

Schlumberger

Company: Battelle Pacific Northwest Lab

Well: Wallula Basalt Pilot #1

Field: Wildcat

County: Walla Walla

State: Washington

SONIC SCANNER

County: Walla Walla
 Field: Wildcat
 Location: SOUTHWEST 1/4 OF SECTION
 Well: Wallula Basalt Pilot #1
 Company: Battelle Pacific Northwest Lab

LOCATION			
SOUTHWEST 1/4 OF SECTION 10		Elev.: K.B. 5.50 ft	
		G.L. D.F.	
Permanent Datum: _____	GROUND LEVEL _____	Elev.: _____	above Perm. Datum _____
Log Measured From: _____	FLANGE TOP _____		
Drilling Measured From: _____	KELLY BUSHING _____		
API Serial No. _____	Section 10	Township 7	Range 31E

Logging Date	18-Apr-2009		
Run Number	TWO		
Depth Driller	4105 ft		
Schlumberger Depth	4105 ft		
Bottom Log Interval	4103 ft		
Top Log Interval	1108 ft		
Casing Driller Size @ Depth	14,000 in	@	1108 ft
Casing Schlumberger	1108 ft		
Bit Size	12.250 in		
Type Fluid In Hole	FRESH WATER		
Density	8.4 lbm/gal		
Fluid Loss	PH		
Source Of Sample	MUD TANK		
RM @ Measured Temperature	23.100 ohm.m	@	64 degF
RMF @ Measured Temperature		@	
RMC @ Measured Temperature		@	
Source RMF	RMC		
RM @ MRT	RMF @ MRT	@	@
Maximum Recorded Temperatures			
Circulation Stopped	Time		
Logger On Bottom	Time		10:35
Unit Number	3152	SACRAMENTO	
Recorded By	BEN GRAU		
Witnessed By	CHARLOTTE SULLIVAN		

	Run 1	Run 2	Run
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			
Fluid Loss			
Source Of Sample			
RM @ Measured Temperature			
RMF @ Measured Temperature			
RMC @ Measured Temperature			
Source RMF			
RM @ MRT			
Maximum Recorded Temperatures			
Circulation Stopped			
Logger On Bottom			
Unit Number			
Recorded By			
Witnessed By			

DEPTH SUMMARY LISTING

Date Created: 19-APR-2009 2:22:51

Depth System Equipment

Depth Measuring Device	Tension Device	Logging Cable
Type: IDW-B Serial Number: 6347 Calibration Date: Calibrator Serial Number: 1 Calibration Cable Type: 7-39Z LXS Wheel Correction 1: -4 Wheel Correction 2: -3	Type: CMTD-B/A Serial Number: 2205 Calibration Date: Calibrator Serial Number: 185 Number of Calibration Points: 0	Type: 7-39Z LXS Serial Number: 3152 Length: 17700 FT <hr/> Conveyance Method: Wireline Rig Type: LAND

Depth Control Parameters

Log Sequence:	Subsequent Log In the Well
Reference Log Name:	
Reference Log Run Number:	
Reference Log Date:	

Depth Control Remarks

1.	ALL SCHLUMBERGER DEPTH CONTROL PROCEDURES FOLLOWED
2.	
3.	
4.	
5.	
6.	

DISCLAIMER

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 SERVICES1	OTHER SERVICES2
OS1:	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
TOOL STRING RAN AS PER TOOL SKETCH	
MATRIX: LIMESTONE	
DENSITY: 2.71 G/CC	
ICV CALCULATED USING FCD = 9.625"	
TOOLS RAN AT 1200 FT/HR	

THANK YOU FOR USING SCHLUMBERGER!!

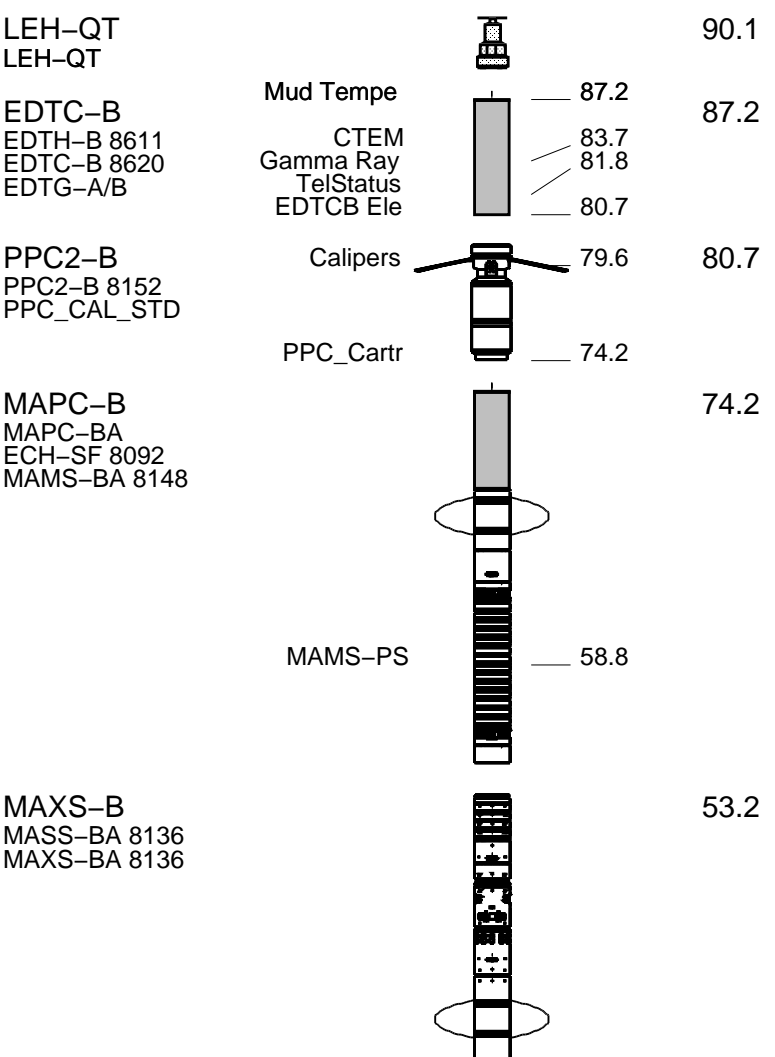
RUN 1			RUN 2		
SERVICE ORDER #:		AZJT00051	SERVICE ORDER #:		
PROGRAM VERSION:		16C0-147	PROGRAM VERSION:		
FLUID LEVEL:			FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT
WITM (EDTS)-A

DOWNHOLE EQUIPMENT



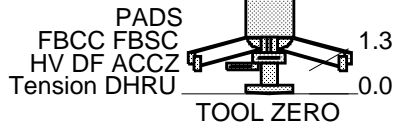
MAXS-PS  32.9

Calipers  31.8 32.9

PPC_Cartr  26.4

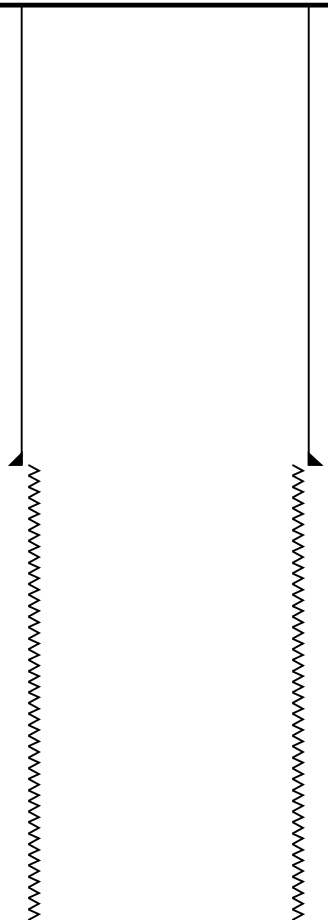
PPC1-B
PPC1-B 8334
PPC_CAL_STD

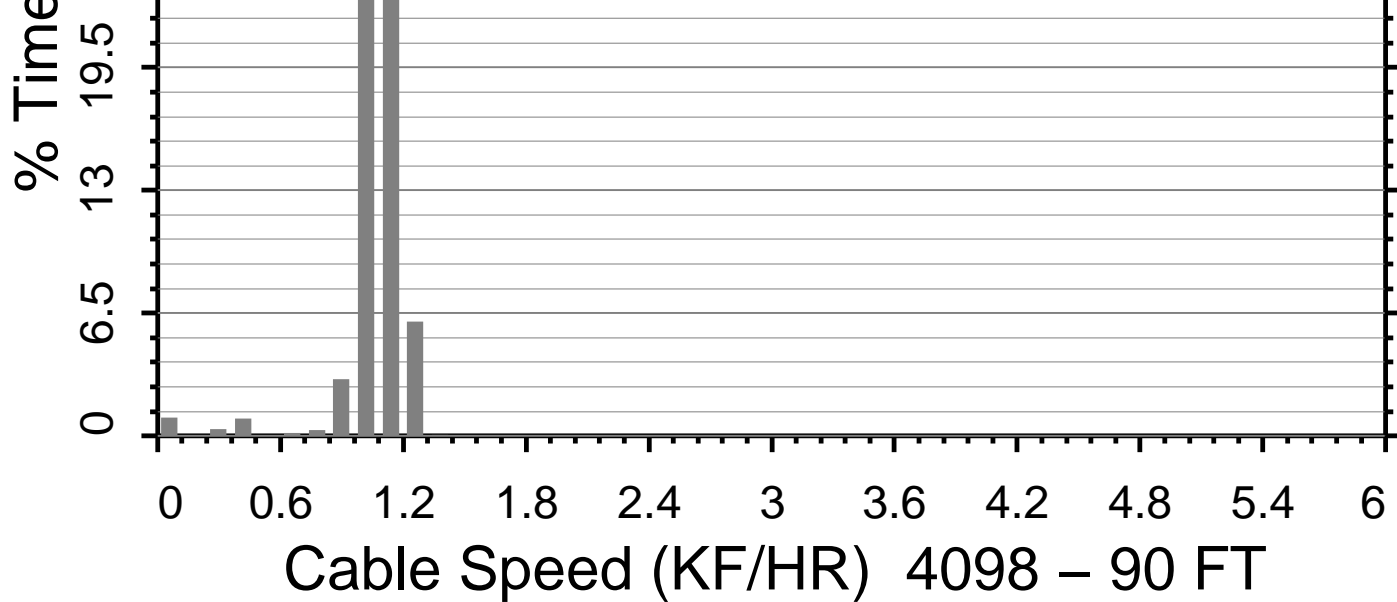
FBST-B
ECH-MRA 5881
FBCC-A
AH-184
AH-185 1773
FBSH-A 1730
GPIC-F
FBSC-B
FBSS-B



26.4

MAXIMUM STRING DIAMETER 5.00 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Production String	(in)			Well Schematic	(ft)			Casing String
	OD	ID	MD		MD	OD	ID	
					0.0	13.325		Casing String
					1108.0	13.325		Casing Shoe
					1108.0	12.250		Borehole Segment



Main Pass 2" = 100 ft

MAXIS Field Log

Company: Battelle Pacific Northwest Lab

Well: Wallula Basalt Pilot #1

Input DLIS Files

22-Apr-2009 10:36

Output DLIS Files

DLIS Name	File Name	FN	Producer	Date/Time	Start Depth (FT)	End Depth (FT)
DEFAULT	FMI_CAL_MAXS_MAPC_003PUP	FN:2	PRODUCER	22-Apr-2009 10:45	4098.0 FT	90.0 FT
MSIP	FMI_CAL_MAXS_MAPC_003PUP	FN:3	PRODUCER	22-Apr-2009 10:45	4098.0 FT	90.0 FT
GPIT	FMI_CAL_MAXS_MAPC_003PUP	FN:4	PRODUCER	22-Apr-2009 10:45	4098.0 FT	90.0 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 3022.22 F3

Cement Volume = 1511.25 F3 (assuming 9.63 IN casing O.D.)

Computed from 4098.0 FT to 1108.0 FT using data channel(s) C1 C2

OP System Version: 16C0-147

MCM

FBST-B	SRPC-3777-Q4_2008_OP16	PPC1-B	16C0-147
MAXS-B	SKK-3703-MAST	MAPC-B	SKK-3703-MAST
PPC2-B	16C0-147	EDTC-B	SKK-3494-EDTCB

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
BHS	CASED	OPEN	1110.5 13:58:28

PIP SUMMARY

- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3

┆ Integrated Transit Time Minor Pip Every 1 MS
┆ Integrated Transit Time Major Pip Every 10 MS

Time Mark Every 60 S

Sonic Scanner Twist Indicator Total (TWIND_TOTAL)
0.5 (----) 1

MAMS Twisted From LHT1 to TWIND_TOTAL

PPC2 Hole Diameter 1 (HD1_PPC2)
6 (IN) 16

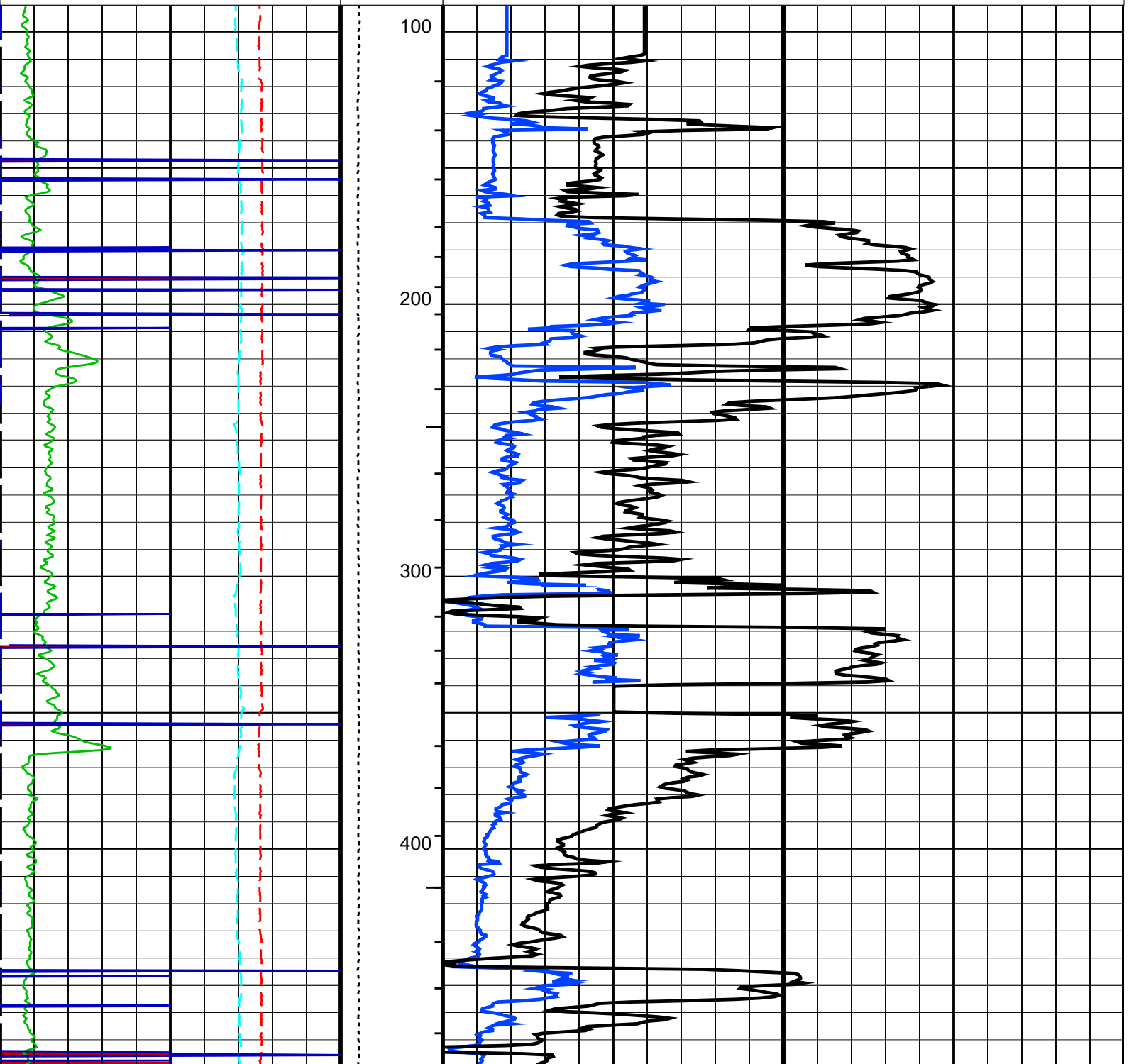
PPC1 Hole Diameter 1 (HD1_PPC1)
6 (IN) 16

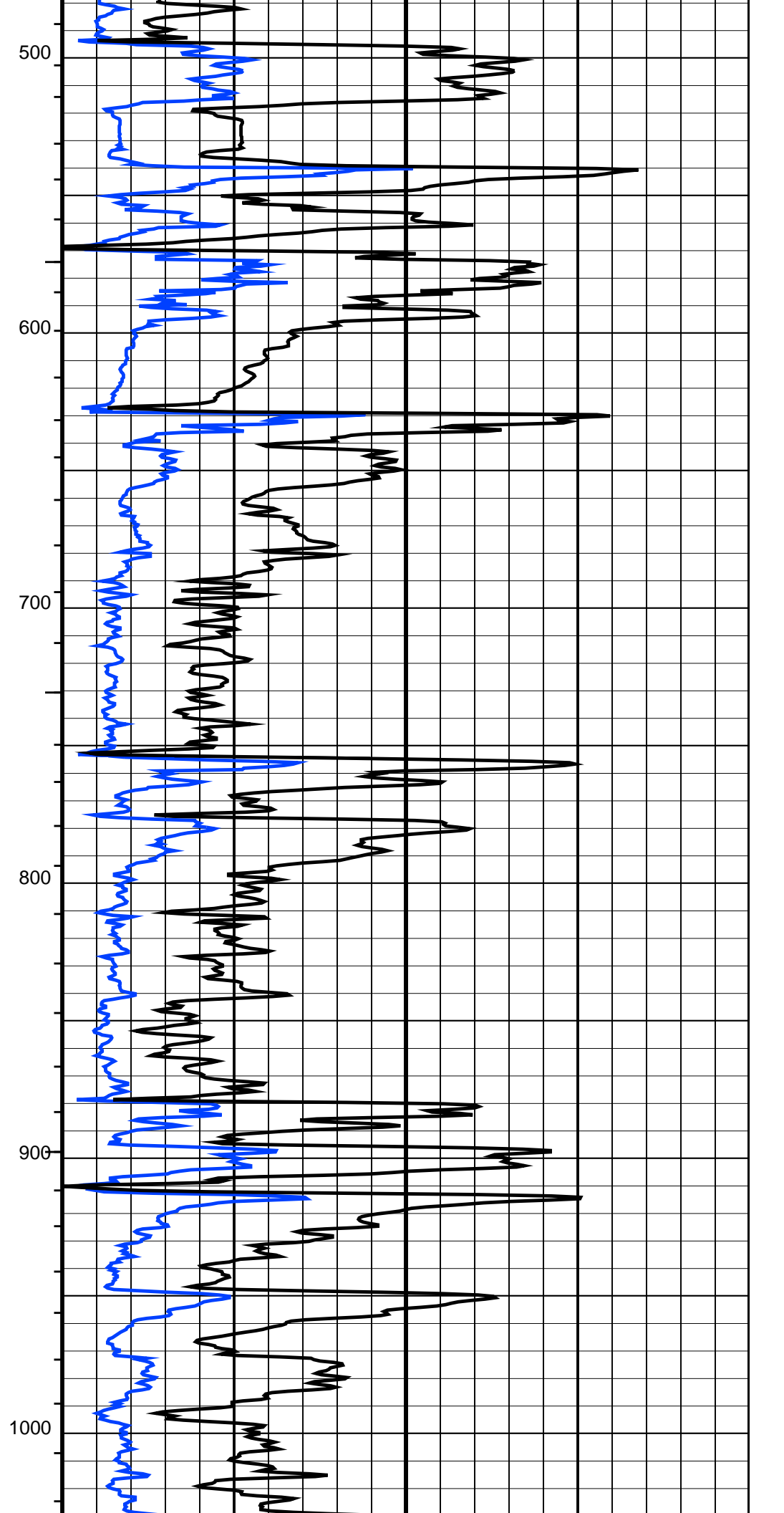
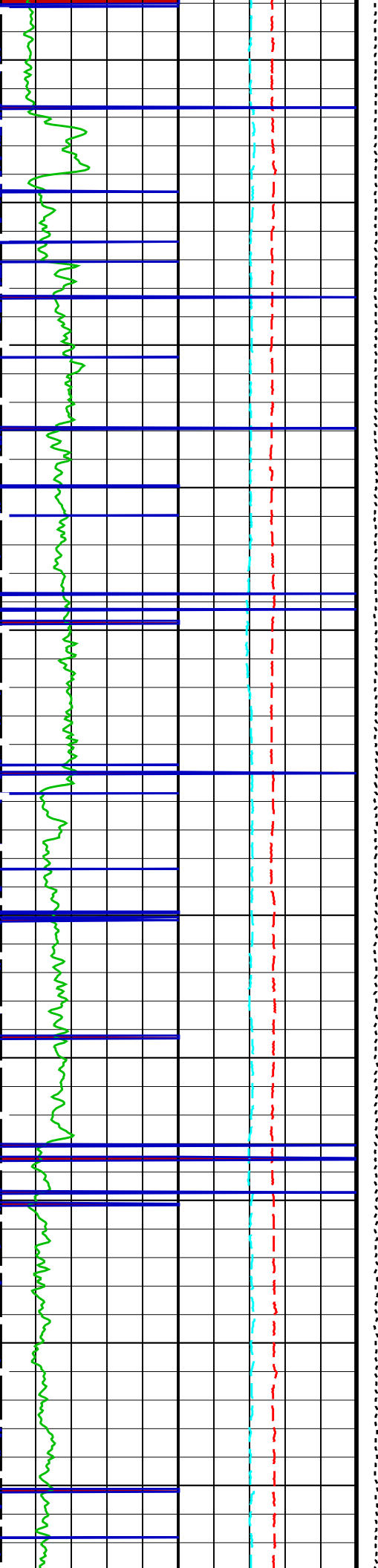
Gamma Ray (GR_EDTC)
0 (GAPI) 150

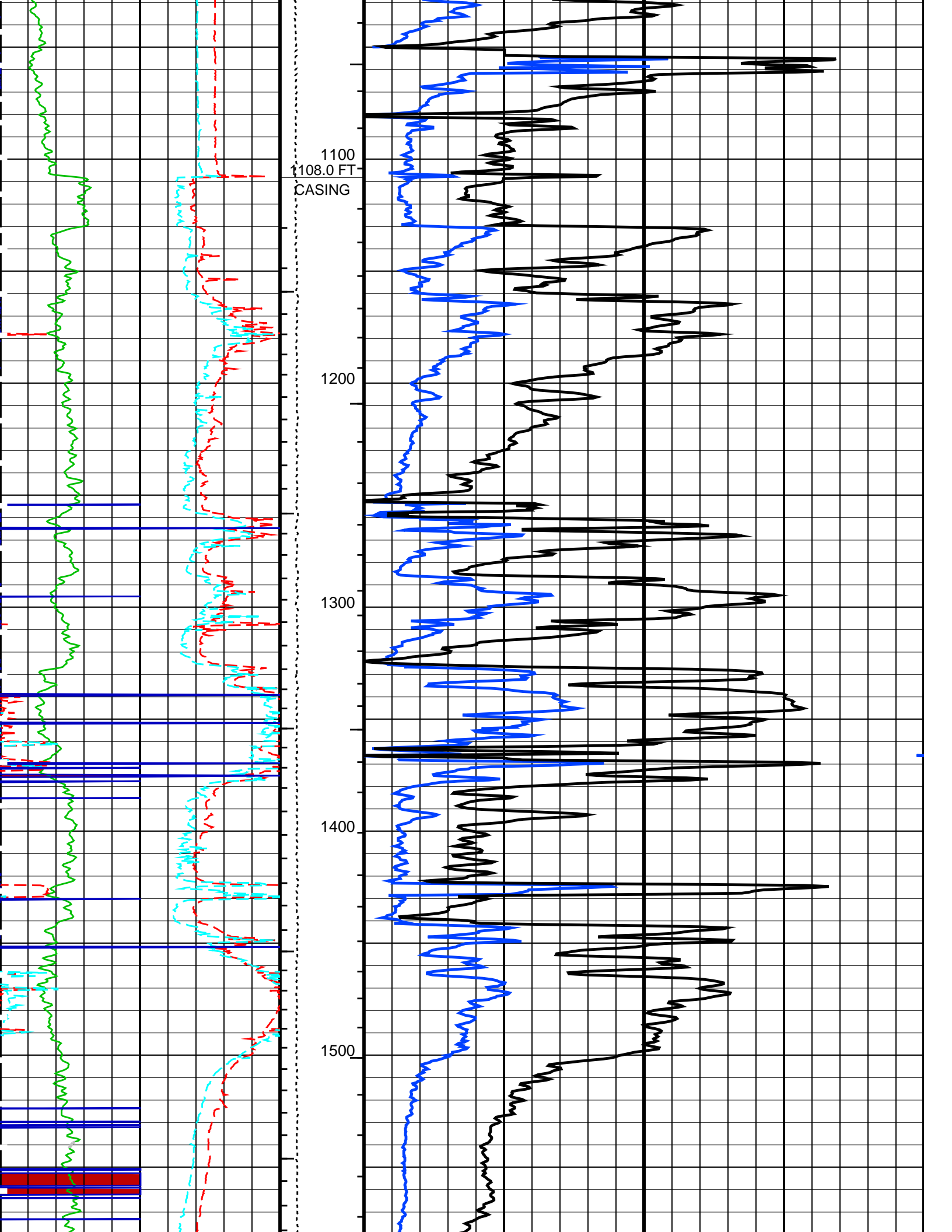
Tension (TENS) (LBF)
0 10000

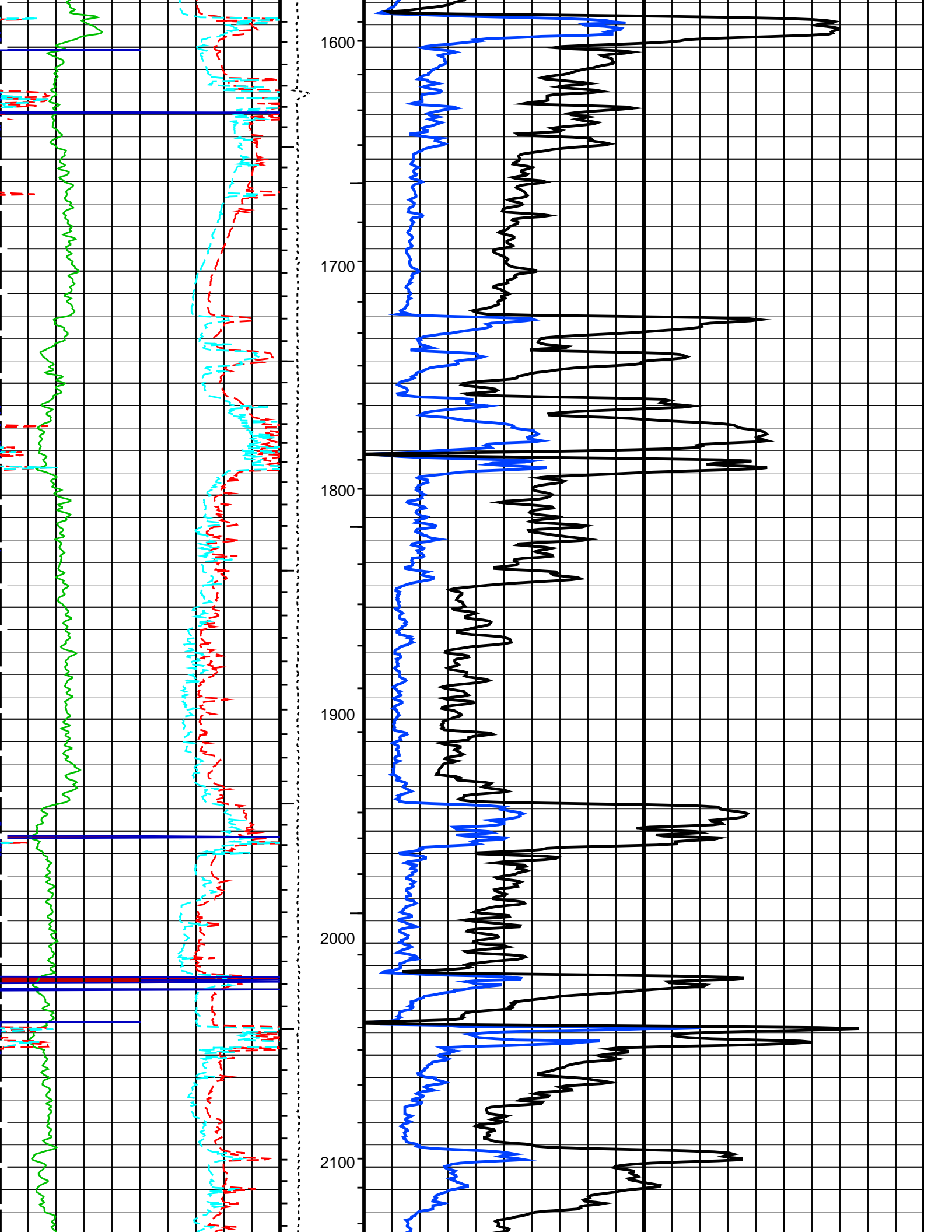
Sonic Porosity (SPHI)
-0.15 (V/V) 0.45

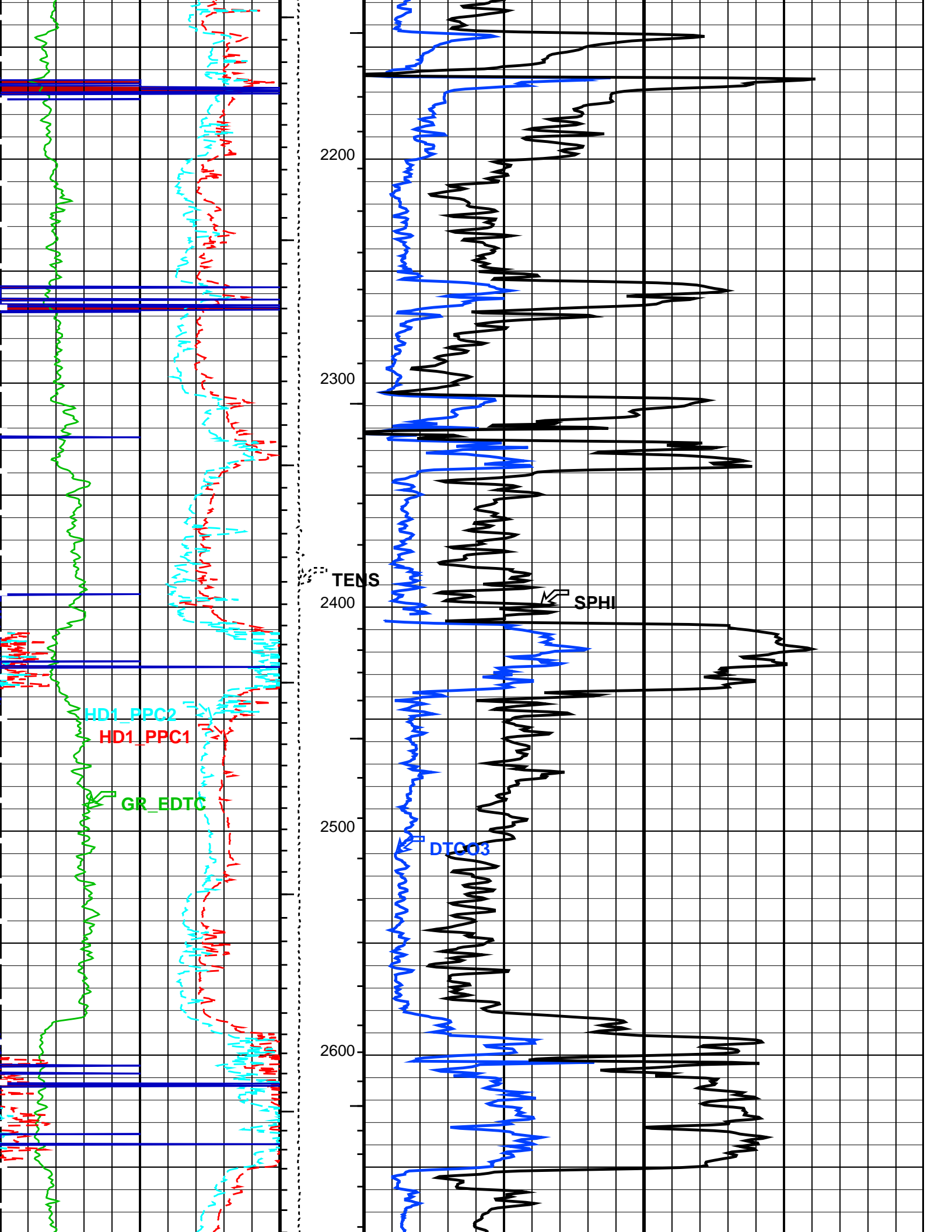
Compressional Slowness 3 (DTCO3)
40 (US/F) 240

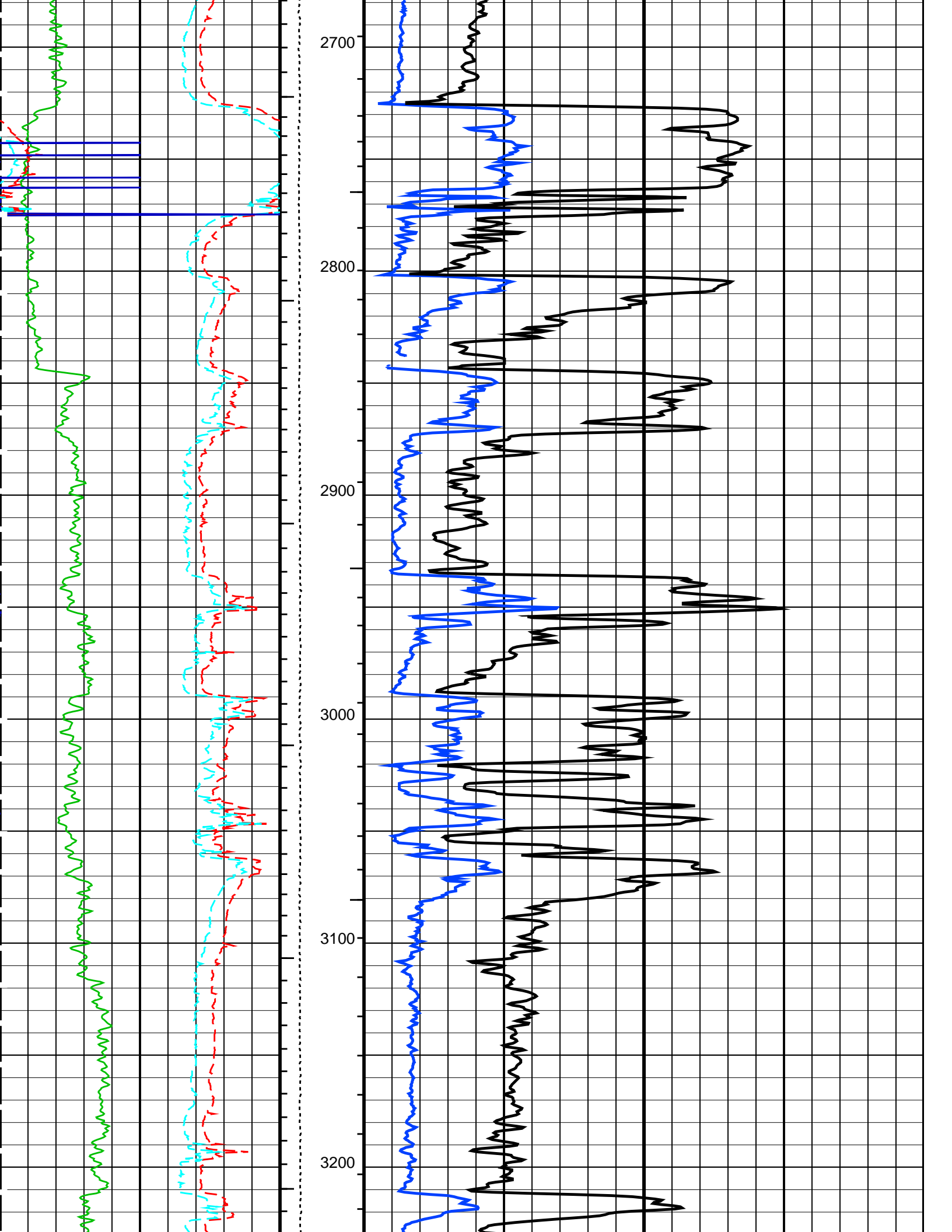


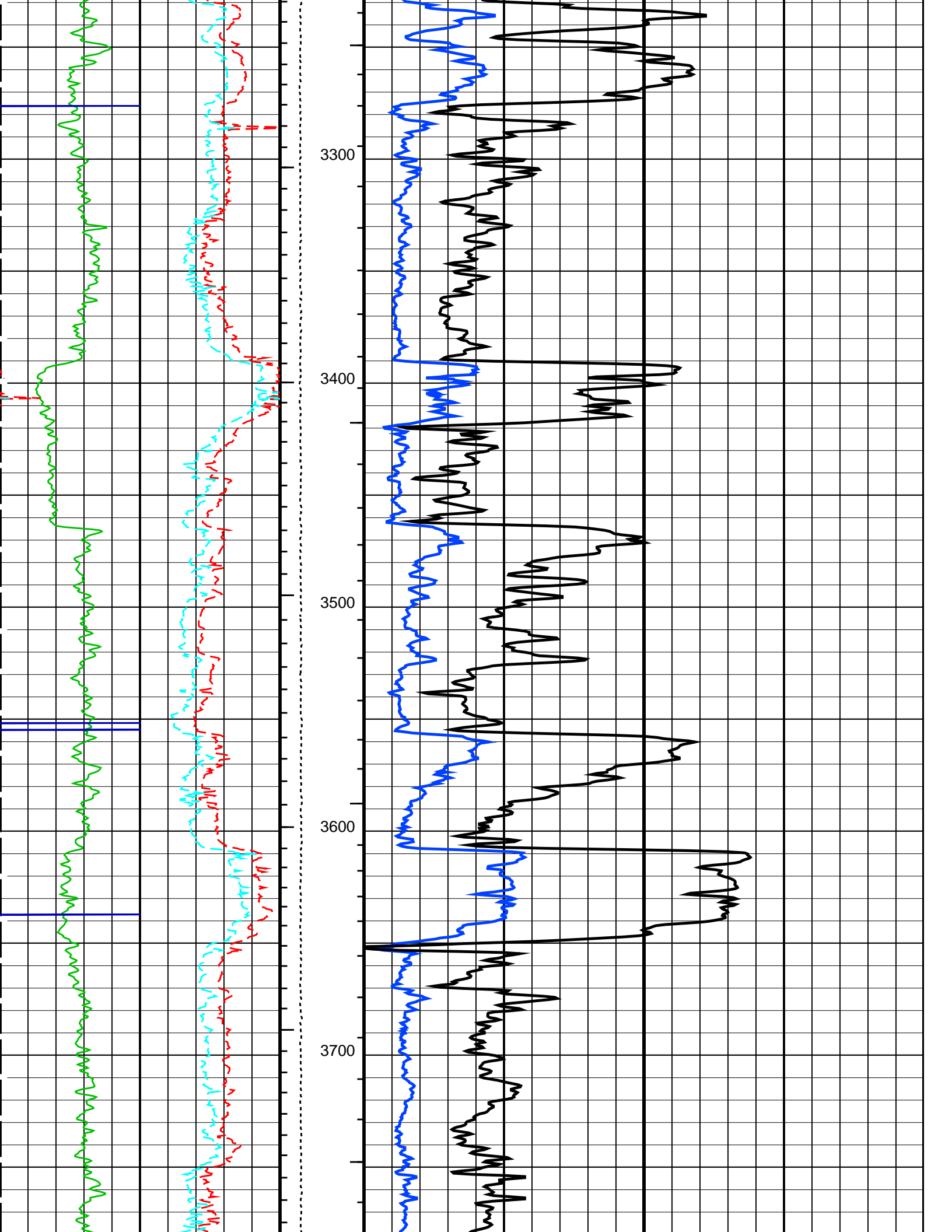












CLBD_PPC	PPC1 Caliper Type	CAL_STD	
	PPC Calibration data selection	ROM	
MAPC-B: Multimode	Array Sonic Power Cartridge		
AZIM_SELECT	Azimuth Reference Selection	P1AZ	
BHS	Borehole Status	OPEN	
BS	Bit Size	12.250	IN
CDTS	C-Delta-T Shale	100	US/F
DCRMVL	DC Offset Removal Option	DC_MULTIPLE	
DLHS	Hole Diameter Source for SOBS Channel	HD1_PPC1	
DTF	Delta-T Fluid	204.5	US/F
DTM	Delta-T Matrix	56	US/F
ITTS	Integrated Transit Time Source	DTCO	
SPFS	Sonic Porosity Formula	RAYMER_HUNT	
SPSO	Sonic Porosity Source	DTCO	
PPC2-B: Powered Positioning Device/Caliper 2			
	PPC2 Caliper Type	CAL_STD	
CLBD_PPC	PPC Calibration data selection	ROM	
EDTC-B: Enhanced DTS Cartridge			
BHS	Borehole Status	OPEN	
DIP: Dip Computation			
	DIP Tool	FBST	
DIR: Directional Survey Computation			
	TVD of Starting Point	0	FT
SPVD	Along-hole depth of Tie-in Point	0	FT
TIMD	TVD of Tie-in Point	0	FT
TIVD			
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
FCD	Future Casing (Outer) Diameter	9.625	IN
HVCS	Integrated Hole Volume Caliper Selection	C1/C2	
STI: Stuck Tool Indicator			
	Trigger for MAXIS First Reading Label	STI	
LBFR	Total Depth - Driller	4105.00	FT
TDD	Total Depth - Logger	4105.00	FT
TDL			
System and Miscellaneous			
CSIZ	Current Casing Size	14.000	IN
CWEI	Casing Weight	54.57	LB/F
DO	Depth Offset for Playback	2.0	FT
PP	Playback Processing	NORMAL	
TD	Total Depth	4105	FT

Format: DTCO_2" Vertical Scale: 2" per 100' Graphics File Created: 22-Apr-2009 10:45

OP System Version: 16C0-147

MCM

FBST-B	SRPC-3777-Q4_2008_OP16	PPC1-B	16C0-147
MAXS-B	SKK-3703-MAST	MAPC-B	SKK-3703-MAST
PPC2-B	16C0-147	EDTC-B	SKK-3494-EDTCB

Input DLIS Files

22-Apr-2009 10:36

Output DLIS Files

DEFAULT	FMI_CAL_MAXS_MAPC_003PUP	FN:2	PRODUCER	22-Apr-2009 10:45
MSIP	FMI_CAL_MAXS_MAPC_003PUP	FN:3	PRODUCER	22-Apr-2009 10:45
GPIT	FMI_CAL_MAXS_MAPC_003PUP	FN:4	PRODUCER	22-Apr-2009 10:45

Schlumberger

Main Pass 5" = 100 ft

MAXIS Field Log

Output DLIS Files

DEFAULT	FMI_CAL_MAXS_MAPC_003PUP	FN:2	PRODUCER	22-Apr-2009 10:45	4098.0 FT	90.0 FT
MSIP	FMI_CAL_MAXS_MAPC_003PUP	FN:3	PRODUCER	22-Apr-2009 10:45	4098.0 FT	90.0 FT
GPIT	FMI_CAL_MAXS_MAPC_003PUP	FN:4	PRODUCER	22-Apr-2009 10:45	4098.0 FT	90.0 FT

OP System Version: 16C0-147

MCM

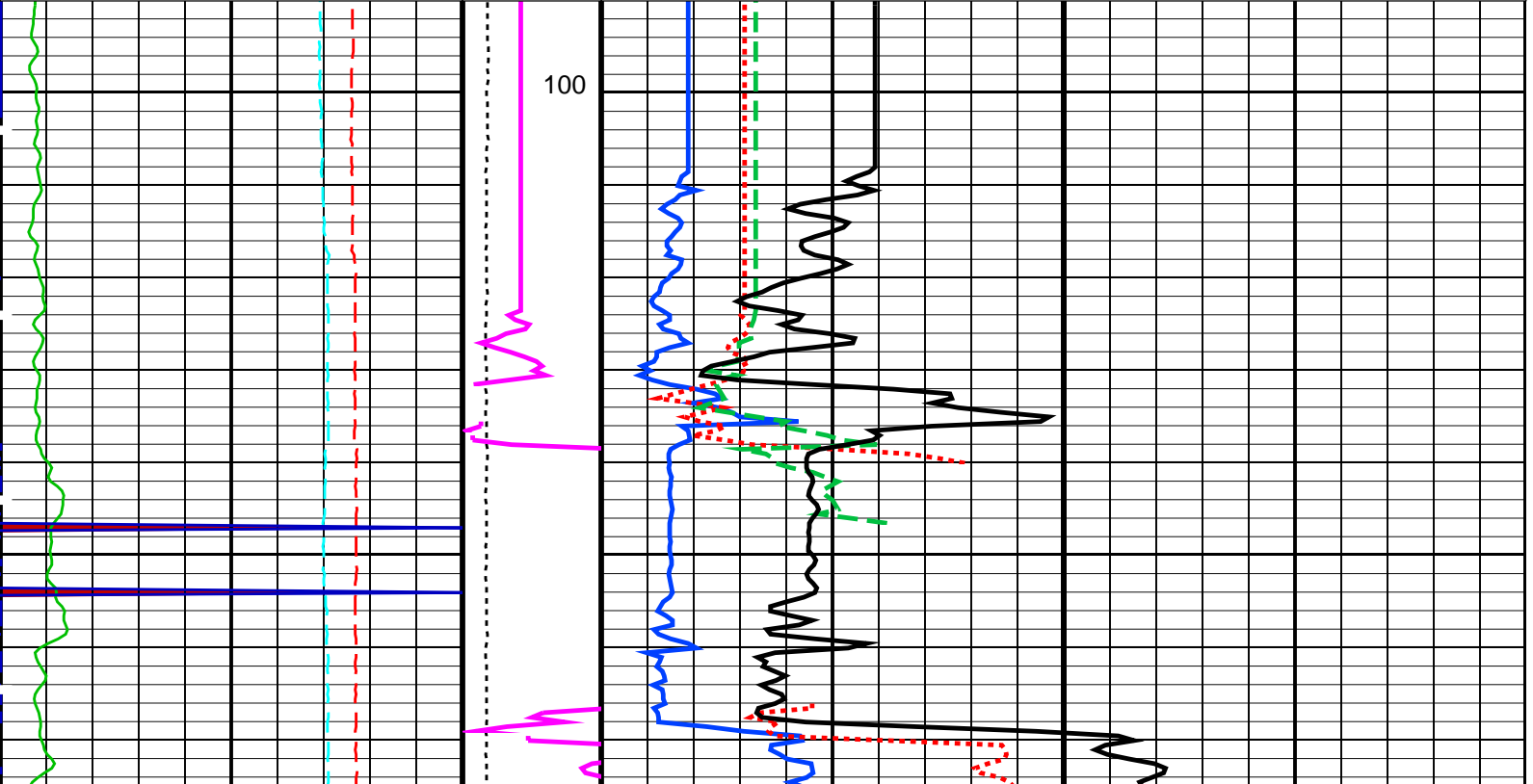
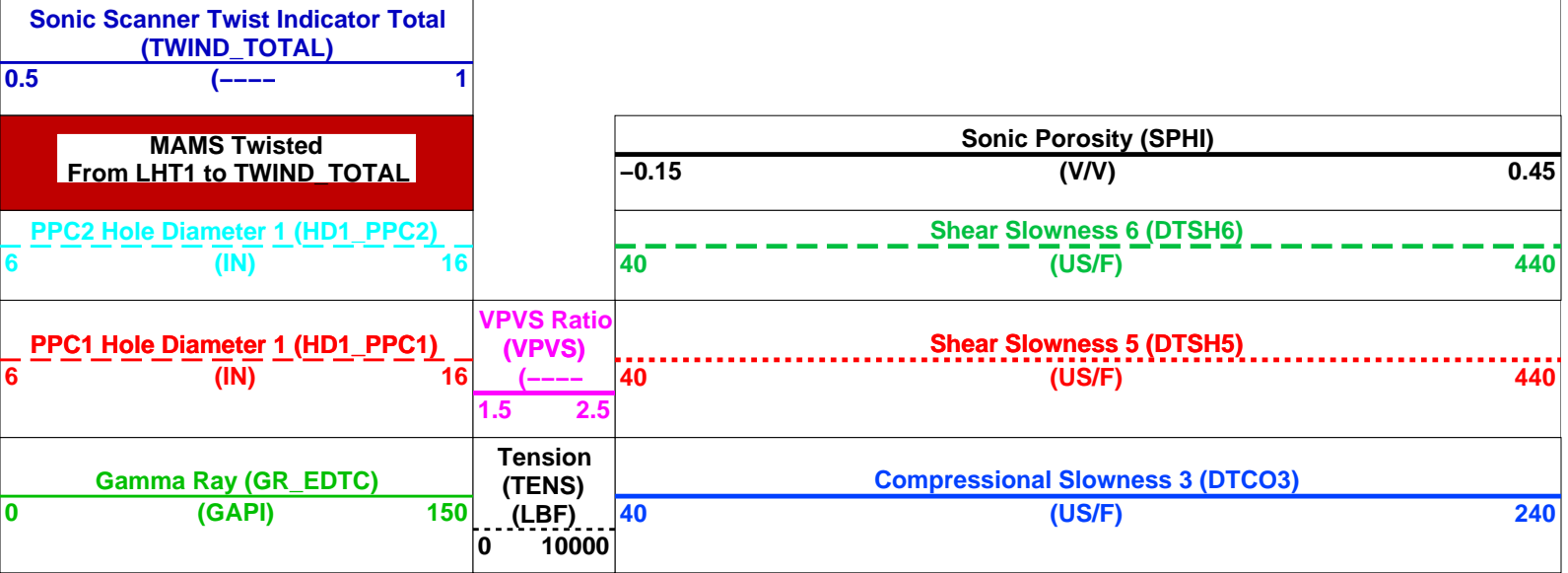
FBST-B	SRPC-3777-Q4_2008_OP16	PPC1-B	16C0-147
MAXS-B	SKK-3703-MAST	MAPC-B	SKK-3703-MAST
PPC2-B	16C0-147	EDTC-B	SKK-3494-EDTCB

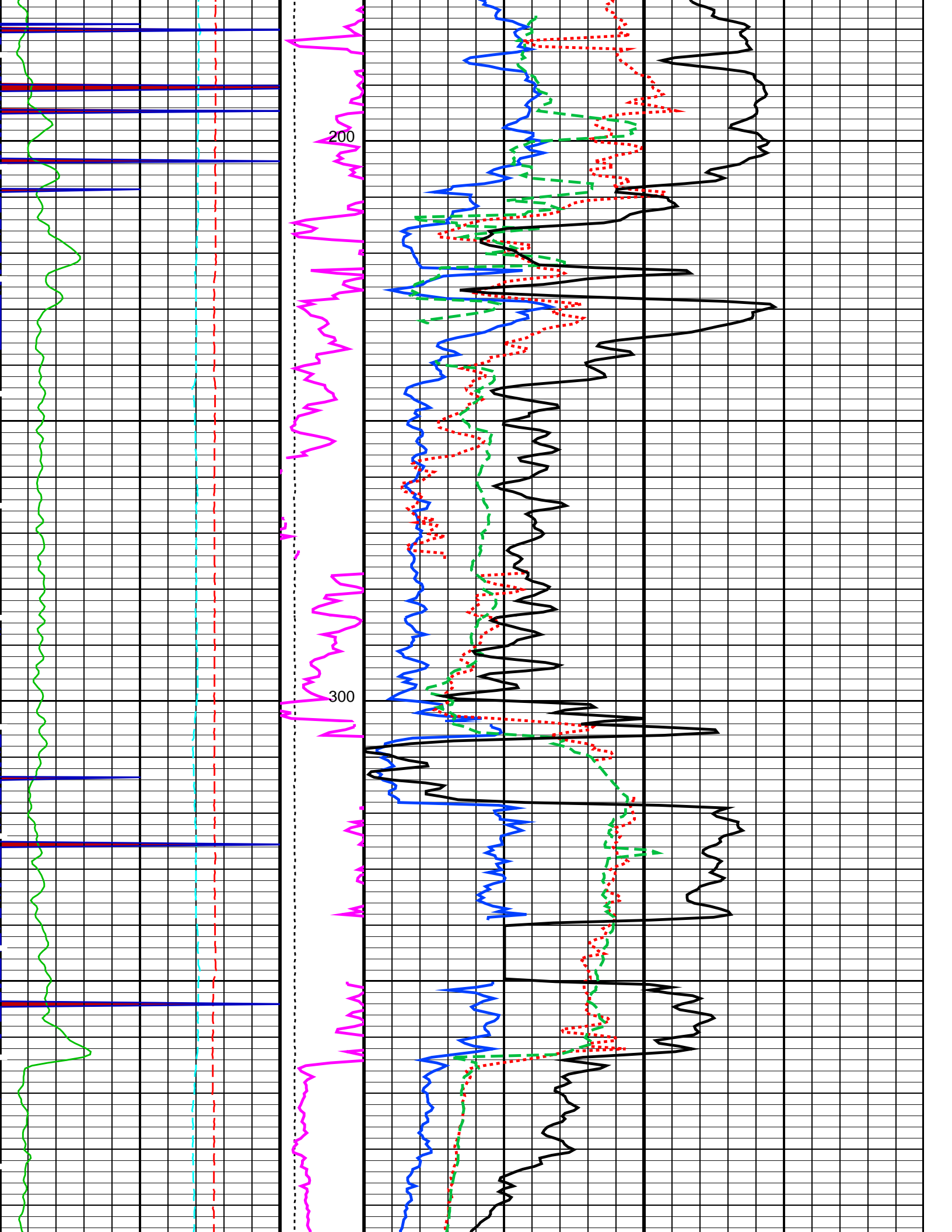
Changed Parameter Summary

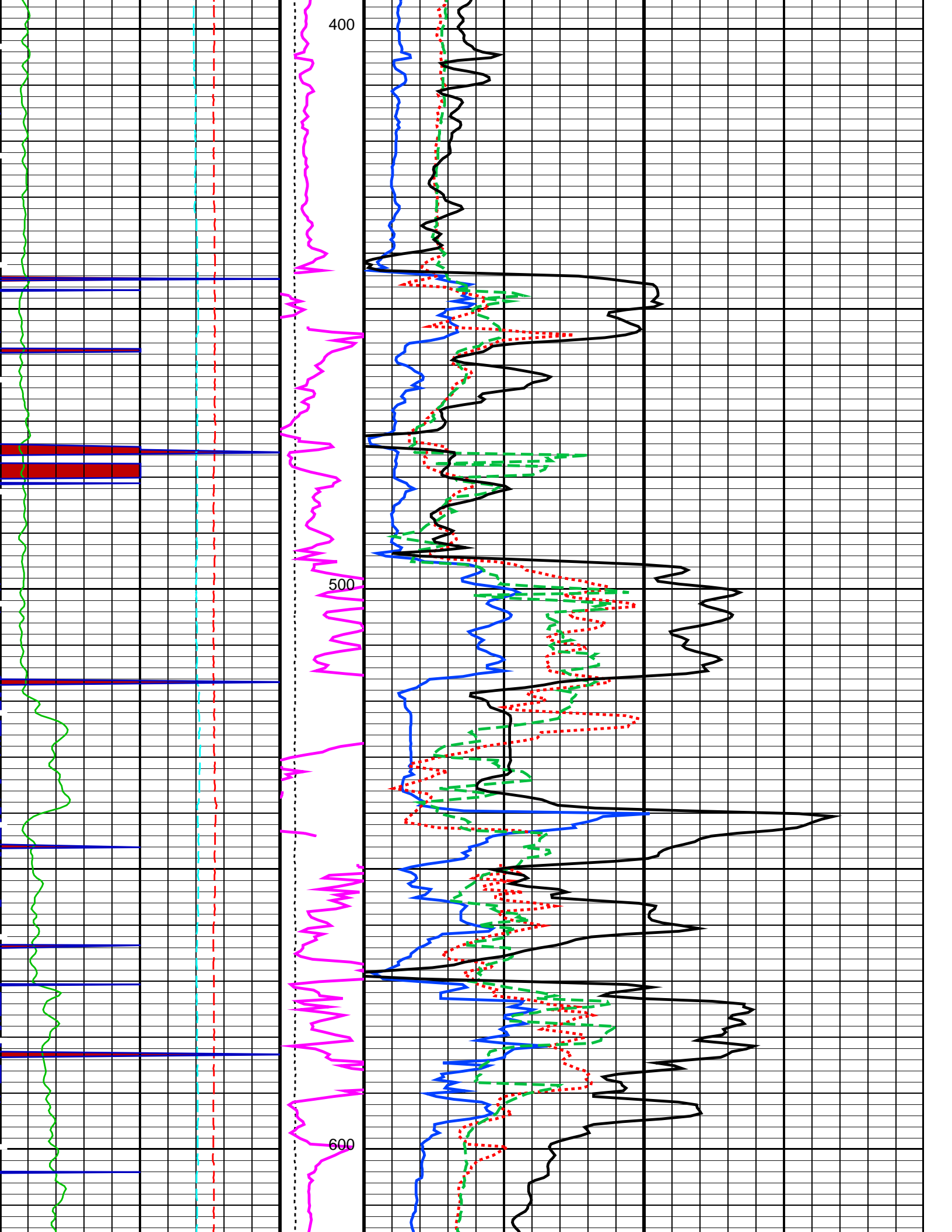
DLIS Name	New Value	Previous Value	Depth & Time
BHS	CASED	OPEN	1110.5 13:58:28

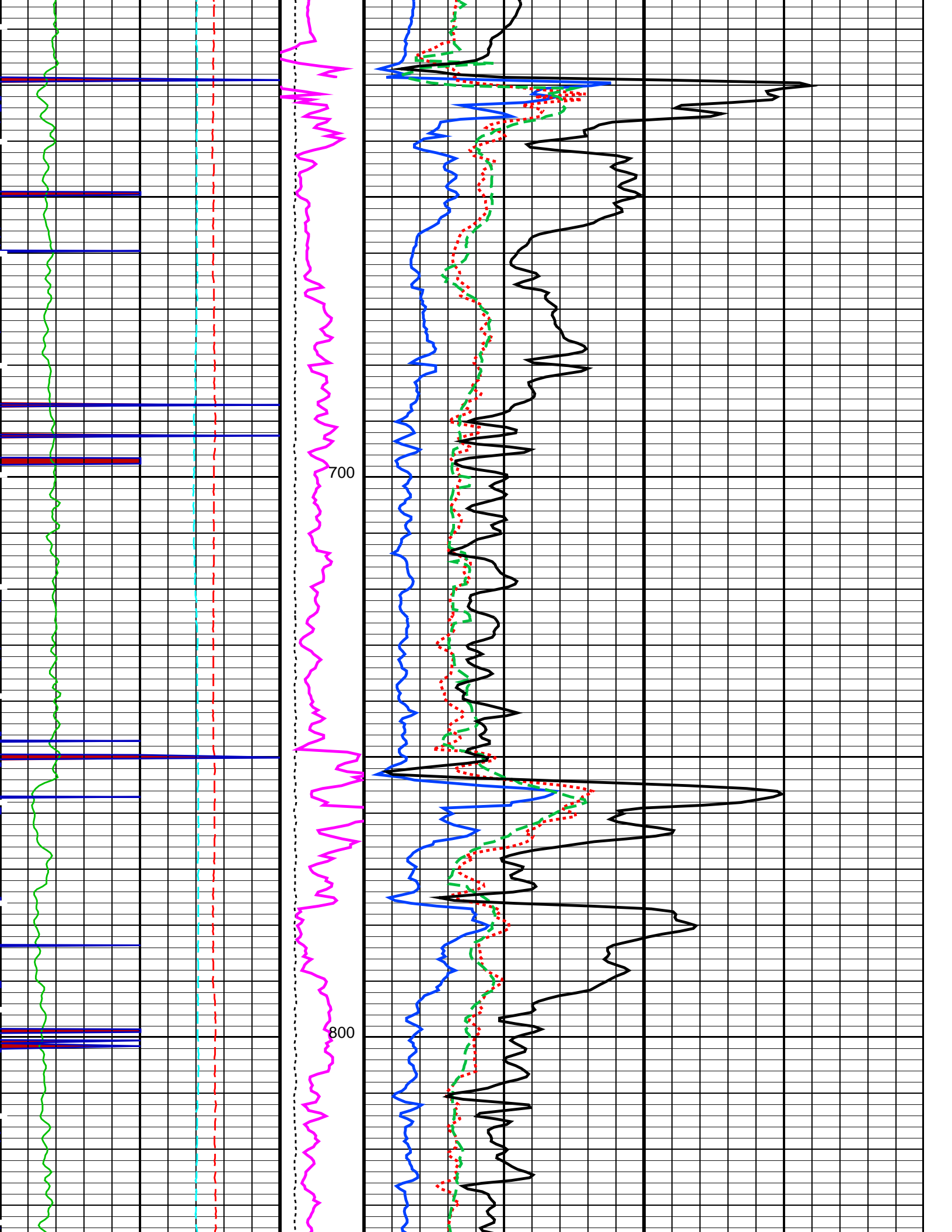
PIP SUMMARY

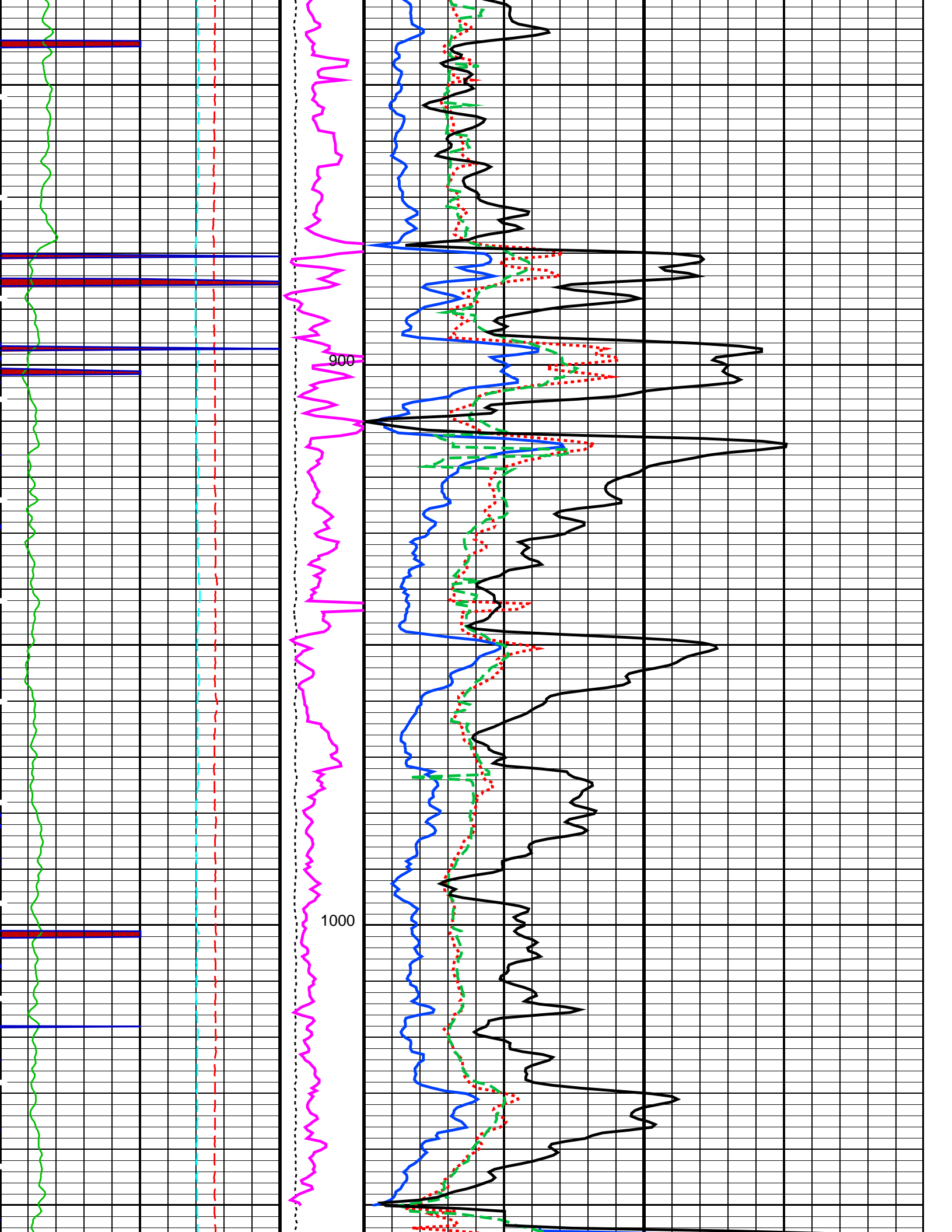
Time Mark Every 60 S

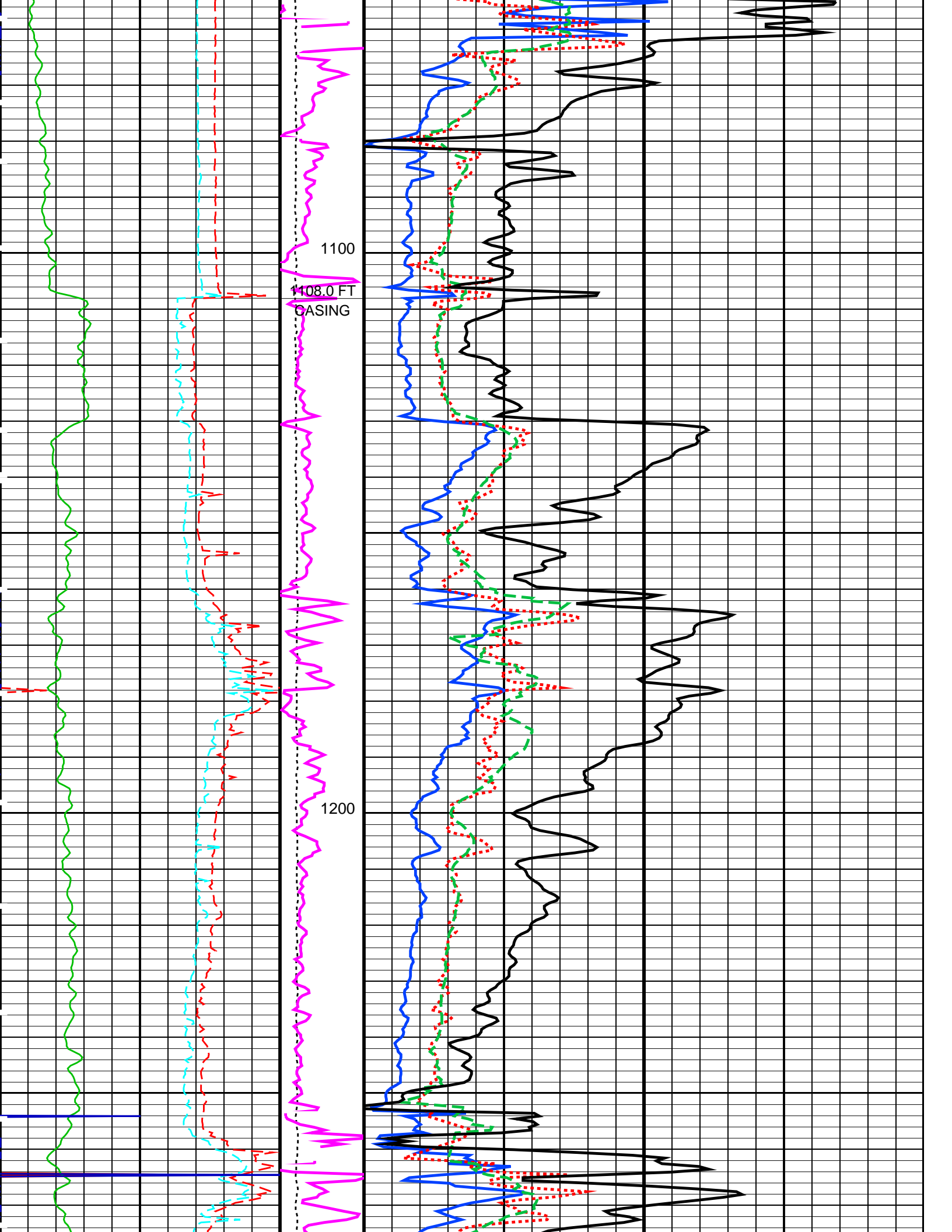


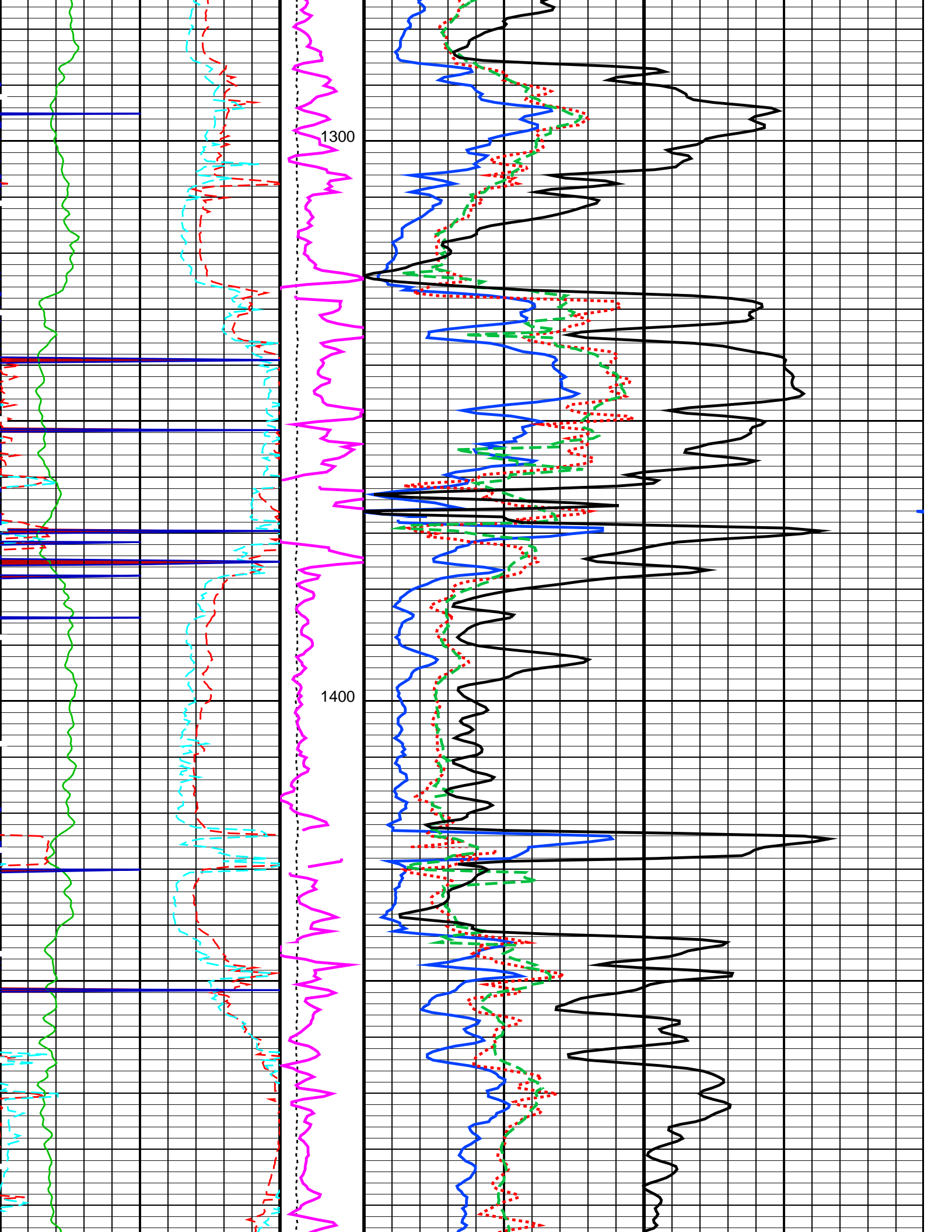


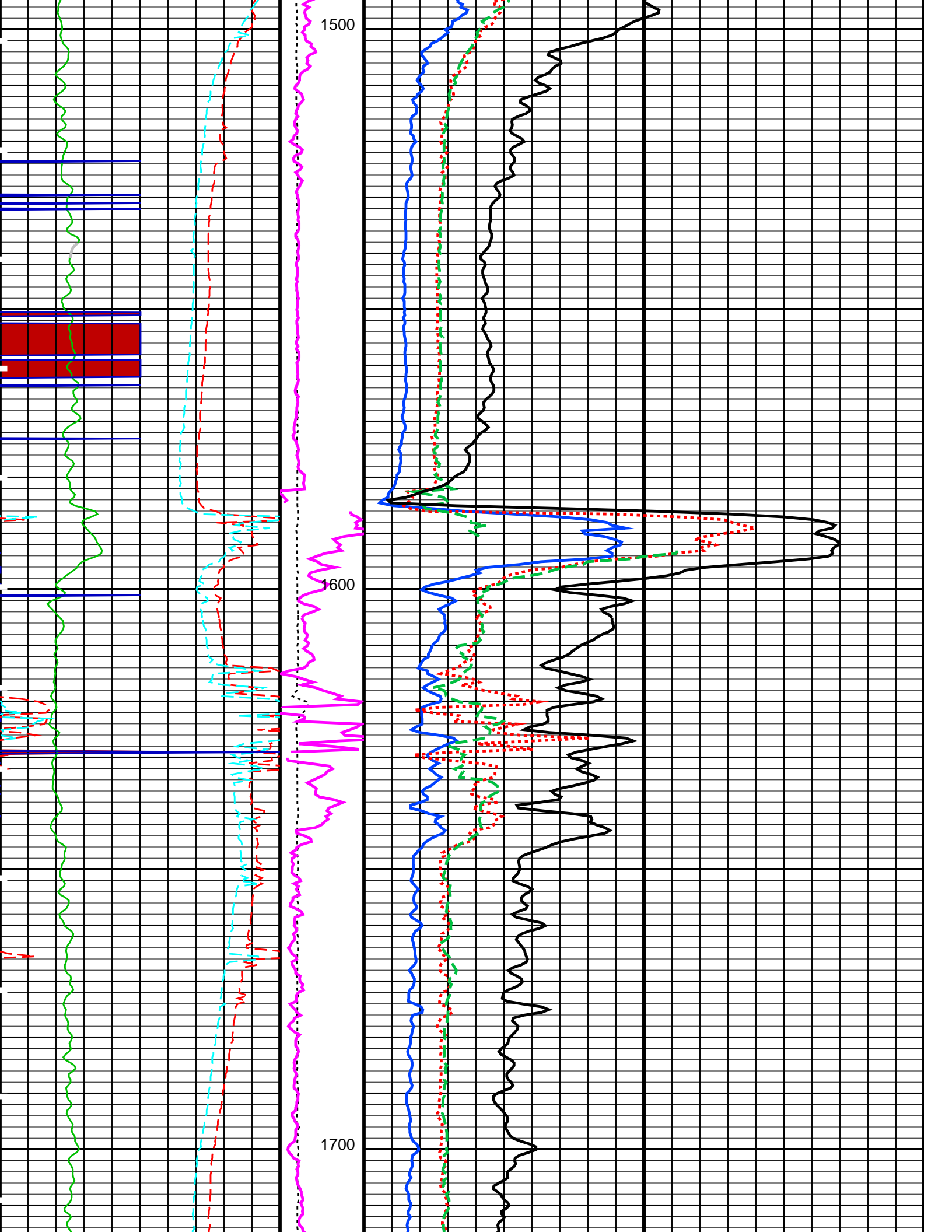


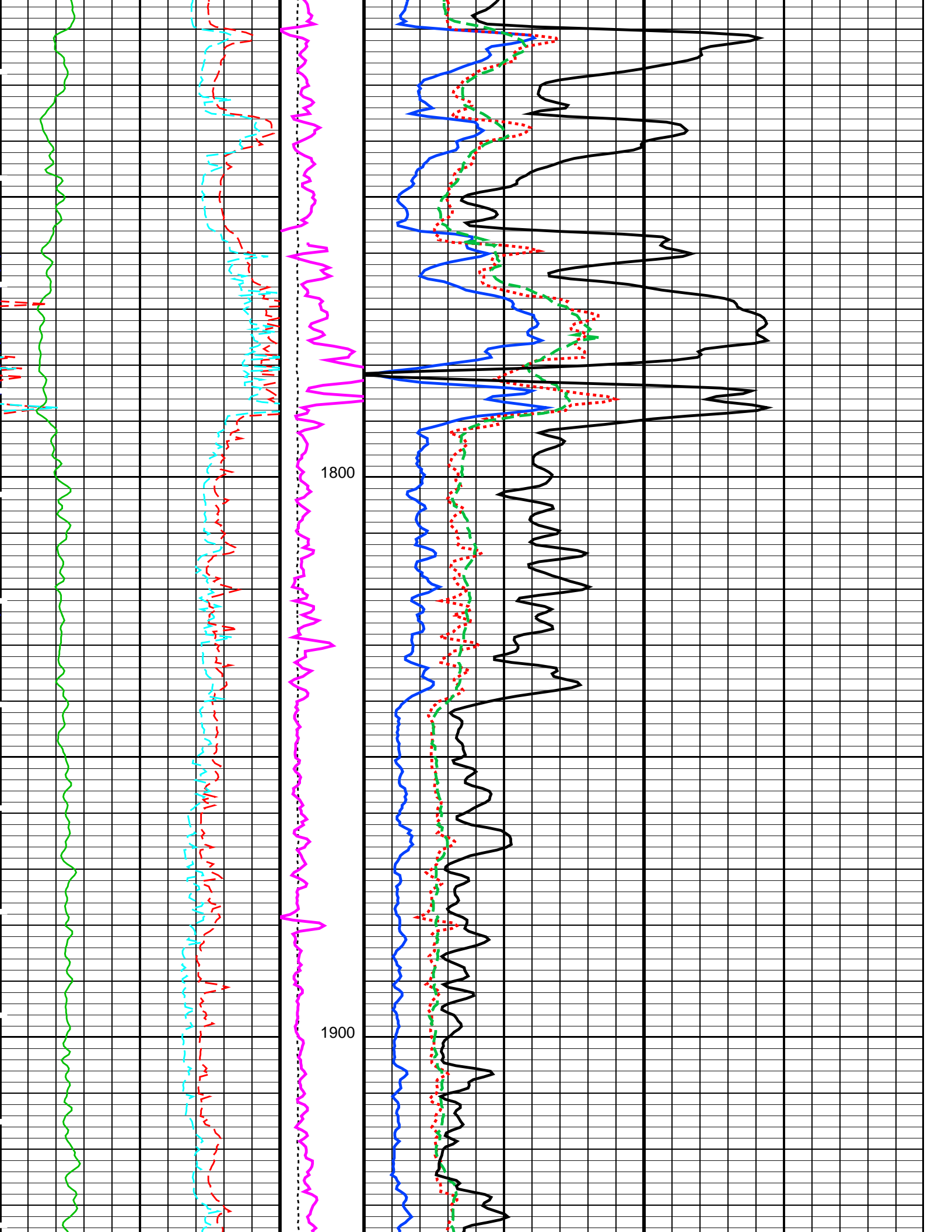


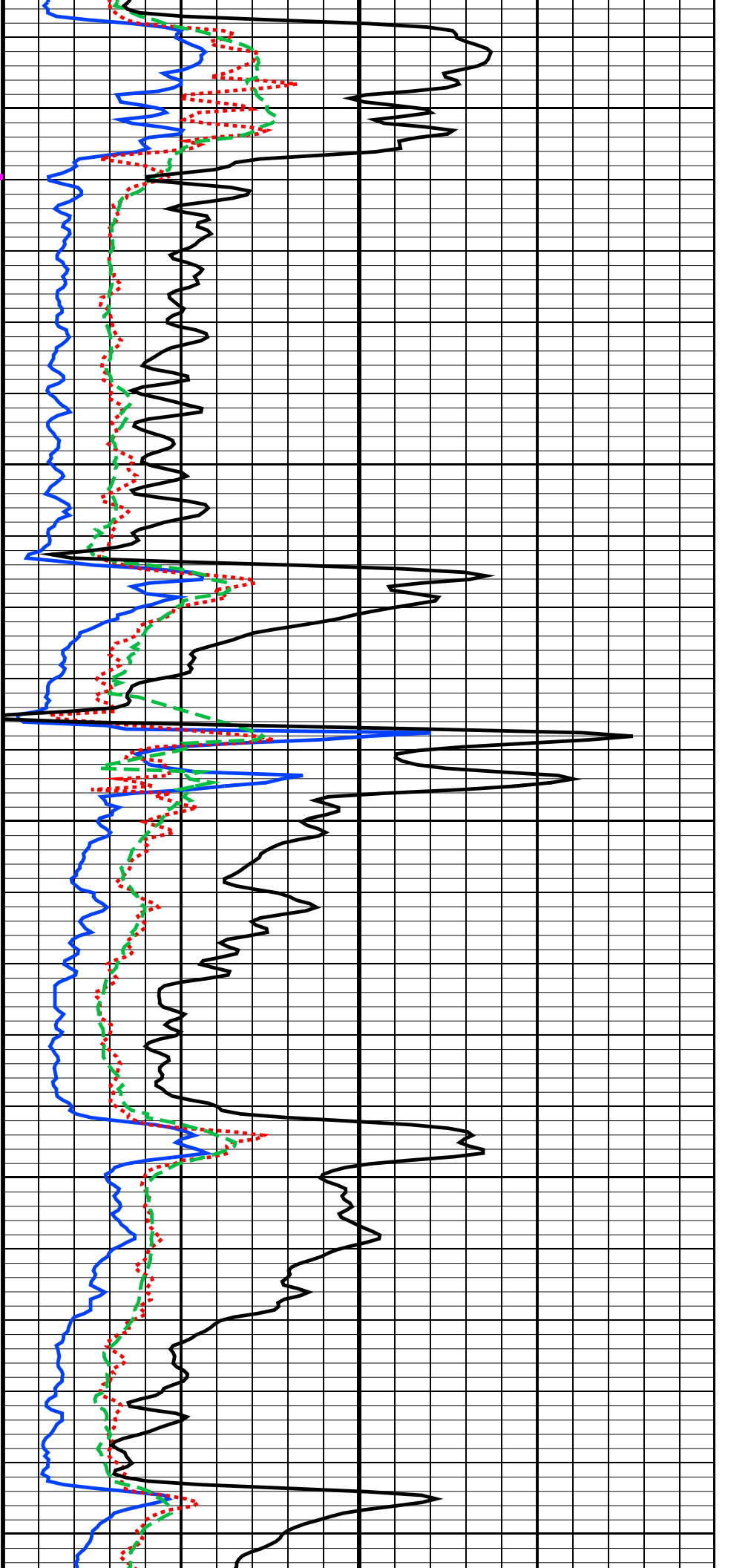
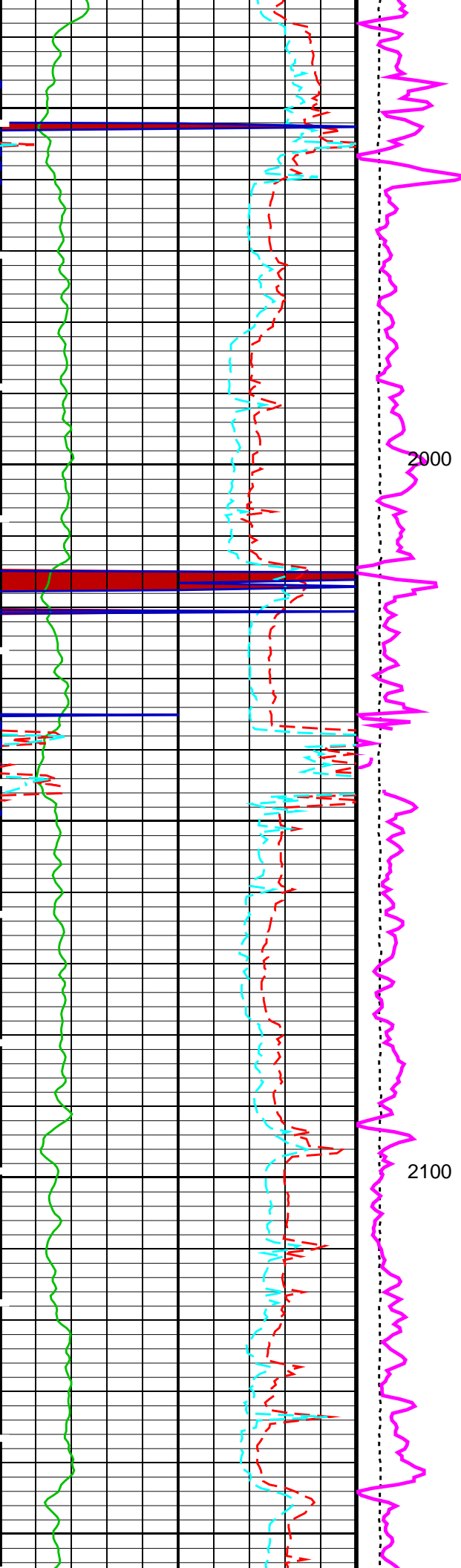


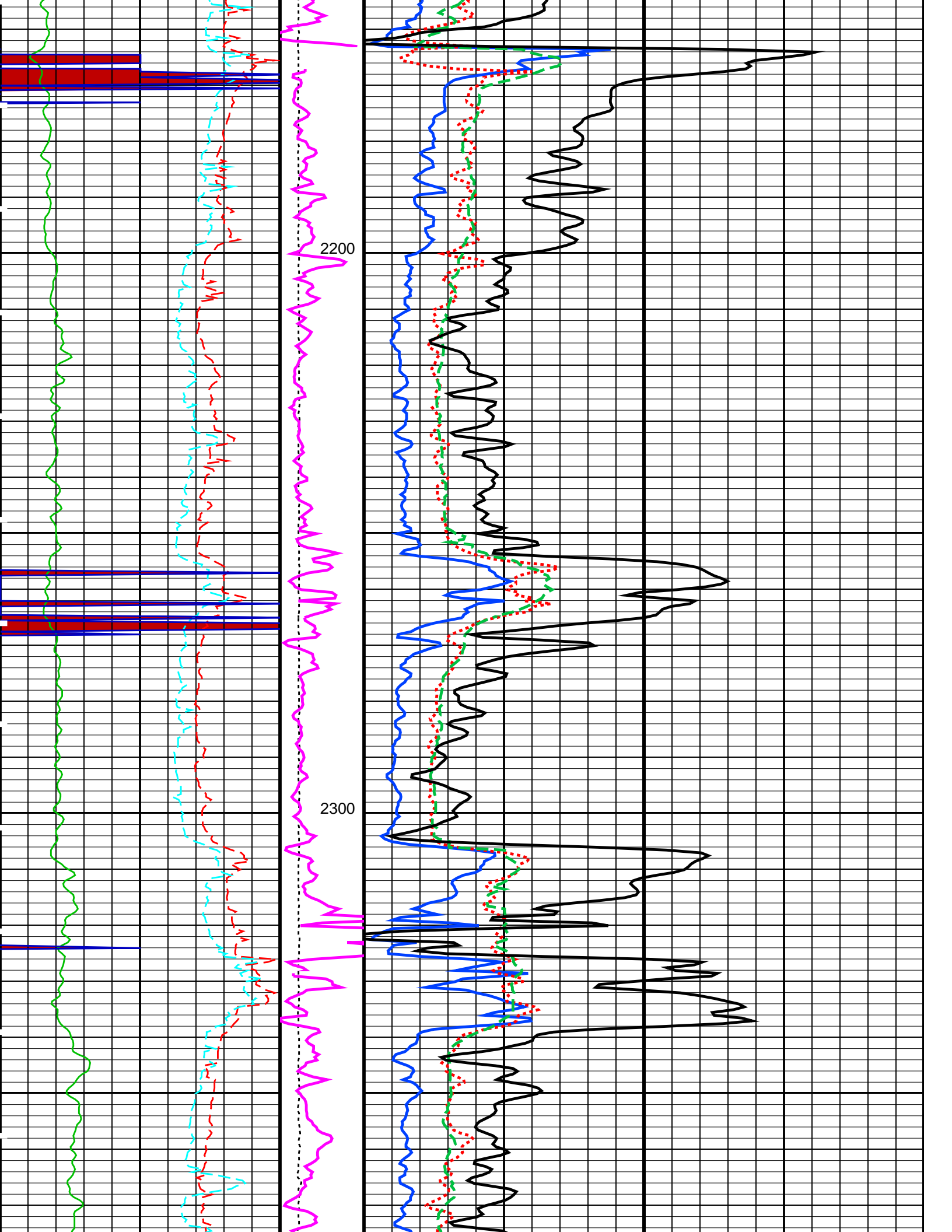


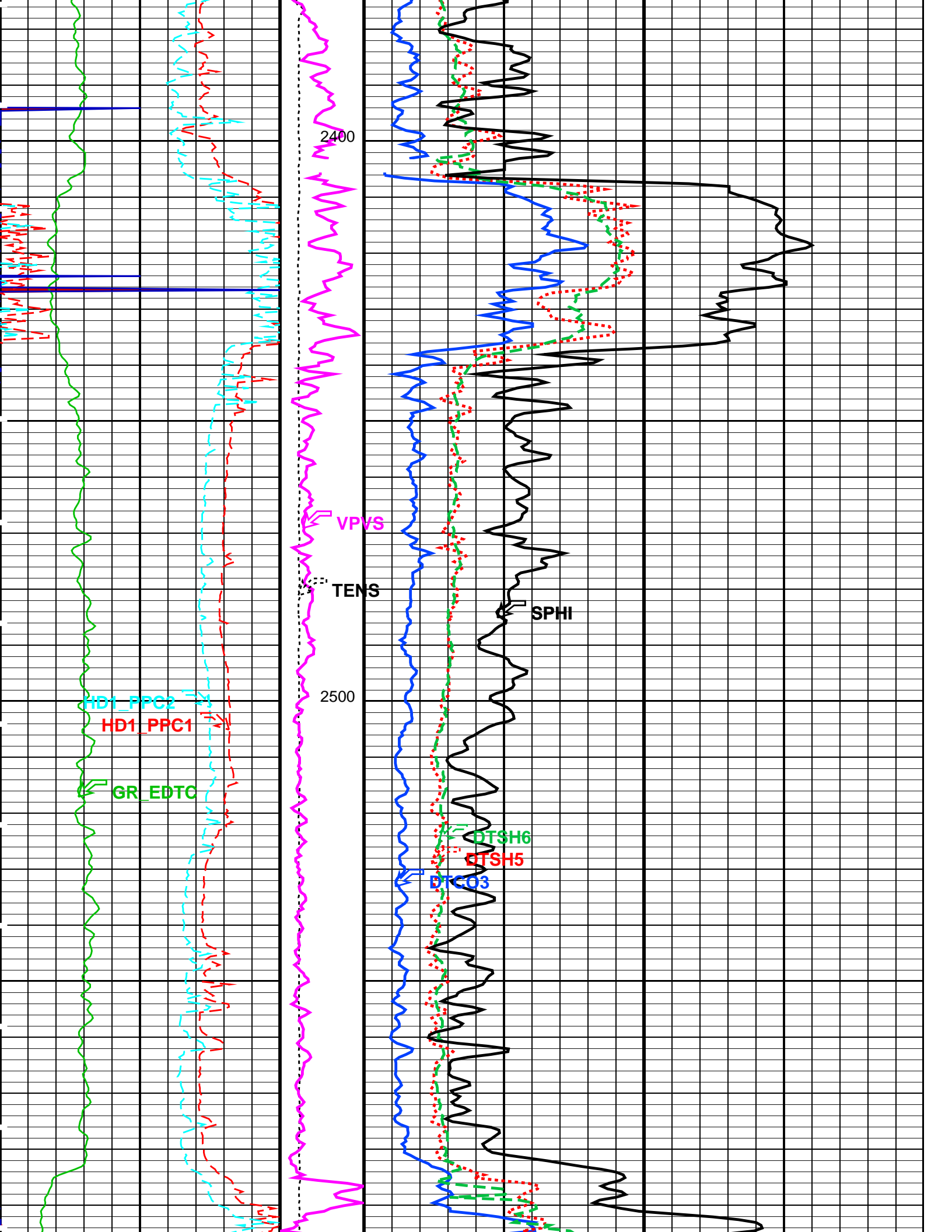


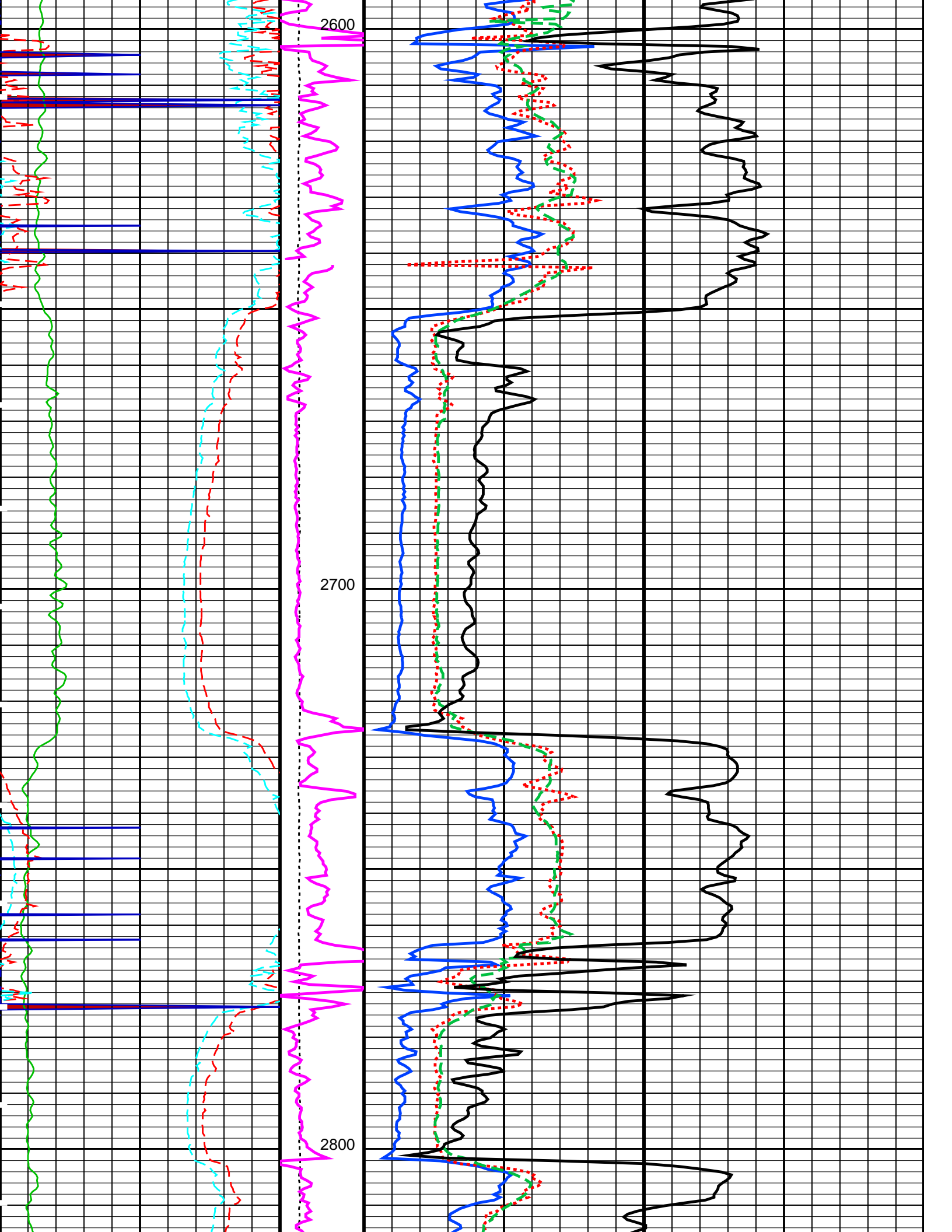


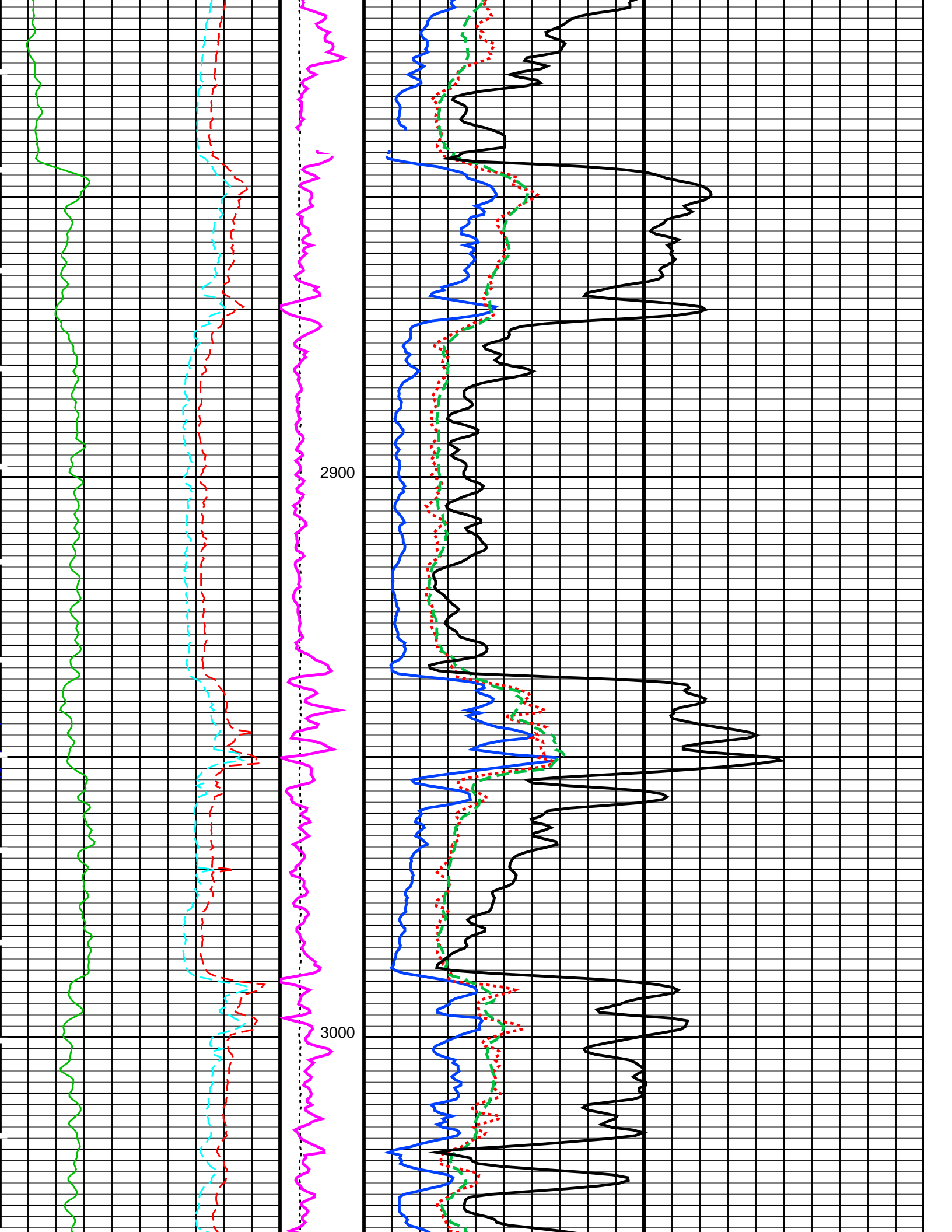


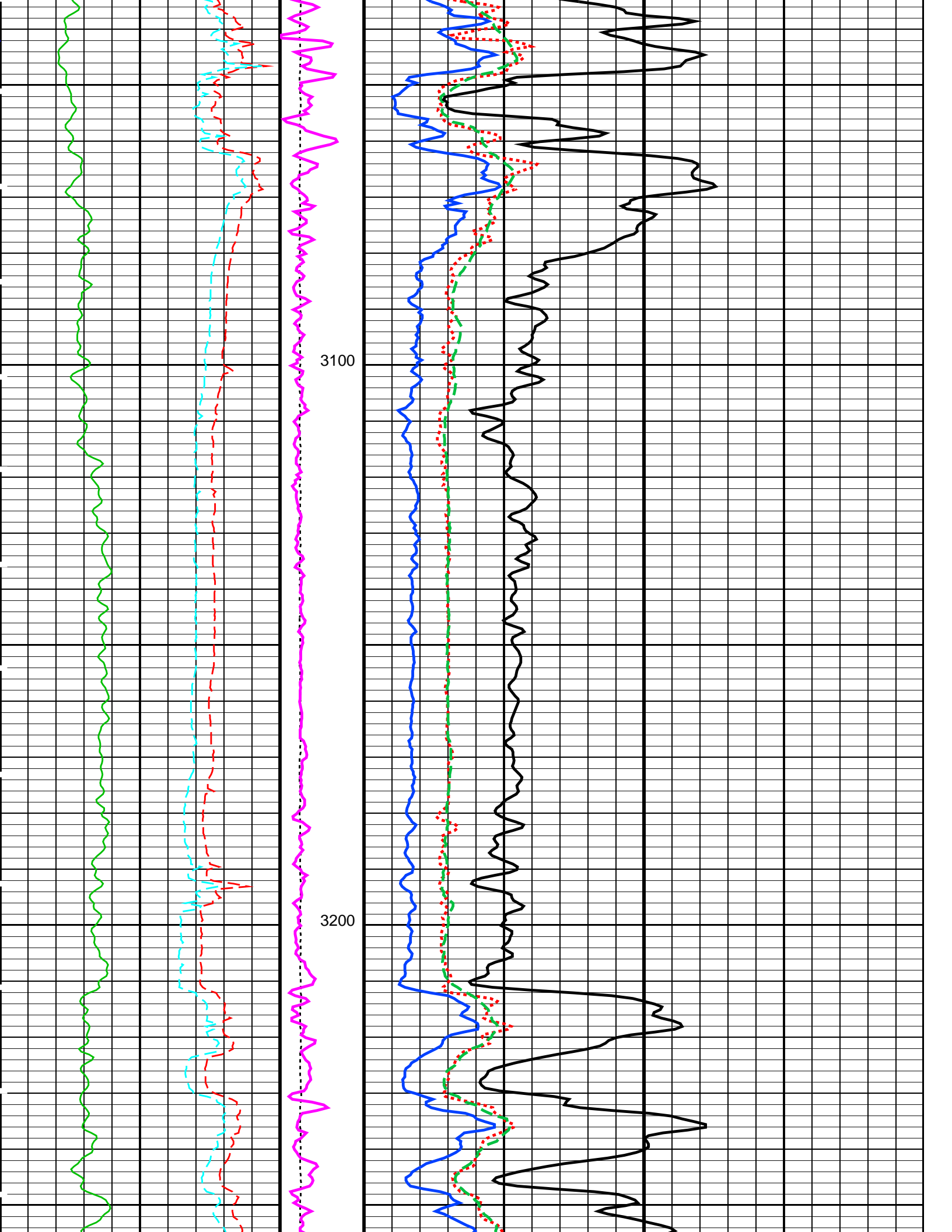


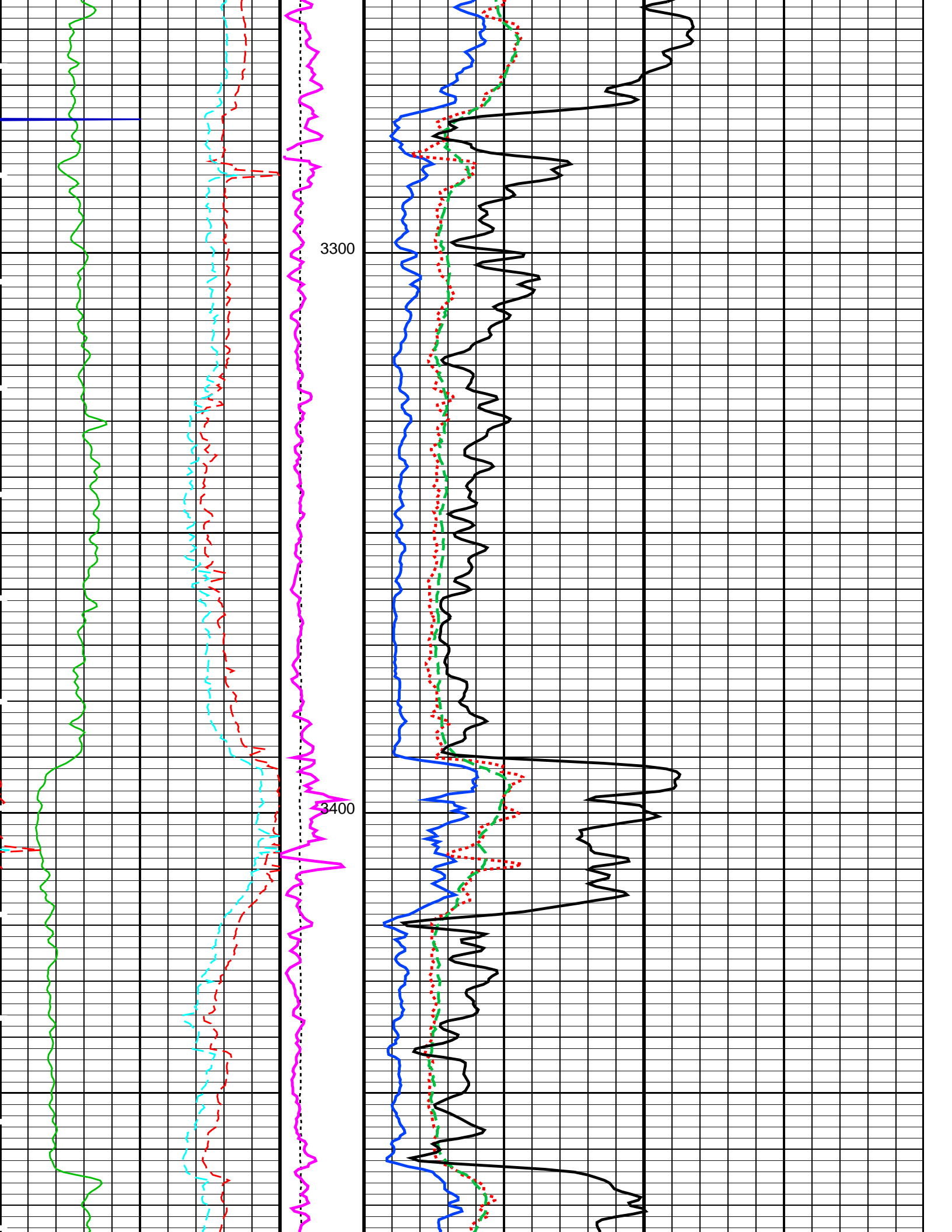


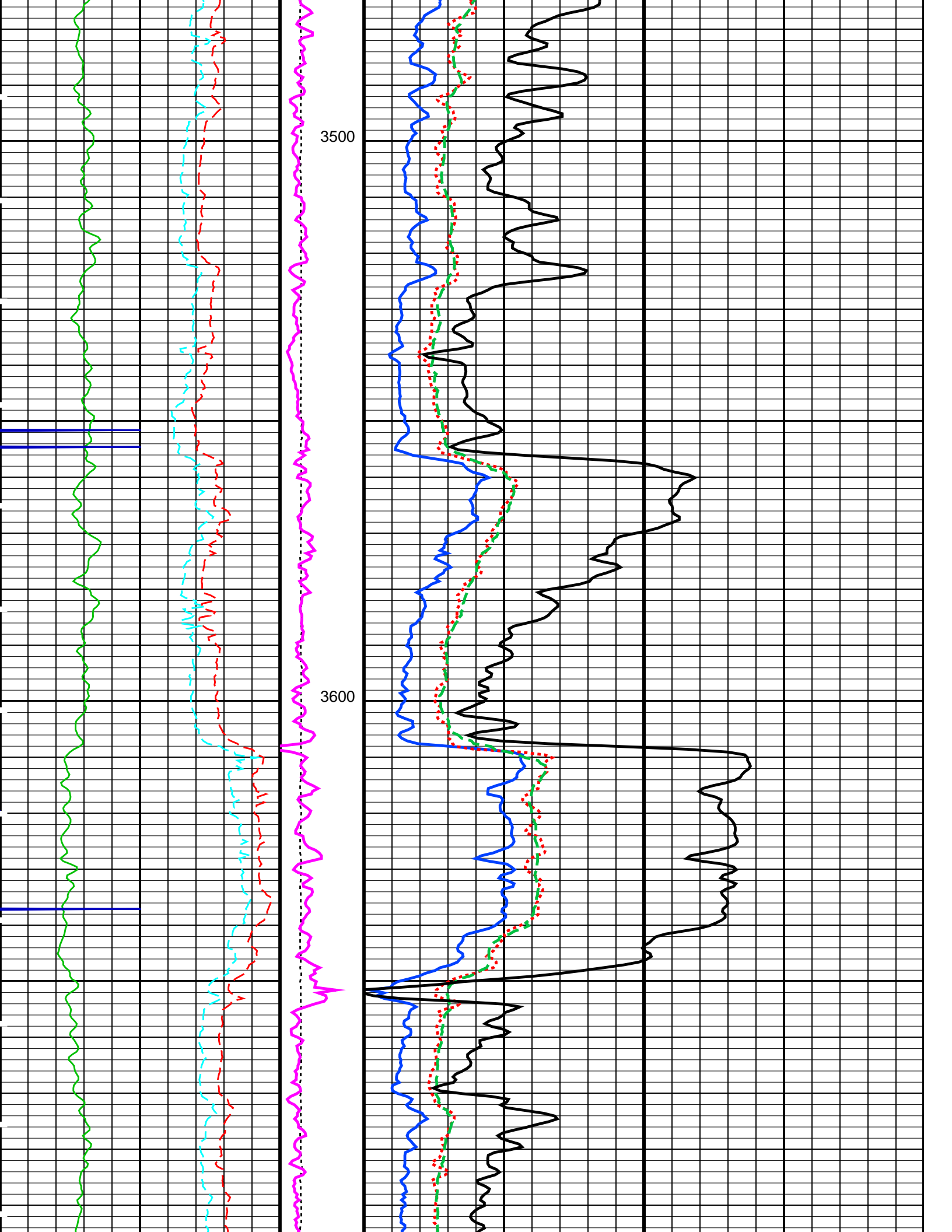


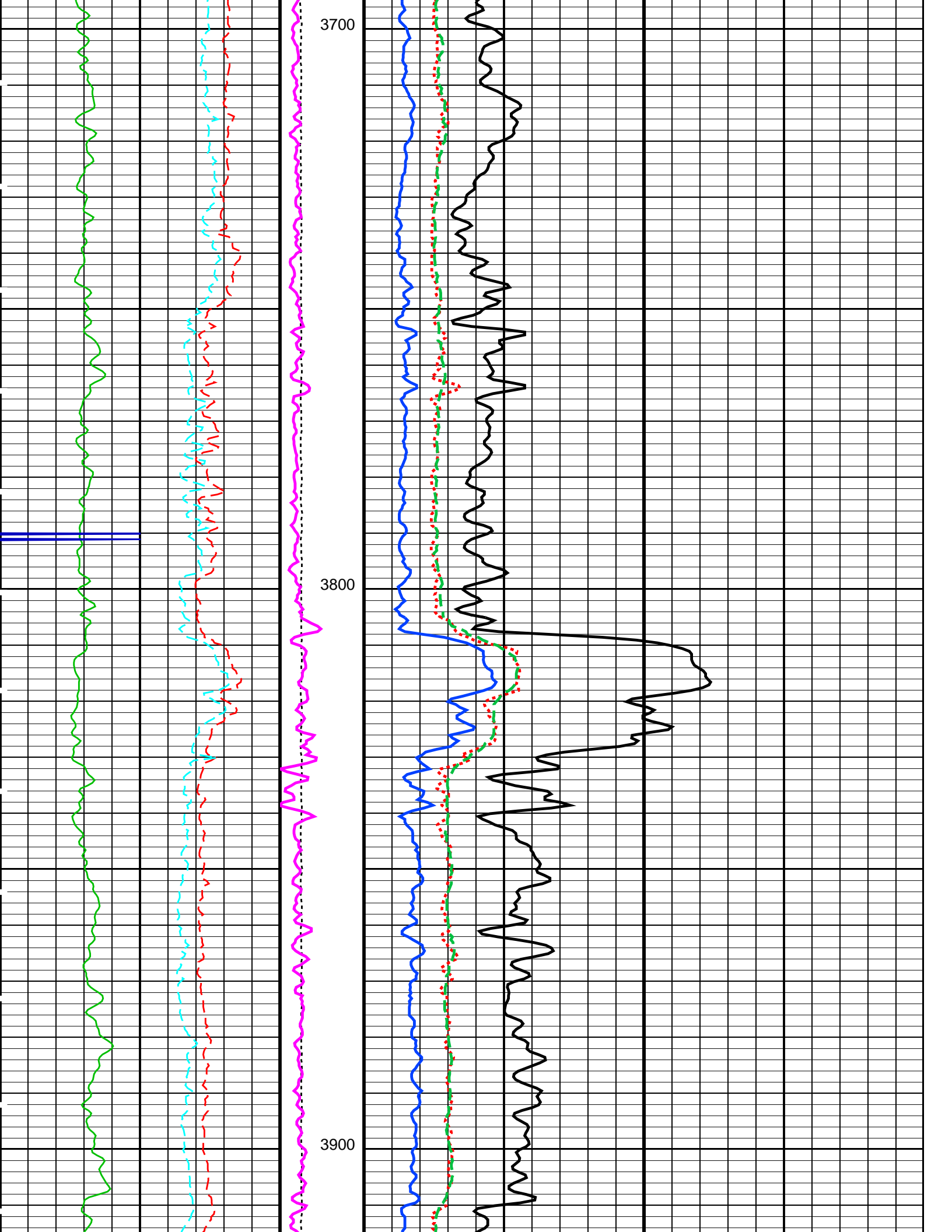


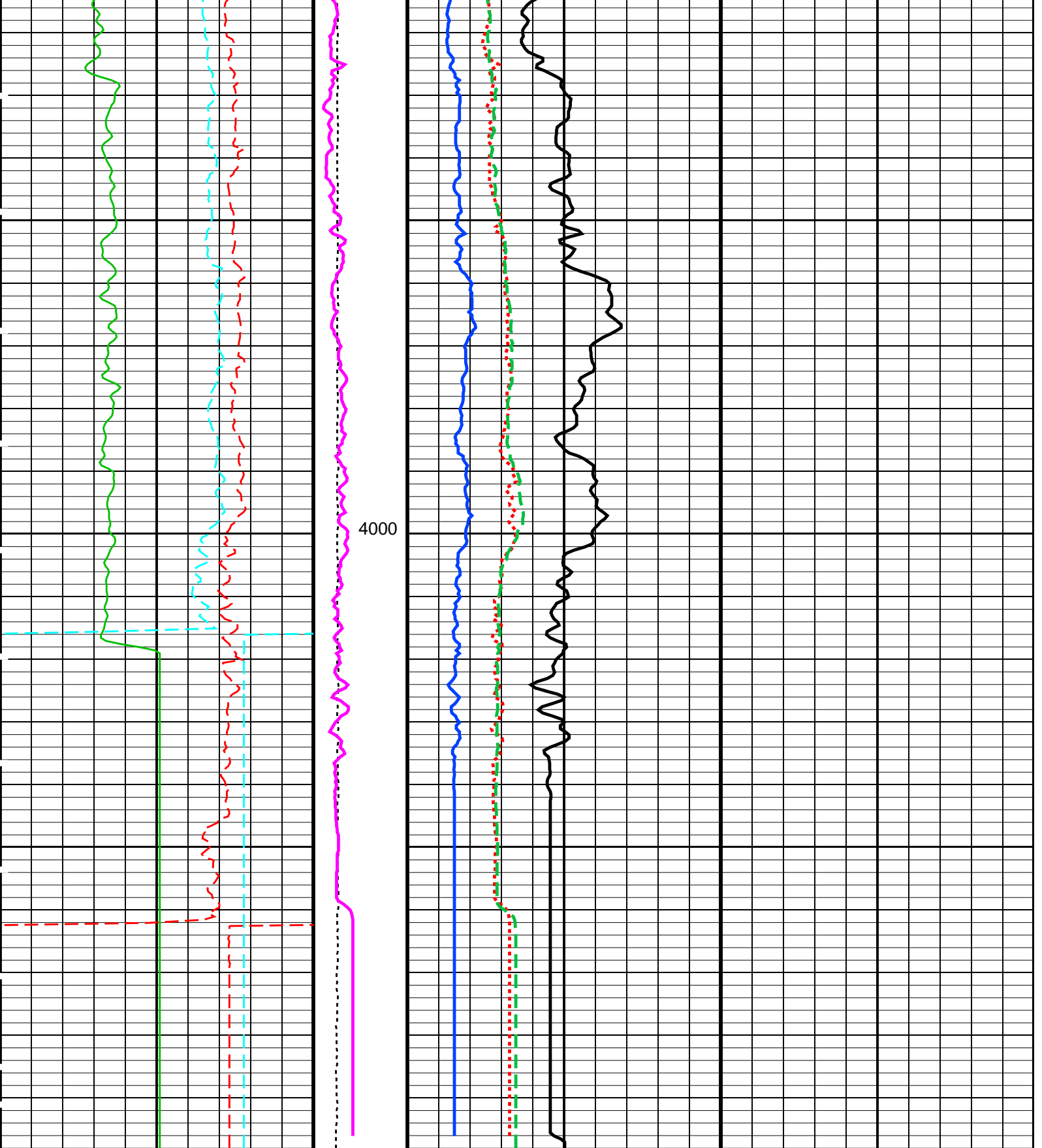












<p>Gamma Ray (GR_EDTC) (GAPI)</p> <p>0 150</p>	<p>Tension (TENS) (LBF)</p> <p>0 10000</p>	<p>Compressional Slowness 3 (DTCO3) (US/F)</p> <p>40 240</p>
<p>PPC1 Hole Diameter 1 (HD1_PPC1) (IN)</p> <p>6 16</p>	<p>VPVS Ratio (VPVS) (-----)</p> <p>1.5 2.5</p>	<p>Shear Slowness 5 (DTSH5) (US/F)</p> <p>40 440</p>
<p>PPC2 Hole Diameter 1 (HD1_PPC2) (IN)</p> <p>6 16</p>		<p>Shear Slowness 6 (DTSH6) (US/F)</p> <p>40 440</p>

MAMS Twisted
From LHT1 to TWIND_TOTAL

Sonic Porosity (SPHI)

-0.15

(V/V)

0.45

Sonic Scanner Twist Indicator Total
(TWIND_TOTAL)

0.5 (----) 1

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
PPC1-B: Powered Positioning Device/Caliper 1			
CLBD_PPC	PPC1 Caliper Type	CAL_STD	
	PPC Calibration data selection	ROM	
MAPC-B: Multimode Array Sonic Power Cartridge			
AZIM_SELECT	Azimuth Reference Selection	P1AZ	
BHS	Borehole Status	OPEN	
BS	Bit Size	12.250	IN
CDTS	C-Delta-T Shale	100	US/F
DCRMVL	DC Offset Removal Option	DC_MULTIPLE	
DLHS	Hole Diameter Source for SOBS Channel	HD1_PPC1	
DTCO_SELECT	Delta-T Compressional Selection for Finalization	MF	
DTF	Delta-T Fluid	204.5	US/F
DTM	Delta-T Matrix	56	US/F
DTSH_SELECT	Delta-T Shear Selection for Finalization	XD	
SPFS	Sonic Porosity Formula	RAYMER_HUNT	
SPSO	Sonic Porosity Source	DTCO	
PPC2-B: Powered Positioning Device/Caliper 2			
CLBD_PPC	PPC2 Caliper Type	CAL_STD	
	PPC Calibration data selection	ROM	
EDTC-B: Enhanced DTS Cartridge			
BHS	Borehole Status	OPEN	
DIP: Dip Computation			
	DIP Tool	FBST	
DIR: Directional Survey Computation			
SPVD	TVD of Starting Point	0	FT
TIMD	Along-hole depth of Tie-in Point	0	FT
TIVD	TVD of Tie-in Point	0	FT
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	STI	
TDD	Total Depth - Driller	4105.00	FT
TDL	Total Depth - Logger	4105.00	FT
System and Miscellaneous			
CSIZ	Current Casing Size	14.000	IN
CWEI	Casing Weight	54.57	LB/F
DO	Depth Offset for Playback	2.0	FT
PP	Playback Processing	NORMAL	

Format: DTCO_5" Vertical Scale: 5" per 100'

Graphics File Created: 22-Apr-2009 10:45

OP System Version: 16C0-147

MCM

FBST-B	SRPC-3777-Q4_2008_OP16	PPC1-B	16C0-147
MAXS-B	SKK-3703-MAST	MAPC-B	SKK-3703-MAST
PPC2-B	16C0-147	EDTC-B	SKK-3494-EDTCB

Input DLIS Files

22-Apr-2009 10:36

Output DLIS Files

DEFAULT	FMI_CAL_MAXS_MAPC_003PUP	FN:2	PRODUCER	22-Apr-2009 10:45
MSIP	FMI_CAL_MAXS_MAPC_003PUP	FN:3	PRODUCER	22-Apr-2009 10:45
GPIT	FMI_CAL_MAXS_MAPC_003PUP	FN:4	PRODUCER	22-Apr-2009 10:45

Company: Battelle Pacific Northwest Lab

Well: Wallula Basalt Pilot #1

Input DLIS Files

22-Apr-2009 10:36

Output DLIS Files

DEFAULT	FMI_CAL_MAXS_MAPC_003PUP	FN:2	PRODUCER	22-Apr-2009 10:45	4098.0 FT	90.0 FT
MSIP	FMI_CAL_MAXS_MAPC_003PUP	FN:3	PRODUCER	22-Apr-2009 10:45	4098.0 FT	90.0 FT
GPIT	FMI_CAL_MAXS_MAPC_003PUP	FN:4	PRODUCER	22-Apr-2009 10:45	4098.0 FT	90.0 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 3022.22 F3

Cement Volume = 1511.25 F3 (assuming 9.63 IN casing O.D.)

Computed from 4098.0 FT to 1108.0 FT using data channel(s) C1 C2

OP System Version: 16C0-147

MCM

FBST-B	SRPC-3777-Q4_2008_OP16	PPC1-B	16C0-147
MAXS-B	SKK-3703-MAST	MAPC-B	SKK-3703-MAST
PPC2-B	16C0-147	EDTC-B	SKK-3494-EDTCB

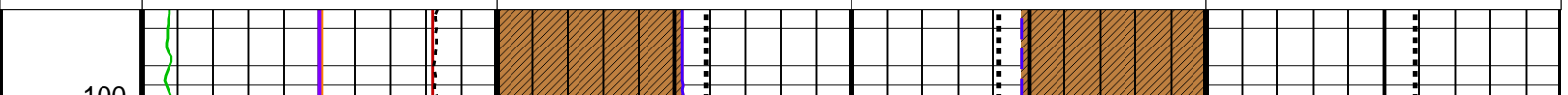
PIP SUMMARY

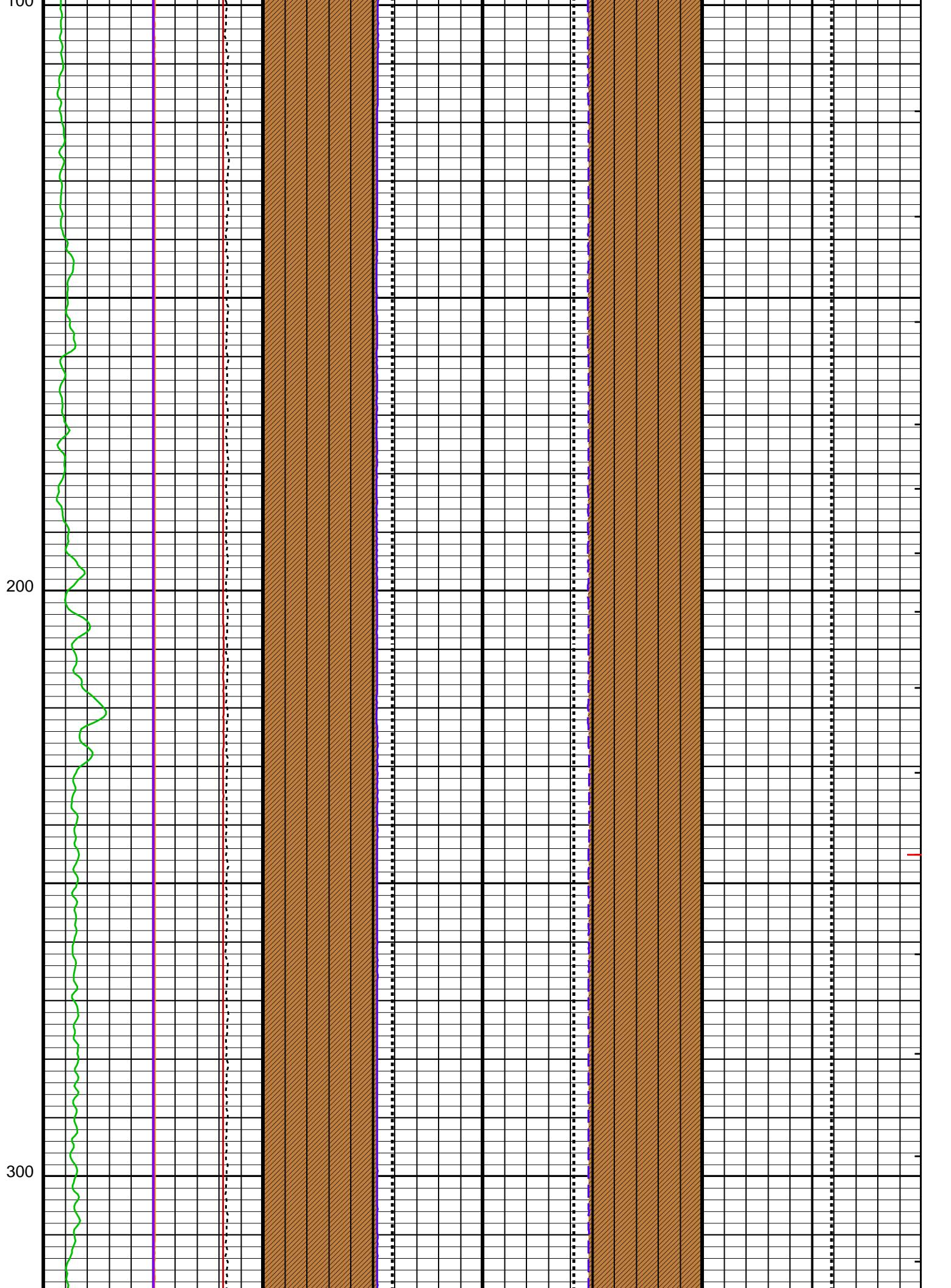
- ┆ Integrated Hole Volume Minor Pip Every 10 F3
- ┆ Integrated Hole Volume Major Pip Every 100 F3
- ┆ Integrated Cement Volume Minor Pip Every 10 F3
- ┆ Integrated Cement Volume Major Pip Every 100 F3

Integrated Transit Time Minor Pip Every 1 MS ┆
 Integrated Transit Time Major Pip Every 10 MS ┆

Time Mark Every 60 S

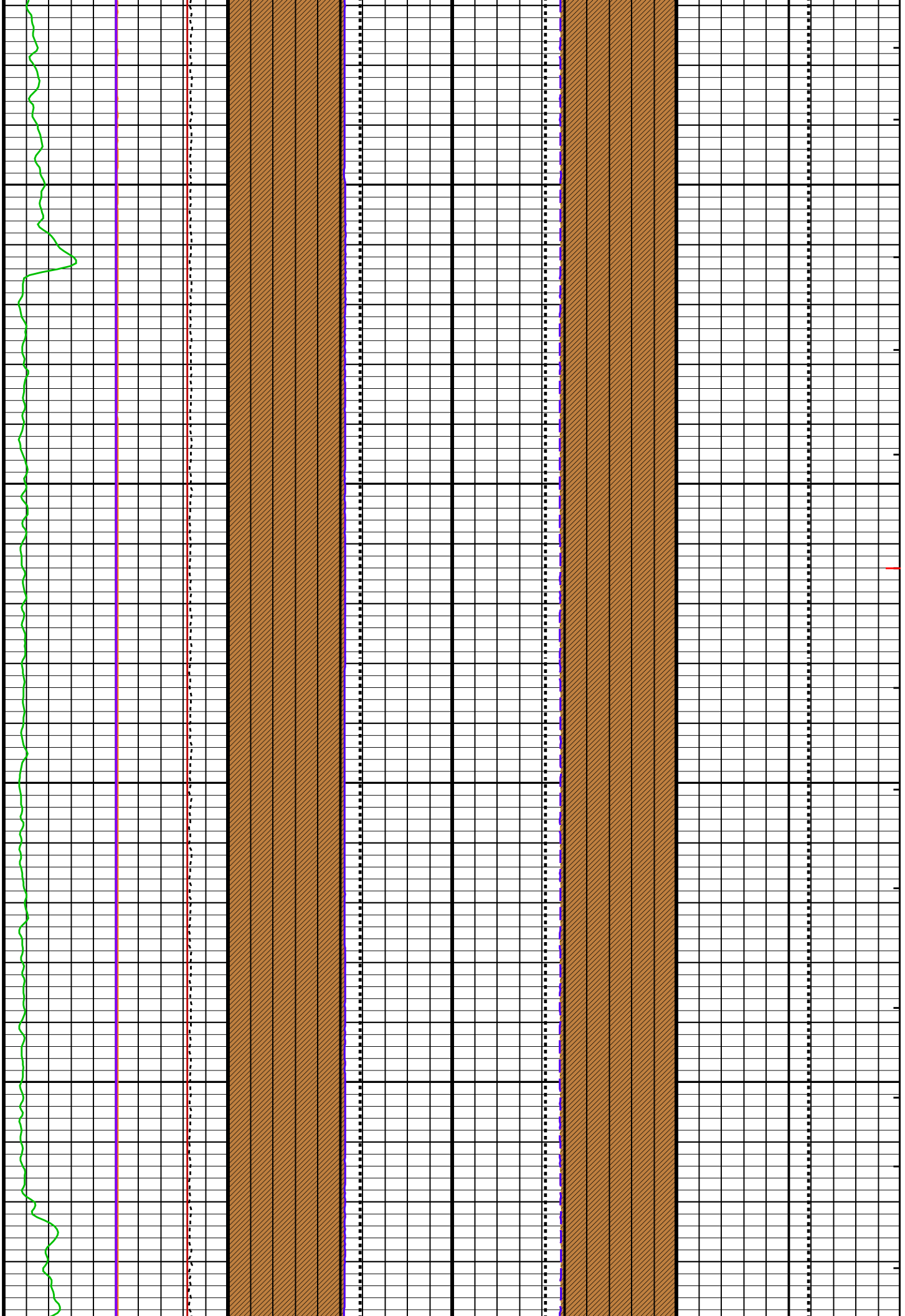
	PPC1 Relative Bearing (RB_ PPC1) 0 (DEG) 360	HD difference From EHD1_PPC1 to HD1_PPC1	HD difference From HD2_PPC1 to EHD2_PPC1
	Tension (TENS) (LBF) 10000 0	Formation From F2 to EHD1_PPC1	Formation From EHD2_PPC1 to F3
Tool/Tot. Drag From D4T to STIA	Gamma Ray (GR_EDTC) (GAPI) 0 150	PPC1 Hole Diameter 1 (HD1_PPC1) 24 (IN) 4 4	PPC1 Hole Diameter 2 (HD2_PPC1) 24 (IN) 24
Cable Drag From D4T to STIT	PPC1 Tool Center 2 (ETC2_PPC1) -10 (IN) 10	PPC1 Ellipse Hole Diameter 1 (EHD1_PPC1) 24 (IN) 4 4	PPC1 Ellipse Hole Diameter 2 (EHD2_PPC1) 24 (IN) 24
Stuck Stretch (STIT) 0 (F) 50	PPC1 Tool Center 1 (ETC1_PPC1) -10 (IN) 10	Bit Size (BS) 24 (IN) 4 4	Bit Size (BS) 24 (IN) 24 4

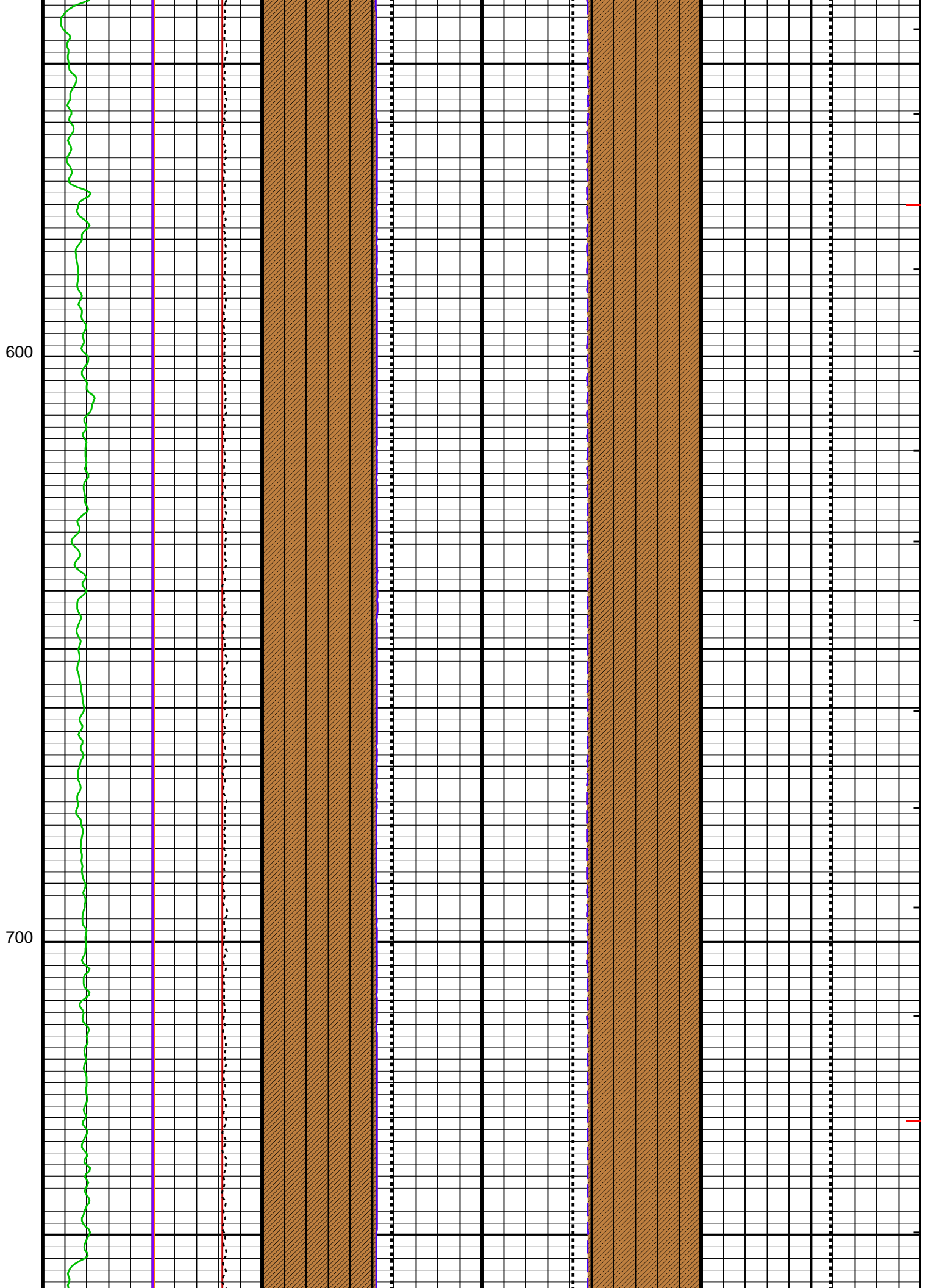




400

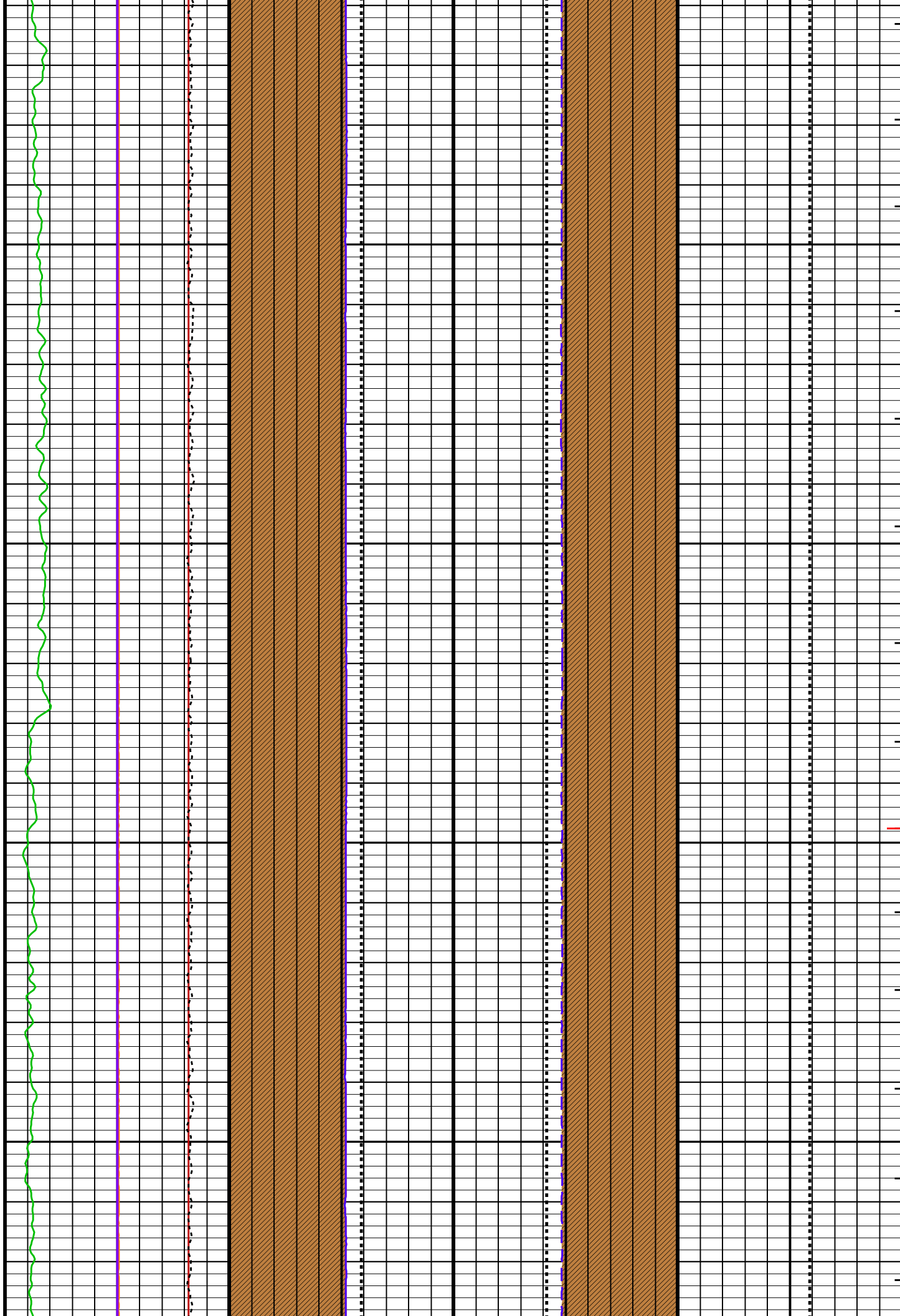
500

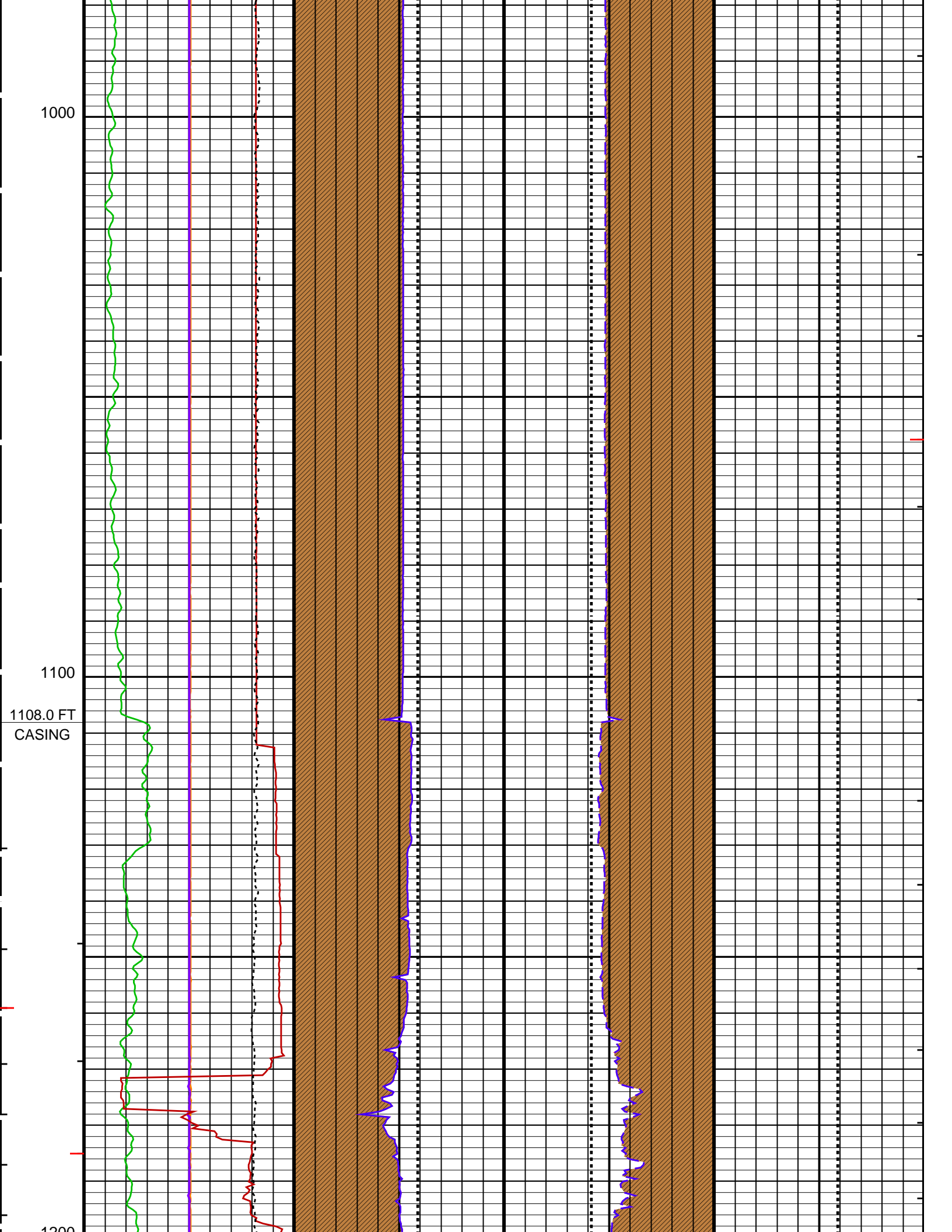


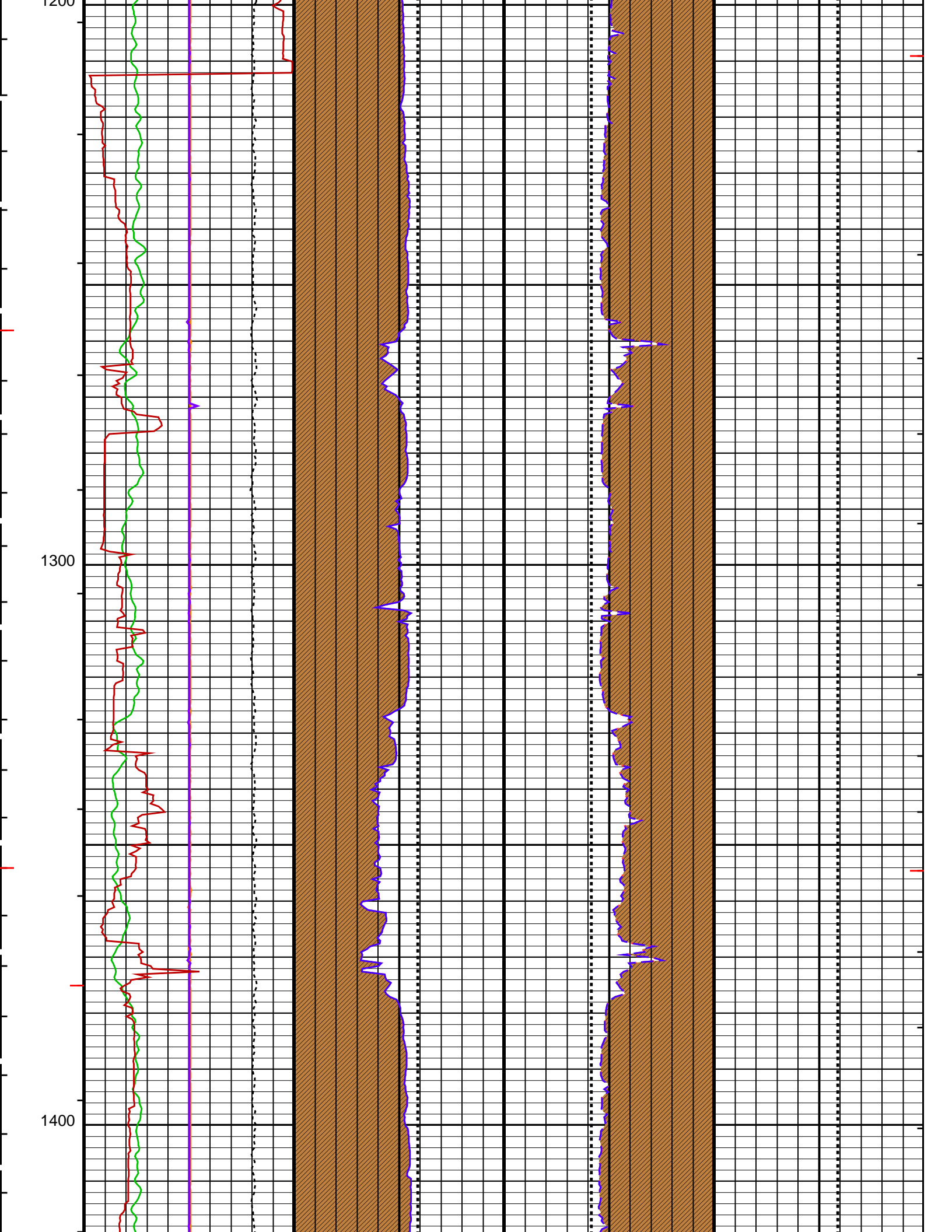


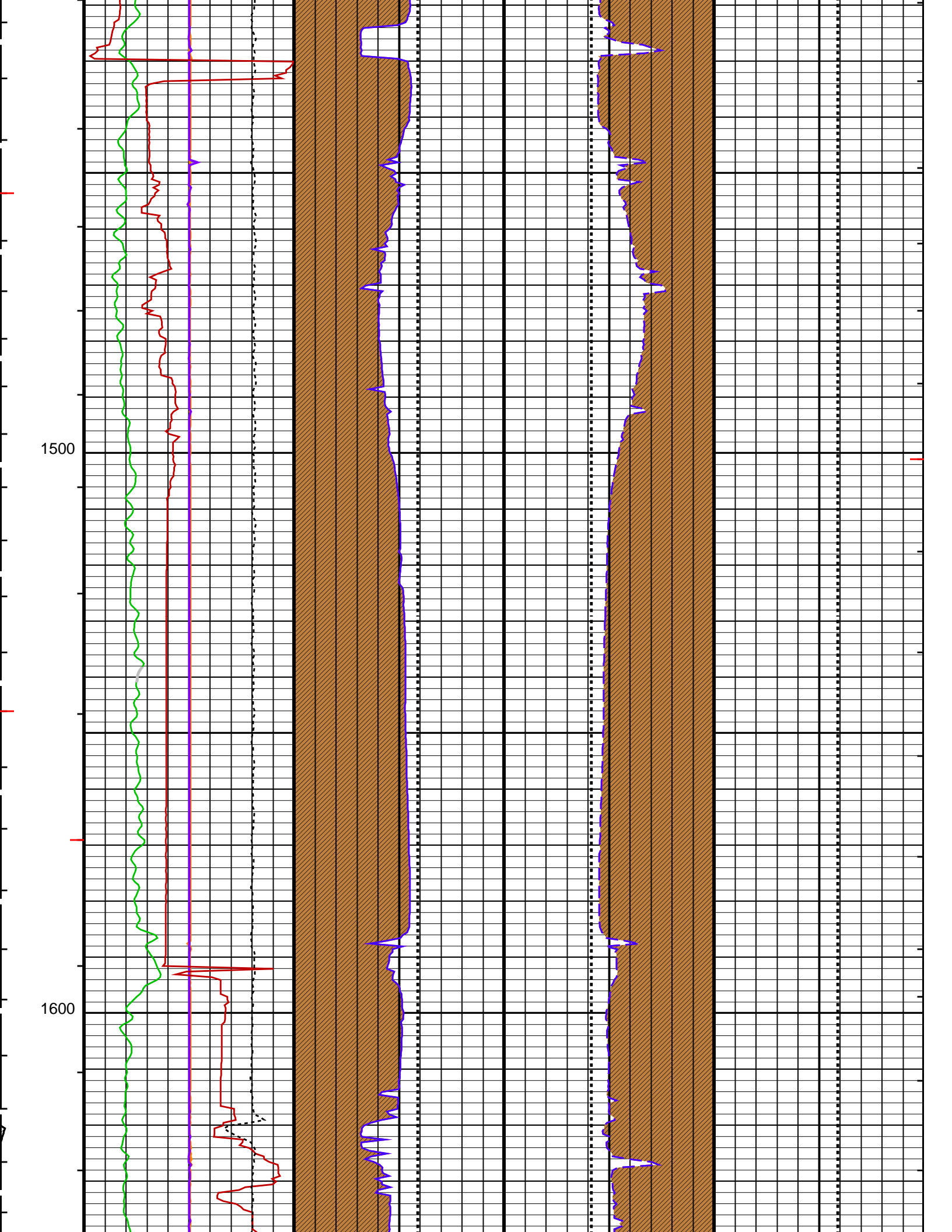
800

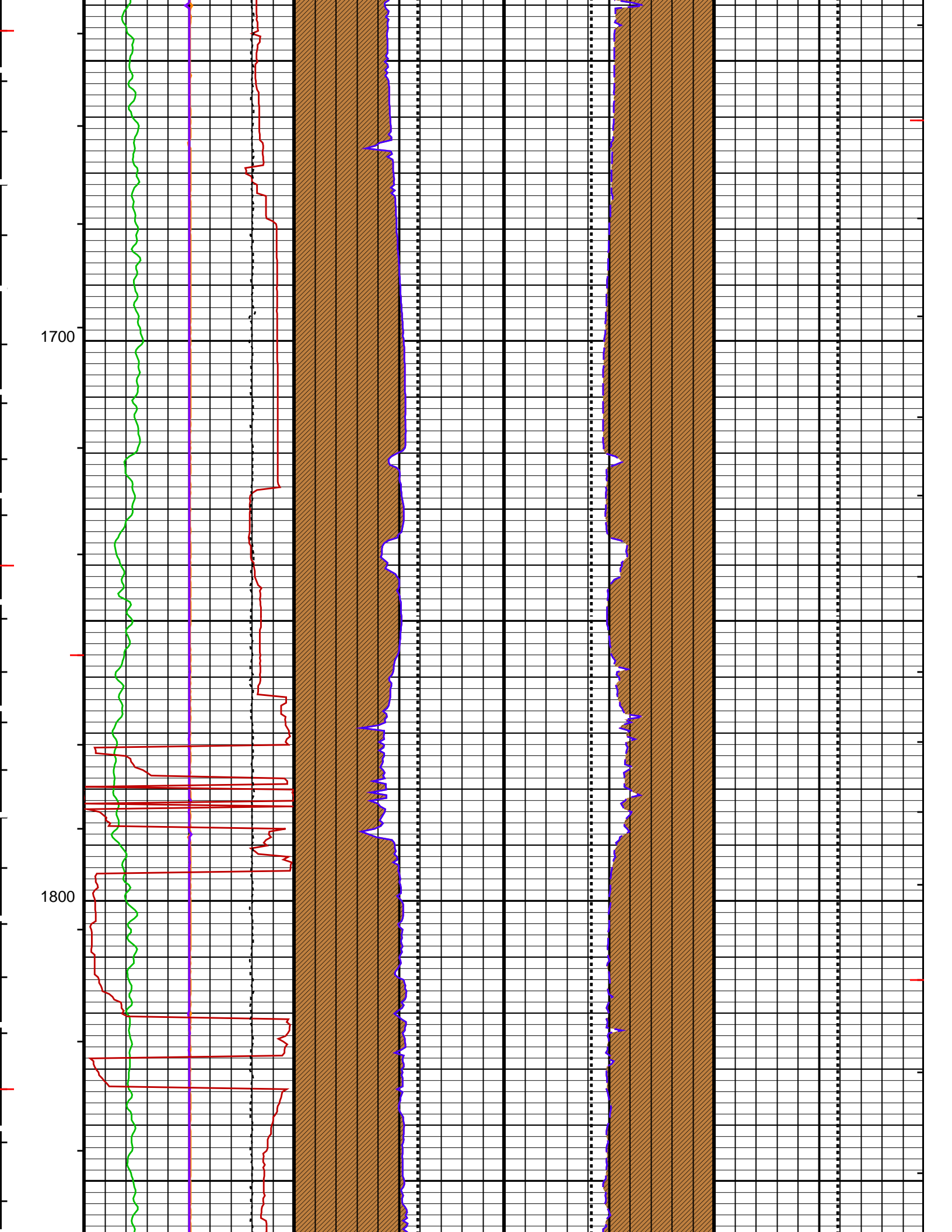
900

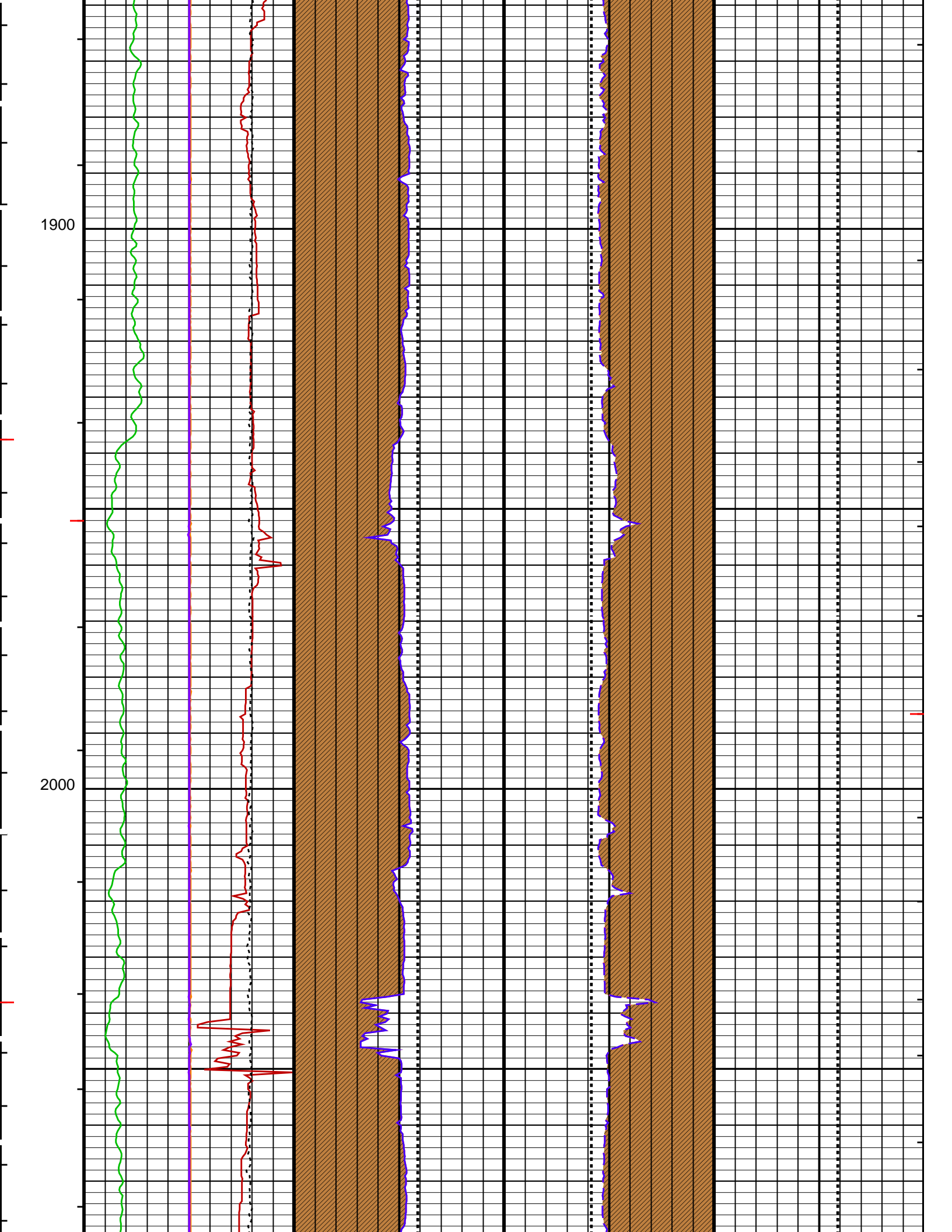


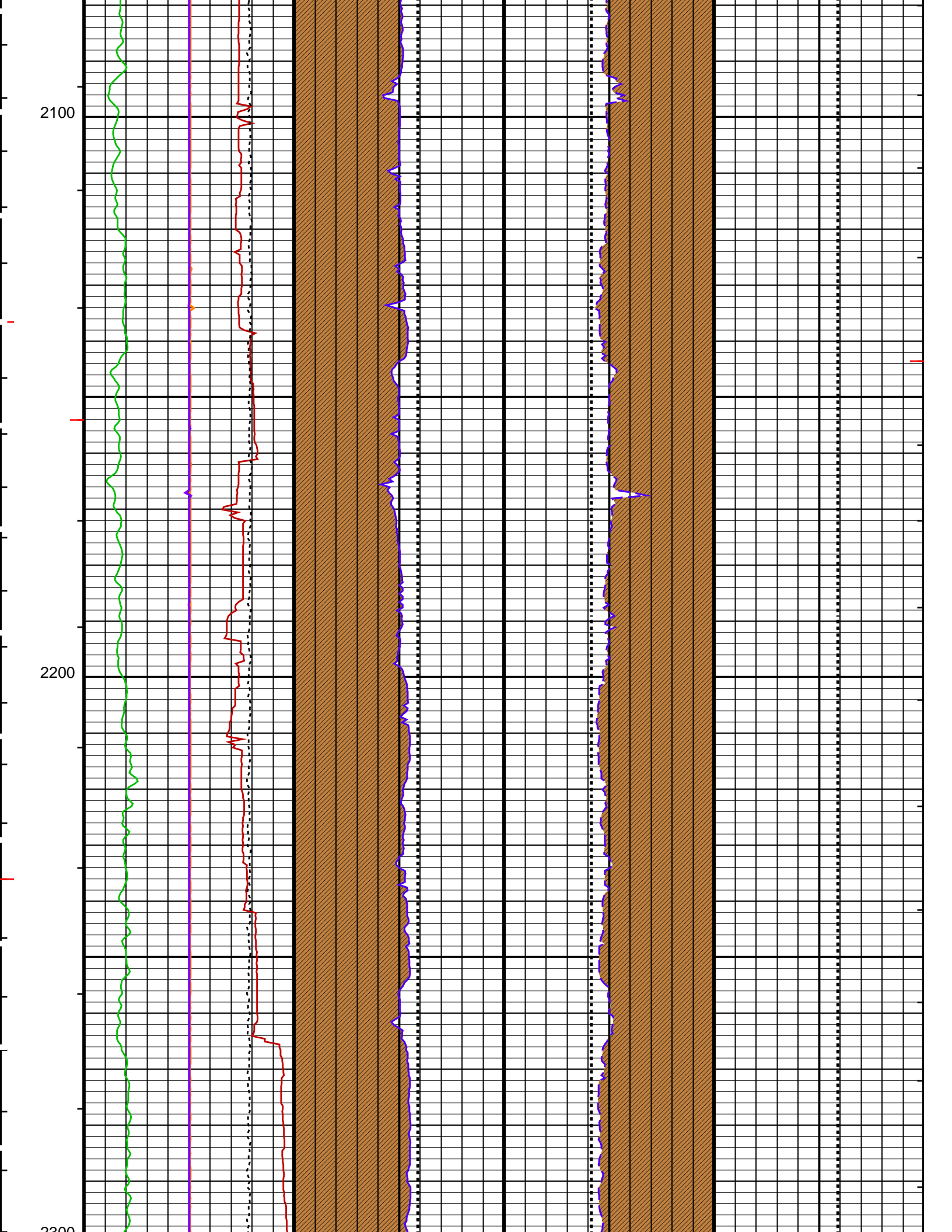


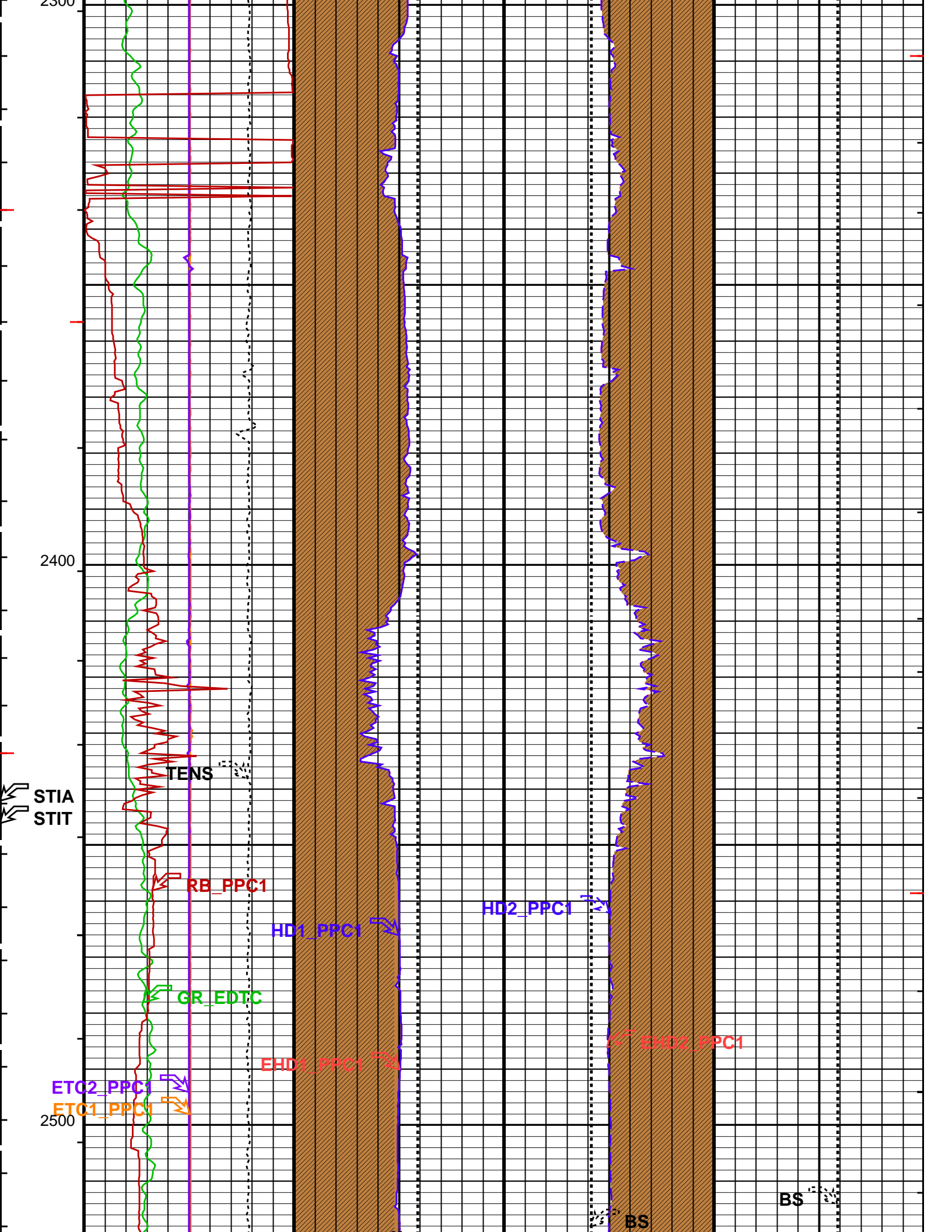


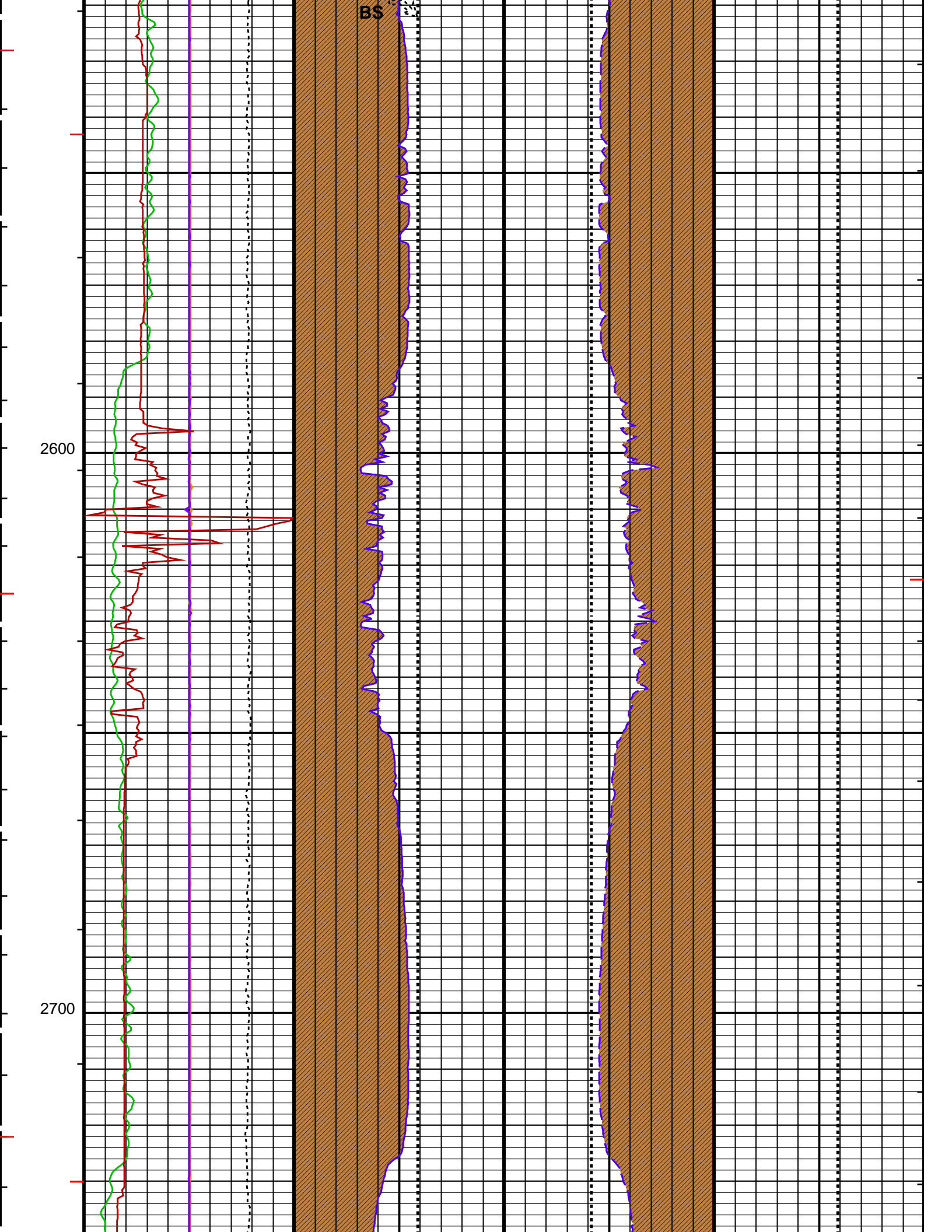


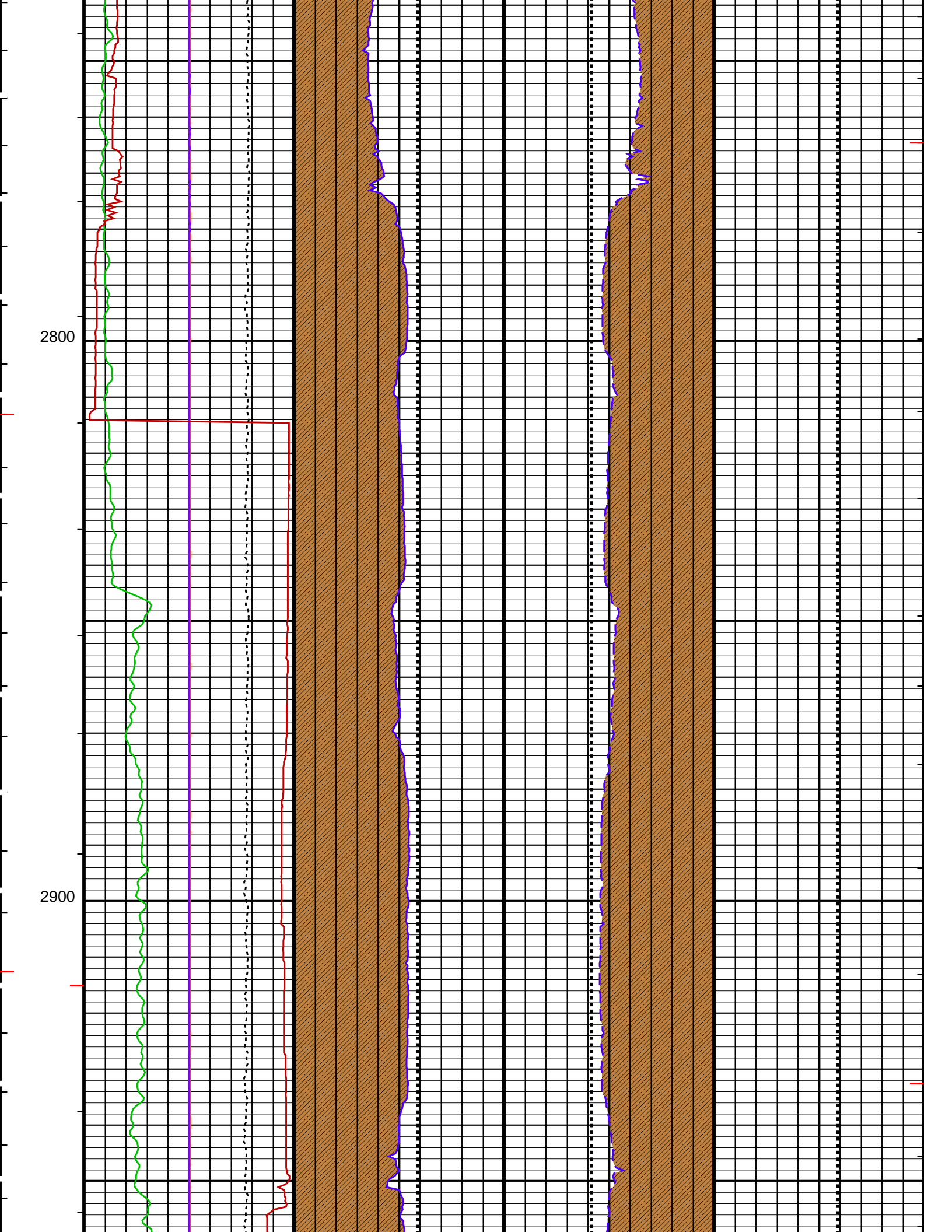


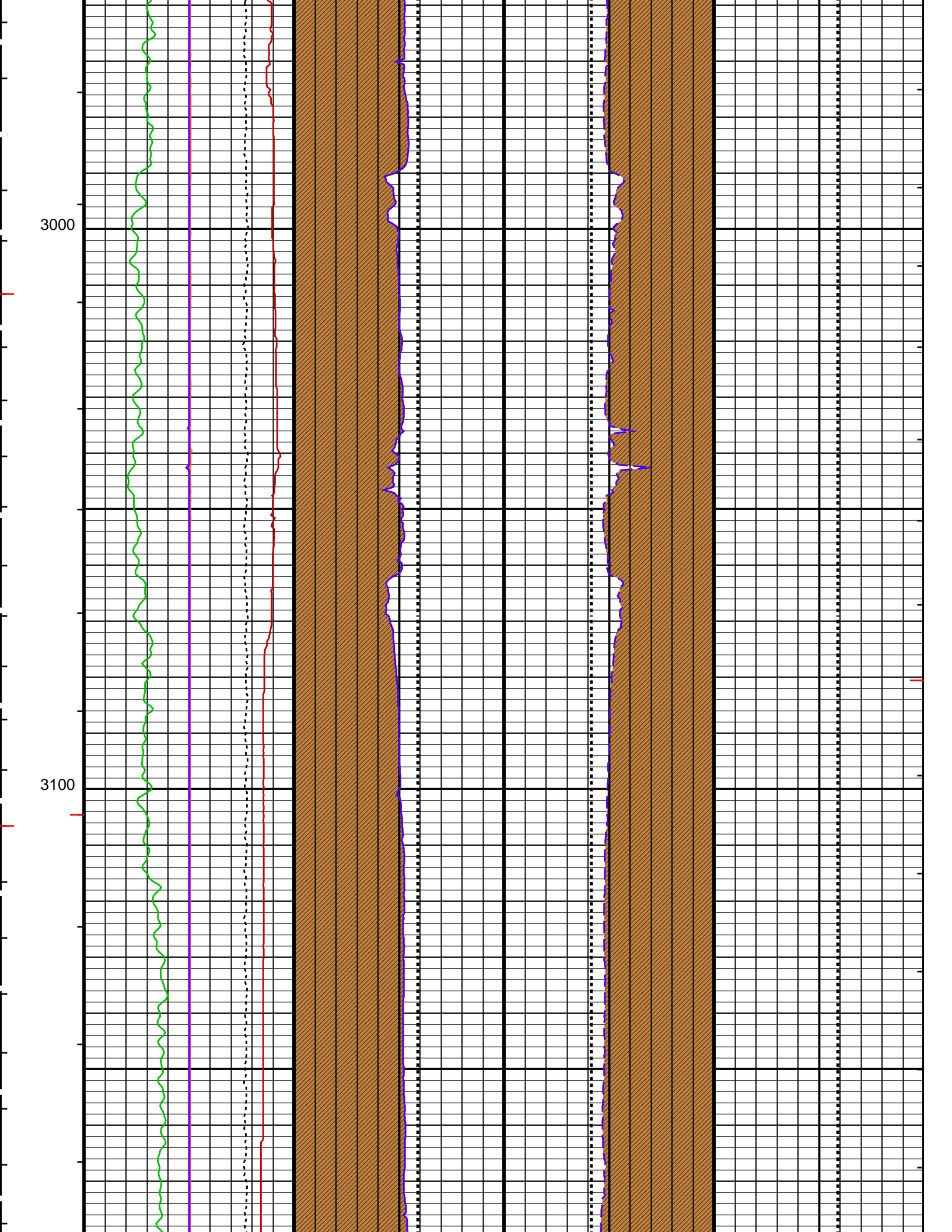


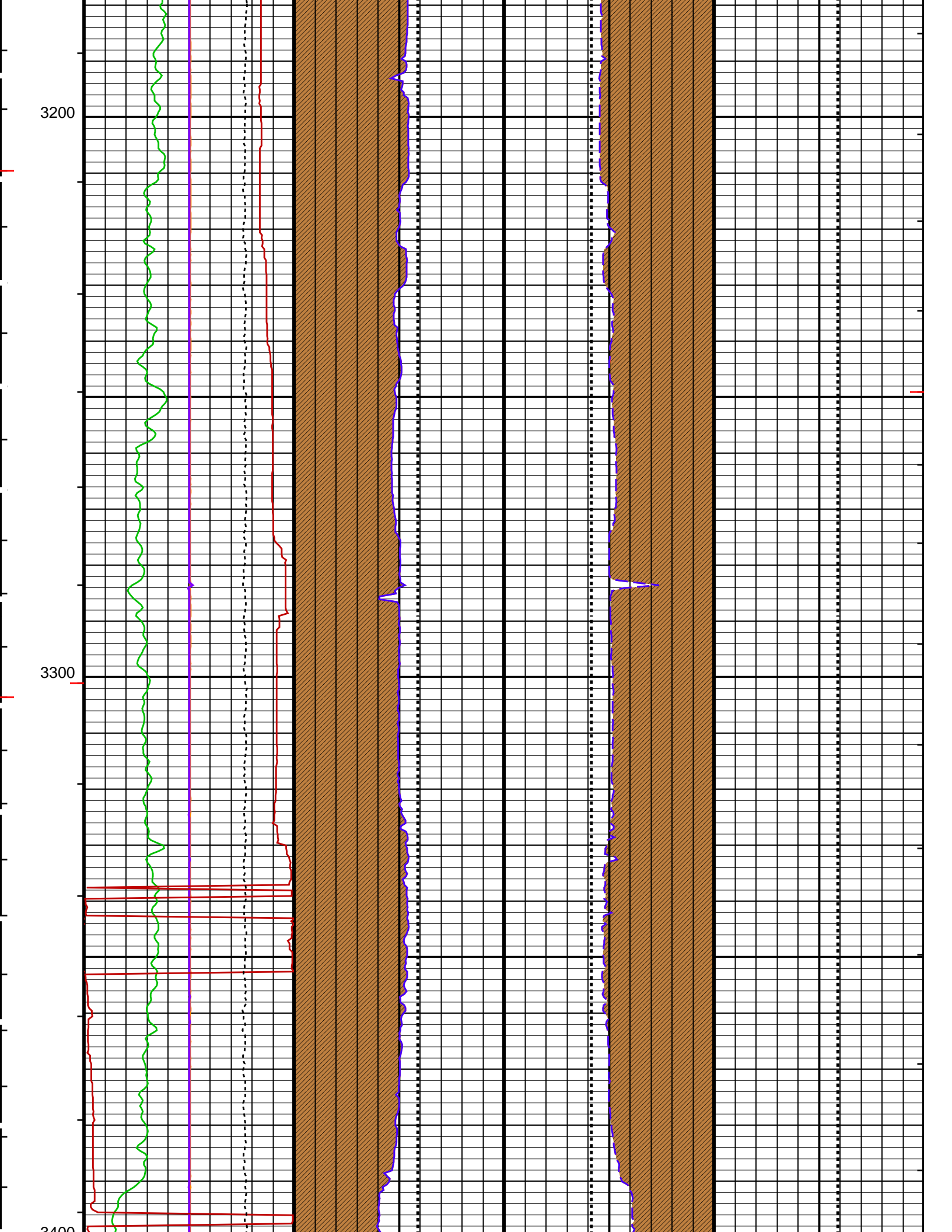


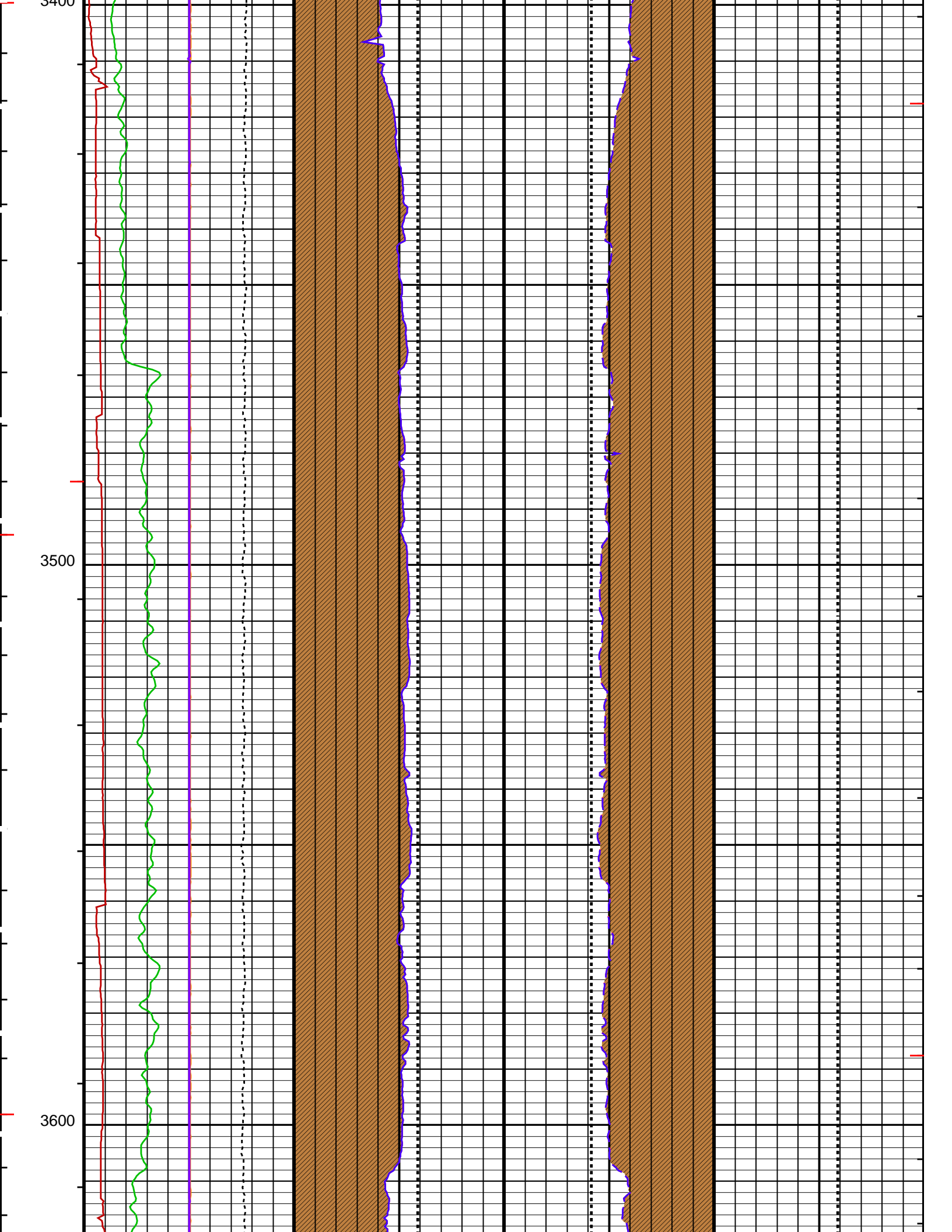


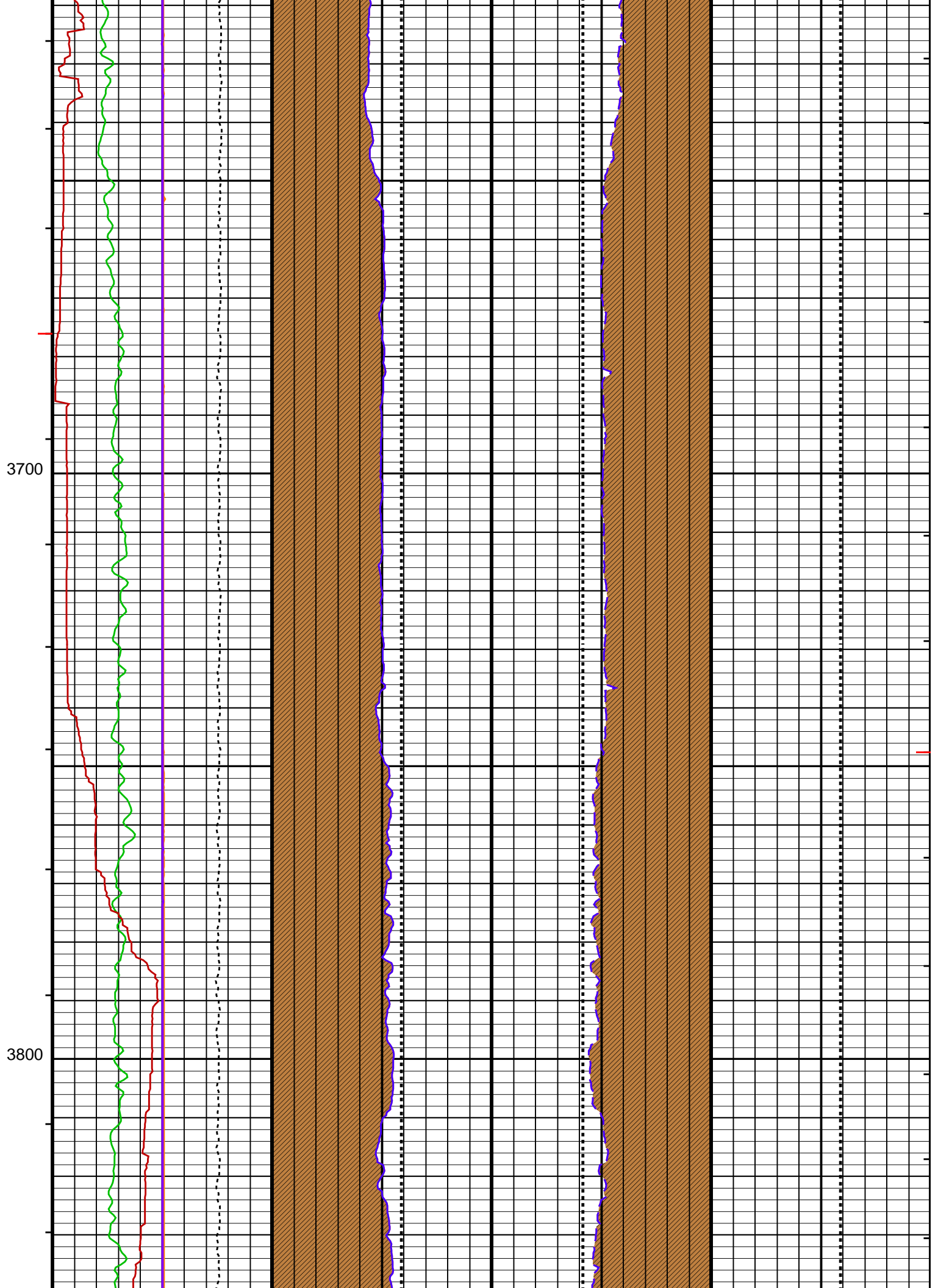


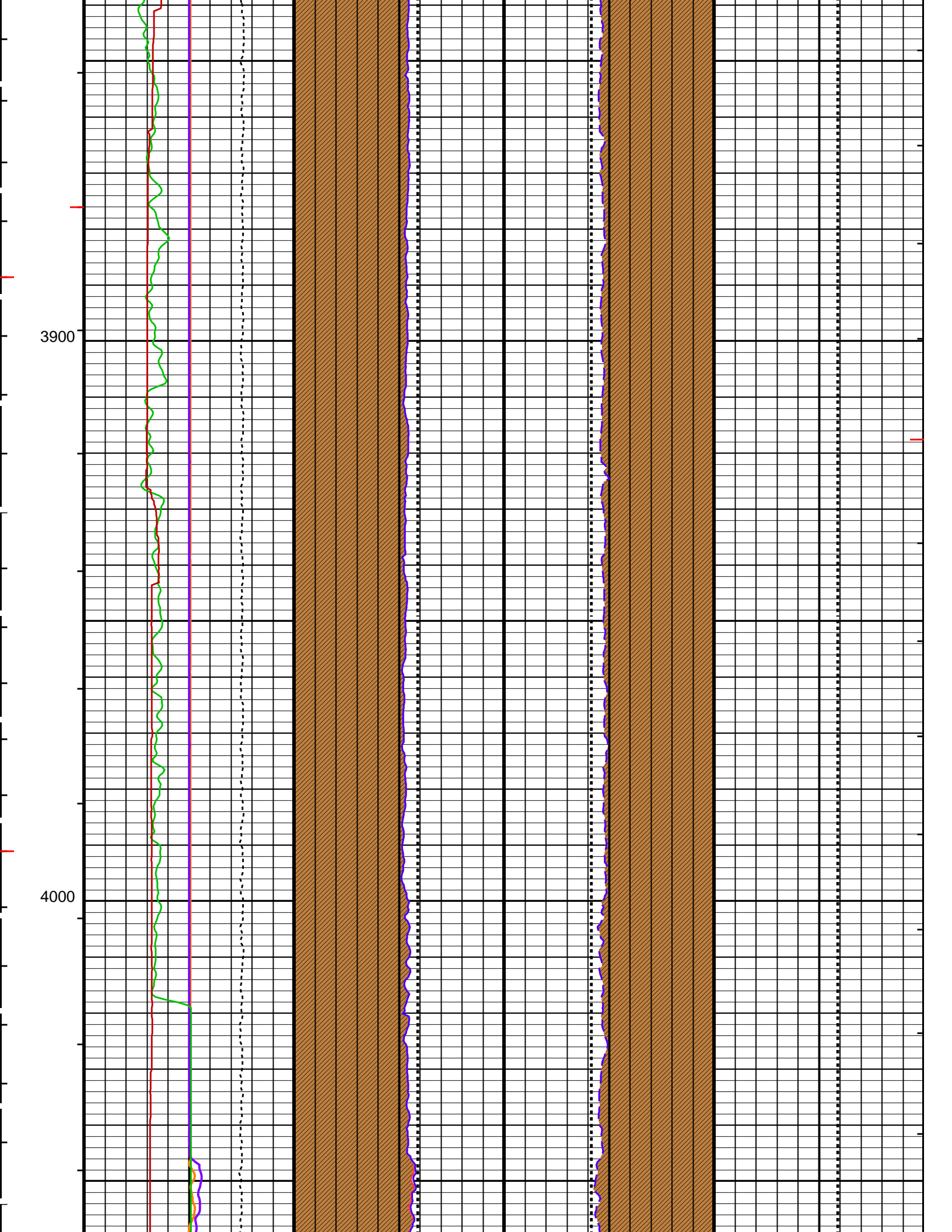


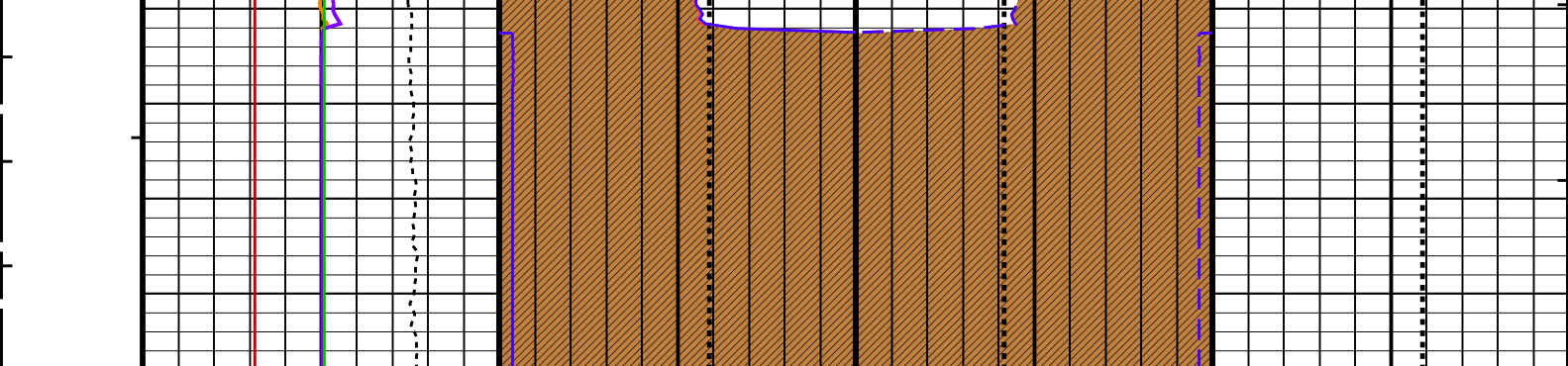












Stuck Stretch (STIT)	PPC1 Tool Center 1 (ETC1_PPC1)	Bit Size (BS)	Bit Size (BS)	Bit Size (BS)
0 (F) 50	-10 (IN) 10	24 (IN) 4 4	24 (IN) 24	24 (IN) 4
Cable Drag From D4T to STIT	PPC1 Tool Center 2 (ETC2_PPC1)	PPC1 Ellipse Hole Diameter 1 (EHD1_PPC1)	PPC1 Ellipse Hole Diameter 2 (EHD2_PPC1)	
	-10 (IN) 10	24 (IN) 4 4	24 (IN) 24	
Tool/Tot. Drag From D4T to STIA	Gamma Ray (GR_EDTC)	PPC1 Hole Diameter 1 (HD1_PPC1)	PPC1 Hole Diameter 2 (HD2_PPC1)	
	0 (GAPI) 150	24 (IN) 4 4	24 (IN) 24	
	Tension (TENS)	Formation From F2 to EHD1_PPC1	Formation From EHD2_PPC1 to F3	
	10000 (LBF) 0			
	PPC1 Relative Bearing (RB_PPC1)	HD difference From EHD1_PPC1 to HD1_PPC1	HD difference From HD2_PPC1 to EHD2_PPC1	
	0 (DEG) 360			

PIP SUMMARY

- ┆ Integrated Hole Volume Minor Pip Every 10 F3
- ┆ Integrated Hole Volume Major Pip Every 100 F3
- ┆ Integrated Cement Volume Minor Pip Every 10 F3
- ┆ Integrated Cement Volume Major Pip Every 100 F3
- ┆ Integrated Transit Time Minor Pip Every 1 MS
- ┆ Integrated Transit Time Major Pip Every 10 MS
- ┆ Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
PPC1-B: Powered Positioning Device/Caliper 1	PPC1 Caliper Type	CAL_STD
CLBD_PPC	PPC Calibration data selection	ROM
MAPC-B: Multimode Array Sonic Power Cartridge	Bit Size	12.250 IN
BS	Integrated Transit Time Source	DTCO
ITTS	PPC2-B: Powered Positioning Device/Caliper 2	
PPC2 Caliper Type	PPC2 Caliper Type	CAL_STD
CLBD_PPC	PPC Calibration data selection	ROM
DIP: Dip Computation	DIP Tool	FBST
DIR: Directional Survey Computation	TVD of Starting Point	0 FT
SPVD	Along-hole depth of Tie-in Point	0 FT
TIMD	TVD of Tie-in Point	0 FT
TIVD	HOLEV: Integrated Hole/Cement Volume	
FCD	Future Casing (Outer) Diameter	9.625 IN
HVCS	Integrated Hole Volume Caliper Selection	C1/C2
STI: Stuck Tool Indicator	Trigger for MAXIS First Reading Label	STI
LBFR	STI Stuck Threshold	2.5 FT
STKT	Total Depth - Driller	4105.00 FT
TDD	Total Depth - Logger	4105.00 FT
TDL	System and Miscellaneous	
DO	Depth Offset for Playback	2.0 FT
PP	Playback Processing	NORMAL
TD	Total Depth	4105 FT

OP System Version: 16C0-147
MCM

FBST-B	SRPC-3777-Q4_2008_OP16	PPC1-B	16C0-147
MAXS-B	SKK-3703-MAST	MAPC-B	SKK-3703-MAST
PPC2-B	16C0-147	EDTC-B	SKK-3494-EDTCB

Input DLIS Files

22-Apr-2009 10:36

Output DLIS Files

DEFAULT	FMI_CAL_MAXS_MAPC_003PUP	FN:2	PRODUCER	22-Apr-2009 10:45
MSIP	FMI_CAL_MAXS_MAPC_003PUP	FN:3	PRODUCER	22-Apr-2009 10:45
GPIT	FMI_CAL_MAXS_MAPC_003PUP	FN:4	PRODUCER	22-Apr-2009 10:45

Company: Battelle Pacific Northwest Lab Well: Wallula Basalt Pilot #1

Input DLIS Files

22-Apr-2009 10:36

Output DLIS Files

DEFAULT	FMI_CAL_MAXS_MAPC_003PUP	FN:2	PRODUCER	22-Apr-2009 10:45	4098.0 FT	90.0 FT
MSIP	FMI_CAL_MAXS_MAPC_003PUP	FN:3	PRODUCER	22-Apr-2009 10:45	4098.0 FT	90.0 FT
GPIT	FMI_CAL_MAXS_MAPC_003PUP	FN:4	PRODUCER	22-Apr-2009 10:45	4098.0 FT	90.0 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 3022.22 F3
 Cement Volume = 1511.25 F3 (assuming 9.63 IN casing O.D.)
 Computed from 4098.0 FT to 1108.0 FT using data channel(s) C1 C2

OP System Version: 16C0-147
MCM

FBST-B	SRPC-3777-Q4_2008_OP16	PPC1-B	16C0-147
MAXS-B	SKK-3703-MAST	MAPC-B	SKK-3703-MAST
PPC2-B	16C0-147	EDTC-B	SKK-3494-EDTCB

PIP SUMMARY

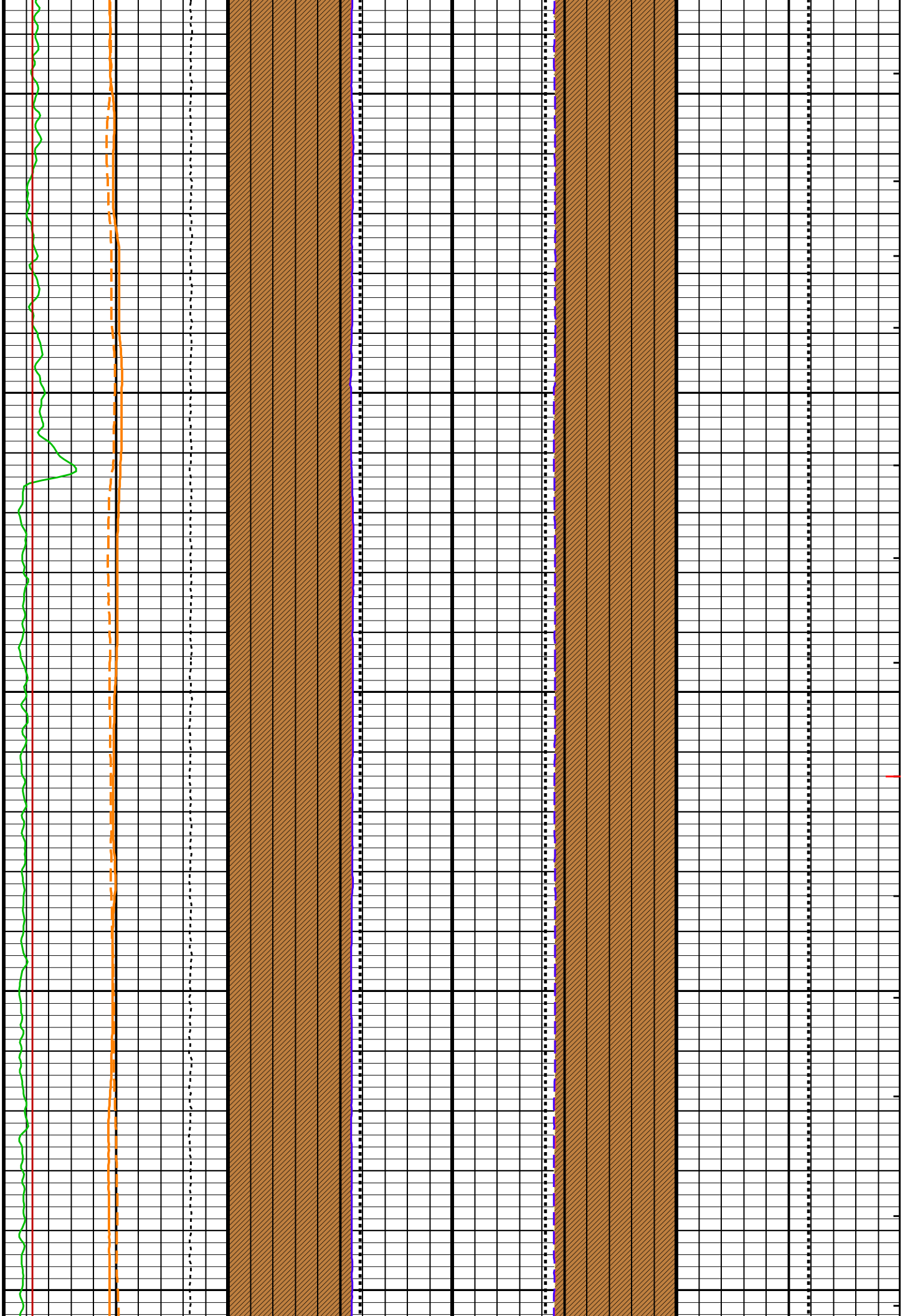
- ┆ Integrated Hole Volume Minor Pip Every 10 F3
 - ┆ Integrated Hole Volume Major Pip Every 100 F3
 - ┆ Integrated Cement Volume Minor Pip Every 10 F3
 - ┆ Integrated Cement Volume Major Pip Every 100 F3
- Integrated Transit Time Minor Pip Every 1 MS ┆
 Integrated Transit Time Major Pip Every 10 MS ┆
- Time Mark Every 60 S

	PPC2 Relative Bearing (RB_	HD difference From EHD1_PPC2 to HD1_	HD difference From HD2_PPC2 to EHD2_
	PPC2)		
	0 (DEG) 360	PPC2	PPC2
	Tension (TENS)	Formation From F2 to EHD1_PPC2	Formation From EHD2_PPC2 to F3
	10000 (LBF) 0		
Tool/Tot. Drag From D4T to STIA	Gamma Ray (GR_EDTC)	PPC2 Hole Diameter 1 (HD1_	PPC2 Hole Diameter 2 (HD2_
	0 (GAPI) 150	PPC2)	PPC2)
		24 (IN) 4 4	24 (IN) 24
Cable	PPC2 Tool Center 2 (ETC2_	PPC2 Ellipse Hole Diameter 1	PPC2 Ellipse Hole Diameter 2

300

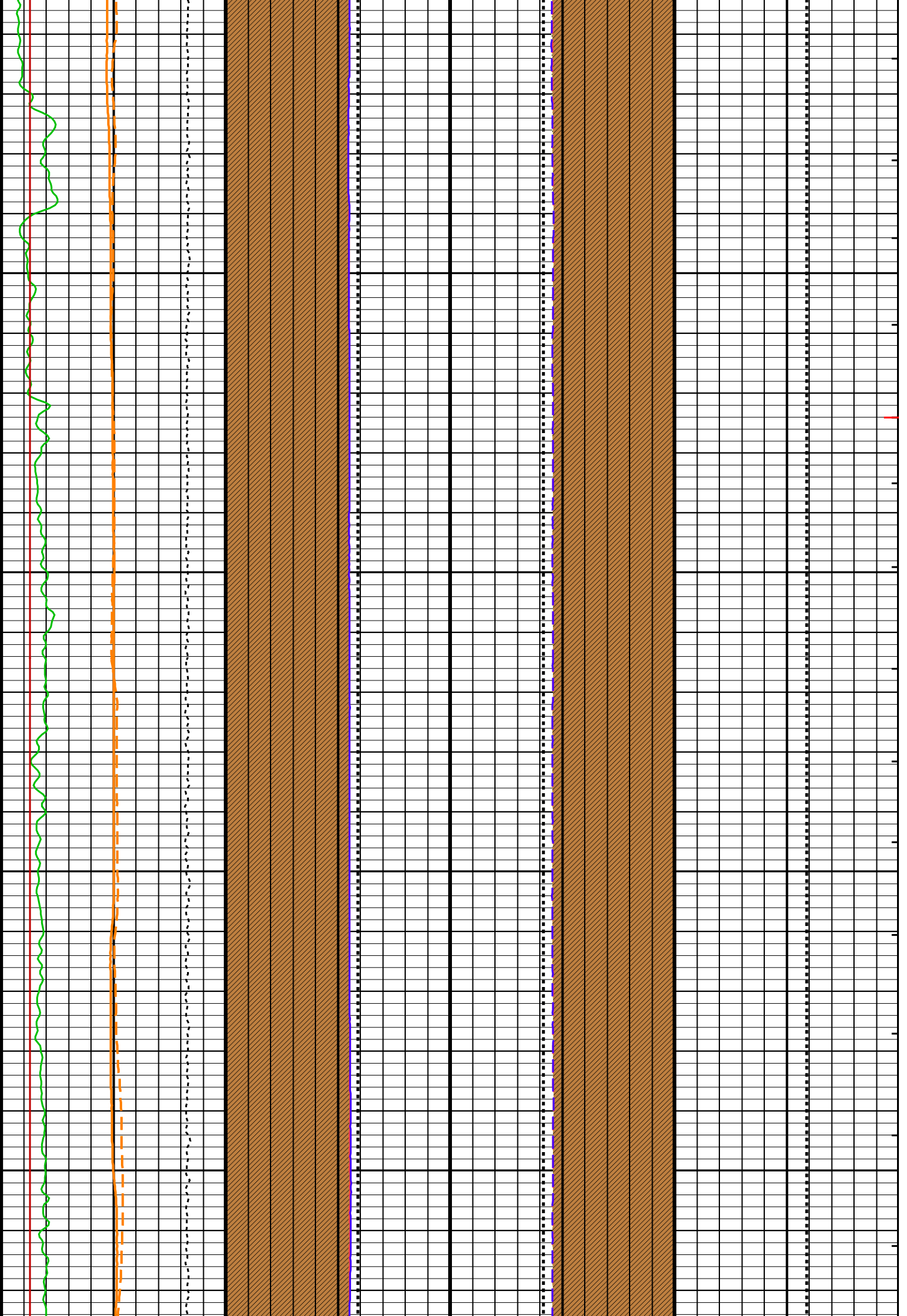
400

500



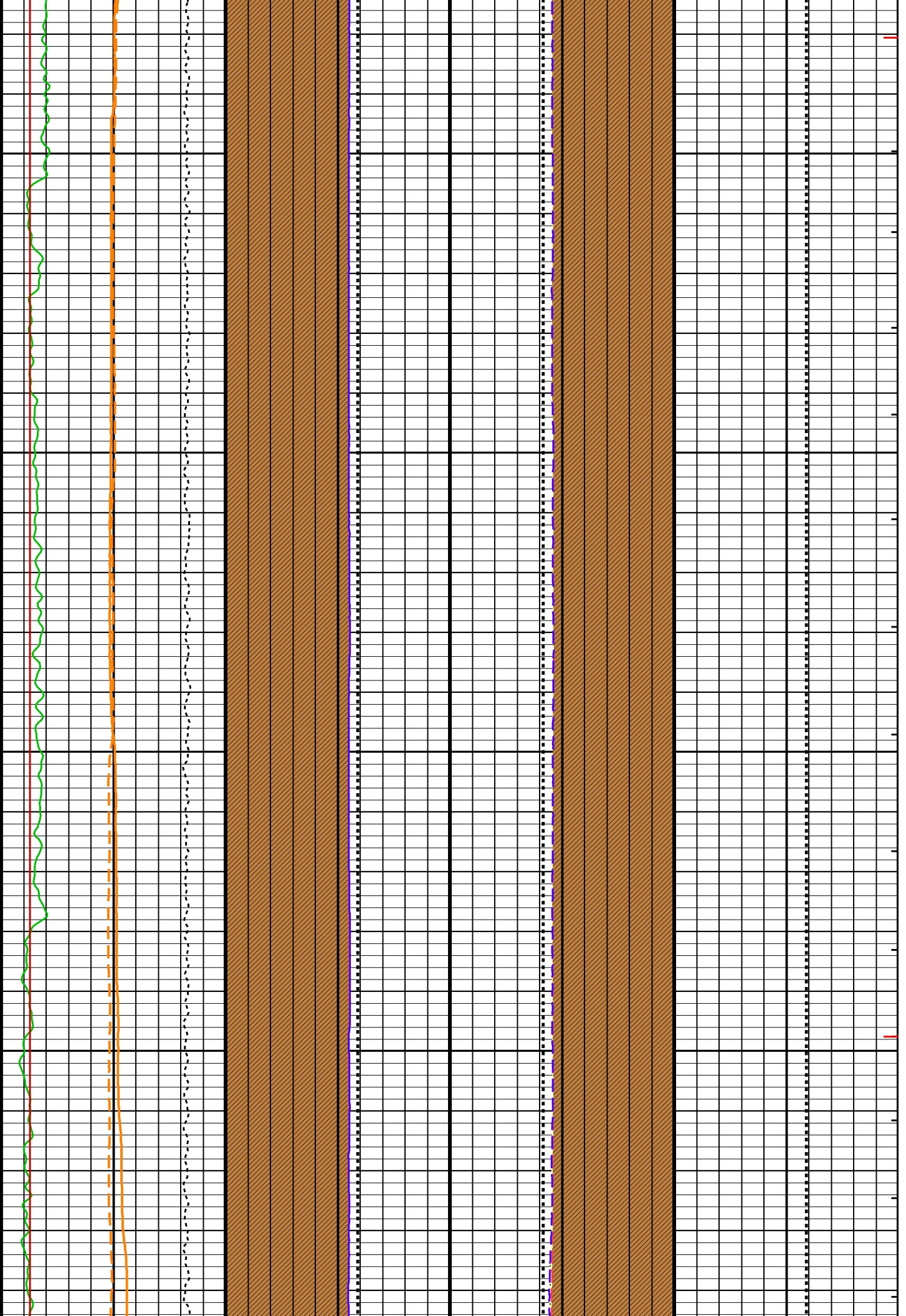
600

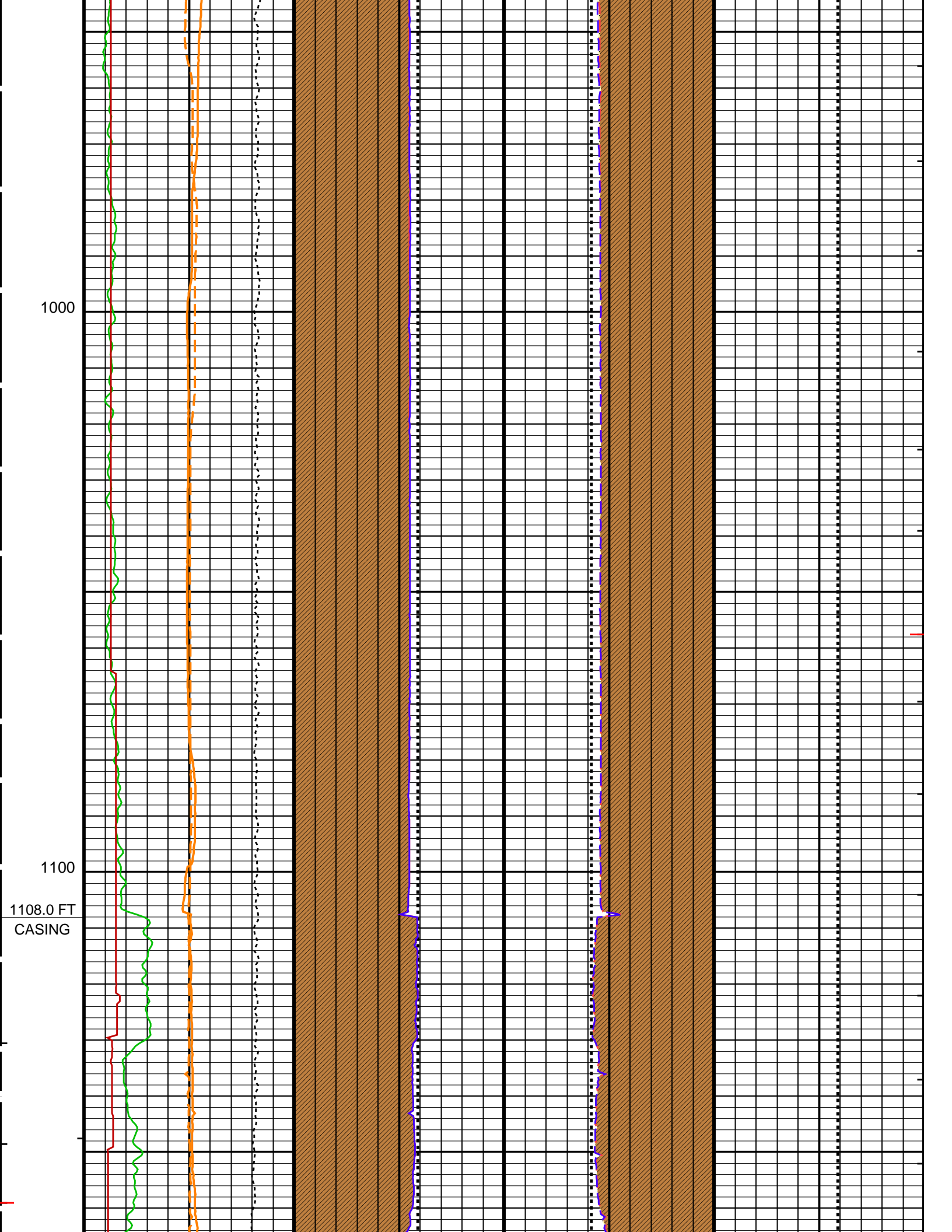
700

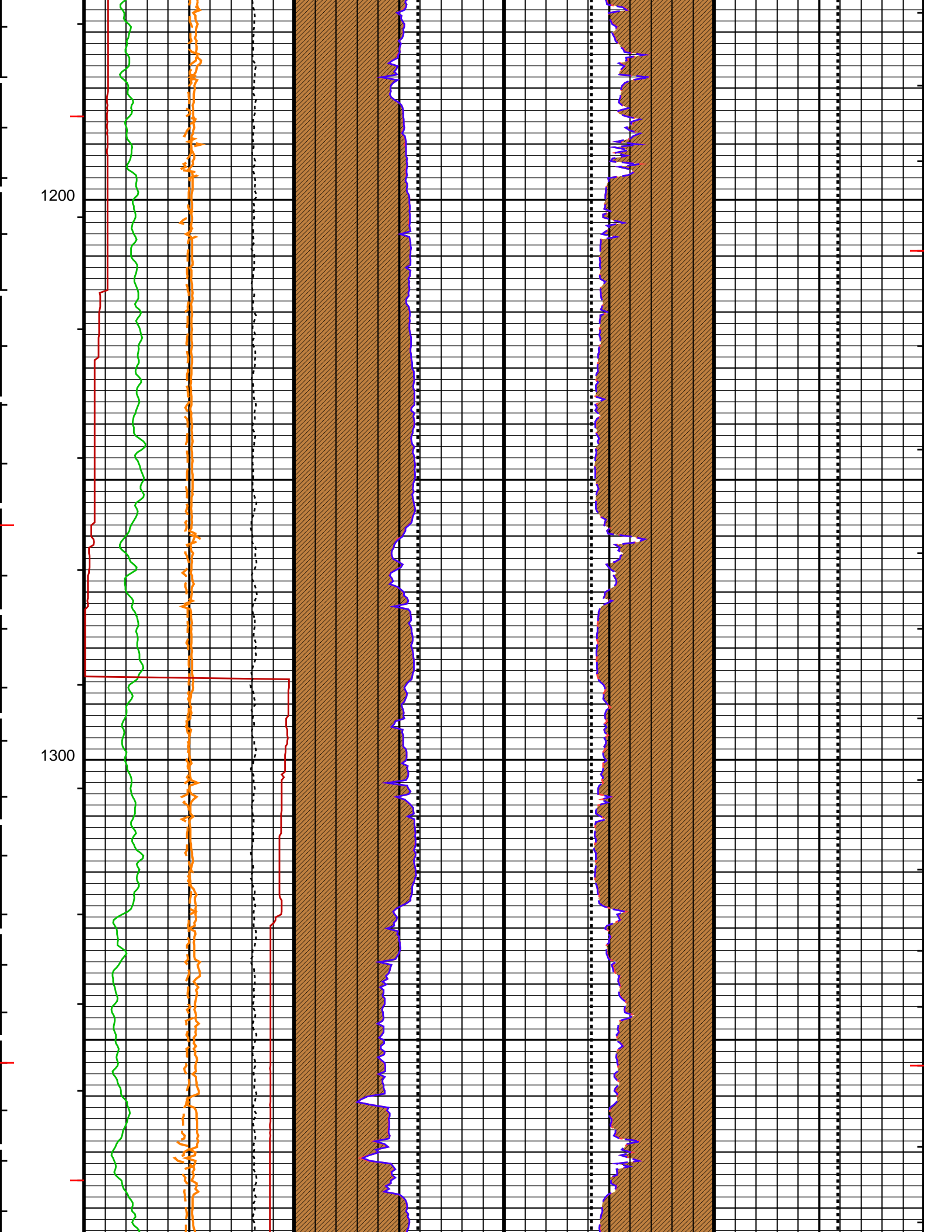


800

900



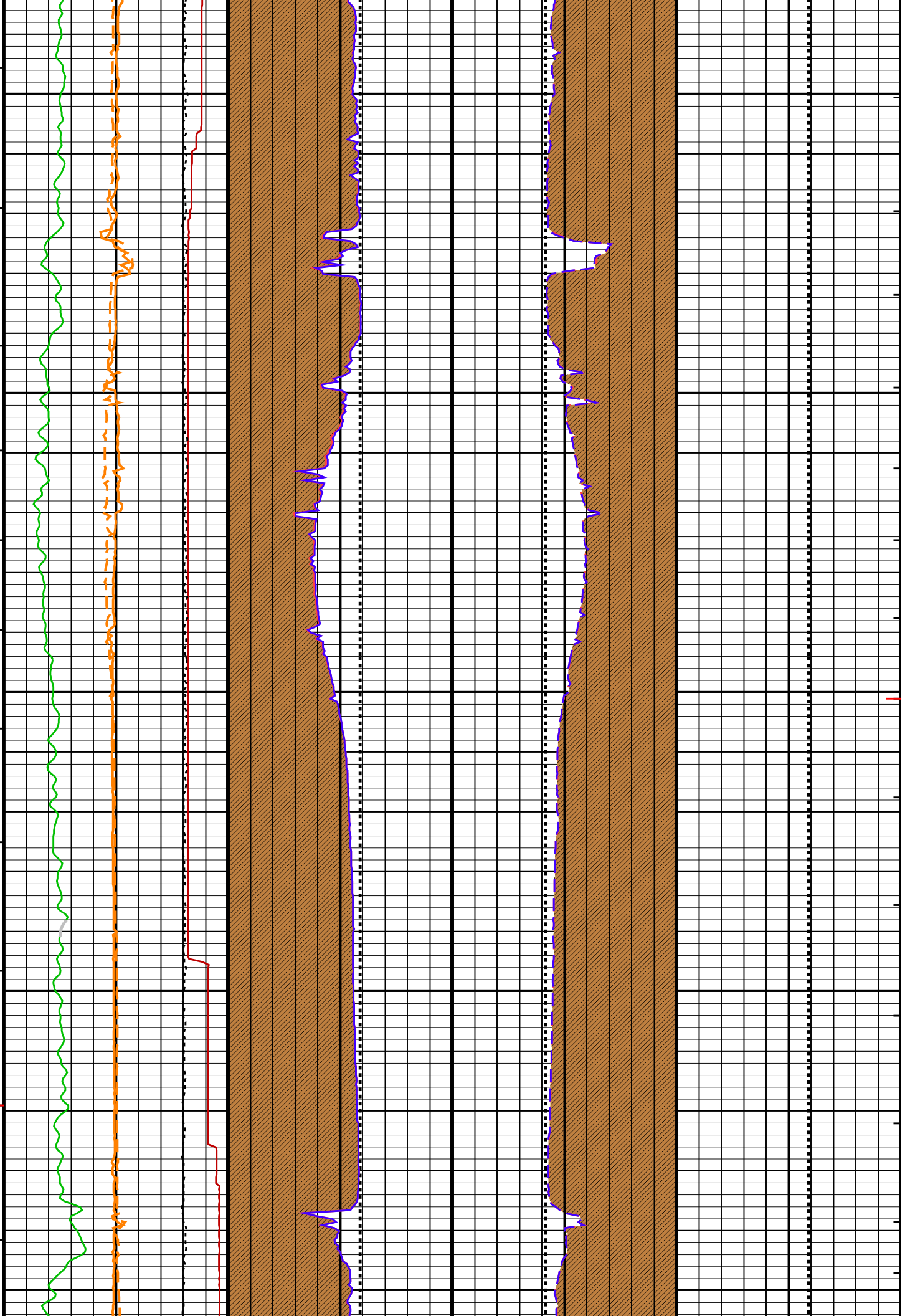


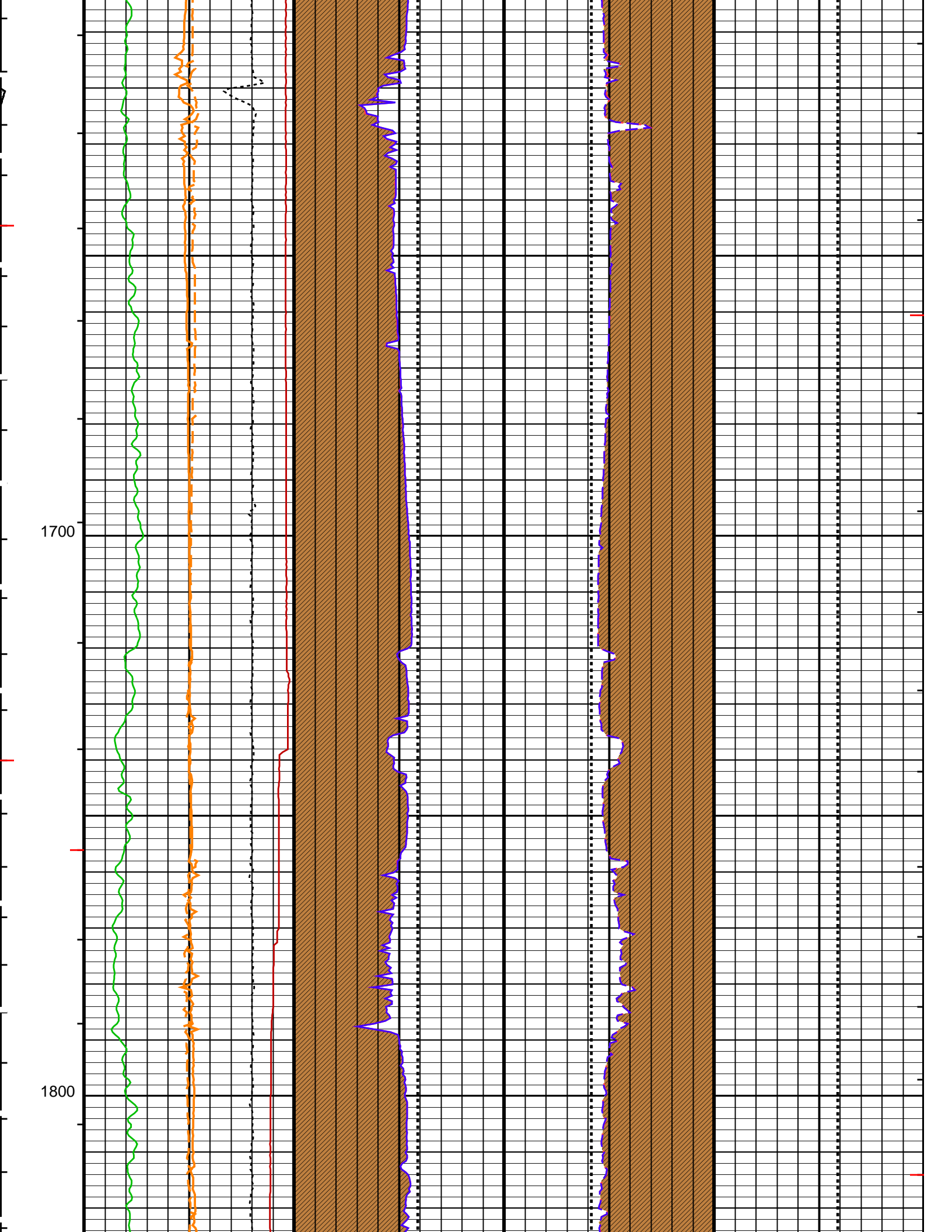


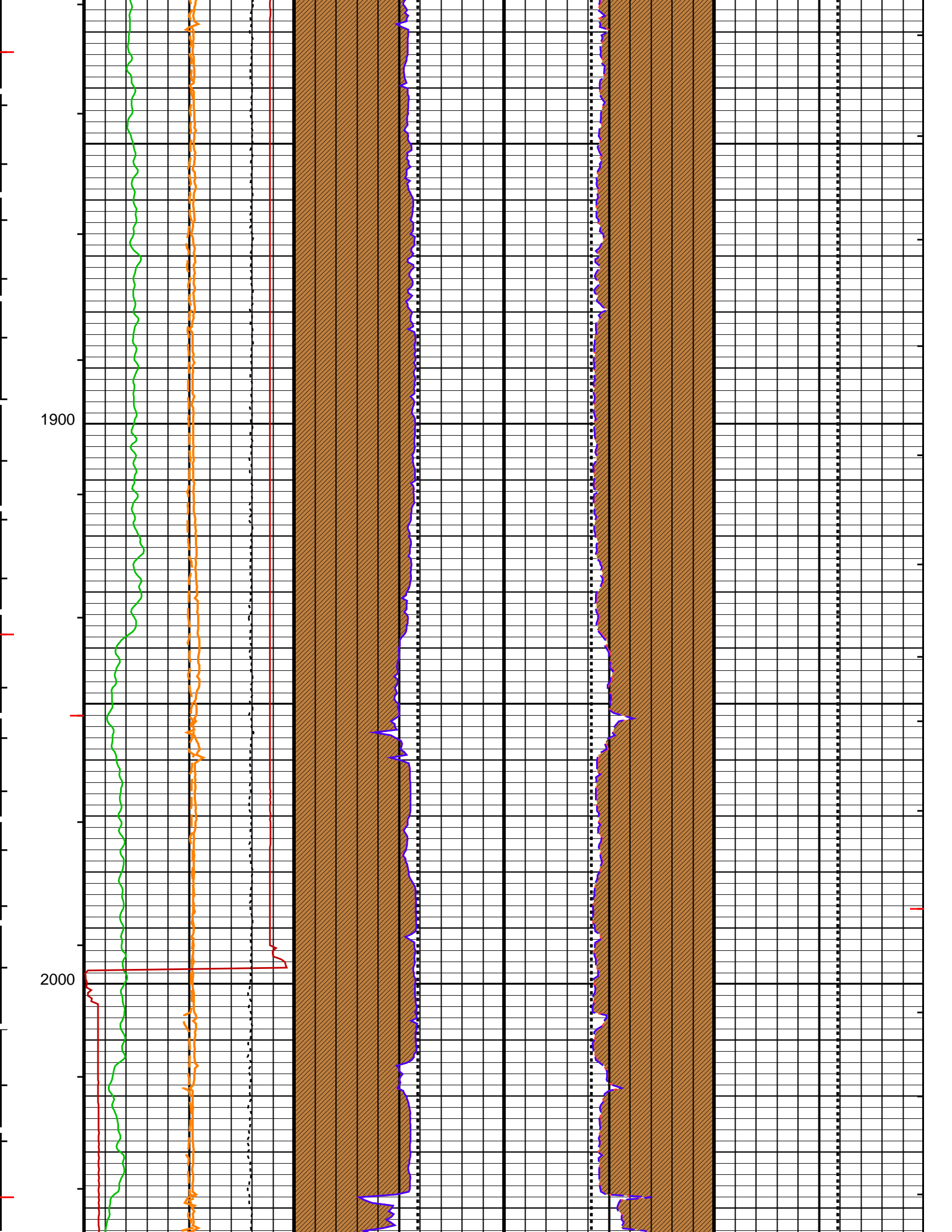
1400

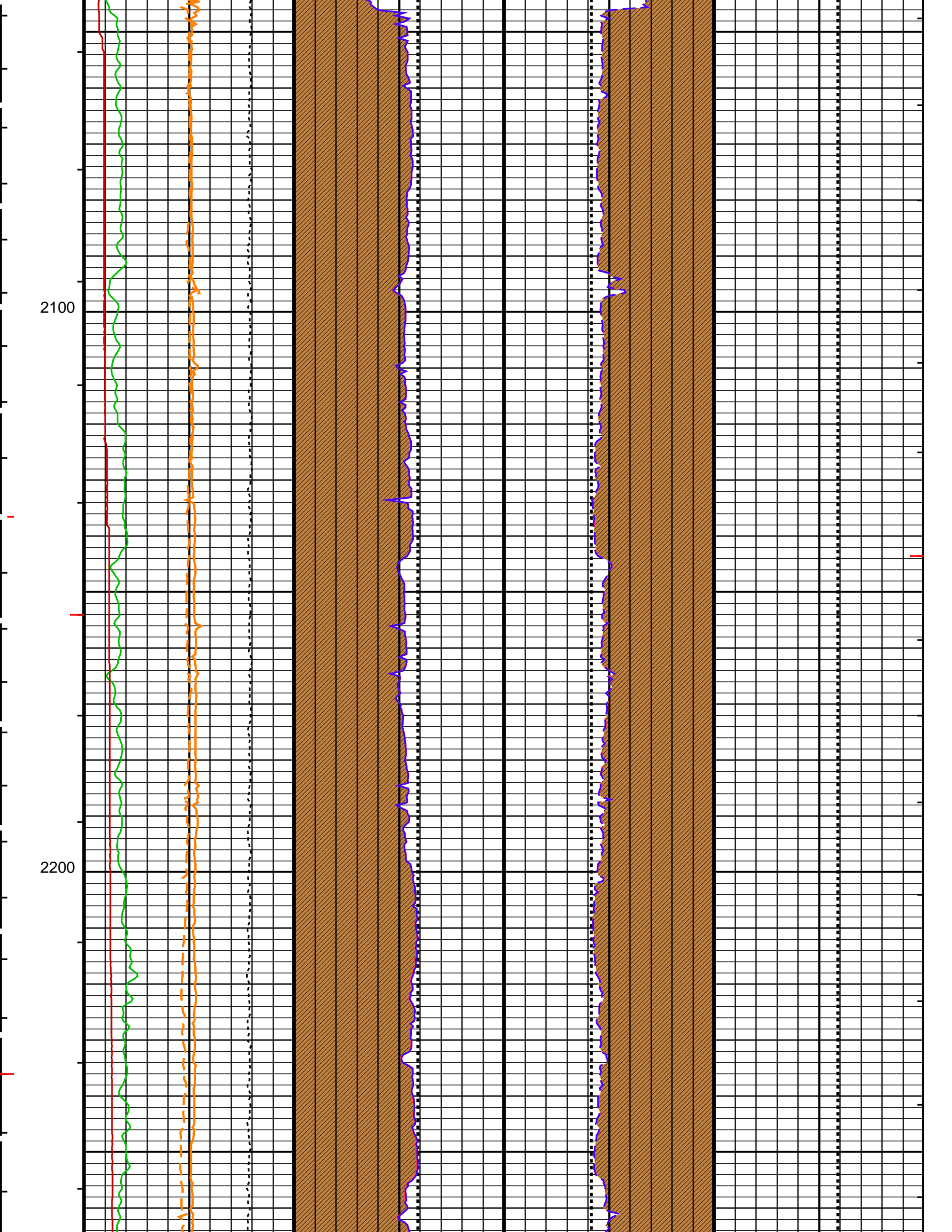
1500

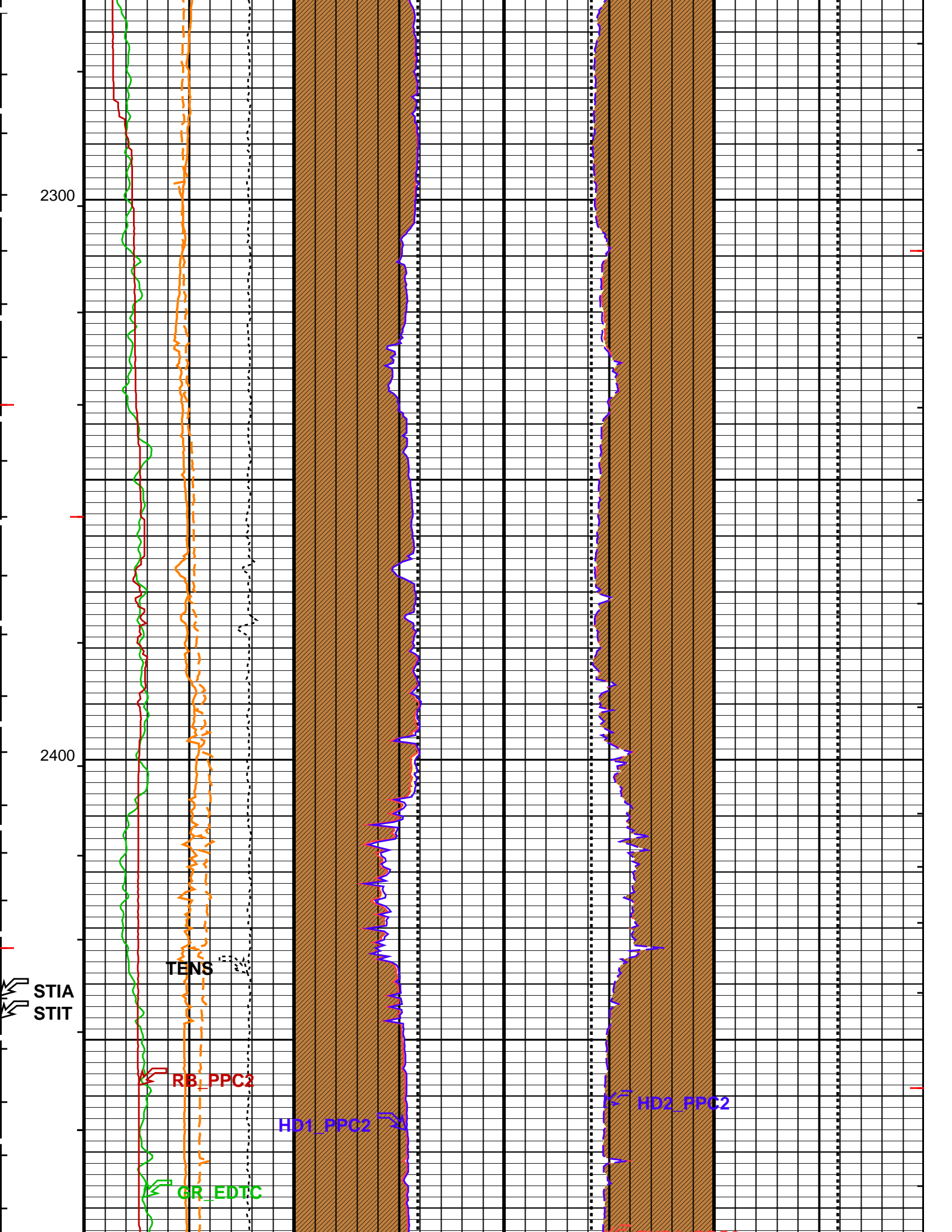
1600

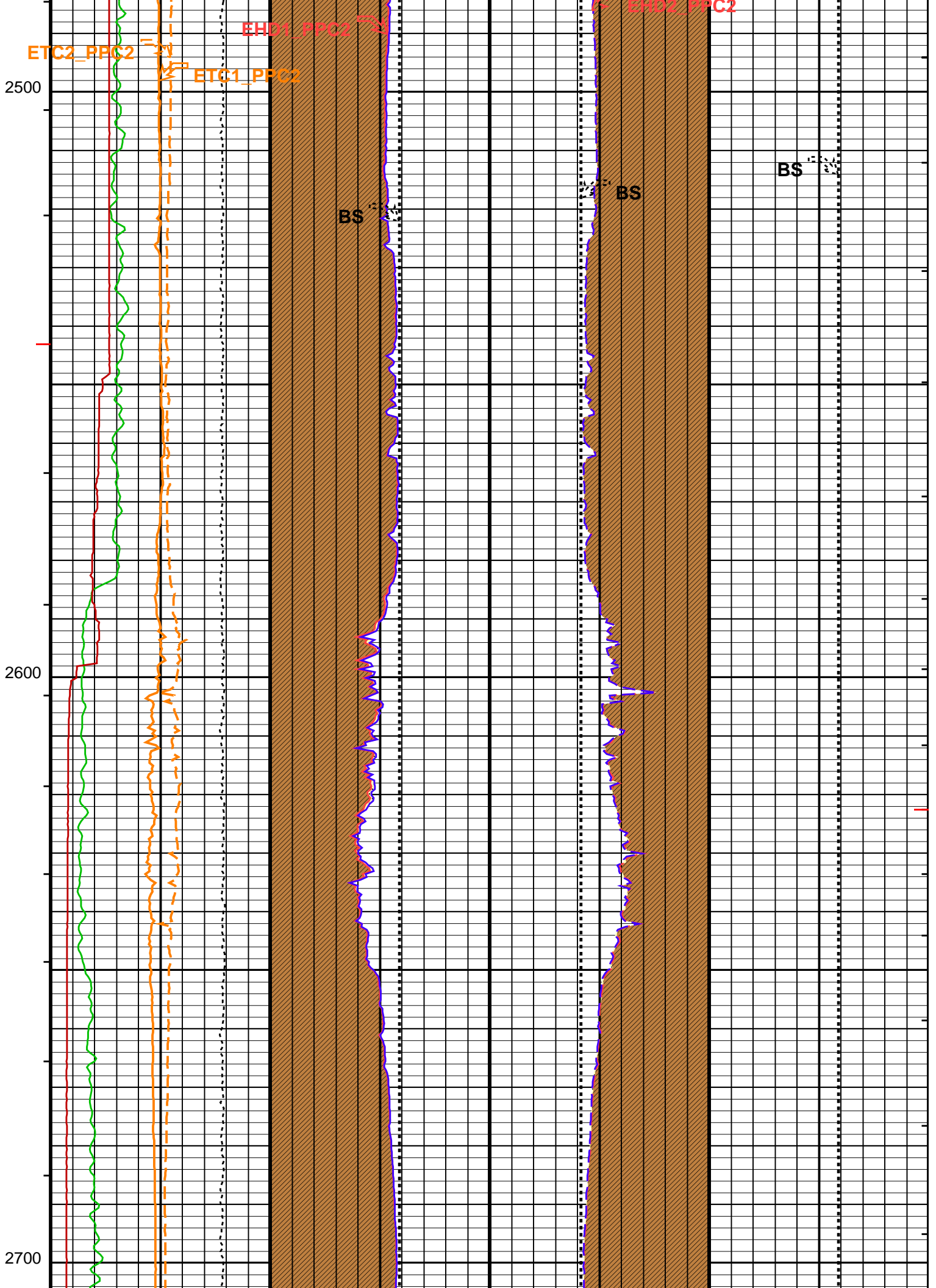


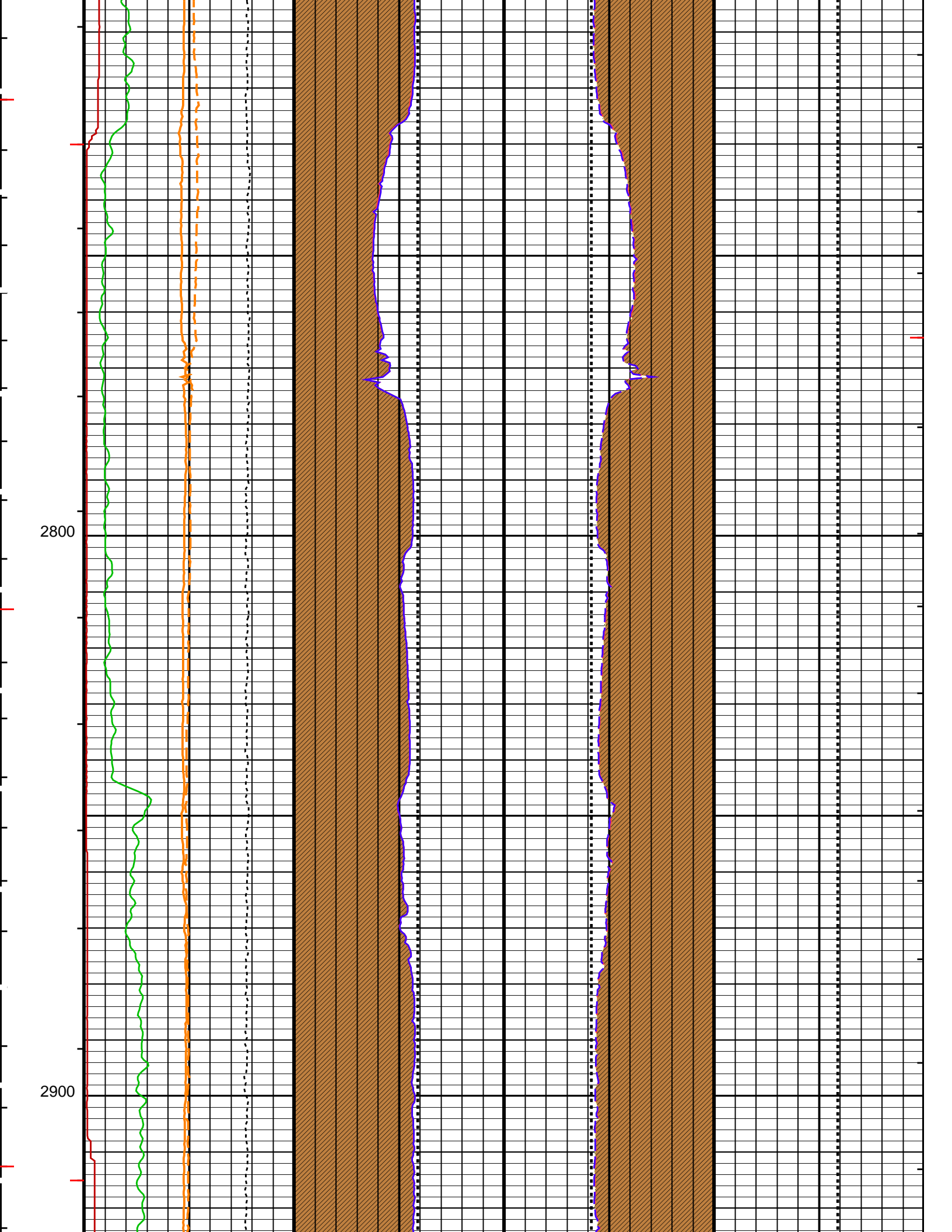


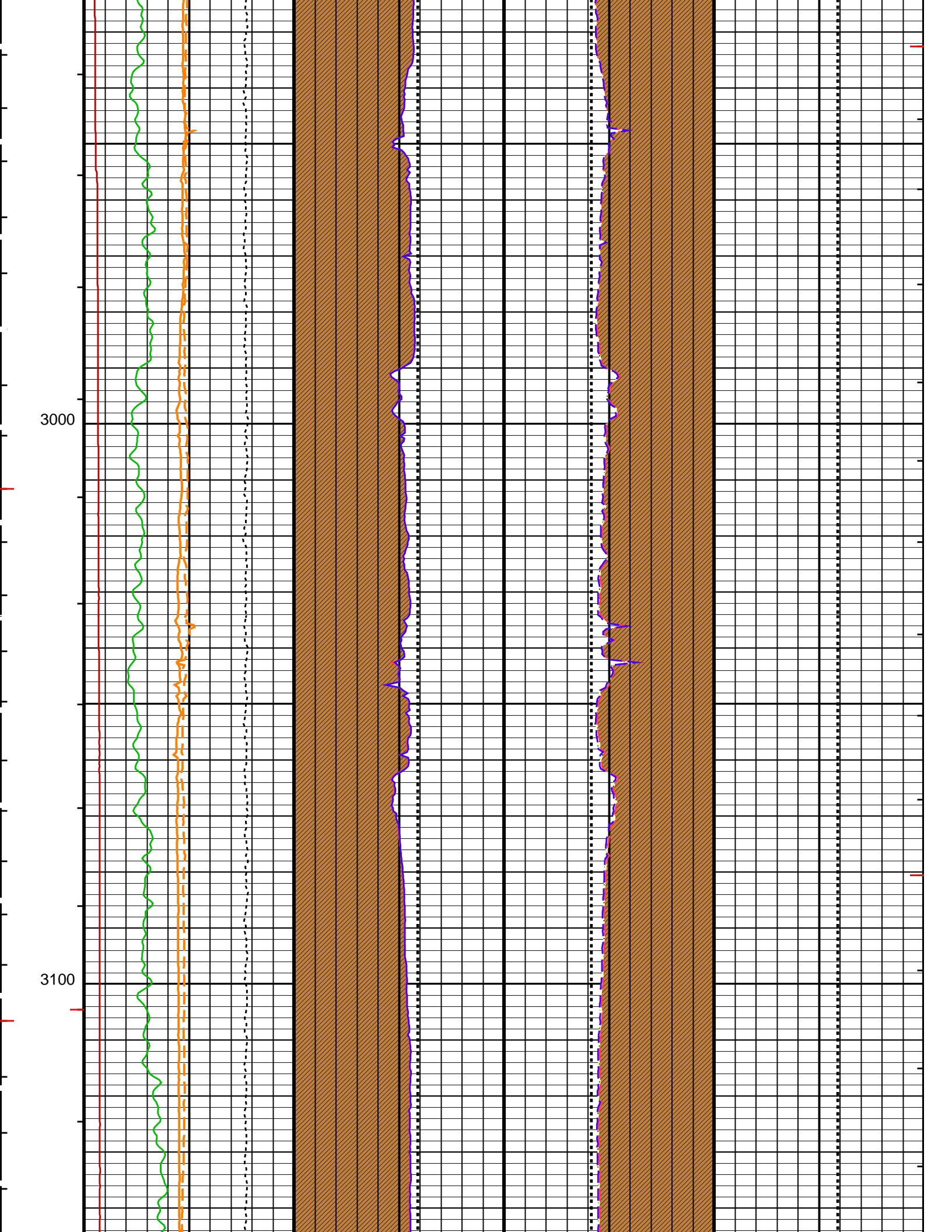


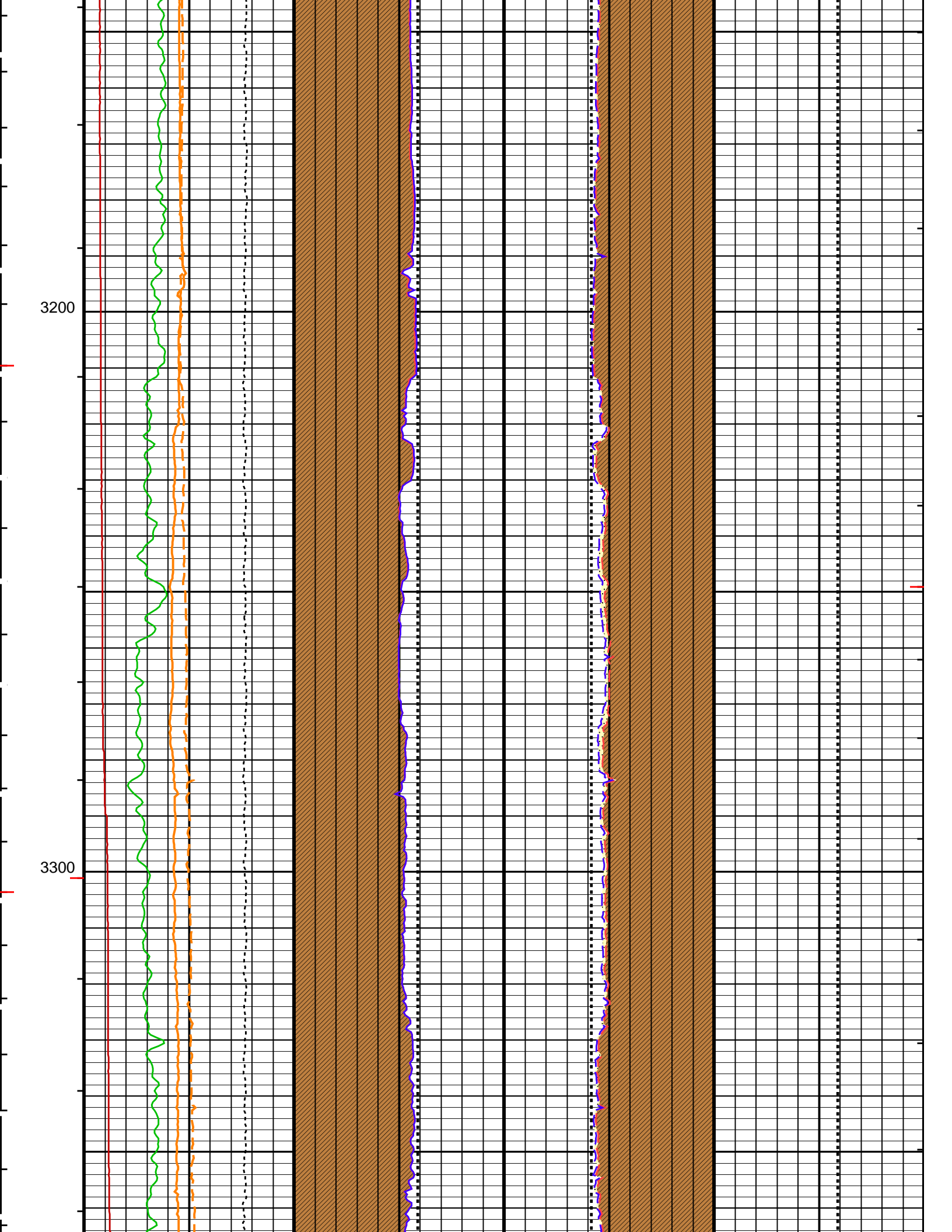


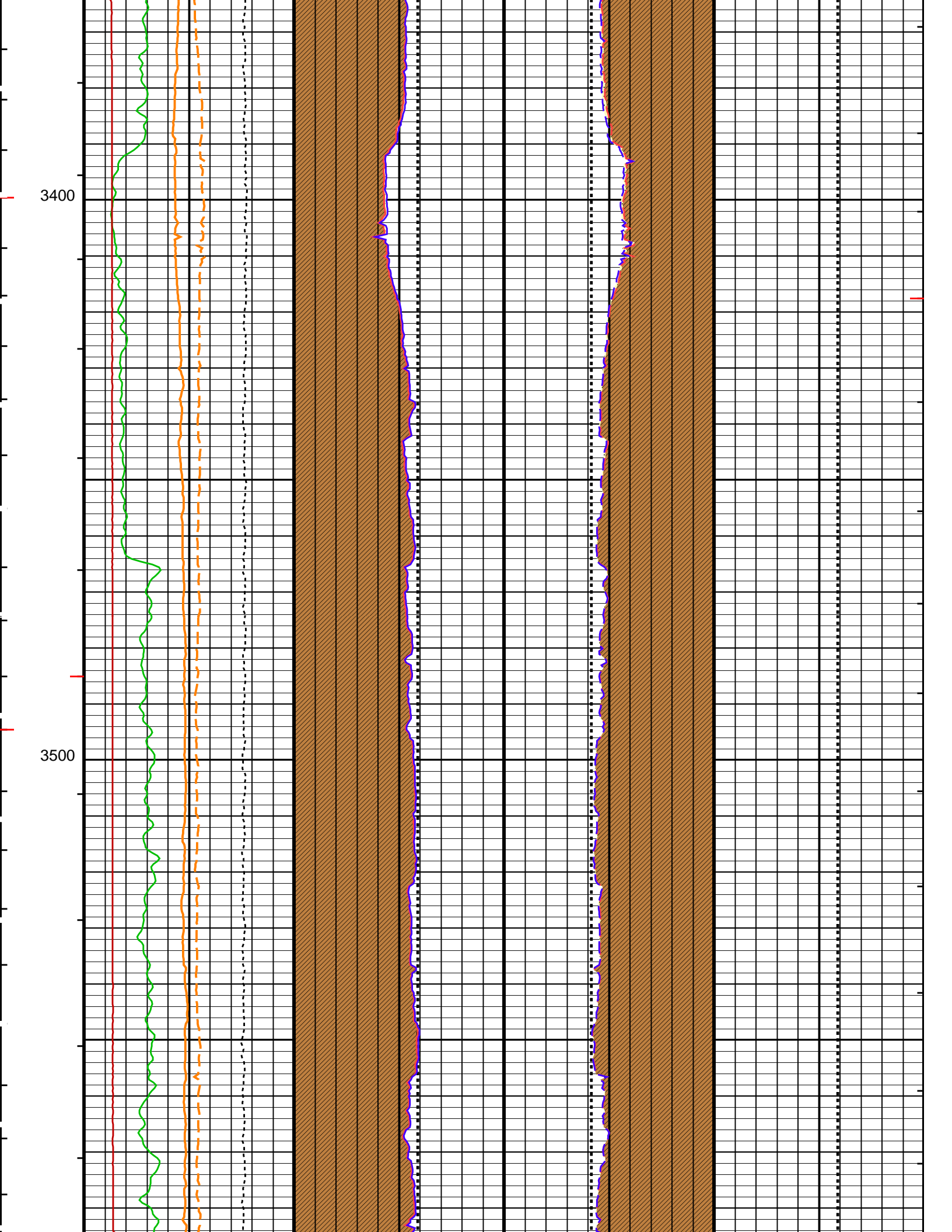


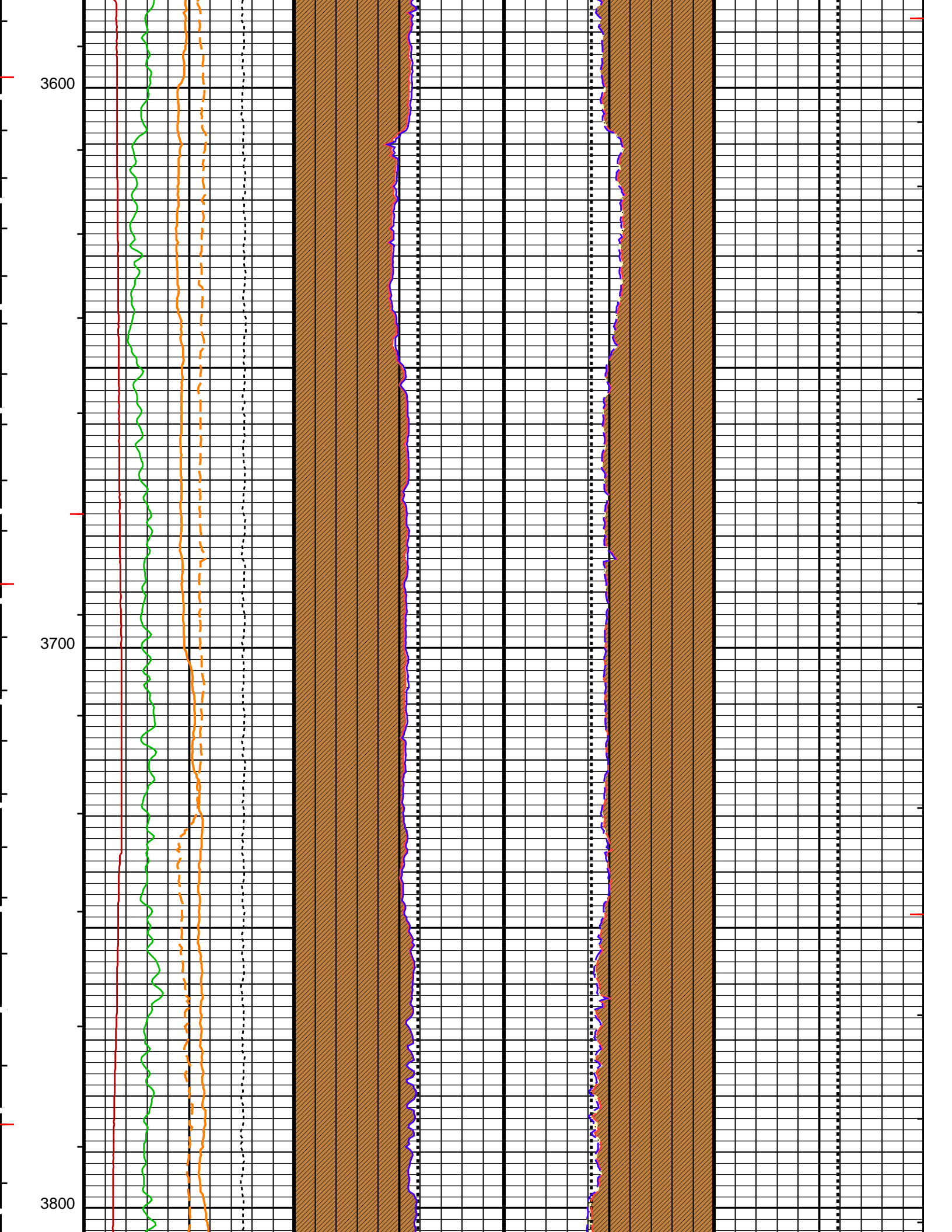


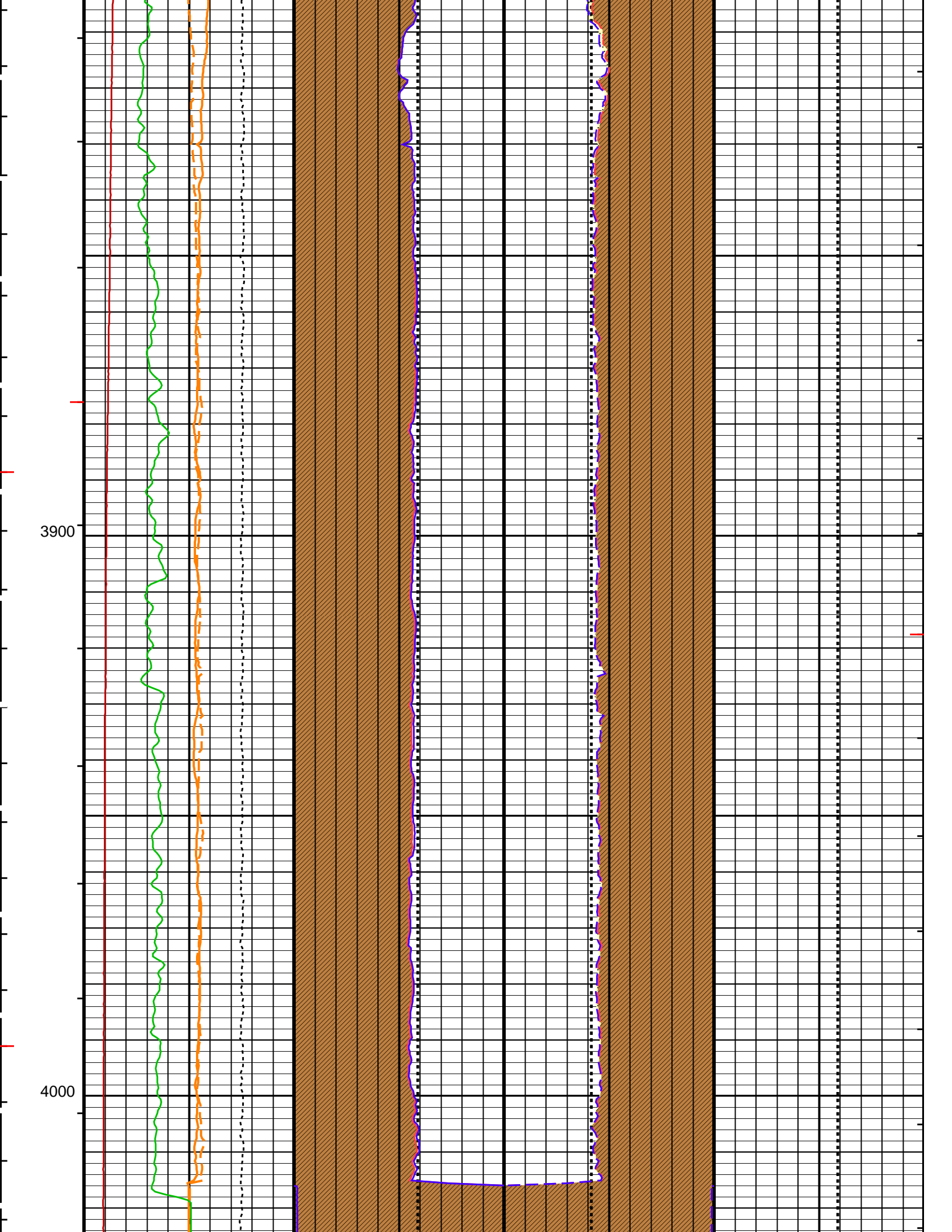


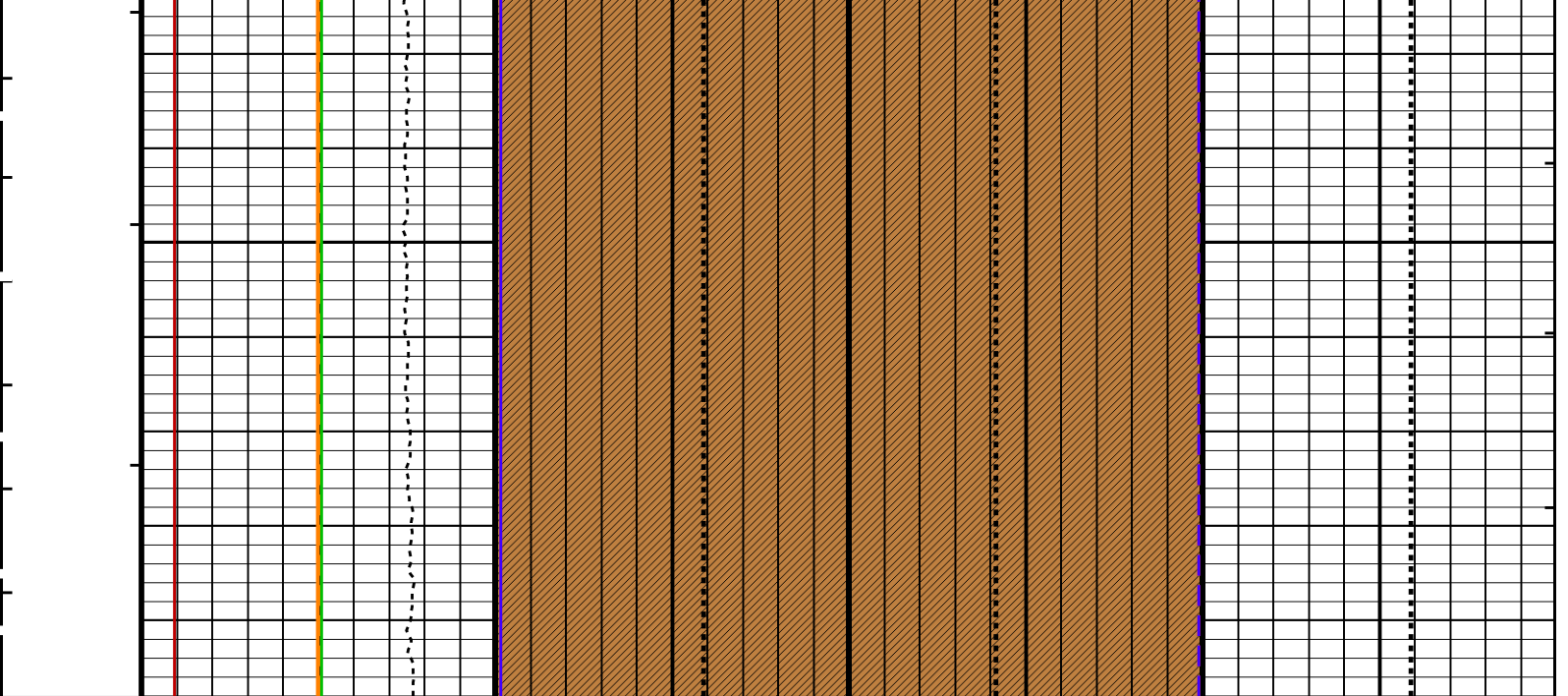












Stuck Stretch (STIT) 0 (F) 50	PPC2 Tool Center 1 (ETC1_PPC2)	Bit Size (BS) 24 (IN)		Bit Size (BS) 4 4 (IN)		Bit Size (BS) 24 24 (IN)	
	-10 (IN) 10						
Cable Drag From D4T to STIT	PPC2 Tool Center 2 (ETC2_PPC2)	PPC2 Ellipse Hole Diameter 1 (EHD1_PPC2)		PPC2 Ellipse Hole Diameter 2 (EHD2_PPC2)			
	-10 (IN) 10	24 (IN)		4 4 (IN)		24	
Tool/Tot. Drag From D4T to STIA	Gamma Ray (GR_EDTC)	PPC2 Hole Diameter 1 (HD1_PPC2)		PPC2 Hole Diameter 2 (HD2_PPC2)			
	0 (GAPI) 150	24 (IN)		4 4 (IN)		24	
	Tension (TENS)	Formation From F2 to EHD1_PPC2		Formation From EHD2_PPC2 to F3			
	10000 (LBF) 0						
	PPC2 Relative Bearing (RB_PPC2)	HD difference From EHD1_PPC2 to HD1_PPC2		HD difference From HD2_PPC2 to EHD2_PPC2			
	0 (DEG) 360						

PIP SUMMARY

- ┆ Integrated Hole Volume Minor Pip Every 10 F3
- ┆ Integrated Hole Volume Major Pip Every 100 F3
- ┆ Integrated Cement Volume Minor Pip Every 10 F3
- ┆ Integrated Cement Volume Major Pip Every 100 F3

- ┆ Integrated Transit Time Minor Pip Every 1 MS
- ┆ Integrated Transit Time Major Pip Every 10 MS

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
PPC1-B: Powered Positioning Device/Caliper 1	PPC1 Caliper Type	CAL_STD ROM
CLBD_PPC	PPC Calibration data selection	
MAPC-B: Multimode Array Sonic Power Cartridge	Bit Size	12.250 IN
BS	Integrated Transit Time Source	DTCO
ITTS	PPC2-B: Powered Positioning Device/Caliper 2	
PPC2-B: Powered Positioning Device/Caliper 2	PPC2 Caliper Type	CAL_STD ROM
CLBD_PPC	PPC Calibration data selection	
DIP: Dip Computation	DIP Tool	FBST
DIR: Directional Survey Computation	TVD of Starting Point	0 FT
SPVD	Along hole depth of Tie in Point	0 FT
TIMD		

TMD	Along-hole depth of Tie-in Point	0	FT
TIVD	TVD of Tie-in Point	0	FT
	HOLEV: Integrated Hole/Cement Volume		
FCD	Future Casing (Outer) Diameter	9.625	IN
HVCS	Integrated Hole Volume Caliper Selection	C1/C2	
	STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	STI	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth - Driller	4105.00	FT
TDL	Total Depth - Logger	4105.00	FT
	System and Miscellaneous		
DO	Depth Offset for Playback	2.0	FT
PP	Playback Processing	NORMAL	
TD	Total Depth	4105	FT

Format: PPC2_HoleDiameter Vertical Scale: 5" per 100' Graphics File Created: 22-Apr-2009 10:45

OP System Version: 16C0-147
MCM

FBST-B	SRPC-3777-Q4_2008_OP16	PPC1-B	16C0-147
MAXS-B	SKK-3703-MAST	MAPC-B	SKK-3703-MAST
PPC2-B	16C0-147	EDTC-B	SKK-3494-EDTCB

Input DLIS Files

22-Apr-2009 10:36

Output DLIS Files

DEFAULT	FMI_CAL_MAXS_MAPC_003PUP	FN:2	PRODUCER	22-Apr-2009 10:45
MSIP	FMI_CAL_MAXS_MAPC_003PUP	FN:3	PRODUCER	22-Apr-2009 10:45
GPIT	FMI_CAL_MAXS_MAPC_003PUP	FN:4	PRODUCER	22-Apr-2009 10:45



Calibrations

MAXIS Field Log

Calibration and Check Summary								
Measurement	Nominal	Master	Before	After	Change	Limit	Units	
Full-Bore Scanner - B Wellsite Calibration - Caliper Calibration								
Before: 15-Apr-2009 17:30								
Caliper 1 Small Jig	8.000	N/A	7.983	N/A	N/A	N/A	IN	
Caliper 2 Small Jig	8.000	N/A	7.560	N/A	N/A	N/A	IN	
Caliper 1 Large Jig	12.00	N/A	11.75	N/A	N/A	N/A	IN	
Caliper 2 Large Jig	12.00	N/A	11.38	N/A	N/A	N/A	IN	
Powered Positioning Device/Caliper 1 Wellsite Calibration - PPC1 Caliper Calibration								
Before: 15-Apr-2009 17:43								
PPC1 Radius 1 Raw Small Radius	3.500	N/A	4.321	N/A	N/A	0.5000	IN	
PPC1 Radius 1 Raw Large Radius	8.000	N/A	8.676	N/A	N/A	0.5000	IN	
PPC1 Radius 2 Raw Small Radius	3.500	N/A	3.305	N/A	N/A	0.5000	IN	
PPC1 Radius 2 Raw Large Radius	8.000	N/A	7.689	N/A	N/A	0.5000	IN	
PPC1 Radius 3 Raw Small Radius	3.500	N/A	4.219	N/A	N/A	0.5000	IN	
PPC1 Radius 3 Raw Large Radius	8.000	N/A	8.524	N/A	N/A	0.5000	IN	
PPC1 Radius 4 Raw Small Radius	3.500	N/A	3.110	N/A	N/A	0.5000	IN	
PPC1 Radius 4 Raw Large Radius	8.000	N/A	7.663	N/A	N/A	0.5000	IN	
Powered Positioning Device/Caliper 2 Wellsite Calibration - PPC2 Caliper Calibration								
Before: 15-Apr-2009 19:33								
PPC2 Radius 1 Raw Small Radius	3.500	N/A	4.301	N/A	N/A	0.5000	IN	
PPC2 Radius 1 Raw Large Radius	8.000	N/A	8.676	N/A	N/A	0.5000	IN	
PPC2 Radius 2 Raw Small Radius	3.500	N/A	3.305	N/A	N/A	0.5000	IN	
PPC2 Radius 2 Raw Large Radius	8.000	N/A	7.689	N/A	N/A	0.5000	IN	
PPC2 Radius 3 Raw Small Radius	3.500	N/A	4.219	N/A	N/A	0.5000	IN	
PPC2 Radius 3 Raw Large Radius	8.000	N/A	8.524	N/A	N/A	0.5000	IN	
PPC2 Radius 4 Raw Small Radius	3.500	N/A	3.110	N/A	N/A	0.5000	IN	
PPC2 Radius 4 Raw Large Radius	8.000	N/A	7.663	N/A	N/A	0.5000	IN	

PPC2 Radius 1 Raw Large Radius	8.000	N/A	8.579	N/A	N/A	0.5000	IN
PPC2 Radius 2 Raw Small Radius	3.500	N/A	3.102	N/A	N/A	0.5000	IN
PPC2 Radius 2 Raw Large Radius	8.000	N/A	7.612	N/A	N/A	0.5000	IN
PPC2 Radius 3 Raw Small Radius	3.500	N/A	4.656	N/A	N/A	0.5000	IN
PPC2 Radius 3 Raw Large Radius	8.000	N/A	8.966	N/A	N/A	0.5000	IN
PPC2 Radius 4 Raw Small Radius	3.500	N/A	3.159	N/A	N/A	0.5000	IN
PPC2 Radius 4 Raw Large Radius	8.000	N/A	7.632	N/A	N/A	0.5000	IN

Enhanced DTS Cartridge Wellsite Calibration – EDTC Accelerometer Calibration

Before: Calibration not done

EDTC Z-Axis Acceleration	32.19	N/A	32.17	N/A	N/A	N/A	F/S2
--------------------------	-------	-----	-------	-----	-----	-----	------

Enhanced DTS Cartridge Wellsite Calibration – Detector Calibration

Before: 15-Apr-2009 14:34

Gamma Ray (Jig – Bkg)	159.8	N/A	159.8	N/A	N/A	14.52	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

Full-Bore Scanner – B / Equipment Identification

Primary Equipment:

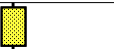
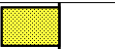


FullBore Scanner Sonde	FBSS – B	
FullBore Scanner Sonde Upper part	FBSH – A	1730
FullBore Scanner Sonde Cartridge	FBSC – B	
GPIT Cartridge – F	GPIC – F	
Insulating Sub	AH – 185	1773
Flex Joint	AH – 184	
FullBore Scanner Control Cartridge	FBCC – A	

Auxiliary Equipment:

Electronics Cartridge Housing	ECH – MRA	5881
-------------------------------	-----------	------

Full-Bore Scanner – B Wellsite Calibration

Caliper Calibration

Phase	Caliper 1 Small Jig IN	Value	Phase	Caliper 2 Small Jig IN	Value
Before		7.983	Before		7.560
	6.800 (Minimum) 8.000 (Nominal) 9.200 (Maximum)			6.800 (Minimum) 8.000 (Nominal) 9.200 (Maximum)	
Phase	Caliper 1 Large Jig IN	Value	Phase	Caliper 2 Large Jig IN	Value
Before		11.75	Before		11.38
	10.20 (Minimum) 12.00 (Nominal) 13.80 (Maximum)			10.20 (Minimum) 12.00 (Nominal) 13.80 (Maximum)	

Before: 15-Apr-2009 17:30

Powered Positioning Device/Caliper 1 / Equipment Identification

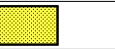
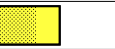


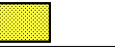
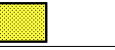

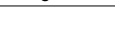
Primary Equipment:

PPC Powered Positioning Device/Caliper	PPC1 – B	8334
PPC1 Caliper Standard	PPC_ –	

Auxiliary Equipment:

Powered Positioning Device/Caliper 1 Wellsite Calibration

PPC1 Caliper Calibration

Phase	PPC1 Radius 1 Raw Small Radius IN	Value	Phase	PPC1 Radius 1 Raw Large Radius IN	Value
Before		4.321	Before		8.676
	1.200 (Minimum) 3.500 (Nominal) 5.600 (Maximum)			6.100 (Minimum) 8.000 (Nominal) 9.700 (Maximum)	
Phase	PPC1 Radius 2 Raw Small Radius IN	Value	Phase	PPC1 Radius 2 Raw Large Radius IN	Value
Before		3.305	Before		7.689
	1.200 (Minimum) 3.500 (Nominal) 5.600 (Maximum)			6.100 (Minimum) 8.000 (Nominal) 9.700 (Maximum)	
Phase	PPC1 Radius 3 Raw Small Radius IN	Value	Phase	PPC1 Radius 3 Raw Large Radius IN	Value
Before		4.219	Before		8.524
	1.200 (Minimum) 3.500 (Nominal) 5.600 (Maximum)			6.100 (Minimum) 8.000 (Nominal) 9.700 (Maximum)	
Phase	PPC1 Radius 4 Raw Small Radius IN	Value	Phase	PPC1 Radius 4 Raw Large Radius IN	Value
Before		3.110	Before		7.000
	1.200 (Minimum) 3.500 (Nominal) 5.600 (Maximum)			6.100 (Minimum) 8.000 (Nominal) 9.700 (Maximum)	

Before		3.110	Before		7.663
1.200 (Minimum)	3.500 (Nominal)	5.600 (Maximum)	6.100 (Minimum)	8.000 (Nominal)	9.700 (Maximum)

Before: 15-Apr-2009 17:43

Multimode Array Sonic Power Cartridge / Equipment Identification

Primary Equipment:		
Multimode Array Sonic Minimum Service So	MAMS – BA	8148
Multimode Array Sonic Control Cartridge	MAPC – BA	
Auxiliary Equipment:		
Electronics Cartridge Housing	ECH – SF	8092

Powered Positioning Device/Caliper 2 / Equipment Identification

Primary Equipment:		
PPC Powered Positioning Device/Caliper	PPC2 – B	8152
PPC2 Caliper Standard	PPC_ –	
Auxiliary Equipment:		

Powered Positioning Device/Caliper 2 Wellsite Calibration

PPC2 Caliper Calibration

Phase	PPC2 Radius 1 Raw Small Radius IN	Value	Phase	PPC2 Radius 1 Raw Large Radius IN	Value
Before		4.301	Before		8.579
1.200 (Minimum)	3.500 (Nominal)	5.600 (Maximum)	6.100 (Minimum)	8.000 (Nominal)	9.700 (Maximum)
Phase	PPC2 Radius 2 Raw Small Radius IN	Value	Phase	PPC2 Radius 2 Raw Large Radius IN	Value
Before		3.102	Before		7.612
1.200 (Minimum)	3.500 (Nominal)	5.600 (Maximum)	6.100 (Minimum)	8.000 (Nominal)	9.700 (Maximum)
Phase	PPC2 Radius 3 Raw Small Radius IN	Value	Phase	PPC2 Radius 3 Raw Large Radius IN	Value
Before		4.656	Before		8.966
1.200 (Minimum)	3.500 (Nominal)	5.600 (Maximum)	6.100 (Minimum)	8.000 (Nominal)	9.700 (Maximum)
Phase	PPC2 Radius 4 Raw Small Radius IN	Value	Phase	PPC2 Radius 4 Raw Large Radius IN	Value
Before		3.159	Before		7.632
1.200 (Minimum)	3.500 (Nominal)	5.600 (Maximum)	6.100 (Minimum)	8.000 (Nominal)	9.700 (Maximum)

Before: 15-Apr-2009 19:33

Enhanced DTS Cartridge / Equipment Identification

Primary Equipment:		
EDTC Gamma Ray Detector	EDTG – A/B	
Enhanced DTS Cartridge	EDTC – B	8620
Auxiliary Equipment:		
EDTC Housing	EDTH – B	8611

Enhanced DTS Cartridge Wellsite Calibration

EDTC Accelerometer Calibration

Phase	EDTC Z-Axis Acceleration F/S2	Value
Before		32.17
31.53 (Minimum)	32.19 (Nominal)	32.84 (Maximum)

Before: Calibration not done

Enhanced DTS Cartridge Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig – Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		35.72	Before		159.8	Before		165.0

0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)	145.2 (Minimum)	159.8 (Nominal)	174.3 (Maximum)	150.0 (Minimum)	165.0 (Nominal)	180.0 (Maximum)
Before: 15-Apr-2009 14:34								

Company: **Battelle Pacific Northwest Lab**

Schlumberger

Well: **Wallula Basalt Pilot #1**

Field: **Wildcat**

County: **Walla Walla**

State: **Washington**

SONIC SCANNER