

STEP

energy services

COMPENSATED NEUTRON PEL DENSITY LOG

Company GRAND MESA OPERATING COMPANY Well PREISSER #1-34 Field WILDCAT County RENO State KANSAS Country USA API No. 15-155-21771-00-00		File No : HAYS-70428 Company : GRAND MESA OPERATING COMPANY Well : PREISSER #1-34 Field : WILDCAT County : RENO State : KANSAS Country : USA API No : 15-155-21771-00-00	
Location : 330' ENL & 1620' FEL E2 NE NW NE		LSD : Sect : 34 Twp : 24S Rge : 09W	
Permanent Datum: Drilling Measured From: GL Log Measured From: KB Above Permanent Datum: 11.00 Ft		Elevations: KB 1687.00 Ft DF 1688.00 Ft GL 1677.00 Ft	
Services: GRT MLT CNP PIT LD			
Date	12-14-2019		
Run Number	1		
Depth--Driller	4140.0 Ft		
Depth--Logger	4140.0 Ft		
First Reading	4118.0 Ft		
Last Reading	266.0 Ft		
Casing--Driller	266.0 Ft		
Casing--Logger	266.0 Ft		
Bit Size	7.875 In		
Casing Size	8.625 In		
Hole Fluid Type	WBM		
Density	9.4		
Fluid Loss	11.6		
PH/Viscosity	9.0 53.0		
Sample Source	MEASURED		
RM@Measured Temp.	1.400 @ 58 F		
RMF@Measured Temp	1.190 @ 58 F		
RMG@Measured Temp.	1.610 @ 58 F		
Source RMF/RMC	CALCULATED/CALCULATED		
RM@BHT	0.720 @ 119 F		
Time Circulation Stopped	12-14-2019 05:57		
Max Recorded Temp.	119 F		
Equipment/Base	TRK-137 HAYS		
Recorded By	B.BAILEY		
Witnessed By	KENT MATSON		

The customer is hereby warned that by providing the log data herein, STEP Energy Services does not agree to provide any interpretation of log data, conversion of log data to physical rock parameters or recommendations. STEP Energy Services 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 STEP Energy Services 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 STEP Energy Services 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	4140.00	8.625	17.00	266.00	0.00

Run Number	1	
Date	12-14-2019	
Date/Time On Bottom	12-14-2019 11:57	
Depth to Fluid	0.0 Ft	
Salinity	10400.000	
RMF@BHT	0.610 @ 119 F	
RMC@BHT	0.830 @ 119 F	

Run Number 1

Comments

ALL PRESENTATIONS AS PER CUSTOMER REQUEST.

GRT, CNT, LDT, CST, MLT, AND PIT RUN IN COMBINATION.

2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY.

5.5" PRODUCTION CASING USED TO CALCULATE ANNULAR HOLE VOLUME.

CALIPERS ORIENTED ON X-Y AXIS.

PHIN IS CALIPER CORRECTED

GRT: GRP

CNT: PHIN, PHINDOL, CLCNIN

LDT: PORL, PORLDOL, LCORN, LDENN, PECLN, CLLDIN

MLT: MSFI, MSFN, CLMRIN.

PIT: ILD, ILM, SFLAEC, SPU, CIRD

OPERATORS:

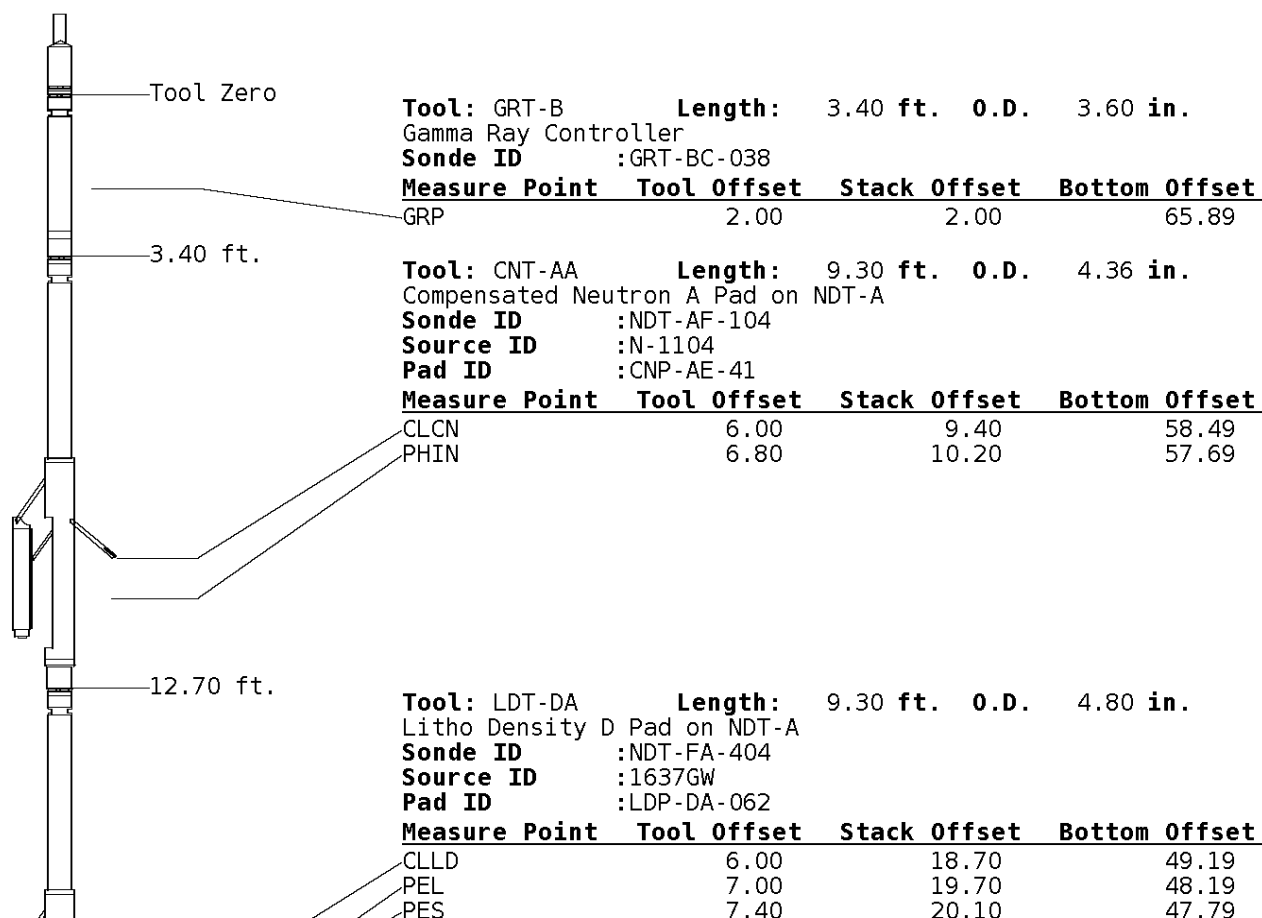
D.LEGLEGITER

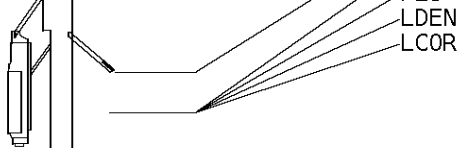
D.RAGSDALE

J.VAUGHN

Tool String Schematic

Total Tool Length - 67.89 ft.
Maximum Outside diameter - 6.00 in.
Net Weight in Air - 1171.00 lbs.



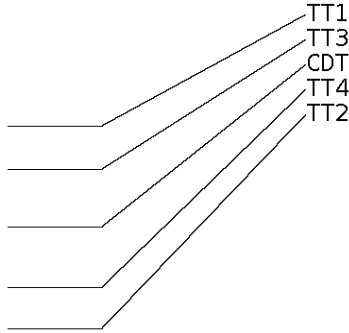


7.20	19.90	47.99
7.20	19.90	47.99

22.00 ft.

Tool: CST-AD **Length:** 13.80 ft. **O.D.** 3.60 in.
 Open Hole Sonic
Sonde ID : CST-AB-24

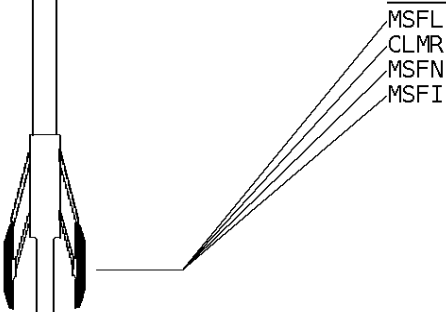
Measure Point	Tool Offset	Stack Offset	Bottom Offset
TT1	4.80	26.80	41.09
TT3	5.80	27.80	40.09
CDT	7.30	29.30	38.59
TT4	8.80	30.80	37.09
TT2	9.80	31.80	36.09



35.80 ft.

Tool: MLT-AB **Length:** 10.60 ft. **O.D.** 6.00 in.
 Micro Log Tool
Sonde ID : MLT-012

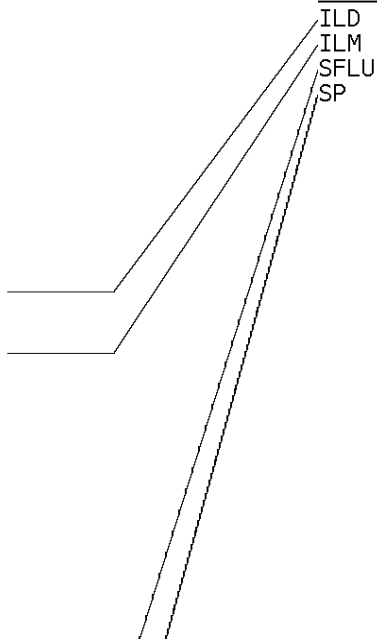
Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	8.90	44.70	23.19
CLMR	7.60	43.40	24.49
MSFN	8.90	44.70	23.19
MSFI	8.90	44.70	23.19



46.40 ft.

Tool: PIT-CA **Length:** 21.49 ft. **O.D.** 3.62 in.
 Phased Dual Induction w/ RM & D
Sonde ID : PIT-AC-043

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	55.32	12.56
ILM	10.10	56.50	11.39
SFLU	17.49	63.89	4.00
SP	20.60	67.00	0.88



LWT 67.89 ft.

Well File: GRAND MESA PREISSER 1-34 DEC-14 QUINT

Scale: 1:240

Format: NLD-240

Segment: V1.D1.S3 mn

Acquired: 2019-12/14 12:23 3.4.1-13972

Reference: 0

Processed: 2019-12/14 12:23 3.4.1-13972

CALIPER MICRO
INCHES (IN)

16 26
6 16

BIT SIZE
INCHES (IN)

6 16

NEUTRON (Y) CALIPER
INCHES (IN)

16 26
6 16

DENSITY (X) CALIPER
INCHES (IN)

16 26
6 16

Volume
Quartz

PE CROSS-SECTION
BARNES/ELECTRON

DENSITY CORRECTION
G/CC

0 10 -0.25 0.25

TENSION
LBS

10000 0

Volume
Calcite

DENSITY POROSITY (2.71g/cc)
PERCENT

70 30
30 -10
-10 -50

GAMMA RAY
API UNITS

150 300
0 150

Volume
Dolo/Shale

NEUTRON POROSITY (LIMESTONE)
PERCENT

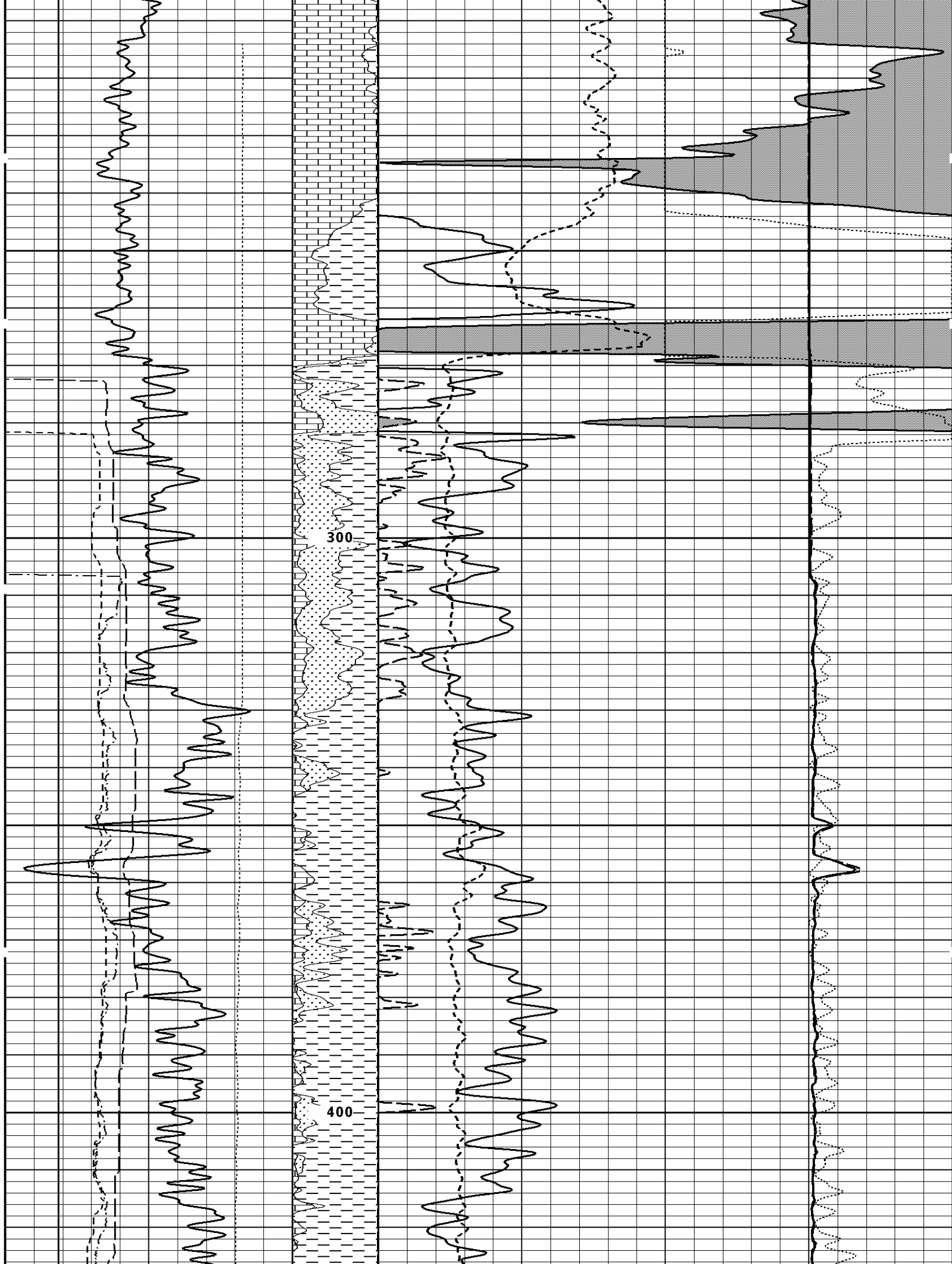
30 -10

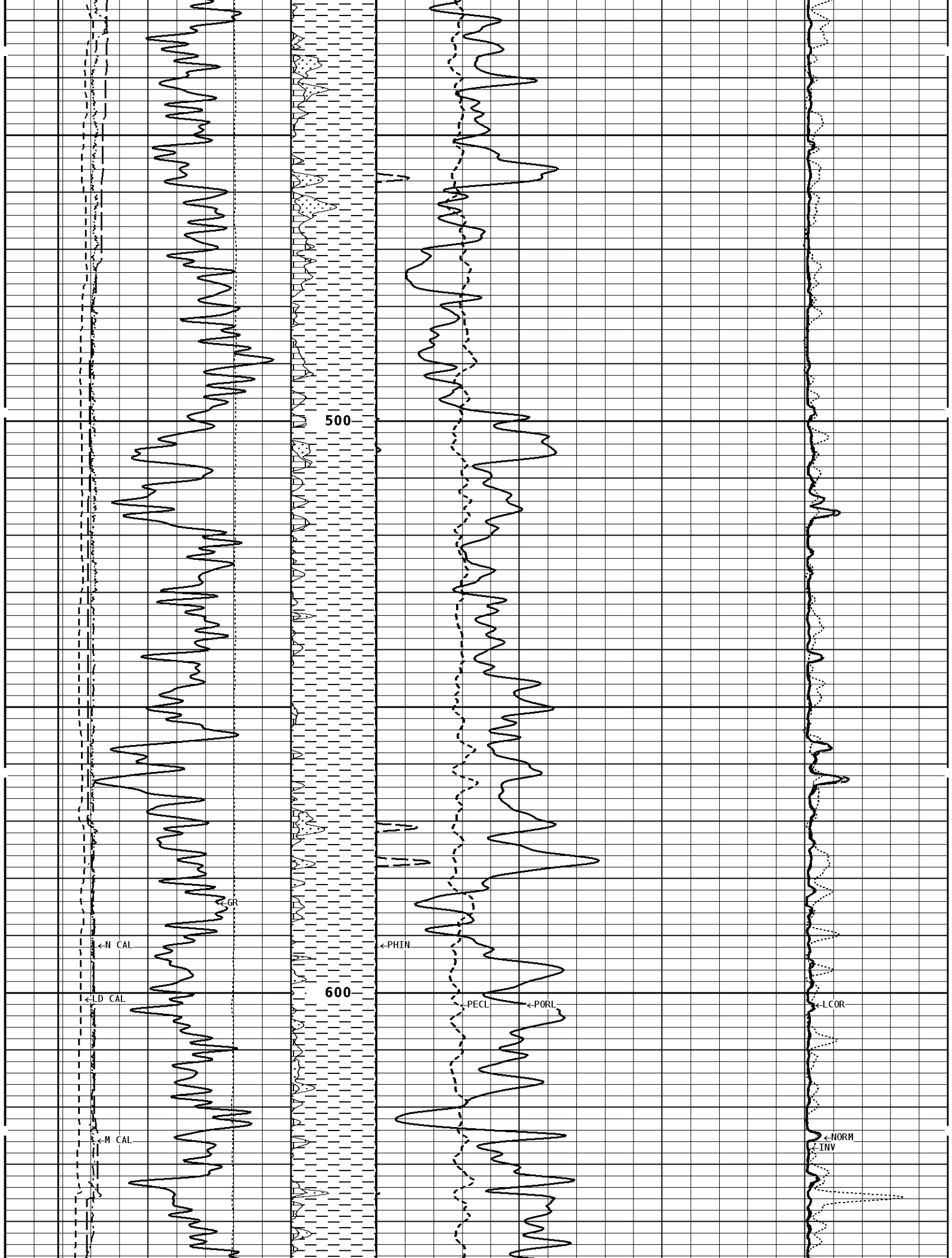
1:240 MAIN SECTION

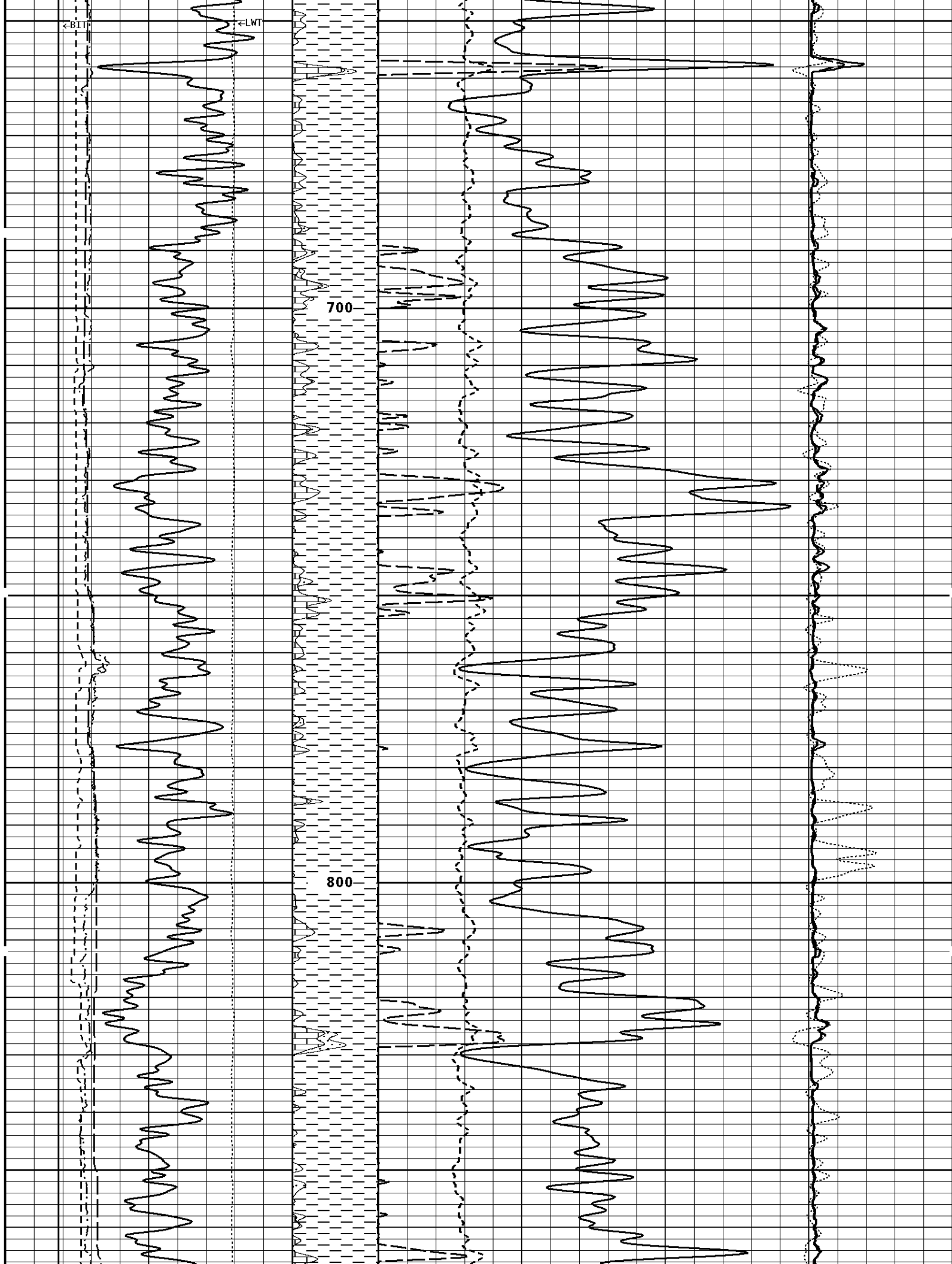
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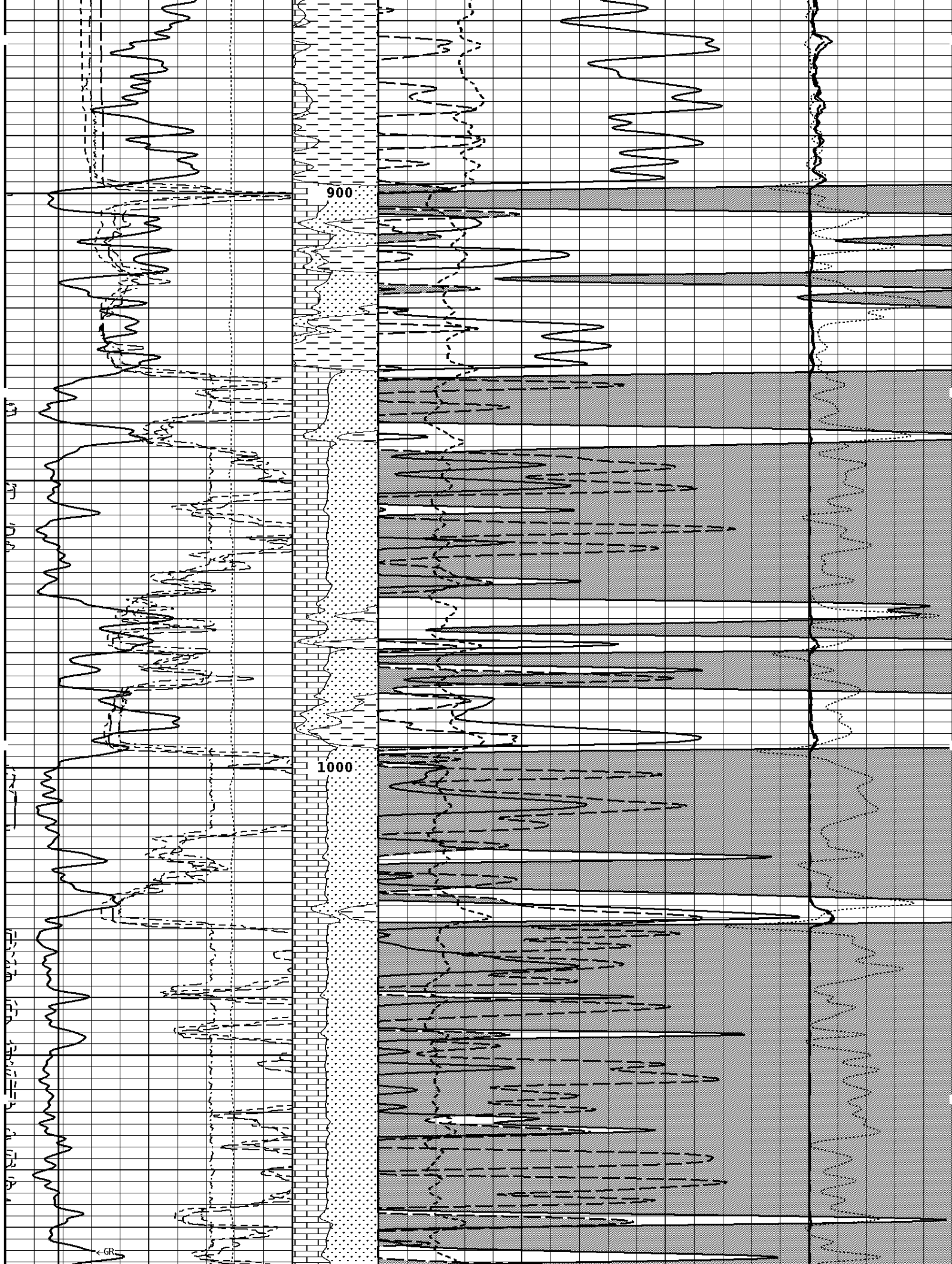
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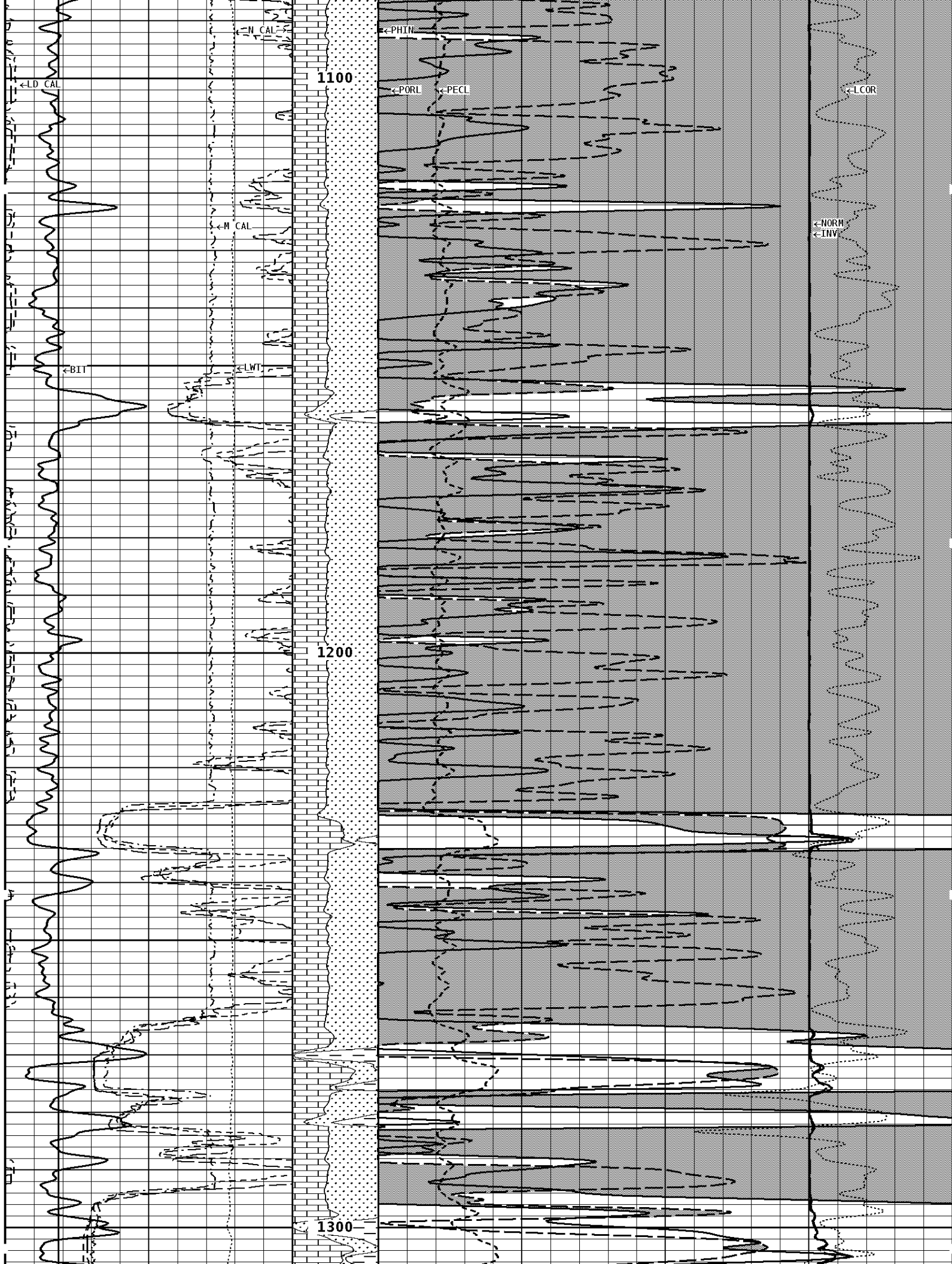
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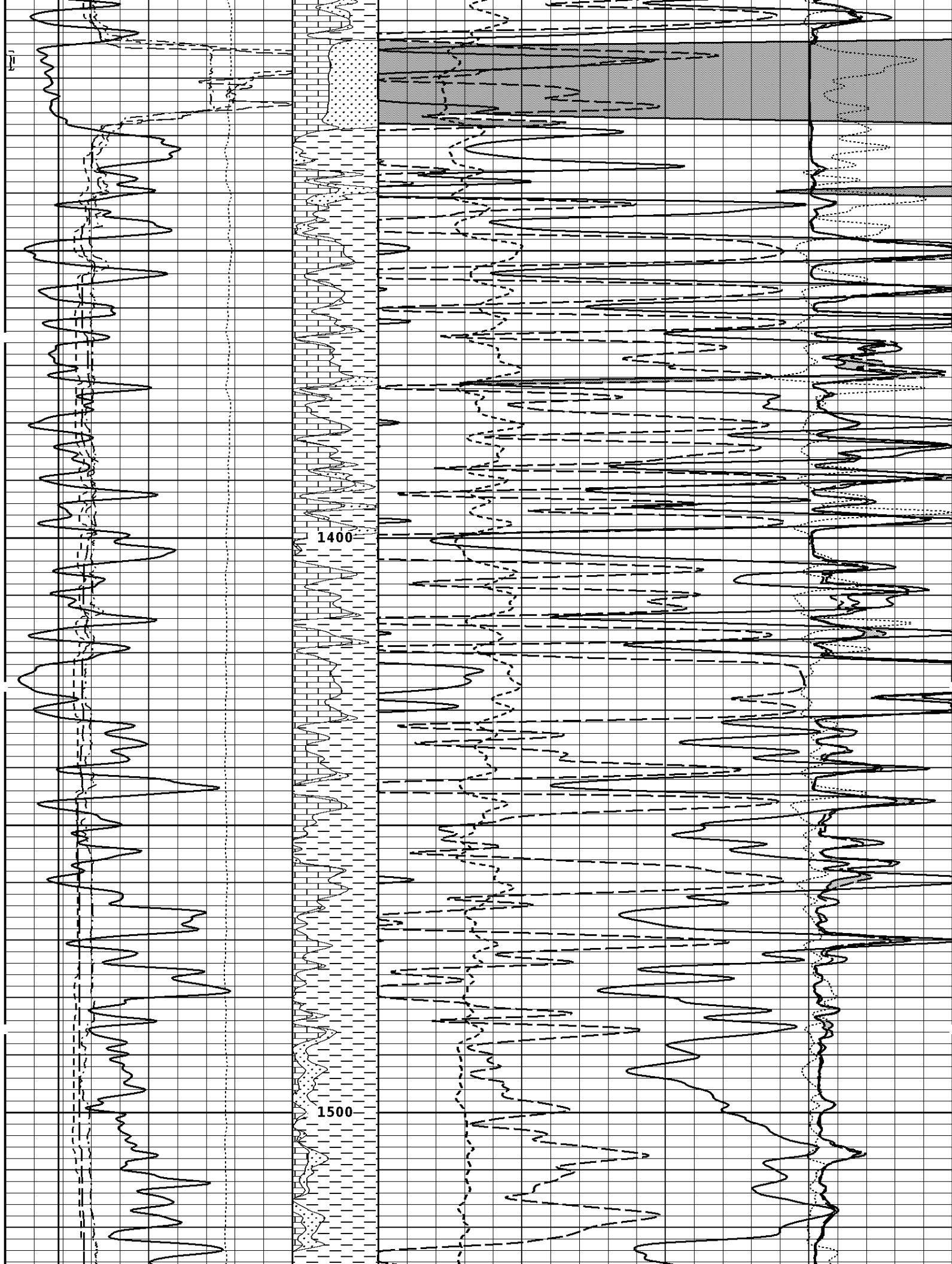


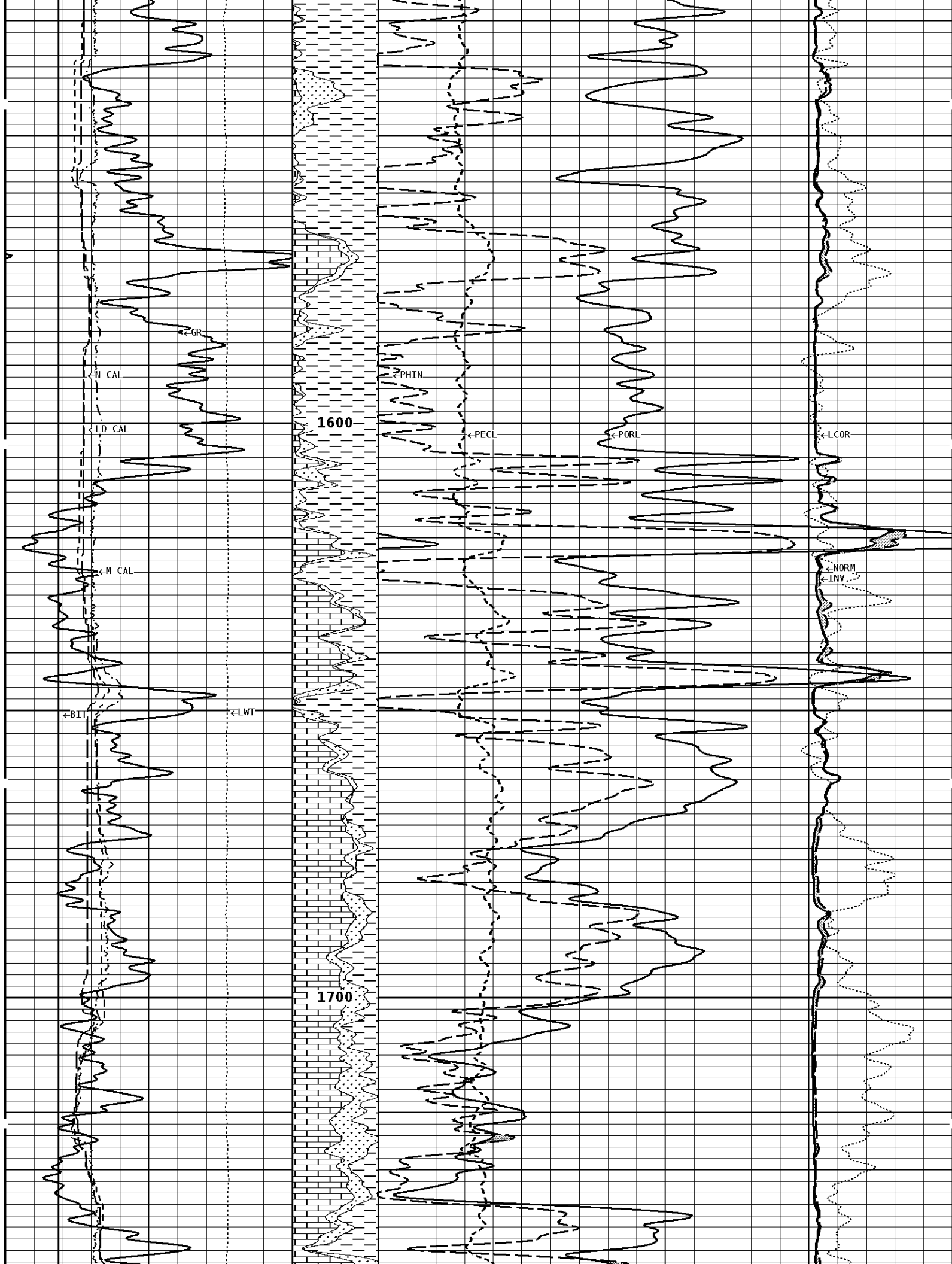


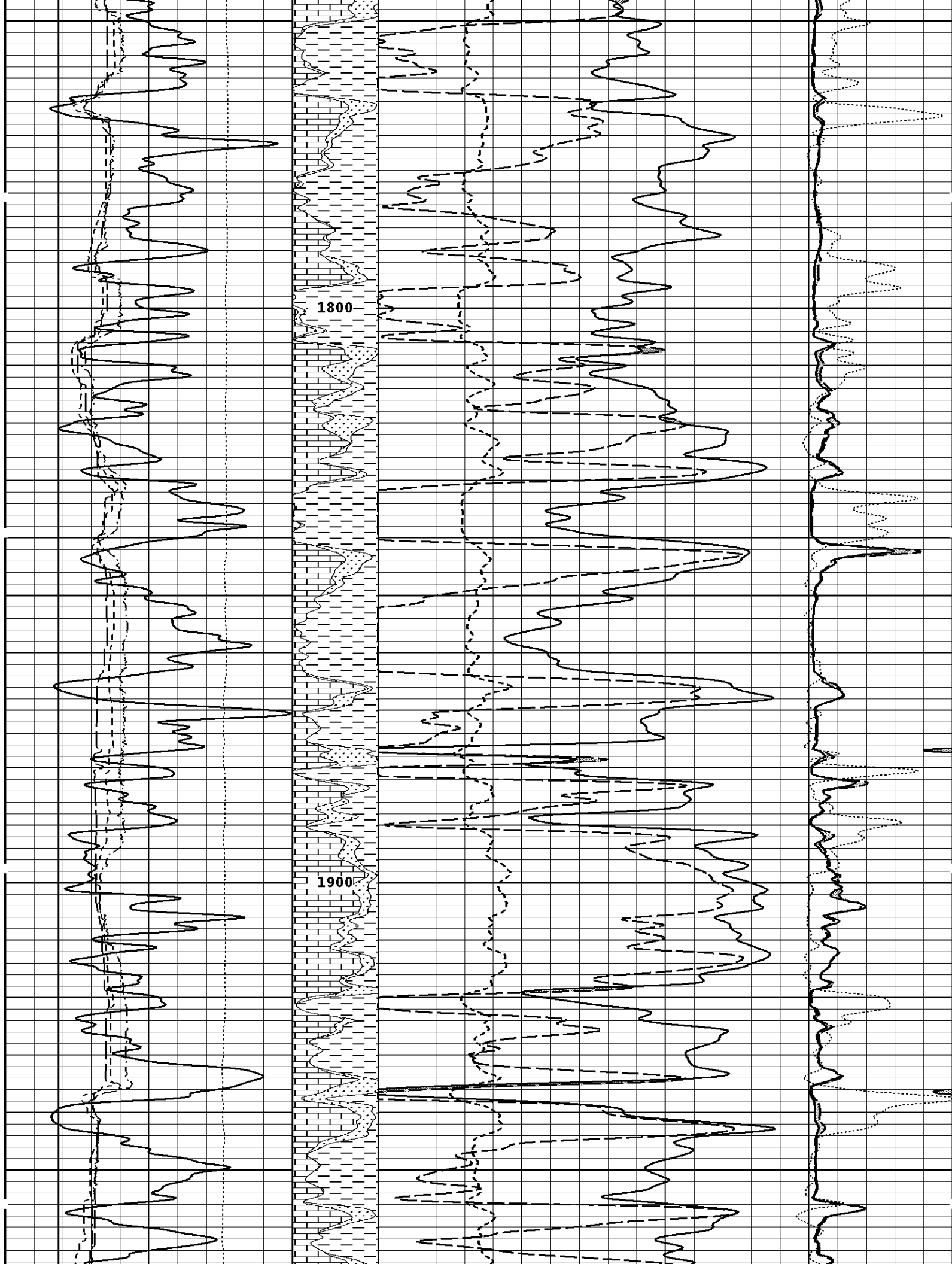


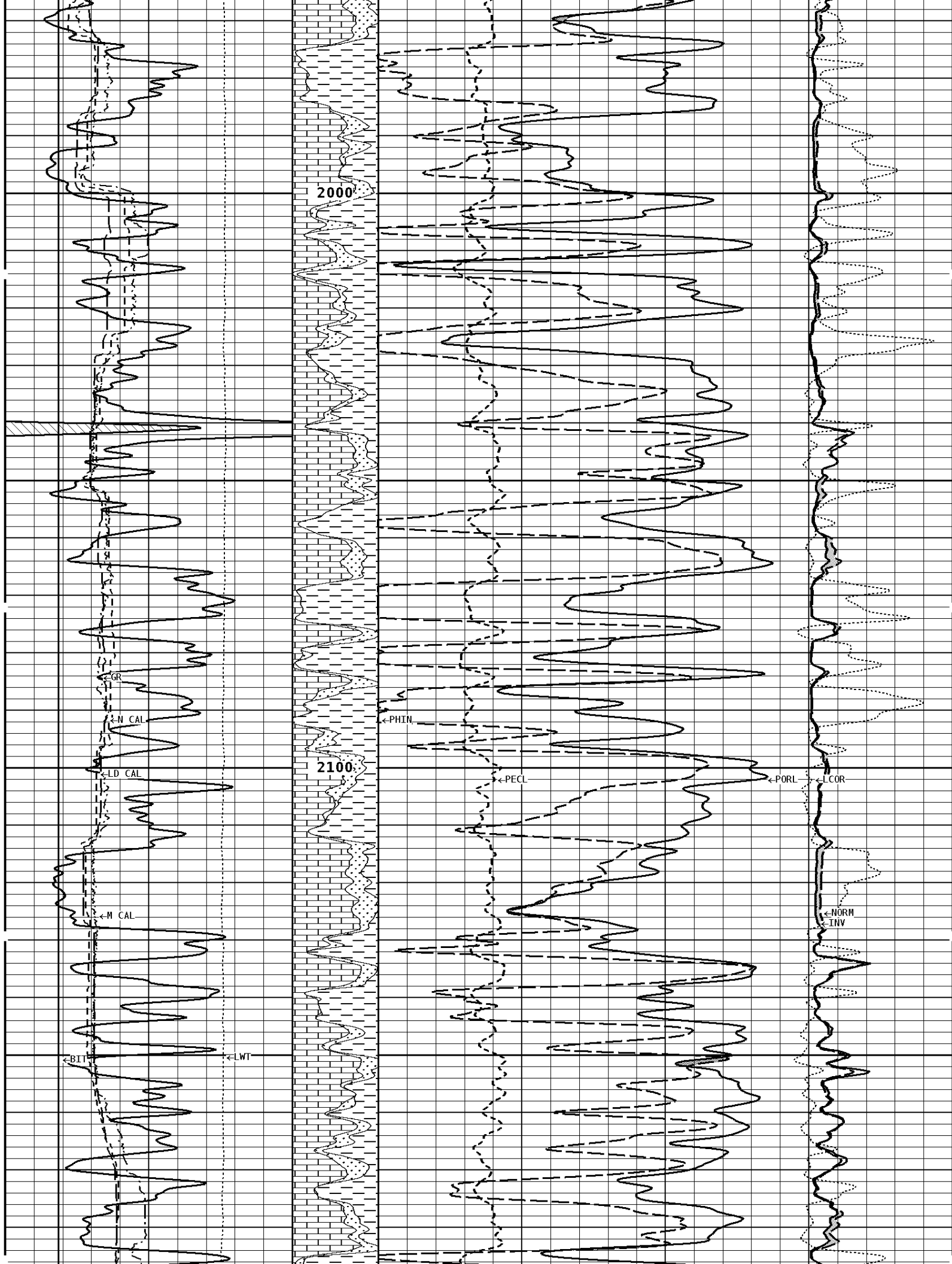


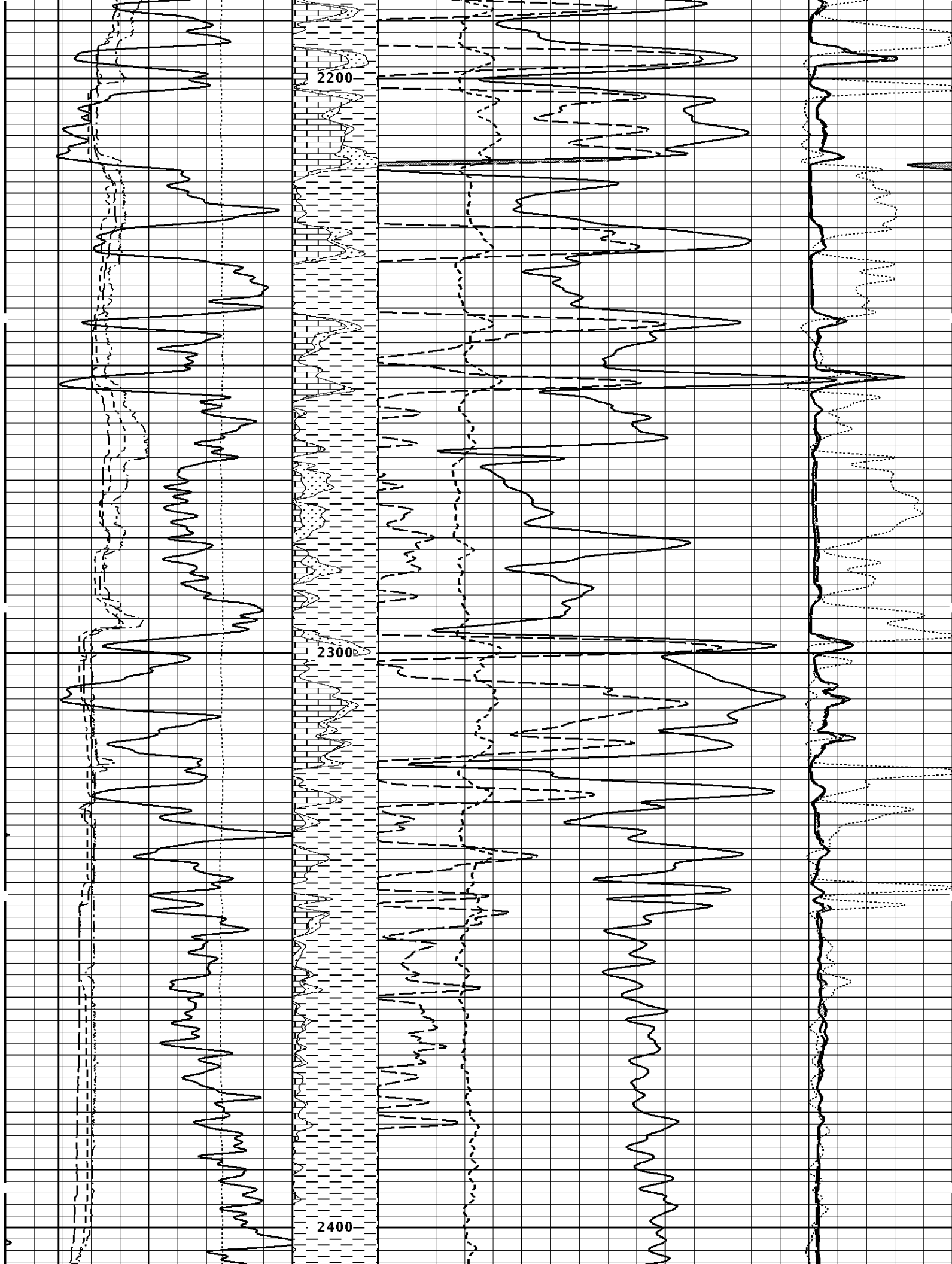


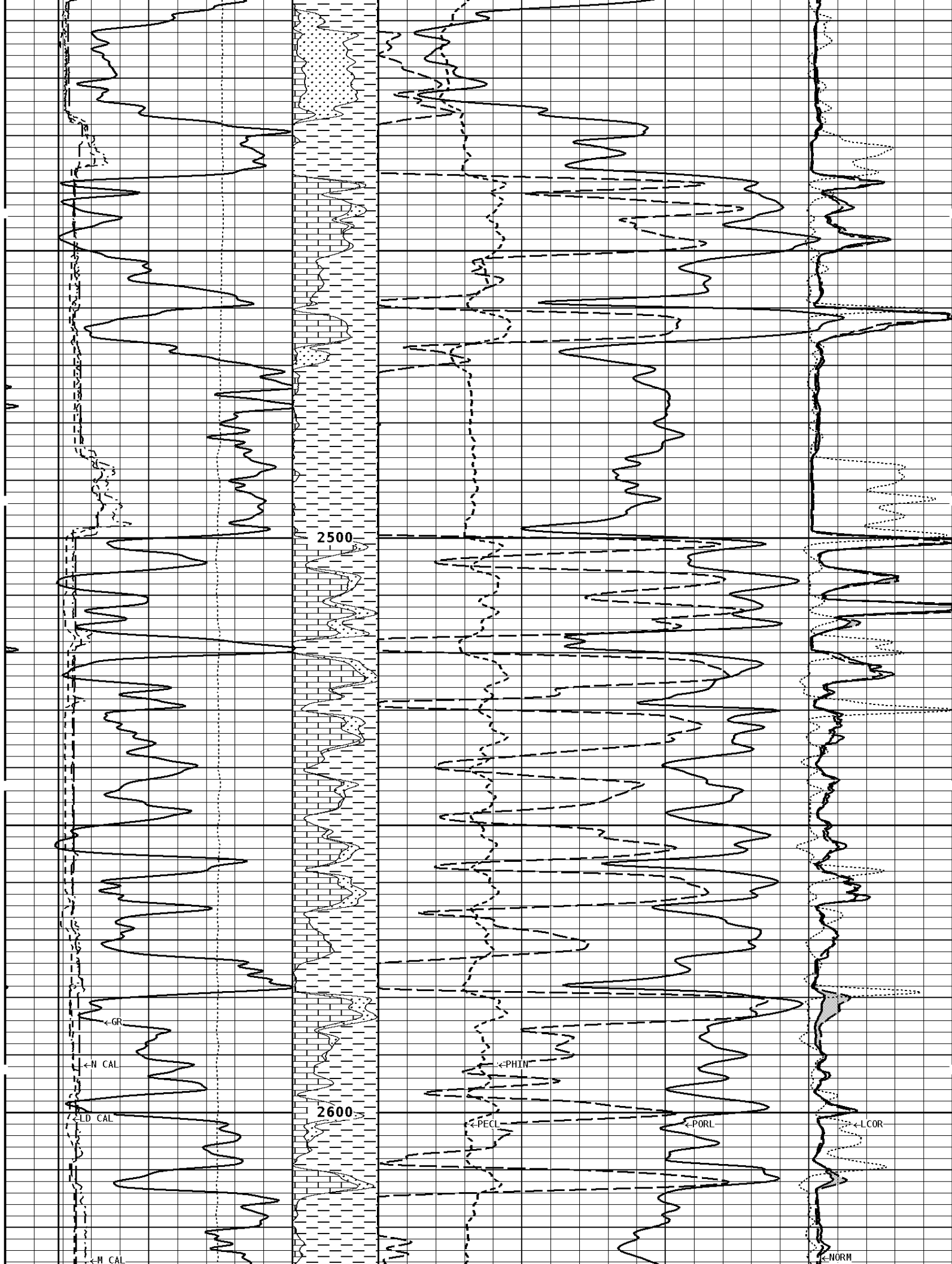


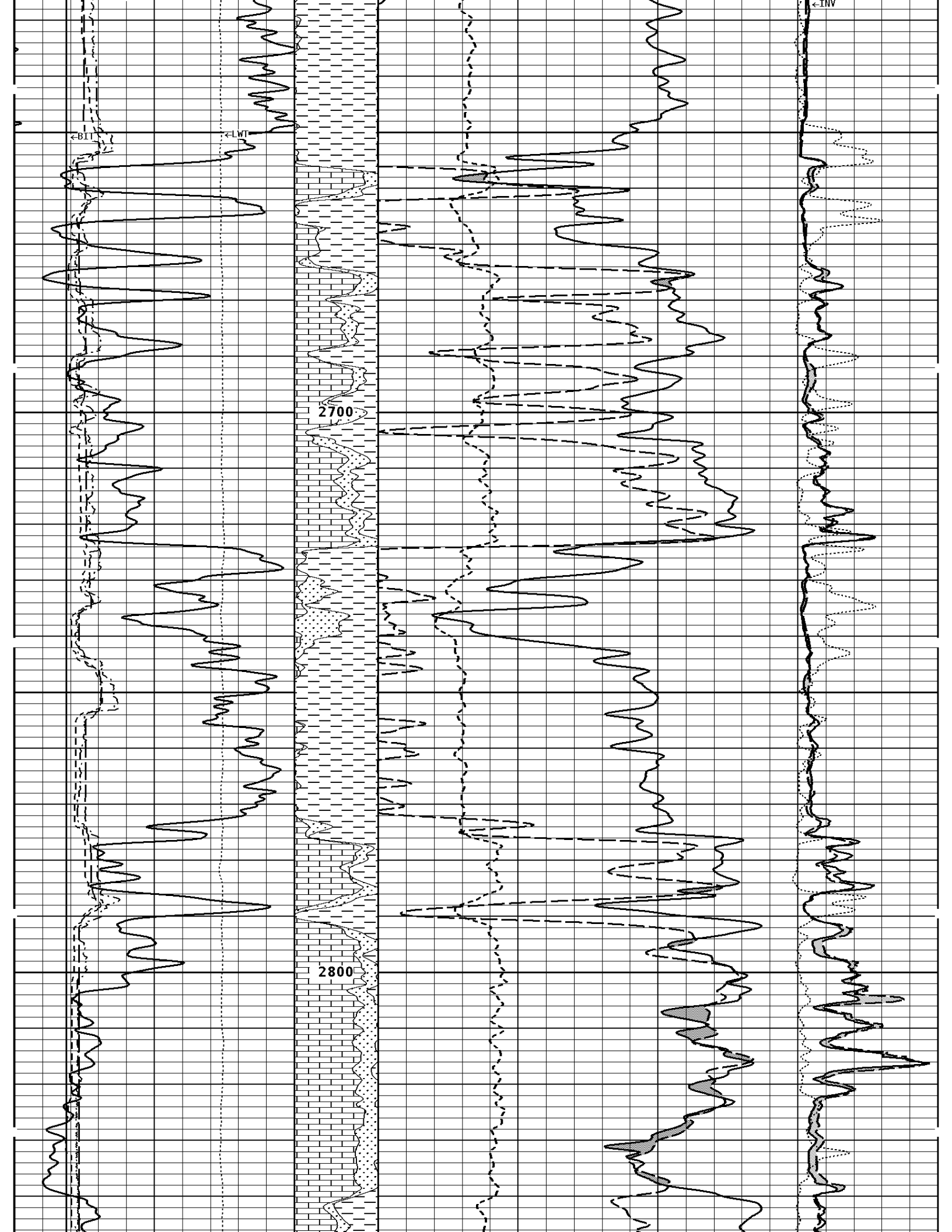


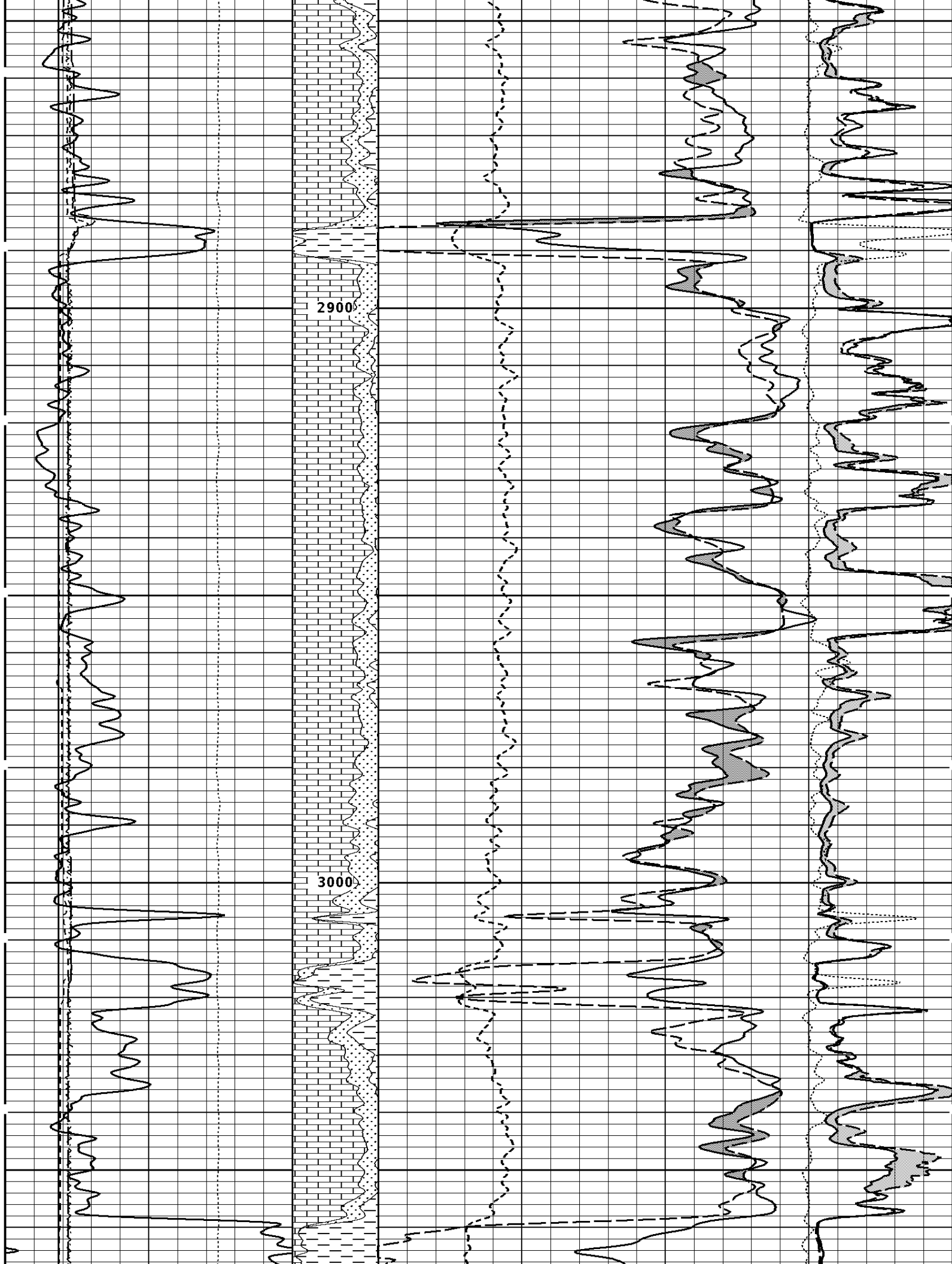


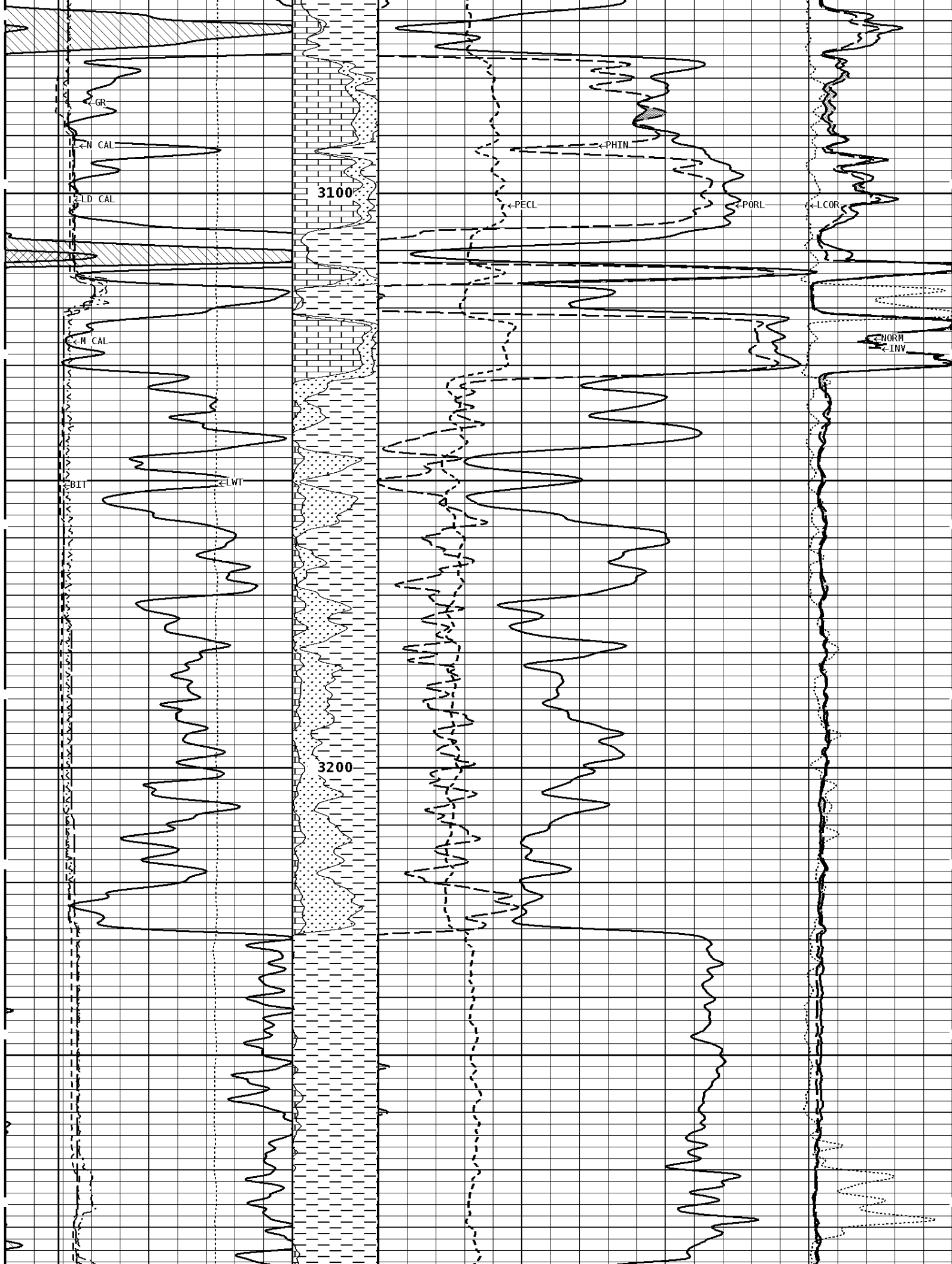


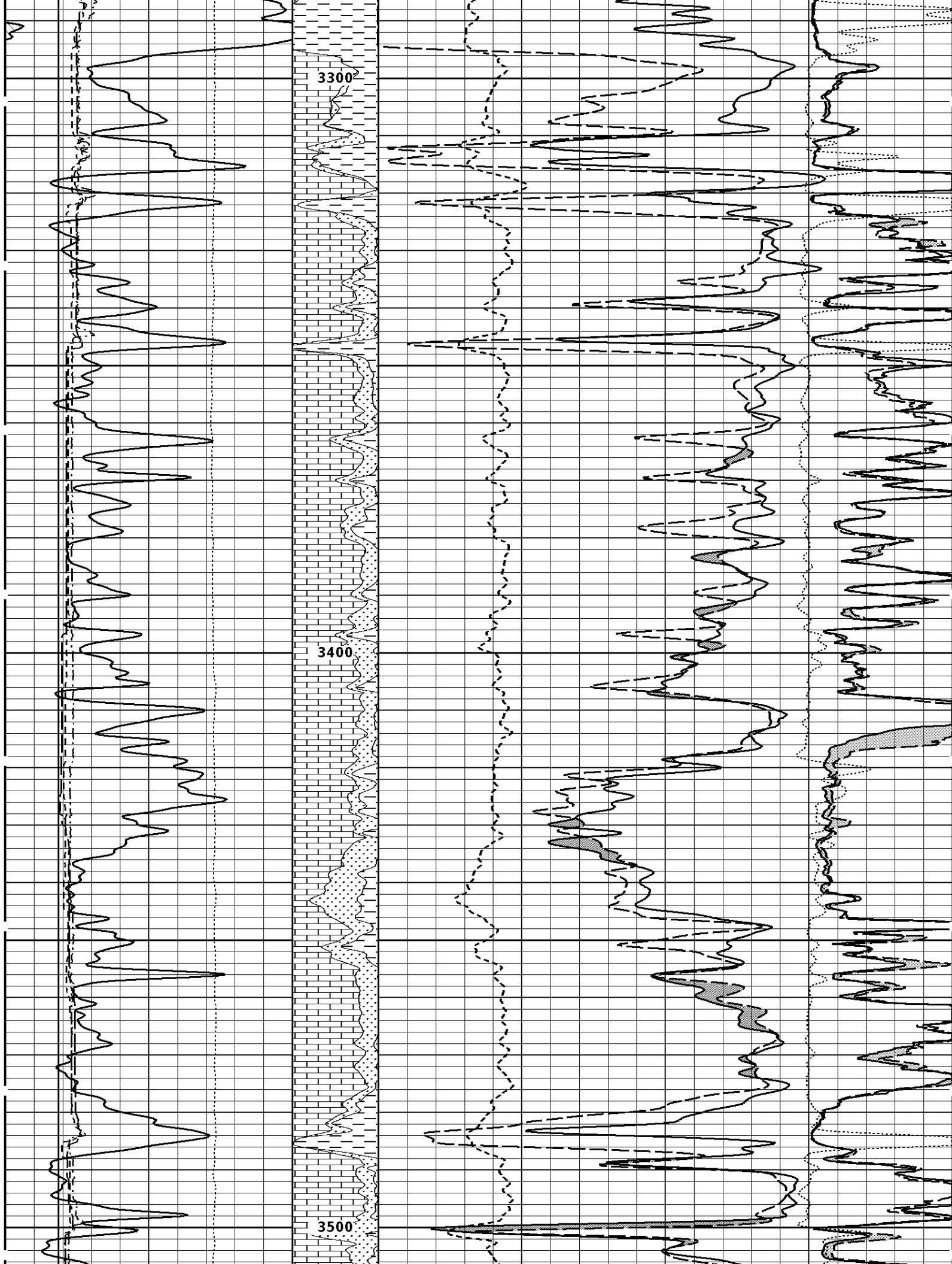


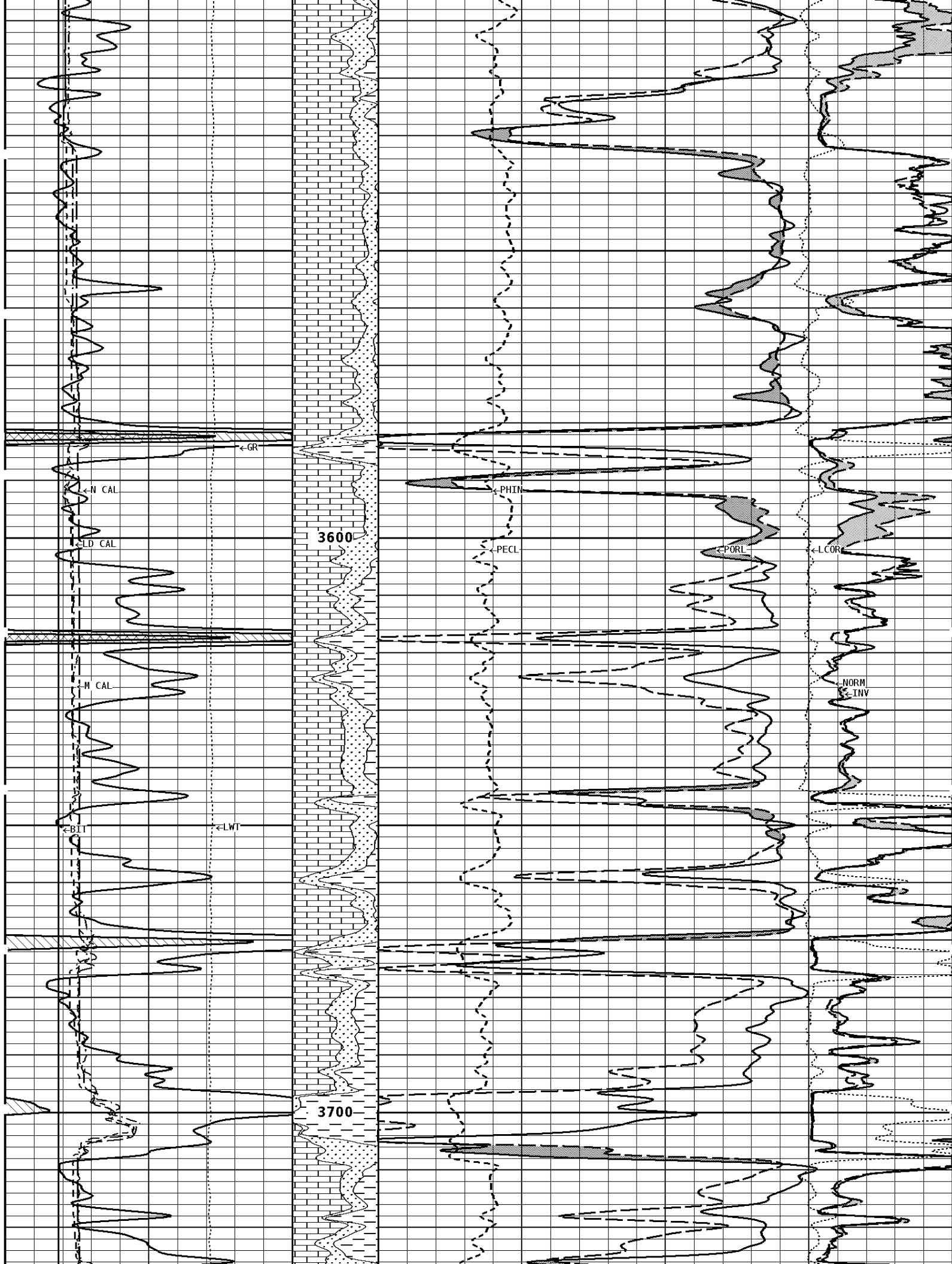


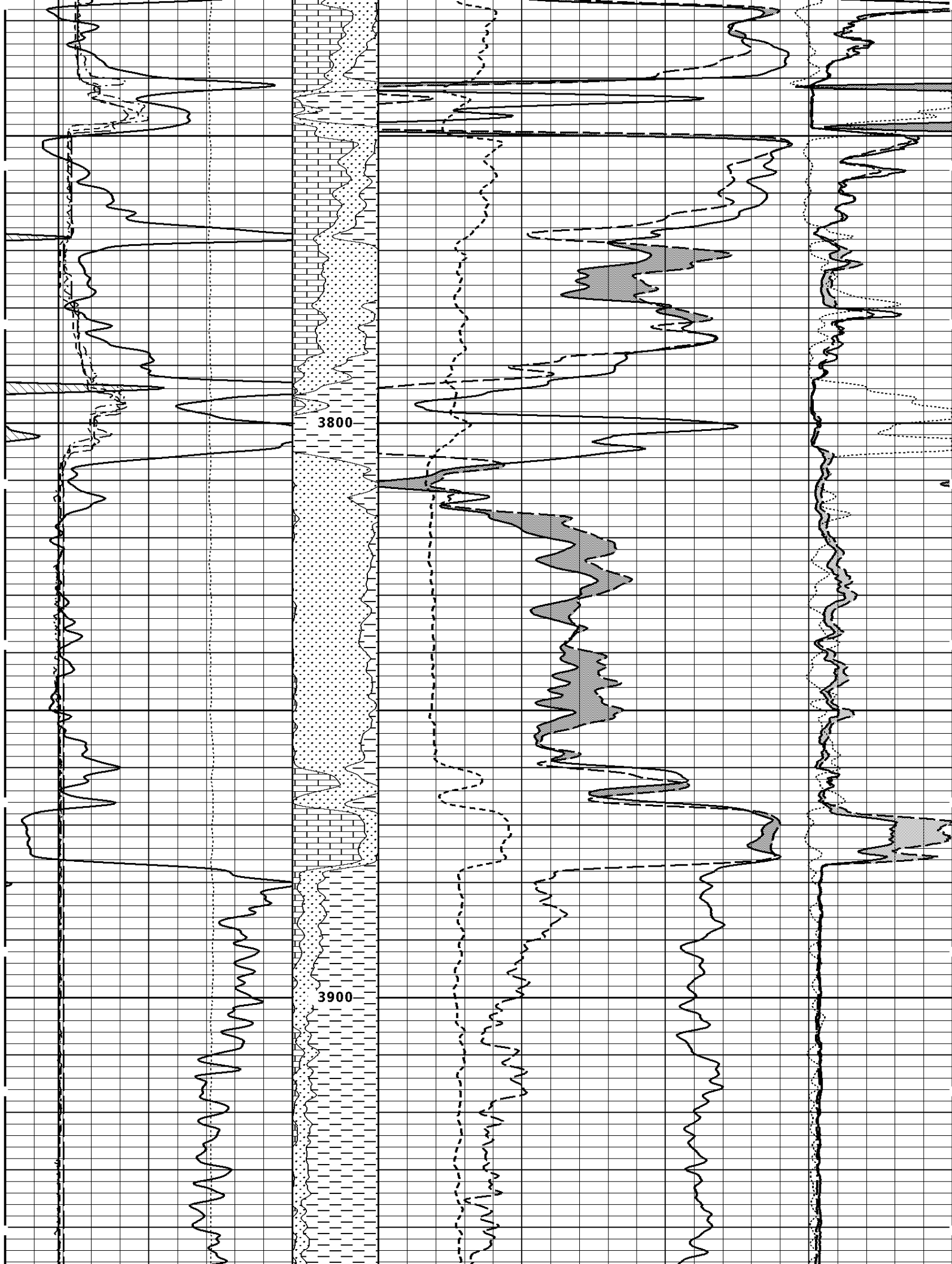


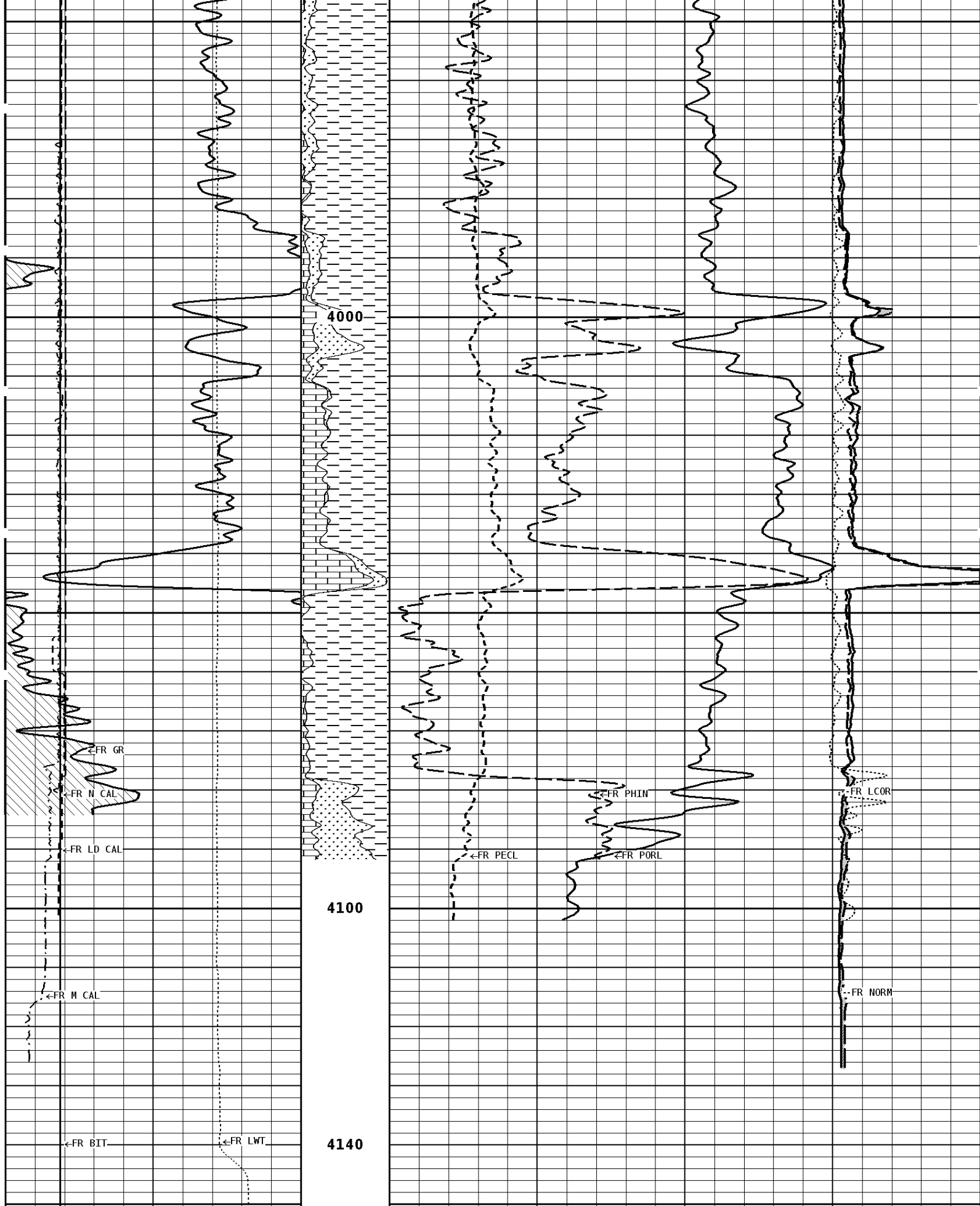












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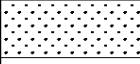
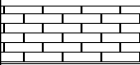
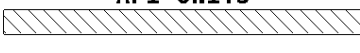
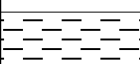
GAMMA RAY API UNITS 150 300		Volume Dolo/Shale 	NEUTRON POROSITY (LIMESTONE) PERCENT 30	
TENSION LBS 10000 0		Volume Calcite 	DENSITY POROSITY (2.71g/cc) PERCENT 70 30	
DENSITY (X) CALIPER INCHES (IN) 16 6 26 16		Volume Quartz 	PE CROSS-SECTION BARNs/ELECTRON 0 10	DENSITY CORRECTION G/CC -0.25 0.25
NEUTRON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

*** Borehole Zone Factors ***

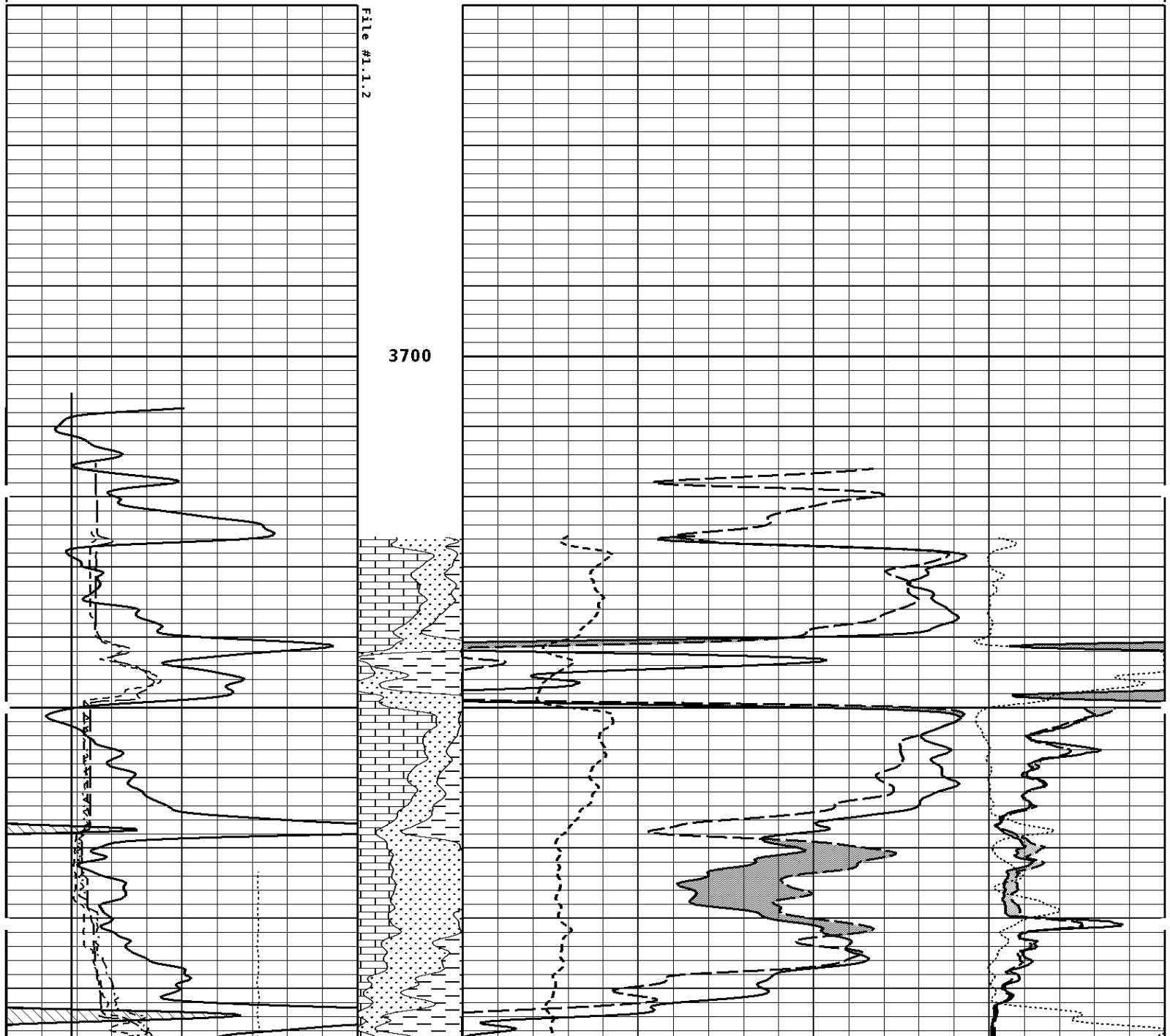
Zone 1 99999.0 to 0.0 Feet		
Matrix Density	2.71	g/cc
Fluid Density	1.00	g/cc
Formation Matrix	Limestone	
Drill Bit Size	7.875	in
Casing Diameter	5.500	in
Casing Thickness	0.250	in
Casing Correction (PHI N)	Disable	

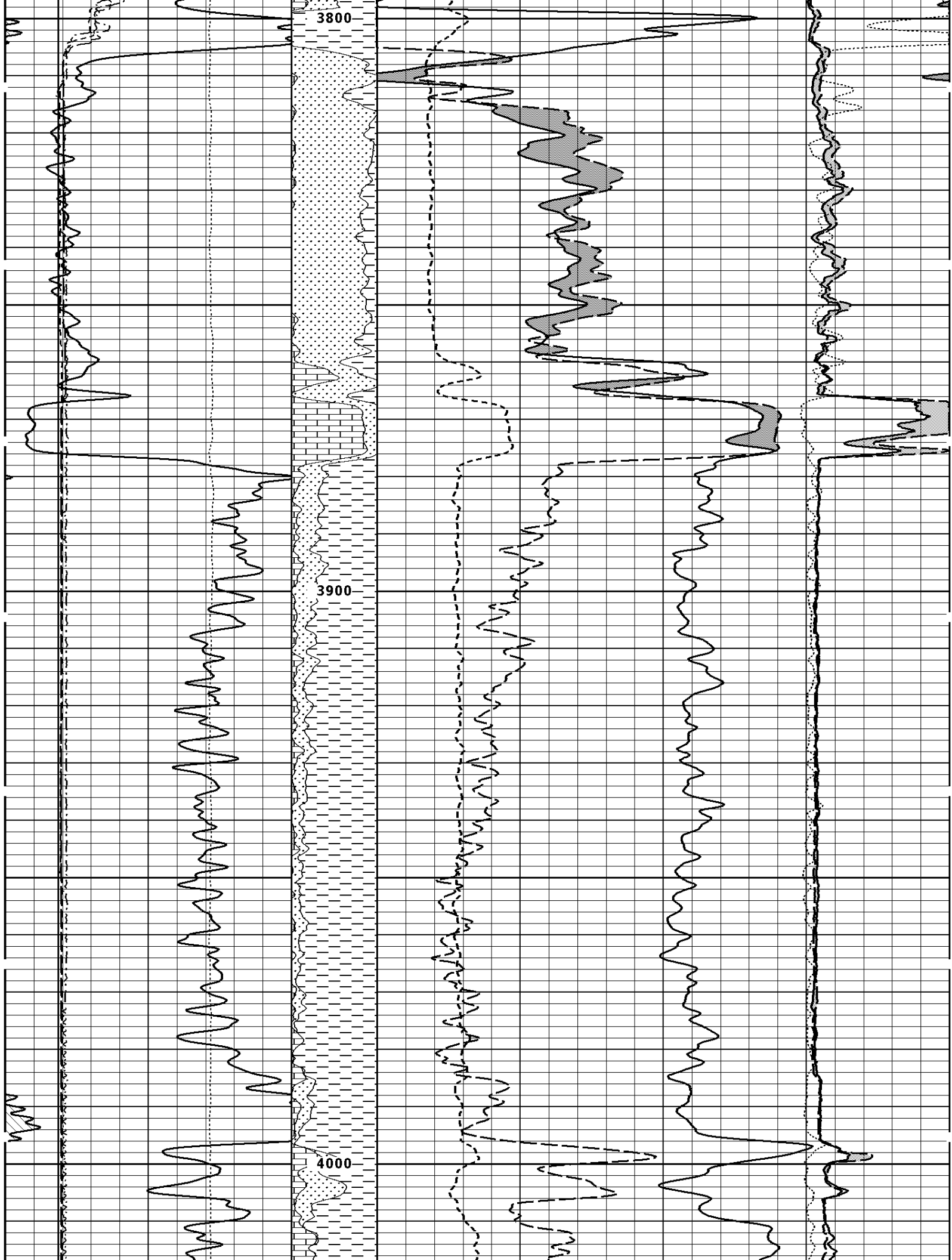
Well File: GRAND_MESA_PREISSER_1-34_DEC-14_QUINT	Scale: 1:240	Format: NLD-240
Segment: V1.D1.S2 re	Acquired: 2019-12/14 12:05 3.4.1-13972	
Reference: 0	Processed: 2019-12/14 12:05 3.4.1-13972	

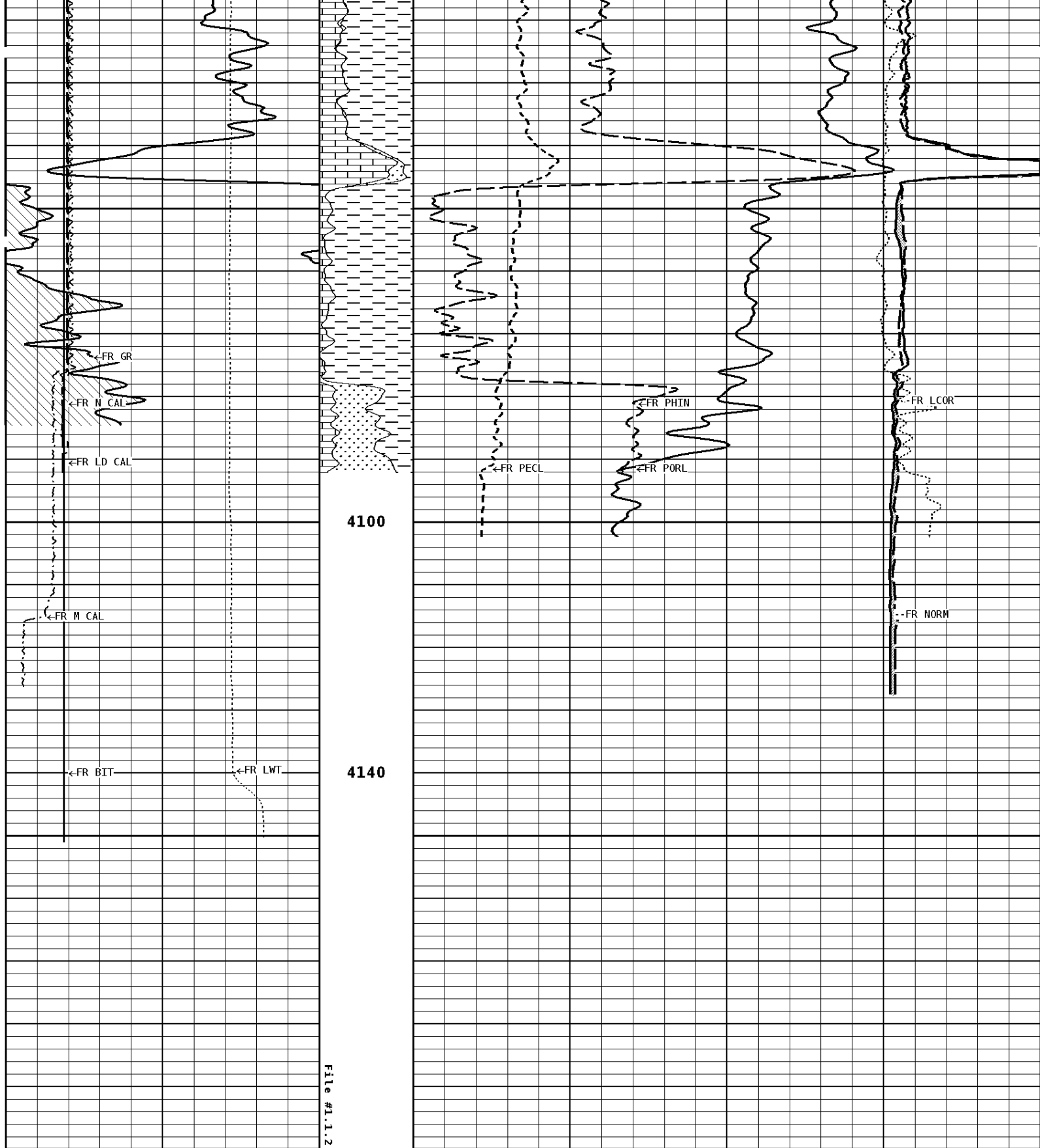
CALIPER MICRO INCHES (IN)					
16	26				
6	16				
BIT SIZE INCHES (IN)					
6	16				
NEUTRON (Y) CALIPER					

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

1:240 REPEAT SECTION



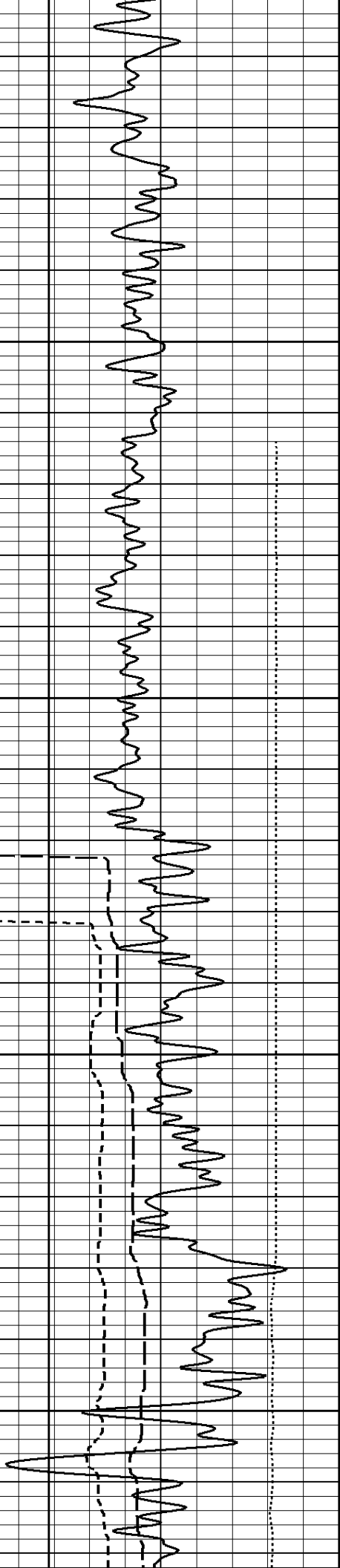




1:240 REPEAT SECTION

GAMMA RAY API UNITS 150 0 300 150	Volume Dolo/Shale	NEUTRON POROSITY (LIMESTONE) PERCENT 30 -10
TENSION LBS	Volume Calcite	DENSITY POROSITY (2.71g/cc) PERCENT

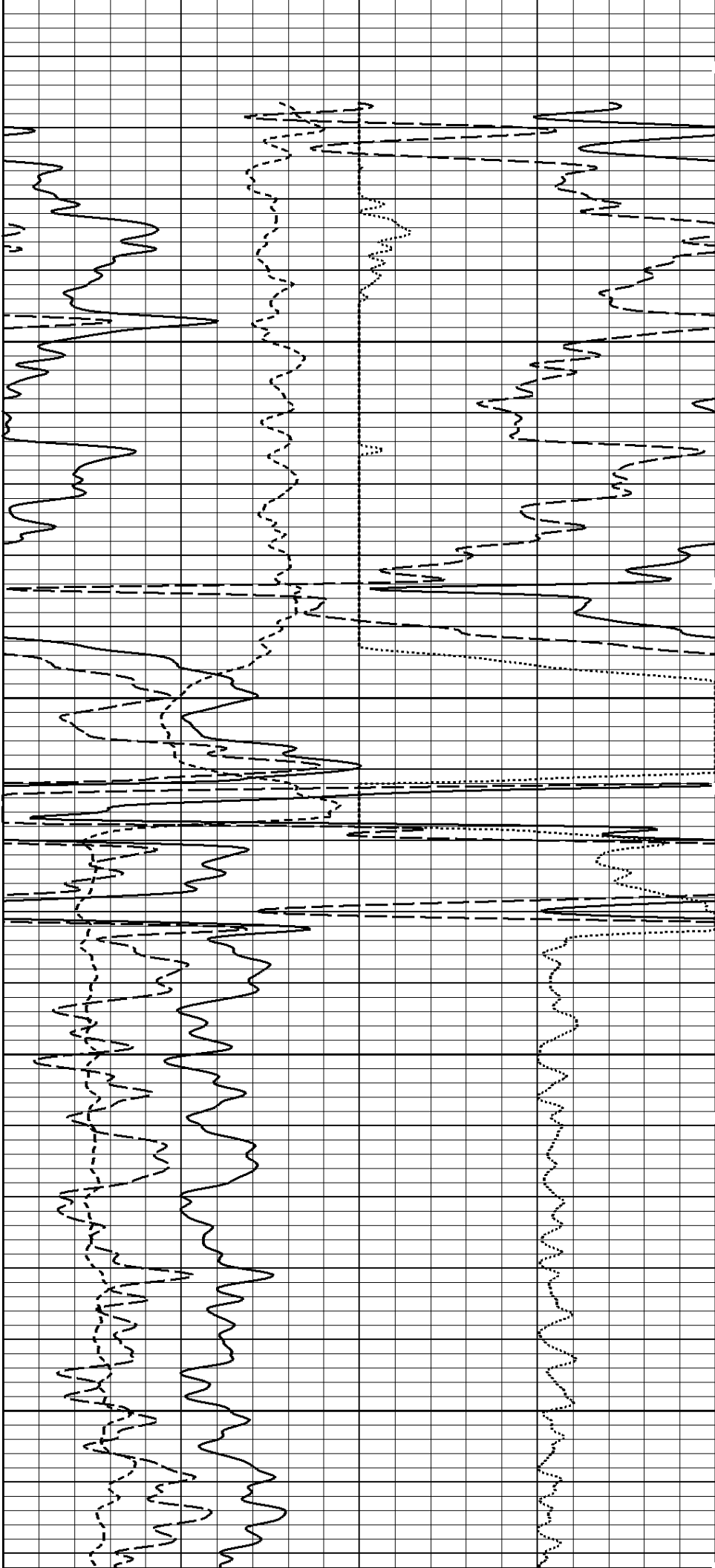
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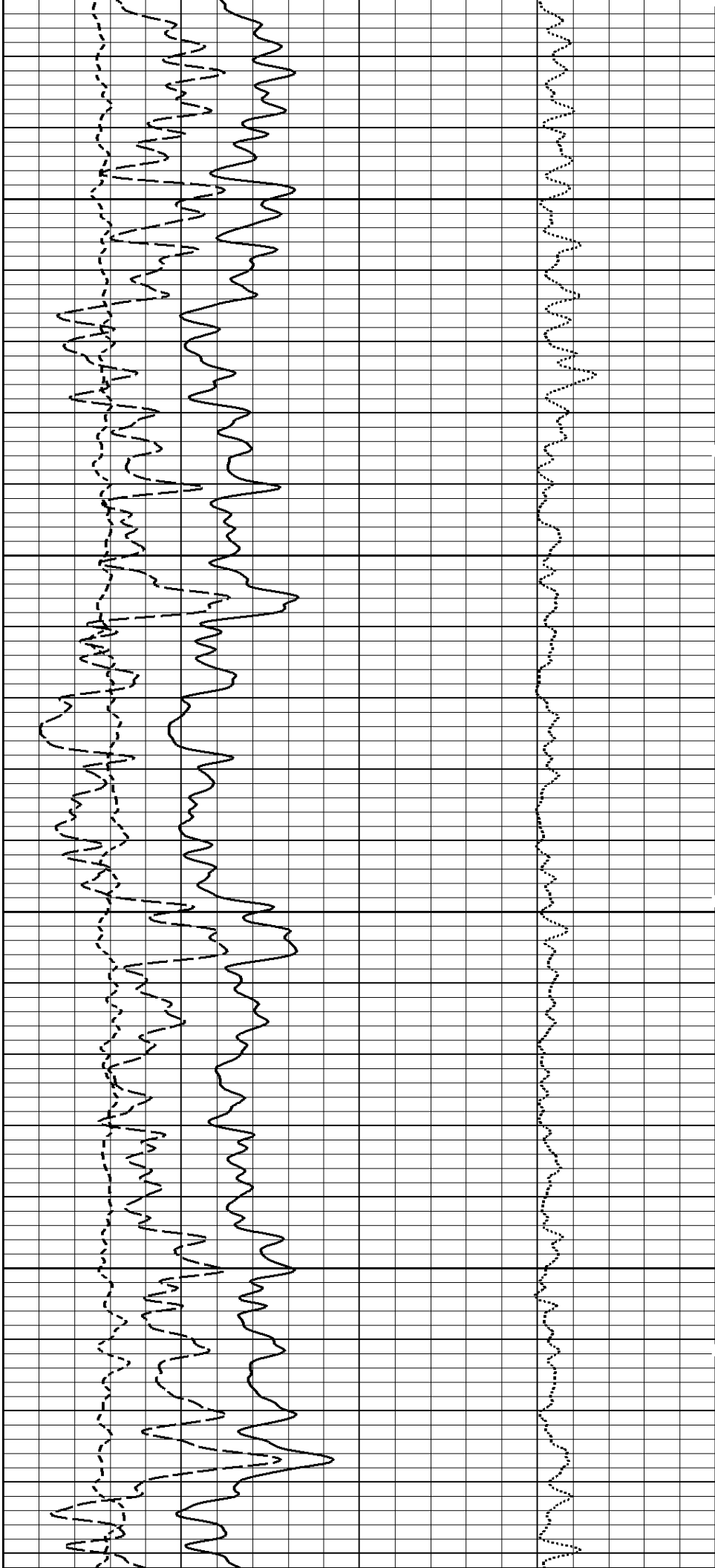
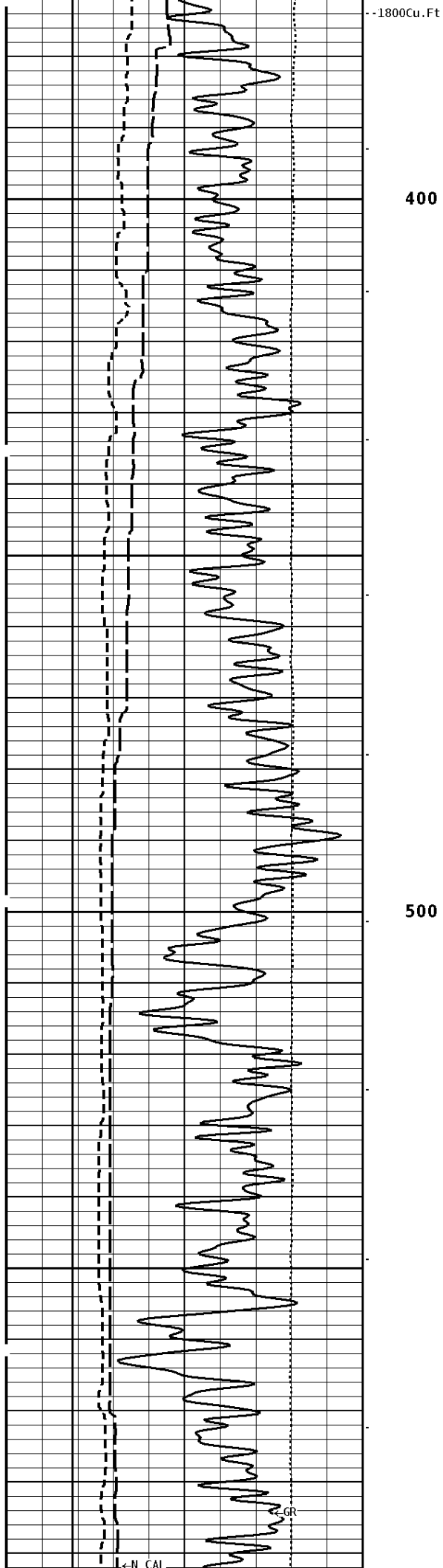


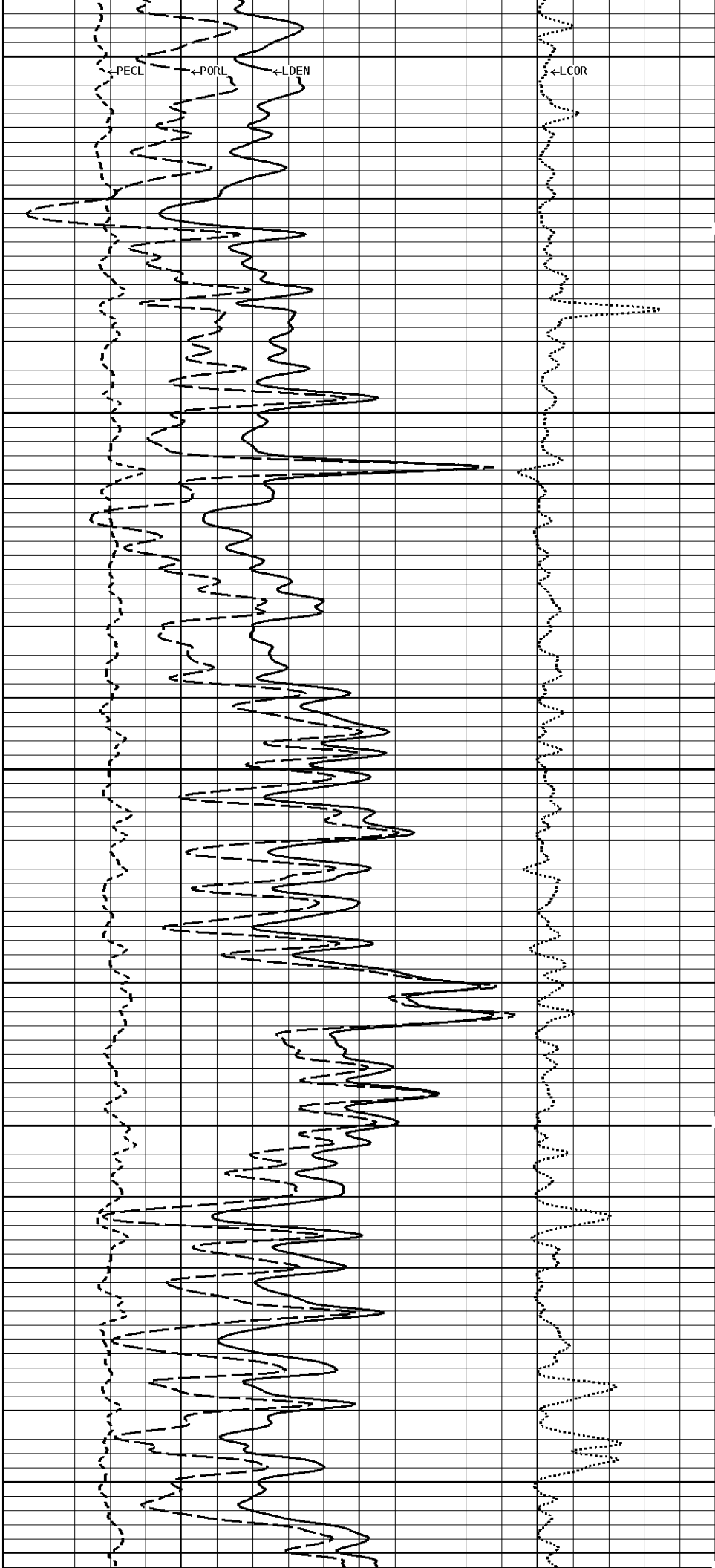
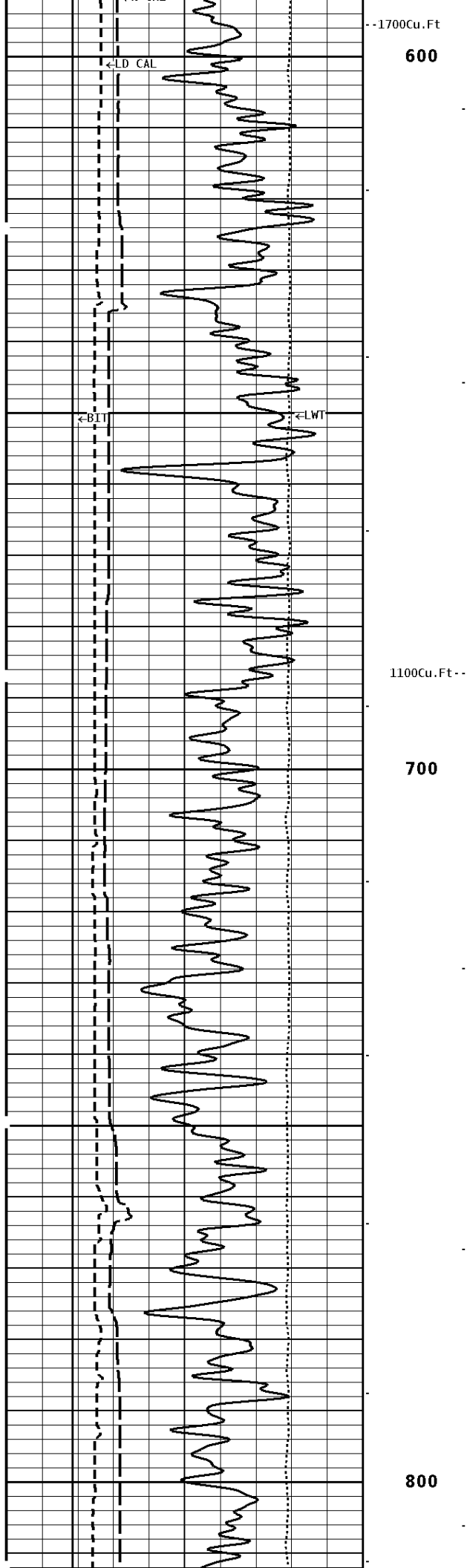
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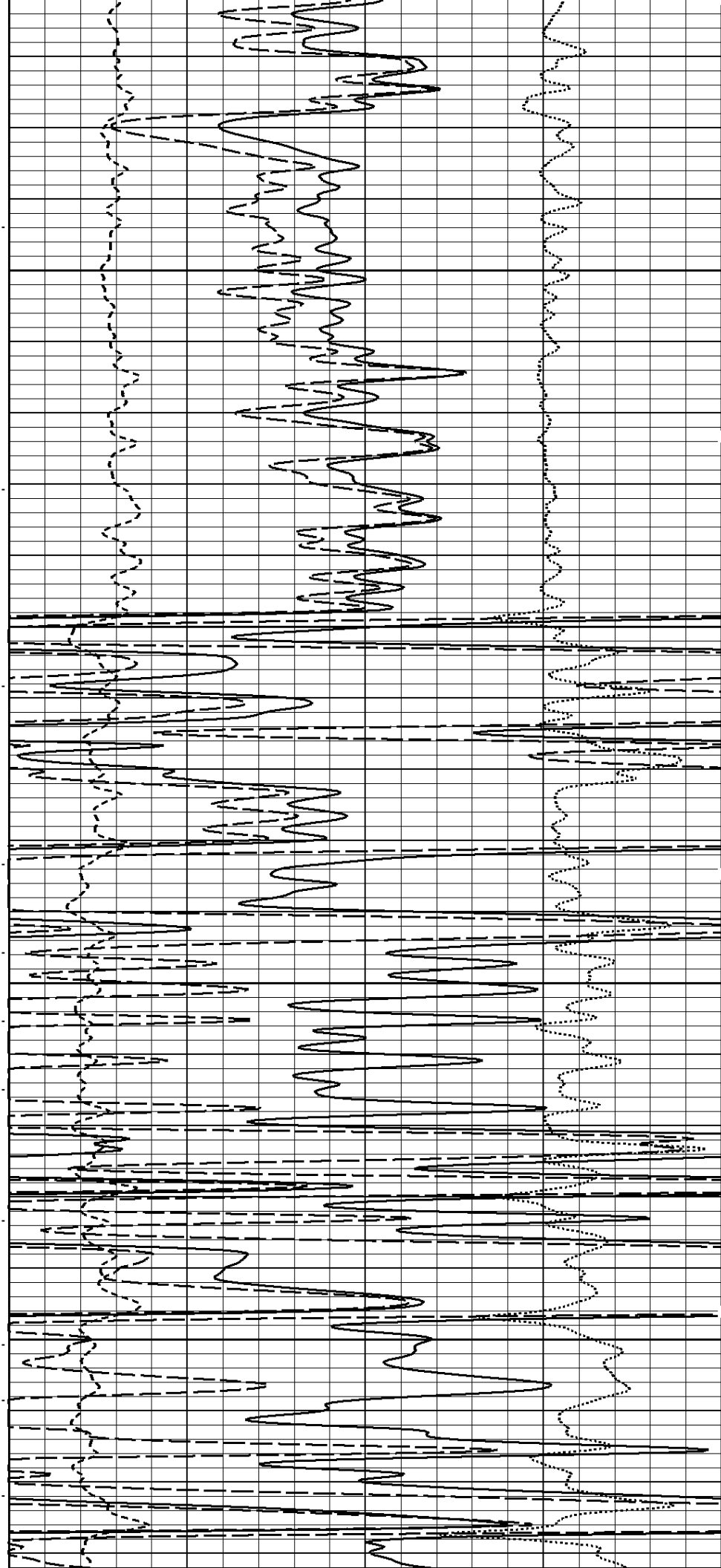
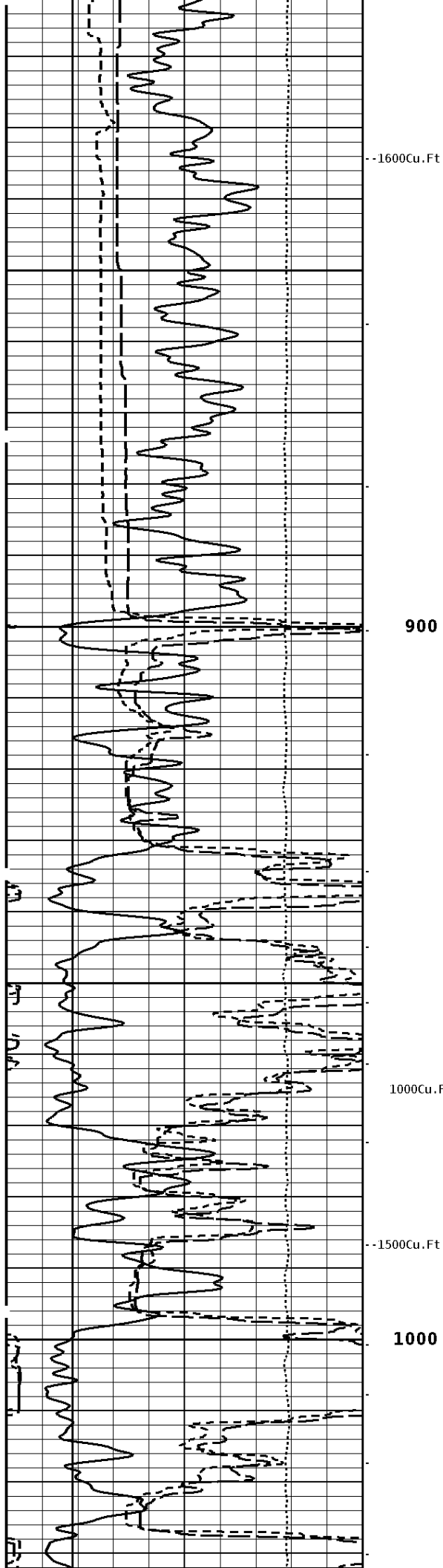
300

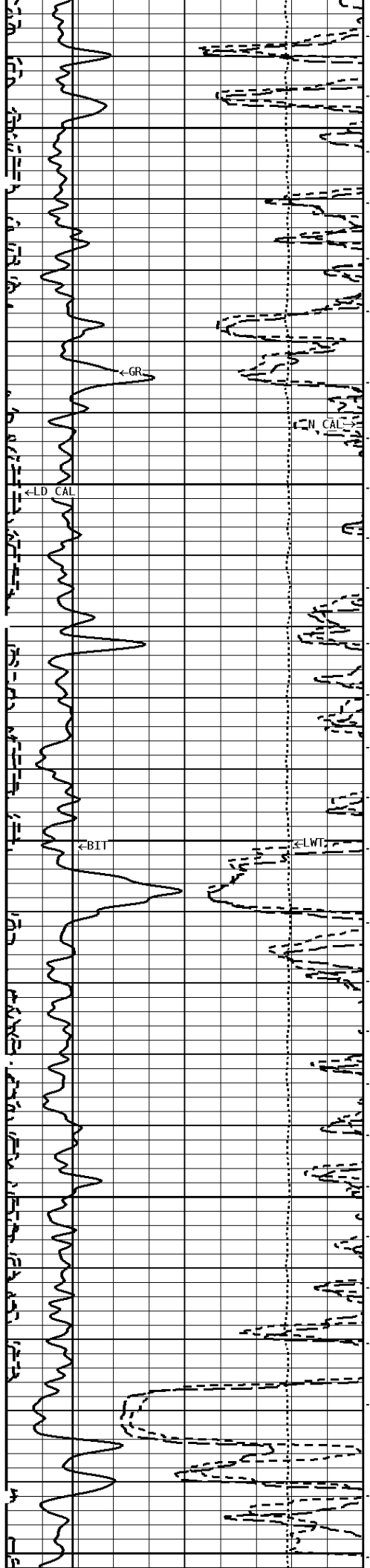
1200Cu.Ft--











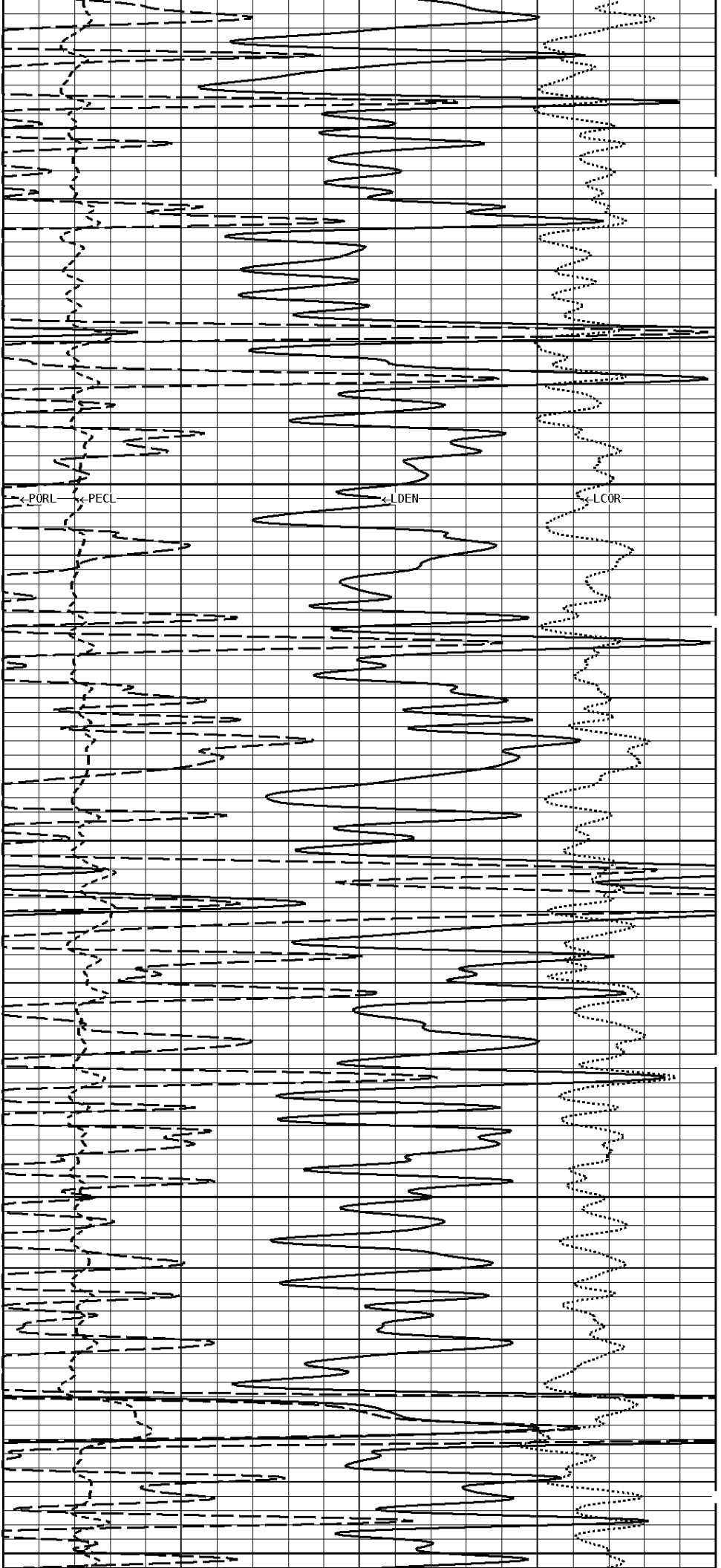
-1400Cu.Ft
900Cu.Ft--

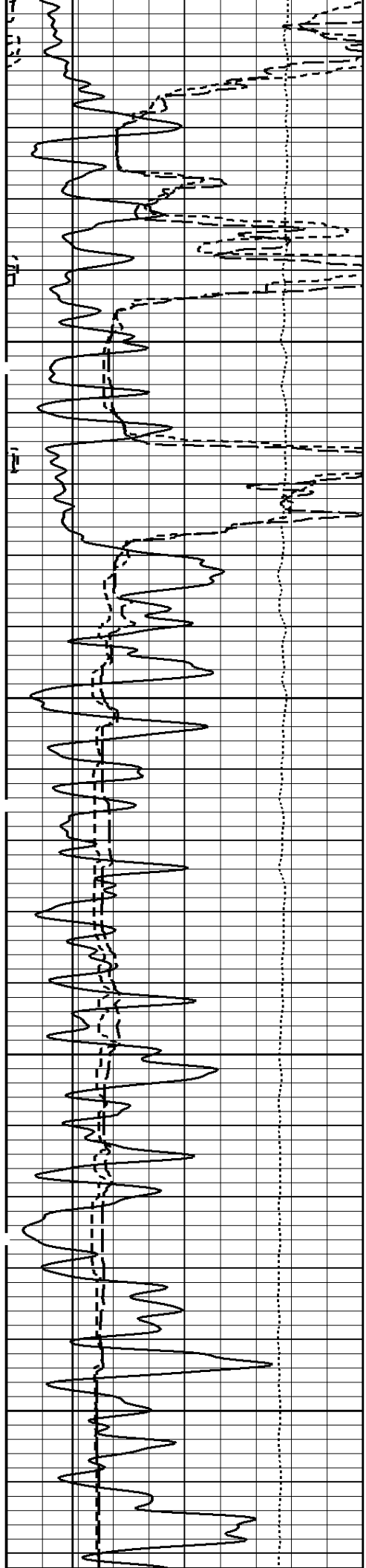
1100

-1300Cu.Ft
800Cu.Ft--

1200

-1200Cu.Ft



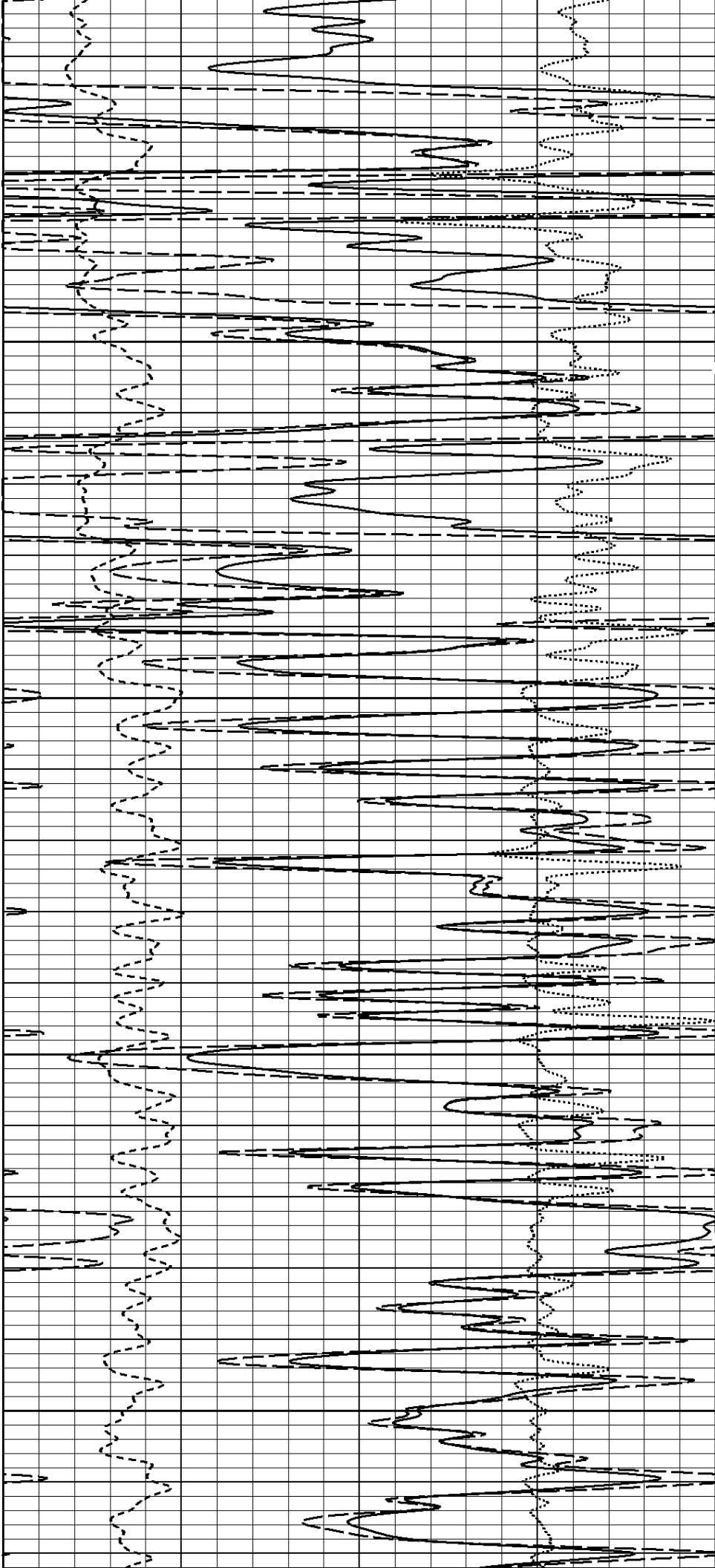


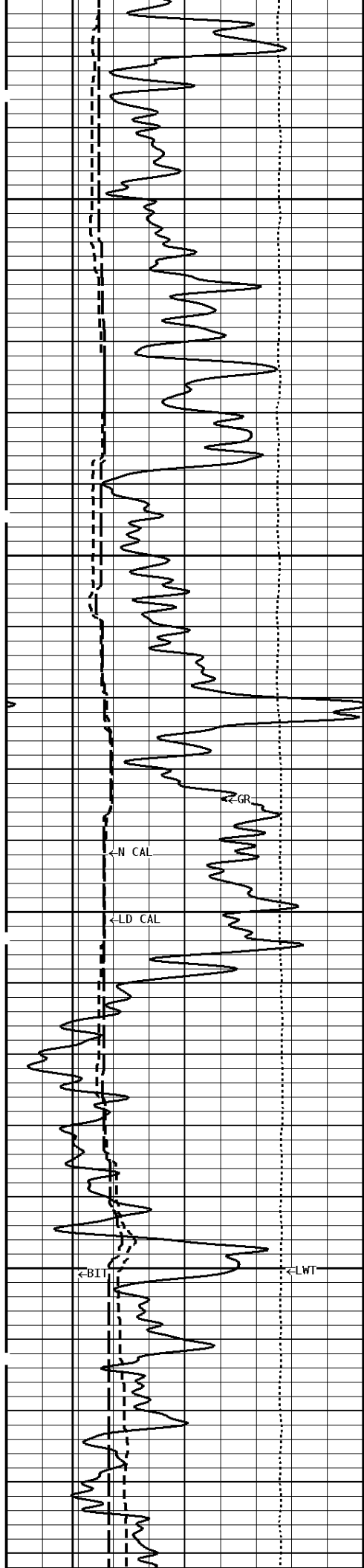
700Cu.Ft.

1300

1100Cu.Ft

1400



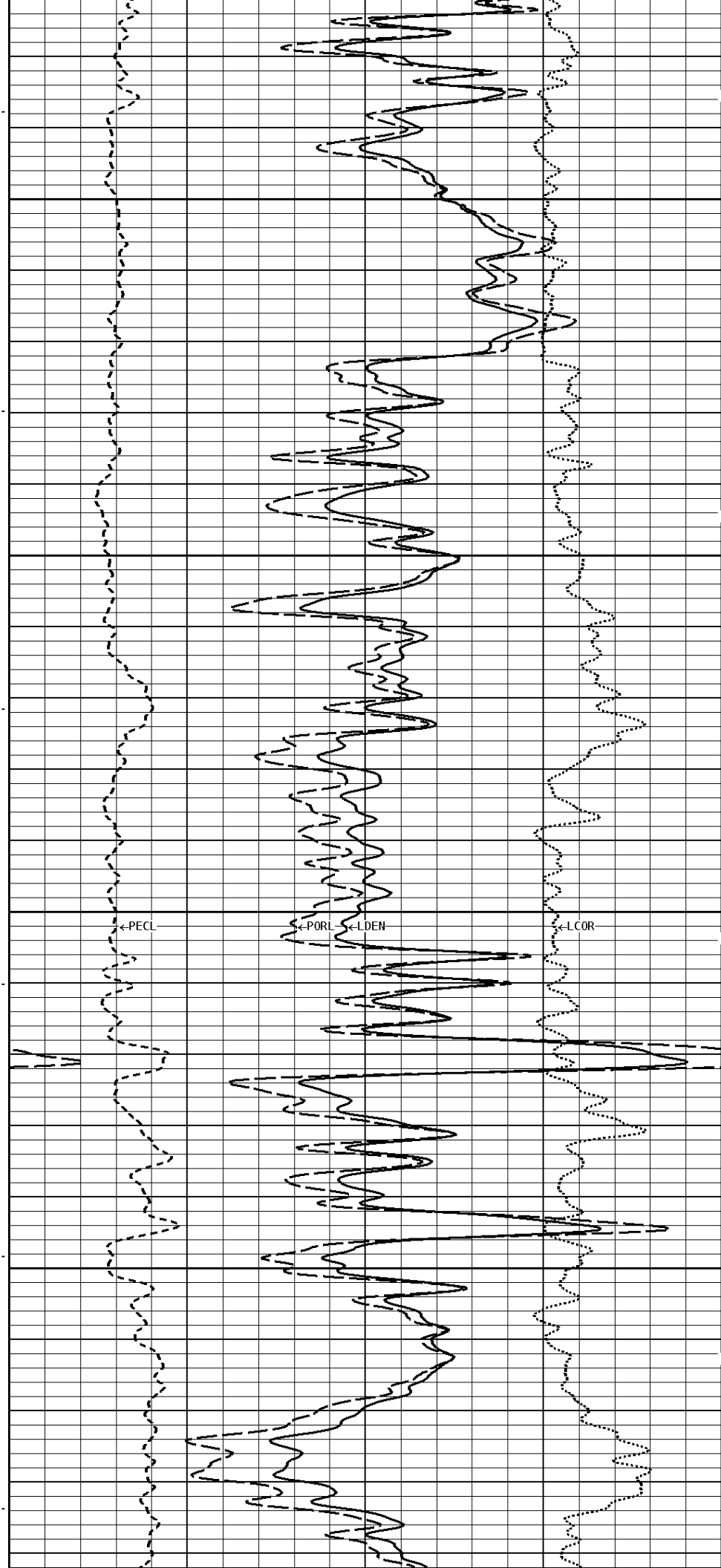


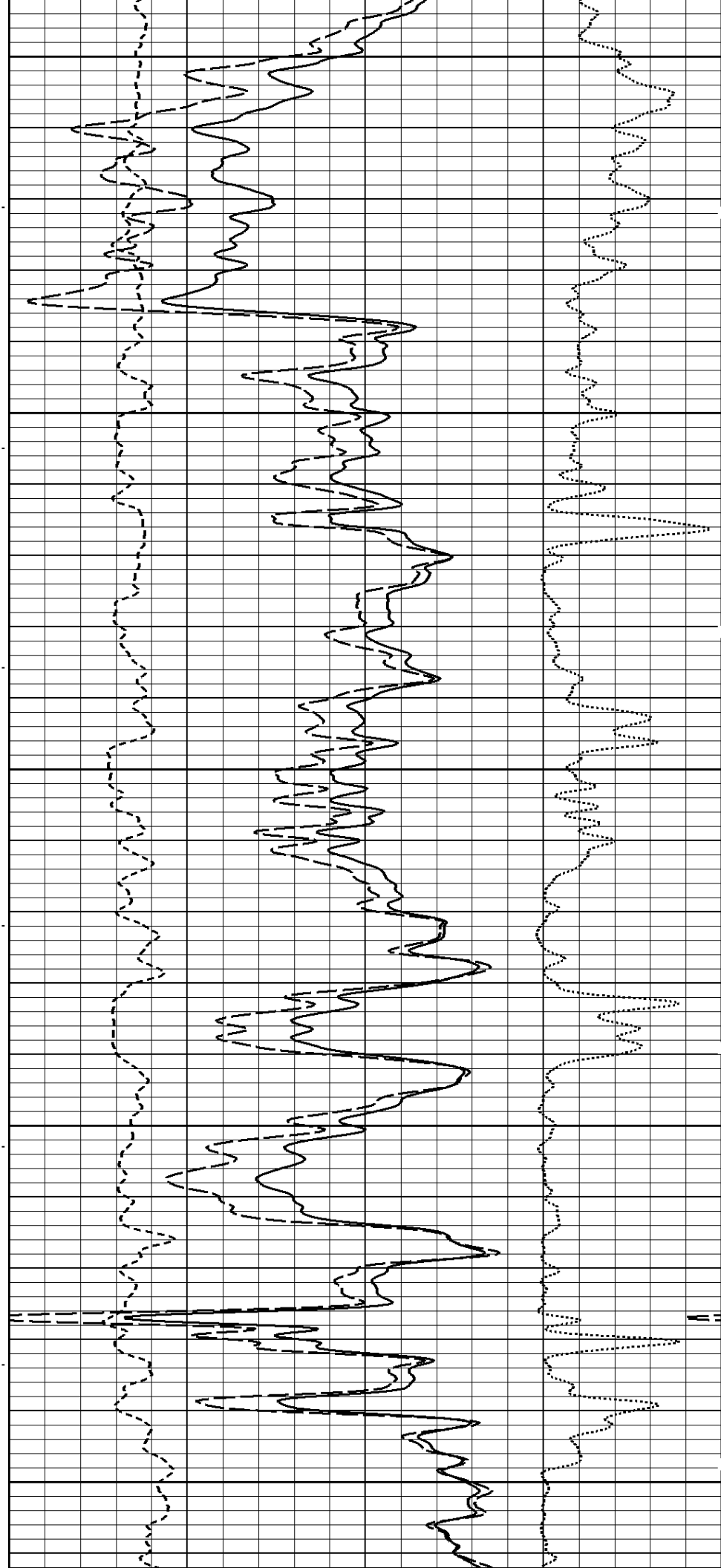
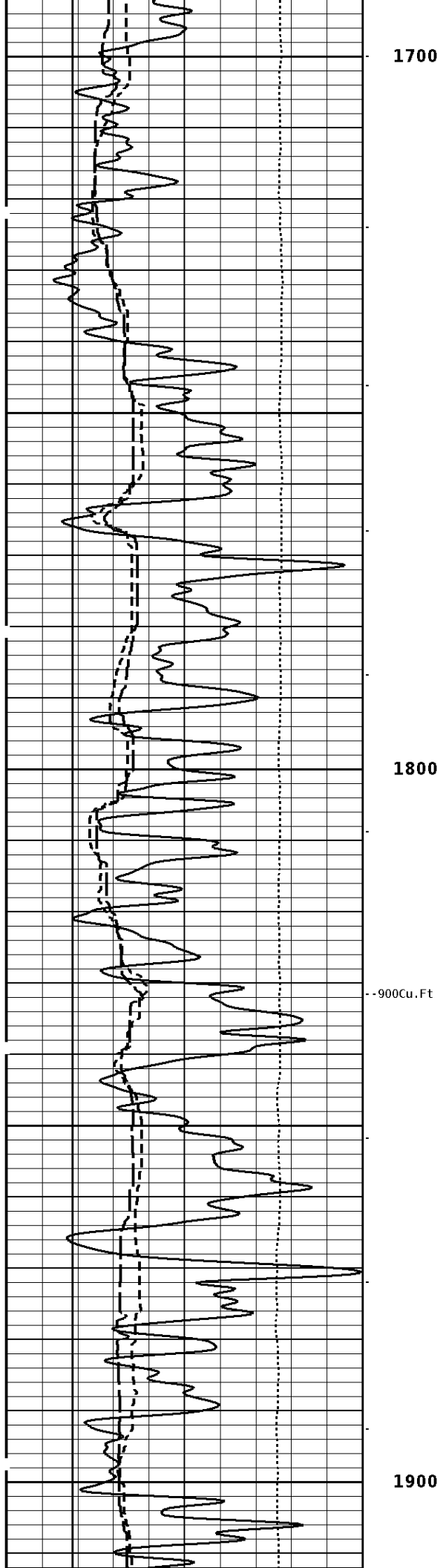
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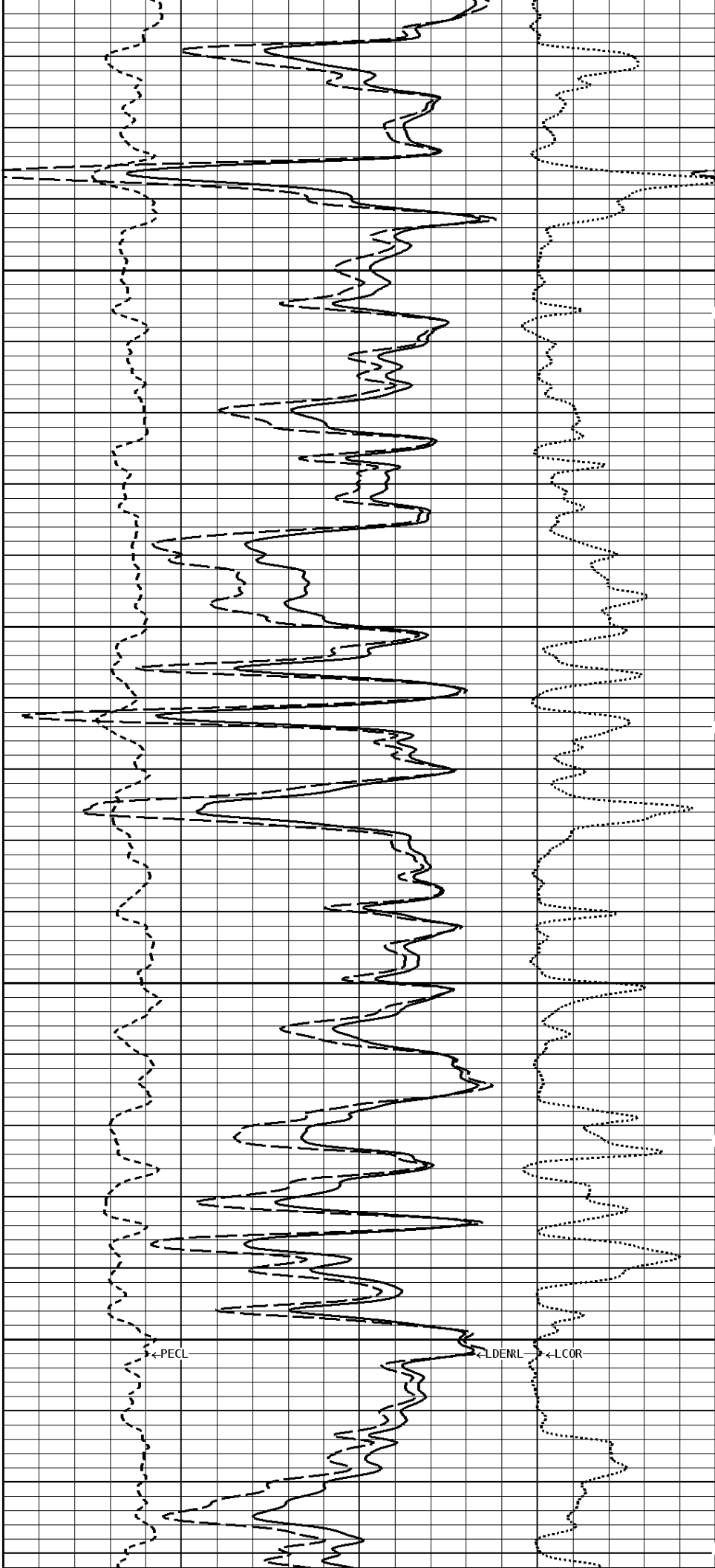
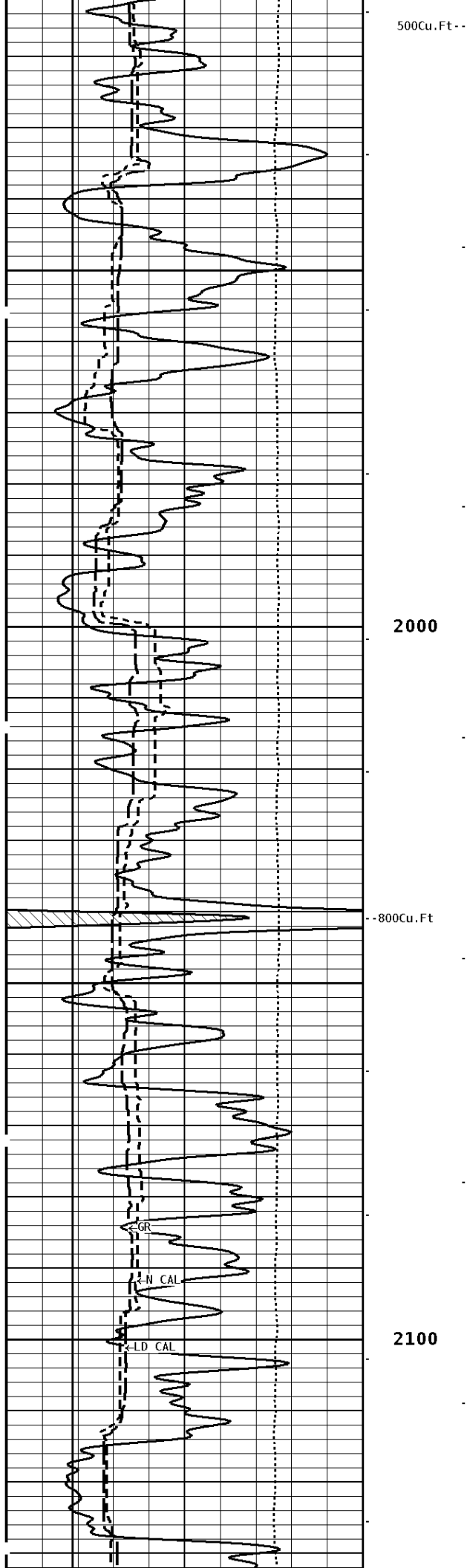
600Cu.Ft--

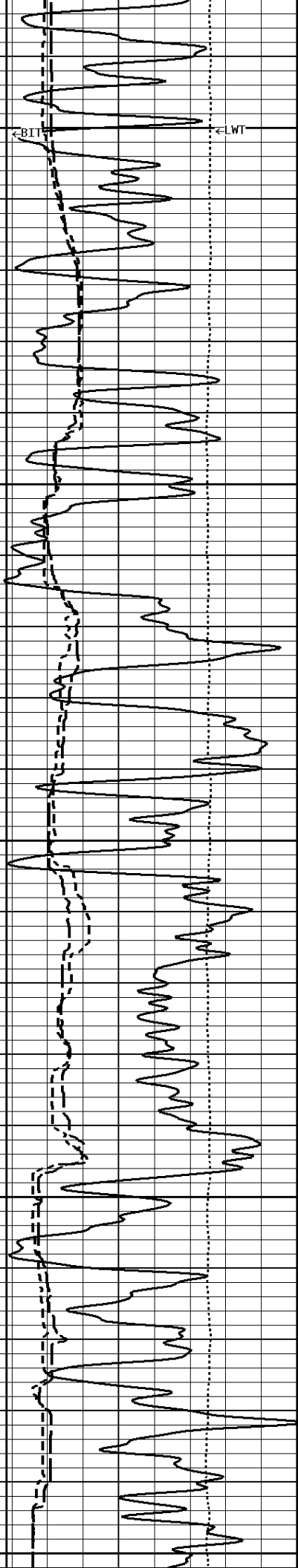
1600

--1000Cu.Ft







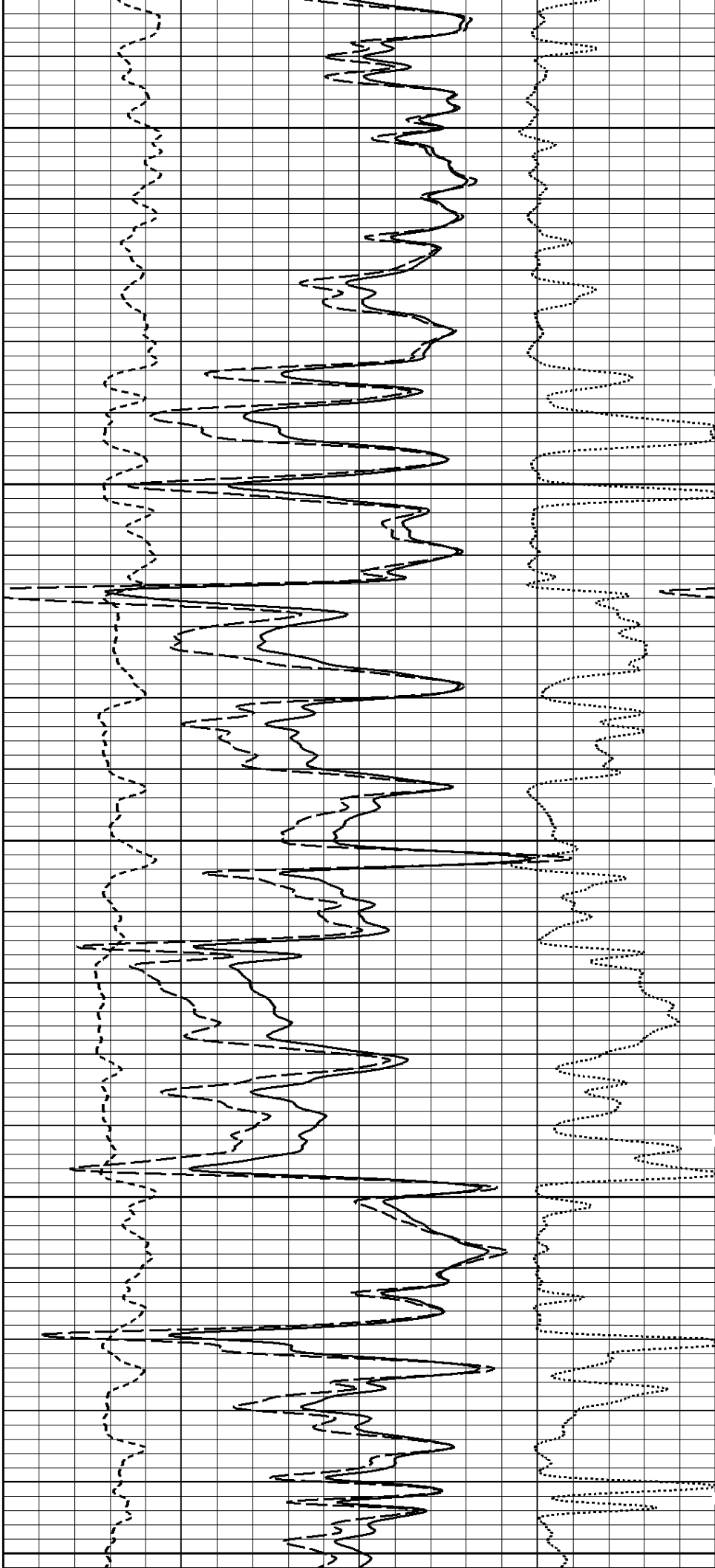


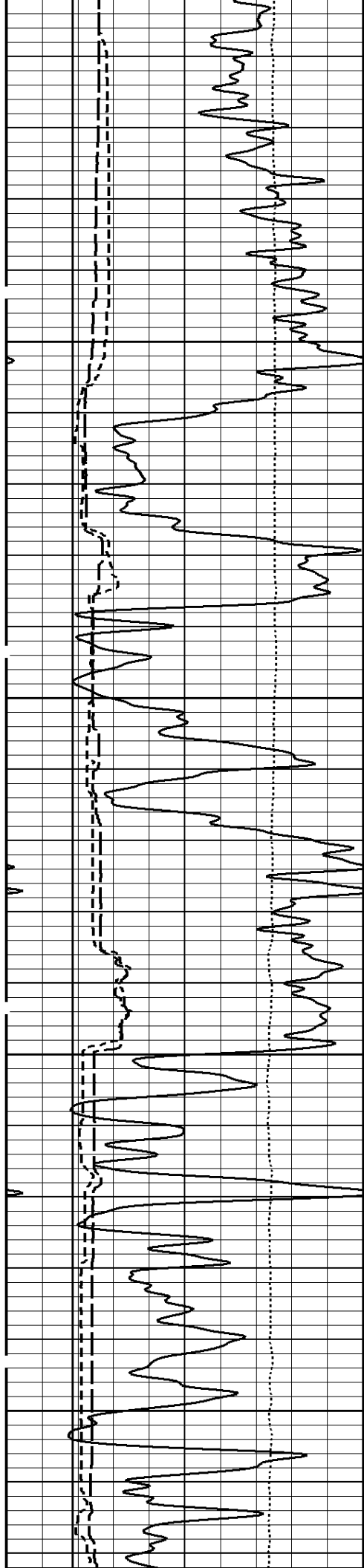
2200

400Cu.Ft.

700Cu.Ft.

2300

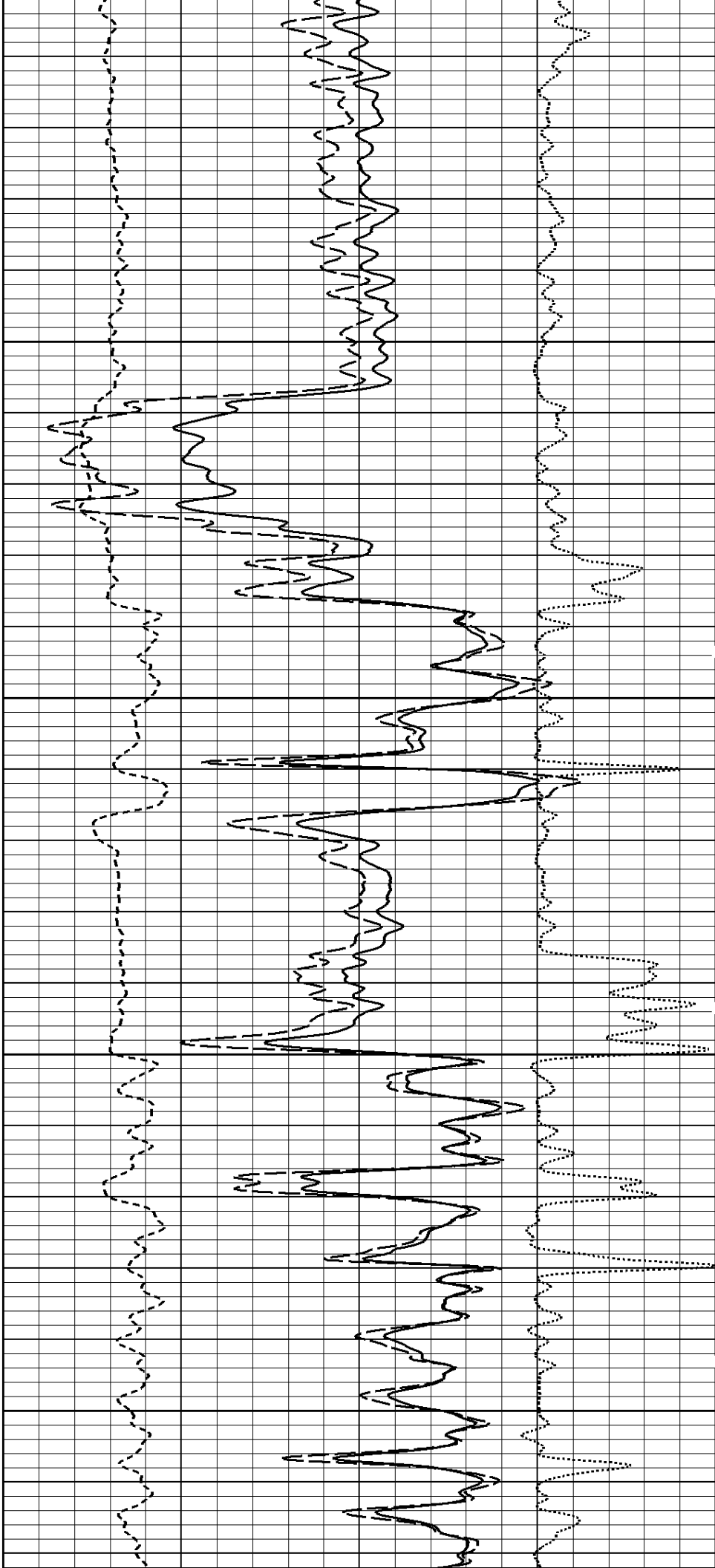


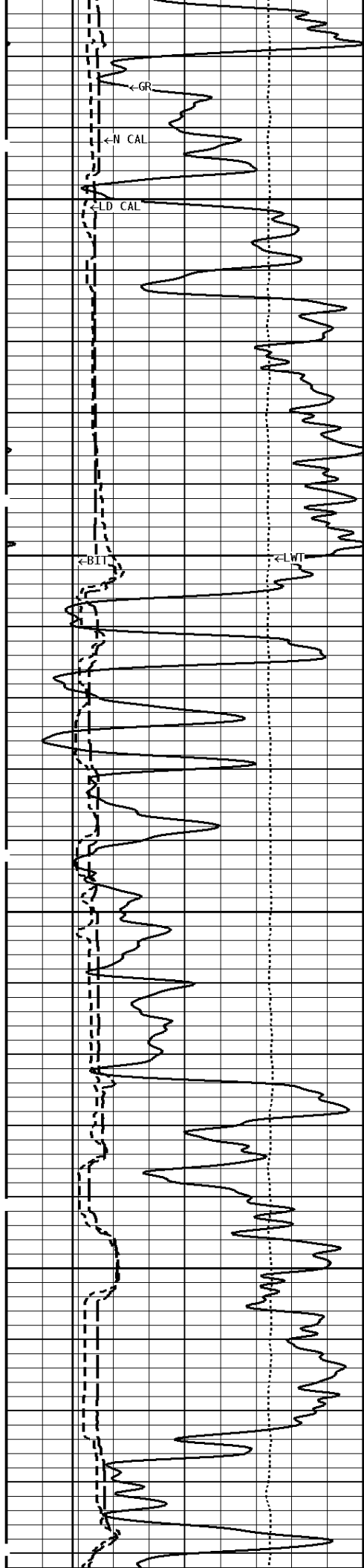


2400

-600Cu.Ft

2500



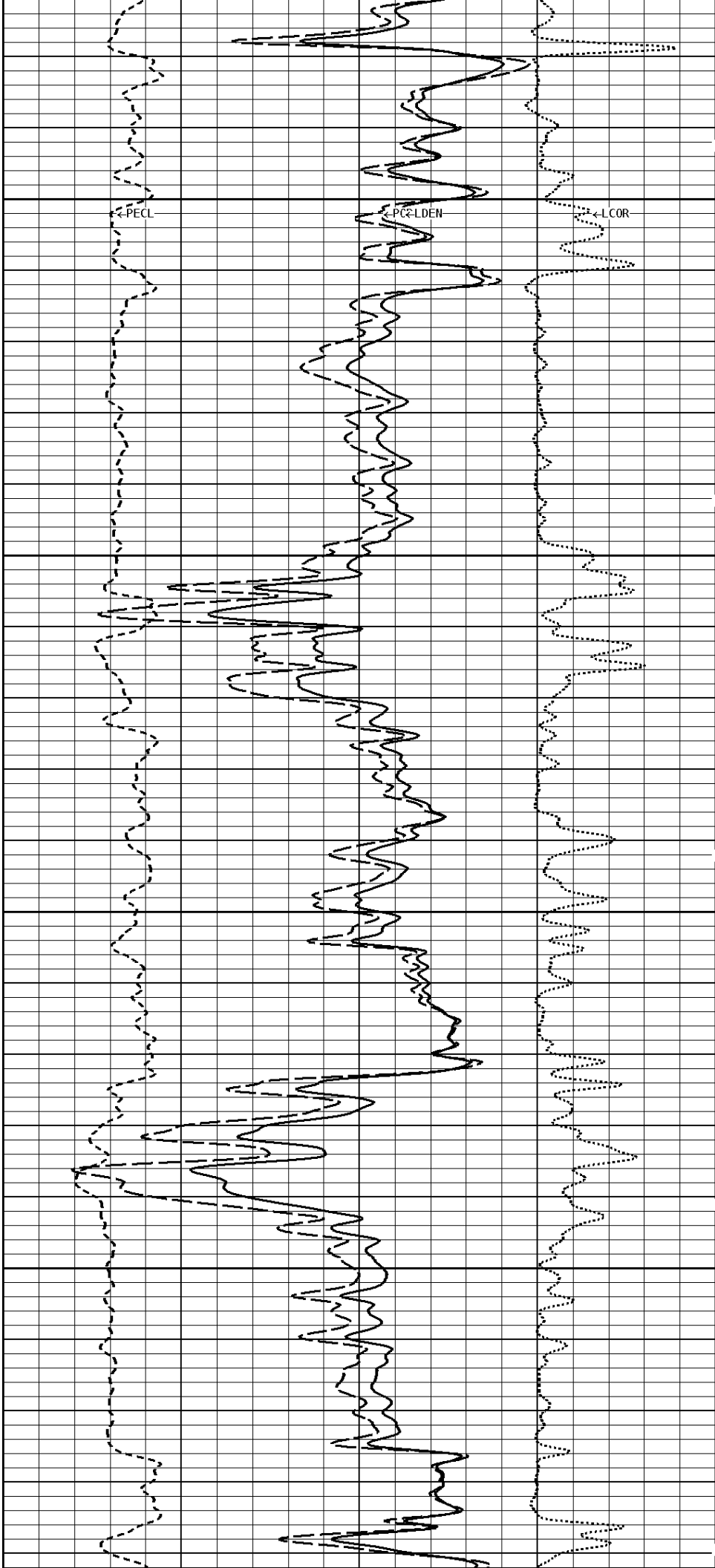


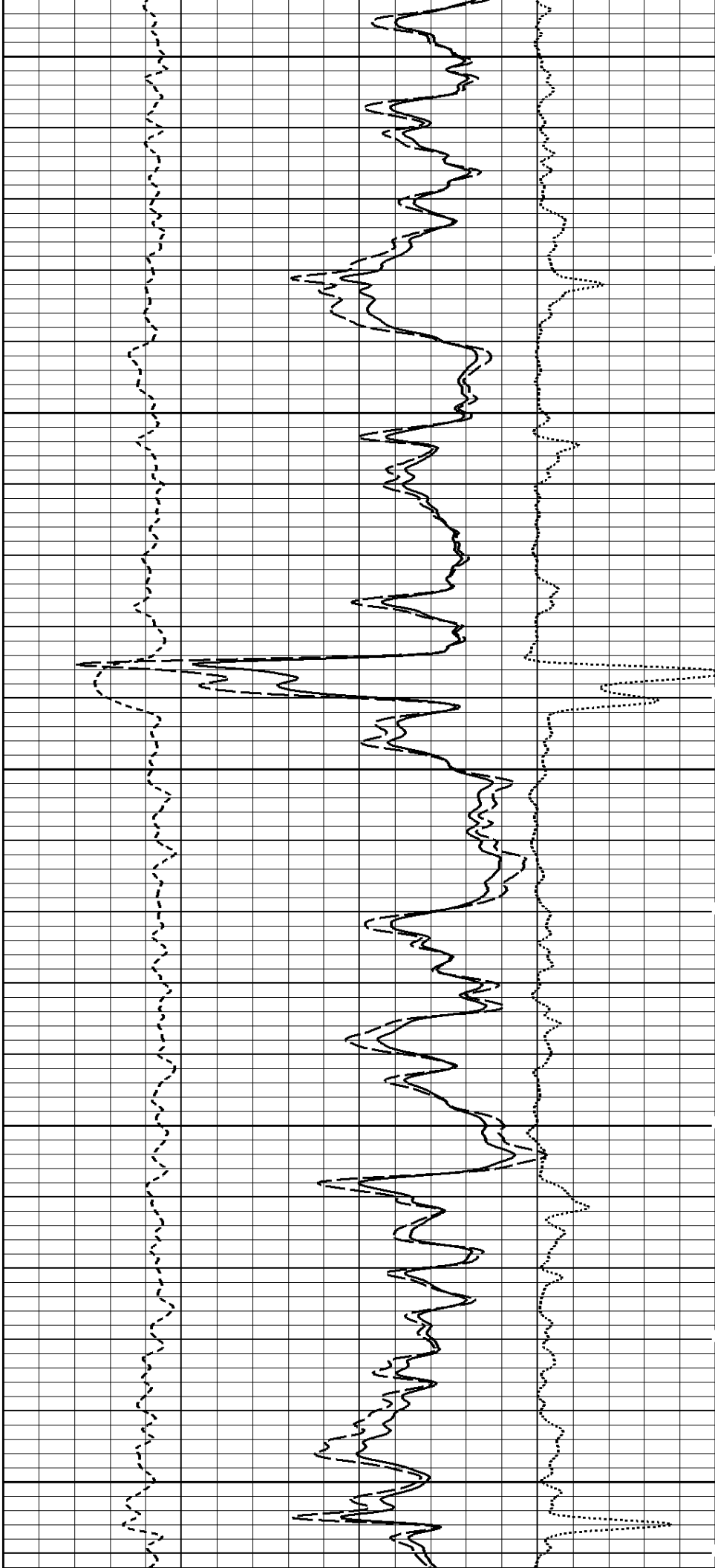
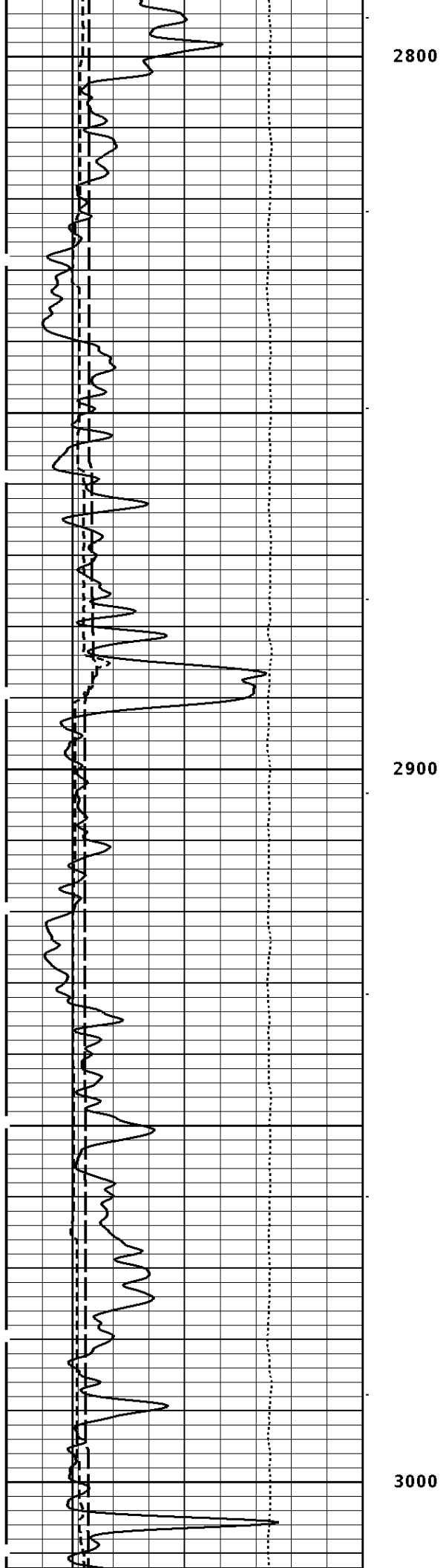
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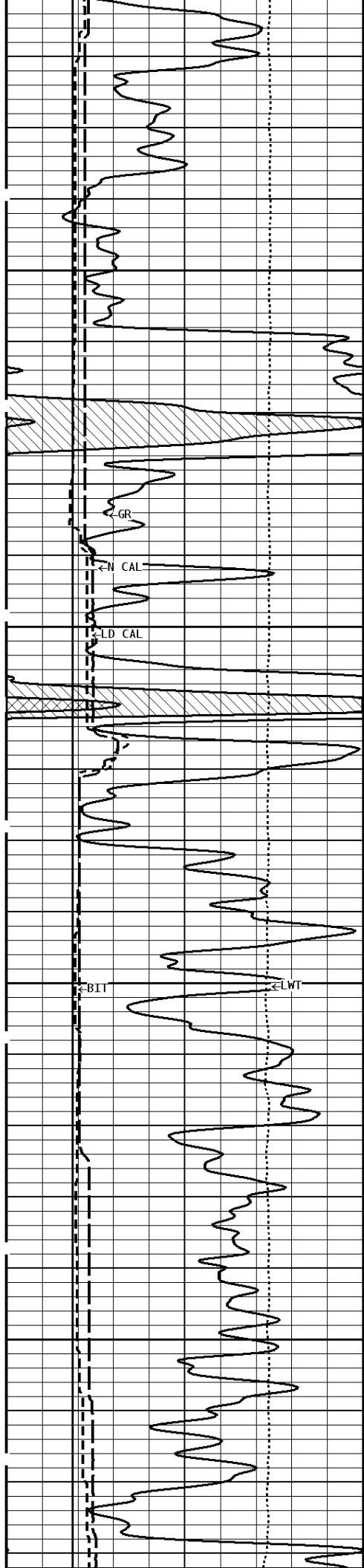
300Cu.Ft.

2700

500Cu.Ft.





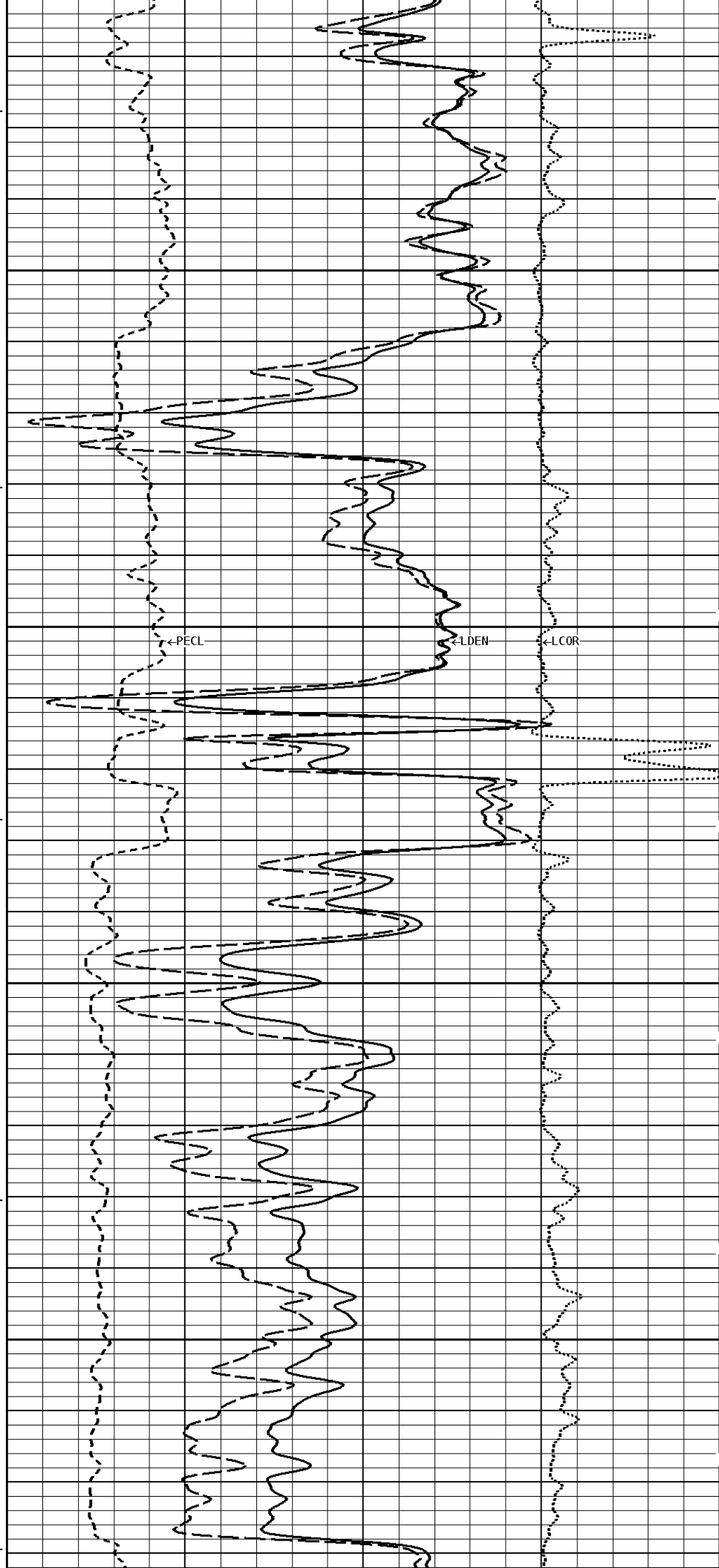


--400Cu.Ft

3100

200Cu.Ft--

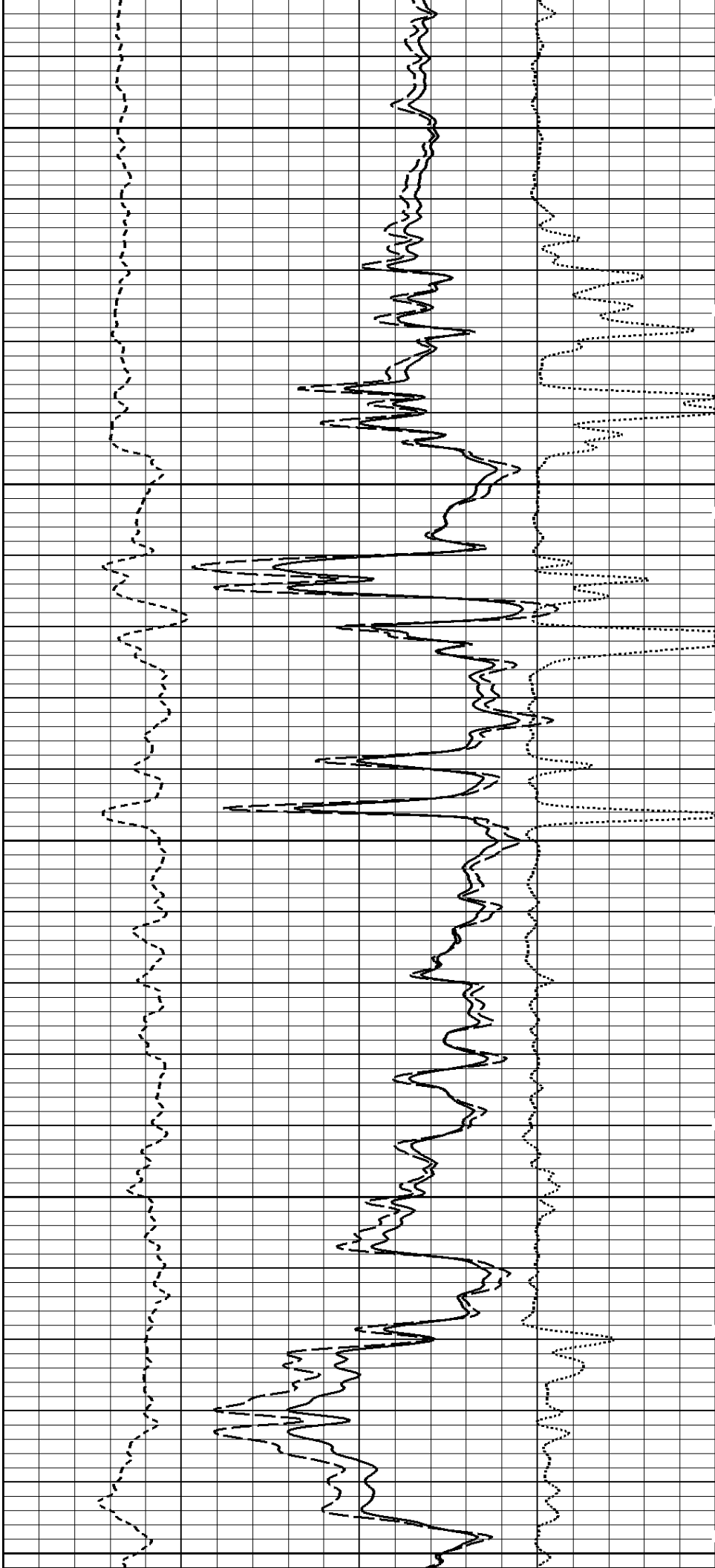
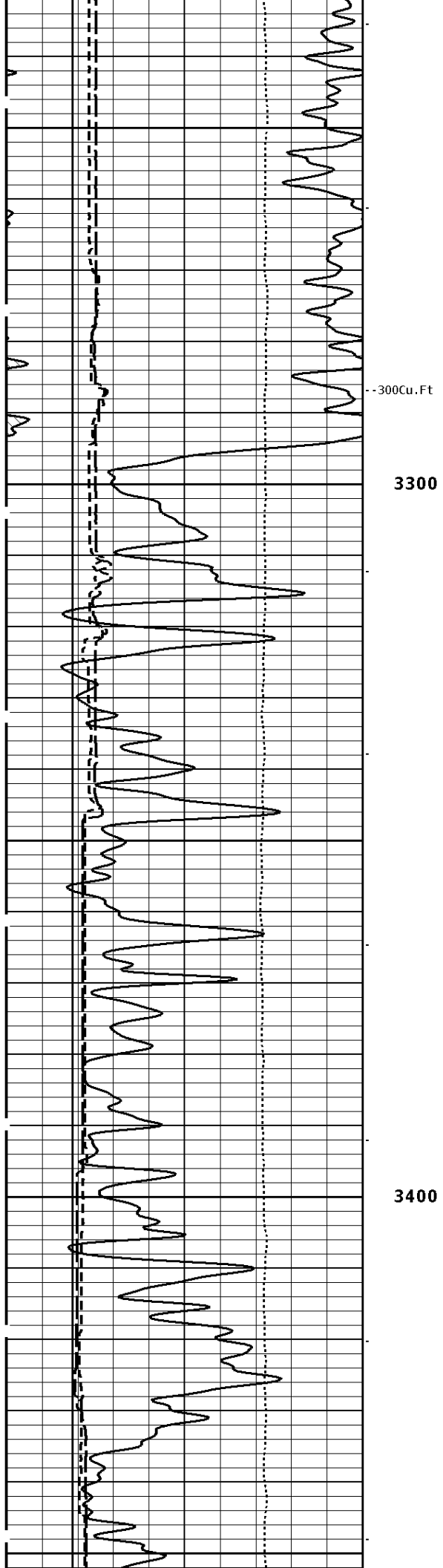
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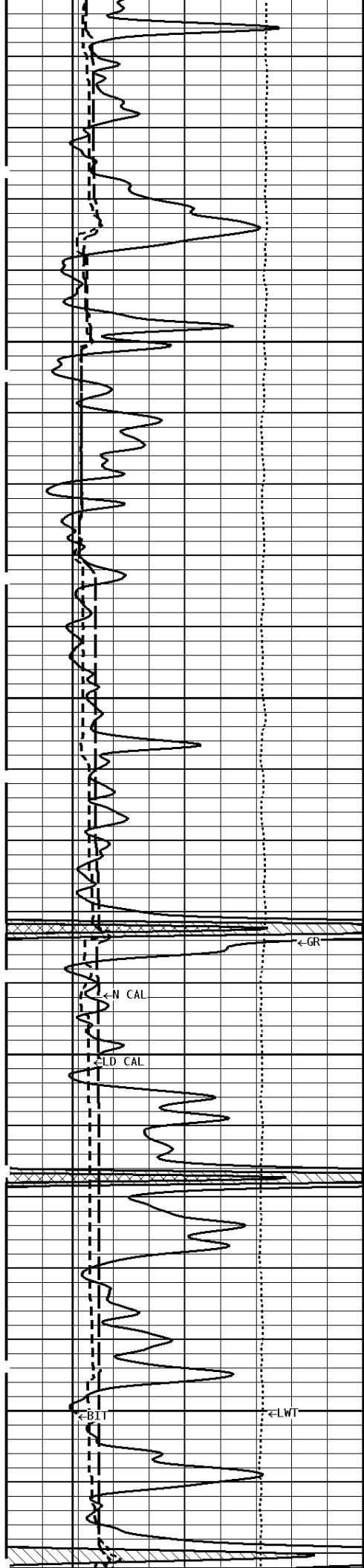


←PECL

←LDEN

←LCOR



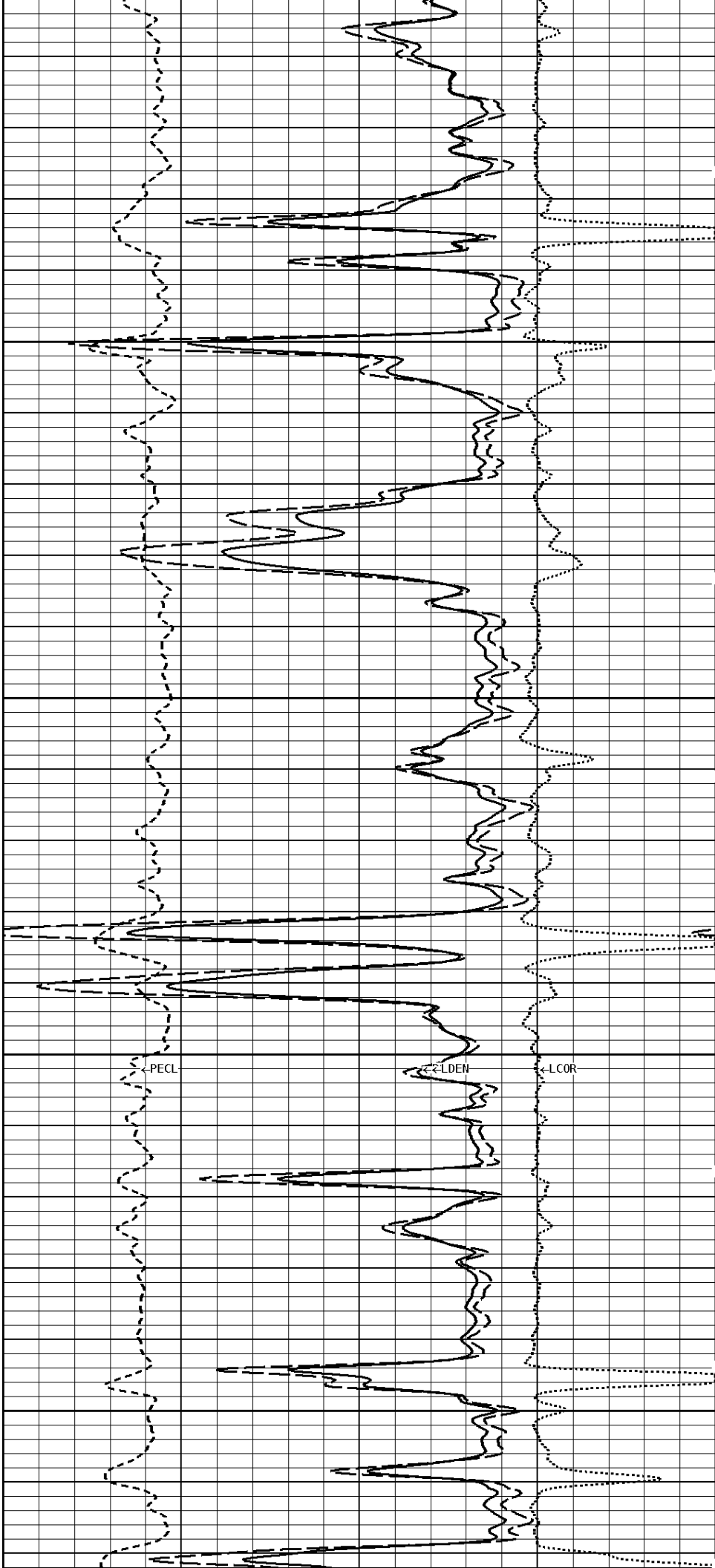


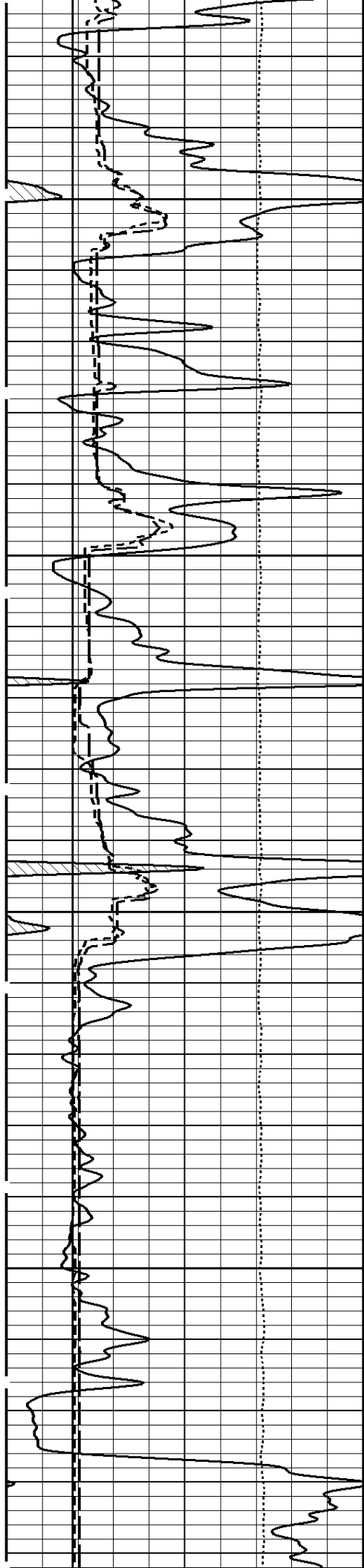
3500

--200Cu.Ft--

3600

100Cu.Ft--

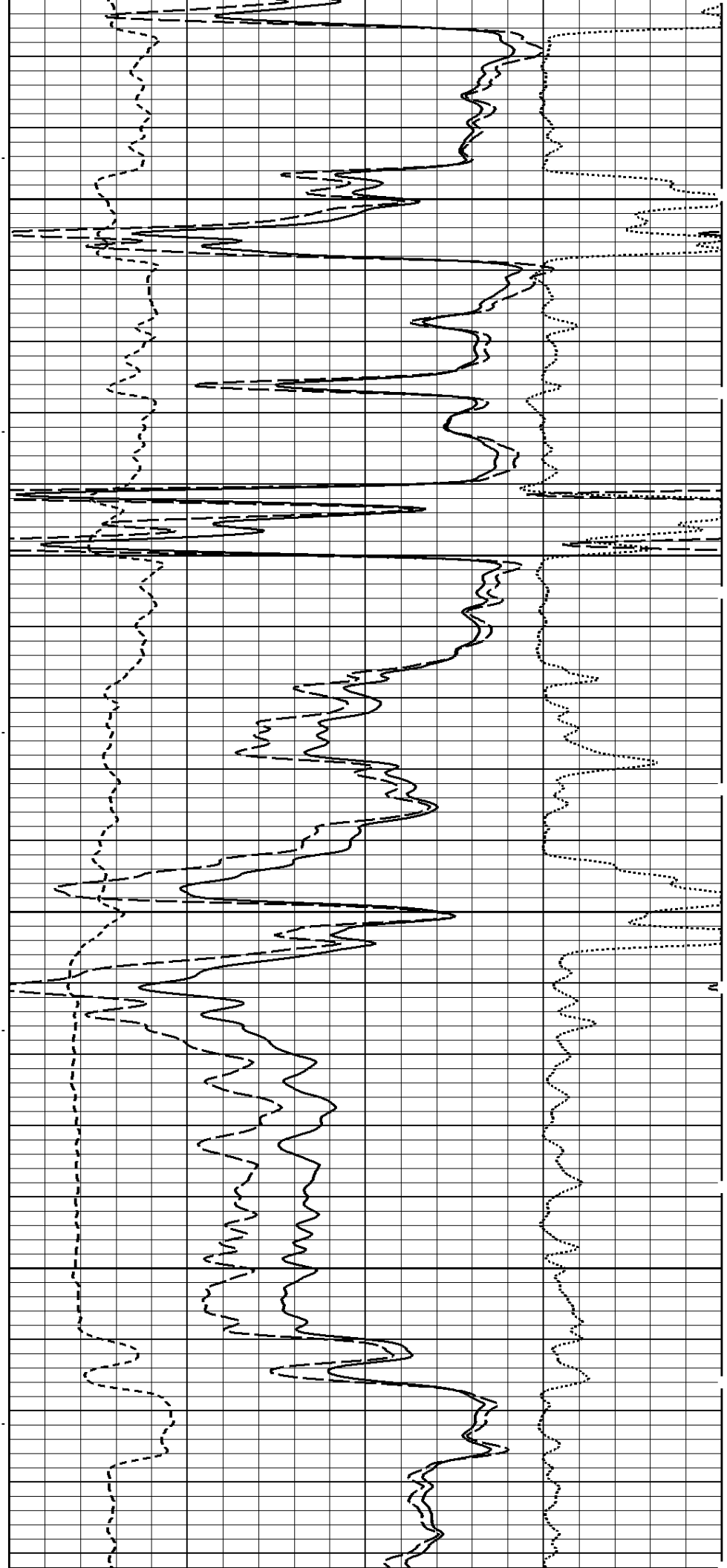


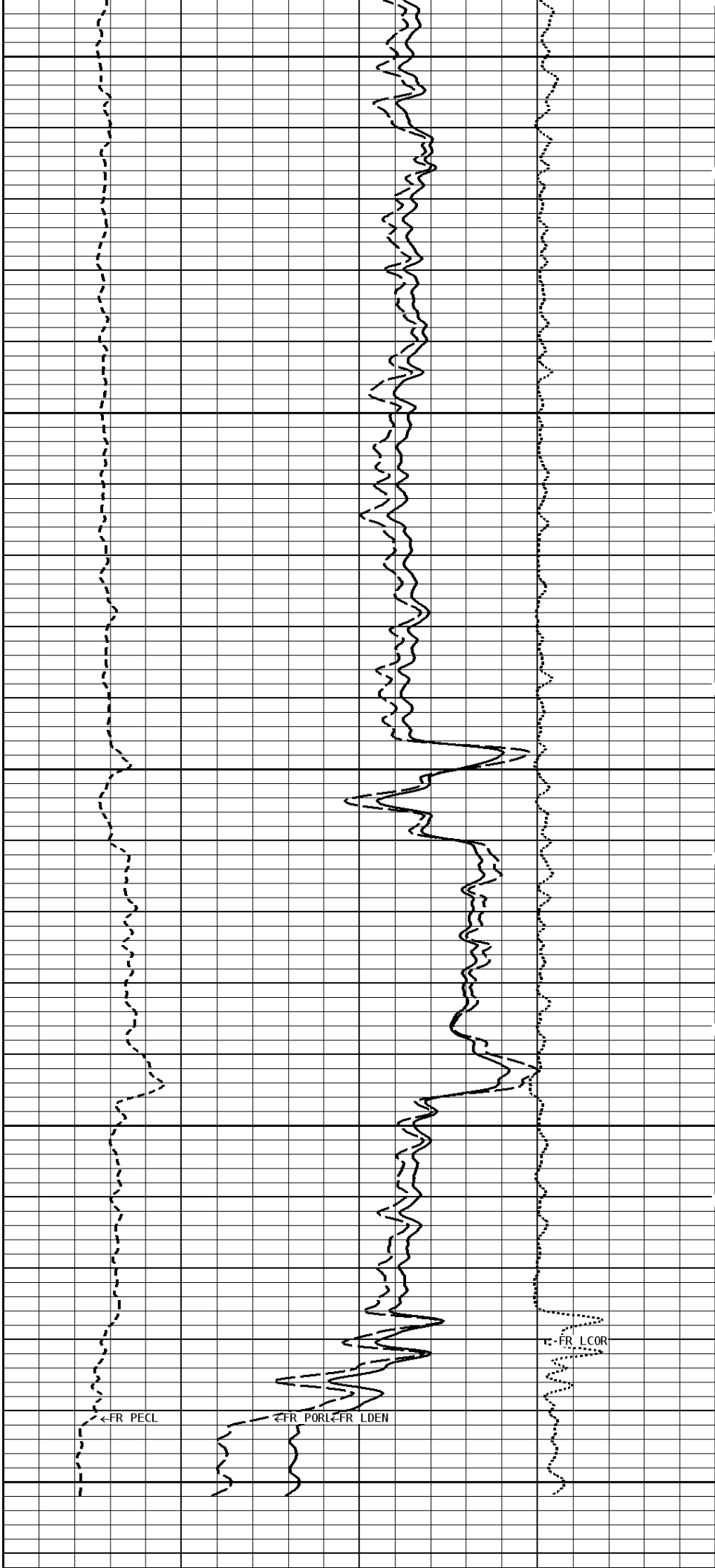
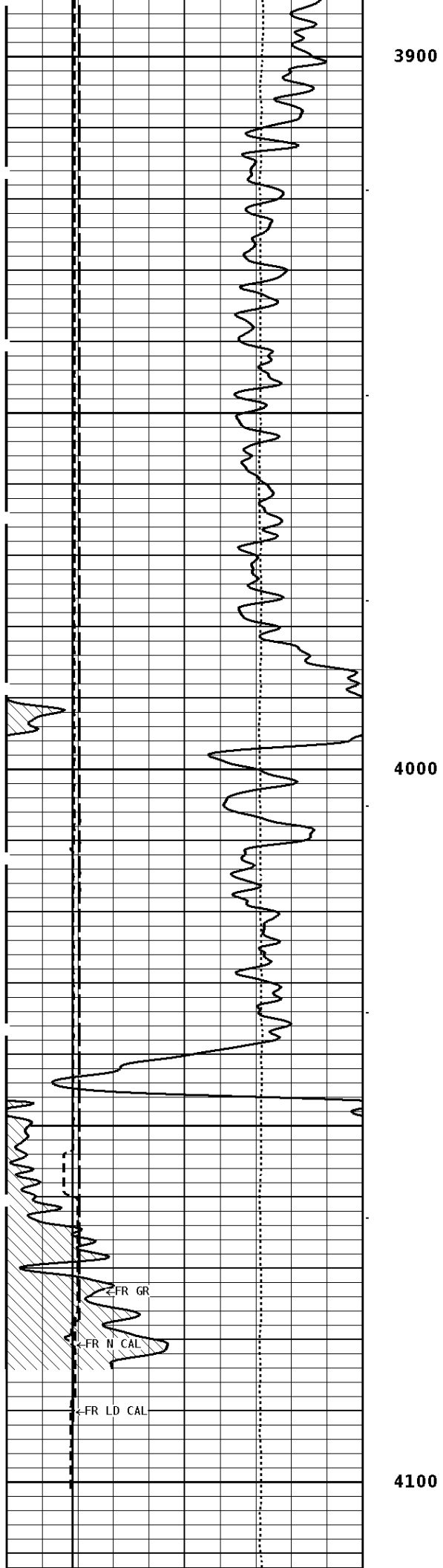


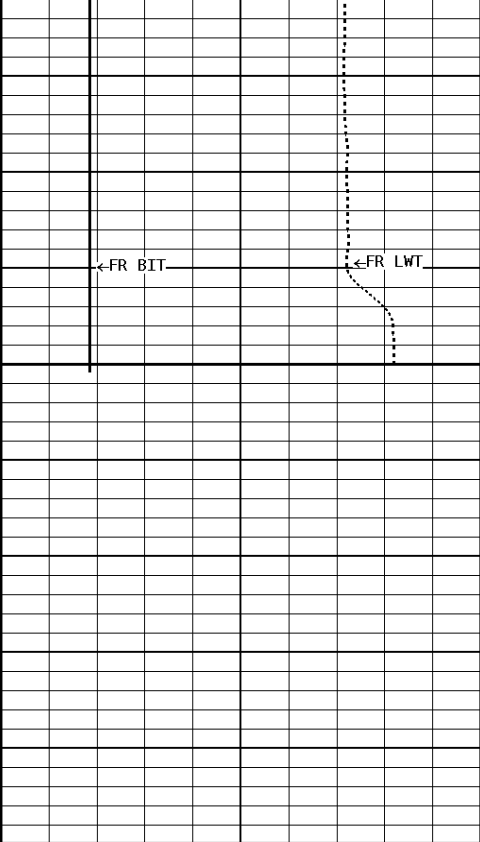
3700

3800

100Cu.Ft







4140

File #1.1.3

1:240 MAIN SECTION

BULK DENSITY

GAMMA RAY API UNITS	
150 0	300 150
TENSION LBS	
10000	0
DENSITY (X) CALIPER INCHES (IN)	
16 6	26 16
NEUTRON (Y) CALIPER INCHES (IN)	
16 6	26 16
BIT SIZE INCHES (IN)	
6	16

- BHV AHV - CU. FT		DENSITY POROSITY (2.71g/cc) PERCENT	
70 30		30 -10	
-10		-50	
COMPENSATED BULK DENSITY G/CC		3.0 2.0 1.0	
4.0 3.0 2.0		PE CROSS-SECTION BARN/ELECTRON	
0 10		DENSITY CORRECTION G/CC	
-0.25 0.25		0.25 0.25	

* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 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 : 24-JUN-2019			Time : 12:20		
Sensor Suite : GR-GR5			ID : GRT-BC-038		
	Background	Measured Jig	Units	Calibrated Jig	Units
GR	36	266	CPS	160	GRAPI
Shop Calibration CNT-AA					
Performed : 03-Jun-2019			Time : 11:06		
Sensor Suite : CALI-BCN			ID : NDT-AF-104		
	Jig - Measured		Jig - Calibrated		Units
	Ring#1 Ring#2		Ring#1 Ring#2		
CL # 1	8.3 13.2		6.0 12.0		IN.
Shop Calibration LDT-DA					
Performed : 18-SEP-2019			Time : 16:10		
Sensor Suite : BHC NEUT			ID : CNP-AE-41		
Source ID : N-1104					
	Tank		Verification		Units
	Measured	Calibrated	Jig		
N/F	3.7537	3.6893	3.6964		
Porosity	21.5	20.5	20.6		%
Shop Calibration LDT-DA					
Performed : 03-Jun-2019			Time : 14:53		
Sensor Suite : CALI-LTH			ID : NDT-FA-404		
	Jig - Measured		Jig - Calibrated		Units
	Ring#1 Ring#2		Ring#1 Ring#2		
CL # 1	8.3 13.2		6.0 12.0		IN.
Shop Calibration LDP-DA					
Performed : 03-Dec-2019			Time : 19:18		
Sensor Suite : BHCPELNG			ID : LDP-DA-062		
Source ID : 1637GW					
Short Space					
	BKGD	Al	Mg	Al+Fe	Units
LSW1	59	994	1604	617	CPS
LSW2	58	1159	1848	809	CPS
LSW3	218	2640	4281	2191	CPS
LSW4	272	2262	3264	1957	CPS
LSW5	26	44	49	42	CPS
LSW6	76	80	79	79	CPS
LSW7	48	52	54	51	CPS
LSW8	1	3	4	3	CPS
QS	0.224	0.208	0.191	0.214	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC
Long Space					
	BKGD	Al	Mg	Al+Fe	Units
LLW1	89	1139	4703	663	CPS
LLW2	98	2033	7985	1435	CPS
LLW3	372	3656	13901	3102	CPS
LLW4	483	1704	5322	1526	CPS
LLW5	54	65	108	65	CPS
LLW6	152	153	144	154	CPS
LLW7	99	102	99	102	CPS
LLW8	4	6	16	6	CPS
QL	0.210	0.200	0.185	0.199	
PEL			2.697	5.458	
LSDN		2.600	1.680		G/CC

STEP
energy services

Company: GRAND MESA OPERATING COMPANY
Well: PREISSER #1-34
Location: 330' FNL & 1620' FEL
Logged: 12-14-2019
K.B. Elev: 1687.0 Ft