

Tucker

ENERGY SERVICES

COMPOSITE 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:	Services:
Drilling Measured From:	KB	KB 1400.00	CNT
Log Measured From:	KB	DF 1399.00	PIT
Above Permanent Datum:	10.00 Ft	GL 1390.00	MLT
Date	12-22-2014		
Run Number	1		
Depth--Driller	5457.0 Ft		
Depth--Logger	5452.0 Ft		
First Reading	5452.0 Ft		
Last Reading	320.0 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		
RMF@Measured Temp.	1.000 @ 50 F		
RMF@Measured Temp	0.850 @ 50 F		
RMF@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'

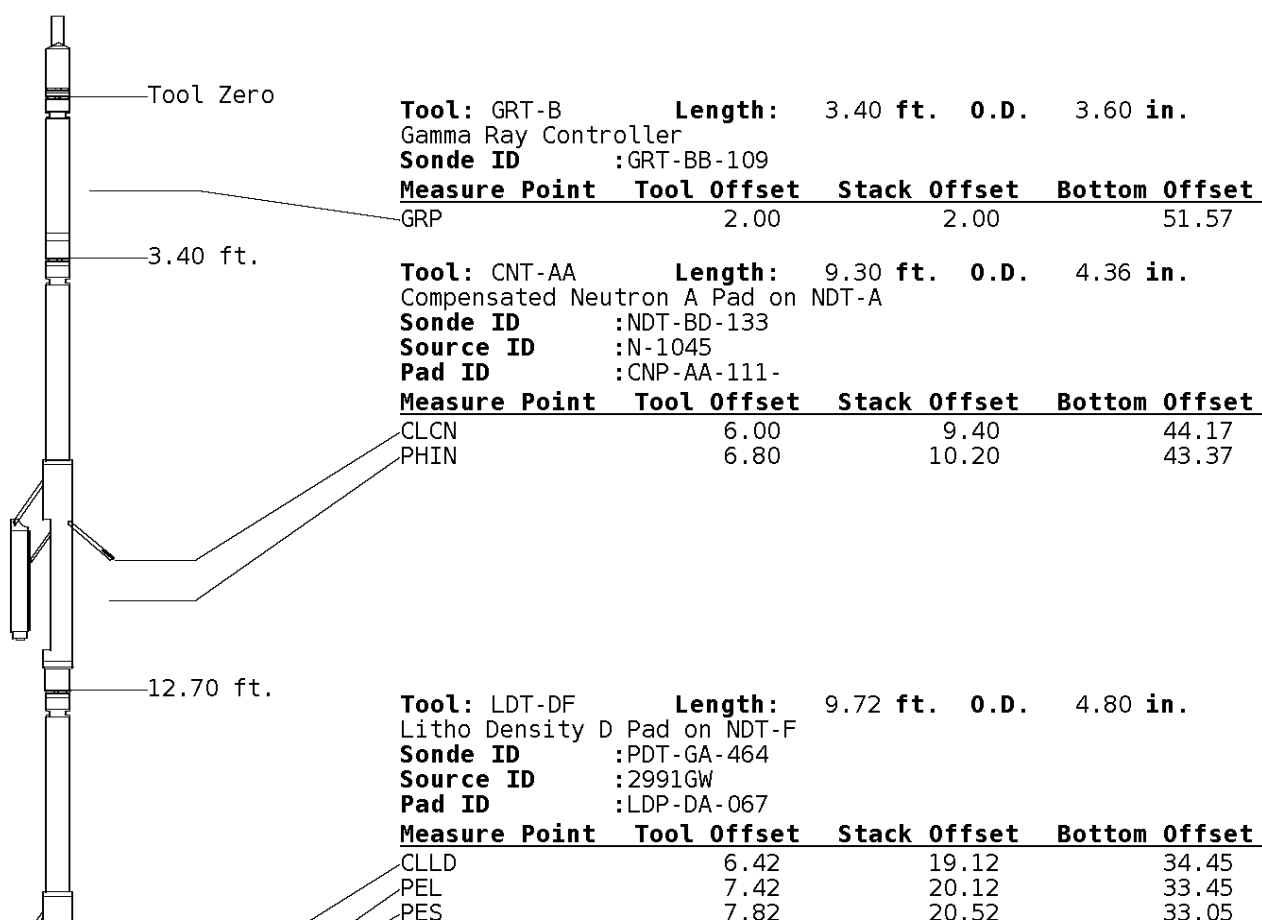
GRT; GRP,
 CNT; PHIN, CLCNIN
 LDT; PORL, LCORN, PECLN, LDENN, CLLDIN
 MLT; NOR.RF, INV.RF, MSCLPIN.
 PIT; ILD, ILM, SPU, SFLAEC, CIRD

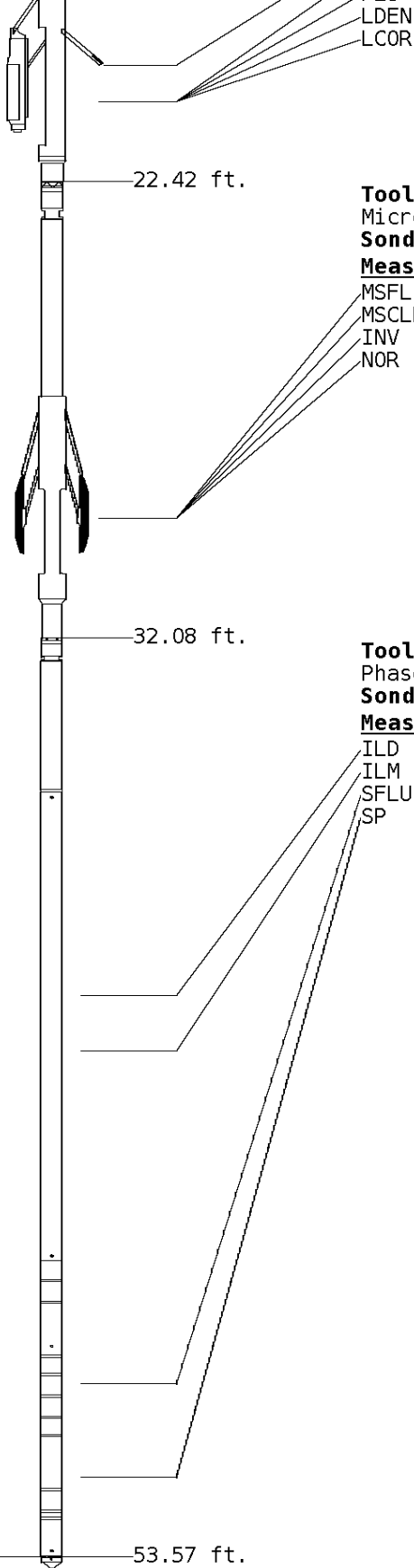
OPERATORS;

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.





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

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	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

Well File: chief-ahs-11-mstk-dec-22

Scale: 1:240 Format: COMSAT

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

CALIPER MICRO
INCHES (IN)

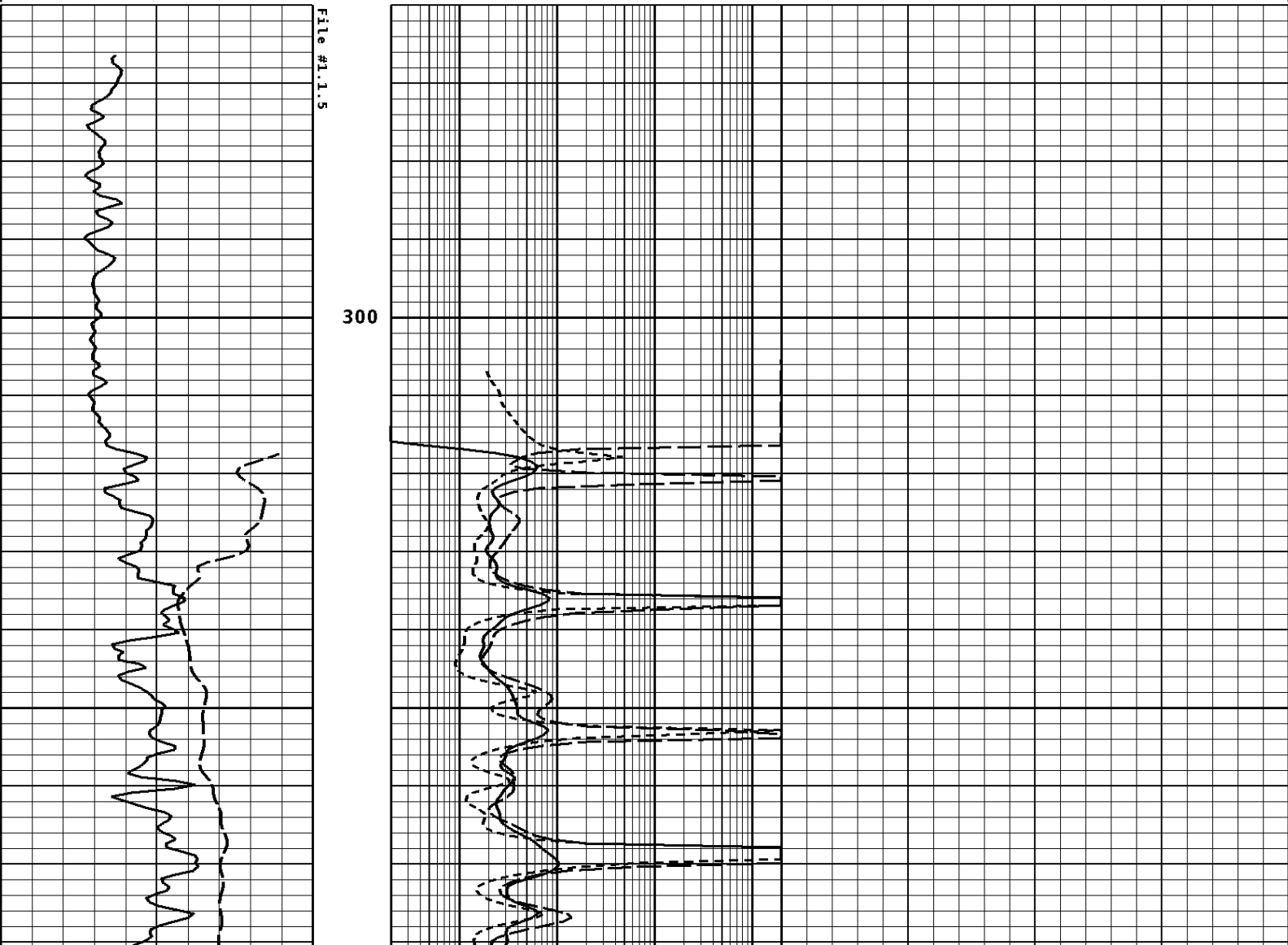
16 26
6 16

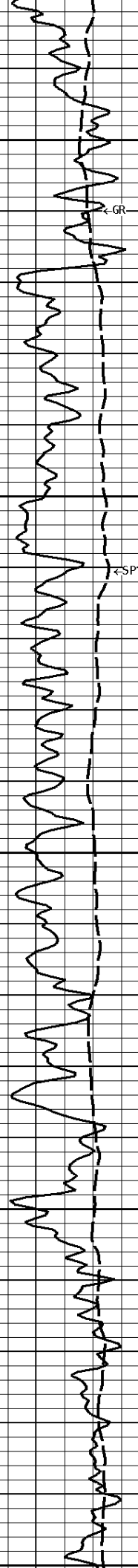
BIT SIZE
INCHES (IN)

NORHAL
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			-0.75	0.25
6	16				
TENSION LBS		Volume Calcite	SHALLOW FOCUSED RESISTIVITY OHMM	PE CROSS-SECTION BARNs/ELECTRON	
10000	0		0.22000.0	0	20
SPONTANEOUS POTENTIAL mV		Volume Dolo/Shale	DEEP INDUCTION OHMM	DENSITY POROSITY (2.71g/cc) PERCENT	
→ ←25			0.22000.0	7030	30-10
				-10	-50
GAMMA RAY API UNITS		BHV AHV CU.FT	MEDIUM INDUCTION OHMM	NEUTRON POROSITY (LIMESTONE) PERCENT	
150	300		0.22000.0	30	-10
0	150				

1:240 MAIN SECTION

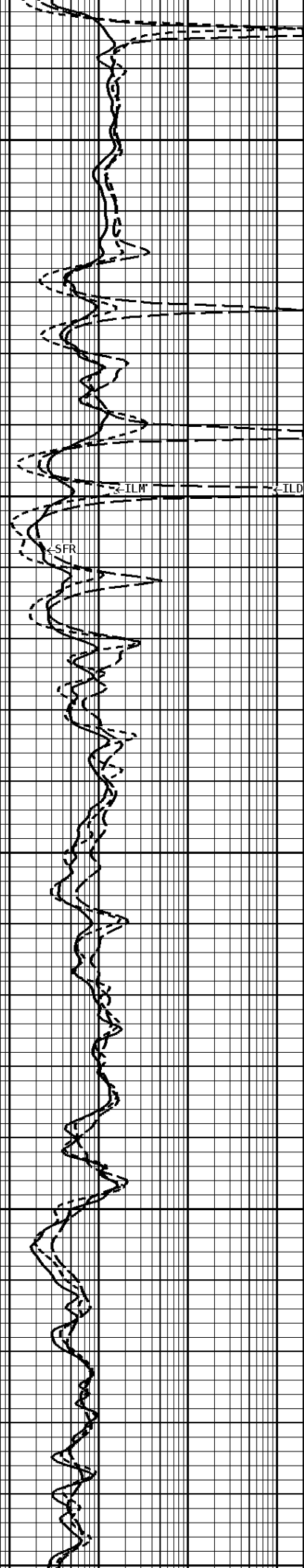


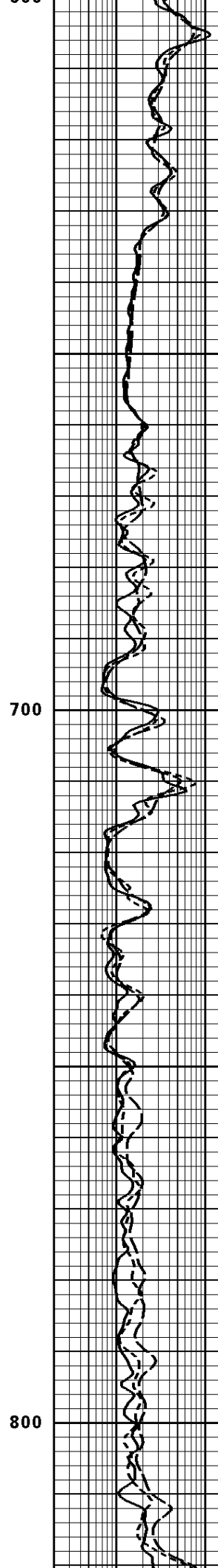
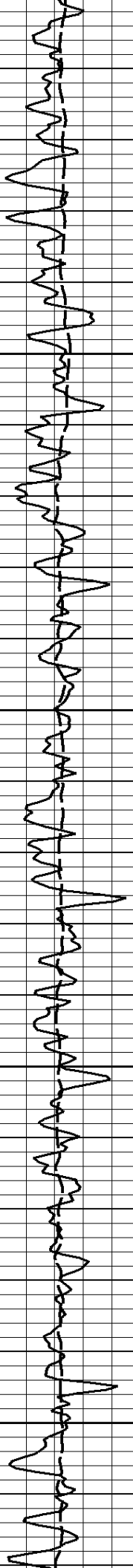


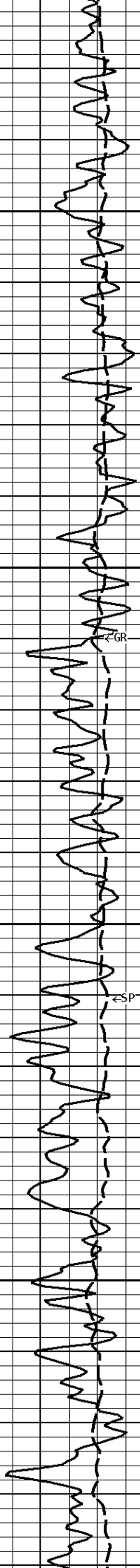
400

500

600

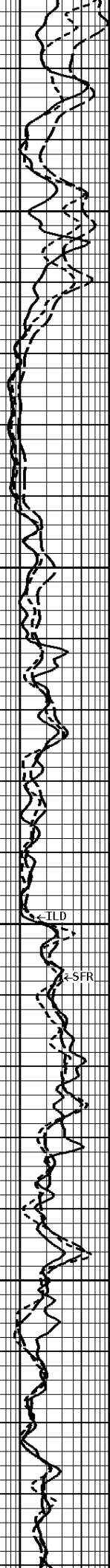






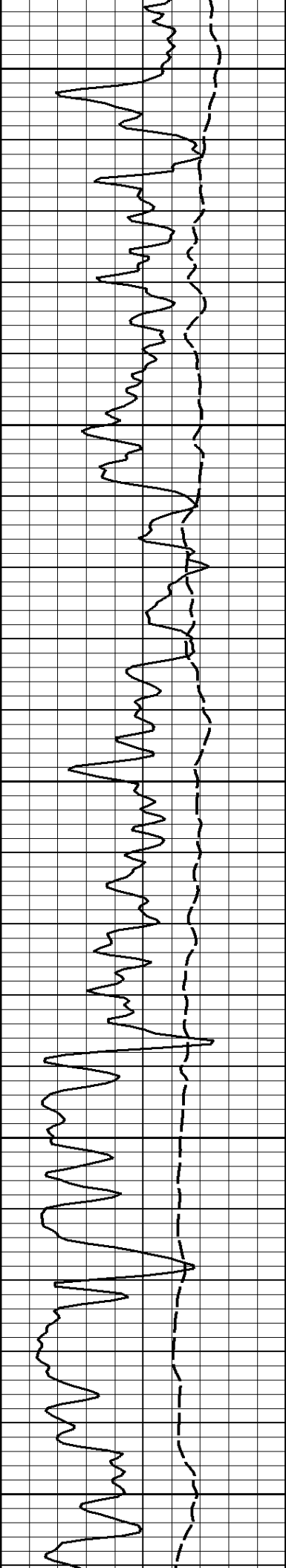
900

1000

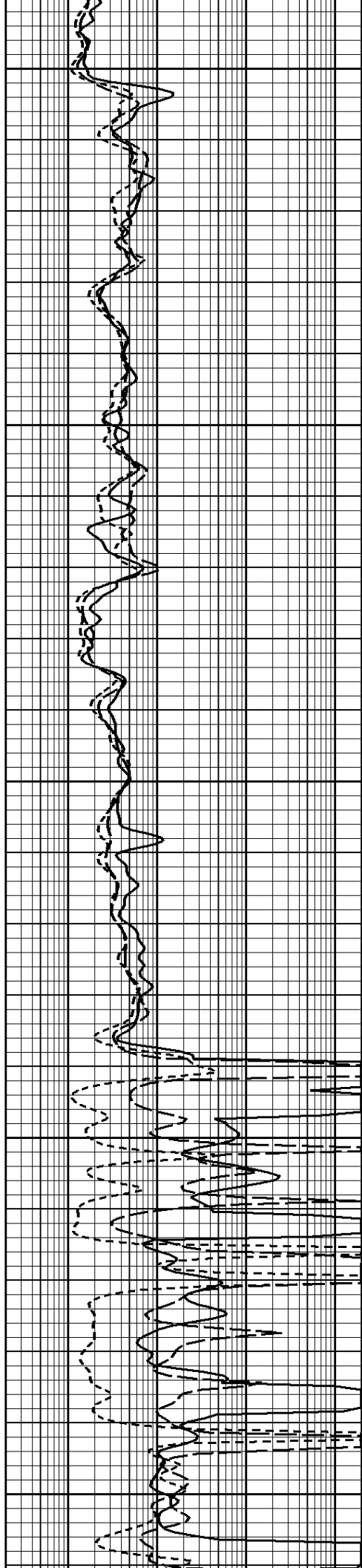


TLD

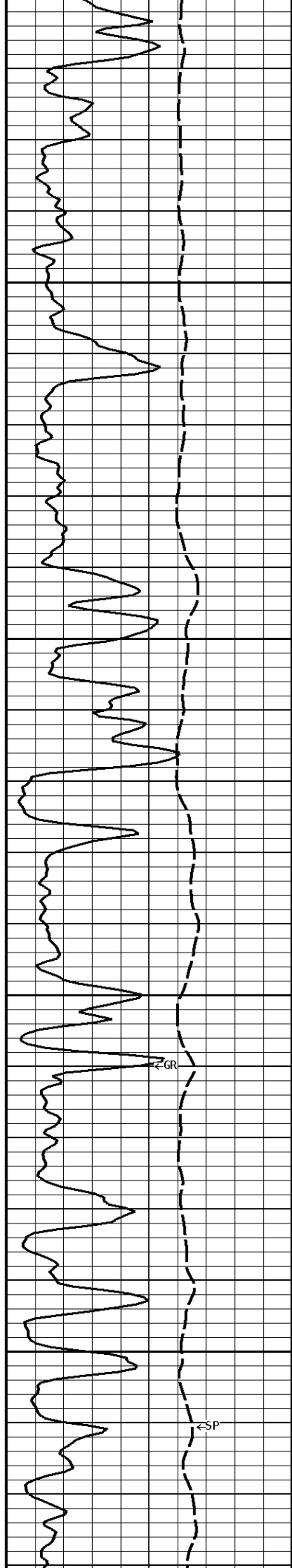
SFR



1100



1200

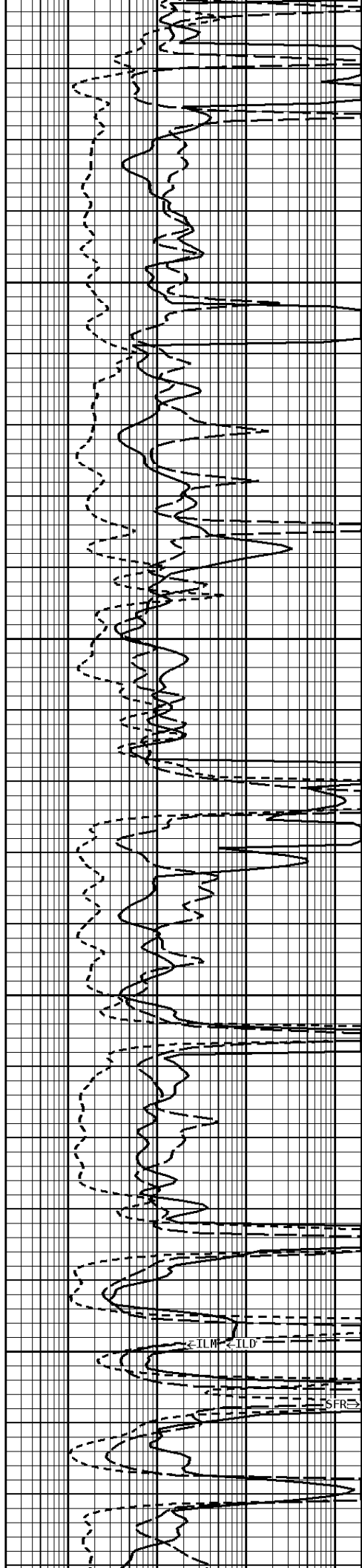


1300

1400

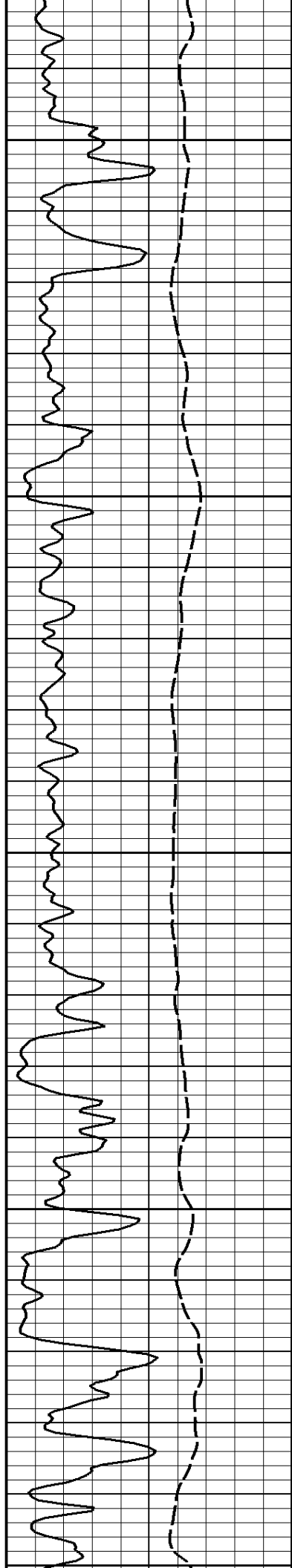
GR

SP



TLM

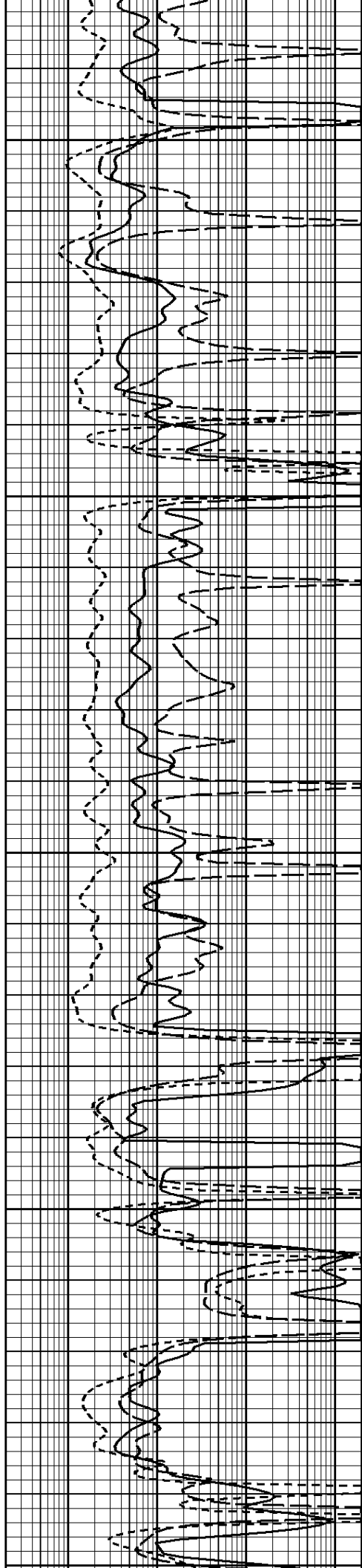
SFR

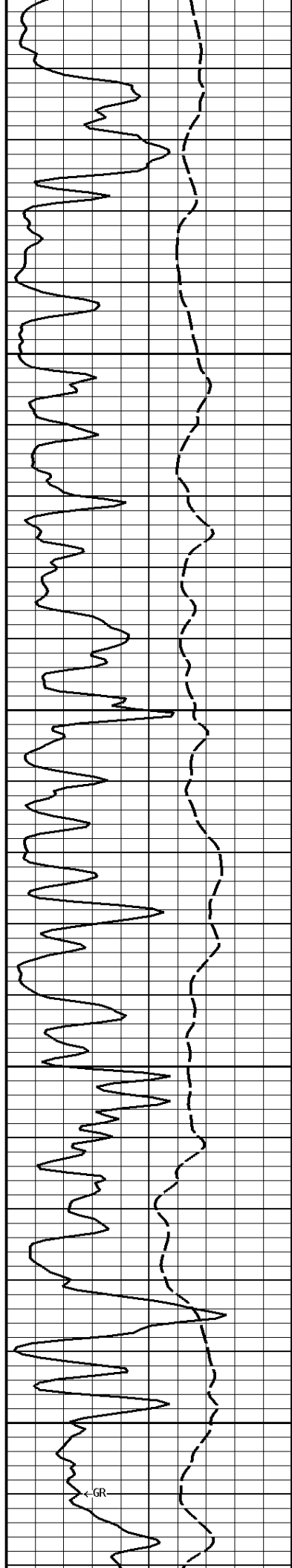


1500

1600

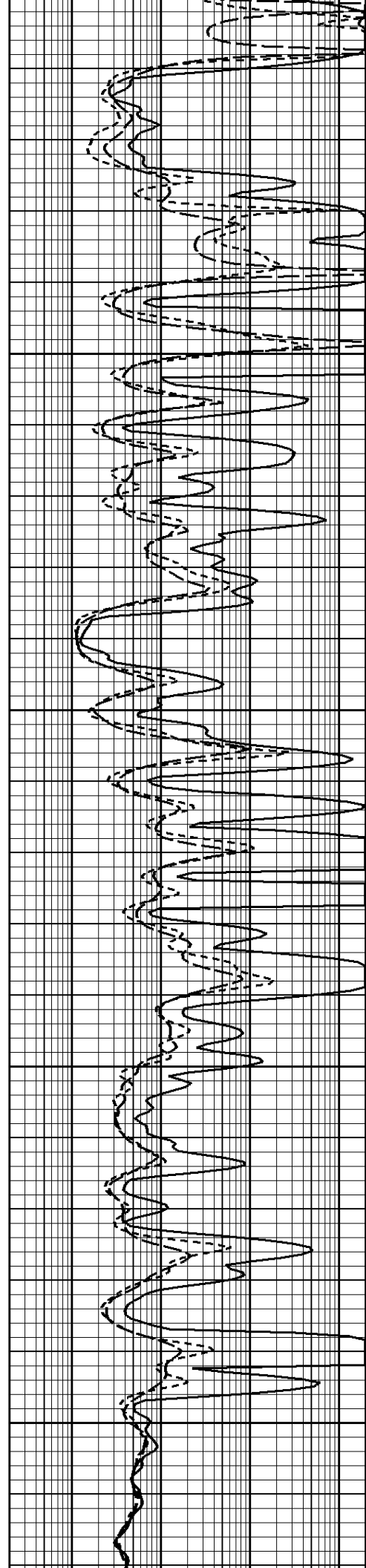
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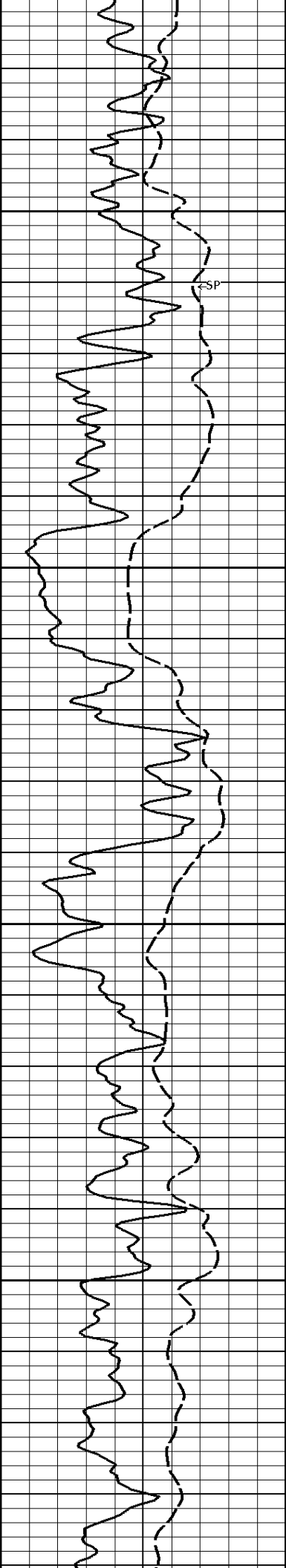




1800

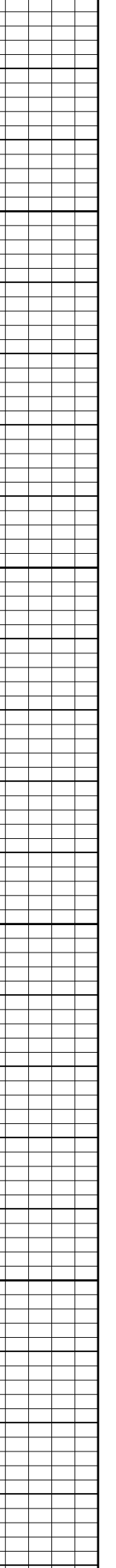
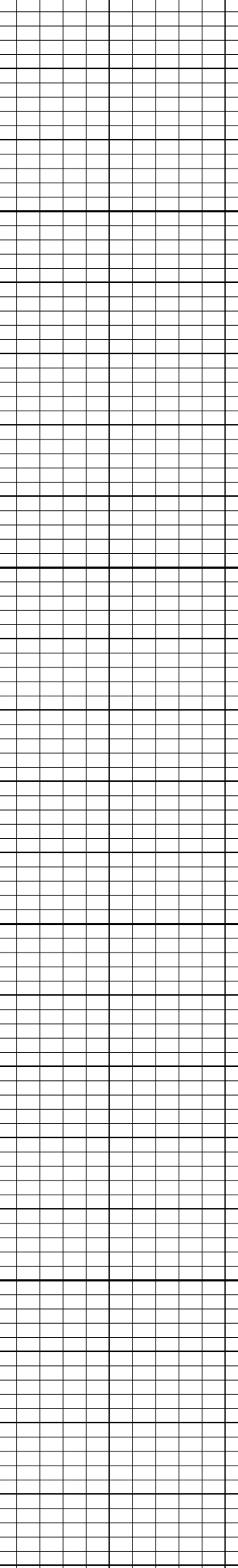
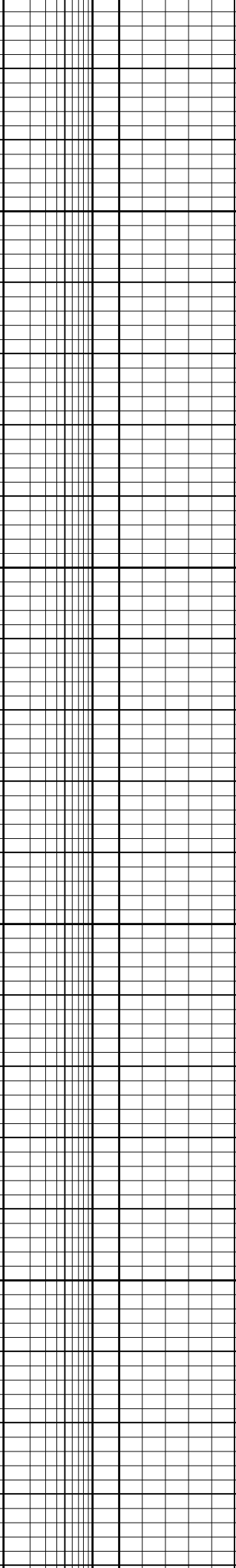
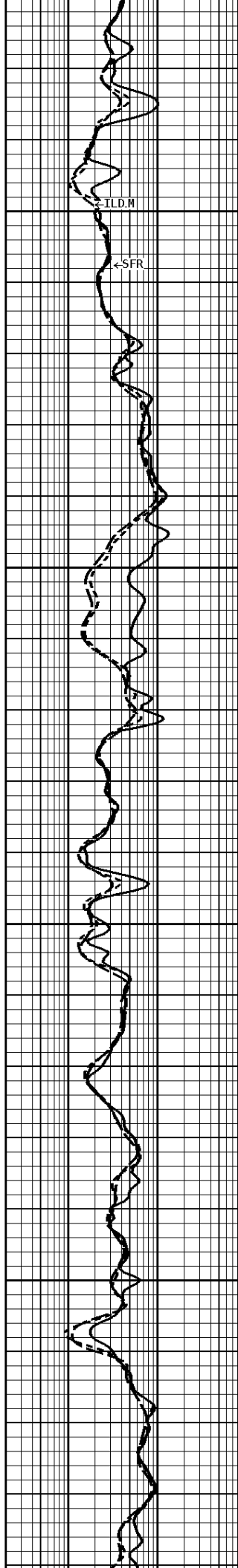
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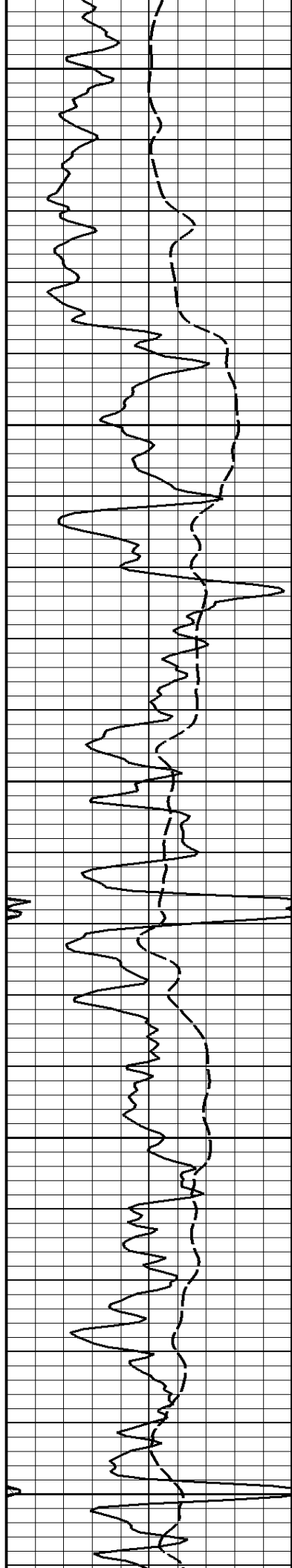




2000

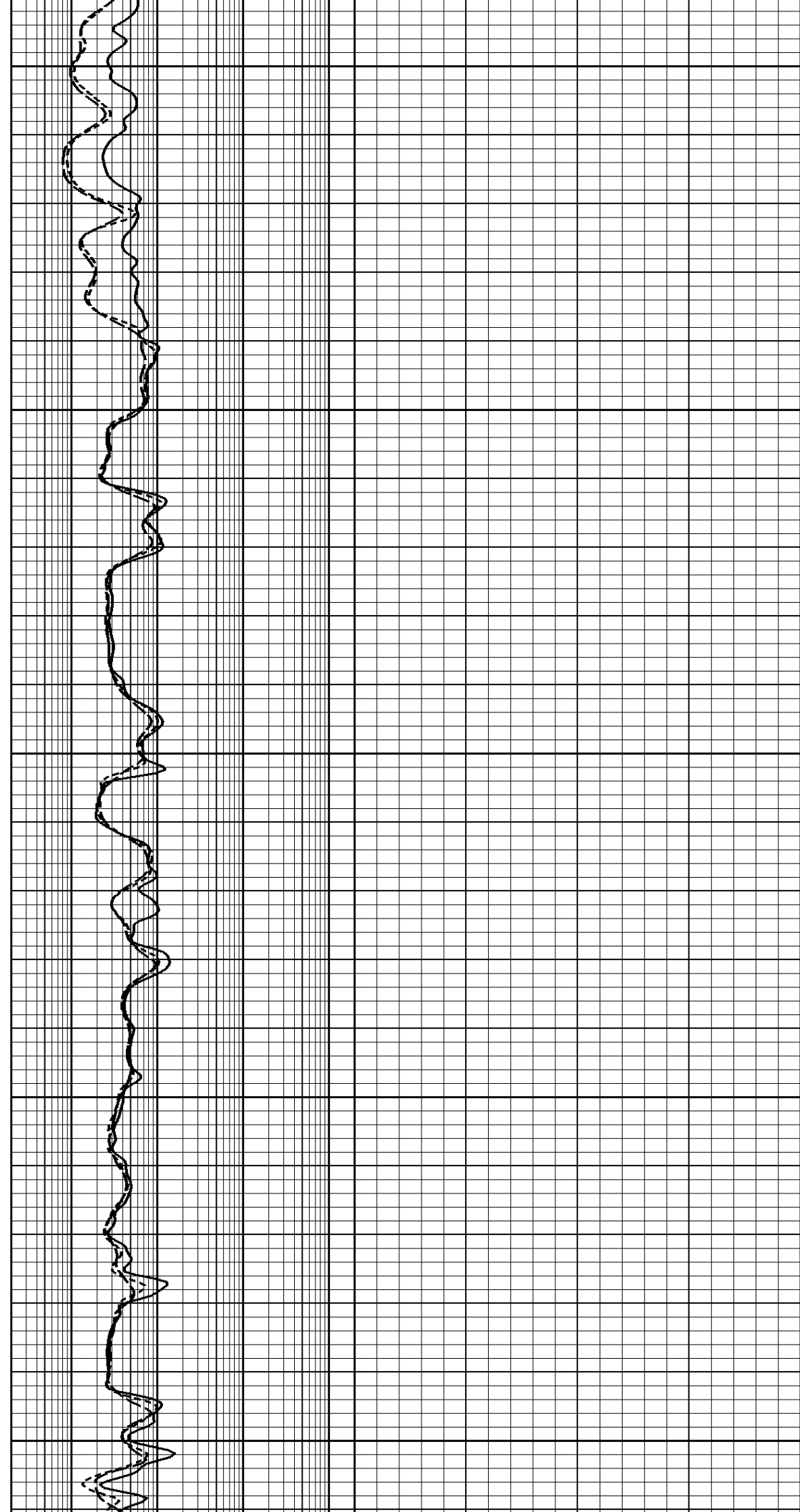
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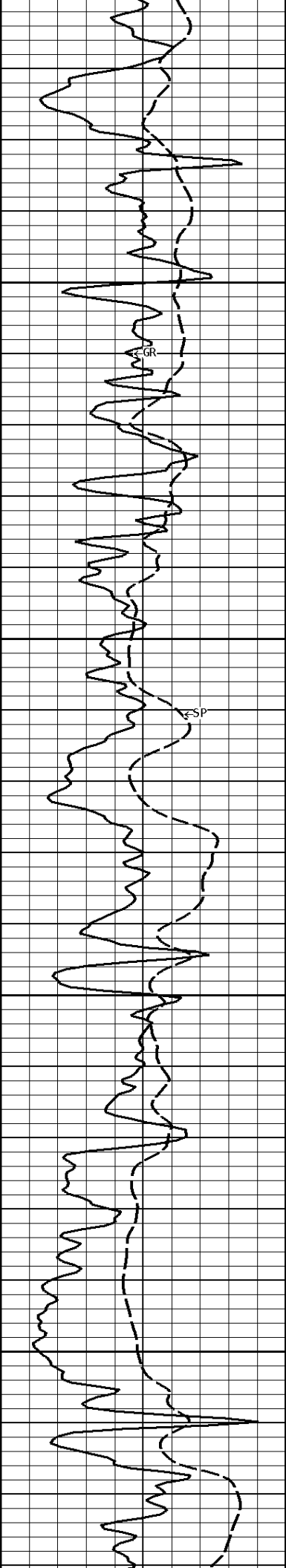




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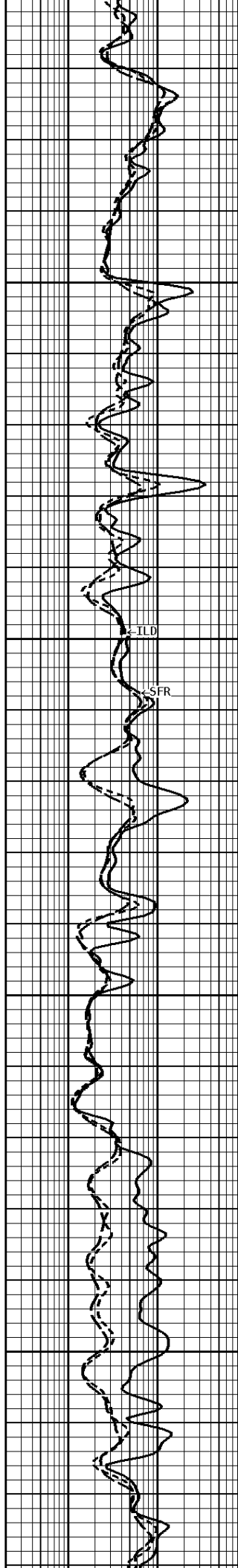
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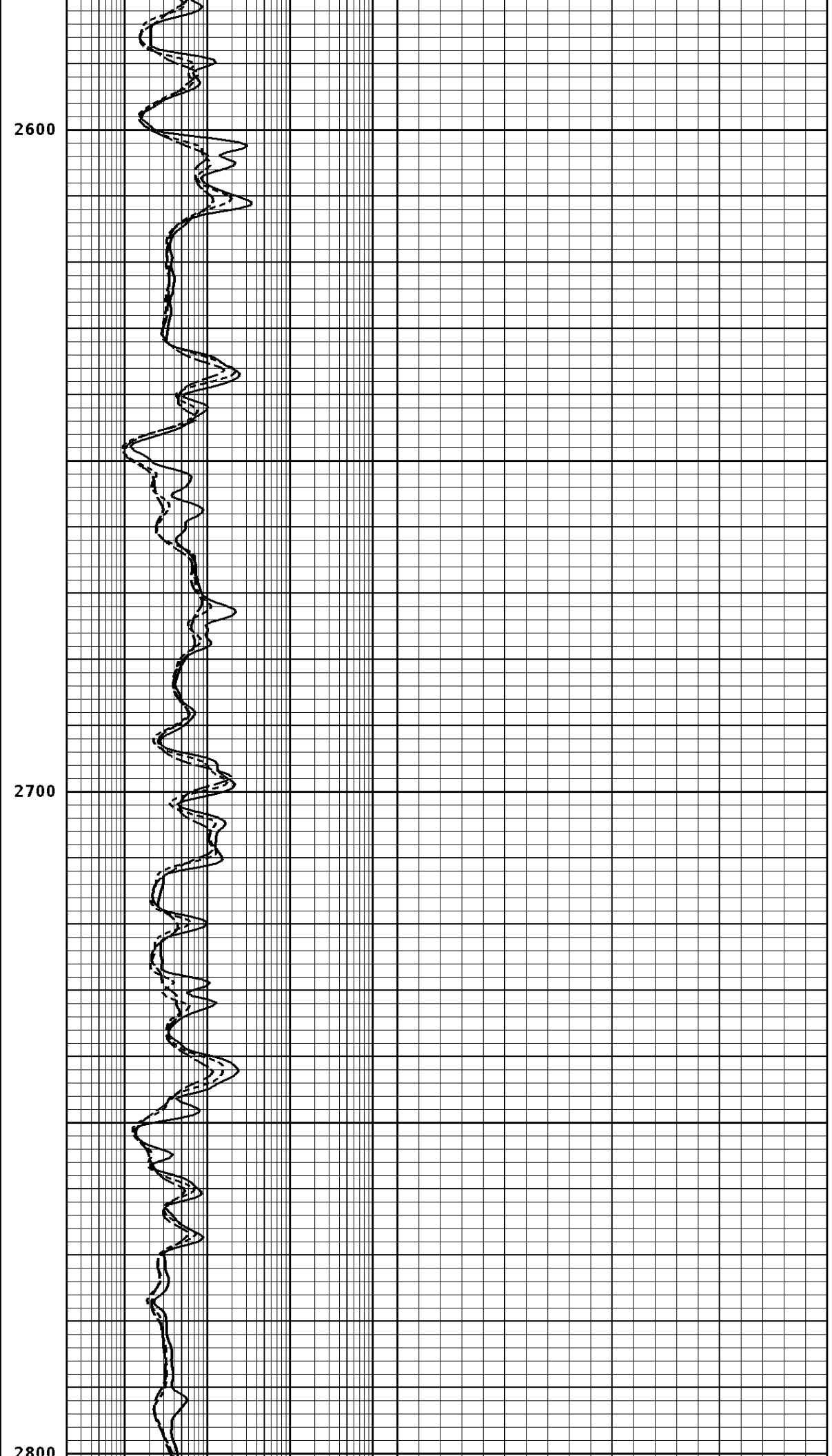
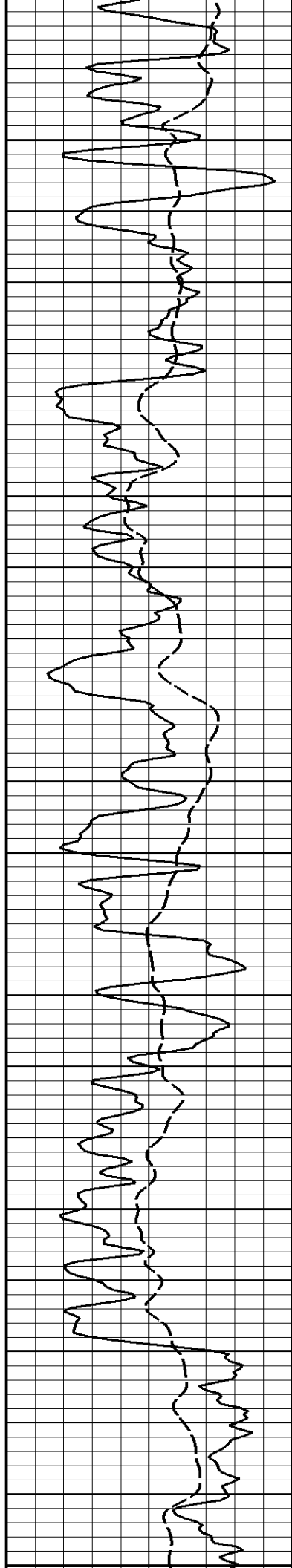


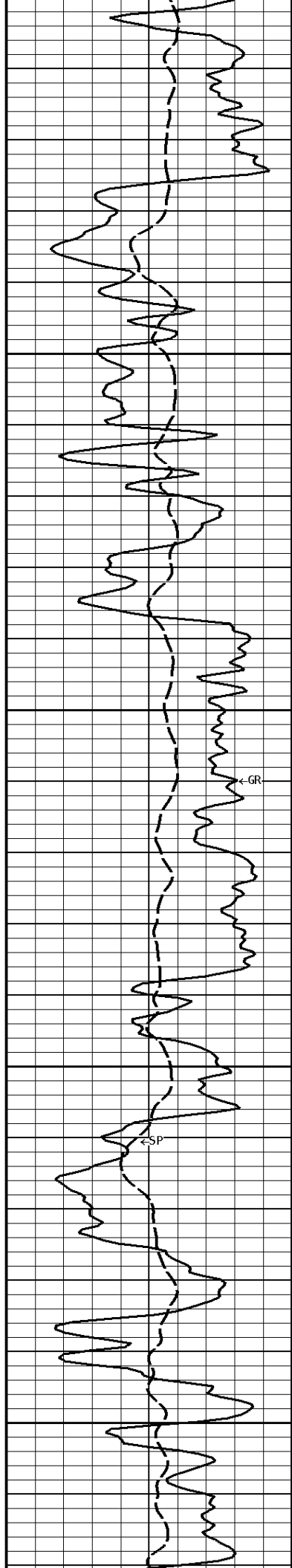


2400

2500



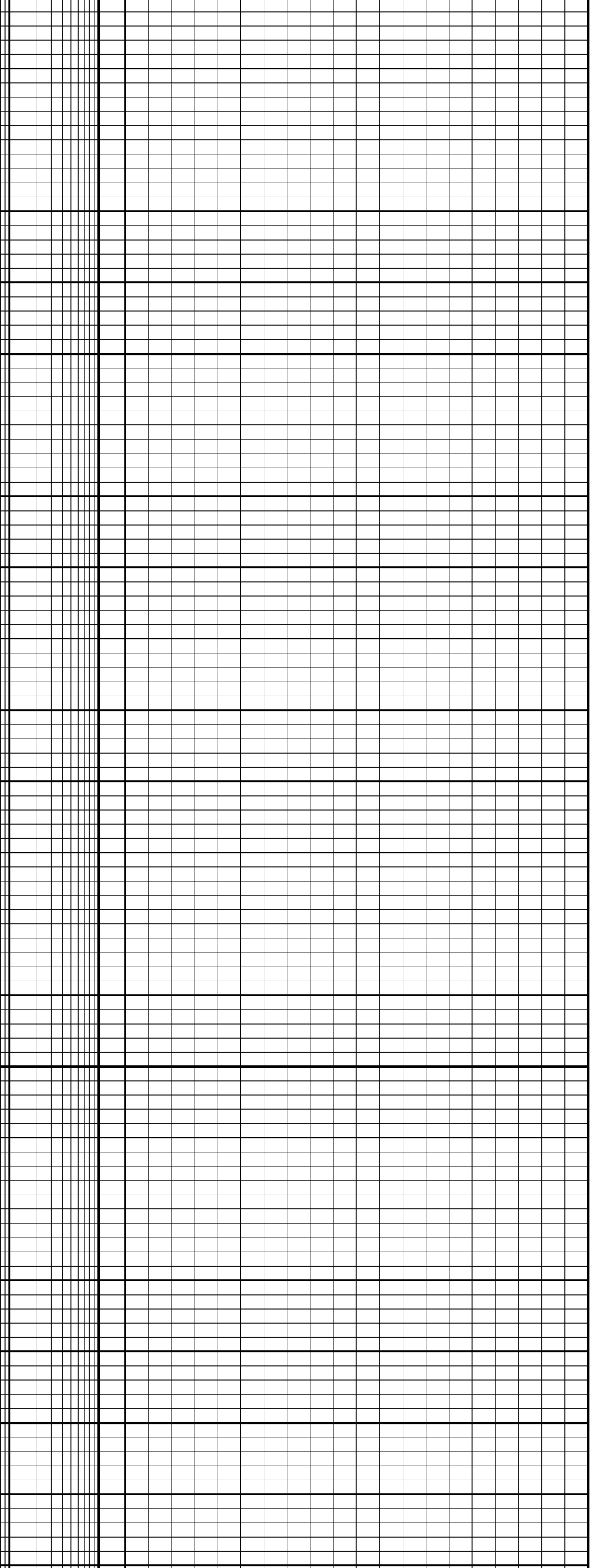
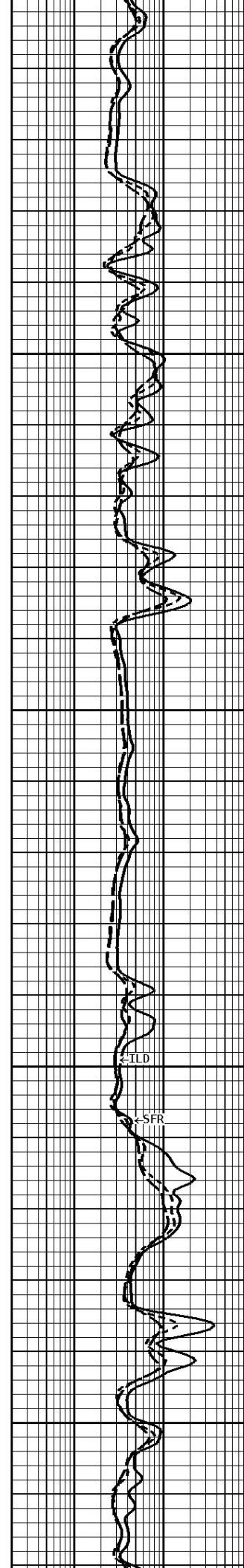


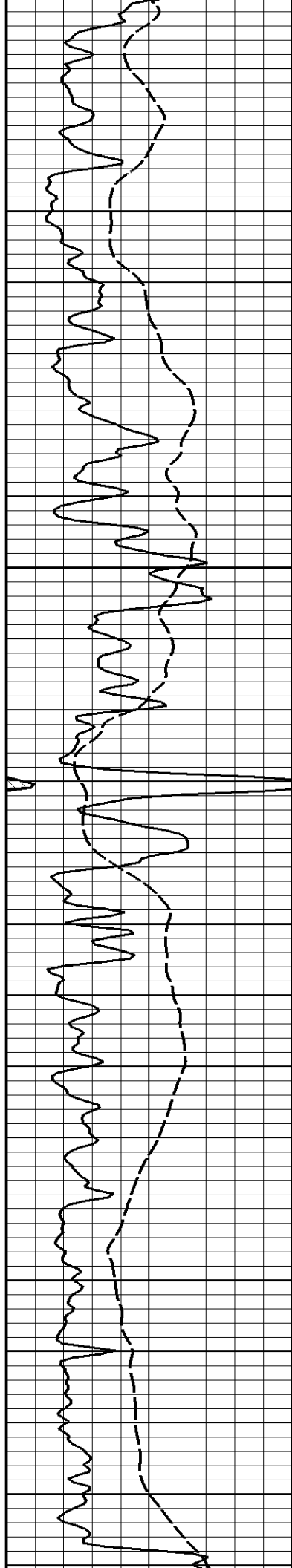


2880

2900

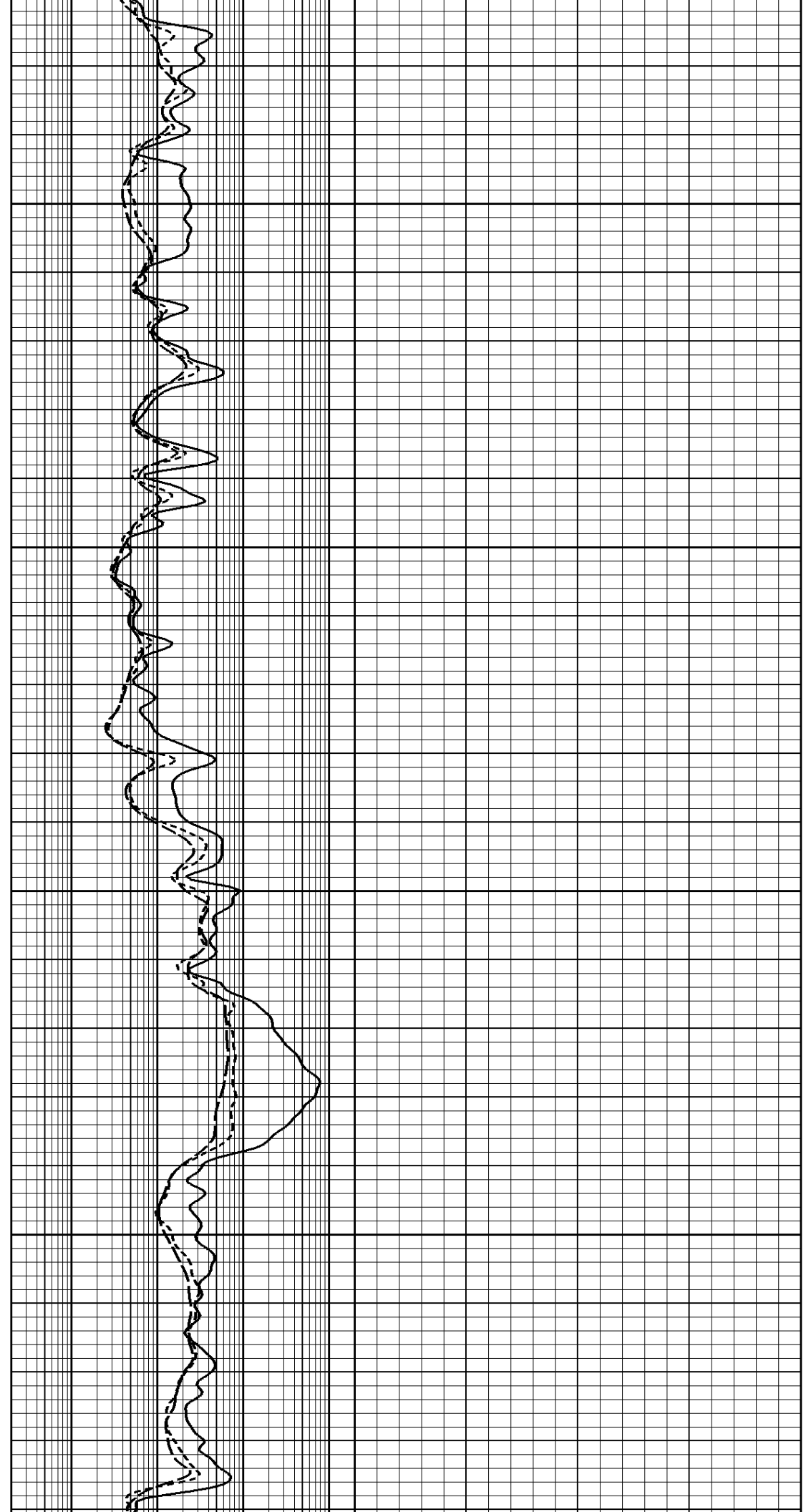
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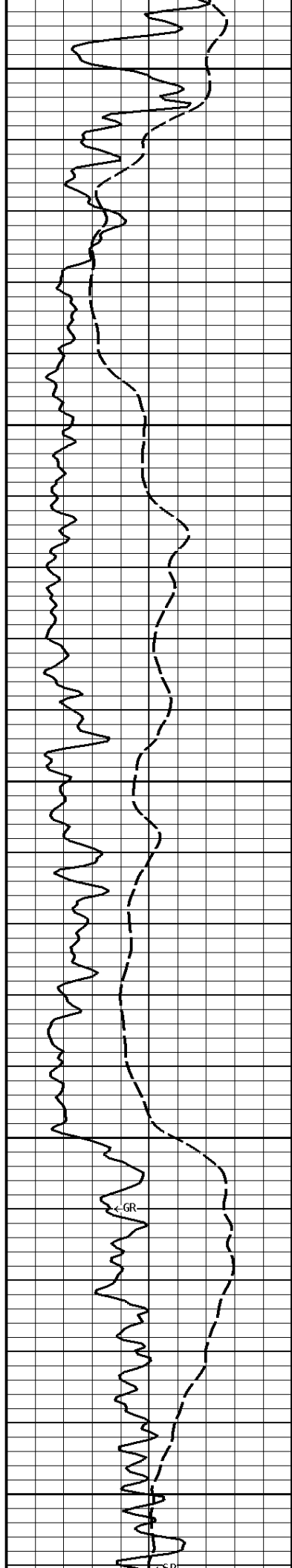




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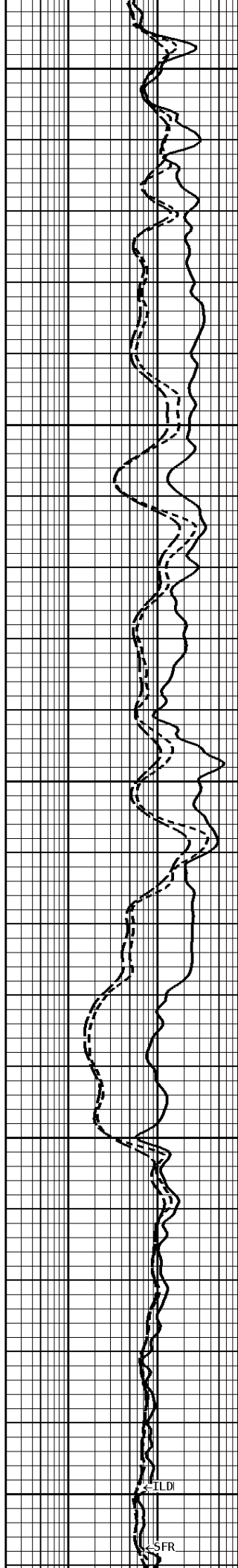
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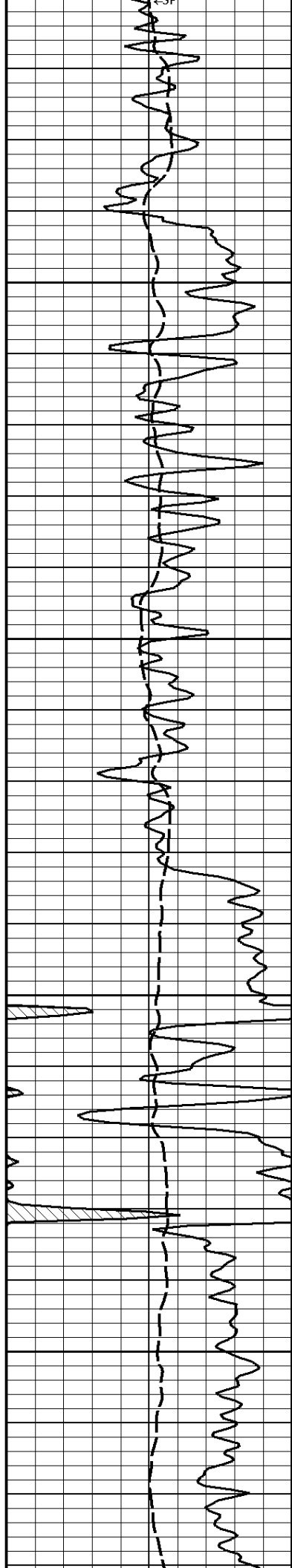




3300

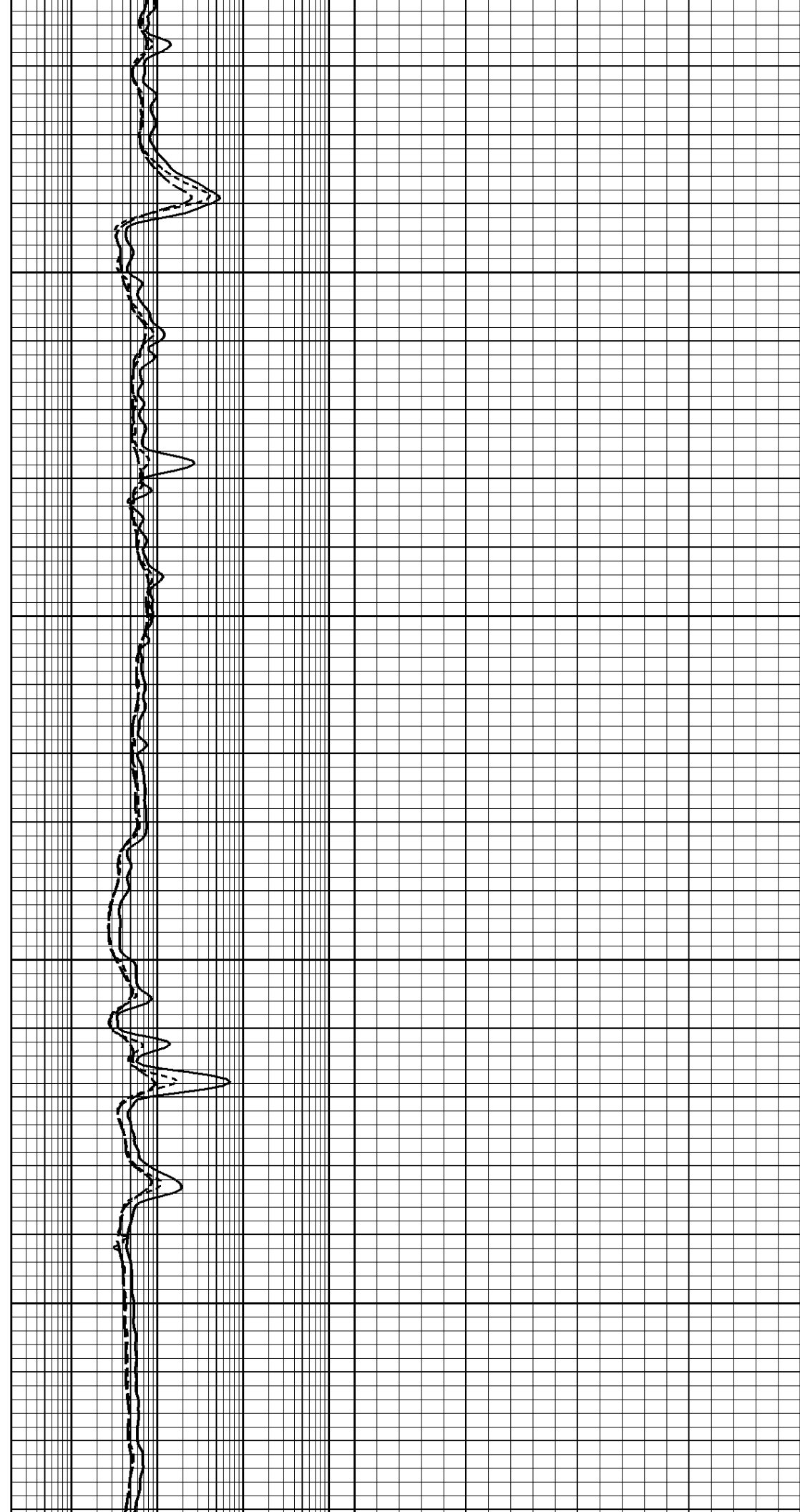
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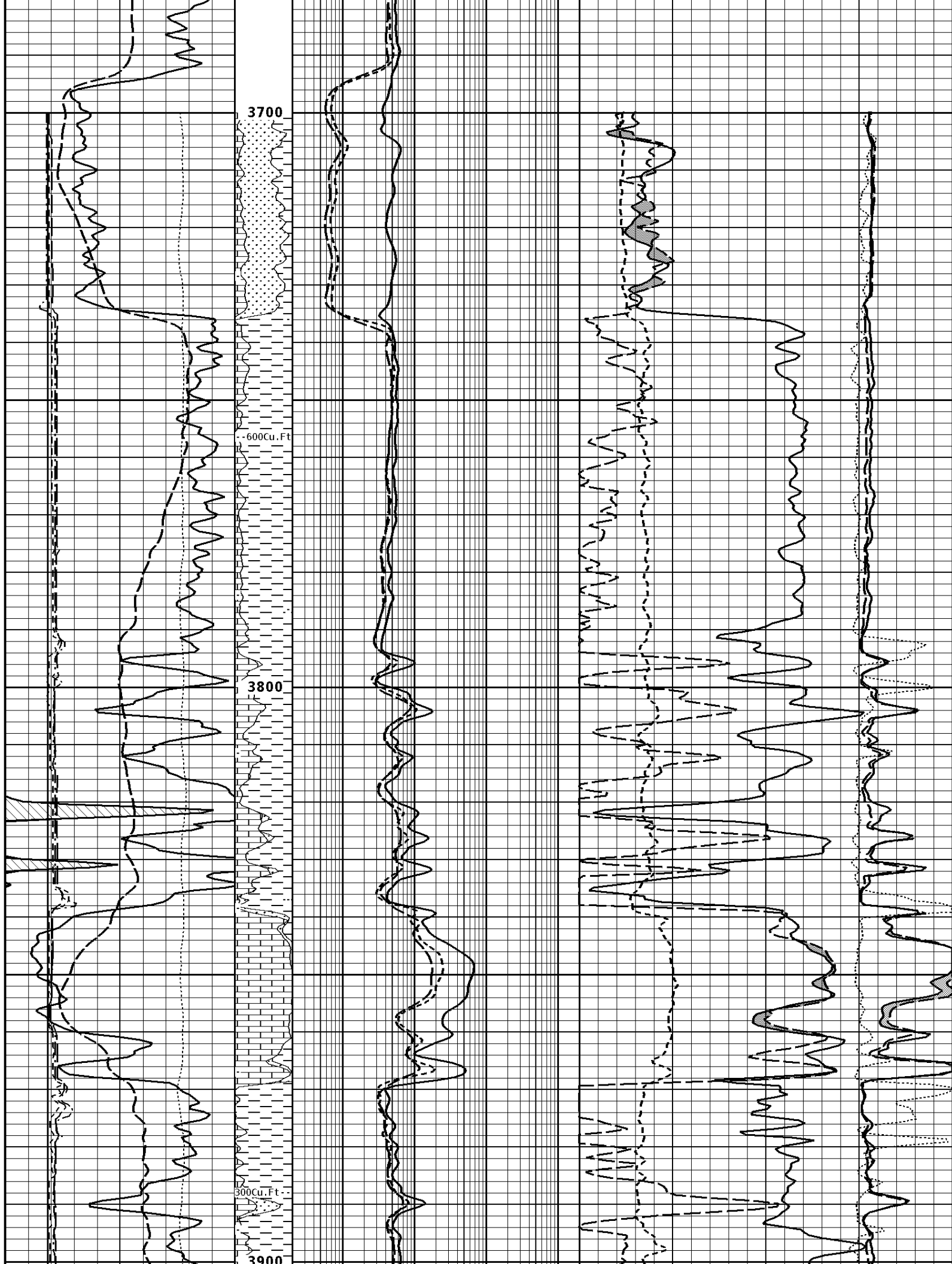




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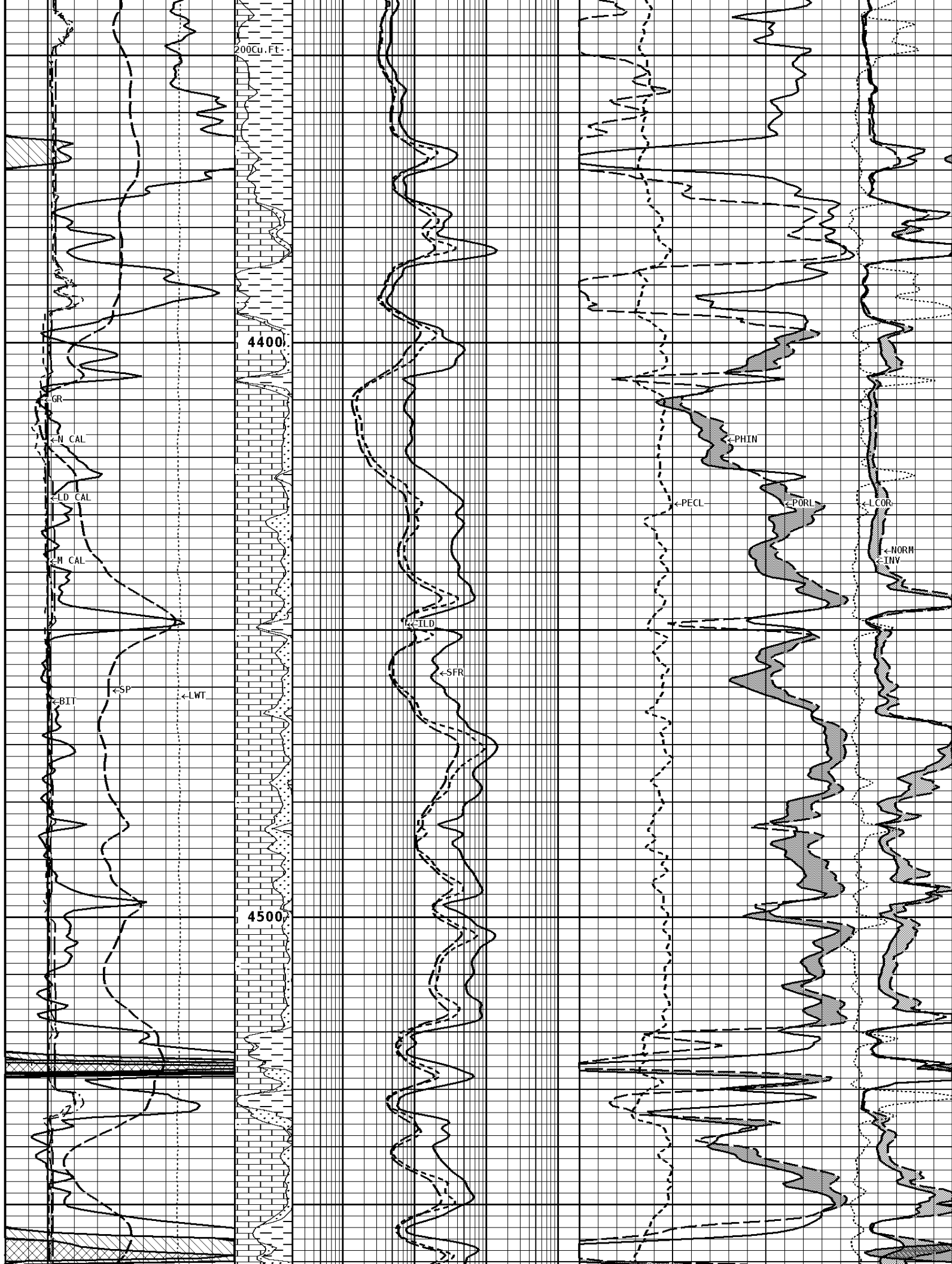
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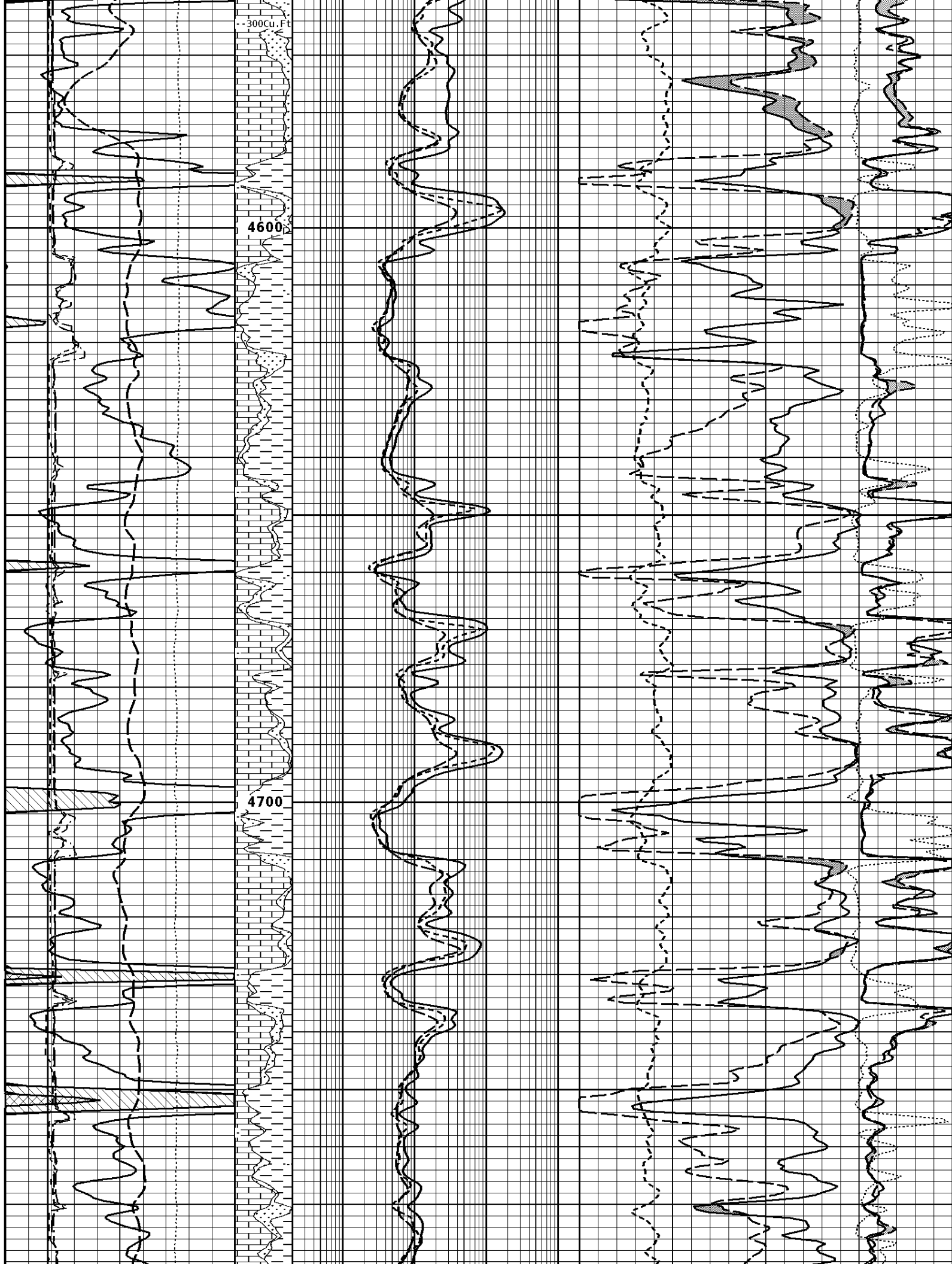


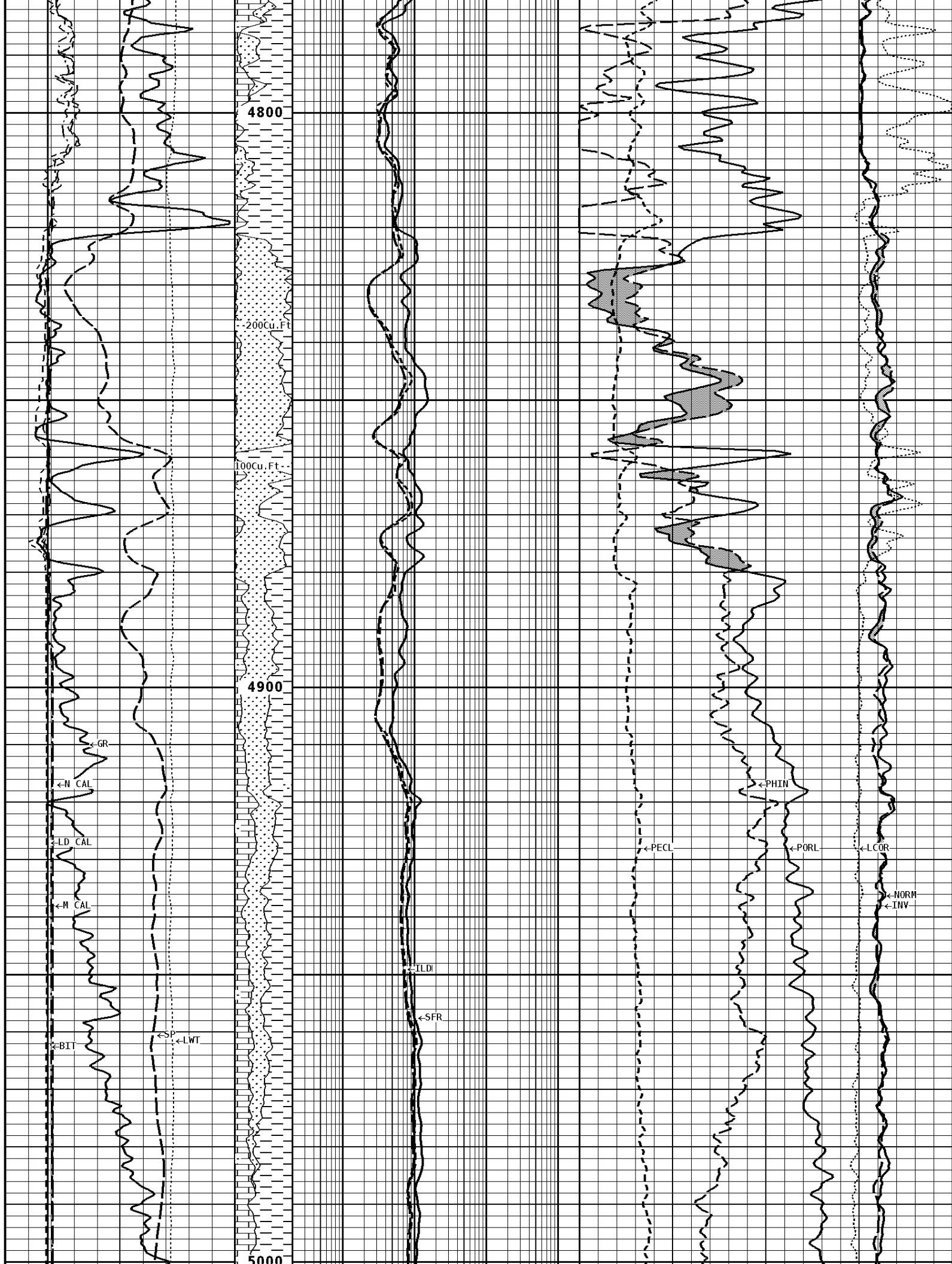


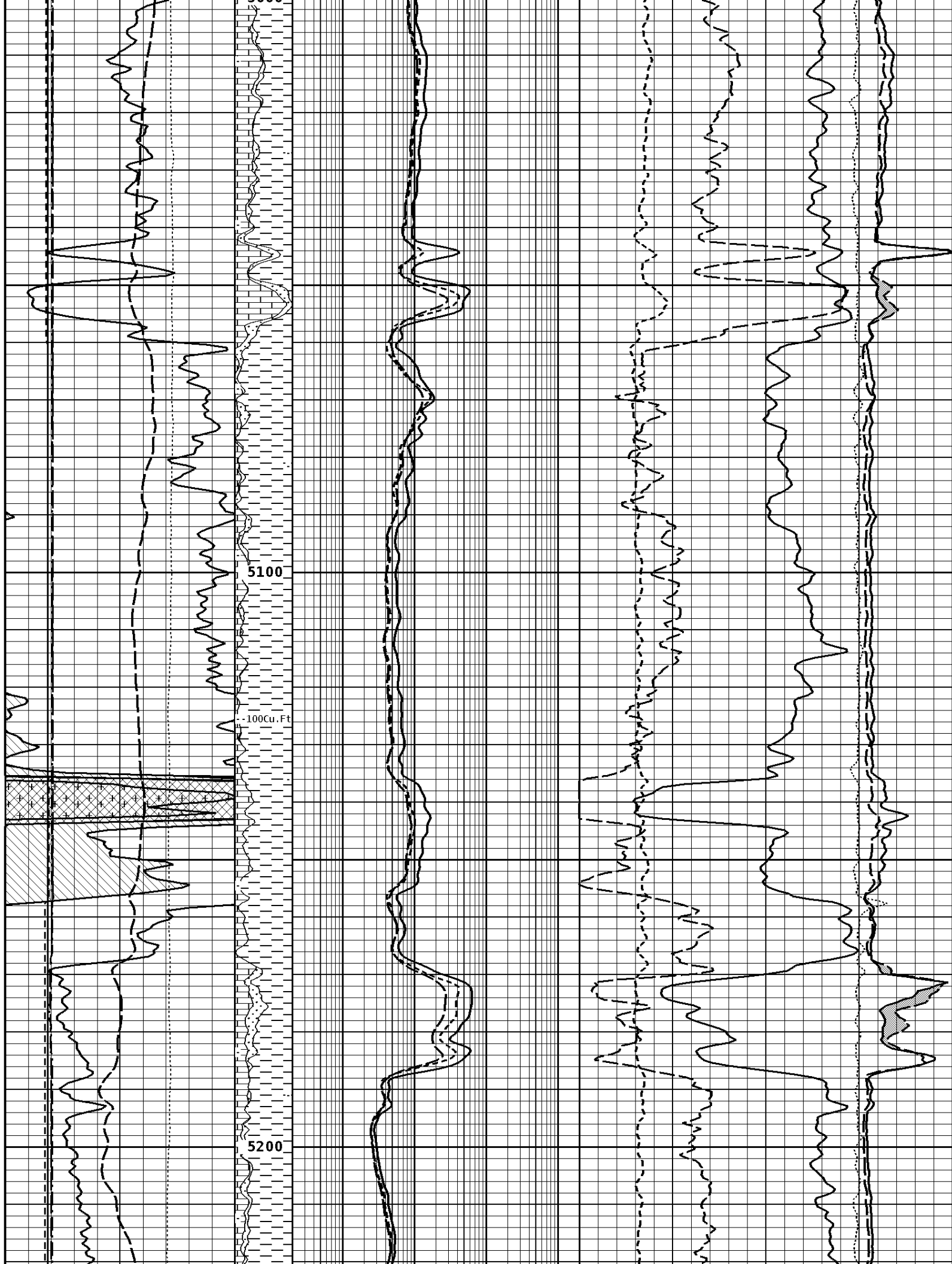


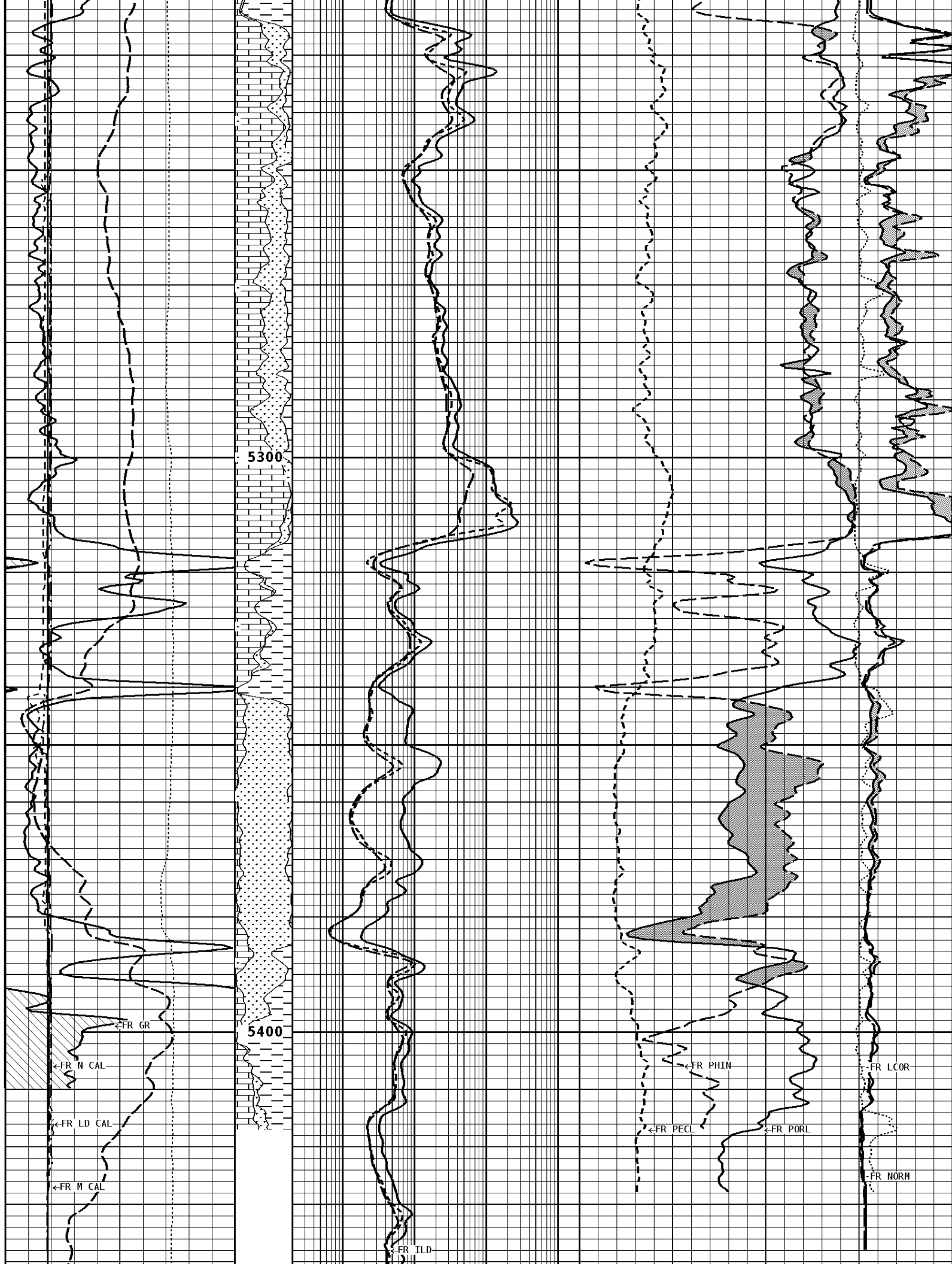


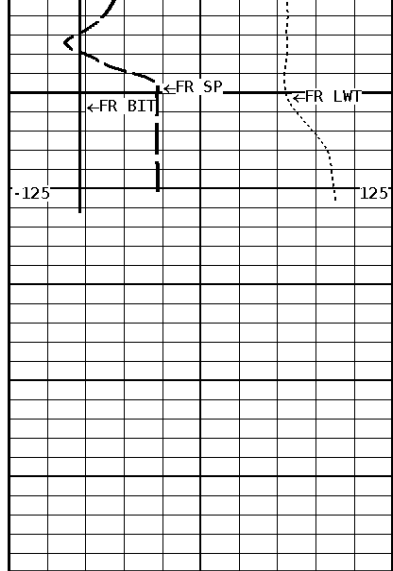




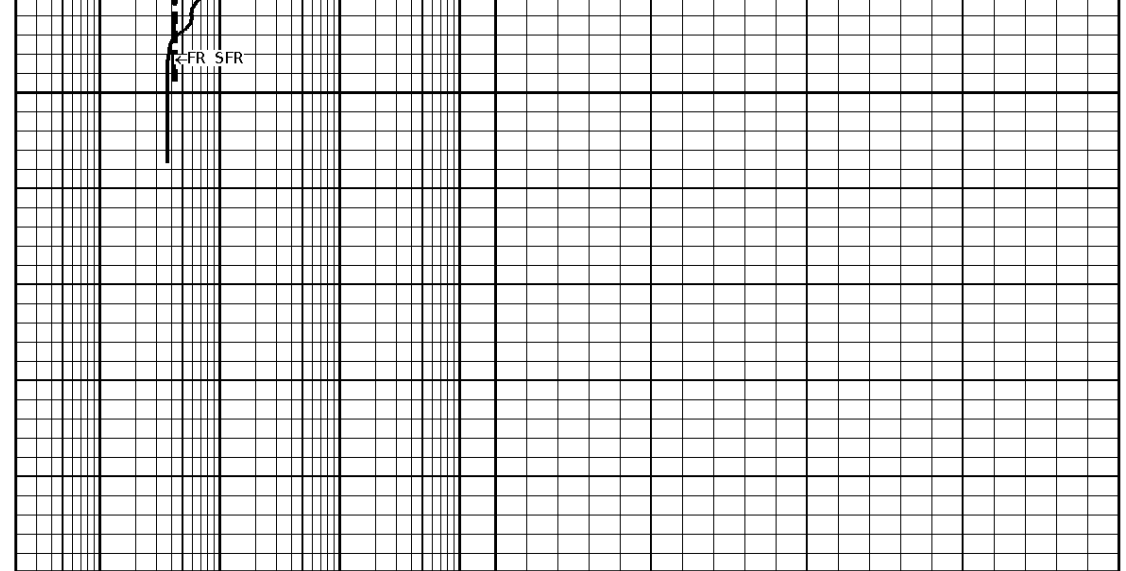








5452



1:240 MAIN SECTION

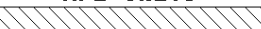
GAMMA RAY API UNITS 150 0 300 150	BHV AHV- CU.FT	MEDIUM INDUCTION OHMM 0.2 2000.0	NEUTRON POROSITY (LIMESTONE) PERCENT 30 -10
SPONTANEOUS POTENTIAL mV → ← 25	Volume Dolo/Shale	DEEP INDUCTION OHMM 0.2 2000.0	DENSITY POROSITY (2.71g/cc) PERCENT 70 30 -10 -50
TENSION LBS 10000 0	Volume Calcite	SHALLOW FOCUSED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

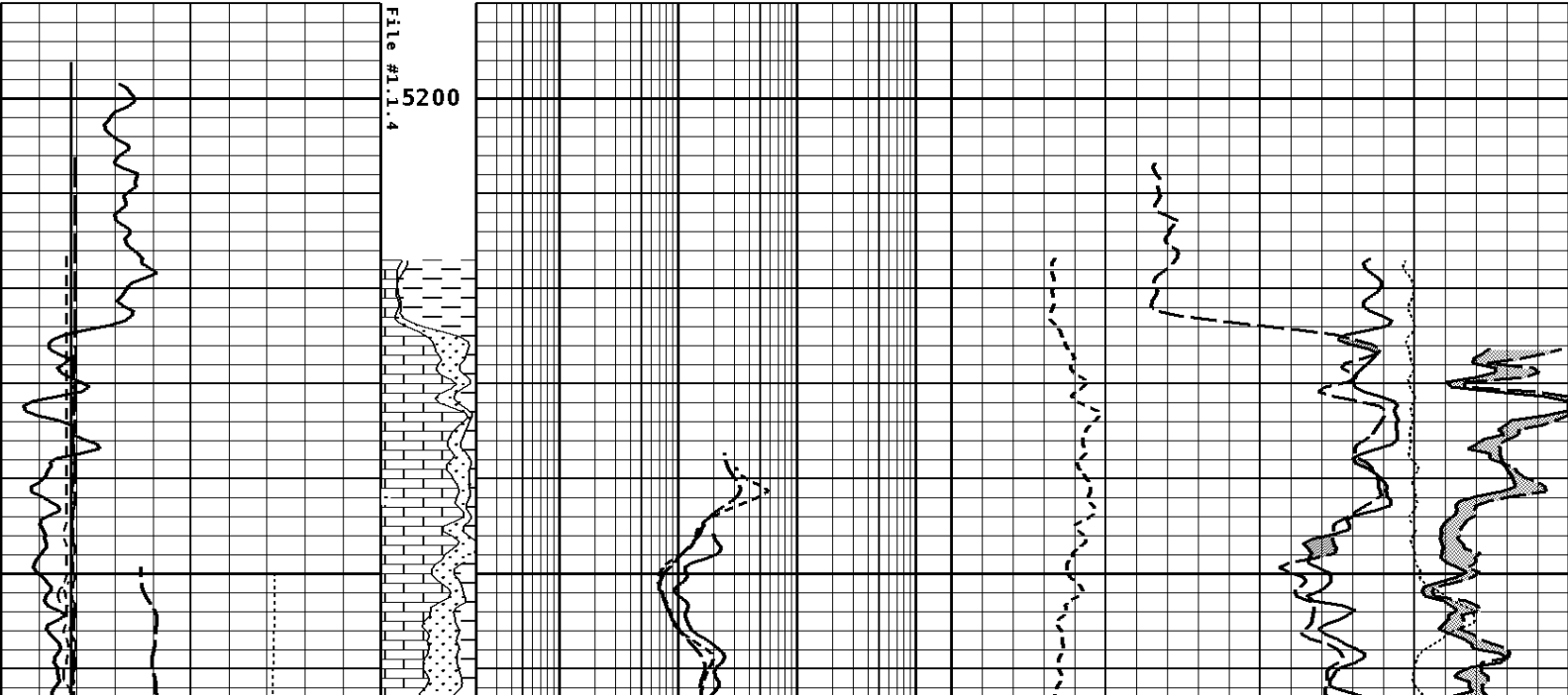
Zone 1 99999.0 to 0.0 Feet		
Matrix Density	2.71	g/cc
Fluid Density	1.00	g/cc
Formation Matrix	Limestone	
Drill Bit Size	7.875	in
Casing Diameter	5.500	in
Casing Thickness	0.250	in
Casing Correction (PHI N)	Disable	
Hole Substance	Fluid	
BHT Depth	5452.000	ft
Borehole Temperature	128.0	degF

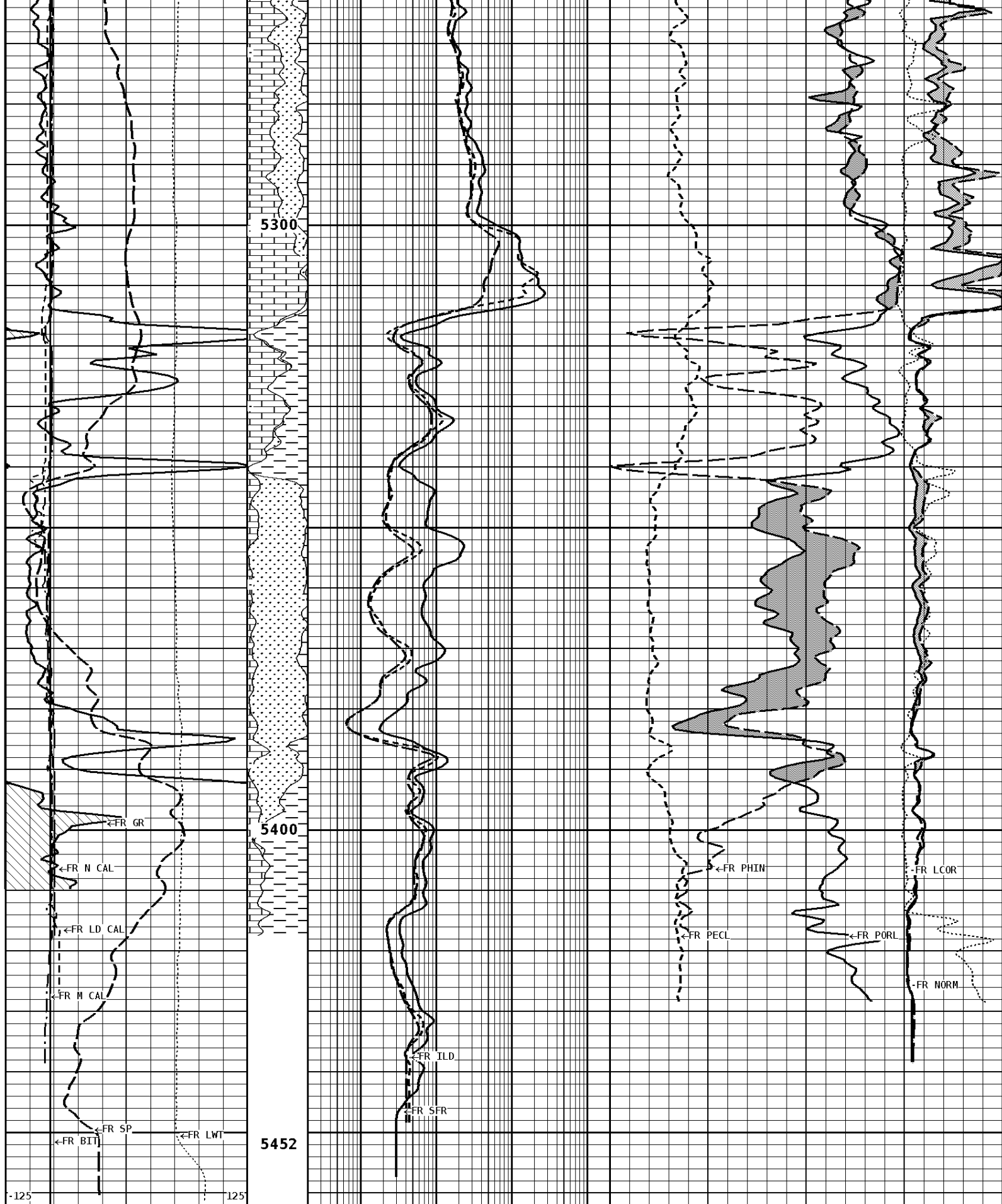
Bottom Hole Temperature	120.8	Deg
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	1.000	ohm/m
MSTNG Normal Correction	-1.50	ohm/m
MSTNG Inverse Correction	0.00	ohm/m

Well File: chief-ahs-11-mstk-dec-22	Scale: 1:240	Format: COMSAT
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	

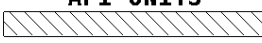
CALIPER MICRO INCHES (IN)					
16 6	26 16				
BIT SIZE INCHES (IN)				NORMAL OHMM	
6	16			0 40	
NEUTRON (Y) CALIPER INCHES (IN)				INVERSE OHMM	
16 6	26 16			0 40	
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	DENSITY CORRECTION G/CC		
16 6	26 16		-0.75 0.25		
TENSION LBS		Volume Calcite	SHALLOW FOCUSED 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	
→ ←25			0.2 2000.0	70 30	
				-10 -50	
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	

1:240 REPEAT SECTION





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 → ← 25	Volume Dolo/Shale	DEEP INDUCTION OHMM 0.2 2000.0	DENSITY POROSITY (2.71g/cc) PERCENT 70 30 30 -10 -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
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		5452.000	ft
Borehole Temperature		128.0	degF
Temperature Gradient		1.00	DFHF
Resistivity Of Mud		1.000	ohm/m
MSTNG Normal Correction		-1.50	ohm/m
MSTNG Inverse Correction		0.00	ohm/m

* 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
Background	Jig	Jig	

GR	48	318	CPS	175	GRAP1
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.
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.
Performed : 08-Dec-2014			Time : 10:26		
Sensor Suite : BHCPELNG			ID : LDP-DA-067		
Source ID : 2991GW					
	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
Shop Calibration MST-DA					
Performed : 10-Sep-2014			Time : 09:51		
Sensor Suite : CALI-MSN			ID : MST-DA-057		
	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	7.1	11.3	6.0	12.0	IN.
Performed : 10-Sep-2014			Time : 09:43		
Sensor Suite : MSTDA-NI			ID : MST-DA-057		
	Internal				
	Zero	Measured	Units	Zero	Calibrated
		Reference			Reference
INV-V	297.1	30434.1		0.00	1536.00
NOR-V	171.1	30363.7		0.00	1636.00
IN-C	169.1	30673.9		0.00	15.46
INV-R				32.14	OHMM
NOR-R				58.31	OHMM
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
32768.0	58944.2	0.0	1000.0
		Units	
		mV	



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