



Tucker
ENERGY SERVICES

COMPENSATED NEUTRON
PEL DENSITY MICRO LOG

Company: MCGOWAN OIL COMPANY
Well: CHRISTENSON #2-4
Field: COWLEY
County: KANSAS
State: USA
Country: USA
API No.: 35-035-24485

File No.: TUL-57170
Company: MCGOWAN OIL COMPANY
Well: CHRISTENSON #2-4
Field: COWLEY
County: KANSAS
State: USA
Country: USA
API No.: 35-035-24485
Location: 1260' FNL & 1100' FEL
SW SW NE NE
LSD: Sect: Twp: Rge:

Permanent Datum:	GL	Elevations:	Services:
Drilling Measured From:	KB	KB 1202.00	CNT
Log Measured From:	KB	DF 1201.00	PIT
Above Permanent Datum:	5.00 Ft	GL 1197.00	LDT
Date:	2012-10-06		MLT
Run Number	1		
Depth--Driller	3250.0	Ft	
Depth--Logger	3250.0	Ft	
First Reading	3227.0	Ft	
Last Reading	220.0	Ft	
Casing--Driller	220.0	Ft	
Casing--Logger	220.0	Ft	
Bit Size	7.875	In	
Casing Size	8.625	In	
Hole Fluid Type	WBM		
Density	9.3	LBS/GAL	
Fluid Loss	10.6	CC	
PH/Viscosity	9.0	47.0 SEC	
Sample Source	MEASURED		
RM@Measured Temp.	1.400	@ 55 F	
RMF@Measured Temp	1.190	@ 55 F	
RMC@Measured Temp.	1.610	@ 55 F	
Source RMF/RMC	CALCULATED	CALCULATED	
RM@BHT	0.680	@ 120 F	
Time Circulation Stopped			
Max Recorded Temp.	120	F	
Equipment/Base	TRUCK 119	TULSA	
Recorded By	S. DAVIS		
Witnessed By	D. MCGOWAN		

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)
7.875	3250.00	8.625	20.00	220.00

Run Number	1	
Date	2012-10-06	
Date/Time On Bottom	2012-10-06 03:00	
Depth to Fluid	0.0 Ft	
Salinity	1400.000 PPM	
RMF@BHT	0.580 @ 120 F	
RMC@BHT	0.780 @ 120 F	

Run Number 1

Comments

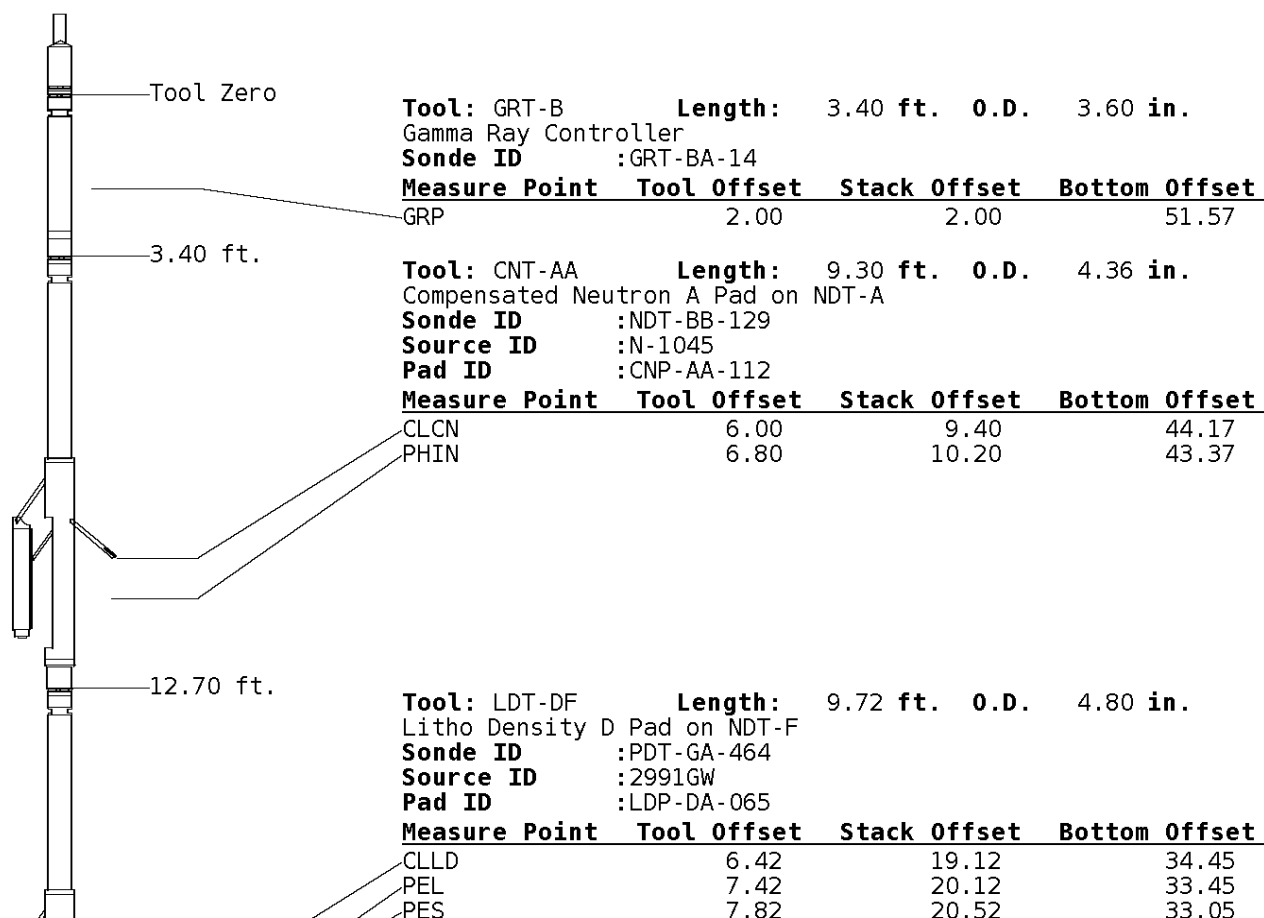
ALL PRESENTATIONS AS PER CUSTOMER REQUEST
 GRT, CNT, LDT, MLT AND PIT RUN IN COMBINATION.
 CALIPERS ORIENTED ON X-Y AXIS.
 2.71 G/CC USED TO CALCULATED POROSITY.
 ANNULAR HOLE VOLUME CALCULATED USING 5.50" PRODUCTION CASING.
 PHIN IS CALIPER CORRECTED.
 DETAIL PRESENTED FROM TD TO 1000'

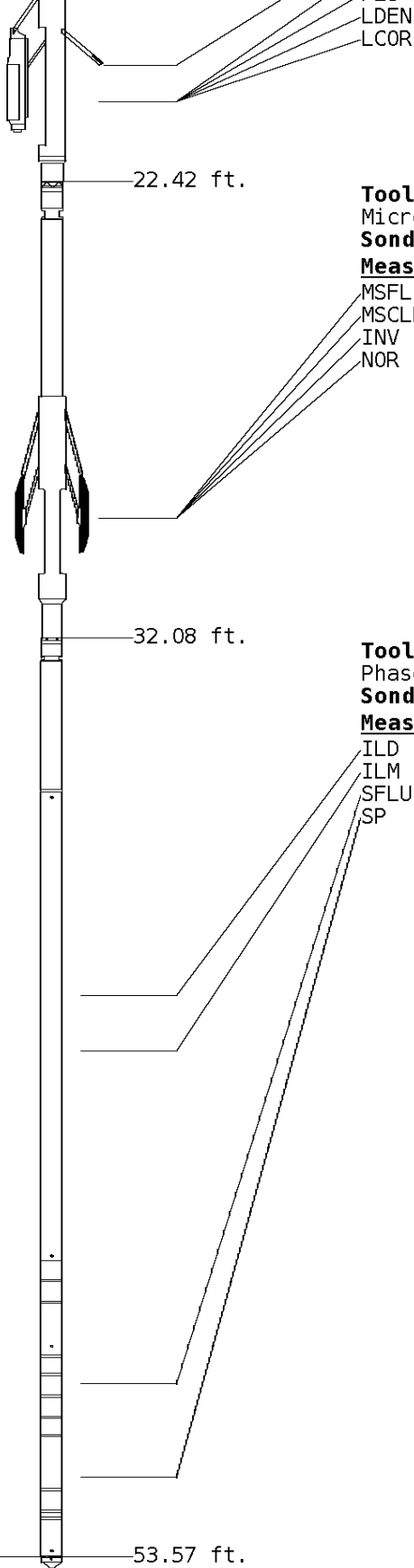
GRT: GRP.
 CNT: PHINLS, CLCNIN.
 LDT: PORLLS, LCORN, PECLN, LDENN, CLLDIN.
 MLT: NOR_RF, INV_RF, MSCLPIN.
 PIT: ILD, ILM, SPU, CIRD, SFLAEC.

OPERATORS:
 B. COLWILL
 M. RUBY

Tool String Schematic

Total Tool Length - 53.57 ft.
Maximum Outside diameter - 6.00 in.
Net Weight in Air - 943.00 lbs.





Tool: MST-DA **Length:** 9.66 ft. **O.D.** 6.00 in.
 Micro Spherically Focused (IC)
Sonde ID :MST-DA-36

Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	30.02	23.55
MSCLP	7.60	30.02	23.55
INV	7.60	30.02	23.55
NOR	7.60	30.02	23.55

Tool: PIT-CA **Length:** 21.49 ft. **O.D.** 3.62 in.
 Phased Dual Induction w/ RM & D
Sonde ID :PIT-AC-22

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	41.00	12.56
ILM	10.10	42.18	11.39
SFLU	17.49	49.57	4.00
SP	20.60	52.68	0.88

Well File: mcgow-chri-2-4-mtk-oct-6

Scale: 1:240

Segment: V1.D1.S5 MN

Acquired: 2012-10/06 03:16 3.2.0-11172

Reference: 0

Processed: 2012-10/06 04:34 3.2.0-11172

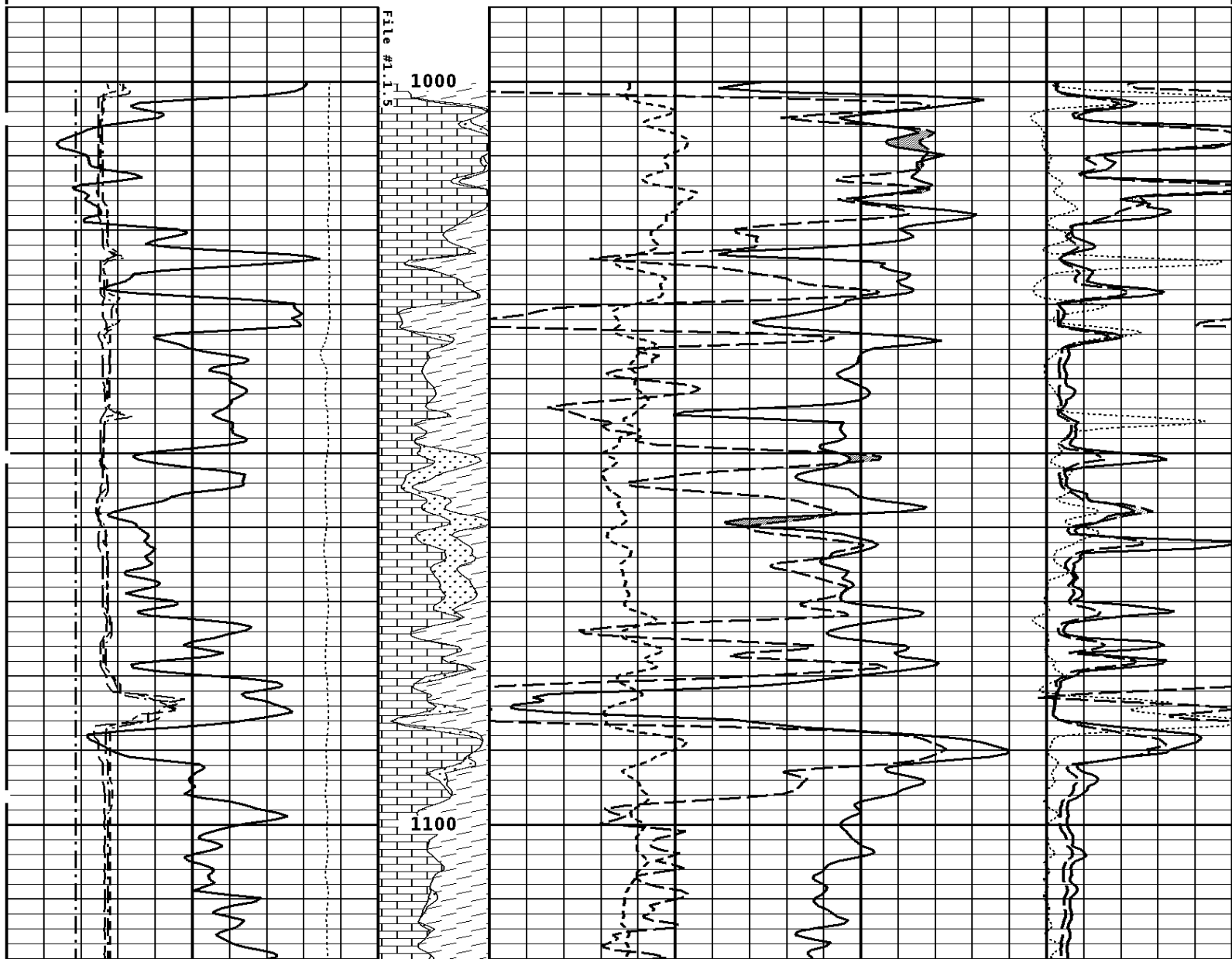
**CALIPER MICRO
INCHES (IN)**

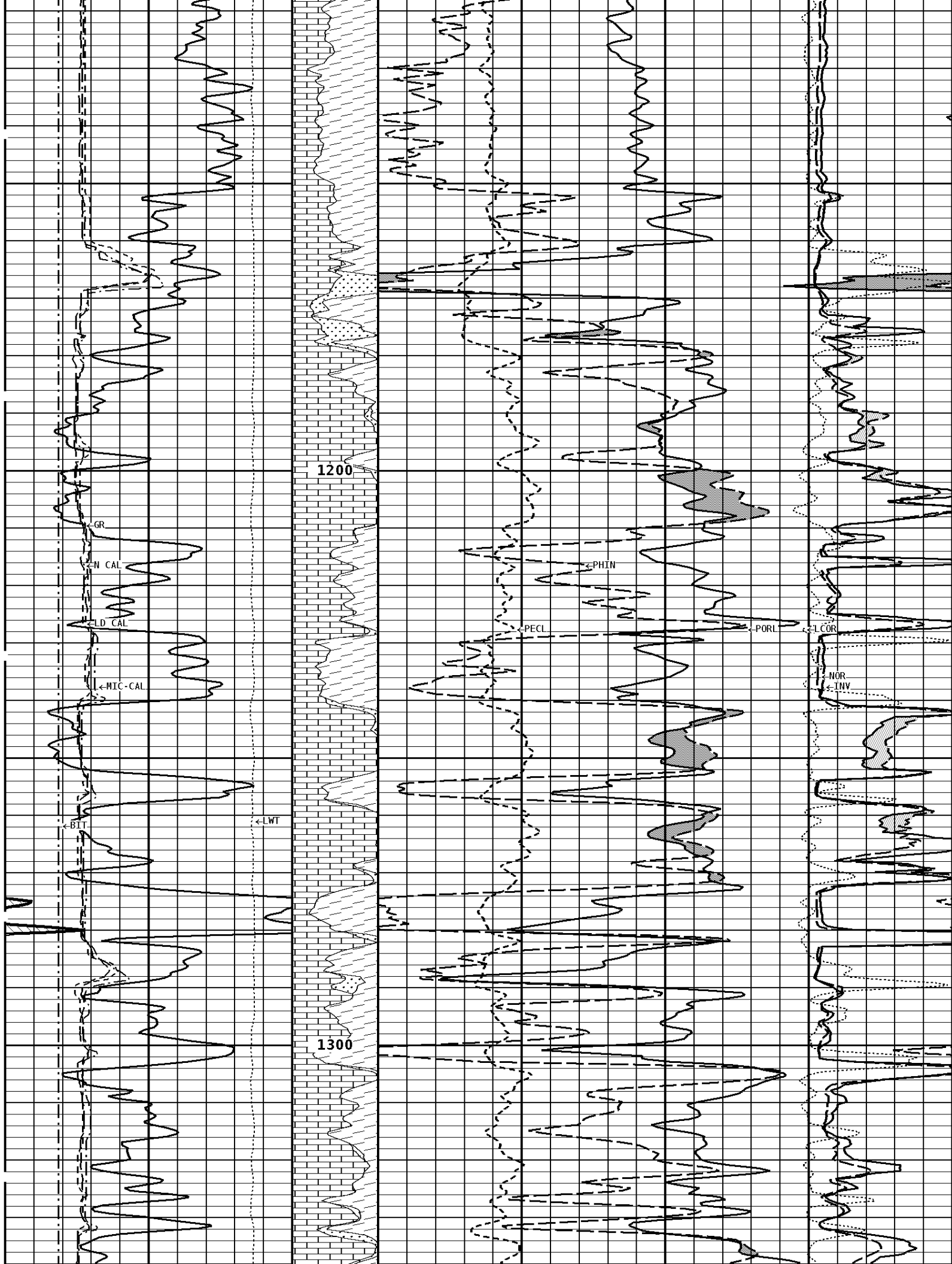
16 26
6 16

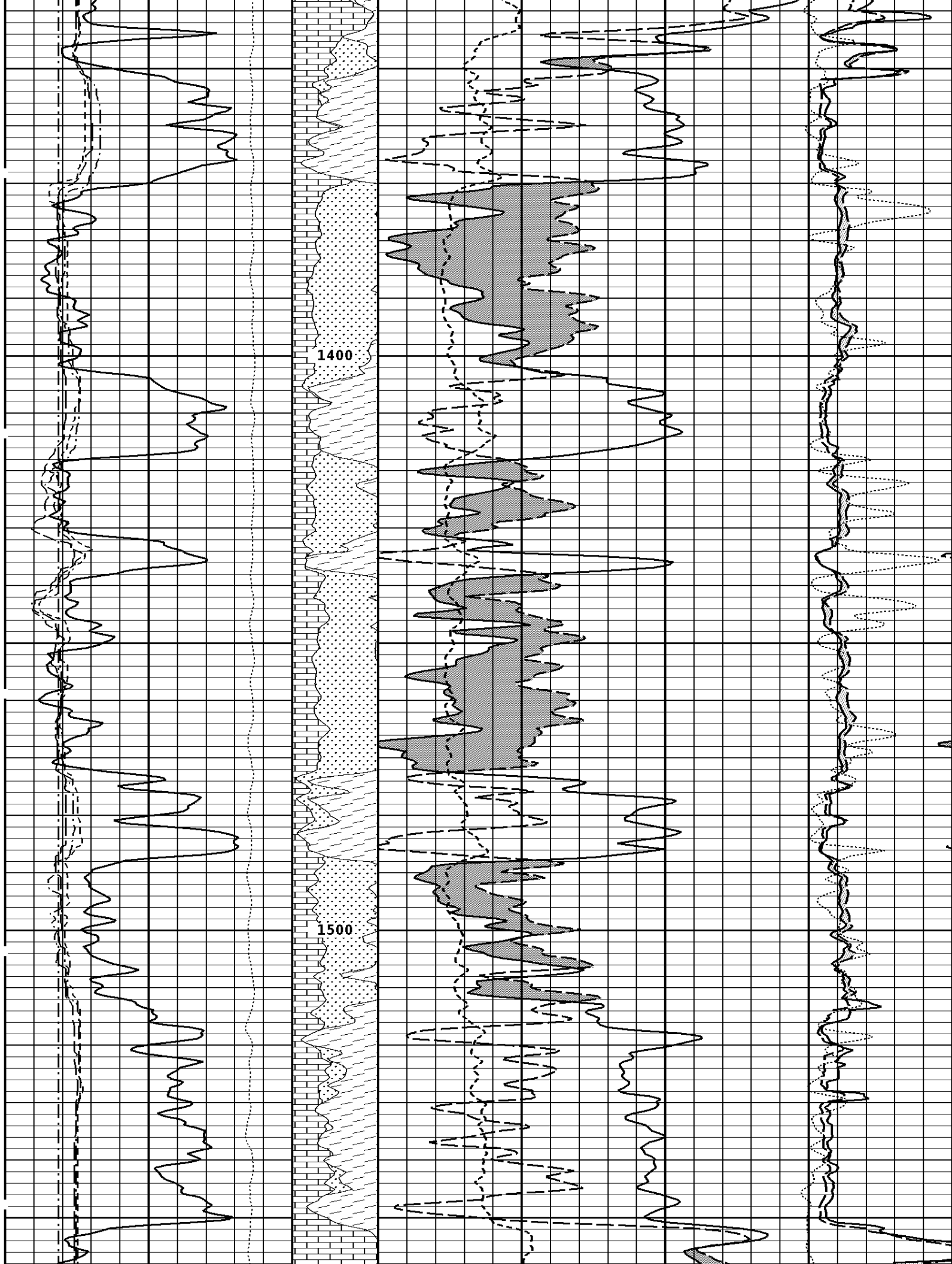
**TENSION
LBS**

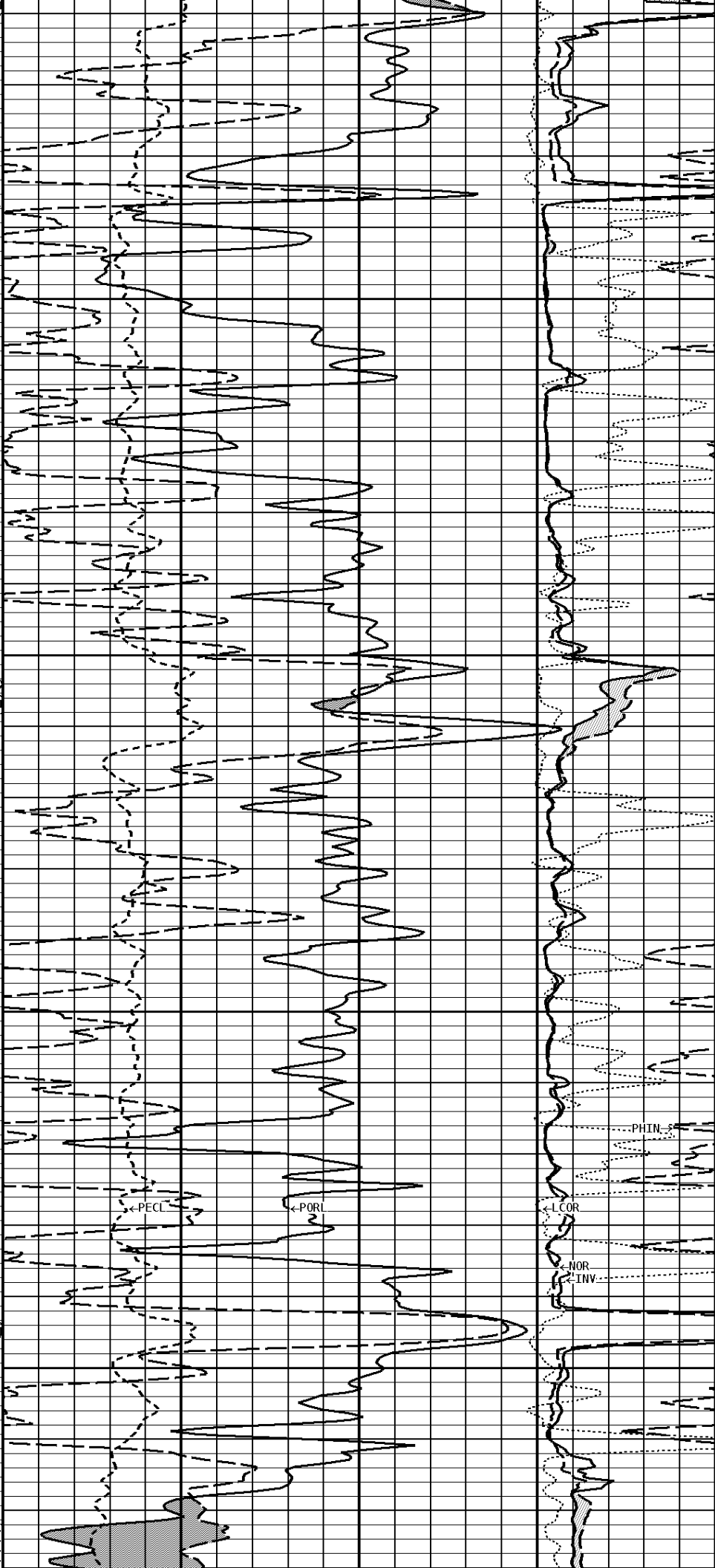
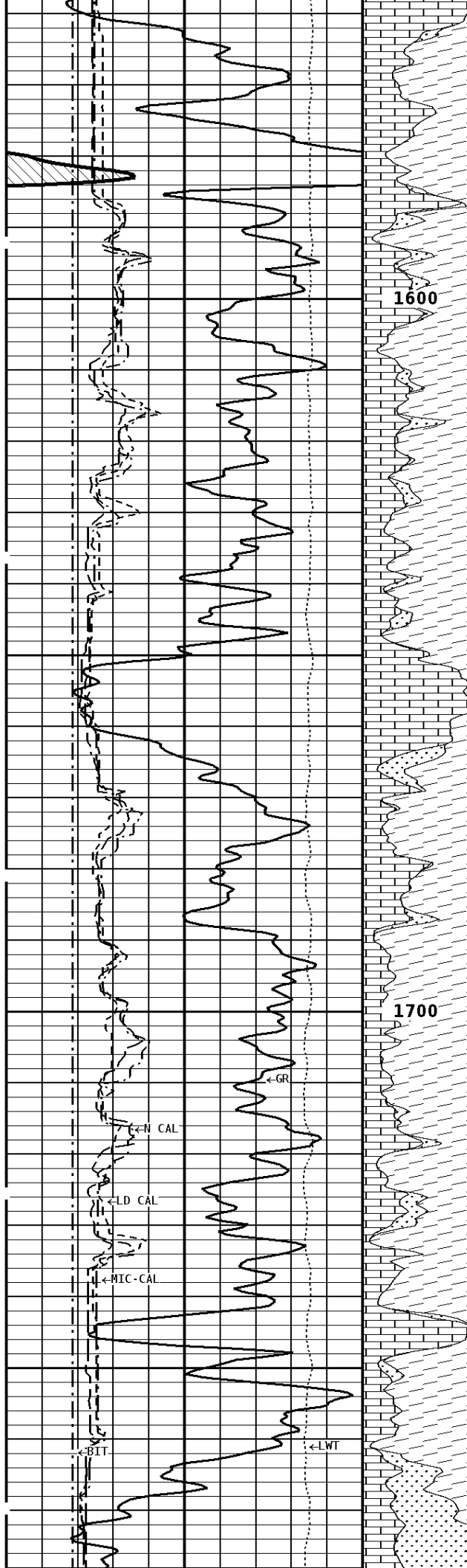
**MICRO-INVERSE
OHMM**

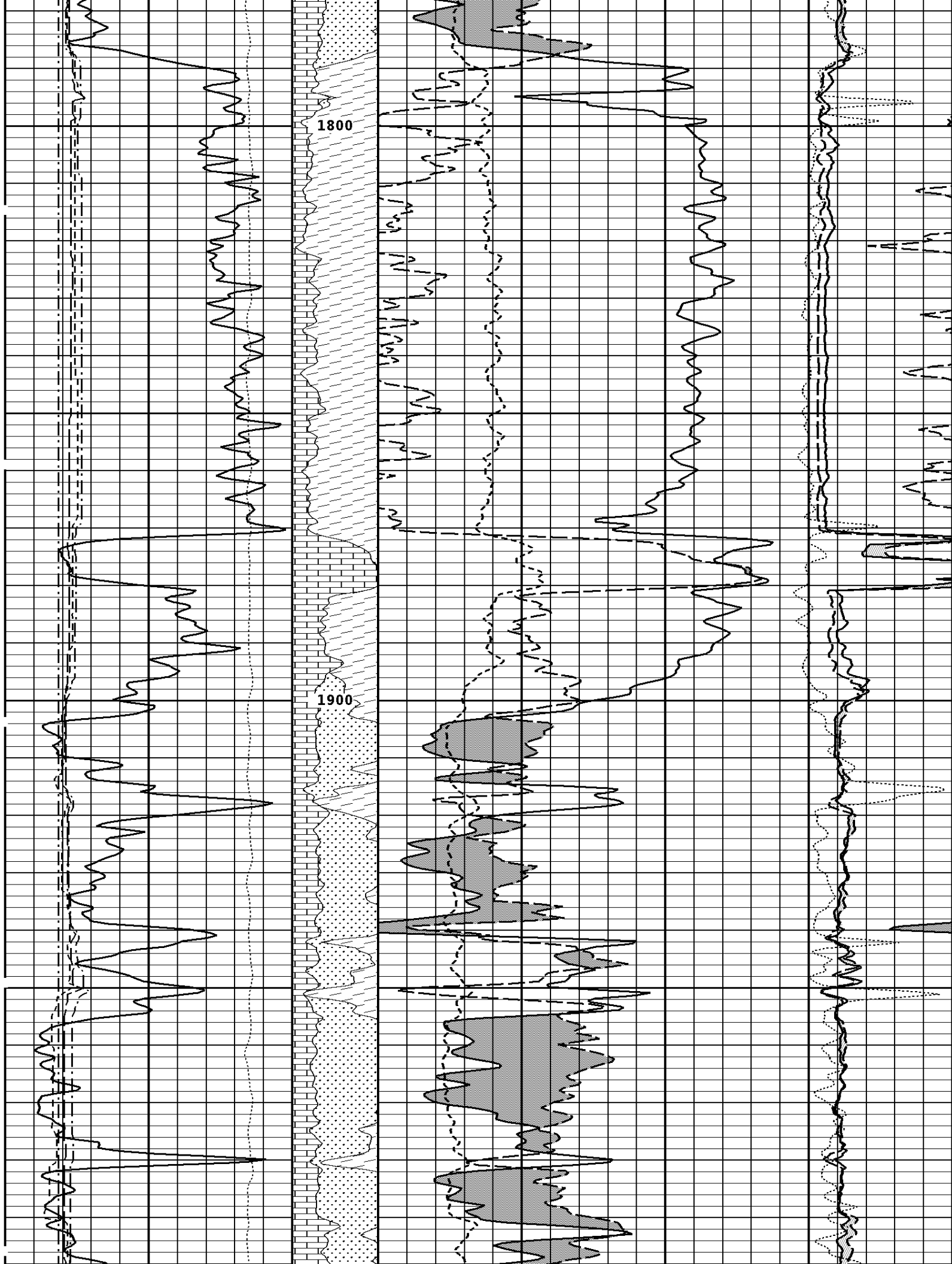
10000	0			0	40
BIT SIZE INCHES (IN)				MICRO-NORMAL OHMM	
6	16			0	40
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARNs/ELECTRON	DENSITY CORRECTION G/CC	
16	26		0	10	-0.25
6	16				0.25
NEUTRON (Y) CALIPER INCHES (IN)		Volume Calcite	NEUTRON POROSITY PERCENT (LIMESTONE MATRIX)		
16	26		70		30
6	16		30		-10
			-10		-50
GAMMA RAY API UNITS		Volume Dolo/Shale	DENSITY POROSITY PERCENT (2.71 g/cc)		
150	300		70		30
0	150		30		-10
			-10		-50
1:240 MAIN SECTION					

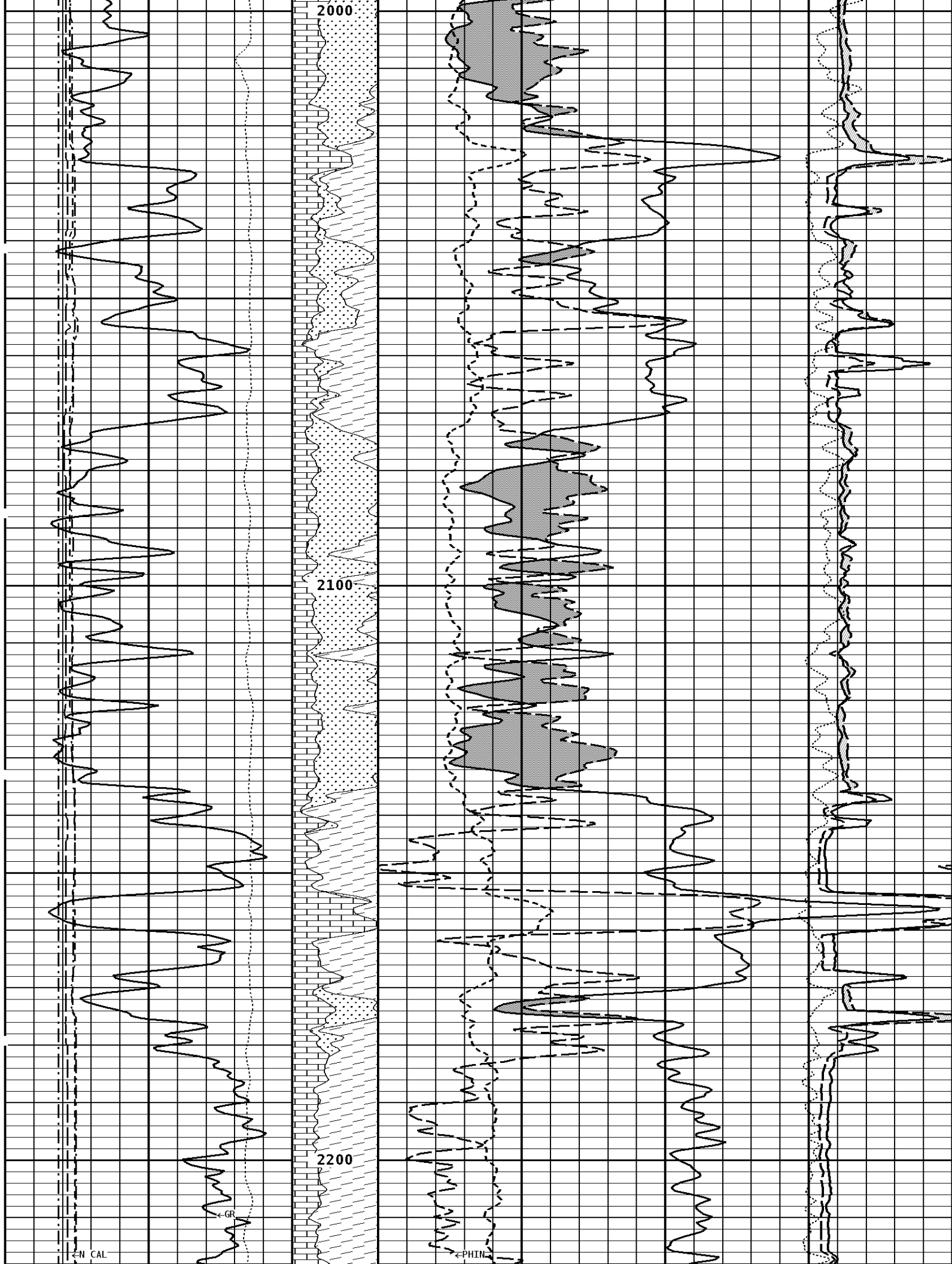


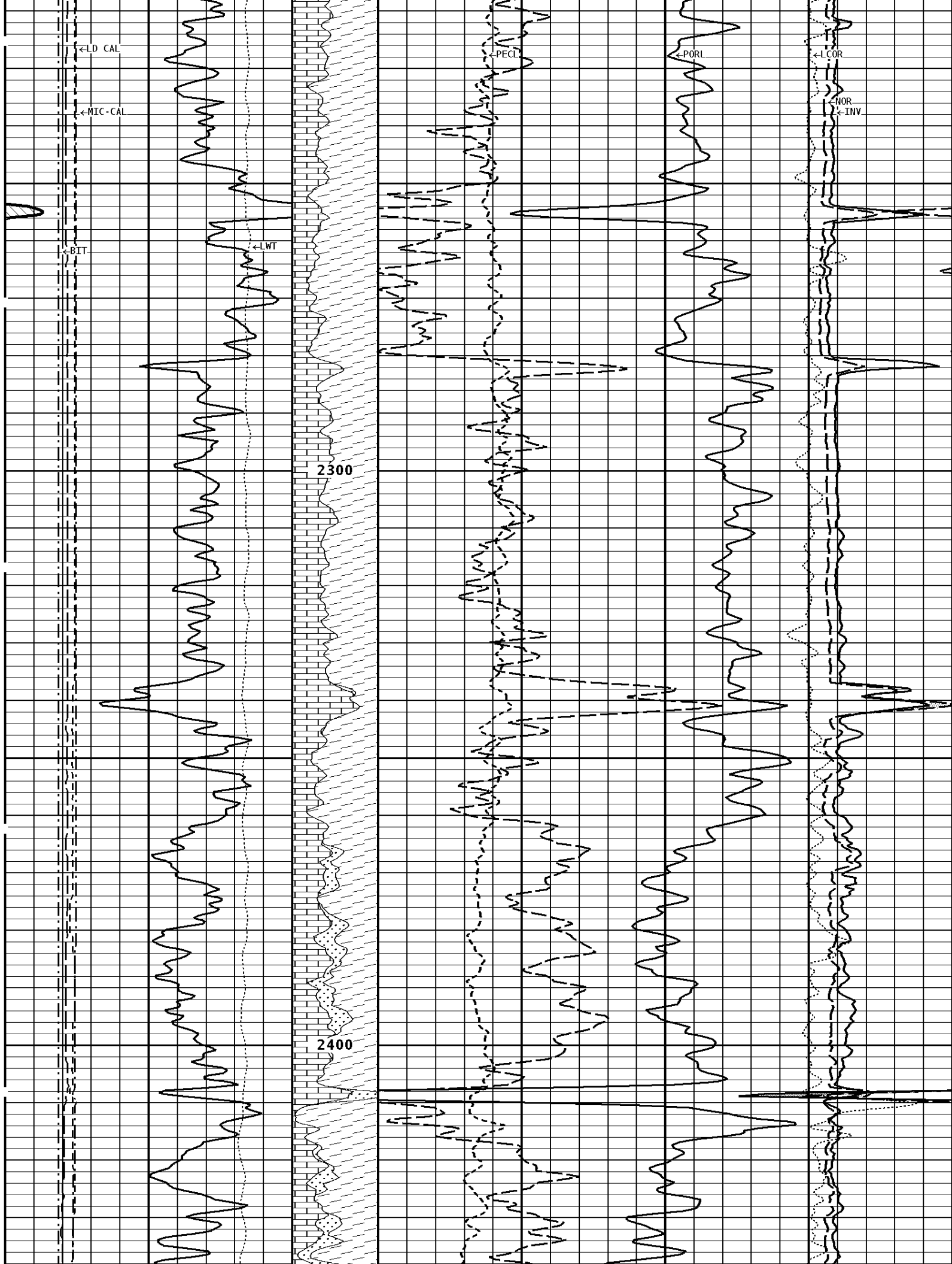


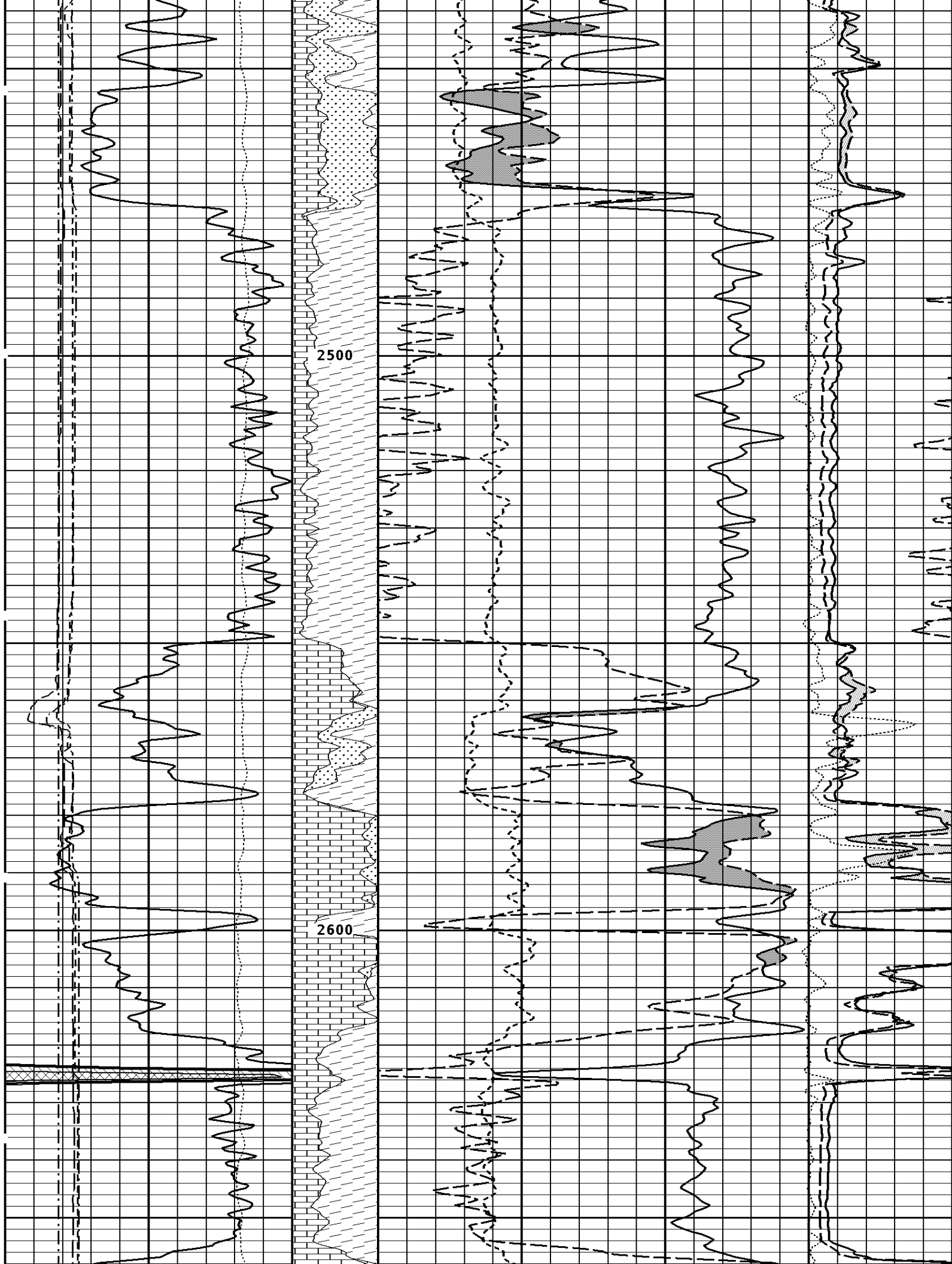


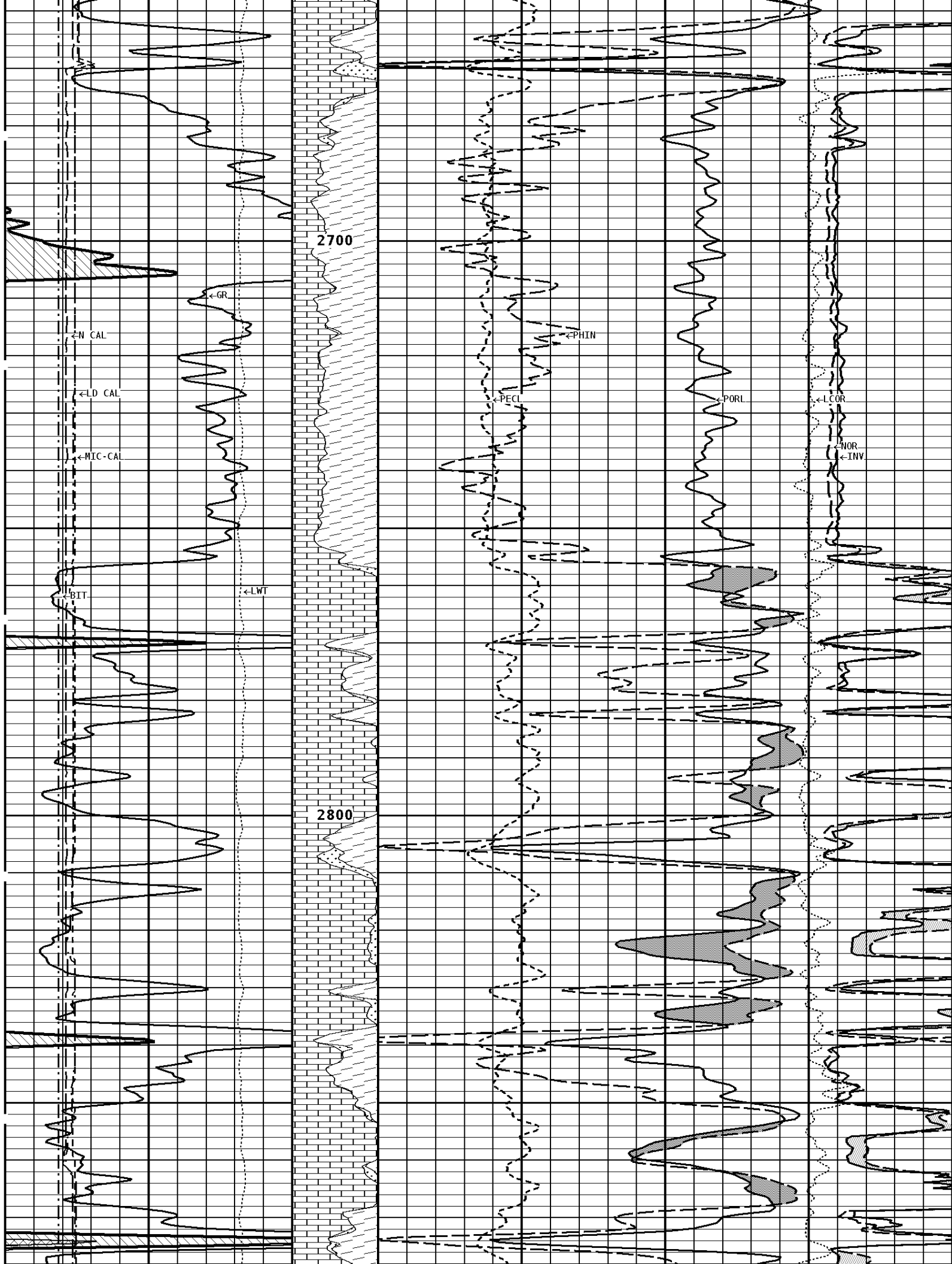


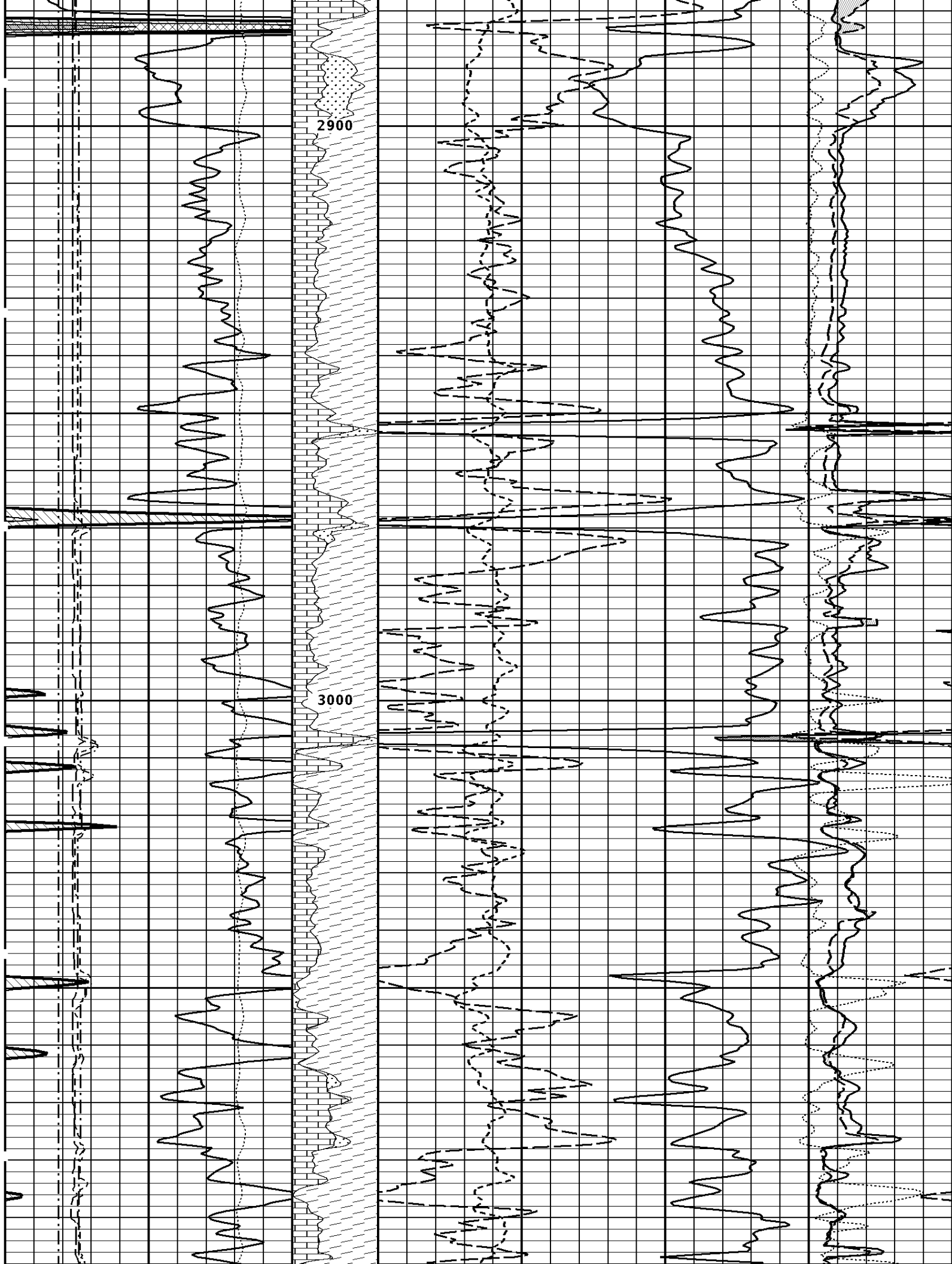


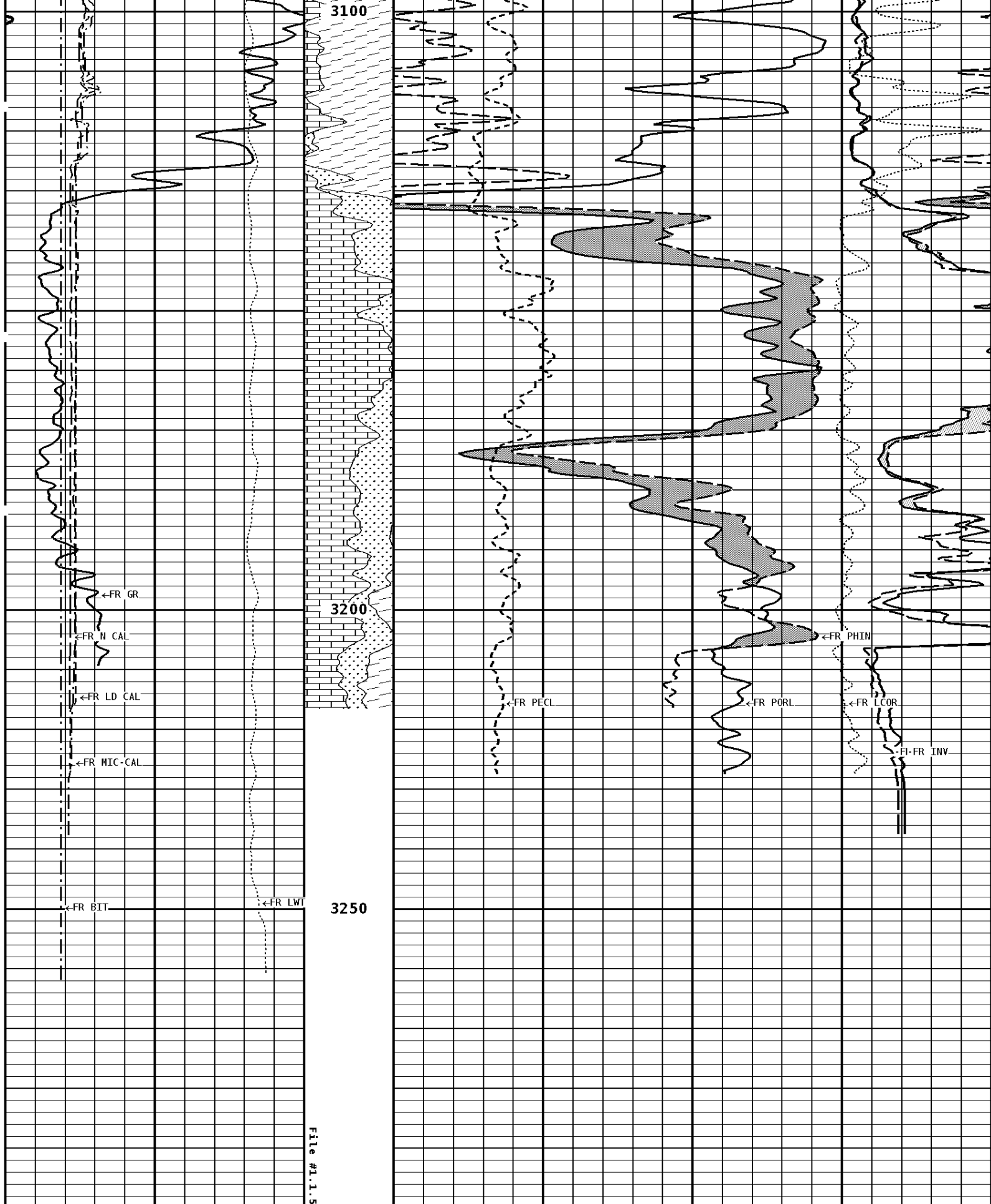






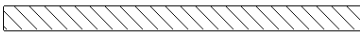
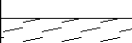
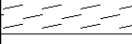
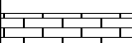
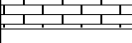
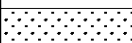






File #1.1.5

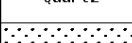
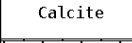
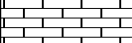
1:240 MAIN SECTION

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

*** Borehole Zone Factors ***

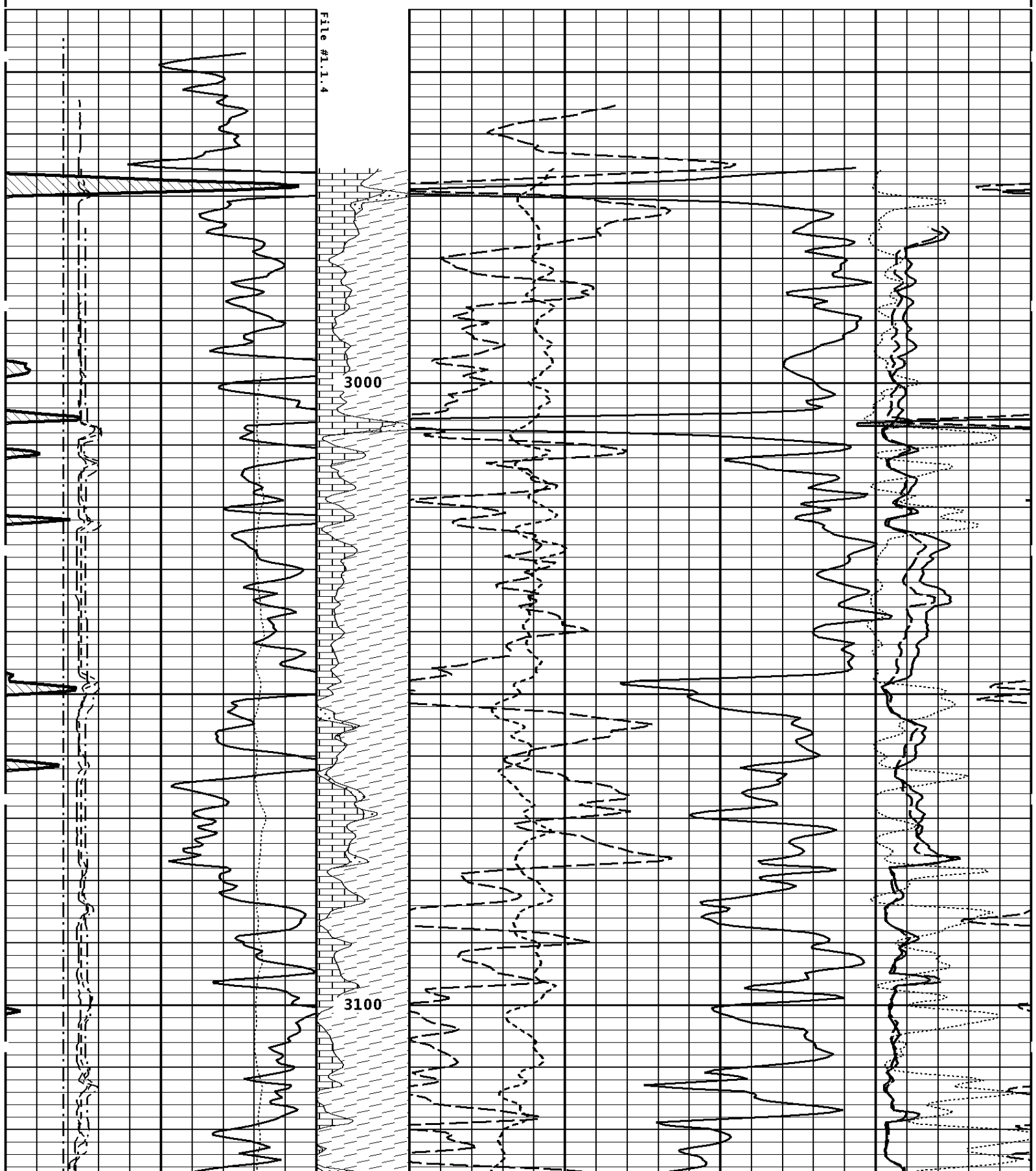
Zone 1 99999.0 to 0.0 Feet			
Matrix Density	_____	2.71	g/cc
Fluid Density	_____	1.00	g/cc
Formation Matrix	_____	Limestone	
Drill Bit Size	_____	7.875	in
Casing Diameter	_____	5.500	in
Casing Correction (PHI N)	_____	Disable	

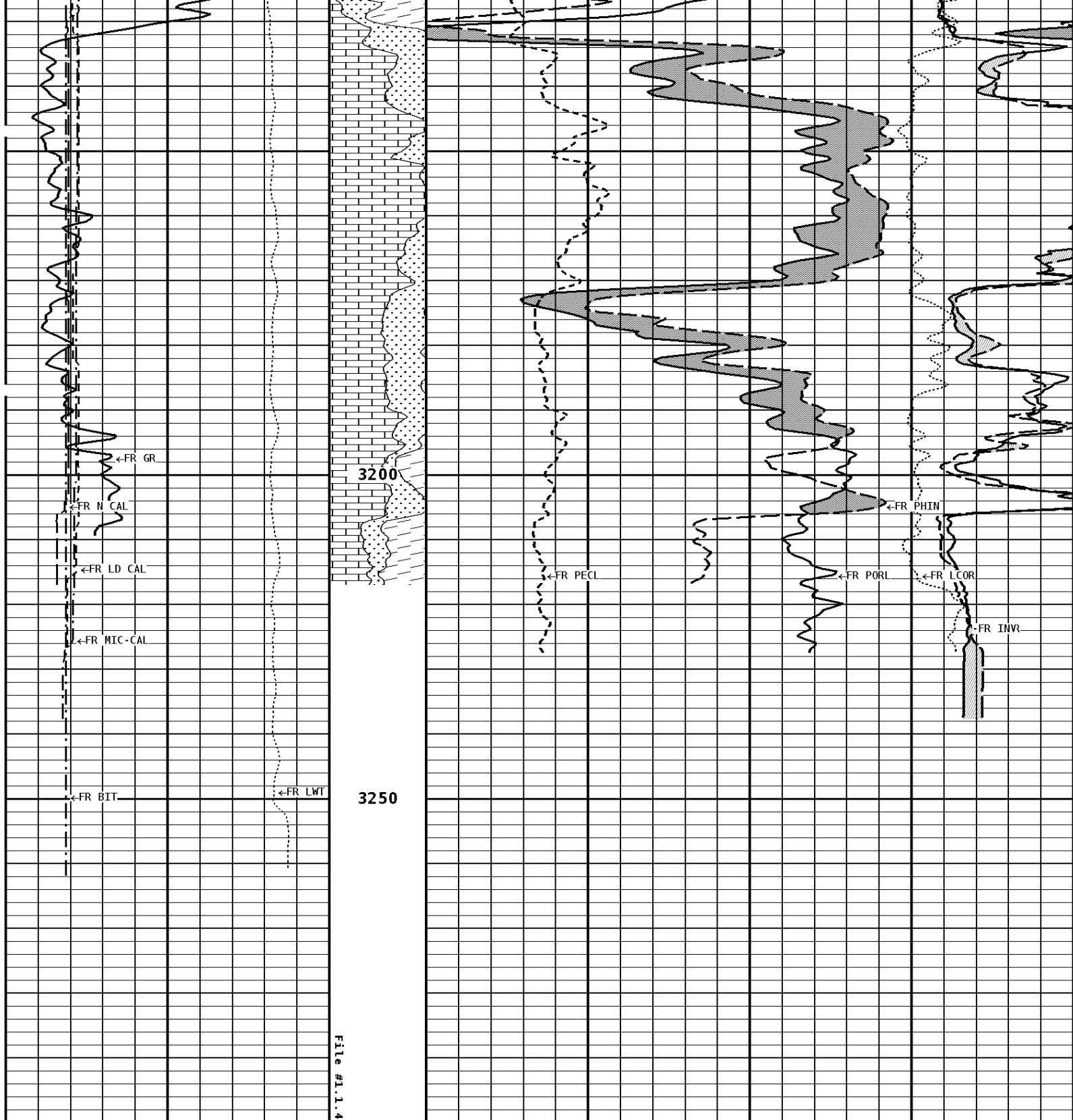
Well File: mcgow-chri-2-4-mtk-oct-6	Scale: 1:240
Segment: V1.D1.S4 RP	Acquired: 2012-10/06 03:02 3.2.0-11172
Reference: 0	Processed: 2012-10/06 04:33 3.2.0-11172

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

150	300	70	30
0	150	30	-10
		-10	-50

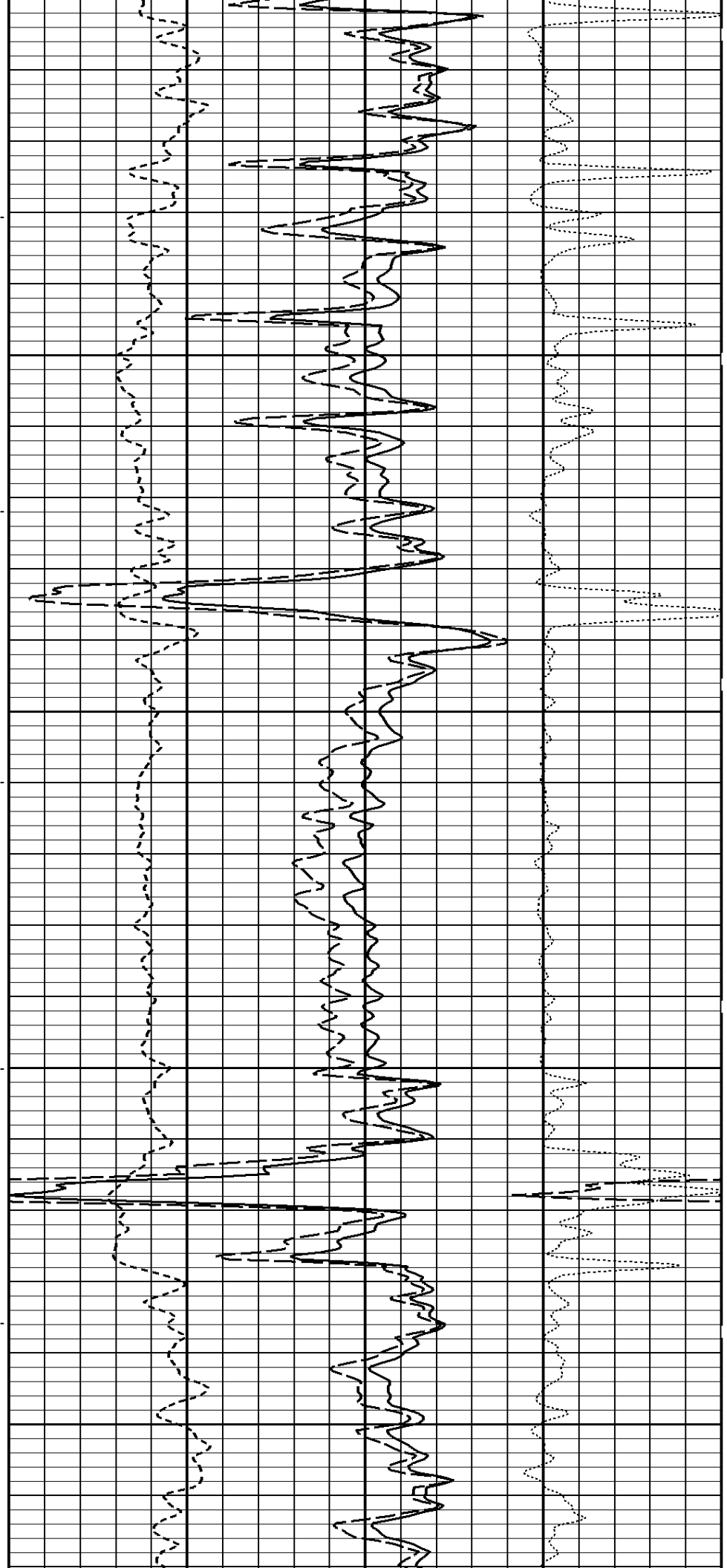
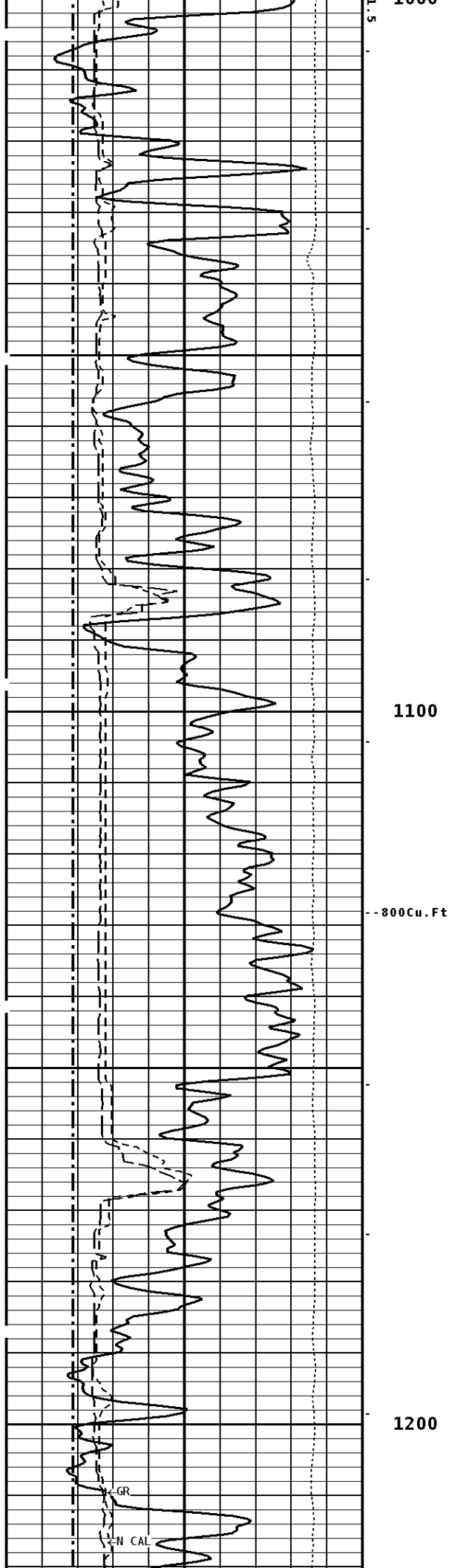
1:240 REPEAT SECTION

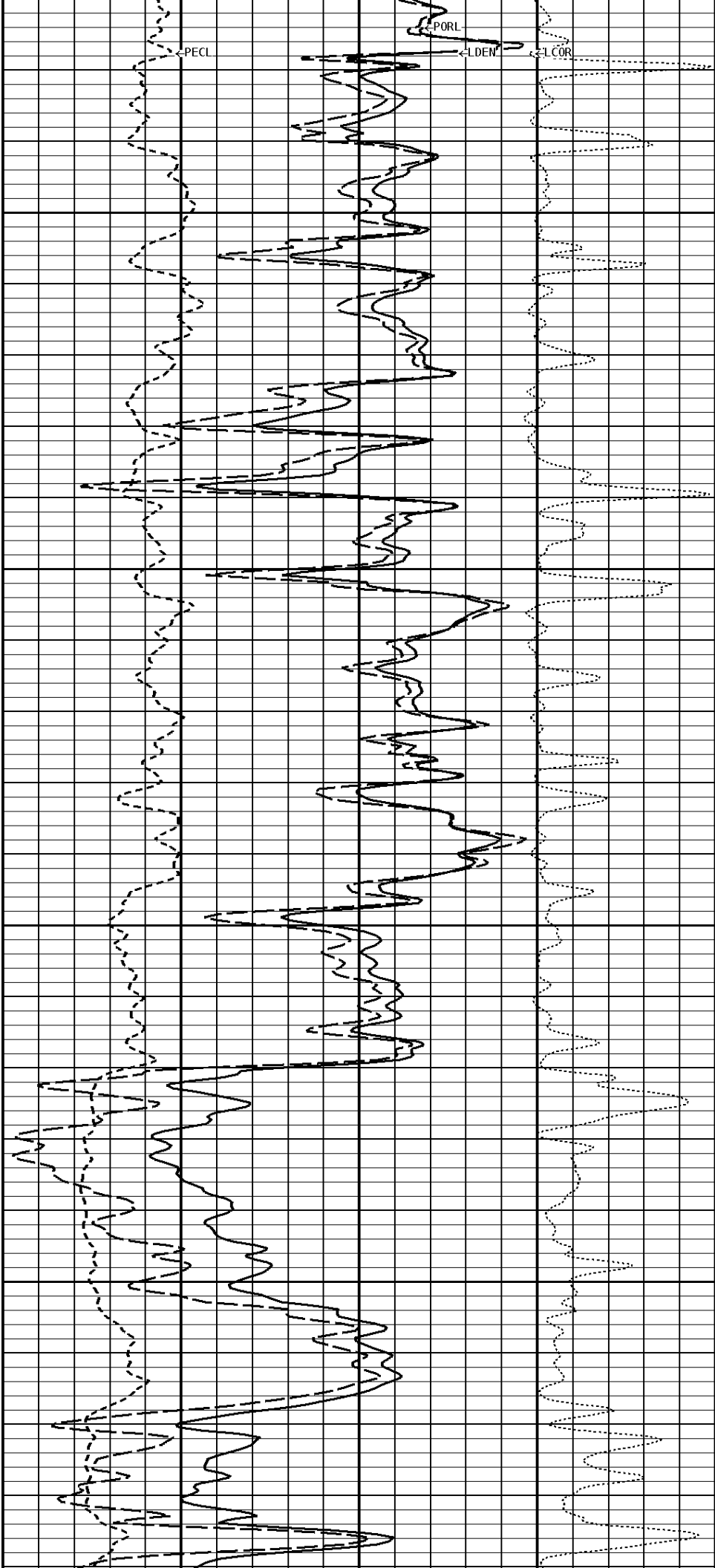
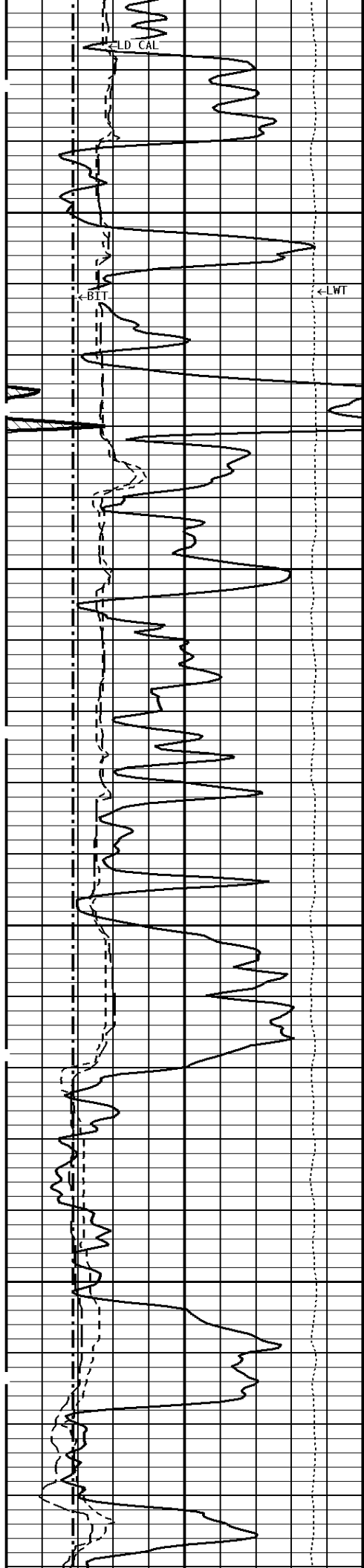


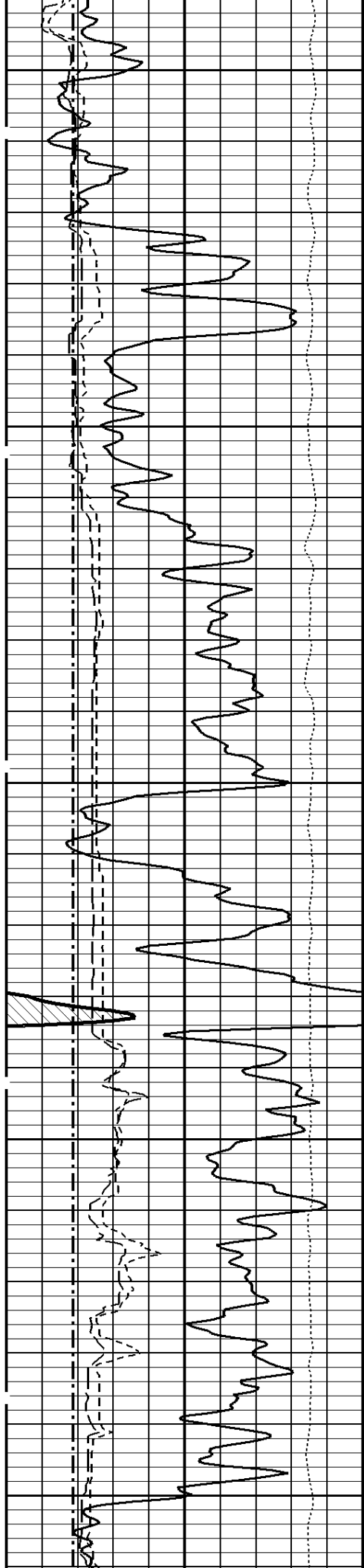


1:240 REPEAT SECTION

GAMMA RAY API UNITS 150 0 300 150	Volume Dolo/Shale 70 30 -10	DENSITY POROSITY PERCENT (2.71 g/cc) 30 -10 -50
NEUTRON (Y) CALIPER INCHES (IN) 16 26	Volume Calcite 70	NEUTRON POROSITY PERCENT (LIMESTONE MATRIX) 30



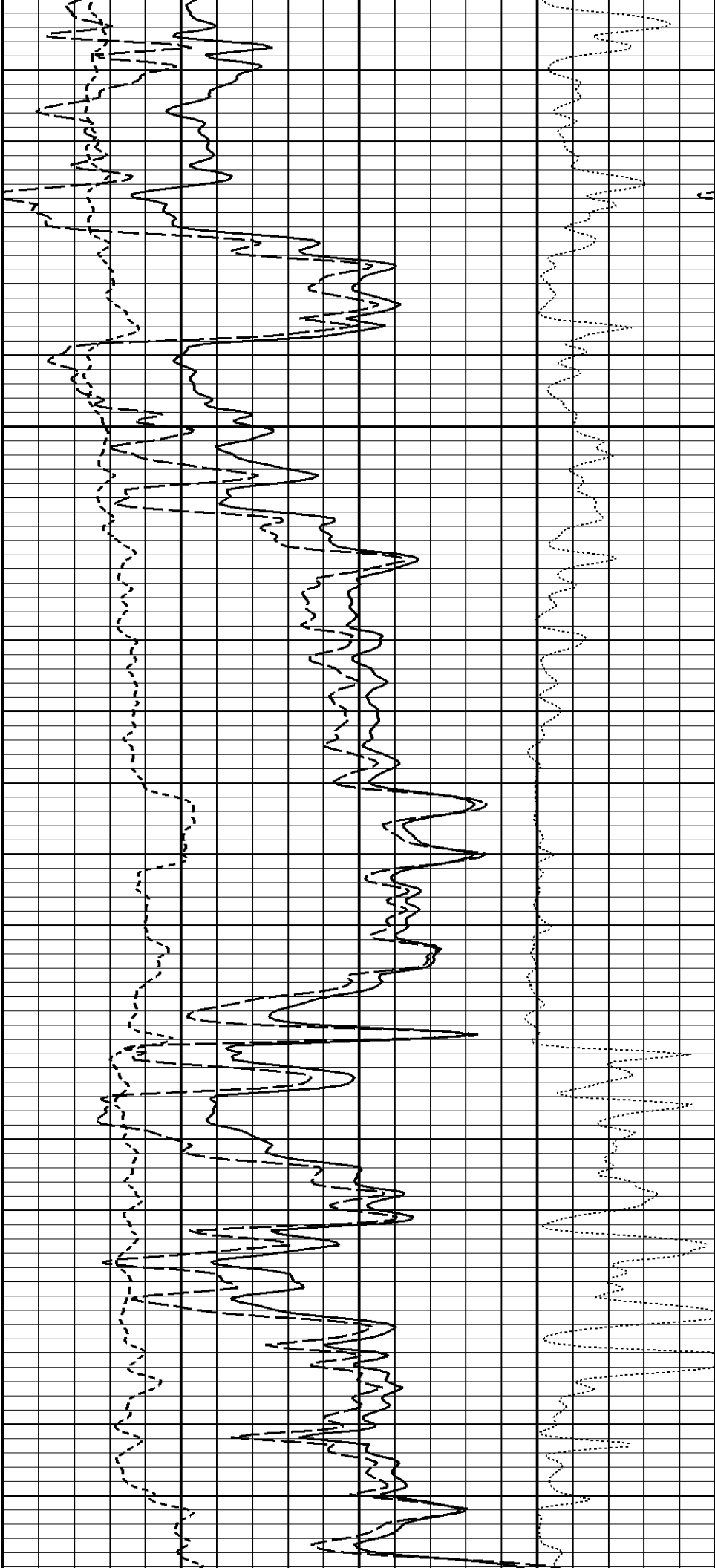


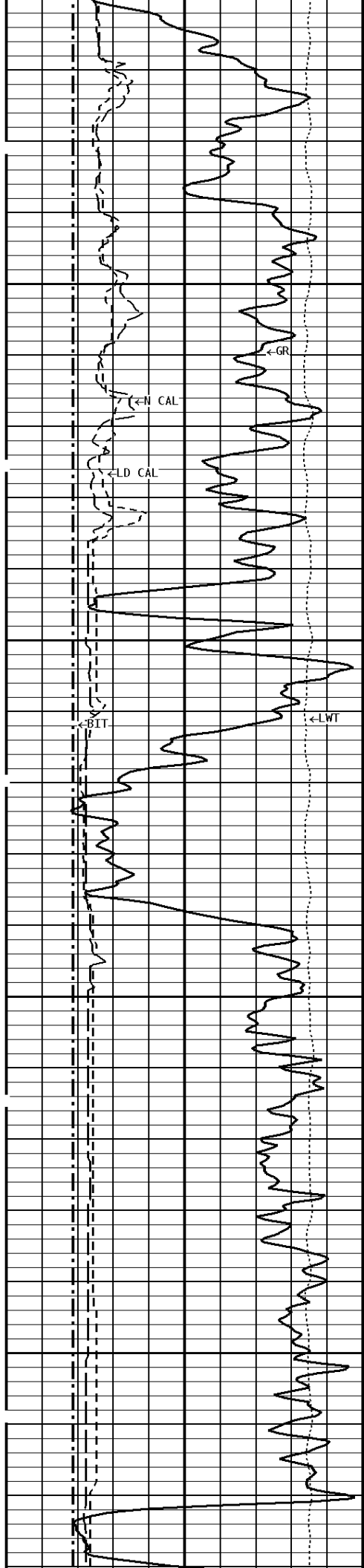


1500

1600

--600Cu.Ft

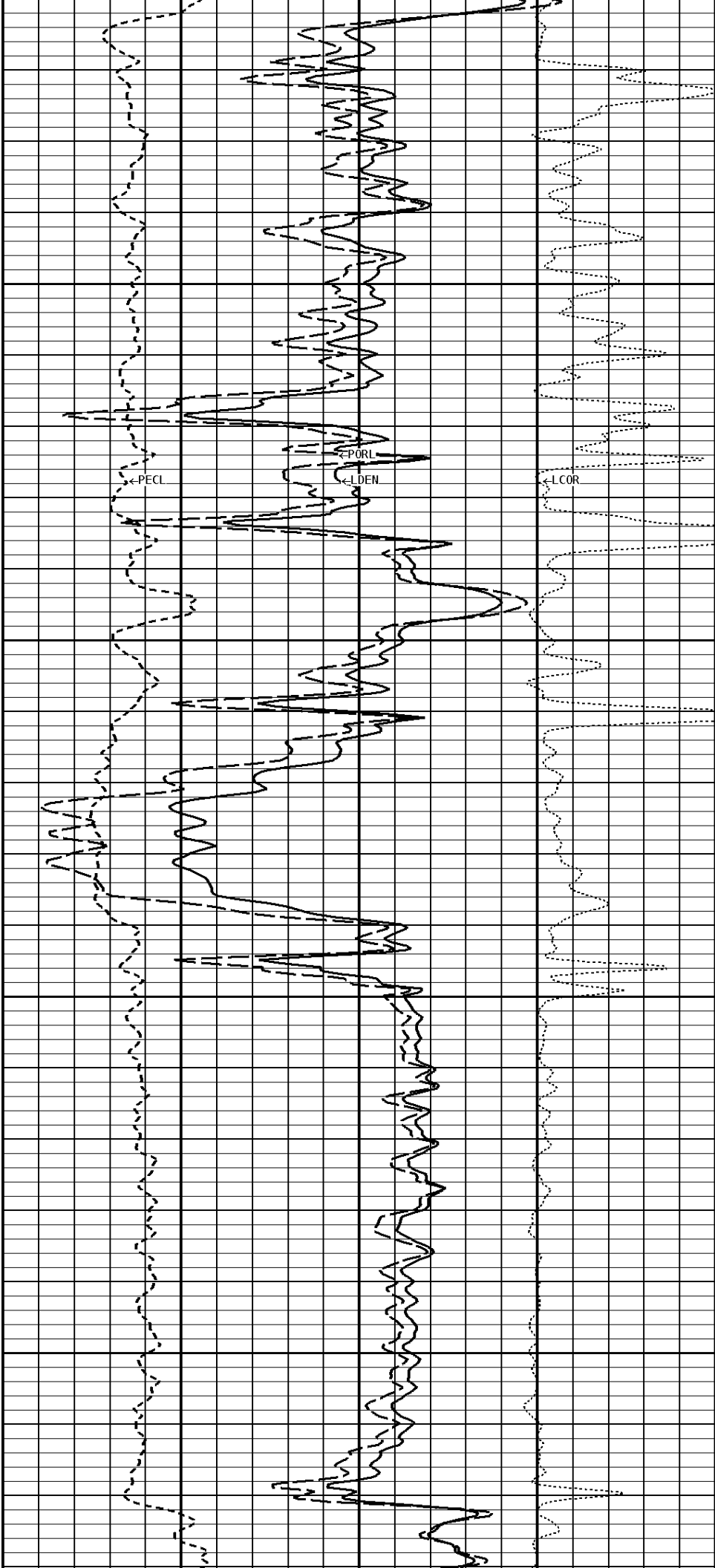




1700

300 Cu. Ft.

1800

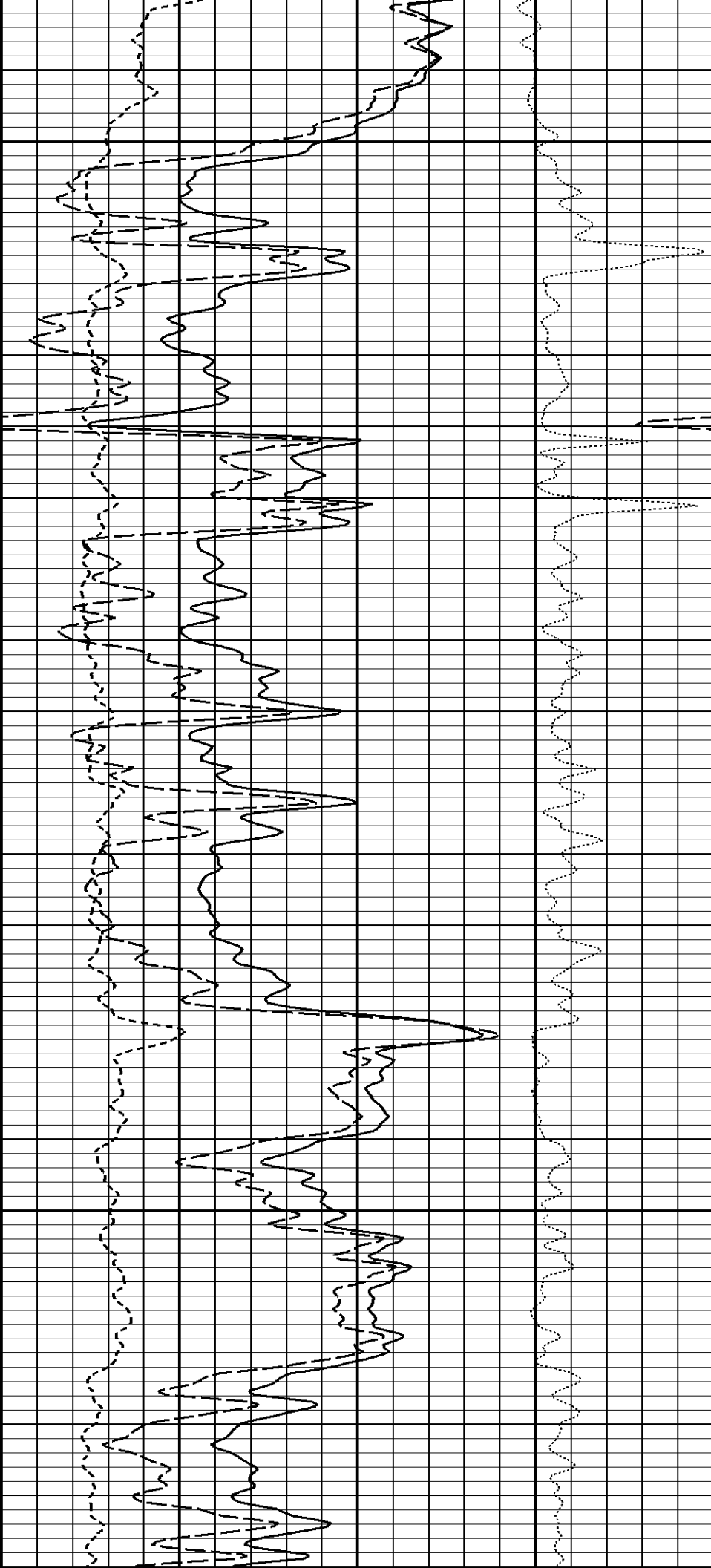


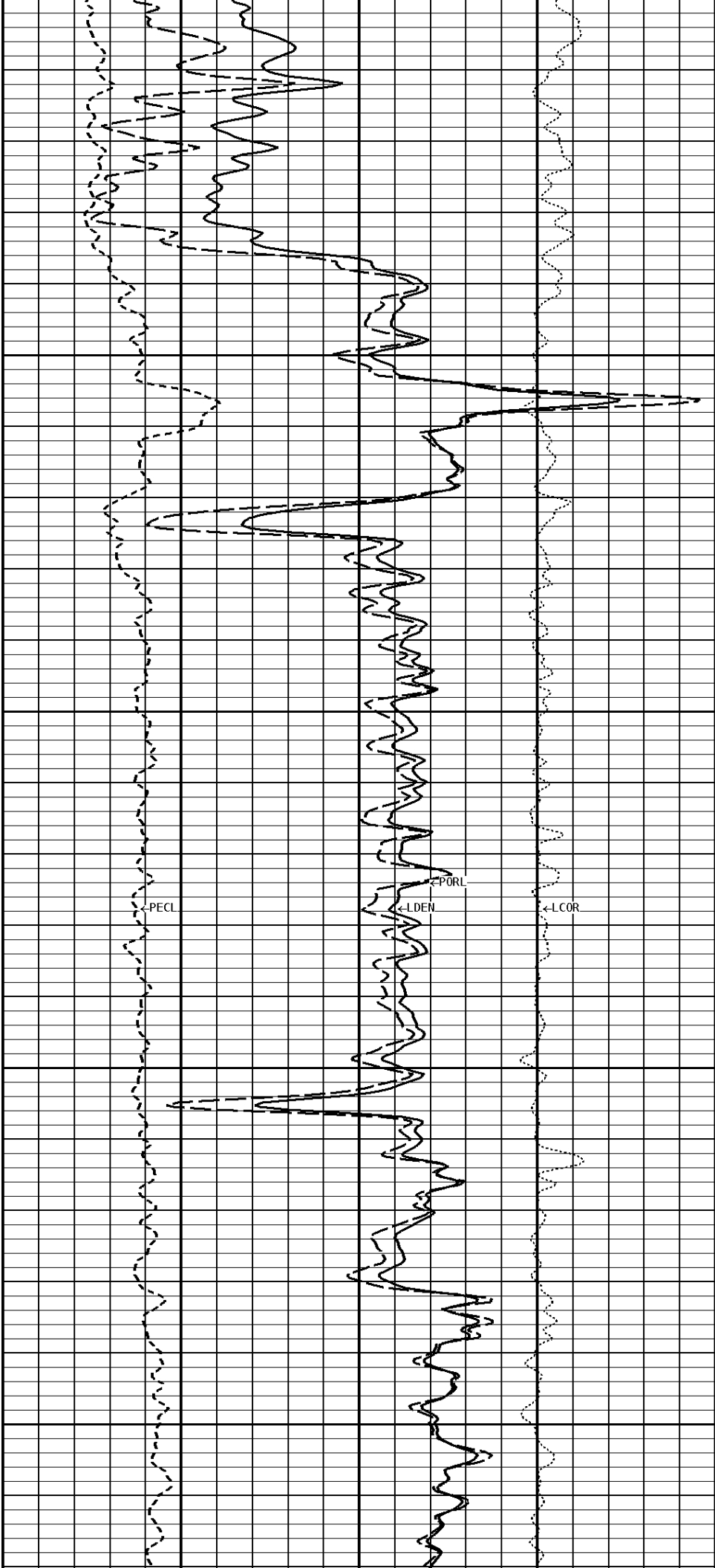
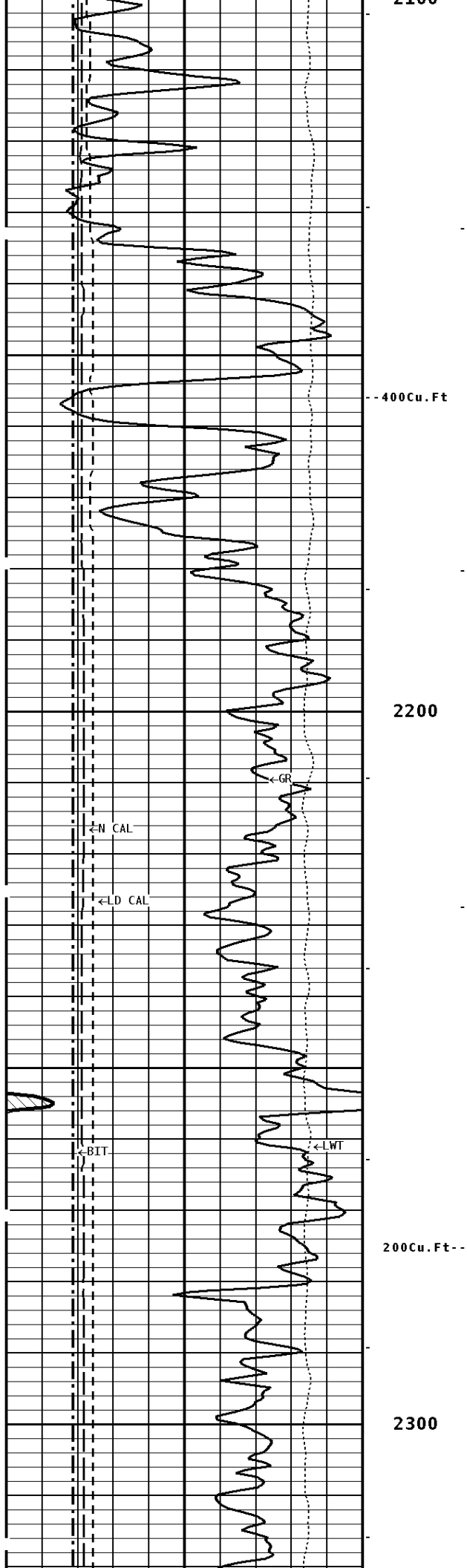
--500 Cu. Ft

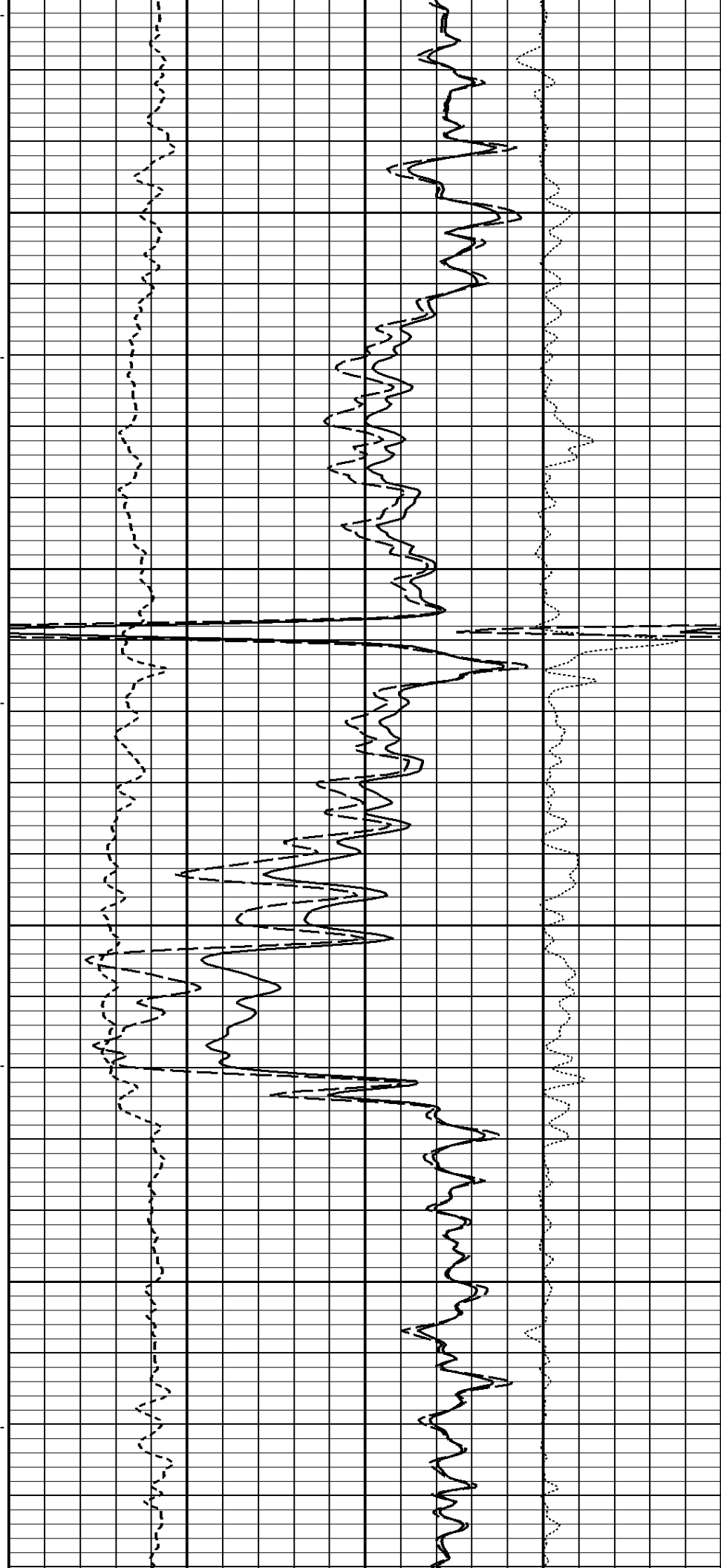
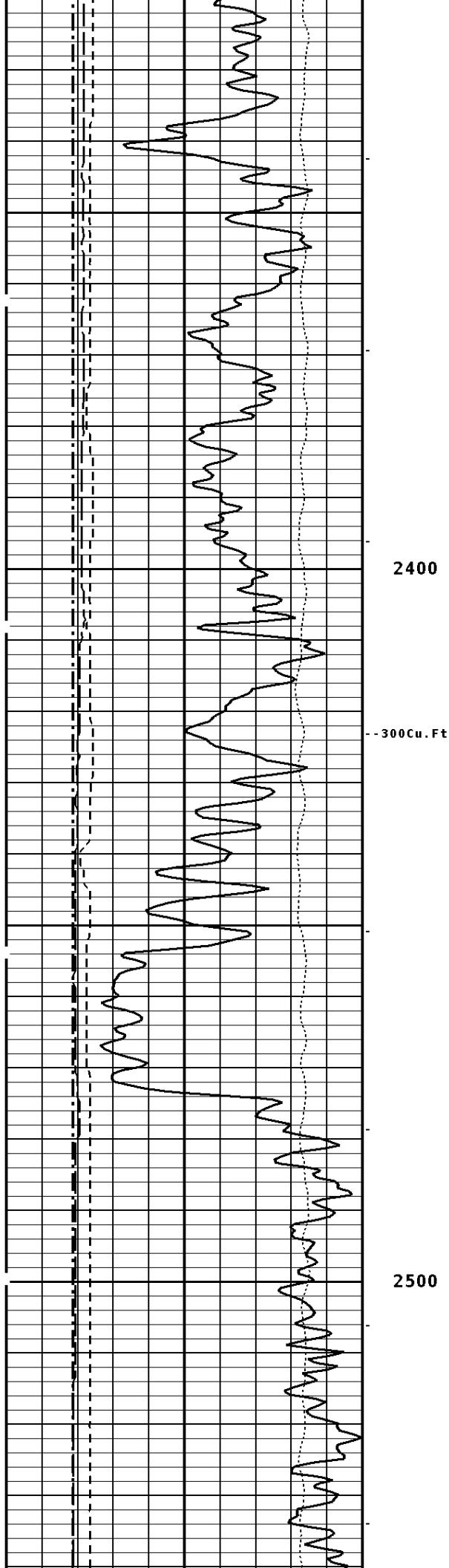
1900

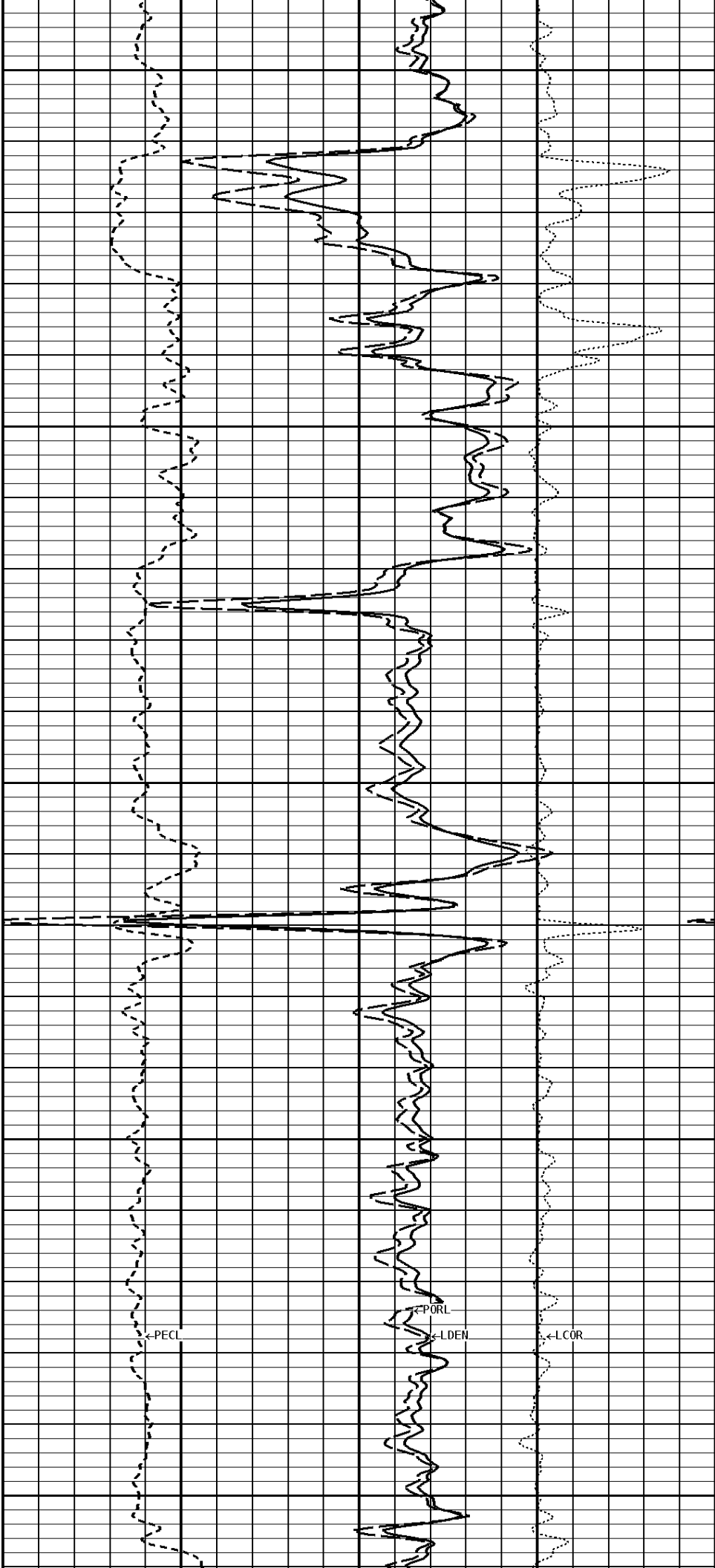
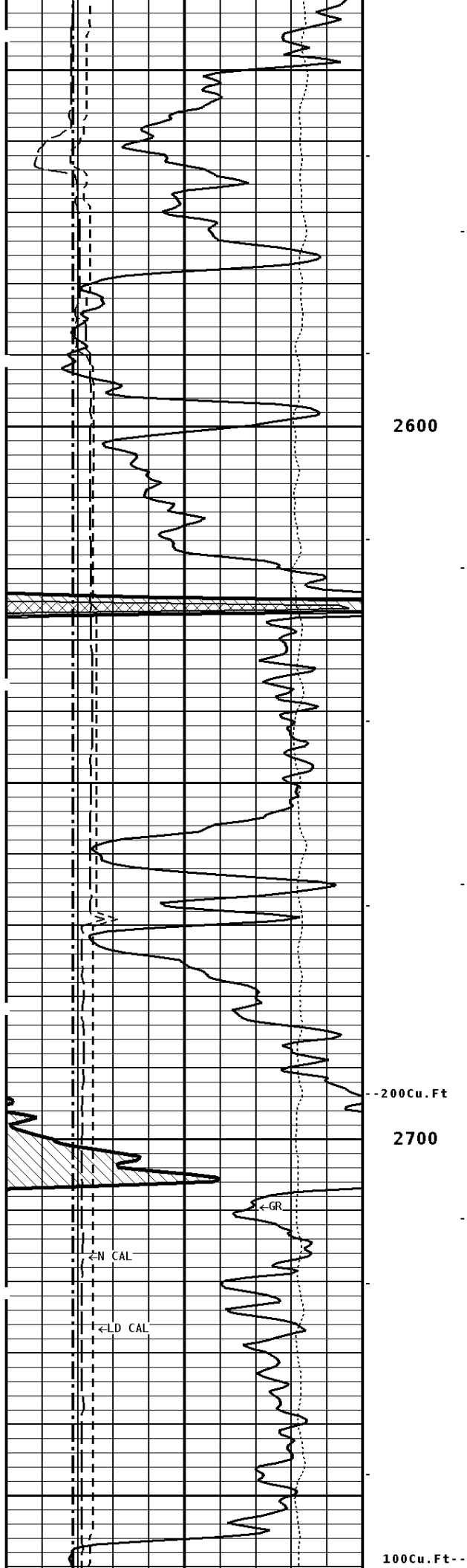
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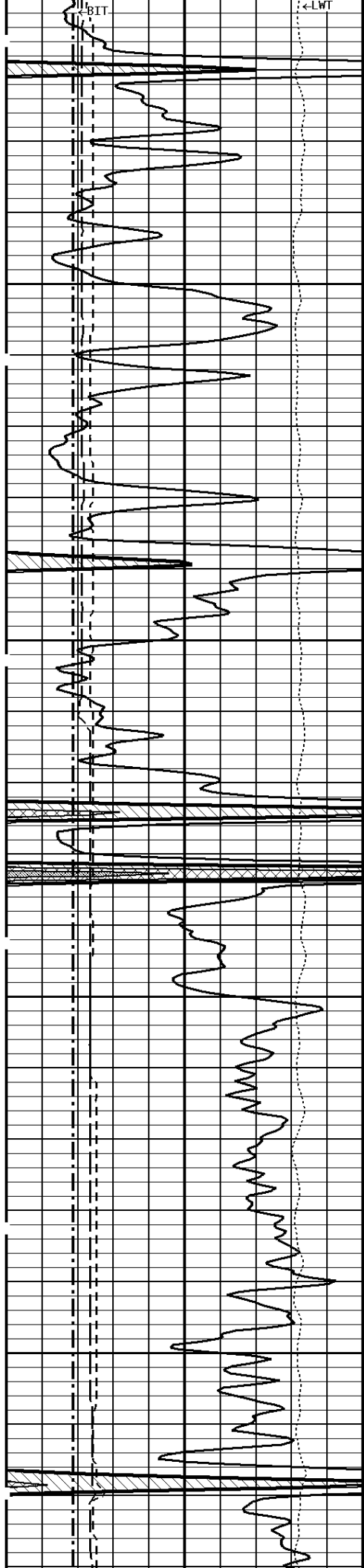
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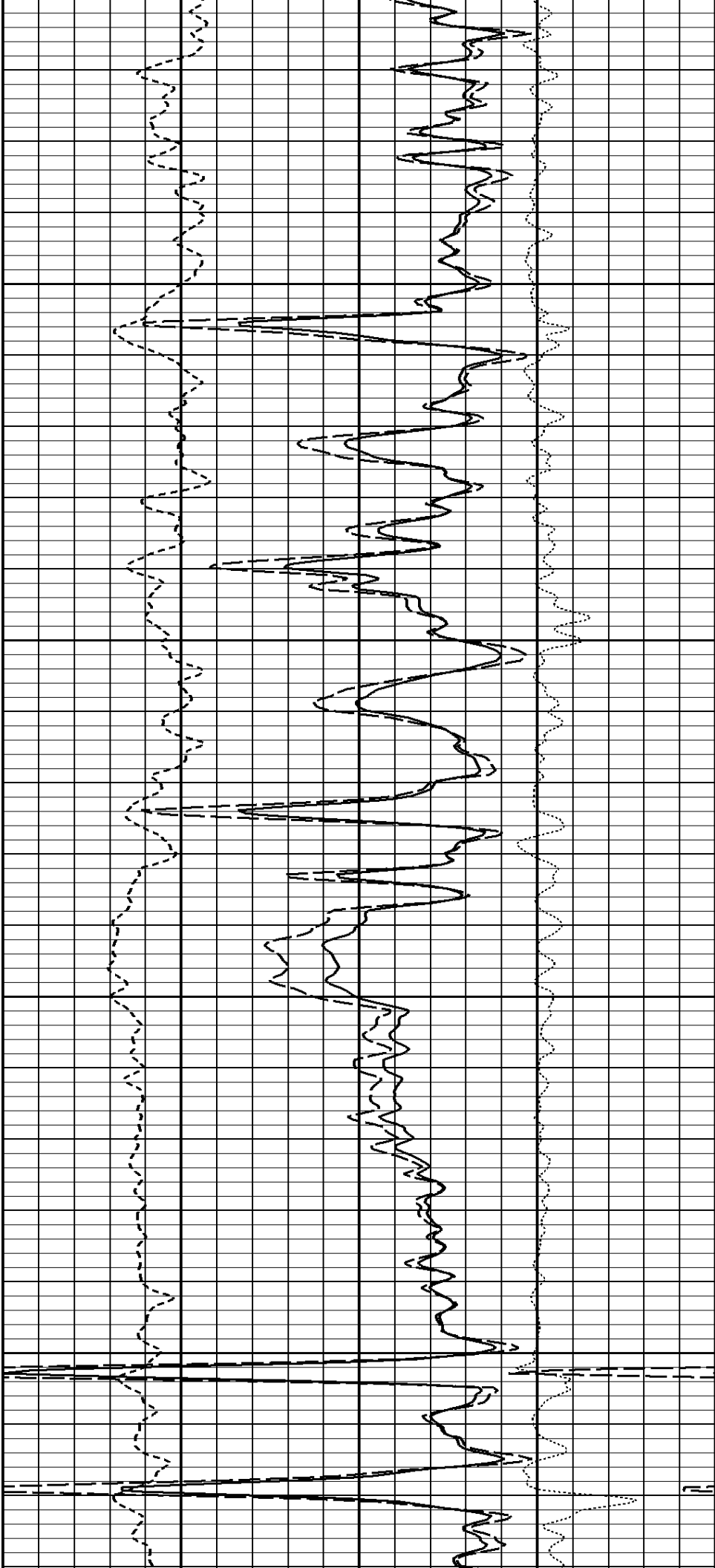


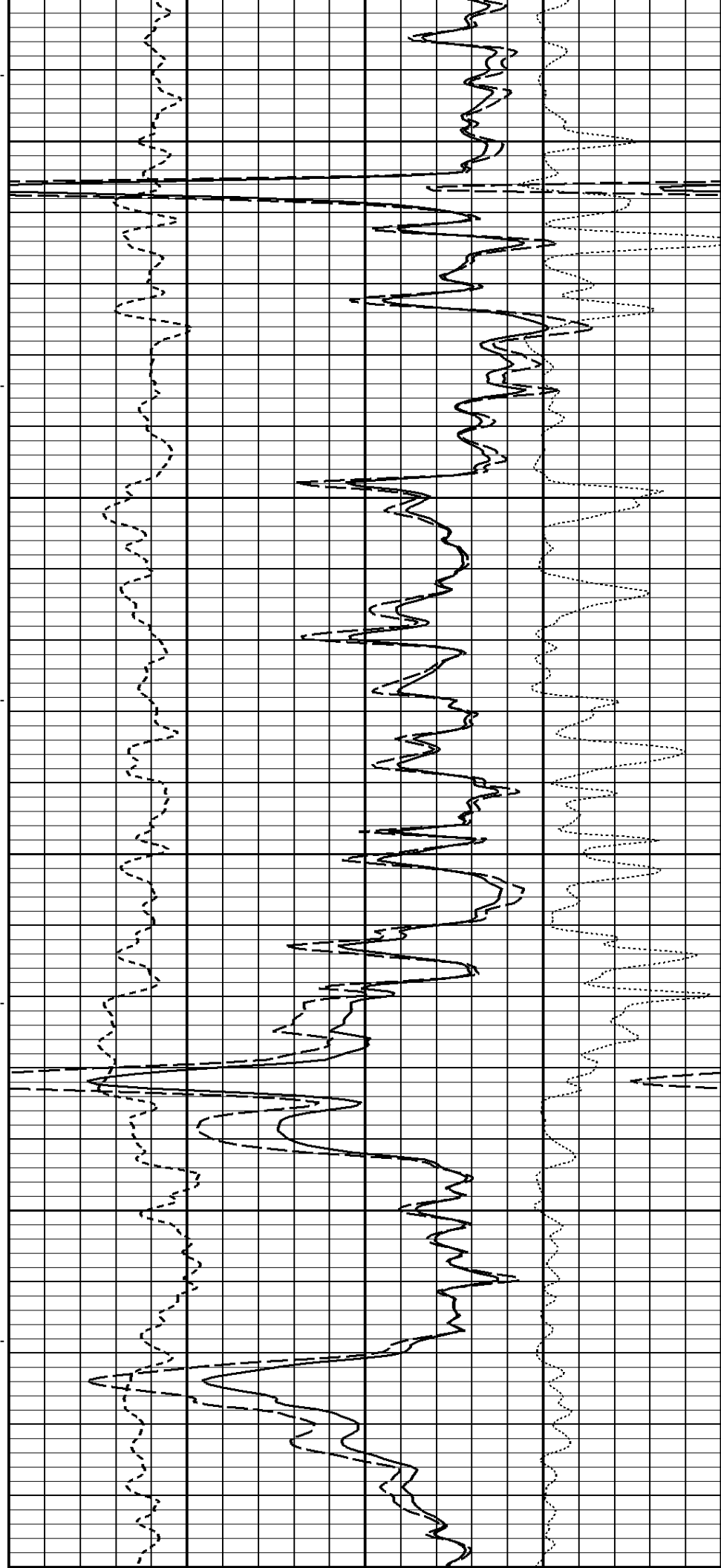
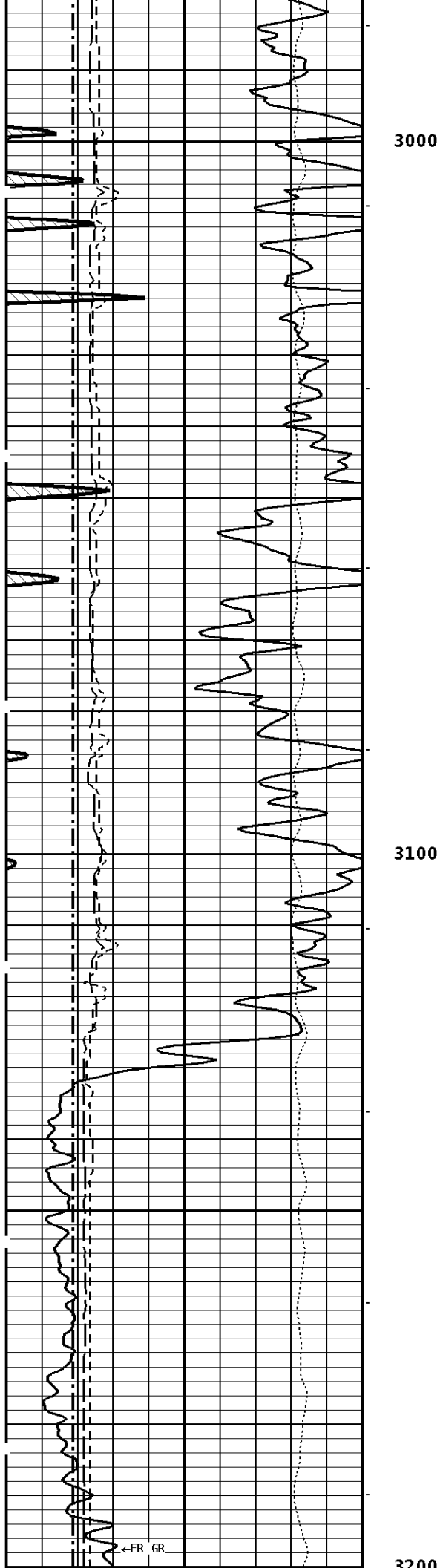


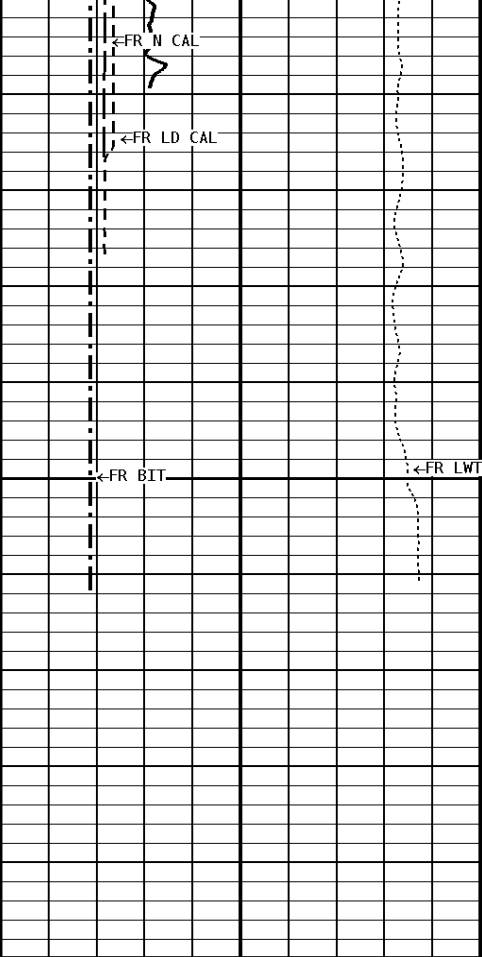
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2900

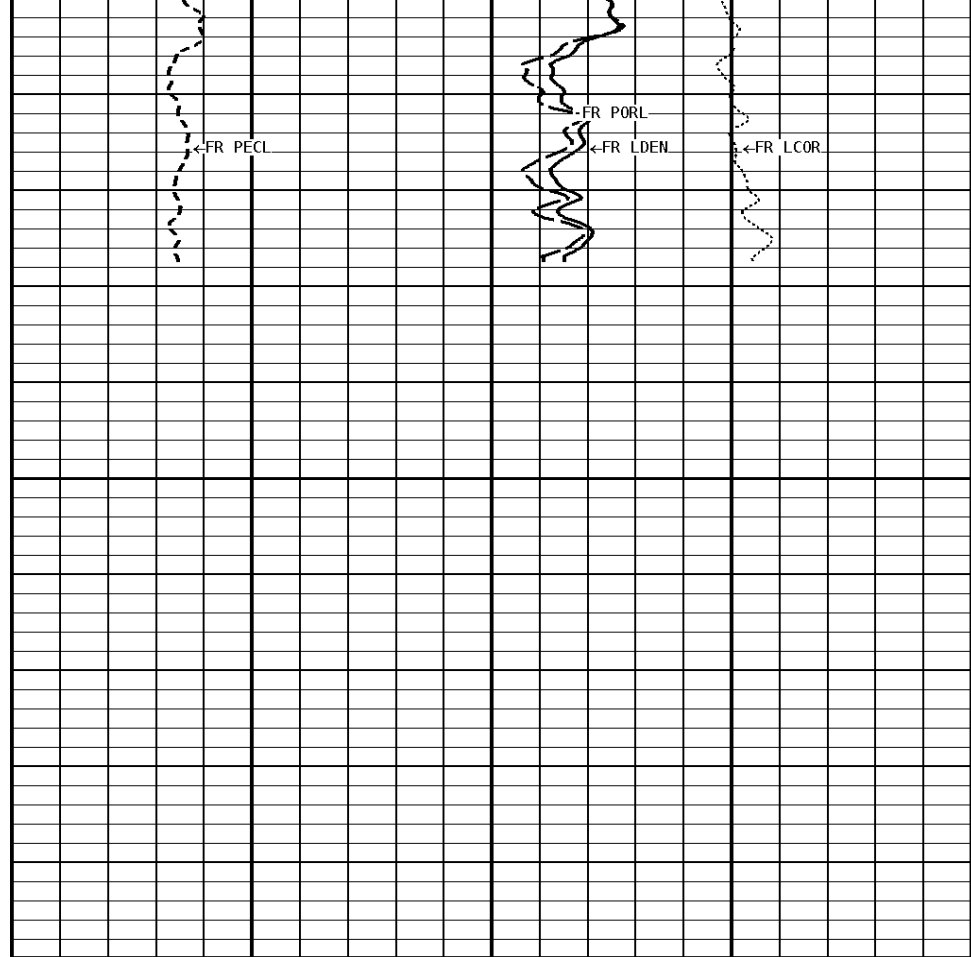
--100Cu.Ft







3200
3250
File #1.1.5



1:240 MAIN SECTION BULK DENSITY

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

- BHV AHV - CU. FT		COMPENSATED BULK DENSITY G/CC	
		3.0	4.0
		2.0	3.0
		1.0	2.0
		DENSITY POROSITY PERCENT (2.71 g/cc)	
		70	30
		30	-10
		-10	-50
		PE CROSS-SECTION BARN/ ELECTRON	DENSITY CORRECTION G/CC
		0	10 -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 : 23-Aug-2012			Time : 09:20		
Sensor Suite : GR-GR5			ID : GRT-BA-14		
	Measured	Units	Calibrated	Units	
GR	Background	Jig	Jig		
	52	368	175	GRAPI	
		CPS			
Shop Calibration CNT-AA					
Performed : 01-AUG-2012			Time : 10:49		
Sensor Suite : CALI-BCN			ID : NDT-BB-129		
	Jig - Measured		Jig - Calibrated	Units	
CL # 1	Ring#1	Ring#2	Ring#1	Ring#2	IN.
	8.9	13.6	6.0	12.0	
Shop Calibration LDT-DF					
Performed : 01-Aug-2012			Time : 11:07		
Sensor Suite : CALI-LTH			ID : PDT-GA-464		
	Jig - Measured		Jig - Calibrated	Units	
CL # 1	Ring#1	Ring#2	Ring#1	Ring#2	IN.
	7.6	10.8	6.0	12.0	
Shop Calibration MST-DA					
Performed : 01-Aug-2012			Time : 10:58		
Sensor Suite : CALI-MSN			ID : MST-DA-36		
	Jig - Measured		Jig - Calibrated	Units	
CL # 1	Ring#1	Ring#2	Ring#1	Ring#2	IN.
	4.7	9.5	6.0	12.0	

Performed : 19-APR-2012
Sensor Suite : MSTDA-NI

Time : 09:18
ID : MST-DA-36

	Internal			Calibrated		
	Zero	Measured Reference	Units	Zero	Reference	Units
INV-V	221.0	21282.7		0.00	1946.00	MV
NOR-V	164.0	21140.6		0.00	1546.00	MV
IN-C	157.3	21367.2		0.00	15.46	UA
INV-R					40.71	OHMM
NOR-R					55.11	OHMM

Performed : 09-APR-2012
Sensor Suite : MSTDAMSF

Time : 14:53
ID : MST-DA-36

	Internal			Calibrated		
	Zero	Measured Reference	Units	Zero	Reference	Units
MSFC	150.0	58600.0		0.00	1522.00	UA
MSFB	32800.0	62500.0		0.00	1522.00	MA
MOM1	150.0	5950.0		0.00	1522.00	MV
MSFRA					43.30	OHMM