

Tucker
ENERGY SERVICES

COMPENSATED NEUTRON
PEL DENSITY MICRO LOG

Company RUNNING FOXES PETROLEUM N Well HERRMANN #9-4B-2 Field LIVINGOOD County BROWN State KANSAS Country USA API No. 15-013-20052-0000		File No : TUL-61201 Company : RUNNING FOXES PETROLEUM INC. Well : HERRMANN #9-4B-2 Field : LIVINGOOD County : BROWN State : KANSAS Country : USA API No : 15-013-20052-0000	
Location : 2315' FSL & 1292' FEL NW NW NE SE		LSD : Sect : 4 Twp : 1S Rge : 15E	
Permanent Datum:	GL	Elevations:	
Drilling Measured From:	KB	KB	1146.00
Log Measured From:	KB	DF	1145.00
Above Permanent Datum:	6.00 Ft	GL	1140.00
Date	09-18-2016		
Run Number	1		
Depth--Driller	3435.0	Ft	
Depth--Logger	3436.0	Ft	
First Reading	3413.0	Ft	
Last Reading	215.0	Ft	
Casing--Driller	215.0	Ft	
Casing--Logger	215.0	Ft	
Bit Size	7.875	In	
Casing Size	8.625	In	
Hole Fluid Type	WBM		
Density	8.9		
Fluid Loss	7.6		
PH/Viscosity	9.0	56.0	
Sample Source	MEASURED		
RMF@Measured Temp.	2.000	@ 75 F	
RMF@Measured Temp	1.600	@ 75 F	
RMF@Measured Temp.	2.400	@ 75 F	
Source RMF/RMC	CALCULATED/CALCULATED		
RM@BHT	1.400	@ 110 F	
Time Circulation Stopped	09-18-2016 12:00		
Max Recorded Temp.	110	F	
Equipment/Base	1022	TULSA, OK	
Recorded By	SHELDON TYLER		
Witnessed By	CHAD COUNTS		

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	3435.00	8.625	32.00	215.00	0.00

Run Number	1	
Date	09-18-2016	
Date/Time On Bottom	09-18-2016 15:00	
Depth to Fluid	0.0 Ft	
Salinity	800.000	
RMF@BHT	1.120 @ 110 F	
RMC@BHT	1.680 @ 110 F	

Run Number 1

Comments

ALL PRESENTATIONS AS PER CUSTOMER REQUEST
 GRT, CNT, LDT, CST, MLT 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

PERMIT #201512001

GRT: GRP, GRX
 CST: PORS, CDTF, TTIPF, TT2PF, TT3PF, TT4PF, ITT
 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

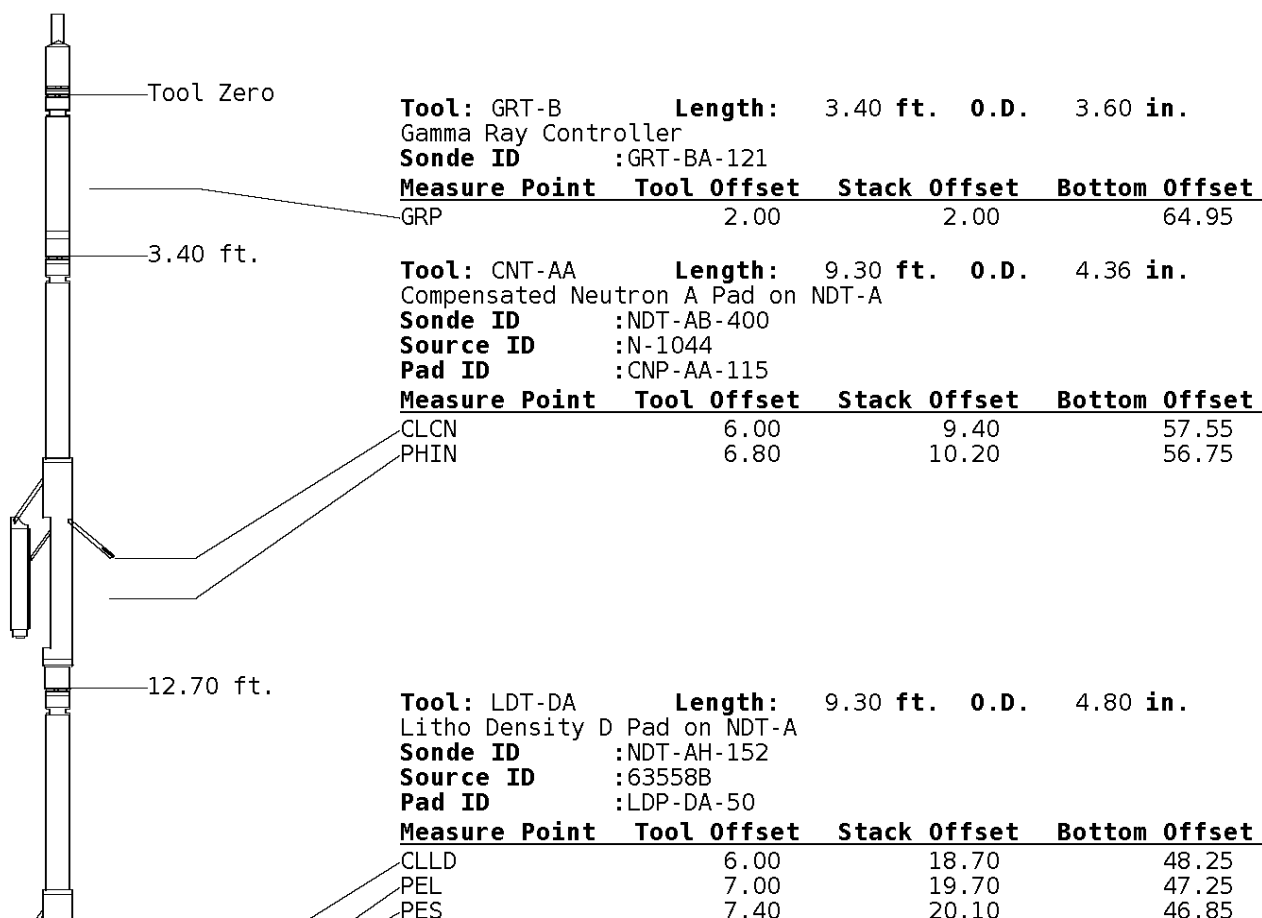
OPERATORS:

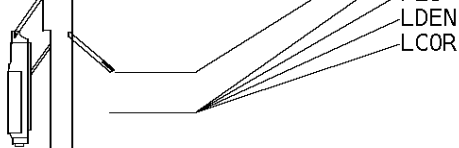
R.FRANKLIN

B.BAILEY

Tool String Schematic

Total Tool Length - 66.95 ft.
Maximum Outside diameter - 6.00 in.
Net Weight in Air - 1171.00 lbs.



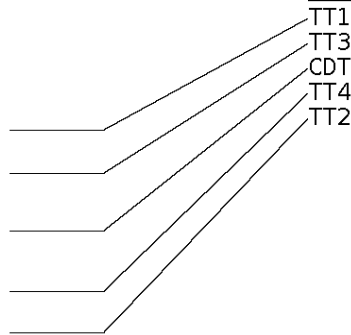


7.20	19.90	47.05
7.20	19.90	47.05

22.00 ft.

Tool: CST-AD **Length:** 13.80 ft. **O.D.** 3.60 in.
Open Hole Sonic
Sonde ID : CST-AD-078

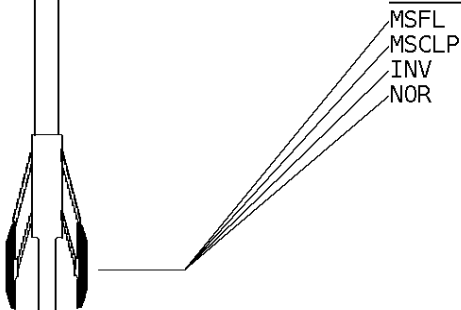
Measure Point	Tool Offset	Stack Offset	Bottom Offset
TT1	4.80	26.80	40.15
TT3	5.80	27.80	39.15
CDT	7.30	29.30	37.65
TT4	8.80	30.80	36.15
TT2	9.80	31.80	35.15



35.80 ft.

Tool: MST-DA **Length:** 9.66 ft. **O.D.** 6.00 in.
Micro Spherically Focused (IC)
Sonde ID : MST-DA-021

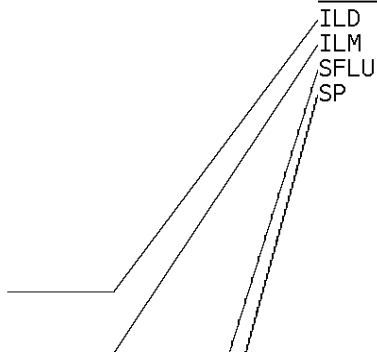
Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	43.40	23.55
MSCLP	7.60	43.40	23.55
INV	7.60	43.40	23.55
NOR	7.60	43.40	23.55



45.46 ft.

Tool: PIT-CA **Length:** 21.49 ft. **O.D.** 3.62 in.
Phased Dual Induction w/ RM & D
Sonde ID : PIT-CA-069

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	54.38	12.56
ILM	10.10	55.56	11.39
SFLU	17.49	62.95	4.00
SP	20.60	66.06	0.88



LWT 66.95 ft.

Well File: RFP_HERRMANN_9-4B-2_SEPT18_QUINT

Scale: 1:240

Format: NLD-240

Segment: V1.D1.S7_DS_FINAL_MAIN

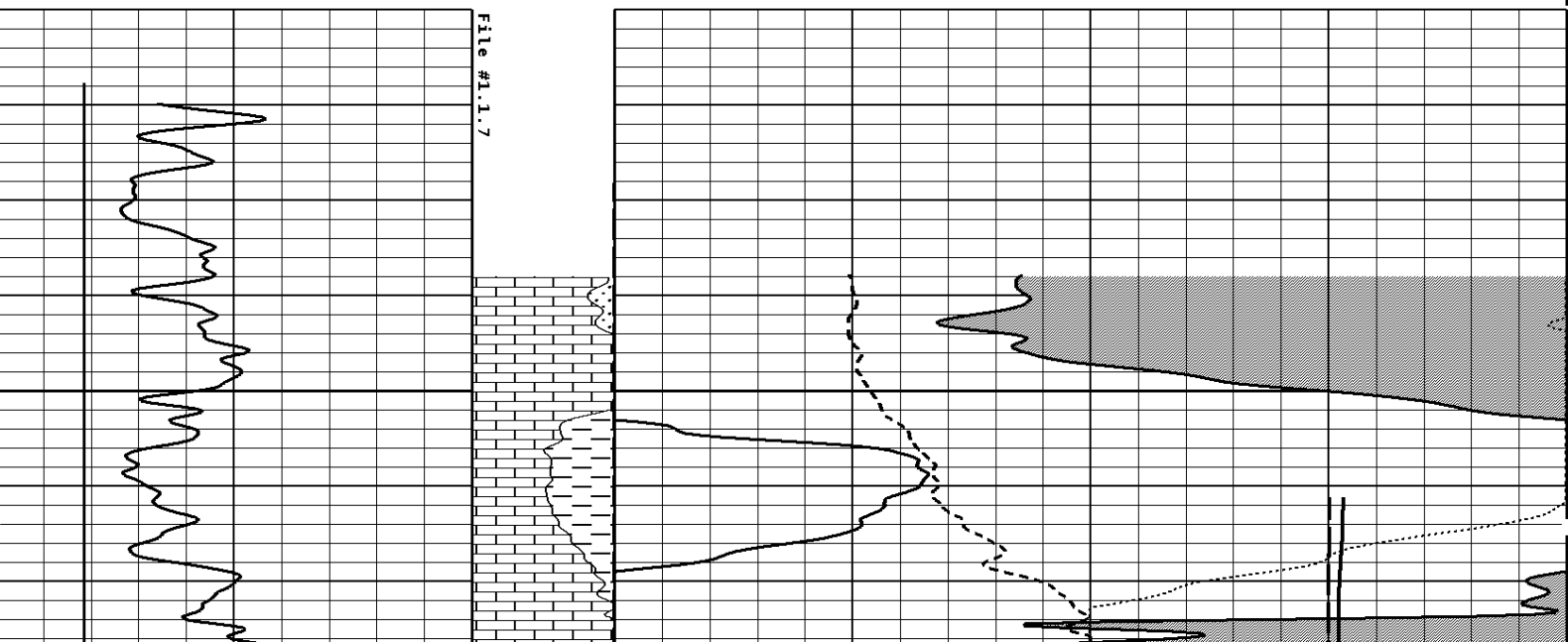
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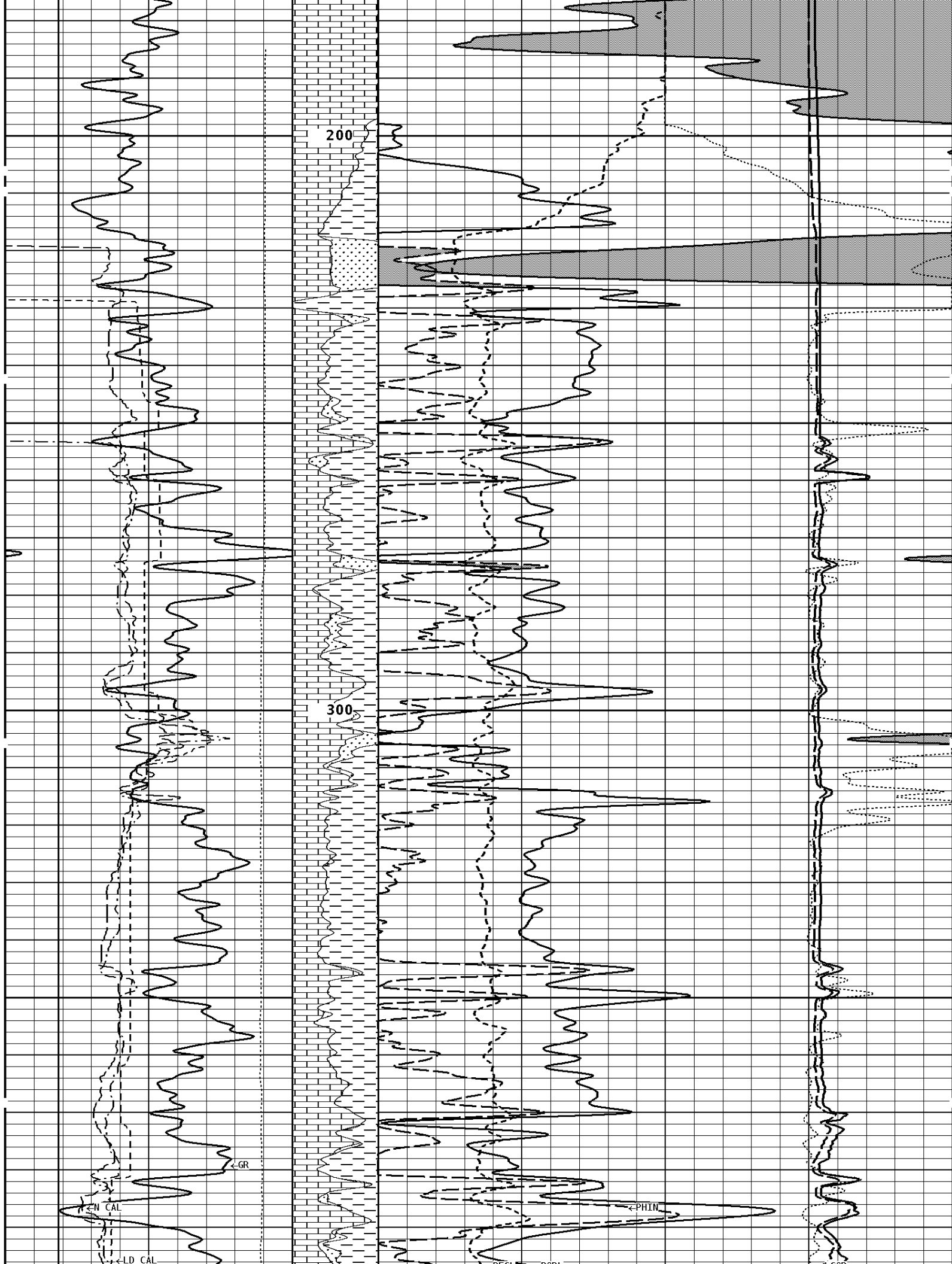
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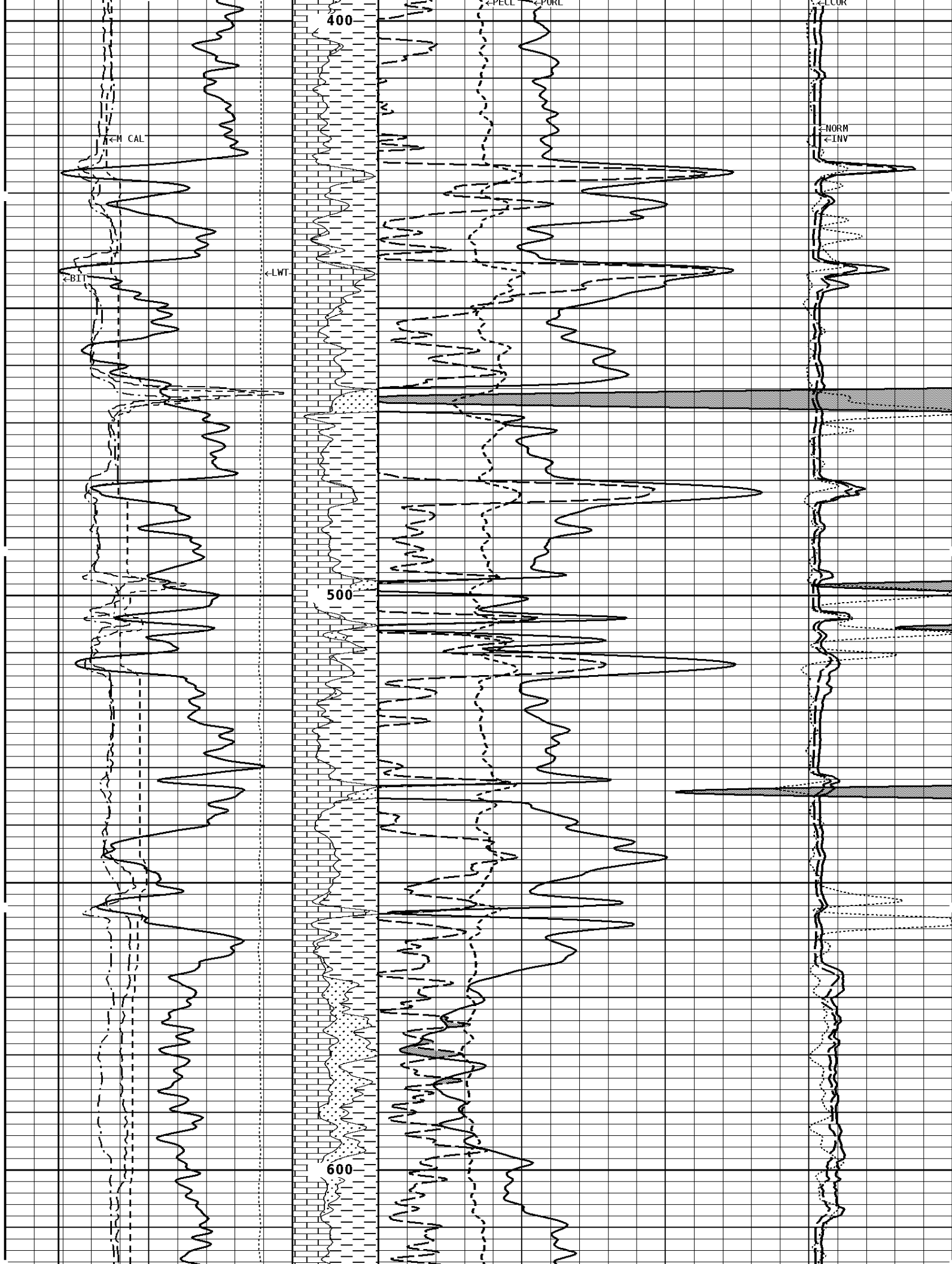
Processed: 2016-09/18 15:08 3.4.0-13711

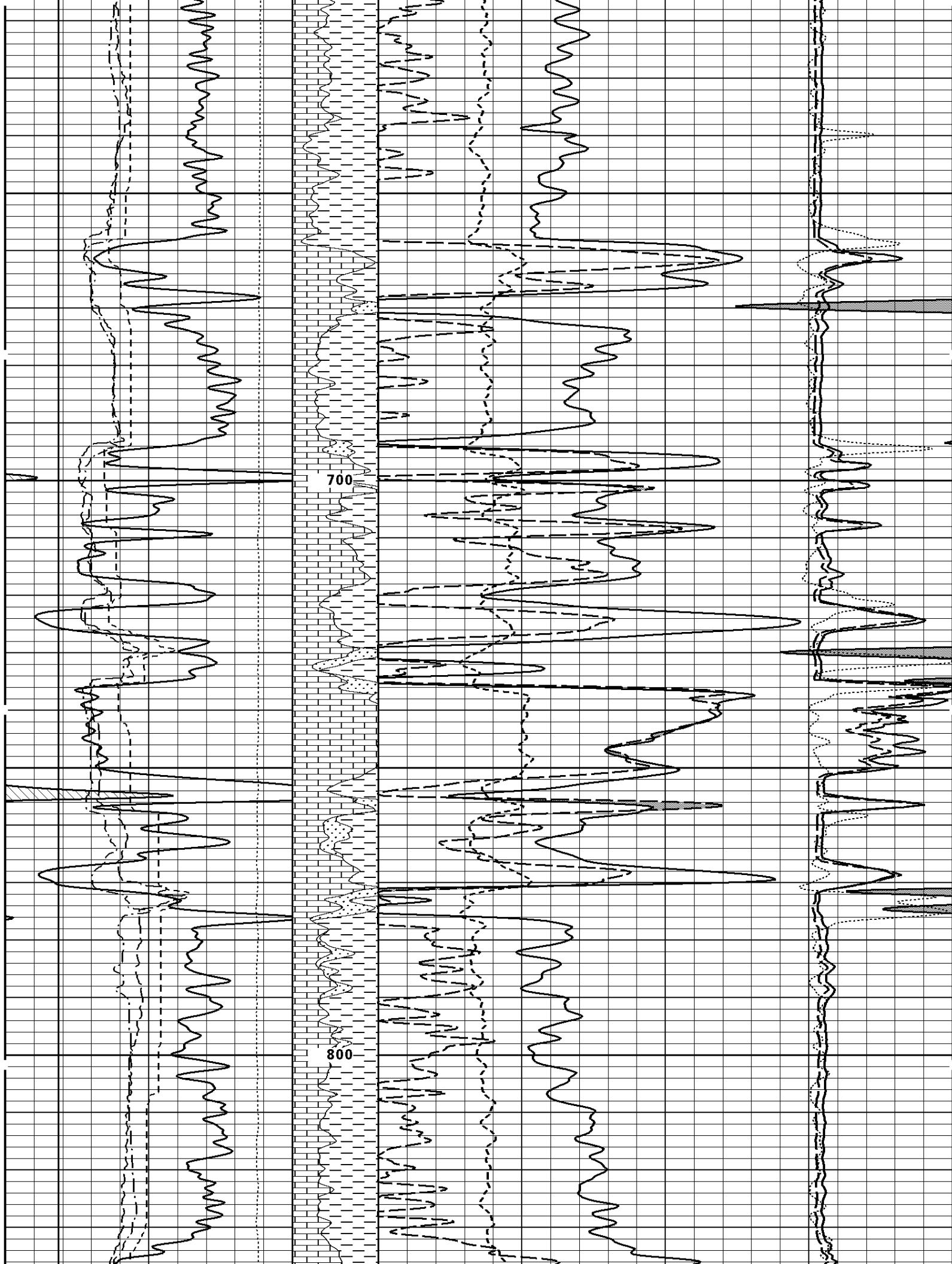
CALIPER MICRO INCHES (IN)					
16	26				
6	16				
BIT SIZE INCHES (IN)				NORMAL OHMM	
6	16			0 40	
NEUTRON (Y) CALIPER INCHES (IN)				INVERSE OHMM	
16	26			0 40	
6	16				
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARNS/ELECTRON	DENSITY CORRECTION G/CC	
16	26				
6	16		0 10	-0.25 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				
0	150		30	-10	

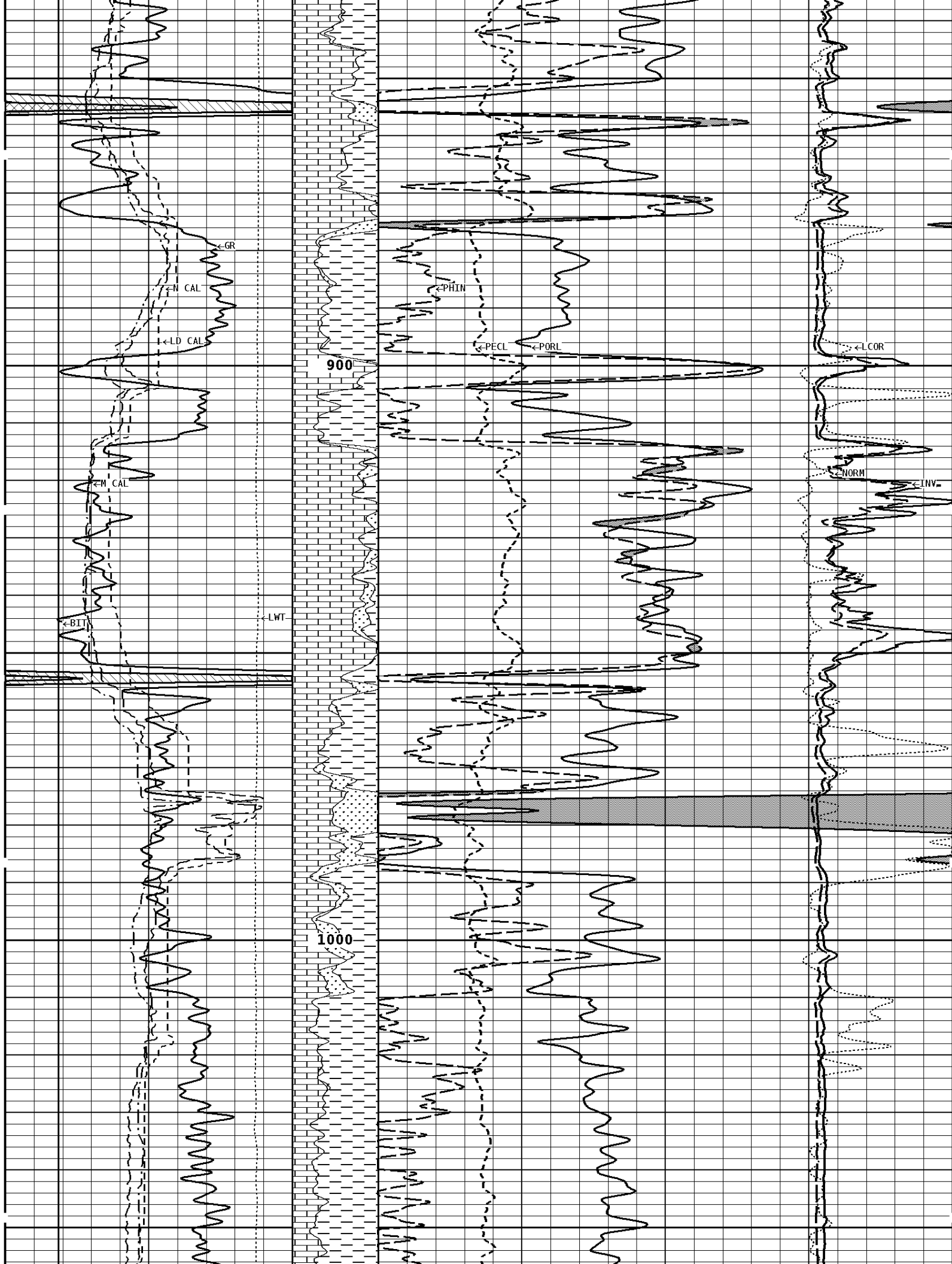
1:240 MAIN SECTION

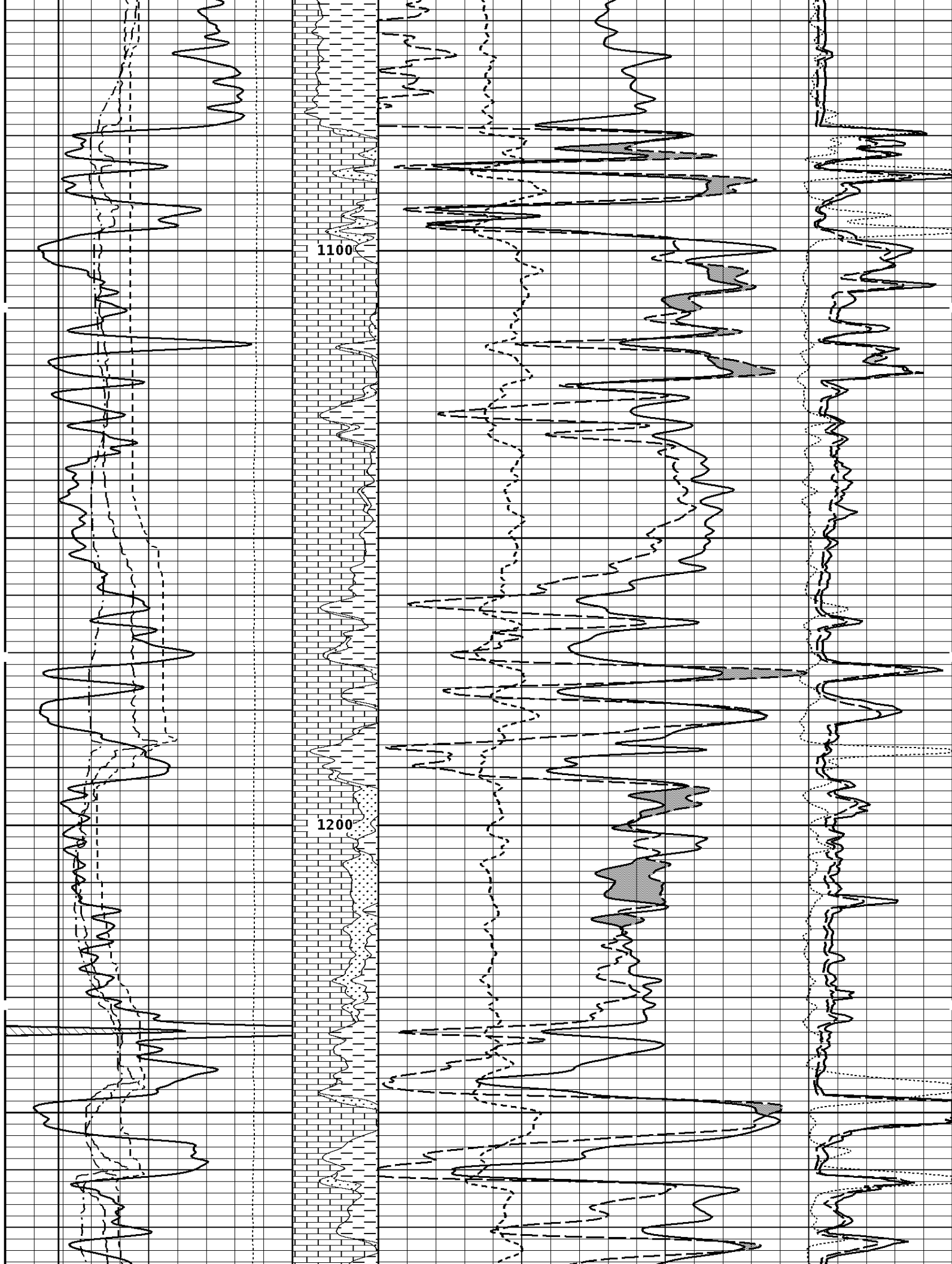


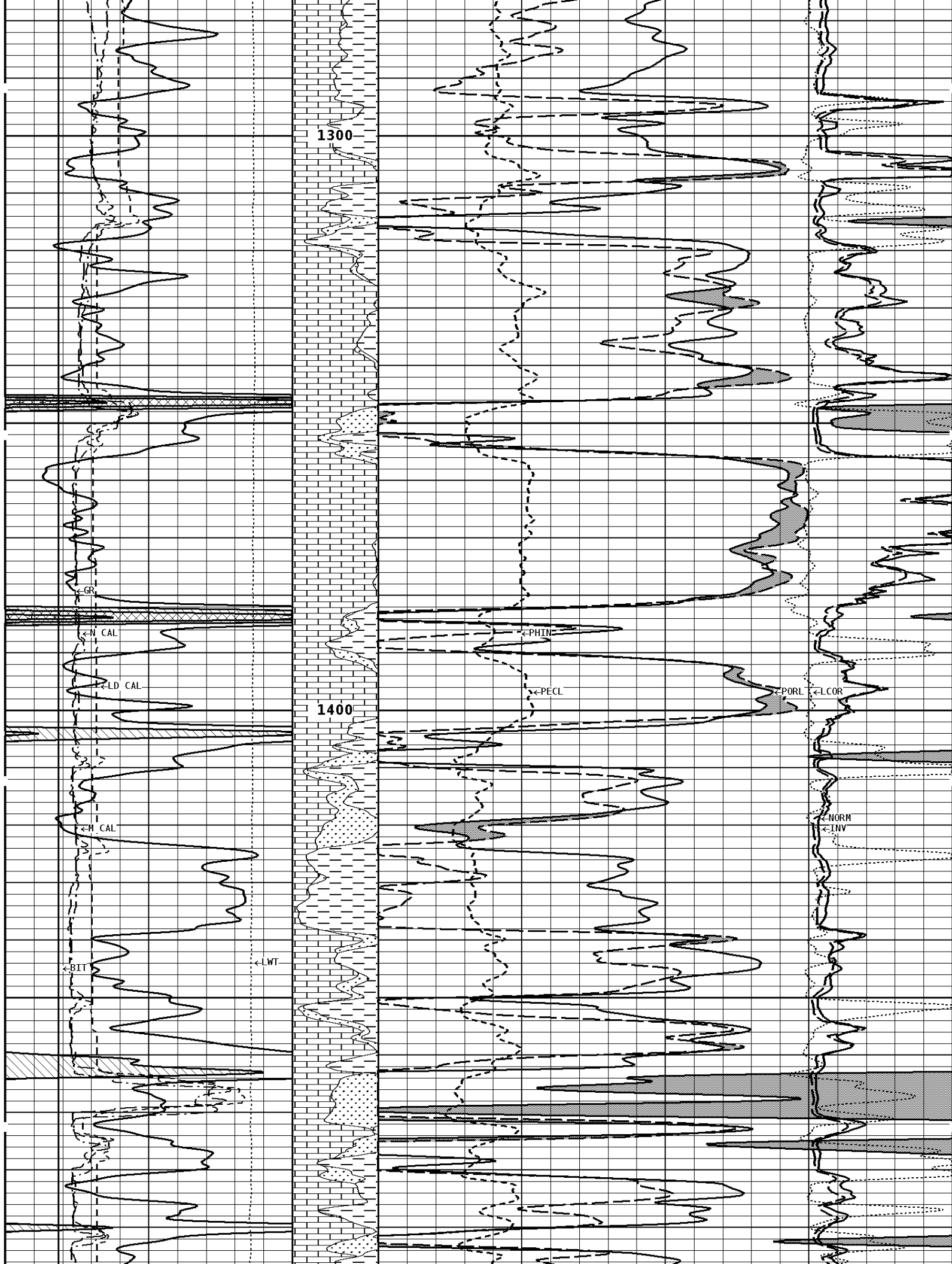


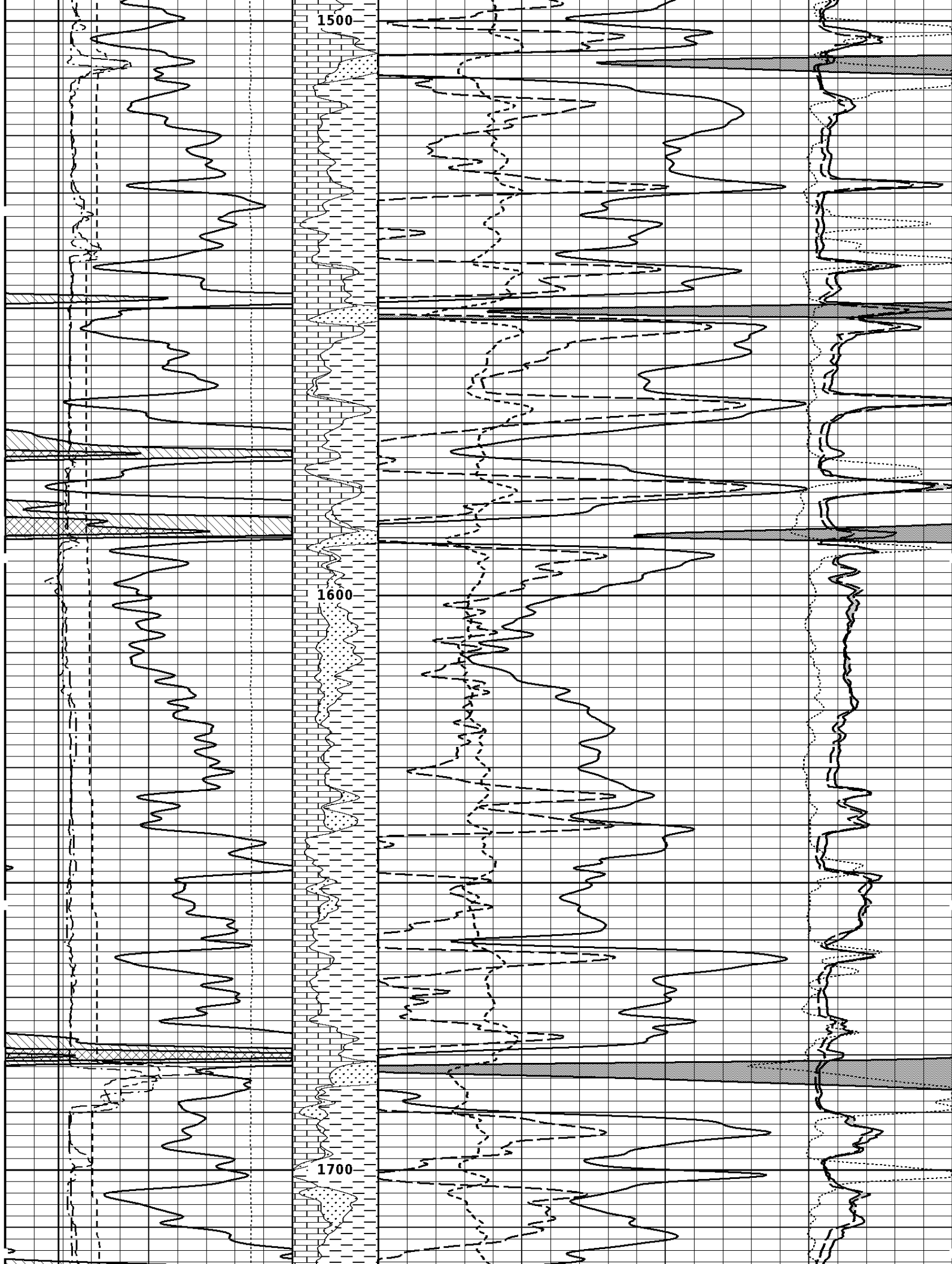


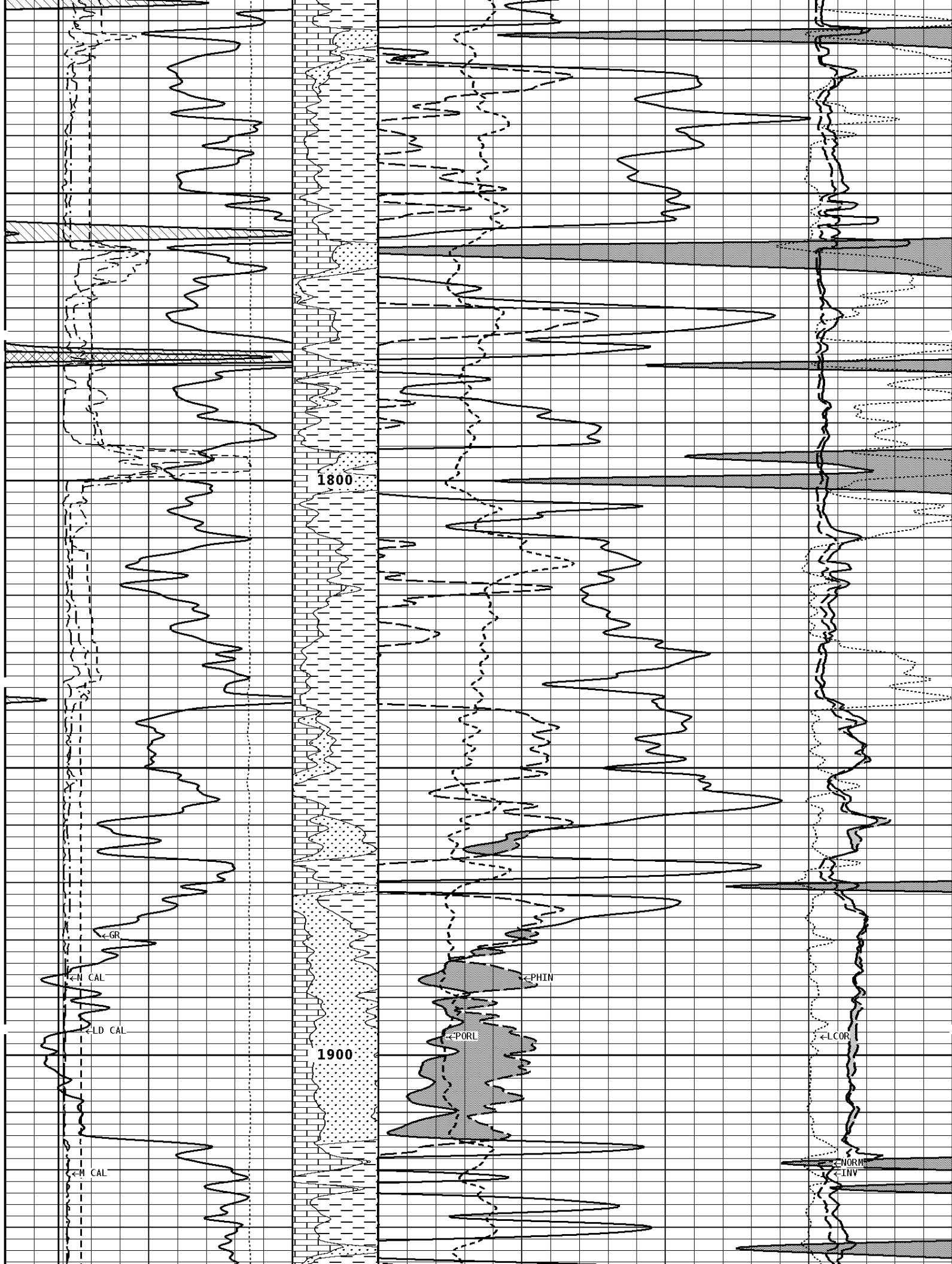










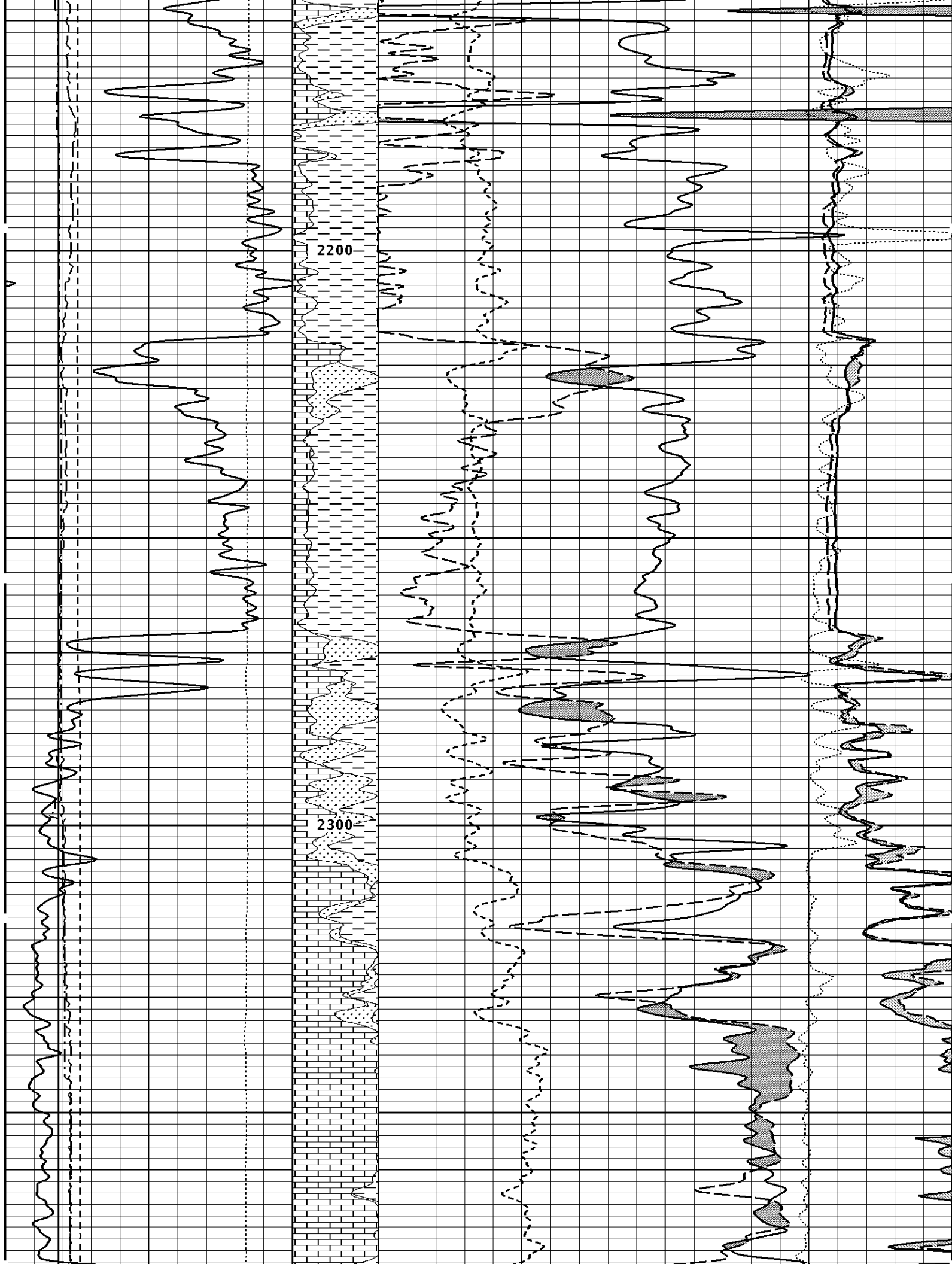


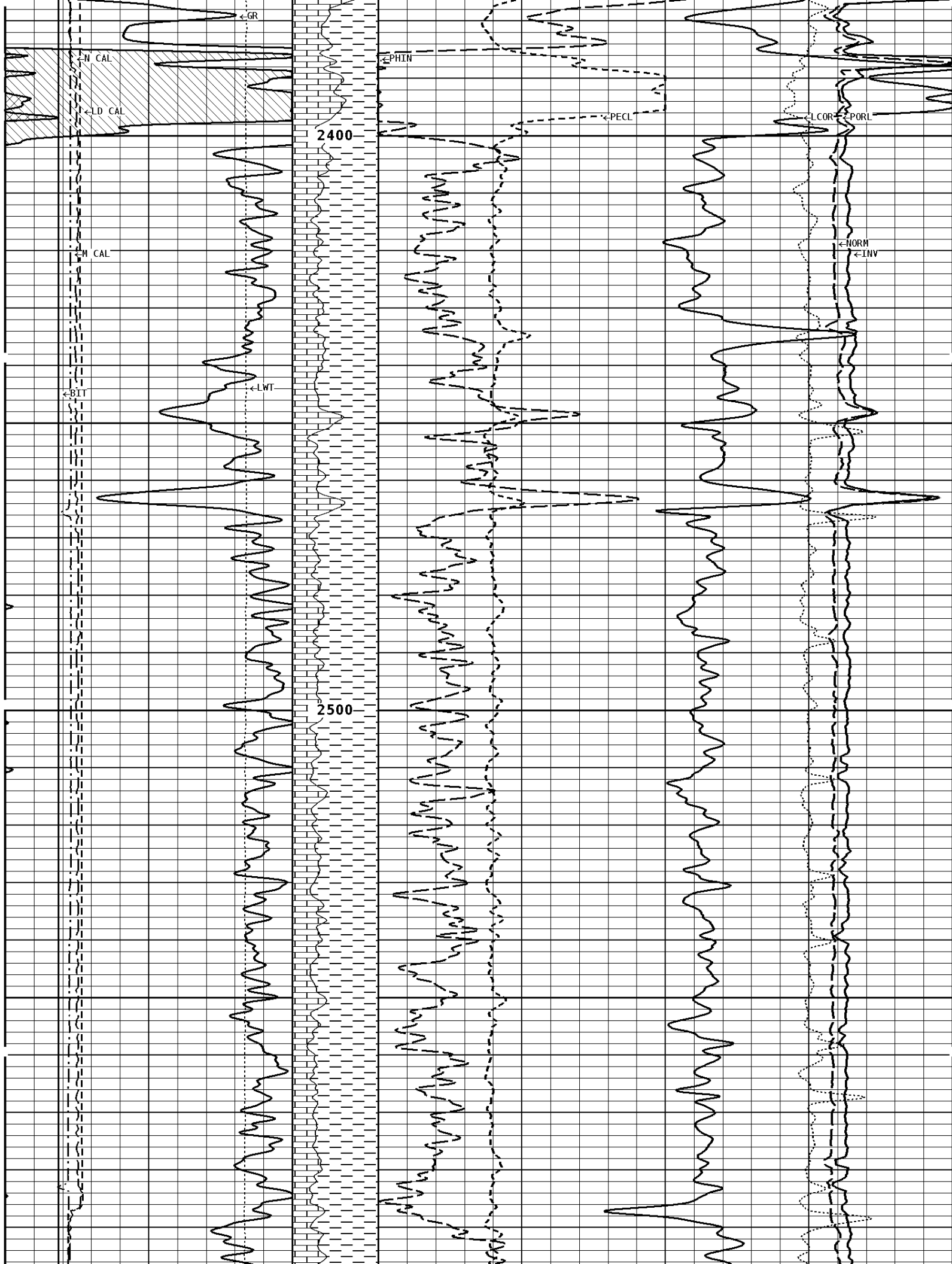
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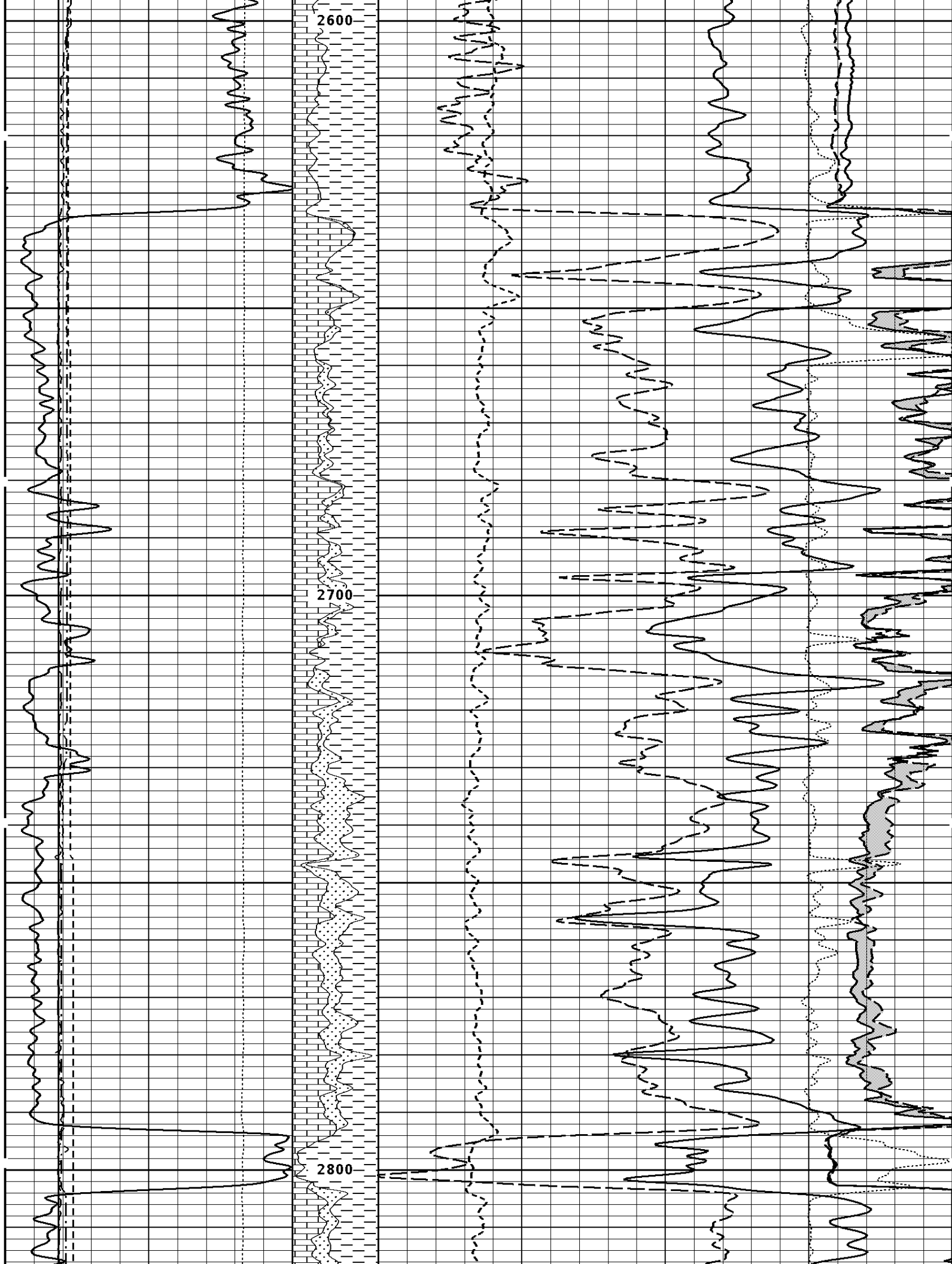
←LWT

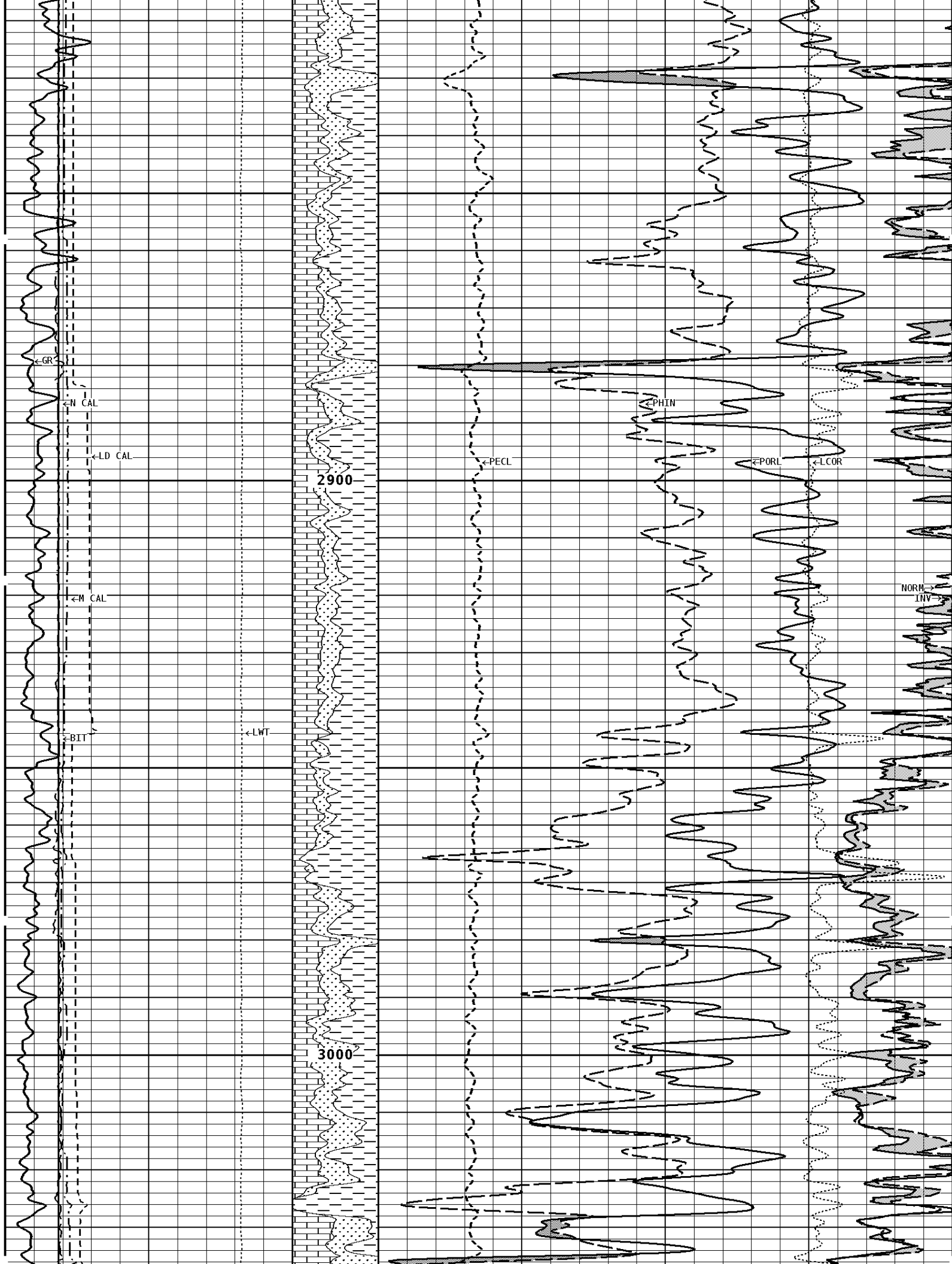
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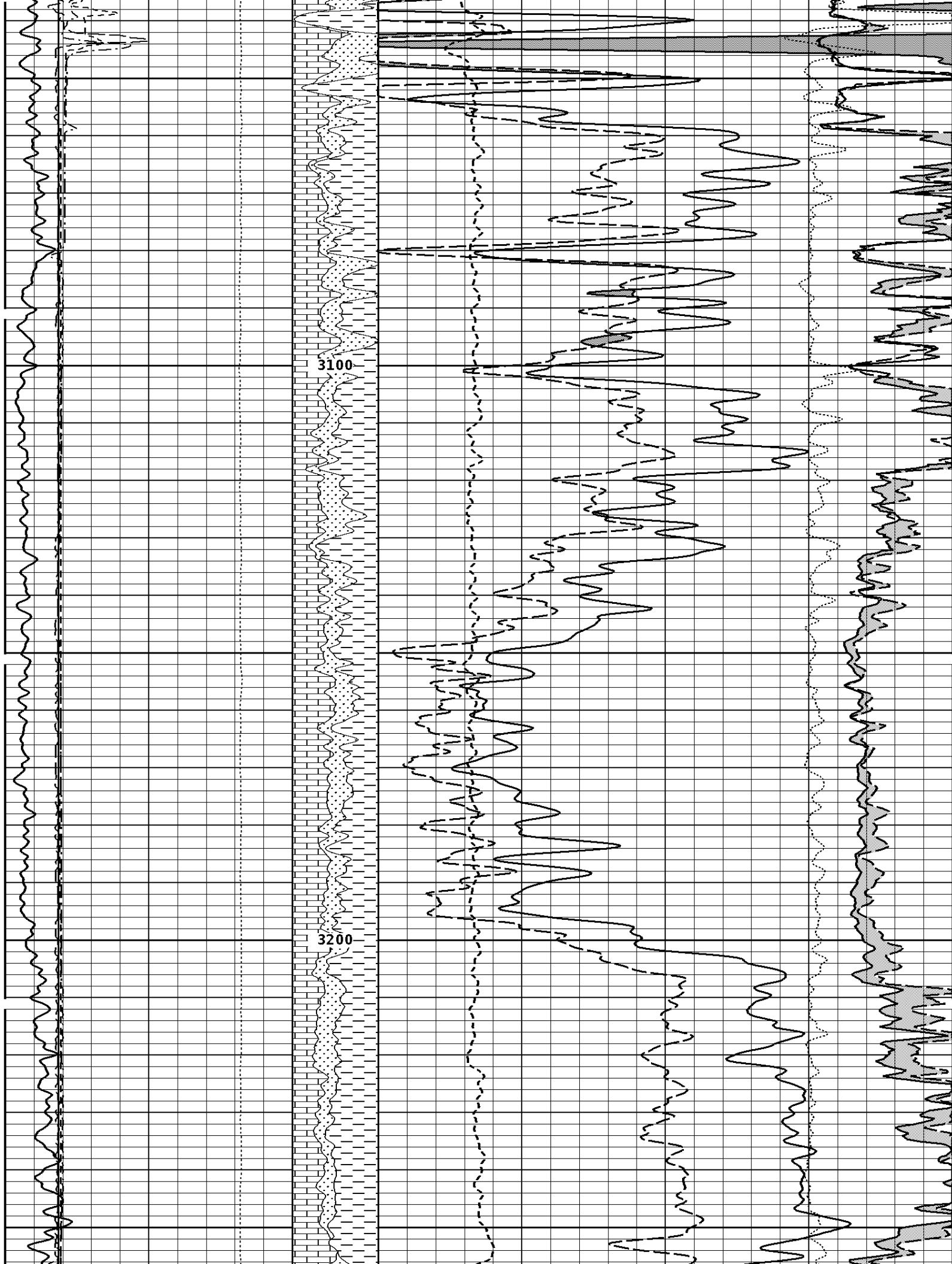
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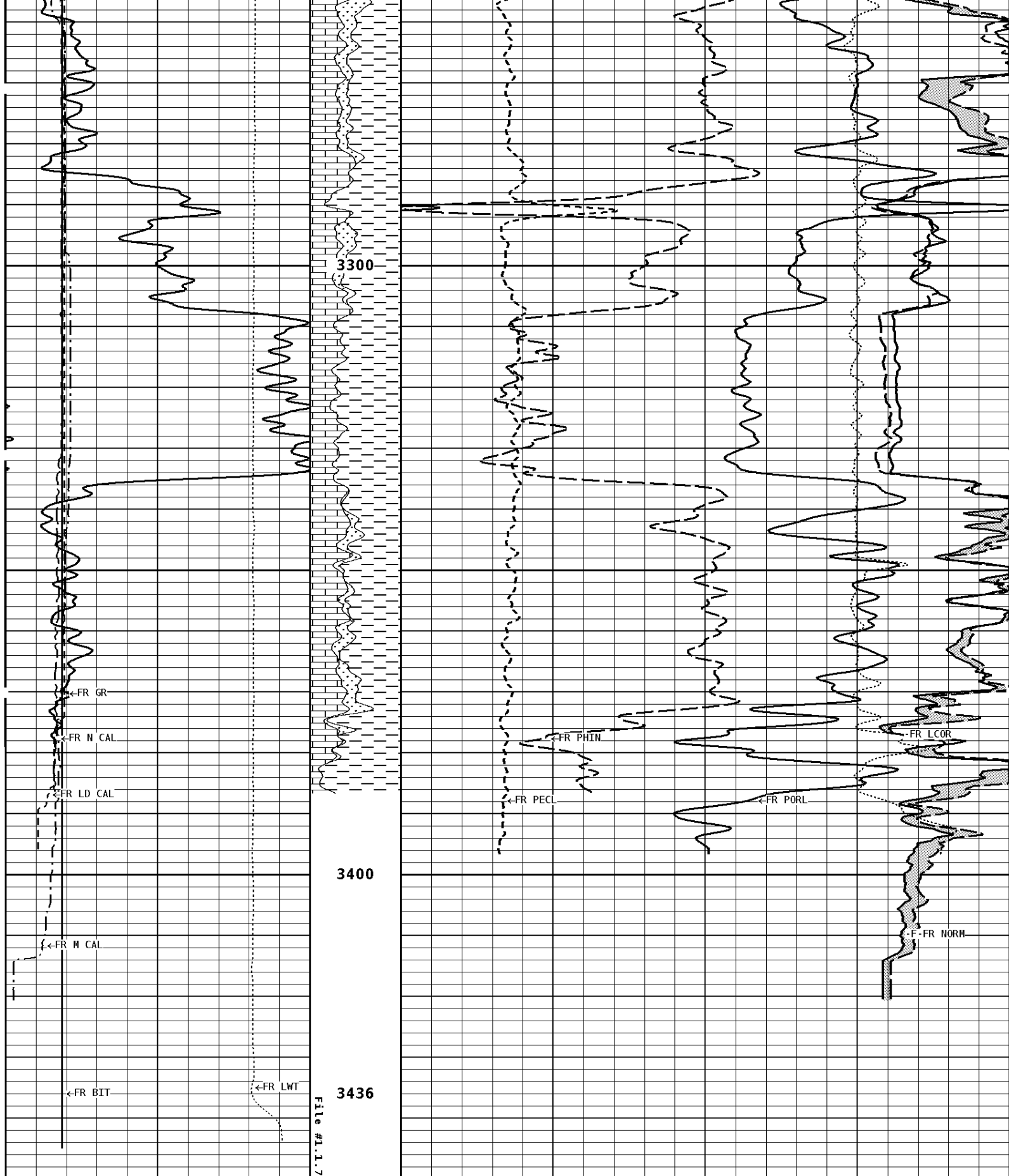






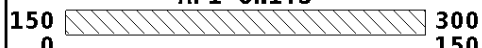






1:240 MAIN SECTION

GAMMA RAY
API UNITS



Volume
DoLo/Shale

30

NEUTRON POROSITY (LIMESTONE)
PERCENT

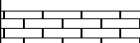
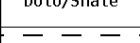
-10

TENSION LBS		Volume Calcite	DENSITY POROSITY (2.71g/cc) PERCENT	
10000	0		70 30 -10	30 -10 -50
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARNs/ELECTRON	DENSITY CORRECTION G/CC
16 6	26 16		010	-0.250.25
NEUTRON (Y) CALIPER INCHES (IN)				
16 6	26 16			
BIT SIZE INCHES (IN)				
6	16			
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: RFP_HERRMANN 9-4B-2 SEPT18_QUINT	Scale: 1:240	Format: NLD-240
Segment: V1.D1.S9 DS FINAL REPEAT	Acquired: 2016-09/18 14:43 3.4.0-13711	
Reference: 0	Processed: 2016-09/18 14:52 3.4.0-13711	

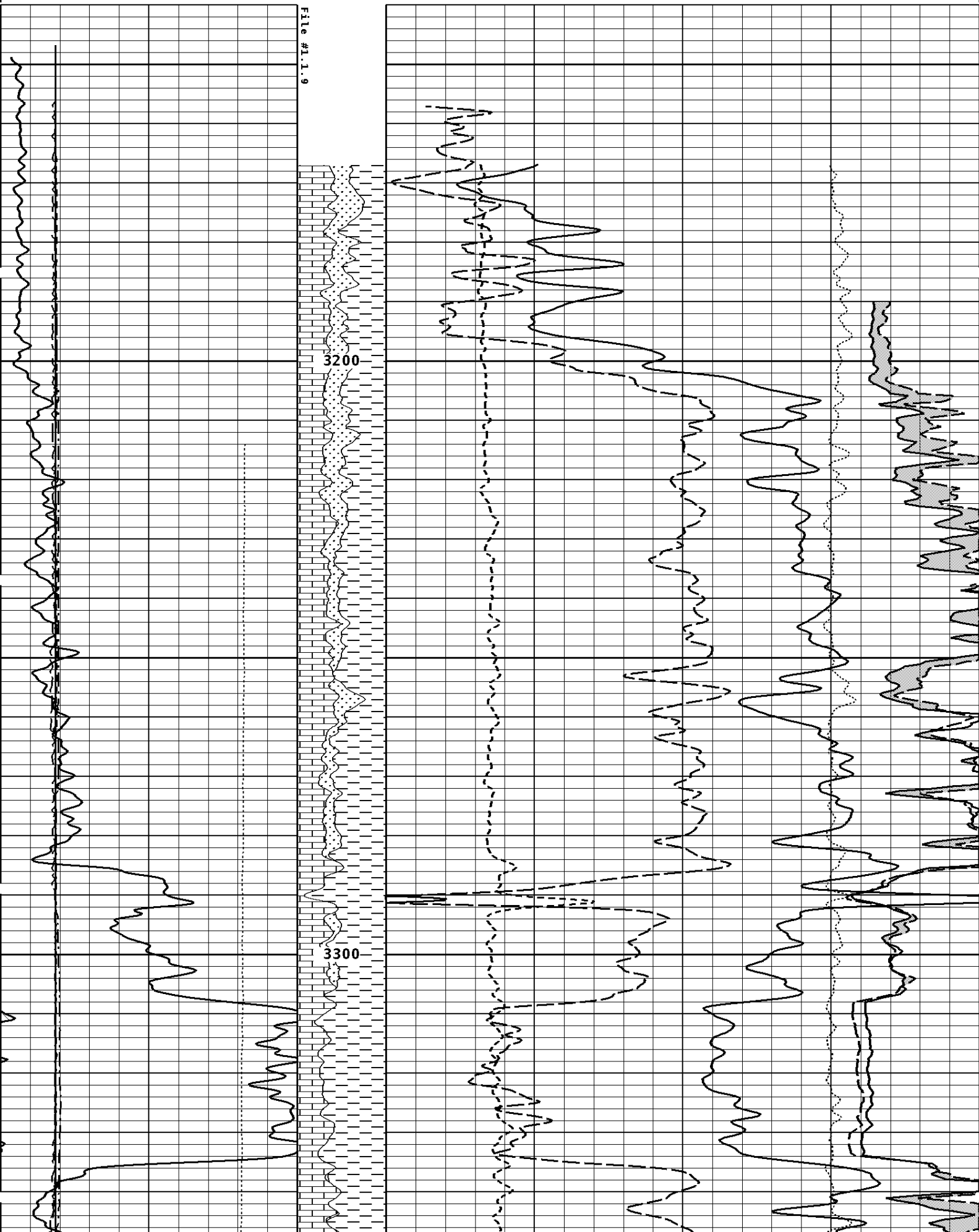
CALIPER MICRO INCHES (IN)		26 16		
BIT SIZE INCHES (IN)		6		
NEUTRON (Y) CALIPER INCHES (IN)		16 6		
DENSITY (X) CALIPER INCHES (IN)		16 6	Volume Quartz	PE CROSS-SECTION BARNs/ELECTRON
		26 16		010
TENSION LBS		10000	Volume Calcite	DENSITY POROSITY (2.71g/cc) PERCENT
		0		70 30 -10
GAMMA RAY API UNITS		150 0	Volume Dolo/Shale	NEUTRON POROSITY (LIMESTONE) PERCENT
		300 150		30

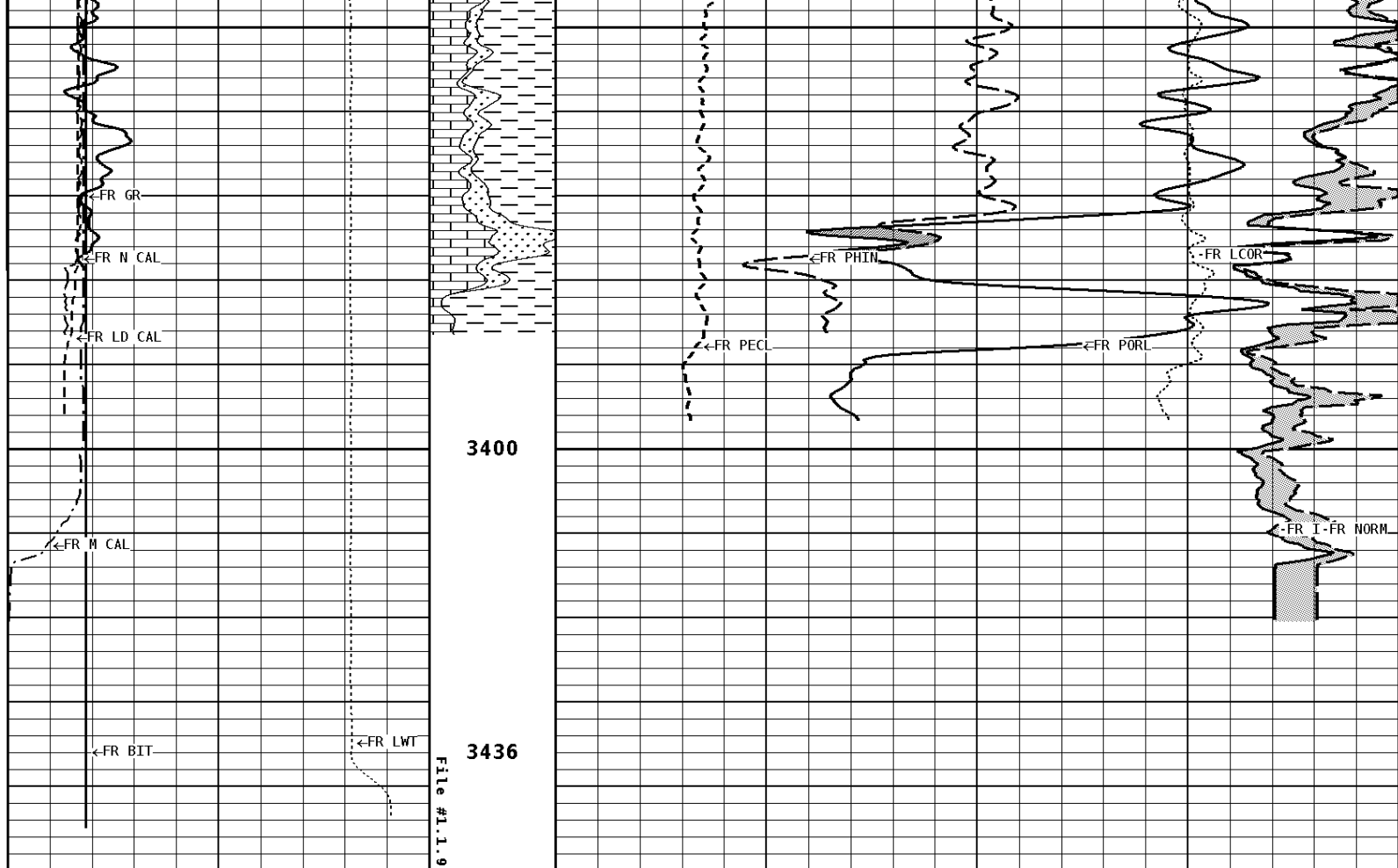
1:240 REPEAT SECTION

File #1.1.9

3200

3300





1:240 REPEAT SECTION

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
		30	-10	-10
		-10		-50
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)				
16	26			
6	16			
BIT SIZE INCHES (IN)				
6	16			
CALIPER MICRO INCHES (IN)				
16	26			
6	16			

INVERSE OHMM	
0	40
NORMAL OHMM	
0	40

* Borehole Zone Factors *

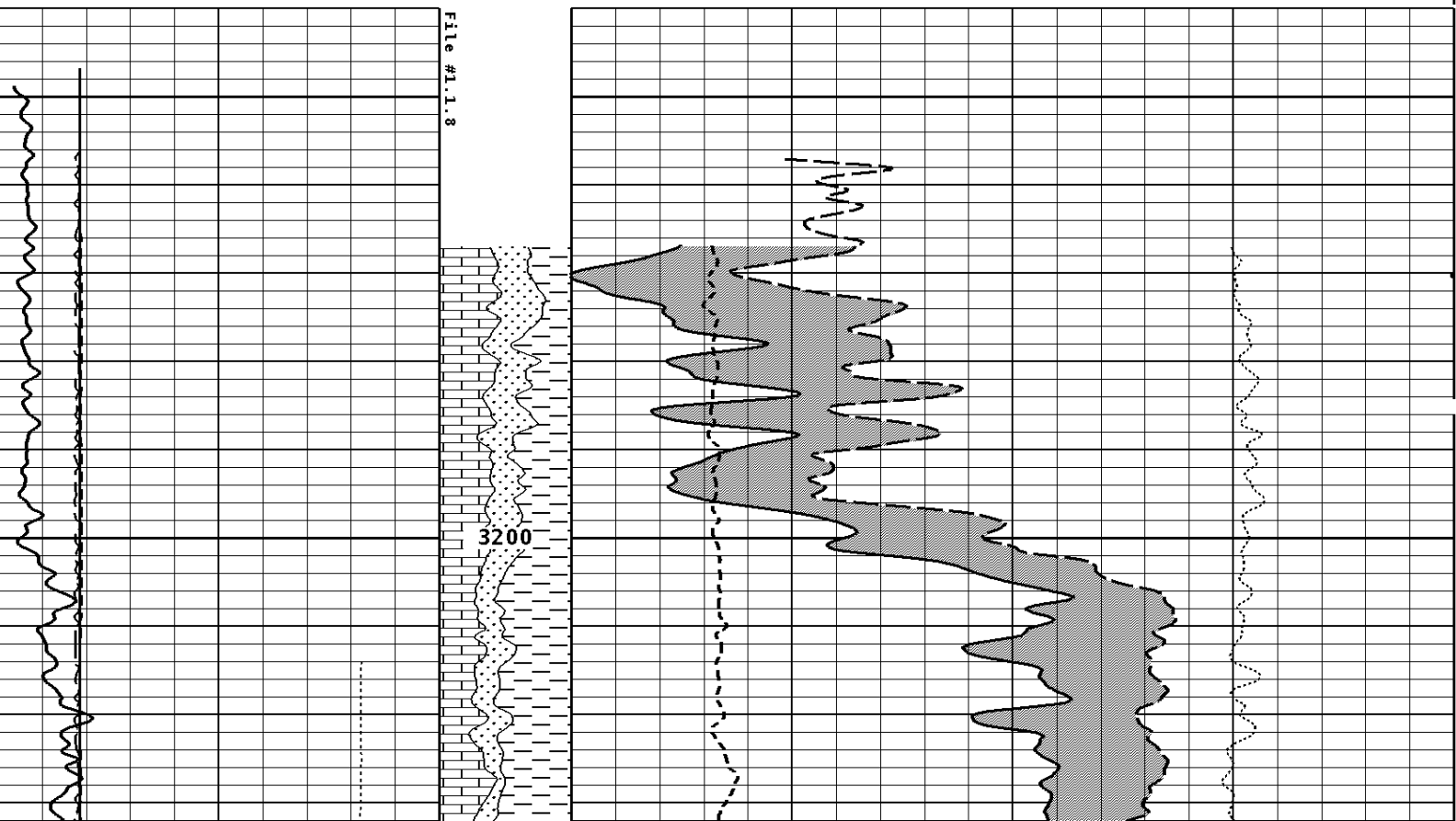
Zone 1 99999 0 to 0 0 Feet

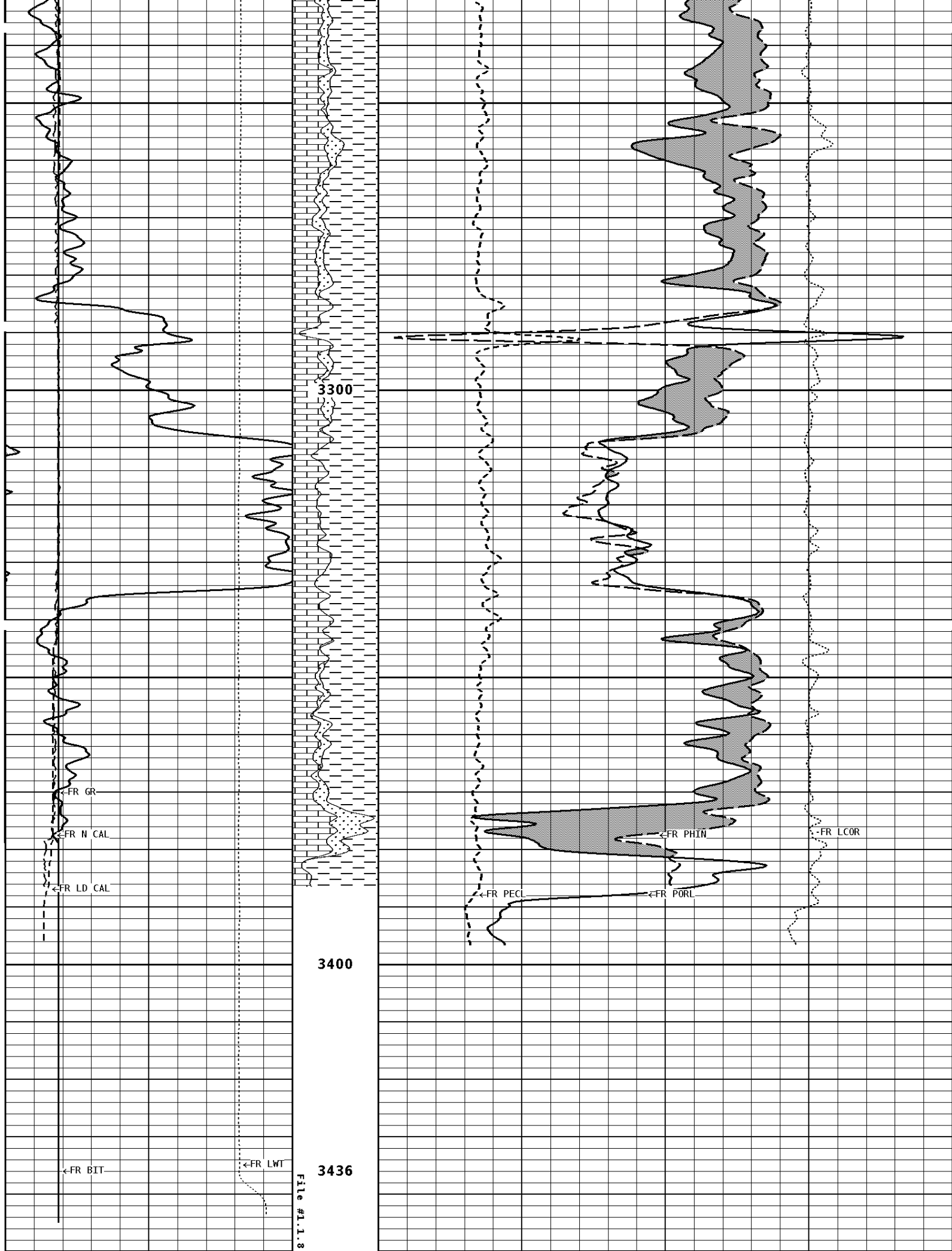
Zone 1 55555.0 to 5.0 Feet
 Matrix Density _____ 2.71 g/cc
 Fluid Density _____ 1.00 g/cc
 Formation Matrix _____ Limestone
 Drill Bit Size _____ 7.875 in
 Casing Diameter _____ 5.500 in
 Casing Thickness _____ 0.250 in
 Casing Correction (PHI N) _____ Disable

Well File: RFP HERRMANN 9-4B-2 SEPT18 QUINT **Scale:** 1:240 **Format:** NLD-240
Segment: V1.D1.S8 DS FINAL DOLOMITE 2.83 **Acquired:** 2016-09/18 14:43 3.4.0-13711
Reference: 0 **Processed:** 2016-09/18 14:53 3.4.0-13711

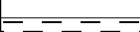
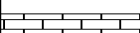
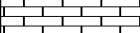
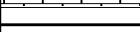
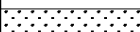
BIT SIZE INCHES (IN) 6 16			
NEUTRON (Y) CALIPER INCHES (IN) 16 26 6 16			
DENSITY (X) CALIPER INCHES (IN) 16 26 6 16		Volume Quartz 0 10	DENSITY CORRECTION G/CC -0.25 0.25
TENSION LBS 10000 0		Volume Calcite 70 30 30 -10 -10 -50	DENSITY POROSITY (2.83g/cc) PERCENT 30 -10 -50
GAMMA RAY API UNITS 150 300 0 150		Volume Dolo/Shale 30 -10	NEUTRON POROSITY (DOLOMITE) PERCENT -10

1:240 DOLOMITE 2.83 SECTION





1:240 DOLOMITE 2.83 SECTION

GAMMA RAY API UNITS 150  300 0 150		Volume Dolo/Shale  30  -10	NEUTRON POROSITY (DOLOMITE) PERCENT 30 ----- -10	
TENSION LBS 10000 ----- 0		Volume Calcite  70  30  -10 ----- -50	DENSITY POROSITY (2.83g/cc) PERCENT 70 30 30 -10 -10 -50	
DENSITY (X) CALIPER INCHES (IN) 16 26 6 16 ----- 16		Volume Quartz  0 ----- 10	PE CROSS-SECTION BARNS/ELECTRON 0 ----- 10	DENSITY CORRECTION G/CC -0.25 ----- 0.25
NEUTRON (Y) CALIPER INCHES (IN) 16 26 6 16 ----- 16				
BIT SIZE INCHES (IN) 6 ----- 16				

* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 Feet			
Matrix Density	_____	2.83	g/cc
Fluid Density	_____	1.00	g/cc
Formation Matrix	_____	Dolomite	
Drill Bit Size	_____	7.875	in
Casing Diameter	_____	5.500	in
Casing Thickness	_____	0.250	in
Casing Correction (PHI N)	_____	Disable	

Well File: RFP HERRMANN 9-4B-2 SEPT18_ QUINT	Scale: 1:240	Format: LDT-240
Segment: V1.D1.S7 DS FINAL MAIN	Acquired: 2016-09/18 15:08 3.4.0-13711	
Reference: 0	Processed: 2016-09/18 15:08 3.4.0-13711	

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

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

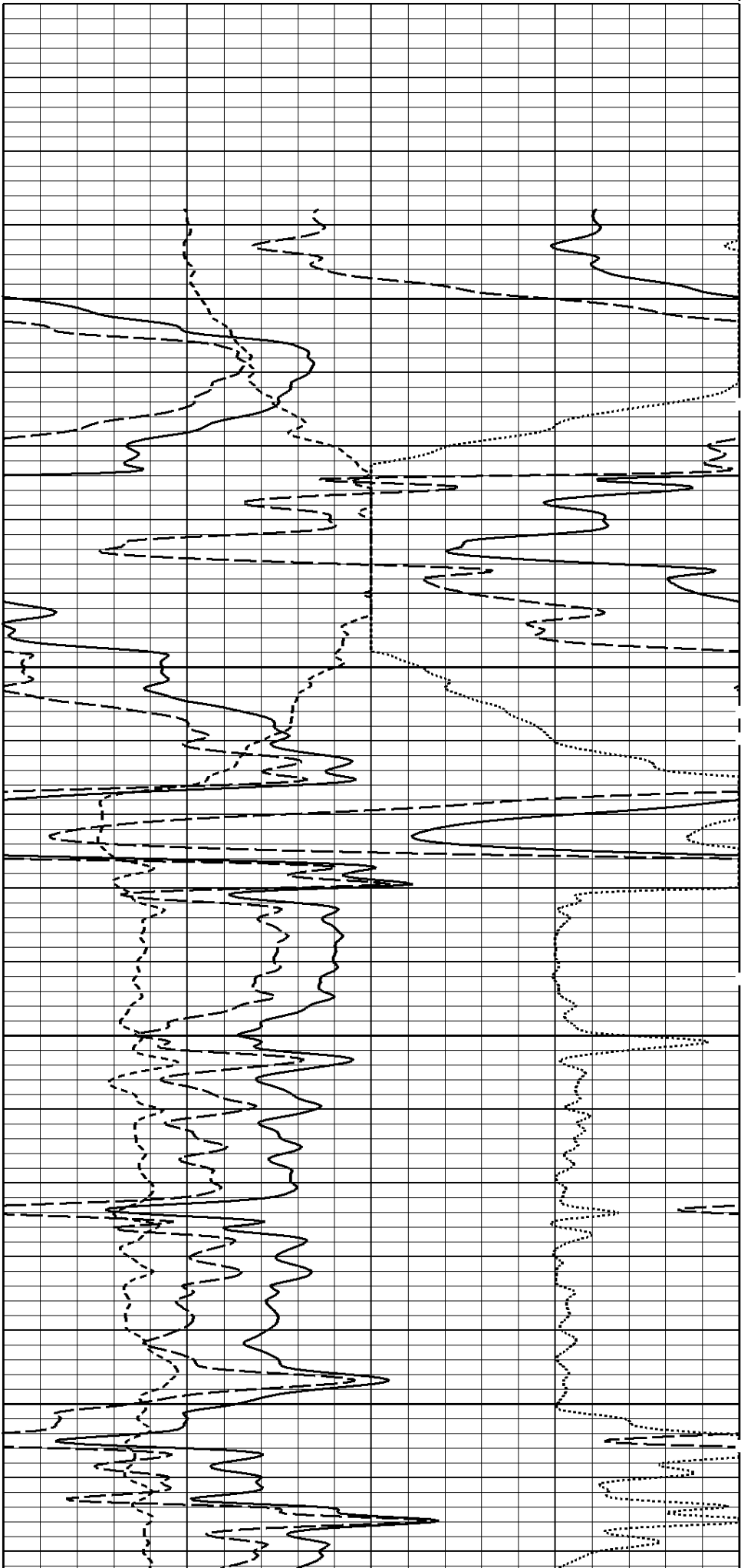
TENSION LBS			
10000	0		

GAMMA RAY API UNITS		- BHV AHV - CU. FT	
150	300		
0	150		
			

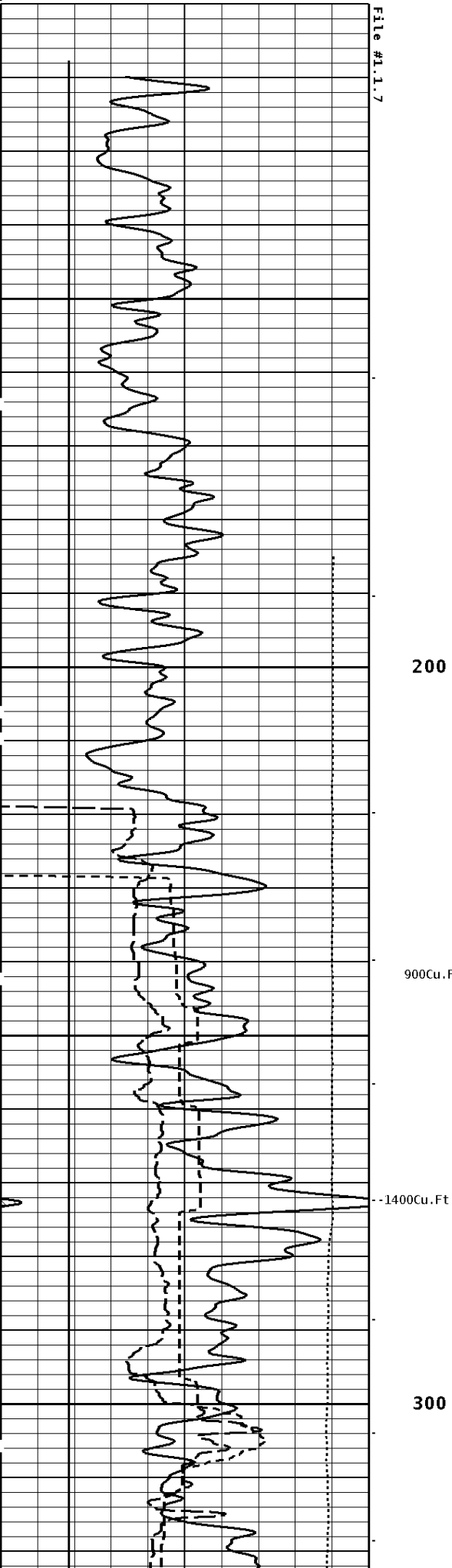
PE CROSS-SECTION BARNS/ELECTRON		DENSITY CORRECTION G/CC	
0	10	-0.25	0.25
-----		-----	
COMPENSATED BULK DENSITY G/CC			
3.0		4.0	
2.0		3.0	
1.0		2.0	
-----		-----	
DENSITY POROSITY (2.71g/cc) PERCENT			
70		30	
30		-10	
-10		-50	
-----		-----	

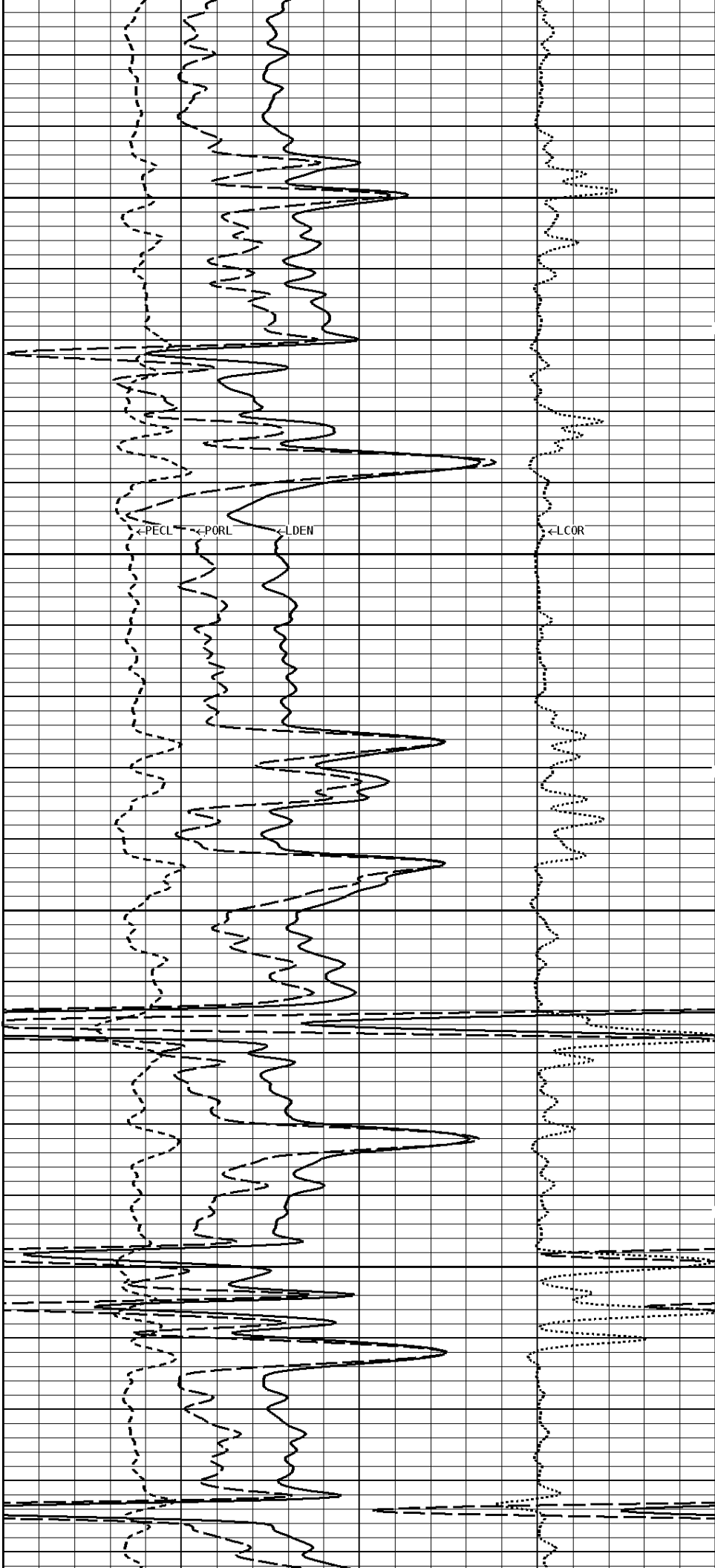
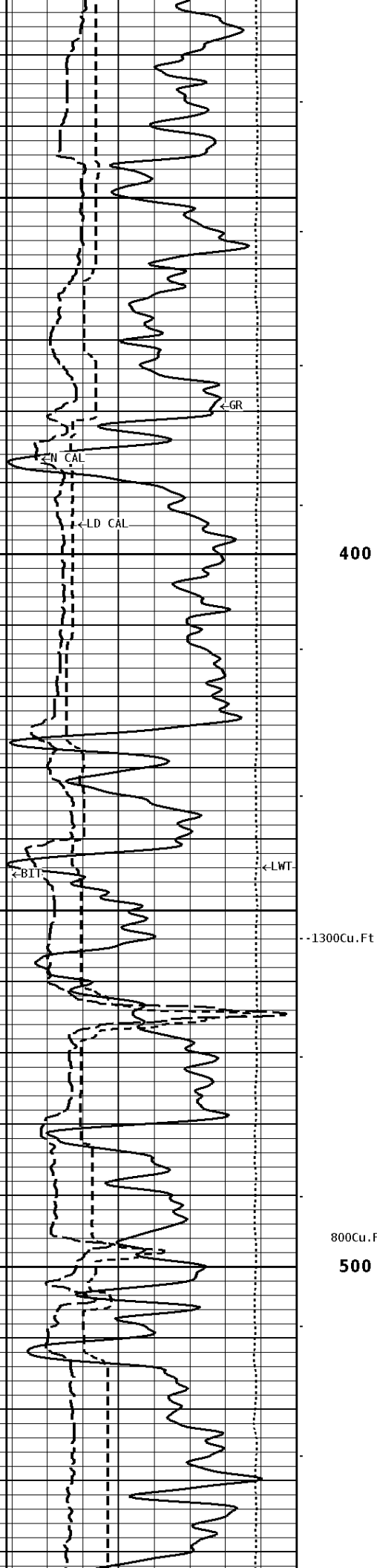
1:240 MAIN SECTION

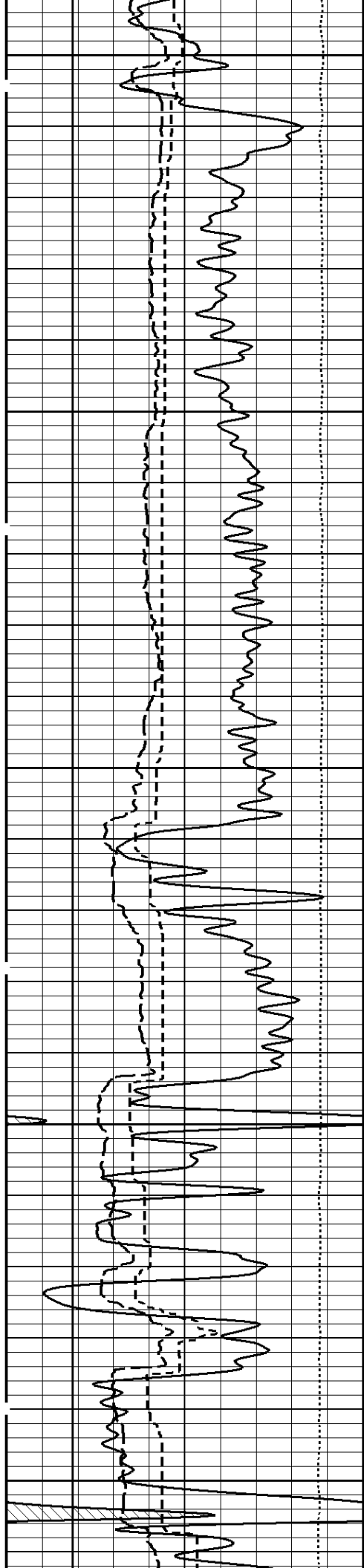
BULK DENSITY



File #1.1.7





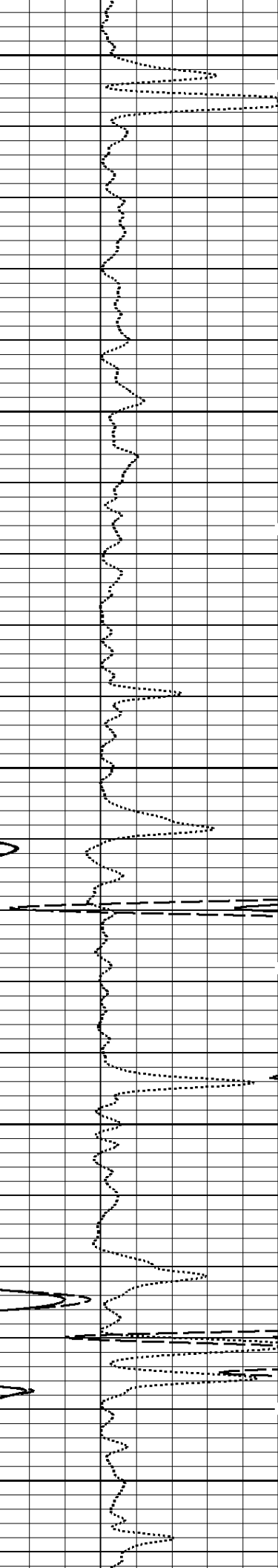
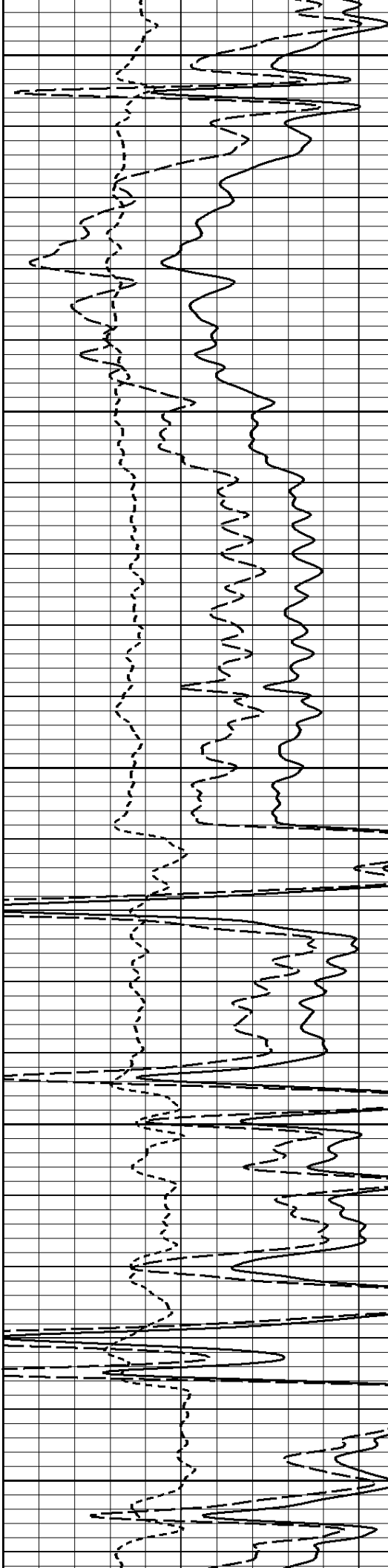


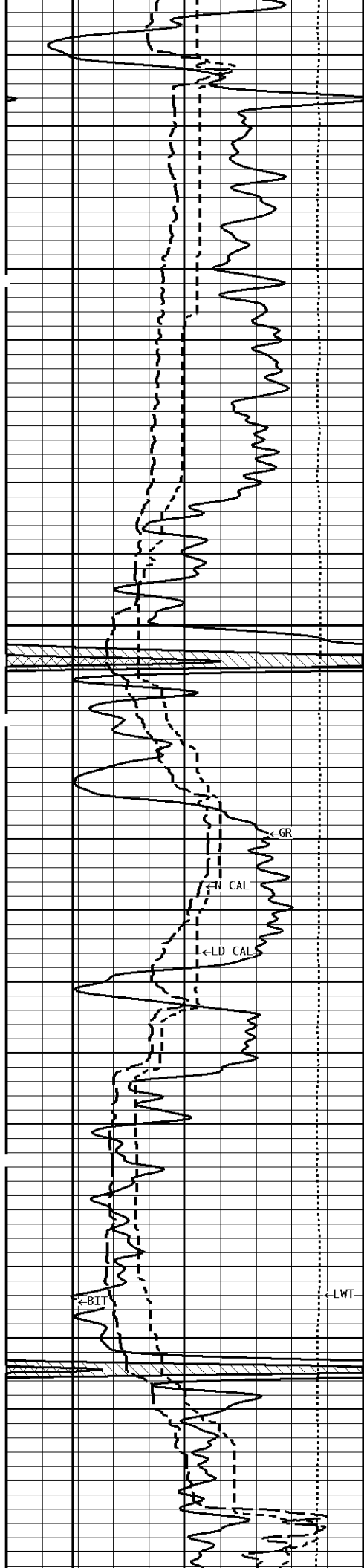
600

--1200Cu.Ft--

700

700Cu.Ft--





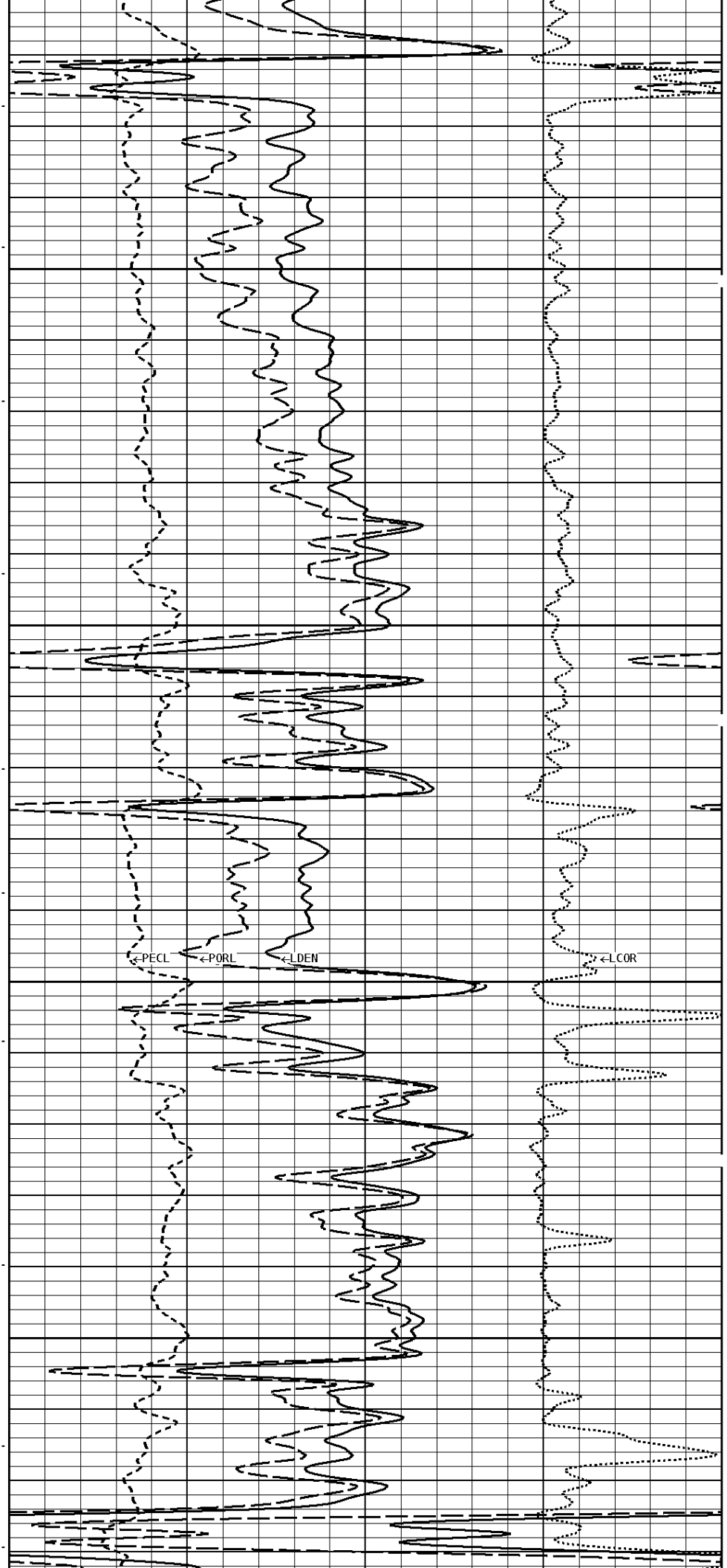
800

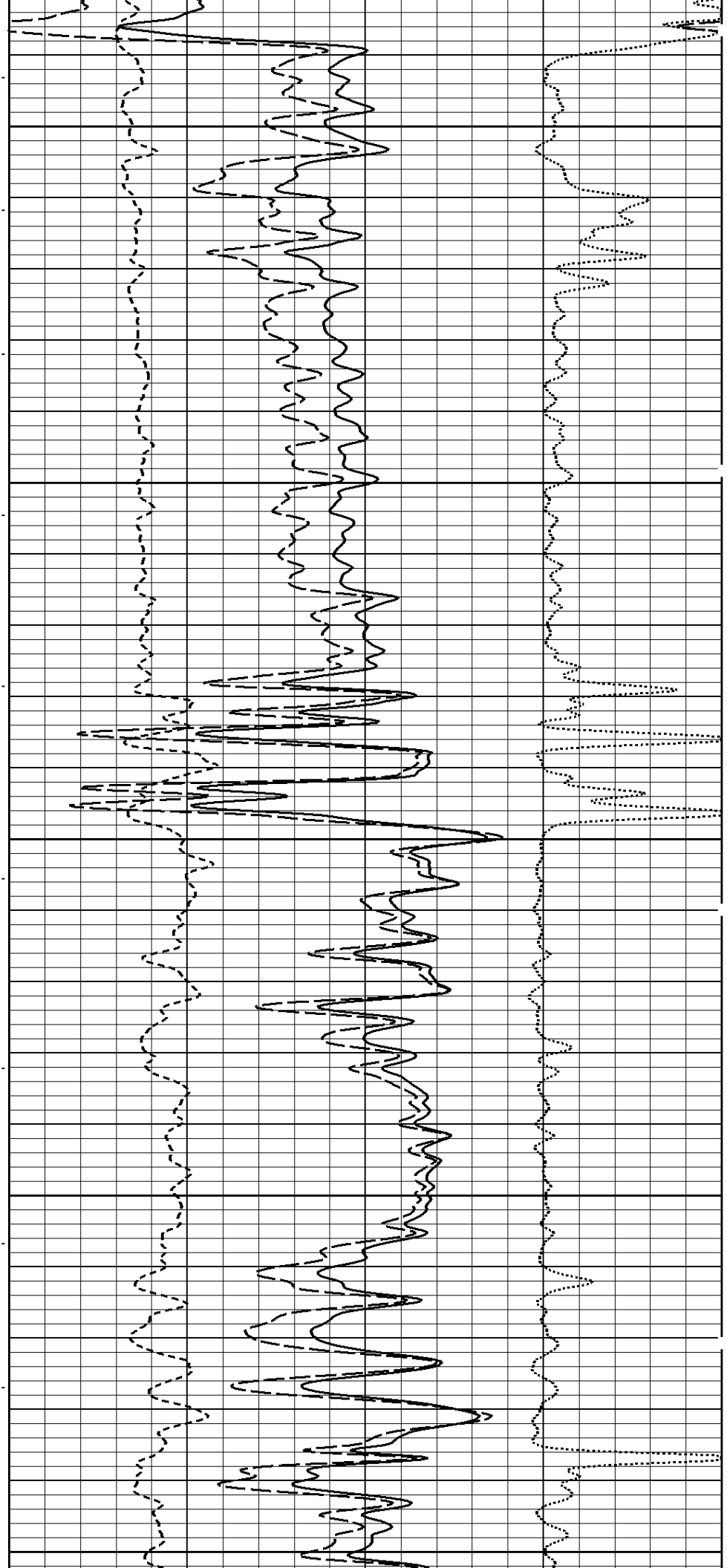
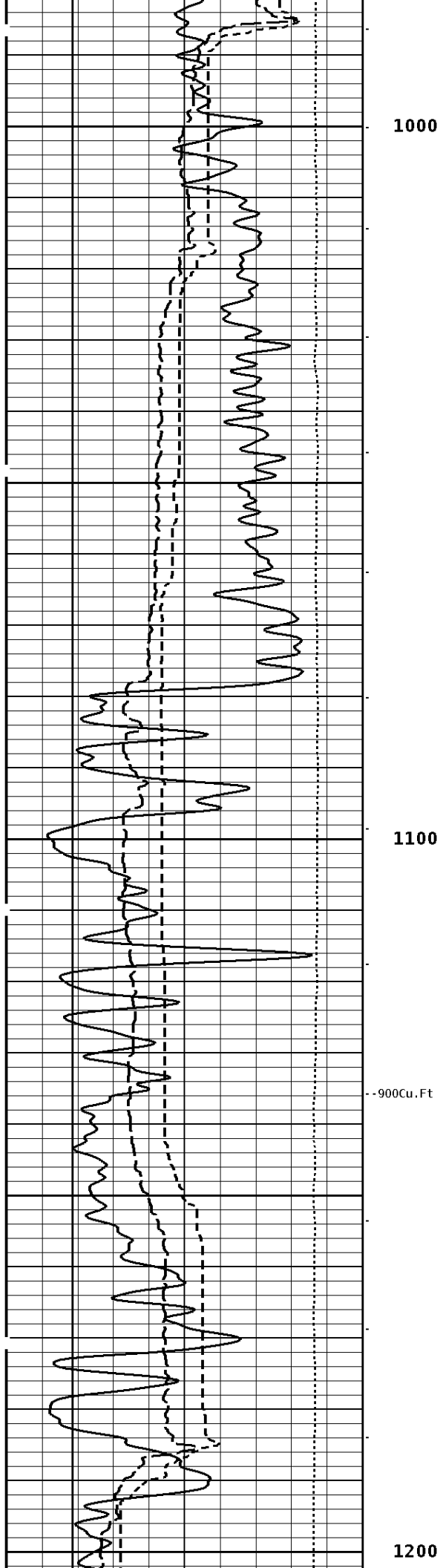
-1100Cu.Ft

900

-1000Cu.Ft

600Cu.Ft--





500Cu.Ft--

1300

--800Cu.Ft

1400

GR

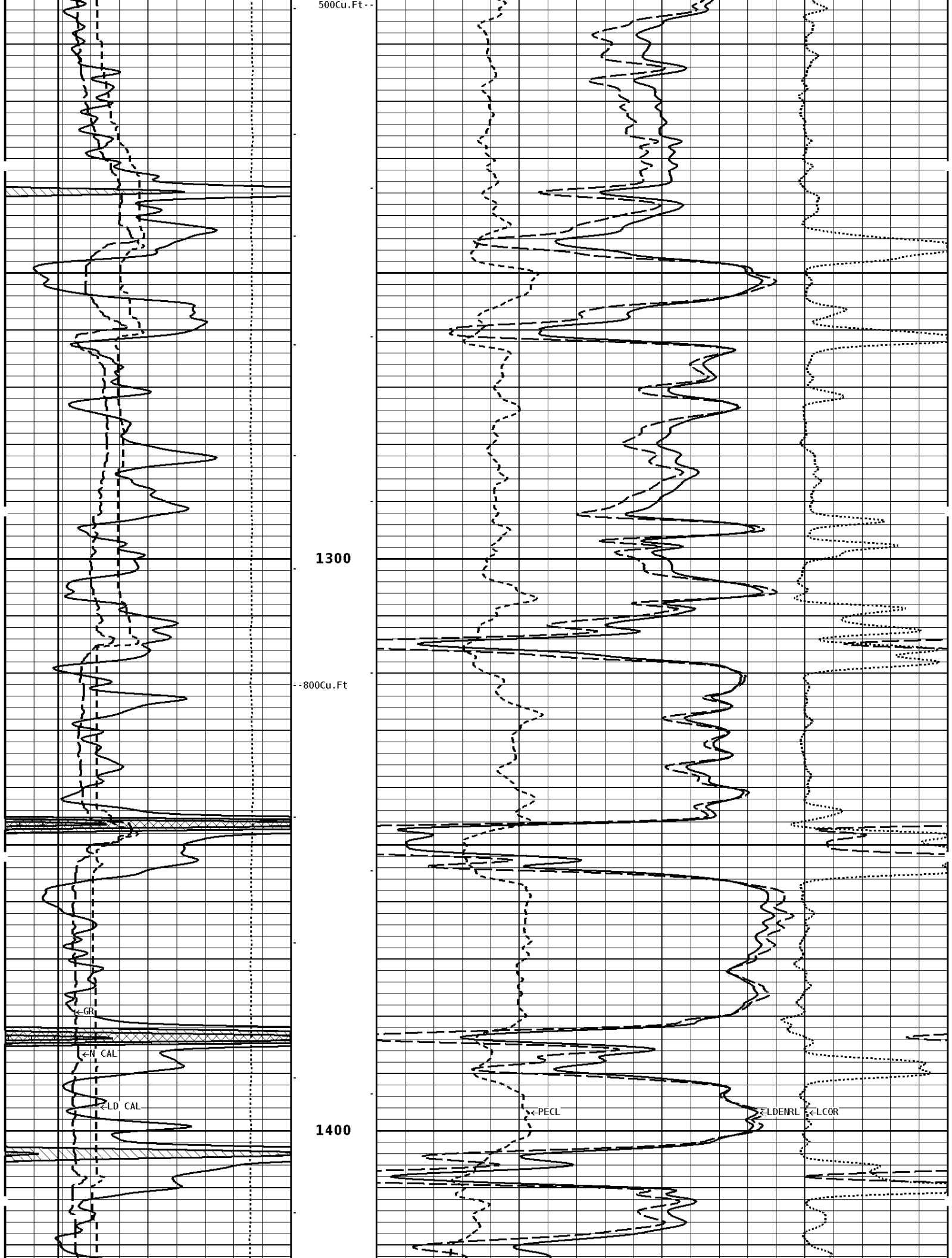
EN CAL

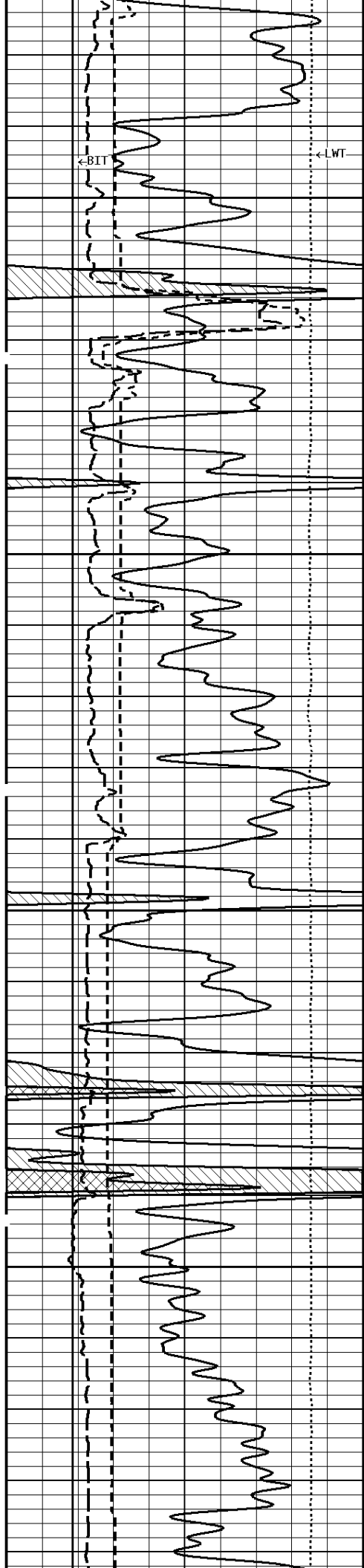
LD CAL

PECL

ELDENRL

LCOR



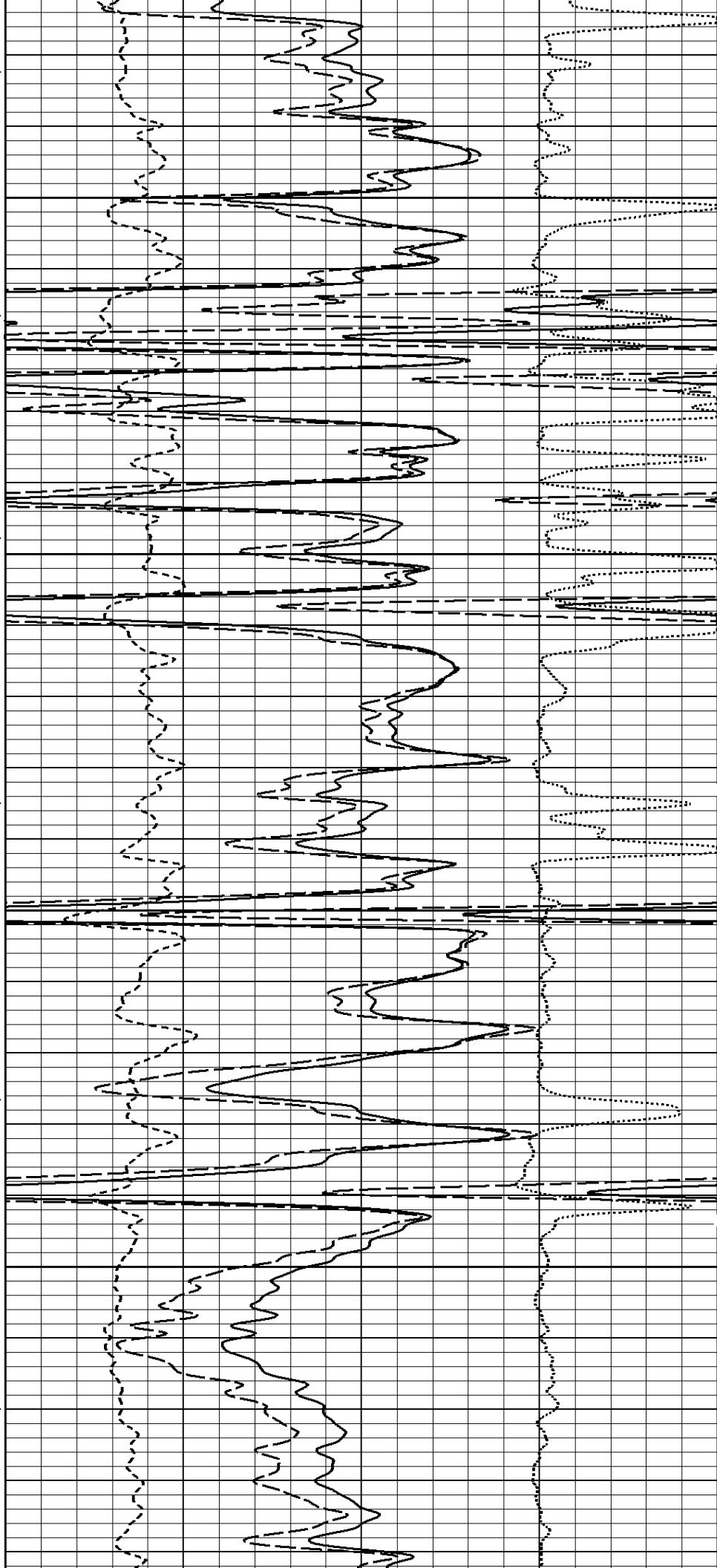


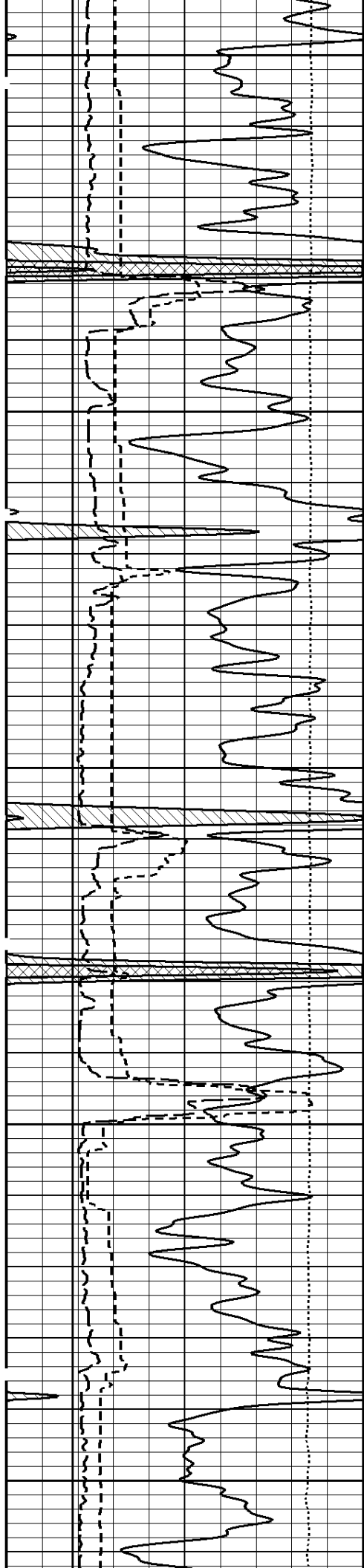
1500

400Cu.Ft--

--700Cu.Ft

1600

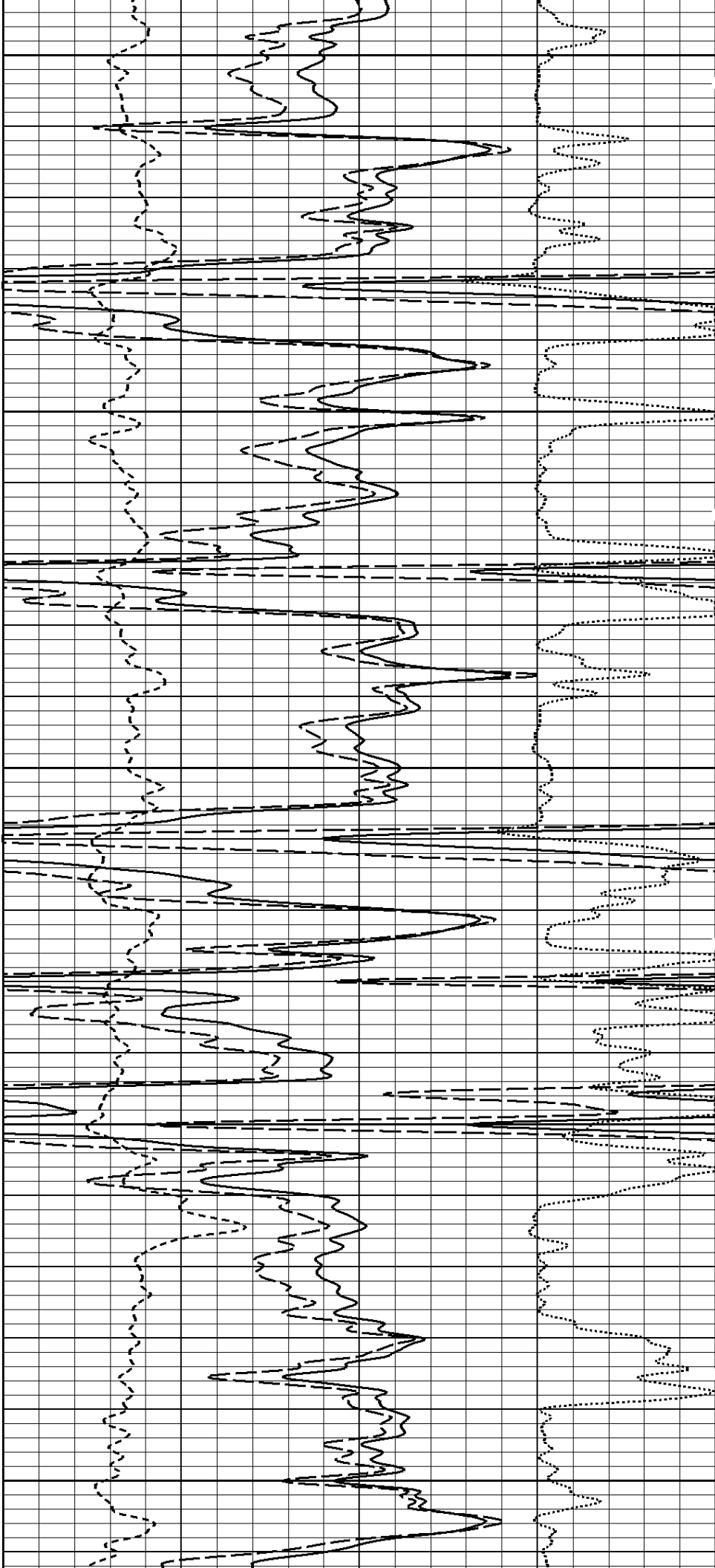


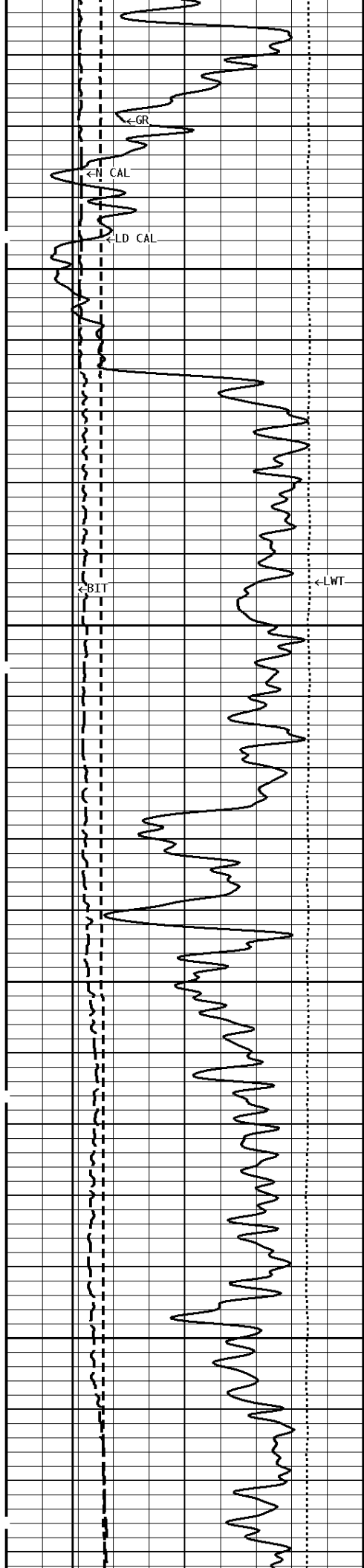


1700

--600Cu.Ft

1800



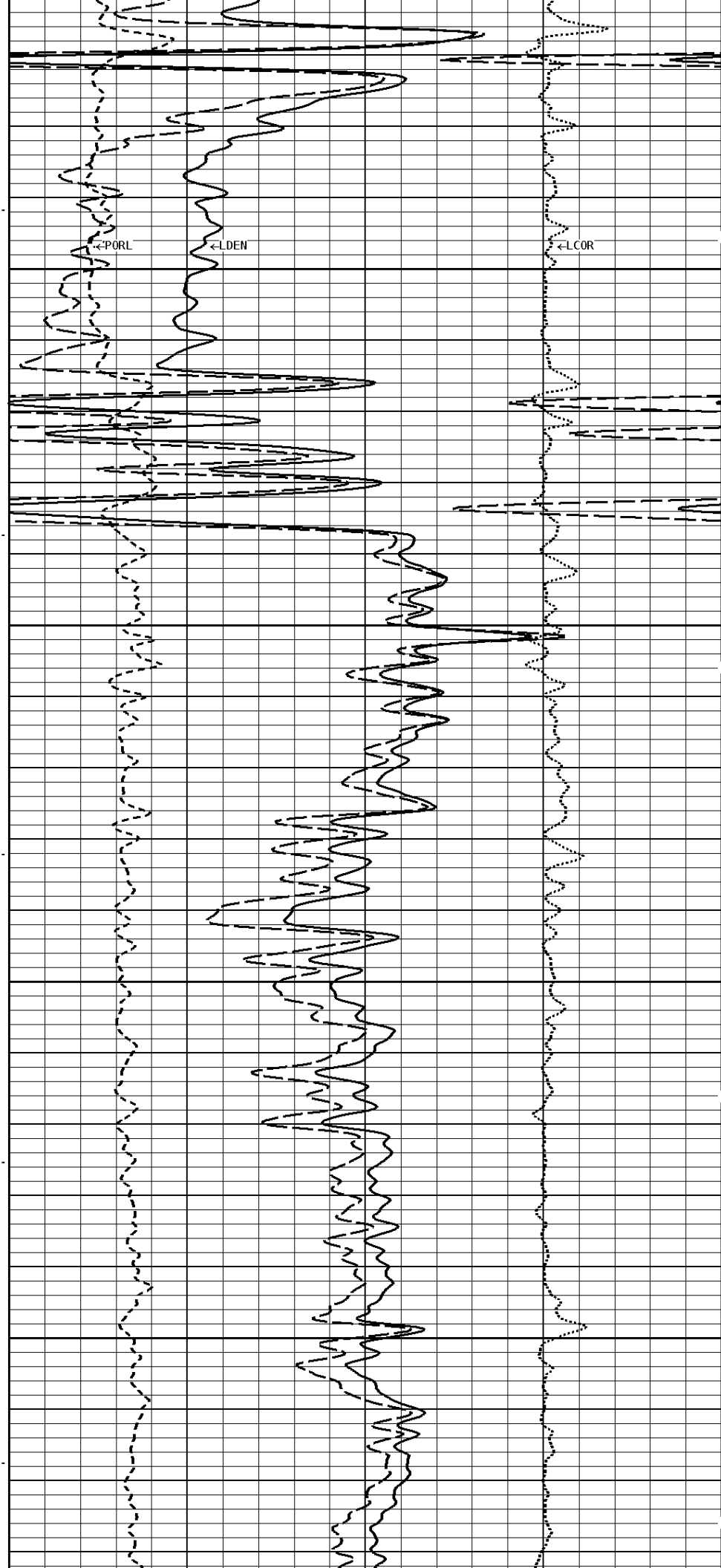


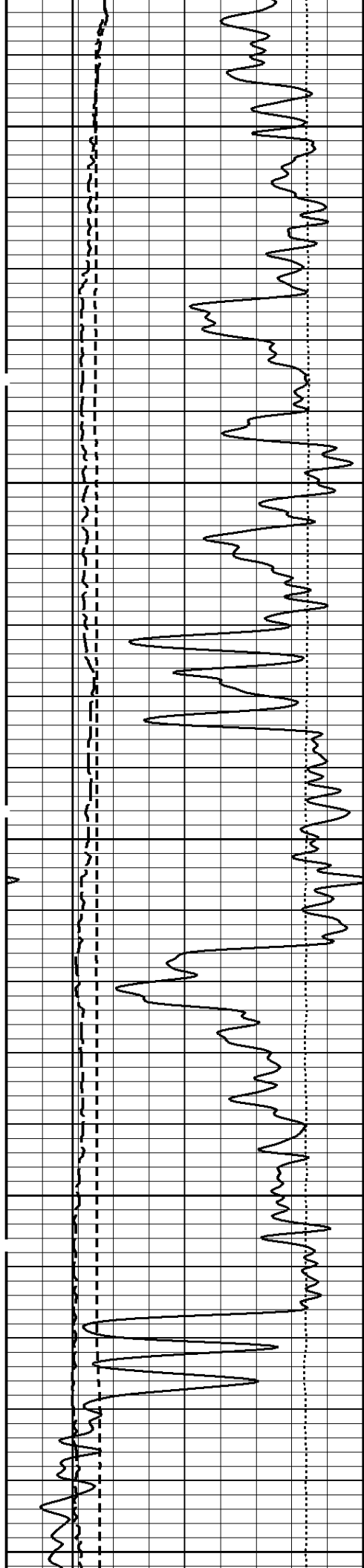
1900

300Cu.Ft--

2000

--500Cu.Ft



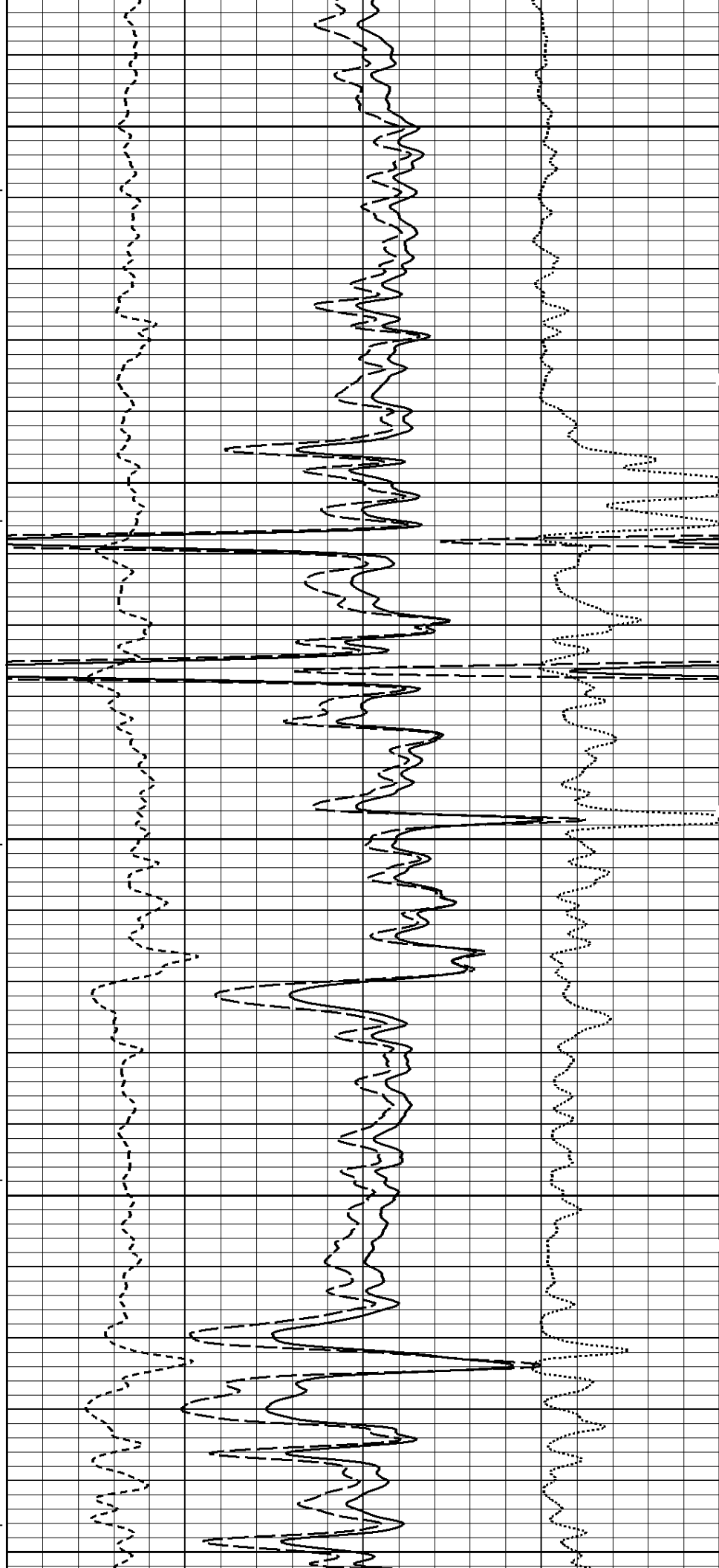


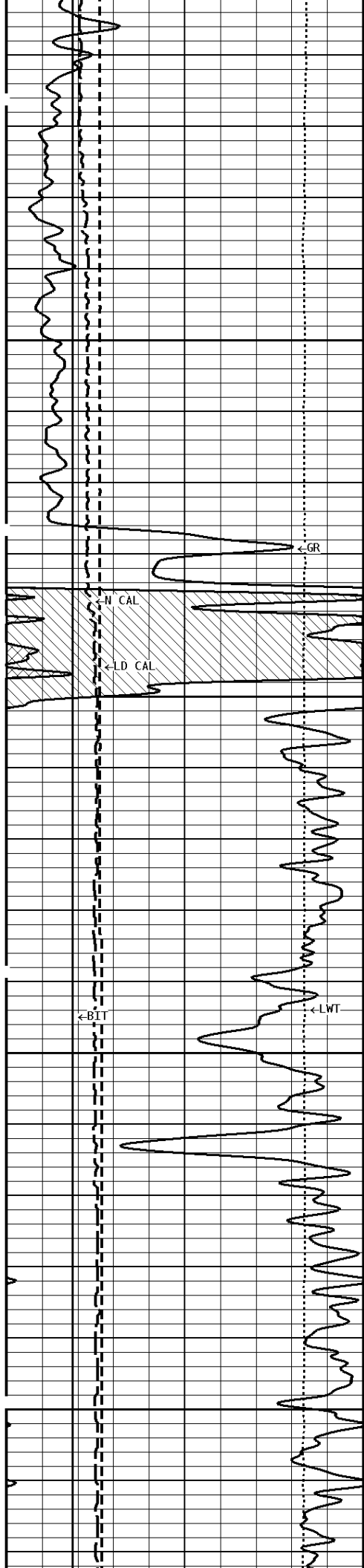
2100

2200

-400Cu.Ft

2300

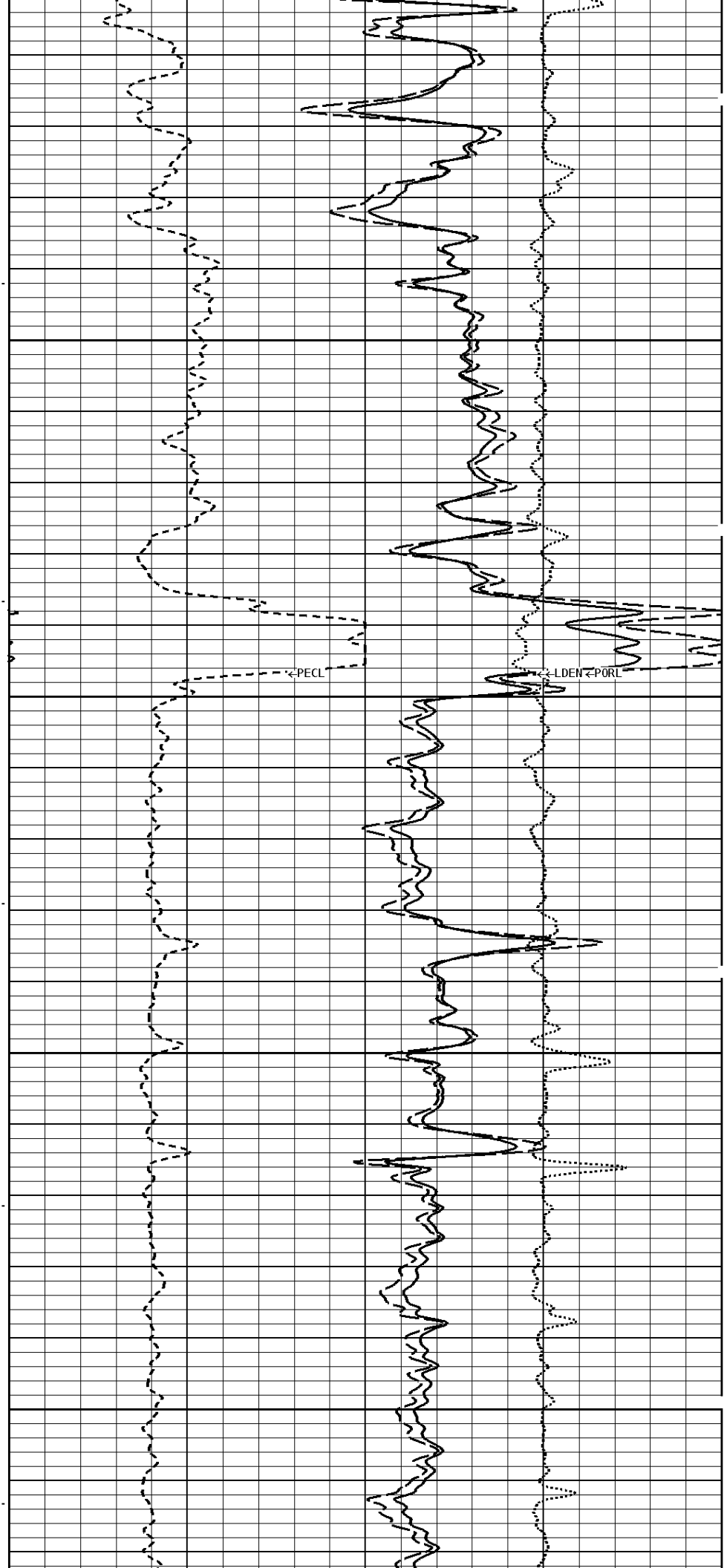


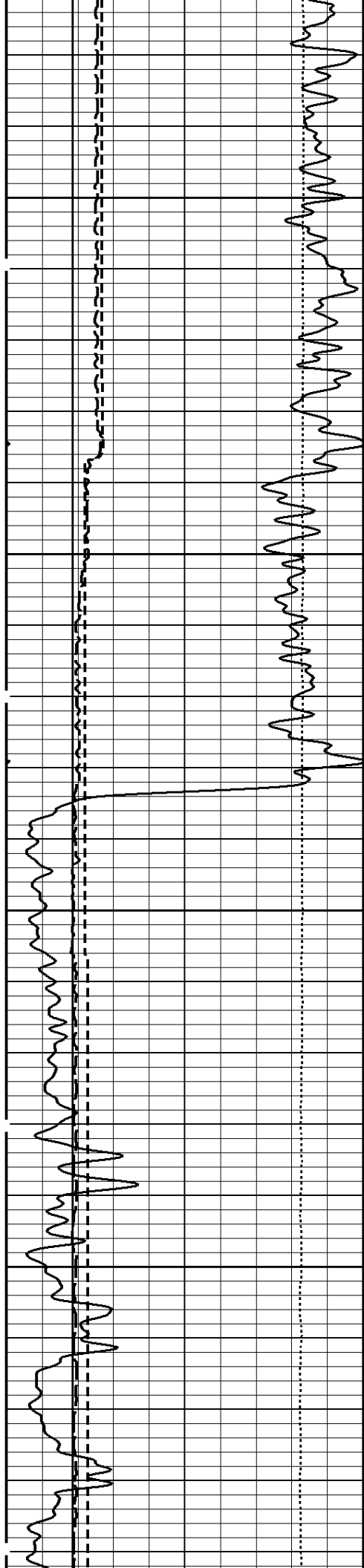


200Cu.Ft..

2400

2500

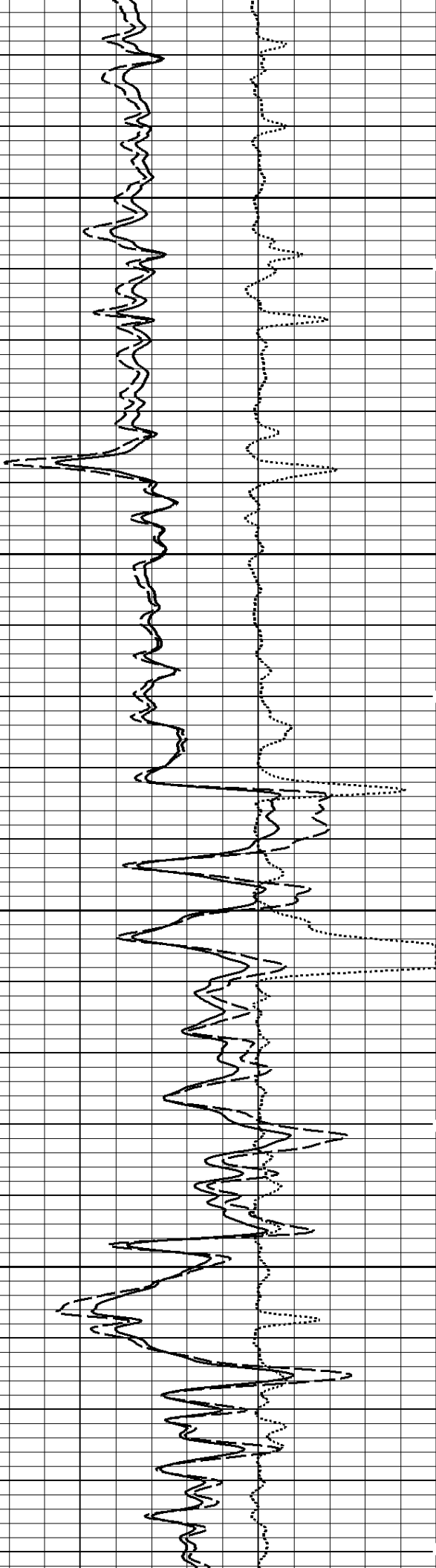
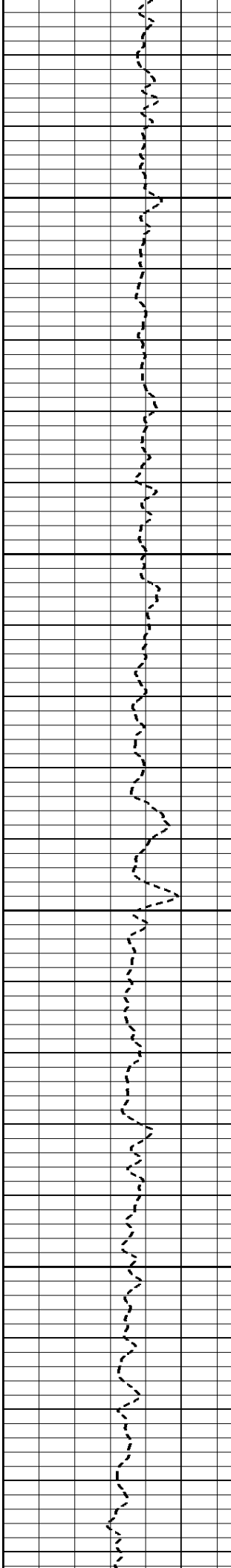


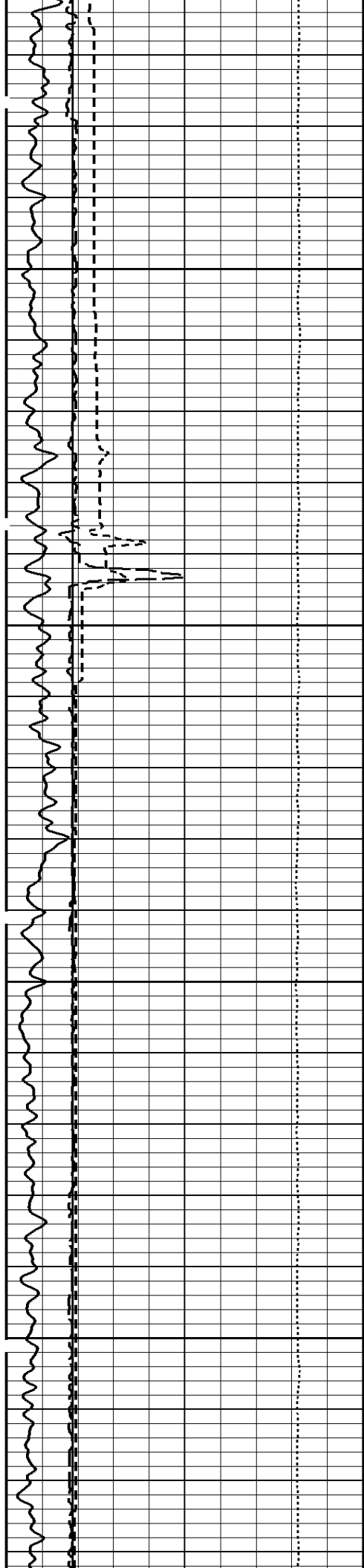


--300Cu.Ft

2600

2700

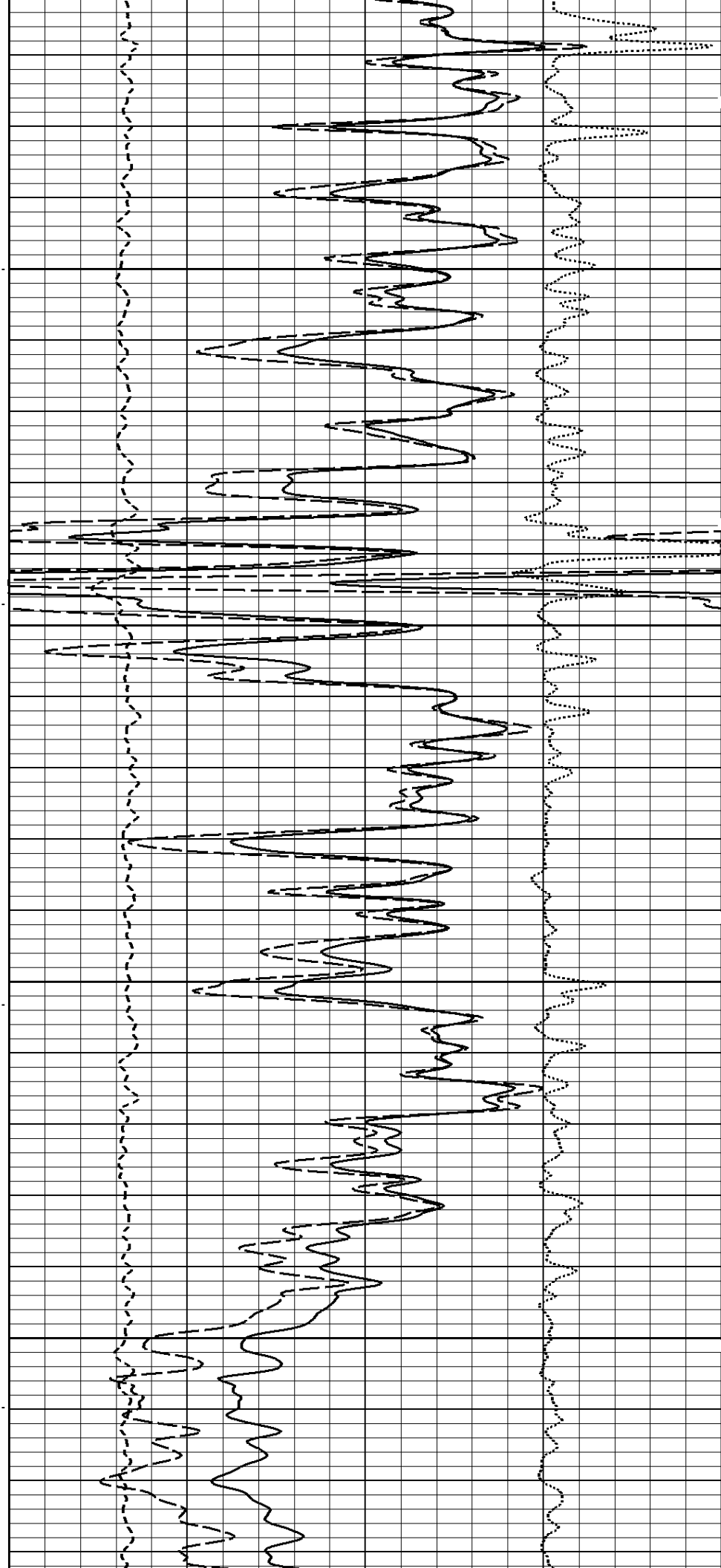


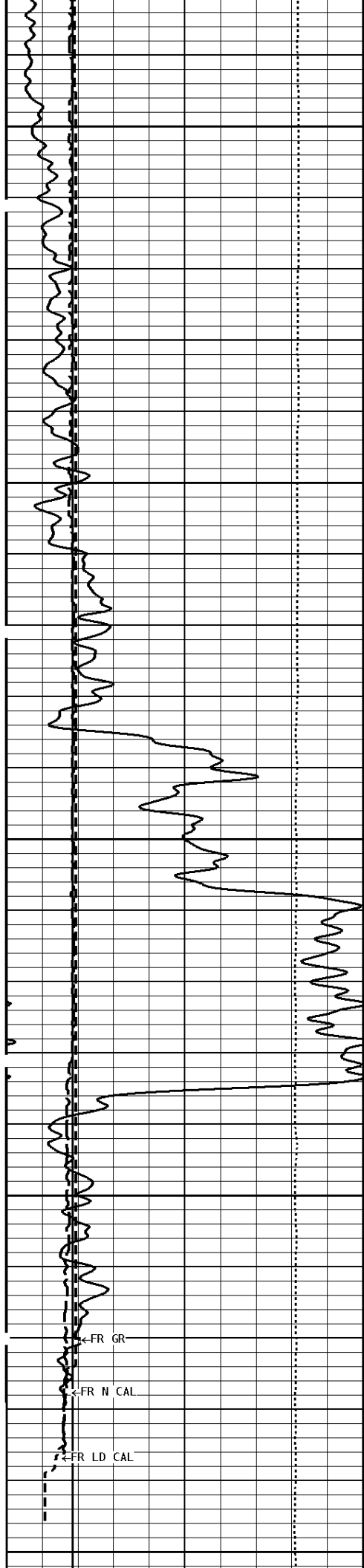


3000

--100Cu.Ft

3100

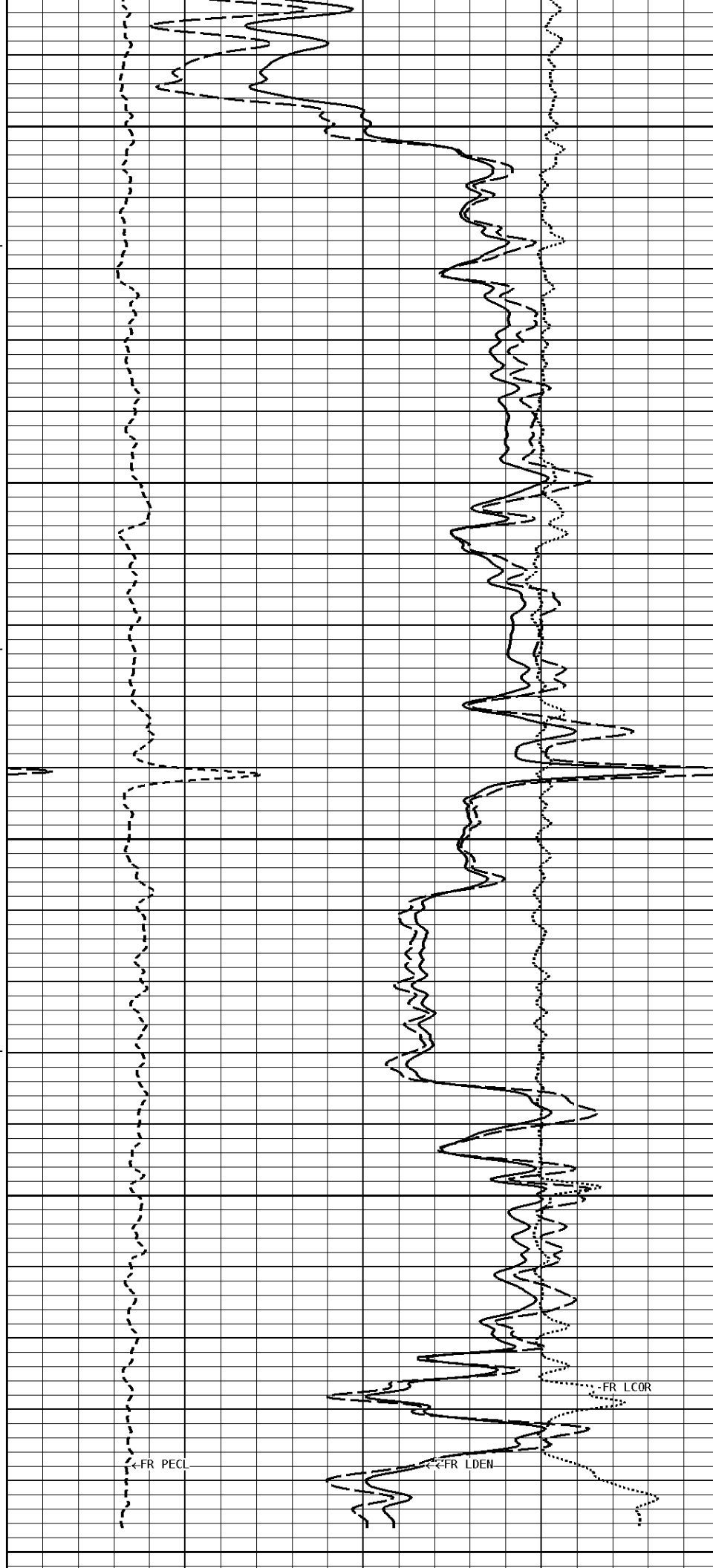


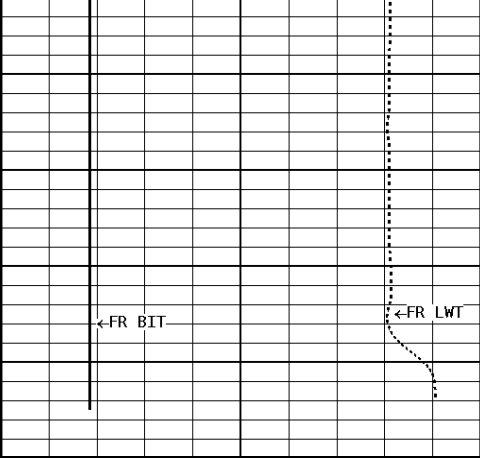


3200

3300

3400





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	

DENSITY POROSITY (2.71g/cc) PERCENT 70 30 -10 -50	
COMPENSATED BULK DENSITY G/CC 3.0 4.0 2.0 3.0 1.0 2.0	
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 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 : 08-AUG-2016			Time : 10:25		
Sensor Suite : GR-GR5			ID : GRT-BA-121		
	Measured	Units	Calibrated	Units	
GR	Background	Jig	Jig		
	47	341	175	GR-API	
Shop Calibration CNT-AA					
Performed : 08-SEP-2016			Time : 10:32		
Sensor Suite : CALI-BCN			ID : NDT-AB-400		
	Jig - Measured		Jig - Calibrated	Units	

CL # 1	Ring#1 8.6	Ring#2 13.0	Ring#1 6.0	Ring#2 12.0	Units IN.
Performed : 08-SEP-2016 Sensor Suite : BHC NEUT Source ID : N-1044			Time : 10:41 ID : CNP-AA-115		
N/F	Measured 3.9975	Tank Calibrated 3.6893	Verification Jig 3.7016	Units	
Porosity	25.5	20.5	20.7	%	
Shop Calibration LDT-DA					
Performed : 28-SEP-2016 Sensor Suite : CALI-LTH			Time : 11:42 ID : NDT-AH-152		
CL # 1	Jig - Measured Ring#1 8.5	Ring#2 11.9	Jig - Calibrated Ring#1 6.0	Ring#2 12.0	Units IN.
Performed : 08-SEP-2016 Sensor Suite : BHCPELNG Source ID : 63558B			Time : 10:16 ID : LDP-DA-50		
Short Space					
	BKGD	Al	Mg	Al+Fe	Units
LSW1	69	1331	2149	854	CPS
LSW2	73	1494	2370	1097	CPS
LSW3	267	3415	5516	2904	CPS
LSW4	321	3061	4385	2680	CPS
LSW5	31	59	69	54	CPS
LSW6	90	93	95	95	CPS
LSW7	54	60	59	61	CPS
LSW8	1	5	6	4	CPS
QS	0.250	0.213	0.235	0.217	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC
Long Space					
	BKGD	Al	Mg	Al+Fe	Units
LLW1	98	1618	6680	986	CPS
LLW2	111	2469	9491	1861	CPS
LLW3	409	4401	16499	3816	CPS
LLW4	522	2066	6578	1868	CPS
LLW5	62	74	140	70	CPS
LLW6	161	157	148	158	CPS
LLW7	109	104	98	105	CPS
LLW8	5	8	20	8	CPS
QL	0.194	0.205	0.201	0.201	
PEL			2.697	5.458	
LSDN		2.600	1.680		G/CC
Shop Calibration MST-DA					
Performed : 08-SEP-2016 Sensor Suite : CALI-MSN			Time : 09:20 ID : MST-DA-021		
CL # 1	Jig - Measured Ring#1 8.2	Ring#2 12.5	Jig - Calibrated Ring#1 6.0	Ring#2 12.0	Units IN.
Performed : 08-SEP-2016 Sensor Suite : MSTDAMSF			Time : 09:20 ID : MST-DA-021		
Internal					
	Zero	Measured Reference	Units	Zero	Calibrated Reference
INV-V	0.0	30239.5		0.00	1546.00
NOR-V	3.9	30809.3		0.00	1646.00
IN-C	0.0	29408.3		0.00	15.46
INV-R					32.34
NOR-R					58.67
Performed : 08-SEP-2016 Sensor Suite : MSTDAMSF			Time : 09:20 ID : MST-DA-021		
Internal					
	Zero	Measured Reference	Units	Zero	Calibrated Reference
MSFC	35.0	62277.7		0.00	1522.00
MSFB	13098.0	44123.4		0.00	1522.00
MOM1	0.0	64536.5		0.00	1522.00

