

**Tucker**  
ENERGY SERVICES

PHASED INDUCTION  
SHALLOW FOCUS SP LOG

**Company** LEON C. SMITHERMAN JR.  
**Well** MBF #5-1  
**Field** COMBS  
**County** COWLEY  
**State** KANSAS  
**Country** USA  
**API No.** 15-035-24623-0000

**File No** : TUL-60086  
**Company** : LEON C. SMITHERMAN JR.  
**Well** : MBF #5-1  
**Field** : COMBS  
**County** : COWLEY  
**State** : KANSAS  
**Country** : USA  
**API No** : 15-035-24623-0000

**Location** :  
 330' FSL & 330' FEL  
 SE SE SE

**LSD** :                   **Sect** : 5                   **Twp** : 30S                   **Rge** : 5E

<b>Permanent Datum:</b>	GL	<b>Elevations:</b>		<b>Services:</b>	
<b>Drilling Measured From:</b>	KB	KB 1313.00	Ft	CNT	
<b>Log Measured From:</b>	KB	DF 1312.00	Ft	LDT	
<b>Above Permanent Datum:</b>	8.00 Ft	GL 1305.00	Ft	PII	
<b>Date</b>	11-20-2014				
<b>Run Number</b>	1				
<b>Depth--Driller</b>	3100.0	Ft			
<b>Depth--Logger</b>	3102.0	Ft			
<b>First Reading</b>	3102.0	Ft			
<b>Last Reading</b>	210.0	Ft			
<b>Casing--Driller</b>	210.0	Ft			
<b>Casing--Logger</b>	210.0	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>	9.3				
<b>Fluid Loss</b>	8.0				
<b>PH/Viscosity</b>	9.0		51.0		
<b>Sample Source</b>	MEASURED				
<b>RM@Measured Temp.</b>	2.000	@ 60 F			
<b>RMF@Measured Temp</b>	1.600	@ 60 F			
<b>RMG@Measured Temp.</b>	2.400	@ 60 F			
<b>Source RMF/RMC</b>	CALCULATED/CALCULATED				
<b>RM@BHT</b>	0.000	@ 106 F			
<b>Time Circulation Stopped</b>	11-20-2014 8:30 am				
<b>Max Recorded Temp.</b>	106	F			
<b>Equipment/Base</b>	127	TULSA			
<b>Recorded By</b>	SHELDON TYLER				
<b>Witnessed By</b>	LEON SMITHERMAN / TOM BLAIR				

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	3100.00	8.625	32.00	210.00	0.00

<b>Run Number</b>	1
<b>Date</b>	11-20-2014
<b>Date/Time On Bottom</b>	11-20-2014 10:30 am
<b>Depth to Fluid</b>	0.0 Ft
<b>Salinity</b>	1000.000
<b>RMF@BHT</b>	0.000 @ 106 F
<b>RMC@BHT</b>	0.000 @ 106 F

Run Number 1

Comments

ALL PRESENTATIONS AS PER CUSTOMER REQUEST  
 GRT, CNT, LDT, AND PIT RUN IN COMBINATION  
 CALIPERS ORIENTED ON X-Y AXIS  
 2.71 G/CC USED TO CALCULATE POROSITY  
 ANNULAR HOLE VOLUME CALCULATED USING 5.5" PRODUCTION CASING  
 PHIN IS CALIPER CORRECTED

CUSTOMER REQUESTED DETAIL PULLED TO 1800'

GRT: GRP, GRX  
 CNT: PHIN, CLCNIN, PHXN  
 LDT: PORL, LCORN, PECLN, LDENN, PORLLS, CLLDIN, PRXL, PECLX, LDENNX, LCORX

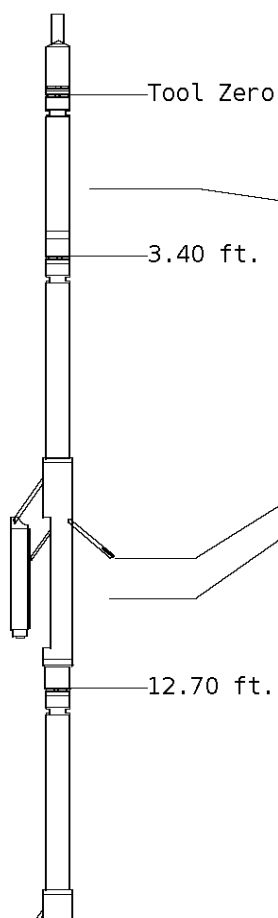
PIT: ILD, ILM, SPU, SFLAEC, CIRD

OPERATORS:

J.JOHNSON  
 B.BROWN

### Tool String Schematic

**Total Tool Length** - 43.49 ft.  
**Maximum Outside diameter** - 4.80 in.  
**Net Weight in Air** - 743.00 lbs.



**Tool:** GRT-B      **Length:** 3.40 ft.    **O.D.** 3.60 in.  
 Gamma Ray Controller  
**Sonde ID** :GRT-BA-017

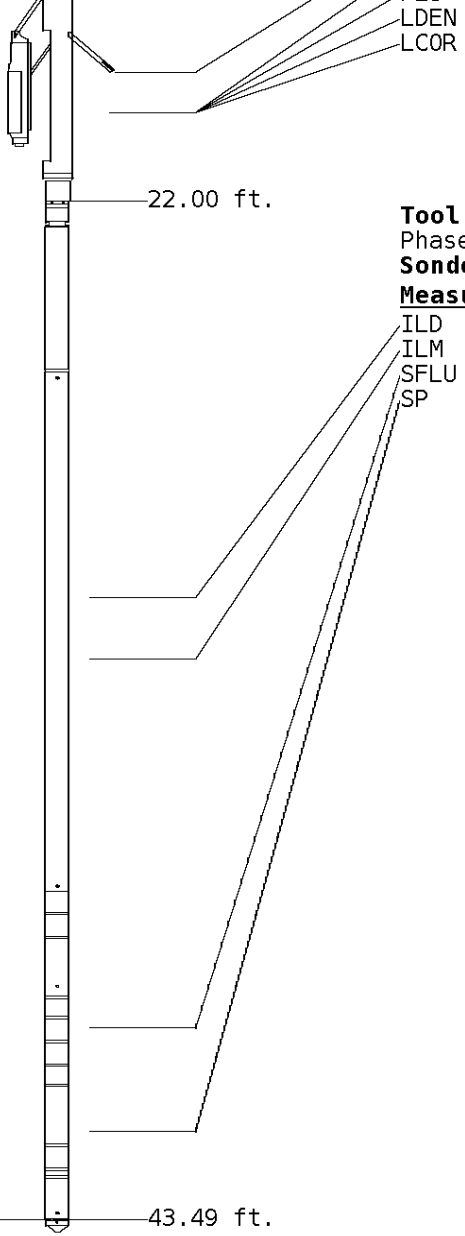
Measure Point	Tool Offset	Stack Offset	Bottom Offset
GRP	2.00	2.00	41.49

**Tool:** CNT-AA      **Length:** 9.30 ft.    **O.D.** 4.36 in.  
 Compensated Neutron A Pad on NDT-A  
**Sonde ID** :NDT-BB-146  
**Source ID** :N-1044  
**Pad ID** :CNP-AA-115

Measure Point	Tool Offset	Stack Offset	Bottom Offset
CLCN	6.00	9.40	34.09
PHIN	6.80	10.20	33.29

**Tool:** LDT-DA      **Length:** 9.30 ft.    **O.D.** 4.80 in.  
 Litho Density D Pad on NDT-A  
**Sonde ID** :NDT-AH-152  
**Source ID** :CSV-587  
**Pad ID** :LDP-DA-50

Measure Point	Tool Offset	Stack Offset	Bottom Offset
CLLD	6.00	18.70	24.79
PEL	7.00	19.70	23.79
PES	7.40	20.10	23.39

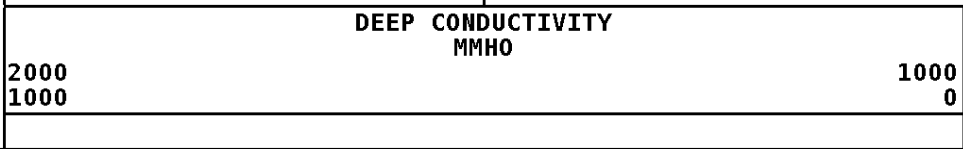
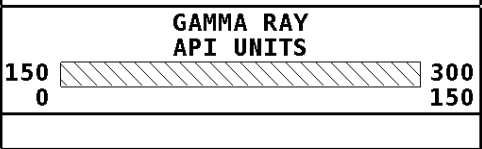
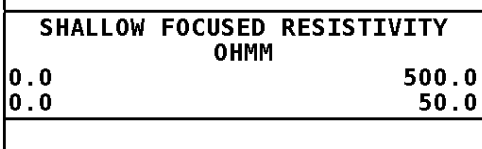
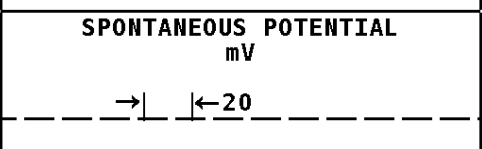
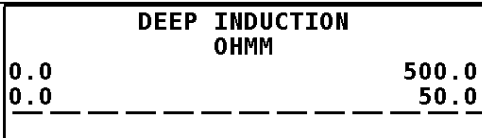
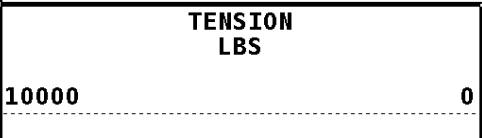


7.20 19.90 23.59  
 7.20 19.90 23.59

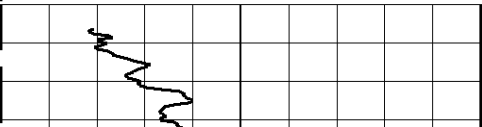
**Tool:** PIT-CA      **Length:** 21.49 ft.    **O.D.** 3.62 in.  
 Phased Dual Induction w/ RM & D  
**Sonde ID** :PIT-AB-18

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	30.92	12.56
ILM	10.10	32.10	11.39
SFLU	17.49	39.49	4.00
SP	20.60	42.60	0.88

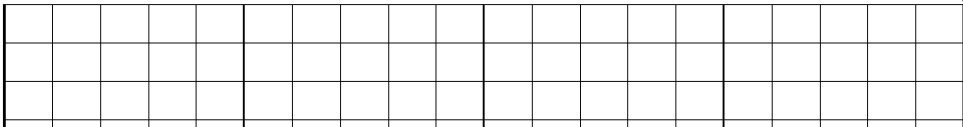
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**Segment:** V1.D1.S5\_FINAL\_MAIN      **Acquired:** 2014-11/20 10:14 3.4.0-13284  
**Reference:** 0      **Processed:** 2014-11/20 11:02 3.4.0-13284

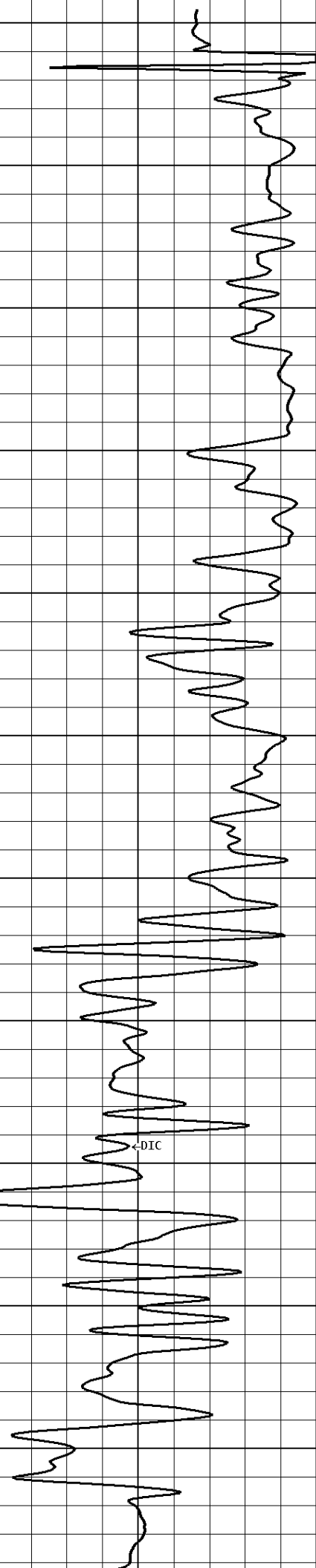
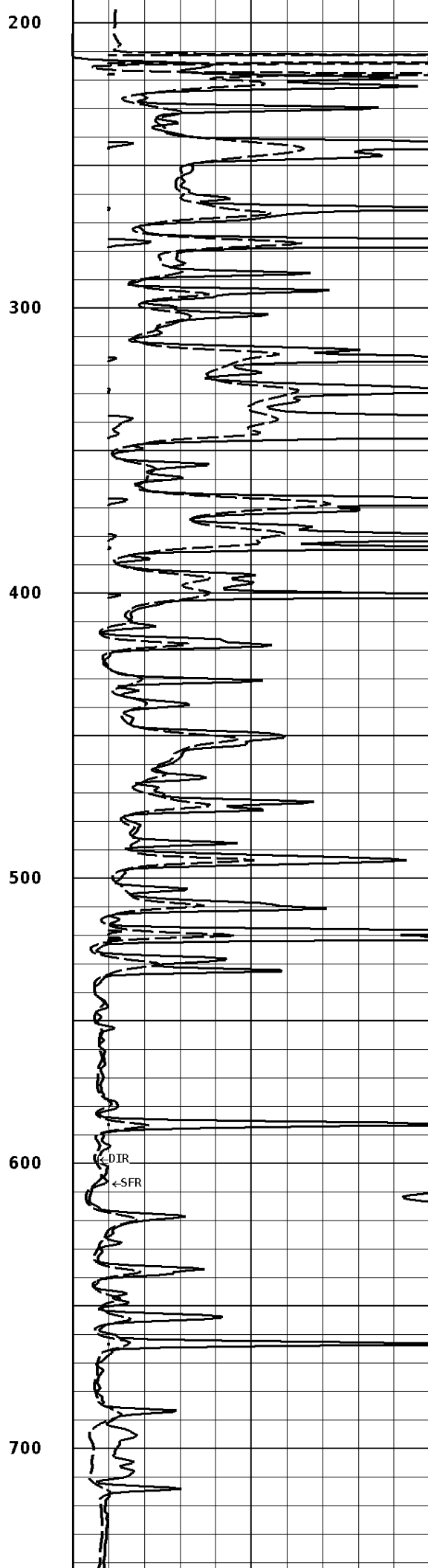
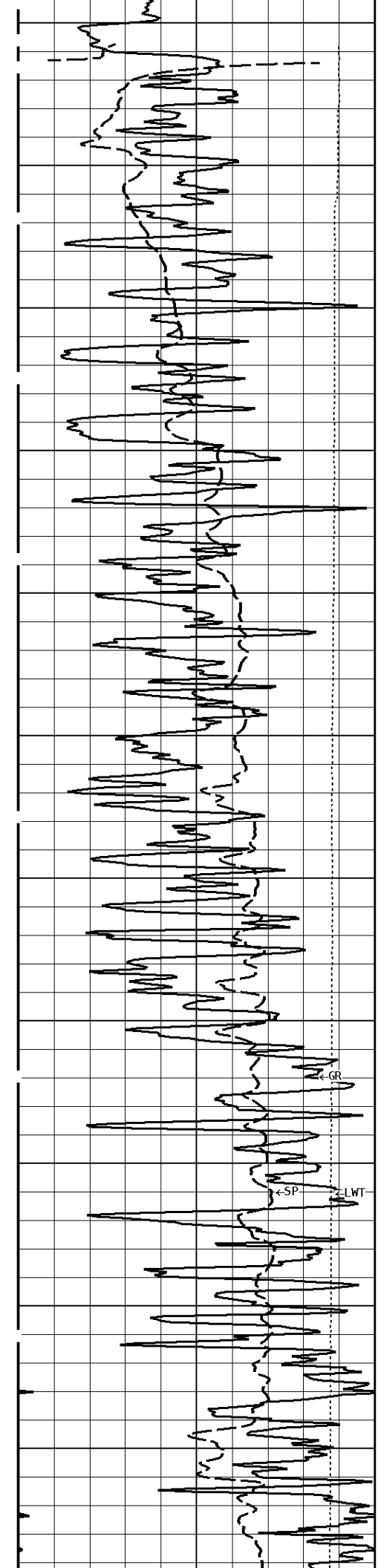


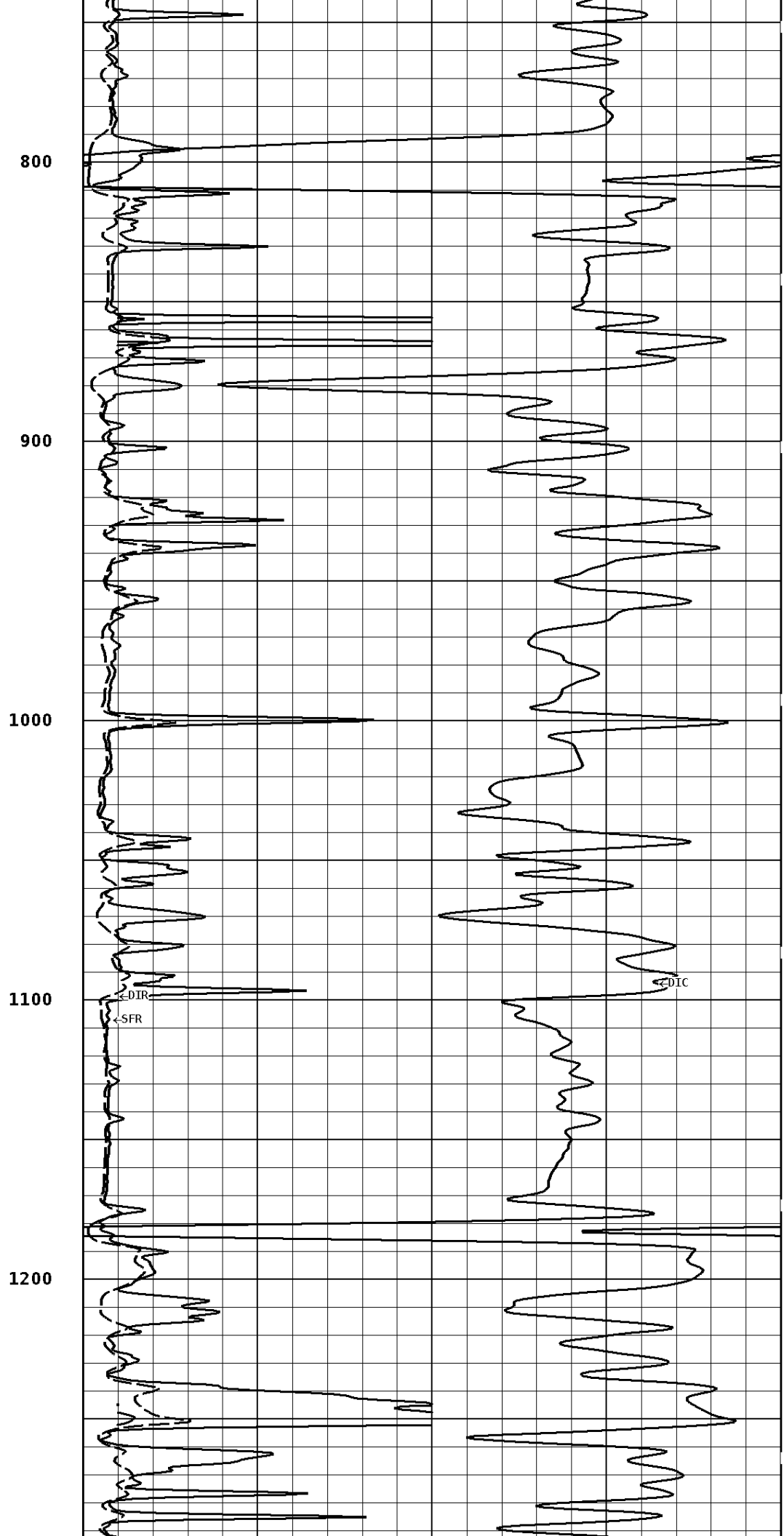
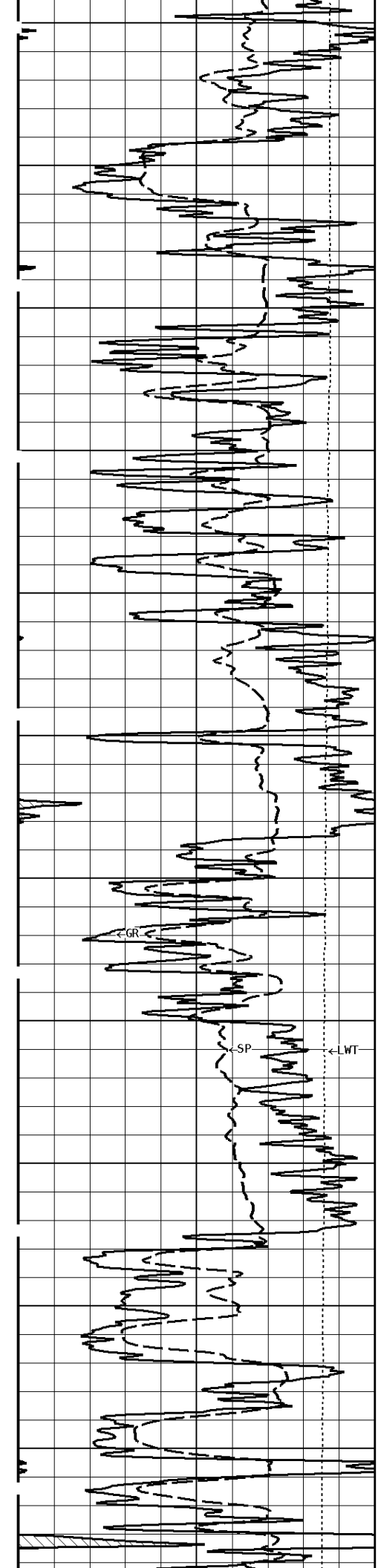
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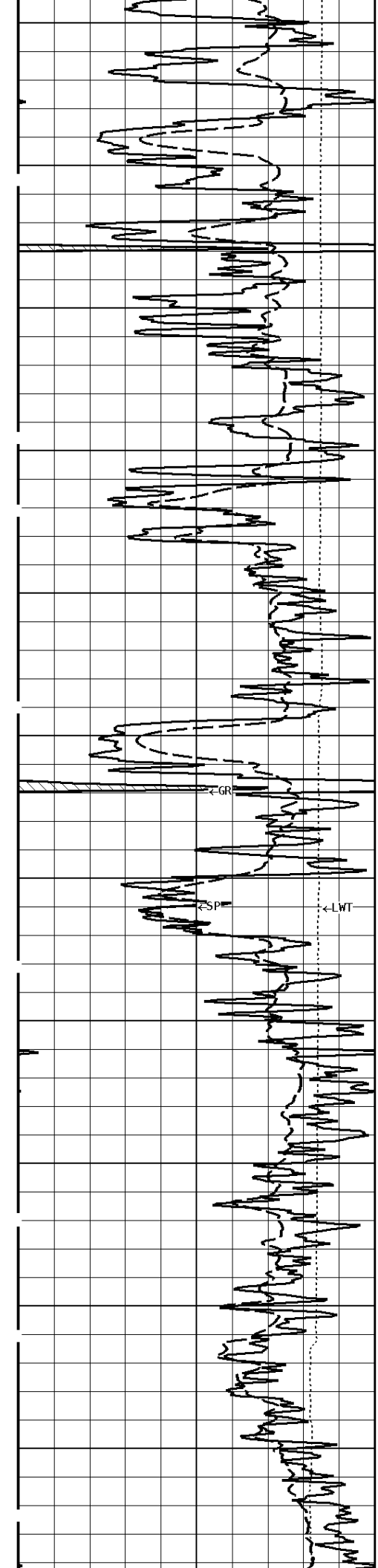


File #1.1.1









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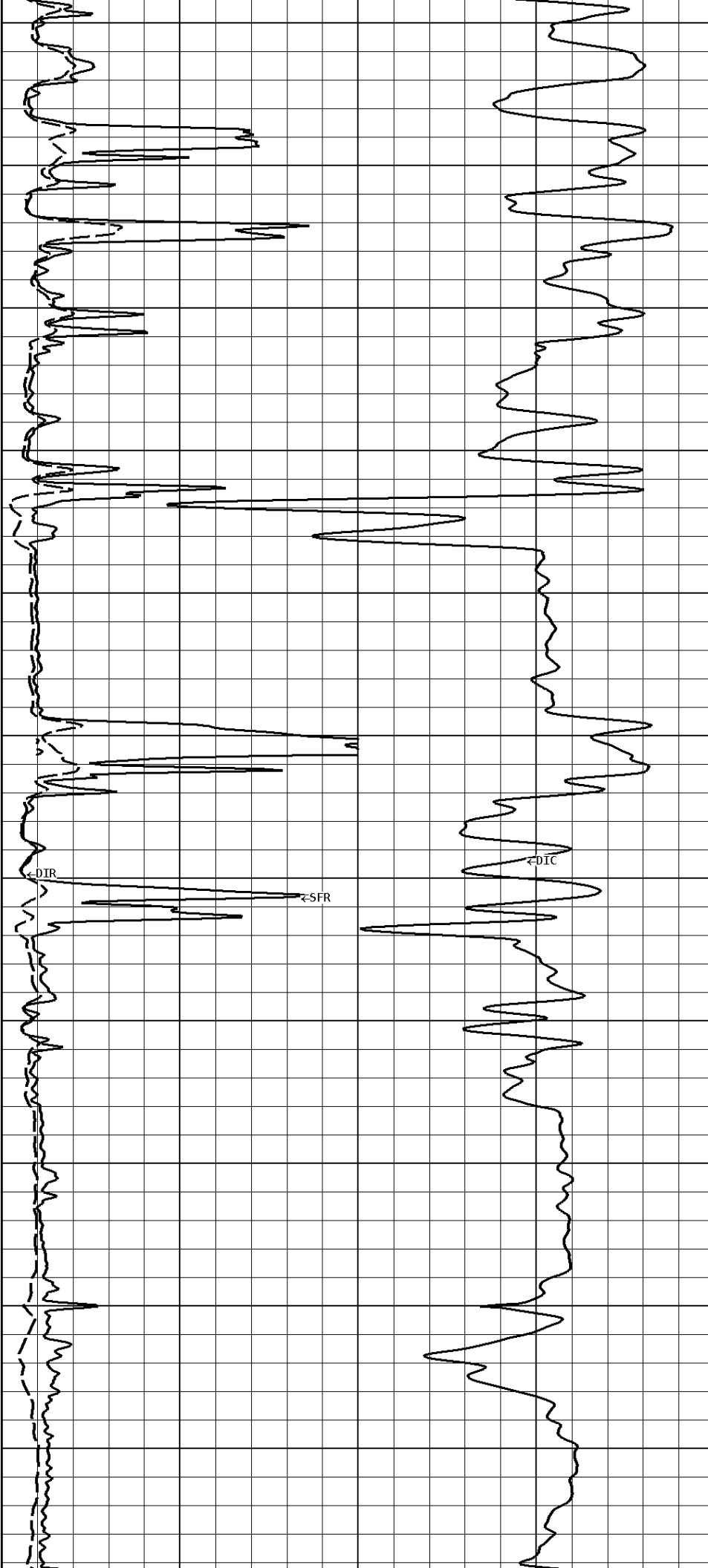
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1600

1700

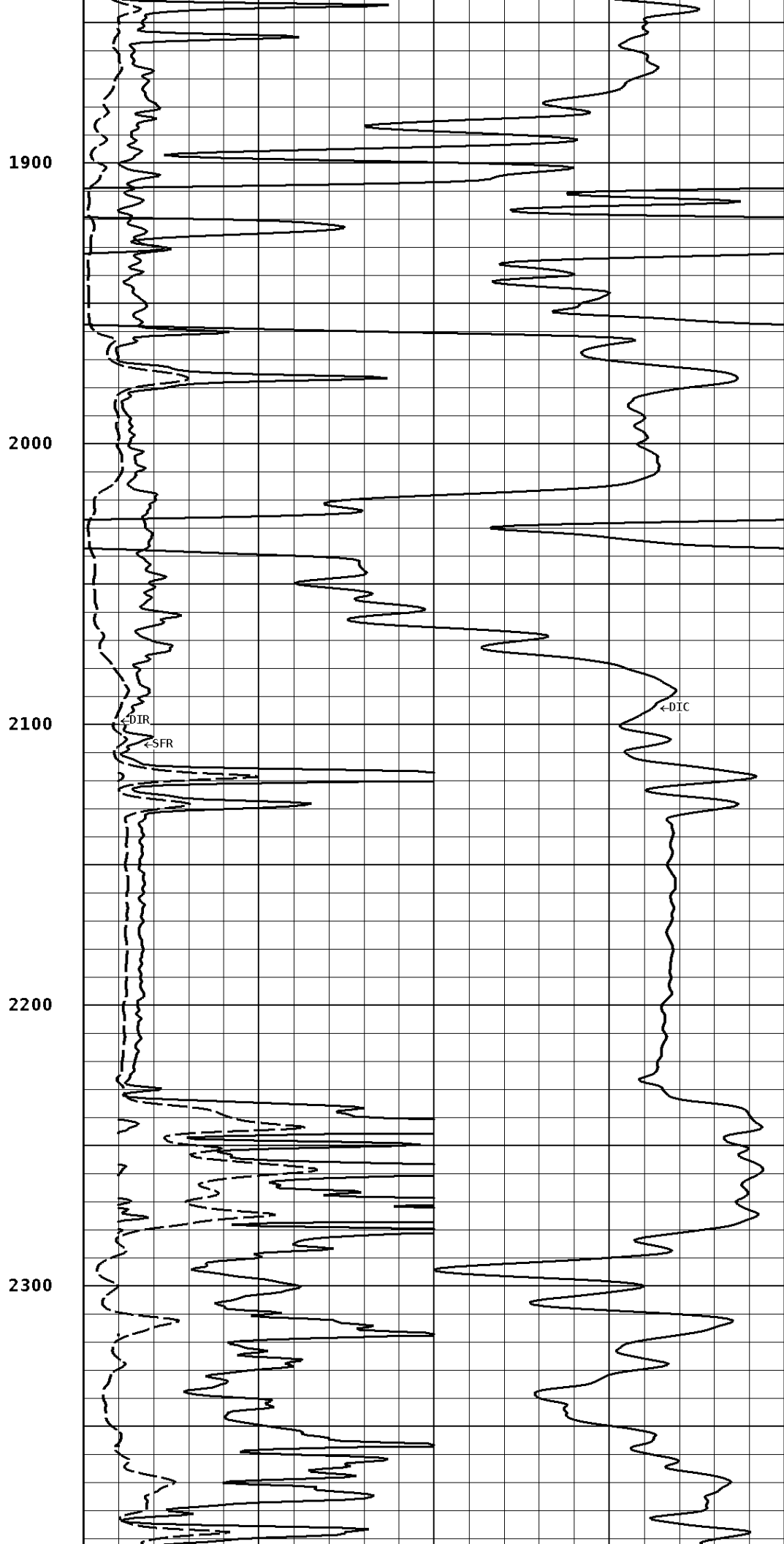
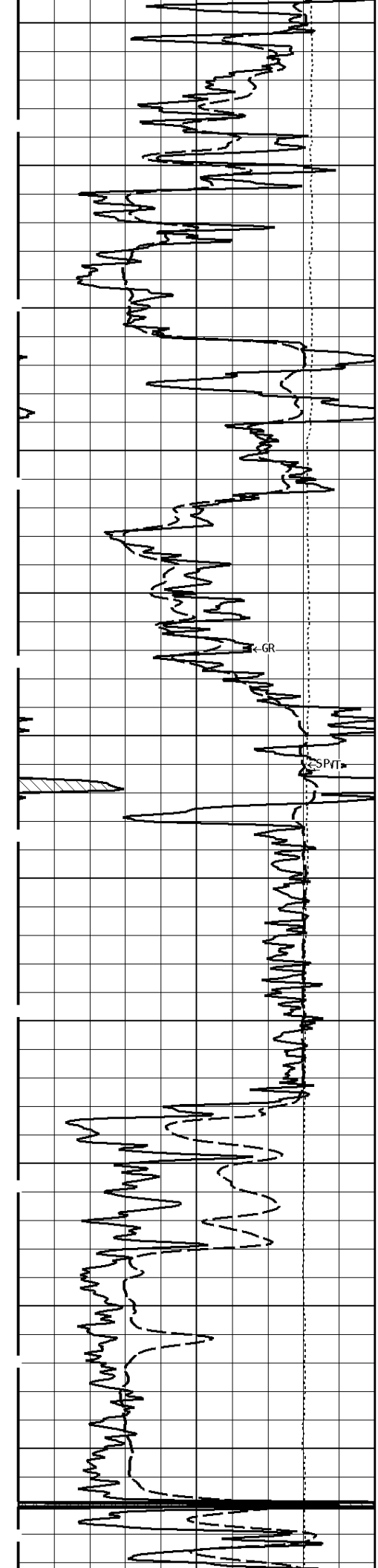
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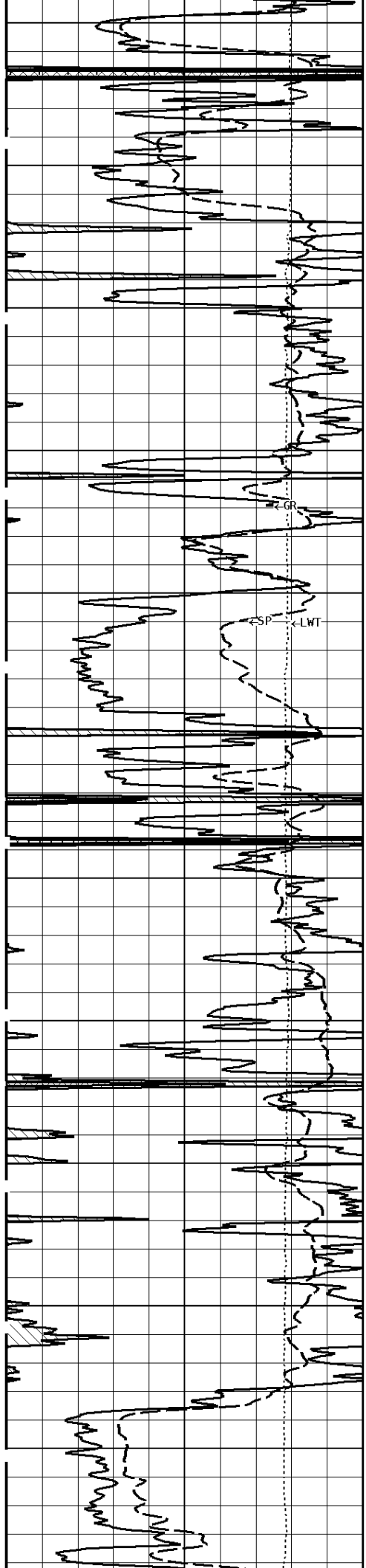


DIR

SFR

DIC





2400

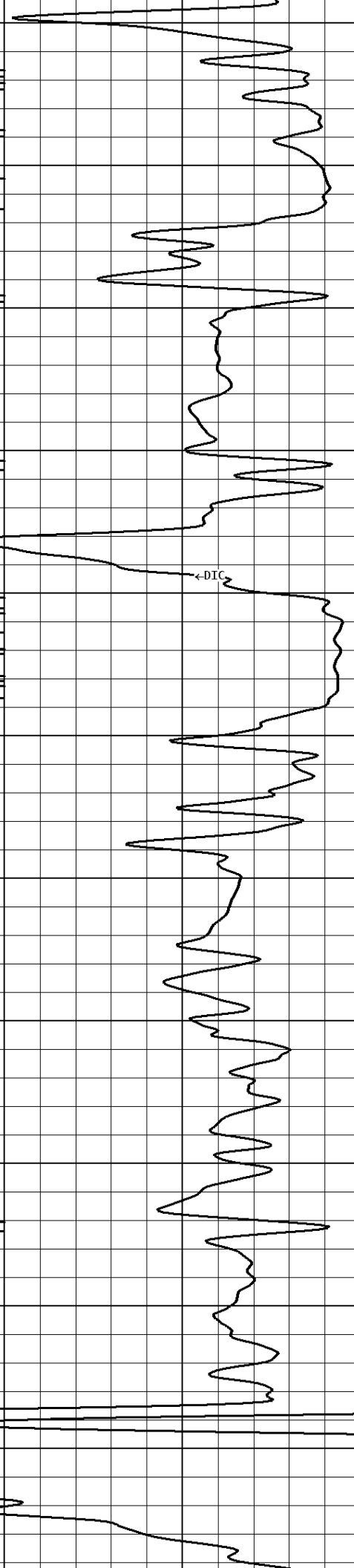
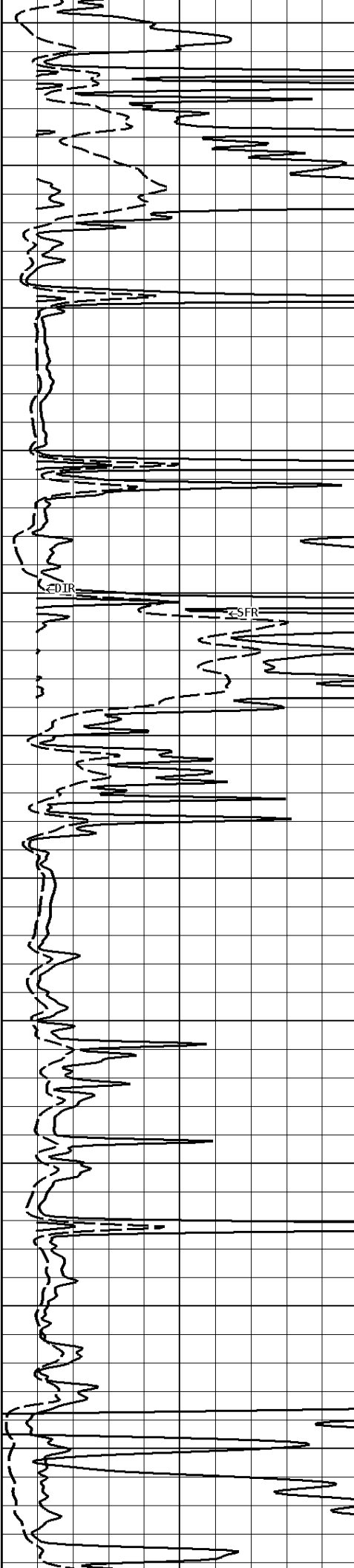
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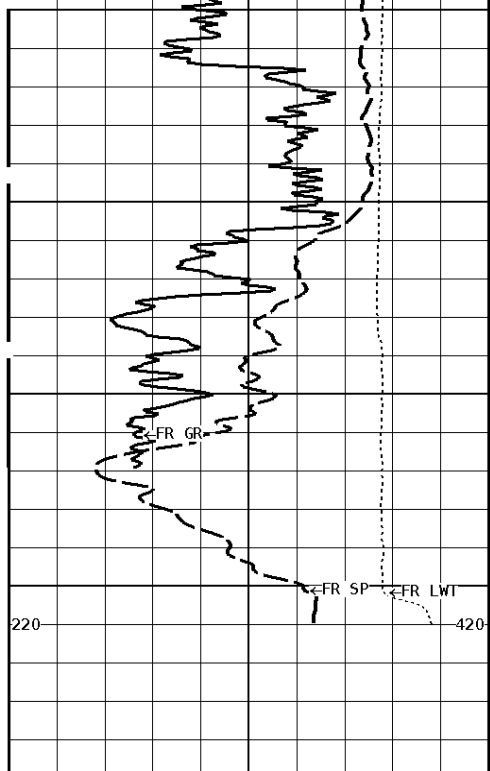
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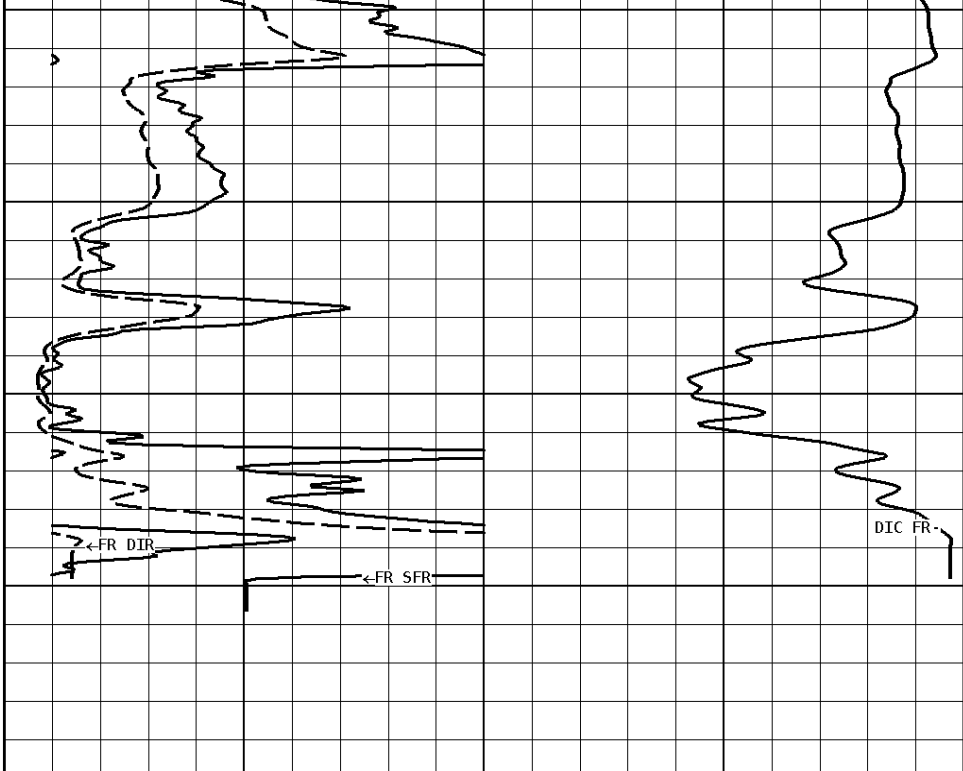
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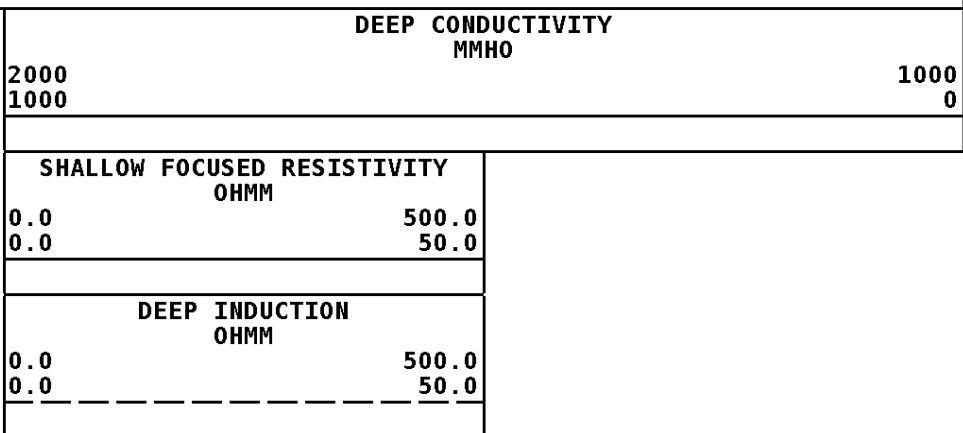
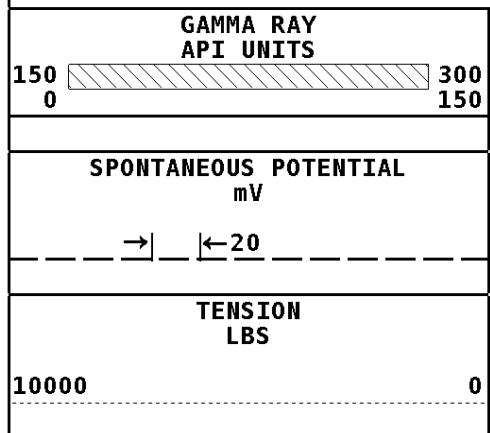


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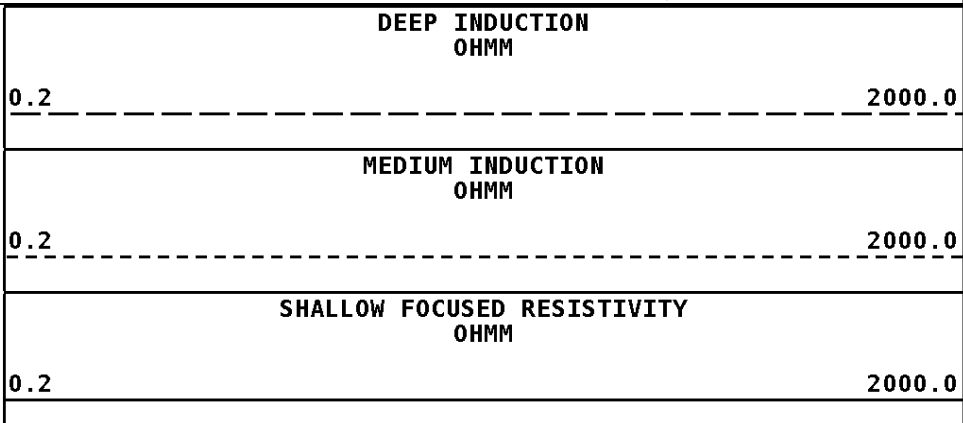
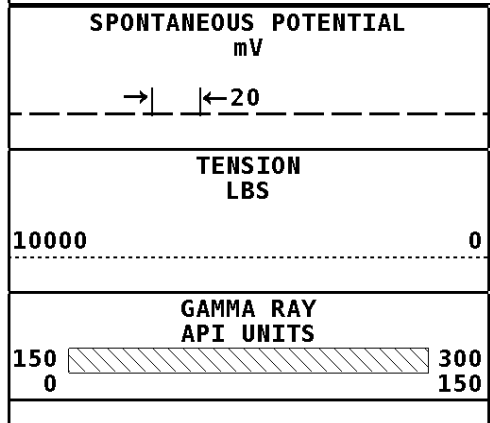
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**1:600 MAIN SECTION**



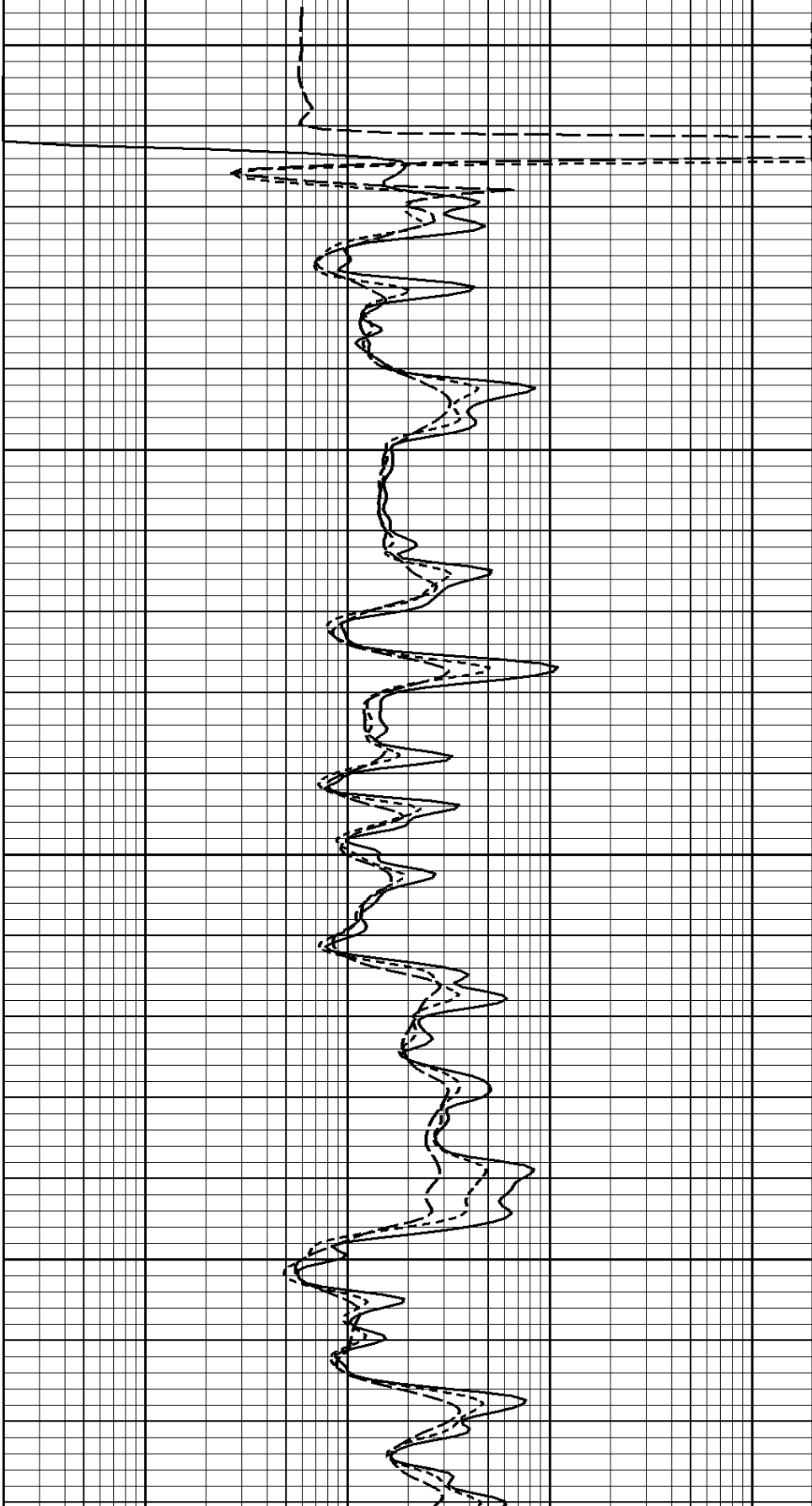
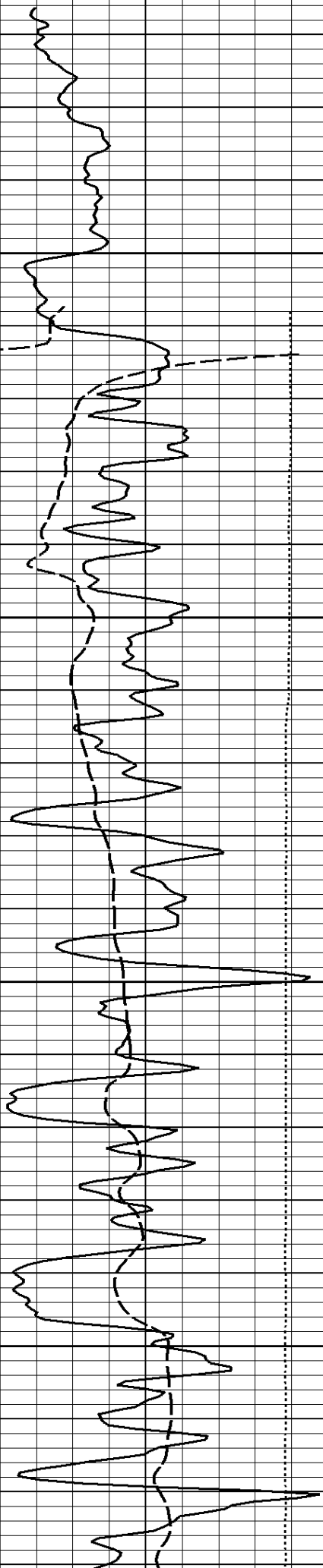
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 Reference: 0 Processed: 2014-11/20 11:02 3.4.0-13284

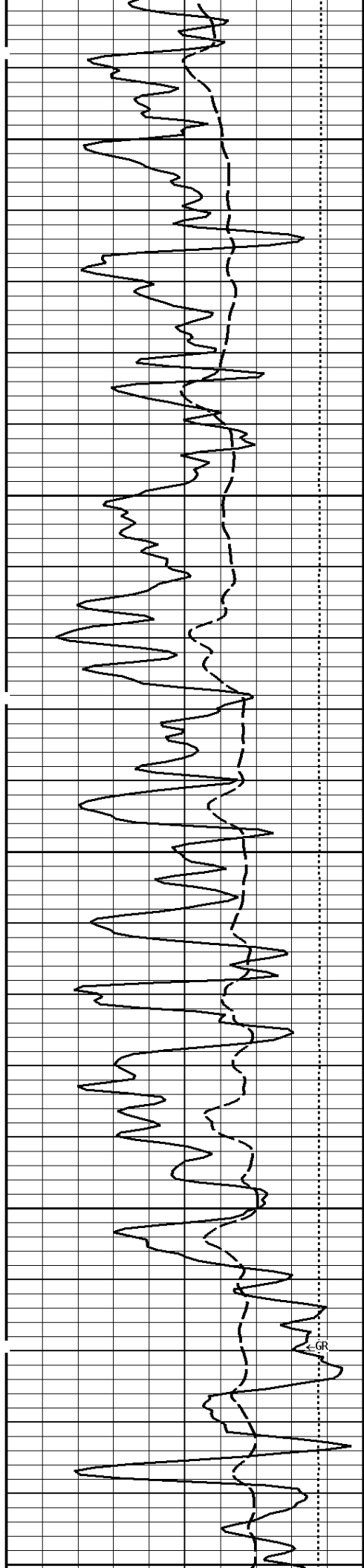


**1:240 MAIN SECTION**

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300

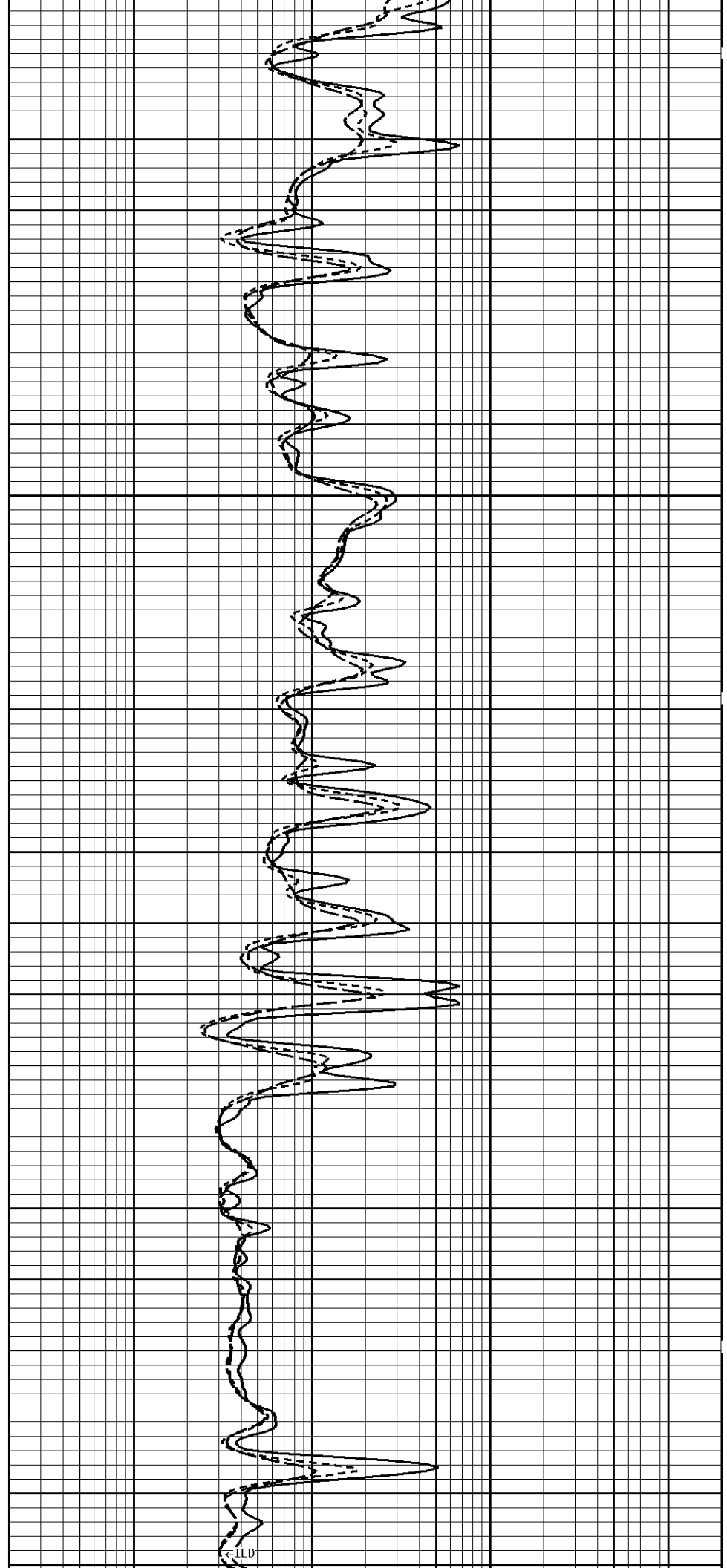




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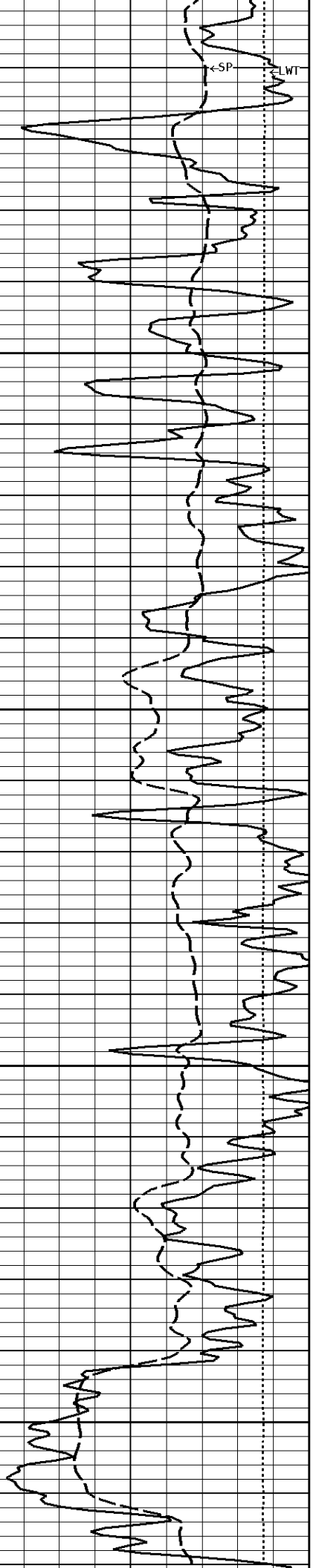
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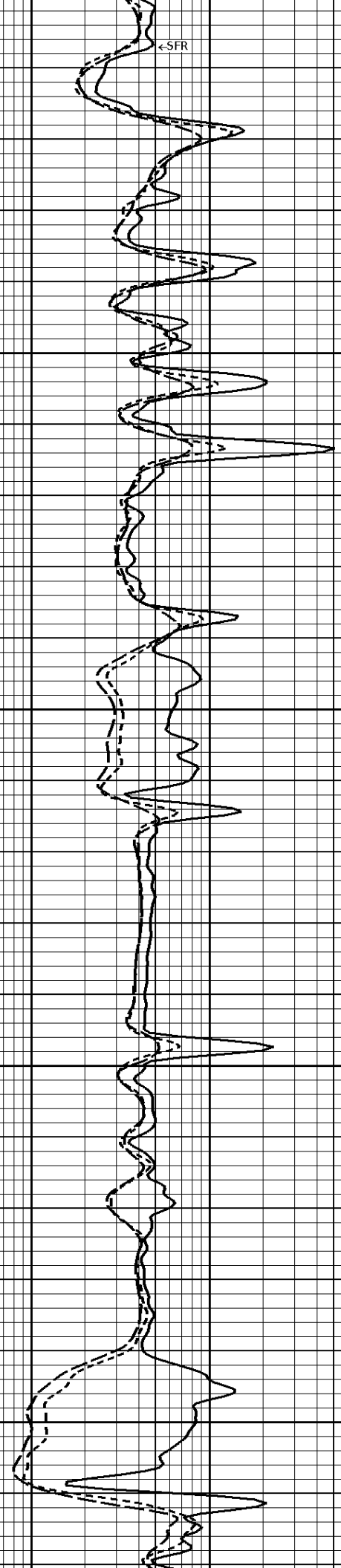
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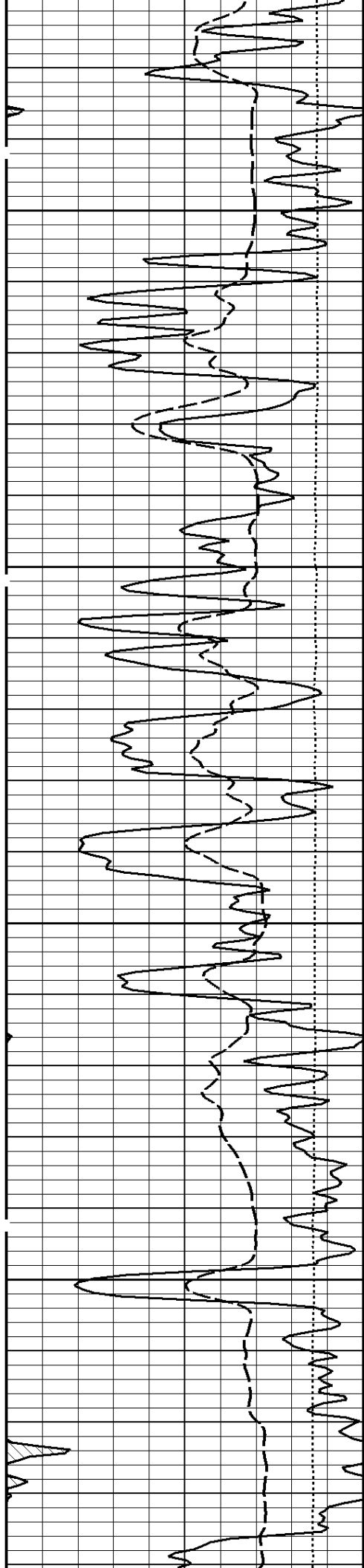
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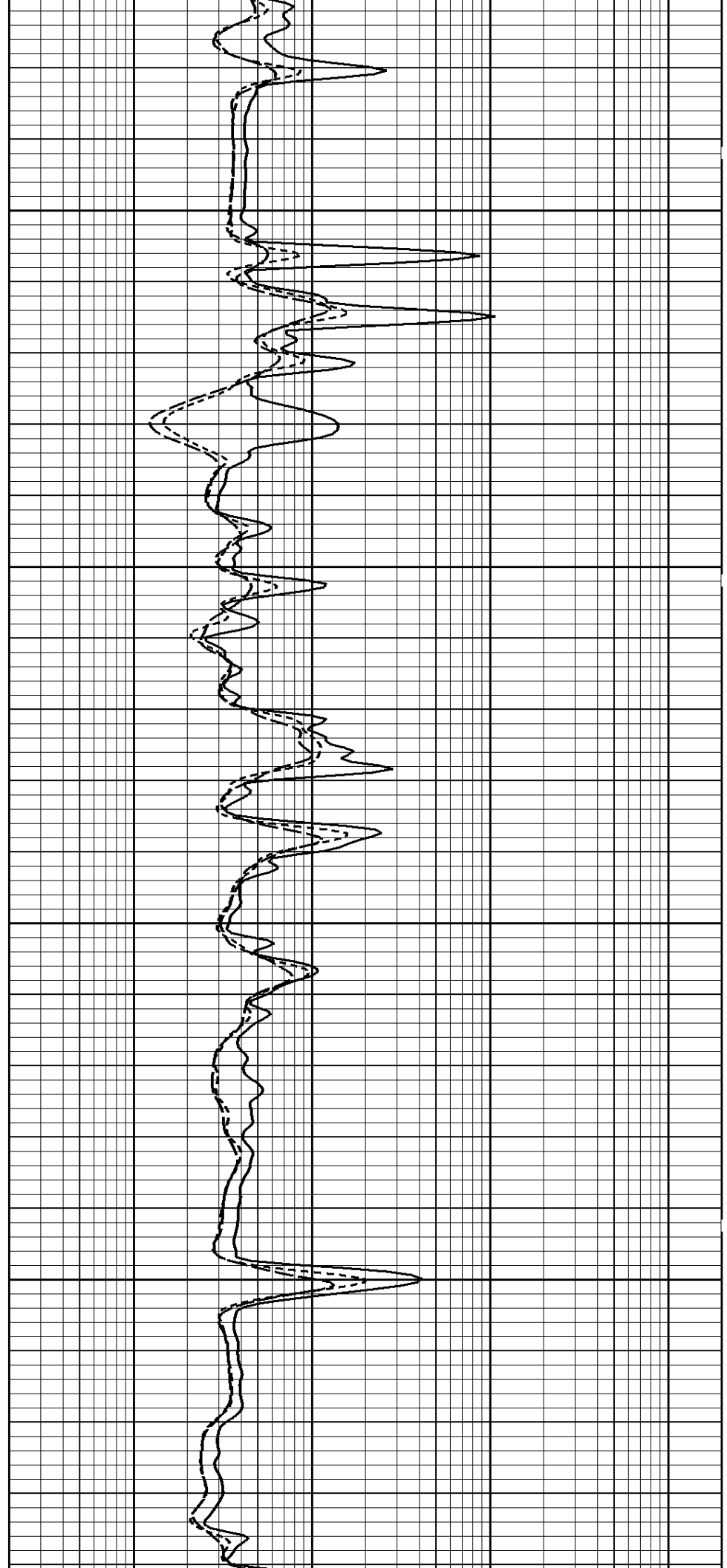
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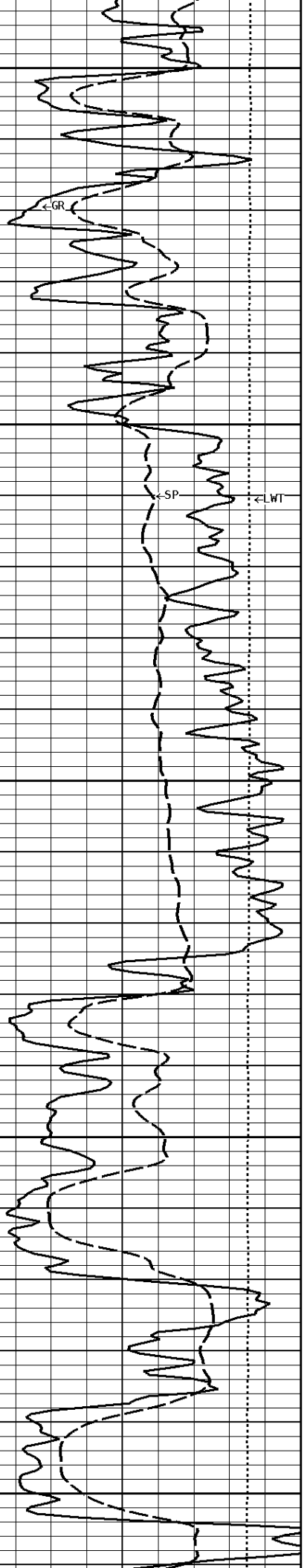




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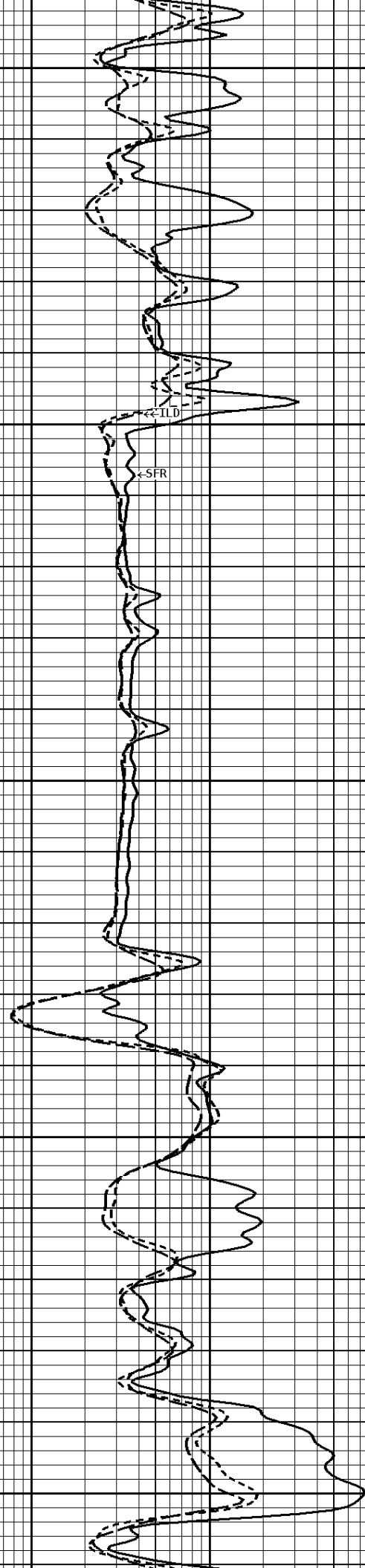
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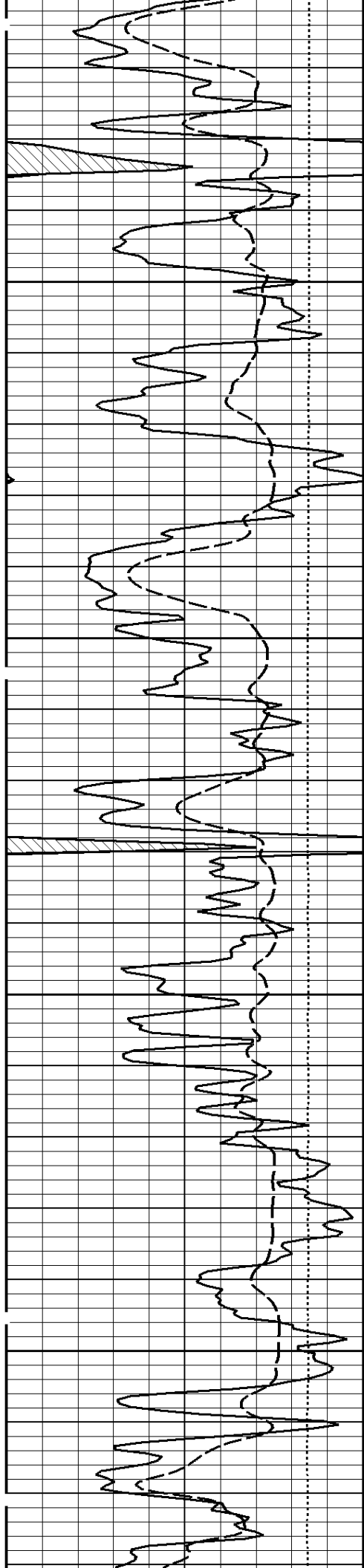




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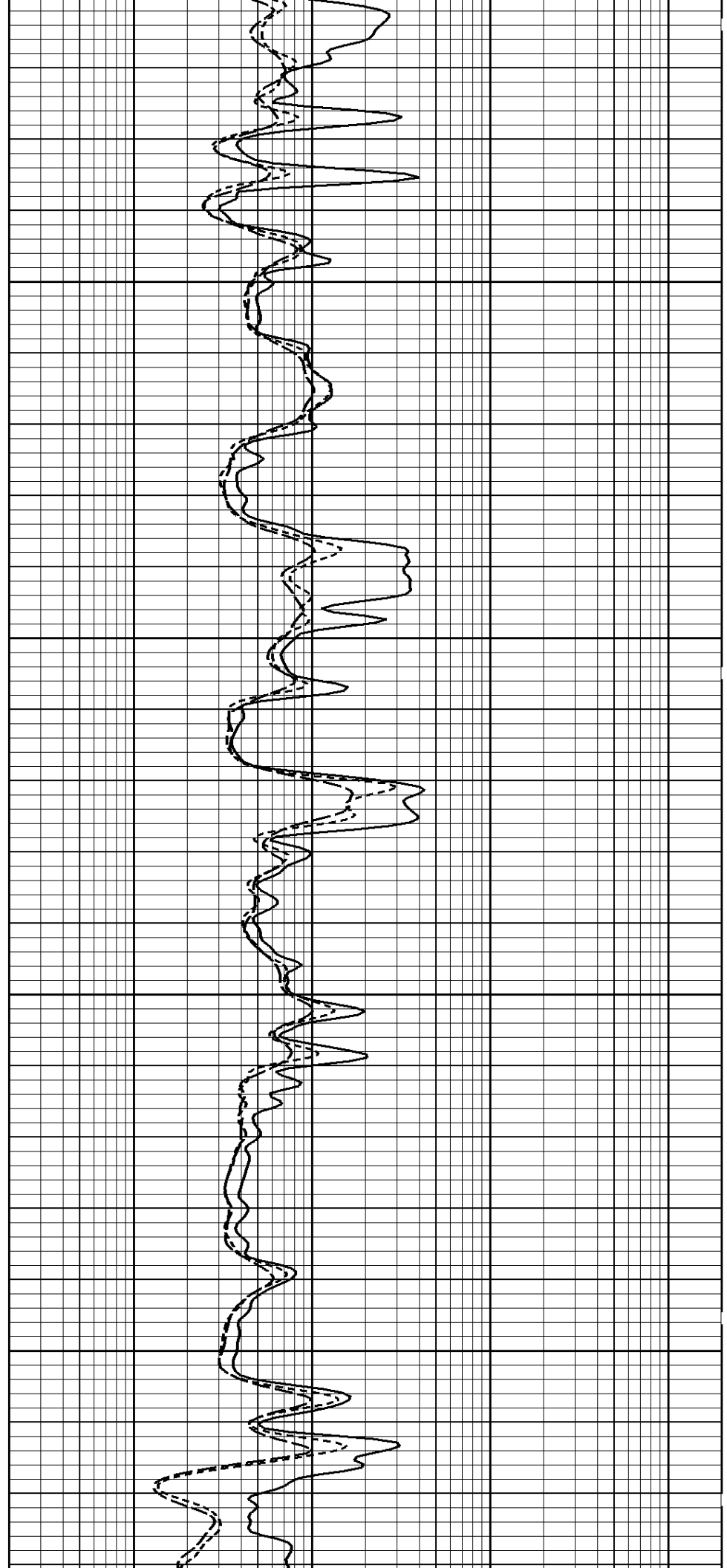
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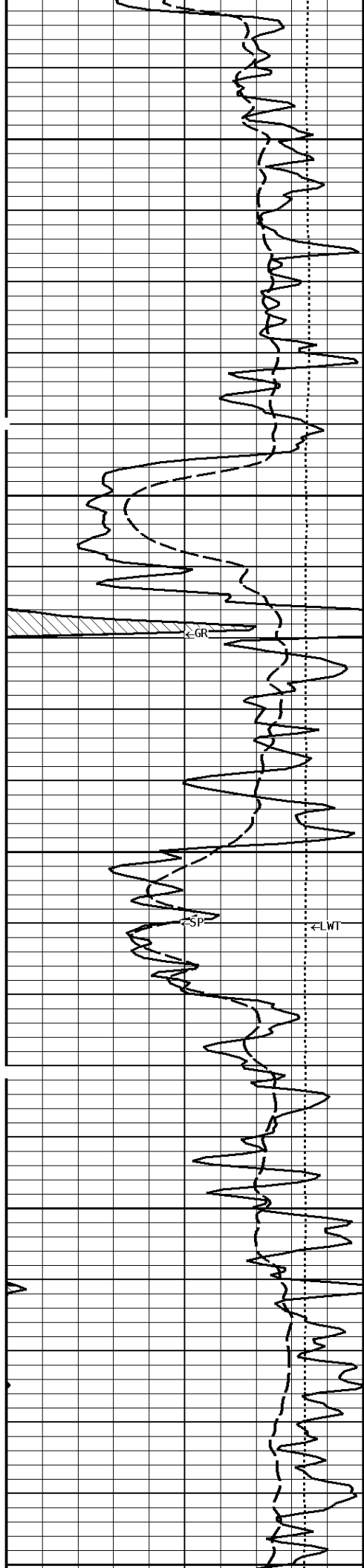




1300

1400

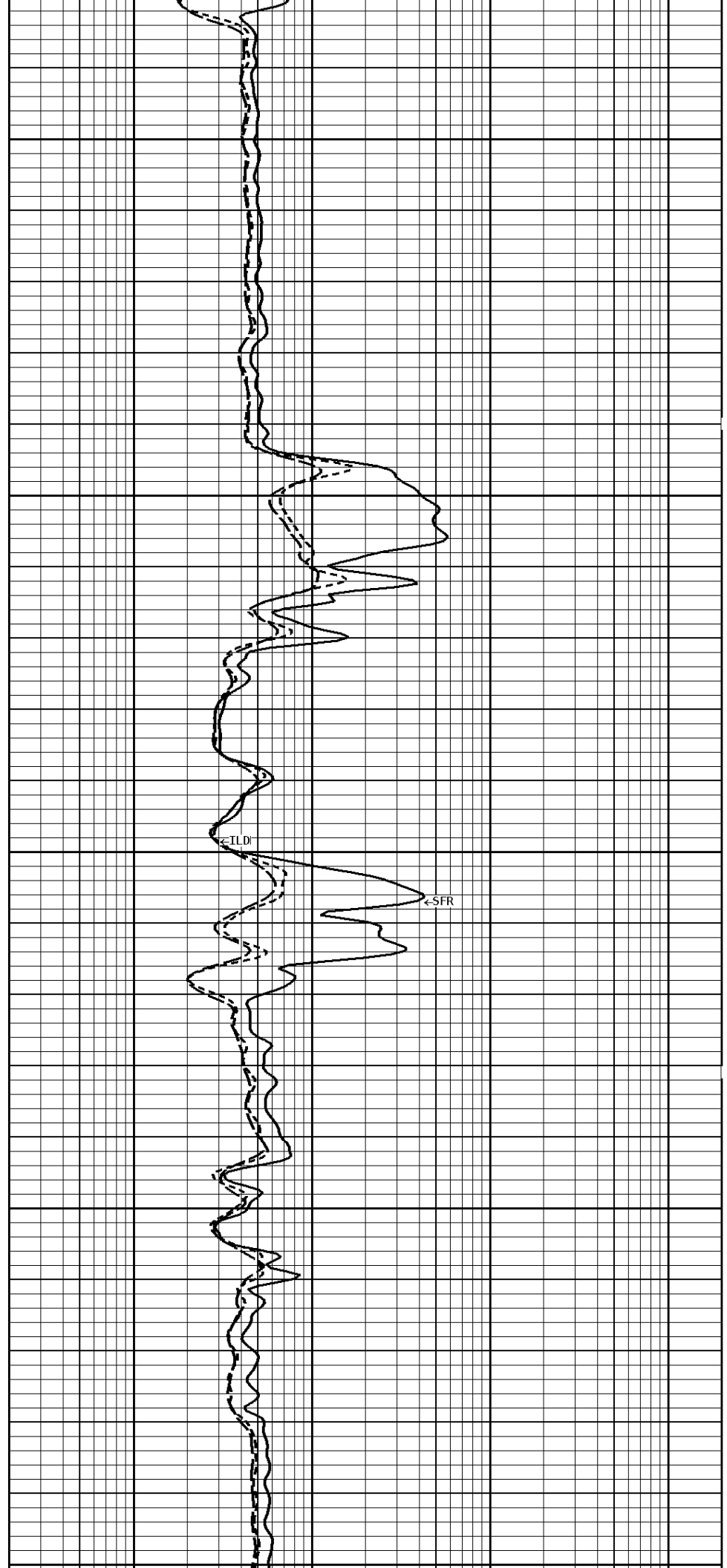




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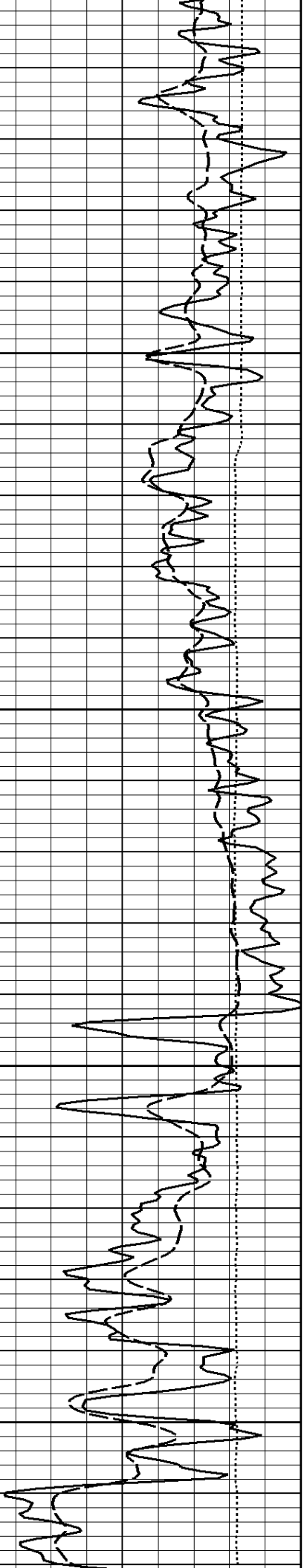
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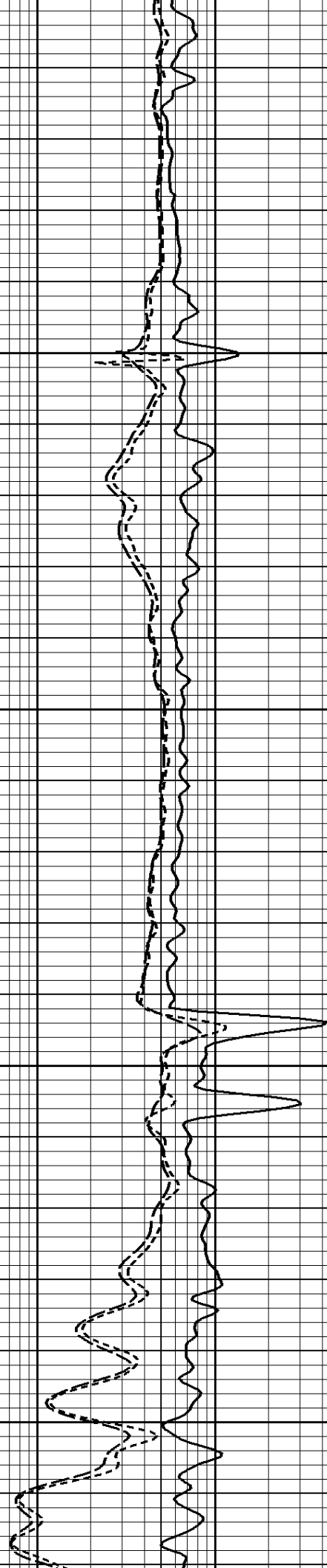
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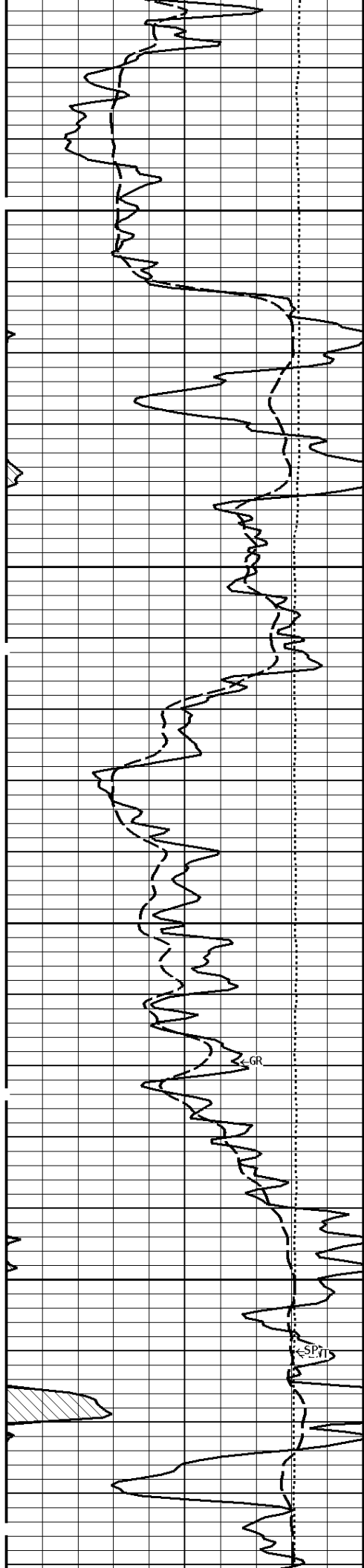
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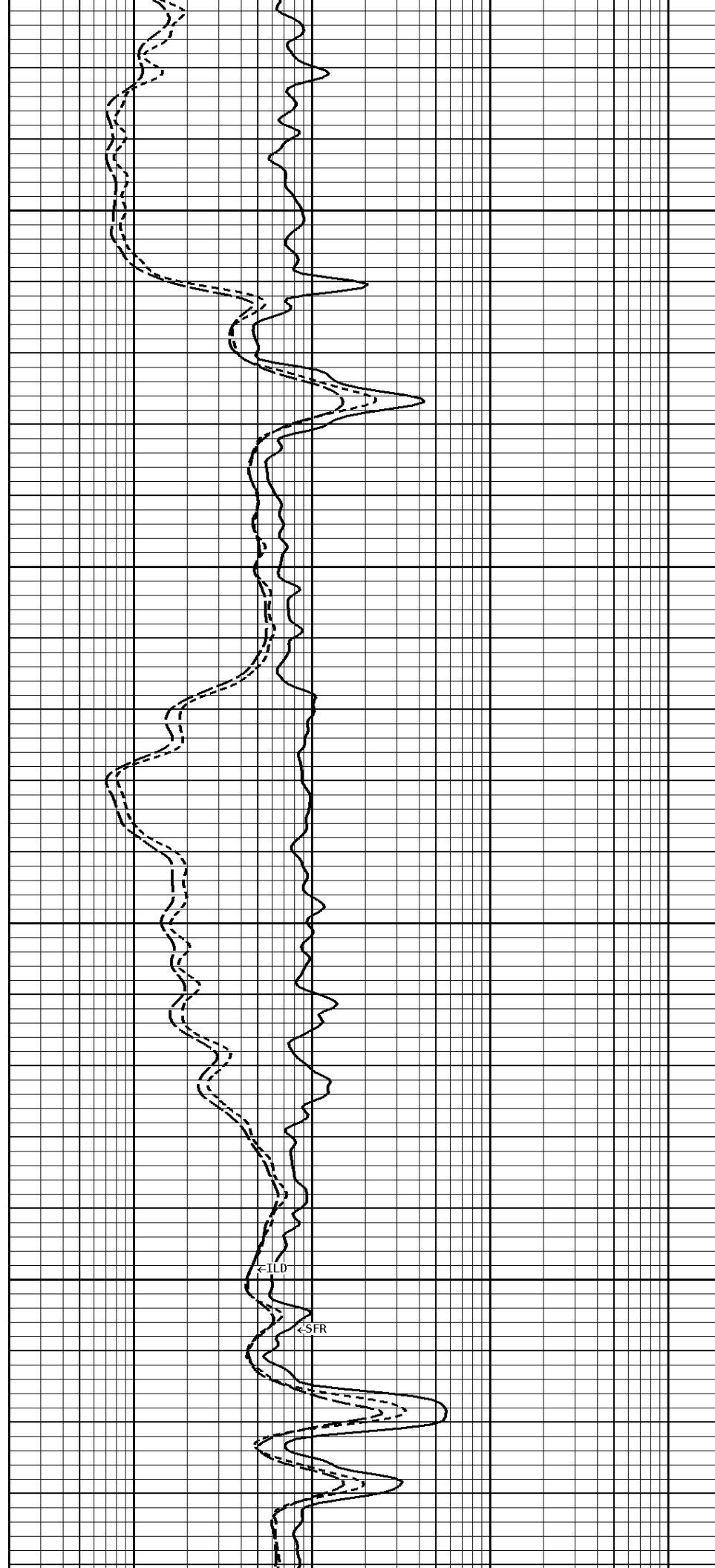


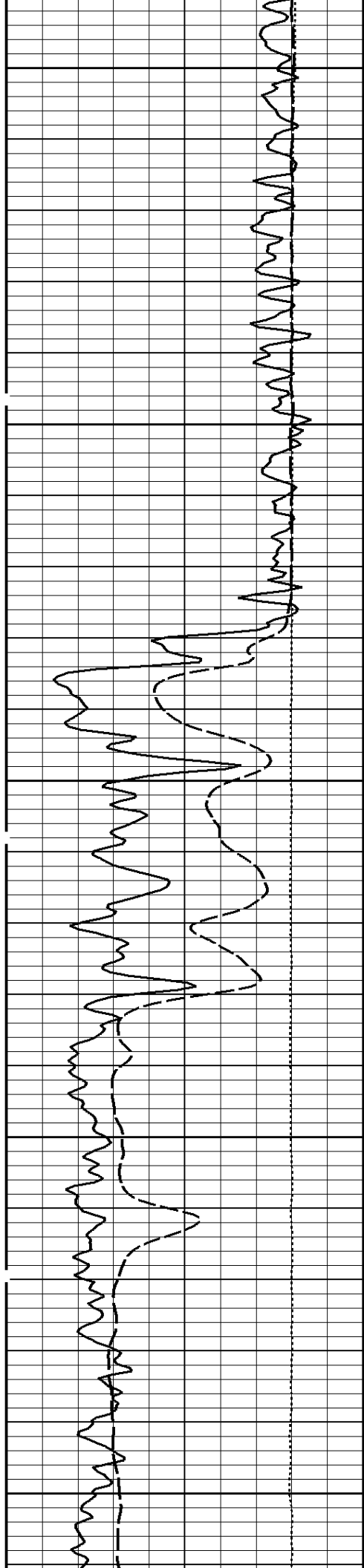
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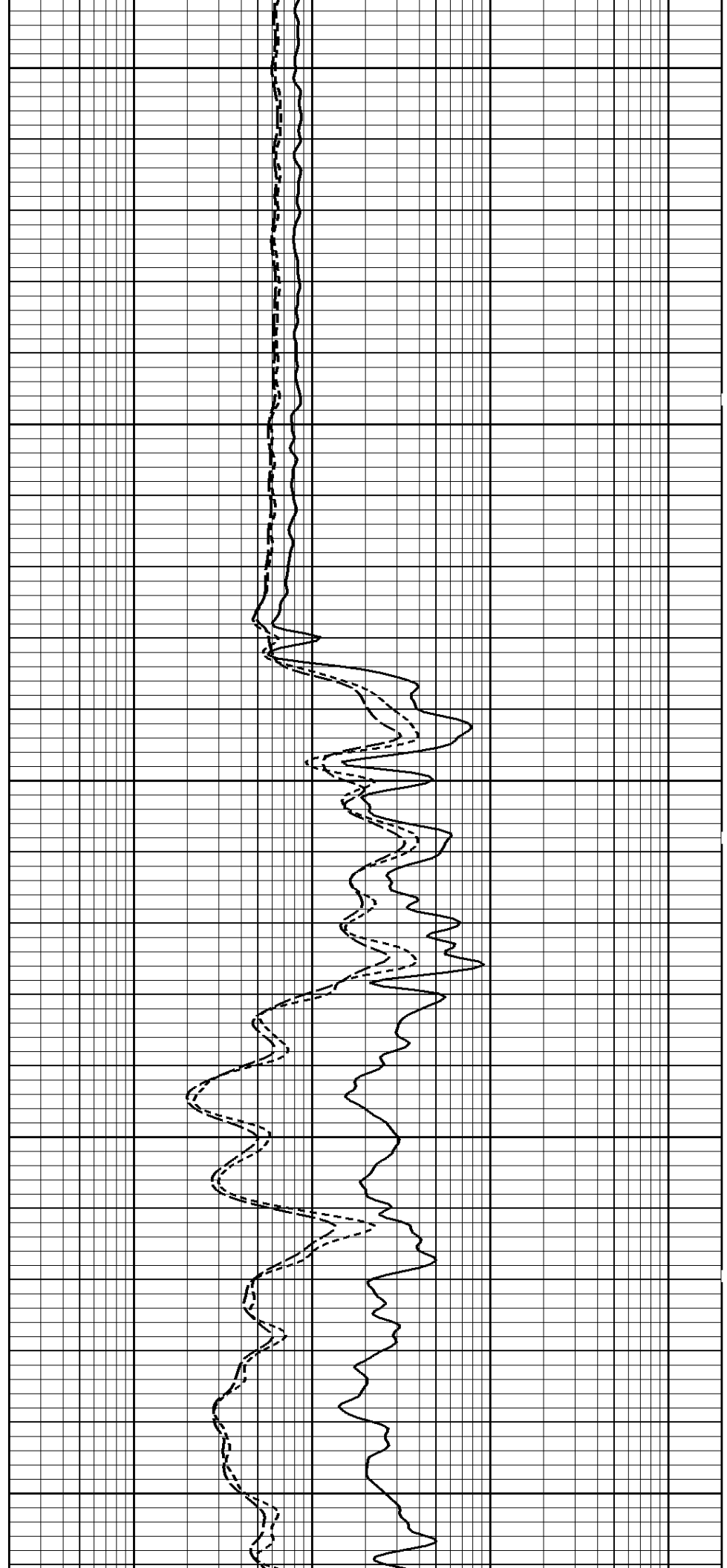
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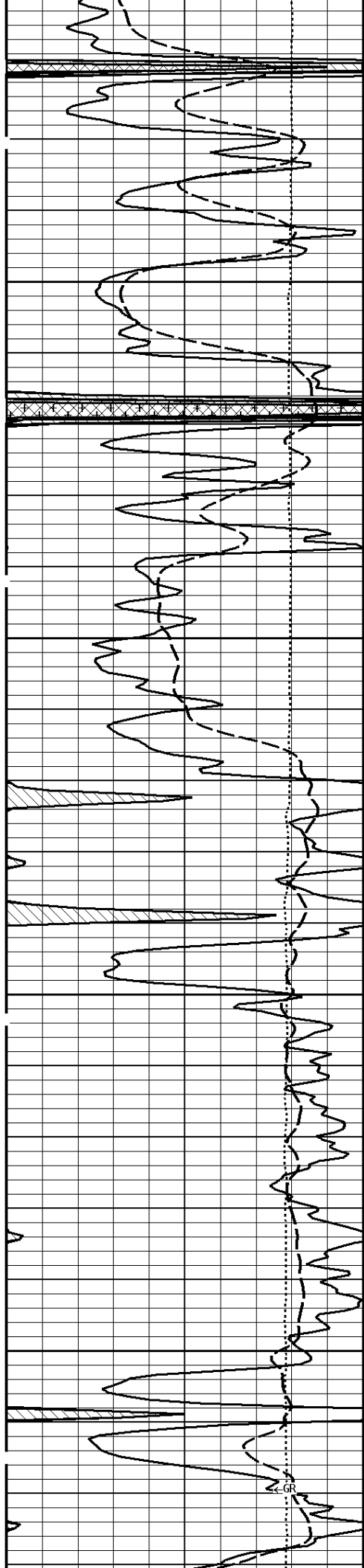




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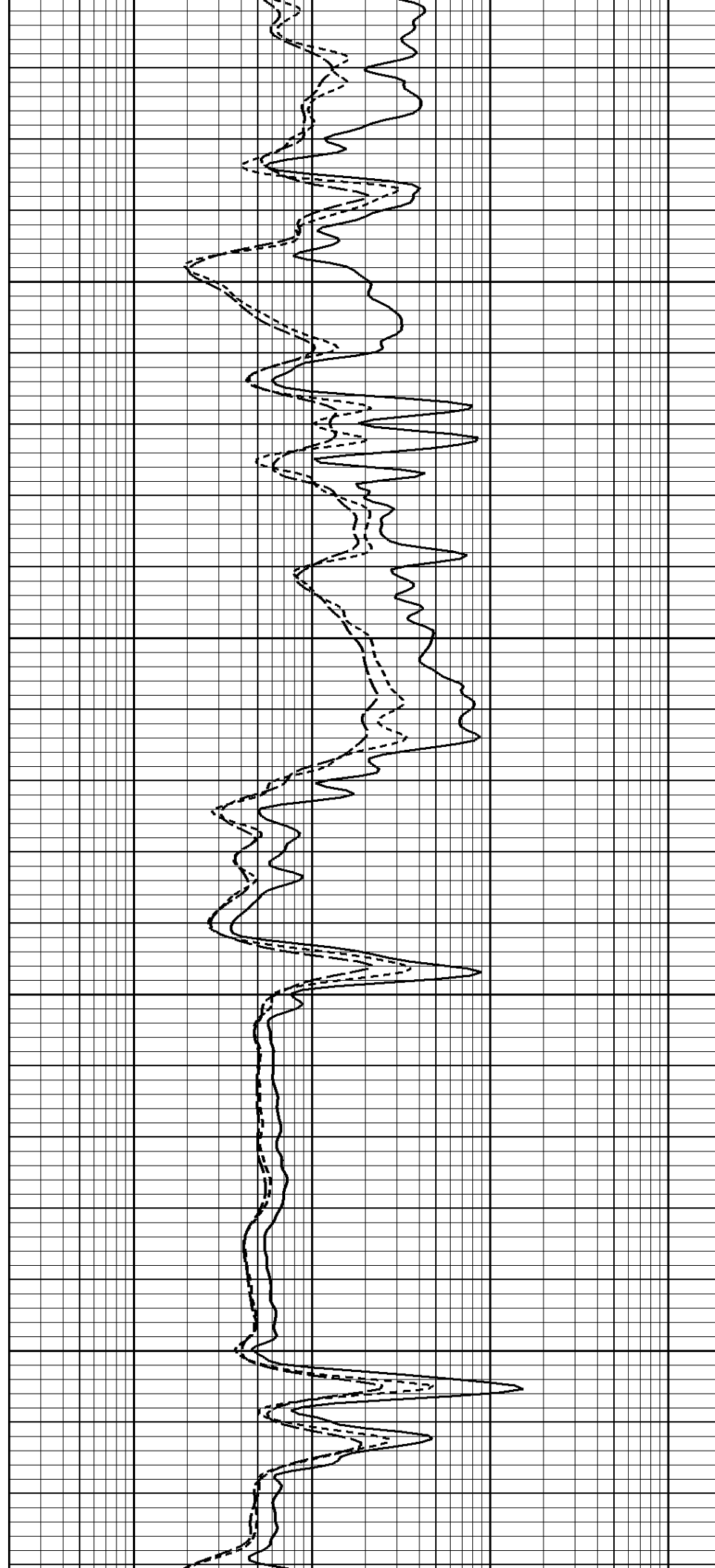
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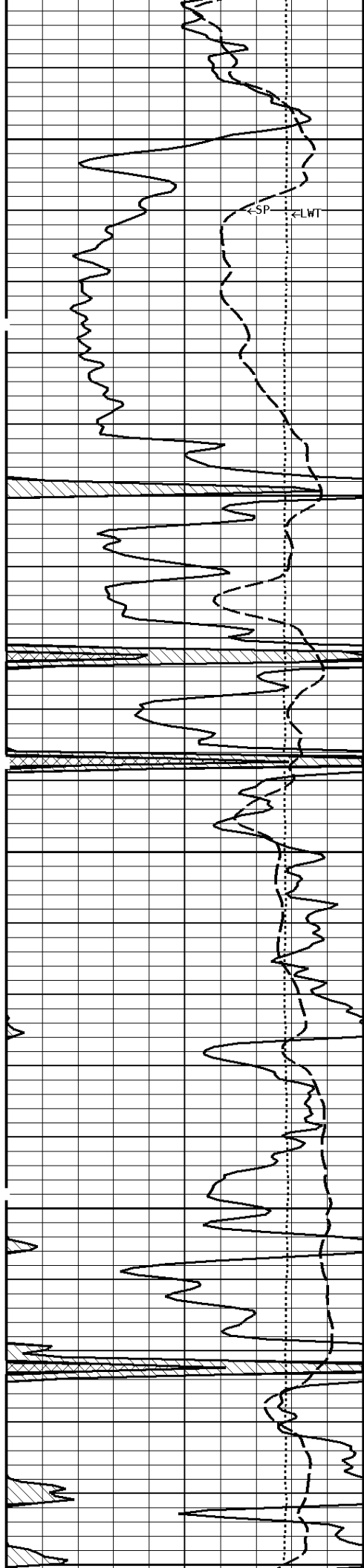




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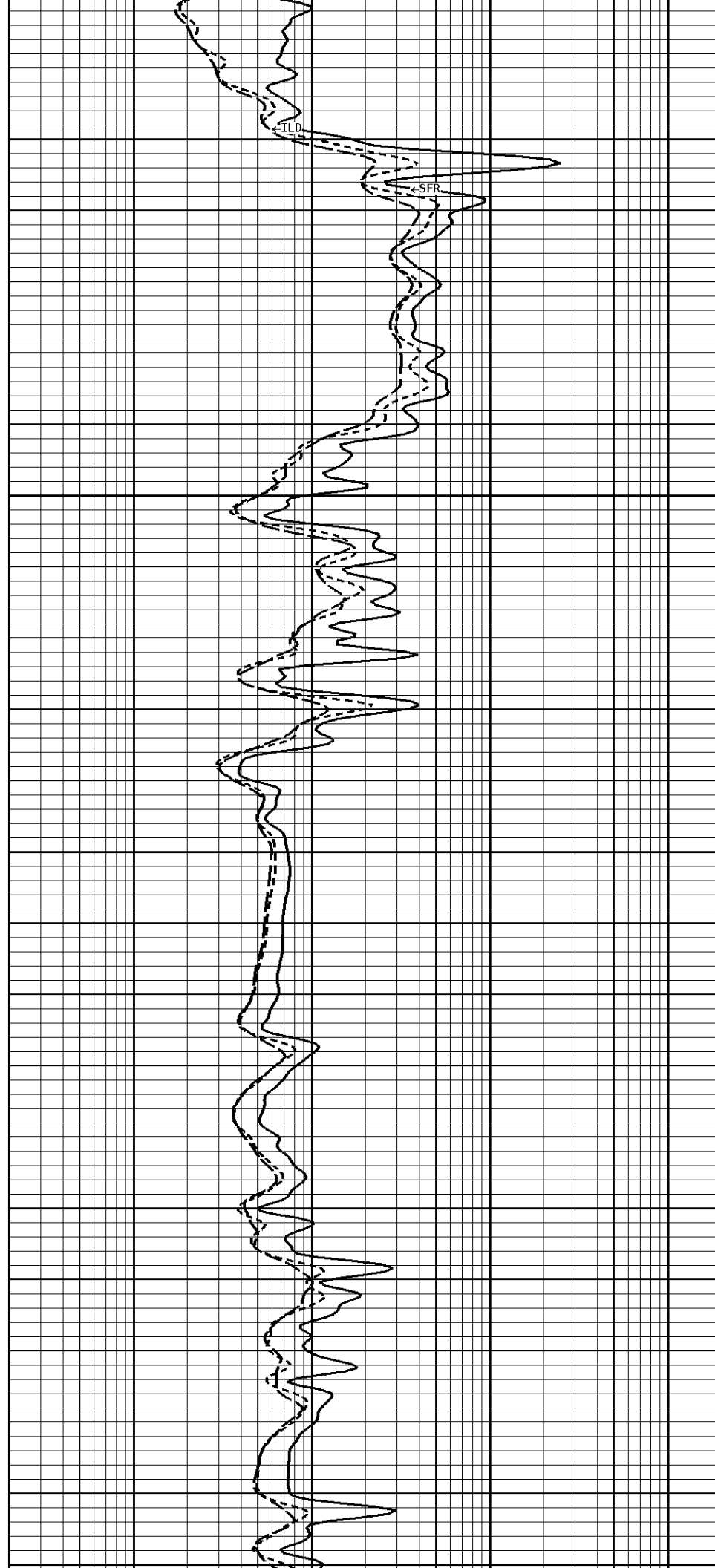




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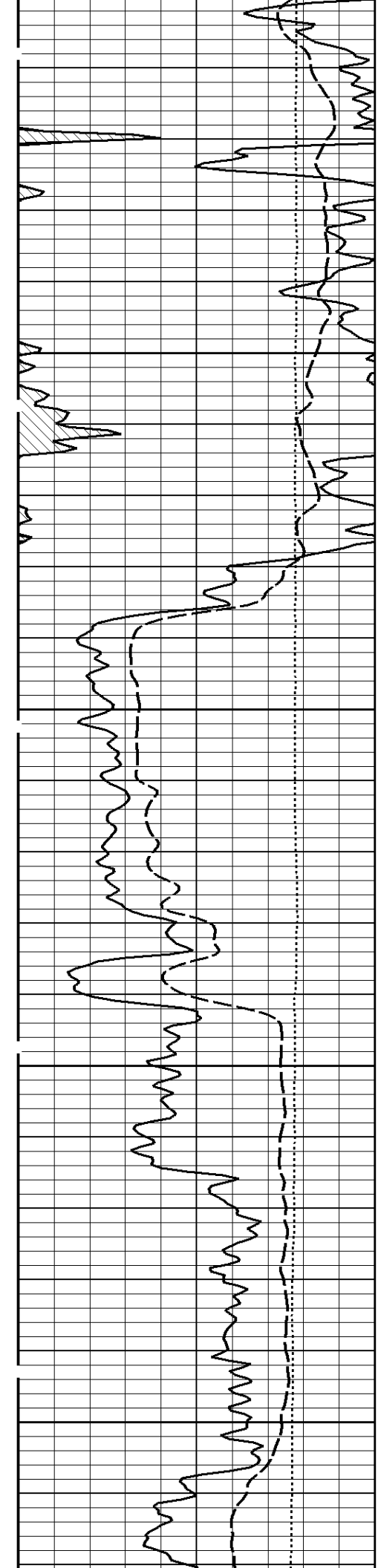
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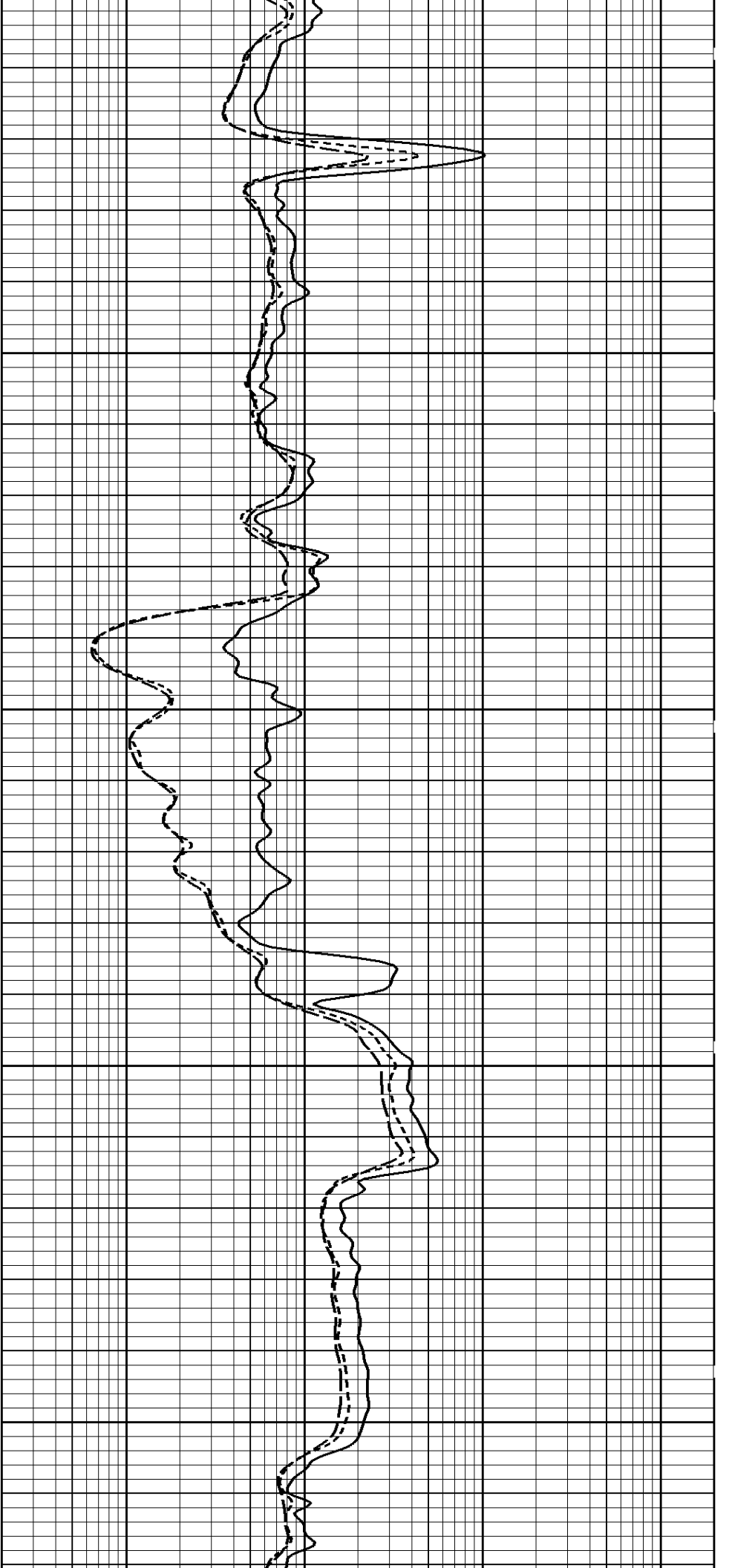
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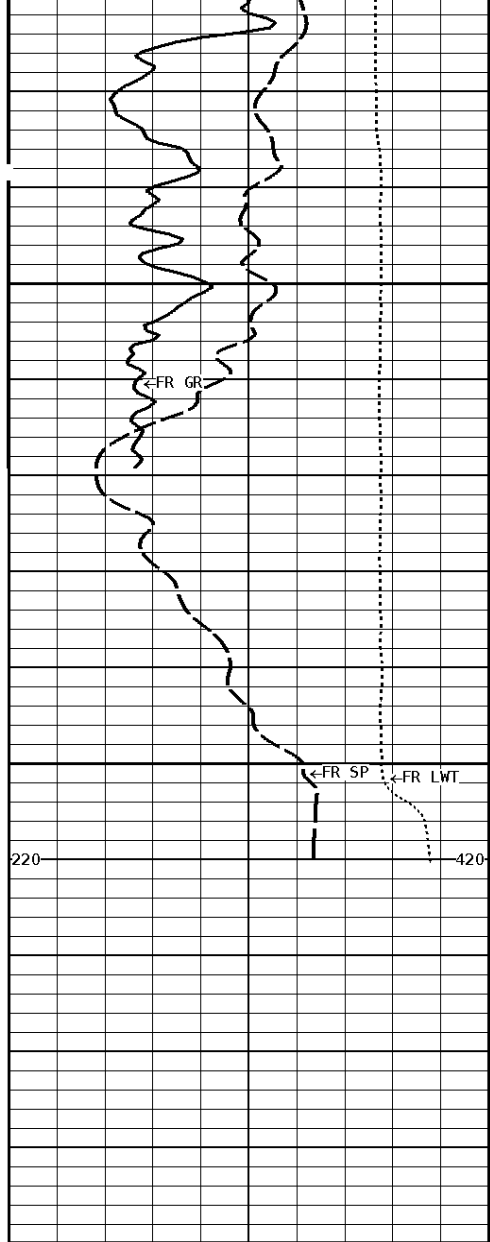
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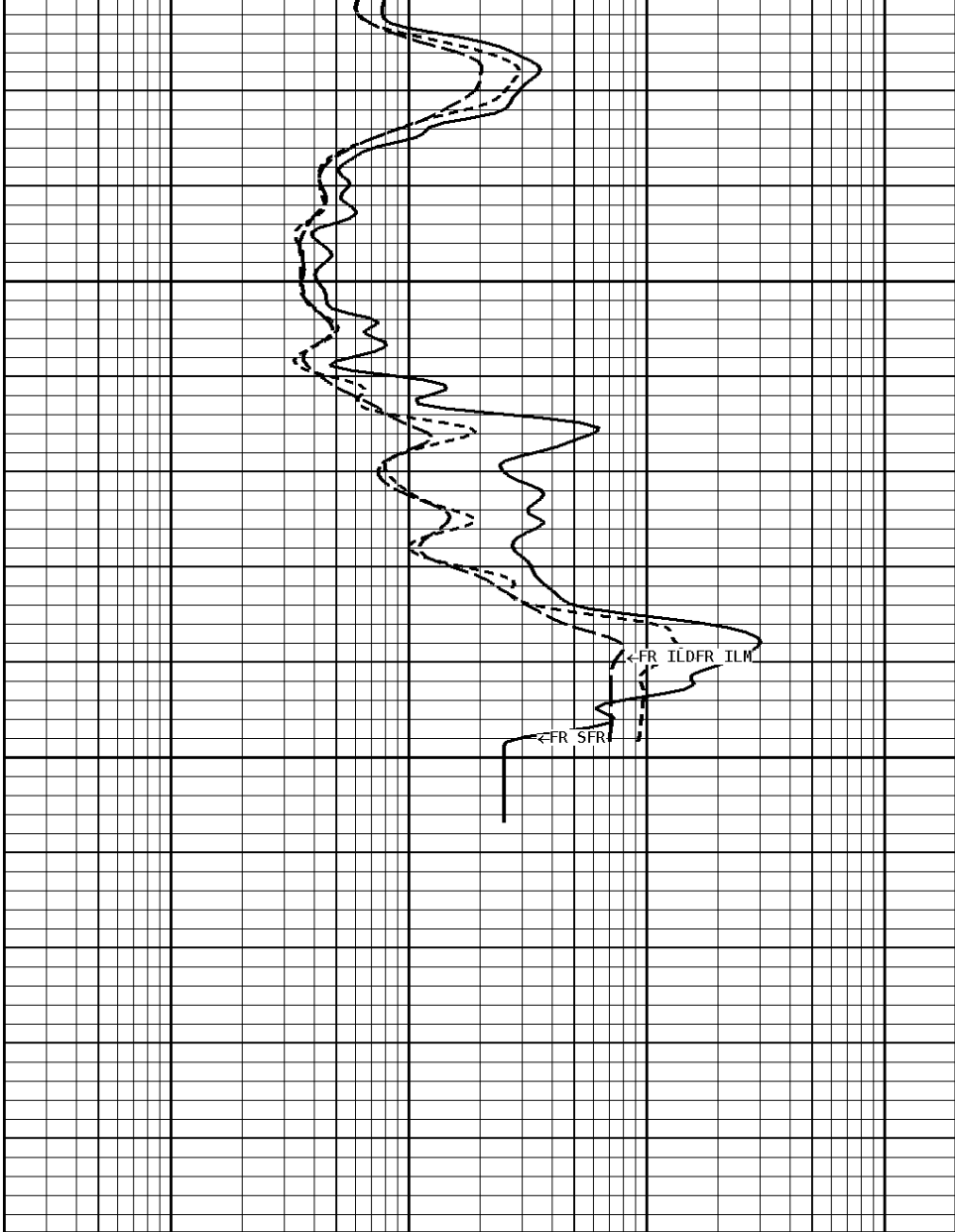
2900

3000





3100  
3102



**1:240 MAIN SECTION**

File #1.1.5

<b>GAMMA RAY API UNITS</b>	
150 0	300 150
<b>TENSION LBS</b>	
10000	0
<b>SPONTANEOUS POTENTIAL mV</b>	
→	←20

<b>SHALLOW FOCUSED RESISTIVITY OHMM</b>	
0.2	2000.0
<b>MEDIUM INDUCTION OHMM</b>	
0.2	2000.0
<b>DEEP INDUCTION OHMM</b>	
0.2	2000.0

**\* Borehole Zone Factors \***

<b>Zone 1 99999.0 to 0.0 Feet</b>	
Drill Bit Size	7.875 in
Casing Diameter	5.500 in
BHT Depth	3100.000 ft
Borehole Temperature	106.0 degF
Temperature Gradient	1.00 DFHF
Resistivity Of Mud	2.000 ohm/m

Well File: LEON MBF 5-1 NOV20 STK

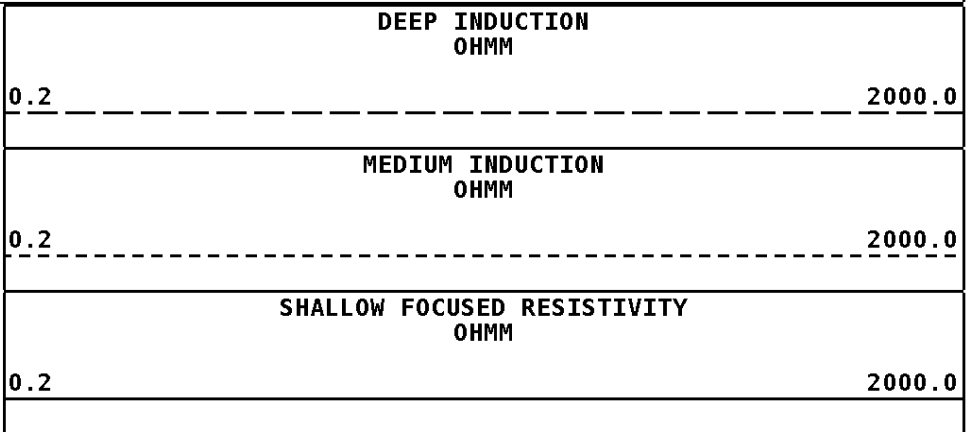
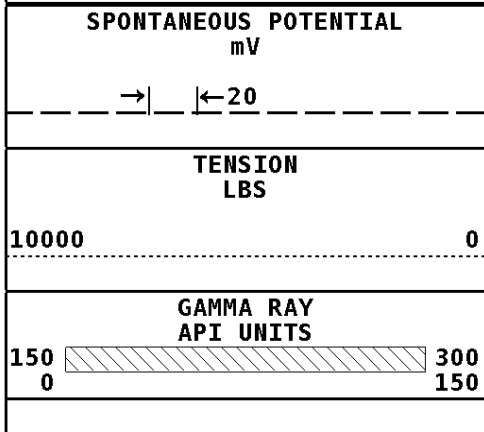
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Segment: V1.D1.S3 DS REPEAT

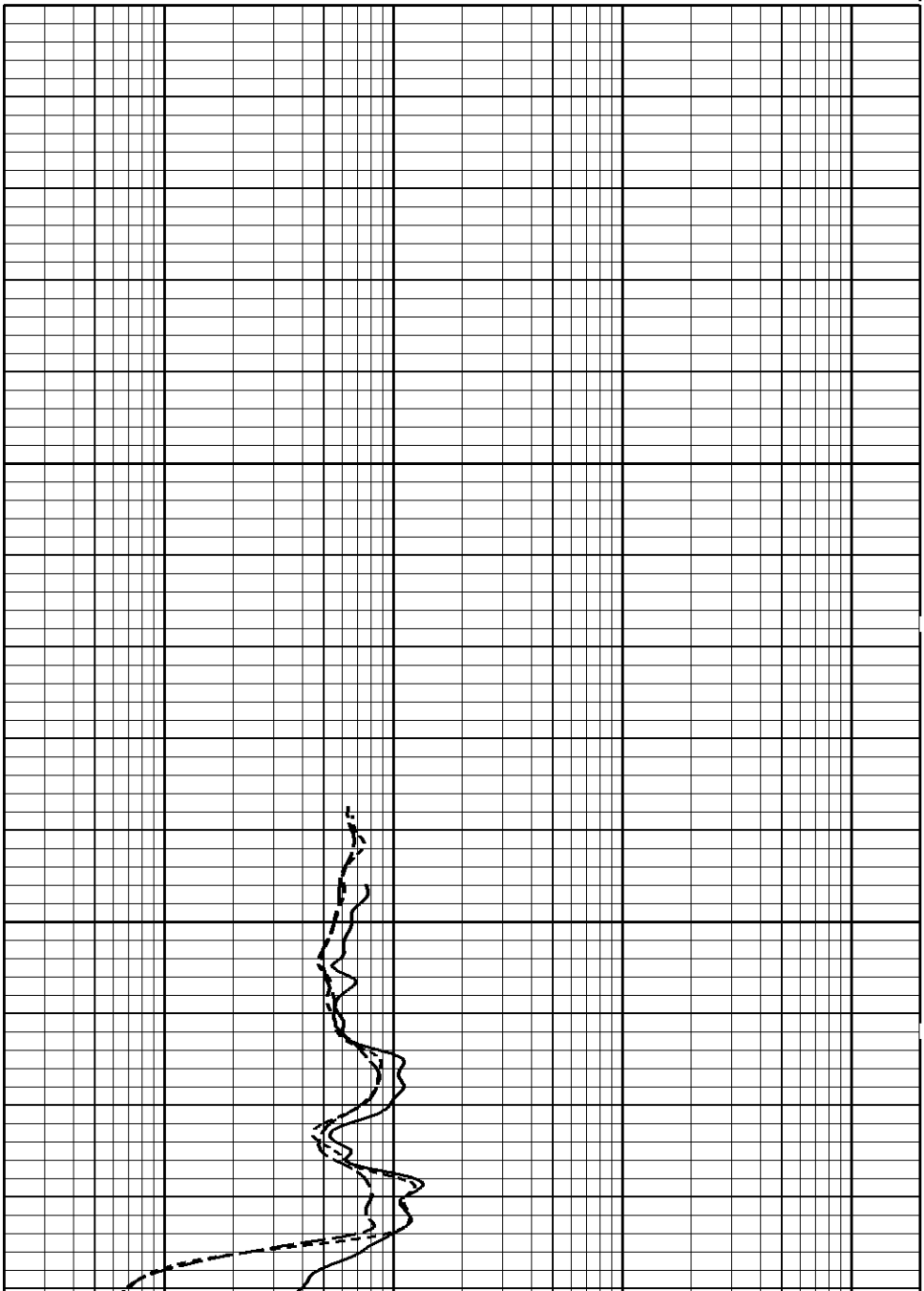
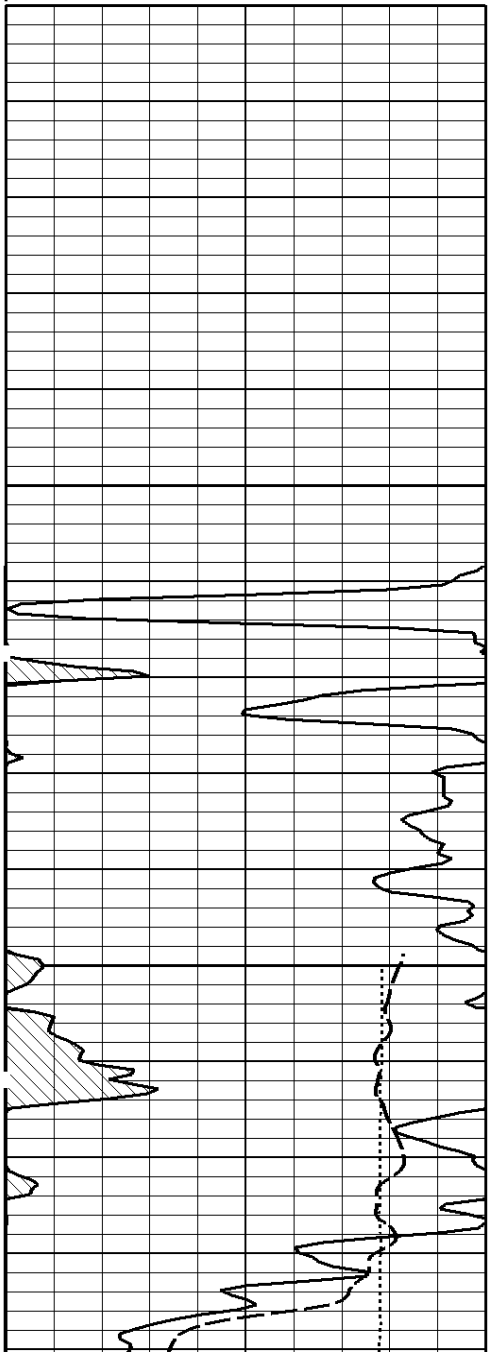
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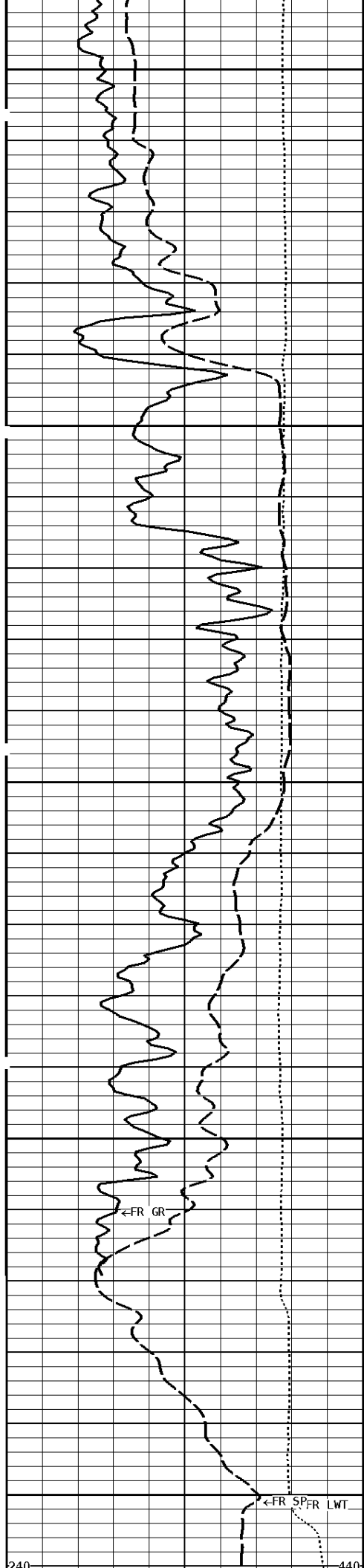
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Processed: 2014-11/20 10:01 3.4.0-13284



**1:240 REPEAT SECTION**





2900

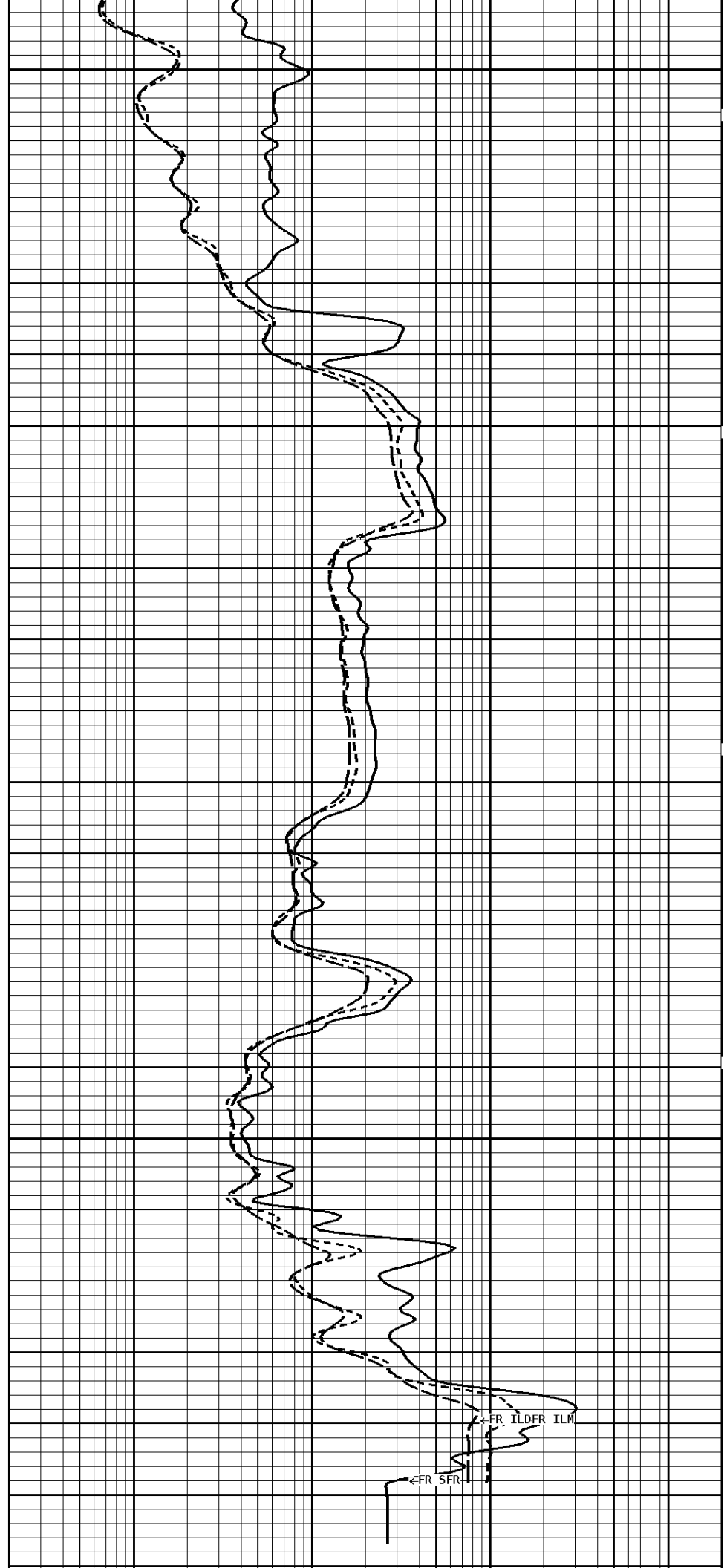
3000

3100

3103

←FR GR

←FR SPFR LWT

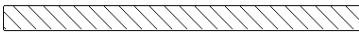

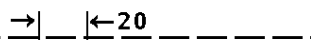




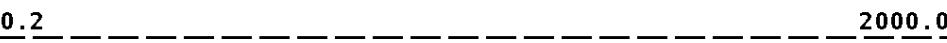
←FR SFR

←FR ILDFR ILM

File #1.1.3

## 1:240 REPEAT SECTION

<b>GAMMA RAY API UNITS</b>

<b>TENSION LBS</b>

<b>SPONTANEOUS POTENTIAL mV</b>


<b>SHALLOW FOCUSED RESISTIVITY OHMM</b>

<b>MEDIUM INDUCTION OHMM</b>

<b>DEEP INDUCTION OHMM</b>


\* Borehole Zone Factors \*

<b>Zone 1</b>	<b>99999.0</b>	<b>to</b>	<b>0.0</b>	<b>Feet</b>
Drill Bit Size			7.875	in
Casing Diameter			5.500	in
BHT Depth			3100.000	ft
Borehole Temperature			106.0	degF
Temperature Gradient			1.00	DFHF
Resistivity Of Mud			2.000	ohm/m
Resistivity Of Mud Temperature			60.00	degF

\* Calibration Summary \*

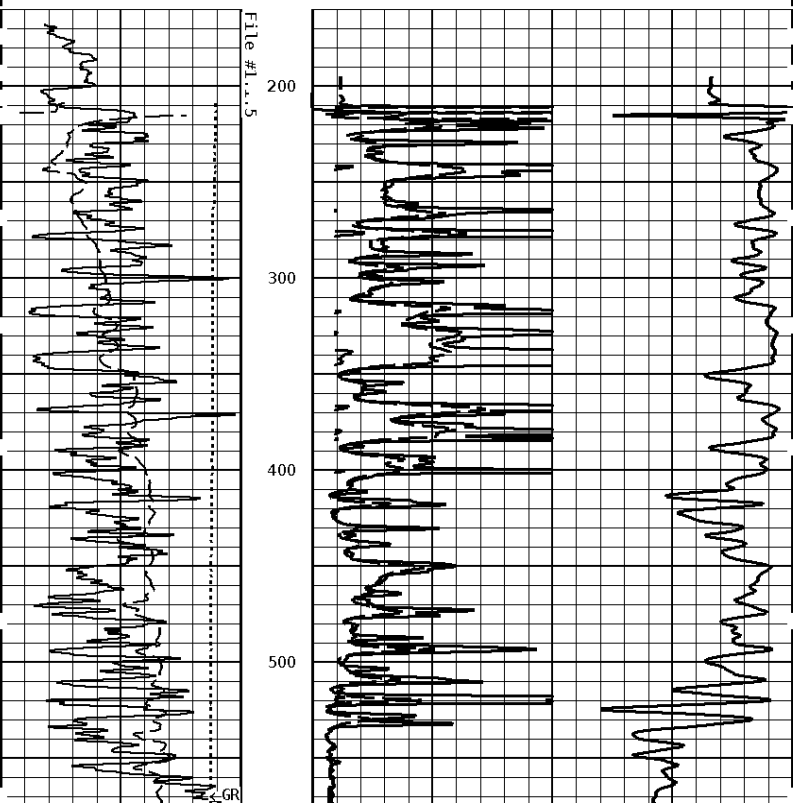
<b>Shop Calibration GRT-B</b>					
Performed : 10-NOV-2014			Time : 15:34		
Sensor Suite : GR-GR5			ID : GRT-BA-017		
	Measured	Units	Calibrated	Units	
GR	Background Jig	CPS	Jig	GRAPI	
	56 363		175		
<b>Shop Calibration PIT-CA</b>					
Performed : 10-Nov-2014			Time : 10:03		
Sensor Suite : P-IND-T			ID : PIT-AB-18		
	Measured		Calibrated		Units
	R	X	R	X	
Air	131374	130019	-0.0	-0.0	MMHOS
Zero	131066	131064	-11.8	40.2	MMHOS
Reference	252289	252326	4988.2	5040.2	MMHOS
Loop	130026	216170	3496.6	3607.8	MMHOS
Sonde Error			-1.9	-3.8	MMHOS
Cond			4988.2	5040.2	MMHOS
	Measured		Calibrated		Units
	R	X	R	X	
Air	129413	131232	-0.0	-0.0	MMHOS

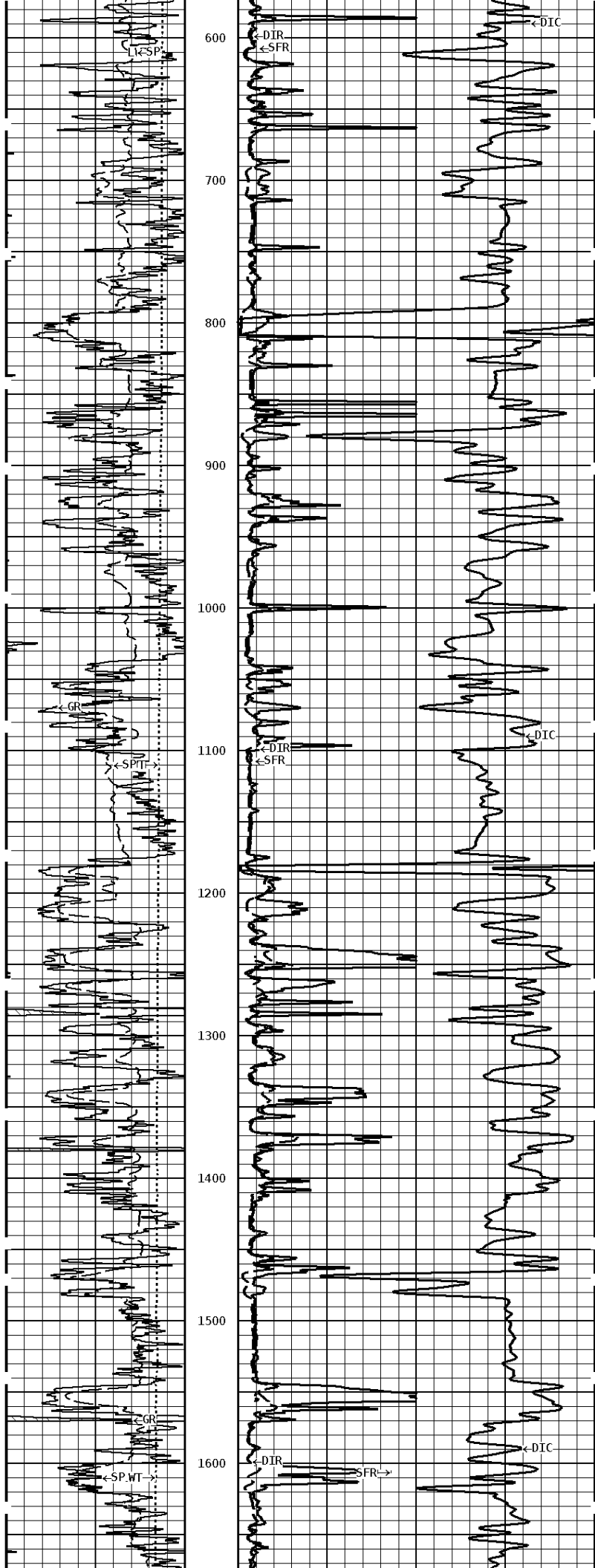
Zero	131084	131069	32.3	-5.1	MMHOS
Reference	230634	231840	2032.3	1994.9	MMHOS
Loop	127538	215721	1639.2	1714.5	MMHOS
Sonde Error			-3.2	-0.6	MMHOS
Cond			2032.3	1994.9	MMHOS
Temperature					
	Measured		Calibrated		Units
	Low	High	Low	High	DEGF
	16980.0	56920.0	70.0	350.0	
Performed : 10-Nov-2014			Time : 09:53		
Sensor Suite : SFL			ID : PIT-AB-18		
Internal					
	Measured		Calibrated		Units
	Zero	Reference	Zero	Reference	
Im	32767.3	50218.2	0.0	7028.0	uA
Ib	34516.0	51300.7	0.0	1750.0	mA
MOM1	32827.6	57549.6	0.0	175.0	mV
Equivalent SFL				43.97	OHMM
Performed : 10-Nov-2014			Time : 09:50		
Sensor Suite : P-SP			ID : PIT-AB-18		
Internal					
	Measured		Calibrated		Units
	Zero	Reference	Zero	Reference	
	32781.9	58935.2	0.0	1000.0	mV

Well File: LEON MBF 5-1 NOV20 STK      Scale: 1:1200      Format: DIL1200  
Segment: V1.D1.S5 FINAL MAIN      Acquired: 2014-11/20 10:14 3.4.0-13284  
Reference: 0      Processed: 2014-11/20 11:02 3.4.0-13284

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

**1:1200 MAIN SECTION**





600

DIR  
SFR

DTC

700

800

900

1000

1100

DIR  
SFR

DTC

1200

1300

1400

1500

1600

DIR

SFR

DTC

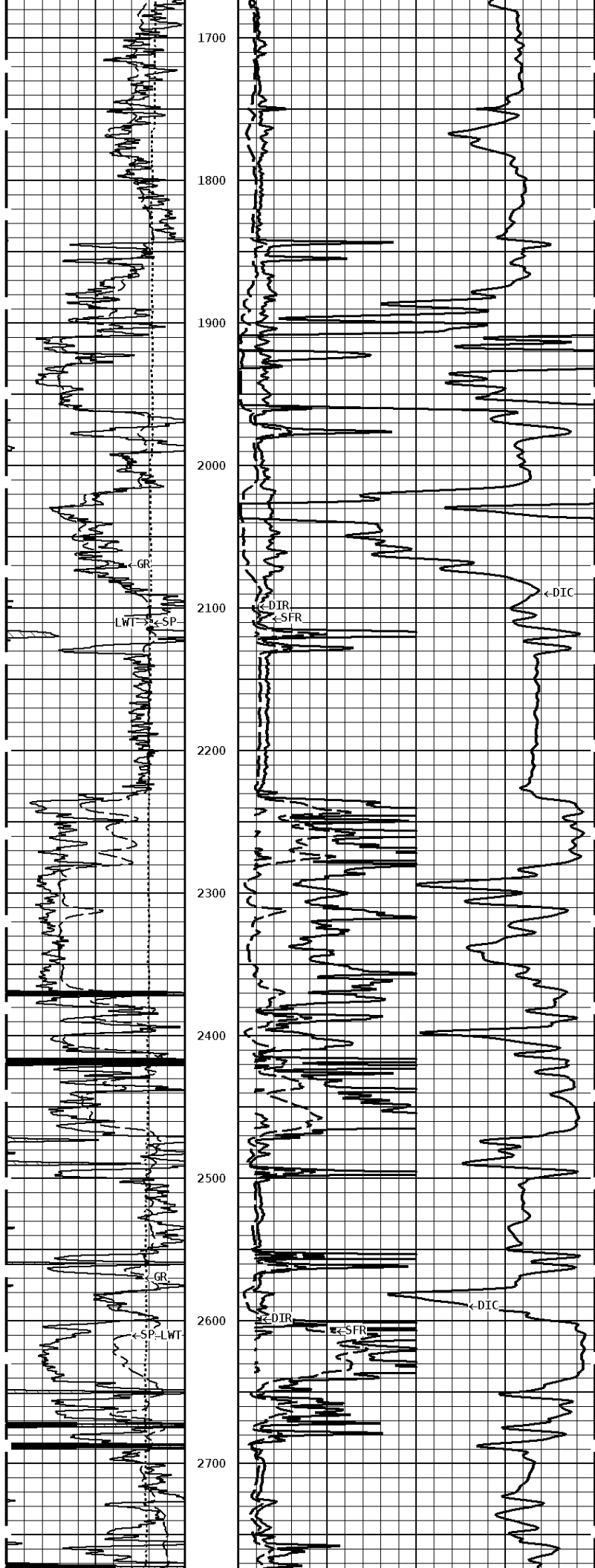
KSP

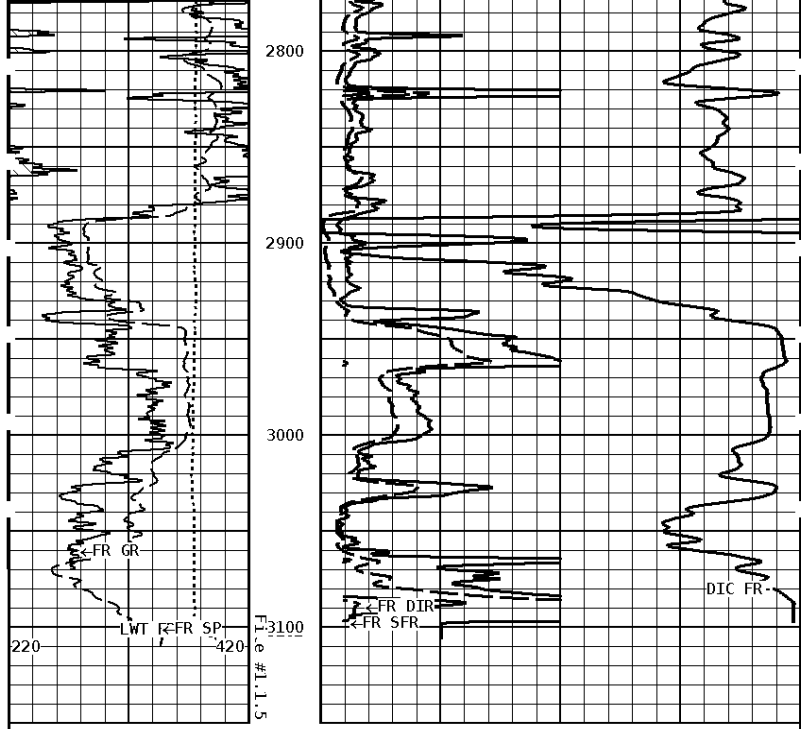
GR

SP.WT

GR

SP.WT





**1:1200 MAIN SECTION**

<b>GAMMA RAY</b> <b>API UNITS</b> 150 0 300 150	<b>DEEP CONDUCTIVITY</b> <b>MMHO</b> 2000 1000 1000 0
<b>SPONTANEOUS POTENTIAL</b> <b>mV</b> →   ← 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



Company: LEON C. SMITHERMAN JR.  
 Well: MBF #5-1  
 Location: 330' FSL & 330' FEL  
 Logged: 11-20-2014  
 K.B. Elev: 1313.0 Ft