



Tucker

ENERGY SERVICES

COMPOSITE LOG

Company MULL DRILLING COMPANY, INC. Well TJADEN "C" #4		File No : TUL 59797 Company : MULL DRILLING COMPANY, INC. Well : TJADEN "C" #4 Field : County : KINGMAN State : KANSAS Country : USA API No : 15-095-22288	
Location : 1980' FSL & 660' FWL NW/4 SW/4		LSD : Sect : 18 Twp : 30S Rge : 7W	
Permanent Datum:	GL	Elevations:	Services:
Drilling Measured From:	KB	KB 1486.00	CNT
Log Measured From:	KB	DF 1485.00	LDT
Above Permanent Datum:	10.00 Ft	GL 1476.00	MLT
Date	09-25-2014		
Run Number	1		
Depth--Driller	4285.0	Ft	
Depth--Logger	4283.0	Ft	
First Reading	4283.0	Ft	
Last Reading	226.0	Ft	
Casing--Driller	223.0	Ft	
Casing--Logger	226.0	Ft	
Bit Size	7.875	In	
Casing Size	8.625	In	
Hole Fluid Type	CHEM GEL		
Density	9.6	lb/gl	
Fluid Loss	10.8		
PH/Viscosity	9.0	55.0 sec/qt	
Sample Source	MEASURED		
RM@Measured Temp.	0.600 @ 65 F		
RMF@Measured Temp	0.480 @ 65 F		
RMG@Measured Temp.	0.720 @ 65 F		
Source RMF/RMC	CALCULATED/CALCULATED		
RM@BHT	0.440 @ 125 F		
Time Circulation Stopped	09-25-2014 11:30 pm		
Max Recorded Temp.	125 F		
Equipment/Base	126 TULSA		
Recorded By	S. K. DAVIS / A. S. DIAHO		
Witnessed By			

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	4285.00	8.625	32.00	226.00	0.00

Run Number	1	
Date	09-25-2014	
Date/Time On Bottom	09-26-2014 4:00 am	
Depth to Fluid	0.0 Ft	
Salinity	3000.000 ppm	
RMF@BHT	0.350 @ 125 F	
RMC@BHT	0.520 @ 125 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 CALCULATE POROSITY
 ANNULAR HOLE VOLUME CALCULATED USING 5.50" PRODUCTION CASING
 PHIN IS CALIPER CORRECTED
 ANHYDRITE SECTION FROM 1150' TO 800'
 DETAIL SECTION FROM TD TO 2900'

GRT: GRP.
 CNT: PHIN, CLCNIN.
 LDT: PORL, LCORN, PECLN, LDENN, CLLDIN.
 MLT: NOR_RF, INV_RF, MSCLPIN.
 CST: PORS, ITT, CDTF, TT1, TT2, TT3, TT4.
 PIT: ILD, ILM, SFLAEC, CIRD, SPU

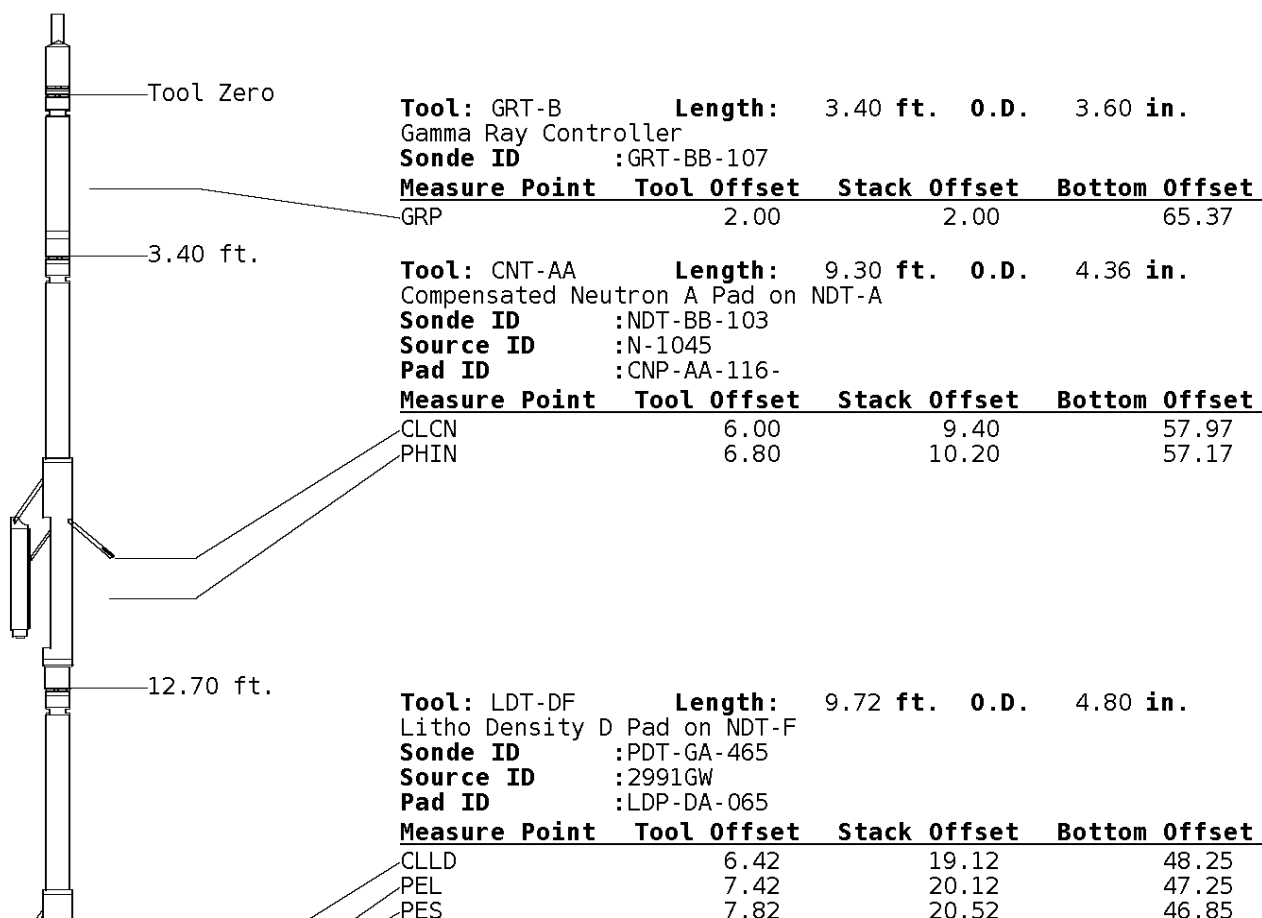
OPERATORS:

C. GONZALES

J OFFEIBGU

Tool String Schematic

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



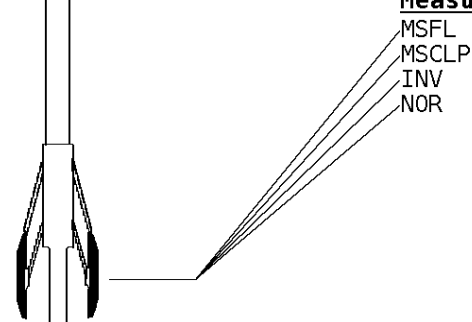


LDEN	7.62	20.32	47.05
LCOR	7.62	20.32	47.05

22.42 ft.

Tool: MST-DA **Length:** 9.66 ft. **O.D.** 6.00 in.
Micro Spherically Focused (IC)
Sonde ID :MST-DA-26

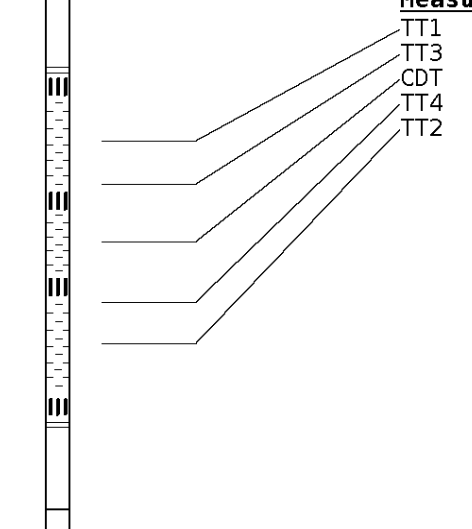
Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	30.02	37.35
MSCLP	7.60	30.02	37.35
INV	7.60	30.02	37.35
NOR	7.60	30.02	37.35



32.08 ft.

Tool: CST-AD **Length:** 13.80 ft. **O.D.** 3.60 in.
Open Hole Sonic
Sonde ID :CST-AB-25

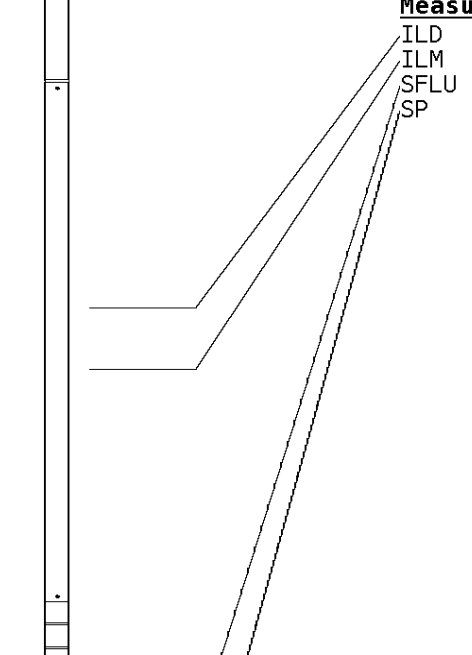
Measure Point	Tool Offset	Stack Offset	Bottom Offset
TT1	4.80	36.88	30.49
TT3	5.80	37.88	29.49
CDT	7.30	39.38	27.99
TT4	8.80	40.88	26.49
TT2	9.80	41.88	25.49



45.88 ft.

Tool: PIT-CA **Length:** 21.49 ft. **O.D.** 3.62 in.
Phased Dual Induction w/ RM & D
Sonde ID :PIT-CA-075

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: MULL TJADEN C4 SEPT25 QUINT

Scale: 1:240

Format: COMSAT

Segment: V1.D1.S5 MN

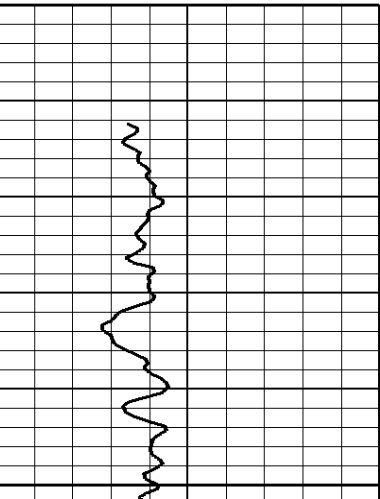
Acquired: 2014-09/26 04:07 3.3.0-12594

Reference: 0

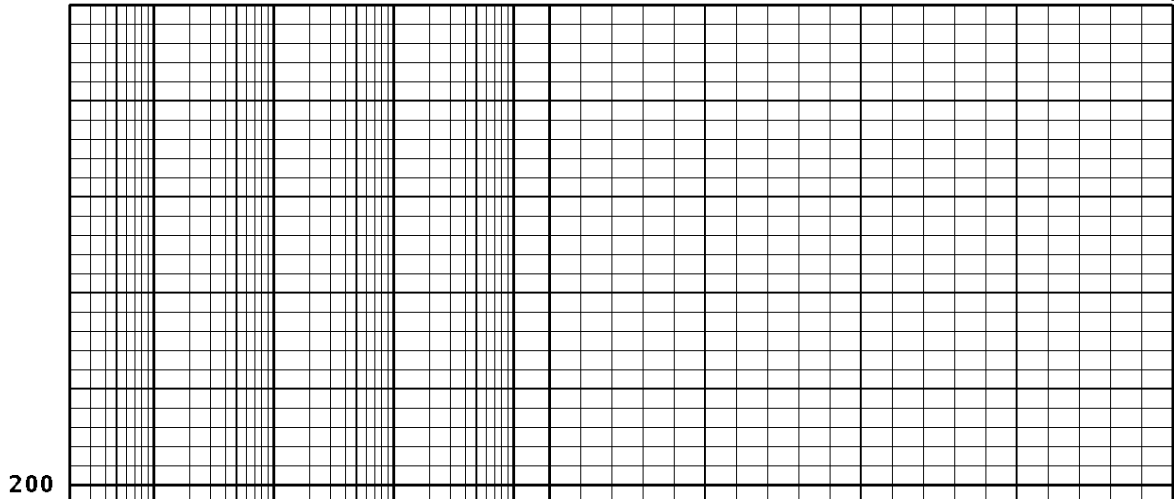
Processed: 2014-09/26 05:50 3.3.0-12594

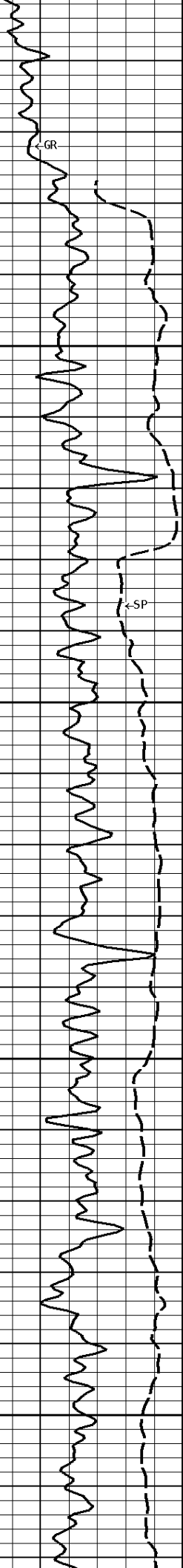
CALIPER MICRO INCHES (IN) 16 26 6 16			
BIT SIZE INCHES (IN) 6 16			
NEUTRON (Y) CALIPER INCHES (IN) 16 26 6 16			
DENSITY (X) CALIPER INCHES (IN) 16 26 6 16		DENSITY CORRECTION G/CC -0.75 0.25	NORMAL OHMM 0 40 INVERSE OHMM 0 40
TENSION LBS 10000 0	Volume Quartz Volume Calcite	SHALLOW FOCUSED RESISTIVITY OHMM 0.2 2000.0 0	PE CROSS-SECTION BARNS/ELECTRON 20
SPONTANEOUS POTENTIAL mV → ← 25	Volume Dolo/Shale	DEEP INDUCTION OHMM 0.2 2000.0	DENSITY POROSITY (2.71g/cc) PERCENT 70 30 30 -10 -10 -50
GAMMA RAY API UNITS 150 300 0 150	BHV AHV CU.FT	MEDIUM INDUCTION OHMM 0.2 2000.0 30	NEUTRON POROSITY (LIMESTONE) PERCENT -10

1:240 MAIN SECTION



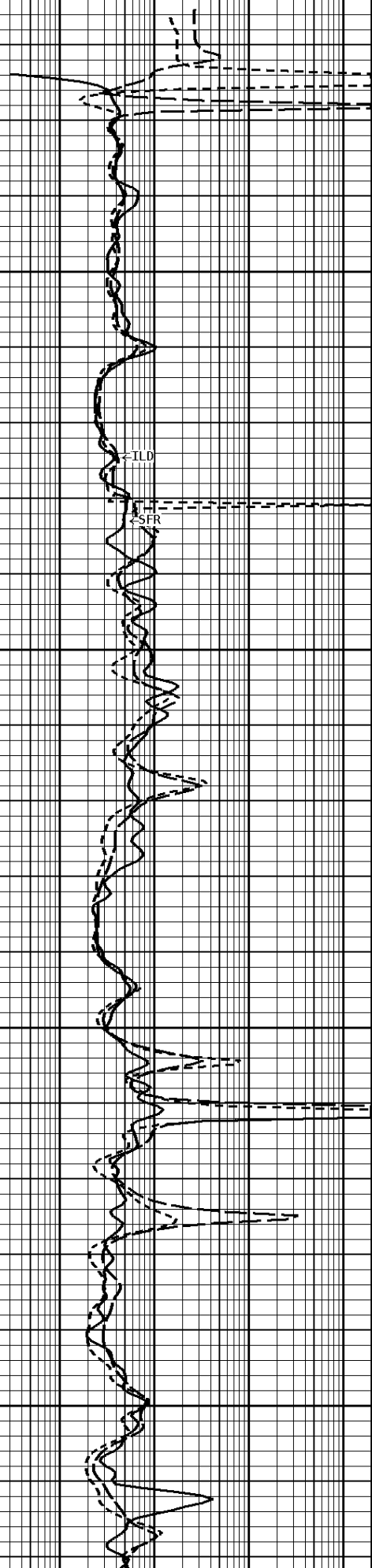
File #1.1.5

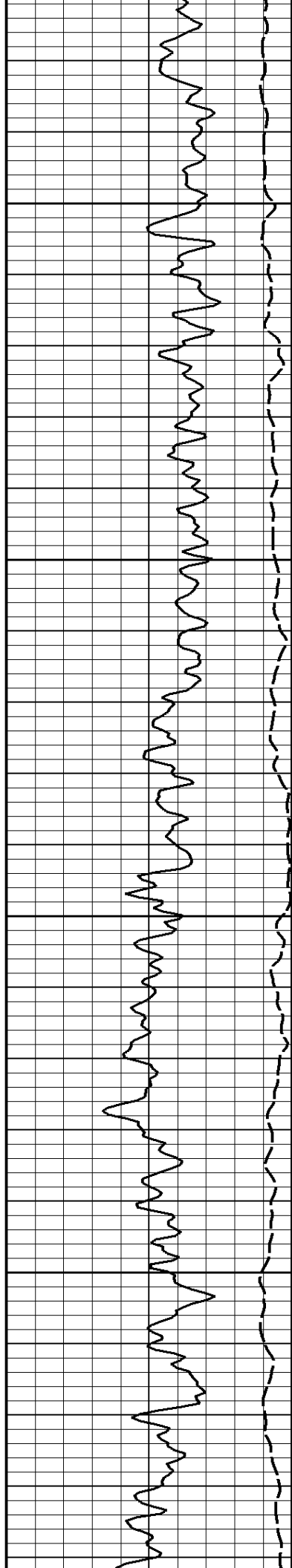




300

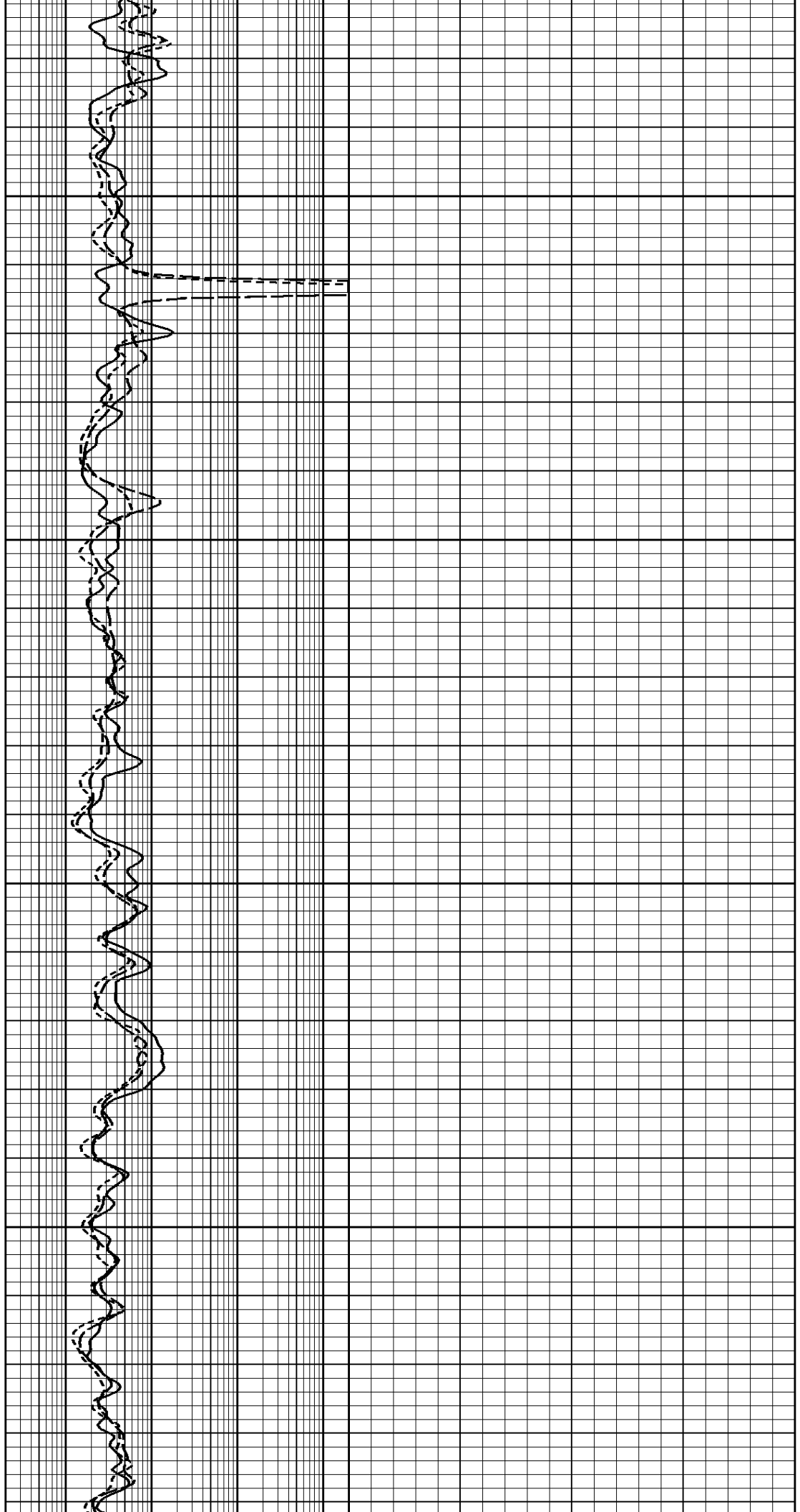
400

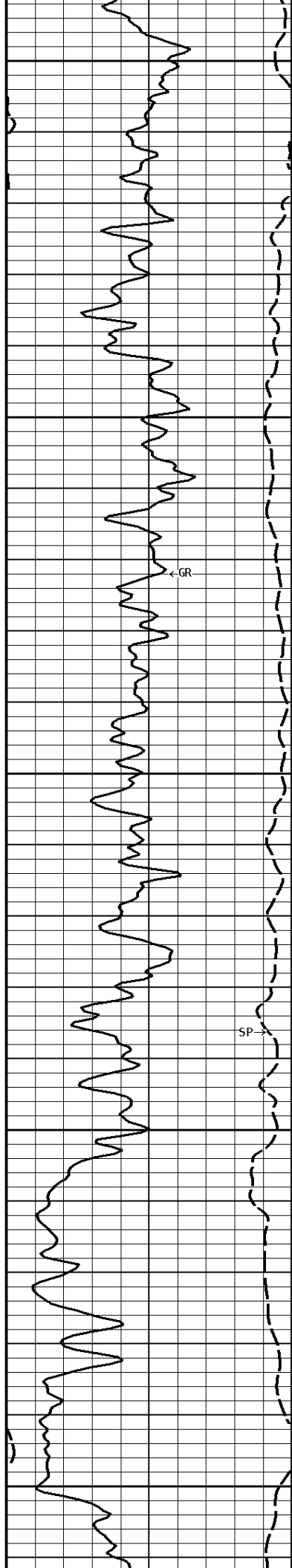




500

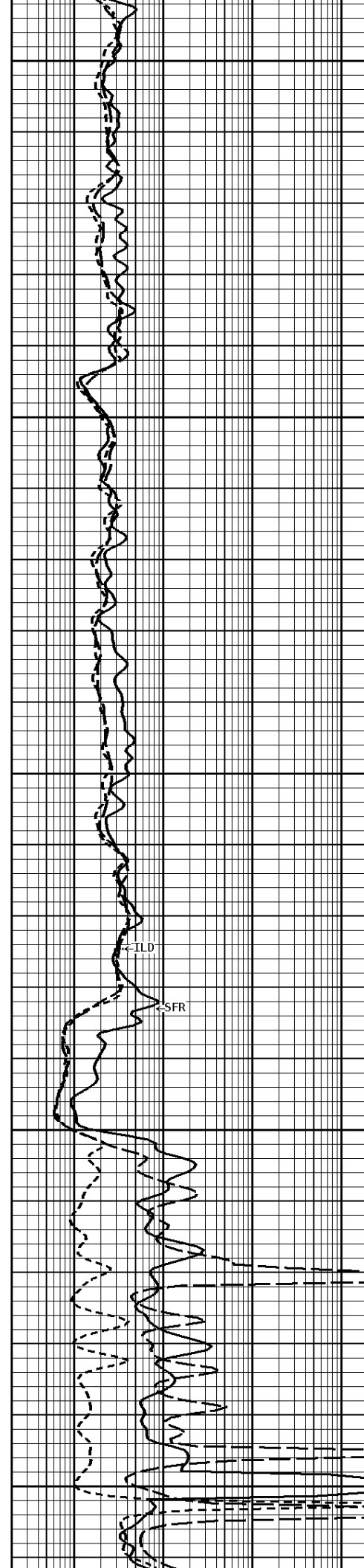
600

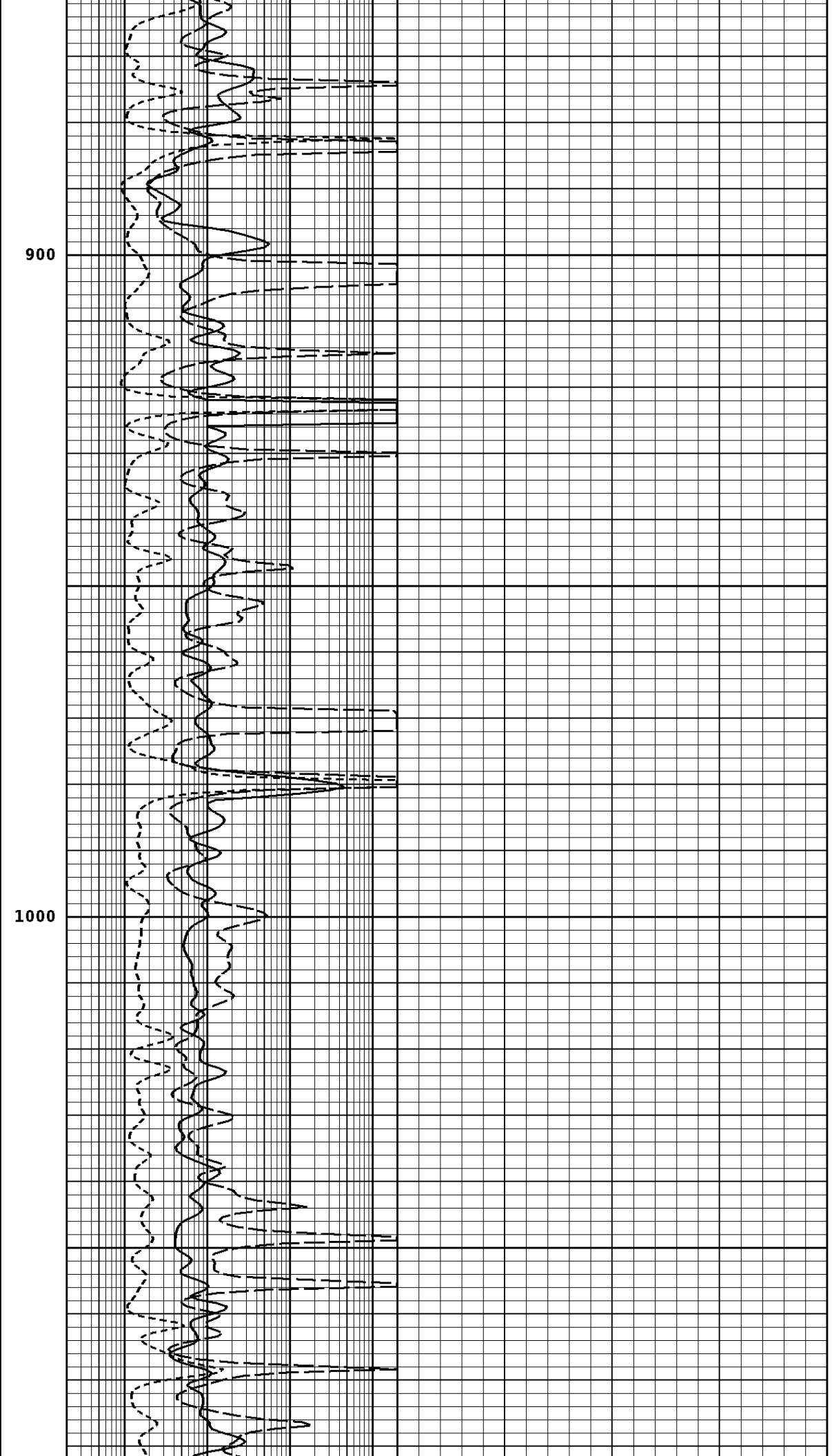
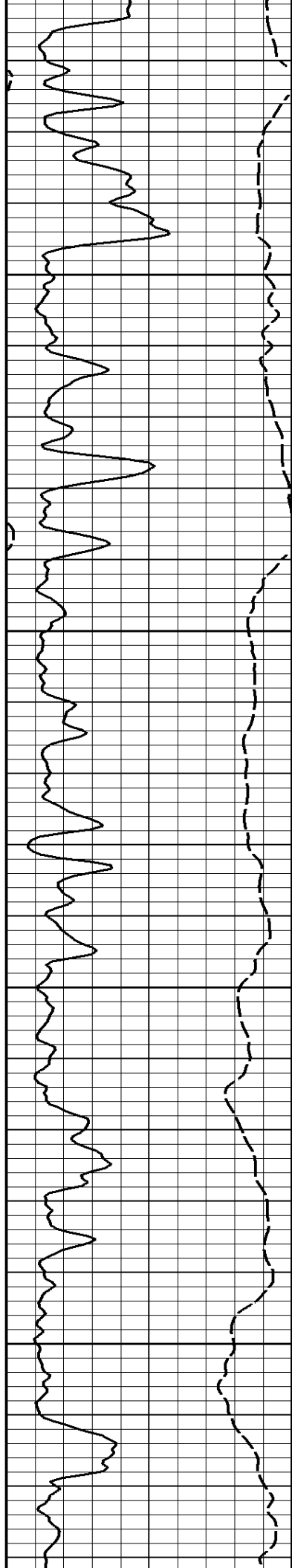


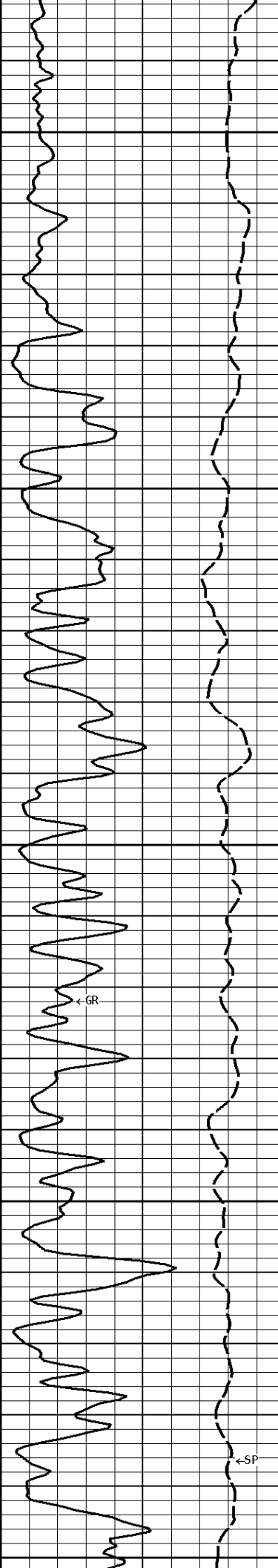


700

800



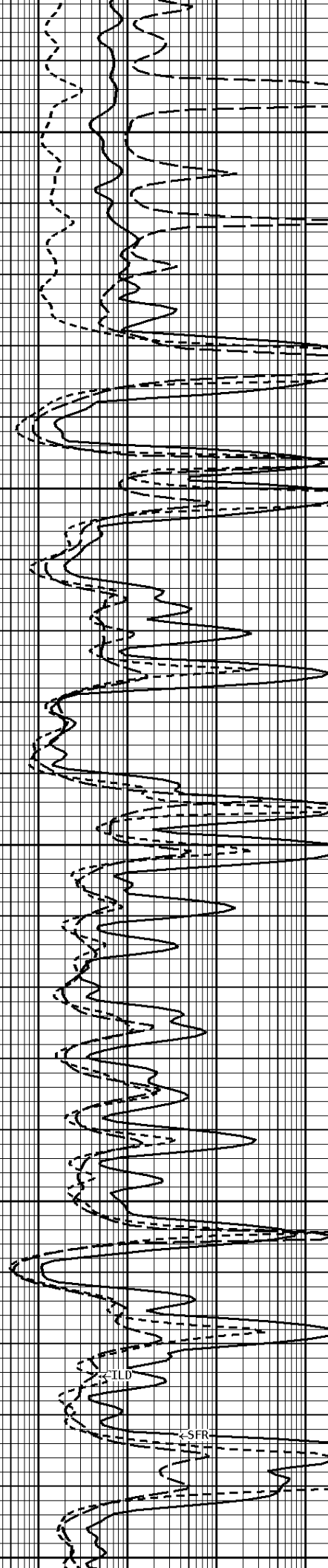


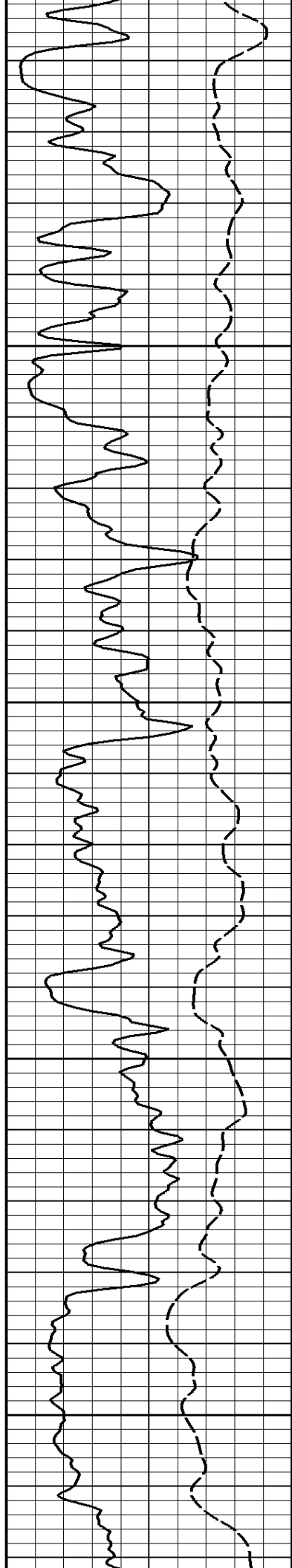


1100

1200

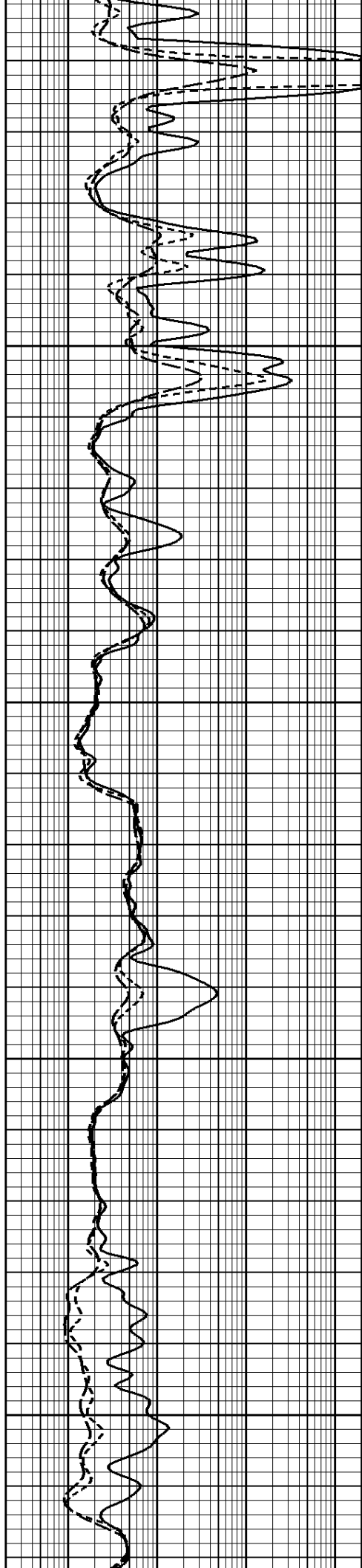
1300

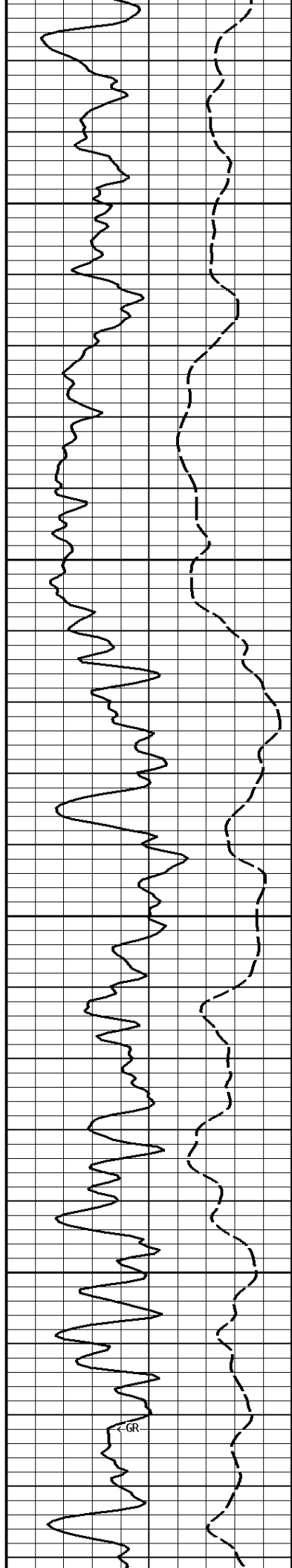




1400

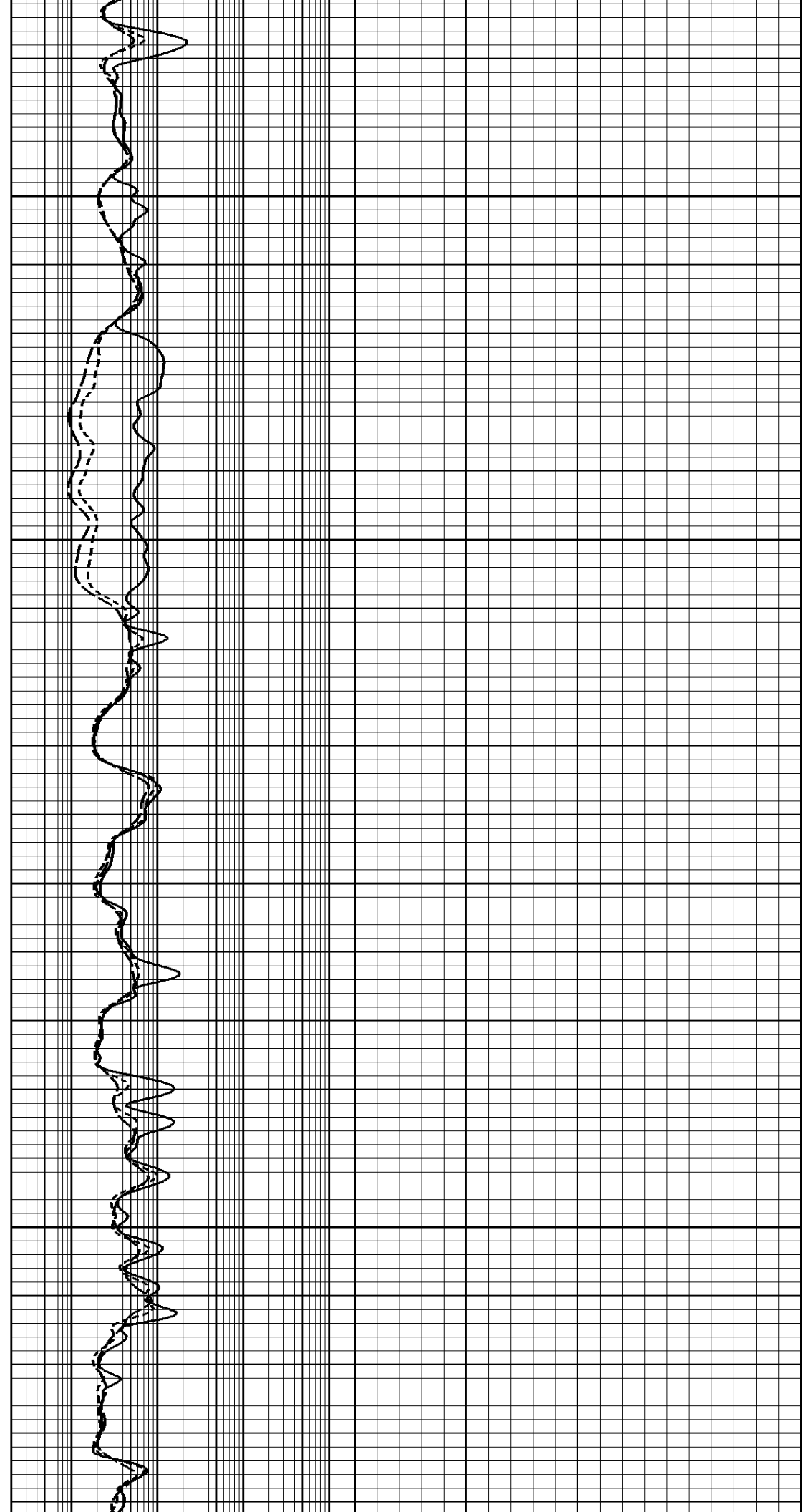
1500

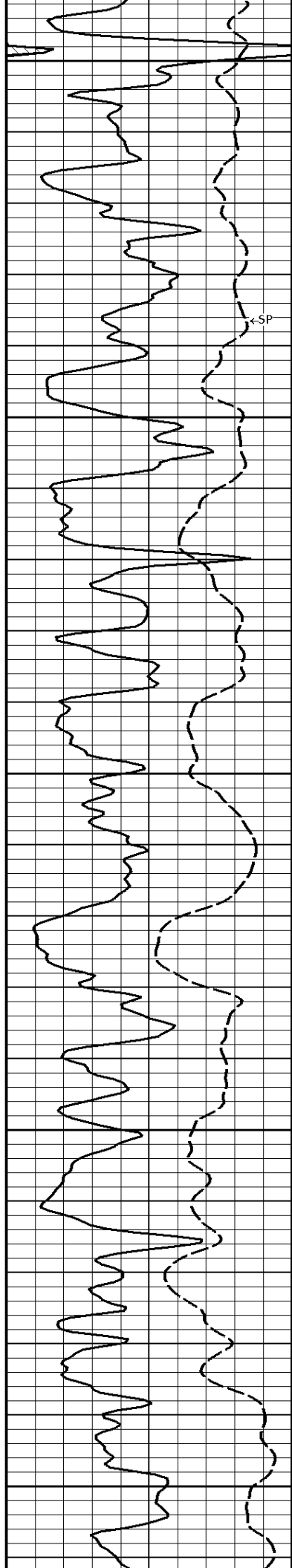




1600

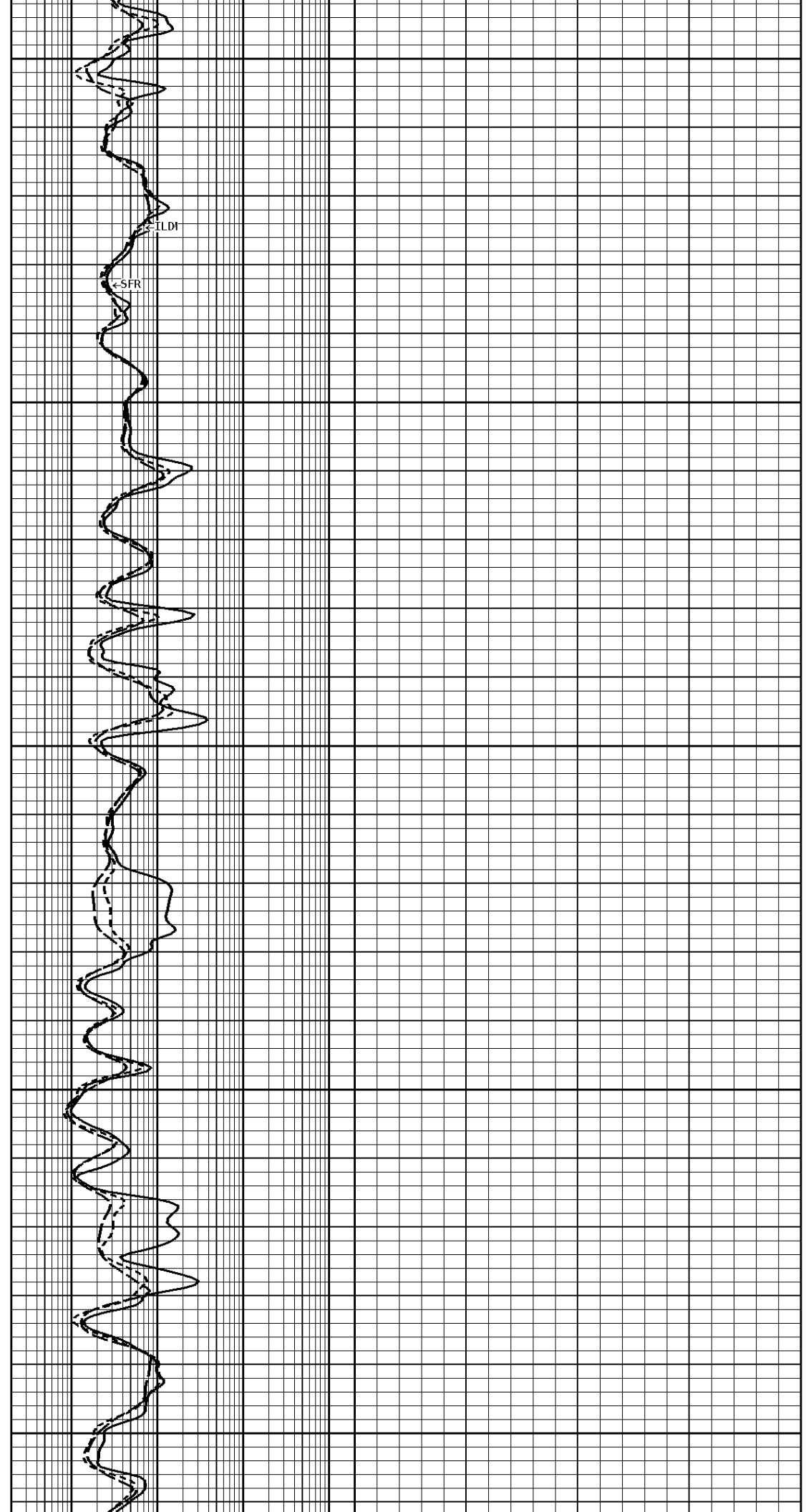
1700





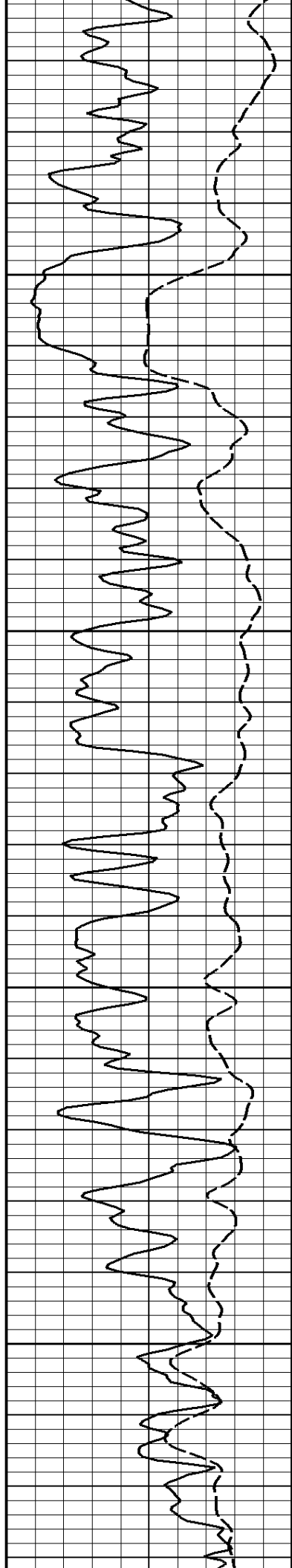
1800

1900



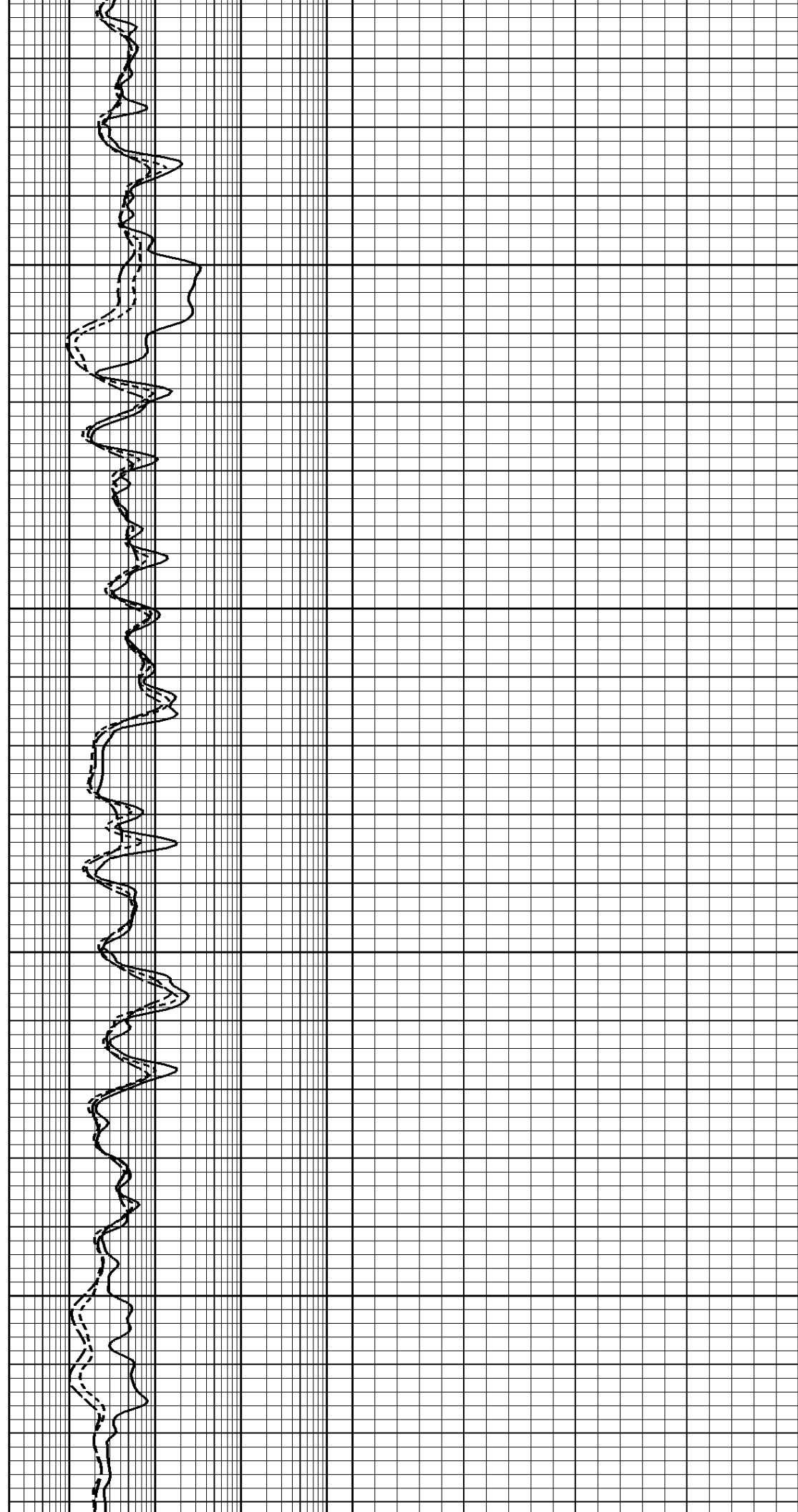
<SFR

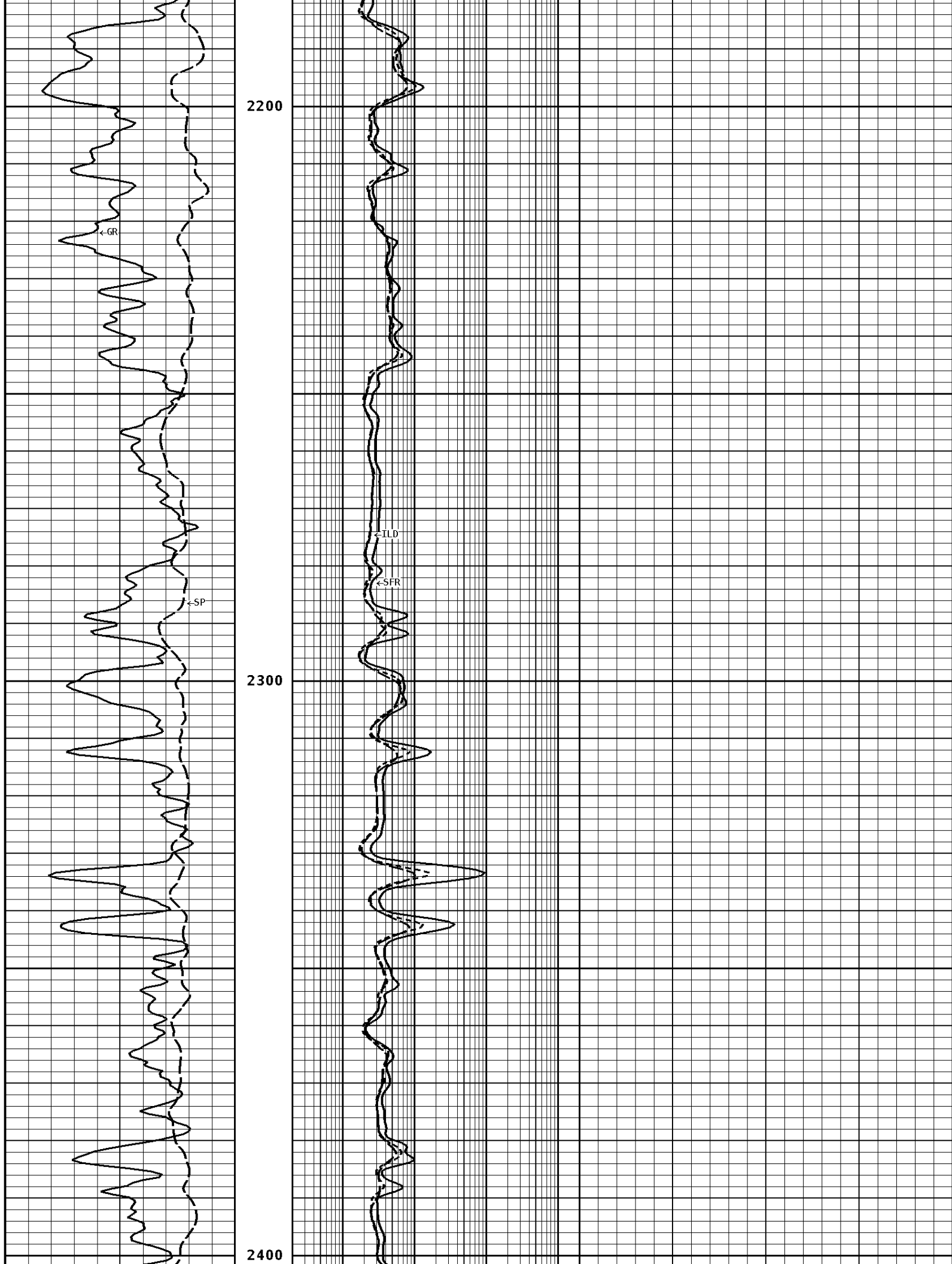
<TLDI

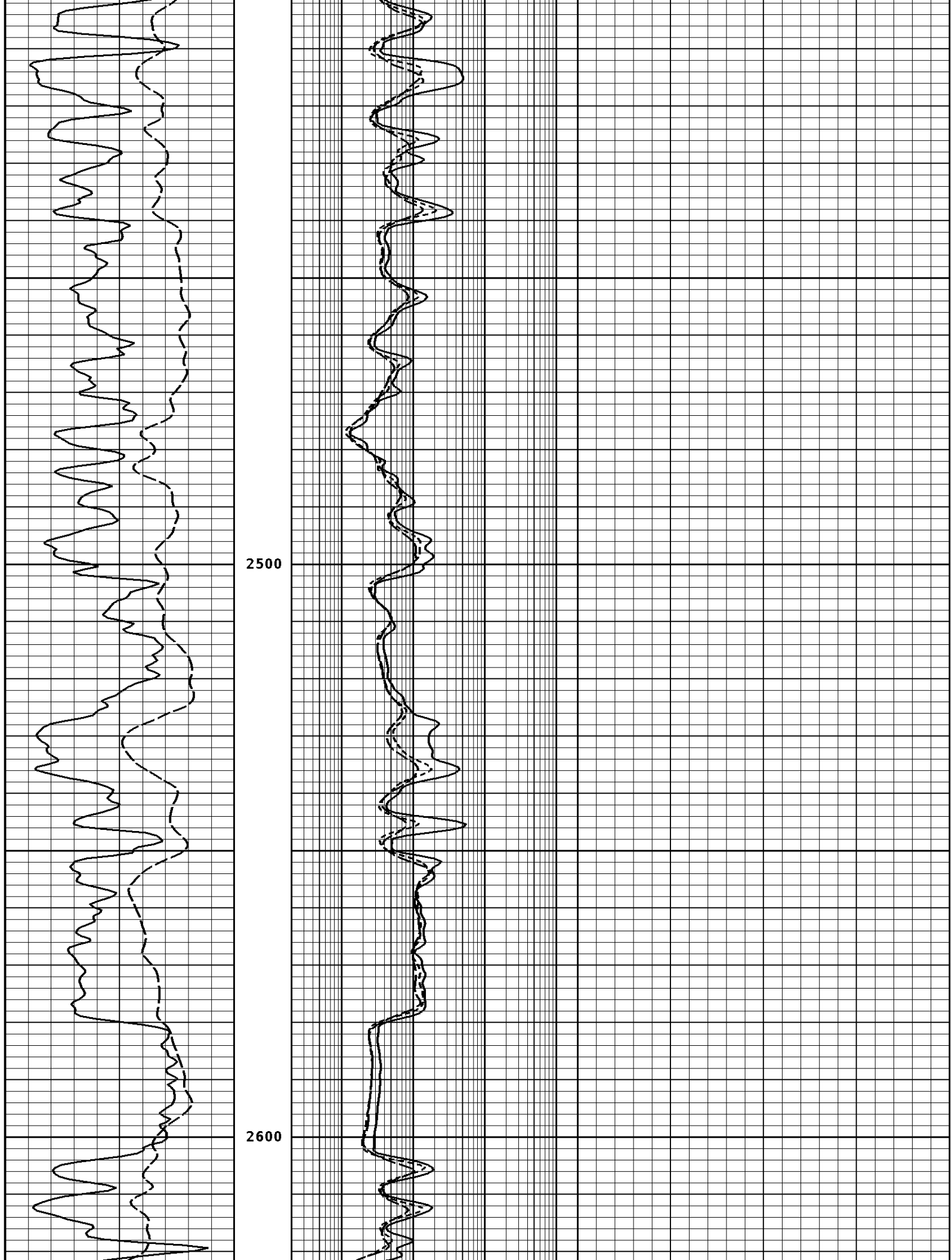


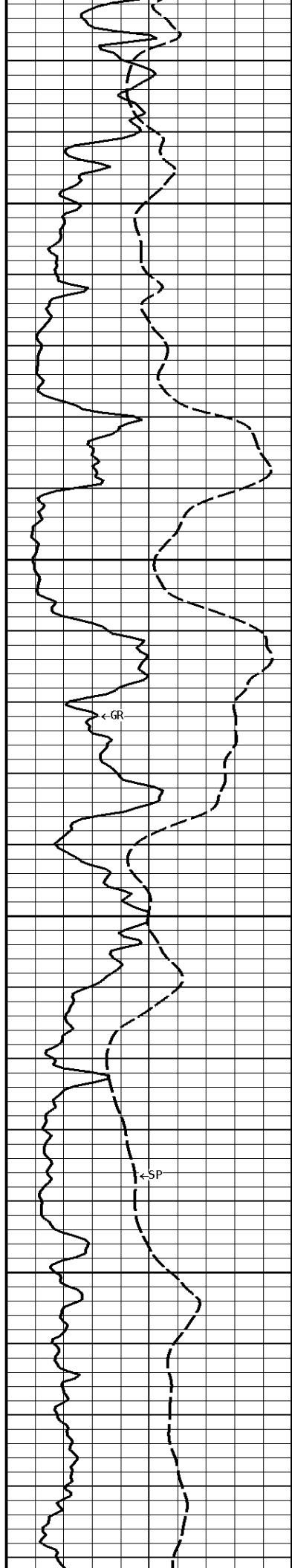
2000

2100



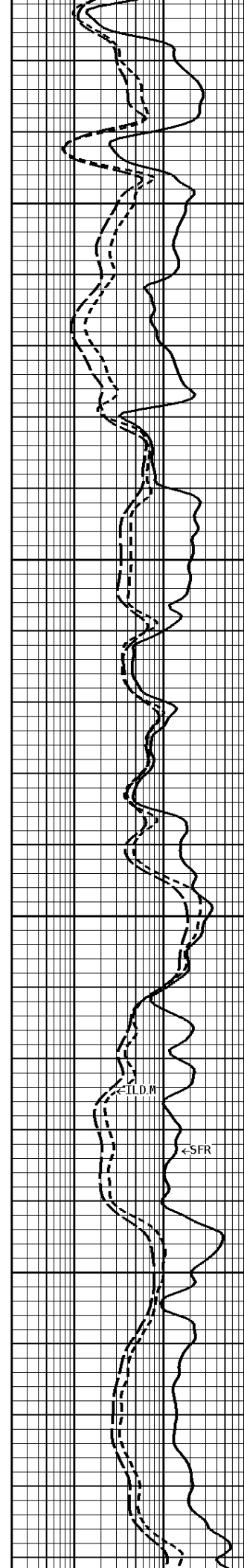


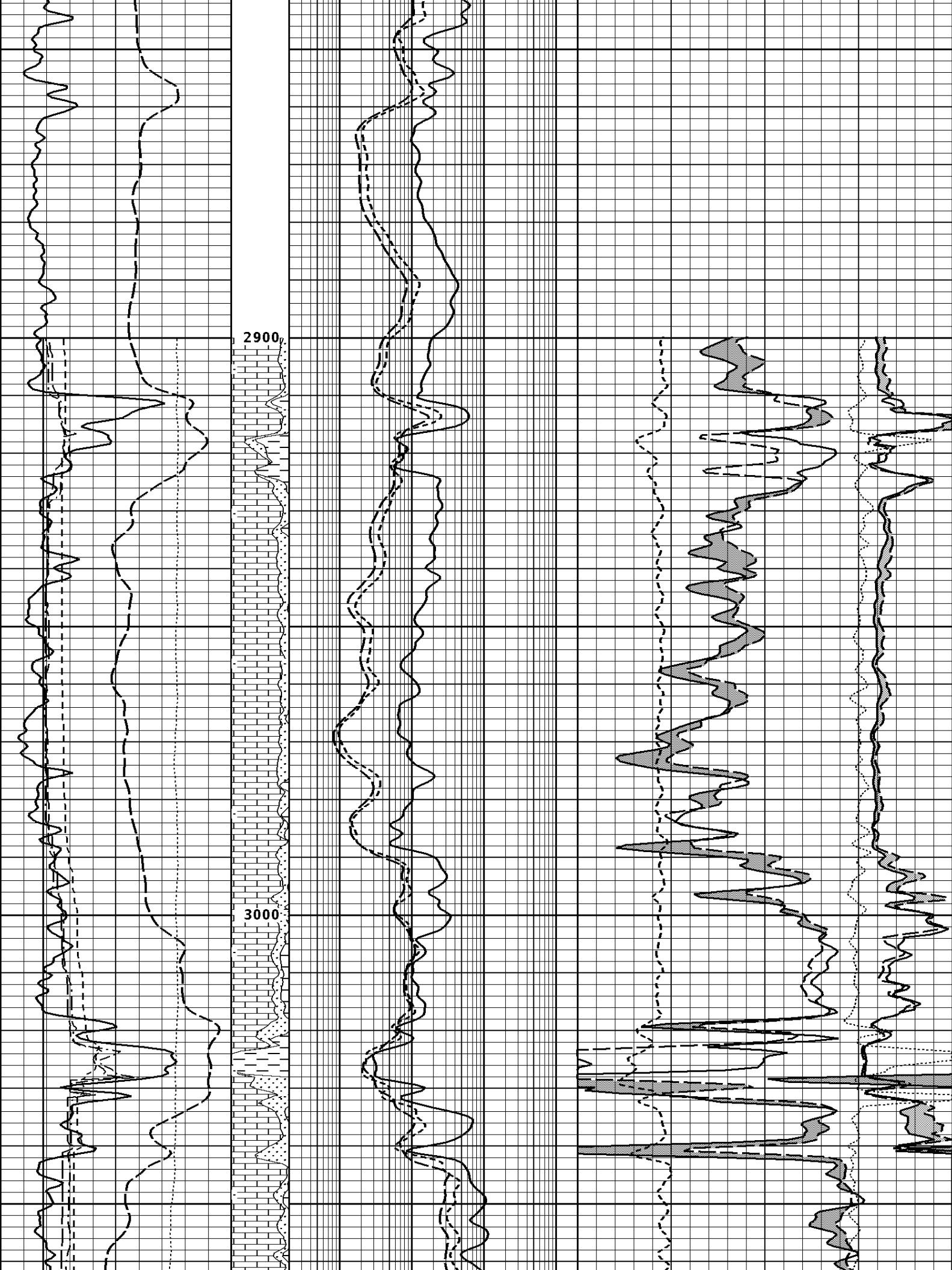


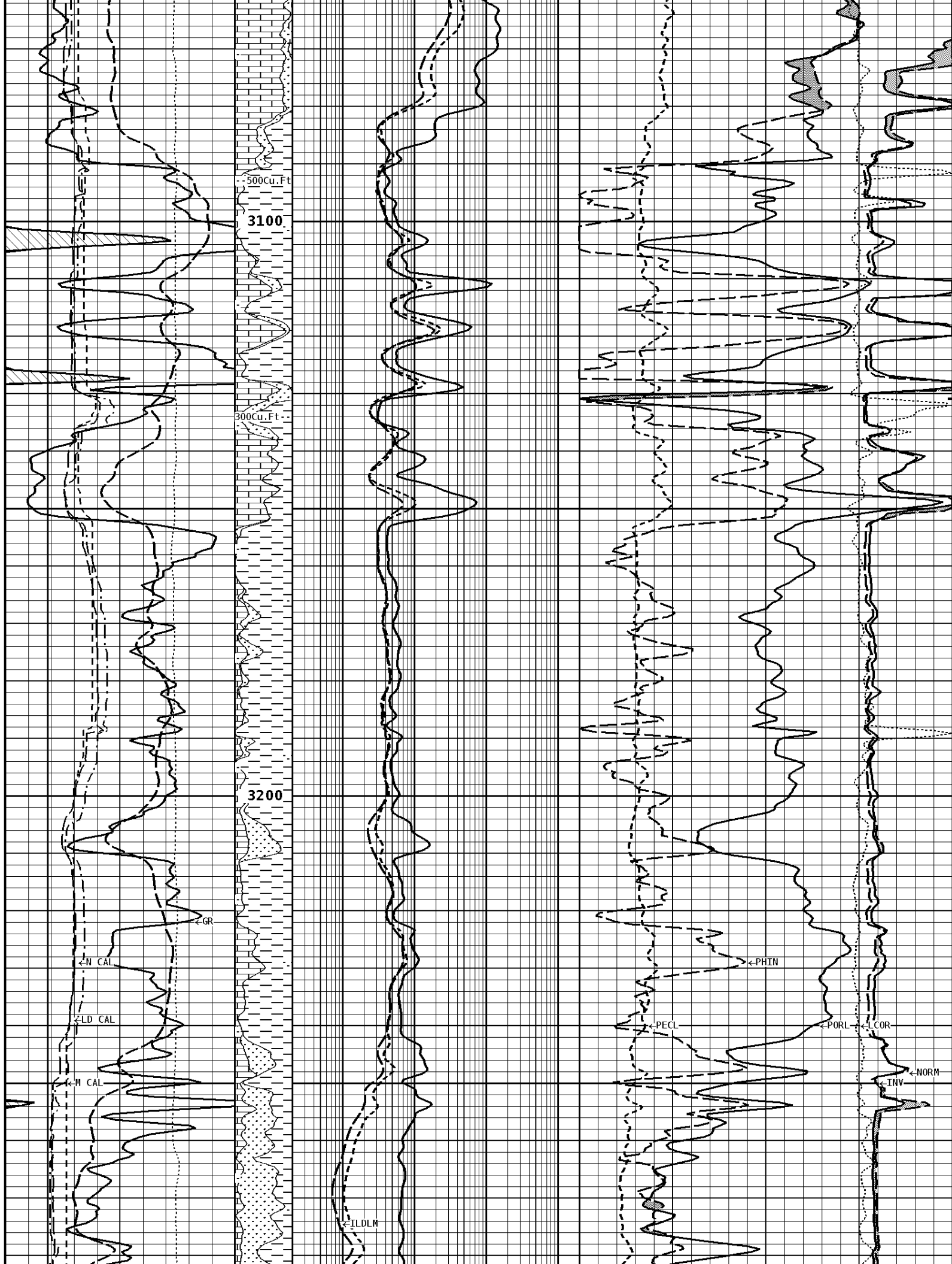


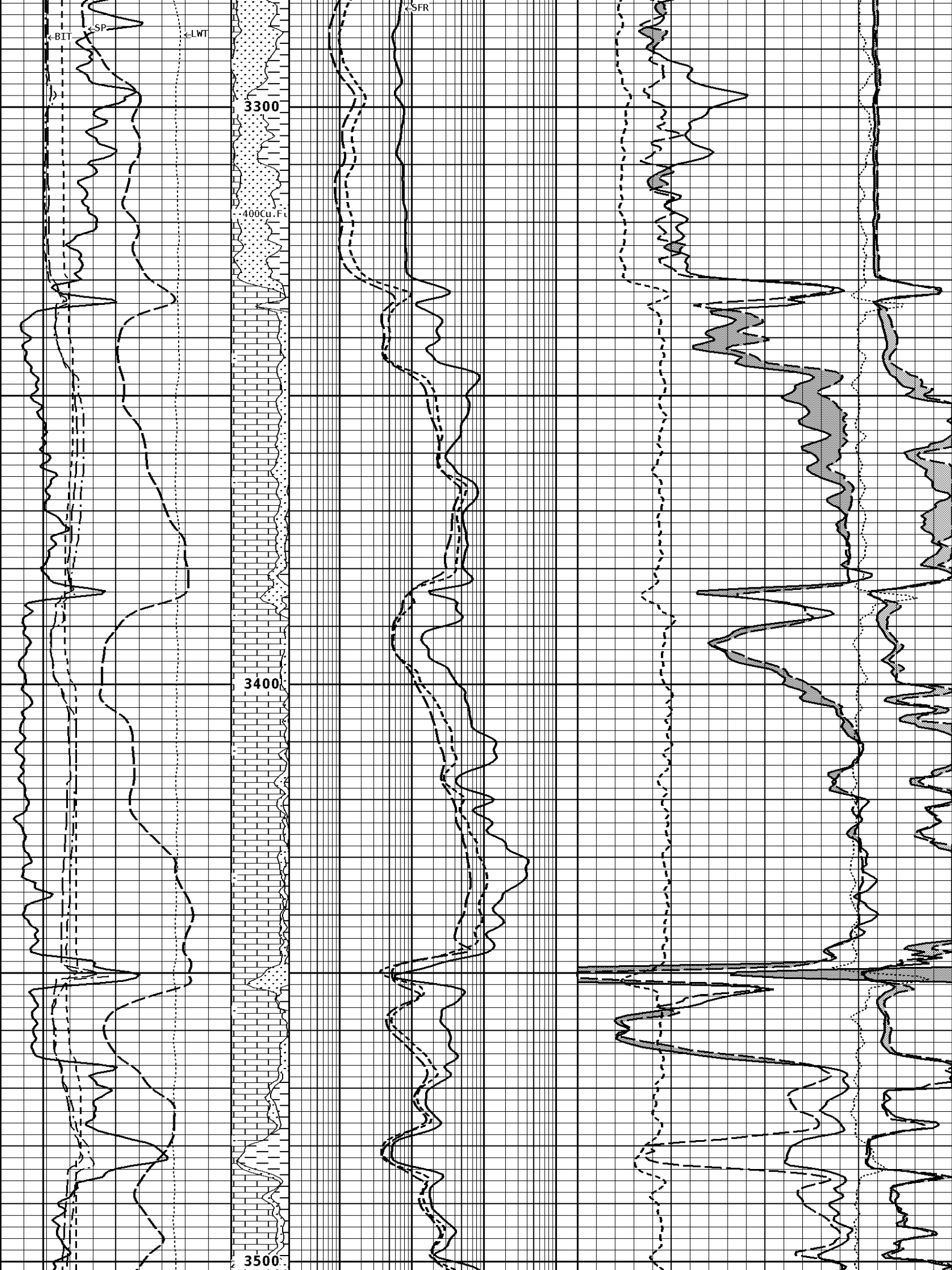
2700

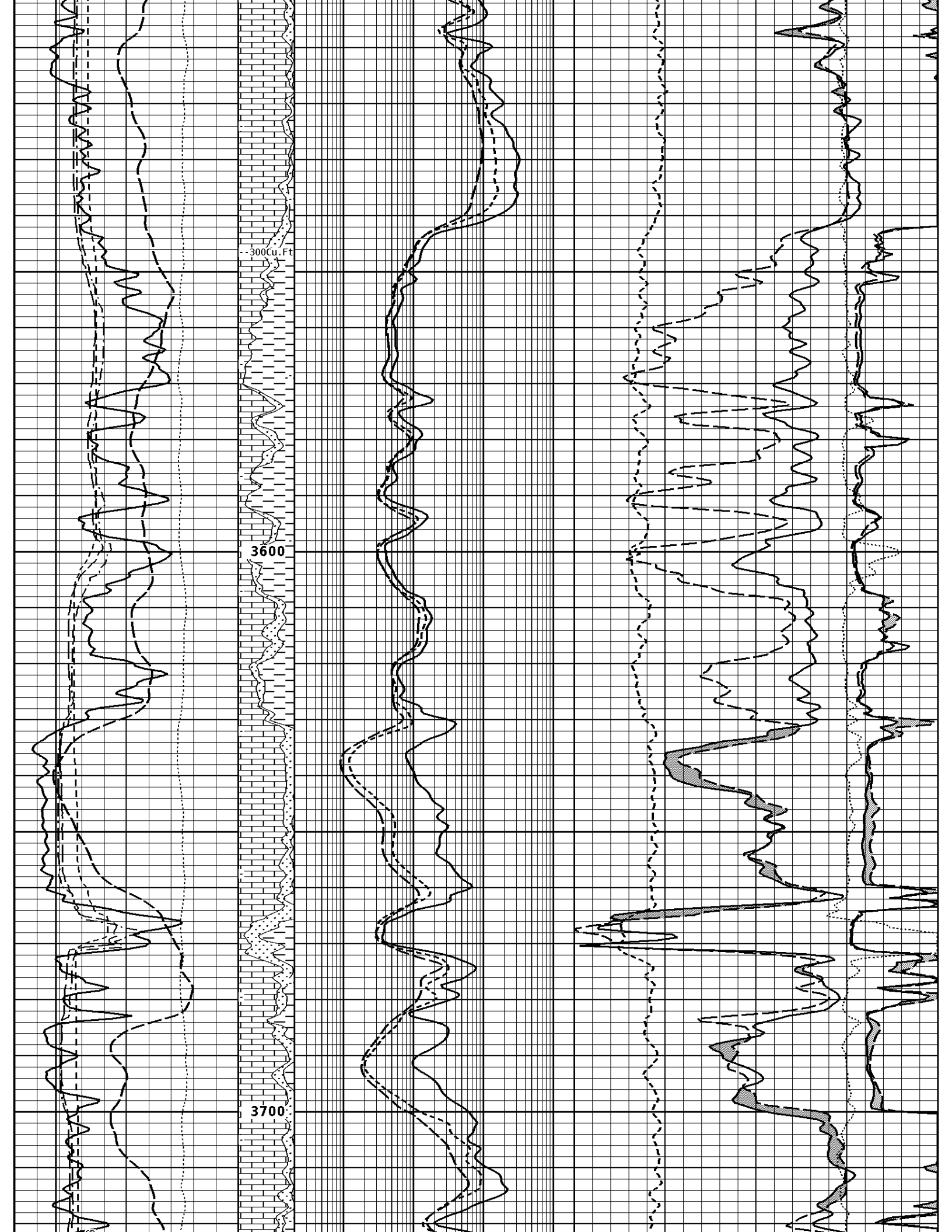
2800

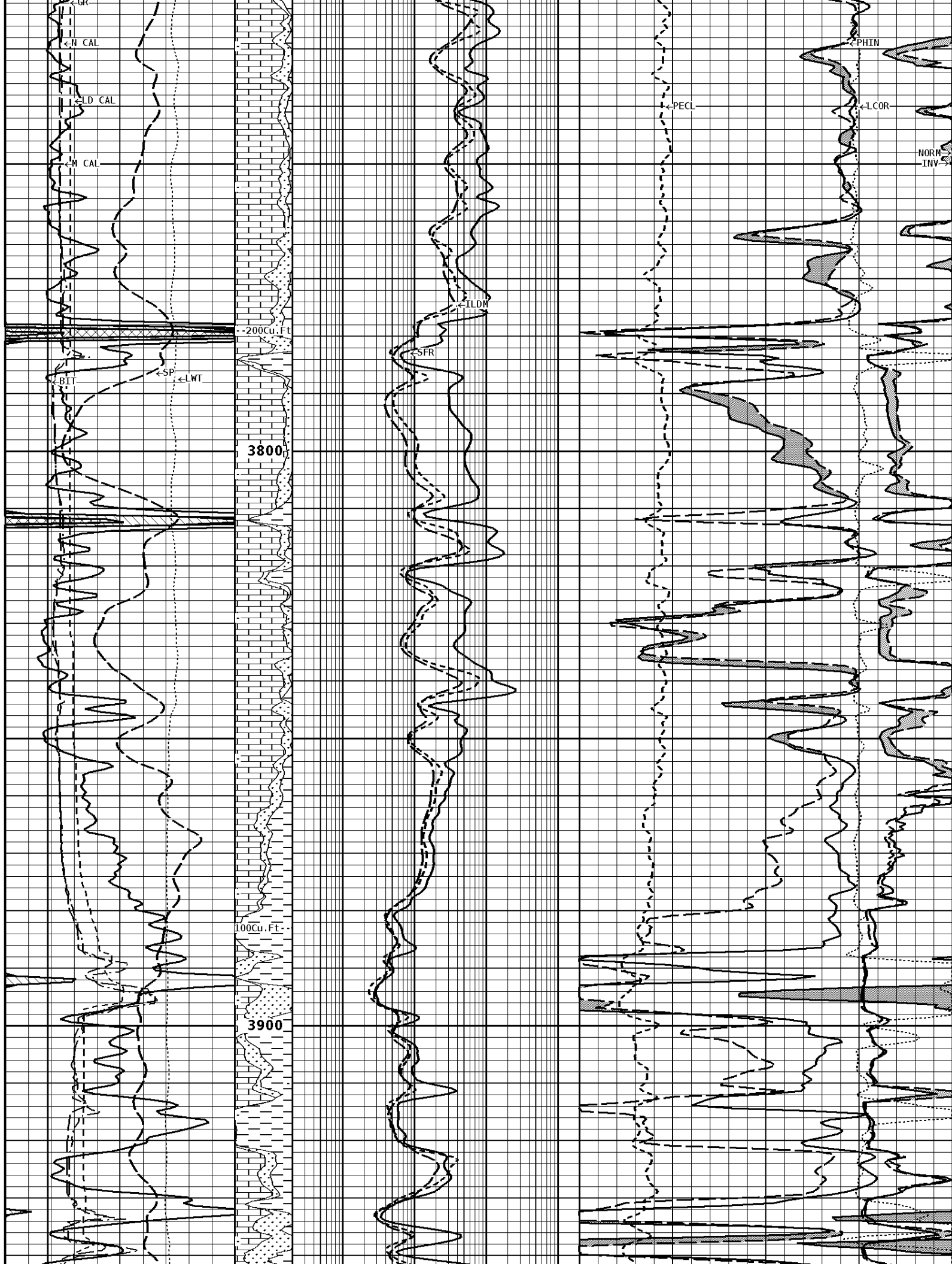


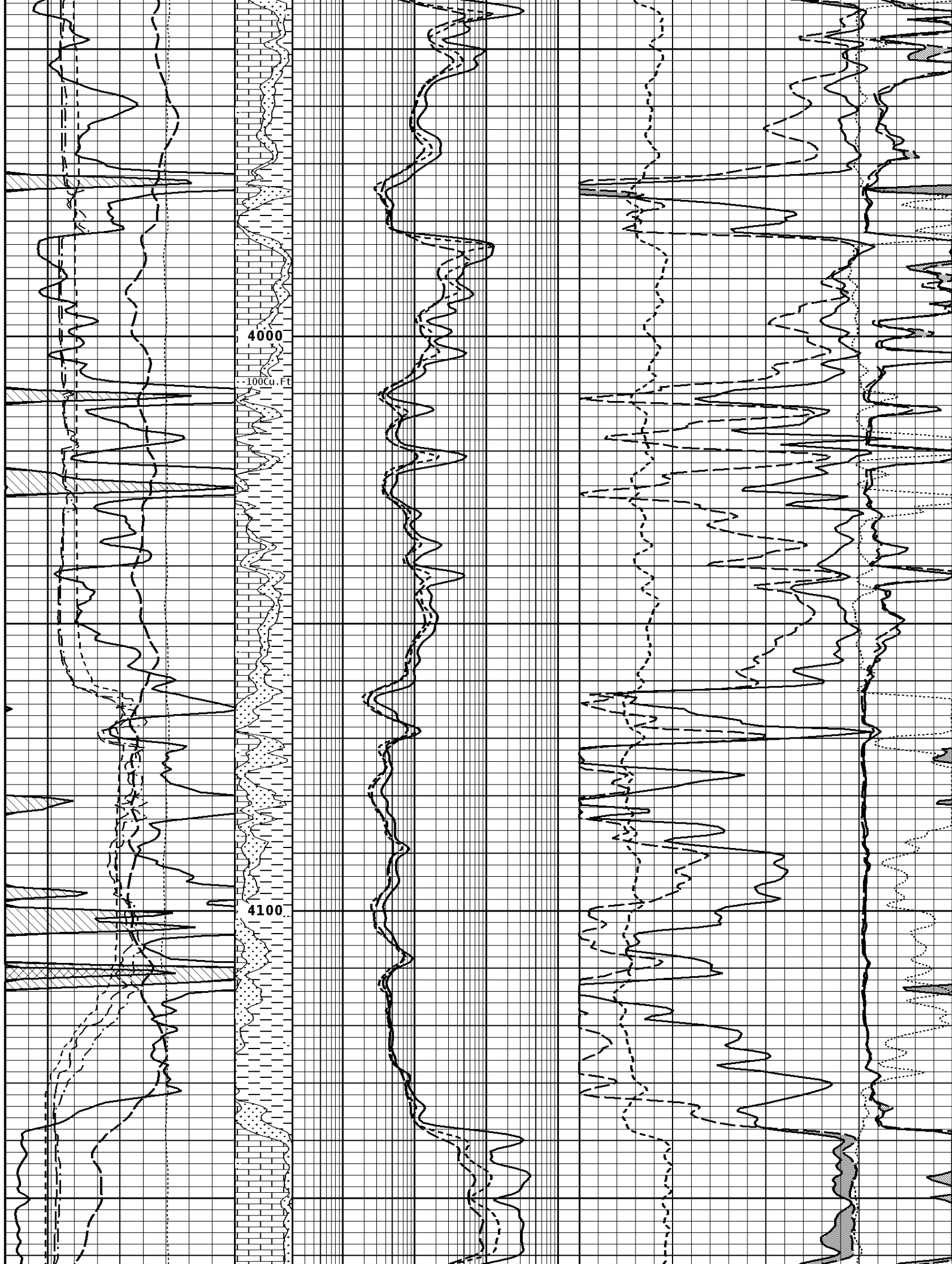


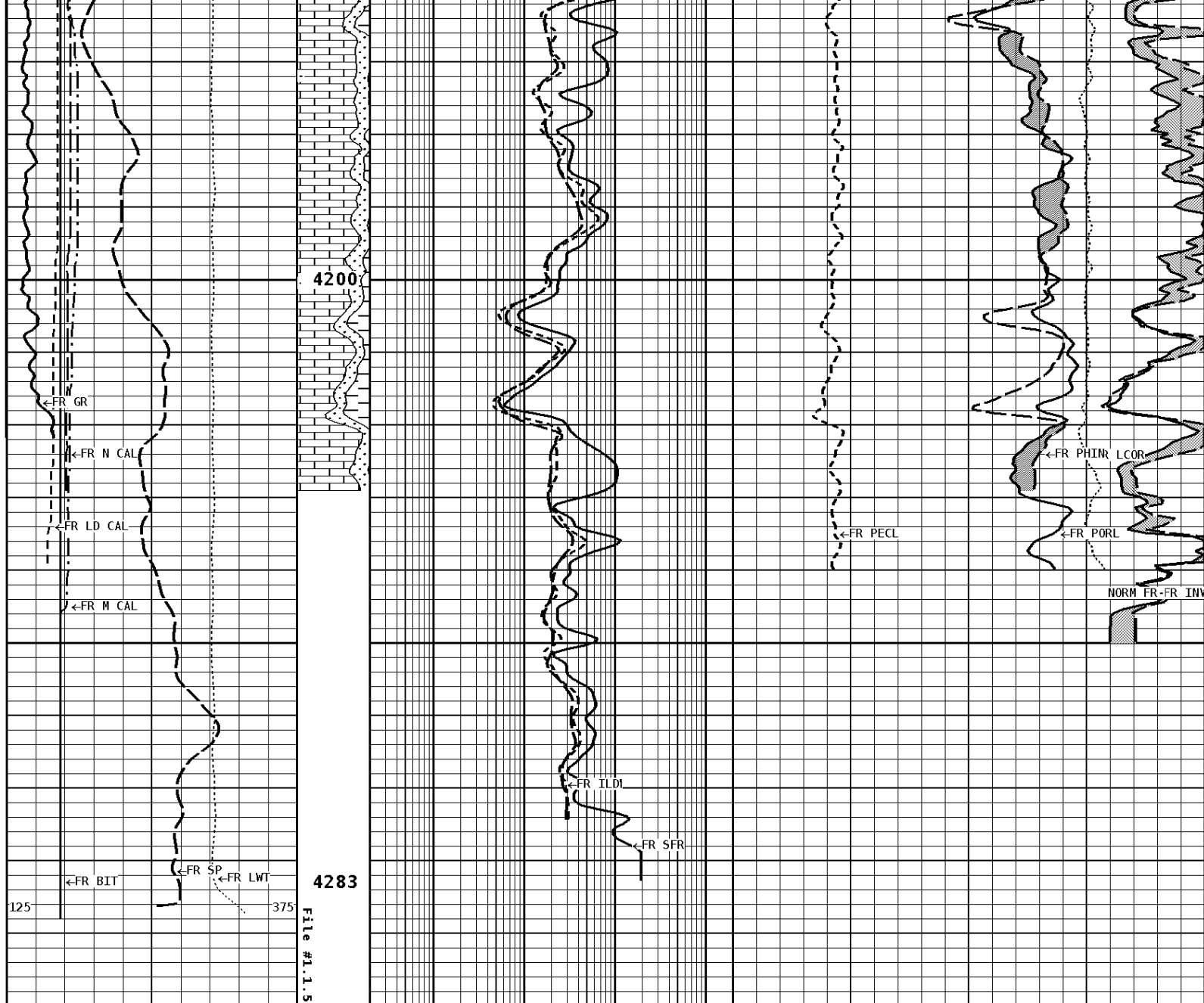












1:240 MAIN SECTION

GAMMA RAY API UNITS		BHV AHV CU. FT	MEDIUM INDUCTION OHMM		NEUTRON POROSITY (LIMESTONE) PERCENT	
150 0	300 150		0.2	2000.0	30	-10
SPONTANEOUS POTENTIAL mV		Volume Dolo/Shale	DEEP INDUCTION OHMM		DENSITY POROSITY (2.71g/cc) PERCENT	
→ ←25			0.2	2000.0	70 30	30 -10
					-10	-50
TENSION LBS		Volume Calcite	SHALLOW FOCUSED RESISTIVITY OHMM		PE CROSS-SECTION BARNS/ELECTRON	
10000	0		0.2	2000.0	0	20
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz			DENSITY CORRECTION G/CC	
16 6	26 16				-0.75	0.25
NEUTRON (Y) CALIPER INCHES (IN)						INVERSE OHMM

16	26
6	16

BIT SIZE INCHES (IN)	
6	16

CALIPER MICRO INCHES (IN)	
16	26
6	16

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
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	4283.000	ft
Borehole Temperature	125.0	degF
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	0.600	ohm/m
MSTNG Normal Correction	0.00	ohm/m
MSTNG Inverse Correction	1.25	ohm/m

Well File: MULL TJADEN_C4_SEPT25_QUINT	Scale: 1:240	Format: COMSAT
Segment: V1.D1.S4 RP	Acquired: 2014-09/26 03:52 3.3.0-12594	
Reference: 0	Processed: 2014-09/26 05:45 3.3.0-12594	

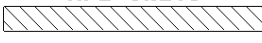
CALIPER MICRO INCHES (IN)			
16	26		
6	16		

BIT SIZE INCHES (IN)			
6	16		

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

DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	DENSITY CORRECTION G/CC
16	26		-0.75 0.25
6	16		

TENSION LBS		Volume Calcite	SHALLOW FOCUSED RESISTIVITY OHMM
10000	0		0.2 2000.0 0 20

SPONTANEOUS POTENTIAL mV		Volume Dolo/Shale	PE CROSS-SECTION BARNs/ELECTRON
→ ← 25			DENSITY POROSITY (2.71g/cc) PERCENT
		0.2 2000.0	70 30 -10
-----			-10 -50
GAMMA RAY API UNITS		BHV AHV CU.FT	MEDIUM INDUCTION OHMM
150  300	0 150		0.2 2000.0 30 -10

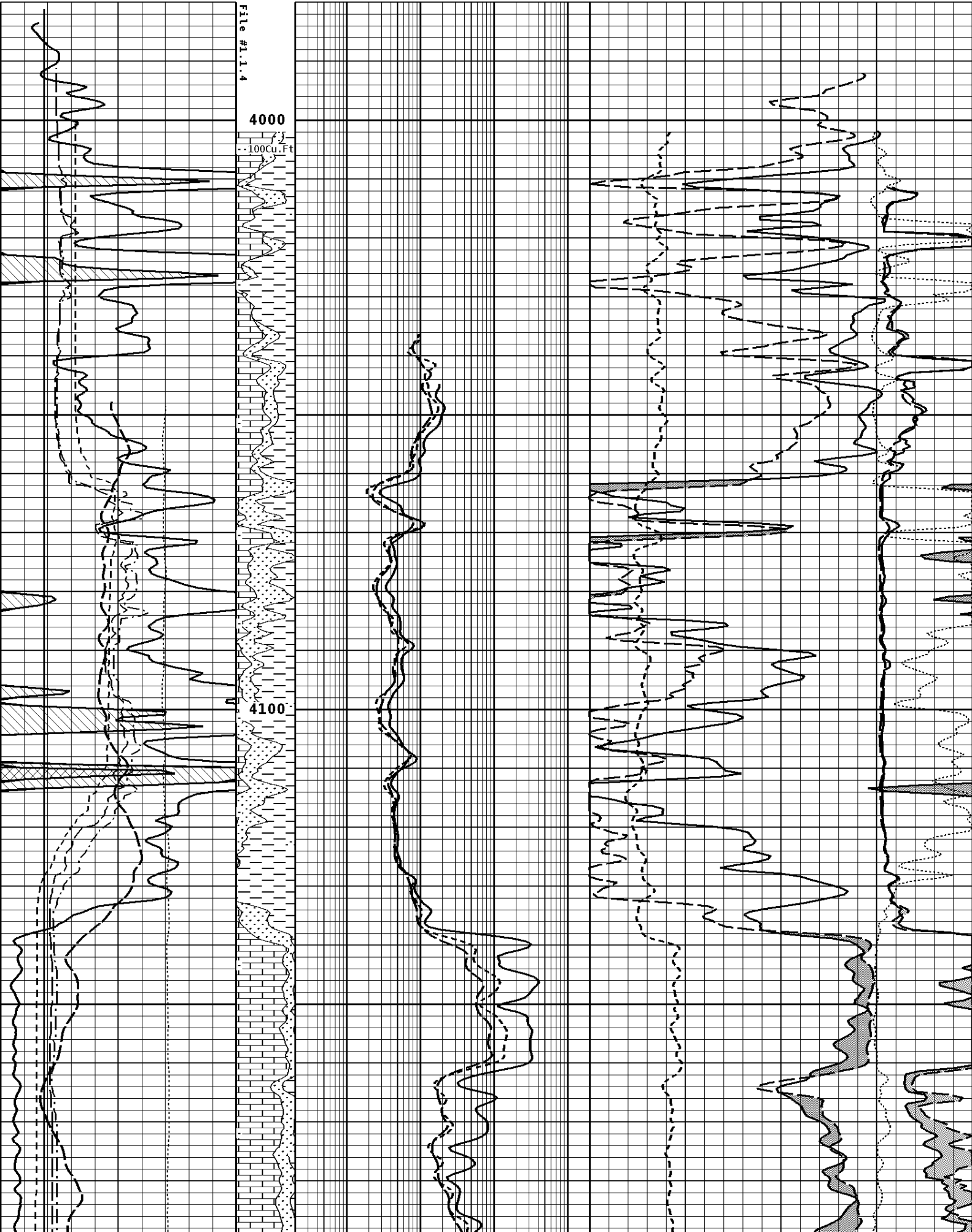
1:240 REPEAT SECTION

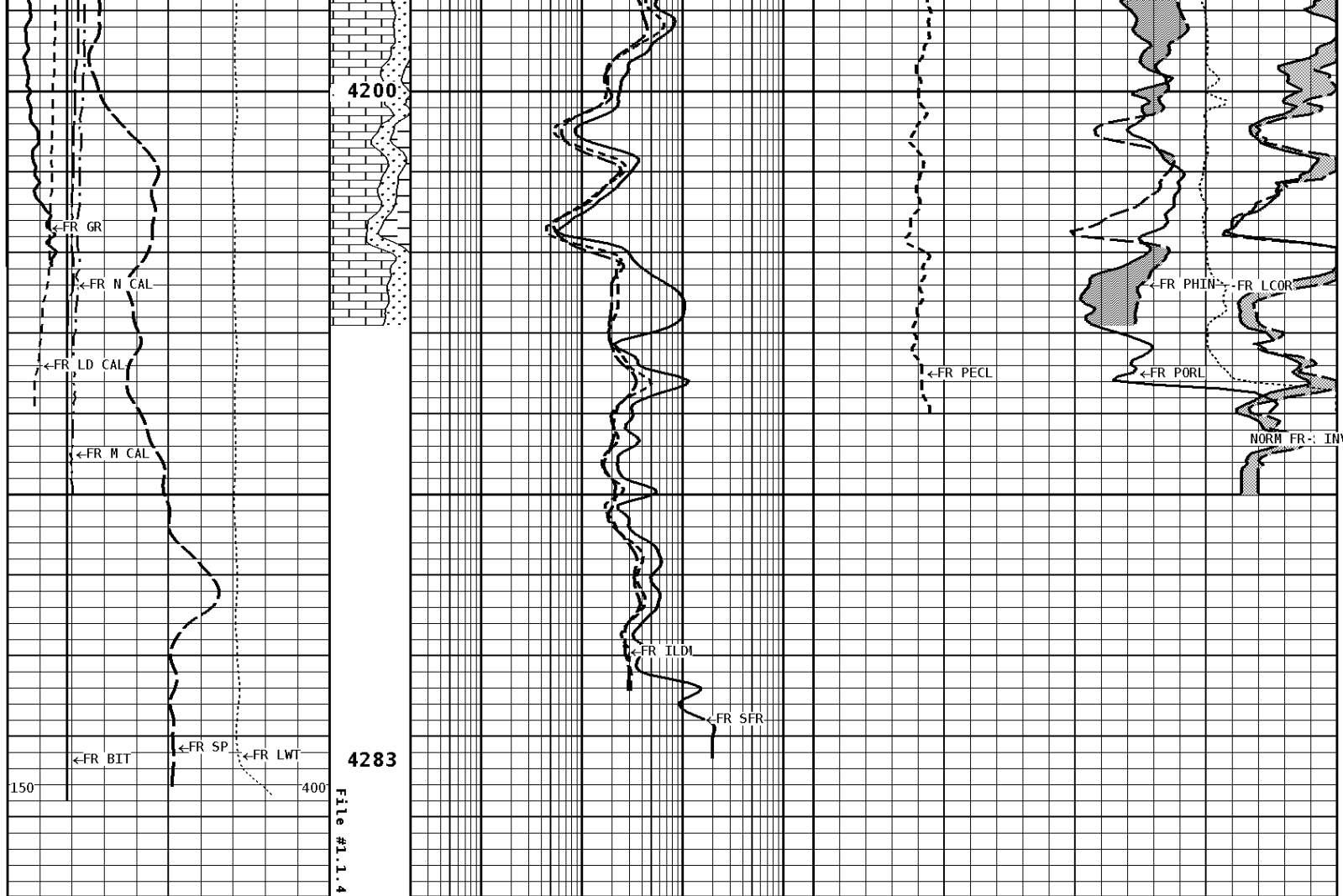
File #1.1.4

4000

--100Cu.Ft

4100





GAMMA RAY API UNITS	150 300 0 150	BHV ANV CU.FT	MEDIUM INDUCTION OHMM	NEUTRON POROSITY (LIMESTONE) PERCENT
			0.2 2000.0	30 -10
SPONTANEOUS POTENTIAL mV	→ ←25	Volume Dolo/Shale	DEEP INDUCTION OHMM	DENSITY POROSITY (2.71g/cc) PERCENT
			0.2 2000.0	70 30 -10 -50
TENSION LBS	10000 0	Volume Calcite	SHALLOW FOCUSED RESISTIVITY OHMM	PE CROSS-SECTION BARNs/ELECTRON
			0.2 2000.0	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				

* 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	4283.000	ft
Borehole Temperature	125.0	degF
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	0.600	ohm/m
MSTNG Normal Correction	0.00	ohm/m
MSTNG Inverse Correction	1.25	ohm/m

* Calibration Summary *

Shop Calibration GRT-B					
Performed : 21-APR-2014			Time : 11:21		
Sensor Suite : GR-GR5			ID : GRT-BB-107		
	Measured	Units	Calibrated	Units	
	Background	Jig	Jig		
GR	75	381	175	GRAPI	
Shop Calibration CNT-AA					
Performed : 22-SEP-2014			Time : 10:50		
Sensor Suite : CALI-BCN			ID : NDT-BB-103		
	Jig - Measured		Jig - Calibrated	Units	
	Ring#1 Ring#2		Ring#1 Ring#2		
CL # 1	9.1 14.0		6.0 12.0	IN.	
Performed : 22-Sep-2014			Time : 10:07		
Sensor Suite : BHC NEUT			ID : CNP-AA-116-		
Source ID : N-1045					
	Tank		Verification	Units	
	Measured	Calibrated	Jig		
N/F	3.8497	3.6893	3.6848		
Porosity	23.0	20.5	20.4	%	
Shop Calibration LDT-DF					
Performed : 04-SEP-2014			Time : 13:21		
Sensor Suite : CALI-LTH			ID : PDT-GA-465		
	Jig - Measured		Jig - Calibrated	Units	
	Ring#1 Ring#2		Ring#1 Ring#2		
CL # 1	7.2 10.9		6.0 12.0	IN.	
Performed : 04-Sep-2014			Time : 11:38		
Sensor Suite : BHCPELNG			ID : LDP-DA-065		
Source ID : 2991GW					
	Short Space				
	BKGD	Al	Mg	Al+Fe	Units
LSW1	68	1135	1823	720	CPS
LSW2	72	1368	2170	957	CPS
LSW3	267	3113	5000	2590	CPS
LSW4	333	2770	4008	2406	CPS
LSW5	31	56	62	51	CPS
LSW6	88	91	89	91	CPS
LSW7	55	59	58	59	CPS
LSW8	1	4	5	4	CPS
QS	0.237	0.209	0.208	0.213	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC

Long Space					
	BKGD	Al	Mg	Al+Fe	Units
LLW1	133	1332	5445	790	CPS
LLW2	176	2298	8926	1638	CPS
LLW3	533	4103	15396	3472	CPS
LLW4	534	1981	6289	1758	CPS
LLW5	65	73	134	71	CPS
LLW6	156	150	142	151	CPS
LLW7	105	102	95	102	CPS
LLW8	6	9	20	8	CPS
QL	0.192	0.190	0.199	0.192	
PEL			2.697	5.458	
LSDN		2.600	1.680		G/CC

Shop Calibration MST-DA

Performed : 10-Sep-2014 Time : 10:05
Sensor Suite : CALI-MSN ID : MST-DA-26

		Jig - Measured		Jig - Calibrated		Units
		Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1		7.0	11.1	6.0	12.0	IN.

Performed : 10-Sep-2014 Time : 10:01
Sensor Suite : MSTDA-NI ID : MST-DA-26

Internal						
		Measured		Calibrated		
	Zero	Reference	Units	Zero	Reference	Units
INV-V	79.0	29879.9		0.00	1546.00	MV
NOR-V	0.0	29958.1		0.00	1546.00	MV
IN-C	0.0	30310.3		0.00	15.46	UA
INV-R					32.34	OHMM
NOR-R					55.11	OHMM

Shop Calibration CST-AD

Performed : 20-MAY-2014 Time : 18:11
Sensor Suite : SON-ANA ID : CST-AB-25

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 PIT-CA

Performed : 10-Sep-2014 Time : 11:40
Sensor Suite : P-IND-T ID : PIT-CA-075

Medium						
		Measured		Calibrated		
		R	X	R	X	Units
Air		131419	129931	1.4	0.2	MMHOS
Zero		131070	131067	-10.2	45.4	MMHOS
Reference		250682	249654	4989.8	5045.4	MMHOS
Loop		129961	216623	3595.7	3716.3	MMHOS
Sonde Error				0.5	-7.1	MMHOS
Cond				4989.8	5045.4	MMHOS
Deep						
		Measured		Calibrated		
		R	X	R	X	Units
Air		128119	131856	0.3	-1.2	MMHOS
Zero		131062	131059	52.1	-18.8	MMHOS
Reference		238518	237019	2052.1	1981.2	MMHOS
Loop		126986	223844	1715.5	1756.2	MMHOS
Sonde Error				-6.7	0.1	MMHOS
Cond				2052.1	1981.2	MMHOS
Temperature						
		Measured		Calibrated		
		Low	High	Low	High	Units
		16980.0	56920.0	70.0	350.0	DEGF

Performed : 10-Sep-2014			Time : 11:51		
Sensor Suite : SFL			ID : PIT-CA-075		
Internal					
	Measured		Calibrated		
	Zero	Reference	Zero	Reference	Units
Im	32770.2	49049.9	0.0	7028.0	uA
Ib	32767.1	49093.1	0.0	1750.0	mA
MOM1	32794.6	56675.8	0.0	175.0	mV
Equivalent SFL				43.97	OHMM

Performed : 10-SEP-2014			Time : 11:47		
Sensor Suite : P-SP			ID : PIT-CA-075		
Internal					
	Measured		Calibrated		
	Zero	Reference	Zero	Reference	Units
	32768.0	58944.2	0.0	1000.0	mV



Company: MULL DRILLING COMPANY, INC.
 Well: TJADEN "C" #4
 Location: 1980' FSL & 660' FWL
 Logged: 09-25-2014
 K.B. Elev: 1486.0 Ft