

RESISTIVITY/INDUCTION LOG

Schlumberger

Company: Windy Hill Gas Storage, LLC

Well: Windy Hill 3-17D

Field: Wildcat

County: Morgan

State: Colorado

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Company: Windy Hill Gas Storage, LLC

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Field: Wildcat

County: Morgan

State: Colorado

[illegible]

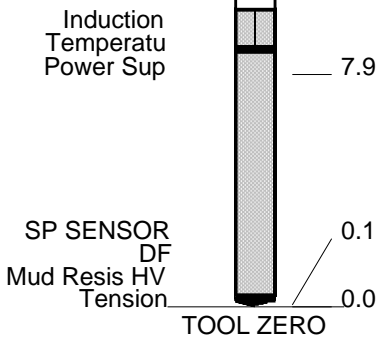
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth		@	
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
Density	Viscosity		
Fluid Loss	PH		
Source Of Sample			
RM @ Measured Temperature		@	
RMF @ Measured Temperature		@	
RMC @ Measured Temperature		@	
Source RMF	RMC		
RM @ MRT	RMF @ MRT	@	@
Maximum Recorded Temperatures			
Circulation Stopped	Time		
Logger On Bottom	Time		
Unit Number	Location		
Recorded By			
Witnessed By			

OTHER SERVICES1	OTHER SERVICES2
OS1: PEX	OS1:
OS2: Caliper	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
This is the first run in hole	
Tool run as per tool sketch	
Matrix changes noted on logs.	

Rig: Unit 234					
Thank you for using Schlumberger Wireline					
Crew: Sam Hopper & David Marquez					
RUN 1			RUN 2		
SERVICE ORDER #: 11634009			SERVICE ORDER #:		
PROGRAM VERSION: 15C0-309			PROGRAM VERSION:		
FLUID LEVEL:			FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP
EQUIPMENT DESCRIPTION					
RUN 1			RUN 2		
SURFACE EQUIPMENT					
GSR-U WITM (DTS)-A					
DOWNHOLE EQUIPMENT					

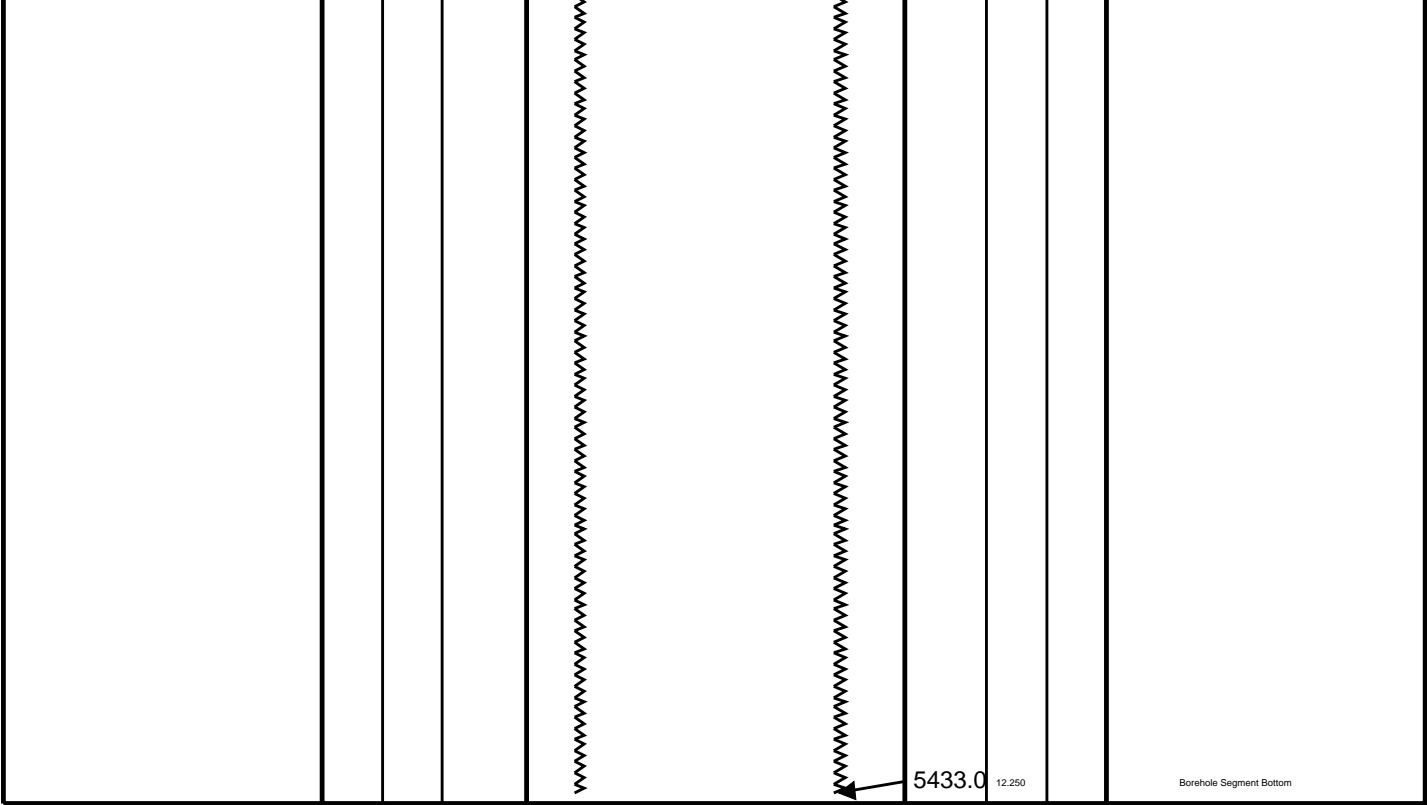
NGC-C
NGCH-A

AIT-H
AHIS-BA 372
AHRM-A



MAXIMUM STRING DIAMETER 4.50 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Production String	(in)		(ft) MD	Well Schematic	(ft) MD	(in)		Casing String
	OD	ID				OD	ID	
					0.0	13.375		Casing String, 52.5 lbm/ft
					476.0	13.375		Casing Shoe
					476.0	12.250		Borehole Segment



ALL DEPTHS AS PER DRILLER

Schlumberger

MAIN RESISTIVITY LOG 5" = 100'

MAXIS Field Log

Input DLIS Files

DEFAULT	AIT_NGS_SONIC_012LUP	FN:11	PRODUCER	12-Aug-2007 12:03	5430.0 FT	379.0 FT
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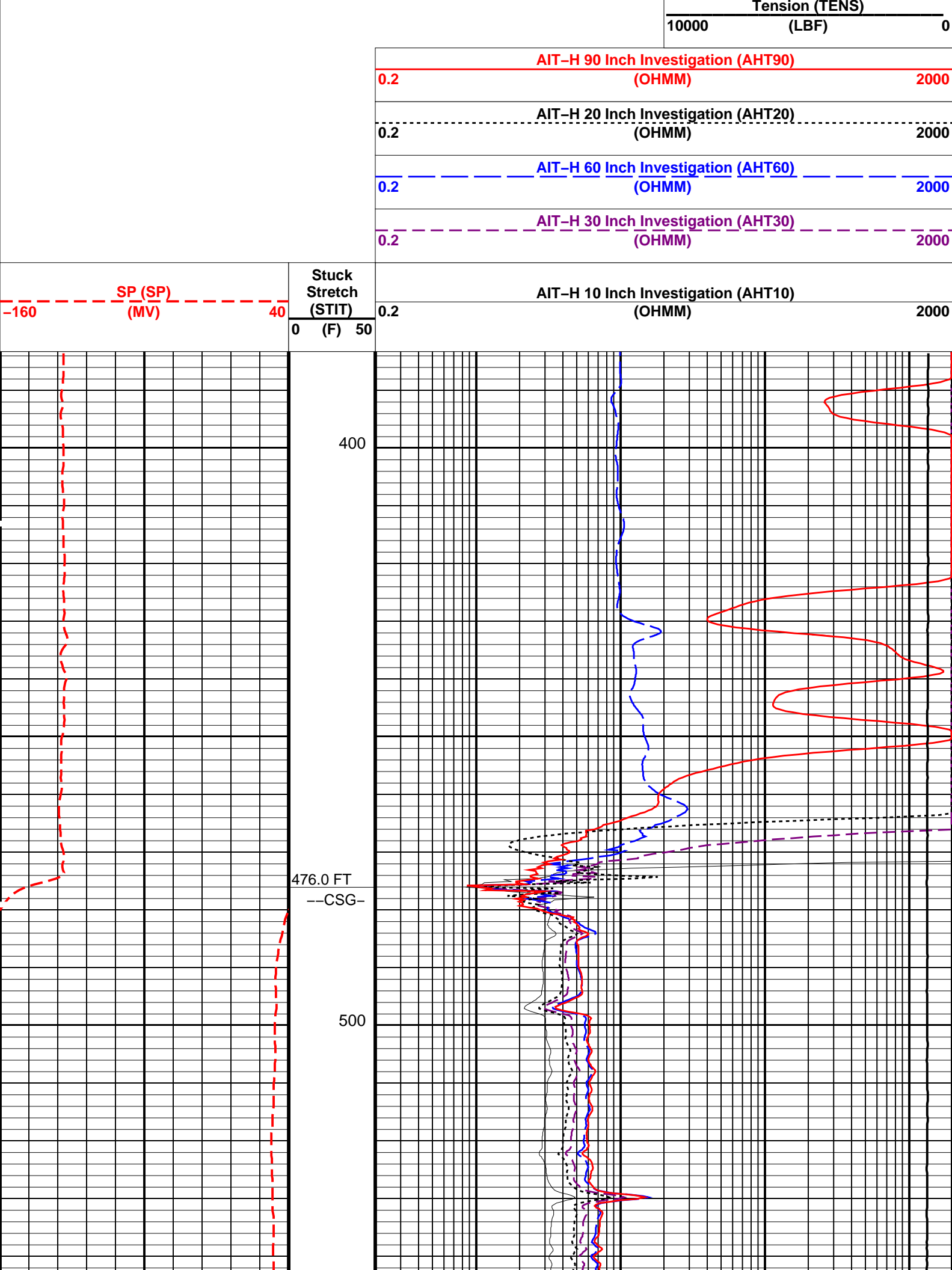
Output DLIS Files

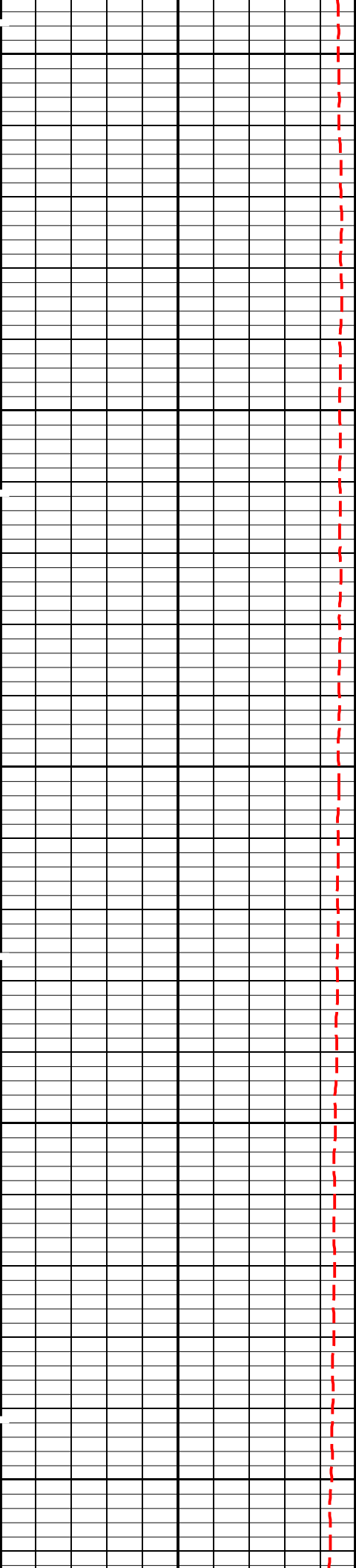
DEFAULT	AIT_NGS_SONIC_022PUP	FN:21	PRODUCER	12-Aug-2007 13:28	5430.0 FT	383.0 FT
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OP System Version: 15C0-309
MCM

AIT-H	SRPC-3357-Q2_2007	NGT-C	15C0-309
DTA-A	SRPC-3357-Q2_2007	DSL-FTB	15C0-309
DTC-H	15C0-309		

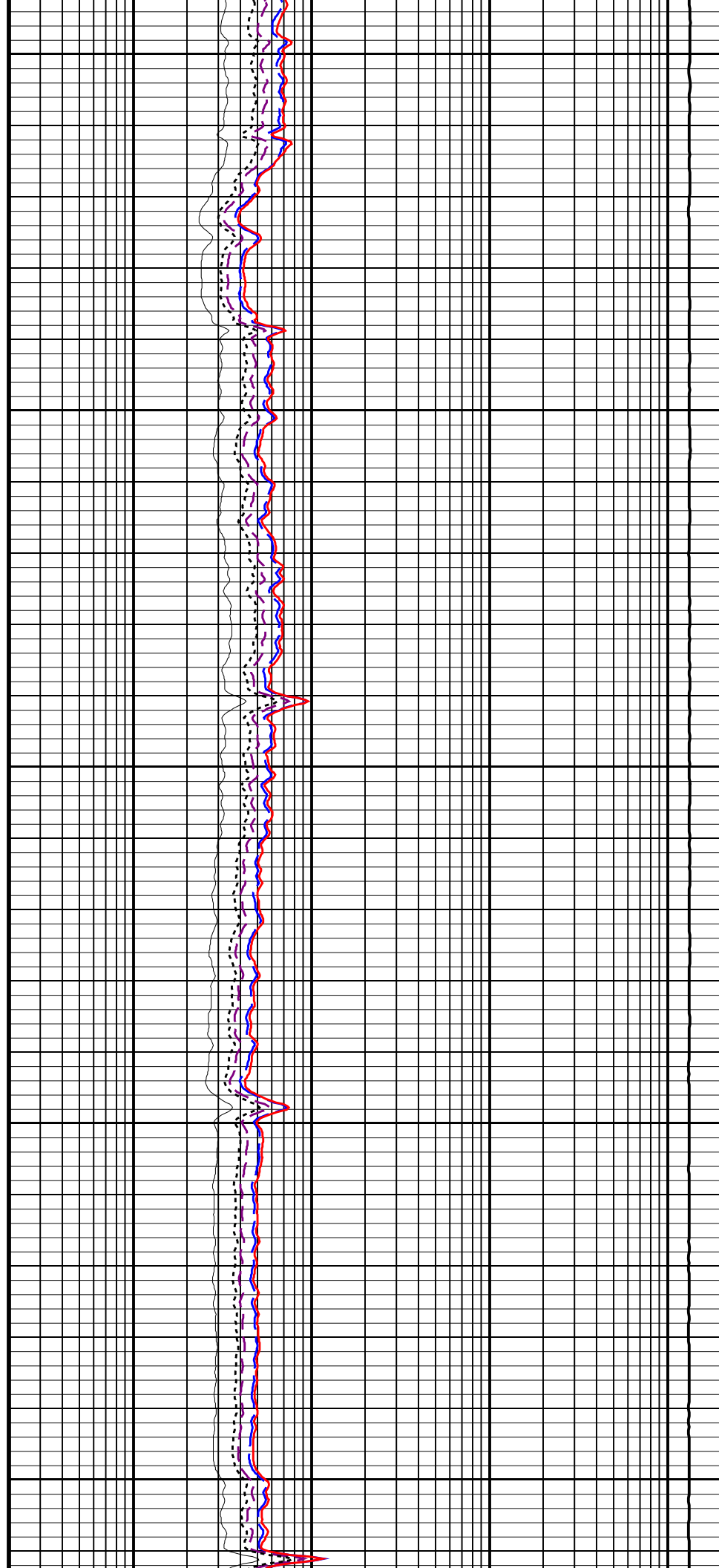
PIP SUMMARY

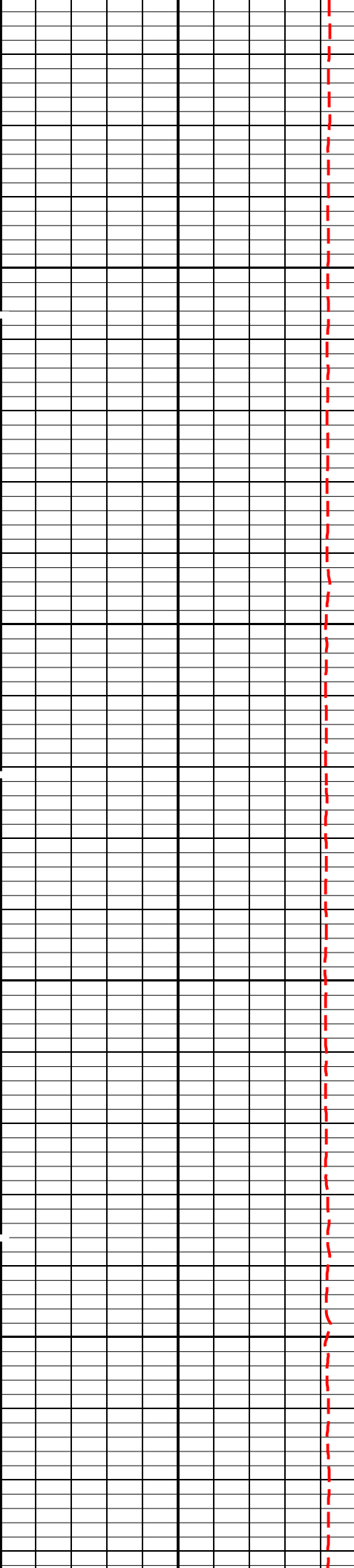




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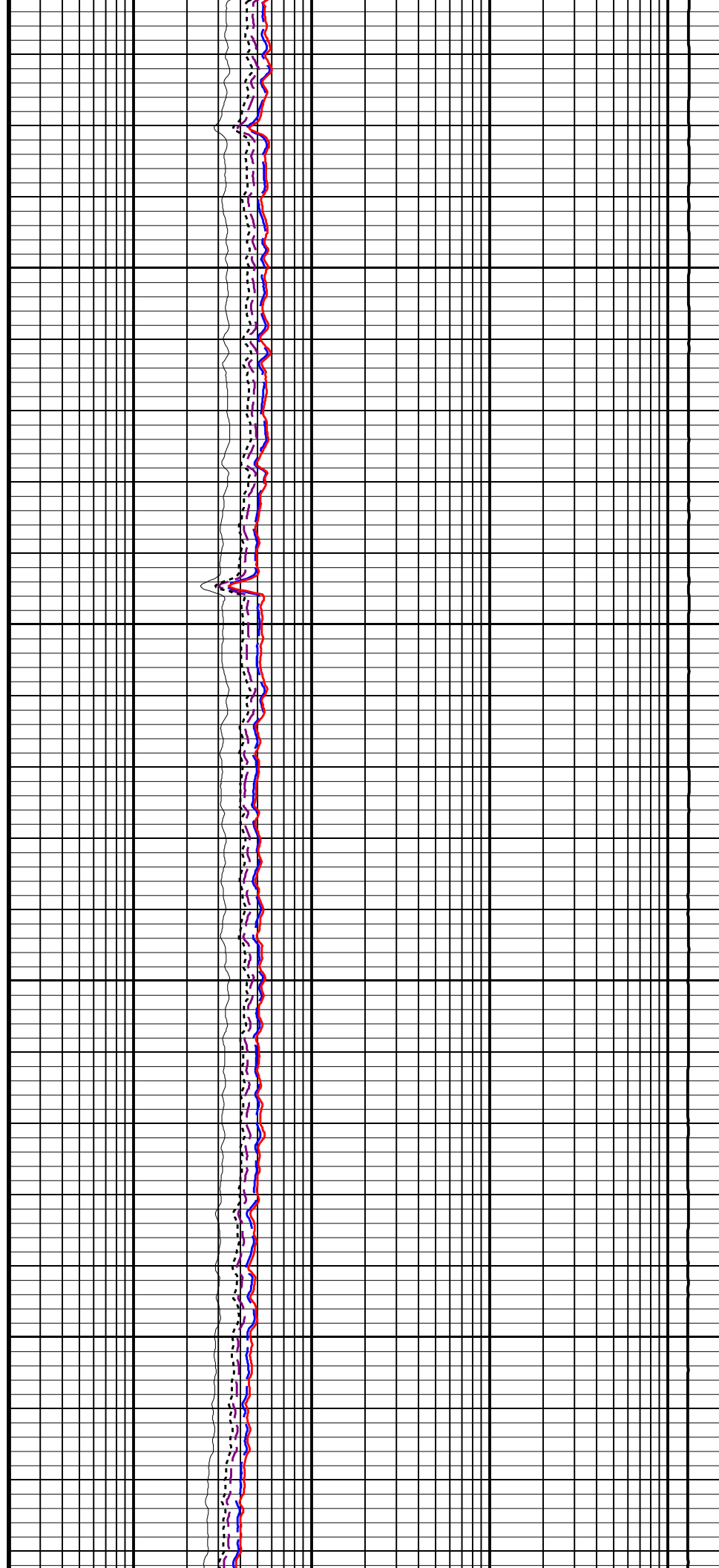
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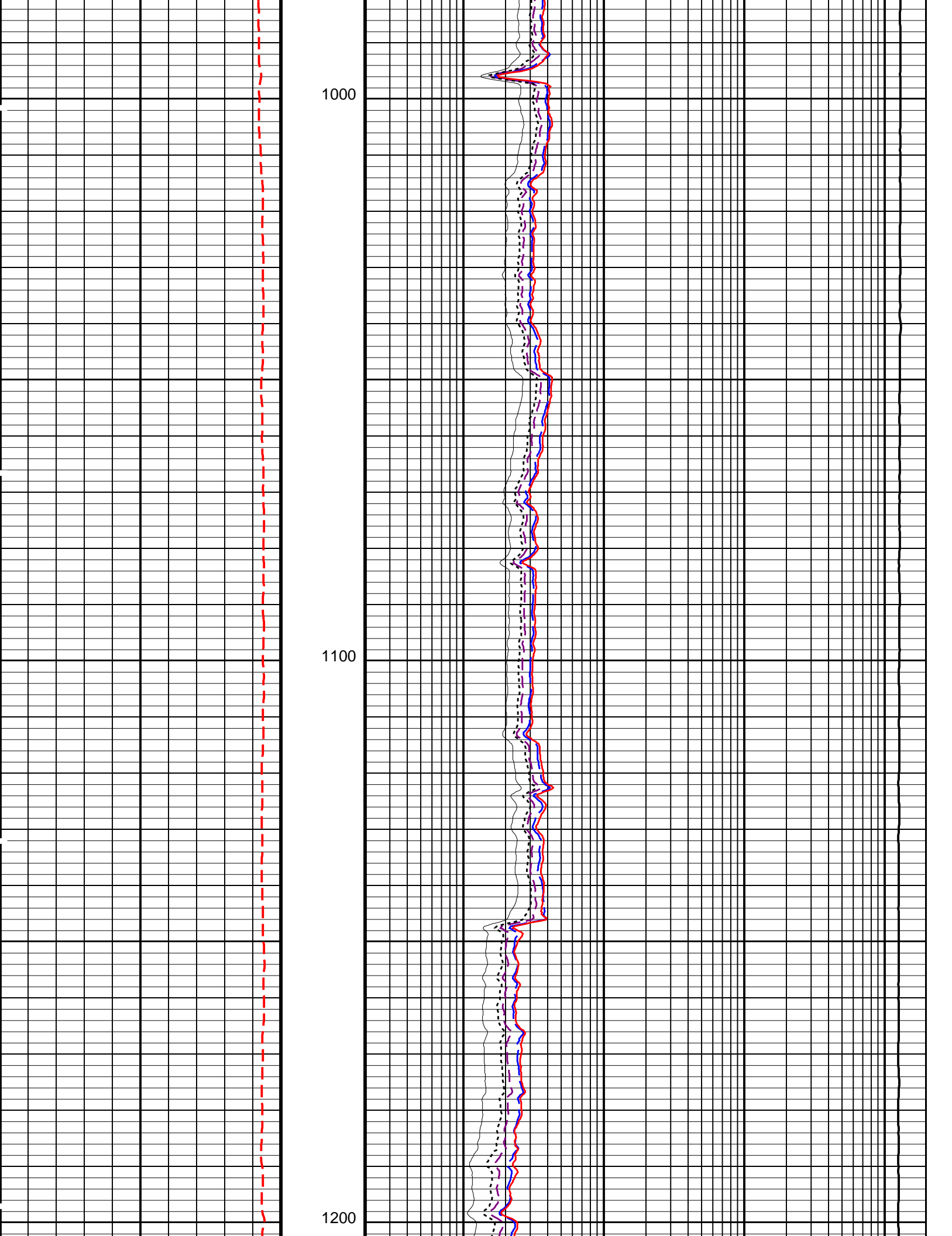


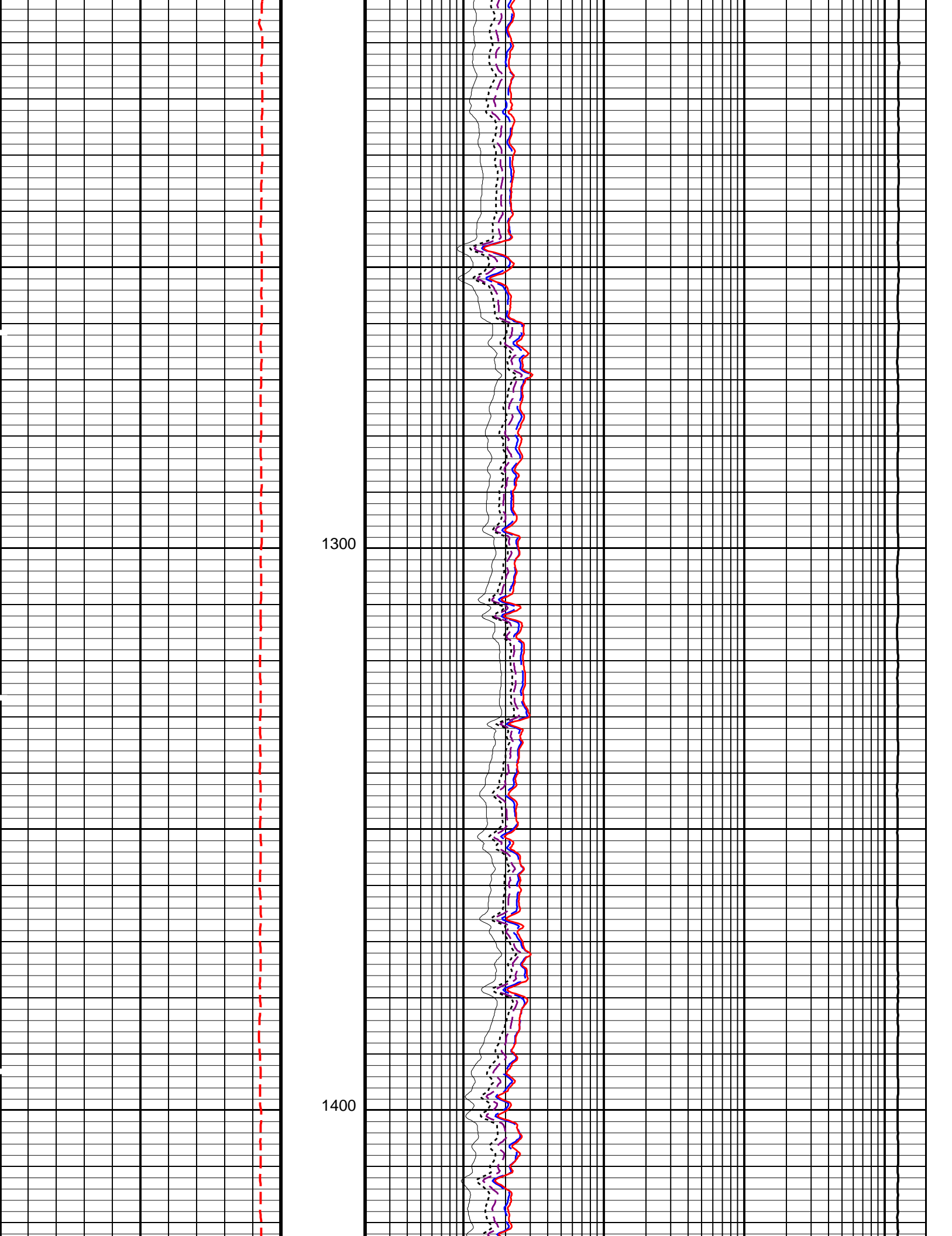


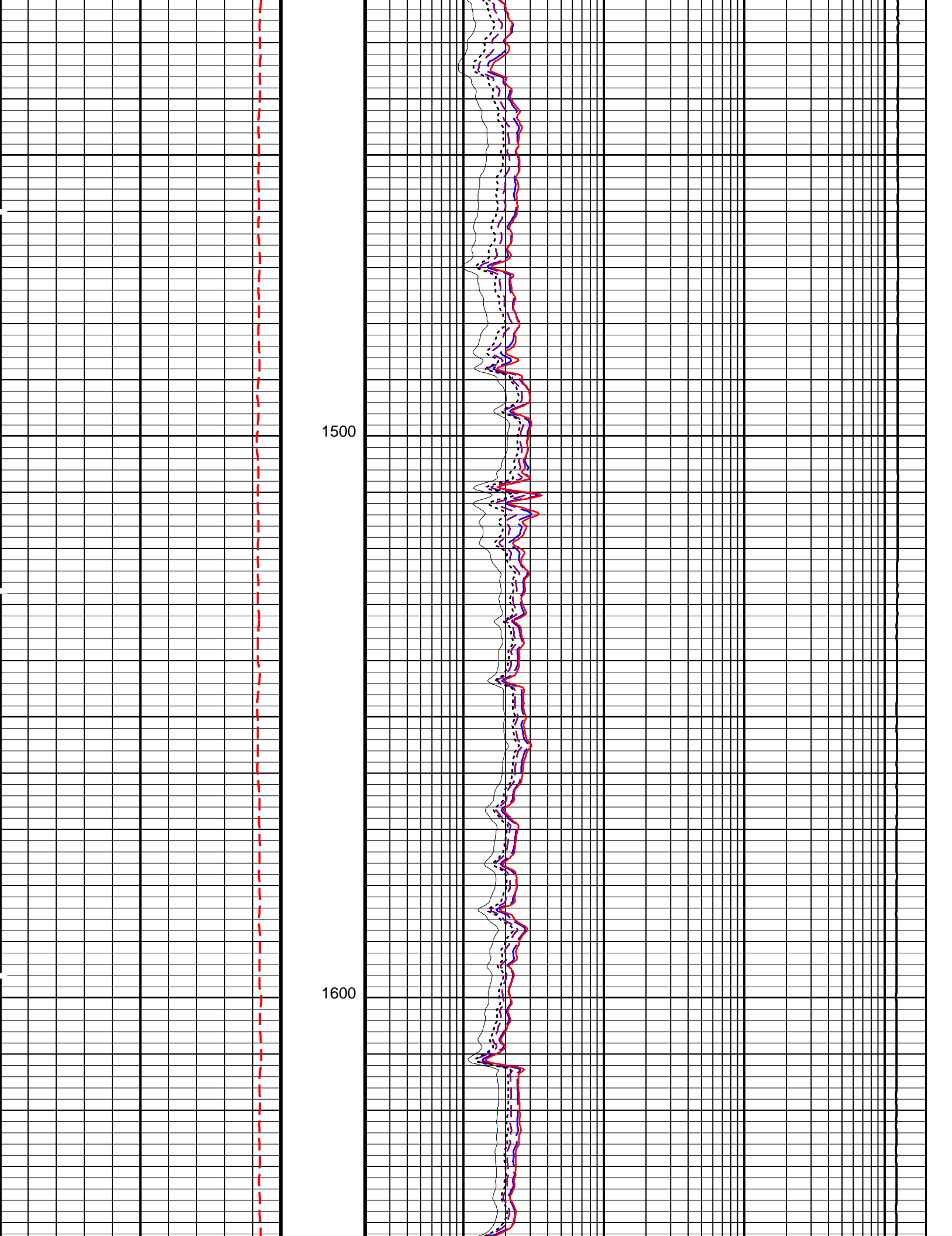
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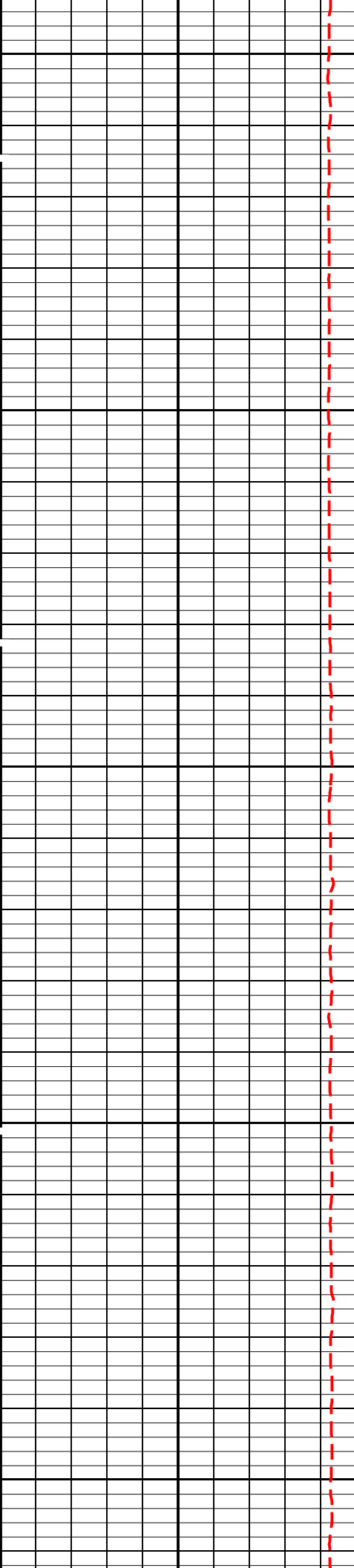
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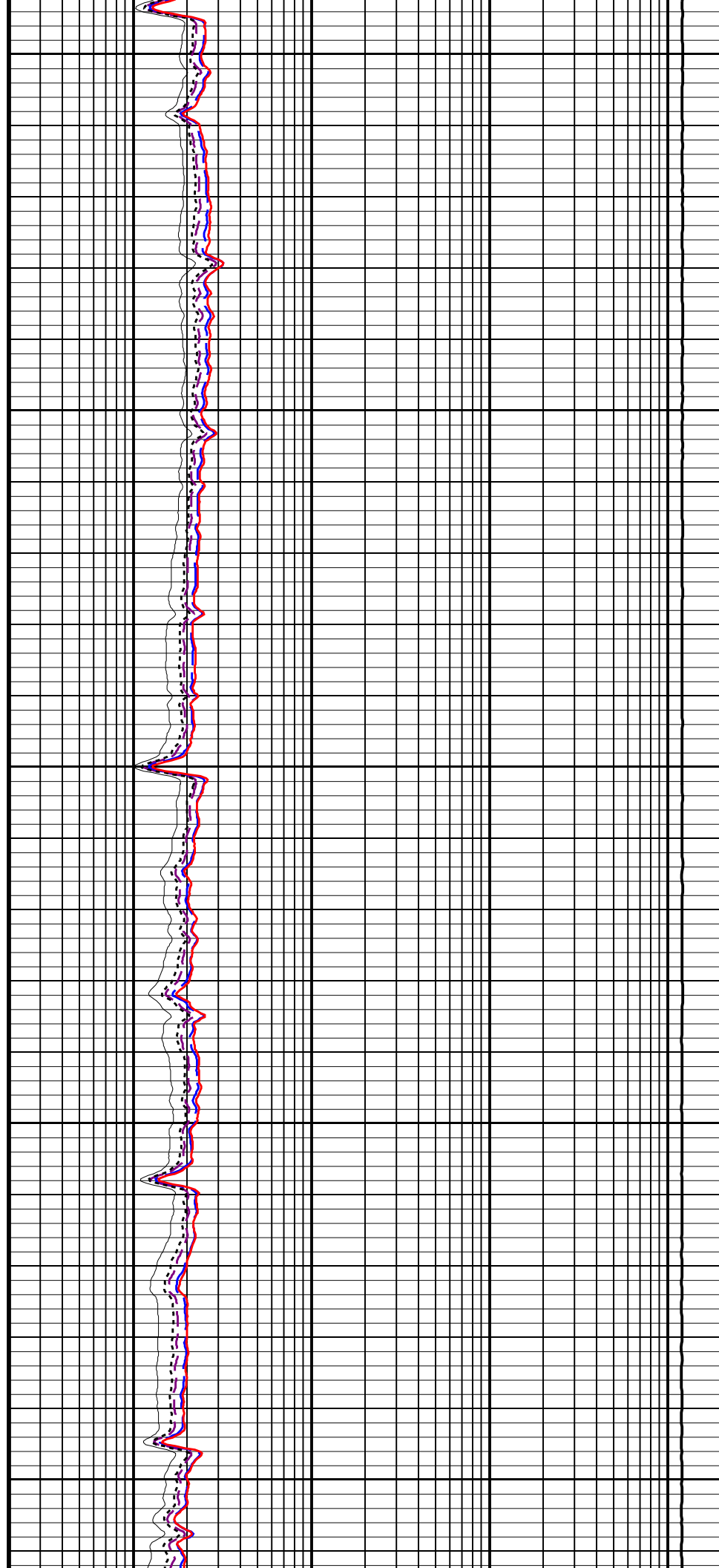


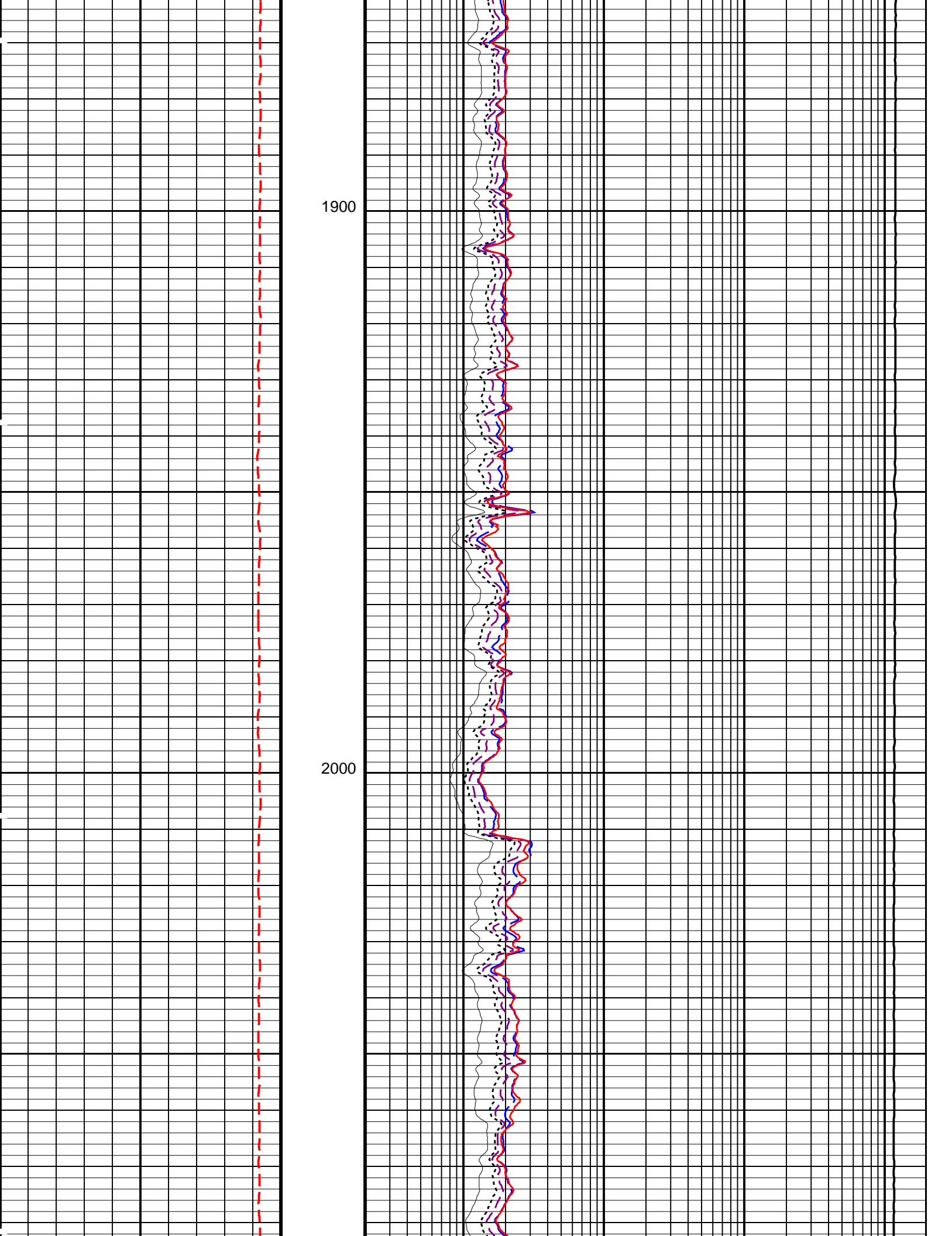


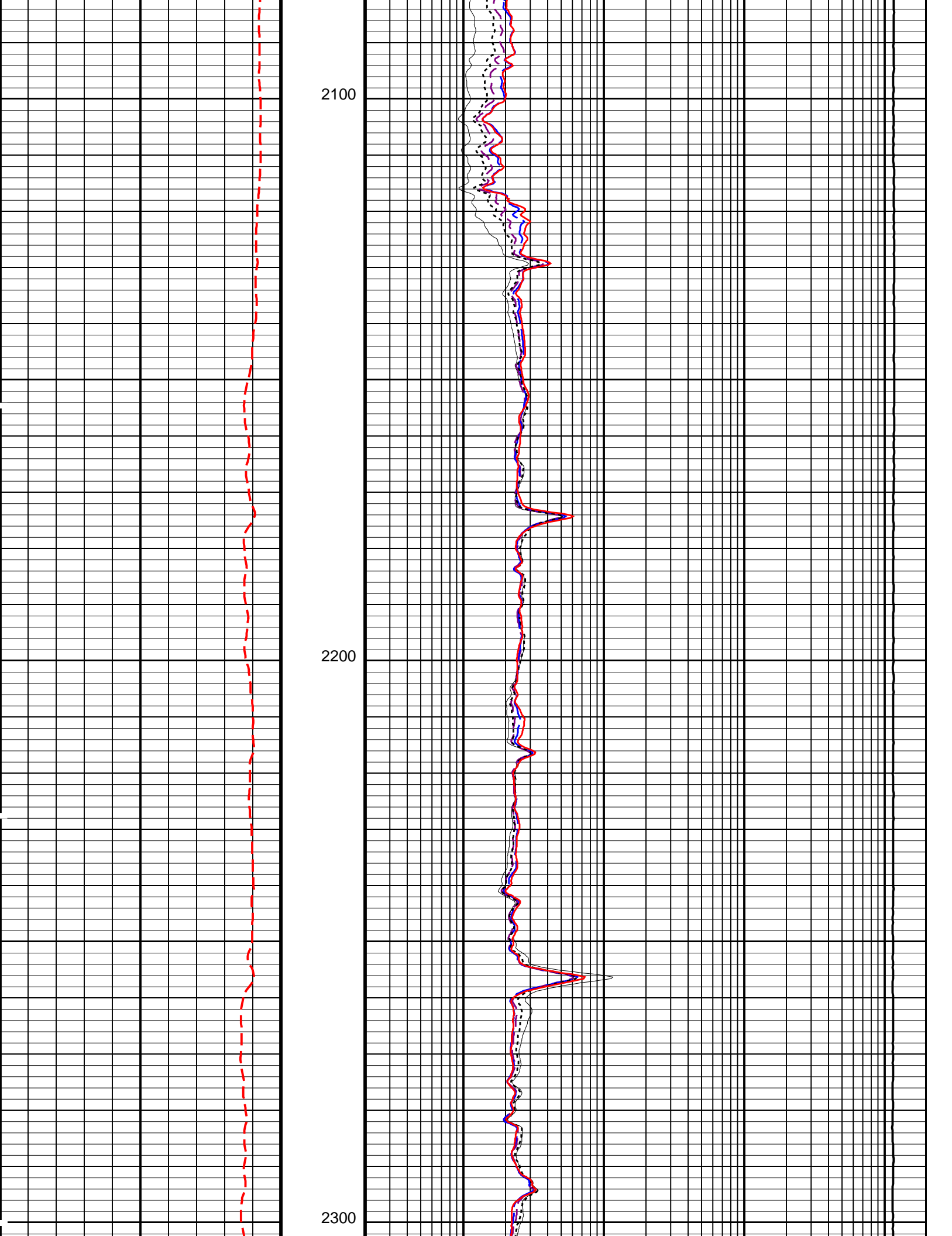


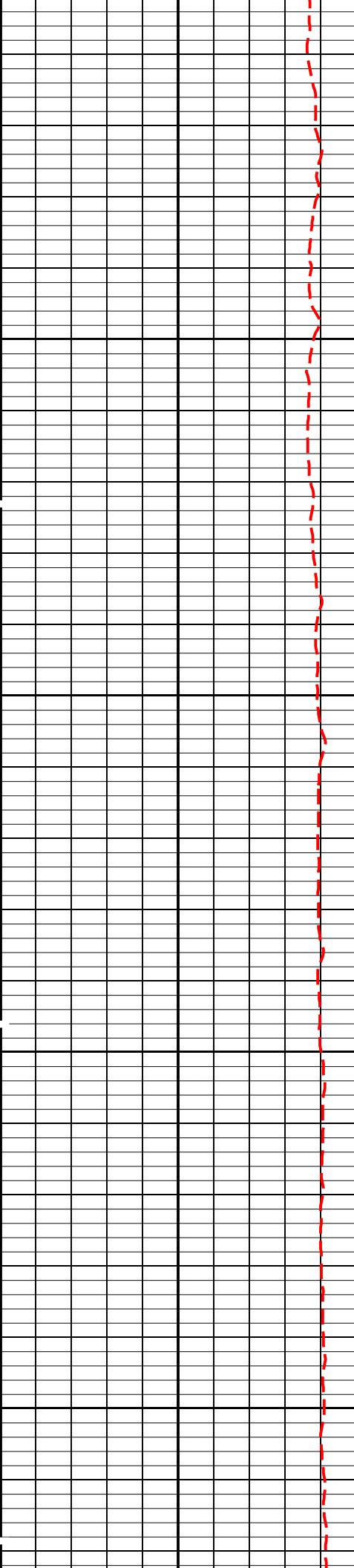
1700

1800



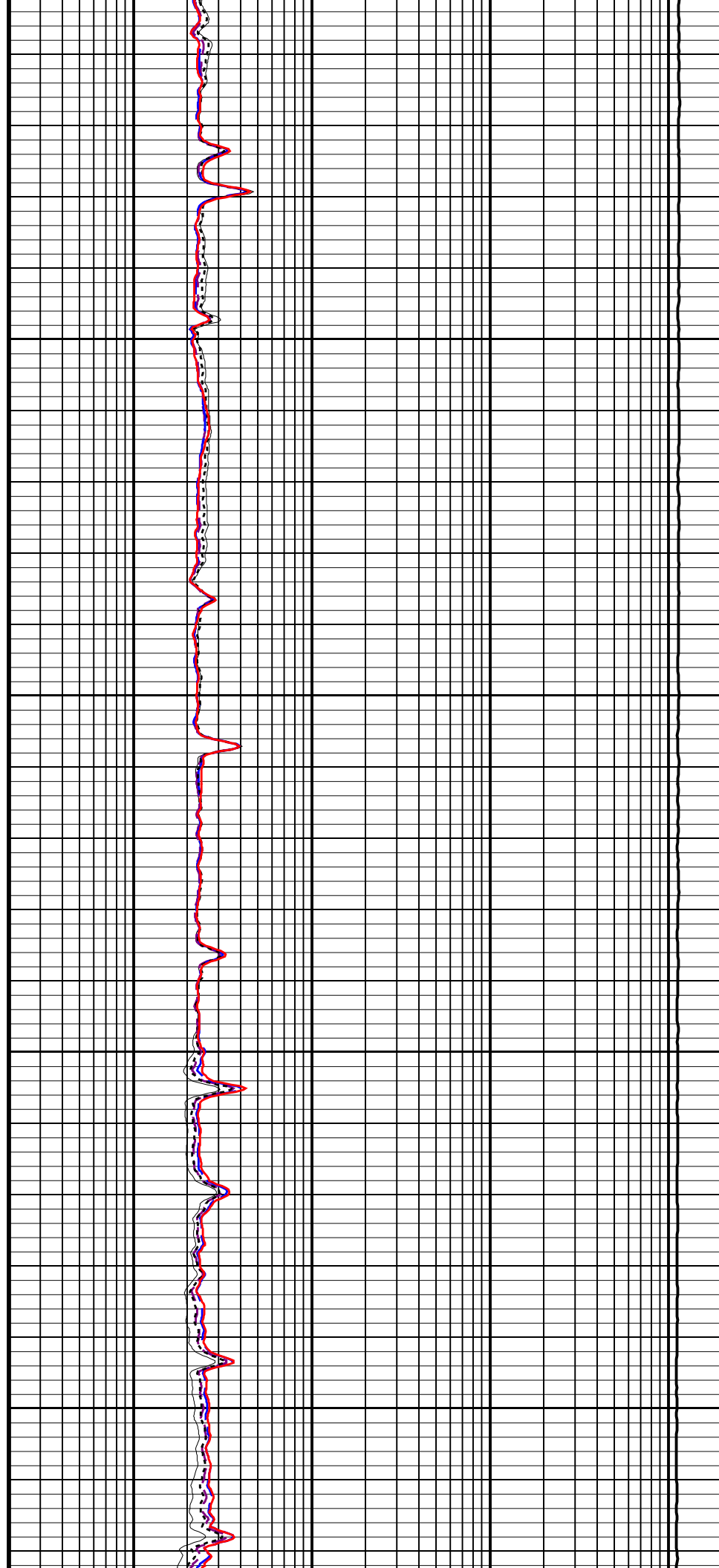


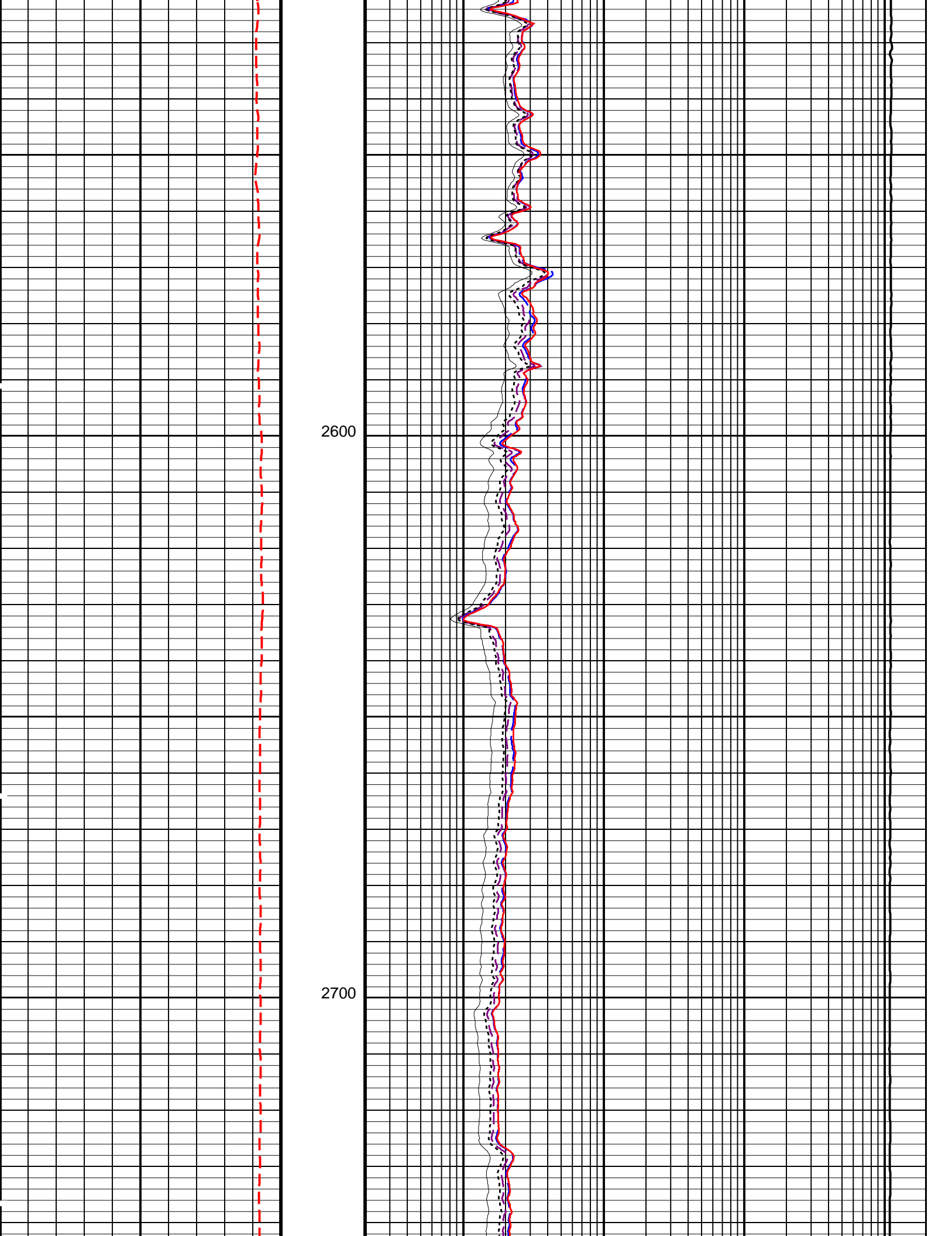


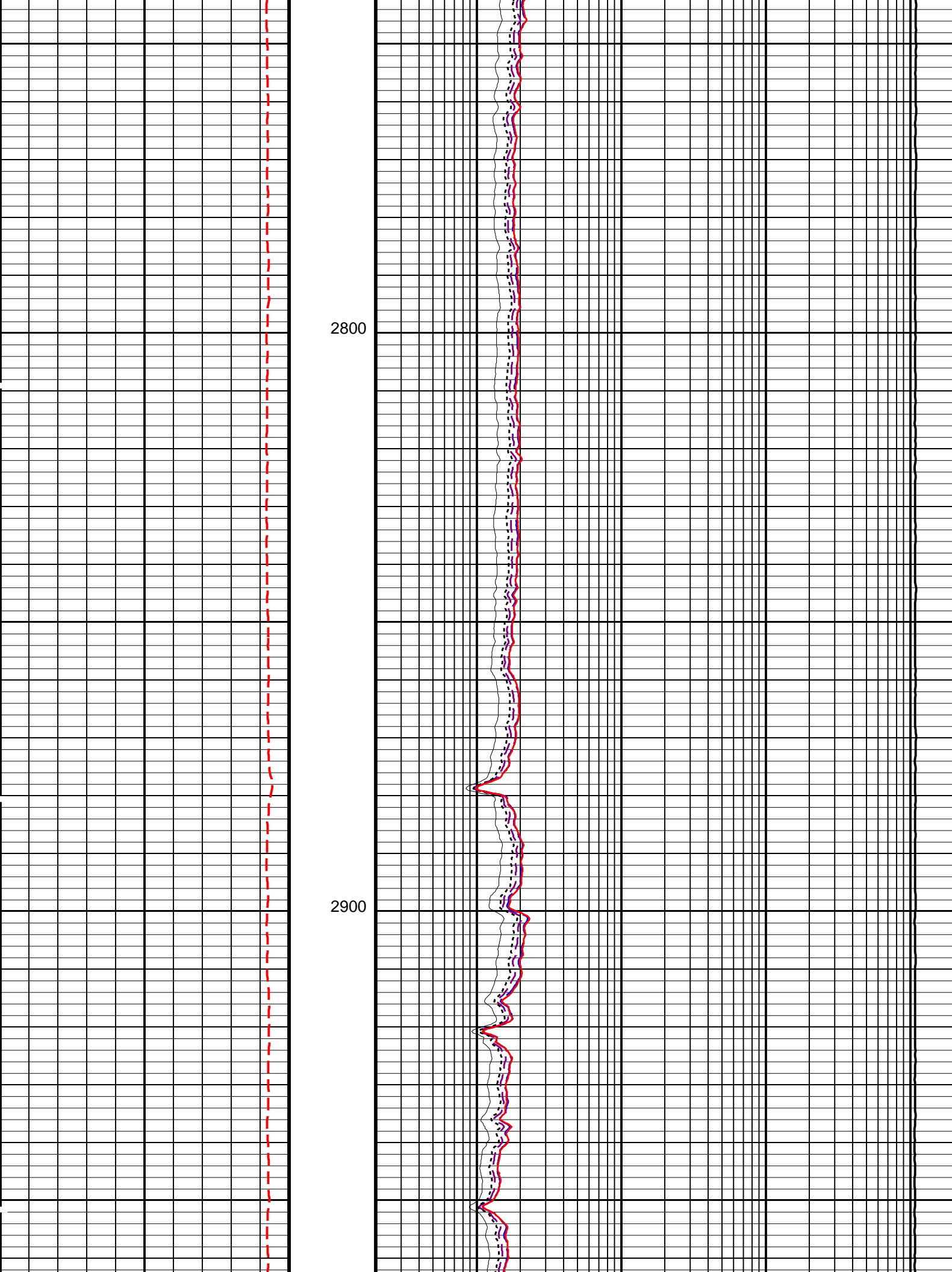


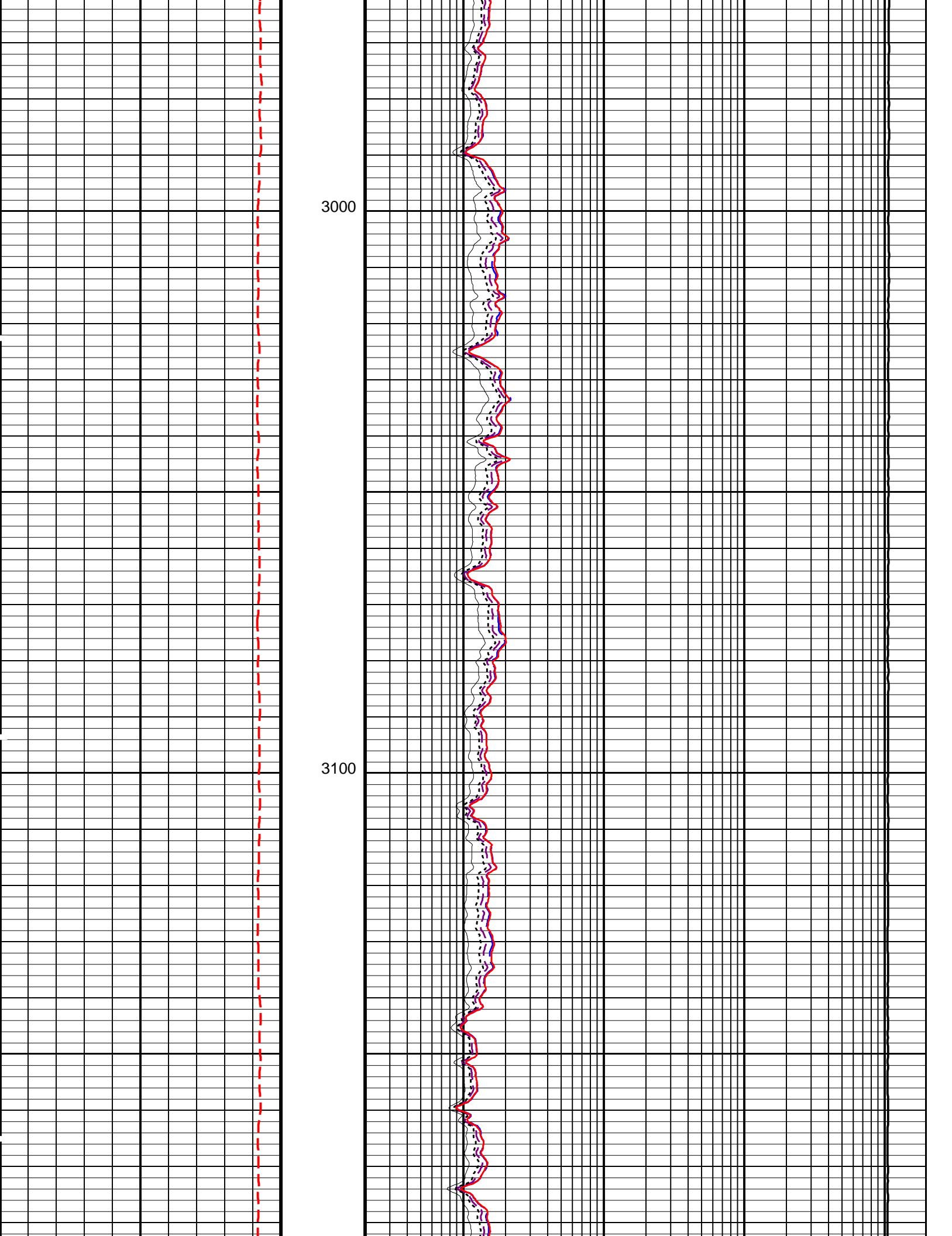
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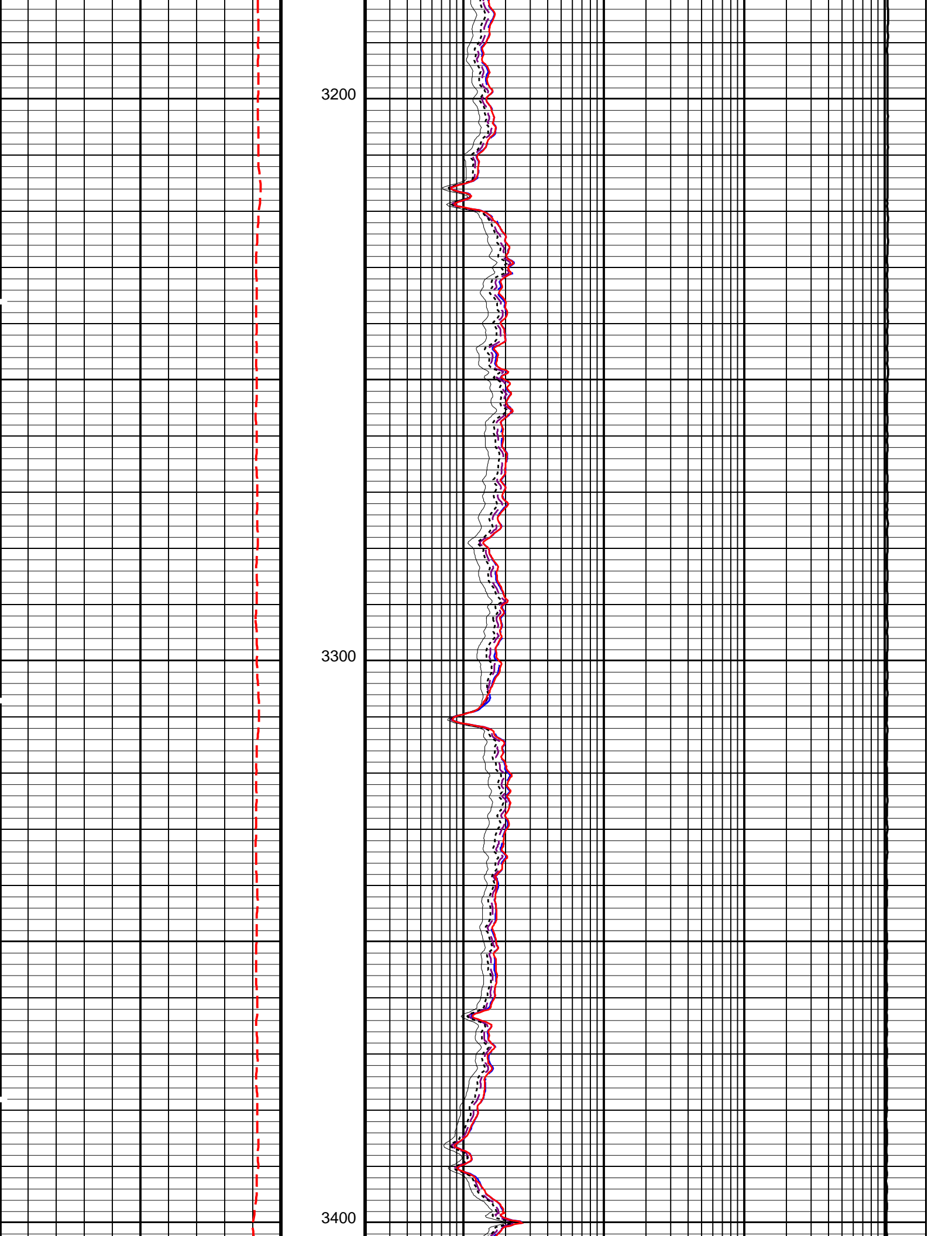
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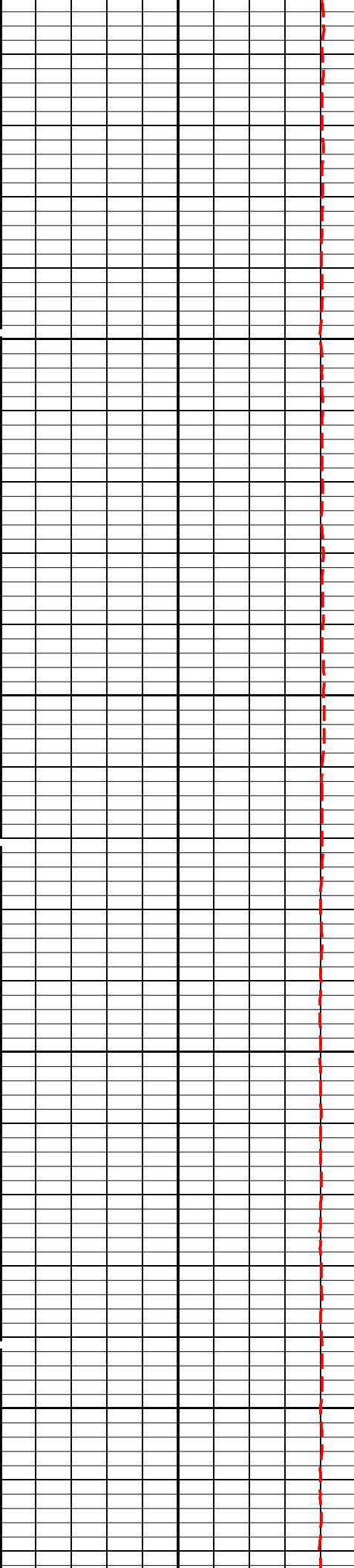






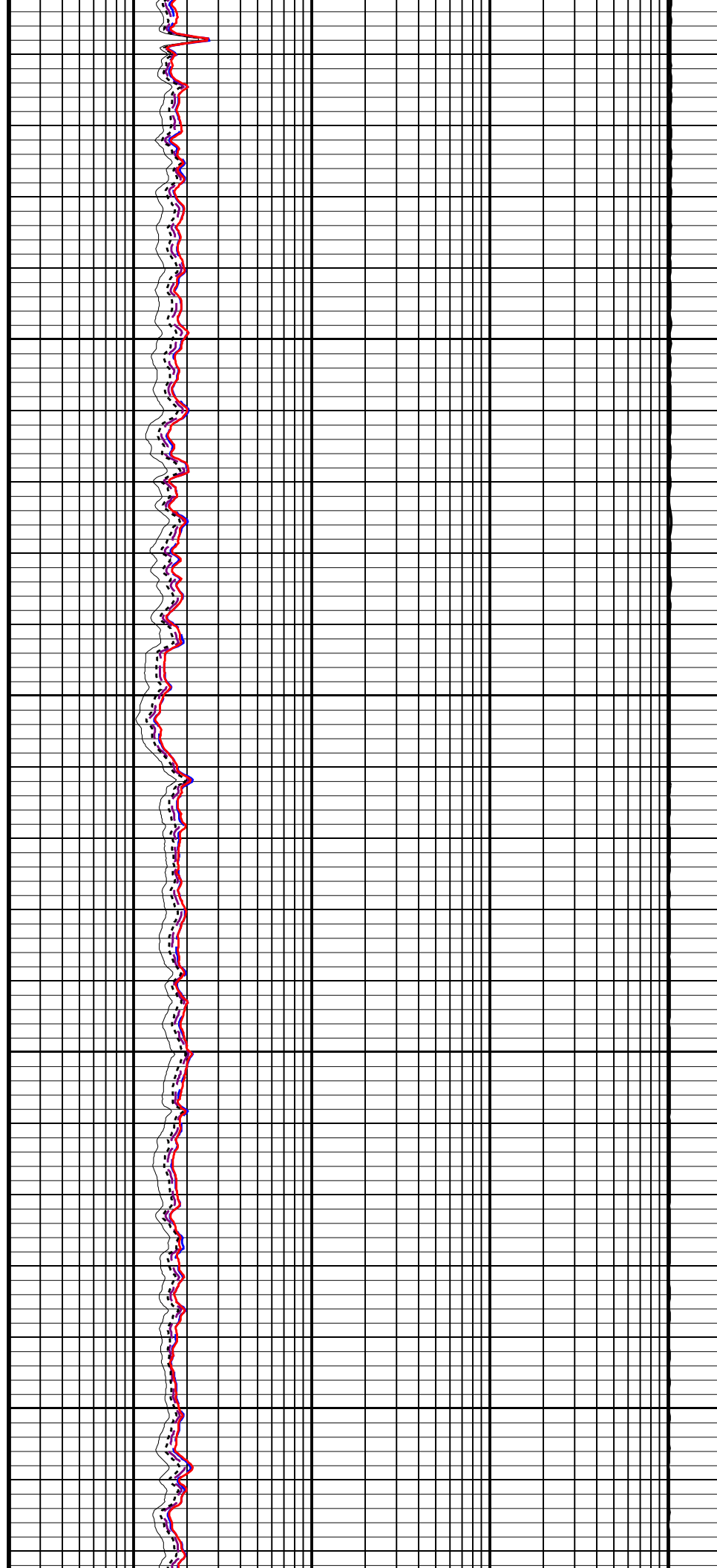


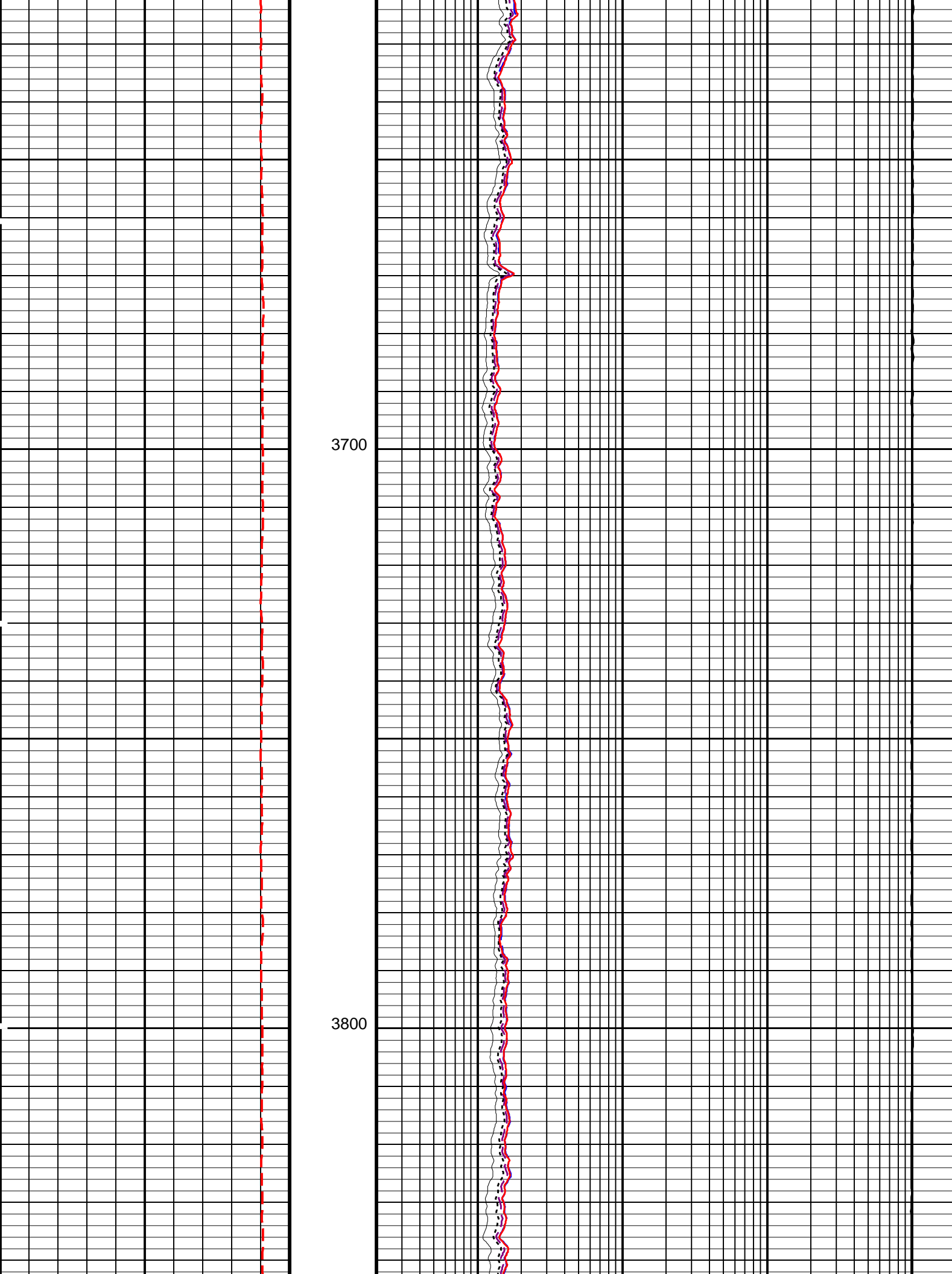


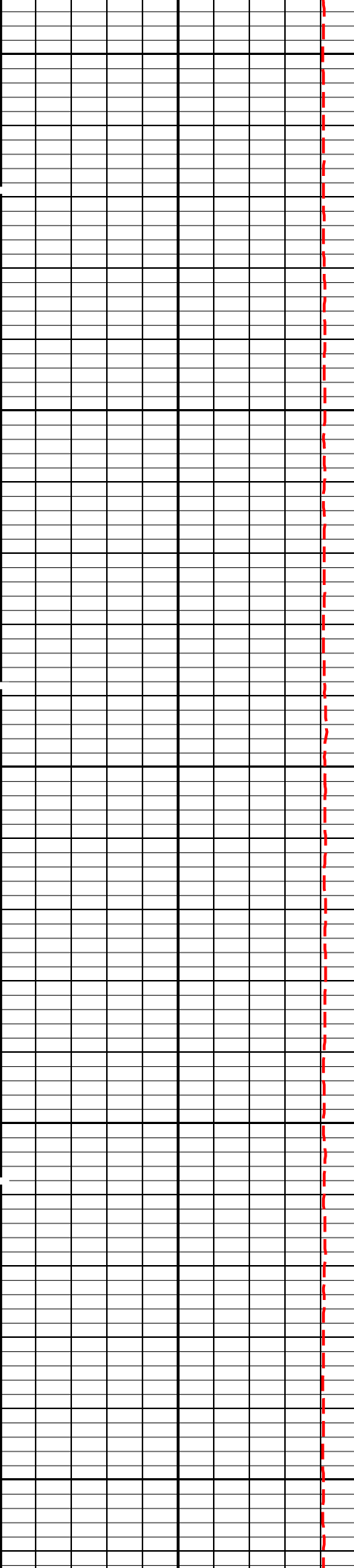


3500

3600

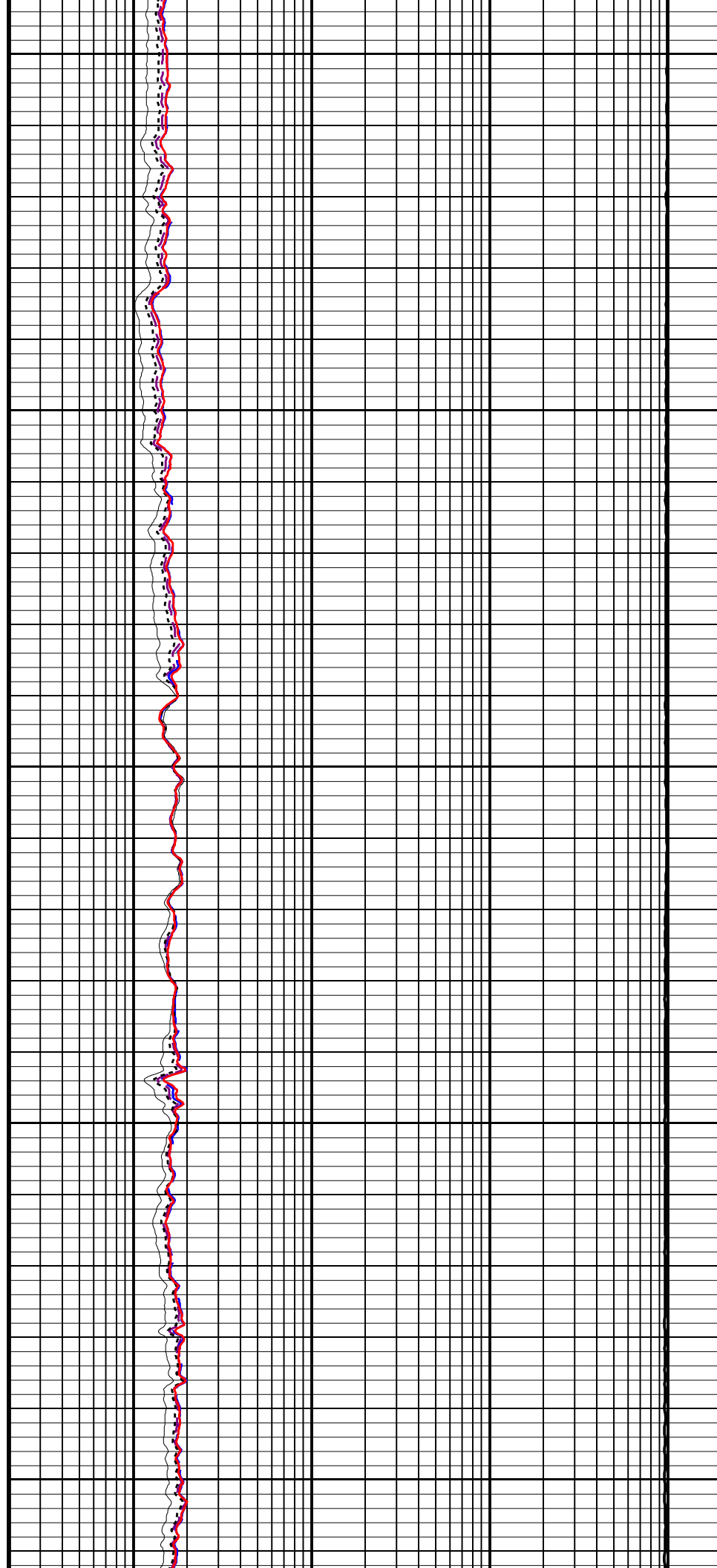


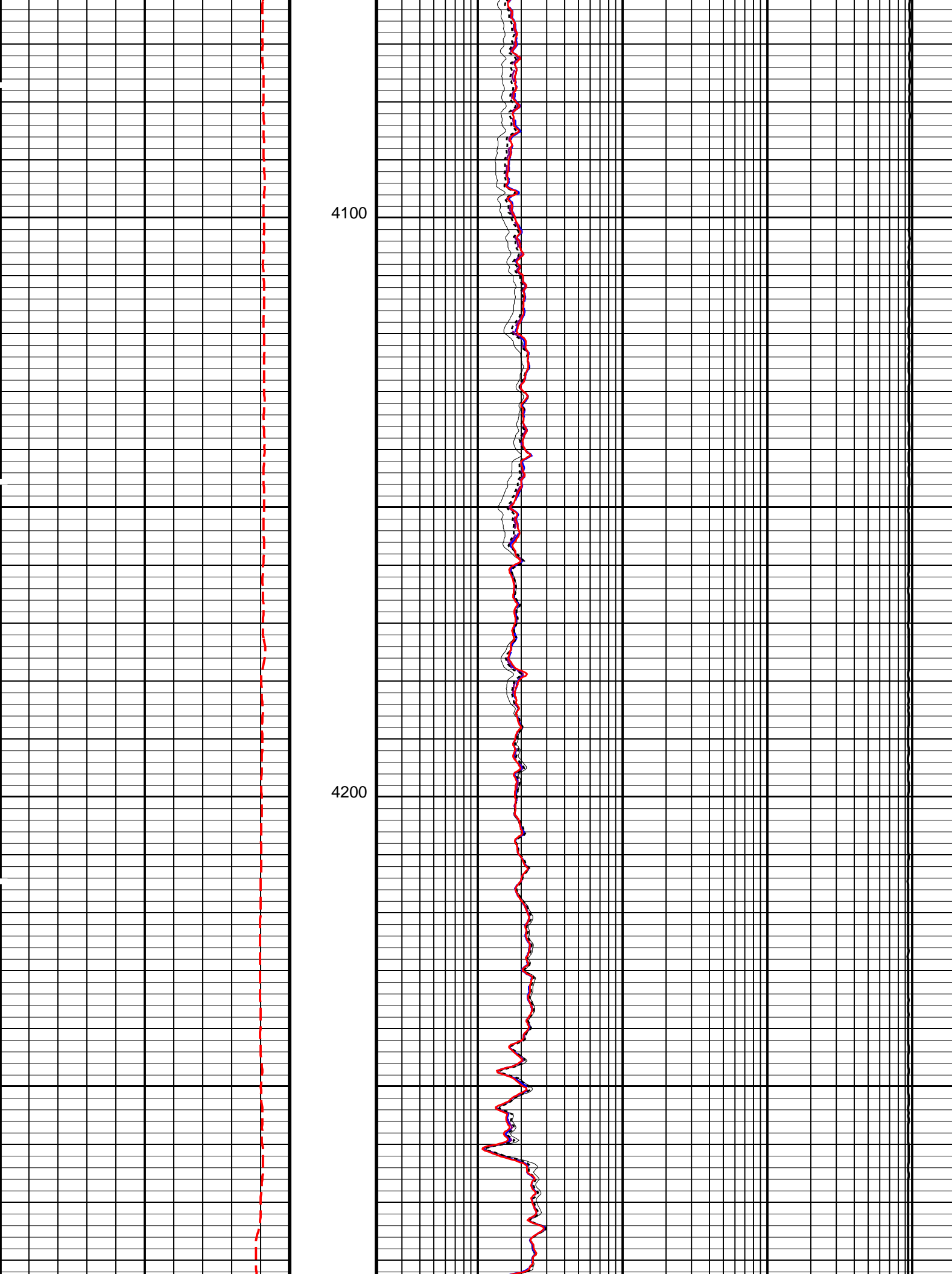


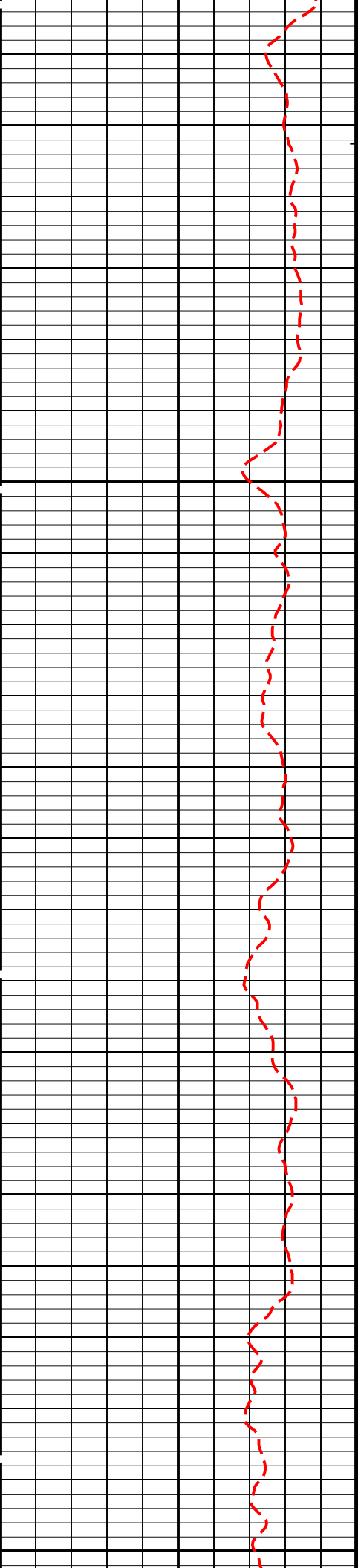


3900

4000





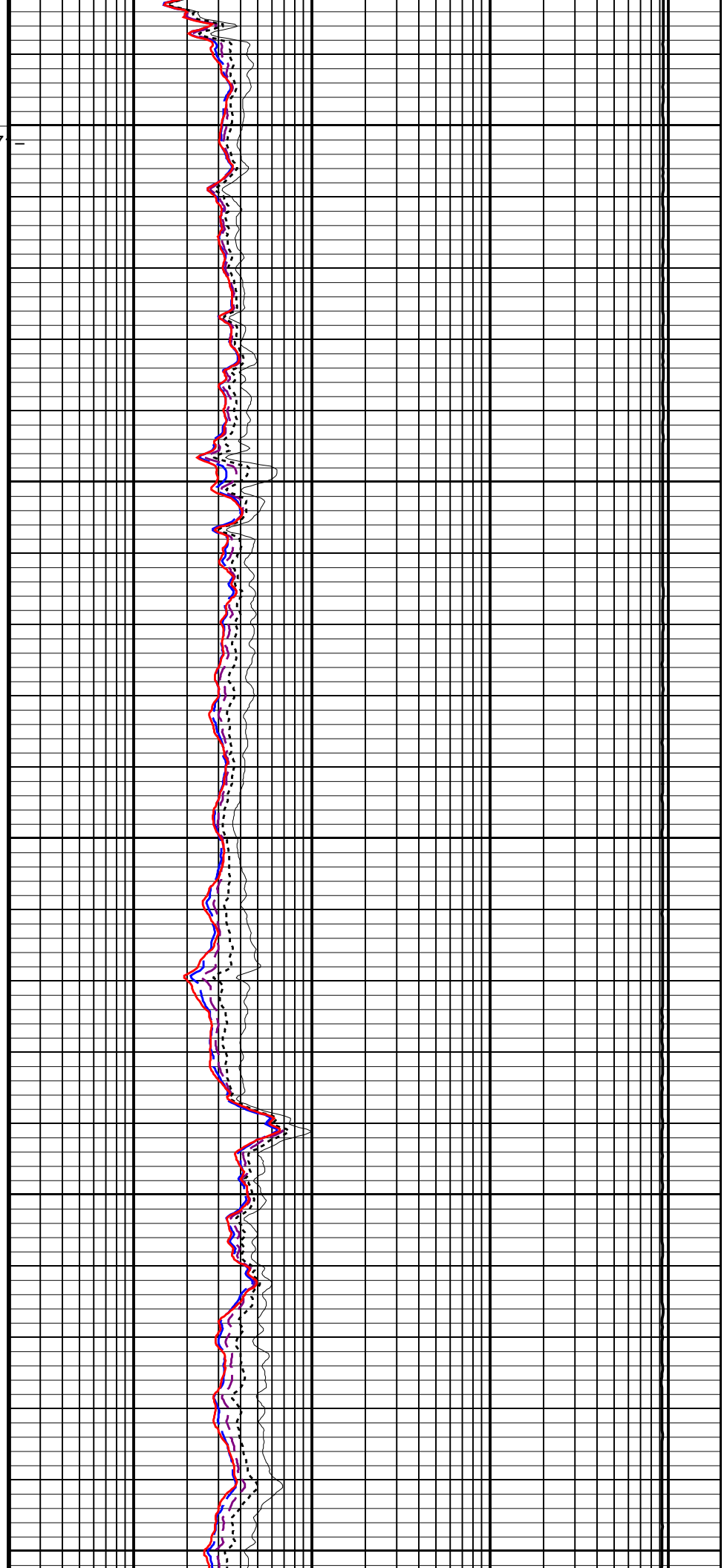


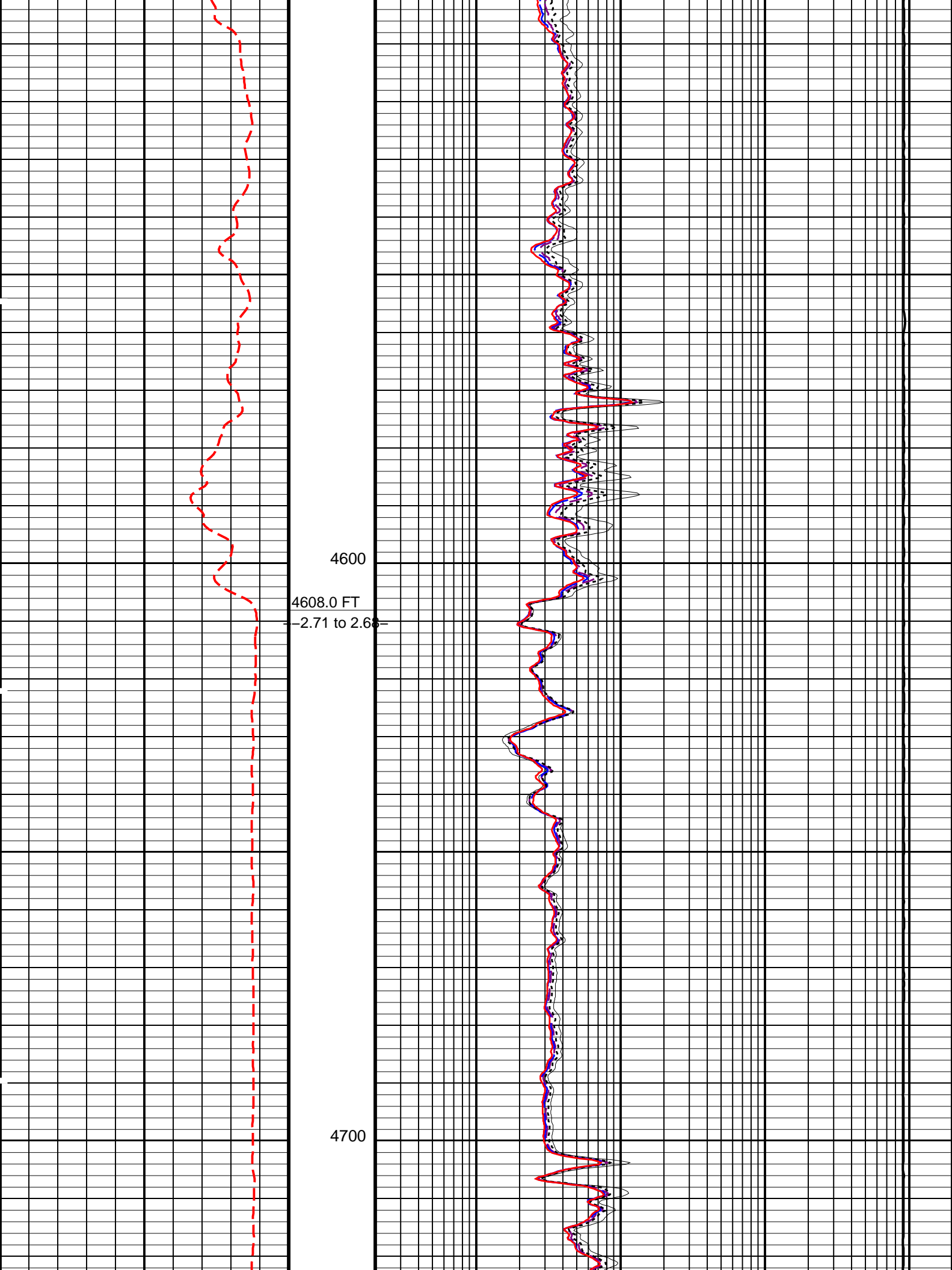
4300.0 FT

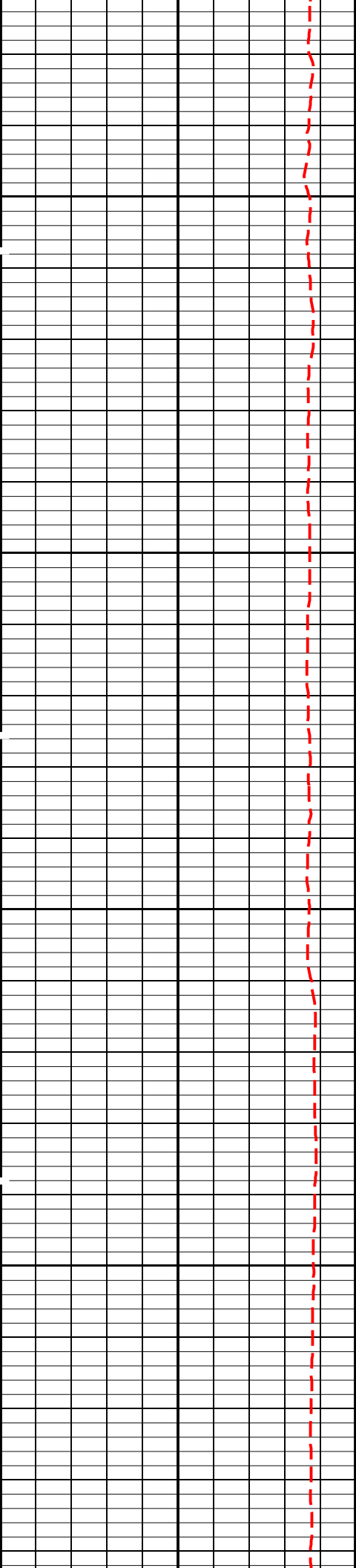
-2.68 to 2.7 -

4400

4500

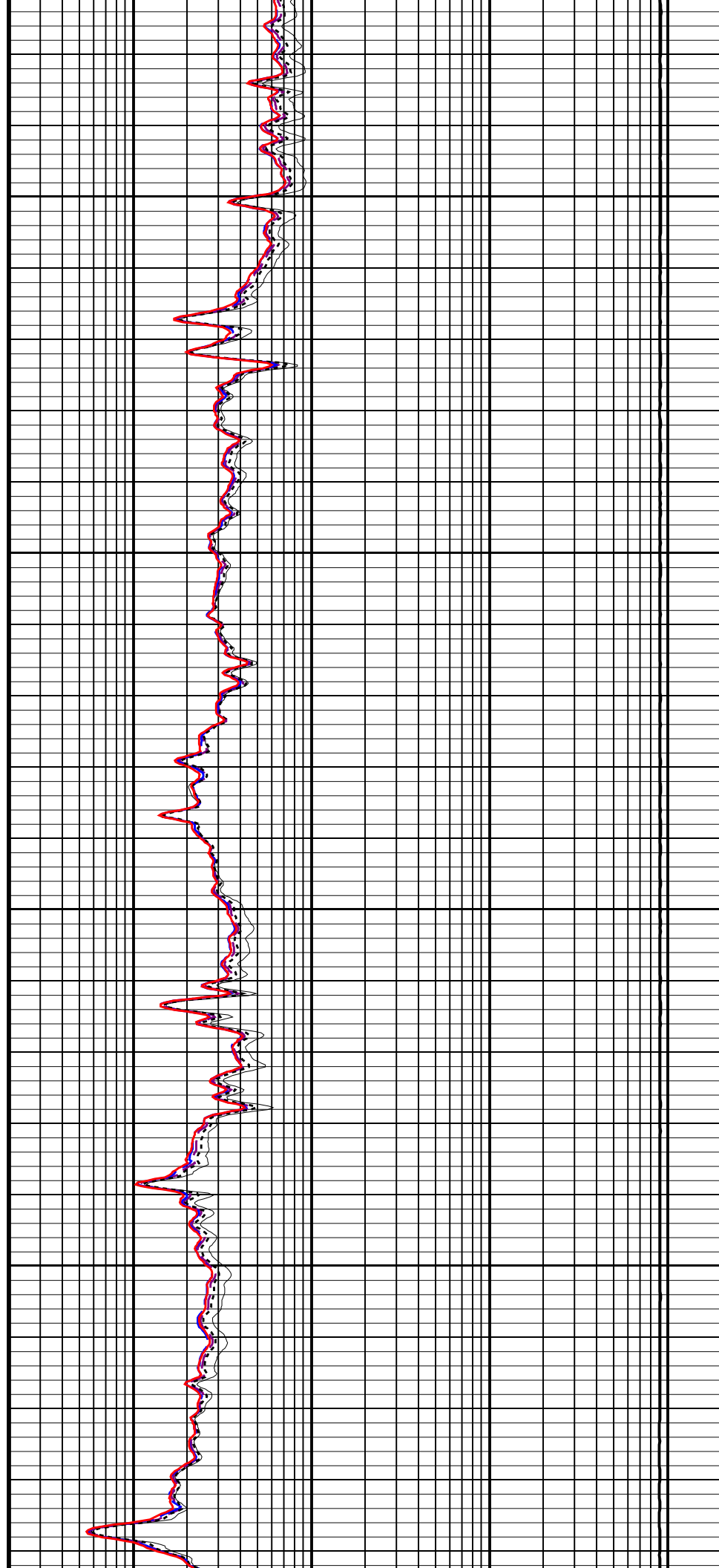


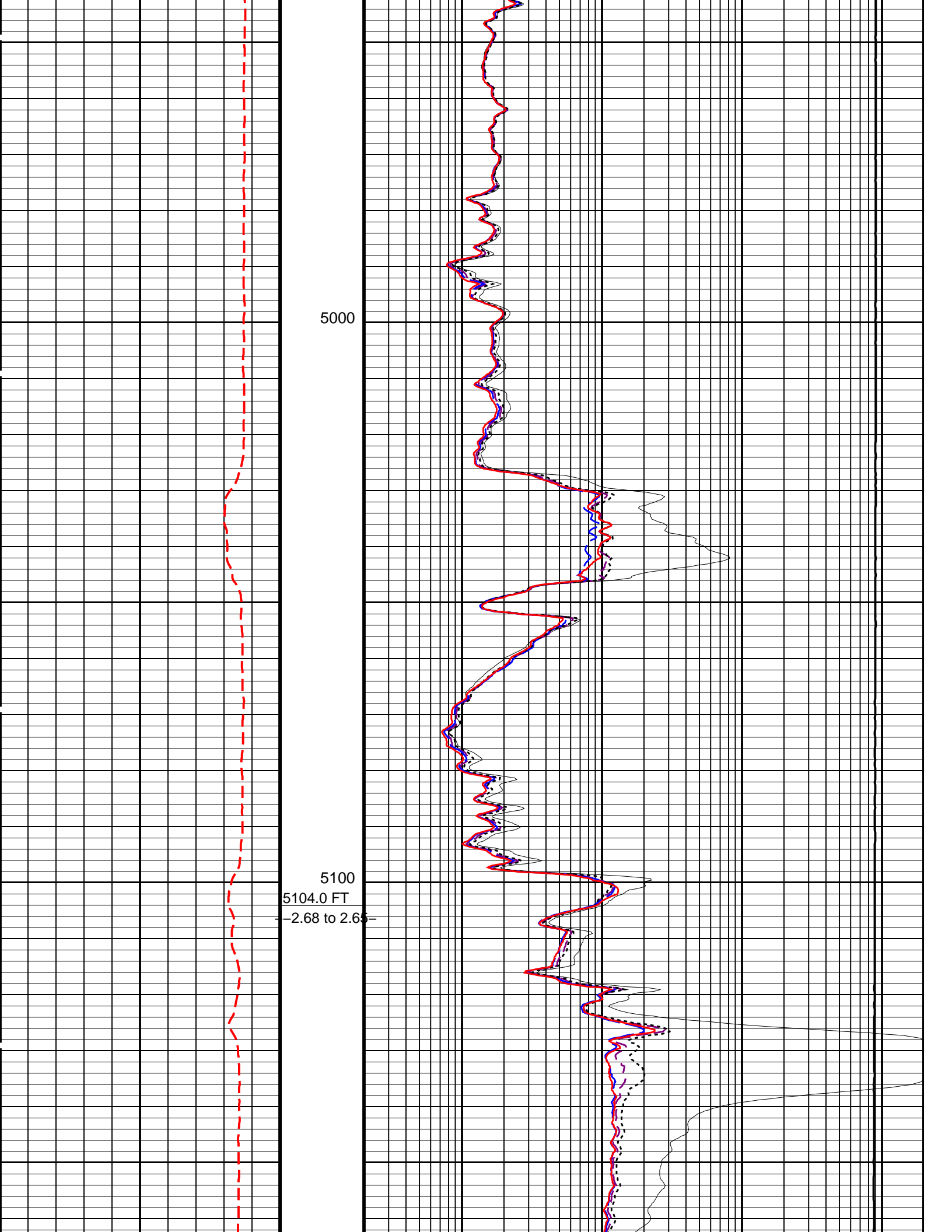


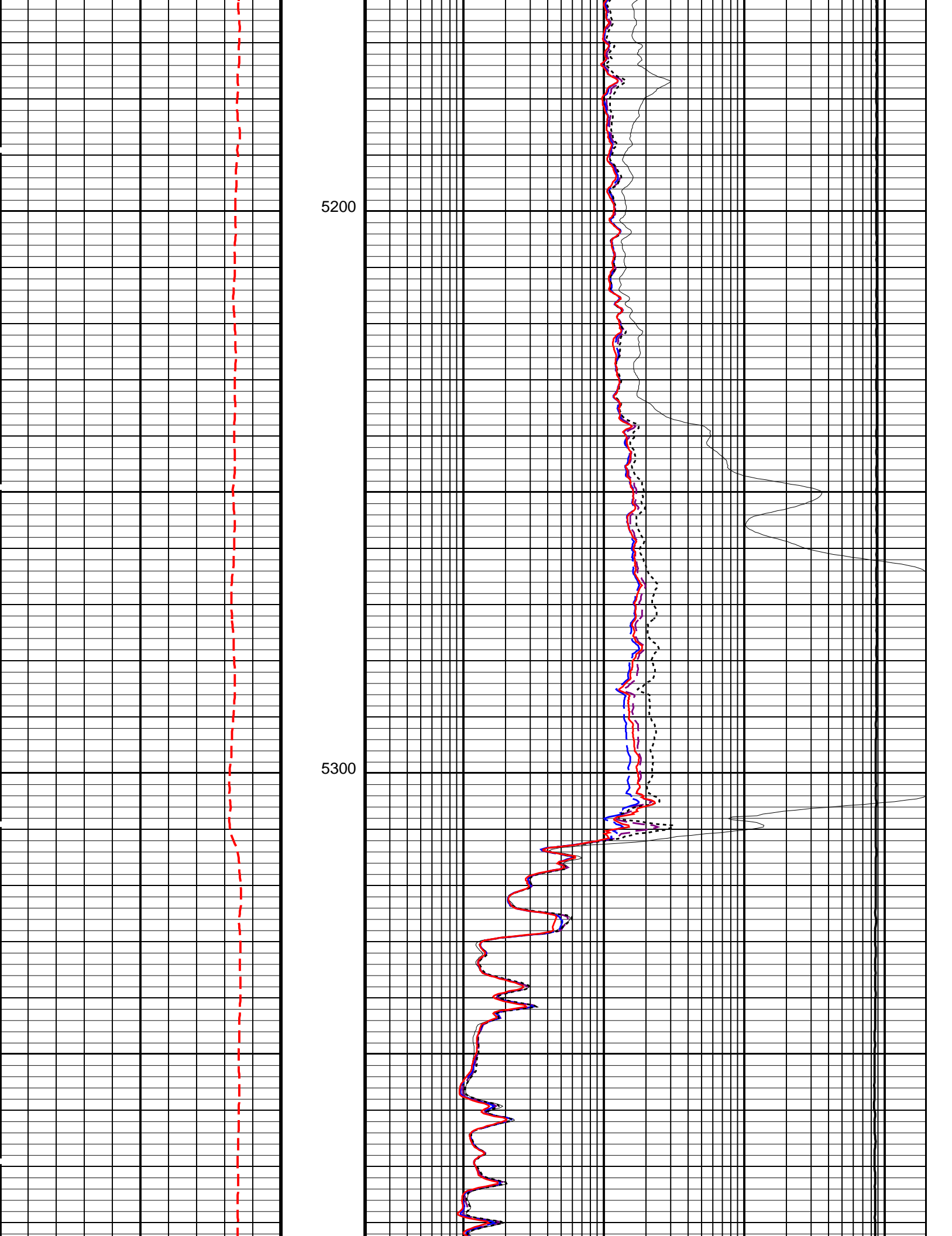


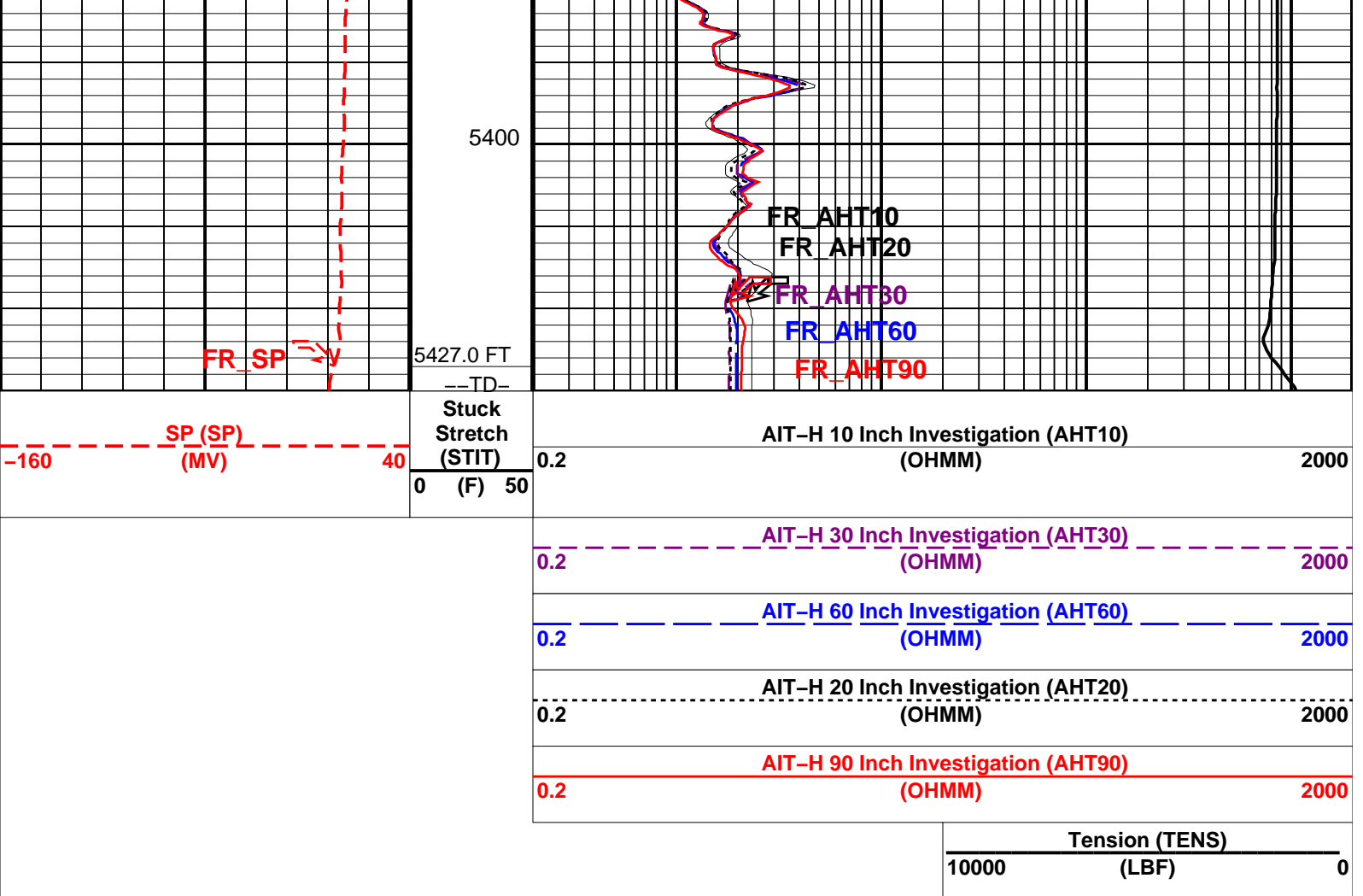
4800

4900









PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
AIT-H: Array Induction Tool – H		
AHBHM	Array Induction Borehole Correction Mode	2_ComputeStandoff
AHBHV	Array Induction Borehole Correction Code Version Number	900
AHBLM	Array Induction Basic Logs Mode	6_One_Two_and_Four
AHBLV	Array Induction Basic Logs Code Version Number	223
AHCDE	Array Induction Casing Detection Enable	No
AHCEN	Array Induction Tool Centering Flag (in Borehole)	Centered
AHFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20
AHMRF	Array Induction Mud Resistivity Factor	1
AHORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20
AHRFV	Array Induction Radial Profiling Code Version Number	701
AHRPV	Array Induction Radial Parametrization Code Version Number	232
AHSTA	Array Induction Tool Standoff	0.125 IN
AHTRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20
BHT	Bottom Hole Temperature (used in calculations)	140 DEGF
FEXP	Form Factor Exponent	2
FNUM	Form Factor Numerator	1
GCSE	Generalized Caliper Selection	BS
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.01 DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE
SHT	Surface Hole Temperature	68 DEGF
SPNV	SP Next Value	0 MV
FEQL: Formation Evaluation Quick Look		
FEXP	Form Factor Exponent	2
FNUM	Form Factor Numerator	1
PERT: Preliminary Evaluation – Real Time		
BHT	Bottom Hole Temperature (used in calculations)	140 DEGF
FEXP	Form Factor Exponent	2
FNUM	Form Factor Numerator	1
GCSE	Generalized Caliper Selection	BS
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.01 DF/F

CHART_GEN 9	0.01	DEGF
GRSE	Generalized Mud Resistivity Selection	LINEAR_ESTIMATE
GTSE	Generalized Temperature Selection	68
SHT	Surface Hole Temperature	DEGF
STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	TDL
STKT	STI Stuck Threshold	2.5
TDD	Total Depth - Driller	5433.00
TDL	Total Depth - Logger	5427.00
System and Miscellaneous		
BS	Bit Size	12.250
DFD	Drilling Fluid Density	9.80
DO	Depth Offset for Playback	0.0
DORL	Depth Offset for Repeat Analysis	2.0
MST	Mud Sample Temperature	130.00
PP	Playback Processing	RECOMPUTE
TD	Total Depth	5427

Format: GRES_S5_LOG

Vertical Scale: 5" per 100'

Graphics File Created: 12-Aug-2007 13:28

OP System Version: 15C0-309			
MCM			
AIT-H	SRPC-3357-Q2_2007	NGT-C	15C0-309
DTA-A	SRPC-3357-Q2_2007	DSLT-FTB	15C0-309
DTC-H	15C0-309		

Input DLIS Files						
DEFAULT	AIT_NGS_SONIC_012LUP	FN:11	PRODUCER	12-Aug-2007 12:03	5430.0 FT	379.0 FT
Output DLIS Files						
DEFAULT	AIT_NGS_SONIC_022PUP	FN:21	PRODUCER	12-Aug-2007 13:28		

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REPEAT ANALYSIS

MAXIS Field Log

Input DLIS Files						
DEFAULT	AIT_NGS_SONIC_010LUP	FN:9	PRODUCER	12-Aug-2007 11:46	5442.0 FT	4784.5 FT
DEFAULT	AIT_NGS_SONIC_012LUP	FN:11	PRODUCER	12-Aug-2007 12:03	5430.0 FT	379.0 FT
Output DLIS Files						
DEFAULT	AIT_NGS_SONIC_022PUP	FN:21	PRODUCER	12-Aug-2007 13:28		

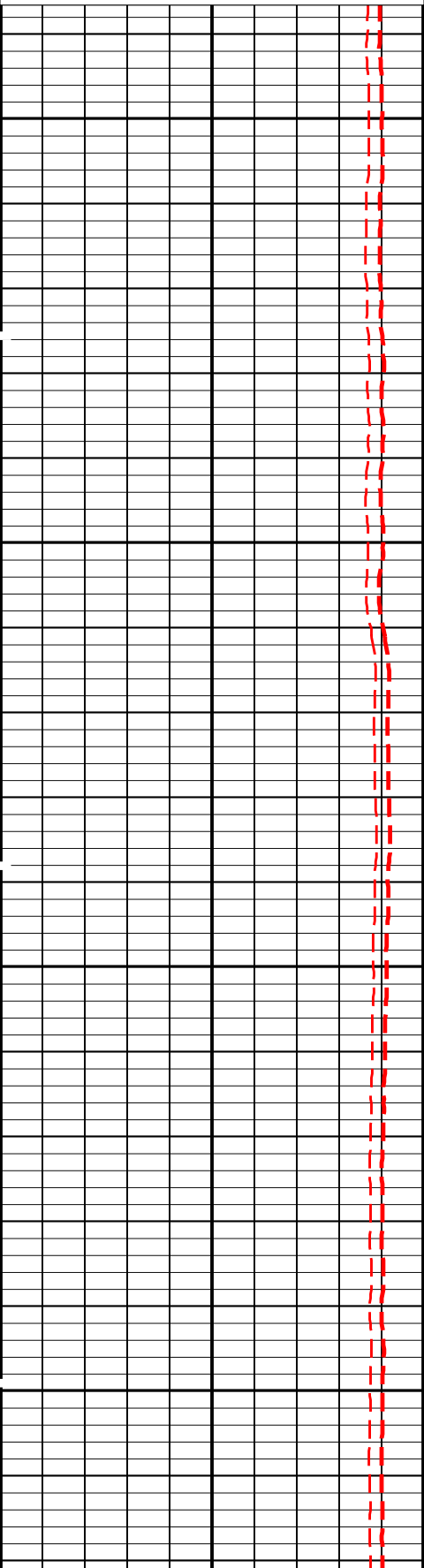
OP System Version: 15C0-309			
MCM			
AIT-H	SRPC-3357-Q2_2007	NGT-C	15C0-309
DTA-A	SRPC-3357-Q2_2007	DSLT-FTB	15C0-309
DTC-H	15C0-309		

PIP SUMMARY

Time Mark Every 60 S

TENS_REP Curve (TENS_REP)	
10000	(LBF) 0
AHT90_REP Curve (AHT90_REP)	
0.2	(OHMM) 2000
AHT20_REP Curve (AHT20_REP)	

SP_REP Curve (SP_REP)
(MV)

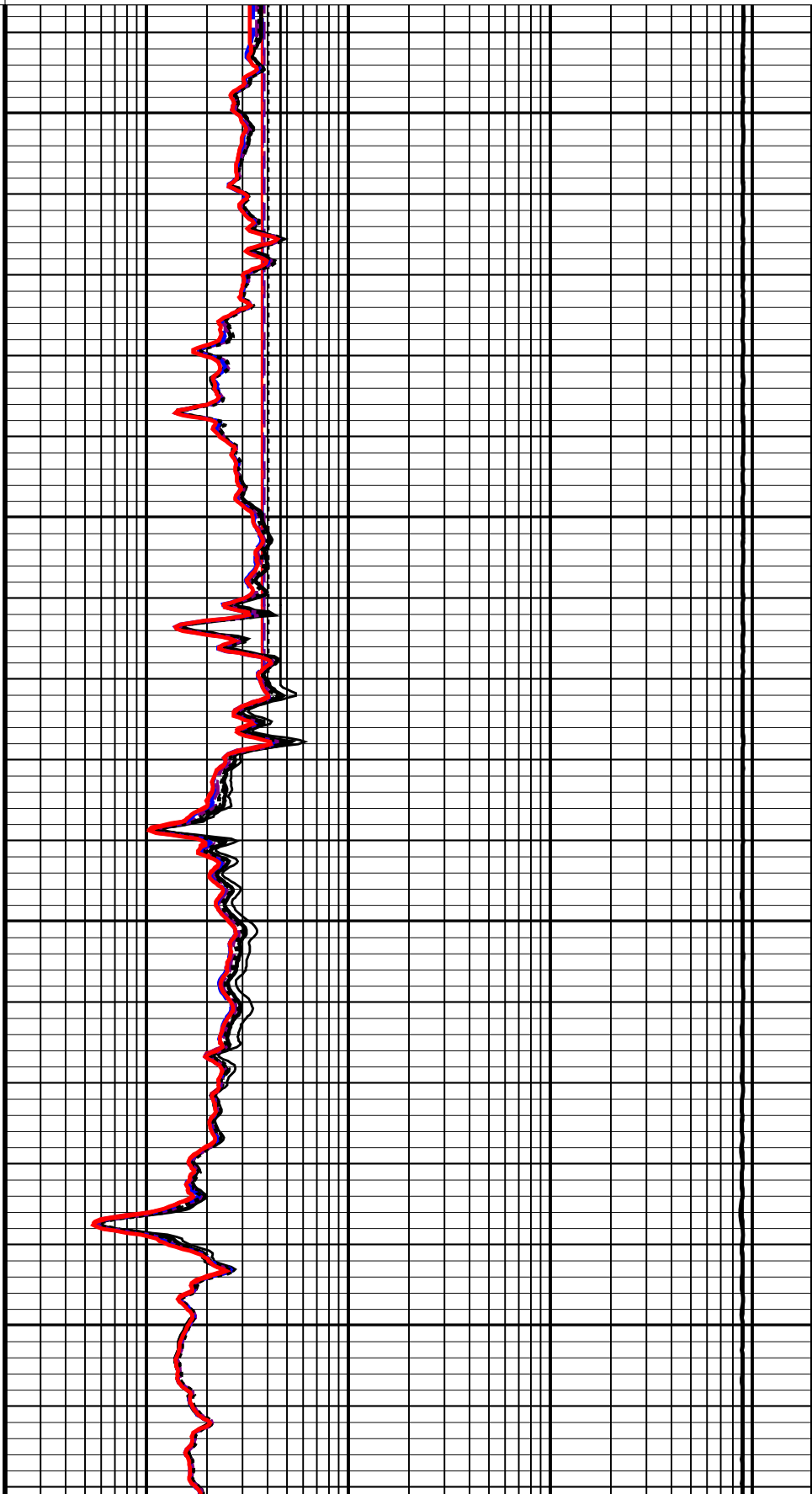


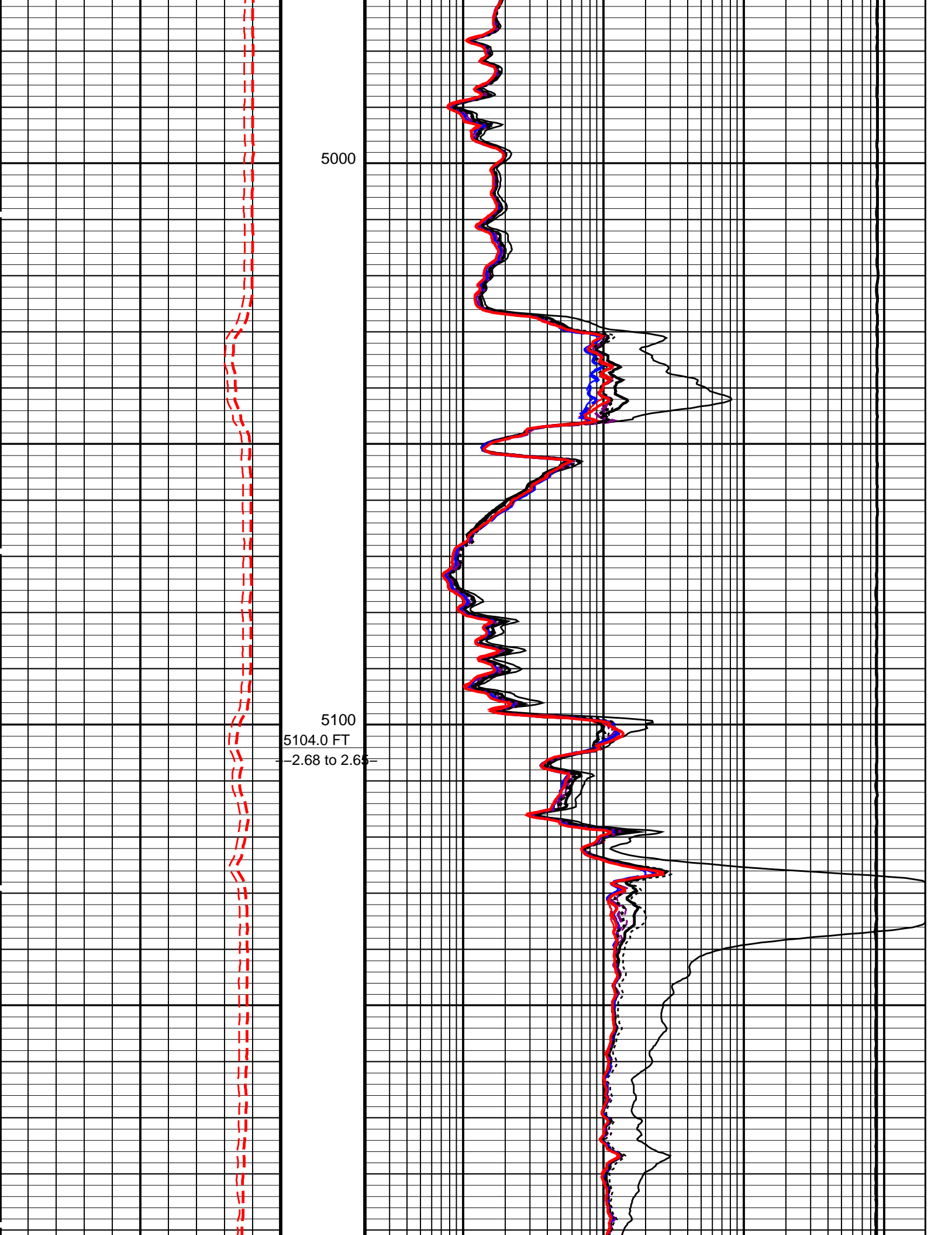
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(OHMM)

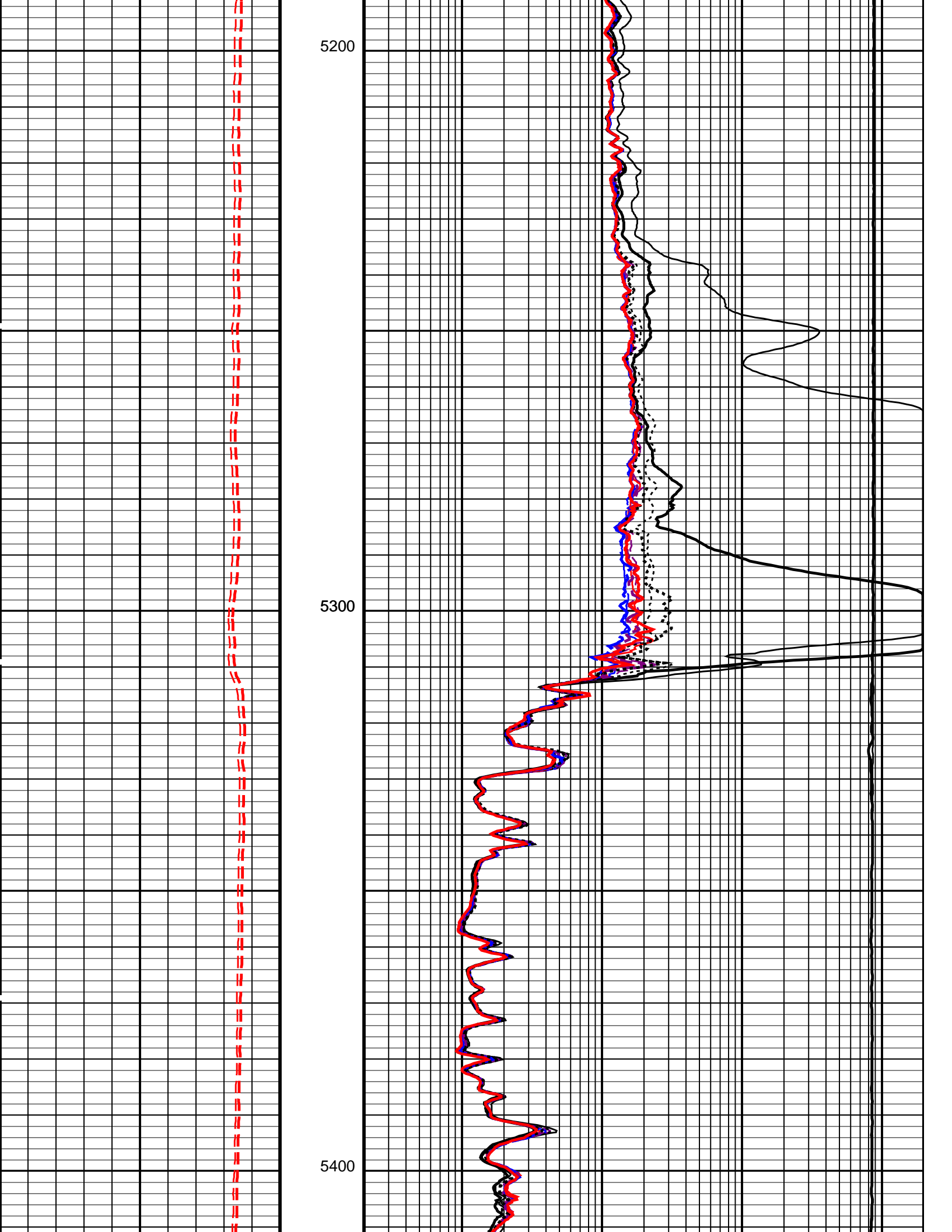
AHT60_REP Curve (AHT60_REP)
(OHMM)

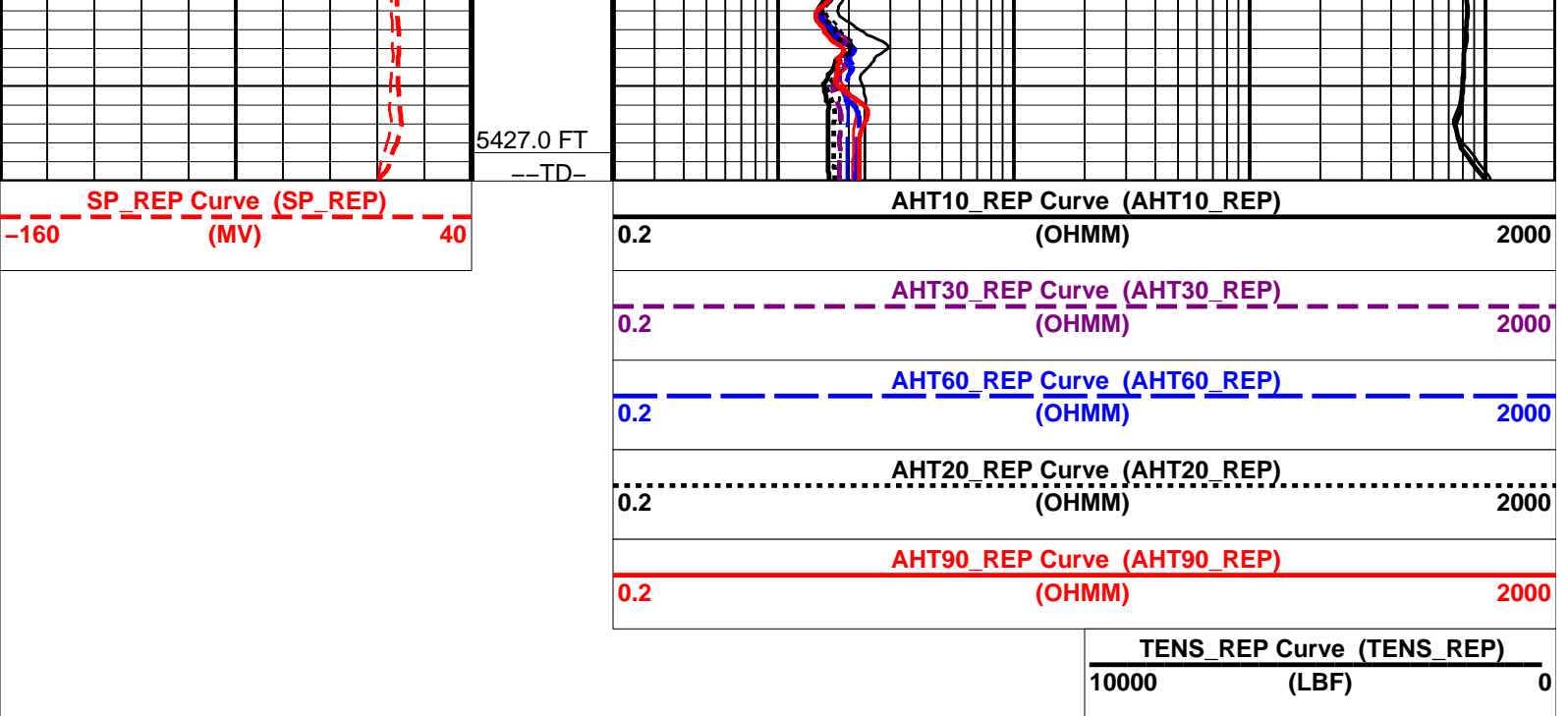
AHT30_REP Curve (AHT30_REP)
(OHMM)

AHT10_REP Curve (AHT10_REP)
(OHMM)









PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
AIT-H: Array Induction Tool - H		
AHBHM	Array Induction Borehole Correction Mode	2_ComputeStandoff
AHBHV	Array Induction Borehole Correction Code Version Number	900
AHBLM	Array Induction Basic Logs Mode	6_One_Two_and_Four
AHBLV	Array Induction Basic Logs Code Version Number	223
AHCDE	Array Induction Casing Detection Enable	No
AHCEN	Array Induction Tool Centering Flag (in Borehole)	Centered
AHFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20
AHMRF	Array Induction Mud Resistivity Factor	1
AHORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20
AHRFV	Array Induction Radial Profiling Code Version Number	701
AHRPV	Array Induction Radial Parametrization Code Version Number	232
AHSTA	Array Induction Tool Standoff	0.125 IN
AHTRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20
BHT	Bottom Hole Temperature (used in calculations)	140 DEGF
FEXP	Form Factor Exponent	2
FNUM	Form Factor Numerator	1
GCSE	Generalized Caliper Selection	BS
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.01 DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN 9
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE
SHT	Surface Hole Temperature	68 DEGF
SPNV	SP Next Value	0 MV
FEQL: Formation Evaluation Quick Look		
FEXP	Form Factor Exponent	2
FNUM	Form Factor Numerator	1
PERT: Preliminary Evaluation - Real Time		
BHT	Bottom Hole Temperature (used in calculations)	140 DEGF
FEXP	Form Factor Exponent	2
FNUM	Form Factor Numerator	1
GCSE	Generalized Caliper Selection	BS
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.01 DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN 9
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE
SHT	Surface Hole Temperature	68 DEGF
System and Miscellaneous		
BS	Bit Size	12.250 IN
DFD	Drilling Fluid Density	9.80 LB/G
DO	Depth Offset for Playback	0.0 FT
DORL	Depth Offset for Repeat Analysis	2.0 FT
MST	Mud Sample Temperature	130.00 DEGF
PP	Playback Processing	RECOMPUTE
TD	Total Depth	5427 FT

OP System Version: 15C0-309

MCM

AIT-H	SRPC-3357-Q2_2007	NGT-C	15C0-309
DTA-A	SRPC-3357-Q2_2007	DSLT-FTB	15C0-309
DTC-H	15C0-309		

Input DLIS Files

DEFAULT	AIT_NGS_SONIC_010LUP	FN:9	PRODUCER	12-Aug-2007 11:46	5442.0 FT	4784.5 FT
DEFAULT	AIT_NGS_SONIC_012LUP	FN:11	PRODUCER	12-Aug-2007 12:03	5430.0 FT	379.0 FT

Output DLIS Files

DEFAULT	AIT_NGS_SONIC_022PUP	FN:21	PRODUCER	12-Aug-2007 13:28
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Schlumberger

BEFORE CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Array Induction Tool – H Wellsite Calibration – Electronics Calibration Check – Thru Cal Mag. & Phase							
Master: 20-Jul-2007 10:53 Before: 11-Aug-2007 4:09							
Thru Cal Magnitude – 0	0	0.6146	0.6172	N/A	N/A	N/A	V
Thru Cal Magnitude – 1	0	1.260	1.266	N/A	N/A	N/A	V
Thru Cal Magnitude – 2	0	0.6267	0.6297	N/A	N/A	N/A	V
Thru Cal Magnitude – 3	0	0.7053	0.7083	N/A	N/A	N/A	V
Thru Cal Magnitude – 4	0	1.327	1.332	N/A	N/A	N/A	V
Thru Cal Magnitude – 5	0	1.923	1.931	N/A	N/A	N/A	V
Thru Cal Magnitude – 6	0	1.923	1.931	N/A	N/A	N/A	V
Thru Cal Magnitude – 7	0	1.379	1.382	N/A	N/A	N/A	V
Phase – 0	0	59.30	58.78	N/A	N/A	N/A	DEG
Phase – 1	0	58.27	57.74	N/A	N/A	N/A	DEG
Phase – 2	0	54.43	53.89	N/A	N/A	N/A	DEG
Phase – 3	0	53.64	53.10	N/A	N/A	N/A	DEG
Phase – 4	0	47.09	46.52	N/A	N/A	N/A	DEG
Phase – 5	0	45.23	44.64	N/A	N/A	N/A	DEG
Phase – 6	0	45.24	44.65	N/A	N/A	N/A	DEG
Phase – 7	0	42.16	41.37	N/A	N/A	N/A	DEG
Array Induction Tool – H Wellsite Calibration – Electronics Calibration Check – Auxilliary							
Master: 20-Jul-2007 10:53 Before: 11-Aug-2007 4:09							
Array Induction SPA Plus	990.5	990.5	990.3	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	0.03630	0.03388	N/A	N/A	N/A	MV
Array Induction Temperature PI	0.9150	0.9174	0.9171	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	0.00003146	0.00003267	N/A	N/A	N/A	V
Array Induction Tool – H Wellsite Calibration – Test Loop Gain Correction							
Master: 20-Jul-2007 10:53							
Test Loop Gain Magnitude – 0	0	1.017	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 1	0	1.019	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 2	0	1.016	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 3	0	1.017	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 4	0	0.9965	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 5	0	1.008	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 6	0	1.005	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 7	0	1.009	N/A	N/A	N/A	N/A	V
Phase – 0	0	0.3788	N/A	N/A	N/A	N/A	DEG
Phase – 1	0	0.4778	N/A	N/A	N/A	N/A	DEG

Phase – 2	0	-0.1272	N/A	N/A	N/A	N/A	DEG
Phase – 3	0	-0.03952	N/A	N/A	N/A	N/A	DEG
Phase – 4	0	-0.1155	N/A	N/A	N/A	N/A	DEG
Phase – 5	0	-0.1104	N/A	N/A	N/A	N/A	DEG
Phase – 6	0	0.2446	N/A	N/A	N/A	N/A	DEG
Phase – 7	0	-0.3556	N/A	N/A	N/A	N/A	DEG

Array Induction Tool – H Wellsite Calibration – Sonde Error Correction

Master: 20-Jul-2007 10:53

R Sonde Error Correction – 0	0	-153.6	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 1	0	137.2	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 2	0	124.6	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 3	0	54.29	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 4	0	25.17	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 5	0	7.628	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 6	0	8.197	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 7	0	-2.134	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 0	0	639.1	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 1	0	211.5	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 2	0	29.16	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 3	0	-5.433	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 4	0	26.43	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 5	0	-16.14	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 6	0	0.5340	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 7	0	1.764	N/A	N/A	N/A	N/A	MM/M

Array Induction Tool – H Wellsite Calibration – Mud Gain Correction

Master: 20-Jul-2007 10:53

Coarse – Mag, Real, Imag – 0	0	1.015	N/A	N/A	N/A	N/A
Coarse – Mag, Real, Imag – 1	0	1.015	N/A	N/A	N/A	N/A
Coarse – Mag, Real, Imag – 2	0	1.015	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 0	0	1.016	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 1	0	1.017	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 2	0	1.017	N/A	N/A	N/A	N/A

Natural Gamma Spectroscopy – C Wellsite Calibration – Background Measurement

Master: 8-Aug-2007 12:46 Before: 8-Aug-2007 13:13

WINDOW 1 Background	100.0	150.0	146.4	N/A	N/A	100.0	CPS
WINDOW 2 Background	50.00	52.18	52.22	N/A	N/A	50.00	CPS
WINDOW 3 Background	10.00	17.13	17.31	N/A	N/A	10.00	CPS
WINDOW 4 Background	6.000	2.700	2.445	N/A	N/A	6.000	CPS
WINDOW 5 Background	10.00	2.600	2.405	N/A	N/A	10.00	CPS
SGR Background	30.00	58.76	57.76	N/A	N/A	N/A	GAPI

Natural Gamma Spectroscopy – C Wellsite Calibration – Normalized Jig Measurement

Master: 8-Aug-2007 12:04 Before: 8-Aug-2007 13:19

WINDOW 1 Jig	376.0	357.6	361.7	N/A	N/A	22.56	CPS
WINDOW 2 Jig	167.0	158.8	159.2	N/A	N/A	10.02	CPS
WINDOW 3 Jig	24.00	22.28	22.00	N/A	N/A	1.440	CPS
WINDOW 4 Jig	14.00	13.26	13.33	N/A	N/A	2.800	CPS
WINDOW 5 Jig	22.50	21.17	21.57	N/A	N/A	4.500	CPS
SGR Jig	165.0	163.7	165.0	N/A	N/A	7.000	GAPI

Natural Gamma Spectroscopy – C Master Calibration – Master Quality Control Values

Master: 8-Aug-2007 11:59

Photomultiplier Res. CARC3	8.000	7.686	--	--	--	--	
APU WINDOW Jig	1350	831.4	--	--	--	--	CPS
APL WINDOW Jig	1350	831.3	--	--	--	--	CPS

Digitizing Sonic Logging Tool Master Calibration – DSLT CBL/CBLB Amplitude Normalization in SFT-255

Master: Calibration not done

CBL Raw Amplitude	33.00	N/A	--	--	--	--	MV
CBLB Raw Amplitude	46.00	N/A	--	--	--	--	MV

The NGT PCSL Value is set to 134.651 KEV

Array Induction Tool – H / Equipment Identification

Primary Equipment:

































Rm/SP Bottom Nose
Array Induction Sonde









AHRM – A
AHIS – BA













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



Auxiliary Equipment:

Array Induction Tool – H Wellsite Calibration

















Electronics Calibration Check – Thru Cal Mag. & Phase							
Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6146		0.6050	59.30		71.00
	Before	0.6172			58.78		
1	Master	1.260		1.270	58.27		70.00
	Before	1.266			57.74		
2	Master	0.6267		0.6230	54.43		66.00
	Before	0.6297			53.89		
3	Master	0.7053		0.7040	53.64		65.00
	Before	0.7083			53.10		
4	Master	1.327		1.337	47.09		59.00
	Before	1.332			46.52		
5	Master	1.923		1.955	45.23		57.00
	Before	1.931			44.64		
6	Master	1.923		1.955	45.24		57.00
	Before	1.931			44.65		
7	Master	1.379		1.415	42.16		53.00
	Before	1.382			41.37		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)
Master: 20-Jul-2007 10:53				Before: 11-Aug-2007 4:09			

Array Induction Tool – H Wellsite Calibration							
Electronics Calibration Check – Auxiliary							
Phase	Array Induction SPA Plus MV		Value	Phase	Array Induction SPA Zero MV		Value
Master			990.5	Master			0.03630
Before			990.3	Before			0.03388
941.0 (Minimum)			990.5 (Nominal)	1040 (Maximum)			
-50.00 (Minimum)			0 (Nominal)	50.00 (Maximum)			
Phase	Array Induction Temperature Plus V		Value	Phase	Array Induction Temperature Zero V		Value
Master			0.9174	Master			3.146E-00
Before			0.9171	Before			3.267E-00
0.8700 (Minimum)			0.9150 (Nominal)	0.9600 (Maximum)			
-0.05000 (Minimum)			0 (Nominal)	0.05000 (Maximum)			
Master: 20-Jul-2007 10:53				Before: 11-Aug-2007 4:09			







Array Induction Tool – H Wellsite Calibration							
Test Loop Gain Correction							
Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG	
0	1.017				0.3788		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.019				0.4778		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.016				-0.1272		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.017				-0.03952		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9965				-0.1155		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	1.008				-0.1104		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

		(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)
6	1.005				0.2446				
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)			-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.009				-0.3556				
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)			-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)















Master: 20-Jul-2007 10:53

Array Induction Tool – H Wellsite Calibration									
Sonde Error Correction									
Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M			
0	-153.6				639.1				
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)			-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	137.2				211.5				
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)			-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	124.6				29.16				
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)			-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	54.29				-5.433				
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)			-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	25.17				26.43				
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)			-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	7.628				-16.14				
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)			-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	8.197				0.5340				
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)			-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-2.134				1.764				
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)			-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)





Master: 20-Jul-2007 10:53

















Array Induction Tool – H Wellsite Calibration									
Mud Gain Correction									
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag			
0	1.015				1.016				
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)			0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.015				1.017				
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)			0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.015				1.017				
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)			0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)













Master: 20-Jul-2007 10:53

Array Induction Tool – H Master Calibration							
Electronics Calibration Check – Thru Cal Mag. & Phase							
Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6146		0.6050	59.30		71.00
1	Master	1.260		1.270	58.27		70.00
2	Master	0.6267		0.6230	54.43		66.00
3	Master	0.7053		0.7040	53.64		65.00
4	Master	1.327		1.337	47.09		59.00
5	Master	1.923		1.955	45.23		57.00
6	Master	1.923		1.955	45.24		57.00
7	Master	1.670		1.670	49.10		59.00

Master	1.379	60.00 % (Minimum)	140.0 % (Maximum)	1.415	42.16	53.00
		(Nominal)			Nom -60.00 (Minimum)	Nom + 60.00 (Maximum)
Master: 20-Jul-2007 10:53						

Array Induction Tool – H Master Calibration							
Electronics Calibration Check – Auxilliary							
Phase	Array Induction SPA Plus MV		Value	Phase	Array Induction SPA Zero MV		Value
Master			990.5	Master			0.03630
	941.0 (Minimum)	990.5 (Nominal)	1040 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
Phase	Array Induction Temperature Plus V		Value	Phase	Array Induction Temperature Zero V		Value
Master			0.9174	Master			3.146E-00
	0.8700 (Minimum)	0.9150 (Nominal)	0.9600 (Maximum)		-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)
Master: 20-Jul-2007 10:53							

Array Induction Tool – H Master Calibration						
Test Loop Gain Correction						
Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG
0	1.017				0.3788	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
1	1.019				0.4778	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
2	1.016				-0.1272	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
3	1.017				-0.03952	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
4	0.9965				-0.1155	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
5	1.008				-0.1104	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
6	1.005				0.2446	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
7	1.009				-0.3556	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
Master: 20-Jul-2007 10:53						

Array Induction Tool – H Master Calibration							
Sonde Error Correction							
Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M	
0	-153.6				639.1		
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)	-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	137.2				211.5		
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)	-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	124.6				29.16		
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)	-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	54.29				-5.433		
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)	-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	25.17				26.43		
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)	-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	7.628				-16.14		
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)	-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)

	(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)
6	8.197			0.5340			
	5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-2.134			1.764			
	-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
Master: 20-Jul-2007 10:53							

Array Induction Tool – H Master Calibration								
Mud Gain Correction								
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag		
0	1.015				1.016			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.015				1.017			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.015				1.017			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
Master: 20-Jul-2007 10:53								





Natural Gamma Spectroscopy – C / Equipment Identification			
Primary Equipment:			
NGT Cartridge		NGC – C	
NGT Sonde		NGD – A 1745	
Auxiliary Equipment:			
NGT Cartridge Housing		NGCH – A	
NGT Sonde Housing		NGH – B	
Gamma Source Radioactive		GSR – U	


Natural Gamma Spectroscopy – C Wellsite Calibration												
Background Measurement												
Phase	WINDOW 1 Background CPS		Value	Phase	WINDOW 2 Background CPS		Value	Phase	WINDOW 3 Background CPS		Value	
Master			150.0	Master			52.18	Master			17.13	
Before			146.4	Before			52.22	Before			17.31	
0 (Minimum)			100.0 (Nominal)	0 (Minimum)			50.00 (Nominal)	0 (Minimum)			10.00 (Nominal)	40.00 (Maximum)
Phase	WINDOW 4 Background CPS		Value	Phase	WINDOW 5 Background CPS		Value	Phase	SGR Background GAPI		Value	
Master			2.700	Master			2.600	Master			58.76	
Before			2.445	Before			2.405	Before			57.76	
0 (Minimum)			6.000 (Nominal)	0 (Minimum)			10.00 (Nominal)	0 (Minimum)			30.00 (Nominal)	120.0 (Maximum)
Master: 8-Aug-2007 12:46					Before: 8-Aug-2007 13:13							

Natural Gamma Spectroscopy – C Wellsite Calibration														
Normalized Jig Measurement														
Phase	WINDOW 1 Jig CPS			Value	Phase	WINDOW 2 Jig CPS			Value	Phase	WINDOW 3 Jig CPS			Value
Master				357.6	Master				158.8	Master				22.28
Before				361.7	Before				159.2	Before				22.00
354.0 (Minimum)376.0 (Nominal)398.0 (Maximum)					155.0 (Minimum)167.0 (Nominal)179.0 (Maximum)					21.50 (Minimum)24.00 (Nominal)26.50 (Maximum)				
Phase	WINDOW 4 Jig CPS			Value	Phase	WINDOW 5 Jig CPS			Value	Phase	SGR Jig GAPI			Value
Master				13.26	Master				21.17	Master				163.7
Before				13.33	Before				21.57	Before				165.0
12.50 (Minimum)14.00 (Nominal)15.50 (Maximum)					20.00 (Minimum)22.50 (Nominal)25.00 (Maximum)					153.0 (Minimum)165.0 (Nominal)177.0 (Maximum)				
Master: 8-Aug-2007 12:04					Before: 8-Aug-2007 13:19									

Natural Gamma Spectroscopy – C Wellsite Calibration			

Quality Control Values

Phase	DHVF Jig V			Value	Phase	Quality Windows Ratio Jig			Value
Master				1369	Master				2.251
Before				1368	Before				2.271
1088 (Minimum)		1450 (Nominal)		1813 (Maximum)	2.150 (Minimum)		2.240 (Nominal)		2.330 (Maximum)
Master: 8–Aug–2007 12:04					Before: 8–Aug–2007 13:19				

Natural Gamma Spectroscopy – C Wellsite Calibration		
Quality Control Values Check		
Phase	Thorium peak Form Factor Jig	Value
Before		-0.01207
-0.2000 (Minimum)		0 (Nominal)
		0.2000 (Maximum)
Before: 8–Aug–2007 13:19		

Natural Gamma Spectroscopy – C Master Calibration												
Master Quality Control Values												
Phase	Photomultiplier Res. CARC3		Value	Phase	APU WINDOW Jig CPS		Value	Phase	APL WINDOW Jig CPS		Value	
Master	<div><div></div></div>		7.686	Master	<div><div></div></div>		831.4	Master	<div><div></div></div>		831.3	
4.500 (Minimum)			8.000 (Nominal)	700.0 (Minimum)			1350 (Nominal)	700.0 (Minimum)			1350 (Nominal)	1600 (Maximum)
Phase	Thorium peak Form Factor Jig		Value									
Master	<div><div></div></div>		−0.01887									
−0.1000 (Minimum)			0 (Nominal)									0.1000 (Maximum)
Master: 8–Aug–2007 11:59												

Digitizing Sonic Logging Tool / Equipment Identification

Primary Equipment:

BHC Sonde

Digitizing Sonic Logging Cartridge

SLS – W

DSLCL – B

Auxiliary Equipment:

Electronics Cartridge Housing

ECH – KH

Digitizing Sonic Logging Tool Master Calibration									
DSLTL CBL/CBLB Amplitude Normalization in SFT–255									
Phase	CBL Raw Amplitude MV			Value	Phase	CBLB Raw Amplitude MV			Value
Master	<div>NOT DONE</div>			N/A	Master	<div>NOT DONE</div>			N/A
27.00 (Minimum)		33.00 (Nominal)		43.00 (Maximum)	27.00 (Minimum)		46.00 (Nominal)		68.00 (Maximum)
Master: Calibration not done									

DTS Telemetry Tool / Equipment Identification

Primary Equipment:

DTC–H Auxiliary Cartridge

DTC–H Telemetry Cartridge

DTCH – A

DTCH – A

Auxiliary Equipment:

DTCH Telemetry Cartridge Housing

ECH – KC

Well: **Windy Hill 3-17D**
Field: **Wildcat**
County: **Morgan**
State: **Colorado**

Array Induction
Linear Correlation

Schlumberger

Company: Windy Hill Gas Storage, LLC

Well: Windy Hill 3-17D

Field: Wildcat

County: Morgan

State: Colorado

Schlumberger

Company: Windy Hill Gas Storage, LLC

Well: Windy Hill 3-17D

Field: Wildcat

County: Morgan

State: Colorado

Schlumberger

Company: Windy Hill Gas Storage, LLC

Well: Windy Hill 3-17D

Field: Wildcat

County: Morgan

State: Colorado

Schlumberger

Company: Windy Hill Gas Storage, LLC

Well: Windy Hill 3-17D

Field: Wildcat

County: Morgan

State: Colorado

Schlumberger

Company: Windy Hill Gas Storage, LLC

Well: Windy Hill 3-17D

Field: Wildcat

County: Morgan

State: Colorado

County: Morgan Field: Wildcat Location: SENE/4 Sec. 17, T3N, R55W Well: Windy Hill 3-17D Company: Windy Hill Gas Storage, LLC			
<h2>Natural Gamma-Ray Spectrometry Tool</h2>			
LOCATION			
SENE/4 Sec. 17, T3N, R55W 1826' FSL & 2290' FEL		Elev.: K.B. 5368 ft G.L. 5350 ft D.F. 5367 ft	
Permanent Datum: _____ Log Measured From: _____ Drilling Measured From: _____	Ground Level _____ Kelly Bushing _____ Kelly Bushing _____	Elev.: 5350 ft _____ 18.0 ft above Perm. Datum	
API Serial No.	Section 17	Township 3N	Range 55W

County: Morgan Field: Wildcat Location: SENE/4 Sec. 17, T3N, R55W Well: Windy Hill 3-17D Company: Windy Hill Gas Storage, LLC			
<h2>Natural Gamma-Ray Spectrometry Tool</h2>			
LOCATION			
SENE/4 Sec. 17, T3N, R55W 1826' FSL & 2290' FEL		Elev.: K.B. 5368 ft G.L. 5350 ft D.F. 5367 ft	
Permanent Datum: _____ Log Measured From: _____ Drilling Measured From: _____	Ground Level _____ Kelly Bushing _____ Kelly Bushing _____	Elev.: 5350 ft _____ 18.0 ft above Perm. Datum	
API Serial No.	Section 17	Township 3N	Range 55W

County: Morgan Field: Wildcat Location: SENE/4 Sec. 17, T3N, R55W Well: Windy Hill 3-17D Company: Windy Hill Gas Storage, LLC			
<h2>Natural Gamma-Ray Spectrometry Tool</h2>			
LOCATION			
SENE/4 Sec. 17, T3N, R55W 1826' FSL & 2290' FEL		Elev.: K.B. 5368 ft G.L. 5350 ft D.F. 5367 ft	
Permanent Datum: _____ Log Measured From: _____ Drilling Measured From: _____	Ground Level _____ Kelly Bushing _____ Kelly Bushing _____	Elev.: 5350 ft _____ 18.0 ft above Perm. Datum	
API Serial No.	Section 17	Township 3N	Range 55W

County: Morgan Field: Wildcat Location: SENE/4 Sec. 17, T3N, R55W Well: Windy Hill 3-17D Company: Windy Hill Gas Storage, LLC			
<h2>Natural Gamma-Ray Spectrometry Tool</h2>			
LOCATION			
SENE/4 Sec. 17, T3N, R55W 1826' FSL & 2290' FEL		Elev.: K.B. 5368 ft G.L. 5350 ft D.F. 5367 ft	
Permanent Datum: _____ Log Measured From: _____ Drilling Measured From: _____	Ground Level _____ Kelly Bushing _____ Kelly Bushing _____	Elev.: 5350 ft _____ 18.0 ft above Perm. Datum	
API Serial No.	Section 17	Township 3N	Range 55W

County: Morgan Field: Wildcat Location: SENE/4 Sec. 17, T3N, R55W Well: Windy Hill 3-17D Company: Windy Hill Gas Storage, LLC			
<h2>Natural Gamma-Ray Spectrometry Tool</h2>			
LOCATION			
SENE/4 Sec. 17, T3N, R55W 1826' FSL & 2290' FEL		Elev.: K.B. 5368 ft G.L. 5350 ft D.F. 5367 ft	
Permanent Datum: _____ Log Measured From: _____ Drilling Measured From: _____	Ground Level _____ Kelly Bushing _____ Kelly Bushing _____	Elev.: 5350 ft _____ 18.0 ft above Perm. Datum	
API Serial No.	Section 17	Township 3N	Range 55W

County: Morgan Field: Wildcat Location: SENE/4 Sec. 17, T3N, R55W Well: Windy Hill 3-17D Company: Windy Hill Gas Storage, LLC			
<h2>Natural Gamma-Ray Spectrometry Tool</h2>			
LOCATION			
SENE/4 Sec. 17, T3N, R55W 1826' FSL & 2290' FEL		Elev.: K.B. 5368 ft G.L. 5350 ft D.F. 5367 ft	
Permanent Datum: _____ Log Measured From: _____ Drilling Measured From: _____	Ground Level _____ Kelly Bushing _____ Kelly Bushing _____	Elev.: 5350 ft _____ 18.0 ft above Perm. Datum	
API Serial No.	Section 17	Township 3N	Range 55W

LOCATION			
SENE/4 Sec. 17, T3N, R56W	Elev.:	K.B.	5368 ft
1826' FSL & 2290' FEL		G.L.	5350 ft
		D.F.	5367 ft
Permanent Datum:	Ground Level	Elev.:	5350 ft
Log Measured From:	Kelly Bushing	18.0 ft	above Perm. Datum
Drilling Measured From:	Kelly Bushing		
API Serial No.	Section	Township	Range
	17	3N	55W

[illegible]

Logging Date	12-Aug-2007				
Run Number	1				
Depth Driller	5433 ft				
Schlumberger Depth	5427 ft				
Bottom Log Interval	5419 ft				
Top Log Interval	476 ft				
Casing Driller Size @ Depth	13.375 in @ 463 ft			@	
Casing Schlumberger	476 ft				
Bit Size	12.250 in				
Type Fluid In Hole	KCL Polymer				
Density	9.8 lbm/gal		51 s		
Fluid Loss	PH				
Source Of Sample	Flowline				
RM @ Measured Temperature	0.560 ohm.m @ 130 degF			@	
RMF @ Measured Temperature	0.448 ohm.m @ 130 degF			@	
RMC @ Measured Temperature	0.672 ohm.m @ 130 degF			@	
Source RMF	RMC		Calculated		
RM @ MRT	RMF @ MRT		0.522 @ 140 0.417 @ 140	@	@
Maximum Recorded Temperatures	140 degF				
Circulation Stopped	Time		8:30		
Logger On Bottom	Time		11:30		
Unit Number	Location		3003 Fort Morgan, CO		
Recorded By	Matt Baldwin				
Witnessed By	Lynn Brewer				

Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth	@		
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
Density	Viscosity		
Fluid Loss	PH		
Source Of Sample			
RM @ Measured Temperature	@		
RMF @ Measured Temperature	@		
RMC @ Measured Temperature	@		
Source RMF	RMC		
RM @ MRT	RMF @ MRT	@	@
Maximum Recorded Temperatures			
Circulation Stopped	Time		
Logger On Bottom	Time		
Unit Number	Location		
Recorded By			
Witnessed By			

DEPTH SUMMARY LISTING	
-----------------------	--

Date Created: 12-AUG-2007 13:10:31

Logging Cable

Type:	7-39P-LXS
Serial Number:	6029
Length:	16600.00 FT
Conveyance Method:	Wireline
Rig Type:	LAND

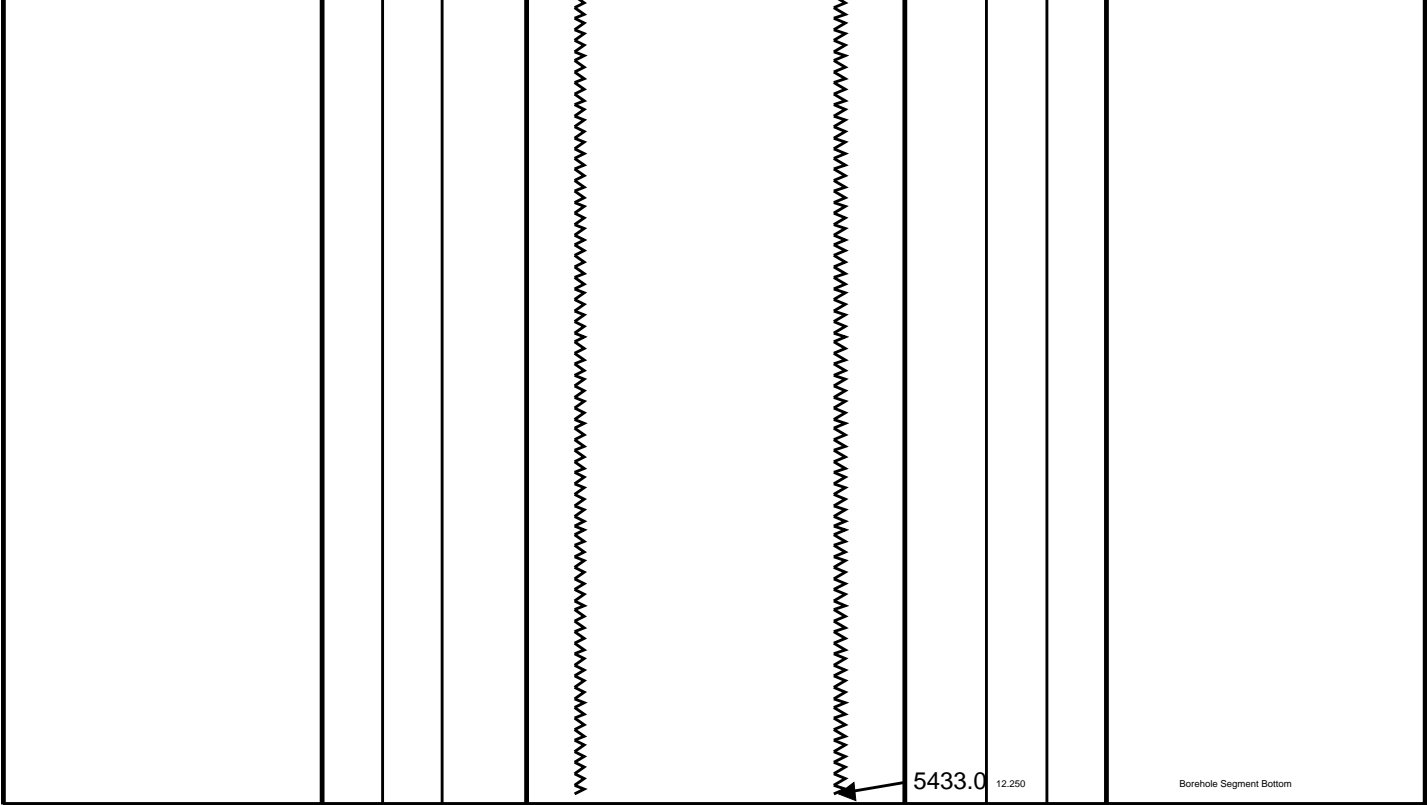
Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	2.00 FT
Tool Zero Check At Surface:	0.00 FT

1. All Schlumberger Depth Policy Procedures Applied
2. This is the Primary Depth Reference
- 3.
- 4.
- 5.
- 6.

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

OTHER SERVICES2
OS1:
OS2:
OS3:
OS4:
OS5:

REMARKS: RUN NUMBER 2



ALL DEPTHS AS PER DRILLER



NGT Ratios
100’=5"

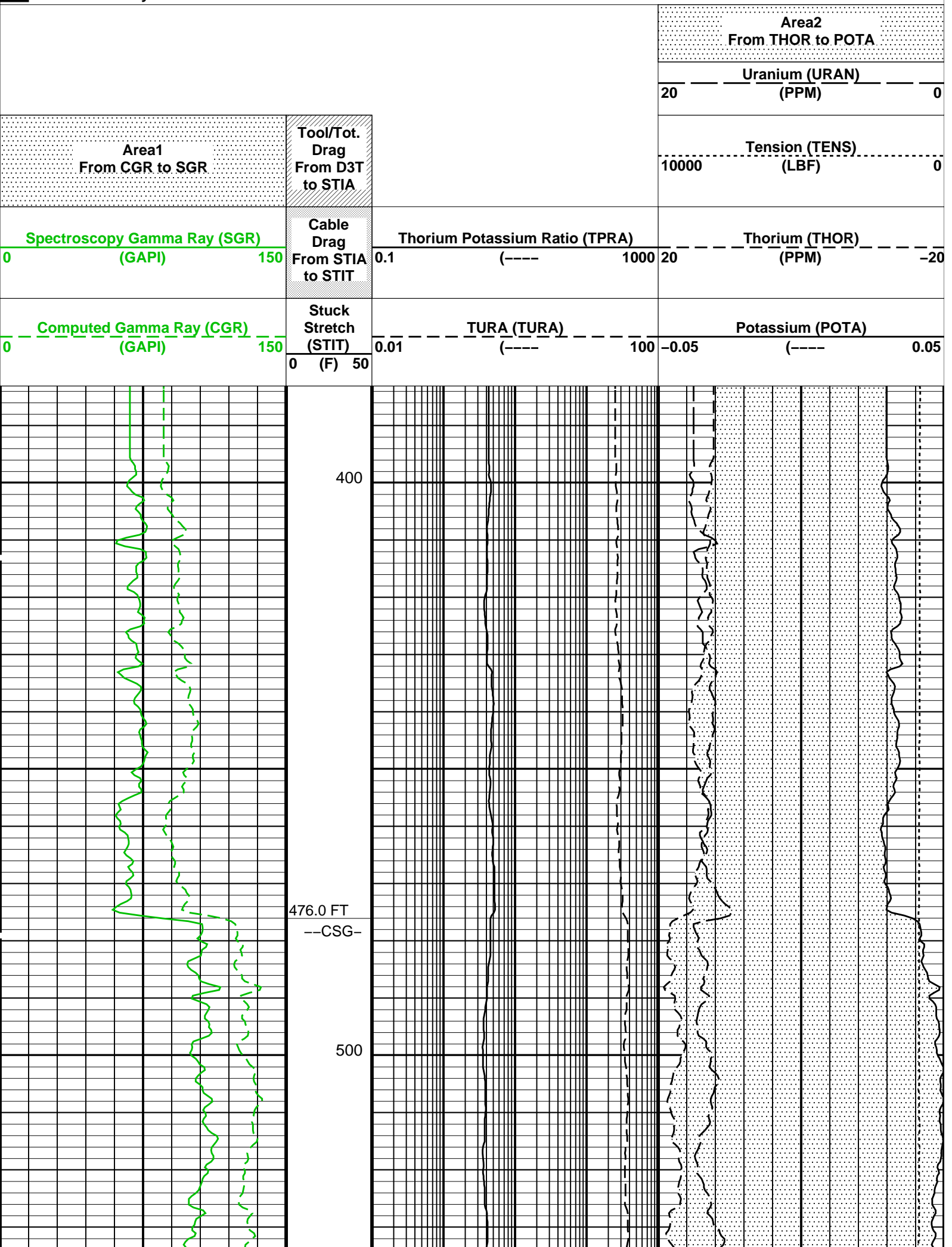
MAXIS Field Log

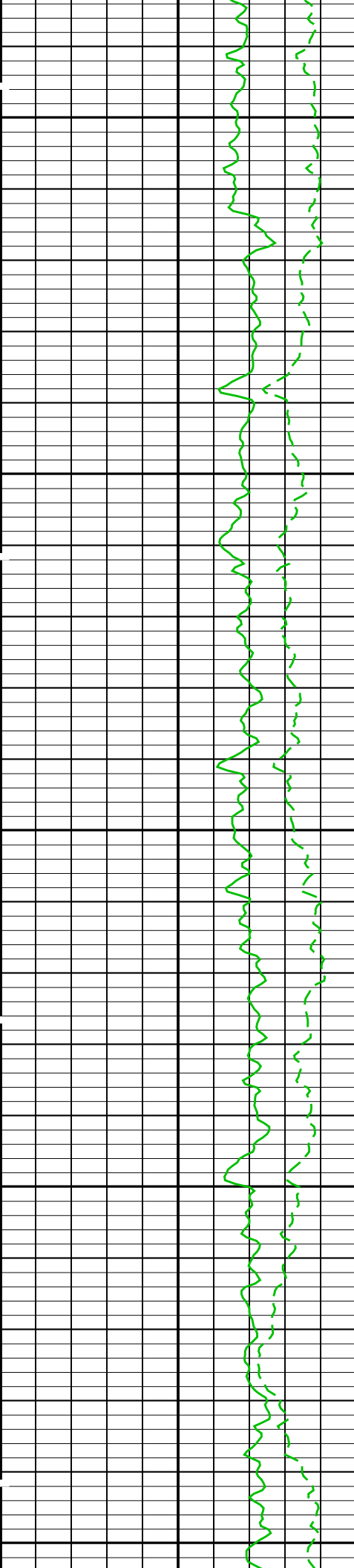
Company: Windy Hill Gas Storage, LLC Well: Windy Hill 3–17D

Input DLIS Files						
DEFAULT	AIT_NGS_SONIC_012LUP	FN:11	PRODUCER	12–Aug–2007 12:03	5430.0 FT	379.0 FT

Output DLIS Files						
DEFAULT	AIT_NGS_SONIC_022PUP	FN:21	PRODUCER	12–Aug–2007 13:28	5430.0 FT	383.0 FT

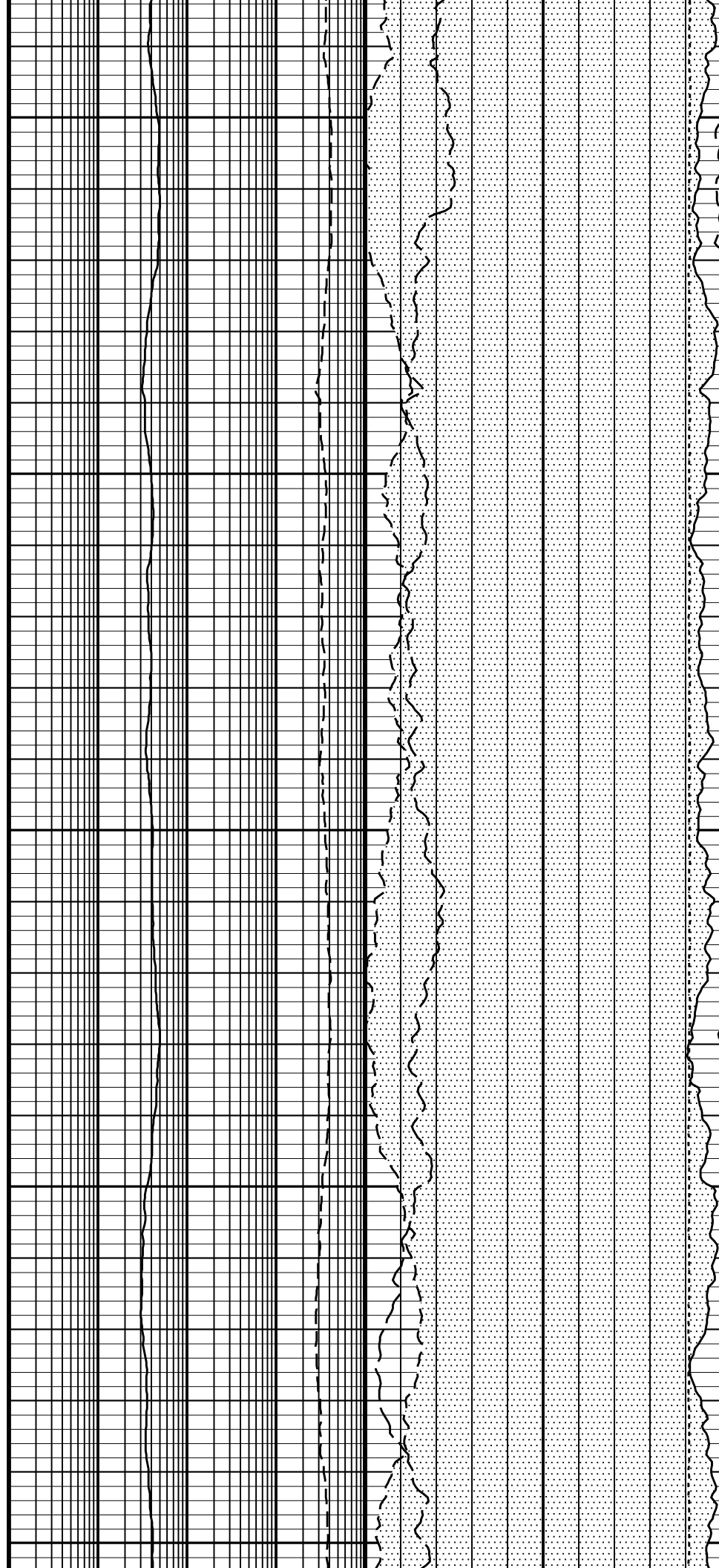
OP System Version: 15C0–309			
MCM			
AIT–H	SRPC–3357–Q2_2007	NGT–C	15C0–309
DTA–A	SRPC–3357–Q2_2007	DSL–FTB	15C0–309
DTC–H	15C0–309		

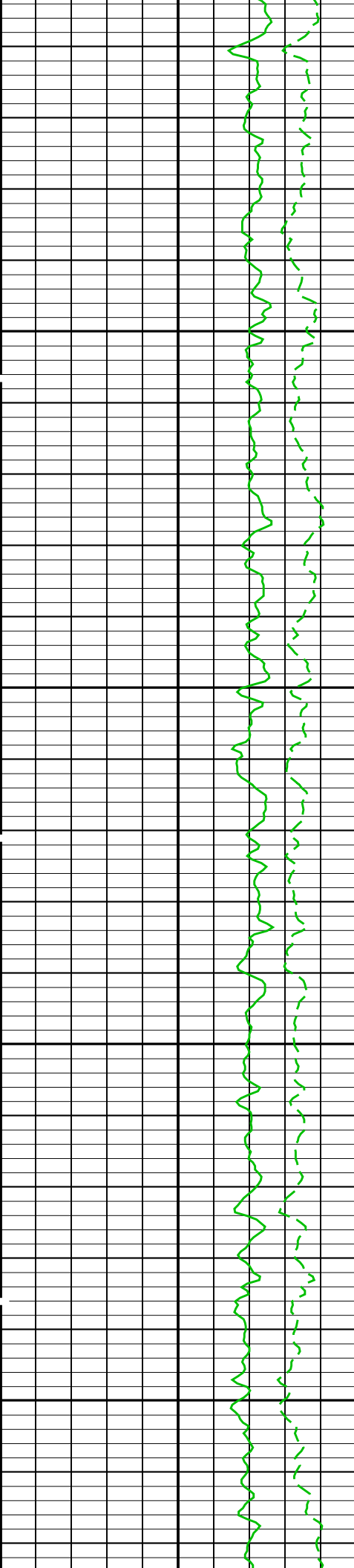




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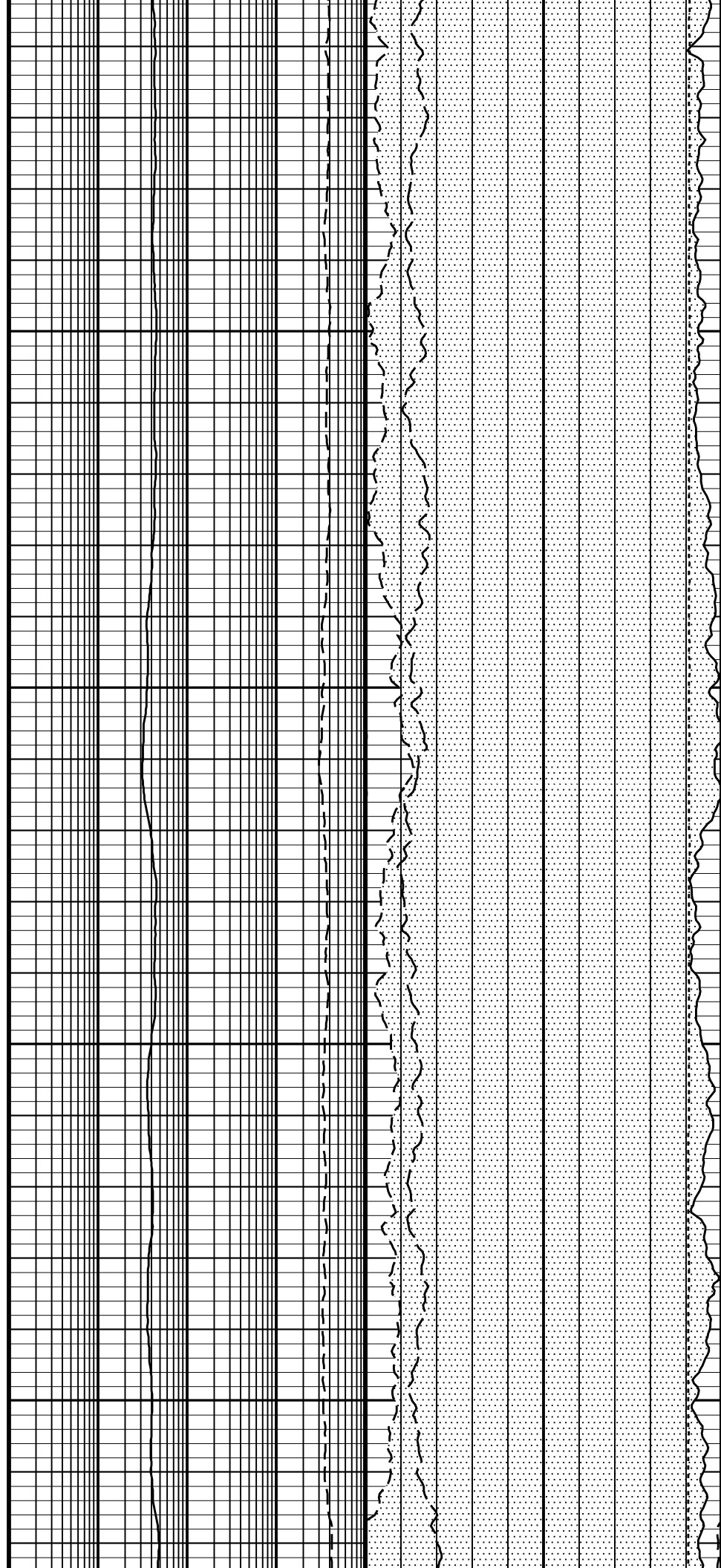
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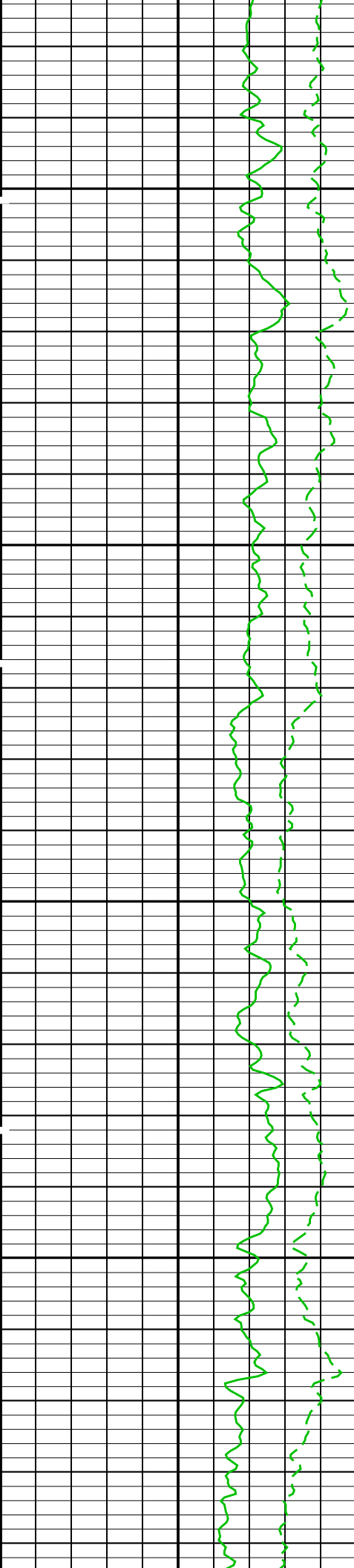




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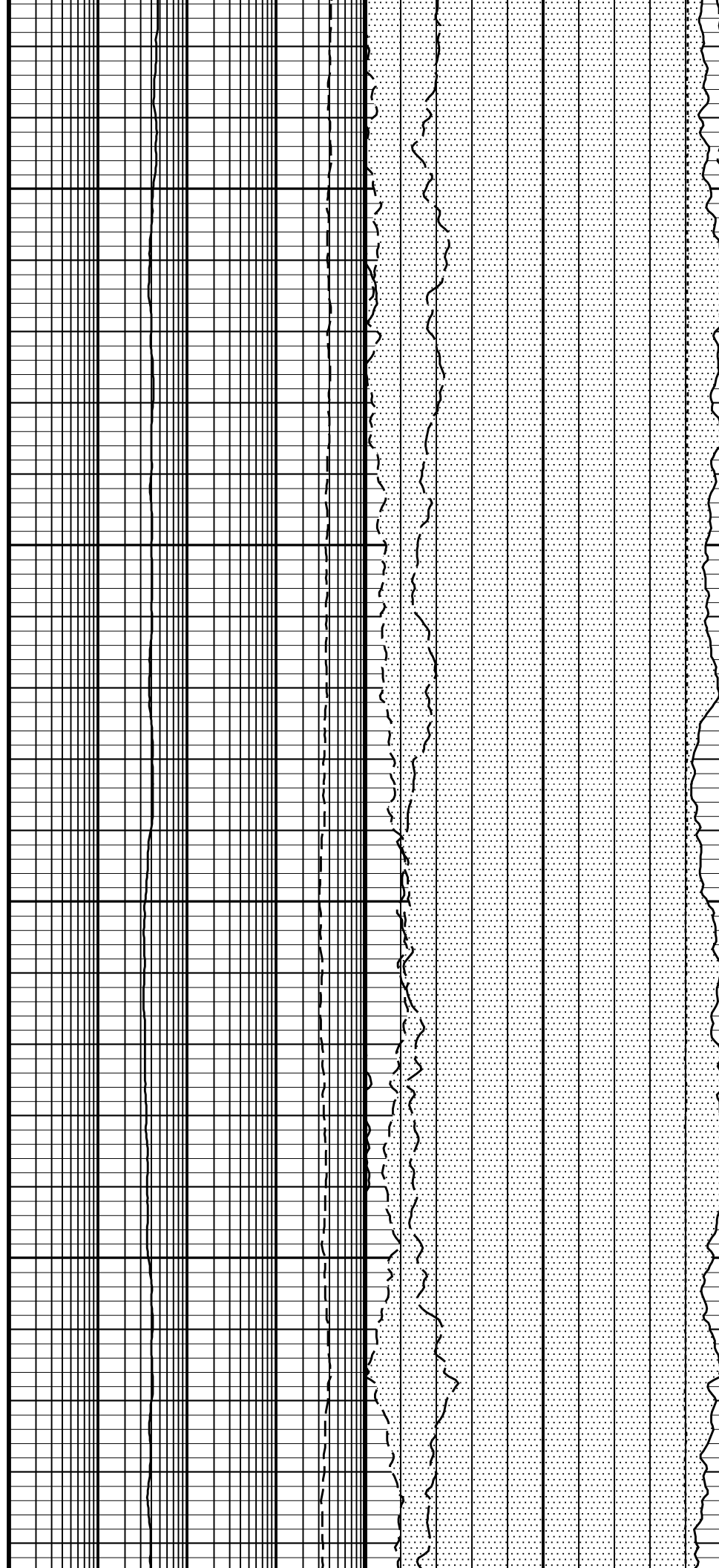
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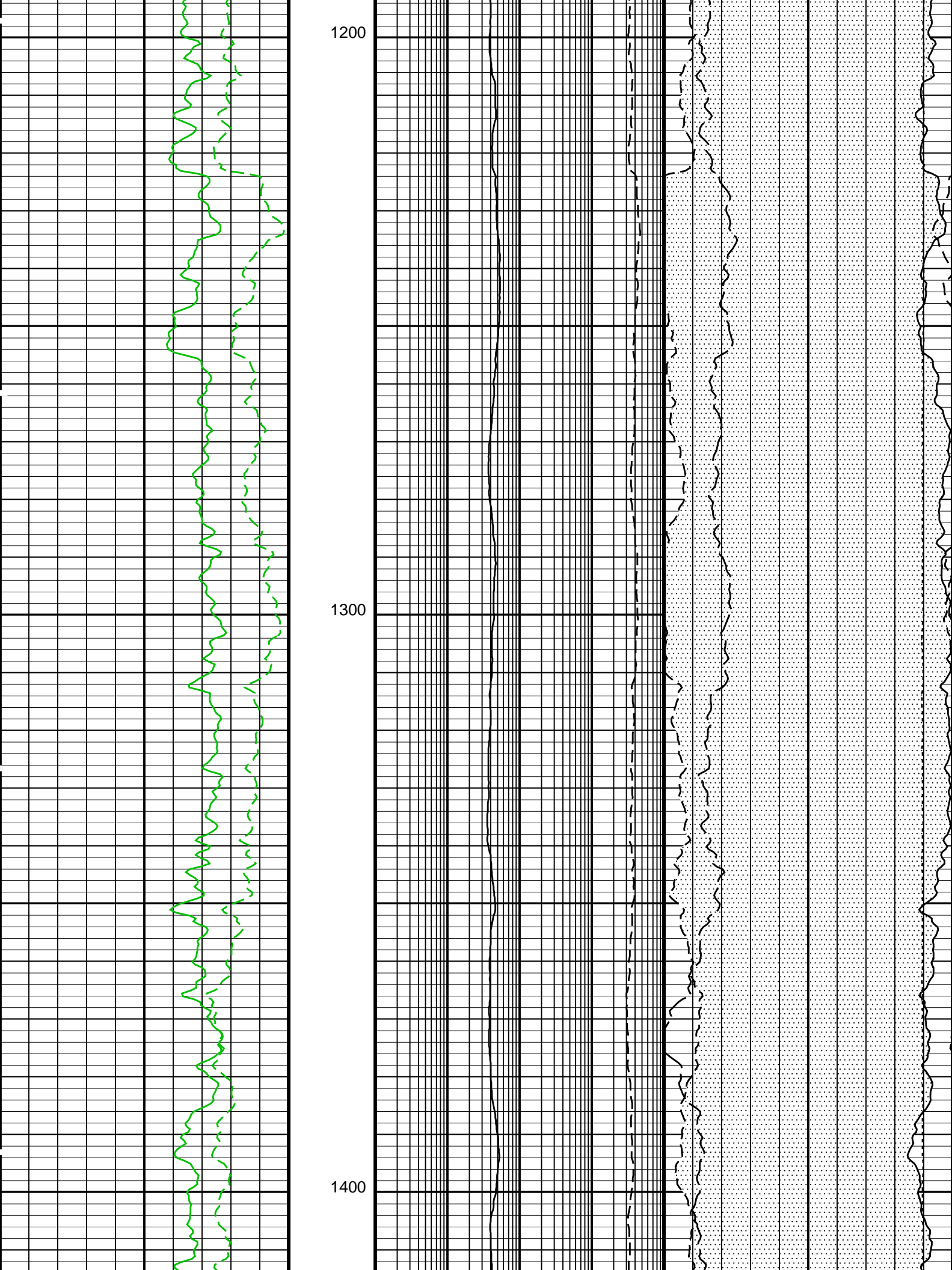


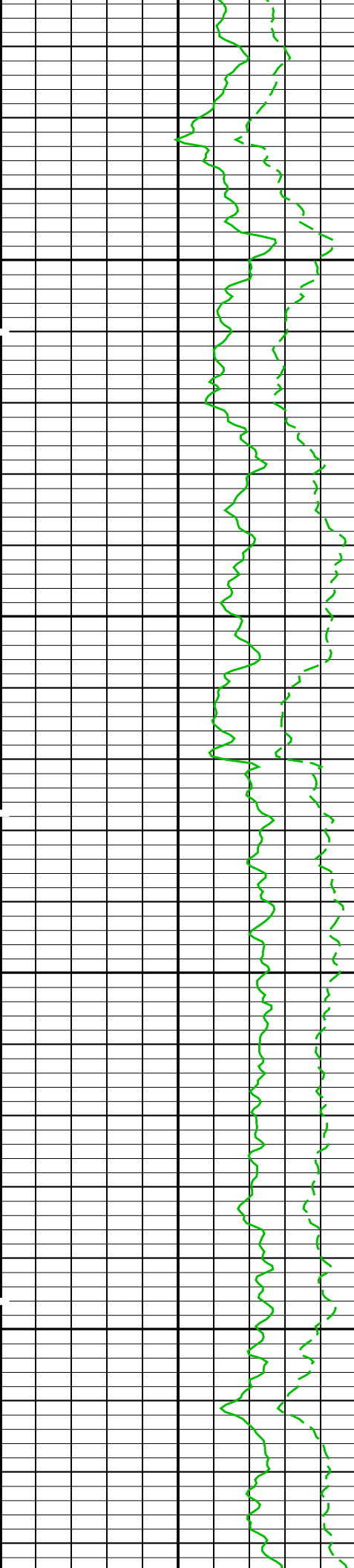


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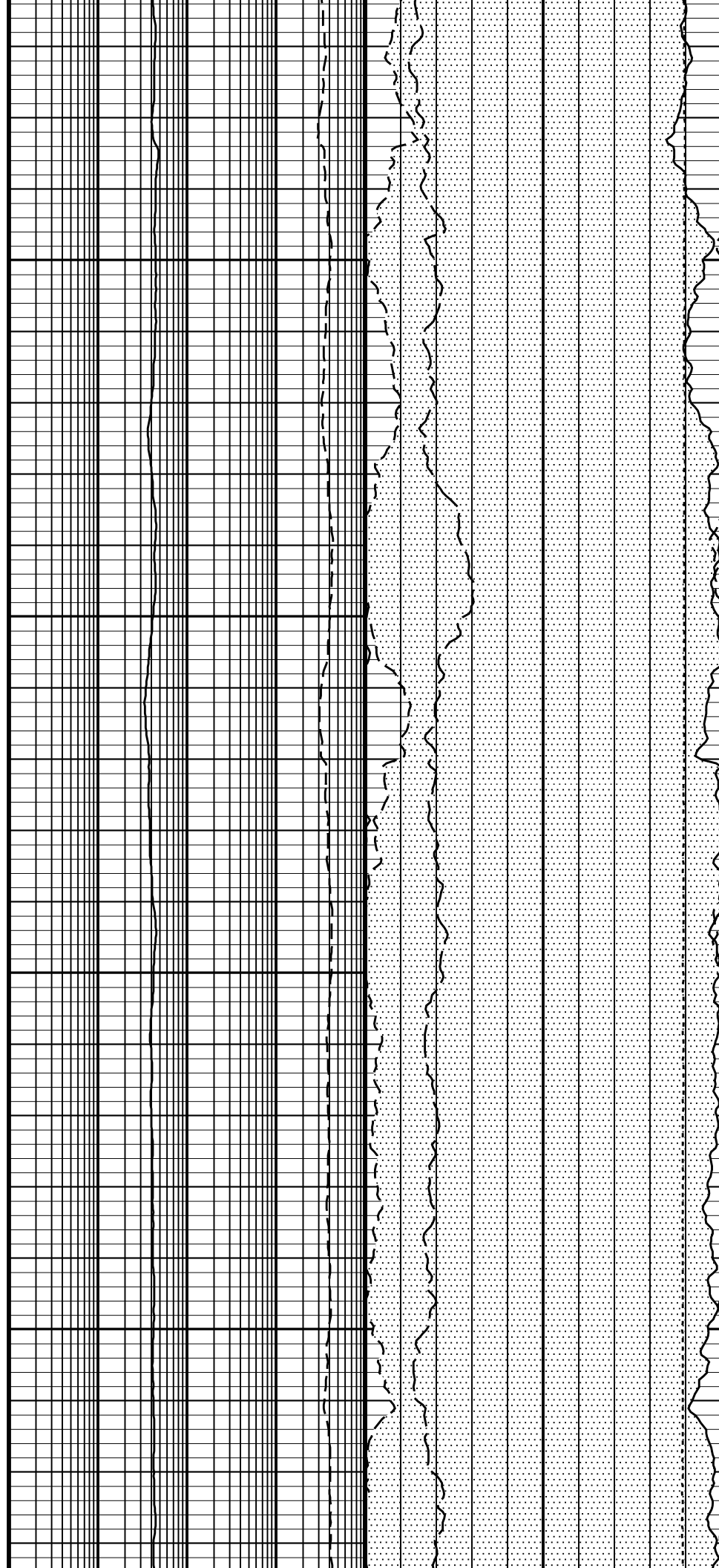


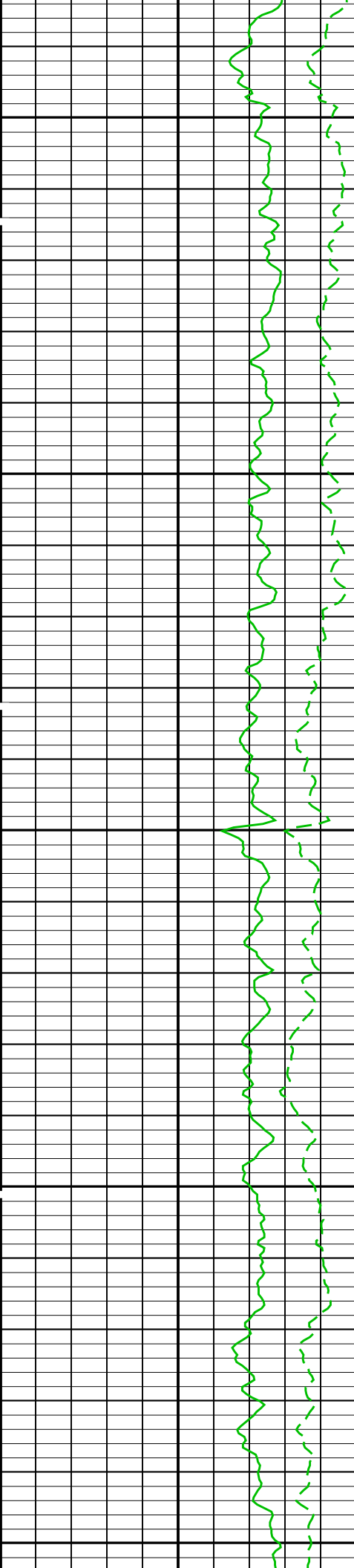




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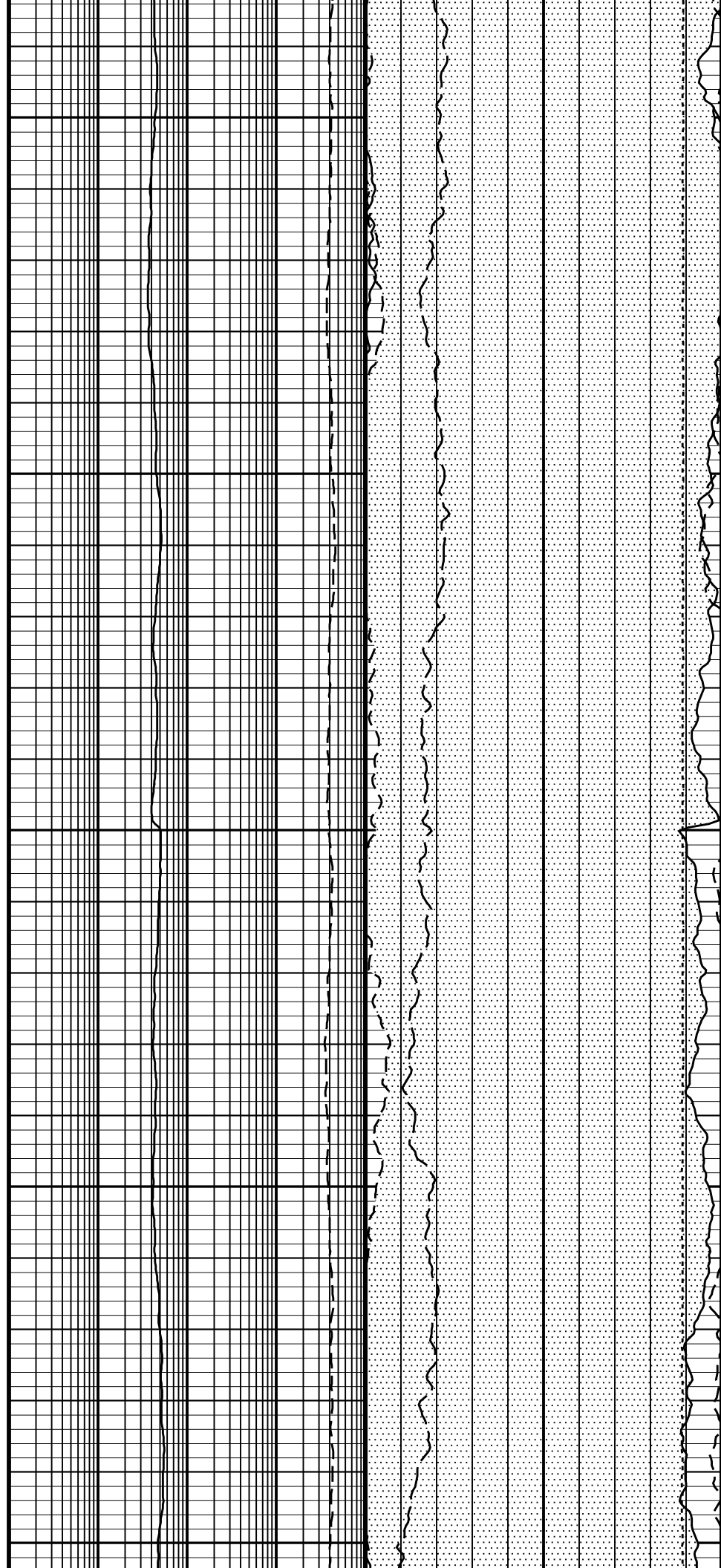
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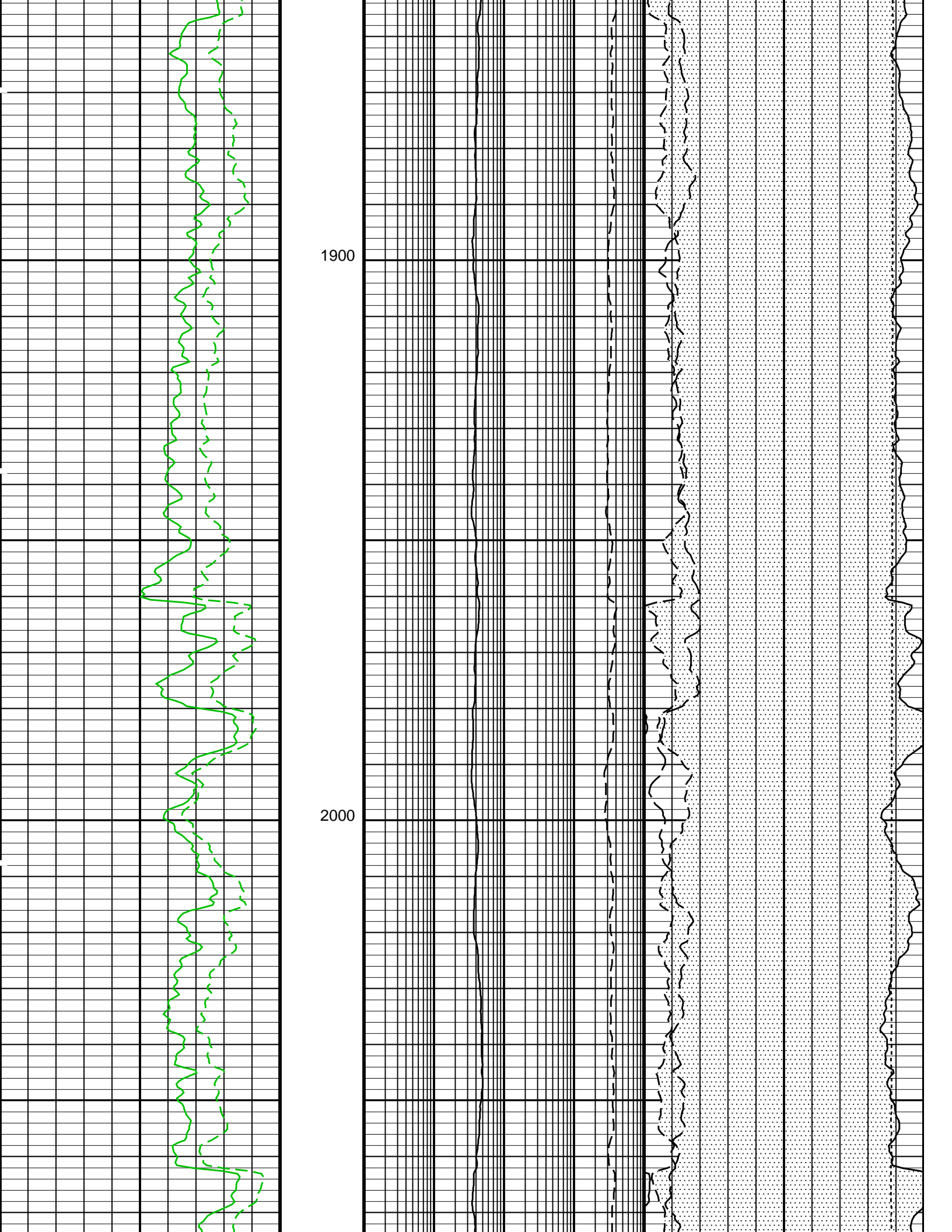


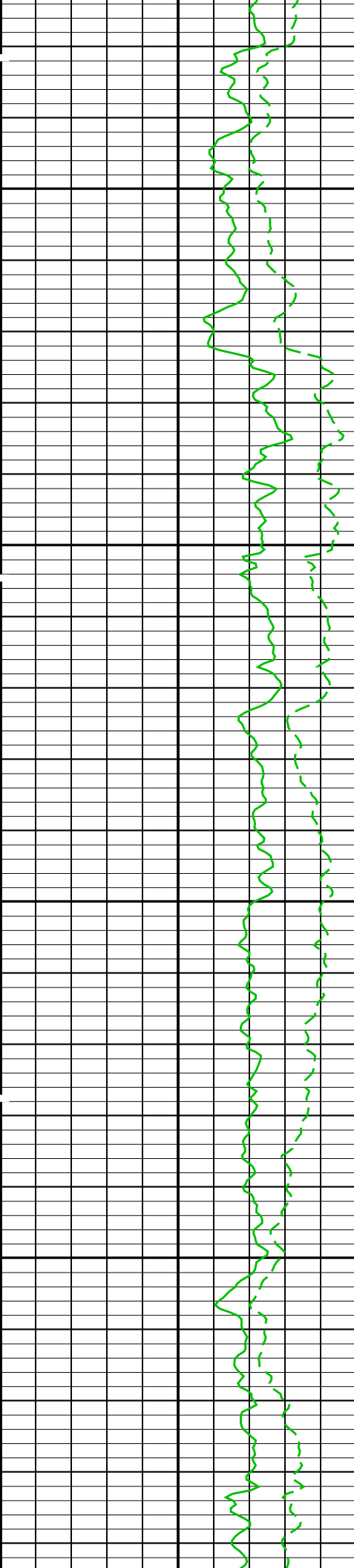


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1800



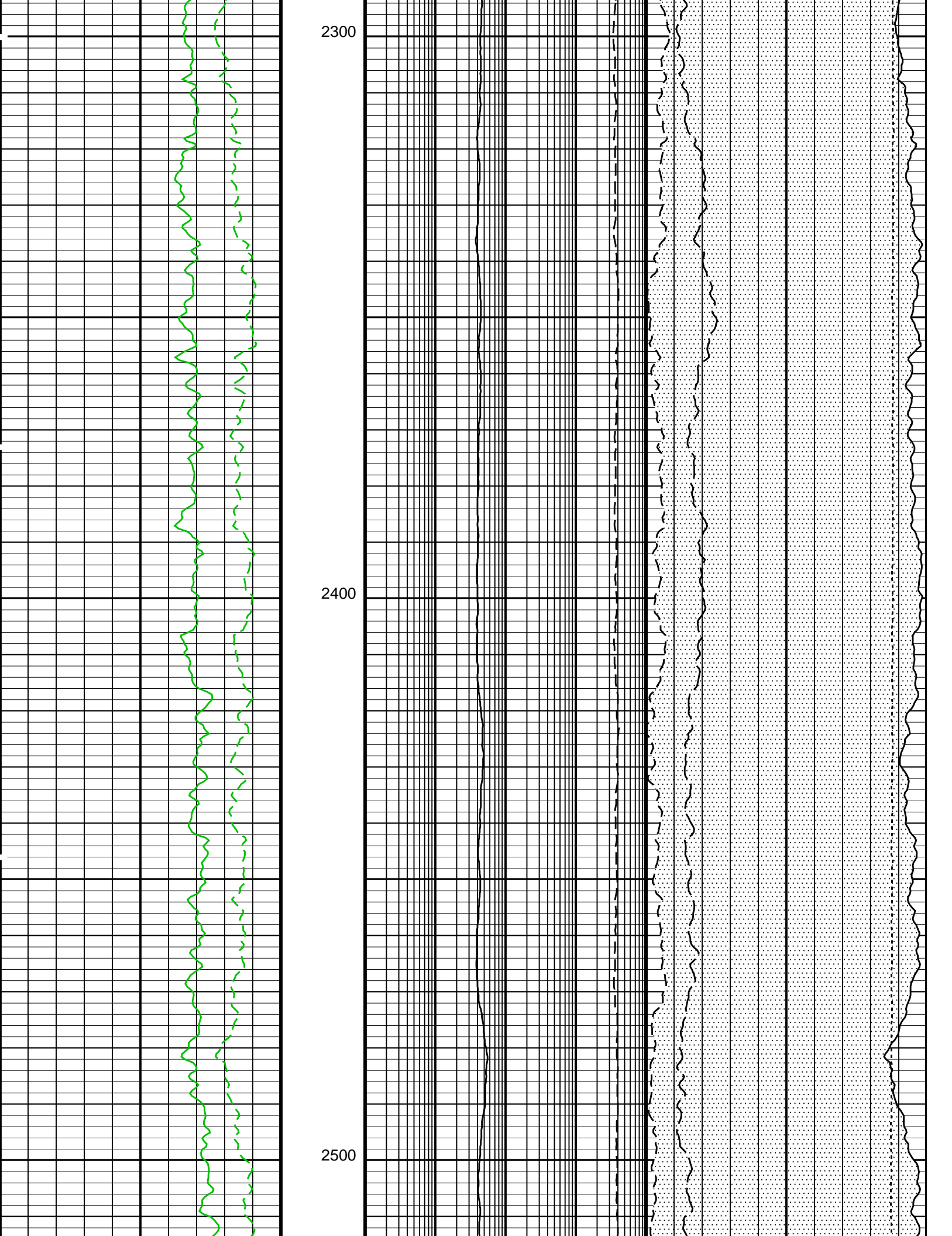


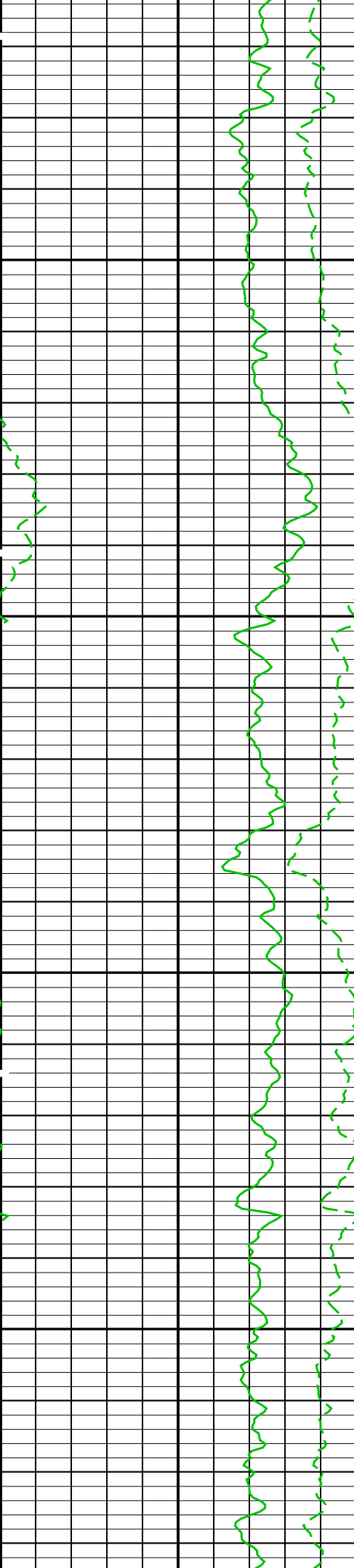


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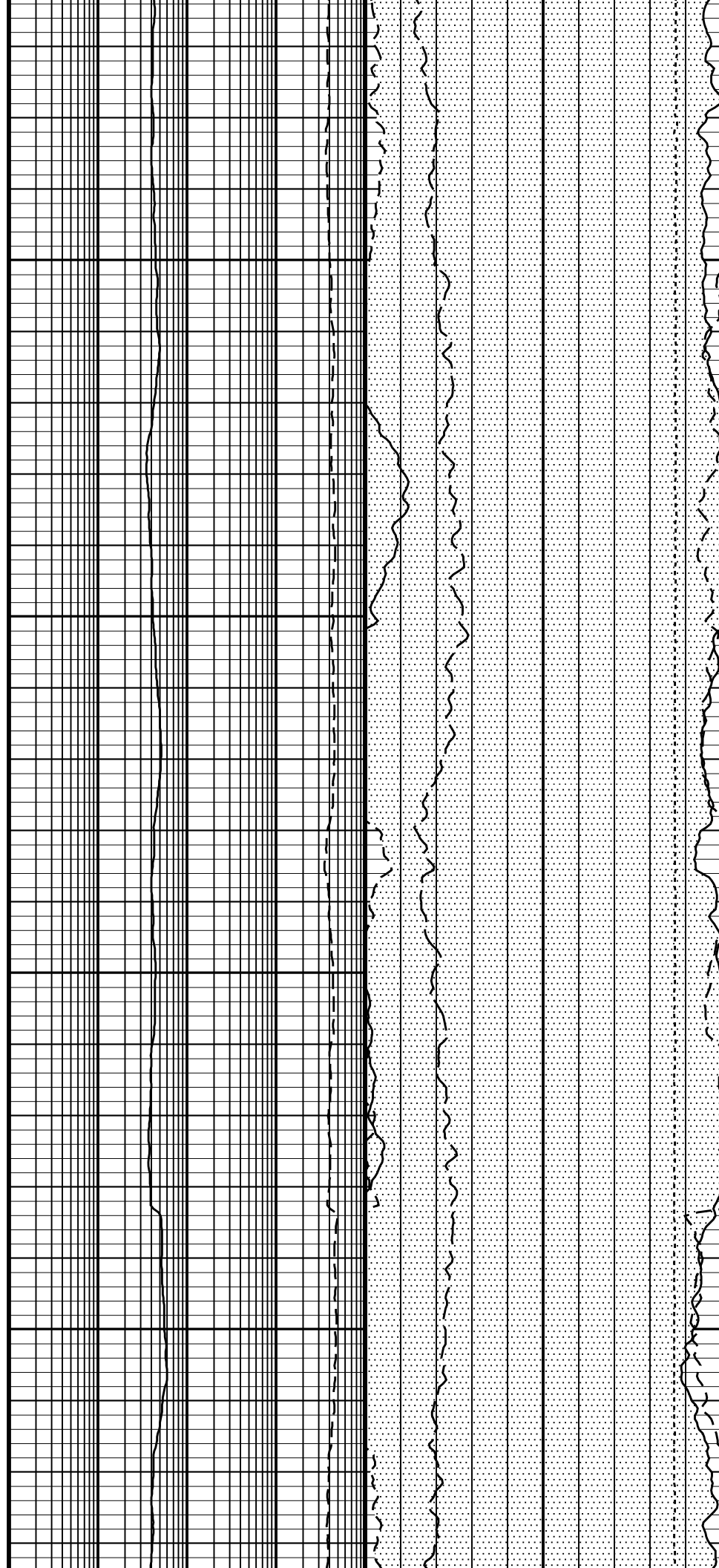


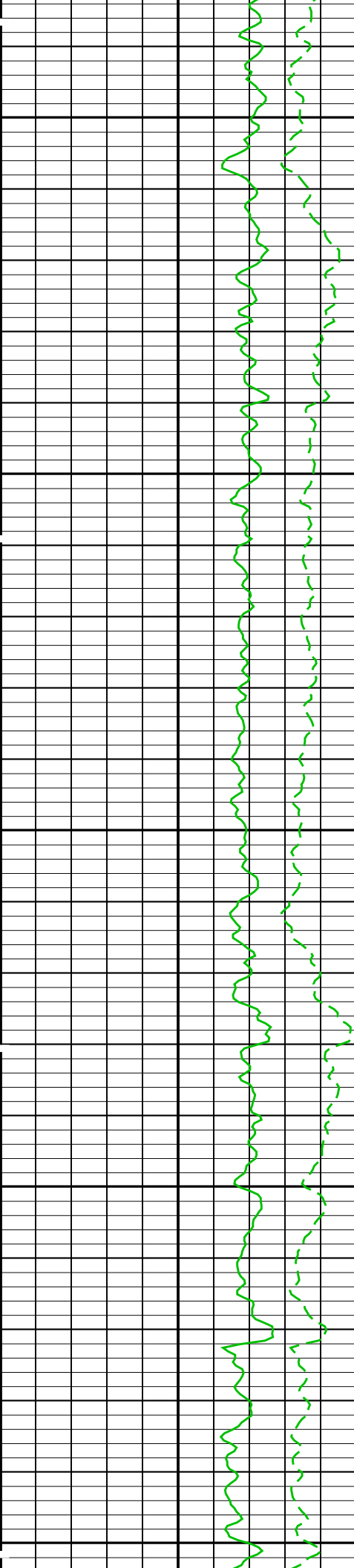




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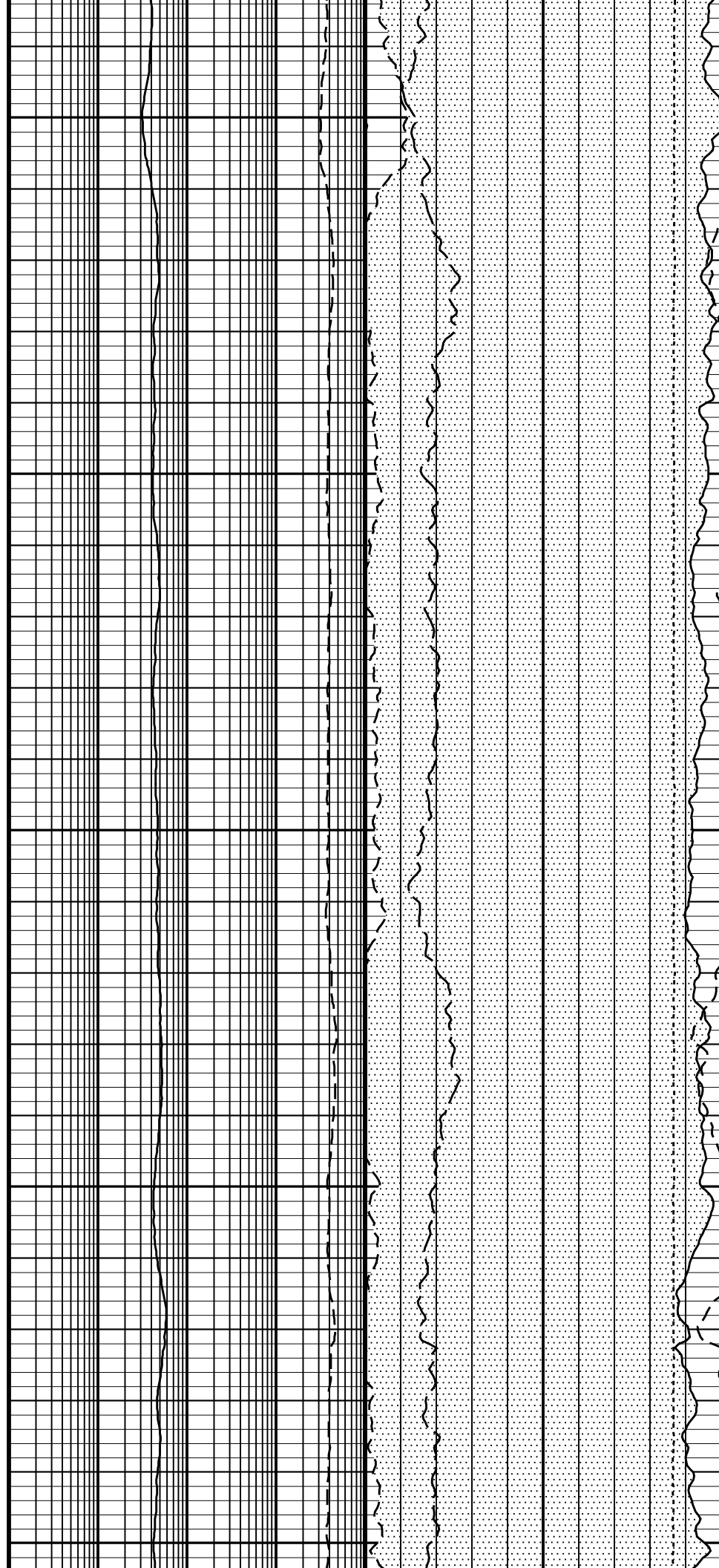
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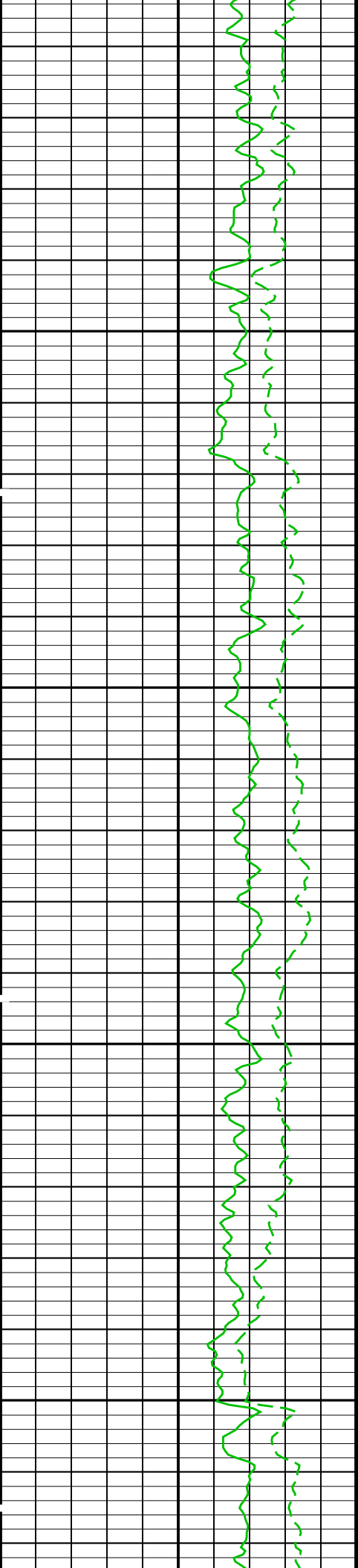




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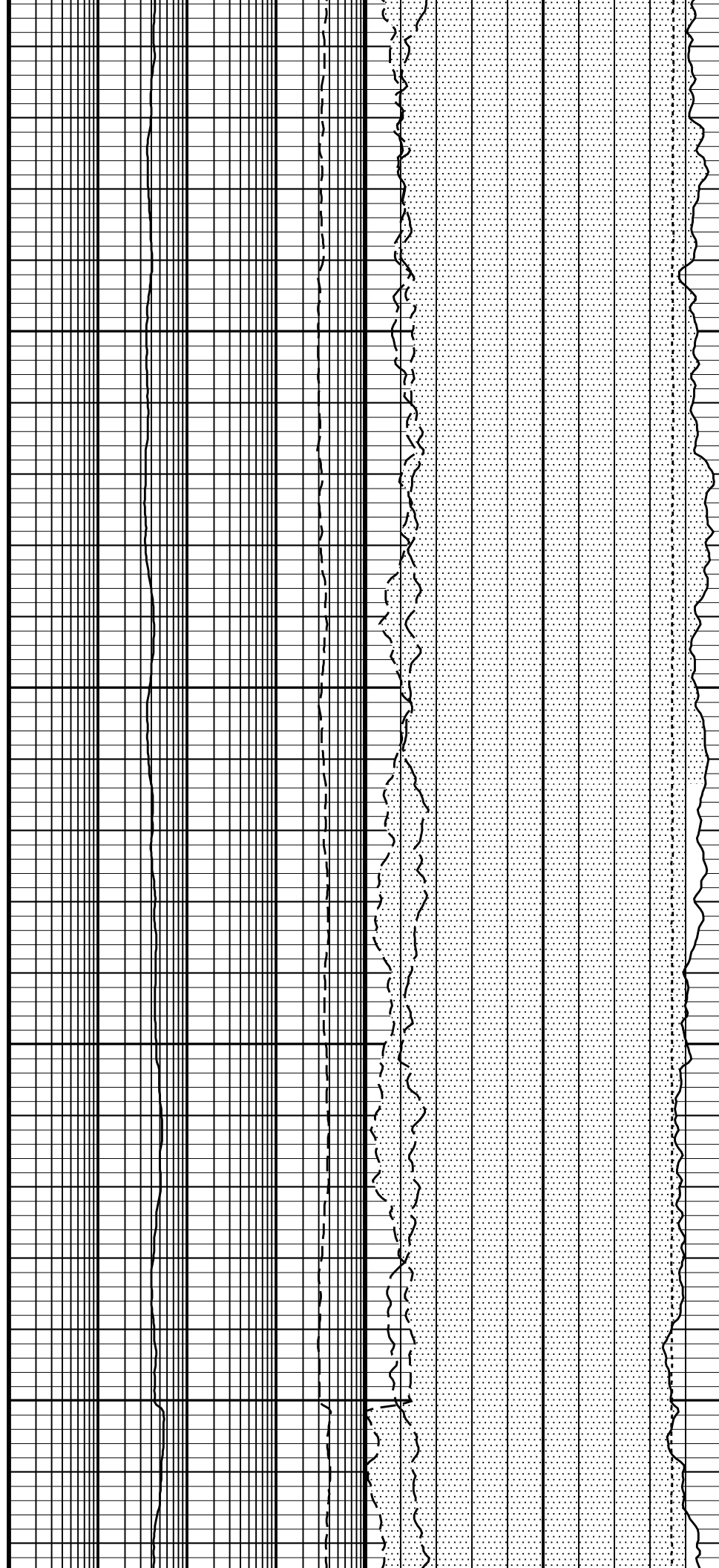
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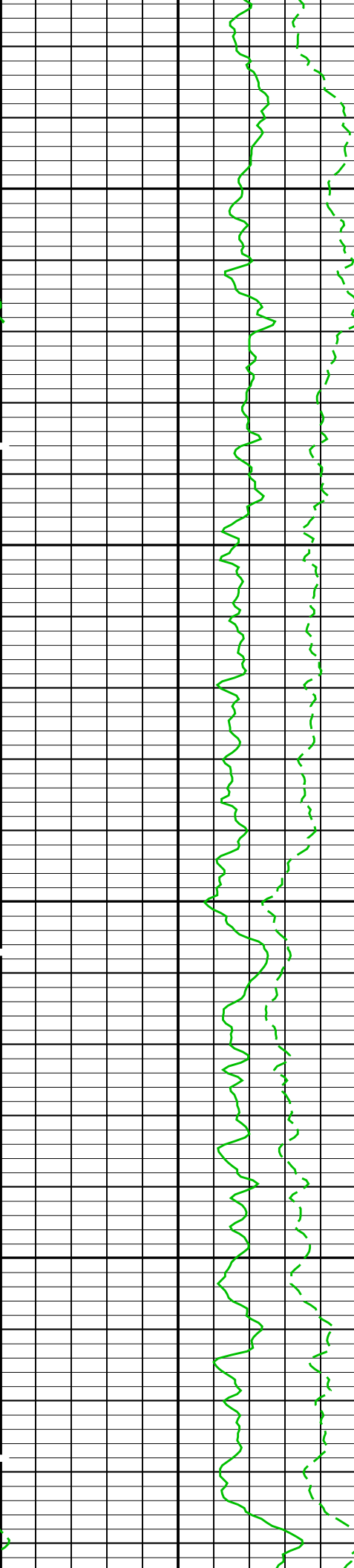




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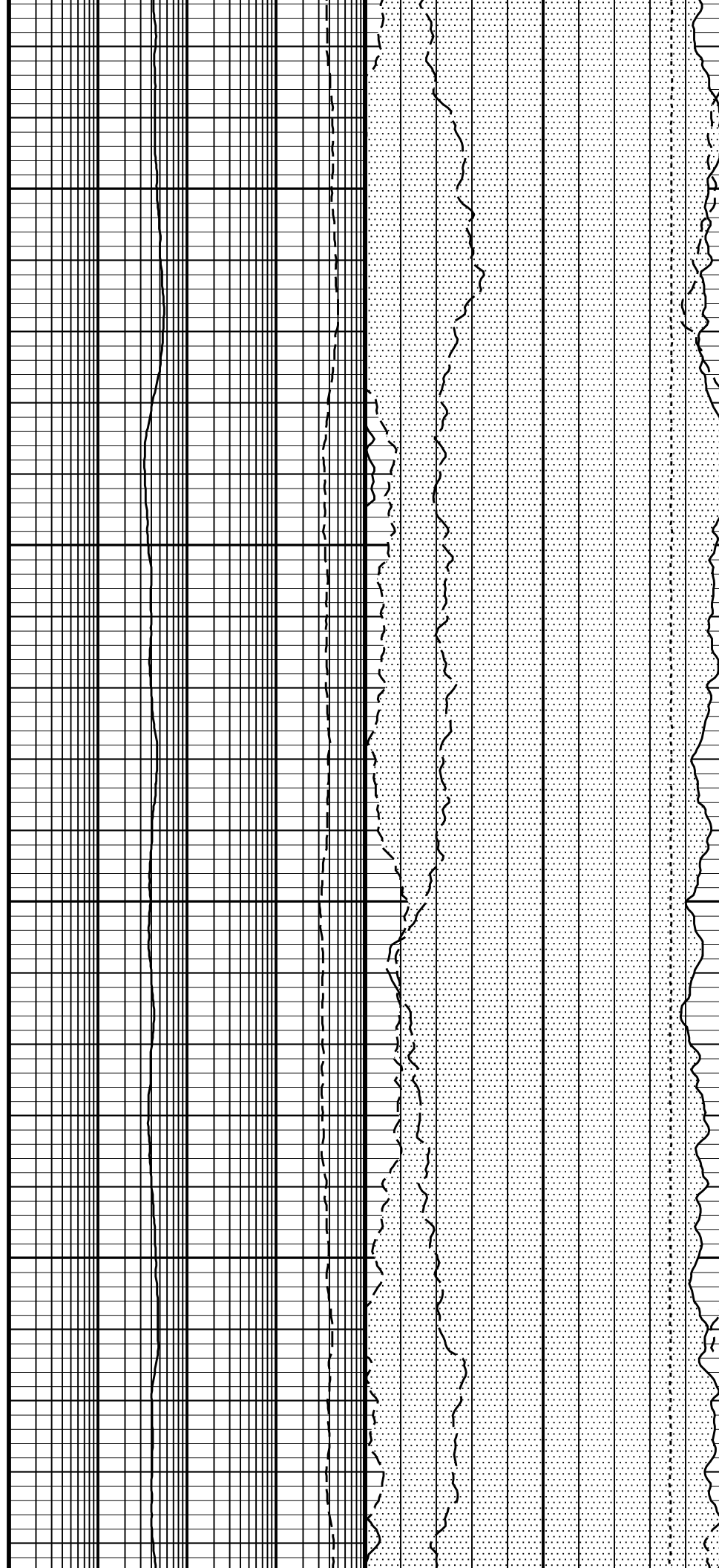
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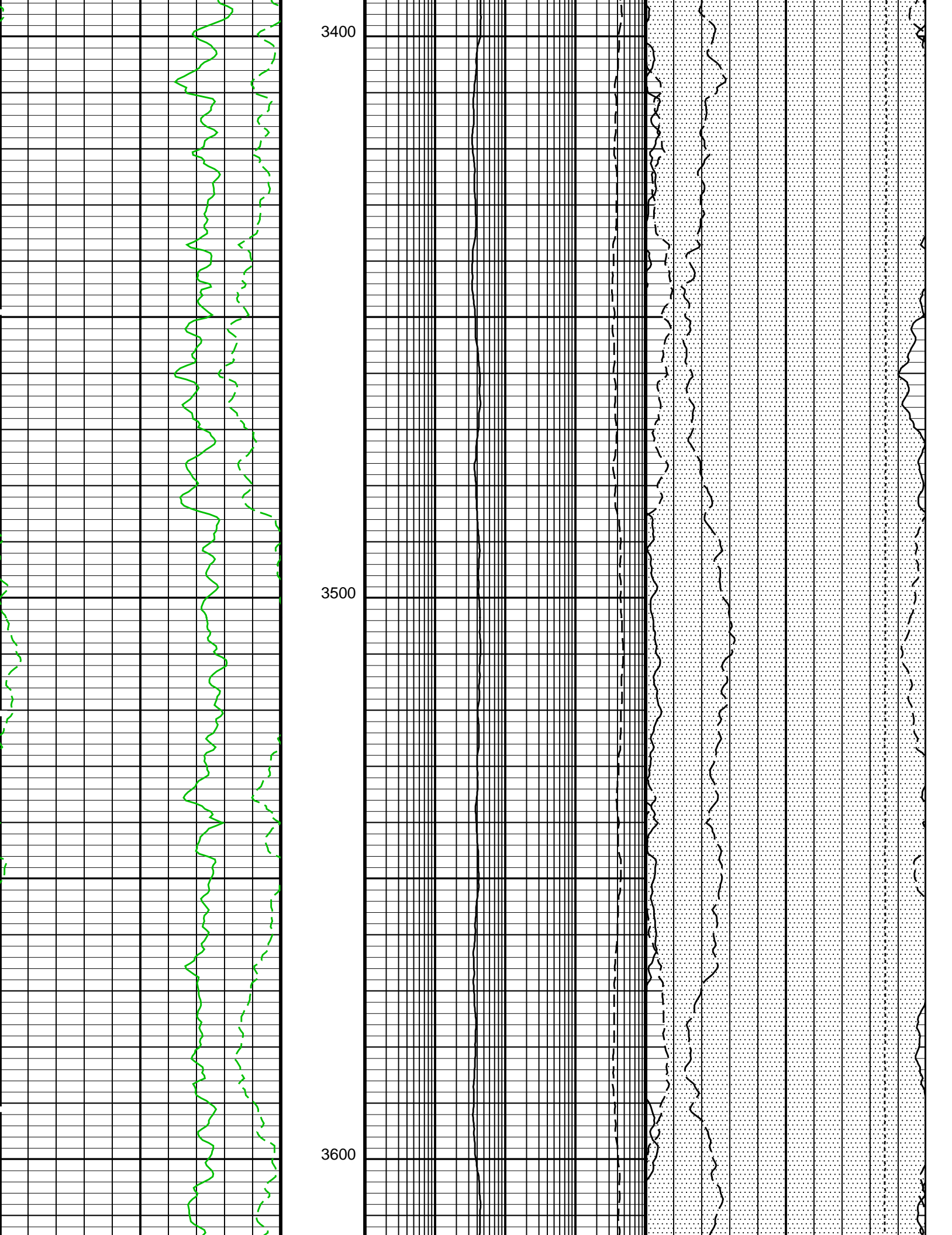


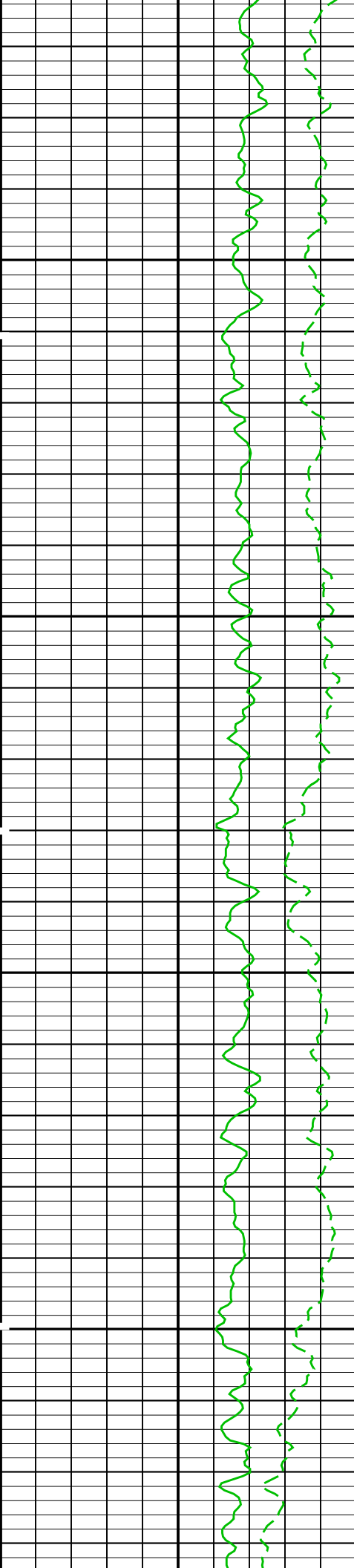


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3300

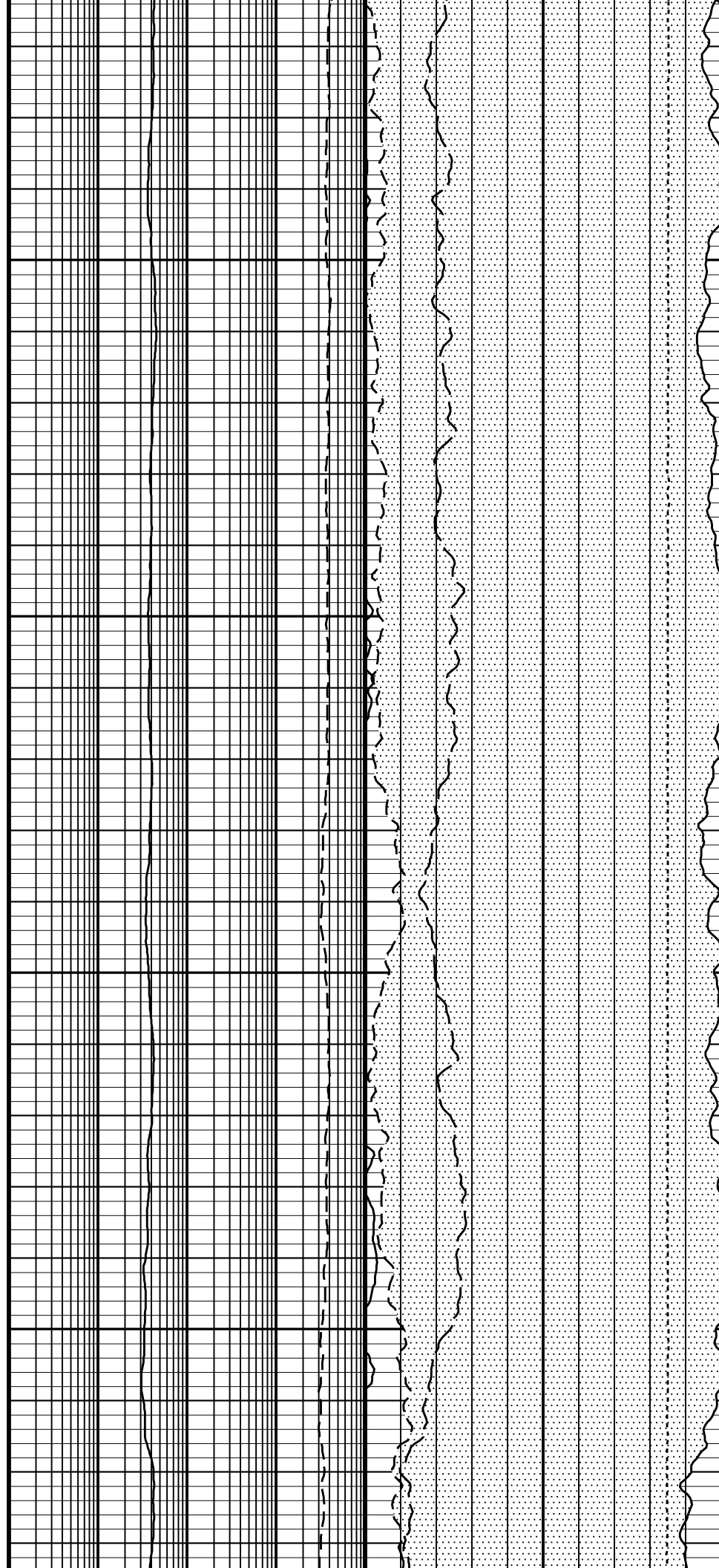


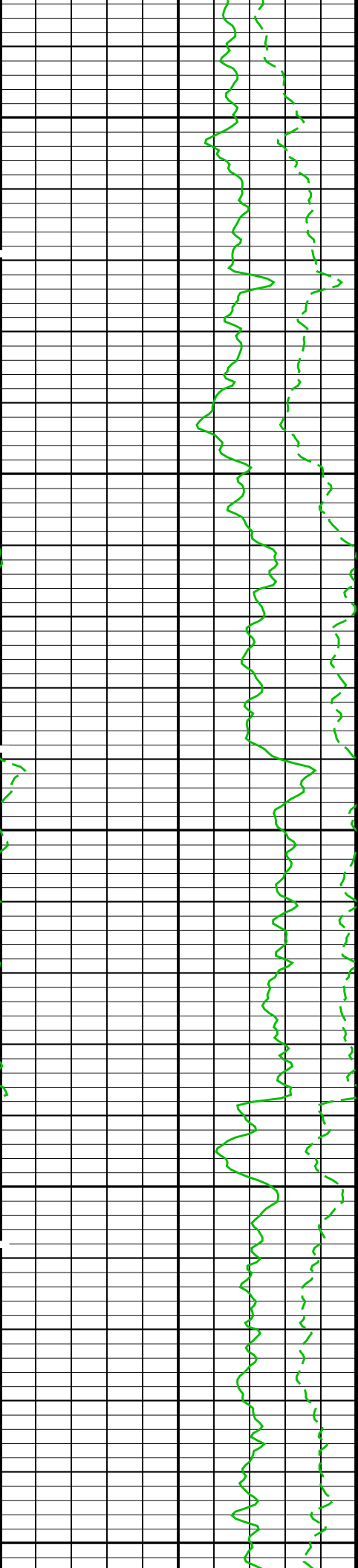




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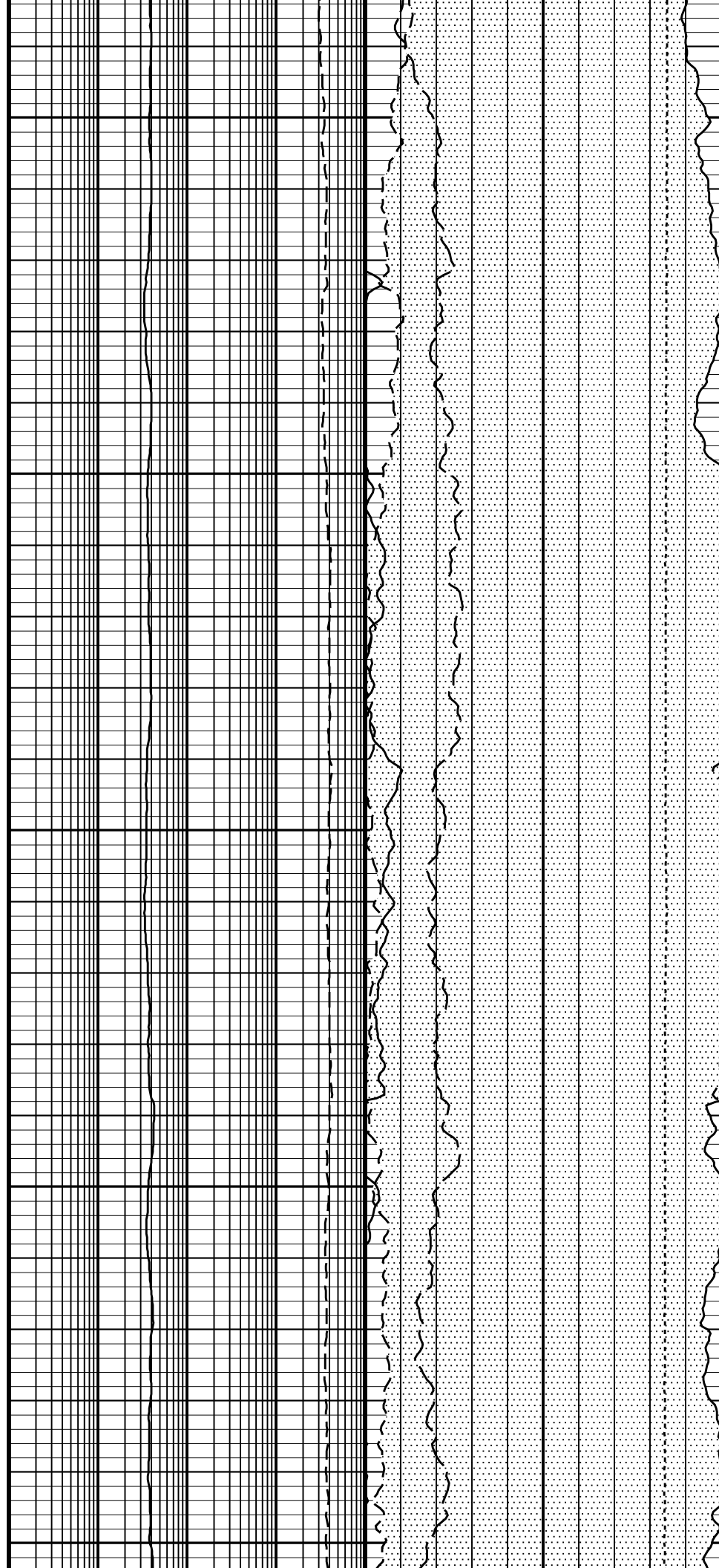
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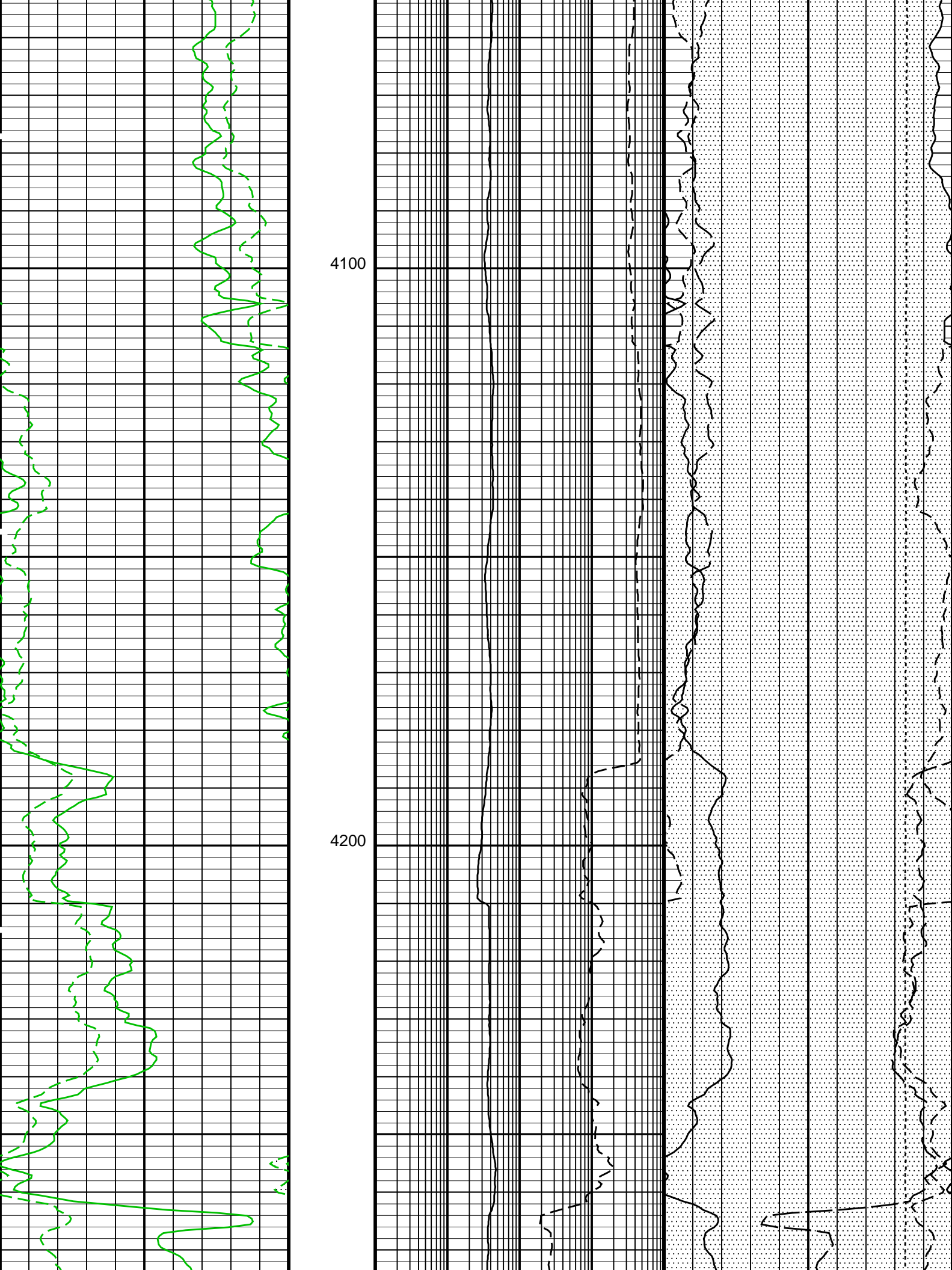


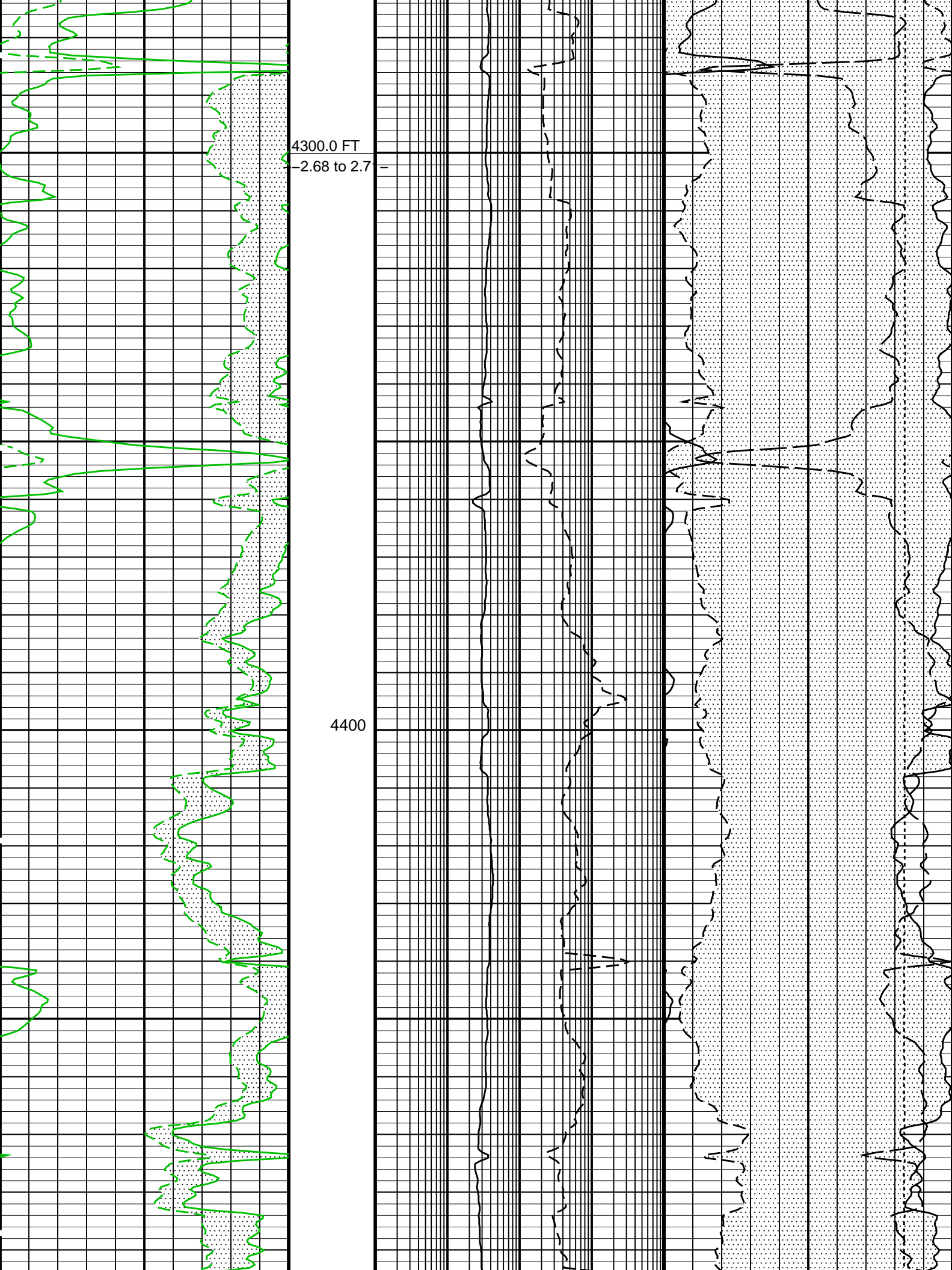


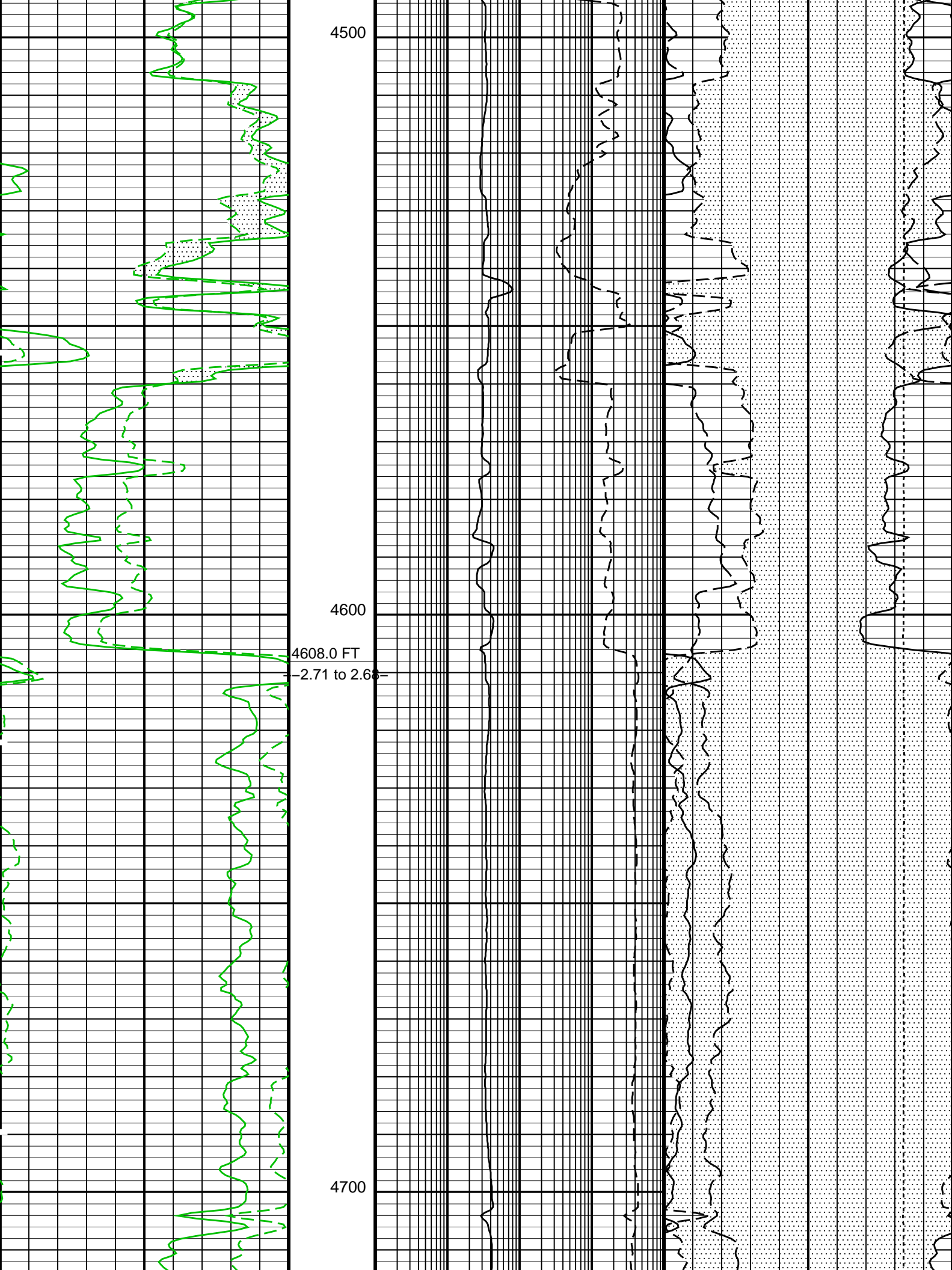
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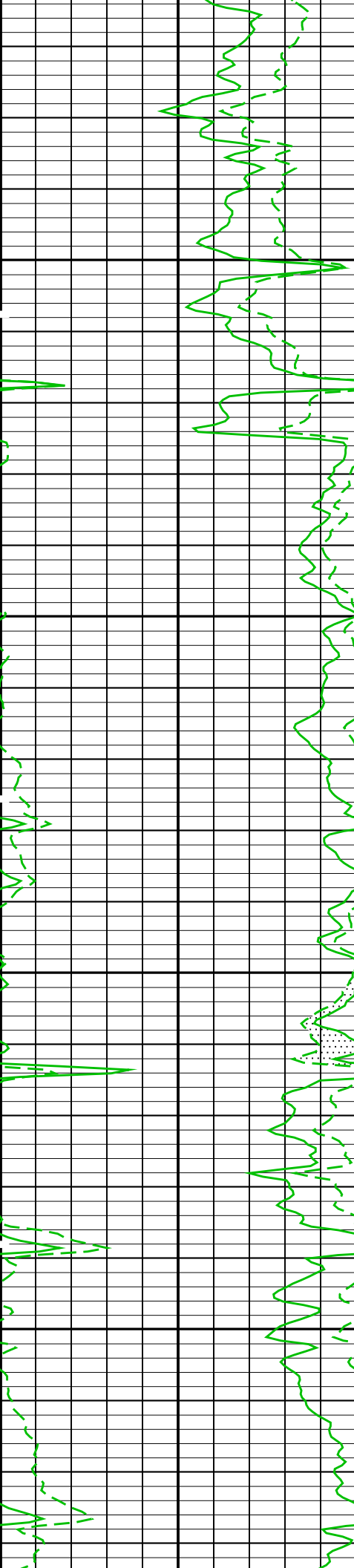
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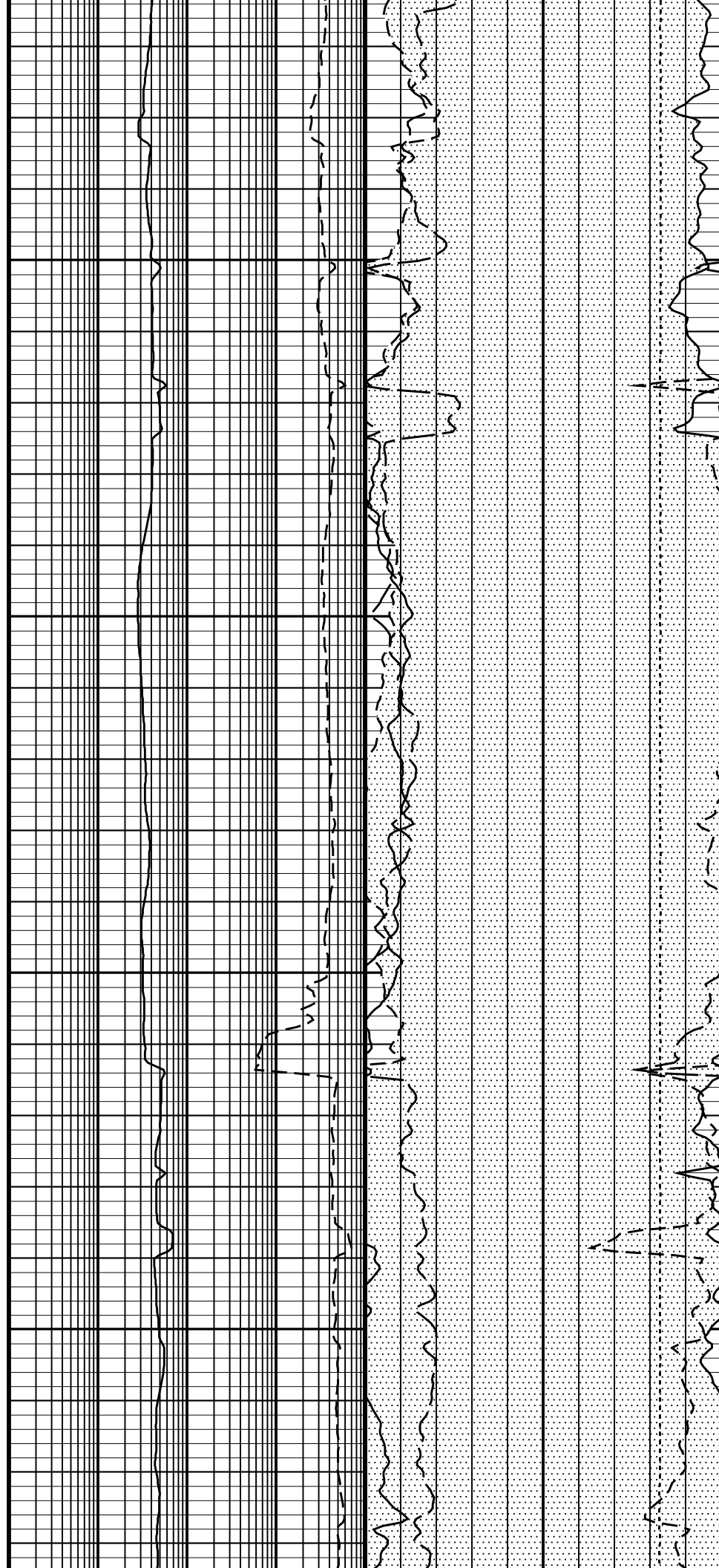


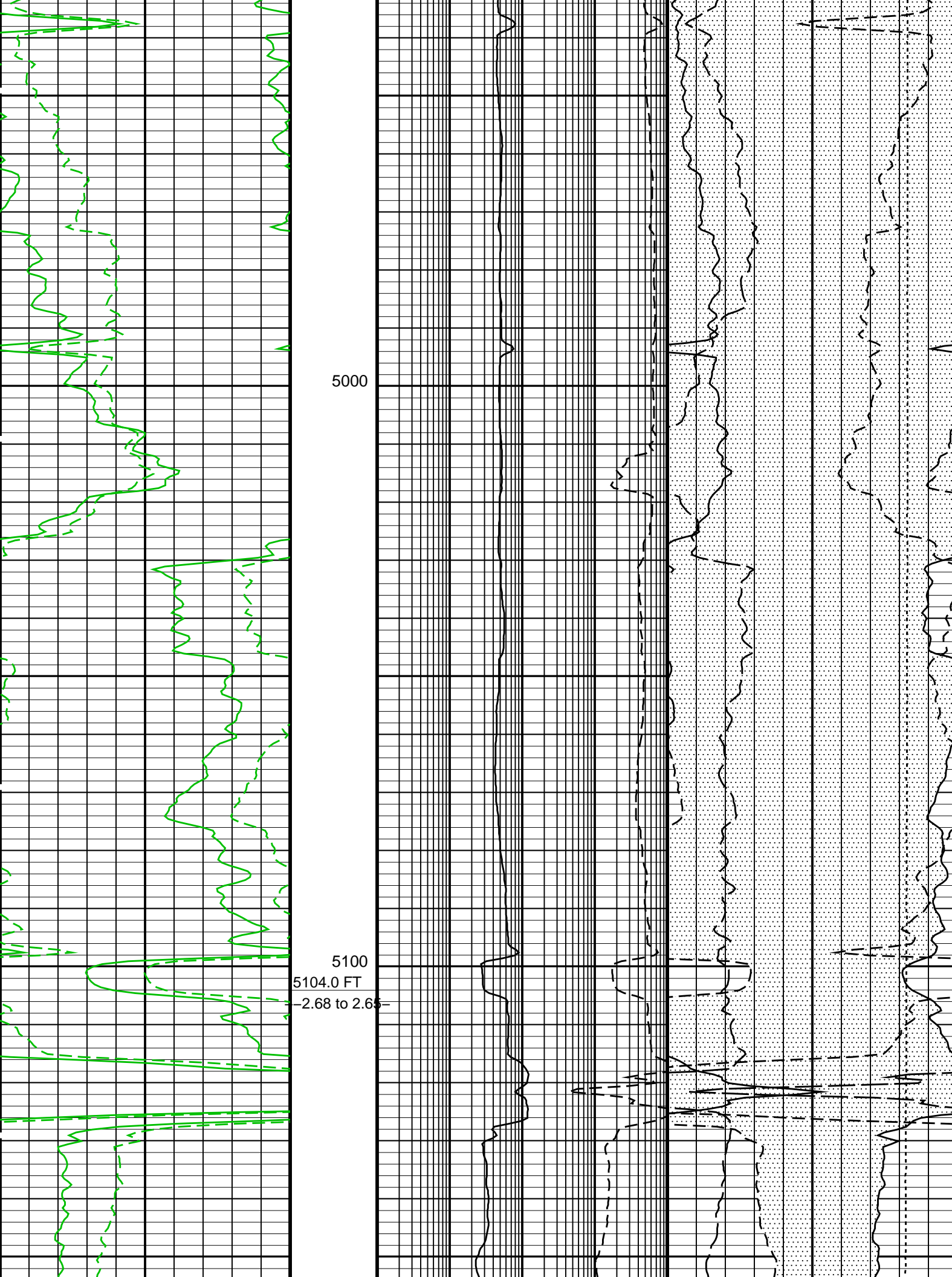


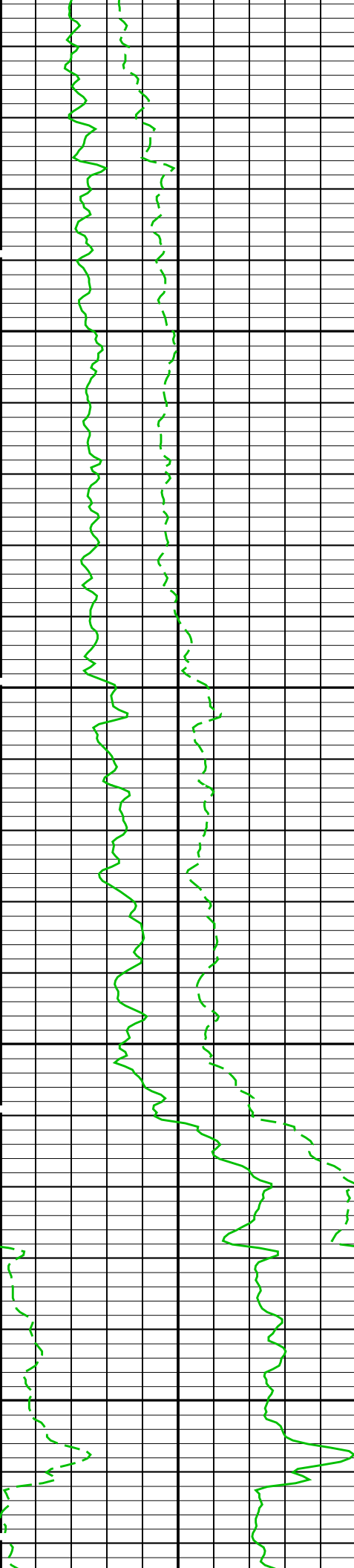


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4900

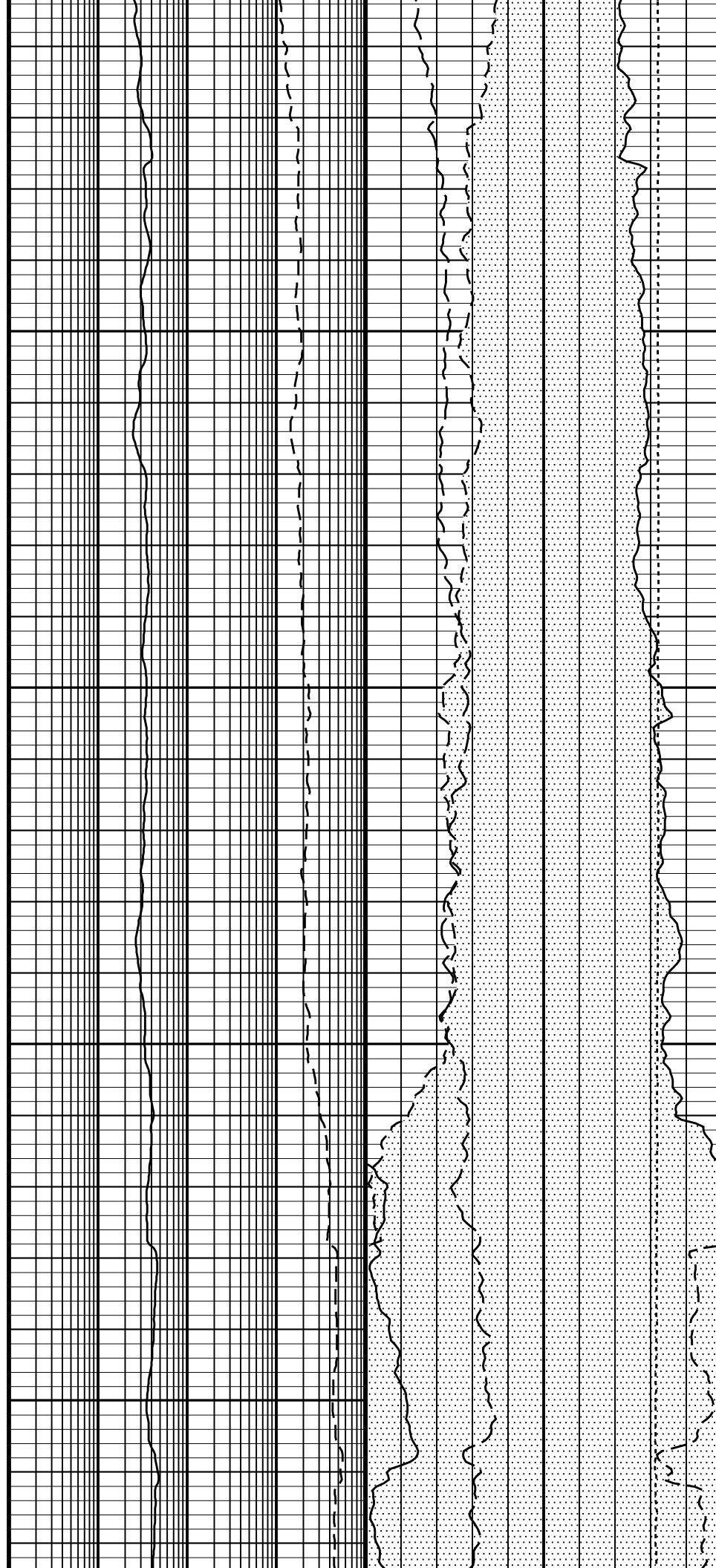


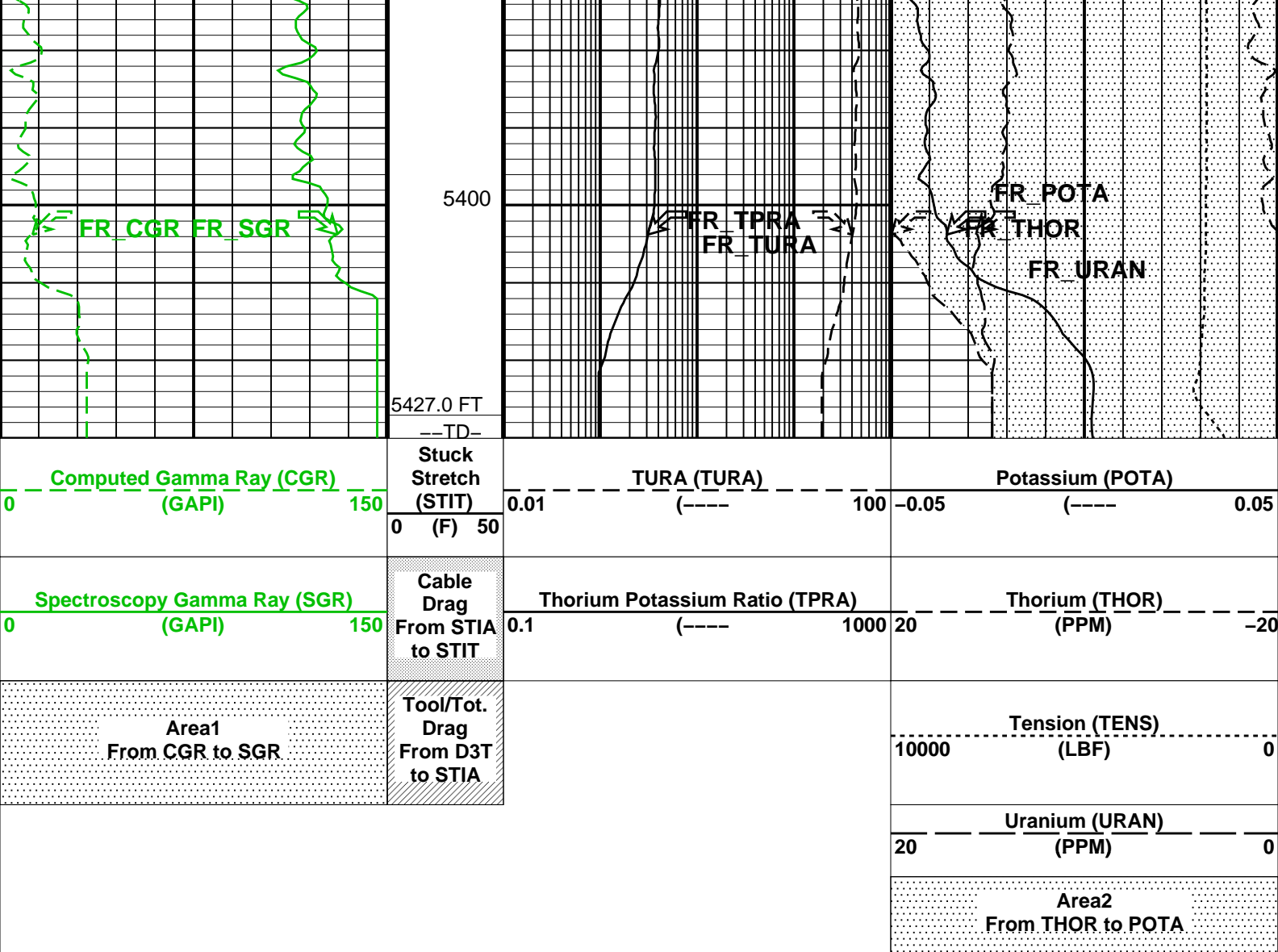




5200

5300





PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
NGT-C: Natural Gamma Spectroscopy - C			
CBAR	Constant Barite	1	
CGMI	Spectro Computed Gamma Ray Minimum	0	GAPI
CGSH	Spectro Computed Gamma Ray Shale	100	GAPI
KMIN	Potassium Minimum	0	
KSHA	Potassium Shale	0.02	
NFO	NGT Filtering Option	KALMAN	
PMUD	Potassium Mud	0	%
SGMI	Spectro Gamma Ray Minimum	0	GAPI
SGSH	Spectro Gamma Ray Shale	100	GAPI
TMIN	Thorium Minimum	0	PPM
TSHA	Thorium Shale	12	PPM
UMIN	Uranium Minimum	0	PPM
USHA	Uranium Shale	3	PPM
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth - Driller	5433.00	FT
TDL	Total Depth - Logger	5427.00	FT
System and Miscellaneous			
BS	Bit Size	12.250	IN
DFD	Drilling Fluid Density	9.80	LB/G
DO	Depth Offset for Playback	0.0	FT
DORL	Depth Offset for Repeat Analysis	2.0	FT
PP	Playback Processing	RECOMPUTE	

Format: NGTRatios Vertical Scale: 5" per 100'

Graphics File Created: 12-Aug-2007 13:28

OP System Version: 15C0-309

MCM

AIT-H	SRPC-3357-Q2_2007	NGT-C	15C0-309
DTA-A	SRPC-3357-Q2_2007	DSLTT-FTB	15C0-309
DTC-H	15C0-309		

Input DLIS Files

DEFAULT	AIT_NGS_SONIC_012LUP	FN:11	PRODUCER	12-Aug-2007 12:03	5430.0 FT	379.0 FT
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Output DLIS Files

DEFAULT	AIT_NGS_SONIC_022PUP	FN:21	PRODUCER	12-Aug-2007 13:28
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Schlumberger

NGT Yields
100'=5"

MAXIS Field Log

Company: Windy Hill Gas Storage, LLC

Well: Windy Hill 3-17D

Input DLIS Files

DEFAULT	AIT_NGS_SONIC_012LUP	FN:11	PRODUCER	12-Aug-2007 12:03	5430.0 FT	379.0 FT
---------	----------------------	-------	----------	-------------------	-----------	----------

Output DLIS Files

DEFAULT	AIT_NGS_SONIC_022PUP	FN:21	PRODUCER	12-Aug-2007 13:28	5430.0 FT	383.0 FT
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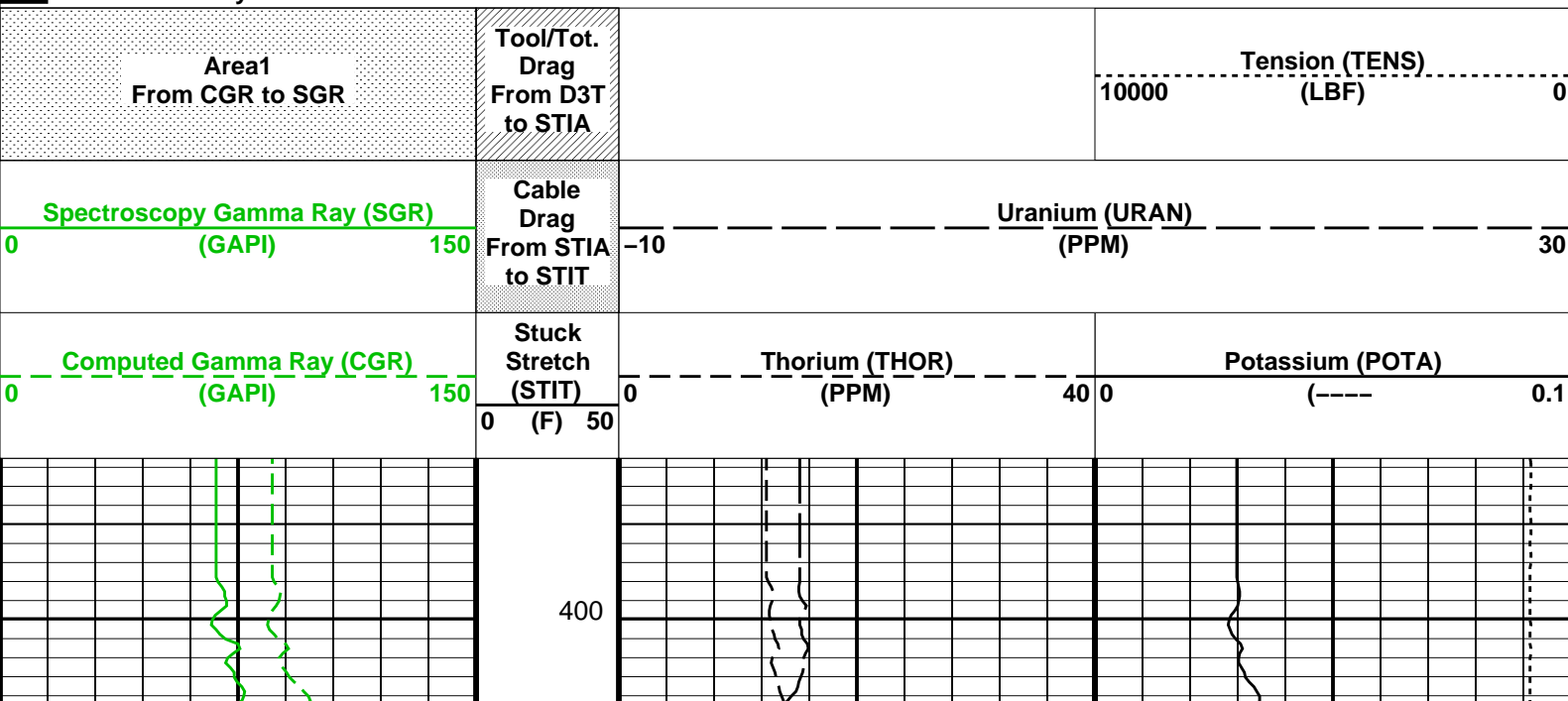
OP System Version: 15C0-309

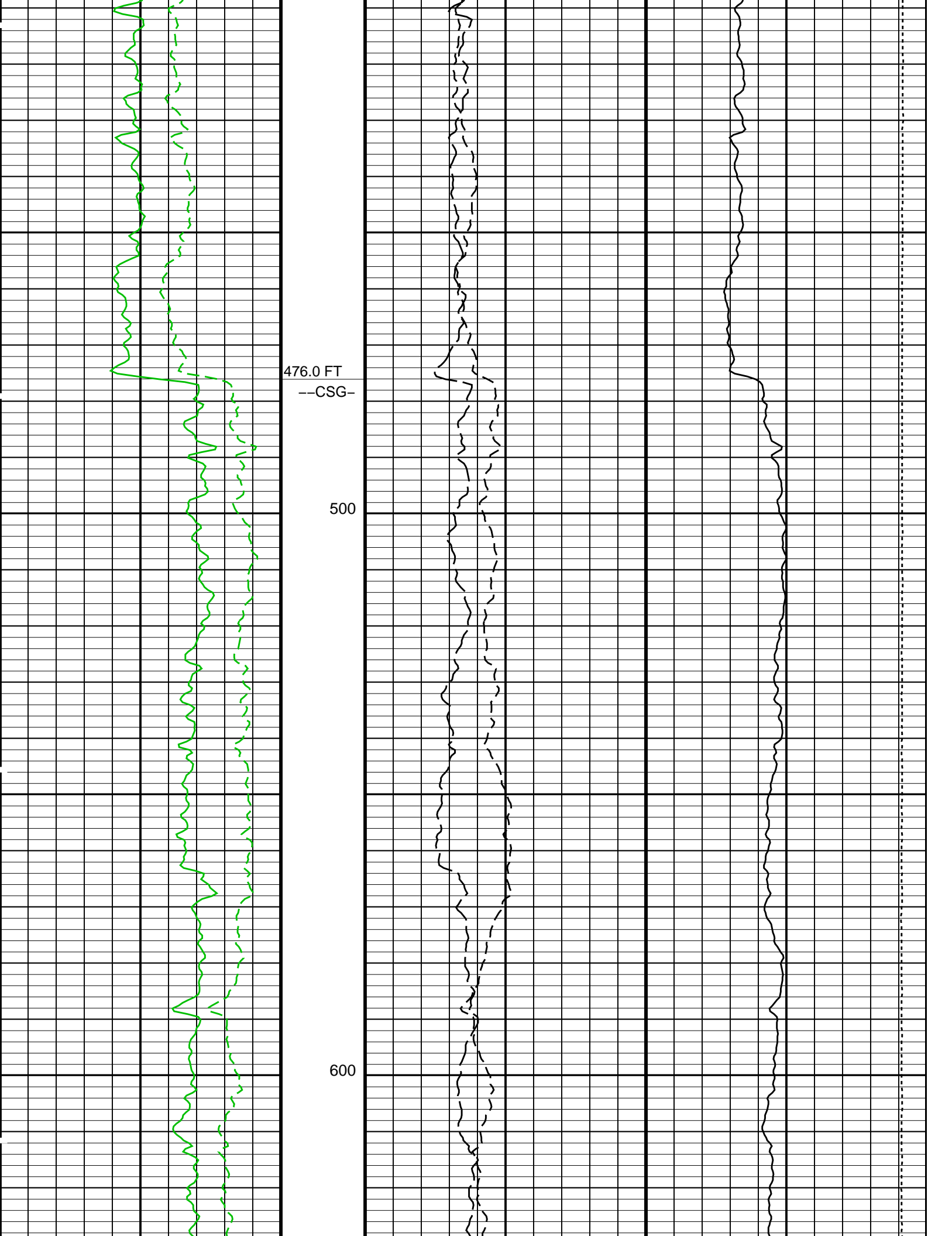
MCM

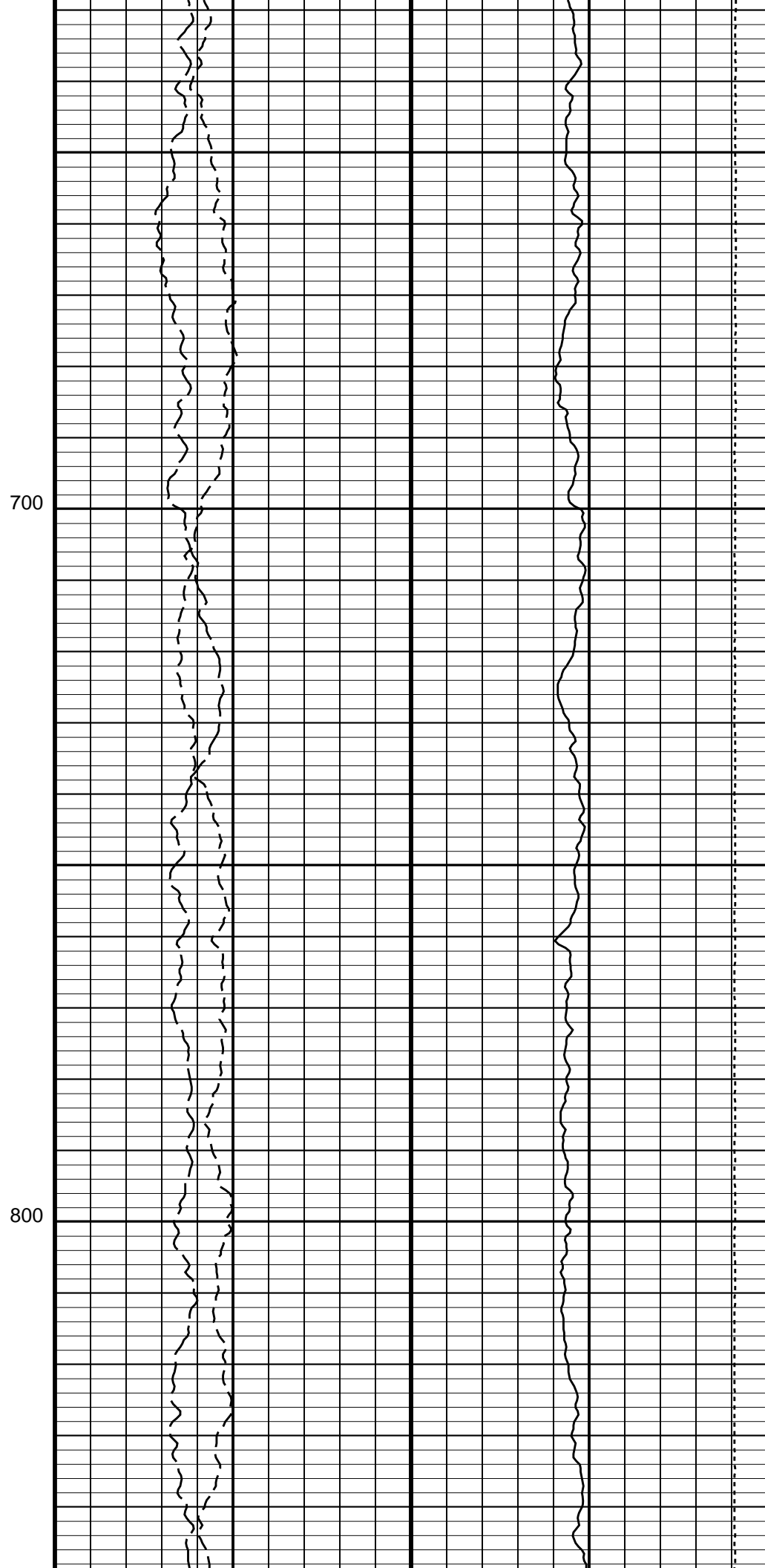
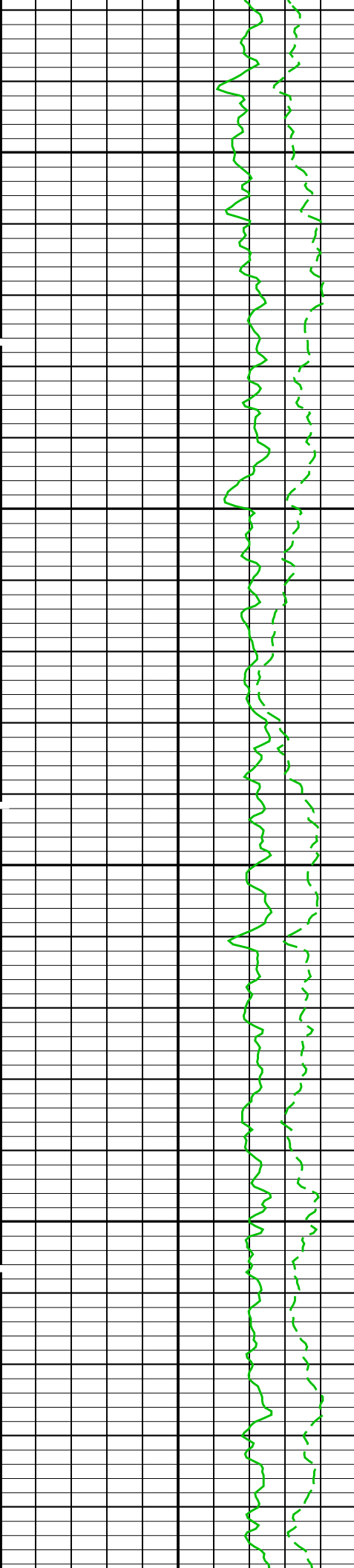
AIT-H	SRPC-3357-Q2_2007	NGT-C	15C0-309
DTA-A	SRPC-3357-Q2_2007	DSLTT-FTB	15C0-309
DTC-H	15C0-309		

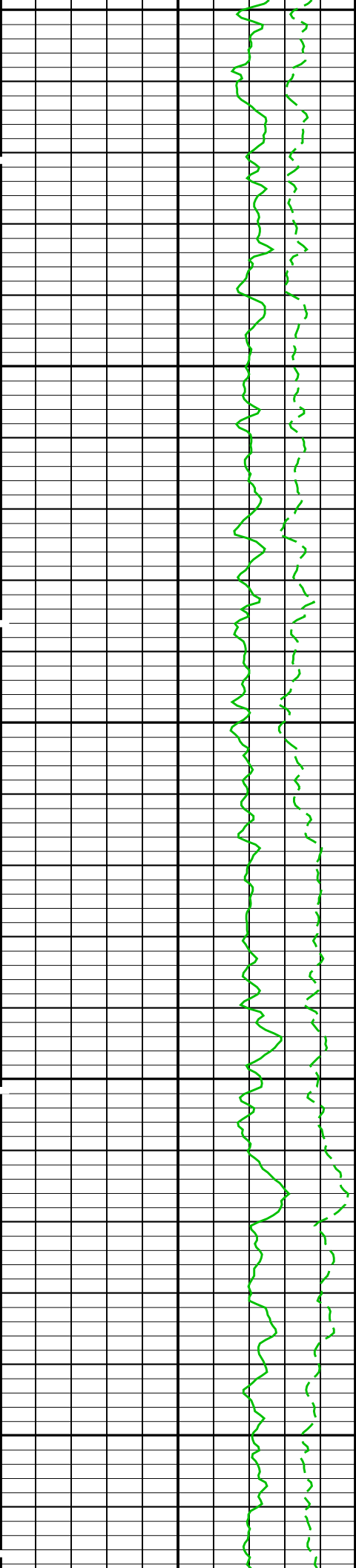
PIP SUMMARY

Time Mark Every 60 S



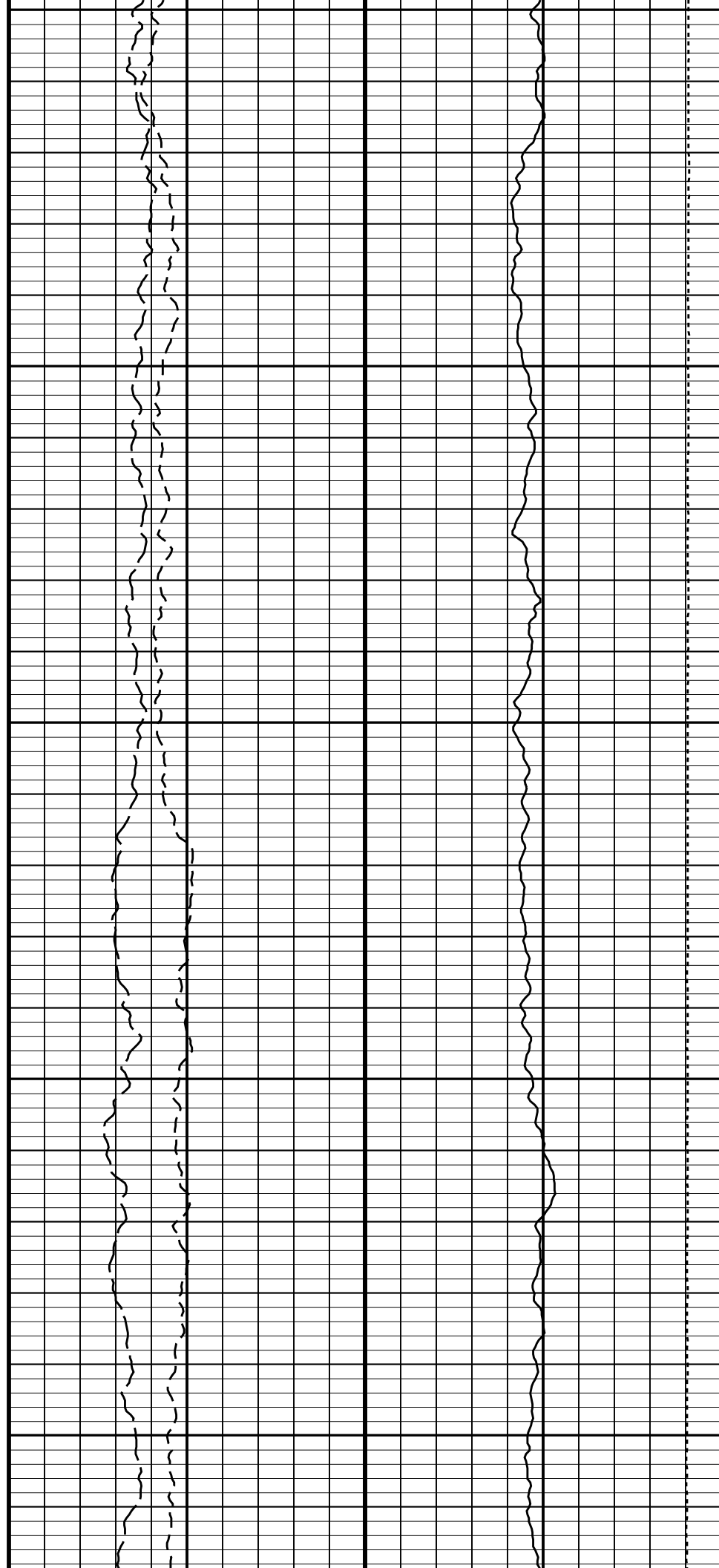


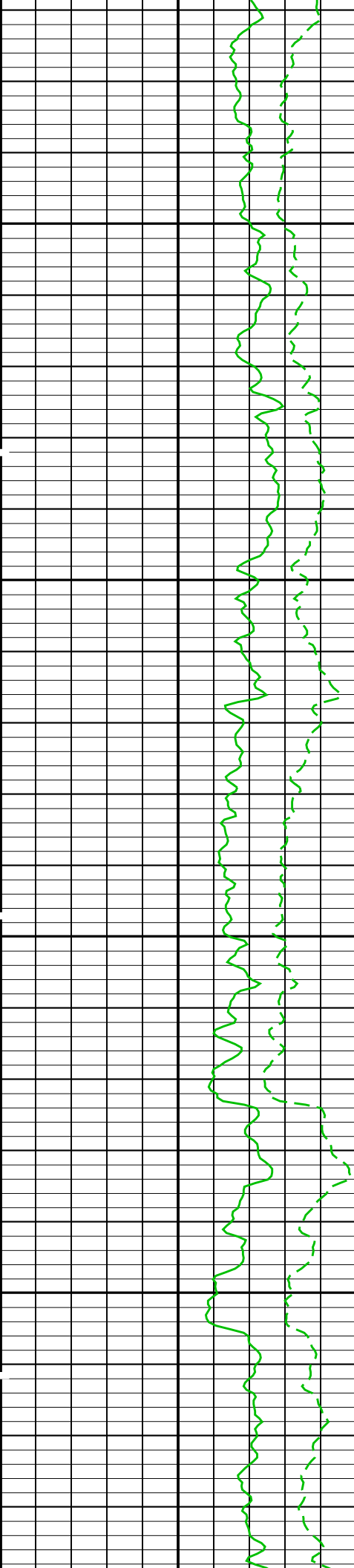




900

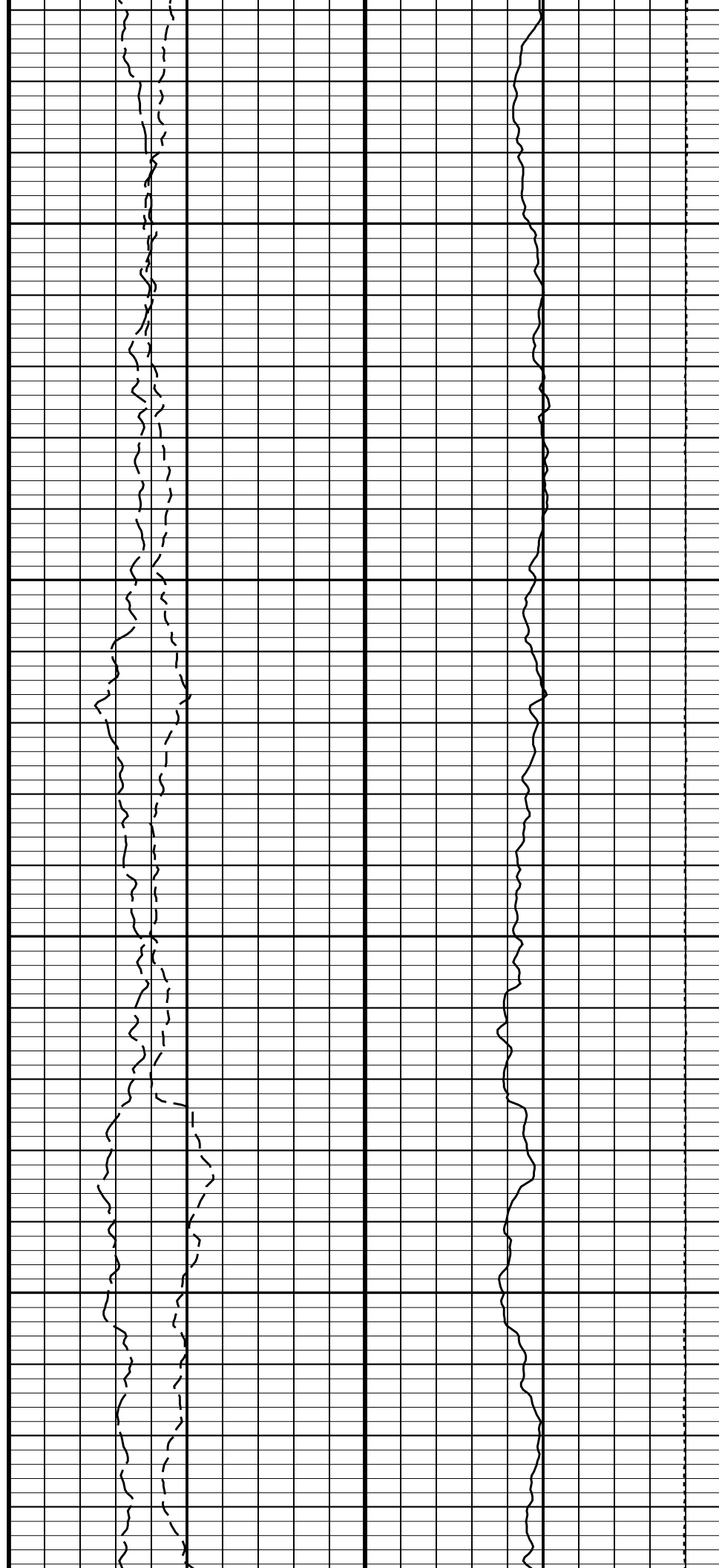
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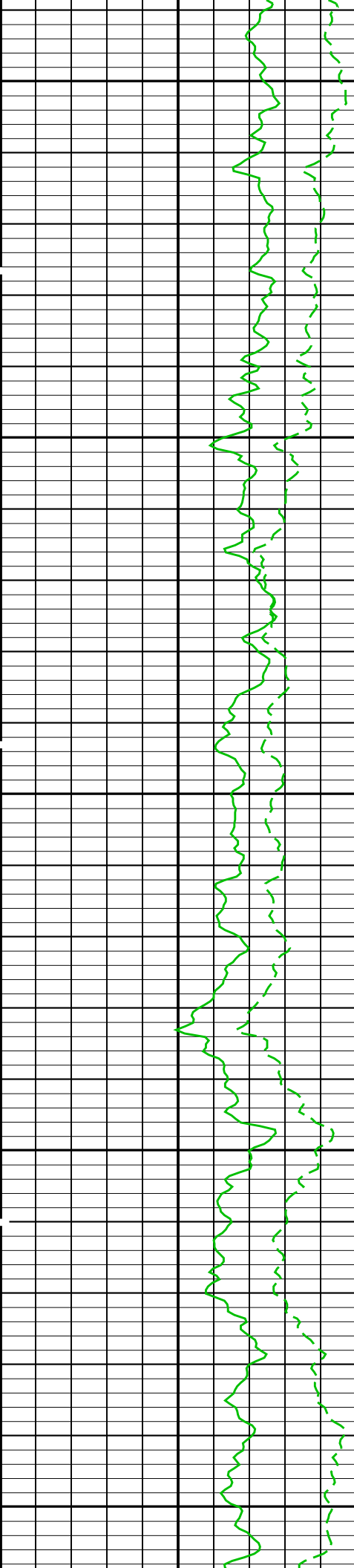




1100

1200

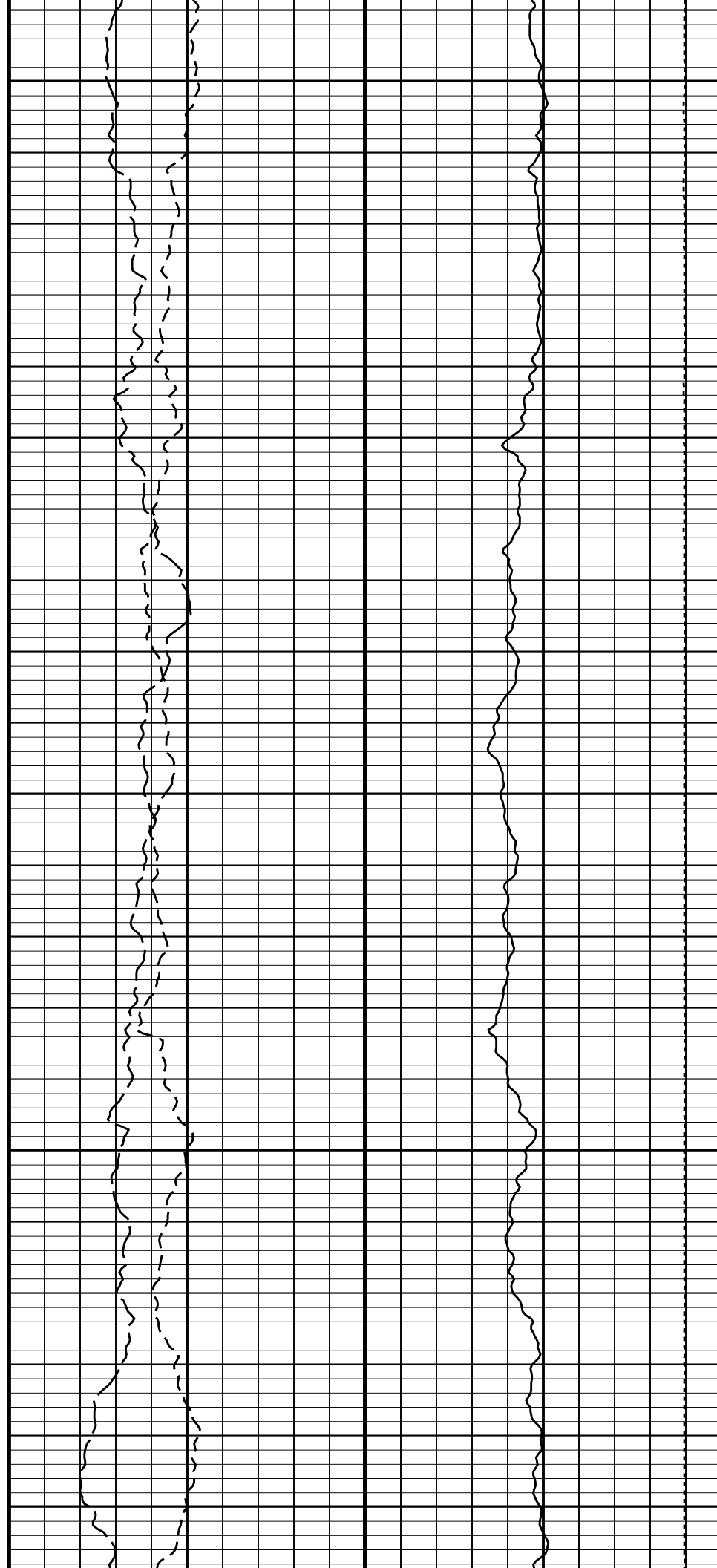


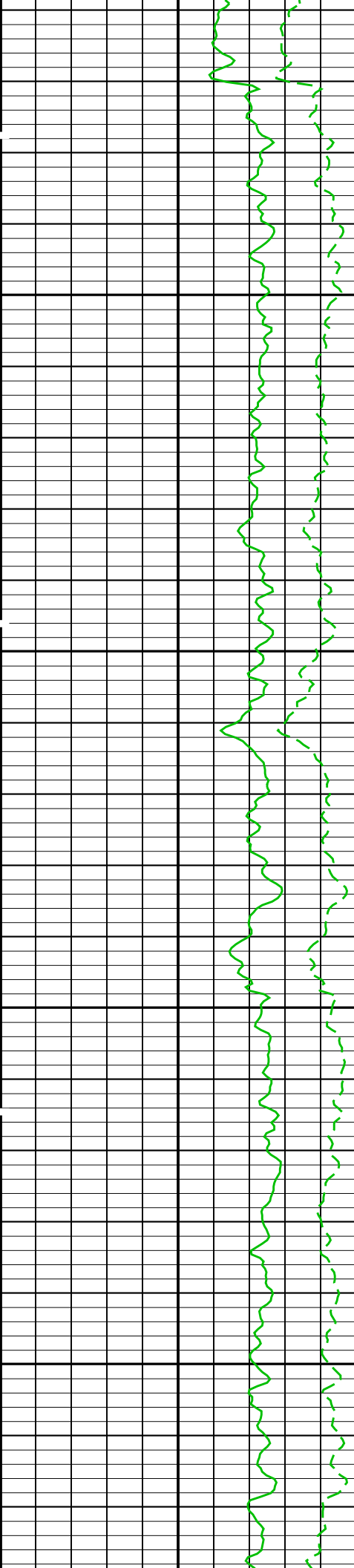


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1400

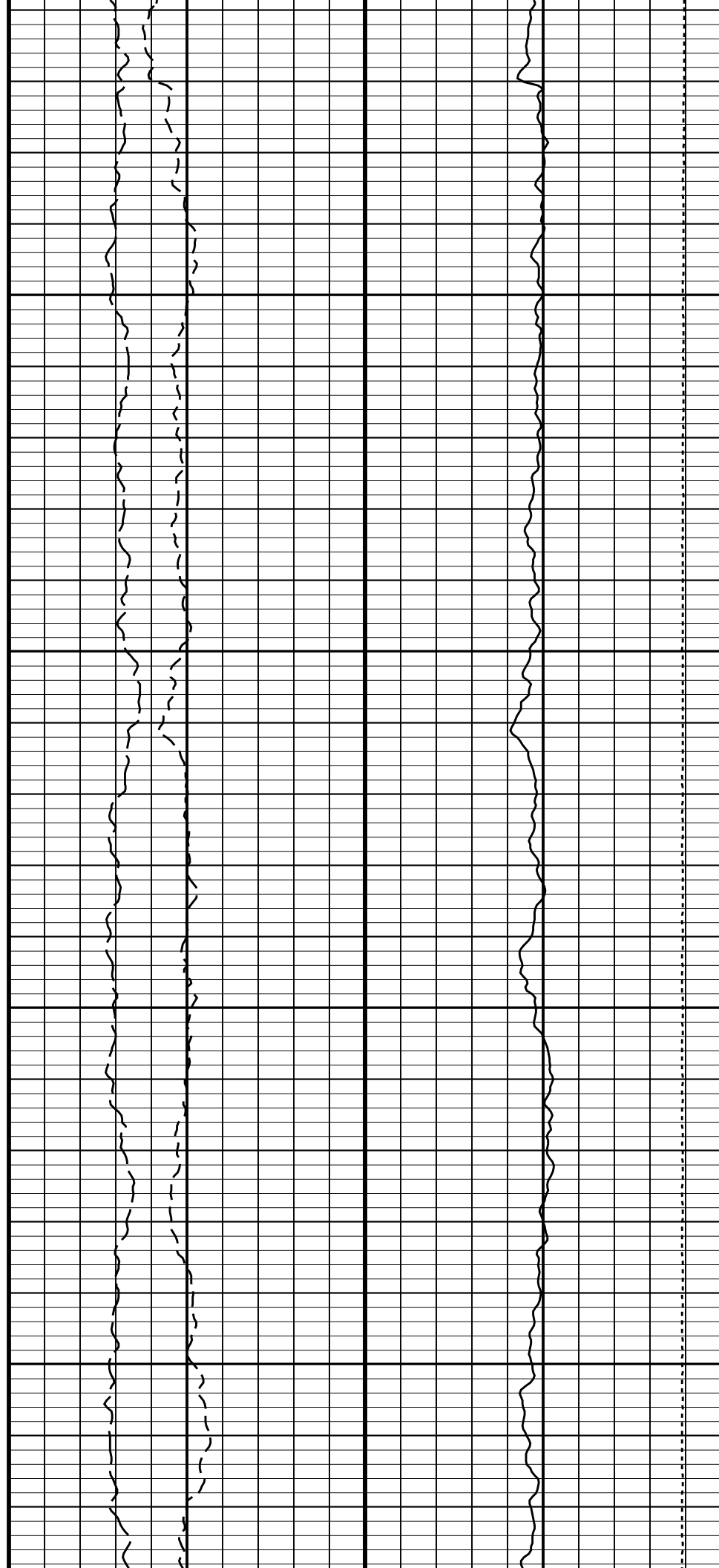
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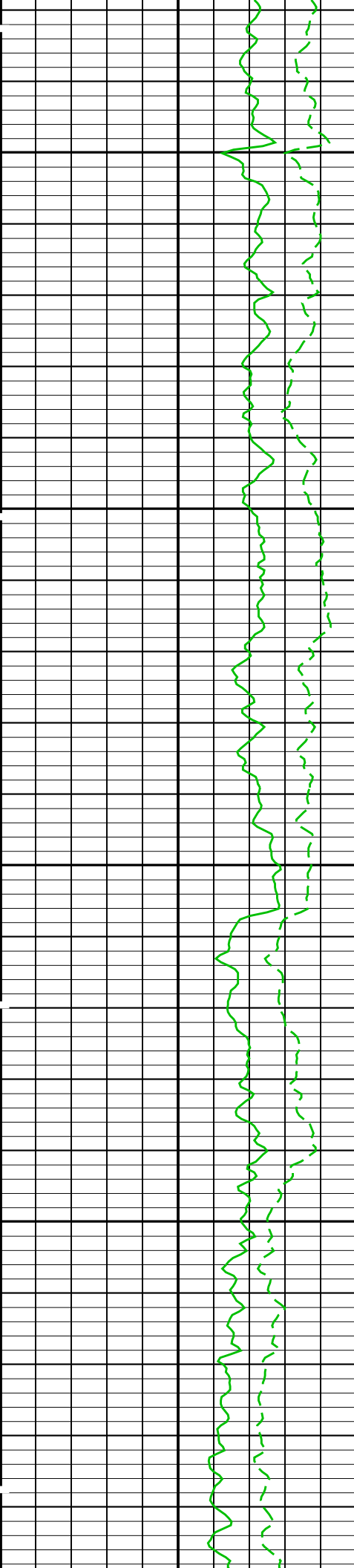




1600

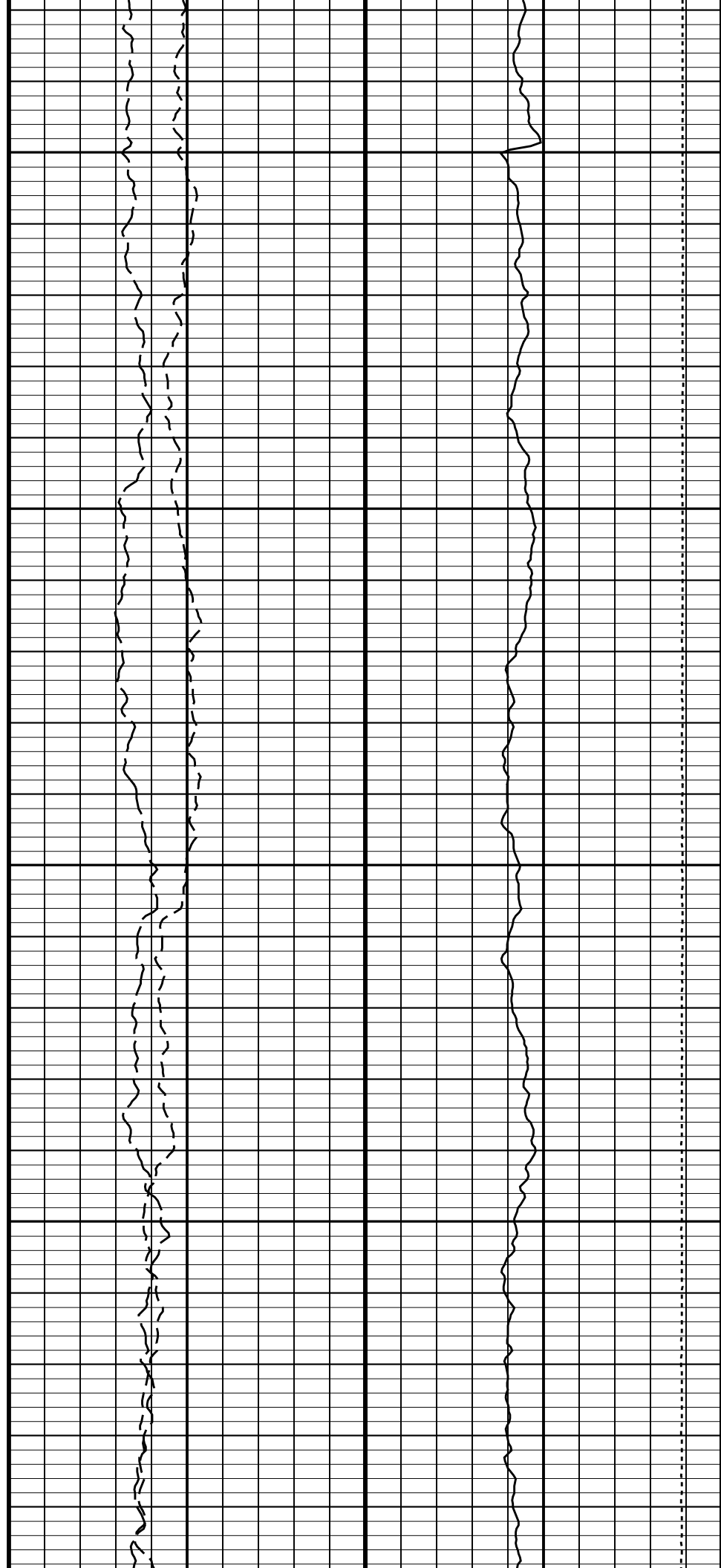
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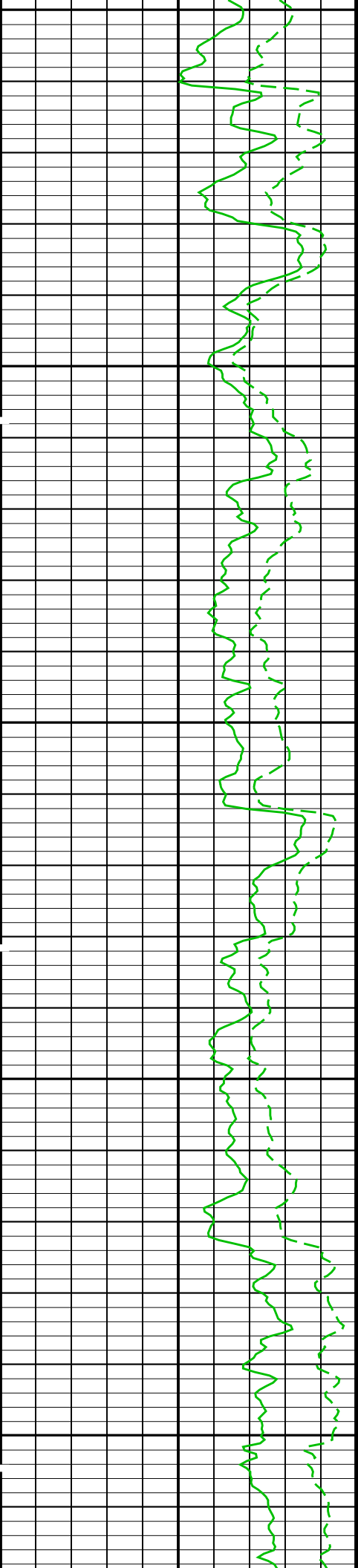




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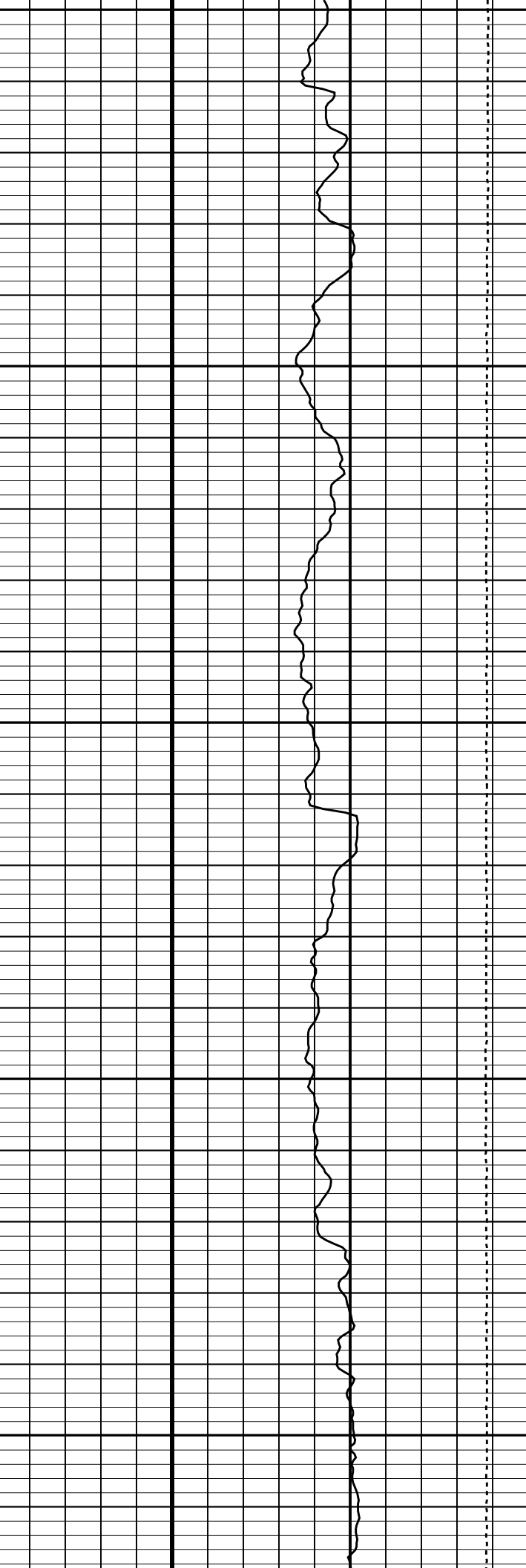
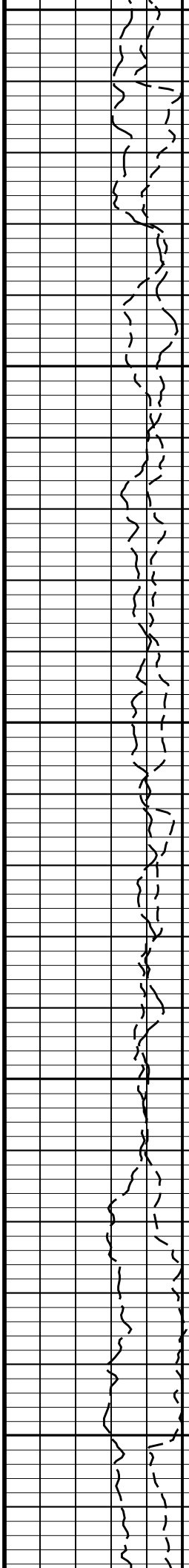
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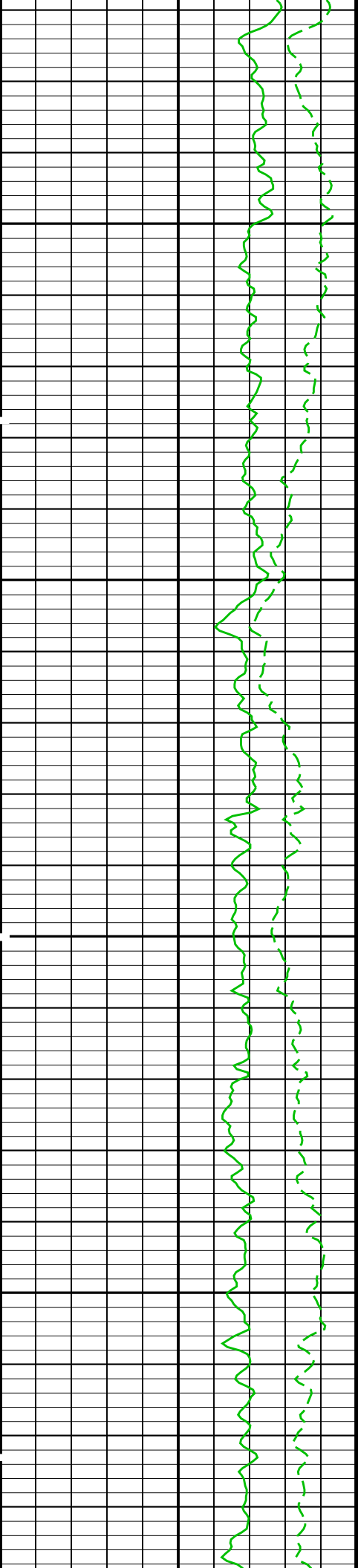




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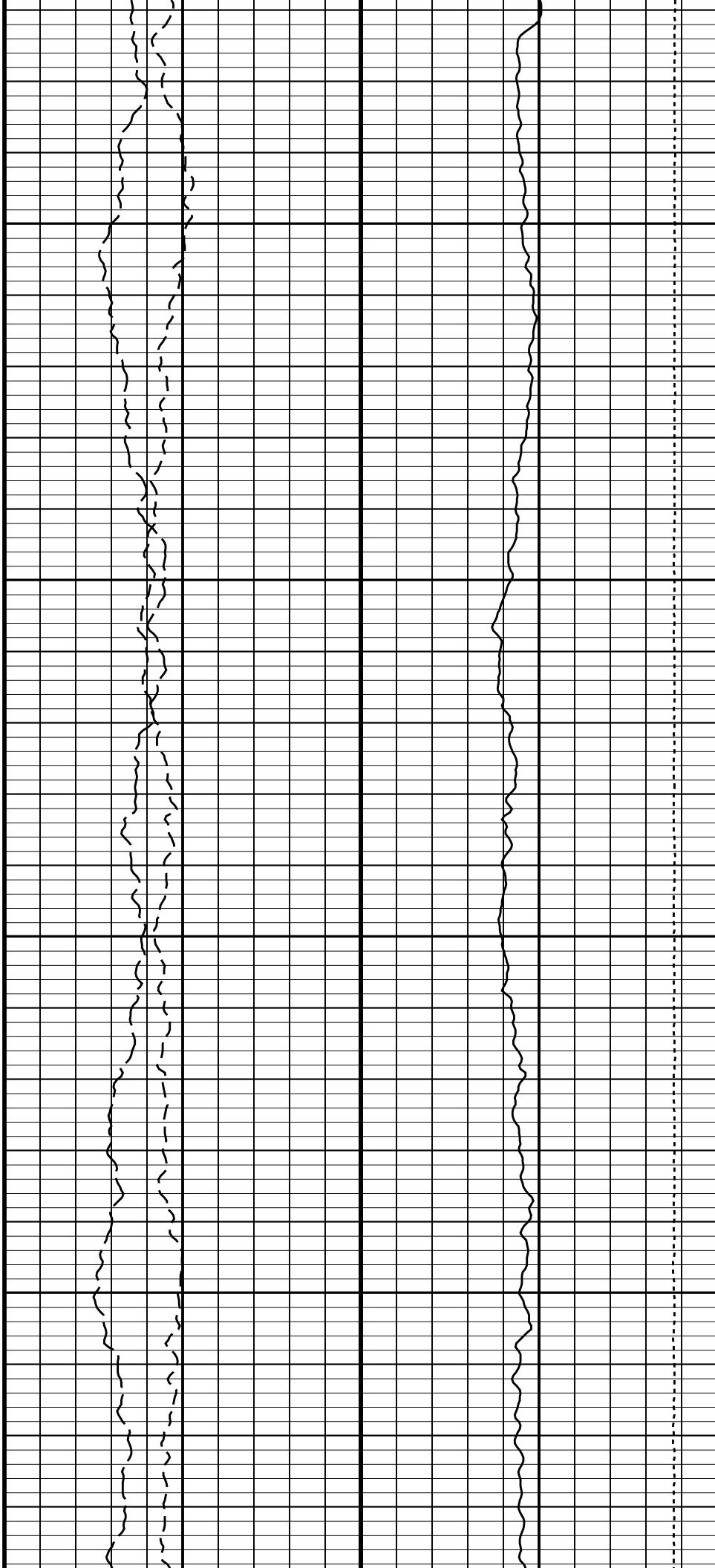
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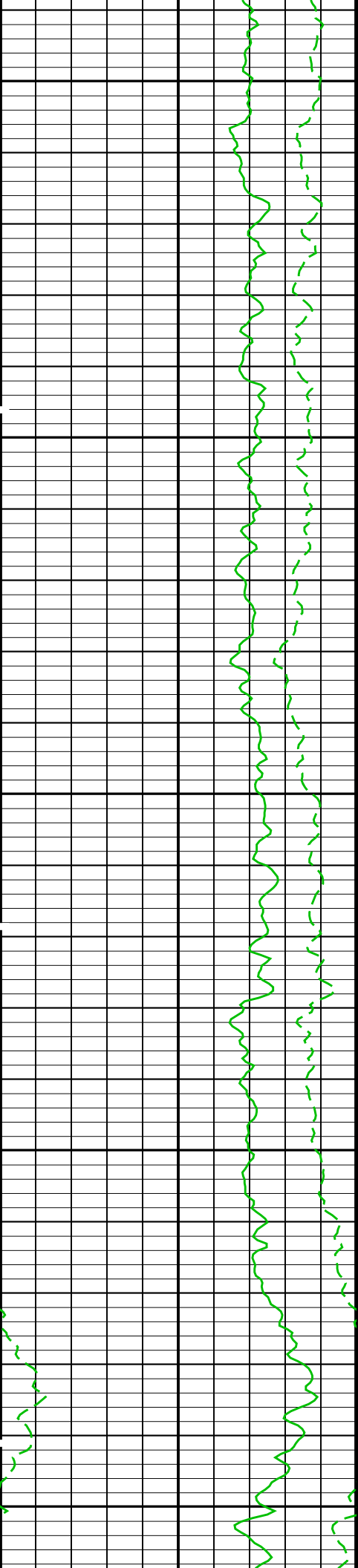




2200

2300

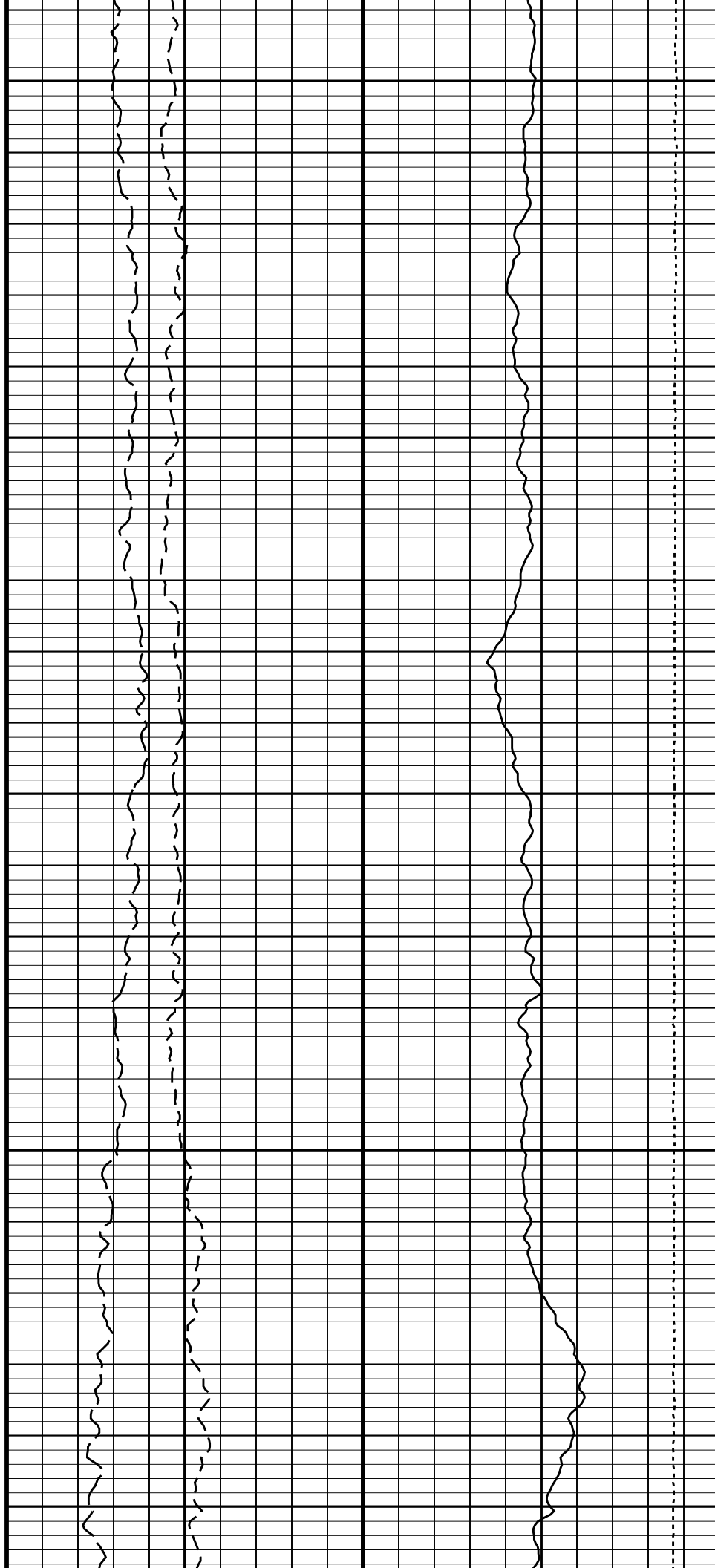


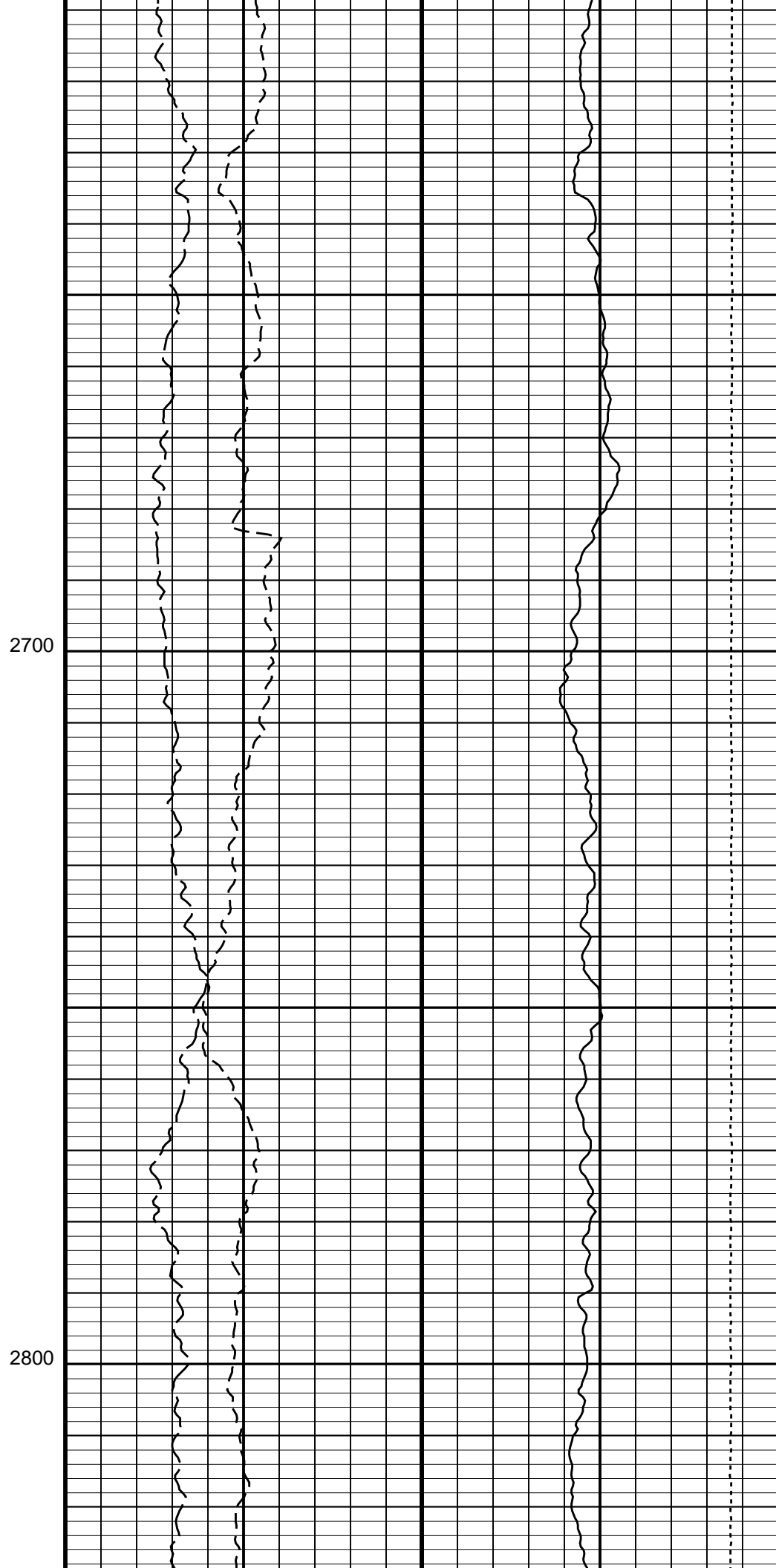
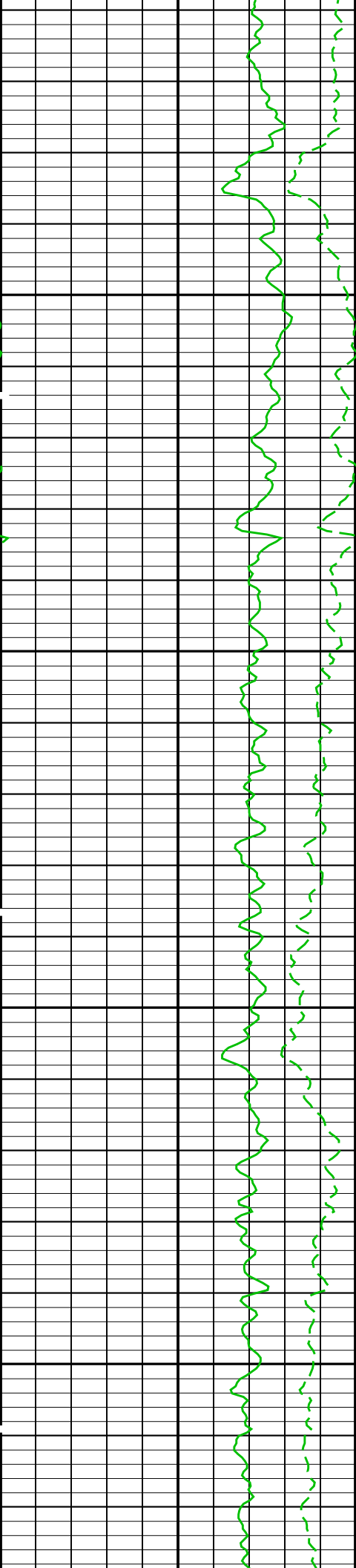


2400

2500

2600

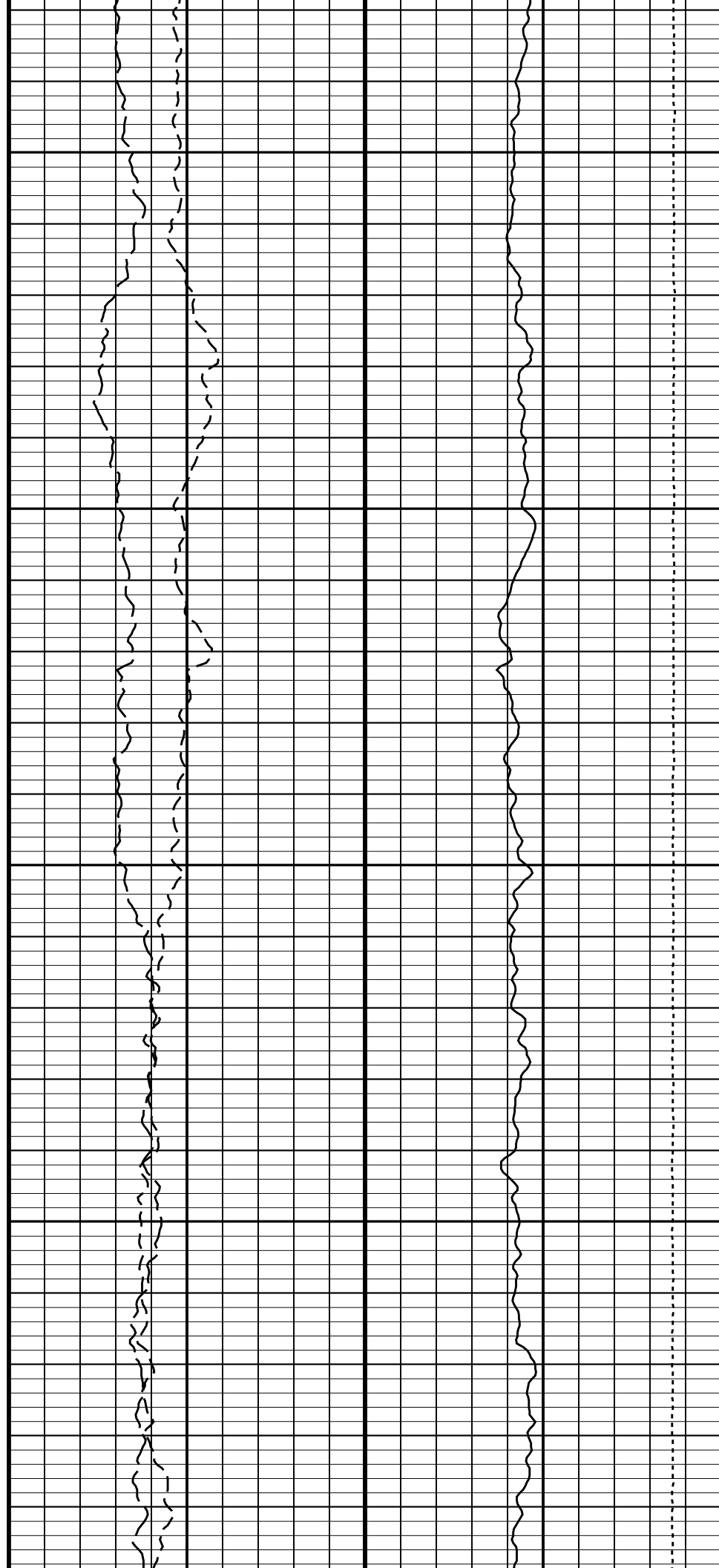


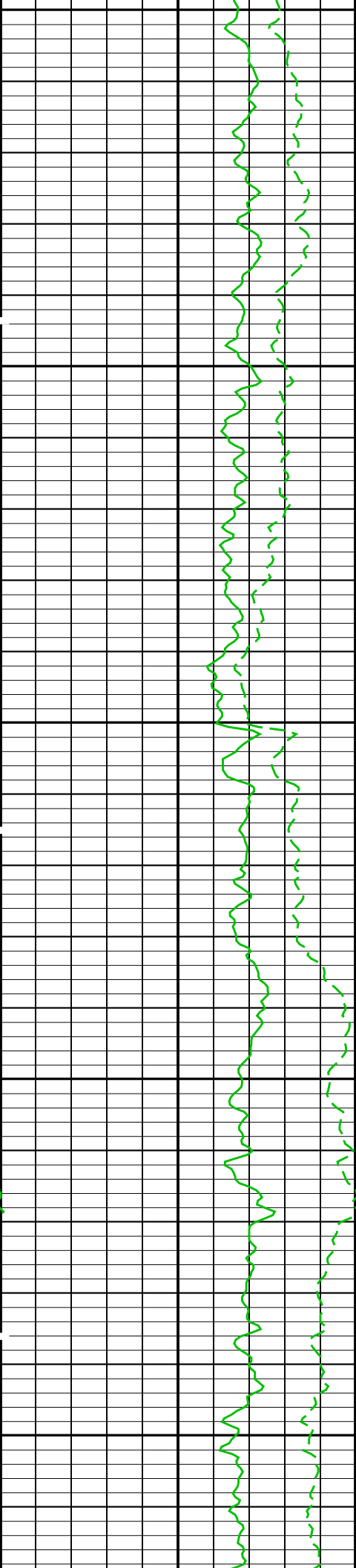




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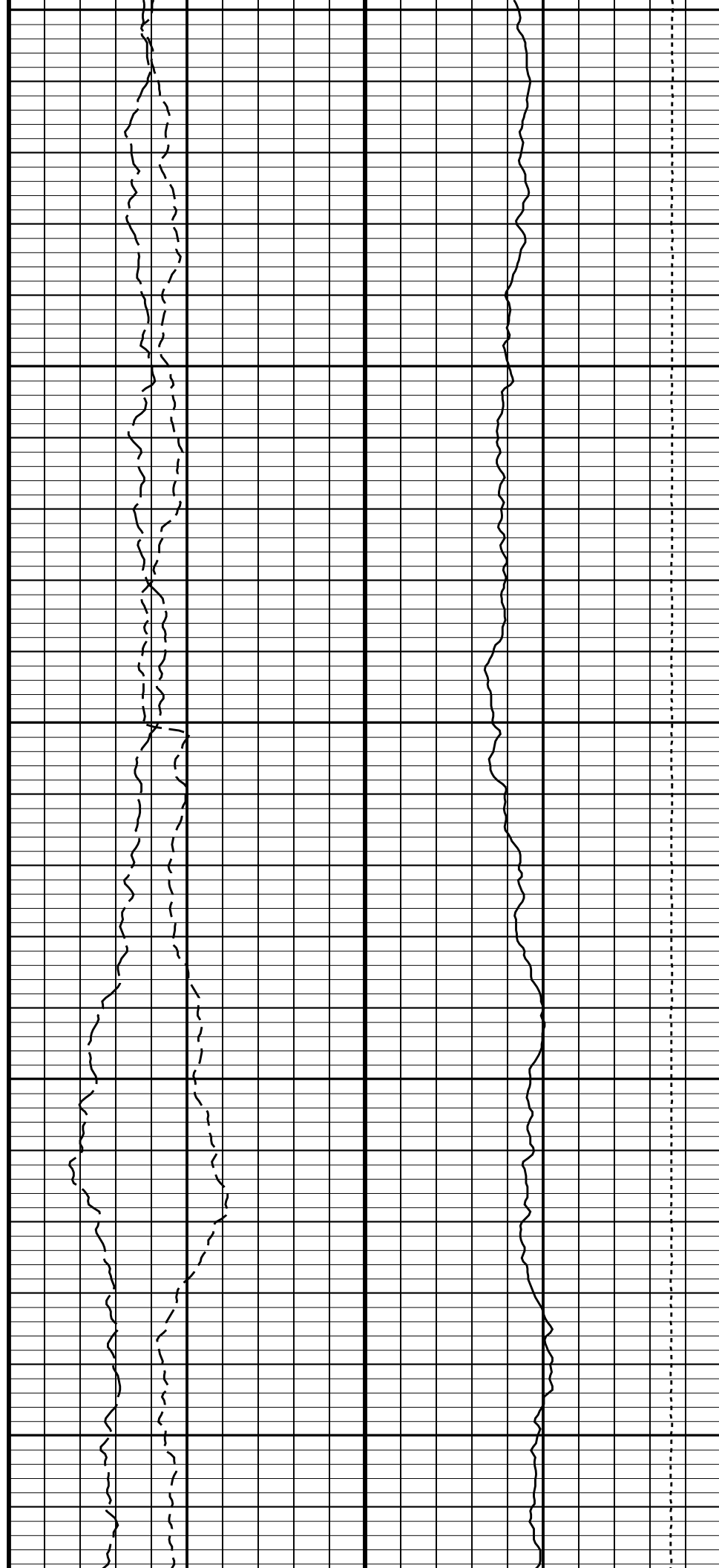
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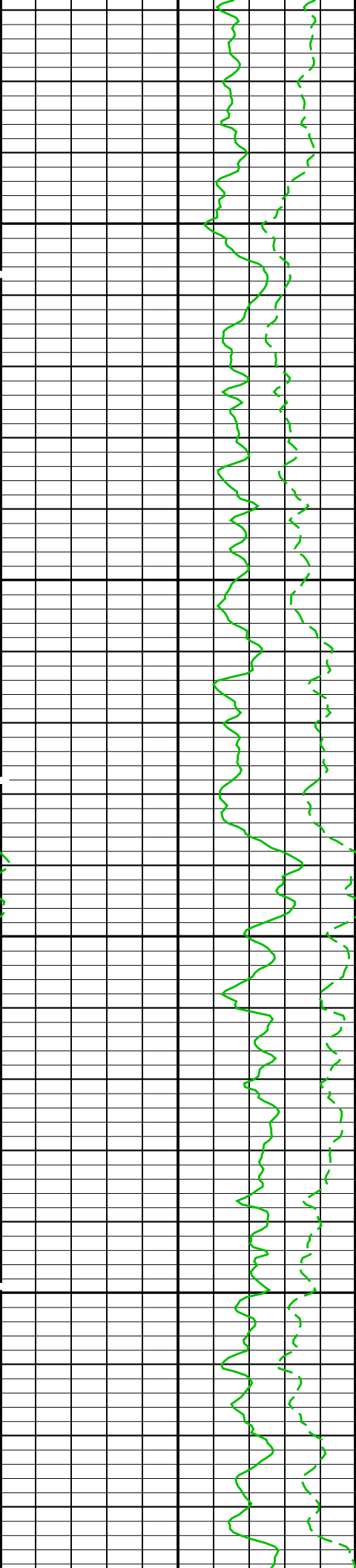




3100

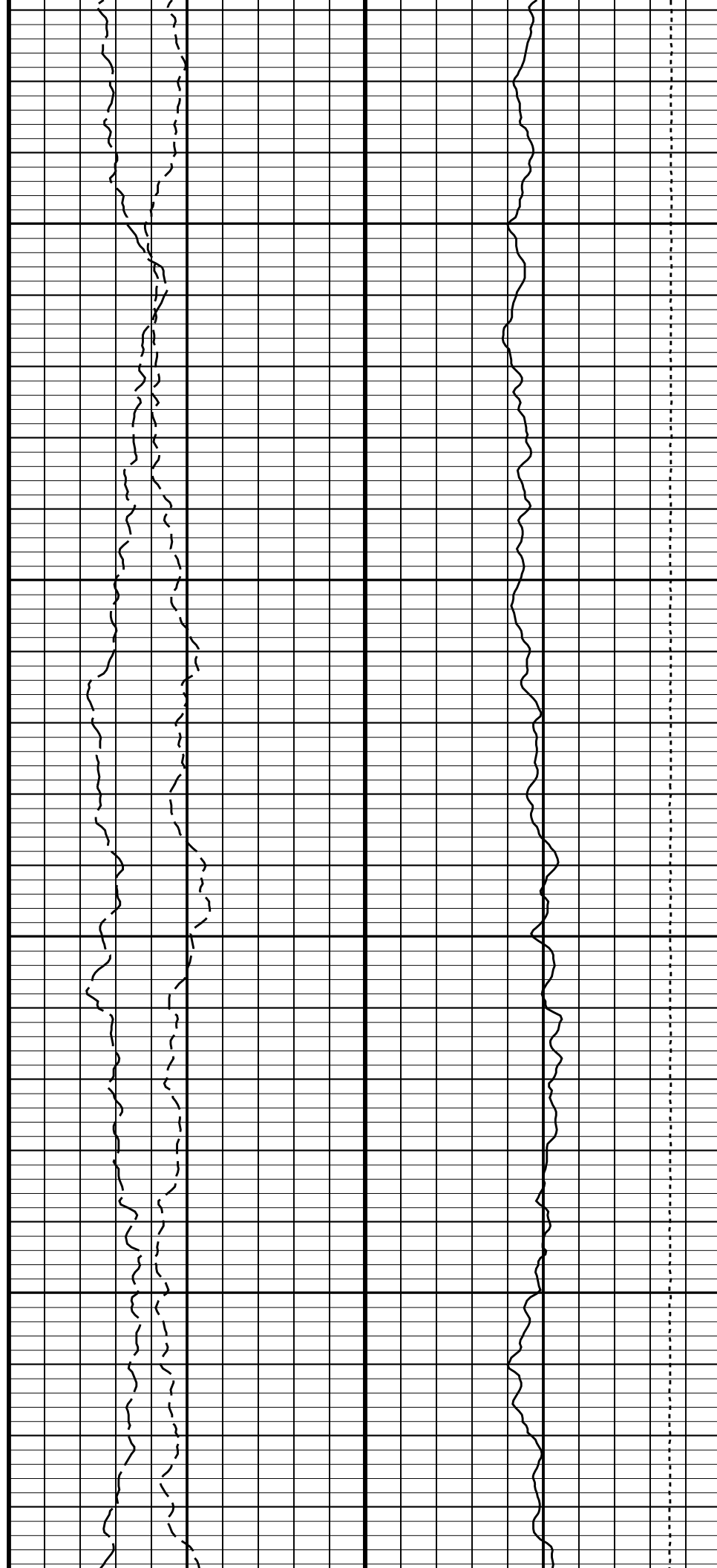
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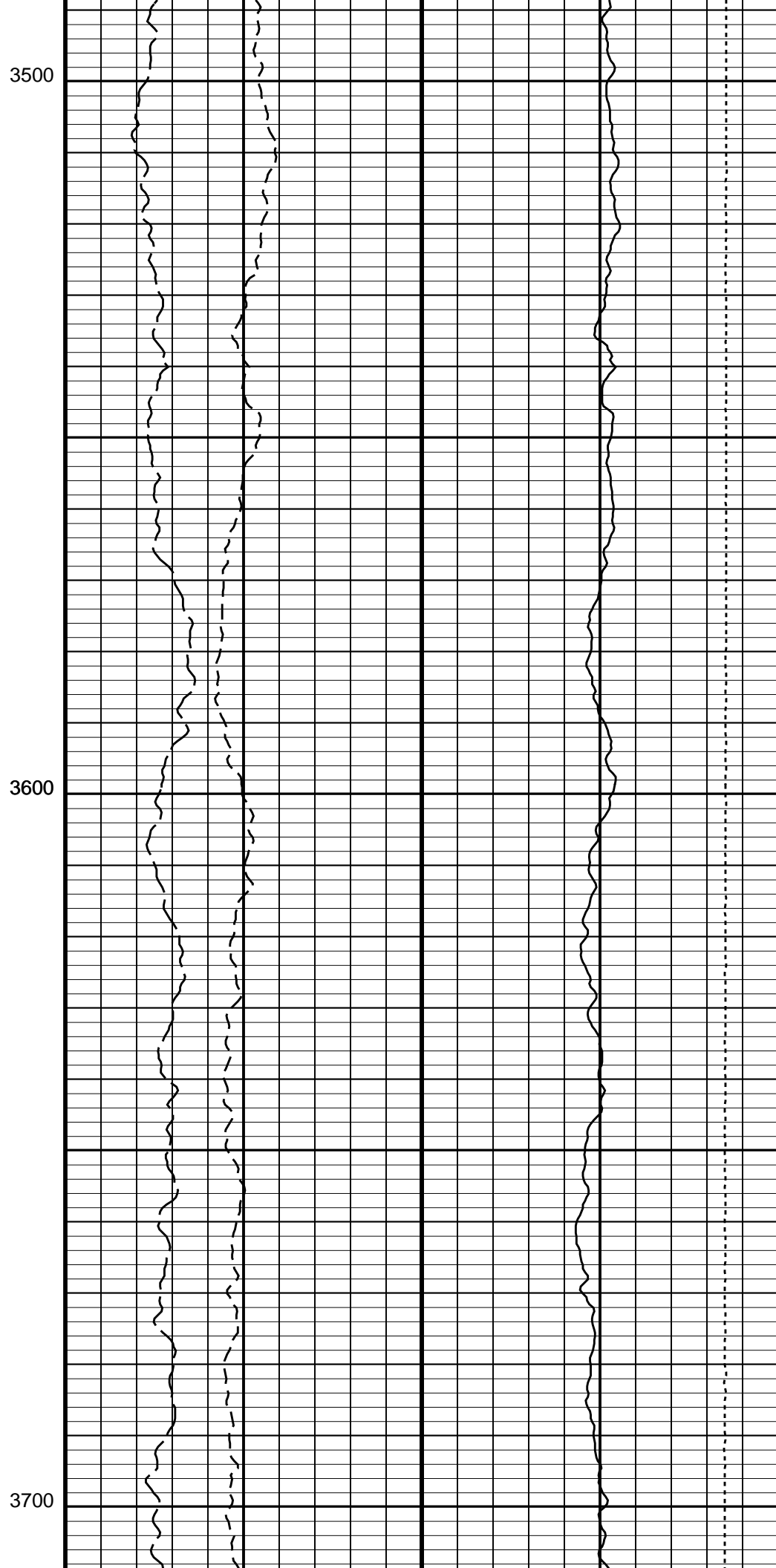
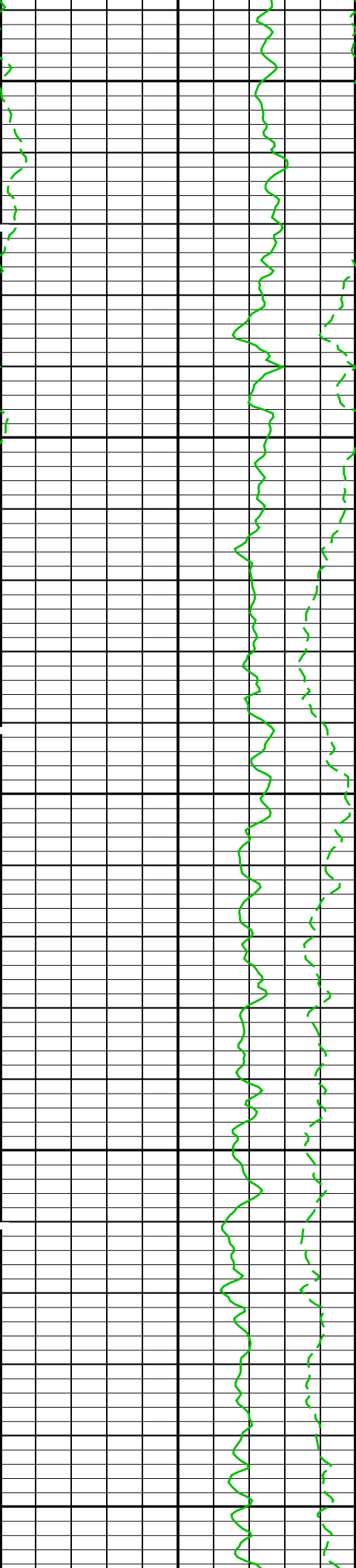


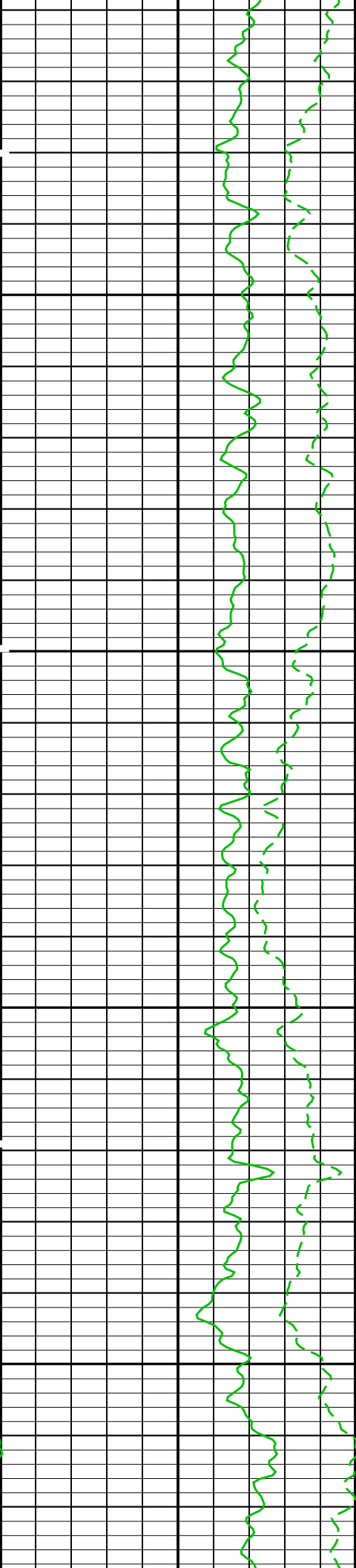


3300

3400

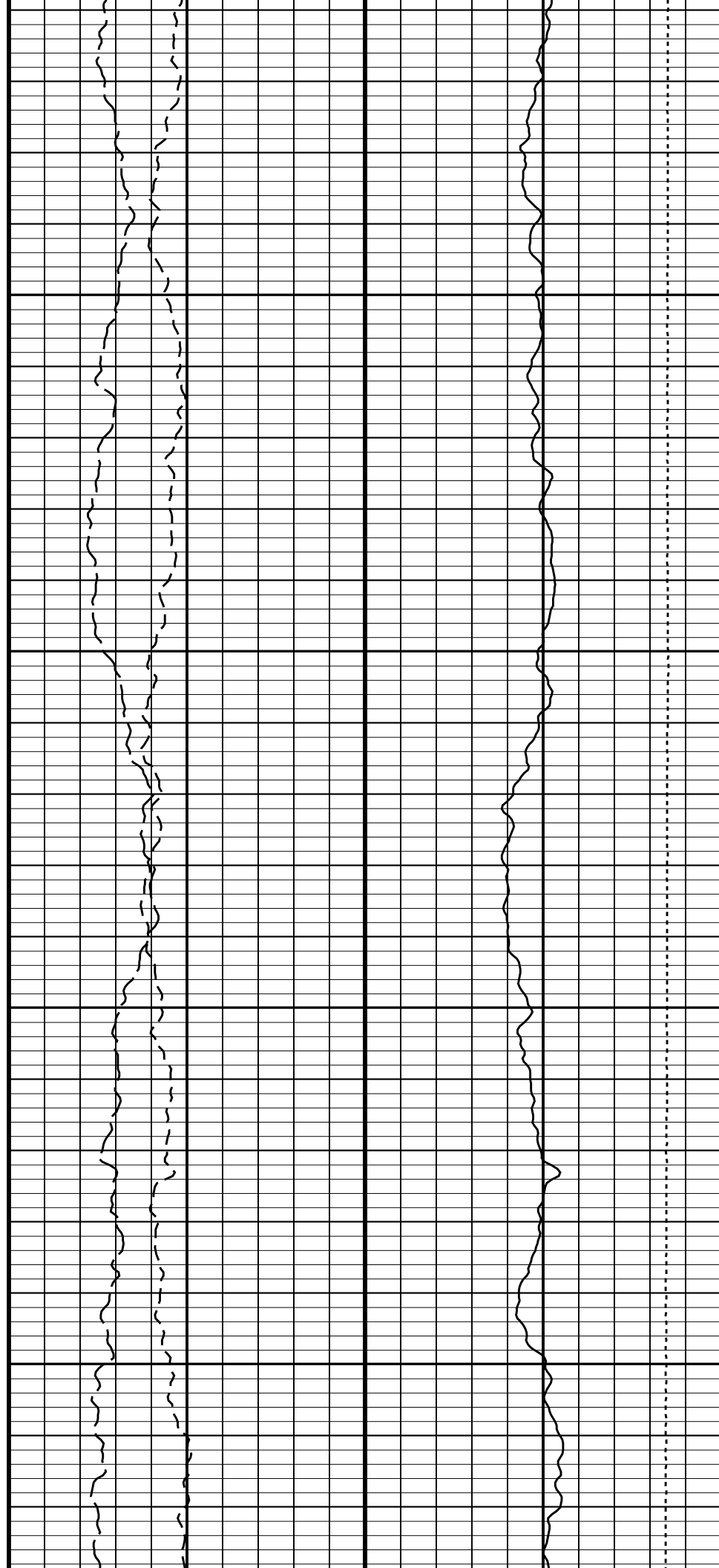


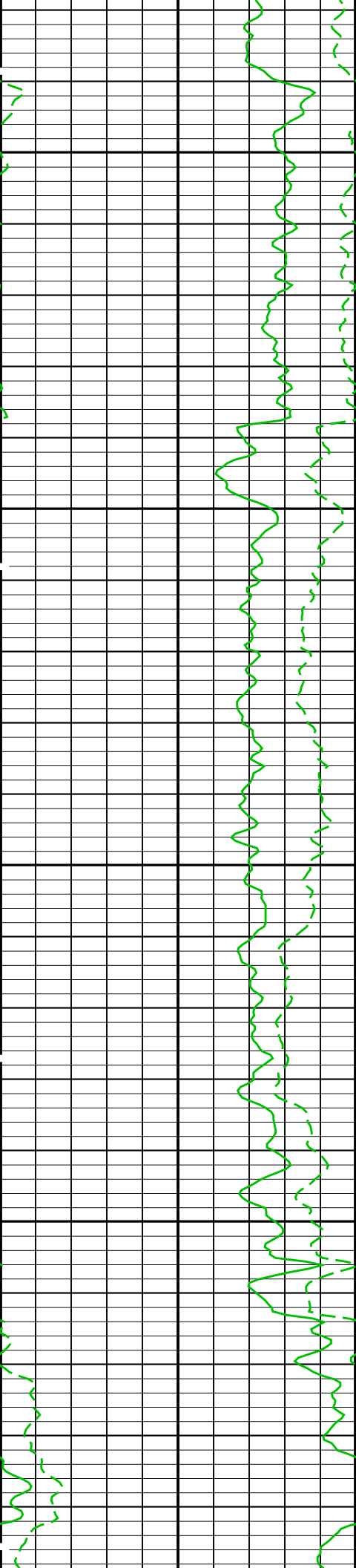




3800

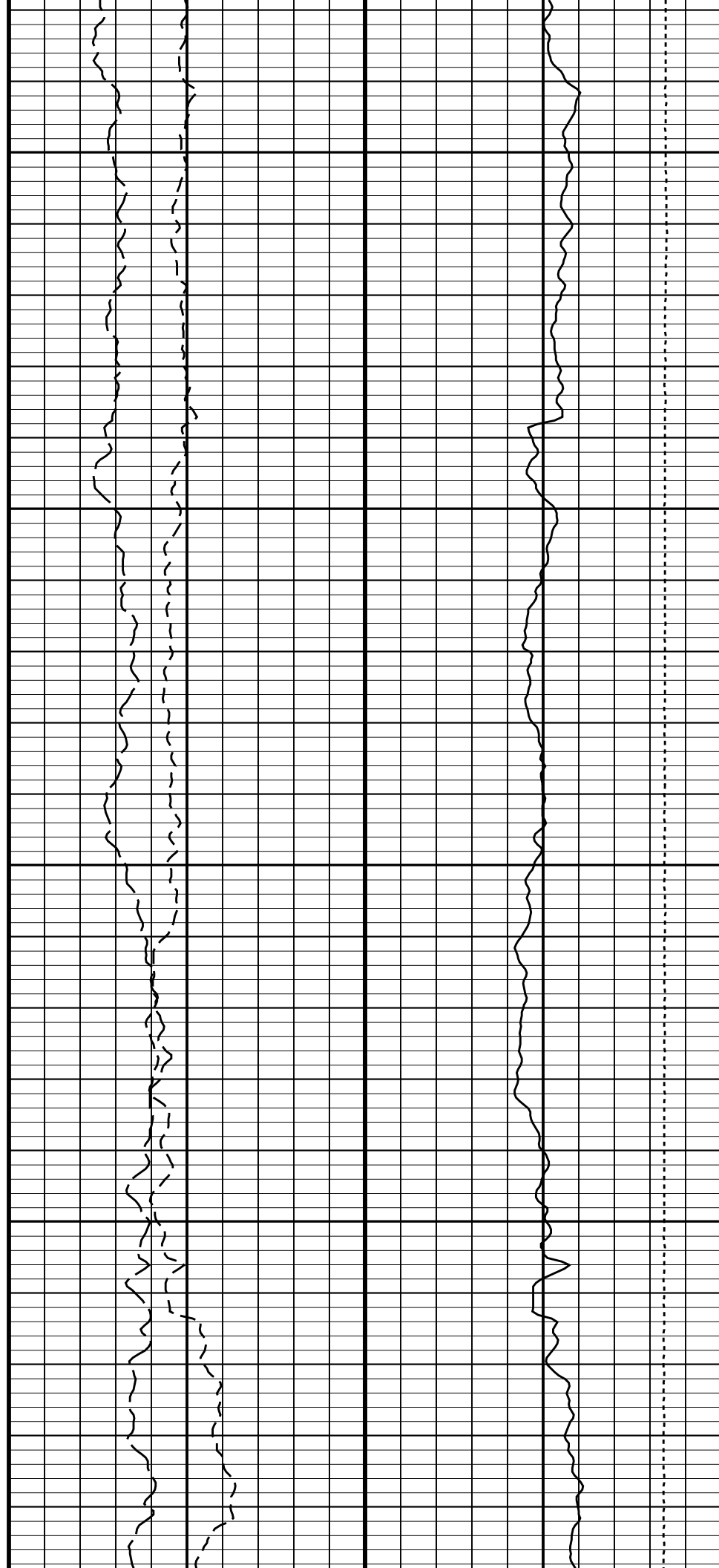
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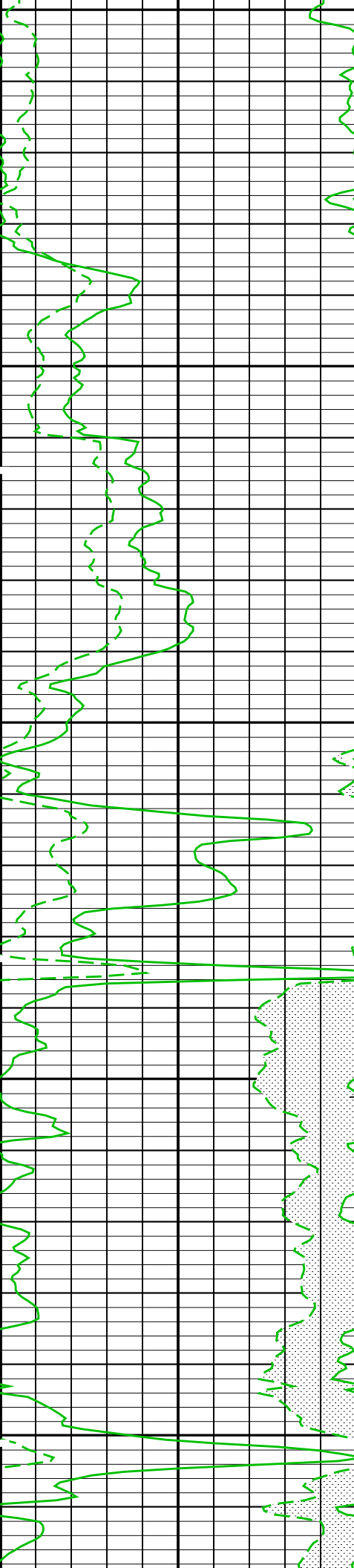




4000

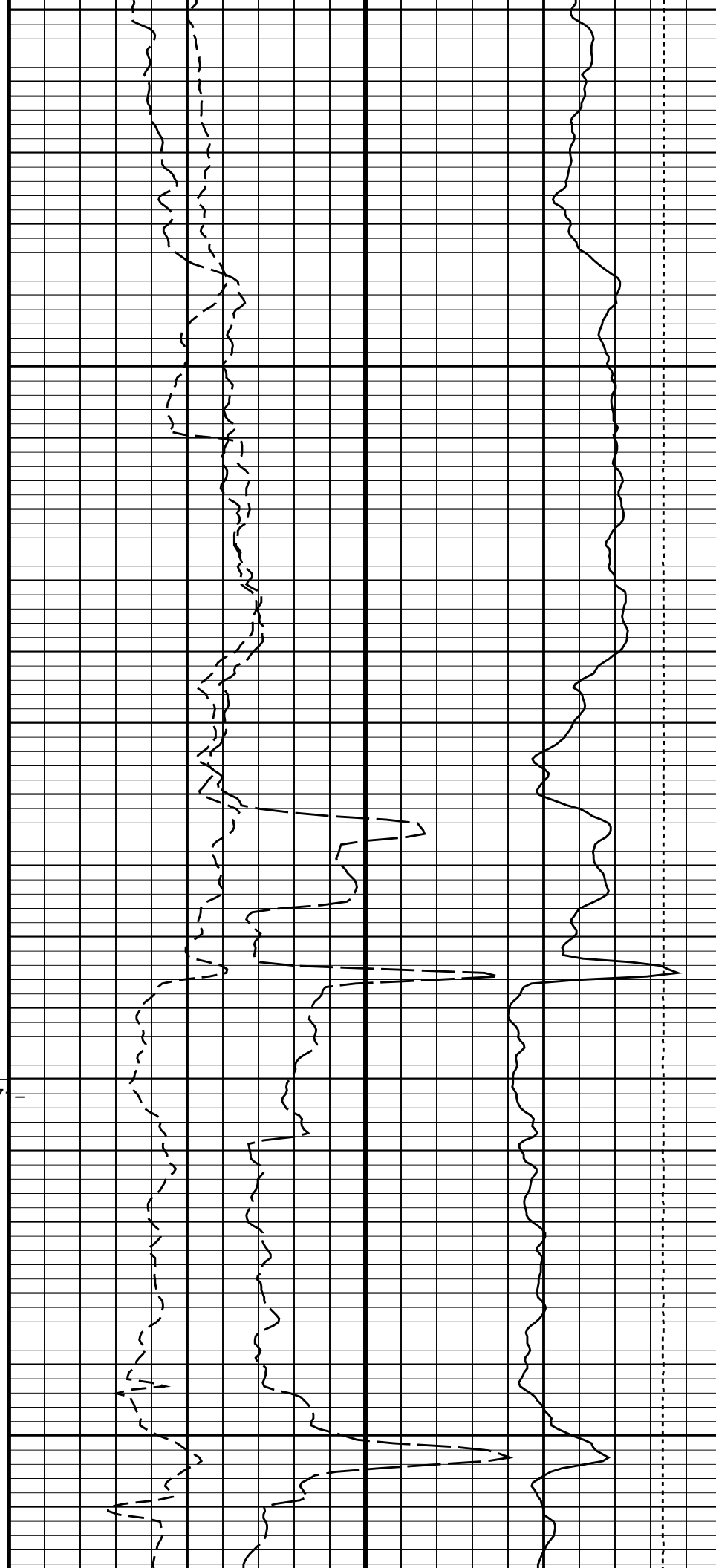
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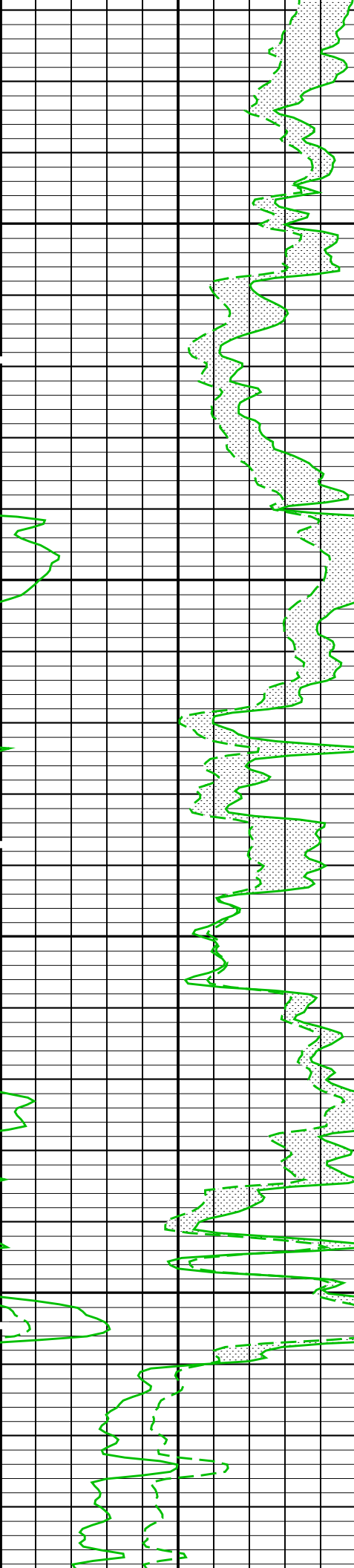




4200

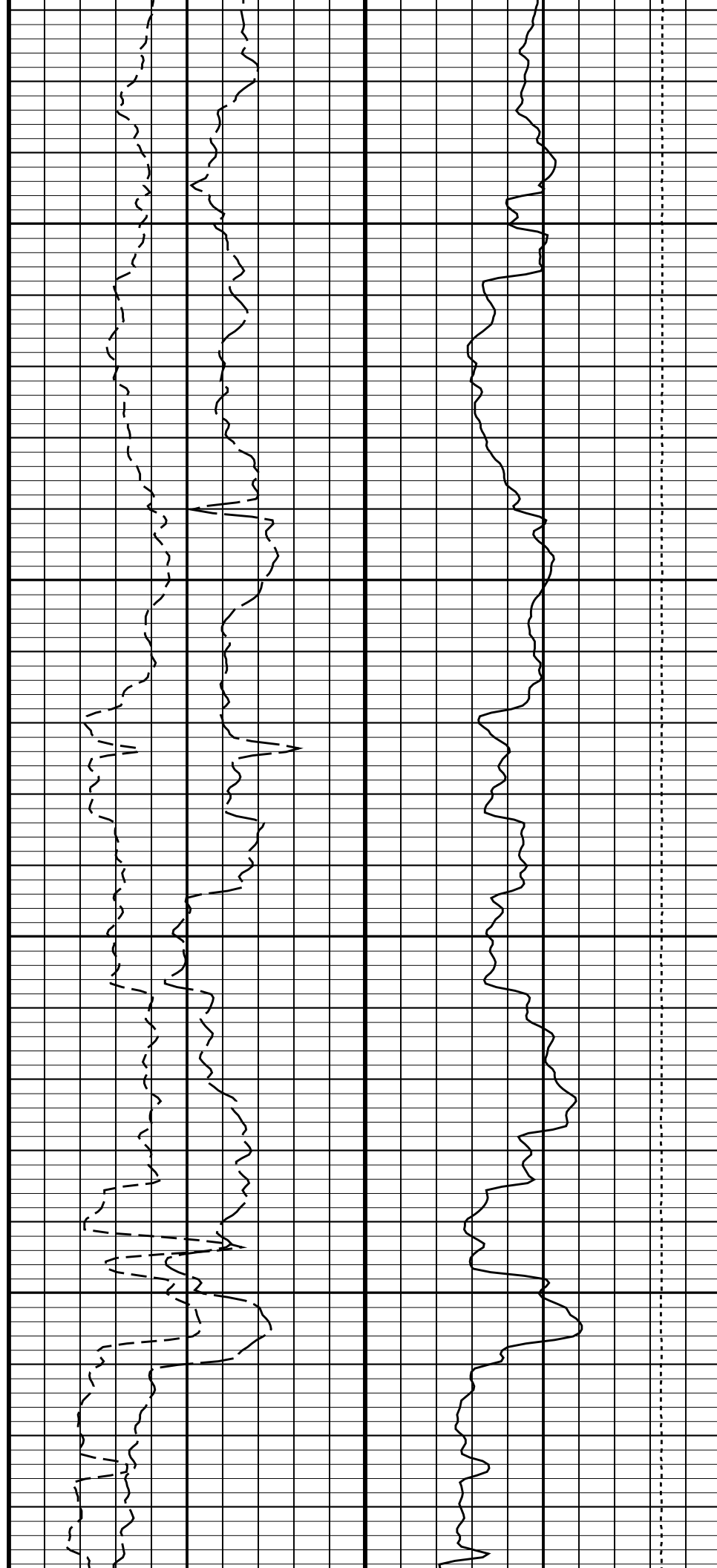
4300.0 FT
-2.68 to 2.7-

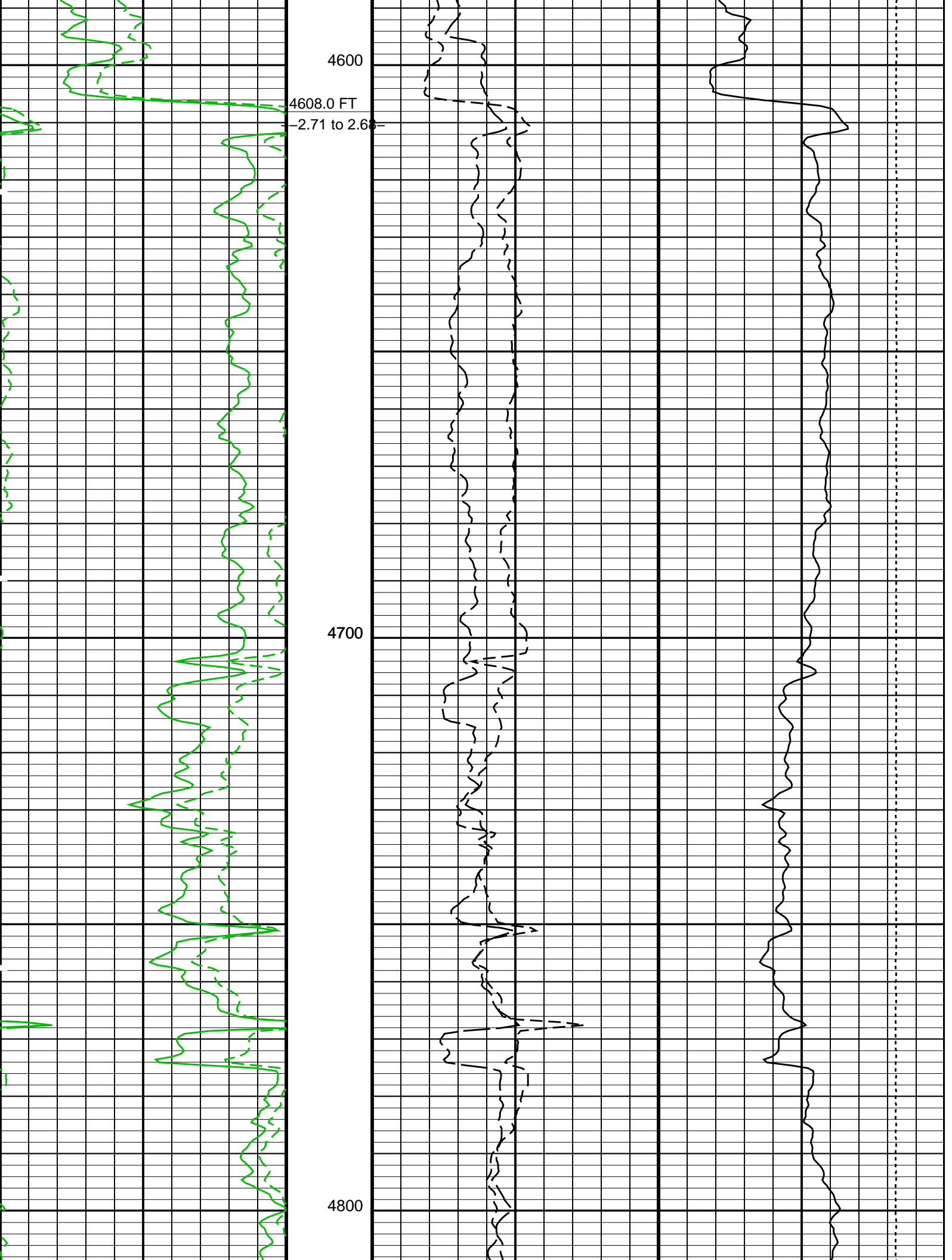


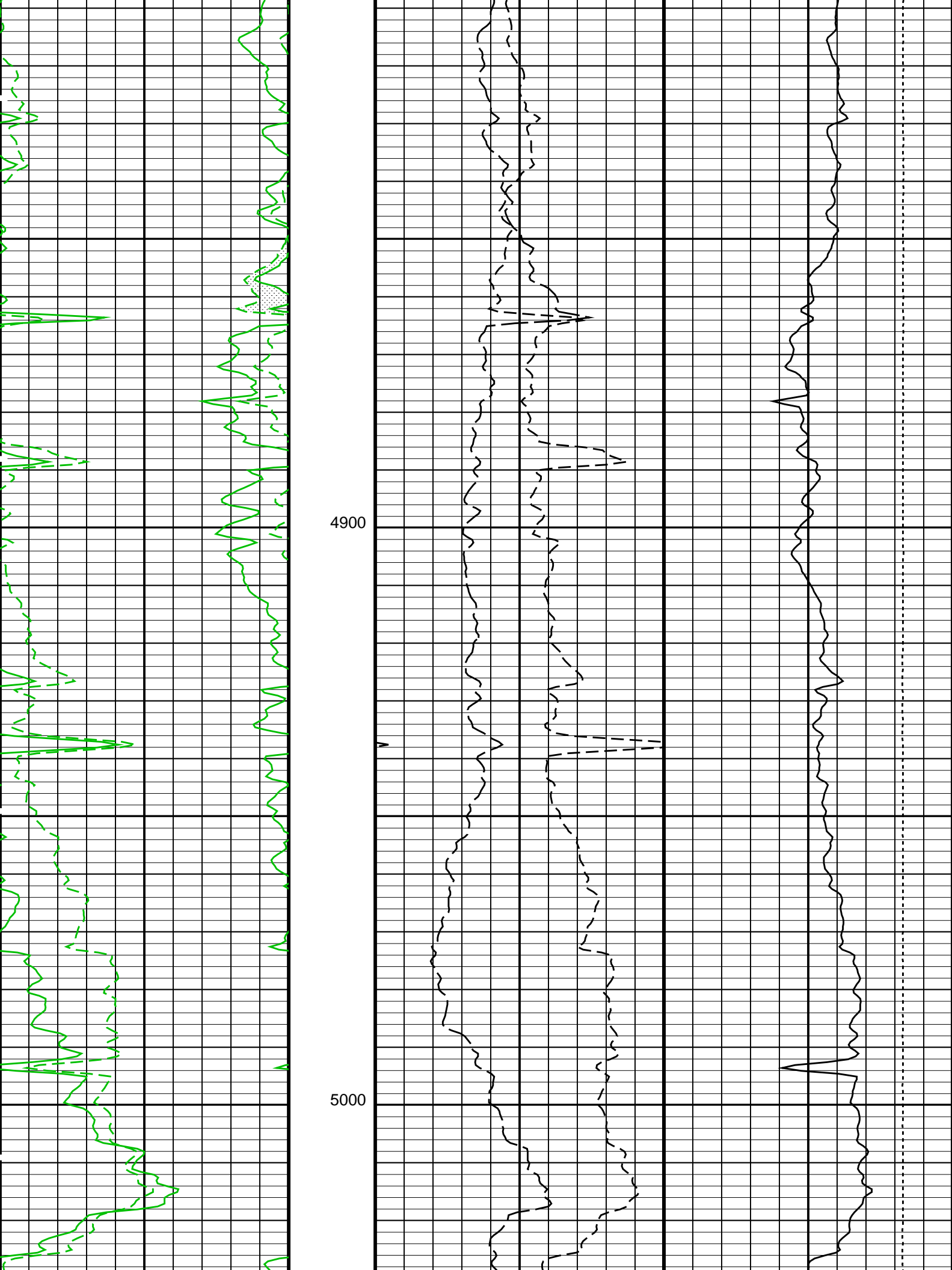


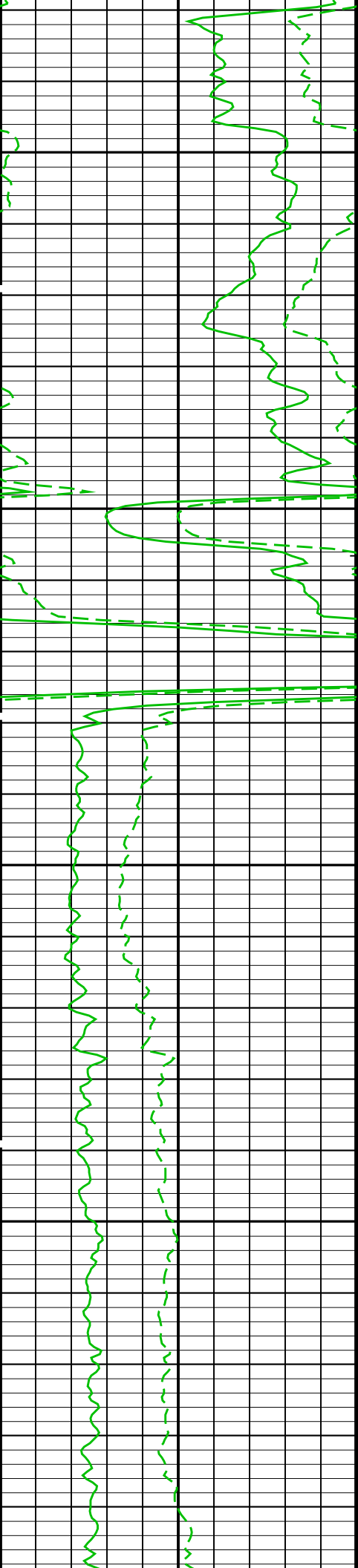
4400

4500



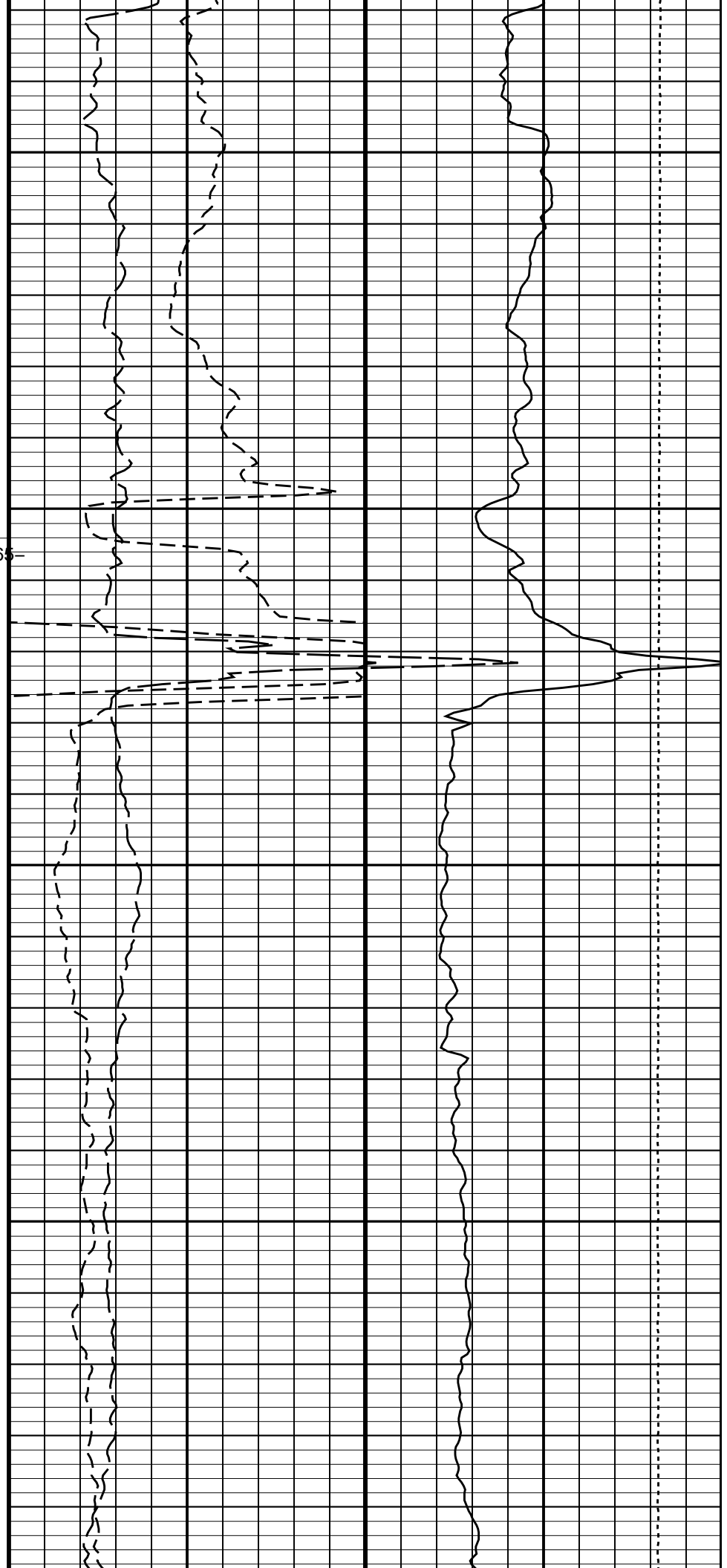


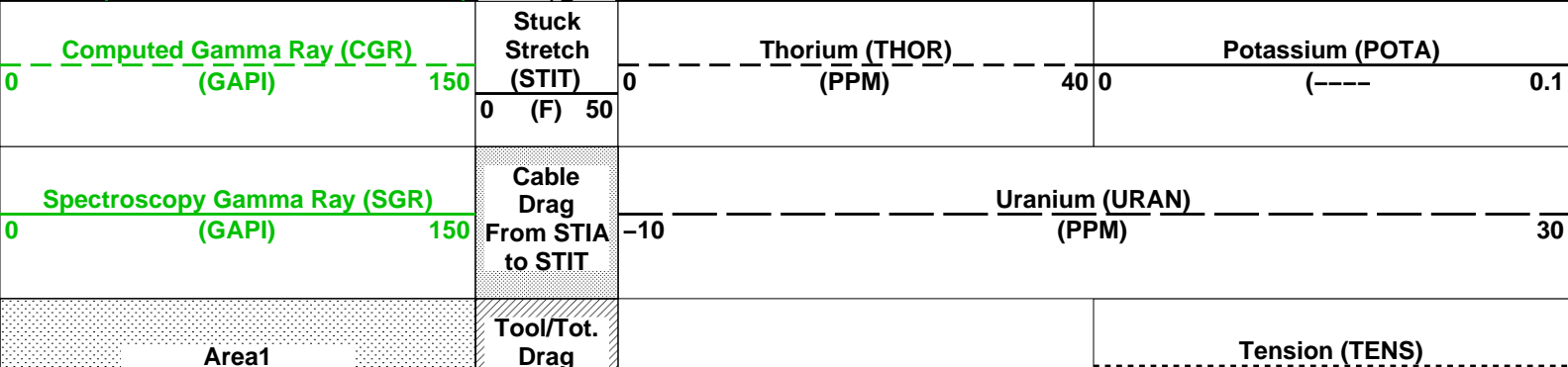
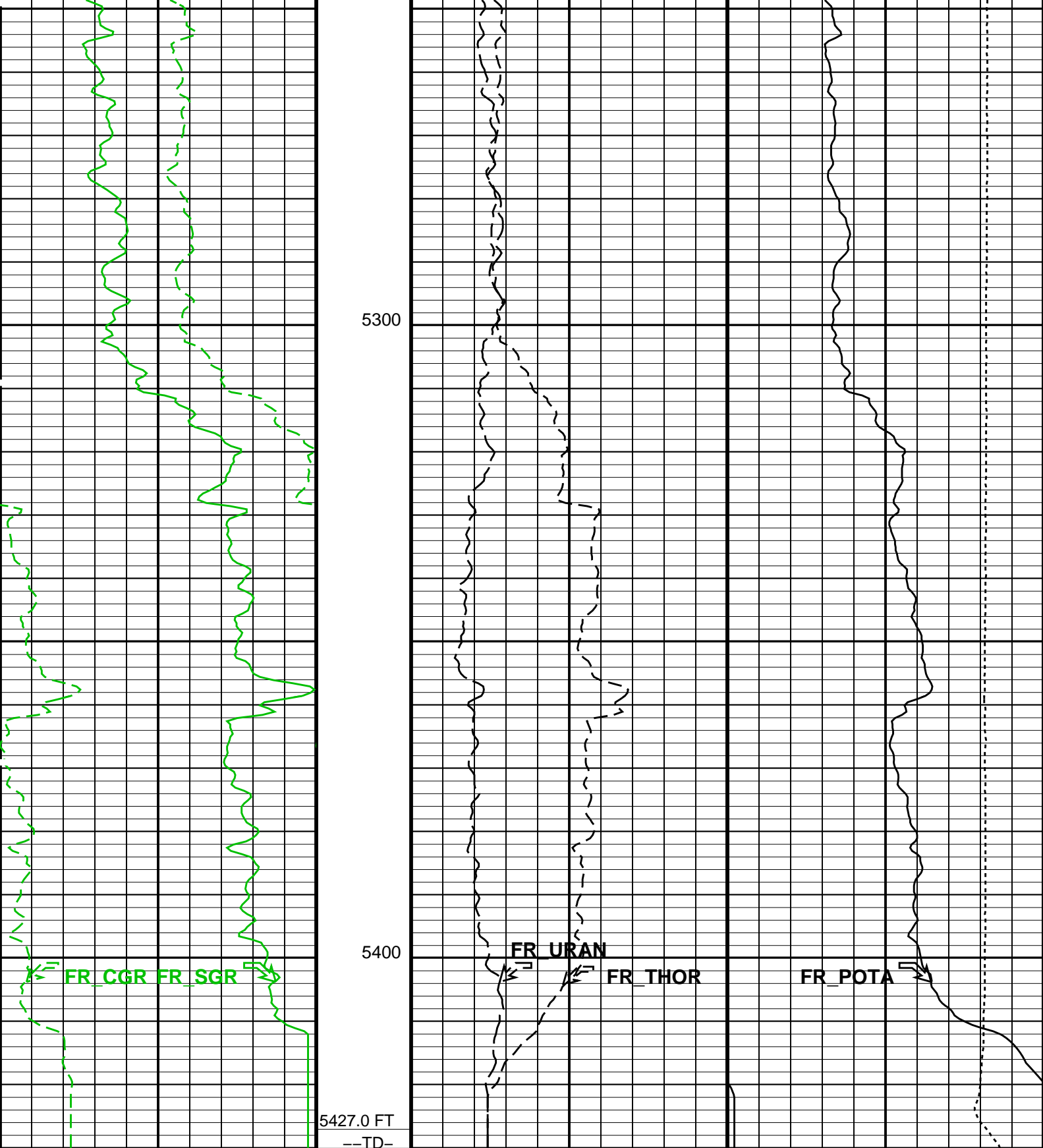




5100
5104.0 FT
-2.68 to 2.65-

5200





PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
NGT-C: Natural Gamma Spectroscopy – C			
CBAR	Constant Barite	1	
CGMI	Spectro Computed Gamma Ray Minimum	0	GAPI
CGSH	Spectro Computed Gamma Ray Shale	100	GAPI
KMIN	Potassium Minimum	0	
KSHA	Potassium Shale	0.02	
NFO	NGT Filtering Option	KALMAN	
PMUD	Potassium Mud	0	%
SGMI	Spectro Gamma Ray Minimum	0	GAPI
SGSH	Spectro Gamma Ray Shale	100	GAPI
TMIN	Thorium Minimum	0	PPM
TSHA	Thorium Shale	12	PPM
UMIN	Uranium Minimum	0	PPM
USHA	Uranium Shale	3	PPM
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth – Driller	5433.00	FT
TDL	Total Depth – Logger	5427.00	FT
System and Miscellaneous			
BS	Bit Size	12.250	IN
DFD	Drilling Fluid Density	9.80	LB/G
DO	Depth Offset for Playback	0.0	FT
DORL	Depth Offset for Repeat Analysis	2.0	FT
PP	Playback Processing	RECOMPUTE	

Format: NGTYields	Vertical Scale: 5" per 100'	Graphics File Created: 12-Aug-2007 13:28
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OP System Version: 15C0-309

MCM

AIT-H	SRPC-3357-Q2_2007	NGT-C	15C0-309
DTA-A	SRPC-3357-Q2_2007	DSL-FTB	15C0-309
DTC-H	15C0-309		

Input DLIS Files

DEFAULT	AIT_NGS_SONIC_012LUP	FN:11	PRODUCER	12-Aug-2007 12:03	5430.0 FT	379.0 FT
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Output DLIS Files

DEFAULT	AIT_NGS_SONIC_022PUP	FN:21	PRODUCER	12-Aug-2007 13:28
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Schlumberger

Repeat Analysis

MAXIS Field Log

Company: Windy Hill Gas Storage, LLC	Well: Windy Hill 3-17D
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Input DLIS Files

DEFAULT	AIT_NGS_SONIC_010LUP	FN:9	PRODUCER	12-Aug-2007 11:46	5442.0 FT	4784.5 FT
DEFAULT	AIT_NGS_SONIC_012LUP	FN:11	PRODUCER	12-Aug-2007 12:03	5430.0 FT	379.0 FT

Output DLIS Files

OP System Version: 15C0-309

MCM

AIT-H

DTA-A

DTC-H

SRPC-3357-Q2_2007

SRPC-3357-Q2_2007

15C0-309

NGT-C

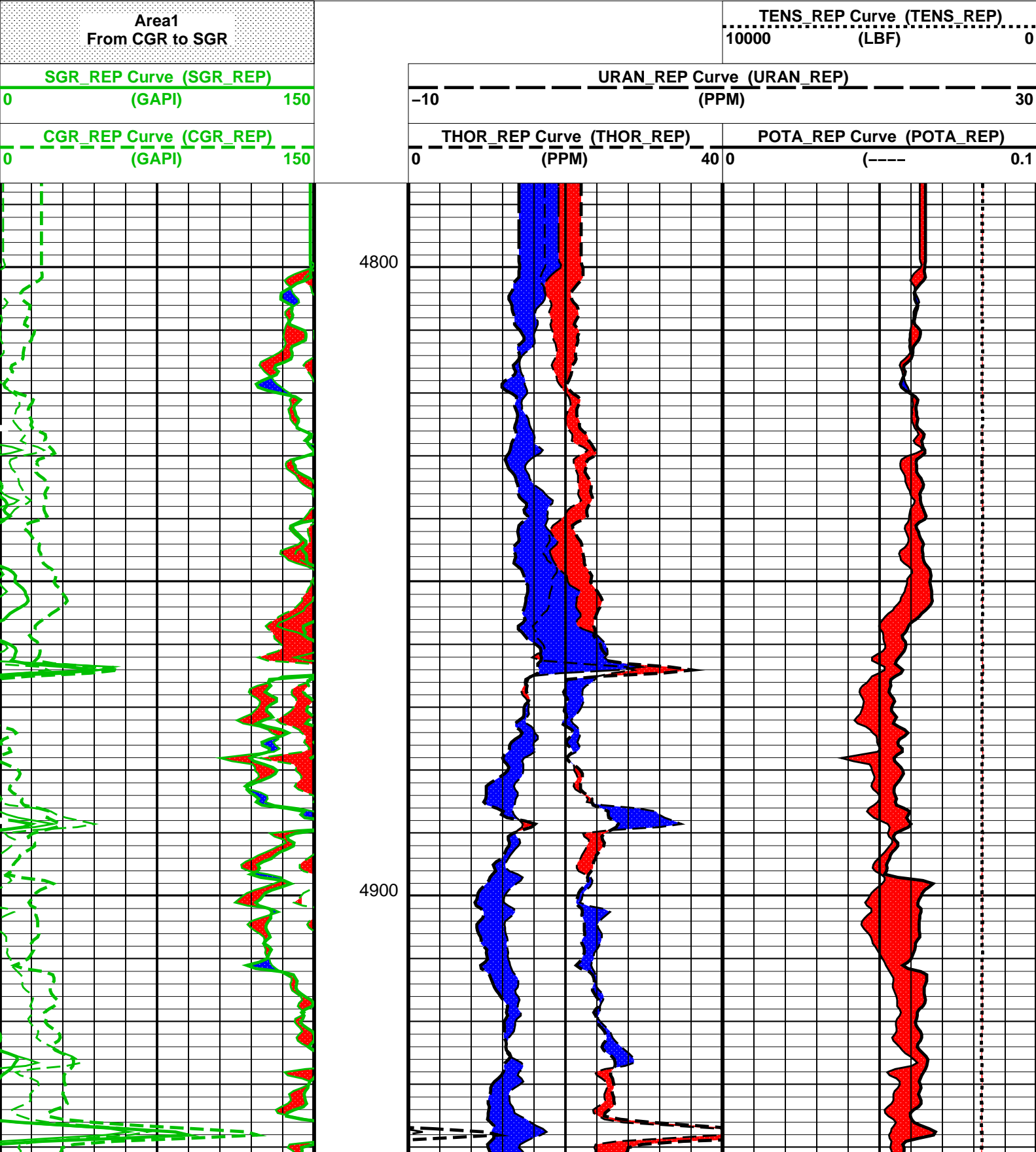
DSLT-FTB

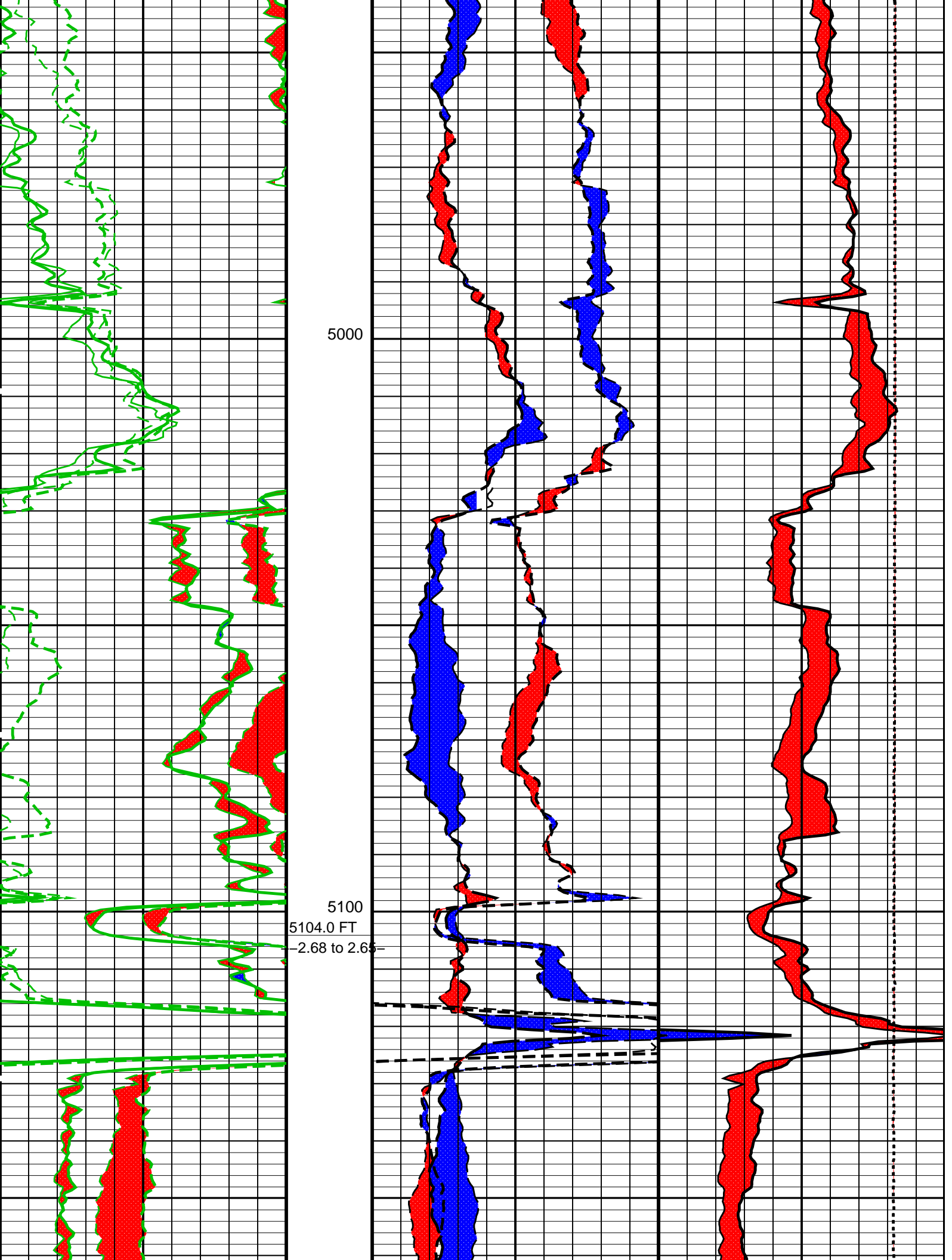
15C0-309

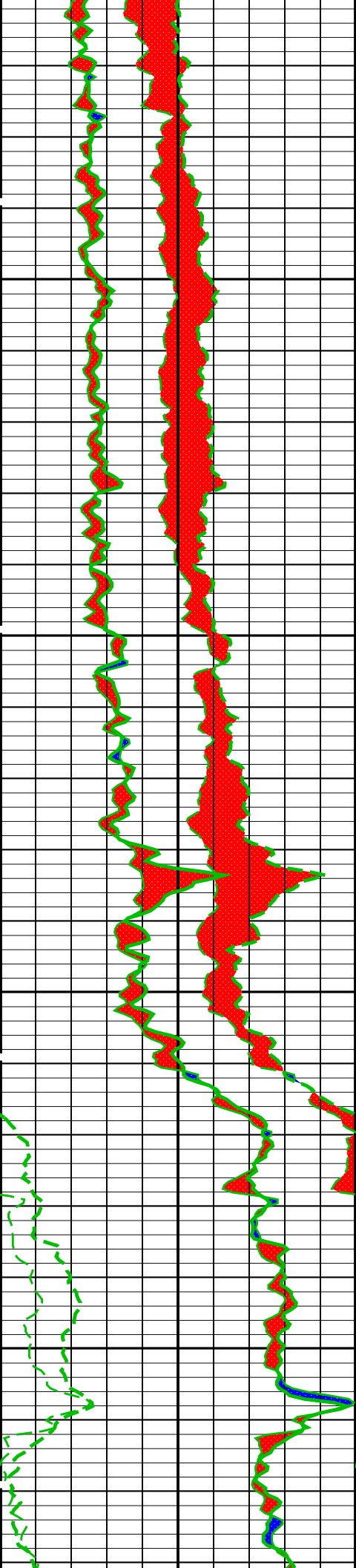
15C0-309

PIP SUMMARY

Time Mark Every 60 S

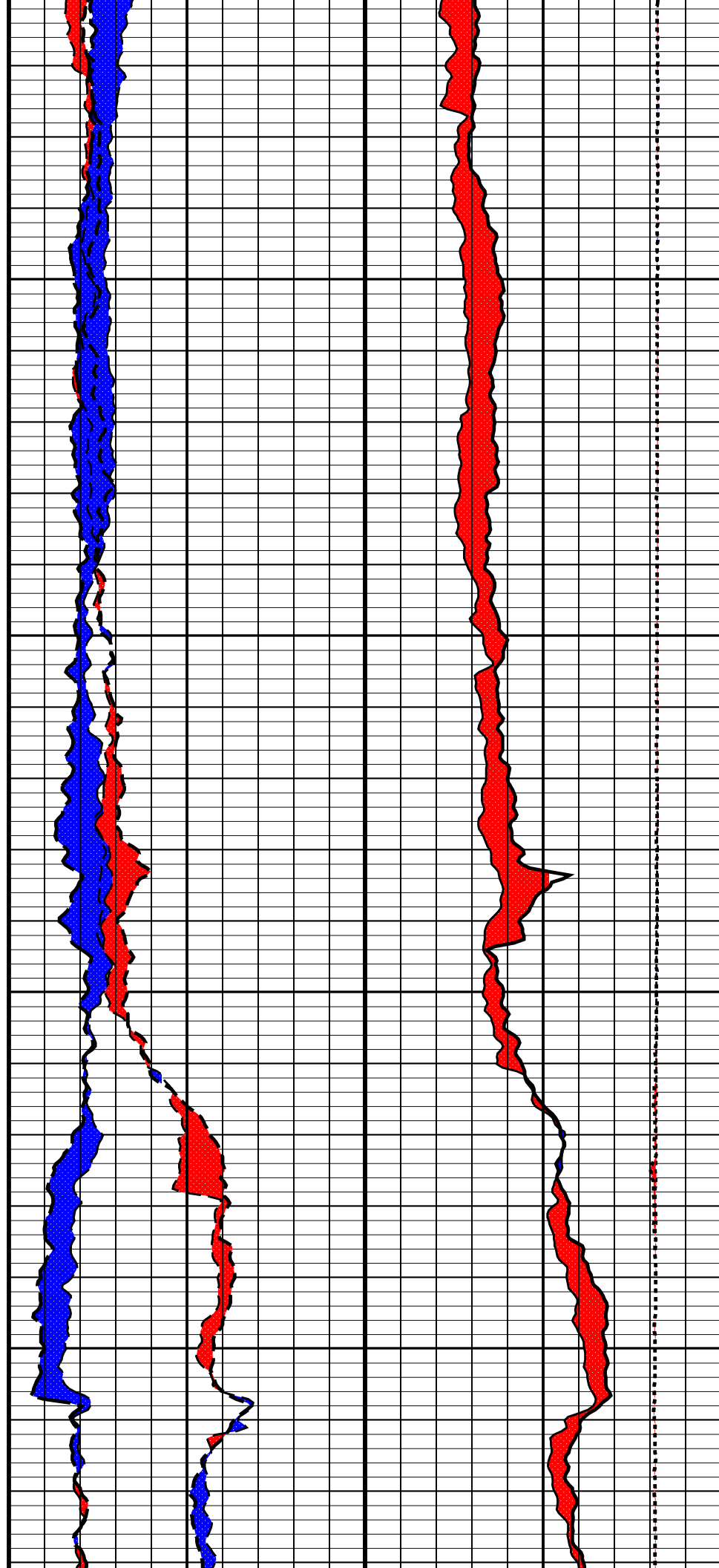


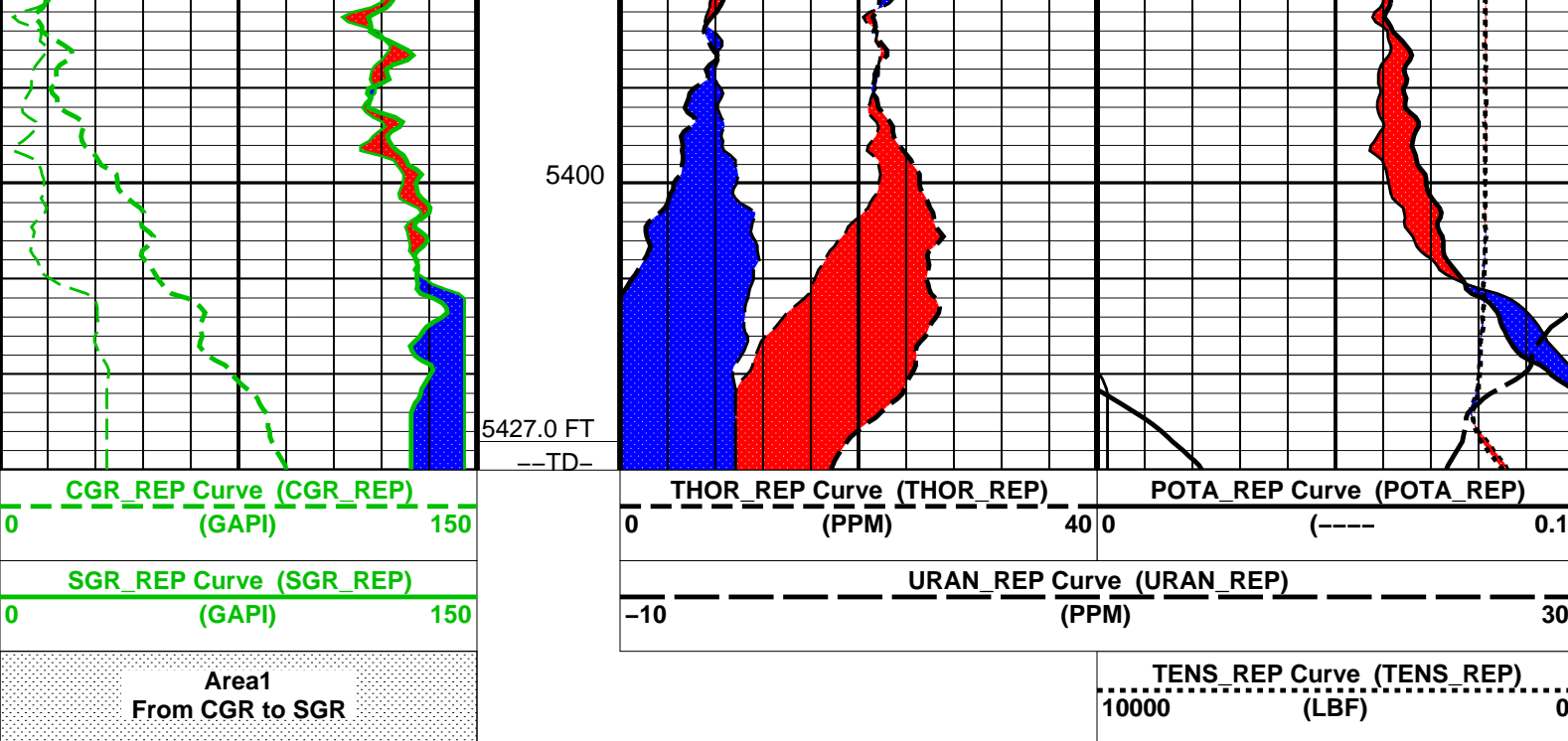




5200

5300





PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
NGT-C: Natural Gamma Spectroscopy - C		
CBAR	Constant Barite	1
CGMI	Spectro Computed Gamma Ray Minimum	0 GAPI
CGSH	Spectro Computed Gamma Ray Shale	100 GAPI
KMIN	Potassium Minimum	0
KSHA	Potassium Shale	0.02
NFO	NGT Filtering Option	KALMAN
PMUD	Potassium Mud	0 %
SGMI	Spectro Gamma Ray Minimum	0 GAPI
SGSH	Spectro Gamma Ray Shale	100 GAPI
TMIN	Thorium Minimum	0 PPM
TSHA	Thorium Shale	12 PPM
UMIN	Uranium Minimum	0 PPM
USHA	Uranium Shale	3 PPM
System and Miscellaneous		
BS	Bit Size	12.250 IN
DFD	Drilling Fluid Density	9.80 LB/G
DO	Depth Offset for Playback	0.0 FT
DORL	Depth Offset for Repeat Analysis	2.0 FT
PP	Playback Processing	RECOMPUTE

Format: NGTYields_REP Vertical Scale: 5" per 100' Graphics File Created: 12-Aug-2007 13:28

OP System Version: 15C0-309

MCM

AIT-H	SRPC-3357-Q2_2007	NGT-C	15C0-309
DTA-A	SRPC-3357-Q2_2007	DSLTT-FTB	15C0-309
DTC-H	15C0-309		

Input DLIS Files

DEFAULT	AIT_NGS_SONIC_010LUP	FN:9	PRODUCER	12-Aug-2007 11:46	5442.0 FT	4784.5 FT
DEFAULT	AIT_NGS_SONIC_012LUP	FN:11	PRODUCER	12-Aug-2007 12:03	5430.0 FT	379.0 FT

Output DLIS Files

DEFAULT	AIT_NGS_SONIC_022PUP	FN:21	PRODUCER	12-Aug-2007 13:28
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MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
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Array Induction Tool – H Wellsite Calibration – Electronics Calibration Check – Thru Cal Mag. & Phase

Master: 20-Jul-2007 10:53 Before: 11-Aug-2007 4:09

Thru Cal Magnitude – 0	0	0.6146	0.6172	N/A	N/A	N/A	V
Thru Cal Magnitude – 1	0	1.260	1.266	N/A	N/A	N/A	V
Thru Cal Magnitude – 2	0	0.6267	0.6297	N/A	N/A	N/A	V
Thru Cal Magnitude – 3	0	0.7053	0.7083	N/A	N/A	N/A	V
Thru Cal Magnitude – 4	0	1.327	1.332	N/A	N/A	N/A	V
Thru Cal Magnitude – 5	0	1.923	1.931	N/A	N/A	N/A	V
Thru Cal Magnitude – 6	0	1.923	1.931	N/A	N/A	N/A	V
Thru Cal Magnitude – 7	0	1.379	1.382	N/A	N/A	N/A	V
Phase – 0	0	59.30	58.78	N/A	N/A	N/A	DEG
Phase – 1	0	58.27	57.74	N/A	N/A	N/A	DEG
Phase – 2	0	54.43	53.89	N/A	N/A	N/A	DEG
Phase – 3	0	53.64	53.10	N/A	N/A	N/A	DEG
Phase – 4	0	47.09	46.52	N/A	N/A	N/A	DEG
Phase – 5	0	45.23	44.64	N/A	N/A	N/A	DEG
Phase – 6	0	45.24	44.65	N/A	N/A	N/A	DEG
Phase – 7	0	42.16	41.37	N/A	N/A	N/A	DEG

Array Induction Tool – H Wellsite Calibration – Electronics Calibration Check – Auxilliary

Master: 20-Jul-2007 10:53 Before: 11-Aug-2007 4:09

Array Induction SPA Plus	990.5	990.5	990.3	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	0.03630	0.03388	N/A	N/A	N/A	MV
Array Induction Temperature PI	0.9150	0.9174	0.9171	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	0.00003146	0.00003267	N/A	N/A	N/A	V

Array Induction Tool – H Wellsite Calibration – Test Loop Gain Correction

Master: 20-Jul-2007 10:53

Test Loop Gain Magnitude – 0	0	1.017	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 1	0	1.019	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 2	0	1.016	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 3	0	1.017	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 4	0	0.9965	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 5	0	1.008	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 6	0	1.005	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 7	0	1.009	N/A	N/A	N/A	N/A	V
Phase – 0	0	0.3788	N/A	N/A	N/A	N/A	DEG
Phase – 1	0	0.4778	N/A	N/A	N/A	N/A	DEG
Phase – 2	0	-0.1272	N/A	N/A	N/A	N/A	DEG
Phase – 3	0	-0.03952	N/A	N/A	N/A	N/A	DEG
Phase – 4	0	-0.1155	N/A	N/A	N/A	N/A	DEG
Phase – 5	0	-0.1104	N/A	N/A	N/A	N/A	DEG
Phase – 6	0	0.2446	N/A	N/A	N/A	N/A	DEG
Phase – 7	0	-0.3556	N/A	N/A	N/A	N/A	DEG

Array Induction Tool – H Wellsite Calibration – Sonde Error Correction

Master: 20-Jul-2007 10:53

R Sonde Error Correction – 0	0	-153.6	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 1	0	137.2	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 2	0	124.6	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 3	0	54.29	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 4	0	25.17	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 5	0	7.628	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 6	0	8.197	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 7	0	-2.134	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 0	0	639.1	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 1	0	211.5	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 2	0	29.16	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 3	0	-5.433	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 4	0	26.43	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 5	0	-16.14	N/A	N/A	N/A	N/A	MM/M

X Sonde Error Correction – 6	0	0.5340	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 7	0	1.764	N/A	N/A	N/A	N/A	MM/M

Array Induction Tool – H Wellsite Calibration – Mud Gain Correction

Master: 20-Jul-2007 10:53

Coarse – Mag, Real, Imag – 0	0	1.015	N/A	N/A	N/A	N/A
Coarse – Mag, Real, Imag – 1	0	1.015	N/A	N/A	N/A	N/A
Coarse – Mag, Real, Imag – 2	0	1.015	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 0	0	1.016	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 1	0	1.017	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 2	0	1.017	N/A	N/A	N/A	N/A

Natural Gamma Spectroscopy – C Wellsite Calibration – Background Measurement

Master: 8-Aug-2007 12:46 Before: 8-Aug-2007 13:13

WINDOW 1 Background	100.0	150.0	146.4	N/A	N/A	100.0	CPS
WINDOW 2 Background	50.00	52.18	52.22	N/A	N/A	50.00	CPS
WINDOW 3 Background	10.00	17.13	17.31	N/A	N/A	10.00	CPS
WINDOW 4 Background	6.000	2.700	2.445	N/A	N/A	6.000	CPS
WINDOW 5 Background	10.00	2.600	2.405	N/A	N/A	10.00	CPS
SGR Background	30.00	58.76	57.76	N/A	N/A	N/A	GAPI

Natural Gamma Spectroscopy – C Wellsite Calibration – Normalized Jig Measurement

Master: 8-Aug-2007 12:04 Before: 8-Aug-2007 13:19

WINDOW 1 Jig	376.0	357.6	361.7	N/A	N/A	22.56	CPS
WINDOW 2 Jig	167.0	158.8	159.2	N/A	N/A	10.02	CPS
WINDOW 3 Jig	24.00	22.28	22.00	N/A	N/A	1.440	CPS
WINDOW 4 Jig	14.00	13.26	13.33	N/A	N/A	2.800	CPS
WINDOW 5 Jig	22.50	21.17	21.57	N/A	N/A	4.500	CPS
SGR Jig	165.0	163.7	165.0	N/A	N/A	7.000	GAPI

Natural Gamma Spectroscopy – C Master Calibration – Master Quality Control Values

Master: 8-Aug-2007 11:59

Photomultiplier Res. CARC3	8.000	7.686	--	--	--	--	
APU WINDOW Jig	1350	831.4	--	--	--	--	CPS
APL WINDOW Jig	1350	831.3	--	--	--	--	CPS

Digitizing Sonic Logging Tool Master Calibration – DSLT CBL/CBLB Amplitude Normalization in SFT-255

Master: Calibration not done

CBL Raw Amplitude	33.00	N/A	--	--	--	--	MV
CBLB Raw Amplitude	46.00	N/A	--	--	--	--	MV

The NGT PCSL Value is set to 134.651 KEV

Array Induction Tool – H / Equipment Identification

Primary Equipment:

Rm/SP Bottom Nose

Array Induction Sonde

AHRM – A























AHIS – BA

372

Auxiliary Equipment:

Array Induction Tool – H Wellsite Calibration

Electronics Calibration Check – Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6146		0.6050	59.30		71.00
	Before	0.6172			58.78		
1	Master	1.260		1.270	58.27		70.00
	Before	1.266			57.74		
2	Master	0.6267		0.6230	54.43		66.00
	Before	0.6297			53.89		
3	Master	0.7053		0.7040	53.64		65.00
	Before	0.7083			53.10		
4	Master	1.327		1.337	47.09		59.00
	Before	1.332			46.52		
	Master	1.923			45.23		







5	Before	1.931		1.955	44.64		57.00
6	Master	1.923		1.955	45.24		57.00
	Before	1.931			44.65		
7	Master	1.379		1.415	42.16		53.00
	Before	1.382			41.37		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)
Master: 20-Jul-2007 10:53				Before: 11-Aug-2007 4:09			

Array Induction Tool – H Wellsite Calibration							
Electronics Calibration Check – Auxilliary							
Phase	Array Induction SPA Plus MV		Value	Phase	Array Induction SPA Zero MV		Value
Master			990.5	Master			0.03630
Before			990.3	Before			0.03388
	941.0 (Minimum)	990.5 (Nominal)	1040 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
Phase	Array Induction Temperature Plus V		Value	Phase	Array Induction Temperature Zero V		Value
Master			0.9174	Master			3.146E-00
Before			0.9171	Before			3.267E-00
	0.8700 (Minimum)	0.9150 (Nominal)	0.9600 (Maximum)		-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)
Master: 20-Jul-2007 10:53				Before: 11-Aug-2007 4:09			

Array Induction Tool – H Wellsite Calibration							
Test Loop Gain Correction							
Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG	
0	1.017				0.3788		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.019				0.4778		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.016				-0.1272		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.017				-0.03952		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9965				-0.1155		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	1.008				-0.1104		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	1.005				0.2446		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.009				-0.3556		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
Master: 20-Jul-2007 10:53							

Array Induction Tool – H Wellsite Calibration						
Sonde Error Correction						
Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M
0	-153.6				639.1	
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum) 0 (Nominal) 2250 (Maximum)
1	137.2				211.5	
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum) 0 (Nominal) 625.0 (Maximum)
2	124.6				29.16	

		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	54.29					-5.433		
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	25.17					26.43		
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	7.628					-16.14		
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	8.197					0.5340		
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-2.134					1.764		
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
Master: 20-Jul-2007 10:53								

Array Induction Tool – H Wellsite Calibration								
Mud Gain Correction								
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag		
0	1.015				1.016			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.015				1.017			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.015				1.017			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
Master: 20–Jul–2007 10:53								

Master: 20-Jul-2007 10:53

Array Induction Tool – H Master Calibration							
Electronics Calibration Check – Thru Cal Mag. & Phase							
Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6146		0.6050	59.30		71.00
1	Master	1.260		1.270	58.27		70.00
2	Master	0.6267		0.6230	54.43		66.00
3	Master	0.7053		0.7040	53.64		65.00
4	Master	1.327		1.337	47.09		59.00
5	Master	1.923		1.955	45.23		57.00
6	Master	1.923		1.955	45.24		57.00
7	Master	1.379		1.415	42.16		53.00
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)
Master: 20-Jul-2007 10:53							

Array Induction Tool – H Master Calibration									
Electronics Calibration Check – Auxilliary									
Phase	Array Induction SPA Plus MV			Value	Phase	Array Induction SPA Zero MV			Value
Master	<div><div></div></div>			990.5	Master	<div><div></div></div>			0.03630
	941.0 (Minimum)	990.5 (Nominal)	1040 (Maximum)			-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)	
Phase	Array Induction Temperature Plus V			Value	Phase	Array Induction Temperature Zero V			Value
Master	<div><div></div></div>			0.9174	Master	<div><div></div></div>			3.146E-00
	0.8700 (Minimum)	0.9150 (Nominal)	0.9600 (Maximum)			-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)	
Master: 20-Jul-2007 10:53									







Array Induction Tool – H Master Calibration				
Test Loop Gain Correction				

Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG		
0	1.017				0.3788			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.019				0.4778			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.016				-0.1272			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.017				-0.03952			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9965				-0.1155			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	1.008				-0.1104			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	1.005				0.2446			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.009				-0.3556			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: 20-Jul-2007 10:53

Array Induction Tool – H Master Calibration								
Sonde Error Correction								
Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	-153.6				639.1			
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	137.2				211.5			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	124.6				29.16			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	54.29				-5.433			
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	25.17				26.43			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	7.628				-16.14			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	8.197				0.5340			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-2.134				1.764			
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 20-Jul-2007 10:53

Array Induction Tool – H Master Calibration								
Mud Gain Correction								
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag		
0	1.015				1.016			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.015				1.017			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.015				1.017			

	0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)	0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
Master: 20-Jul-2007 10:53						

Natural Gamma Spectroscopy – C / Equipment Identification

Primary Equipment:

NGT Cartridge

NGT Sonde

NGC – C

NGD – A

1745

Auxiliary Equipment:

NGT Cartridge Housing

NGT Sonde Housing

Gamma Source Radioactive

NGCH – A

NGH – B

GSR – U

Natural Gamma Spectroscopy – C Wellsite Calibration

Background Measurement

Phase	WINDOW 1 Background CPS		Value	Phase	WINDOW 2 Background CPS		Value	Phase	WINDOW 3 Background CPS		Value	
Master			150.0	Master			52.18	Master			17.13	
Before			146.4	Before			52.22	Before			17.31	
0 (Minimum)			100.0 (Nominal)	0 (Minimum)			50.00 (Nominal)	0 (Minimum)			10.00 (Nominal)	40.00 (Maximum)
Phase	WINDOW 4 Background CPS		Value	Phase	WINDOW 5 Background CPS		Value	Phase	SGR Background GAPI		Value	
Master			2.700	Master			2.600	Master			58.76	
Before			2.445	Before			2.405	Before			57.76	
0 (Minimum)			6.000 (Nominal)	0 (Minimum)			10.00 (Nominal)	0 (Minimum)			30.00 (Nominal)	120.0 (Maximum)

Master: 8-Aug-2007 12:46

Before: 8-Aug-2007 13:13

Natural Gamma Spectroscopy – C Wellsite Calibration

Normalized Jig Measurement

Phase	WINDOW 1 Jig CPS		Value	Phase	WINDOW 2 Jig CPS		Value	Phase	WINDOW 3 Jig CPS		Value
Master			357.6	Master			158.8	Master			22.28
Before			361.7	Before			159.2	Before			22.00
354.0 (Minimum) 376.0 (Nominal) 398.0 (Maximum)				155.0 (Minimum) 167.0 (Nominal) 179.0 (Maximum)				21.50 (Minimum) 24.00 (Nominal) 26.50 (Maximum)			
Phase	WINDOW 4 Jig CPS		Value	Phase	WINDOW 5 Jig CPS		Value	Phase	SGR Jig GAPI		Value
Master			13.26	Master			21.17	Master			163.7
Before			13.33	Before			21.57	Before			165.0
12.50 (Minimum) 14.00 (Nominal) 15.50 (Maximum)				20.00 (Minimum) 22.50 (Nominal) 25.00 (Maximum)				153.0 (Minimum) 165.0 (Nominal) 177.0 (Maximum)			

Master: 8-Aug-2007 12:04

Before: 8-Aug-2007 13:19

Natural Gamma Spectroscopy – C Wellsite Calibration

Quality Control Values

Phase	DHVF Jig V		Value	Phase	Quality Windows Ratio Jig		Value
Master			1369	Master			2.251
Before			1368	Before			2.271
	1088 (Minimum)	1450 (Nominal)	1813 (Maximum)		2.150 (Minimum)	2.240 (Nominal)	2.330 (Maximum)

Master: 8-Aug-2007 12:04

Before: 8-Aug-2007 13:19

Natural Gamma Spectroscopy – C Wellsite Calibration

Quality Control Values Check

Quality Control Values Sheet		
Phase	Thorium peak Form Factor Jig	Value
Before		-0.01207
	-0.2000 (Minimum) 0 (Nominal) 0.2000 (Maximum)	

Before: 8-Aug-2007 13:19

Natural Gamma Spectroscopy – C Master Calibration

Master Quality Control Values

Phase	Photomultiplier Res. CAPC3	Value	Phase	APL WINDOW Jig CPS	Value	Phase	APL WINDOW Jig CPS	Value
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Phase	Photomultiplier Res. CARCS		Value	Phase	APL WINDOW Jig CPS		Value	Phase	APL WINDOW Jig CPS		Value
Master	<div><div></div></div>		7.686	Master	<div><div></div></div>		831.4	Master	<div><div></div></div>		831.3
	4.500 (Minimum)	8.000 (Nominal)	11.50 (Maximum)		700.0 (Minimum)	1350 (Nominal)	1600 (Maximum)		700.0 (Minimum)	1350 (Nominal)	1600 (Maximum)
Phase	Thorium peak Form Factor Jig		Value								
Master	<div><div></div></div>		-0.01887								
	-0.1000 (Minimum)	0 (Nominal)	0.1000 (Maximum)								
Master: 8-Aug-2007 11:59											

Digitizing Sonic Logging Tool / Equipment Identification

Primary Equipment:

BHC Sonde
Digitizing Sonic Logging Cartridge

SLS – W
DSLCL – B

Auxiliary Equipment:

Electronics Cartridge Housing

ECH – KH

Digitizing Sonic Logging Tool Master Calibration									
DSLTL CBL/CBLB Amplitude Normalization in SFT-255									
Phase	CBL Raw Amplitude MV			Value	Phase	CBLB Raw Amplitude MV			Value
Master	NOT DONE			N/A	Master	NOT DONE			N/A
	27.00 (Minimum)	33.00 (Nominal)	43.00 (Maximum)	27.00 (Minimum)		46.00 (Nominal)	68.00 (Maximum)		
Master: Calibration not done									

DTS Telemetry Tool / Equipment Identification

Primary Equipment:

DTC-H Auxiliary Cartridge
DTC-H Telemetry Cartridge

DTCH – A
DTCH – A

Auxiliary Equipment:

DTCH Telemetry Cartridge Housing

ECH – KC

Company: **Windy Hill Gas Storage, LLC**

Schlumberger

Well: **Windy Hill 3-17D**







Field: **Wildcat**

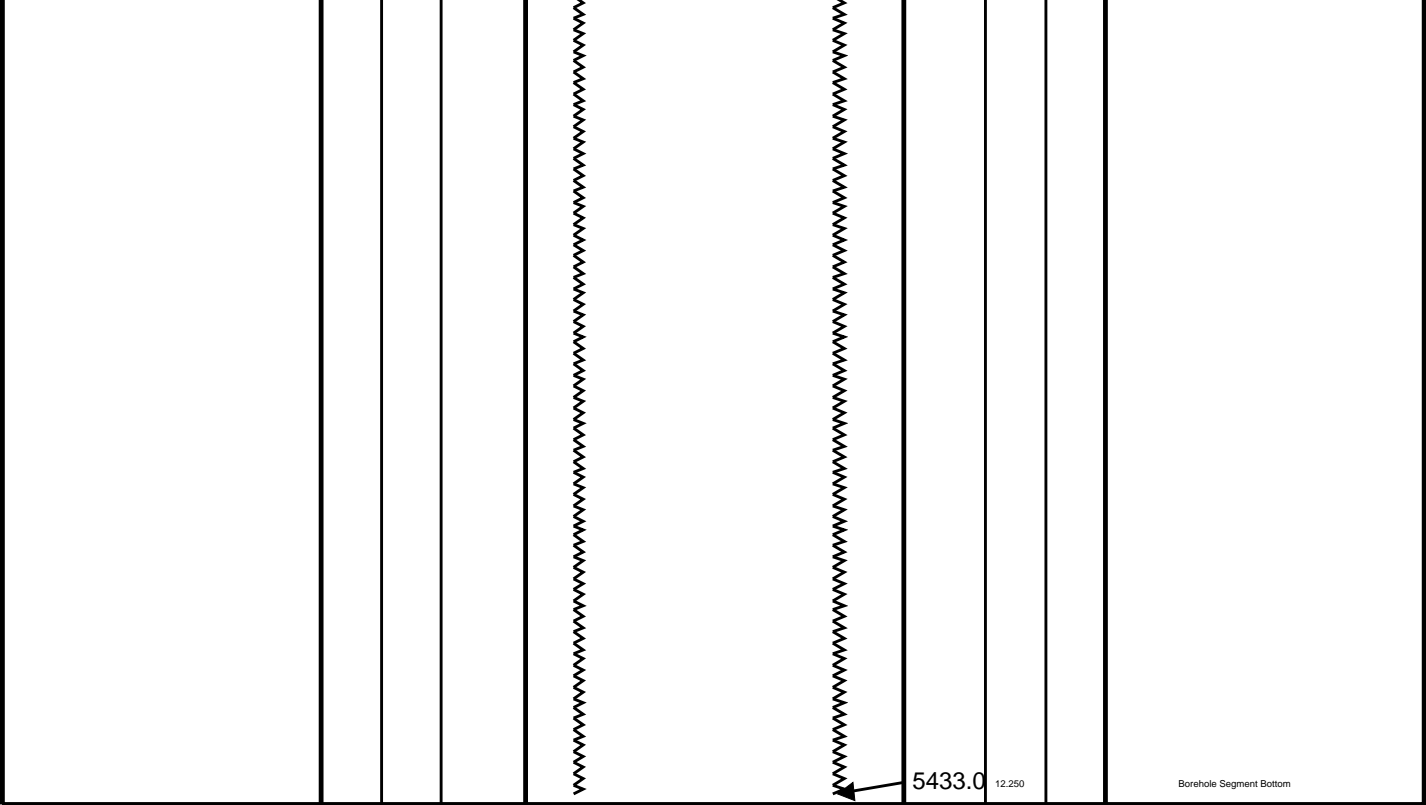
County: **Morgan**

State: **Colorado**

Natural Gamma-Ray Spectrometry Tool

OTHER SERVICES1	OTHER SERVICES2
OS1: PEX	OS1:
OS2: Caliper	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
This is the first run in hole	
Tool run as per tool sketch	
Matrix changes noted on logs.	

Rig: Unit 234					
Thank you for using Schlumberger Wireline					
Crew: Sam Hopper & David Marquez					
RUN 1			RUN 2		
SERVICE ORDER #:		11634009	SERVICE ORDER #:		
PROGRAM VERSION:		15C0-309	PROGRAM VERSION:		
FLUID LEVEL:			FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP
EQUIPMENT DESCRIPTION					
RUN 1			RUN 2		
SURFACE EQUIPMENT					
GSR-U WITM (DTS)-A					
DOWNHOLE EQUIPMENT					
LEH-QT LEH-QT		55.1			
DTC-H ECH-KC DTCH0-A DTCH1-A	CTEM TelStatus ToolStatu	51.3 49.2			
DSLT-FTB DSLCL-B ECH-KH SLS-W		49.2			
					
	USN UHN USF UHF	36.7 36.0 35.7			
	LSF LHF LHN LSN	33.0 32.8 32.0			
					
DTA-A ECH-KE DTA-A	DSLT Aux.	28.6			
		28.6			
NGT-C NGD-A 1745 NGH-B	Detector	23.3			
		24.6			



ALL DEPTHS AS PER DRILLER

Company: Windy Hill Gas Storage, LLC Well: Windy Hill 3-17D

Output DLIS Files

DEFAULT AIT_NGS_SONIC_012LUP FN:11 PRODUCER 12-Aug-2007 12:03 5430.0 FT 379.0 FT

OP System Version: 15C0-309
MCM

AIT-H SRPC-3357-Q2_2007 NGT-C 15C0-309
DTA-A SRPC-3357-Q2_2007 DSLT-FTB 15C0-309
DTC-H 15C0-309

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
DTM	56 US/F	47.6 US/F	5430.0 12:03:21
	56 US/F	56 US/F	5104.0 12:08:46
	47.6 US/F	56 US/F	4975.0 12:10:55

PIP SUMMARY

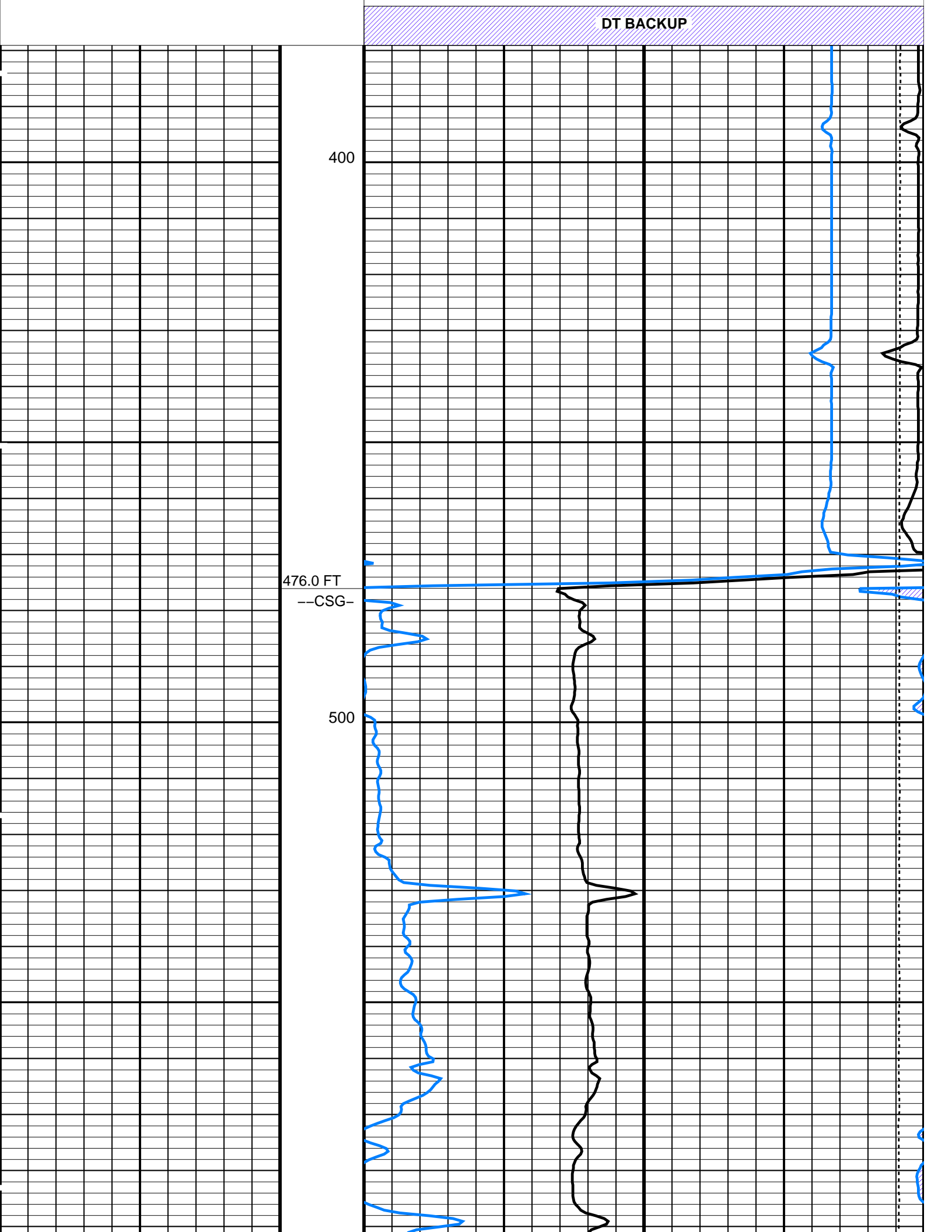
Time Mark Every 60 S

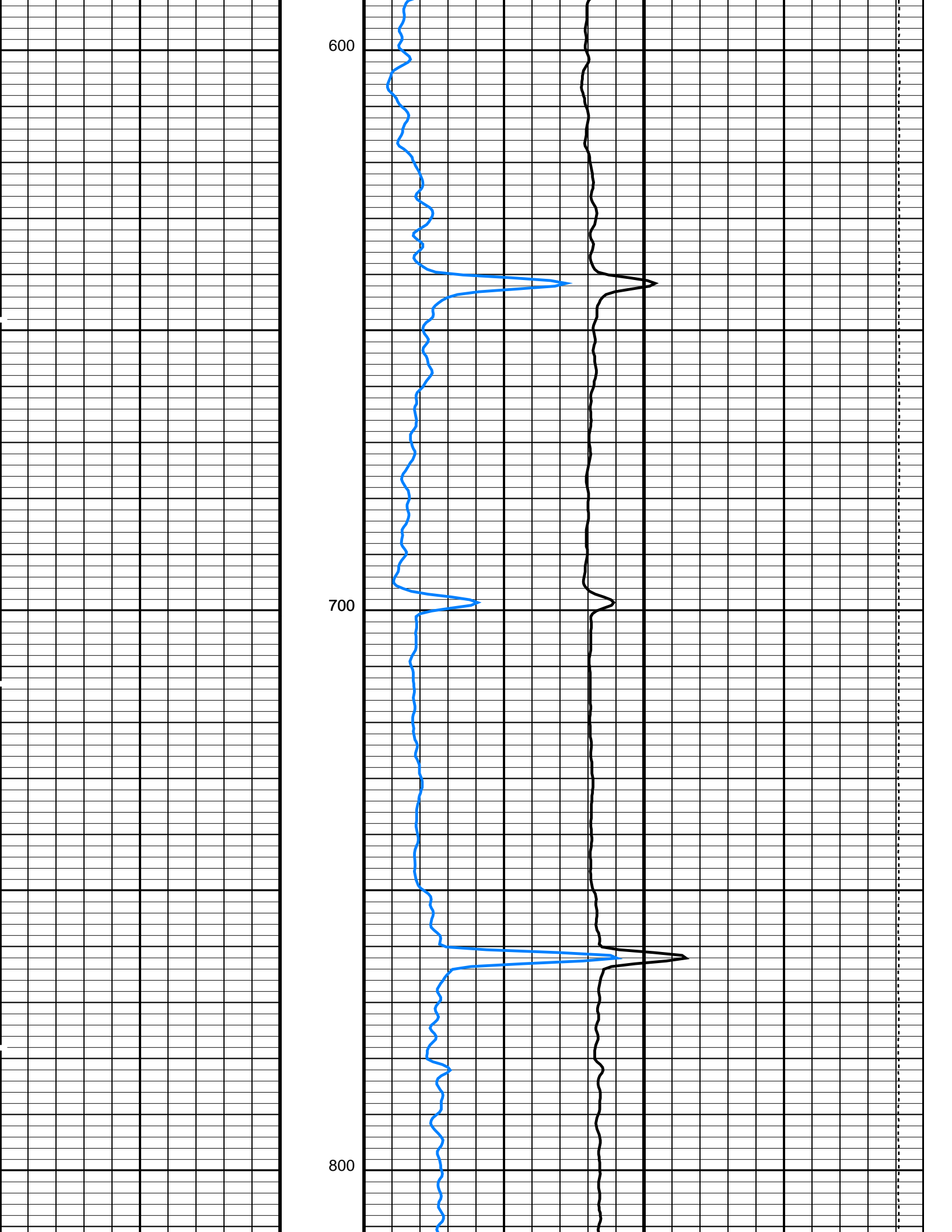
		Tension (TENS)	
		(LBF)	0
Sonic Porosity (SPHI)			
0.6	(V/V)		0
Delta-T (DT)			
140	(US/F)		40

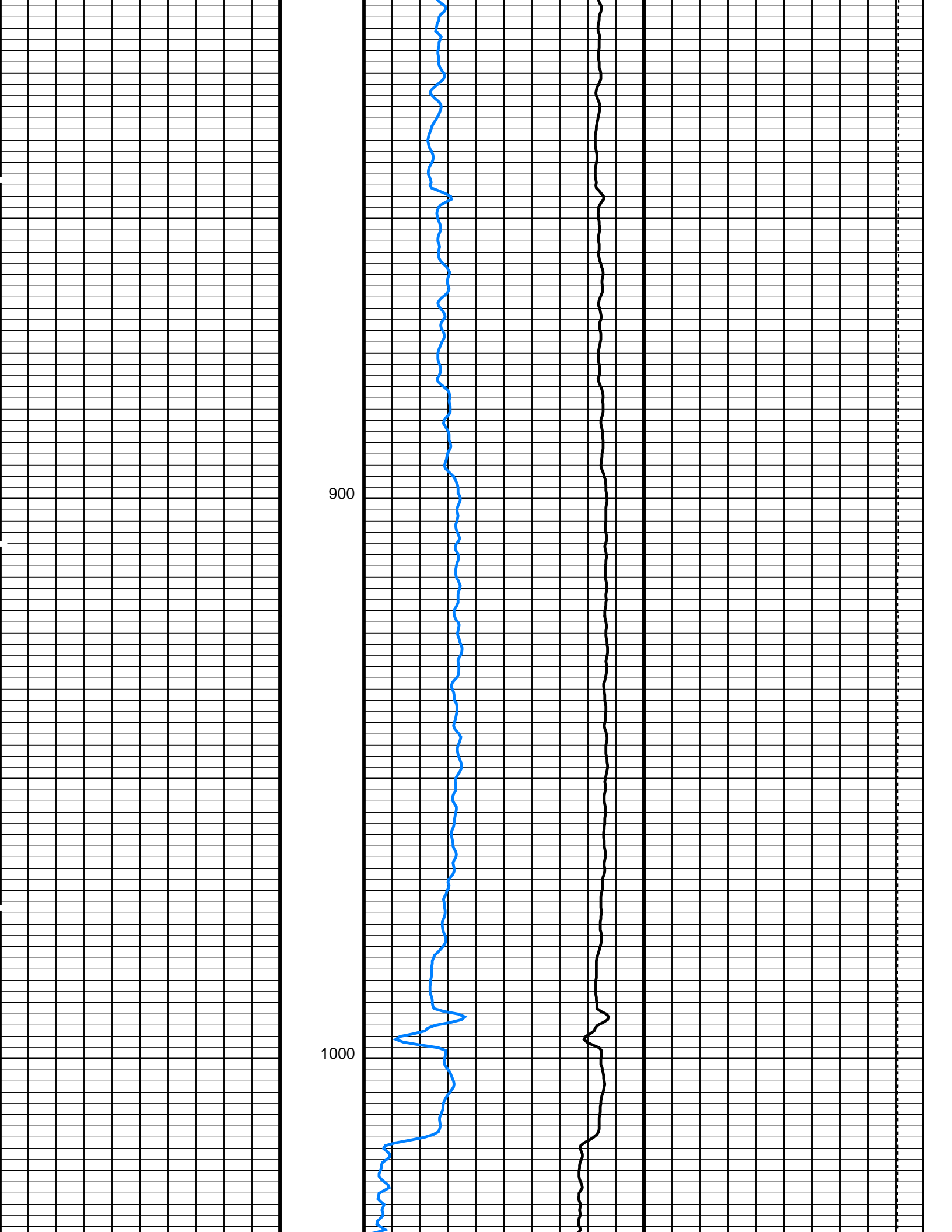
400

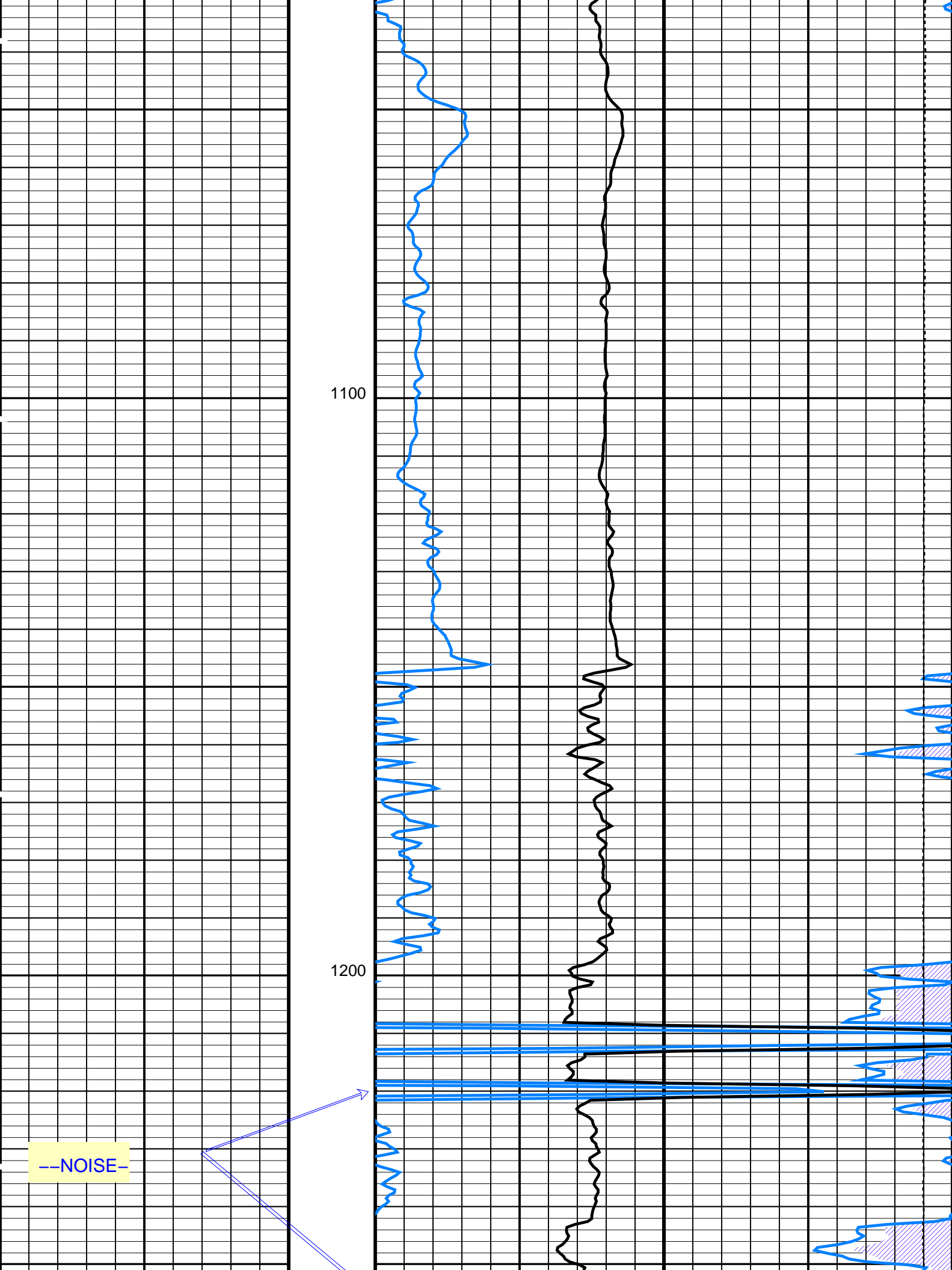
476.0 FT
--CSG--

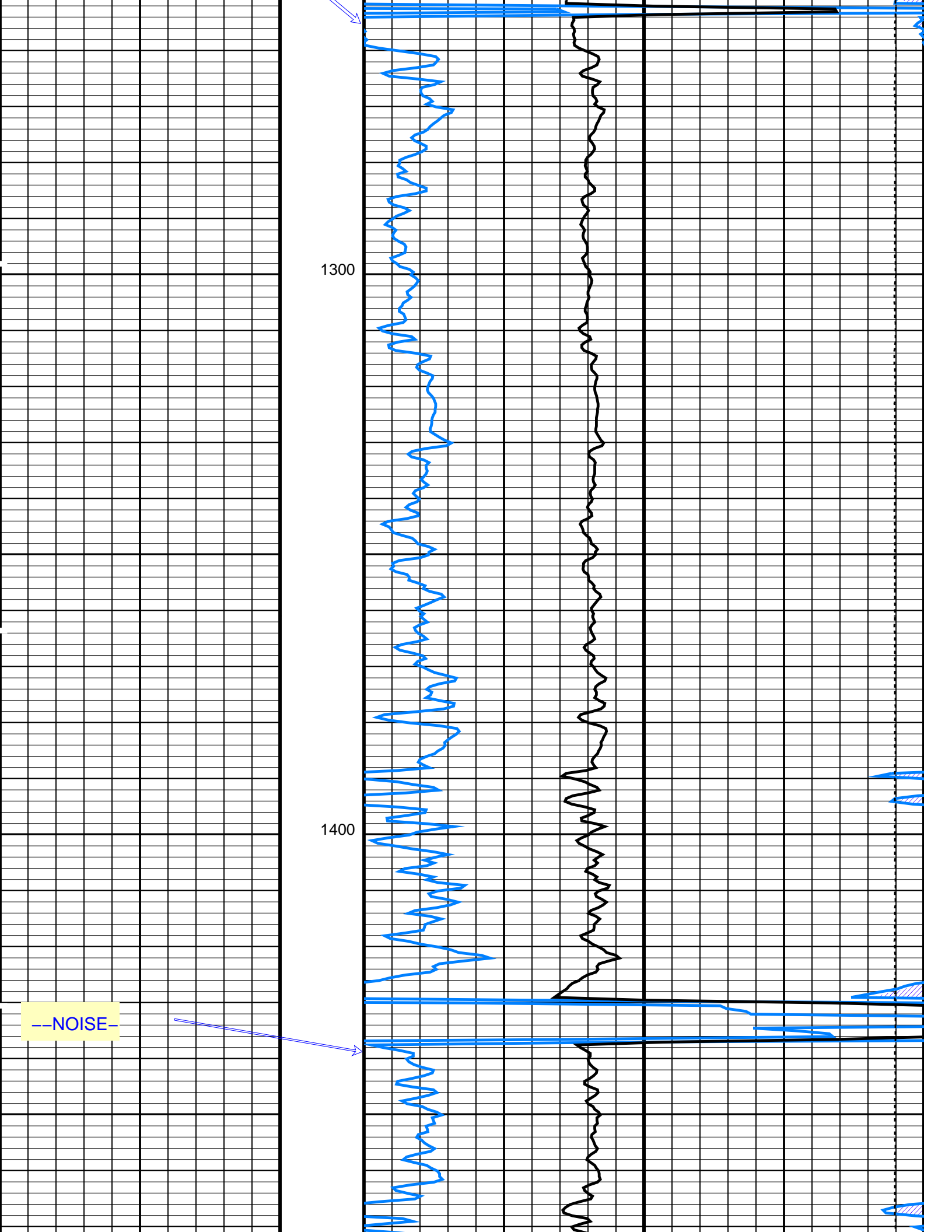
500

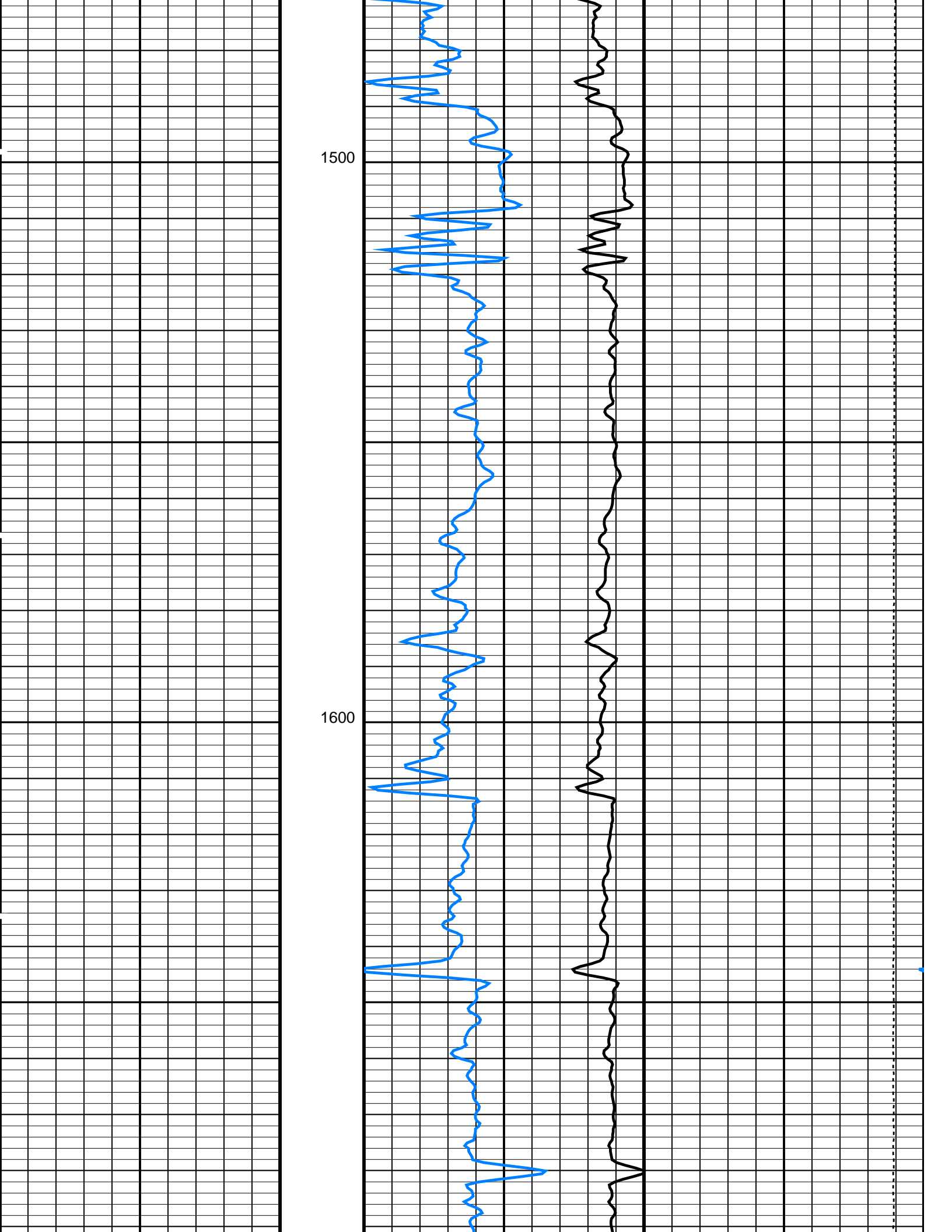


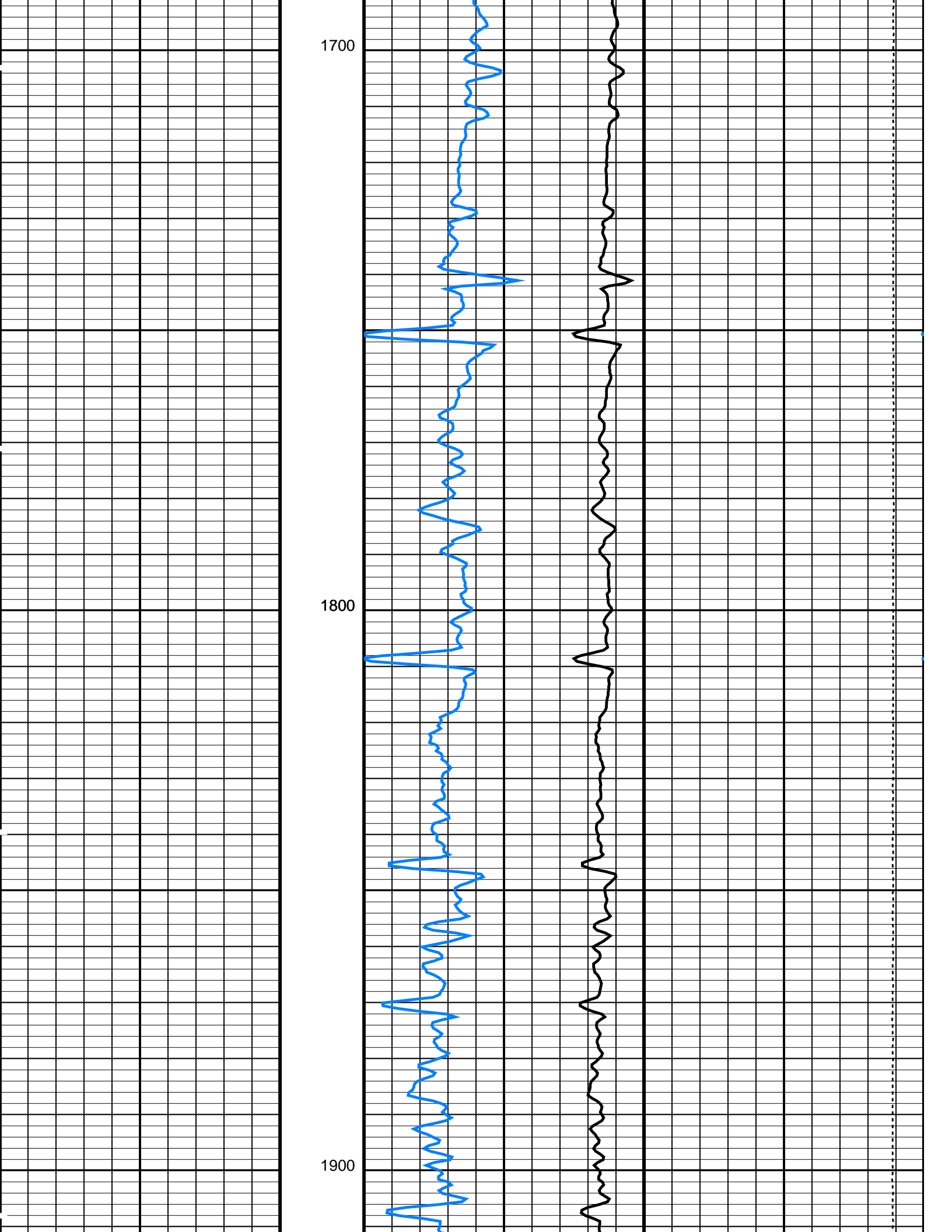


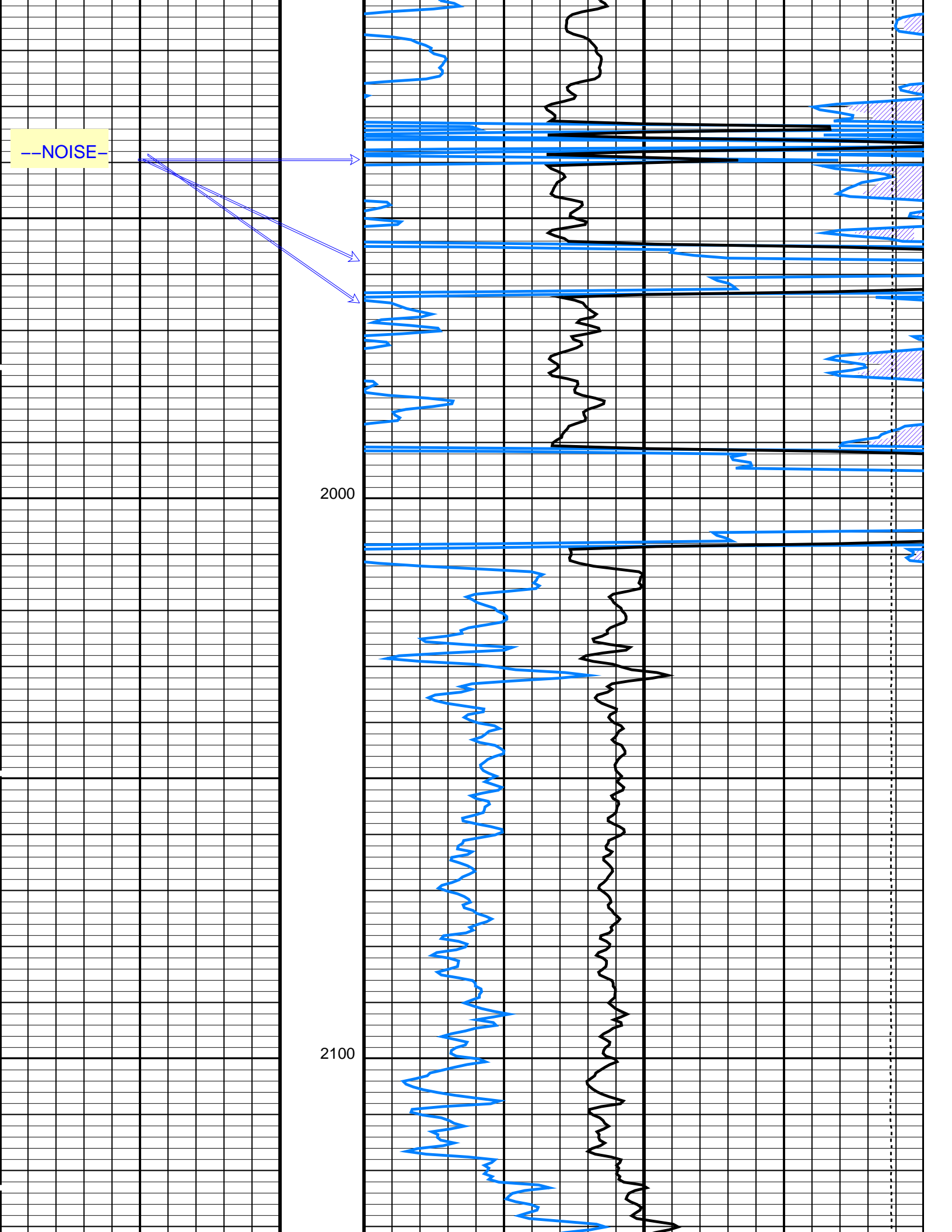


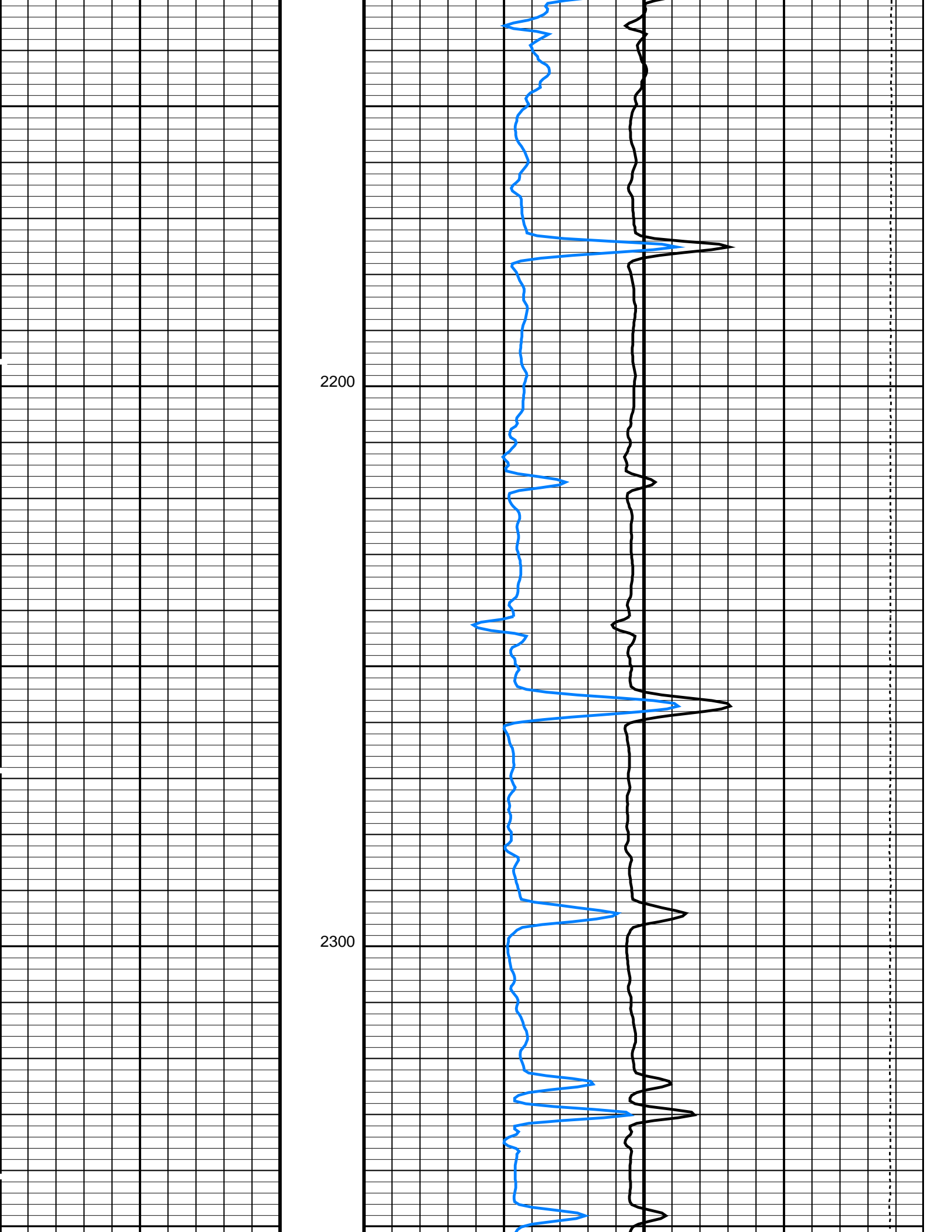


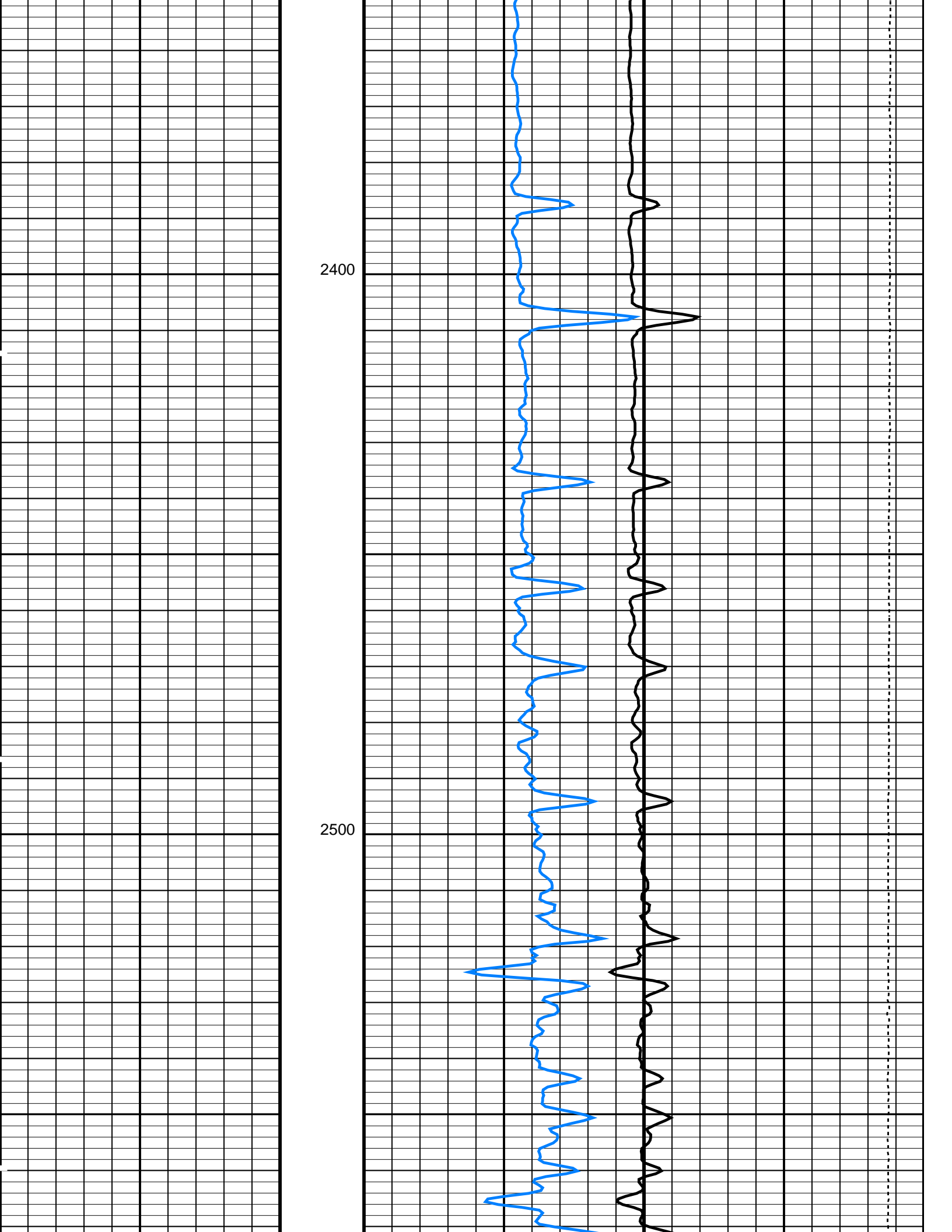


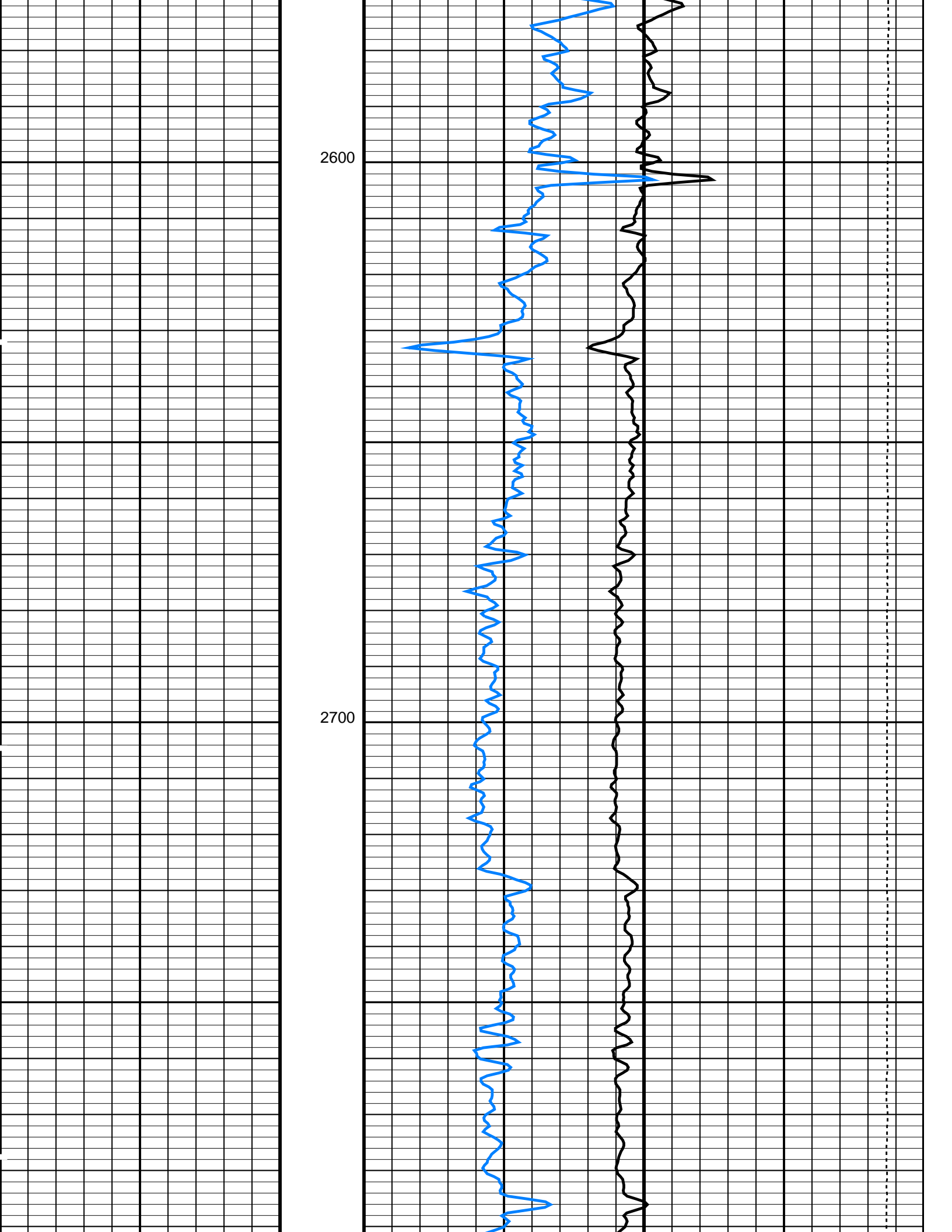


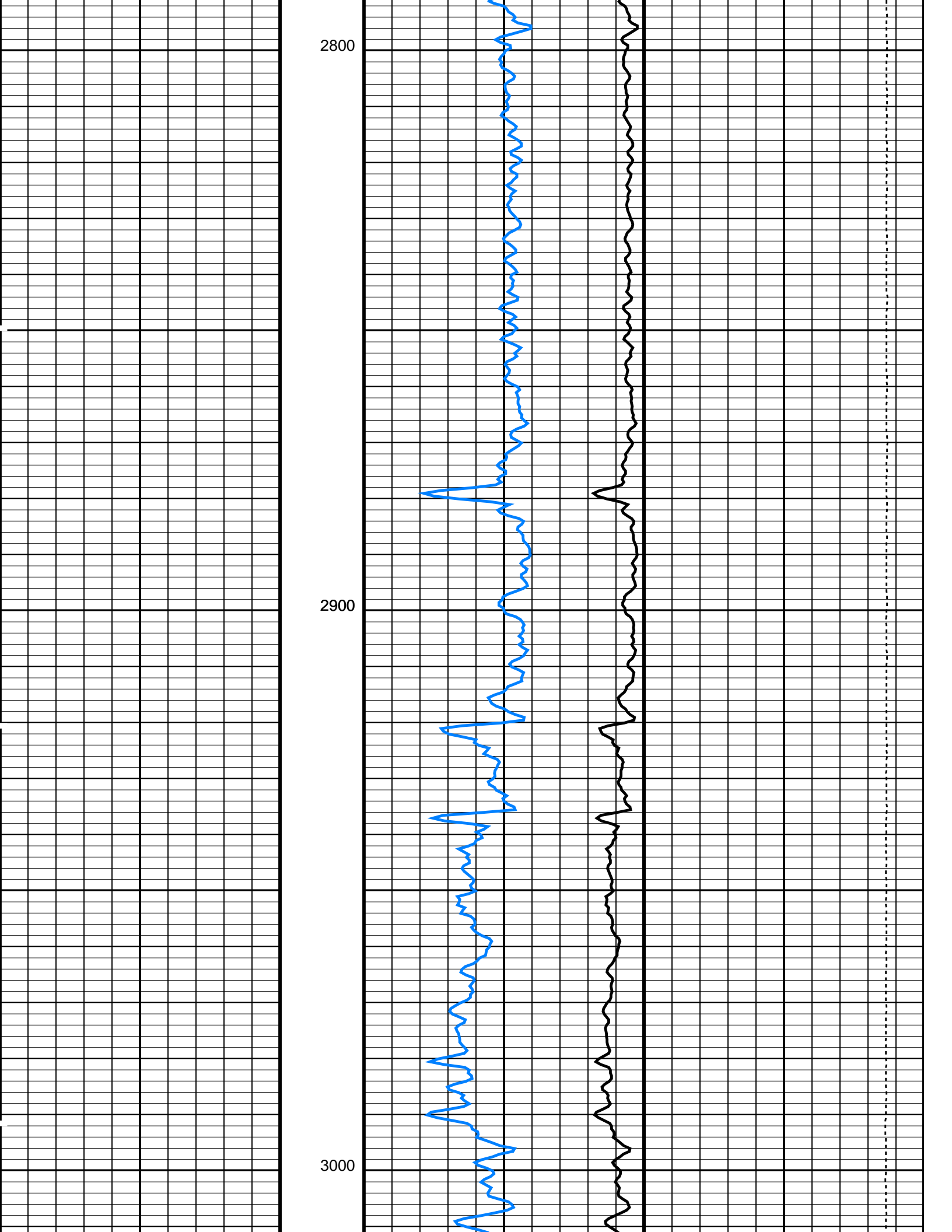


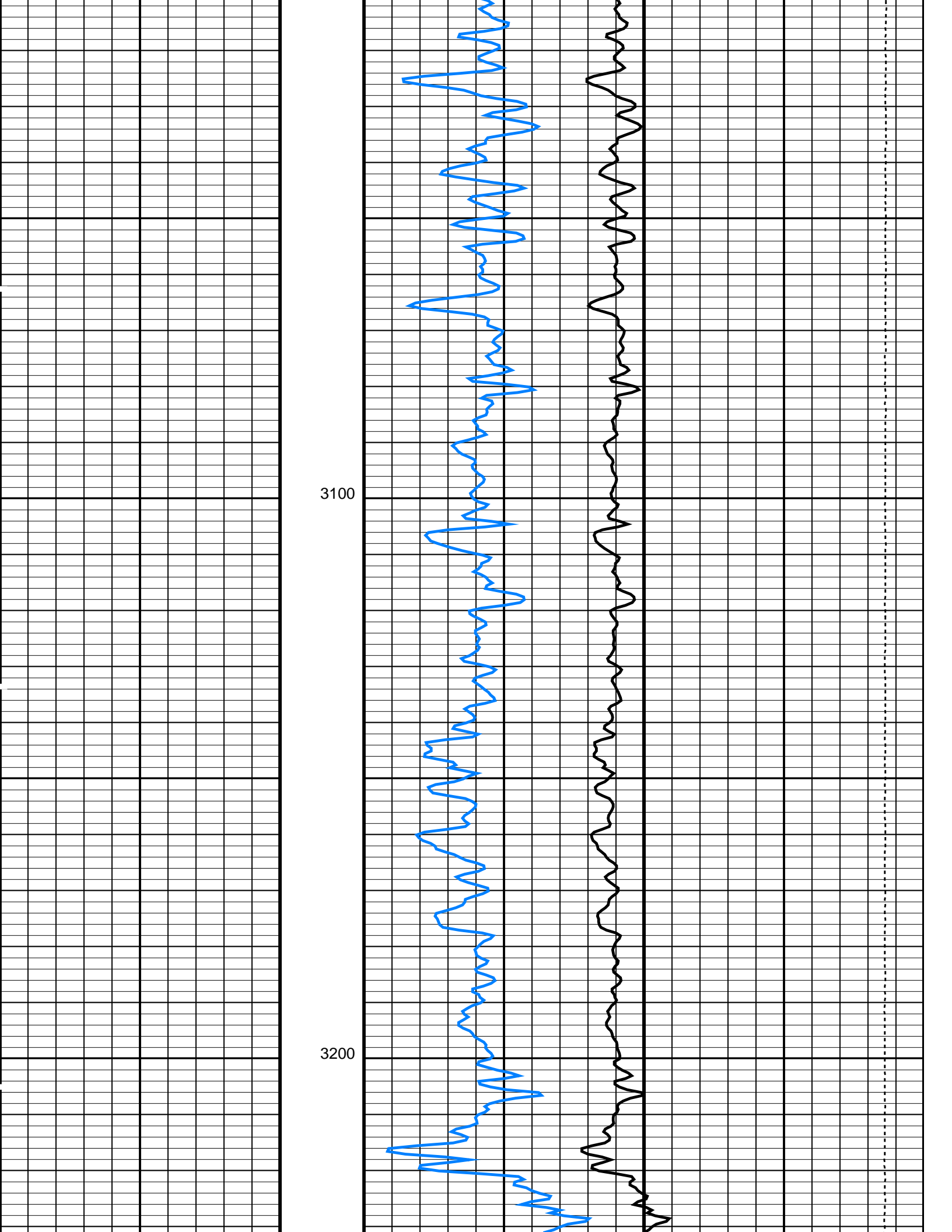


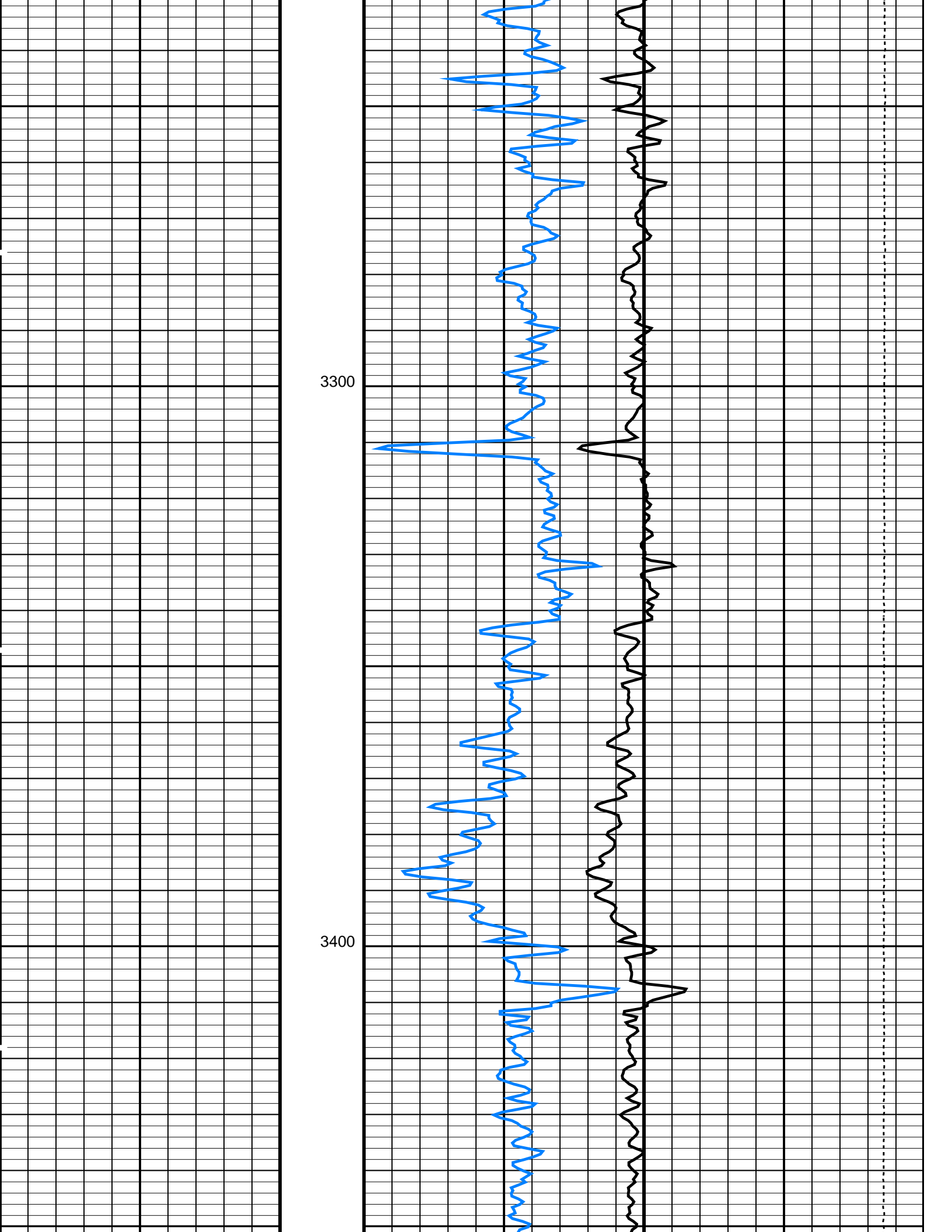


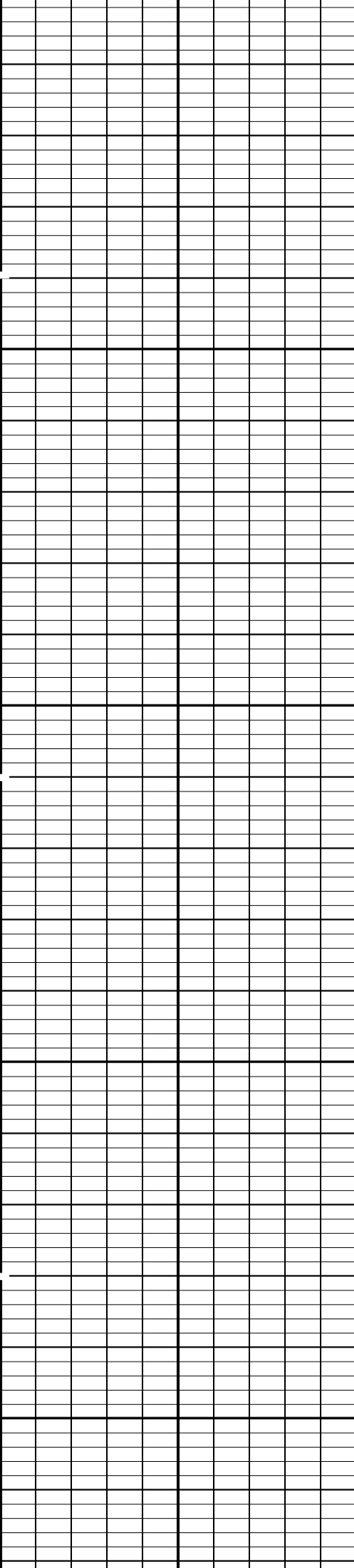






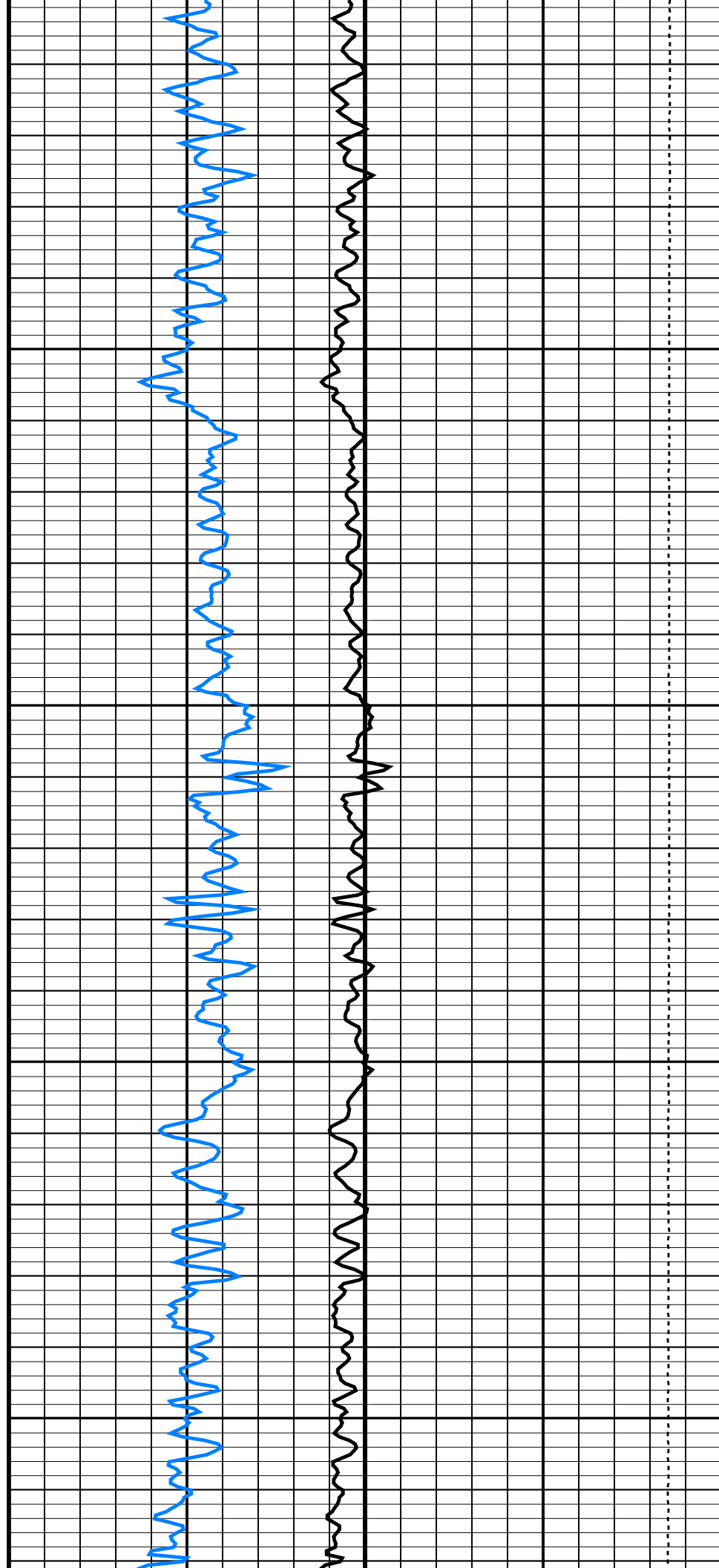


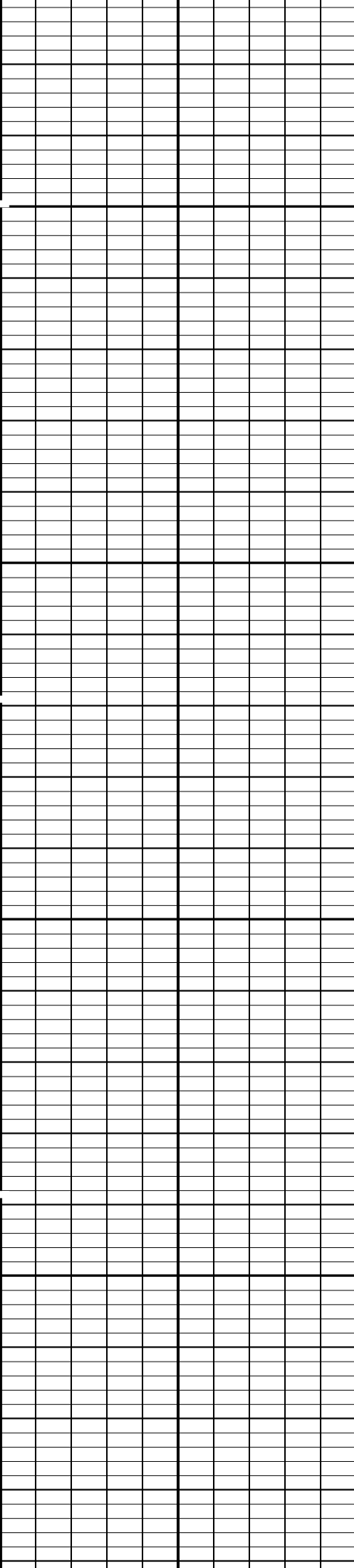




3500

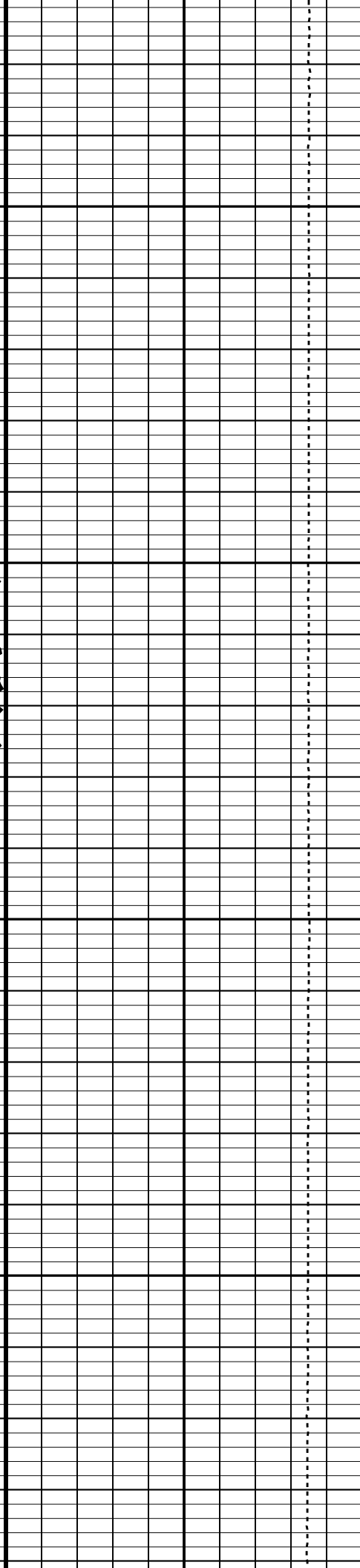
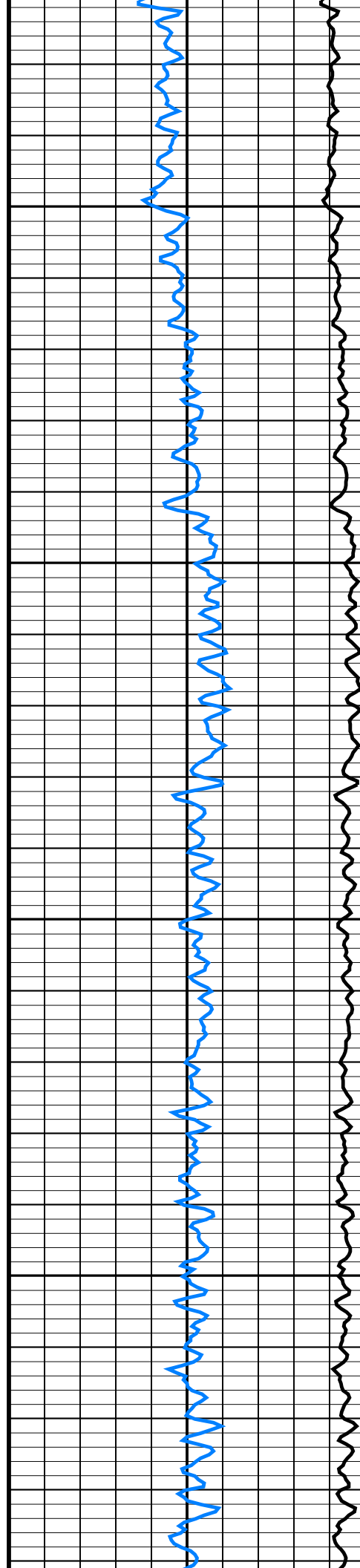
3600

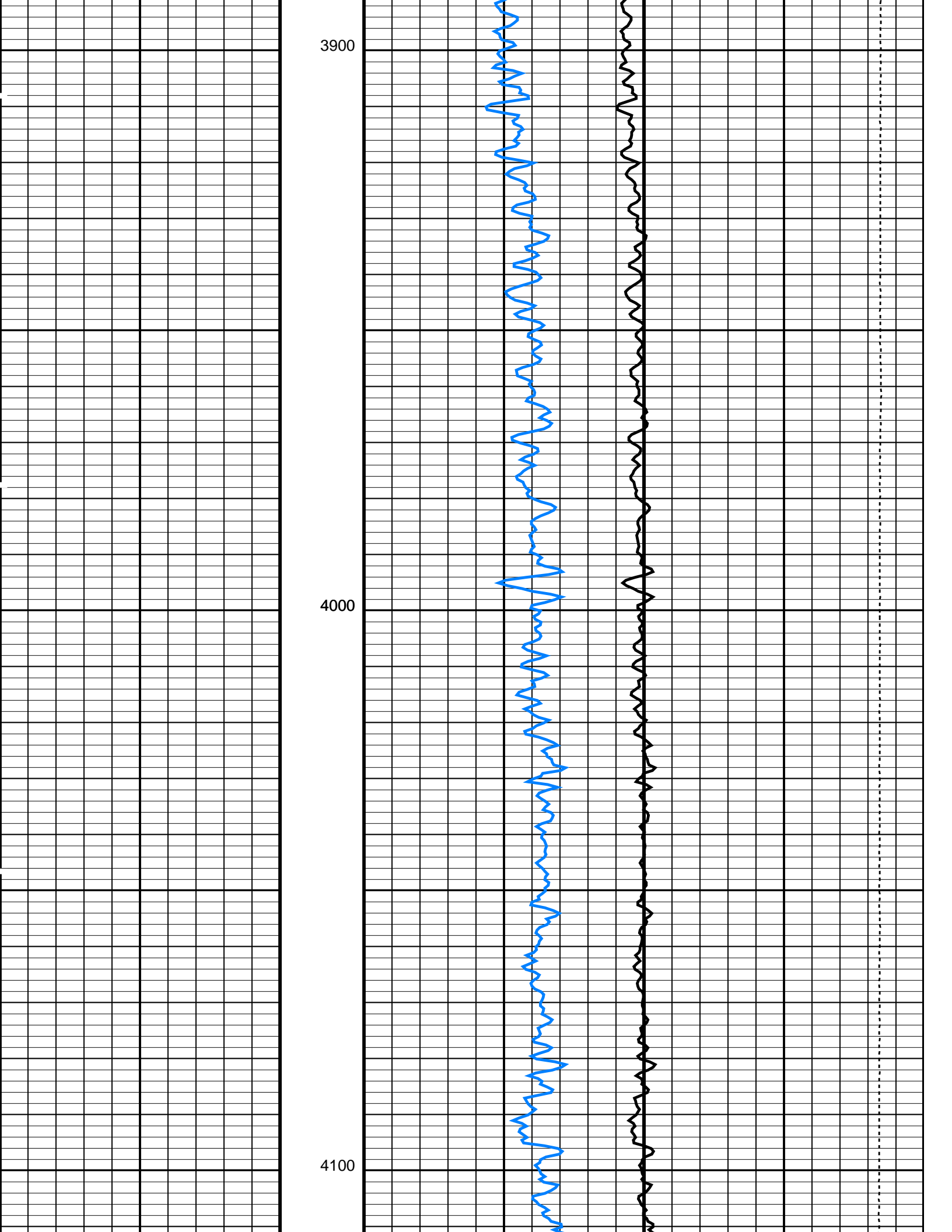


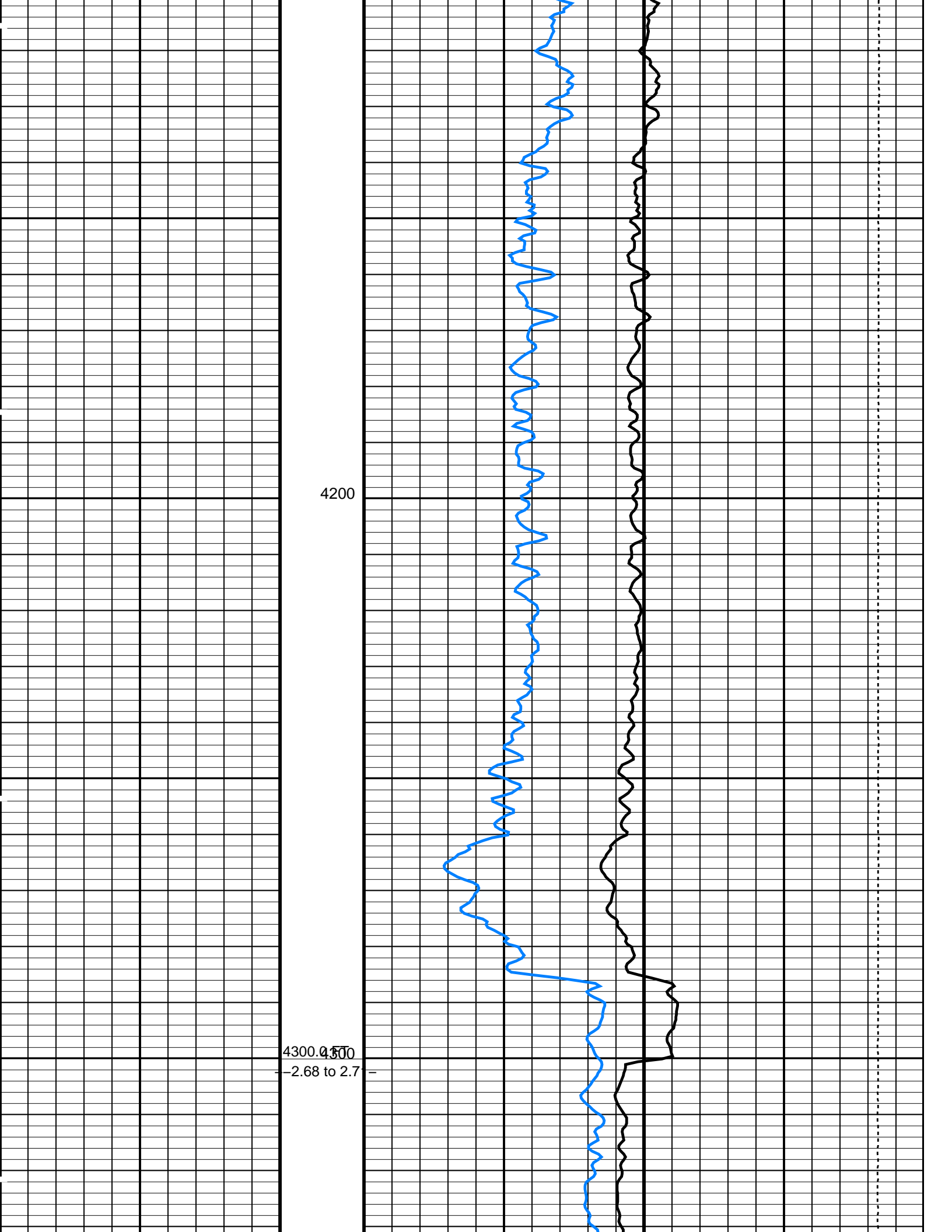


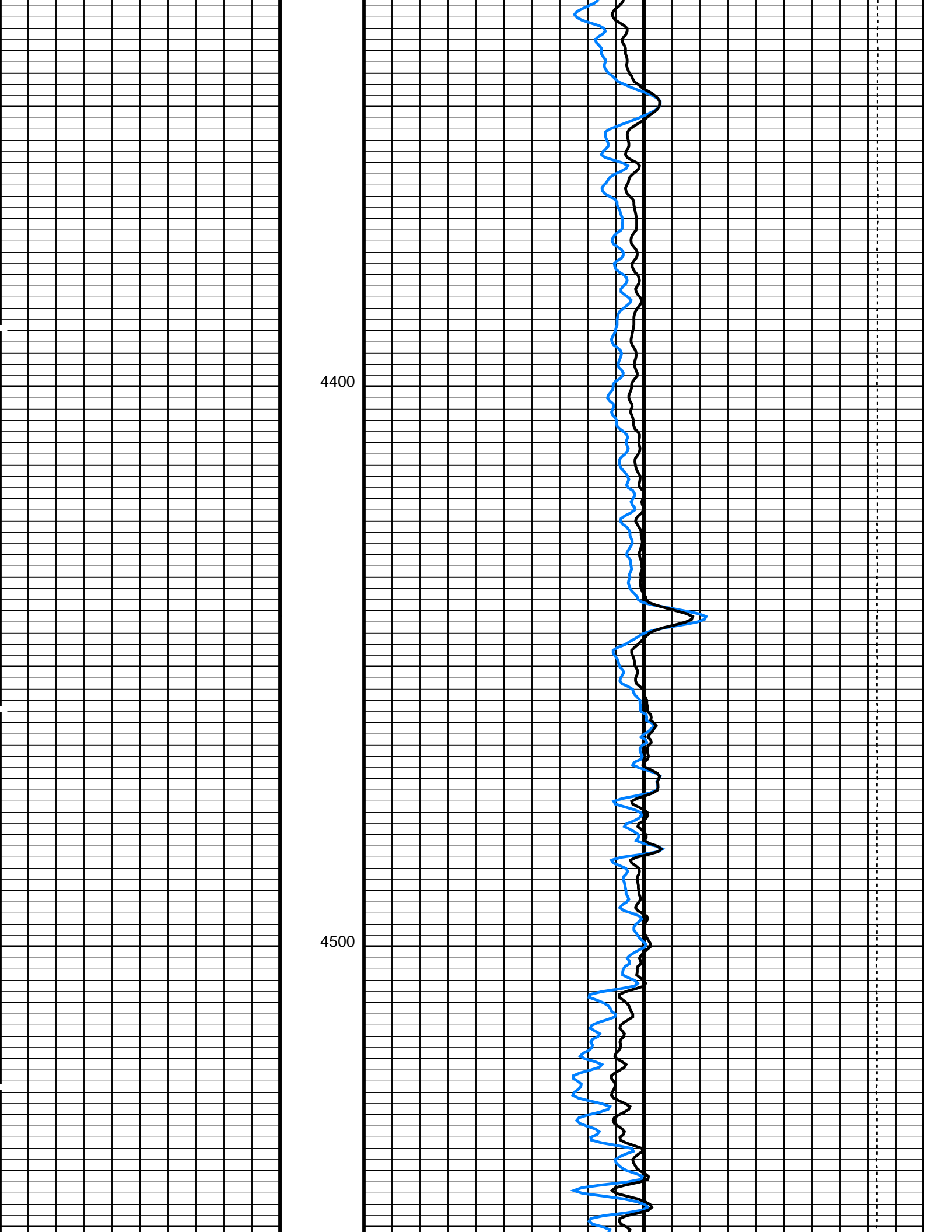
3700

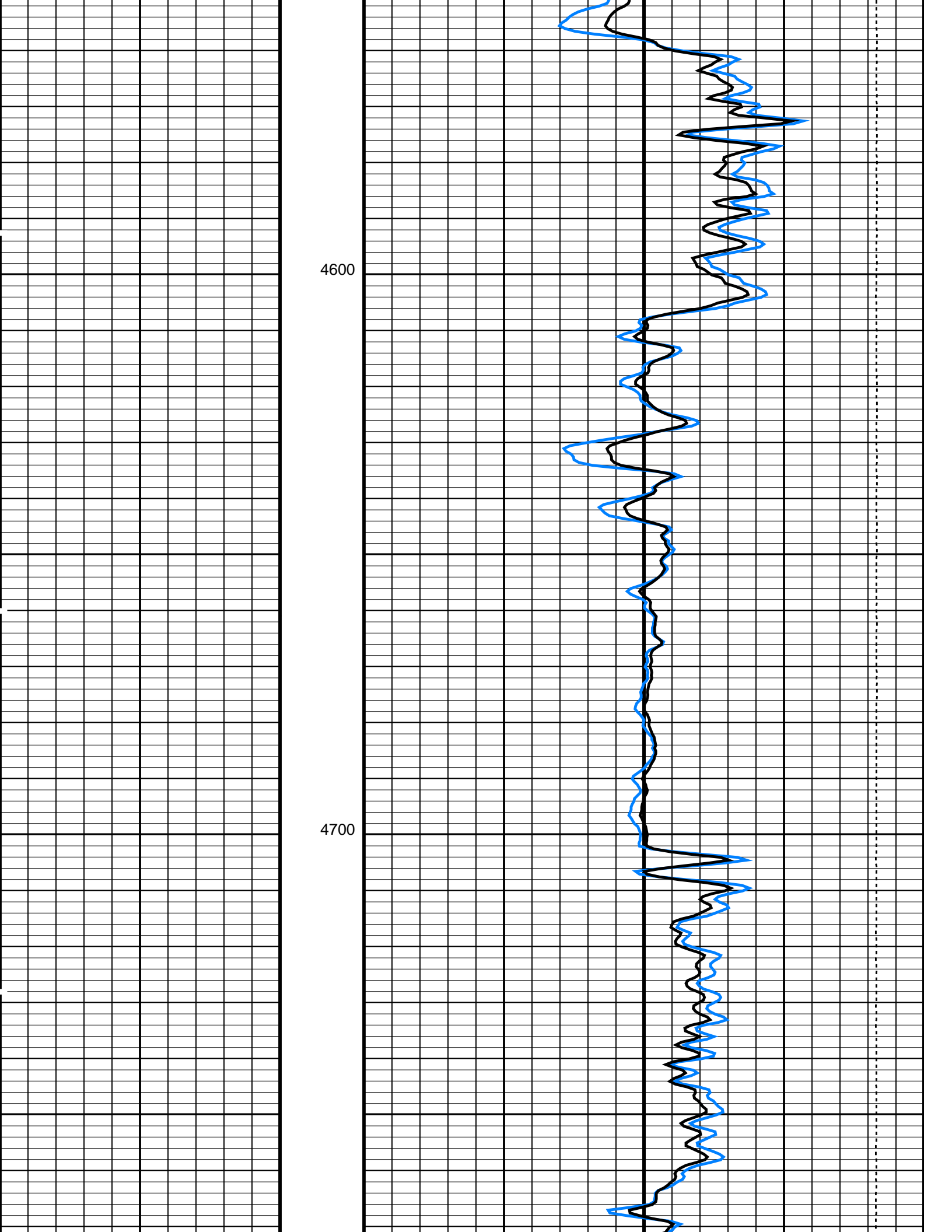
3800

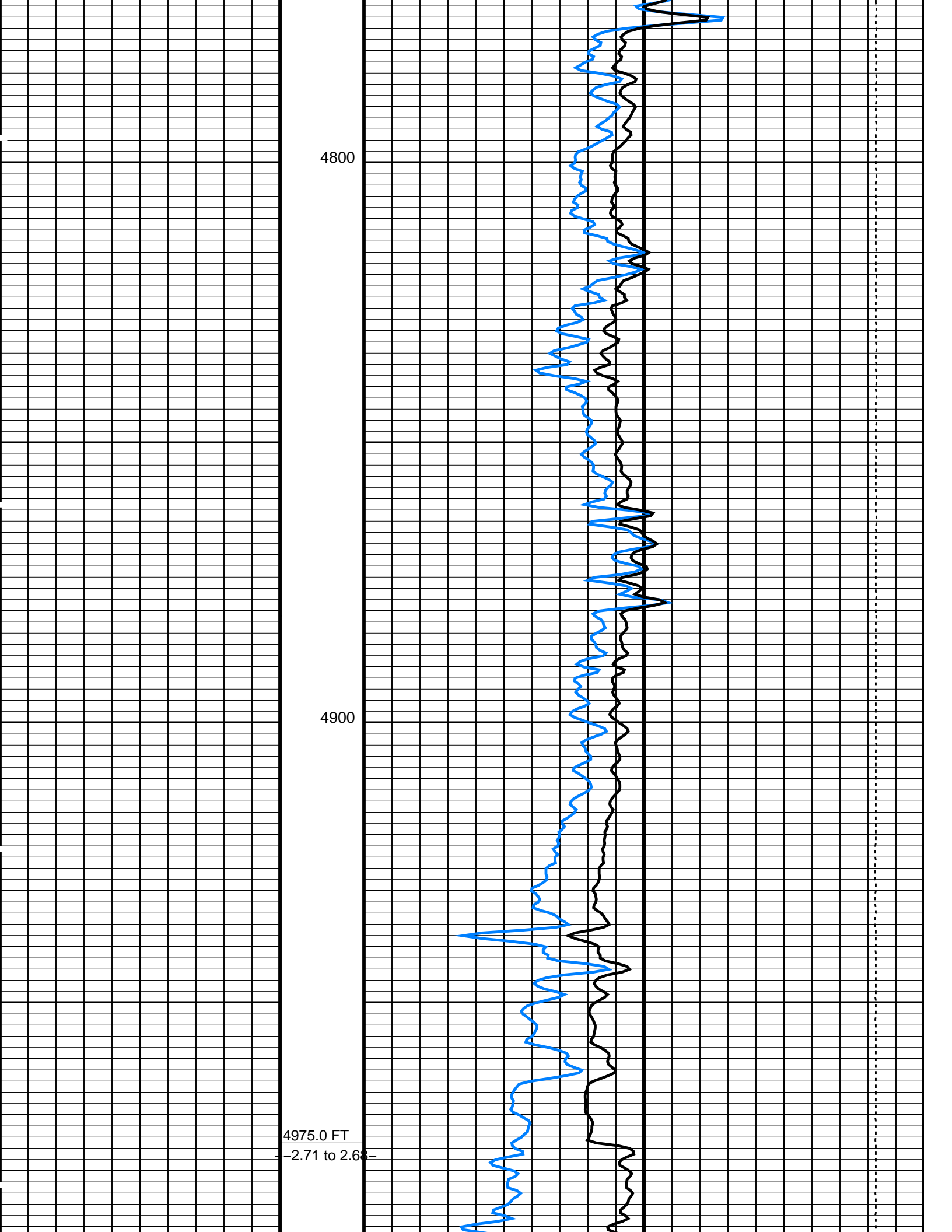


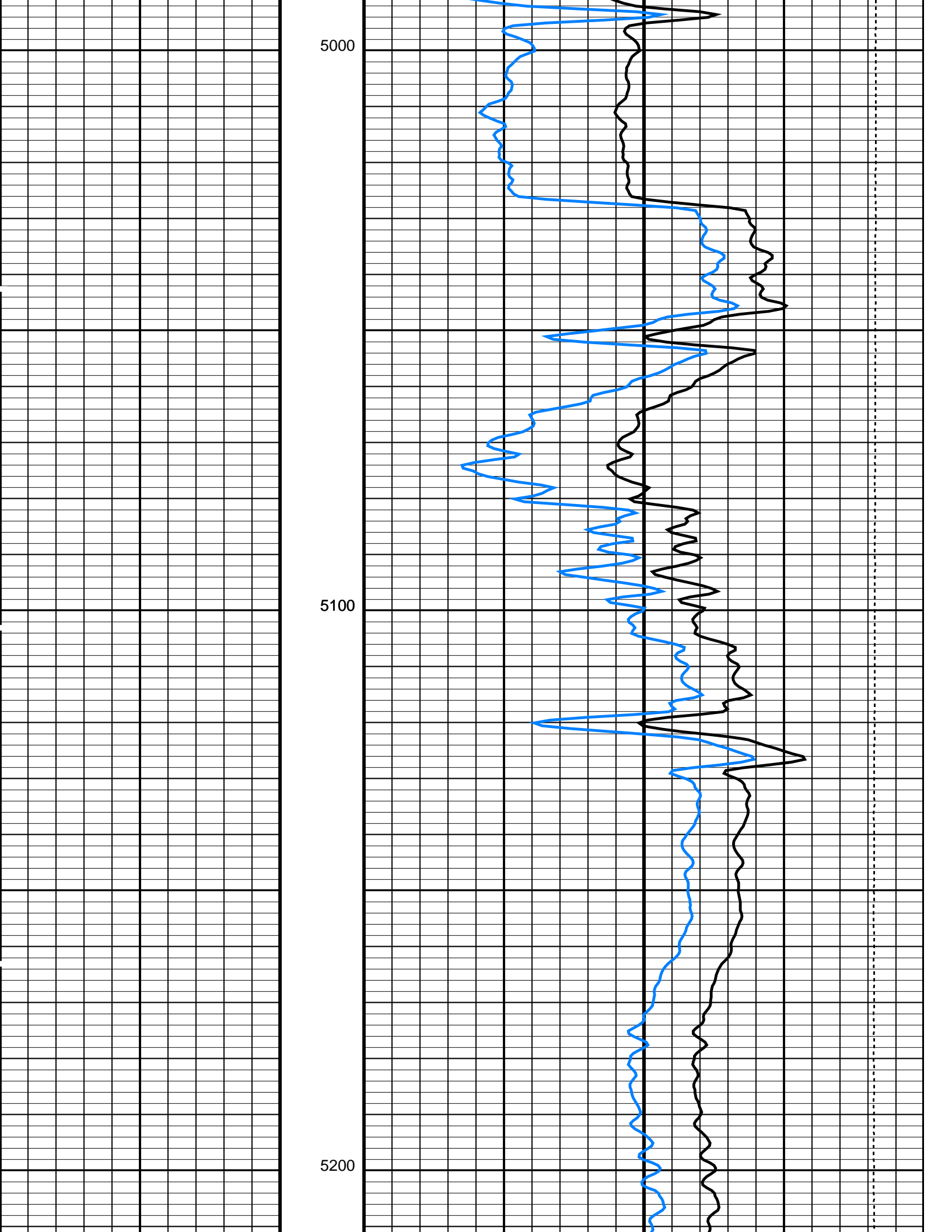


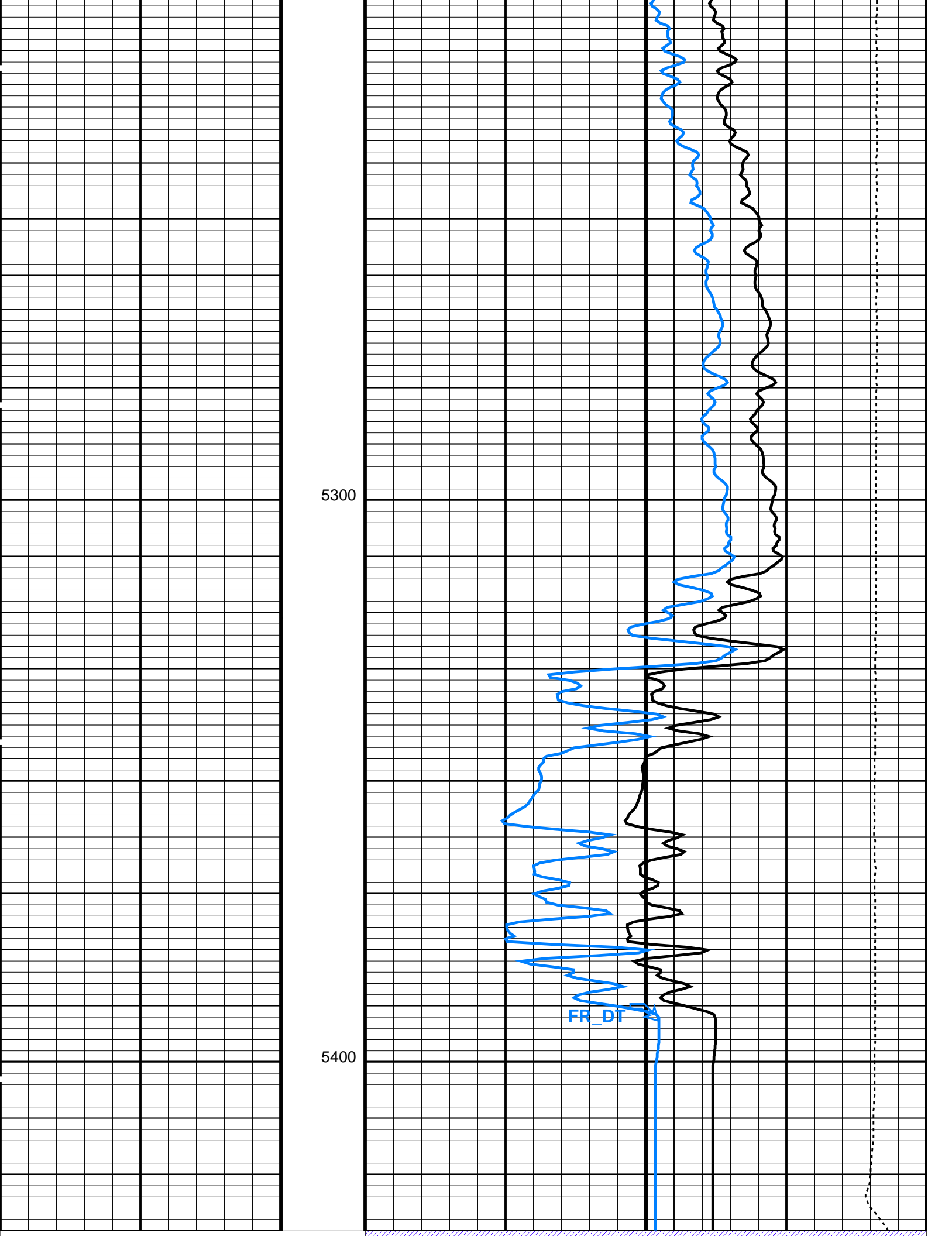












DT BACKUP		
Delta-T (DT)		
140	(US/F)	40
Sonic Porosity (SPHI)		
0.6	(V/V)	0
		Tension (TENS)
		10000 (LBF)
		0

PIP SUMMARY		
Time Mark Every 60 S		

Parameters			
DLIS Name	Description	Value	
DSLTTFTB: Digitizing Sonic Logging Tool			
	DSLTT Firing Mode	BHC	
	Telemetry Mode	DSLCTFTB	
	C-Delta-T Shale	100	US/F
	Digitizing Delay	0	US
	DSLTT Depth Sampling Interval	20	
	DSLTT DLIS Recording Size	100	
	Digitizing Sample Interval	10	
	Delta-T Fluid	189	US/F
	DSLCT Telemetry Frame Size	236	
	Delta-T Matrix	47.6	US/F
	Digitizing Word Count	100	
	Manual Gain	40	
	Manual High Threshold Reference	120	
	Maximum Gain	60	
	Minimum High Threshold Reference	100	
	Near Minimum Sliding Gate	150	US
	Near Maximum Sliding Gate	750	US
	Firing Rate	R15	
	Sonic Formation Attenuation Factor	0	DB/F
	Sliding Gate Closing Delta-T	250	US/F
	Sliding Gate Delta-T	50	US/F
	Sliding Gate Width	80	US
	Signal Level for AGC	5000	
	Sonic Porosity Formula	RAYMER_HUNT	
	Sonic Porosity Source	DT	
	Waveform Firing Mode	FULL	
STI: Stuck Tool Indicator			
	Trigger for MAXIS First Reading Label	TDL	
	STI Stuck Threshold	2.5	FT
	Total Depth - Driller	5433.00	FT
	Total Depth - Logger	5427.00	FT
System and Miscellaneous			
	Depth Offset for Repeat Analysis	0.0	FT

Format: SONI	Vertical Scale: 5" per 100'	Graphics File Created: 12-Aug-2007 12:03
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OP System Version: 15C0-309			
MCM			
AIT-H	SRPC-3357-Q2_2007	NGT-C	15C0-309
DTA-A	SRPC-3357-Q2_2007	DSLTTFTB	15C0-309
DTC-H	15C0-309		

Output DLIS Files			
DEFAULT	AIT_NGS_SONIC_012LUP	FN:11	PRODUCER 12-Aug-2007 12:03



Repeat Analysis

Input DLIS Files						
DEFAULT	AIT_NGS_SONIC_010LUP	FN:9	PRODUCER	12-Aug-2007 11:46	5442.0 FT	4784.5 FT
DEFAULT	AIT_NGS_SONIC_012LUP	FN:11	PRODUCER	12-Aug-2007 12:03	5430.0 FT	379.0 FT
Output DLIS Files						
DEFAULT	AIT_NGS_SONIC_022PUP	FN:21	PRODUCER	12-Aug-2007 13:28		

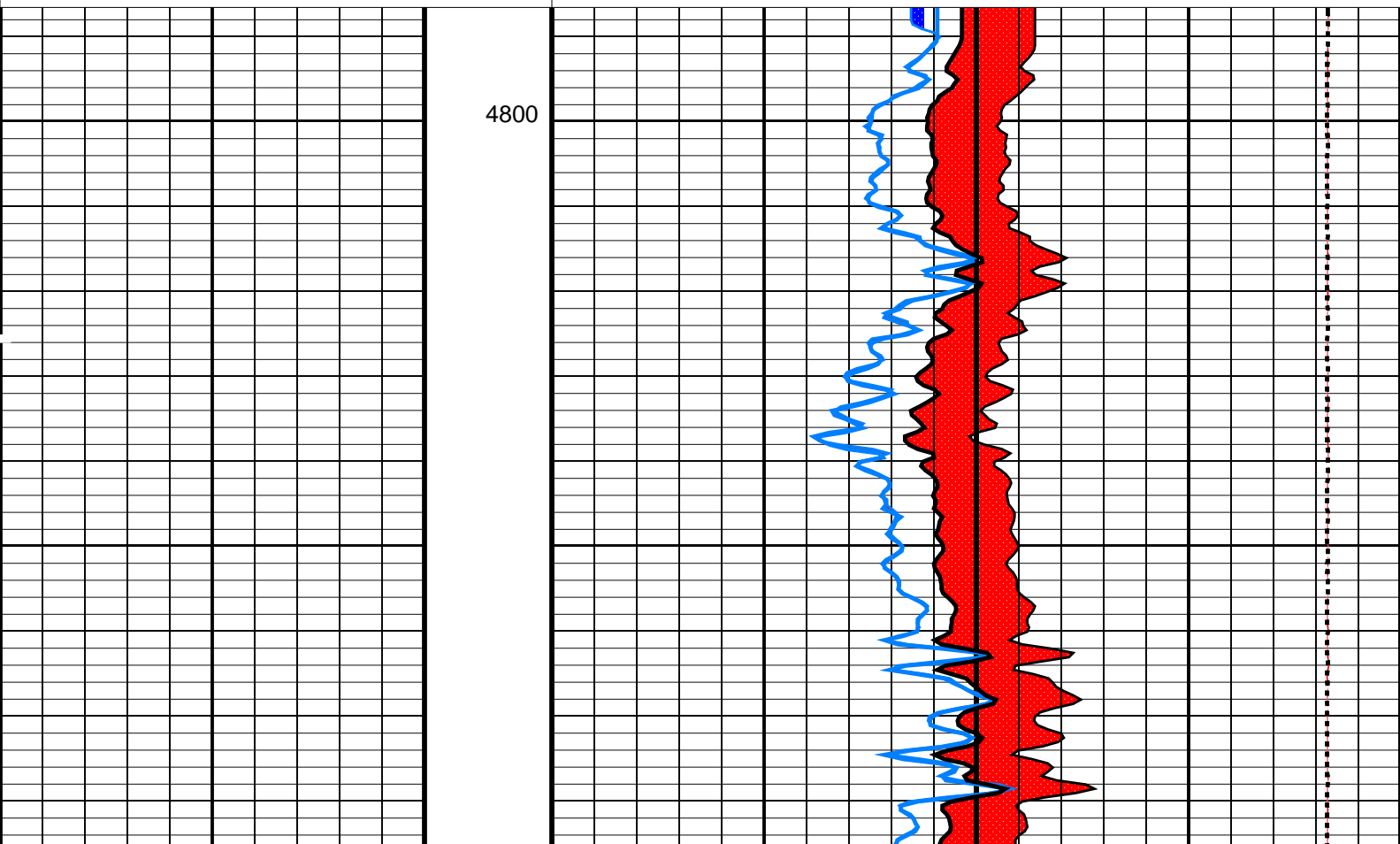
OP System Version: 15C0-309			
MCM			
AIT-H	SRPC-3357-Q2_2007	NGT-C	15C0-309
DTA-A	SRPC-3357-Q2_2007	DSLT-FTB	15C0-309
DTC-H	15C0-309		

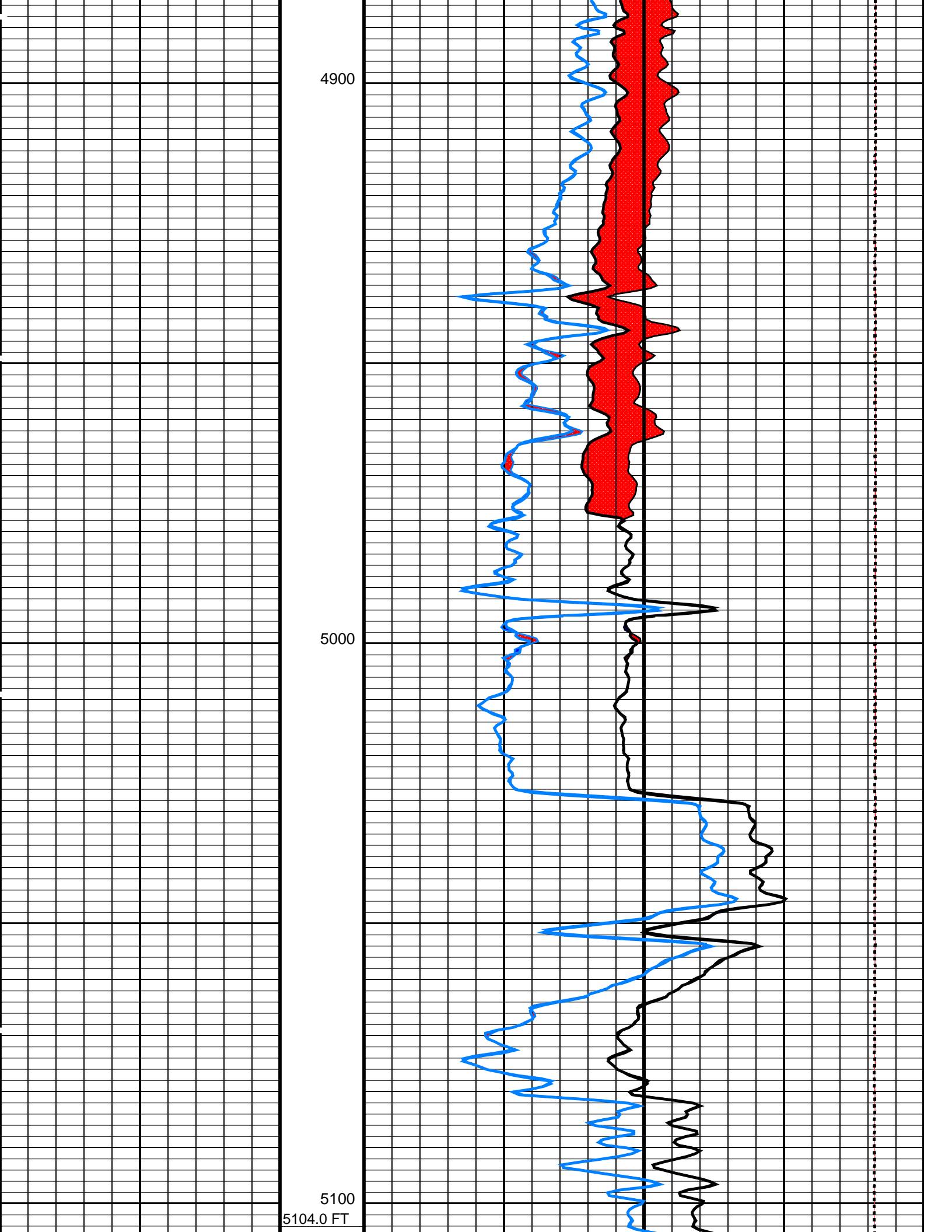
Changed Parameter Summary				
DLIS Name	New Value		Previous Value	Depth & Time
DTM	56	US/F	56 US/F	5430.0 13:28:12
	56	US/F	56 US/F	5104.0 13:28:23

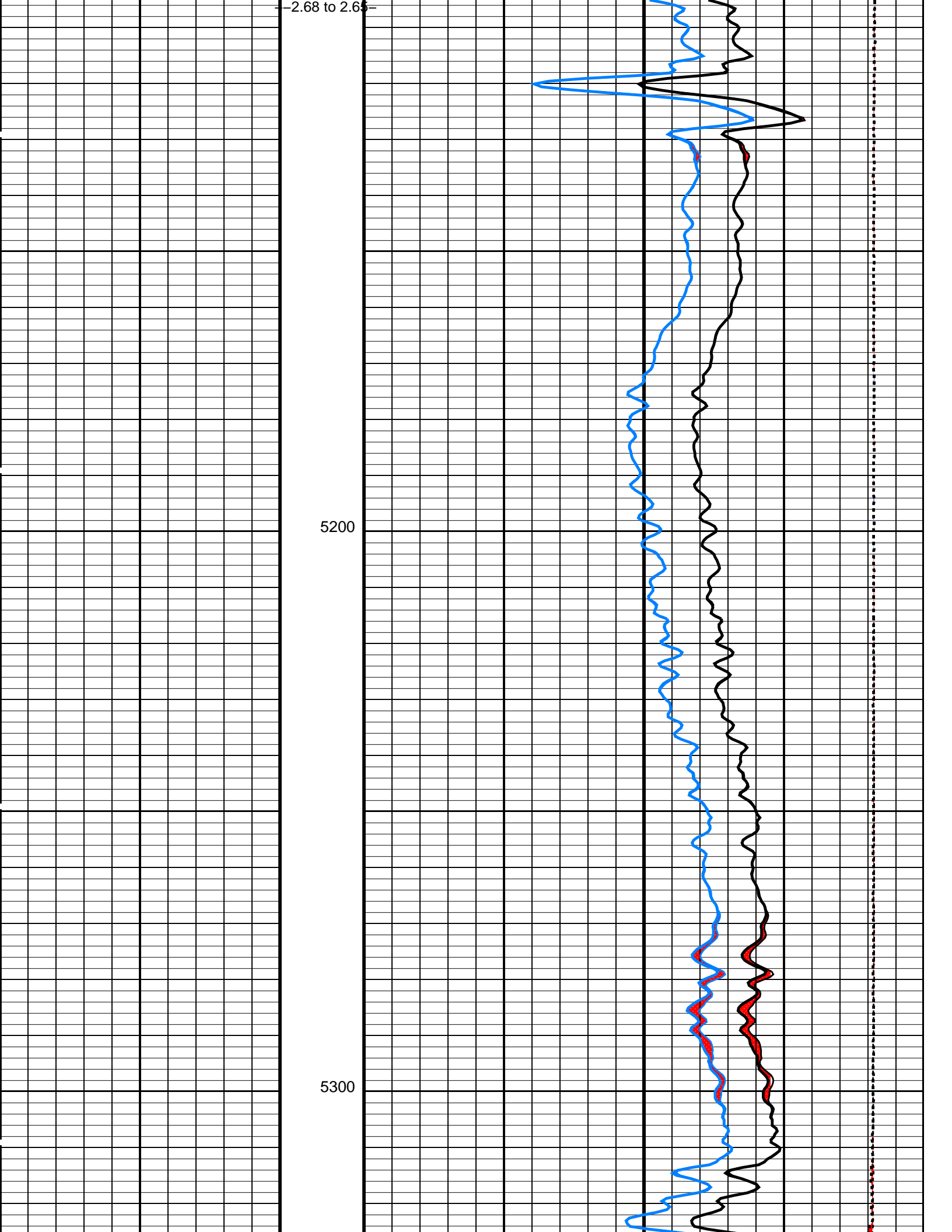
PIP SUMMARY

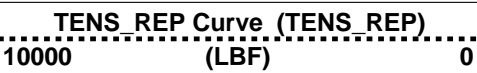
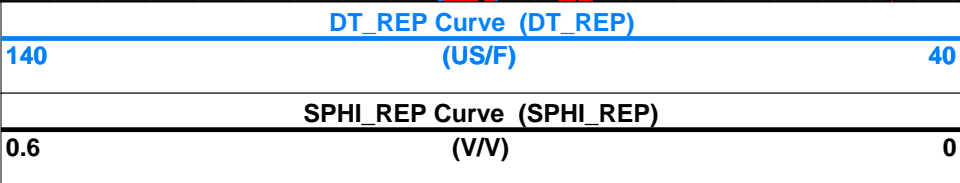
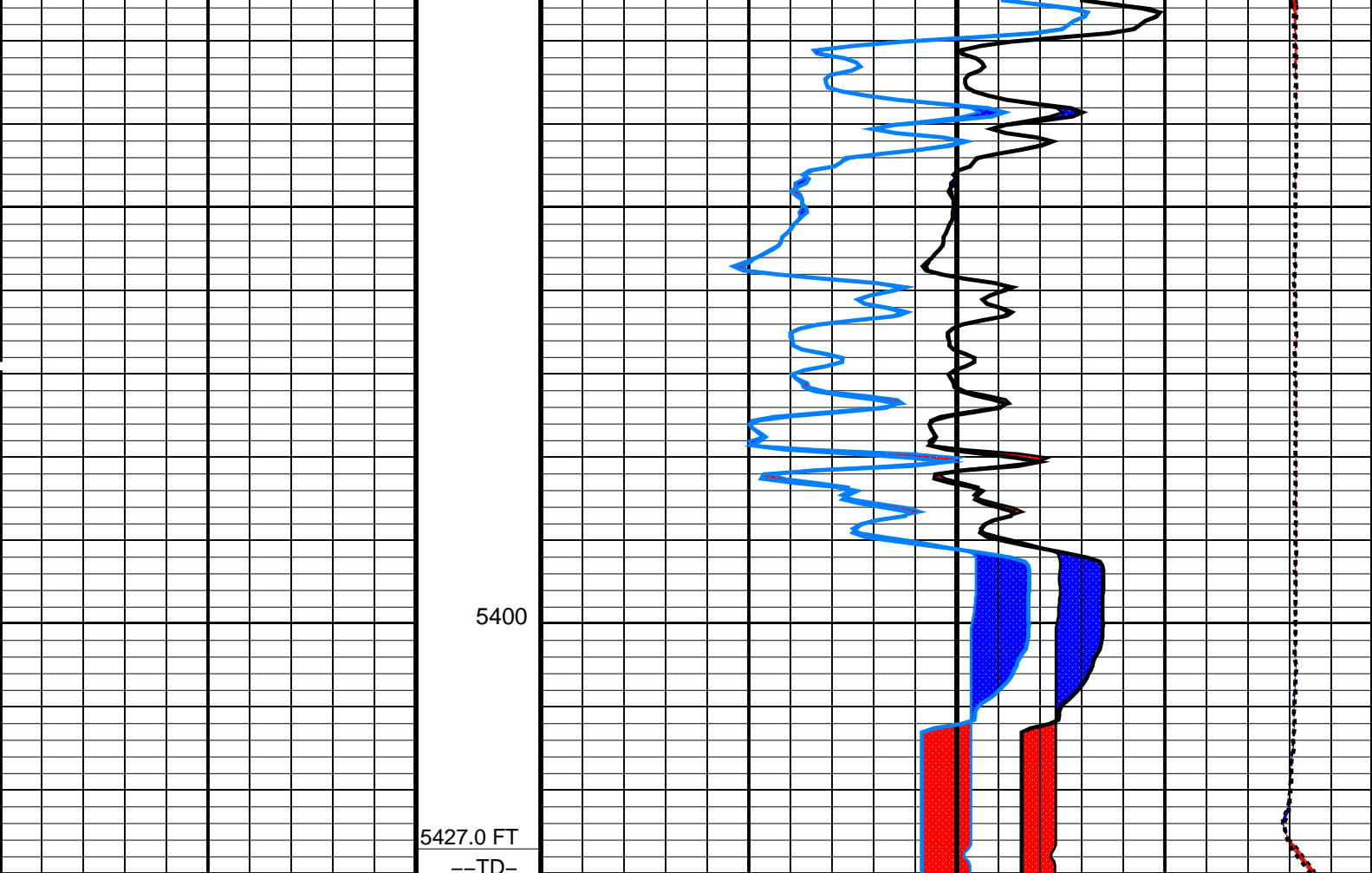
☐ Time Mark Every 60 S

		TENS_REP Curve (TENS_REP)	
		10000	(LBF) 0
		SPHI_REP Curve (SPHI_REP)	
		0.6	(V/V) 0
		DT_REP Curve (DT_REP)	
		140	(US/F) 40









PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
DSLTT-FTB: Digitizing Sonic Logging Tool		
	DSLTT Firing Mode	BHC
	Telemetry Mode	DSLCT_FTB
CDTS	C-Delta-T Shale	100 US/F
DDEL	Digitizing Delay	0 US
DIVL	DSLTT Depth Sampling Interval	20
DRCS	DSLTT DLIS Recording Size	100
DSIN	Digitizing Sample Interval	10
DTF	Delta-T Fluid	189 US/F
DTFS	DSLCT Telemetry Frame Size	236
DTM	Delta-T Matrix	56 US/F
DWCO	Digitizing Word Count	100
GAI	Manual Gain	40
MAHTR	Manual High Threshold Reference	120
MGAI	Maximum Gain	60
MNHTR	Minimum High Threshold Reference	100
NMSG	Near Minimum Sliding Gate	150 US
NMXG	Near Maximum Sliding Gate	750 US
RATE	Firing Rate	R15
SFAF	Sonic Formation Attenuation Factor	0 DB/F
SGCL	Sliding Gate Closing Delta-T	250 US/F
SGDT	Sliding Gate Delta-T	50 US/F
SGW	Sliding Gate Width	80 US
SLEV	Signal Level for AGC	3000
SPES	Sonic Porosity Formula	PAYMER HUNT

SPPS	Sonic Porosity Formula	RATMER_HUNT	
SPSO	Sonic Porosity Source	DT	
WMOD	Waveform Firing Mode	FULL	
System and Miscellaneous			
DO	Depth Offset for Playback	0.0	FT
DORL	Depth Offset for Repeat Analysis	2.0	FT
PP	Playback Processing	RECOMPUTE	

Format: SONI_REP Vertical Scale: 5" per 100' Graphics File Created: 12-Aug-2007 13:28

OP System Version: 15C0-309

MCM

AIT-H	SRPC-3357-Q2_2007	NGT-C	15C0-309
DTA-A	SRPC-3357-Q2_2007	DSLT-FTB	15C0-309
DTC-H	15C0-309		

Input DLIS Files

DEFAULT	AIT_NGS_SONIC_010LUP	FN:9	PRODUCER	12-Aug-2007 11:46	5442.0 FT	4784.5 FT
DEFAULT	AIT_NGS_SONIC_012LUP	FN:11	PRODUCER	12-Aug-2007 12:03	5430.0 FT	379.0 FT

Output DLIS Files

DEFAULT	AIT_NGS_SONIC_022PUP	FN:21	PRODUCER	12-Aug-2007 13:28
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Company: **Windy Hill Gas Storage, LLC**

Schlumberger

Well: **Windy Hill 3-17D**

Field: **Wildcat**

County: **Morgan**

State: **Colorado**

Borehole Compensated Sonic