

**Tucker**  
ENERGY SERVICES

COMPENSATED NEUTRON

PEL DENSITY LOG

**Company** ANDERSON ENERGY INC  
**Well** MACDONALD BONDY #1  
**Field** WILDCAT  
**County** ELLIS  
**State** KANSAS  
**Country** USA  
**API No.** 15-051-26394

**File No** : TUL-57629  
**Company** : ANDERSON ENERGY INC  
**Well** : MACDONALD BONDY #1  
**Field** : WILDCAT  
**County** : ELLIS  
**State** : KANSAS  
**Country** : USA  
**API No** : 15-051-26394

**Location** :  
 1370' FSL & 2300' FEL  
 SE SW NW SE/4

**LSD** :                   **Sect** : 18                   **Twp** : 15S                   **Rge** : 20W

<b>Permanent Datum:</b>	GL	<b>Elevations:</b>		<b>Services:</b>	
<b>Drilling Measured From:</b>	KB	KB 2137.00	Ft	CNT	CST
<b>Log Measured From:</b>	KB	DF 2136.00	Ft	LDT	PIT
<b>Above Permanent Datum:</b>	9.00 Ft	GL 2128.00	Ft	MLT	
<b>Date</b>	2012-10-30				
<b>Run Number</b>	1				
<b>Depth--Driller</b>	4000.0	Ft			
<b>Depth--Logger</b>	3998.0	Ft			
<b>First Reading</b>	3952.0	Ft			
<b>Last Reading</b>	316.0	Ft			
<b>Casing--Driller</b>	316.0	Ft			
<b>Casing--Logger</b>	316.0	Ft			
<b>Bit Size</b>	0.078	In			
<b>Casing Size</b>	8.625	In			
<b>Hole Fluid Type</b>	WBM				
<b>Density</b>	9.1 LBS/GAL				
<b>Fluid Loss</b>	7.6 CC				
<b>PH/Viscosity</b>	10.5	MEASURED	53.0 SEC		
<b>Sample Source</b>	MEASURED				
<b>RM@Measured Temp.</b>	0.450	@ 70 F			
<b>RMF@Measured Temp</b>	0.380	@ 70 F			
<b>RMG@Measured Temp.</b>	0.520	@ 70 F			
<b>Source RMF/RMG</b>	CALCULATED/CALCULATED				
<b>RM@BHT</b>	0.280	@ 118 F			
<b>Time Circulation Stopped</b>					
<b>Max Recorded Temp.</b>	120	F			
<b>Equipment/Base</b>	TRK 119	TULSA			
<b>Recorded By</b>	S. DAVIS				
<b>Witnessed By</b>	P. BALTHAZOR				

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)
0.078	3998.00	8.625	20.00	316.00

<b>Run Number</b>	1	
<b>Date</b>	2012-10-30	
<b>Date/Time On Bottom</b>	2012-10-30 13:00	
<b>Depth to Fluid</b>	0.0	Ft
<b>Salinity</b>	4600.000	PPM
<b>RMF@BHT</b>	0.240	@ 118 F
<b>RMC@BHT</b>	0.320	@ 118 F

Run Number 1

Comments

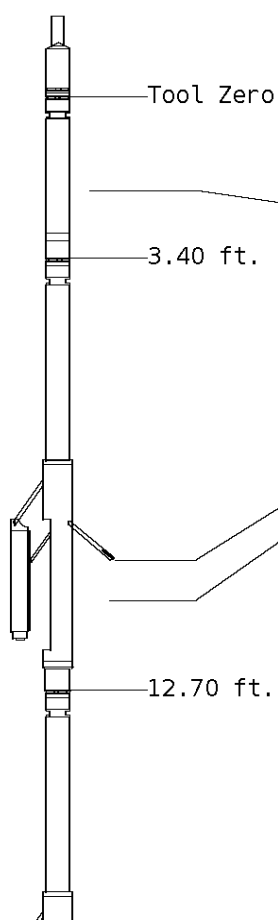
ALL PRESENTATIONS AS PER CUSTOMER REQUEST  
 GRT, CNT, LDT, MLT, CST, AND PIT RUN IN COMBINATION.  
 CALIPERS ORIENTED ON X-Y AXIS.  
 2.71 G/CC USED TO CALCULATED POROSITY.  
 ANNULAR HOLE VOLUME CALCULATED USING 5.50" PRODUCTION CASING.  
 DETAIL PRESENTED FROM TD TO 2800' PER CUSTOMER REQUEST.

GRT: GRP.  
 CNT: PHIN, CLCNIN.  
 LDT: PORL, LCORN, PECLN, LDENN, PORLLS, CLLDIN.  
 MLT: NOR\_RF, INV\_RF, MSCLPIN.  
 CST: PORS, ITT, CDTF, TT1, TT2, TT3, TT4.  
 PIT: ILD, ILM, SPU, SFLAEC.

OPERATORS:  
 B. COLWILL  
 M. RUBY

### Tool String Schematic

**Total Tool Length** - 67.37 ft.  
**Maximum Outside diameter** - 6.00 in.  
**Net Weight in Air** - 1171.00 lbs.



**Tool: GRT-B**      **Length:** 3.40 ft.    **O.D.** 3.60 in.  
 Gamma Ray Controller  
**Sonde ID** :GRT-BA-14

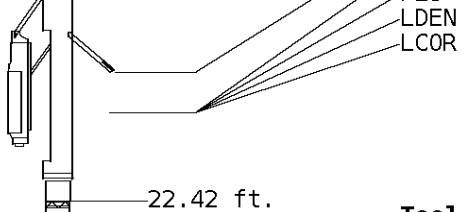
Measure Point	Tool Offset	Stack Offset	Bottom Offset
GRP	2.00	2.00	65.37

**Tool: CNT-AA**      **Length:** 9.30 ft.    **O.D.** 4.36 in.  
 Compensated Neutron A Pad on NDT-A  
**Sonde ID** :NDT-BB-123  
**Source ID** :N-1045  
**Pad ID** :CNP-AA-024

Measure Point	Tool Offset	Stack Offset	Bottom Offset
CLCN	6.00	9.40	57.97
PHIN	6.80	10.20	57.17

**Tool: LDT-DF**      **Length:** 9.72 ft.    **O.D.** 4.80 in.  
 Litho Density D Pad on NDT-F  
**Sonde ID** :PDT-GA-464  
**Source ID** :2991GW  
**Pad ID** :LDP-DA-065

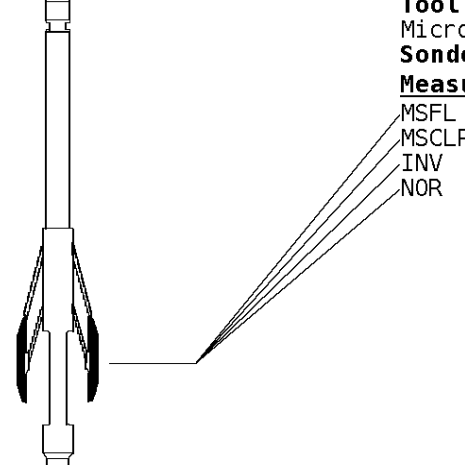
Measure Point	Tool Offset	Stack Offset	Bottom Offset
CLLD	6.42	19.12	48.25
PEL	7.42	20.12	47.25
PES	7.82	20.52	46.85



7.62      20.32      47.05  
 7.62      20.32      47.05

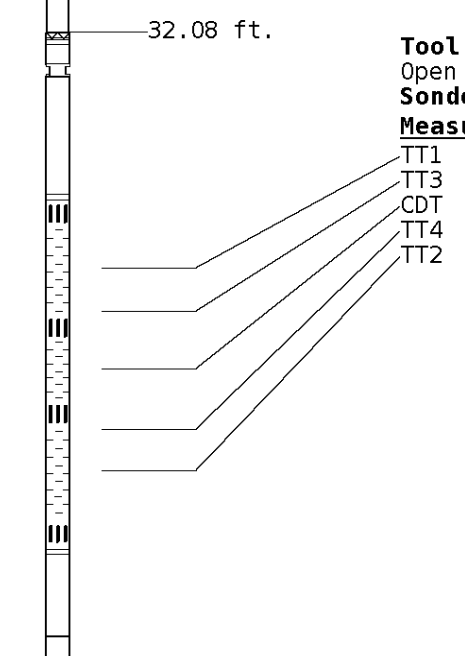
**Tool:** MST-DA      **Length:** 9.66 ft.   **O.D.** 6.00 in.  
 Micro Spherically Focused (IC)  
**Sonde ID** :MST-DA-36

Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	30.02	37.35
MSCLP	7.60	30.02	37.35
INV	7.60	30.02	37.35
NOR	7.60	30.02	37.35



**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	36.88	30.49
TT3	5.80	37.88	29.49
CDT	7.30	39.38	27.99
TT4	8.80	40.88	26.49
TT2	9.80	41.88	25.49



**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	54.80	12.56
ILM	10.10	55.98	11.39
SFLU	17.49	63.37	4.00
SP	20.60	66.48	0.88

LWT 67.37 ft.

Well File: and-mac-bon-1-quint-dip-oct-30

Scale: 1:240

Segment: V1.D1.S9 MN

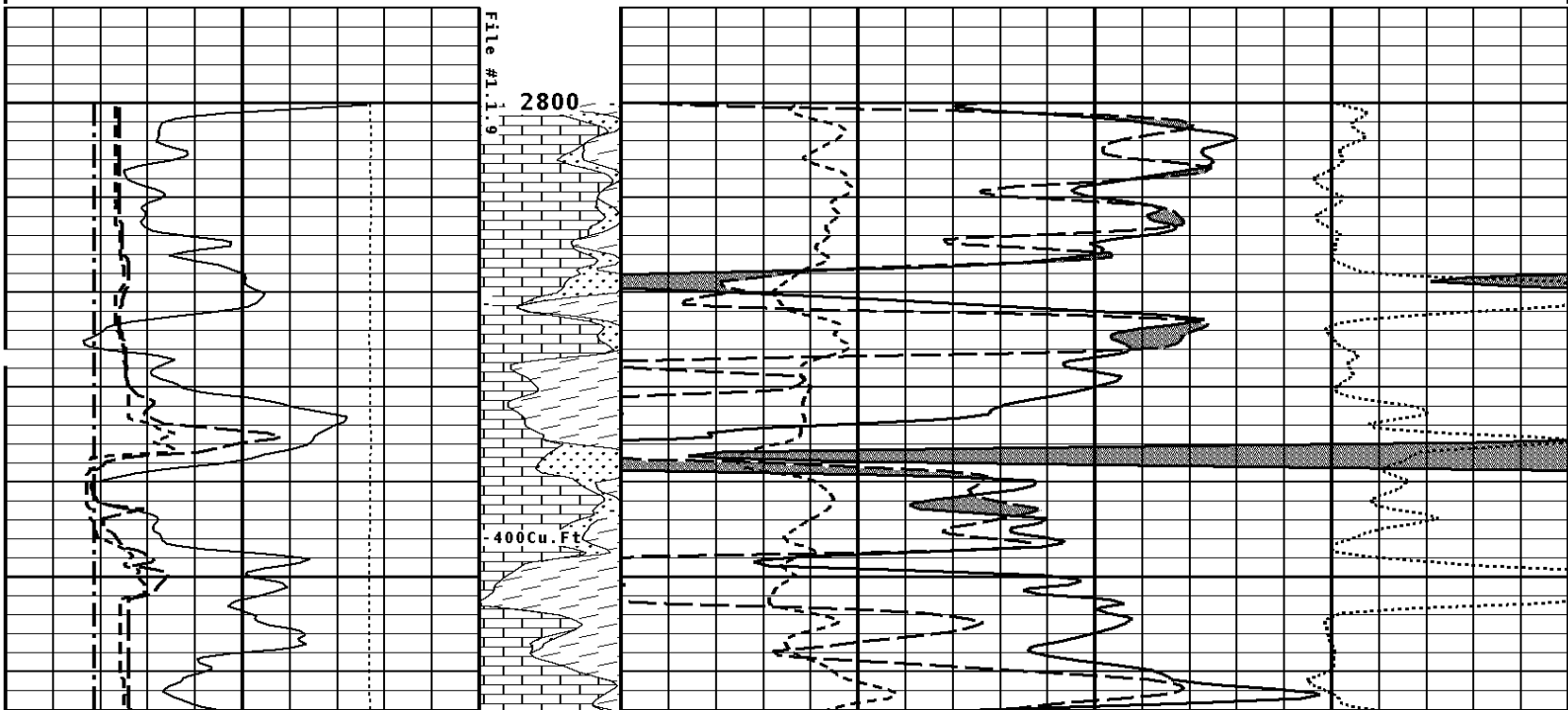
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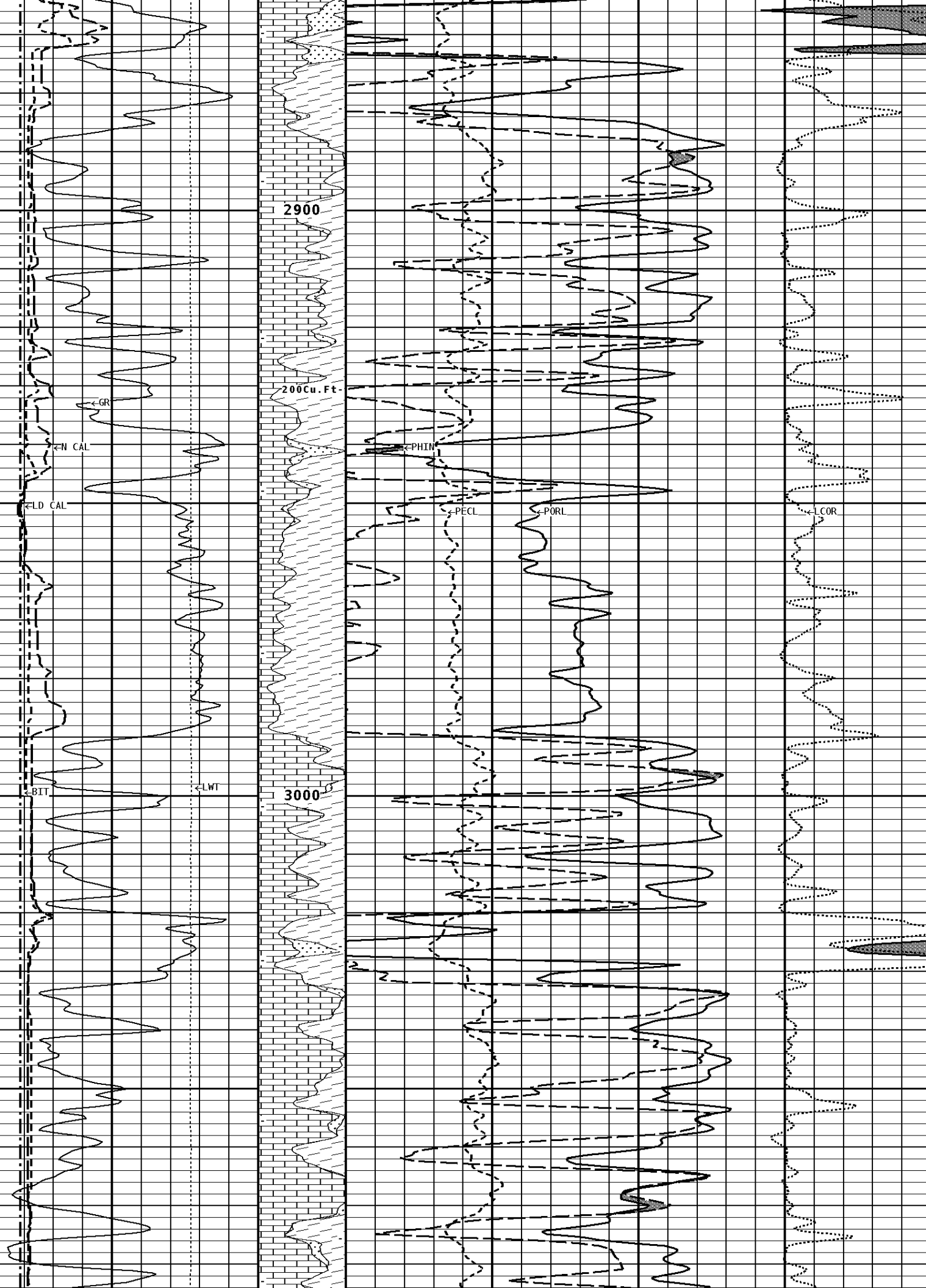
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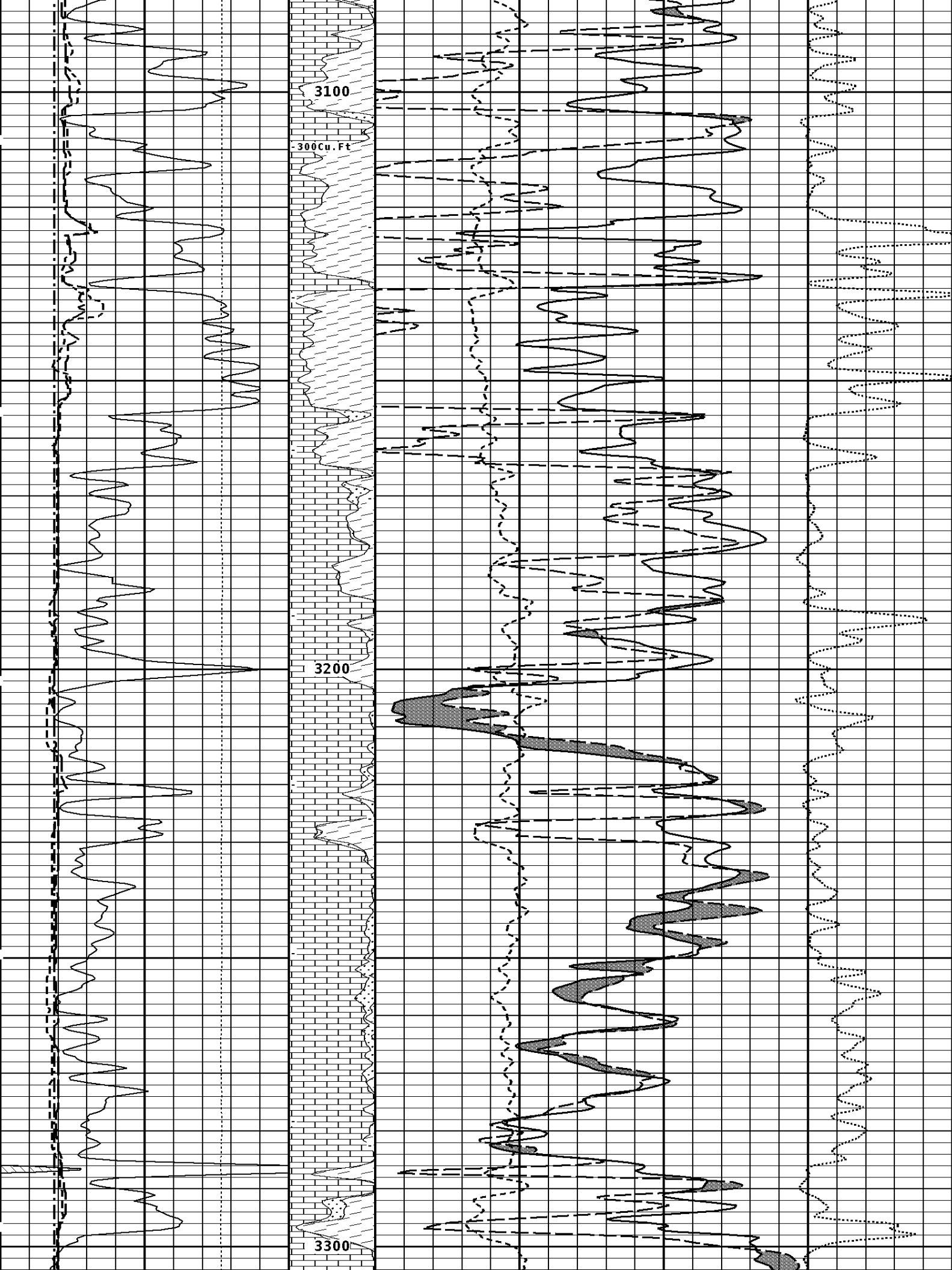
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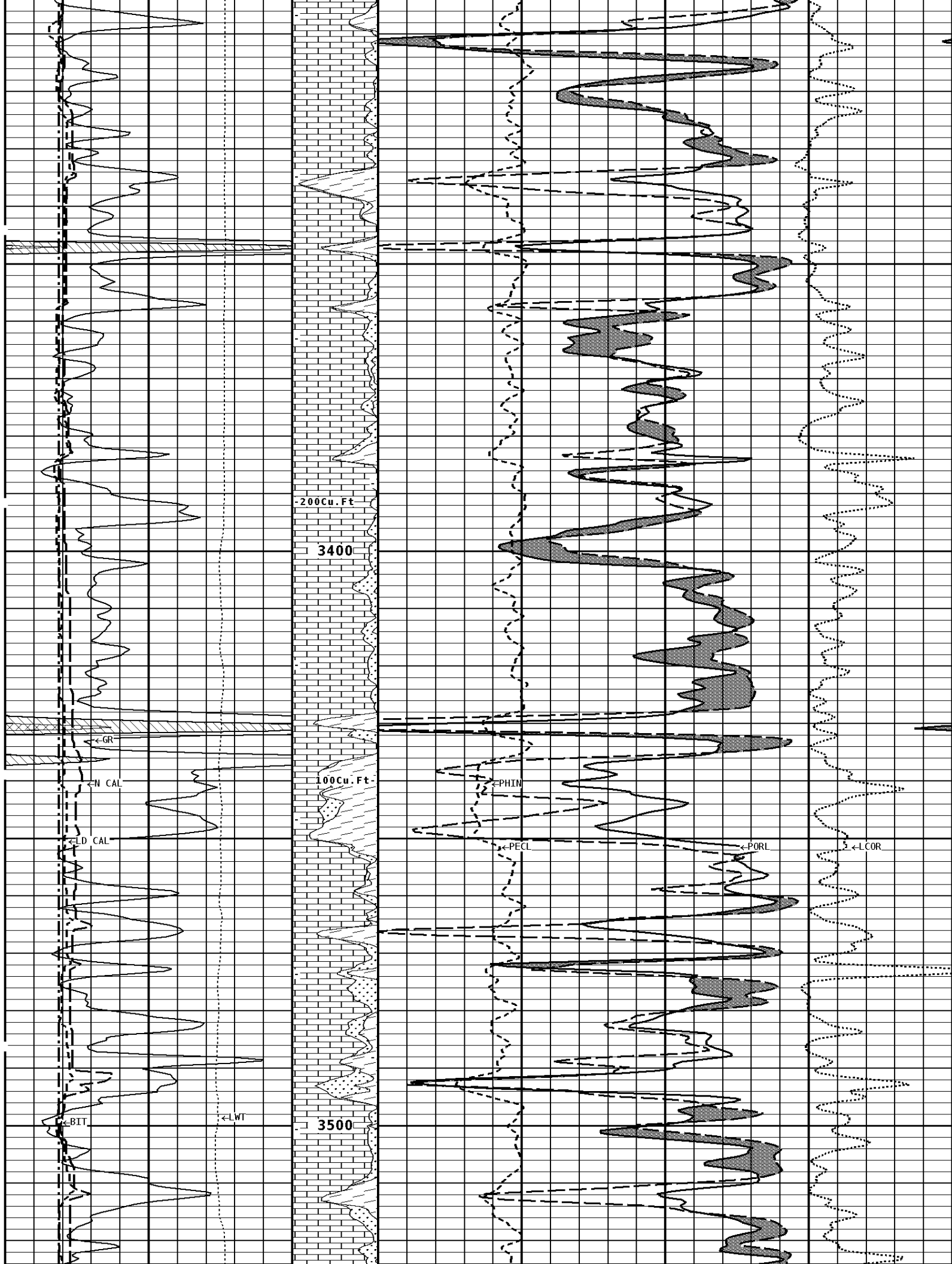
<b>TENSION LBS</b>								
10000	0							
<b>BIT SIZE INCHES (IN)</b>		Volume Dolo/Shale						
6	16							
<b>DENSITY (X) CALIPER INCHES (IN)</b>		Volume Quartz	<b>PE CROSS-SECTION BARNs/ELECTRON</b>		<b>DENSITY CORRECTION G/CC</b>			
16	26		0	10	-0.25	0.25		
6	16							
<b>NEUTRON (Y) CALIPER INCHES (IN)</b>		Volume Calcite	<b>NEUTRON POROSITY PERCENT (LIMESTONE MATRIX)</b>					
16	26		30					
6	16							
<b>GAMMA RAY API UNITS</b>		- BHV AHV - CU. FT	<b>DENSITY POROSITY PERCENT (2.71 g/cc)</b>					
150	300		70			30		
0	150		30			-10		
			-10			-50		

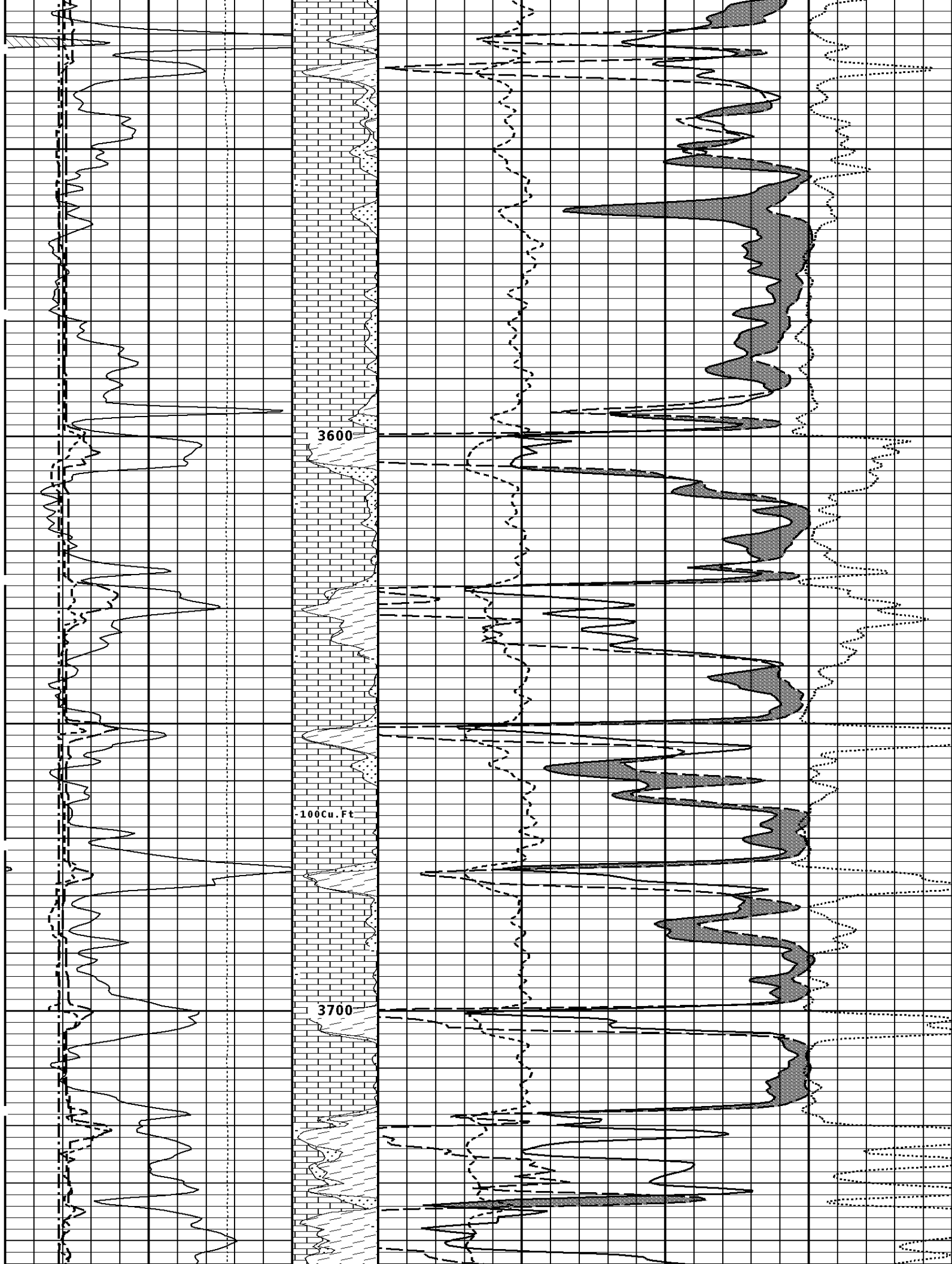
**1:240 MAIN SECTION**

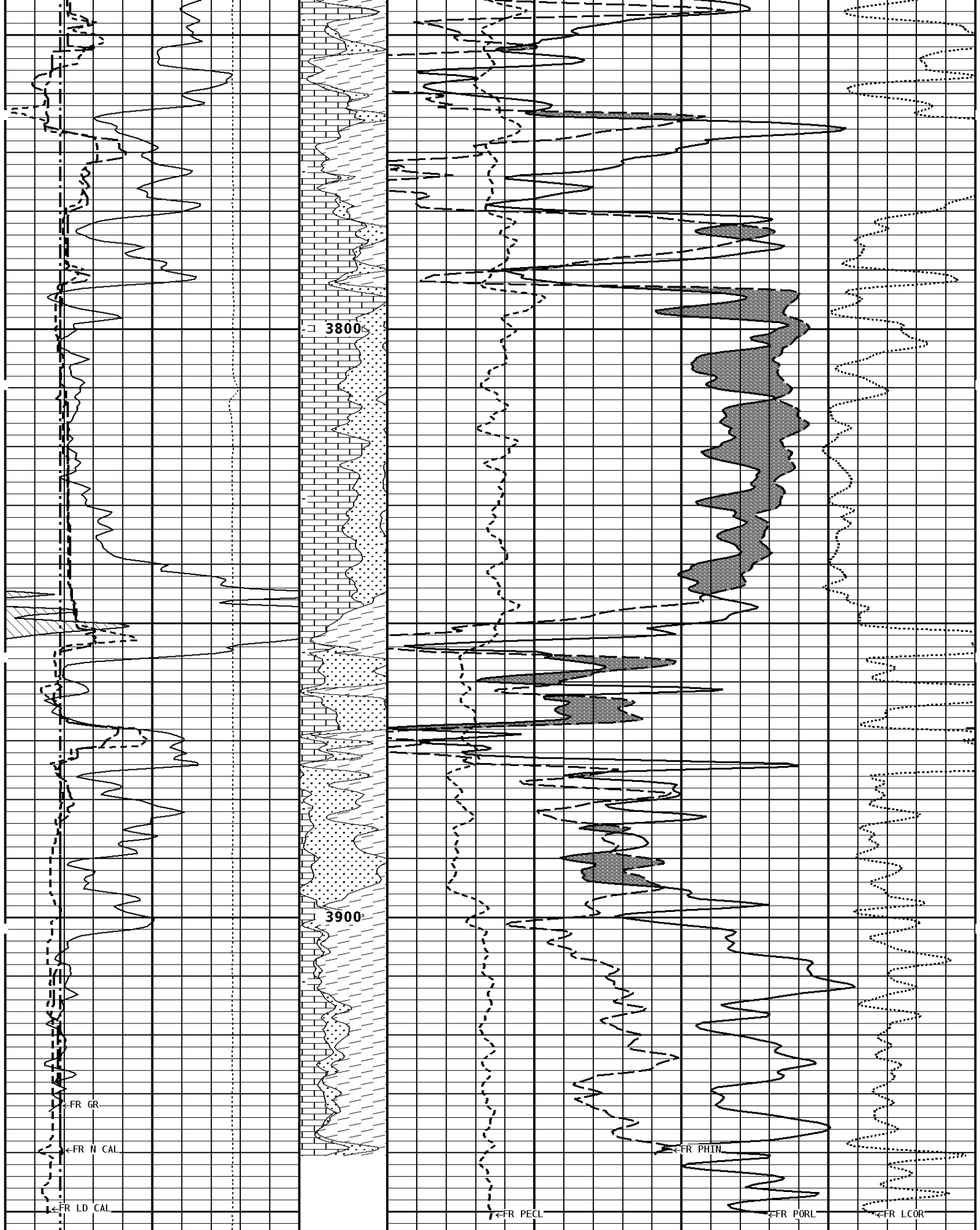












3800

3900

←FR GR

←FR N CAL

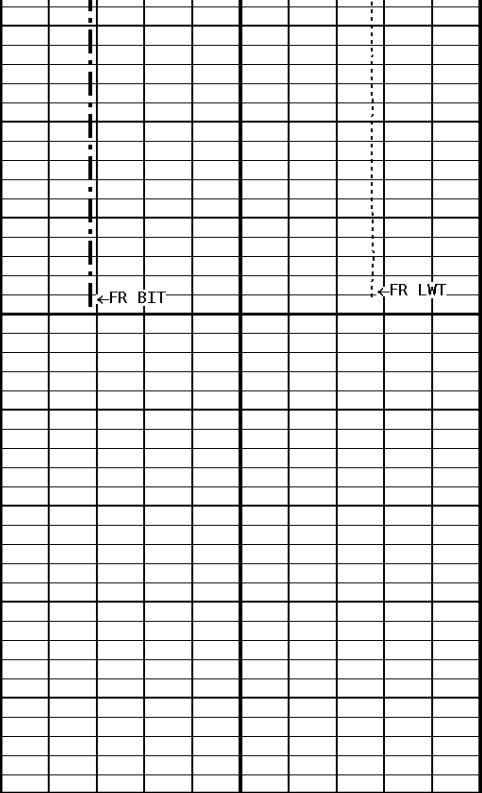
←FR LD CAL

←FR PECL

←FR PHIN

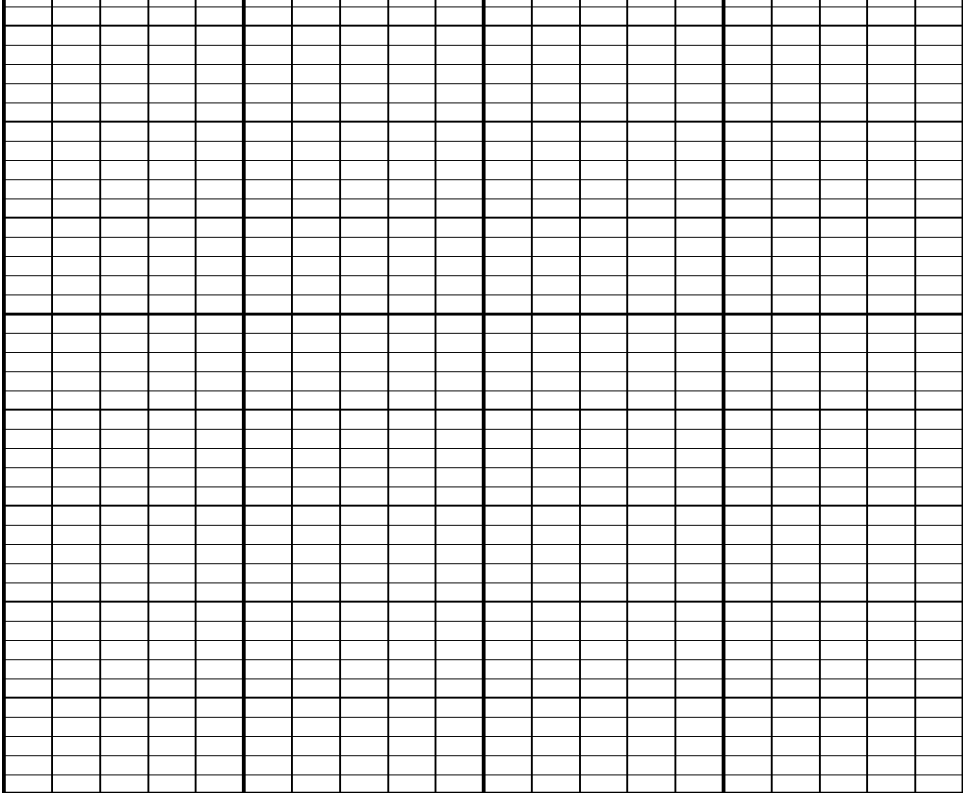
←FR PORL

←FR LCOR



3998

File #1.1.9



**1:240 MAIN SECTION**

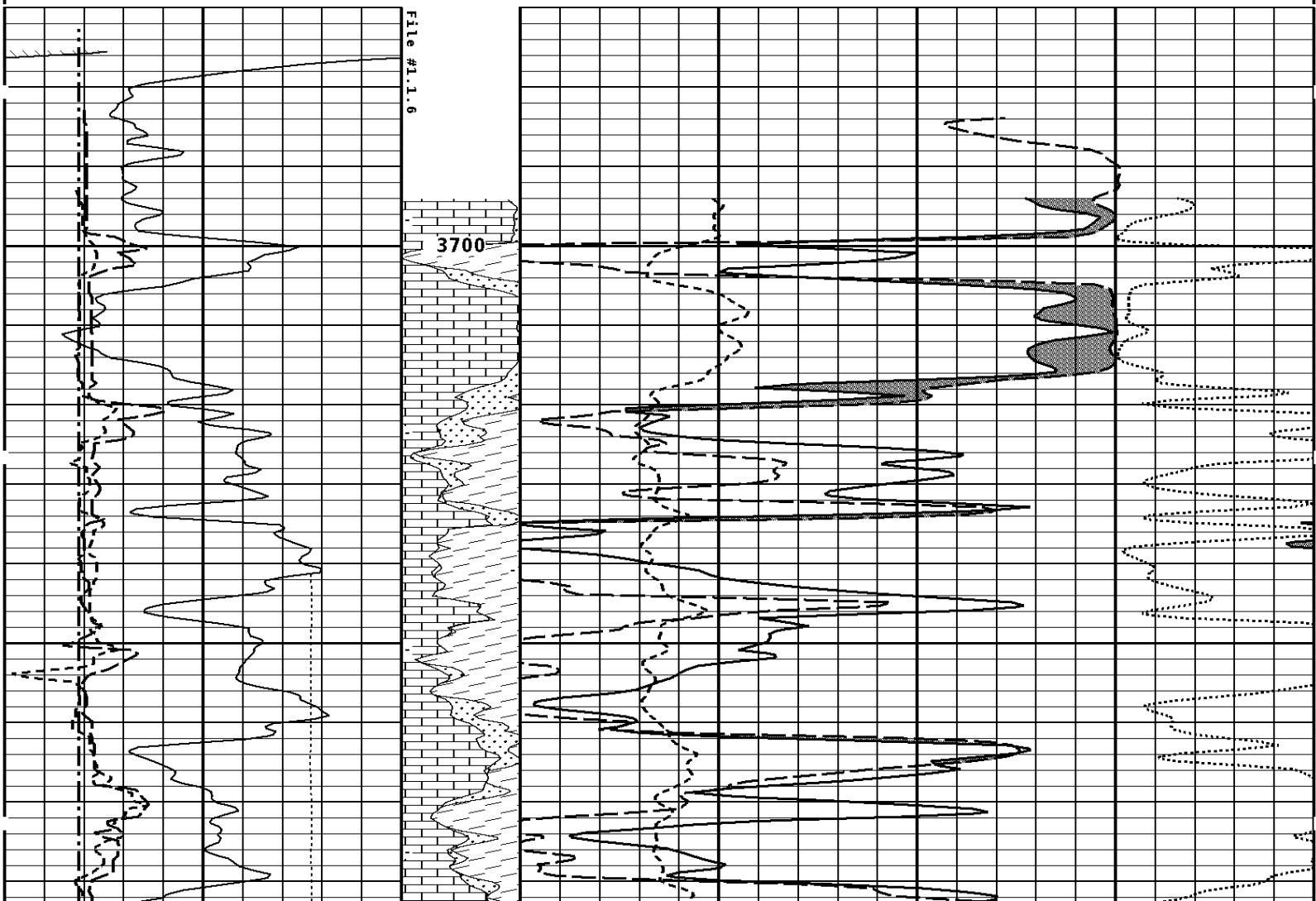
<b>GAMMA RAY</b> <b>API UNITS</b> 150  300 0  150	- BHV AHV - CU. FT	<b>DENSITY POROSITY</b> <b>PERCENT (2.71 g/cc)</b> 70 30 -10	30 -10 -50
<b>NEUTRON (Y) CALIPER</b> <b>INCHES (IN)</b> 16 6 ----- 26 16	Volume Calcite 	<b>NEUTRON POROSITY</b> <b>PERCENT (LIMESTONE MATRIX)</b> 30 ----- -10	-10
<b>DENSITY (X) CALIPER</b> <b>INCHES (IN)</b> 16 6 ----- 26 16	Volume Quartz 	<b>PE CROSS-SECTION</b> <b>BARNS/ELECTRON</b> 0 ----- 10	<b>DENSITY CORRECTION</b> <b>G/CC</b> -0.25 ----- 0.25
<b>BIT SIZE</b> <b>INCHES (IN)</b> 6 ----- 16	Volume DoLo/Shale 		
<b>TENSION</b> <b>LBS</b> 10000 ----- 0			

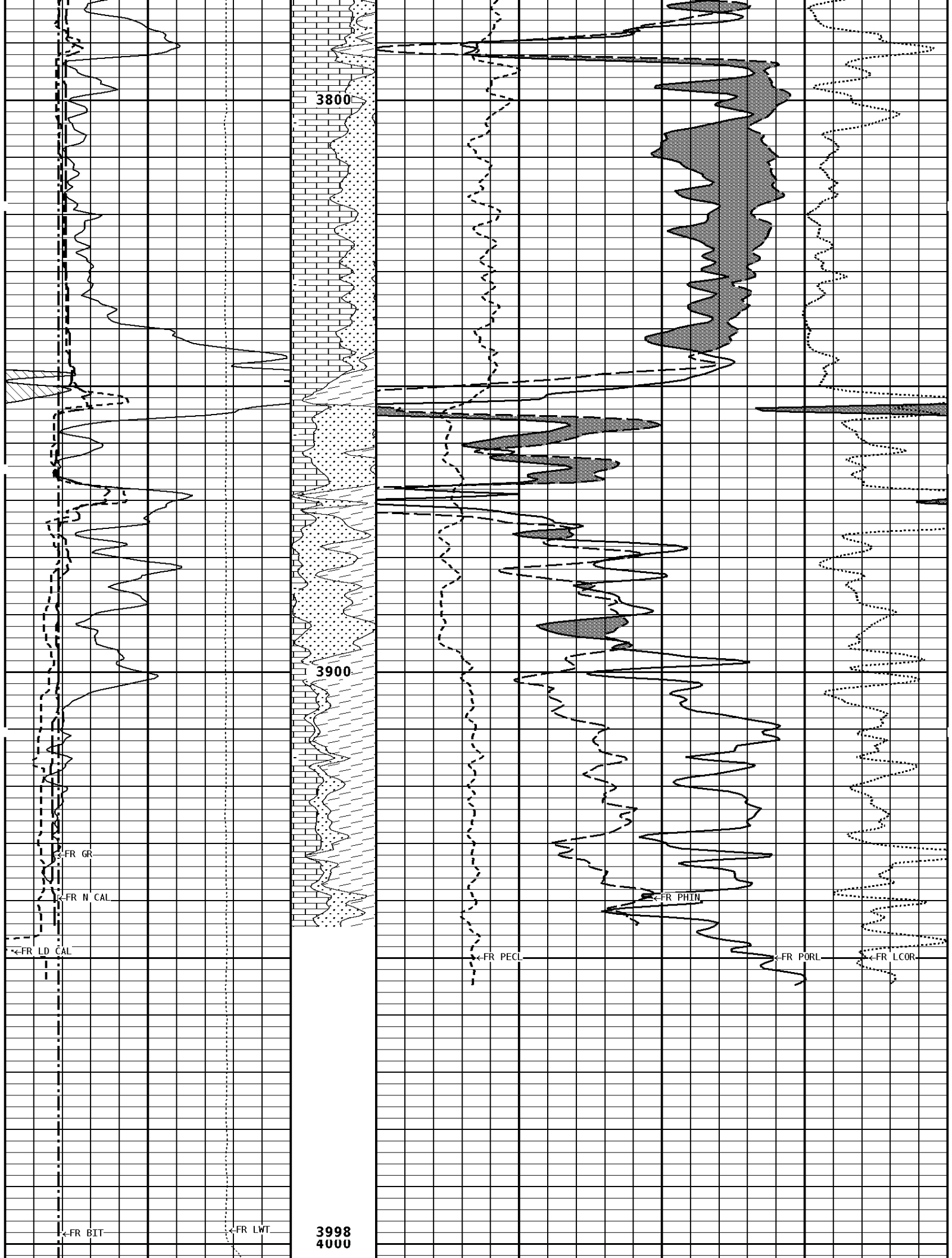
**\* Borehole Zone Factors \***

<b>Zone 1</b>	<b>99999.0</b>	<b>to</b>	<b>0.0</b>	<b>Feet</b>
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	

<b>TENSION LBS</b>									
10000	0								
<b>BIT SIZE INCHES (IN)</b>		Volume Dolo/Shale							
6	16								
<b>DENSITY (X) CALIPER INCHES (IN)</b>		Volume Quartz	<b>PE CROSS-SECTION BARNs/ELECTRON</b>		<b>DENSITY CORRECTION G/CC</b>				
16	26		0		10 -0.25		0.25		
6	16								
<b>NEUTRON (Y) CALIPER INCHES (IN)</b>		Volume Calcite			<b>NEUTRON POROSITY PERCENT (LIMESTONE MATRIX)</b>				
16	26		30				-10		
6	16								
<b>GAMMA RAY API UNITS</b>		- BHV AHV - CU. FT			<b>DENSITY POROSITY PERCENT (2.71 g/cc)</b>				
150	300		70				30		
0	150			30				-10	
				-10				-50	

1:240 REPEAT SECTION





3800

3900

3998  
4000

←FR GR

←FR N CAL

←FR LD CAL

←FR BIT

←FR LWT

←FR PECL


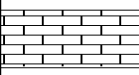
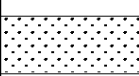
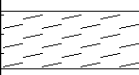
←FR PHIN

←FR PORL

←FR LCOR

File #1.1.6

**1:240 REPEAT SECTION**

<b>GAMMA RAY API UNITS</b> 		<b>- BHV AHV - CU. FT</b>	<b>DENSITY POROSITY PERCENT (2.71 g/cc)</b>	
150	300		70	30
0	150		30	-10
			-10	-50
<b>NEUTRON (Y) CALIPER INCHES (IN)</b>		<b>Volume Calcite</b> 	<b>NEUTRON POROSITY PERCENT (LIMESTONE MATRIX)</b>	
16	26		30	-10
6	16			
<b>DENSITY (X) CALIPER INCHES (IN)</b>		<b>Volume Quartz</b> 	<b>PE CROSS-SECTION BARNS/ELECTRON</b>	<b>DENSITY CORRECTION G/CC</b>
16	26		0	10
6	16		-0.25	0.25
<b>BIT SIZE INCHES (IN)</b>		<b>Volume Dolo/Shale</b> 		
6	16			
<b>TENSION LBS</b>				
10000	0			

**\* Borehole Zone Factors \***

<b>Zone 1 9999.0 to 0.0 Feet</b>	
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

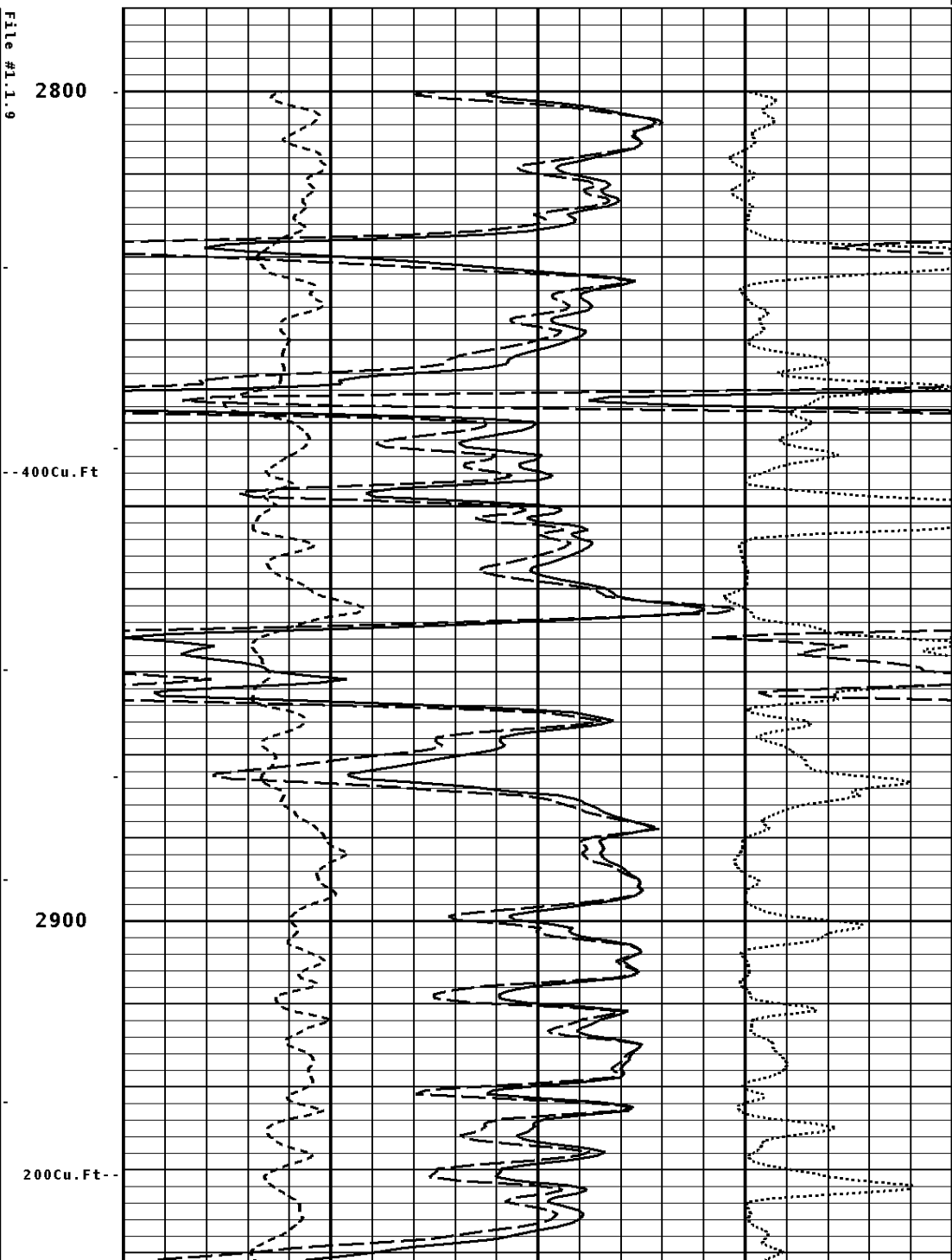
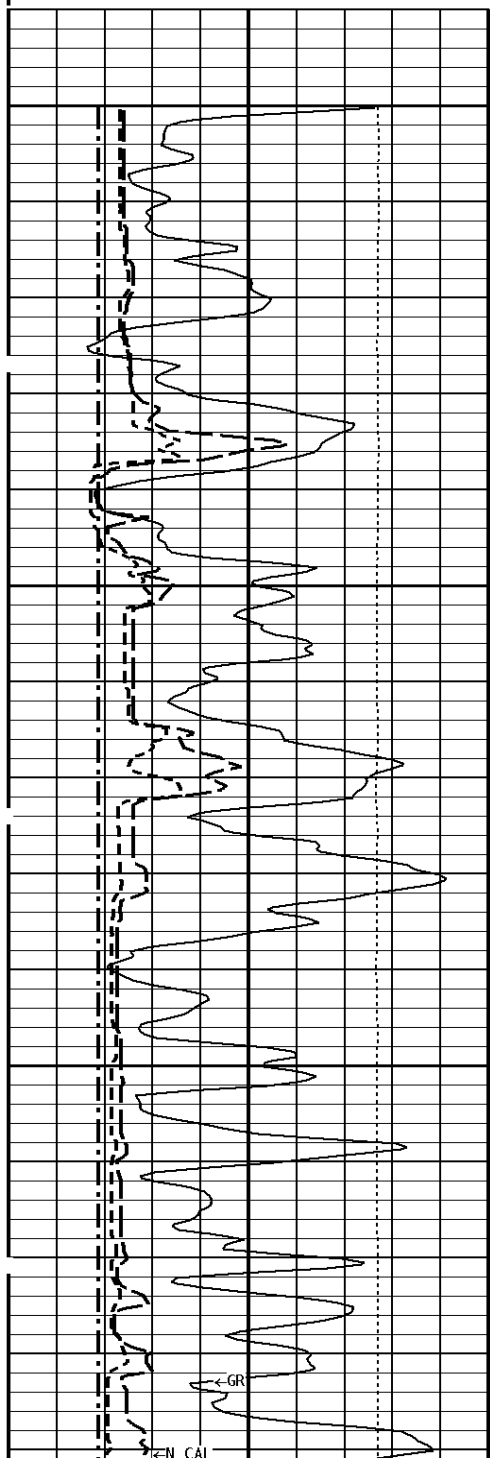
<b>Well File:</b> and-mac-bon-1-quint-dip-oct-30	<b>Scale:</b> 1:240
<b>Segment:</b> V1.D1.S9 MN	<b>Acquired:</b> Not Available
<b>Reference:</b> 0	<b>Processed:</b> 2012-10/30 15:55 3.2.0-11087

<b>TENSION LBS</b>	
10000	0
<b>BIT SIZE INCHES (IN)</b>	
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 BARN/ ELECTRON		DENSITY CORRECTION G/CC	
0	10	-0.25	0.25
-----		-----	
DENSITY POROSITY PERCENT (2.71 g/cc)			
70			30
30			-10
-10			-50
-----		-----	
COMPENSATED BULK DENSITY G/CC			
3.0			4.0
2.0			3.0
1.0			2.0

**1:240 MAIN SECTION  
BULK DENSITY**



File #1.1.9

2800

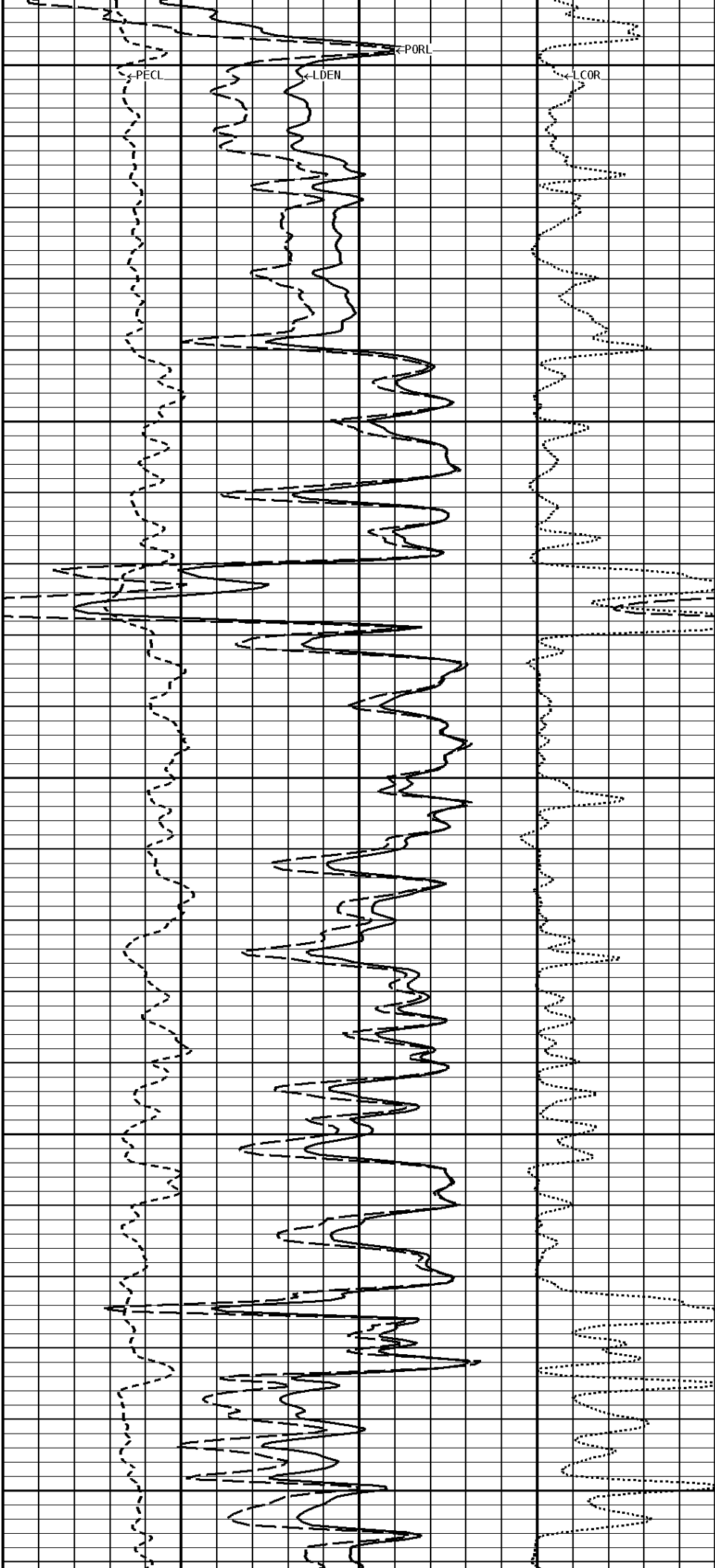
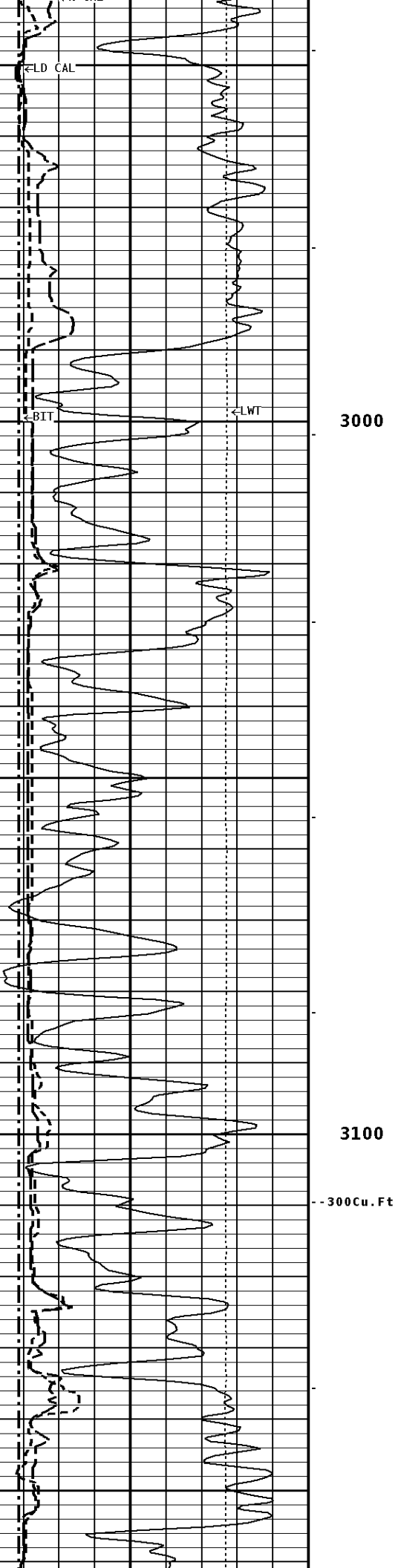
400 Cu. Ft.

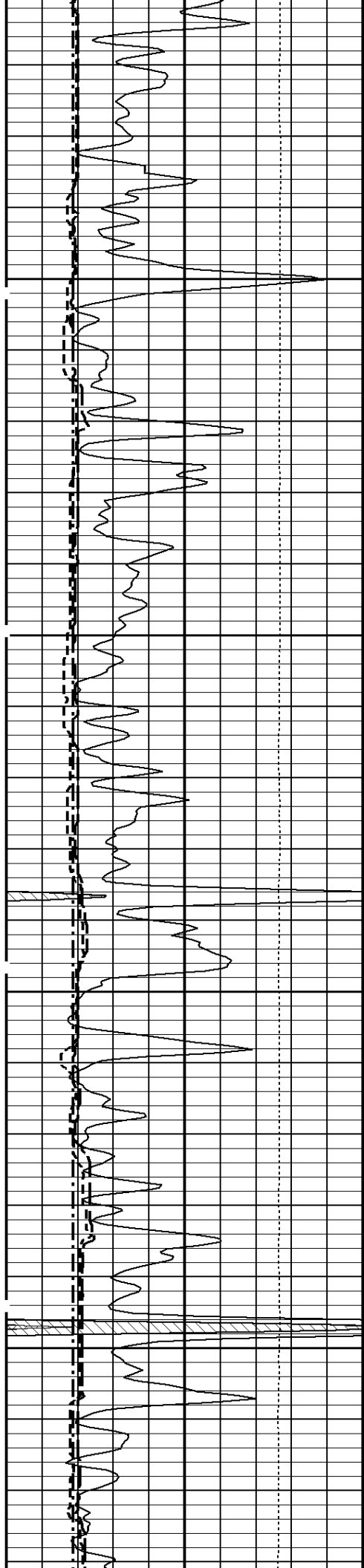
2900

200 Cu. Ft.

← GR

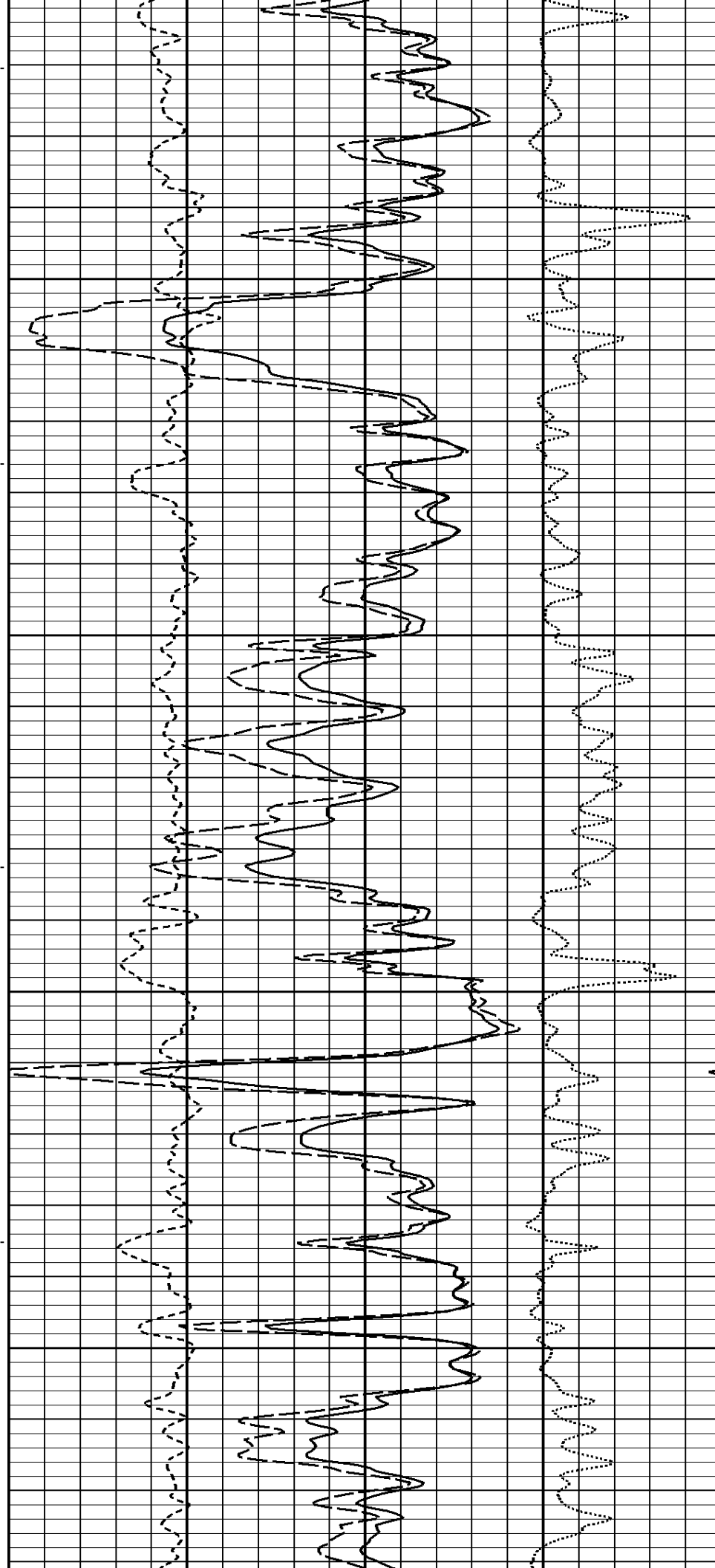
ZEN CAL

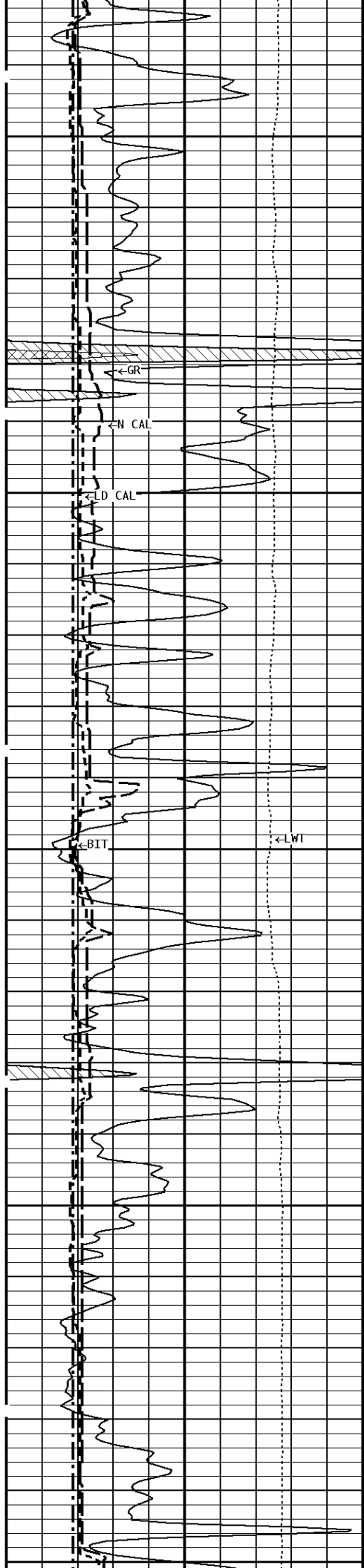




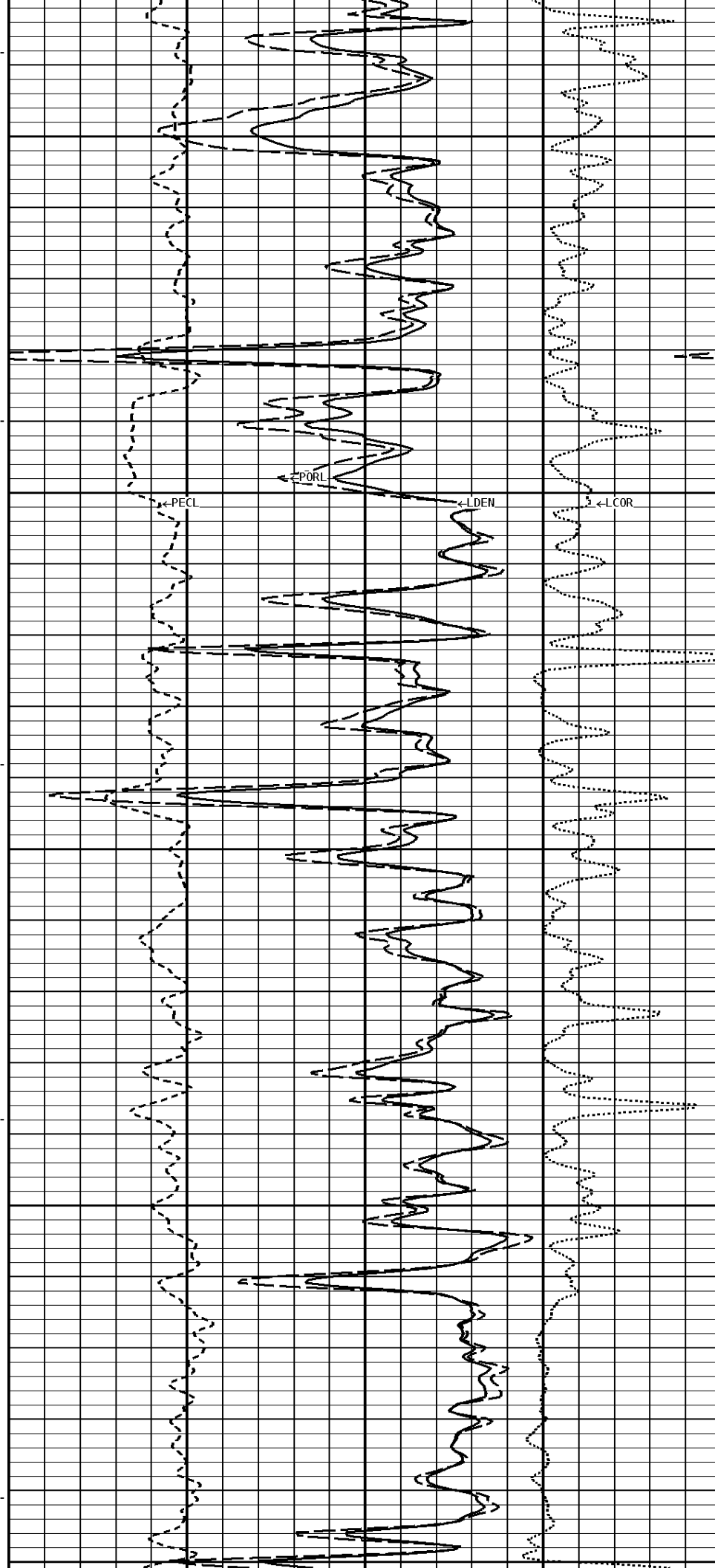
3200

3300

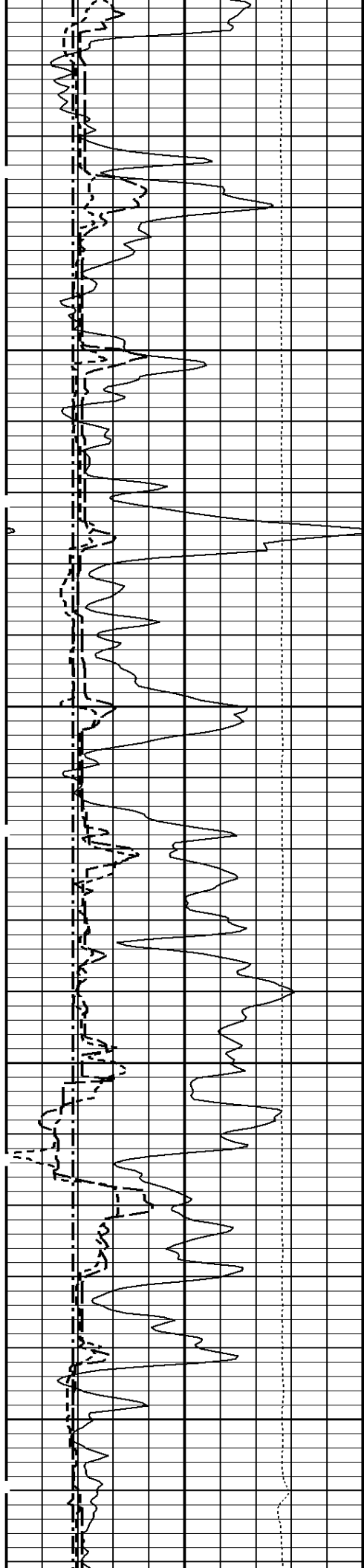




200 Cu. Ft.  
3400  
100 Cu. Ft.  
3500  
3600



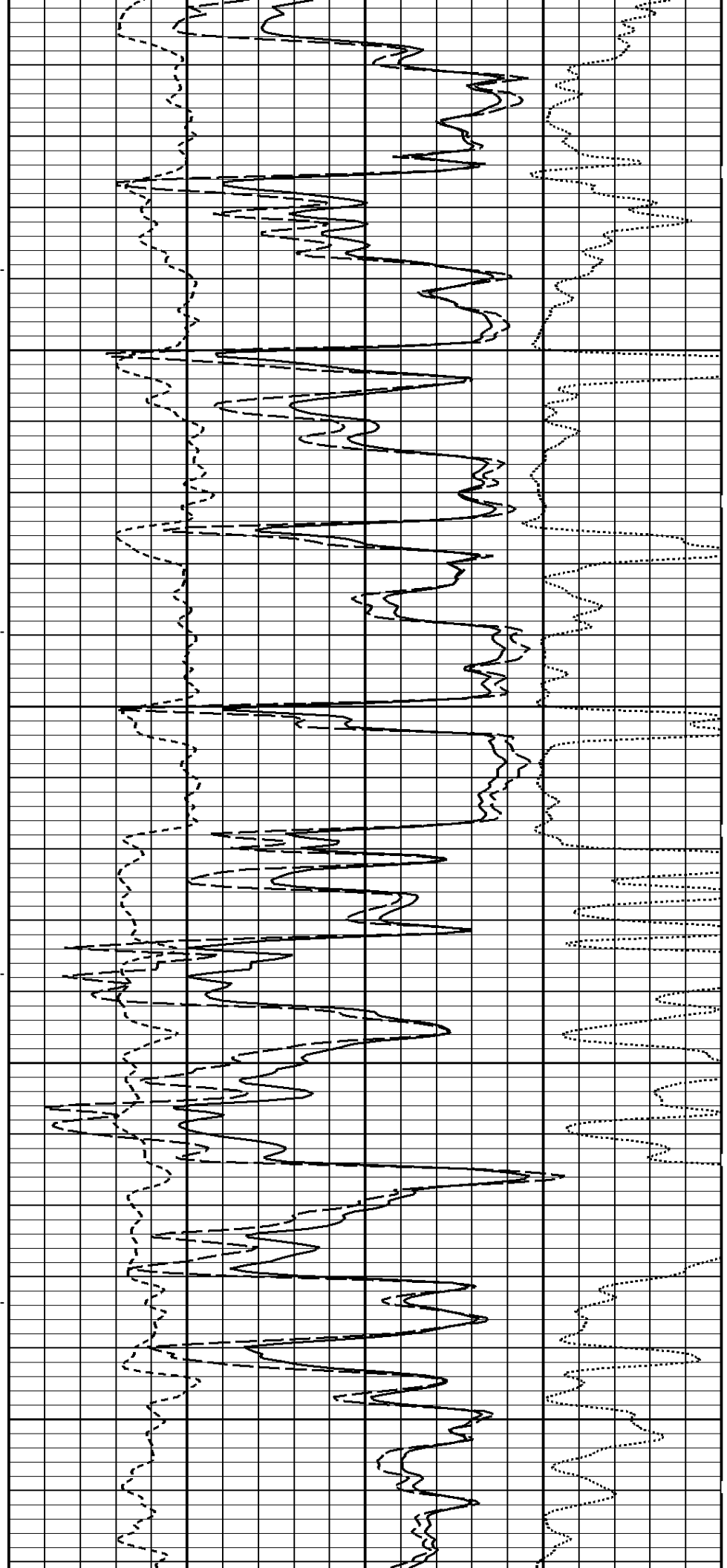
PECL  
PORL  
LDEN  
LCOR

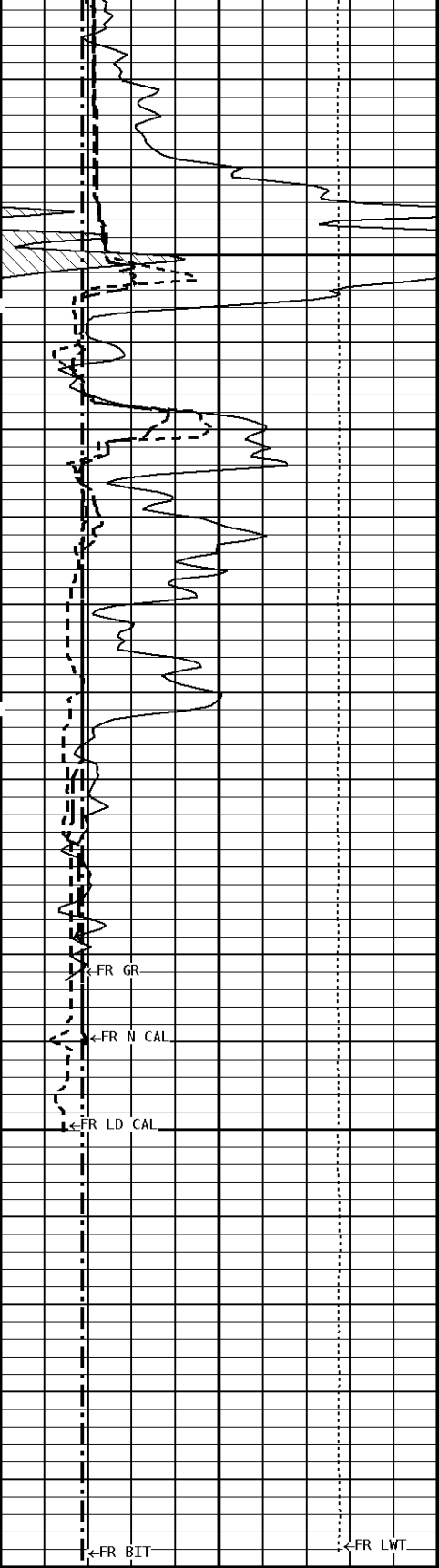


100Cu. Ft

3700

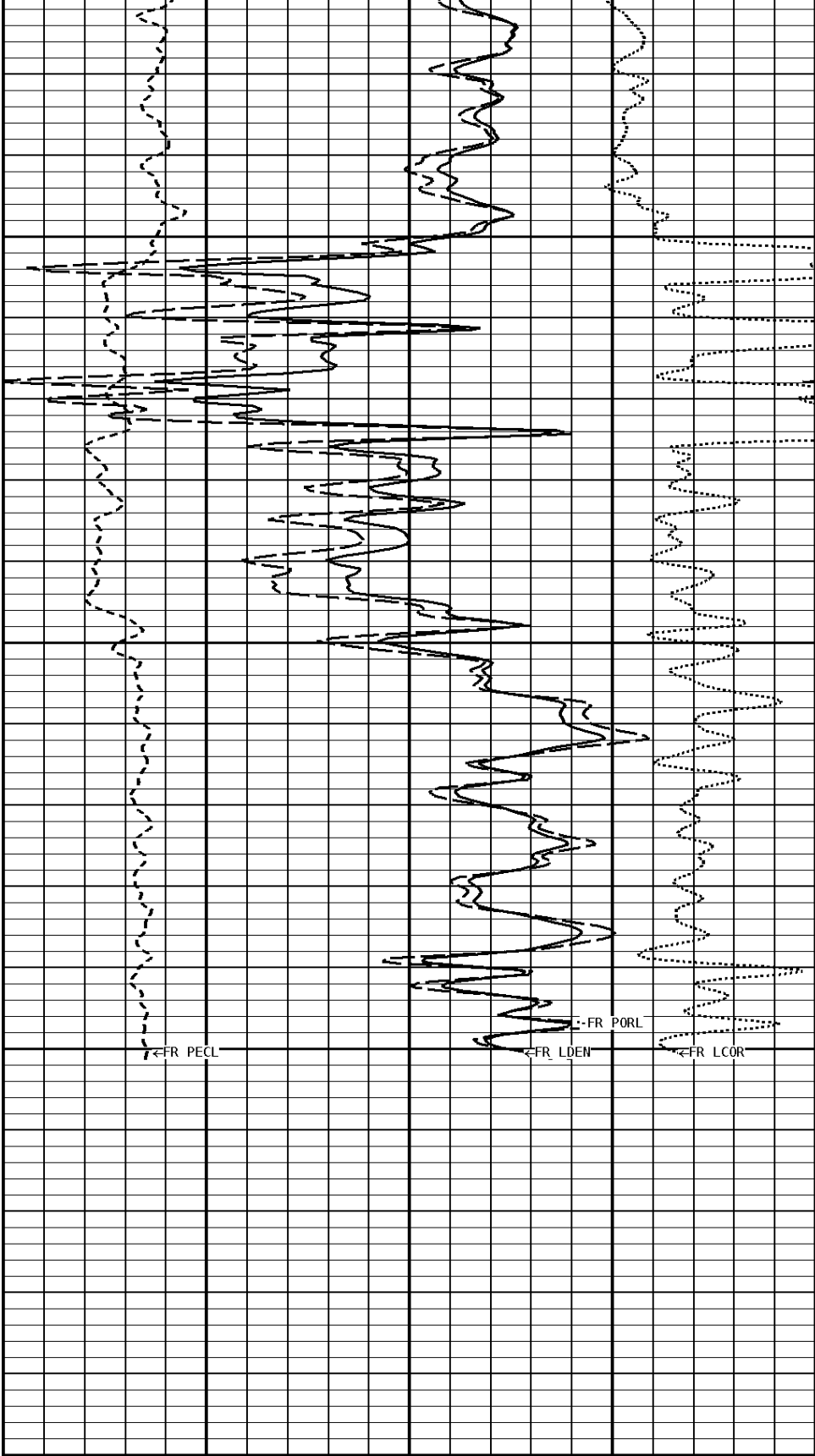
3800





3900

3998



# 1:240 MAIN SECTION BULK DENSITY

#1.1.9

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

**\* Borehole Zone Factors \***

<b>Zone 1</b>	<b>99999.0</b>	<b>to</b>	<b>0.0</b>	<b>Feet</b>
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 \***

<b>Shop Calibration</b>					
<b>GRT-B</b>					
Performed : 23-Aug-2012			Time : 09:20		
Sensor Suite : GR-GR5			ID : GRT-BA-14		
	Measured	Units	Calibrated	Units	
GR	Background	Jig	Jig	GRAPI	
	52	368	175		
	CPS				
<b>Shop Calibration</b>					
<b>CNT-AA</b>					
Performed : 25-Jul-2012			Time : 10:26		
Sensor Suite : CALI-BCN			ID : NDT-BB-123		
	Jig - Measured		Jig - Calibrated		Units
CL # 1	Ring#1	Ring#2	Ring#1	Ring#2	IN.
	6.8	11.6	6.0	12.0	
Performed : 12-Sep-2012			Time : 04:40		
Sensor Suite : BHC NEUT			ID : CNP-AA-024		
Source ID : N-1045					
	Tank		Verification		Units
N/F	Measured	Calibrated	Jig		
Porosity	3.8927	3.6893	3.6946		%
	23.7	20.5	20.6		

**Shop Calibration  
LDT-DF**

Performed : 01-AUG-2012      Time : 11:07  
 Sensor Suite : CALI-LTH      ID : PDT-GA-464

CL # 1	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	IN.
	7.9	11.1	6.0	12.0	

Performed : 04-Sep-2012      Time : 06:40  
 Sensor Suite : BHCPENLNG      ID : LDP-DA-065  
 Source ID : 2991GW

Short Space					
	BKGD	Al	Mg	Al+Fe	Units
LSW1	71	1158	1882	757	CPS
LSW2	76	1373	2189	1002	CPS
LSW3	273	3120	5026	2677	CPS
LSW4	330	2765	3999	2446	CPS
LSW5	30	56	62	51	CPS
LSW6	92	95	94	95	CPS
LSW7	56	62	62	62	CPS
LSW8	1	4	6	3	CPS
QS	0.241	0.211	0.203	0.214	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC

Long Space					
	BKGD	Al	Mg	Al+Fe	Units
LLW1	125	1339	5512	810	CPS
LLW2	154	2183	8533	1629	CPS
LLW3	474	3981	14998	3461	CPS
LLW4	549	1947	6180	1775	CPS
LLW5	67	72	130	71	CPS
LLW6	168	161	151	161	CPS
LLW7	110	105	102	107	CPS
LLW8	4	8	19	8	CPS
QL	0.212	0.209	0.194	0.203	
PEL			2.697	5.458	
LSDN		2.600	1.680		G/CC

**Shop Calibration  
MST-DA**

Performed : 01-Aug-2012      Time : 10:58  
 Sensor Suite : CALI-MSN      ID : MST-DA-36

CL # 1	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	IN.
	4.7	9.5	6.0	12.0	

Performed : 19-APR-2012      Time : 09:18  
 Sensor Suite : MSTDA-NI      ID : MST-DA-36

Internal						
	Measured			Calibrated		
	Zero	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      Time : 14:53  
 Sensor Suite : MSTDAMSF      ID : MST-DA-36

Internal						
	Measured			Calibrated		
	Zero	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