



Tucker
ENERGY SERVICES

COMPENSATED NEUTRON
PEL DENSITY MICRO LOG

Company VAL ENERGY, INC. Well WERNER #3-31 Field WILSON County COWLEY State KANSAS Country USA API No. 15-035-24652		File No : TUL-60794 Company : VAL ENERGY, INC. Well : WERNER #3-31 Field : WILSON County : COWLEY State : KANSAS Country : USA API No : 15-035-24652	
Location : 1980' FSL & 990' FEL W2 SE NE		LSD : Sect : 31 Twp : 32S Rge : 6E	
Permanent Datum:	GL	Elevations:	
Drilling Measured From:	KB	KB	1316.00
Log Measured From:	KB	DF	1315.00
Above Permanent Datum:	8.00 Ft	GL	1308.00
Date	12-05-2015		
Run Number	1		
Depth--Driller	3455.0	Ft	
Depth--Logger	3455.0	Ft	
First Reading	3432.0	Ft	
Last Reading	345.0	Ft	
Casing--Driller	345.0	Ft	
Casing--Logger	345.0	Ft	
Bit Size	7.875	In	
Casing Size	8.625	In	
Hole Fluid Type	WBM		
Density	9.4		
Fluid Loss	9.6		
PH/Viscosity	9.5	36.0	
Sample Source	MEASURED		
RM@Measured Temp.	2.000	@ 50 F	
RMF@Measured Temp	1.700	@ 50 F	
RMG@Measured Temp.	2.300	@ 50 F	
Source RMF/RMC	CALCULATED/CALCULATED		
RM@BHT	99.999	@ 110 F	
Time Circulation Stopped			
Max Recorded Temp.	112	F	
Equipment/Base	T-126	TULSA	
Recorded By	S. DAVIS		
Witnessed By	J. BAKER		

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	3455.00	8.625	20.00	345.00	0.00

Run Number	1	
Date	12-05-2015	
Date/Time On Bottom	12-05-2015 1:30 pm	
Depth to Fluid	0.0 Ft	
Salinity	1800.000	
RMF@BHT	0.890 @ 110 F	
RMC@BHT	1.120 @ 110 F	

Run Number 1

Comments

ALL PRESENTATION PER CUSTOMER REQUEST
 GRT,CNT,LDT,PIT RUN IN COMBINATION
 CALIPERS ORIENTED ON X-Y AXIS
 2.71 G/CC USED TO CALCULATE POROSITY
 ANNULAR & BOREHOLE VOLUME CALCULATED USING 5.5 PRODUCTION CASING
 PHIN IS CALIPER CORRECTED
 DETAIL IS PRESENTED FROM TD TO 1800'
 MICRO 0-80 SCALE

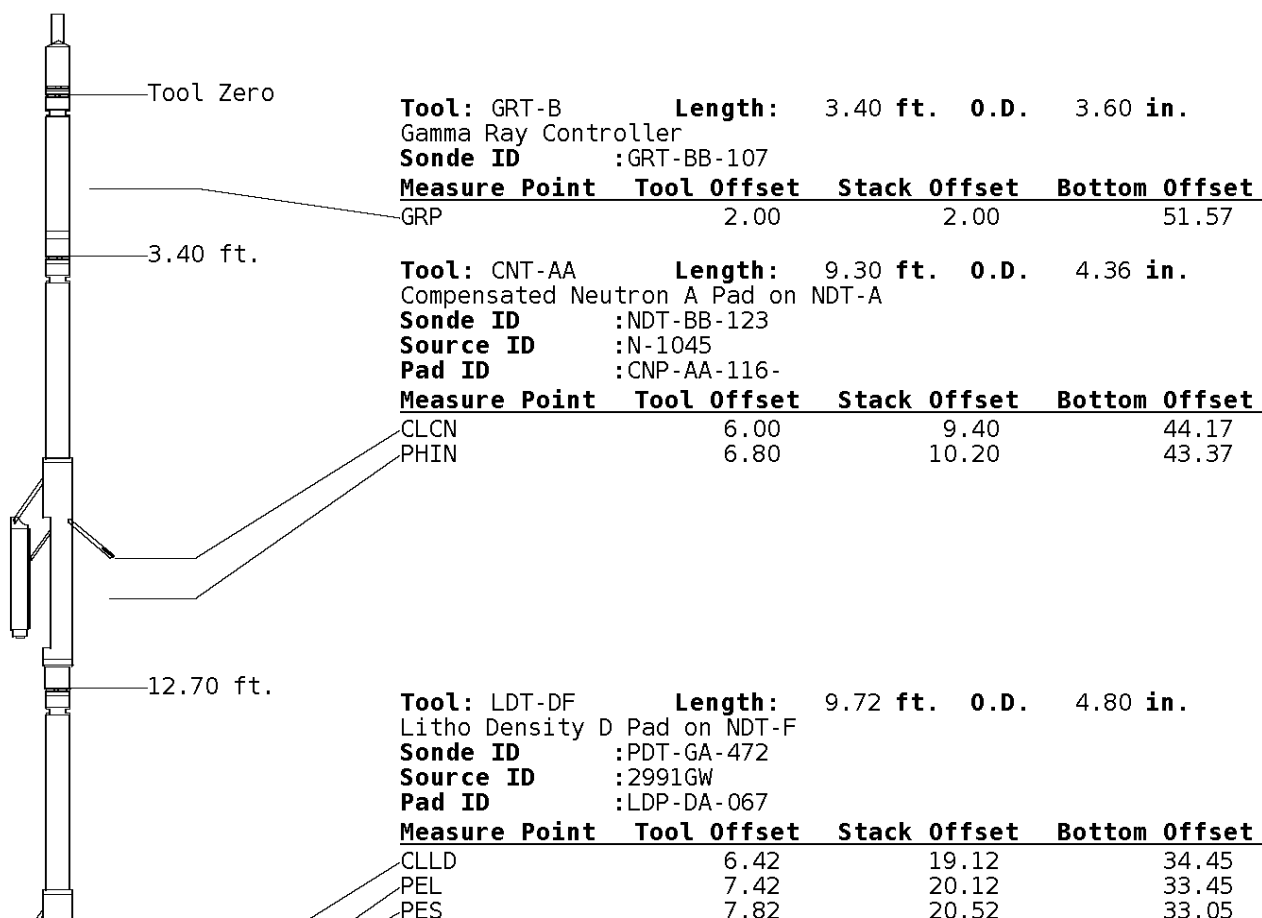
GRT; GRP,
 CNT; PHIN, CLCNIN
 LDT; PORL, LCORN, PECLN, LDENN, CLLDIN
 MLT; NOR.RF, INV.RF, MSCLPIN.
 PIT; ILD, ILM, SPU, SFLAEC, CIRD

OPERATORS;

C. GONZALES
 D. CLARK

Tool String Schematic

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



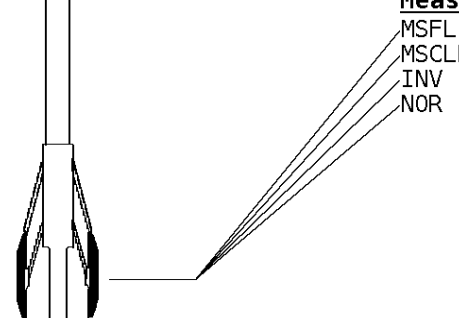


7.62	20.32	33.25
7.62	20.32	33.25

22.42 ft.

Tool: MST-DA **Length:** 9.66 ft. **O.D.** 6.00 in.
 Micro Spherically Focused (IC)
Sonde ID :MST-DA-057

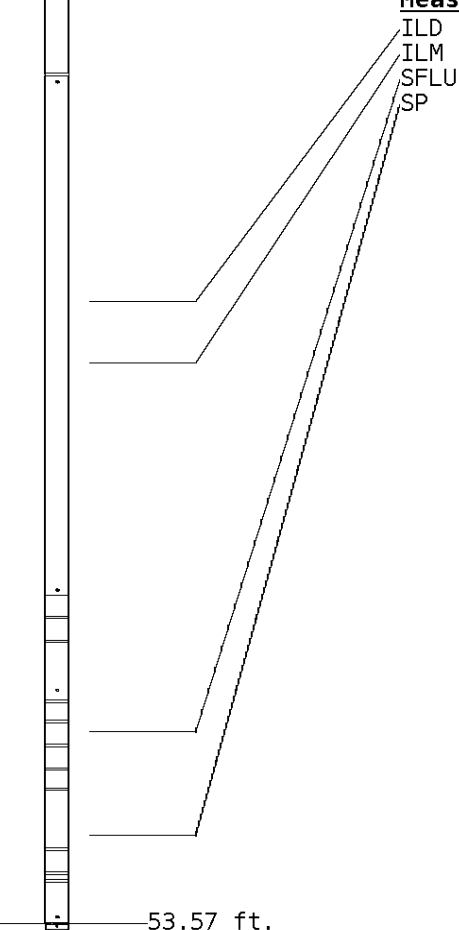
Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	30.02	23.55
MSCLP	7.60	30.02	23.55
INV	7.60	30.02	23.55
NOR	7.60	30.02	23.55



32.08 ft.

Tool: PIT-CA **Length:** 21.49 ft. **O.D.** 3.62 in.
 Phased Dual Induction w/ RM & D
Sonde ID :PIT-CA-077

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



LWT 53.57 ft.

Well File: val-wer-3-31-mstk-dec-5

Scale: 1:240 **Format:** NLD-240

Segment: V1.D1.S5 MN

Acquired: 2015-12/05 13:41 3.4.0-13544

Reference: 0

Processed: 2015-12/05 14:50 3.4.0-13544

**CALIPER MICRO
INCHES (IN)**

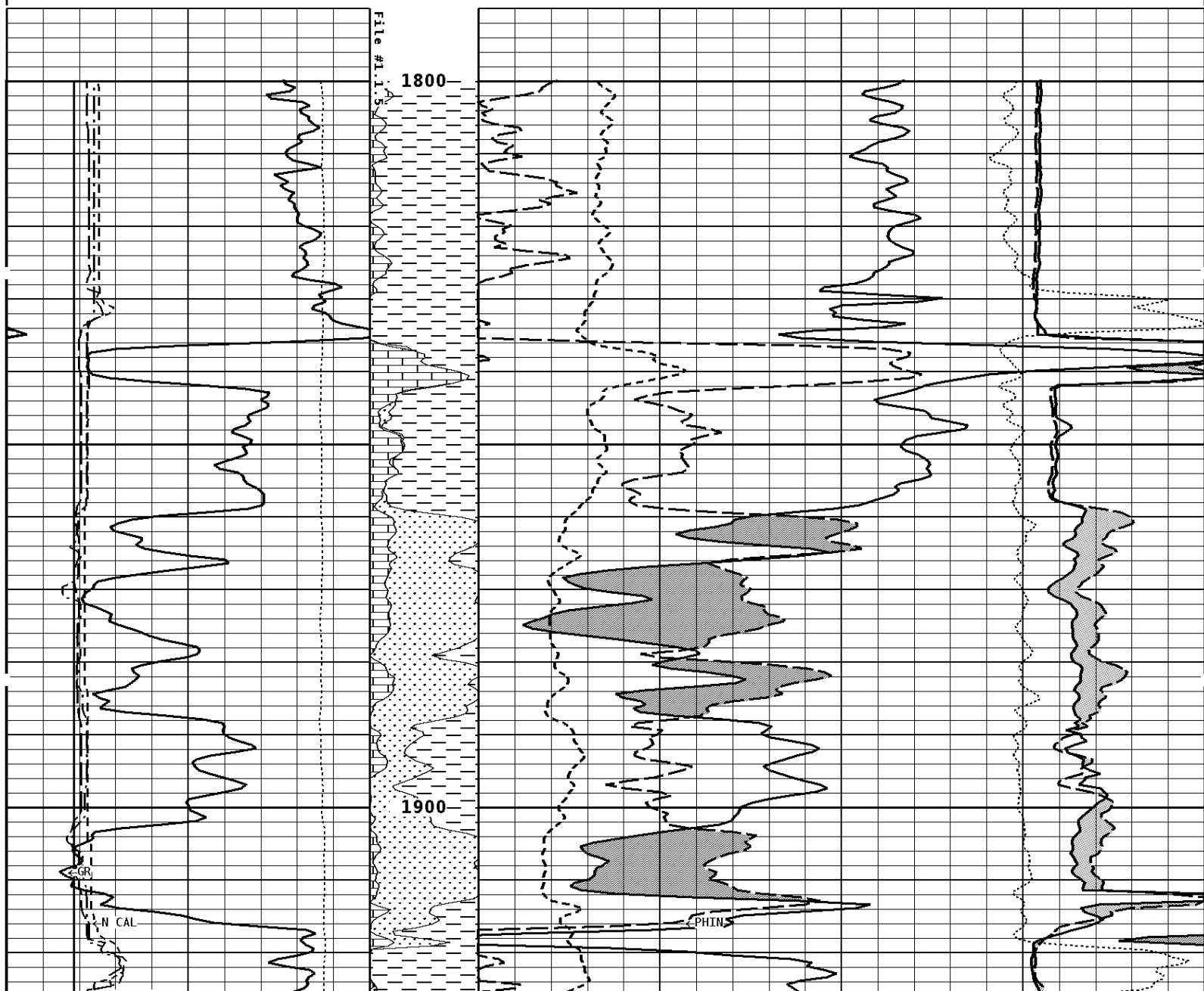
16	26
6	16

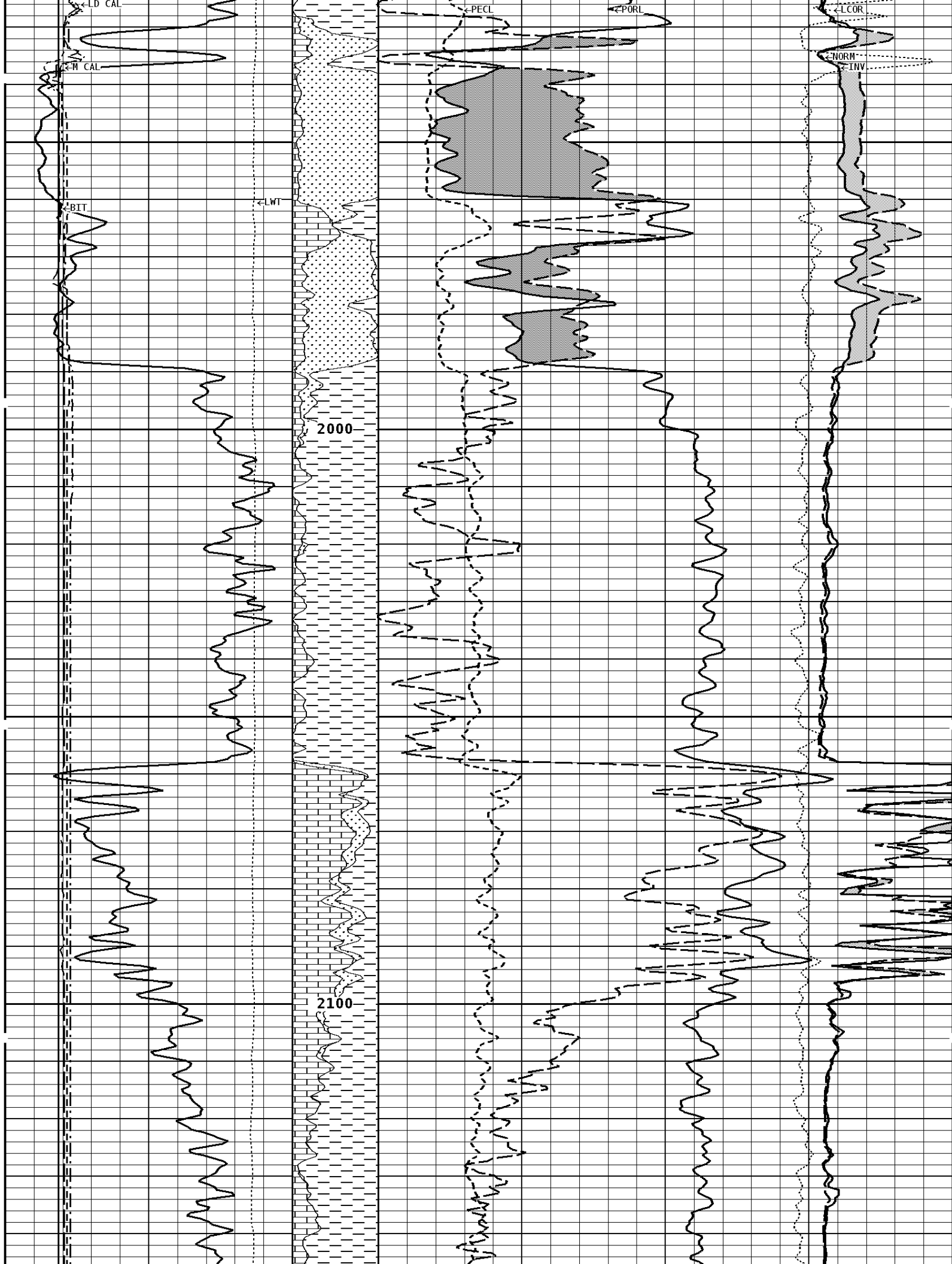
**BIT SIZE
INCHES (IN)**

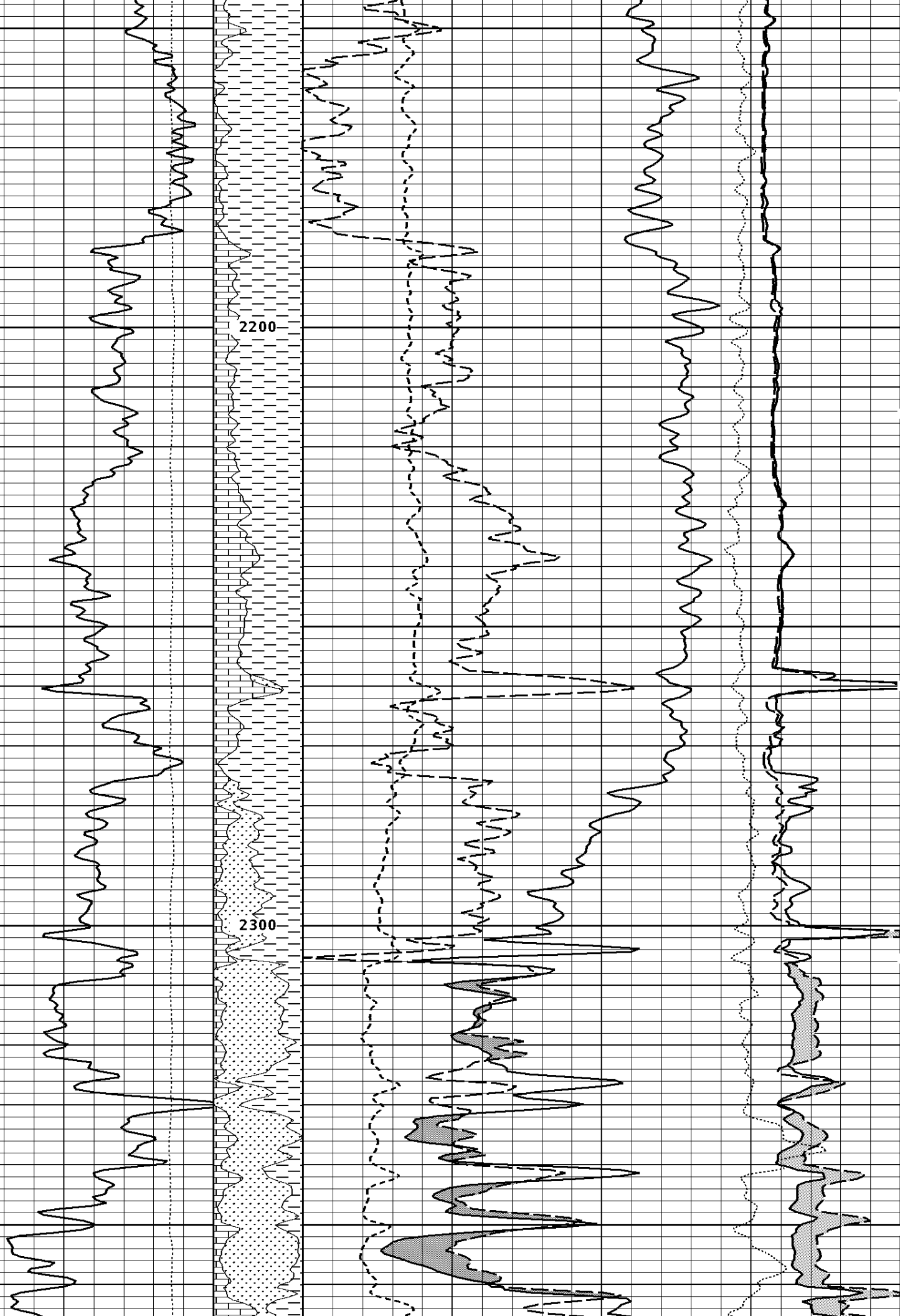
**NORMAL
OHMM**

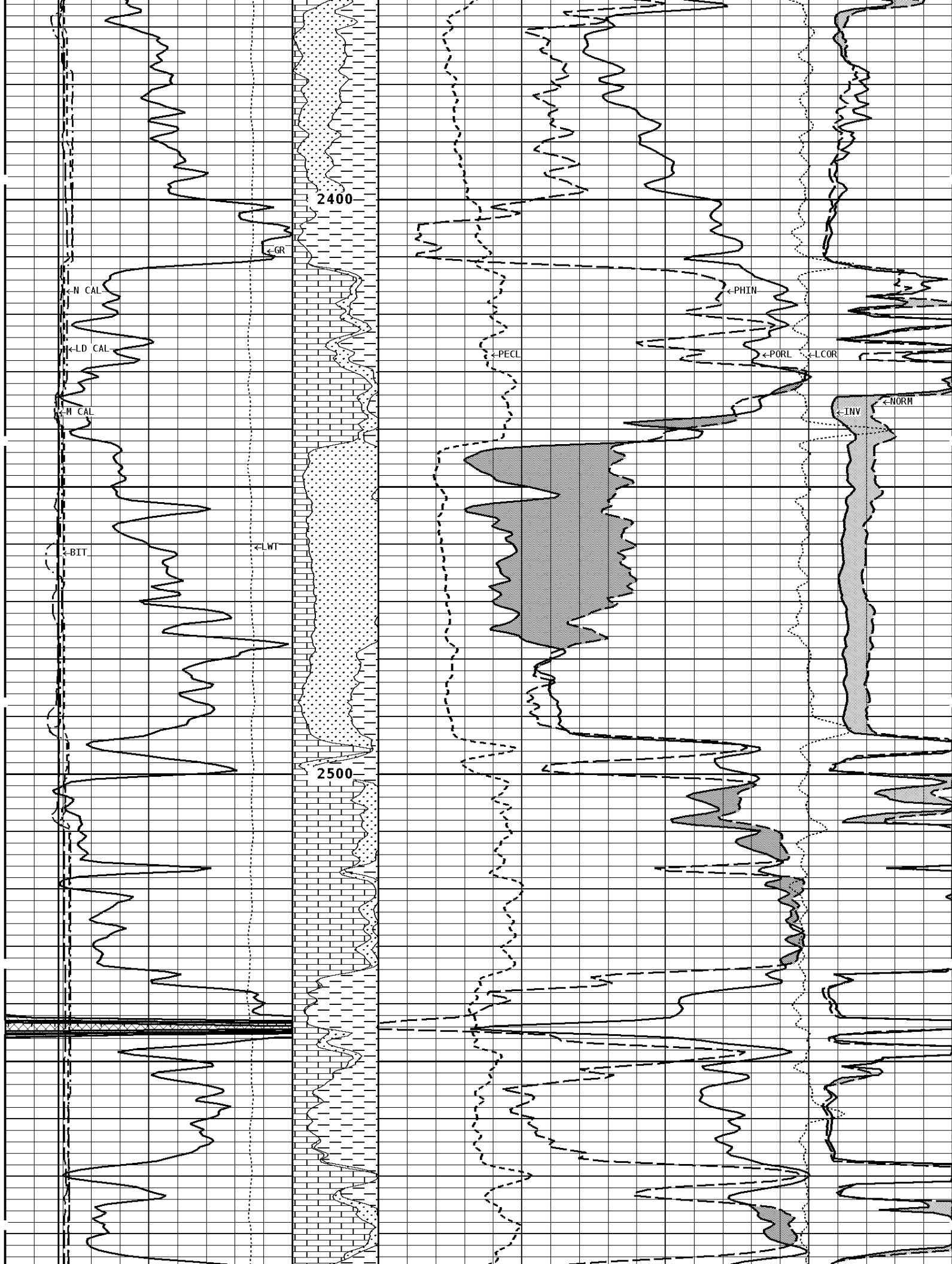
6	16			0	40
NEUTRON (Y) CALIPER INCHES (IN)				INVERSE OHMM	
16	26			0	40
6	16				
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARN/ ELECTRON	DENSITY CORRECTION G/CC	
16	26				
6	16		0	10	-0.25
					0.25
TENSION LBS		Volume Calcite	DENSITY POROSITY (2.71g/cc) PERCENT		
10000	0		70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

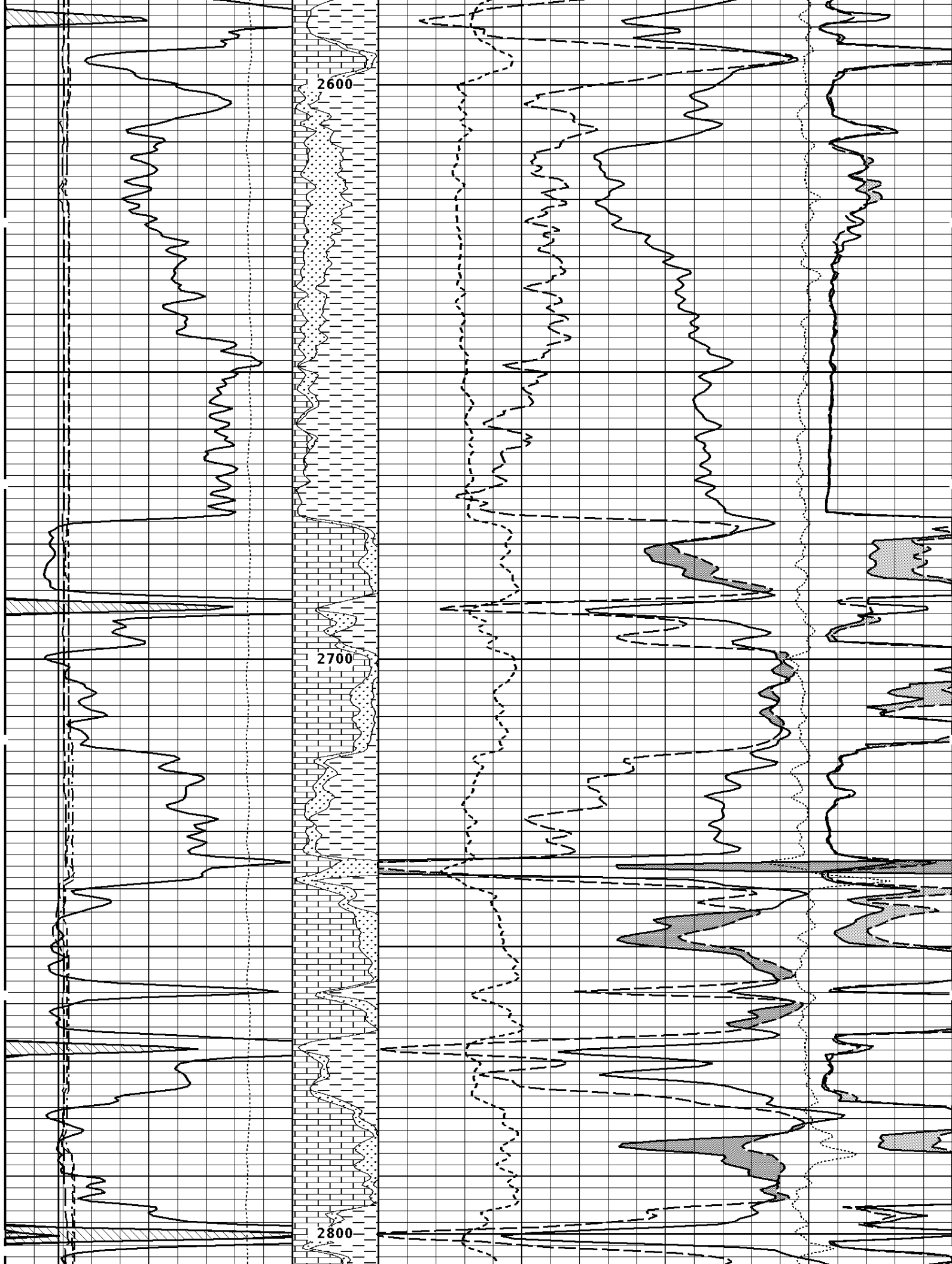
1:240 MAIN SECTION



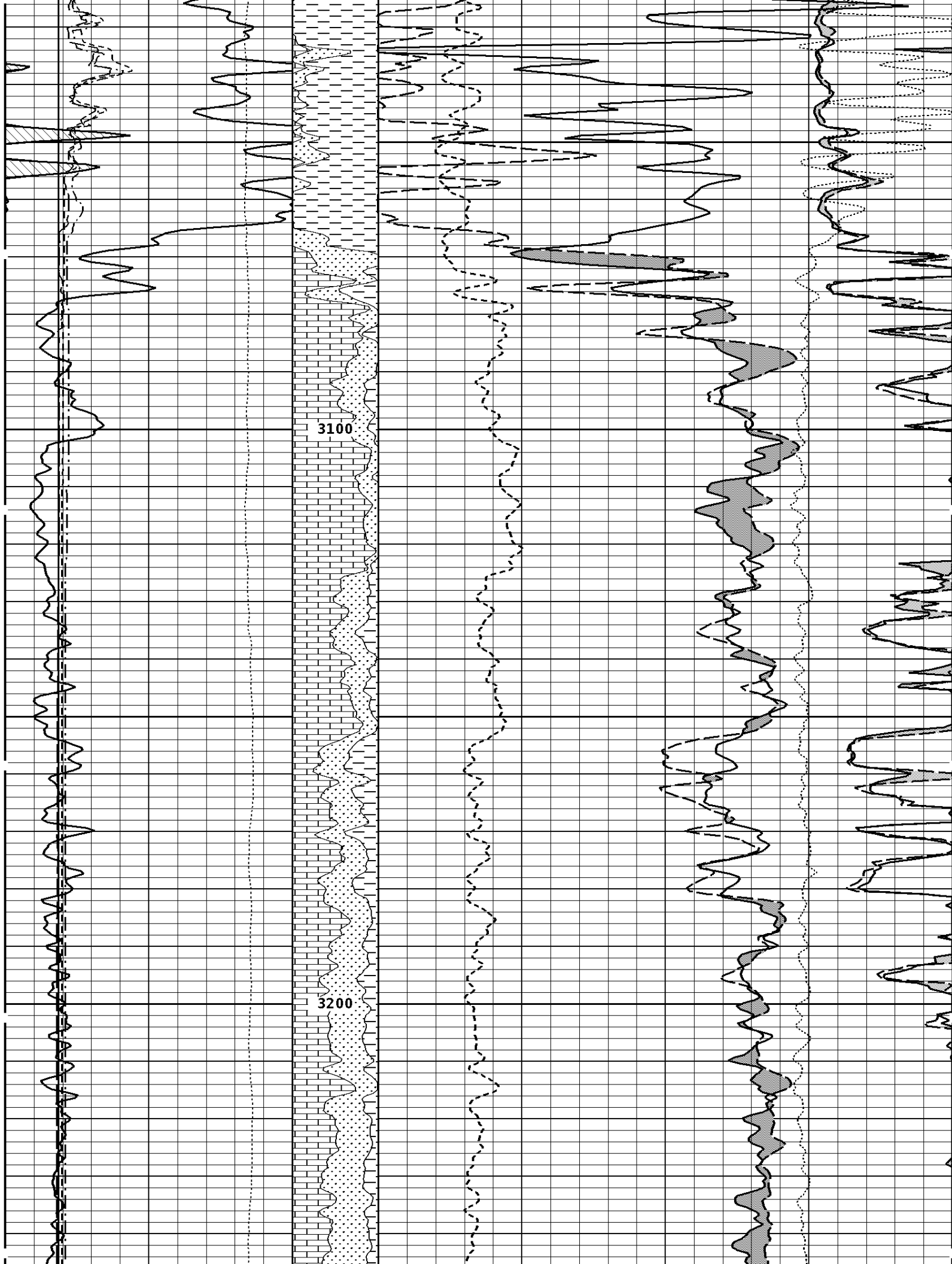


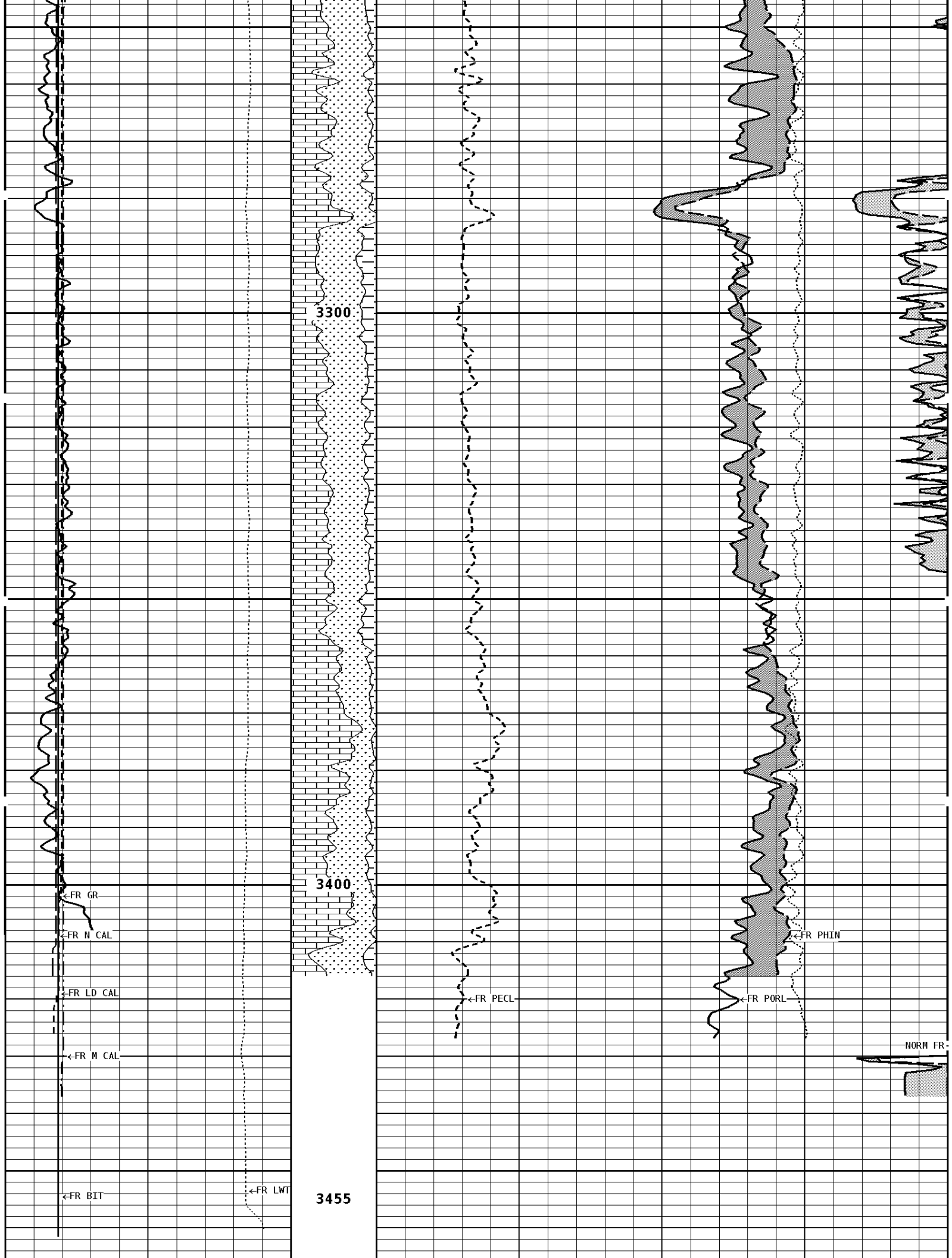












[illegible][illegible]

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

*** Borehole Zone Factors ***

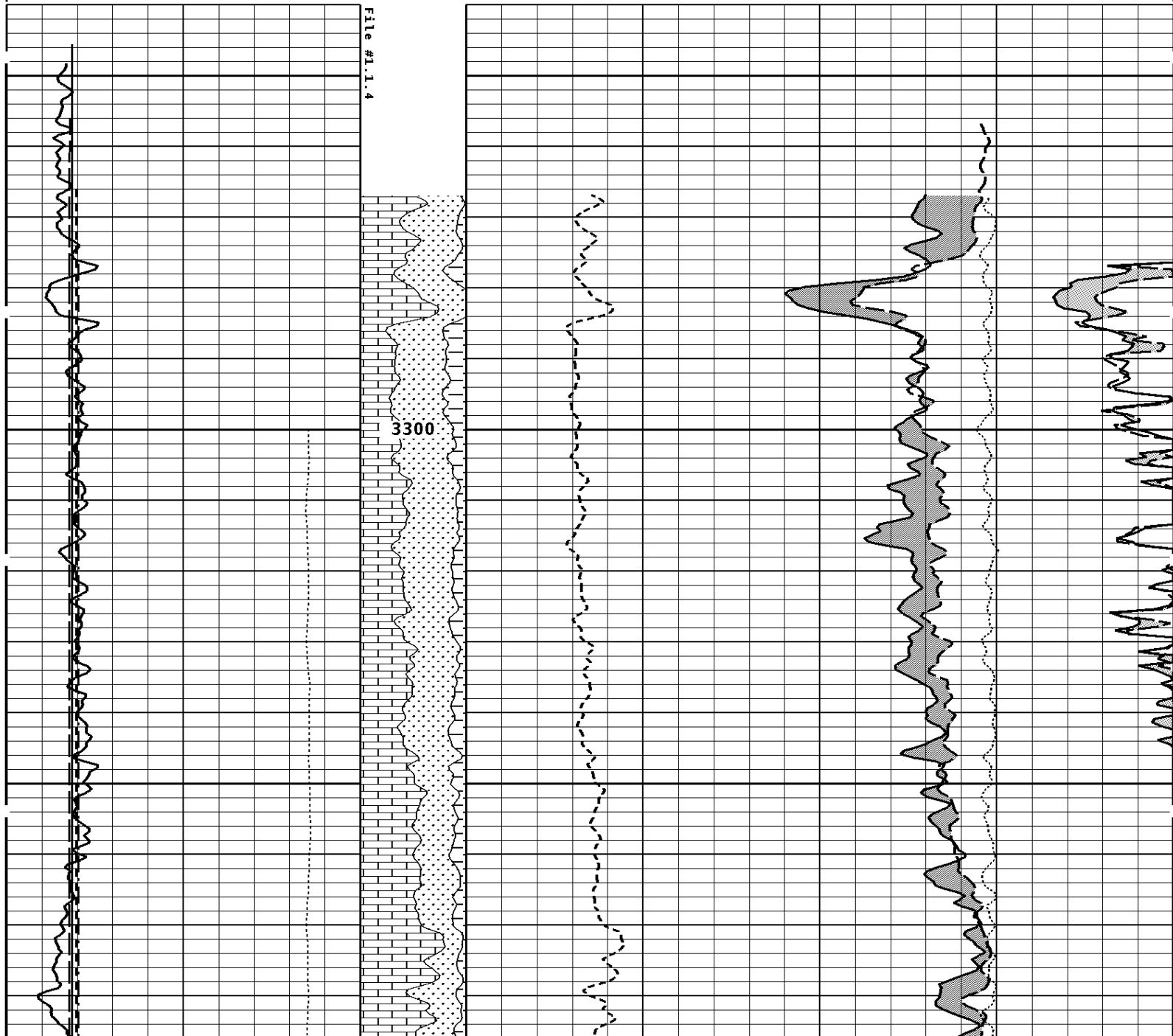
Zone 1 99999.0 to 0.0 Feet		
Matrix Density	_____	2.71 g/cc
Fluid Density	_____	1.00 g/cc
Formation Matrix	_____	Limestone
Drill Bit Size	_____	7.875 in
Casing Diameter	_____	5.500 in
Casing Thickness	_____	0.250 in
Casing Correction (PHI N)	_____	Disable

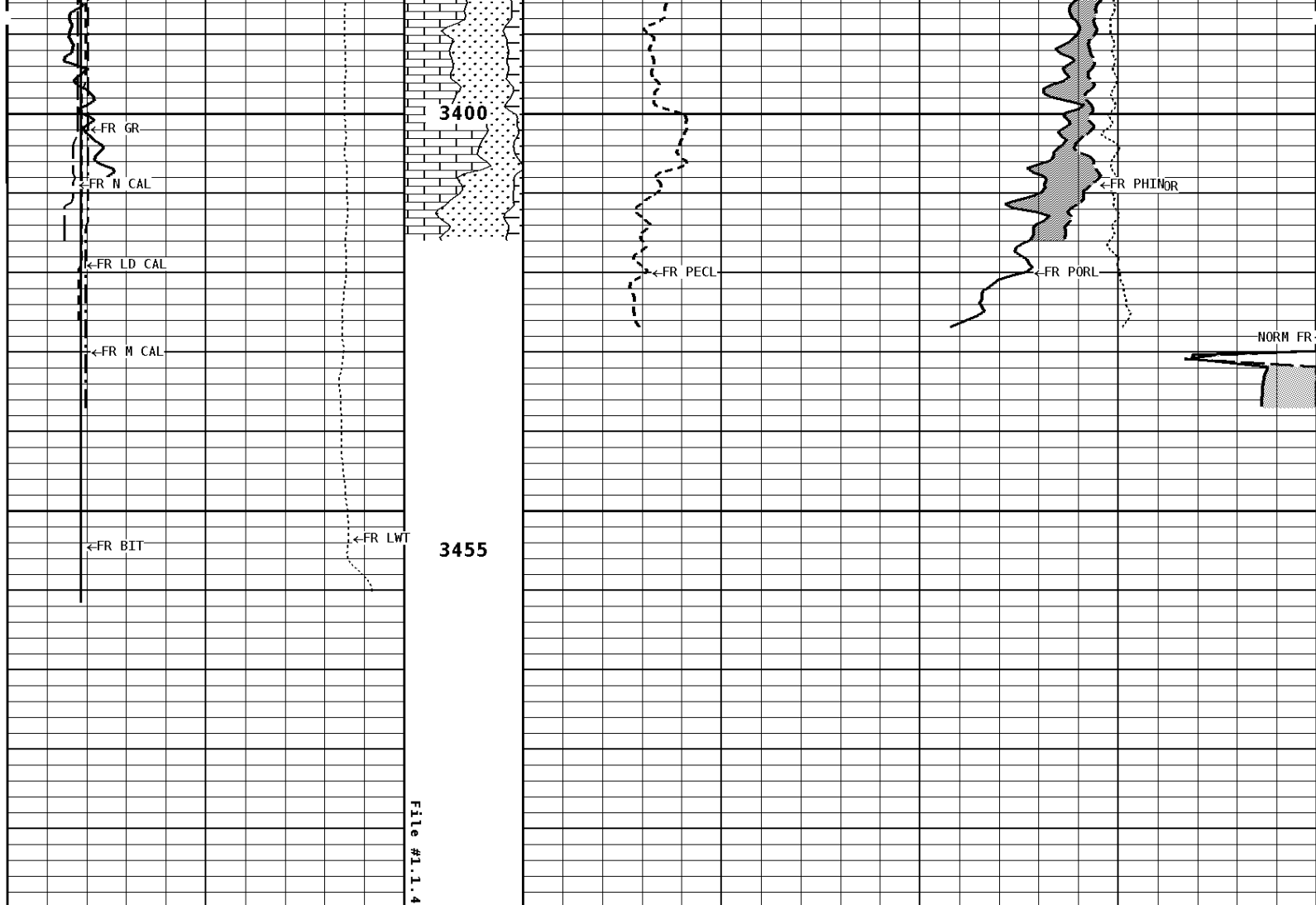
Well File: val-wer-3-31-mstk-dec-5	Scale: 1:240	Format: NLD-240
Segment: V1.D1.S4 RP	Acquired: 2015-12/05 13:29 3.4.0-13544	
Reference: 0	Processed: 2015-12/05 14:50 3.4.0-13544	

CALIPER MICRO INCHES (IN)					
16	26				
6	16				
BIT SIZE INCHES (IN)				NORMAL OHMM	
6	16			0	40
NEUTRON (Y) CALIPER				INVERSE	

INCHES (IN)				0HHH	
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				
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		30	-10	
0	150				

1:240 REPEAT SECTION





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

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: val-wer-3-31-mstk-dec-5

Scale: 1:240

Format: LDT-240

Segment: V1.D1.S5 MN

Acquired: 2015-12/05 13:41 3.4.0-13544

Reference: 0

Processed: 2015-12/05 14:50 3.4.0-13544

**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**

150 300
0 150

**PE CROSS-SECTION
BARNS/ELECTRON**

0 10 -0.25 0.25

**DENSITY CORRECTION
G/CC**

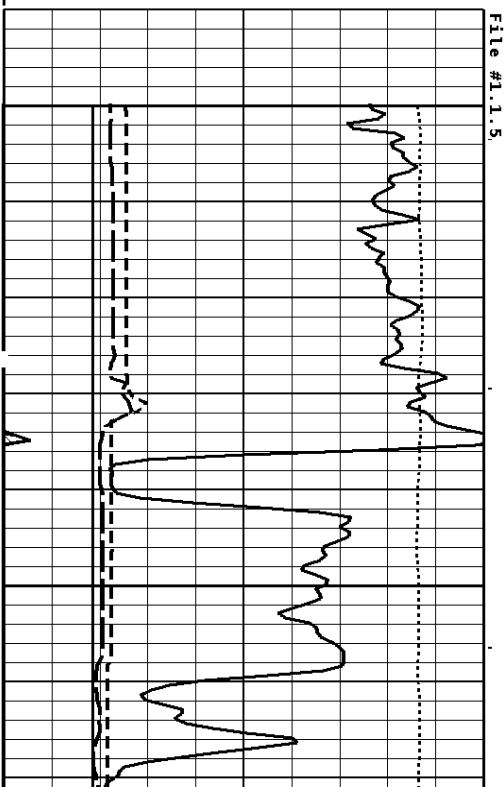
**COMPENSATED BULK DENSITY
G/CC**

3.0 4.0
2.0 3.0
1.0 2.0

**DENSITY POROSITY (2.71g/cc)
PERCENT**

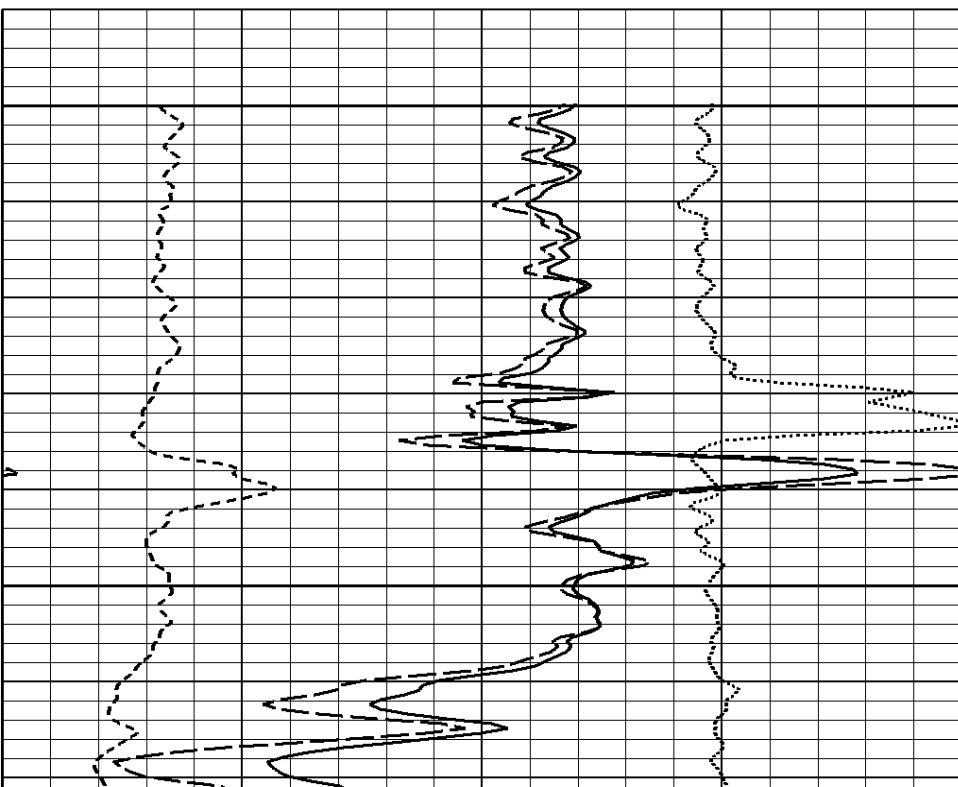
70 30
30 -10
-10 -50

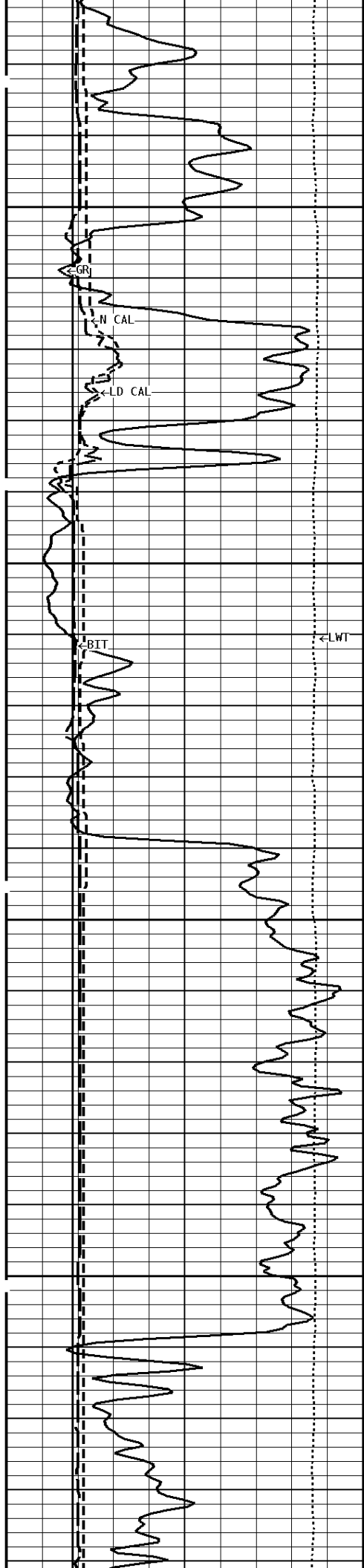
**1:240 MAIN SECTION
BULK DENSITY**



1800

300Cu.Ft--

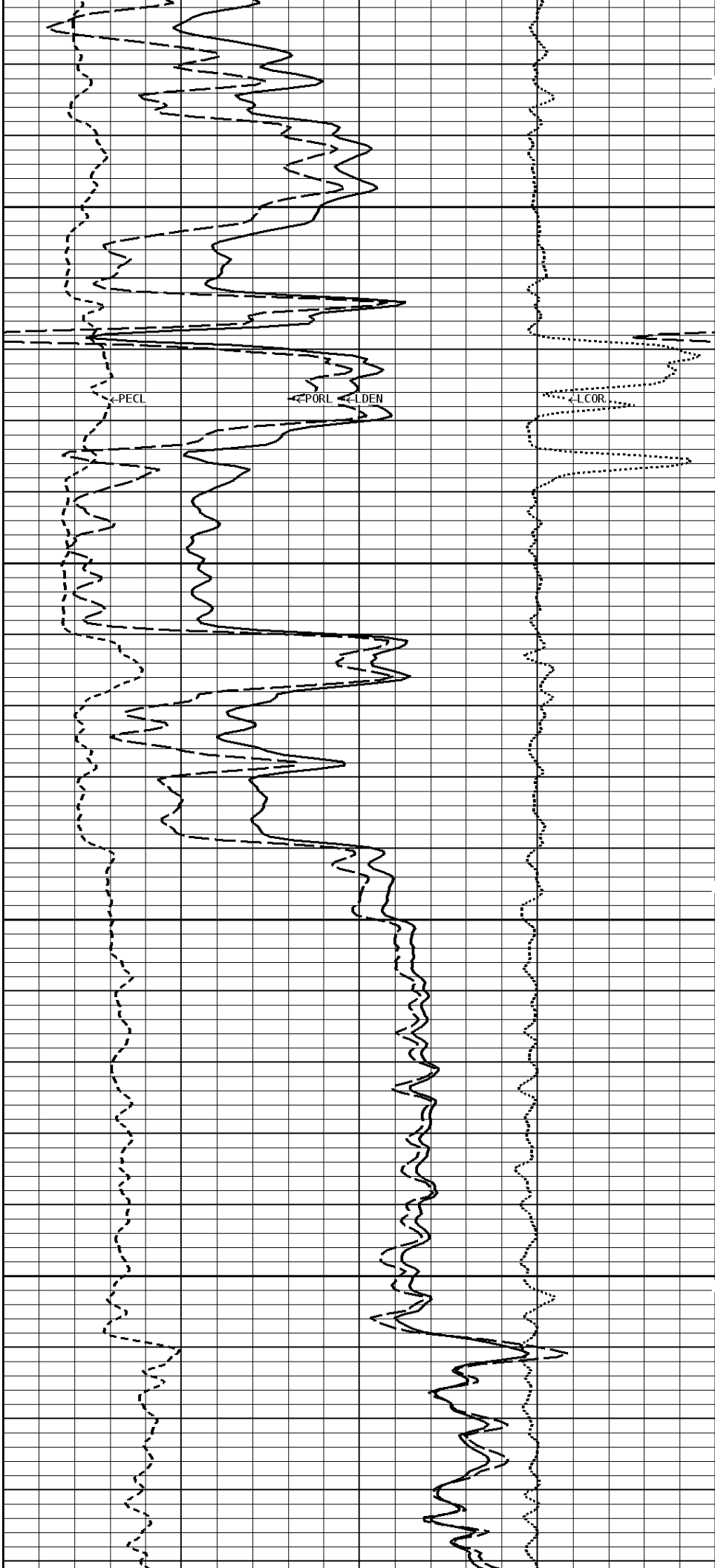


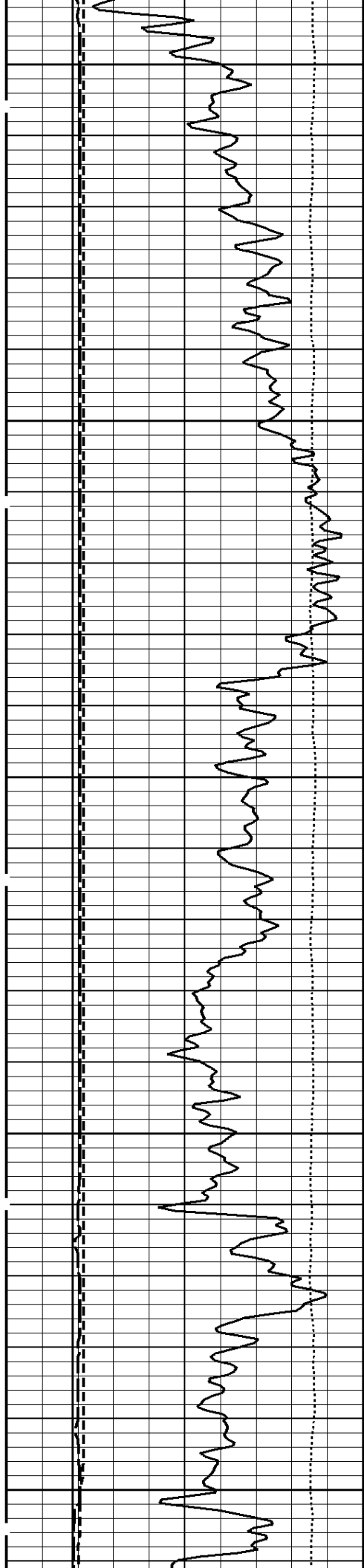


1900

2000

--500Cu.Ft

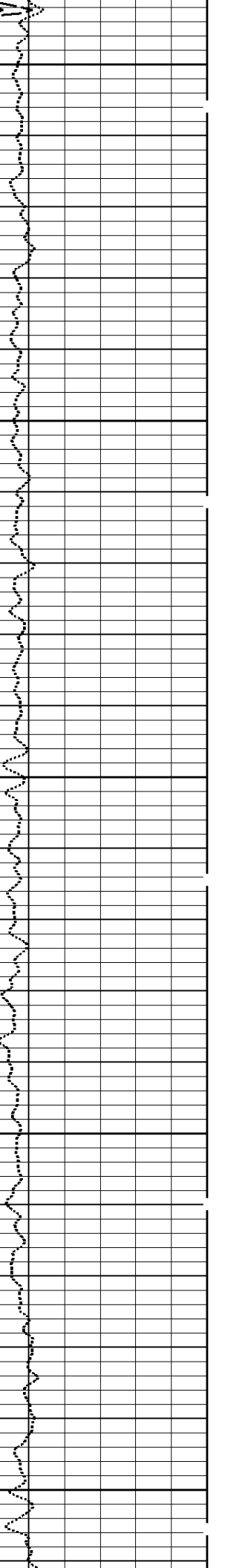
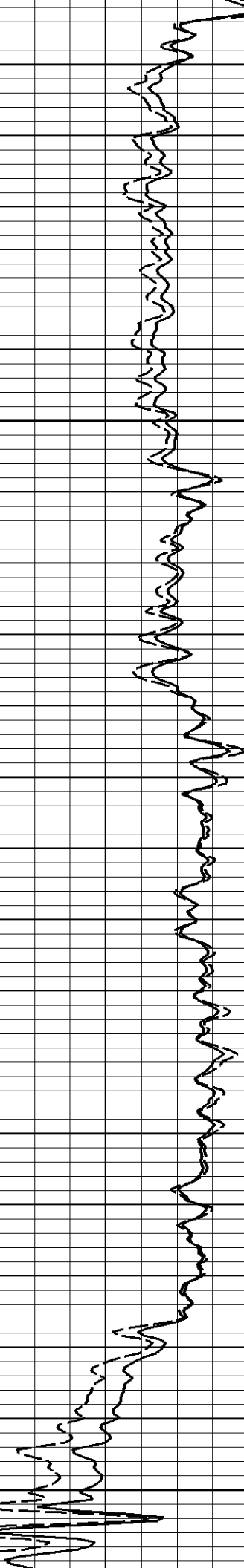
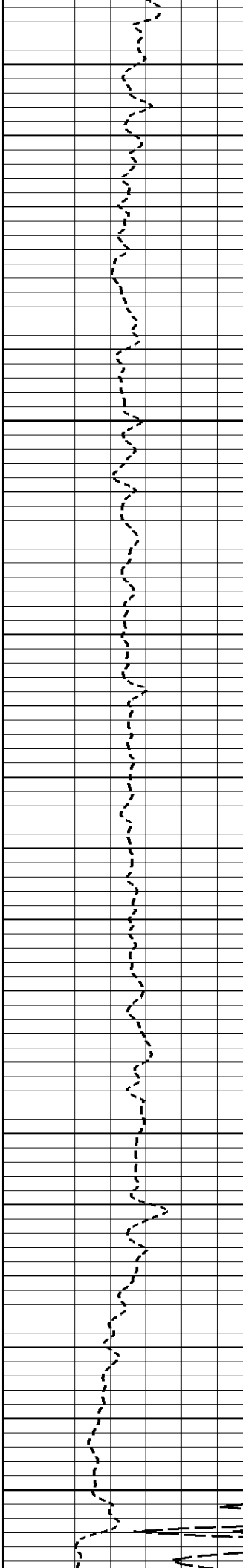


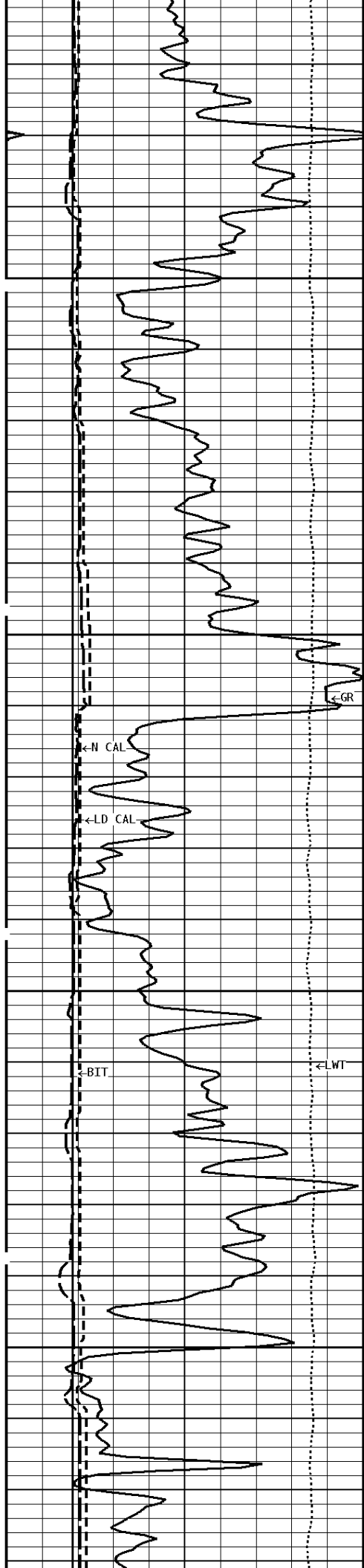


2100

2200

2300
-400Cu.Ft

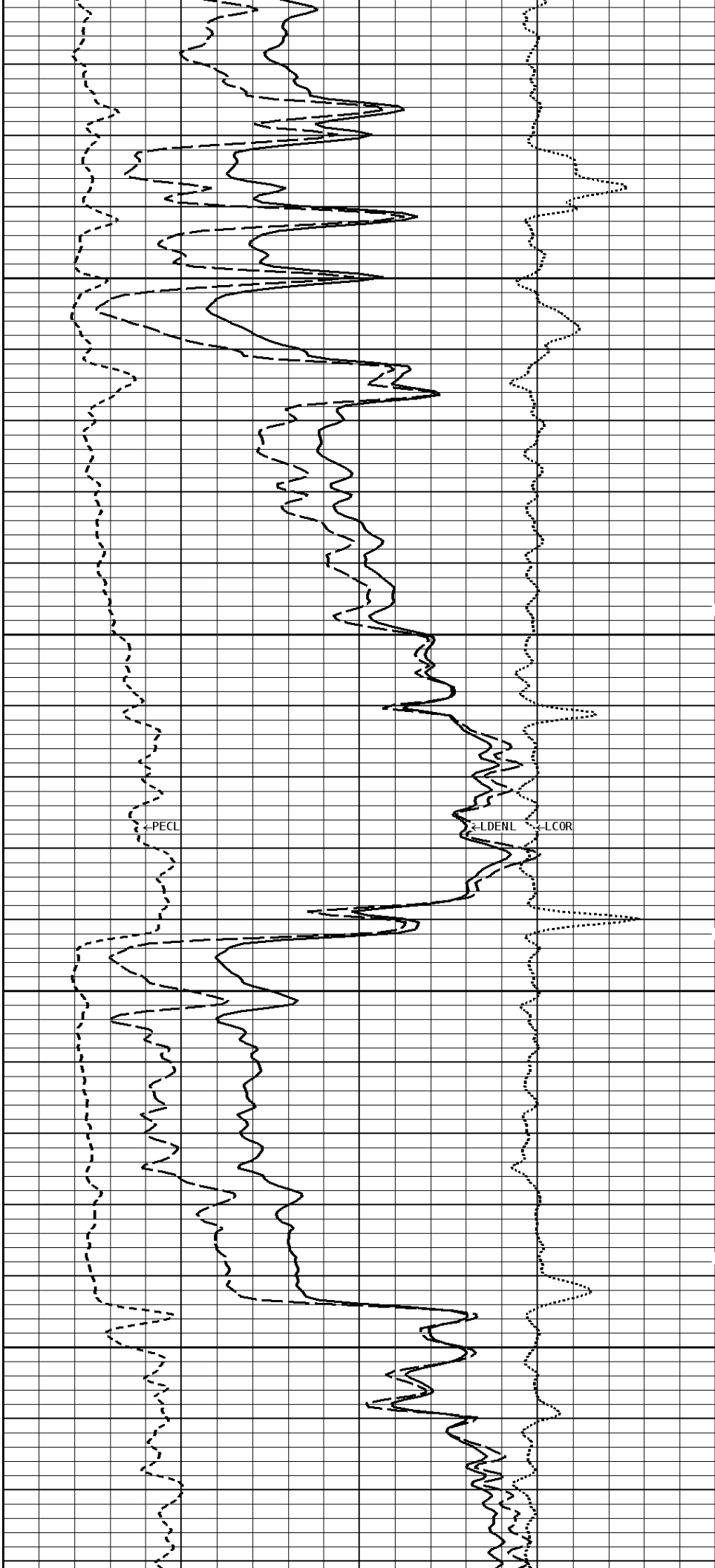


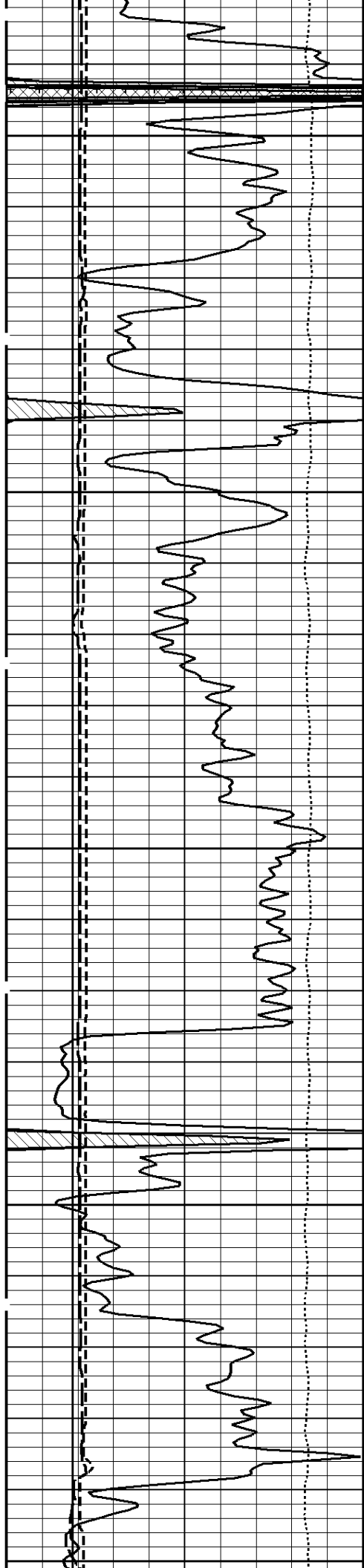


200Cu.Ft--

2400

2500

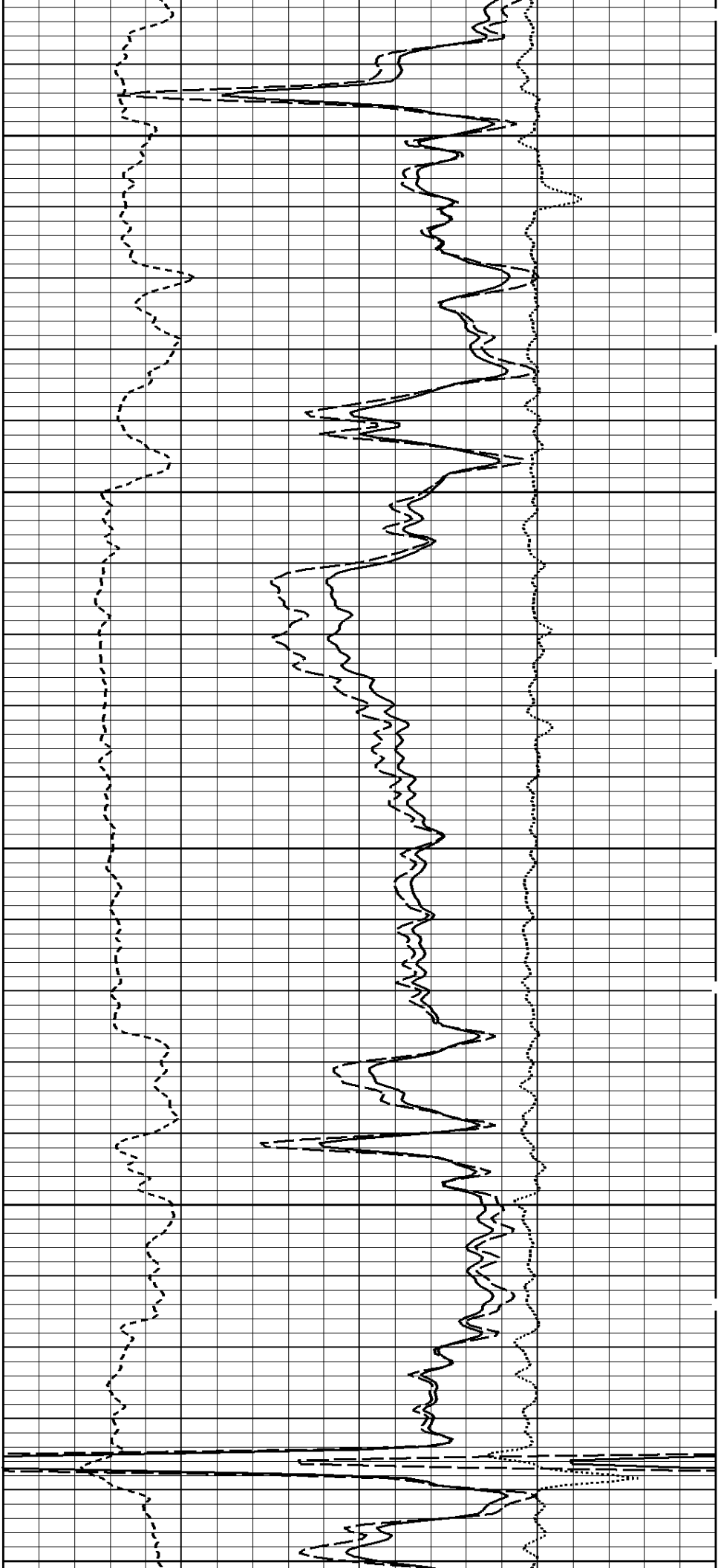


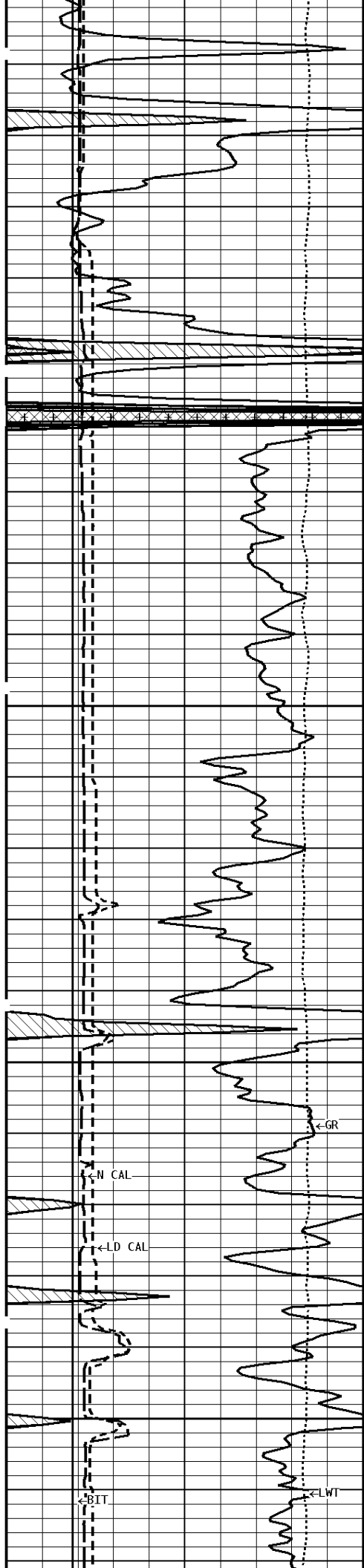


--300Cu.Ft

2600

2700





2800

--200Cu.Ft

100Cu.Ft--
2900

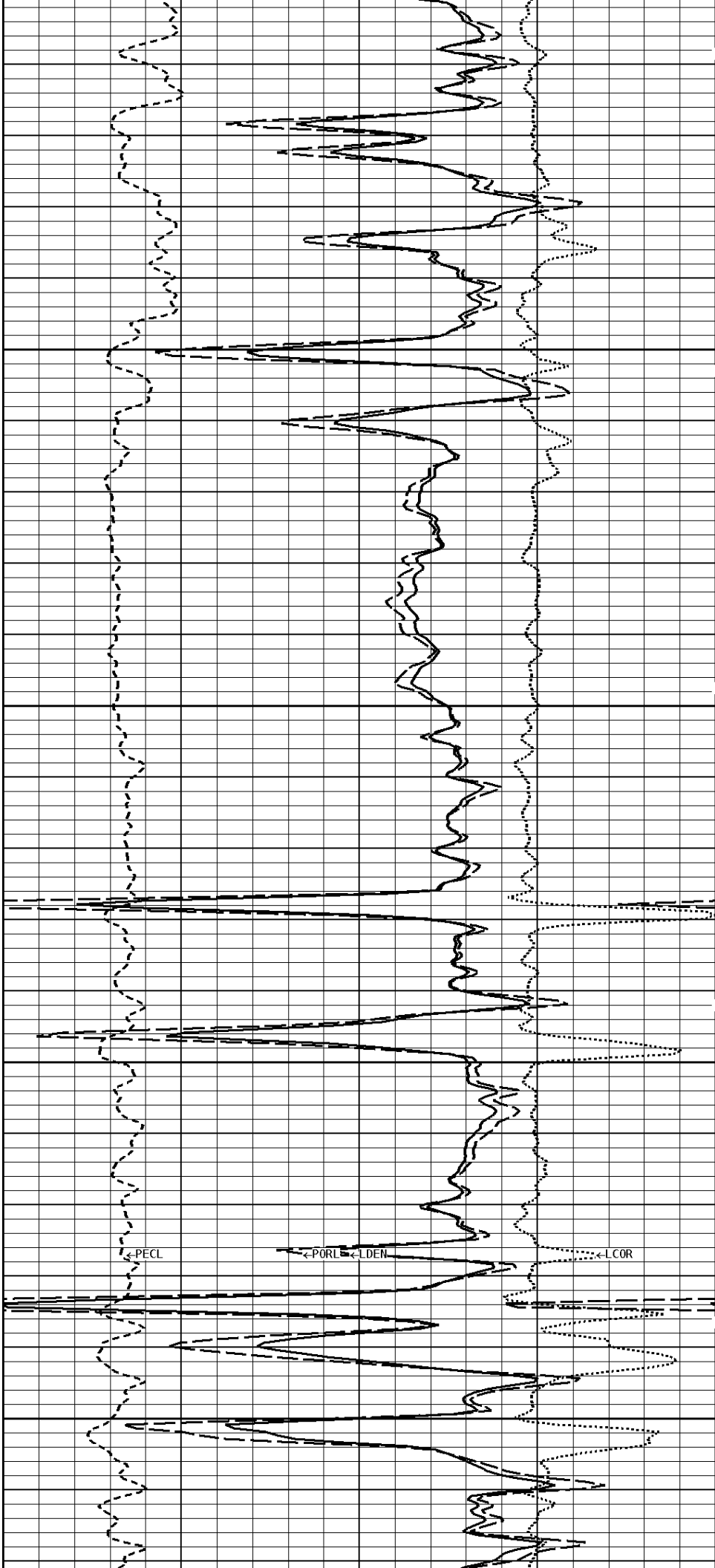
<GR

<N CAL

<LD CAL

<BIT

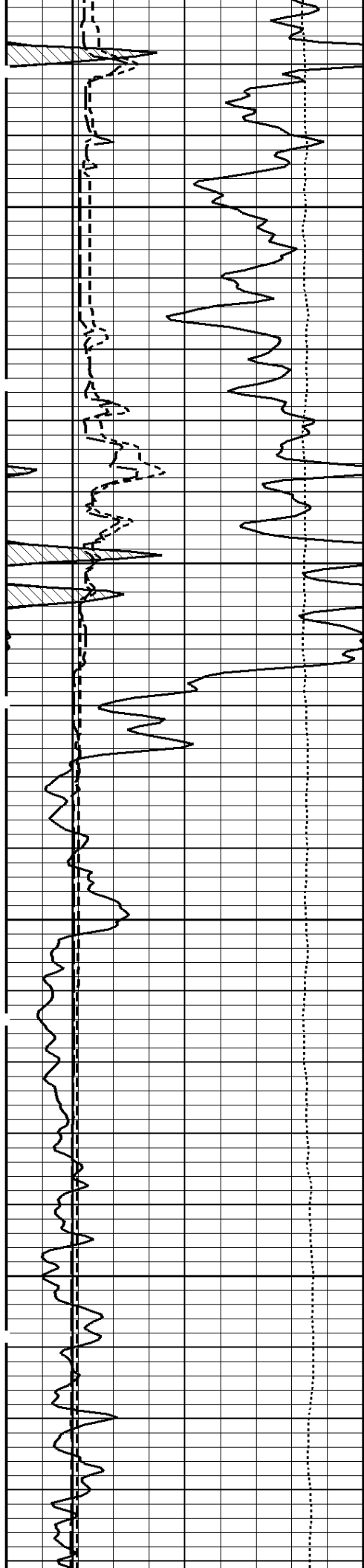
<LWT



<PECL

<PORL <LDEN

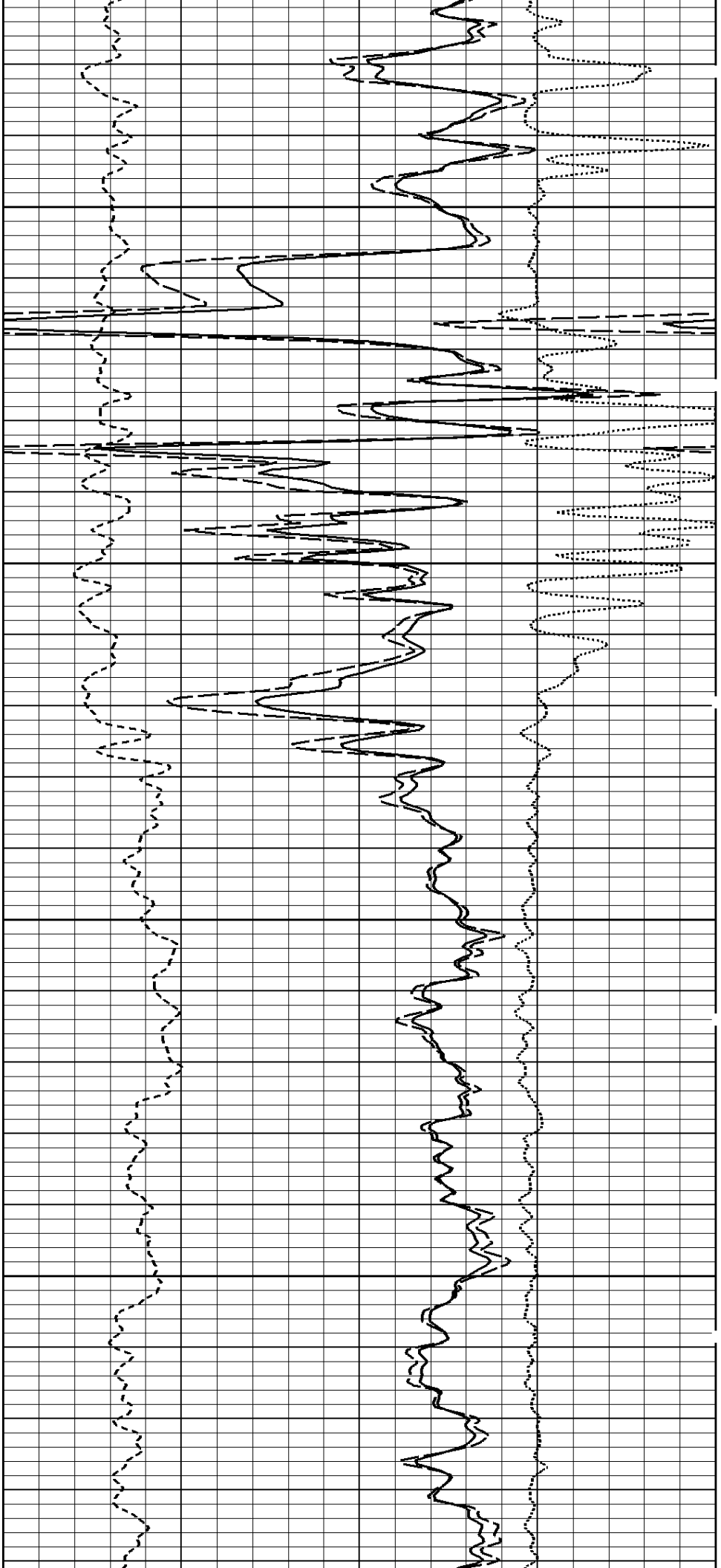
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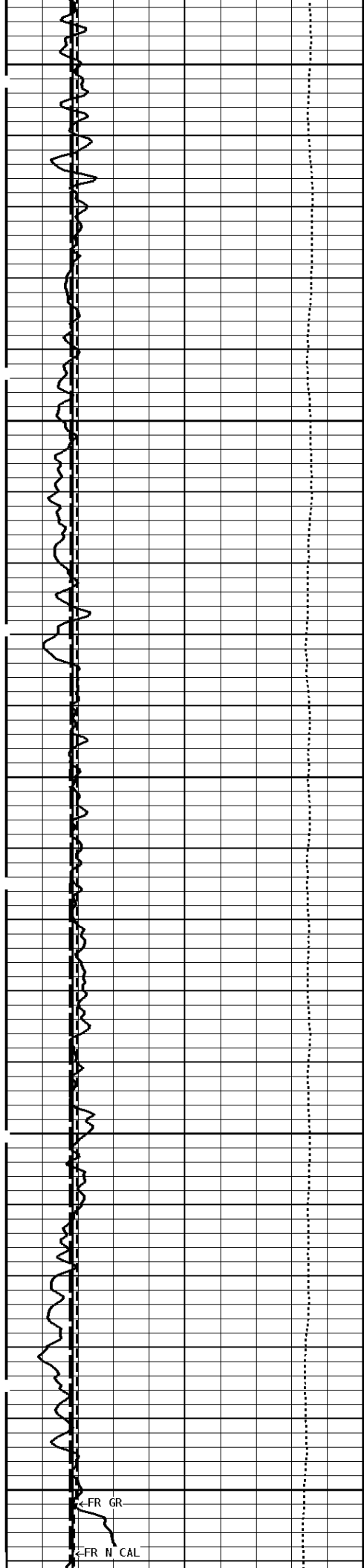


3000

3100

--100Cu.Ft

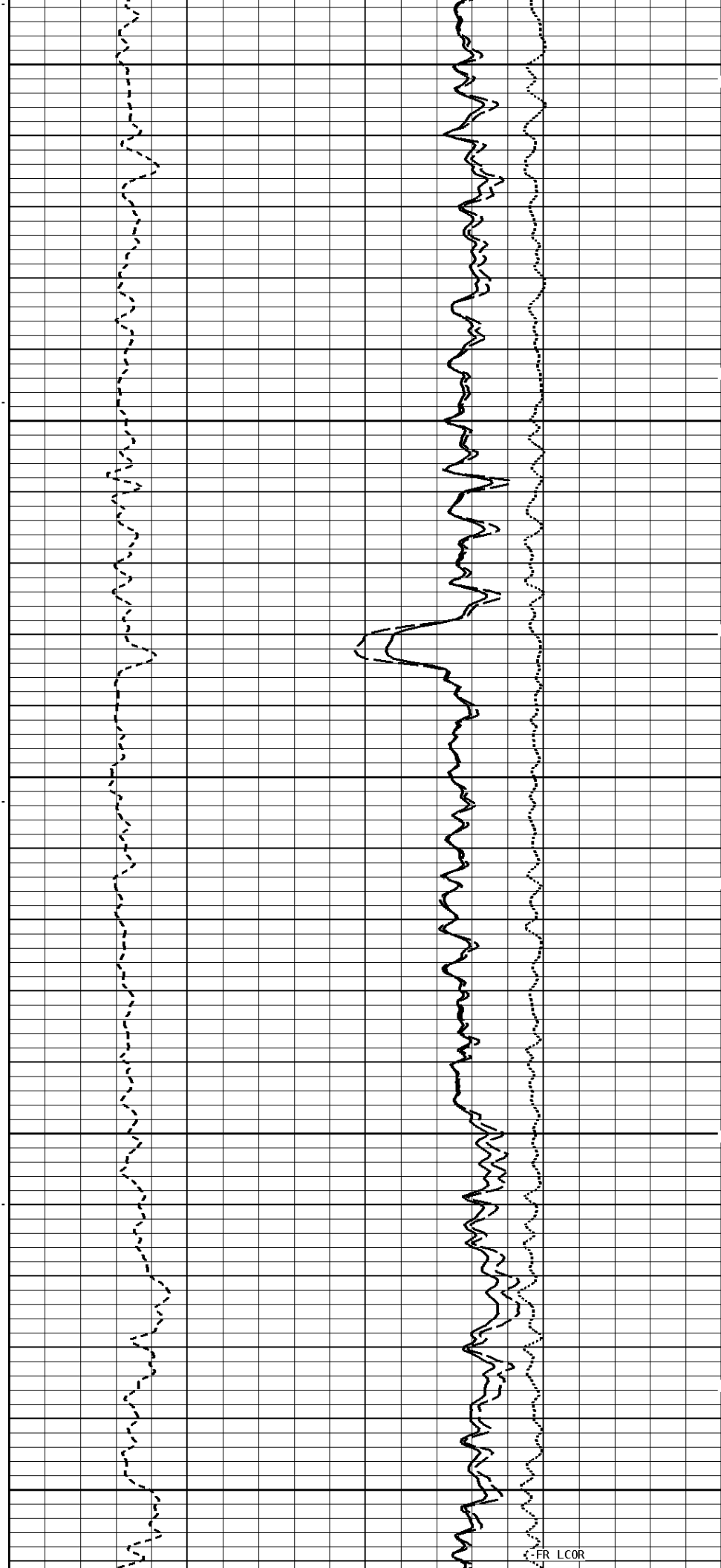




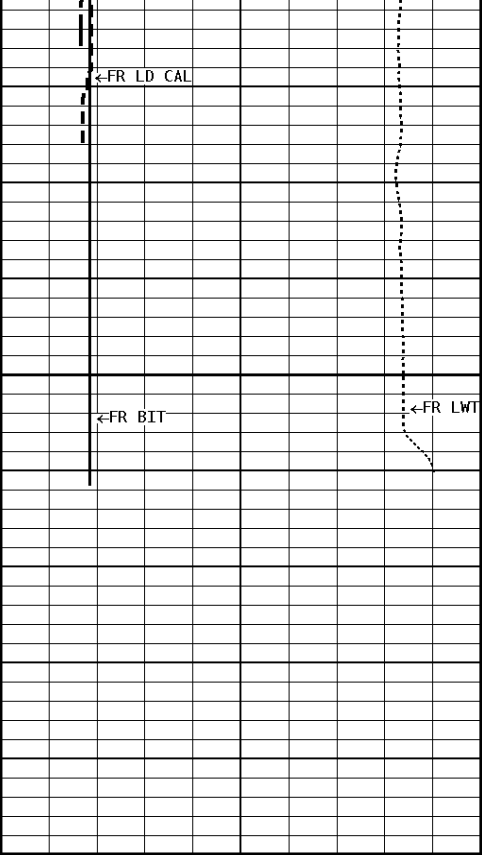
3200

3300

3400

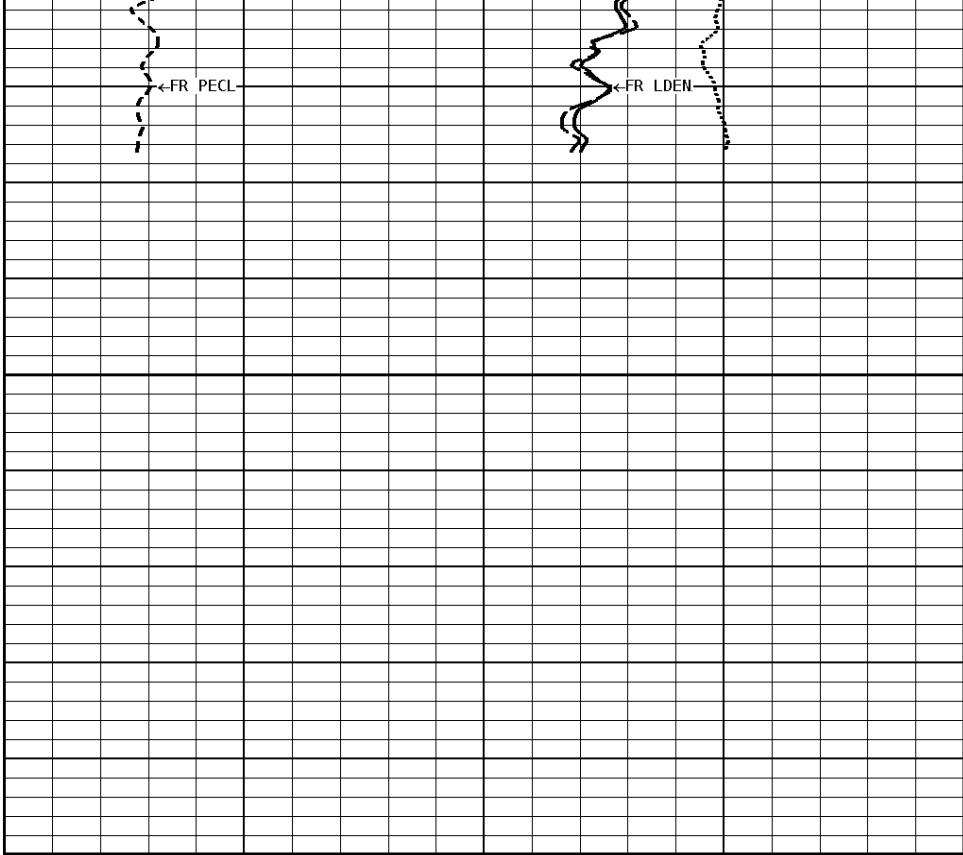


FR LCOR



File #1.1.5

3455



1:240 MAIN SECTION BULK DENSITY

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

* Calibration Summary *

Shop Calibration GRT-B					
Performed : 24-Aug-2015			Time : 10:01		
Sensor Suite : GR-GR5			ID : GRT-BB-107		
	Measured	Units	Calibrated	Units	
GR	Background Jig		Jig		
	61 370	CPS	175		GRAPI

Shop Calibration CNT-AA					
Performed : 04-DEC-2015			Time : 10:59		
Sensor Suite : CALI-BCN			ID : NDT-BB-123		
	Jig - Measured		Jig - Calibrated	Units	
CL # 1	Ring#1 Ring#2		Ring#1 Ring#2		IN.
	9.6 14.5		6.0 12.0		

Performed : 04-Dec-2015			Time : 11:31		
Sensor Suite : BHC NEUT			ID : CNP-AA-116-		
Source ID : N-1045					
	Tank		Verification	Units	
	Measured Calibrated		Jig		
N/F	3.8245 3.6893		3.6786		
Porosity	22.6 20.5		20.3		%

Shop Calibration LDT-DF					
Performed : 09-NOV-2015			Time : 10:36		
Sensor Suite : CALI-LTH			ID : PDT-GA-472		
	Jig - Measured		Jig - Calibrated	Units	
CL # 1	Ring#1 Ring#2		Ring#1 Ring#2		IN.
	7.7 11.0		6.0 12.0		

Performed : 09-Nov-2015			Time : 10:56		
Sensor Suite : BHCPELNG			ID : LDP-DA-067		
Source ID : 2991GW					
Short Space					
	BKGD	Al	Mg	Al+Fe	Units
LSW1	61	1068	1733	696	CPS
LSW2	65	1207	1934	892	CPS
LSW3	234	2772	4476	2363	CPS
LSW4	287	2524	3677	2225	CPS
LSW5	42	71	77	66	CPS
LSW6	58	63	65	65	CPS
LSW7	45	49	49	49	CPS
LSW8	11	15	16	14	CPS
QS	0.131	0.124	0.145	0.143	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC
Long Space					
	BKGD	Al	Mg	Al+Fe	Units
LLW1	87	1240	5140	749	CPS
LLW2	96	2068	8151	1521	CPS
LLW3	361	3727	14278	3224	CPS
LLW4	466	1760	5667	1590	CPS
LLW5	52	60	110	59	CPS
LLW6	155	153	145	150	CPS
LLW7	98	95	92	96	CPS
LLW8	3	5	16	5	CPS
QL	0.223	0.233	0.227	0.217	
PEL			2.697	5.458	
LSDN		2.600	1.680		G/CC

Shop Calibration MST-DA					
Performed : 18-NOV-2015			Time : 09:48		
Sensor Suite : CALI-MSN			ID : MST-DA-057		
	Jig - Measured		Jig - Calibrated	Units	
CL # 1	Ring#1 Ring#2		Ring#1 Ring#2		IN.
	6.4 10.6		6.0 12.0		

Performed : 18-Nov-2015			Time : 09:43		
Sensor Suite : MSTDA-NI			ID : MST-DA-057		
Internal					
	Measured		Calibrated		
	Zero	Reference	Zero	Reference	Units
INM V	287.7	28430.5	0.00	1536.00	MV

INV-V	287.7	30439.3	0.00	1538.00	MV
NOR-V	166.3	30373.7	0.00	1636.00	MV
IN-C	165.7	30674.3	0.00	15.46	UA
INV-R				32.14	OHMM
NOR-R				58.31	OHMM
Performed : 18-Nov-2015 Time : 09:47 Sensor Suite : MSTDAMSF ID : MST-DA-057					
Measured Internal Calibrated Zero Reference Zero Reference Units Units Units					
MSFC	19.6	42592.9	0.00	1522.00	UA
MSFB	32763.4	52822.7	0.00	1522.00	MA
MOM1	0.0	42310.1	0.00	1522.00	MV
MSFRA				43.30	OHMM



Tucker

ENERGY SERVICES

Company:

VAL ENERGY, INC.

Well:

WERNER #3-31

Location:

1980' FSL & 990' FEL

Logged:

12-05-2015

K.B. Elev:

1316.0 Ft