

Tucker
WIRELINE SERVICES

COMPENSATED NEUTRON
PEL DENSITY LOG

File No. : TUL-55264
Company : BERXCO
Well : BAMBERGER #13
Field :
County : HODGEMAN
State : KANSAS
Country : USA

Location : API#: 15-083-21656
636' FSL& 844' FWL
SW SW

Sect : 20 Twp : 22S Rge : 22W

Recorded By : B.BAILEY
Witnessed By : G.KORALEGEDARA, J.OBRIST

Date : JUL 24 2010
Run No. : 1

Permanent Datum : GL
Drilling Measured From : KB
Log Measured From : KB
Above Permanent Datum : 13.00 FT

Depth--Driller : 4635.0 FT
Depth--Logger : 4630.0 FT
Bottom Log Interval : 4581.0 FT
Top Log Interval : 3800.0 FT

Casing Depth--Driller: 278.0 FT
Casing Depth--Logger : 280.0 FT
Casing Diameter : 8.625 IN

Bit Size : 7.875 IN
Unit No. : 122
Location : TULSA

Elevations :
KB : 2327.00 FT
DF : 2326.00 FT
GL : 2314.00 FT

Additional Services

MLT
CST
PIT

The customer is hereby warned that by providing the log data herein, T. W. S. does not agree to provide any interpretation of log data, conversion of log data to physical rock parameters or recommendations. T. W. 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. W. 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. W. 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.

Run Number 1

Depth To Fluid 0.0 FT
Fluid Type In Hole : WBM
Density : 9.100 SG
Viscosity : 48.000 SEC
pH : 9.500
Fluid Loss : 14.400
Salinity : 0.000 KPPM

RM Source : MEASURED
RM : 0.220 OHMM at 85 F
RM at BHT : 0.143 OHMM at 134 F

RMF Source : CALCULATED
RMF : 0.187 OHMM at 85 F
RMF at BHT : 0.122 OHMM at 134 F

RMC Source : CALCULATED
RMC : 0.253 OHMM at 85 F
RMC at BHT : 0.122 OHMM at 134 F

RMC :	0.253	OHMM at	85	F
RMC at BHT :	0.165	OHMM at	134	F
Max Recorded Temp. :			134	F
Time Circulation Stopped :				
Operating Rig Time, Hrs. :			3.0	

- Source Serial Numbers -

Gamma	CSV-587
Neutron	N-1044

- Sonde Serial Numbers -

GRTB	GRT-BA-121
CNT	CNP-AA-111
LDTNG	LDP-DA-01
MSTNG	MST-DA-36
CST	CST-AD-38
PIT	PIT-AB-14

Casing Strings

Size (IN)	Weight (LB/FT)	Bottom (FT)
8.625	32.00	278.00

- Comments -

ALL PRESENTATIONS AS PER CUSTOMER REQUEST.

GRT, CNT, LDT, MLT, CST, PIT RAN IN COMBINATION
CALIPERS ORIENTED ON THE X-Y AXIS.

PHIN IS CALIPER CORRECTED.

2.71 G/CC USED TO CALCULATE POROSITY.

ANNULAR HOLE VOLUME CALCULATED USING 5.50" PRODUCTION CASING.

USTOMER REQUEST SPLIT RUNS WITH CNT LDT.

GRT: GRP.

CNT: PHIN, CLCNIN, PHINLS.

LDT: PORL, LCORN, PECLN, CLLDIN, LDENN, PORLLS, PECSN.

MLT: INV R, NOR R, MSCLPIN

CST: DDCDTF, ITT, PORS, TT1, TT3.

PIT: ILD, ILM, CIRD, SFLAEC, SPU

MINERAL VOLUME: VM31, VM32, VM33.

OPERATORS:

R.AUSTIN

M.BURKE

THANK YOU FOR USING TUCKER WIRELINE SERVICES!

Tool String Schematic

Total Tool Length -	66.75 ft.
Maximum Outside diameter -	6.00 in.
Net Weight in Air -	1171.00 lbs.



Tool: GRTB

Length: 3.40 ft. O.D.: 3.60 in.

Sonde ID

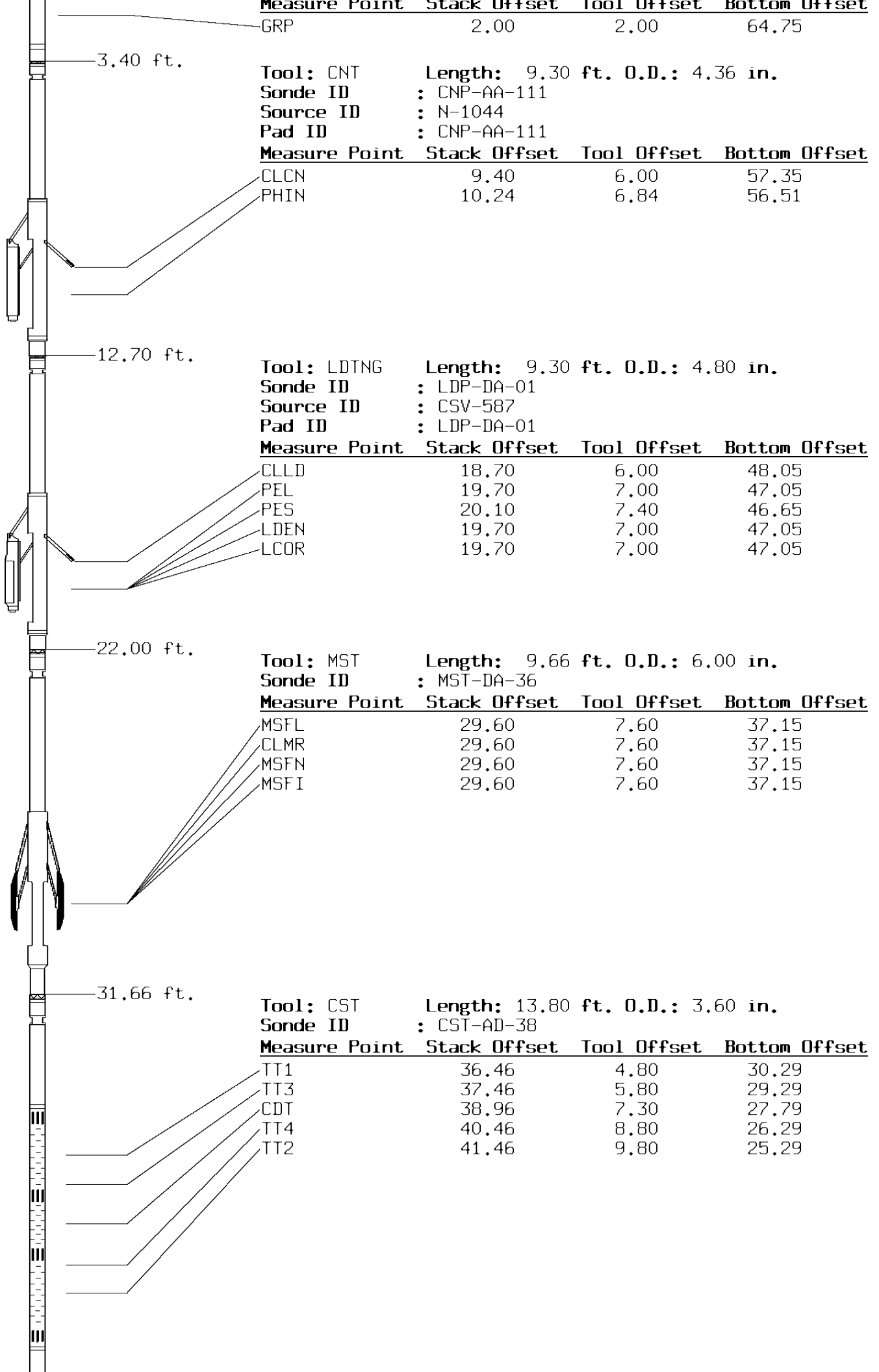
: GRT-BA-121

Measure Point

Stack Offset

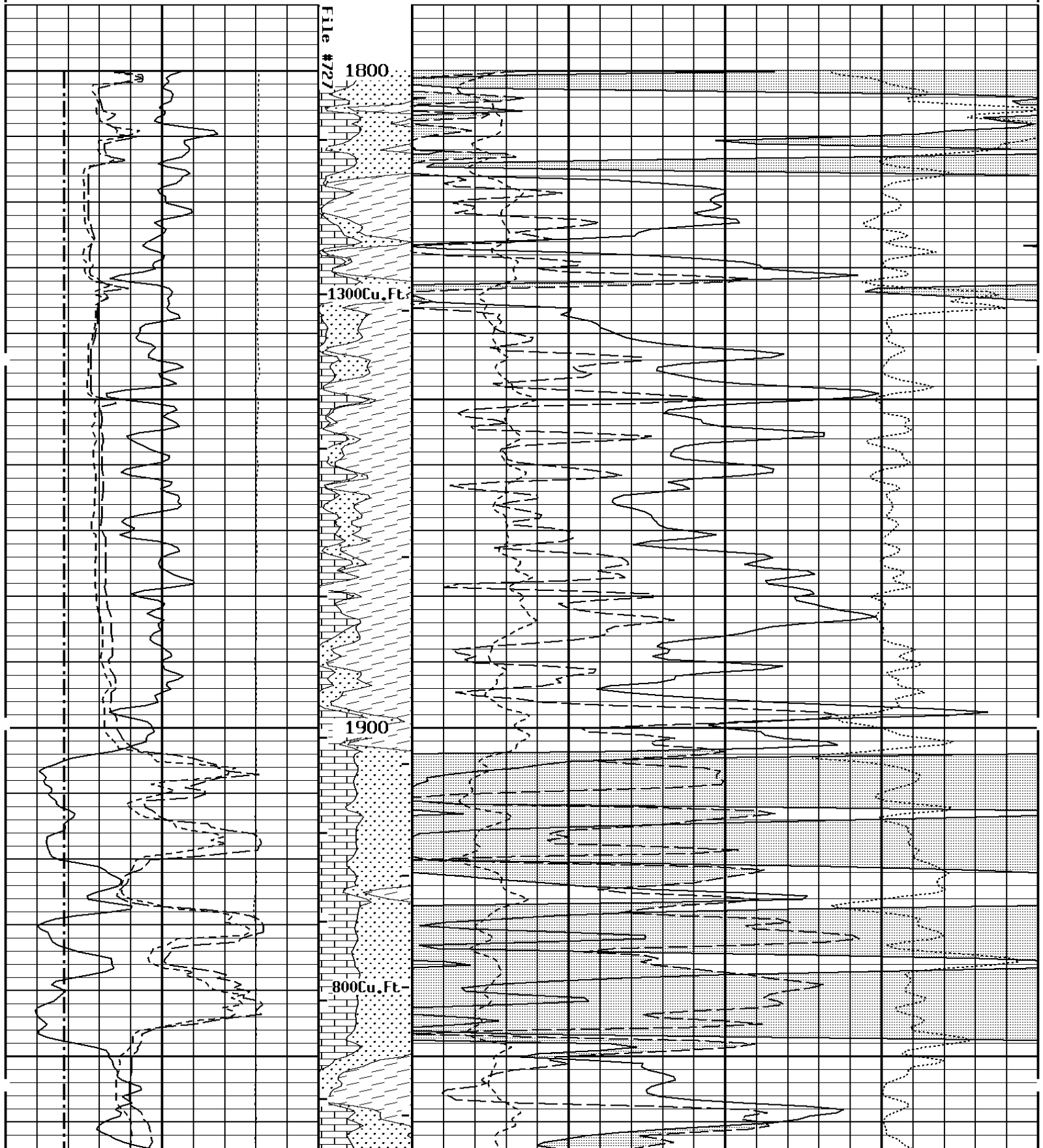
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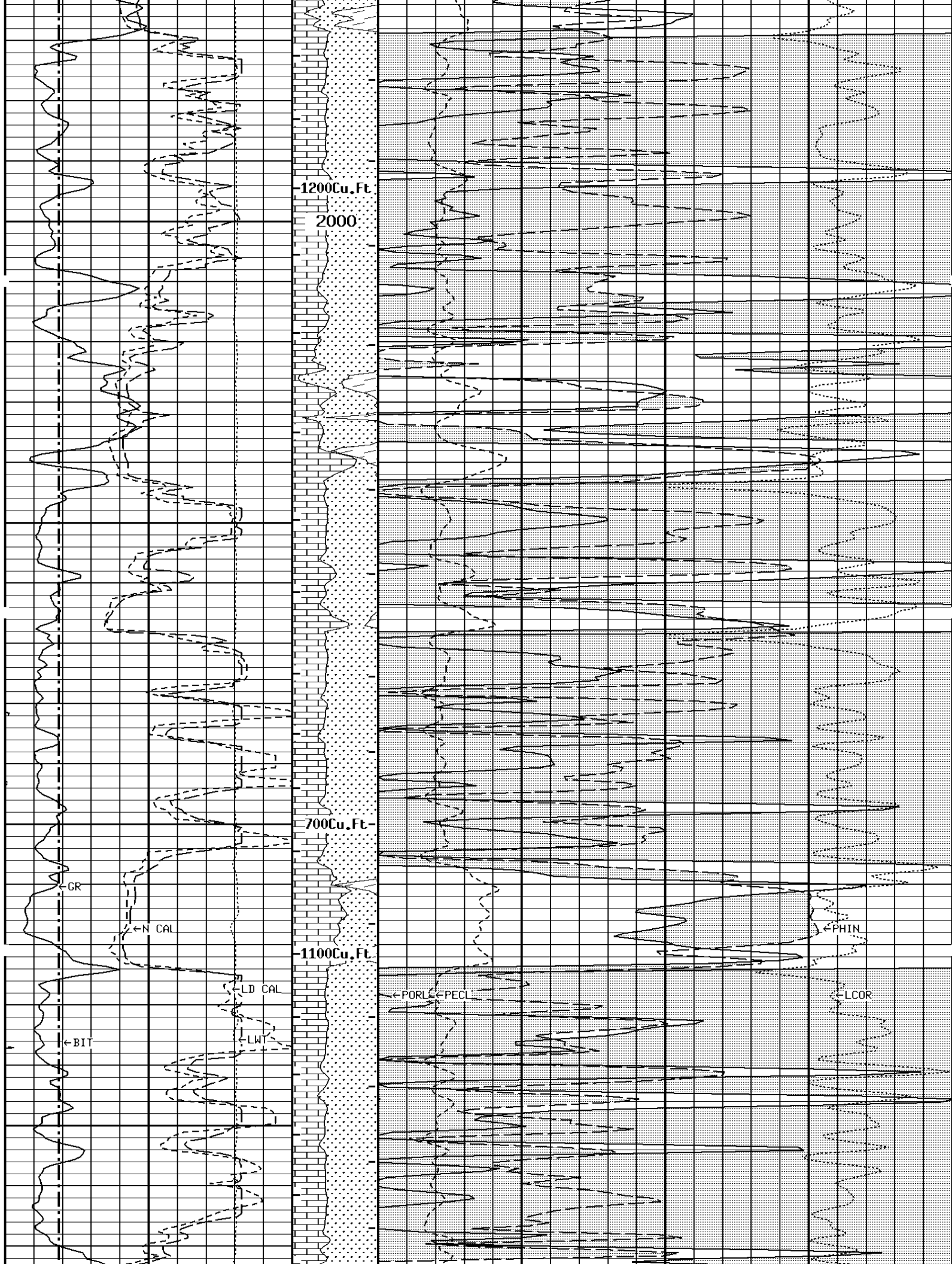
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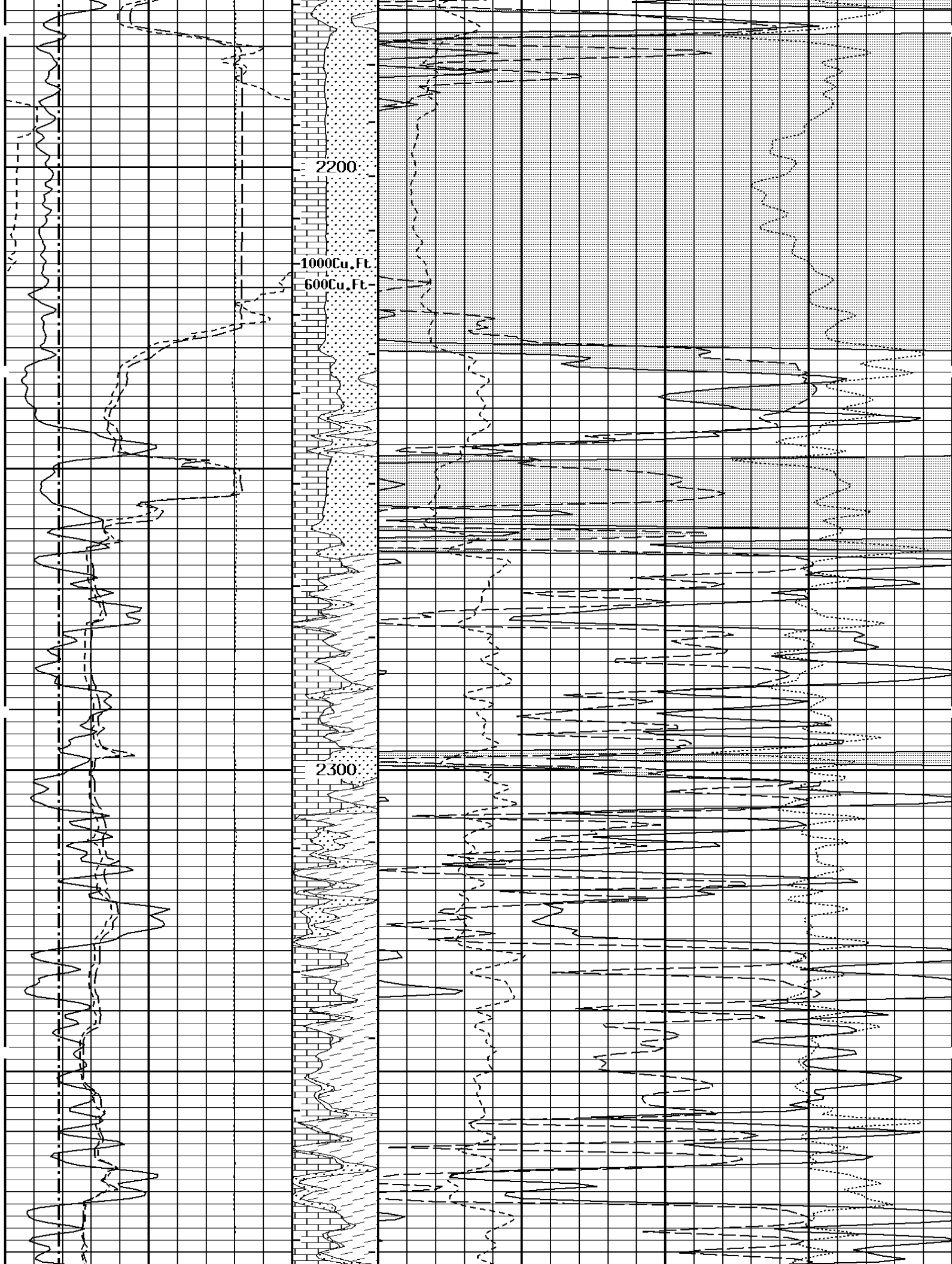


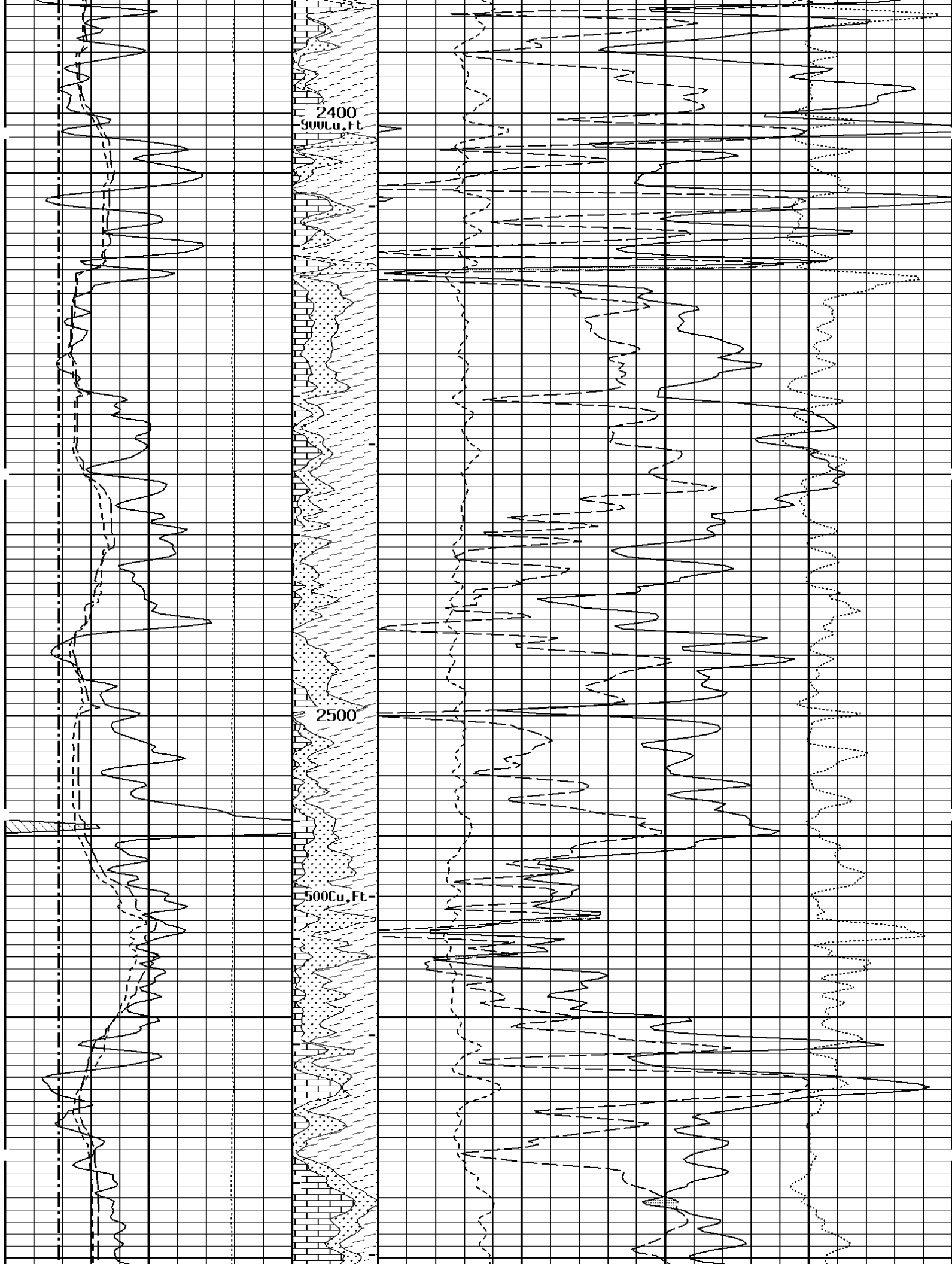
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			-10		-50

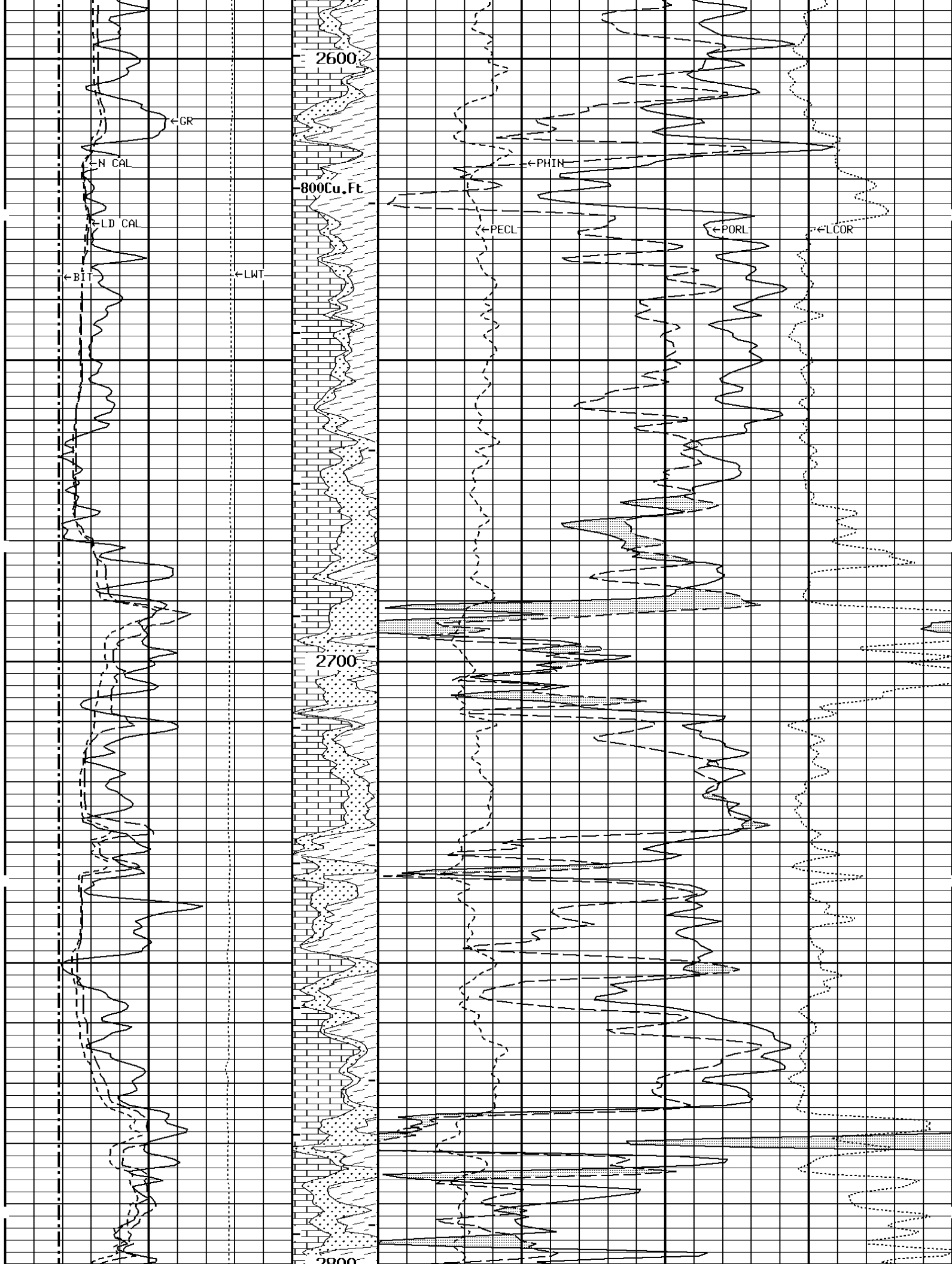
1:240 MAIN SECTION

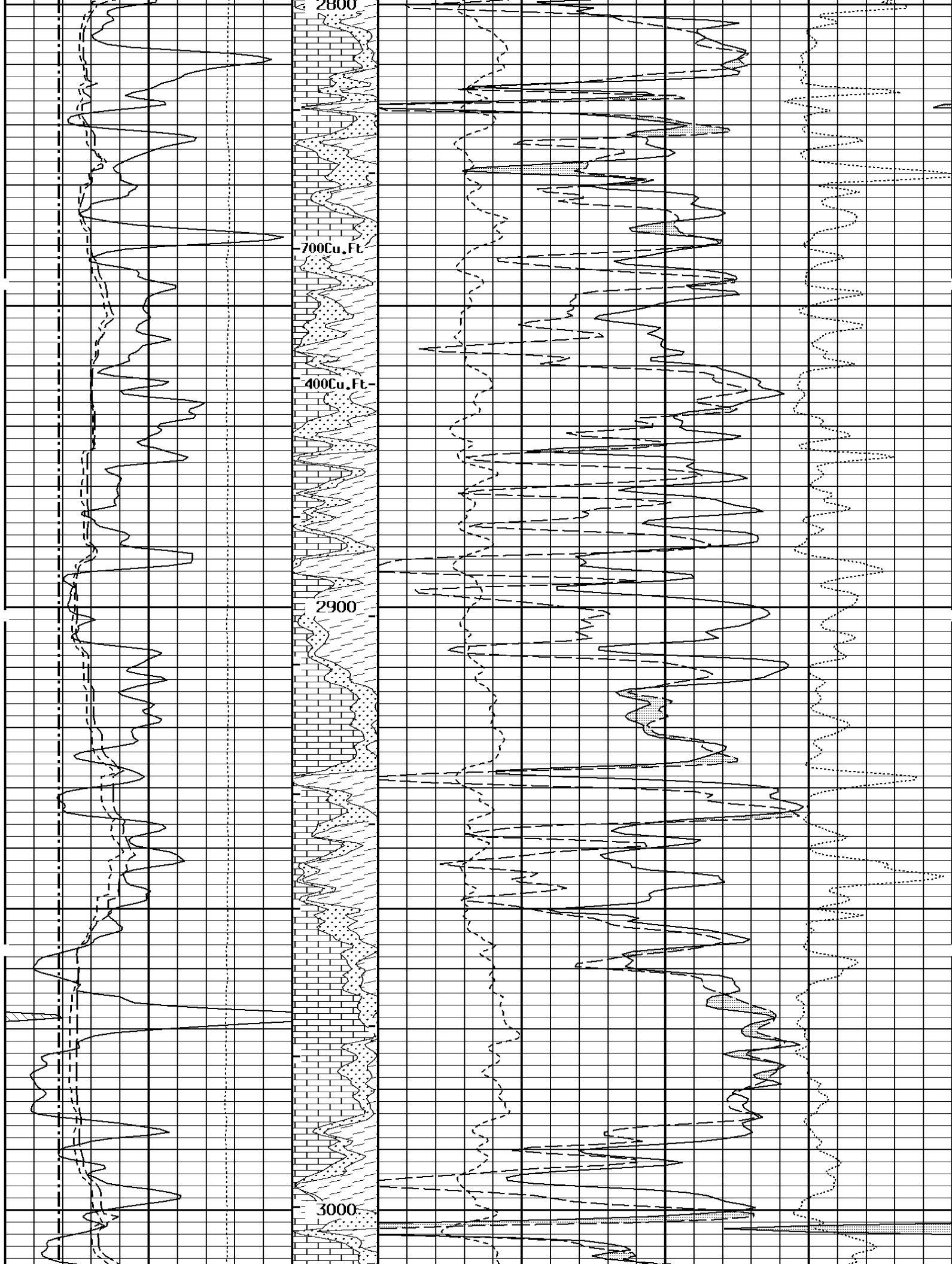


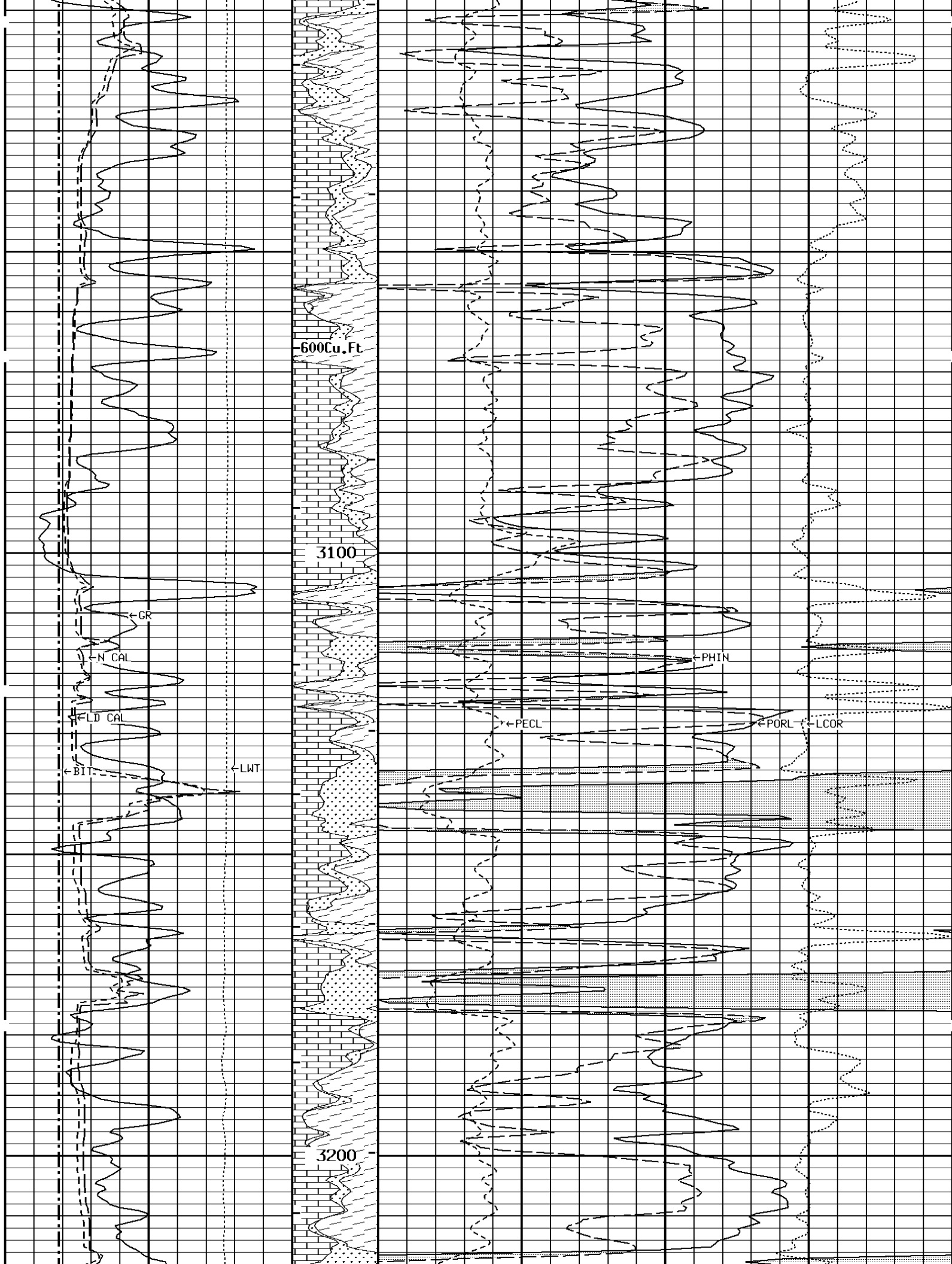


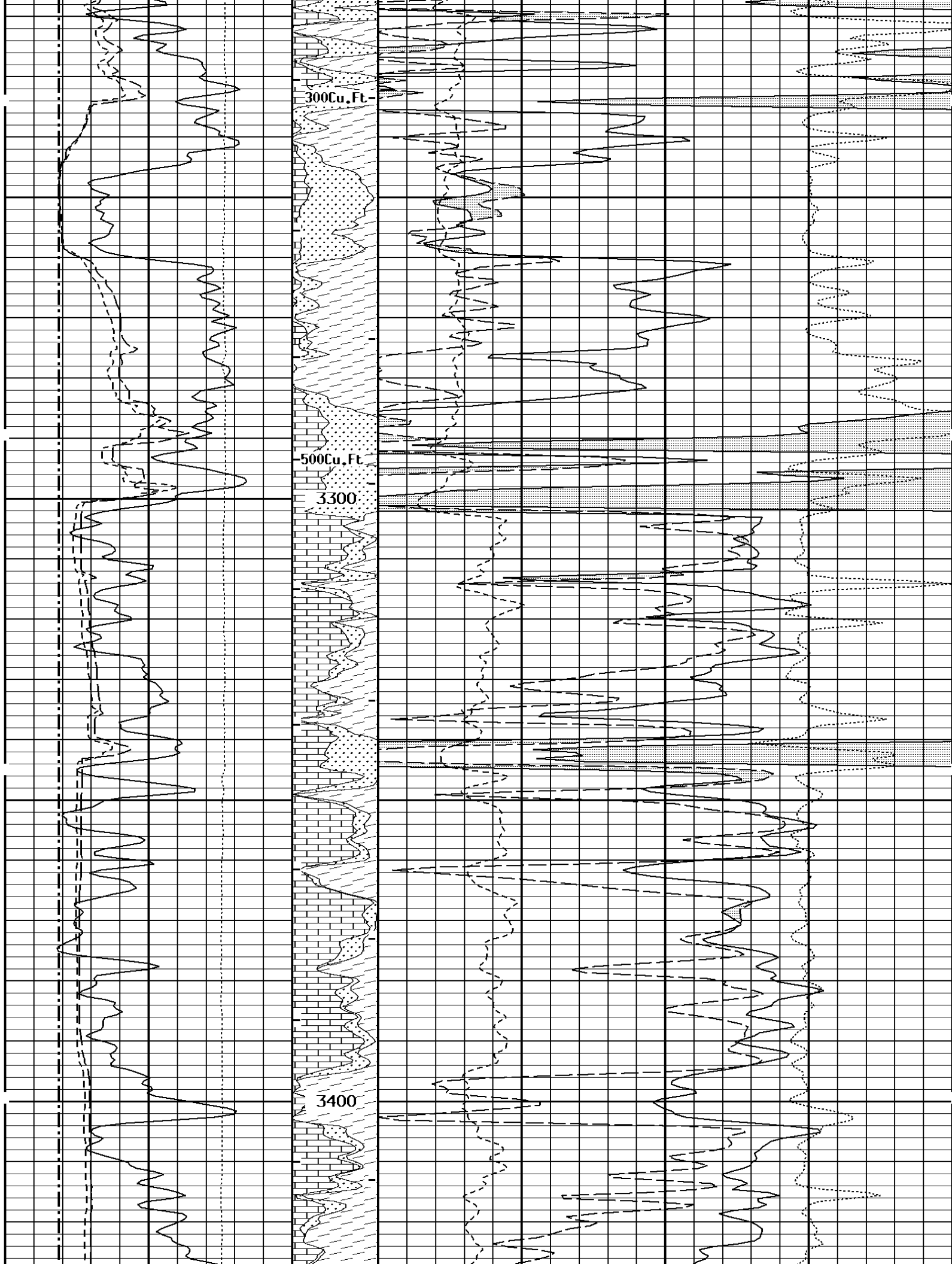


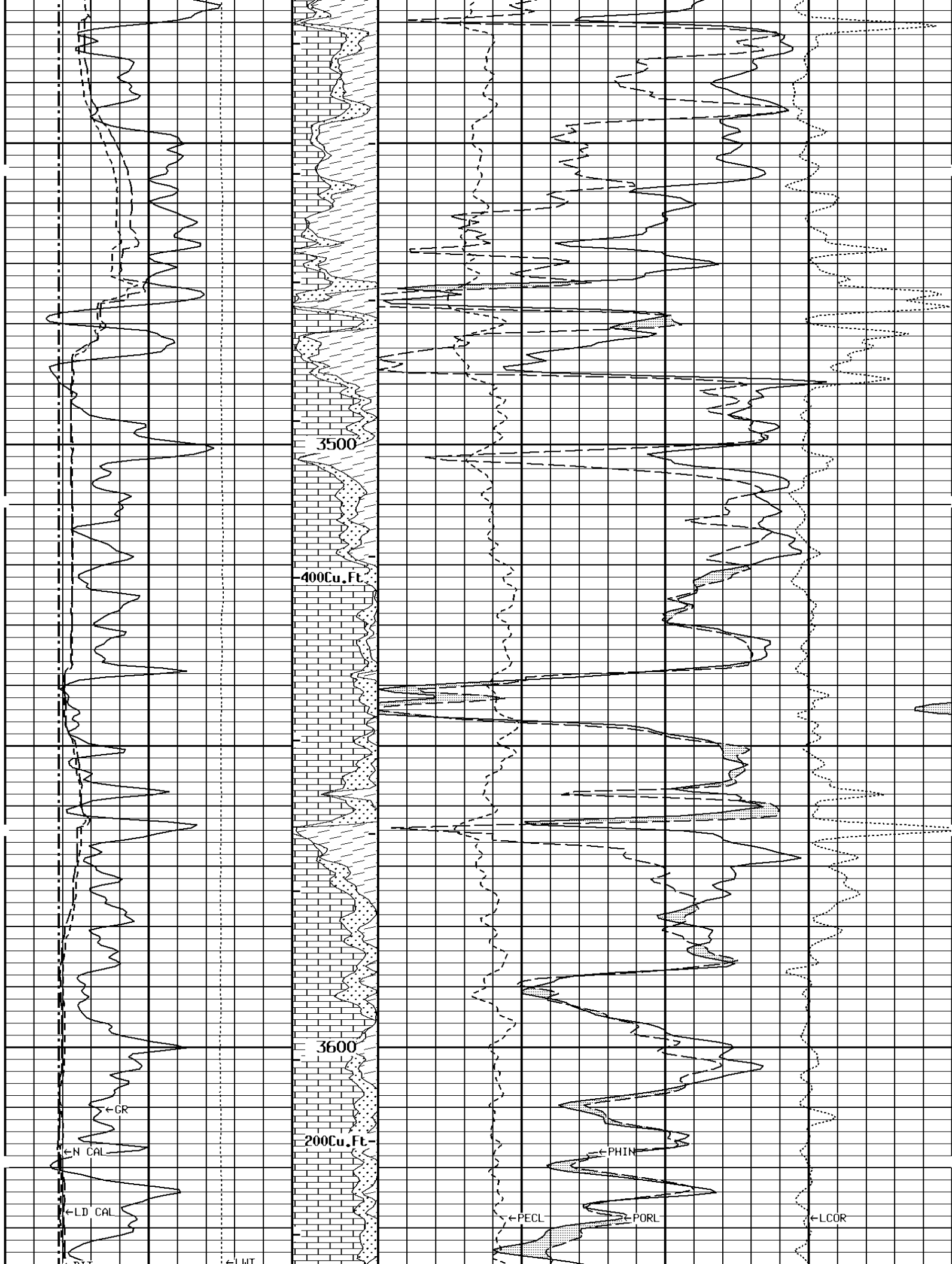


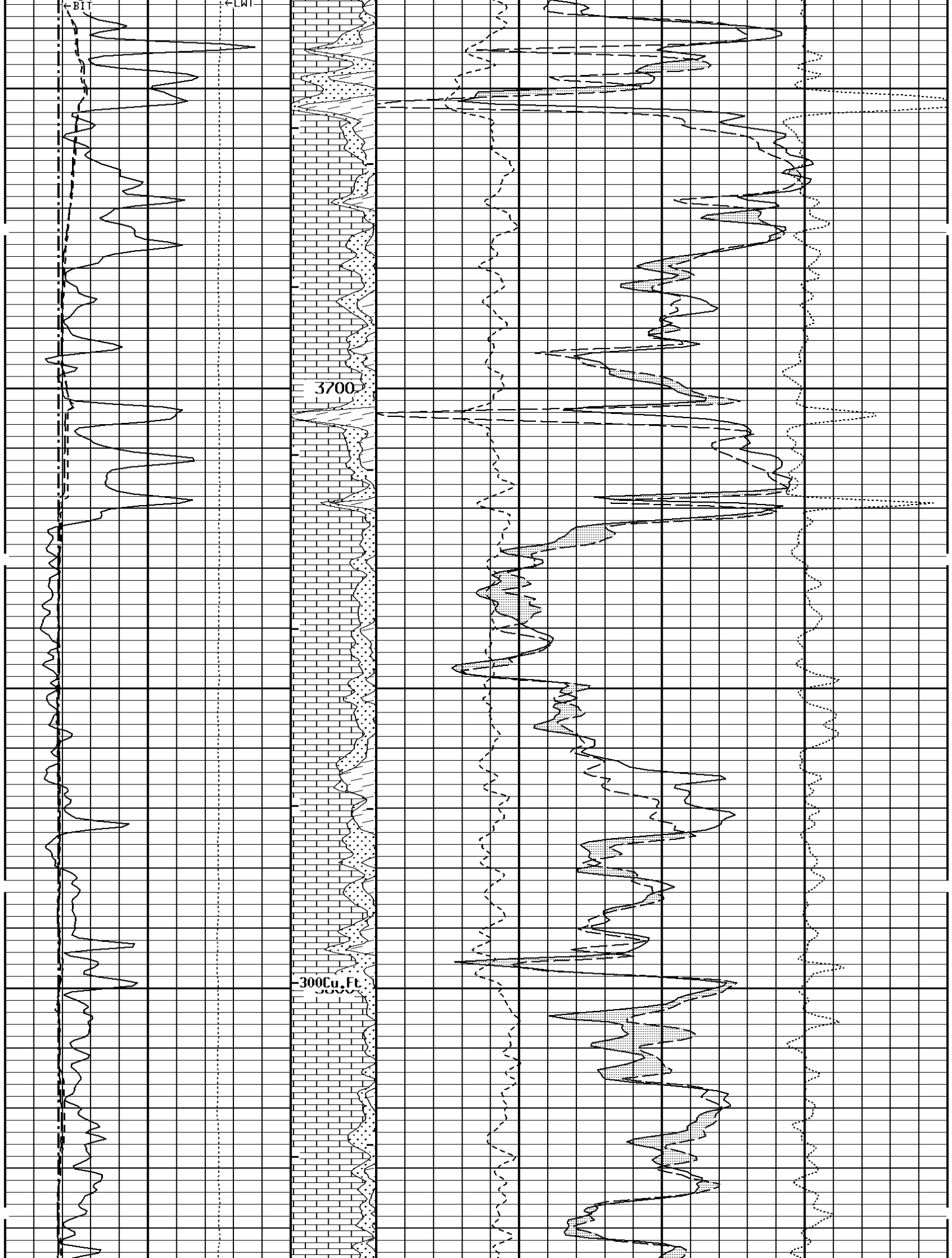


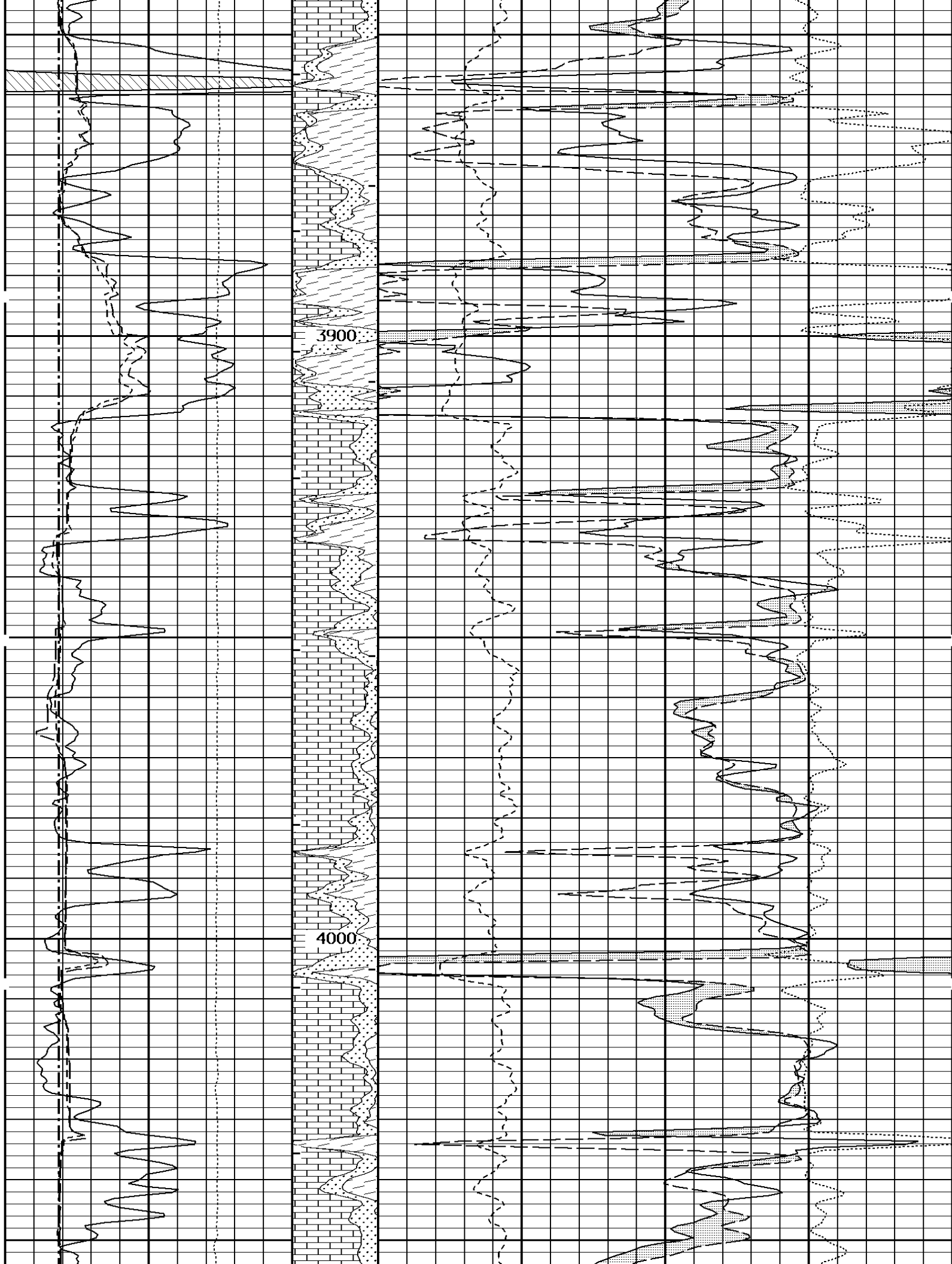


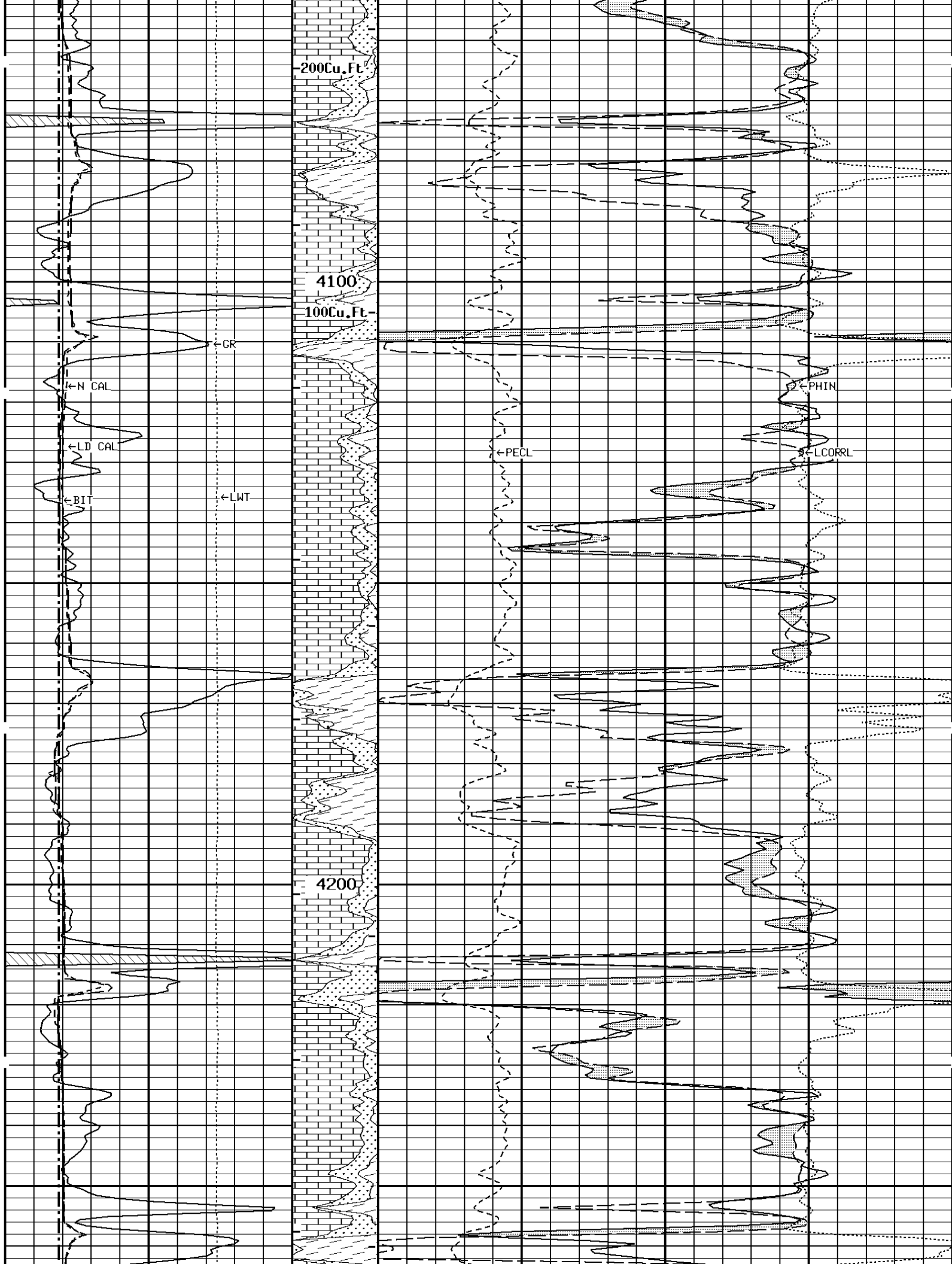


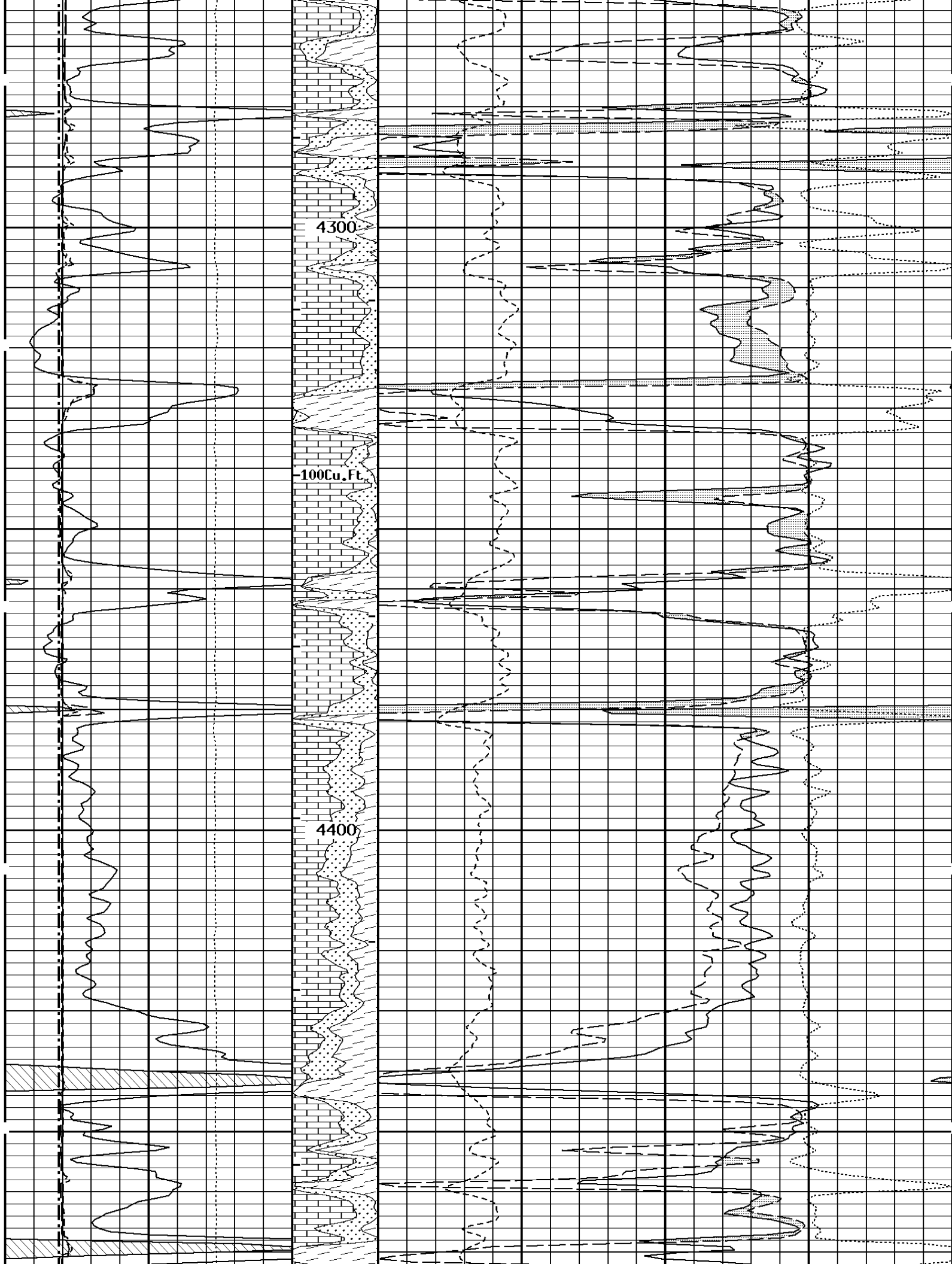


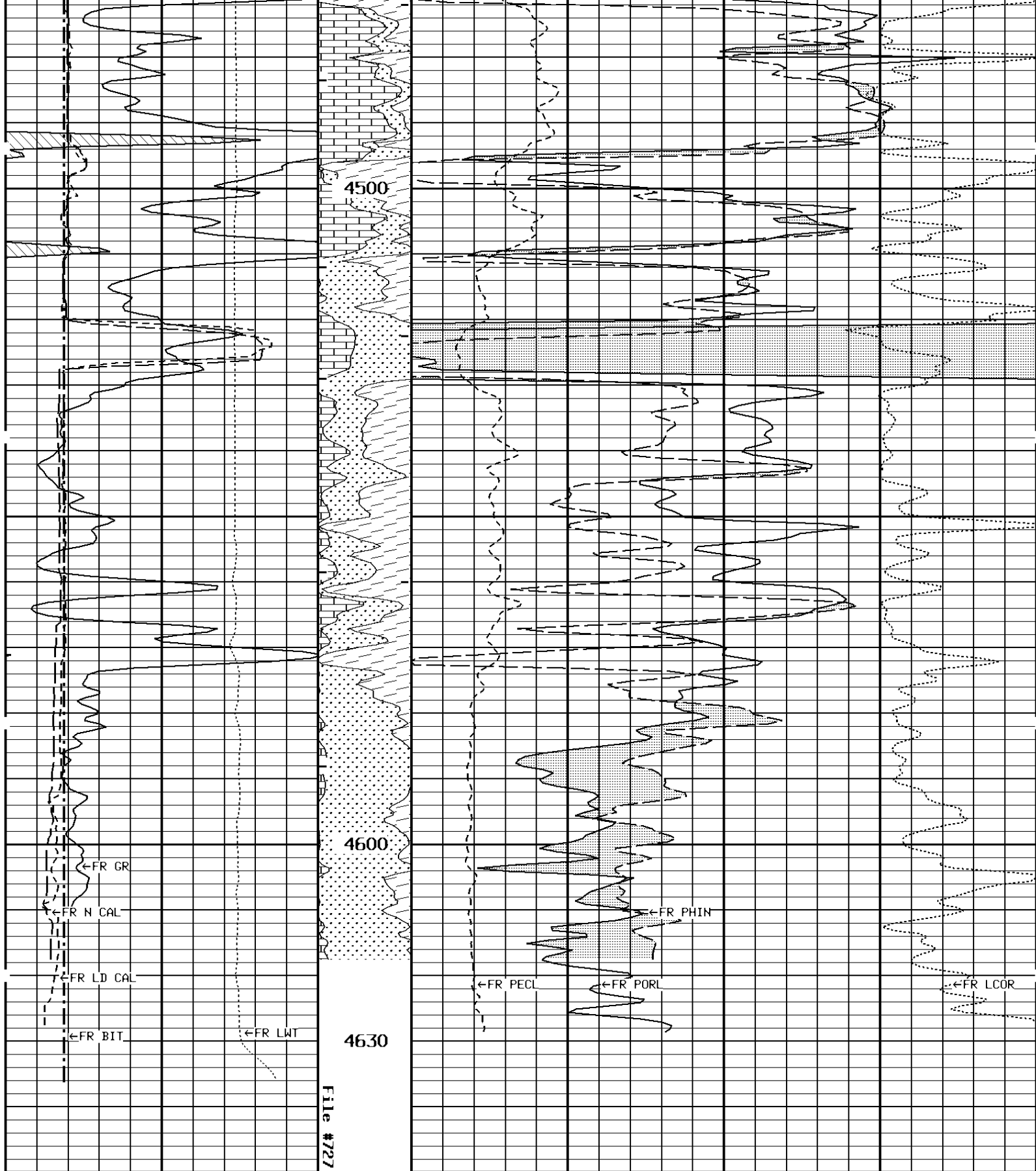








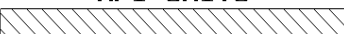
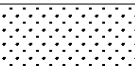
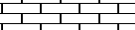
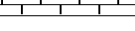
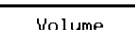
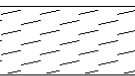




GAMMA RAY
ABSORPTIVITY

-BHV RHV-

DENSITY POROSITY
PERCENT (G/G)

API UNITS		CU.FT	PERCENT (2.71 g/cc)		
150			70	30	
0	300		30	-10	
			-10	-50	
NEUTRON (Y) CALIPER INCHES (IN)		Volume Quartz	NEUTRON POROSITY PERCENT (LIMESTONE MATRIX)		
16	26		30 -10		
6	16				
-----		-----			
DENSITY (X) CALIPER INCHES (IN)		Volume Calcite	PE CROSS-SECTION BARNS/ELECTRON	DENSITY CORRECTION G/CC	
16	26		0 10	-0.25 0.25	
6	16				
-----			-----		
					
BIT SIZE INCHES (IN)		Volume Dolo/Shale			
6	16				

TENSION LBS					
10000	0				

* Borehole Zone Factors *

Zone 1
 99999.0
 to
 0.0
 F

Matrix Density

 2.71
 G/C3

Fluid Density

 1.00
 G/C3

Formation Matrix

 Limestone

Drill Bit Size

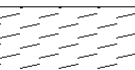
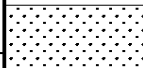
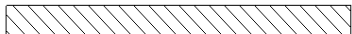
 7.875
 IN

Production Casing Diameter

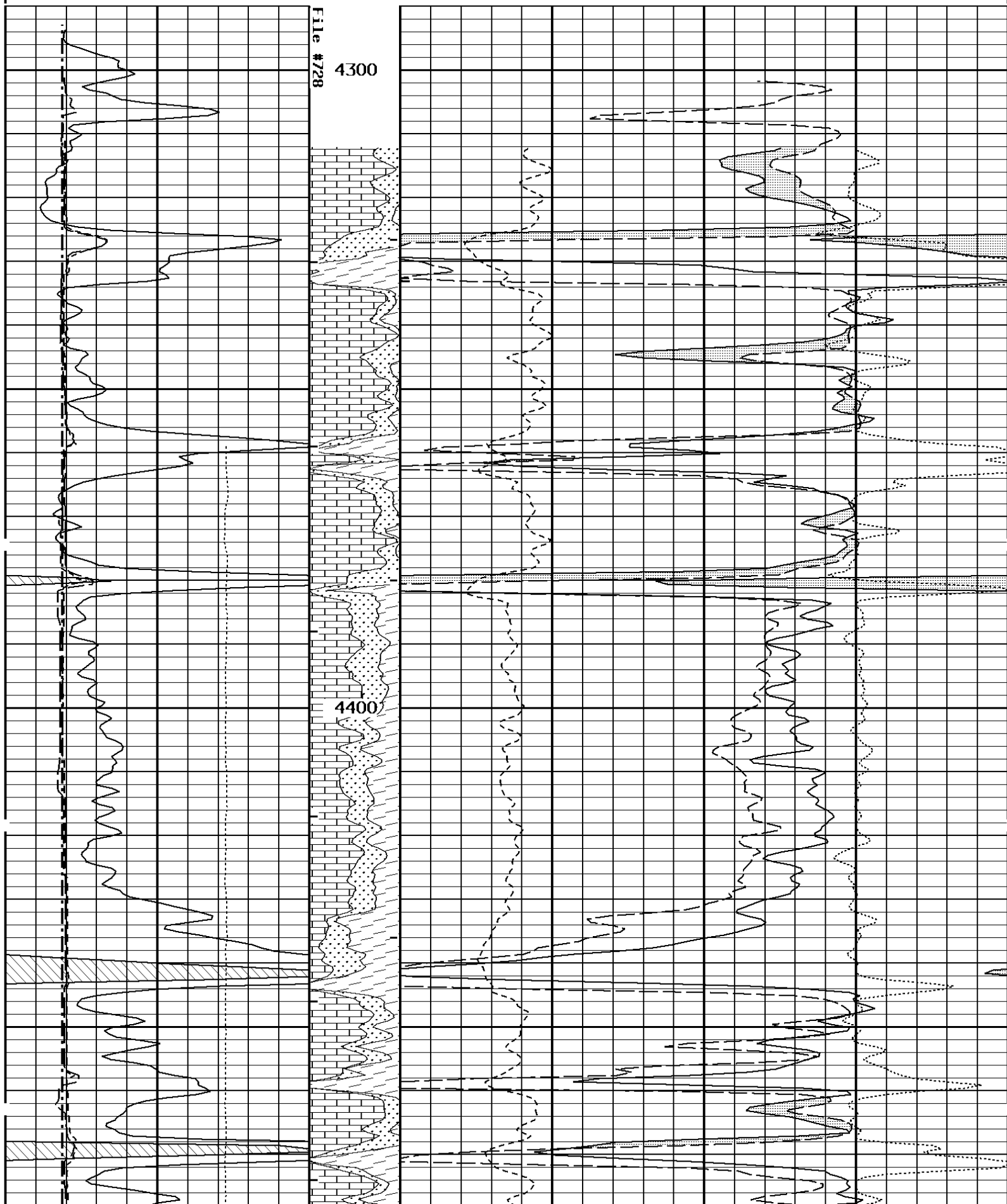
 5.500
 IN

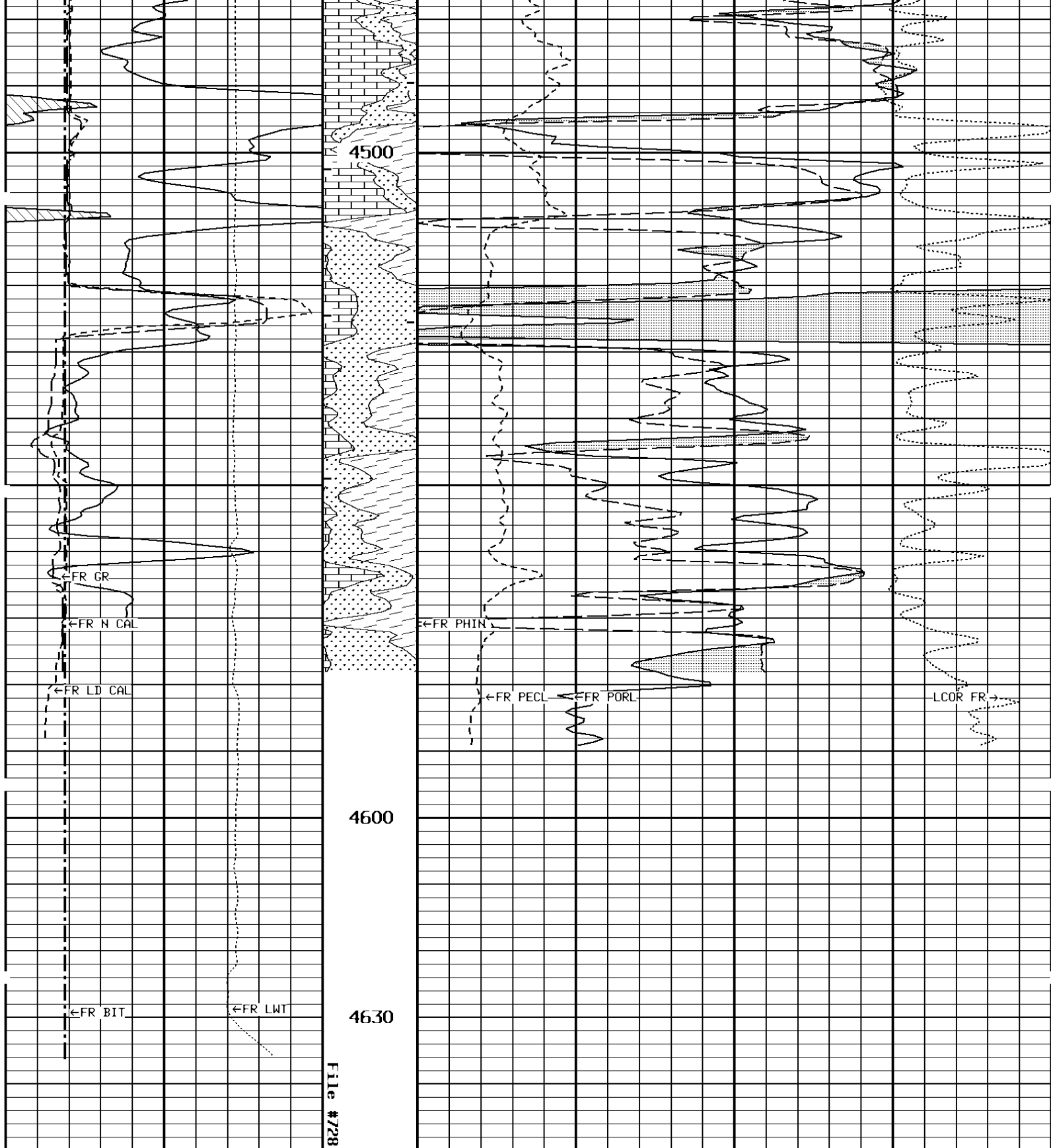
Casing Correction (PHI N)

 Disable

TENSION LBS				
10000	0			
BIT SIZE INCHES (IN)		Volume Dolo/Shale		
6	16			
DENSITY (X) CALIPER INCHES (IN)	Volume Calcite	PE CROSS-SECTION BARNS/ELECTRON	DENSITY CORRECTION G/CC	
16	26	010	-0.250.25	
6	16			
				
NEUTRON (Y) CALIPER INCHES (IN)	Volume Quartz	NEUTRON POROSITY PERCENT (LIMESTONE MATRIX)		
16	26	30		
6	16			
				
GAMMA RAY API UNITS	-BHV AHV- CU.FT	DENSITY POROSITY PERCENT (2.71 g/cc)		
150		70	30	
0		30	-10	
		-10	-50	

1:240 REPEAT SECTION





1:240 REPEAT SECTION

0	150		30	-10
			-10	-50
NEUTRON (Y) CALIPER INCHES (IN)		Volume Quartz	NEUTRON POROSITY PERCENT (LIMESTONE MATRIX)	
16	26			
6	16		30	-10
DENSITY (X) CALIPER INCHES (IN)		Volume Calcite	PE CROSS-SECTION BARNS/ELECTRON	DENSITY CORRECTION G/CC
16	26			
6	16		0	10 -0.25 0.25
BIT SIZE INCHES (IN)		Volume Dolo/Shale		
6	16			
TENSION LBS				
10000	0			

* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 F		
Matrix Density	2.71	G/C3
Fluid Density	1.00	G/C3
Formation Matrix	Limestone	
Drill Bit Size	7.875	IN
Production Casing Diameter	5.500	IN
Casing Correction (PHI N)	Disable	

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

1:240 MAIN SECTION
BULK DENSITY

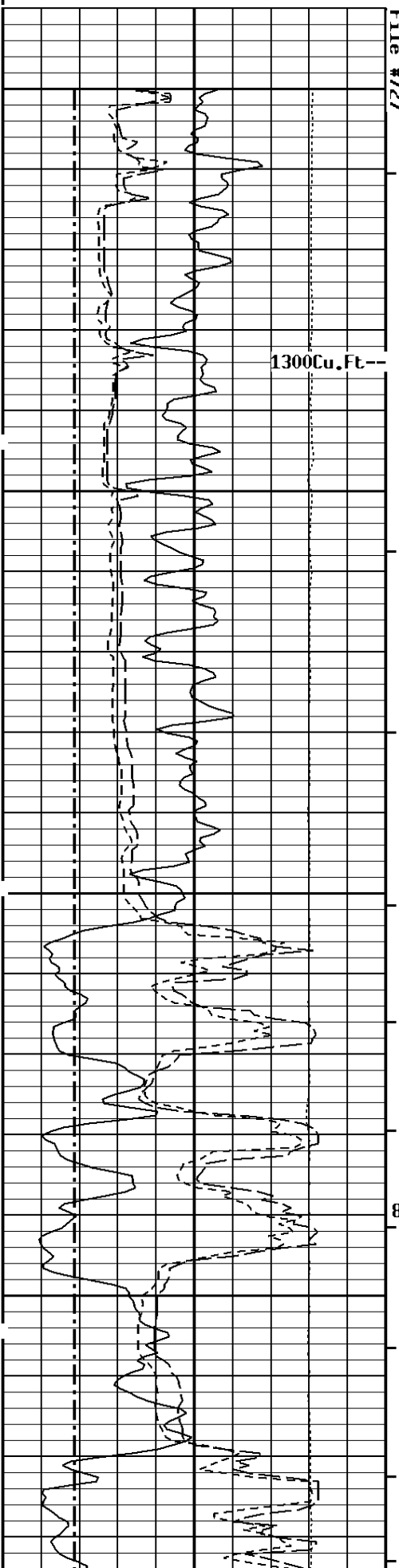
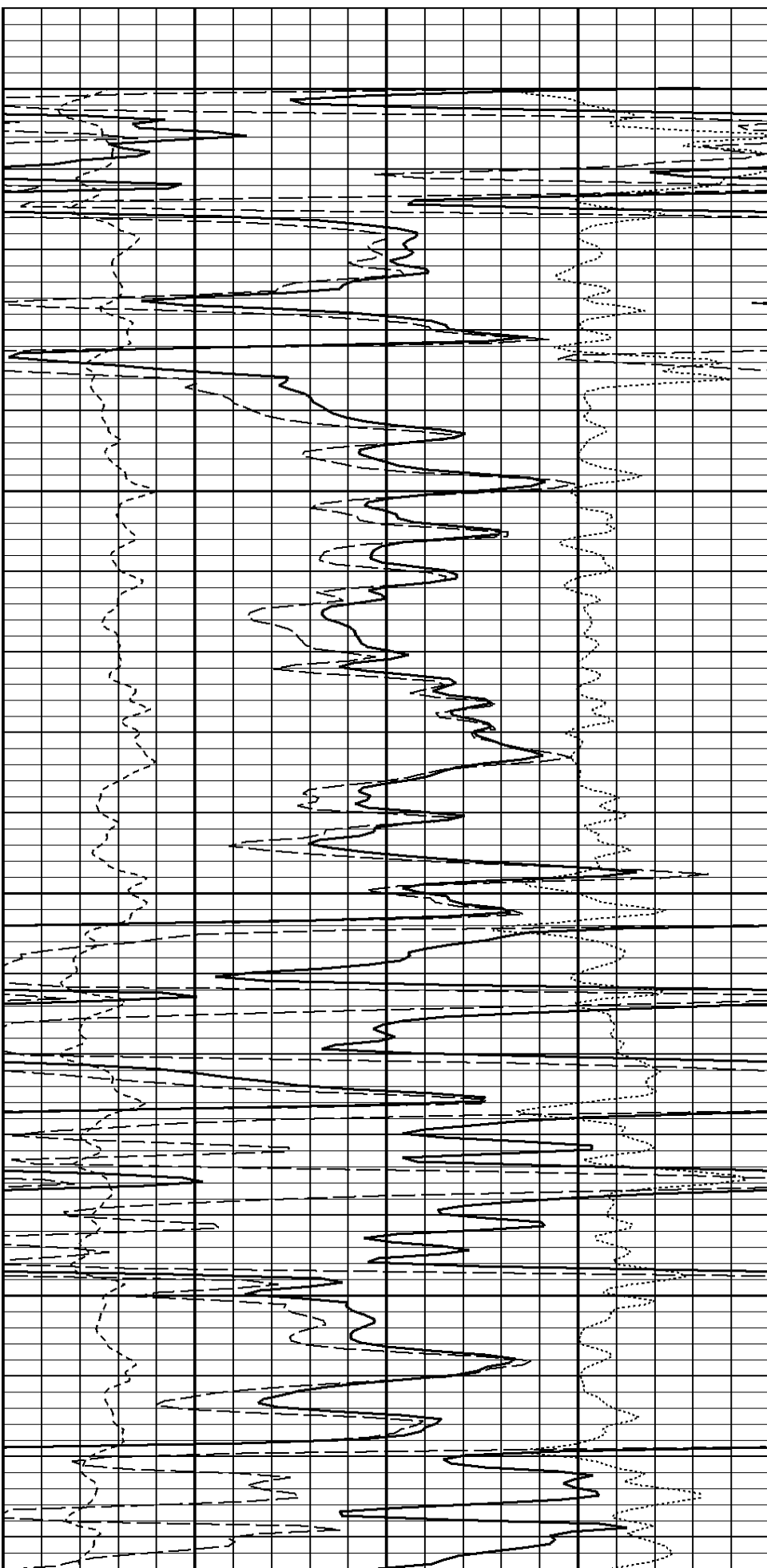
File #727

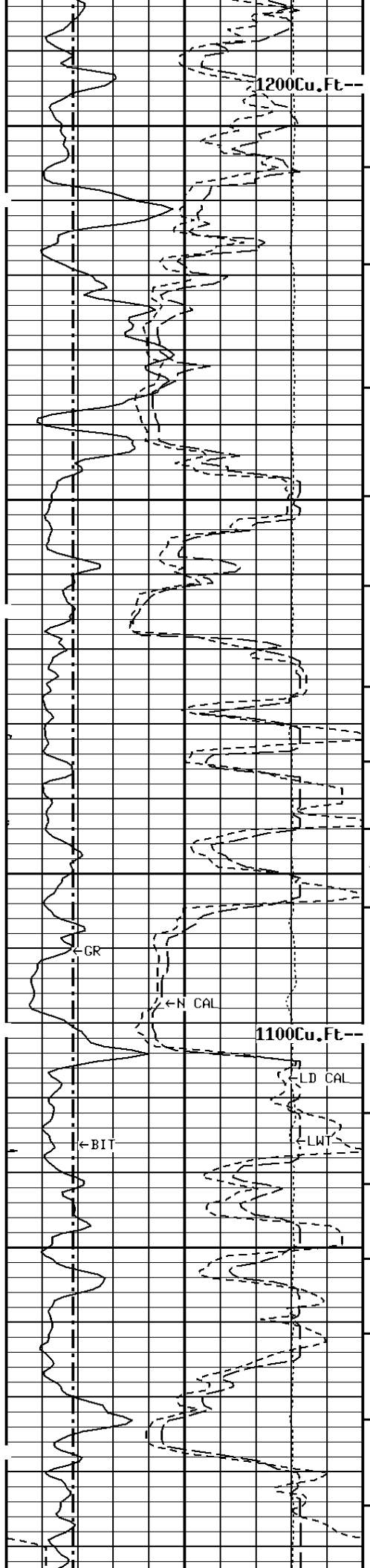
1800

1300Cu.Ft--

1900

800Cu.Ft--

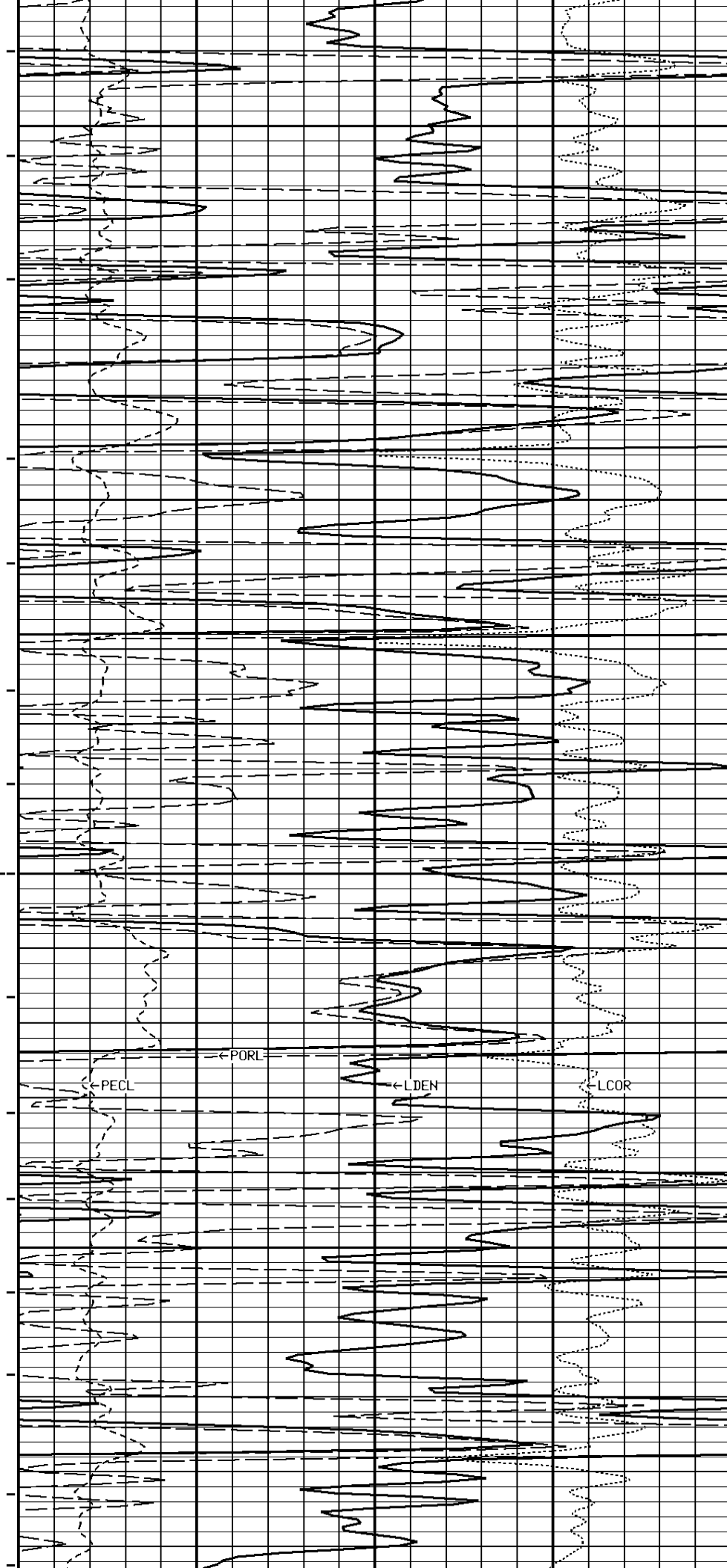


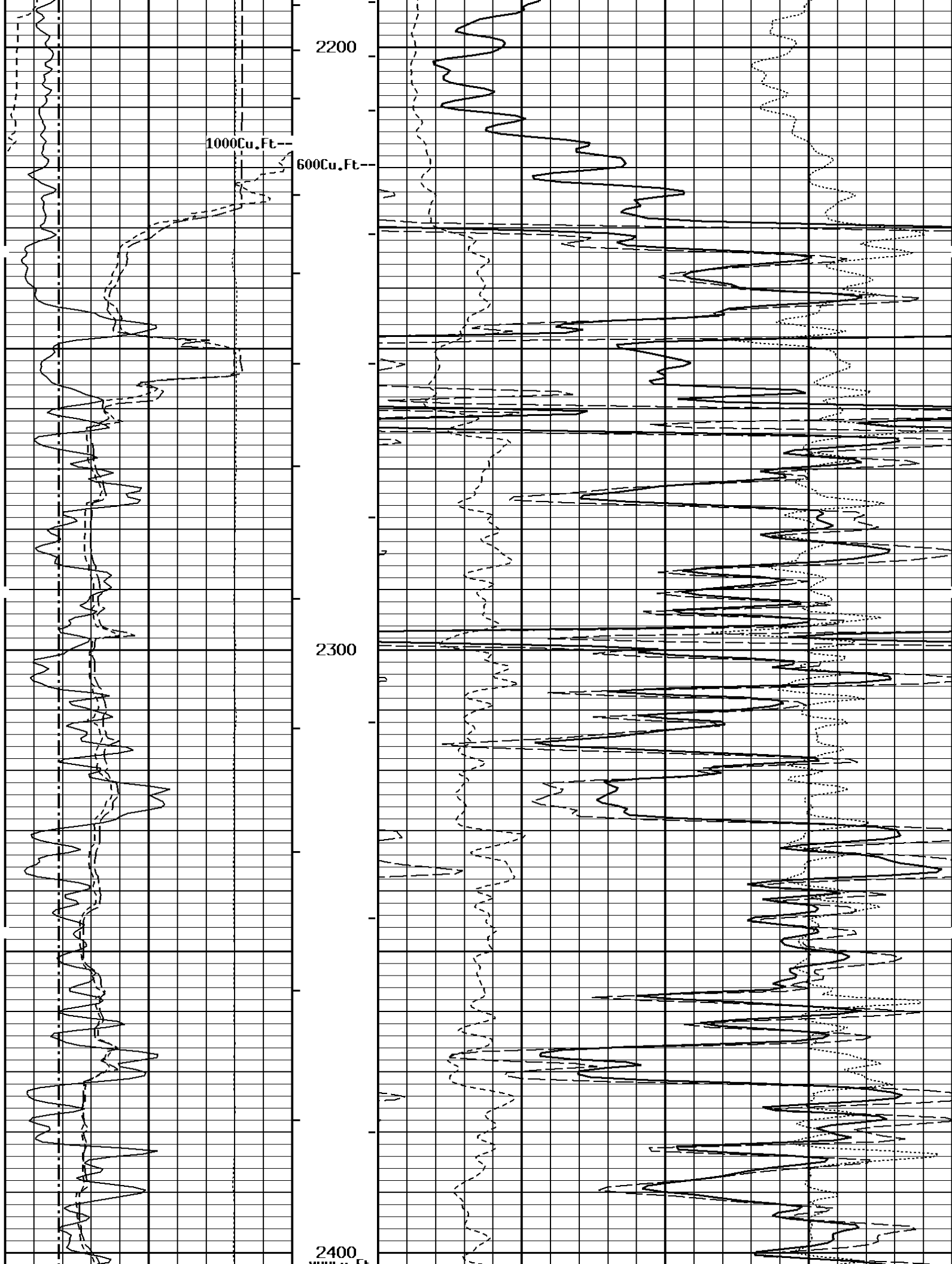


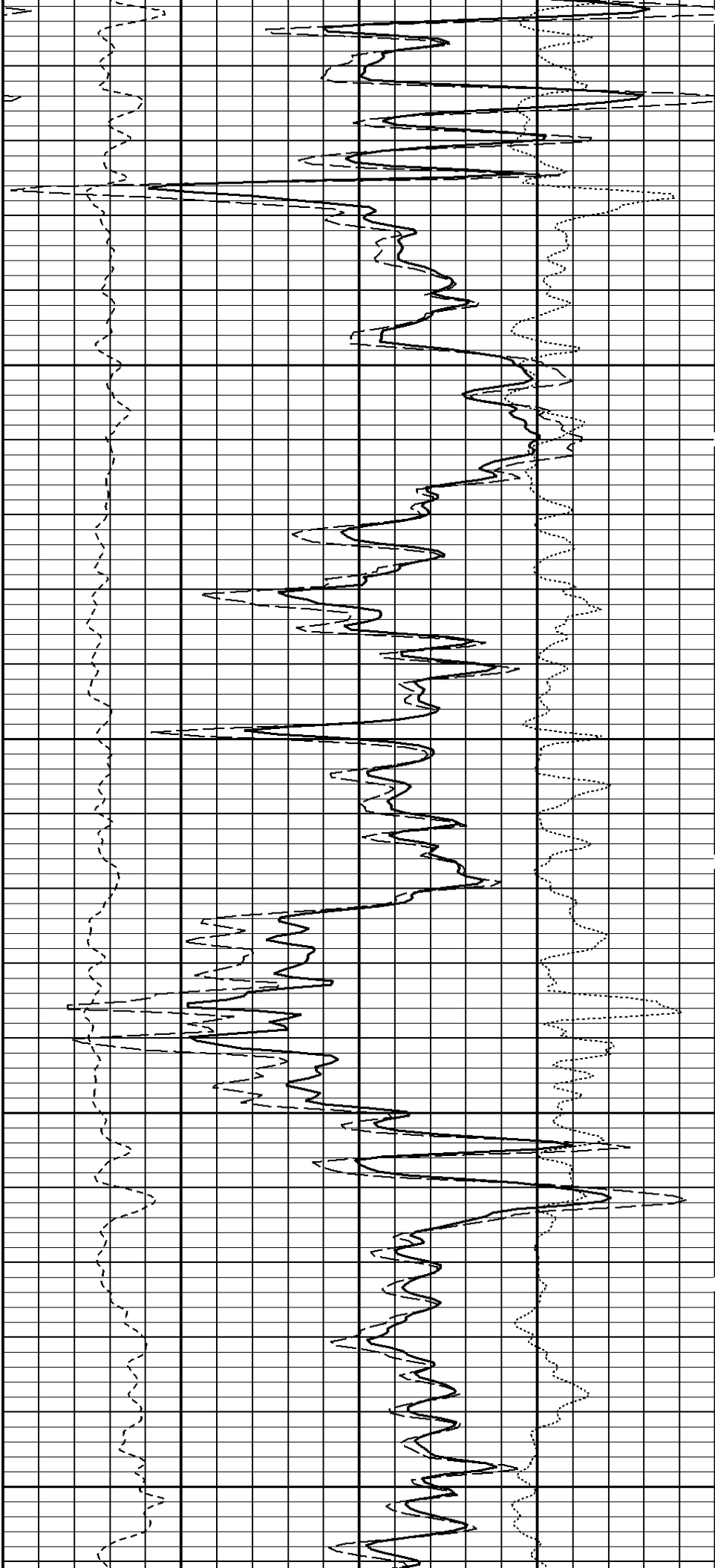
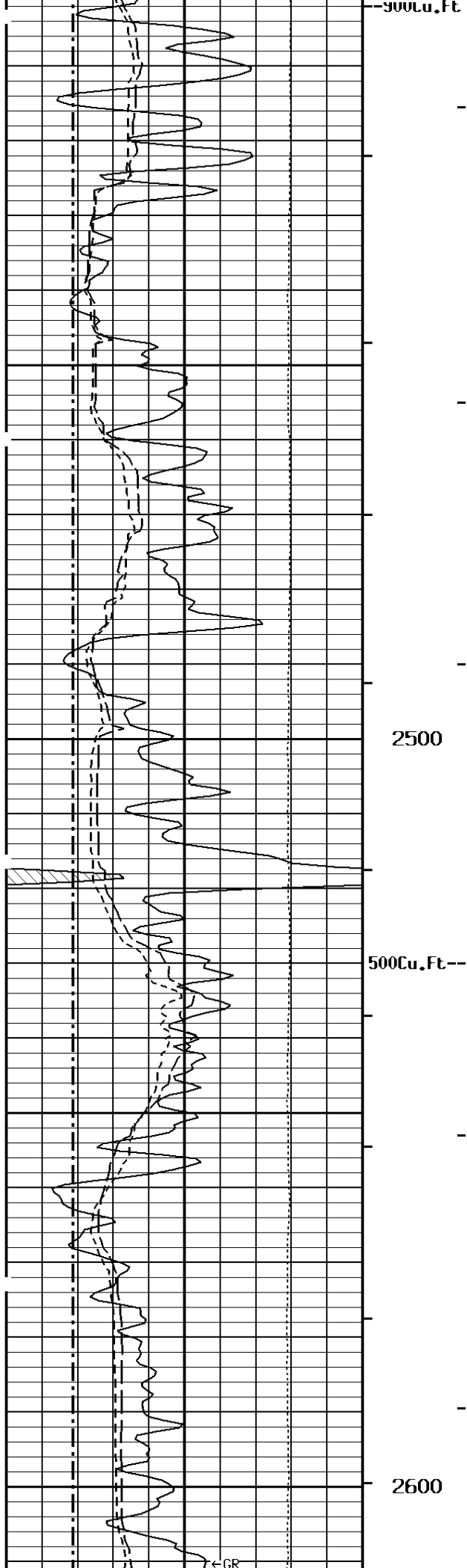
2000

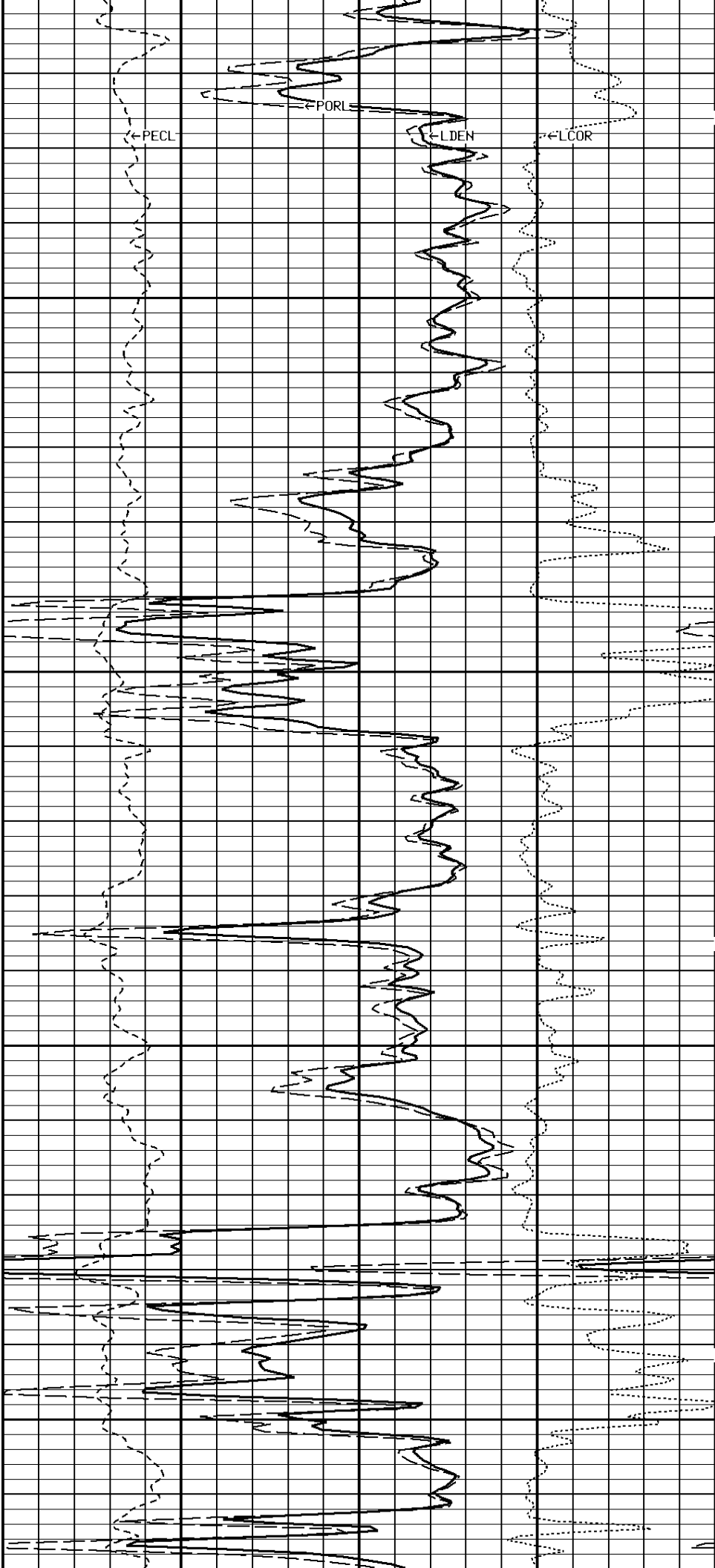
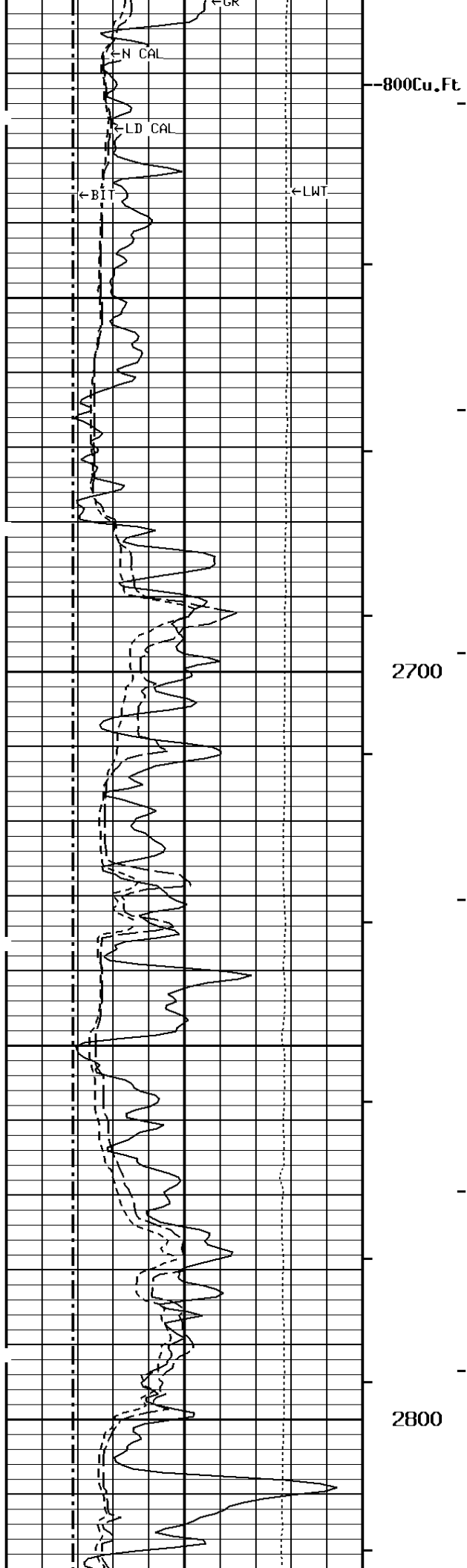
700 Cu.Ft.

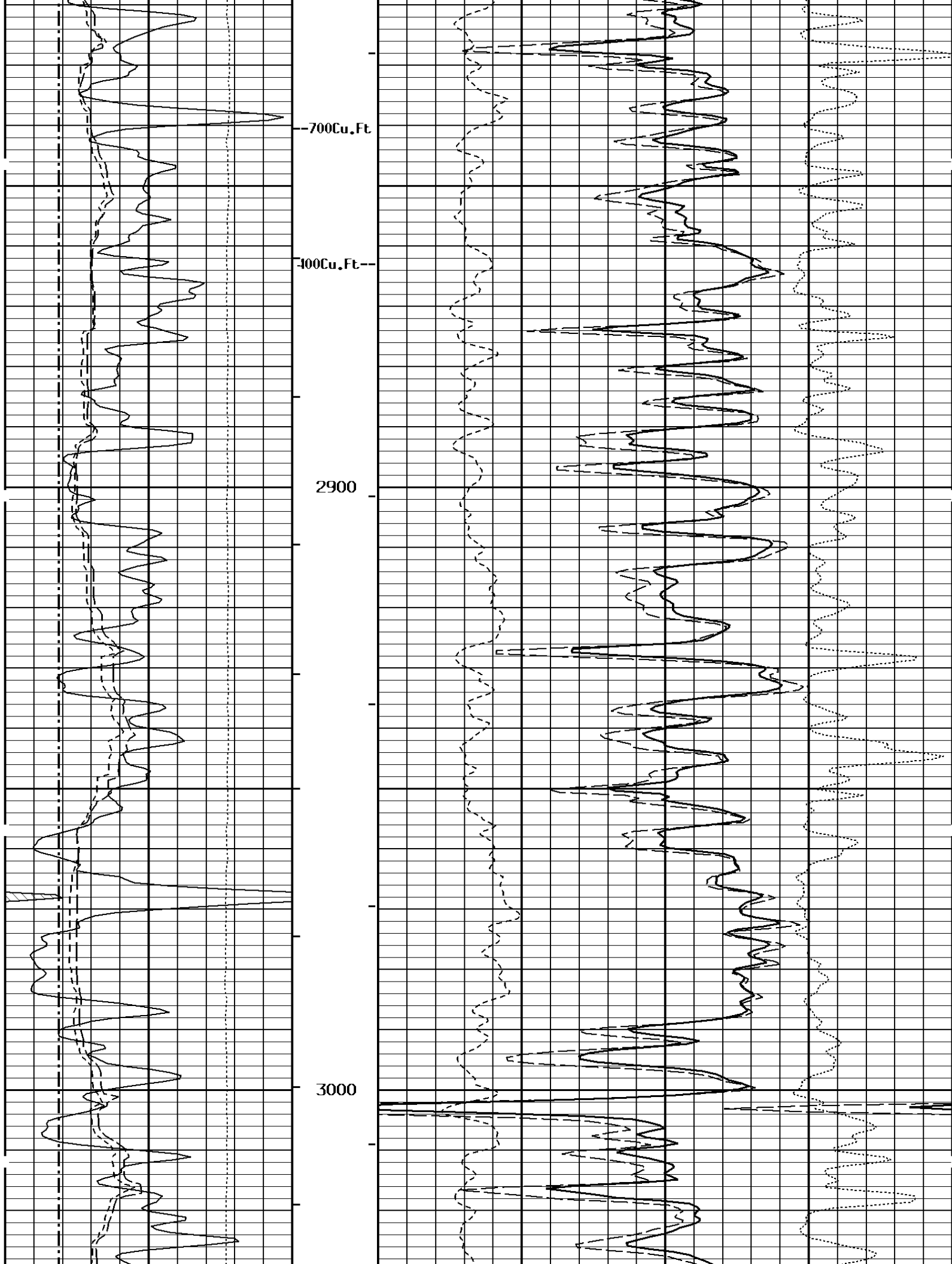
1100 Cu.Ft.

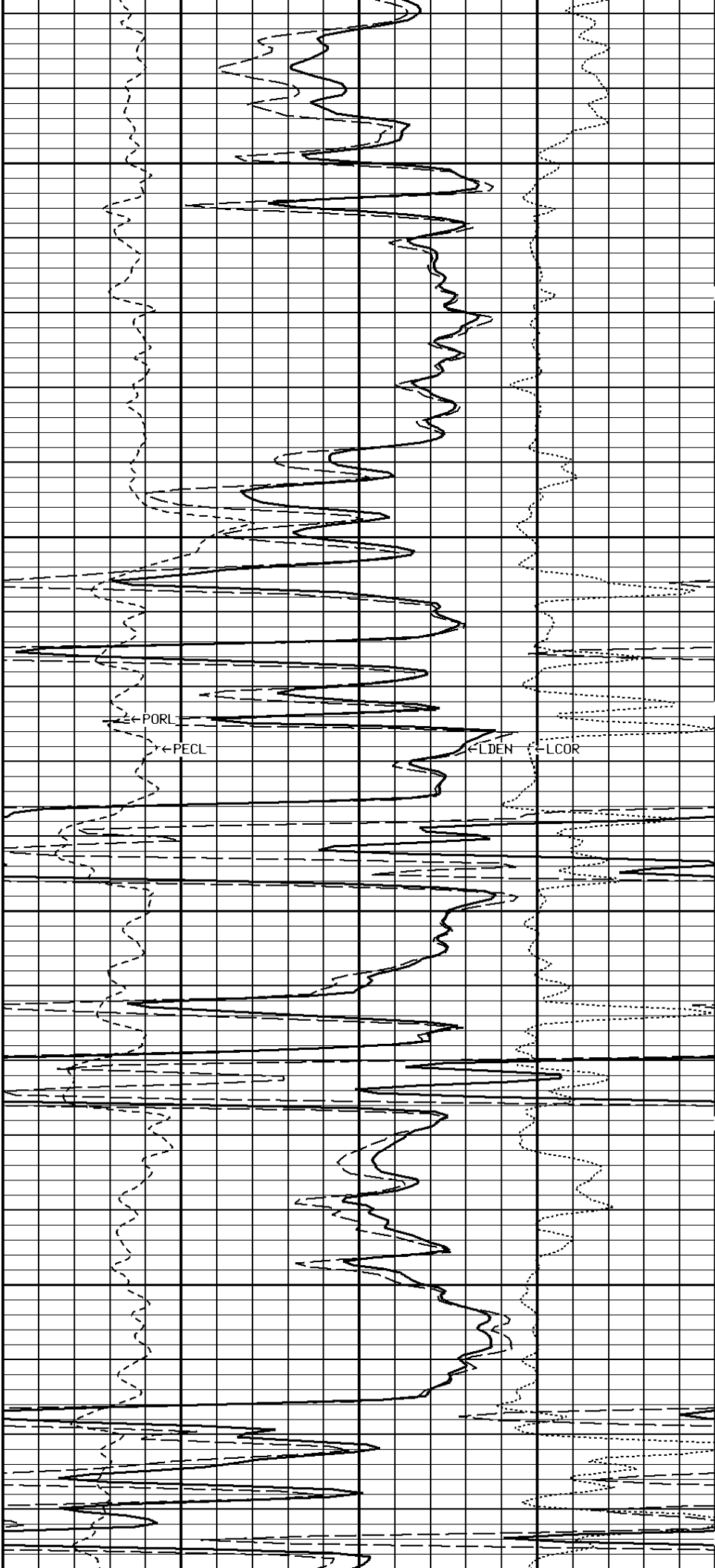
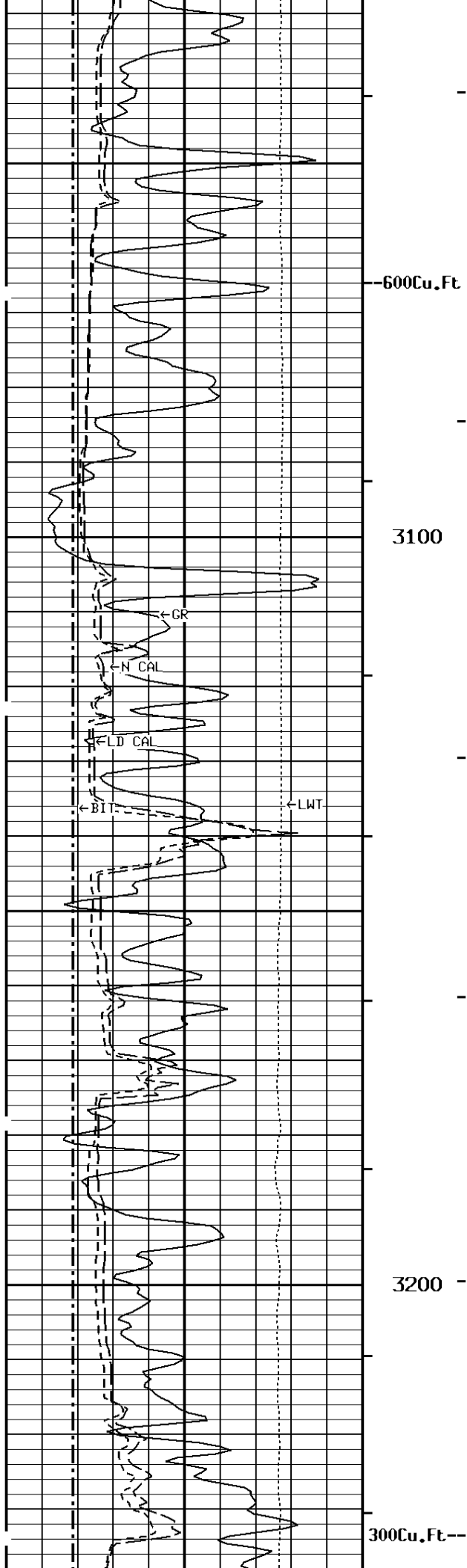


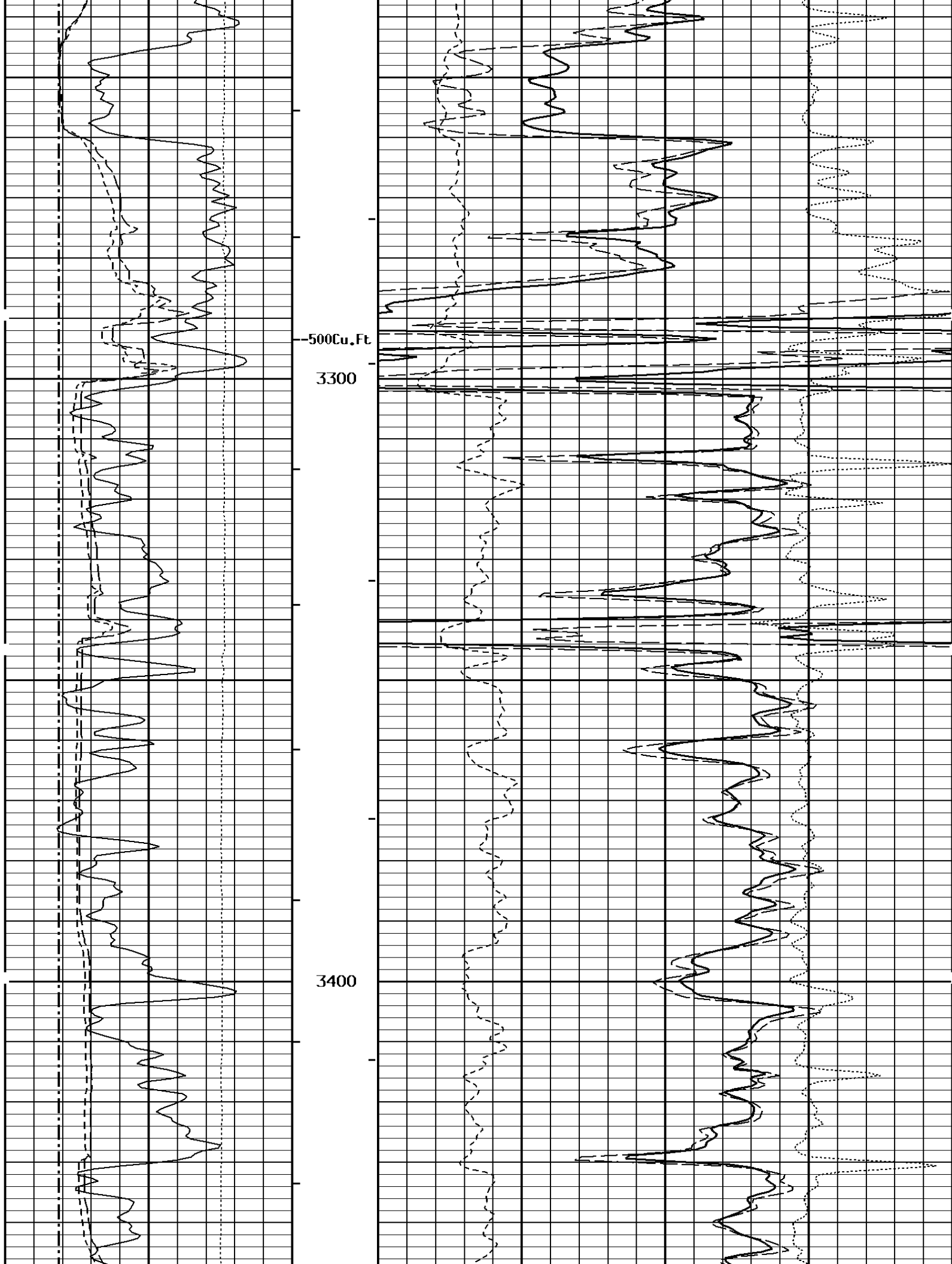


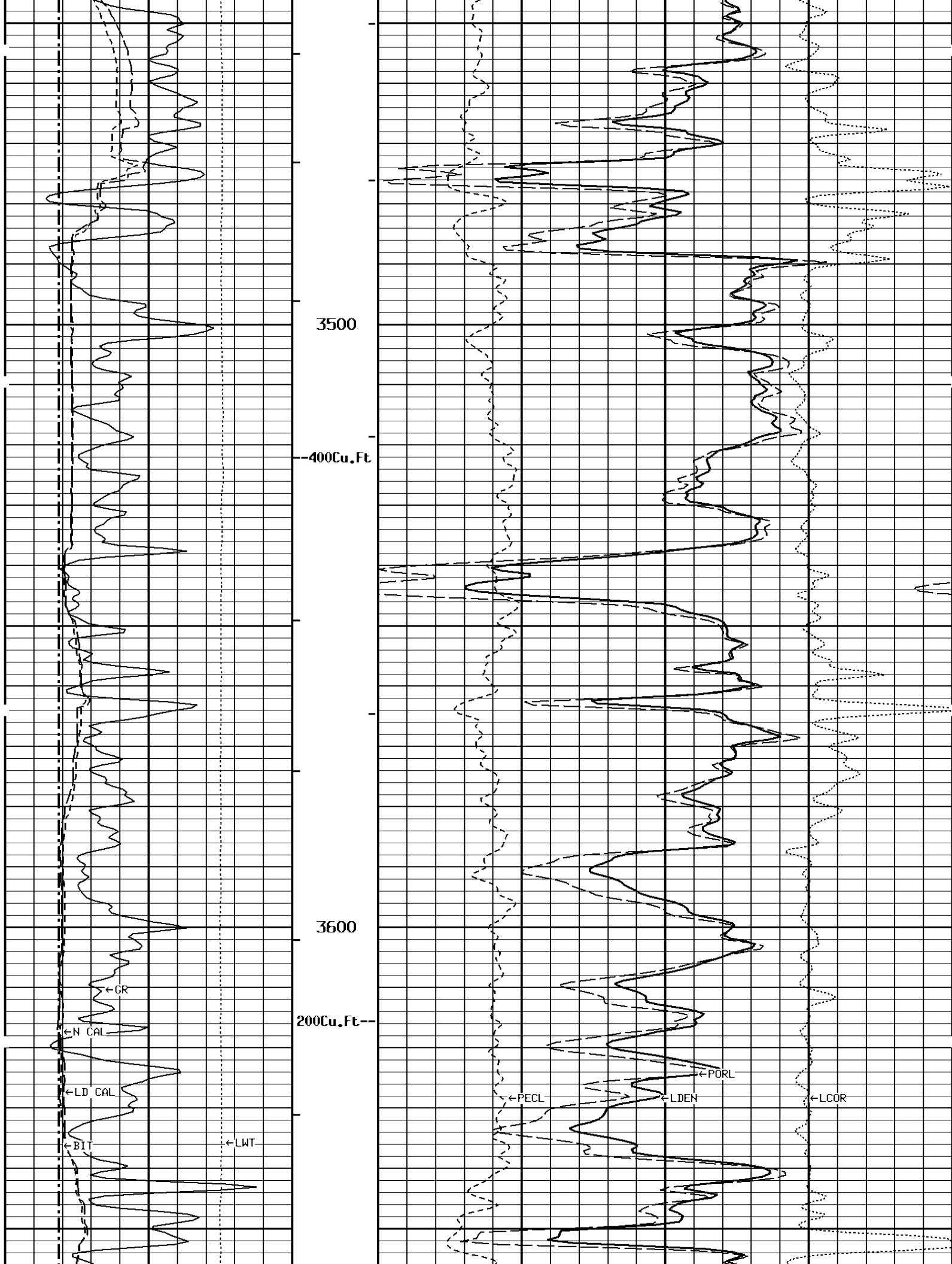


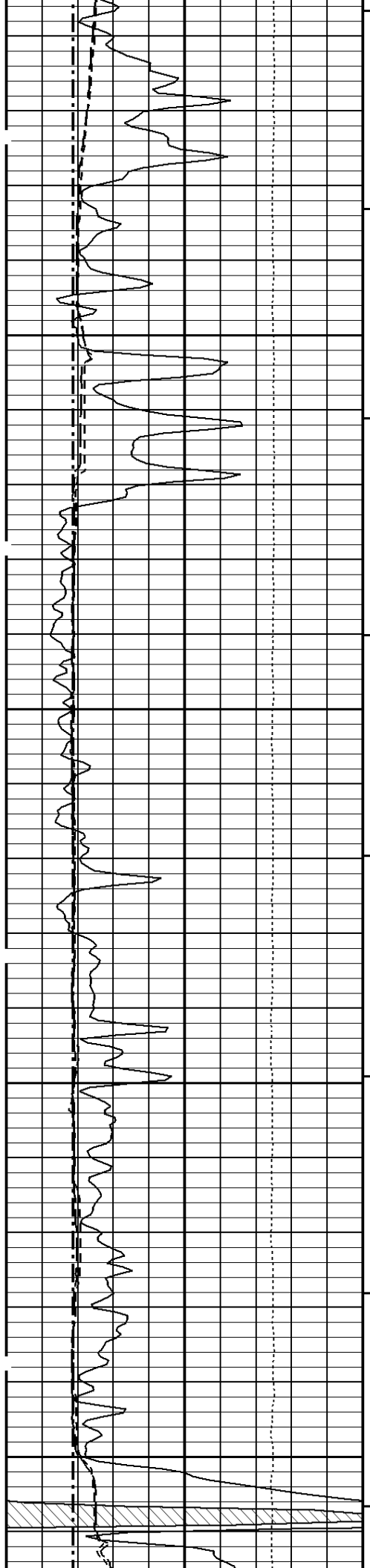






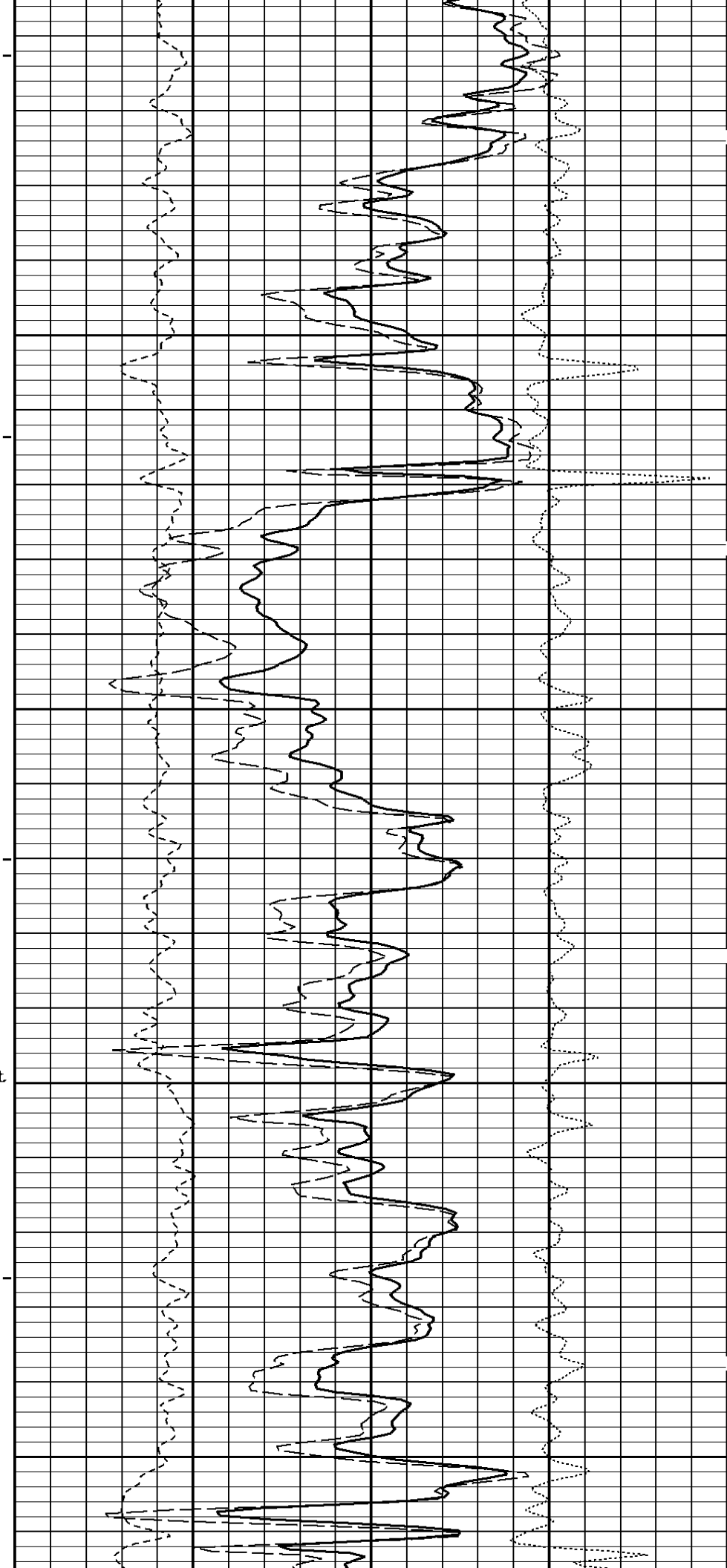


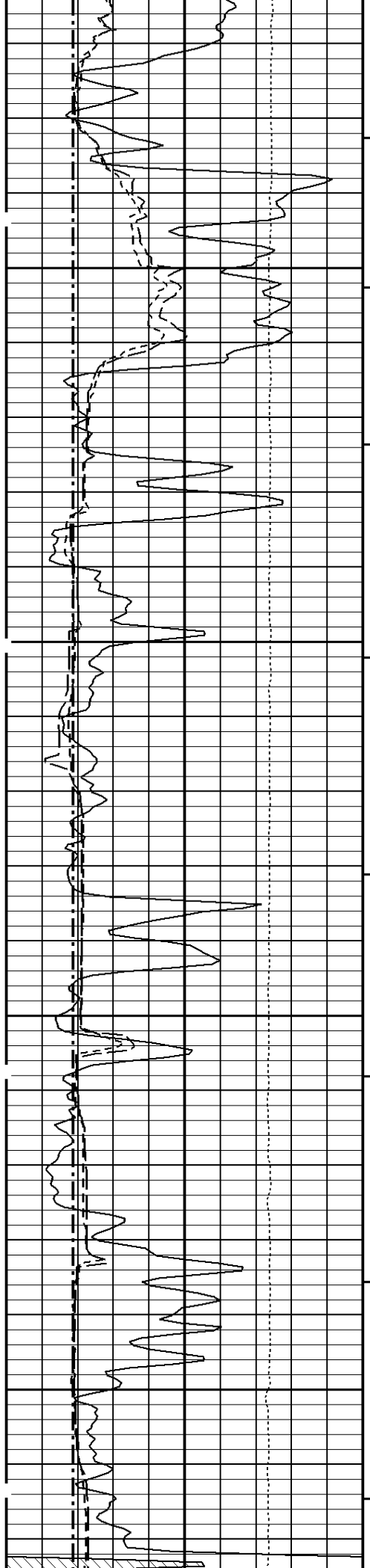




3700

300 Cu. Ft.

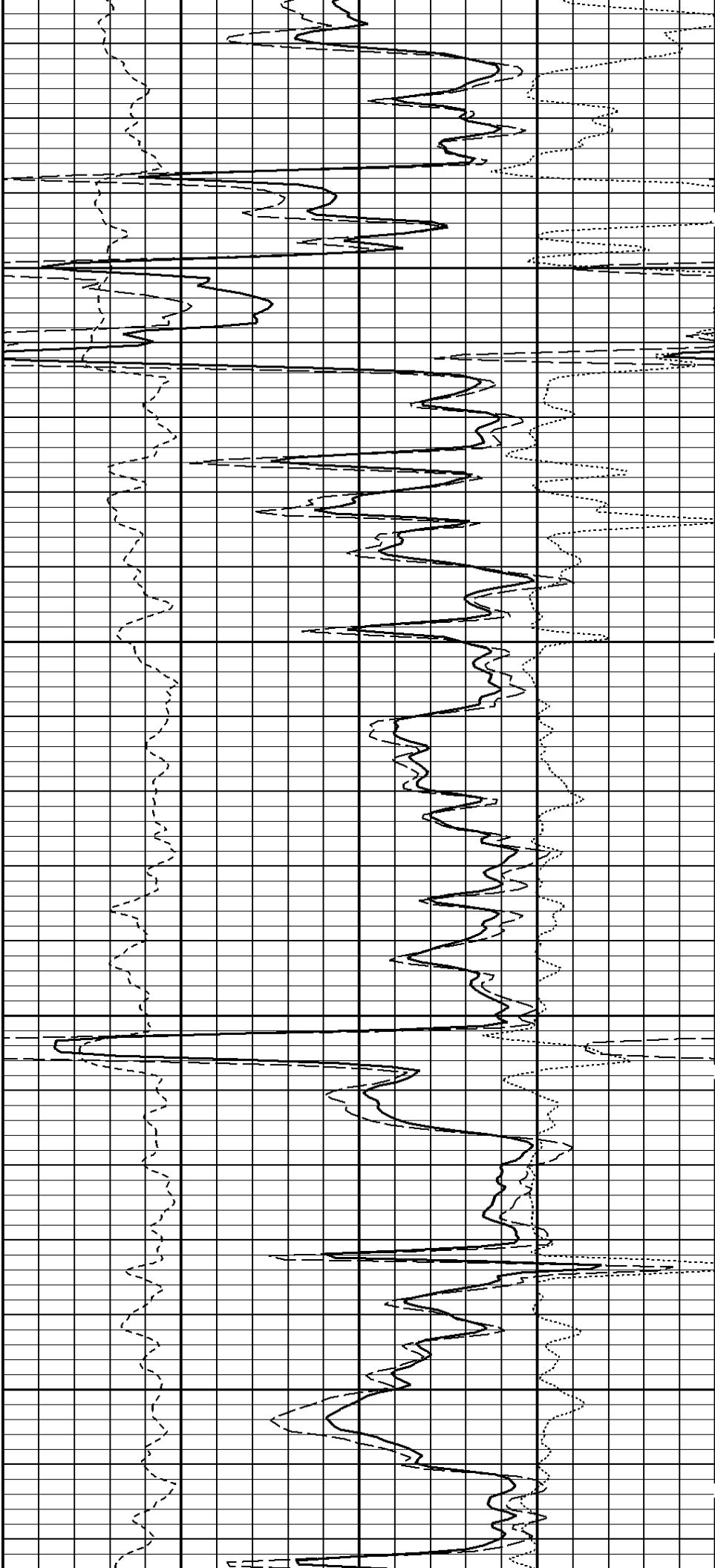


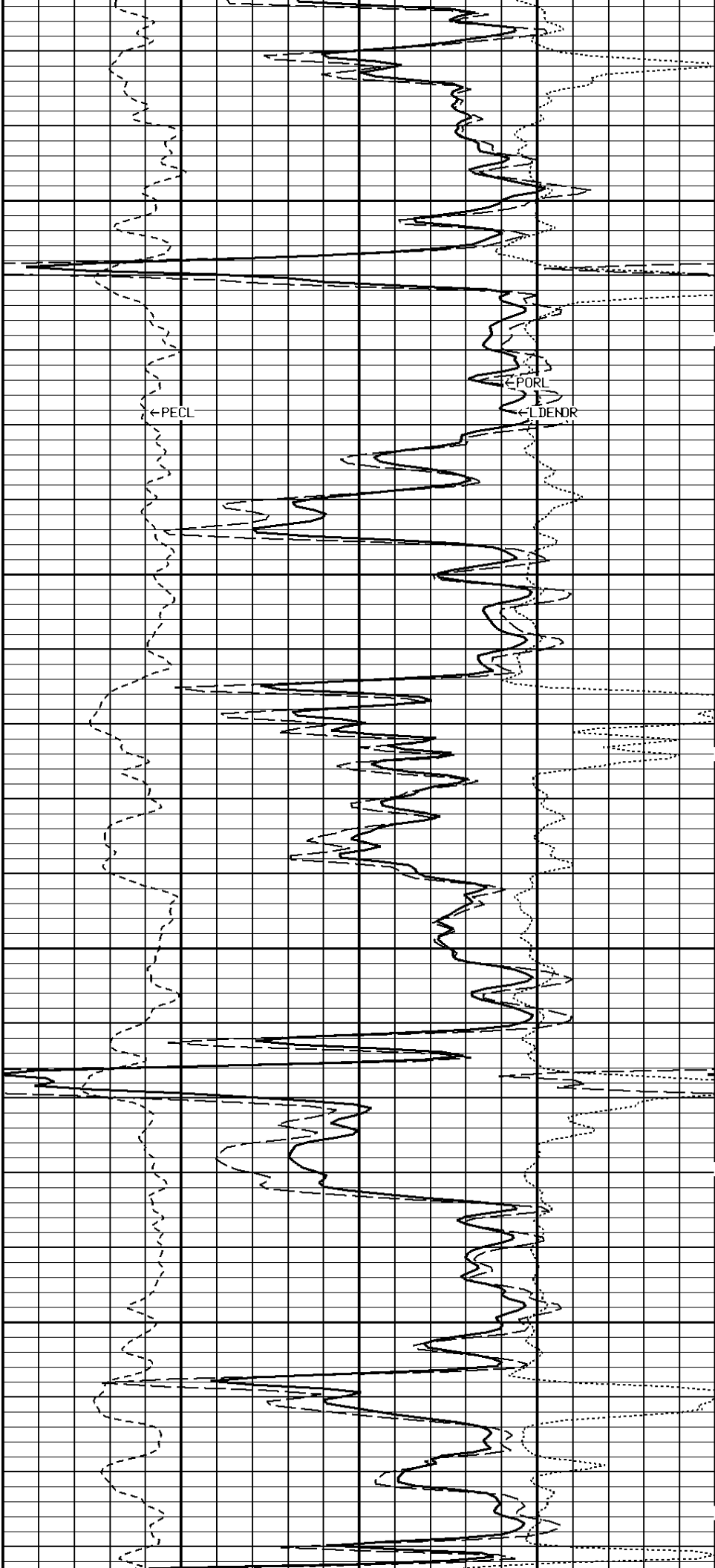
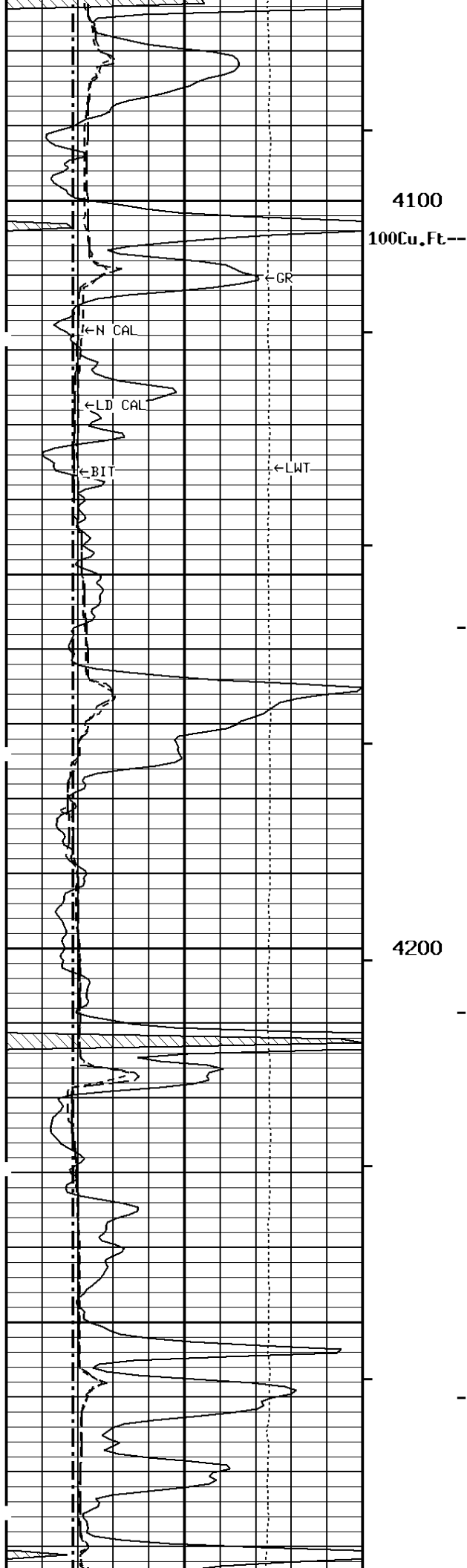


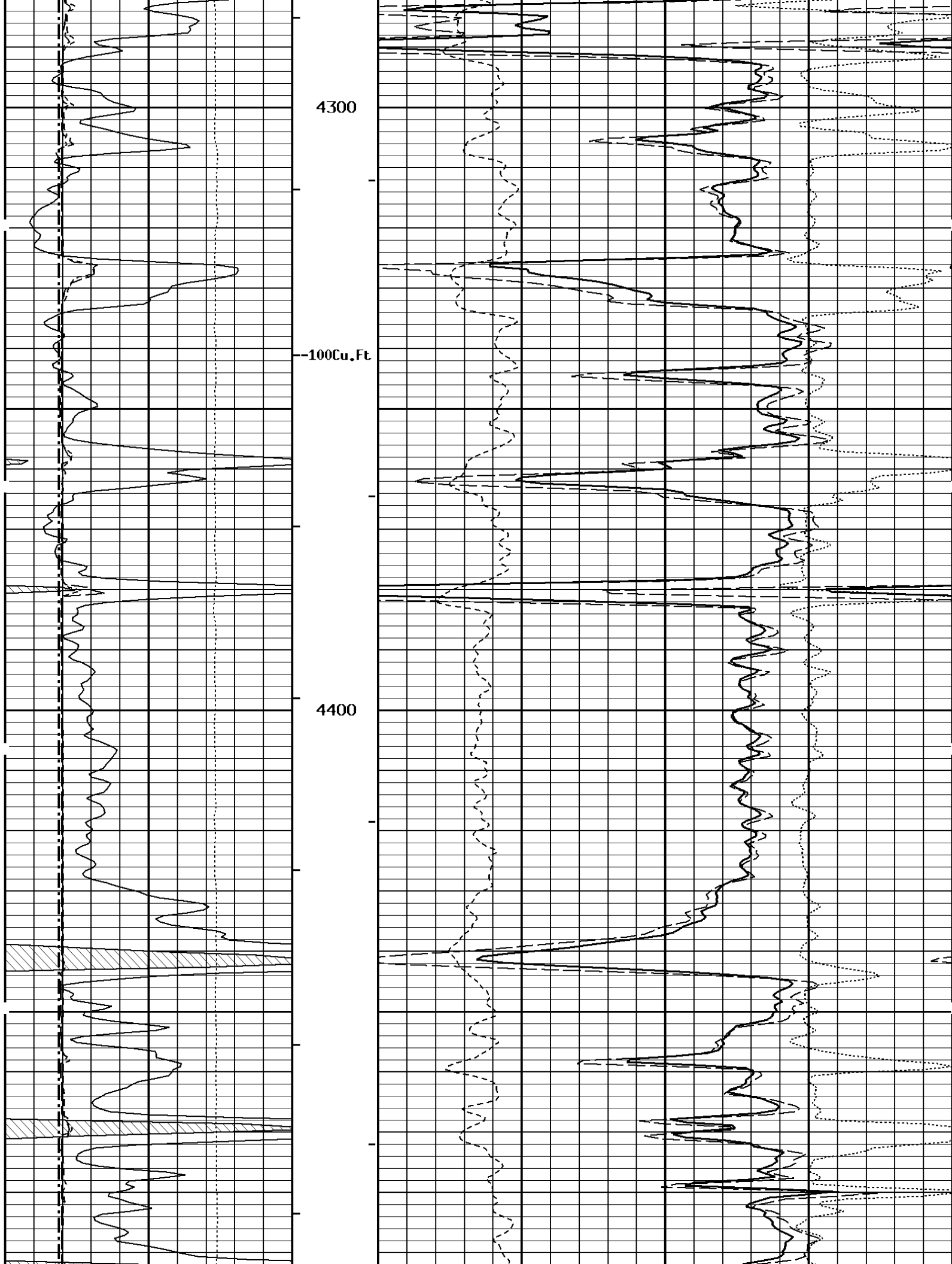
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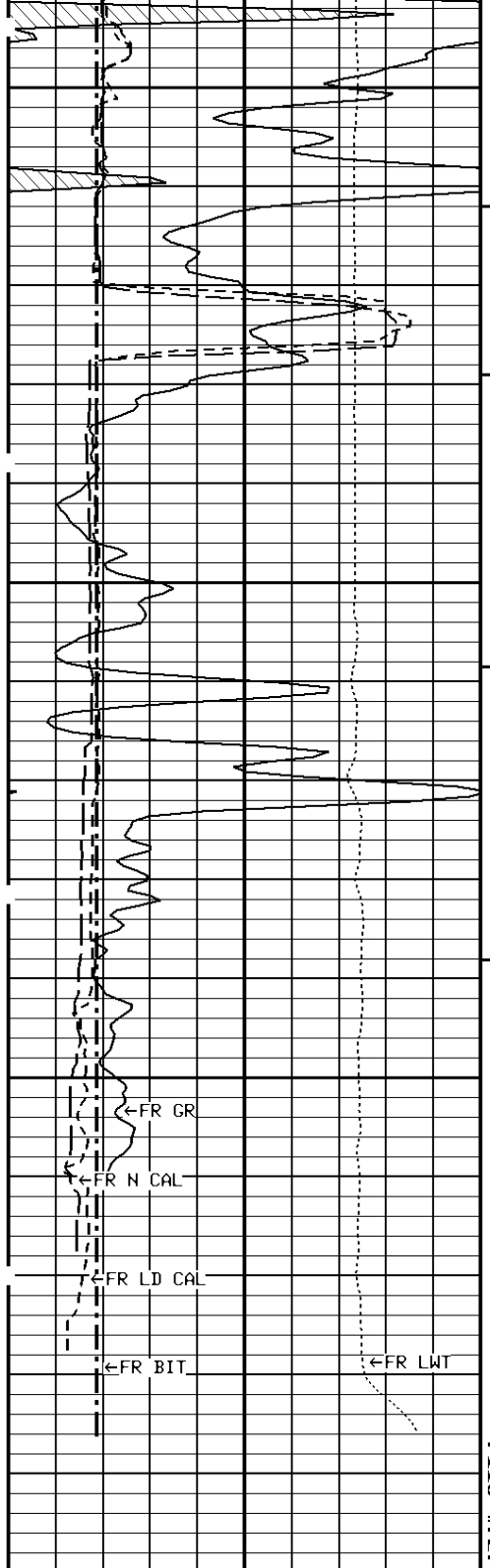
4000

--200Cu.Ft







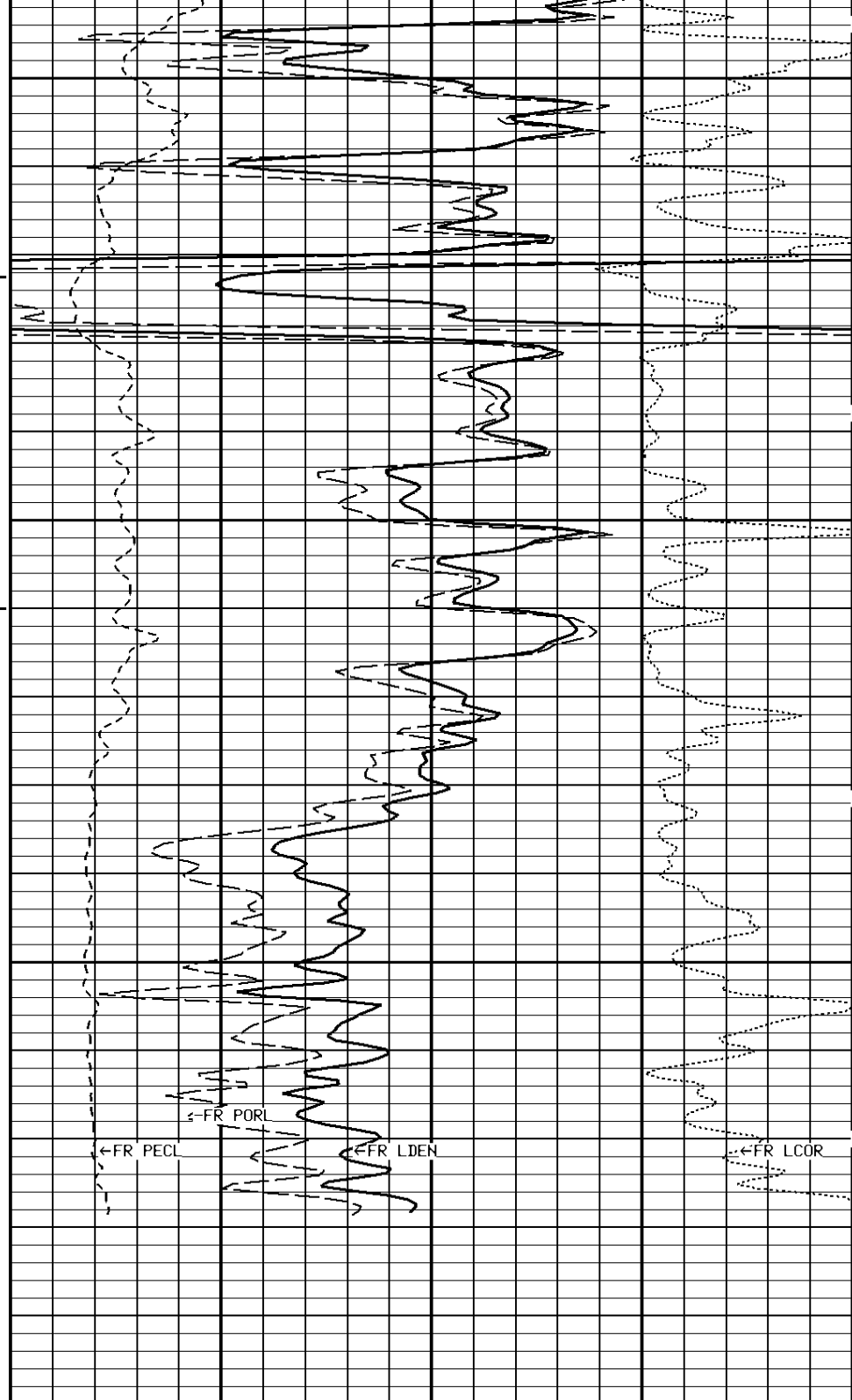


4500

4600

4630

File #727



1:240 MAIN SECTION BULK DENSITY

GAMMA RAY API UNITS 150 0 300 150	-BHV RHV- CU.FT	COMPENSATED BULK DENSITY G/CC 3.0 4.0 2.0 3.0 1.0 2.0
NEUTRON (Y) CALIPER INCHES (IN)		DENSITY POROSITY PERCENT (2.71 g/cc)

16	26
6	16

DENSITY (X) CALIPER INCHES (IN)	
16	26
6	16

BIT SIZE INCHES (IN)	
6	16

TENSION LBS	
10000	0

70	30
30	-10

-10	-50

PE CROSS-SECTION BARNS/ELECTRON	
0	10

DENSITY CORRECTION G/CC	
-0.25	0.25

*** Borehole Zone Factors ***

Zone 1 99999.0 to 0.0 F		
Matrix Density_____	2.71	G/C3
Fluid Density_____	1.00	G/C3
Formation Matrix_____	Limestone	
Drill Bit Size_____	7.875	IN
Production Casing Diameter_____	5.500	IN
Casing Correction (PHI N)_____	Disable	

*** Calibration Summary ***

Shop Calibration					
GRTB					
Performed : 21-Aug-2009			Time : 15:13		
Sensor Suite : GR-GR5			ID : GRT-BA-121		
	Measured	Units	Calibrated	Units	
	Background	Jig	Jig		
GR	50	360	175	GRAPI	
Shop Calibration					
CNT					
Performed : 30-Jun-2010			Time : 12:50		
Sensor Suite : BHC NEUT			ID : CNP-AA-111		
Source ID : N-1044					
	Tank		Verification	Units	
	Measured	Calibrated	Jig		
N/F	3.6595	3.6895	3.6896		
Porosity	20.1	20.5	20.5	%	
Shop Calibration					
LDTNG					
Performed : 16-AUG-2009			Time : 10:24		
Sensor Suite : CALI-BCN			ID : CNP-AA-111		
	Jig - Measured		Jig - Calibrated	Units	
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	8.3	14.3	6.0	12.0	IN.
Shop Calibration					
LDTNG					
Performed : 19-OCT-2009			Time : 10:55		
Sensor Suite : CALIPEL			ID : LDP-DA-01		
	Jig - Measured		Jig - Calibrated	Units	

CL # 1	Ring#1 6.2	Ring#2 12.2	Ring#1 6.0	Ring#2 12.0	IN.
Performed : 30-Jun-2010 Time : 10:25 Sensor Suite : BHCPELNG ID : LDP-DA-01 Source ID : CSV-587					
Short Space					
	BKGD	Al	Mg	Al+Fe	Units
LSW1	66	497	806	332	CPS
LSW2	70	582	933	416	CPS
LSW3	262	1378	2184	1180	CPS
LSW4	318	1265	1764	1123	CPS
LSW5	30	40	41	39	CPS
LSW6	81	81	81	80	CPS
LSW7	51	52	52	53	CPS
LSW8	2	2	3	2	CPS
QS	0.227	0.218	0.218	0.203	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC
Long Space					
	BKGD	Al	Mg	Al+Fe	Units
LLW1	115	623	2559	394	CPS
LLW2	128	1063	4403	774	CPS
LLW3	485	2069	7572	1797	CPS
LLW4	617	1201	3032	1116	CPS
LLW5	71	72	86	72	CPS
LLW6	196	193	188	194	CPS
LLW7	123	124	119	126	CPS
LLW8	4	6	11	6	CPS
QL	0.229	0.218	0.225	0.213	
PEL			2.697	5.458	
LSDN		2.600	1.680		G/CC