Schlumberger

Company: **Battelle Pacific Northwest Lab**

Well: **Wallula Basalt Pilot #1**
Field: **Wildcat**
County: **Walla Walla** State: **Washington**

ELEMENTAL CAPTURE SPECTROSCOPY

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

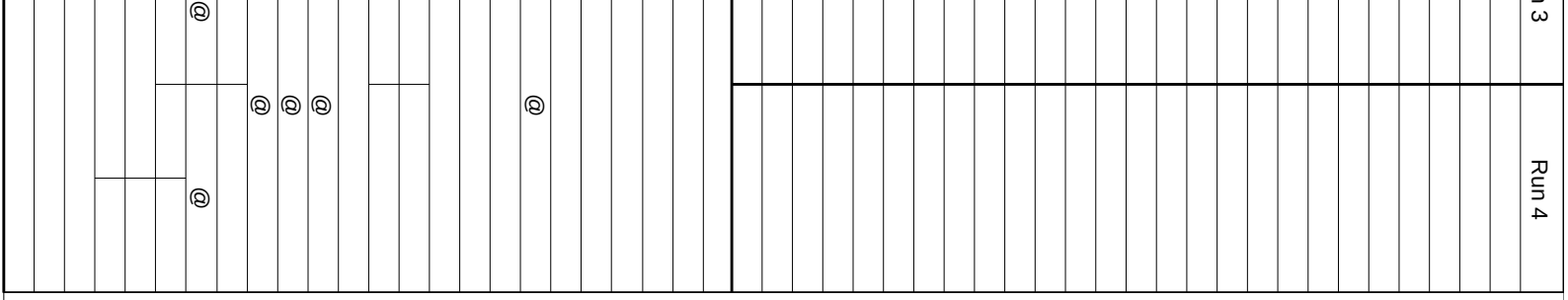
Elev.: K.B. 5.50 ft
G.L.
D.F.

Permanent Datum: GROUND LEVEL Elev.: _____
Log Measured From: FLANGE TOP above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.	Section	Township	Range
	10	7	31E

	Run 1	Run 2	Run
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		
MUD Density / Viscosity	8.4 lbm/gal		
MUD Fluid Loss / PH			
MUD 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	18−Apr−2009 14:55		
Unit Number / Location	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			
MUD Density / Viscosity			
MUD Fluid Loss / PH			
MUD Source Of Sample			
RM @ Measured Temperature	@		
RMF @ Measured Temperature	@		
RMC @ Measured Temperature	@		
Source RMF / RMC			
RM @ MRT / RMF @ MRT	@ / @		
Maximum Recorded Temperatures			
Circulation Stopped / Time			
Logger On Bottom / Time			
Unit Number / Location			
Recorded By			
Witnessed By			



DEPTH SUMMARY LISTING

Date Created: 19−APR−2009 2:22:51

Depth System Equipment

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

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.

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 1800 FT/HR	

THANK YOU FOR USING SCHLUMBERGER!!

RUN 1		RUN 2	
SERVICE ORDER #:	AZJT00051	SERVICE ORDER #:	
PROGRAM VERSION:	17C0−154	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

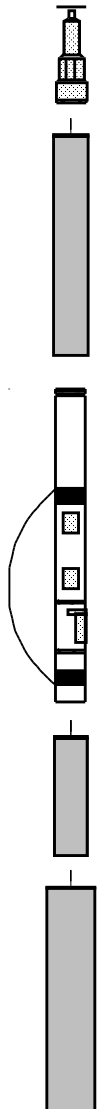
EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

GSR−U/Y
NCT−B
CNB−AB
NCS−VB
WITM (EDTS)−A

DOWNHOLE EQUIPMENT



LEH−QT 47.0
LEH−QT

MDSB_EDTC
Mud Tempe 44.1

EDTC−B 44.1
EDTH−B
EDTC−B
EDTG−A/B

CTEM 40.6
Gamma Ray 38.7
TelStatus
EDTCB Ele 37.6
HGNS HTEM
HMCA 37.6

HILTB−FTB 37.6
HGNS Gamm 36.8
HGNSD−B
HMCA
HGNH 2760
NLS−KL
NSR−F 2289
HACCZ 715
HCNT
HGR
BOW−SPR
NPV−N

HGNS Neut 31.0
HGNS Neut 30.5

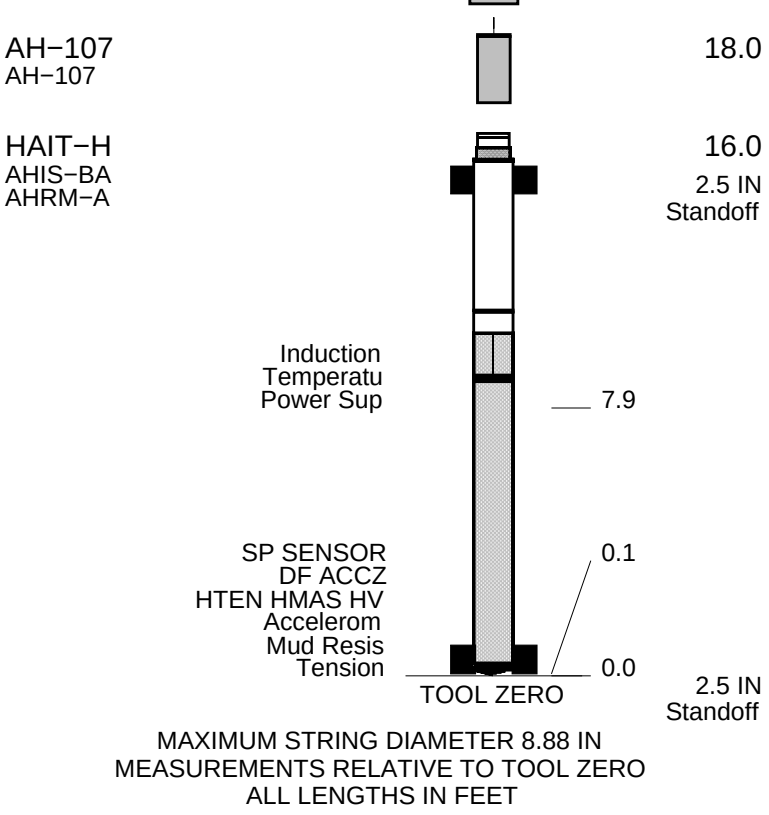
HGNS sens 28.1

ECC−B 28.1
ECH−A 22
ECC−B 32

ECC Statu 26.4

ECS−A 24.6
ECS−A 31
NSR−F 2573
ECSD−A 31
ECSH−A 31

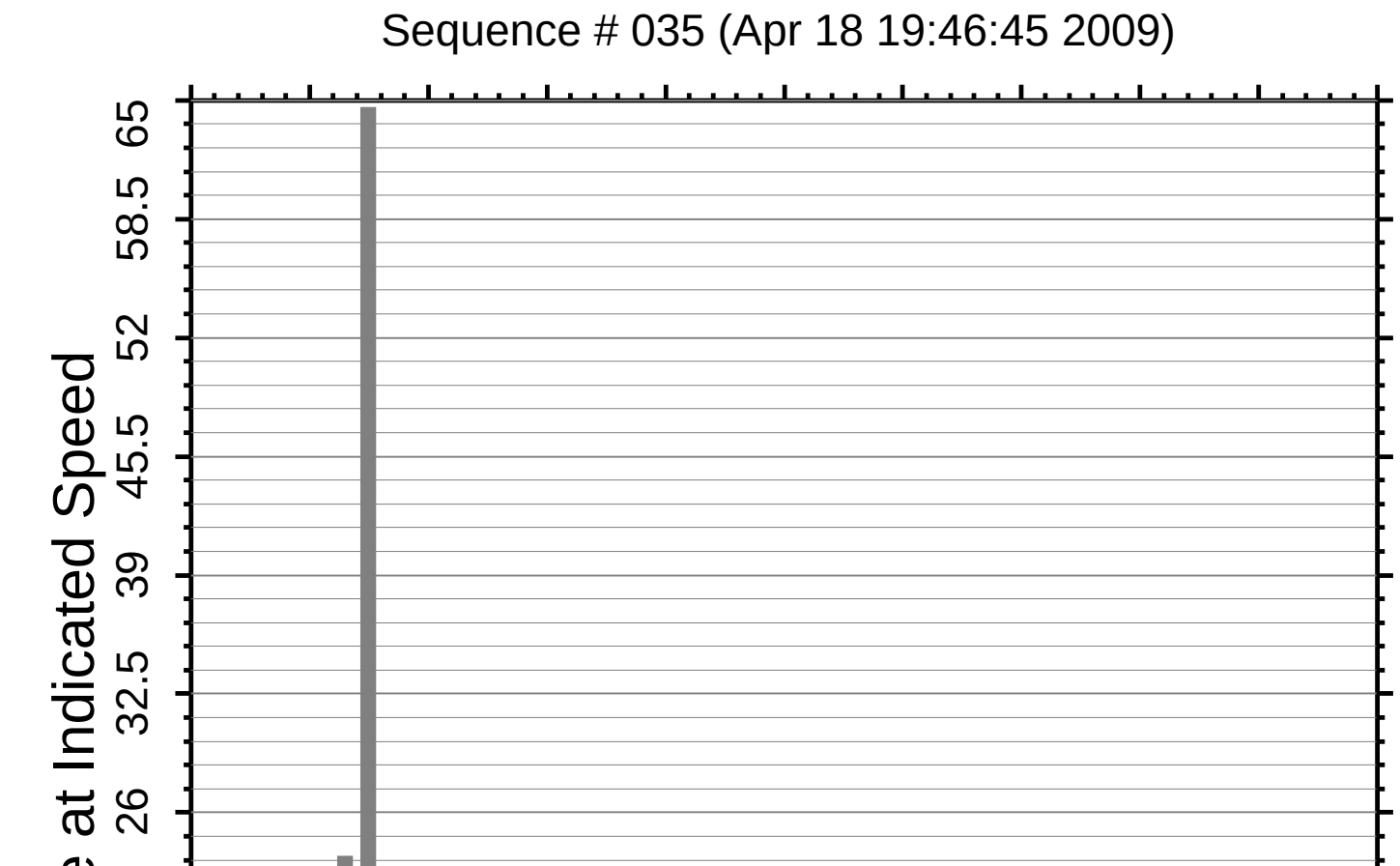
Detector 23.4

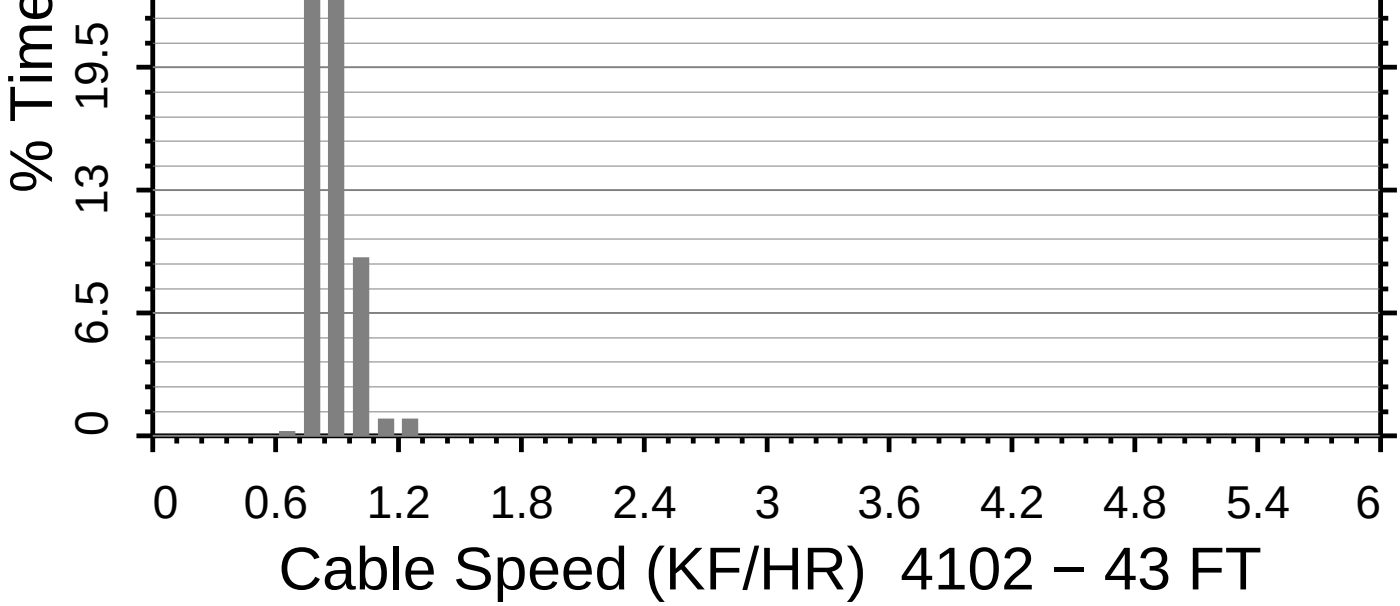


Production String	(in) OD	(in) ID	(ft) MD	Well Schematic	(ft) MD	(in) OD	(in) ID	Casing String
					0.0	13.325		Casing String
					1108.0	13.325		Casing Shoe
					1108.0	12.250		Borehole Segment

						4110.0	12.250	Borehole Segment Bottom

ALL DEPTHS ARE DRILLERS DEPTHS





Schlumberger

MAIN PASS 5 IN=100 FT

MAXIS Field Log

Input DLIS Files

DEFAULT	AIT_ECS_TLD_MCFL_033LUP	FN:32	PRODUCER	18−Apr−2009 14:55	4104.0 FT	44.0 FT

Output DLIS Files

DEFAULT	AIT_ECS_TLD_MCFL_035PUP	FN:34	PRODUCER	18−Apr−2009 19:41	4102.5 FT	43.0 FT

OP System Version: 17C0−154

HAIT−H	SRPC−3779−Q1_2009_OP17	ECS−A	17C0−154
ECC−B	17C0−154	HILTB−FTB	SRPC−3779−Q1_2009_OP17
EDTC−B	17C0−154		

PIP SUMMARY

Time Mark Every 60 S

Matrix Density (RHGE_WALK2)

2.5 (G/C3) 3

Salt

Siderite

Q−F−M

Pyrite

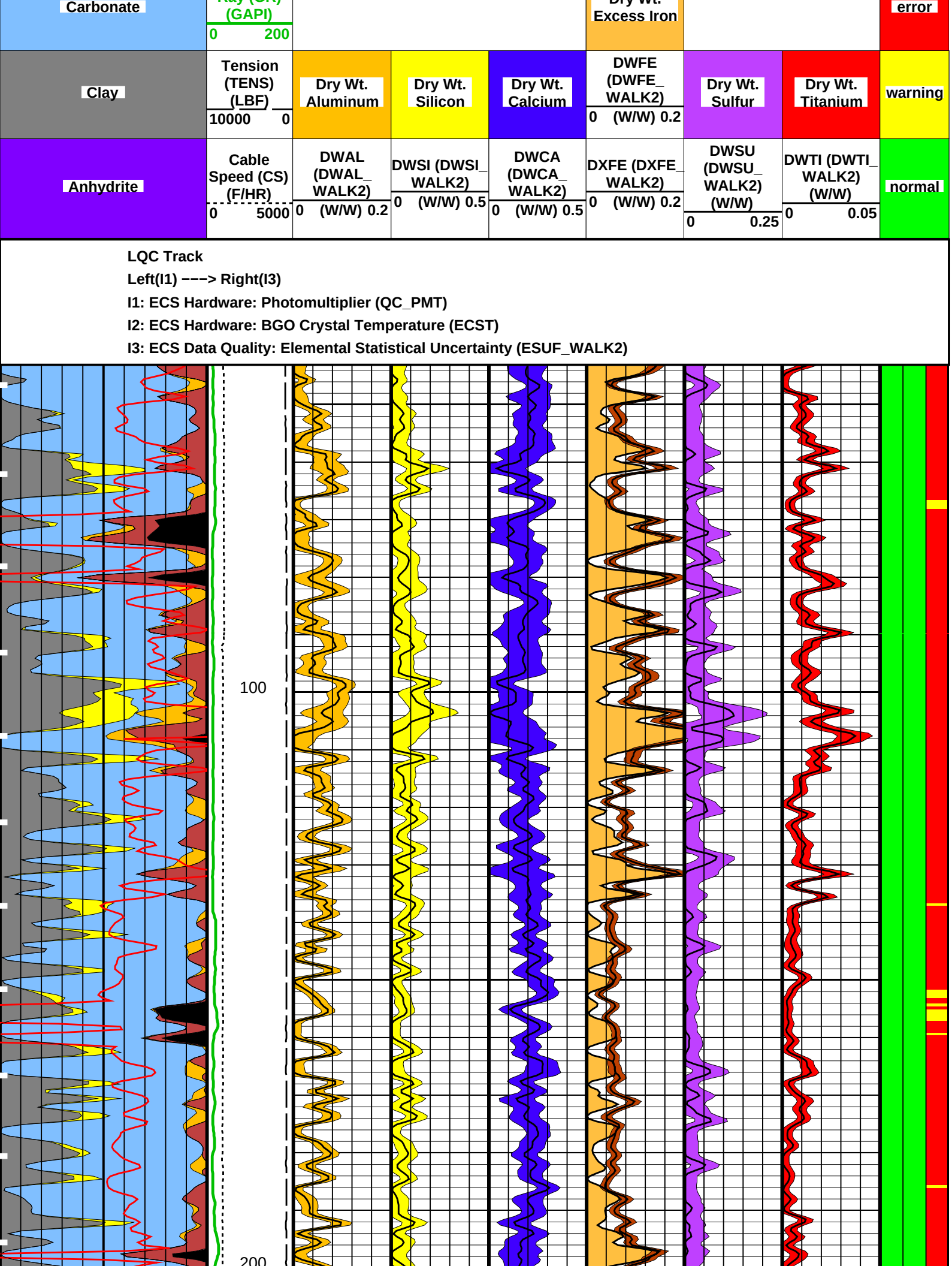
Coal

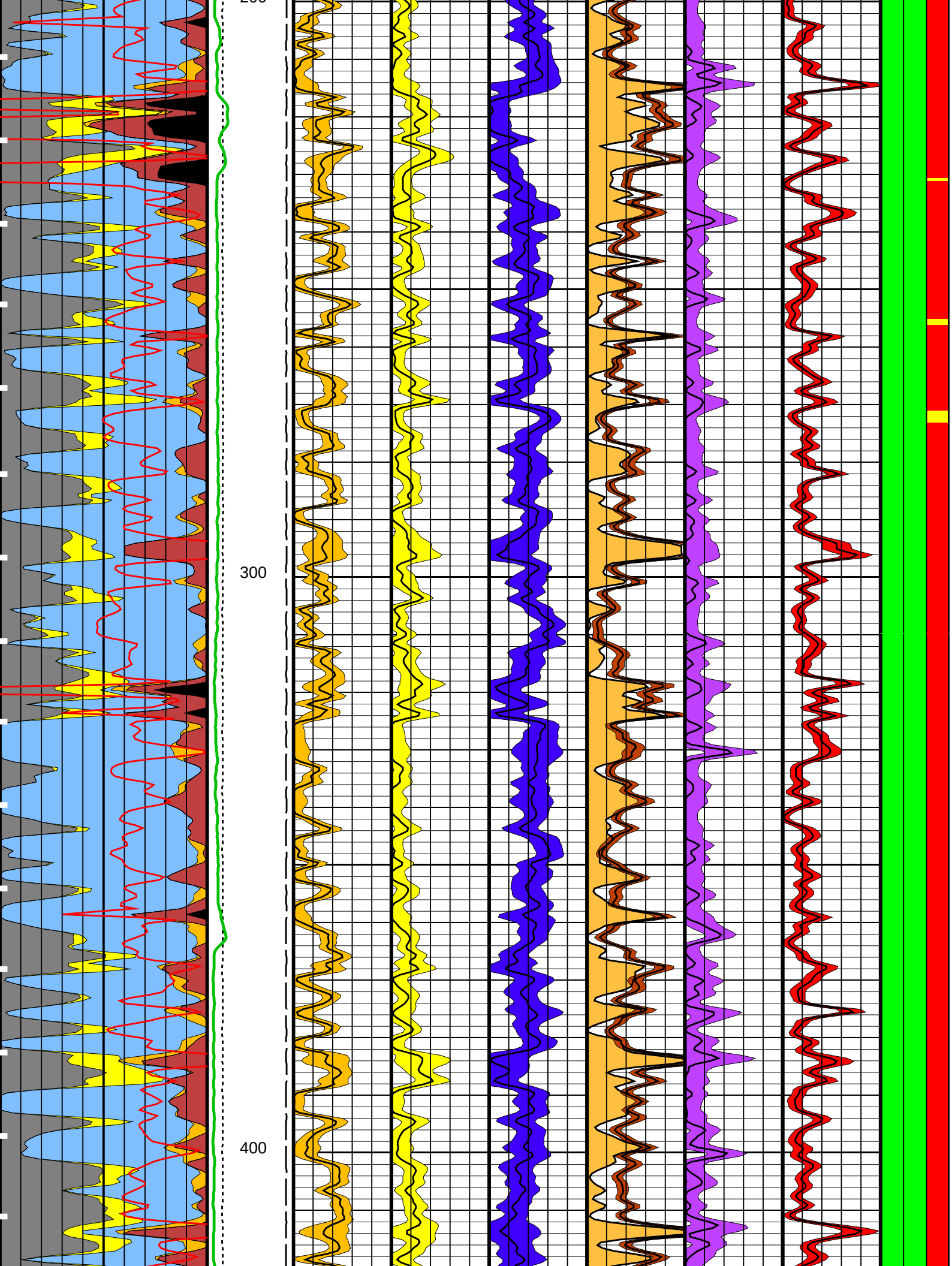
Dry Wt. Iron

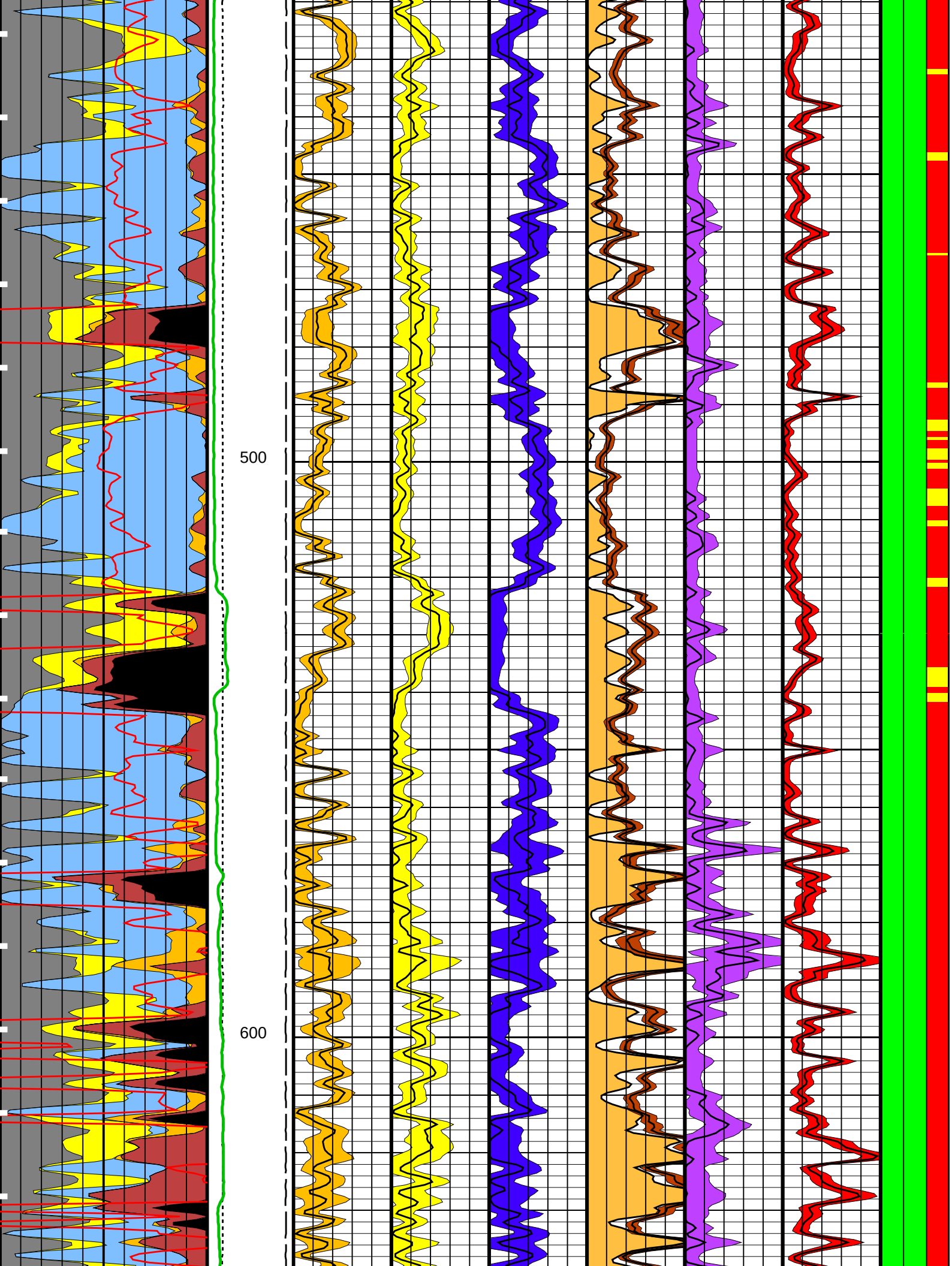
Dry Wt.

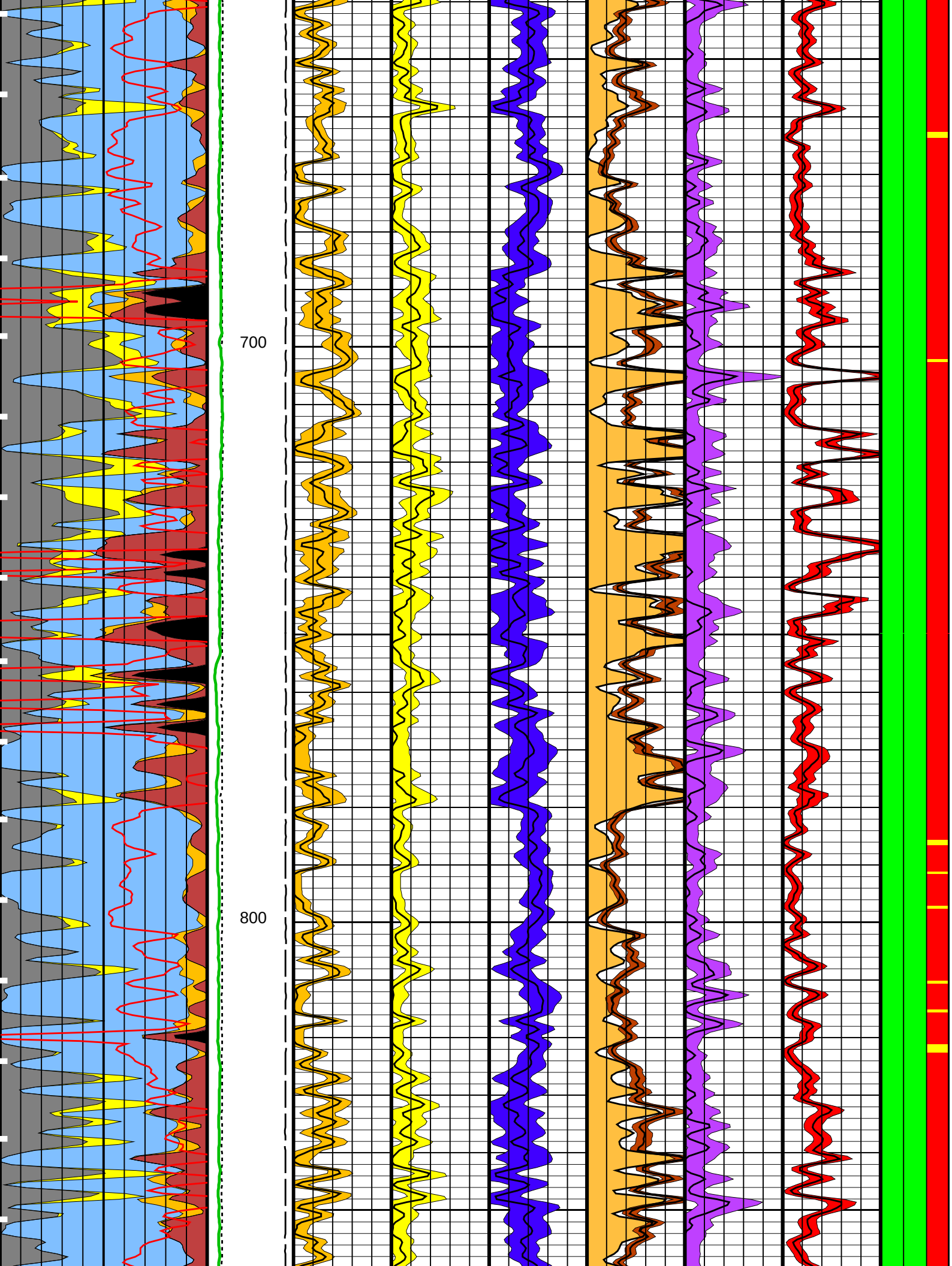
LQC I1−−−>I3

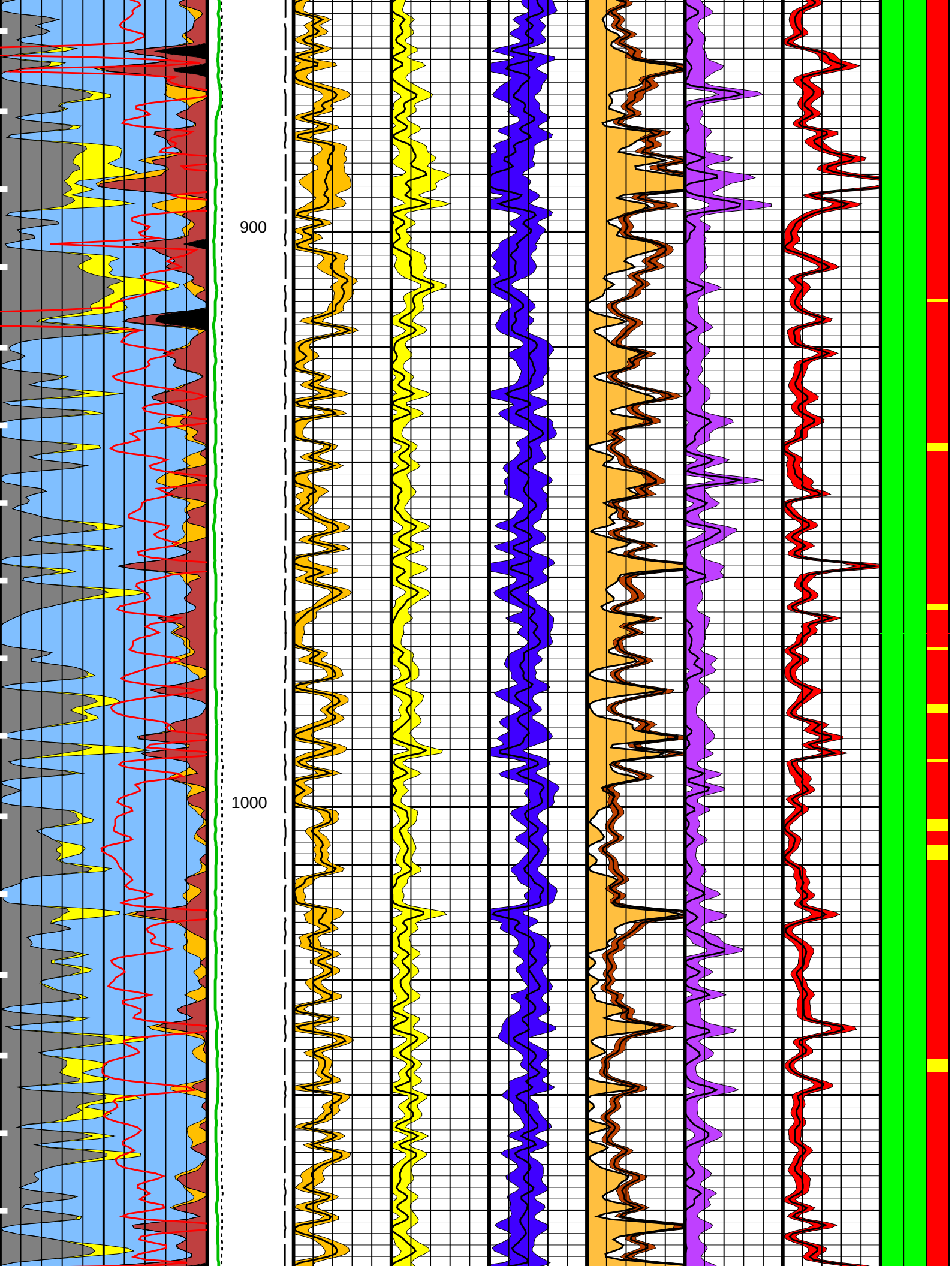
Gamma Ray (GR)

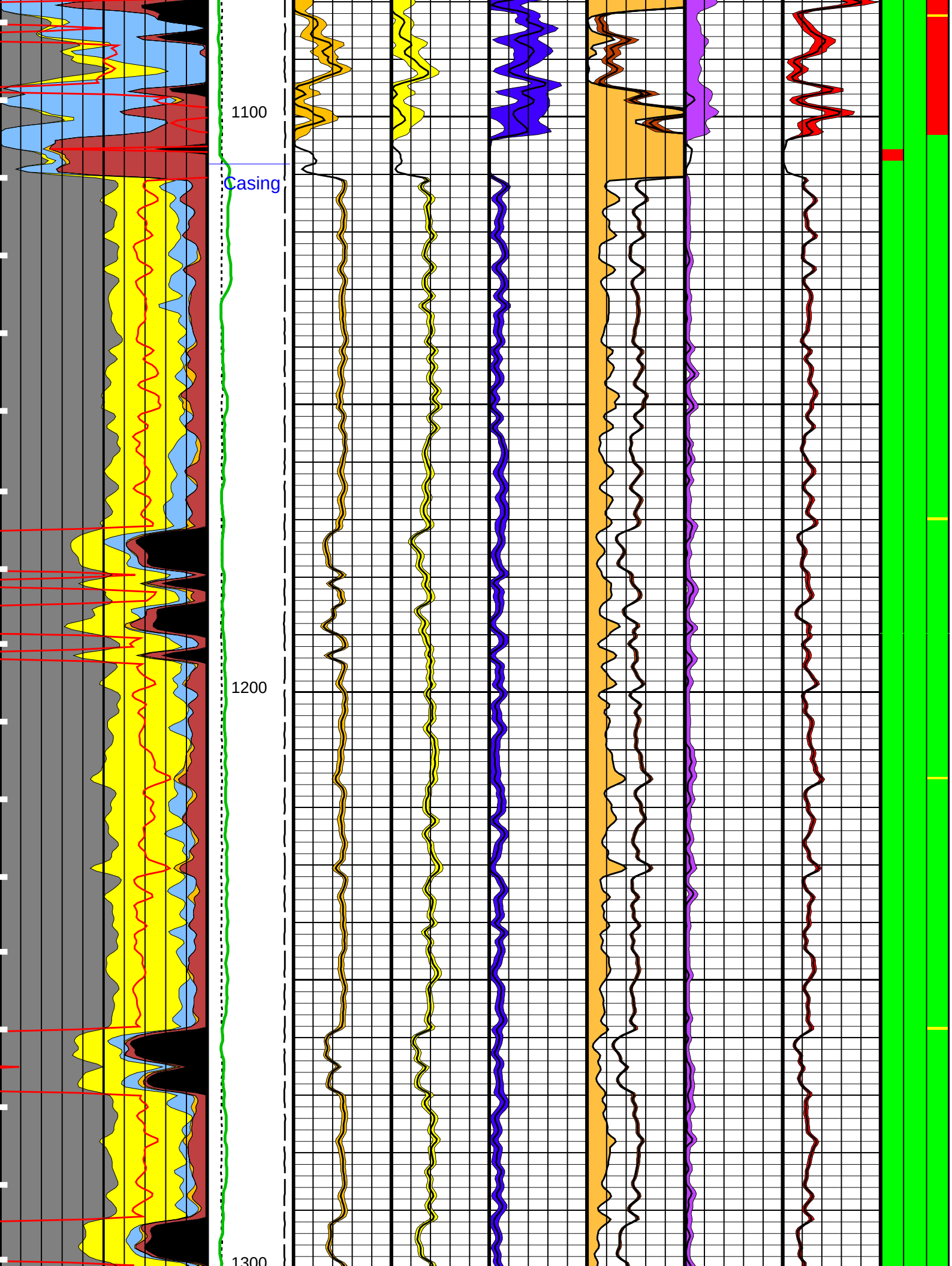

Carbonate
Ray (GR) (GAPI)
0 200
Dry Wt. Excess Iron
error
Clay
Tension (TENS) (LBF)
10000 0
Dry Wt. Aluminum
Dry Wt. Silicon
Dry Wt. Calcium
DWFE (DWFE_ WALK2)
0 (W/W) 0.2
Dry Wt. Sulfur
Dry Wt. Titanium
warning
Anhydrite
Cable Speed (CS) (F/HR)
0 5000
DWAL (DWAL_ WALK2)
0 (W/W) 0.2
DWSI (DWSI_ WALK2)
0 (W/W) 0.5
DWCA (DWCA_ WALK2)
0 (W/W) 0.5
DXFE (DXFE_ WALK2)
0 (W/W) 0.2
DWSU (DWSU_ WALK2) (W/W)
0 0.25
DWTI (DWTI_ WALK2) (W/W)
0 0.05
normal
LQC Track
Left(I1) ---> Right(I3)
I1: ECS Hardware: Photomultiplier (QC_PMT)
I2: ECS Hardware: BGO Crystal Temperature (ECST)
I3: ECS Data Quality: Elemental Statistical Uncertainty (ESUF_WALK2)
100
200

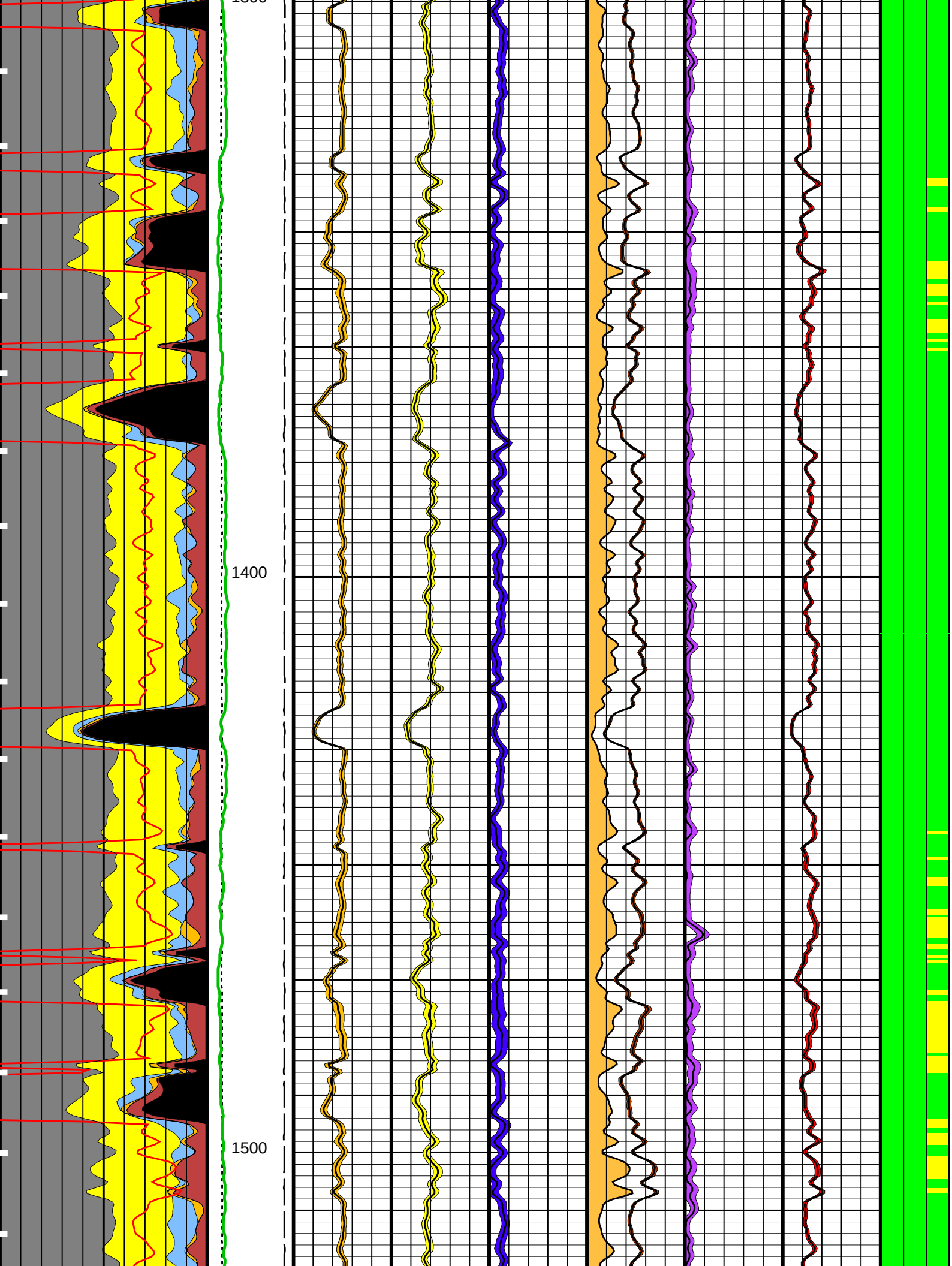

300
400

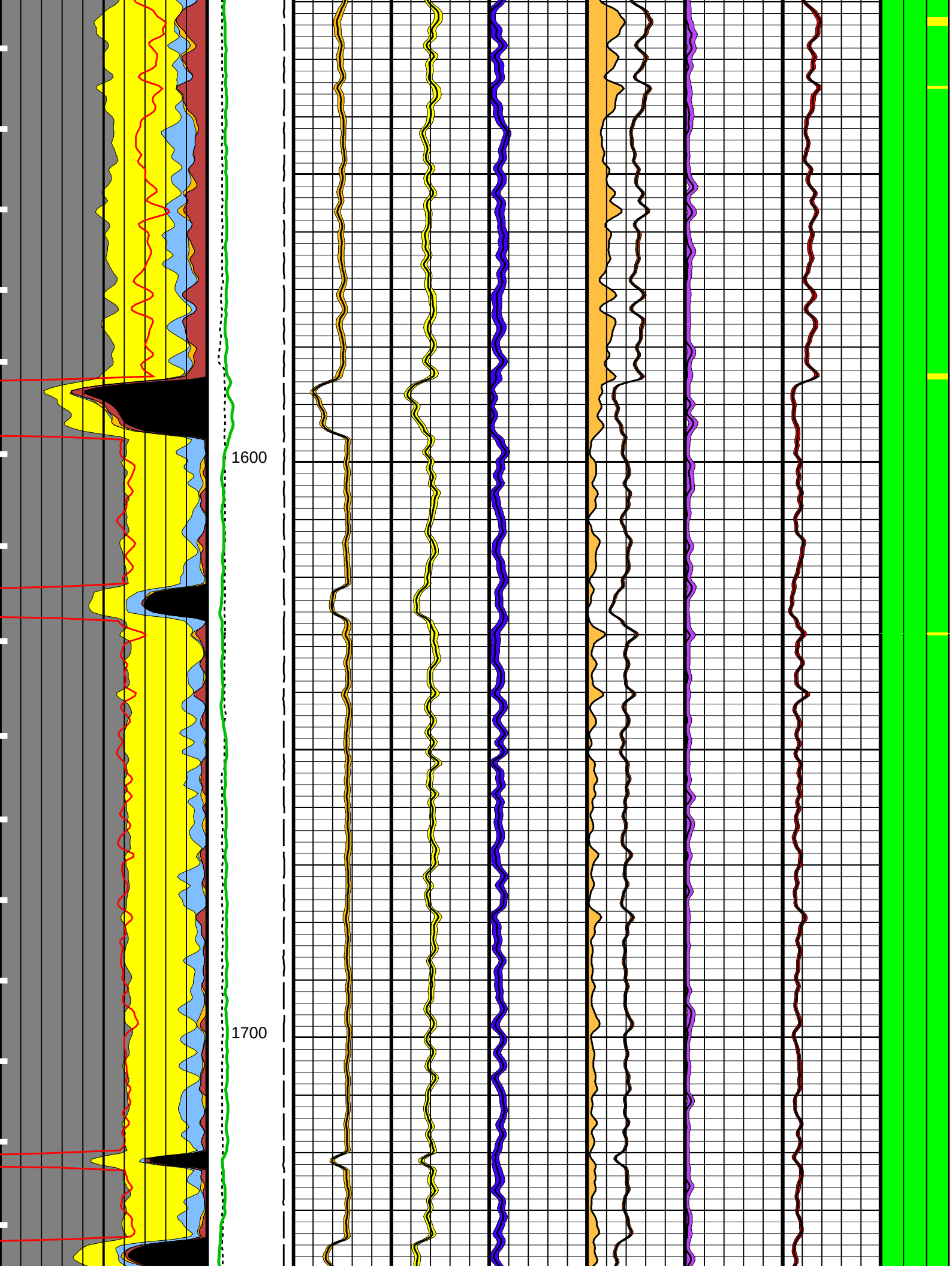

500
600

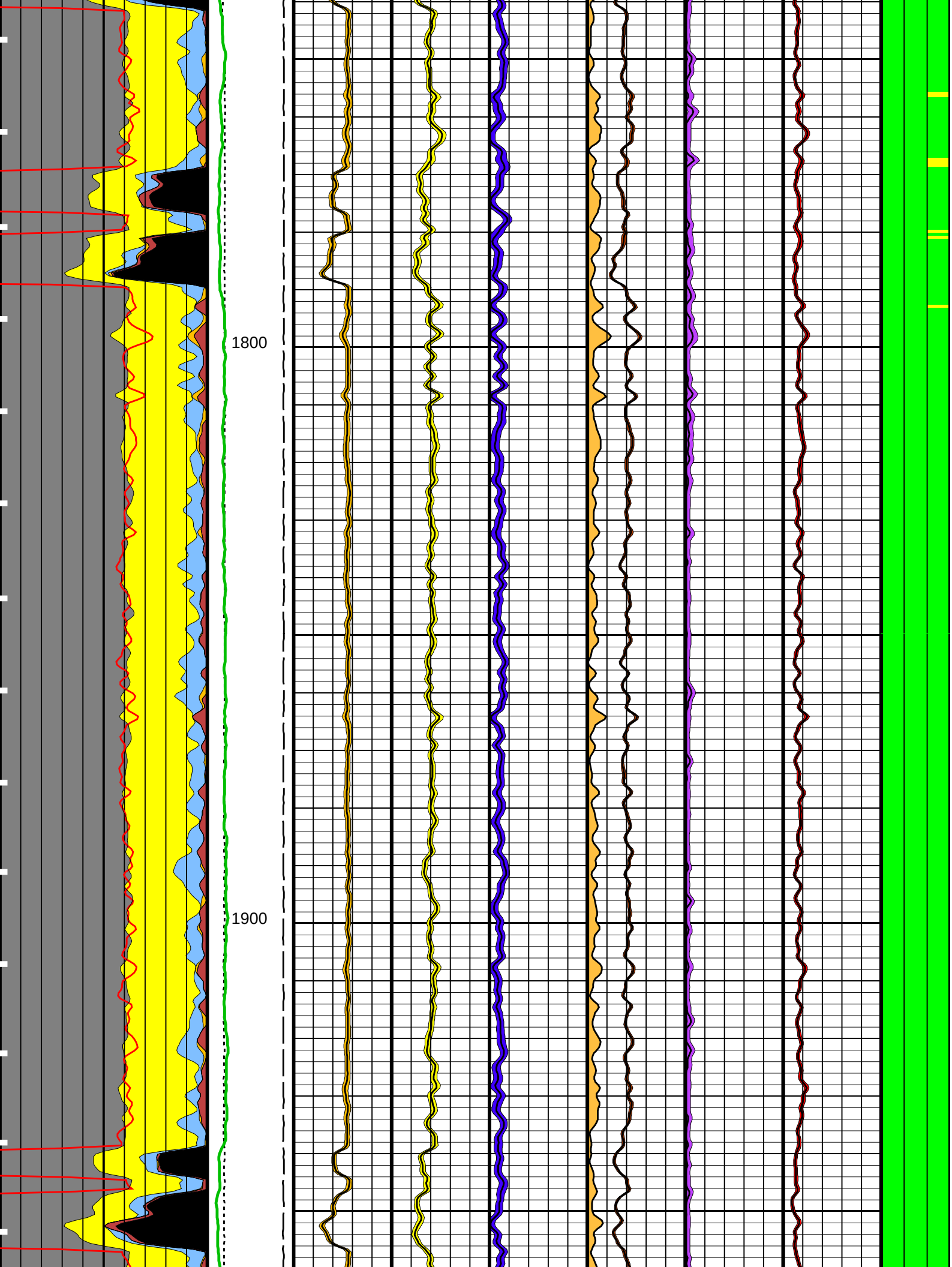

700
800

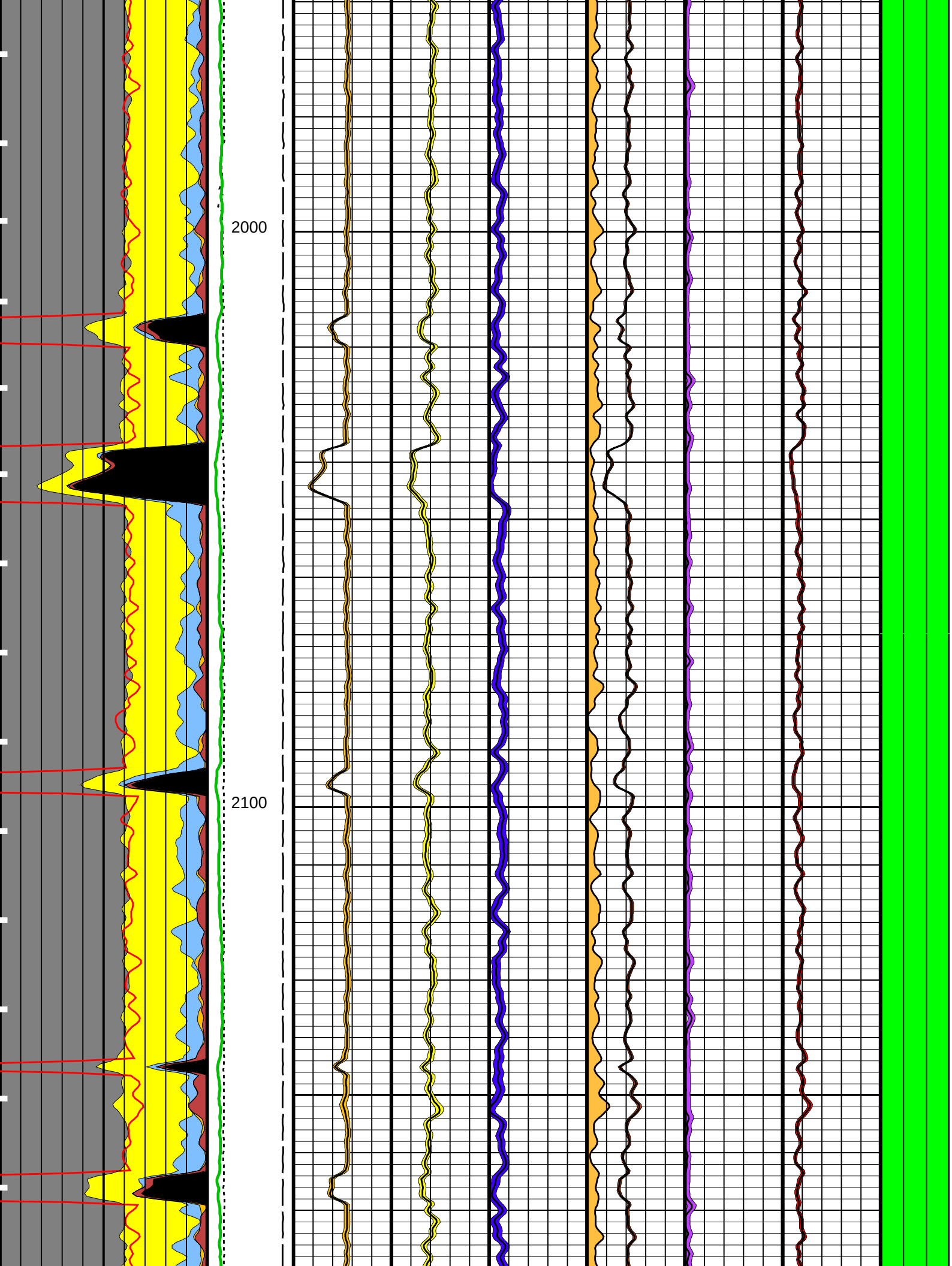

900
1000

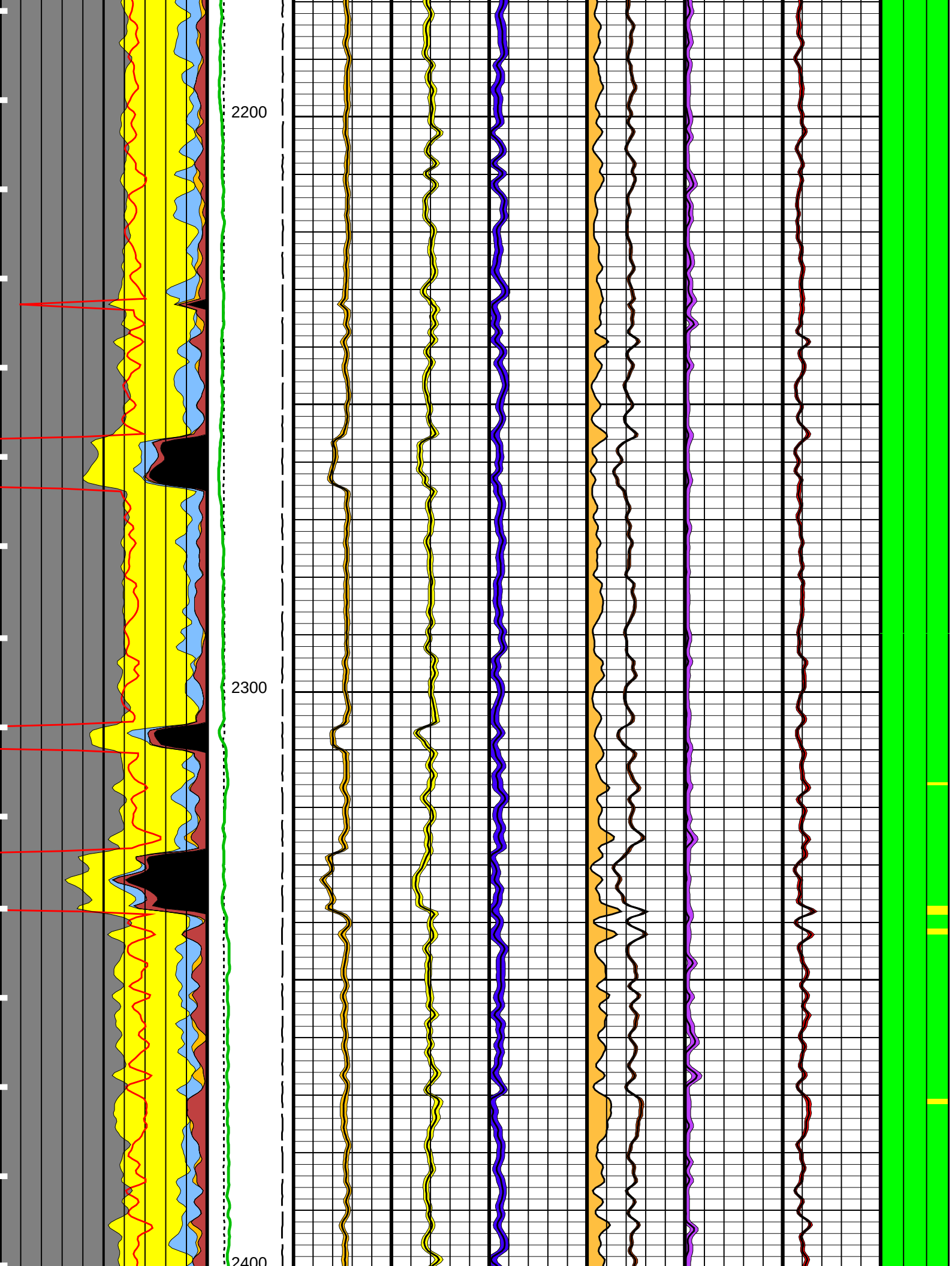

1100
Casing
1200
1300

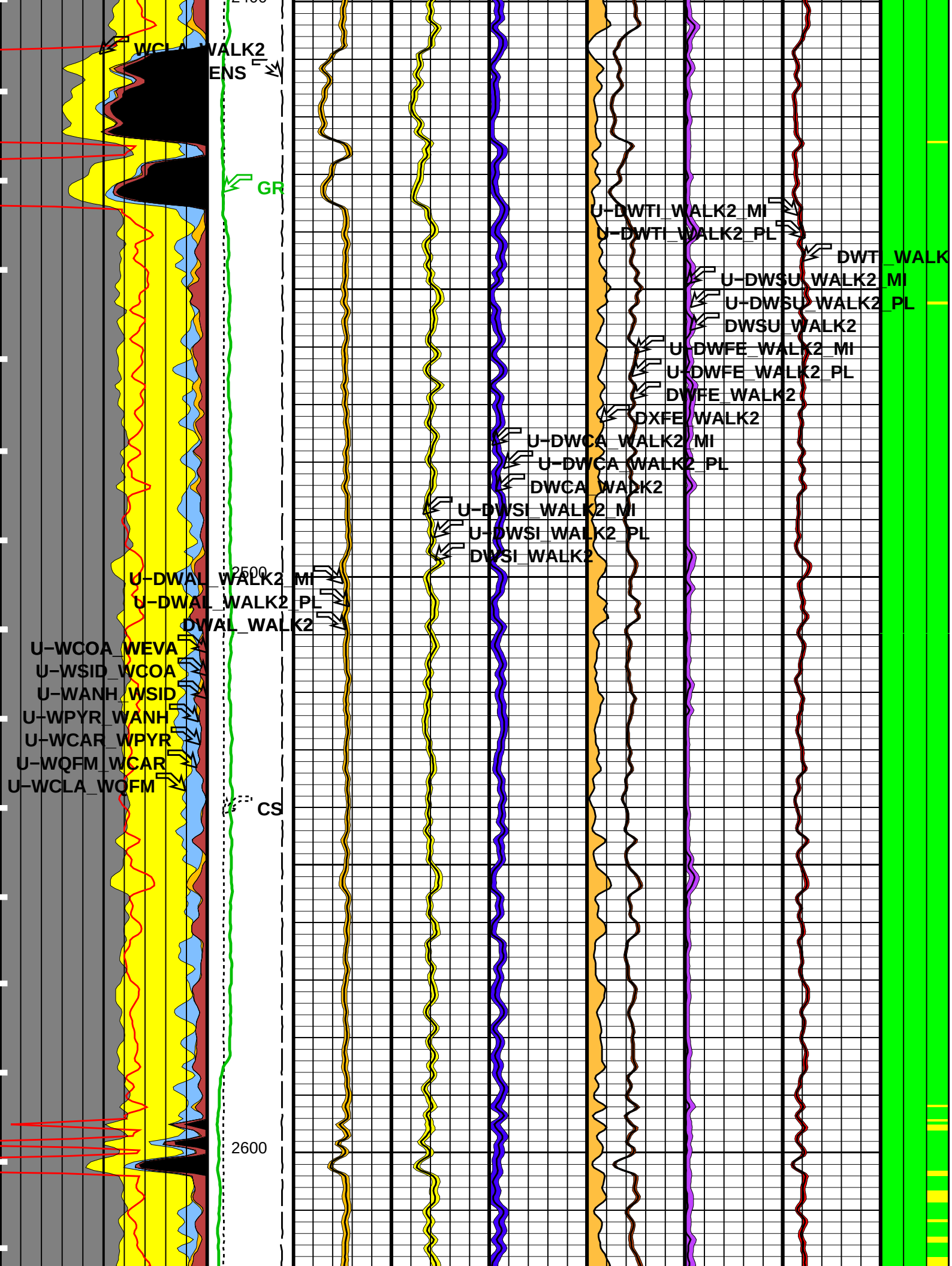

1400
1500

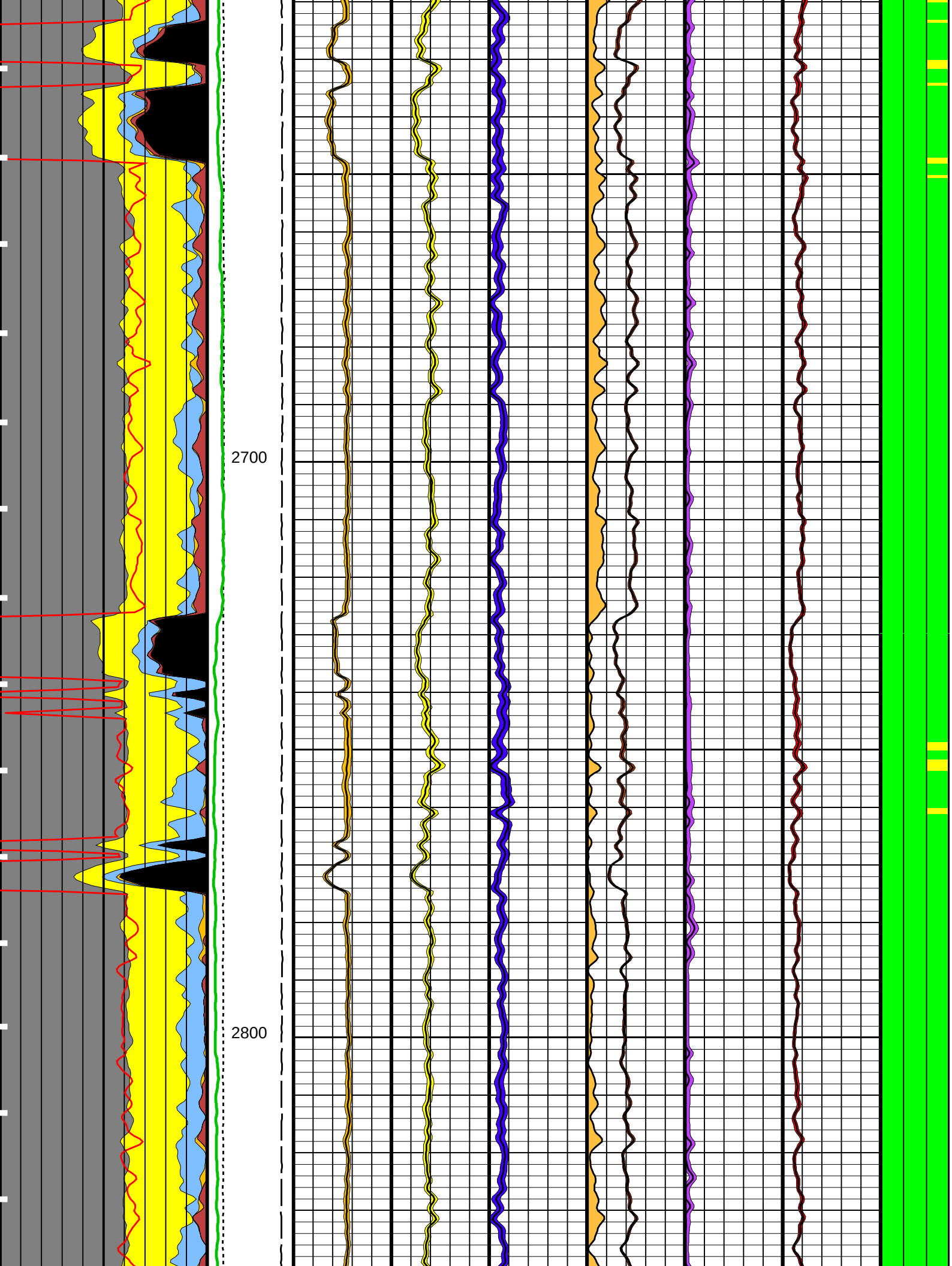

1600
1700

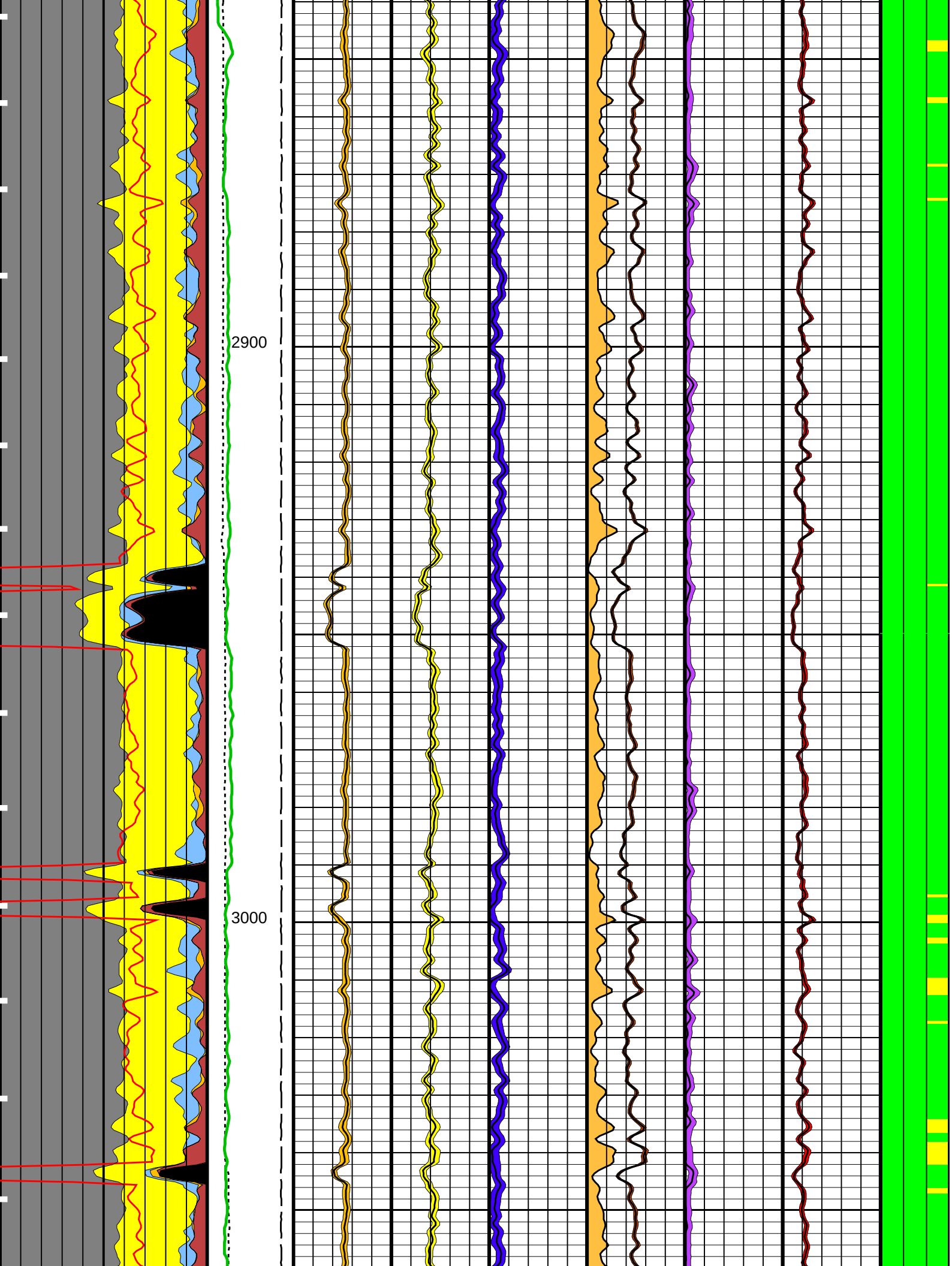

1800
1900

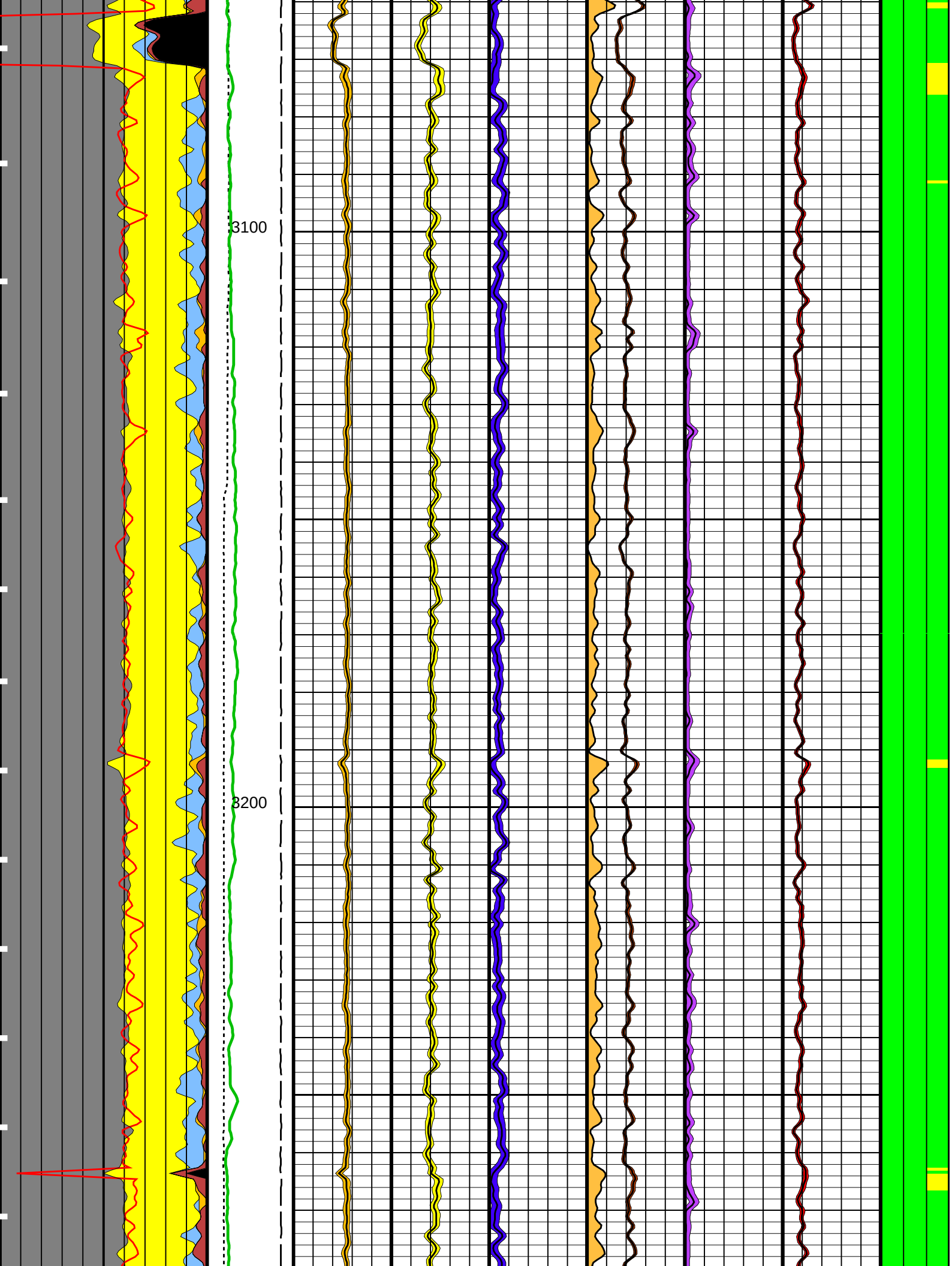

2000
2100

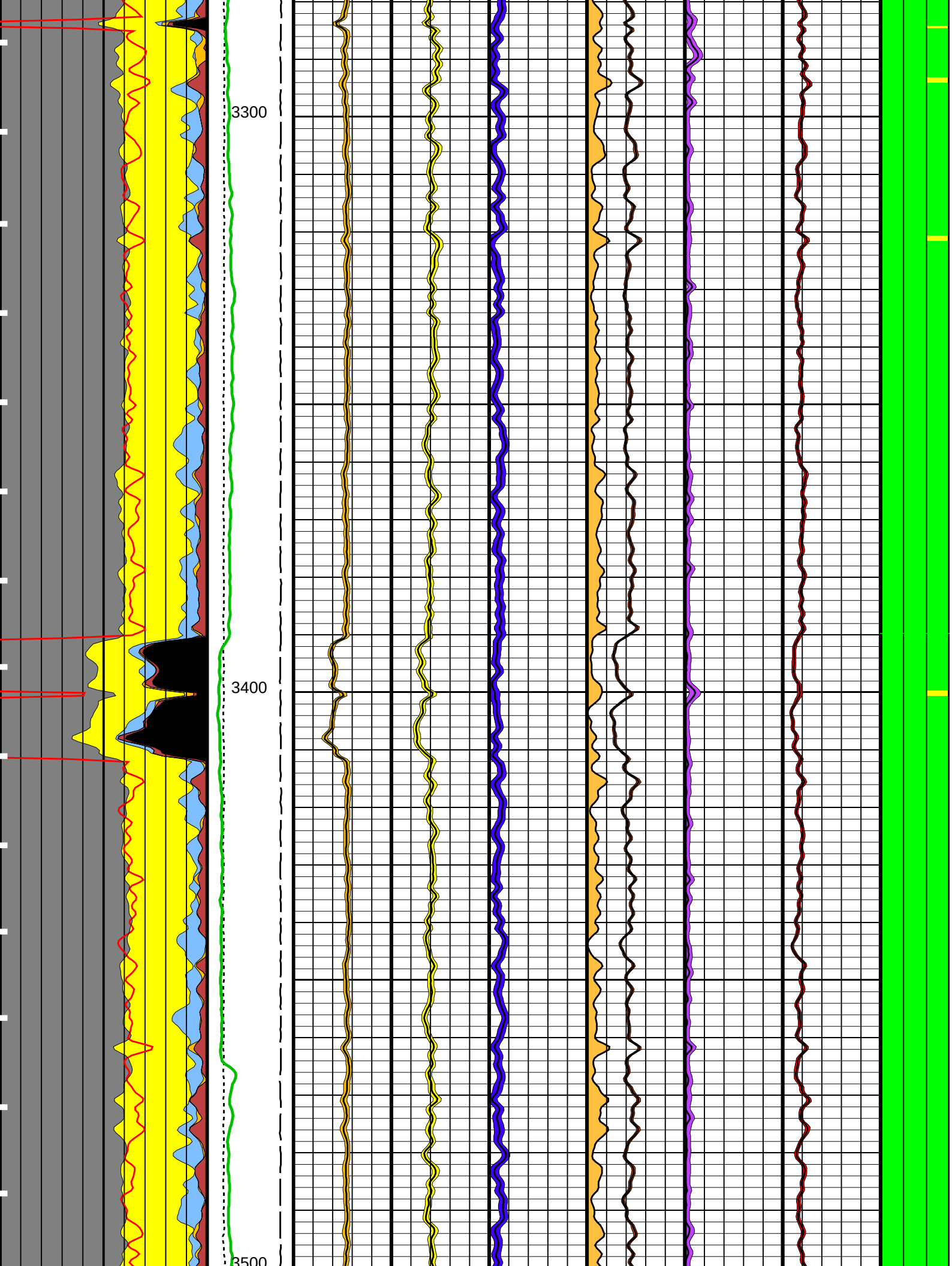

2200
2300
2400

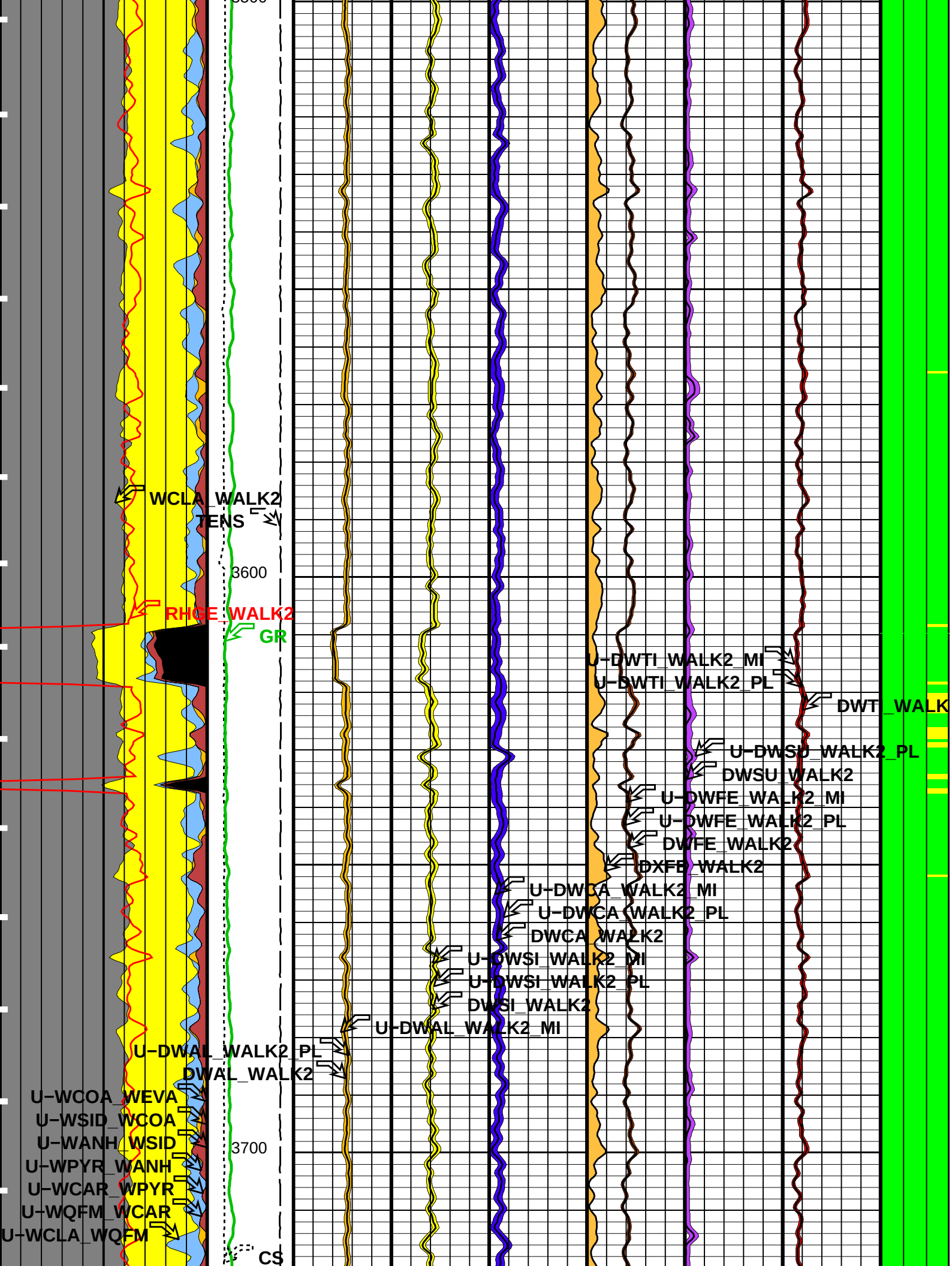

WCLA_WALK2
ENS
GR
U-DWTI_WALK2_MI
U-DWTI_WALK2_PL
DWTI_WALK
U-DWSU_WALK2_MI
U-DWSU_WALK2_PL
DWSU_WALK2
U-DWFE_WALK2_MI
U-DWFE_WALK2_PL
DWFE_WALK2
DXFE_WALK2
U-DWCA_WALK2_MI
U-DWCA_WALK2_PL
DWCA_WALK2
U-DWSI_WALK2_MI
U-DWSI_WALK2_PL
DWSI_WALK2
2500
U-DWAL_WALK2_MI
U-DWAL_WALK2_PL
DWAL_WALK2
U-WCOA_WEVA
U-WSID_WCOA
U-WANH_WSID
U-WPYR_WANH
U-WCAR_WPYR
U-WQFM_WCAR
U-WCLA_WQFM
CS
2600

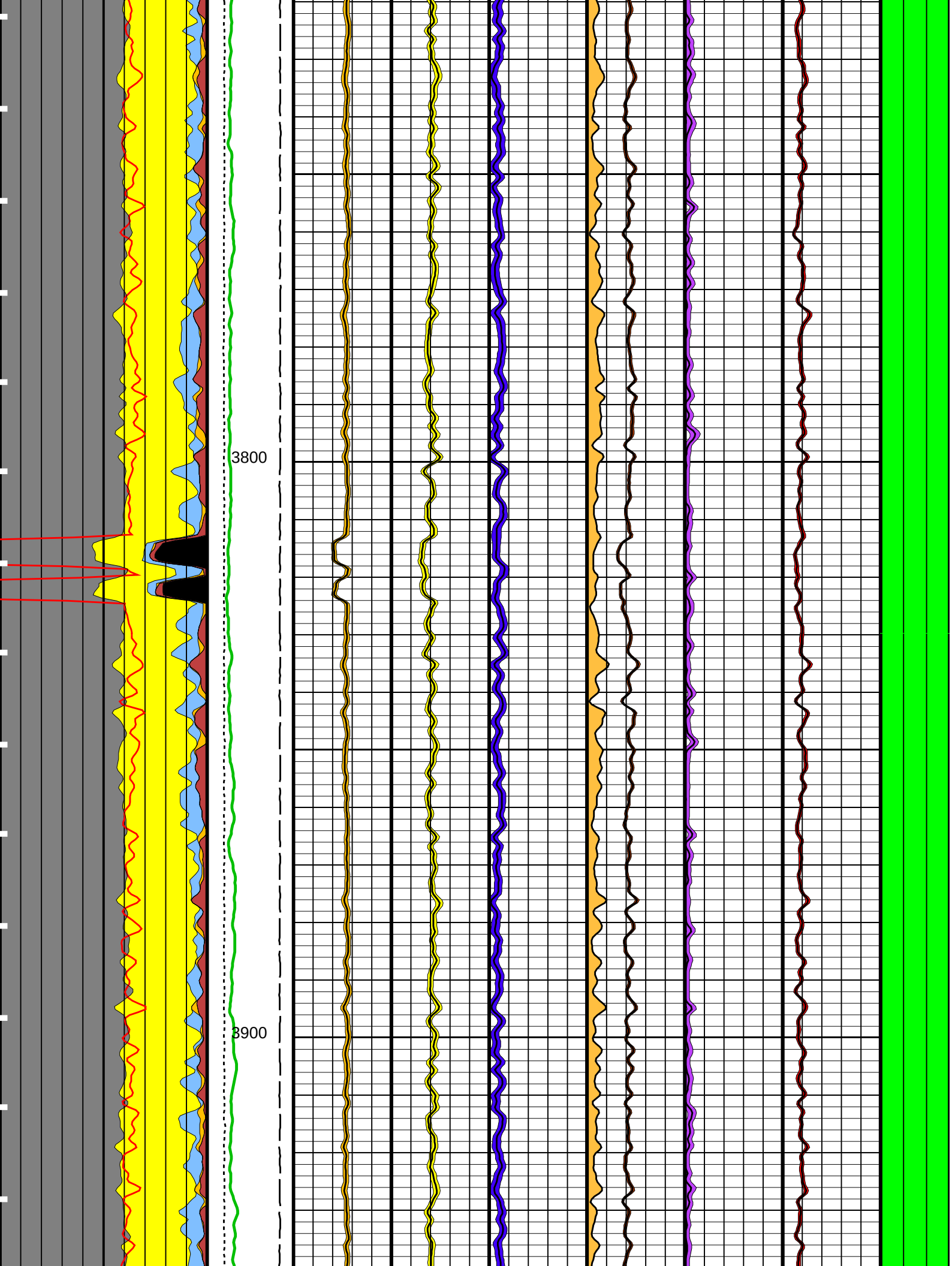

2700
2800

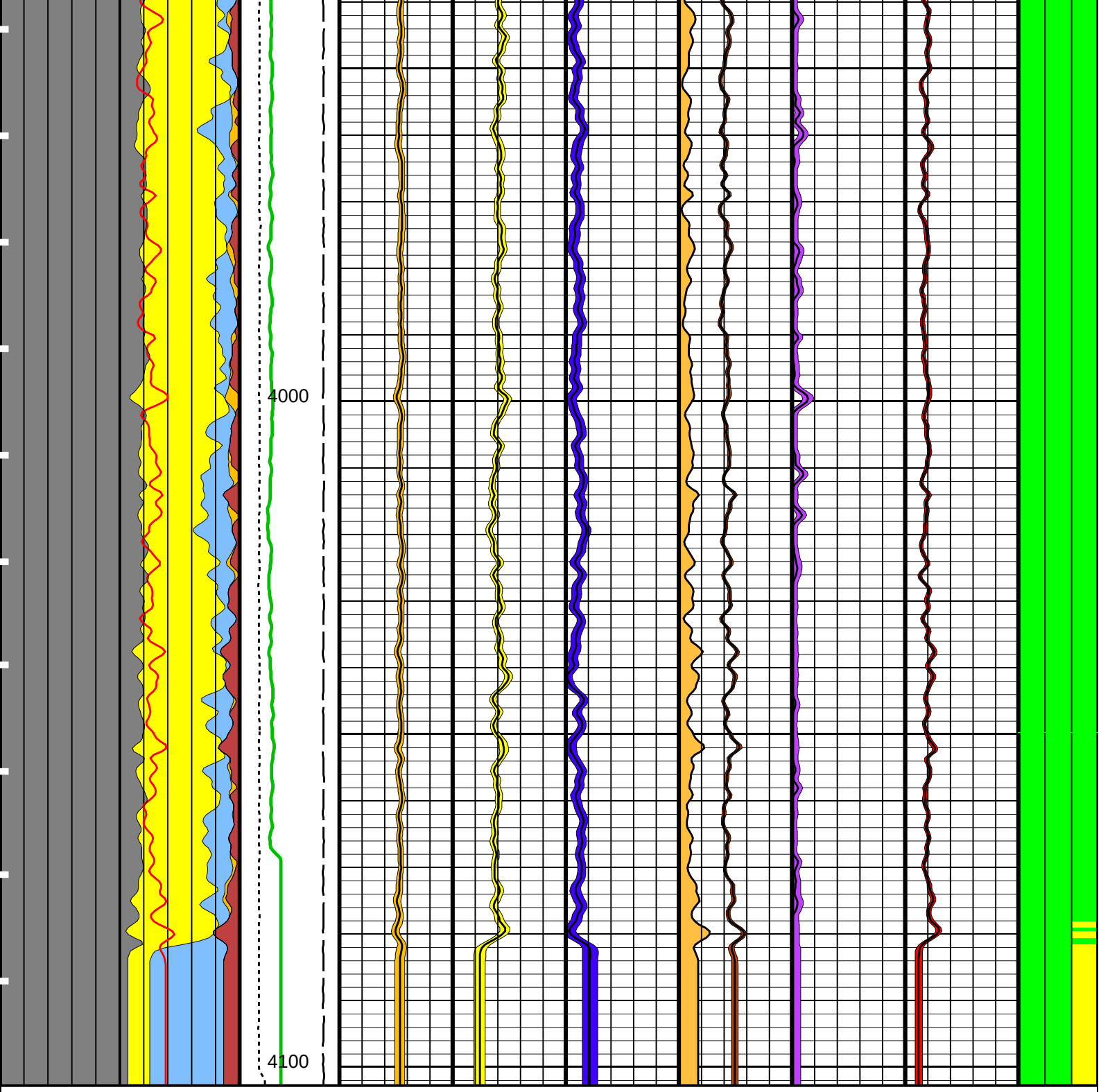

2900
3000


3100
3200


3300
3400
3500


WCLA_WALK2
TENS
3600
RHOE_WALK2
GR
U-DWTI_WALK2_MI
U-DWTI_WALK2_PL
DWTI_WALK
U-DWSU_WALK2_PL
DWSU_WALK2
U-DWFE_WALK2_MI
U-DWFE_WALK2_PL
DWFE_WALK2
DXFB_WALK2
U-DWCA_WALK2_MI
U-DWCA_WALK2_PL
DWCA_WALK2
U-DWSI_WALK2_MI
U-DWSI_WALK2_PL
DWSI_WALK2
U-DWAL_WALK2_MI
U-DWAL_WALK2_PL
DWAL_WALK2
U-WCOA_WEVA
U-WSID_WCOA
U-WANH_WSID
3700
U-WPYR_WANH
U-WCAR_WPYR
U-WQFM_WCAR
U-WCLA_WQFM
CS


3800
3900



LQC Track

Left(I1) −−−> Right(I3)

I1: ECS Hardware: Photomultiplier (QC_PMT)

I2: ECS Hardware: BGO Crystal Temperature (ECST)

I3: ECS Data Quality: Elemental Statistical Uncertainty (ESUF_WALK2)

Anhydrite	Cable Speed (CS) (F/HR) 0 5000	DWAL (DWAL_ WALK2) 0 (W/W) 0.2	DWSI (DWSI_ WALK2) 0 (W/W) 0.5	DWCA (DWCA_ WALK2) 0 (W/W) 0.5	DXFE (DXFE_ WALK2) 0 (W/W) 0.2	DWSU (DWSU_ WALK2) (W/W) 0 0.25	DWTI (DWTI_ WALK2) (W/W) 0 0.05	normal
Clay	Tension (TENS) (LBF) 10000 0	Dry Wt. Aluminum	Dry Wt. Silicon	Dry Wt. Calcium	DWFE (DWFE_ WALK2) 0 (W/W) 0.2	Dry Wt. Sulfur	Dry Wt. Titanium	warning
	Gamma							

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	ECS−A: Elemental Capture Spectroscopy Tool		
SPEC_BARITE_MUD_FLAG	Barite Mud Flag for Spectroscopy Processing	Off	
SPEC_CSG_DEPTH	Casing Depth for Spectroscopy Processing	1106	FT
SPEC_ELE_STD_SHFT_FAC	Calibration Factor for Elemental Spectral Standards	0.8	
SPL_CLAY_MODEL	SpectroLith Clay Model	Arenite	
SPL_SULFUR_MINERAL	SpectroLith Sulfur Mineral Option	Pyrite	
	System and Miscellaneous		
DO	Depth Offset for Playback	−1.0	FT
PP	Playback Processing	RECOMPUTE	

Format: ECS_SpectroLith_PB Vertical Scale: 5" per 100’ Graphics File Created: 18−Apr−2009 19:41

OP System Version: 17C0−154

HAIT−H	SRPC−3779−Q1_2009_OP17	ECS−A	17C0−154
ECC−B	17C0−154	HILTB−FTB	SRPC−3779−Q1_2009_OP17
EDTC−B	17C0−154		

Input DLIS Files

DEFAULT	AIT_ECS_TLD_MCFL_033LUP	FN:32	PRODUCER	18−Apr−2009 14:55	4104.0 FT	44.0 FT

Output DLIS Files

DEFAULT	AIT_ECS_TLD_MCFL_035PUP	FN:34	PRODUCER	18−Apr−2009 19:41

Schlumberger

LOG QUALITY CONTROL

MAXIS Field Log

Input DLIS Files

DEFAULT	AIT_ECS_TLD_MCFL_033LUP	FN:32	PRODUCER	18−Apr−2009 14:55	4104.0 FT	44.0 FT

Output DLIS Files

DEFAULT | AIT_ECS_TLD_MCFL_035PUP | FN:34 | PRODUCER | 18−Apr−2009 19:41 | 4102.5 FT | 43.0 FT

OP System Version: 17C0−154

HAIT−H	SRPC−3779−Q1_2009_OP17	ECS−A	17C0−154
ECC−B	17C0−154	HILTB−FTB	SRPC−3779−Q1_2009_OP17
EDTC−B	17C0−154		

PIP SUMMARY

Time Mark Every 60 S

Oxides Closure Normalization Factor (FY2W_WALK2)
0 (−−−− 5

Elemental Statistical Uncertainty Factor (ESUF_WALK2)
0 (−−−− 5

ECS Marquardt Gain (ECMG_20)
0.95 (−−−− 1.05

Spectral Count Rate (ch.40−240) (ESSR_20)
10000 (CPS) 30000

LQC
I1−−−>I5

Offset Correction Factor (EOCF_20)
−5 (−−−− 5

manual

IC

ECS Temperature (ECST)
−20 (DEGF) 130

error

Gamma Ray (GR) (GAPI)
0 200

CHY

RDF (ERDF_20)
0 (−−−− 10

warning

Tension (TENS) (LBF)
10000 0

CSI | CCA | CFE | CSUL | CTI | CGD | CCHL

IC (IC_WALK2) (−−−−
0.25 0

Bit Size (BS)
6 (IN) 16

normal

Cable Speed (CS) (F/HR)
0 5000

CSI (CSI_WALK2) (−−−−
0 0.5

CCA (CCA_WALK2) (−−−−
0 0.5

CFE (CFE_WALK2) (−−−−
0 0.5

CSUL (CSUL_WALK2) (−−−−
0 0.25

CTI (CTI_WALK2) (−−−−
0 0.5

CGD (CGD_WALK2) (−−−−
0 0.5

CCHL (CCHL_WALK2)
0 (−−−− 1

CHY (CHY_WALK2)
0 (−−−− 1

LQC Track

Left(I1) −−−> Right(I5)

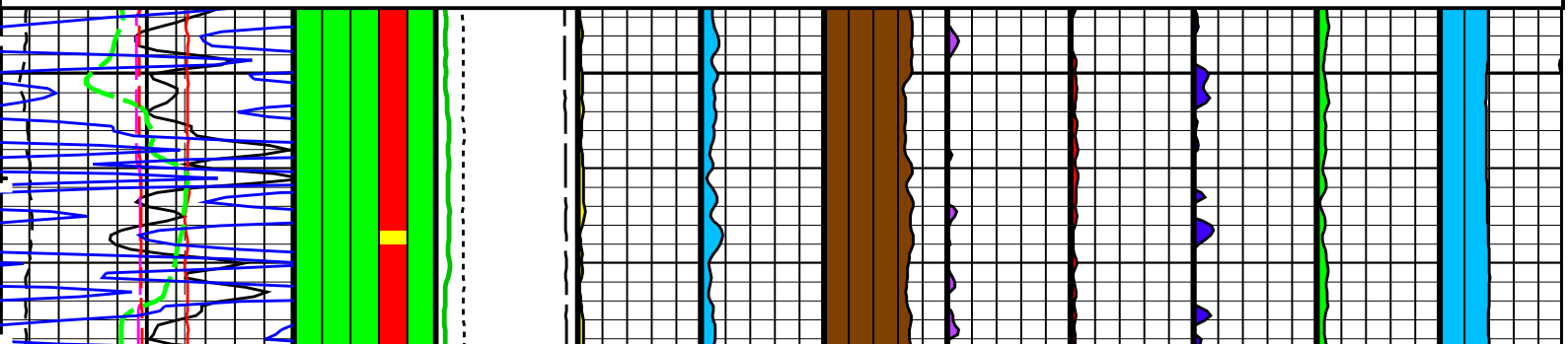
I1: ECS Hardware: Photomultiplier (QC_PMT)

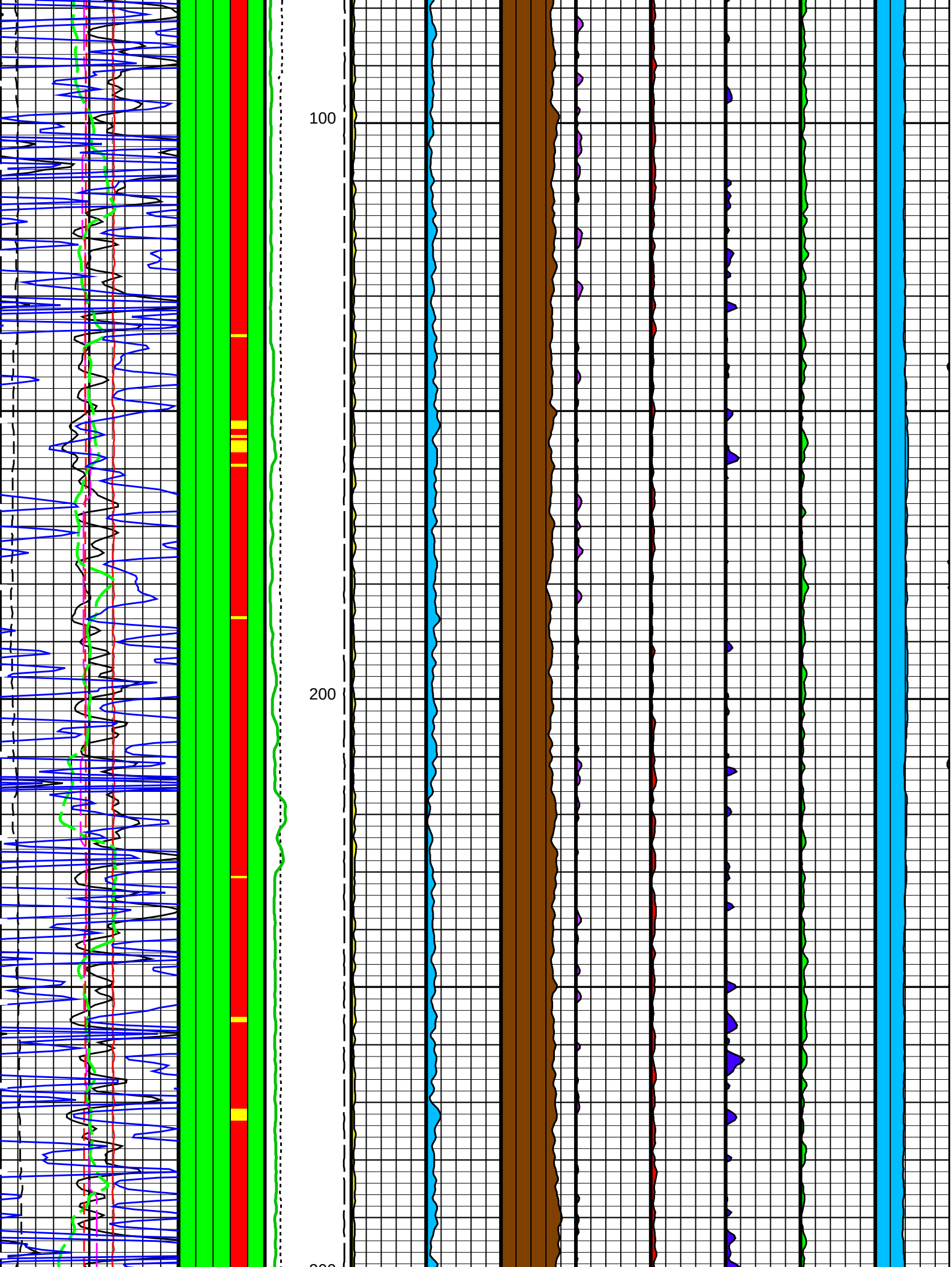
I2: ECS Hardware: BGO Crystal Temperature (ECST)

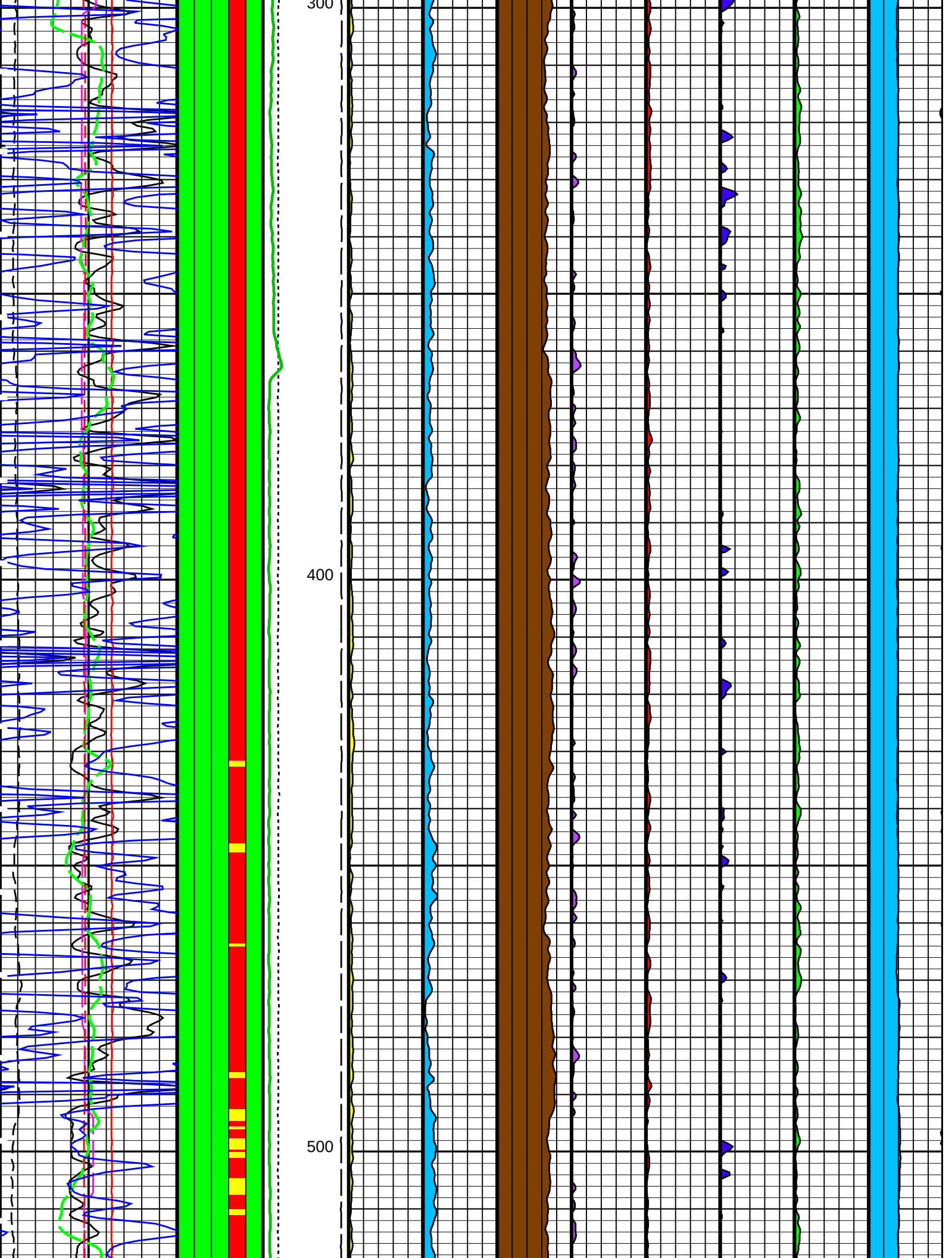
I3: ECS Hardware: Control Loop (HV Loop OR PSC LOOP)

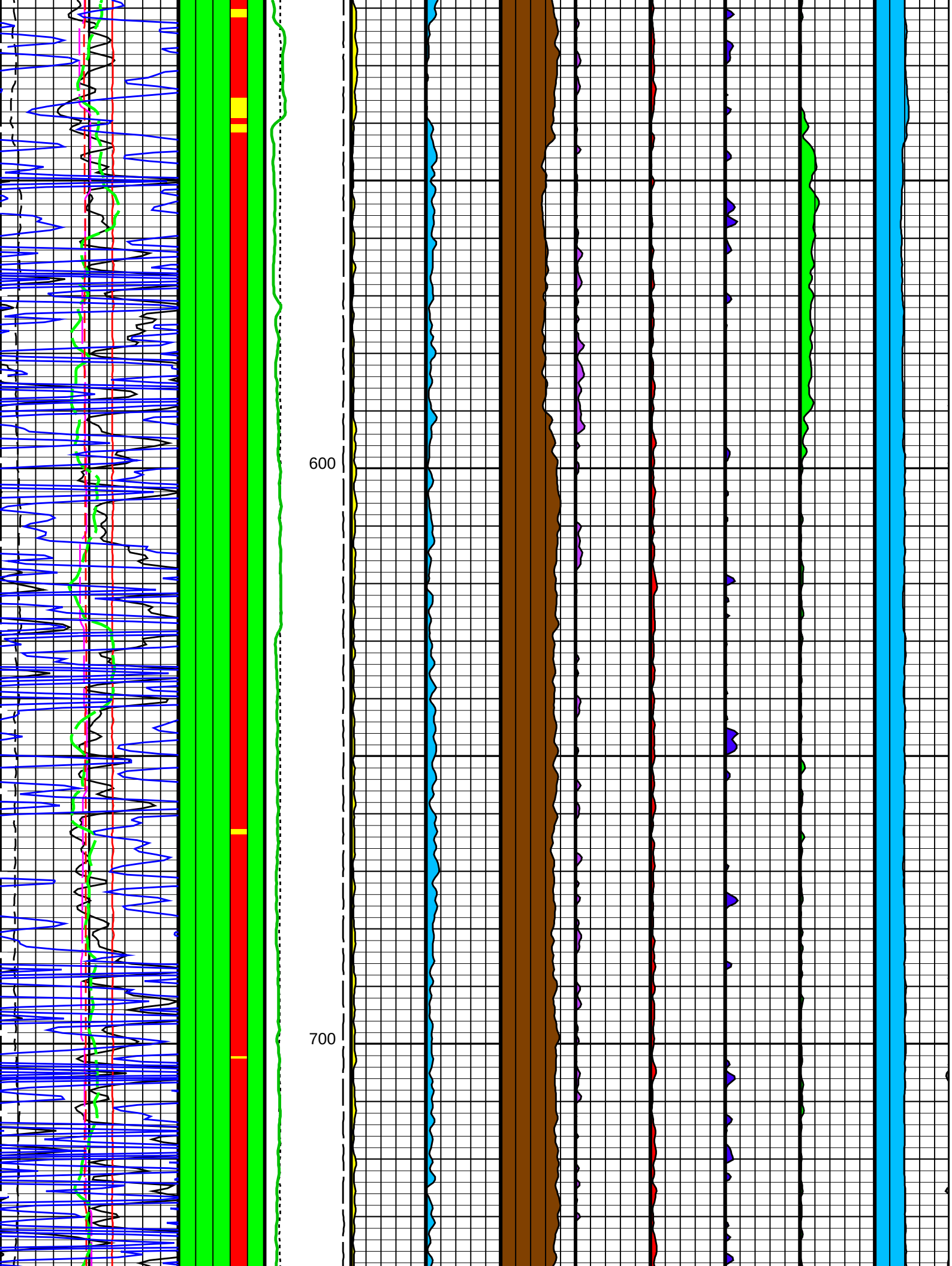
I4: ECS Data Quality: Elemental Statistical Uncertainty (ESUF_WALK2)

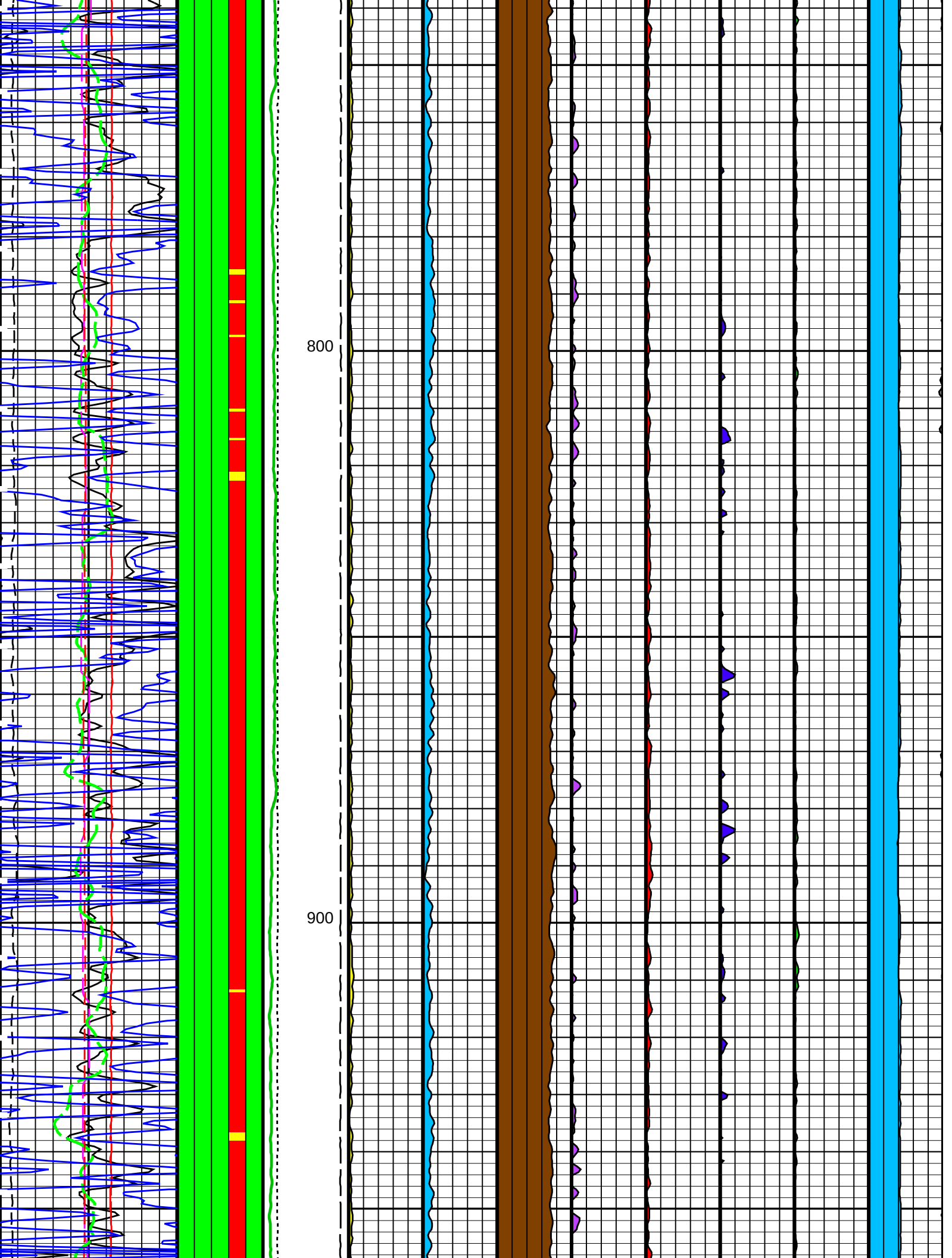
I5: ECS Data Quality: Marquardt Chisq (EMC2)

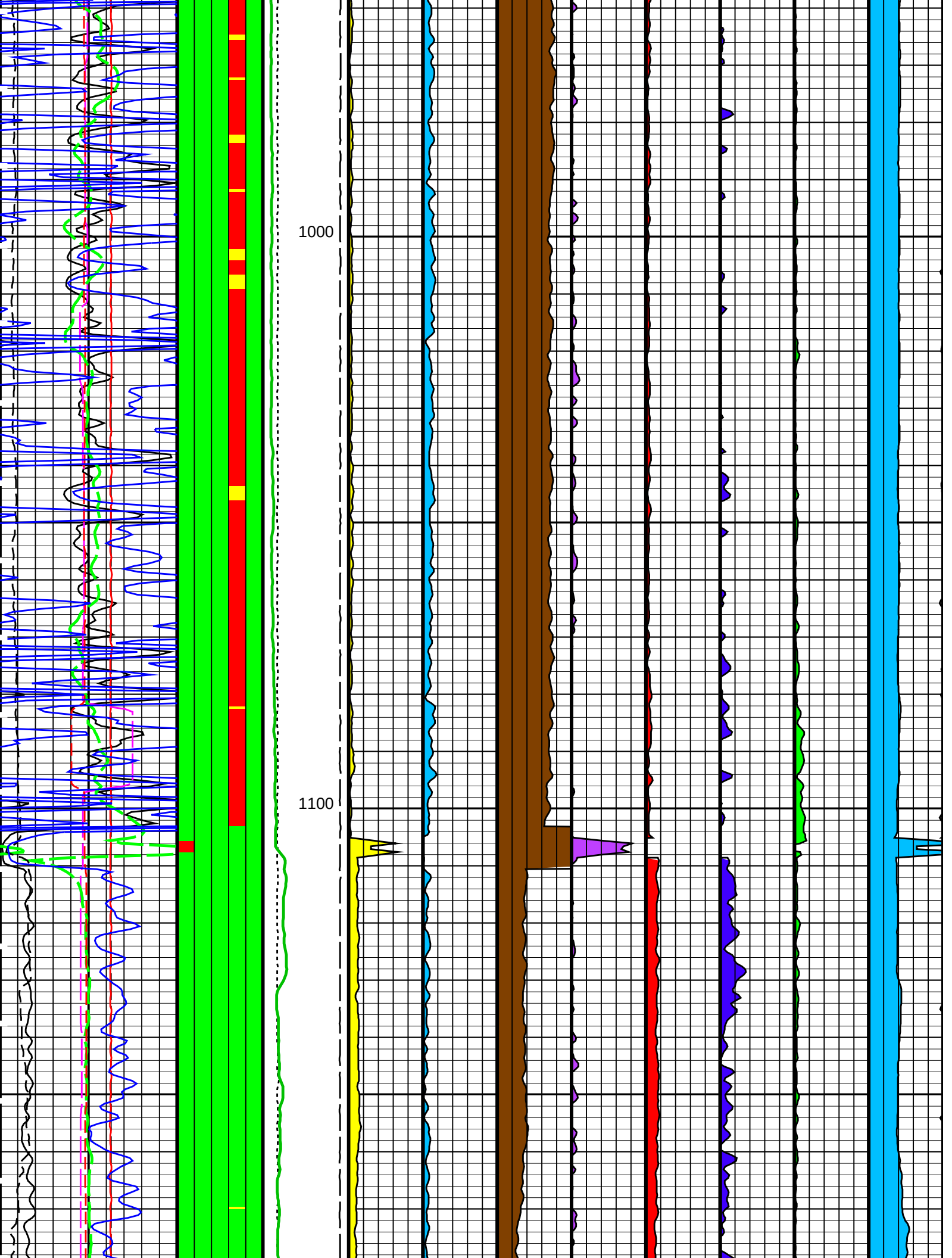


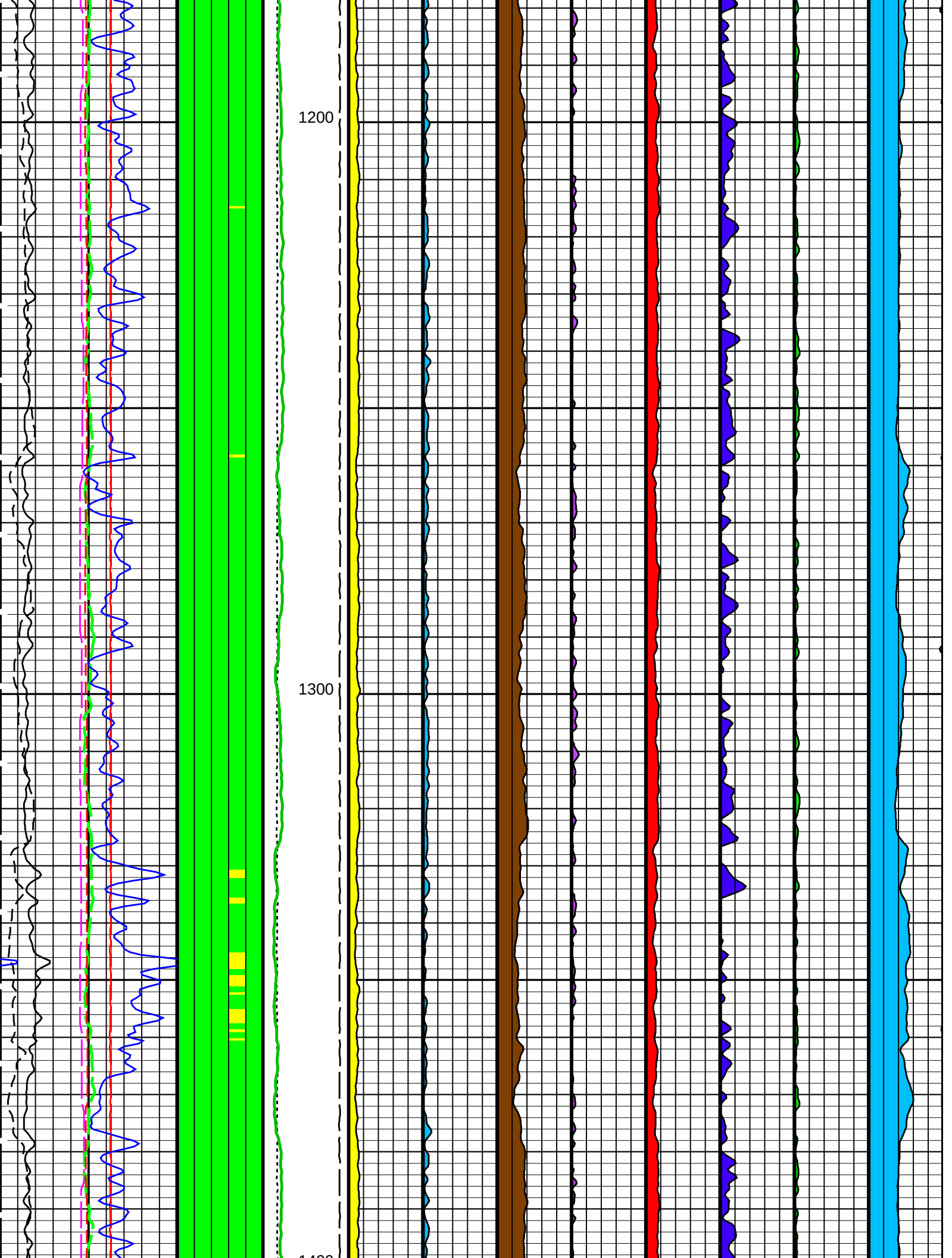

100
200

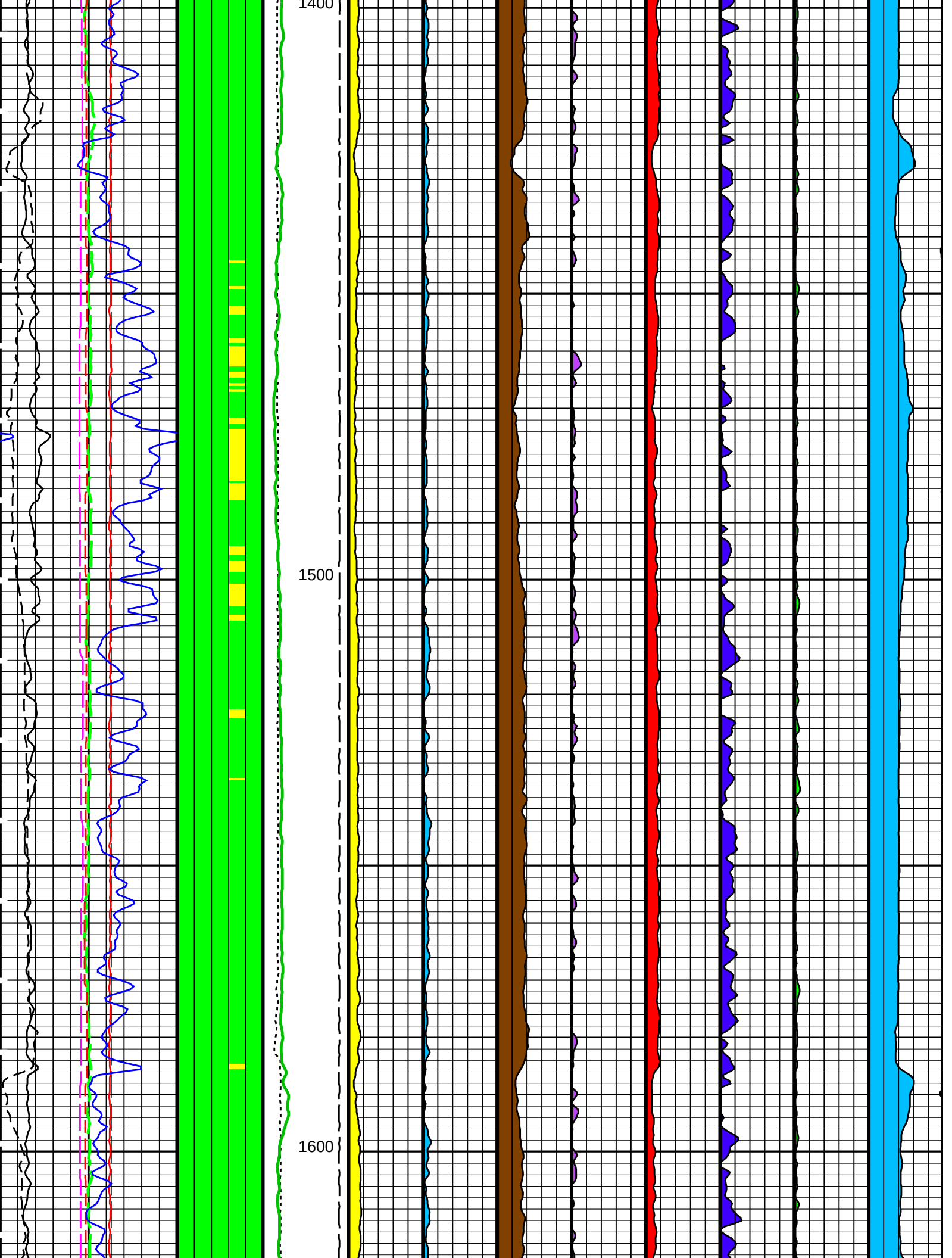

300
400
500

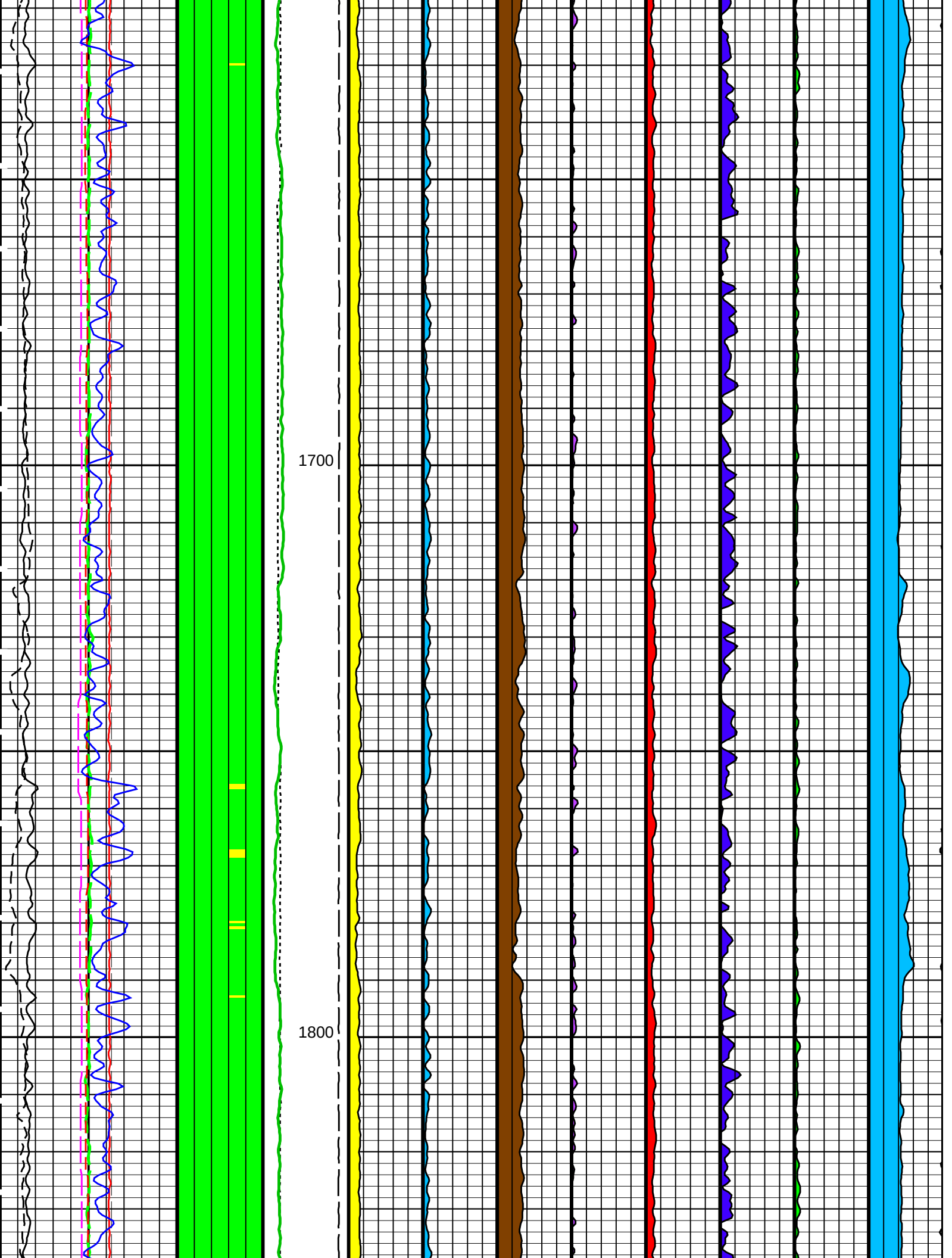

600
700

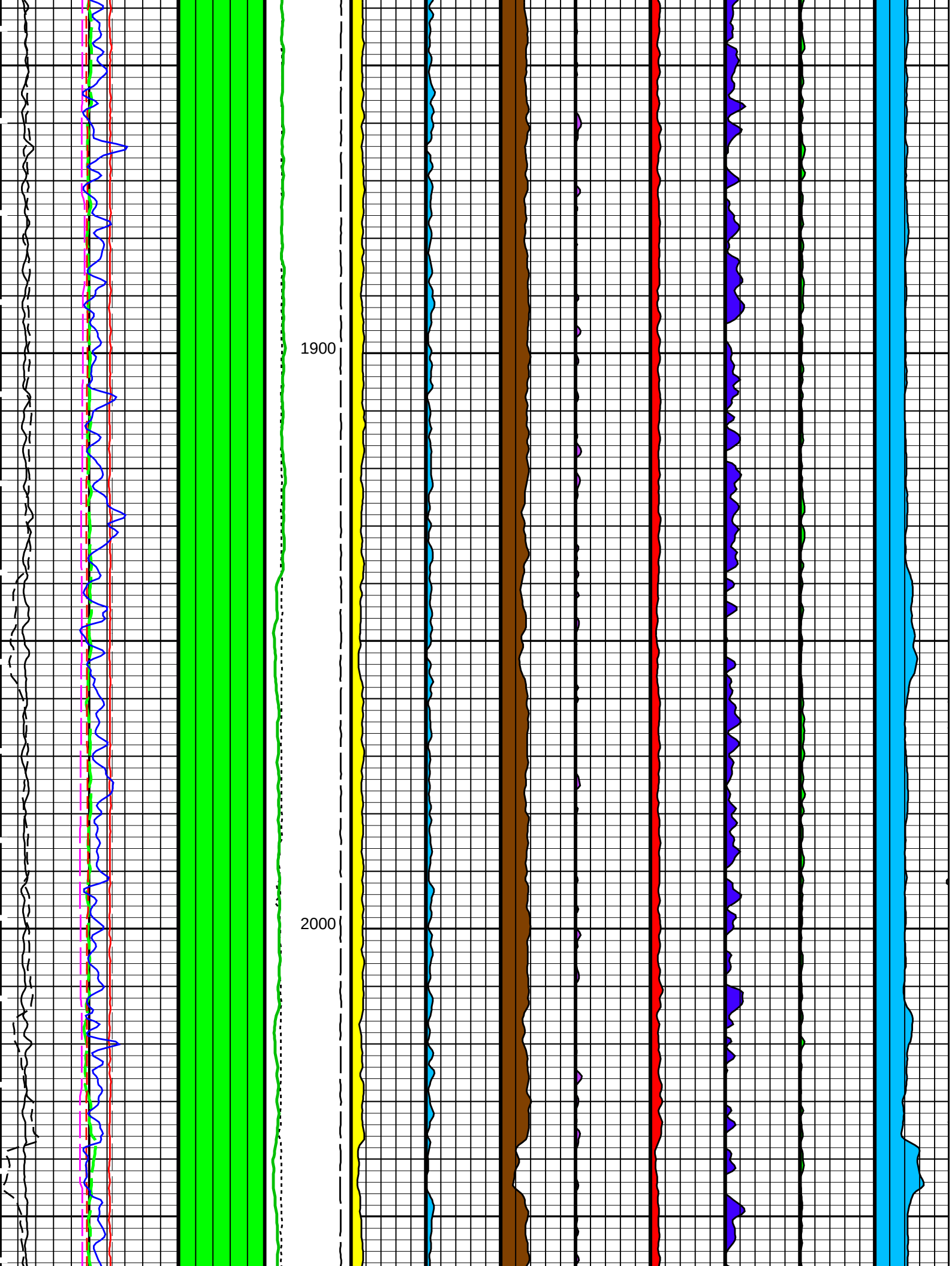

800
900

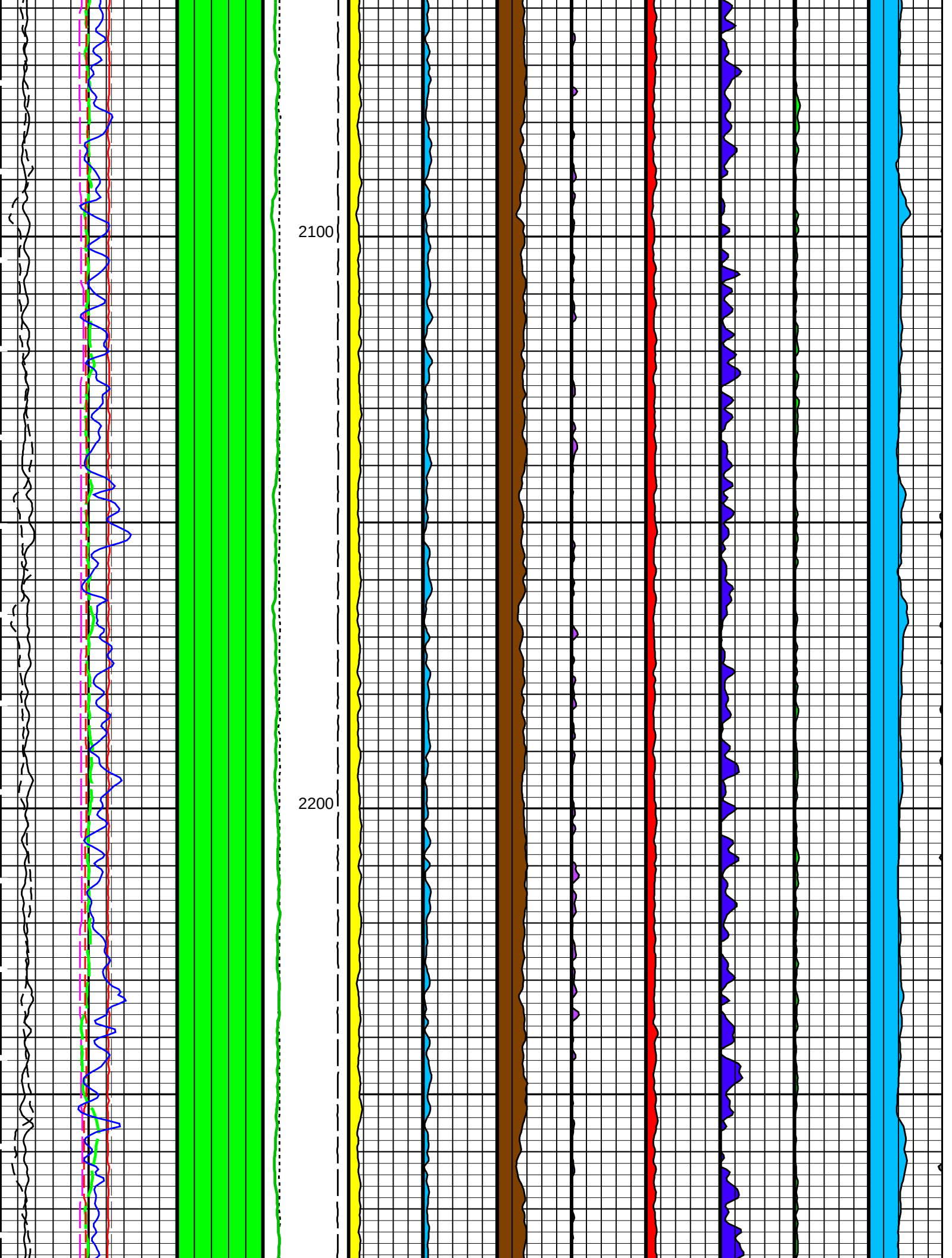

1000
1100

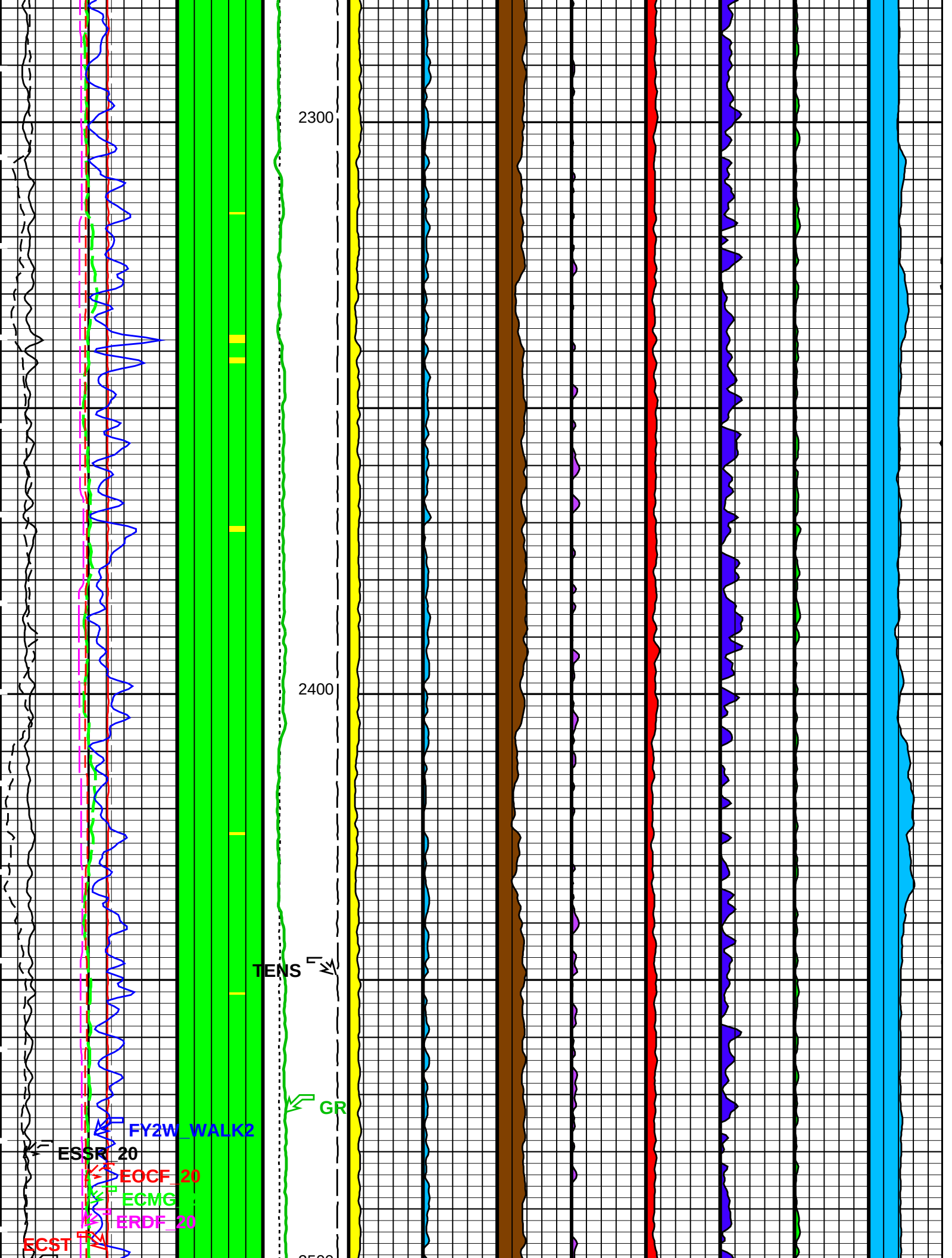

1200
1300

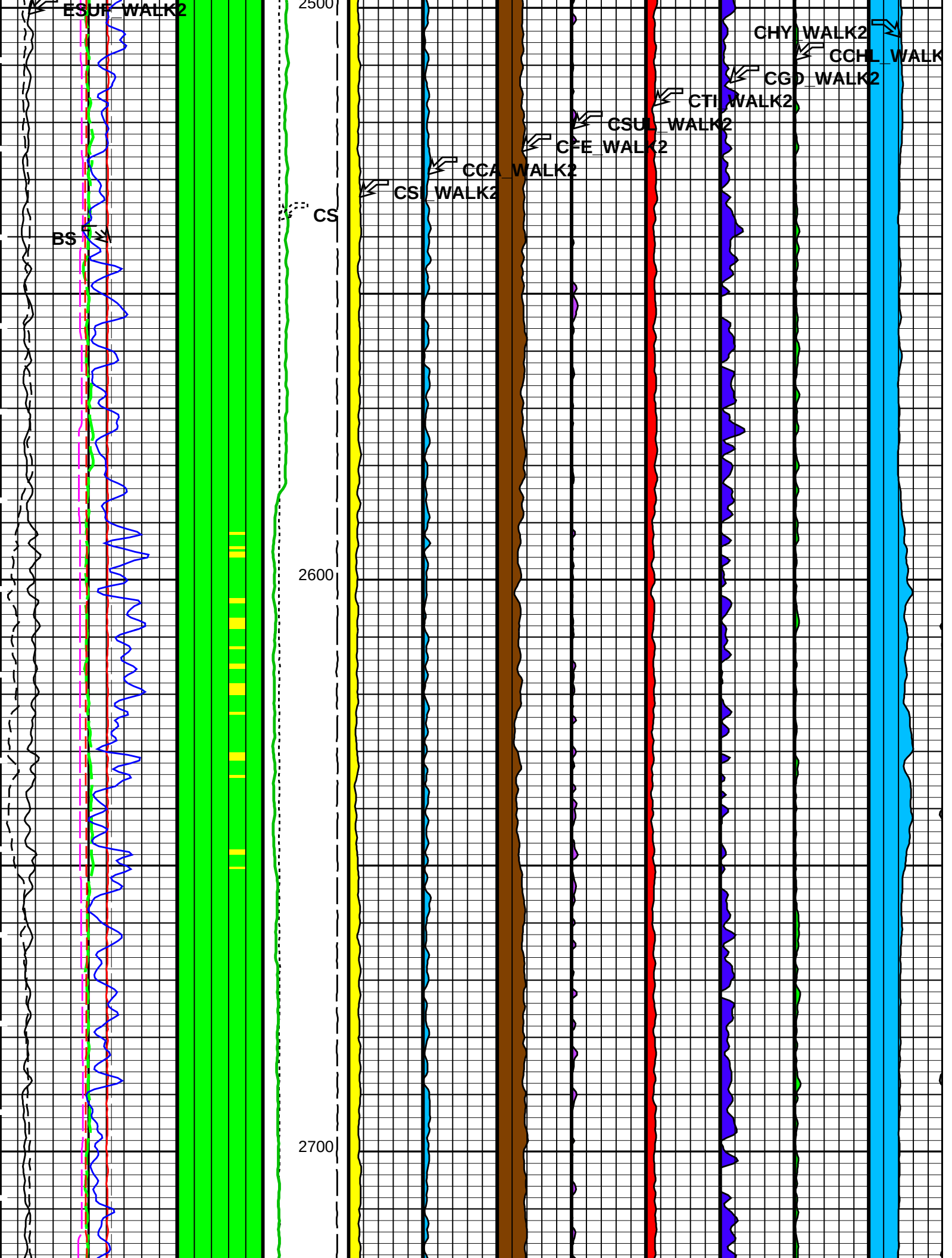

1400
1500
1600

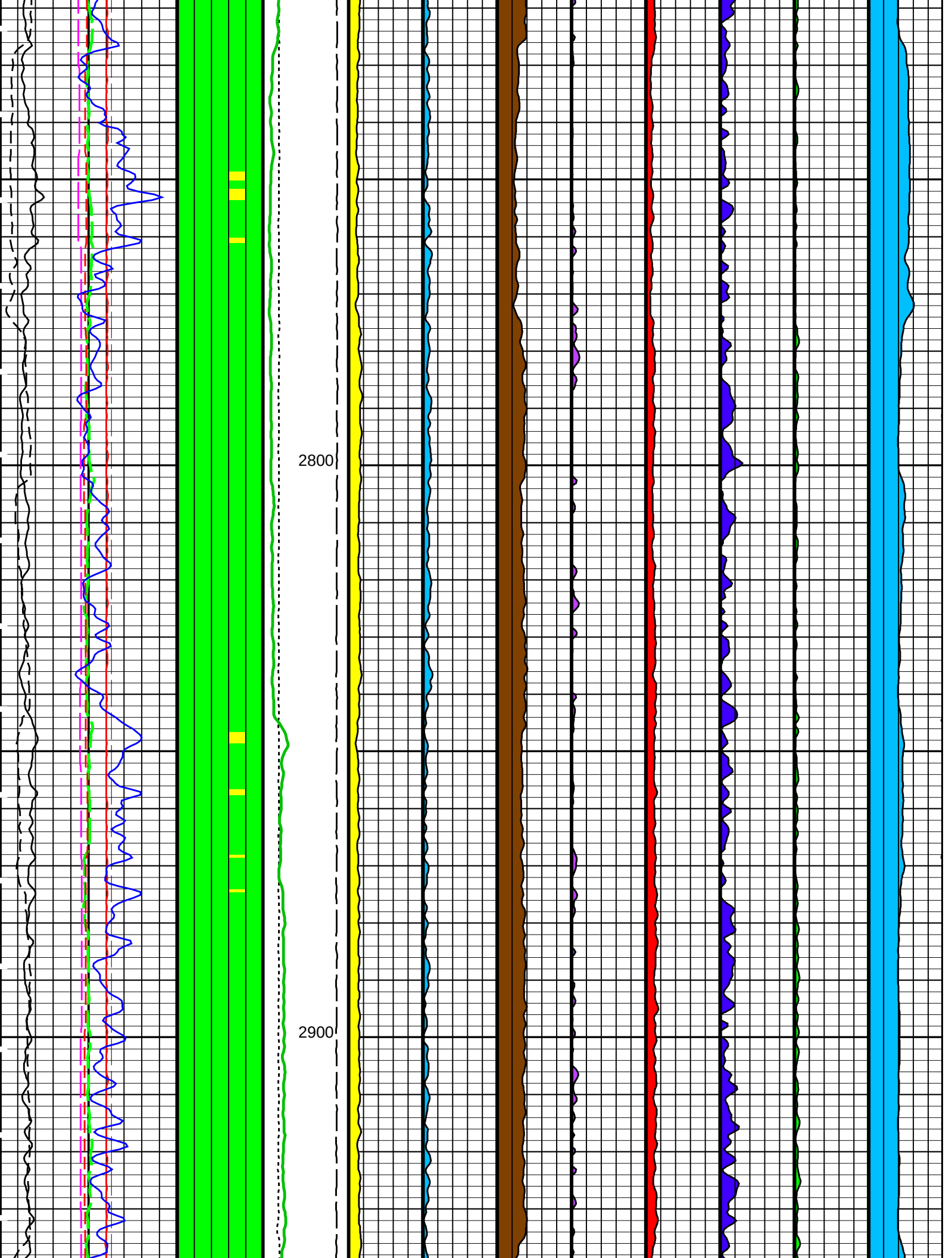

1700
1800

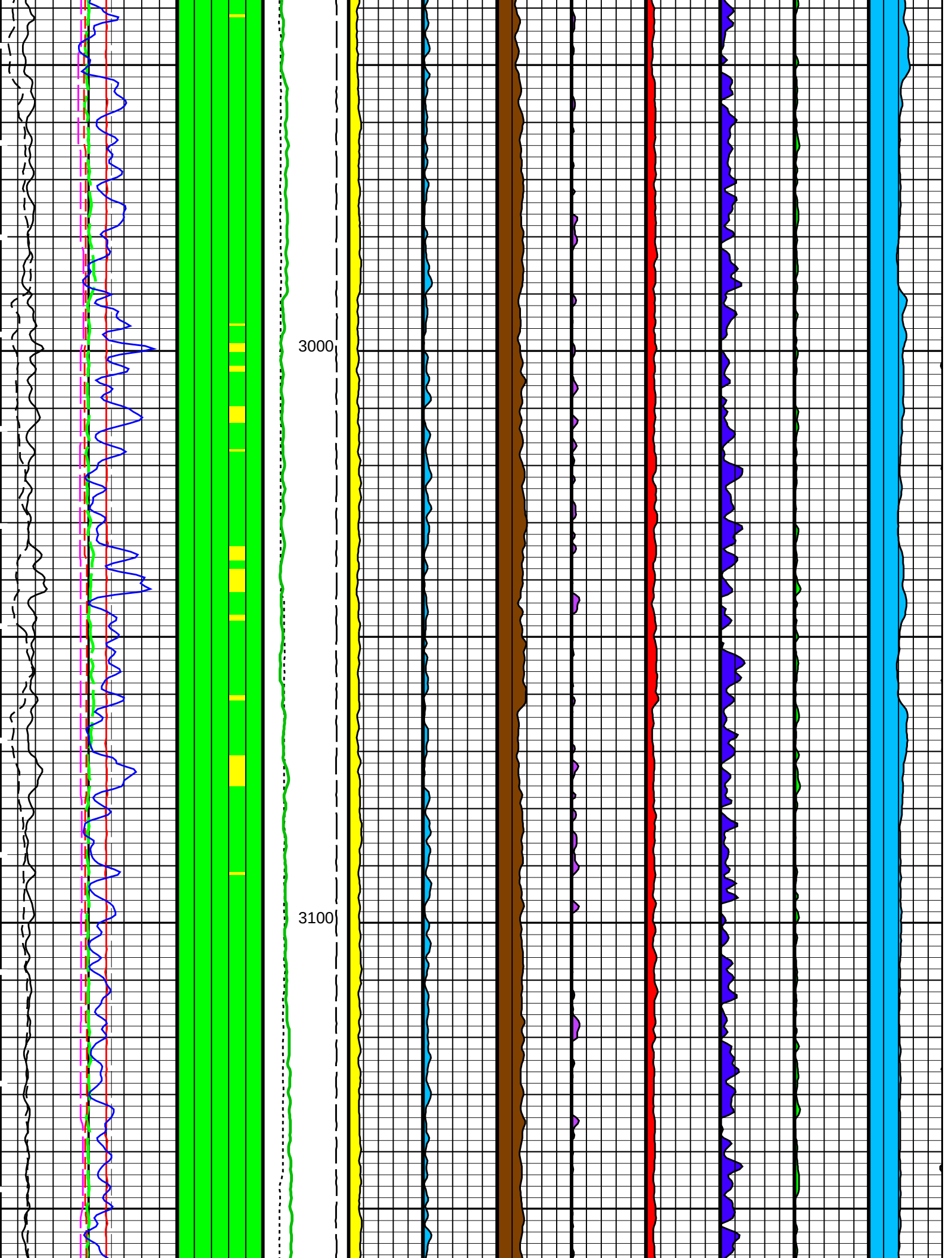

1900
2000

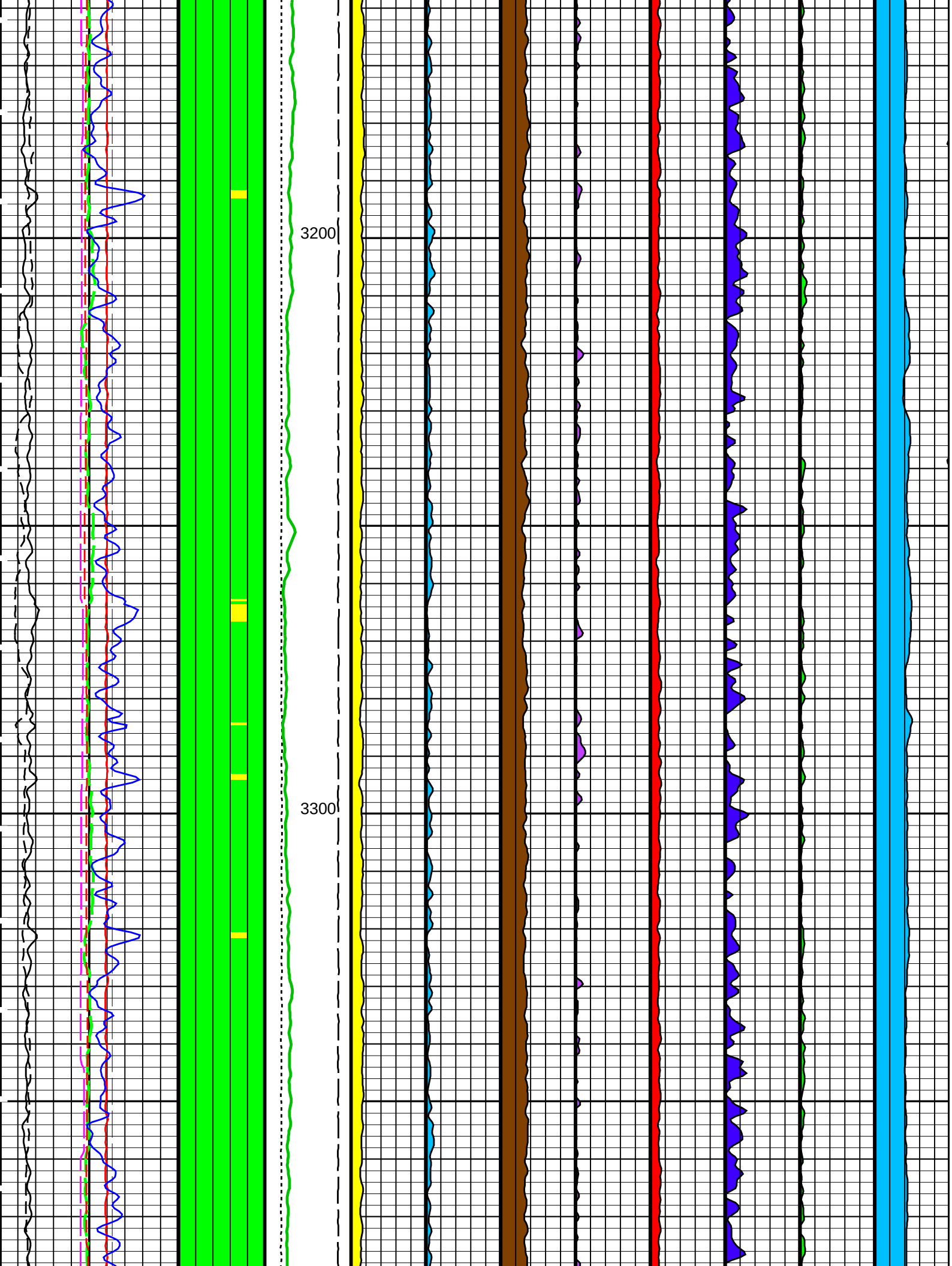

2100
2200

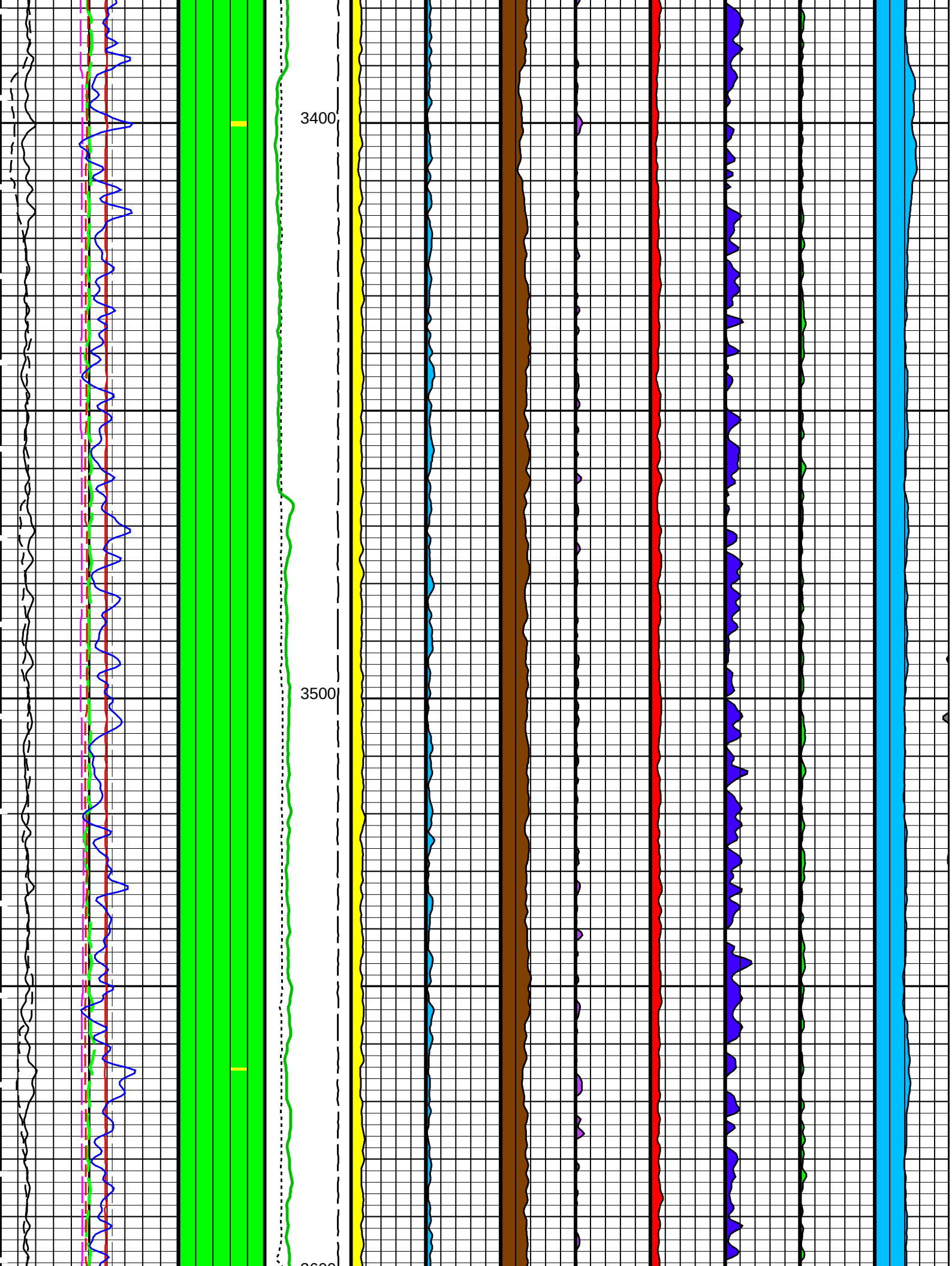

2300
2400
TENS
GR
FY2W_WALK2
ESSR_20
EOCF_20
ECMG
ERDF_20
ECST

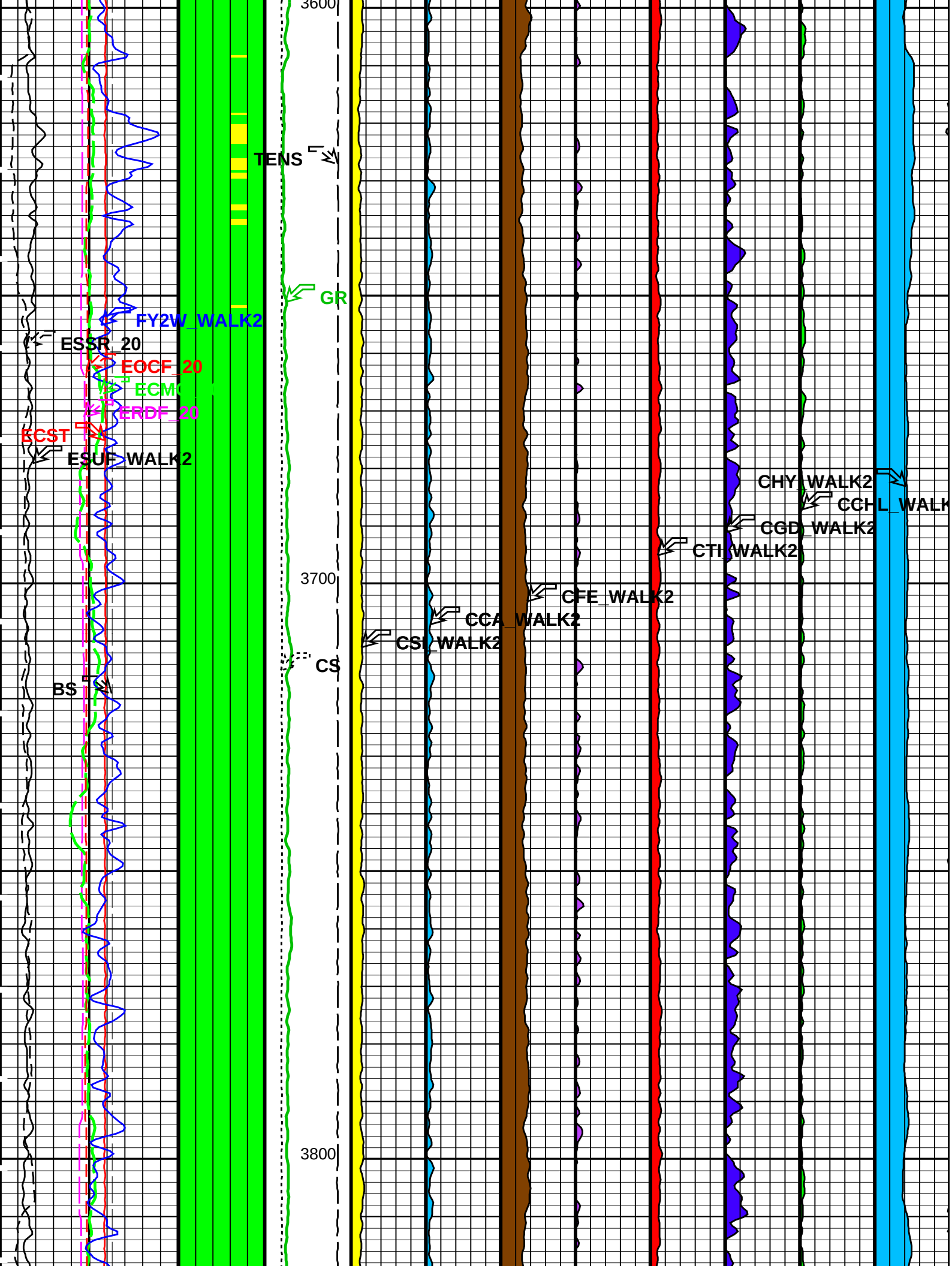

ESUF_WALK2
2500
CHY_WALK2
CCHL_WALK
CGD_WALK2
CTI_WALK2
CSUL_WALK2
CFE_WALK2
CCA_WALK2
CSL_WALK2
CS
BS
2600
2700

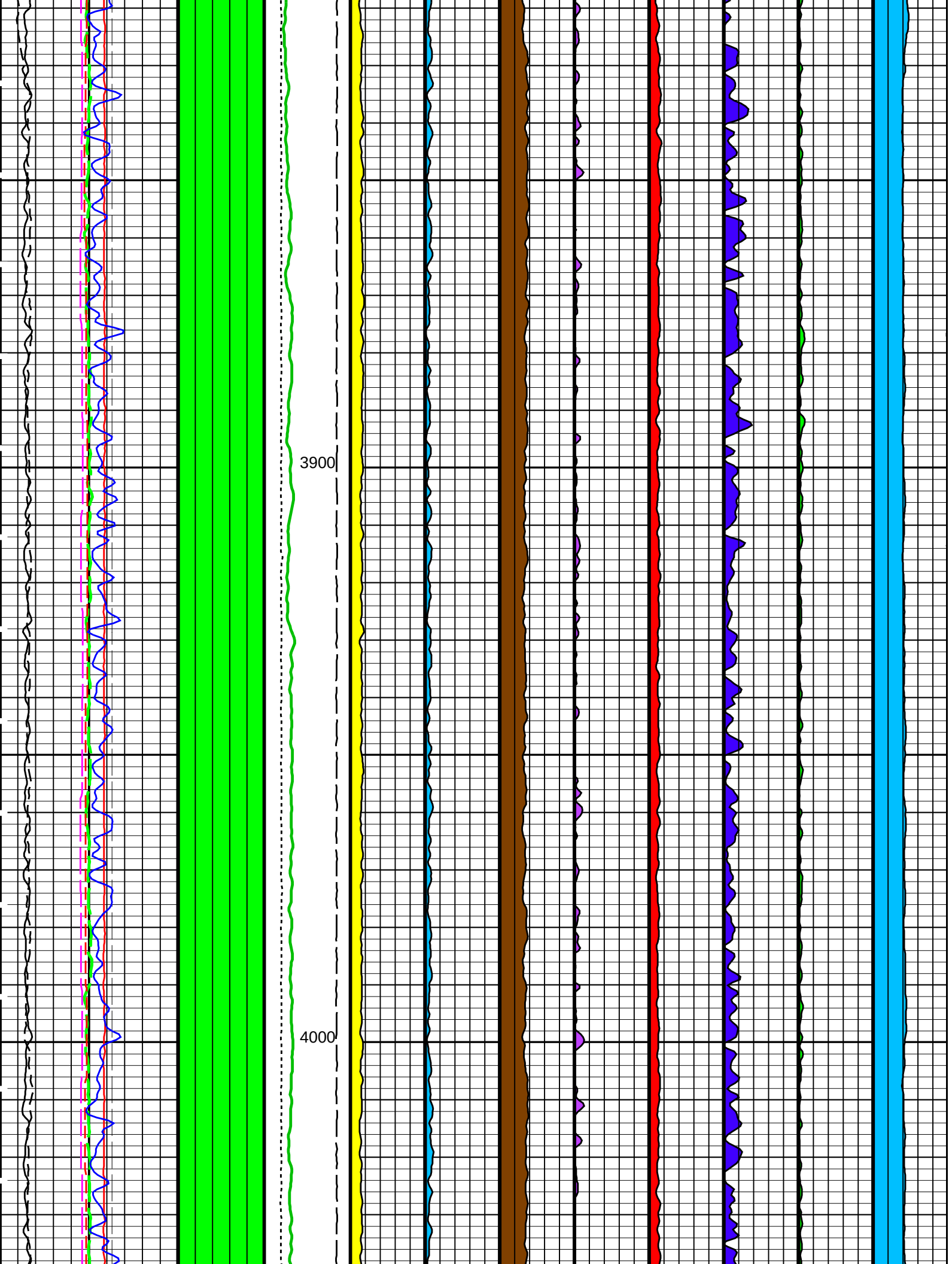

2800
2900

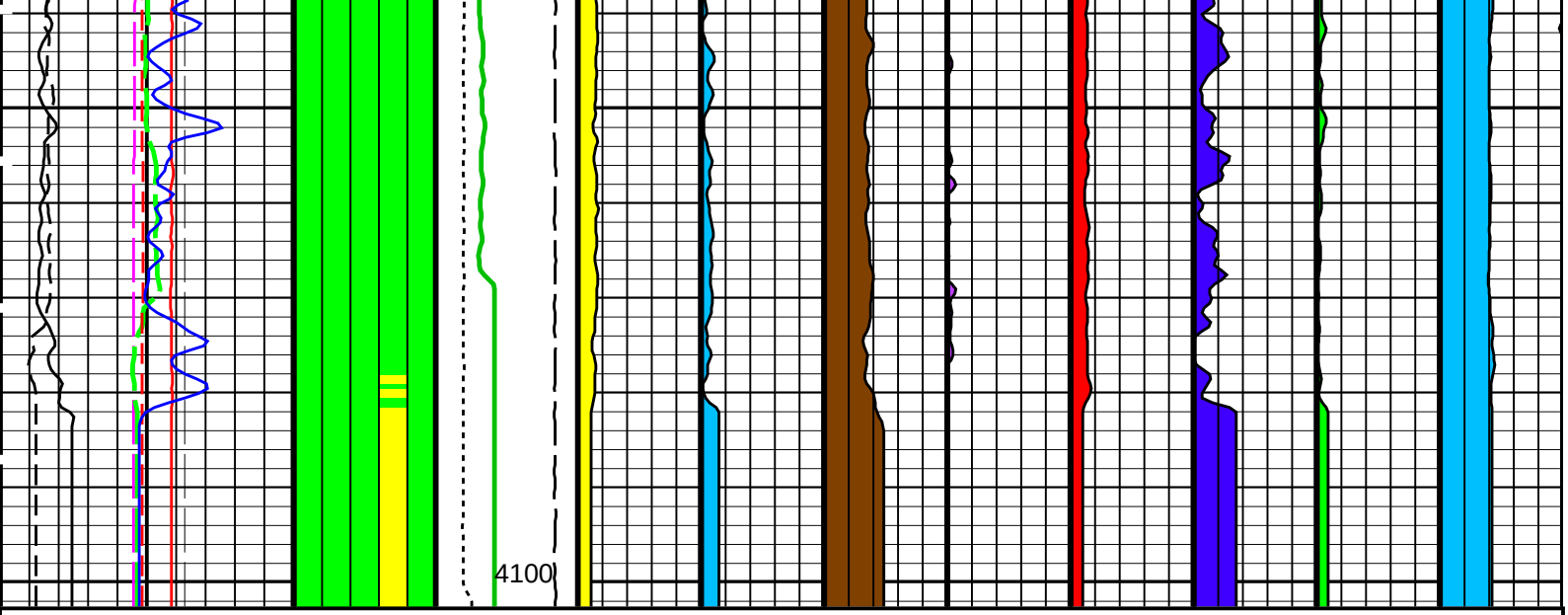

3000
3100


3200
3300


3400
3500


3600
TENS
GR
FY2W_WALK2
ESSR_20
EOCF_20
ECM
ERDF_20
ECST
ESUF_WALK2
CHY_WALK2
CCHL_WALK
CGD_WALK2
CTI_WALK2
3700
CFE_WALK2
CCA_WALK2
CSL_WALK2
CS
BS
3800


3900
4000



LQC Track
Left(I1) ---> Right(I5)
I1: ECS Hardware: Photomultiplier (QC_PMT)
I2: ECS Hardware: BGO Crystal Temperature (ECST)
I3: ECS Hardware: Control Loop (HV Loop OR PSC LOOP)
I4: ECS Data Quality: Elemental Statistical Uncertainty (ESUF_WALK2)
I5: ECS Data Quality: Marquardt Chisq (EMC2)

Bit Size (BS) (IN) 6 16	normal	Cable Speed (CS) (F/HR) 0 5000	CSI (CSI_WALK2) (---- 0 0.5	CCA (CCA_WALK2) (---- 0 0.5	CFE (CFE_WALK2) (---- 0 0.5	CSUL (CSUL_WALK2) (---- 0 0.25	CTI (CTI_WALK2) (---- 0 0.5	CGD (CGD_WALK2) (---- 0 0.5	CCHL (CCHL_WALK2) 0 (----1	CHY (CHY_WALK2) 0 (----1
RDF (ERDF_20) 0 (---- 10	warning	Tension (TENS) (LBF) 10000 0	CSI	CCA	CFE	CSUL	CTI	CGD	CCHL	IC (IC_WALK2) (---- 0.25 0
ECS Temperature (ECST) −20 (DEGF) 130	error	Gamma Ray (GR) (GAPI) 0 200								CHY
Offset Correction Factor (EOCF_20) −5 (---- 5	manual									IC
Spectral Count Rate (ch.40−240) (ESSR_20) 10000 (CPS) 30000	LQC I1--->I5									
ECS Marquardt Gain (ECMG_20) 0.95 (---- 1.05										
Elemental Statistical Uncertainty Factor (ESUF_WALK2) 0 (---- 5										
Oxides Closure Normalization Factor (FY2W_WALK2) 0 (---- 5										

PIP SUMMARY

Time Mark Every 60 S

Parameters

Parameters

DLIS Name	Description	Value	
	ECS−A: Elemental Capture Spectroscopy Tool		
SPEC_BARITE_MUD_FLAG	Barite Mud Flag for Spectroscopy Processing	Off	
SPEC_CSG_DEPTH	Casing Depth for Spectroscopy Processing	1106	FT
SPEC_ELE_STD_SHFT_FAC	Calibration Factor for Elemental Spectral Standards	0.8	
SPL_CLAY_MODEL	SpectroLith Clay Model	Arenite	
SPL_SULFUR_MINERAL	SpectroLith Sulfur Mineral Option	Pyrite	
	System and Miscellaneous		
BS	Bit Size	12.250	IN
DO	Depth Offset for Playback	−1.0	FT
PP	Playback Processing	RECOMPUTE	

Format: ECS_Yields_LQC Vertical Scale: 5" per 100' Graphics File Created: 18−Apr−2009 19:41

OP System Version: 17C0−154

HAIT−H	SRPC−3779−Q1_2009_OP17	ECS−A	17C0−154
ECC−B	17C0−154	HILTB−FTB	SRPC−3779−Q1_2009_OP17
EDTC−B	17C0−154		

Input DLIS Files

DEFAULT	AIT_ECS_TLD_MCFL_033LUP	FN:32	PRODUCER	18−Apr−2009 14:55	4104.0 FT	44.0 FT

Output DLIS Files

DEFAULT	AIT_ECS_TLD_MCFL_035PUP	FN:34	PRODUCER	18−Apr−2009 19:41		

Input DLIS Files

DEFAULT	AIT_ECS_TLD_MCFL_033LUP	FN:32	PRODUCER	18−Apr−2009 14:55	4104.0 FT	44.0 FT

Output DLIS Files

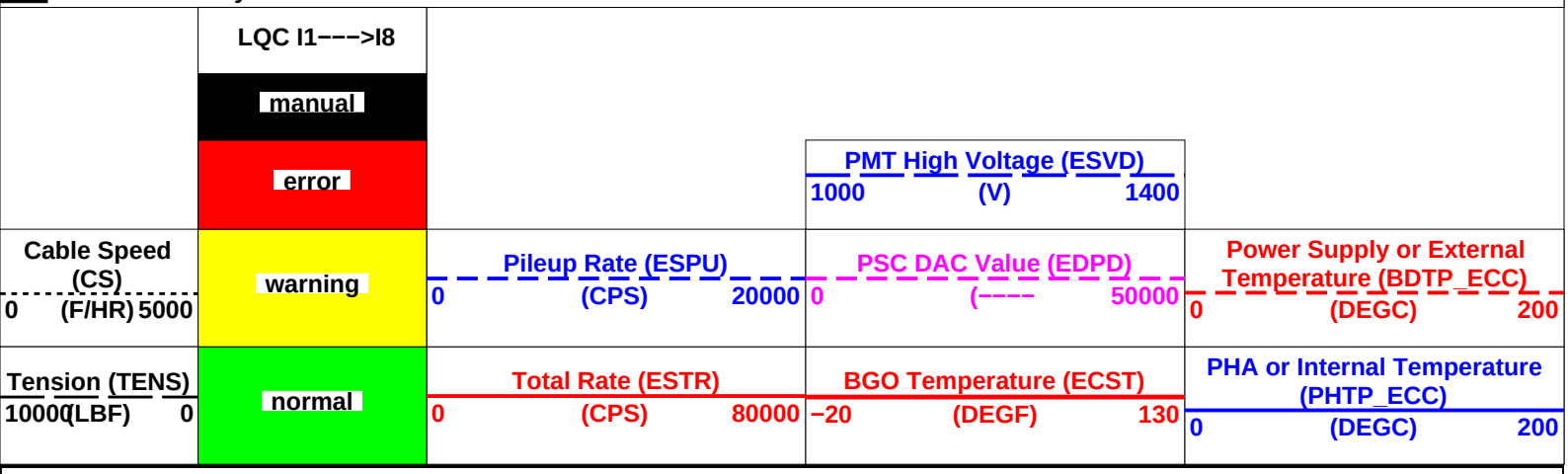
DEFAULT	AIT_ECS_TLD_MCFL_035PUP	FN:34	PRODUCER	18−Apr−2009 19:41	4102.5 FT	43.0 FT

OP System Version: 17C0−154

HAIT−H	SRPC−3779−Q1_2009_OP17	ECS−A	17C0−154
ECC−B	17C0−154	HILTB−FTB	SRPC−3779−Q1_2009_OP17
EDTC−B	17C0−154		

PIP SUMMARY

Time Mark Every 60 S



LQC Track
Left(I1) −−−> Right(I8)
I1: Cartridge Hardware
I2: Cartridge Temperature
I3: Detector Temperature
I4: HV Loop

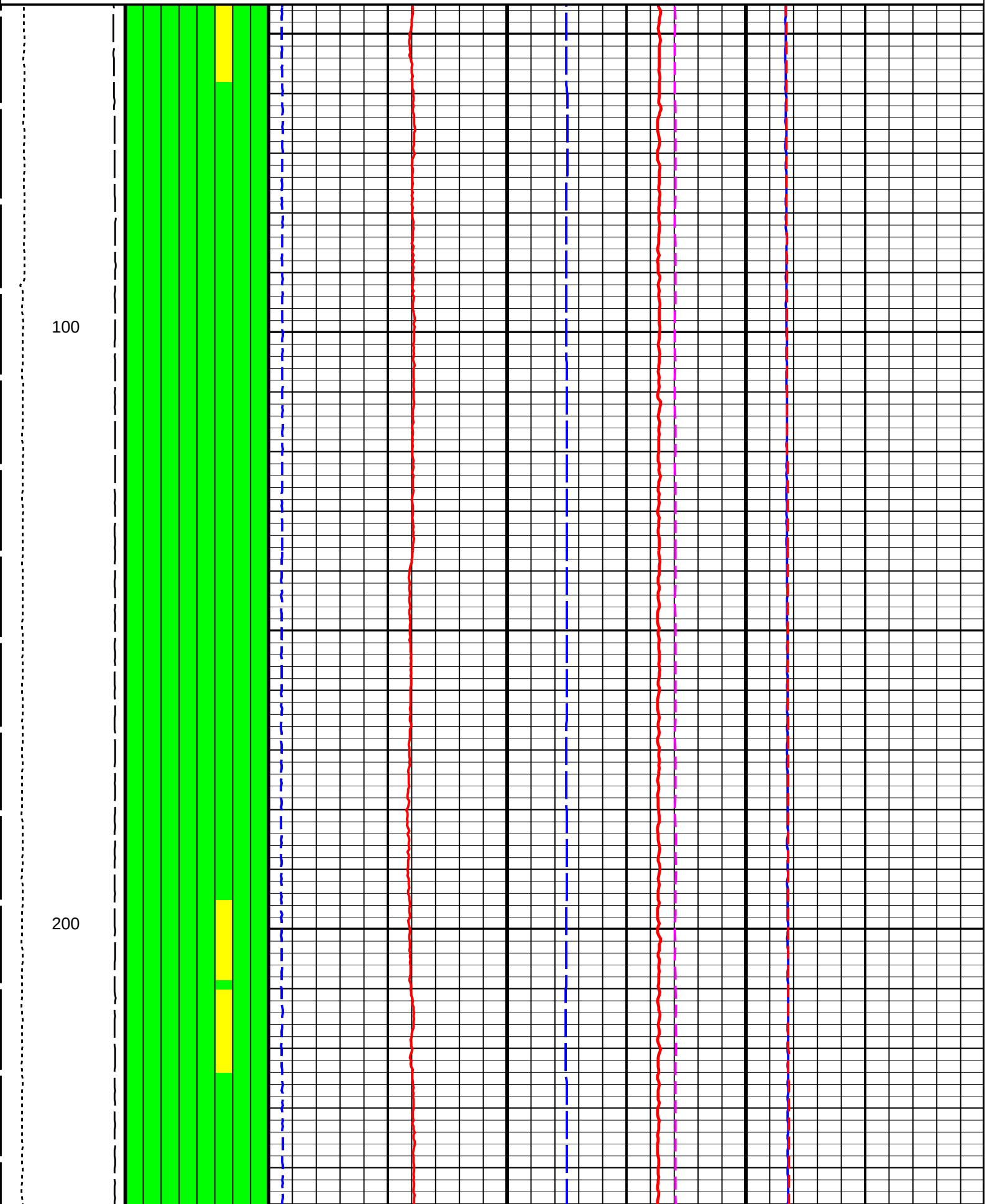
I4: HV Loop

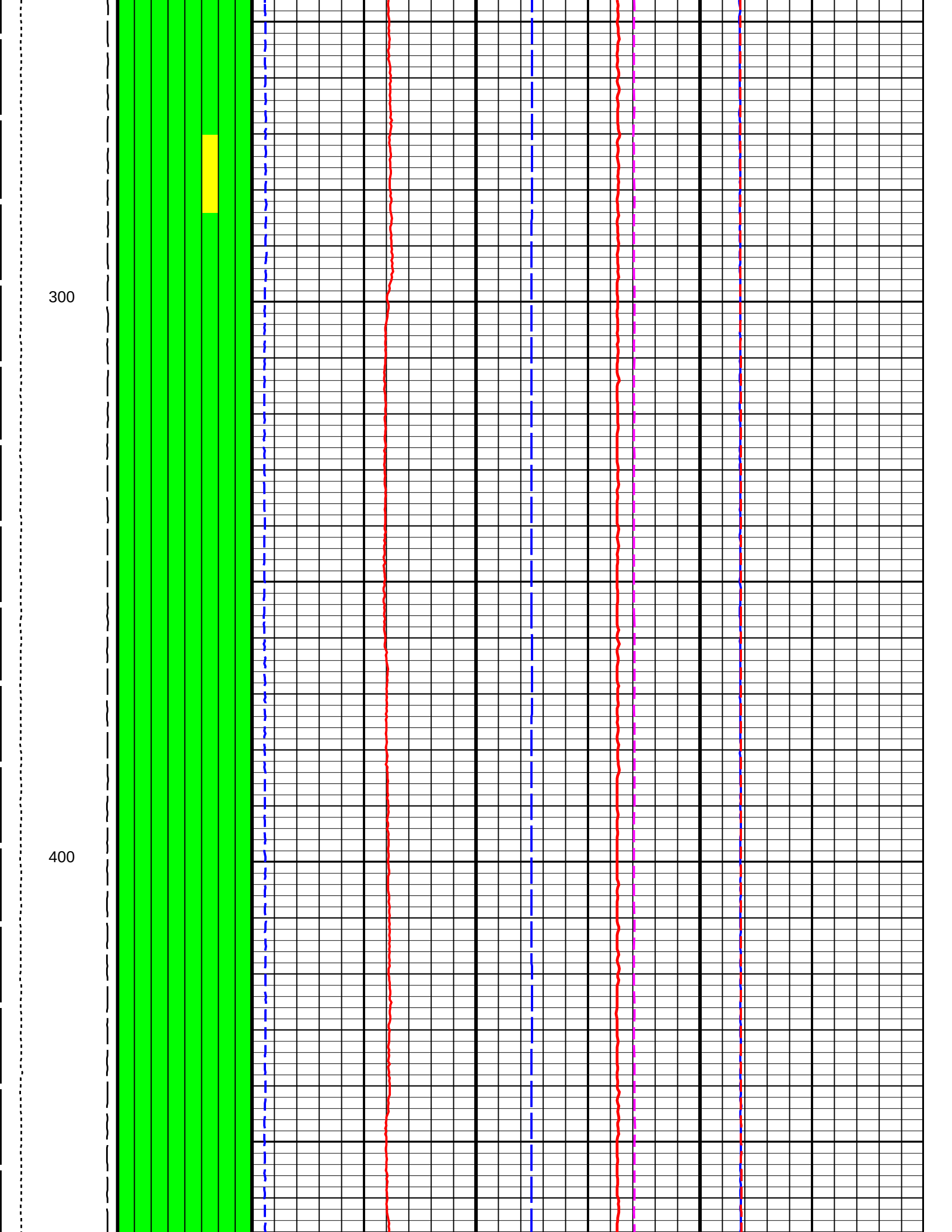
I5: PSC Loop

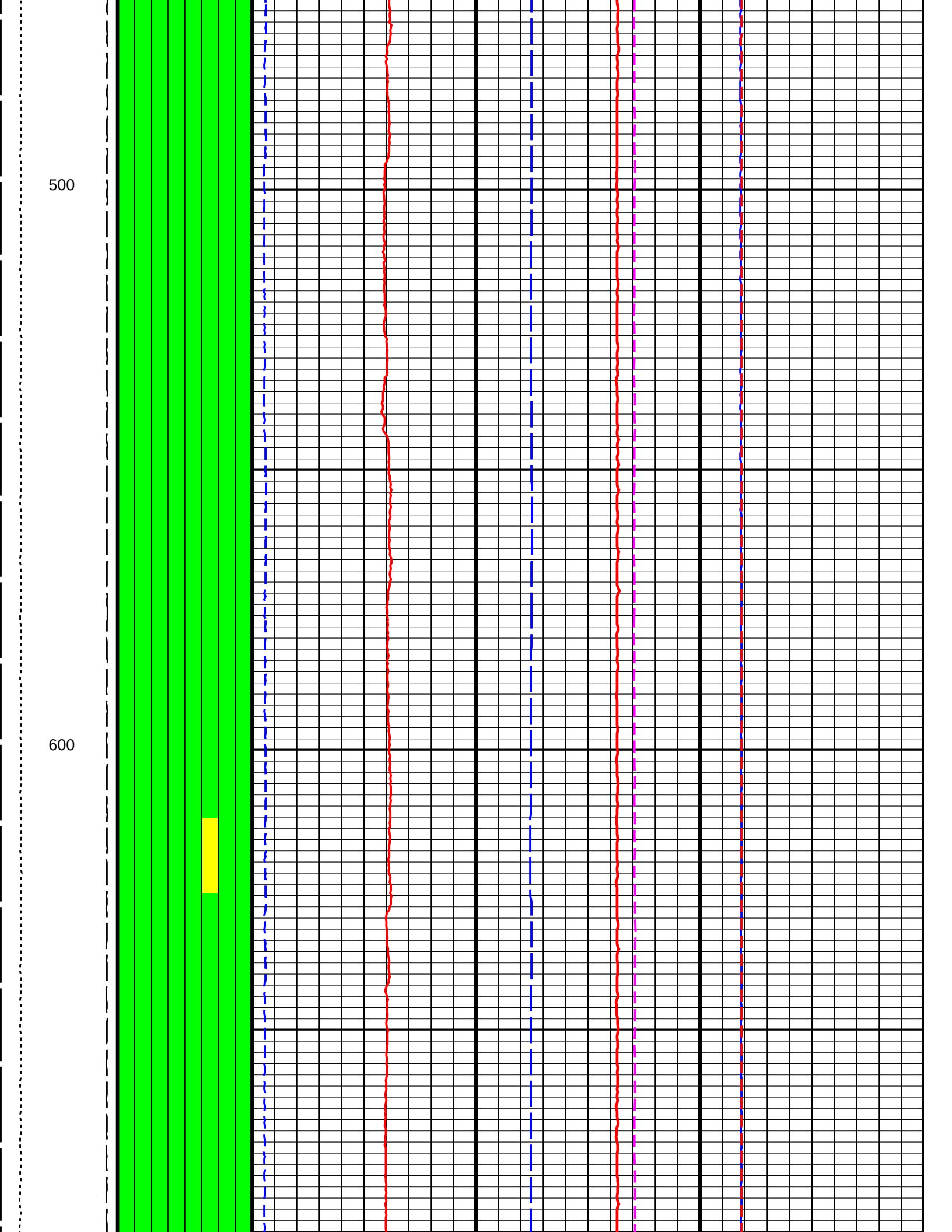
I6: Gain Correction Factor

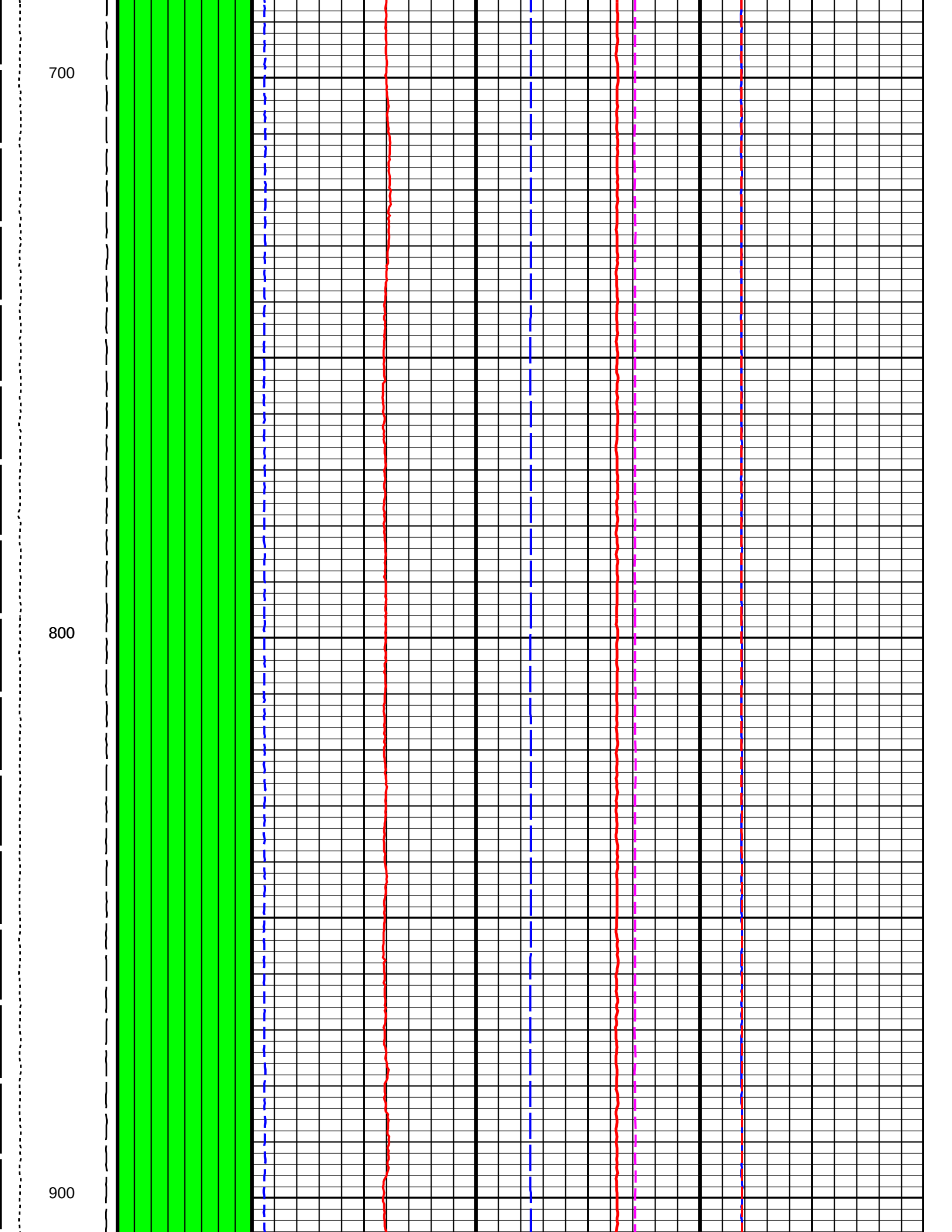
I7: Resolution Degradation Factor

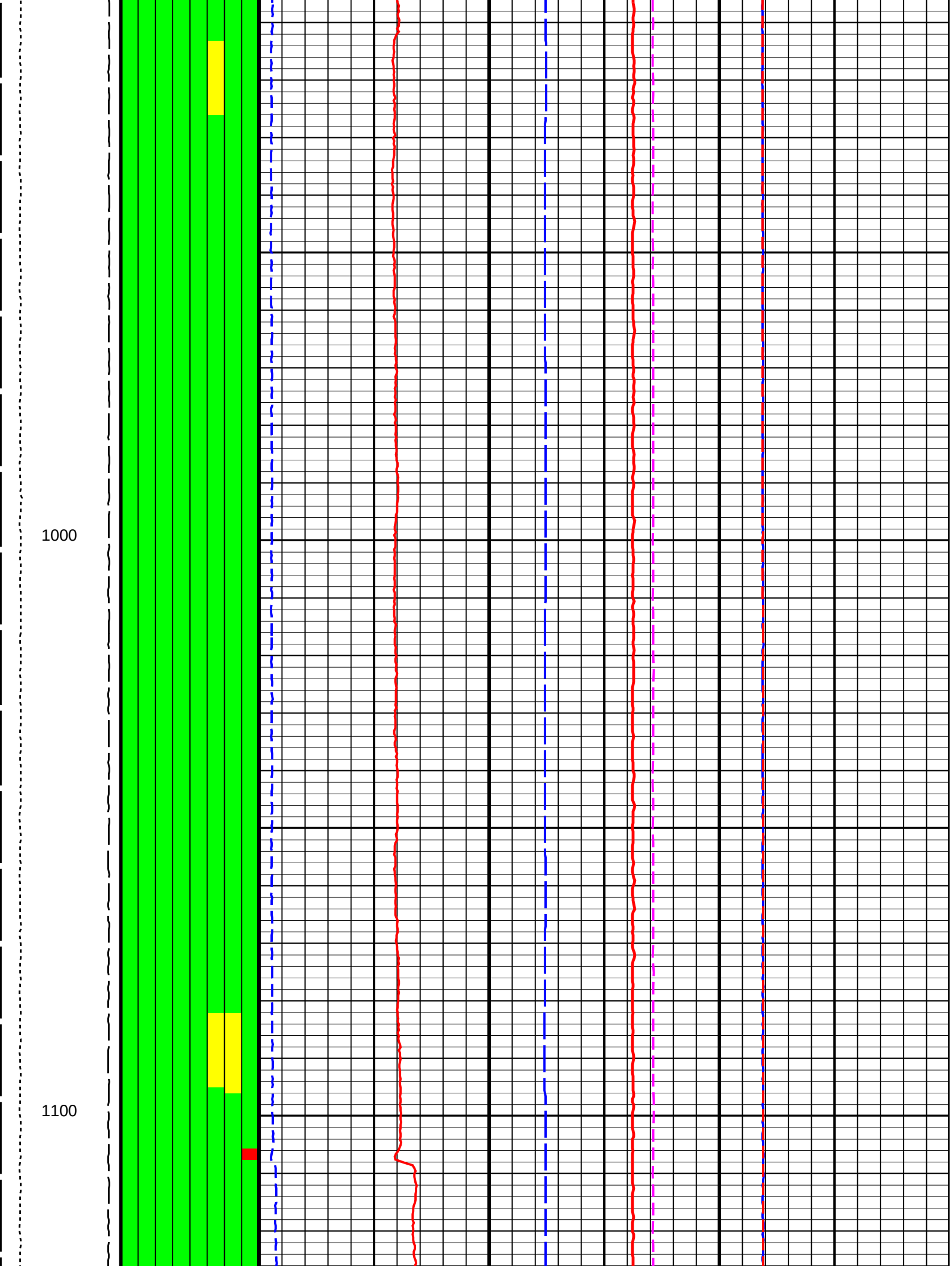
I8: Photomultiplier (QC_PMT)

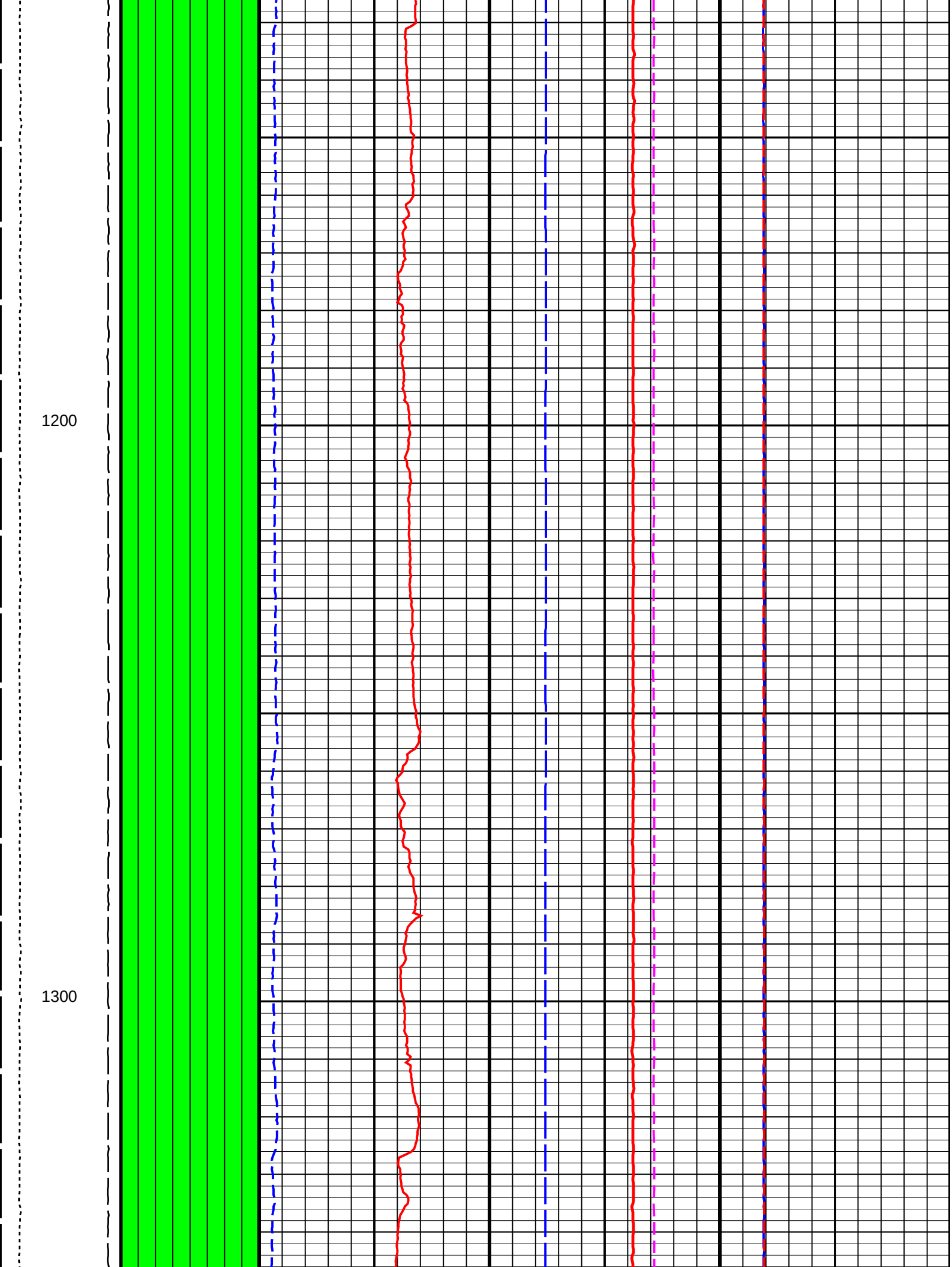


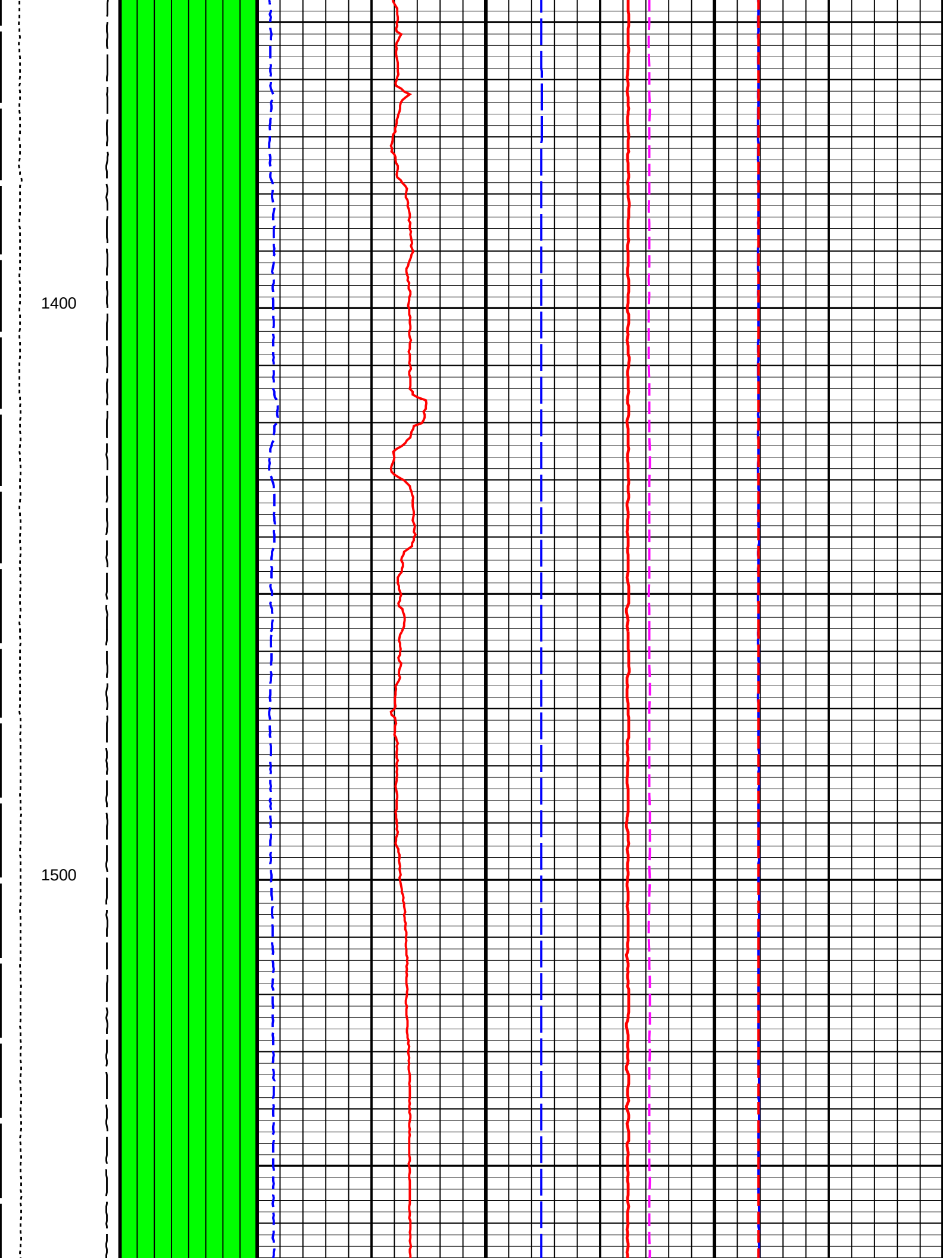

300
400

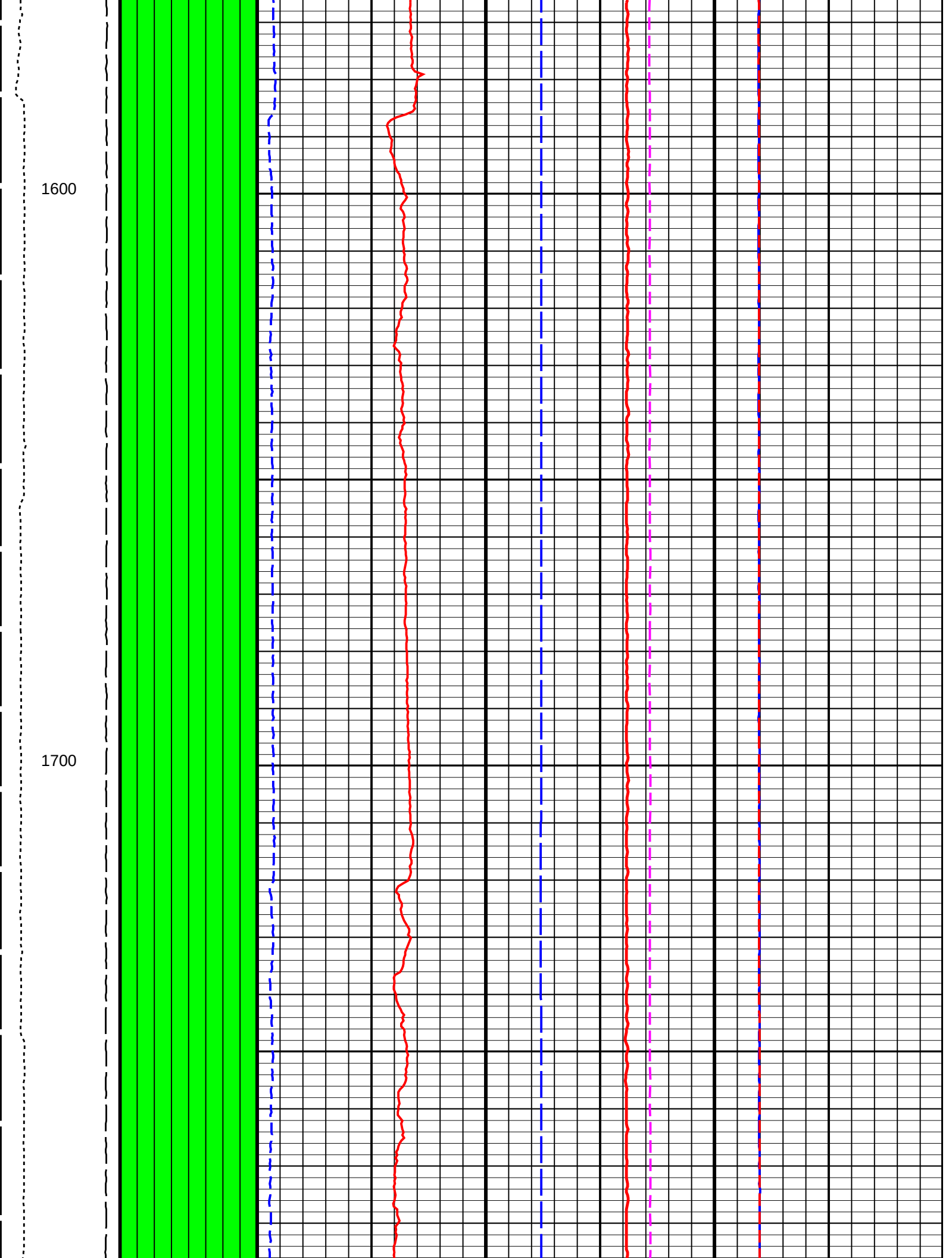

500
600

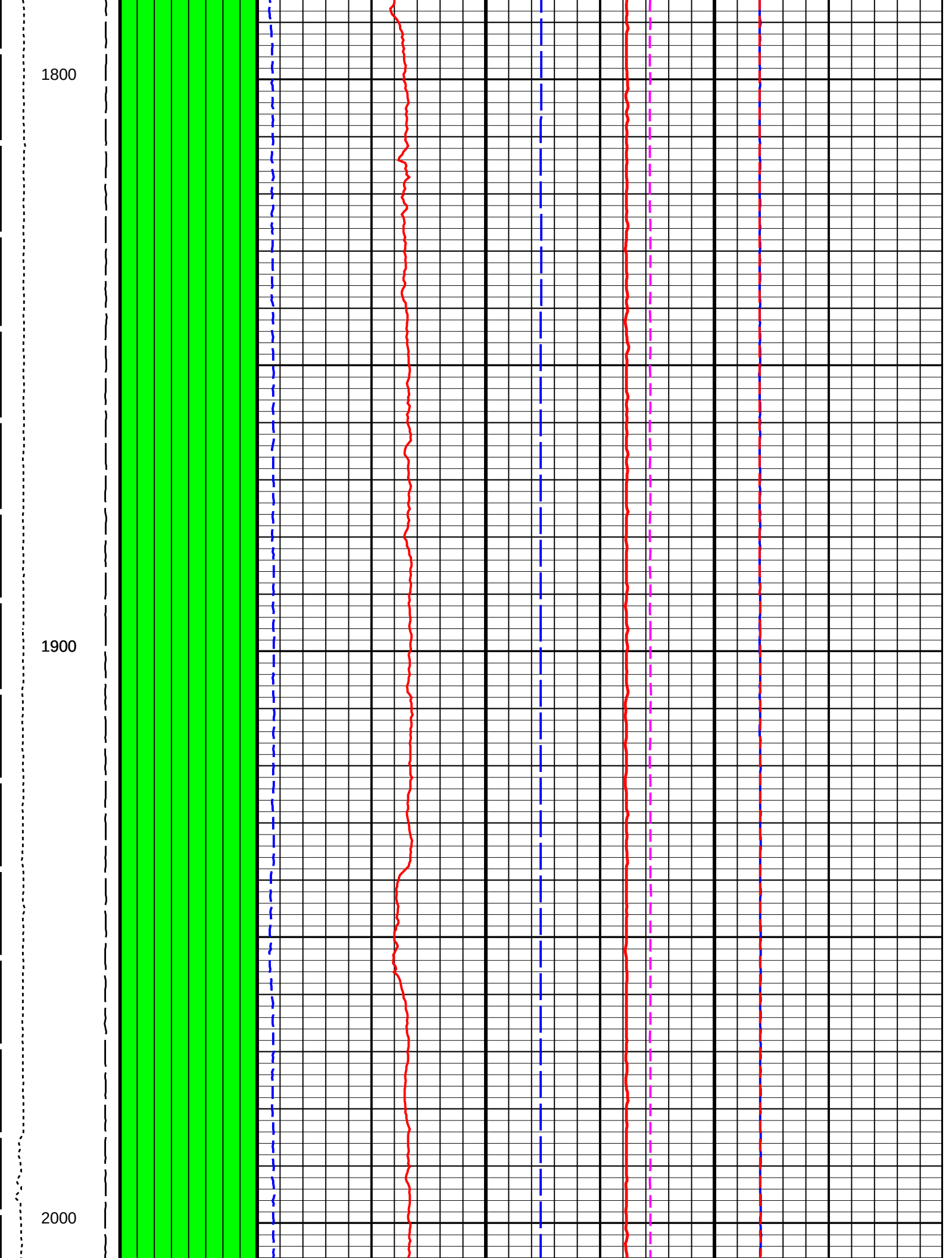

700
800
900

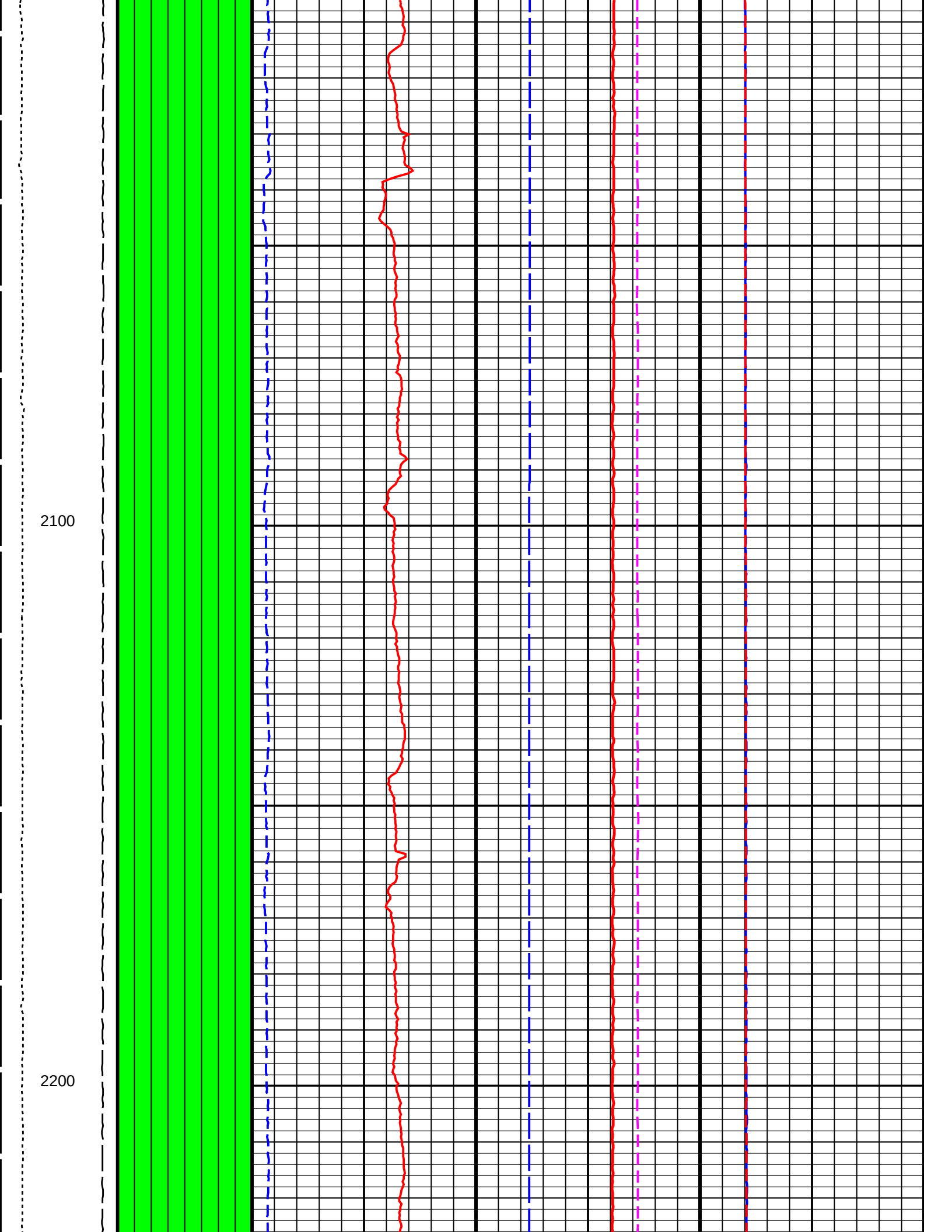

1000
1100

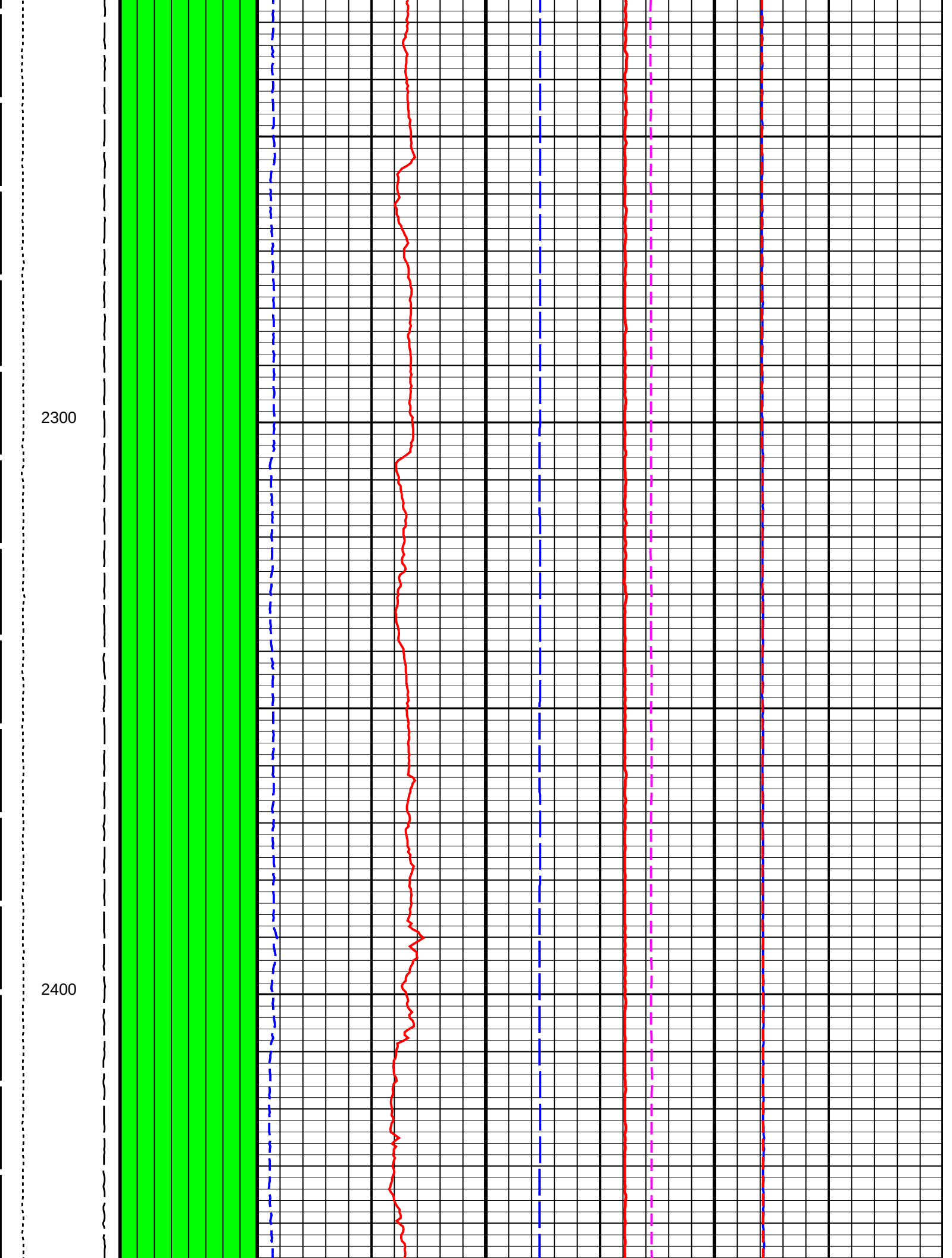

1200
1300

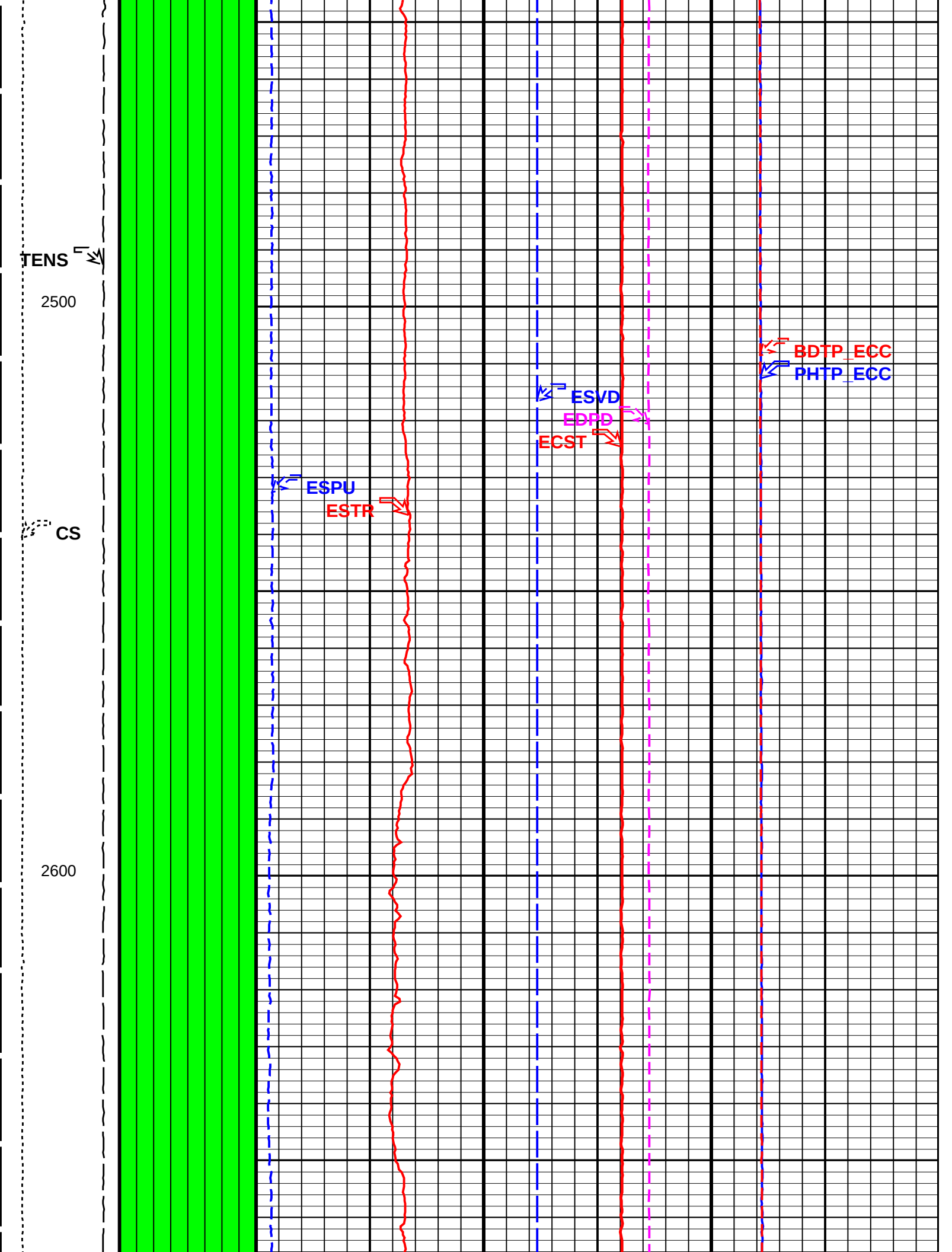

1400
1500

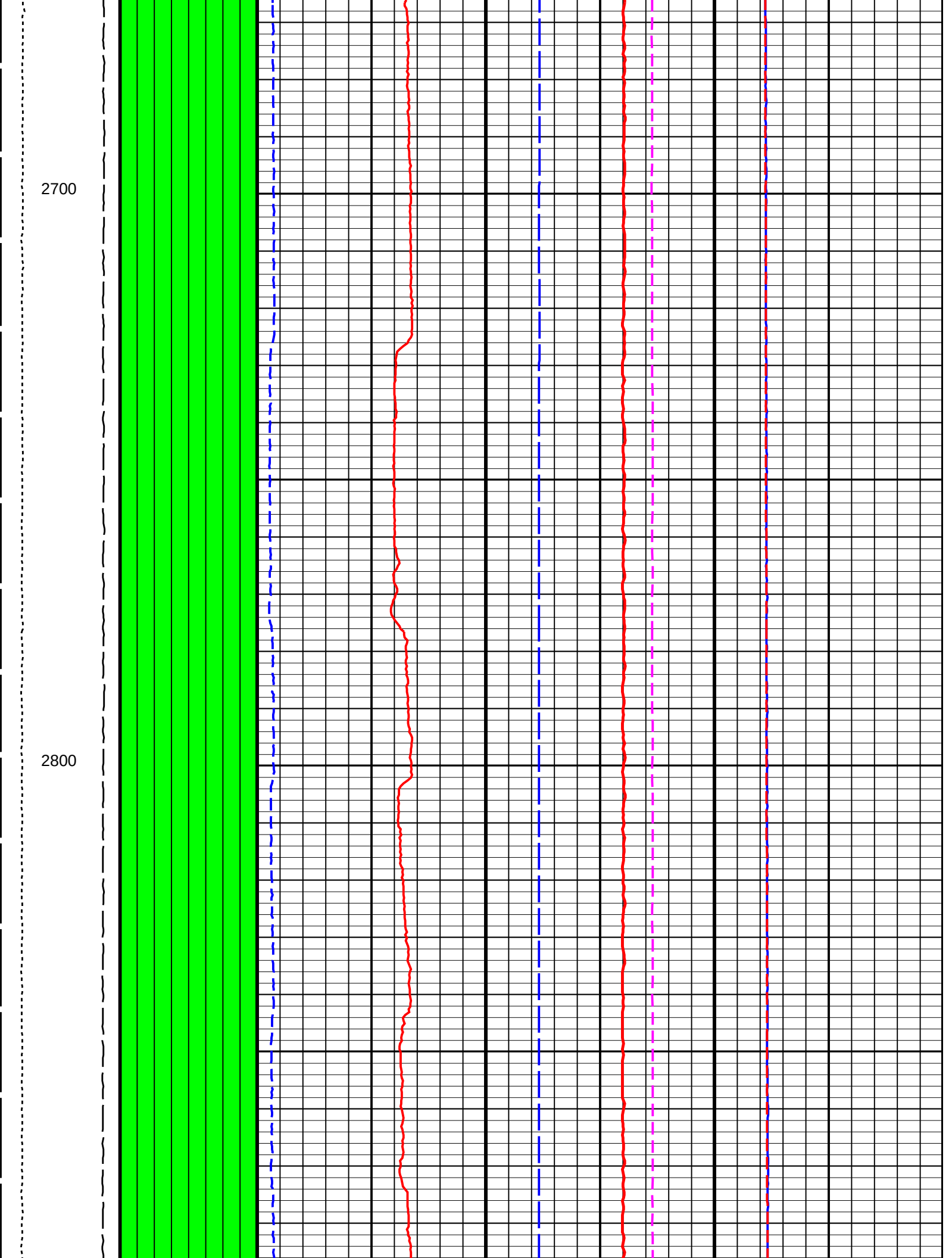

1600
1700

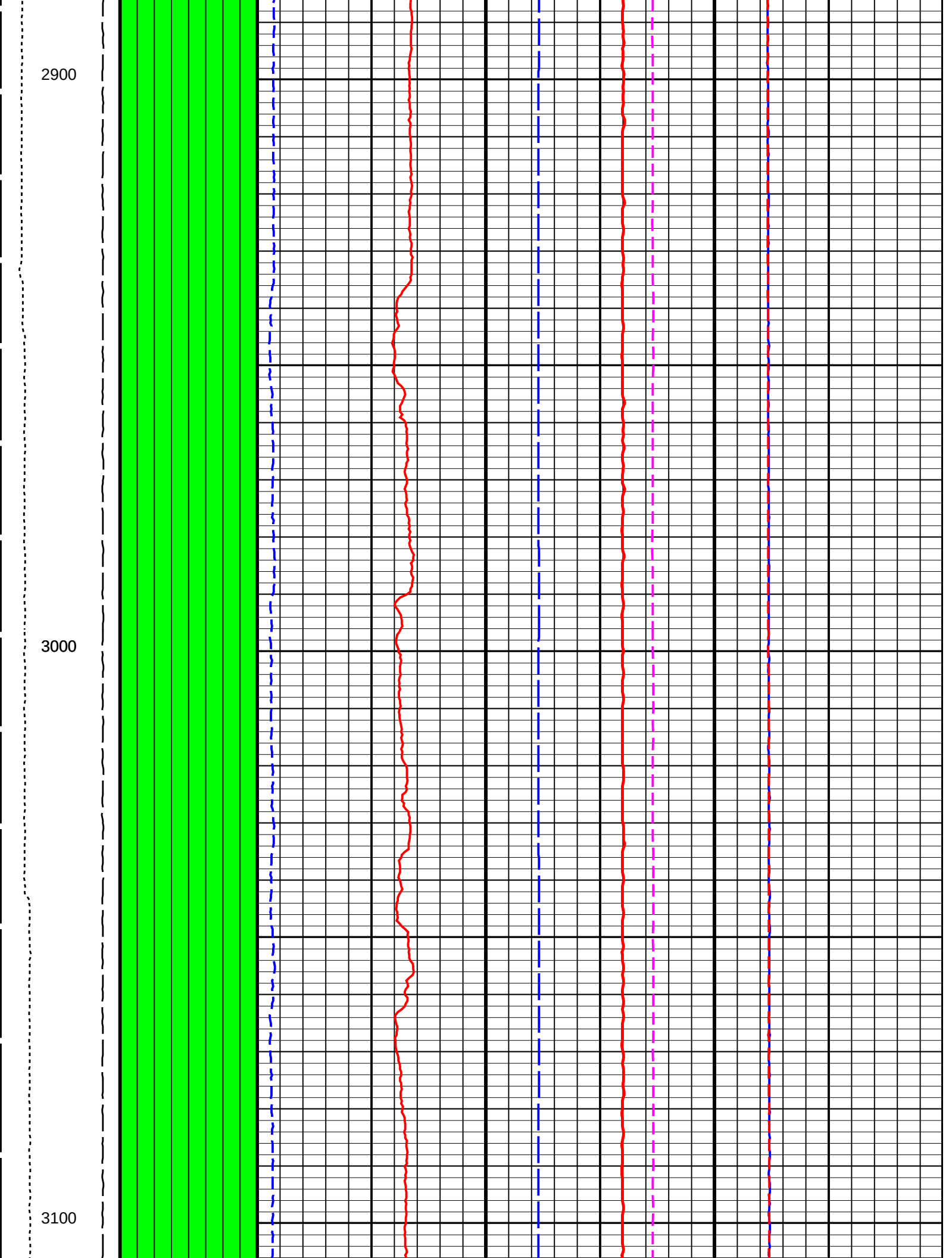

1800
1900
2000

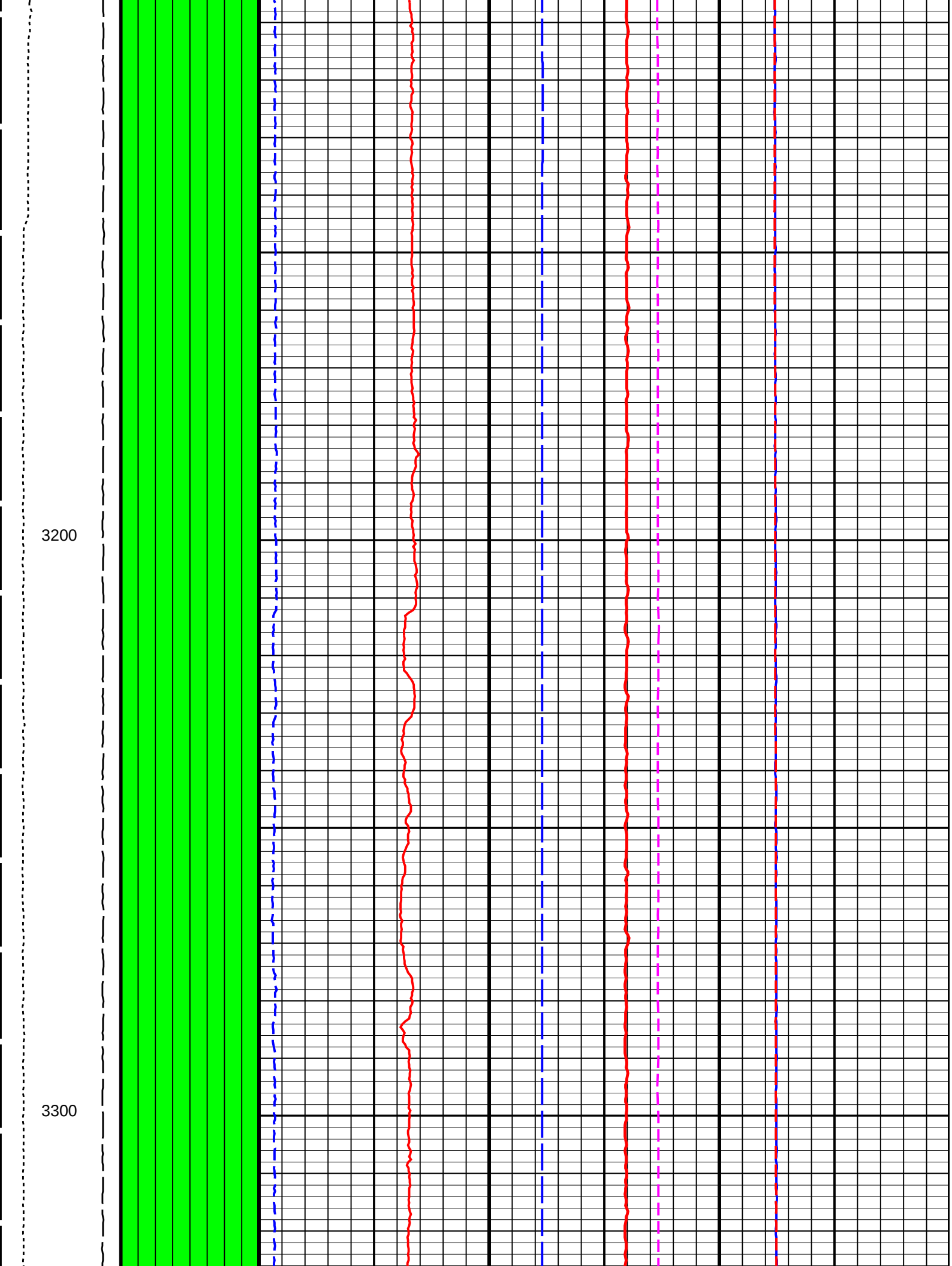

2100
2200

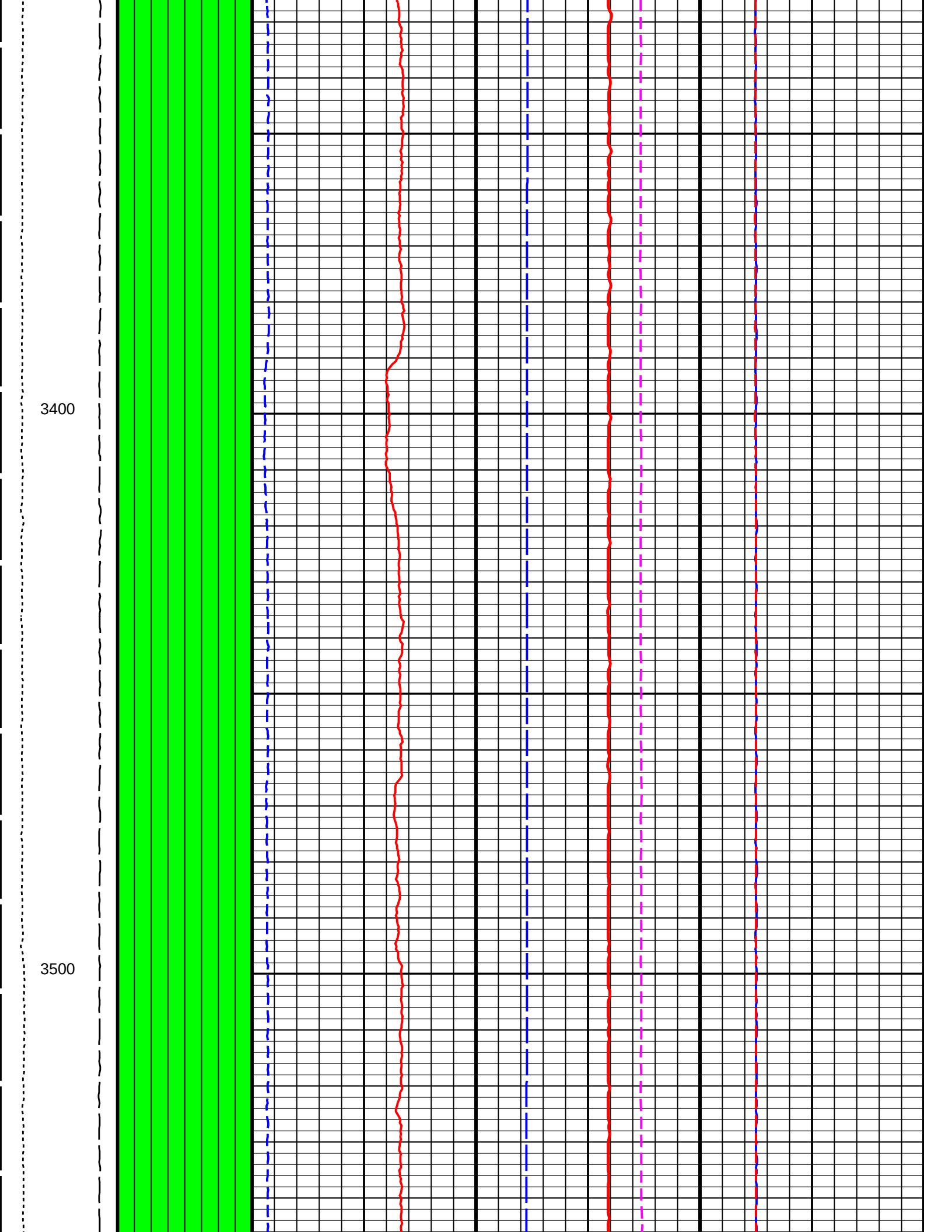

2300
2400

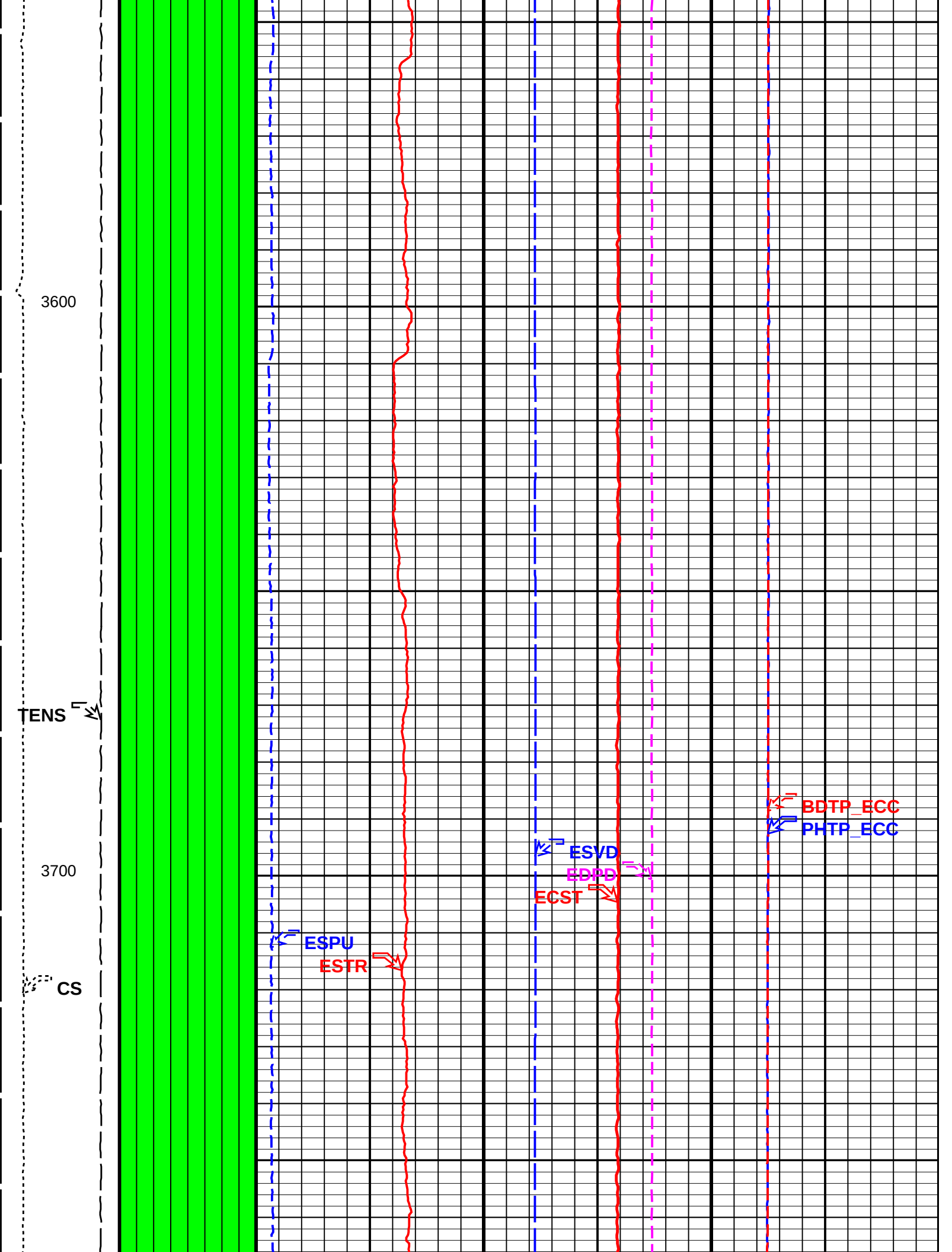

TENS
2500
CS
2600
BDTP_ECC
PHTP_ECC
ESVD
EDPD
ECST
ESPU
ESTR

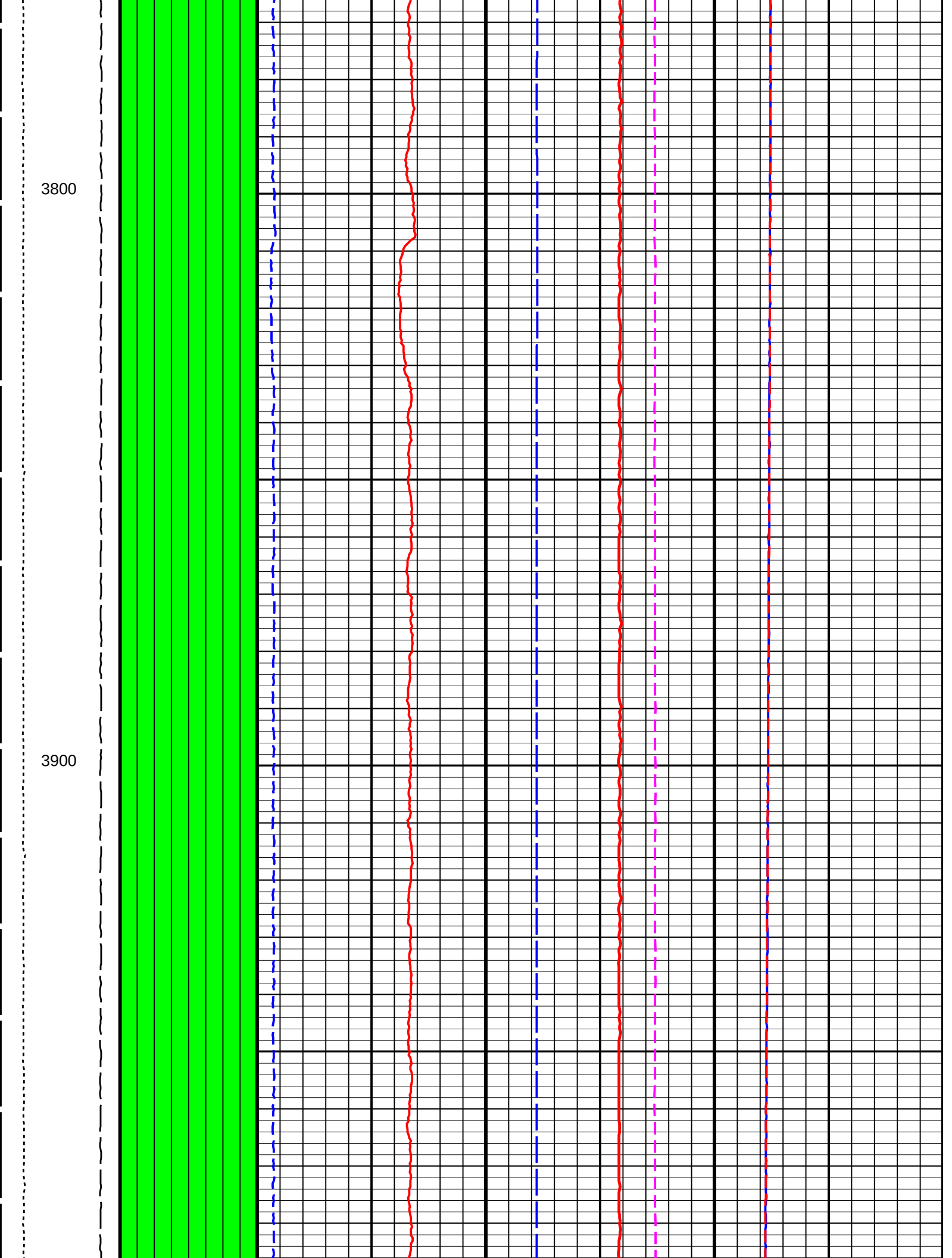

2700
2800

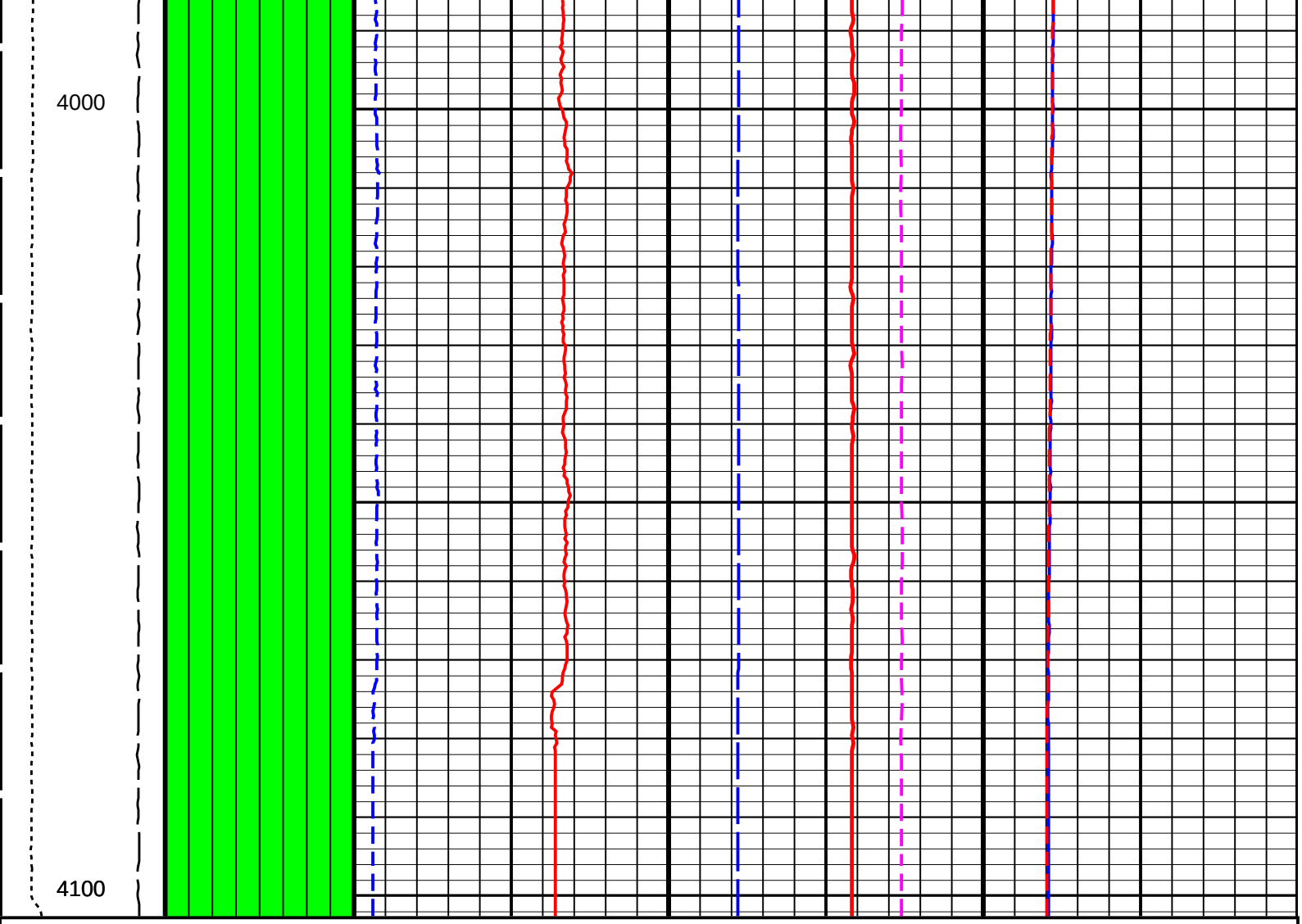

2900
3000
3100


3200
3300


3400
3500


3600
TENS
3700
CS
ESPU
ESTR
ESVD
EDPD
ECST
BDTP_ECC
PHTP_ECC


3800
3900



LQC Track
Left(I1) ---> Right(I8)
I1: Cartridge Hardware
I2: Cartridge Temperature
I3: Detector Temperature
I4: HV Loop
I5: PSC Loop
I6: Gain Correction Factor
I7: Resolution Degradation Factor
I8: Photomultiplier (QC_PMT)

Tension (TENS) 10000 (LBF) 0	normal	Total Rate (ESTR) 0 (CPS) 80000	BGO Temperature (ECST) −20 (DEGF) 130	PHA or Internal Temperature (PHTP_ECC) 0 (DEGC) 200
Cable Speed (CS) 0 (F/HR) 5000	warning	Pileup Rate (ESPU) 0 (CPS) 20000	PSC DAC Value (EDPD) 0 (---- 50000	Power Supply or External Temperature (BDTP_ECC) 0 (DEGC) 200
	error		PMT High Voltage (ESVD) 1000 (V) 1400	
	manual			
	LQC I1--->I8			

PIP SUMMARY

Time Mark Every 60 S

Parameters

Parameters

DLIS Name	Description	Value	
	ECS−A: Elemental Capture Spectroscopy Tool		
SPEC_BARITE_MUD_FLAG	Barite Mud Flag for Spectroscopy Processing	Off	
SPEC_CSG_DEPTH	Casing Depth for Spectroscopy Processing	1106	FT
SPEC_ELE_STD_SHFT_FAC	Calibration Factor for Elemental Spectral Standards	0.8	
SPL_CLAY_MODEL	SpectroLith Clay Model	Arenite	
SPL_SULFUR_MINERAL	SpectroLith Sulfur Mineral Option	Pyrite	
	System and Miscellaneous		
DO	Depth Offset for Playback	−1.0	FT
PP	Playback Processing	RECOMPUTE	

Format: ECS_HW_LQC **Vertical Scale: 5" per 100'** **Graphics File Created: 18−Apr−2009 19:41**

OP System Version: 17C0−154

HAIT−H	SRPC−3779−Q1_2009_OP17	ECS−A	17C0−154
ECC−B	17C0−154	HILTB−FTB	SRPC−3779−Q1_2009_OP17
EDTC−B	17C0−154		

Input DLIS Files

DEFAULT	AIT_ECS_TLD_MCFL_033LUP	FN:32	PRODUCER	18−Apr−2009 14:55	4104.0 FT	44.0 FT

Output DLIS Files

DEFAULT	AIT_ECS_TLD_MCFL_035PUP	FN:34	PRODUCER	18−Apr−2009 19:41

Schlumberger

CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Array Induction Tool − H Wellsite Calibration − Electronics Calibration Check − Thru Cal Mag. & Phase							
Master: 3−Apr−2009 13:11 Before: 15−Apr−2009 13:52							
Thru Cal Magnitude − 0	0	0.6141	0.6131	N/A	N/A	N/A	V
Thru Cal Magnitude − 1	0	1.259	1.257	N/A	N/A	N/A	V
Thru Cal Magnitude − 2	0	0.6241	0.6233	N/A	N/A	N/A	V
Thru Cal Magnitude − 3	0	0.7106	0.7090	N/A	N/A	N/A	V
Thru Cal Magnitude − 4	0	1.329	1.326	N/A	N/A	N/A	V
Thru Cal Magnitude − 5	0	1.927	1.925	N/A	N/A	N/A	V
Thru Cal Magnitude − 6	0	1.927	1.925	N/A	N/A	N/A	V
Thru Cal Magnitude − 7	0	1.403	1.399	N/A	N/A	N/A	V
Phase − 0	0	62.61	61.20	N/A	N/A	N/A	DEG
Phase − 1	0	61.48	60.06	N/A	N/A	N/A	DEG
Phase − 2	0	57.90	56.46	N/A	N/A	N/A	DEG
Phase − 3	0	57.08	55.65	N/A	N/A	N/A	DEG
Phase − 4	0	50.88	49.43	N/A	N/A	N/A	DEG
Phase − 5	0	49.26	47.78	N/A	N/A	N/A	DEG
Phase − 6	0	49.25	47.78	N/A	N/A	N/A	DEG
Phase − 7	0	48.55	46.92	N/A	N/A	N/A	DEG
Array Induction Tool − H Wellsite Calibration − Electronics Calibration Check − Auxilliary							
Master: 3−Apr−2009 13:11 Before: 15−Apr−2009 13:52							
Array Induction SPA Plus	990.5	992.0	991.4	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	−0.1742	−0.1706	N/A	N/A	N/A	MV
Array Induction Temperature Pl	0.9150	0.9190	0.9185	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	−0.0001754	−0.0001748	N/A	N/A	N/A	V

Array Induction Tool − H Wellsite Calibration − Test Loop Gain Correction
Master: 3−Apr−2009 13:11

Test Loop Gain Magnitude − 0	0	1.012	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude − 1	0	1.011	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude − 2	0	1.015	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude − 3	0	1.013	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude − 4	0	0.9961	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude − 5	0	0.9851	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude − 6	0	0.9975	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude − 7	0	1.013	N/A	N/A	N/A	N/A	V
Phase − 0	0	0.4950	N/A	N/A	N/A	N/A	DEG
Phase − 1	0	0.4842	N/A	N/A	N/A	N/A	DEG
Phase − 2	0	−0.04337	N/A	N/A	N/A	N/A	DEG
Phase − 3	0	−0.03414	N/A	N/A	N/A	N/A	DEG
Phase − 4	0	−0.1990	N/A	N/A	N/A	N/A	DEG
Phase − 5	0	−0.1044	N/A	N/A	N/A	N/A	DEG
Phase − 6	0	0.2068	N/A	N/A	N/A	N/A	DEG
Phase − 7	0	−0.1309	N/A	N/A	N/A	N/A	DEG

Array Induction Tool − H Wellsite Calibration − Sonde Error Correction
Master: 3−Apr−2009 13:11

R Sonde Error Correction − 0	0	−114.0	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 1	0	149.1	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 2	0	114.7	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 3	0	58.44	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 4	0	25.24	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 5	0	13.55	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 6	0	8.915	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 7	0	−0.8634	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 0	0	459.8	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 1	0	384.9	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 2	0	−135.7	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 3	0	43.56	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 4	0	−7.536	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 5	0	−3.449	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 6	0	5.765	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 7	0	−3.723	N/A	N/A	N/A	N/A	MM/M

Array Induction Tool − H Wellsite Calibration − Mud Gain Correction
Master: 3−Apr−2009 13:11

Coarse − Mag, Real, Imag − 0	0	1.029	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 1	0	1.029	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 2	0	1.029	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 0	0	1.022	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 1	0	1.022	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 2	0	1.022	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Detector Calibration
Before: 15−Apr−2009 14:08

Gamma Ray Background	30.00	N/A	36.88	N/A	N/A	N/A	GAPI
Gamma Ray (Jig − Bkgd)	165.0	N/A	173.3	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Zero Measurement
Master: 5−Feb−2009 9:56 Before: 16−Apr−2009 0:48

CNTC Background	25.87	25.87	26.20	N/A	N/A	3.881	CPS
CFTC Background	27.92	27.92	27.94	N/A	N/A	4.188	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Ratio Measurement
Master: 5−Feb−2009 9:56

Thermal Near Corr. (Tank)	5800	5444	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2287	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.380	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Accelerometer Calibration
Before: 18−Apr−2009 9:48

Z−Axis Acceleration	32.19	N/A	32.11	N/A	N/A	N/A	F/S2

Enhanced DTS Cartridge Wellsite Calibration − EDTC Accelerometer Calibration
Before: 18−Apr−2009 9:48

EDTC Z−Axis Acceleration	32.19	N/A	32.14	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

The HGNS Neutron Master Calibration was done with the following parameters :

NCT−B Water Temperature 68.0 DEGF.
Thermal Housing Size 2.378 IN

Thermal Housing Size	3.378	IN.
NSR−F serial number	2289	

Array Induction Tool − H / Equipment Identification

Primary Equipment:

Rm/SP Bottom Nose	AHRM − A
Array Induction Sonde	AHIS − BA

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	0.6141		0.6050	62.61		71.00
	Before	0.6131			61.20		
1	Master	1.259		1.270	61.48		70.00
	Before	1.257			60.06		
2	Master	0.6241		0.6230	57.90		66.00
	Before	0.6233			56.46		
3	Master	0.7106		0.7040	57.08		65.00
	Before	0.7090			55.65		
4	Master	1.329		1.337	50.88		59.00
	Before	1.326			49.43		
5	Master	1.927		1.955	49.26		57.00
	Before	1.925			47.78		
6	Master	1.927		1.955	49.25		57.00
	Before	1.925			47.78		
7	Master	1.403		1.415	48.55		53.00
	Before	1.399			46.92		
		60.00 % (Minimum)	140.0 % (Maximum)	(Nominal)	Nom −60.00 (Minimum)	Nom + 60.00 (Maximum)	(Nominal)

Master: 3−Apr−2009 13:11 Before: 15−Apr−2009 13:52

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		992.0	Master		−0.1742
Before		991.4	Before		−0.1706
	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		0.9190	Master		−0.0001754
Before		0.9185	Before		−0.0001748
	0.8700 (Minimum) 0.9150 (Nominal) 0.9600 (Maximum)			−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: 3−Apr−2009 13:11 Before: 15−Apr−2009 13:52

Array Induction Tool − H Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Magnitude V	Value	Phase DEG
0	1.012		0.4950	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
1	1.011		0.4842	

	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.015			−0.04337		
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.013			−0.03414		
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9961			−0.1990		
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9851			−0.1044		
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	0.9975			0.2068		
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.013			−0.1309		
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: 3−Apr−2009 13:11

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	−114.0				459.8			
		−231.0 (Minimum)	−56.00 (Nominal)	119.0 (Maximum)		−2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	149.1				384.9			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		−625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	114.7				−135.7			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		−350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	58.44				43.56			
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)		−250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	25.24				−7.536			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		−63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	13.55				−3.449			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	8.915				5.765			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	−0.8634				−3.723			
		−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

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Array Induction Tool − H Wellsite Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag			Value	Fine − Mag, Real, Imag		
0	1.029				1.022			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.029				1.022			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.029				1.022			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 3−Apr−2009 13:11

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	0.6141		0.6050	62.61		71.00
1	Master	1.259		1.270	61.48		70.00
2	Master	0.6241		0.6230	57.90		66.00
3	Master	0.7106		0.7040	57.08		65.00
4	Master	1.329		1.337	50.88		59.00
5	Master	1.927		1.955	49.26		57.00
6	Master	1.927		1.955	49.25		57.00
7	Master	1.403		1.415	48.55		53.00
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom −60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: 3−Apr−2009 13:11

Array Induction Tool − H Master Calibration
Electronics Calibration Check − Auxilliary

Phase	Array Induction SPA Plus MV	Value
Master		992.0
	941.0 (Minimum) 990.5 (Nominal) 1040 (Maximum)	

Phase	Array Induction SPA Zero MV	Value
Master		−0.1742
	−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	

Phase	Array Induction Temperature Plus V	Value
Master		0.9190
	0.8700 (Minimum) 0.9150 (Nominal) 0.9600 (Maximum)	

Phase	Array Induction Temperature Zero V	Value
Master		−0.0001754
	−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: 3−Apr−2009 13:11

Array Induction Tool − H Master Calibration
Test Loop Gain Correction

Idx	Value	Test Loop Gain Magnitude V	Value	Phase DEG
0	1.012		0.4950	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
1	1.011		0.4842	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
2	1.015		−0.04337	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
3	1.013		−0.03414	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
4	0.9961		−0.1990	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
5	0.9851		−0.1044	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
6	0.9975		0.2068	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
7	1.013		−0.1309	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	

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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	−114.0		459.8	
	−231.0 (Minimum) −56.00 (Nominal) 119.0 (Maximum)		−2250 (Minimum) 0 (Nominal) 2250 (Maximum)	
1	149.1		384.9	

		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		−625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	114.7				−135.7			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		−350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	58.44				43.56			
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)		−250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	25.24				−7.536			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		−63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	13.55				−3.449			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	8.915				5.765			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	−0.8634				−3.723			
		−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

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Array Induction Tool − H Master Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag			Value	Fine − Mag, Real, Imag		
0	1.029				1.022			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.029				1.022			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.029				1.022			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 3−Apr−2009 13:11

Elemental Capture Spectroscopy Tool / Equipment Identification

Primary Equipment:		
ECS Sonde	ECS − A	31
ECS Detector Package	ECSD − A	31
ECS AmBe Source	NSR − F	2573
Auxiliary Equipment:		
ECS Sonde Housing	ECSH − A	31

Elemental Capture Cartridge − B / Equipment Identification

Primary Equipment:		
ECC Cartridge	ECC − B	32
Auxiliary Equipment:		
ECC Housing	ECH − A	22

High resolution Integrated Logging Tool−DTS / Equipment Identification

Primary Equipment:		
HILT Gamma−Ray Neutron Sonde−DTS	HGNS − B	
HGNS Gamma−Ray Device	HGR −	
HGNS Neutron Detector with Alpha Source	HCNT −	
Z−Axis Accelerometer	HACC −	715
Neutron Logging Source	NLS − KL	
Neutron Source Radioactive	NSR − F	2289
Compensated Neutron Box	CNB − AB	
HTBC Communication Assembly DTS Mode	HMCA −	

Auxiliary Equipment:

Neutron Calibration Tank	NCT − B
Gamma Source Radioactive	GSR − U/Y
HGNS Housing	HGNH − 2760

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkgd) GAPI	Value
Before		36.88	Before		173.3
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			157.1 (Minimum) 165.0 (Nominal) 206.3 (Maximum)	

Before: 15−Apr−2009 14:08

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		25.87	Master		27.92
Before		26.20	Before		27.94
	5.000 (Minimum) 25.87 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 27.92 (Nominal) 40.00 (Maximum)	

Master: 5−Feb−2009 9:56 Before: 16−Apr−2009 0:48

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Ratio Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5444	Master		2287	Master		2.380
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: 5−Feb−2009 9:56

High resolution Integrated Logging Tool−DTS

Wellsite Calibration

Accelerometer Calibration

Phase	Z−Axis Acceleration F/S2	Value
Before		32.11
	31.53 (Minimum) 32.19 (Nominal) 32.84 (Maximum)	

Before: 18−Apr−2009 9:48

High resolution Integrated Logging Tool−DTS Master Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		25.87	Master		27.92
	5.000 (Minimum) 25.87 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 27.92 (Nominal) 40.00 (Maximum)	

Master: 5−Feb−2009 9:56

High resolution Integrated Logging Tool−DTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5444	Master		2287	Master		2.380
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: 5−Feb−2009 9:56

Enhanced DTS Cartridge / Equipment Identification

Primary Equipment:

EDTC Gamma Ray Detector	EDTG − A/B
Enhanced DTS Cartridge	EDTC − B

Auxiliary Equipment:

EDTC Housing	EDTH − B

Enhanced DTS Cartridge Wellsite Calibration		
EDTC Accelerometer Calibration		
Phase	EDTC Z−Axis Acceleration F/S2	Value
Before		32.14
31.53 (Minimum)	32.19 (Nominal)	32.84 (Maximum)
Before: 18−Apr−2009 9:48		

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**

ELEMENTAL CAPTURE SPECTROSCOPY