

STEP

energy services

COMPOSITE LOG

Company GRAND MESA OPERATING COMPANY Well PREISSER #1-34 Field WILDCAT County RENO State KANSAS Country USA API No. 15-155-21771-00-00		File No : HAYS-70428 Company : GRAND MESA OPERATING COMPANY Well : PREISSER #1-34 Field : WILDCAT County : RENO State : KANSAS Country : USA API No : 15-155-21771-00-00	
Location : 330' ENL & 1620' FEL E2 NE NW NE		LSD : Sect : 34 Twp : 24S Rge : 09W	
Permanent Datum: Drilling Measured From: Log Measured From: Above Permanent Datum:	GL KB KB 11.00 Ft	Elevations: KB 1687.00 DF 1688.00 GL 1677.00	Services: GRT CNP MLT PIT LD
Date	12-14-2019		
Run Number	1		
Depth--Driller	4140.0 Ft		
Depth--Logger	4140.0 Ft		
First Reading	4139.0 Ft		
Last Reading	266.0 Ft		
Casing--Driller	266.0 Ft		
Casing--Logger	266.0 Ft		
Bit Size	7.875 In		
Casing Size	8.625 In		
Hole Fluid Type	WBM		
Density	9.4		
Fluid Loss	11.6		
PH/Viscosity	9.0	53.0	
Sample Source	MEASURED		
RM@Measured Temp.	1.400 @ 58 F		
RMF@Measured Temp	1.190 @ 58 F		
RMC@Measured Temp.	1.610 @ 58 F		
Source RMF/RMC	CALCULATED/CALCULATED		
RM@BHT	0.720 @ 119 F		
Time Circulation Stopped	12-14-2019 05:57		
Max Recorded Temp.	119 F		
Equipment/Base	TRK-137 HAYS		
Recorded By	B.BAILEY		
Witnessed By	KENT MATSON		

The customer is hereby warned that by providing the log data herein, STEP Energy Services does not agree to provide any interpretation of log data, conversion of log data to physical rock parameters or recommendations. STEP Energy Services 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 STEP Energy Services 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 STEP Energy Services 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	4140.00	8.625	17.00	266.00	0.00

Run Number	1	
Date	12-14-2019	
Date/Time On Bottom	12-14-2019 11:57	
Depth to Fluid	0.0 Ft	
Salinity	10400.000	
RMF@BHT	0.610 @ 119 F	
RMC@BHT	0.830 @ 119 F	

Run Number 1

Comments

ALL PRESENTATIONS AS PER CUSTOMER REQUEST.

GRT, CNT, LDT, CST, MLT, AND PIT RUN IN COMBINATION.

2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY.

5.5" PRODUCTION CASING USED TO CALCULATE ANNULAR HOLE VOLUME.

CALIPERS ORIENTED ON X-Y AXIS.

PHIN IS CALIPER CORRECTED

GRT: GRP

CNT: PHIN, PHINDOL, CLCNIN

LDT: PORL, PORLDOL, LCORN, LDENN, PECLN, CLLDIN

MLT: MSFI, MSFN, CLMRIN.

CST: PORS, ITT, TT1, TT2, TT3, TT4, CDTF,

PIT: ILD, ILM, SFLAEC, SPU, CIRD

OPERATORS:

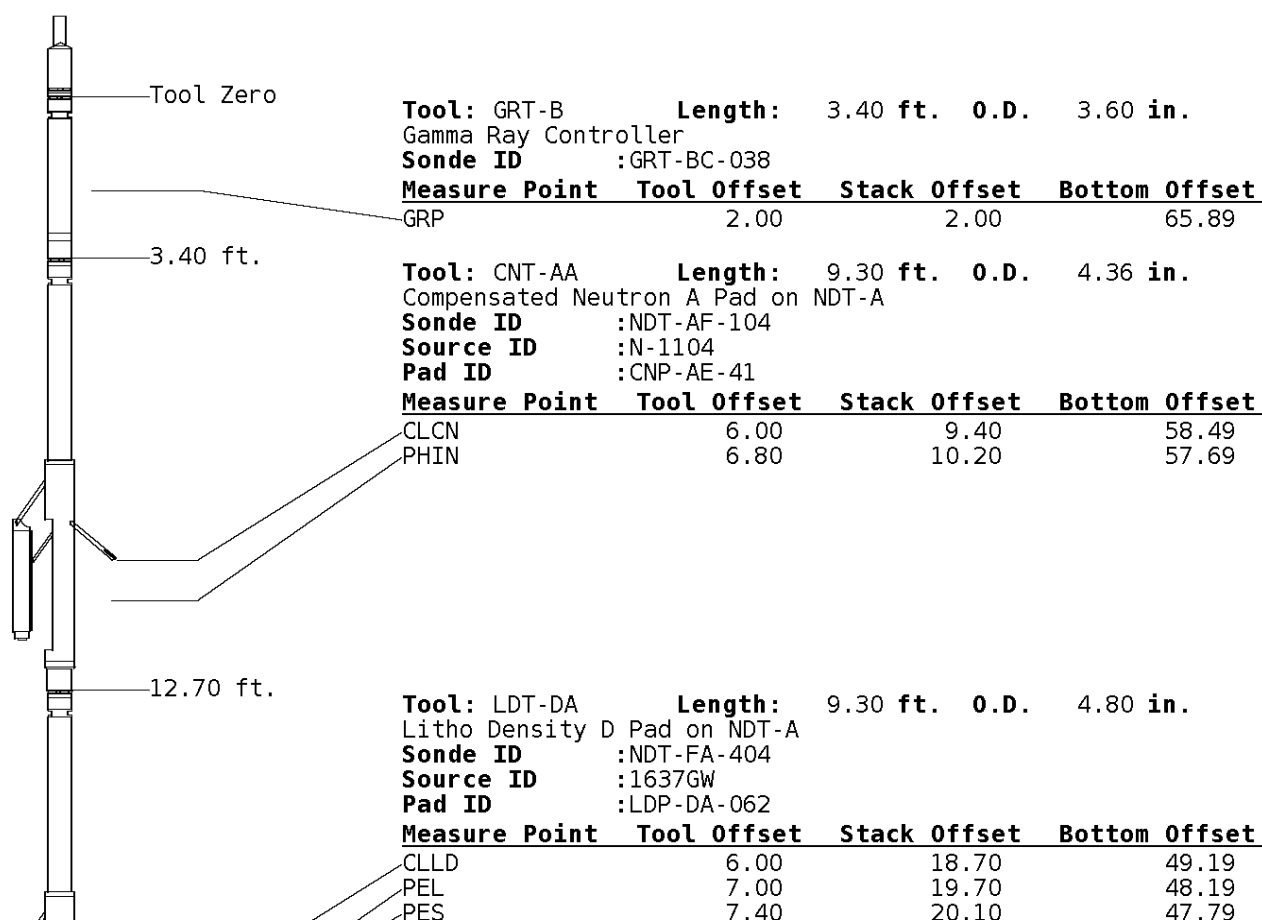
D.LEGLEGITER

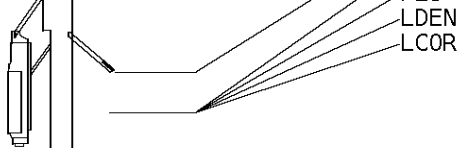
D.RAGSDALE

J.VAUGHN

Tool String Schematic

Total Tool Length - 67.89 ft.
Maximum Outside diameter - 6.00 in.
Net Weight in Air - 1171.00 lbs.



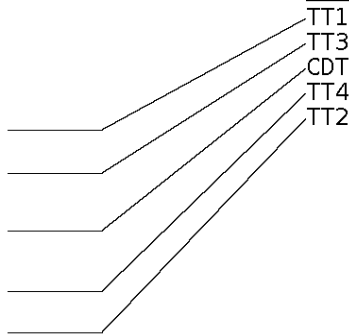


7.20	19.90	47.99
7.20	19.90	47.99

22.00 ft.

Tool: CST-AD **Length:** 13.80 ft. **O.D.** 3.60 in.
Open Hole Sonic
Sonde ID : CST-AB-24

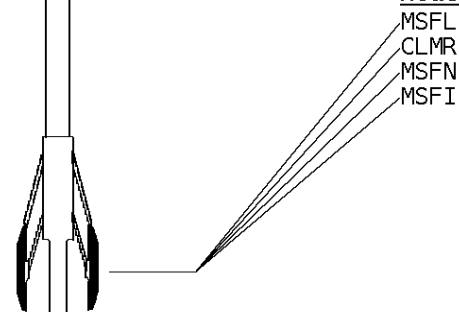
Measure Point	Tool Offset	Stack Offset	Bottom Offset
TT1	4.80	26.80	41.09
TT3	5.80	27.80	40.09
CDT	7.30	29.30	38.59
TT4	8.80	30.80	37.09
TT2	9.80	31.80	36.09



35.80 ft.

Tool: MLT-AB **Length:** 10.60 ft. **O.D.** 6.00 in.
Micro Log Tool
Sonde ID : MLT-012

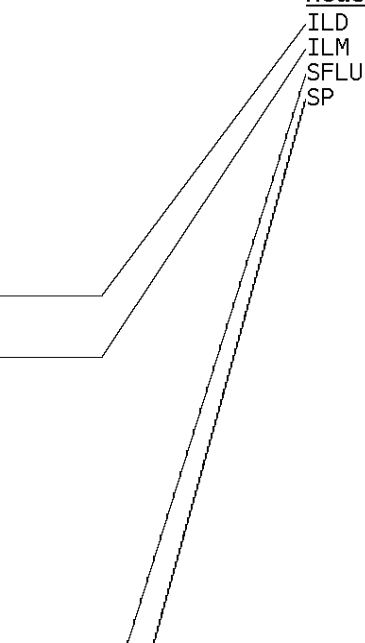
Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	8.90	44.70	23.19
CLMR	7.60	43.40	24.49
MSFN	8.90	44.70	23.19
MSFI	8.90	44.70	23.19

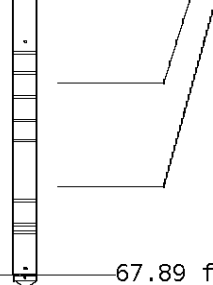


46.40 ft.

Tool: PIT-CA **Length:** 21.49 ft. **O.D.** 3.62 in.
Phased Dual Induction w/ RM & D
Sonde ID : PIT-AC-043

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	55.32	12.56
ILM	10.10	56.50	11.39
SFLU	17.49	63.89	4.00
SP	20.60	67.00	0.88





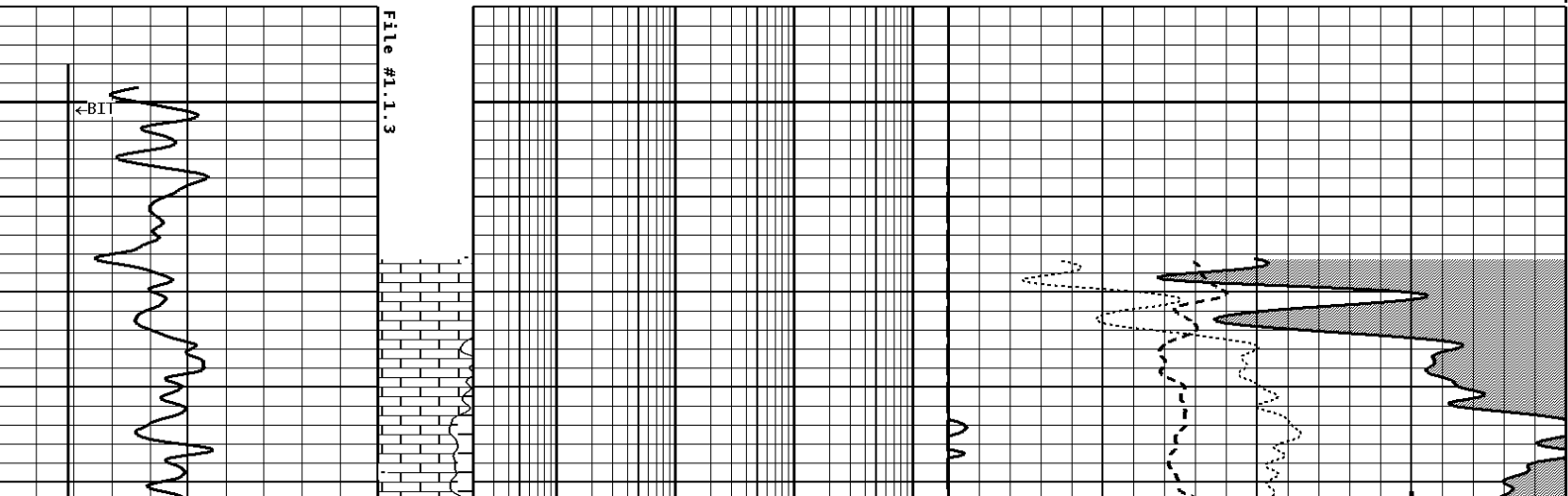
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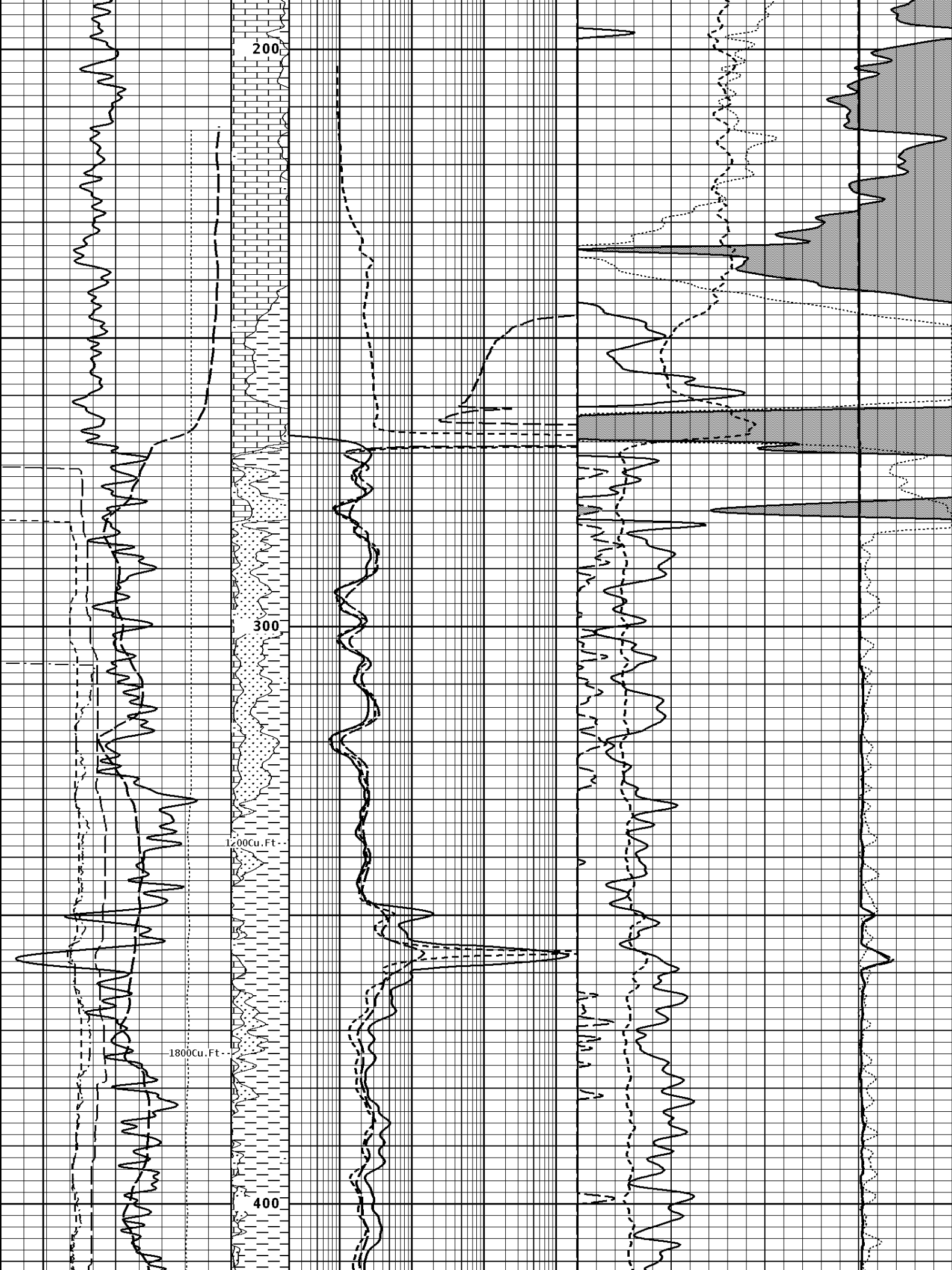
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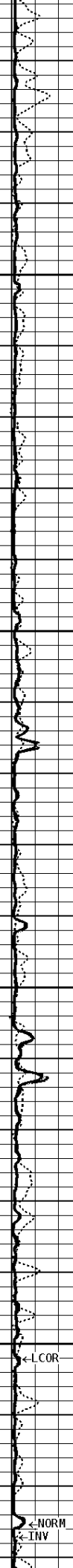
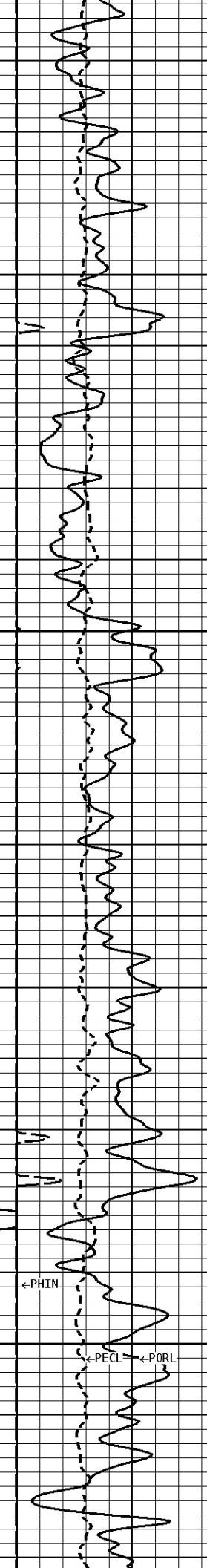
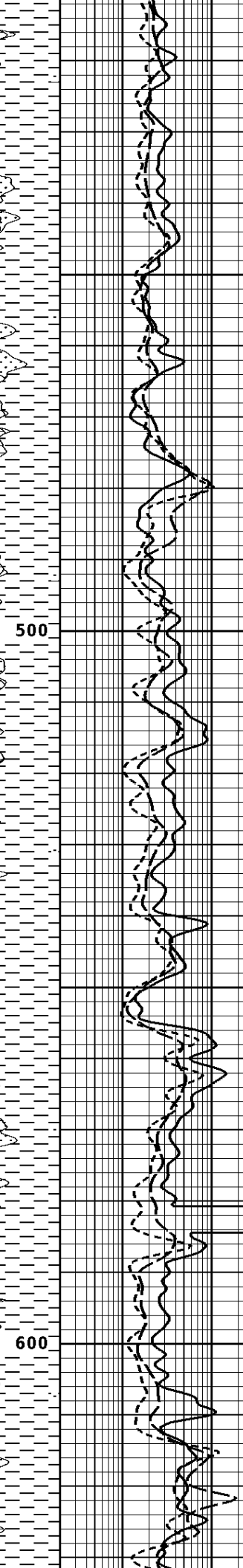
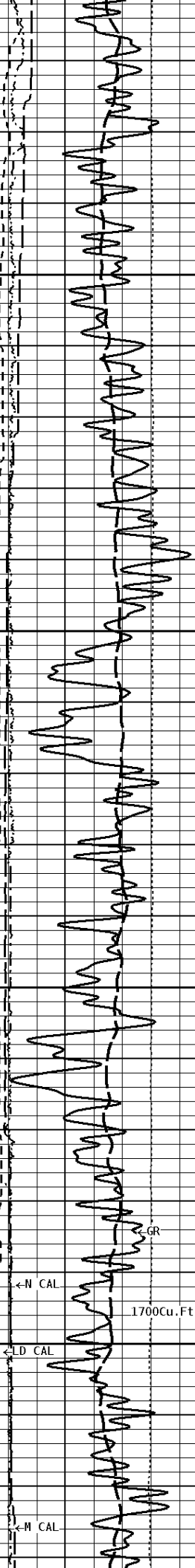
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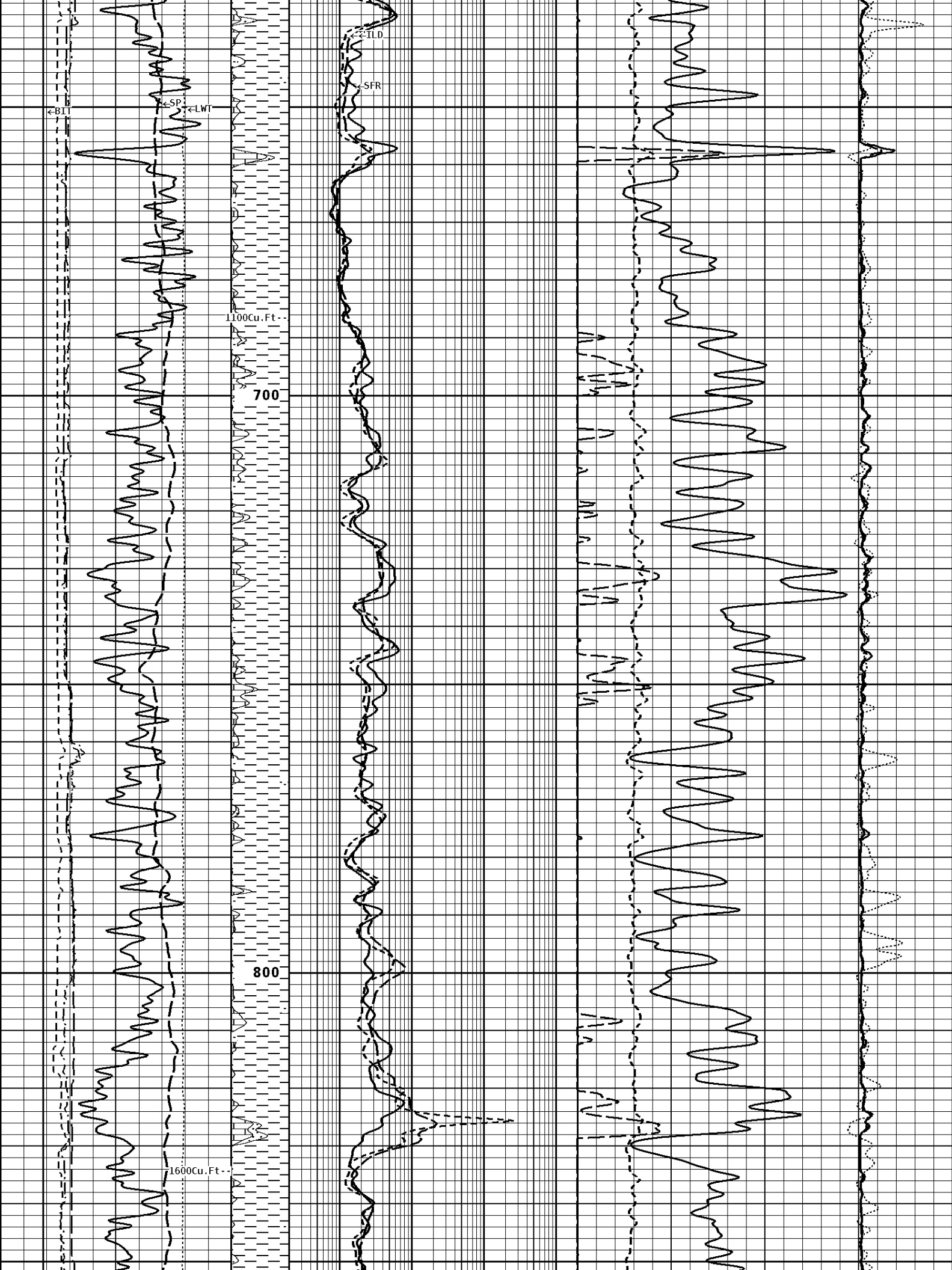
CALIPER MICRO INCHES (IN) 16 6 26 16					
BIT SIZE INCHES (IN) 6 16				NORMAL OHMM 0 40	
NEUTRON (Y) CALIPER INCHES (IN) 16 6				INVERSE OHMM 0 40	
DENSITY (X) CALIPER INCHES (IN) 16 6		Volume Quartz 	DENSITY CORRECTION G/CC -0.75 0.25		
TENSION LBS 10000 0		Volume Calcite 	SHALLOW FOCUSED RESISTIVITY OHMM 0.2 2000.0		PE CROSS-SECTION BARNs/ELECTRON 0 20
SPONTANEOUS POTENTIAL mV → ← 20		Volume Dolo/Shale 	DEEP INDUCTION OHMM 0.2 2000.0		DENSITY POROSITY (2.71g/cc) PERCENT 70 30 -10 -50
GAMMA RAY API UNITS 150 0 300 150		BHV AHV CU.FT 	MEDIUM INDUCTION OHMM 0.2 2000.0		NEUTRON POROSITY (LIMESTONE) PERCENT 30 -10

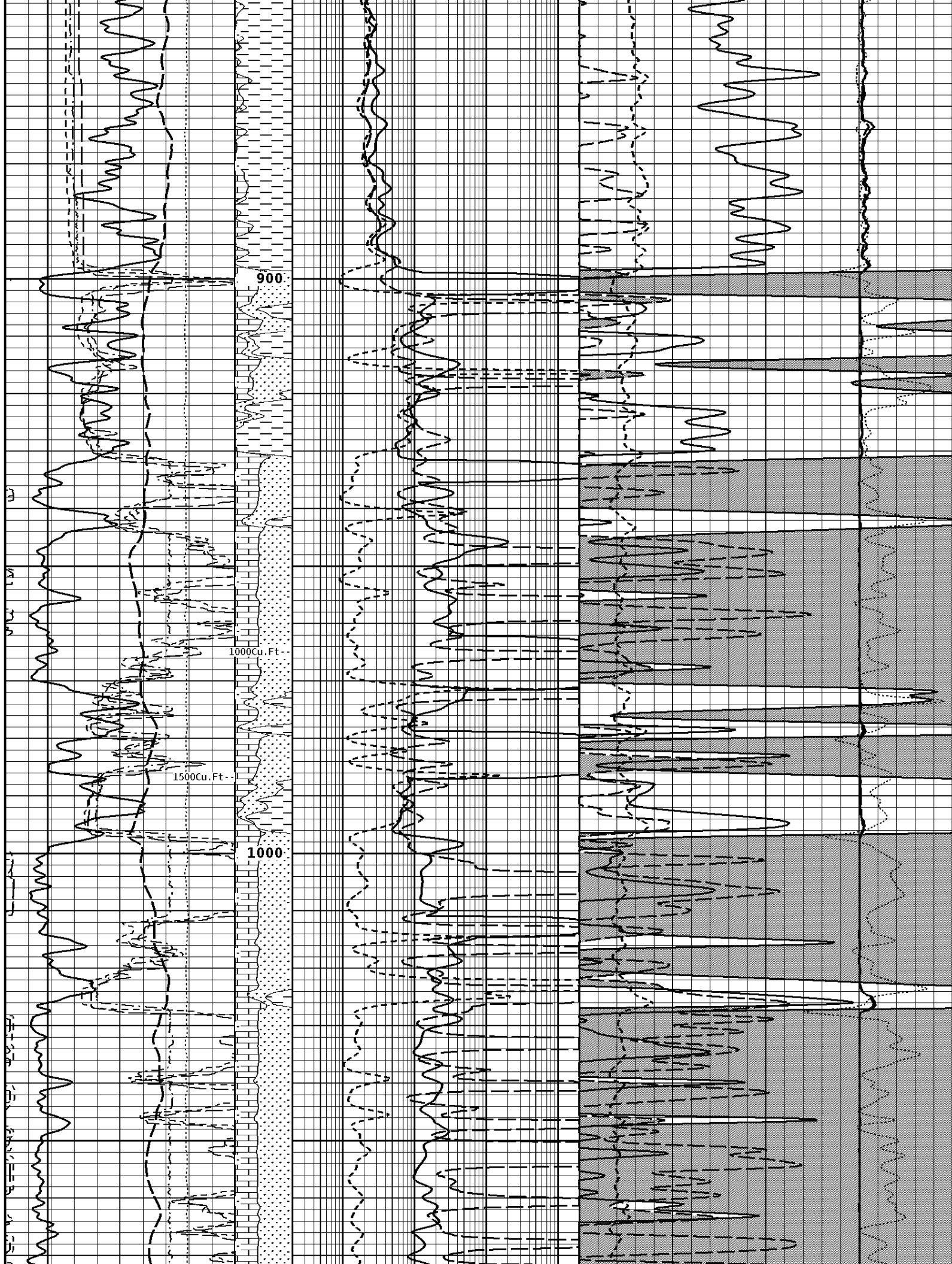
1:240 MAIN SECTION

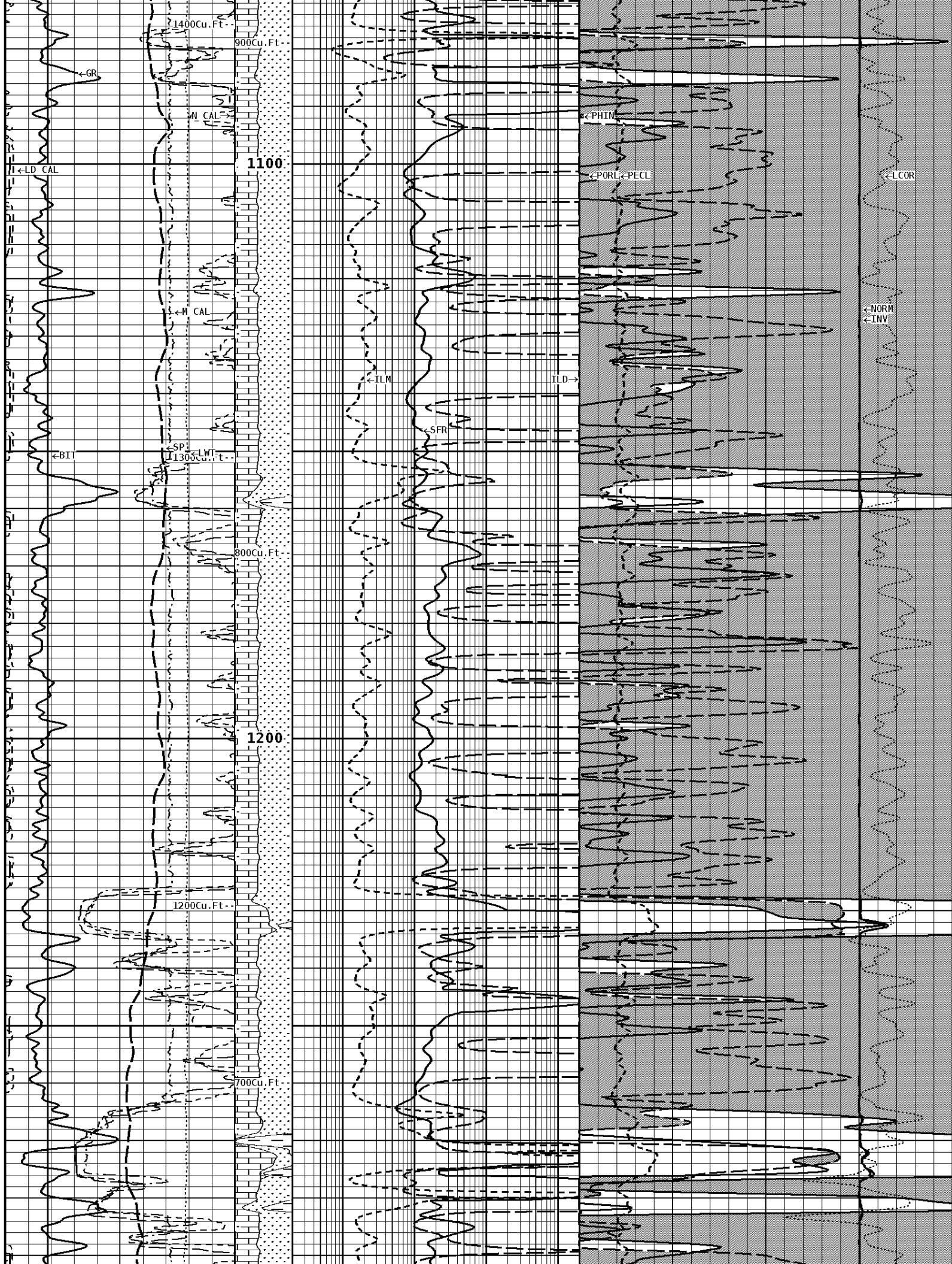


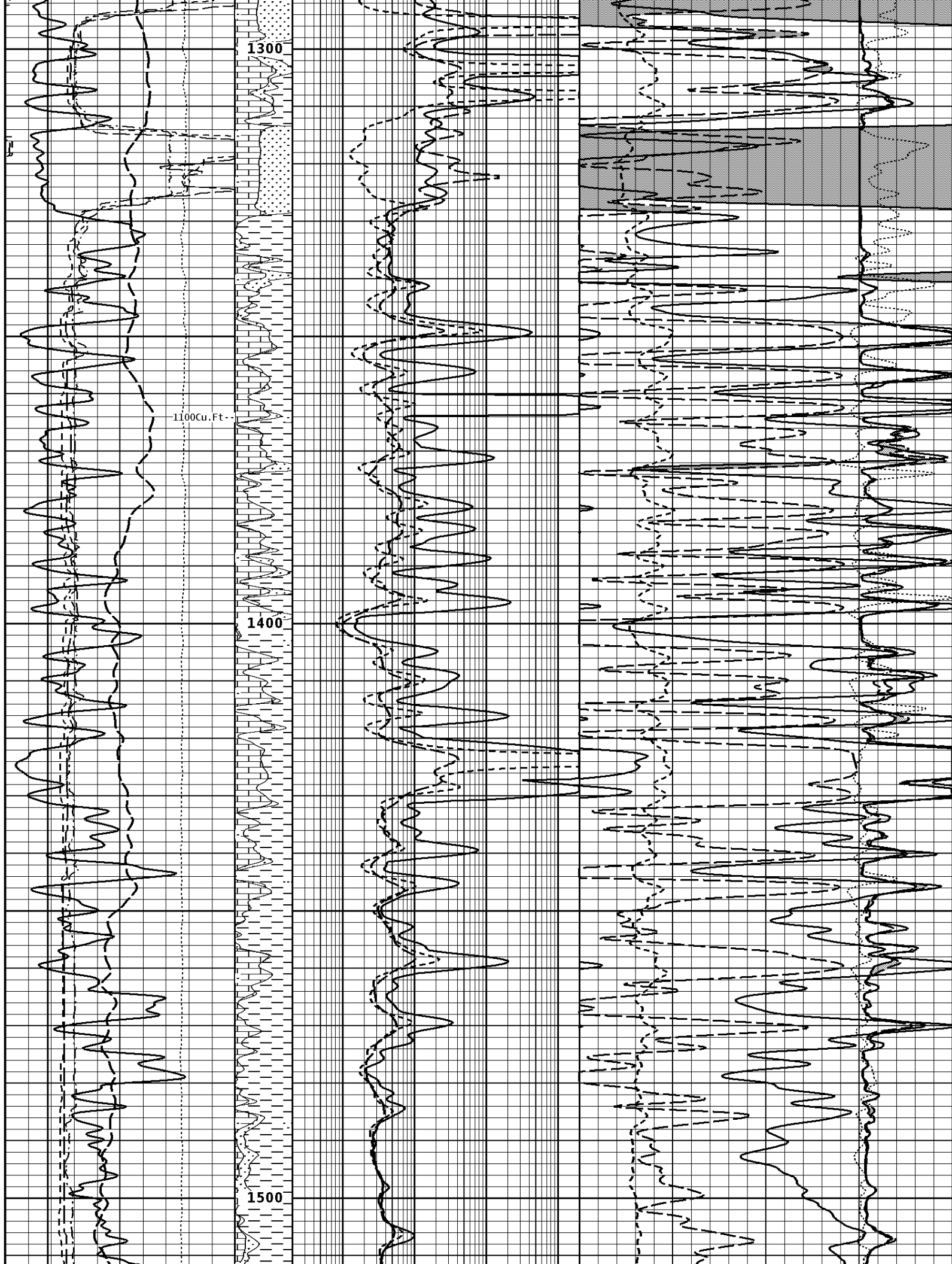


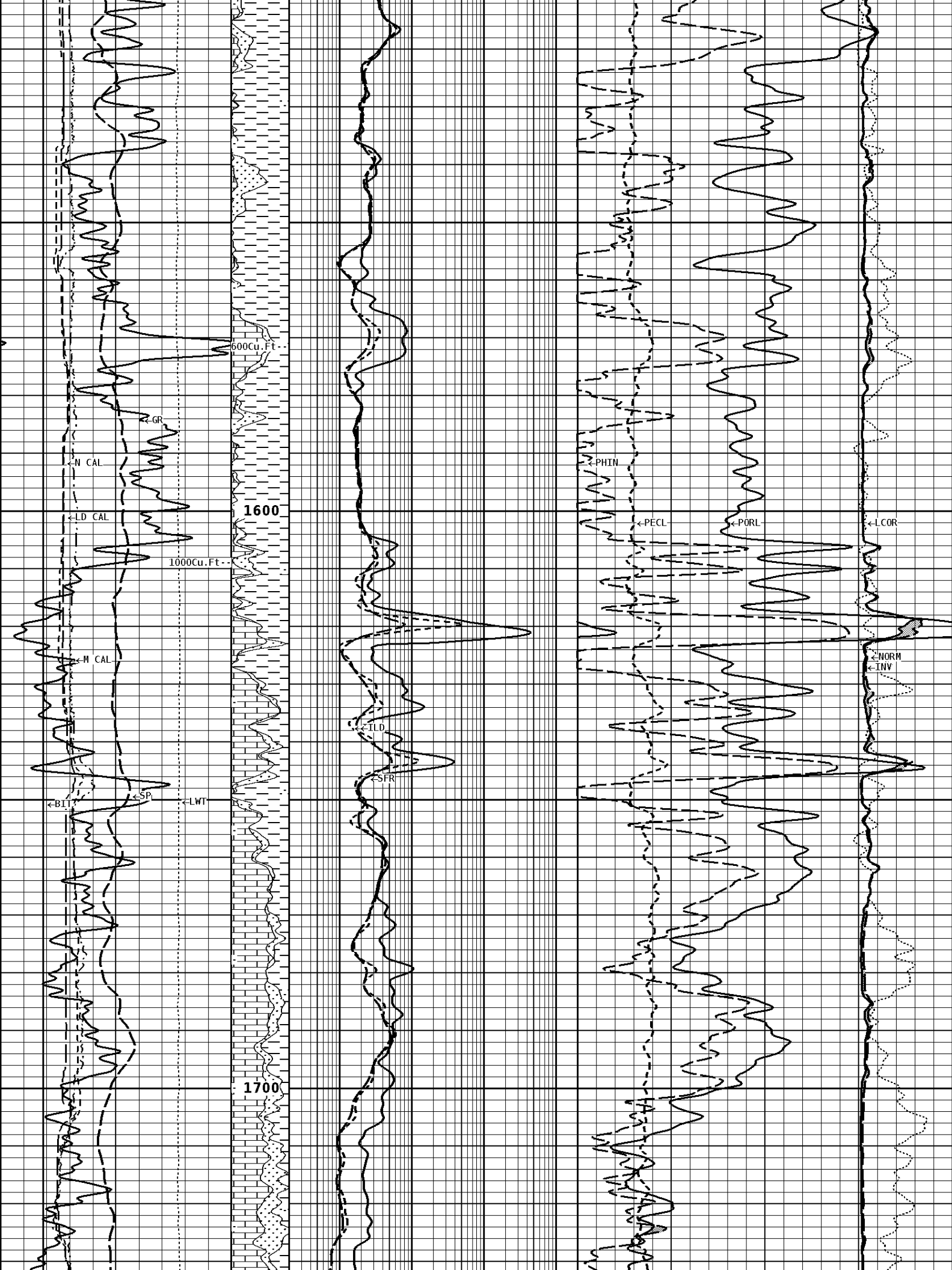


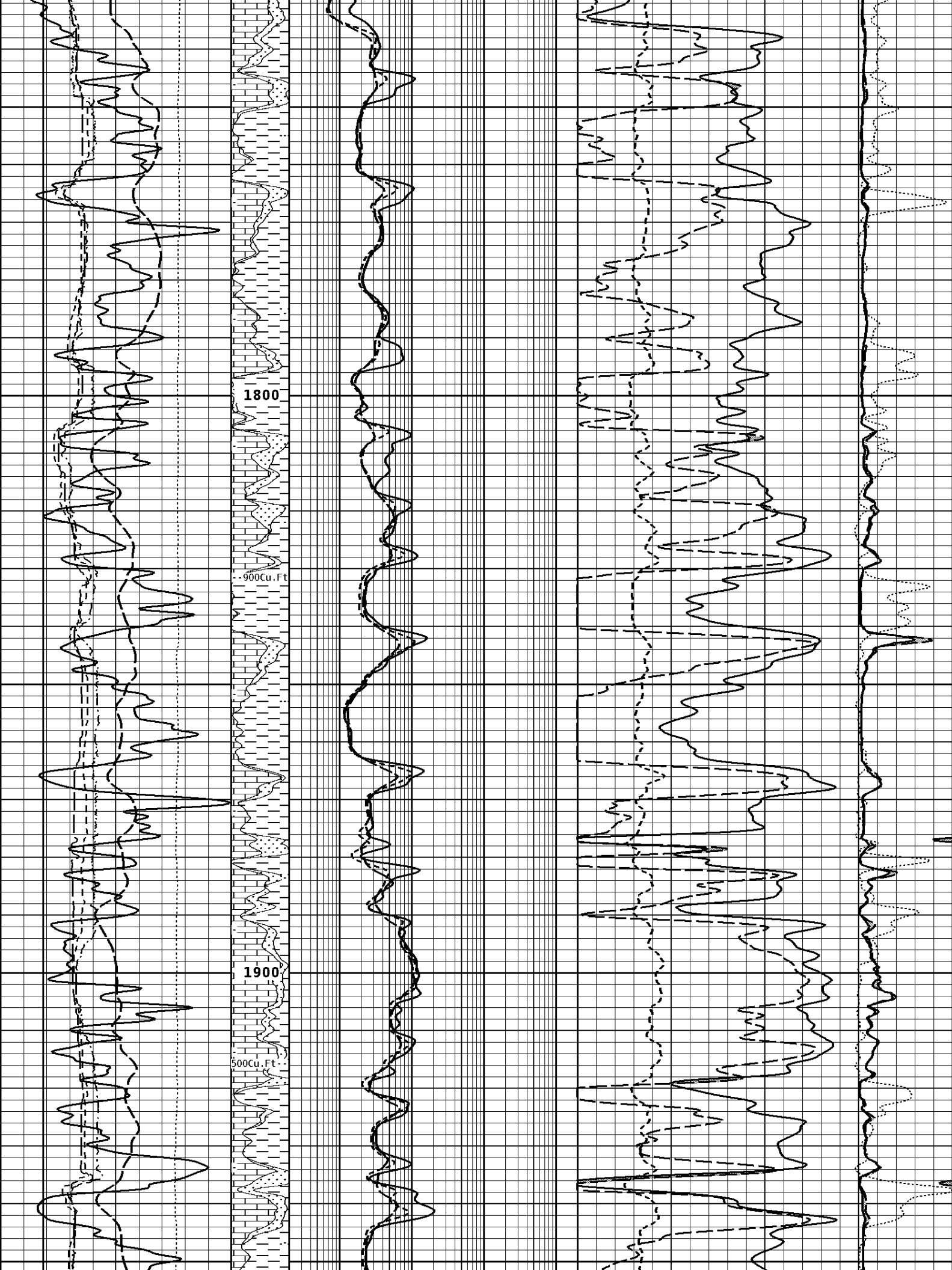




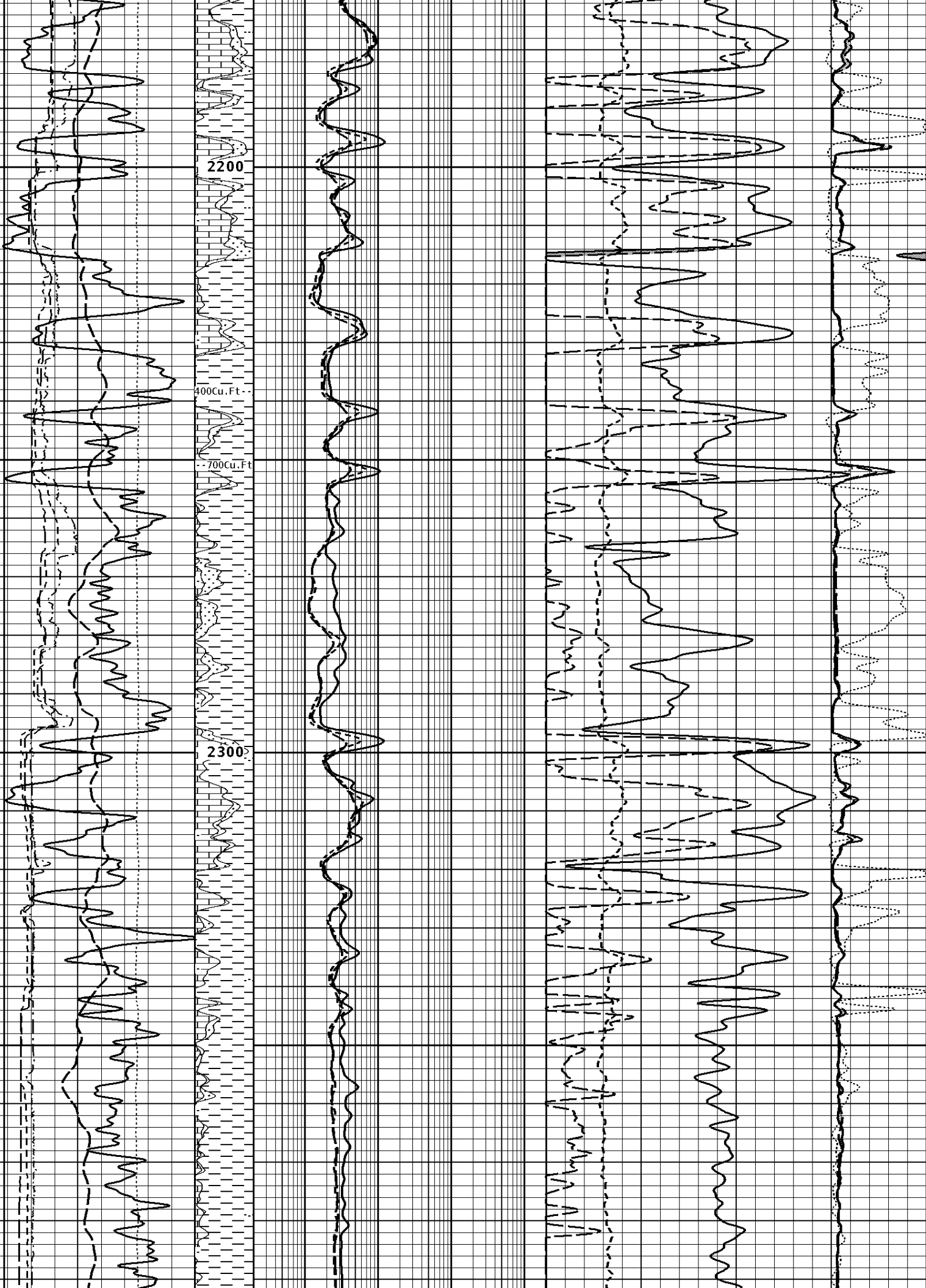


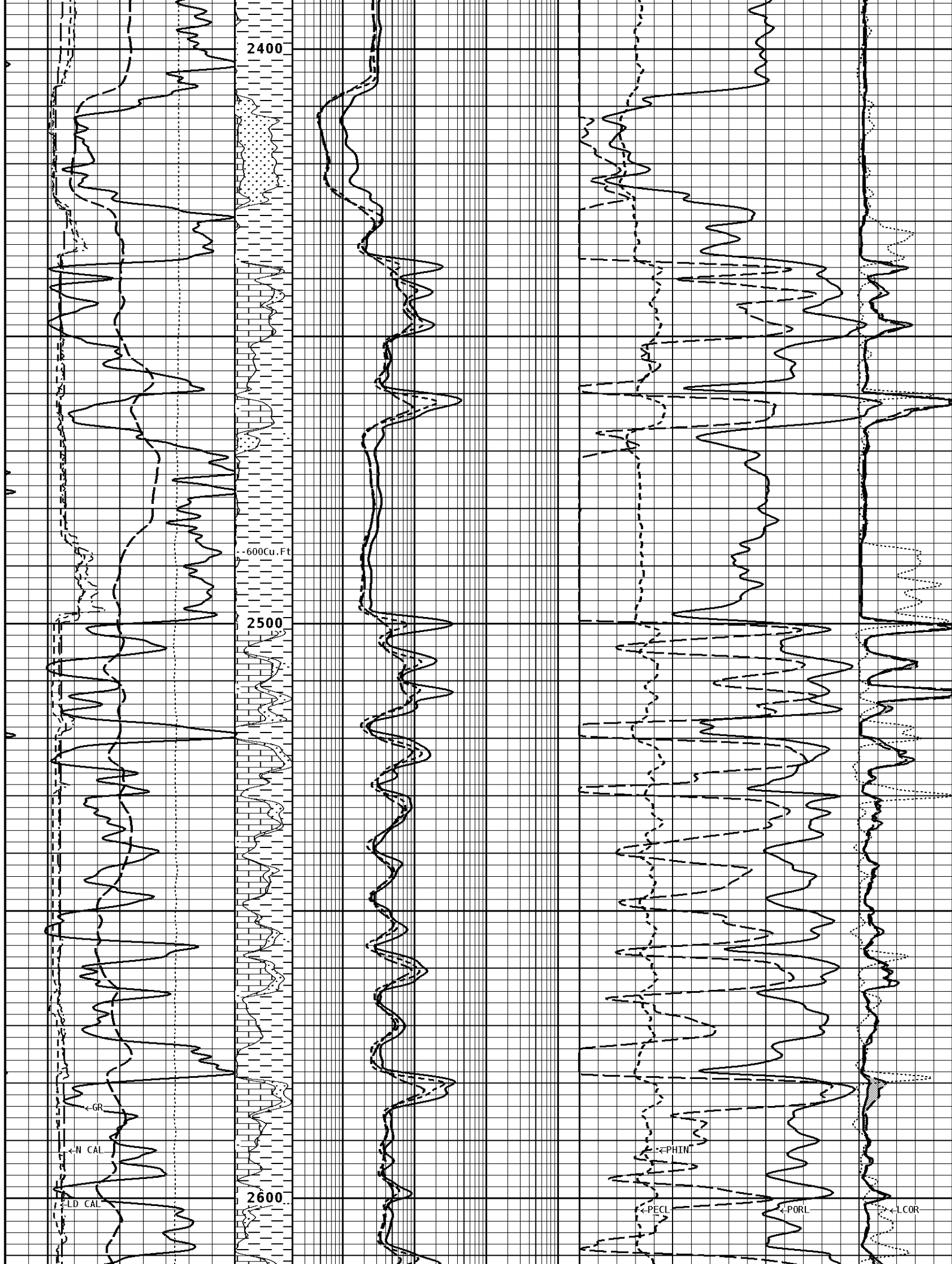


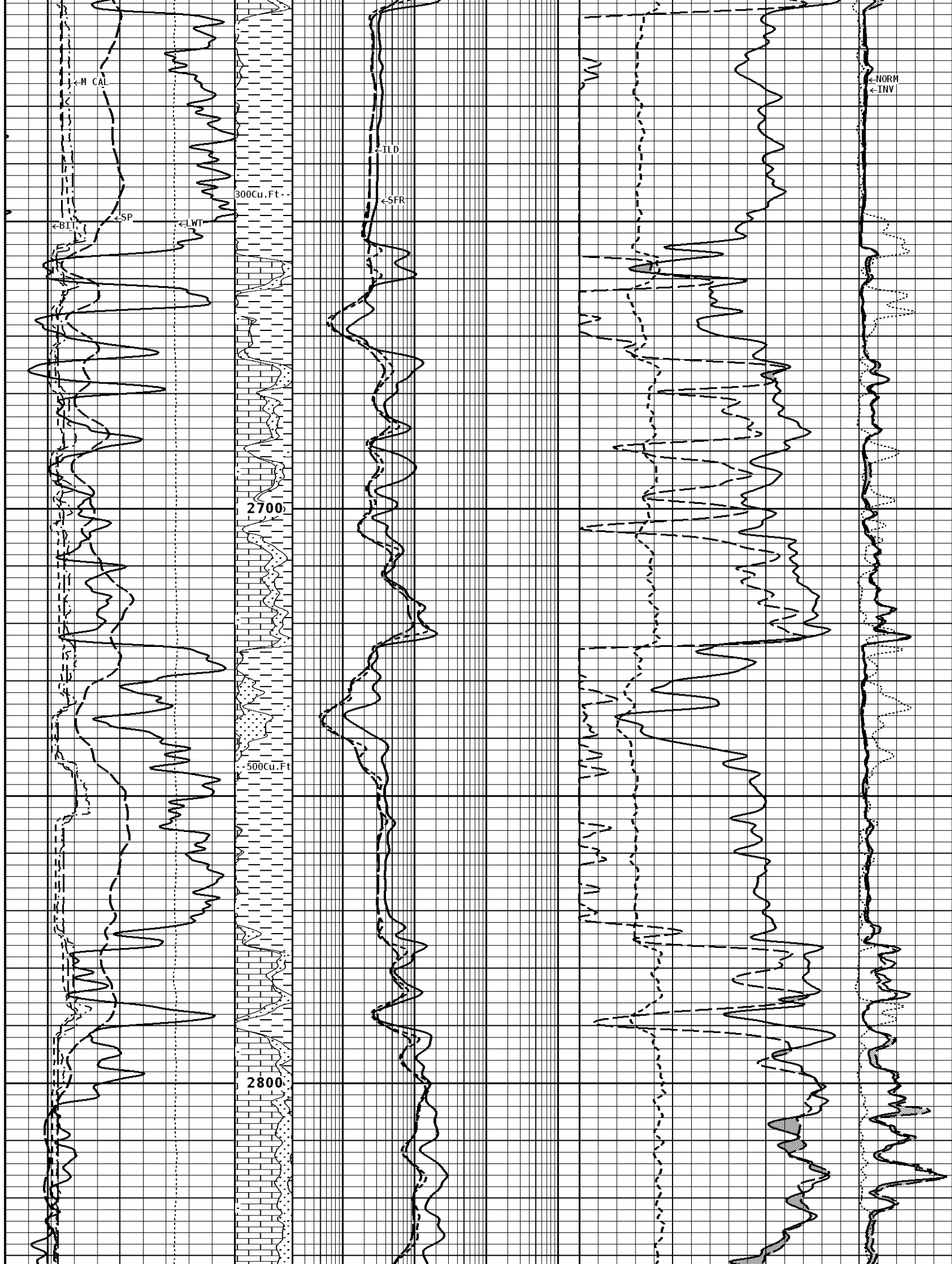




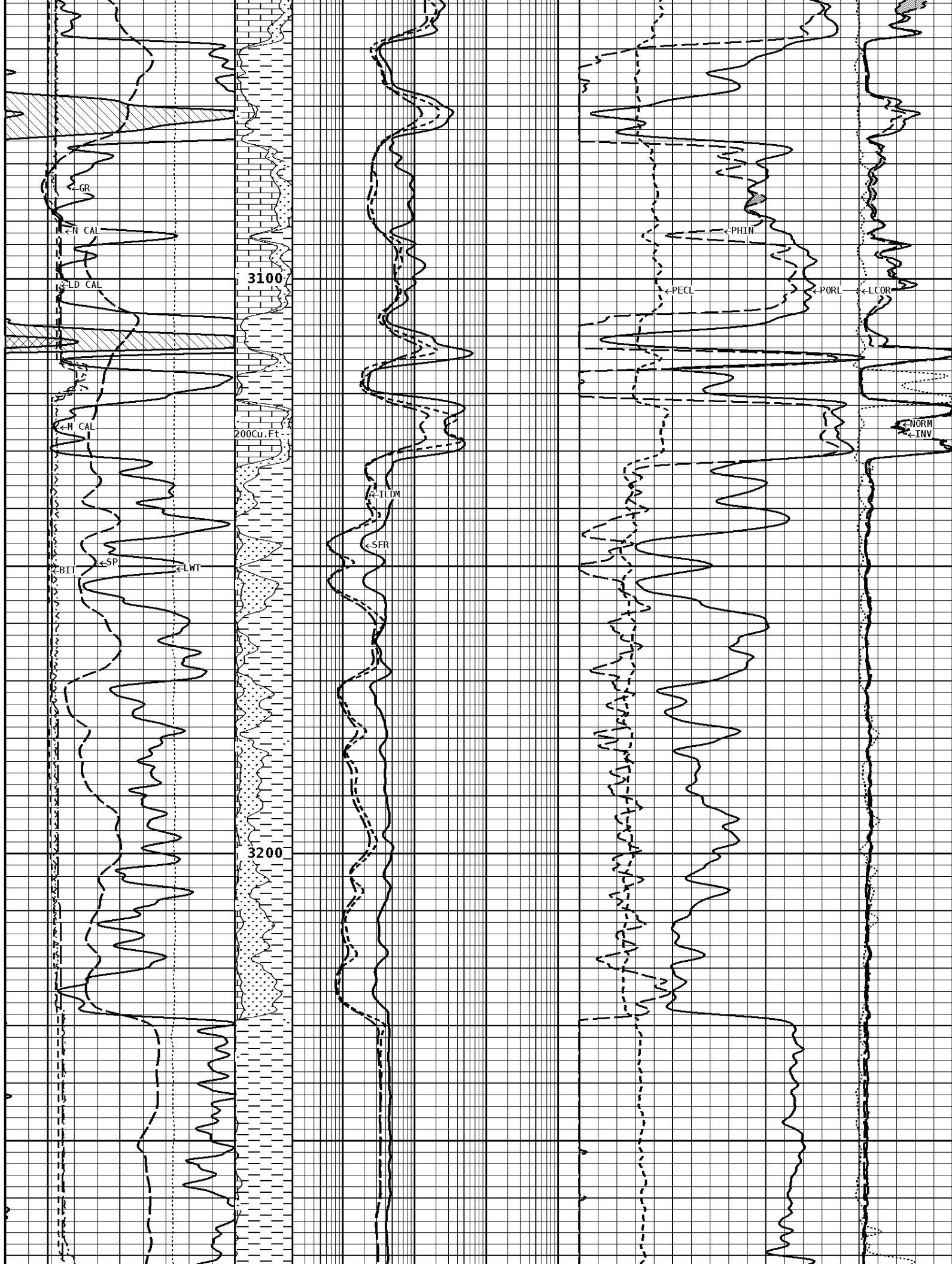


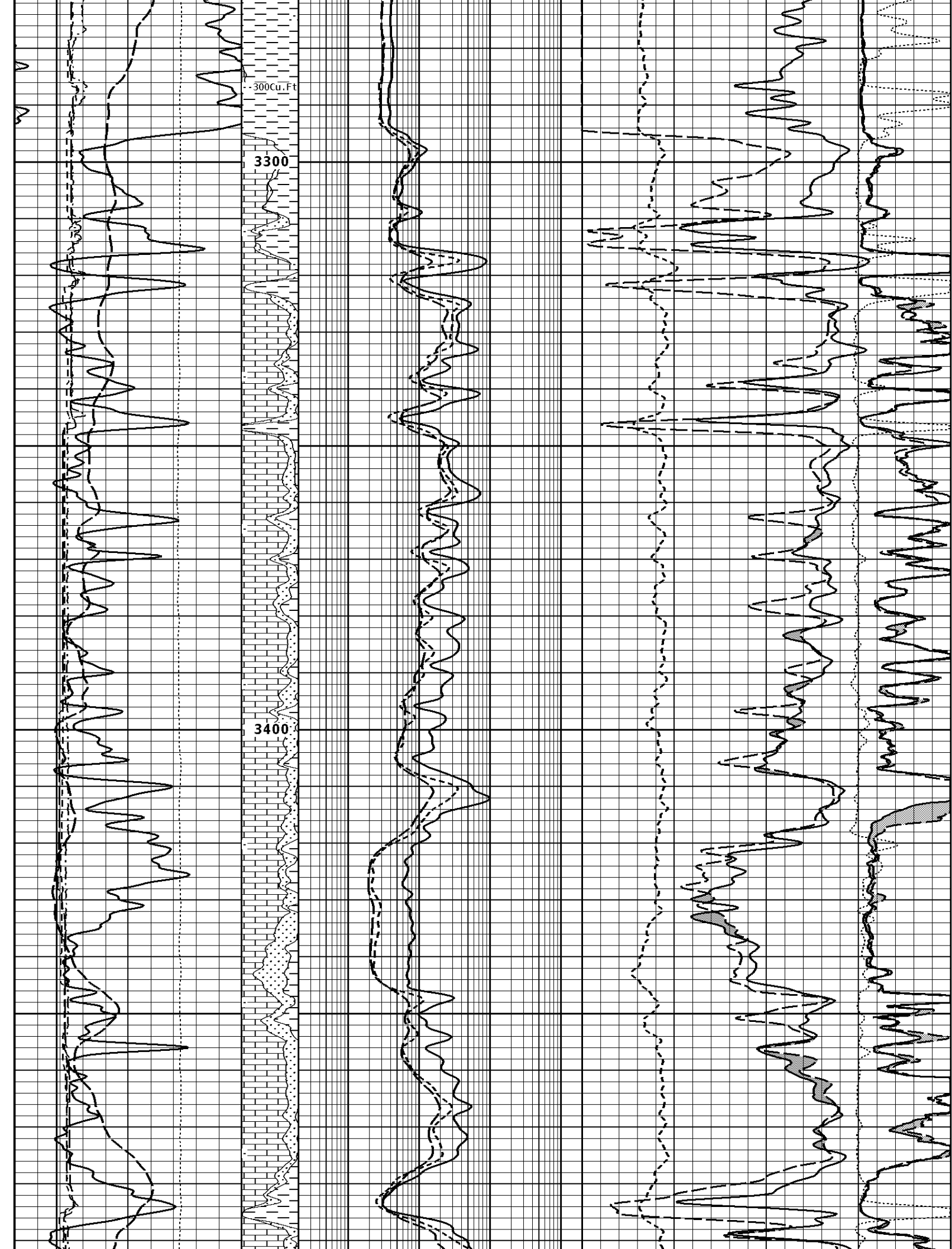


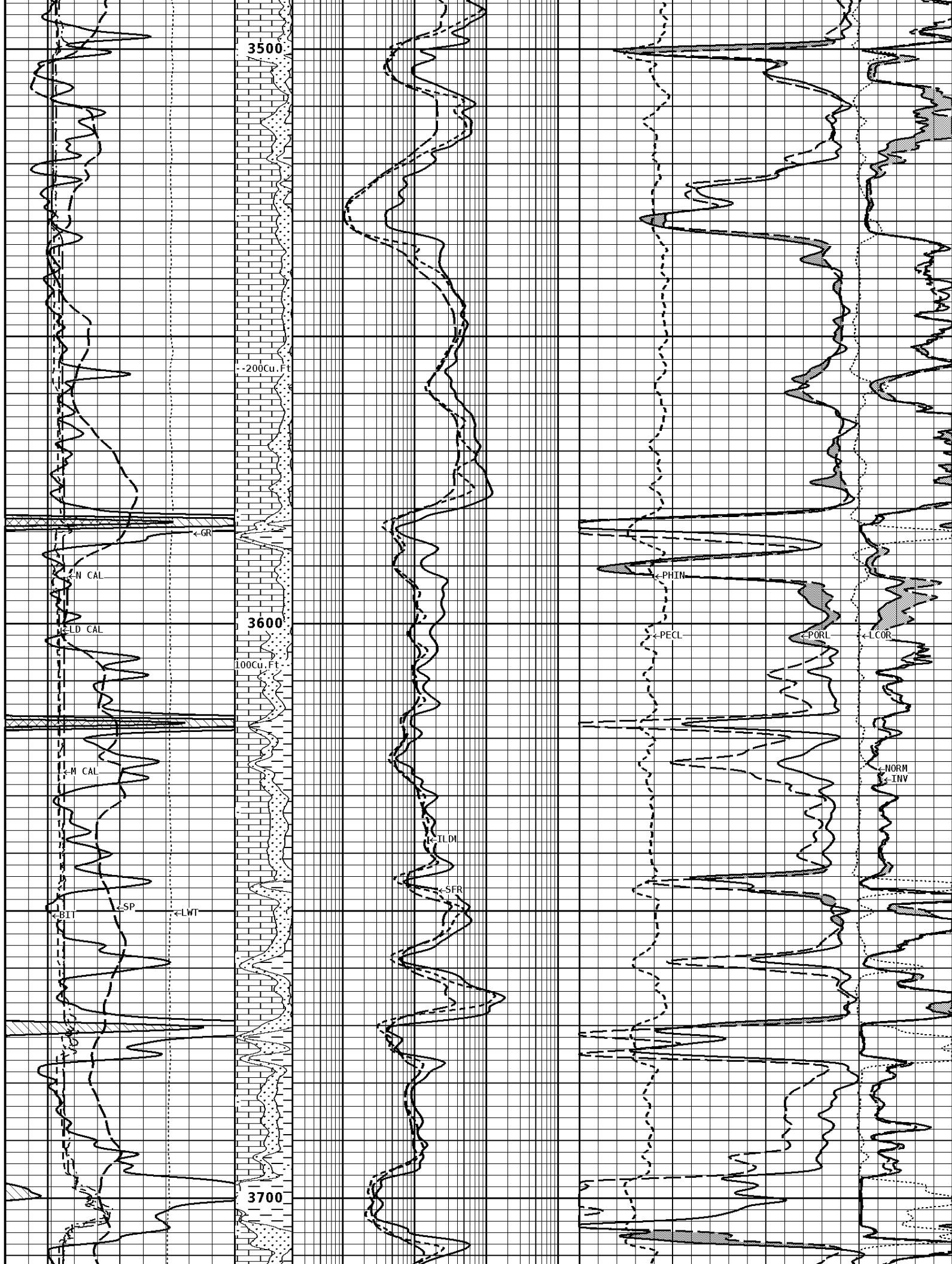


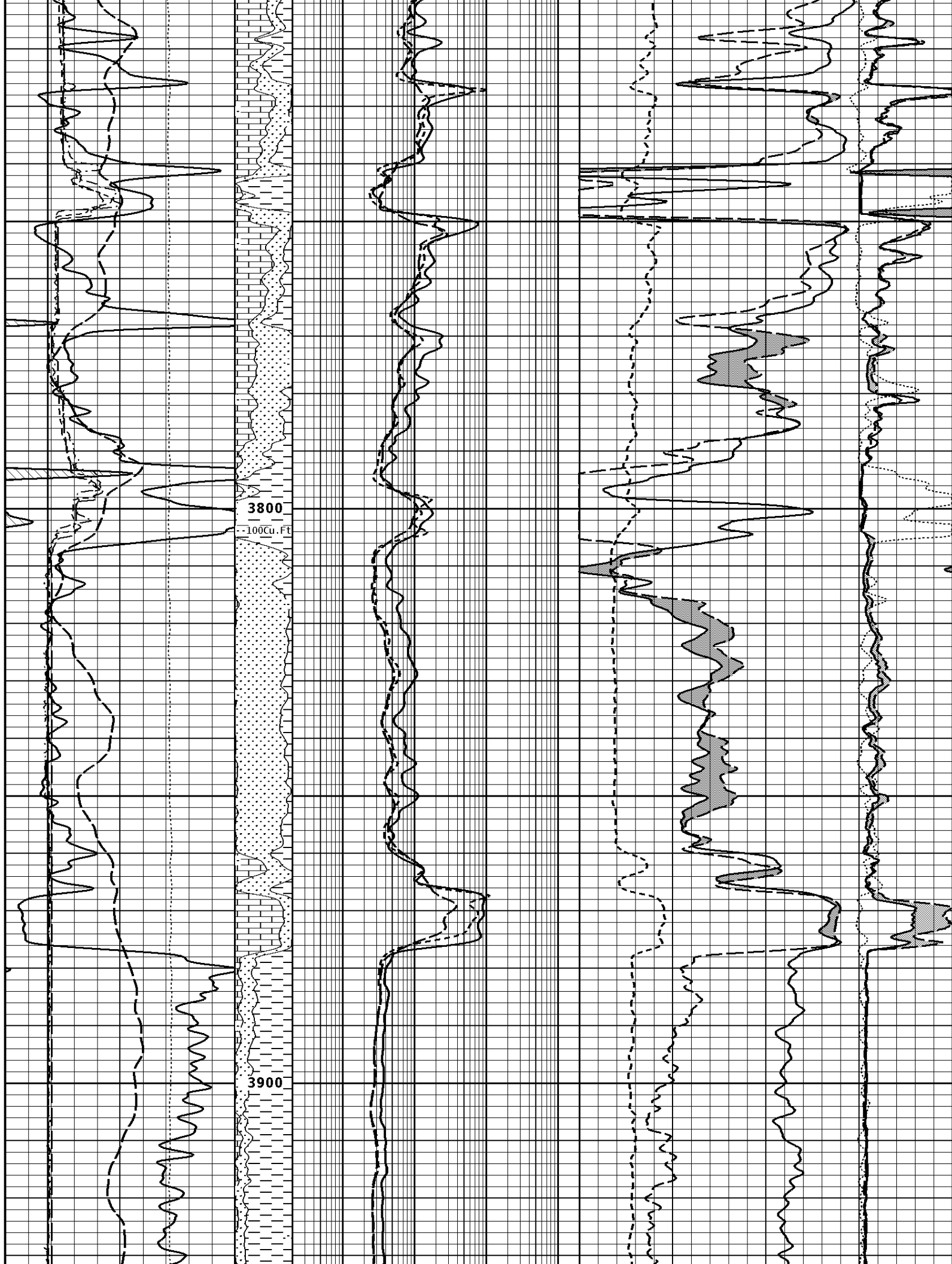


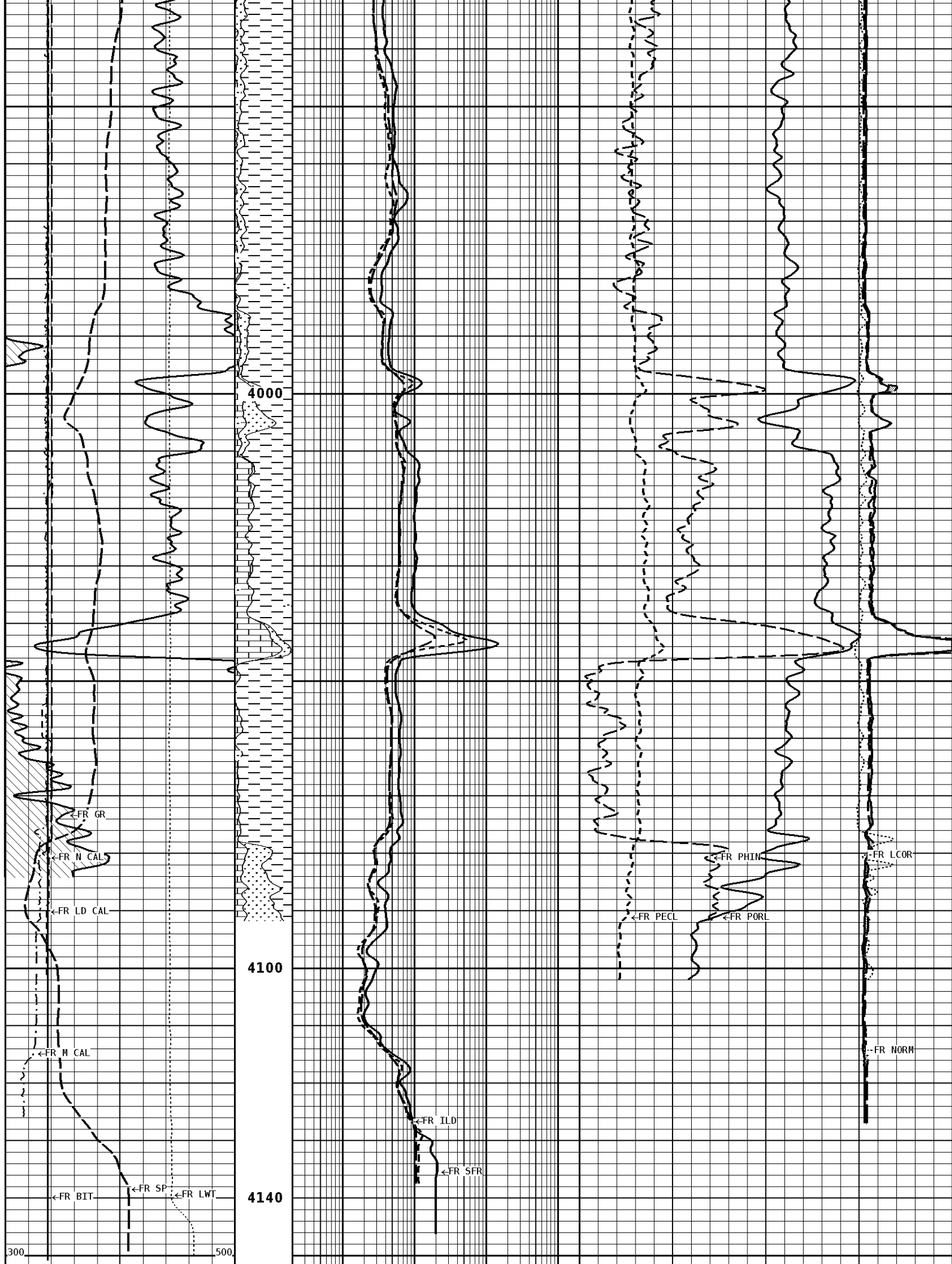


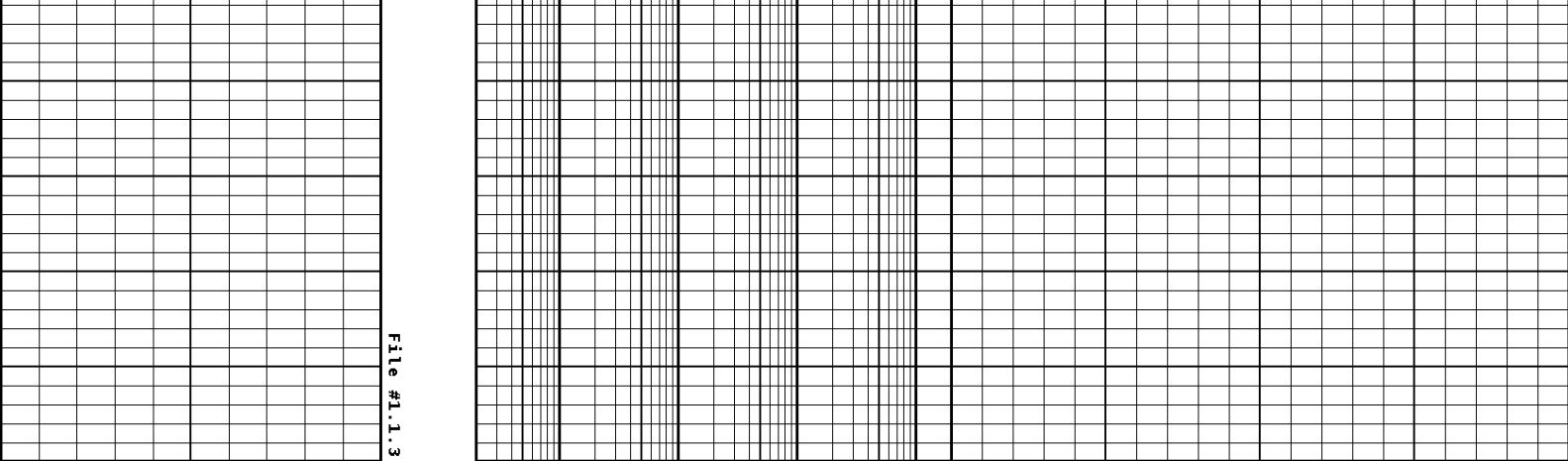












1:240 MAIN SECTION

GAMMA RAY API UNITS 150 0 300 150	BHV AHV CU. FT	MEDIUM INDUCTION OHMM 0.2 2000.0	NEUTRON POROSITY (LIMESTONE) PERCENT 30 -10
SPONTANEOUS POTENTIAL mV → ← 20	Volume Dolo/Shale	DEEP INDUCTION OHMM 0.2 2000.0	DENSITY POROSITY (2.71g/cc) PERCENT 70 30 -10 -50
TENSION LBS 10000 0	Volume Calcite	SHALLOW FOCUSED RESISTIVITY OHMM 0.2 2000.0	PE CROSS-SECTION BARNS/ELECTRON 0 20
DENSITY (X) CALIPER INCHES (IN) 16 6 26 16	Volume Quartz		DENSITY CORRECTION G/CC -0.75 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			

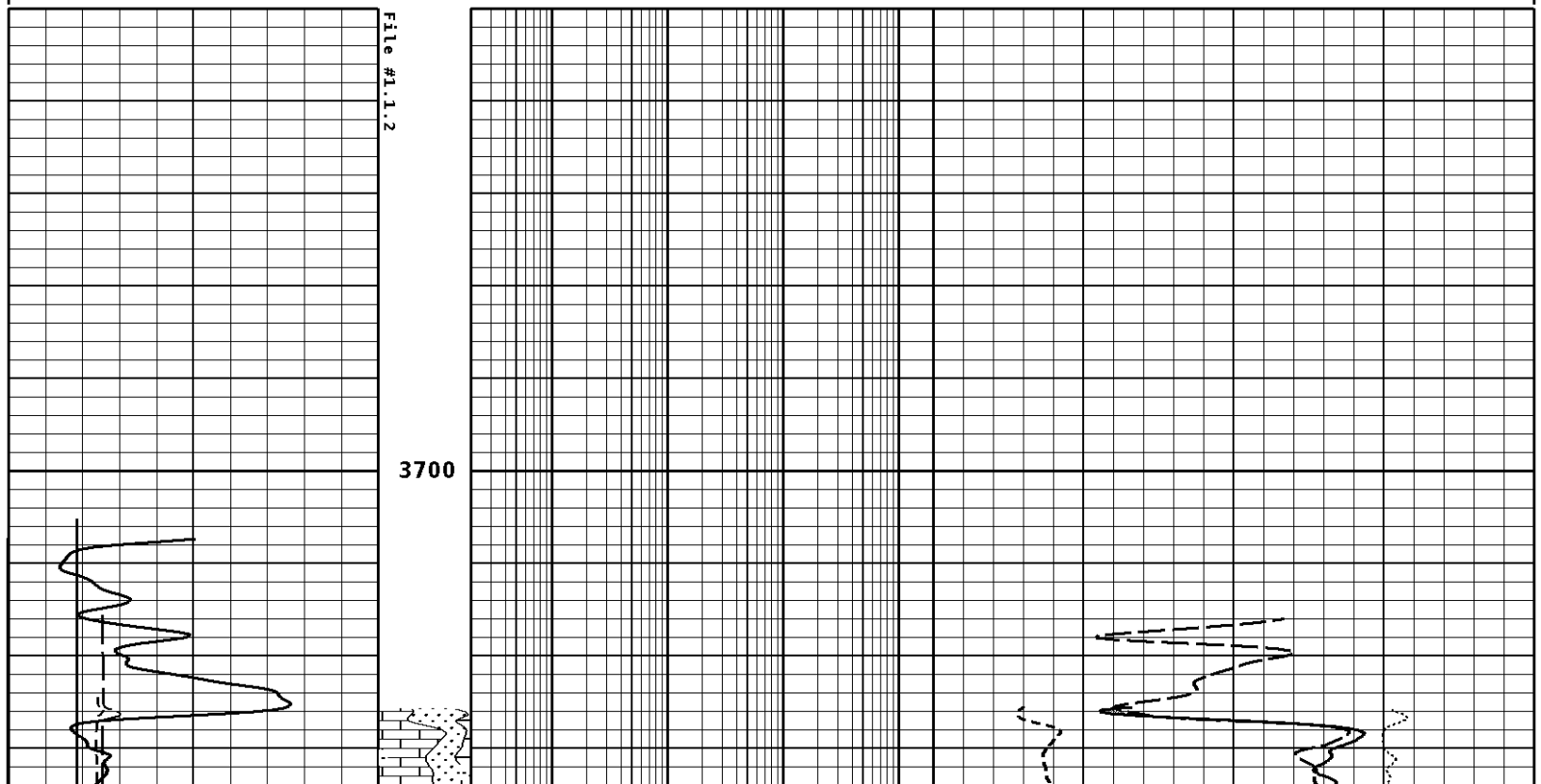
* Borehole Zone Factors *

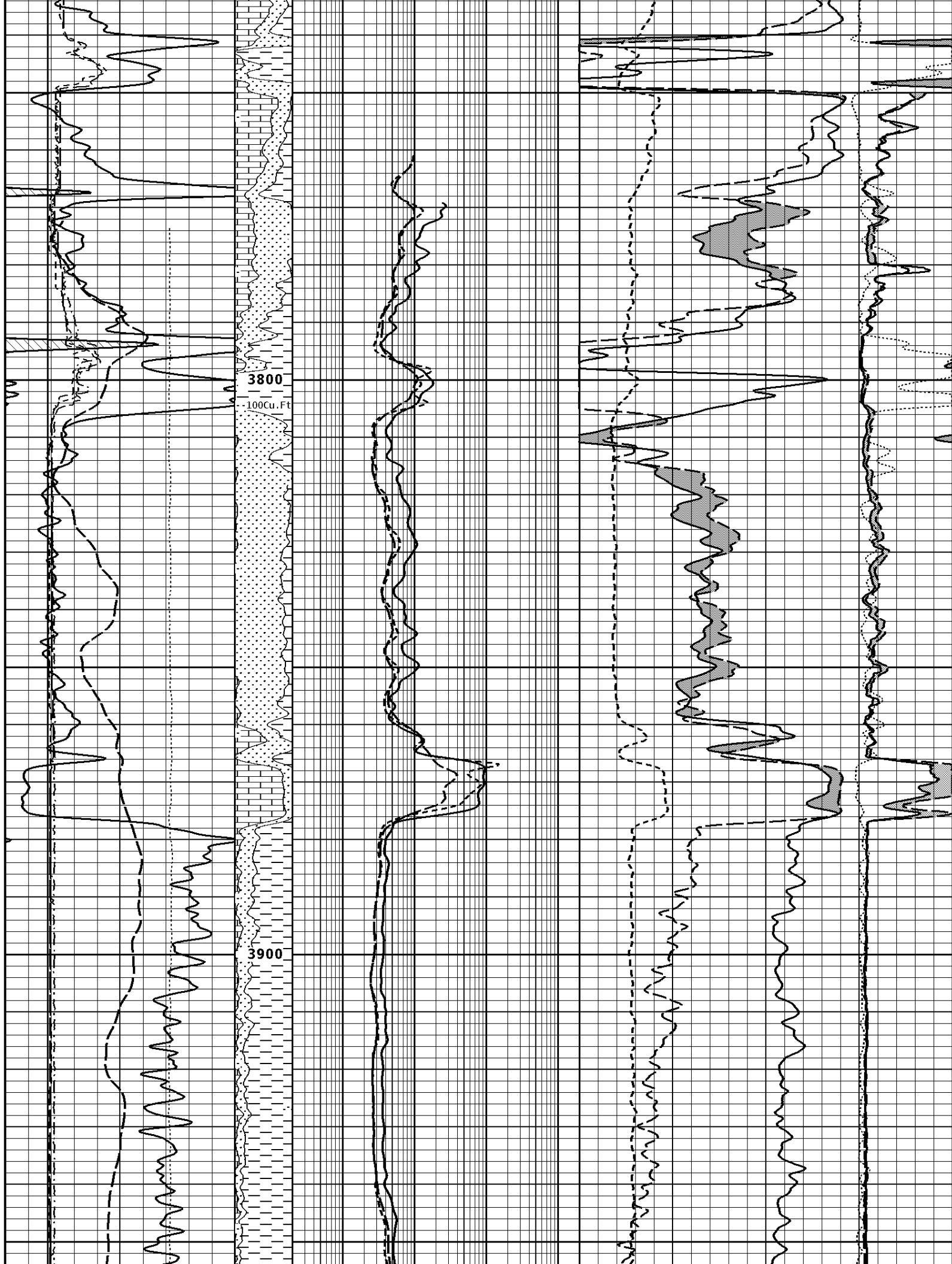
Zone 1	99999.0	to	0.0	Feet
Matrix Density		2.71	g/cc	
Fluid Density		1.00	g/cc	
Matrix Transit Time		47.5	us/ft	
Fluid Transit Time		189.0	us/ft	
Formation Matrix		Limestone		
Drill Bit Size		7.875	in	
Casing Diameter		5.500	in	
Casing Thickness		0.250	in	
Casing Correction (PHI N)		Disable		
Hole Substance		Fluid		
BHT Depth		4140.000	ft	
Borehole Temperature		112.0	degF	
Temperature Gradient		1.00	DFHF	
Resistivity Of Mud		1.400	ohmm	

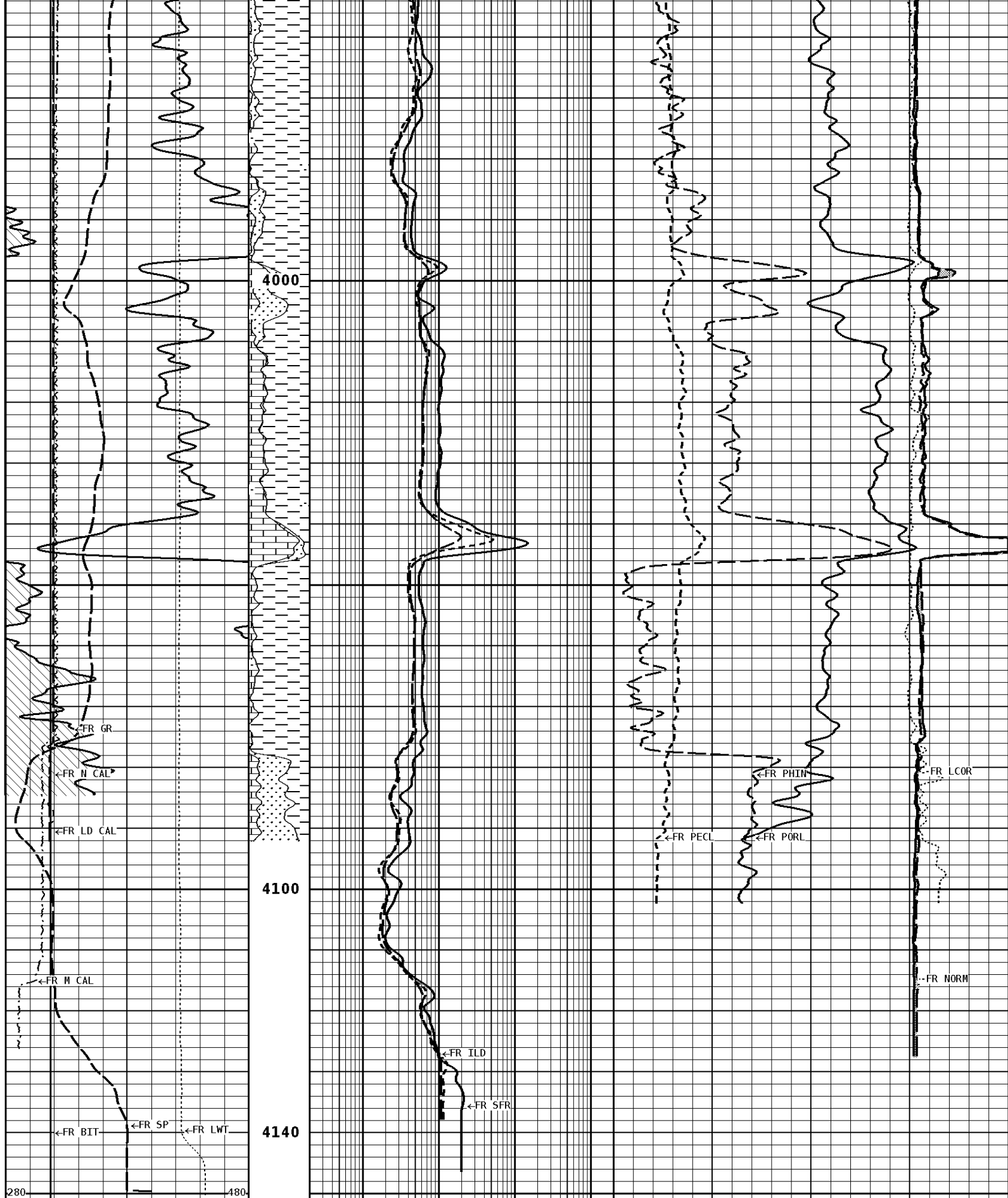
CALIPER MICRO INCHES (IN)					
16	26				
6	16				
BIT SIZE INCHES (IN)				NORMAL OHMM	
6	16			0 40	
NEUTRON (Y) CALIPER INCHES (IN)				INVERSE OHMM	
16	26			0 40	
6	16				
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	DENSITY CORRECTION G/CC		
16	26				
6	16		-0.75 0.25		
TENSION LBS		Volume Calcite	SHALLOW FOCUSED RESISTIVITY OHMM	PE CROSS-SECTION BARNs/ELECTRON	
10000	0		0.2 2000.0	0 20	
SPONTANEOUS POTENTIAL mV		Volume Dolo/Shale	DEEP INDUCTION OHMM	DENSITY POROSITY (2.71g/cc) PERCENT	
→ ← 20			0.2 2000.0	70 30	
				-10 -50	
GAMMA RAY API UNITS		BHV AHV CU.FT	MEDIUM INDUCTION OHMM	NEUTRON POROSITY (LIMESTONE) PERCENT	
150	300		0.2 2000.0	30 -10	
0	150				

NORMAL OHMM	
0	40
INVERSE OHMM	
0	40

1:240 REPEAT SECTION

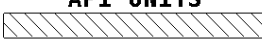






File #1.1.2

1:240 REPEAT SECTION

GAMMA RAY API UNITS 150  300 0 150	BHV AHV CU. FT	MEDIUM INDUCTION OHMM 0.2 2000.0	NEUTRON POROSITY (LIMESTONE) PERCENT 30 -10
SPONTANEOUS POTENTIAL mV → ← 20	Volume Dolo/Shale	DEEP INDUCTION OHMM 0.2 2000.0	DENSITY POROSITY (2.71g/cc) PERCENT 70 30 -10 -50
TENSION LBS 10000 0	Volume Calcite	SHALLOW FOCUSED RESISTIVITY OHMM 0.2 2000.0	PE CROSS-SECTION BARNs/ELECTRON 0 20
DENSITY (X) CALIPER INCHES (IN) 16 26 6 16	Volume Quartz		DENSITY CORRECTION G/CC -0.75 0.25
NEUTRON (Y) CALIPER INCHES (IN) 16 26 6 16			INVERSE OHMM 0 40
BIT SIZE INCHES (IN) 6 16			NORMAL OHMM 0 40
CALIPER MICRO INCHES (IN) 16 26 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
Matrix Transit Time	47.5	us/ft
Fluid Transit Time	189.0	us/ft
Formation Matrix	Limestone	
Drill Bit Size	7.875	in
Casing Diameter	5.500	in
Casing Thickness	0.250	in
Casing Correction (PHI N)	Disable	
Hole Substance	Fluid	
BHT Depth	4140.000	ft
Borehole Temperature	112.0	degF
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	1.400	ohmm

* Calibration Summary *

Shop Calibration	
GRT-B	
Performed : 24-JUN-2019	Time : 12:20
Sensor Suite : GP, GP5	ID : GPT-BC-038

Sensor Suite : GR-GR3	Measured Jig	Units	Calibrated Jig	Units
GR	Background 36	266	160	GRAPI

Shop Calibration CNT-AA					
Performed : 03-Jun-2019			Time : 11:06		
Sensor Suite : CALI-BCN			ID : NDT-AF-104		
CL # 1	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	IN.
	8.3	13.2	6.0	12.0	

Performed : 18-SEP-2019			Time : 16:10		
Sensor Suite : BHC NEUT			ID : CNP-AE-41		
Source ID : N-1104					
N/F	Tank		Verification		Units
	Measured	Calibrated	Jig		
Porosity	3.7537	3.6893	3.6964		%
	21.5	20.5	20.6		

Shop Calibration LDT-DA					
Performed : 03-Jun-2019			Time : 14:53		
Sensor Suite : CALI-LTH			ID : NDT-FA-404		
CL # 1	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	IN.
	8.3	13.2	6.0	12.0	

Performed : 03-Dec-2019			Time : 19:18		
Sensor Suite : BHCPELNG			ID : LDP-DA-062		
Source ID : 1637GW					
Short Space					
	BKGD	Al	Mg	Al+Fe	Units
LSW1	59	994	1604	617	CPS
LSW2	58	1159	1848	809	CPS
LSW3	218	2640	4281	2191	CPS
LSW4	272	2262	3264	1957	CPS
LSW5	26	44	49	42	CPS
LSW6	76	80	79	79	CPS
LSW7	48	52	54	51	CPS
LSW8	1	3	4	3	CPS
QS	0.224	0.208	0.191	0.214	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC
Long Space					
	BKGD	Al	Mg	Al+Fe	Units
LLW1	89	1139	4703	663	CPS
LLW2	98	2033	7985	1435	CPS
LLW3	372	3656	13901	3102	CPS
LLW4	483	1704	5322	1526	CPS
LLW5	54	65	108	65	CPS
LLW6	152	153	144	154	CPS
LLW7	99	102	99	102	CPS
LLW8	4	6	16	6	CPS
QL	0.210	0.200	0.185	0.199	
PEL			2.697	5.458	
LSDN		2.600	1.680		G/CC

Shop Calibration				
CST-AD				
Performed : 26-MAY-2003			Time : 16:03	
Sensor Suite : SON-ANA			ID : CST-AB-24	
Transit Time				
T/R Pair	Measured	Calibrated	Units	
T1R1	208.5	208.5	uS	
T2R2	208.5	208.5	uS	
T1R2	322.5	322.5	uS	
T2R1	322.5	322.5	uS	
Amplitude				
T/R Pair	Measured	Calibrated	Units	
T1R1	90.00	90.00	mV	
T2R2	90.00	90.00	mV	
T1R2	78.00	78.00	mV	
T2R1	78.00	78.00	mV	

Shop Calibration MLT-AB					
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Performed : 03-JUN-2019			Time : 15:59		
Sensor Suite : CAL-MSFL			ID : MLT-012		
CL # 1	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	IN.
	12.4	15.4	6.0	12.0	
Performed : 03-Jun-2019			Time : 16:08		
Sensor Suite : MS-NI			ID : MLT-012		
	Jig#1	Jig#2	Verifier		Units
VN-0	522.41	3592.20	3592.82		
VN-90	322.29	4426.00	4426.45		
MPNR Measured	3.07	28.50	28.51		
MPNR Calibrated	2.00	20.00	20.00		OHMM
VI-0	379.00	5381.38	5381.98		
VI-90	608.31	4363.26	4364.08		
MPIR Measured	3.58	34.64	34.64		
MPIR Calibrated	2.00	20.00	20.00		OHMM
Shop Calibration					
PIT-CA					
Performed : 10-MAY-2019			Time : 11:27		
Sensor Suite : P-IND-T			ID : PIT-AC-043		
Medium					
	Measured		Calibrated		Units
	R	X	R	X	
Air	131492	129685	0.0	0.0	MMHOS
Zero	131066	131062	-18.1	59.6	MMHOS
Reference	244915	244454	4981.9	5059.6	MMHOS
Loop	130404	210498	3515.7	3611.2	MMHOS
Sonde Error			-0.5	-1.7	MMHOS
Cond			4981.9	5059.6	MMHOS
Deep					
	Measured		Calibrated		Units
	R	X	R	X	
Air	131939	129230	0.0	-0.0	MMHOS
Zero	131079	131067	-15.6	35.3	MMHOS
Reference	220620	224092	1984.4	2035.3	MMHOS
Loop	129308	206166	1595.4	1712.8	MMHOS
Sonde Error			-0.6	-7.8	MMHOS
Cond			1984.4	2035.3	MMHOS
Temperature					
	Measured		Calibrated		Units
	Low	High	Low	High	
	16980.0	56920.0	70.0	350.0	DEGF
Performed : 10-May-2019			Time : 14:03		
Sensor Suite : SFL			ID : PIT-AC-043		
Internal					
	Measured		Calibrated		Units
	Zero	Reference	Zero	Reference	
Im	32732.6	48929.1	0.0	7028.0	uA
Ib	32768.6	49680.1	0.0	1750.0	mA
MOM1	32722.0	56290.6	0.0	175.0	mV
Equivalent SFL				43.97	OHMM
Performed : 10-MAY-2019			Time : 11:16		
Sensor Suite : P-SP			ID : PIT-AC-043		
Internal					
	Measured		Calibrated		Units
	Zero	Reference	Zero	Reference	
	32774.5	58935.9	0.0	1000.0	mV

STEP

energy services

Company: GRAND MESA OPERATING COMPANY
 Well: PREISSER #1-34
 Location: 330' FNL & 1620' FEL
 Logged: 12-14-2019
 K.B. Elev: 1687.0 Ft