

Schlumberger

Company: **PETROLEUM RESOURCE MANAGEMENT CORP.**

Well: **SHEEHAN 2 4-2**

Field: **WILDCAT**

County: **MOFFAT**

State: **COLORADO**

Well: SHEEHAN 2 4-2
Field: WILDCAT
County: MOFFAT
State: COLORADO

Field: **WILDCAT**
County: **MOFFAT**
State: **COLORADO**

County: **MOFFAT** State: **COLORADO**

County: MOFFAT Field: WILDCAT Location: SHL: 2082' FNL & 350' FEL Well: SHEEHAN 2 4-2 Company: PETROLEUM RESOURCE MANAGEMENT, INC.			
ARRAY INDUCTION SONIC POROSITY – FORMATION SLOWNESS GAMMA RAY – SPONTANEOUS POTENTIAL			
SHL: 2082' FNL & 350' FEL SECTION 2, TOWNSHIP 10 N., RANGE 89 W. MERIDIAN 6		Elev.: K.B. 8280.00 ft G.L. 8266.00 ft D.F. 8279.00 ft	
Permanent Datum: _____ Log Measured From: _____ Drilling Measured From: _____	GROUND LEVEL KELLY BUSHING KELLY BUSHING	Elev.: 8266.00 ft 14.00 ft above Perm. Datum	
API Serial No. 05-081-07750-00	Section 2	Township 10 NORTH	Range 89 WEST

County:			
Field:			
Location:			
Well:			
Company:			
Log Measured From:	KELLY BUSHING		
API Serial No. 05-081-07750-00	Section 2	Township 10 NORTH	Range 89 WEST

County:			
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Log Measured From:	KELLY BUSHING		
API Serial No. 05-081-07750-00	Section 2	Township 10 NORTH	Range 89 WEST

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API Serial No. 05-081-07750-00	Section 2	Township 10 NORTH	Range 89 WEST

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API Serial No. 05-081-07750-00	Section 2	Township 10 NORTH	Range 89 WEST

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Log Measured From:	KELLY BUSHING		
API Serial No. 05-081-07750-00	Section 2	Township 10 NORTH	Range 89 WEST

SHL: 2082' FNL & 350' FEL	Elev.:	K.B.	8280.00 ft
SECTION 2, TOWNSHIP 10 N., RANGE 89 W.		G.L.	8266.00 ft
MERIDIAN 6		D.F.	8279.00 ft

MERIDIAN 6	D.F. 8279.00 ft
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Elev.:	K.B.	8280.00 ft
	G.L.	8266.00 ft
	D.F.	8279.00 ft

D.F.	8279.00 ft
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Permanent Datum:	GROUND LEVEL	Elev.: 8266.00 ft
Log Measured From:	KELLY BUSHING	14.00 ft above Perm. Datum
Drilling Measured From:	KELLY BUSHING	

Drilling Measured From: KELLY BUSHING

Elev.: 8266.00 ft

14.00 ft above Perm. Datum

API Serial No. 05-081-07750-00	Section 2	Township 10 NORTH	Range 89 WEST
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[illegible]

Section 2	Township 10 NORTH	Range 89 WEST
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Township 10 NORTH	Range 89 WEST
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Range
89 WEST

Downloaded from <http://ajphaphysiol.org/> on September 11, 2012

[illegible]

Logging Date			19-Nov-2012						
Run Number			ONE						
Depth Driller			7100 ft						
Schlumberger Depth			7003 ft						
Bottom Log Interval			6995 ft						
Top Log Interval			991 ft						
Casing Driller Size @ Depth			9.625 in @ 995 ft						
Casing Schlumberger			991 ft						
Bit Size			8.750 in						
Type Fluid In Hole			WATER BASED MUD						
Density		Viscosity	8.9 lbm/gal	56 s					
Fluid Loss		PH	7.8 cm3	9					
Source Of Sample			CIRCULATION TANK						
RM @ Measured Temperature			0.721 ohm.m @ 54 degF						
RMF @ Measured Temperature			0.541 ohm.m @ 54 degF						
RMC @ Measured Temperature			1.082 ohm.m @ 54 degF						
Source RMF		RMC	CALCULATED	CALCULATED					
RM @ MRT	RMF @ MRT	@	@	@					
Maximum Recorded Temperatures									
Circulation Stopped		Time	19-Nov-2012	0:50					
Logger On Bottom		Time	19-Nov-2012	11:54					
Unit Number	Location	2271	ROCK SPRINGS, WY						
Recorded By			MIKE MCMAHON						
Witnessed By			JOHN CARMONY, AL HARTSE						
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:	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
1. THIS IS THE FIRST RUN IN HOLE	
2. TOOLS RUN AS PER TOOL SKETCH	
3. MATRIX = SANDSTONE, MATRIX SLOWNESS = 56 uS/ft	
4. WASHOUTS ADVERSELY AFFECT LOG QUALITY	
5. WELL LOCATION: 40.852626 DEGREES N., 107.336557 DEGREES W.	
6. REPEAT PASS NOT DONE AT CLIENT'S REQUEST	
7. 5% KCL. 10% LOST CIRCULATION MATERIAL IN DRILLING MUD	

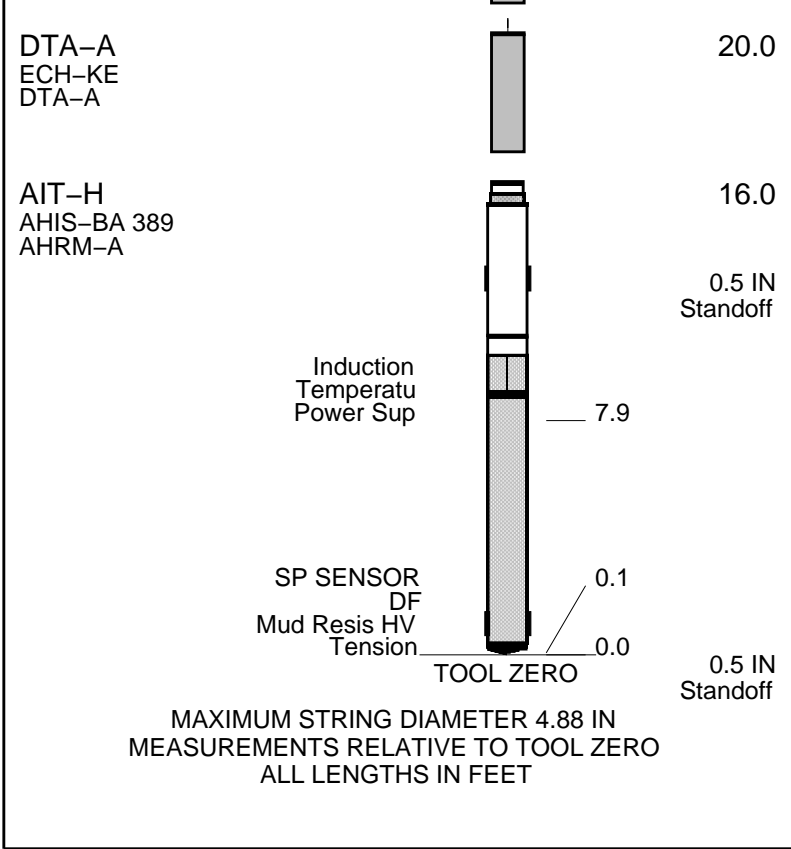
8. SONIC TOOL CENTRALIZED USING THREE CMEZ'S	
9. DRLLER'S TD NOT REACHED DUE TO SUSPECTED FILL	
YOUR CREW TODAY: R. YODER, J. MOSER, M. MCMAHON	
THANK YOU FOR LOGGING WITH SCHLUMBERGER WIRELINE	

RUN 1			RUN 2		
SERVICE ORDER #:		BD24-00178	SERVICE ORDER #:		
PROGRAM VERSION:		18C0-147	PROGRAM VERSION:		
FLUID LEVEL:		0 ft	FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION					
RUN 1			RUN 2		

SURFACE EQUIPMENT	
GSR-U/Y WITM (DTS)-A	

DOWNHOLE EQUIPMENT	
LEH-QT LEH-QT	54.0
DTC-H ECH-KC DTCH0-A DTCH1-A	51.1
SGT-N SGH-K SGC-TB SGD-TAB	48.1
DSLT-FTB DSLCL-B ECH-KH 8635 SLS-EJ 8033	42.6
USN UHN USF UHF	30.2 29.4 29.2
LSF LHF LHN LSN	26.4 26.2 25.4
DSLT Aux.	22.0
AH-107	22.0



Schlumberger

MAIN PASS

5" = 100'

MAXIS Field Log

Input DLIS Files

DEFAULT	AIT_SONIC_010LUP	FN:14	PRODUCER	19-Nov-2012 12:54	7014.0 FT	51.5 FT
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Output DLIS Files

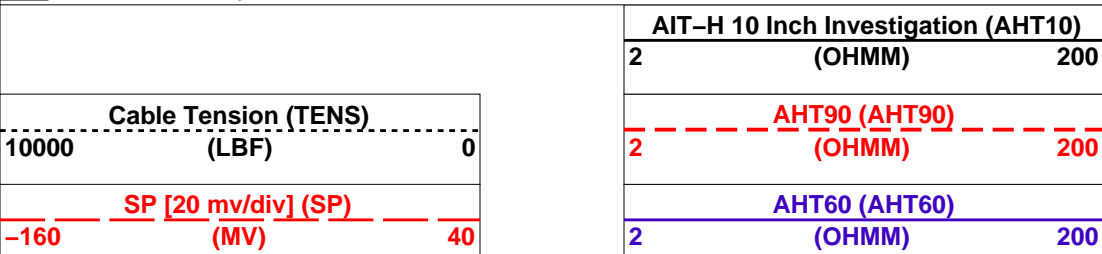
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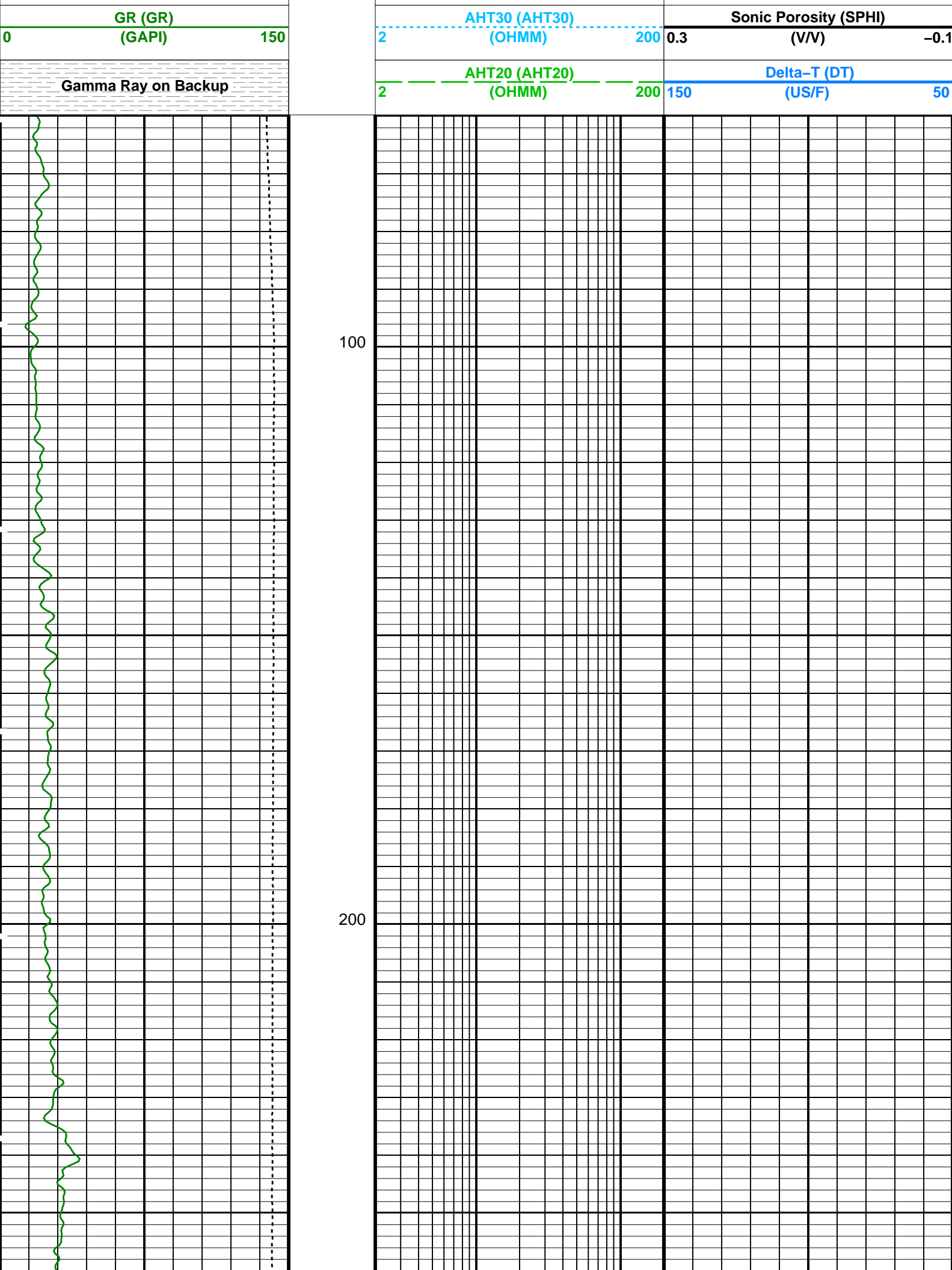
OP System Version: 18C0-147

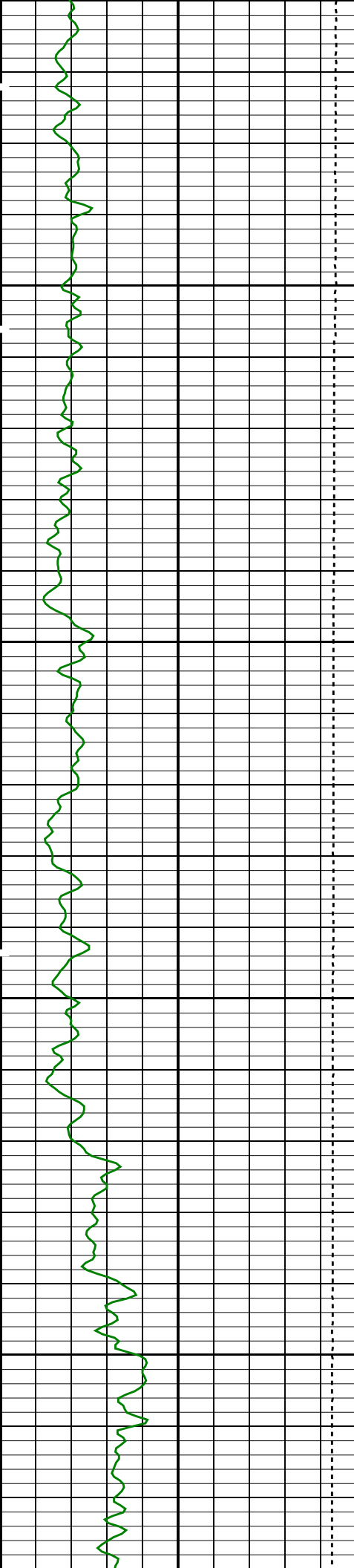
AIT-H	18C0-147	DTA-A	18C0-147
DSL-FTB	18C0-147	SGT-N	18C0-147
DTC-H	18C0-147		

PIP SUMMARY

Time Mark Every 60 S

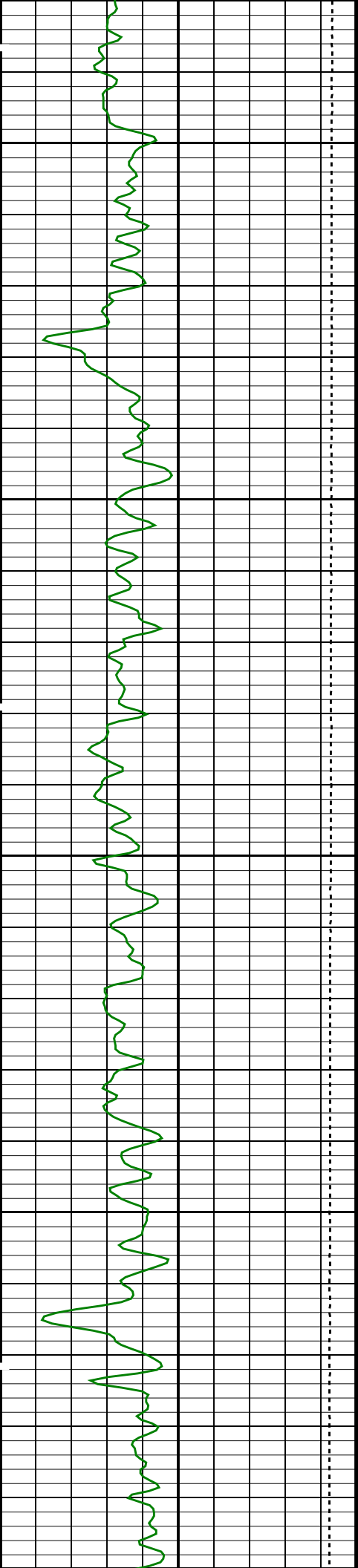






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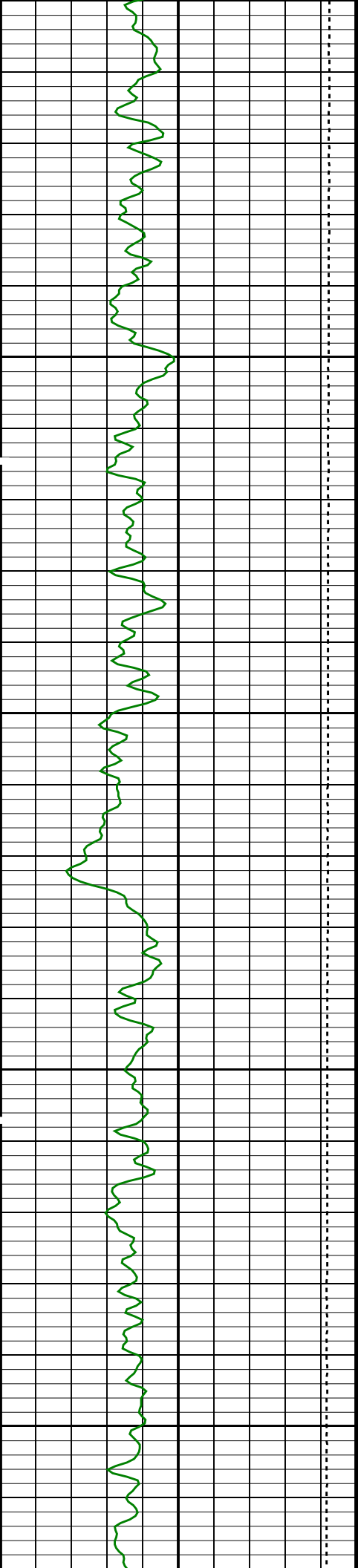
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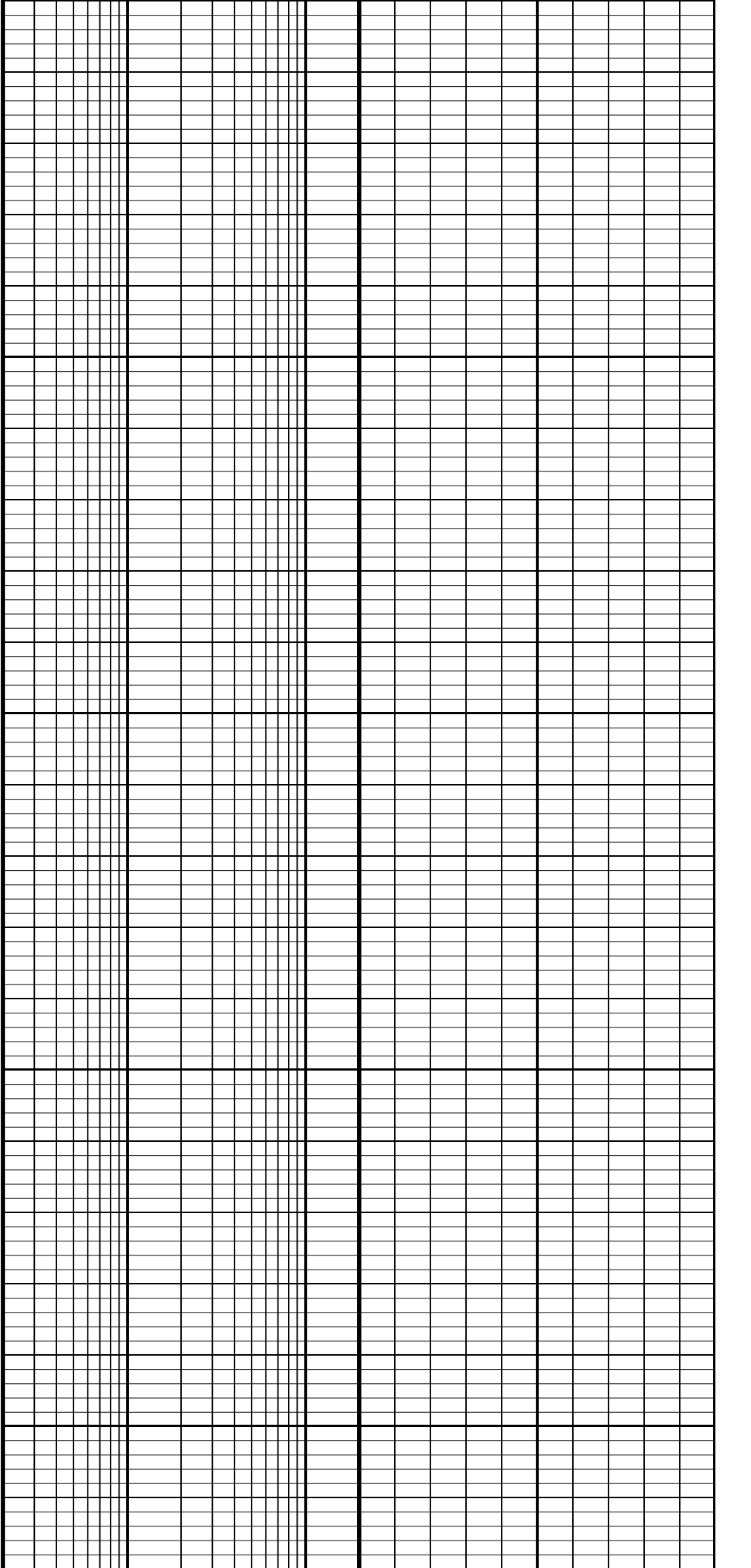
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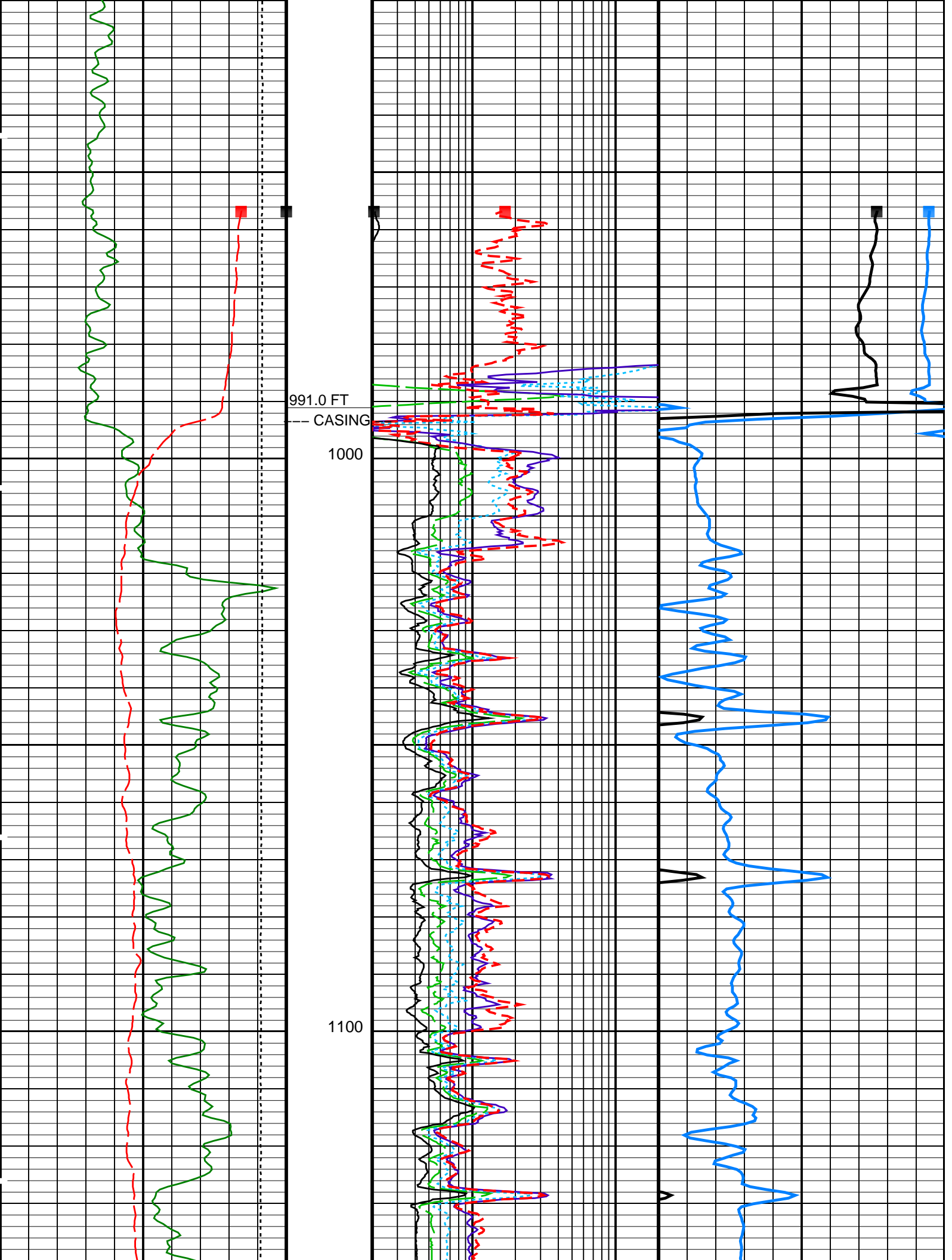
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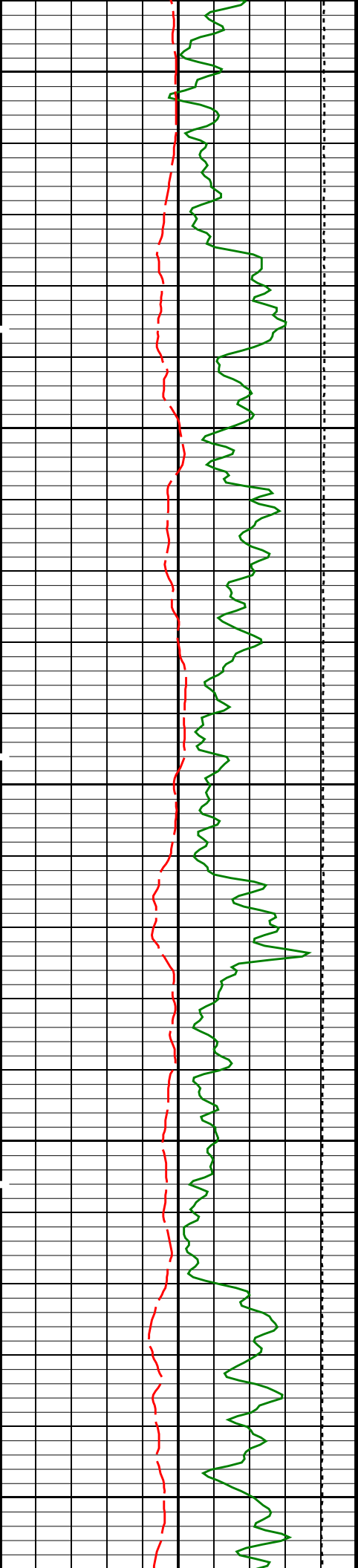


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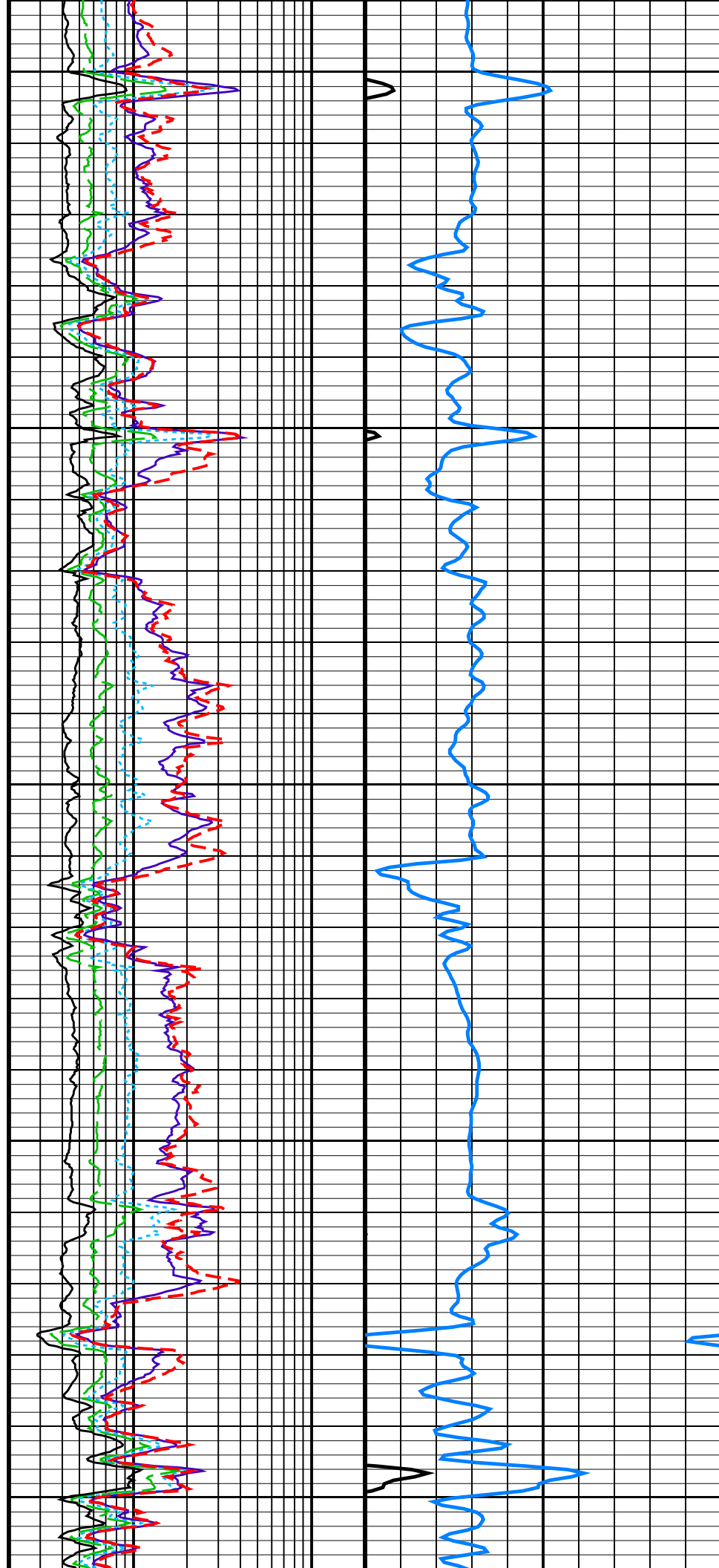


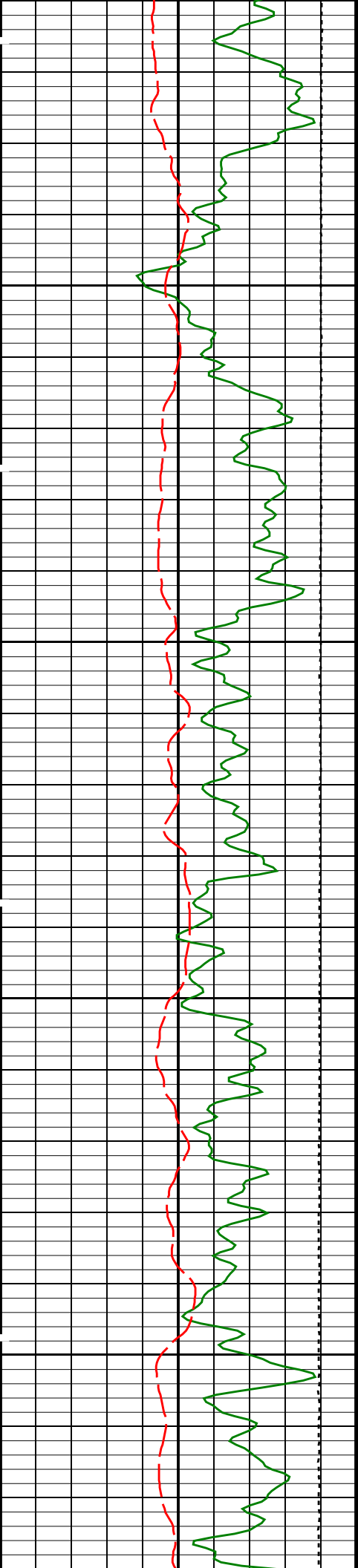




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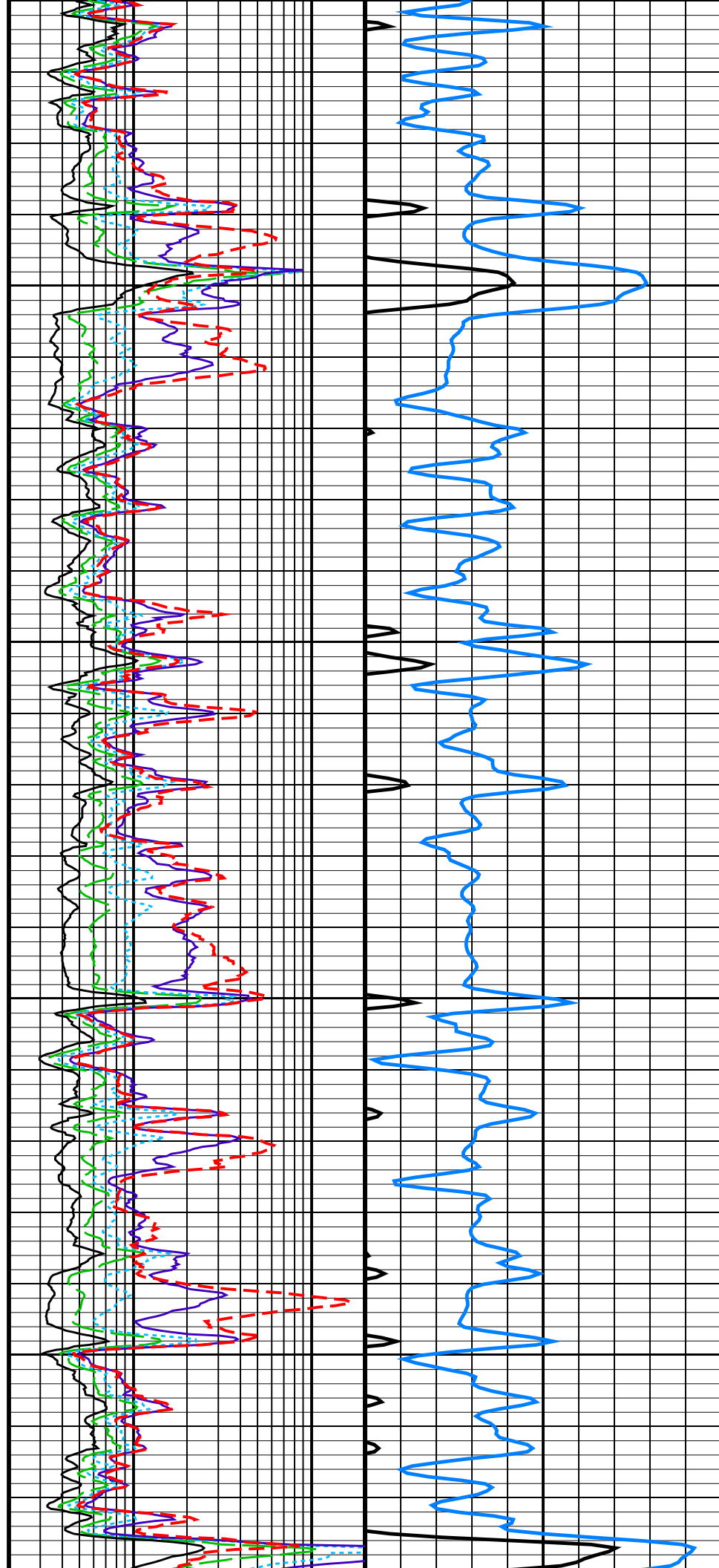
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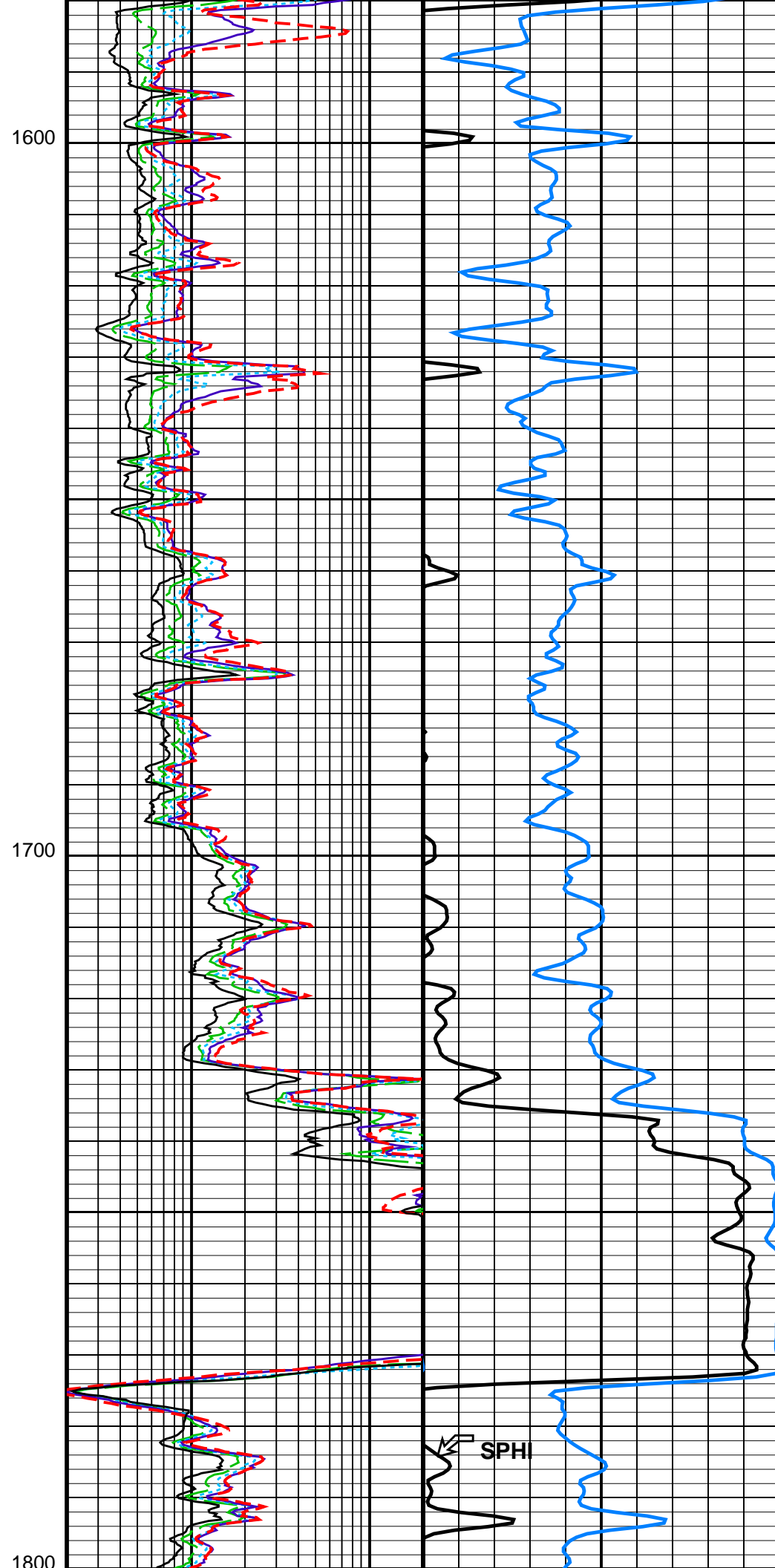
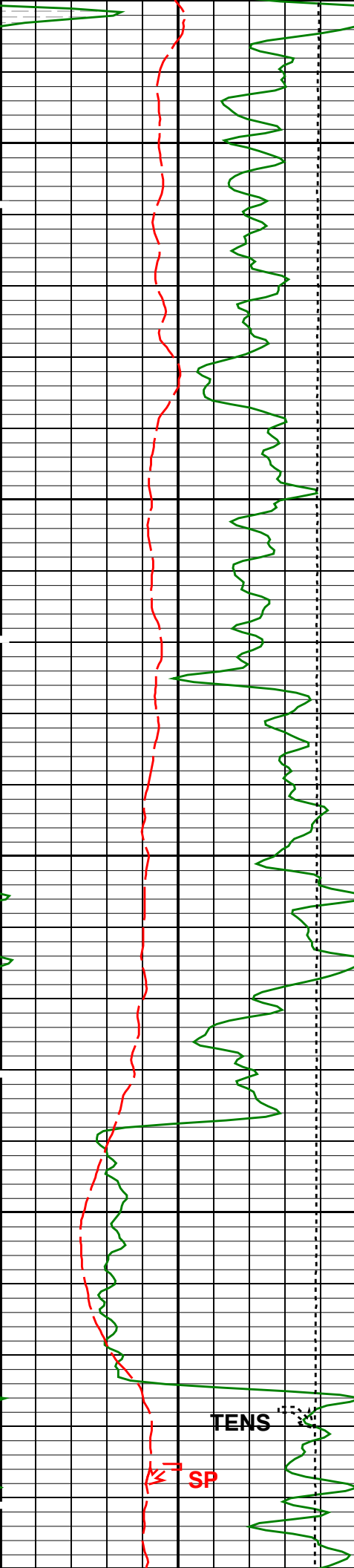


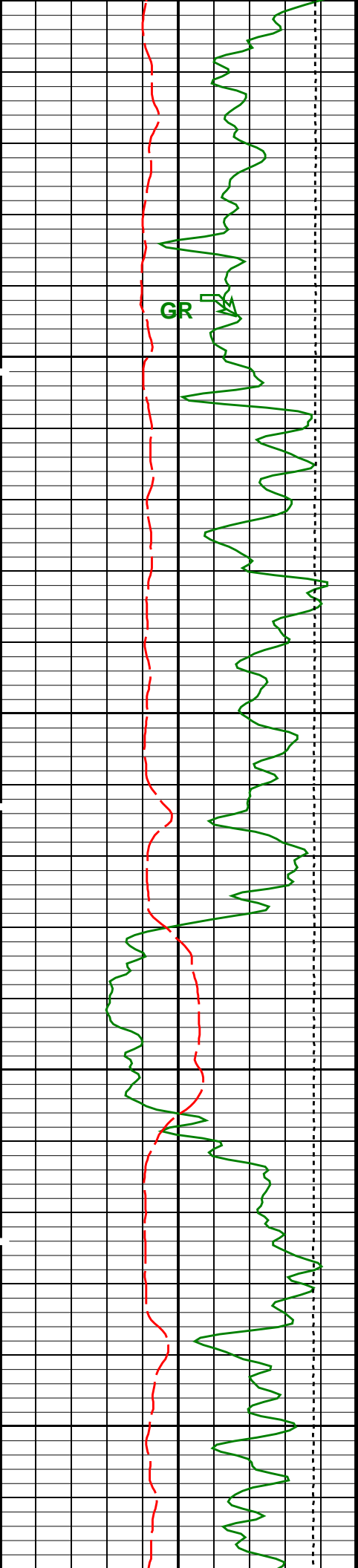


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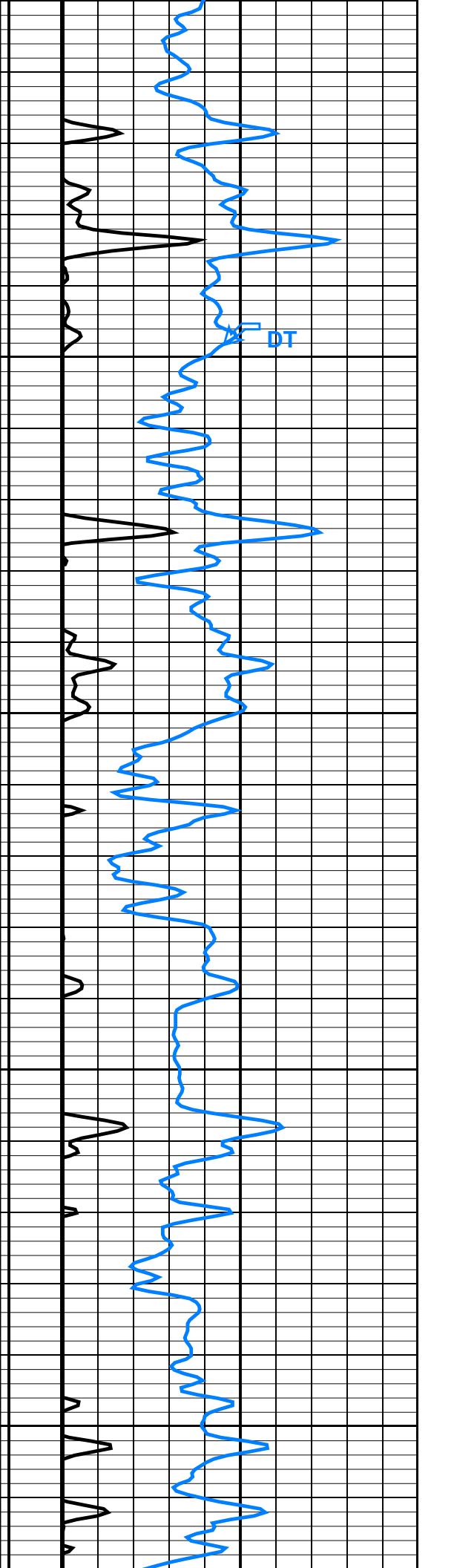
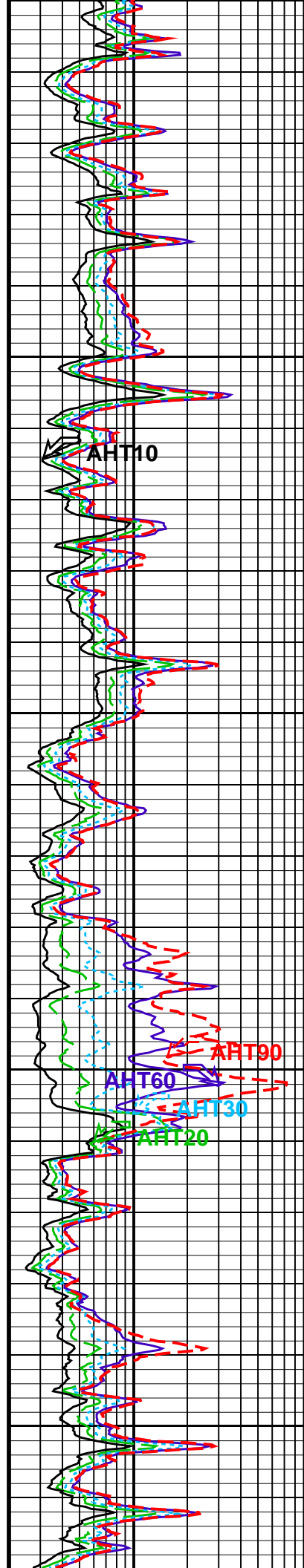
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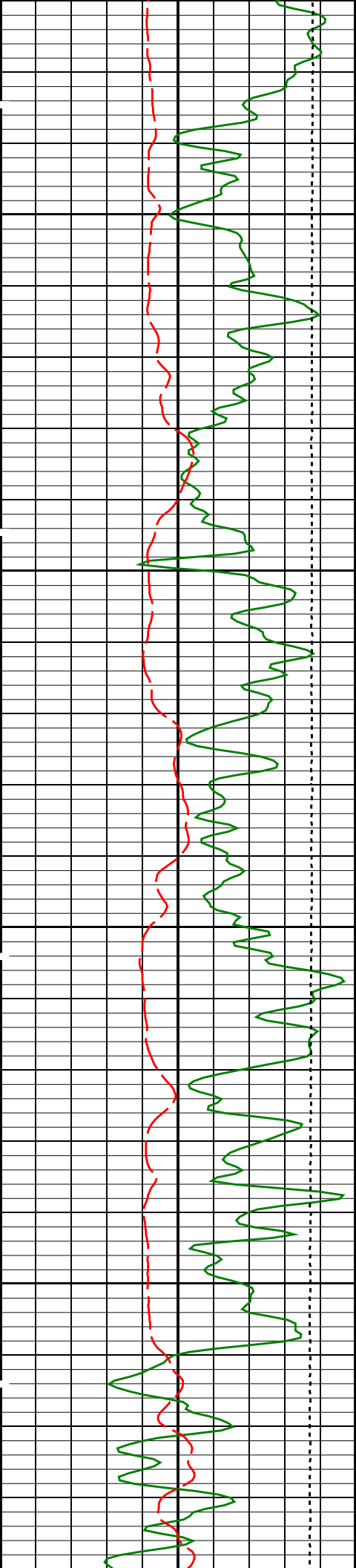






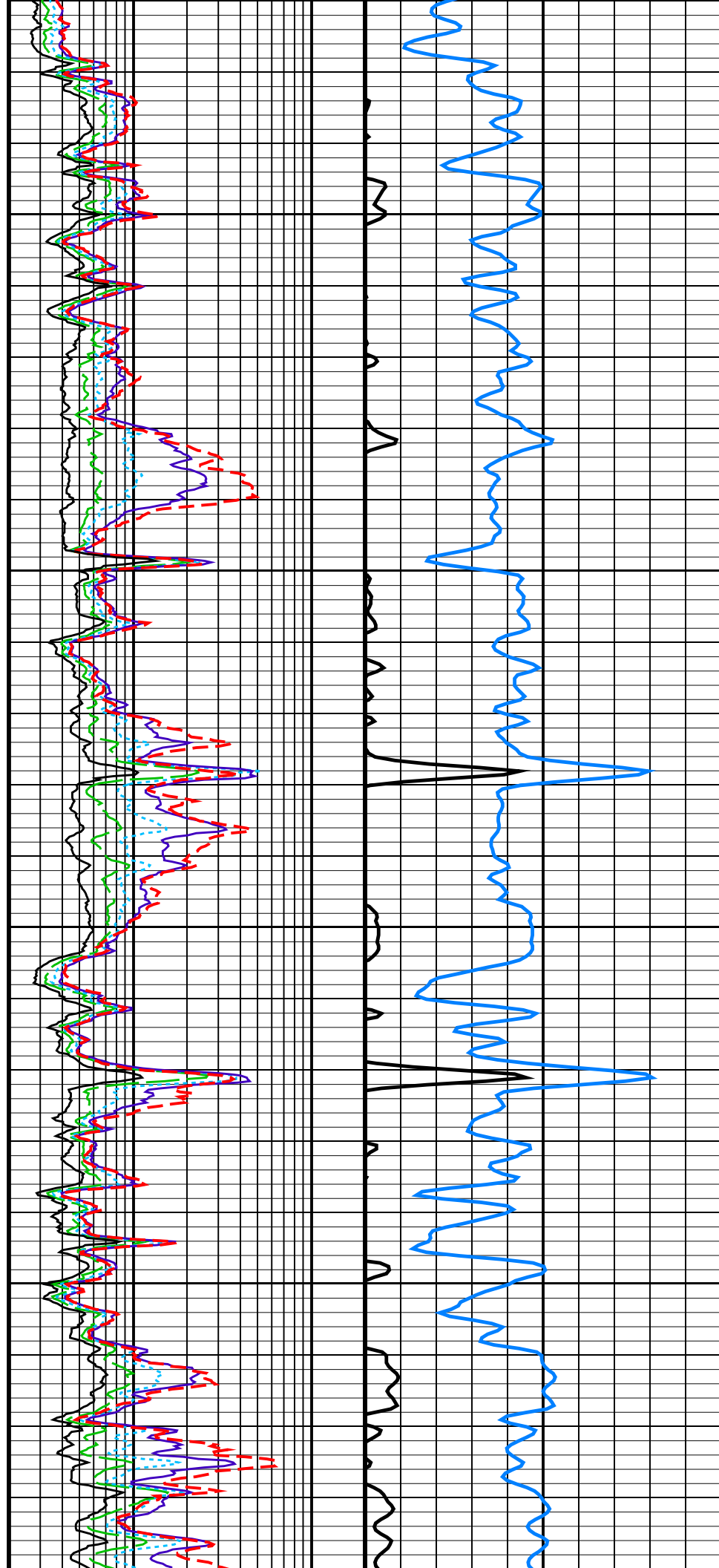
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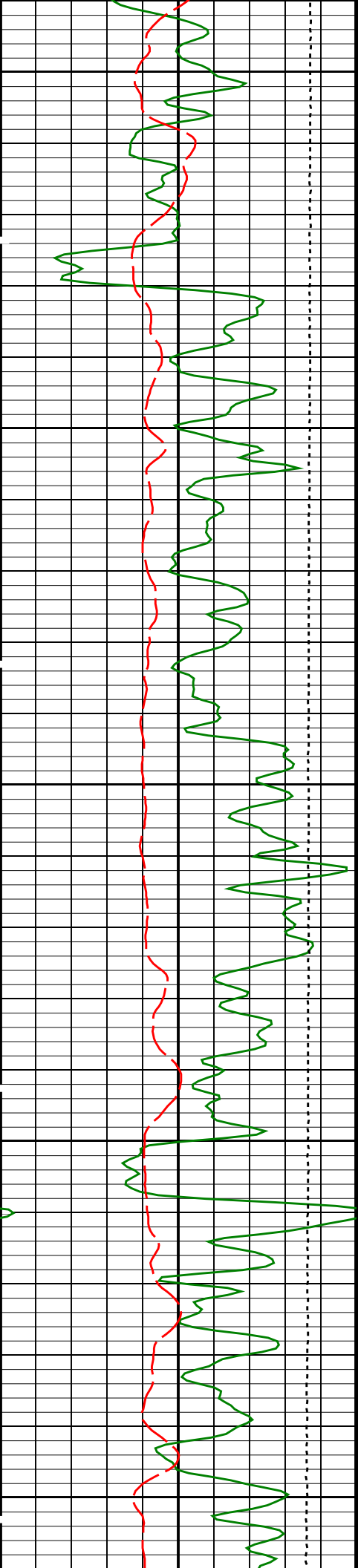




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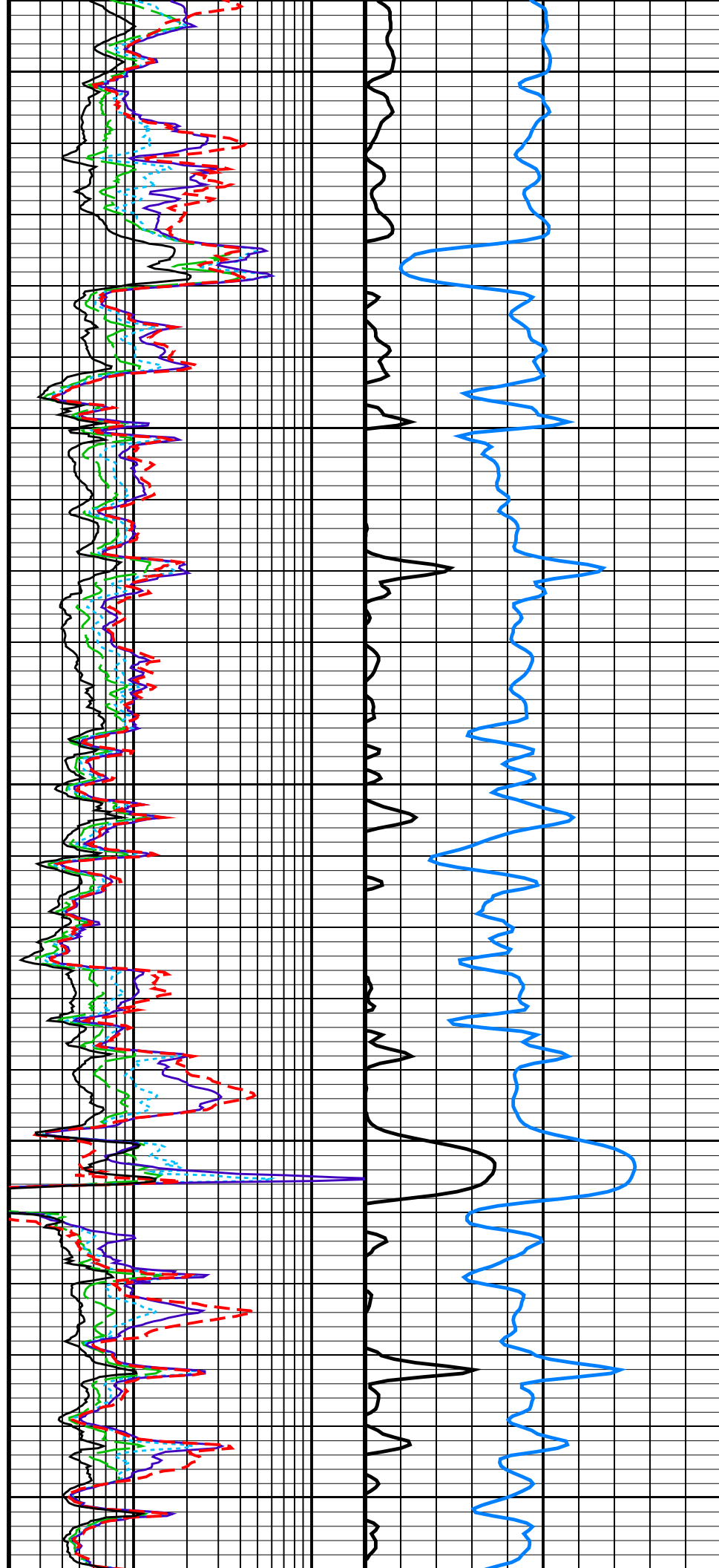
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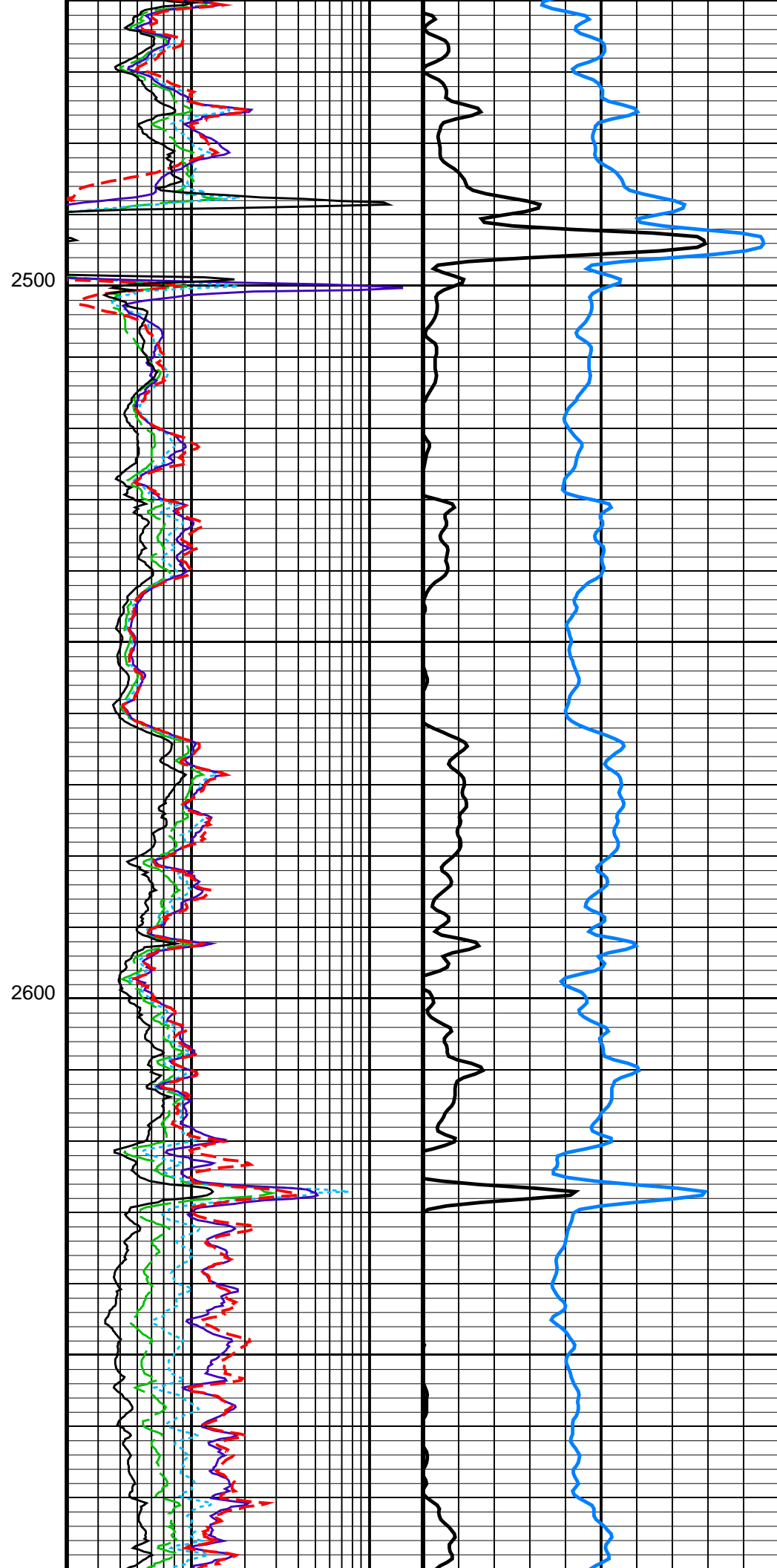
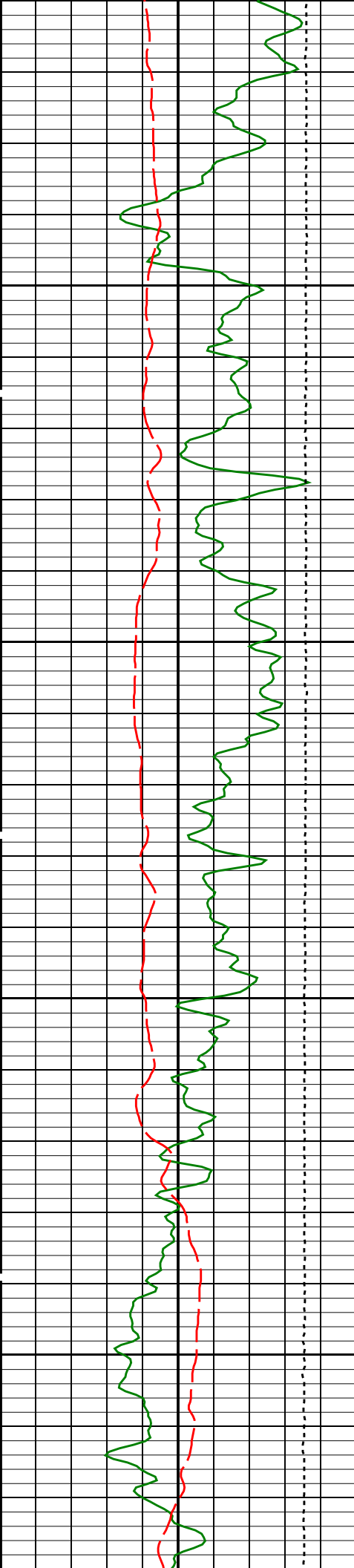


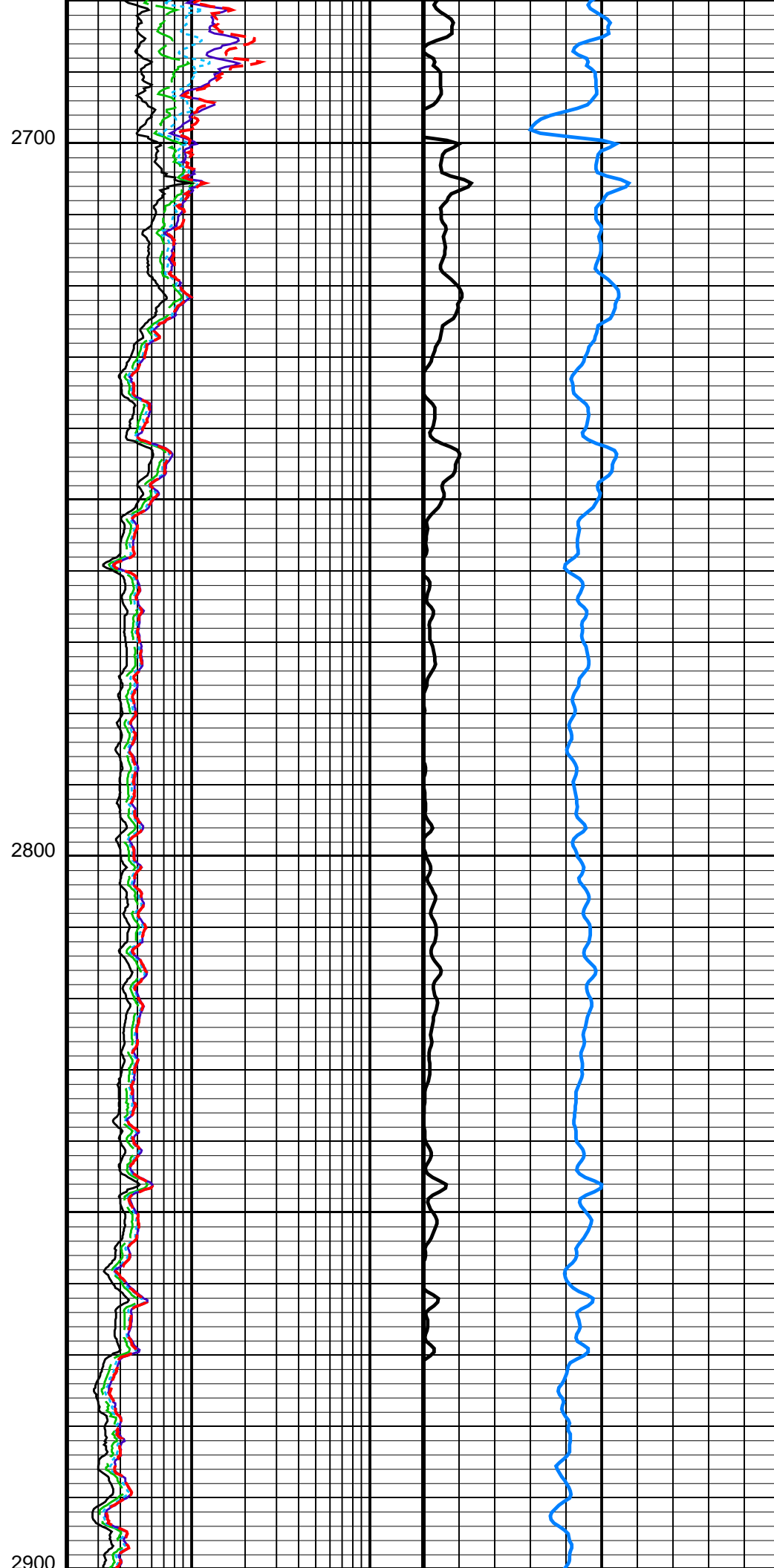
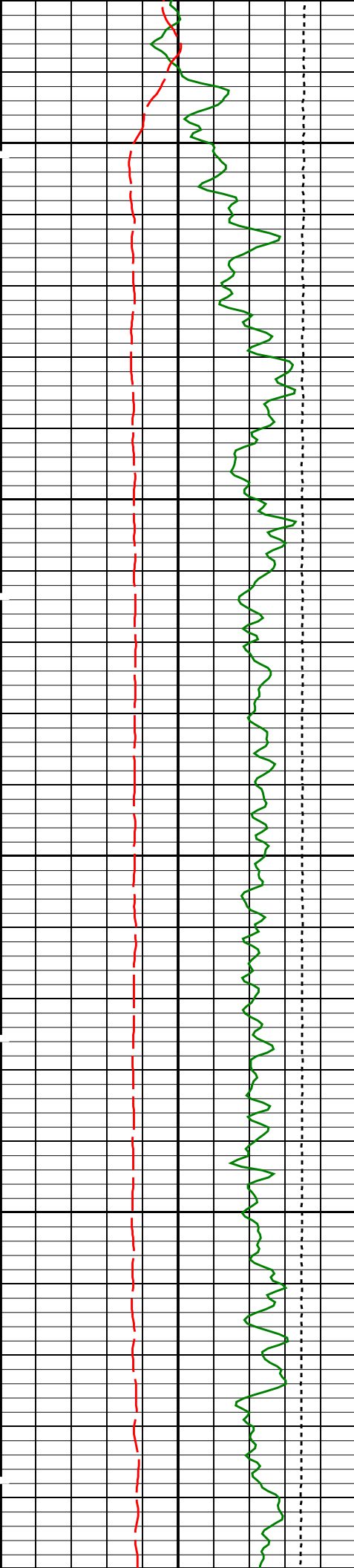


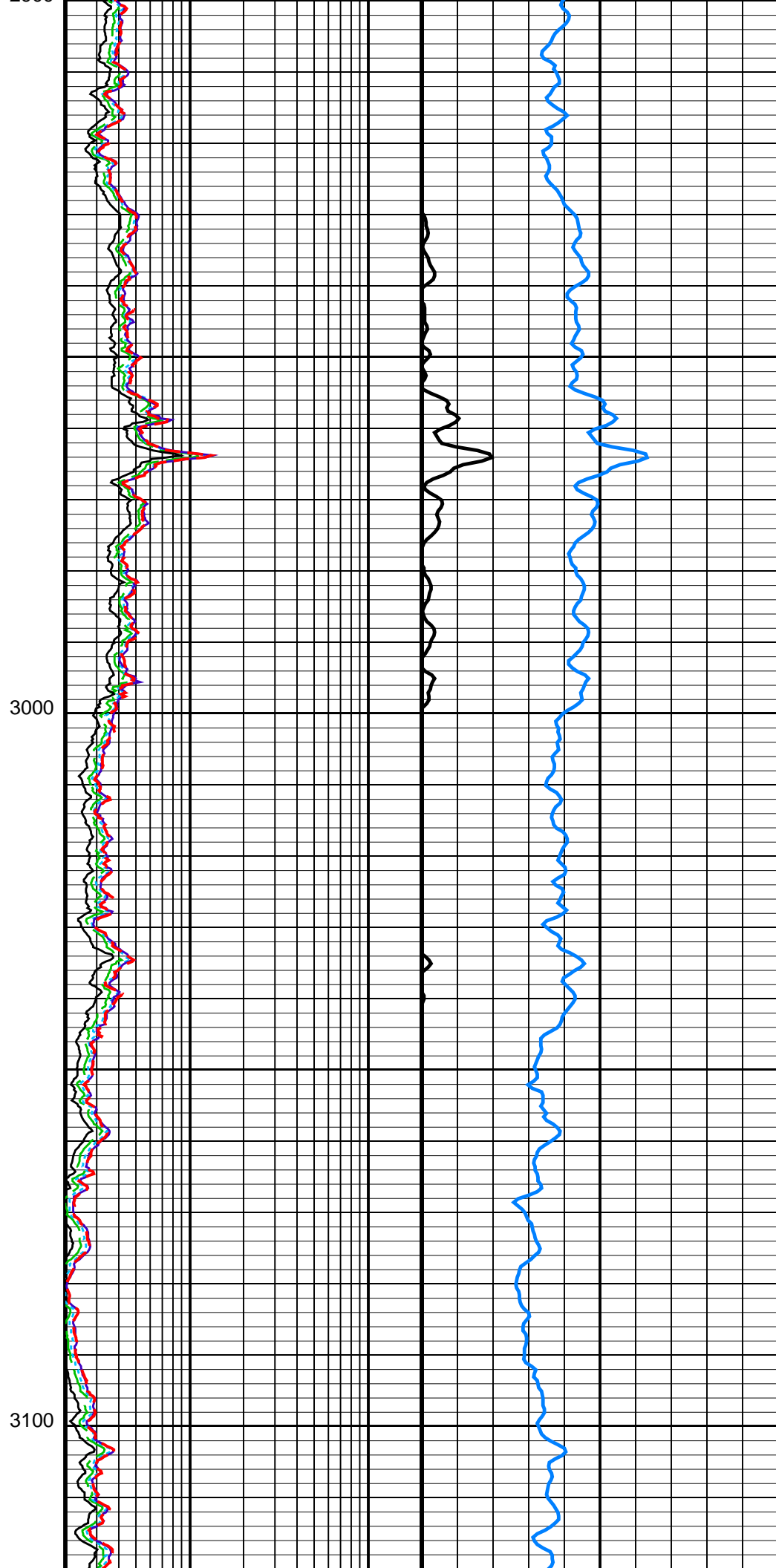
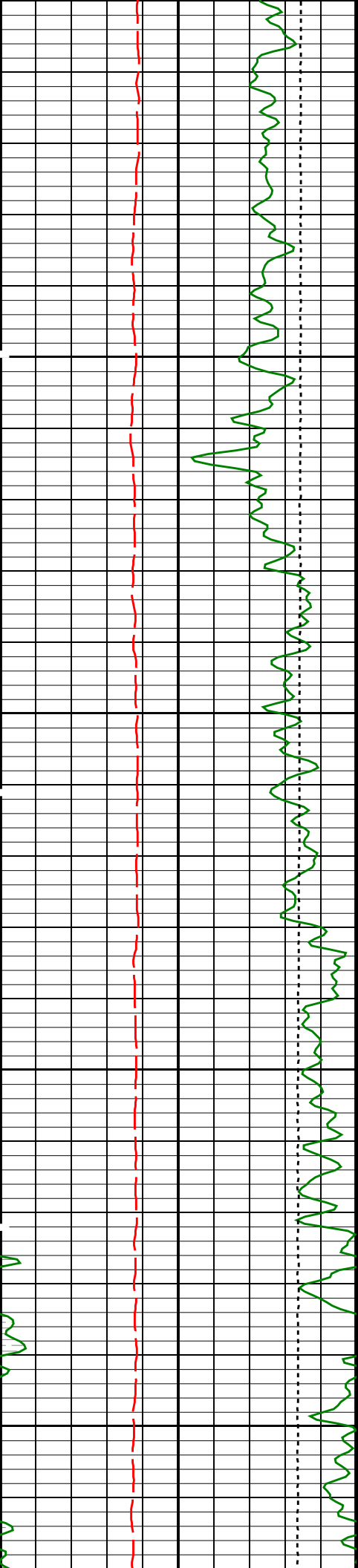
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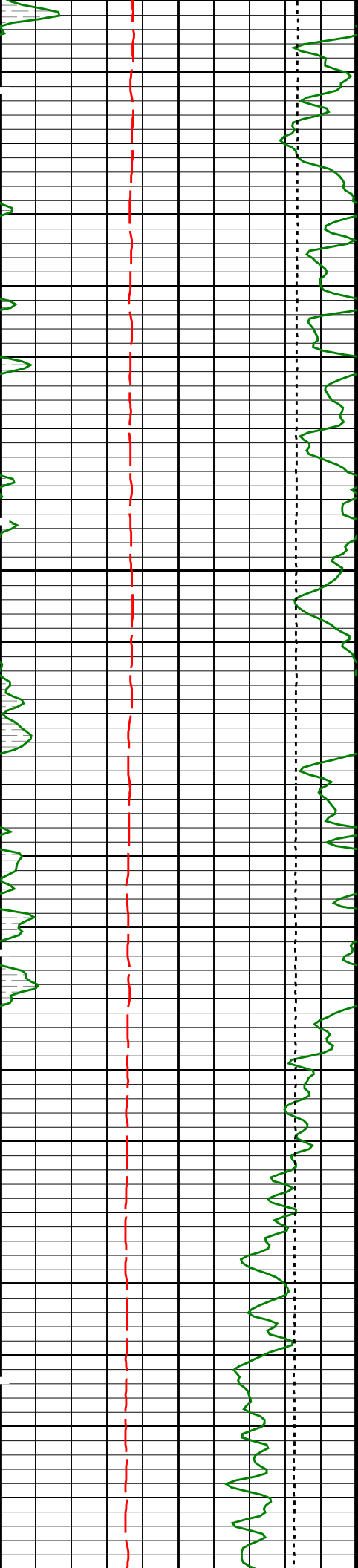
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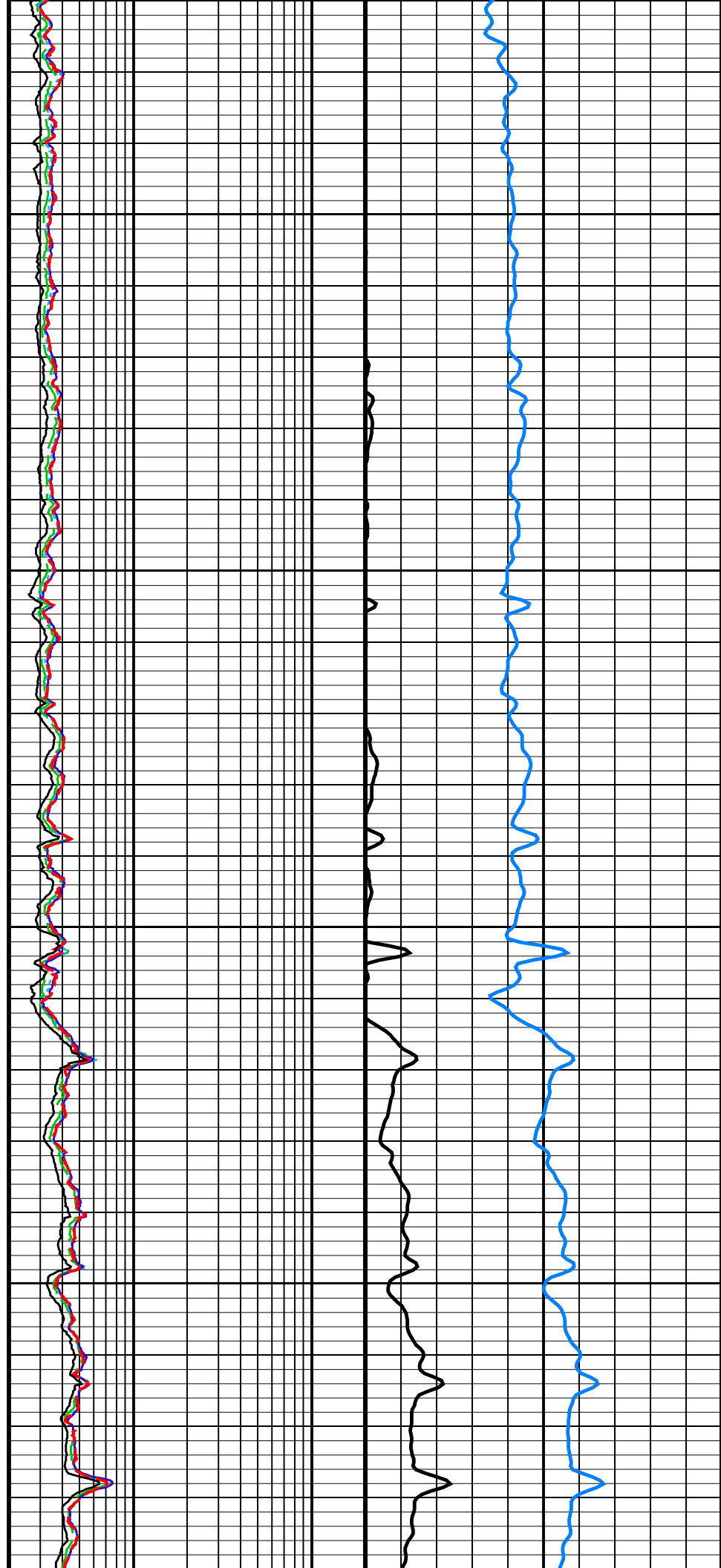


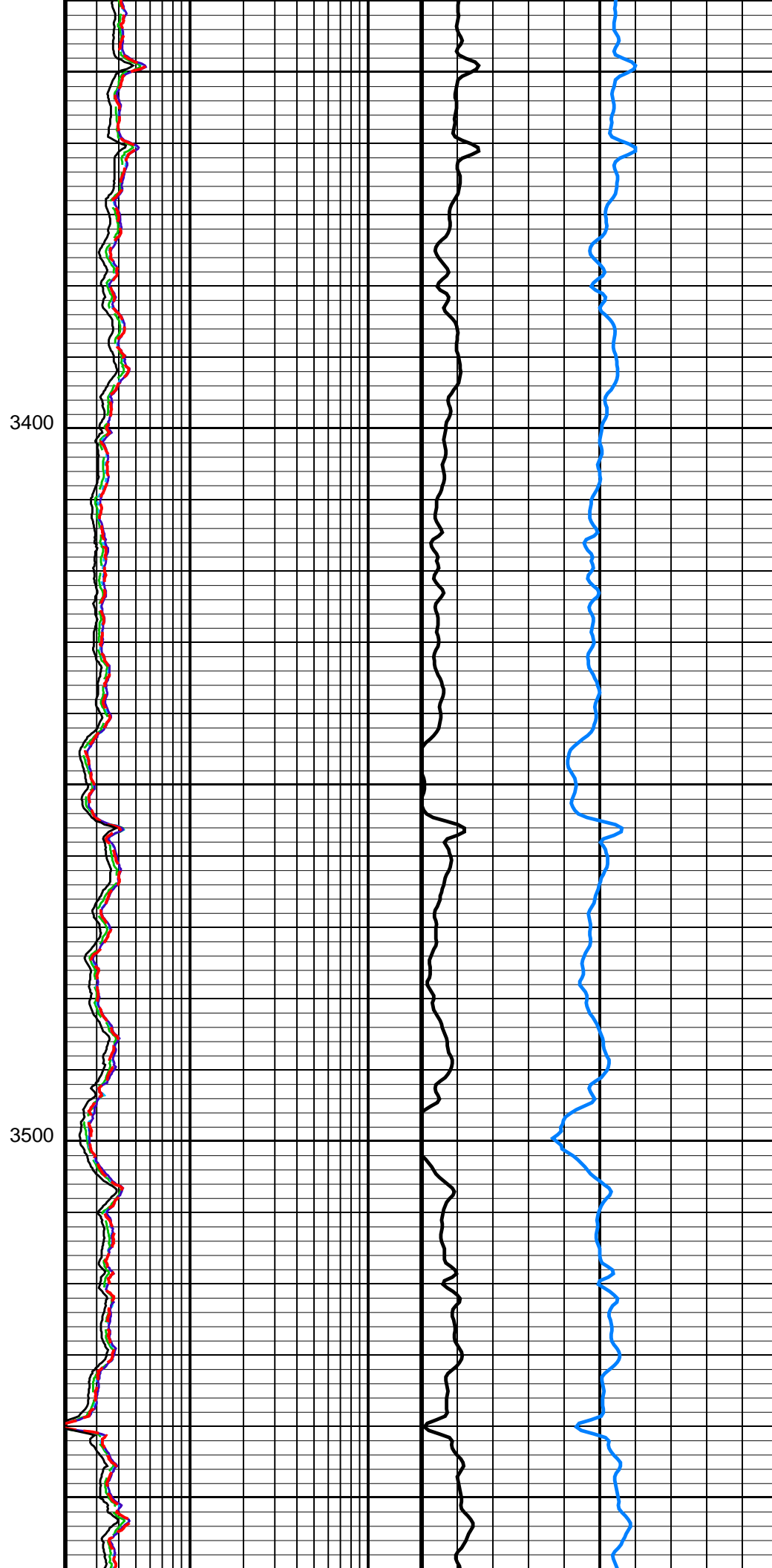
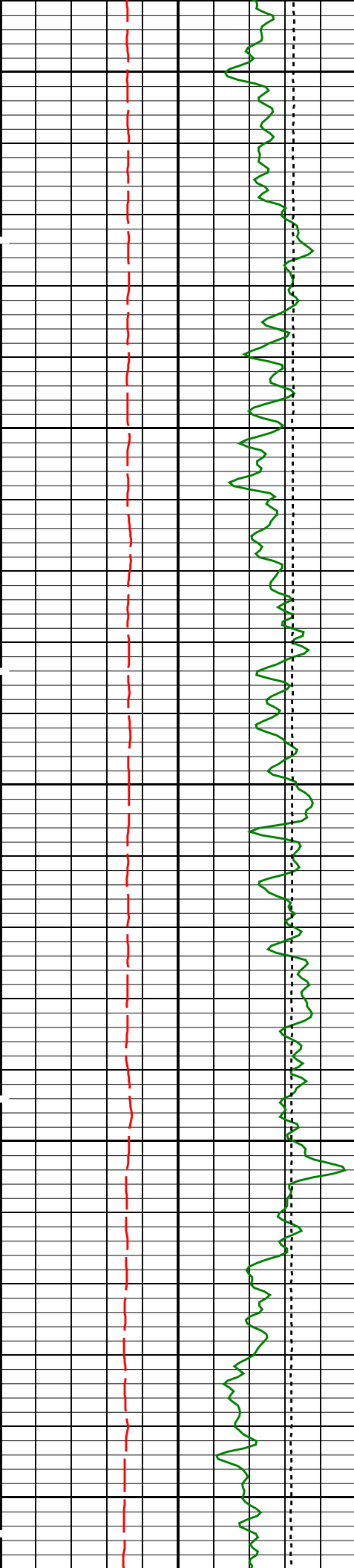


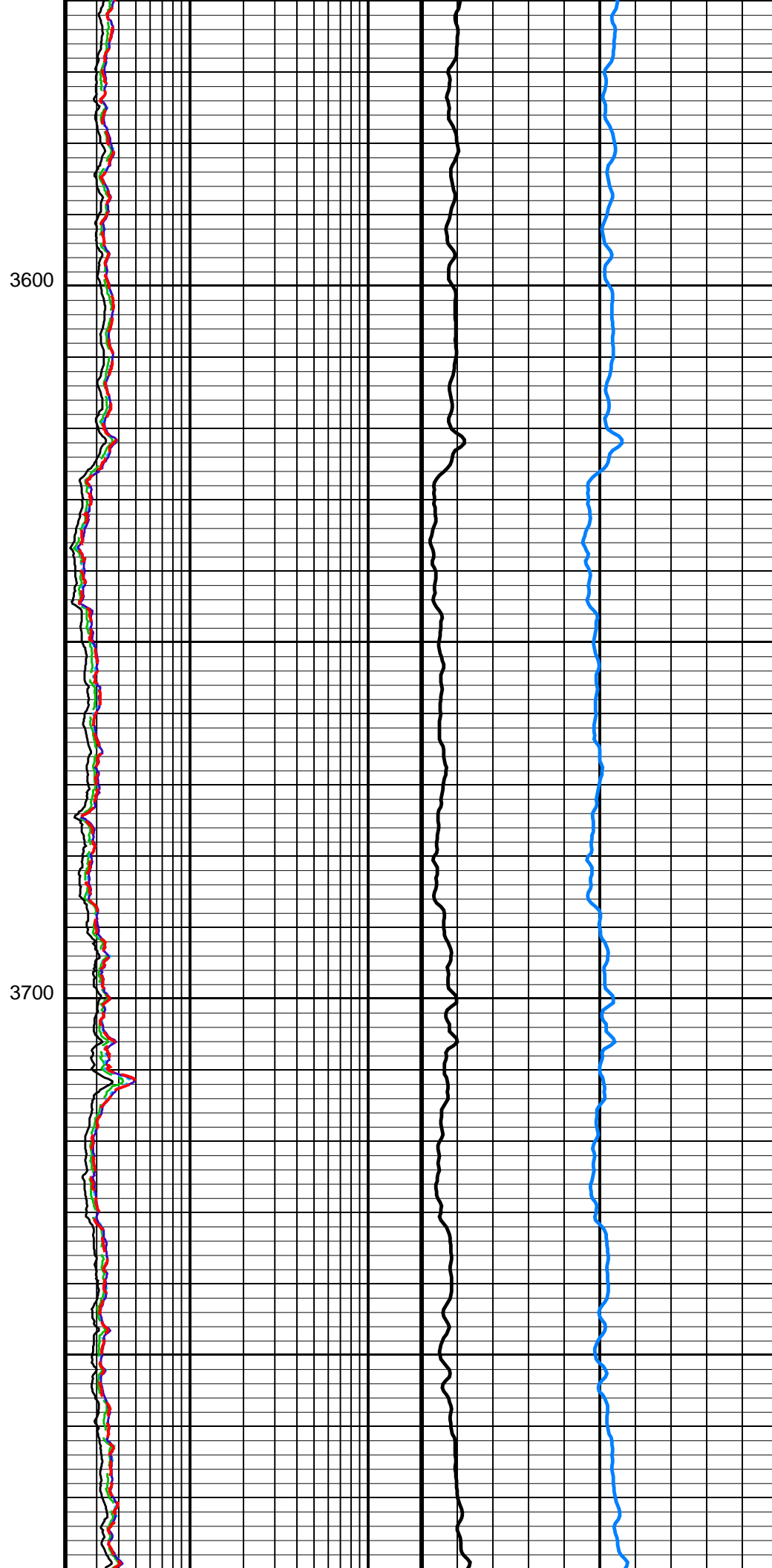
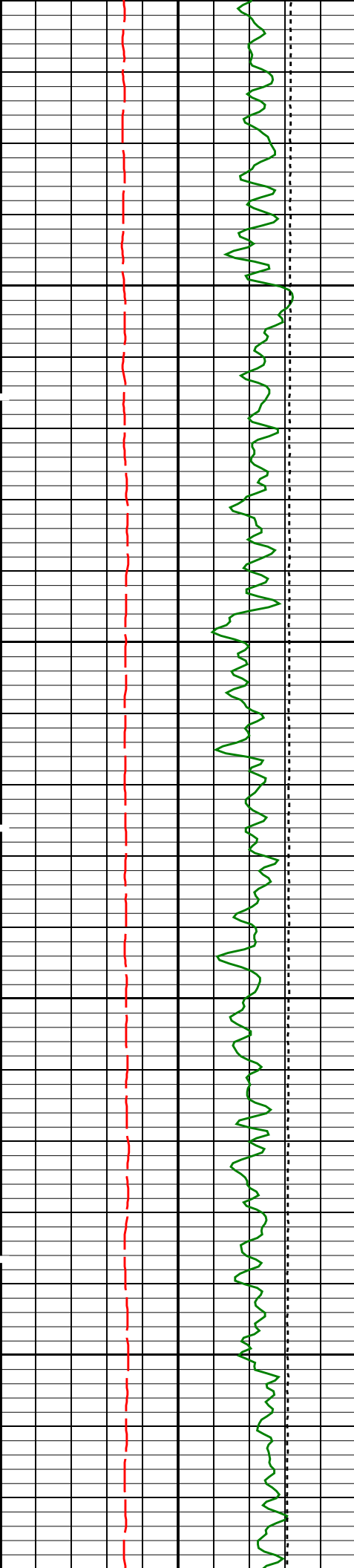


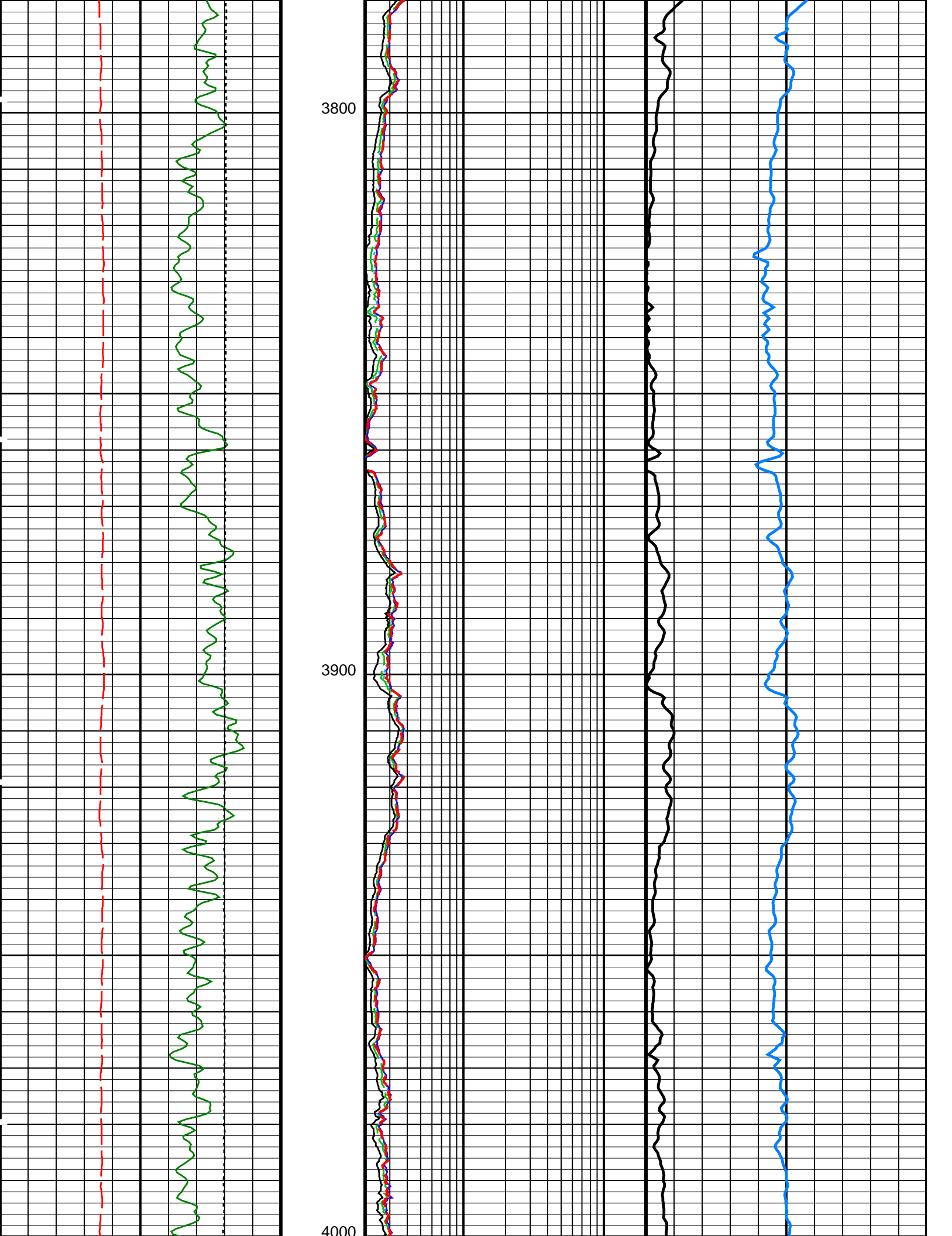
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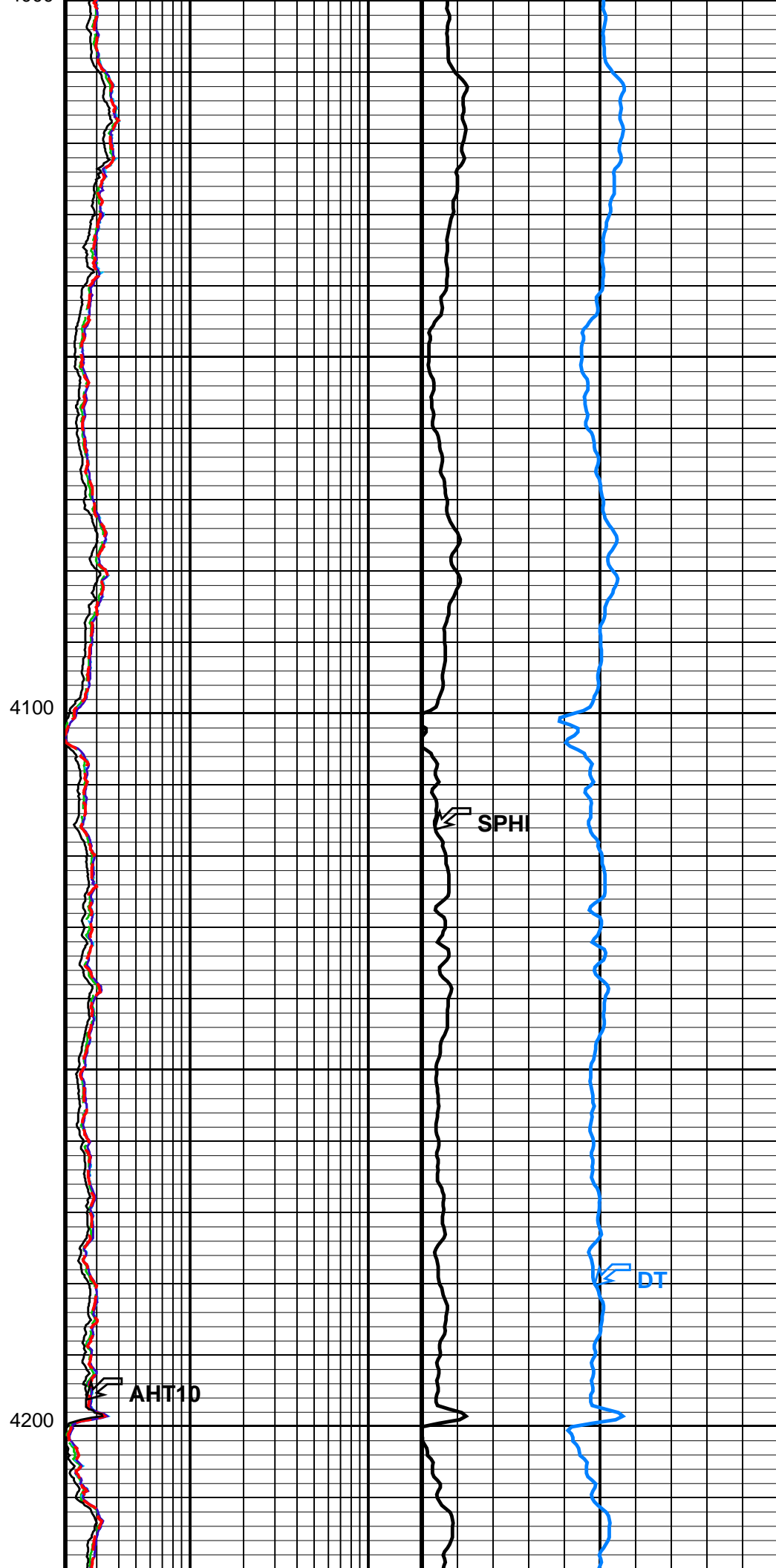
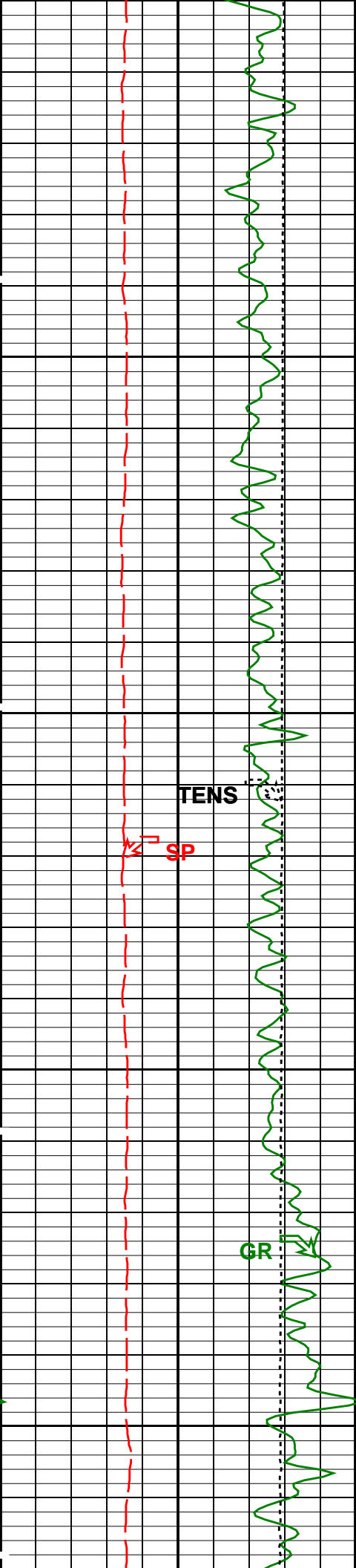
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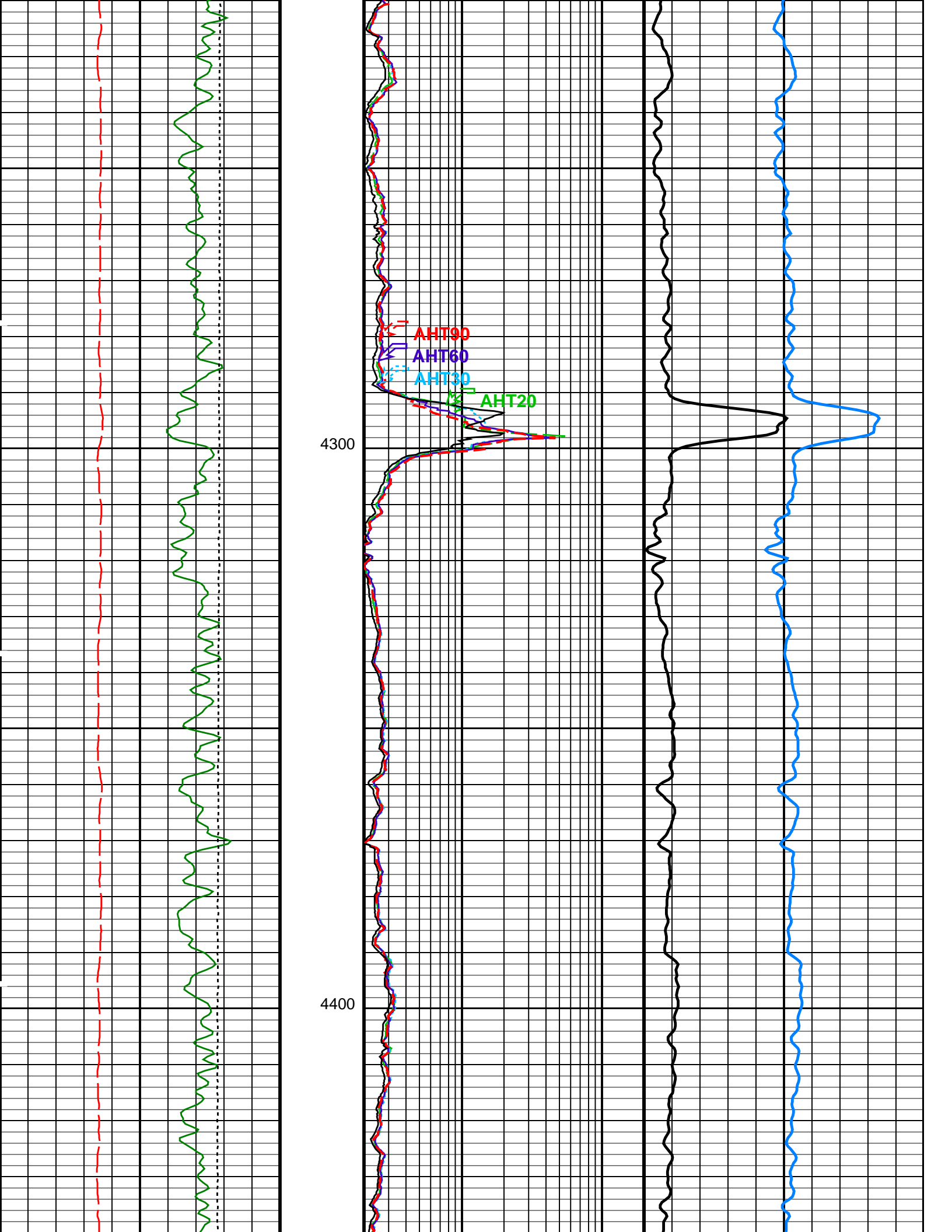


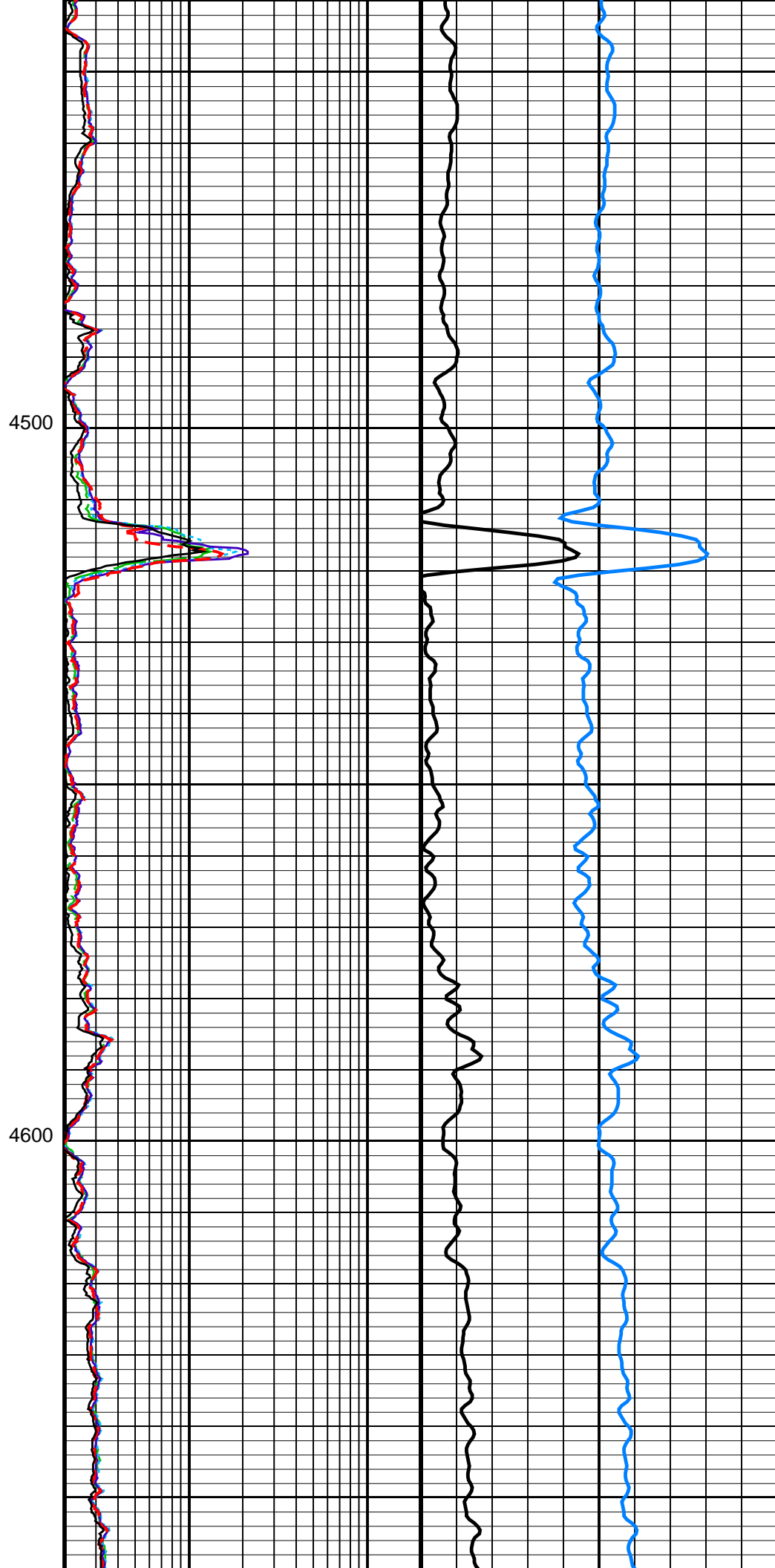
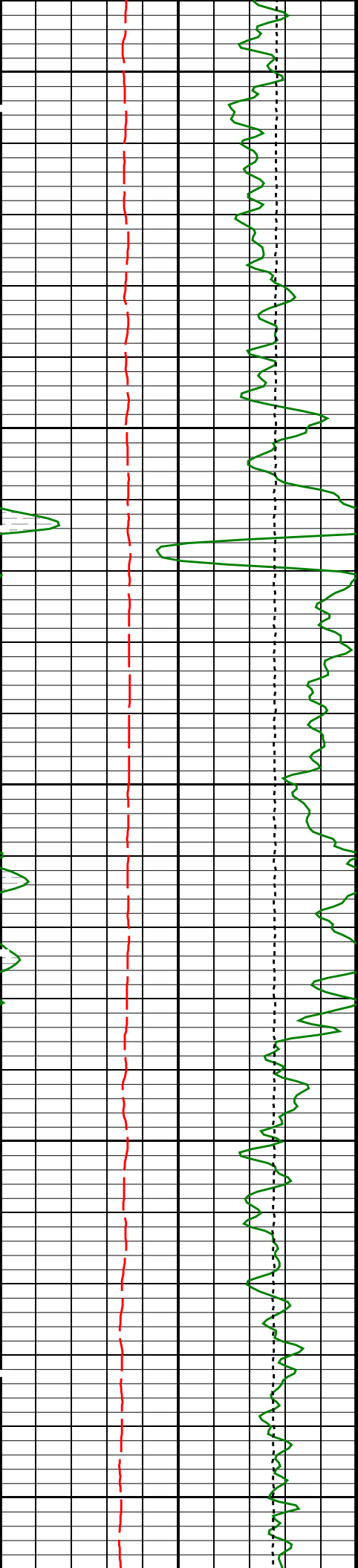


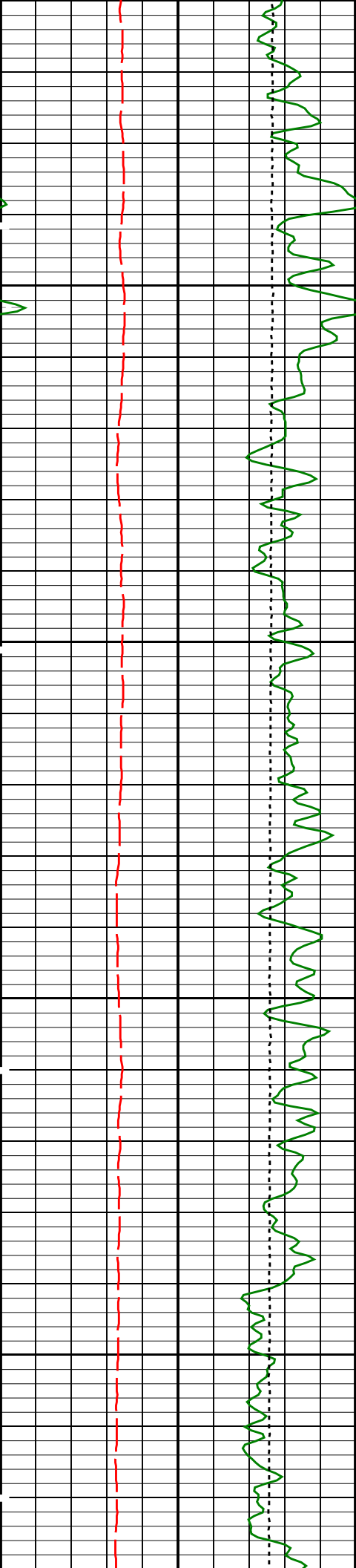






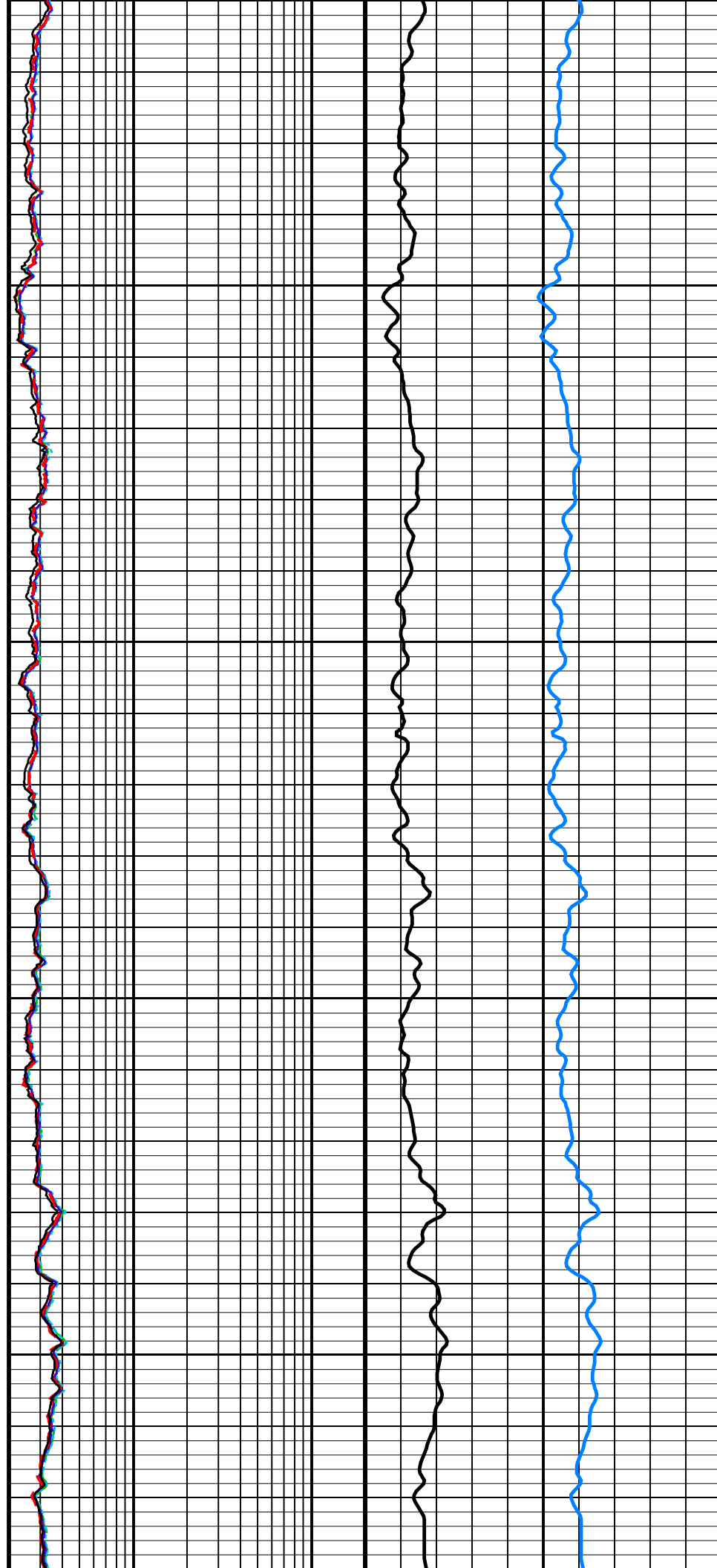


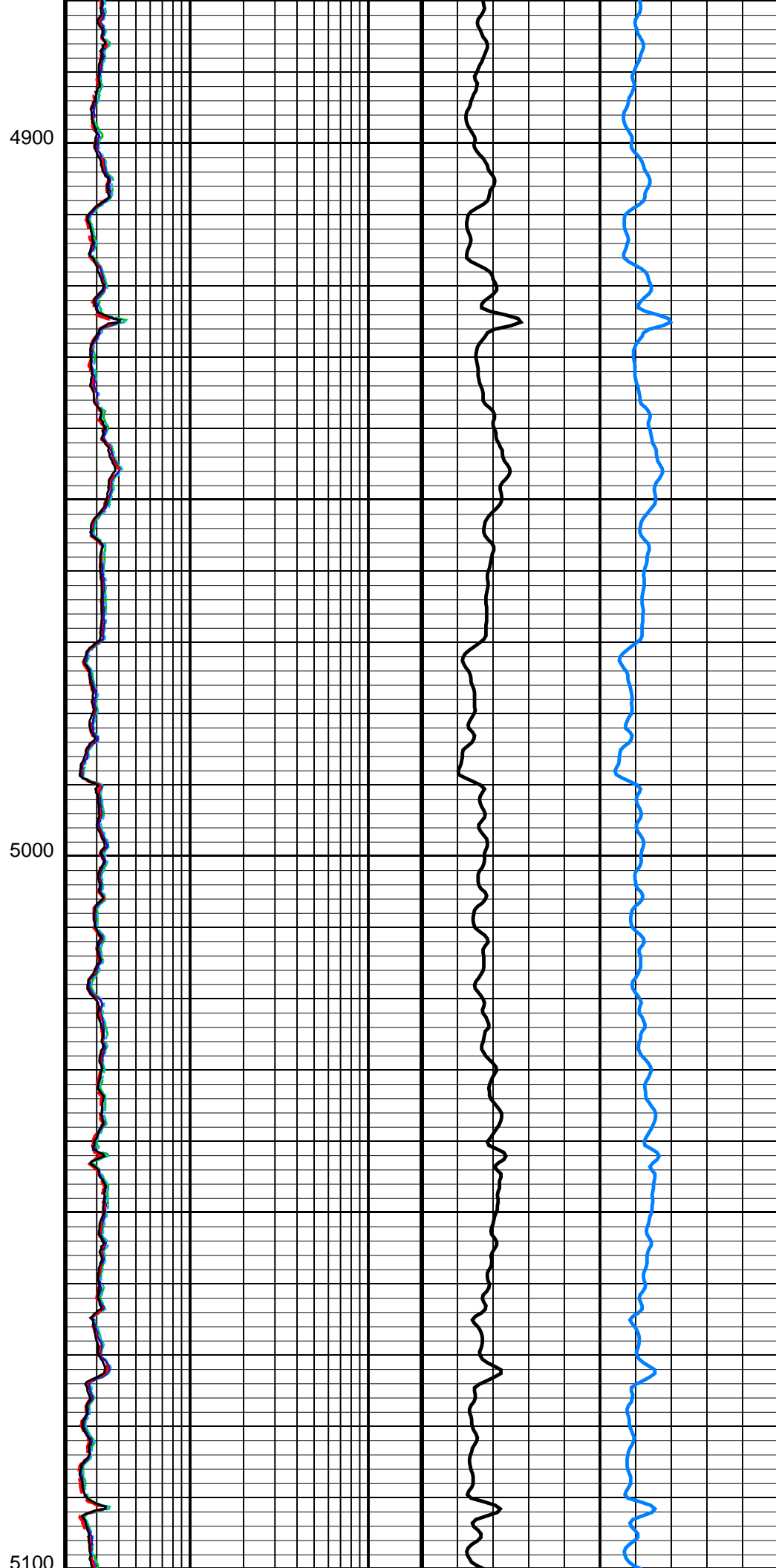
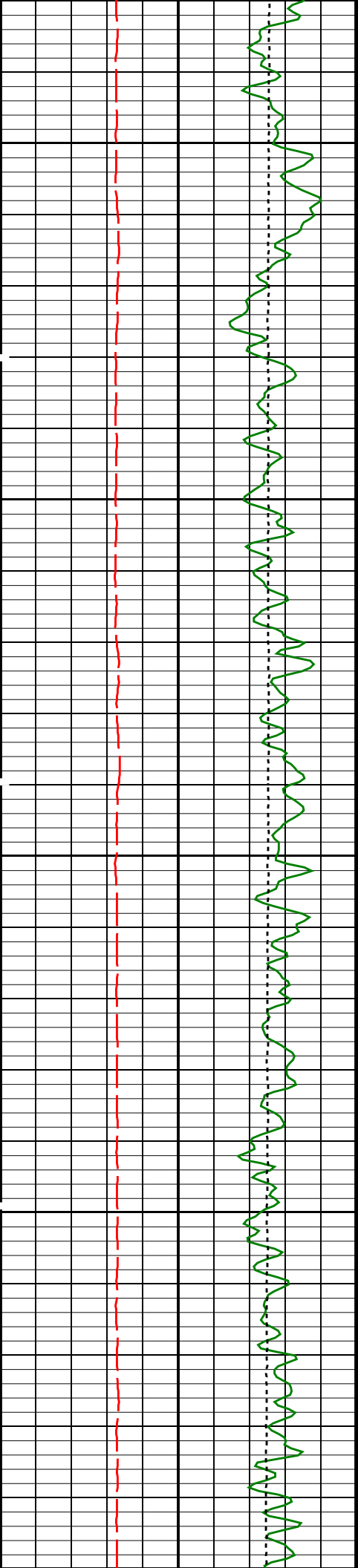


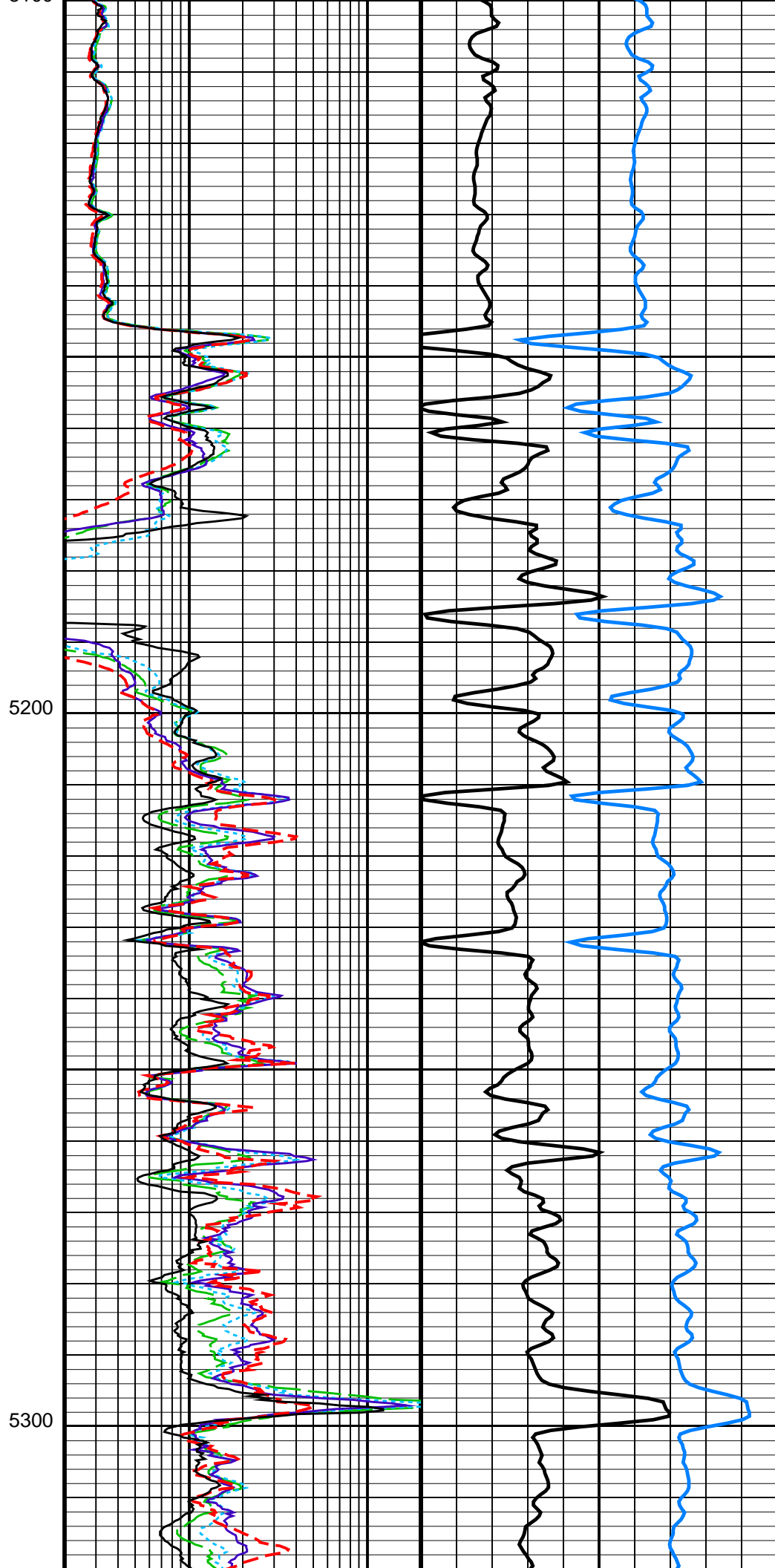
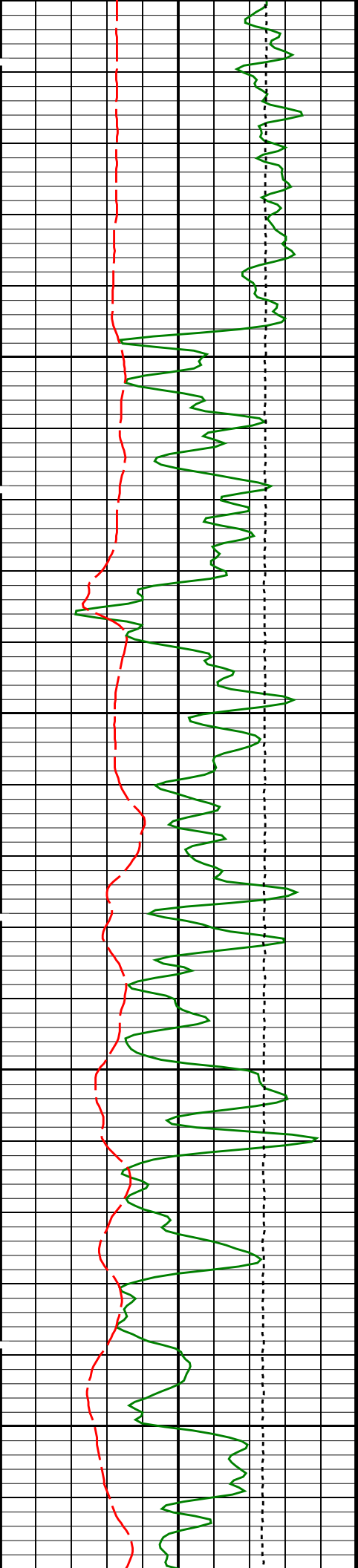


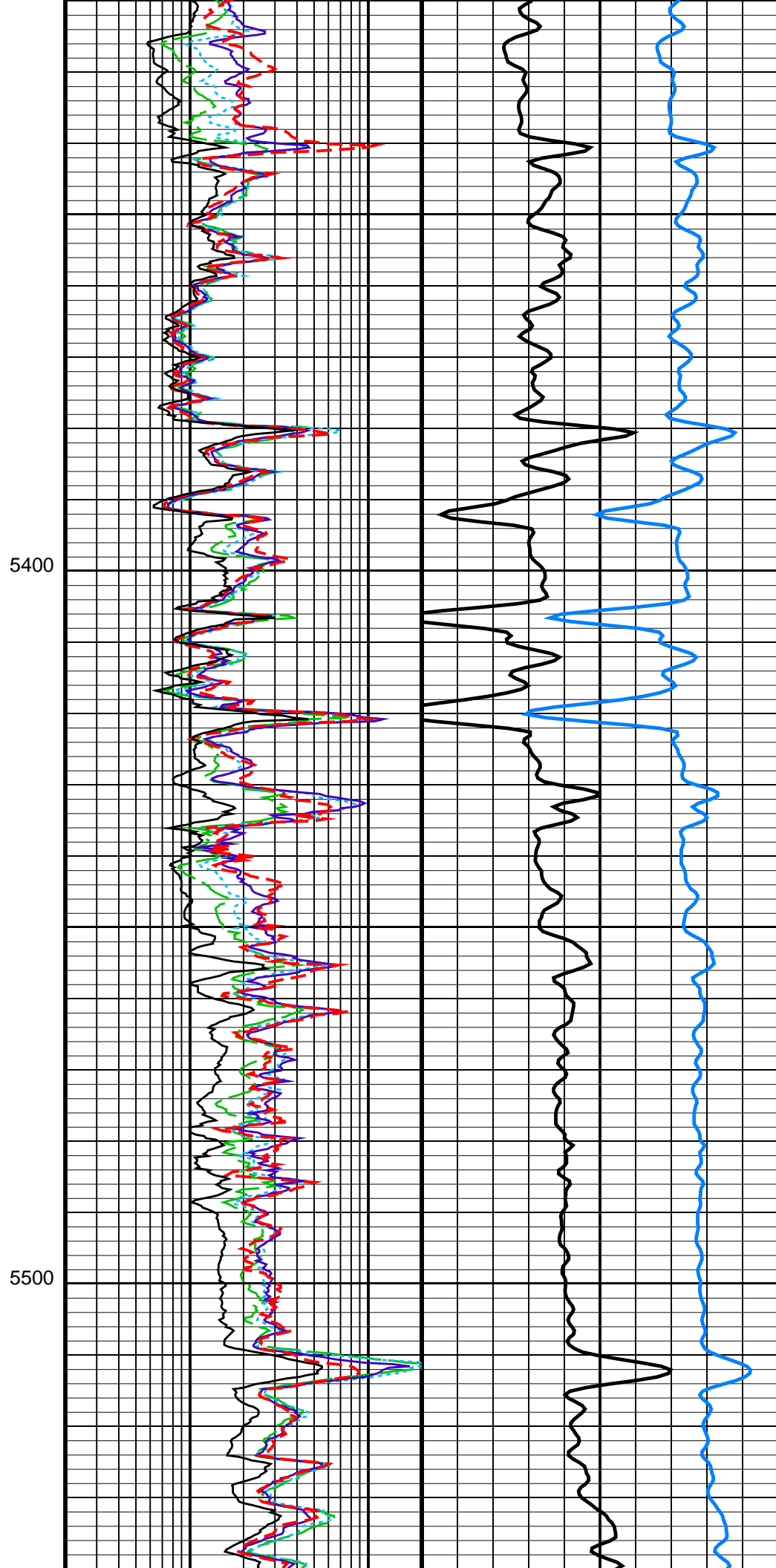
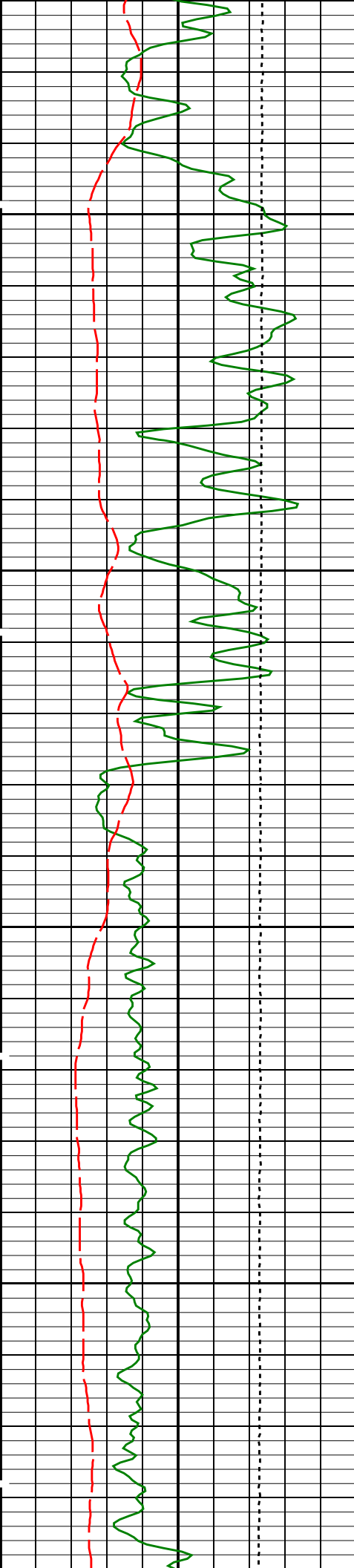
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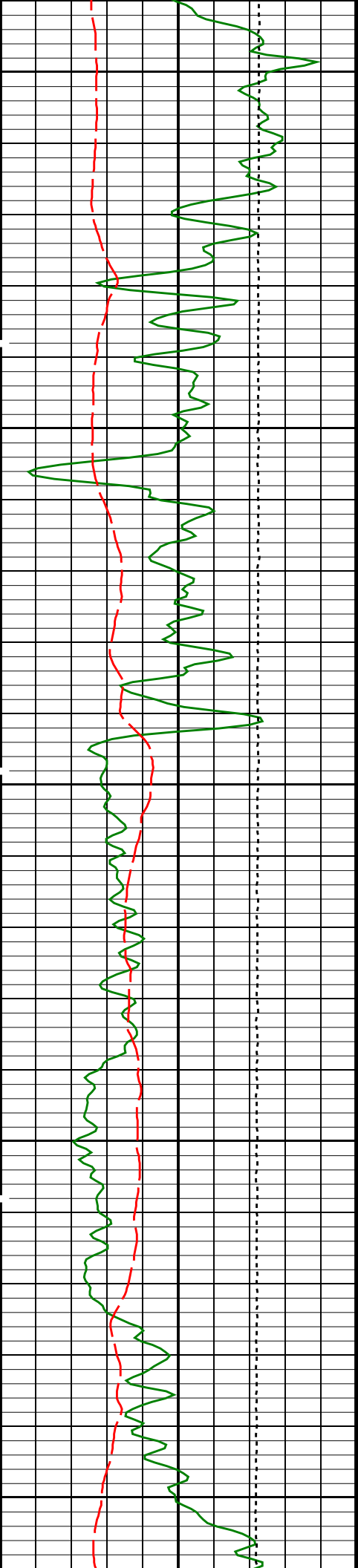
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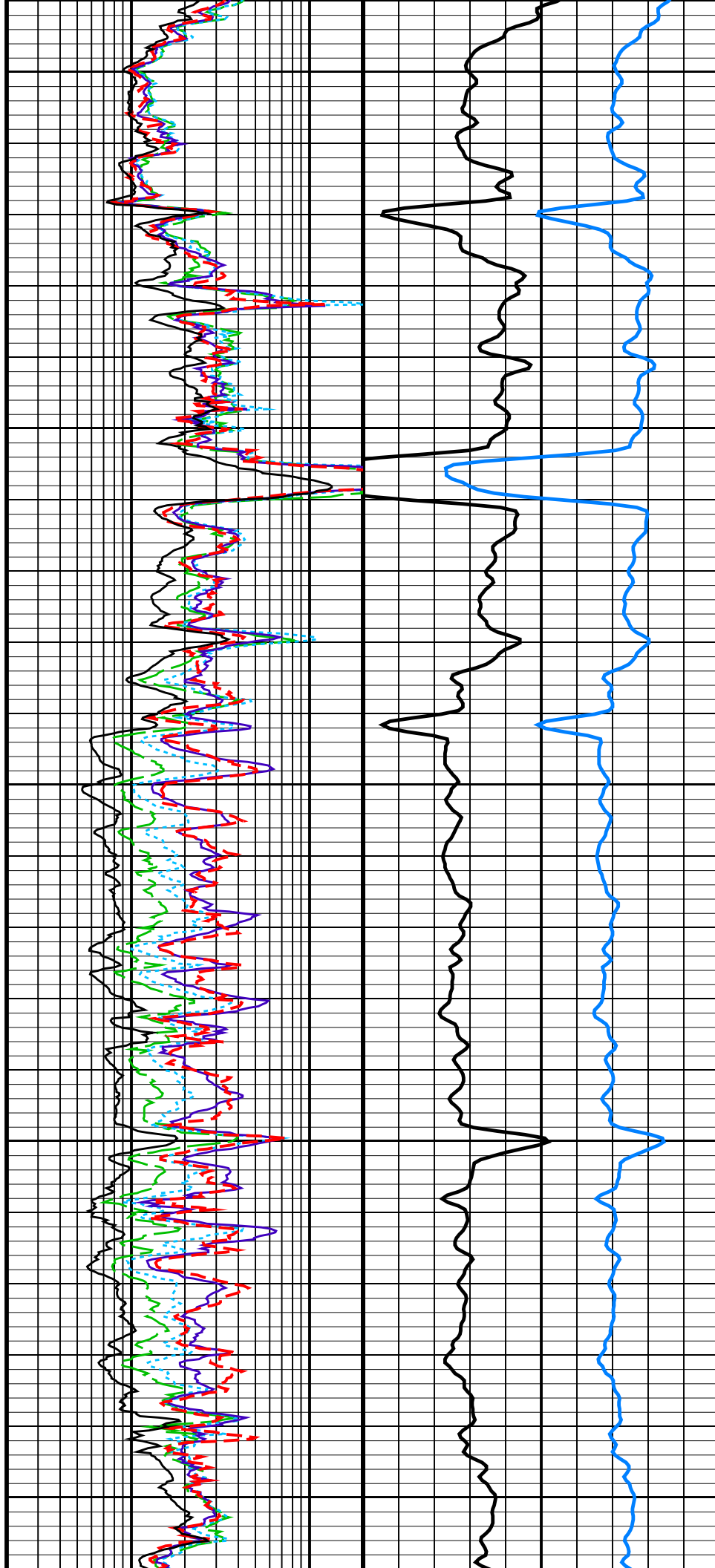


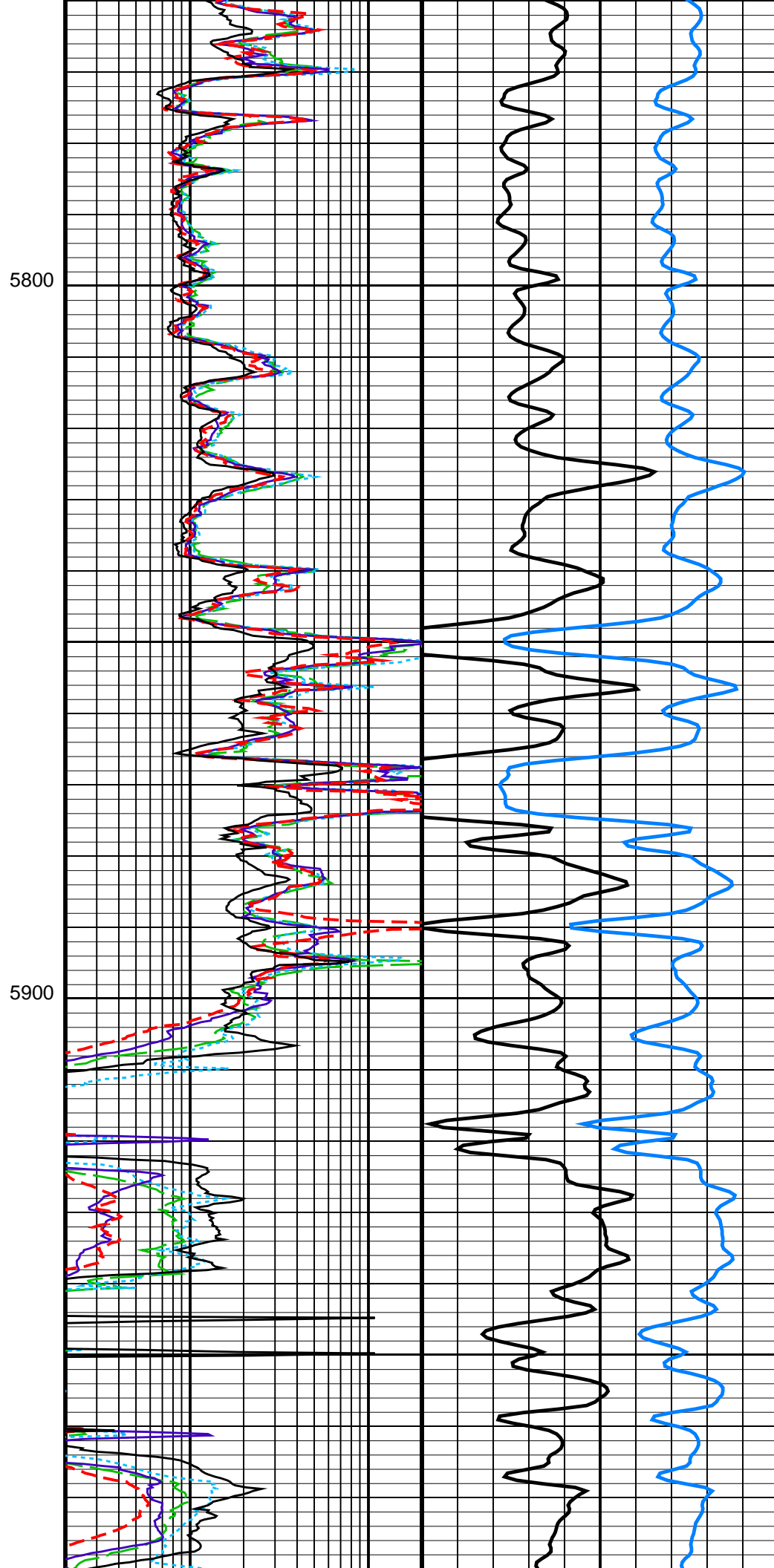
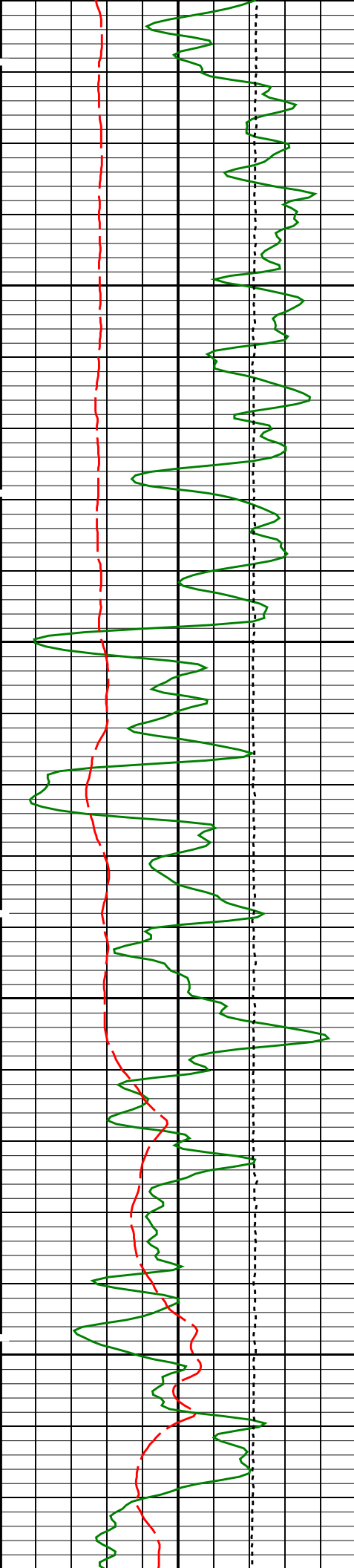


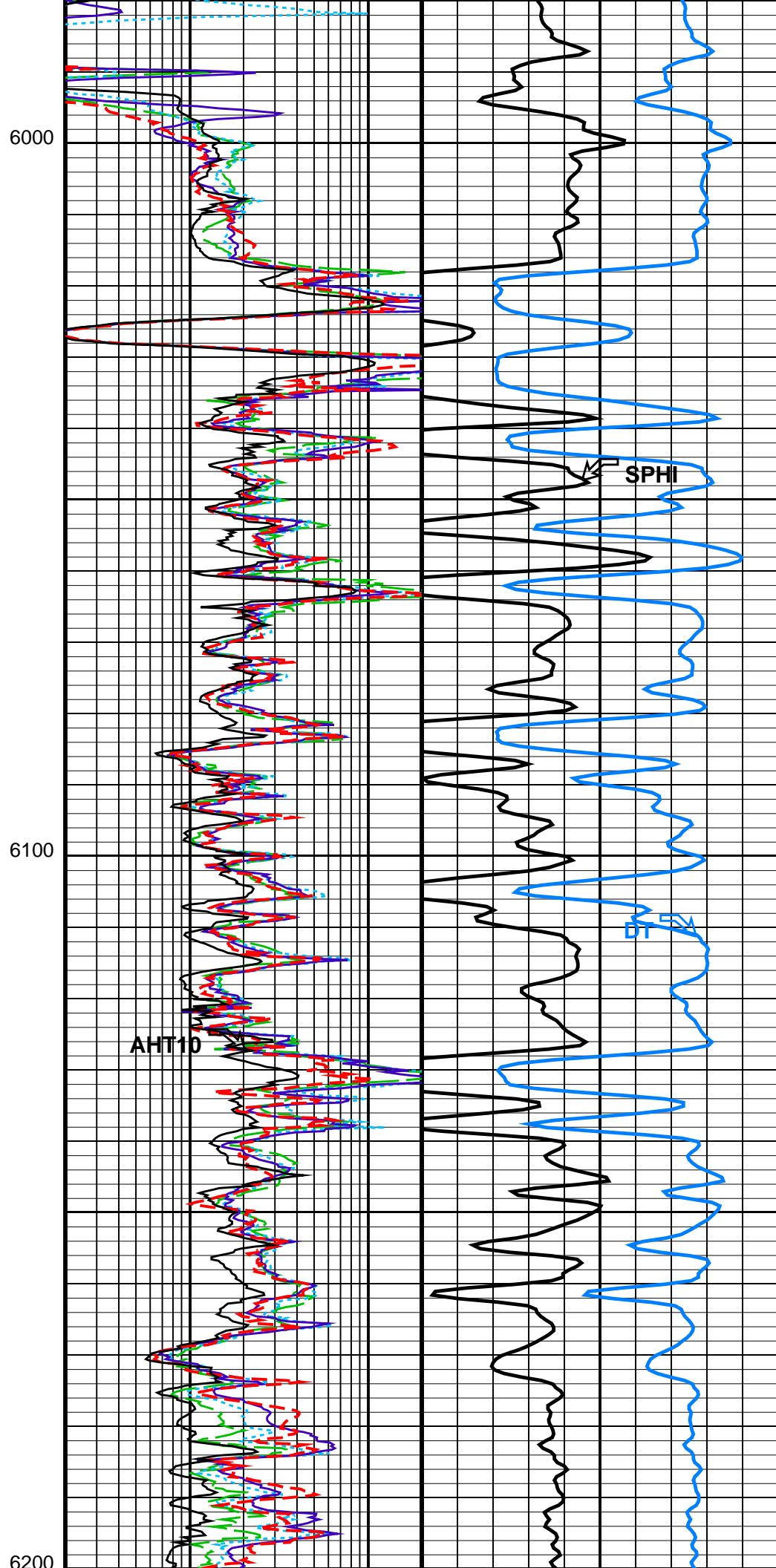
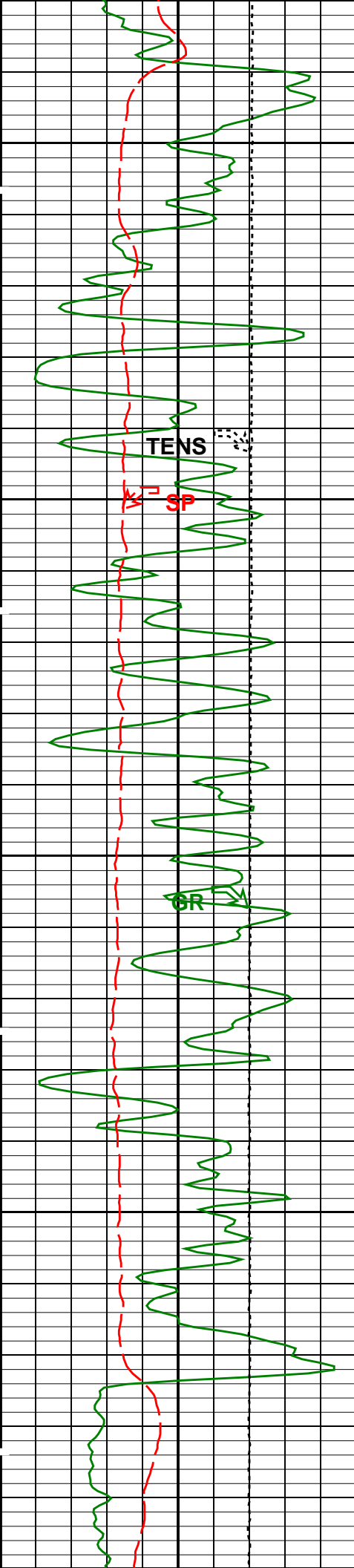


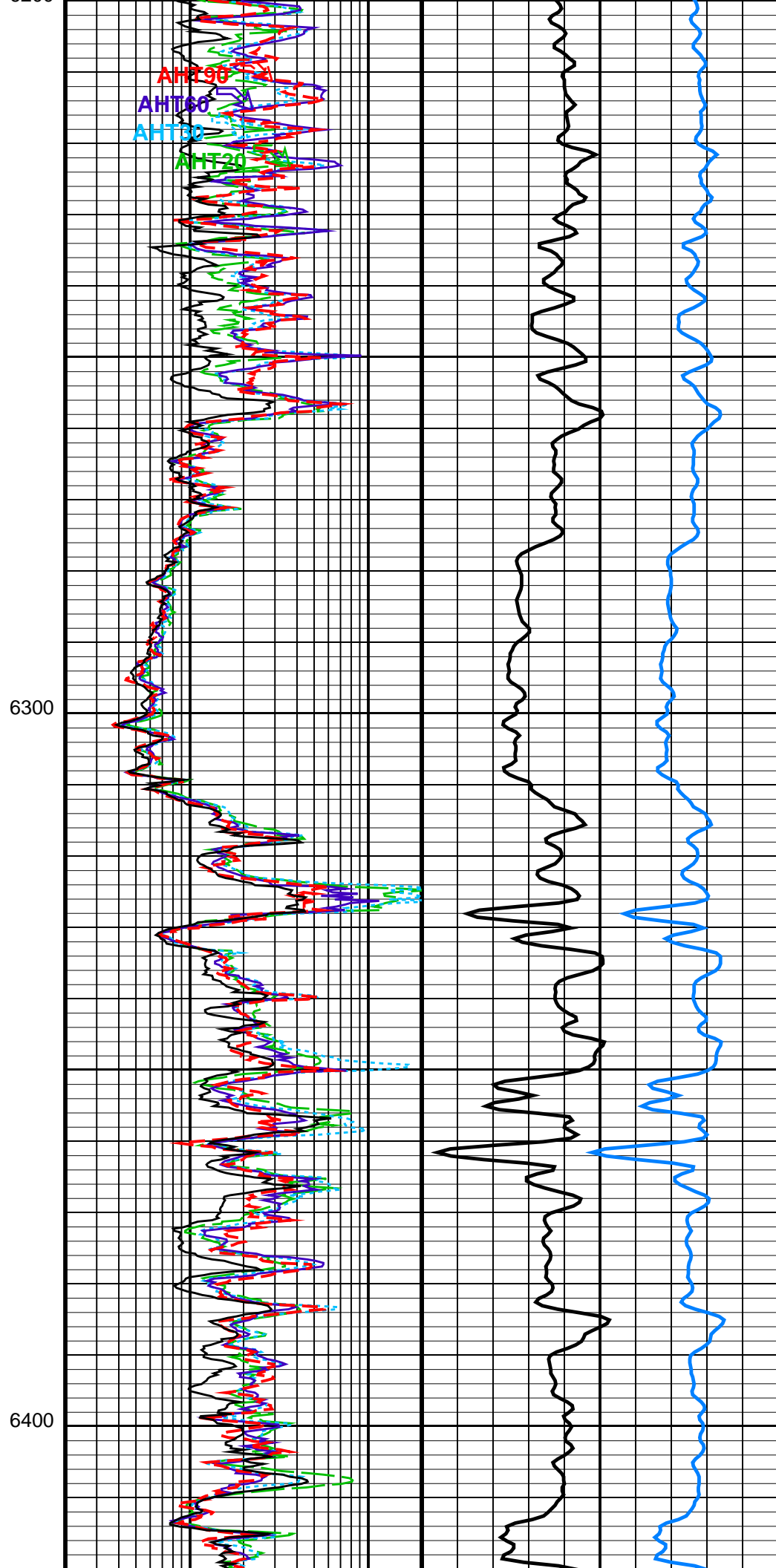
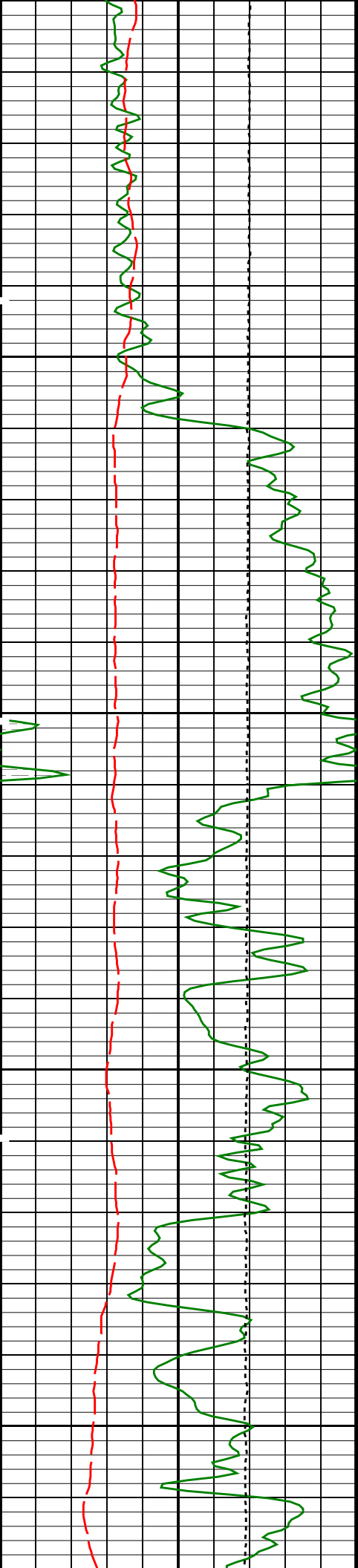
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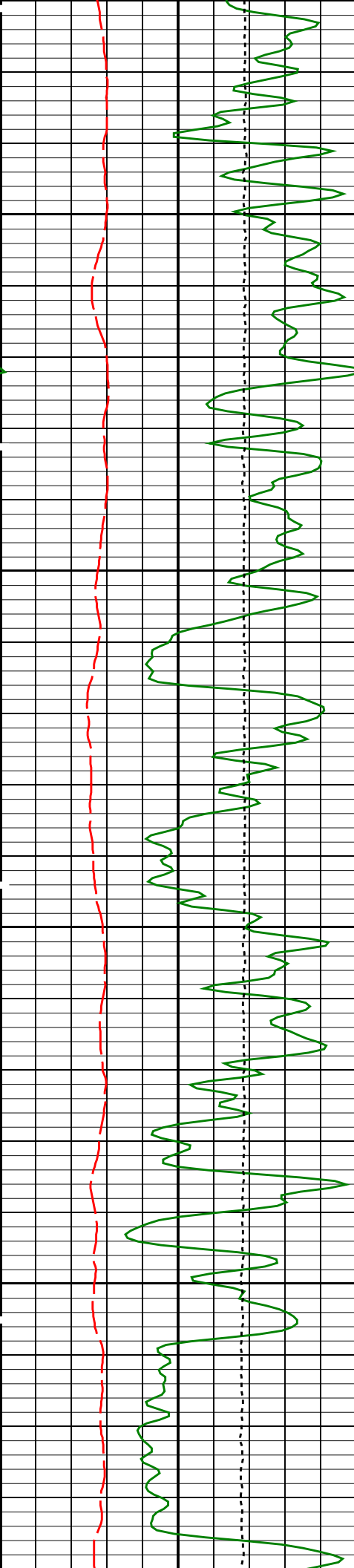
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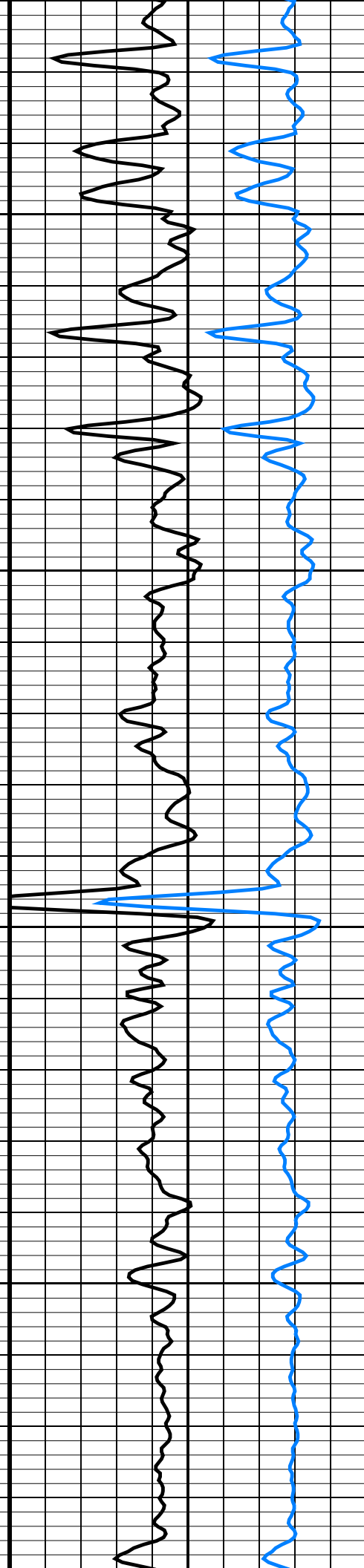
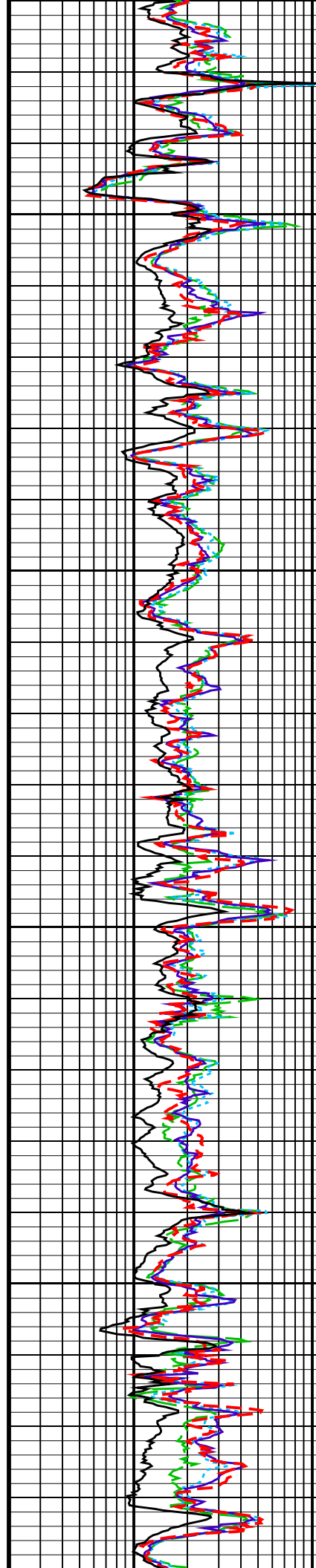


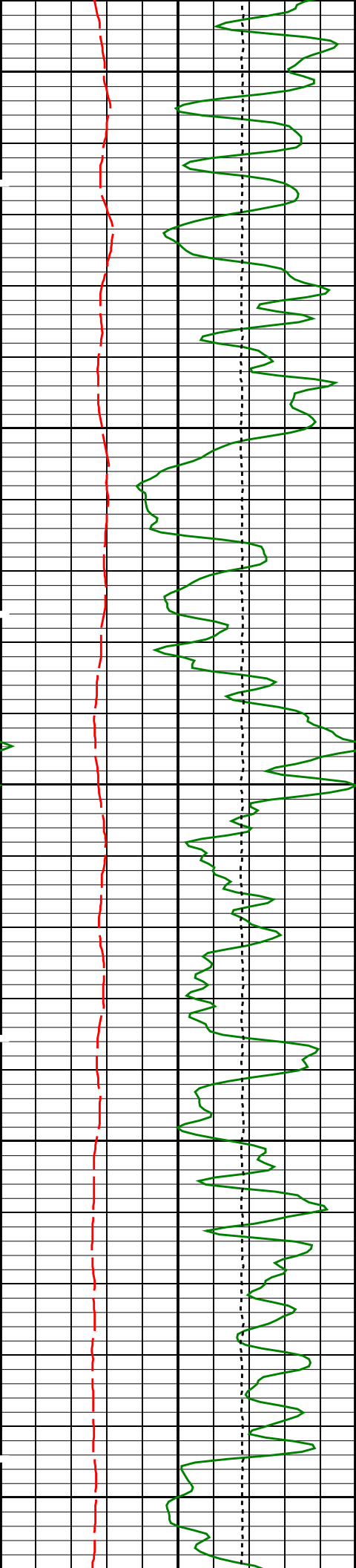




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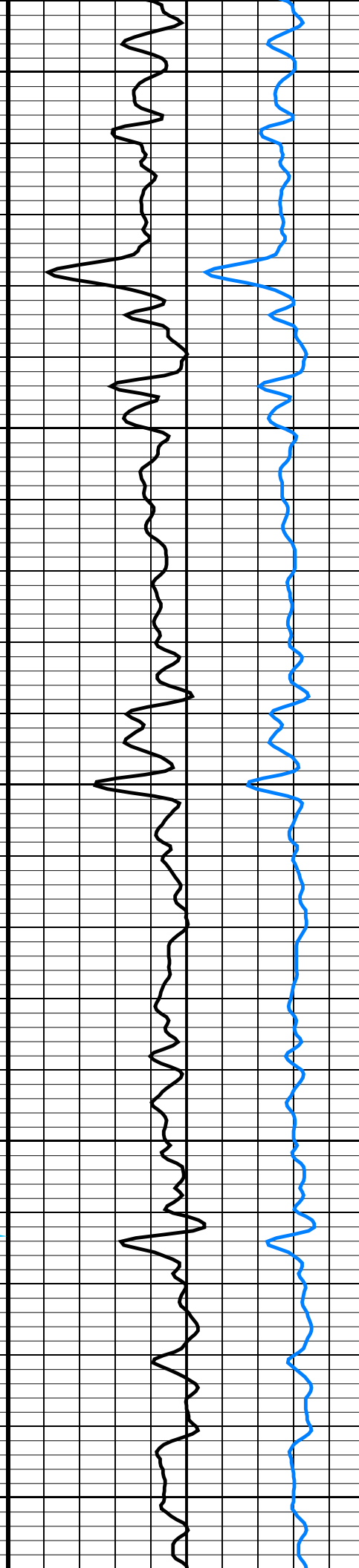
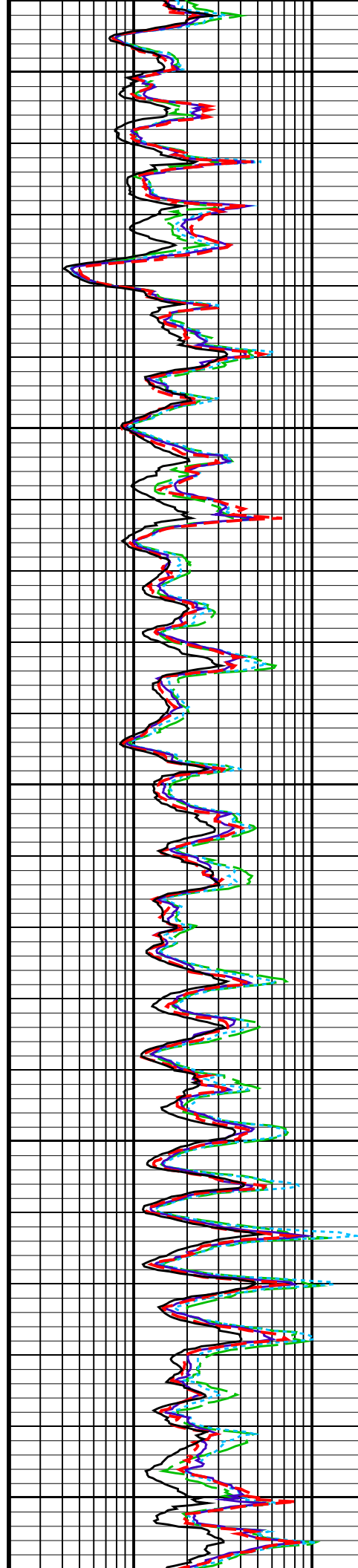
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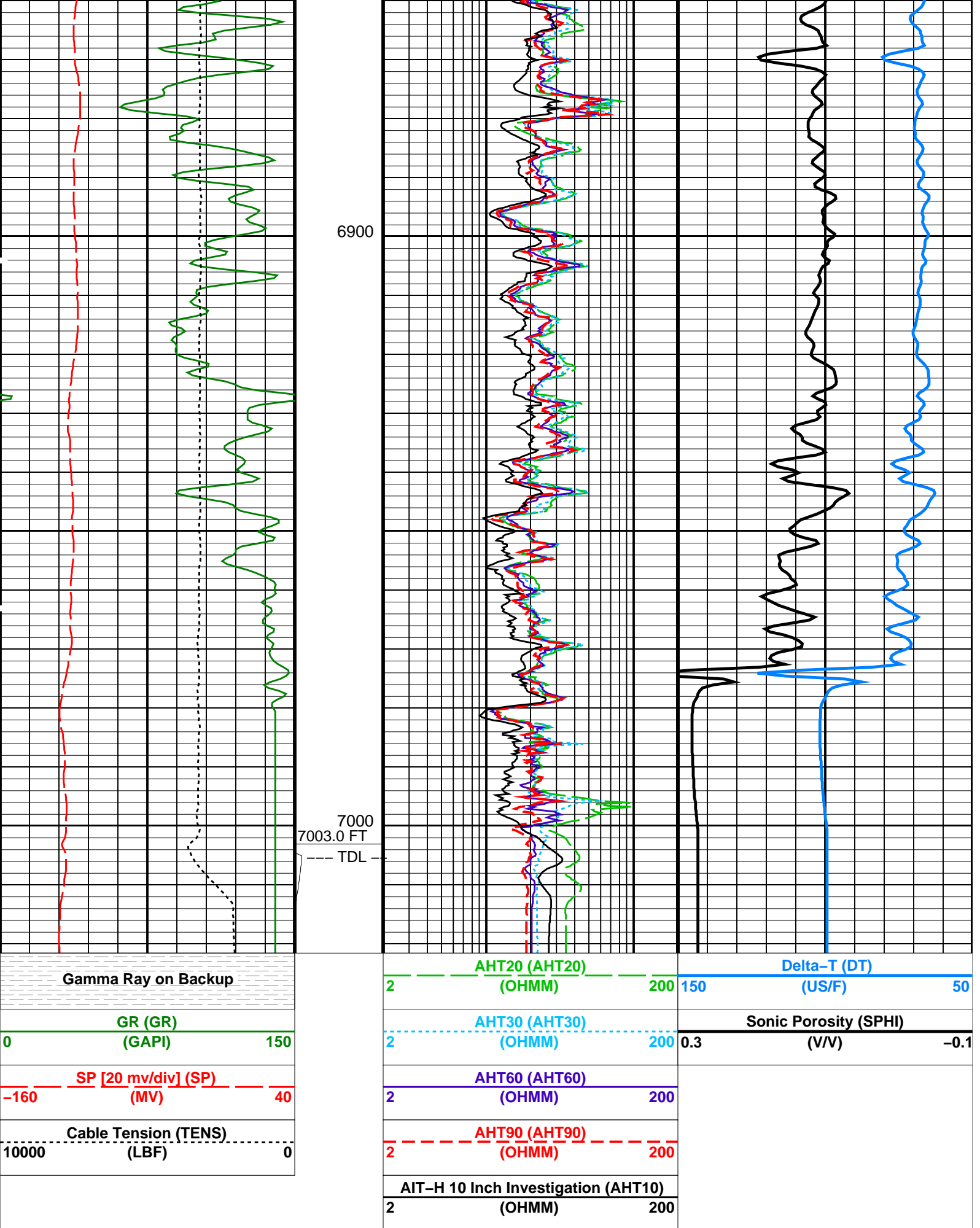




6700

6800





OP System Version: 18C0-147

AIT-H	18C0-147	DTA-A	18C0-147
DSLT-FTB	18C0-147	SGT-N	18C0-147
DTC-H	18C0-147		

Input DLIS Files

DEFAULT	AIT_SONIC_010LUP	FN:14	PRODUCER	19-Nov-2012 12:54	7014.0 FT	51.5 FT
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Output DLIS Files

DEFAULT	AIT_SONIC_016PUP	FN:24	PRODUCER	19-Nov-2012 16:22
RTB	AIT_SONIC_016PUP	FN:25	PRODUCER	19-Nov-2012 10:20

Parameter Insert Created: 19-NOV-2012 16:22

Parameters

DLIS Name	Description	Value	
AIT-H: Array Induction Tool - H			
AHAPL	Array Induction Answer Product Level(Depth Log/View only)		
	3_BholeCorr_BasicLogs_Radial_Processing		
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)	Eccentered	
AHDITM	Array Induction Desired Tool Mode	0x00_Log_000	
AHEBC	Array Induction Enable Borehole Correction	Yes	
AHEBL	Array Induction Enable Basic Logs	Yes	
AHERP	Array Induction Enable Radial Processing	Yes	
AHETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes	
AHFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	
AHIGS	Array Induction Select Akima Interpolation Gating	On	
AHLNV	Array Induction Log Not Valid Flag	Log_Valid-No_Default_Parameters	
AHMRD	Array Induction Mud Resistivity Calibration Depth	0	FT
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	
AHRPM	Array Induction Radial Processing Mode	6_One_Two_and_Four	
AHRPV	Array Induction Radial Parametrization Code Version Number	232	
AHSTA	Array Induction Tool Standoff	0.5	IN
AHTNO	Array Induction Tool Serial Number	389	
AHTRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
AHTSE	Array Induction Temperature Selection (Sonde Error Correction)	Internal	
AHTTY	Array Induction Tool Type (of acquired data)	AITH	
AHULV	Array Induction User Level Control	Normal	
ARTS	AIT Rt Selection (for ALLRES computation)	AITH_TwoResA90	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	164	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHI	
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	AITH_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
RTCO	RTCO - Rt Invasion Correction	YES	
SHT	Surface Hole Temperature	68	DEGF
SPNV	SP Next Value	-120	MV
DSLT-FTB: Digitizing Sonic Logging Tool			
	DSLT Firing Mode	BHC	
	Telemetry Mode	DSLCL_FTB	
AGC	Automatic Gain Control Status	ON	
AMSG	Auxiliary Minimum Sliding Gate	140	US
CBAF	CBL Adjustment Factor	1	
CBLG	CBL Gate Width	45	US
CDTS	C-Delta-T Shale	100	US/F
DDEL	Digitizing Delay	0	US
DETE	Delta-T Detection	E2	
DFAD	Digital First Arrival Detection Switch	HOST	
DTVT	DTVT Depth Sampling Interval	20	

DIVL	DSLT Depth Sampling Interval	130	
DRCS	DSLT DLIS Recording Size	10	
DSIN	Digitizing Sample Interval	10	
DTCM	Delta-T Computation Mode	FULL	
DTF	Delta-T Fluid	189	US/F
DTFS	DSLCL Telemetry Frame Size	296	
DTM	Delta-T Matrix	56	US/F
DWCO	Digitizing Word Count	130	
GAI	Manual Gain	40	
HRSP	High Resolution Spacing	5.118	IN
ITTS	Integrated Transit Time Source	DT	
LTUT	Lower to Upper Transmitter Spacing Ratio	1	
MAHTR	Manual High Threshold Reference	1	
MGAI	Maximum Gain	60	
MIGA	Minimum Gain	1	
MNHT	Minimum High Threshold Reference	100	
MODE	Sonic Firing Mode	BHC	
NMSG	Near Minimum Sliding Gate	140	US
NMXG	Near Maximum Sliding Gate	860	US
NUMP	Number of Detection Passes	2	
RATE	Firing Rate	R15	
RDFA	Reset DFAD	OFF	
SDTH	Switch Down Threshold	20000	
SFAF	Sonic Formation Attenuation Factor	2	DB/F
SGAD	Sliding Gate Status	ON	
SGAI	Selectable Acquisition Gain	AUTO	
SGCL	Sliding Gate Closing Delta-T	111	US/F
SGCW	Sliding Gate Closing Width	41	US
SGDT	Sliding Gate Delta-T	40	US/F
SGW	Sliding Gate Width	100	US
SLEV	Signal Level for AGC	5000	
SPFS	Sonic Porosity Formula	RAYMER_HUNT	
SPSO	Sonic Porosity Source	DT	
SUTH	Switch Up Threshold	1000	
VDLG	VDL Manual Gain	5	
WAGC	Waveform AGC Allow/Disallow	OFF	
WGAJ	Waveform Manual Gain	20	
WGDT	Waveform Gain Delta-T	240	US/F
WGIN	Waveform Gain Interval	2540	US
WMOD	Waveform Firing Mode	FULL	
SGT-N: Scintillation Gamma Ray Tool - N			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	164	DEGF
DPPM	Density Porosity Processing Mode	STAN	
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	AITH_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	68	DEGF
SOGR	SGT Standoff Distance	0	IN
RWA: Apparent Water Resistivity			
ARTS	AIT Rt Selection (for ALLRES computation)	AITH_TwoResA90	
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHI	
RTCO	RTCO - Rt Invasion Correction	YES	
ALLRES: Basic Resistivity Transforms			
ARTS	AIT Rt Selection (for ALLRES computation)	AITH_TwoResA90	
RTCO	RTCO - Rt Invasion Correction	YES	
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth - Driller	7100.00	FT
TDL	Total Depth - Logger	7003.00	FT
System and Miscellaneous			
ALTDPC	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	8.750	IN
BSAL	Borehole Salinity	12200.00	PPM
CSIZ	Current Casing Size	9.625	IN
CWEI	Casing Weight	36.00	LB/F
DFD	Drilling Fluid Density	8.90	LB/G
DO	Depth Offset for Playback	7.8	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	54.40	DEGF
PBVADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	0.5408	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	7003	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Input DLIS Files

DEFAULT AIT_SONIC_010LUP FN:14 PRODUCER 19-Nov-2012 12:54 7014.0 FT 51.5 FT

Output DLIS Files

DEFAULT AIT_SONIC_016PUP FN:24 PRODUCER 19-Nov-2012 16:22 7021.5 FT 59.5 FT
RTB AIT_SONIC_016PUP FN:25 PRODUCER 19-Nov-2012 10:20 7021.5 FT 59.5 FT

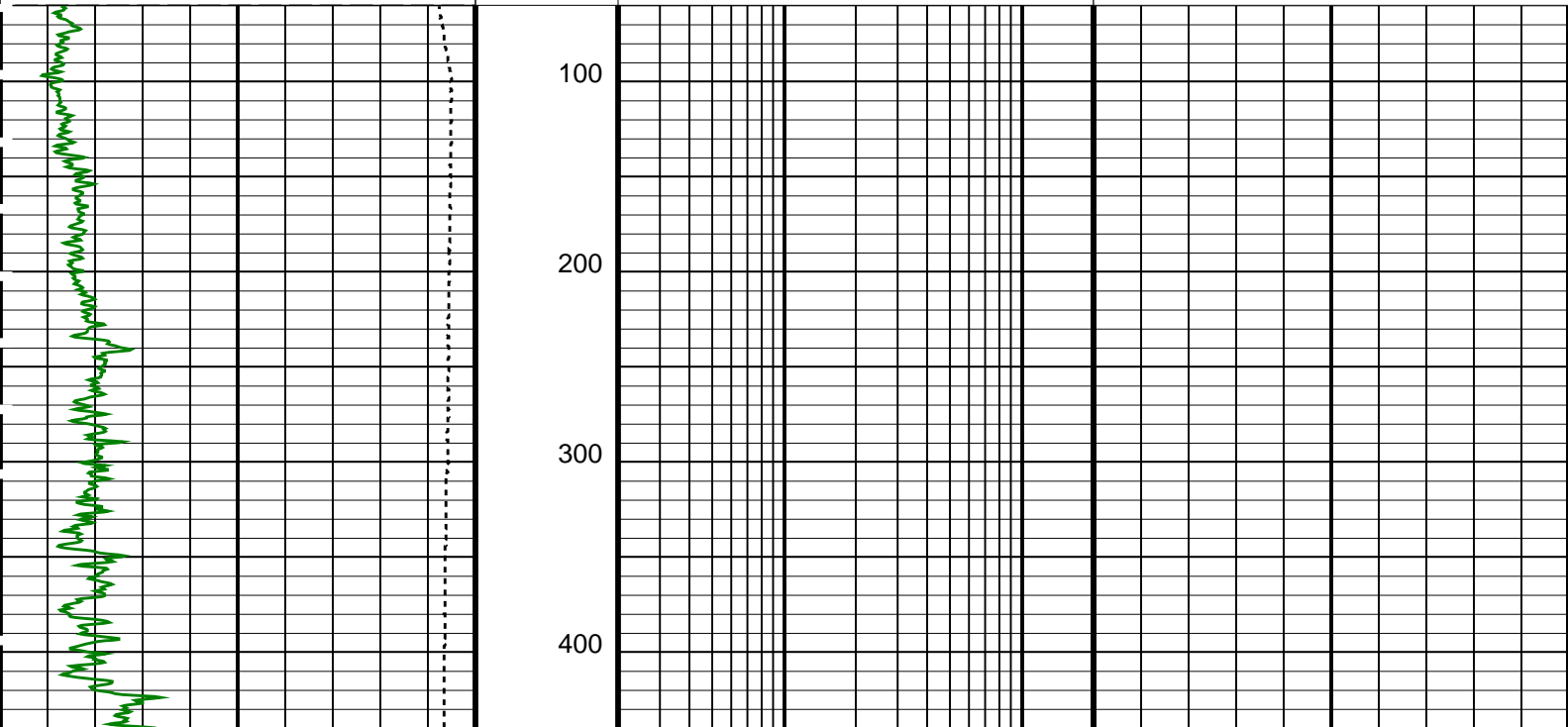
OP System Version: 18C0-147

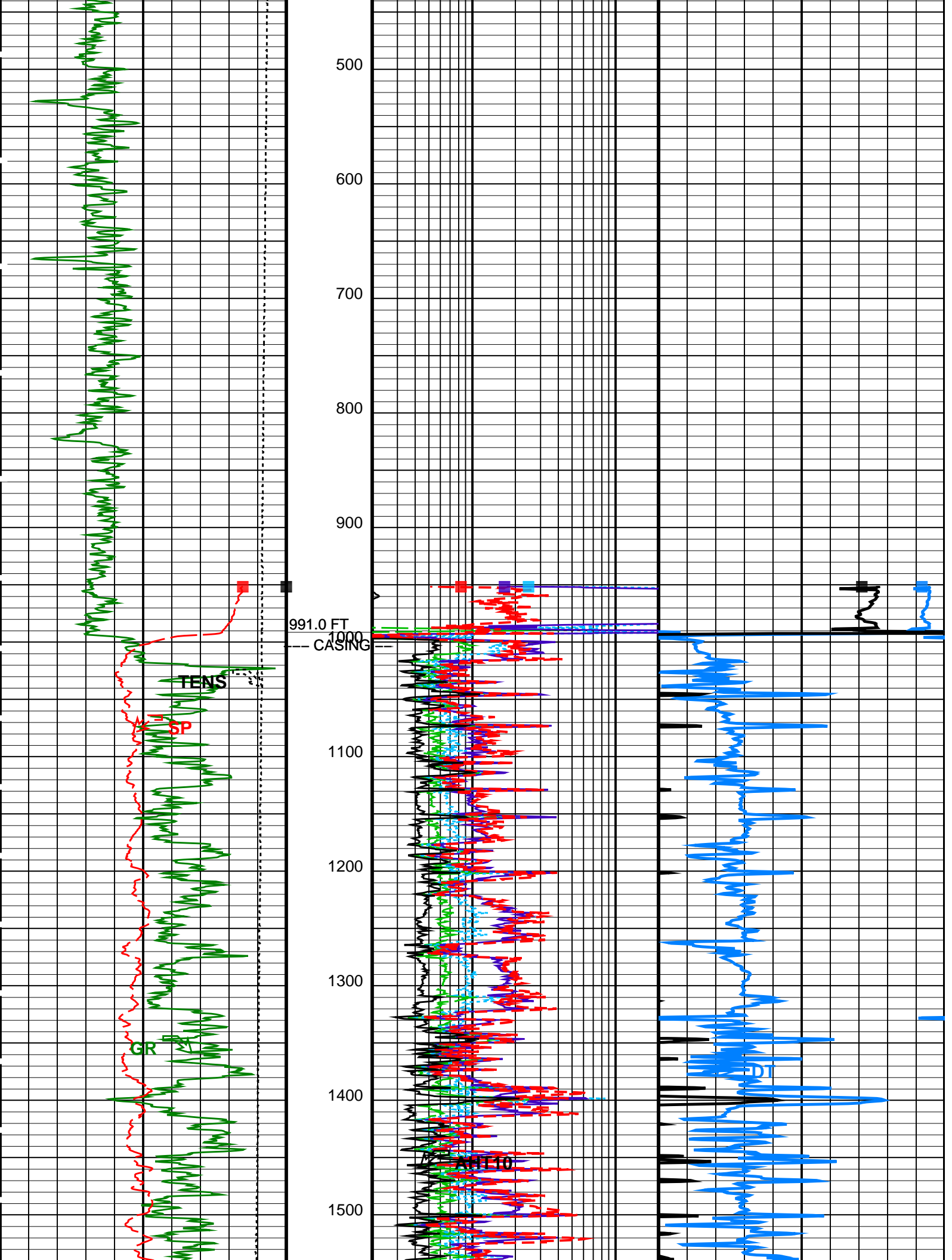
AIT-H 18C0-147 DTA-A 18C0-147
DSLT-FTB 18C0-147 SGT-N 18C0-147
DTC-H 18C0-147

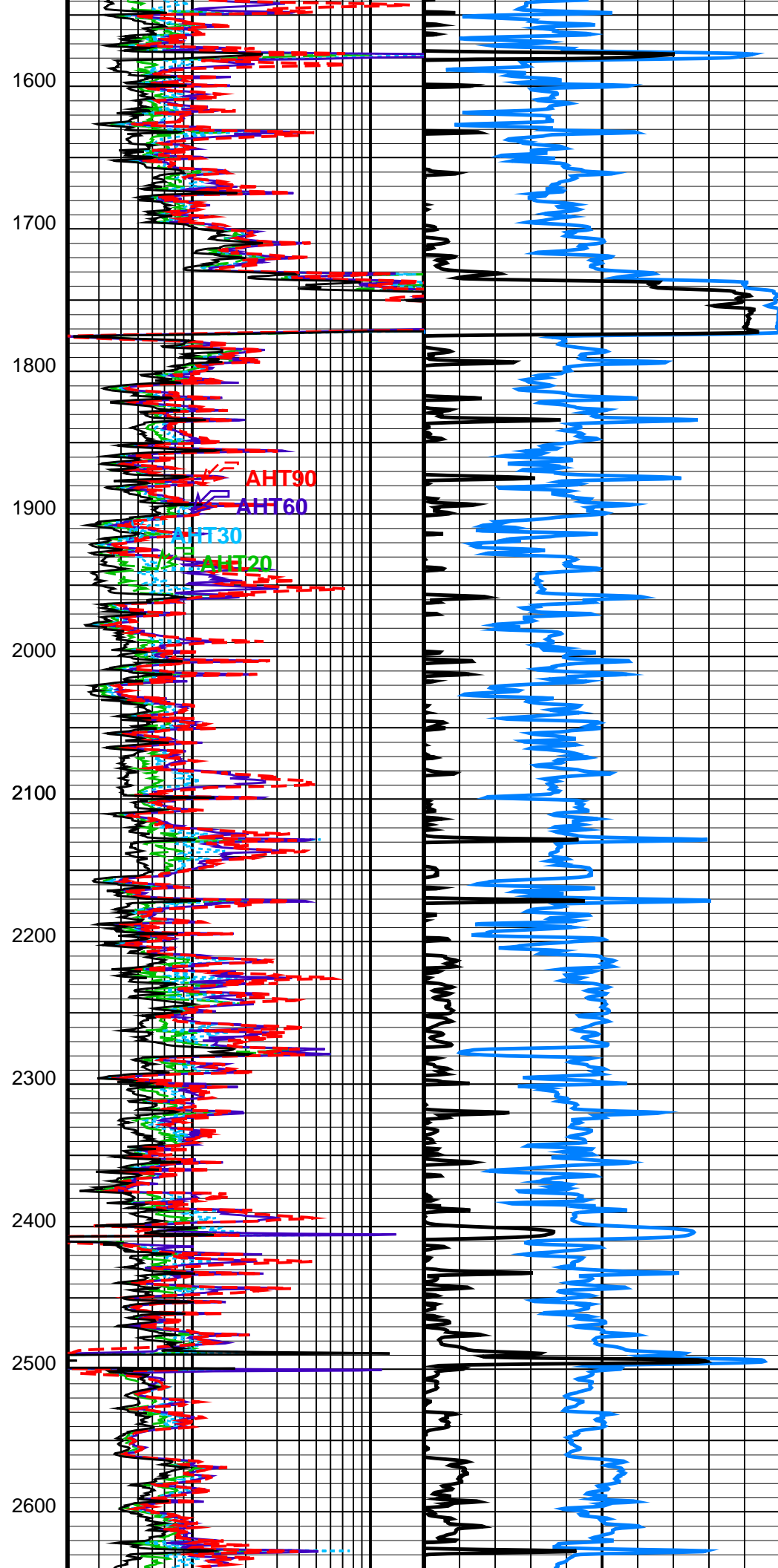
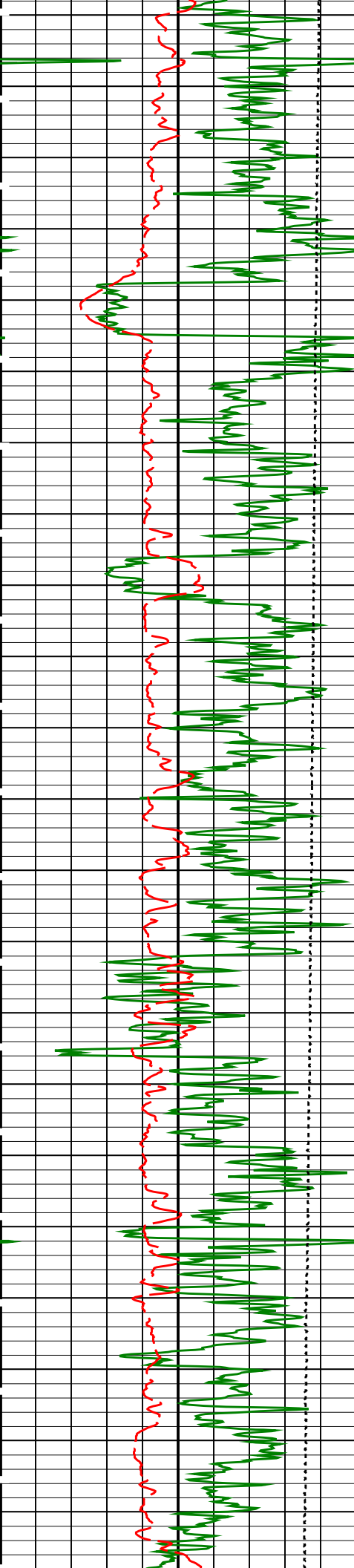
PIP SUMMARY

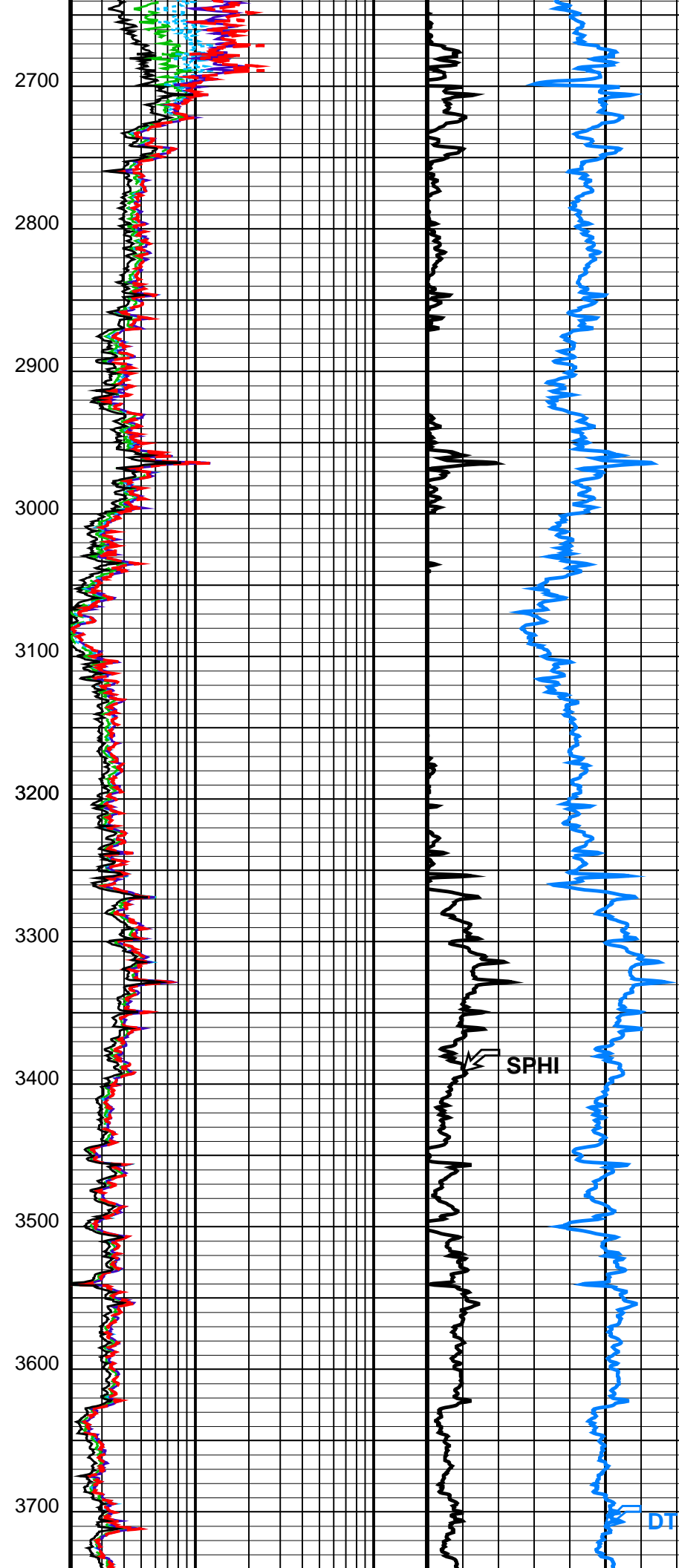
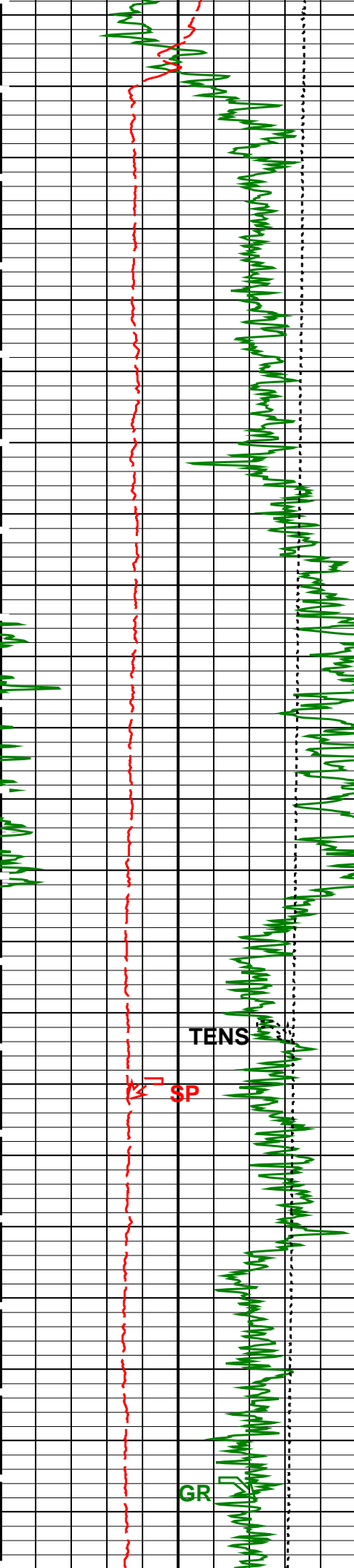
Time Mark Every 60 S

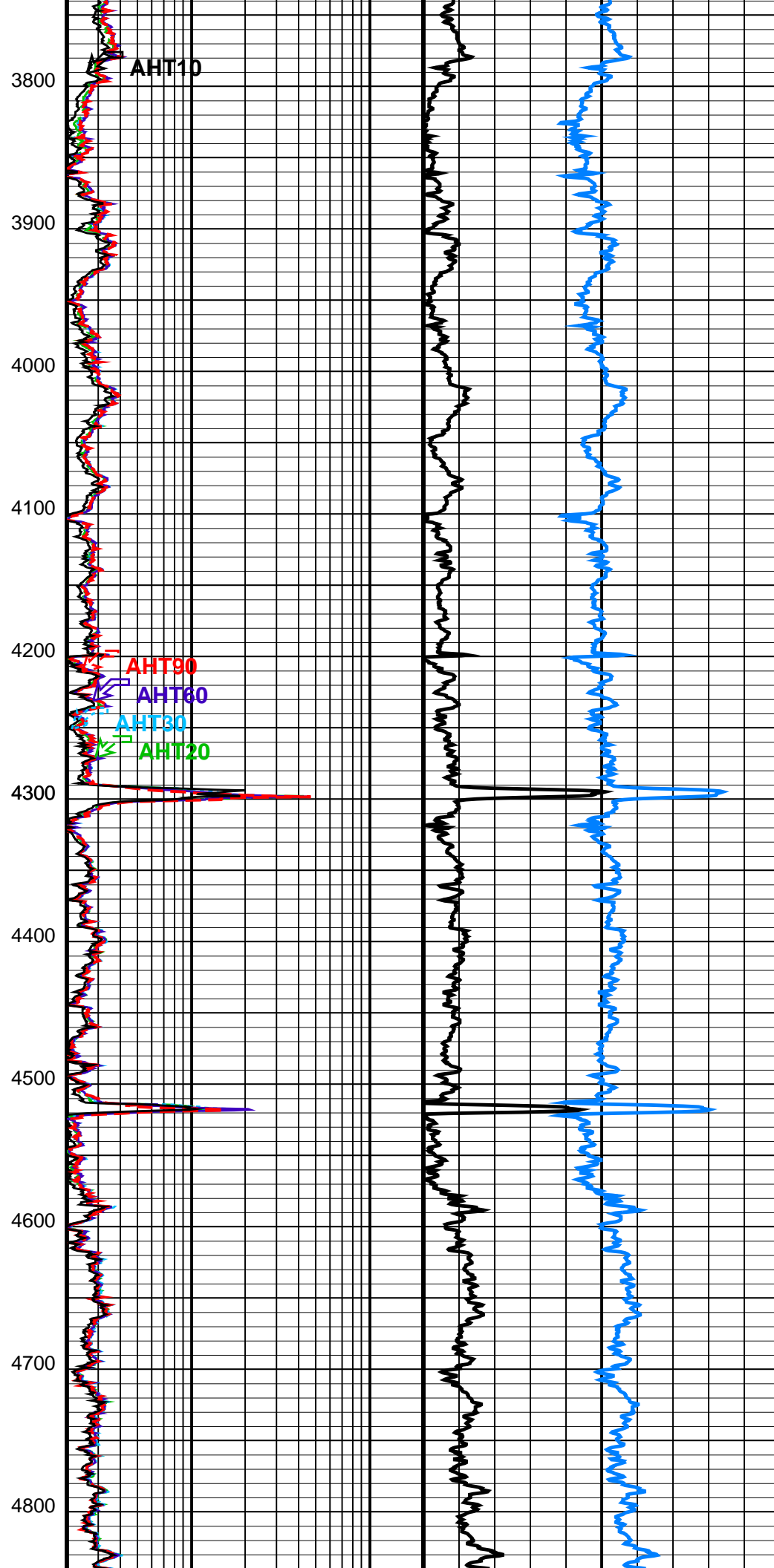
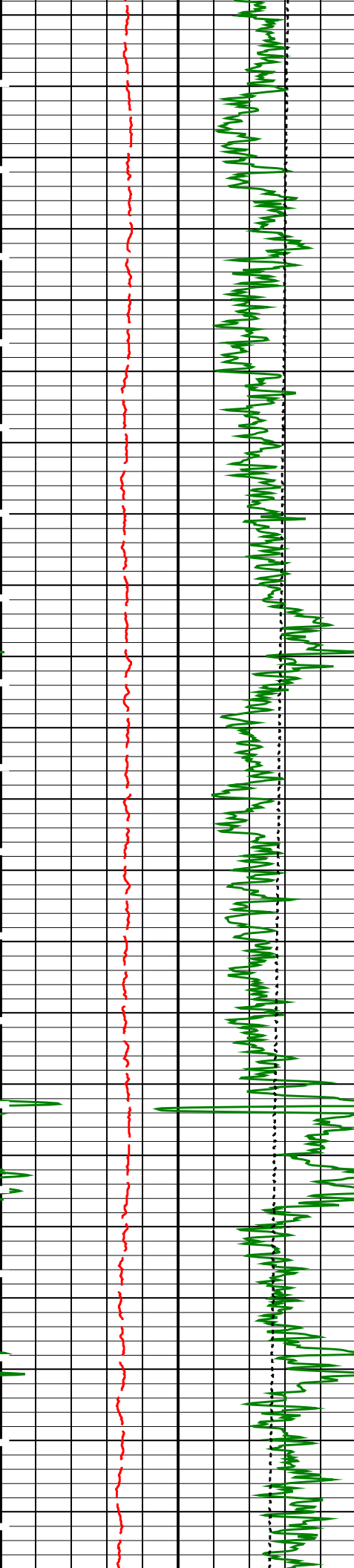
<div>Cable Tension (TENS) (LBF)</div> <div>SP [20 mv/div] (SP) (MV)</div> <div>GR (GR) (GAPI)</div> <div>Gamma Ray on Backup</div>		AIT-H 10 Inch Investigation (AHT10)			
		2	(OHMM)	200	
		2	AHT90 (AHT90) (OHMM)	200	
		2	AHT60 (AHT60) (OHMM)	200	
		2	AHT30 (AHT30) (OHMM)	200	
				Sonic Porosity (SPHI)	
				0.3	(V/V) -0.1
				Delta-T (DT)	
		2	AHT20 (AHT20) (OHMM)	200	150 (US/F) 50

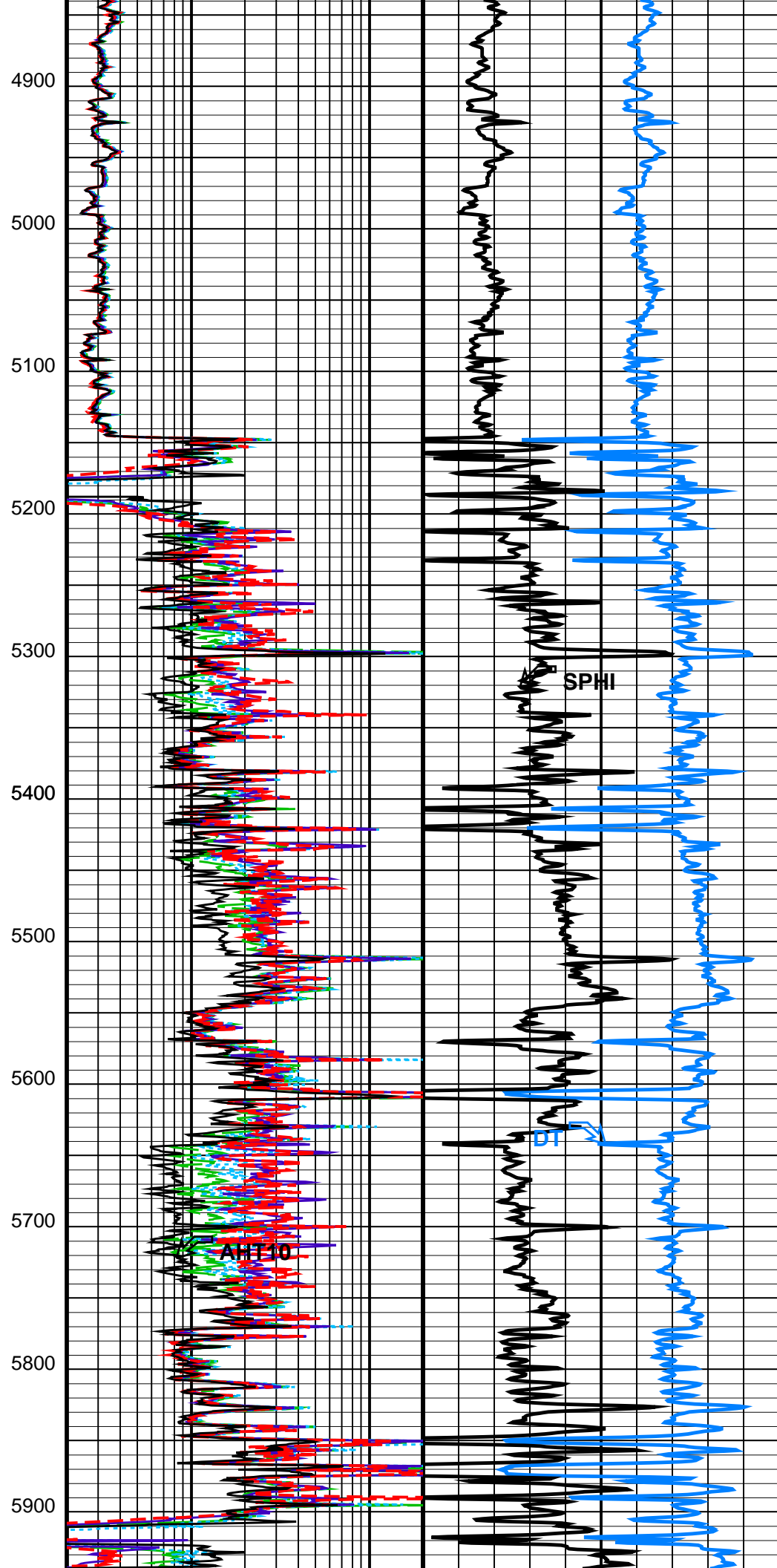
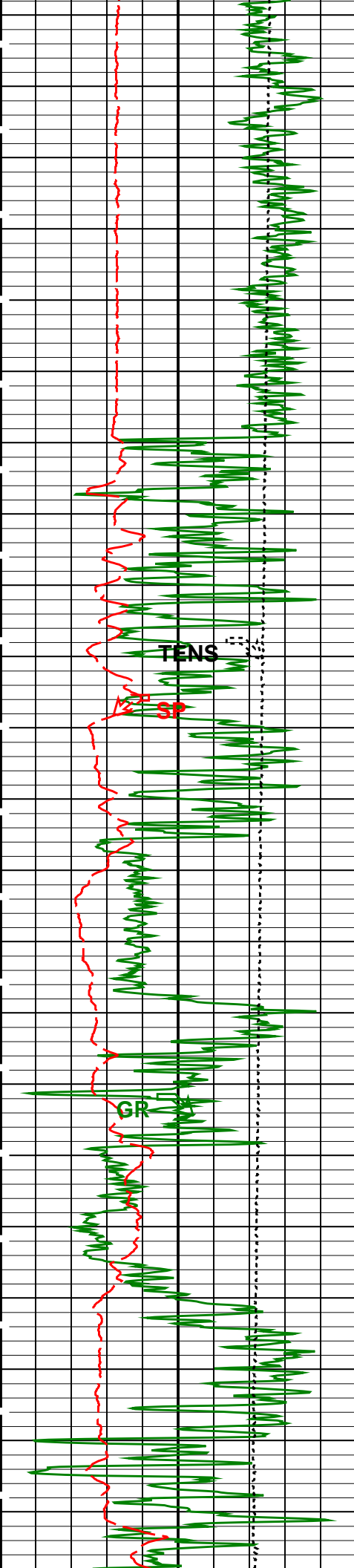


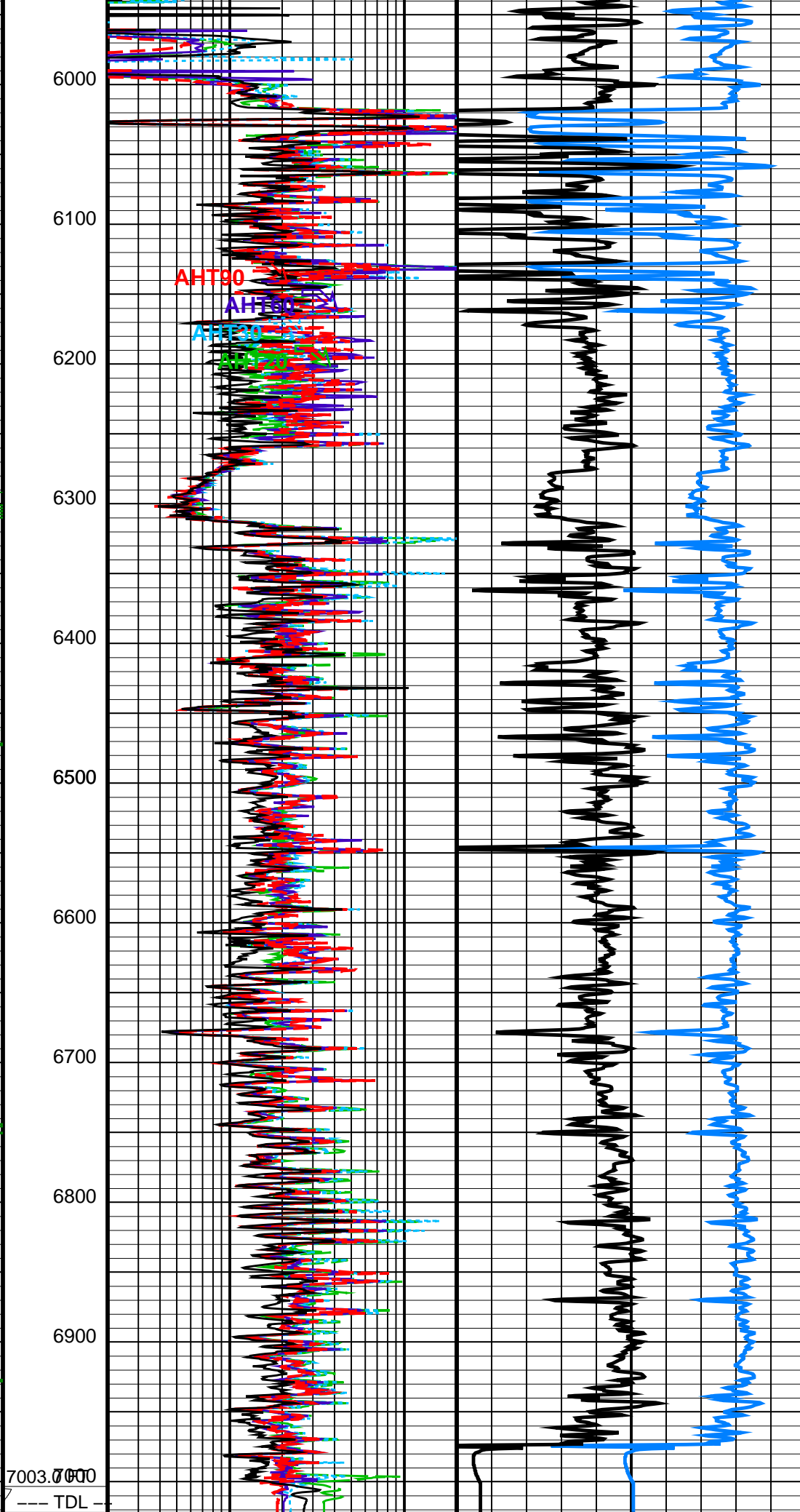
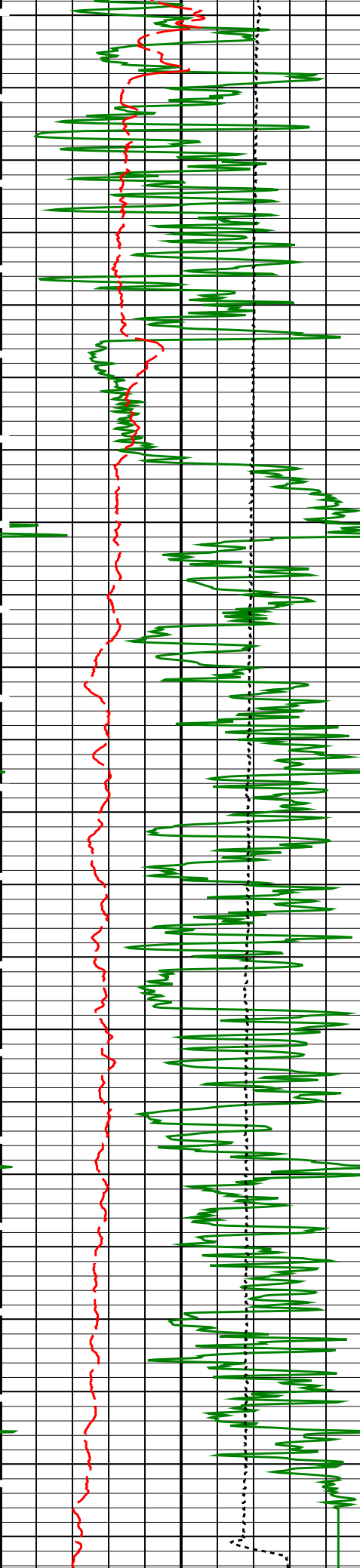












Gamma Ray on Backup			2 (OHMM) 200			150 (US/F) 50		
GR (GR)			AHT30 (AHT30)			Sonic Porosity (SPHI)		
0 (GAPI) 150			2 (OHMM) 200			0.3 (V/V) -0.1		
SP [20 mv/div] (SP)			AHT60 (AHT60)					
-160 (MV) 40			2 (OHMM) 200					
Cable Tension (TENS)			AHT90 (AHT90)					
10000 (LBF) 0			2 (OHMM) 200					
			AIT-H 10 Inch Investigation (AHT10)					
			2 (OHMM) 200					

PIP SUMMARY						
Time Mark Every 60 S						
Format: COMBO_1		Vertical Scale: 1" per 100'		Graphics File Created: 19-Nov-2012 16:22		
OP System Version: 18C0-147						
AIT-H	18C0-147	DTA-A	18C0-147			
DSLT-FTB	18C0-147	SGT-N	18C0-147			
DTC-H	18C0-147					
Input DLIS Files						
DEFAULT	AIT_SONIC_010LUP	FN:14	PRODUCER	19-Nov-2012 12:54	7014.0 FT	51.5 FT
Output DLIS Files						
DEFAULT	AIT_SONIC_016PUP	FN:24	PRODUCER	19-Nov-2012 16:22		
RTB	AIT_SONIC_016PUP	FN:25	PRODUCER	19-Nov-2012 10:20		

<div> <div>Schlumberger</div> <div> MAIN PASS 1" = 100' </div> </div>						
MAXIS Field Log						

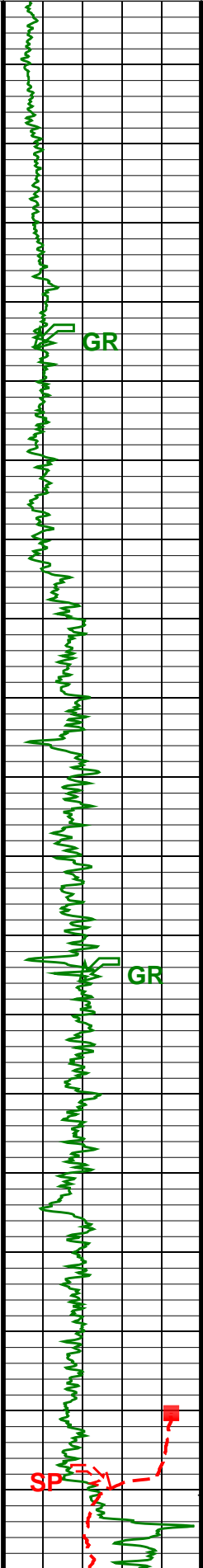
Input DLIS Files						
DEFAULT	AIT_SONIC_010LUP	FN:14	PRODUCER	19-Nov-2012 12:54	7014.0 FT	51.5 FT
Output DLIS Files						
DEFAULT	AIT_SONIC_016PUP	FN:24	PRODUCER	19-Nov-2012 16:22	7021.5 FT	59.5 FT
RTB	AIT_SONIC_016PUP	FN:25	PRODUCER	19-Nov-2012 10:20	7021.5 FT	59.5 FT
OP System Version: 18C0-147						
AIT-H	18C0-147	DTA-A	18C0-147			
DSLT-FTB	18C0-147	SGT-N	18C0-147			
DTC-H	18C0-147					
PIP SUMMARY						
Time Mark Every 60 S						

	SP (SP)	AIT-H 60 Inch Investigation (AHT60)	Sonic Porosity (SPHI)
-160 (MV) 40			

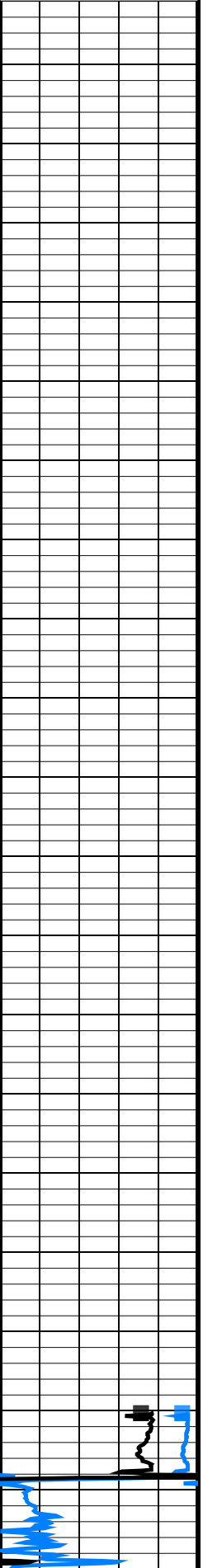
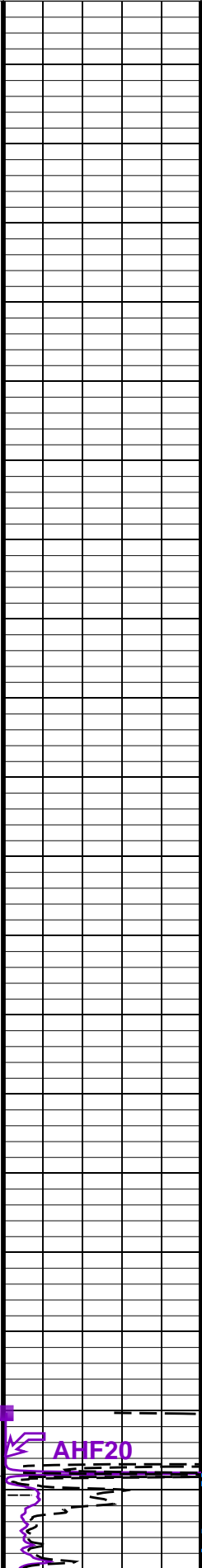
-100 (MV) 40
Gamma Ray (GR)
0 (GAPI) 150

0 (OHMM) 50
AIT-H 20 Inch Investigation (AHF20) (OHMM) 50

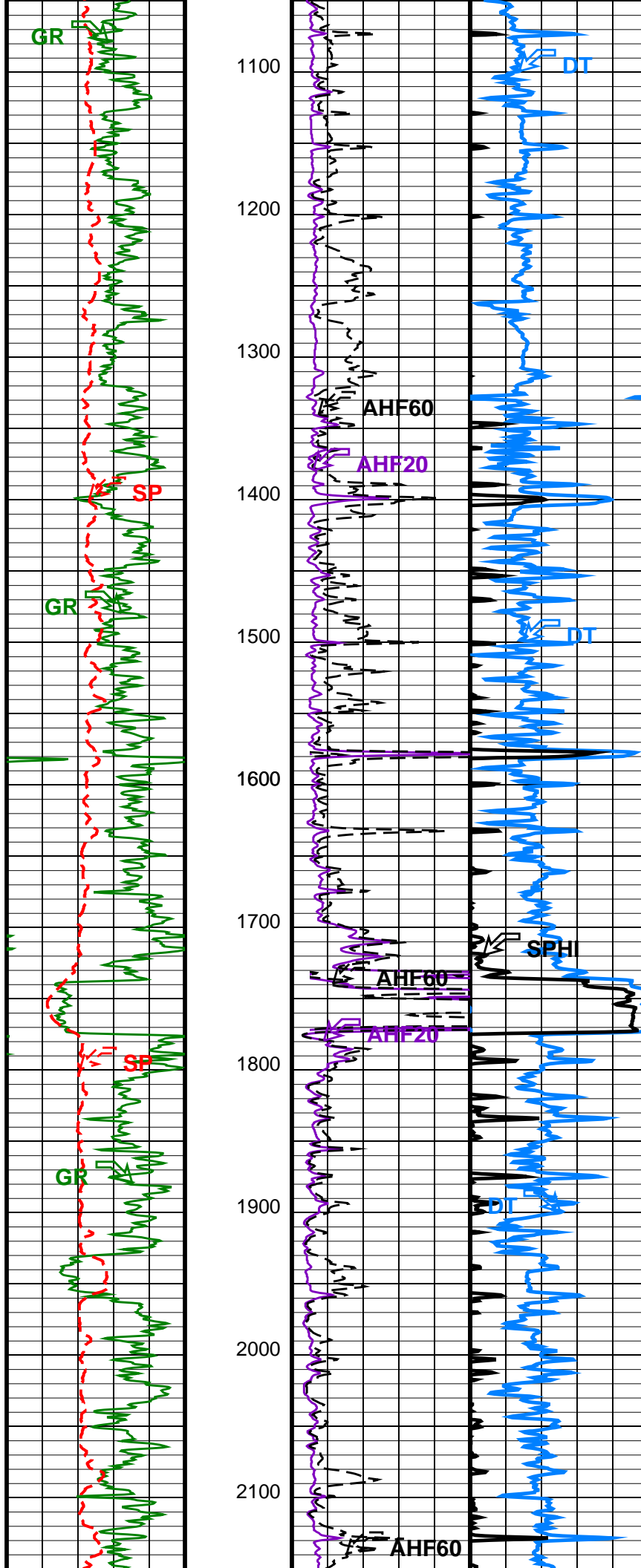
0.3 (V/V) -0.1
Delta-T (DT)
150 (US/F) 50

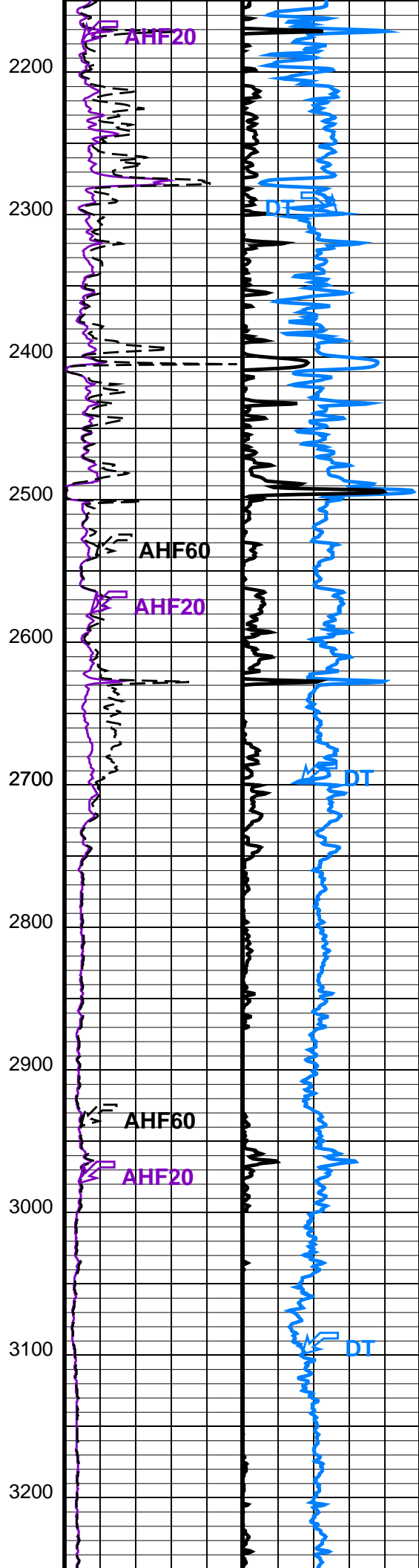
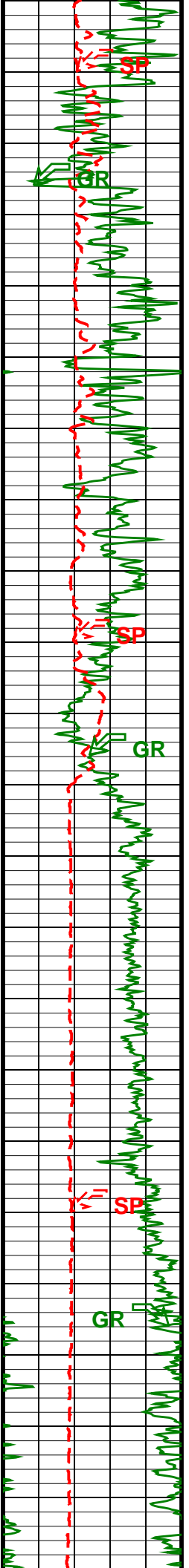


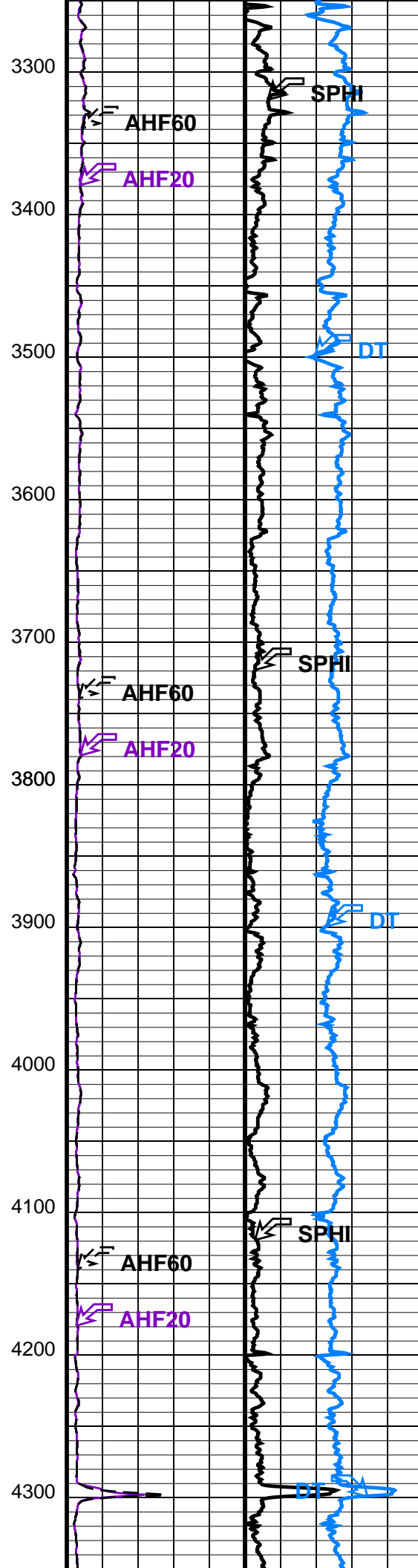
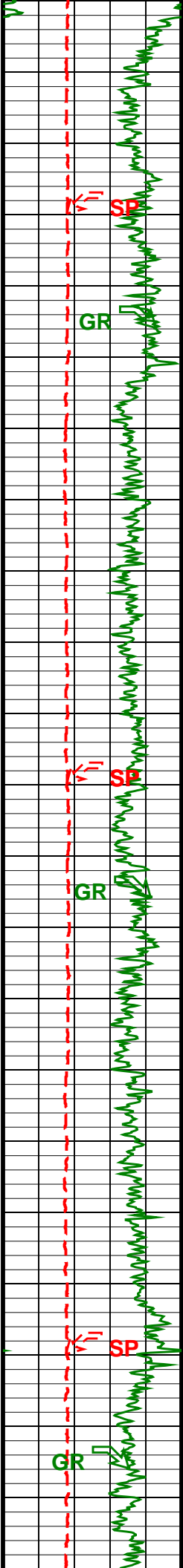
100
200
300
400
500
600
700
800
900

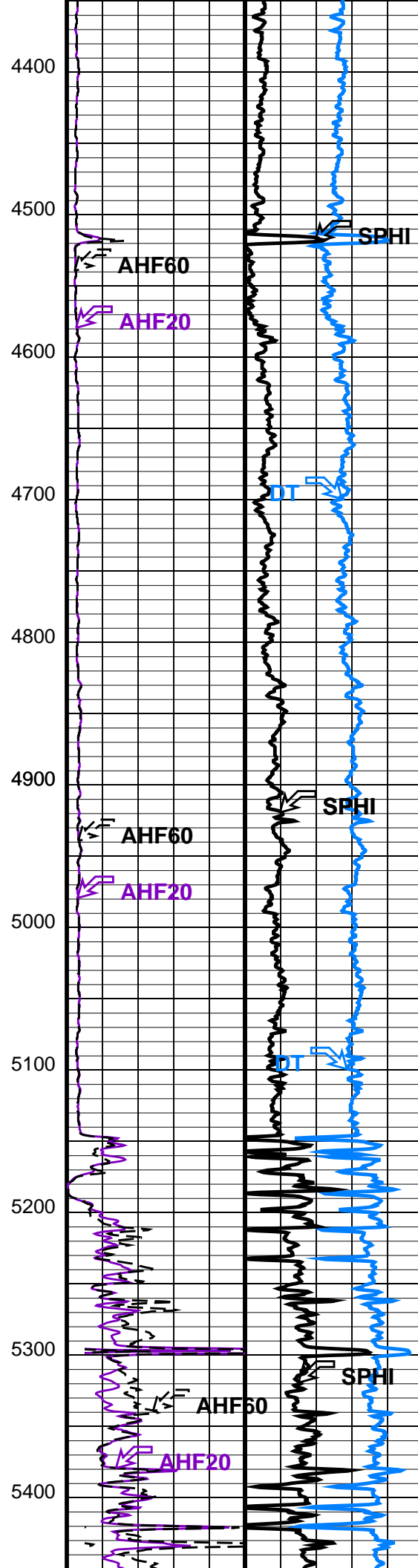
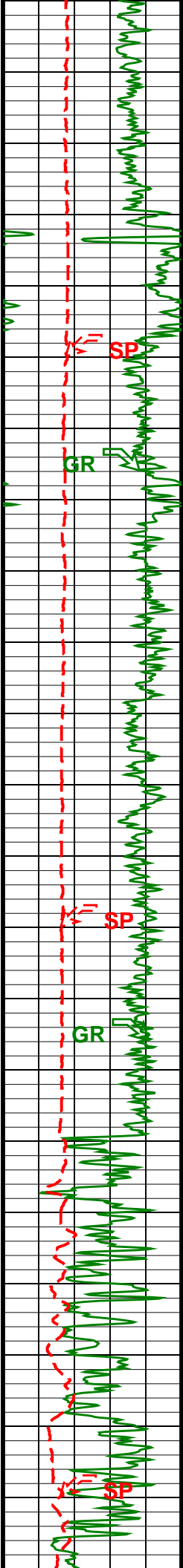


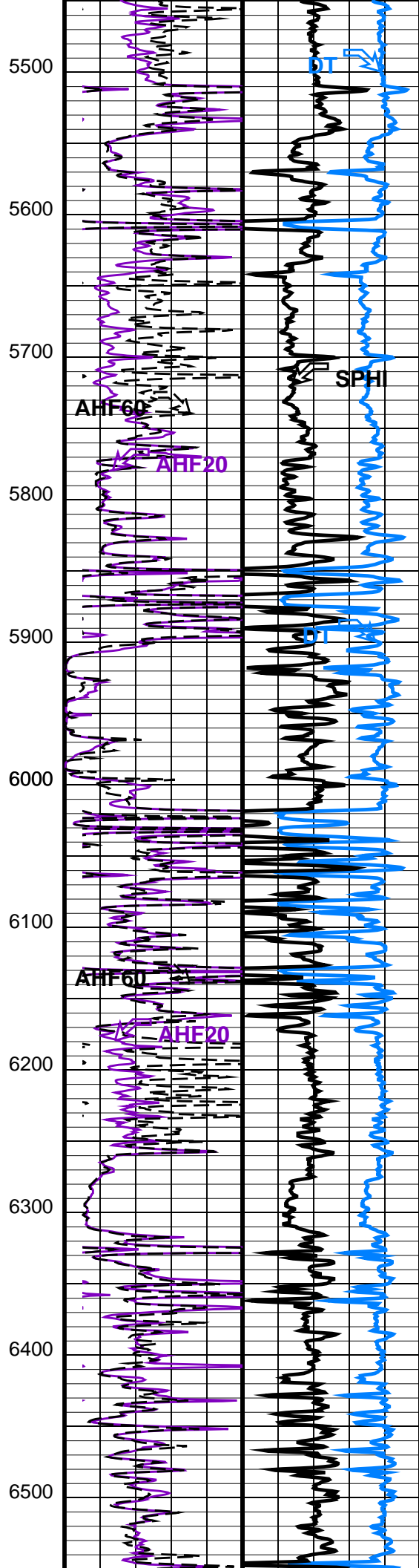
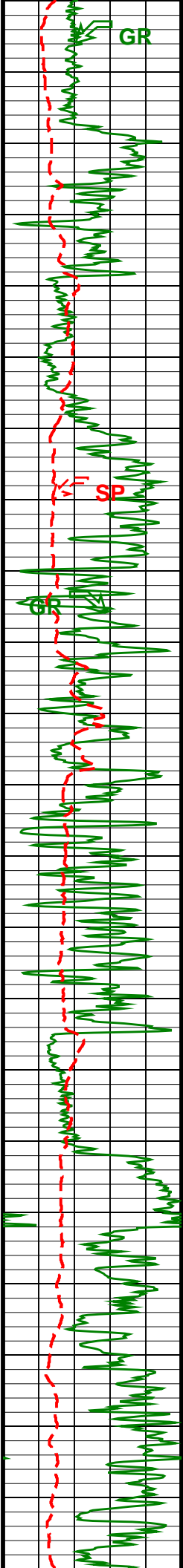
991.0 FT
1000
--- CASING

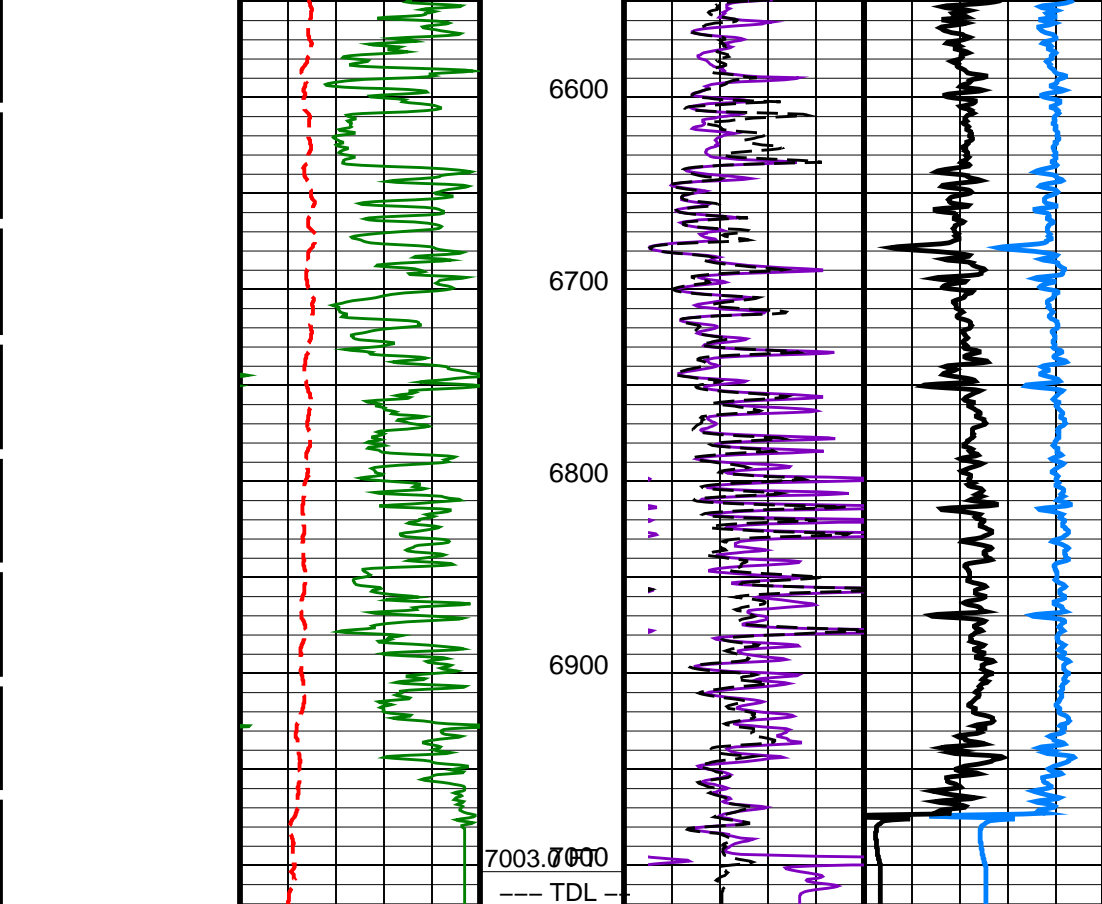












Gamma Ray (GR)
0 (GAPI) 150

SP (SP)
-160 (MV) 40

AIT-H 20 Inch
Investigation
(AHF20)
0 (OHMM) 50

AIT-H 60 Inch
Investigation
(AHF60)
0 (OHMM) 50

Delta-T (DT)
150 (US/F) 50

Sonic Porosity
(SPHI)
0.3 (V/V) -0.1

PIP SUMMARY

Time Mark Every 60 S

Format: COMBO_1_1 Vertical Scale: 1" per 100'

Graphics File Created: 19-Nov-2012 16:22

OP System Version: 18C0-147

AIT-H	18C0-147	DTA-A	18C0-147
DSL-T-FTB	18C0-147	SGT-N	18C0-147
DTC-H	18C0-147		

Input DLIS Files

DEFAULT	AIT_SONIC_010LUP	FN:14	PRODUCER	19-Nov-2012 12:54	7014.0 FT	51.5 FT
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Output DLIS Files

DEFAULT	AIT_SONIC_016PUP	FN:24	PRODUCER	19-Nov-2012 16:22
RTB	AIT_SONIC_016PUP	FN:25	PRODUCER	19-Nov-2012 10:20

Schlumberger

CALIBRATIONS

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: 22-Oct-2012 20:25 Before: 19-Nov-2012 12:27

Thru Cal Magnitude – 0	0	0.6133	0.6197	N/A	N/A	N/A	V
Thru Cal Magnitude – 1	0	1.257	1.270	N/A	N/A	N/A	V
Thru Cal Magnitude – 2	0	0.6245	0.6309	N/A	N/A	N/A	V
Thru Cal Magnitude – 3	0	0.7054	0.7128	N/A	N/A	N/A	V
Thru Cal Magnitude – 4	0	1.325	1.339	N/A	N/A	N/A	V
Thru Cal Magnitude – 5	0	1.922	1.942	N/A	N/A	N/A	V
Thru Cal Magnitude – 6	0	1.925	1.945	N/A	N/A	N/A	V
Thru Cal Magnitude – 7	0	1.376	1.392	N/A	N/A	N/A	V
Phase – 0	0	54.46	54.96	N/A	N/A	N/A	DEG
Phase – 1	0	53.33	53.85	N/A	N/A	N/A	DEG
Phase – 2	0	49.51	50.03	N/A	N/A	N/A	DEG
Phase – 3	0	48.71	49.23	N/A	N/A	N/A	DEG
Phase – 4	0	42.21	42.74	N/A	N/A	N/A	DEG
Phase – 5	0	40.27	40.82	N/A	N/A	N/A	DEG
Phase – 6	0	40.22	40.78	N/A	N/A	N/A	DEG
Phase – 7	0	36.22	36.89	N/A	N/A	N/A	DEG

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

Master: 22-Oct-2012 20:25 Before: 19-Nov-2012 12:27

Array Induction SPA Plus	990.5	994.9	995.2	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	-0.1295	-0.1234	N/A	N/A	N/A	MV
Array Induction Temperature PI	0.9150	0.9220	0.9223	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	-0.0001301	-0.0001234	N/A	N/A	N/A	V

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

Master: 22-Oct-2012 20:25

Test Loop Gain Magnitude – 0	0	1.021	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 1	0	1.018	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 2	0	1.035	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 3	0	1.032	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 4	0	1.011	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 5	0	0.9951	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 6	0	1.010	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 7	0	1.017	N/A	N/A	N/A	N/A	V
Phase – 0	0	0.4316	N/A	N/A	N/A	N/A	DEG
Phase – 1	0	0.4986	N/A	N/A	N/A	N/A	DEG
Phase – 2	0	-0.1444	N/A	N/A	N/A	N/A	DEG
Phase – 3	0	-0.04346	N/A	N/A	N/A	N/A	DEG
Phase – 4	0	-0.2037	N/A	N/A	N/A	N/A	DEG
Phase – 5	0	-0.1868	N/A	N/A	N/A	N/A	DEG
Phase – 6	0	0.1814	N/A	N/A	N/A	N/A	DEG
Phase – 7	0	-0.2196	N/A	N/A	N/A	N/A	DEG

Array Induction Tool – H Wellsite Calibration – Sonde Error Correction

Master: 22-Oct-2012 20:25

R Sonde Error Correction – 0	0	-22.31	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 1	0	153.4	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 2	0	103.0	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 3	0	57.16	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 4	0	23.64	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 5	0	13.18	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 6	0	8.909	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 7	0	-1.458	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 0	0	80.06	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 1	0	169.7	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 2	0	-9.261	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 3	0	-58.61	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 4	0	-9.614	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 5	0	-0.003300	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 6	0	9.901	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 7	0	2.481	N/A	N/A	N/A	N/A	MM/M

Array Induction Tool – H Wellsite Calibration – Mud Gain Correction

Master: 22-Oct-2012 20:25

Coarse – Mag, Real, Imag – 0	0	0.9655	N/A	N/A	N/A	N/A	
Coarse – Mag, Real, Imag – 1	0	0.9655	N/A	N/A	N/A	N/A	
Coarse – Mag, Real, Imag – 2	0	0.9655	N/A	N/A	N/A	N/A	

Coarse – Mag, Real, Imag – 2	0	0.9633	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 0	0	0.8527	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 1	0	0.8527	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 2	0	0.8527	N/A	N/A	N/A	N/A

Scintillation Gamma Ray Tool – N Wellsite Calibration – Detector Calibration

Before: 18–Nov–2012 10:25

Gamma Ray (Jig – Bkg)	159.3	N/A	159.3	N/A	N/A	14.48	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

Array Induction Tool – H / Equipment Identification

Primary Equipment:
Rm/SP Bottom Nose
Array Induction Sonde





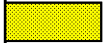











AHRM – A
AHIS – BA
389

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	0.6133		0.6050	54.46		71.00
	Before	0.6197			54.96		
1	Master	1.257		1.270	53.33		70.00
	Before	1.270			53.85		
2	Master	0.6245		0.6230	49.51		66.00
	Before	0.6309			50.03		
3	Master	0.7054		0.7040	48.71		65.00
	Before	0.7128			49.23		
4	Master	1.325		1.337	42.21		59.00
	Before	1.339			42.74		
5	Master	1.922		1.955	40.27		57.00
	Before	1.942			40.82		
6	Master	1.925		1.955	40.22		57.00
	Before	1.945			40.78		
7	Master	1.376		1.415	36.22		53.00
	Before	1.392			36.89		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom –60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)
Master: 22–Oct–2012 20:25				Before: 19–Nov–2012 12:27			

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		994.9	Master		–0.1295
Before		995.2	Before		–0.1234
941.0 (Minimum)		990.5 (Nominal)	–50.00 (Minimum)		50.00 (Maximum)
		1040 (Maximum)			
Phase	Array Induction Temperature Plus V	Value	Phase	Array Induction Temperature Zero V	Value
Master		0.9220	Master		–0.0001301
Before		0.9223	Before		–0.0001234
0.8700 (Minimum)		0.9150 (Nominal)	–0.05000 (Minimum)		0.05000 (Maximum)
		0.9600 (Maximum)			
Master: 22–Oct–2012 20:25			Before: 19–Nov–2012 12:27		




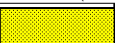


Array Induction Tool – H Wellsite Calibration			
Test Loop Gain Correction			

Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG		
0	1.021				0.4316			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.018				0.4986			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.035				-0.1444			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.032				-0.04346			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	1.011				-0.2037			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9951				-0.1868			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	1.010				0.1814			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.017				-0.2196			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: 22-Oct-2012 20:25





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	-22.31				80.06			
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	153.4				169.7			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	103.0				-9.261			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	57.16				-58.61			
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	23.64				-9.614			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	13.18				-0.003300			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	8.909				9.901			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-1.458				2.481			
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 22-Oct-2012 20:25

Array Induction Tool – H Wellsite Calibration							
Mud Gain Correction							
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag	
0	0.9655				0.8527		
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)
1	0.9655				0.8527		
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)
2	0.9655				0.8527		
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)

0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)	0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
Master: 22-Oct-2012 20:25					

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	0.6133		0.6050	54.46		71.00
1	Master	1.257		1.270	53.33		70.00
2	Master	0.6245		0.6230	49.51		66.00
3	Master	0.7054		0.7040	48.71		65.00
4	Master	1.325		1.337	42.21		59.00
5	Master	1.922		1.955	40.27		57.00
6	Master	1.925		1.955	40.22		57.00
7	Master	1.376		1.415	36.22		53.00
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)
Master: 22-Oct-2012 20:25							







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			994.9	Master			-0.1295
	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			0.9220	Master			-0.0001301
	0.8700 (Minimum)	0.9150 (Nominal)	0.9600 (Maximum)		-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)
Master: 22-Oct-2012 20:25							

Array Induction Tool – H Master Calibration							
Test Loop Gain Correction							
Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG	
0	1.021				0.4316		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.018				0.4986		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.035				-0.1444		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.032				-0.04346		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	1.011				-0.2037		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9951				-0.1868		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	1.010				0.1814		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.017				-0.2196		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
Master: 22-Oct-2012 20:25							

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	-22.31				80.06			
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	153.4				169.7			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	103.0				-9.261			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	57.16				-58.61			
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	23.64				-9.614			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	13.18				-0.003300			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	8.909				9.901			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-1.458				2.481			
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 22-Oct-2012 20:25

Array Induction Tool – H Master Calibration								
Mud Gain Correction								
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag		
0	0.9655				0.8527			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	0.9655				0.8527			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	0.9655				0.8527			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
Master: 22-Oct-2012 20:25								

Master: 22-Oct-2012 20:25

Scintillation Gamma Ray Tool – N / Equipment Identification	
Primary Equipment:	
Scintillation Gamma Cartridge	SGC – TB
Scintillation Gamma Detector	SGD – TAB
Auxiliary Equipment:	
Scintillation Gamma Housing	SGH – K
Gamma Source Radioactive	GSR – U/Y

Scintillation Gamma Ray Tool – N Wellsite Calibration									
Detector Calibration									
Phase	Gamma Ray Background		GAPI	Value	Phase	Gamma Ray (Jig – Bkg)		GAPI	Value
Before				34.22	Before				159.3
	0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)			144.8 (Minimum)	159.3 (Nominal)	173.8 (Maximum)	
					Before				165.0
						150.0 (Minimum)	165.0 (Nominal)	180.0 (Maximum)	

Before: 18-Nov-2012 10:25

DTS Telemetry Tool / Equipment Identification	
Primary Equipment:	
DTC–H Auxiliary Cartridge	DTCH – A
DTC–H Telemetry Cartridge	DTCH – A

Company: **PETROLEUM RESOURCE MANAGEMENT CORP.**

Schlumberger

Well: **SHEEHAN 2 4-2**

Field: **WILDCAT**

County: **MOFFAT**

State: **COLORADO**

ARRAY INDUCTION

SONIC POROSITY – FORMATION SLOWNESS

GAMMA RAY – SPONTANEOUS POTENTIAL