



Tucker

ENERGY SERVICES

COMPENSATED NEUTRON
PEL DENSITY MICRO LOG

Company: CHIEFTAIN OIL CO, INC.
Well: RATHGERBER #3
Field: NA
County: BARBER
State: KANSAS
Country: USA
API No.: 15-007-24169-0000

File No : TUL-59611
Company : CHIEFTAIN OIL CO, INC.
Well : RATHGERBER #3
Field : NA
County : BARBER
State : KANSAS
Country : USA
API No : 15-007-24169-0000

Location :
2702 FSL & 2344 FWL
SE SE SE NW

LSD : Sect : 6 Twp : 35S Rge : 11W

Permanent Datum:	GL	Elevations:	Services:
Drilling Measured From:	KB	KB 1387.00	CNT
Log Measured From:	KB	DF 1386.00	PIT
Above Permanent Datum:	1200 Ft	GL 1375.00	LDT
			MLT
Date	05-12-2014		
Run Number	1		
Depth--Driller	5544.0	Ft	
Depth--Logger	5545.0	Ft	
First Reading	5522.0	Ft	
Last Reading	303.0	Ft	
Casing--Driller	303.0	Ft	
Casing--Logger	303.0	Ft	
Bit Size	7.875	In	
Casing Size	13.375	In	
Hole Fluid Type	CHEM-GEL		
Density	9.4		
Fluid Loss	9.2		
PH/Viscosity	9.5	60.0	
Sample Source	MEASURED		
RM@Measured Temp.	1.000	@ 75 F	
RMF@Measured Temp	0.800	@ 75 F	
RMC@Measured Temp.	1.200	@ 75 F	
Source RMF/RMC	CALCULATED	CALCULATED	
RM@BHT	0.590	@ 133 F	
Time Circulation Stopped	05-12-2014 6:30 pm		
Max Recorded Temp.	133	F	
Equipment/Base	127	TULSA	
Recorded By	SHELDON TYLER		
Witnessed By	DAVID BARKER		

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	5544.00	13.375	42.00	303.00	0.00

Run Number	1	
Date	05-12-2014	
Date/Time On Bottom	05-12-2014 9:30 pm	
Depth to Fluid	0.0 Ft	
Salinity	4000.000	
RMF@BHT	0.470 @ 133 F	
RMC@BHT	0.710 @ 133 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 CALCULATE POROSITY
 ANNULAR HOLE VOLUME CALCULATED USING 5.5" PRODUCTION CASING
 PHIN IS CALIPER CORRECTED

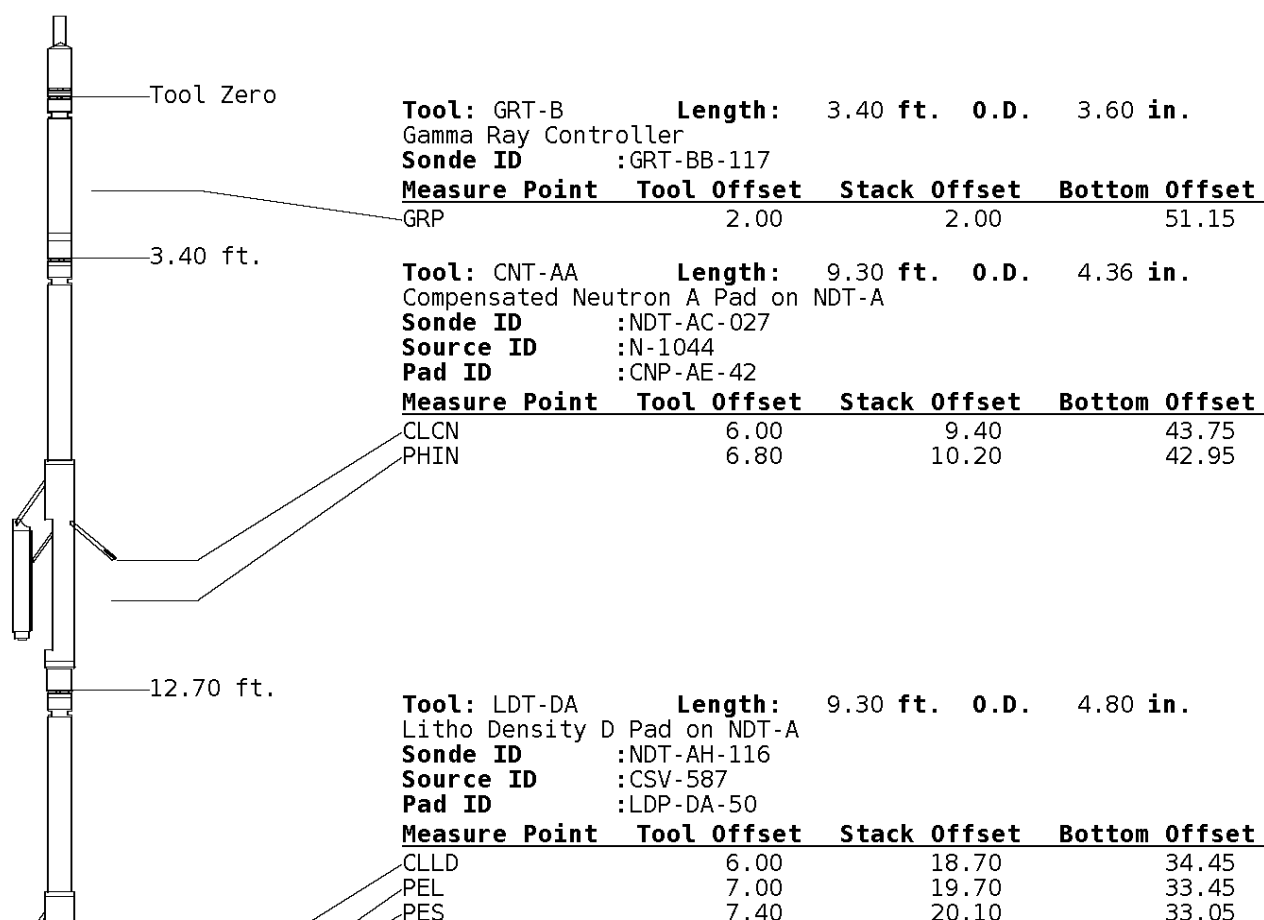
CUSTOMER REQUESTED DETAIL PULLED TO 3700'
 CUSTOMER REQUESTED MICRO PULLED TO 4750'

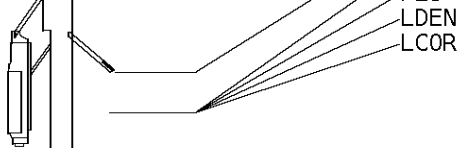
GRT: GRP, GRX
 CNT: PHIN, CLCNIN, PHXN
 LDT: PORL, LCORN, PECLN, LDENN, PORLLS, CLLDIN, PRXL, PECLX, LDENNX, LCORX
 MLT: NOR_RF, INV_RF, MSCLPIN
 PIT: ILD, ILM, SPU, SFLAEC, CIRD

OPERATORS:
 J.JOHNSON
 A.DJAH

Tool String Schematic

Total Tool Length - 53.15 ft.
Maximum Outside diameter - 6.00 in.
Net Weight in Air - 943.00 lbs.



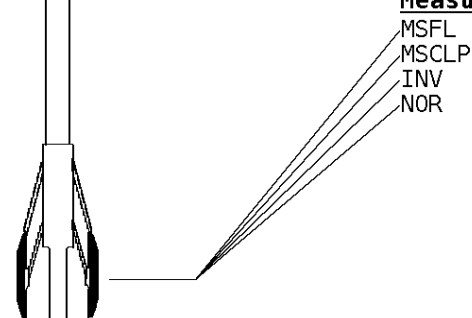


LDEN	7.20	19.90	33.25
LCOR	7.20	19.90	33.25

22.00 ft.

Tool: MST-DA **Length:** 9.66 ft. **O.D.** 6.00 in.
 Micro Spherically Focused (IC)
Sonde ID :MST-DA-28

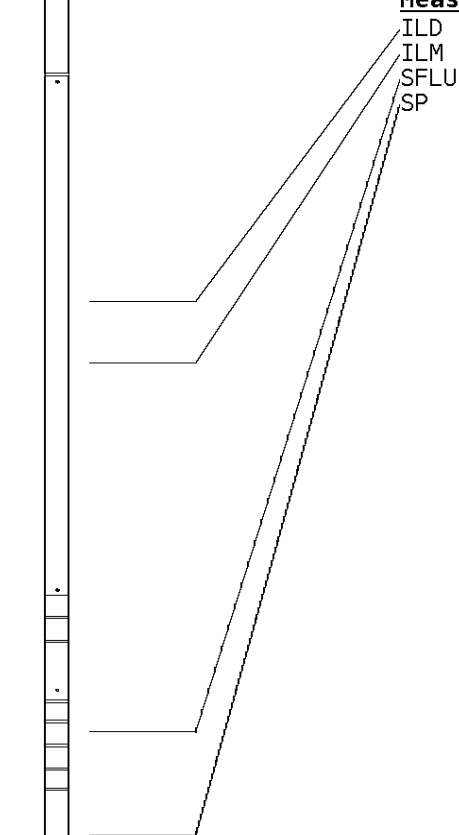
Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	29.60	23.55
MSCLP	7.60	29.60	23.55
INV	7.60	29.60	23.55
NOR	7.60	29.60	23.55



31.66 ft.

Tool: PIT-CA **Length:** 21.49 ft. **O.D.** 3.62 in.
 Phased Dual Induction w/ RM & D
Sonde ID :PIT-CA-062

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	40.58	12.56
ILM	10.10	41.76	11.39
SFLU	17.49	49.15	4.00
SP	20.60	52.26	0.88



LWT 53.15 ft.

Well File: CHIEFTON RATHGERBER_3 MAY12_MSTK

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

Segment: V1.D1.S6 Reprocess of MAIN

Acquired: Not Available

Reference: 0

Processed: 2014-05/12 23:06 3.5.0-12850

**CALIPER MICRO
INCHES (IN)**

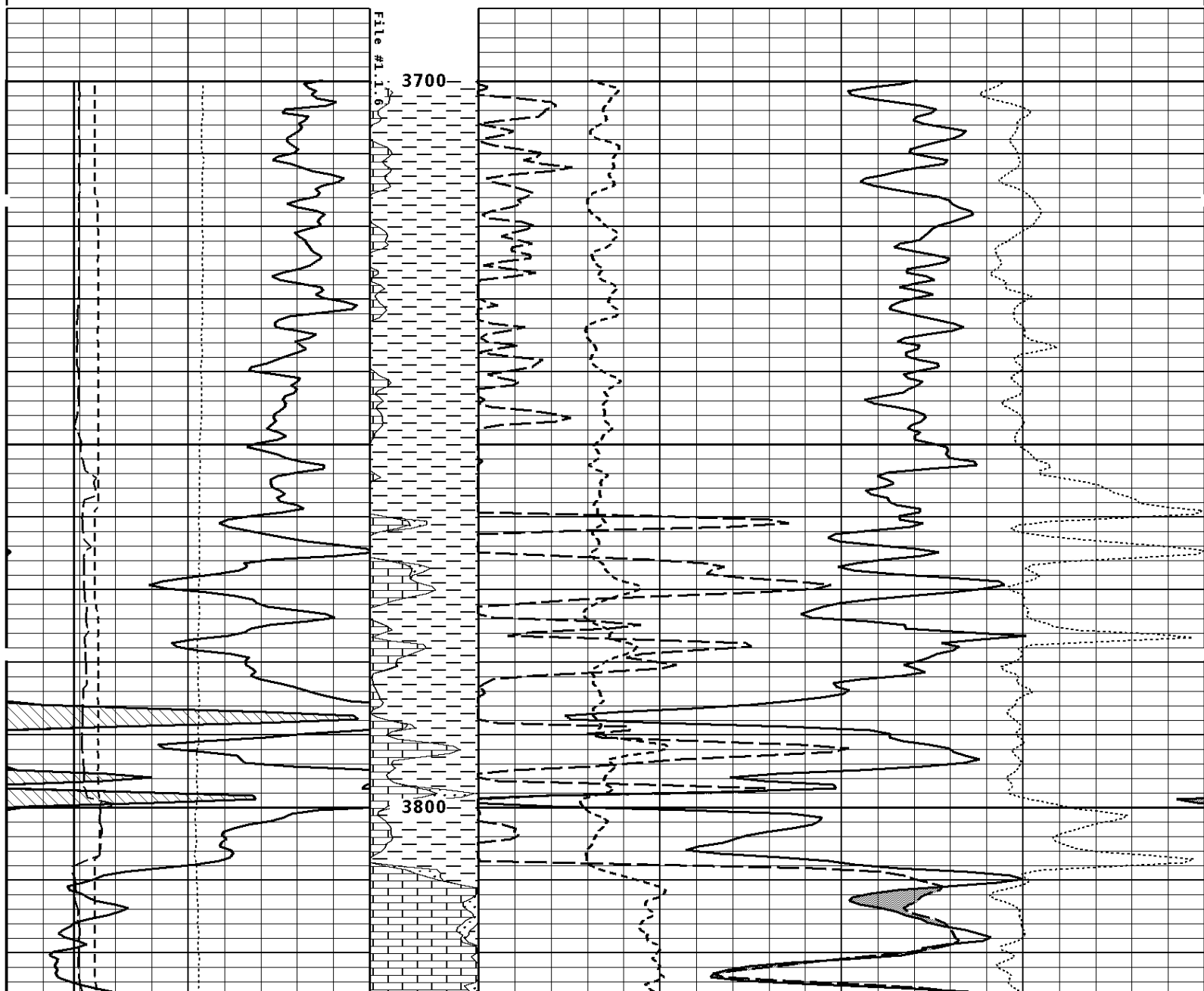
16	26
6	16

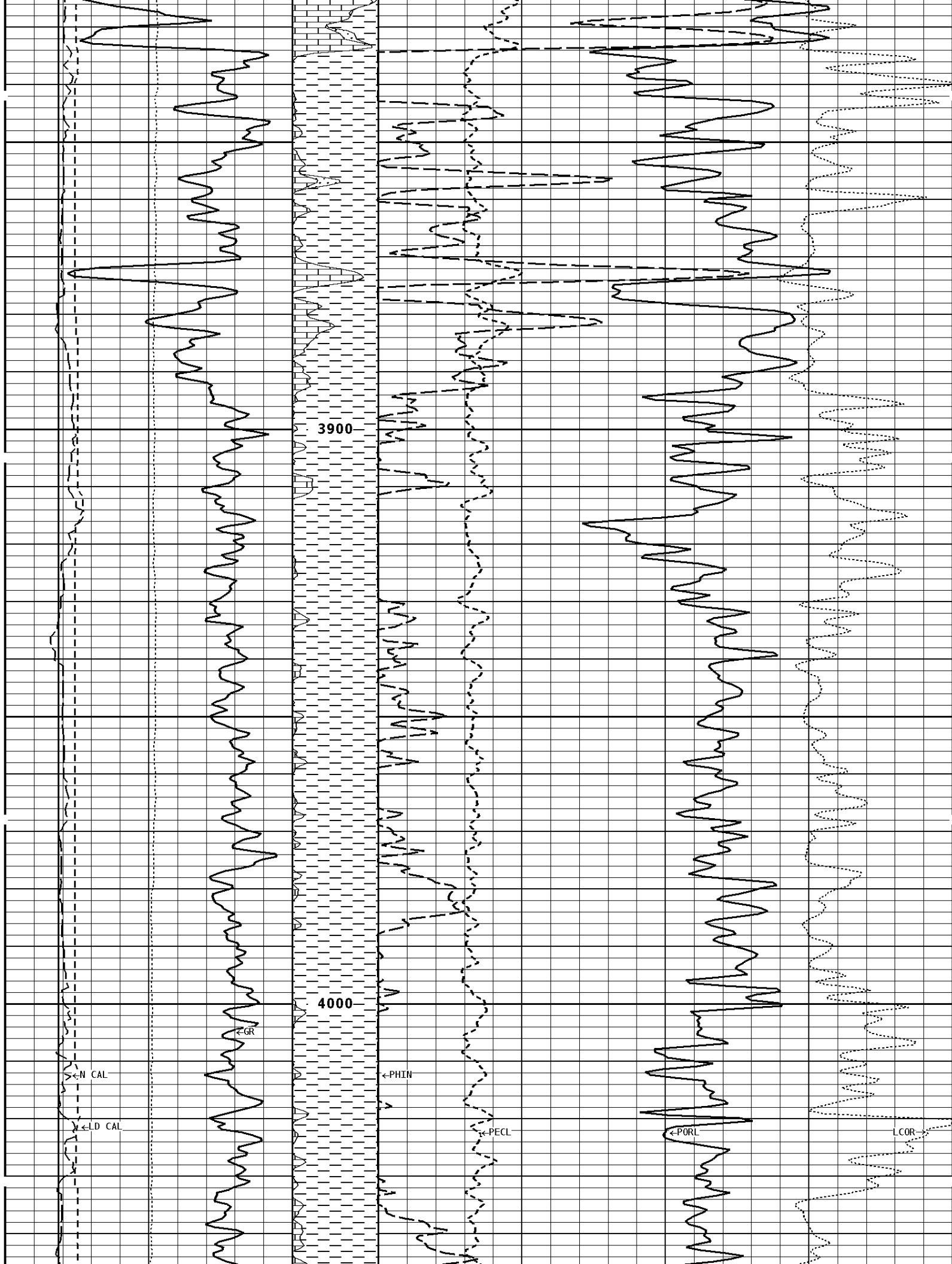
**BIT SIZE
INCHES (IN)**

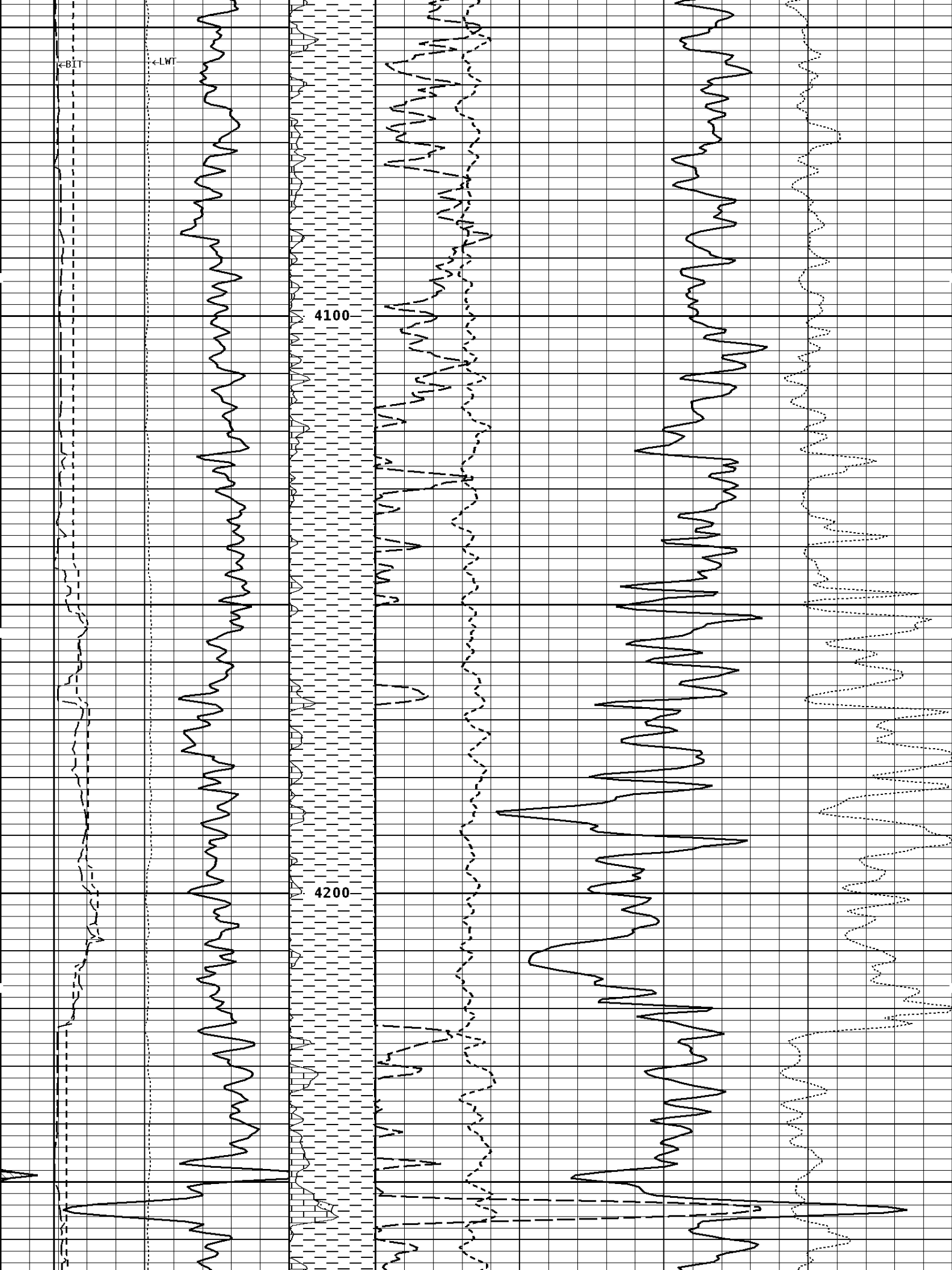
**NORMAL
OHMM**

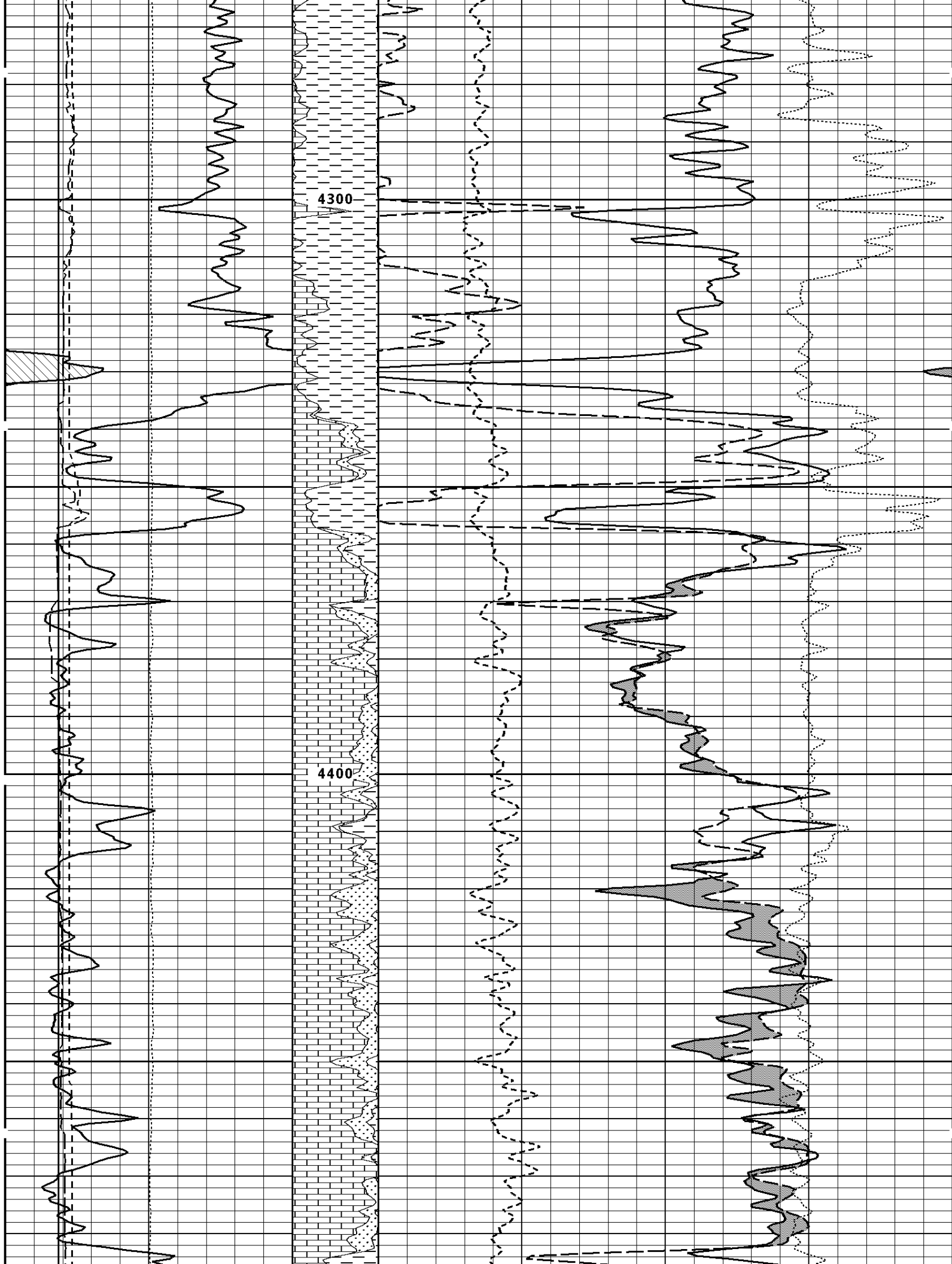
6	16			0	40
NEUTRON (Y) CALIPER INCHES (IN)				INVERSE OHMM	
16	26			0	40
6	16				
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARNs/ELECTRON	DENSITY CORRECTION G/CC	
16	26		0	10	-0.25
6	16				0.25
TENSION LBS		Volume Calcite	DENSITY POROSITY (2.71g/cc) PERCENT		
10000	0		70		30
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

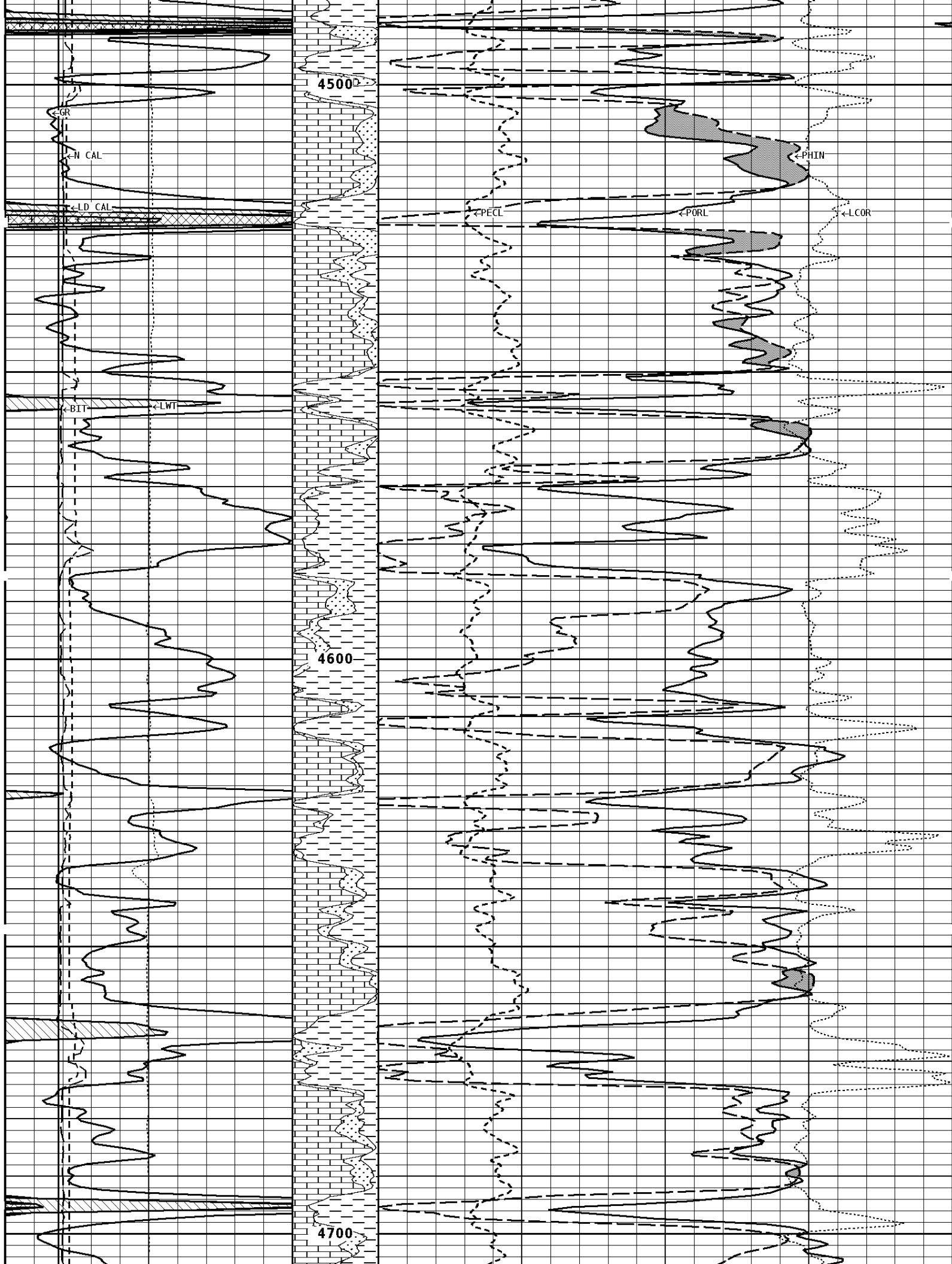
1:240 MAIN SECTION

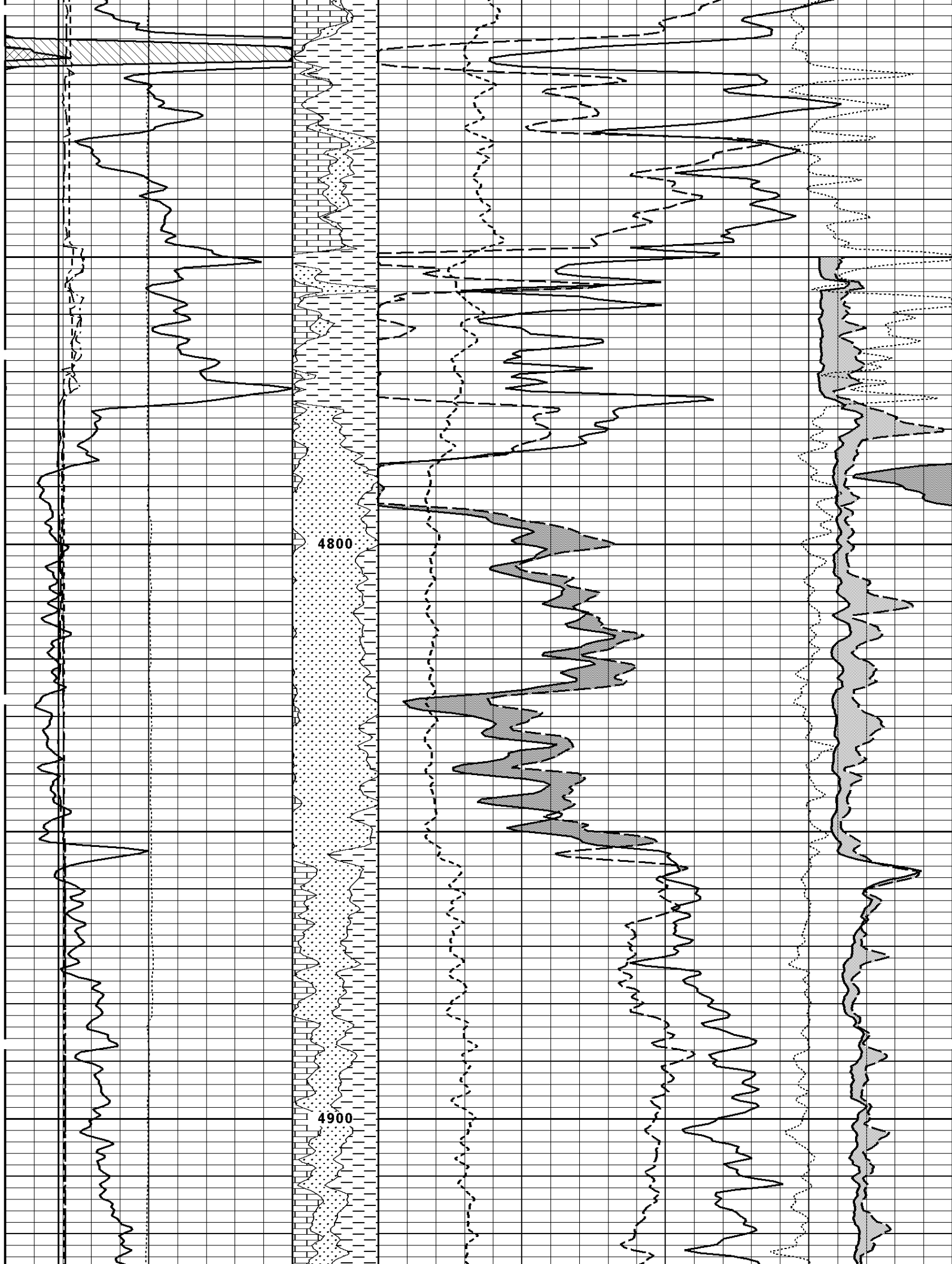


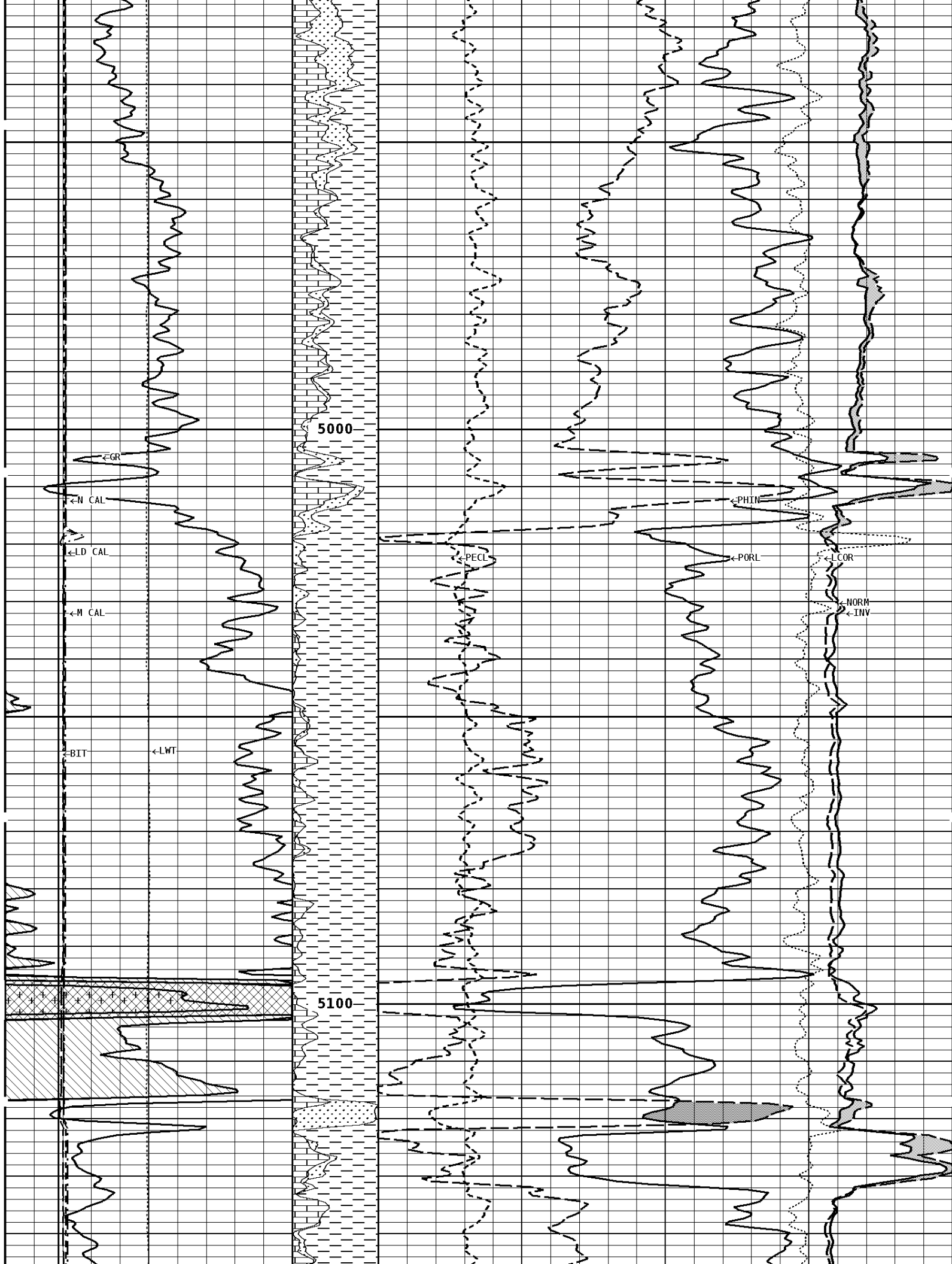


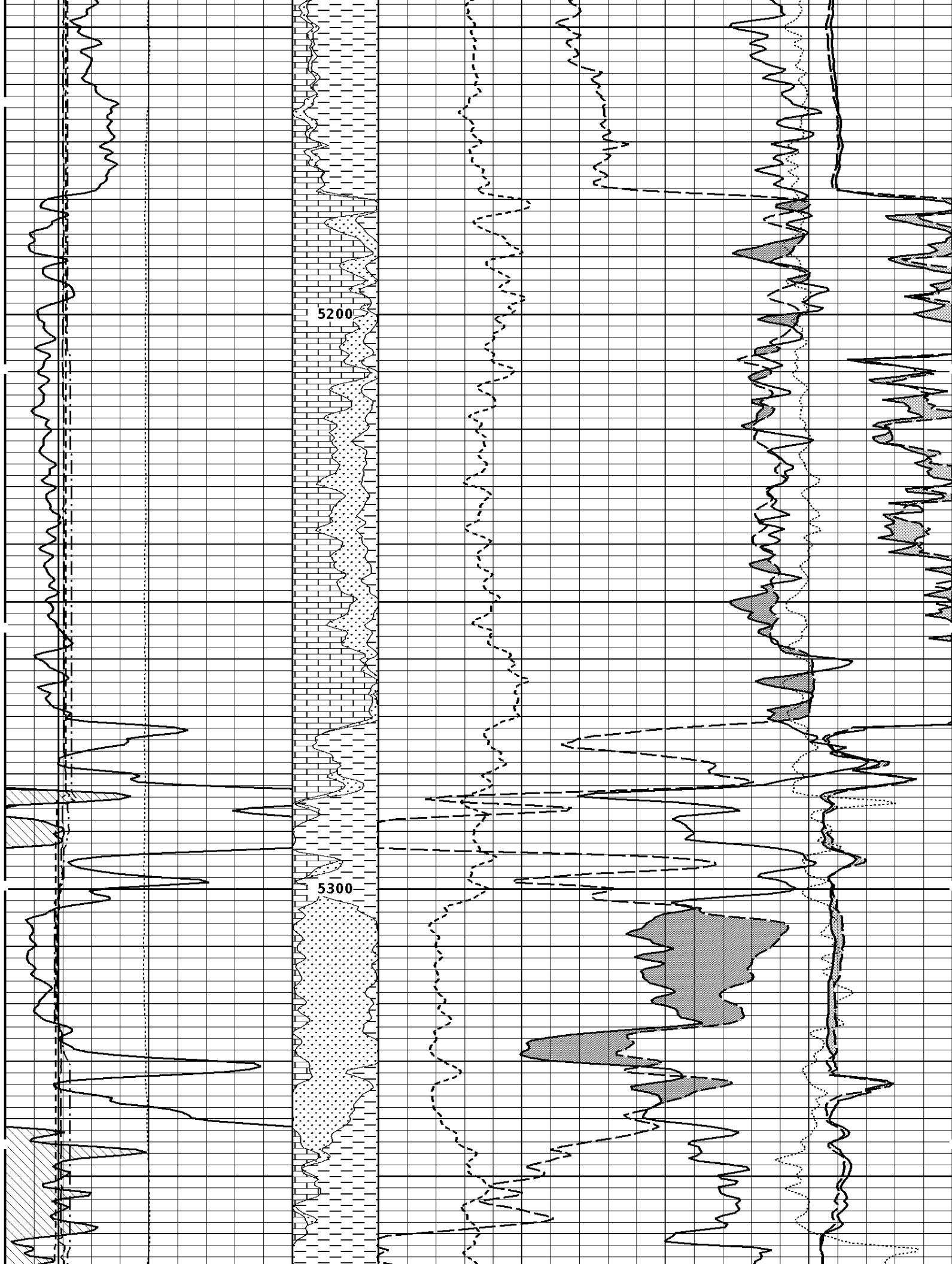


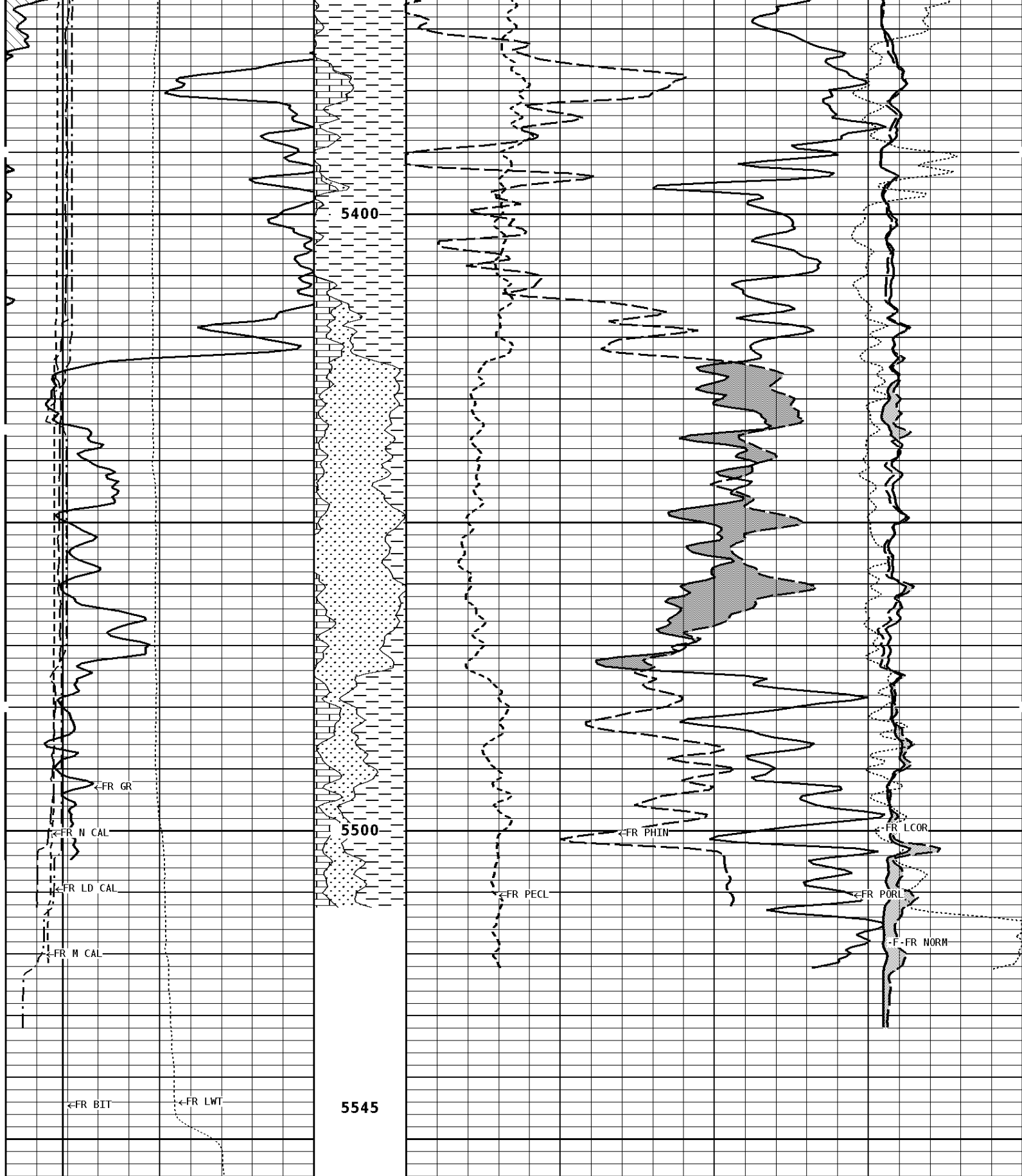






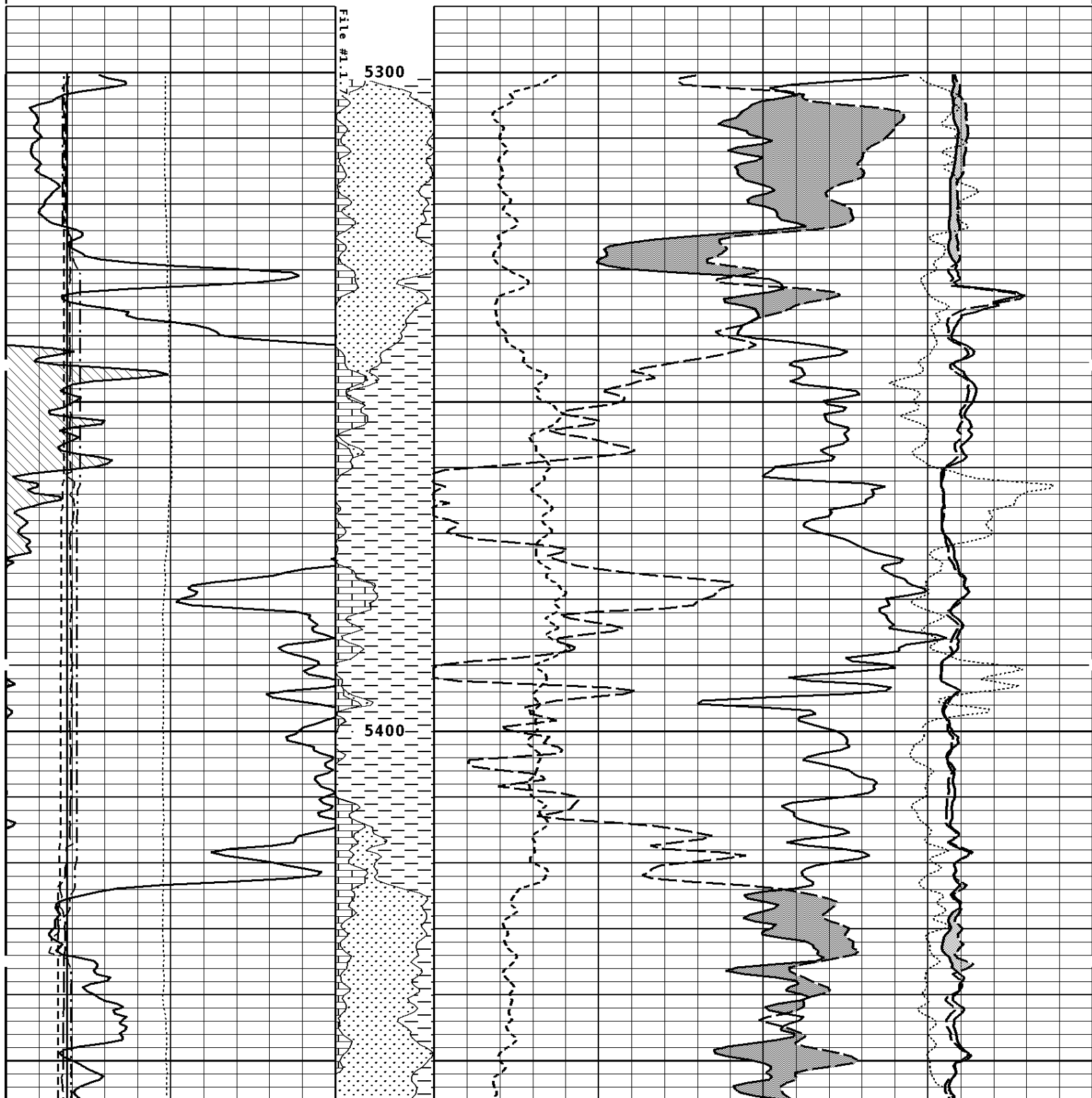


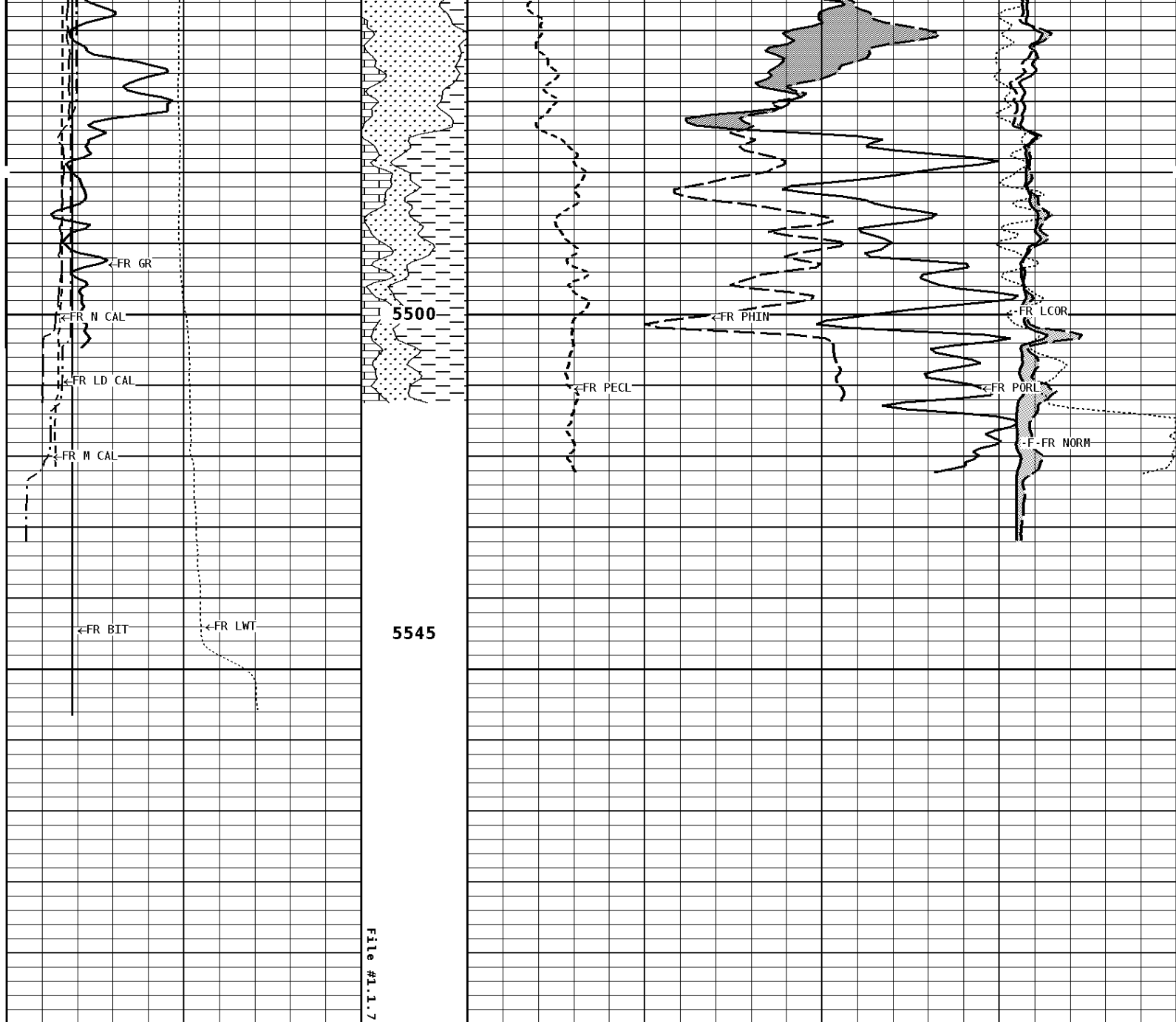




6	16	0	10	-0.25	0.25
TENSION LBS		Volume Calcite	DENSITY POROSITY (2.71g/cc) PERCENT		
10000		0	70	30	30
			30	-10	-10
			-10	-50	-50
GAMMA RAY API UNITS		Volume Dolo/Shale	NEUTRON POROSITY (LIMESTONE) PERCENT		
150 0 300 150			30	-10	-10

1:240 REPEAT SECTION





1:240 REPEAT SECTION

GAMMA RAY API UNITS 150 0 300 150		Volume Dolo/Shale	NEUTRON POROSITY (LIMESTONE) PERCENT 30 -10	
TENSION LBS 10000 0		Volume Calcite	DENSITY POROSITY (2.71g/cc) PERCENT 70 30 -10 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

CALIPER MICRO
INCHES (IN)

16 26
6 16

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: CHIEFTON RATHGERBER 3 MAY12 MSTK

Scale: 1:240 Format: LDT-240

Segment: V1.D1.S6 Reprocess of MAIN

Acquired: Not Available

Reference: 0

Processed: 2014-05/12 23:06 3.5.0-12850

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
BARN/ 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

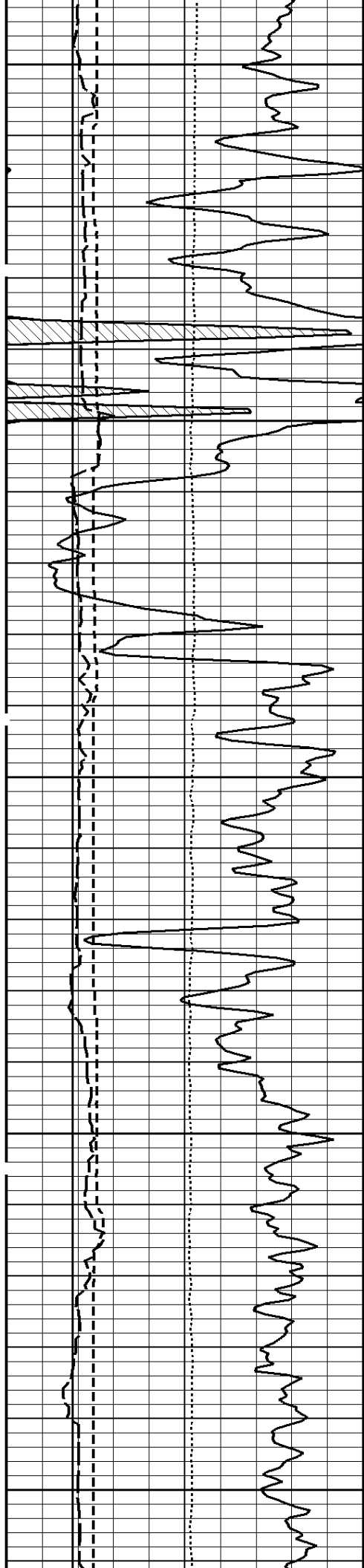
DENSITY POROSITY (2.71g/cc)
PERCENT

70 30
30 -10
-10 -50

1:240 MAIN SECTION
BULK DENSITY

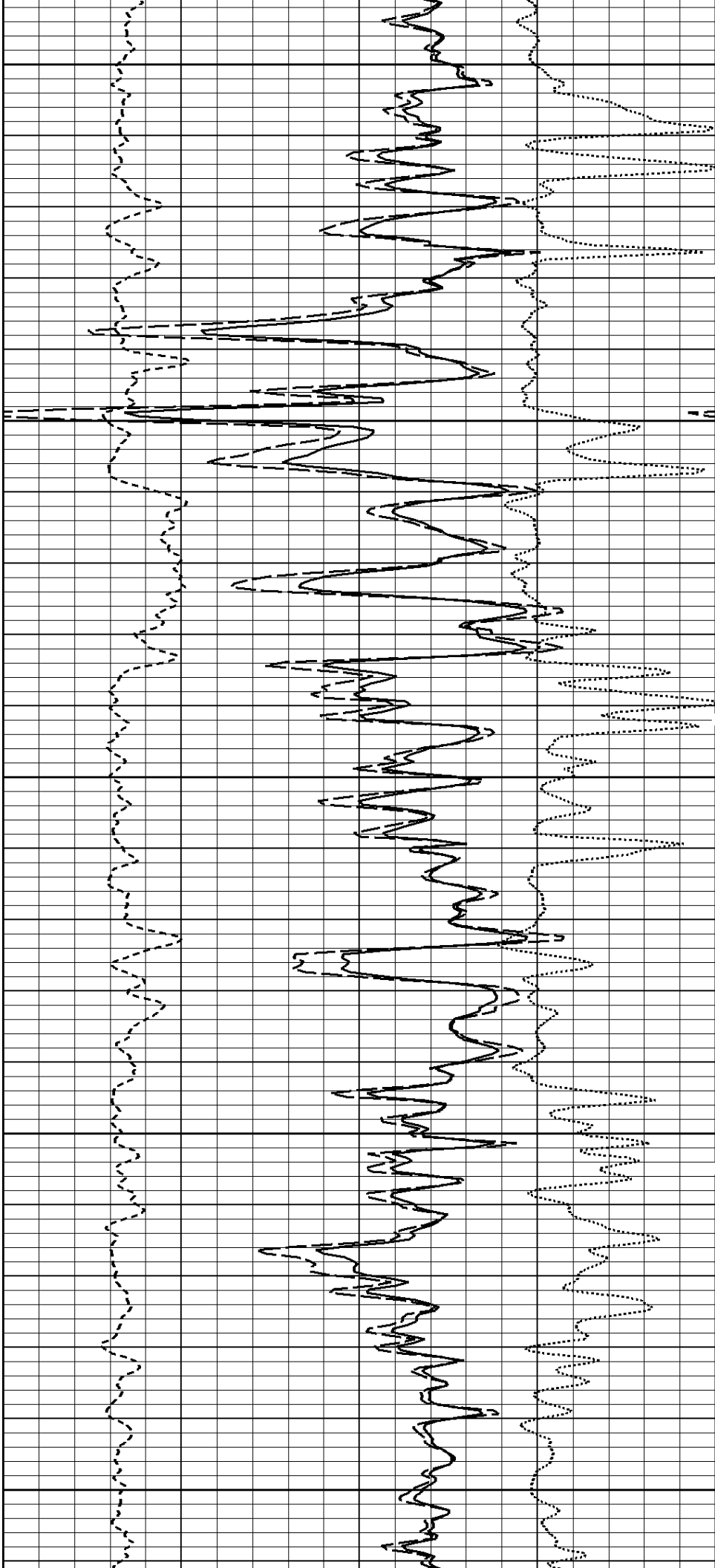
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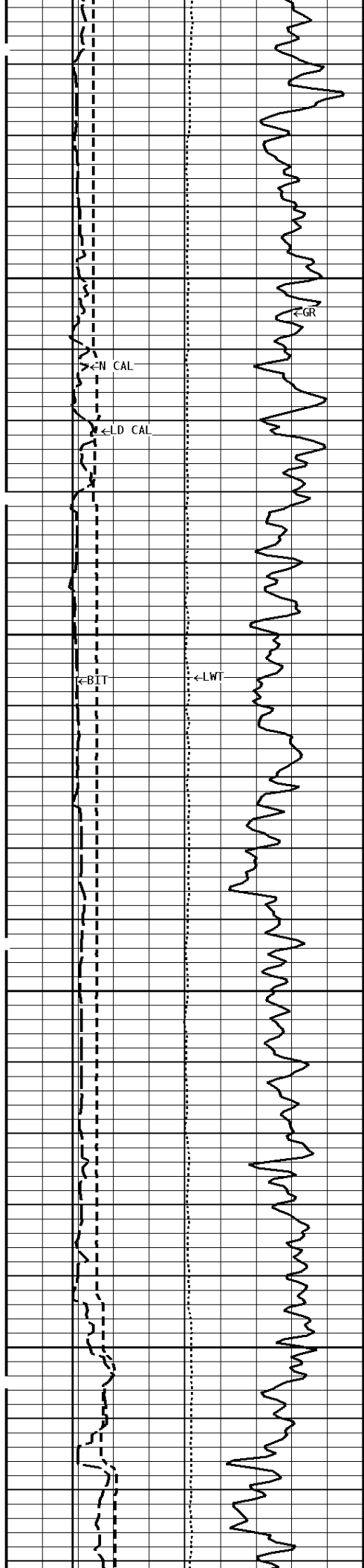
3700



3800

3900



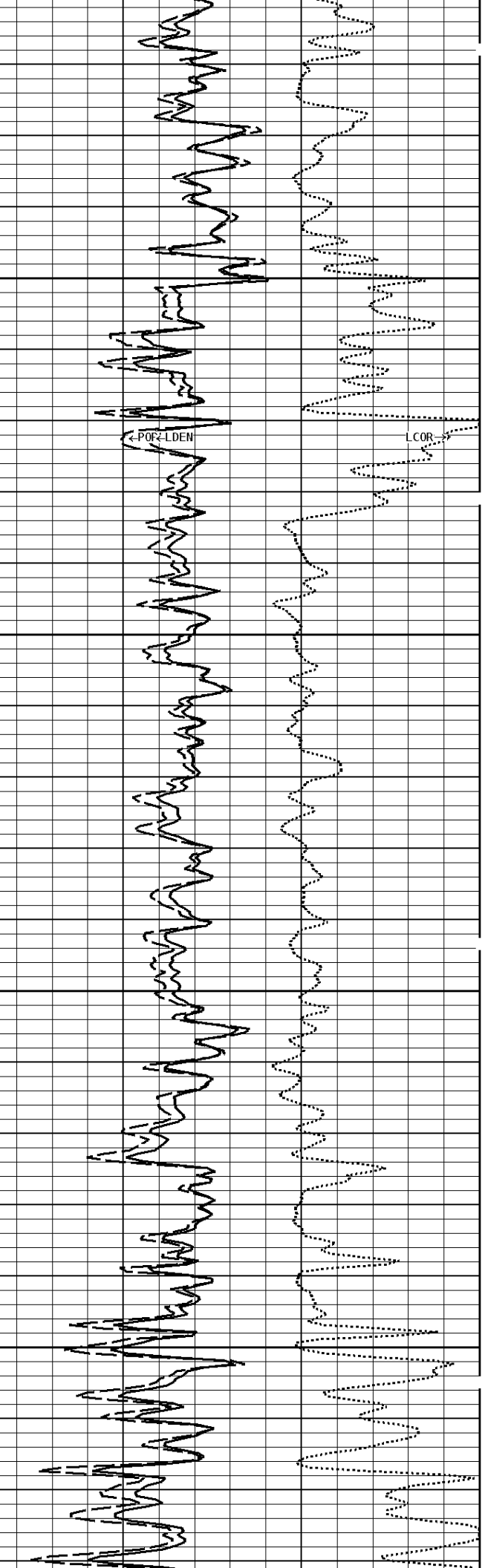
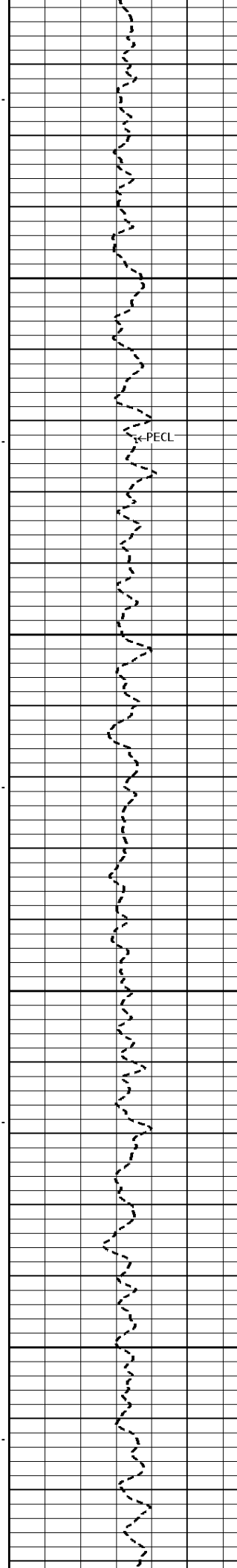


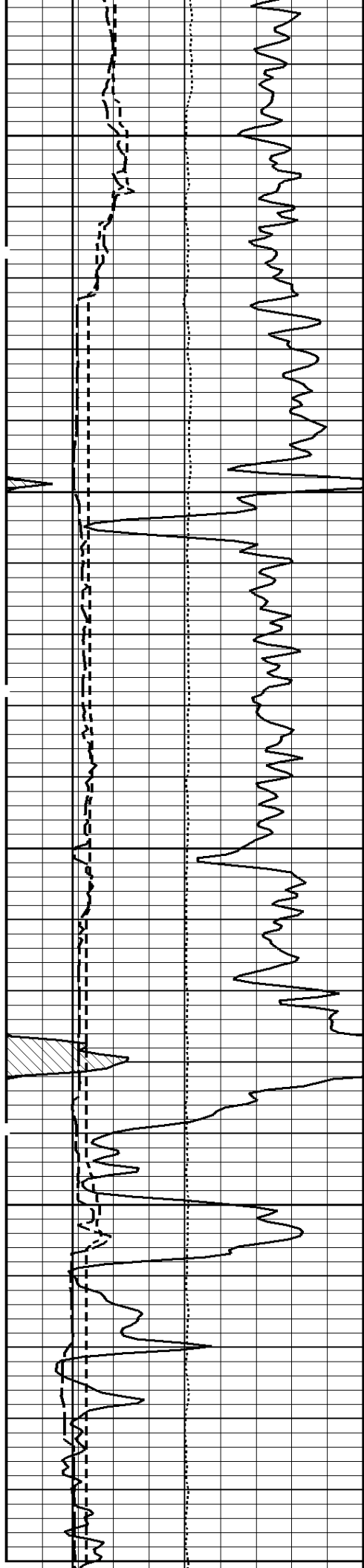
300Cu.Ft--

4000

4100

--500Cu.Ft



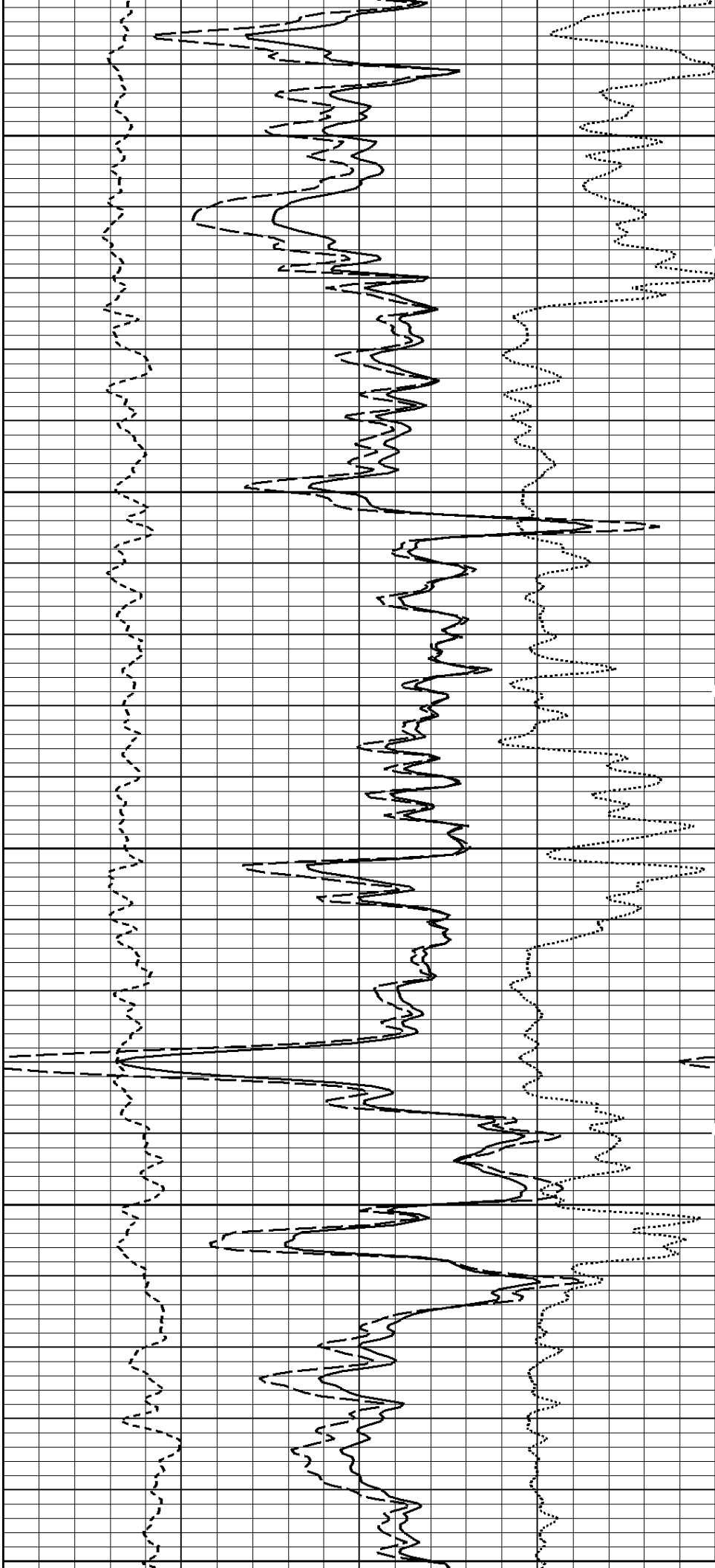


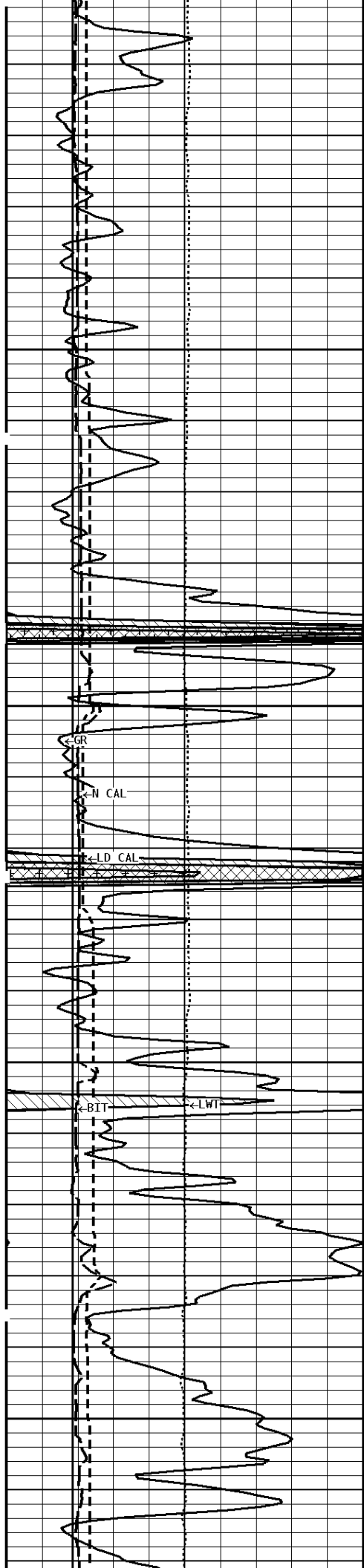
4200

4300

--400Cu.Ft

4400

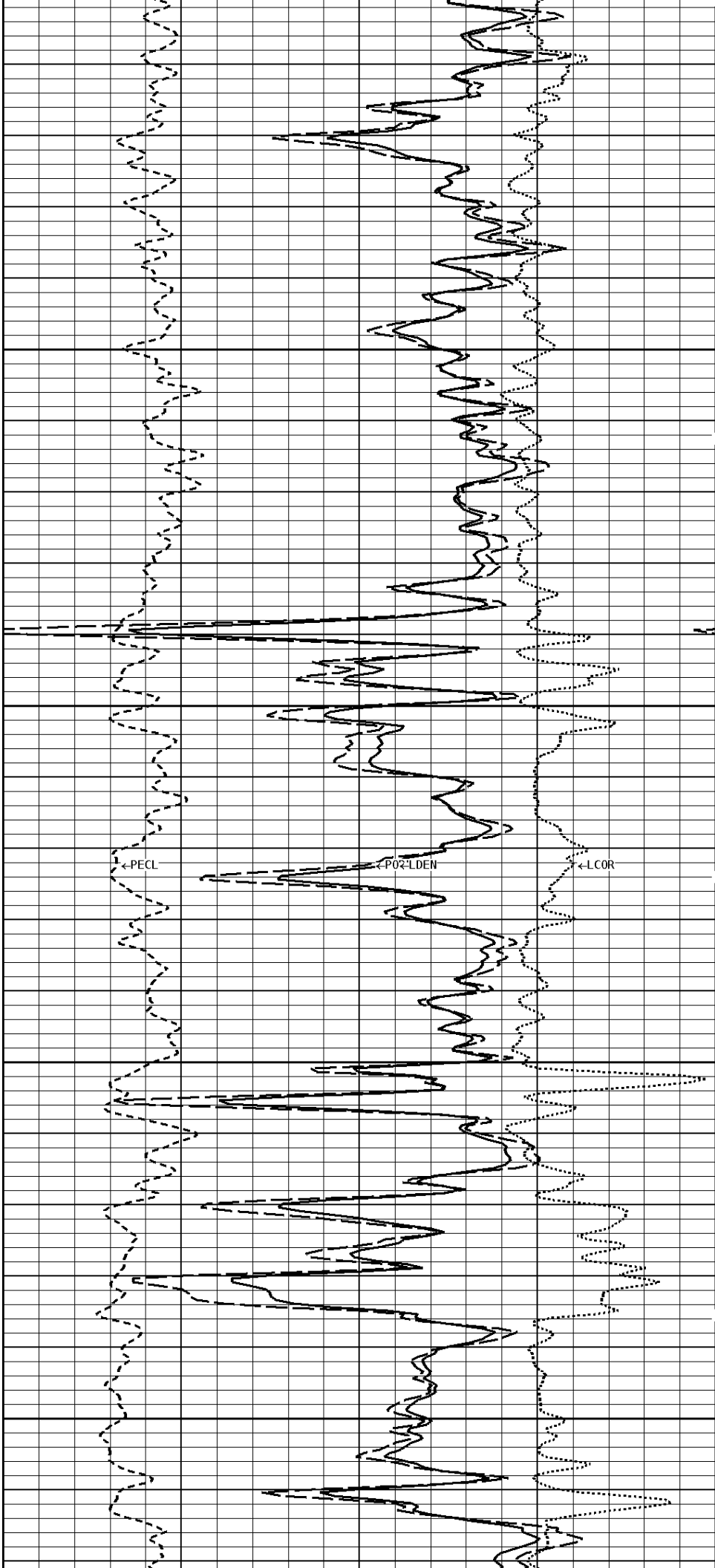


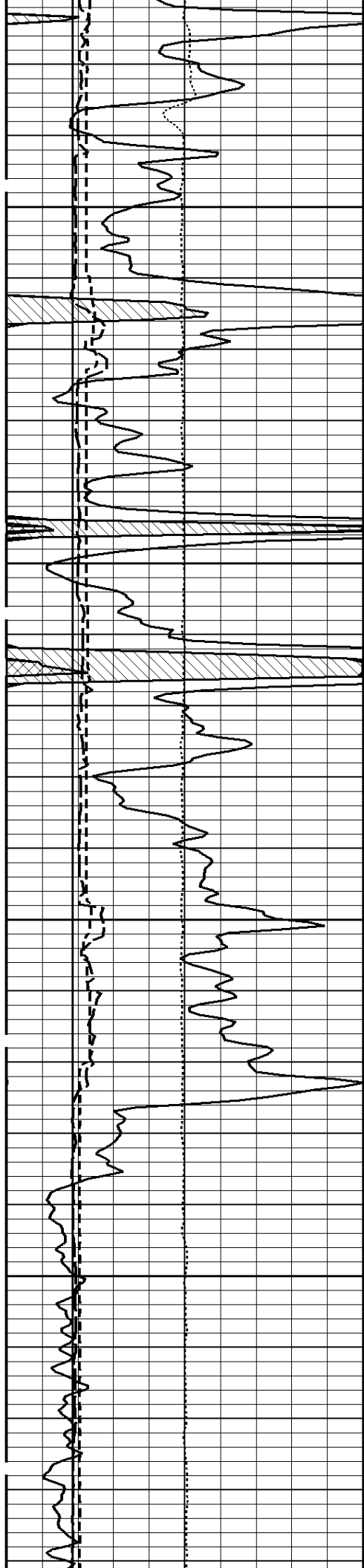


200Cu.Ft--

4500

4600

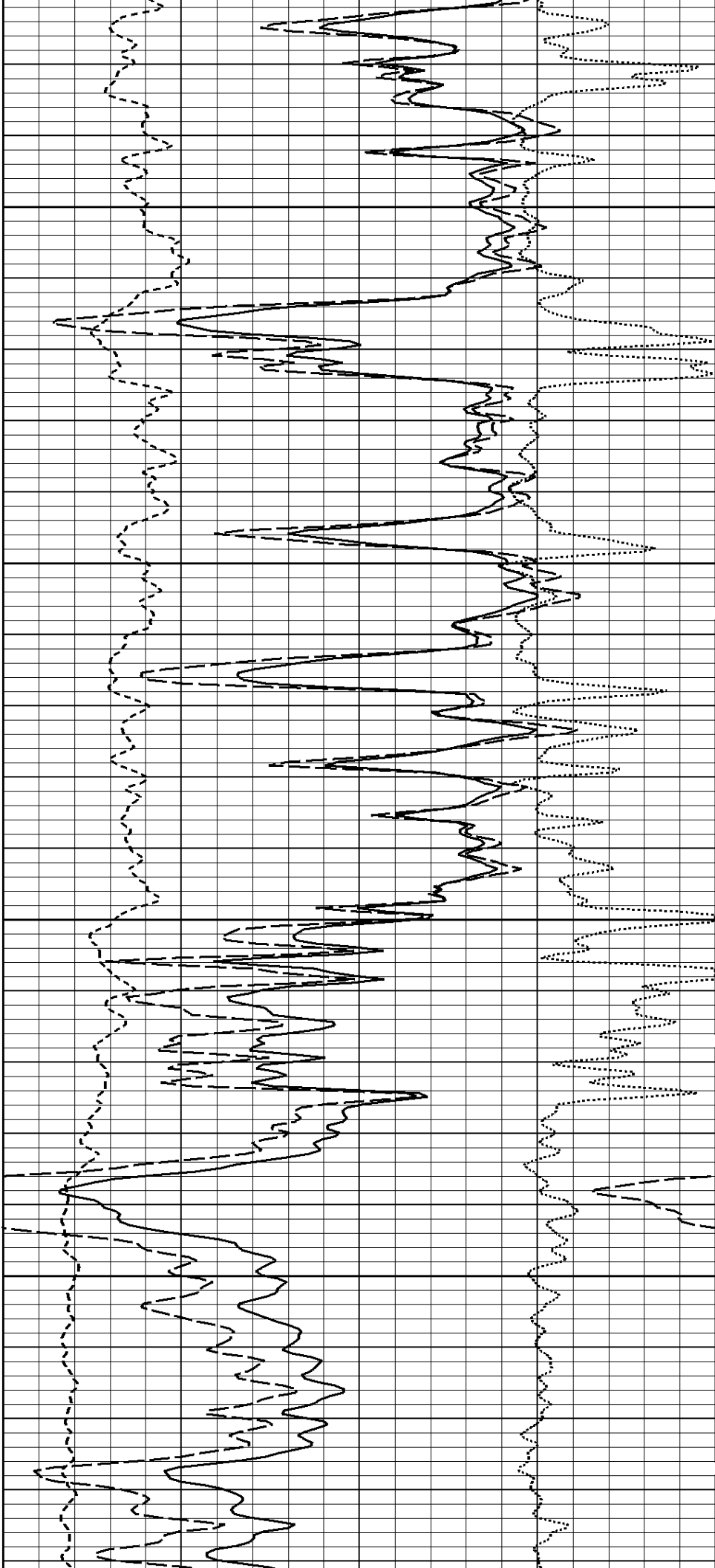


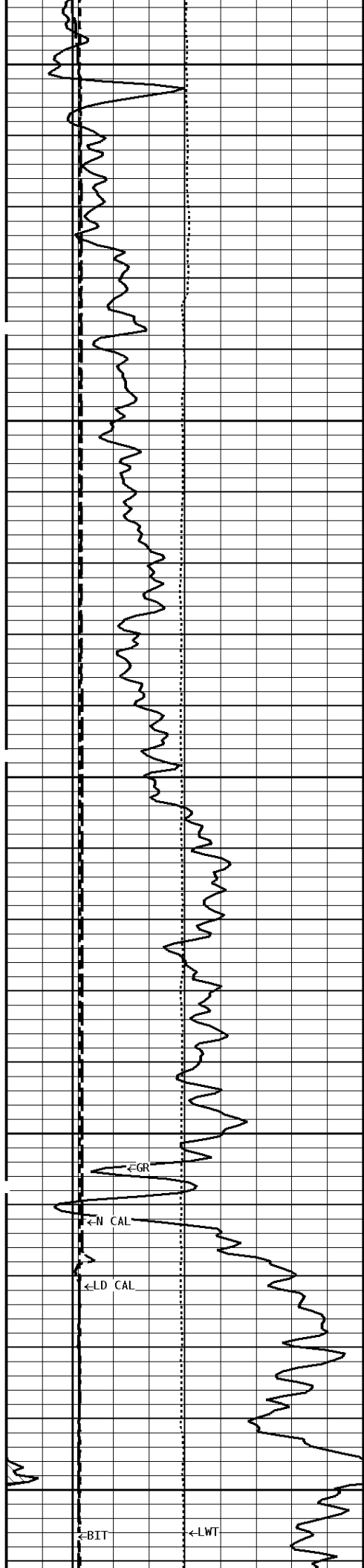


--300Cu.Ft

4700

4800



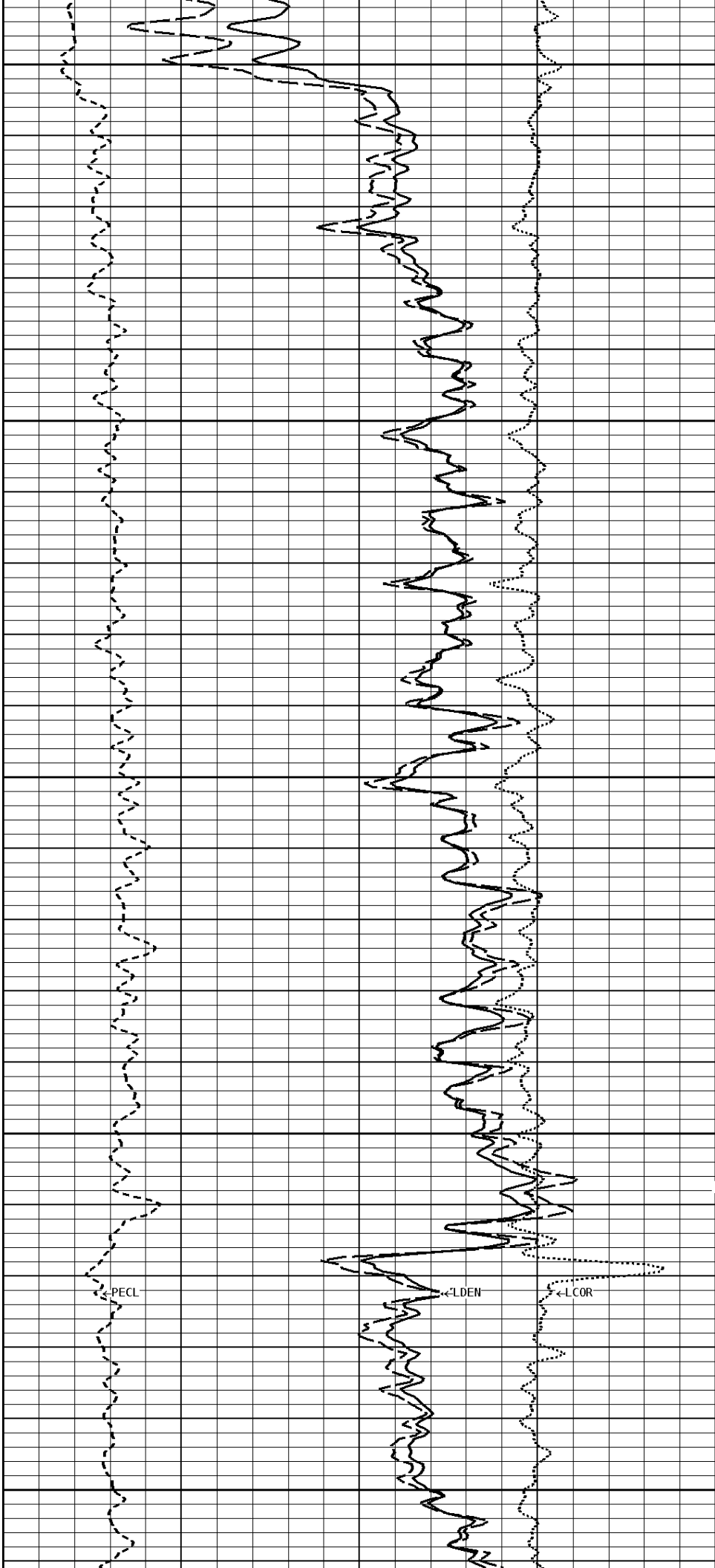


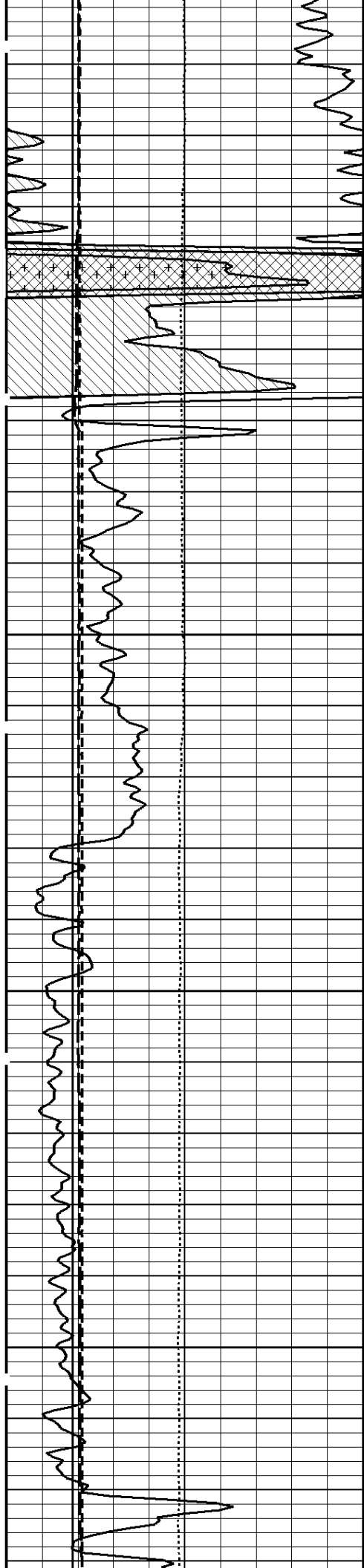
4900

--200Cu.Ft--

100Cu.Ft--

5000

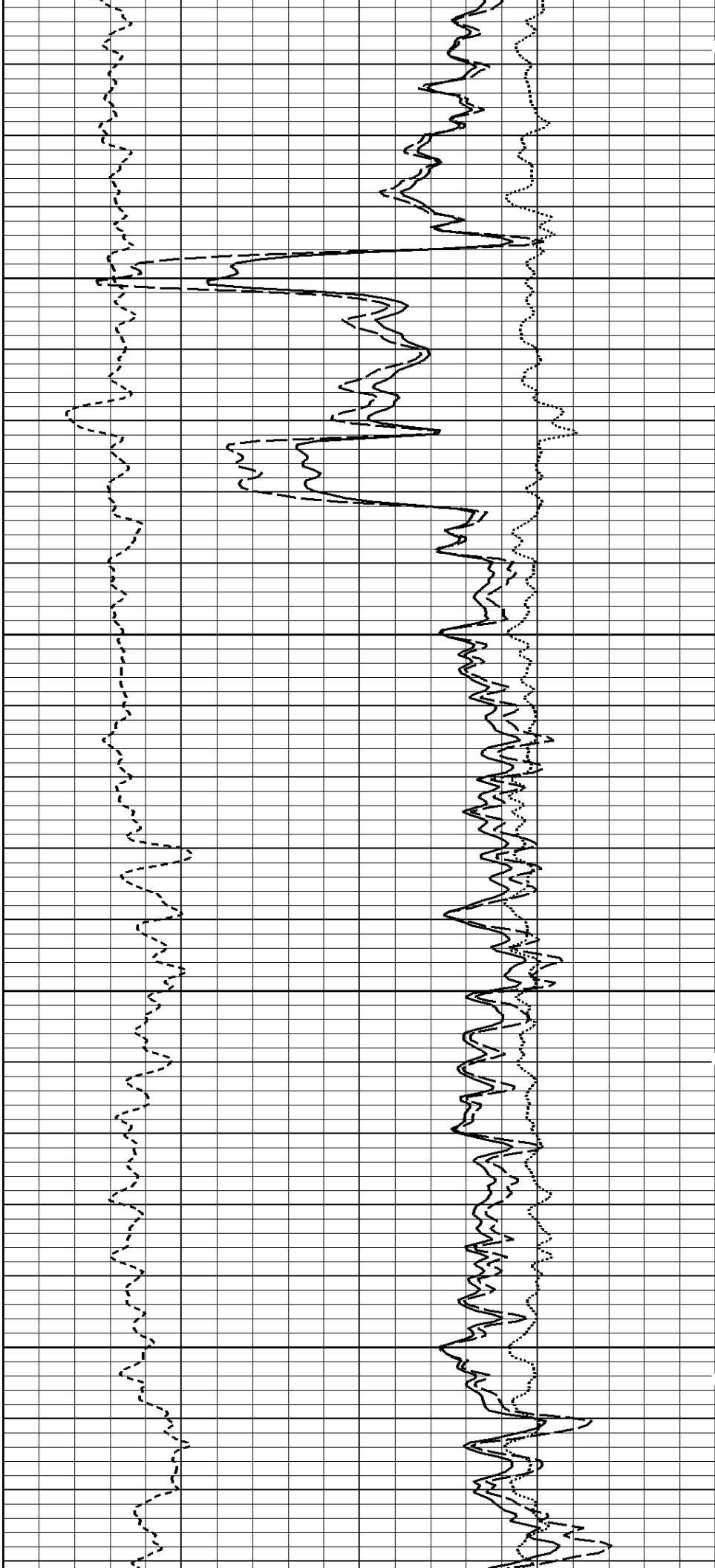


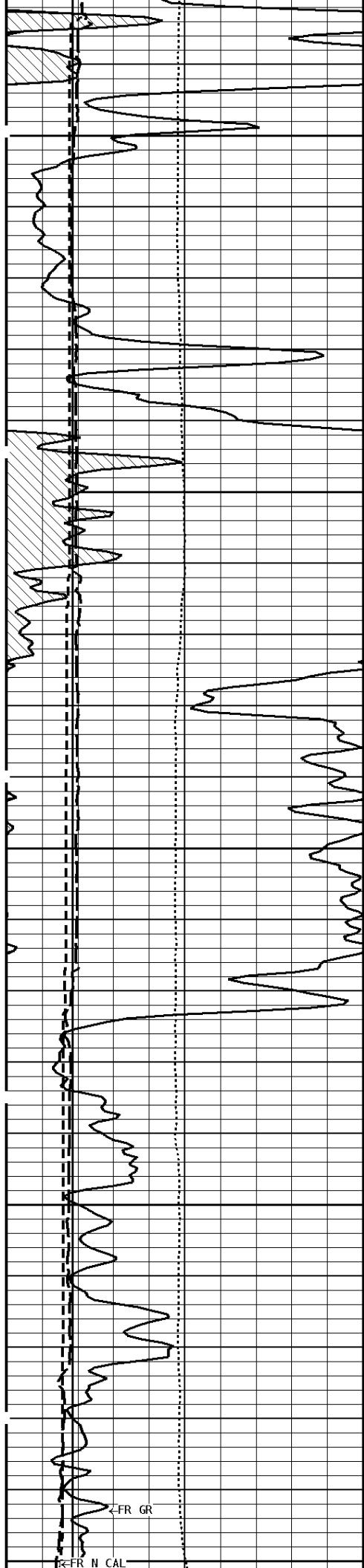


5100

5200

--100Cu.Ft

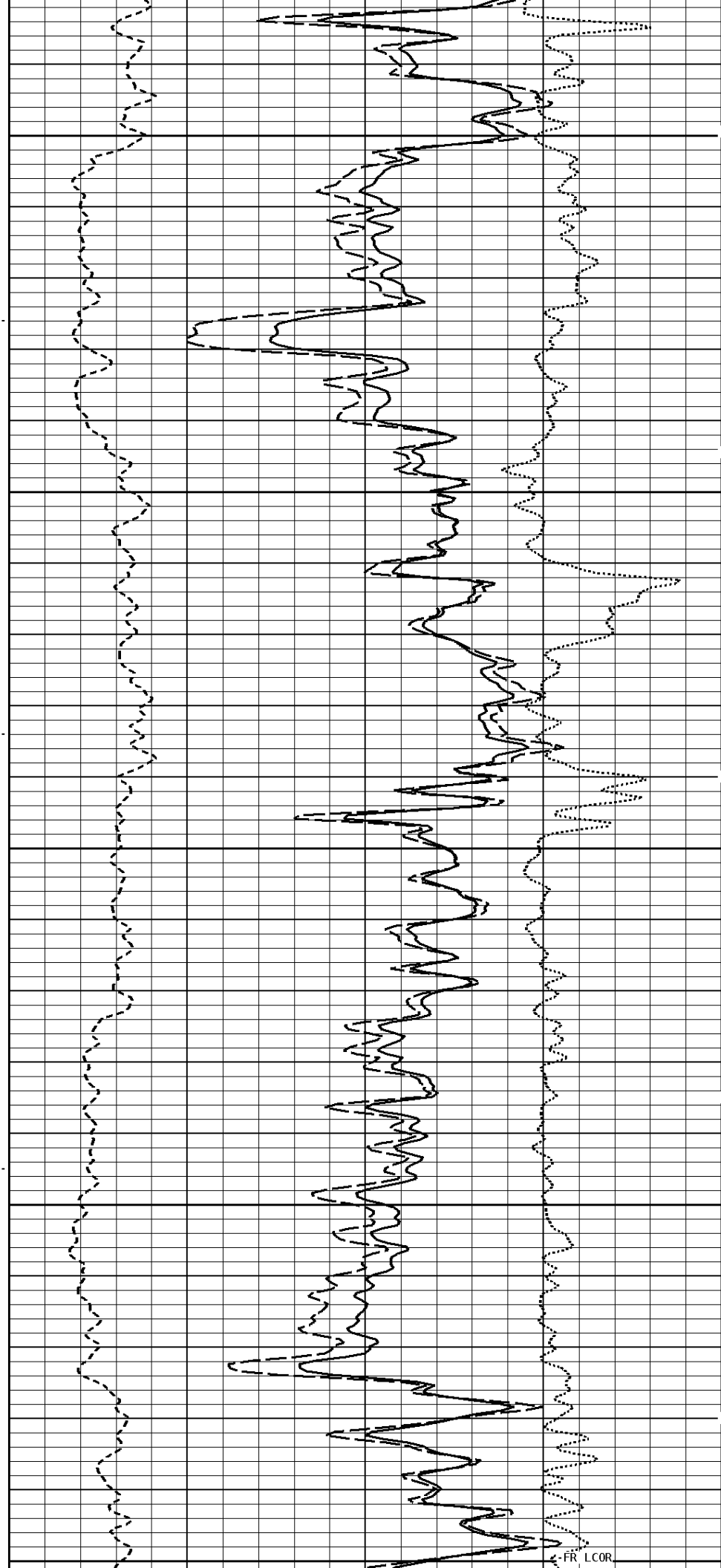


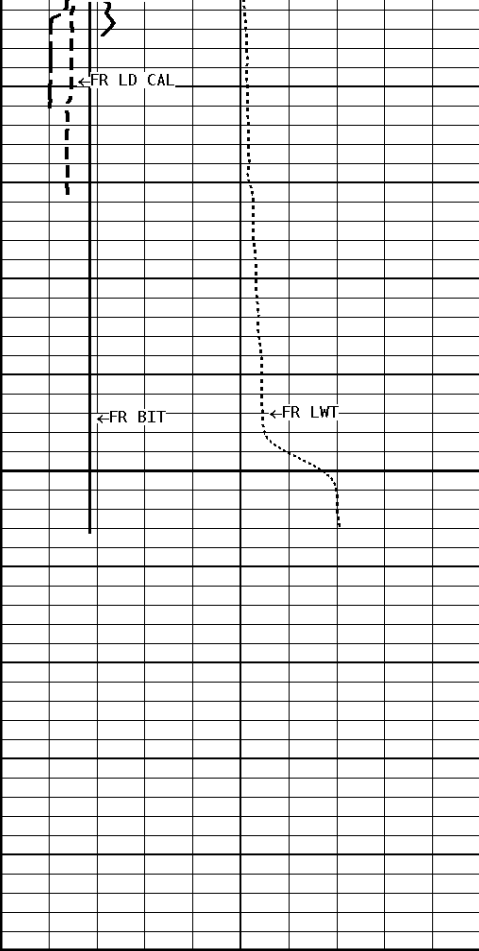


5300

5400

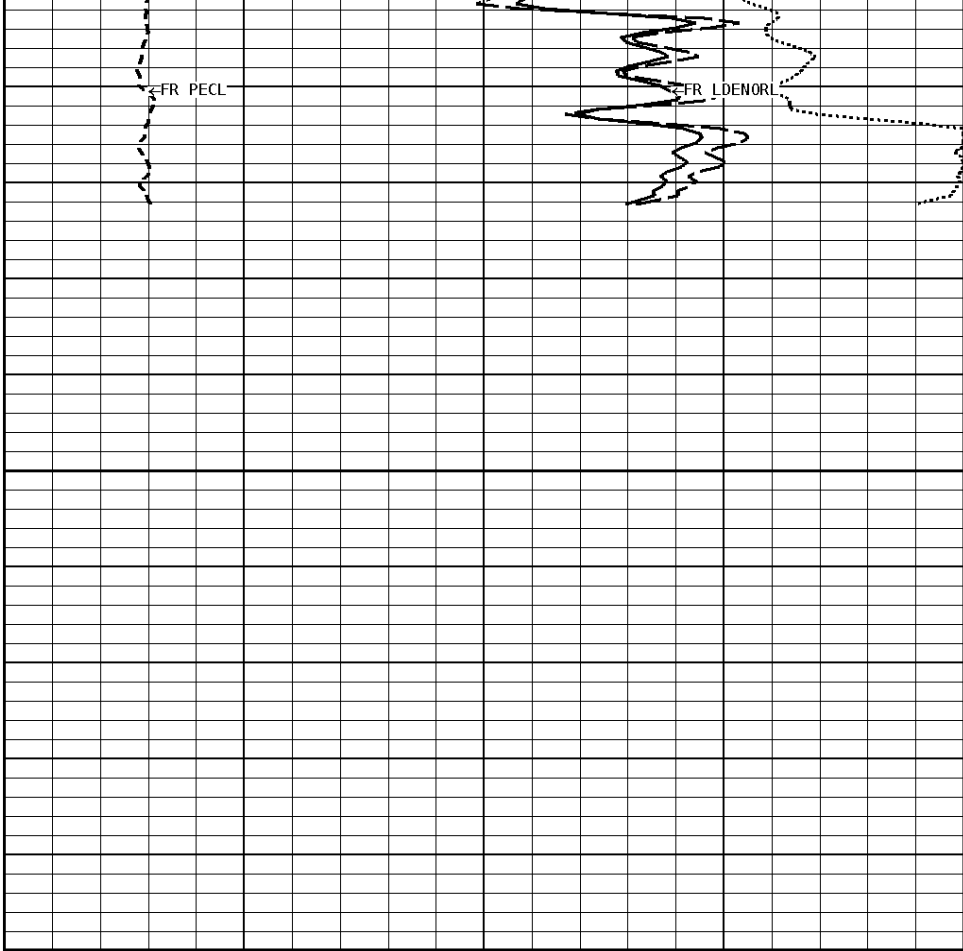
5500





5545

File #1.1.6



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

- BHV AHV - CU.FT		DENSITY POROSITY (2.71g/cc) PERCENT	
70	30	30	-10
-10		-50	
		COMPENSATED BULK DENSITY G/CC	
3.0		4.0	
2.0		3.0	
1.0		2.0	
PE CROSS-SECTION BARNs/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 : 29-APR-2014			Time : 09:39		
Sensor Suite : GR-GR5			ID : GRT-BB-117		
	Measured	Units	Calibrated	Units	
GR	Background Jig		Jig		
	43 344	CPS	175		GRAPI

Shop Calibration CNT-AA					
Performed : 29-APR-2014			Time : 10:47		
Sensor Suite : CALI-BCN			ID : NDT-AC-027		
	Jig - Measured		Jig - Calibrated	Units	
CL # 1	Ring#1 Ring#2		Ring#1 Ring#2		IN.
	8.1 14.7		6.0 12.0		

Performed : 29-Apr-2014			Time : 10:37		
Sensor Suite : BHC NEUT			ID : CNP-AE-42		
Source ID : N-1044					
	Tank		Verification	Units	
	Measured Calibrated		Jig		
N/F	3.6372 3.6893		3.7053		
Porosity	19.7 20.5		20.7		%

Shop Calibration LDT-DA					
Performed : 29-MAR-2014			Time : 09:35		
Sensor Suite : CALI-LTH			ID : NDT-AH-116		
	Jig - Measured		Jig - Calibrated	Units	
CL # 1	Ring#1 Ring#2		Ring#1 Ring#2		IN.
	8.3 11.3		6.0 12.0		

Performed : 30-Apr-2014			Time : 15:13		
Sensor Suite : BHCPELNG			ID : LDP-DA-50		
Source ID : CSV-587					
	Short Space				
	BKGD	Al	Mg	Al+Fe	Units
LSW1	72	440	711	304	CPS
LSW2	76	529	847	390	CPS
LSW3	284	1311	2063	1133	CPS
LSW4	349	1258	1742	1123	CPS
LSW5	32	42	41	39	CPS
LSW6	95	96	98	95	CPS
LSW7	58	59	57	60	CPS
LSW8	2	2	3	2	CPS
QS	0.243	0.234	0.267	0.226	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC
	Long Space				
	BKGD	Al	Mg	Al+Fe	Units
LLW1	103	530	2155	345	CPS
LLW2	113	900	3680	666	CPS
LLW3	430	1805	6571	1571	CPS
LLW4	559	1085	2756	1013	CPS
LLW5	65	71	81	69	CPS
LLW6	171	172	166	171	CPS
LLW7	115	110	110	111	CPS
LLW8	5	6	10	6	CPS
QL	0.197	0.219	0.205	0.213	
PEL			2.697	5.458	
LSDN		2.600	1.680		G/CC

Shop Calibration MST-DA					
Performed : 19-FEB-2014			Time : 09:54		
Sensor Suite : CALI-MSN			ID : MST-DA-28		
	Jig - Measured		Jig - Calibrated	Units	
CL # 1	Ring#1 Ring#2		Ring#1 Ring#2		IN.
	7.4 11.7		6.0 12.0		

Performed : 19-Feb-2014			Time : 10:01		
Sensor Suite : MSTDA-NI			ID : MST-DA-28		

Internal						
	Zero	Measured Reference	Units	Zero	Calibrated Reference	Units
INV-V	0.0	29139.4		0.00	1546.00	MV
NOR-V	0.5	29707.3		0.00	1546.00	MV
IN-C	0.0	60082.3		0.00	15.46	UA
INV-R					32.34	OHMM
NOR-R					55.11	OHMM
Performed : 19-Feb-2014 Sensor Suite : MSTDAMSF Time : 10:03 ID : MST-DA-28						
Internal						
	Zero	Measured Reference	Units	Zero	Calibrated Reference	Units
MSFC	33.5	60303.2		0.00	1522.00	UA
MSFB	32763.0	63839.5		0.00	1522.00	MA
MOM1	0.0	59799.0		0.00	1522.00	MV
MSFRA					43.30	OHMM



Tucker
ENERGY SERVICES

Company: CHIEFTAIN OIL CO, INC.

Well: RATHGERBER #3

Location: 2702' FSL & 2344' FWL

Logged: 05-12-2014

K.B. Elev: 1387.0 Ft