

**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

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				
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:	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 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				
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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				
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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				
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County: Morgan Field: Wildcat Location: SENE/4 Sec. 17, T3N, R55W Well: Windy Hill 3-17D Company: Windy Hill Gas Storage, LLC				
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County: Morgan Field: Wildcat Location: SENE/4 Sec. 17, T3N, R55W Well: Windy Hill 3-17D Company: Windy Hill Gas Storage, LLC				
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Permanent Datum: _____ Log Measured From: <u>Kelly Bushing</u> Drilling Measured From: <u>Kelly Bushing</u>	Elev.: 5350 ft _____ 18.0 ft above Perm. Datum		
API Serial No.	Section 17	Township 3N	Range 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	
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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.

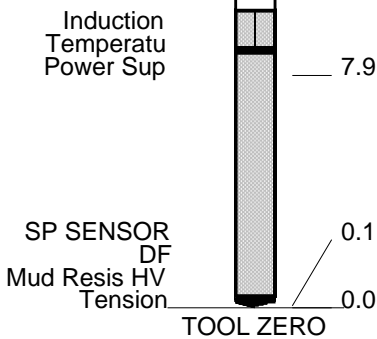
OTHER SERVICES2  
OS1:  
OS2:  
OS3:  
OS4:  
OS5:

REMARKS: RUN NUMBER 2

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			

NGC-C  
NGCH-A

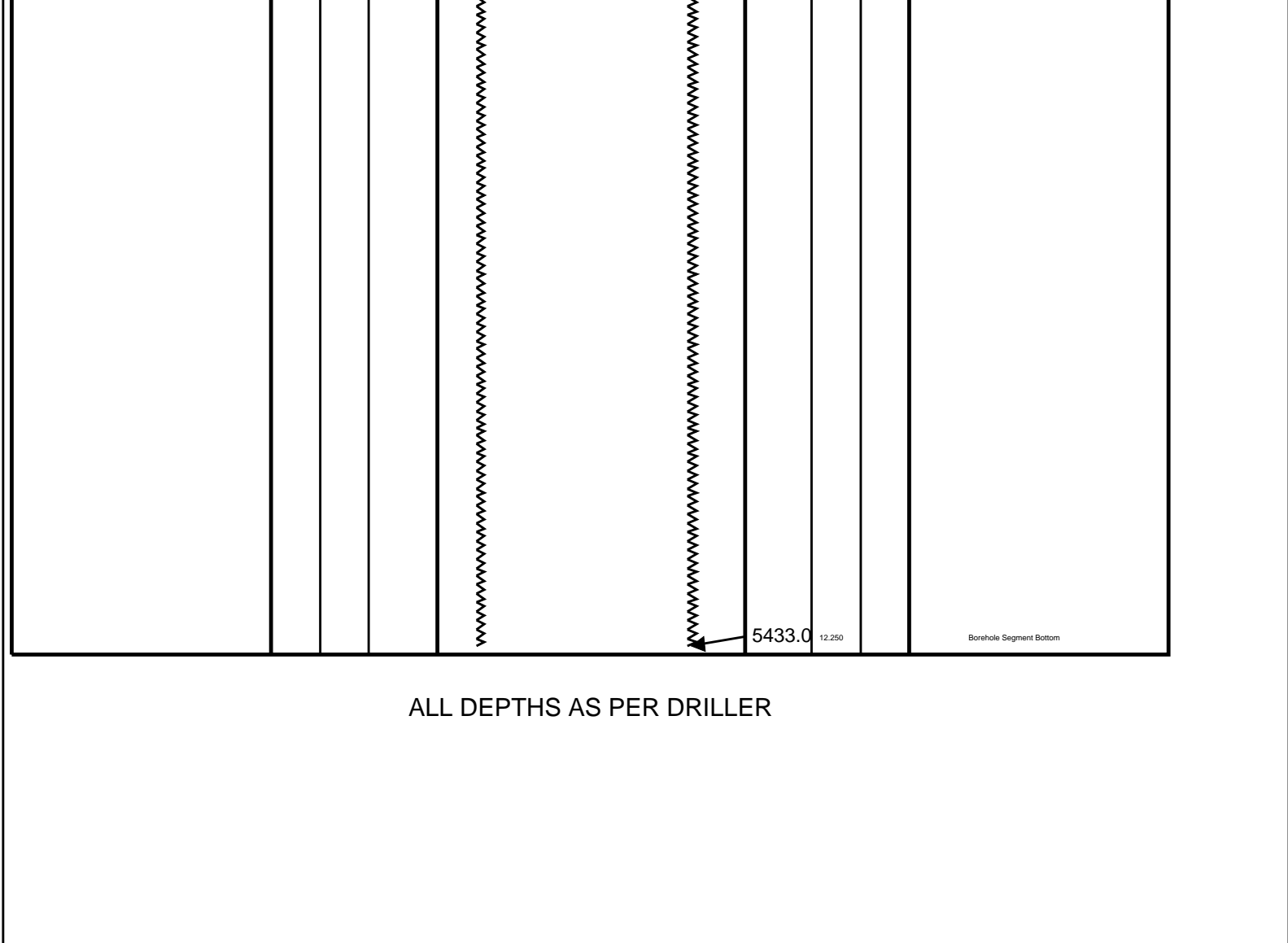
AIT-H  
AHIS-BA 372  
AHRM-A



16.0

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

Production String	(in)		(ft)	Well Schematic	(ft)	(in)		Casing String
	OD	ID			MD	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

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

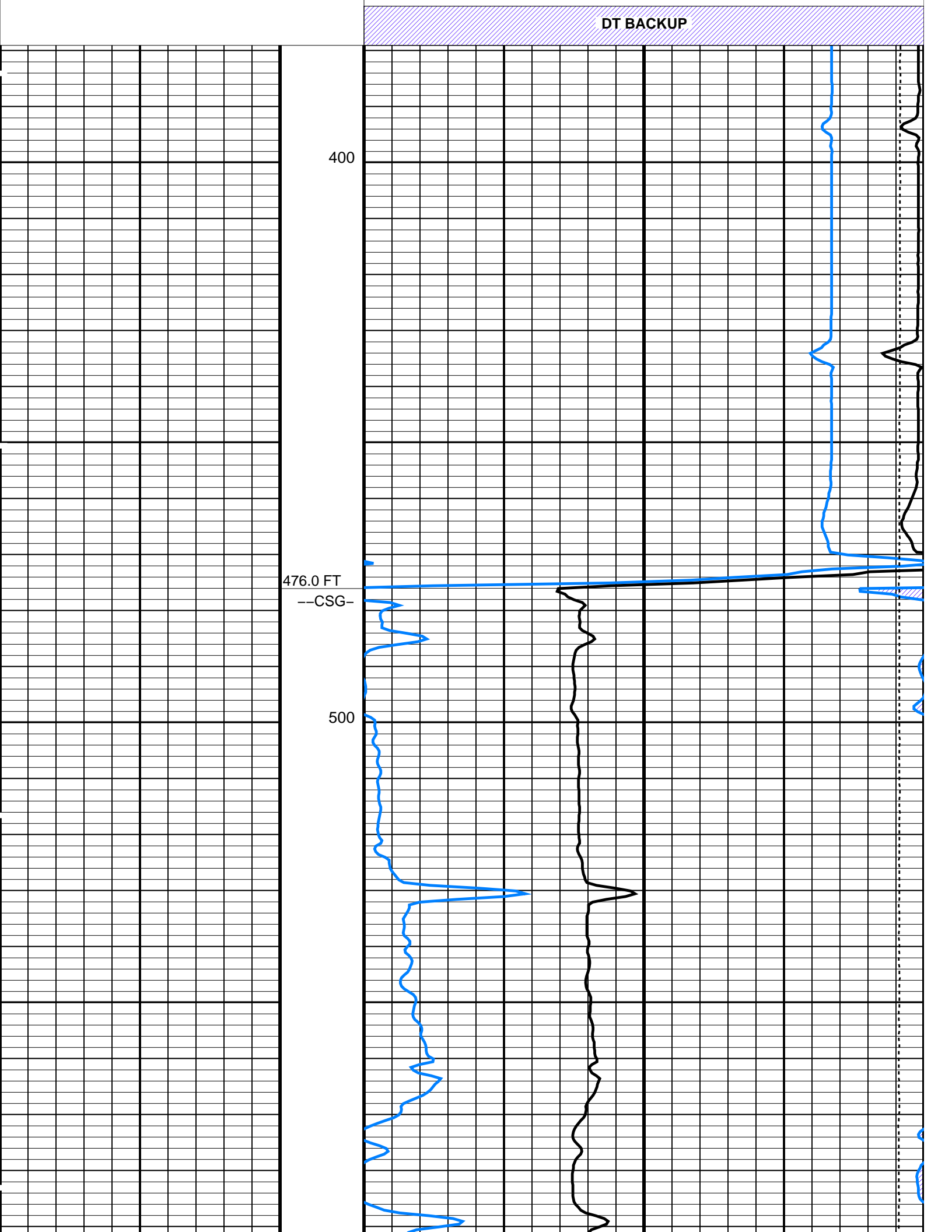
PIP SUMMARY	
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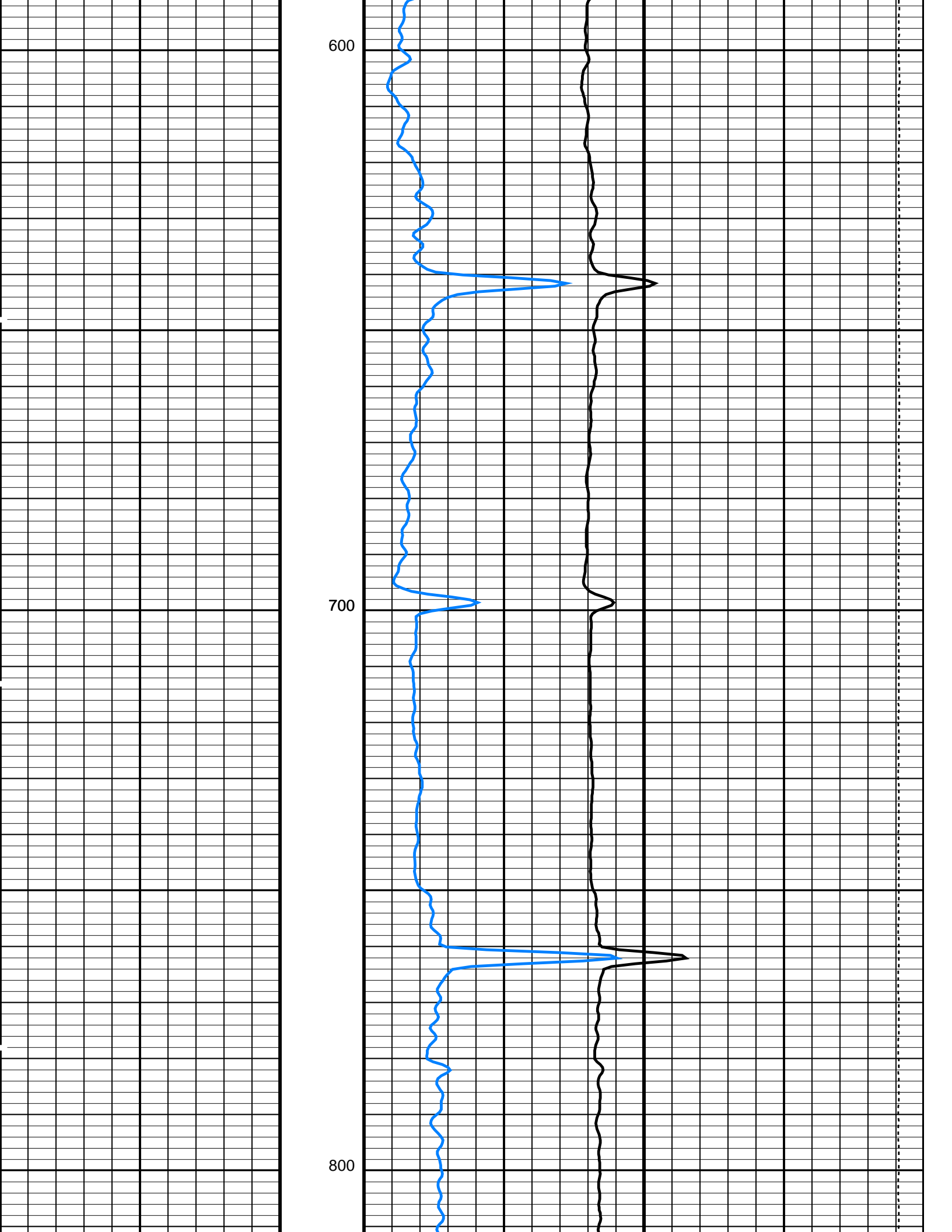
Tension (TENS)	
10000	(LBF)
0	
Sonic Porosity (SPHI)	
0.6	(V/V)
0	
Delta-T (DT)	
140	(US/F)
40	

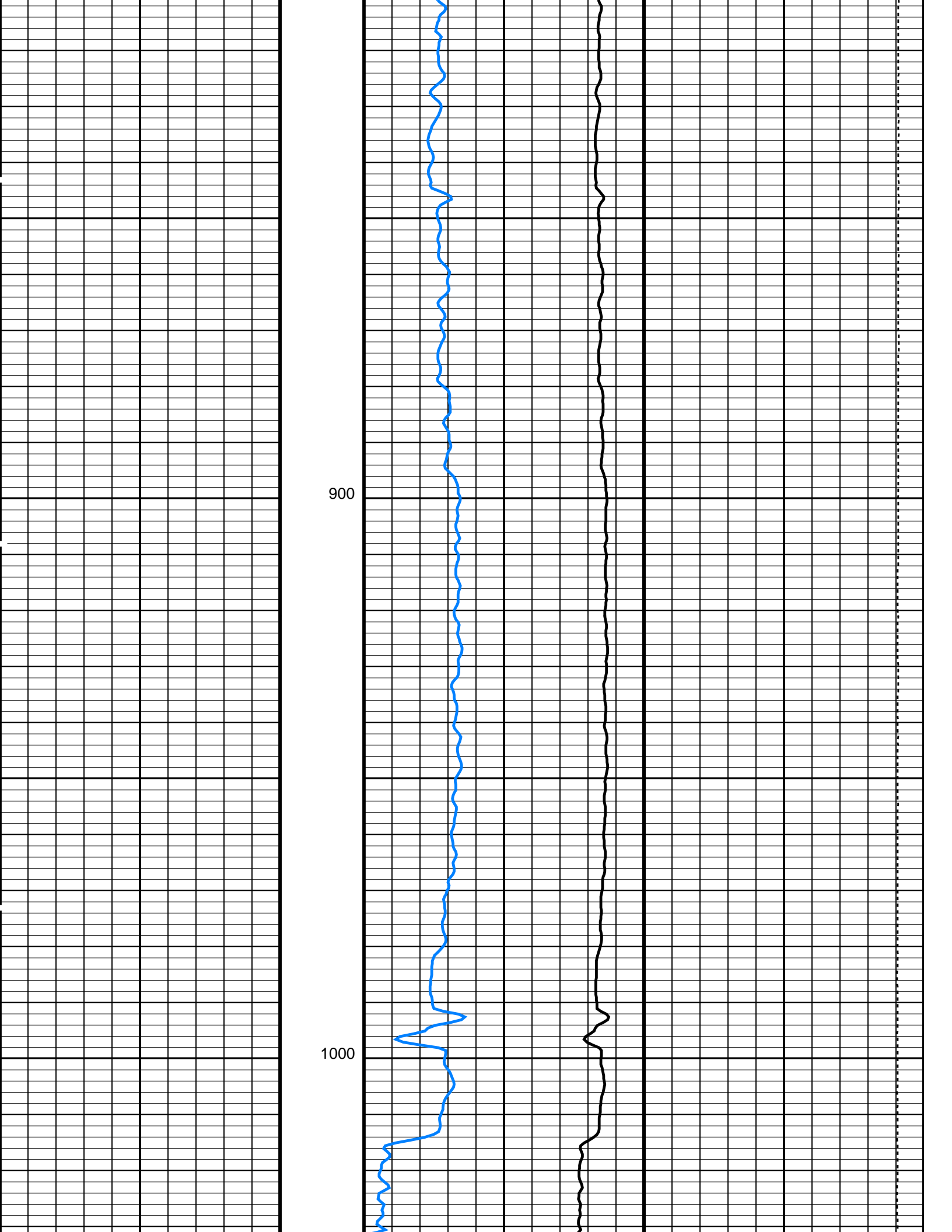
400

476.0 FT  
--CSG--

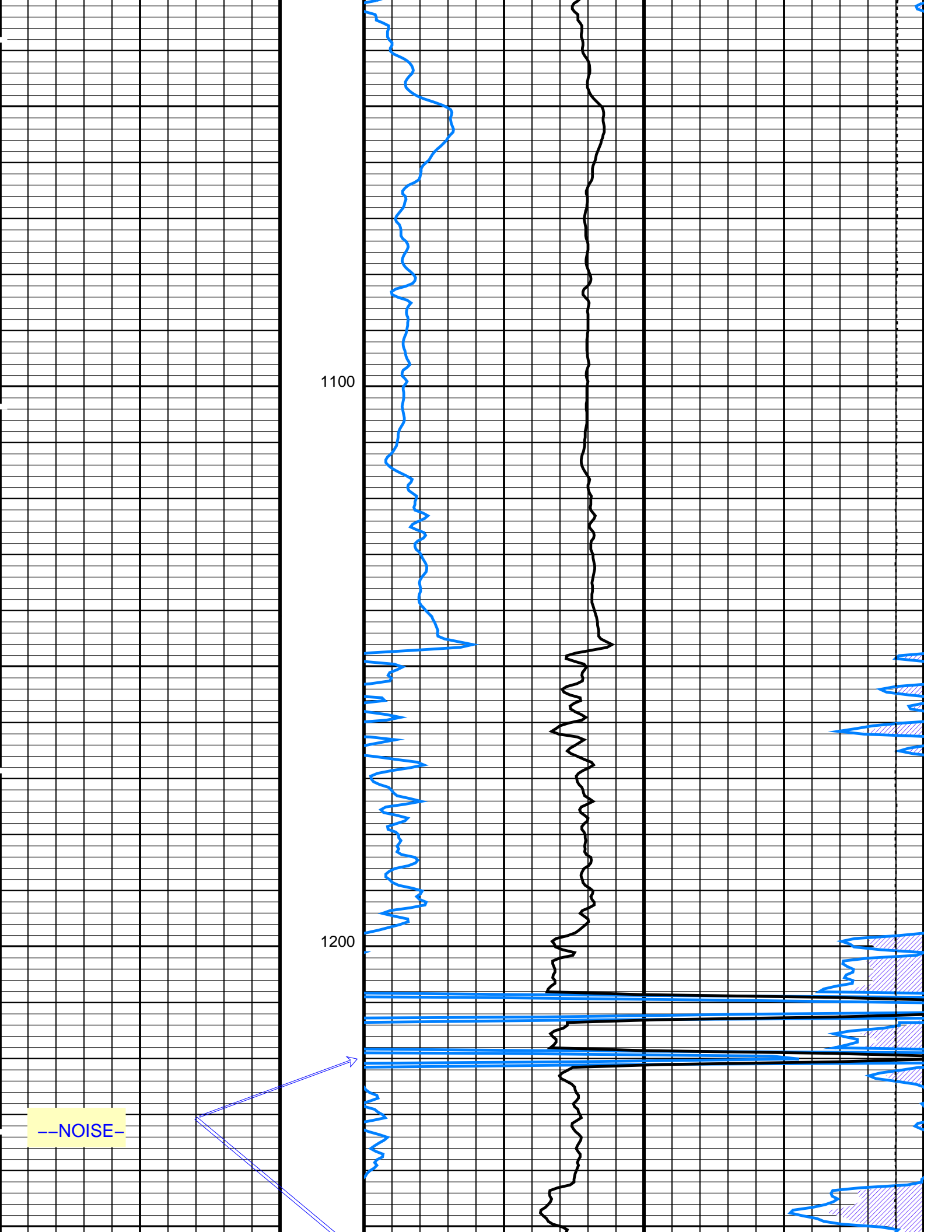
500

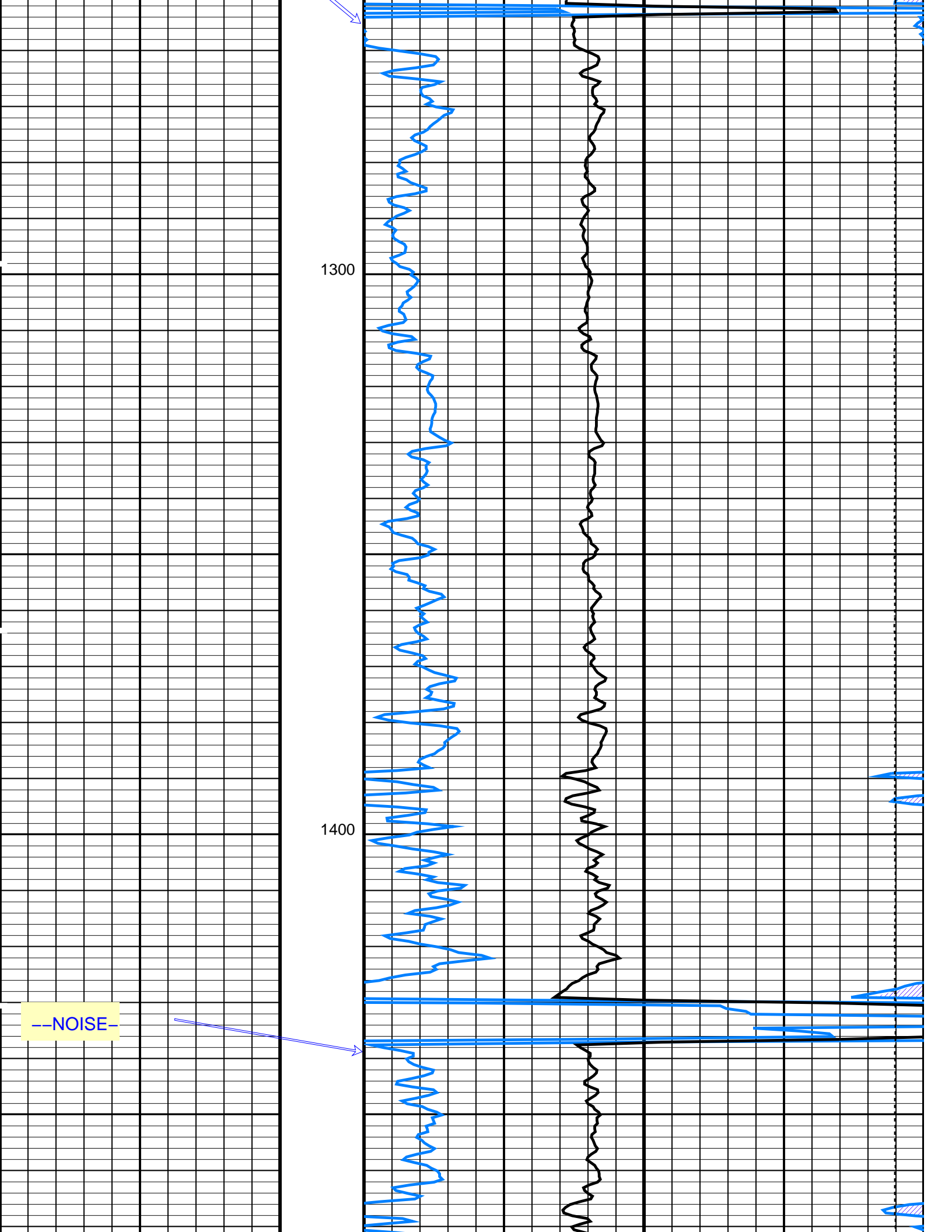


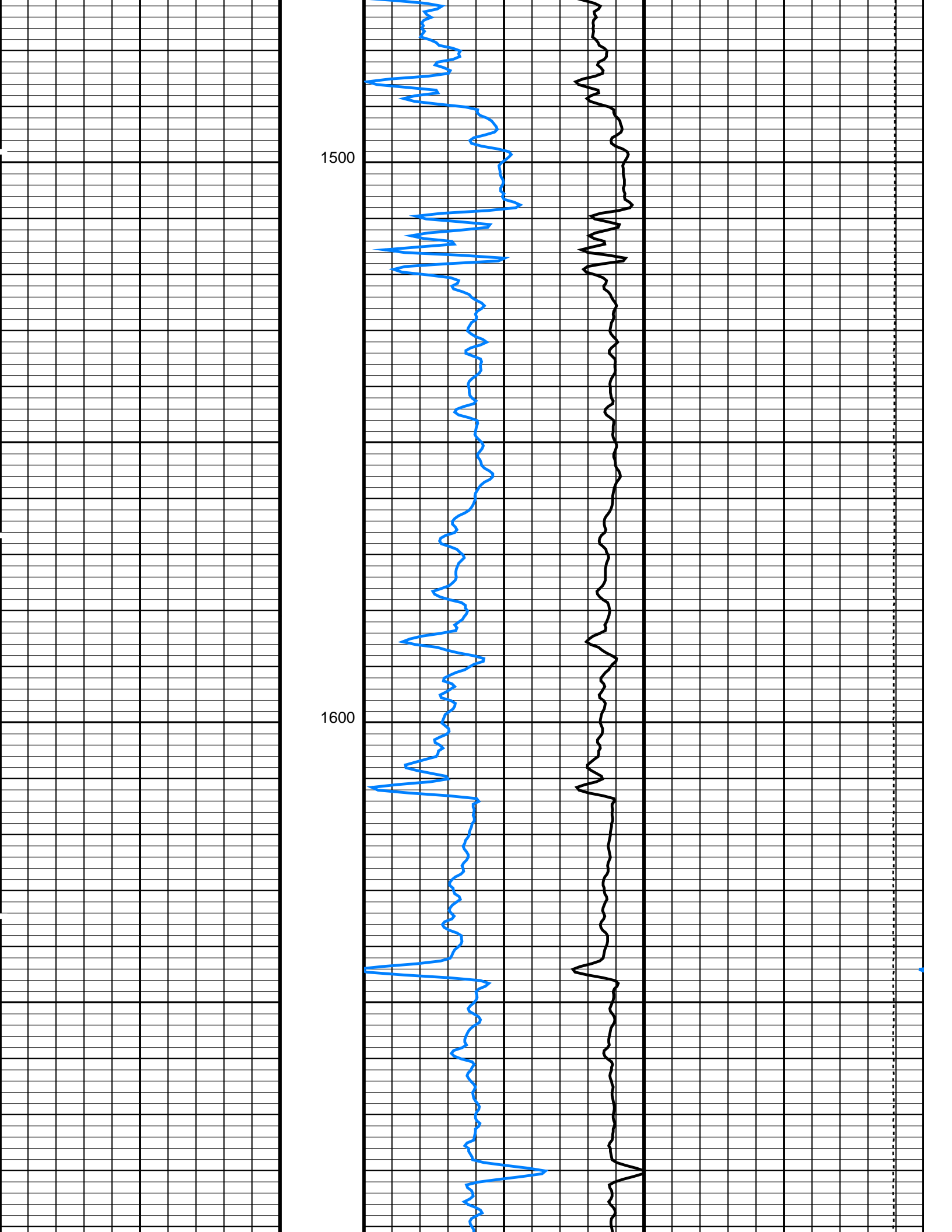


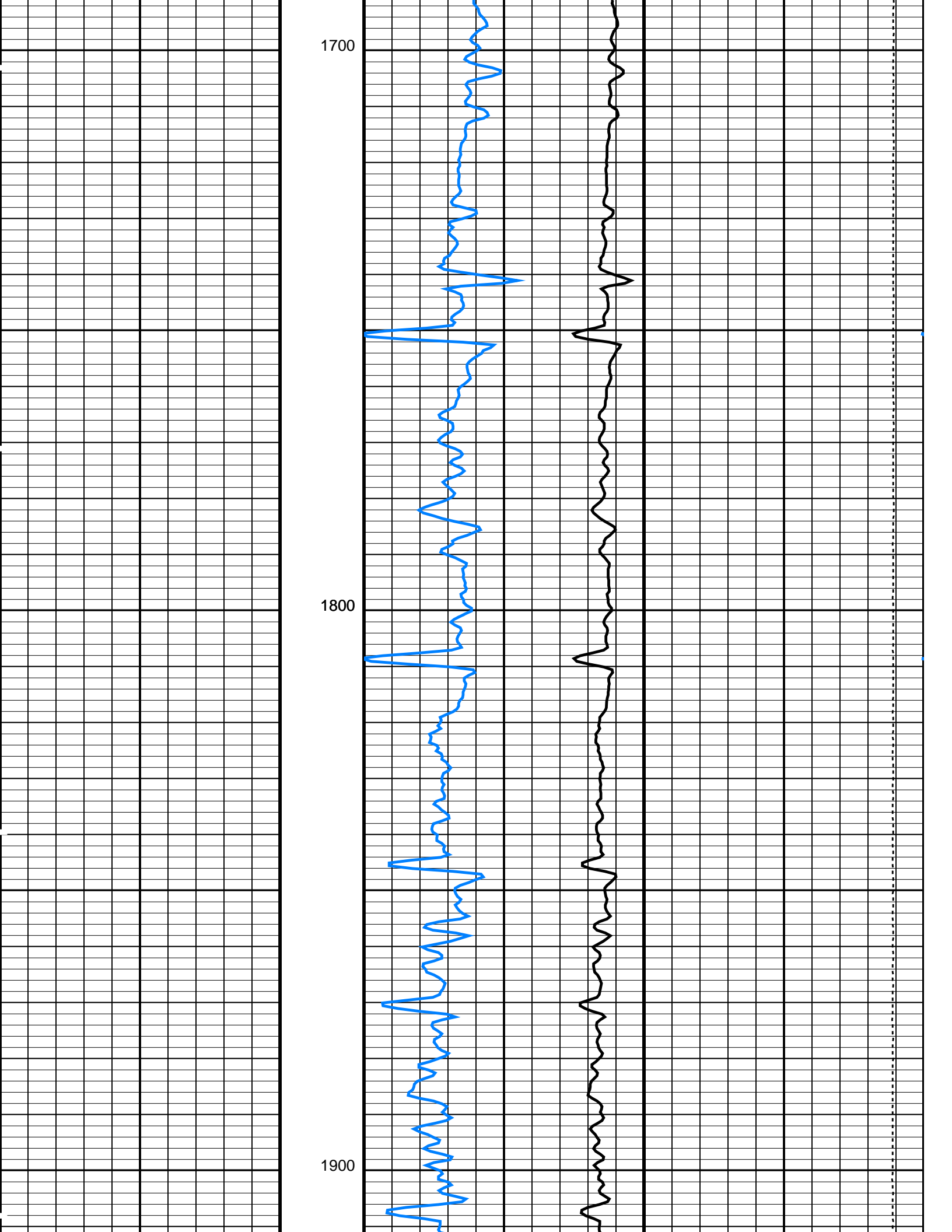


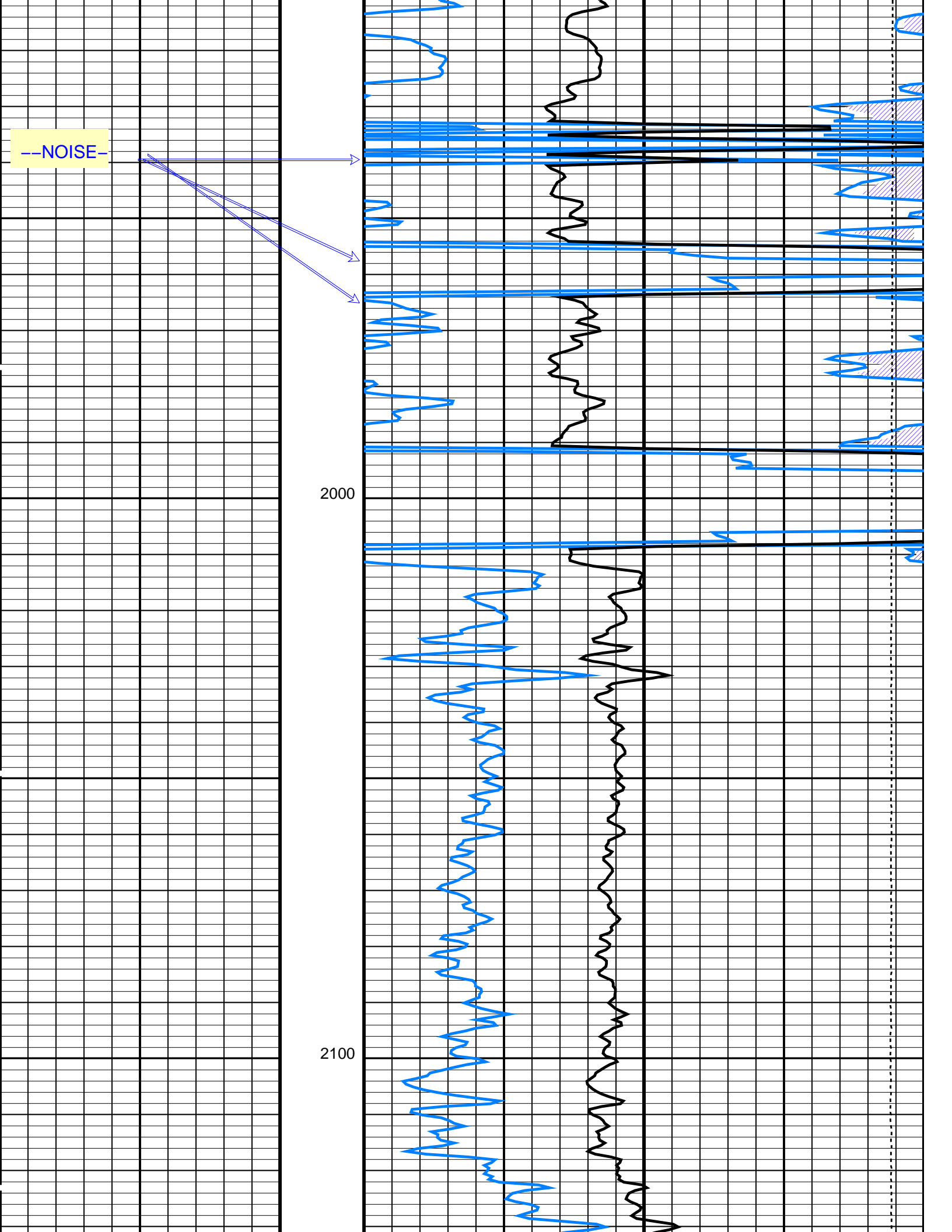


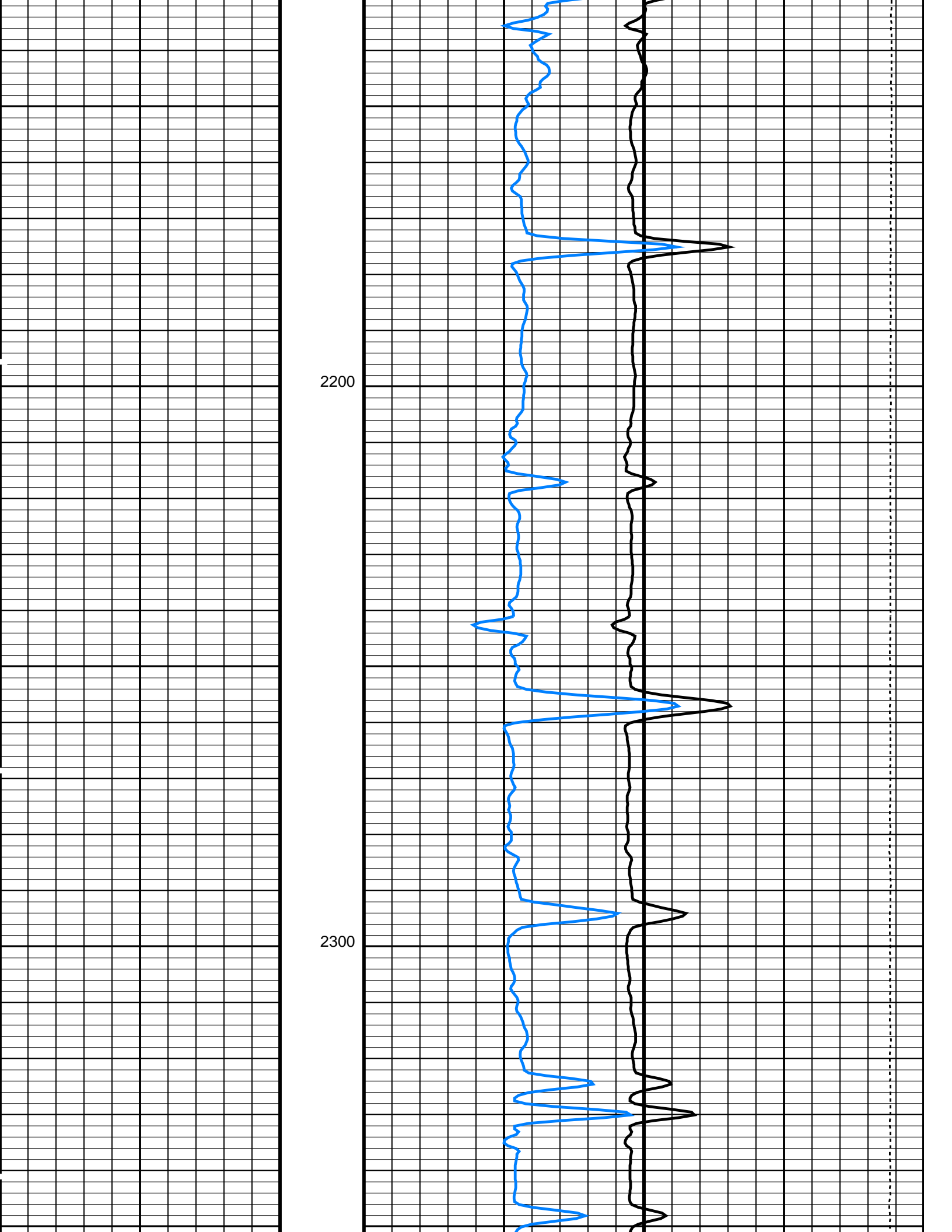


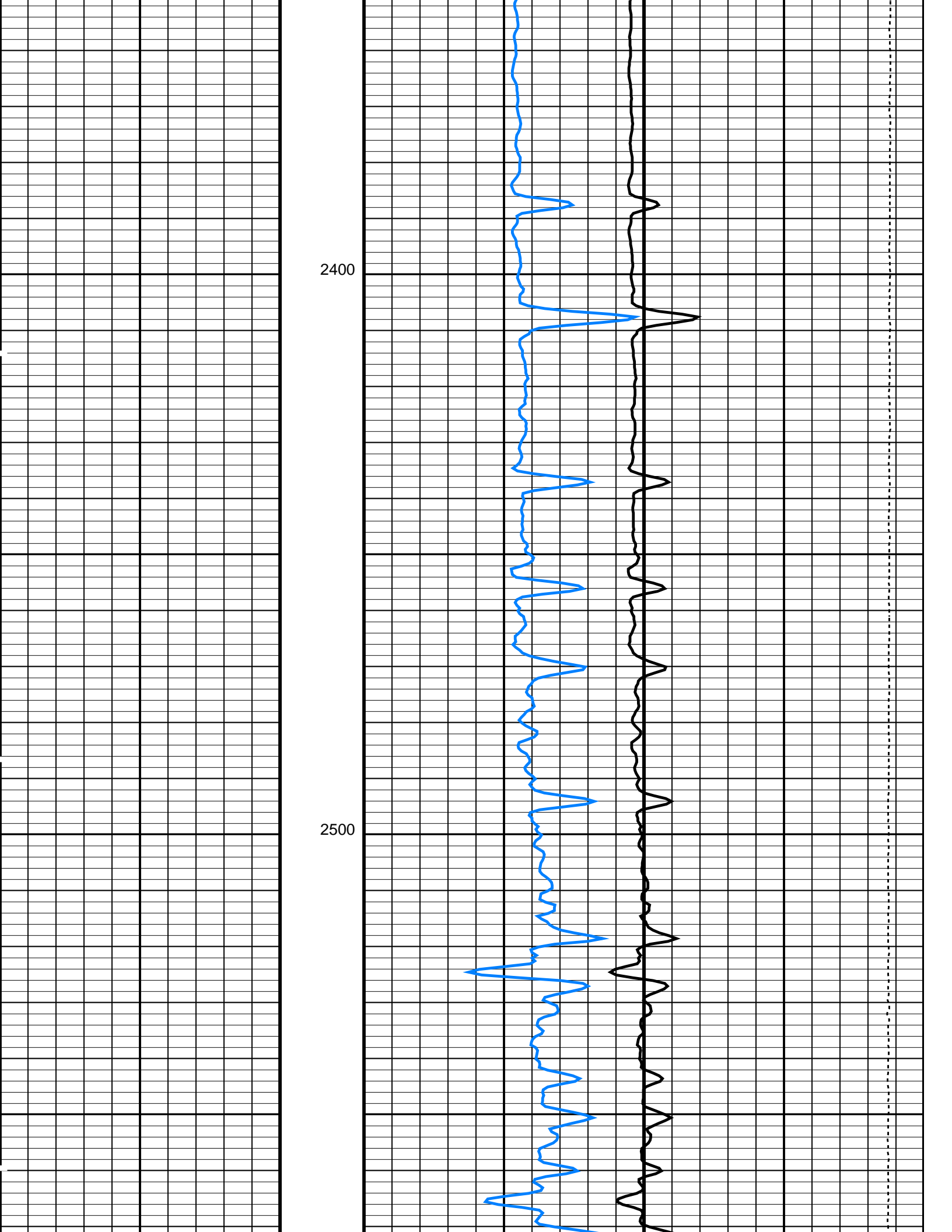


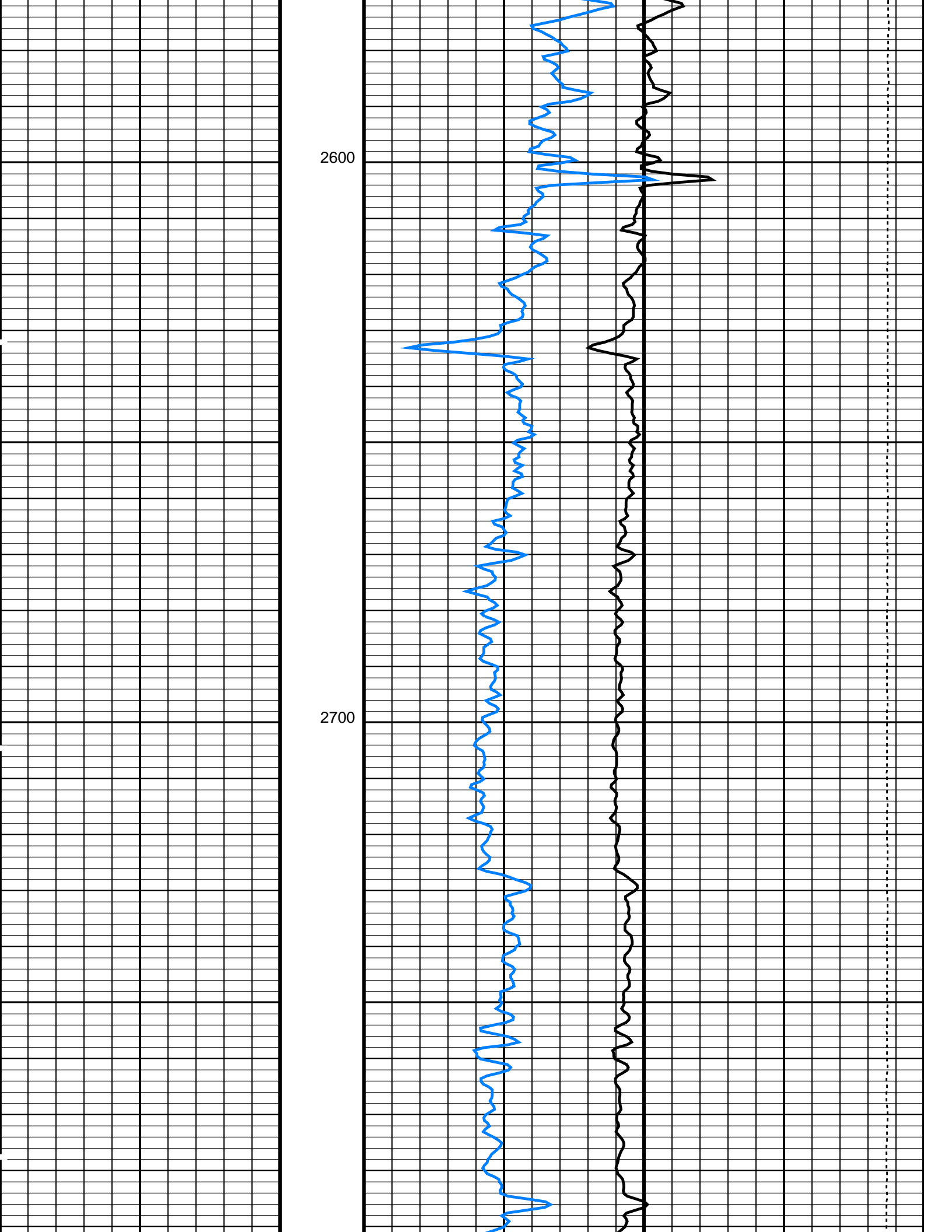




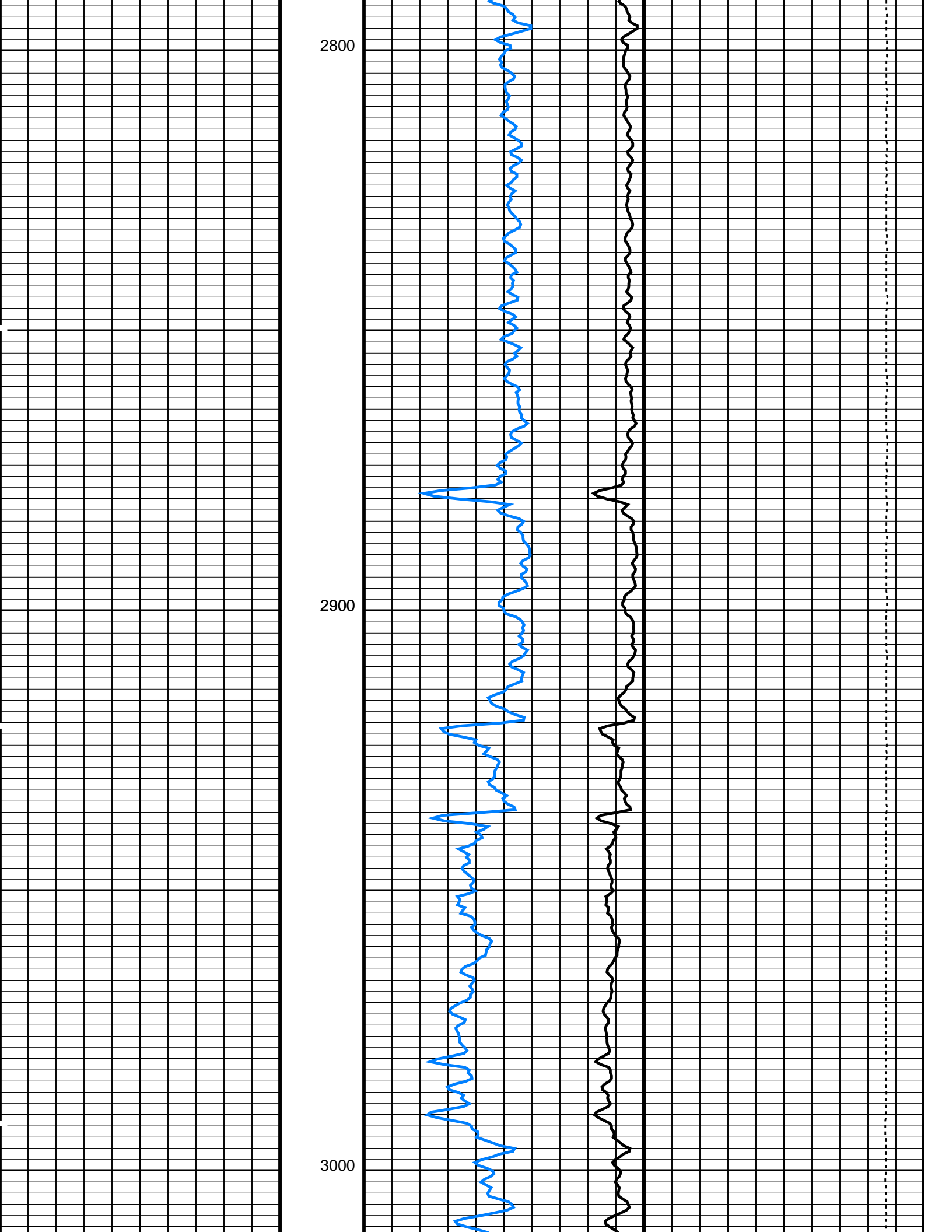


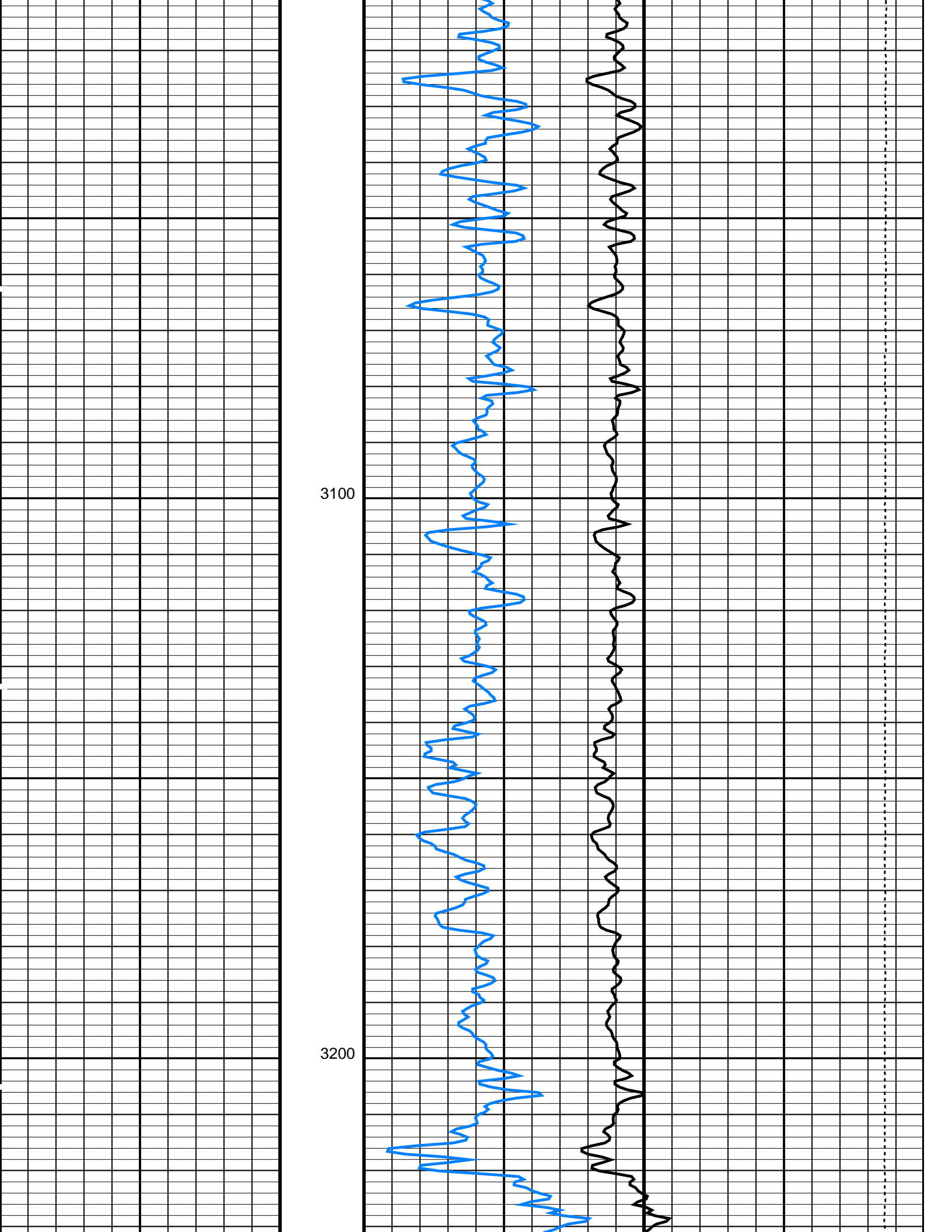


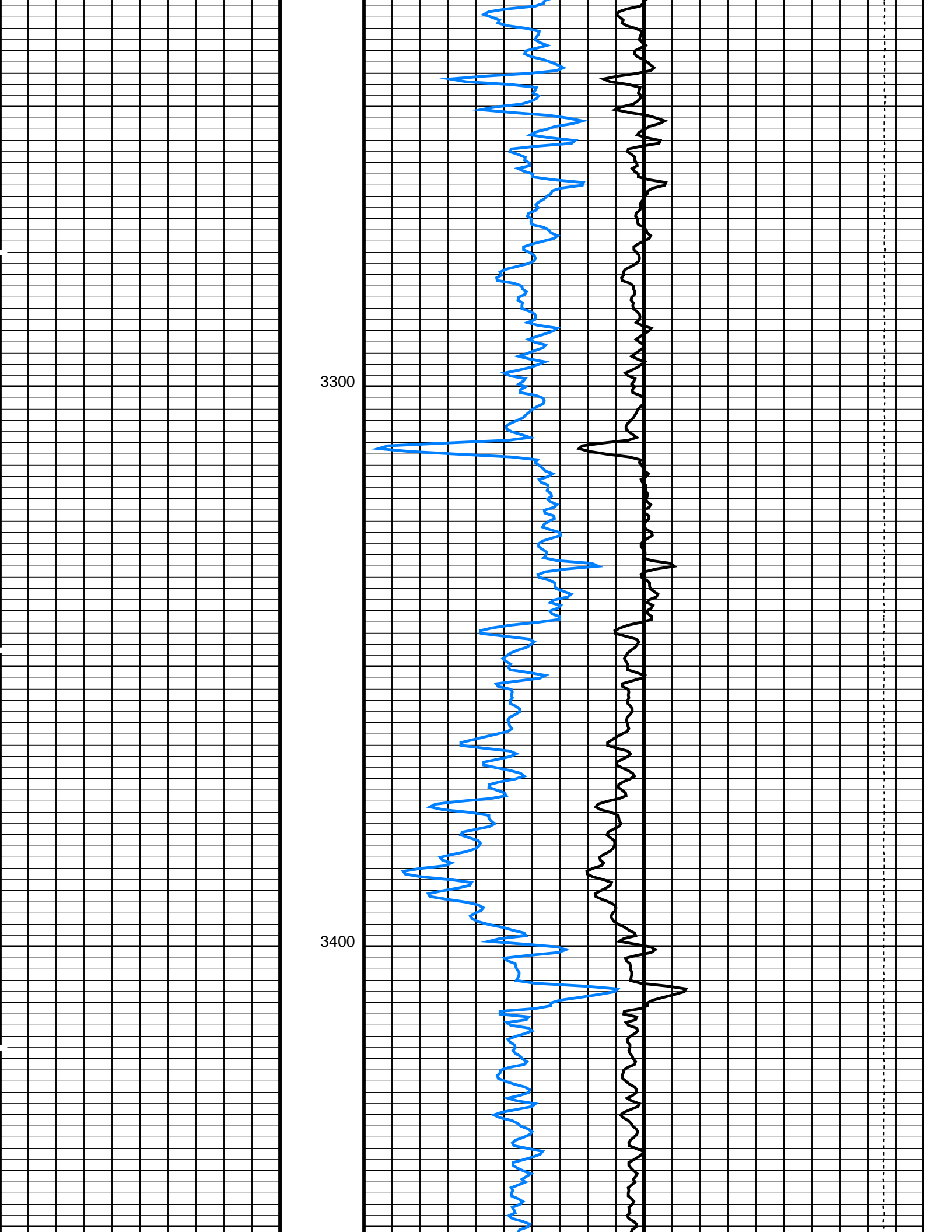


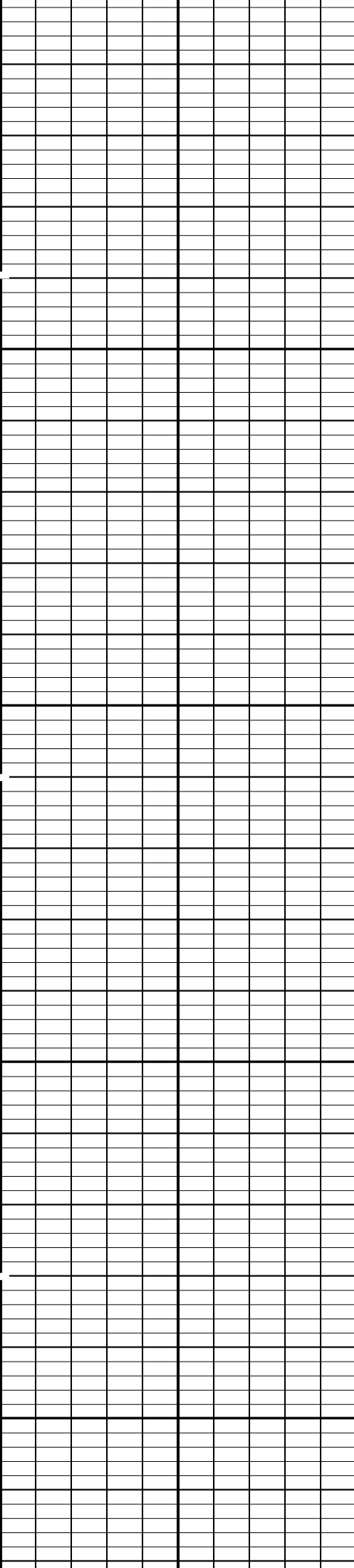






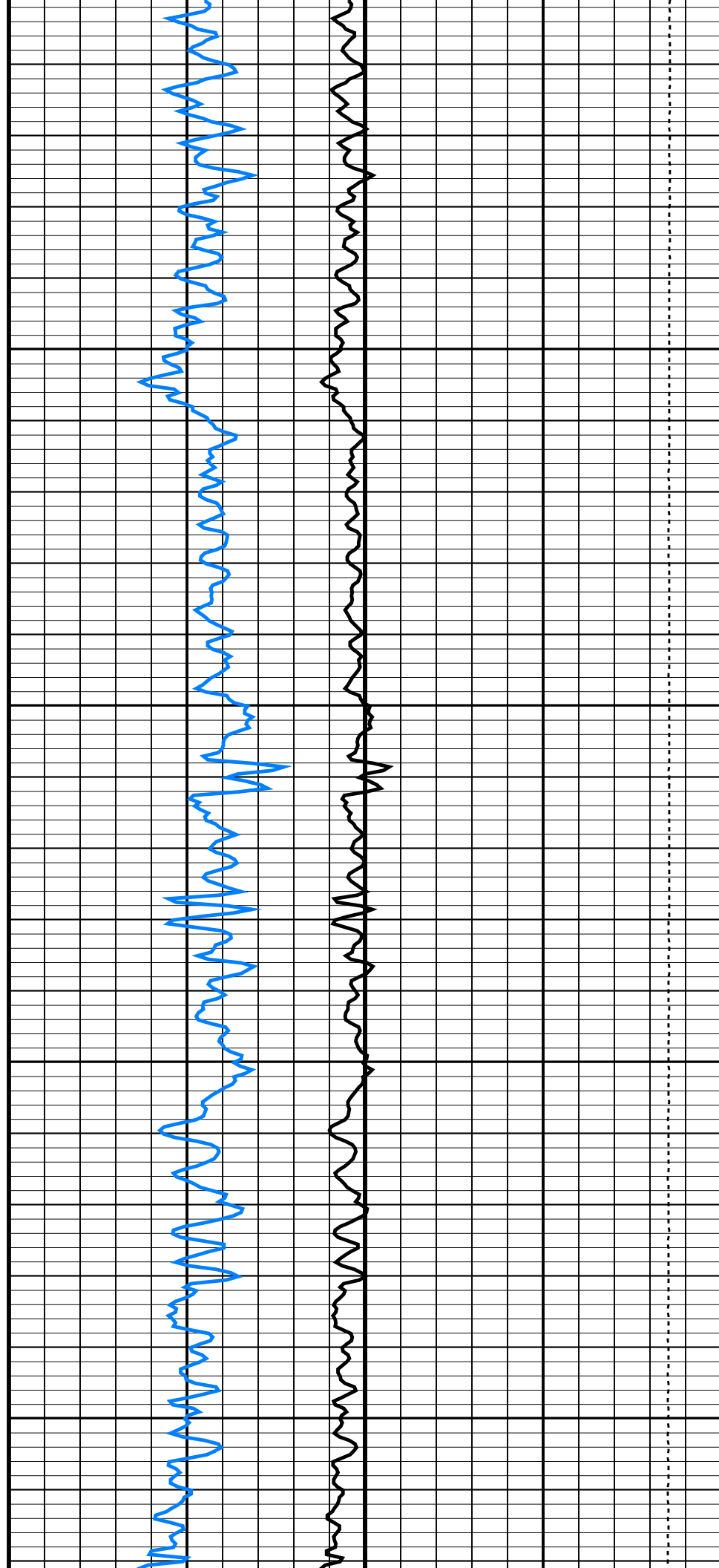


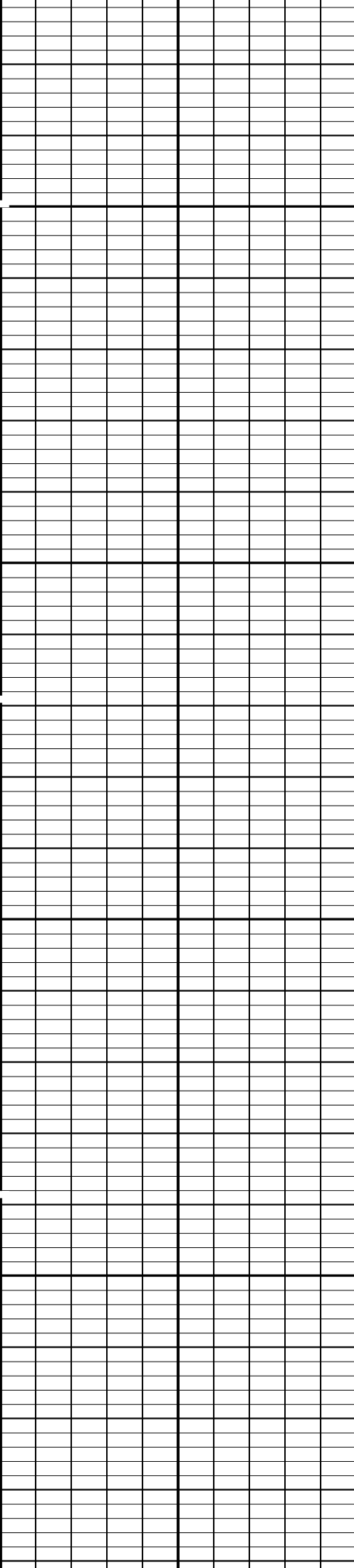




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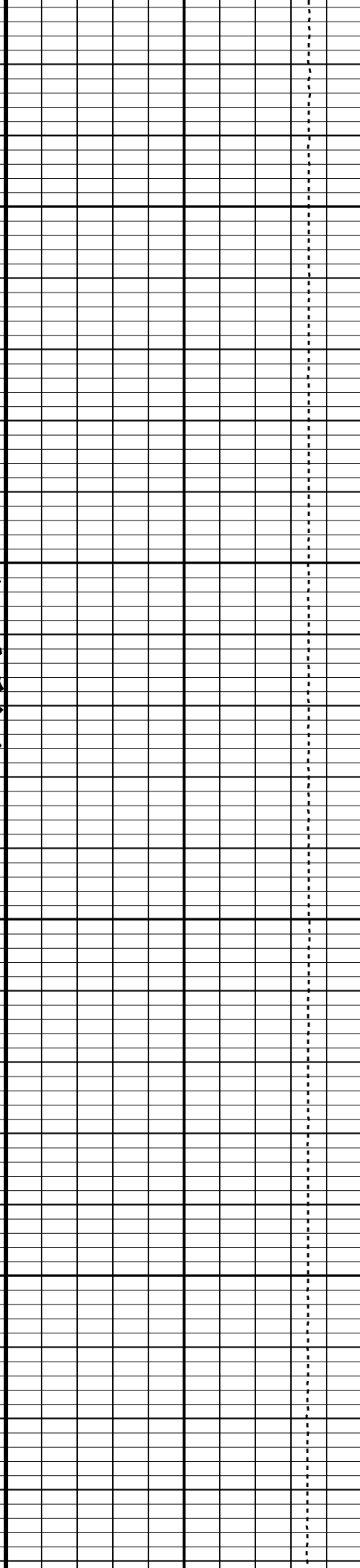
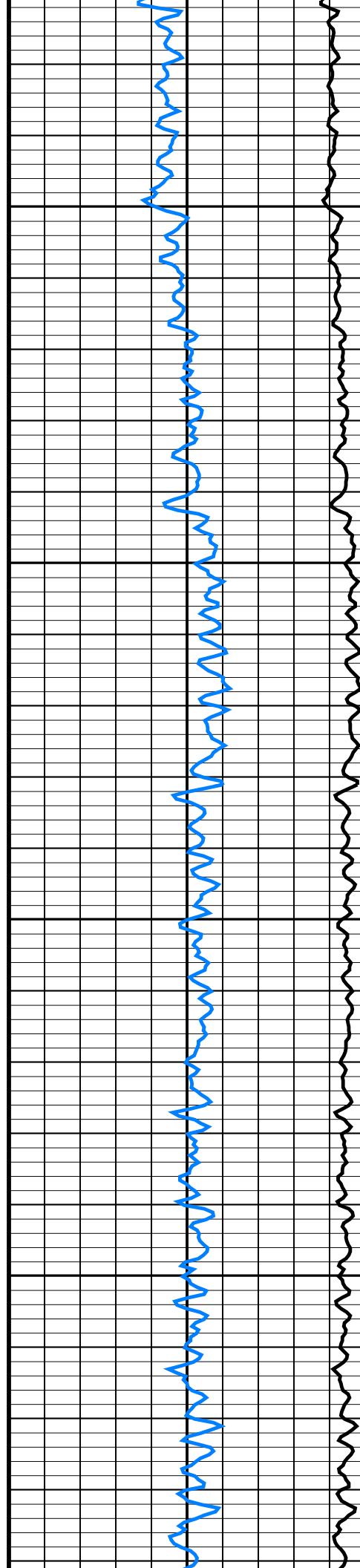
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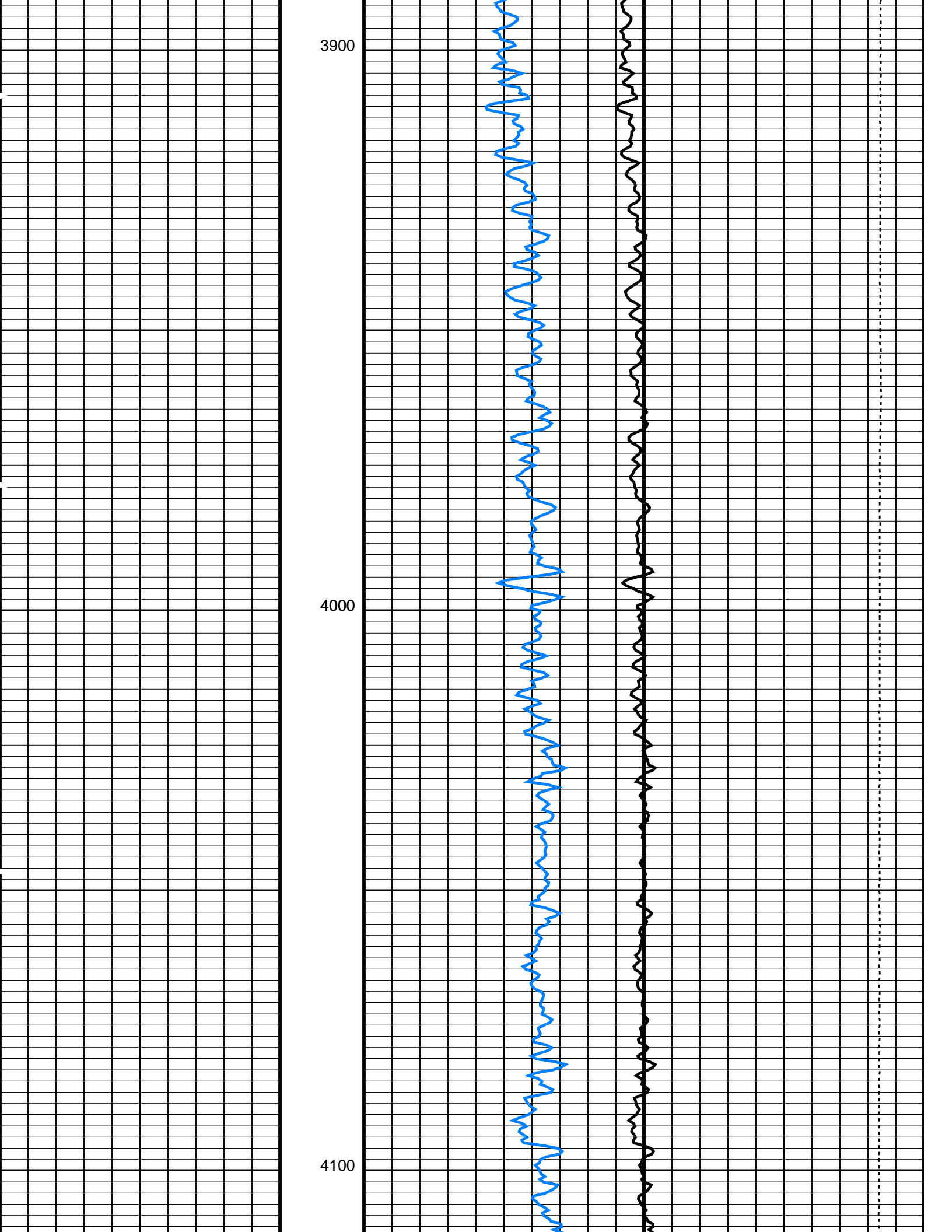


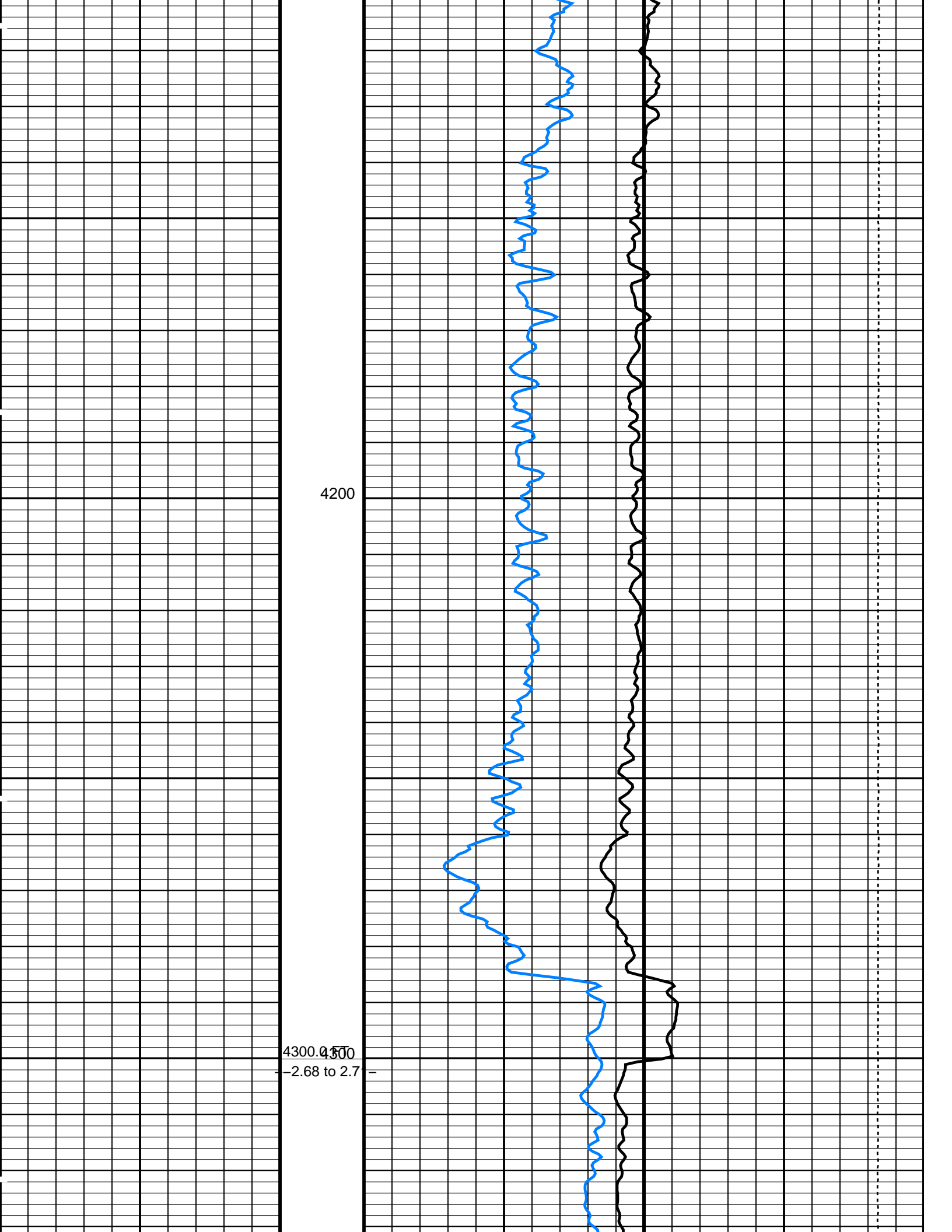


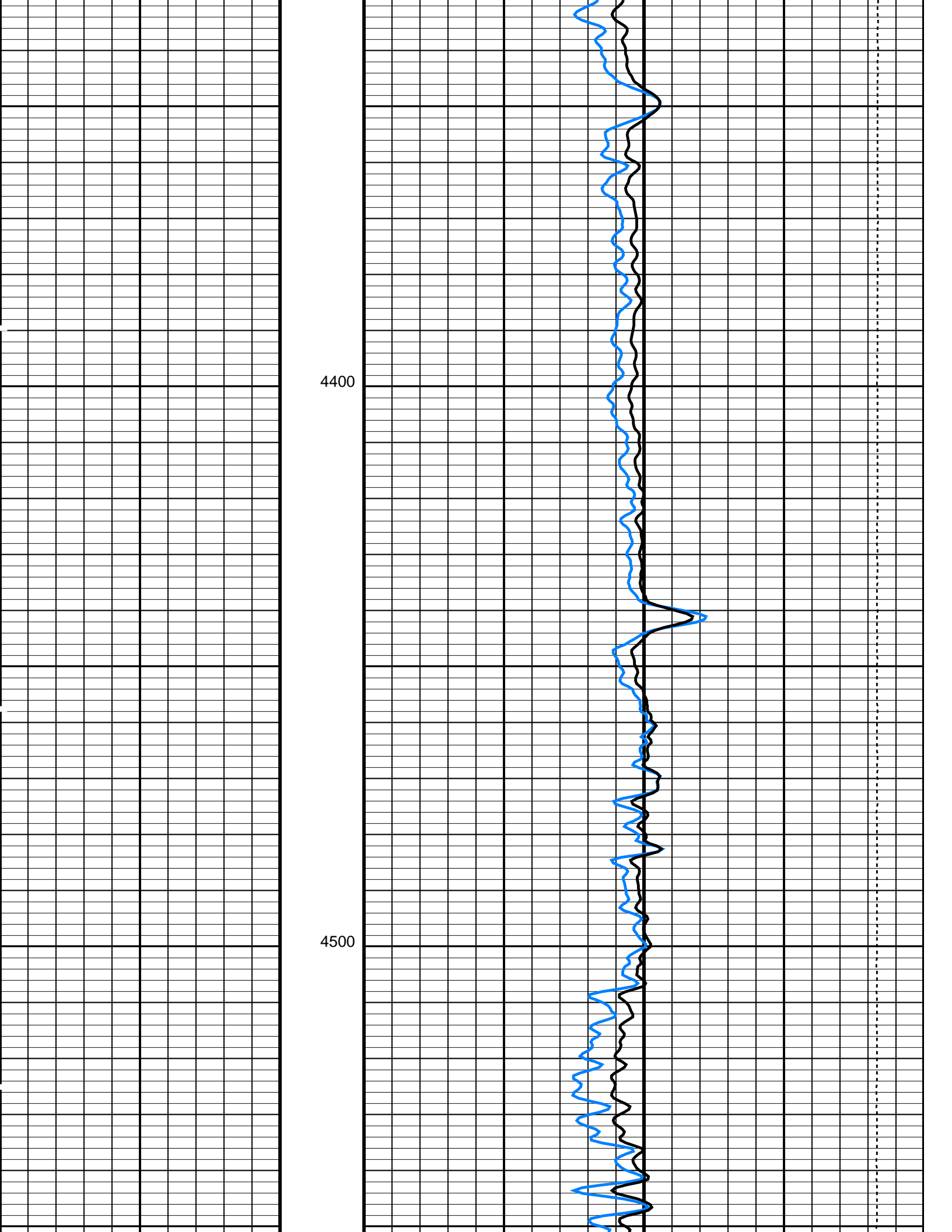
3700

3800

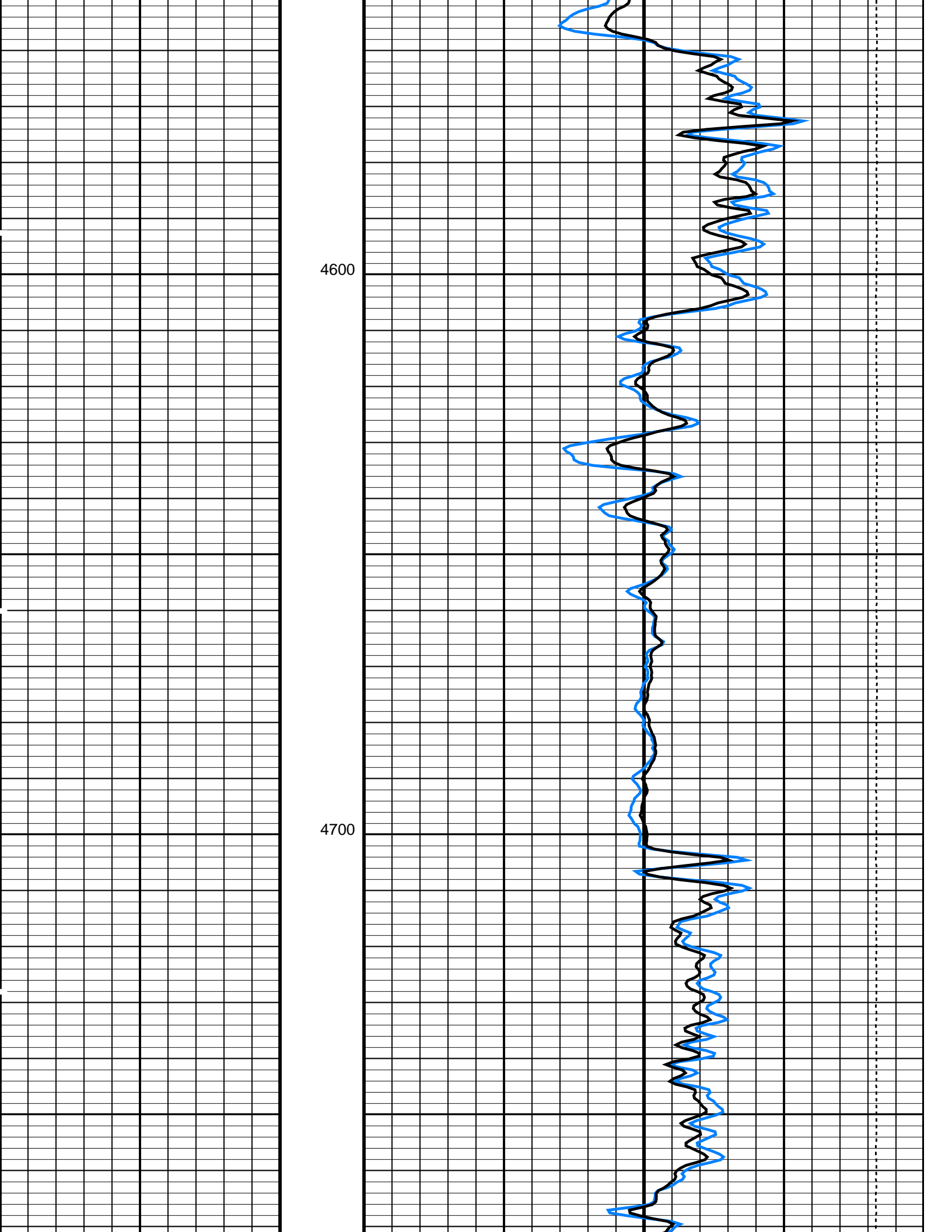


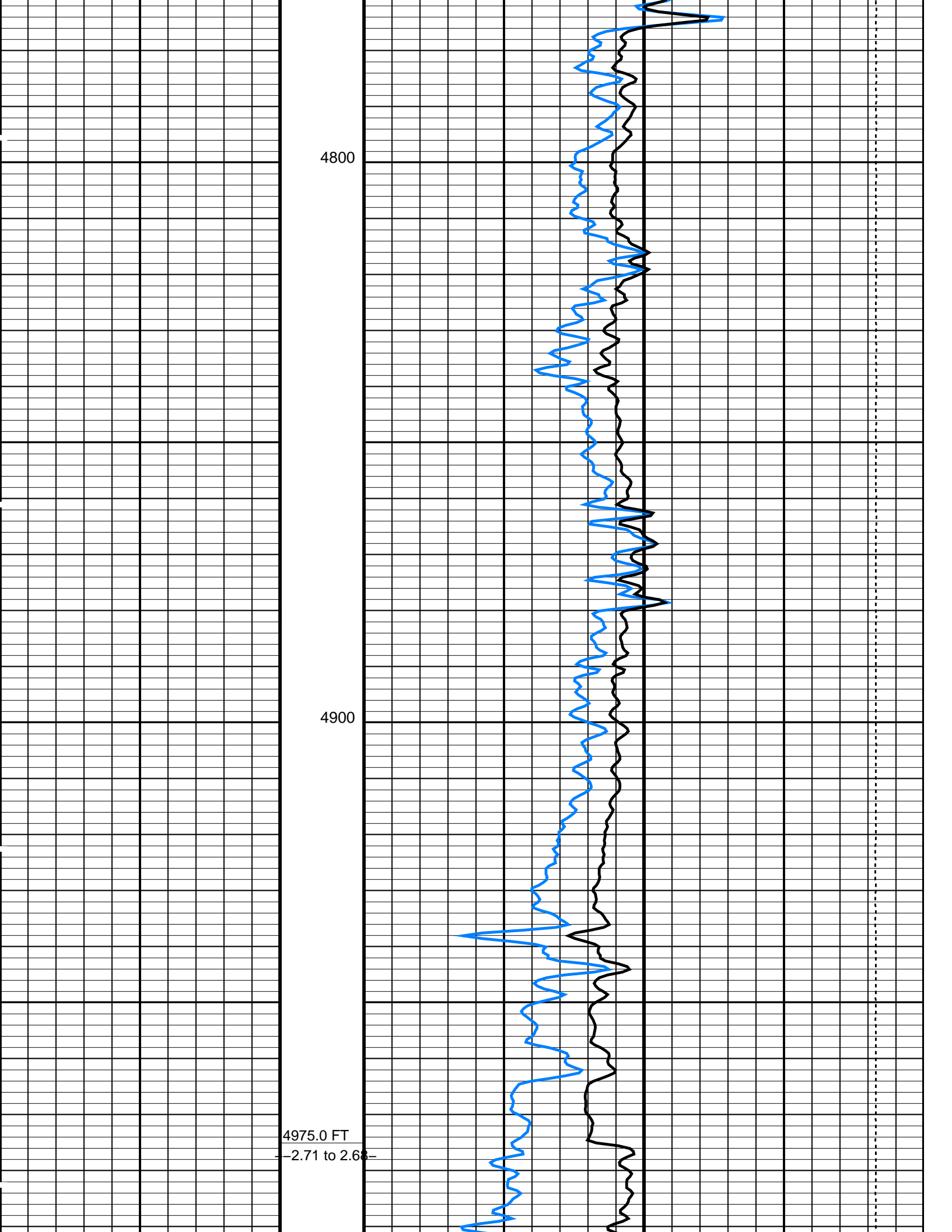


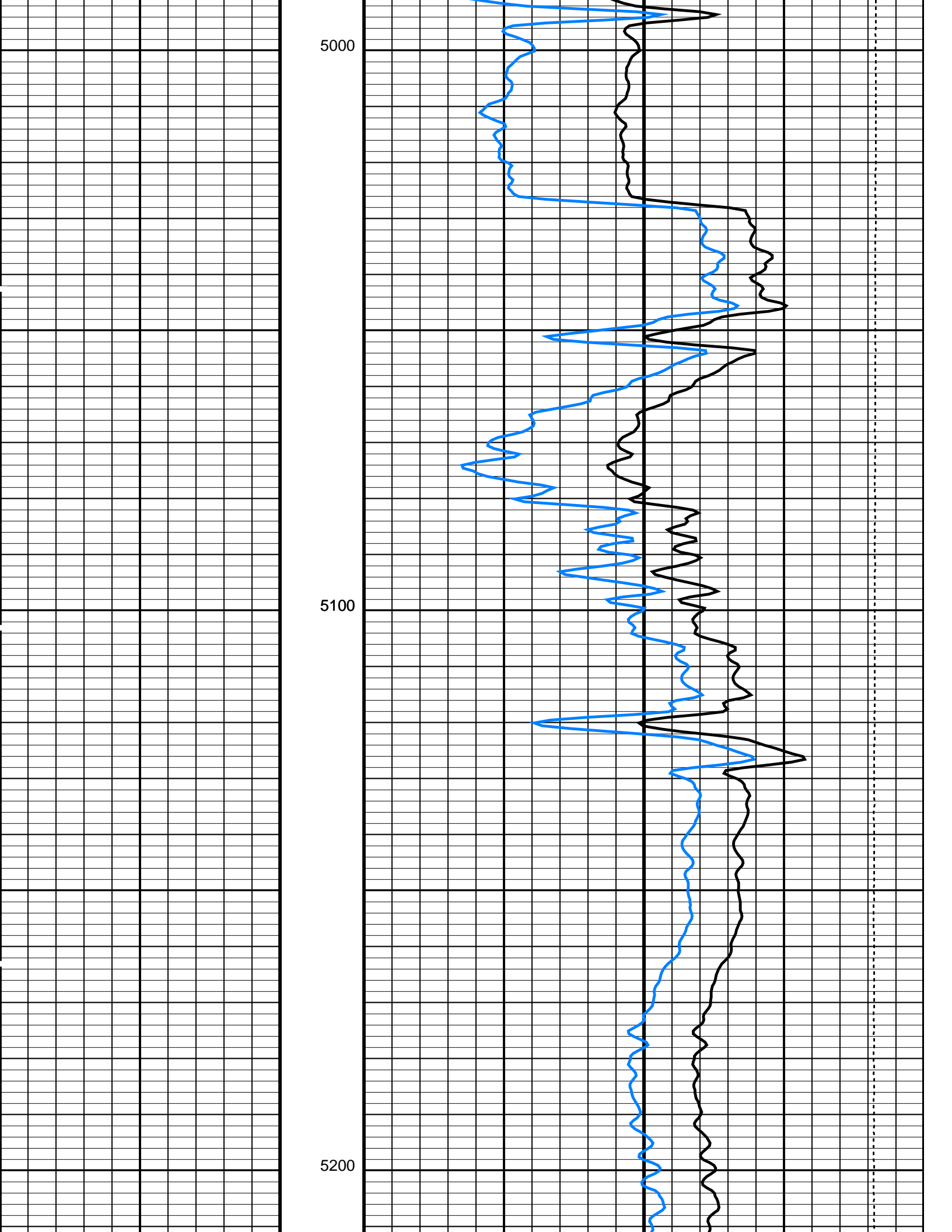


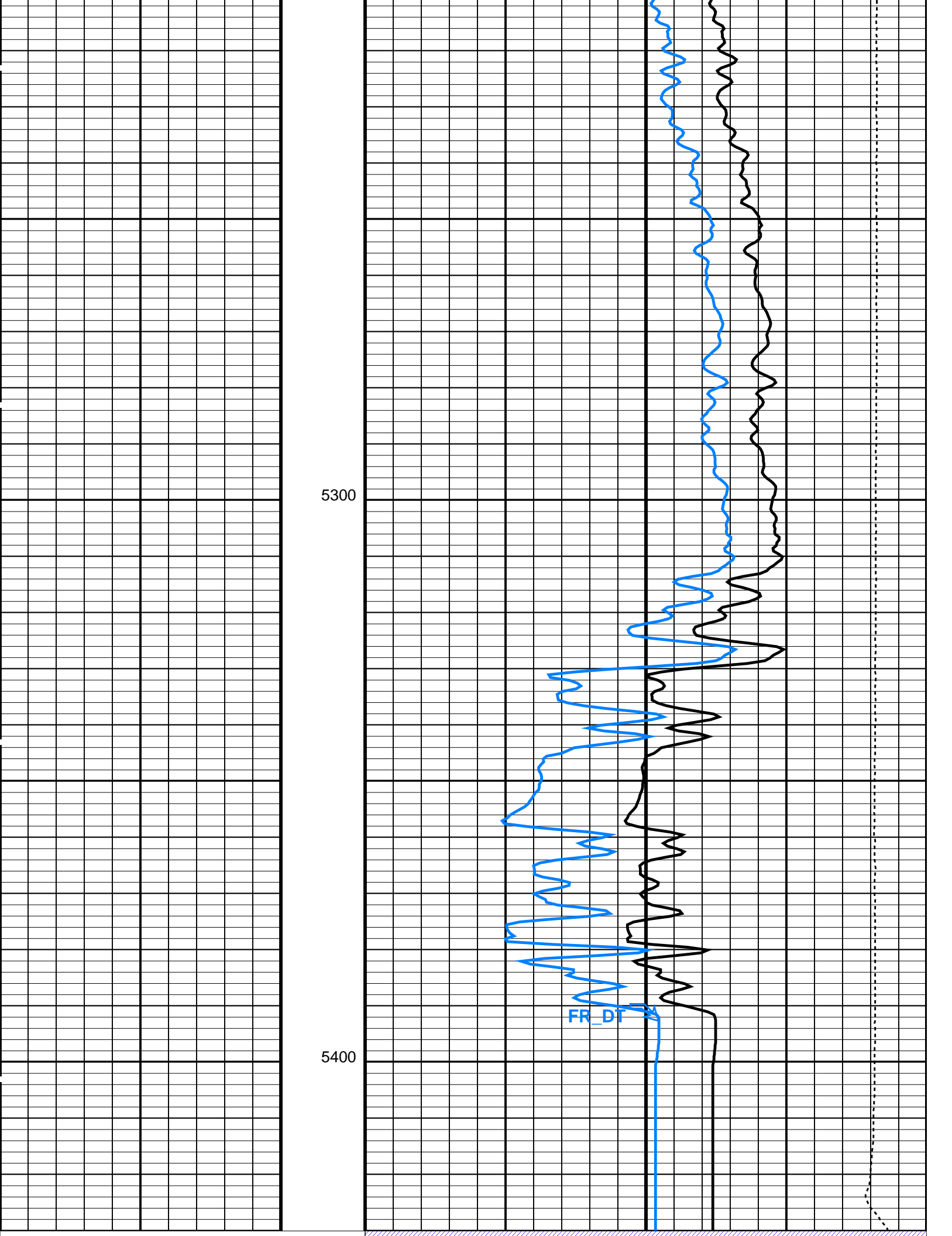












DT BACKUP		
Delta-T (DT)		
140	(US/F)	40
Sonic Porosity (SPHI)		
0.6	(V/V)	0
		Tension (TENS)
		10000 (LBF)
		0

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		

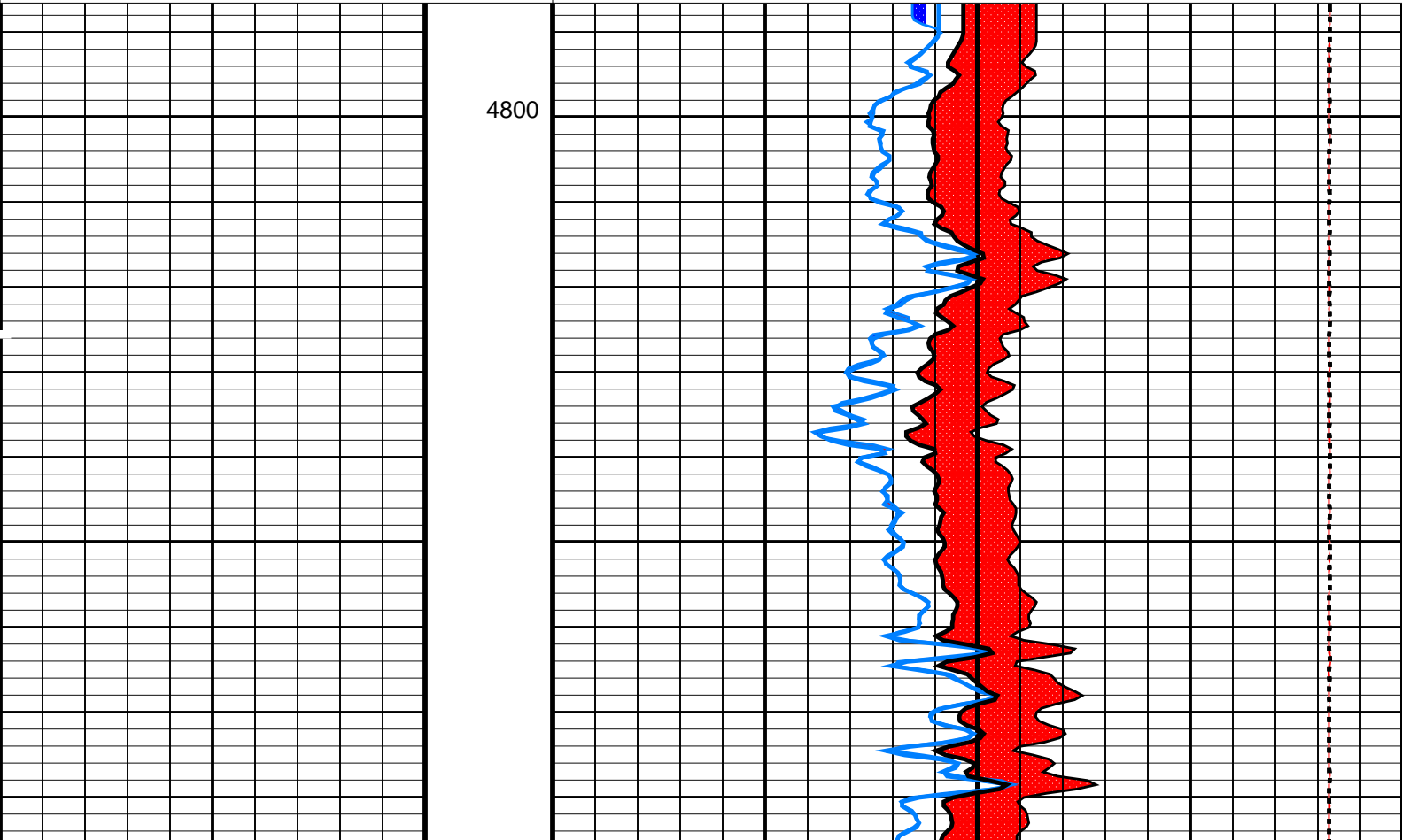
OP System Version: 15C0-309						
MCM						
AIT-H	SRPC-3357-Q2_2007		NGT-C	15C0-309		
DTA-A	SRPC-3357-Q2_2007		DSLT-FTB	15C0-309		
DTC-H	15C0-309					

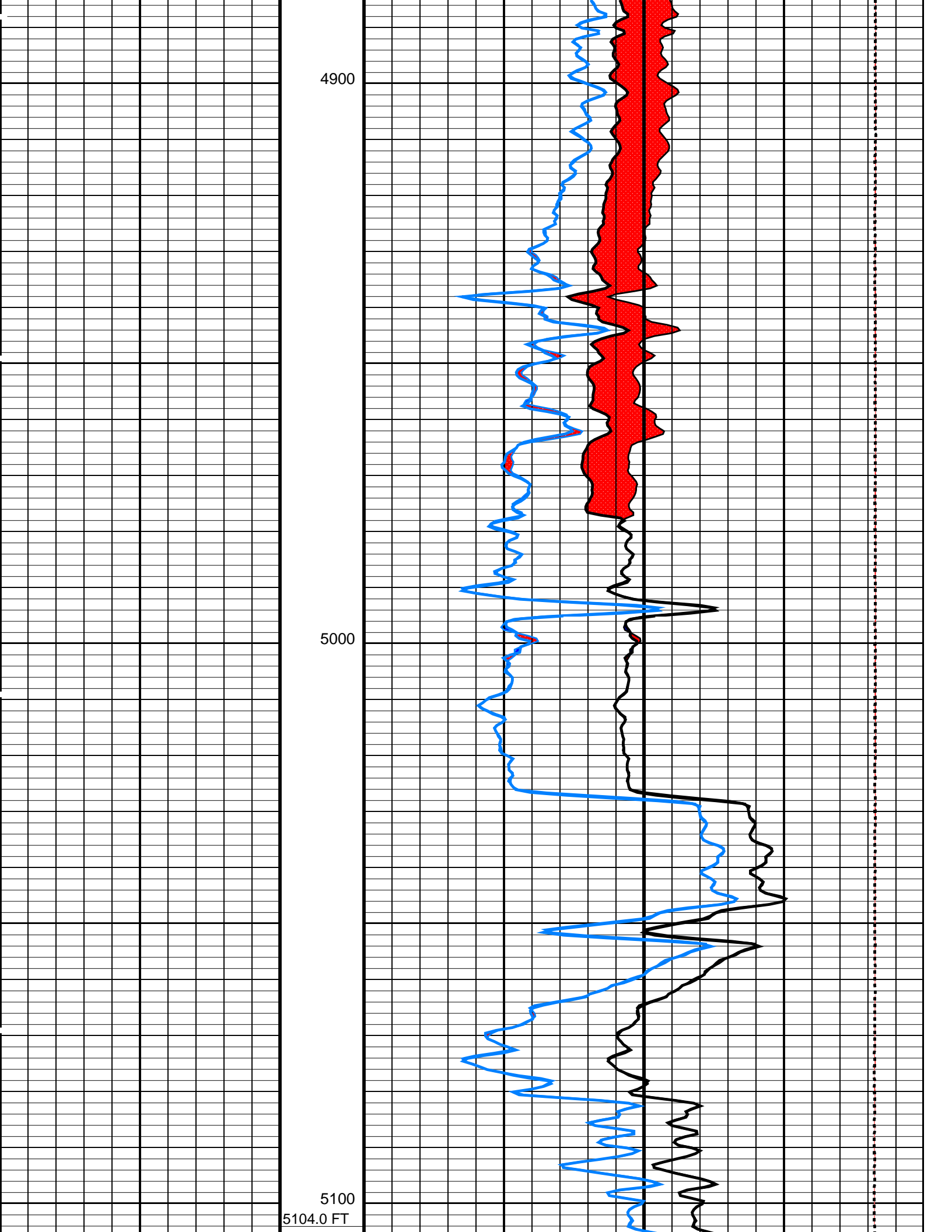
Changed Parameter Summary				
DLIS Name	New Value		Previous Value	Depth & Time
DTM	56	US/F	56 US/F	5430.0 13:28:12
	56	US/F	56 US/F	5104.0 13:28:23

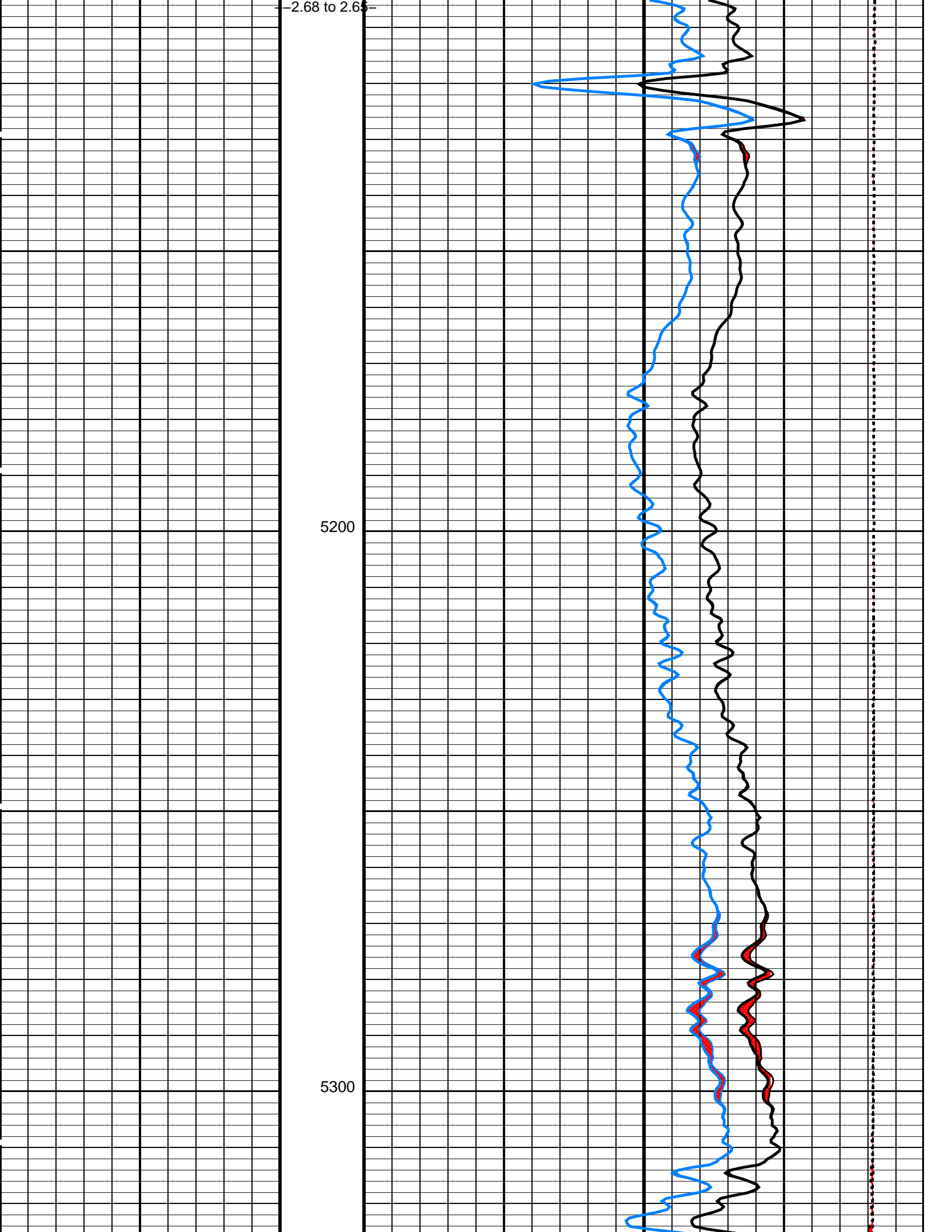
PIP SUMMARY

☐ Time Mark Every 60 S

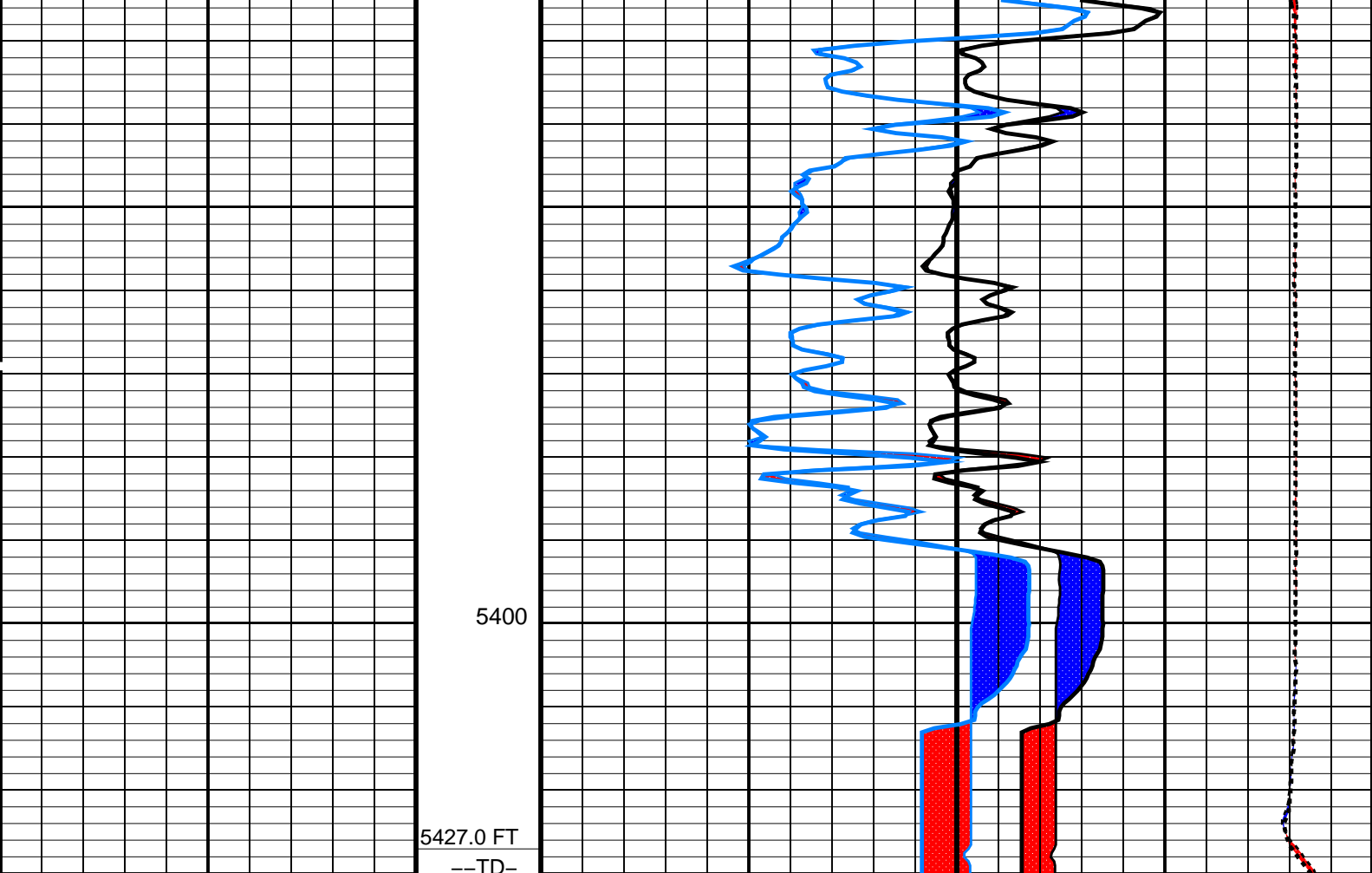
		TENS_REP Curve (TENS_REP)
		10000 (LBF) 0
SPHI_REP Curve (SPHI_REP)		
0.6	(V/V)	0
DT_REP Curve (DT_REP)		
140	(US/F)	40











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

TENS_REP Curve (TENS_REP)		
10000	(LBF)	0

#### PIP SUMMARY

Time Mark Every 60 S

### Parameters

DLIS Name	Description	Value	
DSLTT-FTB: Digitizing Sonic Logging Tool			
	DSLTT Firing Mode	BHC	
	Telemetry Mode	DSLTT_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	DSLTT 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