

Tucker
WIRELINE SERVICES

COMPENSATED NEUTRON
PEL DENSITY MICRO LOG

File No. : TUL-56726
Company : LARSON ENGINEERING INC.
Well : ELDRIDGE #4-32
Field :
County : WABAUNSEE
State : KANSAS
Country : USA

Location : API#: 15-197-20286
1867' FNL & 2131' FWL
SW-NE-SE-NW

Sect : 32 Twp : 14S Rge : 10E

Recorded By : R.NITZ
Witnessed By : L. NICHOLSON

Date : OCT 24 2010
Run No. : 1

Permanent Datum : GL
Drilling Measured From : KB
Log Measured From : KB
Above Permanent Datum : 10.00 FT

Depth--Driller : 3448.0 FT
Depth--Logger : 3449.0 FT
Bottom Log Interval : 3415.0 FT
Top Log Interval : 312.0 FT

Casing Depth--Driller: 312.0 FT
Casing Depth--Logger : 312.0 FT
Casing Diameter : 8.625 IN

Bit Size : 7.875 IN
Unit No. : 127
Location : TULSA

Elevations :
KB : 1510.00 FT
DF : FT
GL : 1500.00 FT

Additional Services

MLT
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 : 9.400 SG
Viscosity : 54.000 SEC
pH : 8.000
Fluid Loss : 9.000
Salinity : 1800.000 KPPM

RM Source : MEASURED
RM : 1.400 OHMM at 69 F
RM at BHT : 0.890 OHMM at 108 F

RMF Source : CALCULATED
RMF : 1.050 OHMM at 69 F
RMF at BHT : 0.670 OHMM at 108 F

RMC Source : CALCULATED
RMC : 1.000 OHMM at 69 F

RMC :	1.000	OHMM at	69	F
RMC at BHT :	0.810	OHMM at	108	F
Max Recorded Temp. :			108	F
Time Circulation Stopped :				
Operating Rig Time, Hrs. :			2.0	

- Source Serial Numbers -

Gamma	CSV-587
Neutron	N-1044

- Sonde Serial Numbers -

GRTB	GRT-BA-14
CNT	CNP-AA-116
LDTNG	LDP-NG-02
MSTNG	MST DA- 029
PIT	PIT-AB-14

Casing Strings

Size (IN)	Weight (LB/FT)	Bottom (FT)
8.625	23.00	312.00

- Comments -

ALL PRESENTATIONS AS PER CUSTOMER REQUEST.

GRT, CNT, LDT, MLT, 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 5.500" PRODUCTION CASING.
 1 LB/GAL LCM

GRT: GRP.
 CNT: PHIN, CLCNIN.
 LDT: PORL, LCORN, PECLN, CLLDIN, LDENN, PORLLS, PECSN.
 MLT: INV R, NOR R, MSCLPIN.
 PIT: ILD, ILM, CIRD, SFLAEC, SPU.

OPERATORS: S3
 R.AUSTIN

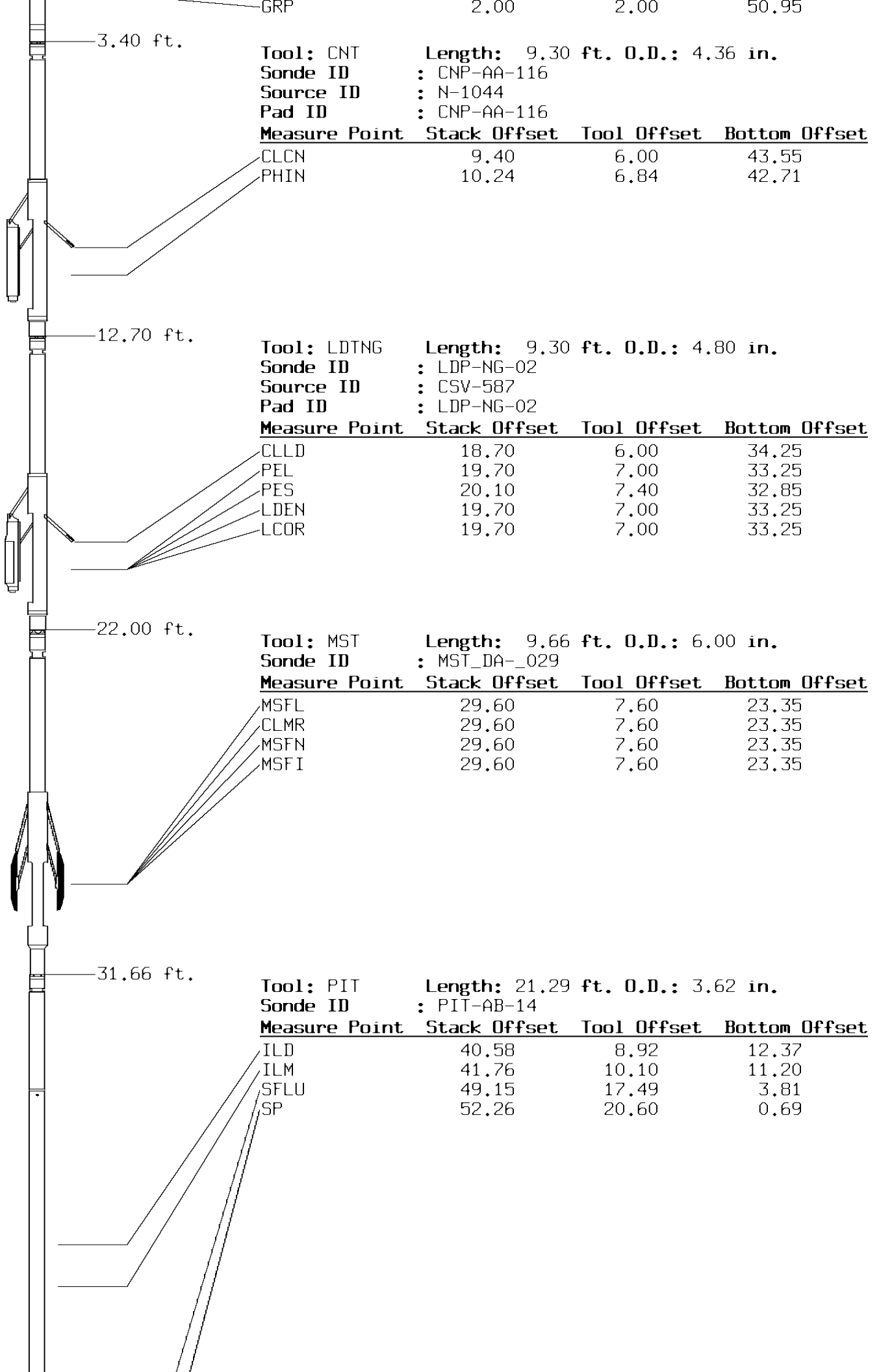
THANK YOU FOR USING TUCKER WIRELINE SERVICES!

Tool String Schematic

Total Tool Length -	52.95 ft.
Maximum Outside diameter -	6.00 in.
Net Weight in Air -	943.00 lbs.

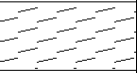
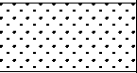
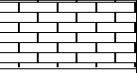
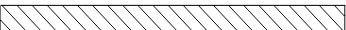


Tool: GRTB	Length: 3.40 ft.	O.D.: 3.60 in.
Sonde ID	: GRT-BA-14	
Measure Point	Stack Offset	Tool Offset
GRTB	3.00	3.00
		50.95

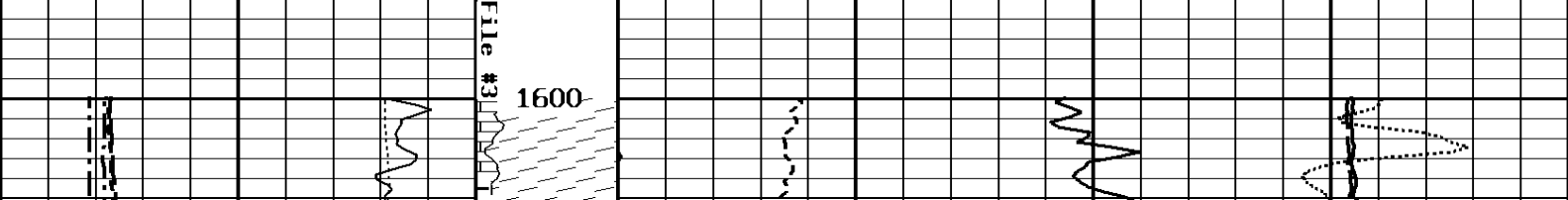


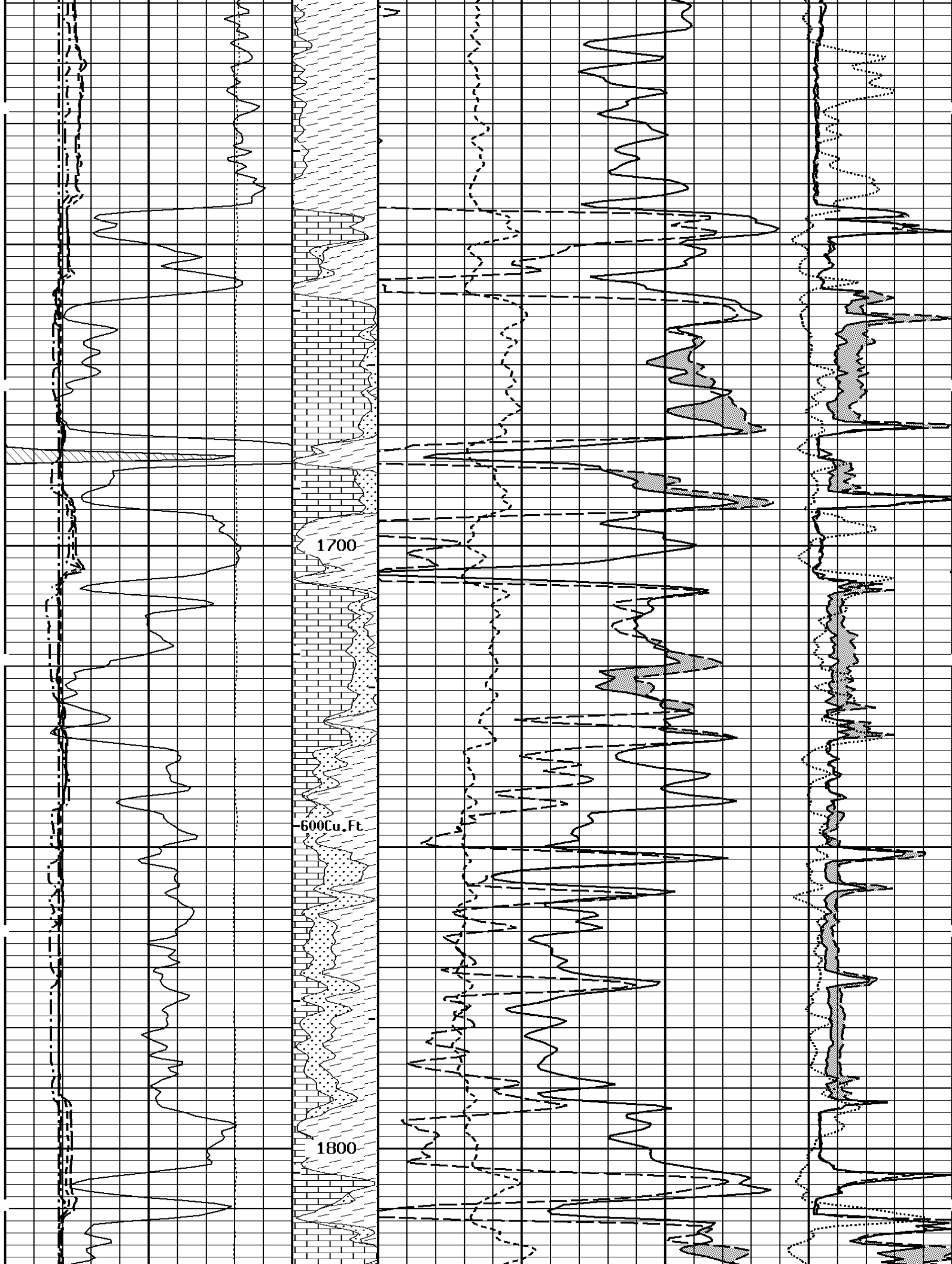


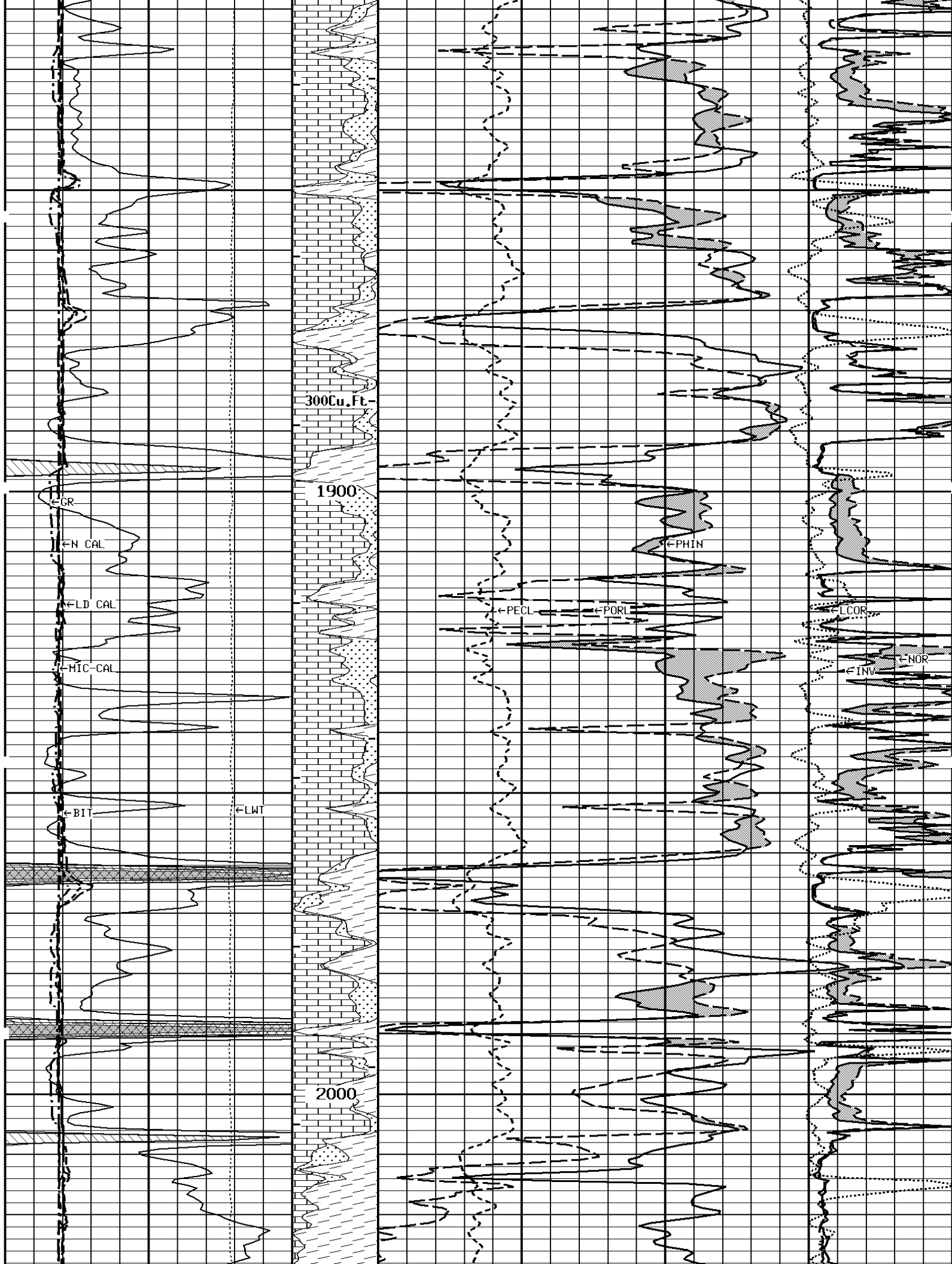
CALIPER MICRO INCHES (IN)						
16	26					
6	16					

TENSION LBS				MICRO-INVERSE OHMM		
10000	0			0	40	
-----				-----		
BIT SIZE INCHES (IN)		Volume Dolo/Shale	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	-----				-----
-----		-----	-----			
NEUTRON (Y) CALIPER INCHES (IN)		Volume Calcite	NEUTRON POROSITY PERCENT (LIMESTONE MATRIX)			
16	26		30		-10	
6	16	-----				
-----		-----	-----			
GAMMA RAY API UNITS		-BHV AHV- CU.FT	DENSITY POROSITY PERCENT (2.71 g/cc)			
150	300		70	30		
0	150		30	-10		
-----			-10	-50		

1:240 MAIN SECTION



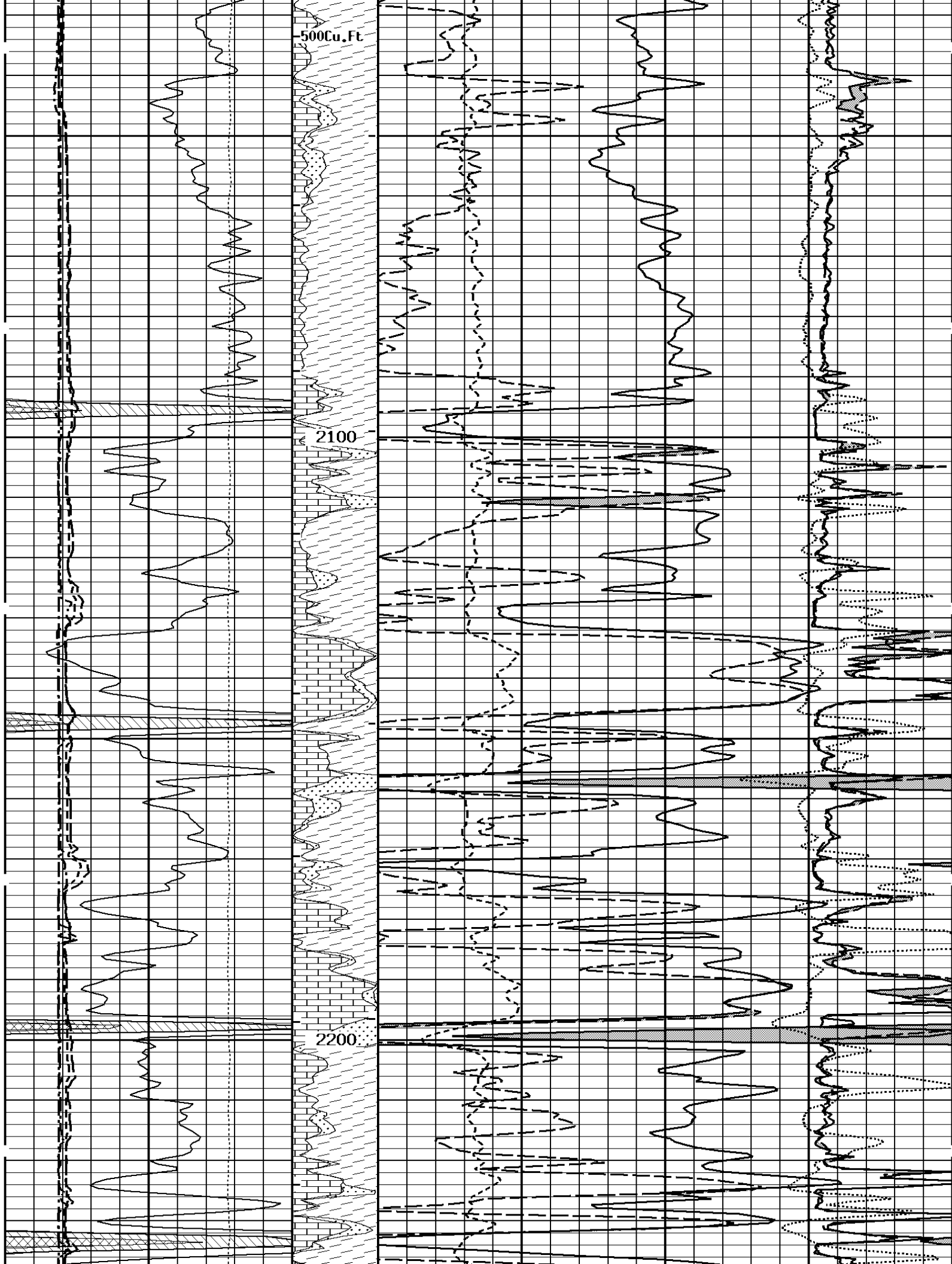


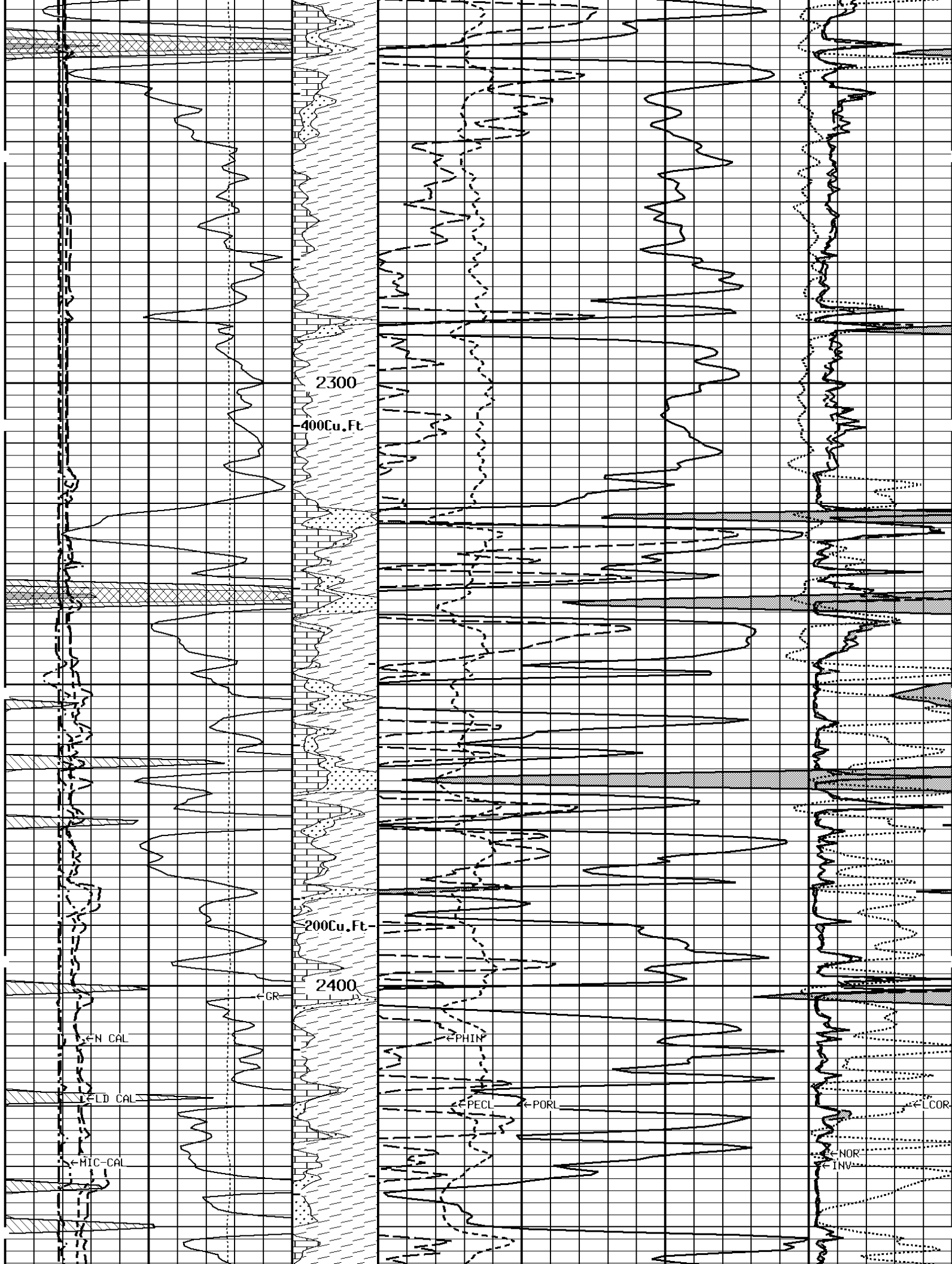


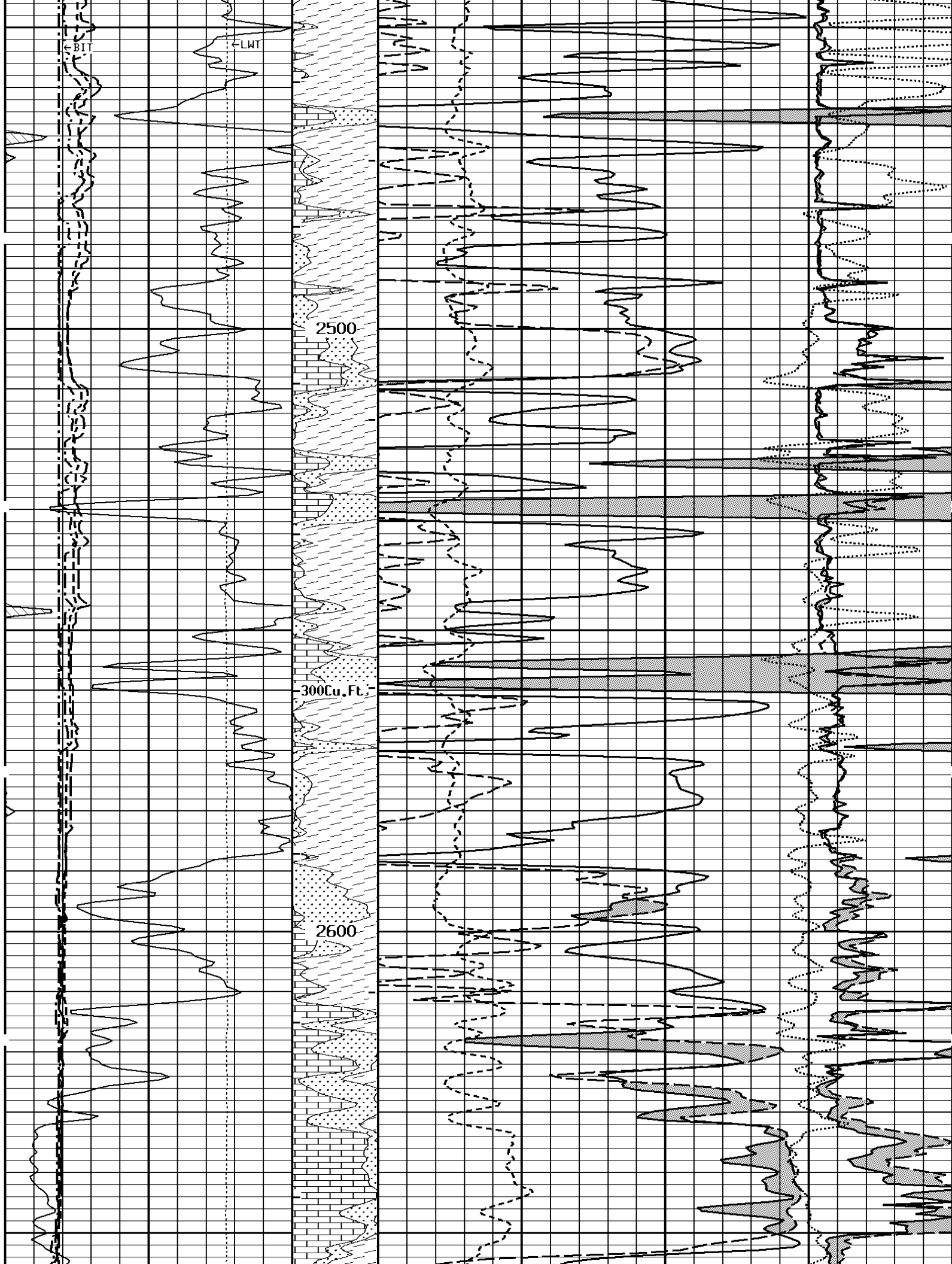
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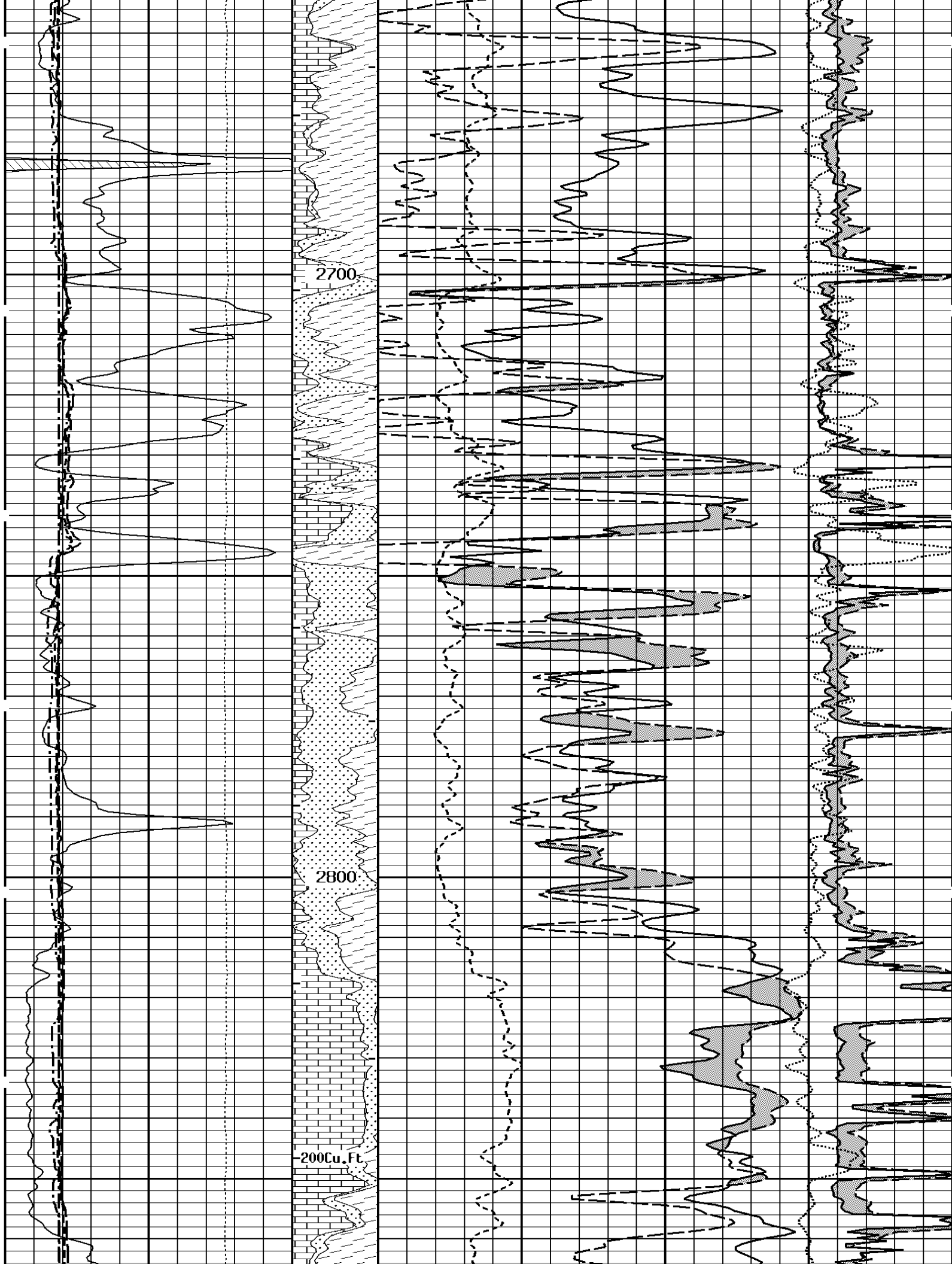
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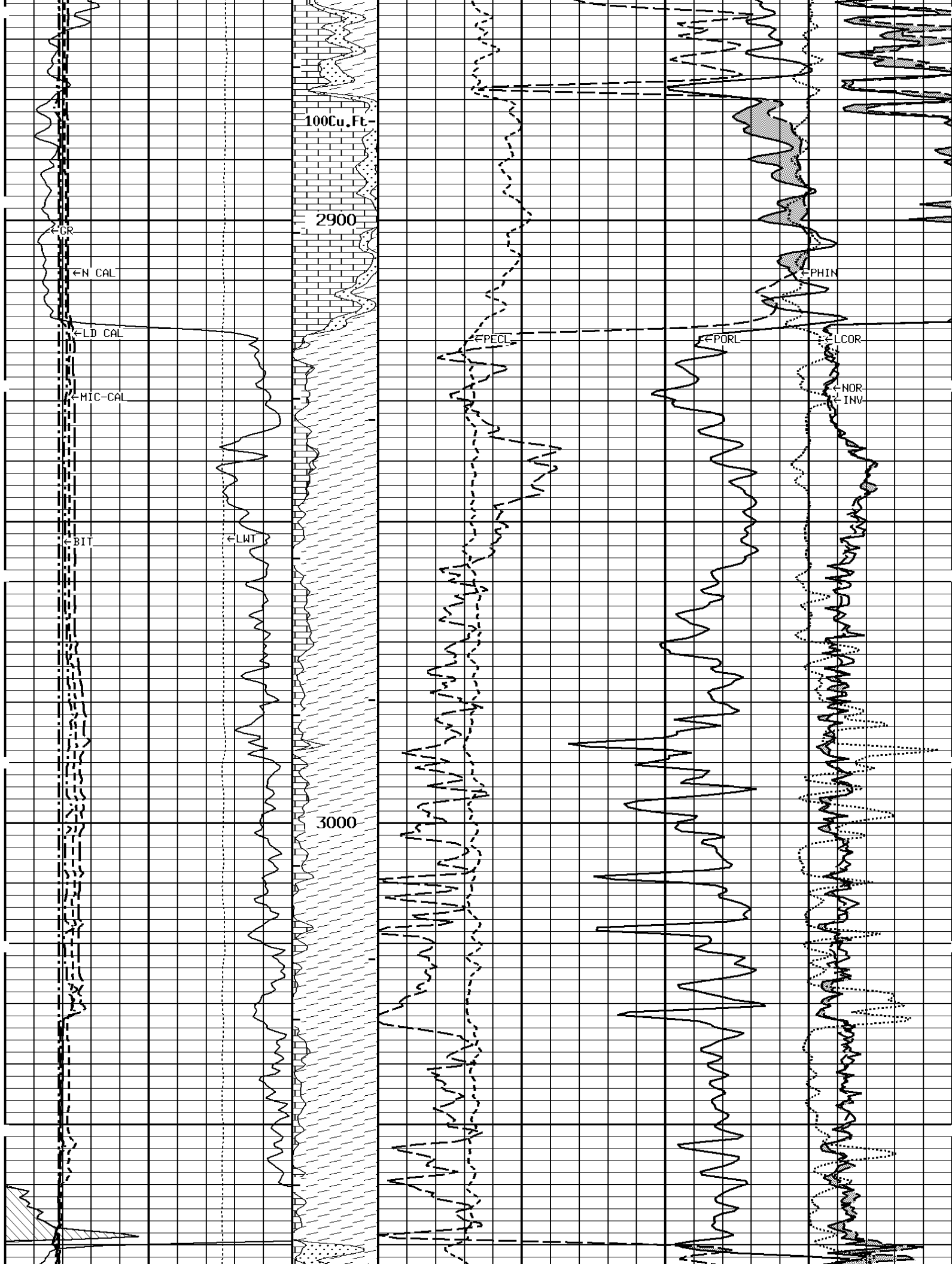
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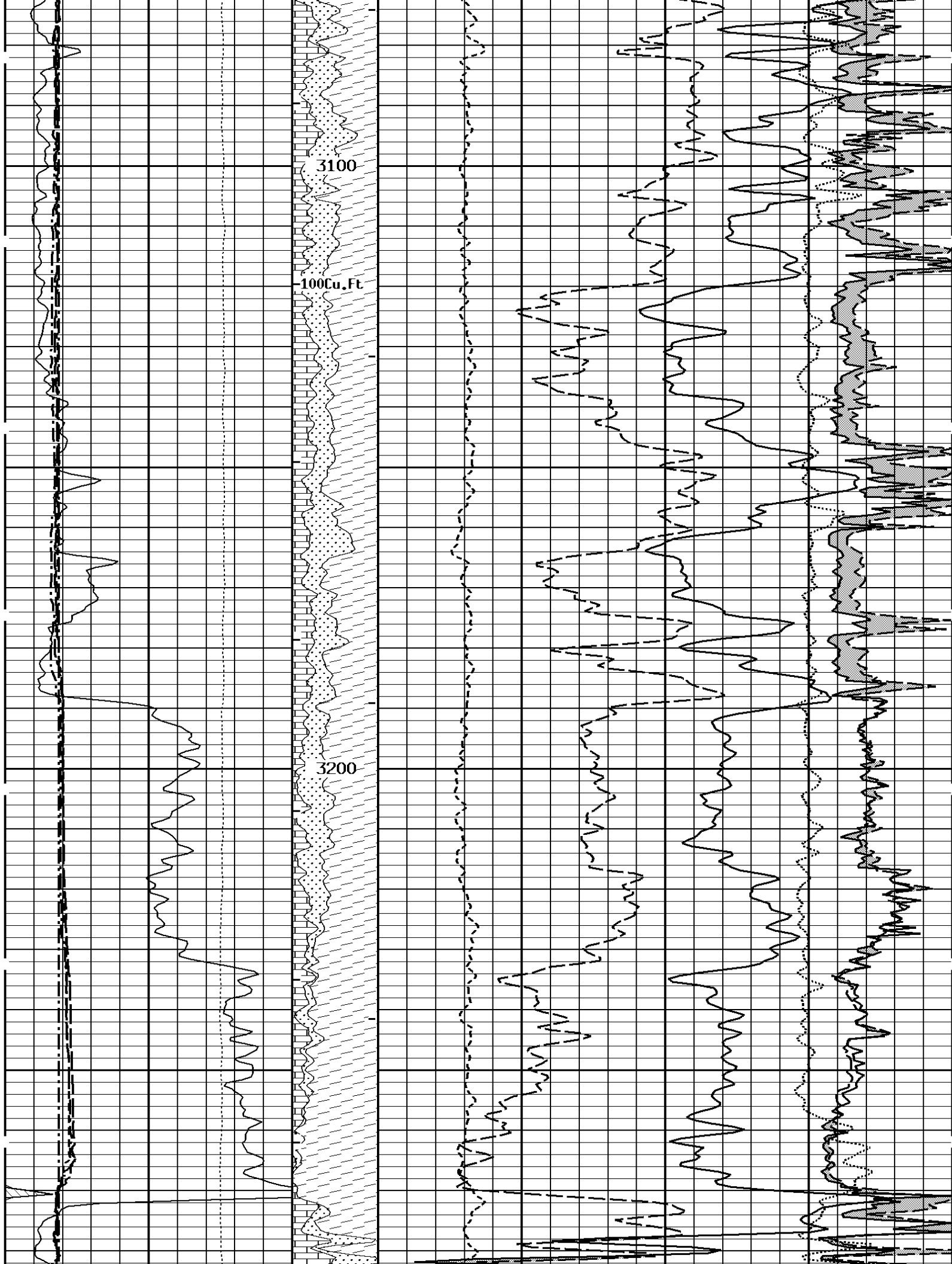


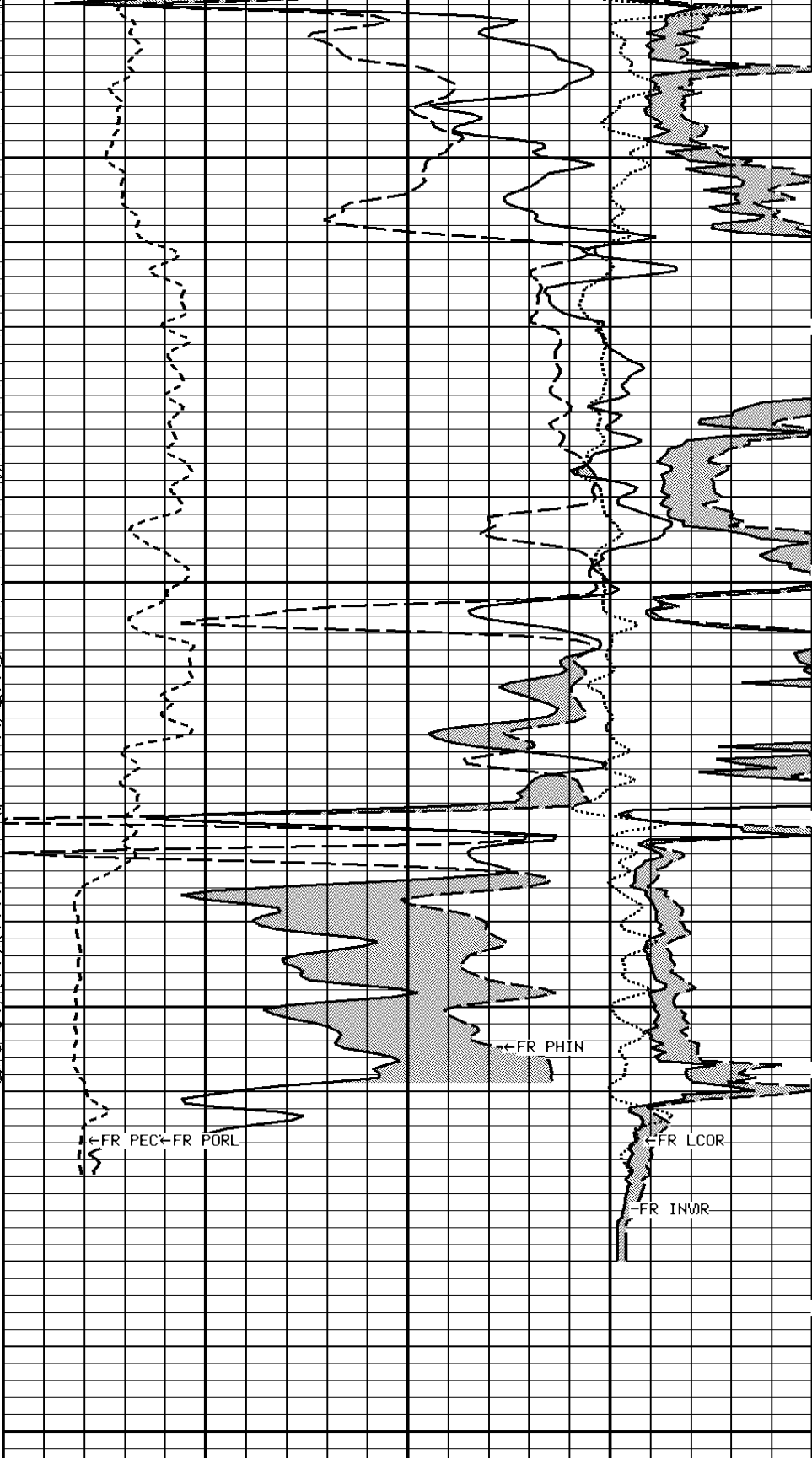
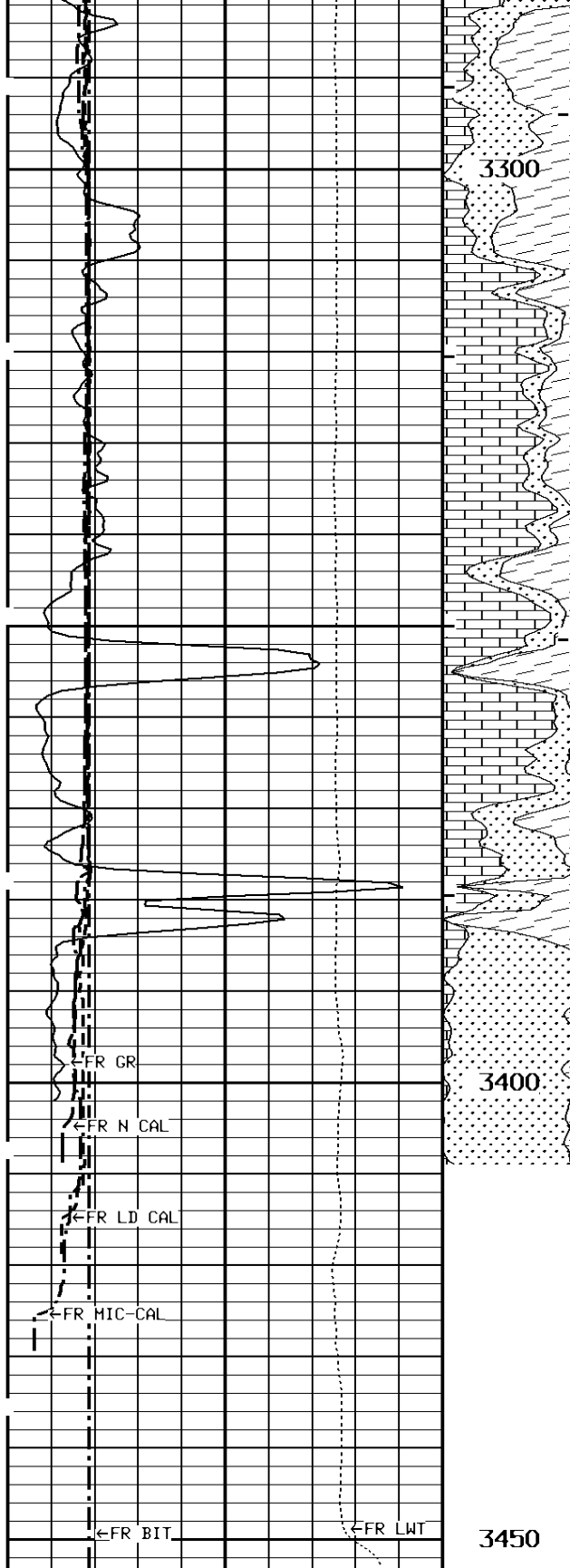


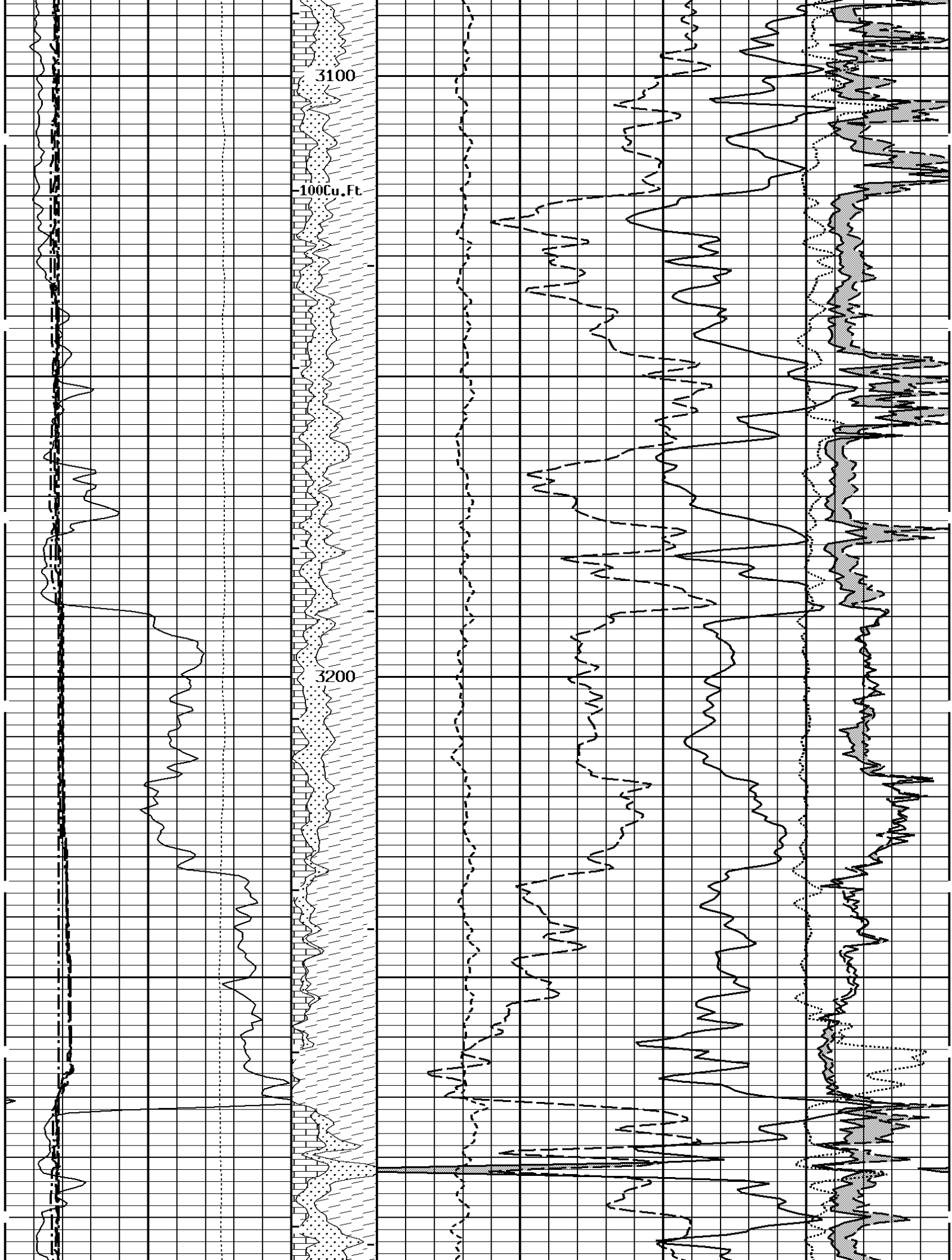


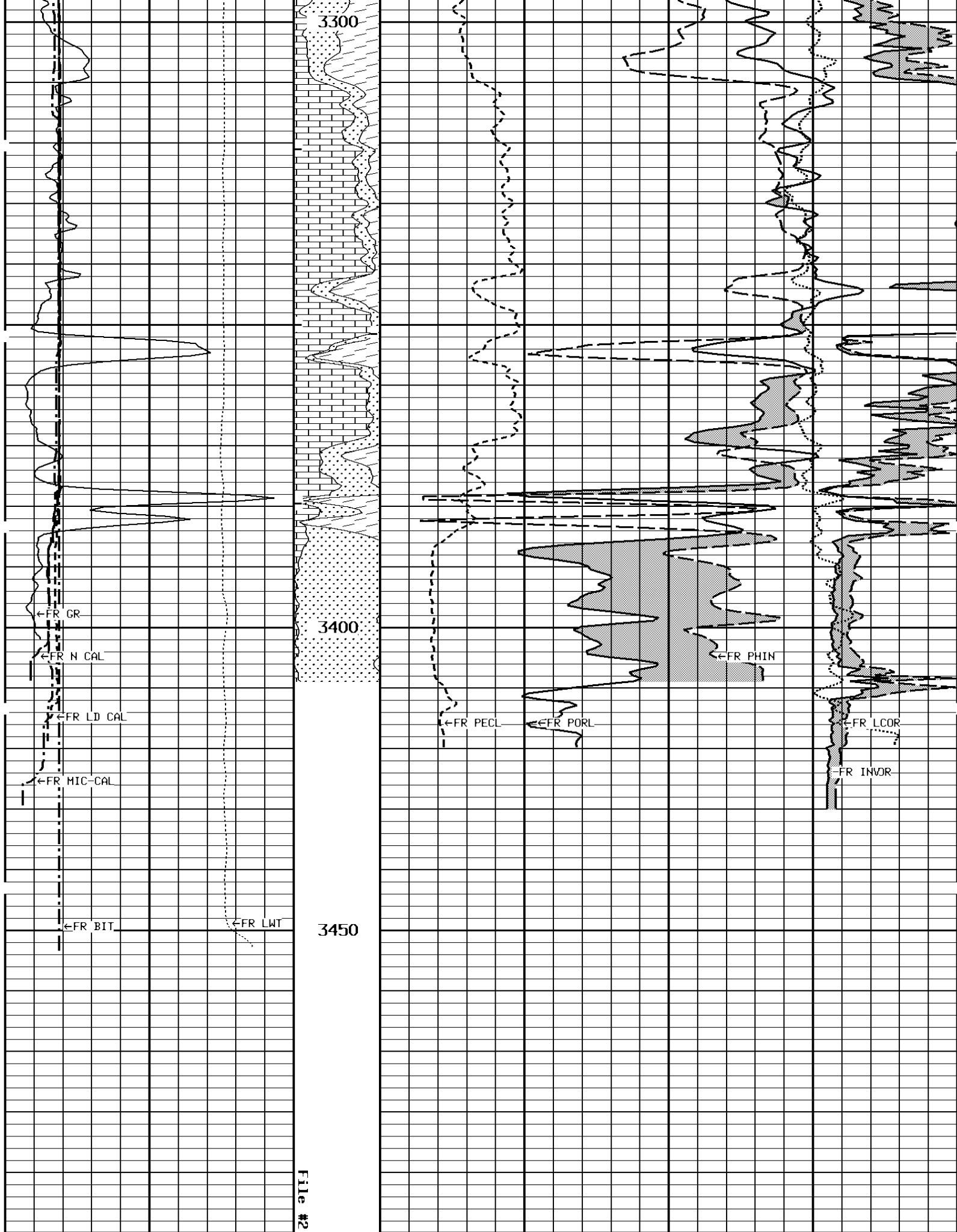






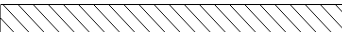
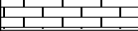
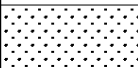
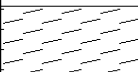






File #2

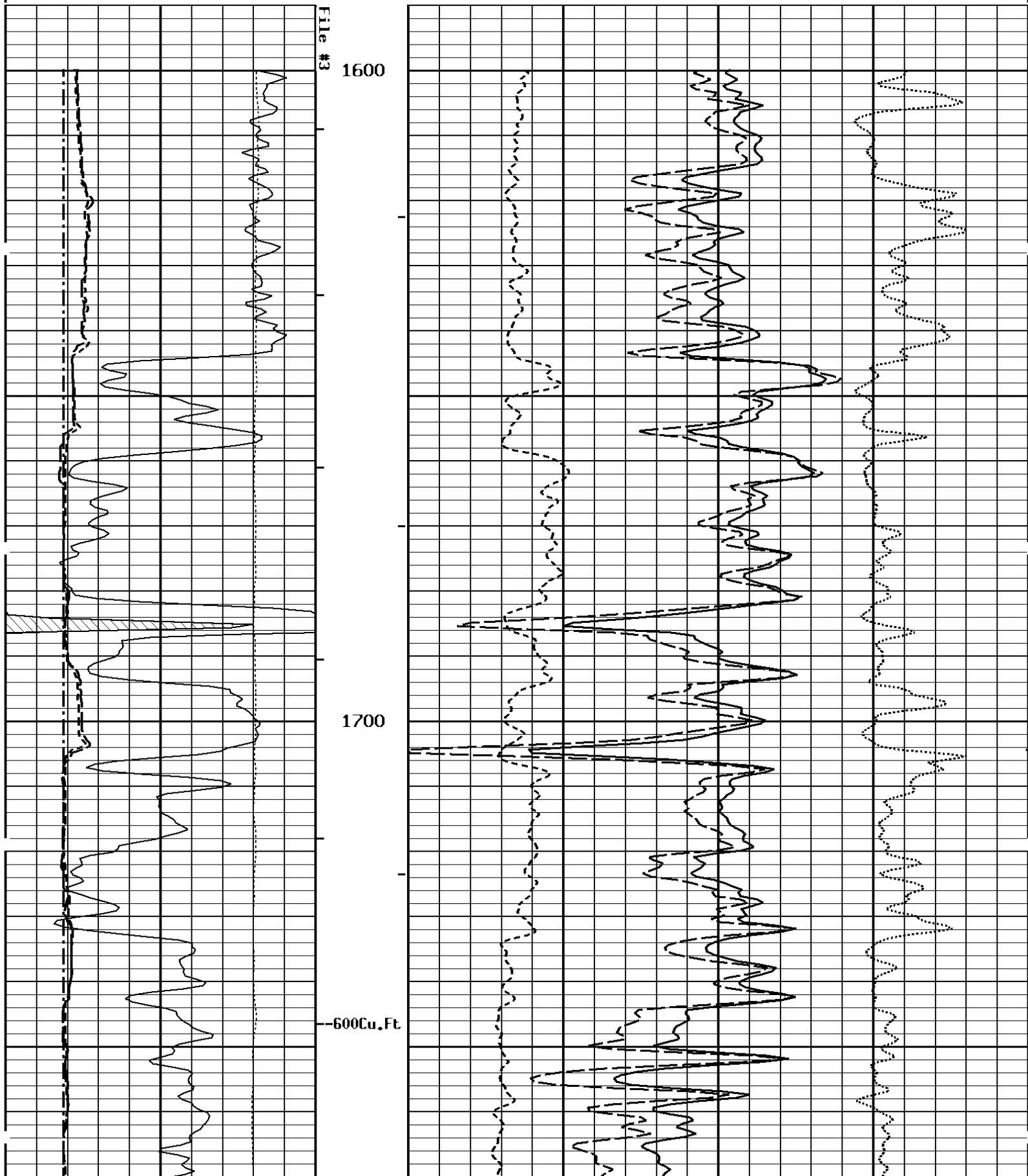
1:240 REPEAT SECTION

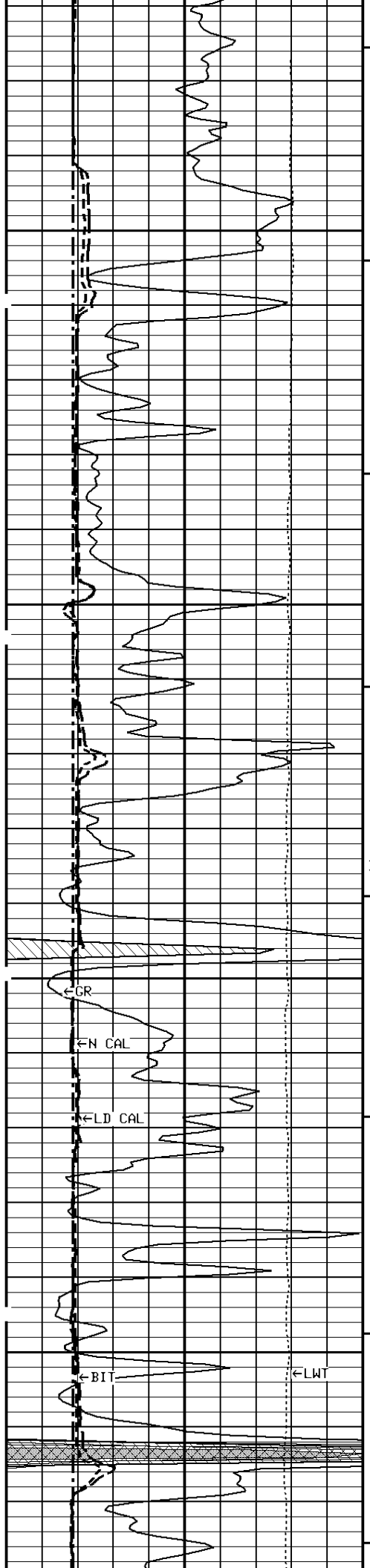
GAMMA RAY API UNITS		-BHV AHV- CU.FT	DENSITY POROSITY PERCENT (2.71 g/cc)	
150 0	 300 150		70 30	30 -10
			-10	-50
NEUTRON (Y) CALIPER INCHES (IN)		Volume Calcite	NEUTRON POROSITY PERCENT (LIMESTONE MATRIX)	
16 6	26 16		30	-10
-----			-----	
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARNS/ELECTRON	DENSITY CORRECTION G/CC
16 6	26 16		010	-0.250.25
-----		-----	-----	
BIT SIZE INCHES (IN)		Volume Dolo/Shale	MICRO-NORMAL OHMM	
6	16		040	
-----		-----	-----	
TENSION LBS			MICRO-INVERSE OHMM	
10000	0		040	
-----			-----	
CALIPER MICRO INCHES (IN)				
16 6	26 16			

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

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

1:240 MAIN SECTION
BULK DENSITY

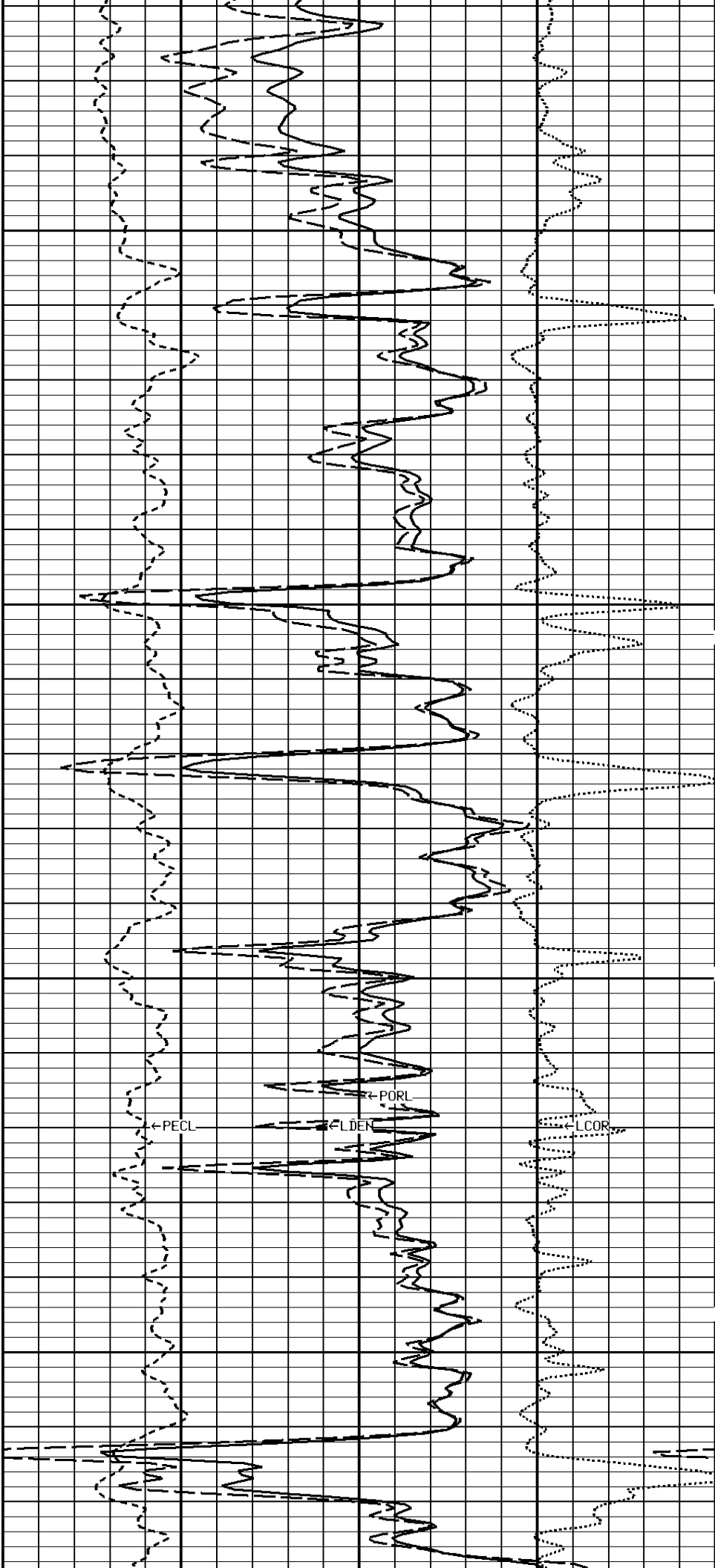


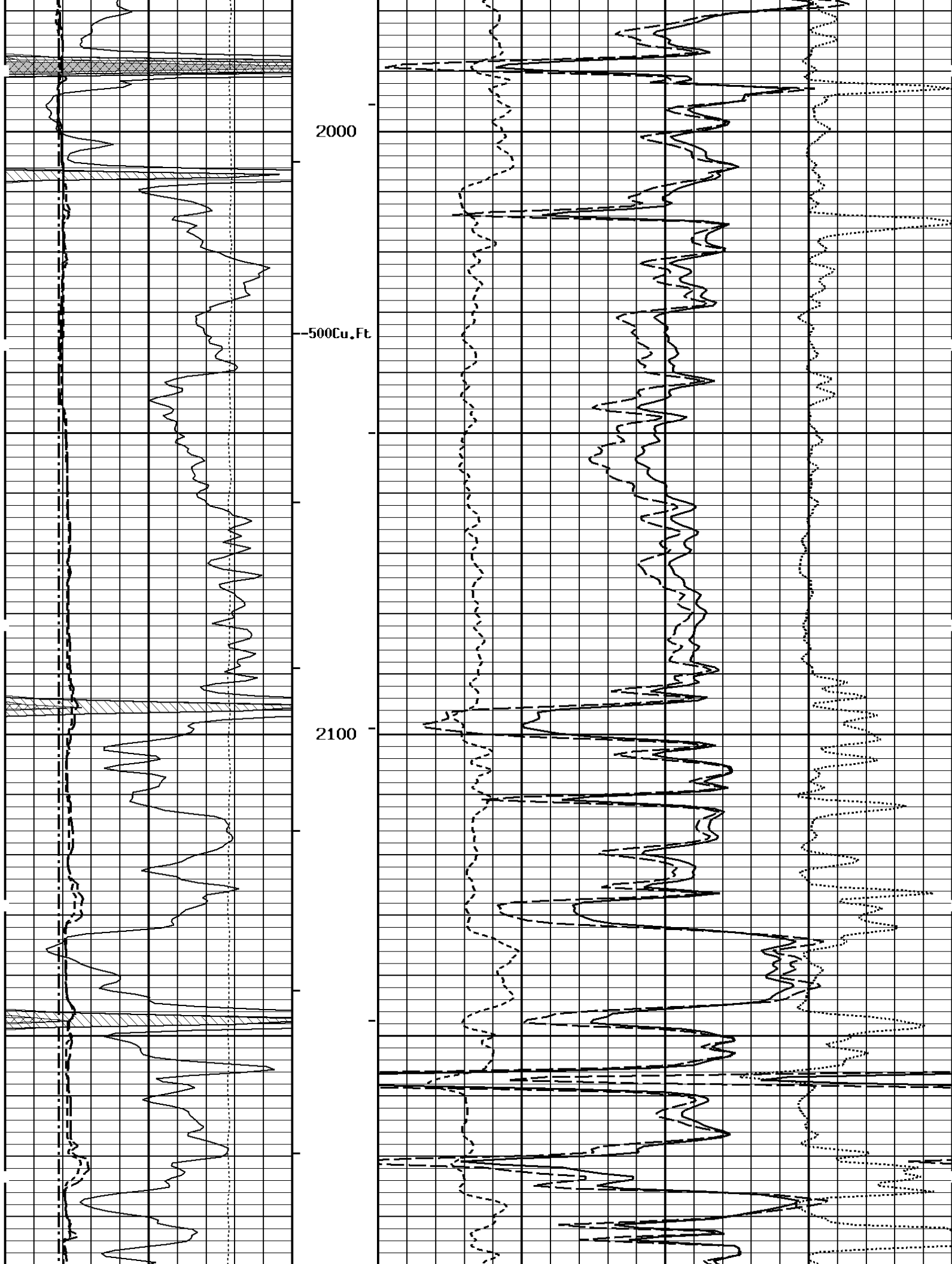


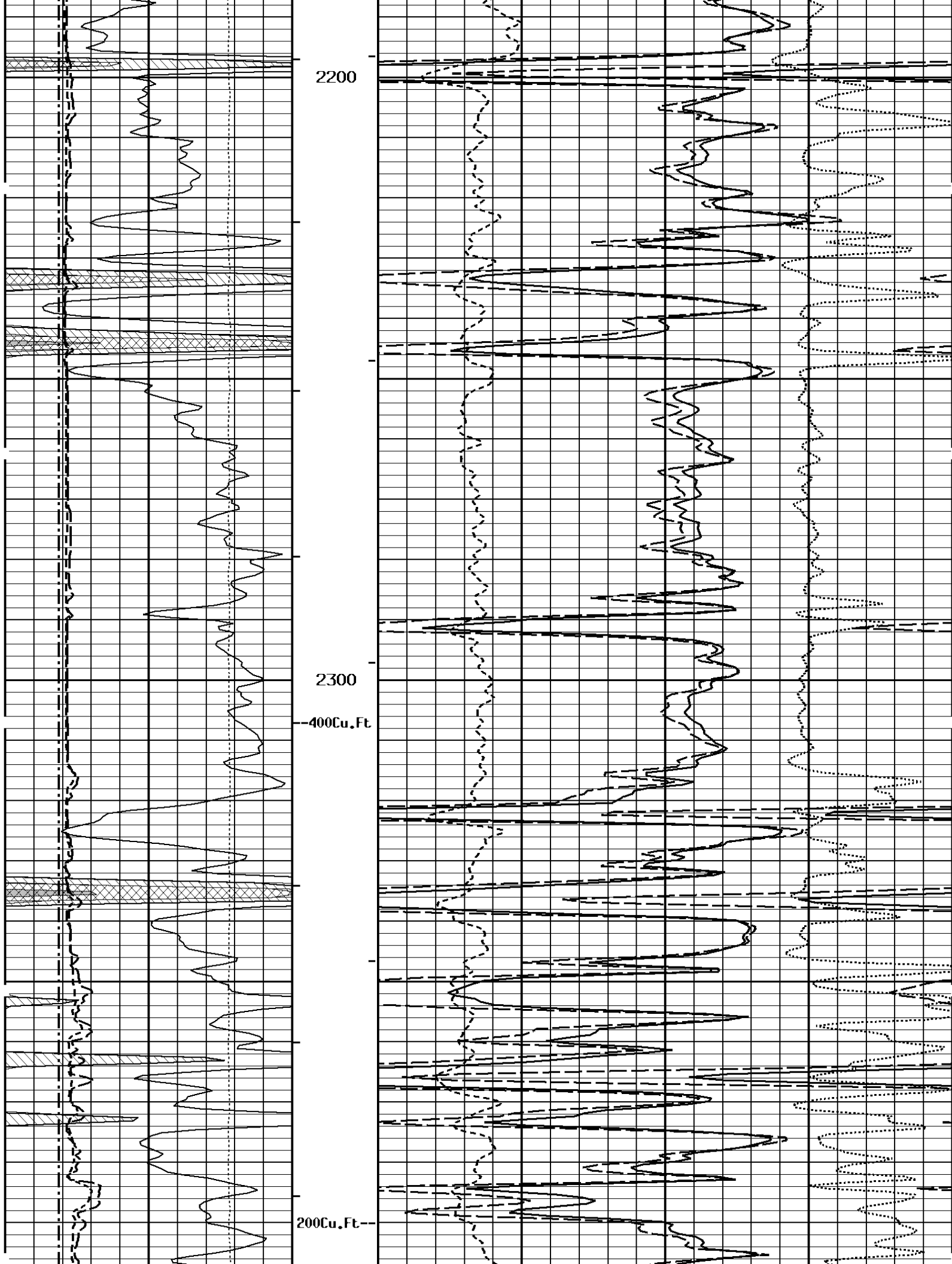
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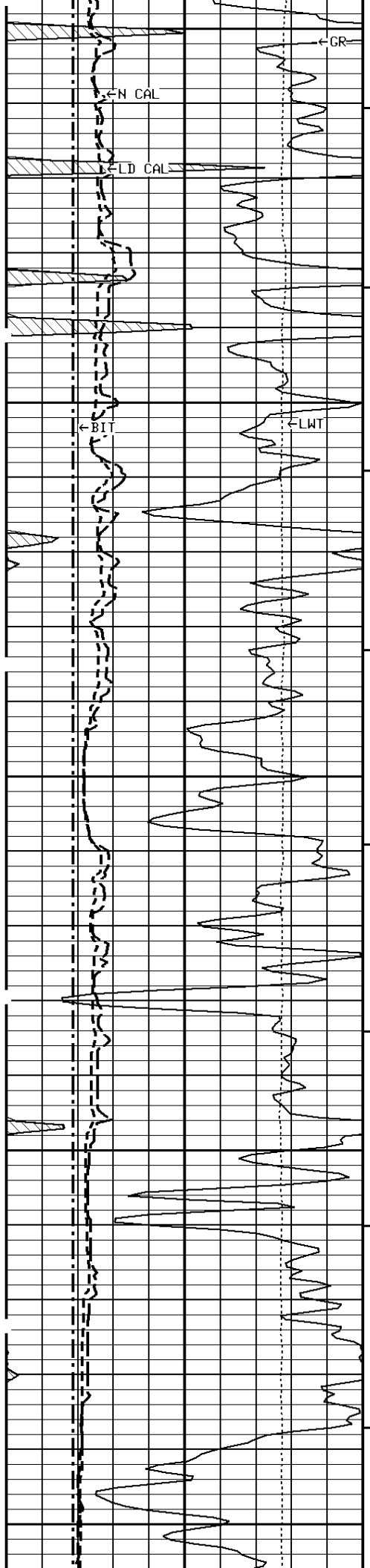
300Cu.Ft.---

1900







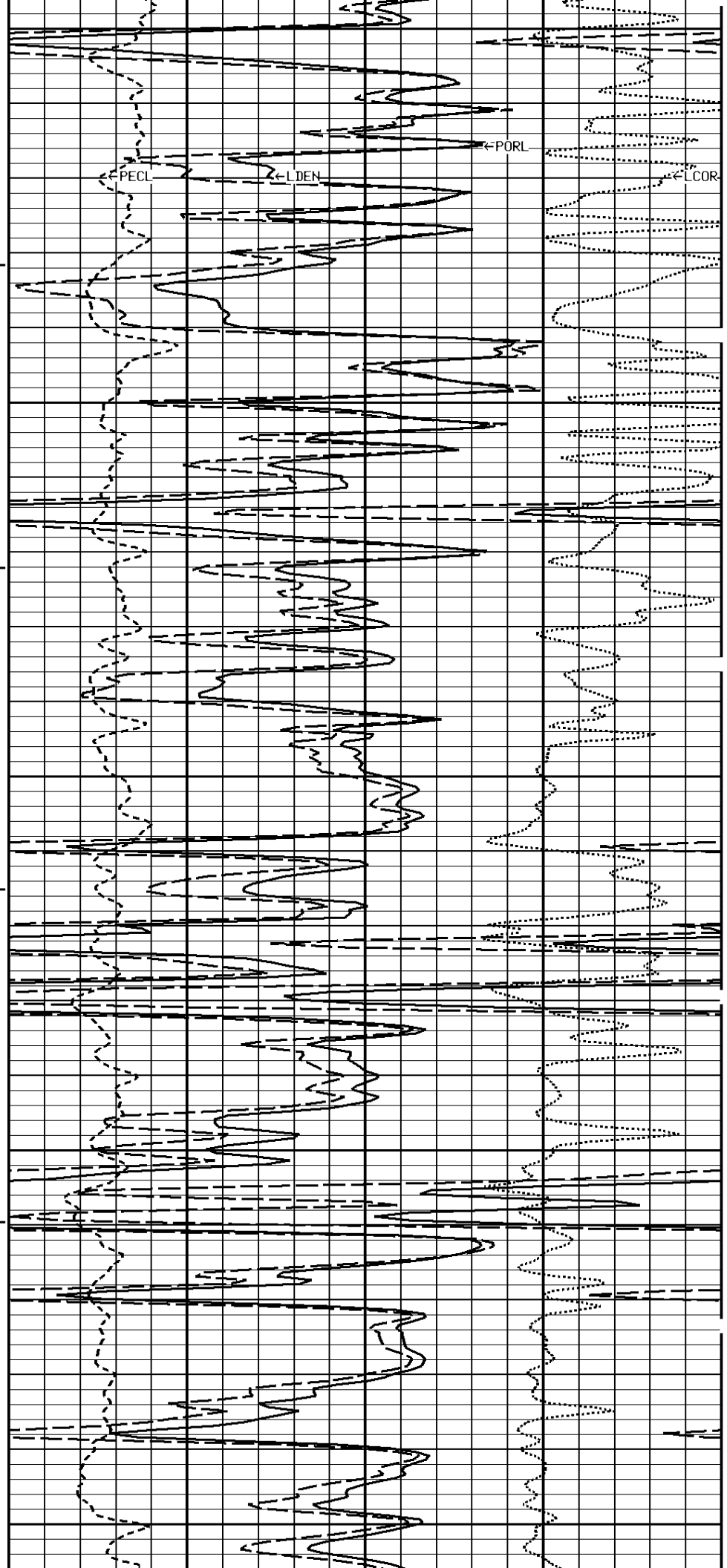


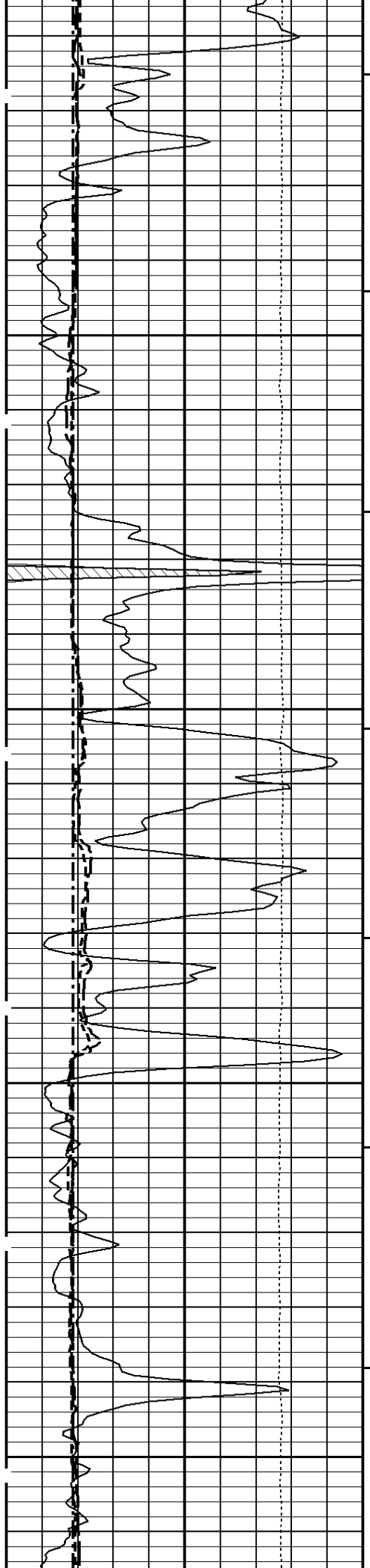
2400

2500

300Cu.Ft

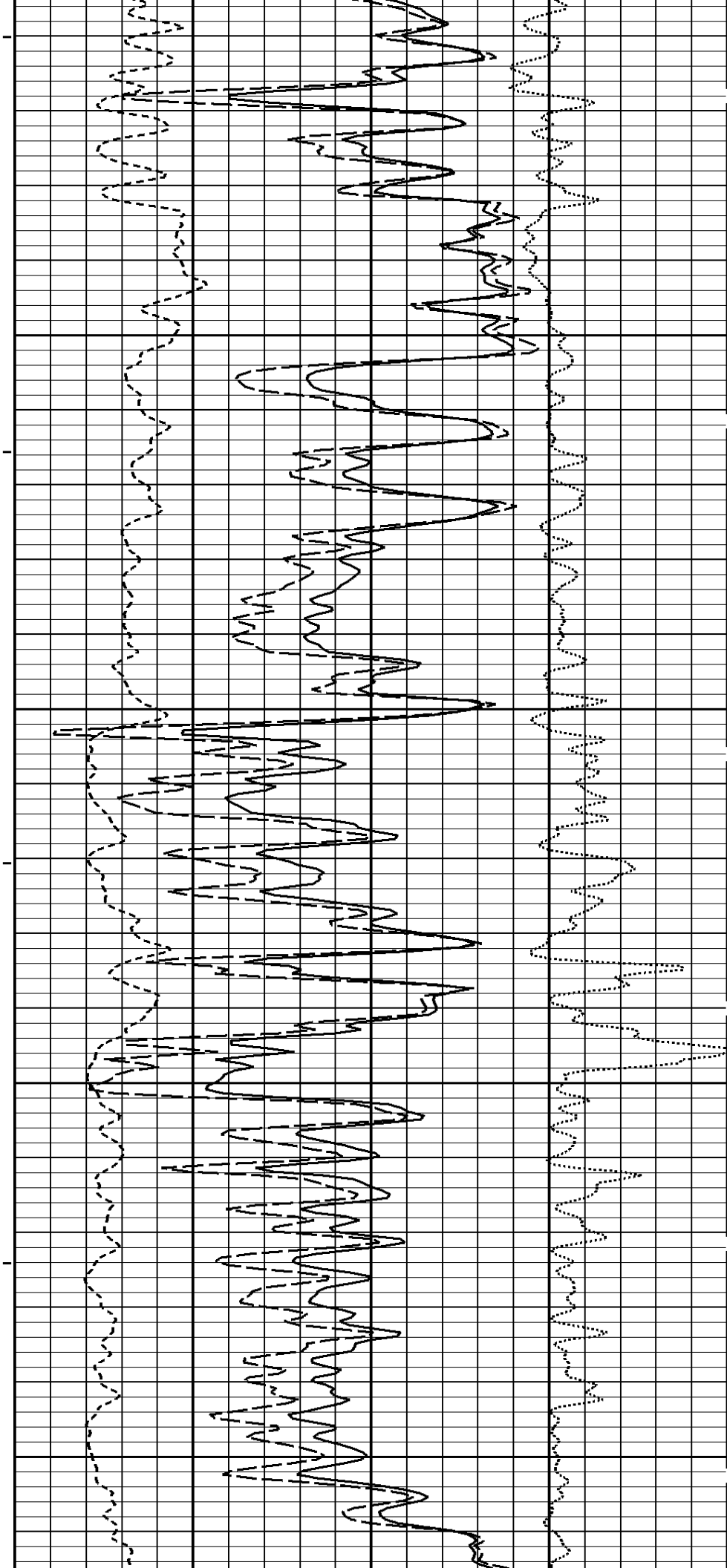
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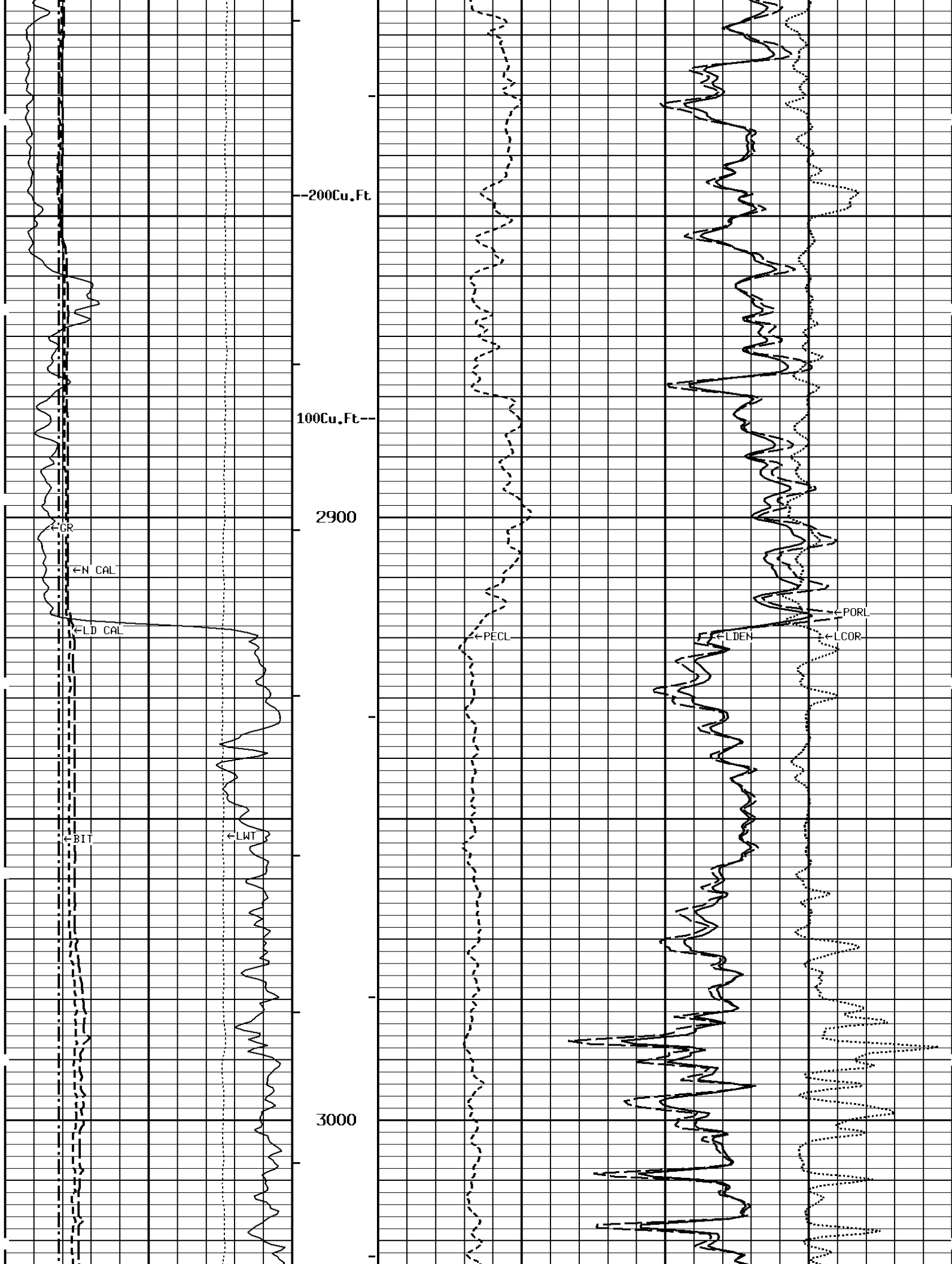


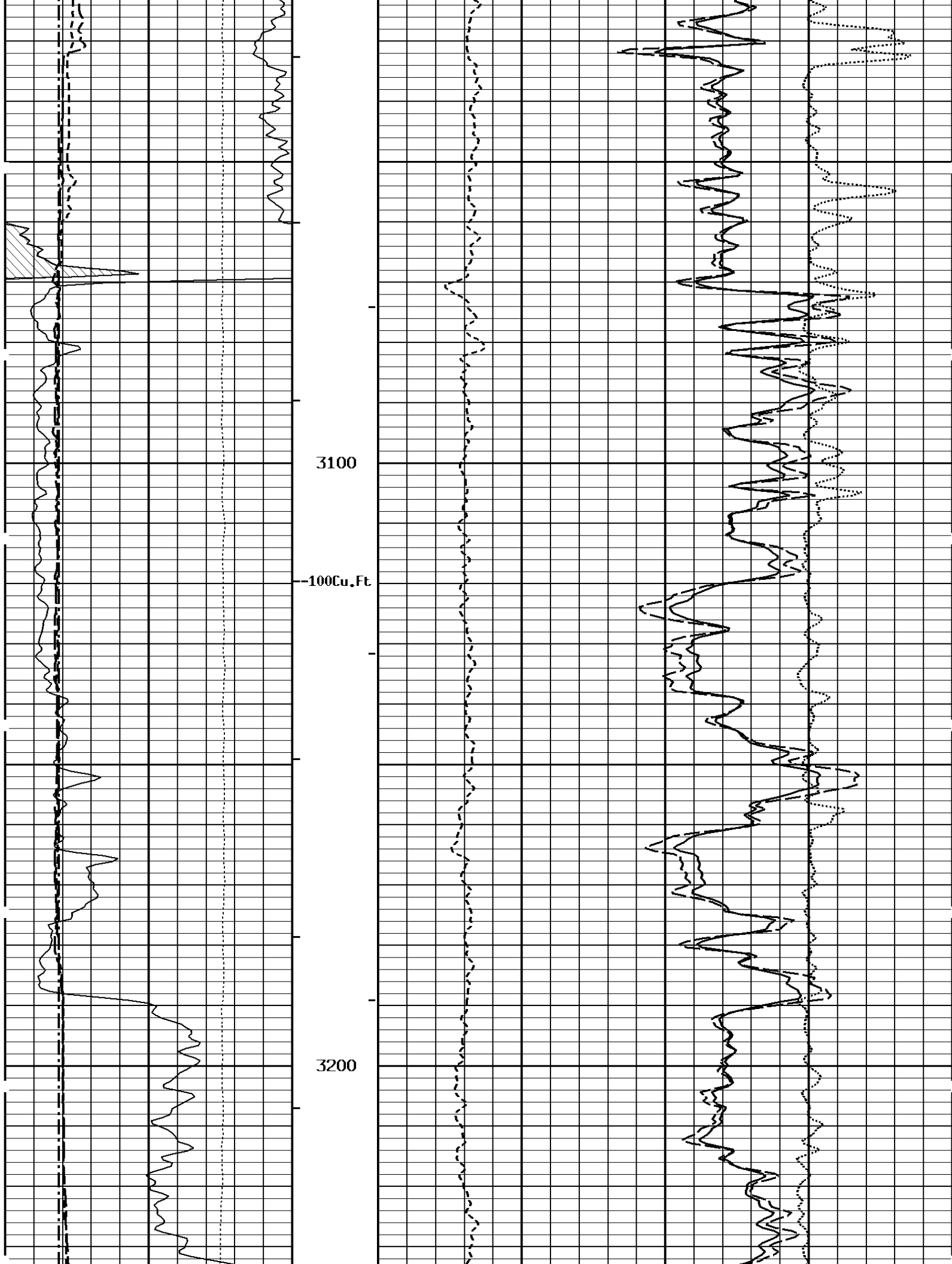


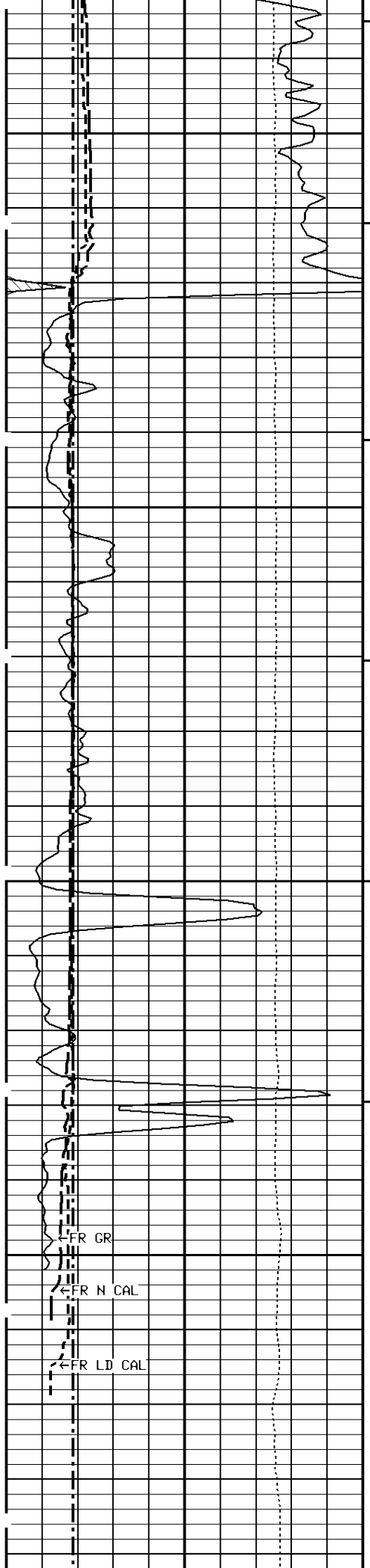
2700

2800



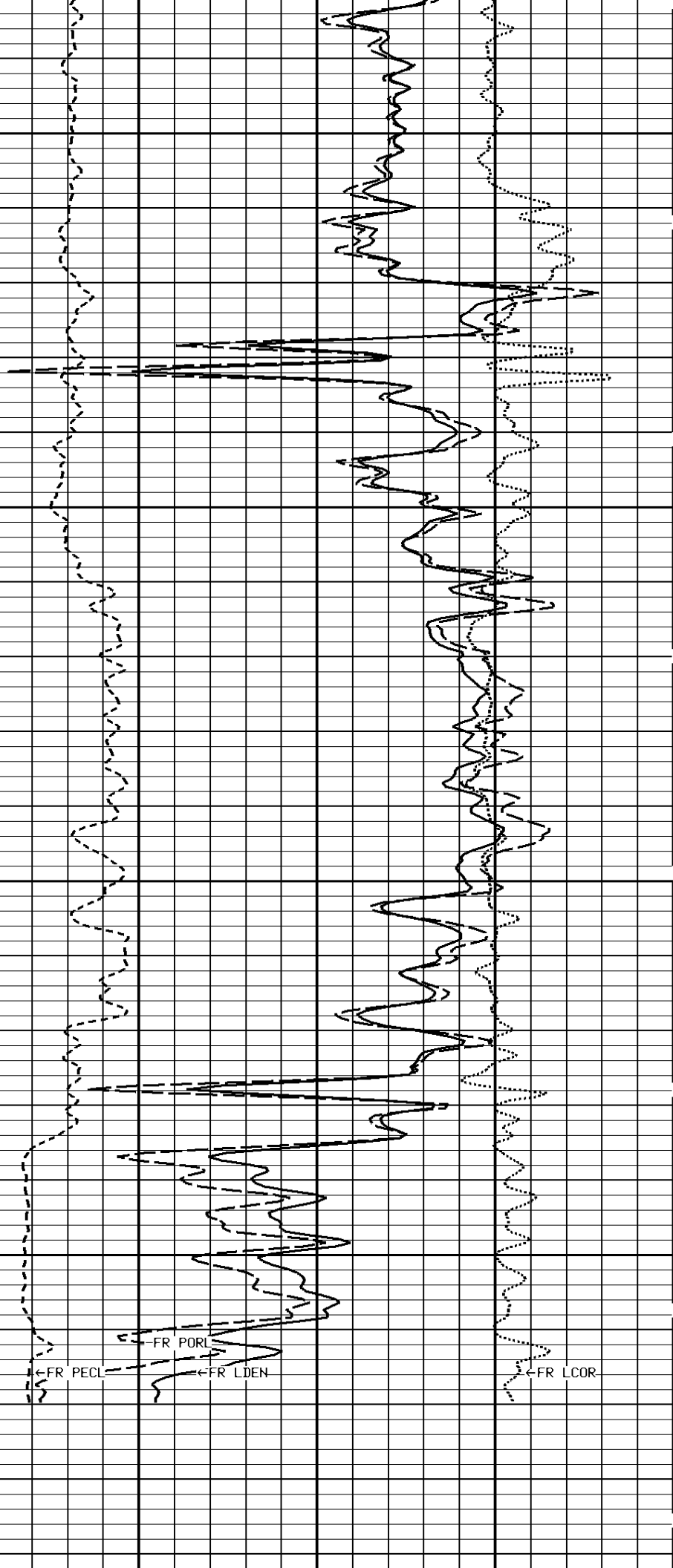






3300

3400



←FR GR

←FR N CAL

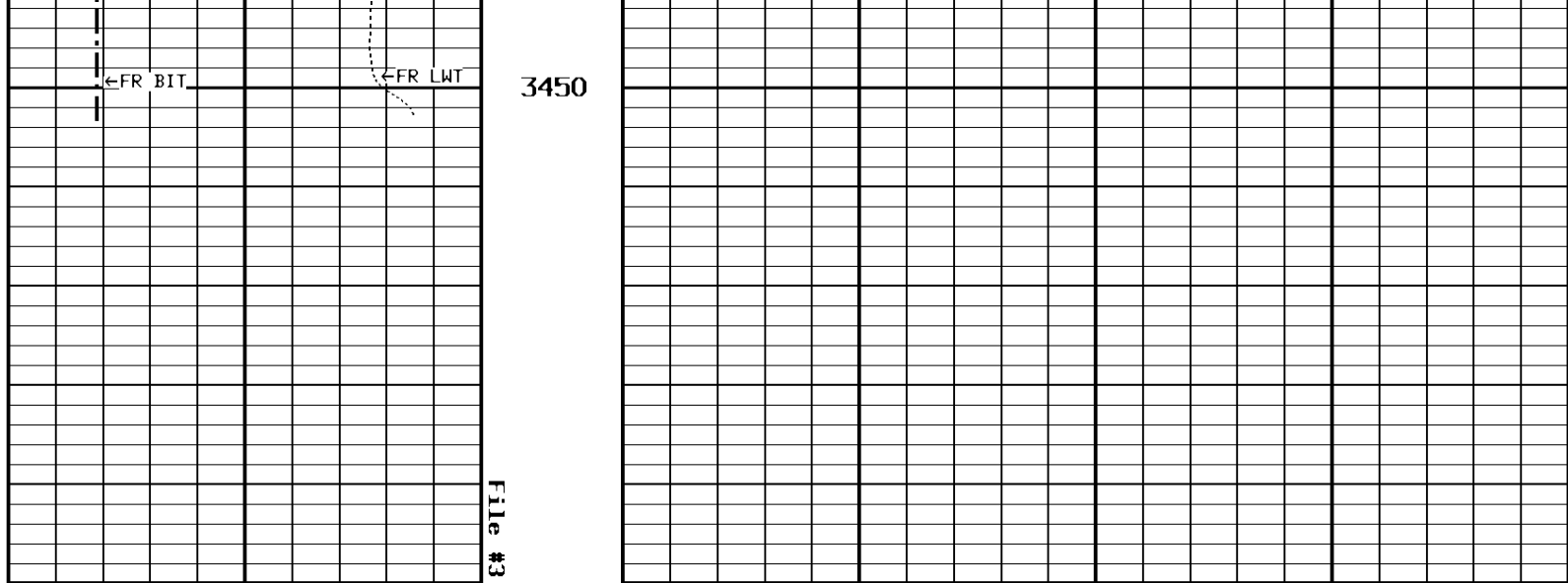
←FR LD CAL

←FR PORL

←FR PECL

←FR LDEN

←FR LCOR



1:240 MAIN SECTION BULK DENSITY

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

*** Calibration Summary ***

Shop Calibration					
GRTB					
Performed : 21-Aug-2009			Time : 15:26		
Sensor Suite : GR-GR5			ID : GRT-BA-14		
	Measured	Units	Calibrated	Units	
	Background	Jig	Jig		
GR	49	347	175		GRAPI
CPS					
Shop Calibration					
CNT					
Performed : 26-Aug-2010			Time : 10:32		
Sensor Suite : BHC NEUT			ID : CNP-AA-116		
Source ID : N-1044					
	Tank		Verification	Units	
	Measured	Calibrated	Jig		
N/F	3.8824	3.6889	3.6916		
Porosity	23.6	20.5	20.5		%
Performed : 07-MAR-2010			Time : 09:04		
Sensor Suite : CALI-BCN			ID : CNP-AA-116		
	Jig - Measured		Jig - Calibrated	Units	
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	8.2	14.2	6.0	12.0	IN.
Shop Calibration					
LDTNG					
Performed : 14-APR-2009			Time : 14:57		
Sensor Suite : CALIPEL			ID : LDP-NG-02		
	Jig - Measured		Jig - Calibrated	Units	
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	6.2	12.2	6.0	12.0	IN.
Performed : 02-Sep-2010			Time : 10:41		
Sensor Suite : BHCPELNG			ID : LDP-NG-02		
Source ID : CSV-587					
Short Space					
	BKGD	Al	Mg	Al+Fe	Units
LSW1	70	487	788	328	CPS
LSW2	73	579	915	419	CPS
LSW3	283	1424	2236	1218	CPS
LSW4	362	1356	1872	1207	CPS
LSW5	36	44	46	43	CPS
LSW6	95	96	96	95	CPS
LSW7	60	61	59	61	CPS
LSW8	2	3	3	3	CPS
QS	0.226	0.223	0.239	0.218	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC
Long Space					
	BKGD	Al	Mg	Al+Fe	Units
LLW1	110	657	2747	420	CPS
LLW2	122	1071	4344	788	CPS
LLW3	457	2034	7421	1767	CPS
LLW4	588	1191	3019	1108	CPS
LLW5	65	69	85	68	CPS
LLW6	194	189	182	189	CPS
LLW7	118	120	112	119	CPS
LLW8	4	5	10	5	CPS
QL	0.244	0.223	0.238	0.227	
PEL			2.697	5.458	
LSW1		0.500	4.600		G/CC

LSDN	2.600	1.680	G/CC
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