

**Tucker**  
ENERGY SERVICES

**BOREHOLE COMPENSATED**

**SONIC LOG**

**Company** : QUAILOIL & GAS, LC  
**Well** : LEON #1-23  
**Field** : MORRISON NORTHEAST  
**Country** : 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  
**Country** : 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

<b>Permanent Datum:</b>	GL	<b>Elevations:</b>	Ft	<b>Services:</b>	MLT
<b>Drilling Measured From:</b>	KB	KB 2034.00	Ft	CST	
<b>Log Measured From:</b>	KB	DF 2033.00	Ft	PLT	
<b>Above Permanent Datum:</b>	1200 Ft	GL 2032.00	Ft		
<b>Date</b>	06-24-2014				
<b>Run Number</b>	1				
<b>Depth--Driller</b>	6650.0	Ft			
<b>Depth--Logger</b>	6664.0	Ft			
<b>First Reading</b>	6651.0	Ft			
<b>Last Reading</b>	626.0	Ft			
<b>Casing--Driller</b>	626.0	Ft			
<b>Casing--Logger</b>	626.0	Ft			
<b>Bit Size</b>	7.875	In			
<b>Casing Size</b>	8.625	In			
<b>Hole Fluid Type</b>	CHEM-GEL				
<b>Density</b>	8.7				
<b>Fluid Loss</b>	9.2				
<b>PH/Viscosity</b>	10.5		50.0		
<b>Sample Source</b>	MEASURED				
<b>RM@Measured Temp.</b>	1.500	@ 75 F			
<b>RMF@Measured Temp</b>	1.200	@ 75 F			
<b>RM@Measured Temp.</b>	1.800	@ 75 F			
<b>Source RMF/RMC</b>	CALCULATED/CALCULATED				
<b>RM@BHT</b>	0.810	@ 145 F			
<b>Time Circulation Stopped</b>	06-24-2014 3:00 pm				
<b>Max Recorded Temp.</b>	145		F		
<b>Equipment/Base</b>	127		TULSA		
<b>Recorded By</b>	SHELDON TYLER				
<b>Witnessed By</b>	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

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

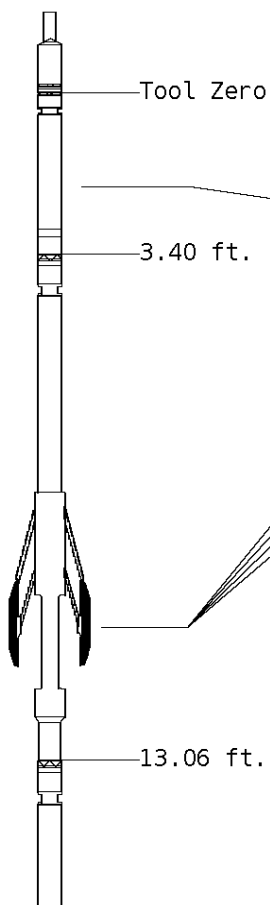
GRT: GRP, GRX  
 CST: PORS, CDTF, TT1PF, TT2PF, TT3PF, TT4PF, ITT

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

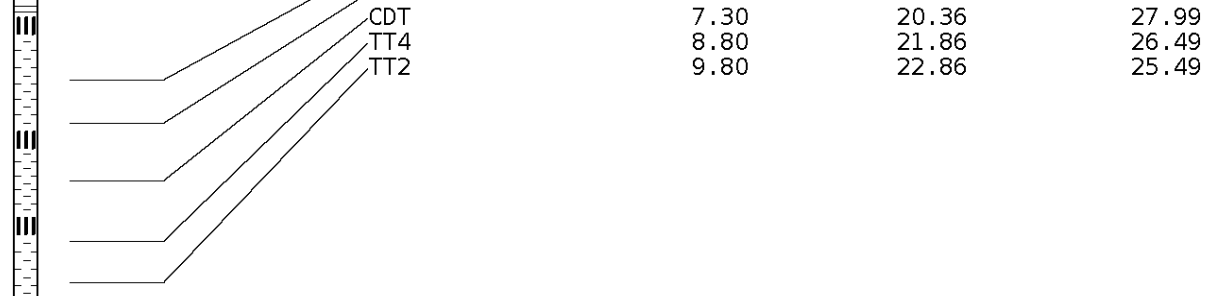
Measure Point	Tool Offset	Stack Offset	Bottom Offset
GRP	2.00	2.00	46.35

**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



**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:** 1:240      **Format:** CST-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

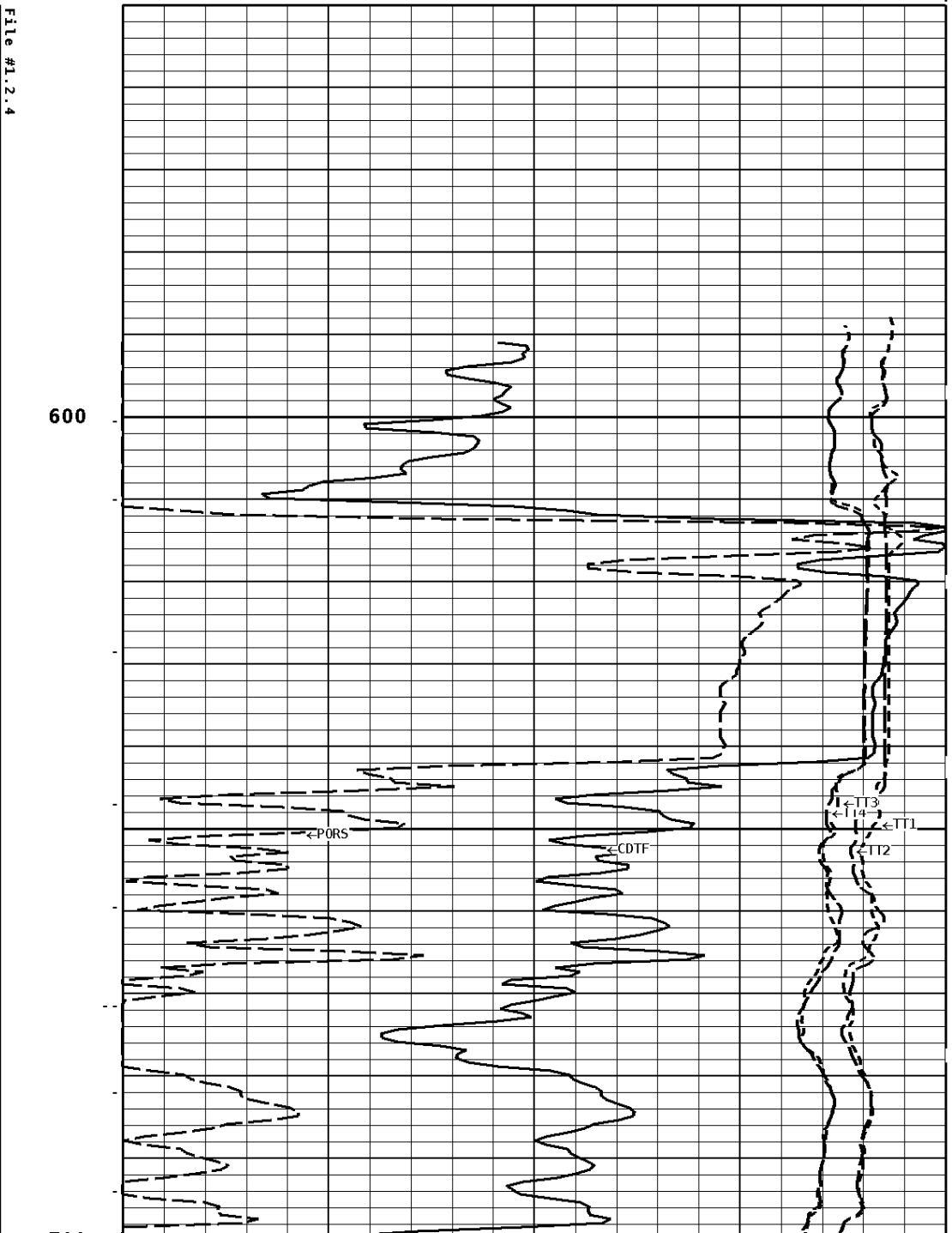
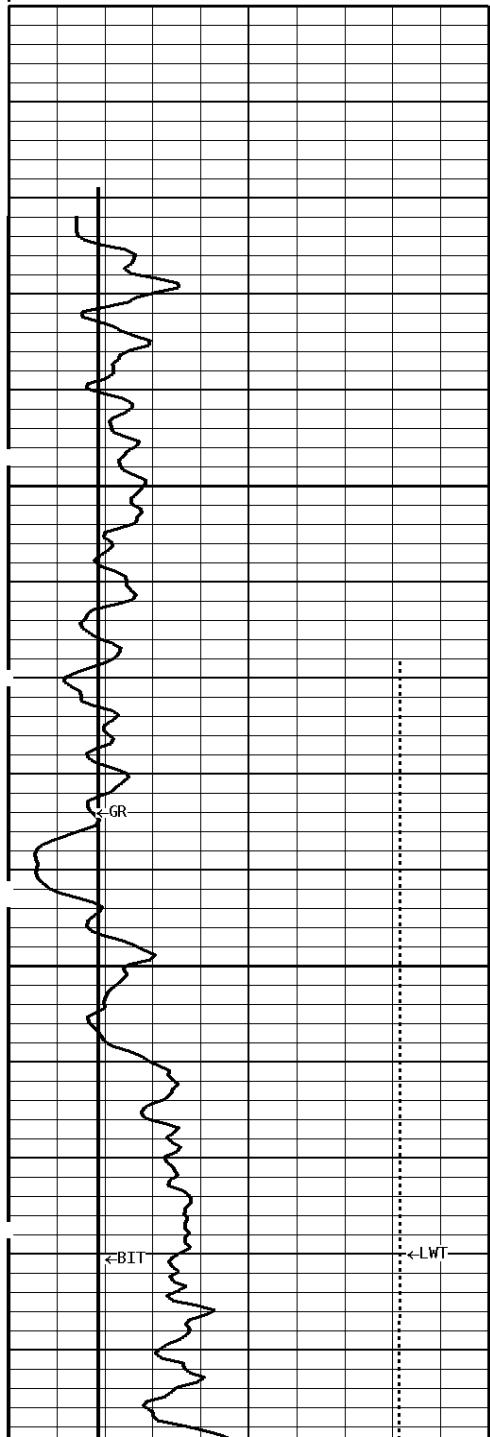
<b>TT4 uSEC</b>	
950	50
<b>TT3 uSEC</b>	
950	50
<b>TT2 uSEC</b>	
950	50

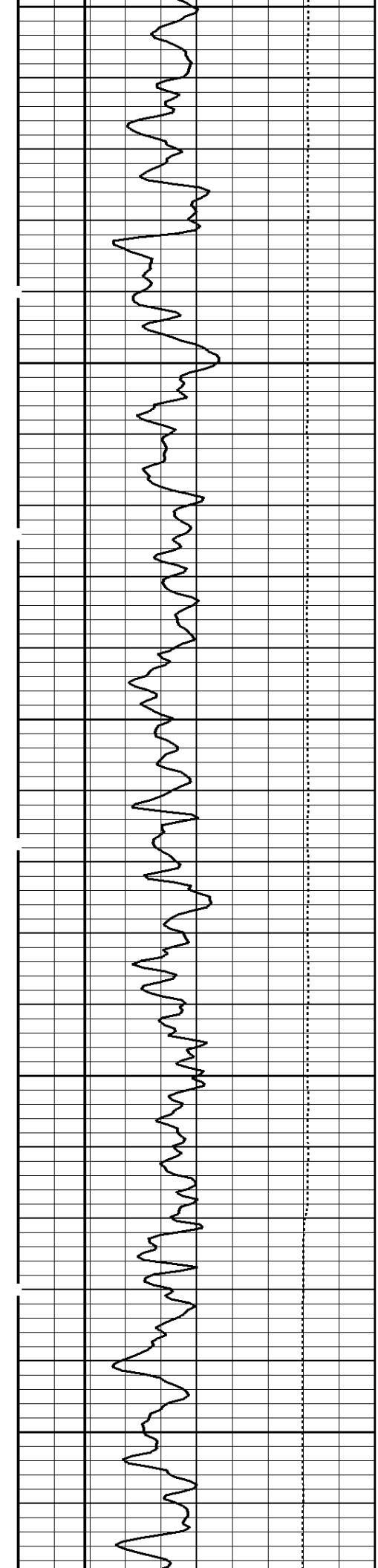
BIT SIZE INCHES (IN)	
6	16
TENSION LBS	
10000	0
GAMMA RAY API UNITS	
150	300
0	150

TT1 uSEC	
950	50

COMPENSATED SONIC TRAVEL TIME uSEC/FT	
240	140
SONIC POROSITY PERCENT	
30	-10

**1:240 MAIN SECTION**

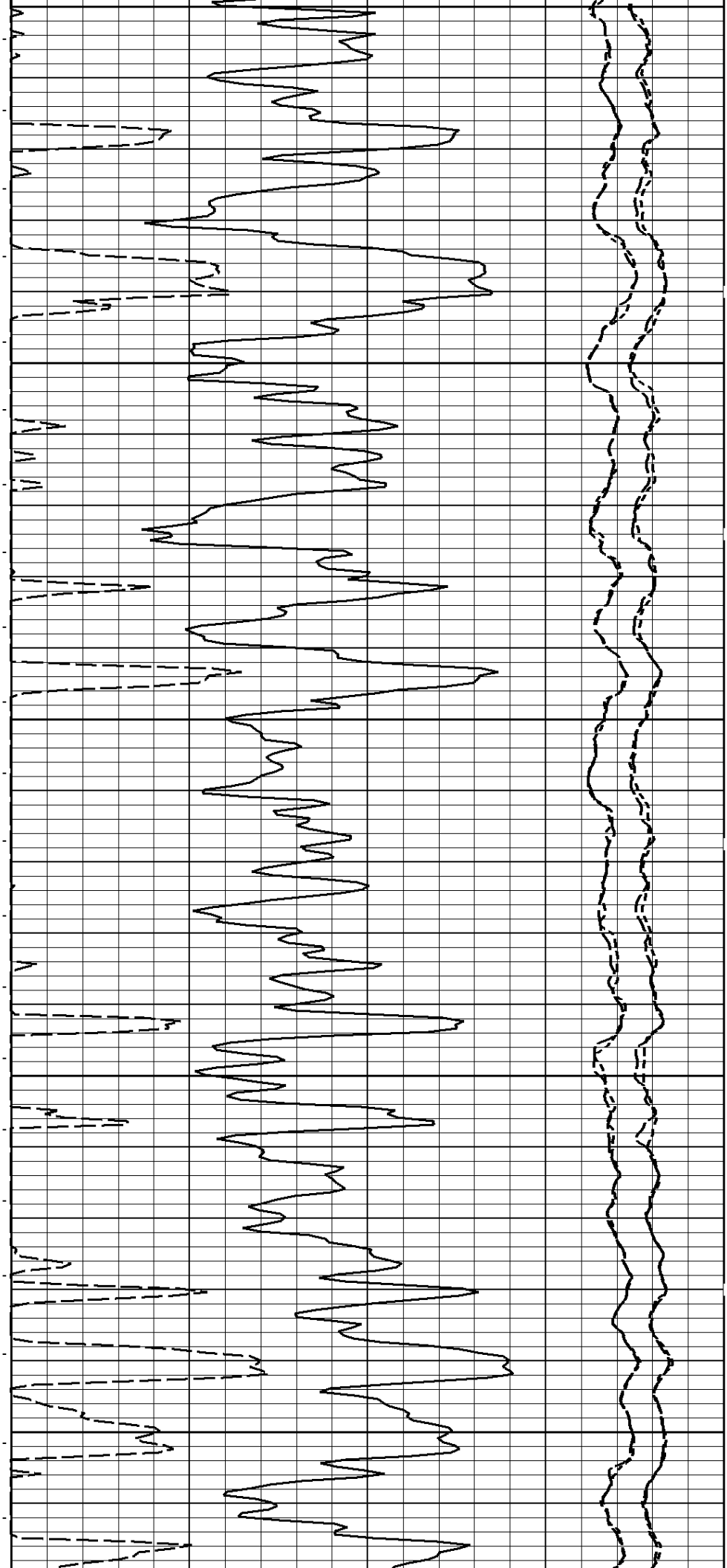


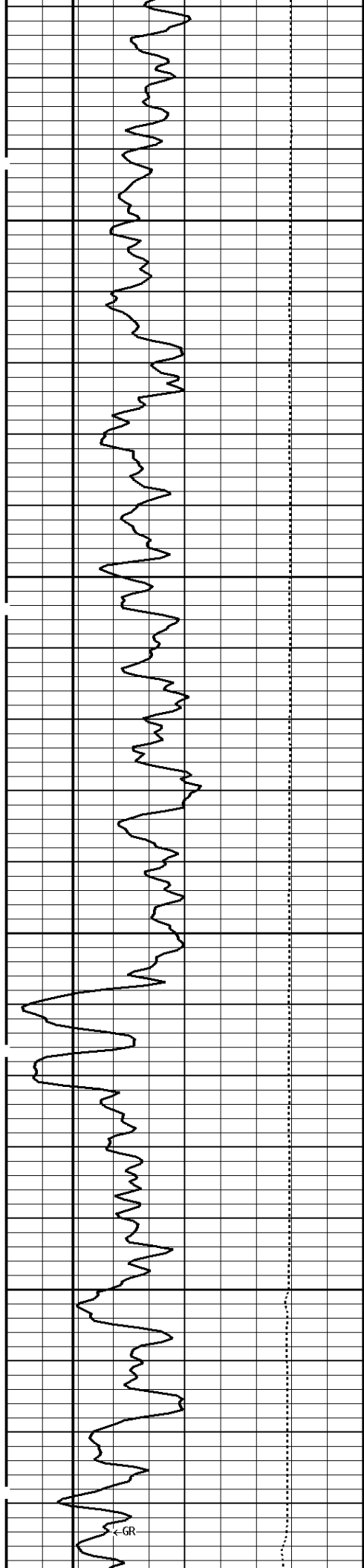


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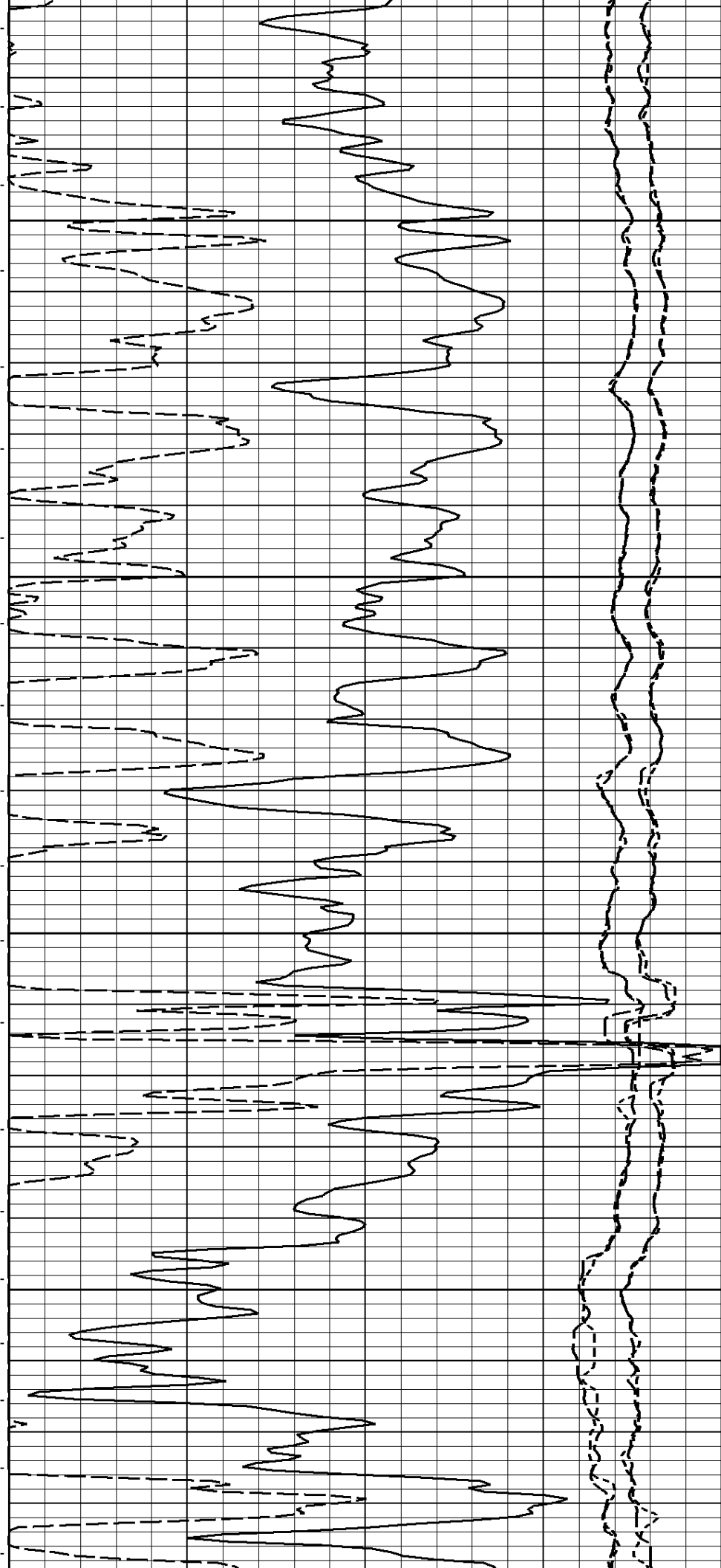
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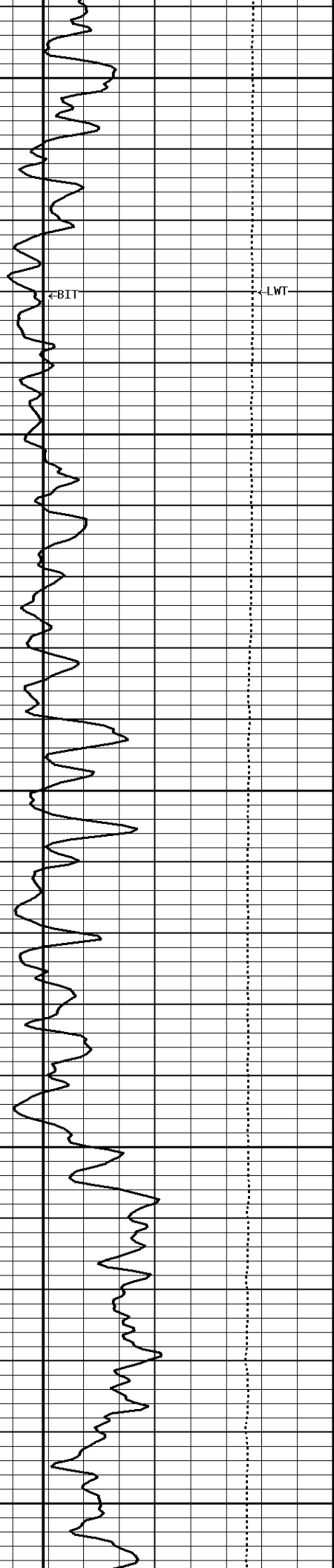




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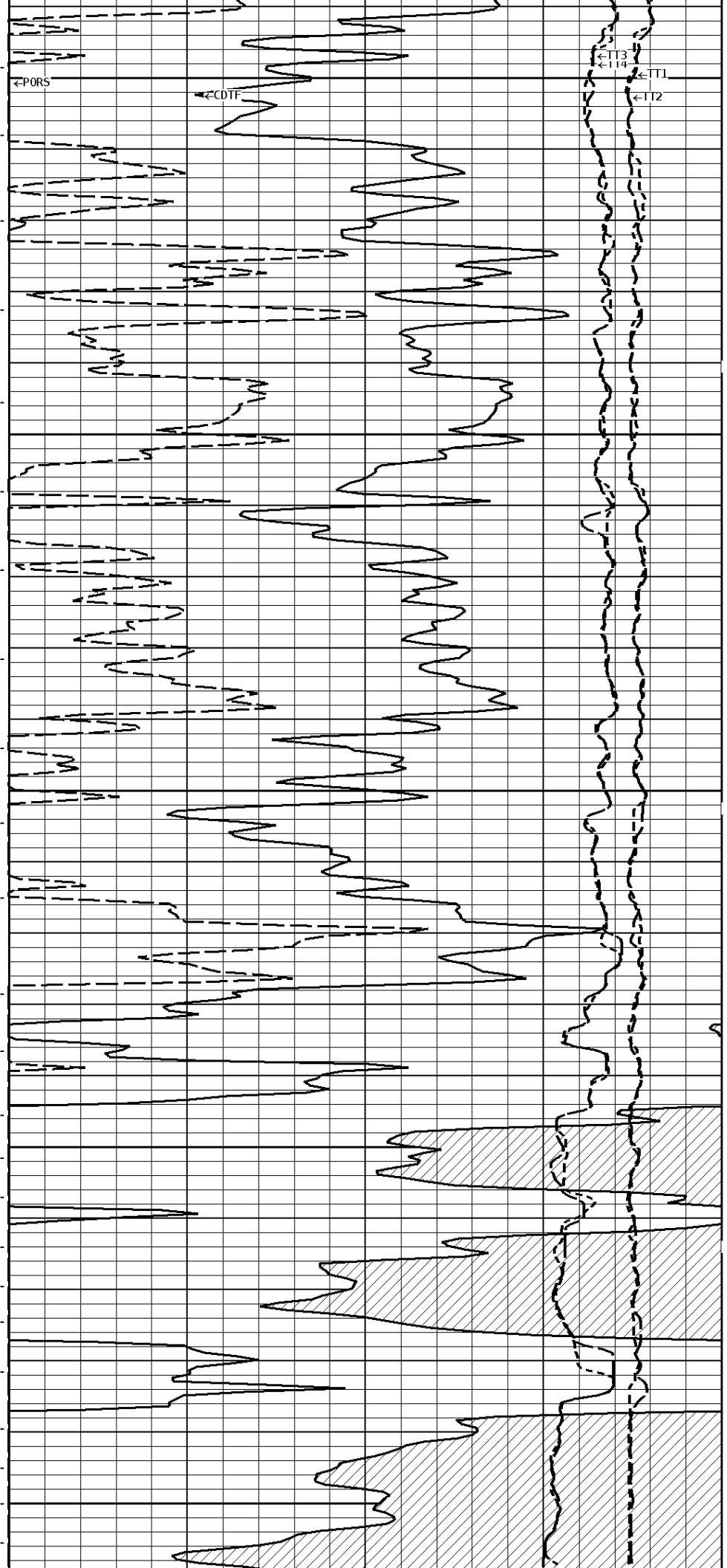
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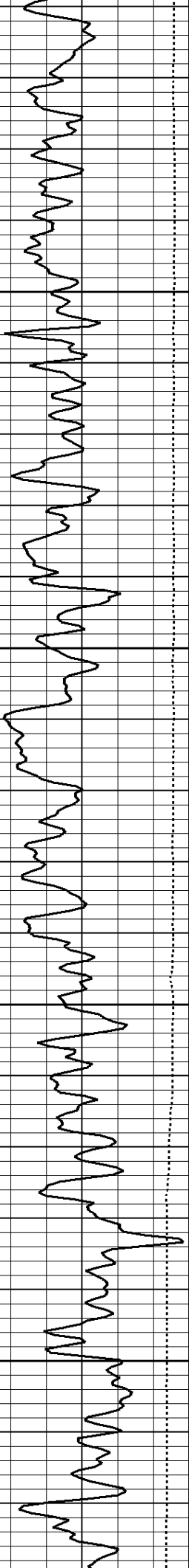




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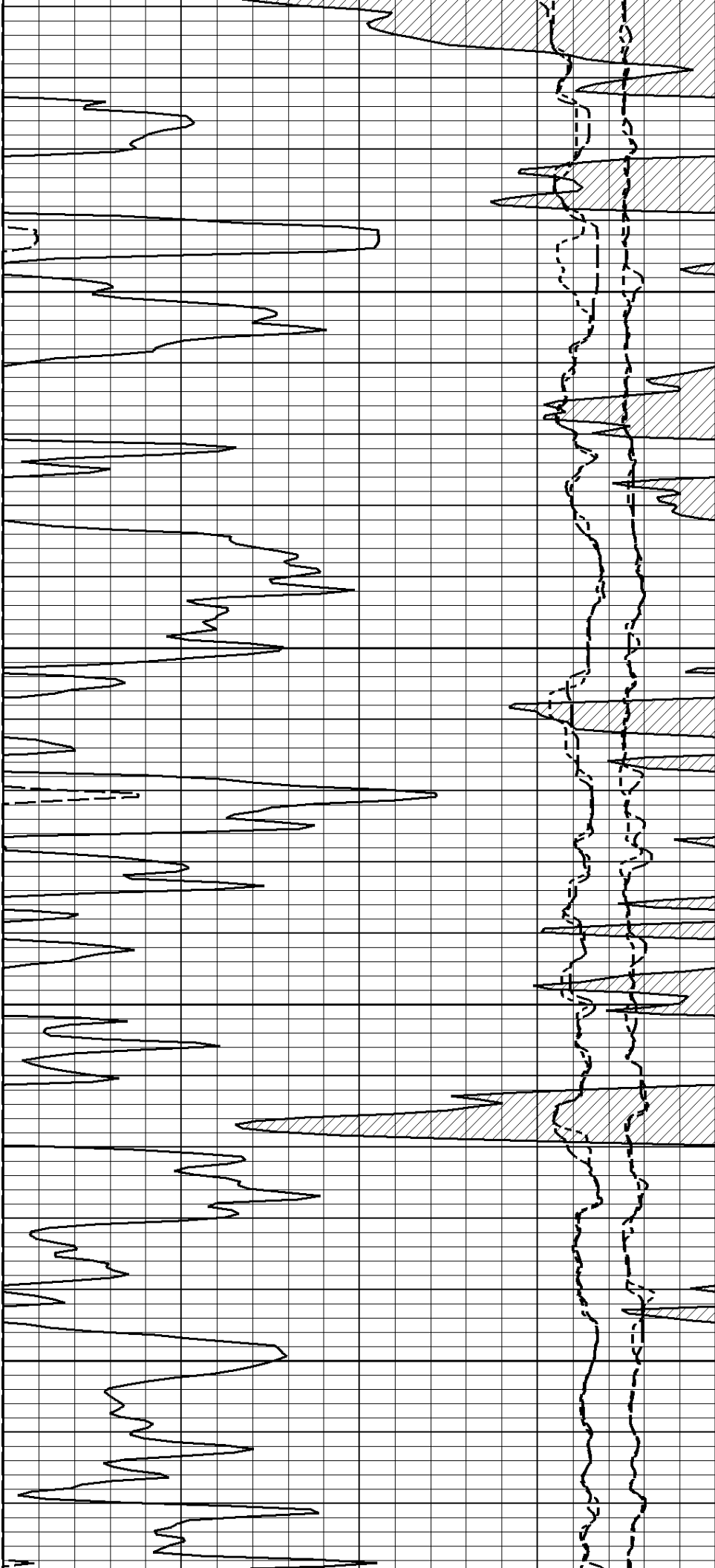
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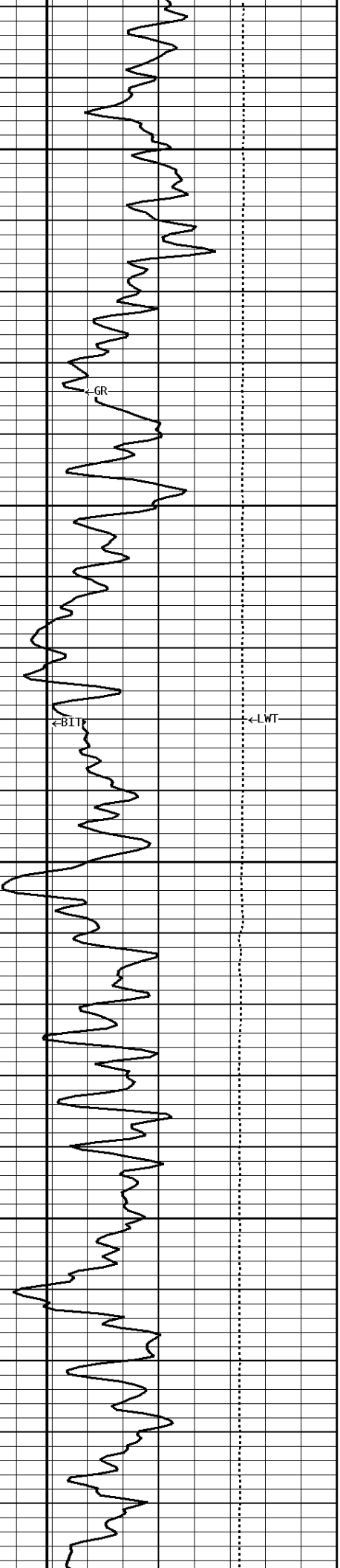




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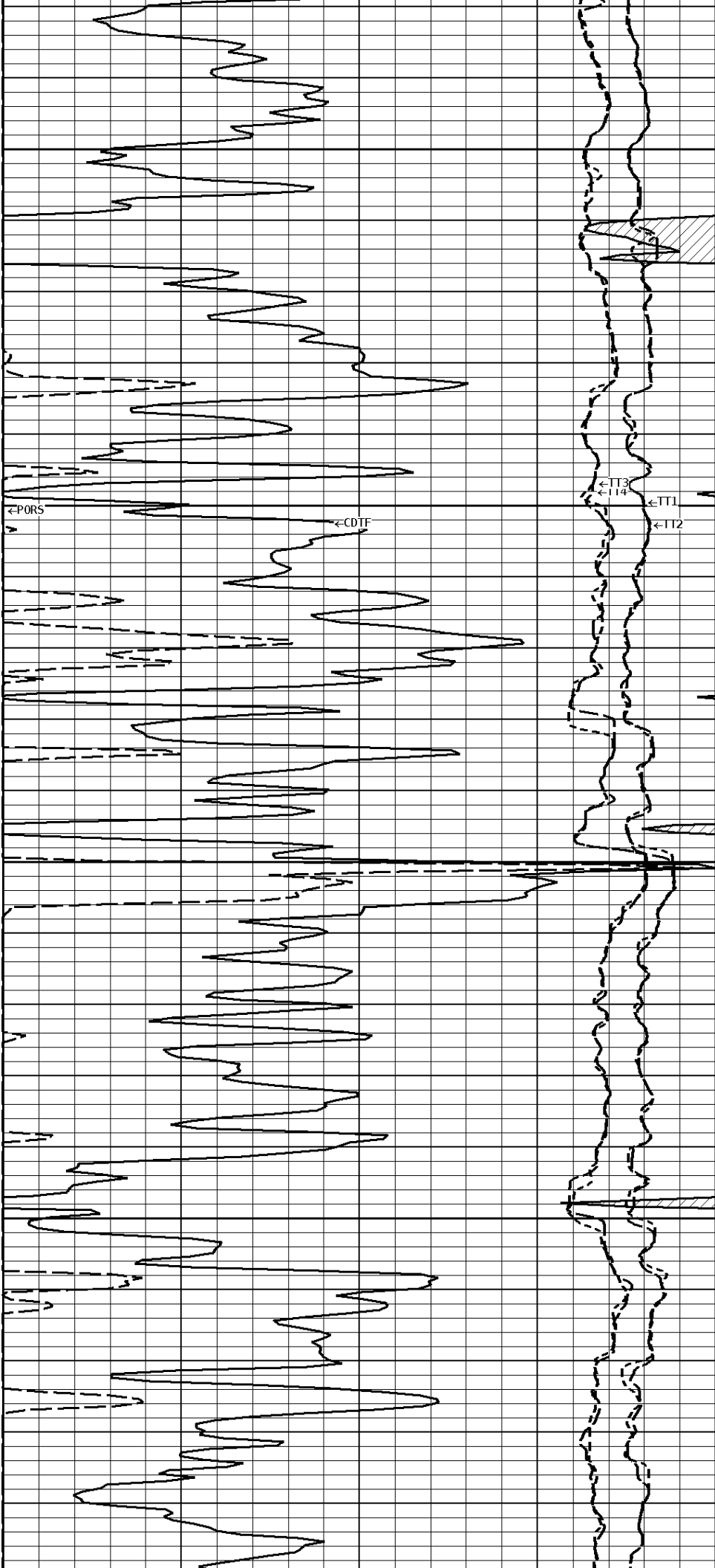
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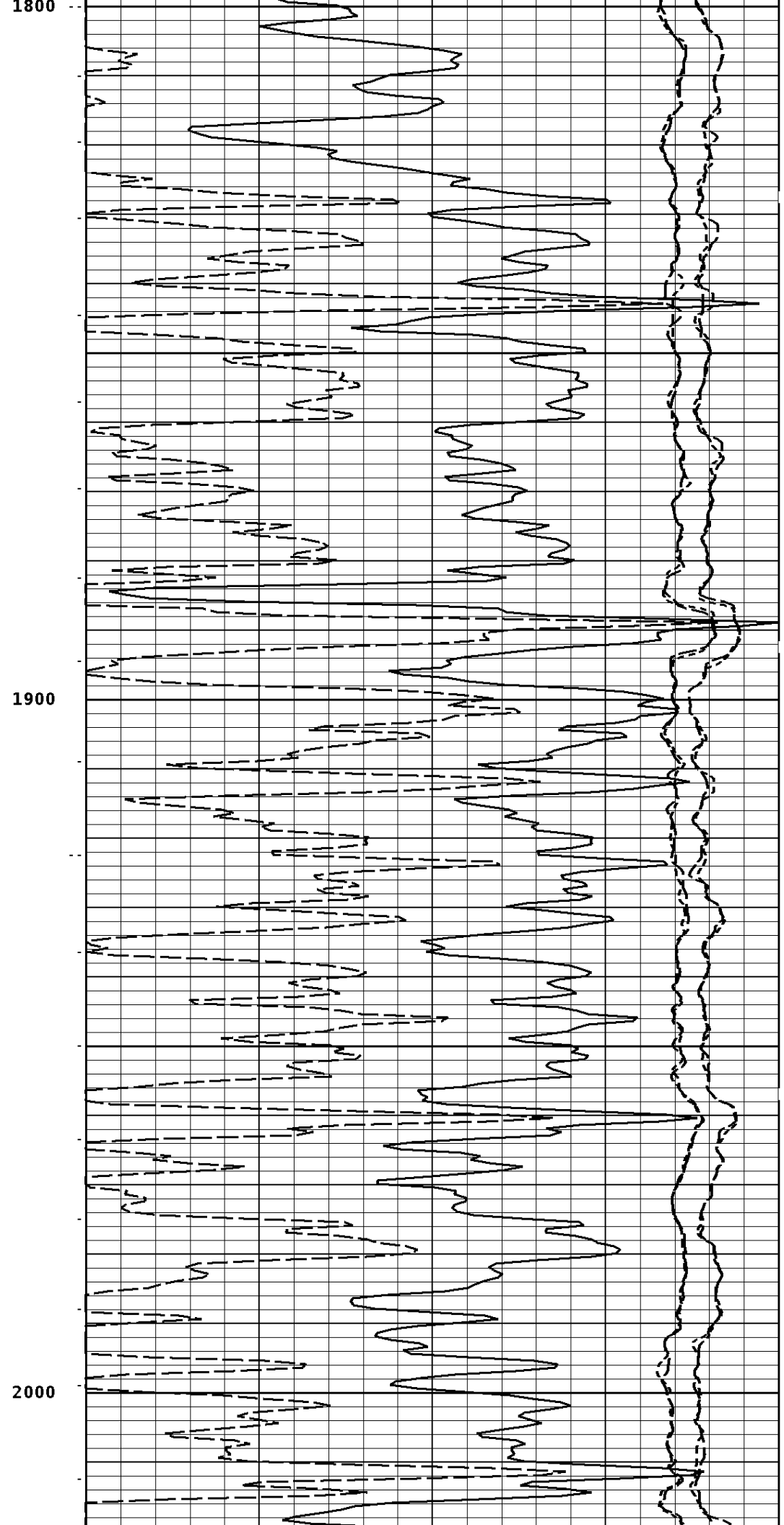
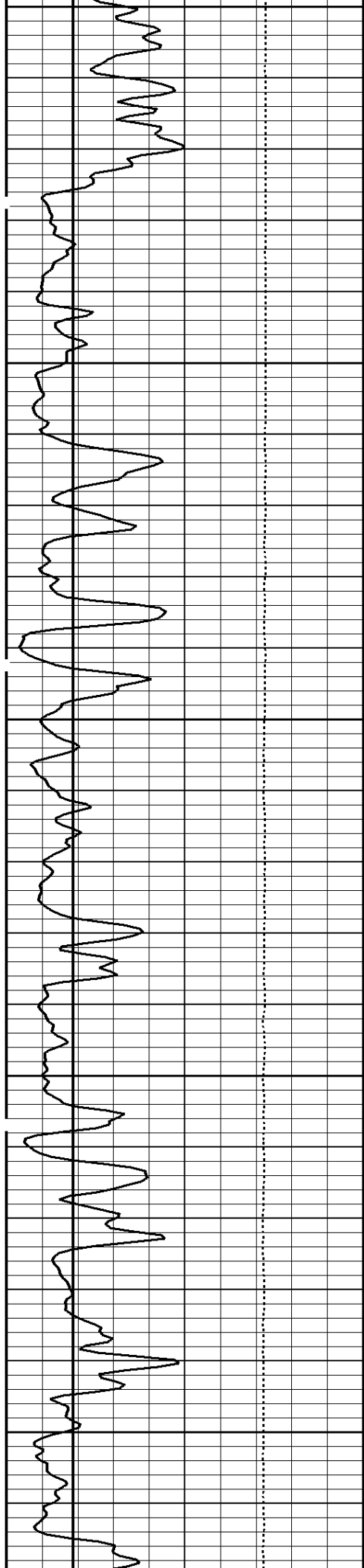


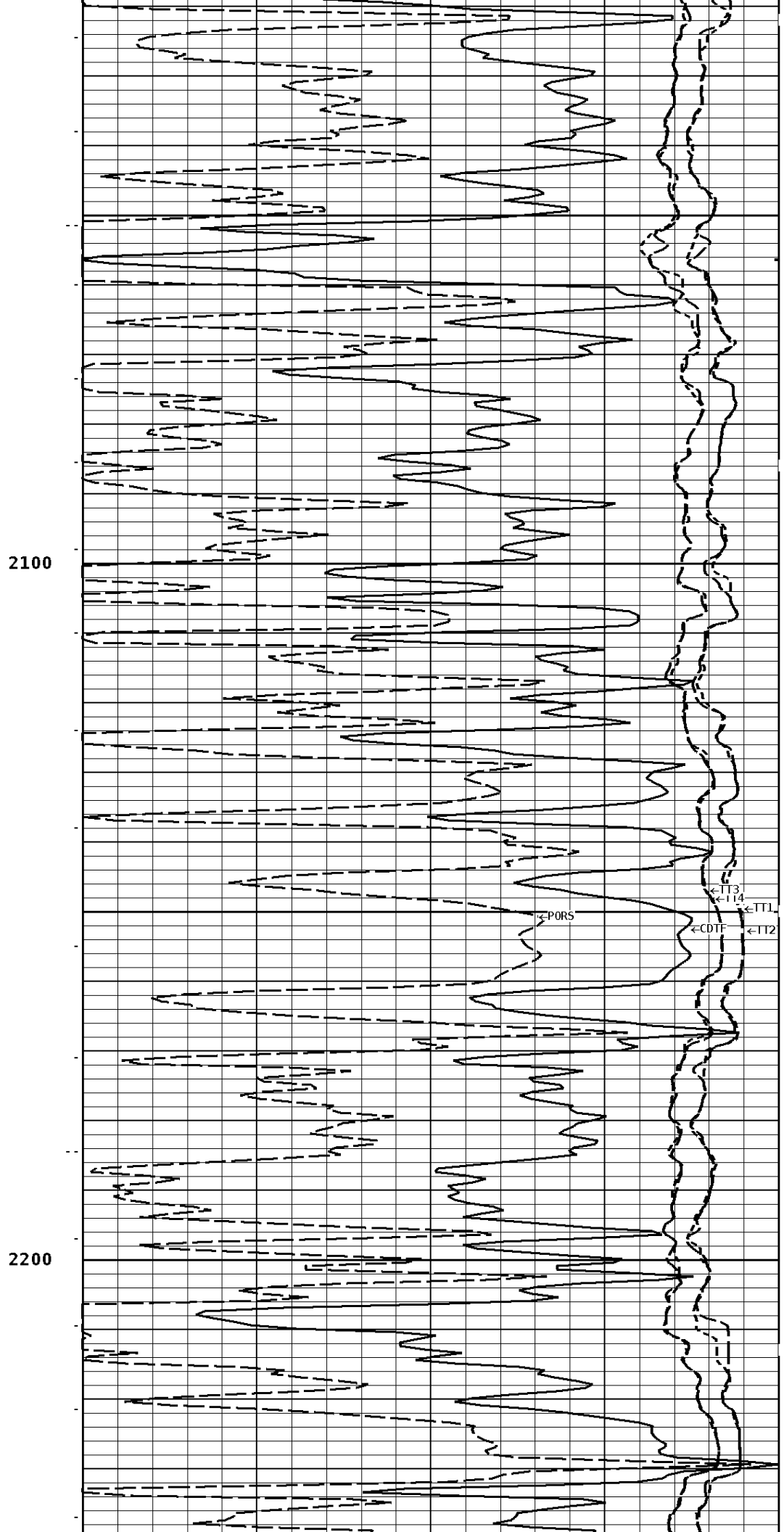
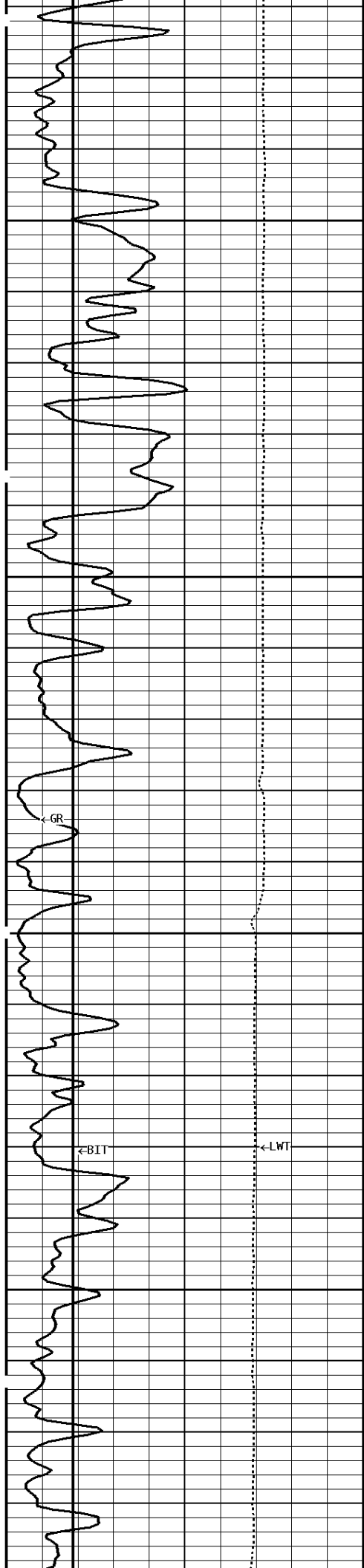


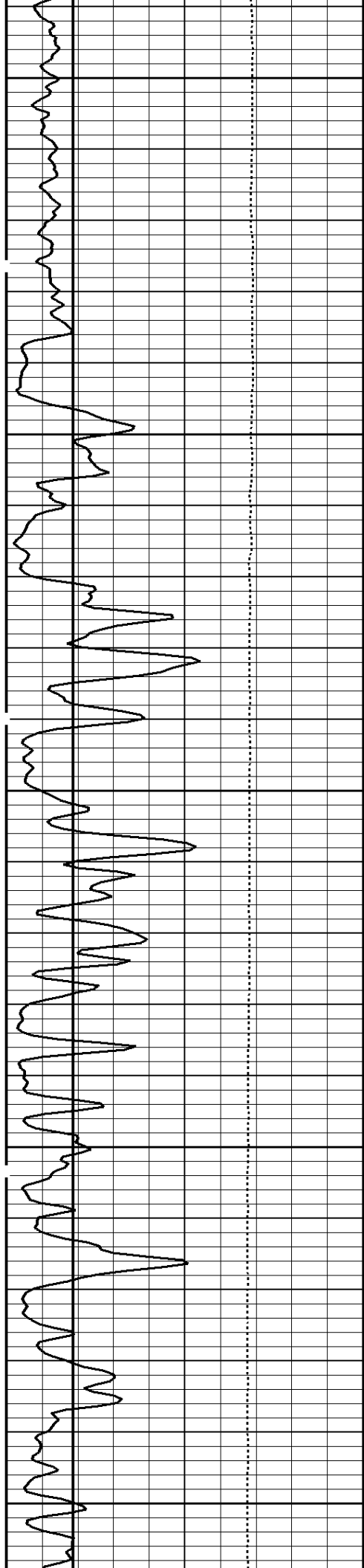
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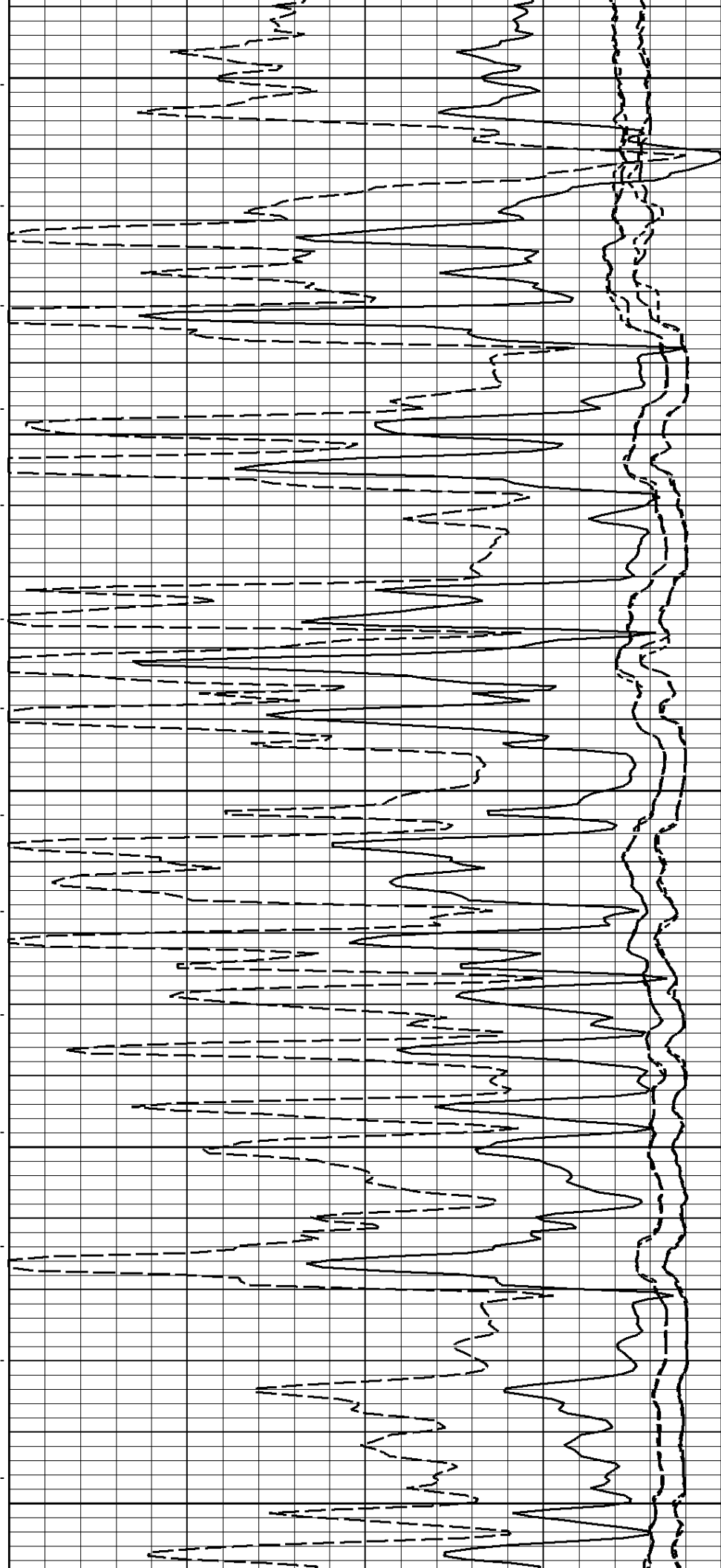


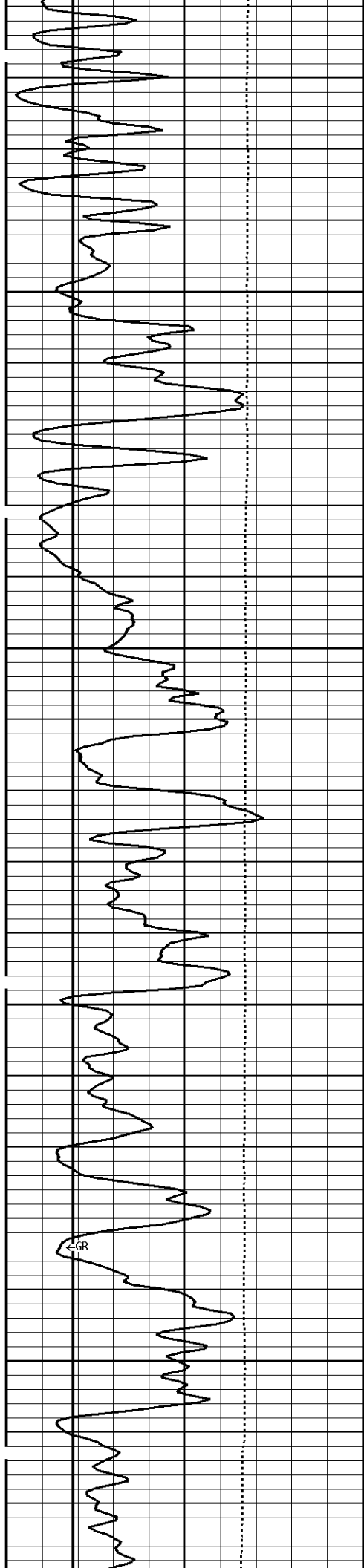




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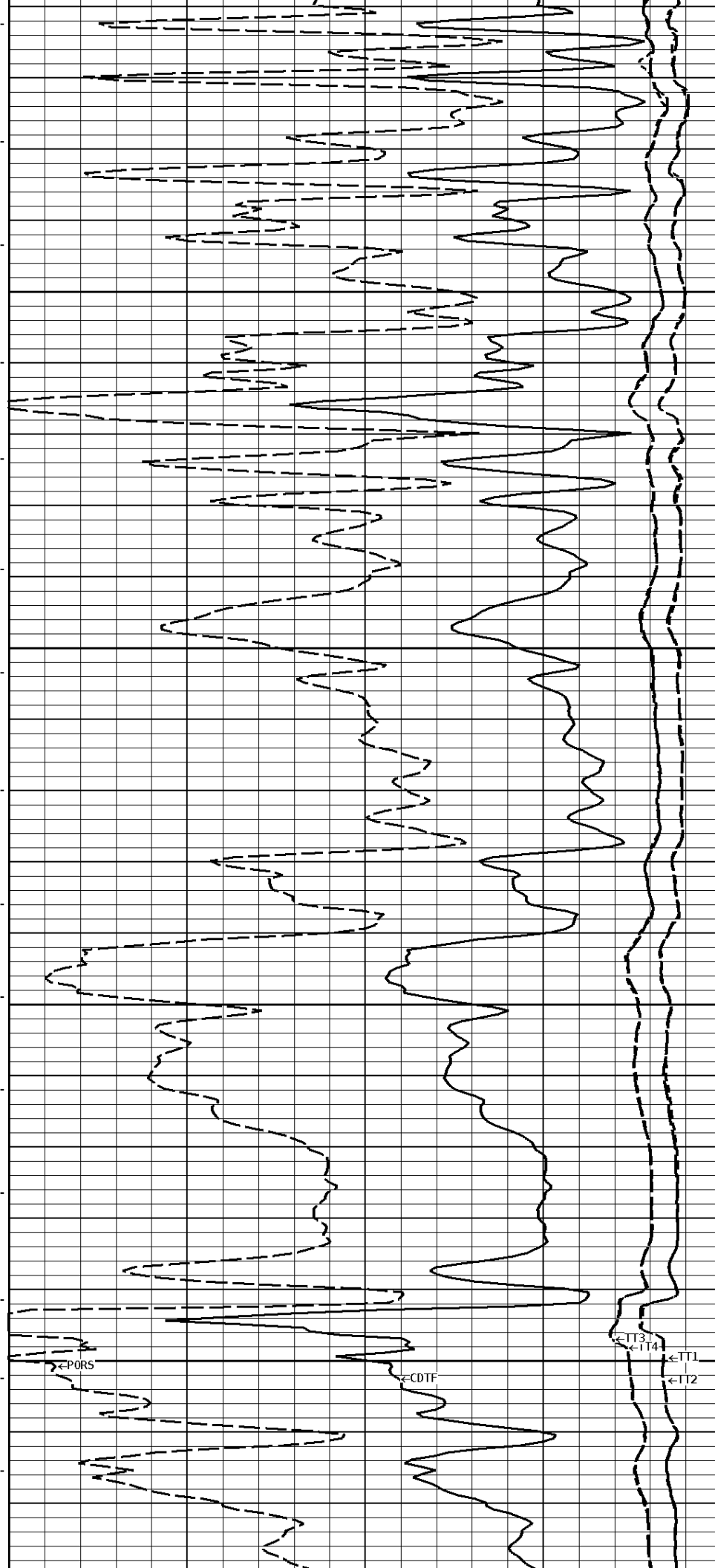
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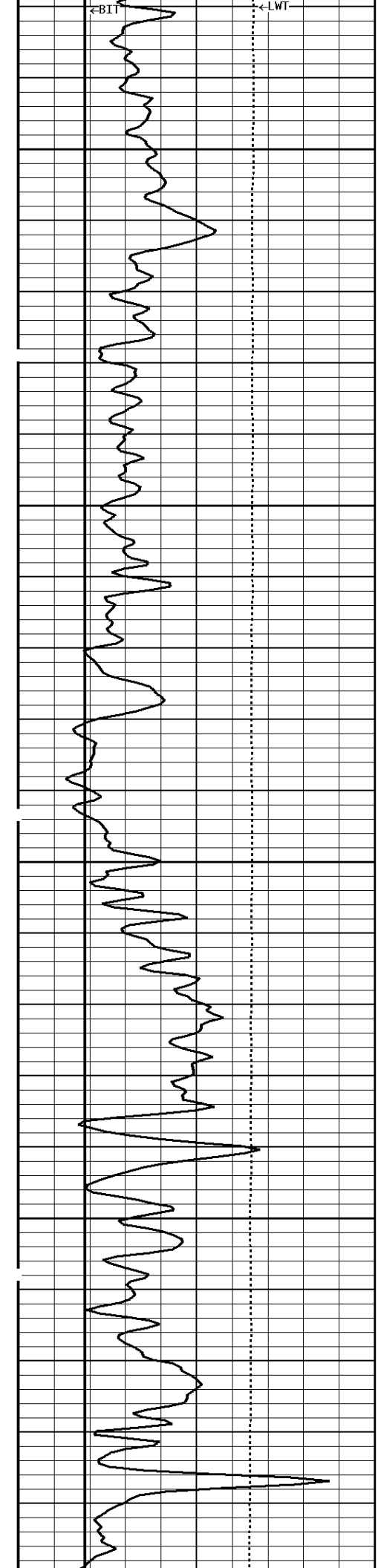




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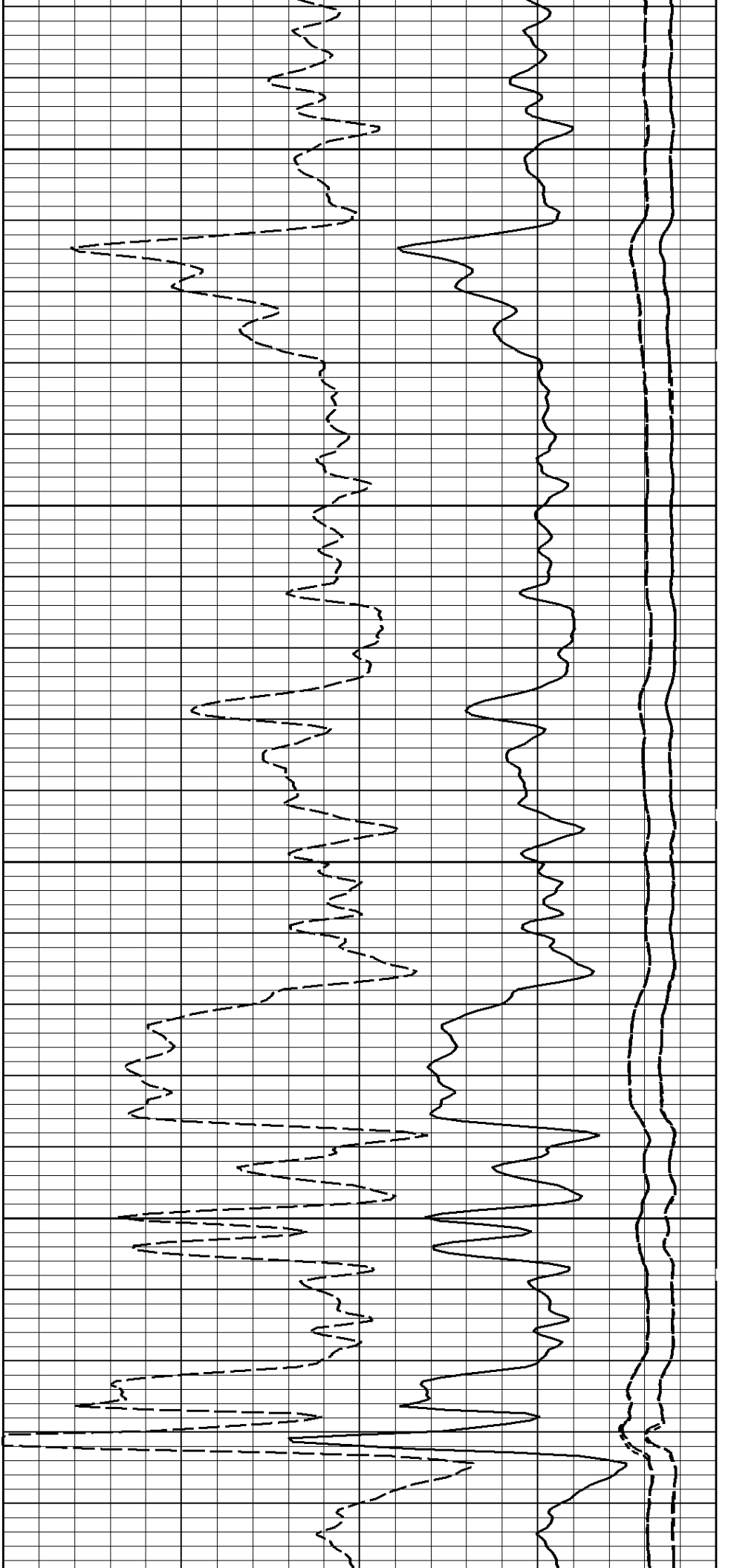
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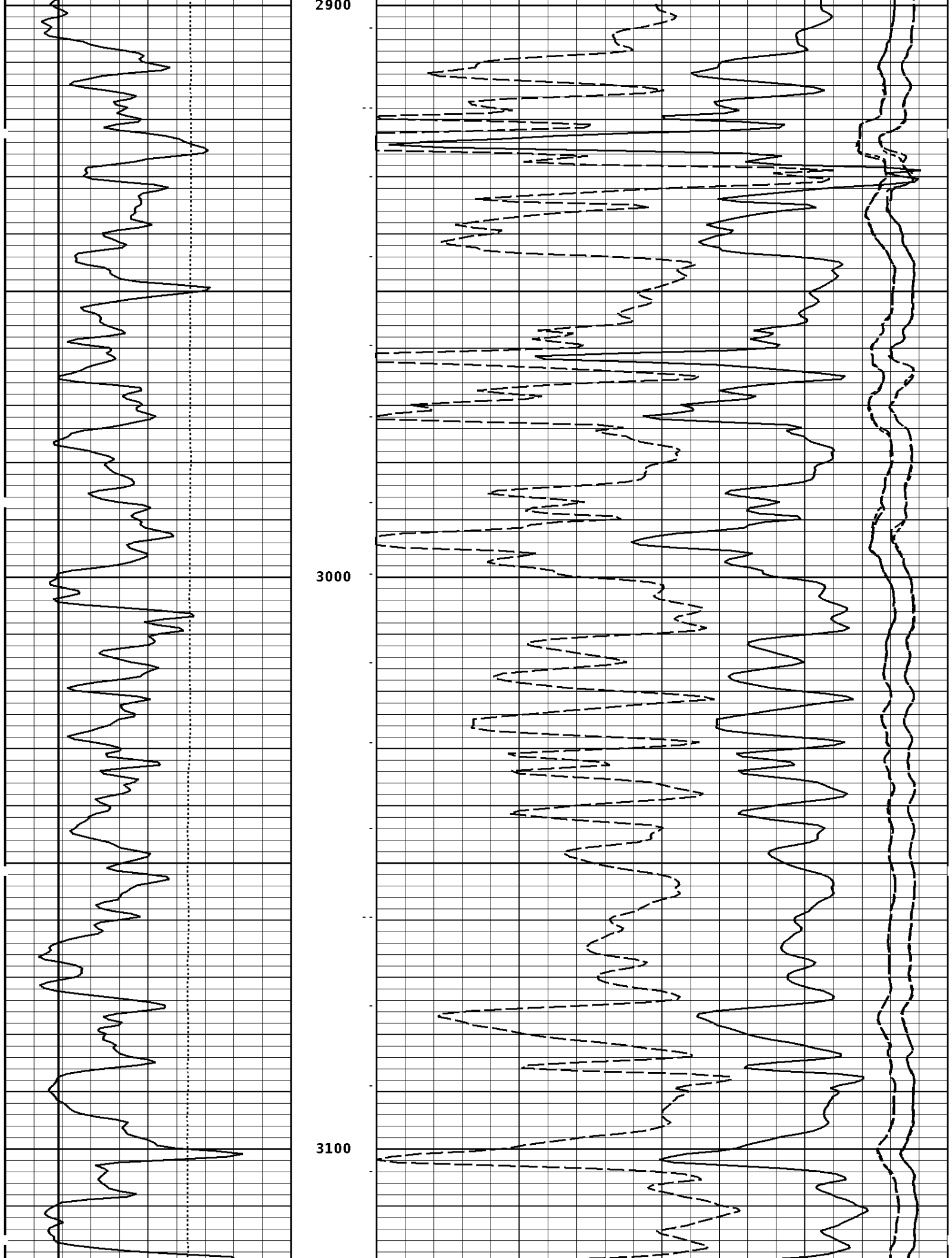
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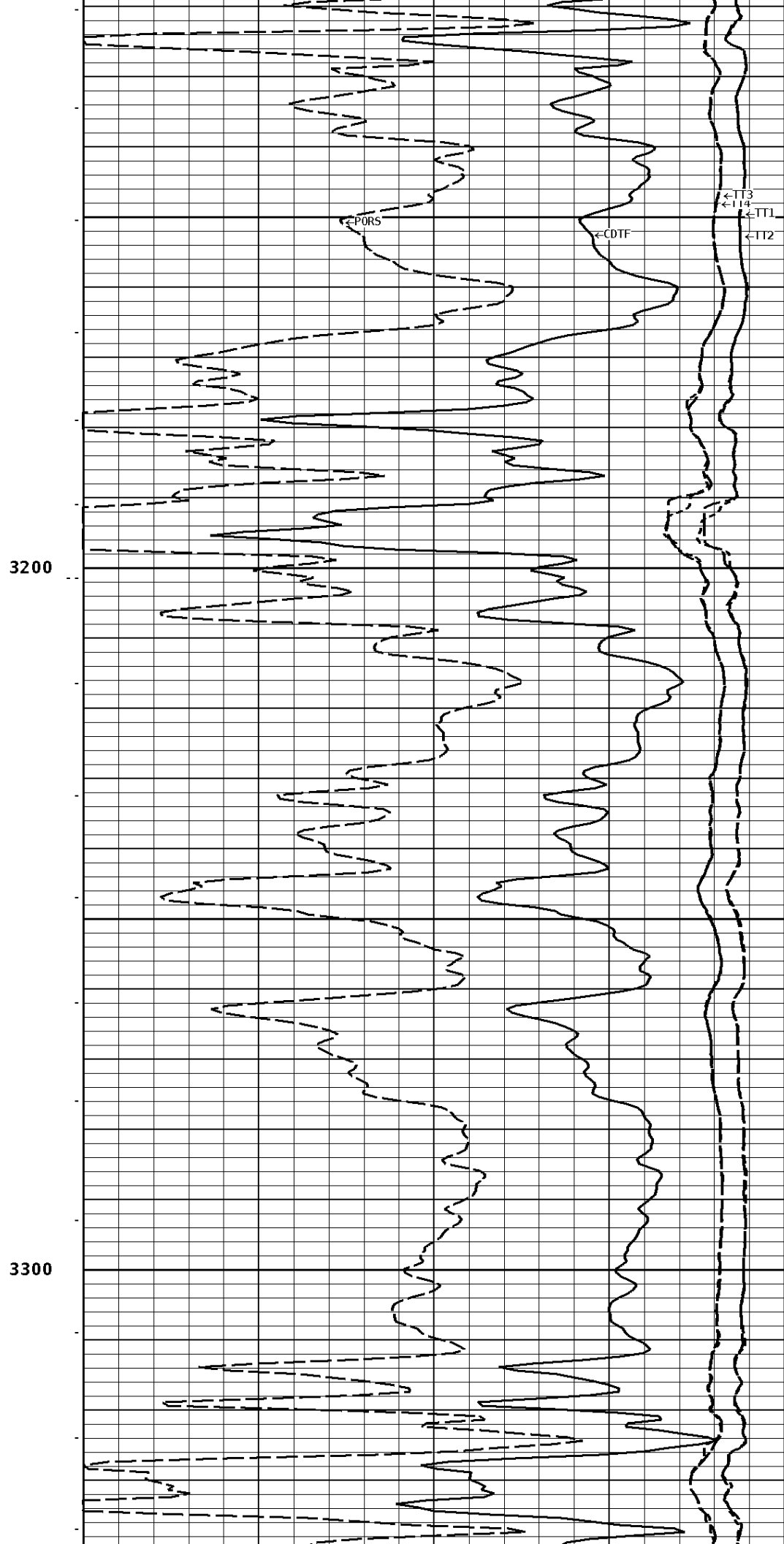
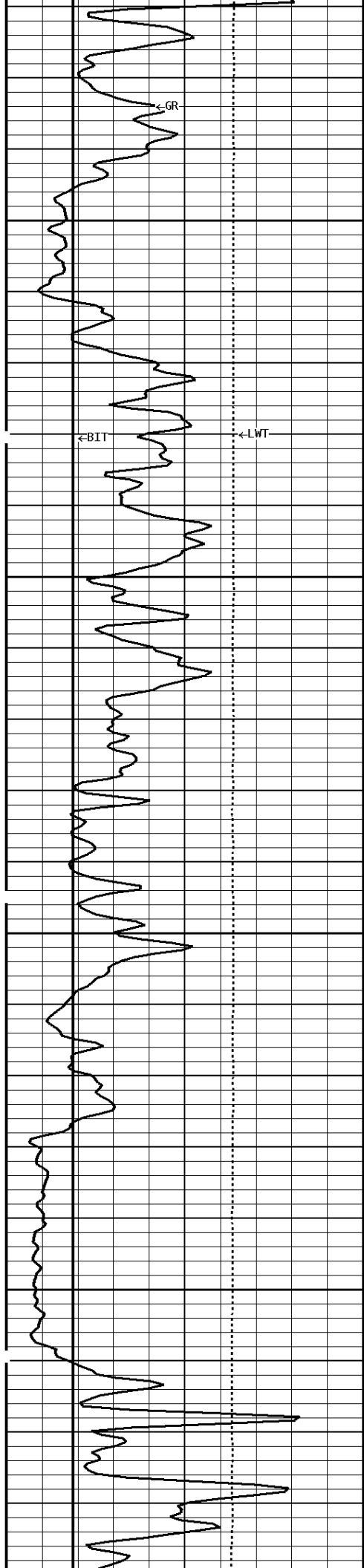


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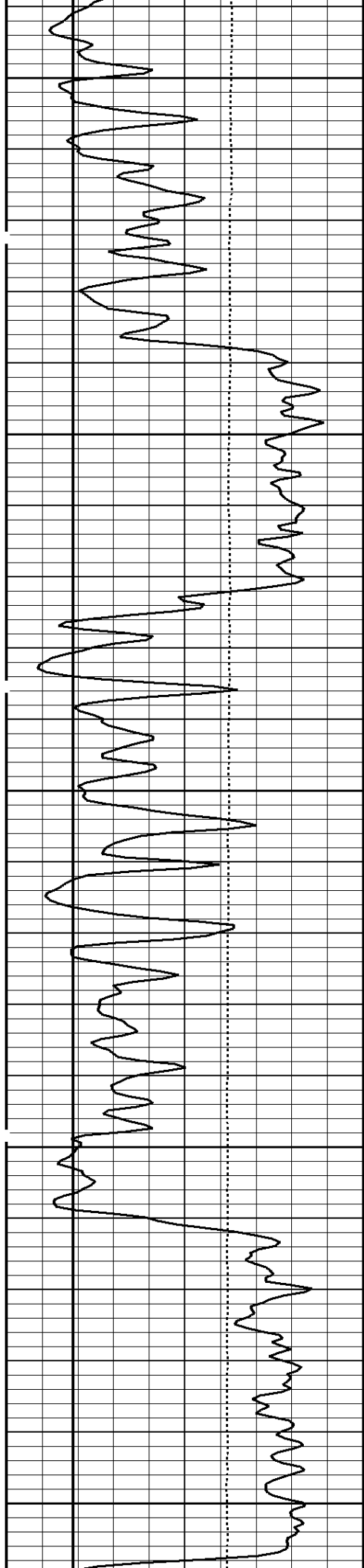
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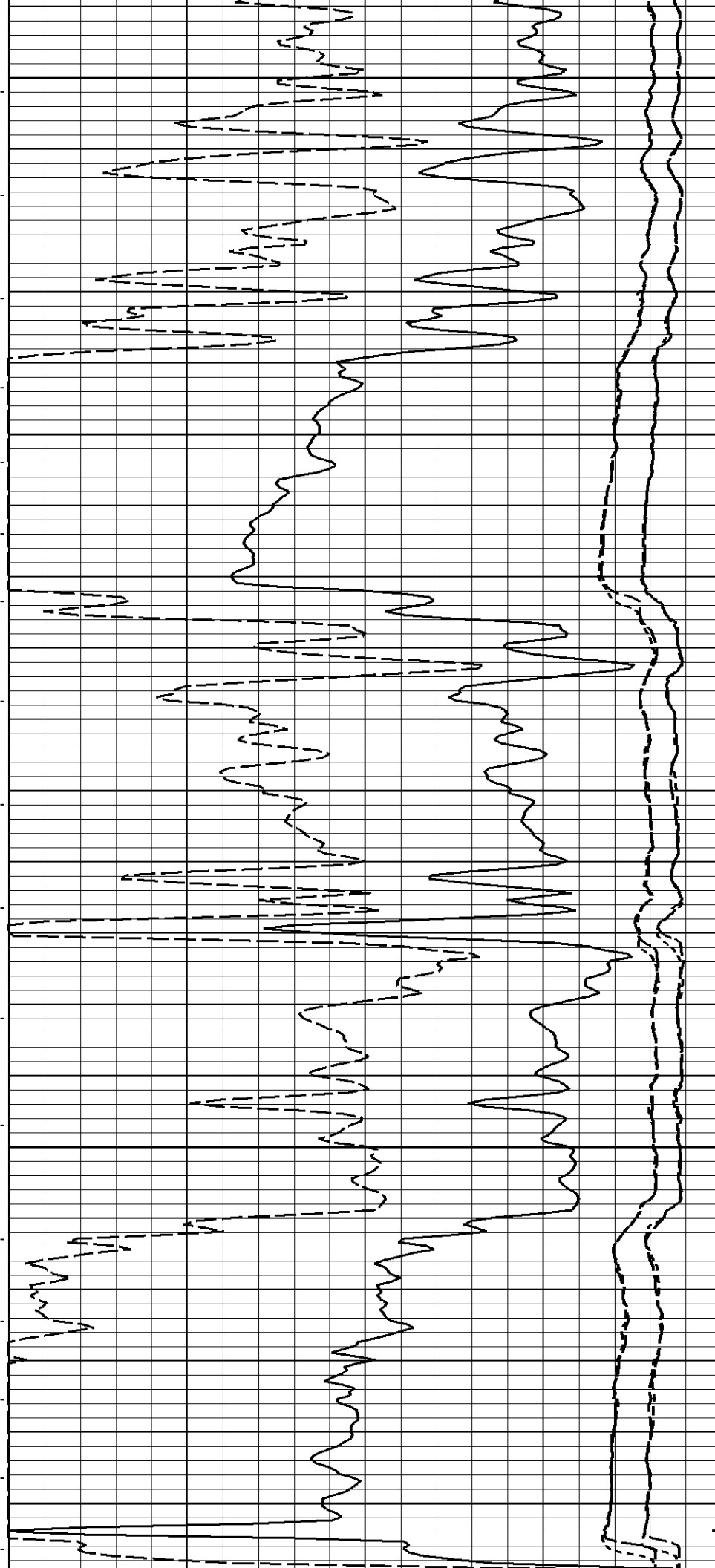
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3300



3400

3500



3600

3700

←GR

←BIT

←LWT

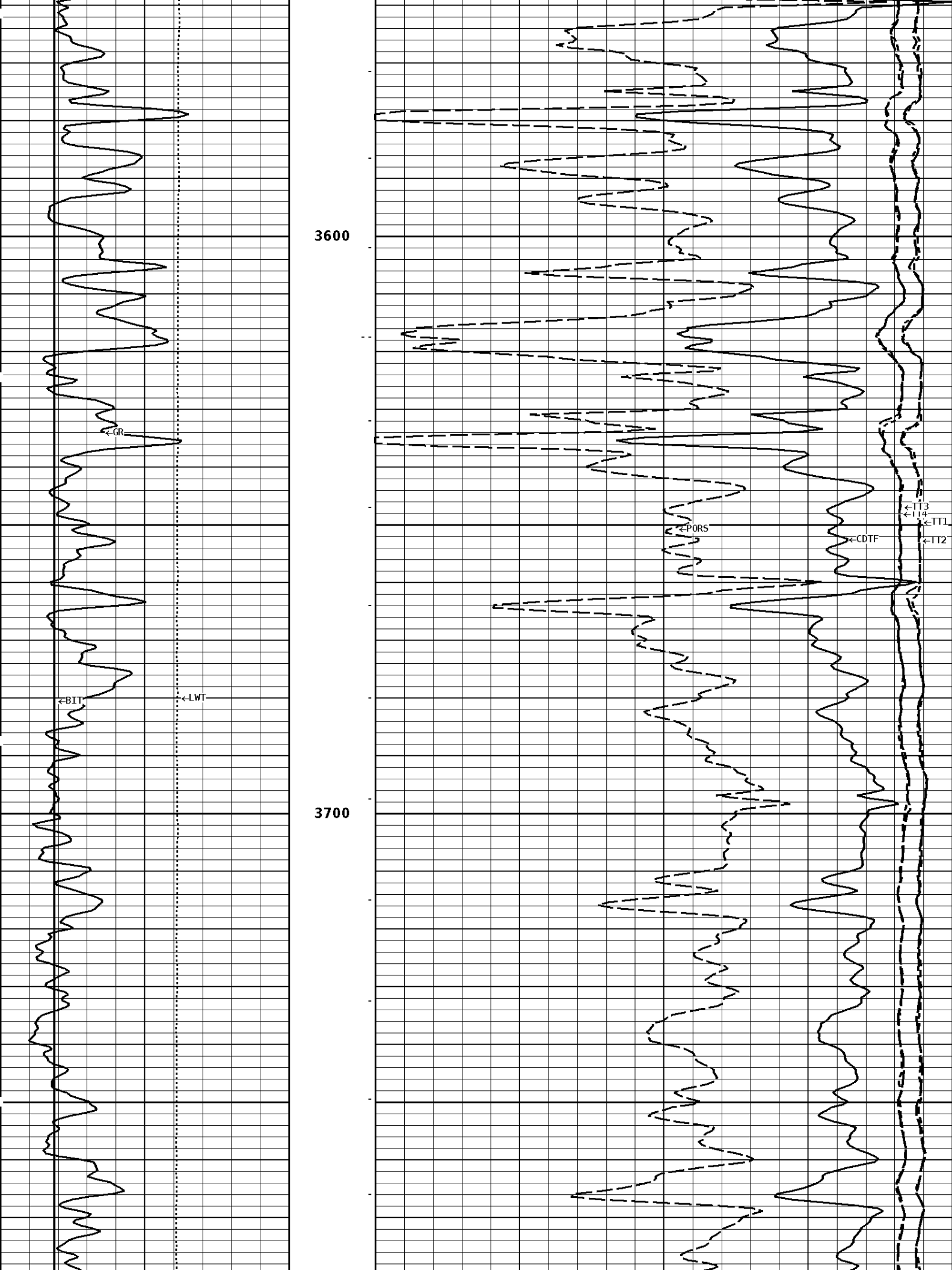
←PORS

←CDTF

←TT3

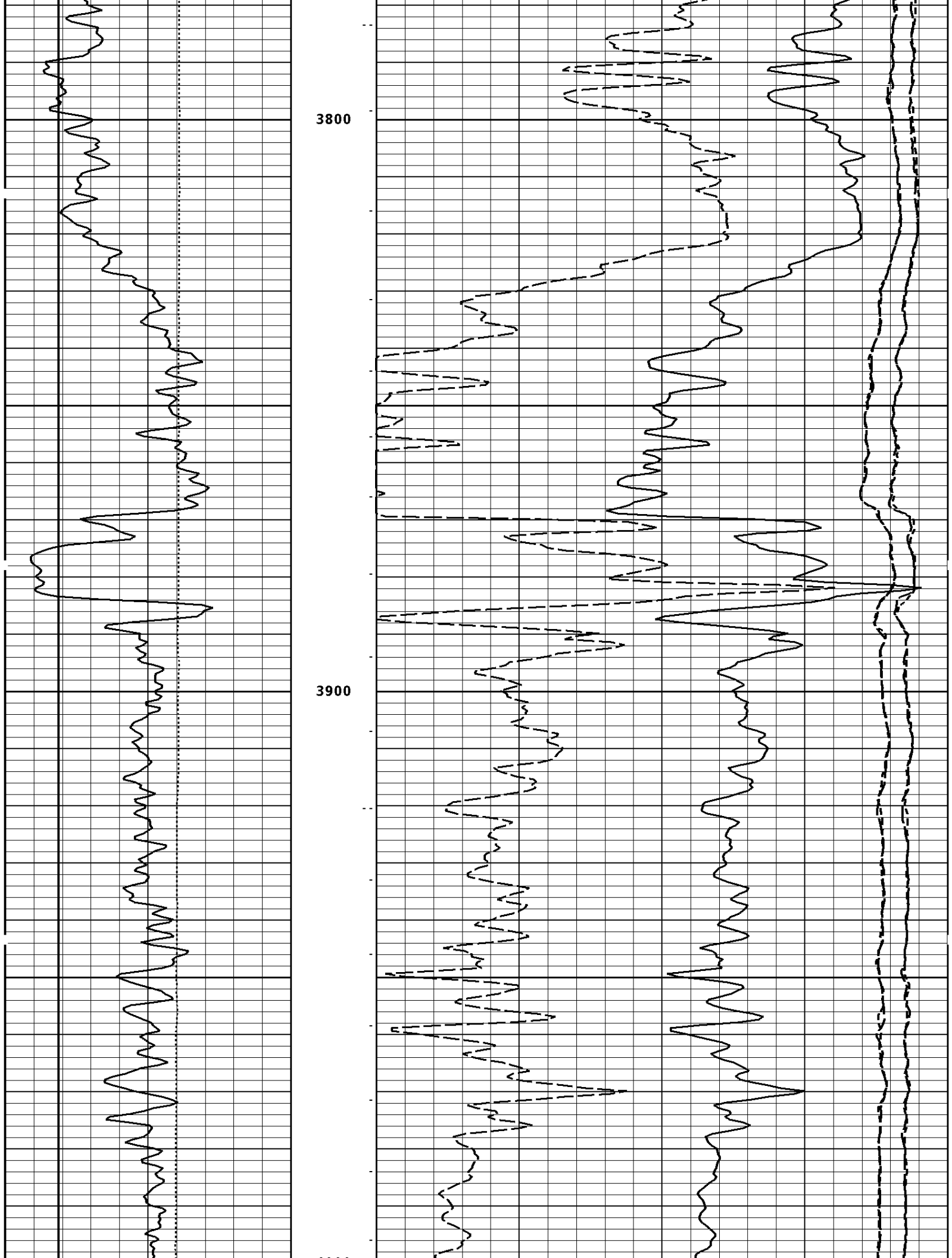
←TT1

←TT2

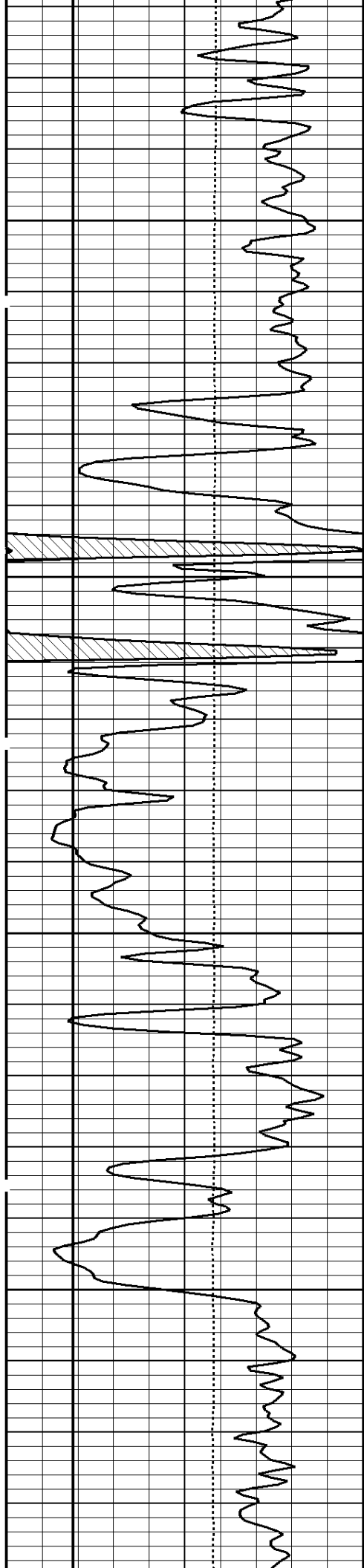


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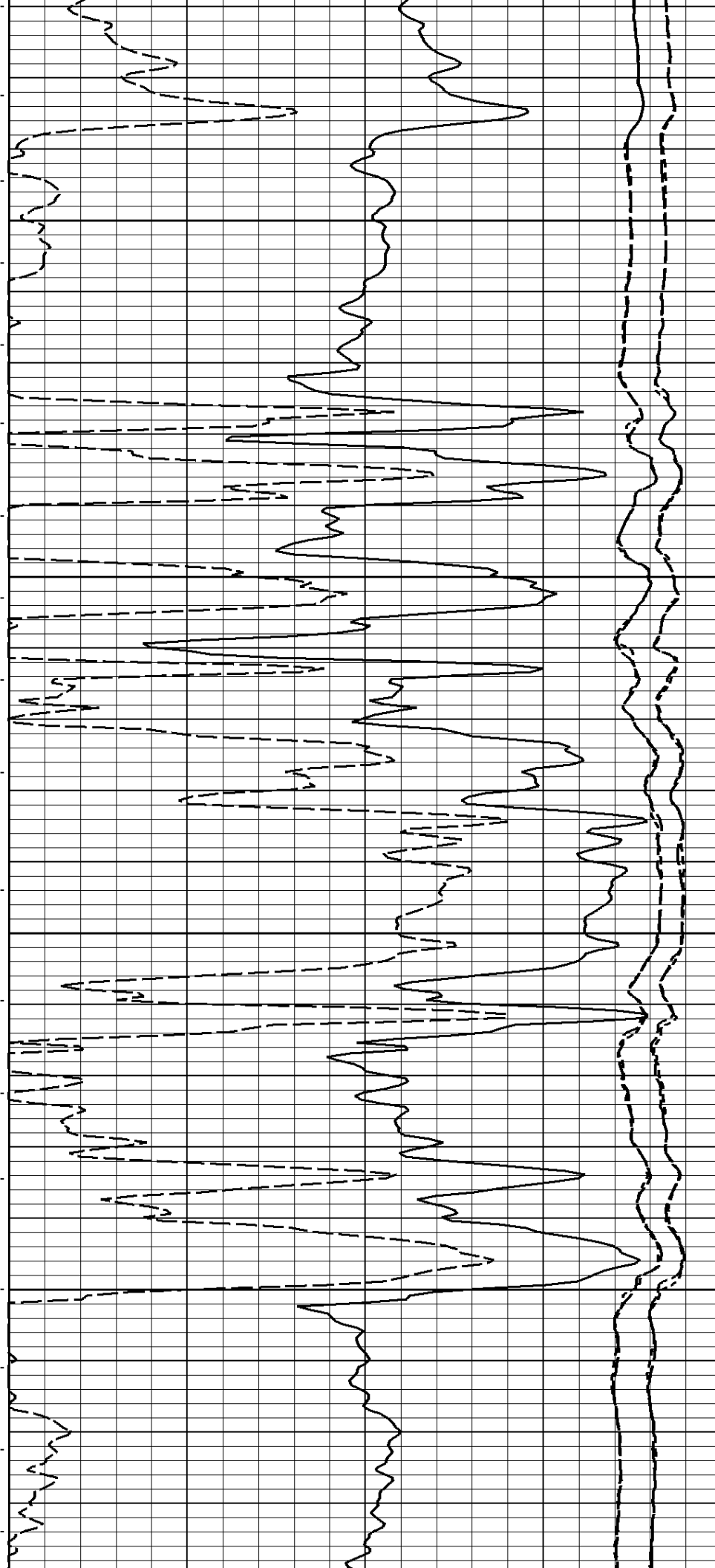


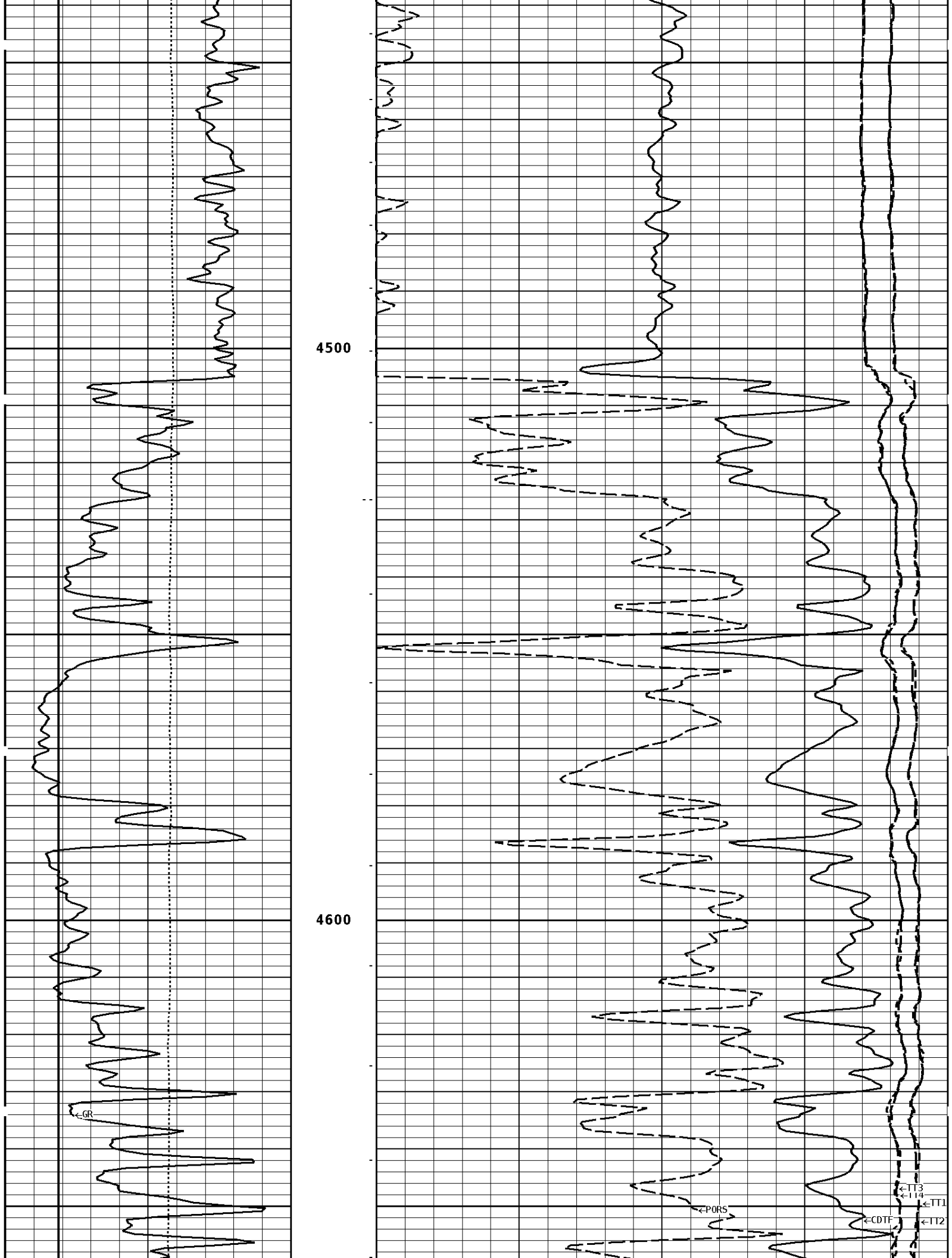


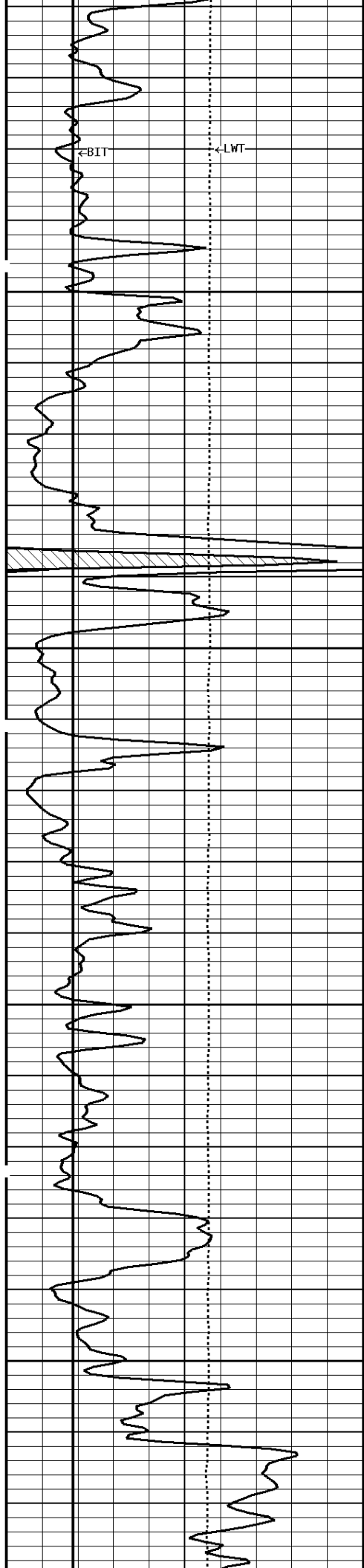


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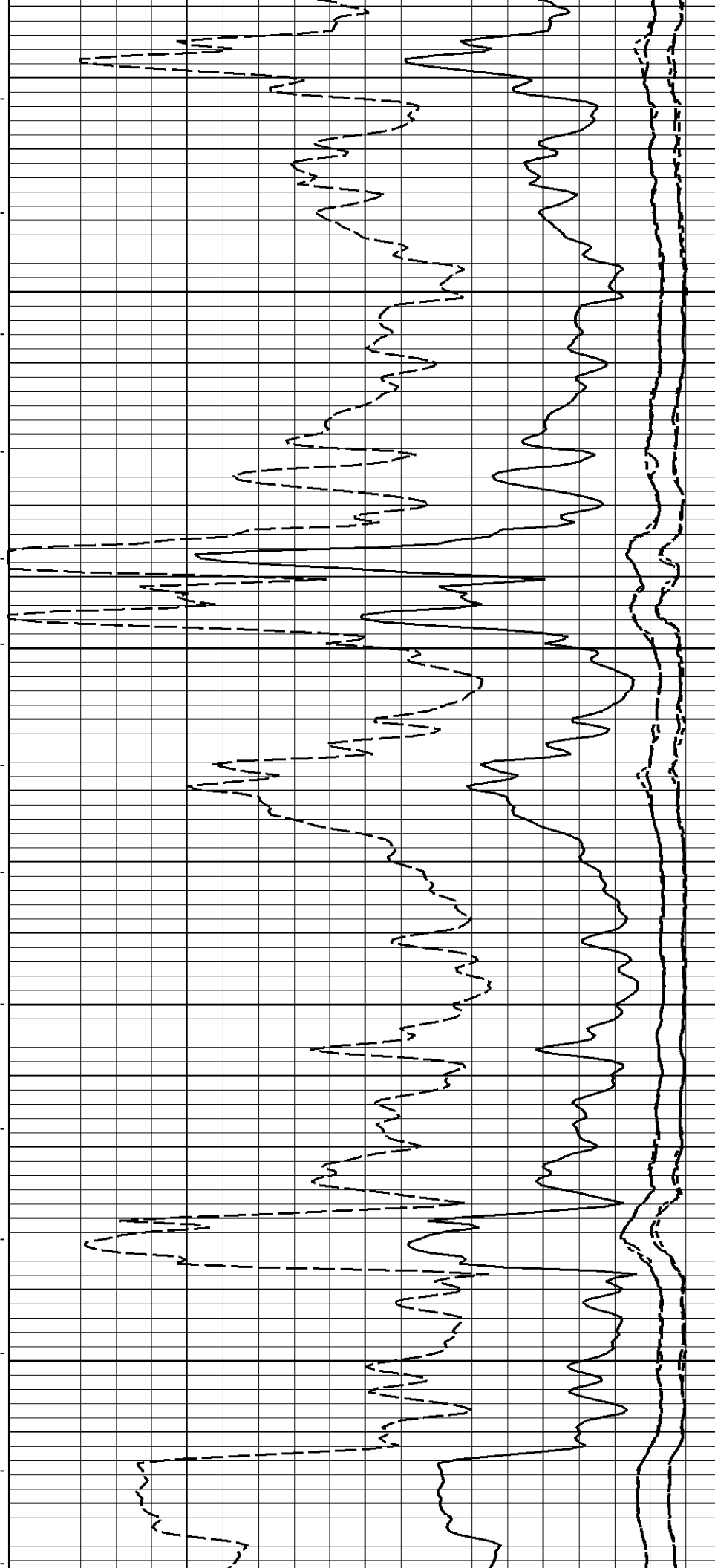


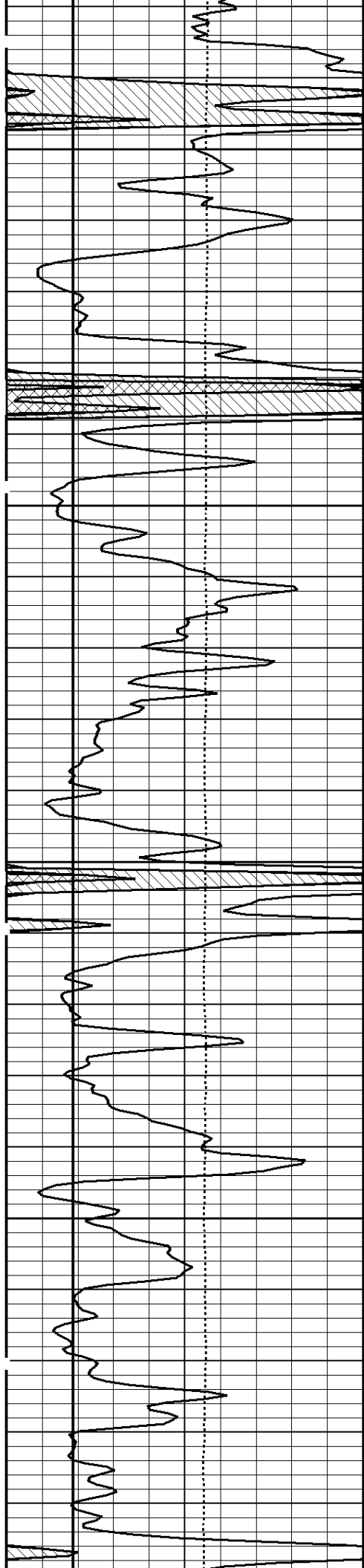




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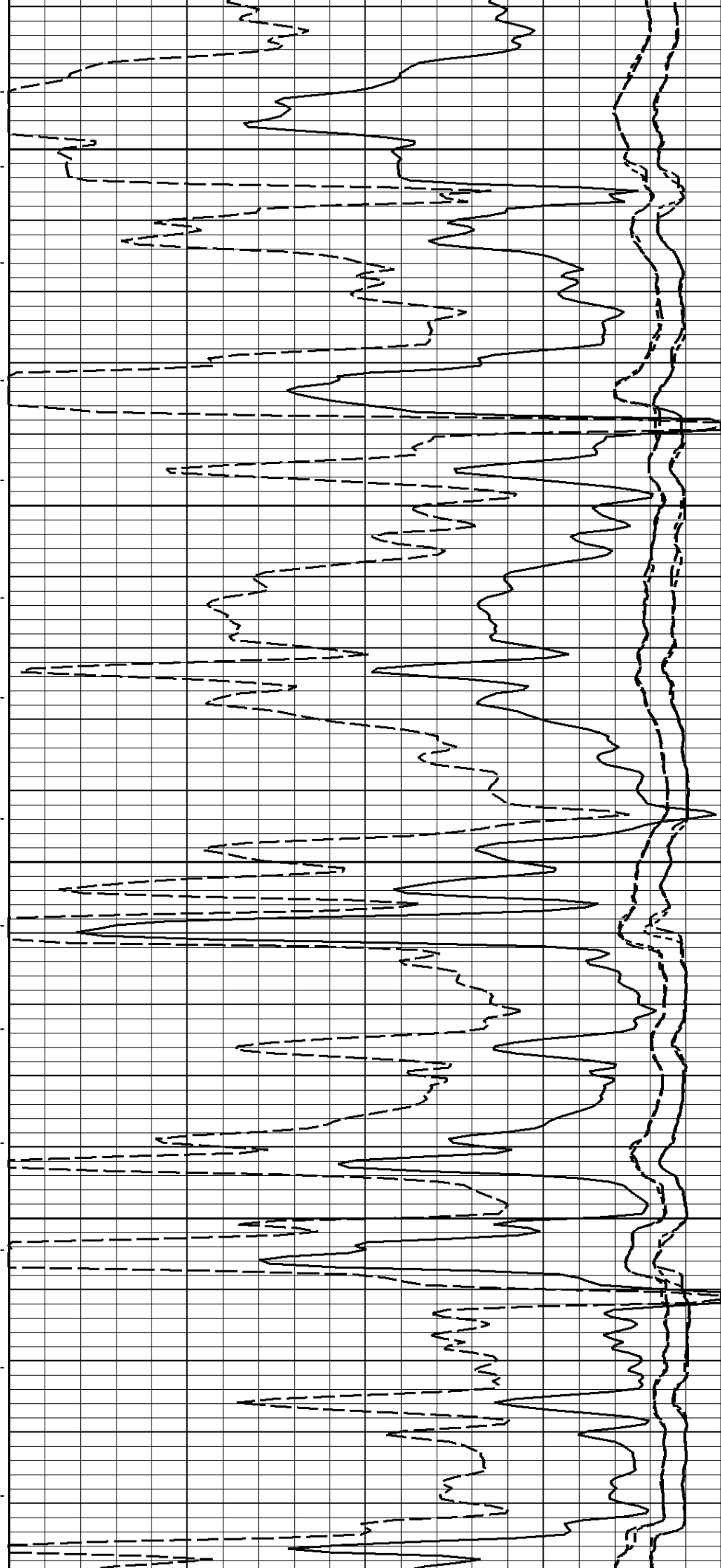
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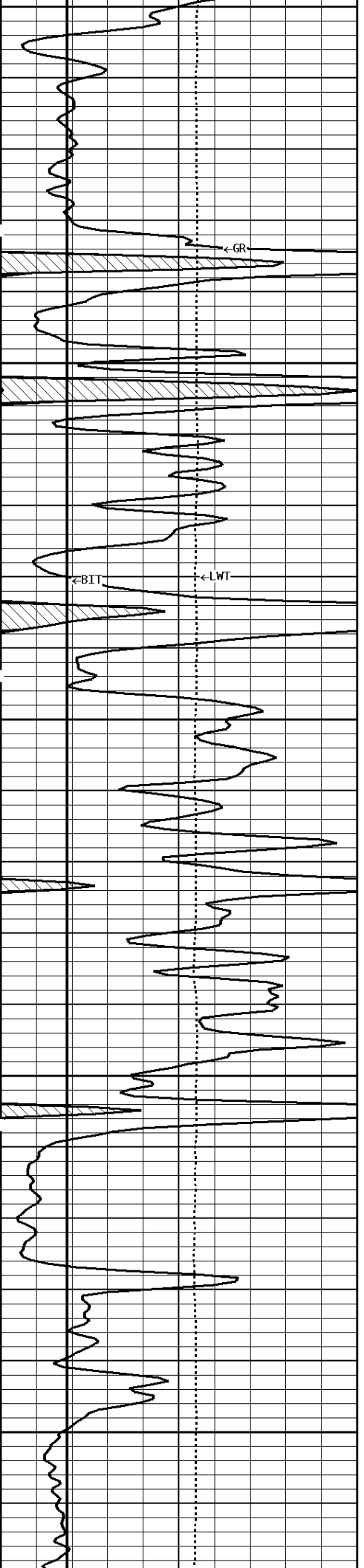


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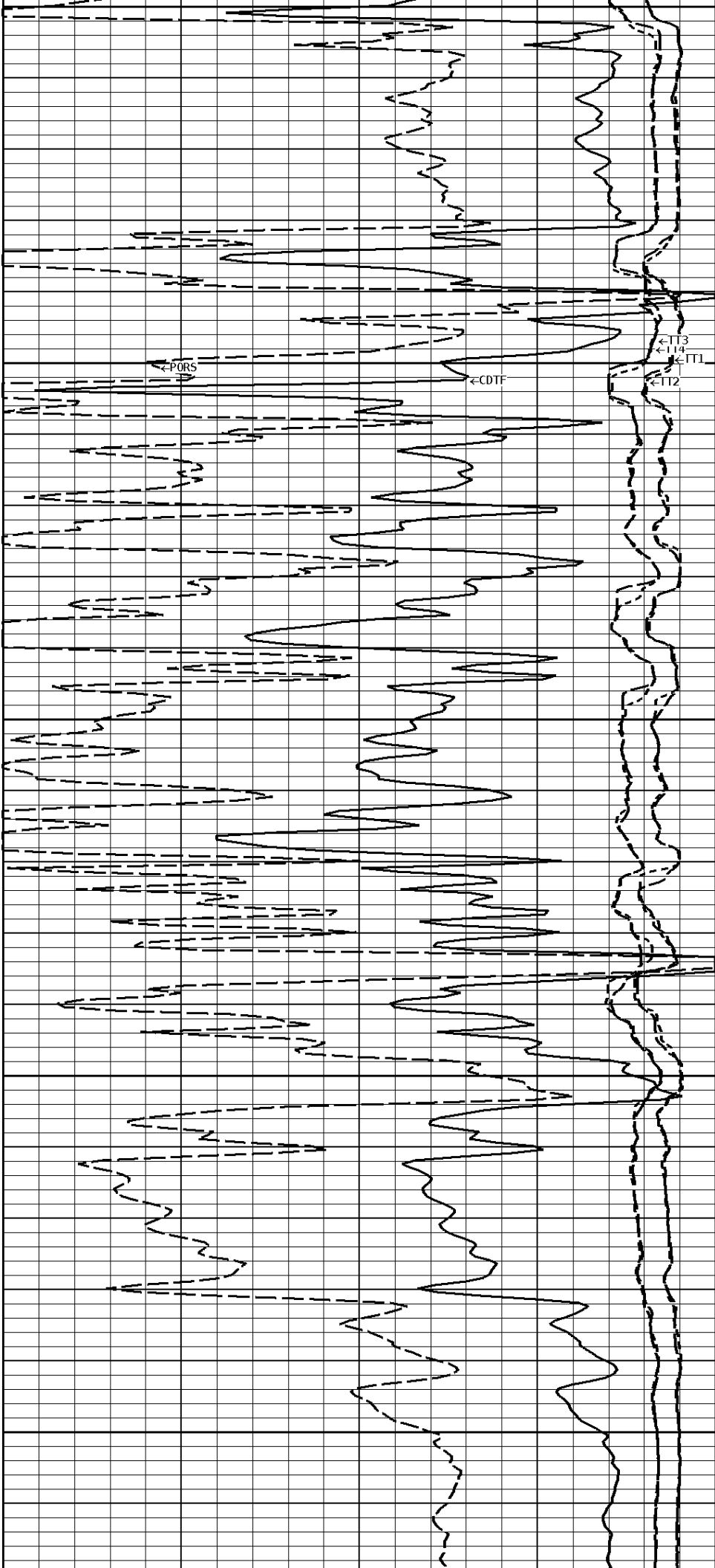
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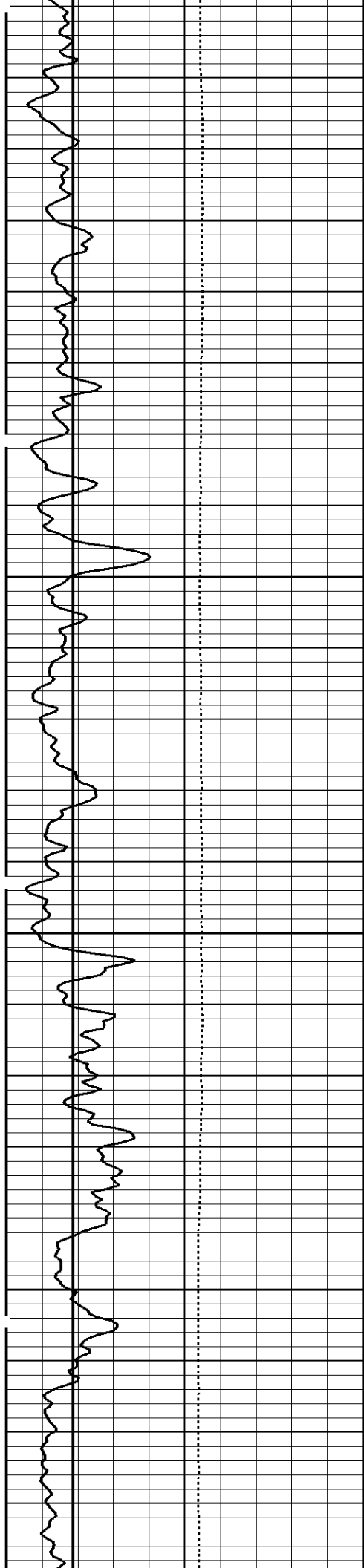
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5200

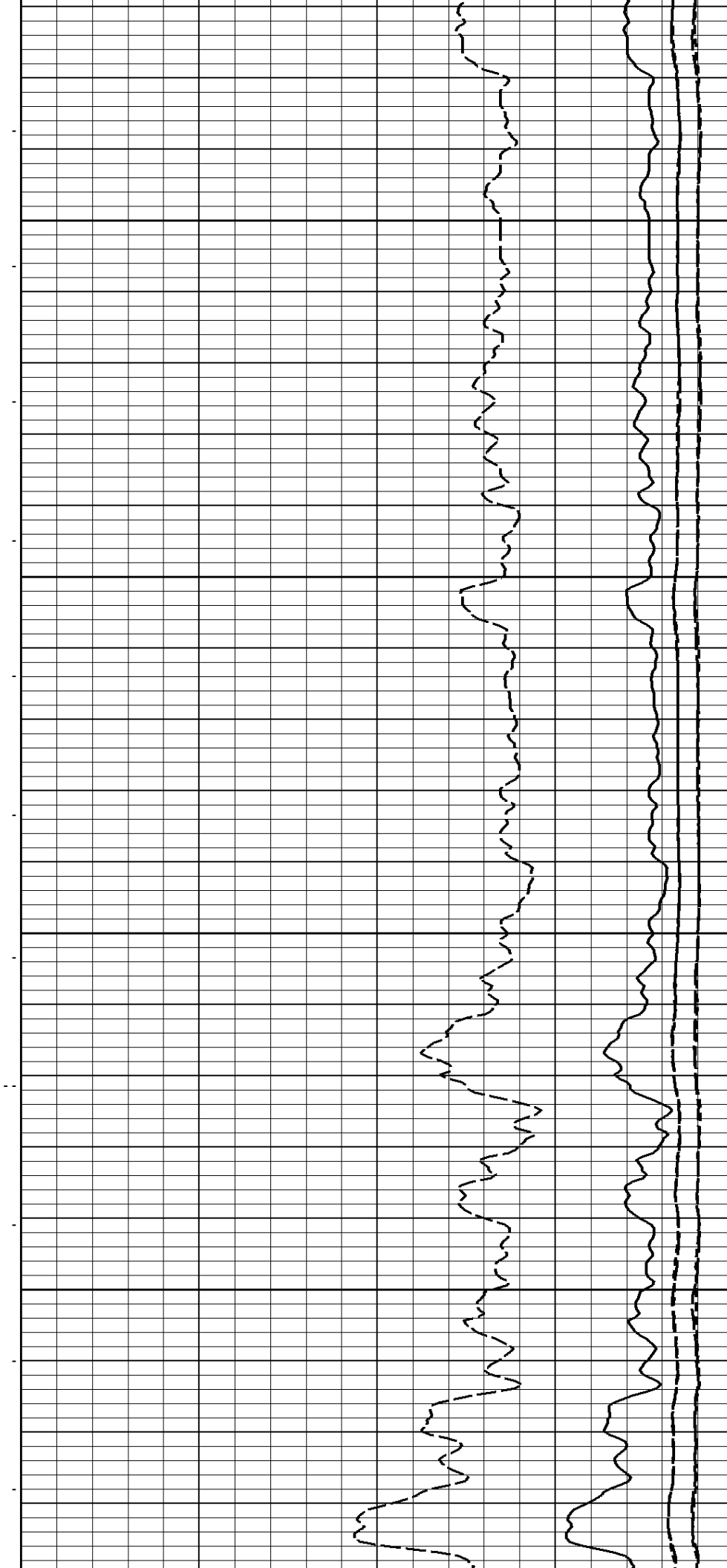


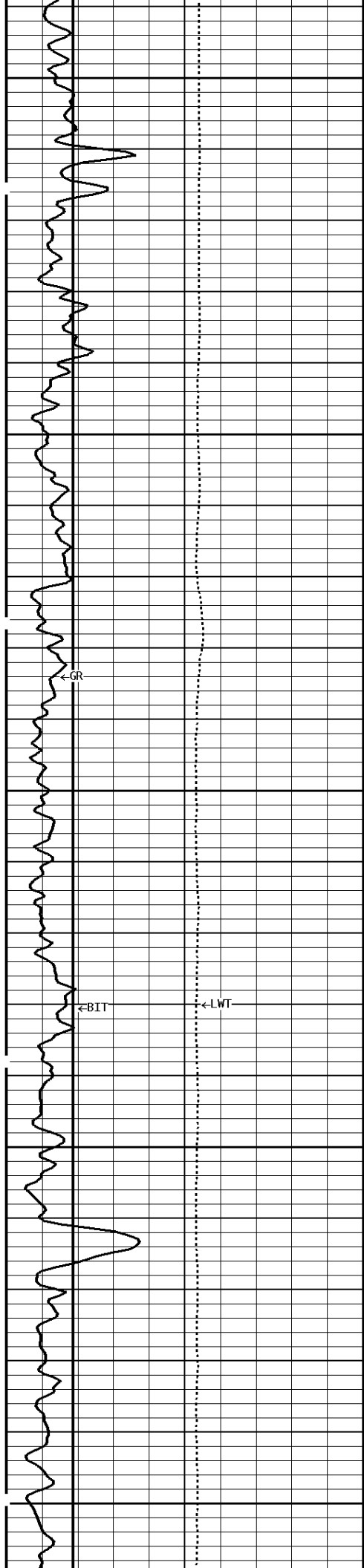
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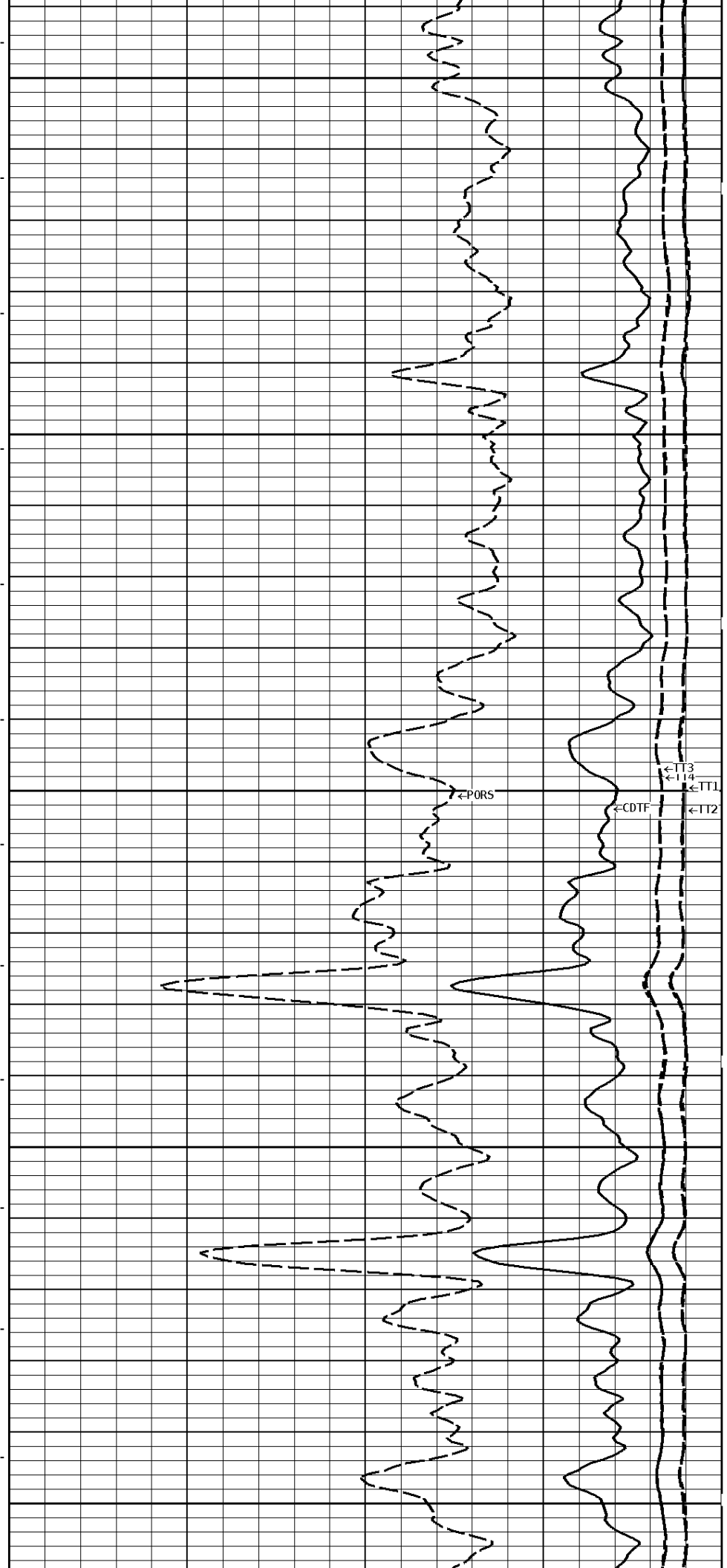
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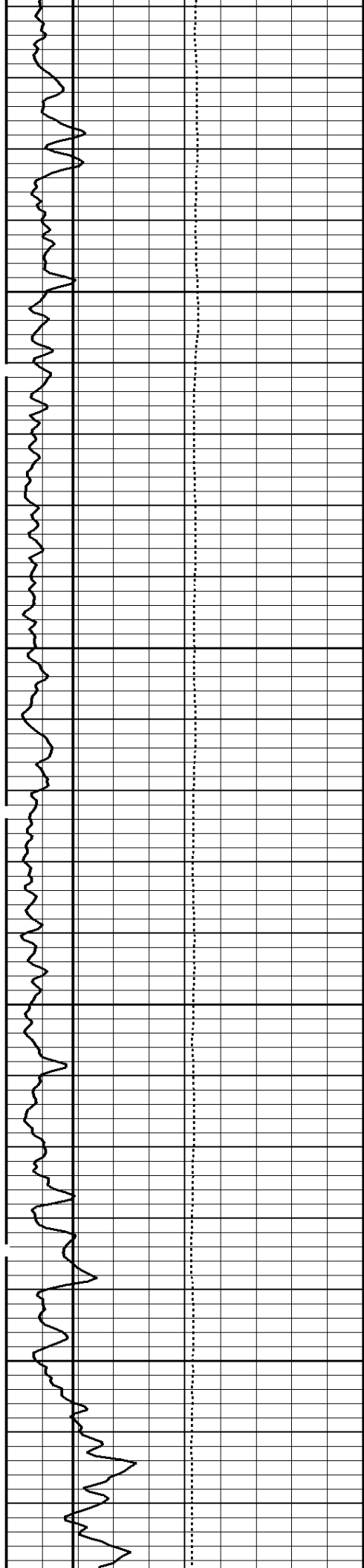




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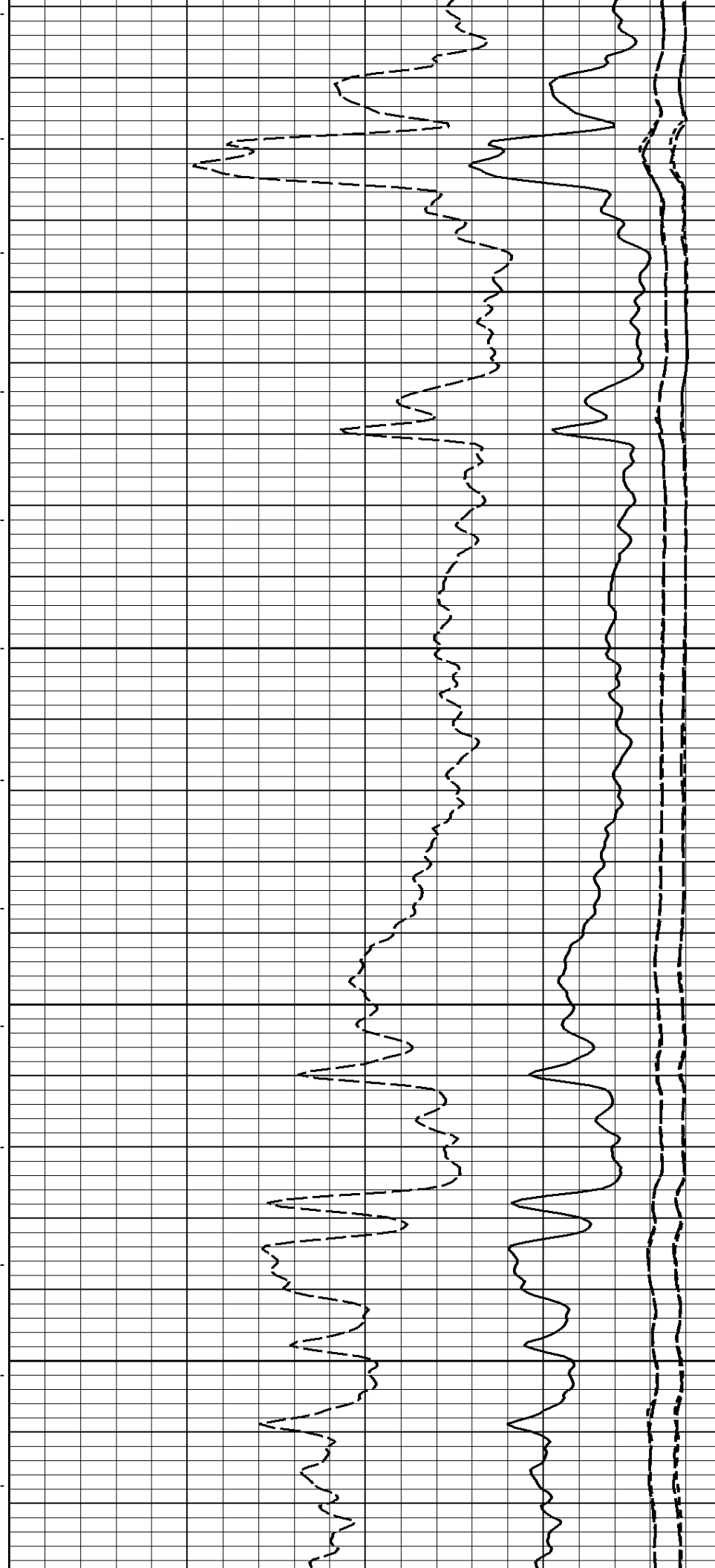
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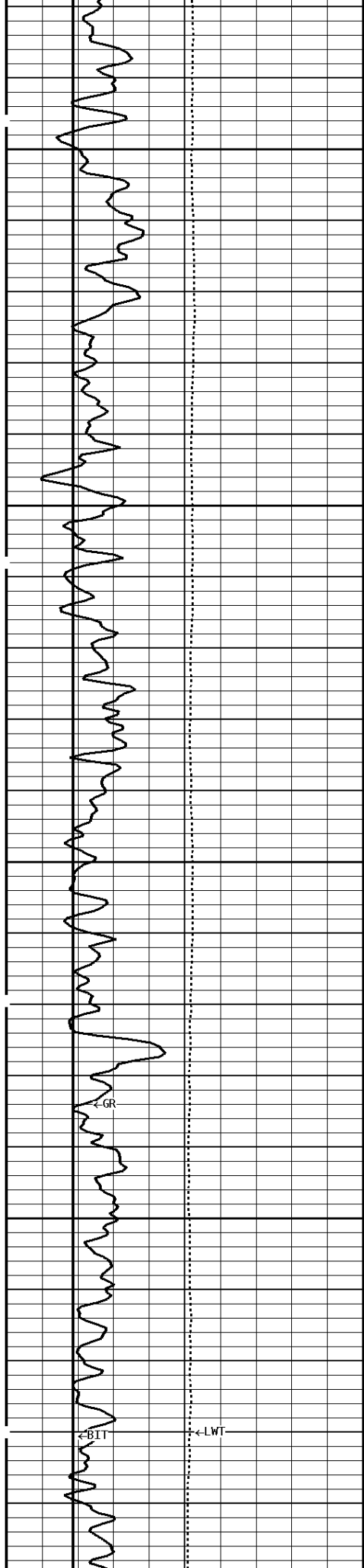




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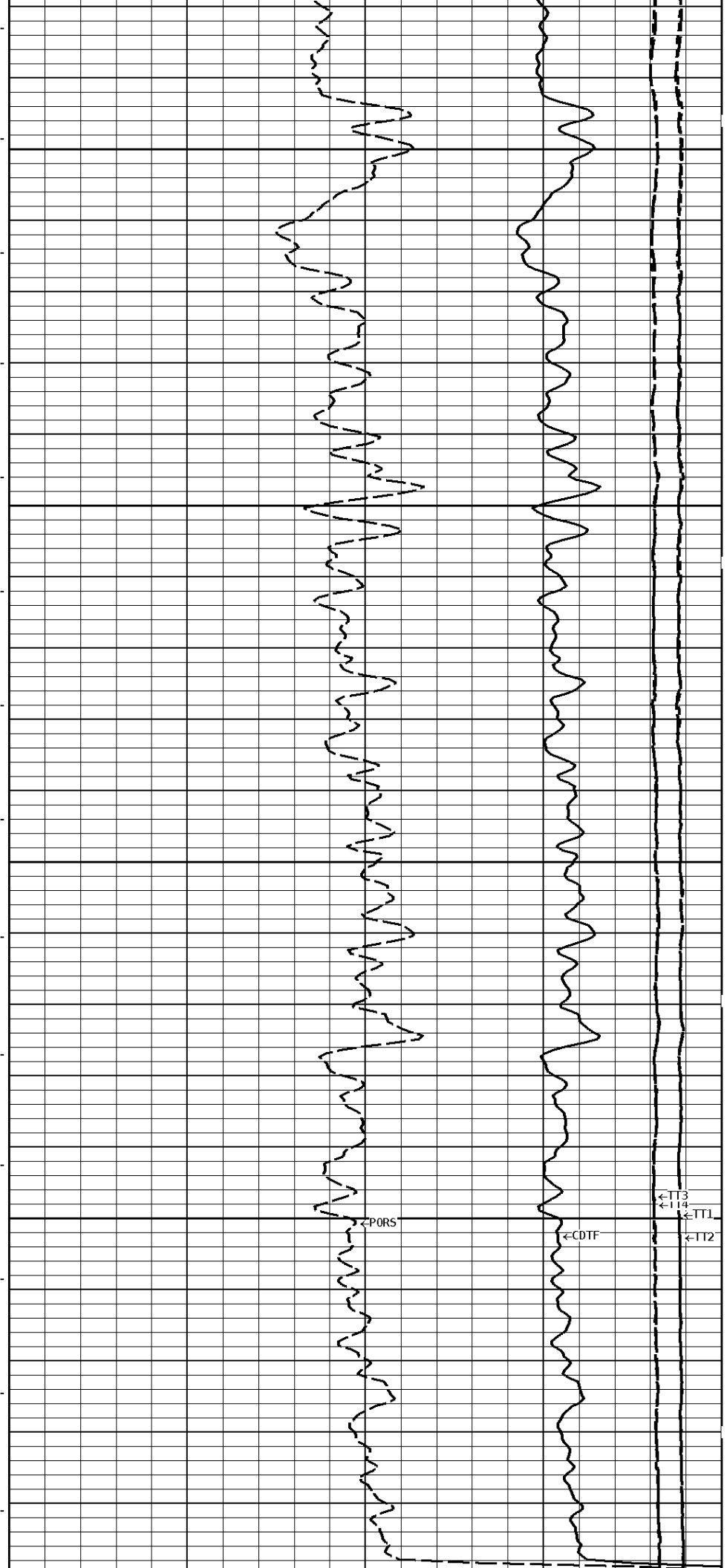




6000

6100

6200



←PORS

←CDTF

←TT3  
←TT4  
←TT1  
←TT2

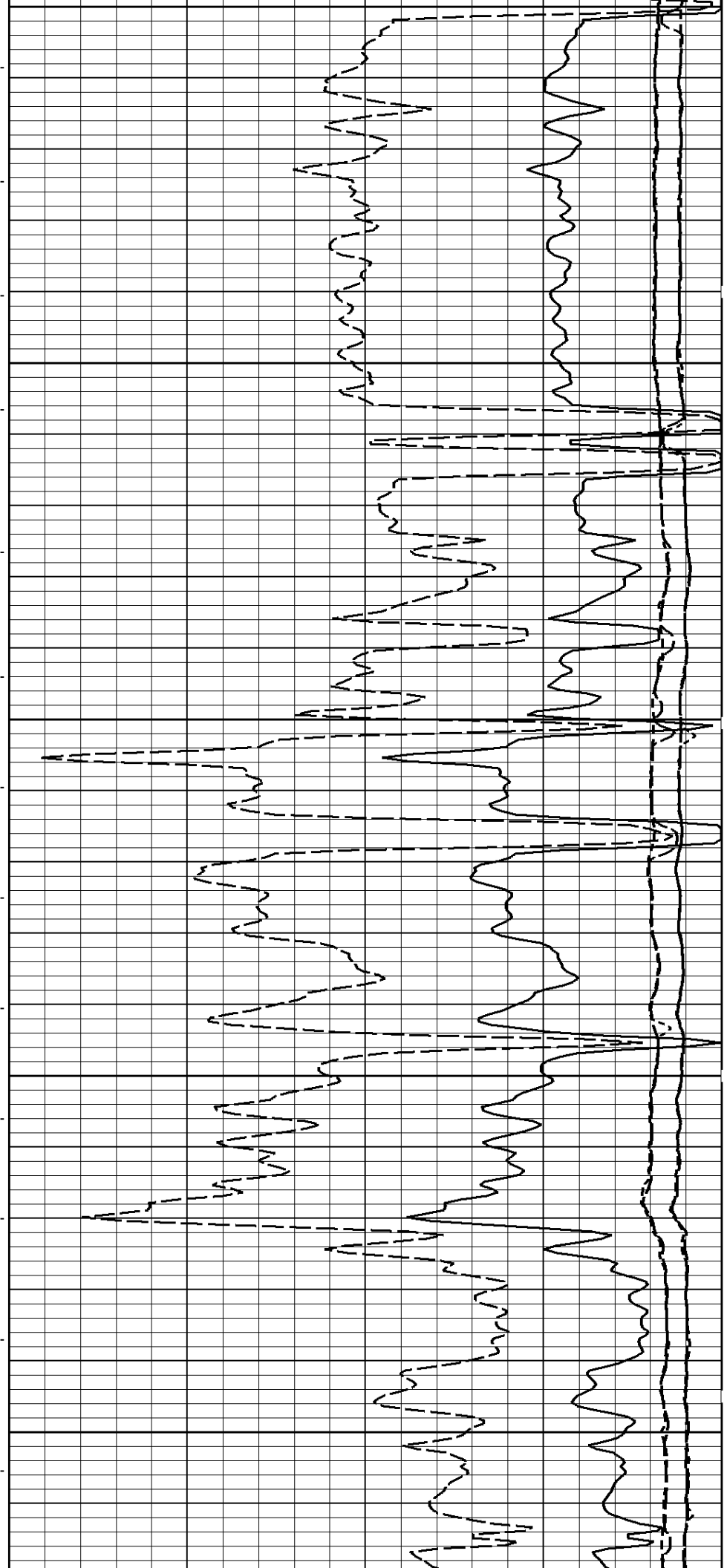
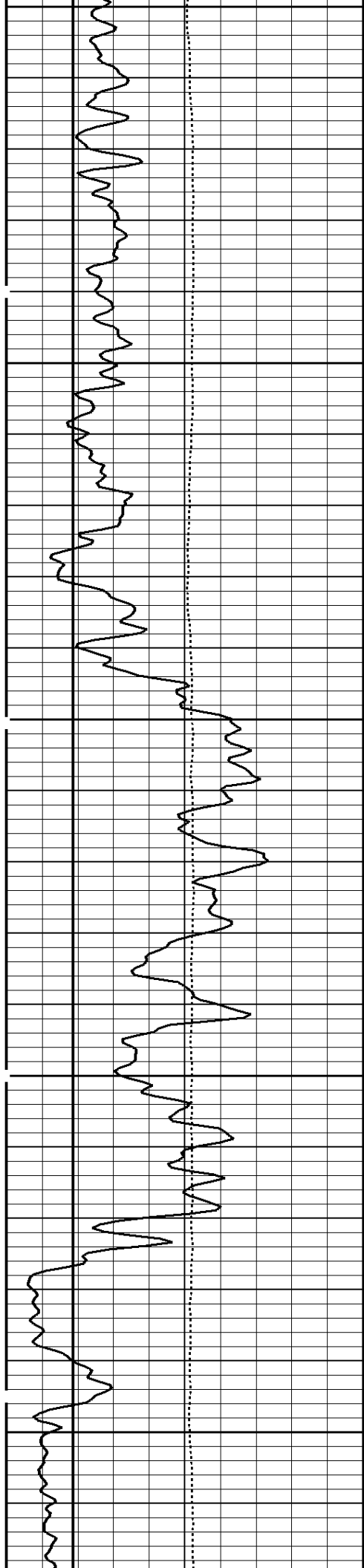
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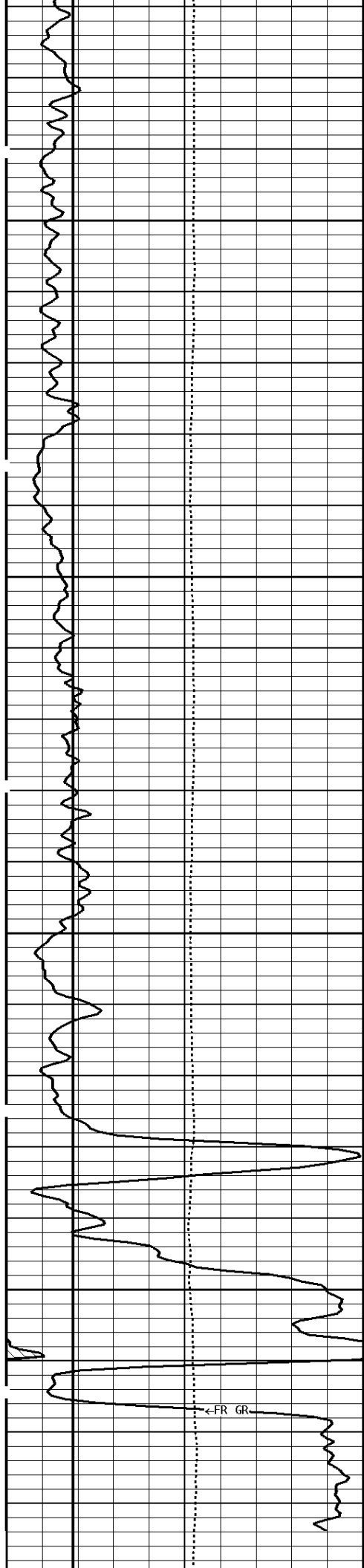
←LWT

6200

6300

6400

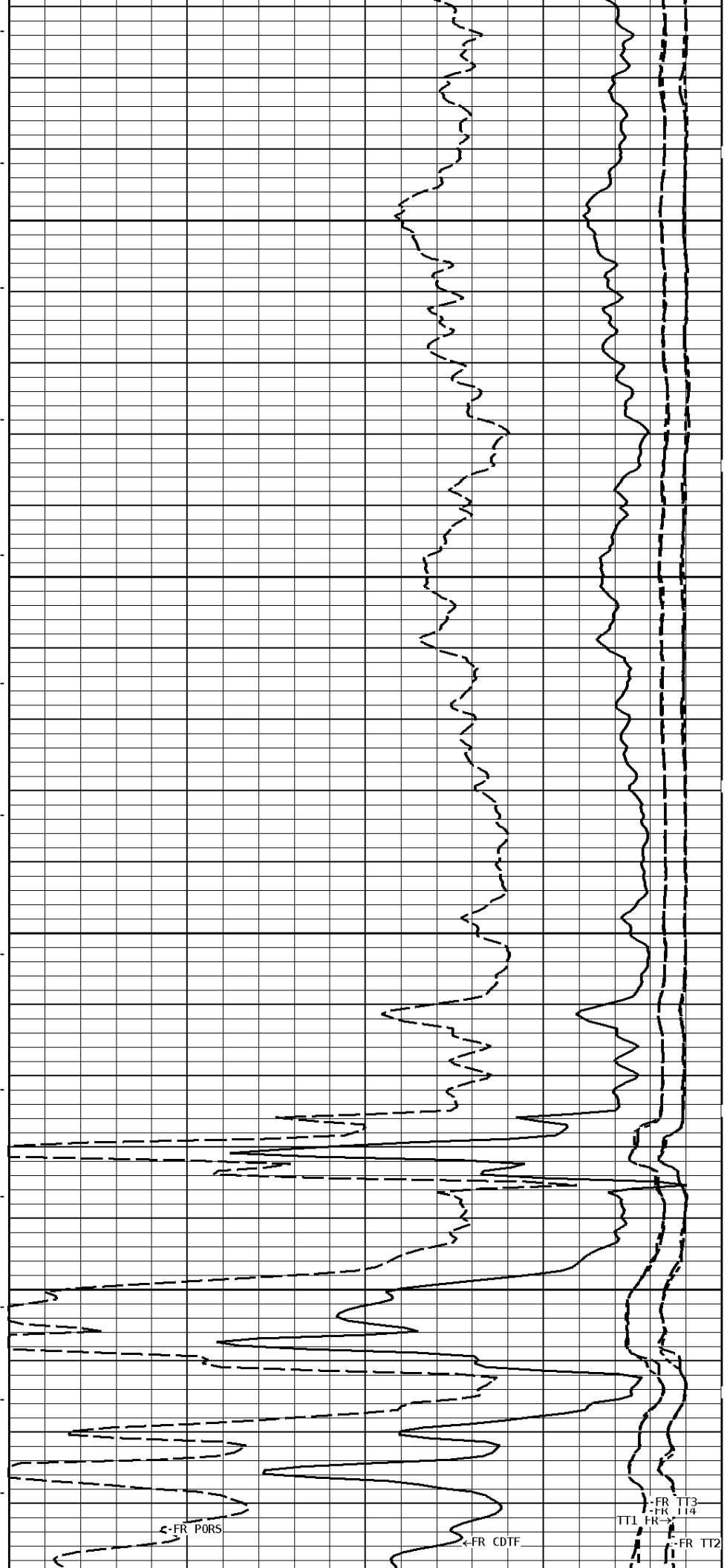




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6600

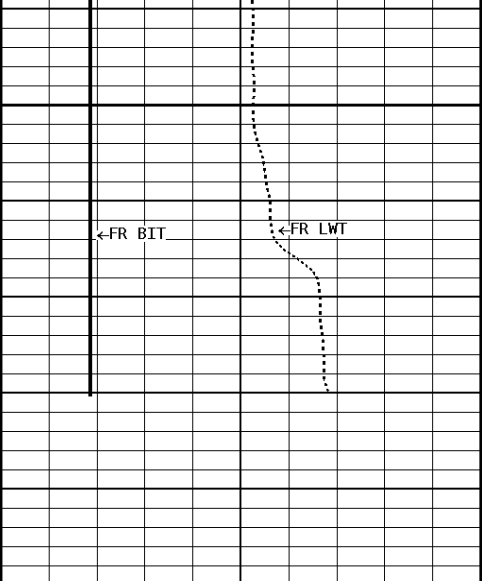
←FR GR



←FR PORS

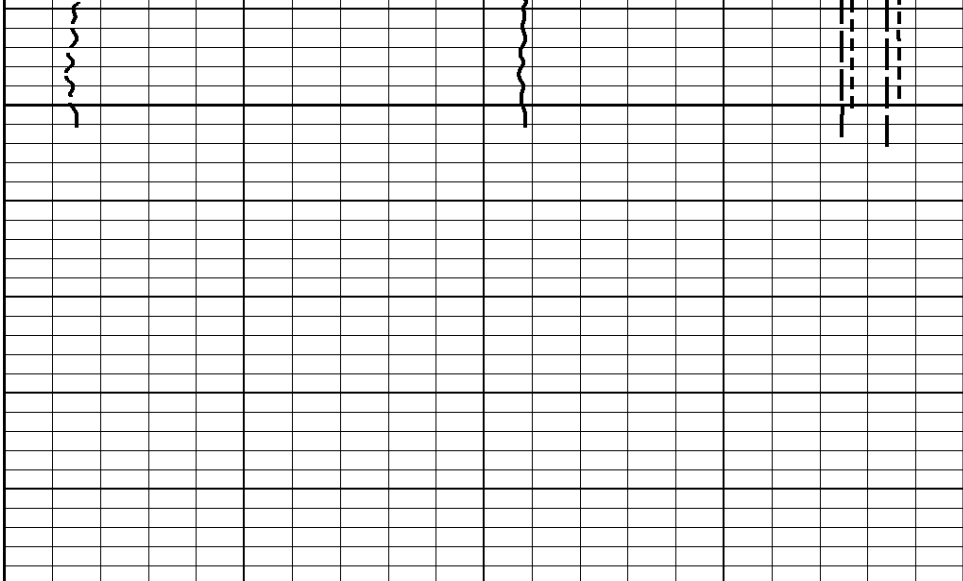
←FR CDTF

TT3  
FR 114  
TT1  
FR 114  
FR TT2

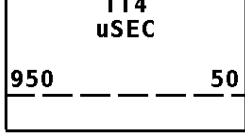
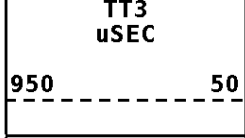
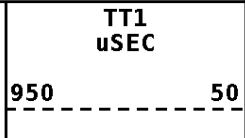
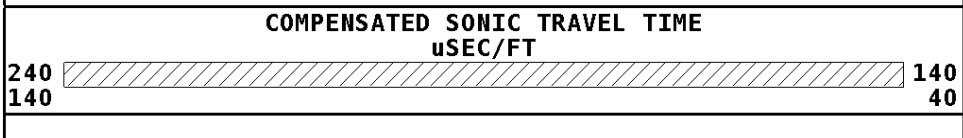
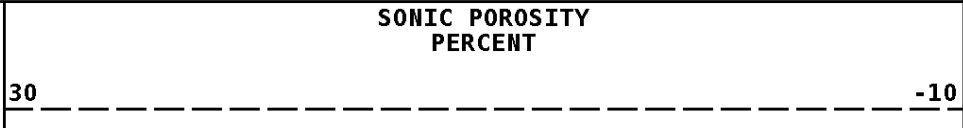
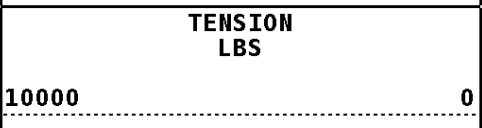
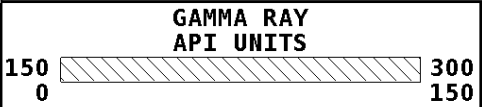


6664

File #1.2.4



**1:240 MAIN SECTION**



**\* Borehole Zone Factors \***

<b>Zone 1 99999.0 to 0.0 Feet</b>			
Matrix Transit Time	_____	47.5	us/ft
Fluid Transit Time	_____	189.0	us/ft

**\* Calibration Summary \***

<b>Shop Calibration</b>			
<b>GRT-B</b>			
Performed :	28-MAY-2014	Time :	09:56
Sensor Suite :	GR-GR5	ID :	GRT-BB-006

	Measured	Units	Calibrated	Units
GR	Background	Jig	Jig	GRAPI
	62	374	175	

**Shop Calibration  
CST-AD**

Performed : 28-MAY-2014                      Time : 11:43  
 Sensor Suite : SON-ANA                      ID : CST-AB-012

		Transit Time		
T/R Pair	Measured	Calibrated	Units	
T1R1	208.5	208.5	uS	
T2R2	208.5	208.5	uS	
T1R2	322.5	322.5	uS	
T2R1	322.5	322.5	uS	

		Amplitude		
T/R Pair	Measured	Calibrated	Units	
T1R1	90.00	90.00	mV	
T2R2	90.00	90.00	mV	
T1R2	78.00	78.00	mV	
T2R1	78.00	78.00	mV	