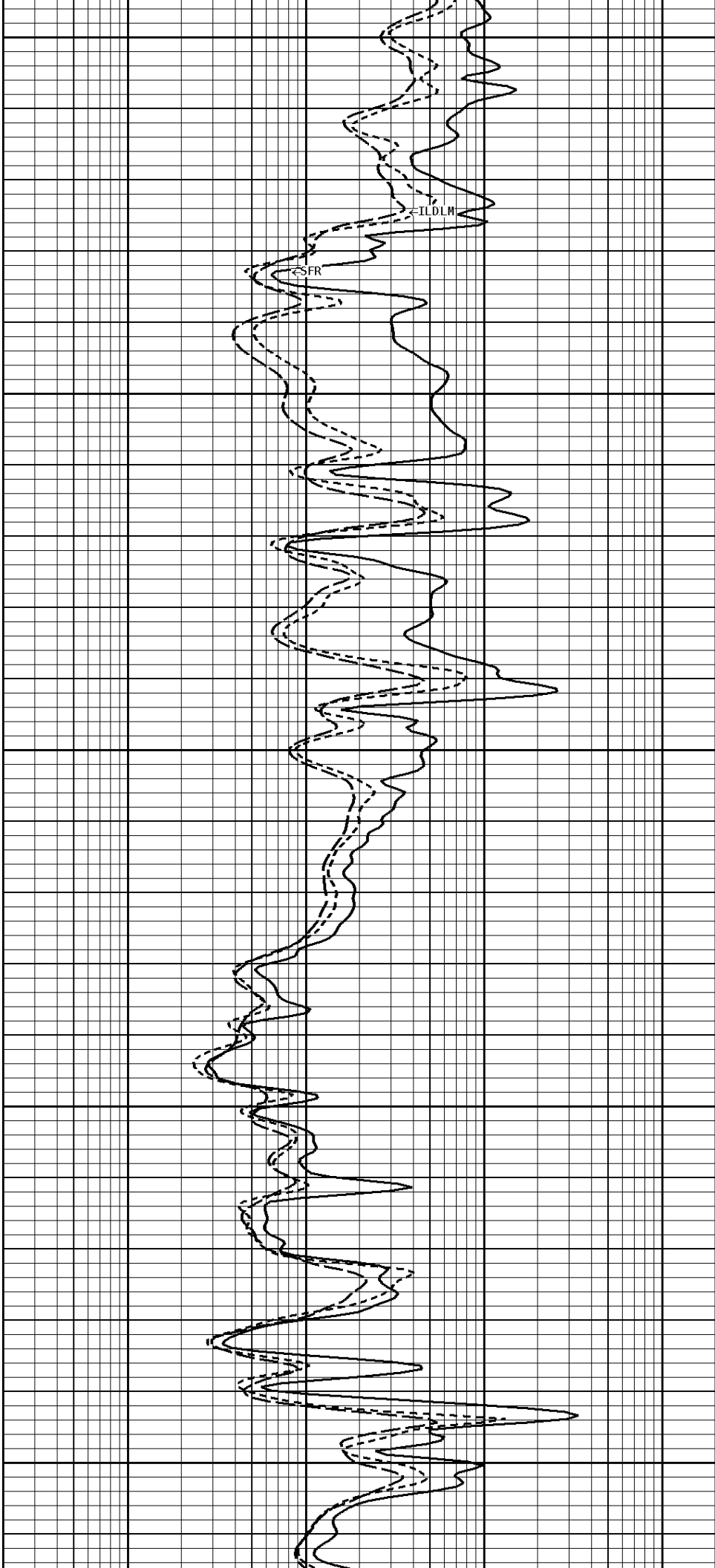
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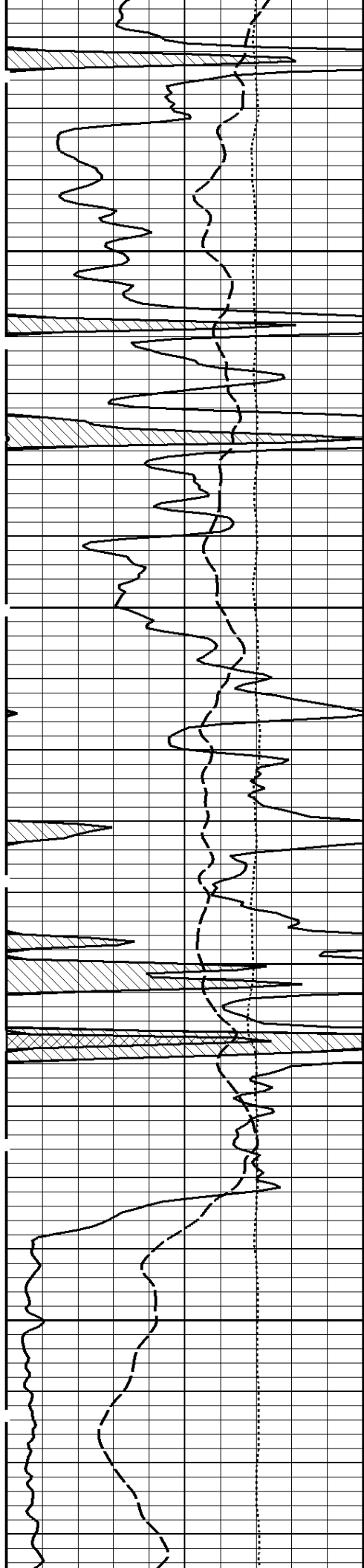




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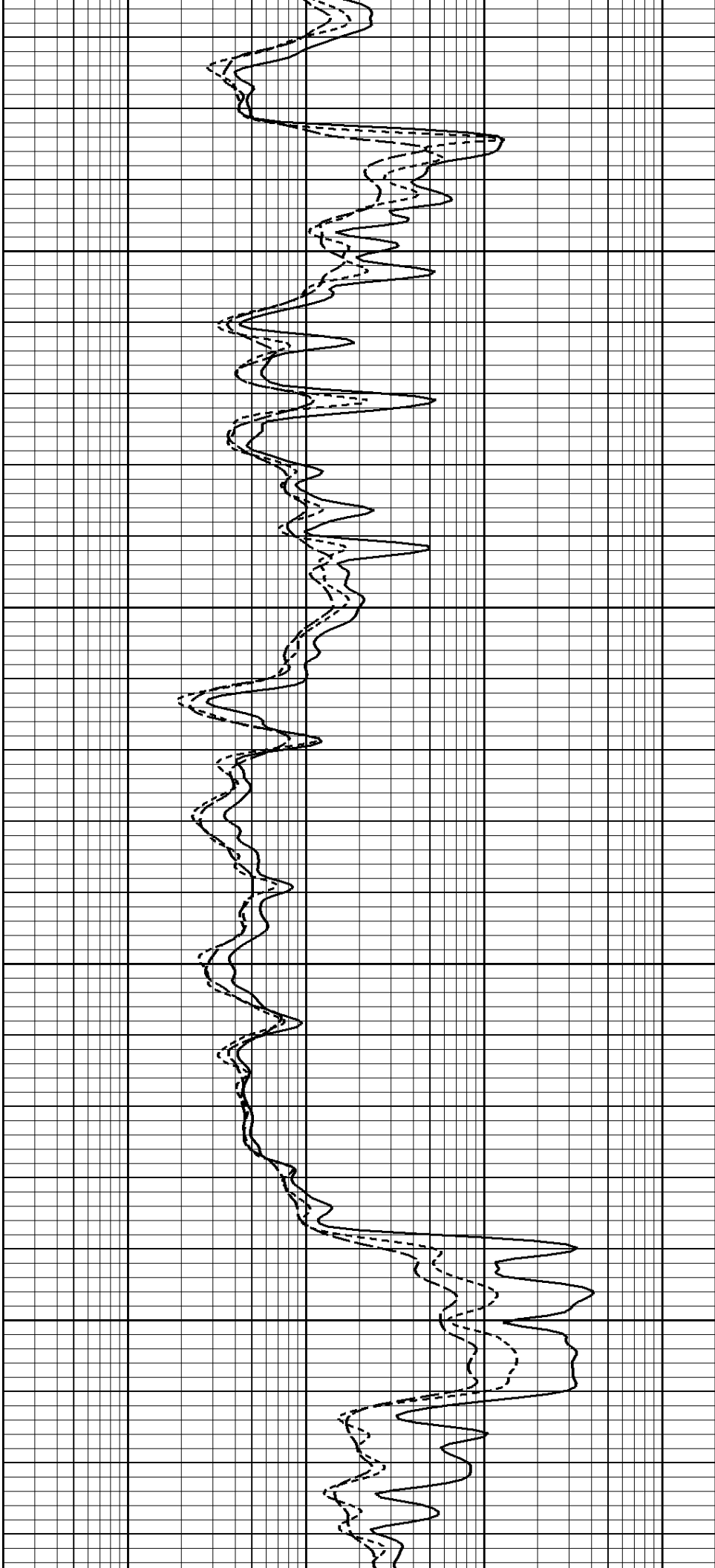
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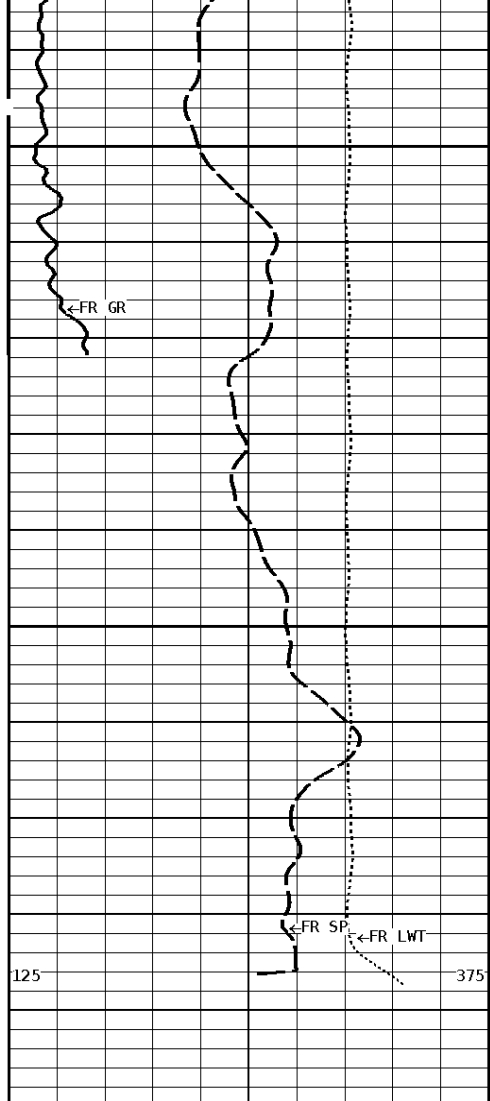




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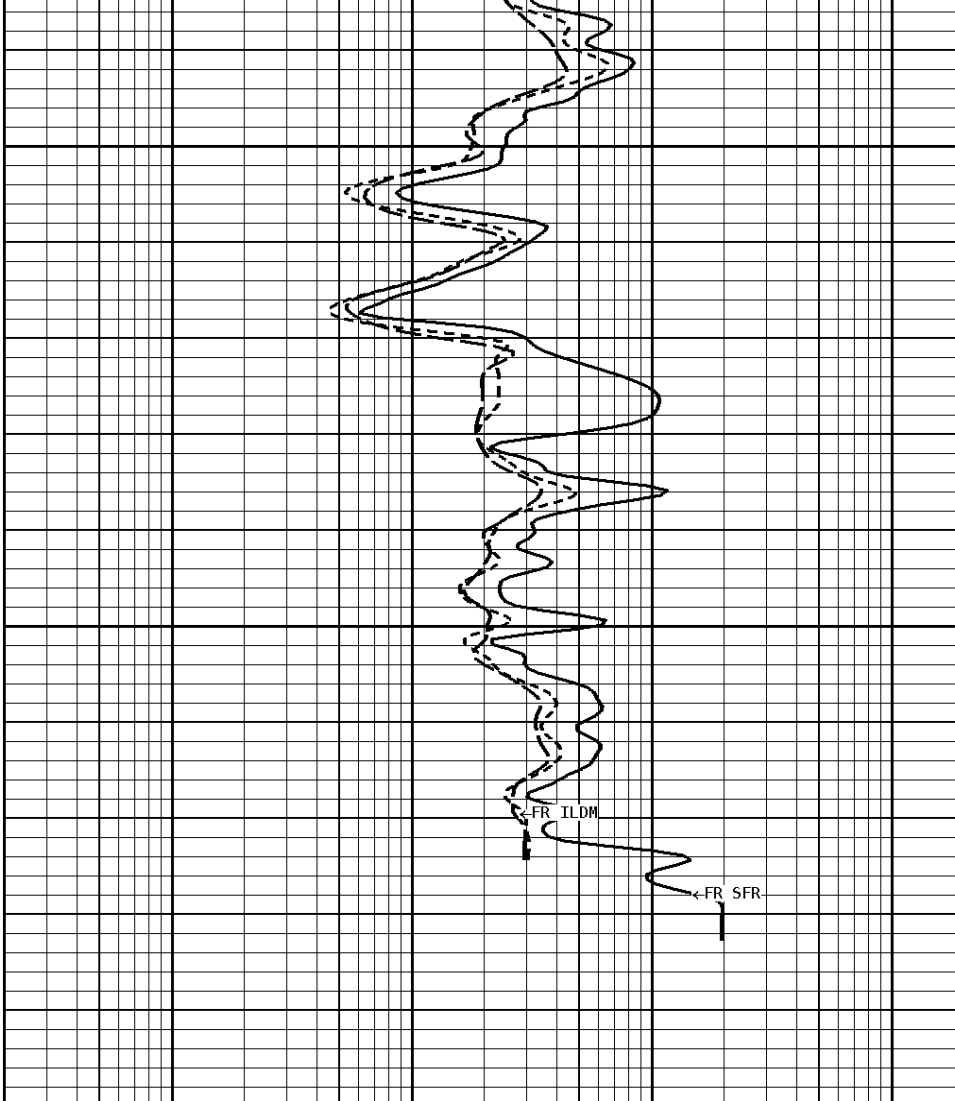
4100





4200

4283



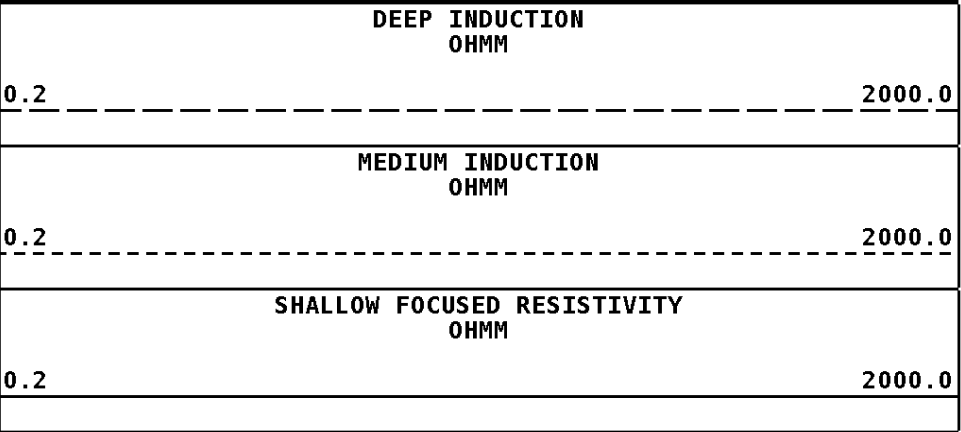
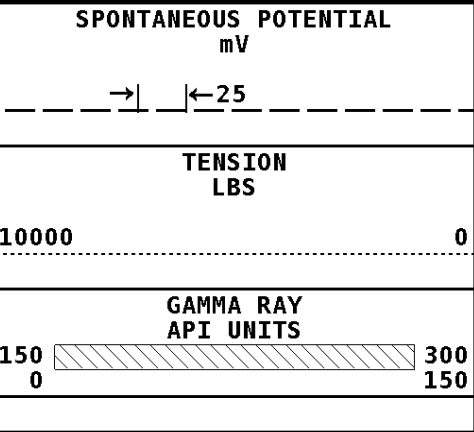
1:240 MAIN SECTION

GAMMA RAY API UNITS	
150	300
0	150
TENSION LBS	
10000	0
SPONTANEOUS POTENTIAL mV	
→	←25

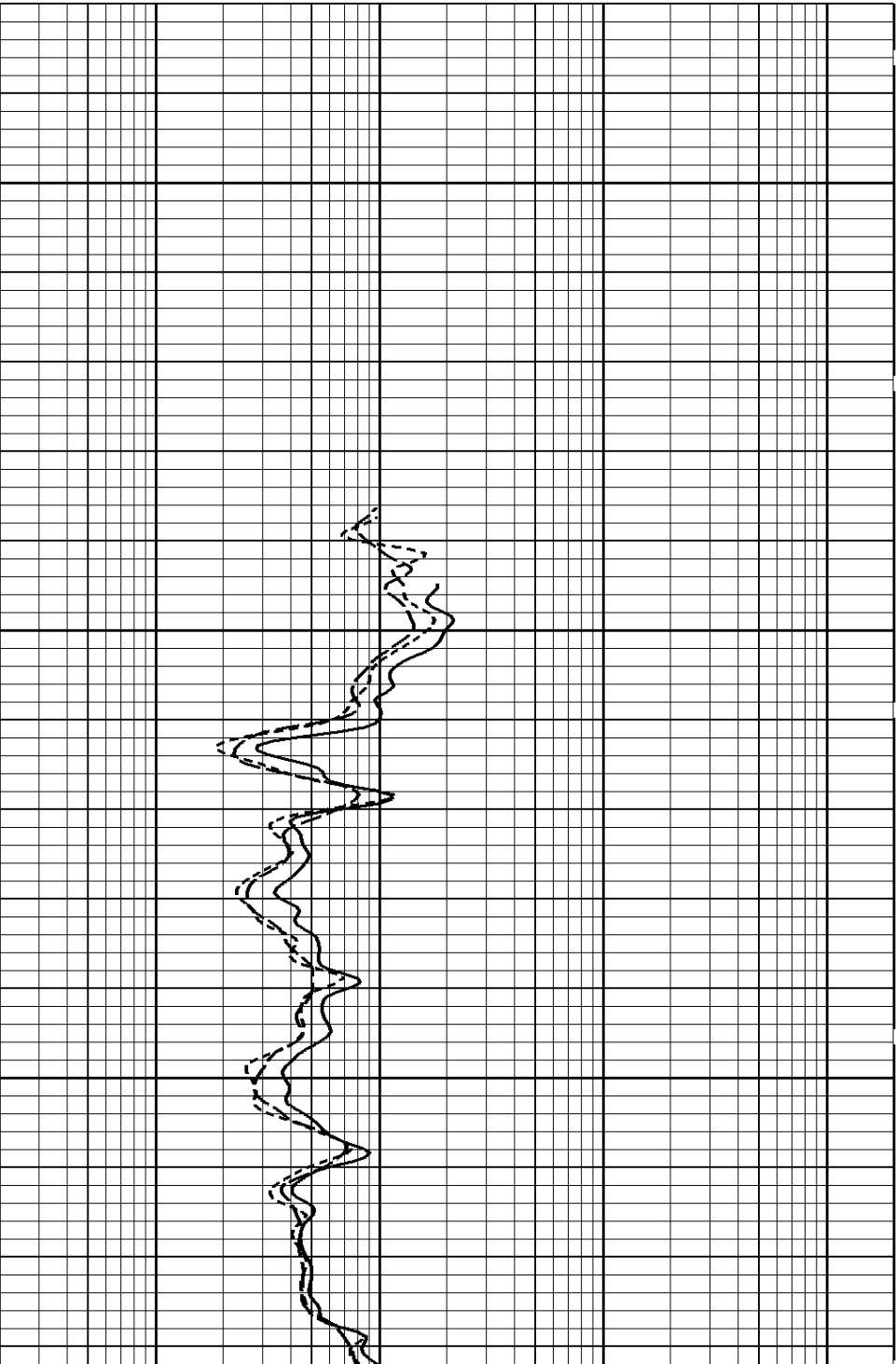
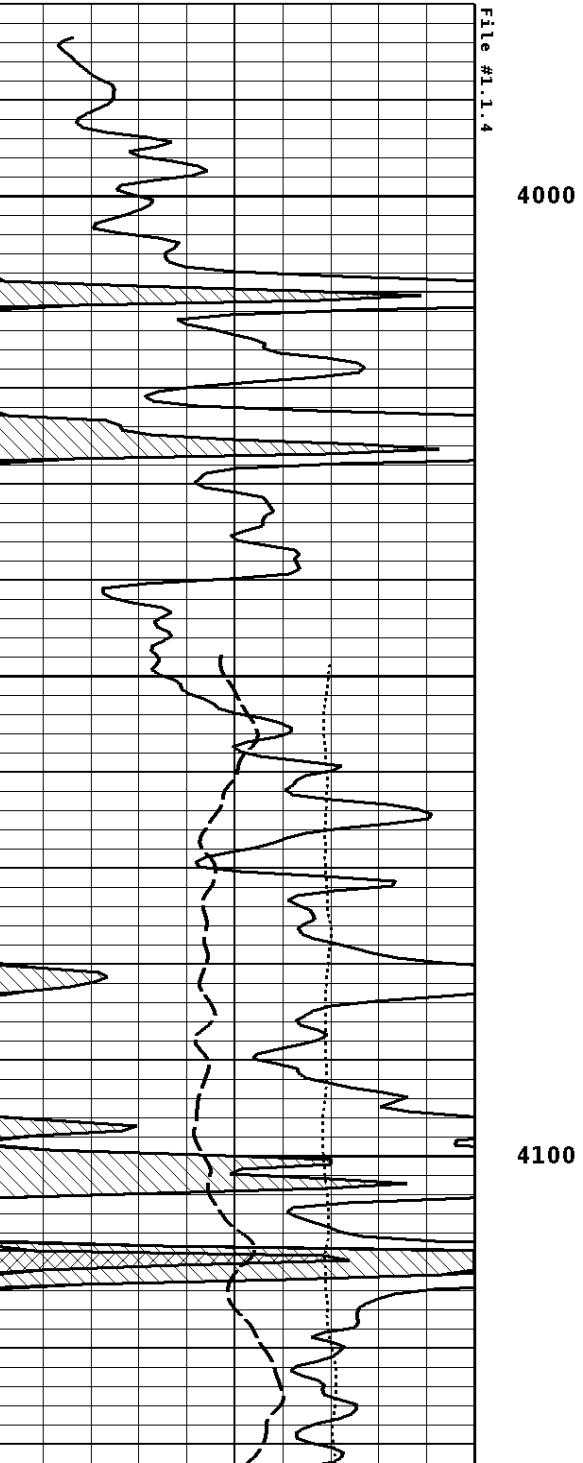
SHALLOW FOCUSED RESISTIVITY OHMM	
0.2	2000.0
MEDIUM INDUCTION OHMM	
0.2	2000.0
DEEP INDUCTION OHMM	
0.2	2000.0

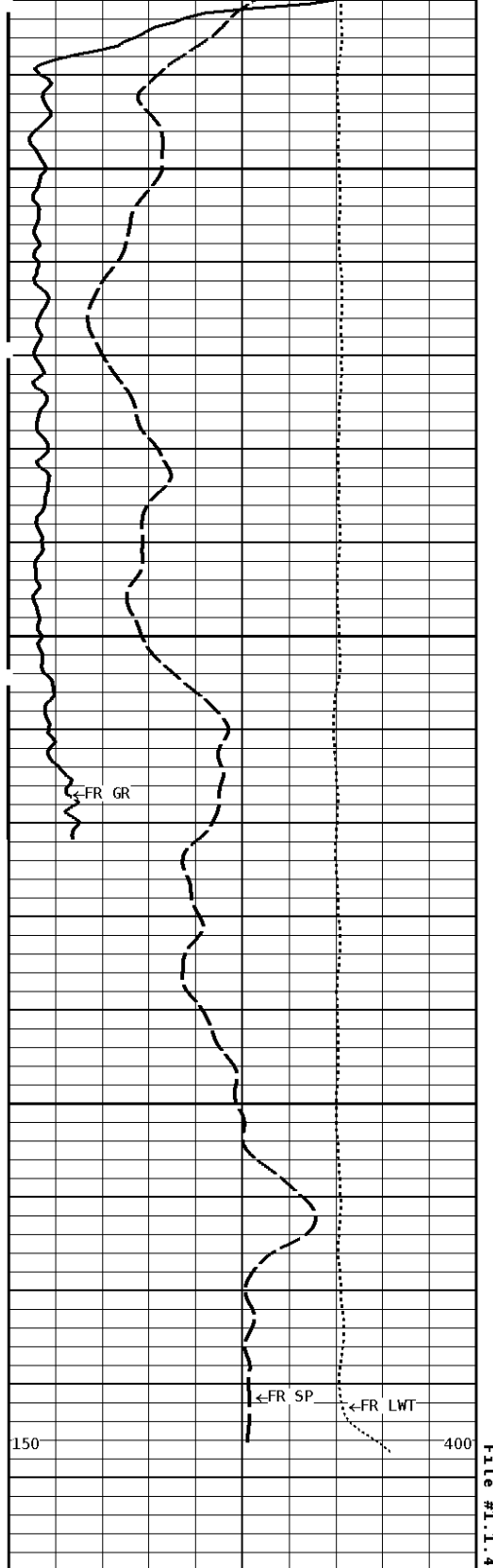
* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 Feet		
Drill Bit Size	7.875	in
Casing Diameter	5.500	in
BHT Depth	4283.000	ft
Borehole Temperature	125.0	degF
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	0.600	ohm/m
Standoff	1.5	
Resistivity Of Mud Temperature	65.00	degF



1:240 REPEAT SECTION



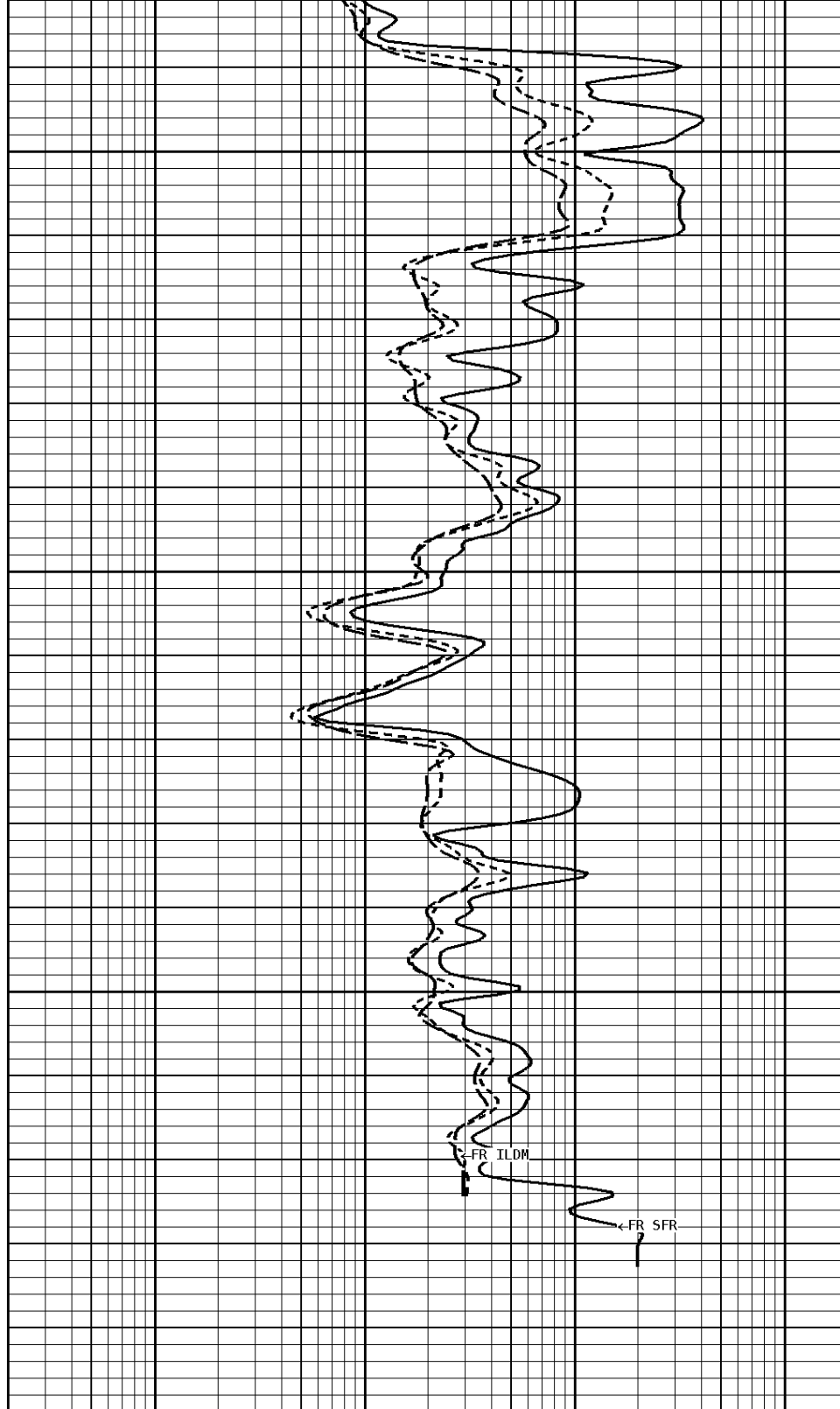


4200

4283

File #1.1.4

1:240 REPEAT SECTION



GAMMA RAY API UNITS	
150	300
0	150
TENSION LBS	
10000	0
SPONTANEOUS POTENTIAL mV	

SHALLOW FOCUSED RESISTIVITY OHMM	
0.2	2000.0
MEDIUM INDUCTION OHMM	
0.2	2000.0
DEEP INDUCTION OHMM	

*** Borehole Zone Factors ***

Zone 1 99999.0 to 0.0 Feet			
Drill Bit Size		7.875	in
Casing Diameter		5.500	in
BHT Depth		4283.000	ft
Borehole Temperature		125.0	degF
Temperature Gradient		1.00	DFHF
Resistivity Of Mud		0.600	ohm/m
Standoff		1.5	
Resistivity Of Mud Temperature		65.00	degF

*** Calibration Summary ***

Shop Calibration GRT-B						
Performed : 21-APR-2014			Time : 11:21			
Sensor Suite : GR-GR5			ID : GRT-BB-107			
	Measured	Units	Calibrated	Units		
	Background	Jig	Jig			
GR	75	381	CPS	175	GRAPI	

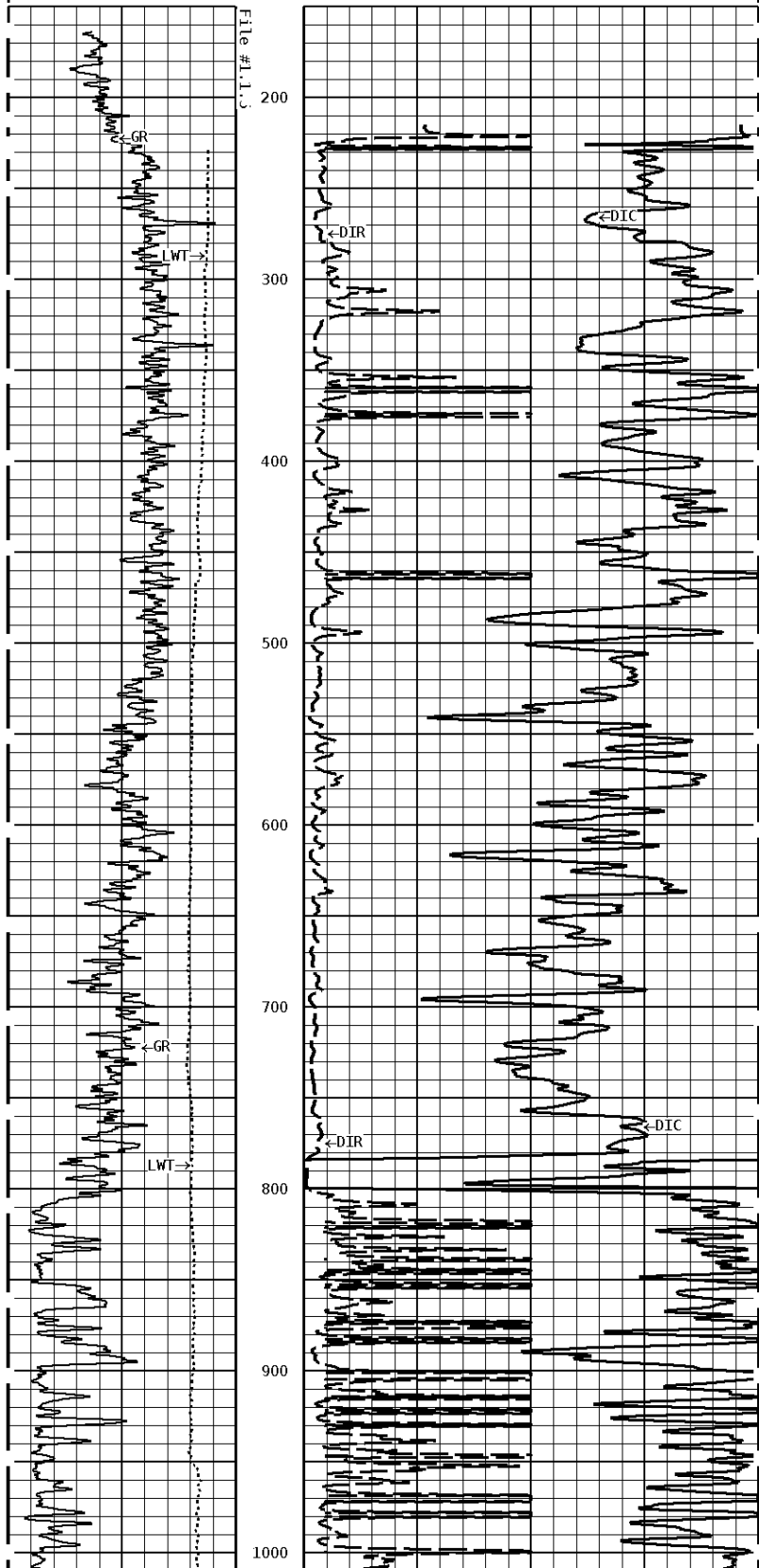
Shop Calibration PIT-CA						
Performed : 10-Sep-2014			Time : 11:40			
Sensor Suite : P-IND-T			ID : PIT-CA-075			
Medium						
	Measured		Calibrated		Units	
	R	X	R	X		
Air	131419	129931	1.4	0.2	MMHOS	
Zero	131070	131067	-10.2	45.4	MMHOS	
Reference	250682	249654	4989.8	5045.4	MMHOS	
Loop	129961	216623	3595.7	3716.3	MMHOS	
Sonde Error			0.5	-7.1	MMHOS	
Cond			4989.8	5045.4	MMHOS	
Deep						
	Measured		Calibrated		Units	
	R	X	R	X		
Air	128119	131856	0.3	-1.2	MMHOS	
Zero	131062	131059	52.1	-18.8	MMHOS	
Reference	238518	237019	2052.1	1981.2	MMHOS	
Loop	126986	223844	1715.5	1756.2	MMHOS	
Sonde Error			-6.7	0.1	MMHOS	
Cond			2052.1	1981.2	MMHOS	
Temperature						
	Measured		Calibrated		Units	
	Low	High	Low	High		
	16980.0	56920.0	70.0	350.0	DEGF	

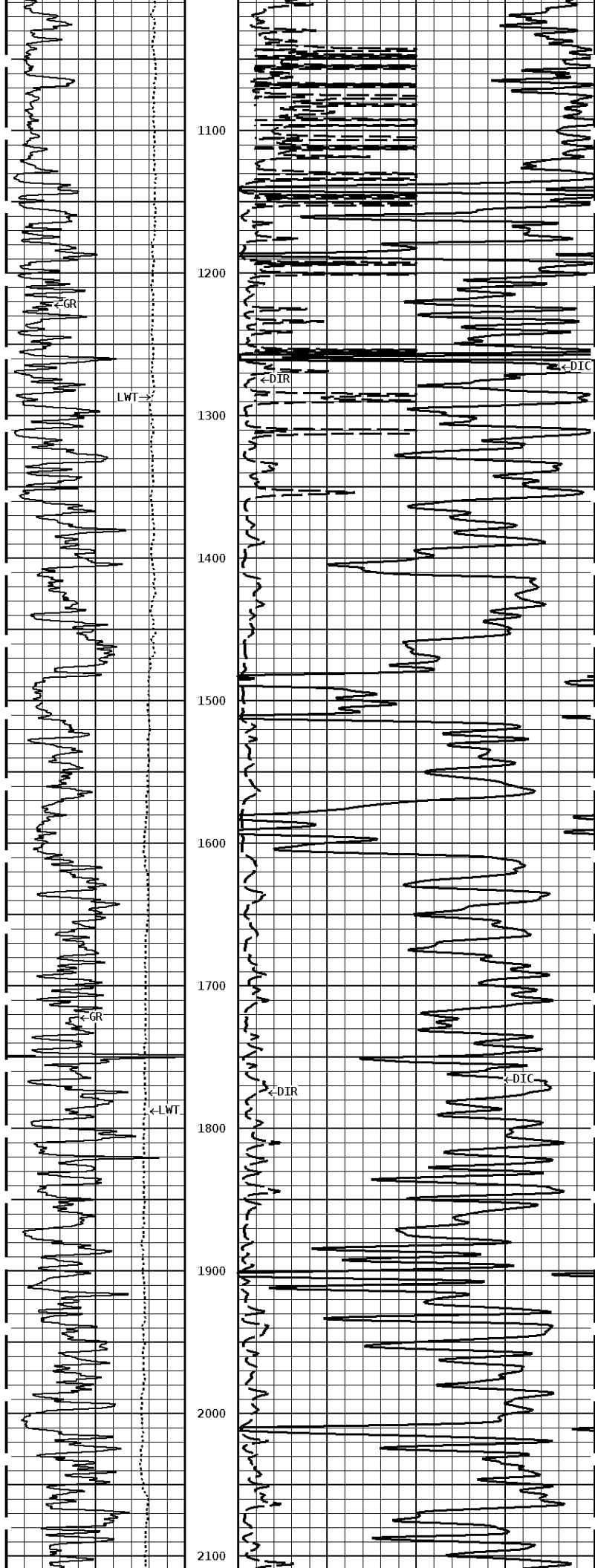
Performed : 10-Sep-2014			Time : 11:51			
Sensor Suite : SFL			ID : PIT-CA-075			
Internal						
	Measured		Calibrated		Units	
	Zero	Reference	Zero	Reference		
Im	32770.2	49049.9	0.0	7028.0	uA	
Ib	32767.1	49093.1	0.0	1750.0	mA	
MOM1	32794.6	56675.8	0.0	175.0	mV	
Equivalent SFL				43.97	OHMM	

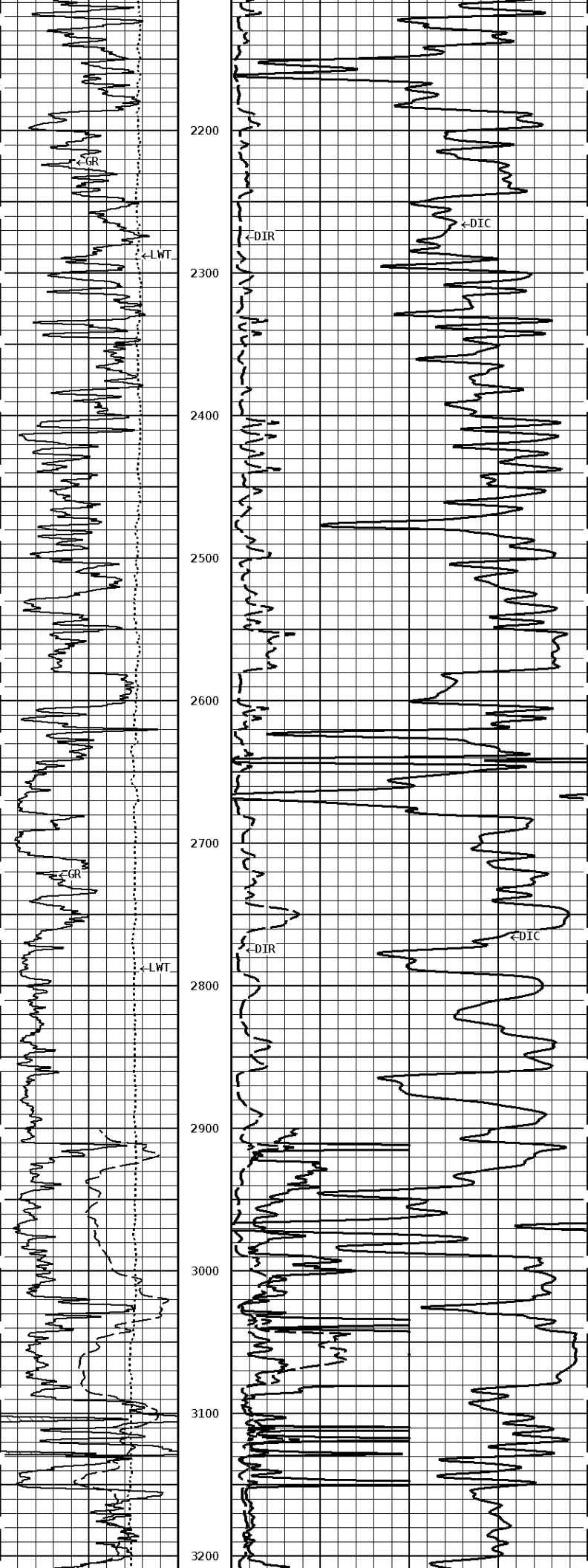
Performed : 10-SEP-2014			Time : 11:47			
Sensor Suite : P-SP			ID : PIT-CA-075			
Internal						
	Measured		Calibrated		Units	
	Zero	Reference	Zero	Reference		
	32768.0	58944.2	0.0	1000.0	mV	

TENSION LBS 10000 0	DEEP INDUCTION OHMM 0.0 500.0 0.0 50.0
SPONTANEOUS POTENTIAL mV → ← 25	SHALLOW FOCUSED OHMM 0.0 500.0 0.0 50.0
GAMMA RAY API UNITS 150 300 0 150	DEEP CONDUCTIVITY MMHO 2000 1000 1000 0

1:1200 MAIN SECTION







1.1200 MAIN SECTION

GAMMA RAY API UNITS		DEEP CONDUCTIVITY MMHO	
150		2000	1000
0	300	1000	0
SPONTANEOUS POTENTIAL mV		SHALLOW FOCUSED OHMM	
→ ← 25		0.0	500.0
		0.0	50.0
TENSION LBS		DEEP INDUCTION OHMM	
10000	0	0.0	500.0
		0.0	50.0



Tucker
ENERGY SERVICES

Company: MULL DRILLING COMPANY, INC.

Well: TJADEN "C" #4

Location: 1980' FSL & 660' FWL

Logged: 09-25-2014

K.B. Elev: 1486.0 Ft