



Tucker
ENERGY SERVICES

COMPENSATED NEUTRON
PEL DENSITY MICRO LOG

Company LASSO ENERGY LLC Well RENICK #1 Field INGALLS County GRAY State KANSAS Country USA API No. 15-069-20446-0000		File No : TUL-57210 Company : LASSO ENERGY LLC Well : RENICK #1 Field : INGALLS County : GRAY State : KANSAS Country : USA API No : 15-069-20446-0000	
Location : 1650' FNL & 330' FEL C NE SE NE		LSD : Sect : 29 Twp : 25S Rge : 29W	
Permanent Datum:	GL	Elevations:	
Drilling Measured From:	KB	KB 2694.00	Ft
Log Measured From:	KB	DF 2693.00	Ft
Above Permanent Datum:	1200 Ft	GL 2682.00	Ft
Date	11-26-2013		
Run Number	1		
Depth--Driller	5870.0 Ft		
Depth--Logger	5866.0 Ft		
First Reading	5842.0 Ft		
Last Reading	1670.0 Ft		
Casing--Driller	1670.0 Ft		
Casing--Logger	1670.0 Ft		
Bit Size	7.875 In		
Casing Size	8.625 In		
Hole Fluid Type	CHEM-GEL		
Density	9.5 lb/gal		
Fluid Loss	8.8 ml/30min		
PH/Viscosity	9.5	57.0 sec/qt	
Sample Source	MEASURED		
RM@Measured Temp.	2.200 @ 45 F		
RMF@Measured Temp	1.760 @ 45 F		
RM@Measured Temp.	2.640 @ 45 F		
Source RMF/RMC	CALCULATED/CALCULATED		
RM@BHT	0.790 @ 137 F		
Time Circulation Stopped	11-26-2013 9:00 pm		
Max Recorded Temp.	137 F		
Equipment/Base	TULSA		
Recorded By	J. ADAMS R. KING		
Witnessed By	M. BURTON		

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	5866.00	8.625	24.00	1670.00	0.00

Run Number	1	
Date	11-26-2013	
Date/Time On Bottom		
Depth to Fluid	0.0 Ft	
Salinity	3800.000	
RMF@BHT	0.630 @ 137 F	
RMC@BHT	0.950 @ 137 F	

Run Number 1

Comments

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

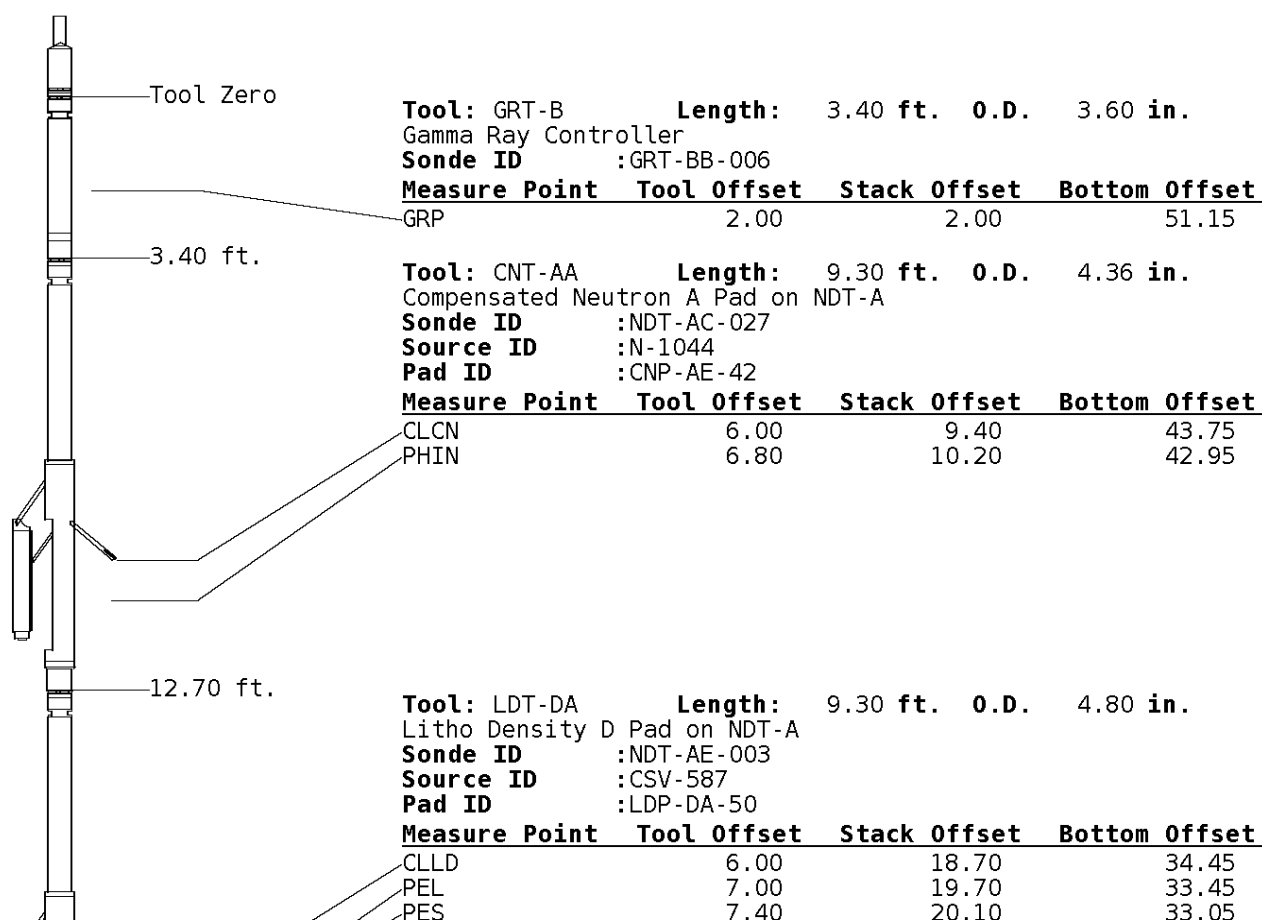
CUSTOMER REQUEST DETAIL PULLED FROM TD-3950'
 CUSTOMER REQUEST HIRES PULLED FROM TD-4700'

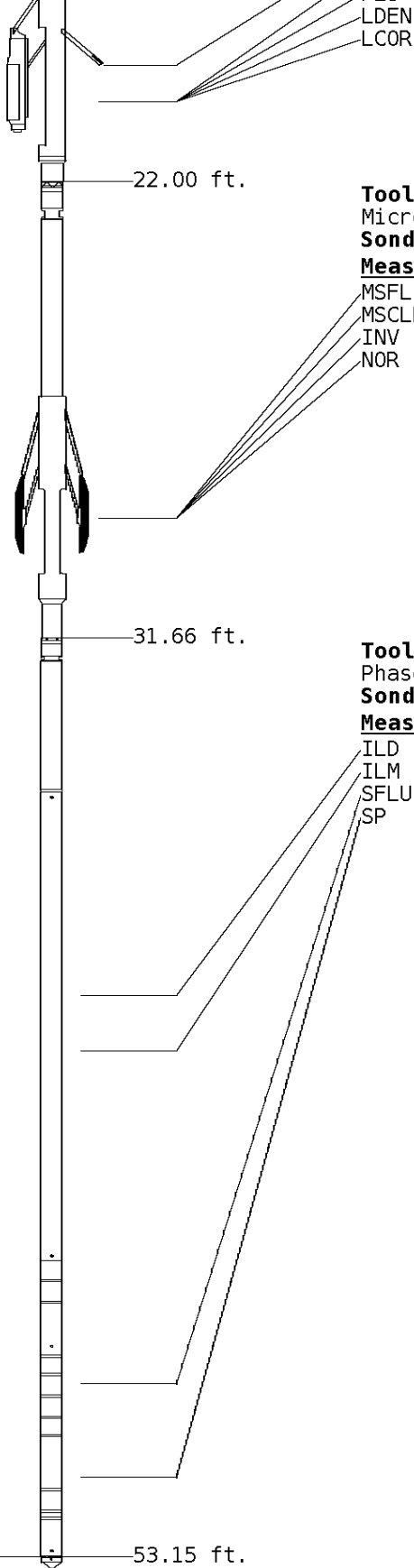
GRT: GRP, GRX
 CNT: PHIN, CLCNIN, PHXN
 LDT: PORL, LCORN, PECLN, LDENN, PORLLS, CLLDIN, PRXL, PECLX, LDENNX, LCORX
 MLT: NOR_RF, INV_RF, MSCLPIN.
 PIT: ILD, ILM, SPU, SFLAEC, CIRD.

OPERATORS:
 D. HOPPER
 A.DJAH

Tool String Schematic

Total Tool Length - 53.15 ft.
Maximum Outside diameter - 6.00 in.
Net Weight in Air - 943.00 lbs.





LDEN 7.20 19.90 33.25
 LCOR 7.20 19.90 33.25

Tool: MST-DA **Length:** 9.66 ft. **O.D.** 6.00 in.
 Micro Spherically Focused (IC)
Sonde ID :MST-DA-32

Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	29.60	23.55
MSCLP	7.60	29.60	23.55
INV	7.60	29.60	23.55
NOR	7.60	29.60	23.55

Tool: PIT-CA **Length:** 21.49 ft. **O.D.** 3.62 in.
 Phased Dual Induction w/ RM & D
Sonde ID :PIT-BA-20

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	40.58	12.56
ILM	10.10	41.76	11.39
SFLU	17.49	49.15	4.00
SP	20.60	52.26	0.88

Well File: LASSO RENICK_1 NOV26 MSTK

Scale: 1:240 **Format:** NLD-240

Segment: V1.D1.S14 AS FINAL MAIN

Acquired: Not Available

Reference: 0

Processed: 2013-11/27 03:29 3.3.0-12261

**CALIPER MICRO
INCHES (IN)**

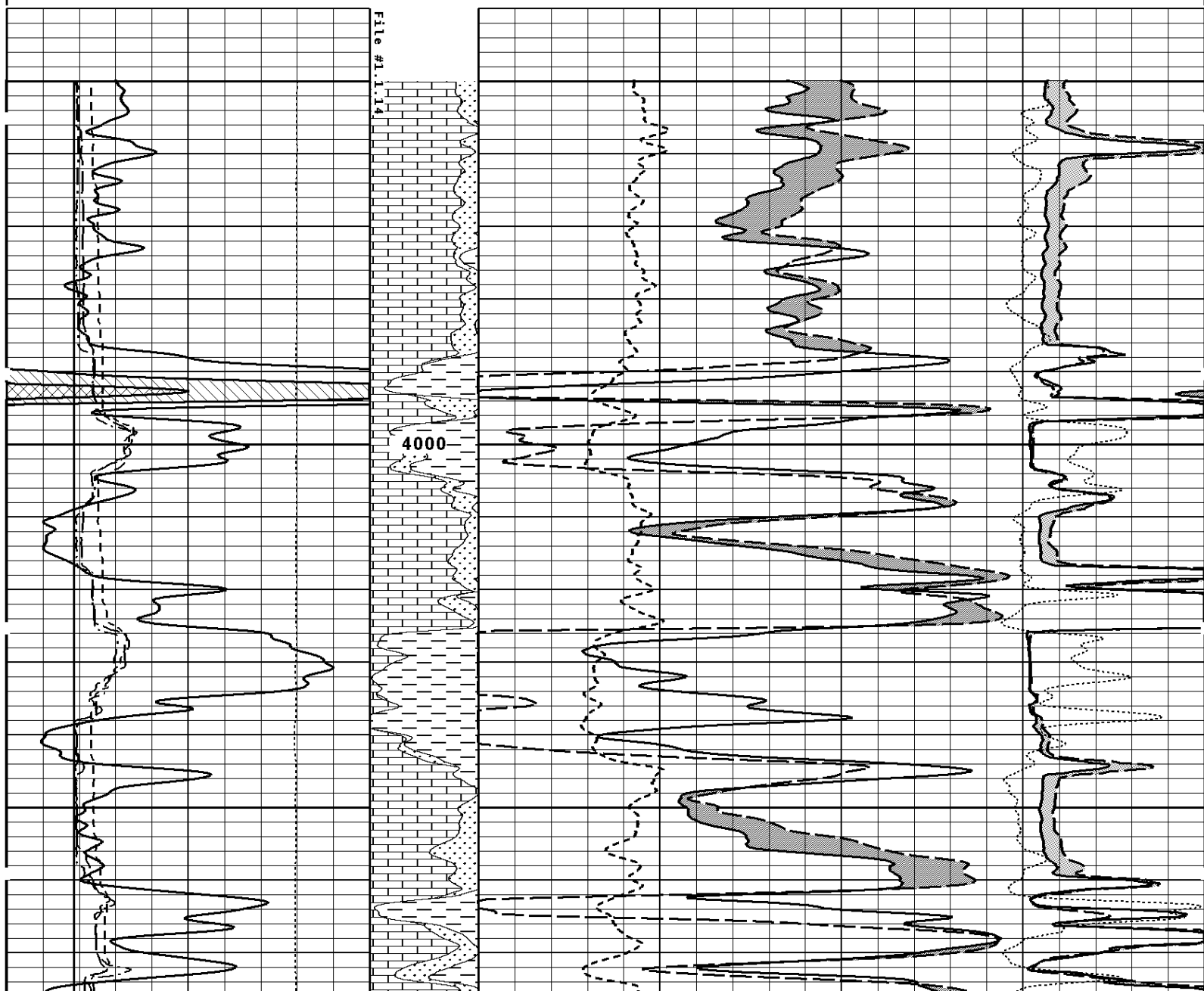
16 26
6 16

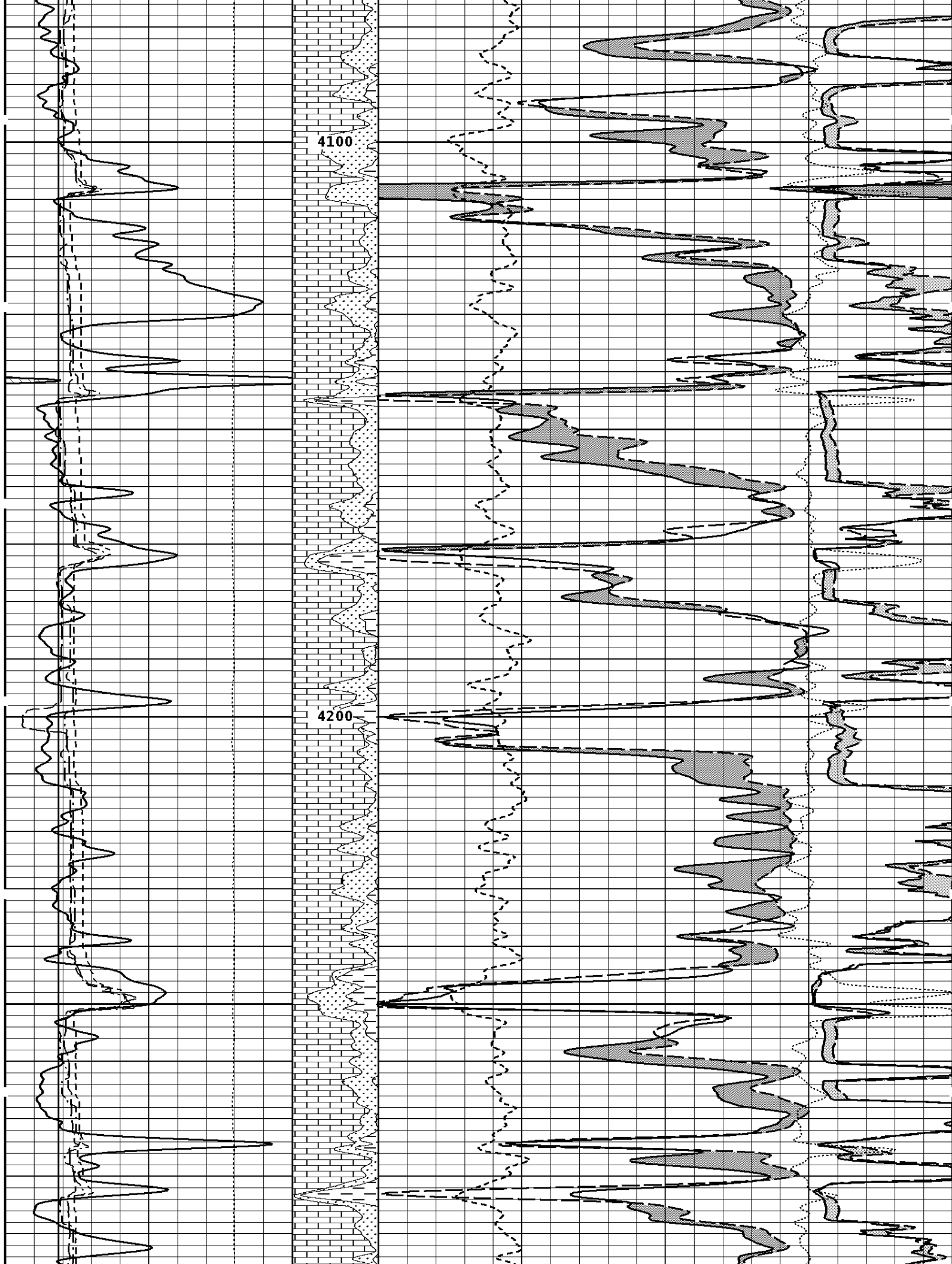
**BIT SIZE
INCHES (IN)**

**NORMAL
OHMM**

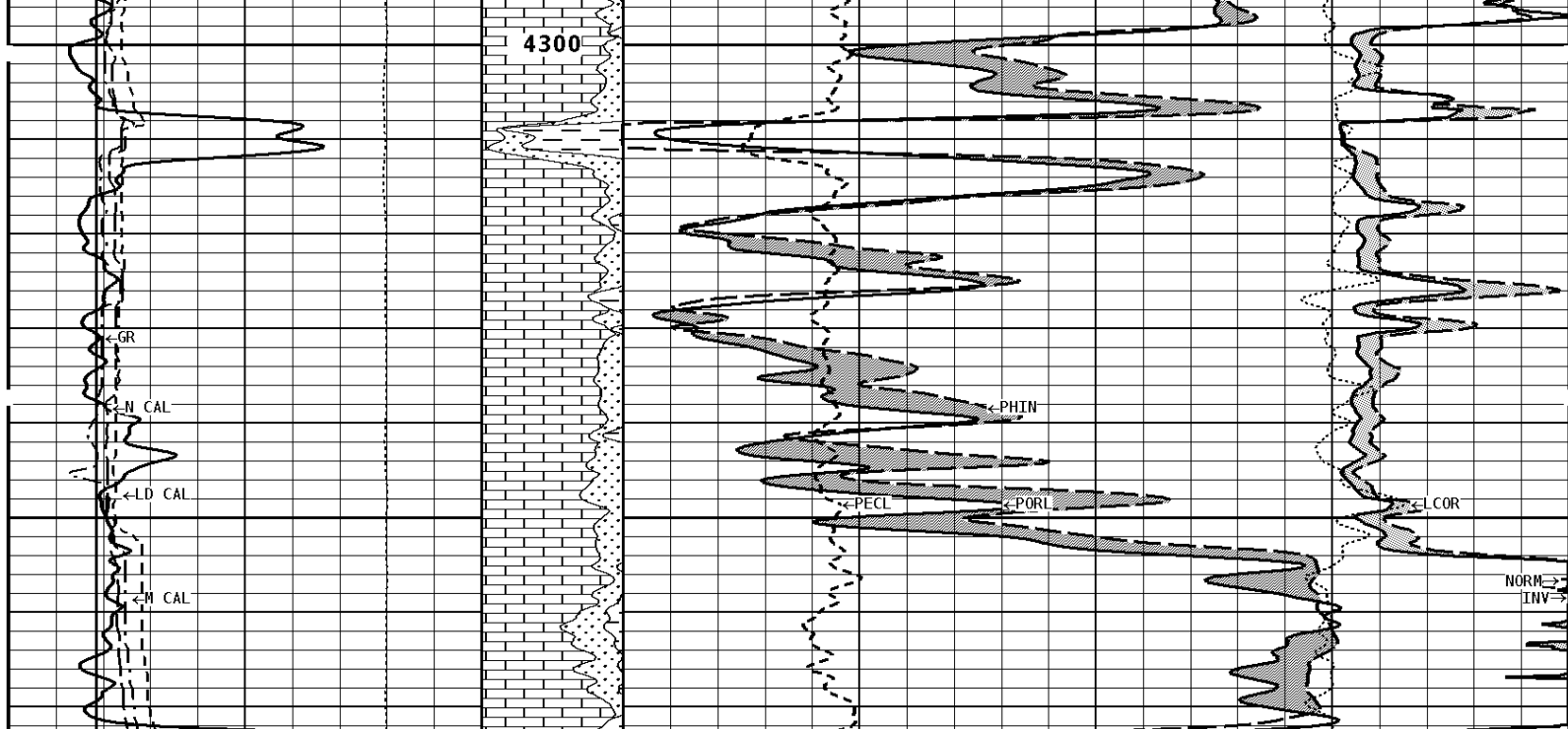
6	16			0	40
NEUTRON (Y) CALIPER INCHES (IN)				INVERSE OHMM	
16	26			0	40
6	16				
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARNs/ELECTRON	DENSITY CORRECTION G/CC	
16	26		0	10	-0.25
6	16				0.25
TENSION LBS		Volume Calcite	DENSITY POROSITY (2.71g/cc) PERCENT		
10000	0		70		30
			30		-10
			-10		-50
GAMMA RAY API UNITS		Volume Dolo/Shale	NEUTRON POROSITY (LIMESTONE) PERCENT		
150	300		30		-10
0	150				

1:240 MAIN SECTION

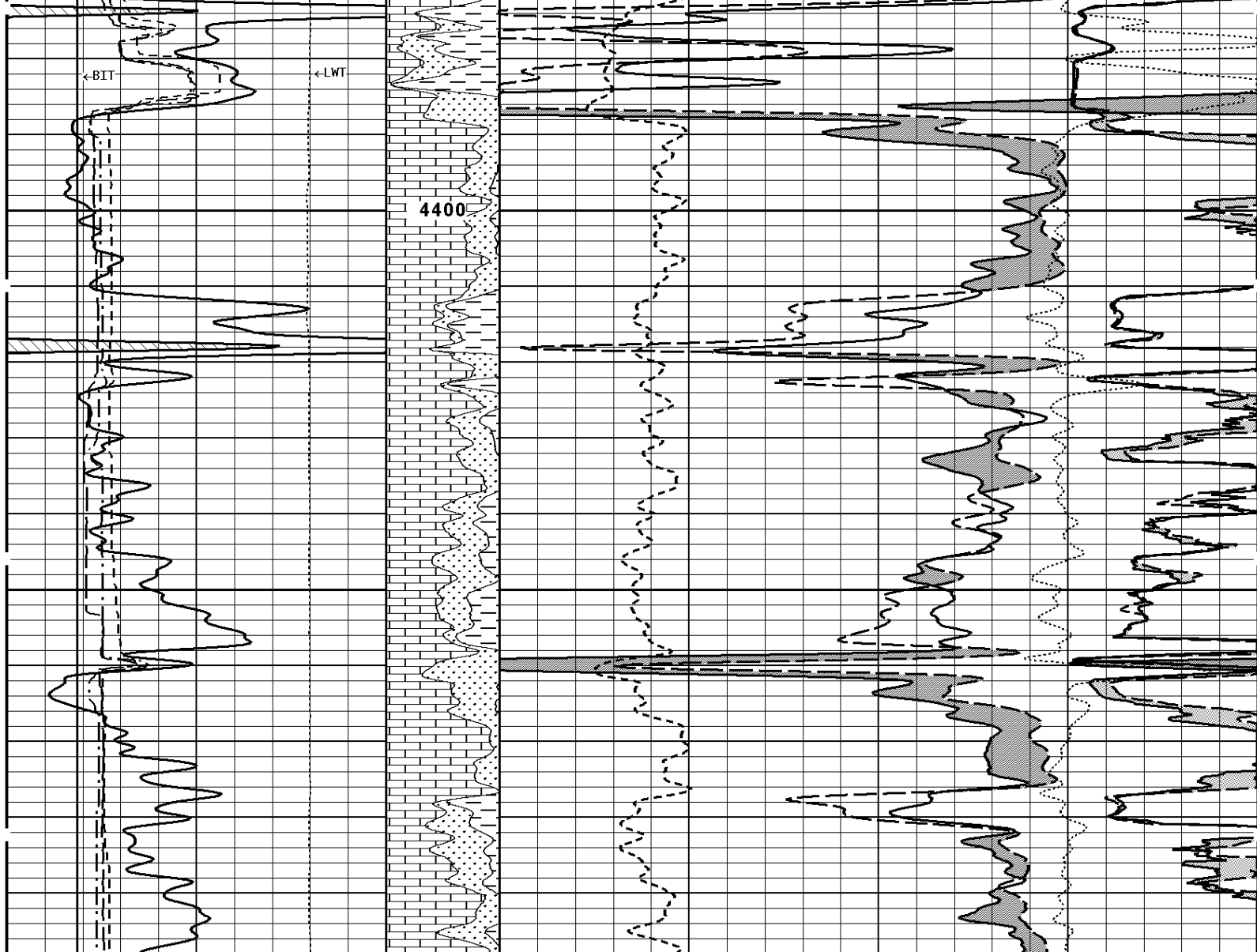




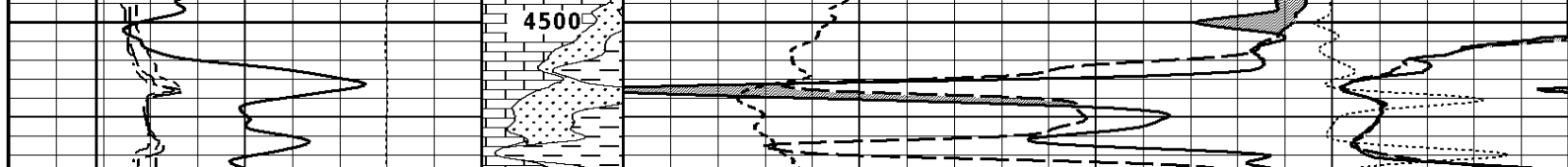
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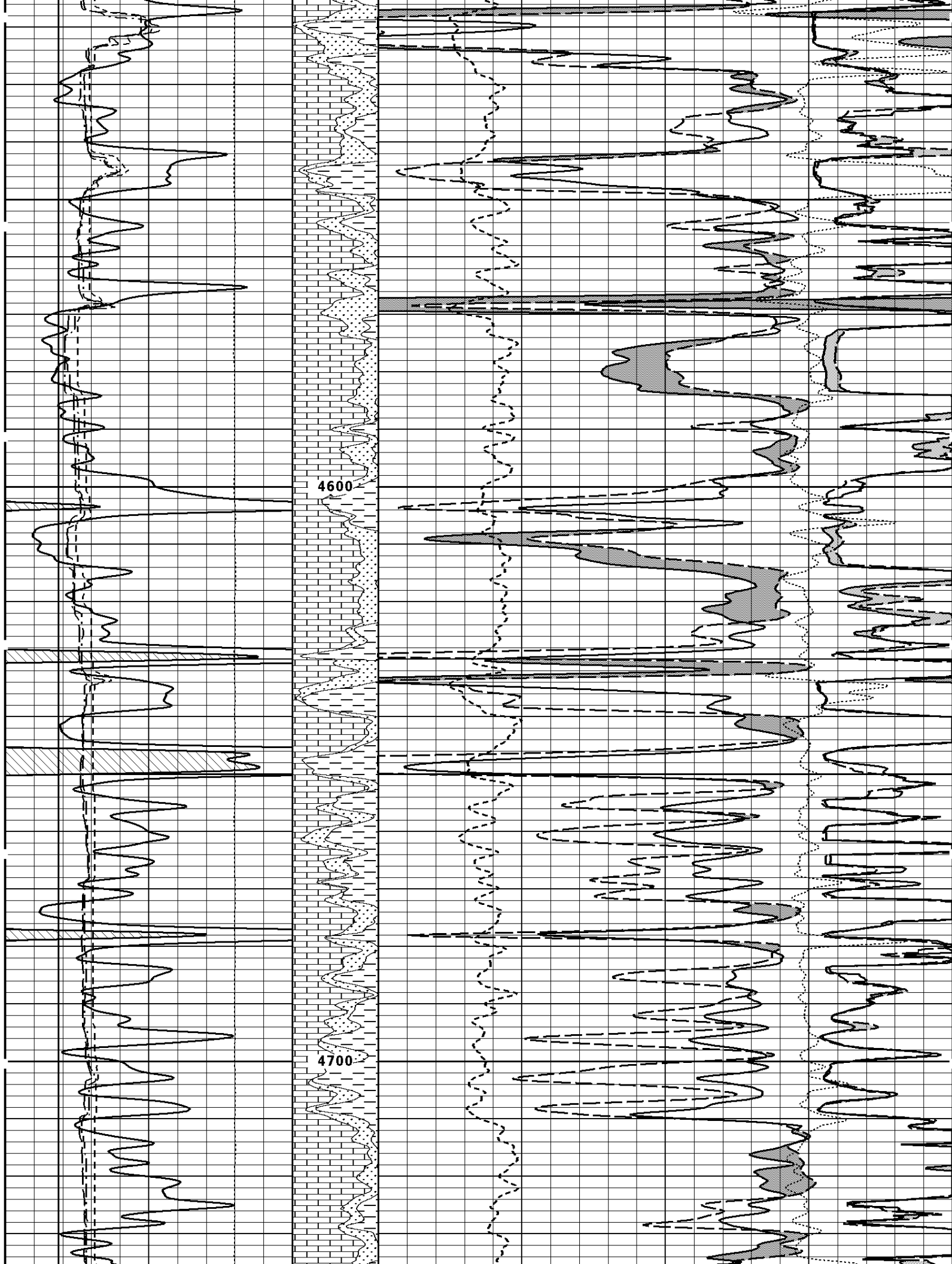


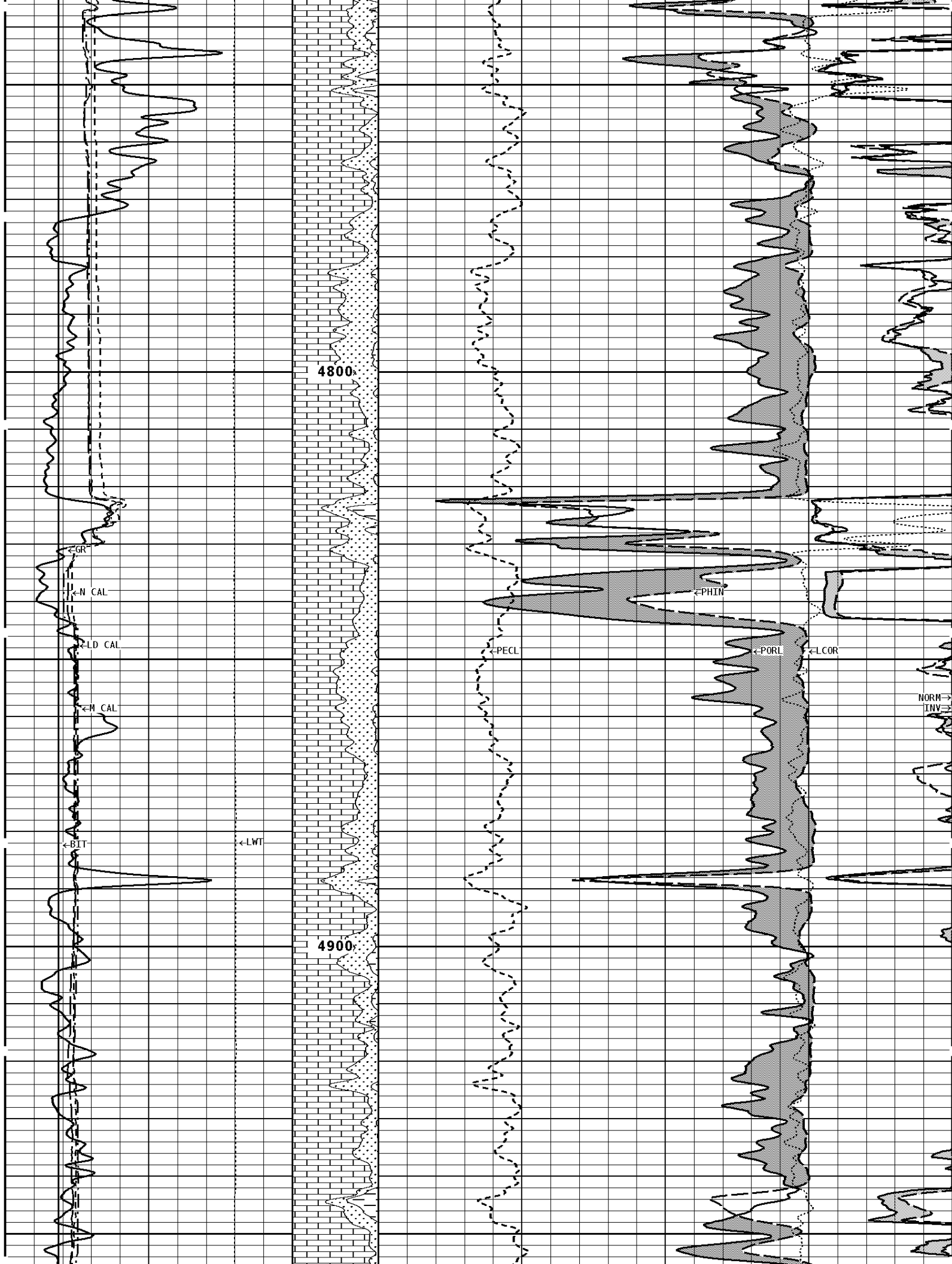
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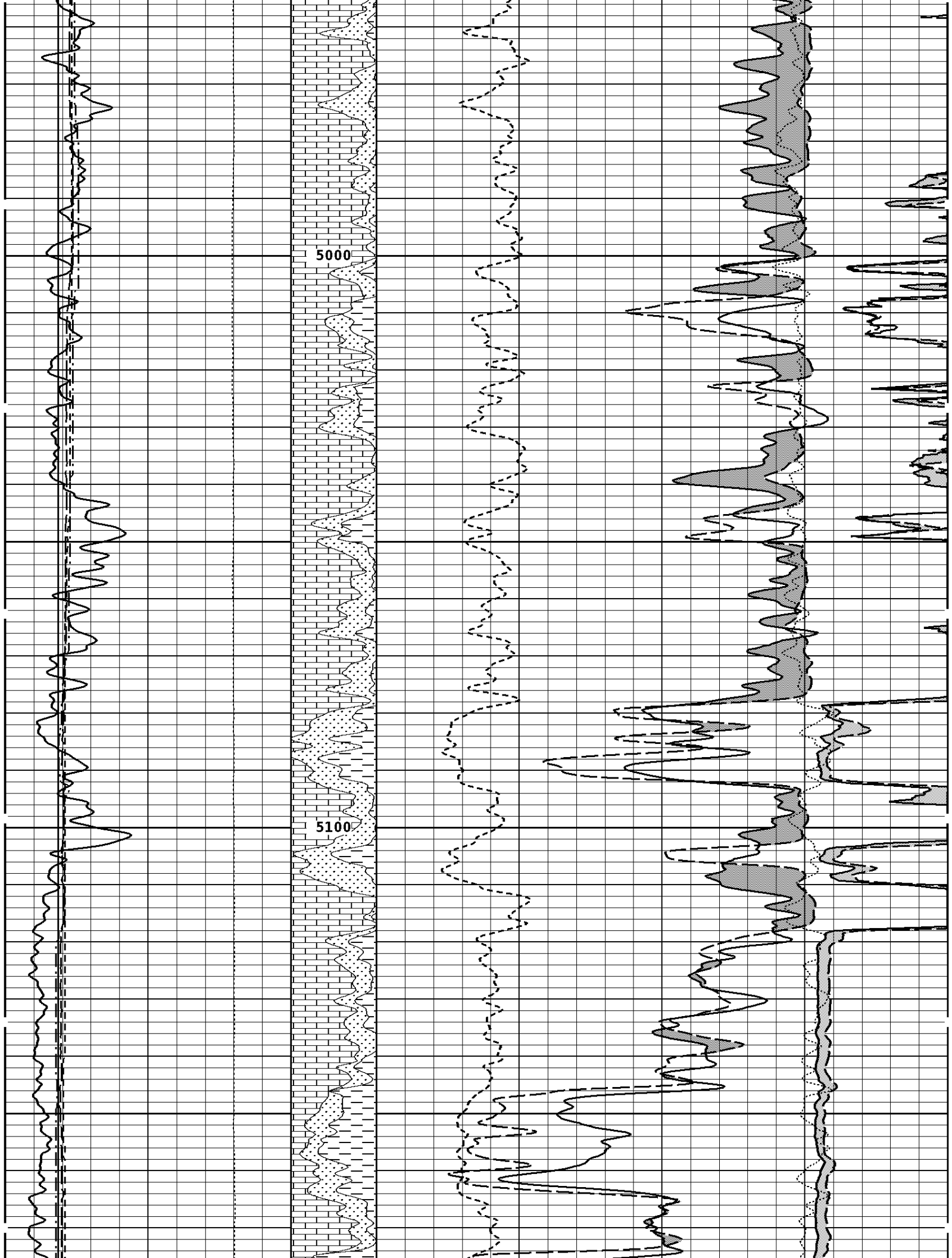


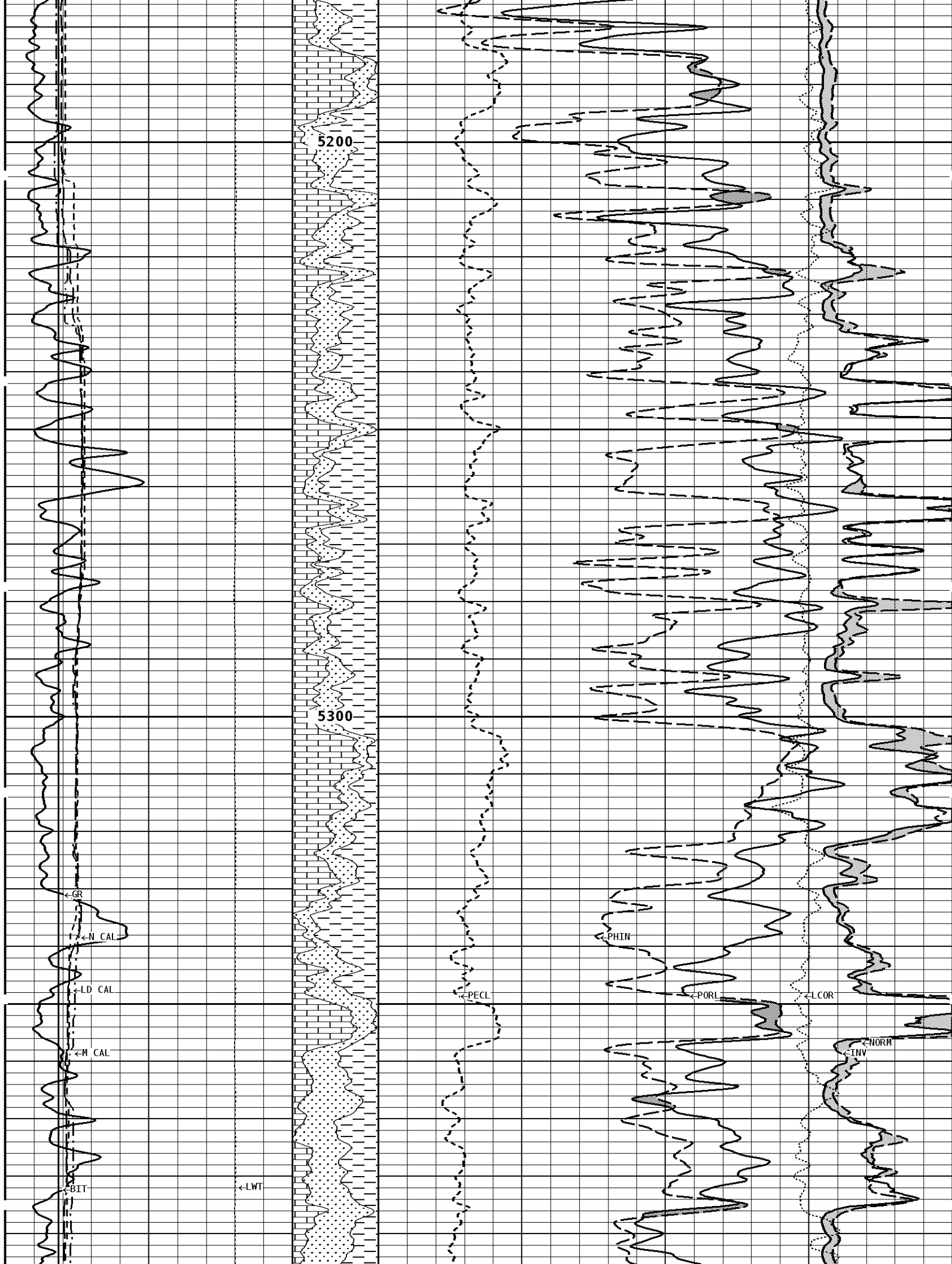
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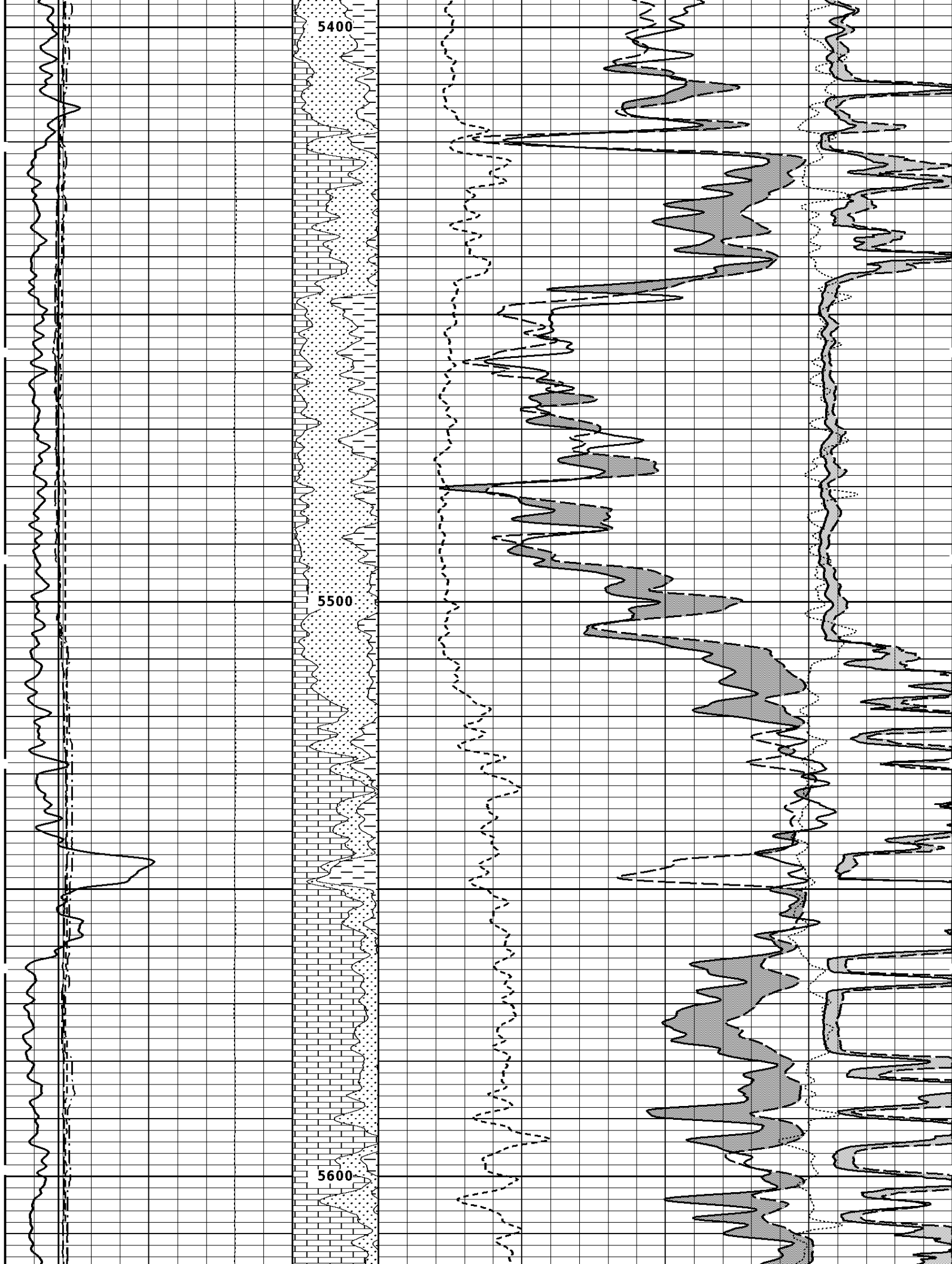


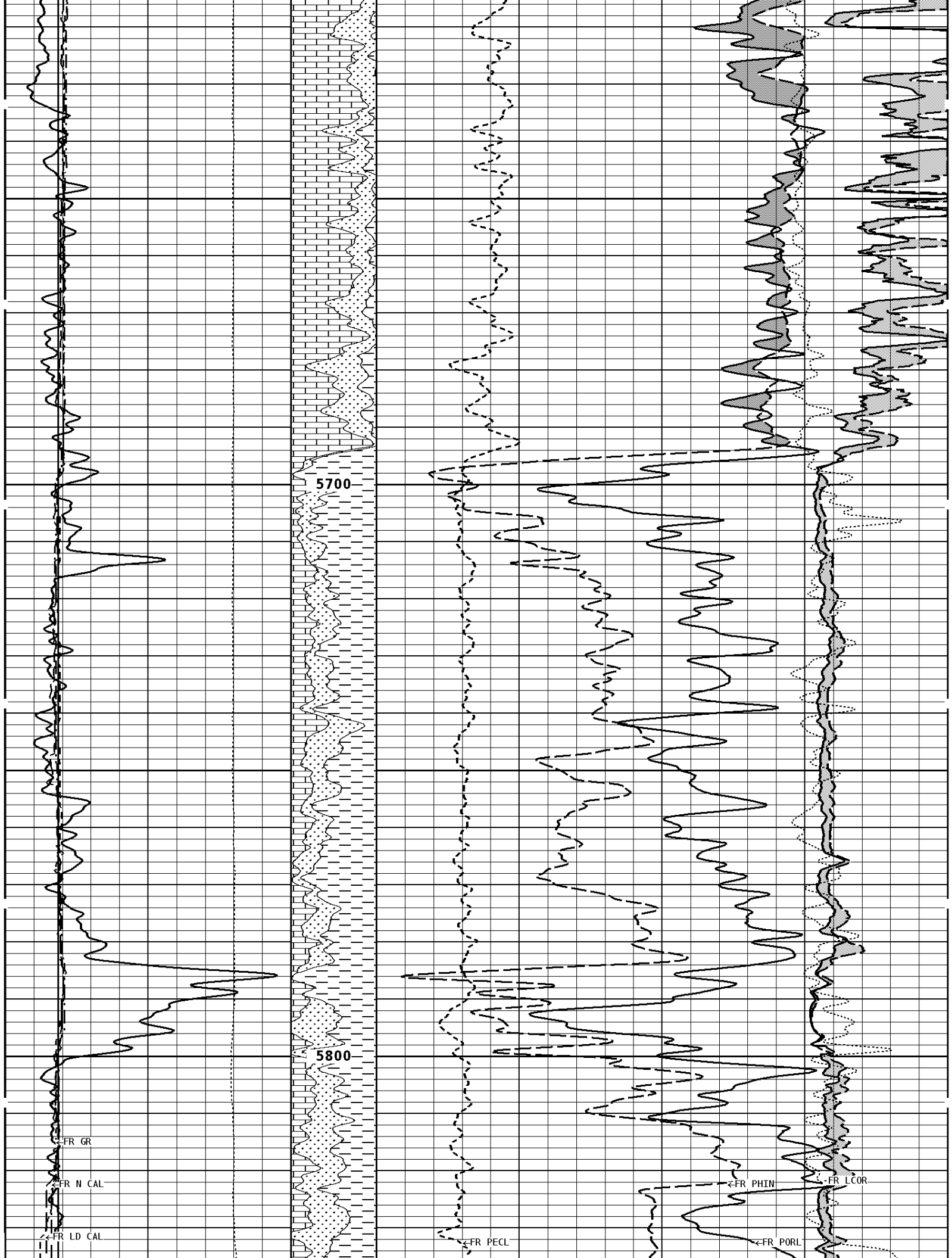


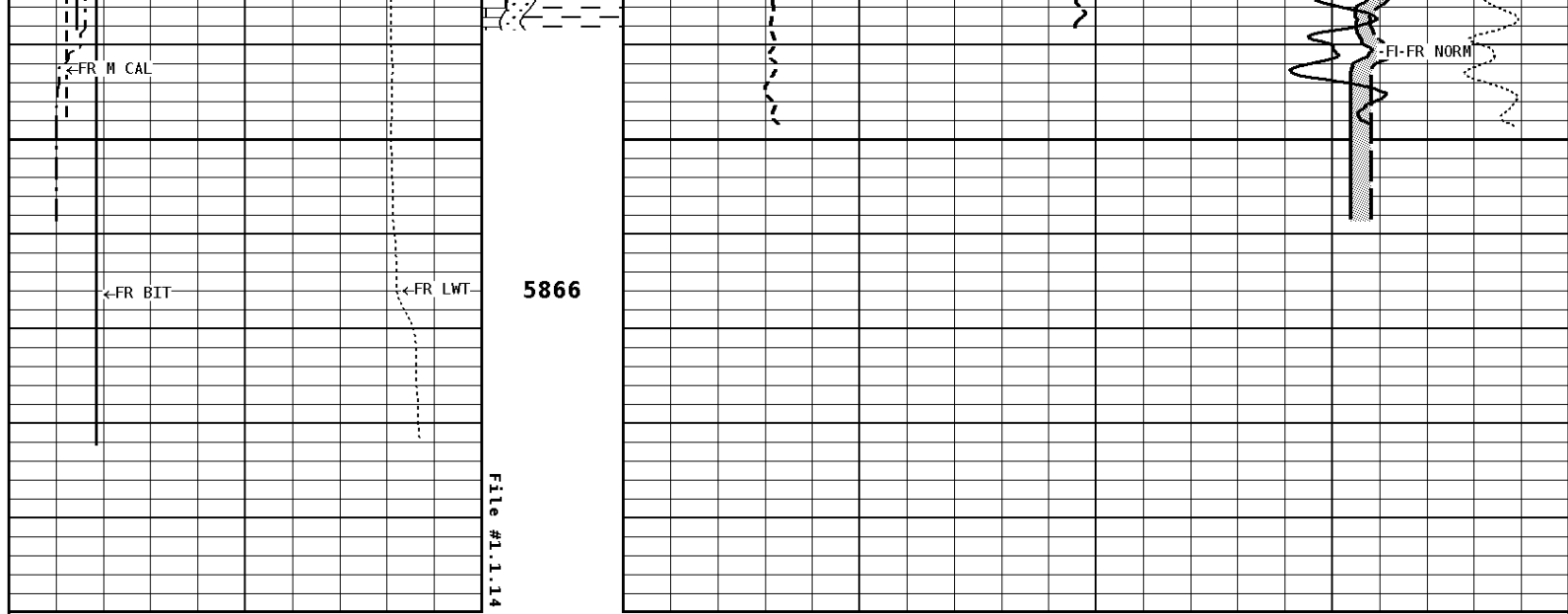












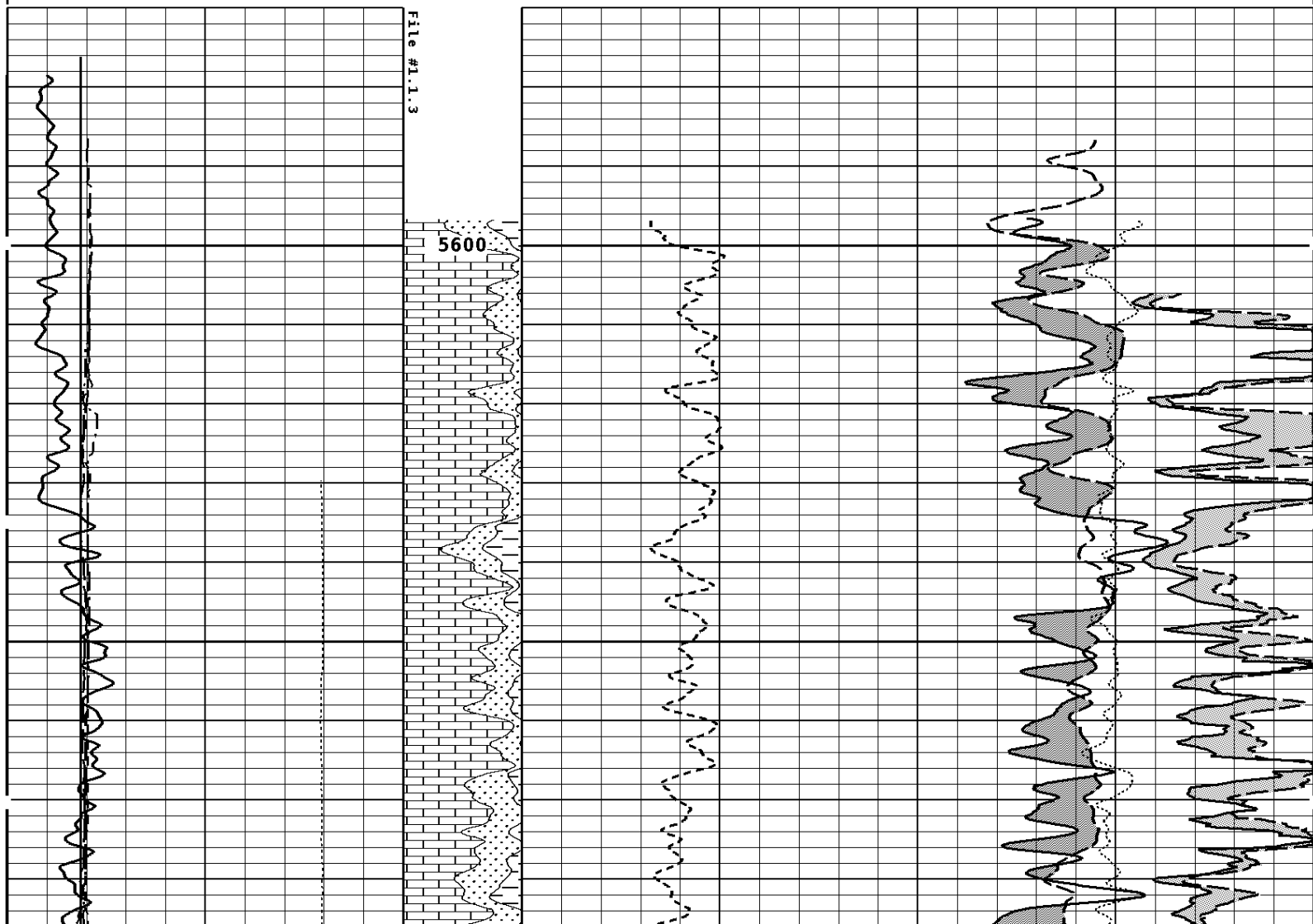
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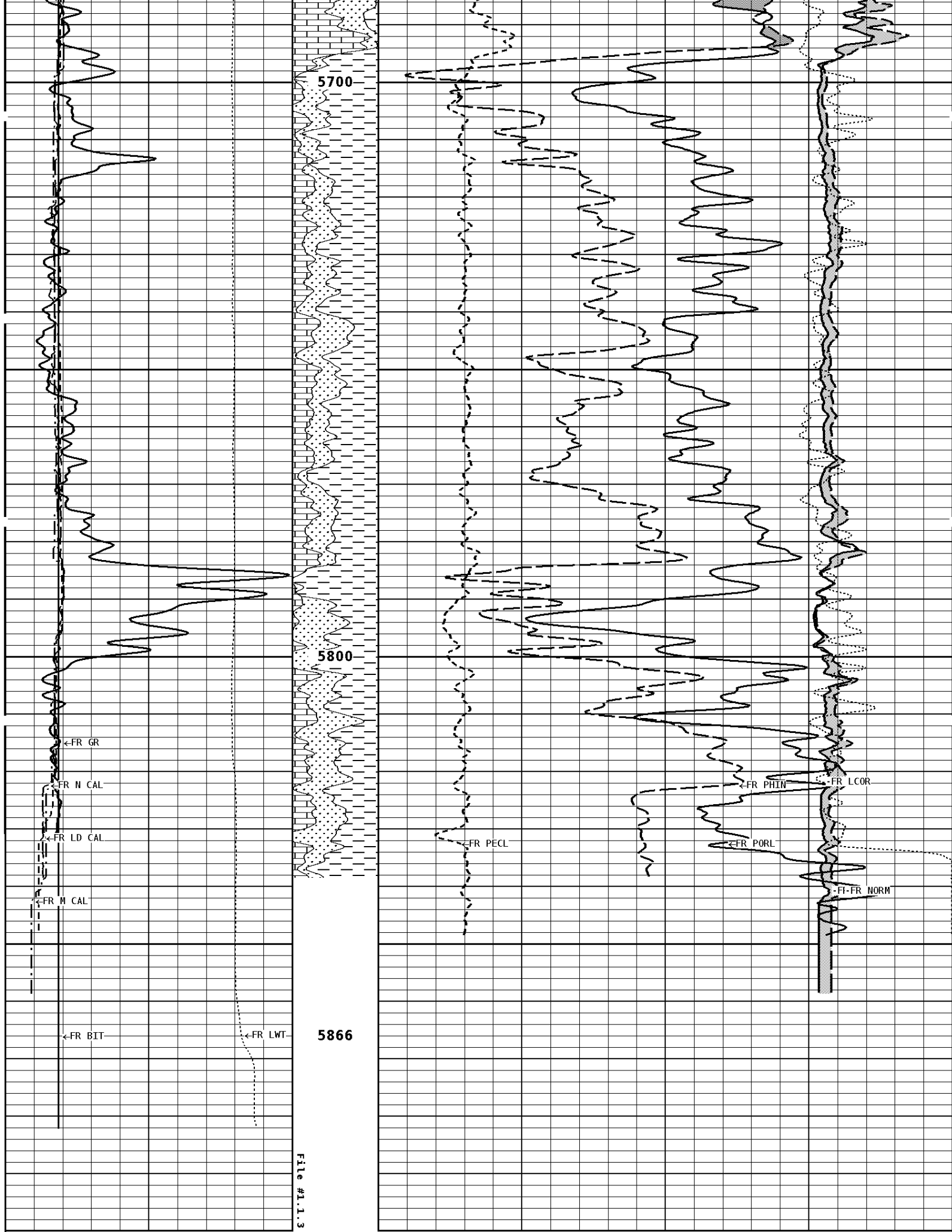
GAMMA RAY API UNITS		Volume Dolo/Shale	NEUTRON POROSITY (LIMESTONE) PERCENT	
150	300		30	-10
0	150			
TENSION LBS		Volume Calcite	DENSITY POROSITY (2.71g/cc) PERCENT	
10000	0		70	30
			30	-10
			-10	-50
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARNs/ELECTRON	DENSITY CORRECTION G/CC
16	26		0	-0.25
6	16		10	0.25
NEUTRON (Y) CALIPER INCHES (IN)				
16	26			
6	16			
BIT SIZE INCHES (IN)				
6	16			
CALIPER MICRO INCHES (IN)				
16	26			
6	16			

* Borehole Zone Factors *

Zone 1 99999.0 to 1662.1 Feet		
Matrix Density	2.71	g/cc
Fluid Density	1.00	g/cc
Formation Matrix	Limestone	
Drill Bit Size	7.875	in
Casing Diameter	5.500	in
Casing Thickness	0.250	in
Casing Correction (PHI N)	Disable	

CALIPER THICKNESS INCHES (IN)		16 6		26 16	
BIT SIZE INCHES (IN)		6		16	
NEUTRON (Y) CALIPER INCHES (IN)		16 6		26 16	
DENSITY (X) CALIPER INCHES (IN)		16 6		26 16	
TENSION LBS		10000		0	
GAMMA RAY API UNITS		150 0		300 150	
Volume Quartz		0		10	
Volume Calcite		70 30 -10		30 -10 -50	
Volume Dolo/Shale		30		-10	
PE CROSS-SECTION BARNs/ELECTRON		0		10	
DENSITY CORRECTION G/CC		-0.25		0.25	
DENSITY POROSITY (2.71g/cc) PERCENT		70 30 -10		30 -10 -50	
NEUTRON POROSITY (LIMESTONE) PERCENT		30		-10	
1:240 REPEAT SECTION					



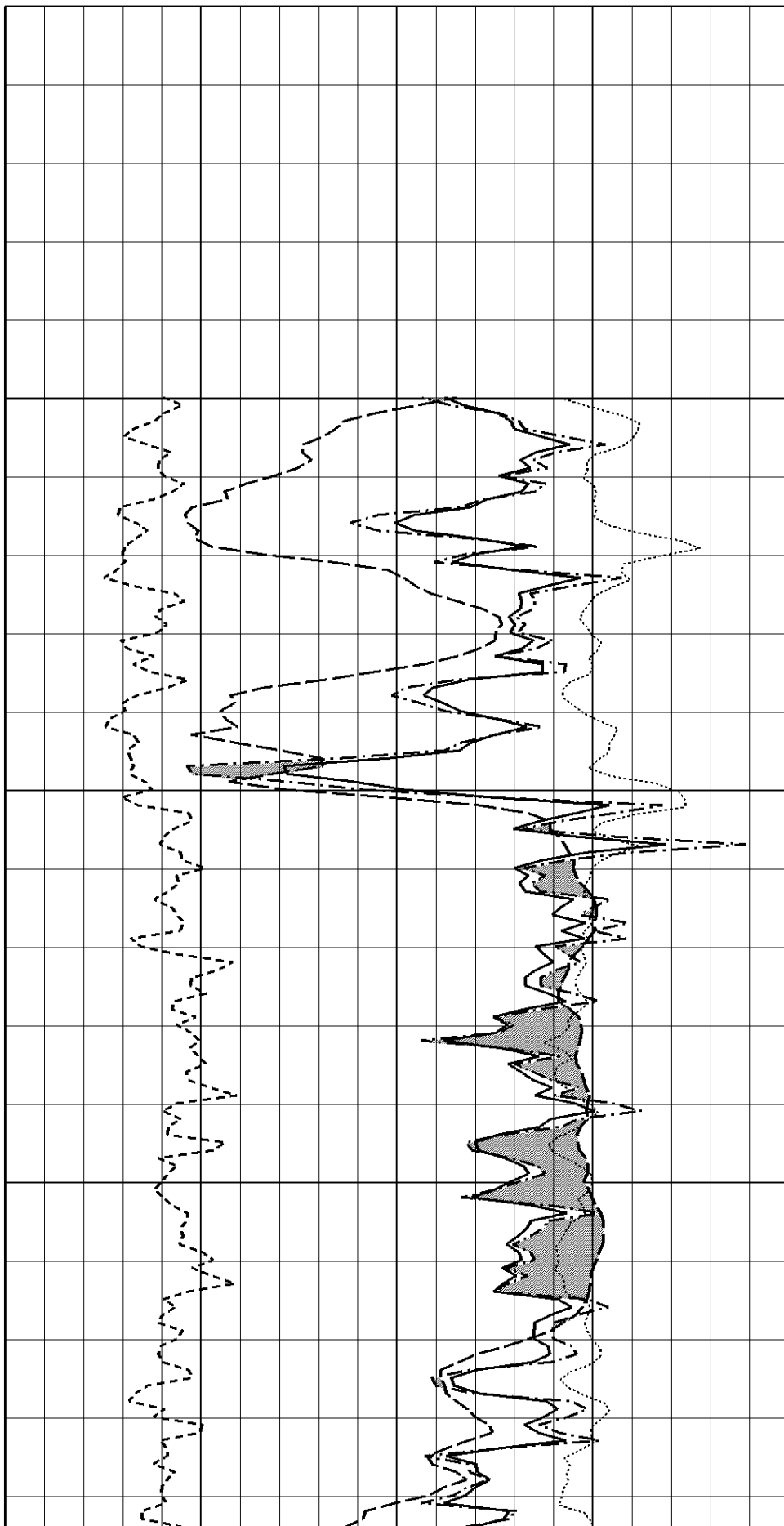
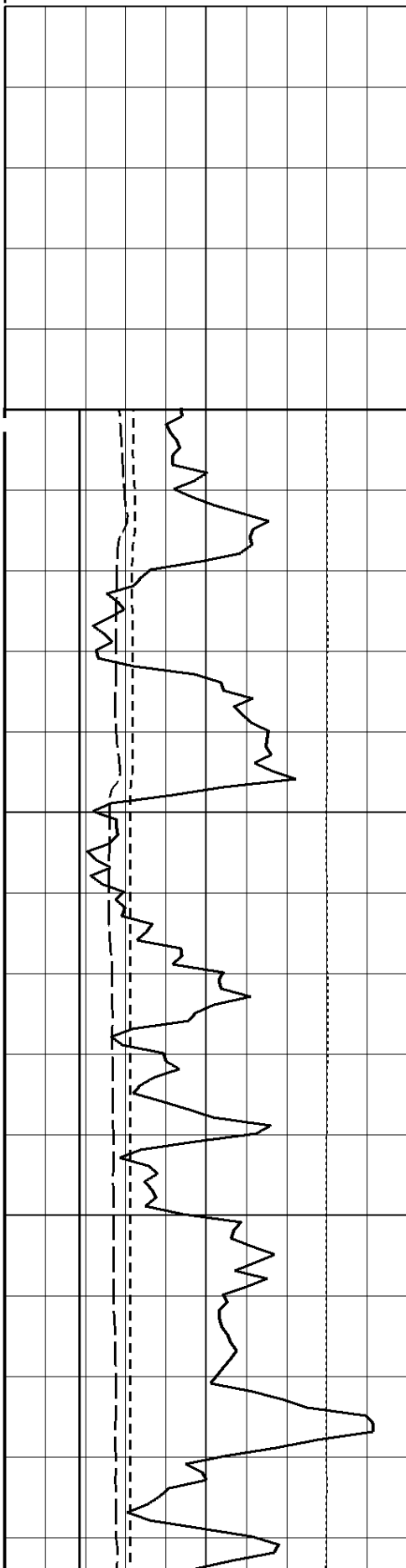


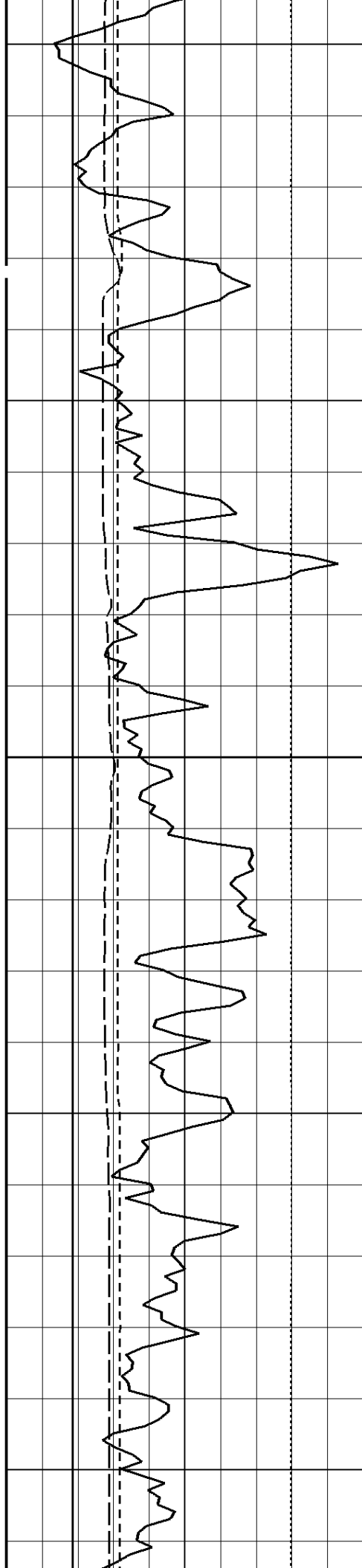
1:240 REPEAT SECTION

1:48 HIGH RESOLUTION

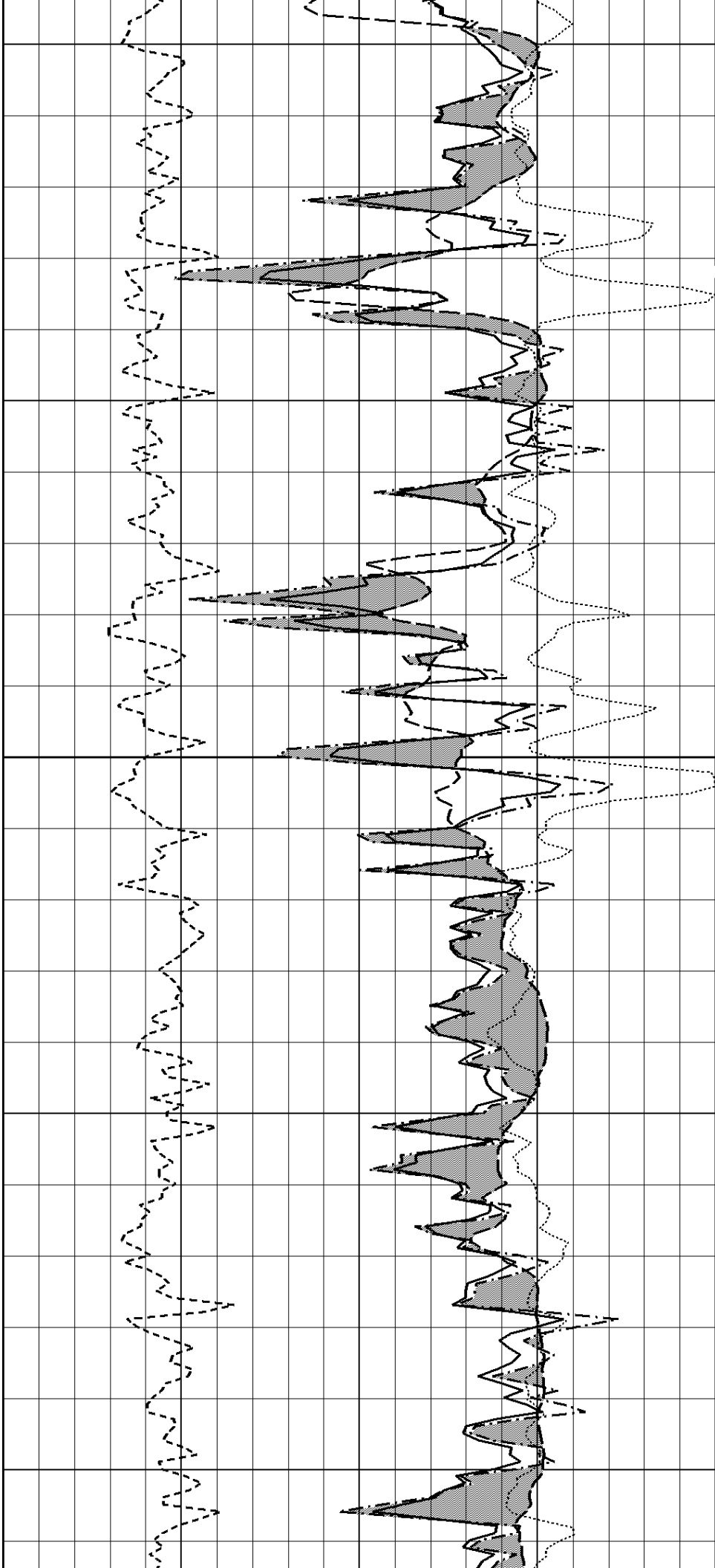
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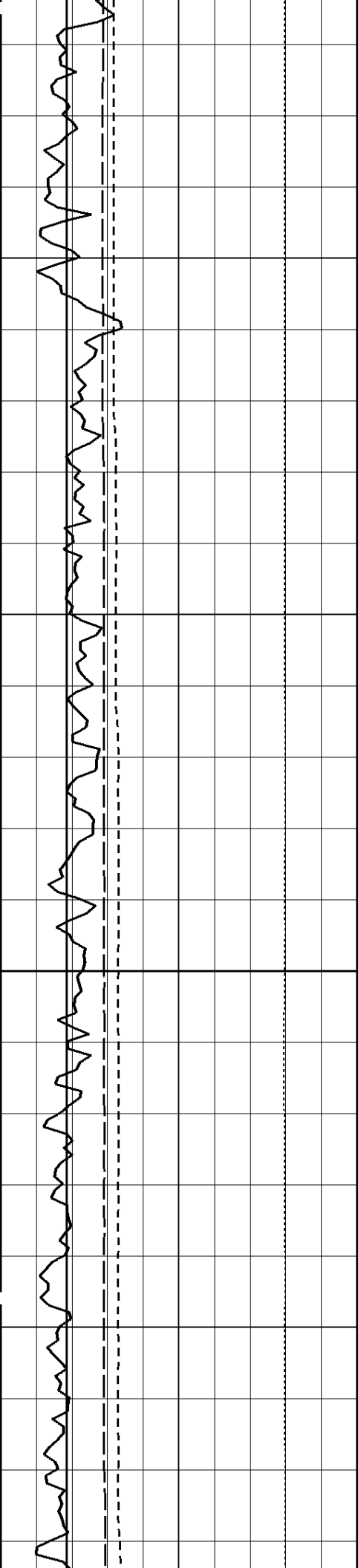
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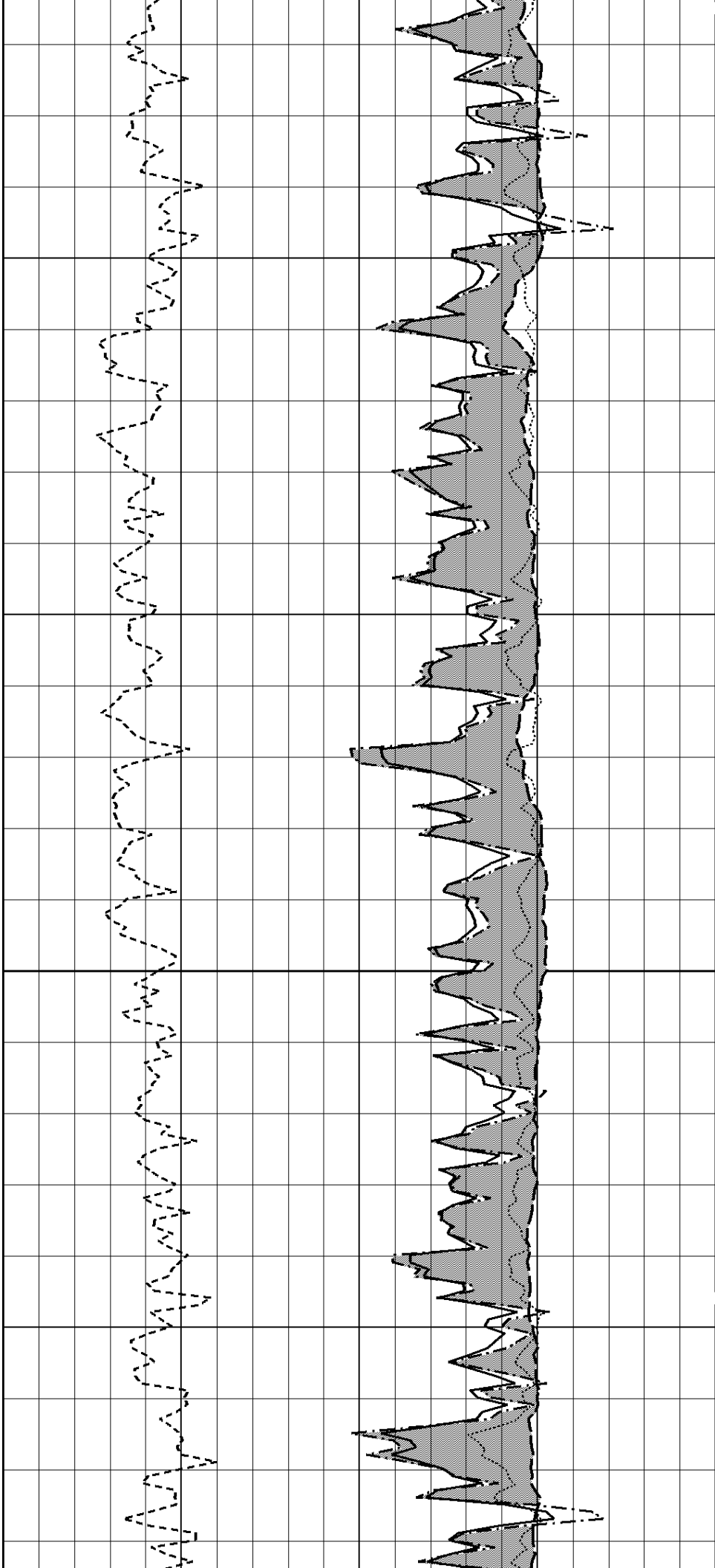


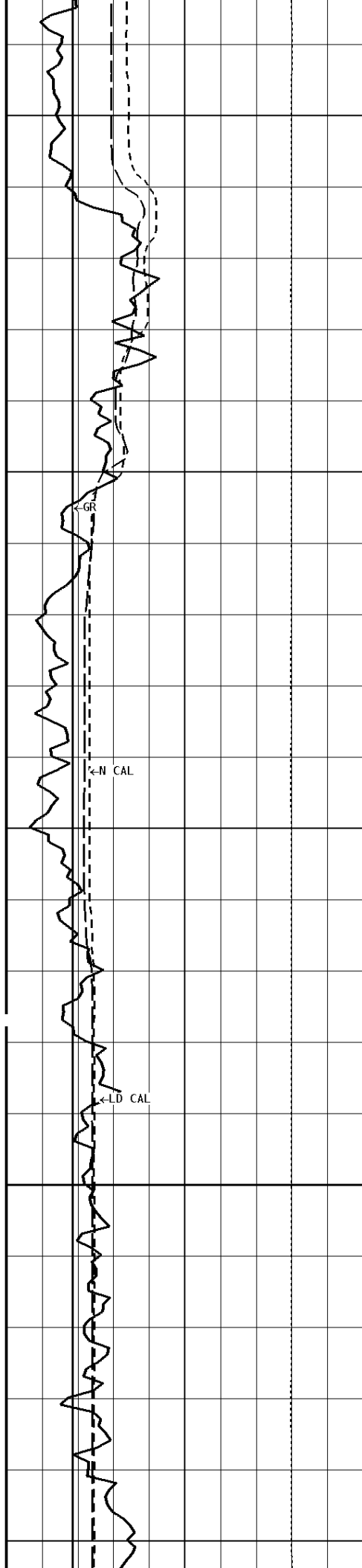
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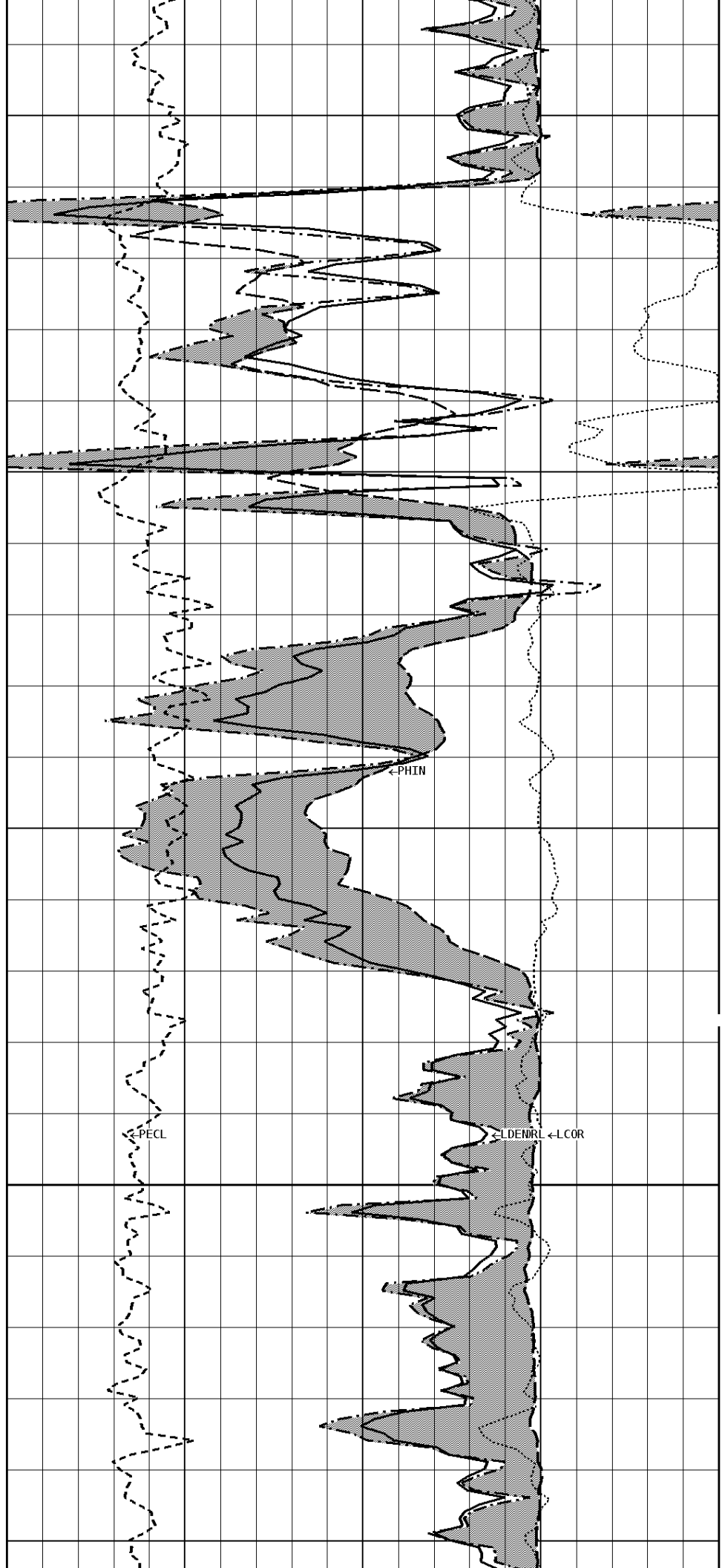


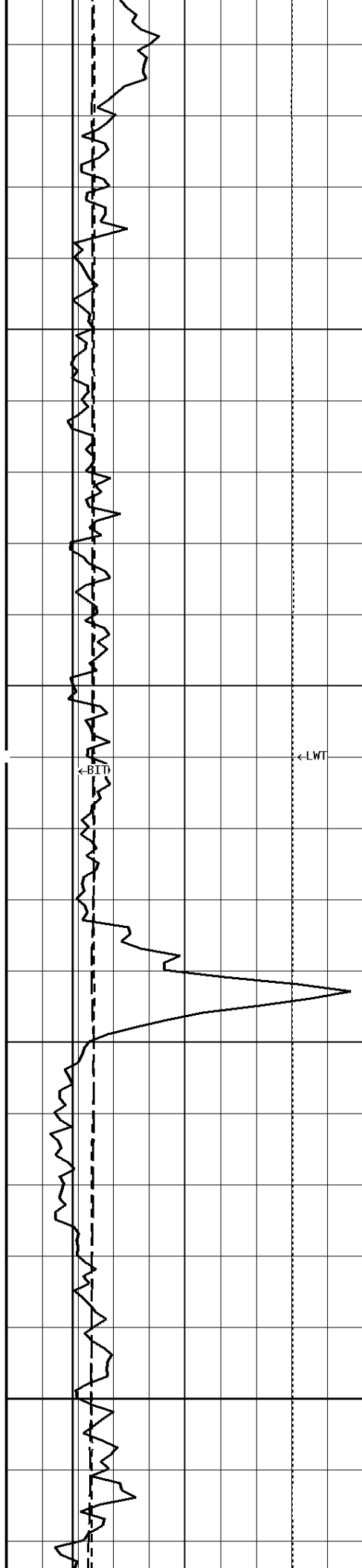
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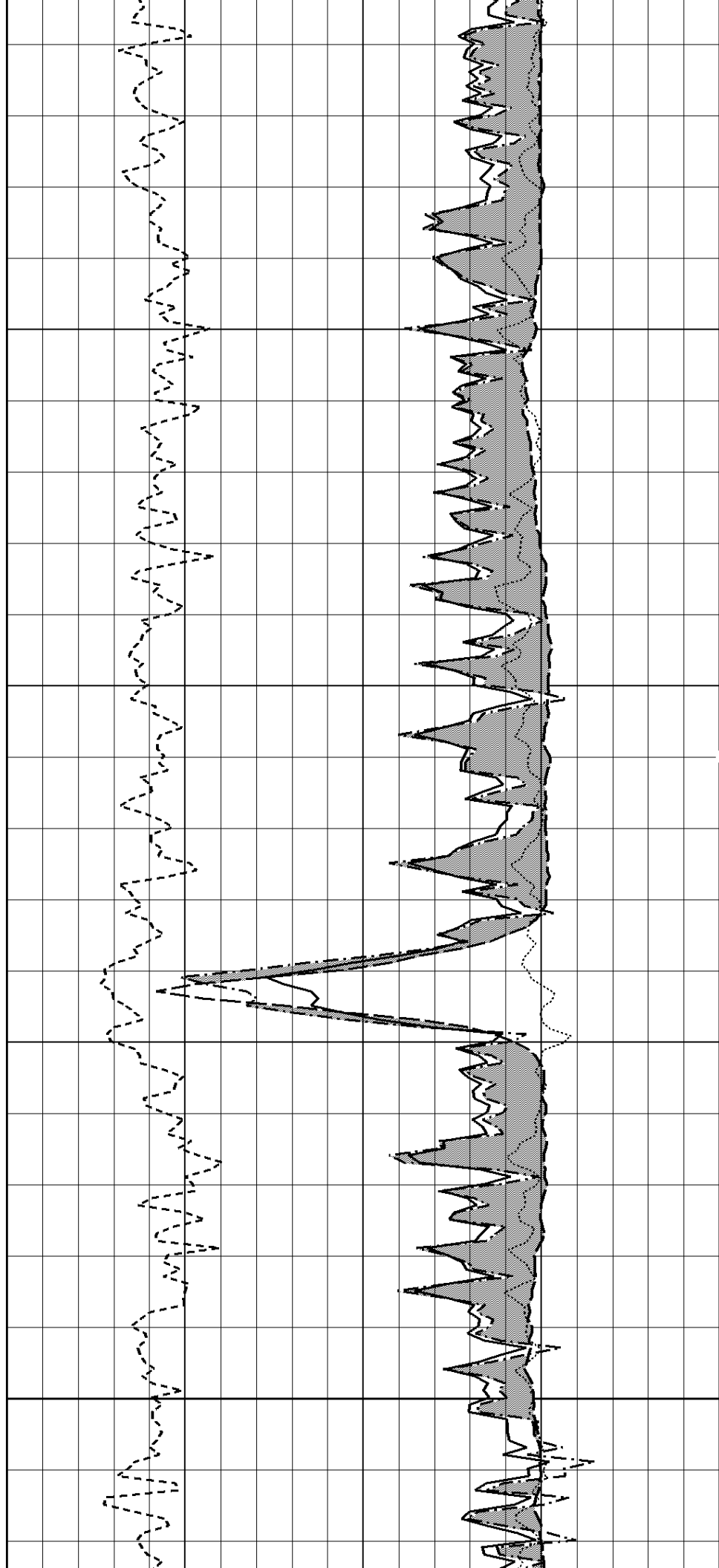


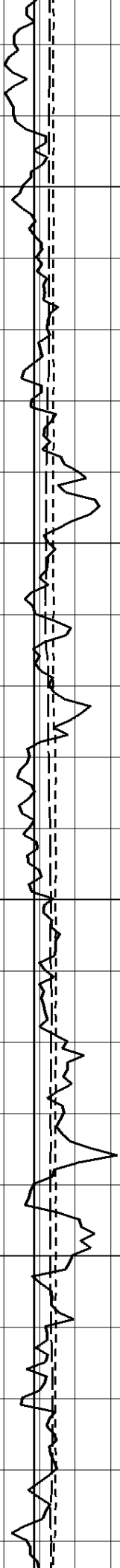
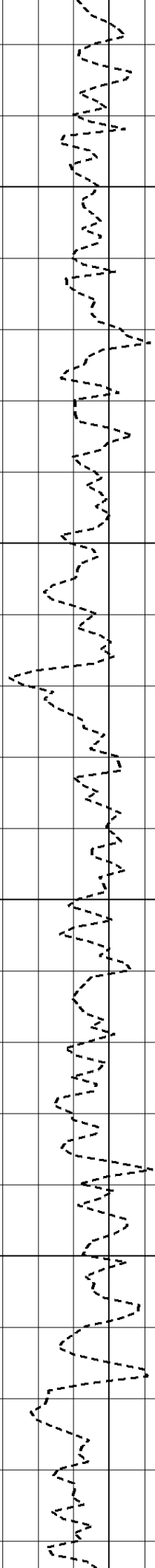
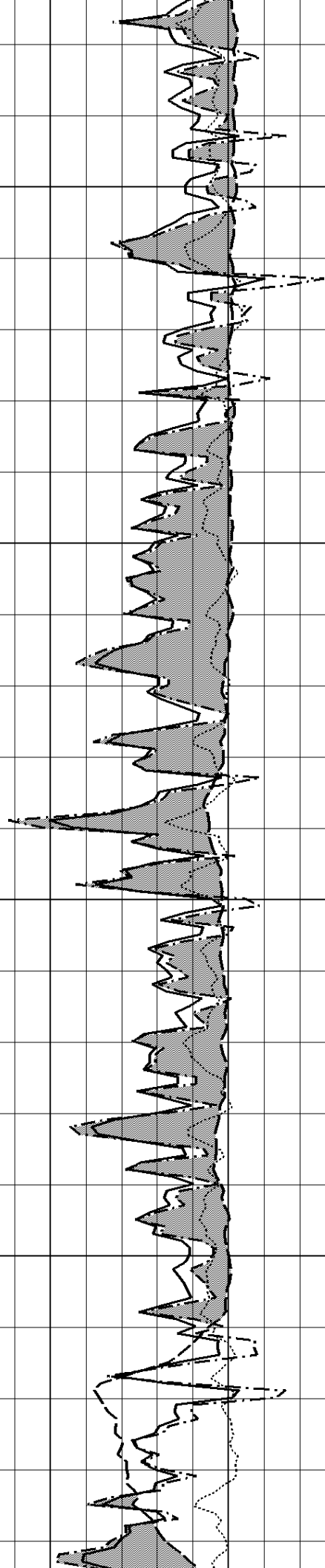
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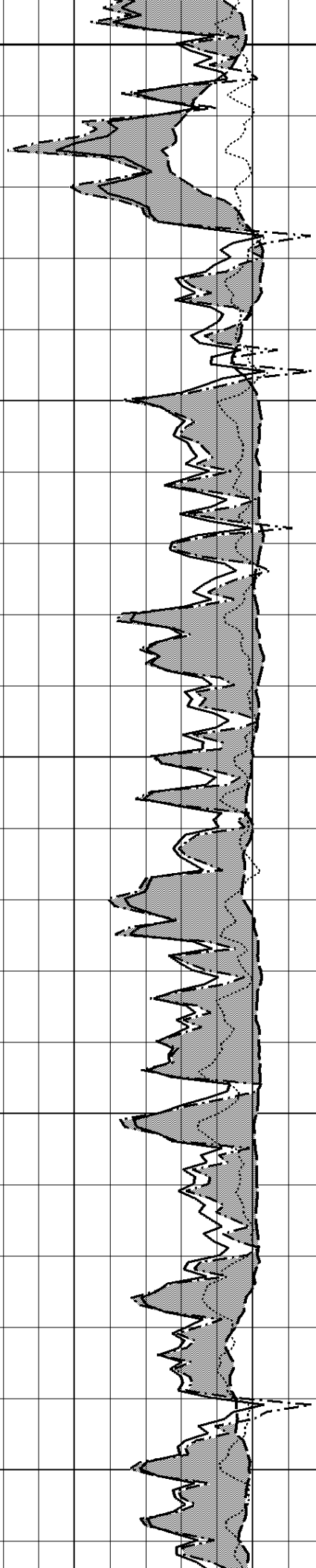
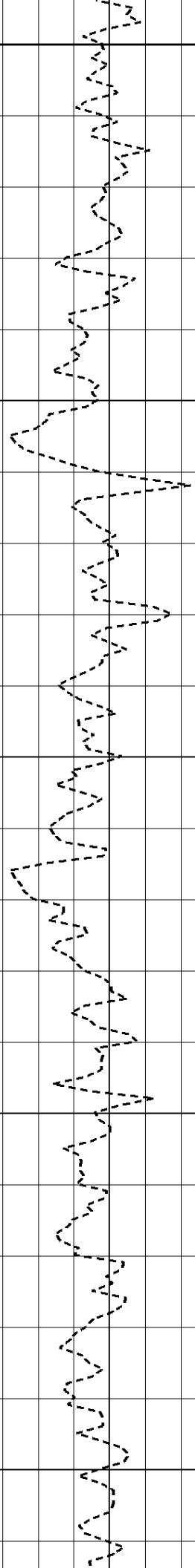
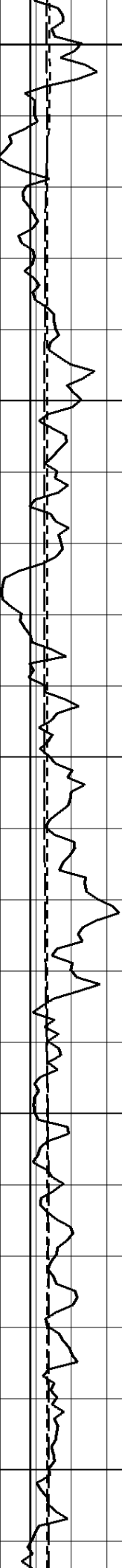


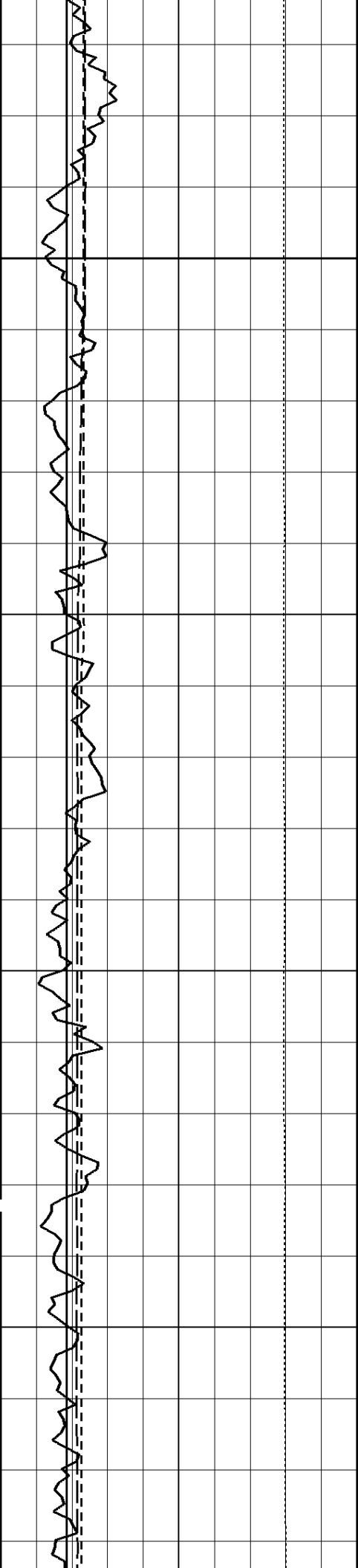
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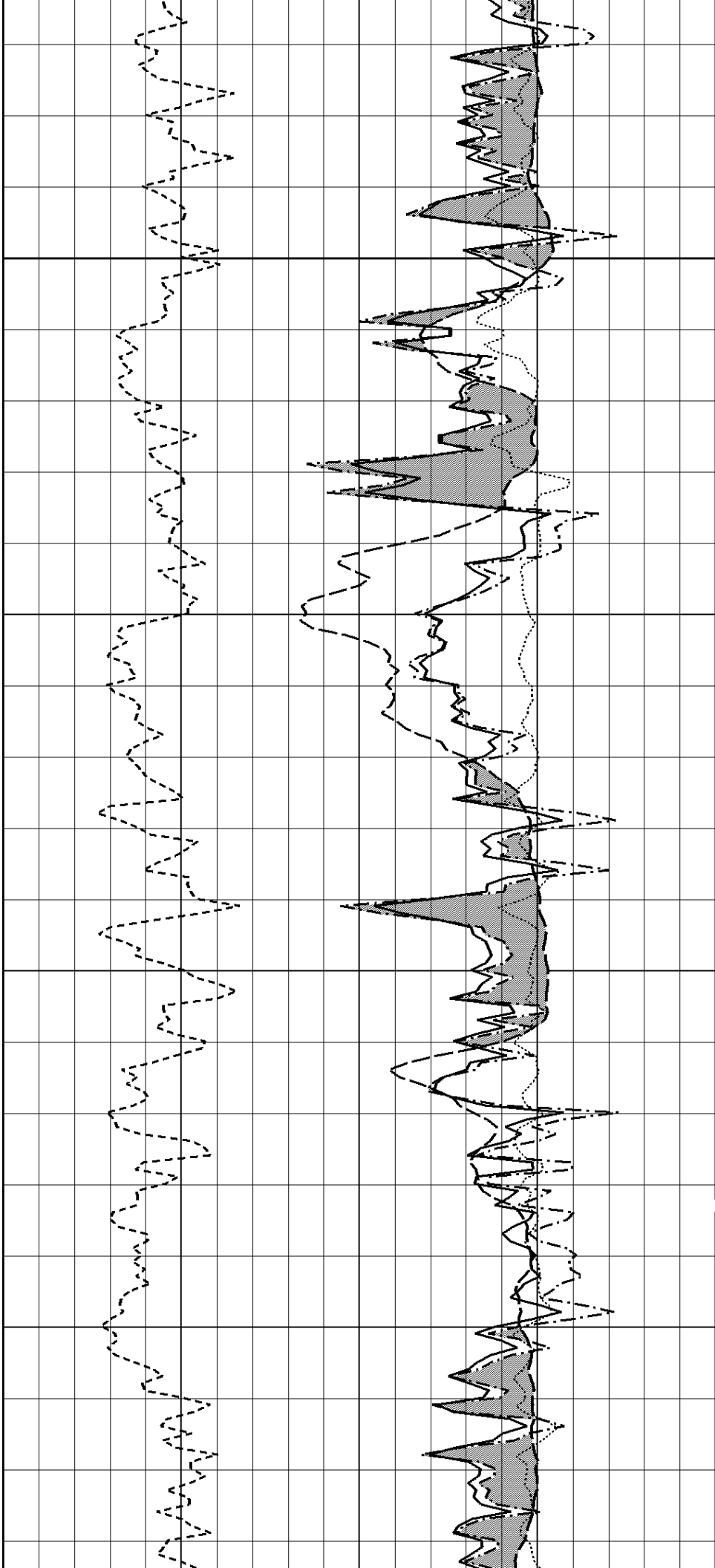


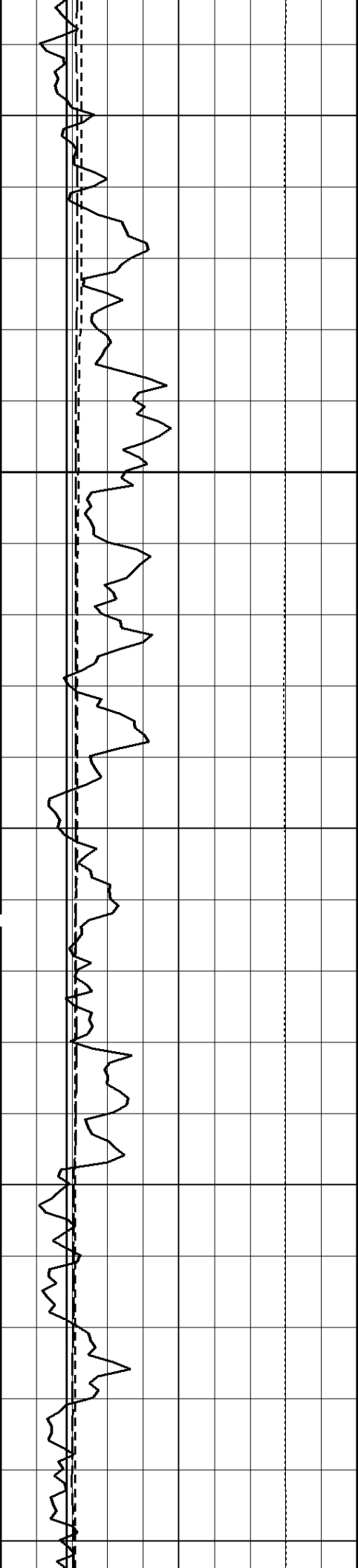
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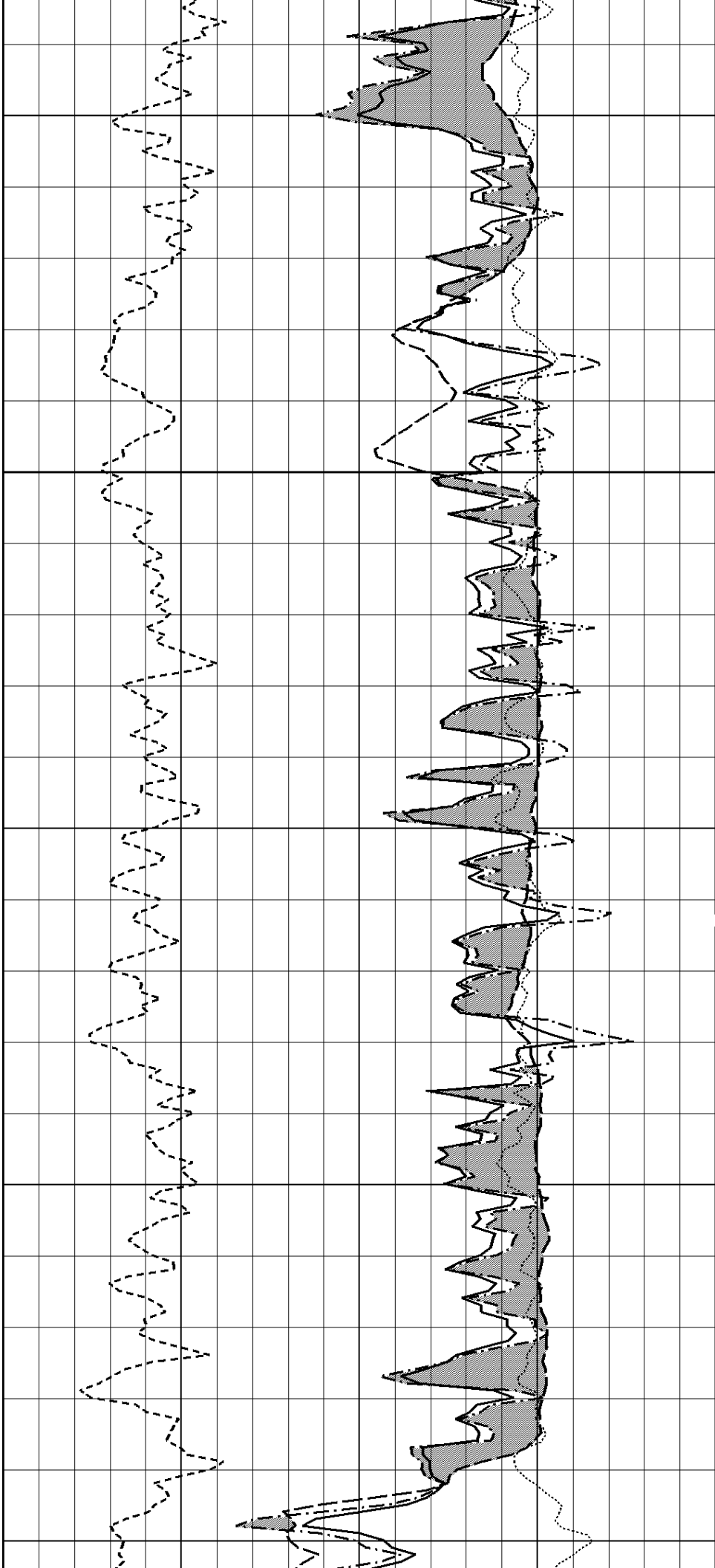


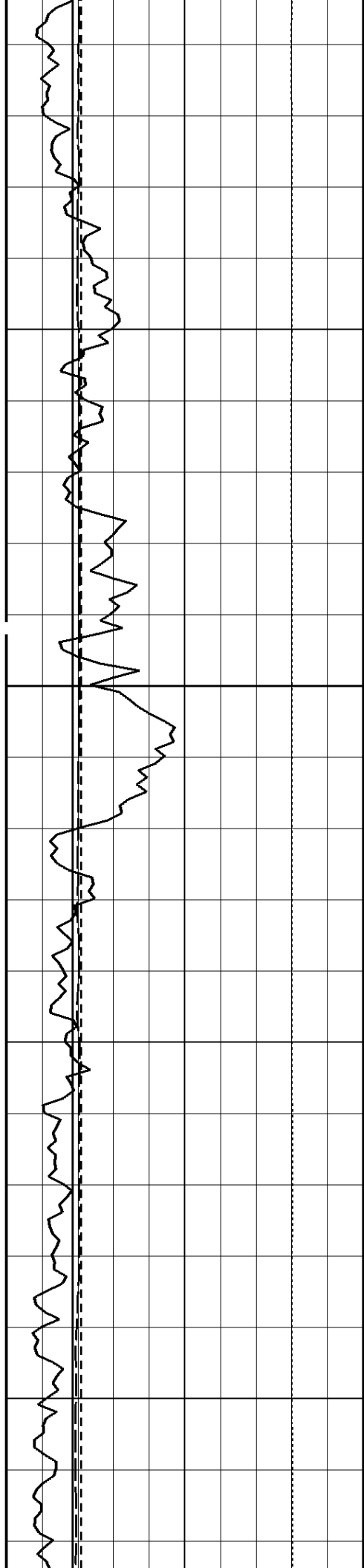
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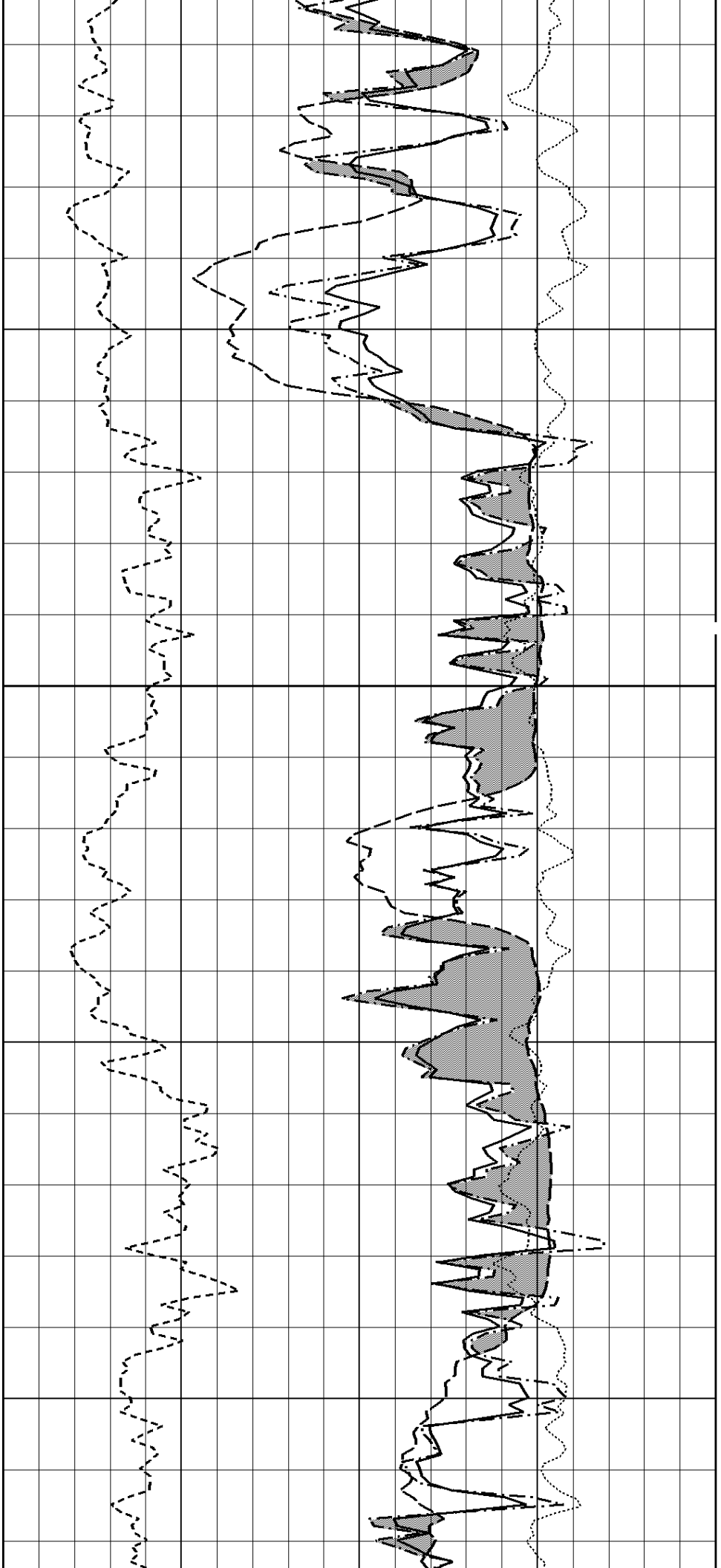


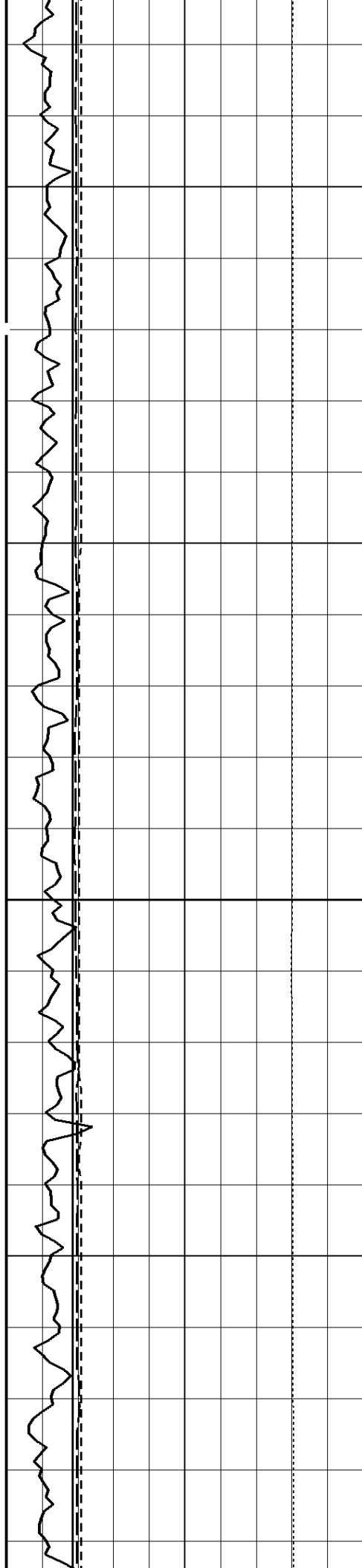
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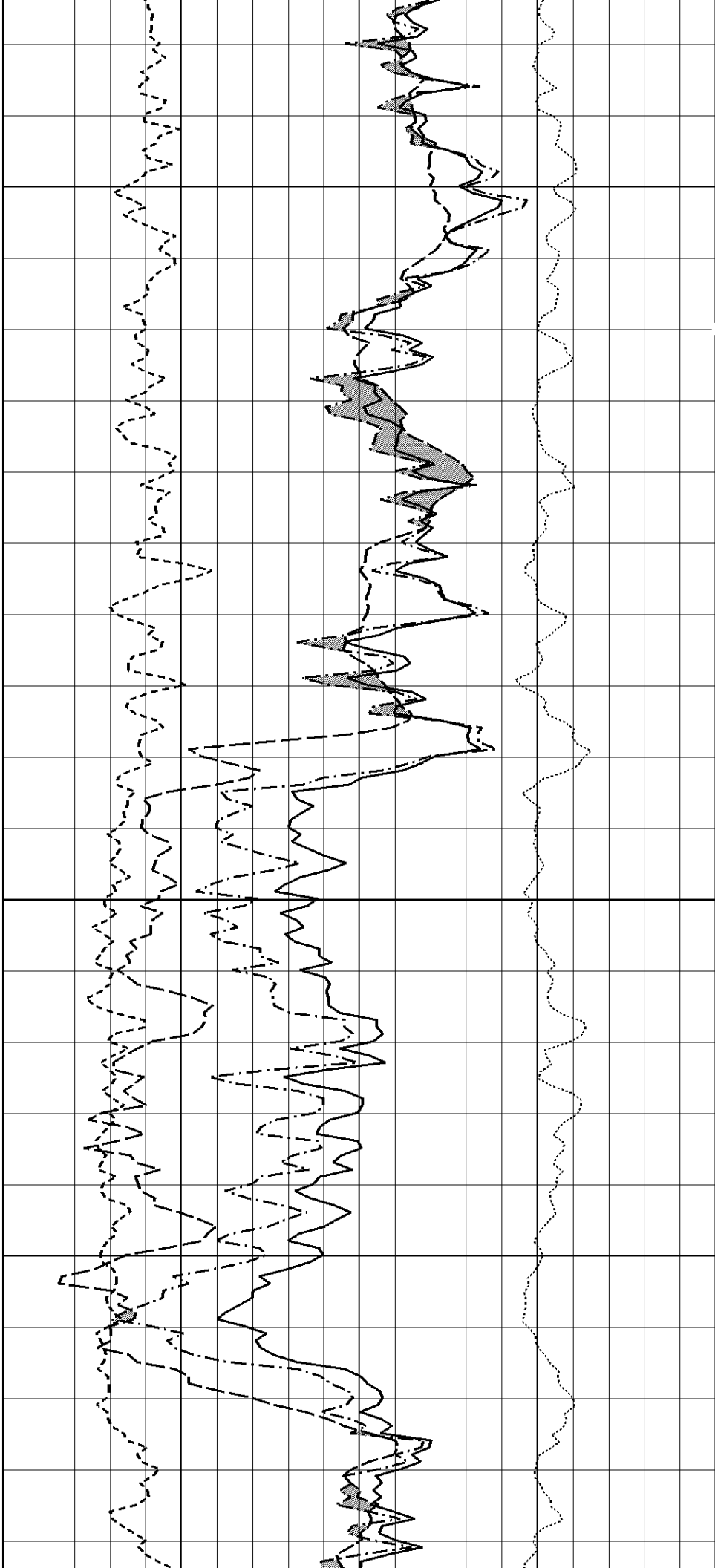


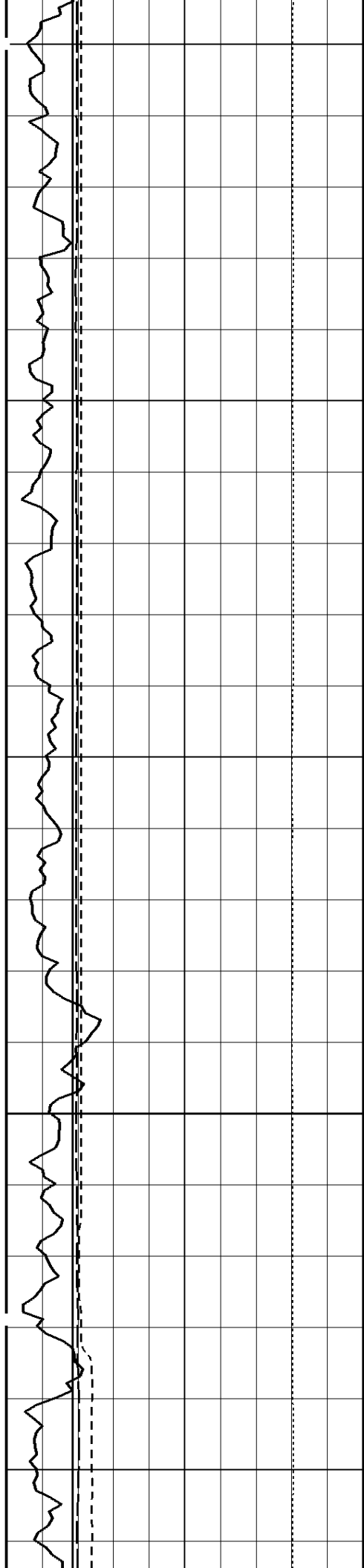
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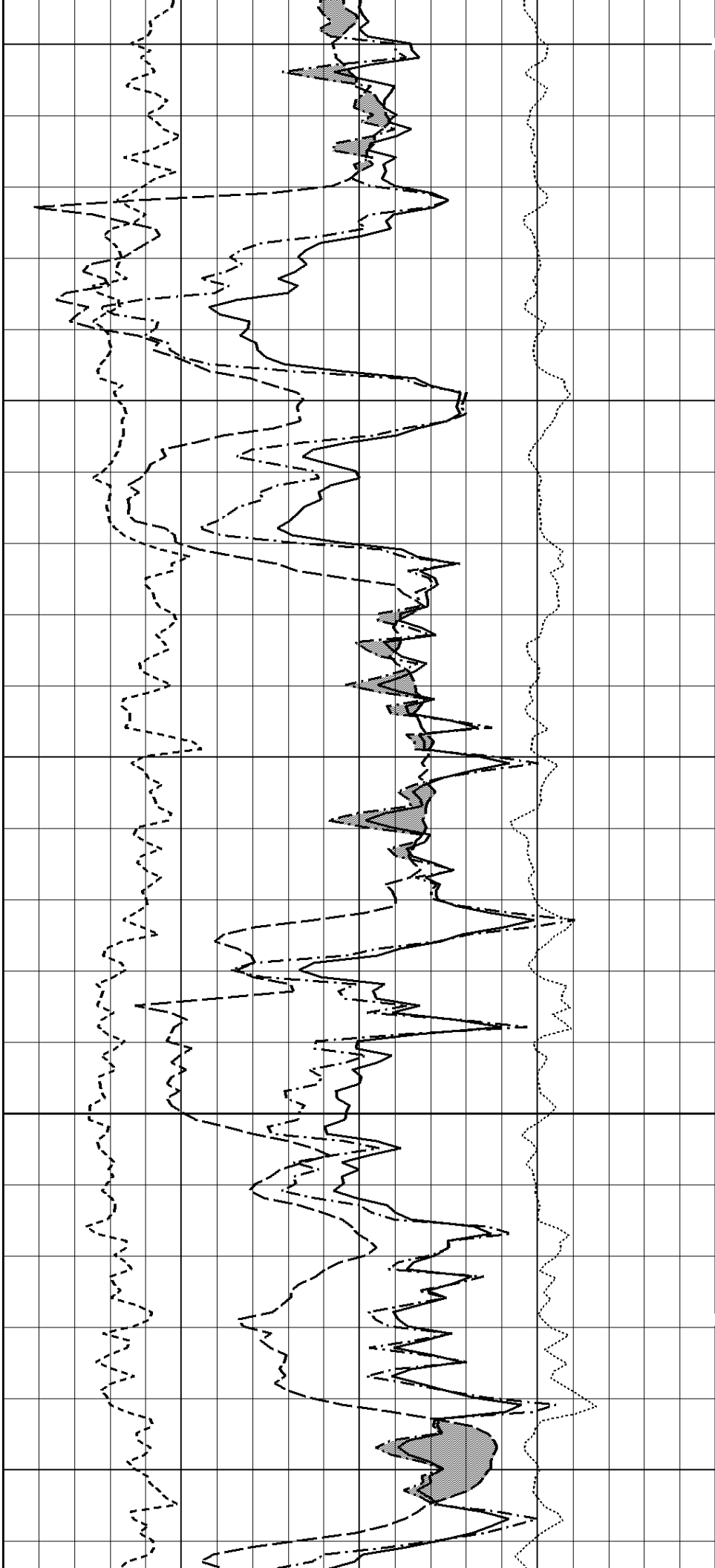


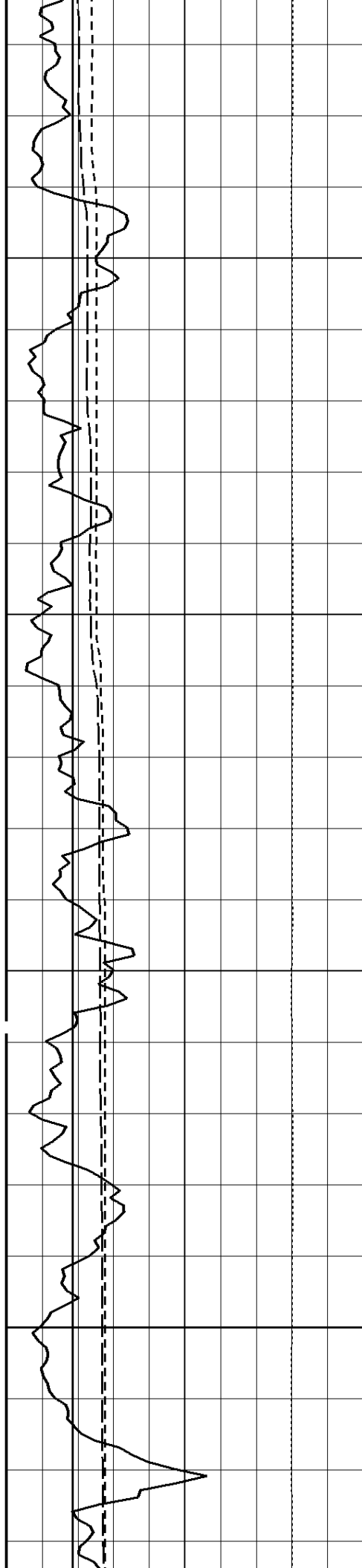
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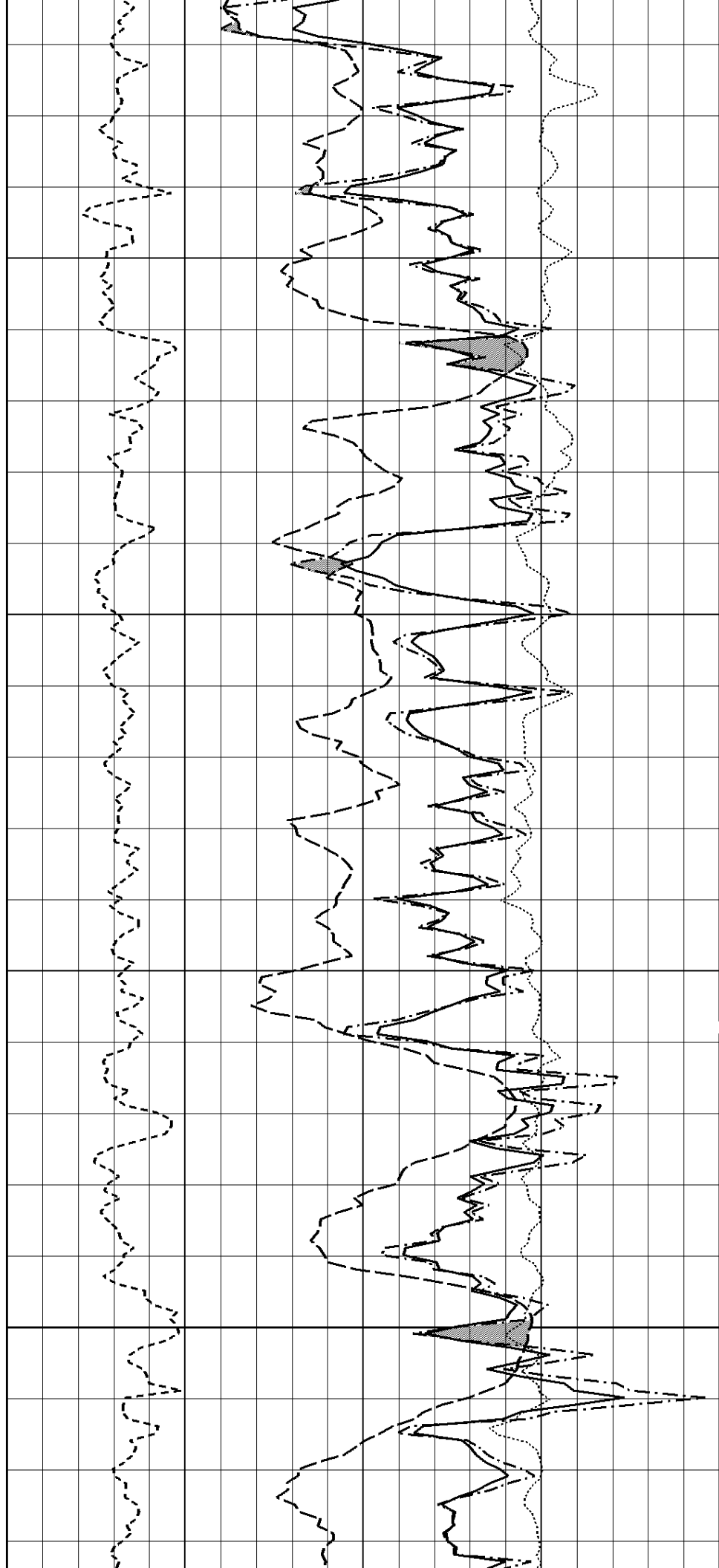


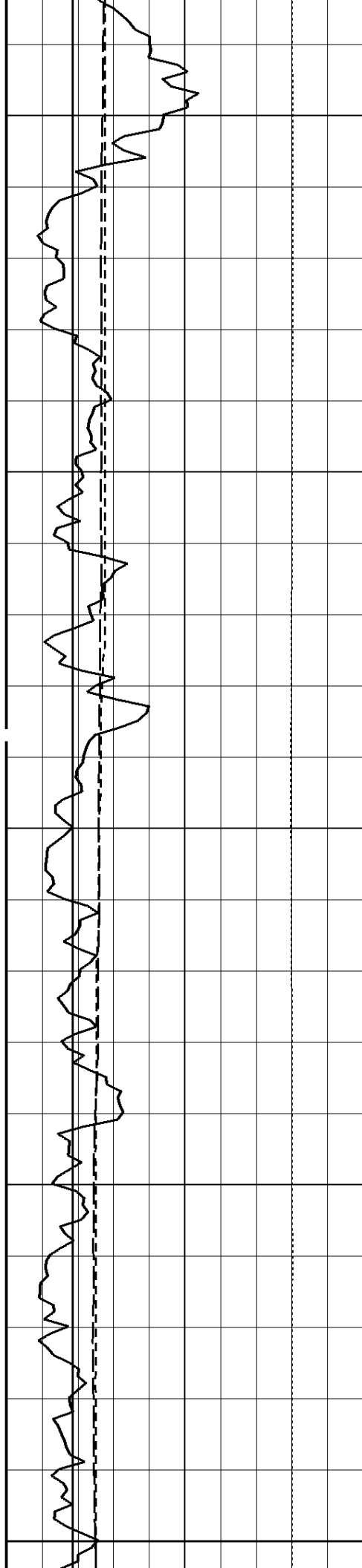
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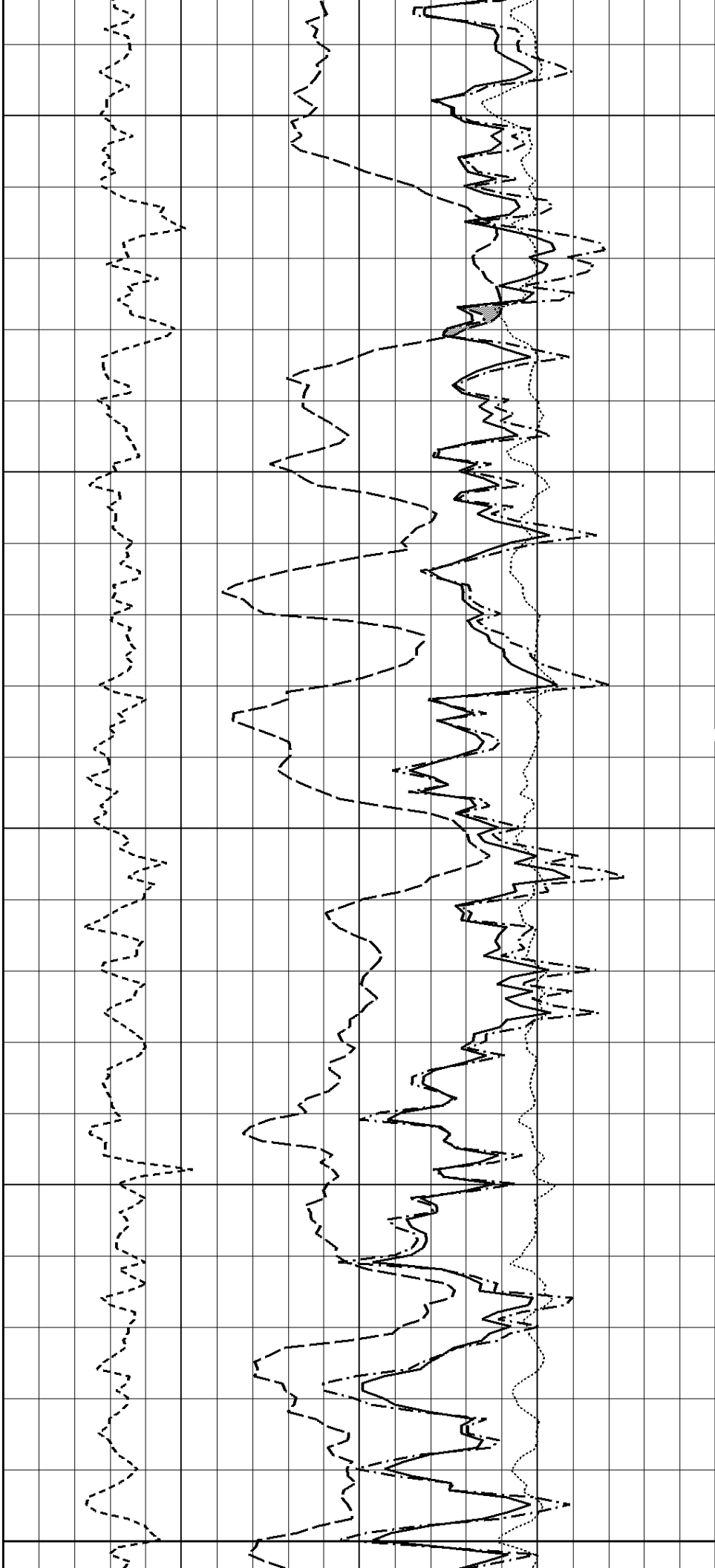


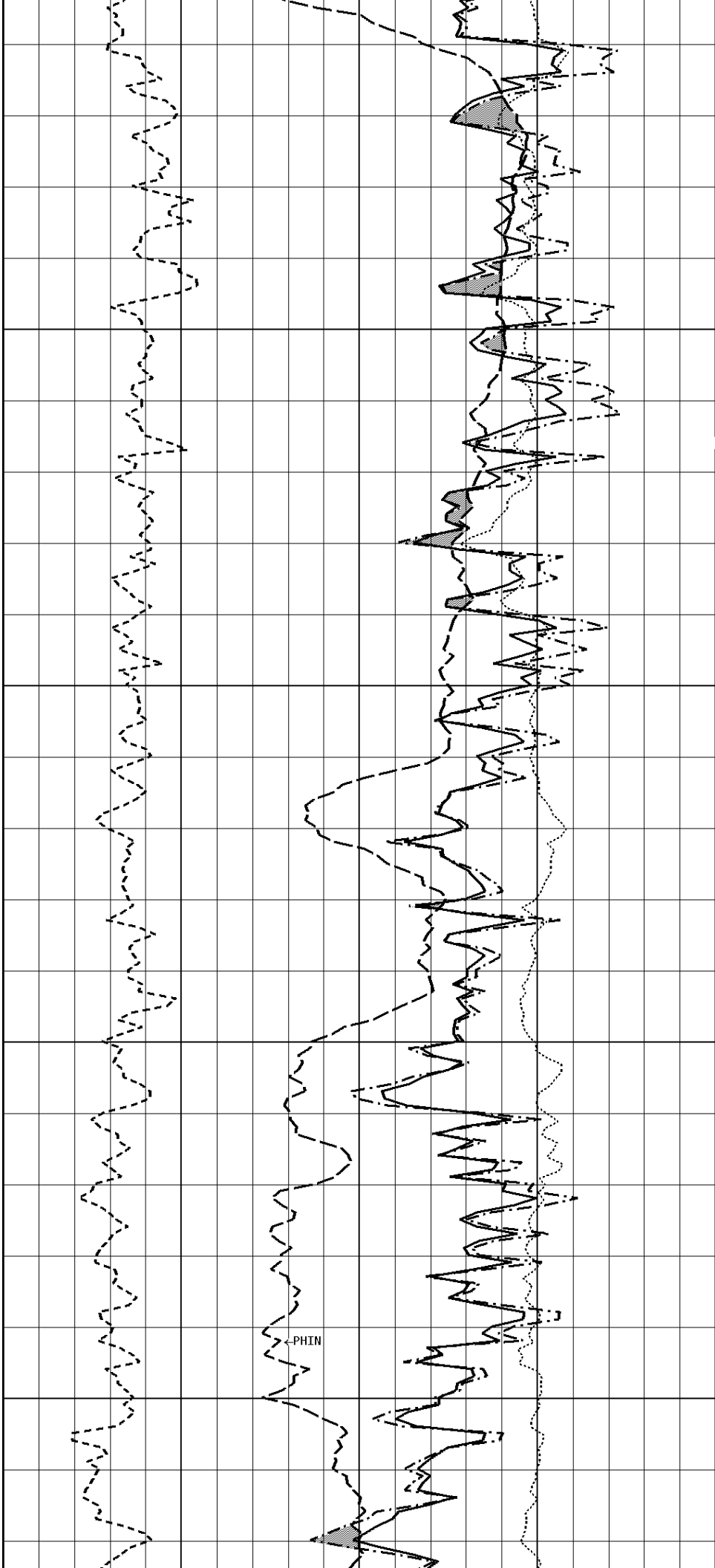
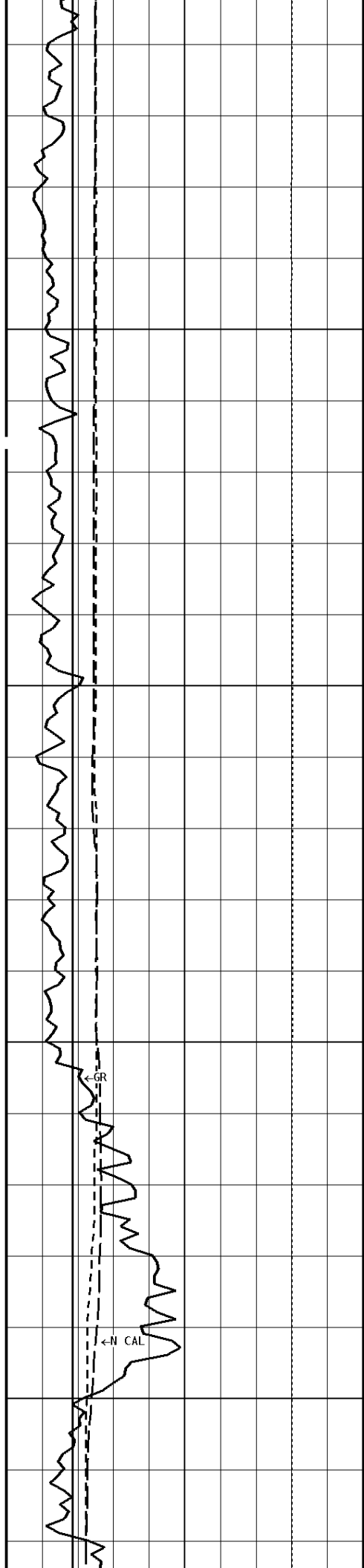
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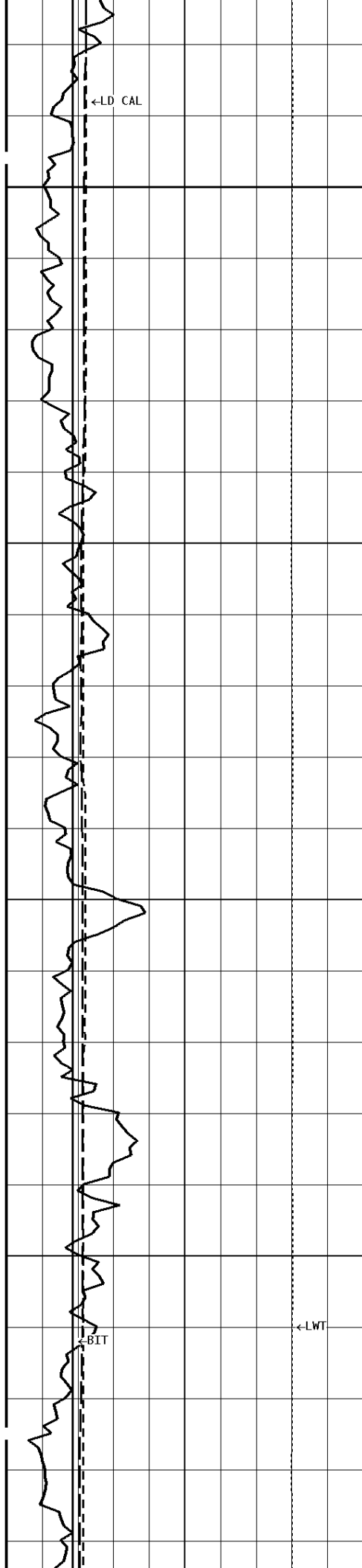




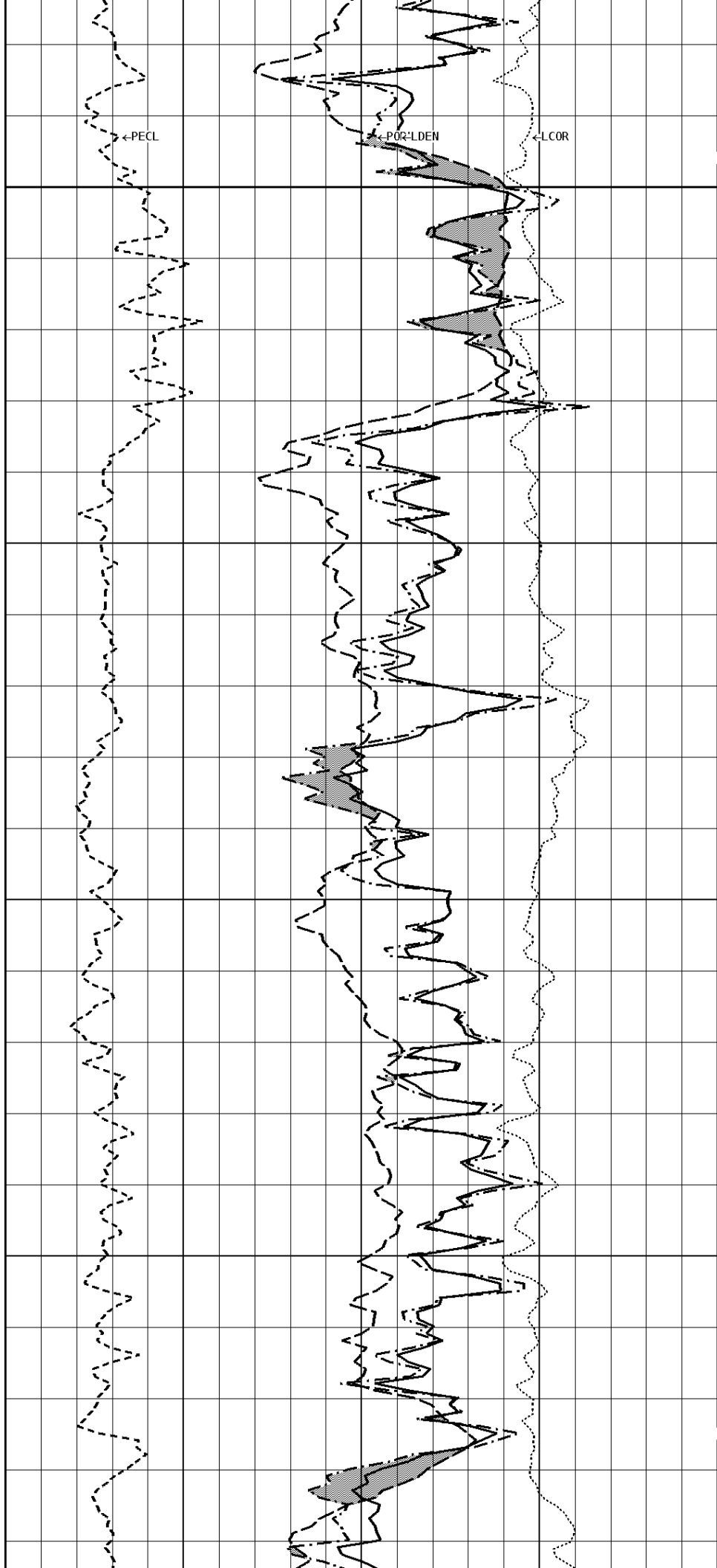
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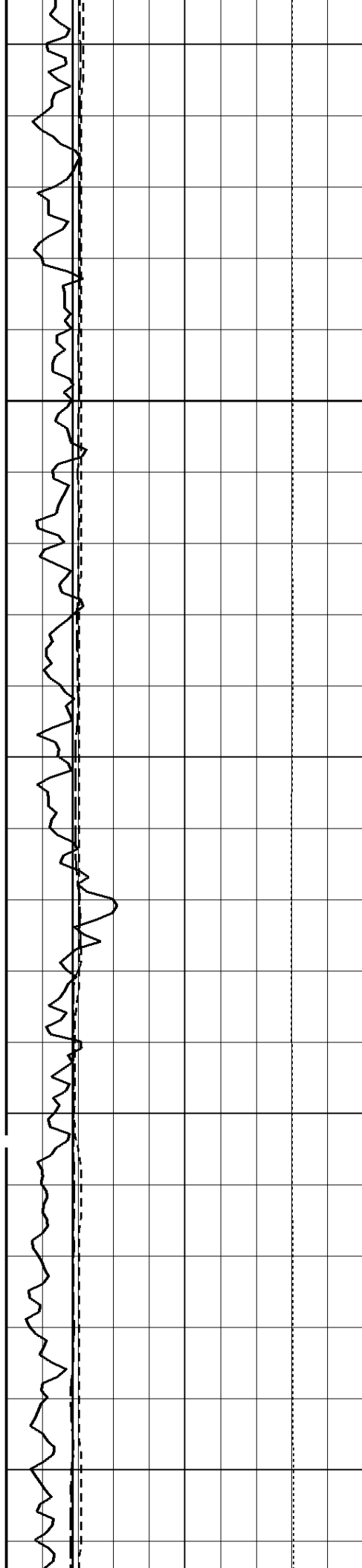




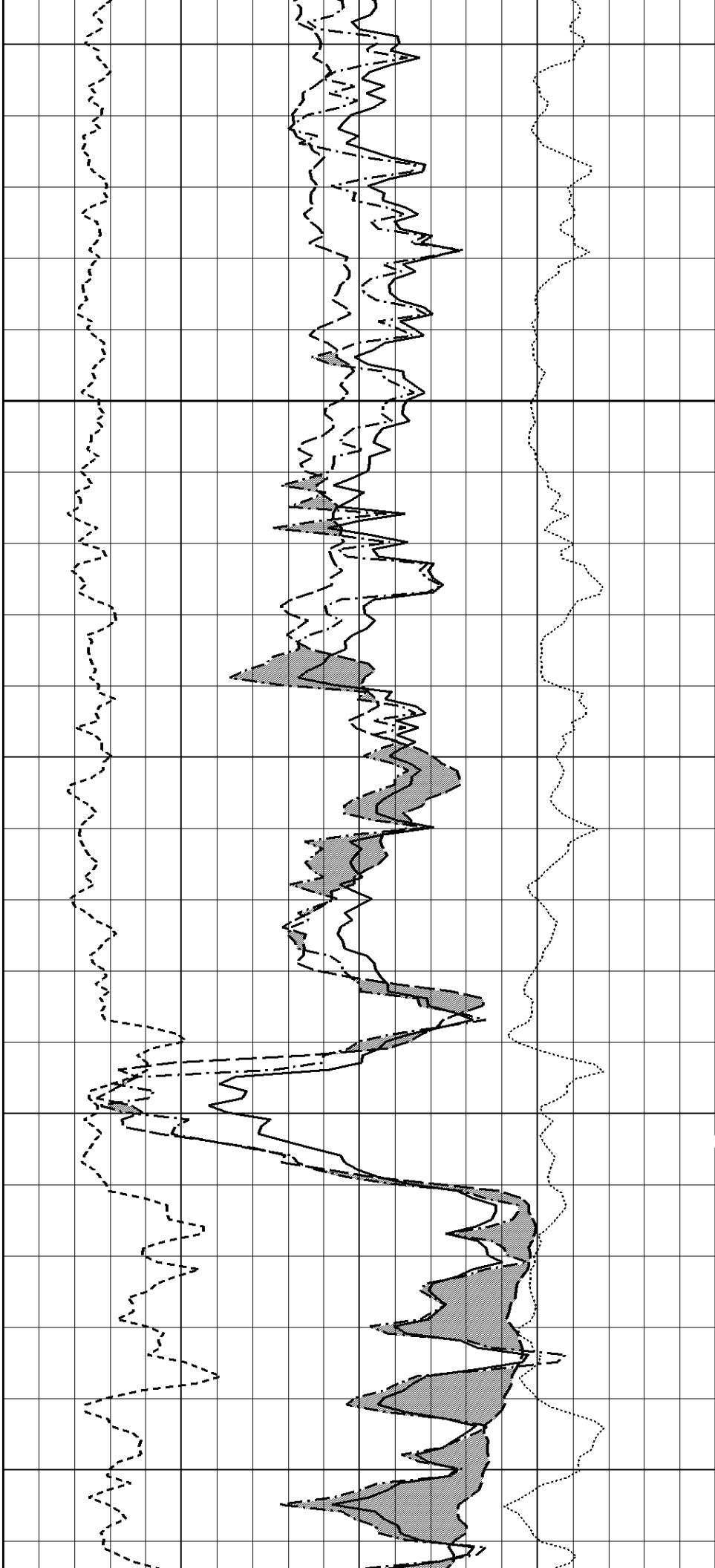


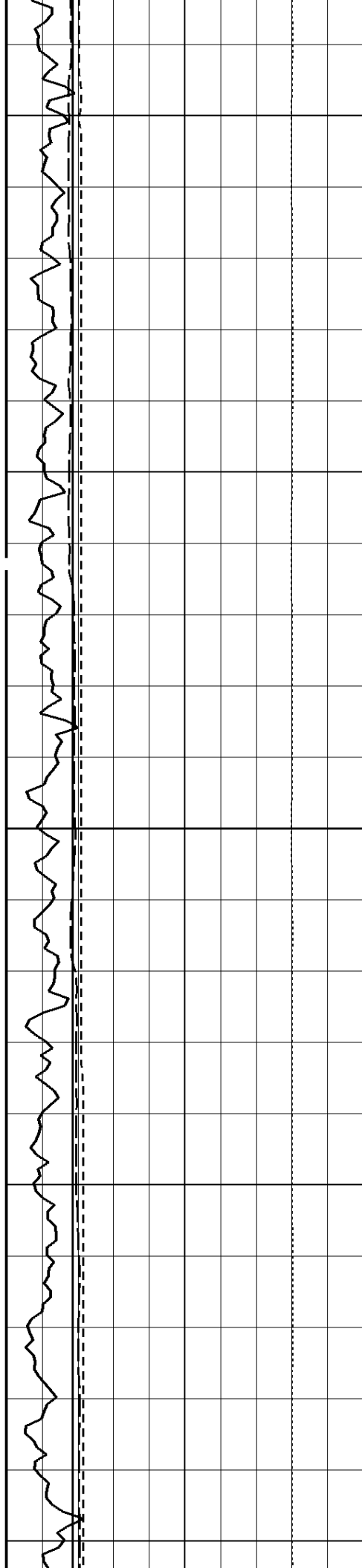
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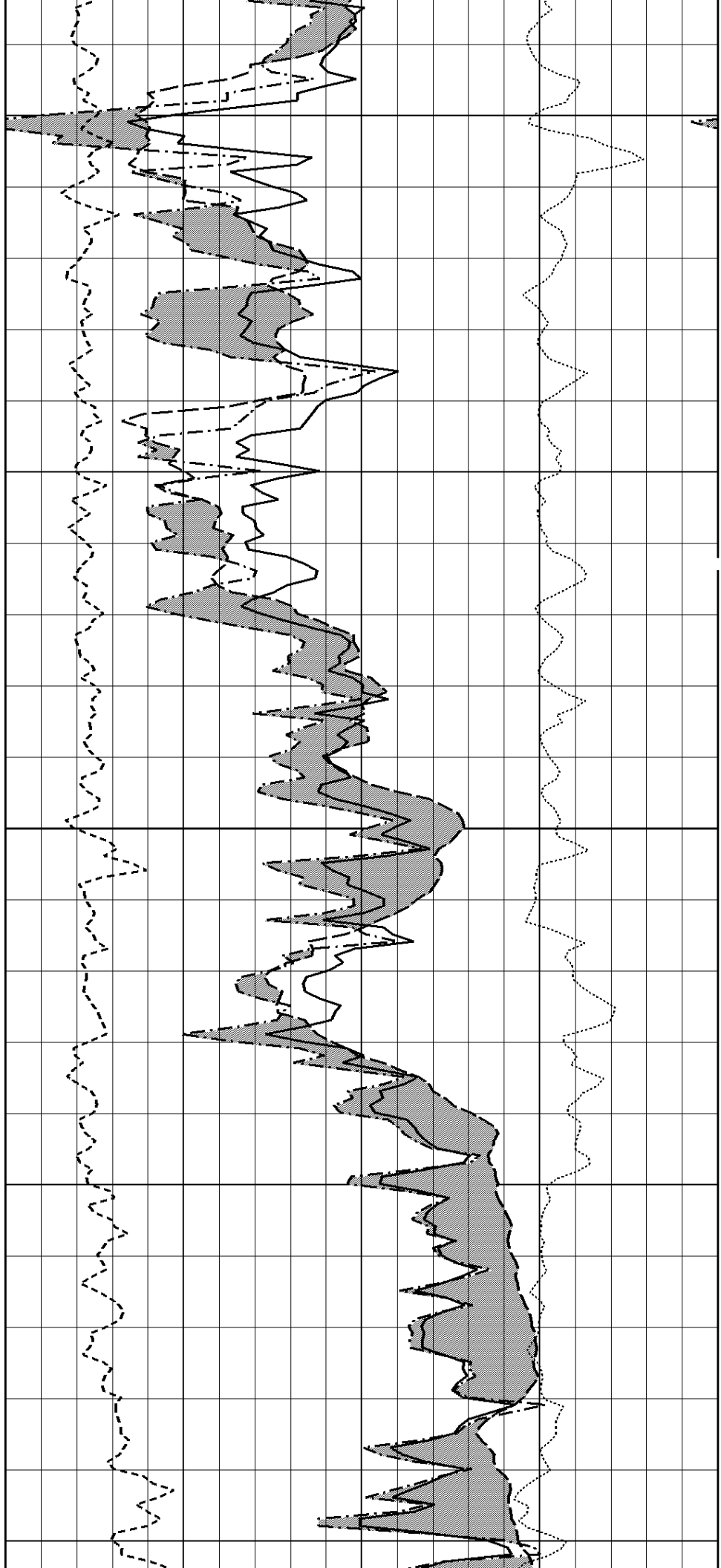


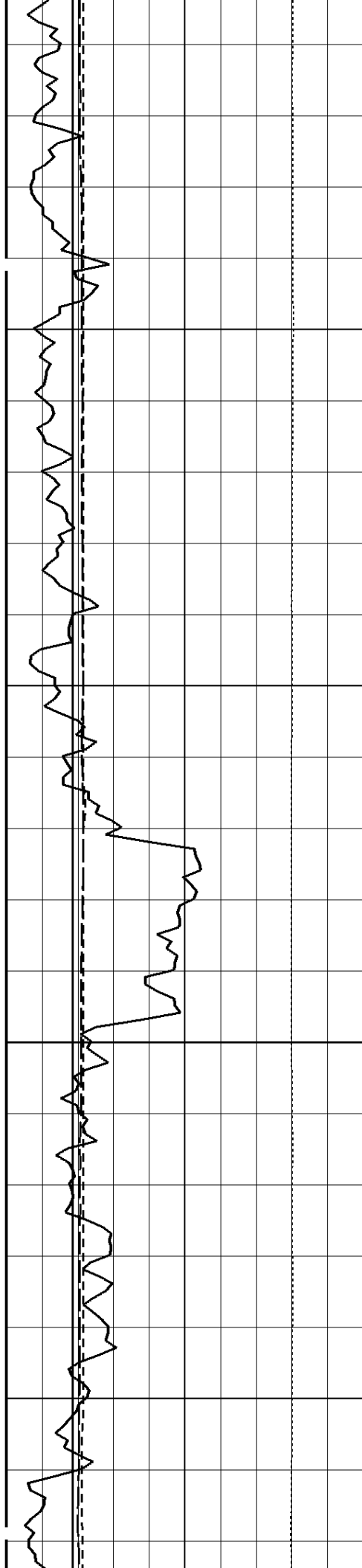
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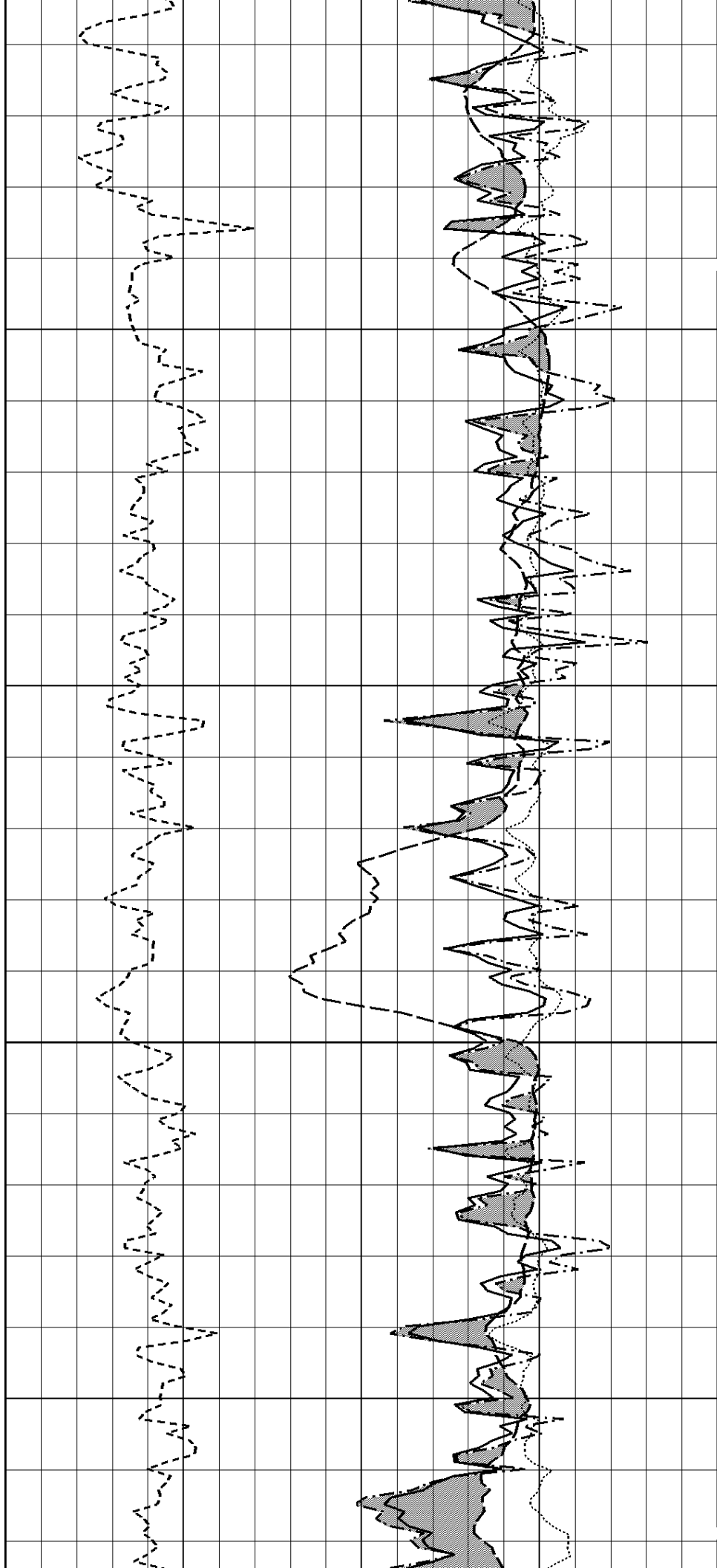


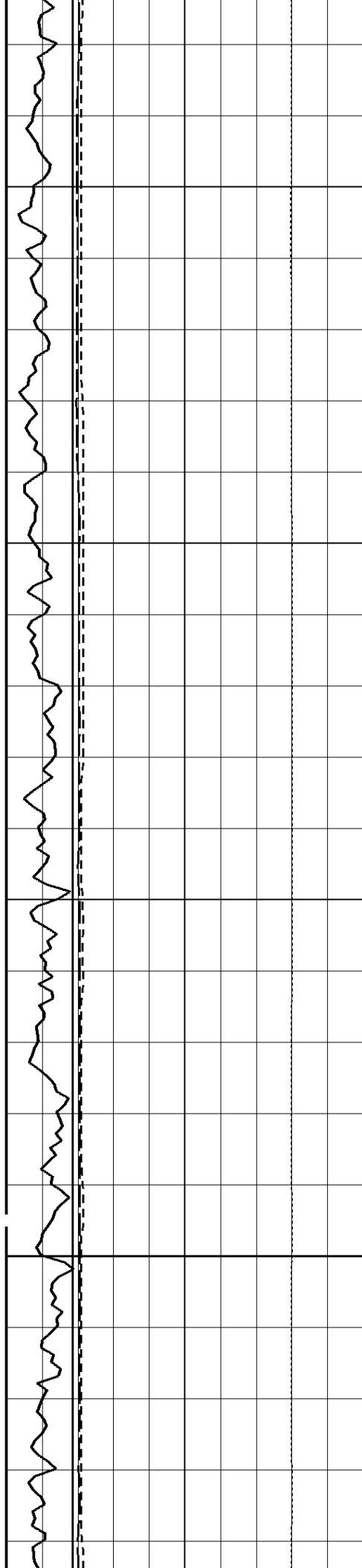
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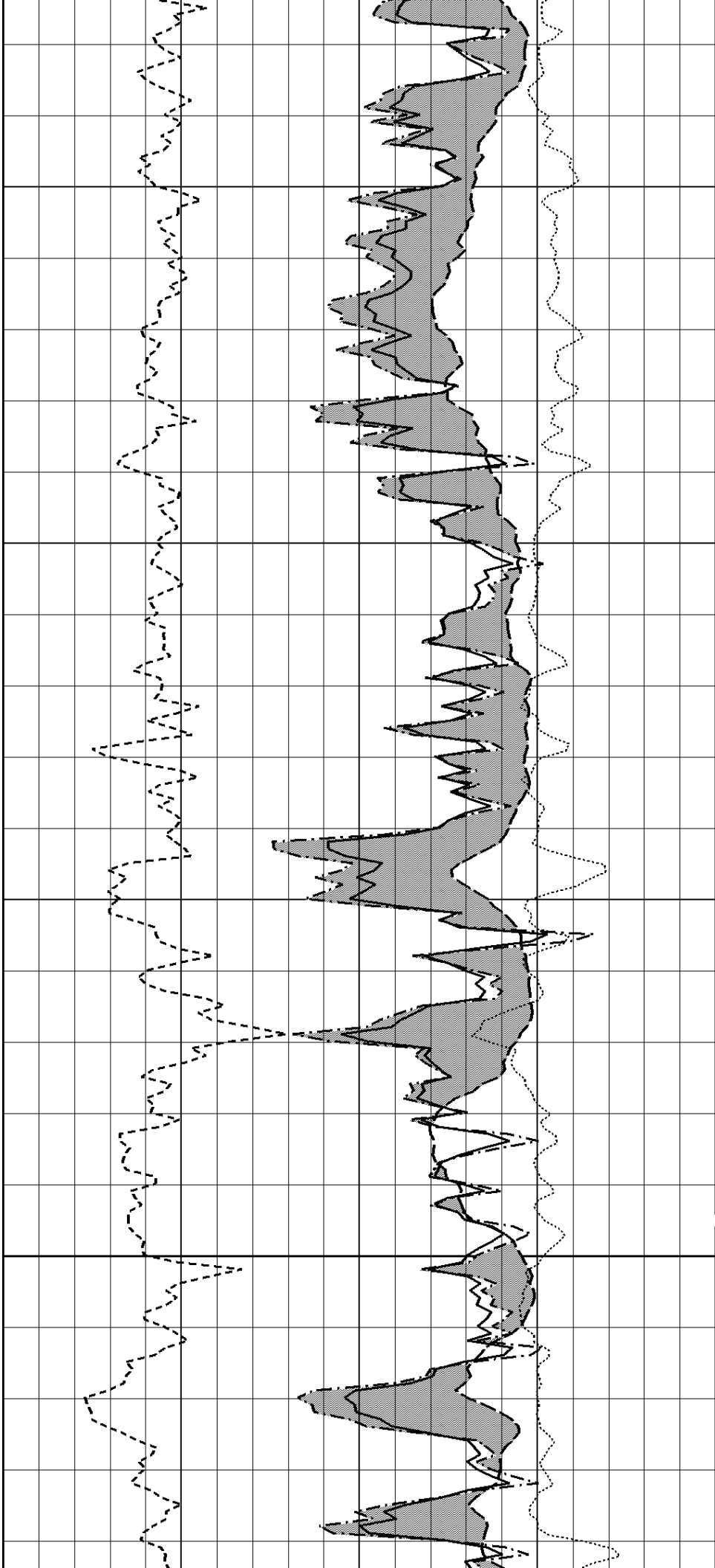


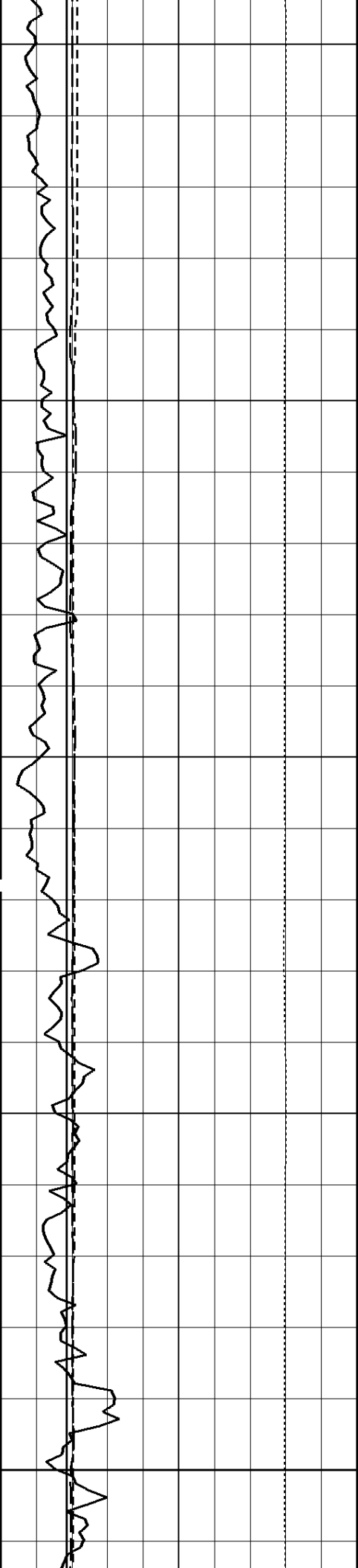
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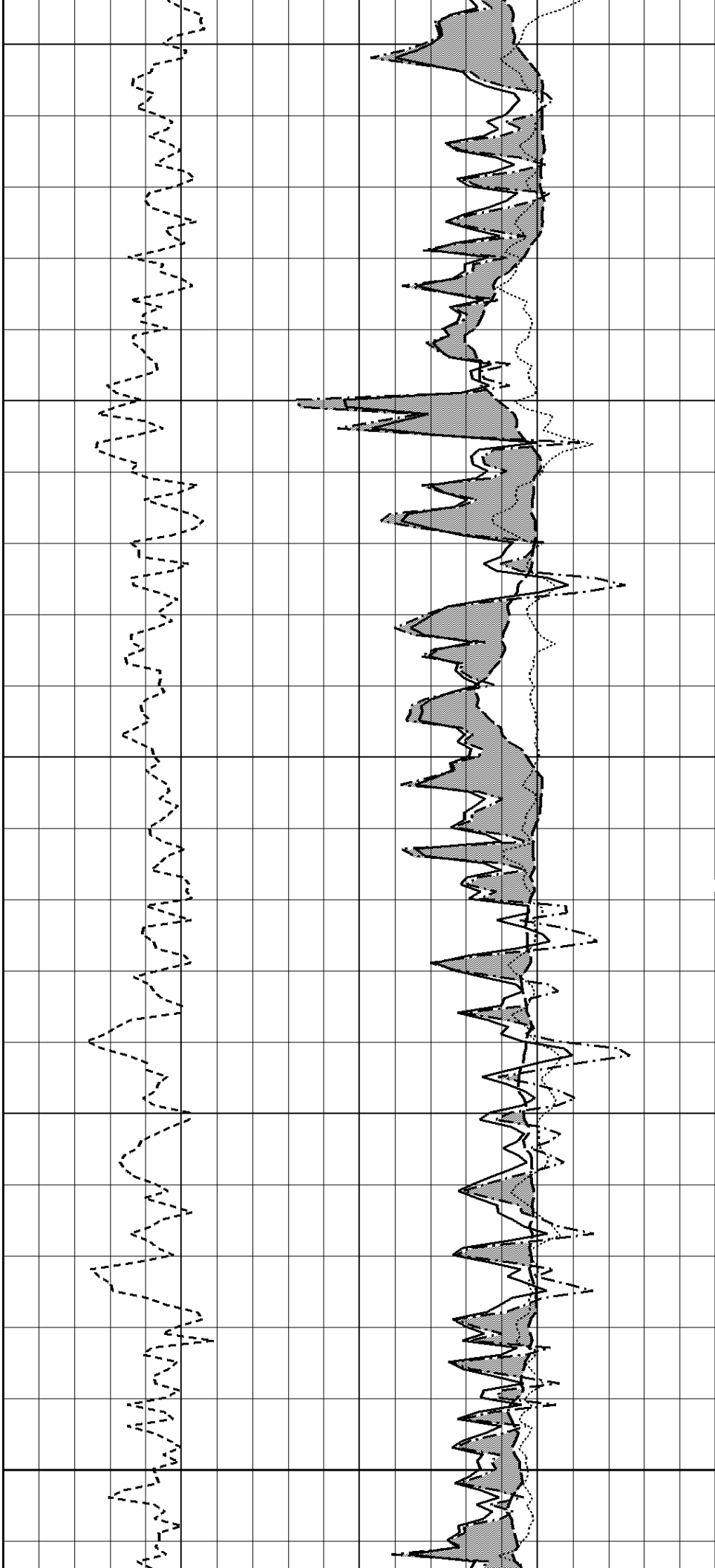


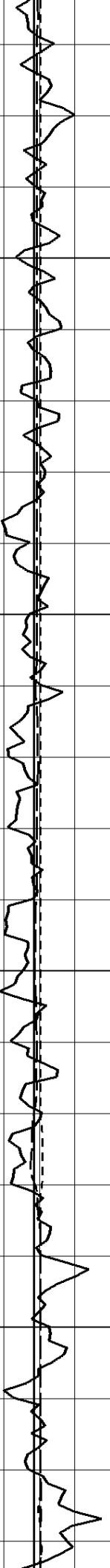
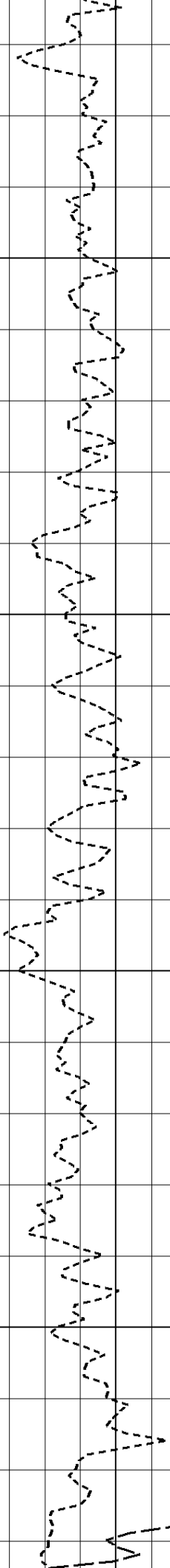
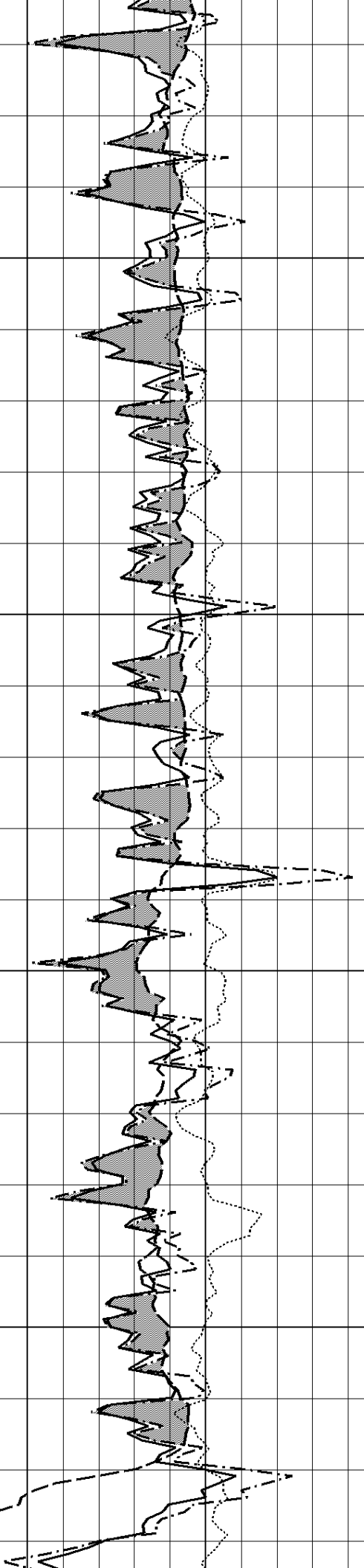
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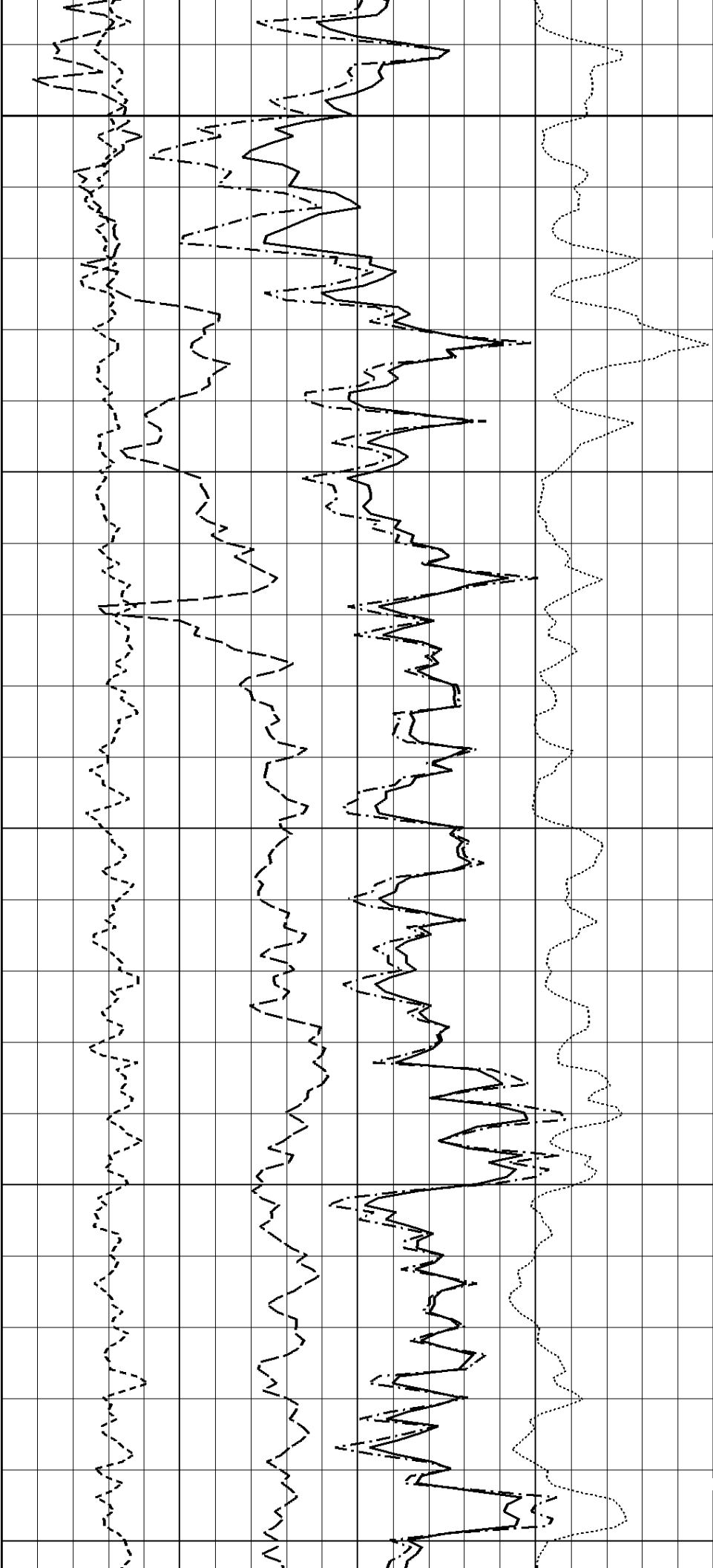
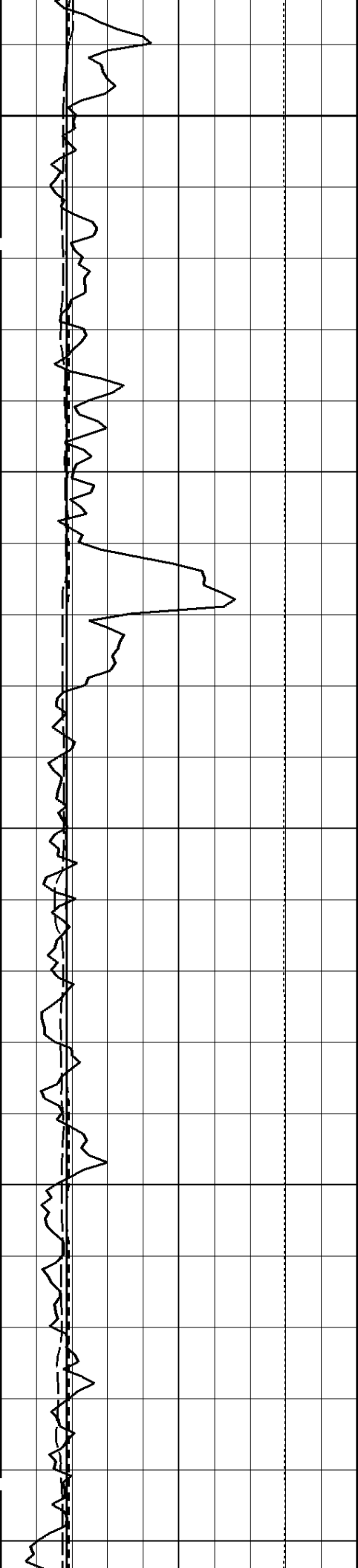


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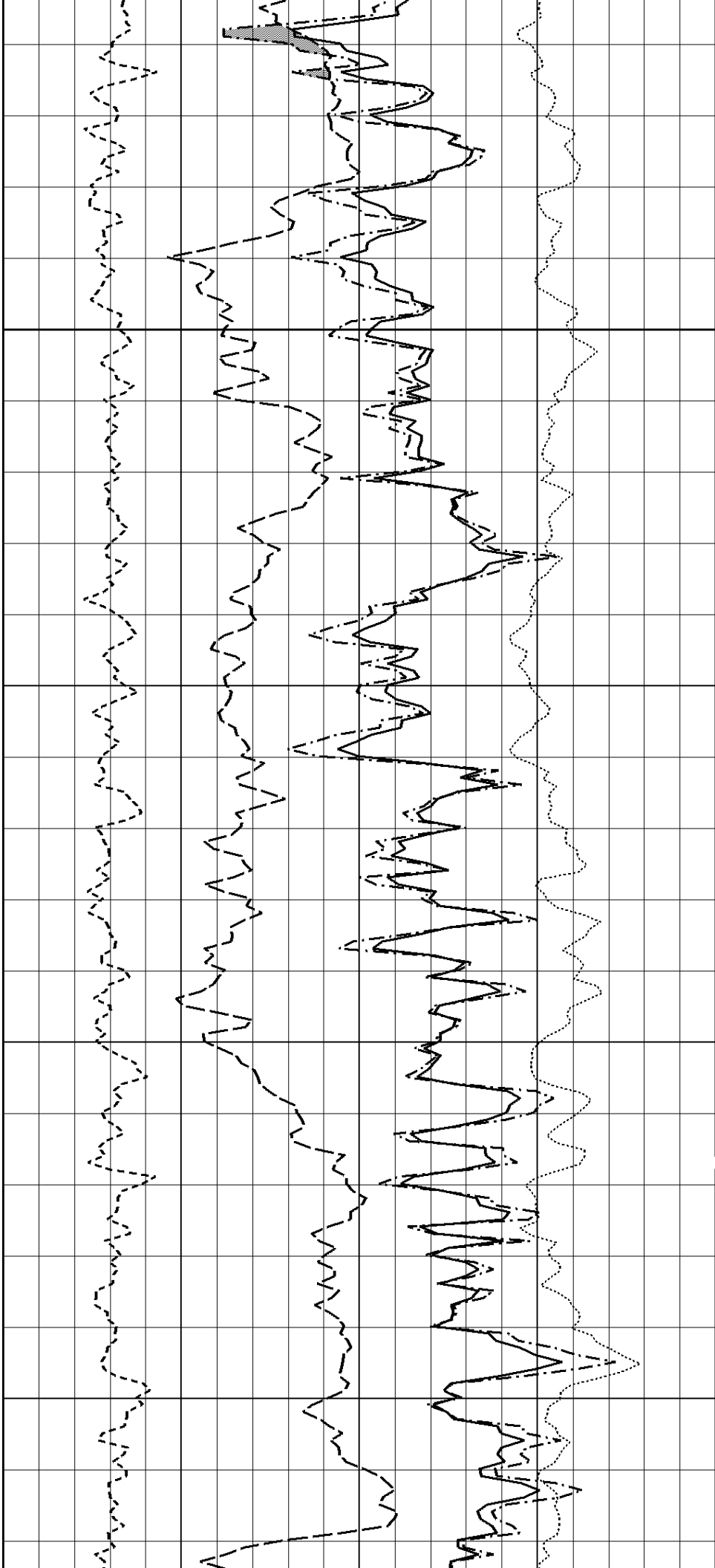
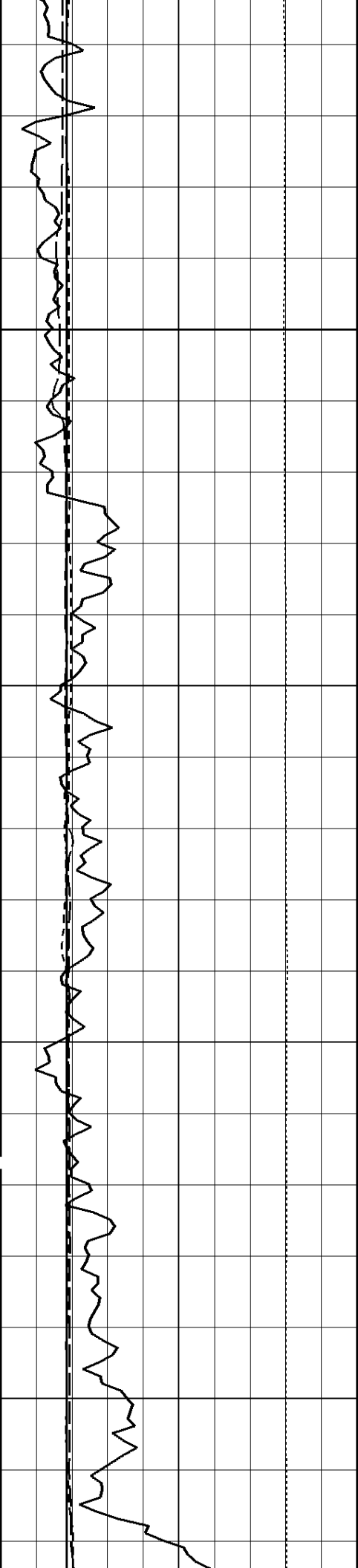


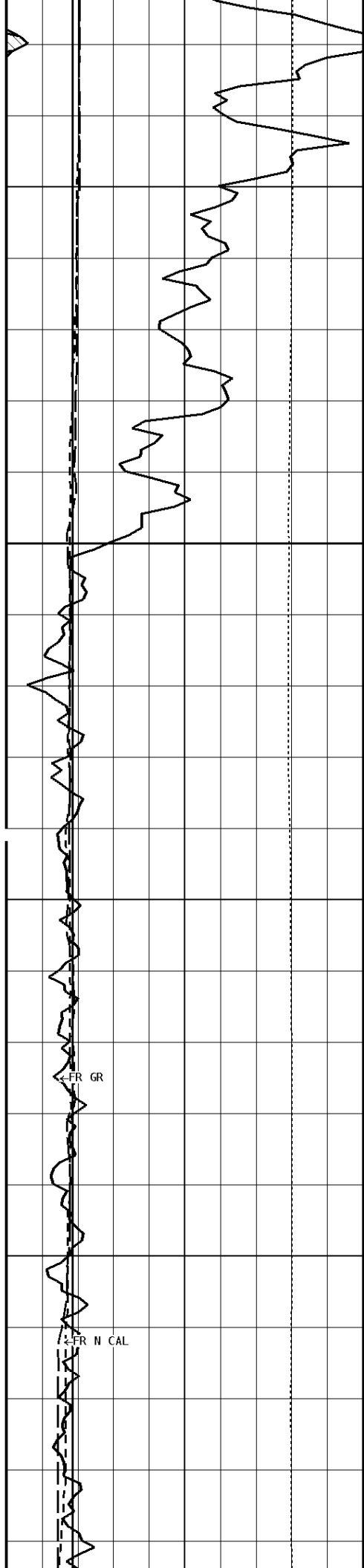


5700

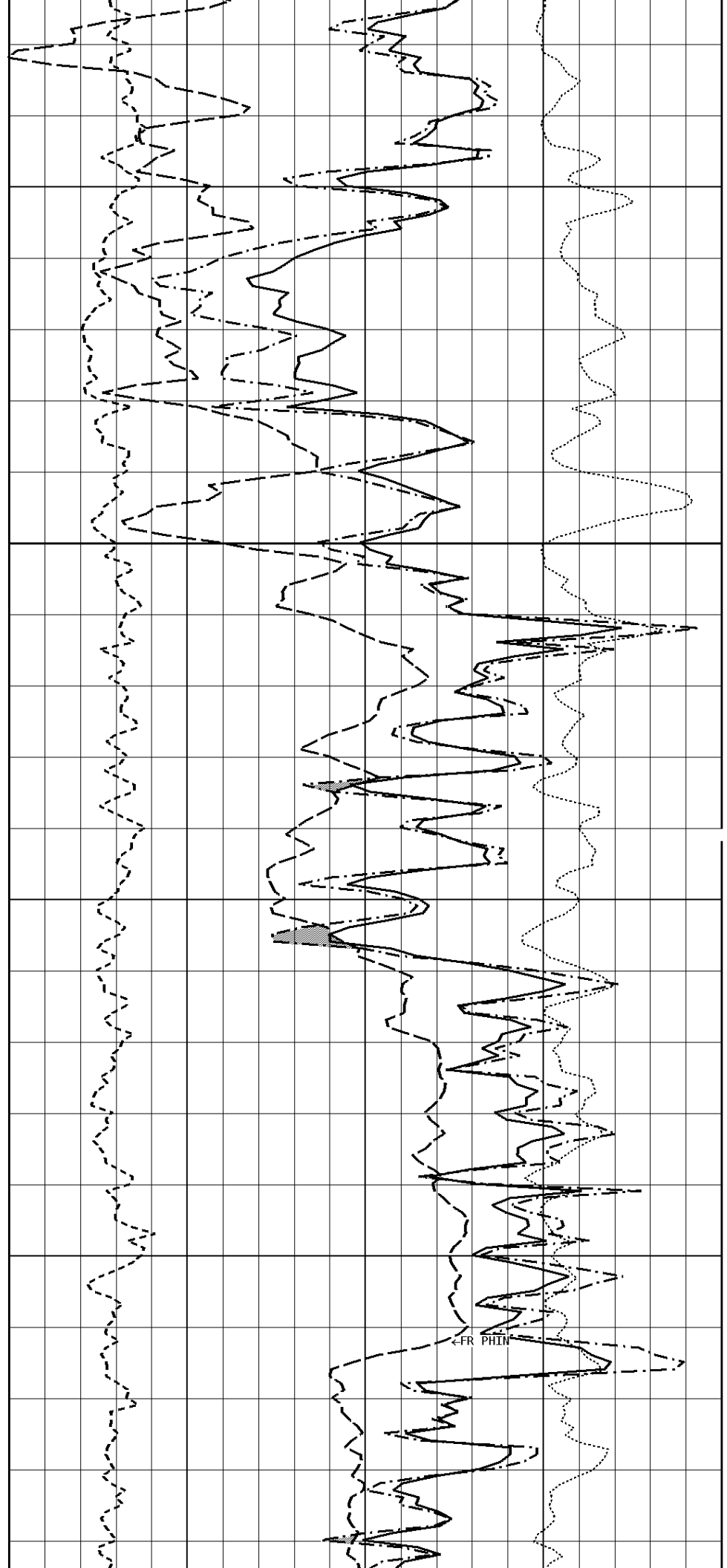


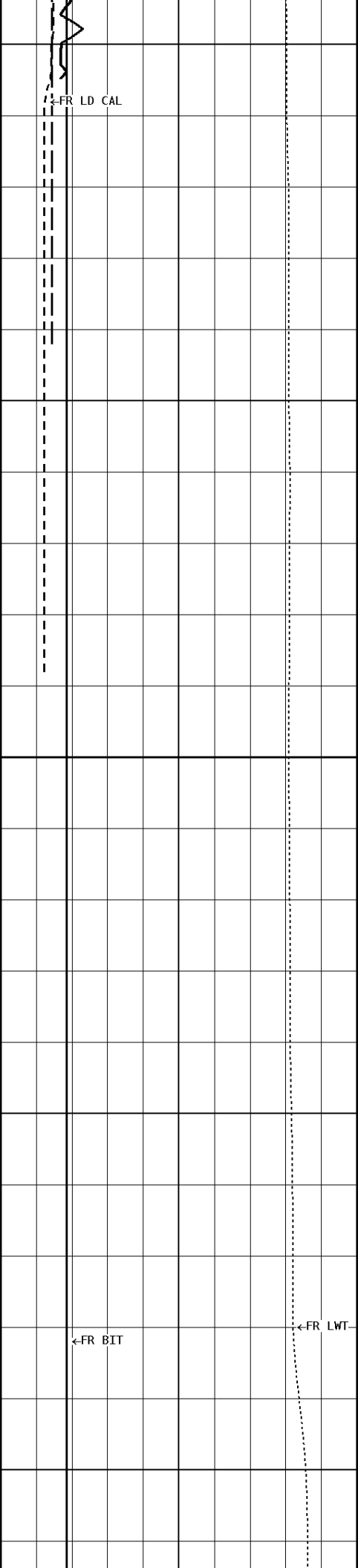
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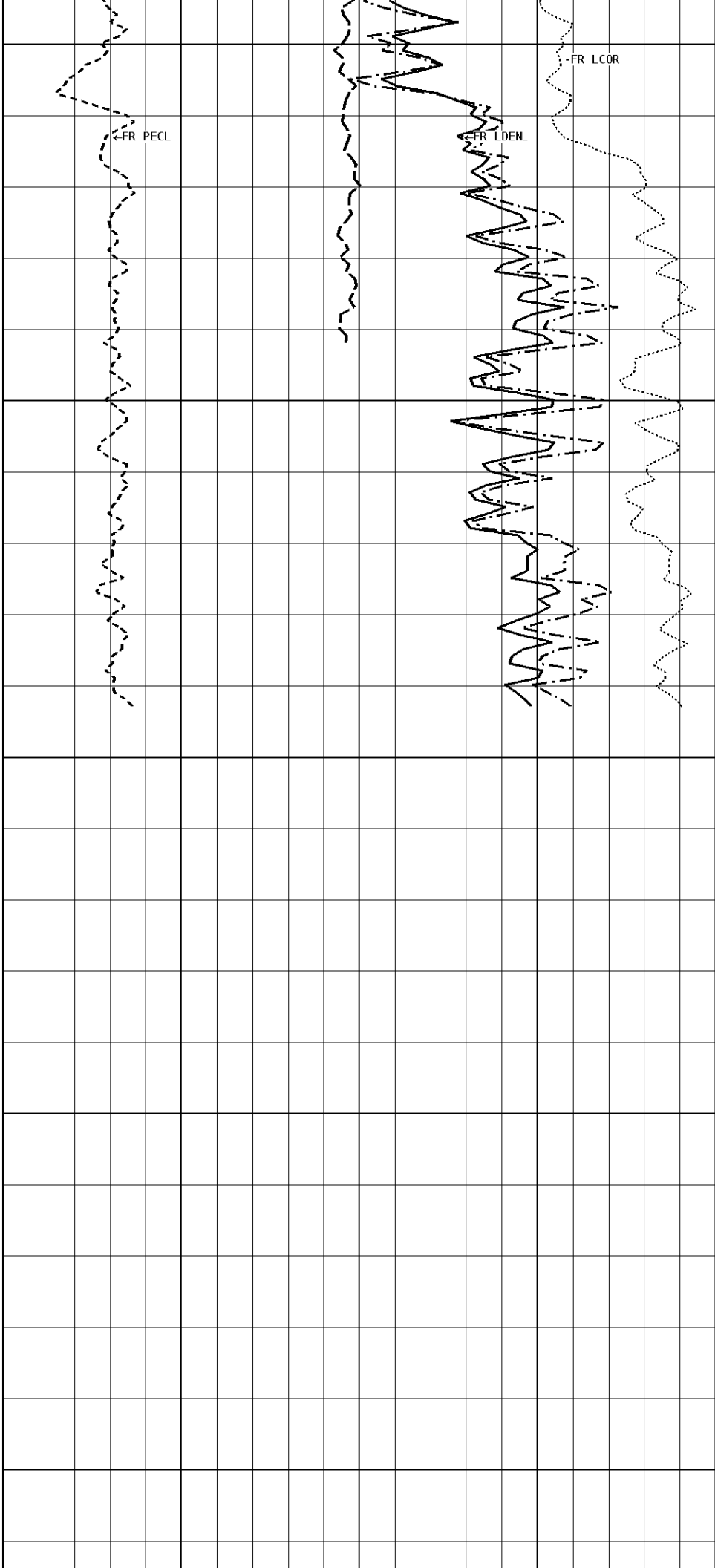
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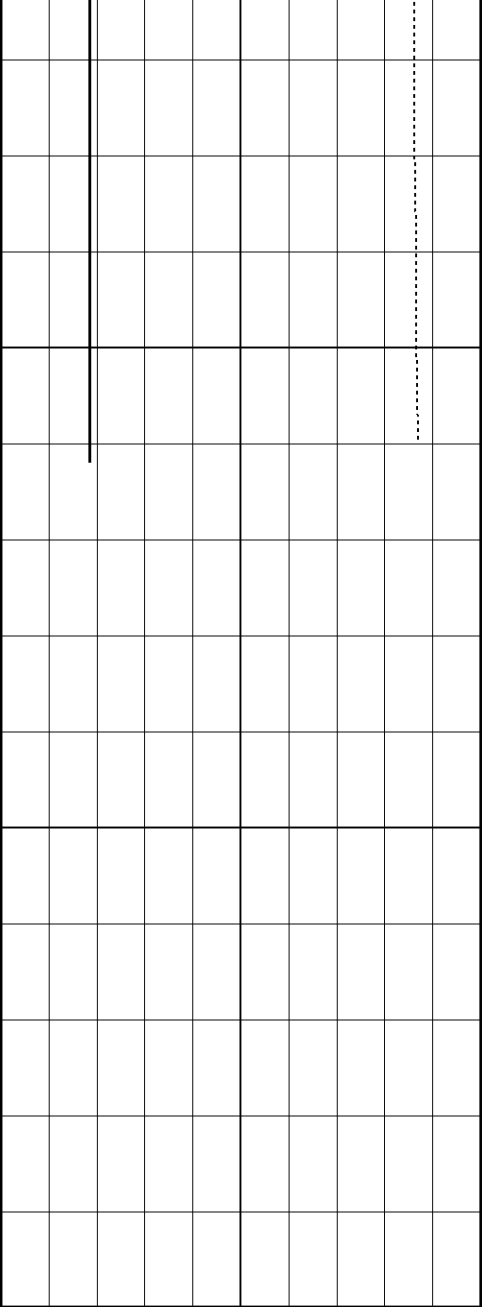




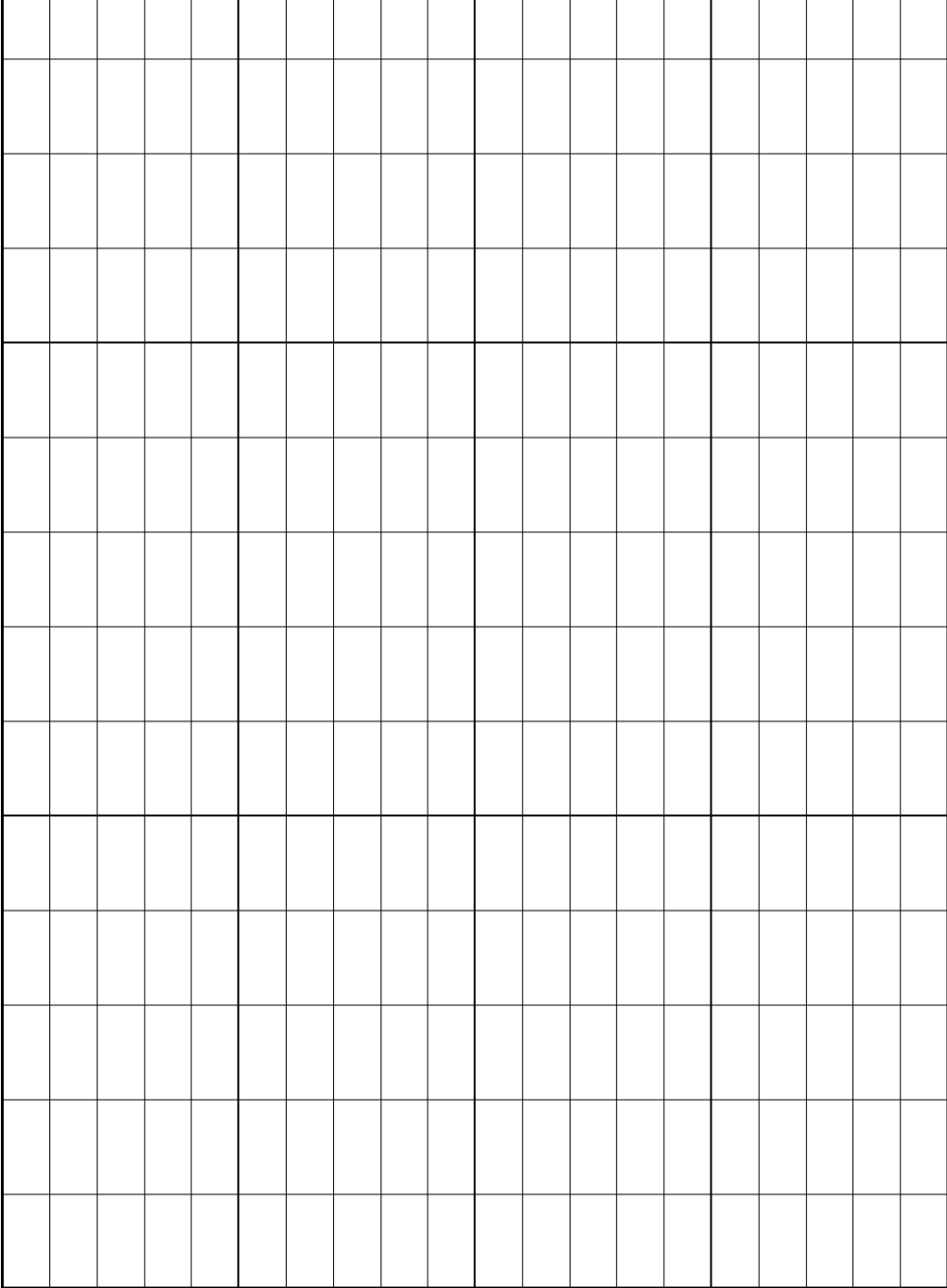
5850

5866

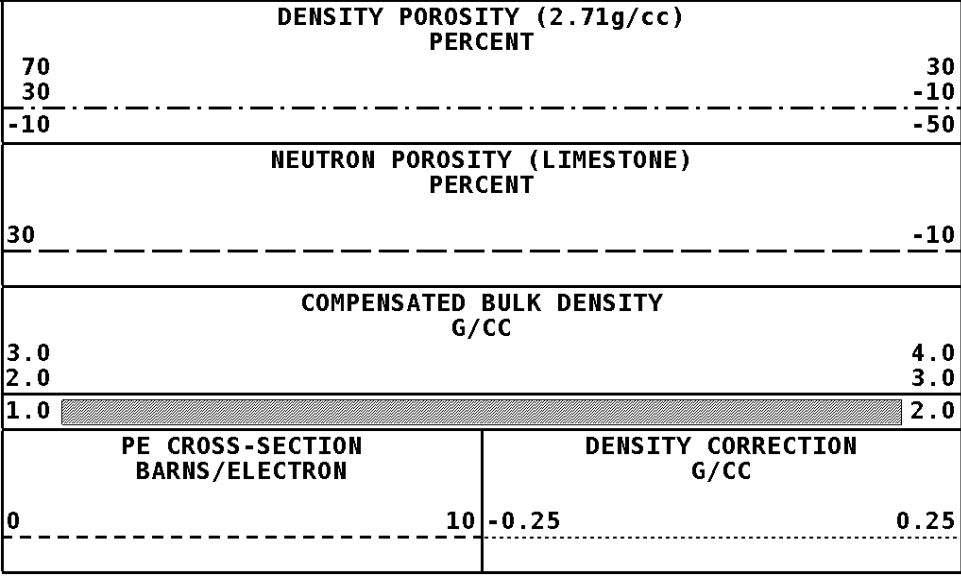
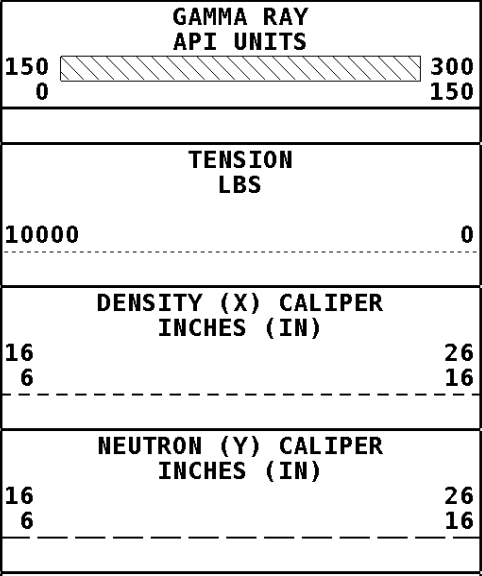




File #1.1.14



1:48 HIGH RESOLUTION



BIT SIZE
INCHES (IN)

6

16

* Borehole Zone Factors *

Zone 1 99999.0 to 1662.1 Feet

Matrix Density_____ 2.71 g/cc
Fluid Density_____ 1.00 g/cc
Formation Matrix_____ Limestone
Drill Bit Size_____ 7.875 in
Casing Diameter_____ 5.500 in
Casing Thickness_____ 0.250 in
Casing Correction (PHI N)_____ Disable

Well File: LASSO RENICK_1 NOV26 MSTK

Scale: 1:240 Format: LDT-240

Segment: V1.D1.S14 AS FINAL MAIN

Acquired: Not Available

Reference: 0

Processed: 2013-11/27 03:29 3.3.0-12261

BIT SIZE
INCHES (IN)

6

16

NEUTRON (Y) CALIPER
INCHES (IN)

16

26

6

16

DENSITY (X) CALIPER
INCHES (IN)

16

26

6

16

TENSION
LBS

10000

0

GAMMA RAY
API UNITS

150

0

300

150

- BHV AHV -
CU. FT

PE CROSS-SECTION
BARNES/ELECTRON

0

10

-0.25

0.25

COMPENSATED BULK DENSITY
G/CC

3.0

2.0

1.0

4.0

3.0

2.0

DENSITY POROSITY (2.71g/cc)
PERCENT

70

30

-10

30

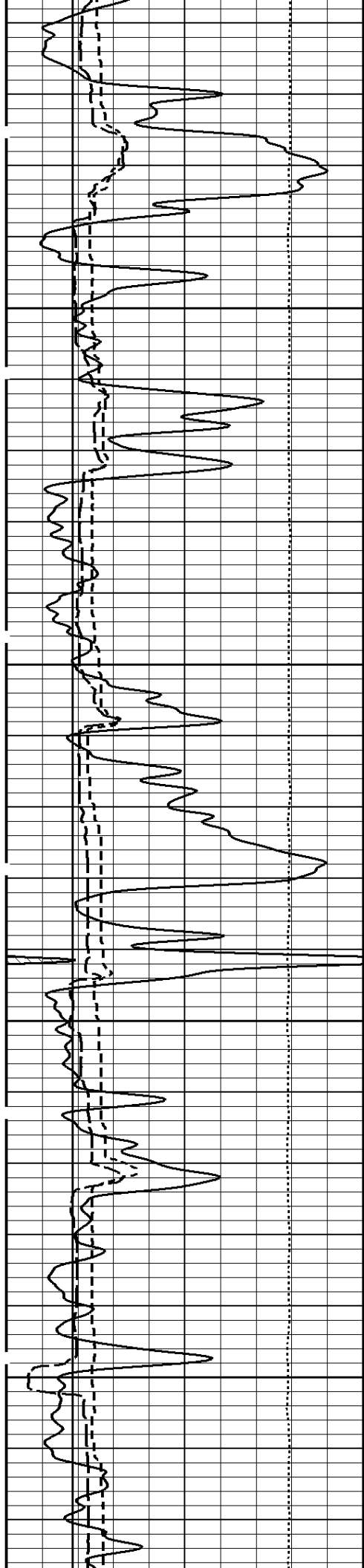
-10

-50

1:240 MAIN SECTION
BULK DENSITY

File #1.1.14

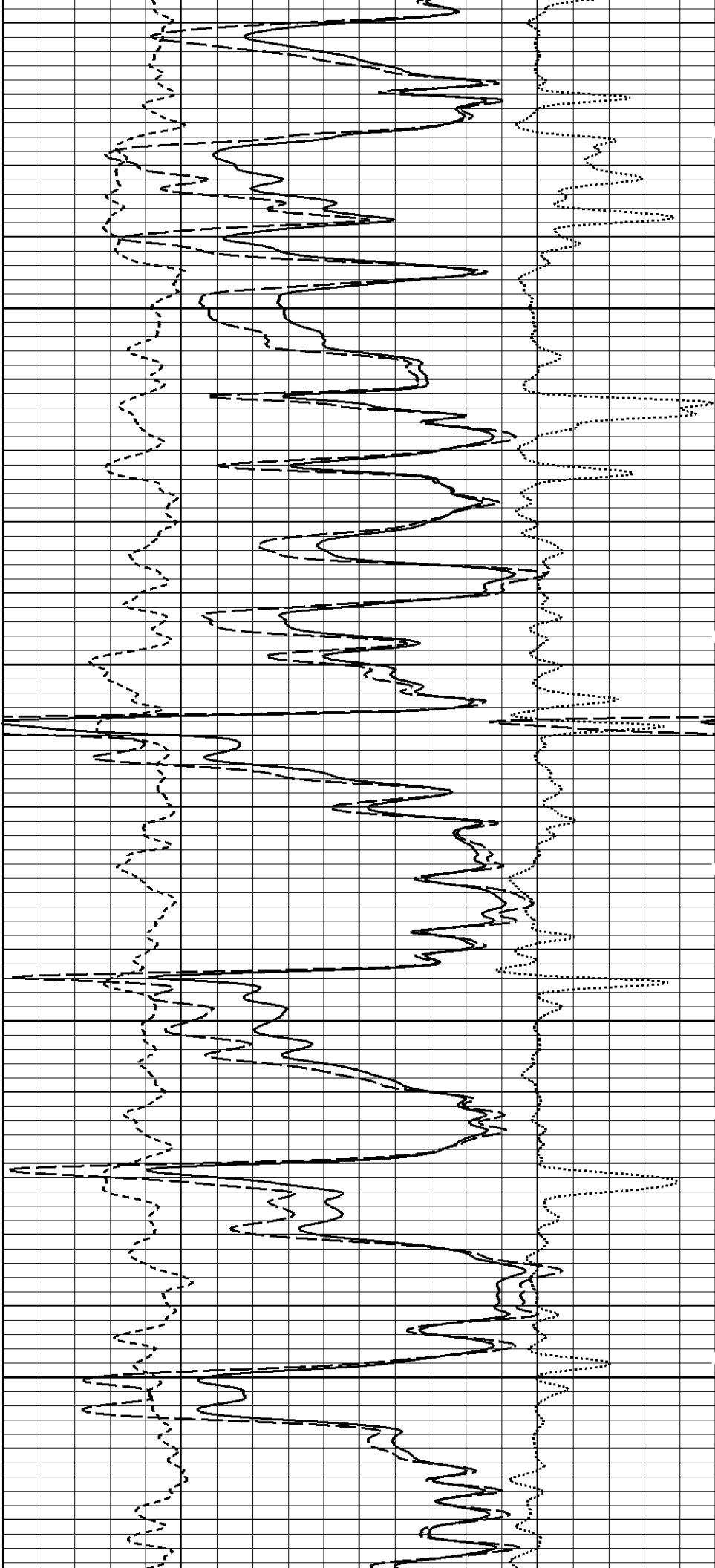
4000

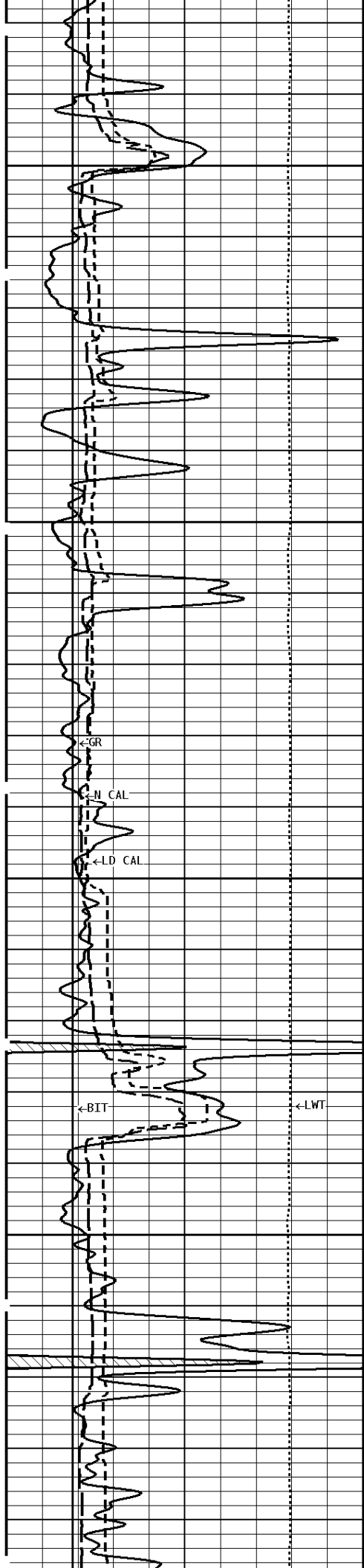


--700Cu.Ft
400Cu.Ft--

4100

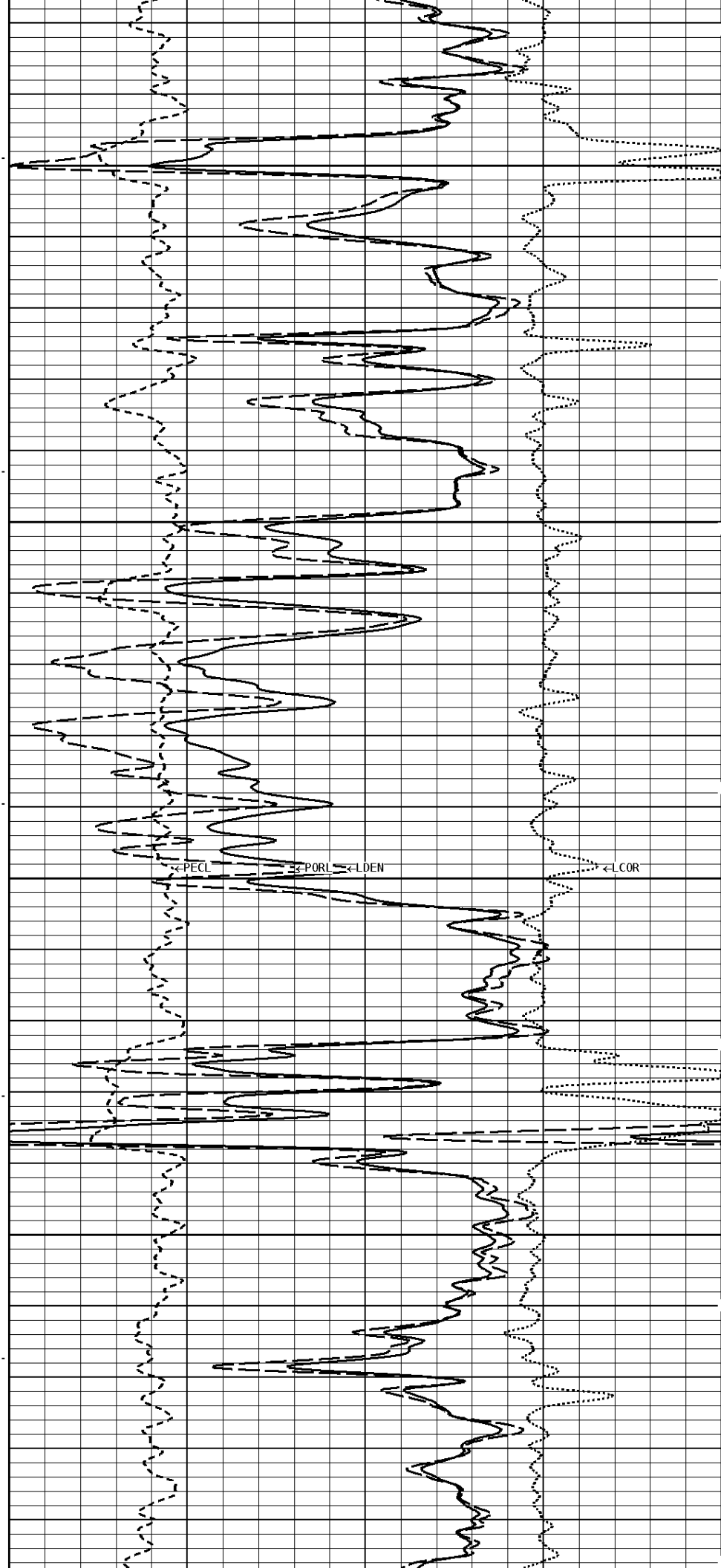
4200

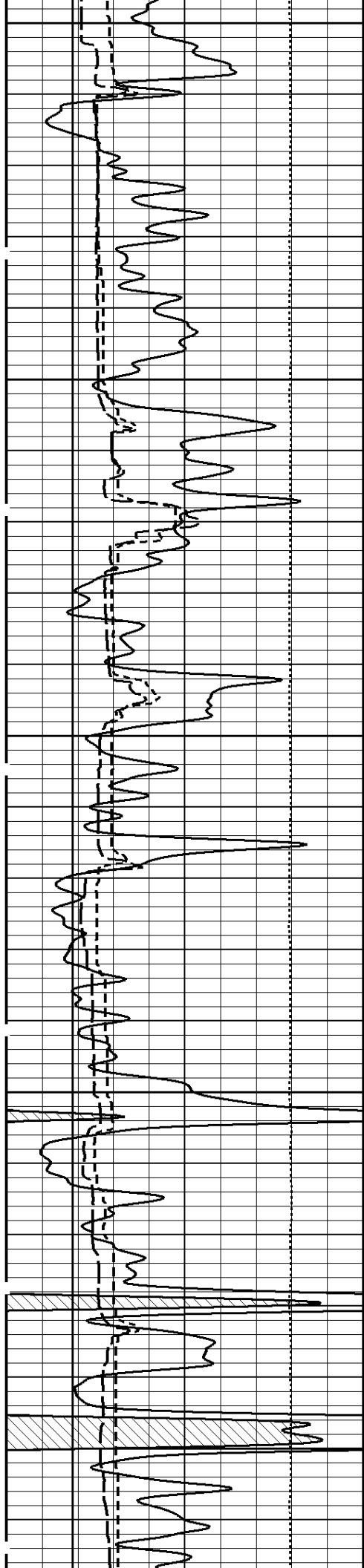




4300

4400



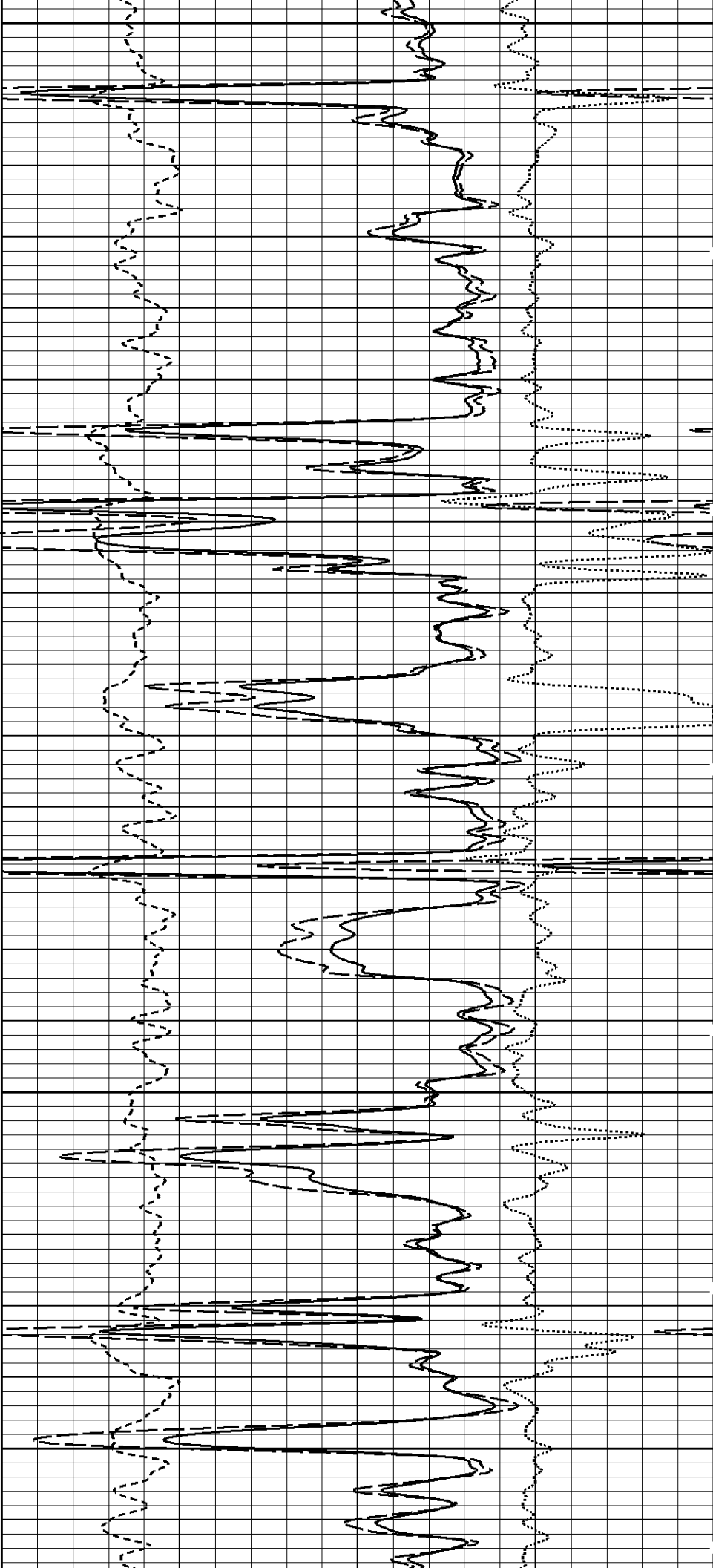


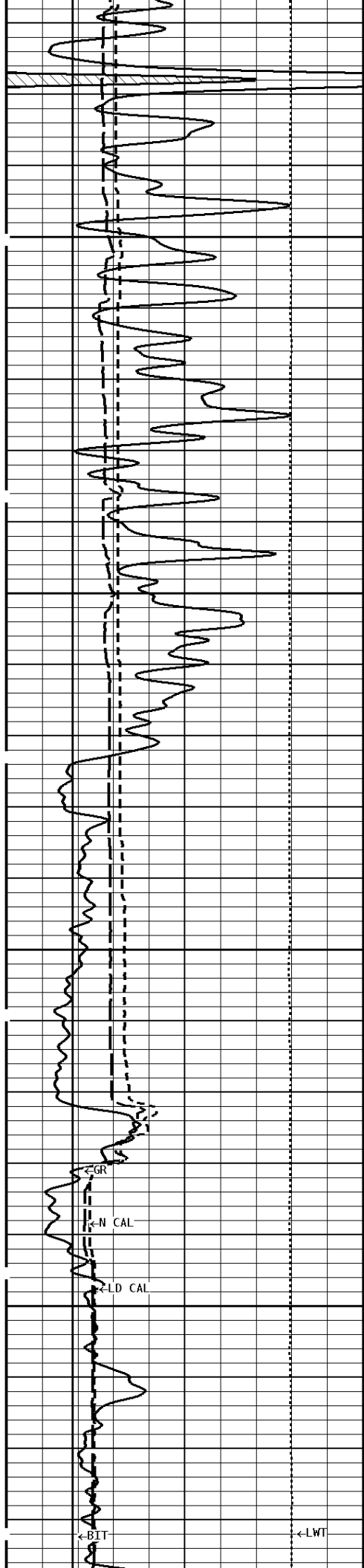
300Cu.Ft--

4500

--500Cu.Ft

4600

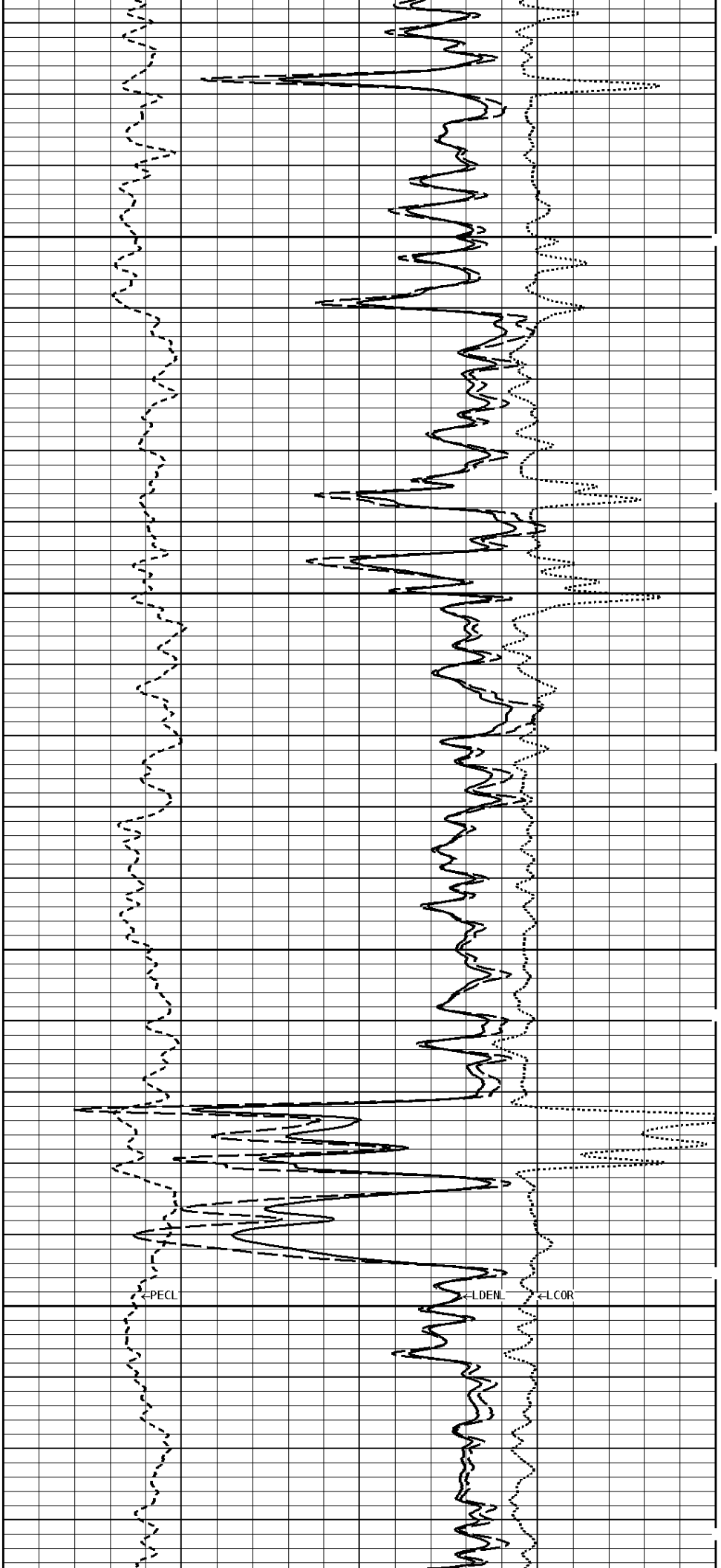




4700

4800

2000 Cu.Ft.



←GR

←N CAL

←LD CAL

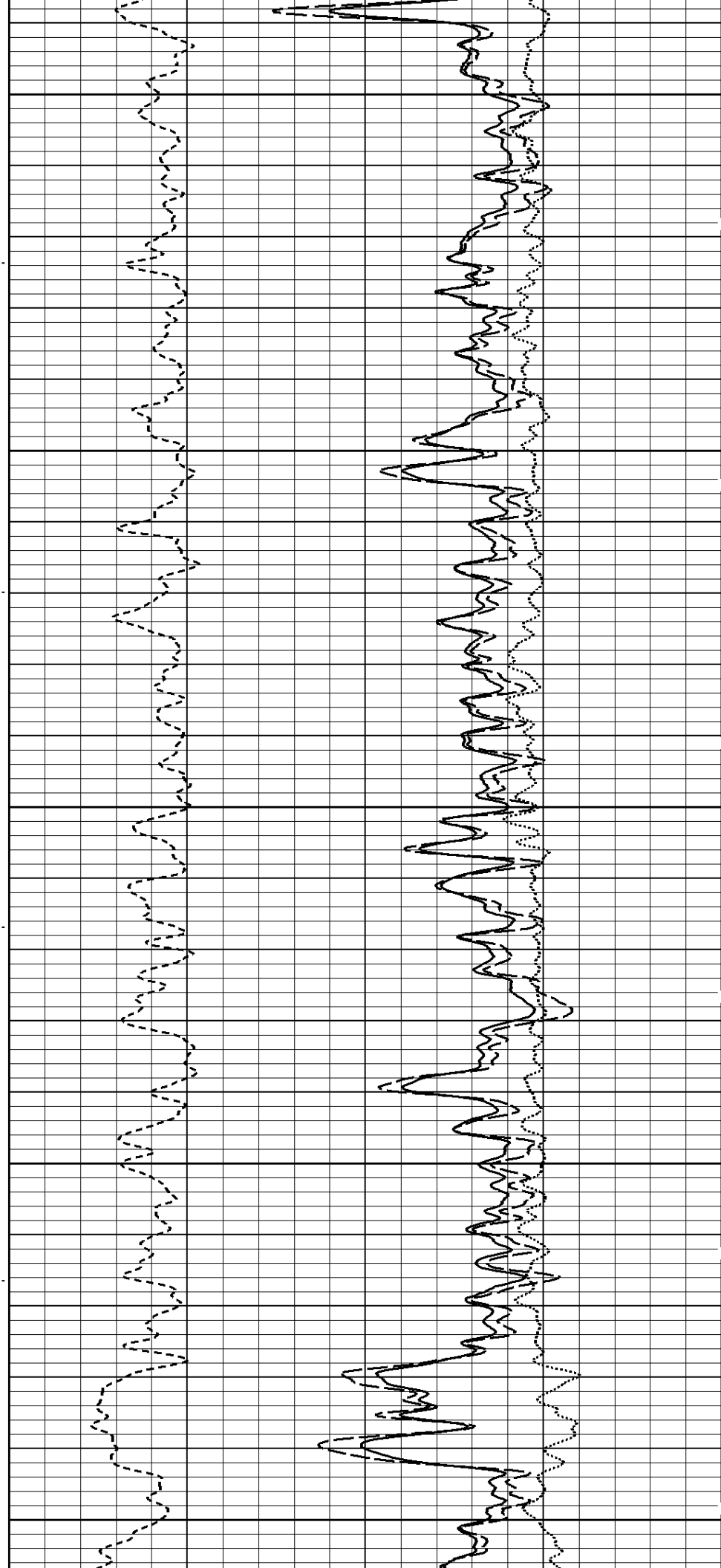
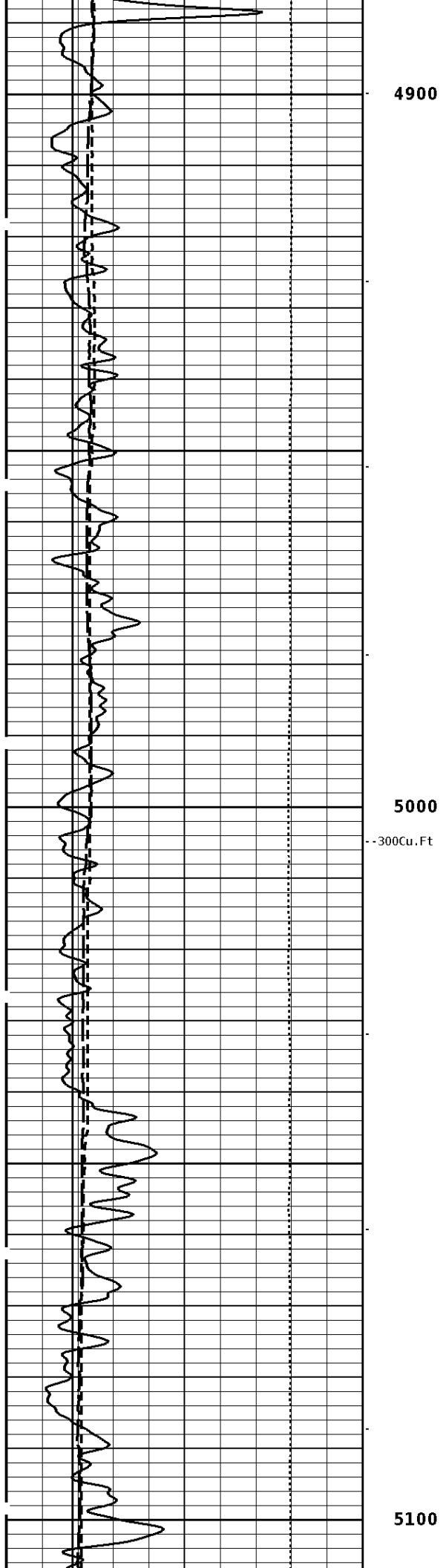
←BIT

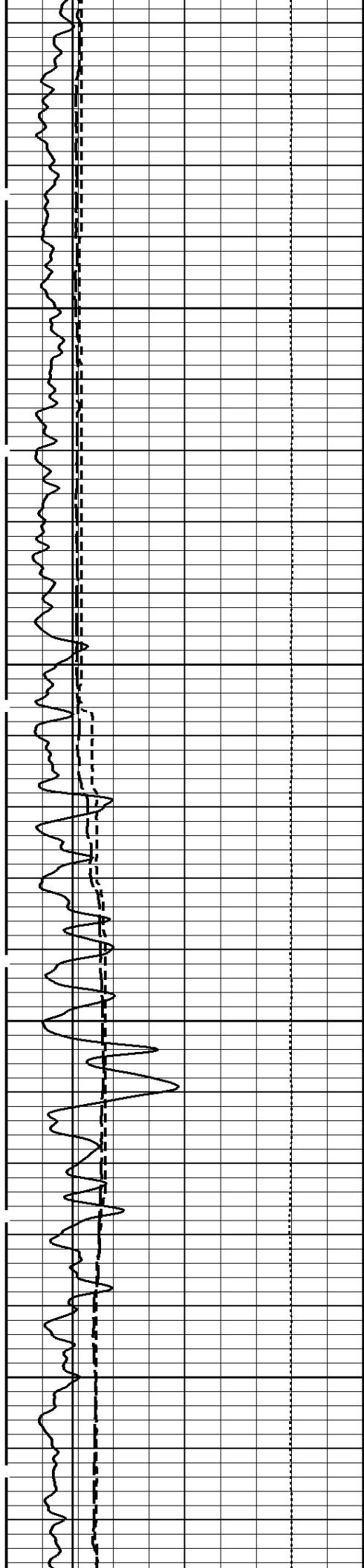
←LWT

←PECL

←LDEN

←LCOR



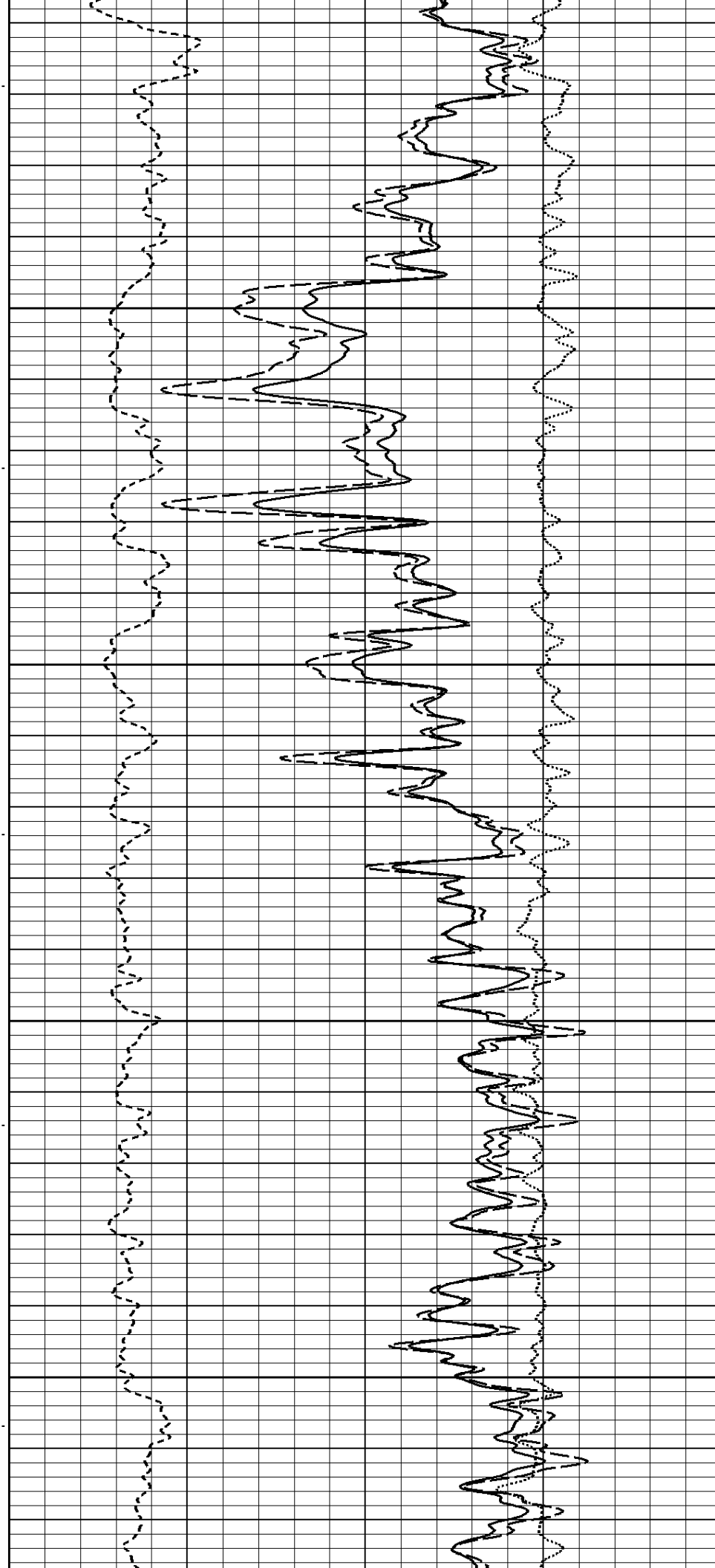


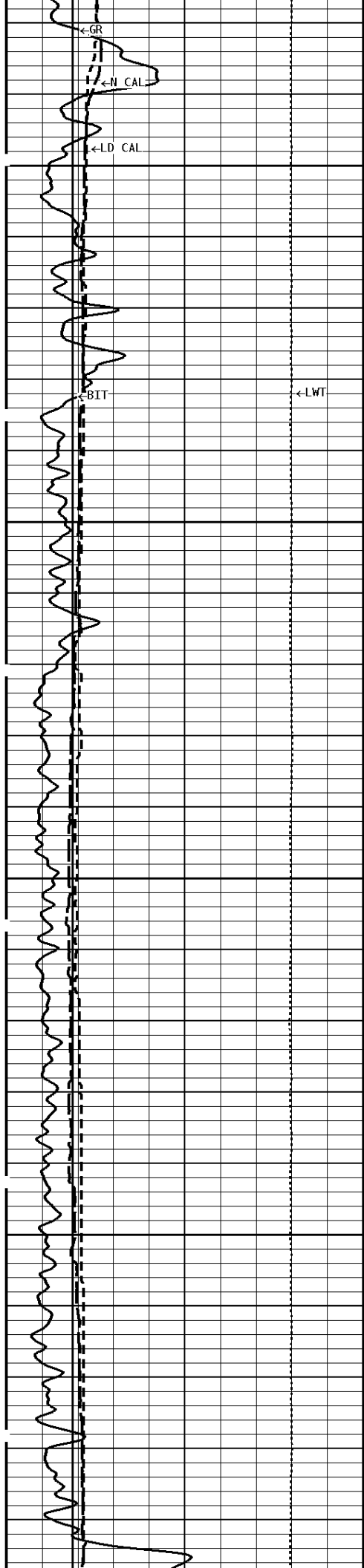
5200

--200Cu.Ft--

5300

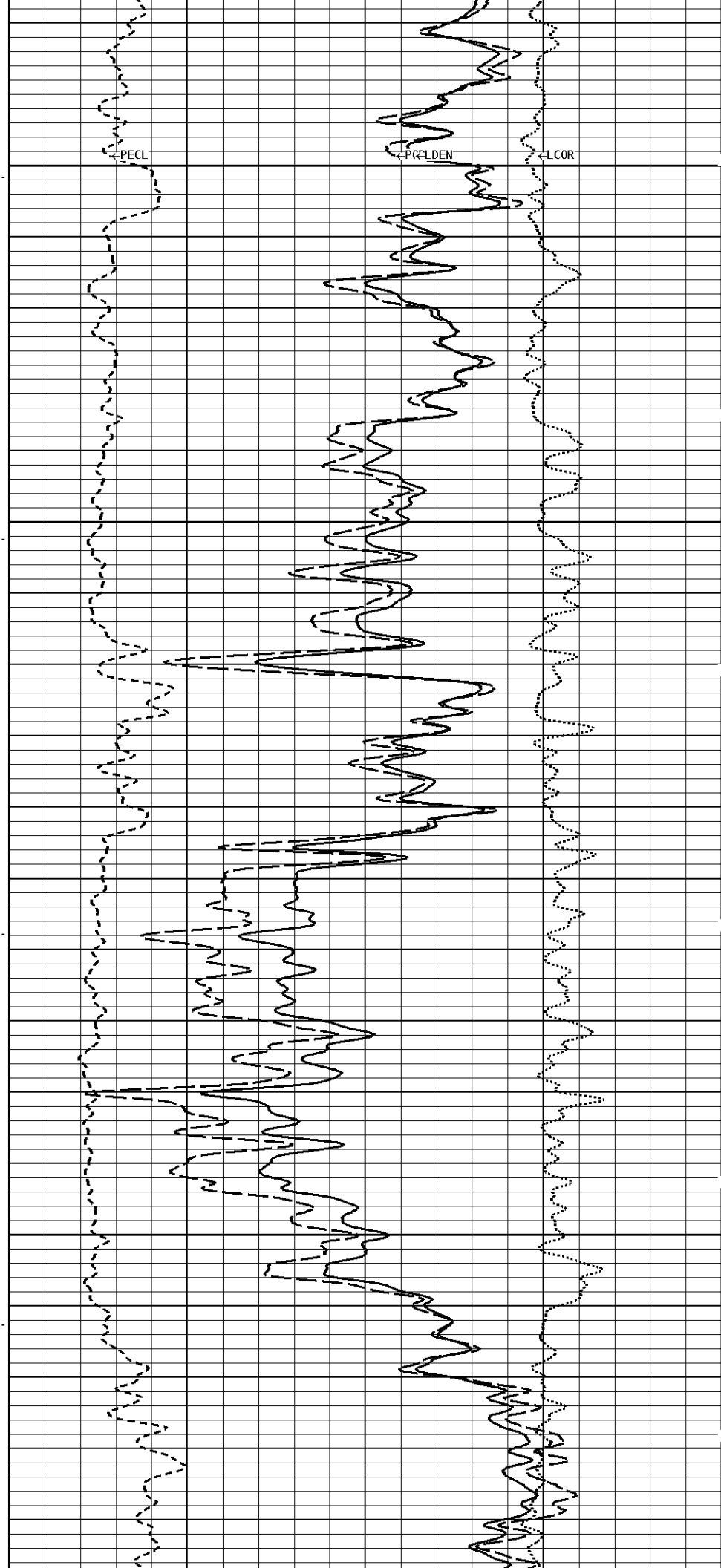
100Cu.Ft--





5400

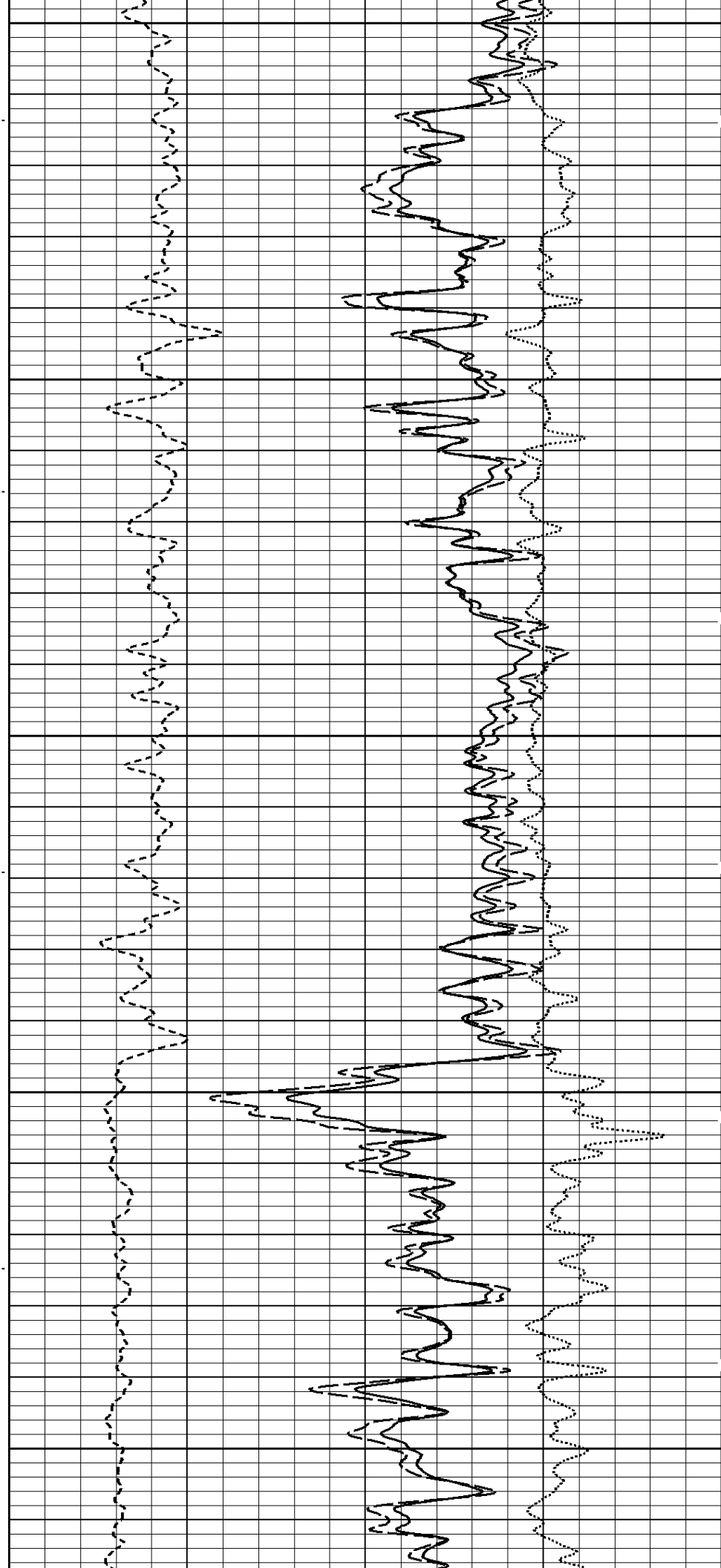
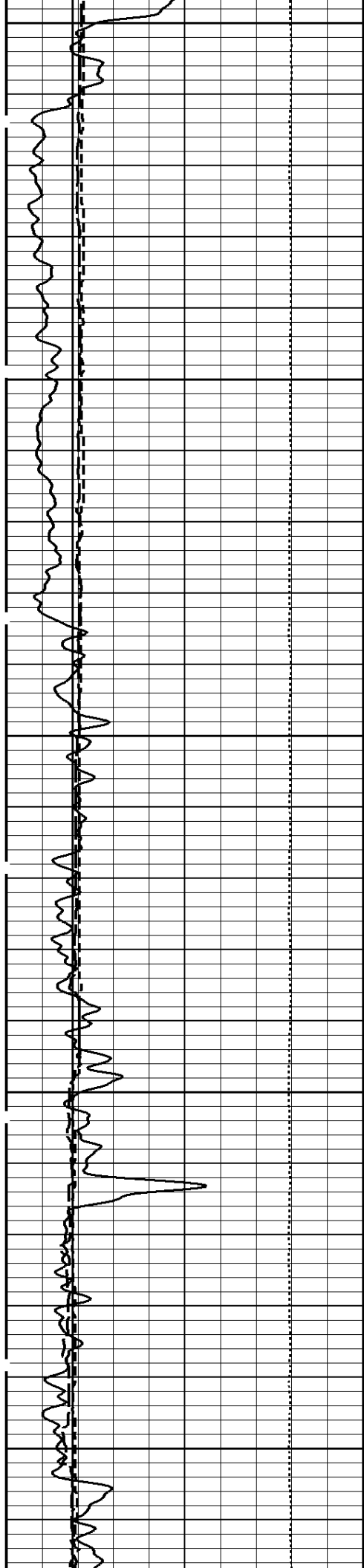
5500

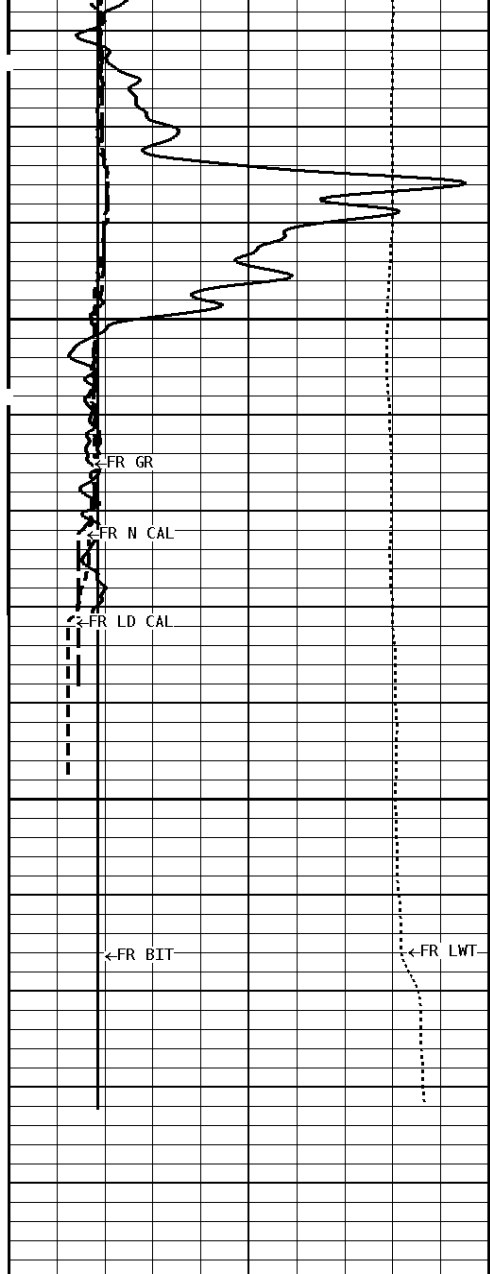


--100Cu.Ft

5600

5700

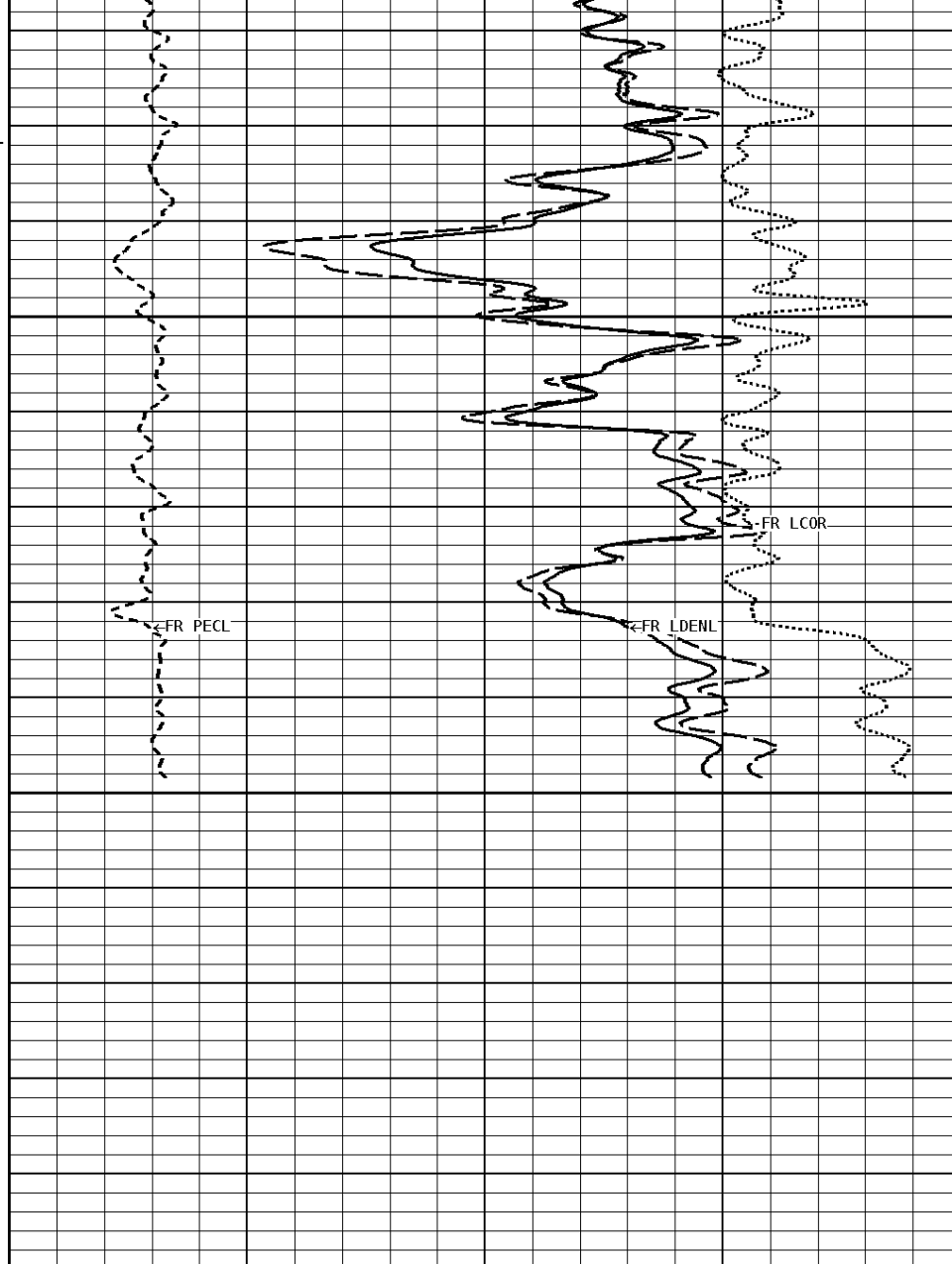




5800

5866

File #1.1.14



1:240 MAIN SECTION BULK DENSITY

GAMMA RAY API UNITS 150 0 300 150	-BHV AHV- CU.FT	DENSITY POROSITY (2.71g/cc) PERCENT 70 30 30 -10 -10 -10 -50	
TENSION LBS 10000 0		COMPENSATED BULK DENSITY G/CC 3.0 4.0 2.0 3.0 1.0 2.0	
DENSITY (X) CALIPER INCHES (IN) 16 26 6 16		PE CROSS-SECTION BARNS/ELECTRON 0 10 -0.25 0.25	DENSITY CORRECTION G/CC
NEUTRON (Y) CALIPER INCHES (IN) 16 26 6 16			
BIT SIZE INCHES (IN) 6 16			

*** Borehole Zone Factors ***

Zone 1 99999.0 to 1662.1 Feet				
Matrix Density_____	2.71	g/cc		
Fluid Density_____	1.00	g/cc		
Formation Matrix_____	Limestone			
Drill Bit Size_____	7.875	in		
Casing Diameter_____	5.500	in		
Casing Correction (PHI N)_____	Disable			

*** Calibration Summary ***

Shop Calibration GRT-B					
Performed : 30-OCT-2013			Time : 14:06		
Sensor Suite : GR-GR5			ID : GRT-BB-006		
	Measured	Units	Calibrated	Units	
GR	Background	Jig	Jig		
	60	375	175		GRAPI
Shop Calibration CNT-AA					
Performed : 30-Oct-2013			Time : 11:57		
Sensor Suite : CALI-BCN			ID : NDT-AC-027		
	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	8.3	14.5	6.0	12.0	IN.
Shop Calibration LDT-DA					
Performed : 30-Oct-2013			Time : 11:52		
Sensor Suite : BHC NEUT			ID : CNP-AE-42		
Source ID : N-1044					
	Tank		Verification	Units	
	Measured	Calibrated	Jig		
N/F	3.6214	3.6893	3.7158		
Porosity	19.5	20.5	20.9		%
Shop Calibration LDT-DA					
Performed : 30-OCT-2013			Time : 11:04		
Sensor Suite : CALI-LTH			ID : NDT-AE-003		
	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	9.4	13.8	6.0	12.0	IN.
Shop Calibration LDP-DA					
Performed : 30-Oct-2013			Time : 10:53		
Sensor Suite : BHCPELNG			ID : LDP-DA-50		
Source ID : CSV-587					
Short Space					
	BKGD	Al	Mg	Al+Fe	Units
LSW1	72	461	748	315	CPS
LSW2	76	537	861	400	CPS
LSW3	288	1313	2060	1141	CPS
LSW4	355	1255	1743	1128	CPS
LSW5	33	42	42	40	CPS
LSW6	98	96	97	97	CPS
LSW7	57	61	59	61	CPS
LSW8	1	2	3	2	CPS
QS	0.263	0.227	0.244	0.226	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC
Long Space					
	BKGD	Al	Mg	Al+Fe	Units
LLW1	103	528	2144	346	CPS
LLW2	114	889	3664	669	CPS
LLW3	440	1787	6541	1585	CPS
LLW4	572	1090	2741	1024	CPS
LLW5	66	70	82	70	CPS
LLW6	171	171	166	173	CPS
LLW7	115	113	112	116	CPS
LLW8	5	6	10	6	CPS
QL	0.196	0.204	0.194	0.198	
PEL			2.697	5.458	
SSDN		2.600	1.680		G/CC

LSDN	2.800	1.680	g/cc
Shop Calibration			
MST-DA			
Performed : 17-NOV-2013		Time : 01:43	
Sensor Suite : CALI-MSN		ID : MST-DA-32	
Jig - Measured		Jig - Calibrated	
CL # 1	Ring#1	Ring#2	Units
	7.8	12.3	IN.
Performed : 17-Nov-2013		Time : 01:42	
Sensor Suite : MSTDA-NI		ID : MST-DA-32	
Internal			
	Measured		Calibrated
	Zero	Reference	Units
INV-V	0.0	30522.7	MV
NOR-V	3.0	30511.2	MV
IN-C	11.1	59131.8	UA
INV-R		32.34	OHMM
NOR-R		58.67	OHMM
Performed : 17-NOV-2013		Time : 01:43	
Sensor Suite : MSTDAMSF		ID : MST-DA-32	
Internal			
	Measured		Calibrated
	Zero	Reference	Units
MSFC	23.0	58060.9	UA
MSFB	32734.0	62709.6	MA
MOM1	0.0	58005.1	MV
MSFRA		43.30	OHMM



Tucker
ENERGY SERVICES

Company: LASSO ENERGY LLC
Well: RENICK #1
Location: 1650' FNL & 330' FEL
Logged: 11-26-2013
K.B. Elev: 2694.0 Ft