



Tucker
ENERGY SERVICES

COMPENSATED NEUTRON
PEL DENSITY MICRO LOG

Company	CHIEFTAIN OIL CO. INC.
Well	AHS CATTLE CO. #11
Field	STRANAHAN
County	BARBER
State	KANSAS
Country	USA
API No.	15-007-24254
File No	TUL-60426
Company	CHIEFTAIN OIL CO. INC.
Well	AHS CATTLE CO. #11
Field	STRANAHAN
County	BARBER
State	KANSAS
Country	USA
API No	15-007-24254
Location	1200' FNL & 660; FEL S2 S2 NE NE
LSD	Sect : 12 Twp : 35S Rge : 12W

Permanent Datum:	GL	Elevations:	KB 1400.00	Ft	Services:	CNT	PIT
Drilling Measured From:	KB	DF	1399.00	Ft	LDT	MLT	
Log Measured From:	KB	GL	1390.00	Ft			
Above Permanent Datum:	10.00	Ft					
Date	12-22-2014						
Run Number	1						
Depth--Driller	5457.0	Ft					
Depth--Logger	5452.0	Ft					
First Reading	5439.0	Ft					
Last Reading	3700.0	Ft					
Casing--Driller	313.0	Ft					
Casing--Logger	320.0	Ft					
Bit Size	7.875	In					
Casing Size	8.625	In					
Hole Fluid Type	WBM						
Density	9.4						
Fluid Loss	8.8						
PH/Viscosity	9.0	48.0					
Sample Source	MEASURED						
RM@Measured Temp.	1.000	@ 50 F					
RMF@Measured Temp	0.850	@ 50 F					
RMC@Measured Temp.	1.150	@ 50 F					
Source RMF/RMC	CALCULATED	CALCULATED					
RM@BHT	0.420	@ 128 F					
Time Circulation Stopped							
Max Recorded Temp.	130	F					
Equipment/Base	T-126	TULSA					
Recorded By	S.K. DAVIS						
Witnessed By	D. 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	5452.00	8.625	20.00	320.00	0.00

Run Number	1	
Date	12-22-2014	
Date/Time On Bottom	12-22-2014 11:30 pm	
Depth to Fluid	0.0 Ft	
Salinity	3500.000	
RMF@BHT	0.360 @ 128 F	
RMC@BHT	0.480 @ 128 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 3700'
 SALT / ANHYDRITE SECTION FROM 1750' TO 1200'

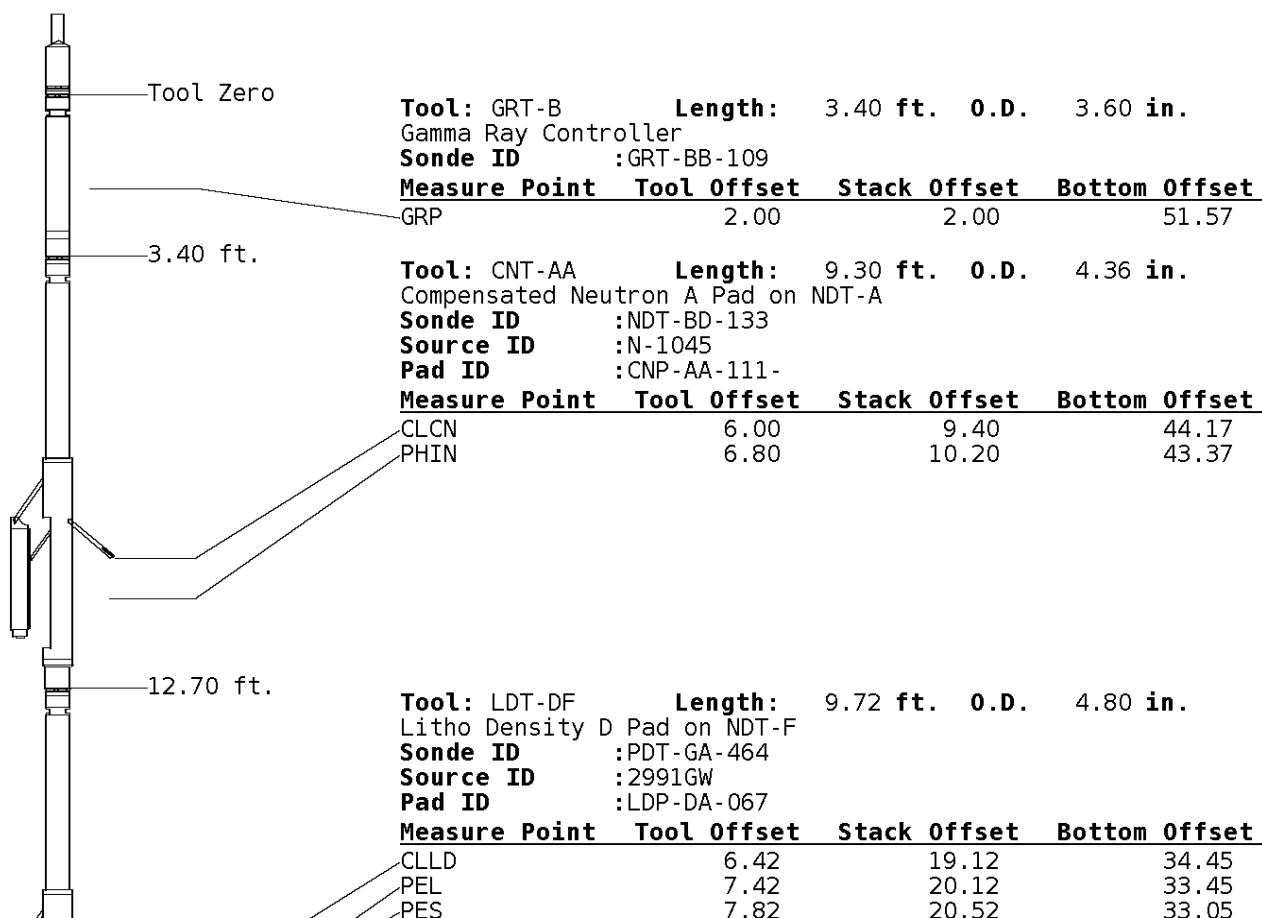
GRT; GRP,
 CNT; PHIN, CLCNIN
 LDT; PORL, LCORN, PECLN, LDENN, CLLDIN
 MLT; NOR.RF, INV.RF, MSCLPIN.
 PIT; ILD, ILM, SPU, SFLAEC, CIRD

OPERATORS;

C. GONZALES
 J. OFFIENGBU

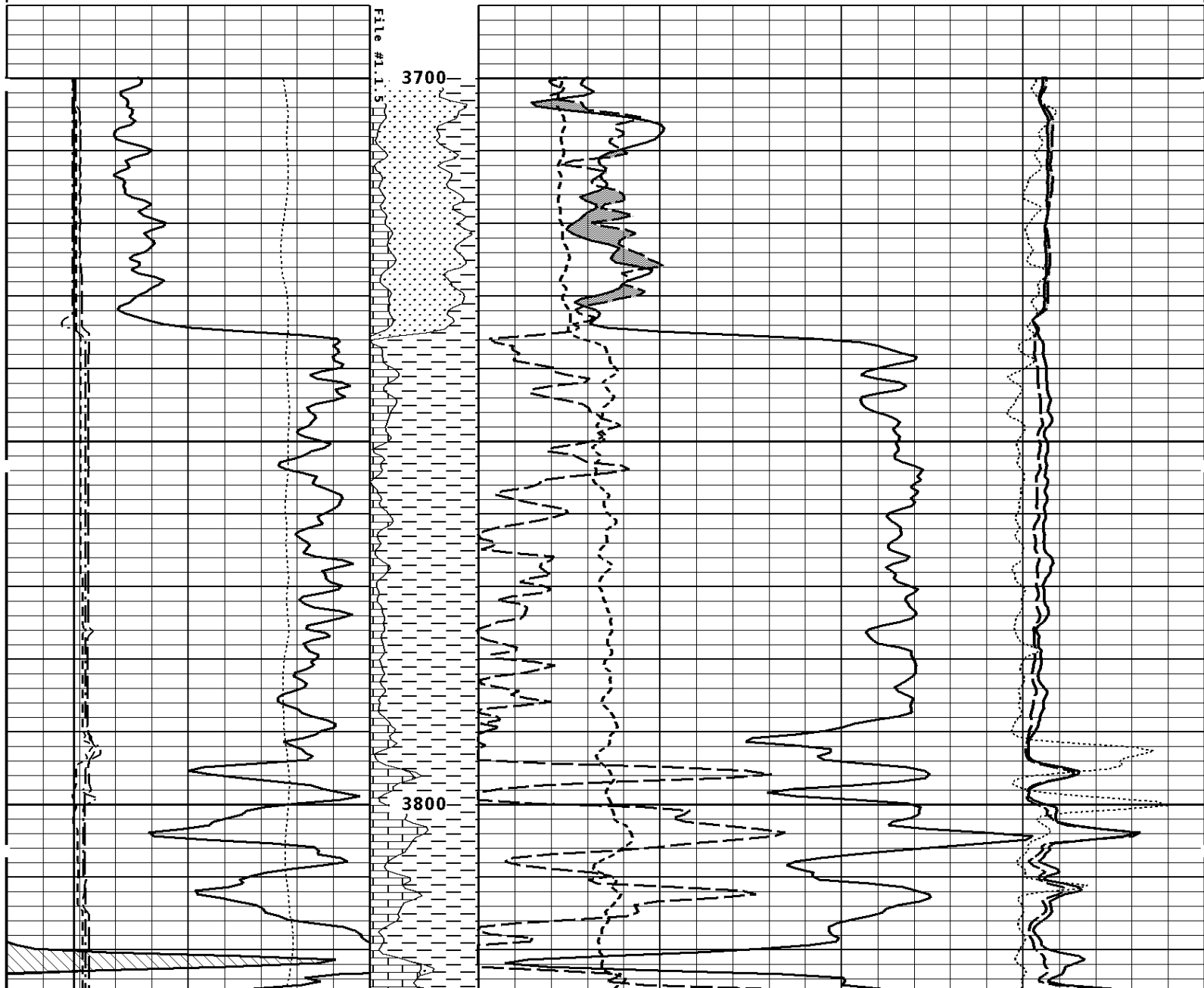
Tool String Schematic

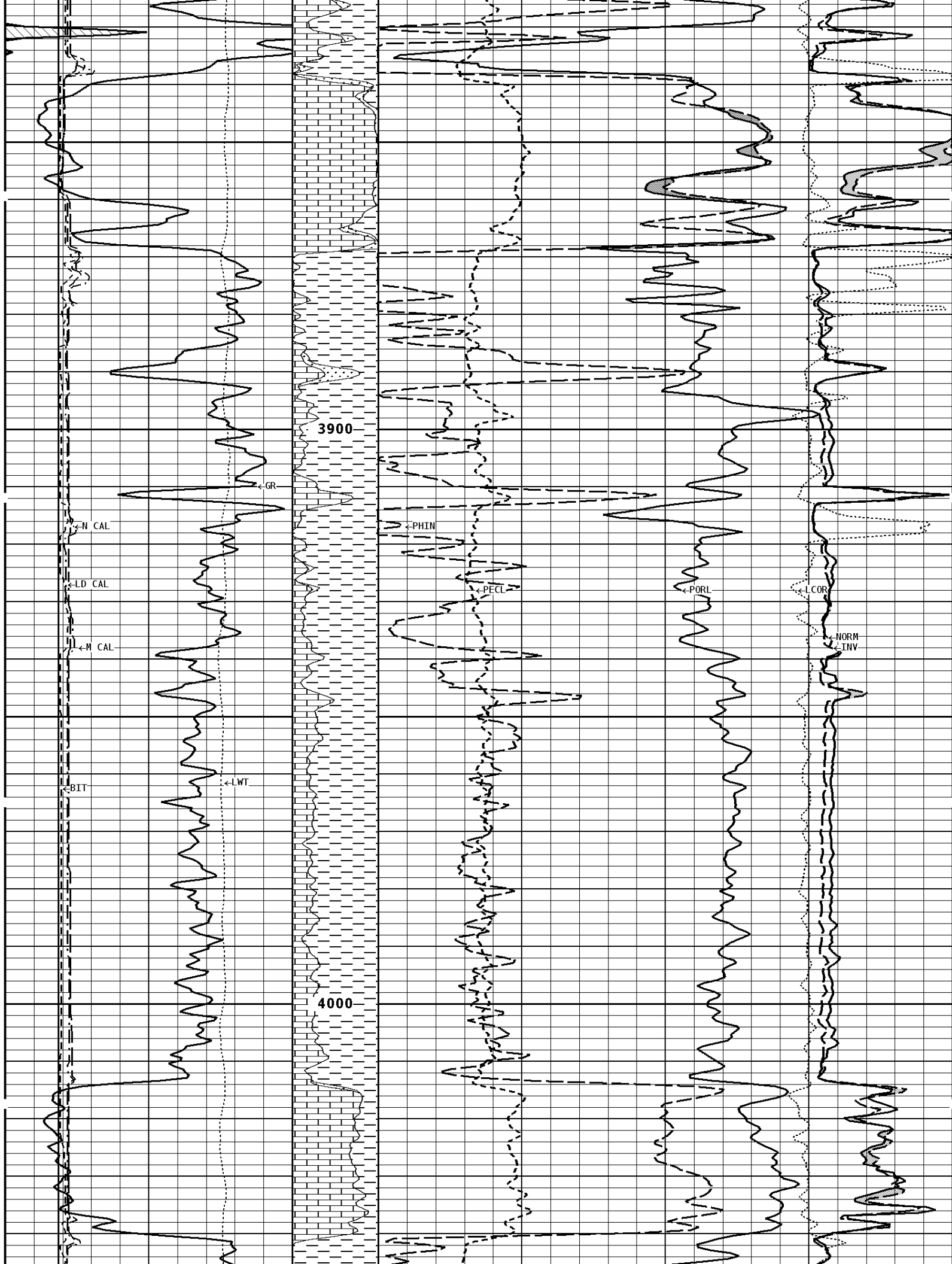
Total Tool Length - 53.57 ft.
Maximum Outside diameter - 6.00 in.
Net Weight in Air - 943.00 lbs.

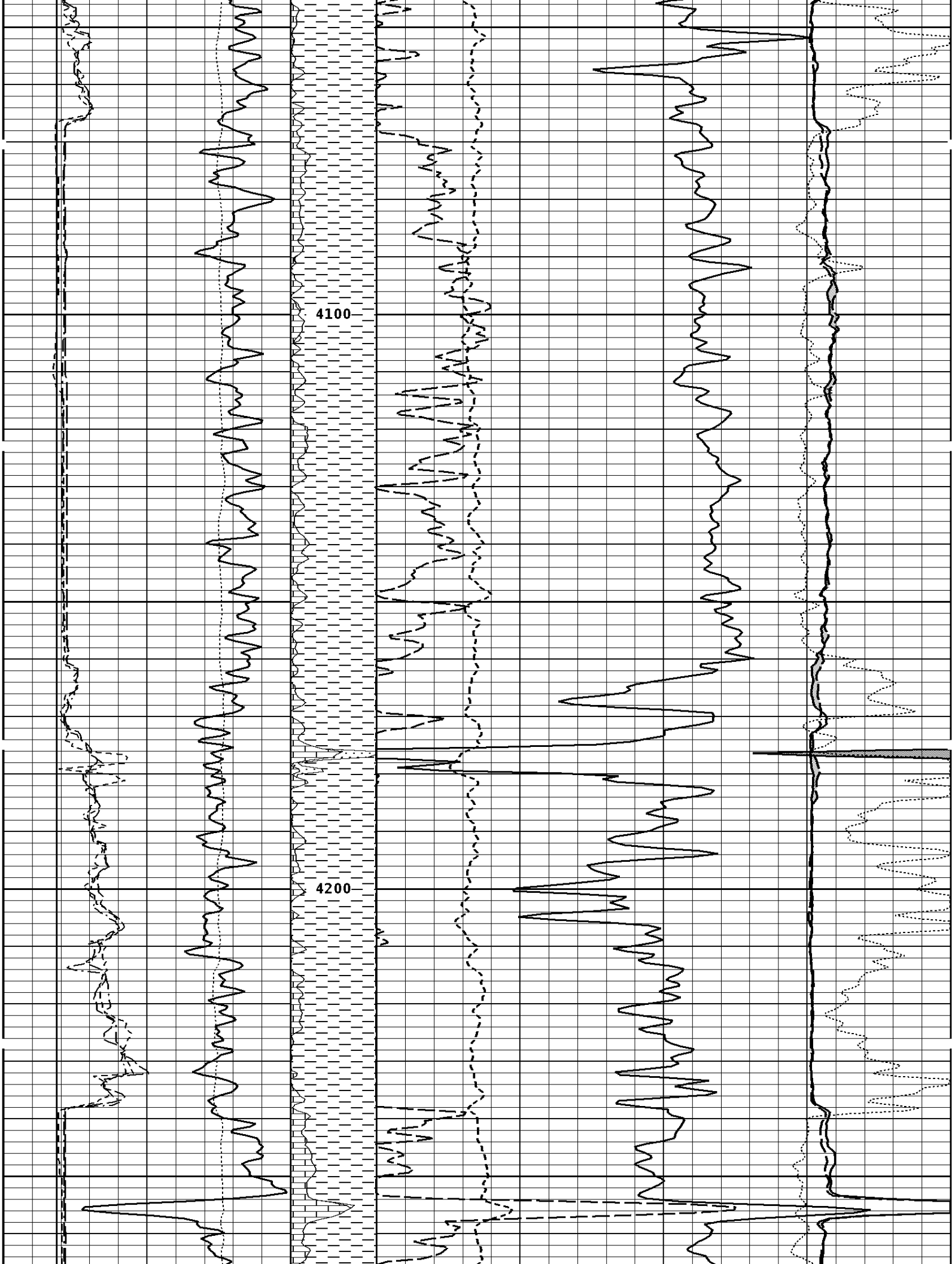


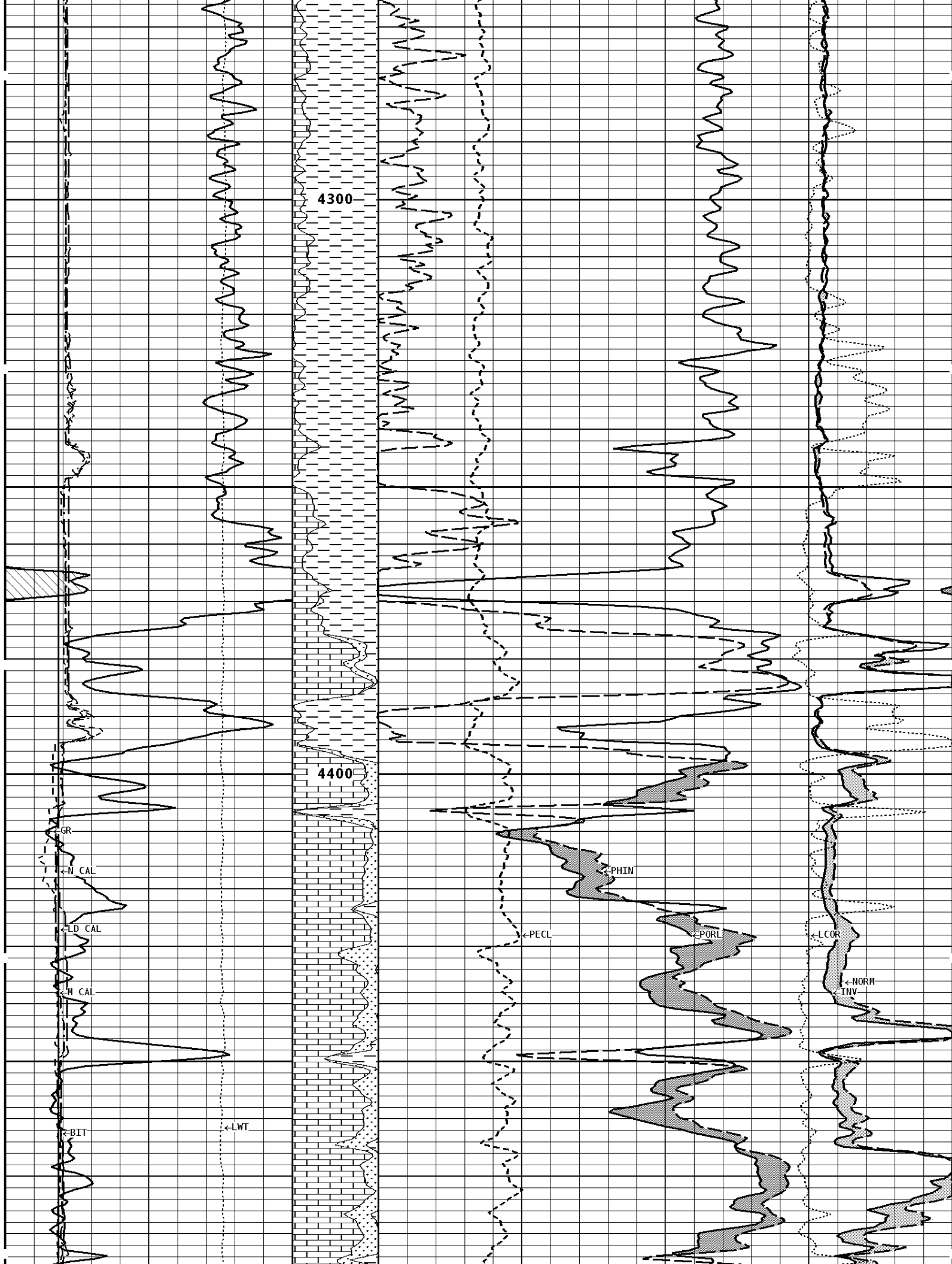
6	16				0	40
NEUTRON (Y) CALIPER INCHES (IN)					INVERSE OHMM	
16	26				0	40
6	16					
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARNs/ELECTRON		DENSITY CORRECTION G/CC	
16	26					
6	16		0	10	-0.25	0.25
TENSION LBS		Volume Calcite	DENSITY POROSITY (2.71g/cc) PERCENT			
			70	30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

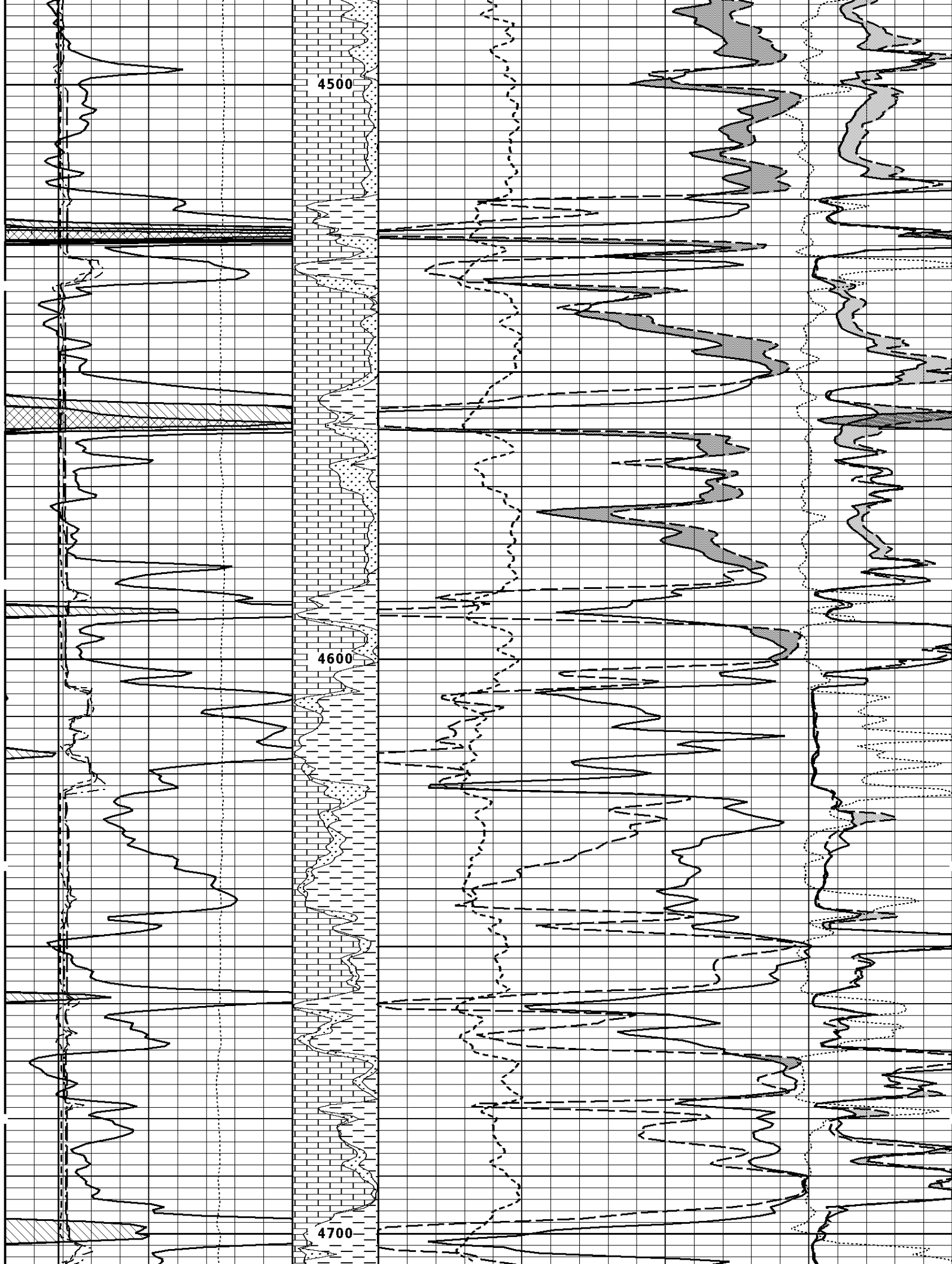
1:240 MAIN SECTION

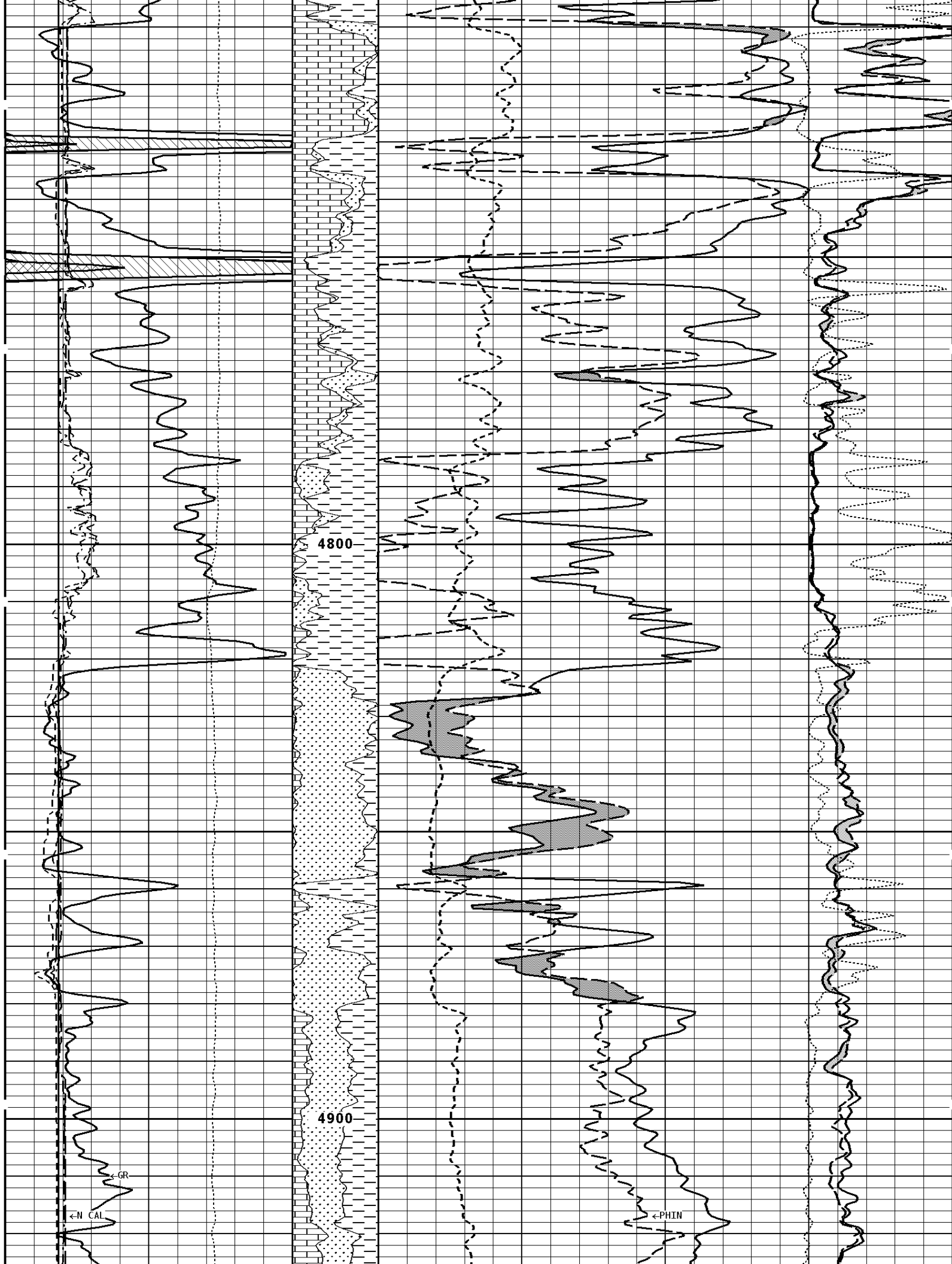


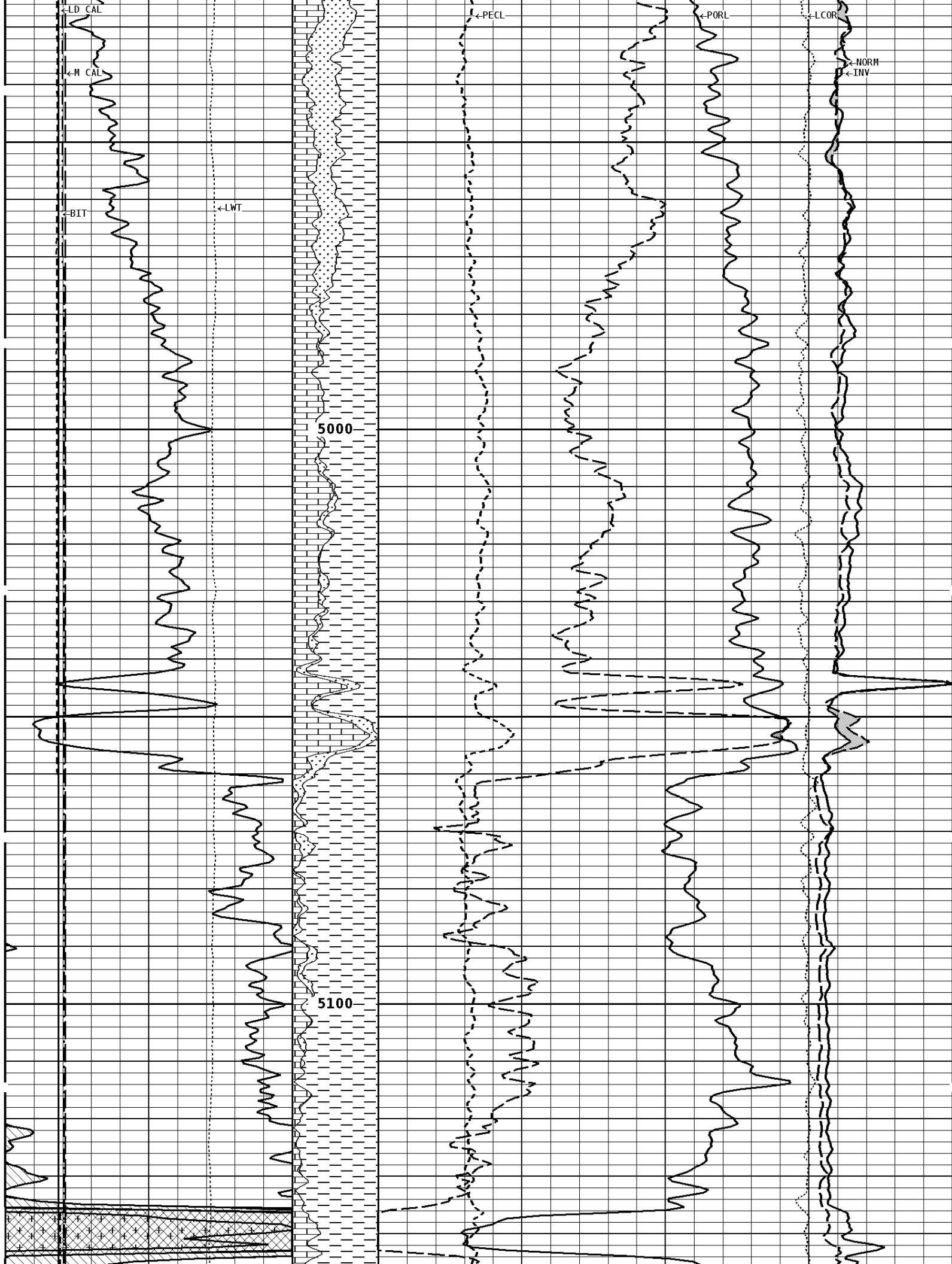


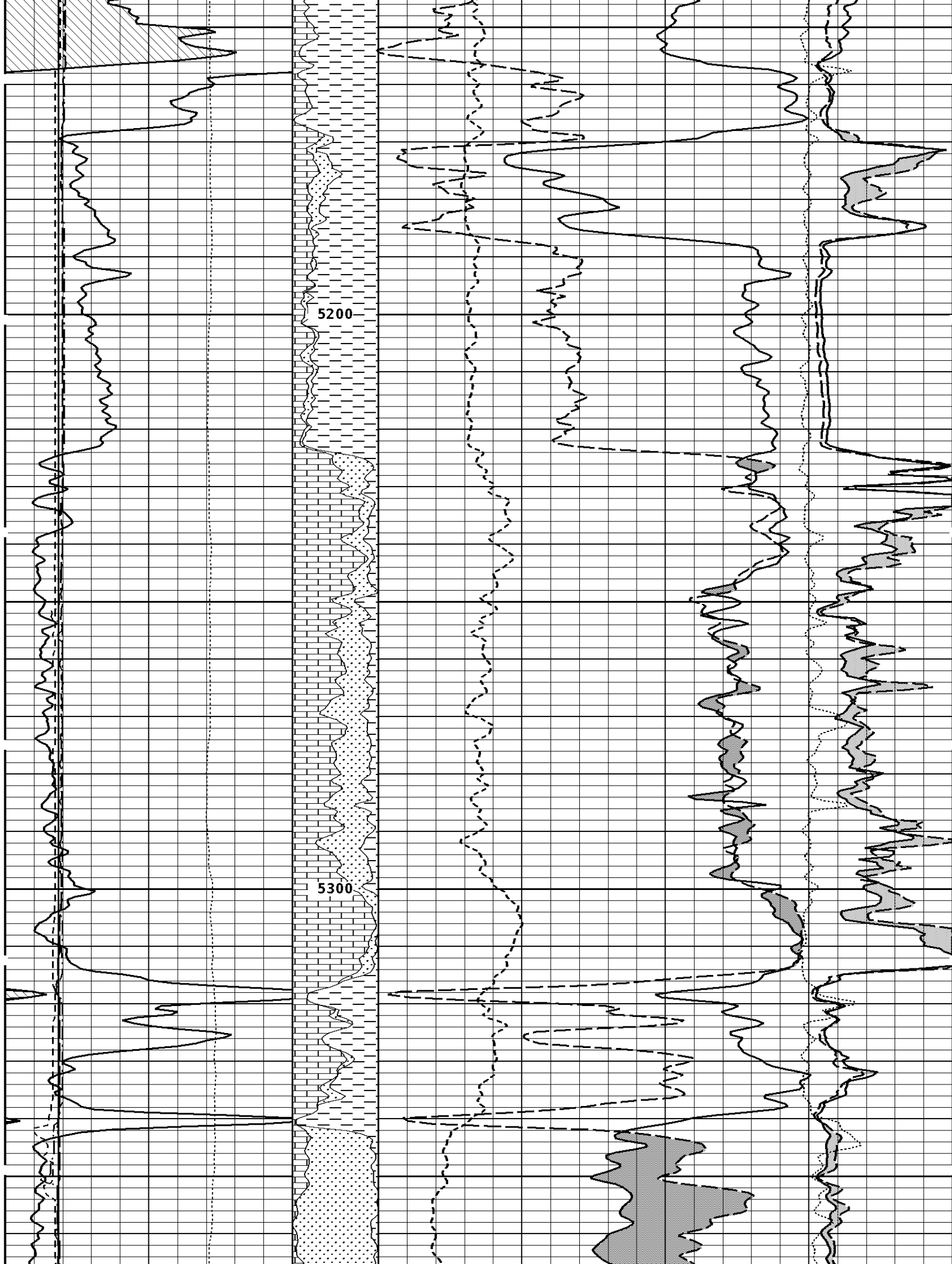


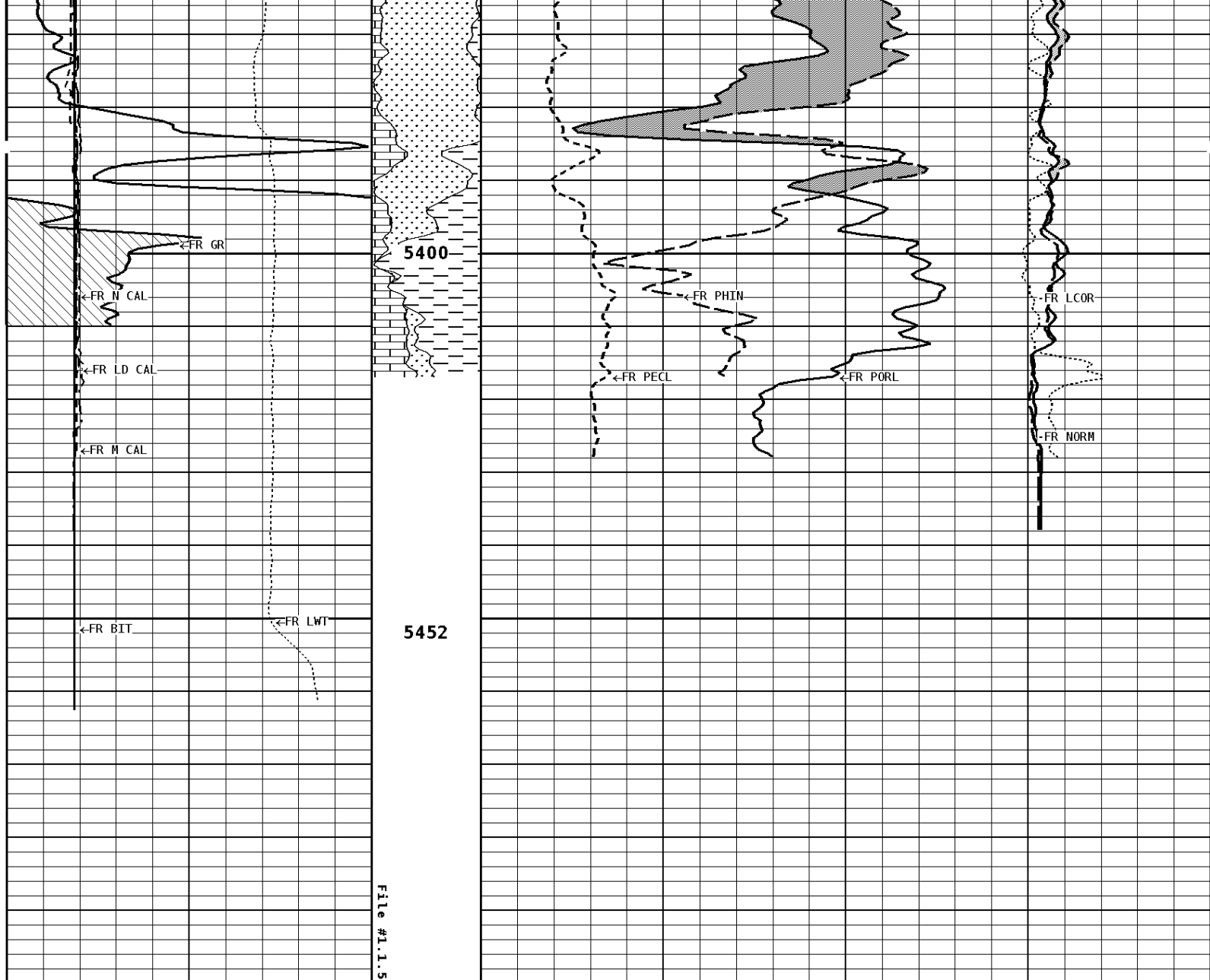












1:240 MAIN SECTION

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	-10
			-10	-50
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARNS/ELECTRON	DENSITY CORRECTION G/CC
16	26		10	-0.25
6	16			0.25
NEUTRON (Y) CALIPER INCHES (IN)				
16	26			
6	16			
BIT SIZE INCHES (IN)				
6	16			

16	16
CALIPER MICRO INCHES (IN)	
16	26
6	16

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:	chief-ahs-11-mstk-dec-22	Scale:	1:240	Format:	NLD-240
Segment:	V1.D1.S4 RP	Acquired:	2014-12/22 23:25 3.4.0-13284		
Reference:	0	Processed:	2014-12/23 01:25 3.4.0-13284		

CALIPER MICRO INCHES (IN)	
16	26
6	16

BIT SIZE INCHES (IN)	
6	16

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

NORMAL OHMM	
0	40

INVERSE OHMM	
0	40

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

Volume Quartz	PE CROSS-SECTION BARNS/ELECTRON	DENSITY CORRECTION G/CC
	0	10 -0.25
		0.25

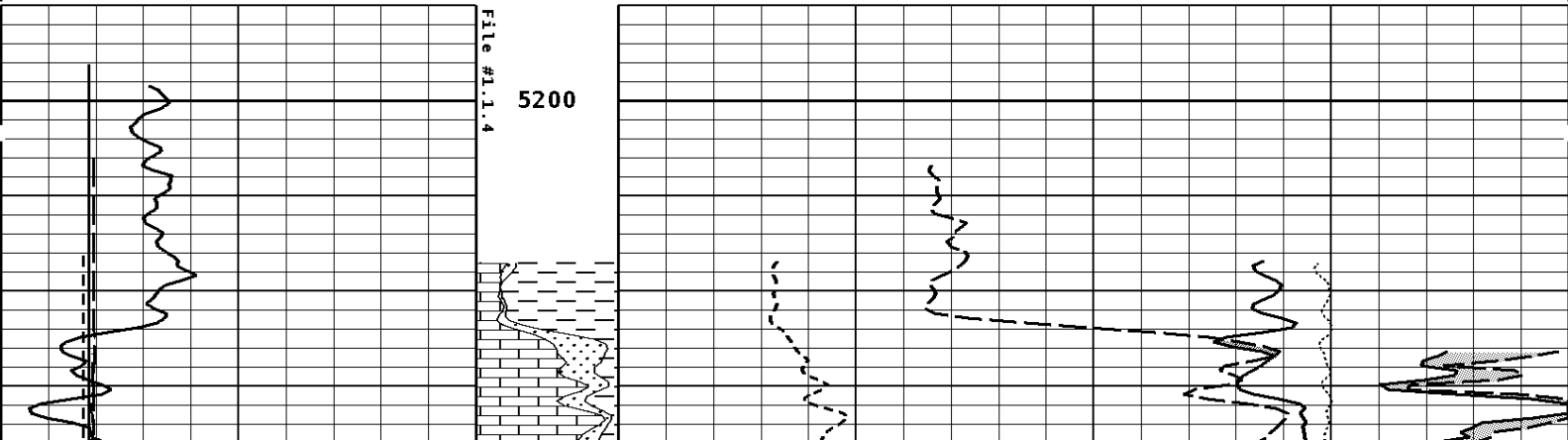
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10000	0

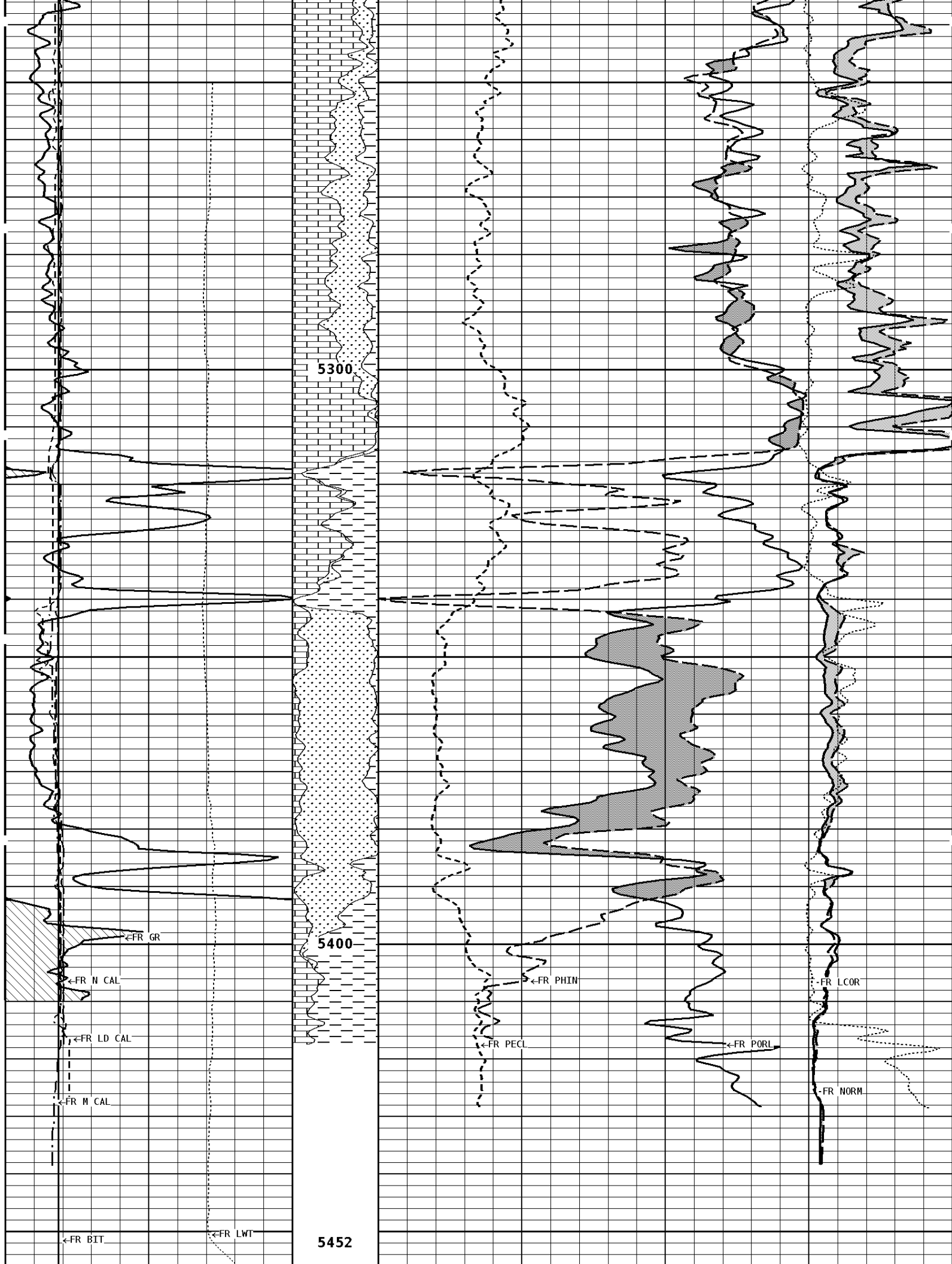
Volume Calcite	DENSITY POROSITY (2.71g/cc) PERCENT
	70
	30
	-10
	-50

GAMMA RAY API UNITS	
150	300
0	150

Volume Dolo/Shale	NEUTRON POROSITY (LIMESTONE) PERCENT
	30
	-10

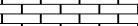
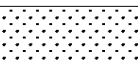
1:240 REPEAT SECTION





File #1.1.4

1:240 REPEAT SECTION

GAMMA RAY API UNITS		Volume Dolo/Shale	NEUTRON POROSITY (LIMESTONE) PERCENT			
150 0		300 150	30-----10			
TENSION LBS		Volume Calcite	DENSITY POROSITY (2.71g/cc) PERCENT			
10000	0		70 30	30 -10		
			-10-----50			
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARNs/ELECTRON	DENSITY CORRECTION G/CC		
16 6	26 16		0-----10	-0.25-----0.25		
NEUTRON (Y) CALIPER INCHES (IN)						
16 6	26 16				INVERSE OHMM 0-----40	
BIT SIZE INCHES (IN)					NORMAL OHMM 0-----40	
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: chief-ahs-11-mstk-dec-22

Scale: 1:240

Format: LDT-240

Segment: V1.D1.S5 MN

Acquired: 2014-12/22 23:38 3.4.0-13284

Reference: 0

Processed: 2014-12/23 01:25 3.4.0-13284

BIT SIZE
INCHES (IN)

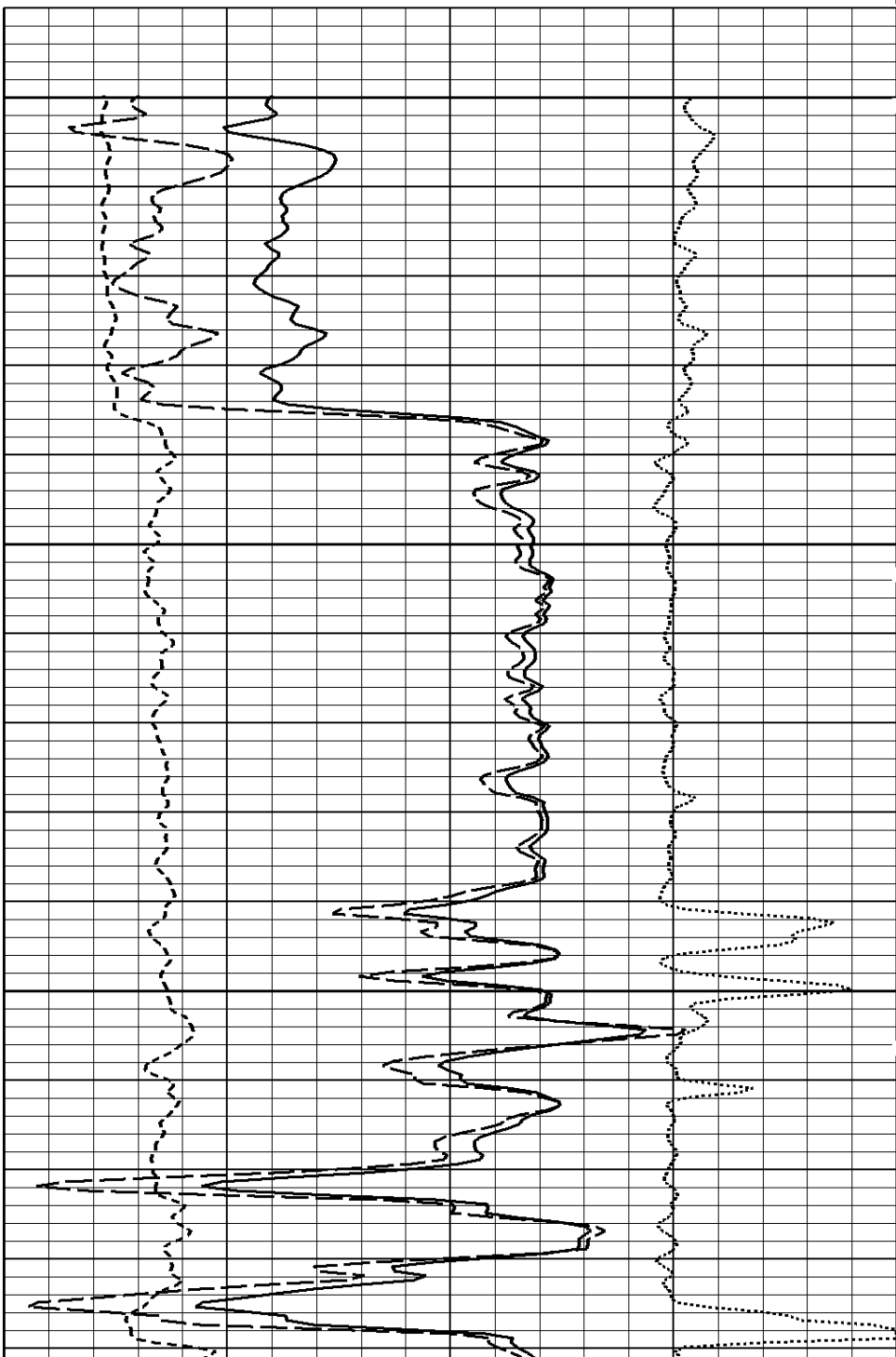
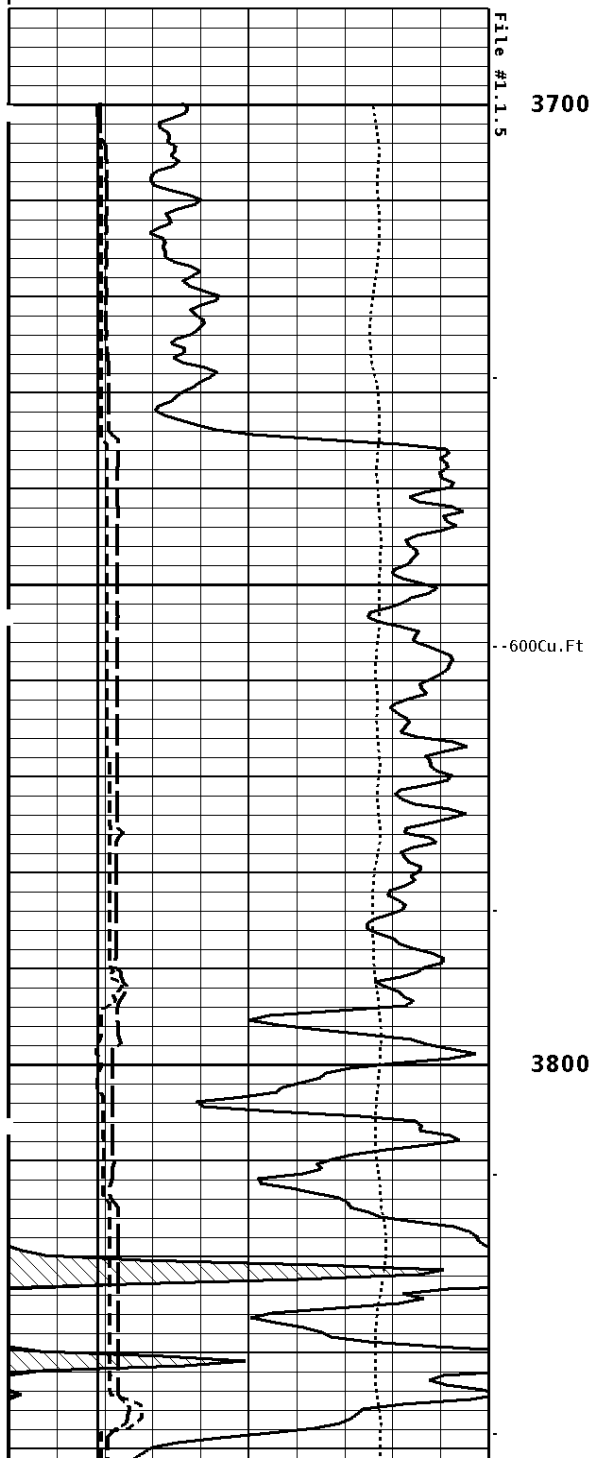
6 16

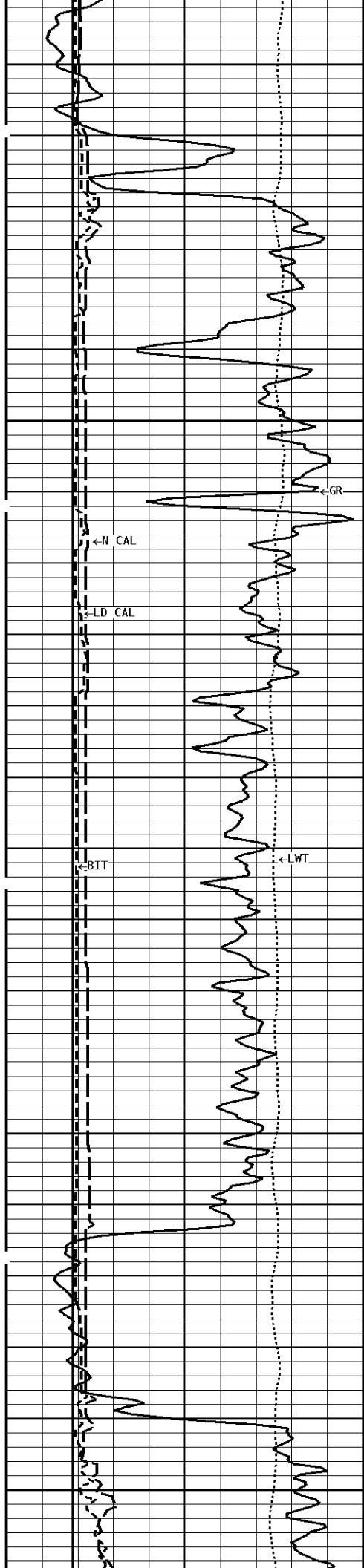
NEUTRON (Y) CALIPER
INCHES (IN)

16 26

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

1:240 MAIN SECTION
BULK DENSITY



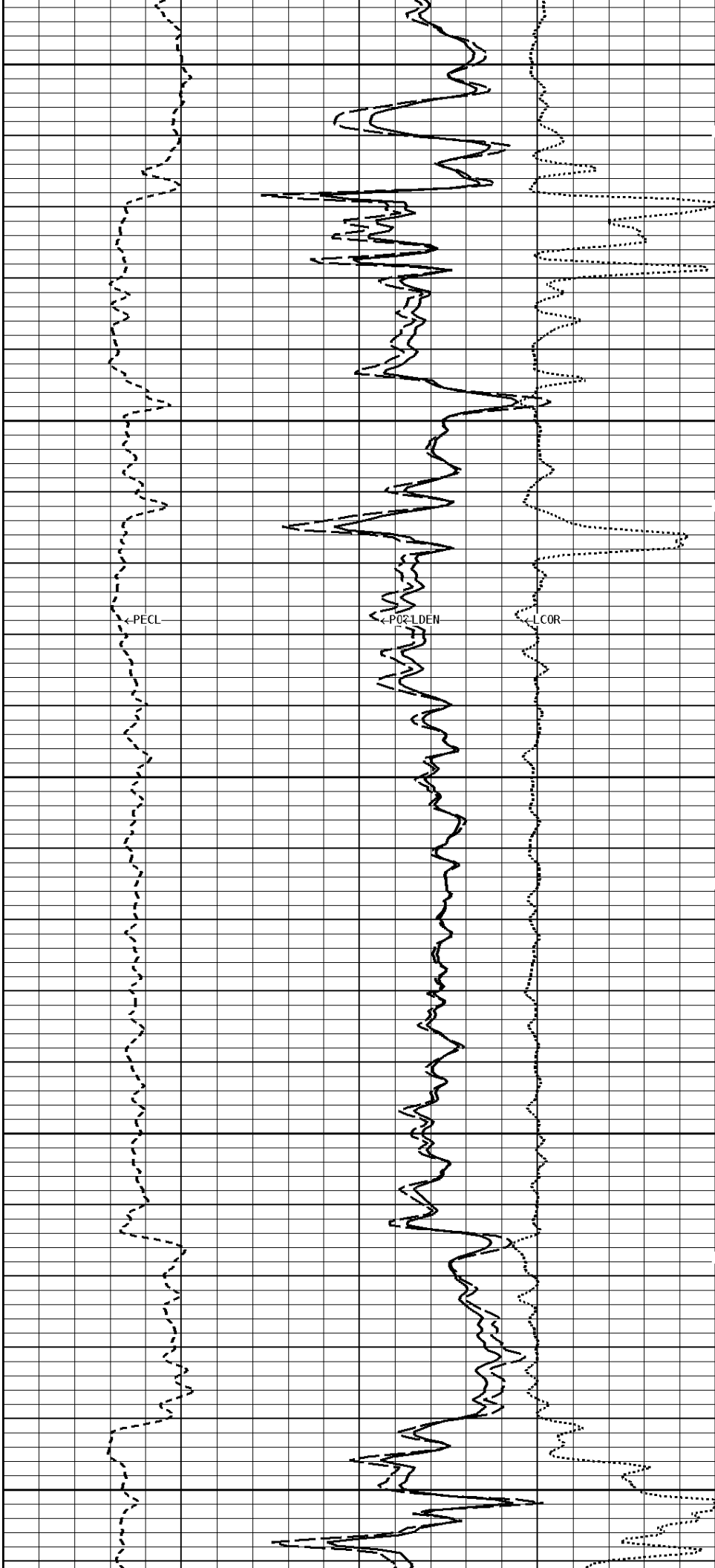


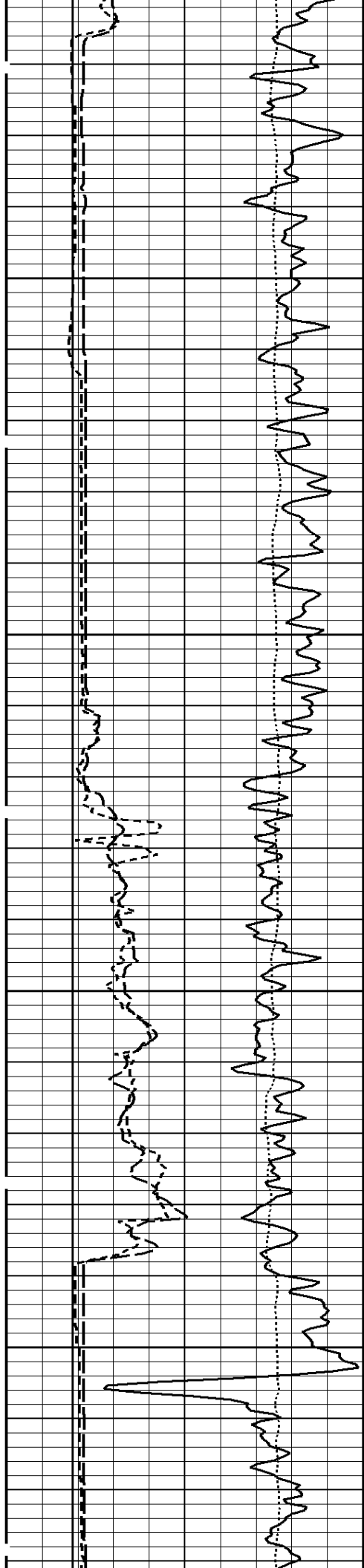
300Cu.Ft.

3900

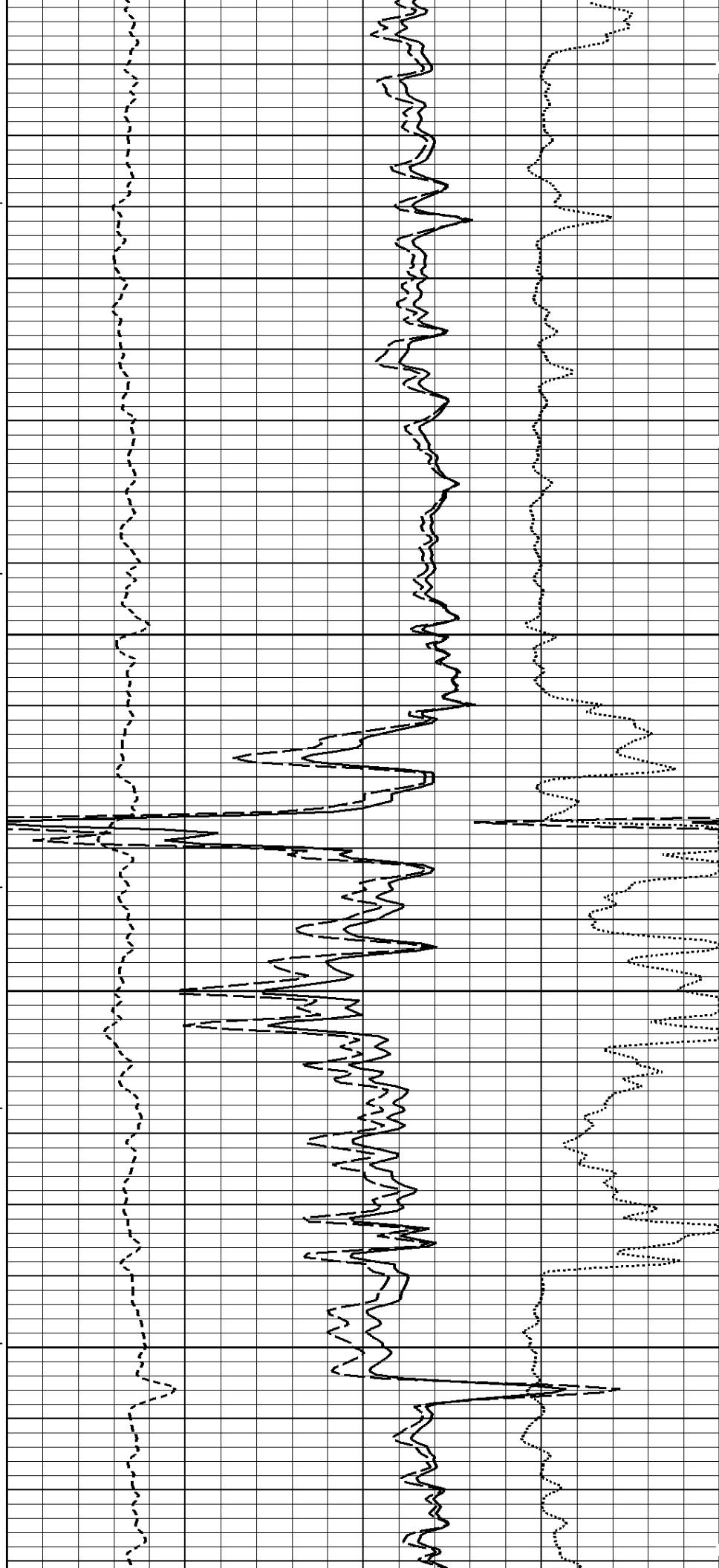
4000

500Cu.Ft

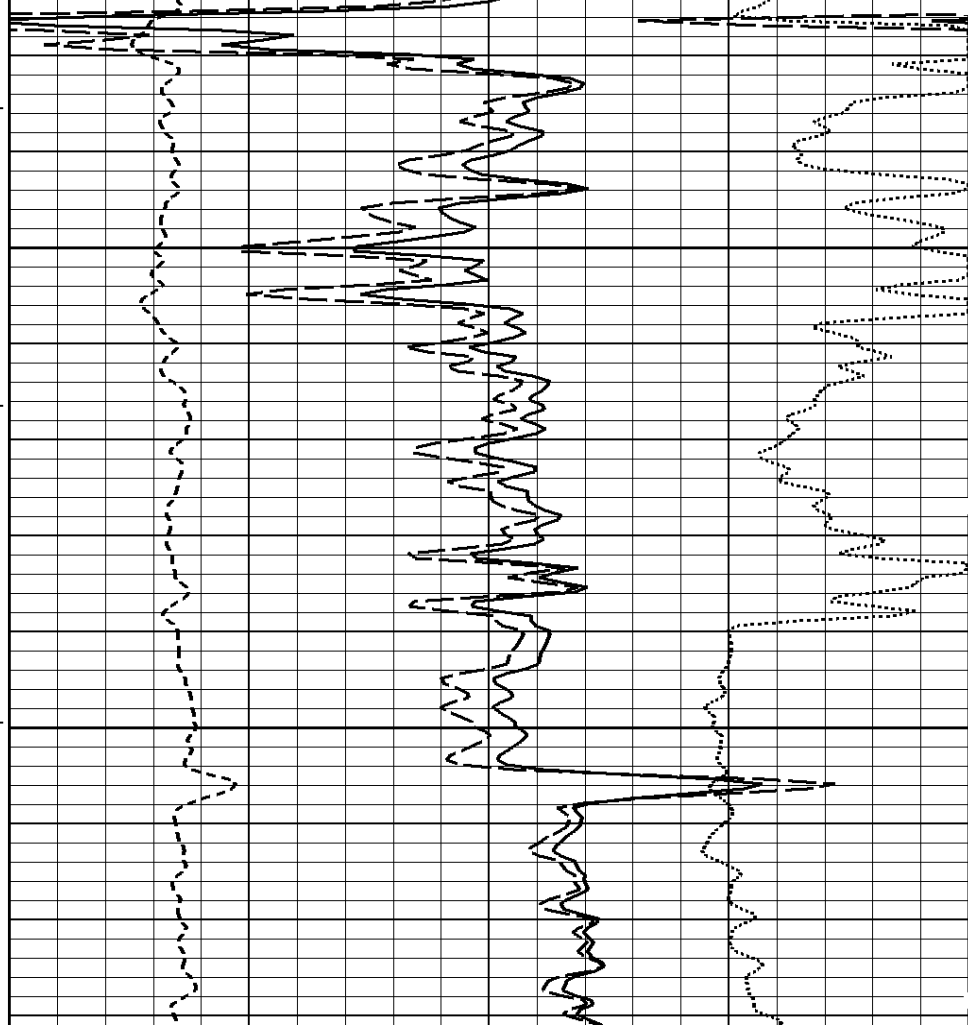
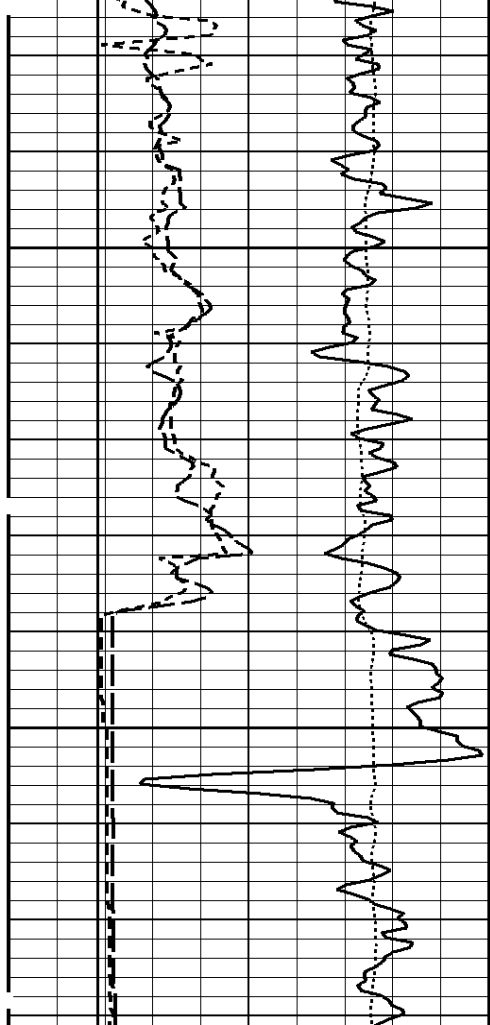


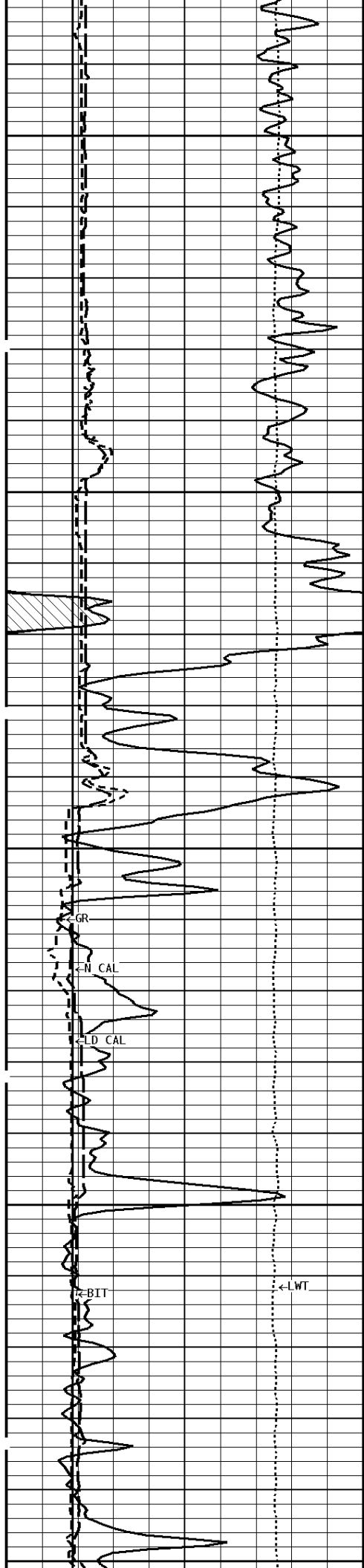


4100



4200





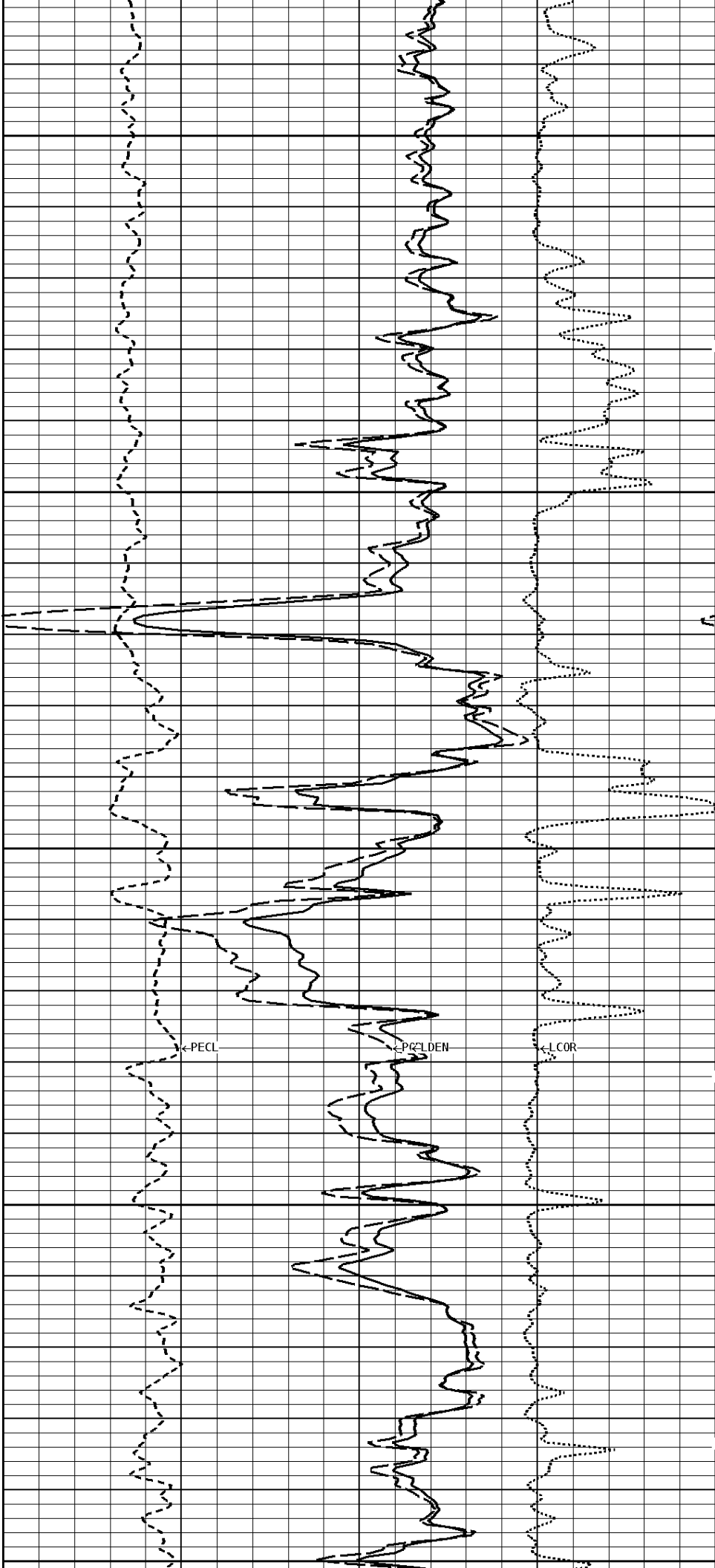
--400Cu.Ft

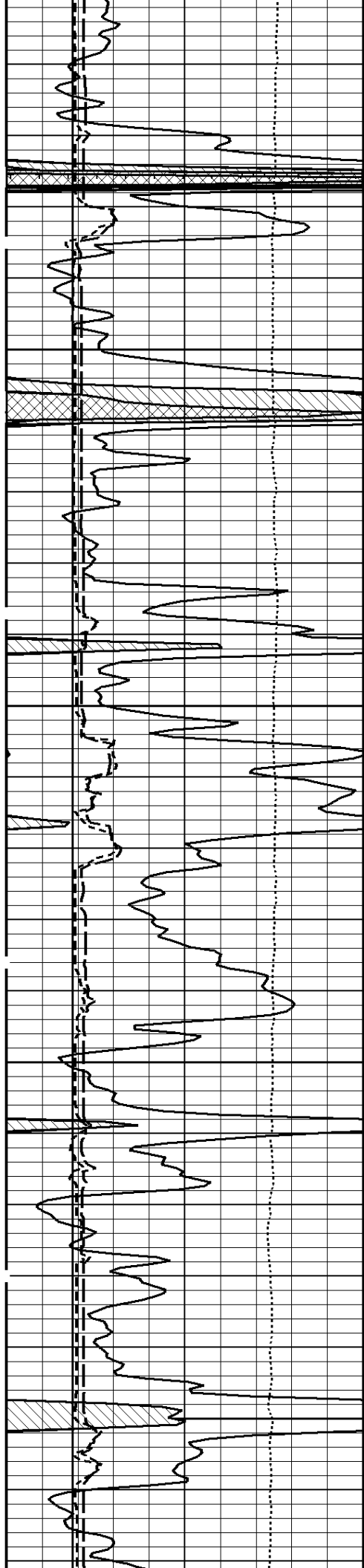
4300

200Cu.Ft.--

4400

4500

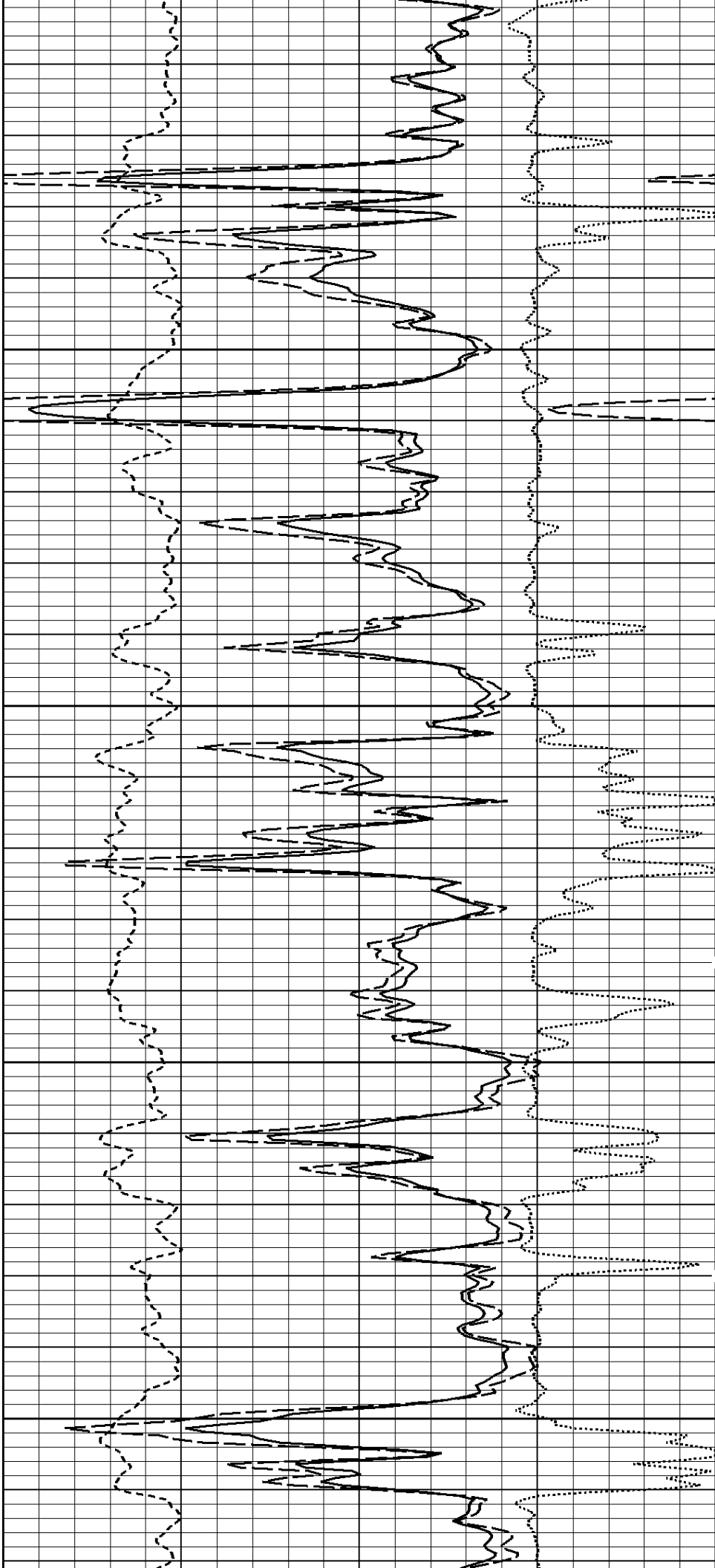


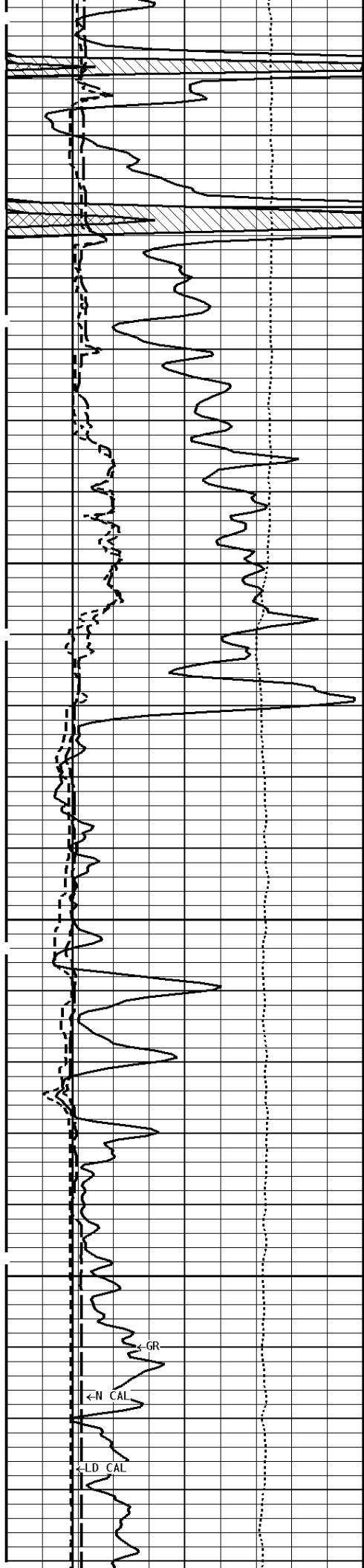


--300Cu.Ft

4600

4700



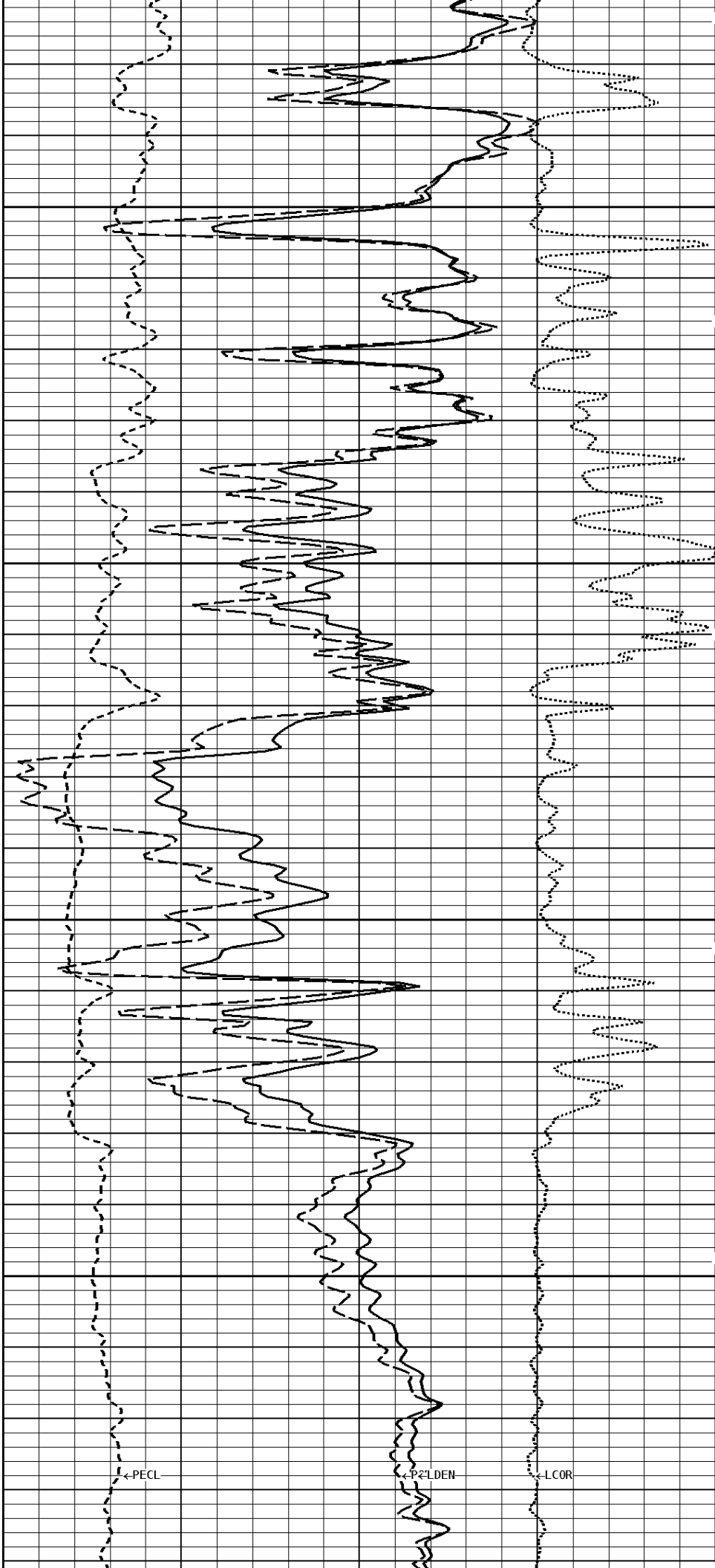


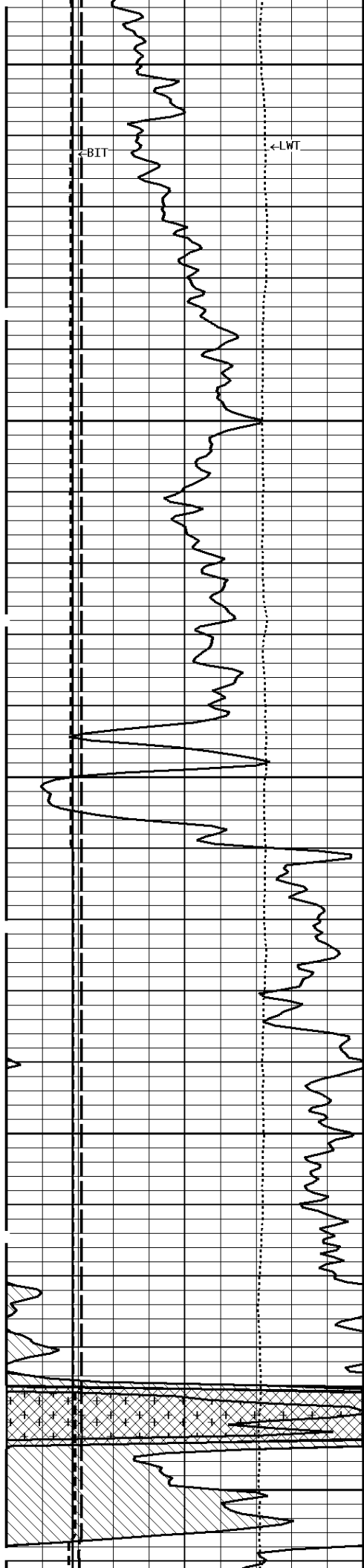
4800

--200Cu.Ft--

100Cu.Ft--

4900

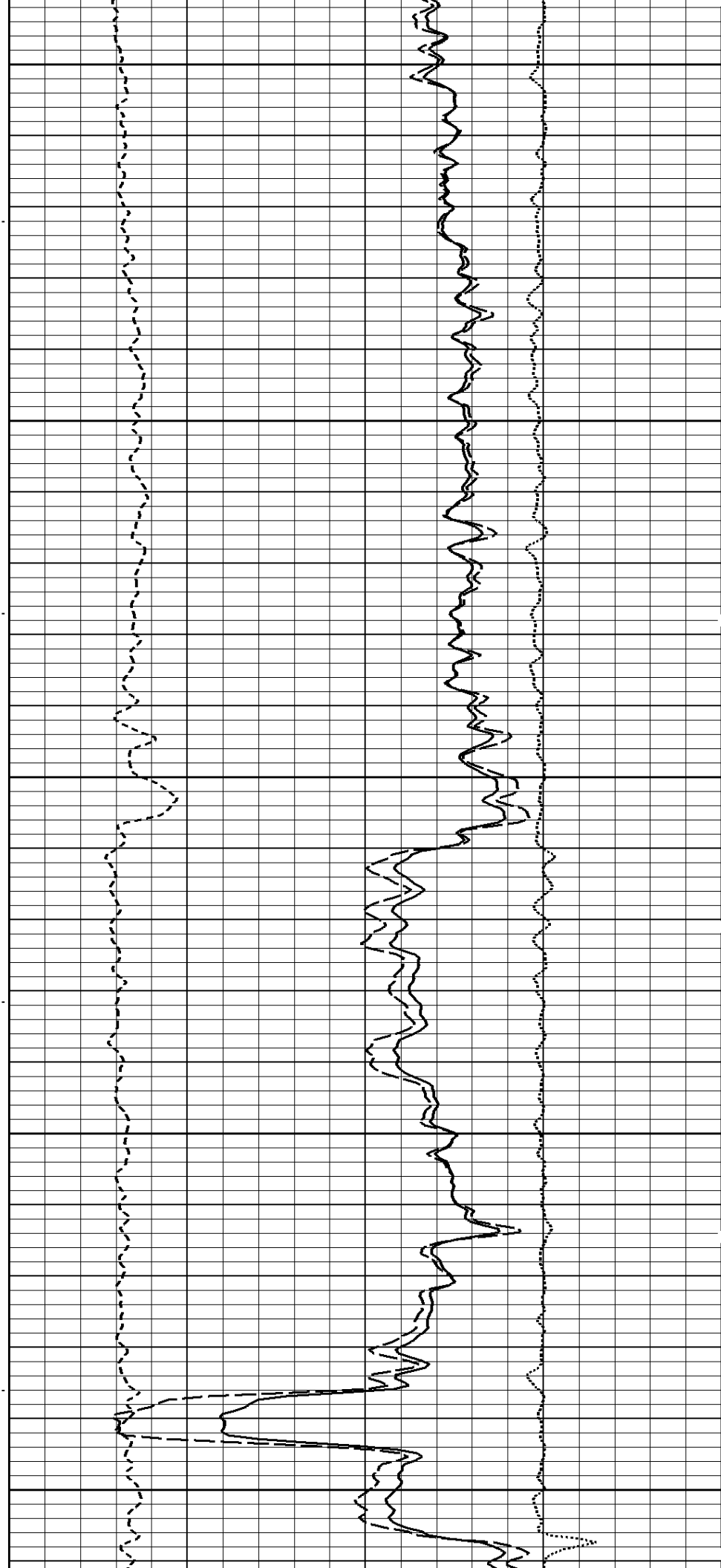


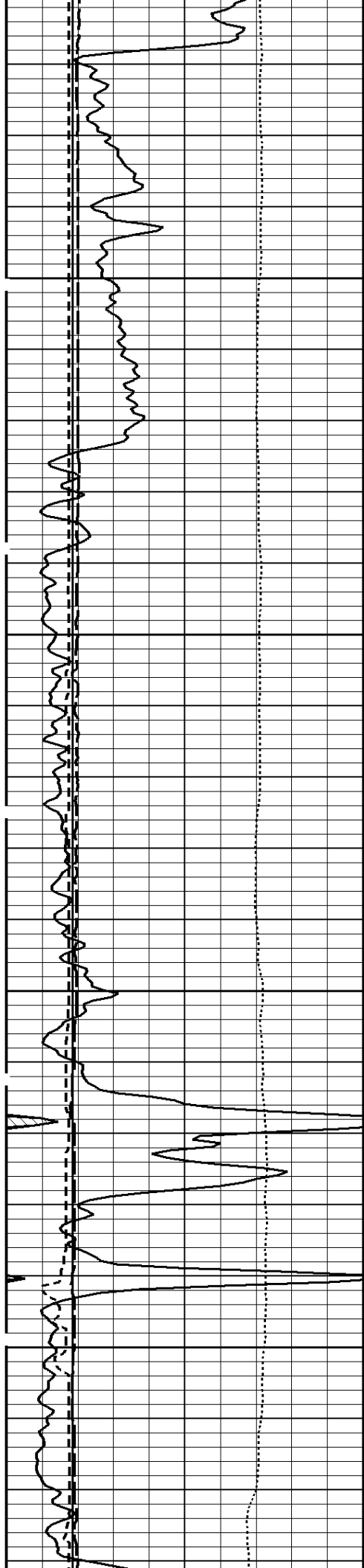


5000

5100

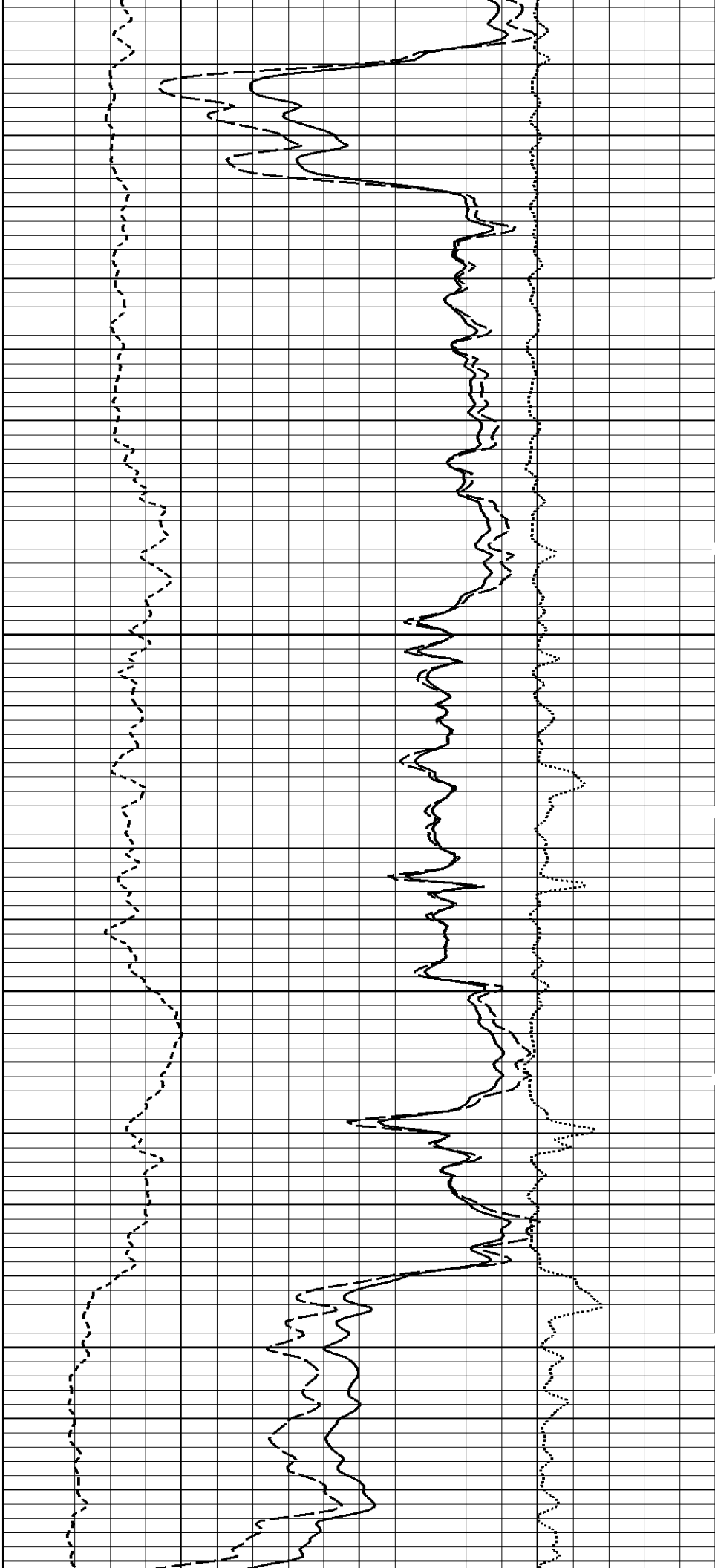
100Cu.Ft

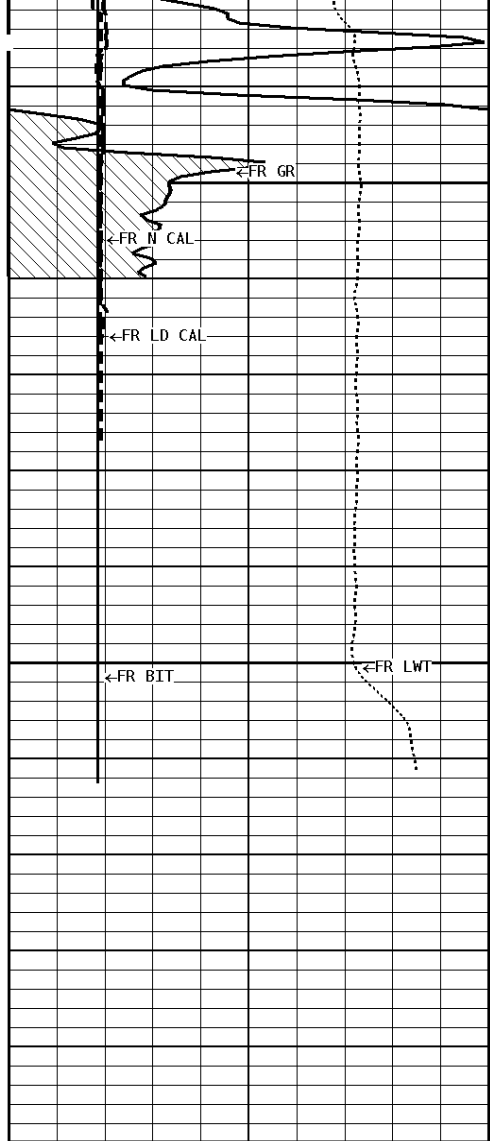




5200

5300

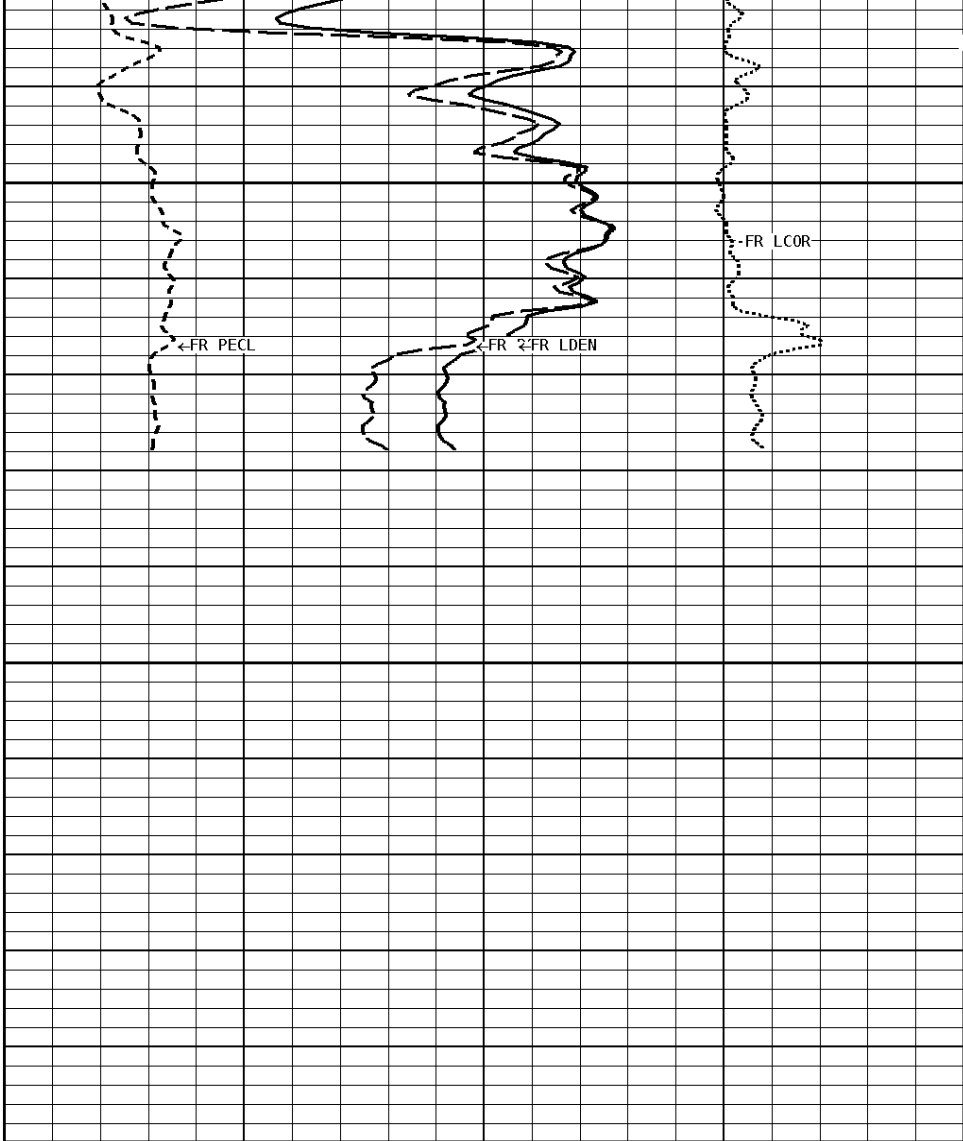




File #1.1.5

5400

5452



1:240 MAIN SECTION
BULK DENSITY

GAMMA RAY API UNITS		- BHV AHV - CU. FT	DENSITY POROSITY (2.71g/cc) PERCENT	
150 0	300 150		70 30 -10	30 -10 -50
TENSION LBS			COMPENSATED BULK DENSITY G/CC	
10000	0		3.0 2.0 1.0	4.0 3.0 2.0
DENSITY (X) CALIPER INCHES (IN)			PE CROSS-SECTION BARNs/ELECTRON	
16 6	26 16		0	10
			DENSITY CORRECTION G/CC	
NEUTRON (Y) CALIPER INCHES (IN)			-0.25 0.25	
16 6	26 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 : 05-NOV-2014			Time : 11:49		
Sensor Suite : GR-GR5			ID : GRT-BB-109		
	Measured	Units	Calibrated	Units	
GR	Background	Jig	Jig		
	48	318	175		GRAPI
	CPS				
Shop Calibration CNT-AA					
Performed : 08-DEC-2014			Time : 11:55		
Sensor Suite : CALI-BCN			ID : NDT-BD-133		
	Jig - Measured		Jig - Calibrated	Units	
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	9.1	13.6	6.0	12.0	IN.
Shop Calibration LDT-DF					
Performed : 08-DEC-2014			Time : 10:30		
Sensor Suite : BHC NEUT			ID : CNP-AA-111-		
Source ID : N-1045					
	Tank		Verification	Units	
	Measured	Calibrated	Jig		
N/F	3.6023	3.6893	3.6807		
Porosity	19.2	20.5	20.4		%
Shop Calibration LDT-DF					
Performed : 08-DEC-2014			Time : 10:50		
Sensor Suite : CALI-LTH			ID : PDT-GA-464		
	Jig - Measured		Jig - Calibrated	Units	
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	7.8	11.2	6.0	12.0	IN.
Shop Calibration MST-DA					
Performed : 10-Sep-2014			Time : 09:51		
Sensor Suite : CALI-MSN			ID : MST-DA-057		
	Short Space				
	BKGD	Al	Mg	Al+Fe	Units
LSW1	61	1064	1726	698	CPS
LSW2	67	1216	1936	893	CPS
LSW3	239	2778	4501	2384	CPS
LSW4	294	2539	3687	2238	CPS
LSW5	39	66	73	64	CPS
LSW6	64	69	70	70	CPS
LSW7	48	52	51	52	CPS
LSW8	9	12	14	12	CPS
QS	0.144	0.145	0.164	0.148	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC
	Long Space				
	BKGD	Al	Mg	Al+Fe	Units
LLW1	87	1227	5087	744	CPS
LLW2	97	2058	8140	1525	CPS
LLW3	371	3767	14409	3251	CPS
LLW4	474	1786	5755	1619	CPS
LLW5	51	62	113	61	CPS
LLW6	159	154	147	155	CPS
LLW7	100	98	95	97	CPS
LLW8	3	6	16	5	CPS
QL	0.226	0.225	0.218	0.229	
PEL			2.697	5.458	
LSDN		2.600	1.680		G/CC

CL # 1	Jig - Measured		Units
	Ring#1	Ring#2	
	7.1	11.3	IN.
Performed : 10-Sep-2014 Time : 09:43 Sensor Suite : MSTDA-NI ID : MST-DA-057			
Internal			
	Measured		Calibrated
	Zero	Reference	Units
INV-V	297.1	30434.1	0.00 1536.00 MV
NOR-V	171.1	30363.7	0.00 1636.00 MV
IN-C	169.1	30673.9	0.00 15.46 UA
INV-R			32.14 OHMM
NOR-R			58.31 OHMM
Performed : 10-Sep-2014 Time : 09:45 Sensor Suite : MSTDAMSF ID : MST-DA-057			
Internal			
	Measured		Calibrated
	Zero	Reference	Units
MSFC	19.0	42587.4	0.00 1522.00 UA
MSFB	32762.8	52821.0	0.00 1522.00 MA
MOM1	0.0	42307.4	0.00 1522.00 MV
MSFRA			43.30 OHMM



Tucker
ENERGY SERVICES

Company: CHIEFTAIN OIL CO. INC.
 Well: AHS CATTLE CO. #11
 Location: 1200' FNL & 660; FEL
 Logged: 12-22-2014
 K.B. Elev: 1400.0 Ft