Schlumberger

Company: **International Ocean Discovery Program**

Well: **Expedition 359, Site U1471E**
Field: **Maldives Monsoon & Sea Level**
Rig: **JOIDES Resolution** Country:

Rig: JOIDES Resolution
Field: Maldives Monsoon & Sea Level
Location: Latitude: N 4* 45.98'
Well: Expedition 359, Site U1471E
Company: International Ocean Discovery Pr

High Resolution Laterolog Array (HRLA)
Nuclear (HNGS, HLDS, APS)
Magnetic Susceptibility (MSS)

LOCATION

Latitude: N 4* 45.98'
Longitude: E 73* 08.09'

Elev.: K.B. 0.00 m
G.L. 430.30 m
D.F. 0.00 m

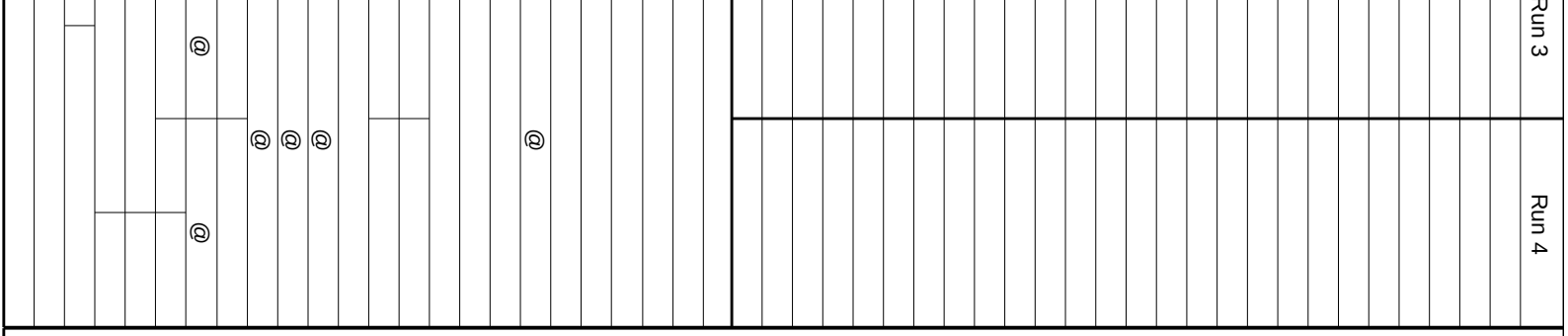
Permanent Datum: Sea Floor
Log Measured From: Rig Floor
Drilling Measured From: Rig Floor

Elev.: 430.30 m
−430.30 m above Perm. Datum

Ocean: Indian	Max. Well Deviation 0 deg	Longitude E 73.1348	Latitude N 4.7663

	Run 1	Run 2	Run 1	Run 2
Logging Date	26−Nov−2015			
Run Number	1			
Depth Driller	1434 m			
Schlumberger Depth	1434 m			
Bottom Log Interval	1434 m			
Top Log Interval	430.3 m			
Casing Driller Size @ Depth	5.500 in @ 530.7 m	@	@	
Casing Schlumberger	530.7 m			
Bit Size	9.875 in			
Type Fluid In Hole	Seawater			
MUD Density / Viscosity	1.05 g/cm3			
MUD Fluid Loss / PH		8.07		
MUD Source Of Sample	Mudpit			
RM @ Measured Temperature	0.220 ohm.m @ 23 degC	@	@	
RMF @ Measured Temperature	@		@	
RMC @ Measured Temperature	@		@	
Source RMF / RMC	N/A	N/A		
RM @ MRT / RMF @ MRT	0.078 @ 104	@ 104	@	@
Maximum Recorded Temperatures	104 degC			
Circulation Stopped / Time	25−Nov−2015	21:30		
Logger On Bottom / Time	25−Nov−2015	20:00		
Unit Number / Location	627314	Houma, LA		
Recorded By	C. Furman			
Witnessed By	A. Slagle, T. Ludmann			

	Run 1	Run 2
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		



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

OS1: VSI
OS2: DSI
OS3:
OS4:
OS5:

REMARKS: RUN NUMBER 1

Hole drilled with tricone bottom hole assembly (BHA) specifically for logging. 9−7/8" BS
Bit dropped at bottom of hole using MBR; Driller's Sea Floor was 430.3mbrf.
Drilled TD was 1434mbrf (1003.7mbsf), drilled and logged with sea water as borehole fluid.
Drill pipe set at 530.7mbrf (100.4mbsf) prior to logging.
Triple−combo run with upper part eccentered using bowsprings and lower part centralized using MCDs.
Fluid type was sea water; no barite corrections applied.
Depth recorded from drill floor; logs presented as−logged without depth corrections or shifts, as per client instructions.
All logs presented in wireline measured depth below rig floor (MDBRF).
Caliper opened during upward passes; closed prior to re−entering pipe.
Hole size corrections made using caliper measurements for upward passes; bit size for downlog.
APS minitron off during downlog and repeat pass to avoid formation activation; turned on during main upward pass.
Caliper closed at 560m on the fly to facilitate pipe entry; APS switched off once safely inside pipe to avoid GR contamination.

RUN 1

SERVICE ORDER #:
PROGRAM VERSION: 19C0−187
FLUID LEVEL:

LOGGED INTERVAL	START	STOP

RUN 2

SERVICE ORDER #:
PROGRAM VERSION:
FLUID LEVEL:

LOGGED INTERVAL	START	STOP

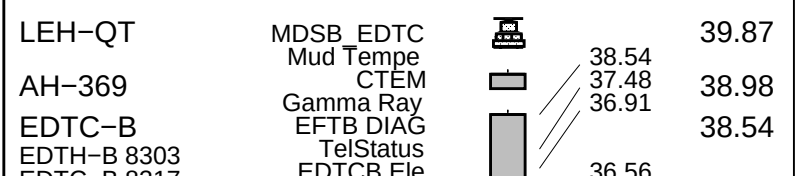
EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

SFT−281 1
SFT−178 1
GSR−U 616008
WITM (EDTS)−A

DOWNHOLE EQUIPMENT



EDTC−B 8317

HNGS−BA
HNGS−BA 177
HNSH−BA 174
Upper_1 35.86
Lower_2 35.65
36.56

HNGC−B
HNGC Stat 33.53
34.06

ILE−F
ILE−F 72
33.00

Status
Minitron
Near TD
Near Arr
AH−191
30.56

APS−C
APH−AC 121
APS−C 212
MNTR−F 6504
Near 27.81
Far Arr 27.73
Far 27.60
Far TD 27.50
30.25

AH−190
26.31

LDSC−B
LDSC Stat 25.47
26.00

HLDS
GSR−Z 8113
HLDV−D 35
HLDS−D 35
HEH−H 35
HLDP−C 35
Caliper
SS LS Status 20.88
24.94

AH−184_NonMagKnuckleJoint
20.12

AH−NonMagSpacer
AH−NonMagSpacer 2
19.51

AH−184_NonMagKnuckleJoint
16.61

AH−MCD2
AH−MCD2 2
16.00

HRLT−B
HRUH−B 978
HRUC−B 764
HRLS−B 768
HRLH−B 968
HRLC−B 974
AH−270 1708
High Res. 10.14
13.72

AH−MCD1
AH−MCD1 1
6.35

AH−230
4.07

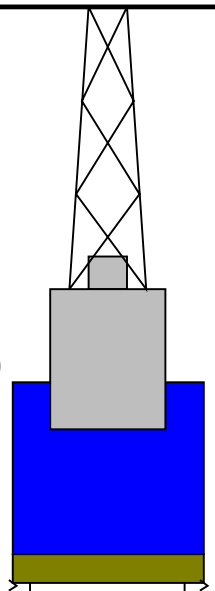
MSS_LDEO−A
ELIC−A 1
MSS_LDEO−A 3
Hi−Res 3.36
Dual Coil 0.39
DF ACCZ
Tension HV 0.00
3.67

TOOL ZERO

MAXIMUM STRING DIAMETER 3.75 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Production String Well Schematic	(in) OD ID	(m) MD		(m) MD	(in) OD ID	Casing St

	OD	ID	MD	OD	ID	
Kelly Bushing Elevation			0.0			
Derrick Floor Elevation			0.0			
Mean Sea Level			11.0			
				430.3	9.3875	Sea Floor
				530.3	8.7000125	Pipe
				1434.8	4.875	Driller's Total De



Schlumberger

Main Pass

MAXIS Field Log

Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_009LUP	FN:10	PRODUCER	26−Nov−2015 03:12	1433.3 M	420.6 M
RTB	MSS_LDEO_HRLA_LDL_009LUP	FN:11	PRODUCER	26−Nov−2015 03:12	1433.3 M	420.6 M

OP System Version: 19C0−187

MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
APS−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

PIP SUMMARY

Time Mark Every 60 S

HNGS Spectroscopy Gamma Ray

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 50

Area1
From HCGR to HSGR

HNGS Borehole Potassium (HBHK)
−0.05 (−−−−) 0.05

HNGS Computed Gamma Ray (HCGR)
0 (GAPI) 100

Calibrated Downhole Force (CDF) (LBF)
3000 0

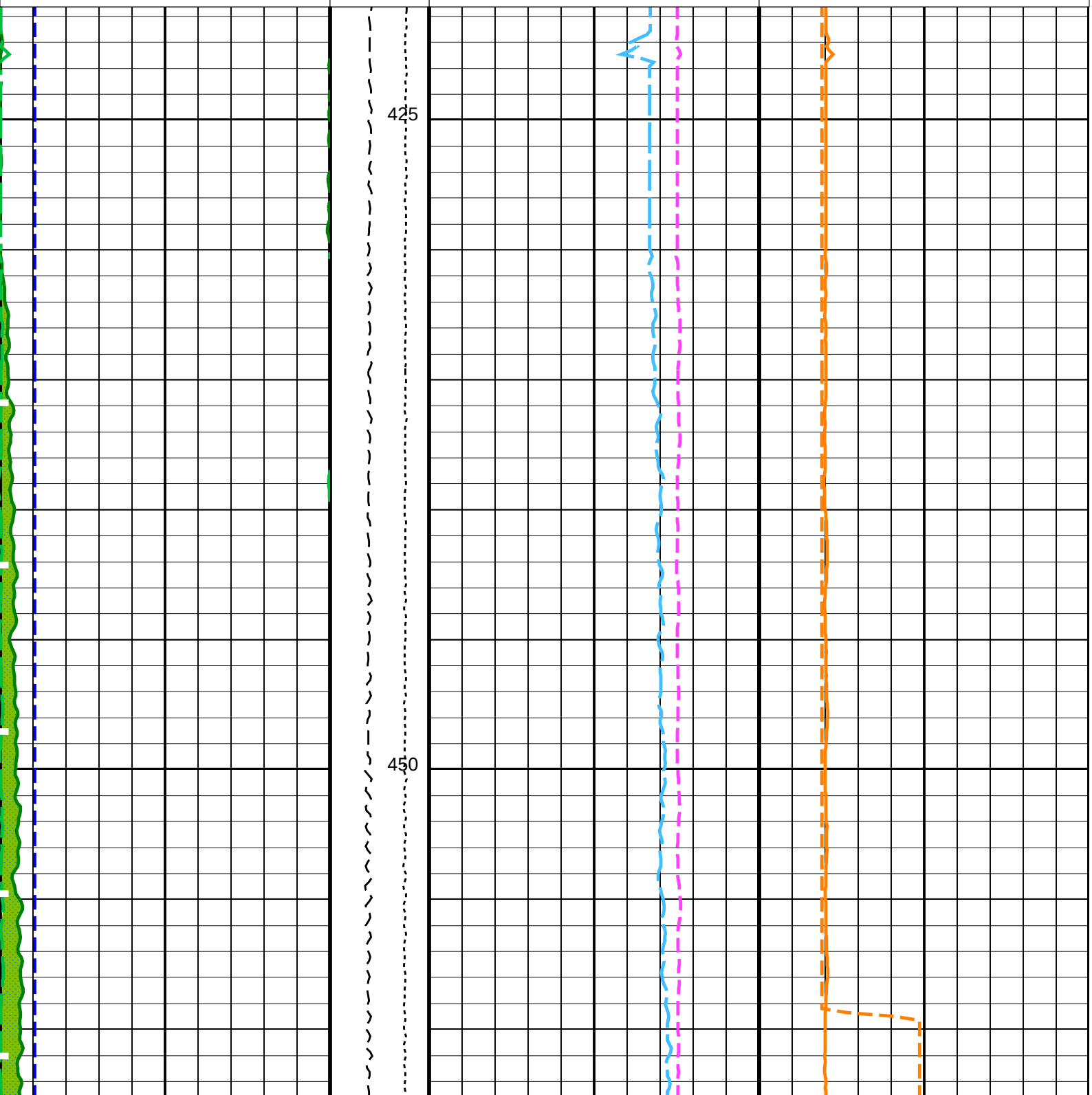
HNGS Uranium (HURA)
−5 (PPM) 10

HLDS Caliper (LCAL)
0 (IN) 20

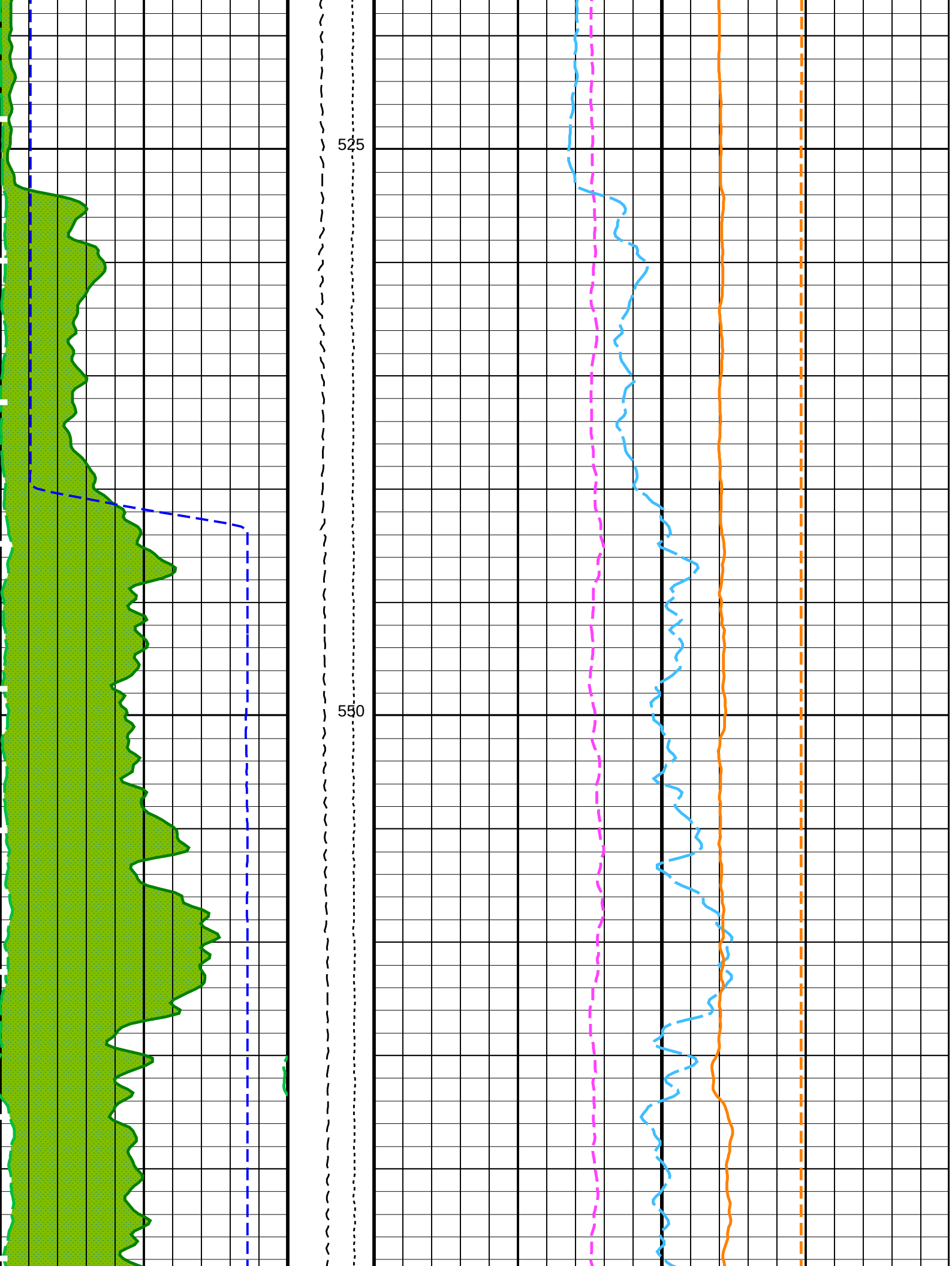
Tension (TENS) (LBF)
10000 0

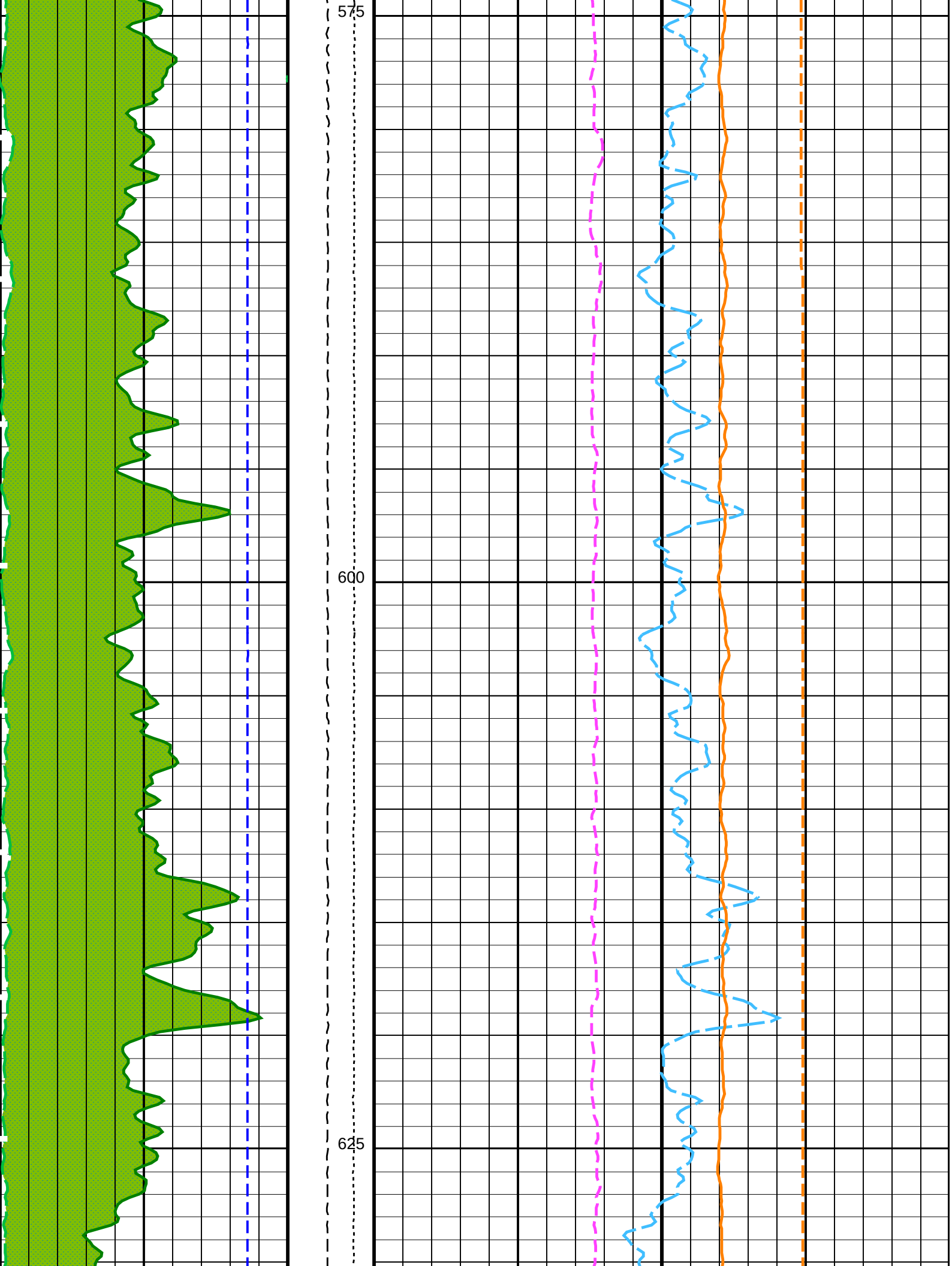
HNGS Thorium (HTHO)
5 (PPM) 25

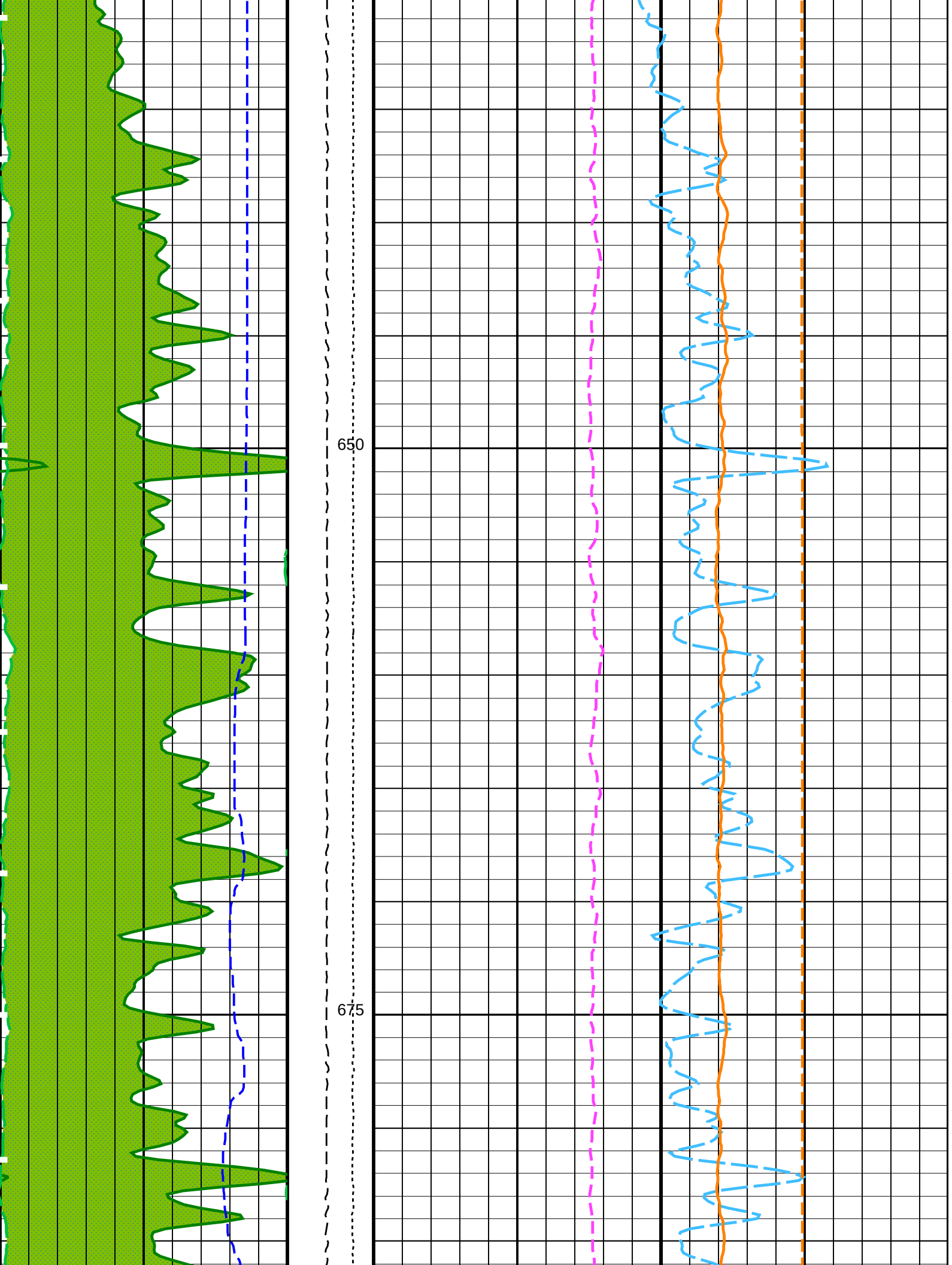
HNGS Potassium (HFK)
−0.01 (−−−−) 0.04

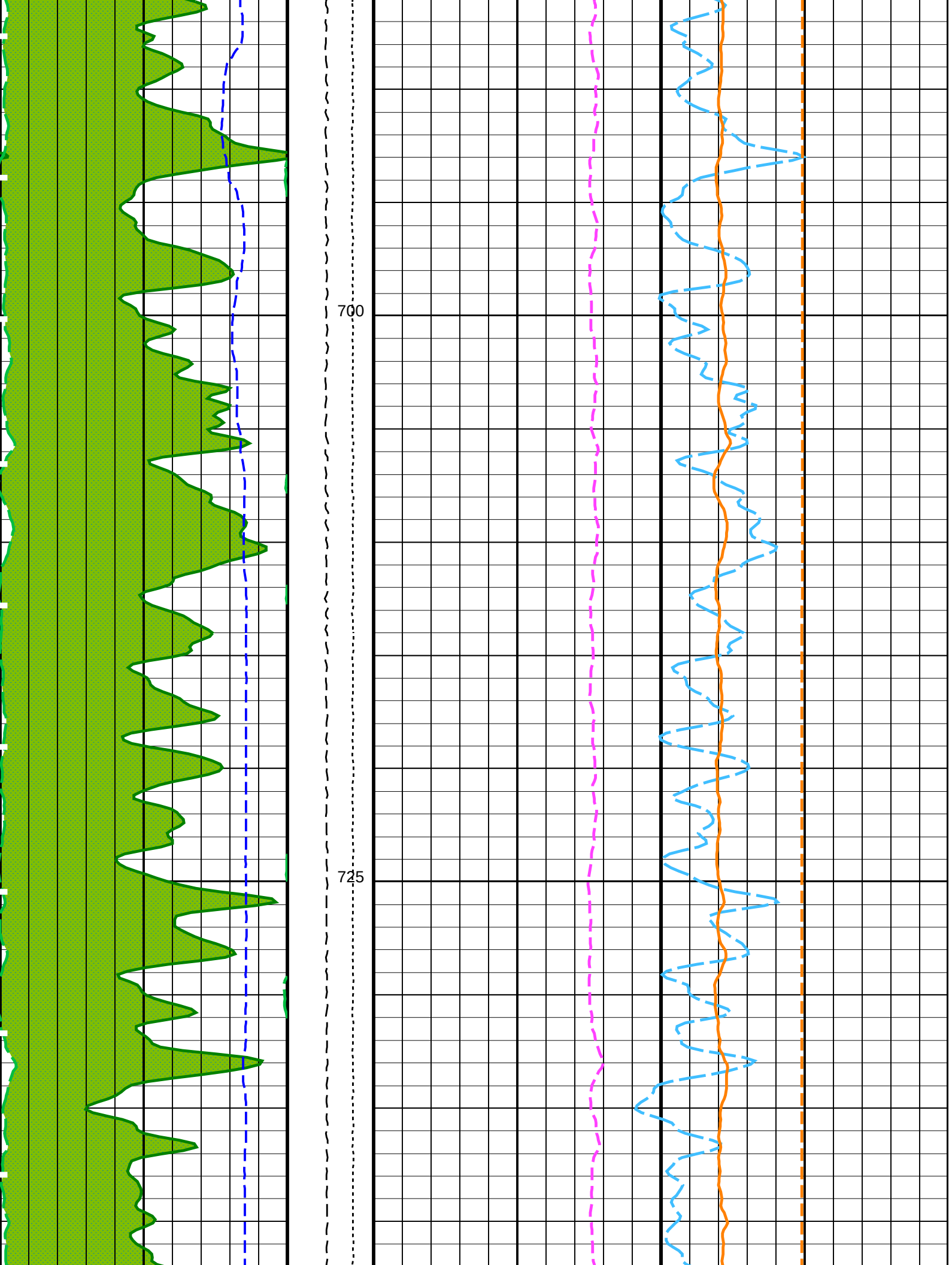


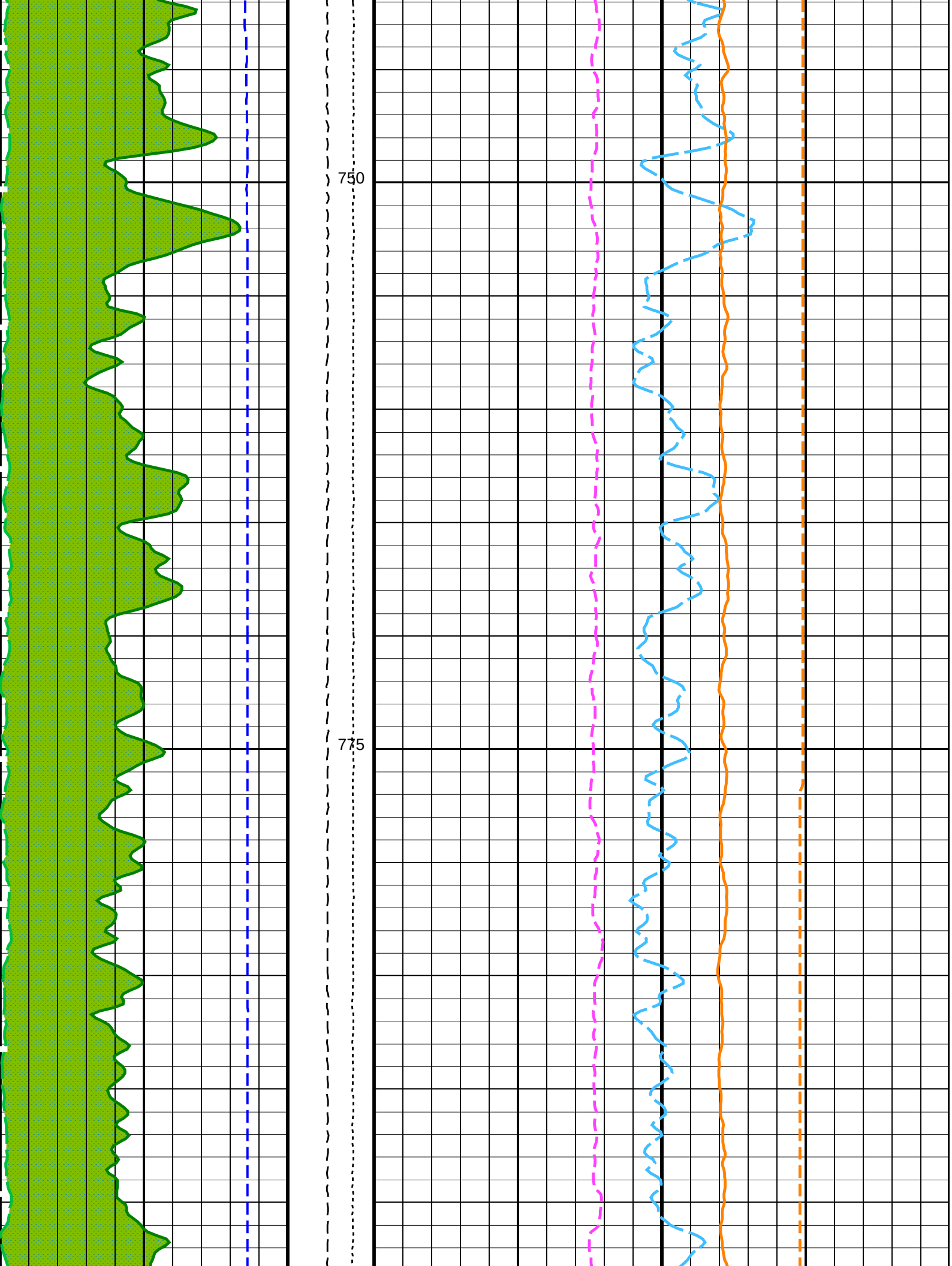

475
500

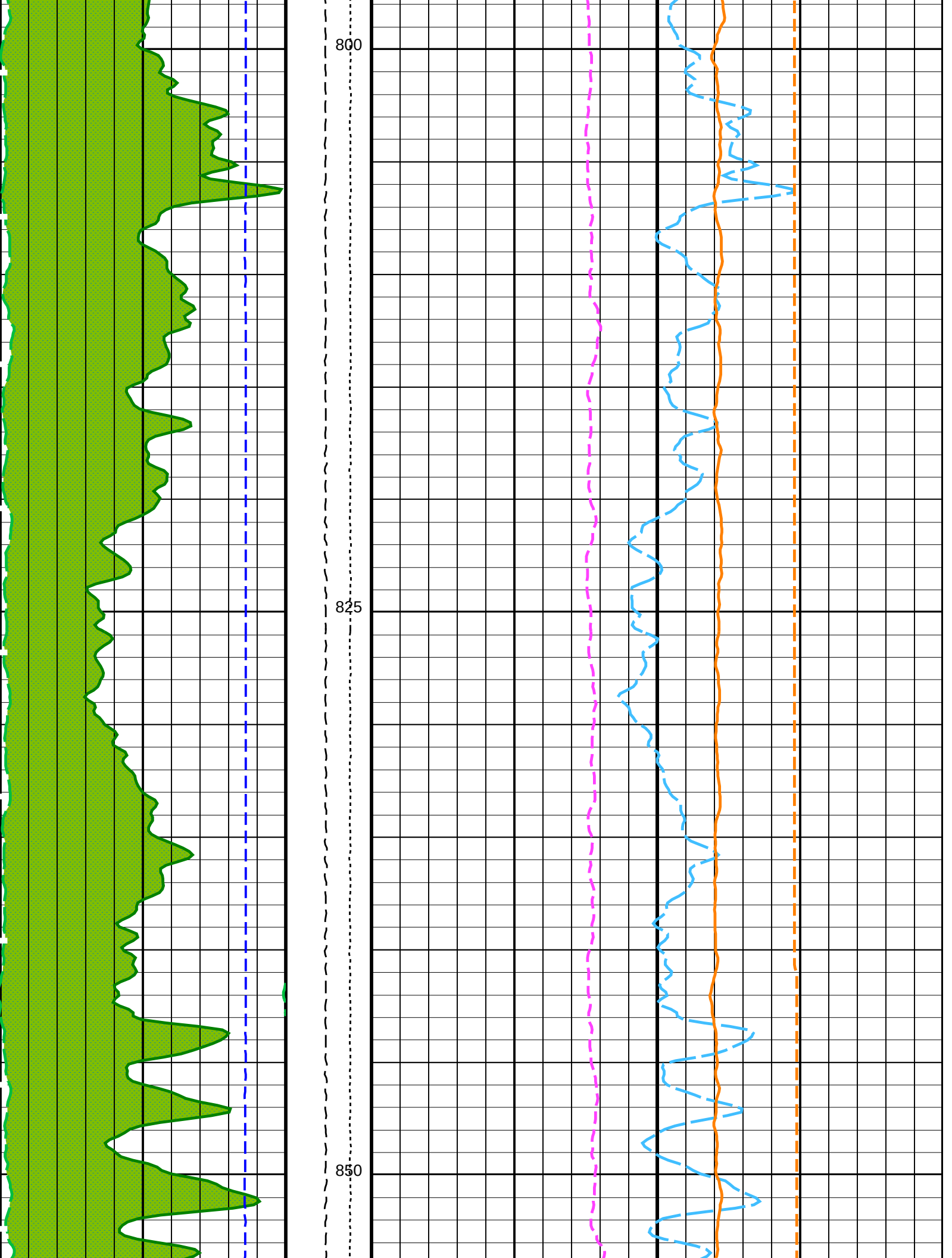

525
550

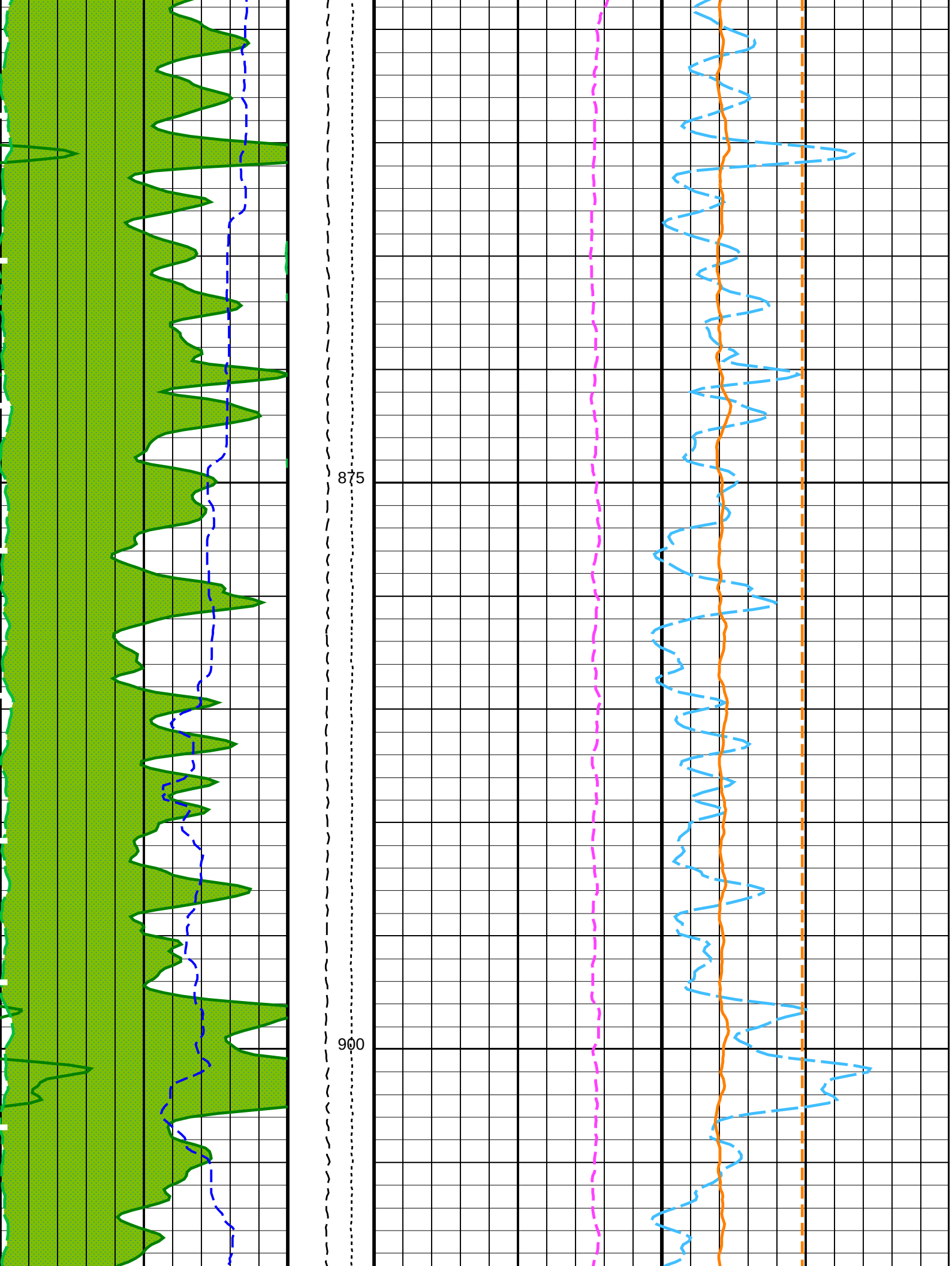

575
600
625

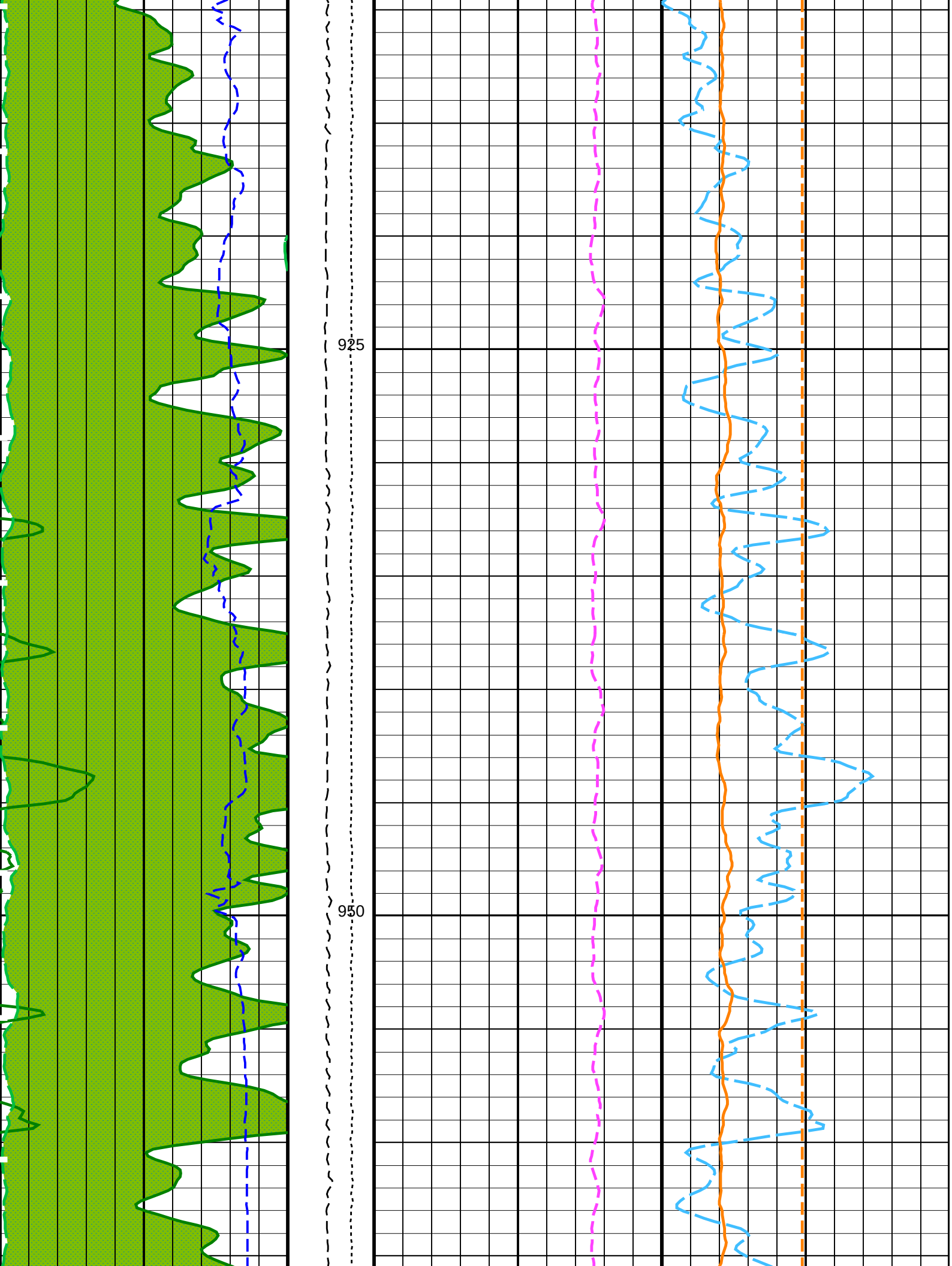

650
675

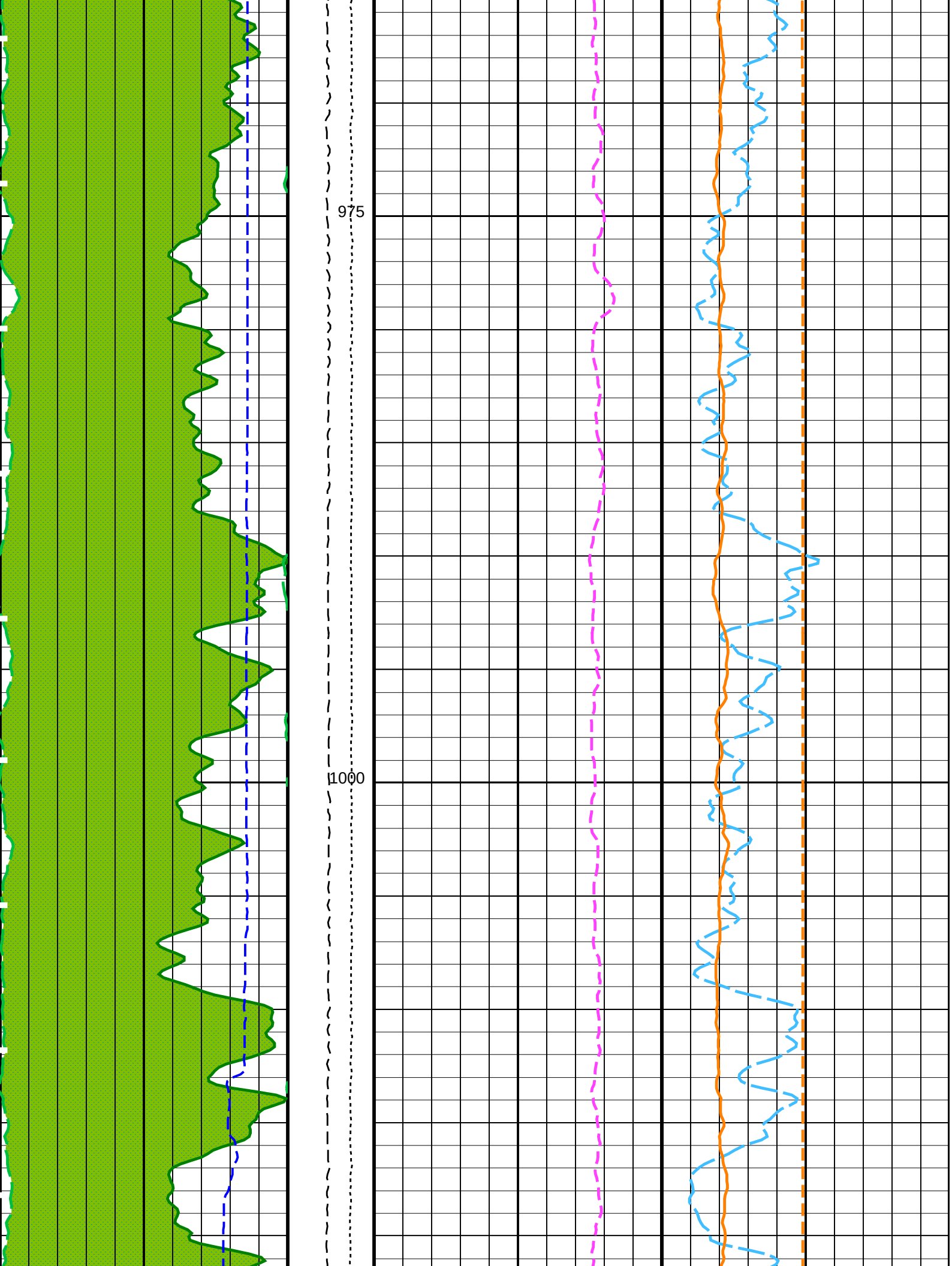

700
725

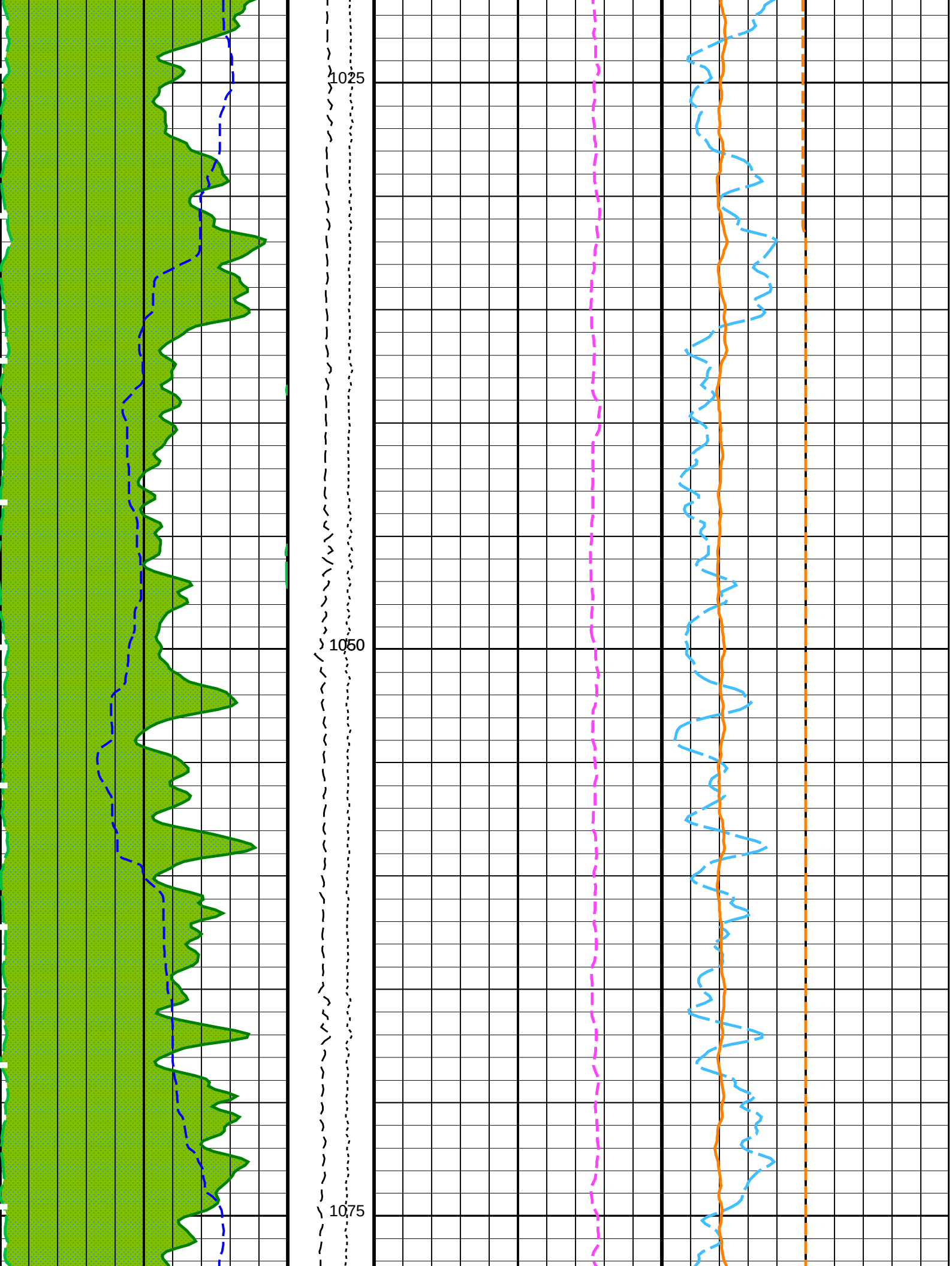

750
775

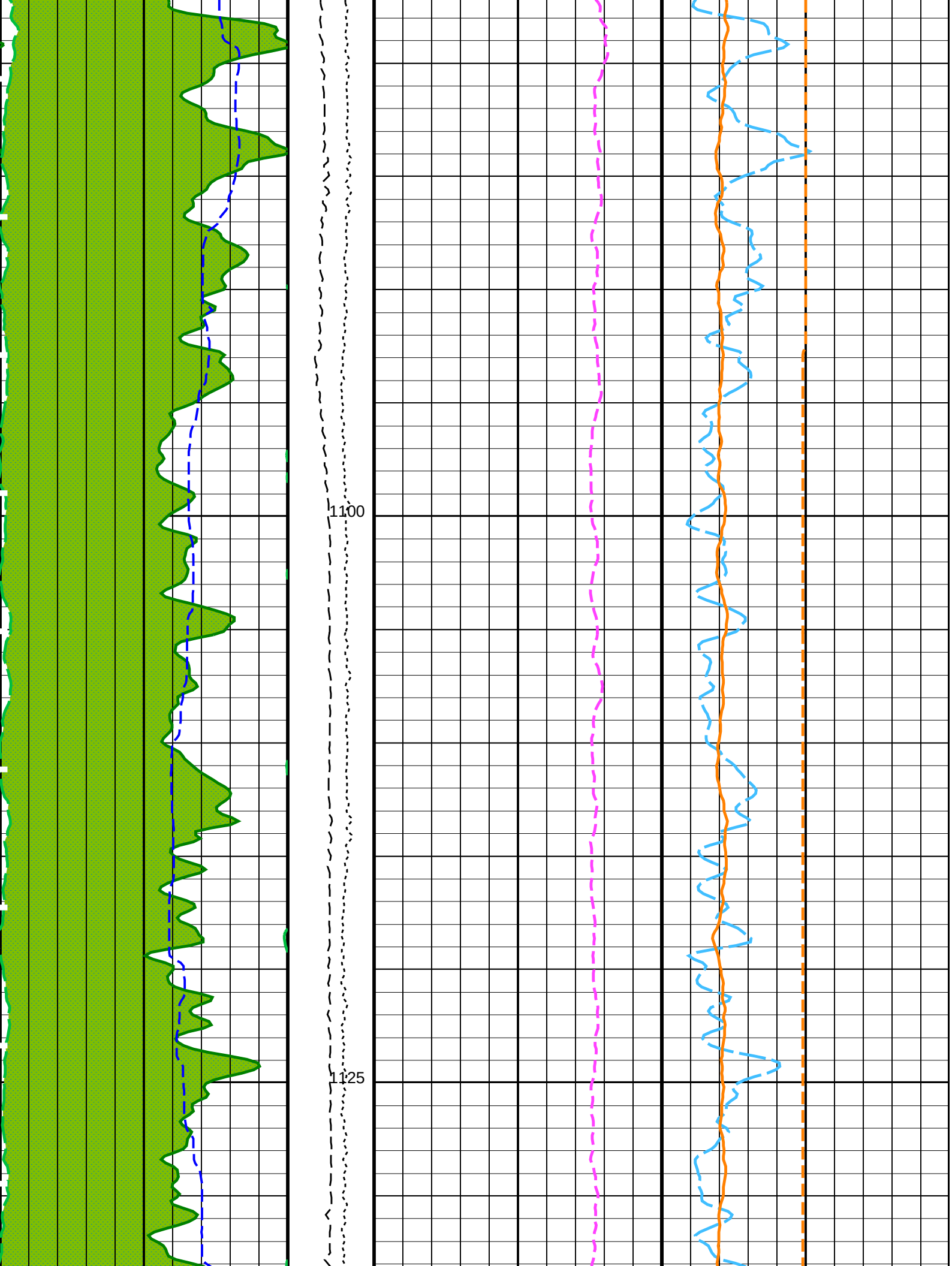

800
825
850

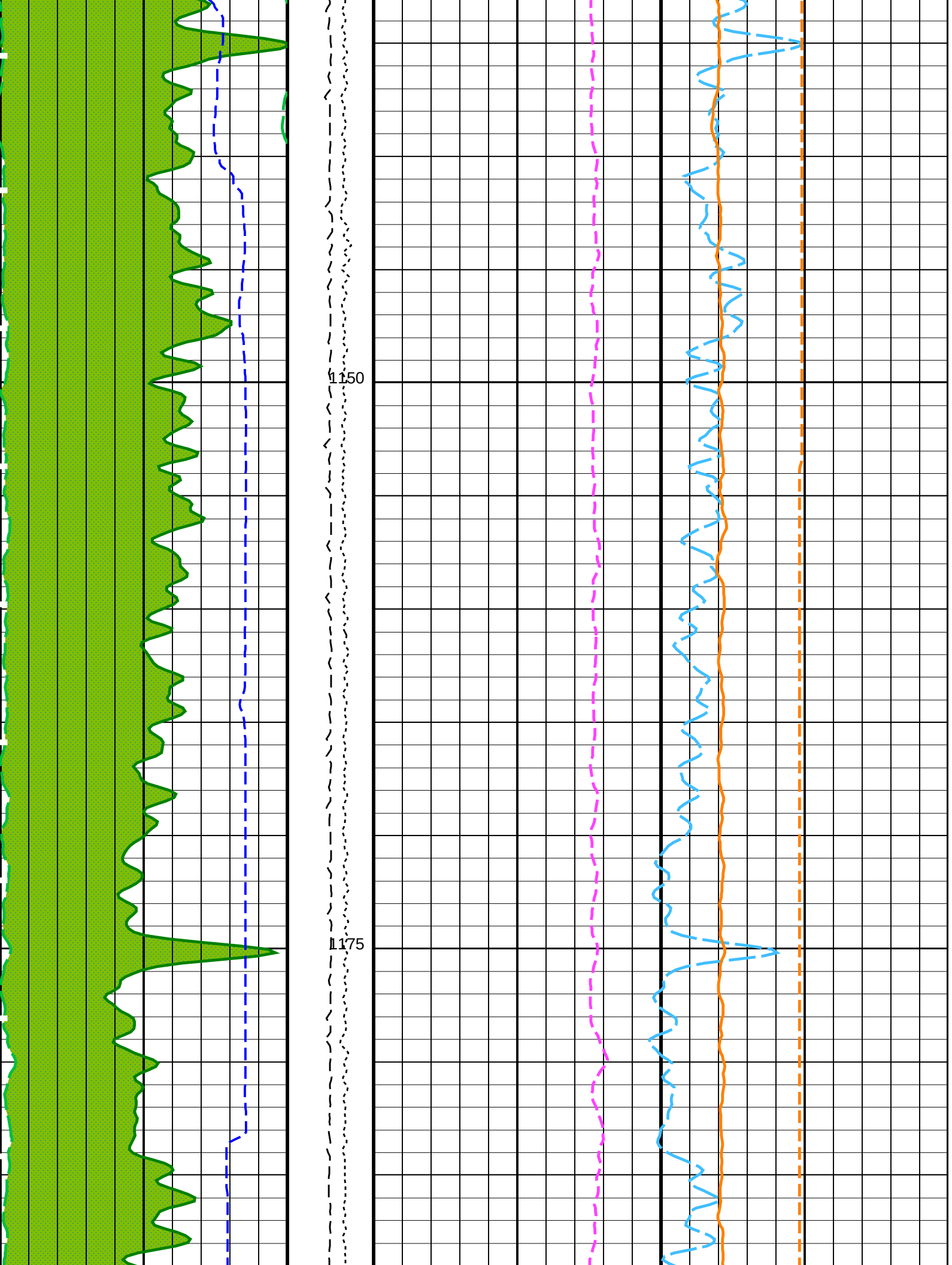

875
900

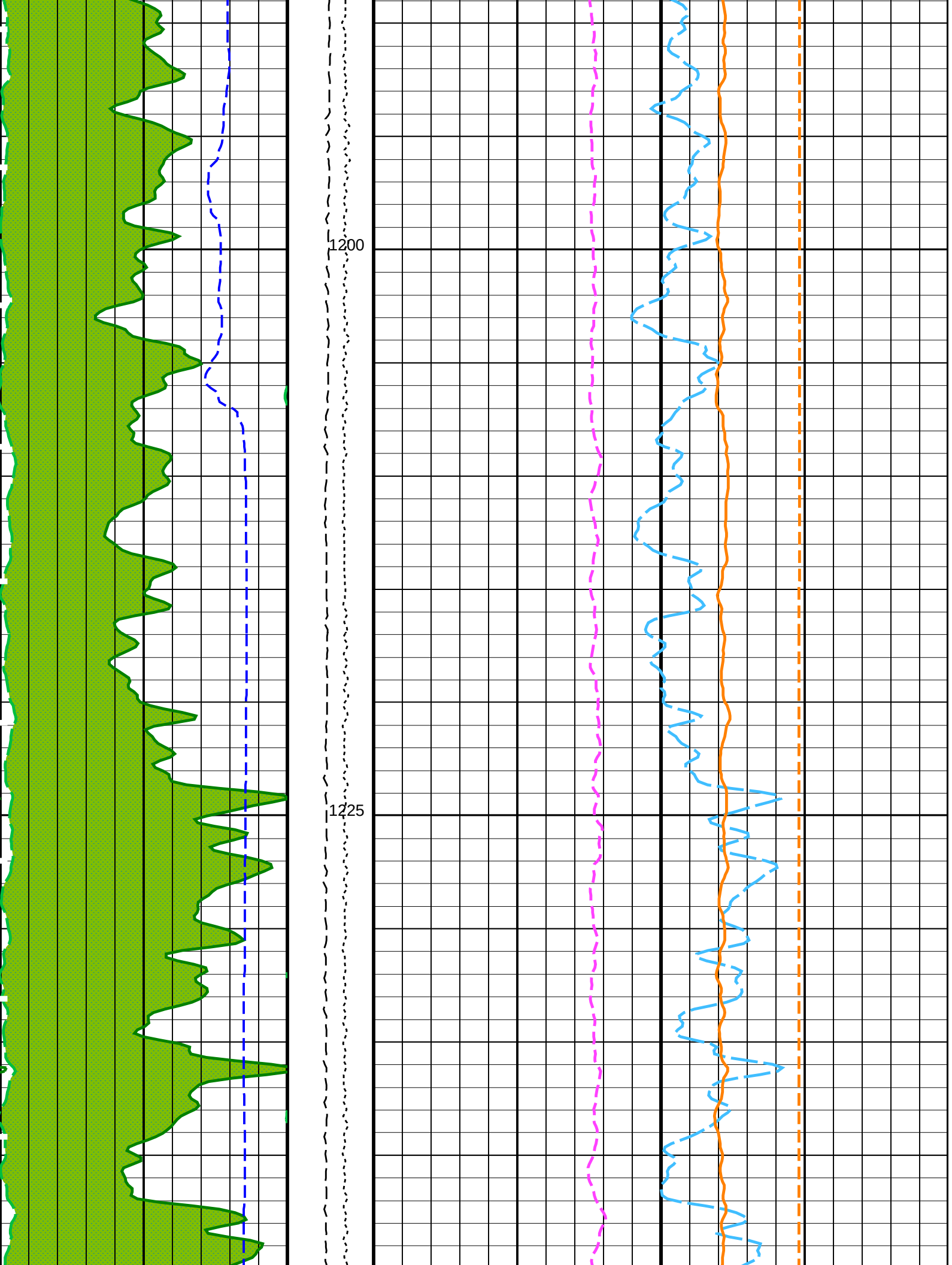

925
950

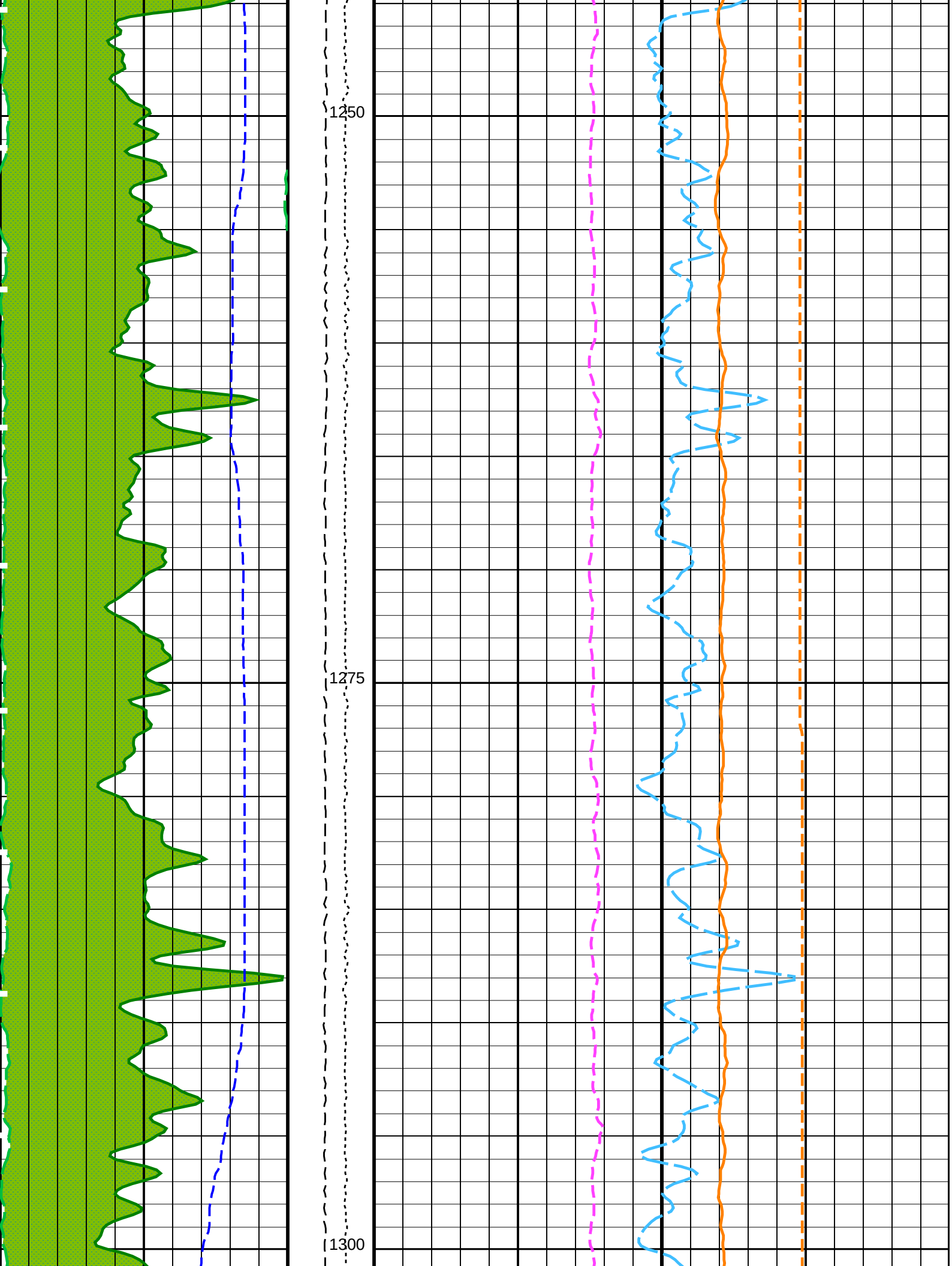

975
1000

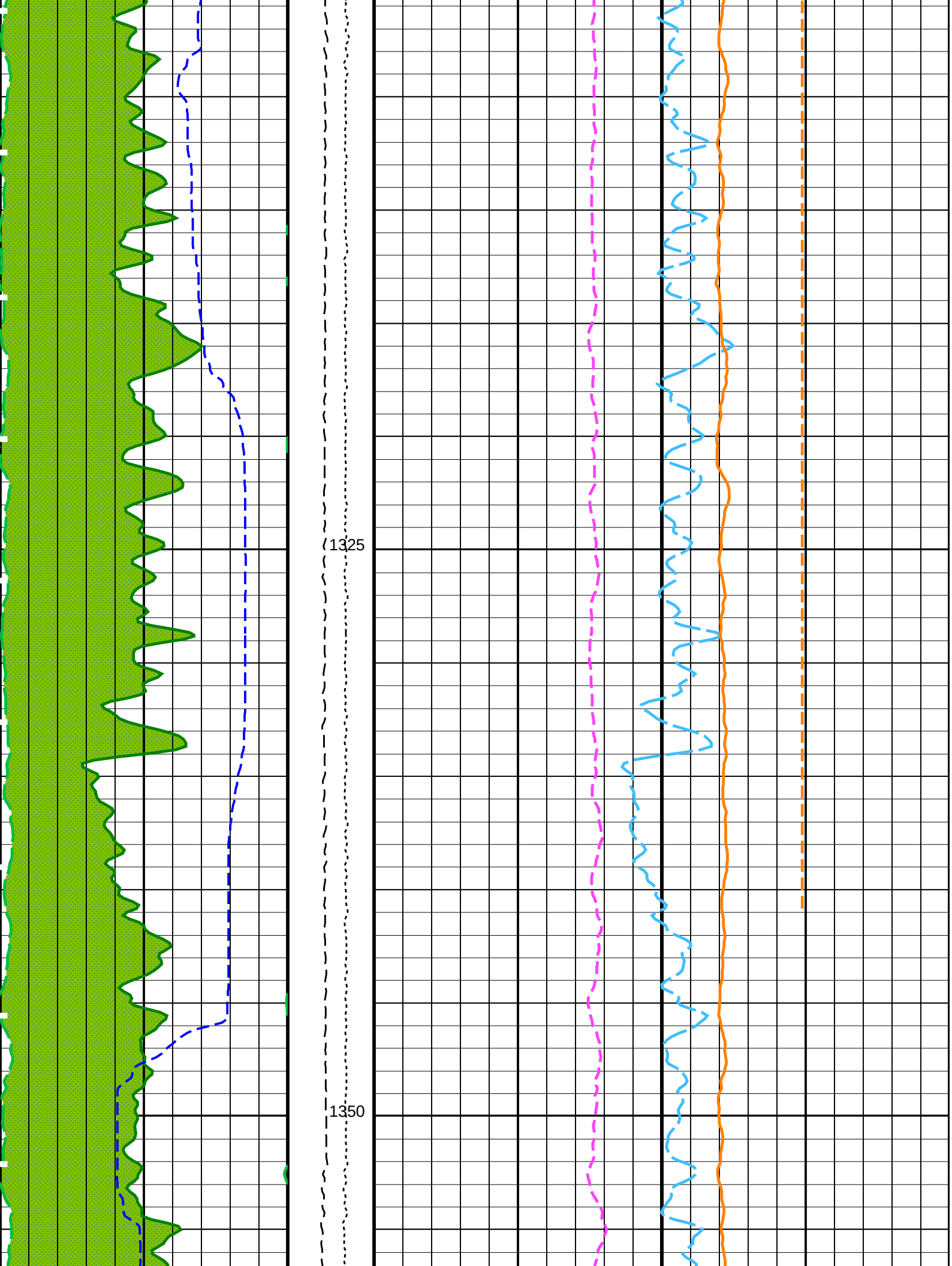

1025
1050
1075

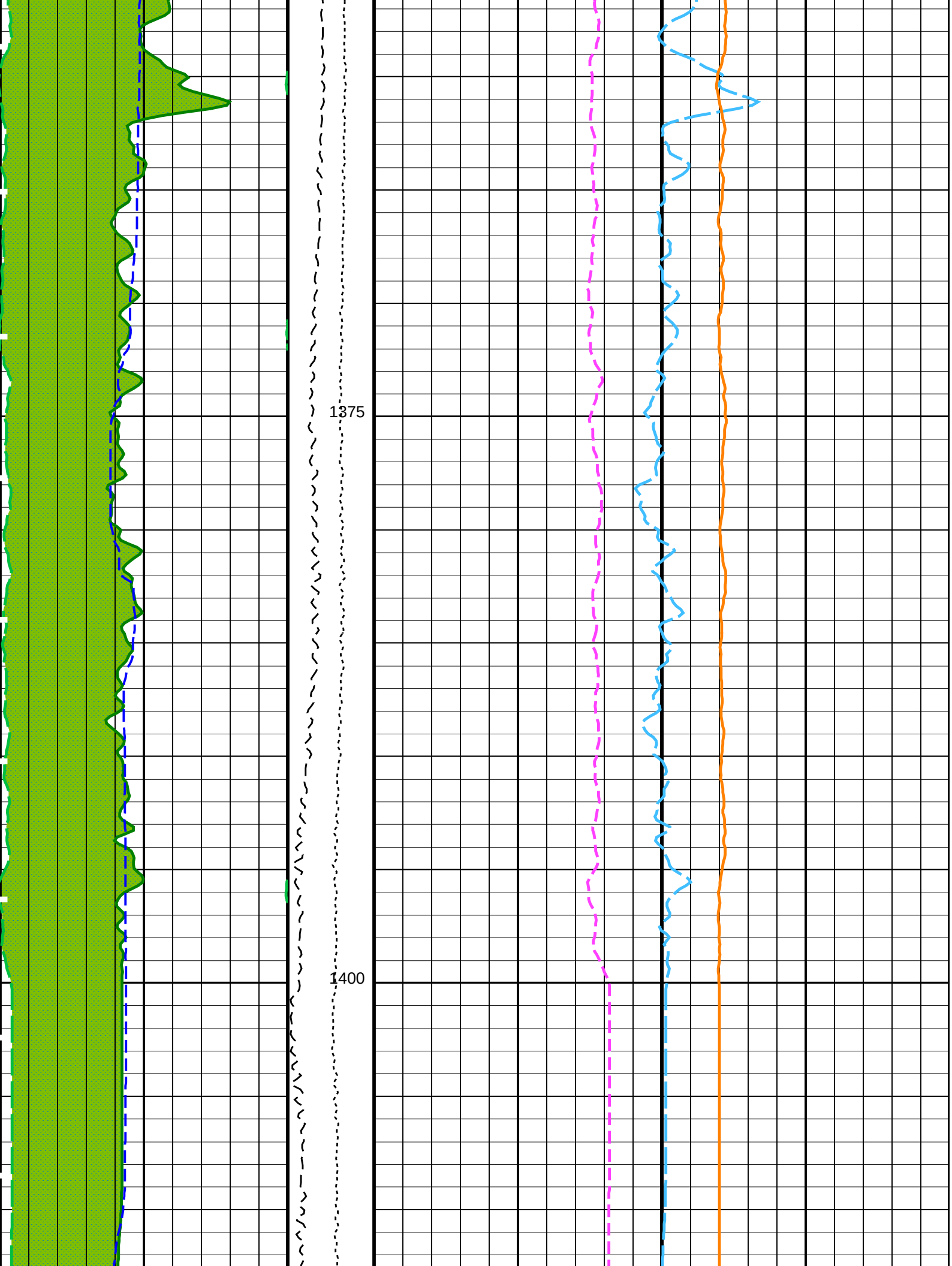

1100
1125

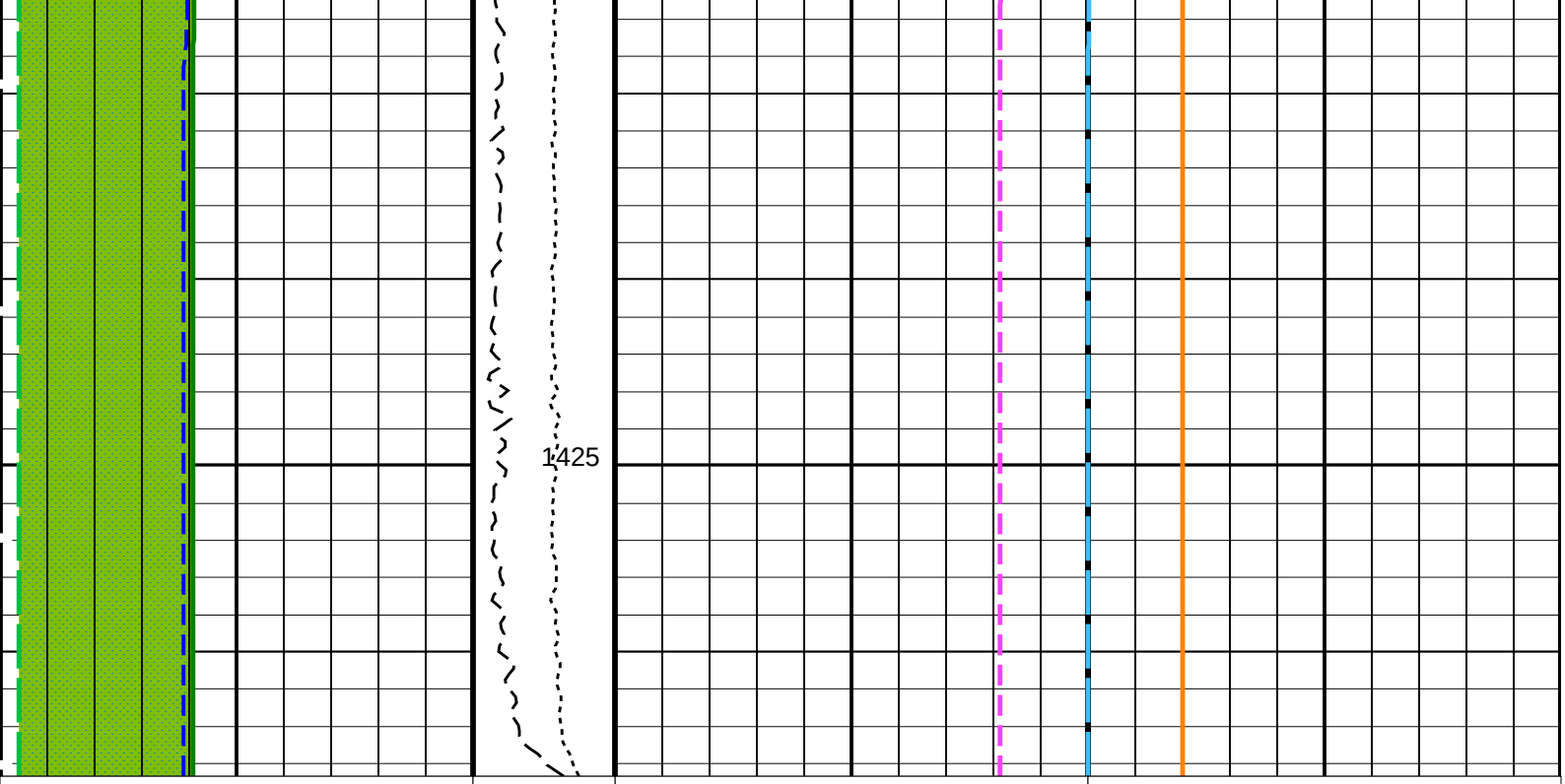

1150
1175


1200
1225


1250
1275
1300


1325
1350


1375
1400



HLDS Caliper (LCAL)
0 (IN) 20

Tension (TENS) (LBF)
10000 0

HNGS Thorium (HTHO)
5 (PPM) 25

HNGS Potassium (HFK)
−0.01 (−−−−) 0.04

HNGS Computed Gamma Ray (HCGR)
0 (GAPI) 100

Calibrated Downhole Force (CDF) (LBF)
3000 0

HNGS Uranium (HURA)
−5 (PPM) 10

Area1
From HCGR to HSGR

HNGS Borehole Potassium (HBHK)
−0.05 (−−−−) 0.05

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 50

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HRLT−B: High Resolution Laterolog Array − B		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	LCAL	
	APS−C: Accelerator−Porosity Tool		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	LCAL	
	HNGS−BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	LCAL	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	−0.000873751	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	

HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.00541	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.984728	
	EDTC−B: Enhanced DTS Cartridge		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	LCAL	
	System and Miscellaneous		
BS	Bit Size	9.875	IN
DFD	Drilling Fluid Density	1.05	G/C3

Format: HNGSYields Vertical Scale: 1:200 Graphics File Created: 26−Nov−2015 03:12

OP System Version: 19C0−187

MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
APS−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_009LUP	FN:10	PRODUCER	26−Nov−2015 03:12	
RTB	MSS_LDEO_HRLA_LDL_009LUP	FN:11	PRODUCER	26−Nov−2015 03:12	

Output DLIS Files

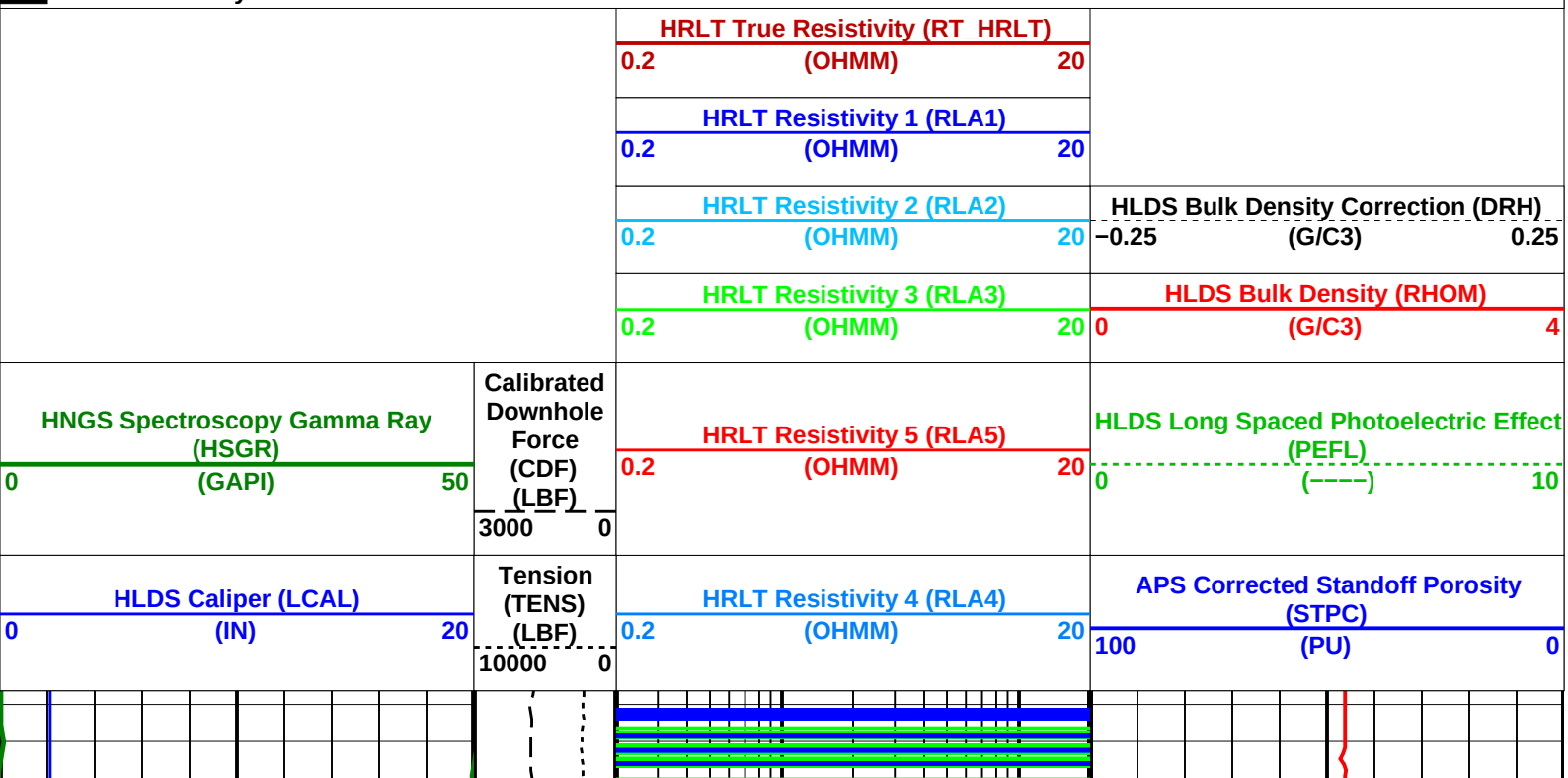
DEFAULT	MSS_LDEO_HRLA_LDL_009LUP	FN:10	PRODUCER	26−Nov−2015 03:12	1433.3 M	420.6 M
RTB	MSS_LDEO_HRLA_LDL_009LUP	FN:11	PRODUCER	26−Nov−2015 03:12	1433.3 M	420.6 M

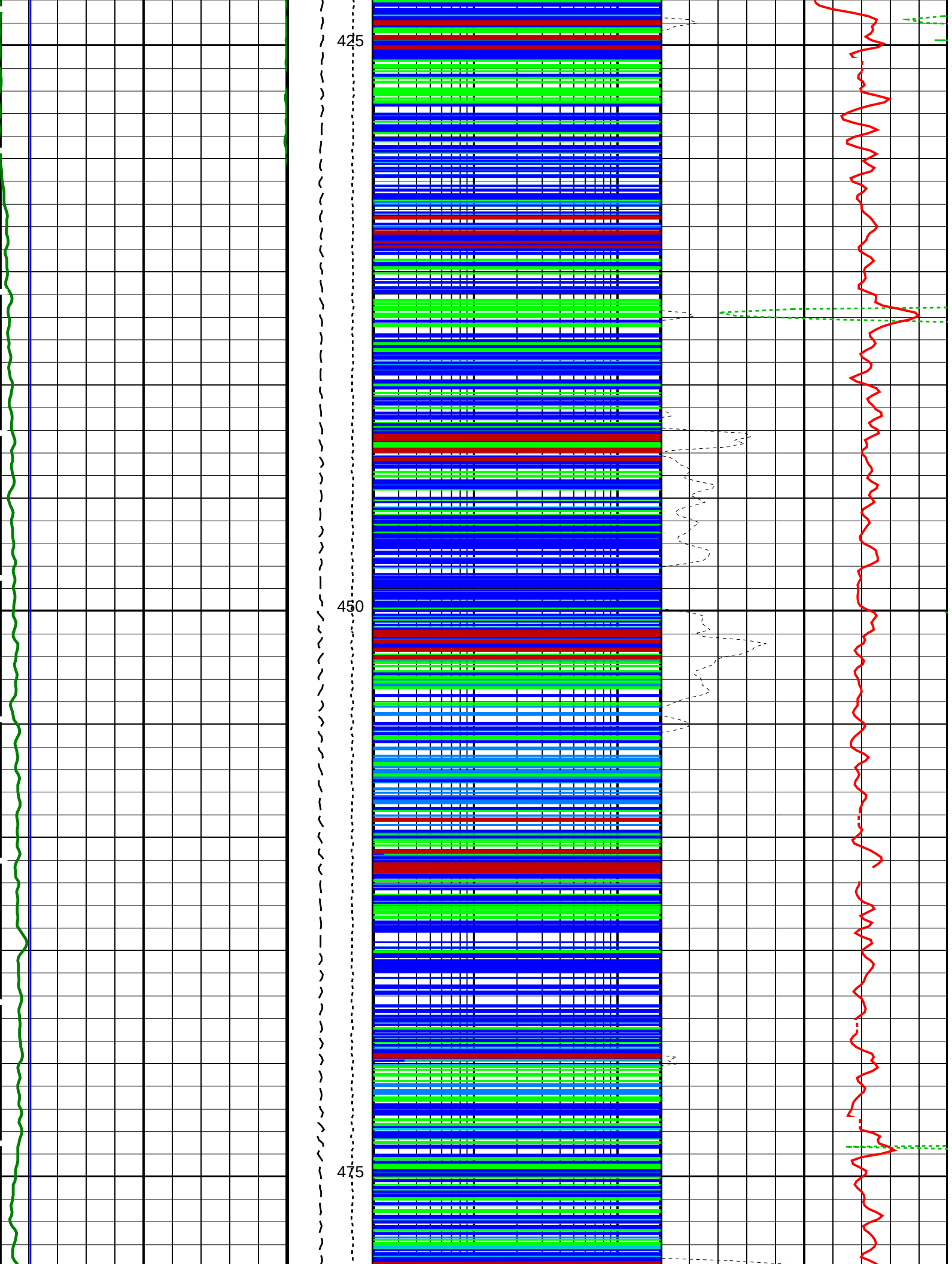
OP System Version: 19C0−187

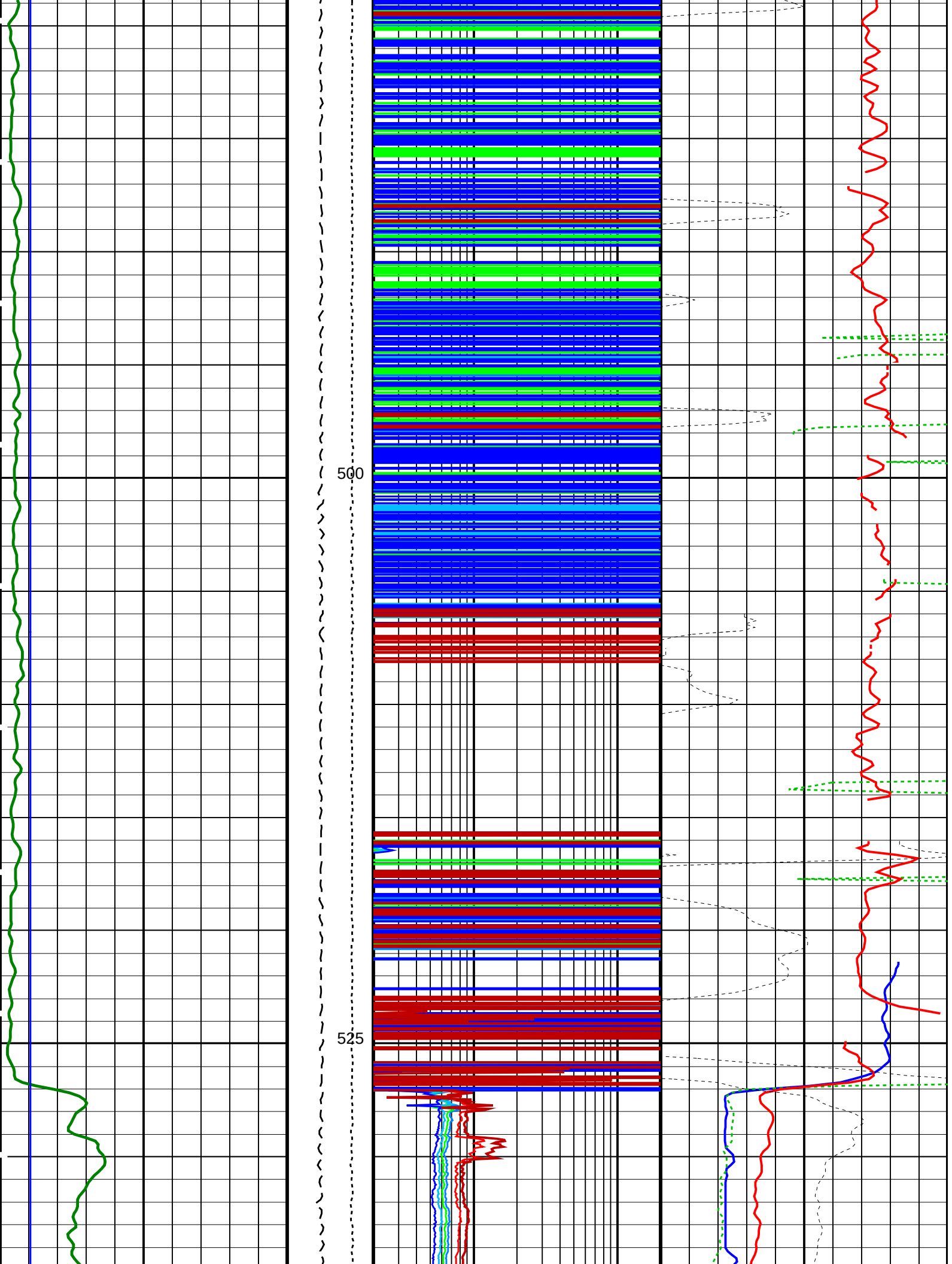
MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
APS−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

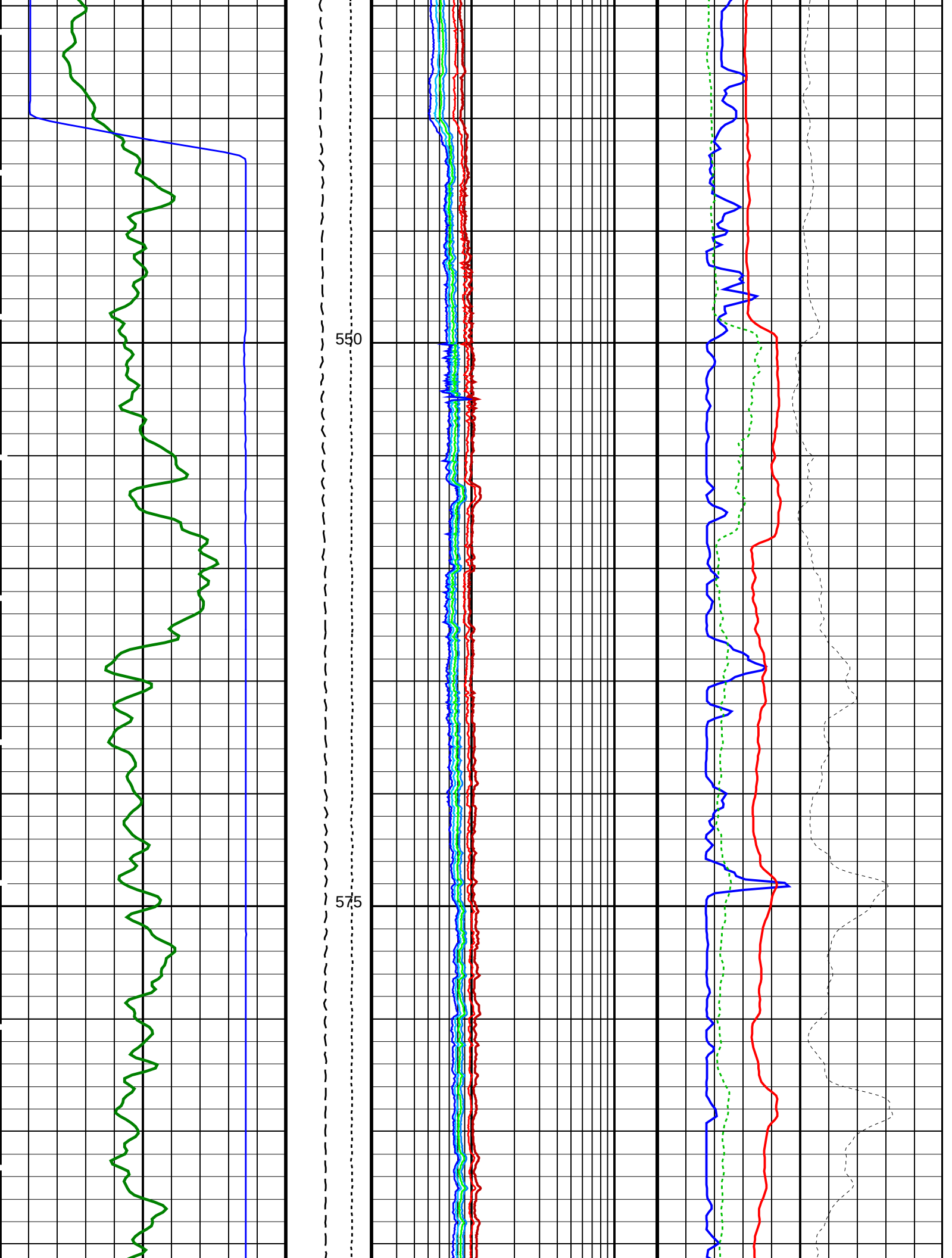
PIP SUMMARY

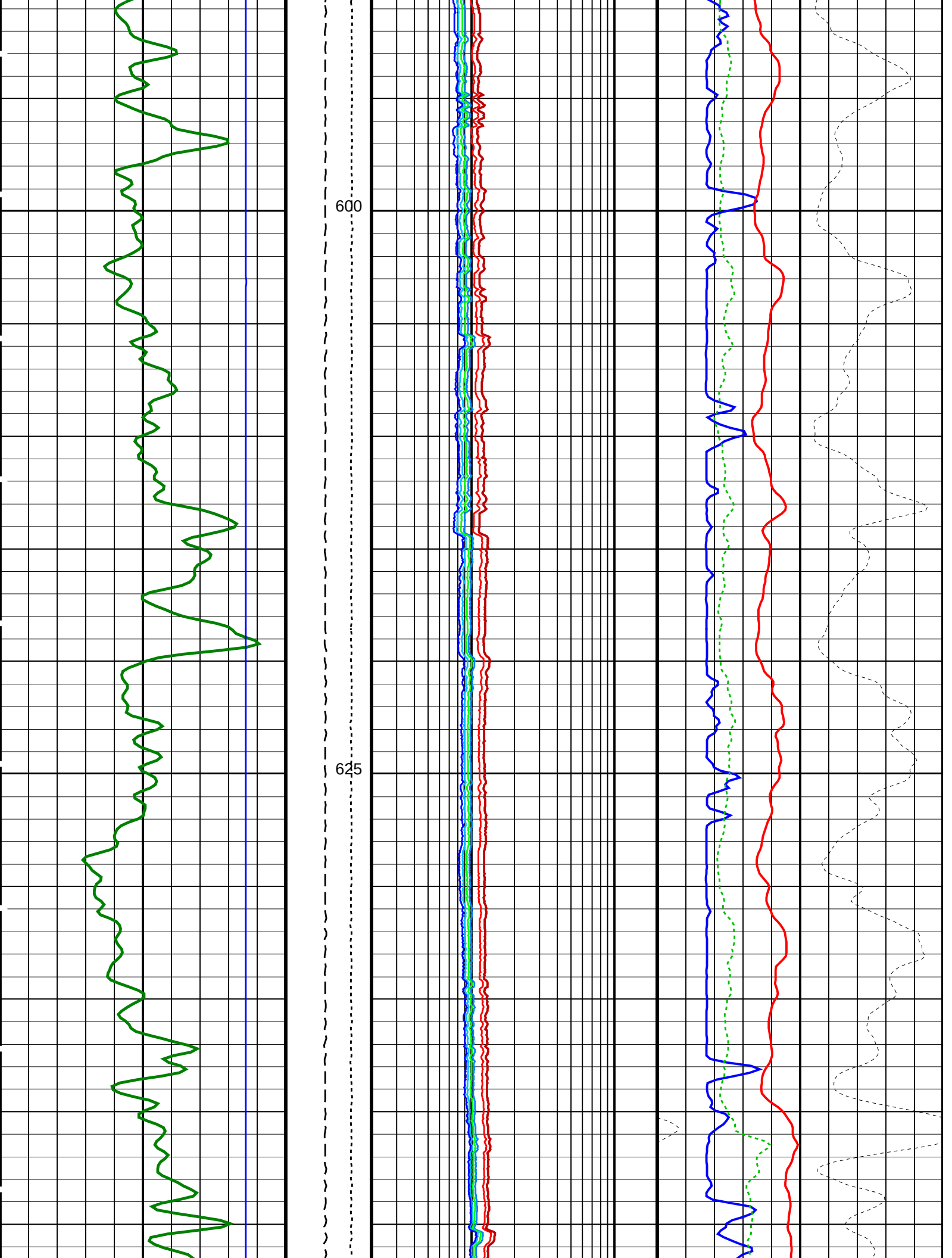
Time Mark Every 60 S

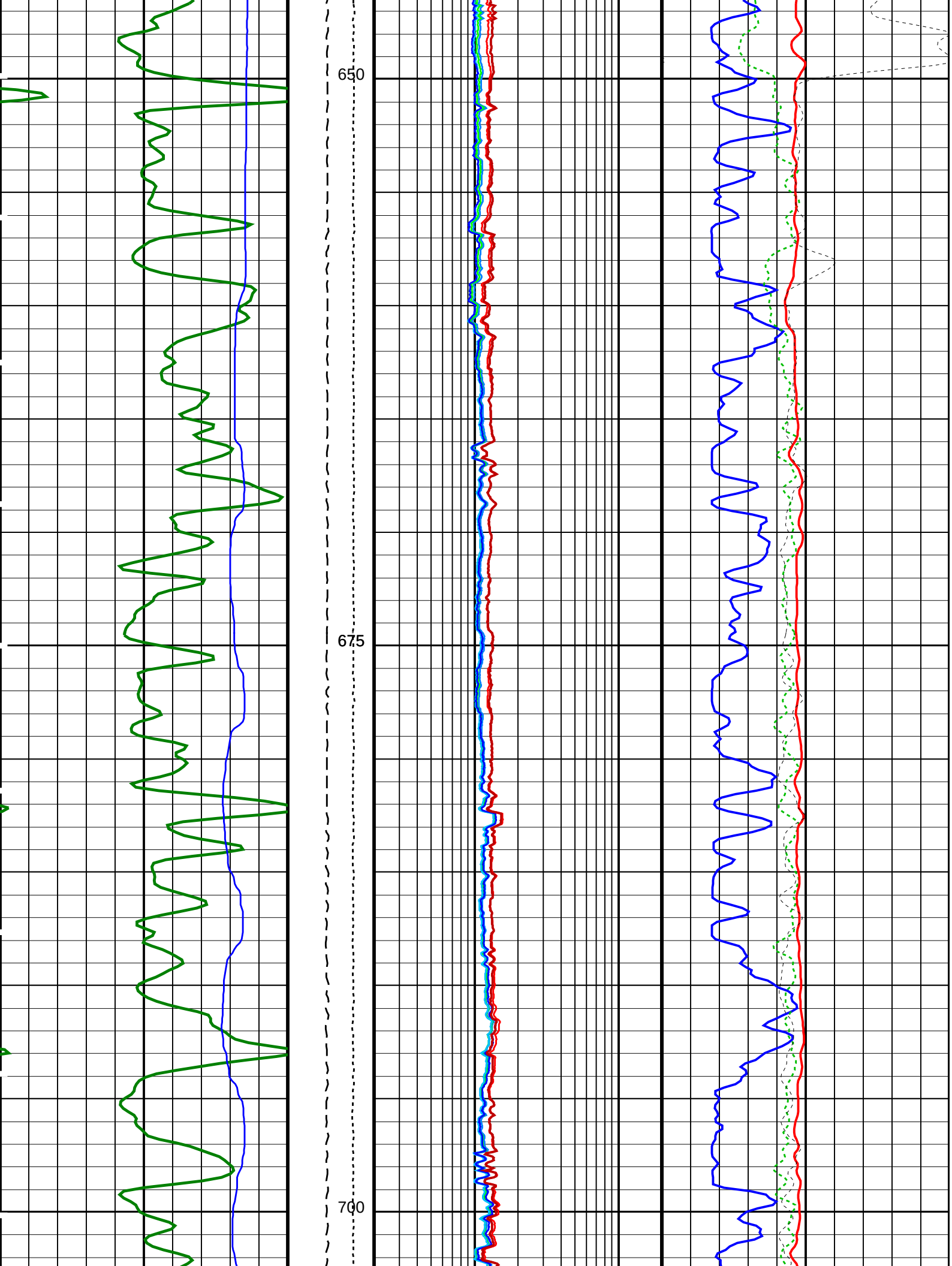


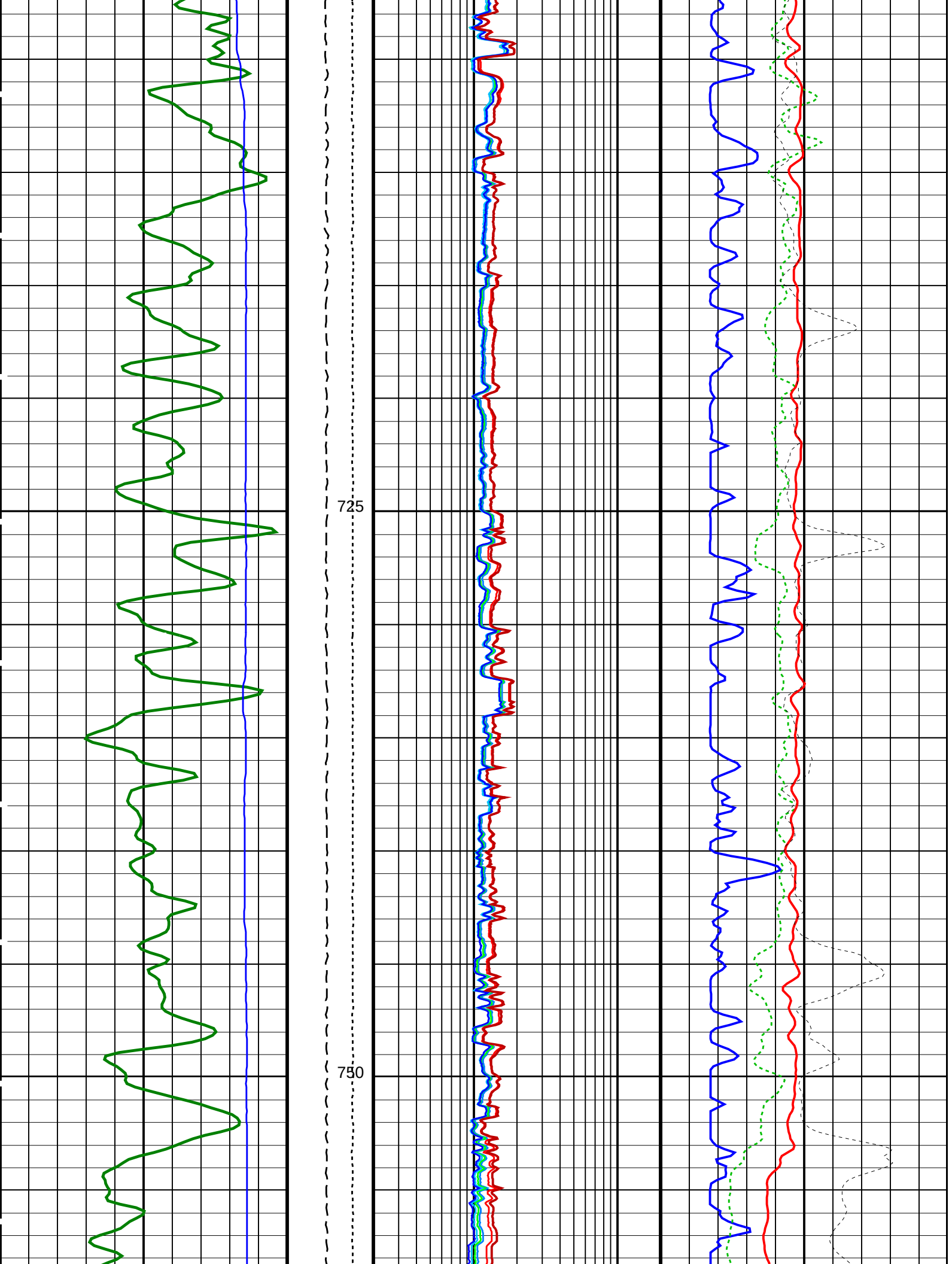

425
450
475

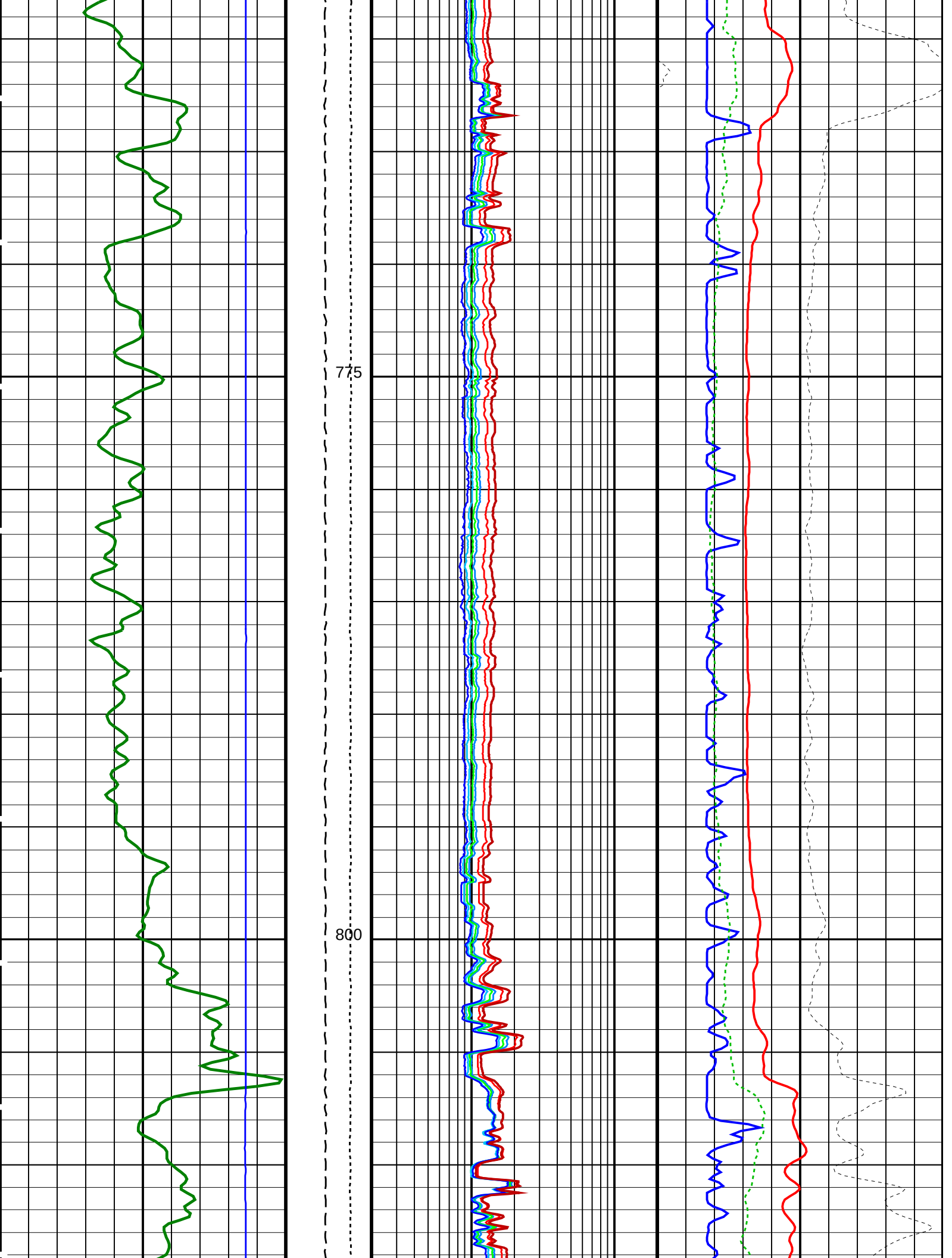

500
525

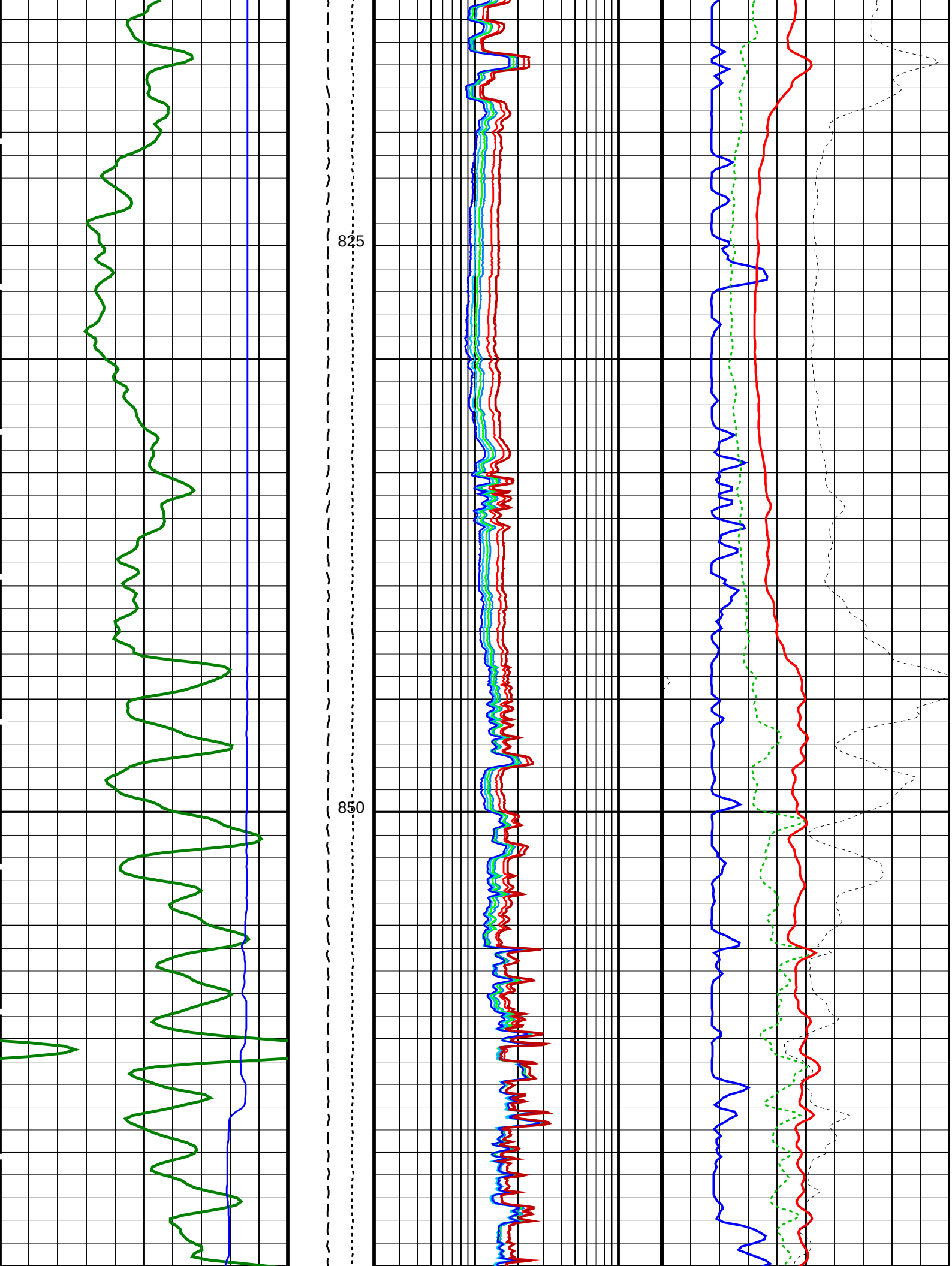

550
575

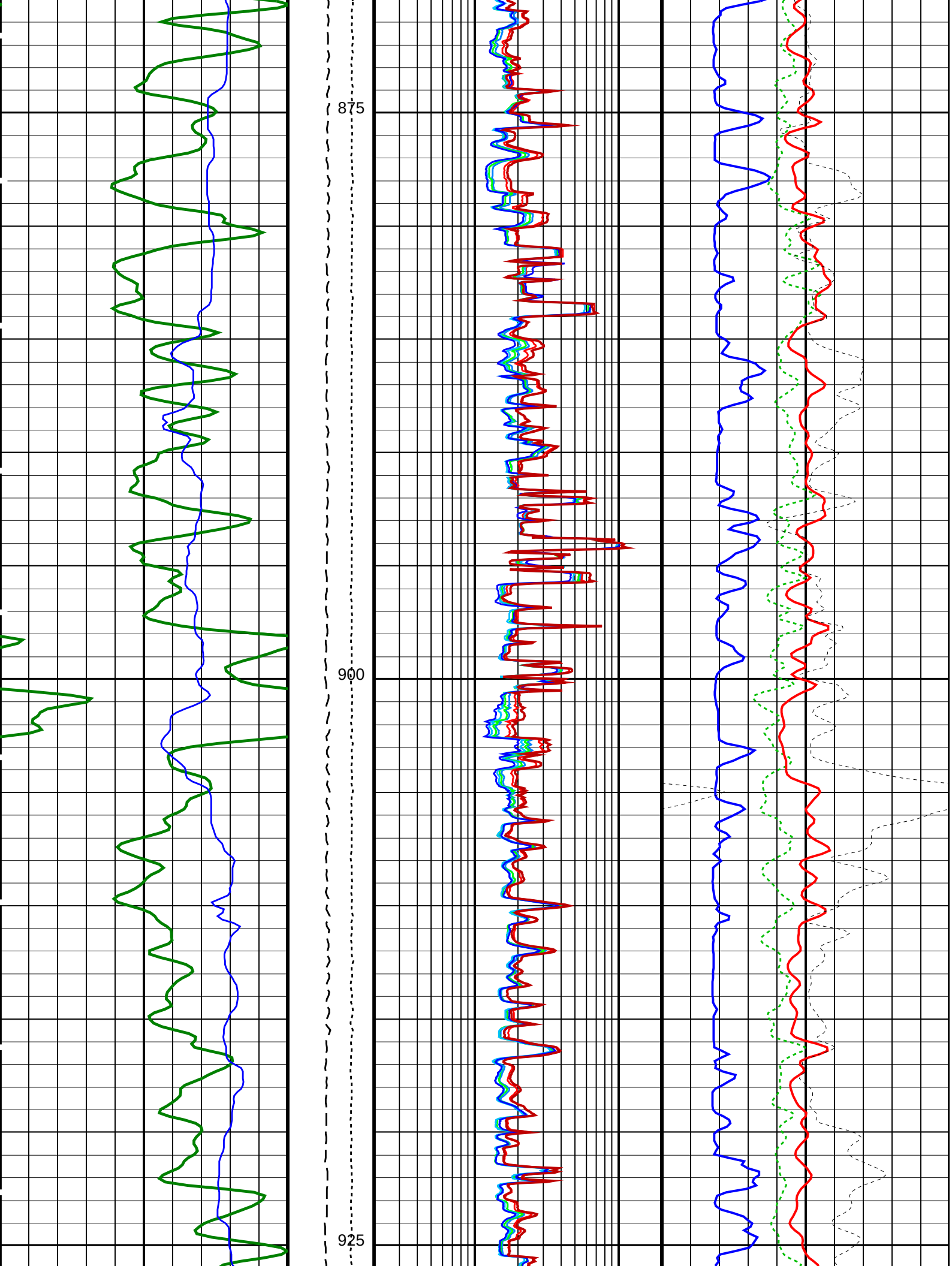

600
625

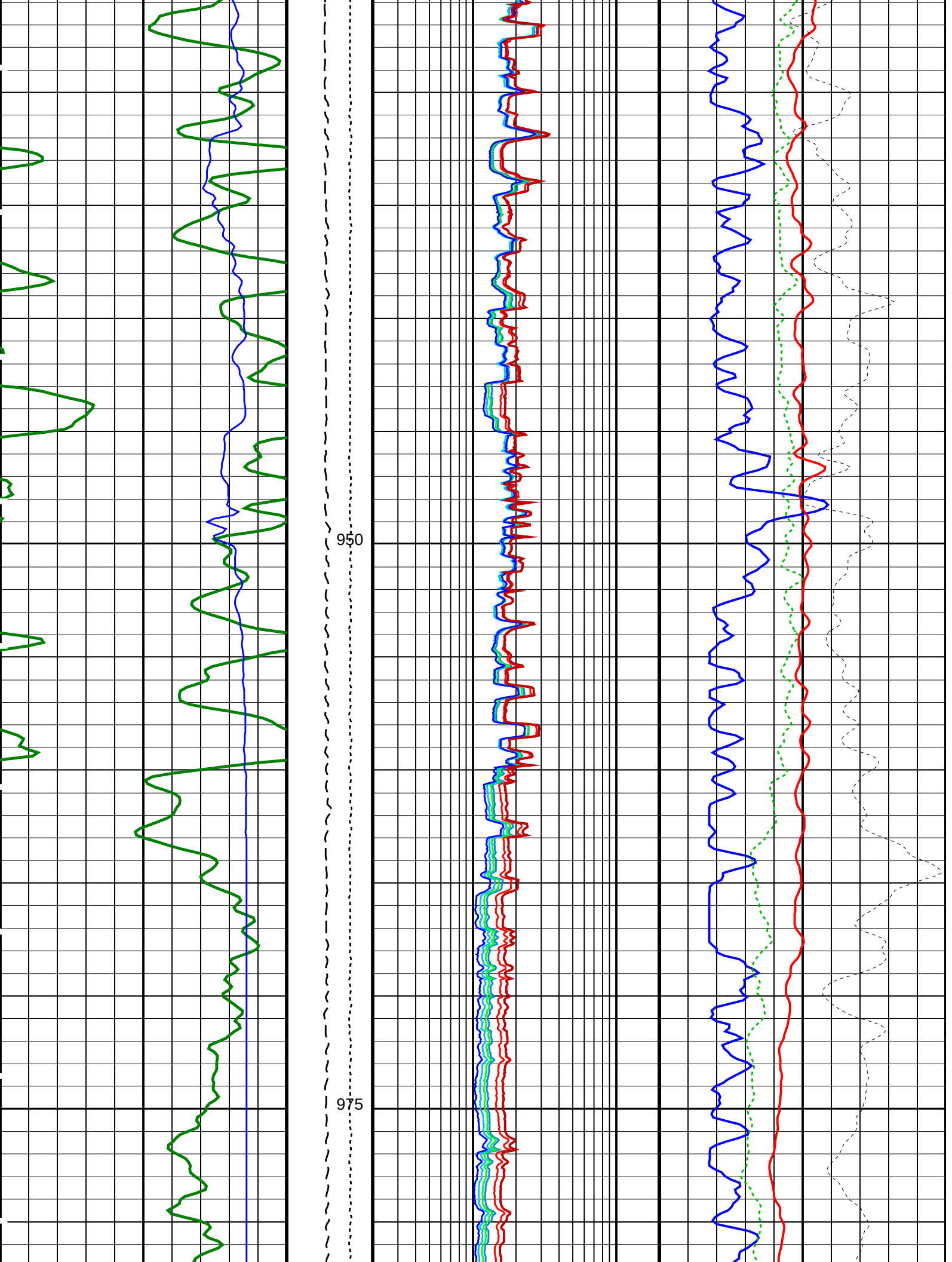

650
675
700

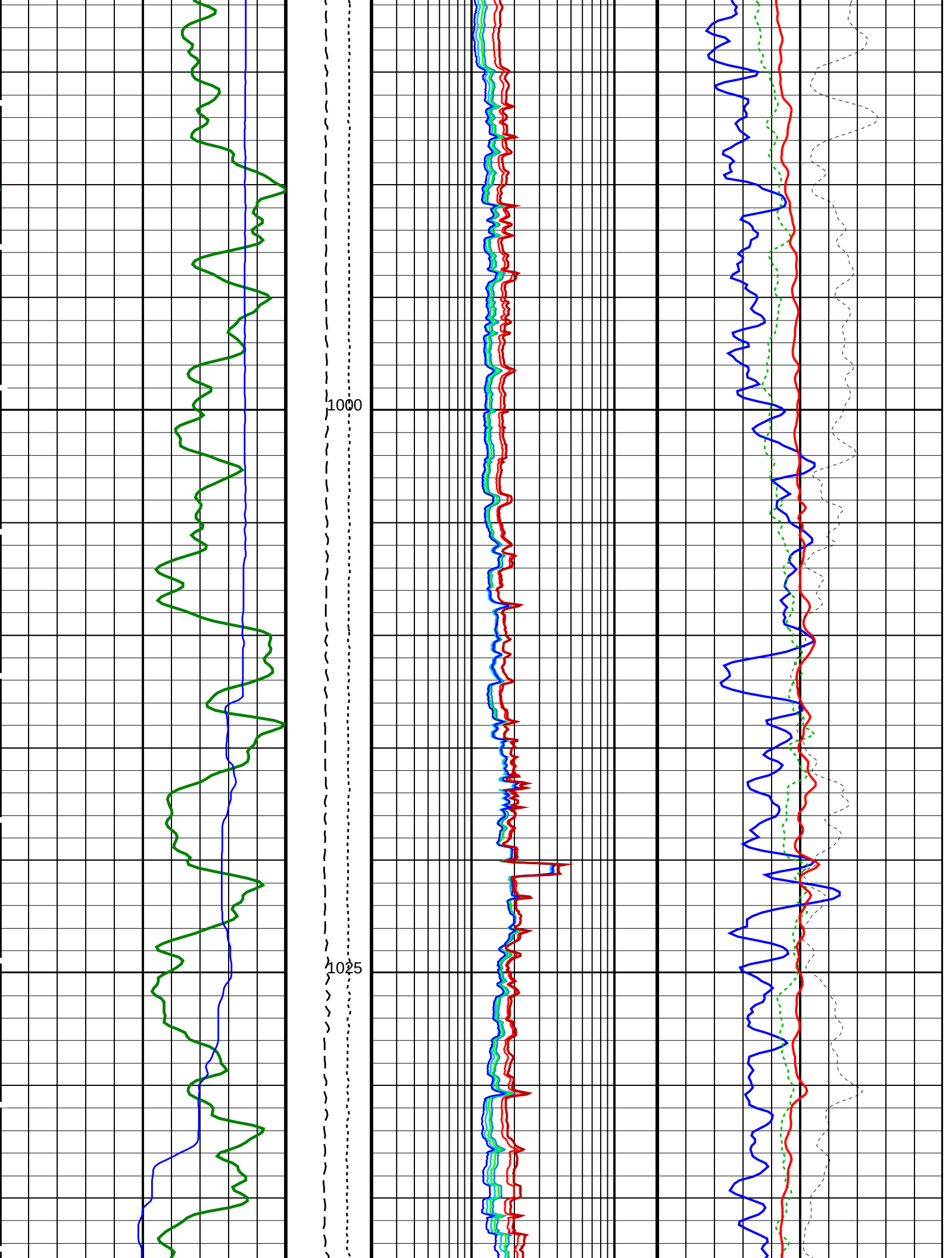

725
750

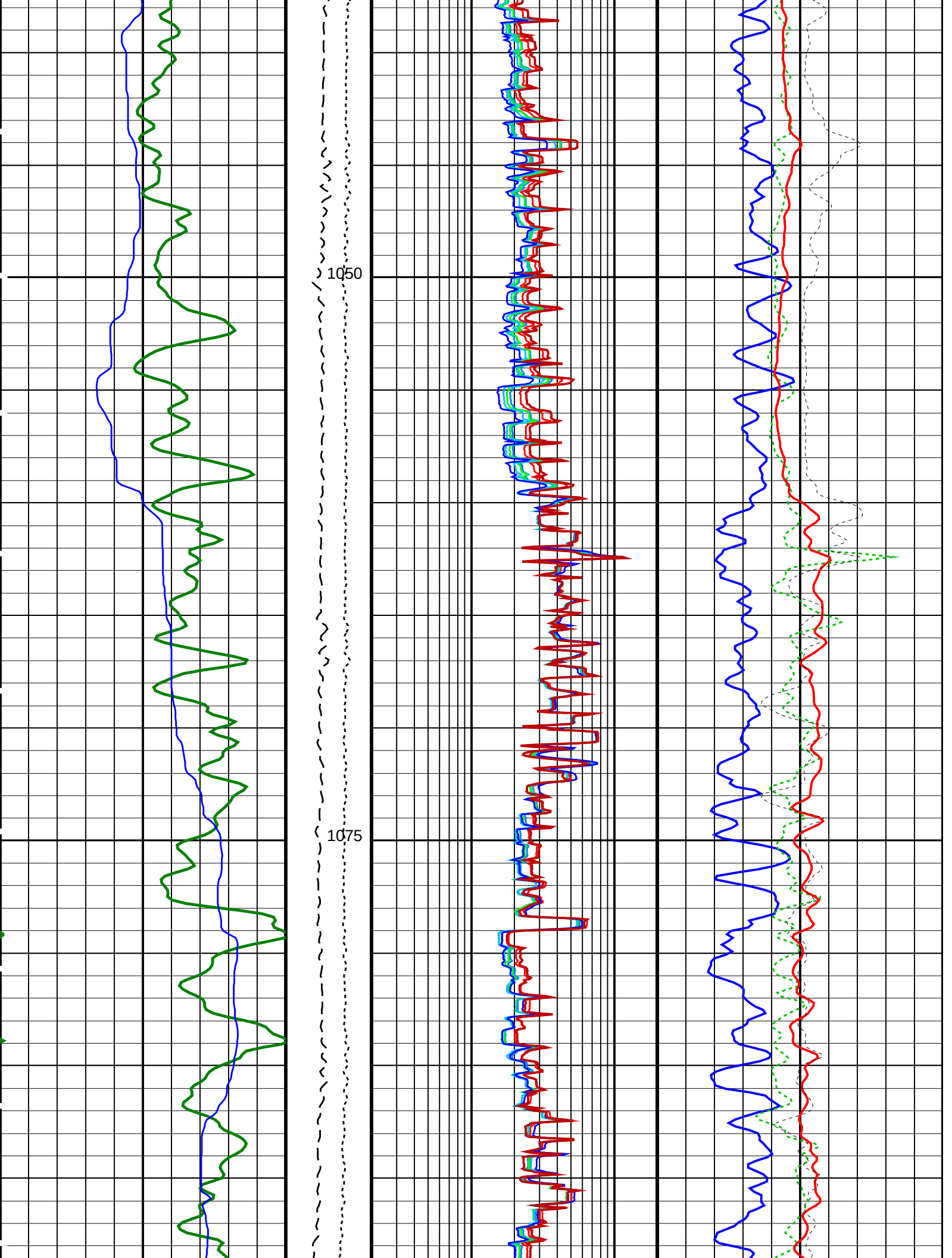

775
800

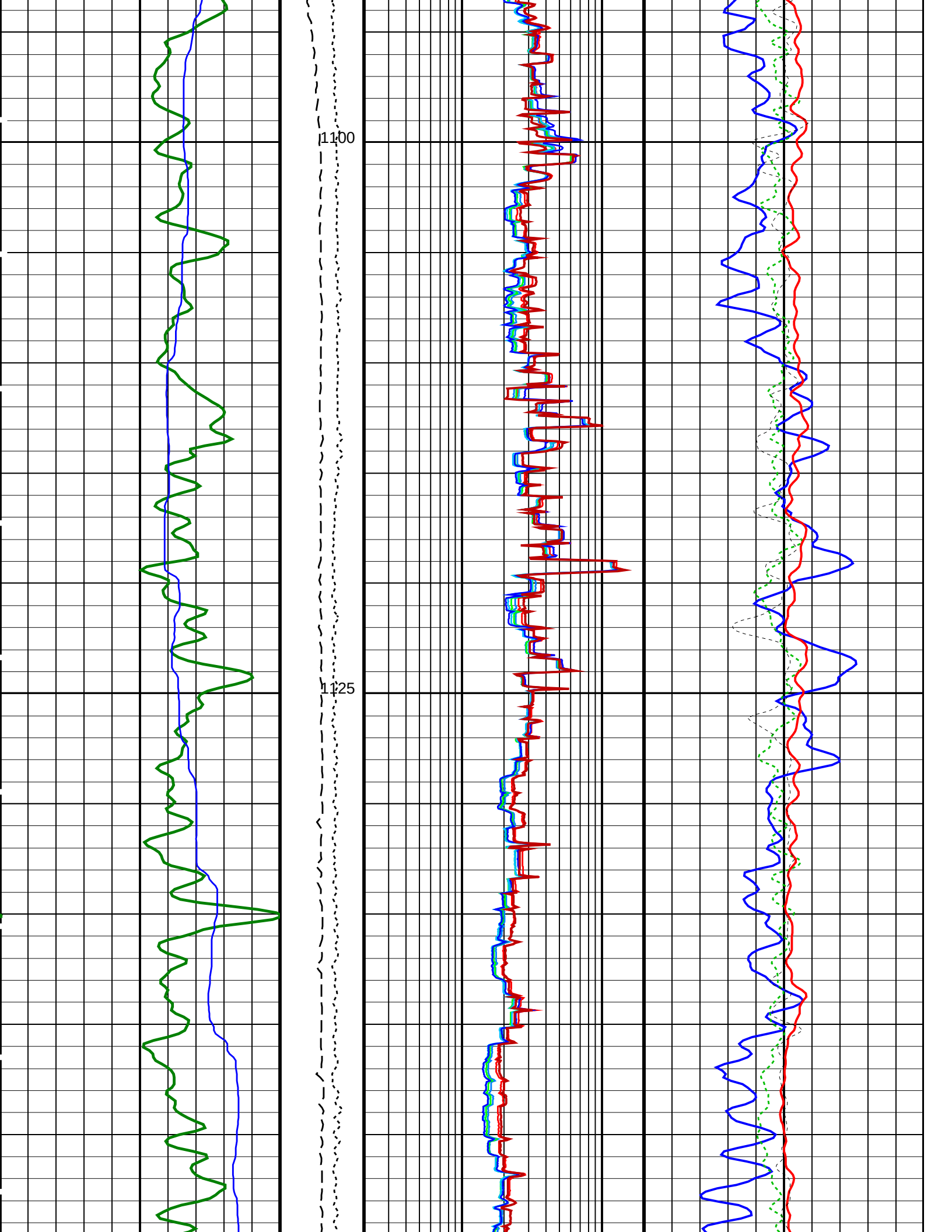

825
850

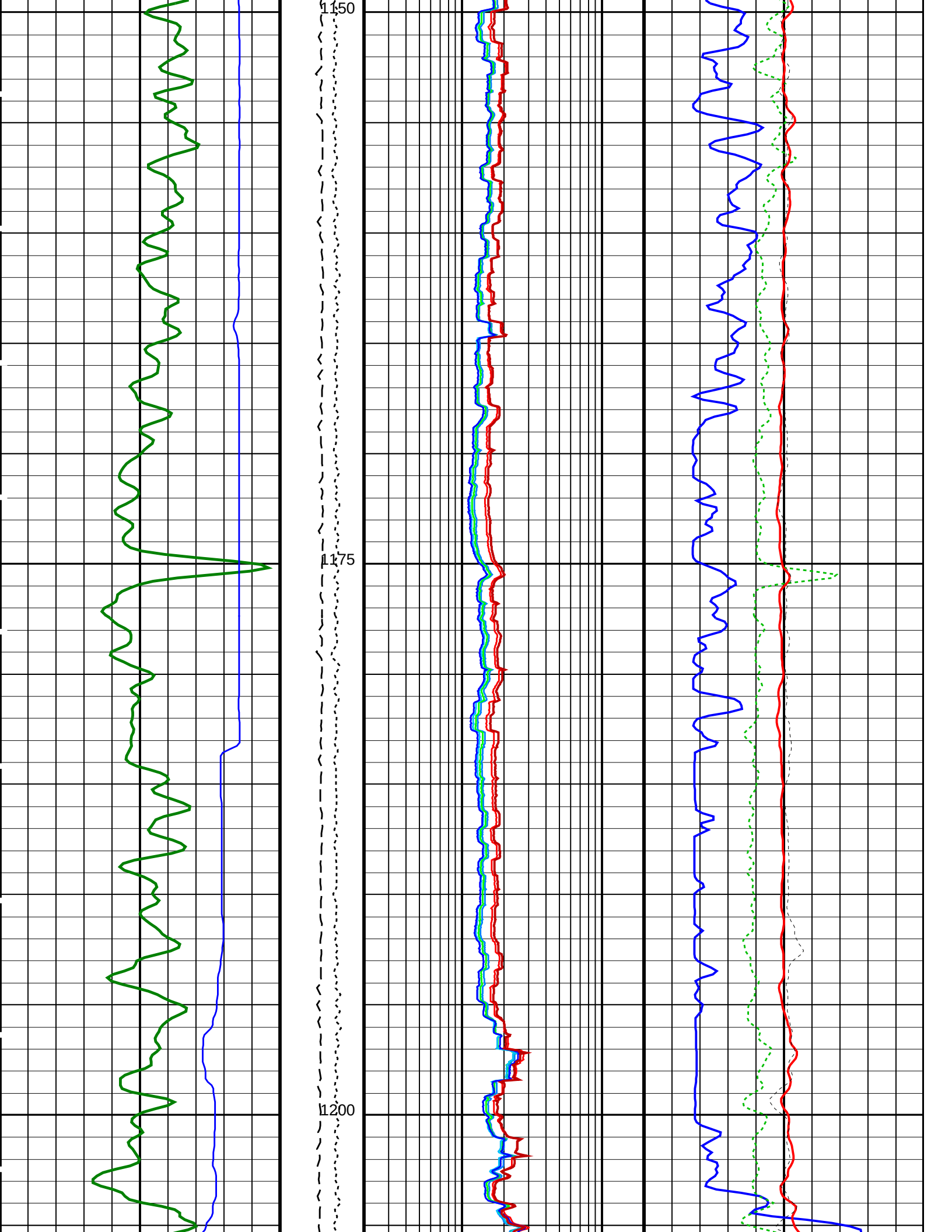

875
900
925

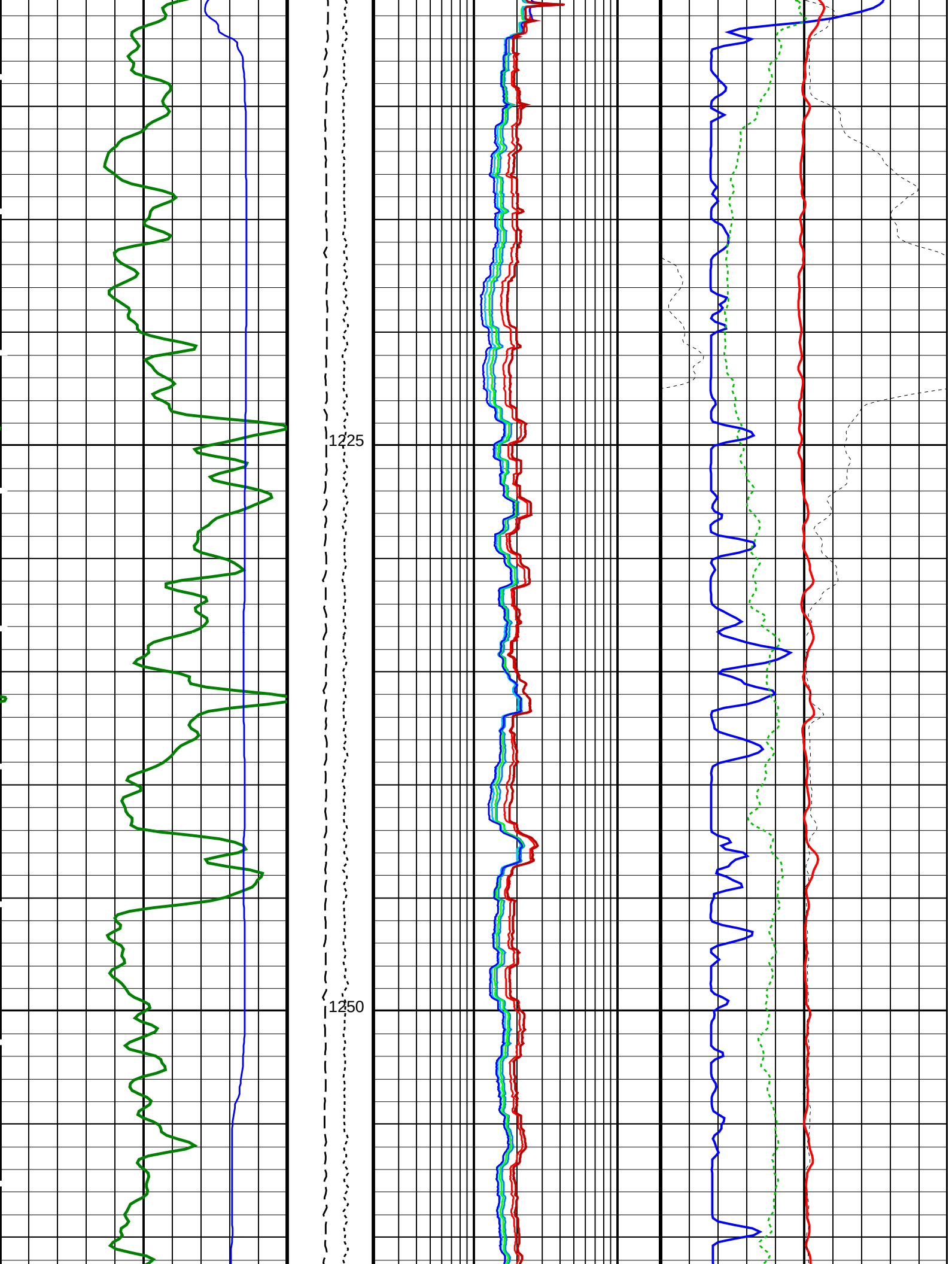

950
975

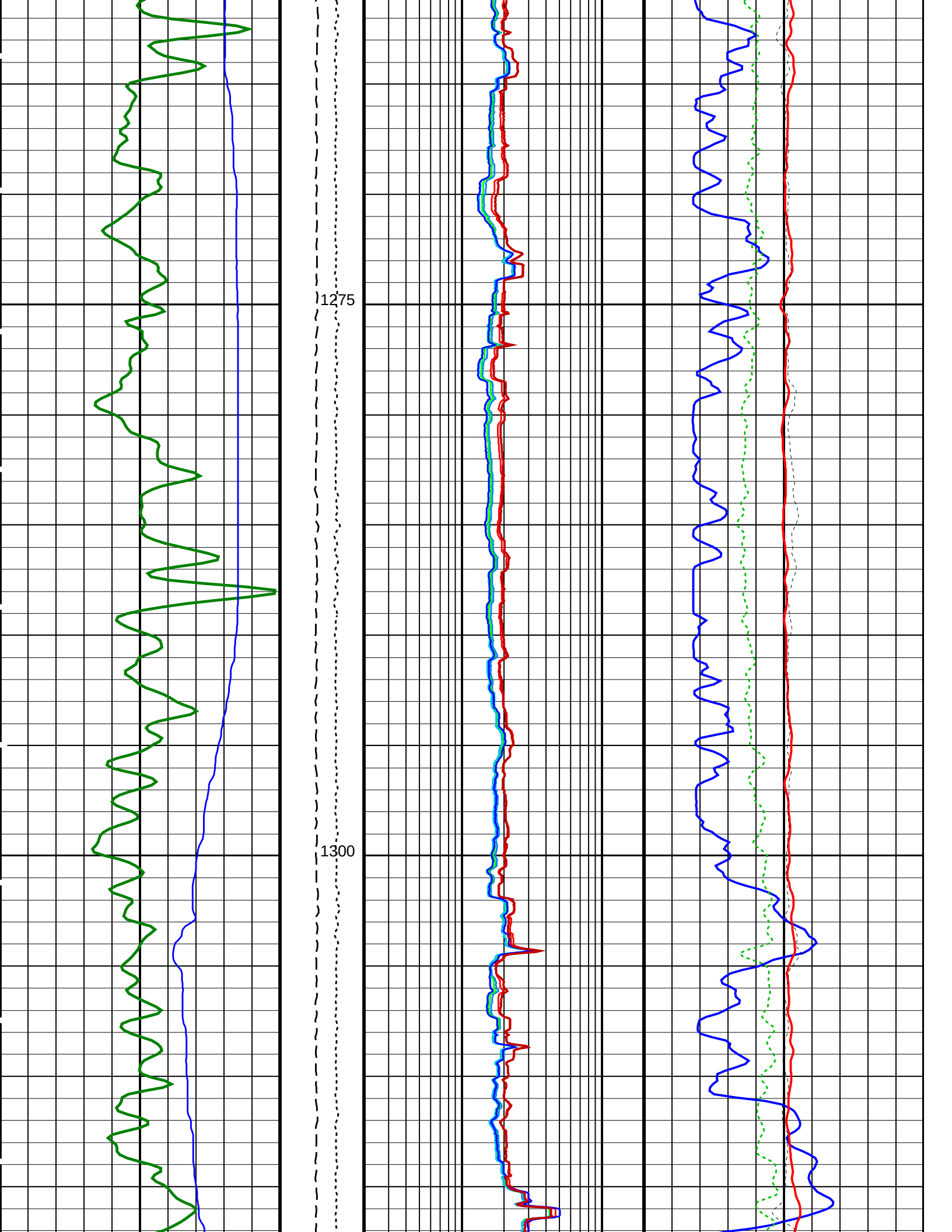

1000
1025

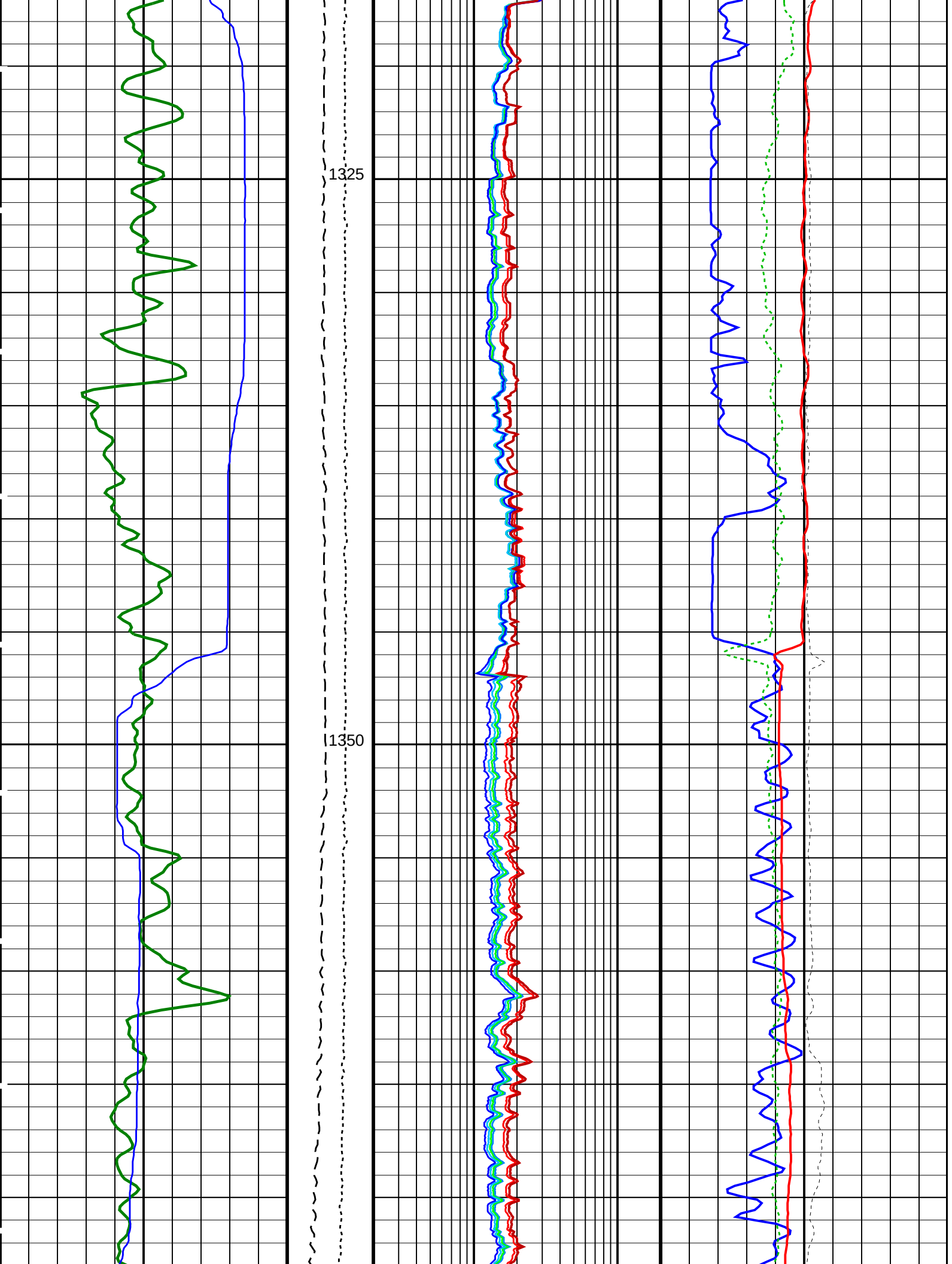

1050
1075

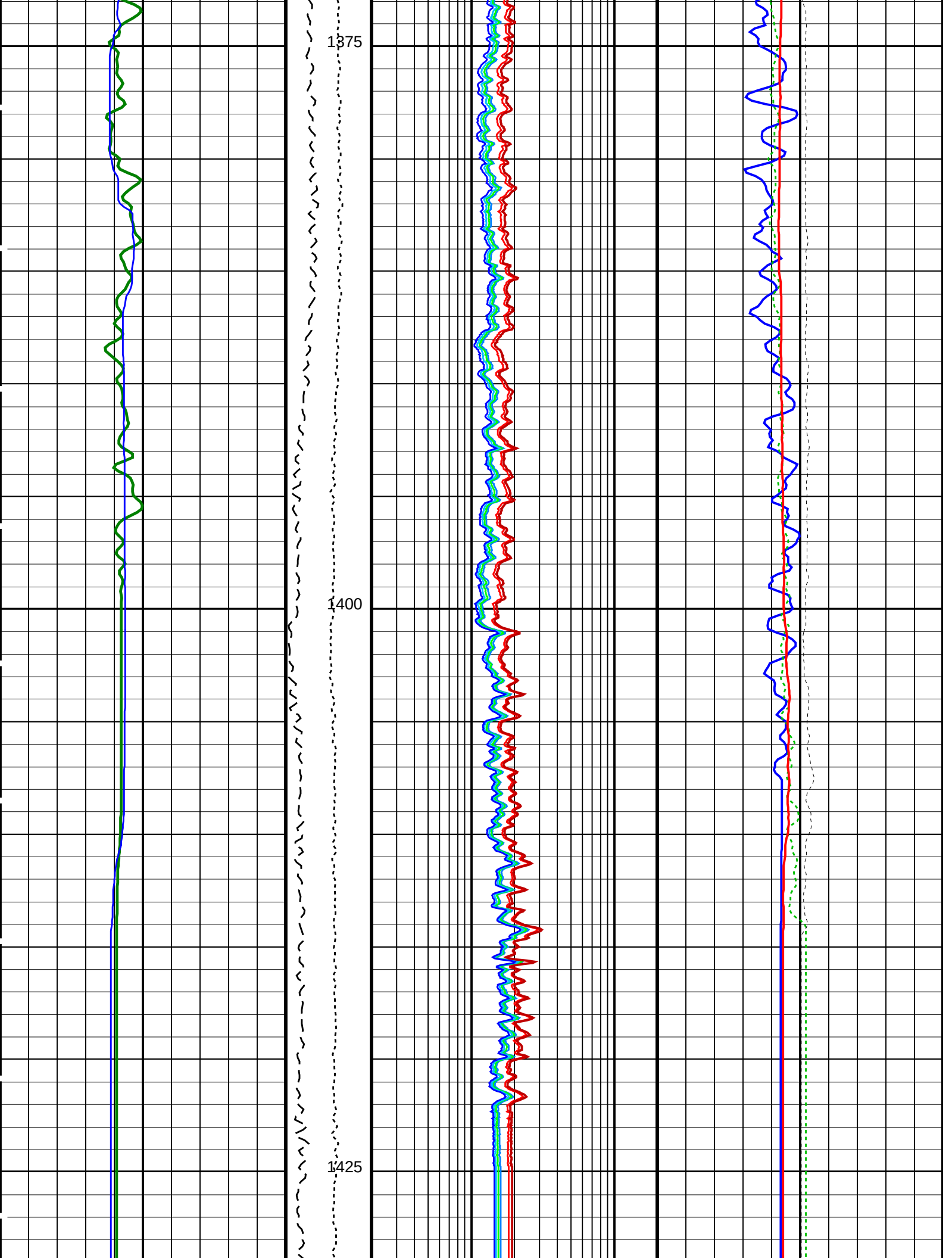

1100
1125

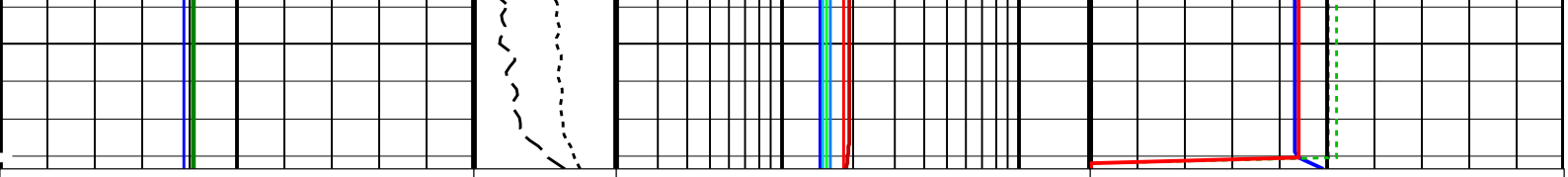

1150
1175
1200


1225
1250


1275
1300


1325
1350


1375
1400
1425



HLDS Caliper (LCAL)	Tension (TENS) (LBF)	HRLT Resistivity 4 (RLA4)	APS Corrected Standoff Porosity (STPC)
0 (IN) 20	10000 0	0.2 (OHMM) 20	100 (PU) 0
HNGS Spectroscopy Gamma Ray (HSGR)	**Calibrated Downhole Force (CDF) (LBF)**	**HRLT Resistivity 5 (RLA5)**	**HLDS Long Spaced Photoelectric Effect (PEFL)**
0 (GAPI) 50	3000 0	0.2 (OHMM) 20	0 (−−−−) 10
		HRLT Resistivity 3 (RLA3)	HLDS Bulk Density (RHOM)
		0.2 (OHMM) 20	0 (G/C3) 4
		HRLT Resistivity 2 (RLA2)	HLDS Bulk Density Correction (DRH)
		0.2 (OHMM) 20	−0.25 (G/C3) 0.25
		HRLT Resistivity 1 (RLA1)	
		0.2 (OHMM) 20	
		HRLT True Resistivity (RT_HRLT)	
		0.2 (OHMM) 20	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HRLT−B: High Resolution Laterolog Array − B		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	22.8987	DEGC
FREQ0	HRLT Frequency Index for Mode 0	32	
FREQ1	HRLT Frequency Index for Mode 1	128	
FREQ2	HRLT Frequency Index for Mode 2	104	
FREQ3	HRLT Frequency Index for Mode 3	86	
FREQ4	HRLT Frequency Index for Mode 4	56	
FREQ5	HRLT Frequency Index for Mode 5	44	
FREQ6	HRLT Frequency Index for Mode 6	116	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
KFAC_HRLT	HRLT K Factor Option	SONDE	
LOOPCOEF_S	HRLT Loop Coefficient for Shallow Modes	LOW	
LOOPMOD0	HRLT Mode 0 Loop Mode	AUTO	
LOOPMOD1	HRLT Mode 1 Loop Mode	AUTO	
LOOPMOD2	HRLT Mode 2 Loop Mode	AUTO	
LOOPMOD3	HRLT Mode 3 Loop Mode	AUTO	
LOOPMOD4	HRLT Mode 4 Loop Mode	AUTO	
LOOPMOD5	HRLT Mode 5 Loop Mode	AUTO	
LOOPMOD6	HRLT Mode 6 Loop Mode	AUTO	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
PROCINV	Inversion Selection	ON	
PROCMFL	Inversion Micro−Resistivity Selection	NO_EXTERNAL_RXO	
PROCMSO	Mechanical Standoff Fin Size	0	IN
PROCRM	Processing Mud Resistivity Select	HRLT_Compute	
PROCSPO	Sonde Position	Centered	
SHT	Surface Hole Temperature	20	DEGC
	HLDS: Hostile Litho−Density Sonde		
CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	

FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	ON	
LLDL	HLDS LS Low Level Discriminator DAC	14000	
LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.6	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
APS−C: Accelerator−Porosity Tool			
	APS Software Version	5	
AASD	APS Thermal and Array Detectors High Voltage Setting	1941.83	V
ADSO	APS Array Detectors Data Source Switch	Both	
AFSD	APS Far Detector High Voltage Setting	2032.14	V
AHCS	APS Holesize Correction Source	GCSE	
AHSS	APS Holesize Correction Switch	ON	
AMTY	APS Environmental Corrections Mud Type	WaterBaseBarite	
ANSD	APS Near Detector High Voltage Setting	1700.66	V
ASOS	APS Standoff Correction Switch	ON	
ATSS	APS Temperature−Pressure−Salinity Correction Switch	OFF	
BHFL_APS	APS TNPH Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
BSCO_APS	APS TNPH Borehole Salinity Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
DSCO_APS	APS TNPH Density Source Correction Option	MEASURED	
FSAL	Formation Salinity	−50000	PPM
FSCO_APS	APS TNPH Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO_APS	APS TNPH Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO_APS	APS TNPH Mud Cake Correction Option	NO	
MCOR_APS	APS TNPH Mud Correction	NATU	
MWCO_APS	APS TNPH Mud Weight Correction Option	YES	
NARC	APS Near/Array Calibration Ratio	1.08475	
NFRC	APS Near/Far Calibration Ratio	0.978244	
PTCO_APS	APS TNPH Pressure/Temperature Correction Option	NO	
SHT	Surface Hole Temperature	20	DEGC
TNCO_APS	APS TNPH Computation Option	YES	
HNGS−BA: Hostile Natural Gamma Ray Sonde			
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	−0.000873751	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
SHT	Surface Hole Temperature	20	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.00541	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.984728	
EDTC−B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
BSCO	Borehole Salinity Correction Option	NO	

CCCO	Casing & Cement Thickness Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO	Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
ISSBAR_EDTC	Nuclear Mud Type	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	YES	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	20	DEGC
SOCN	Standoff Distance	0.5	IN
SOCO	Standoff Correction Option	NO	
TPOS_EDTC	EDTC Tool Centered/Eccentered	Eccentered	
U−ETELM_EDTS	Telemetry Mode for eWAFE	Standard_EDTS	
U−TELM_EDTS	Telemetry Mode for WAFE	Standard_EDTS	
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	38000.00	PPM
CSIZ	Current Casing Size	5.500	IN
CWEI	Casing Weight	168.00	LB/F
DFD	Drilling Fluid Density	1.05	G/C3
FLEV	Fluid Level	−50000.00	M
MST	Mud Sample Temperature	23.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	1212.2	M
TDD	Total Depth − Driller	1434.00	M
TDL	Total Depth − Logger	1434.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: TripleCombo Vertical Scale: 1:200 Graphics File Created: 26−Nov−2015 03:12

OP System Version: 19C0−187

MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
APS−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_009LUP	FN:10	PRODUCER	26−Nov−2015 03:12	
RTB	MSS_LDEO_HRLA_LDL_009LUP	FN:11	PRODUCER	26−Nov−2015 03:12	

Company: International Ocean Discovery Program Well: Expedition 359, Site U1471E

Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_009LUP	FN:10	PRODUCER	26−Nov−2015 03:12	1433.3 M	420.6 M
RTB	MSS_LDEO_HRLA_LDL_009LUP	FN:11	PRODUCER	26−Nov−2015 03:12	1433.3 M	420.6 M

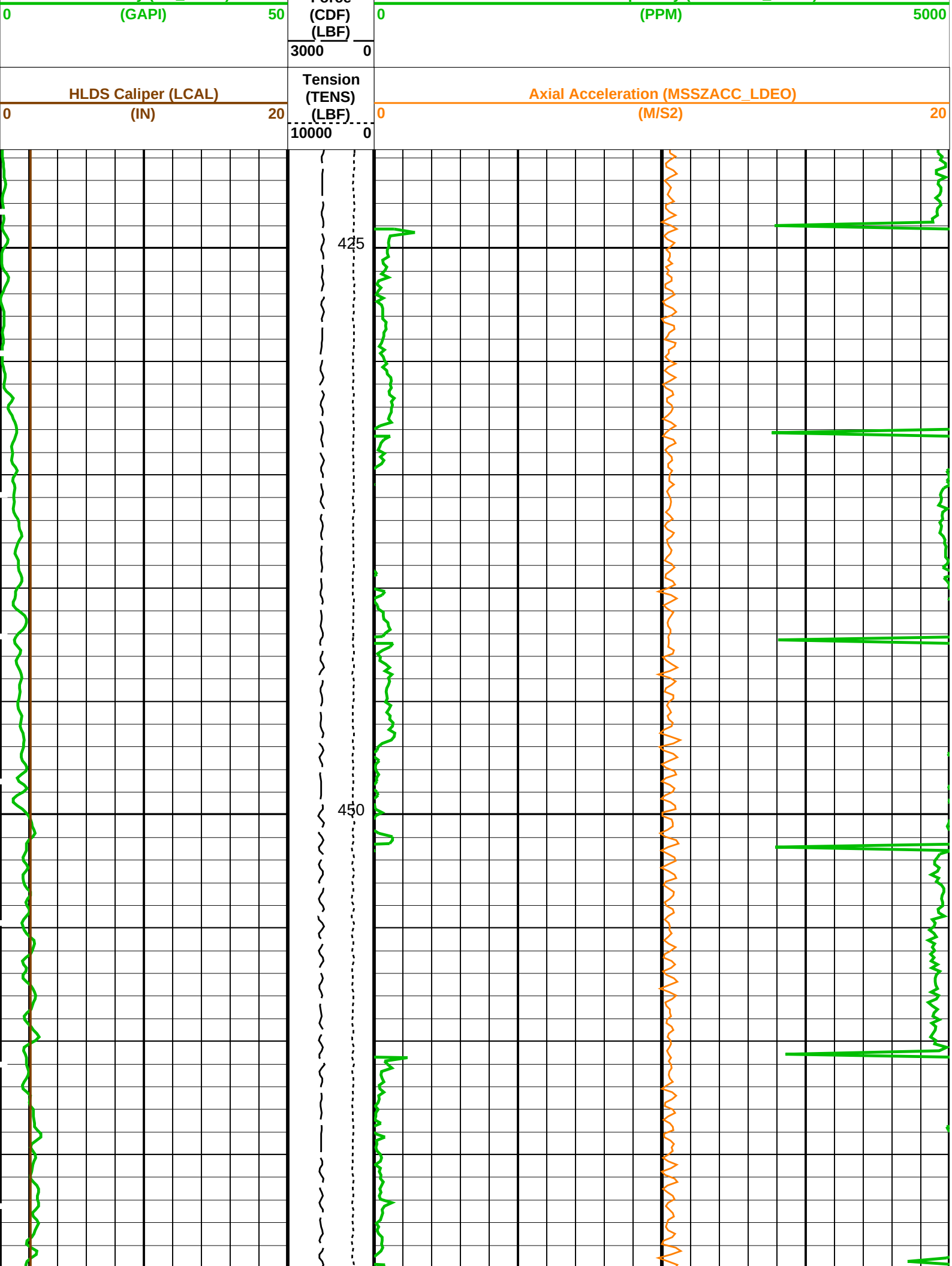
OP System Version: 19C0−187

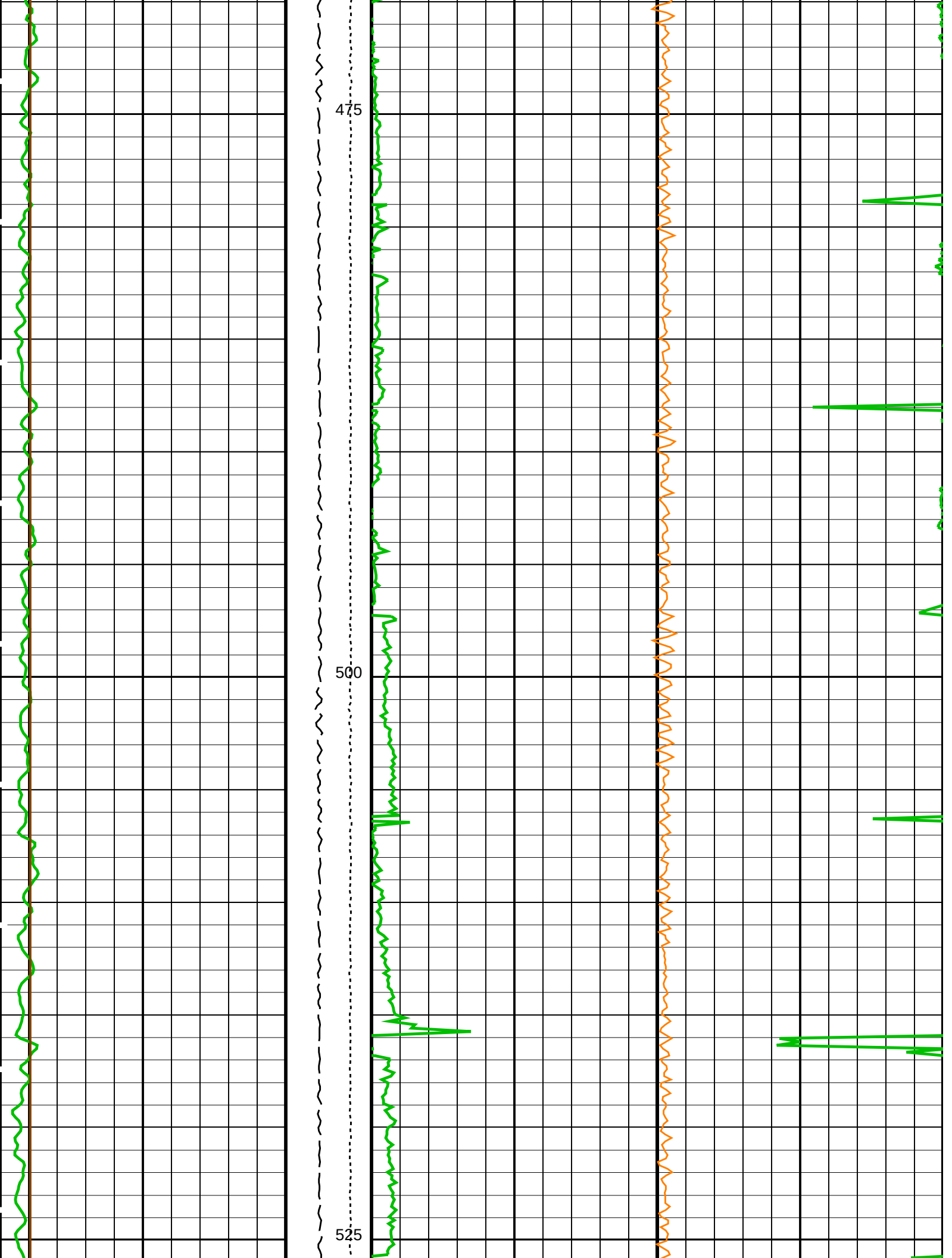
MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
APS−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

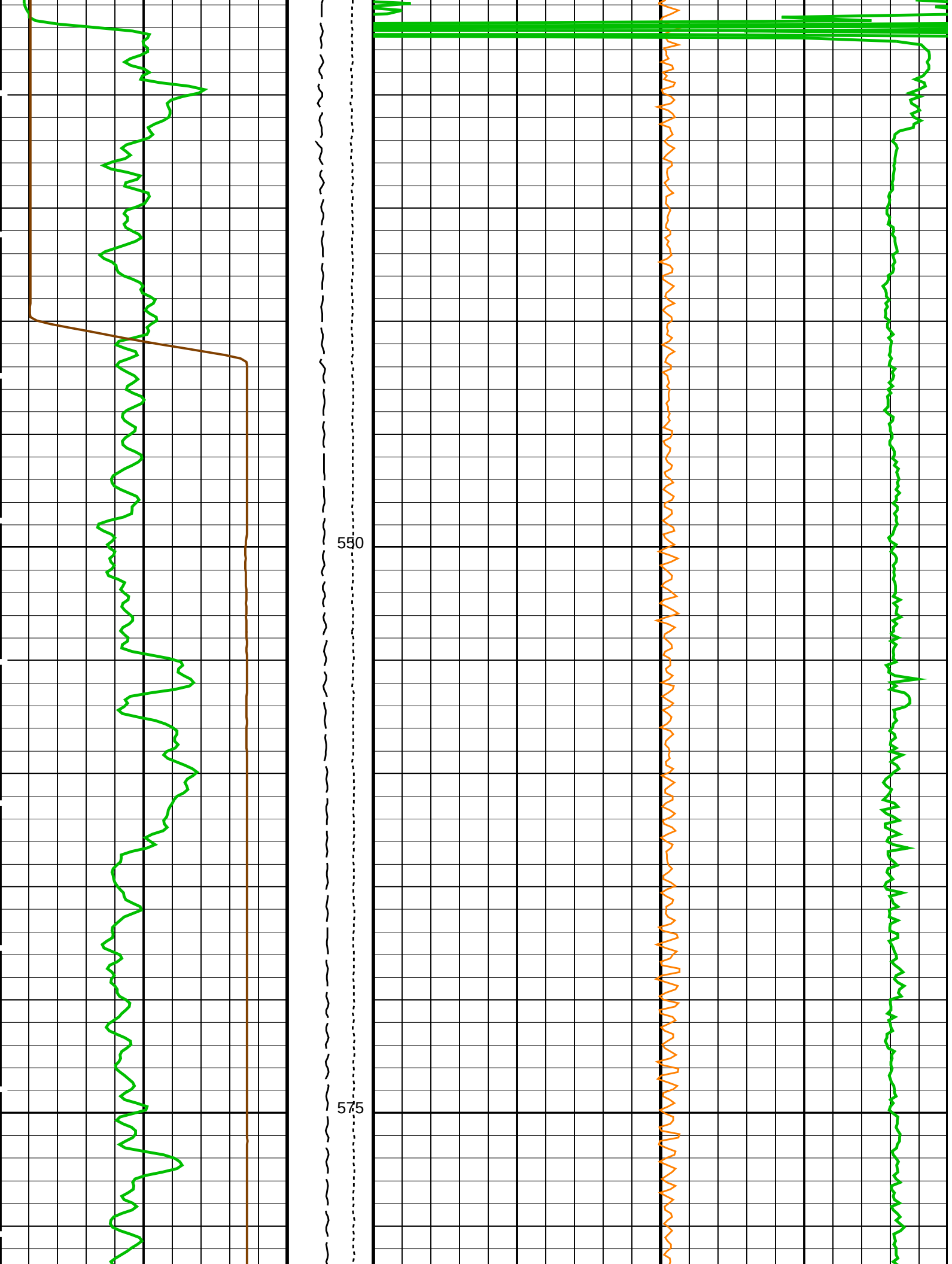
PIP SUMMARY

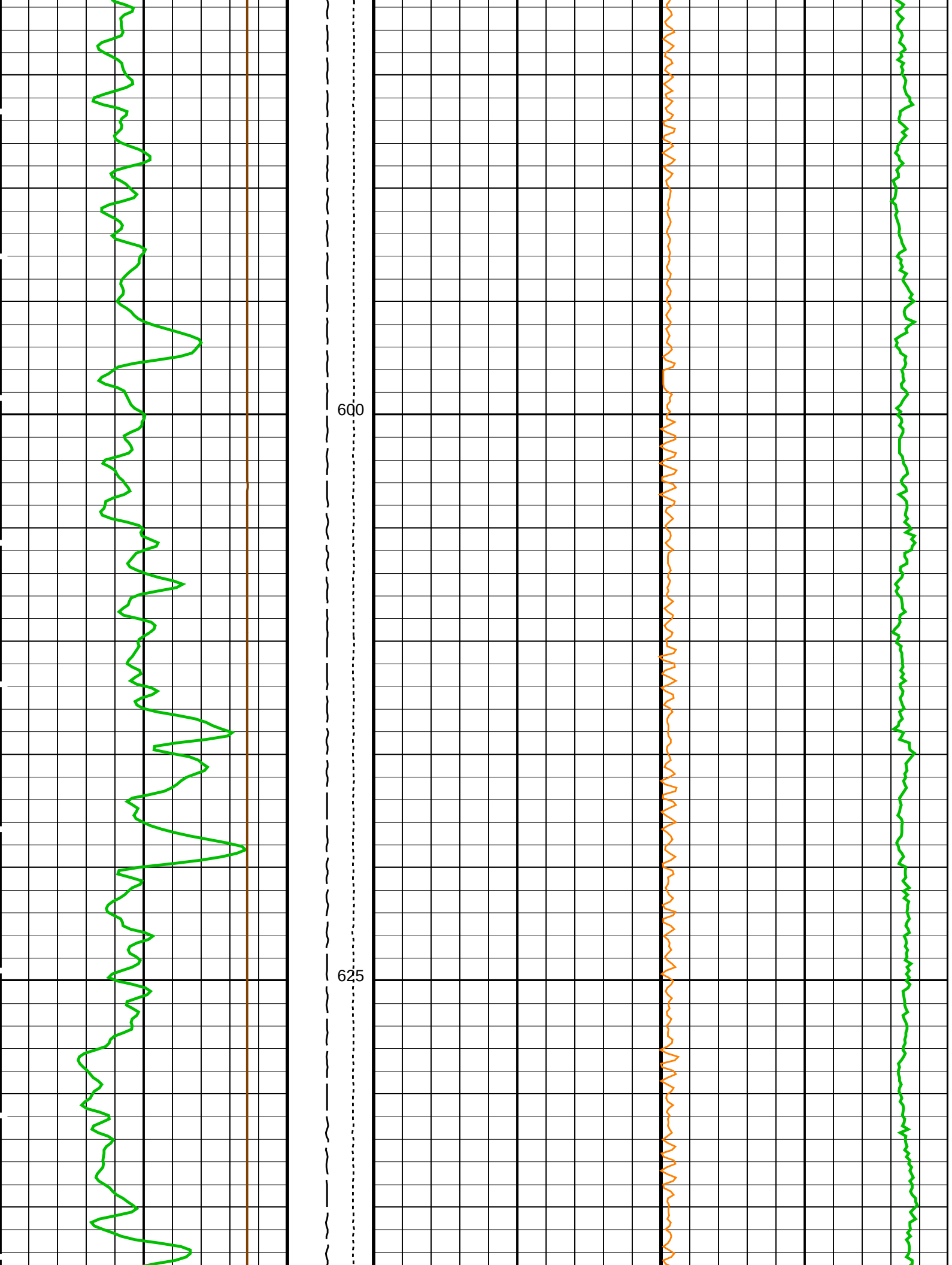
Time Mark Every 60 S

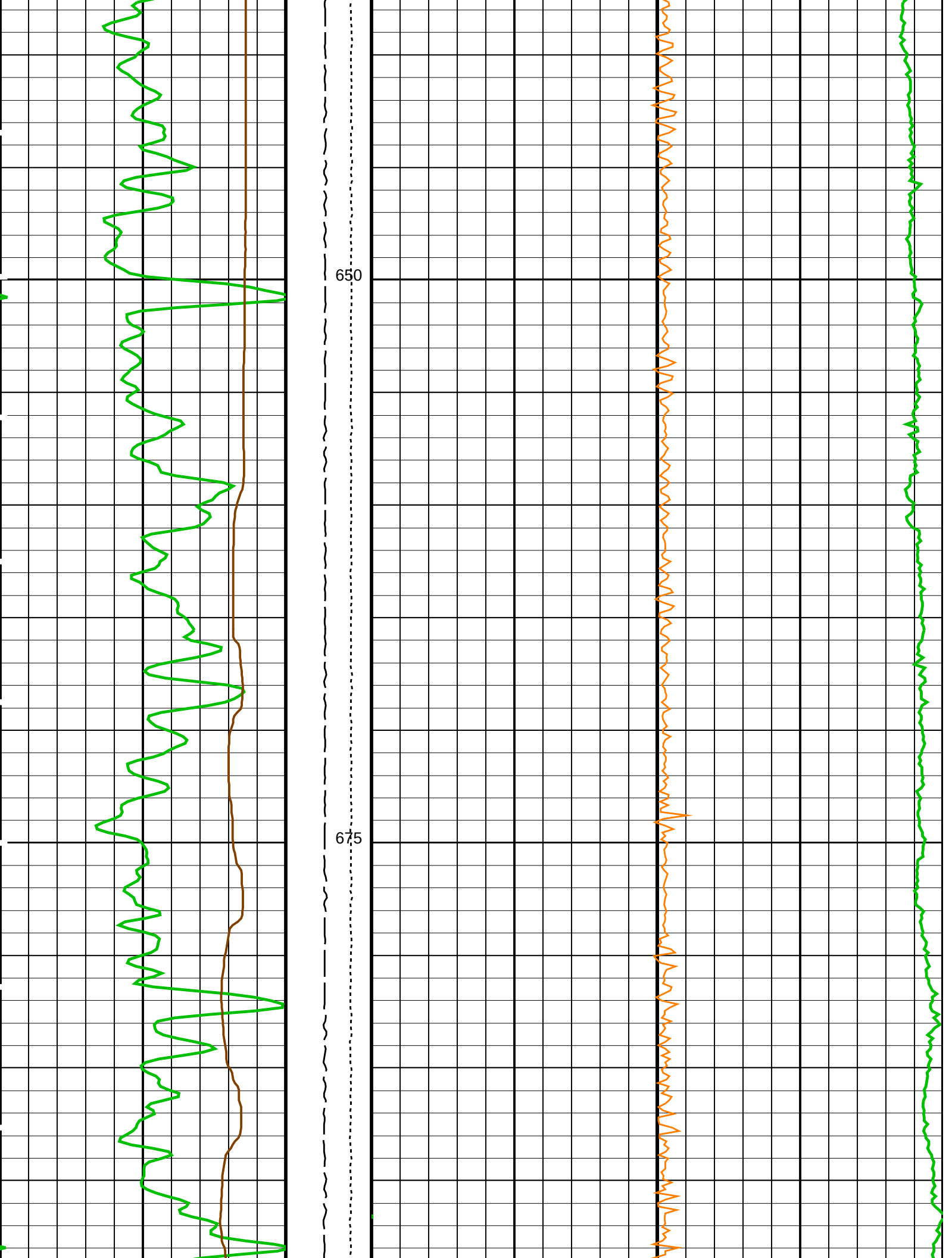
Gamma Ray (GR_EDTC)	Calibrated Downhole Force	Dual−Coil Susceptibility (MSSLSUS_LDEO)

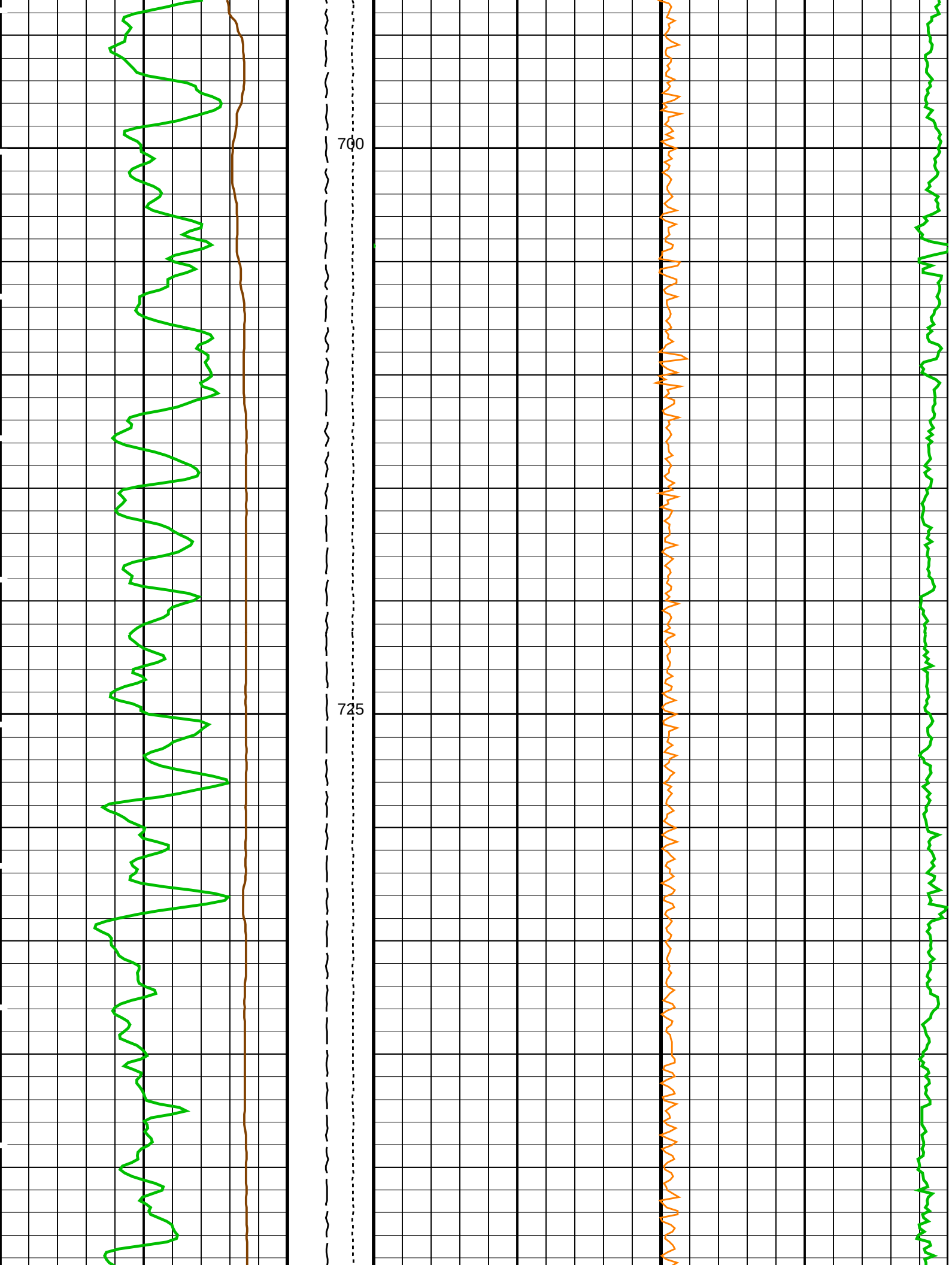

0
(GAPI)
50
Force (CDF) (LBF)
3000
0
0
(PPM)
5000
HLDS Caliper (LCAL)
0
(IN)
20
Tension (TENS) (LBF)
10000
0
Axial Acceleration (MSSZACC_LDEO)
0
(M/S2)
20
425
450

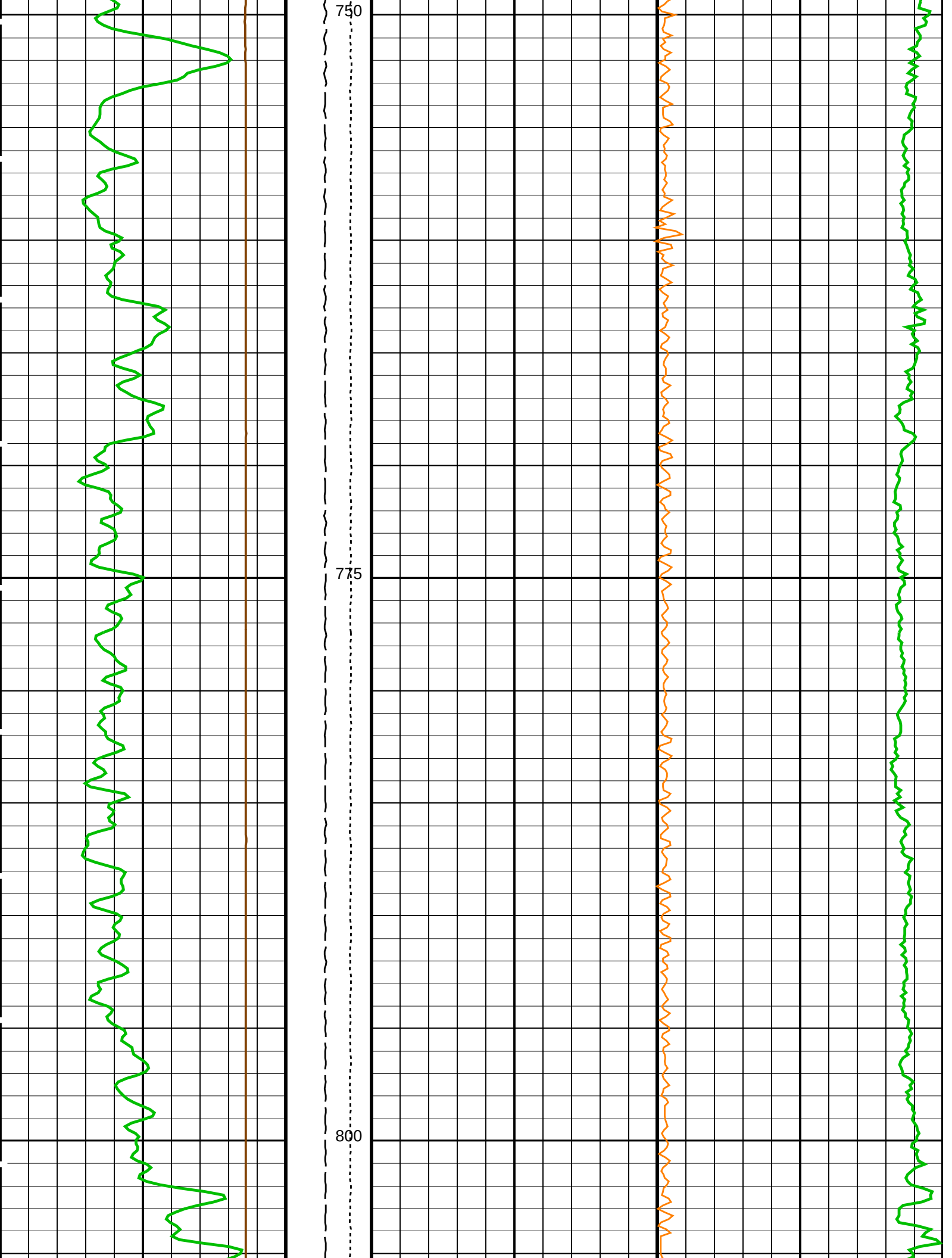

475
500
525

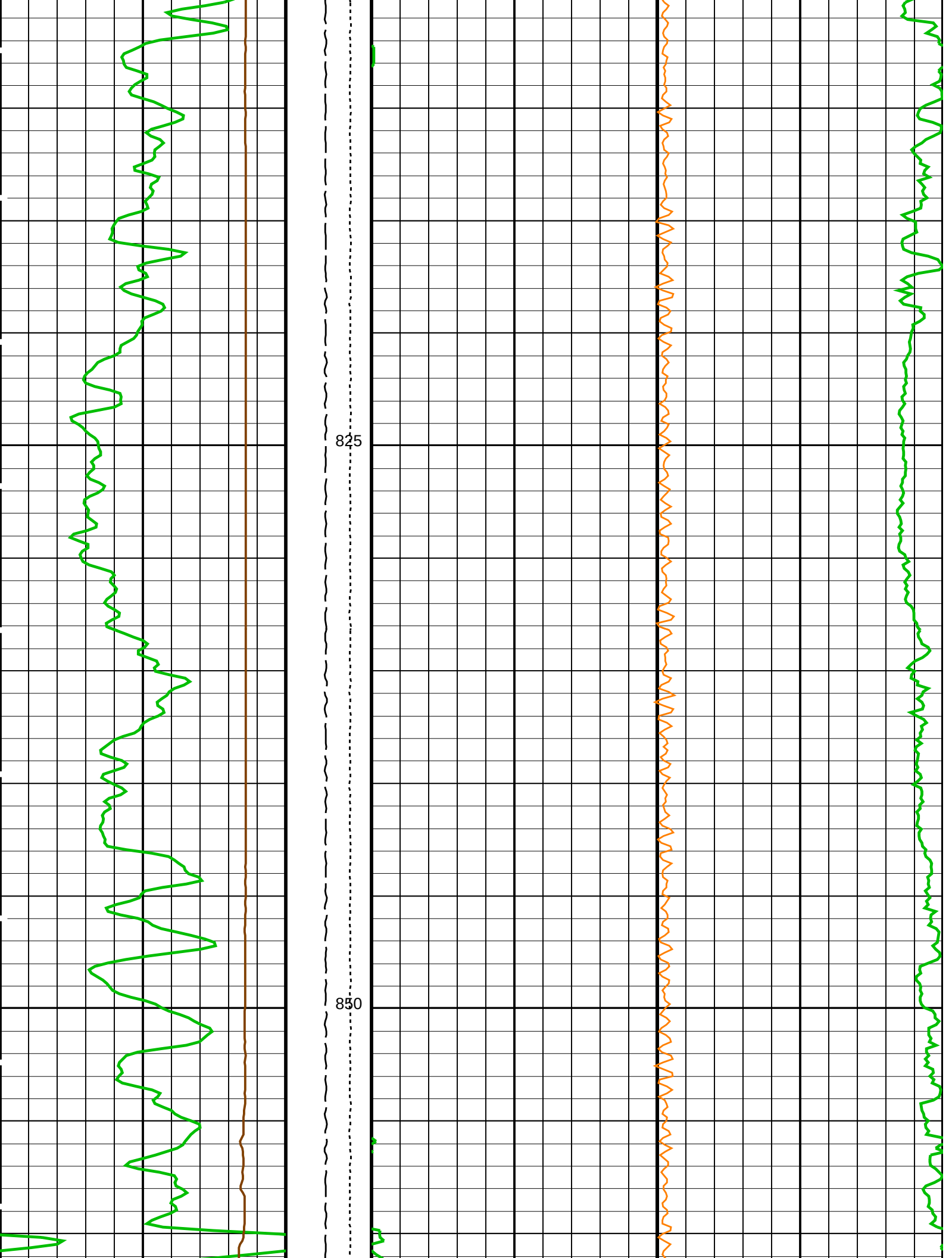

550
575

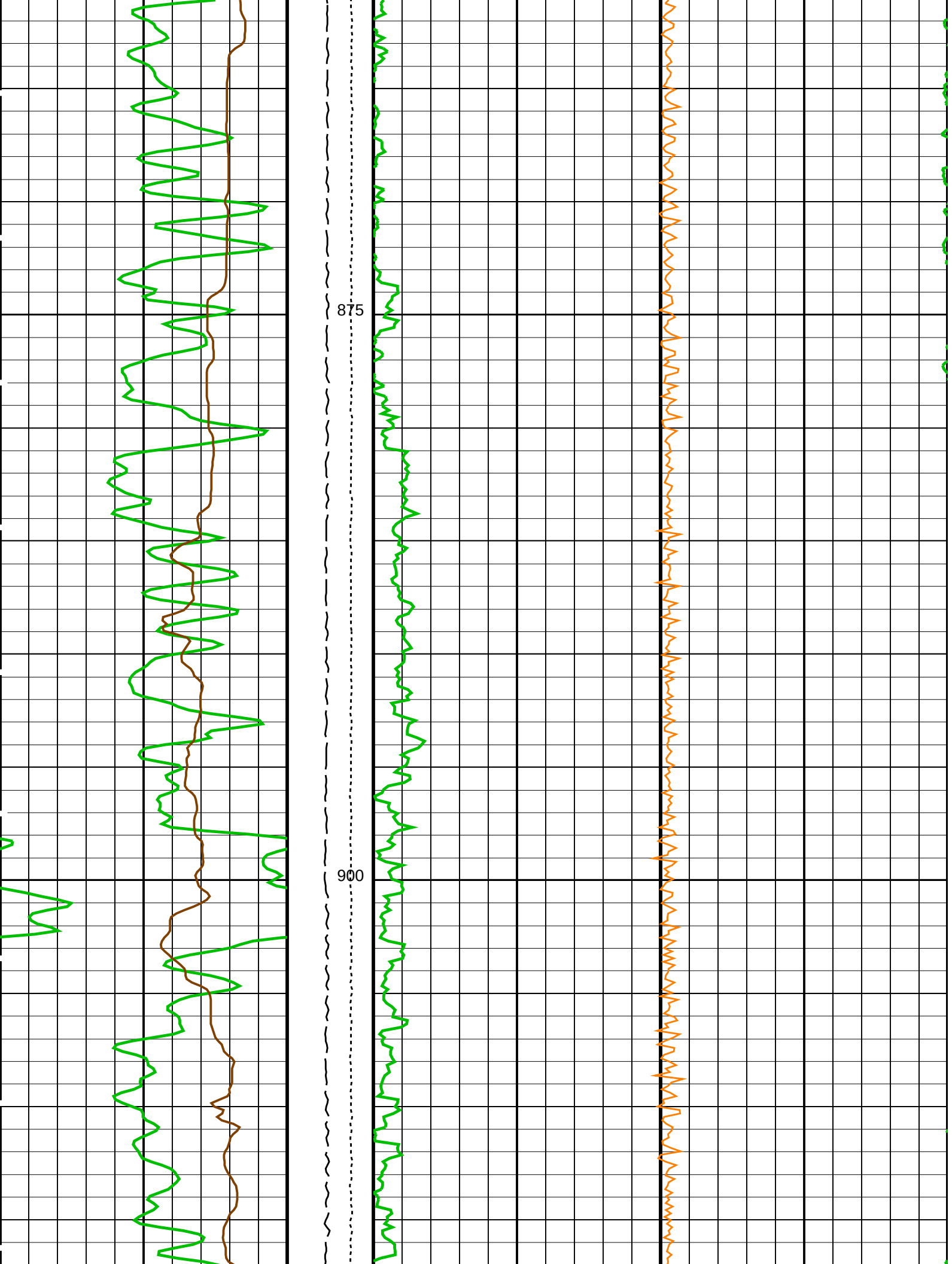

600
625

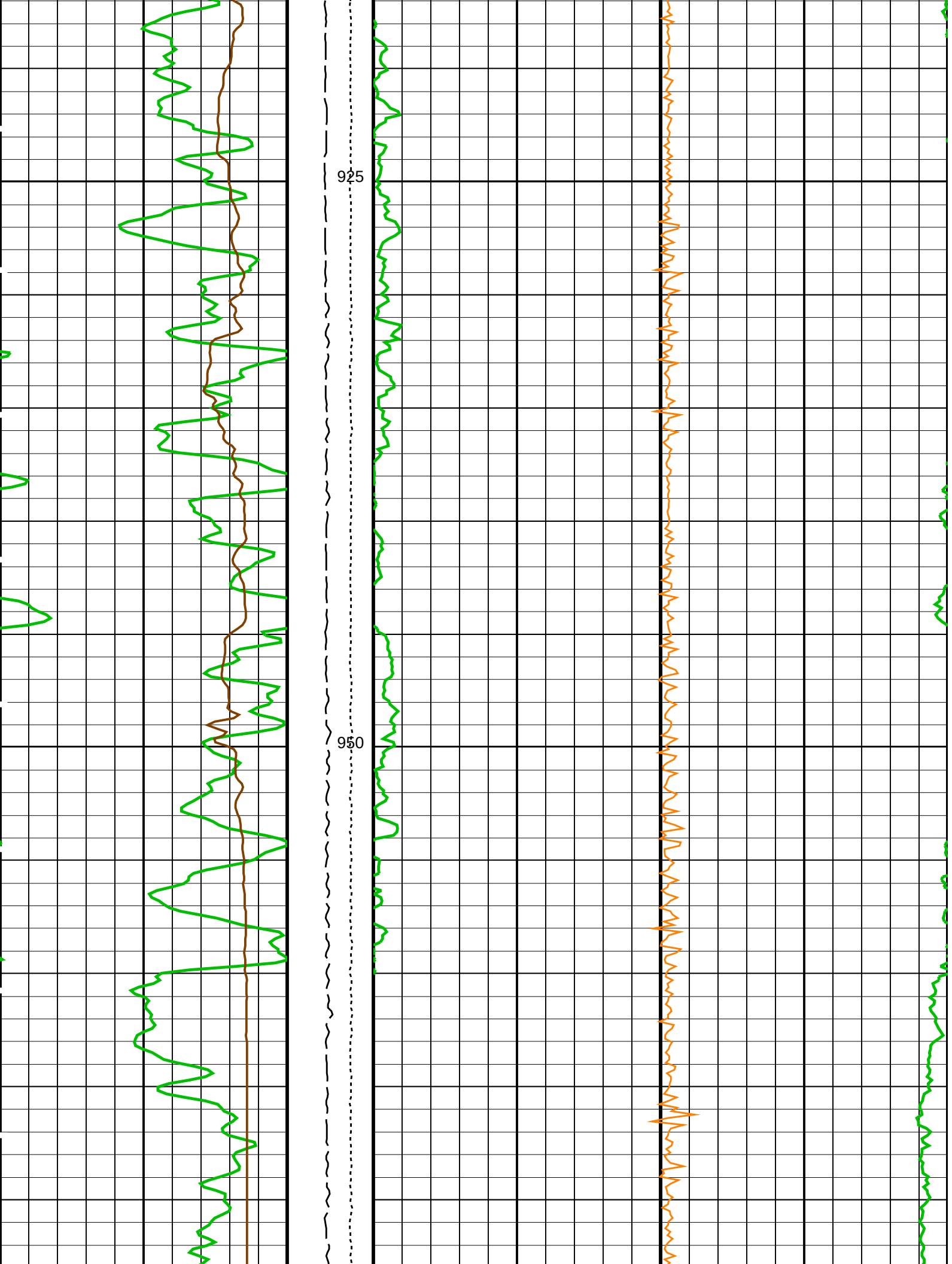

650
675

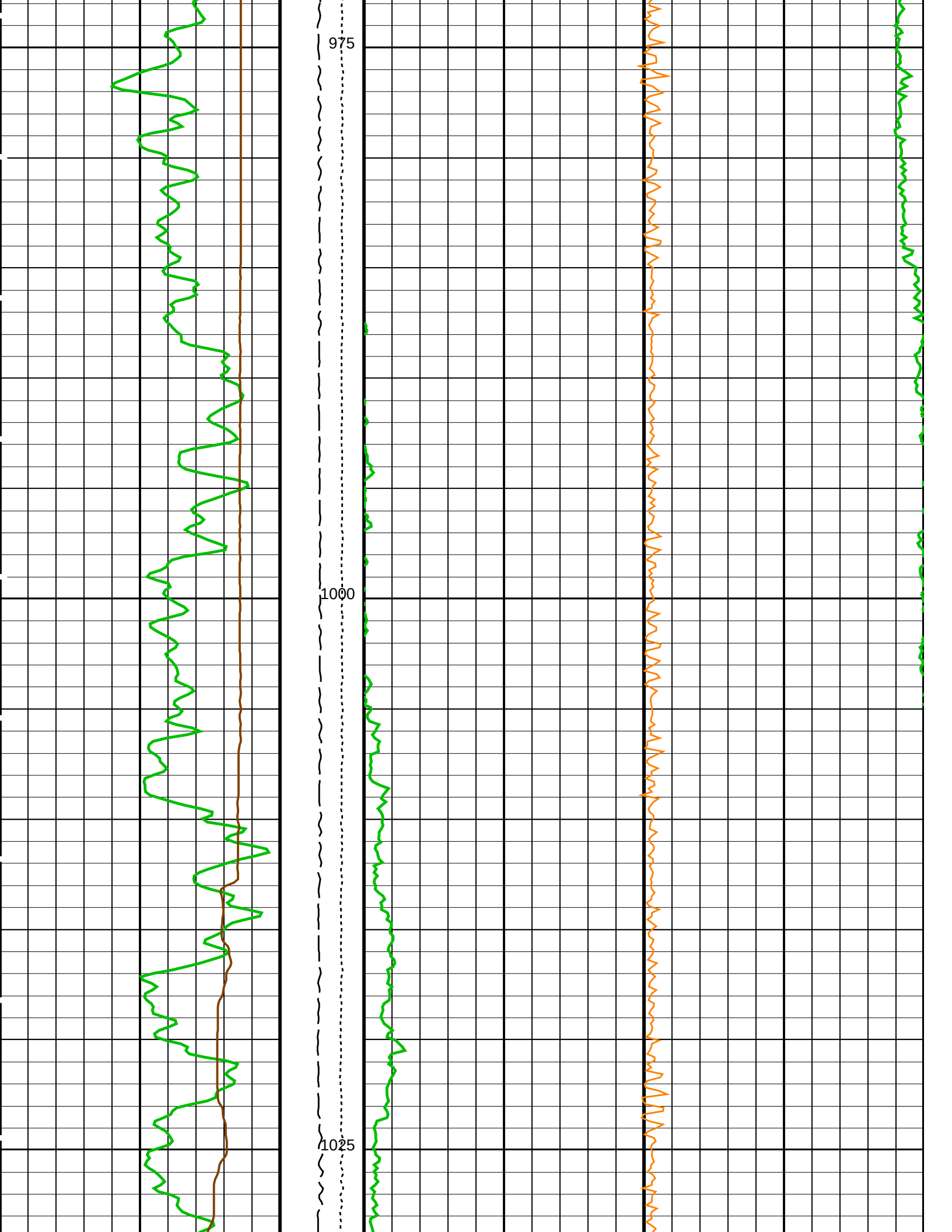

700
725

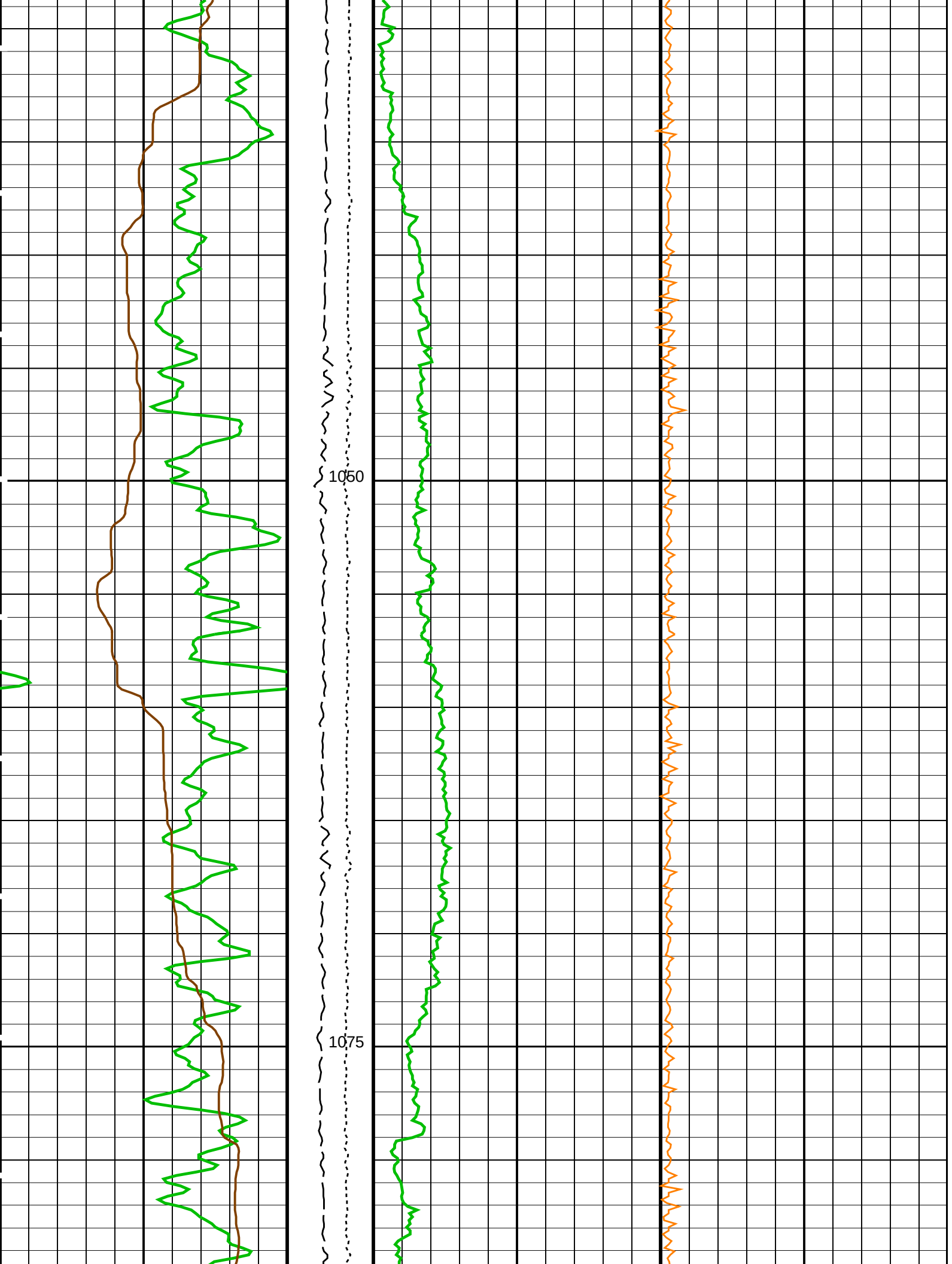

750
775
800

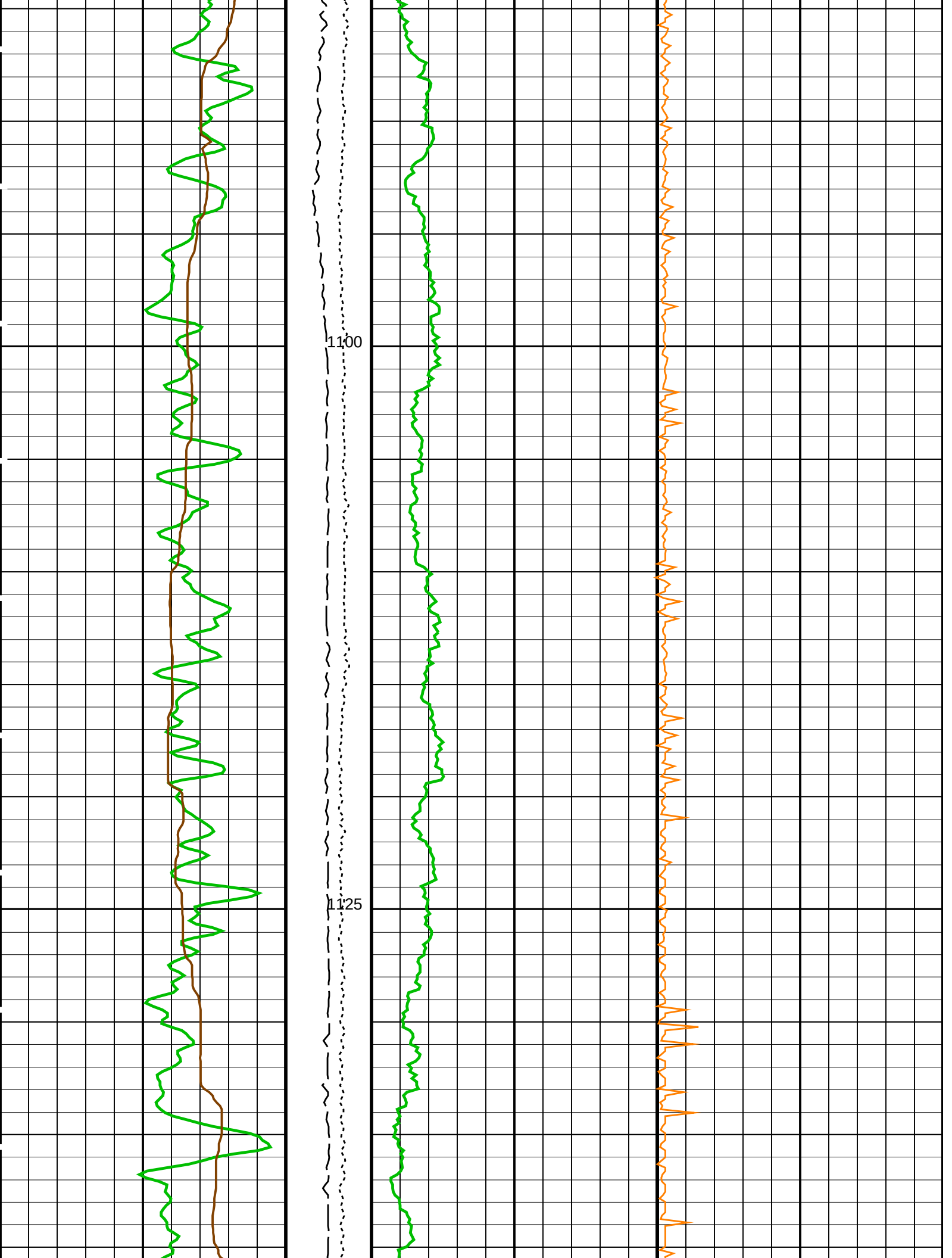

825
850

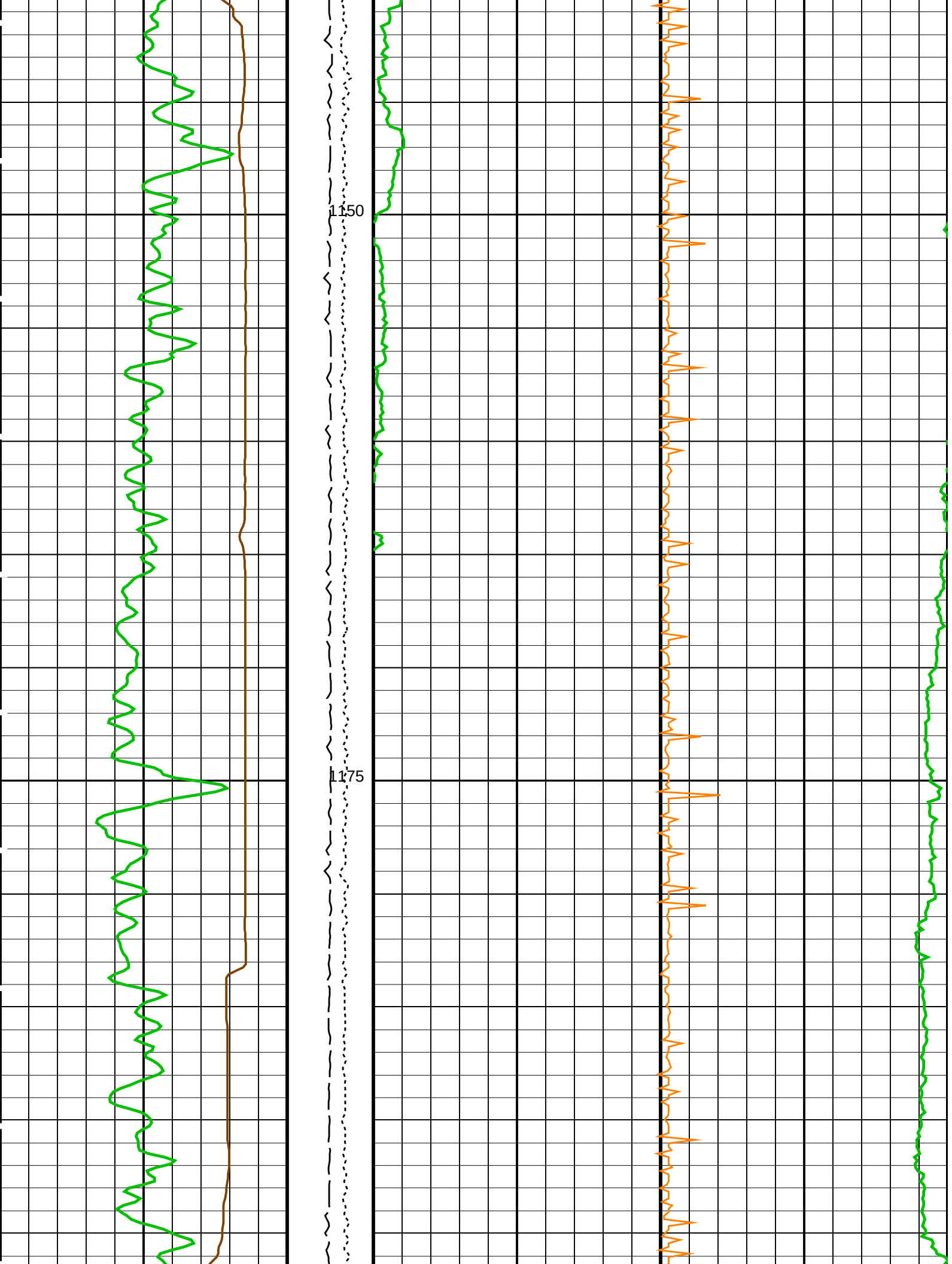

875
900

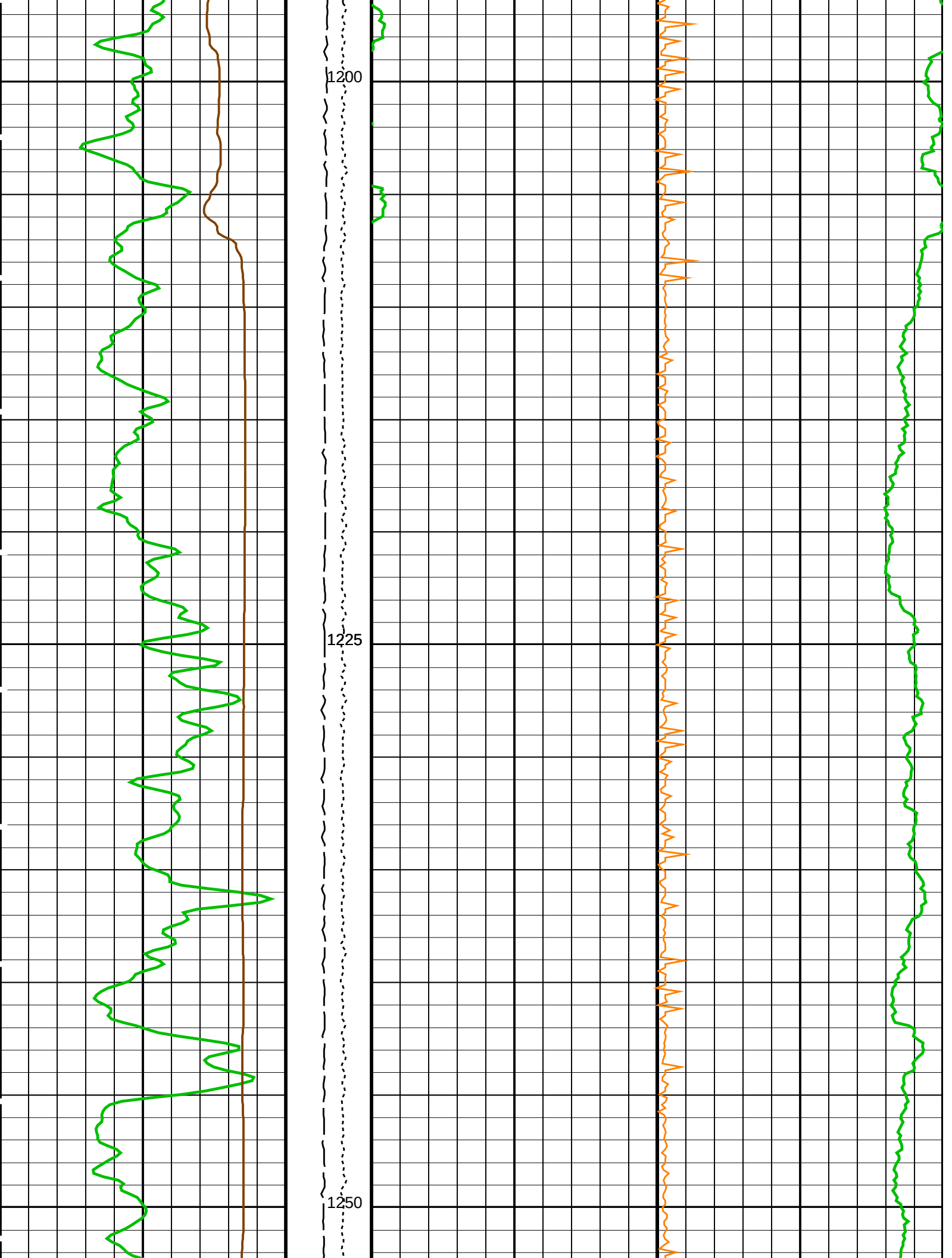

925
950

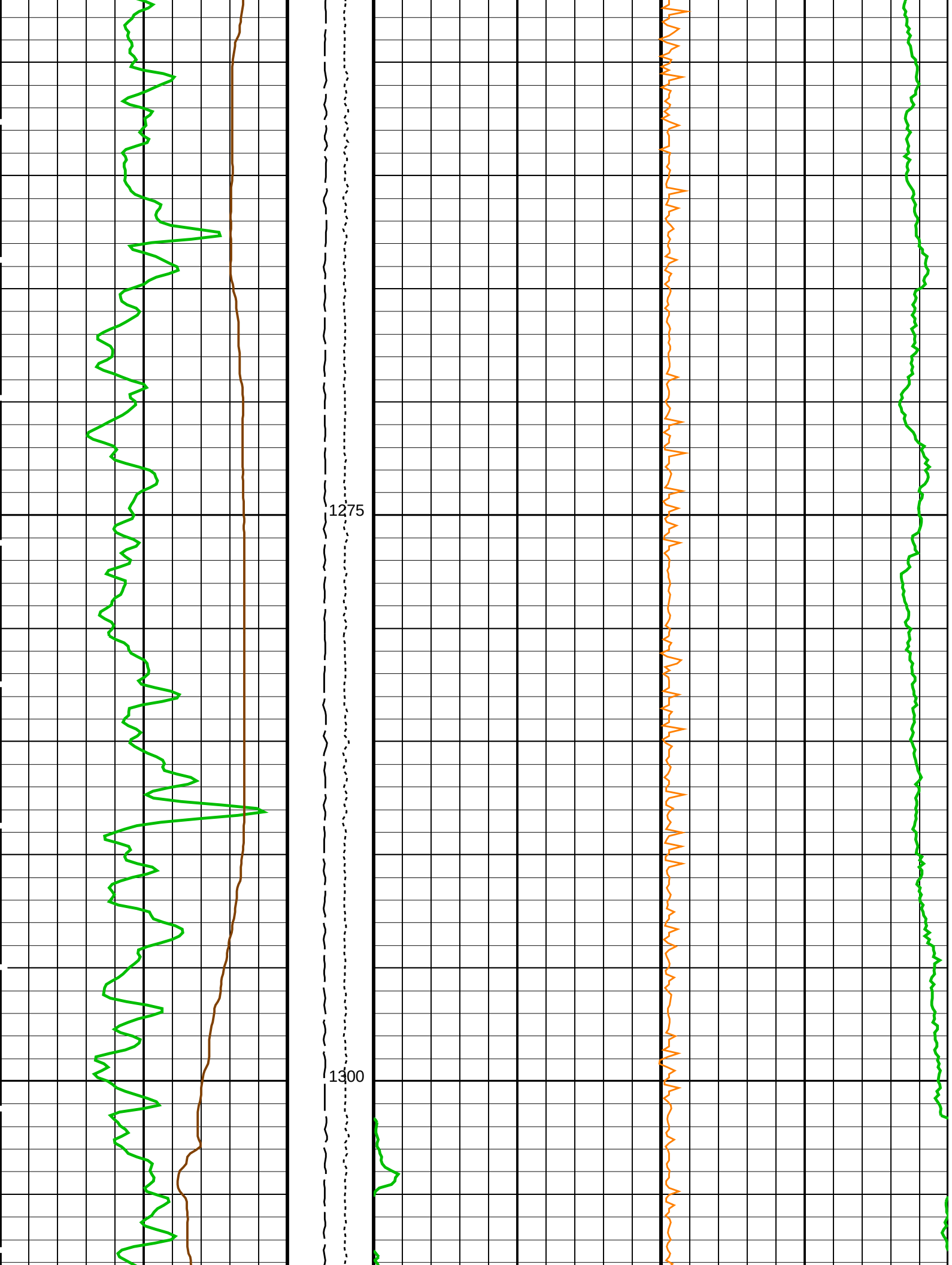

975
1000
1025

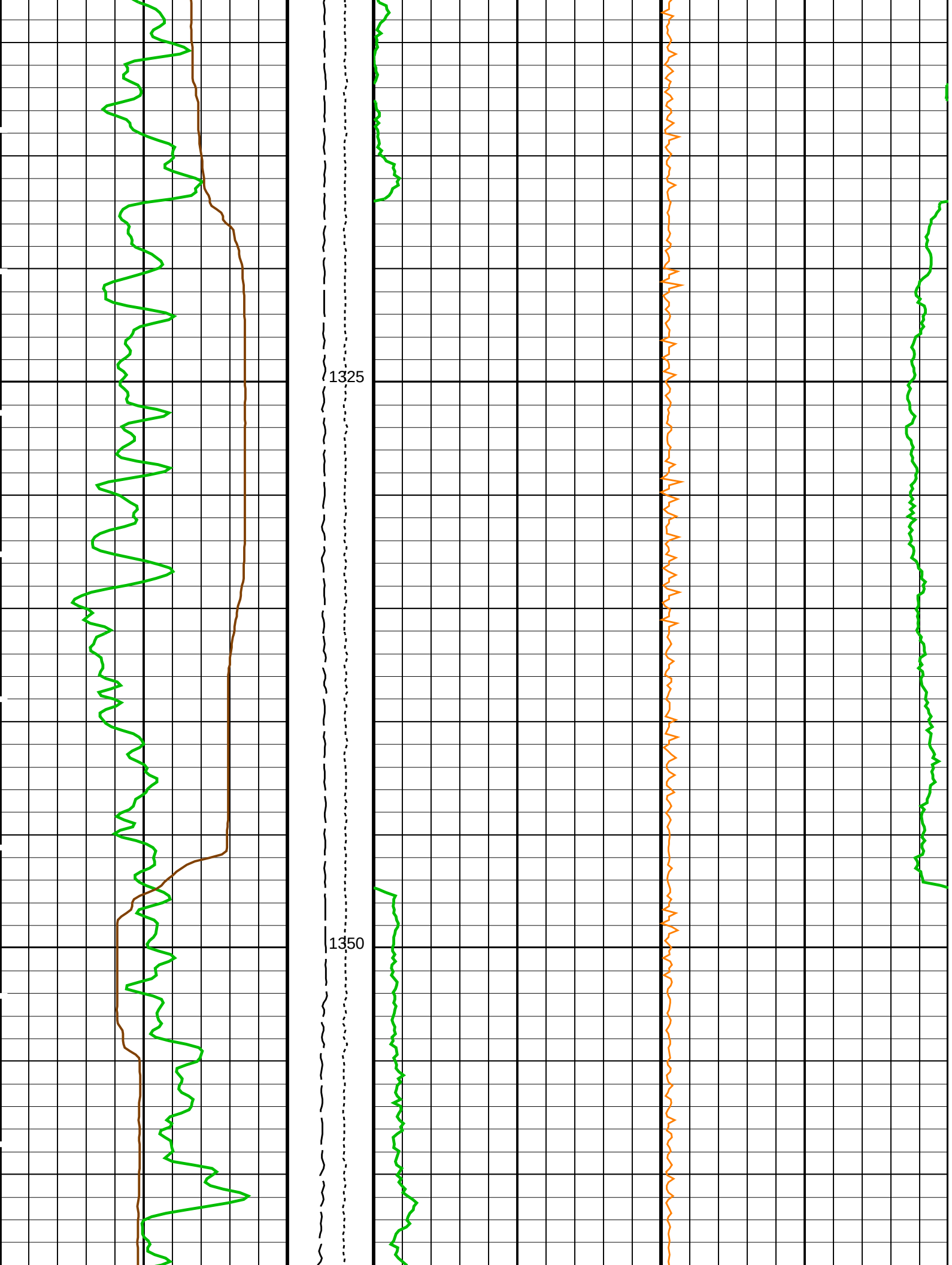

1050
1075


1100
1125

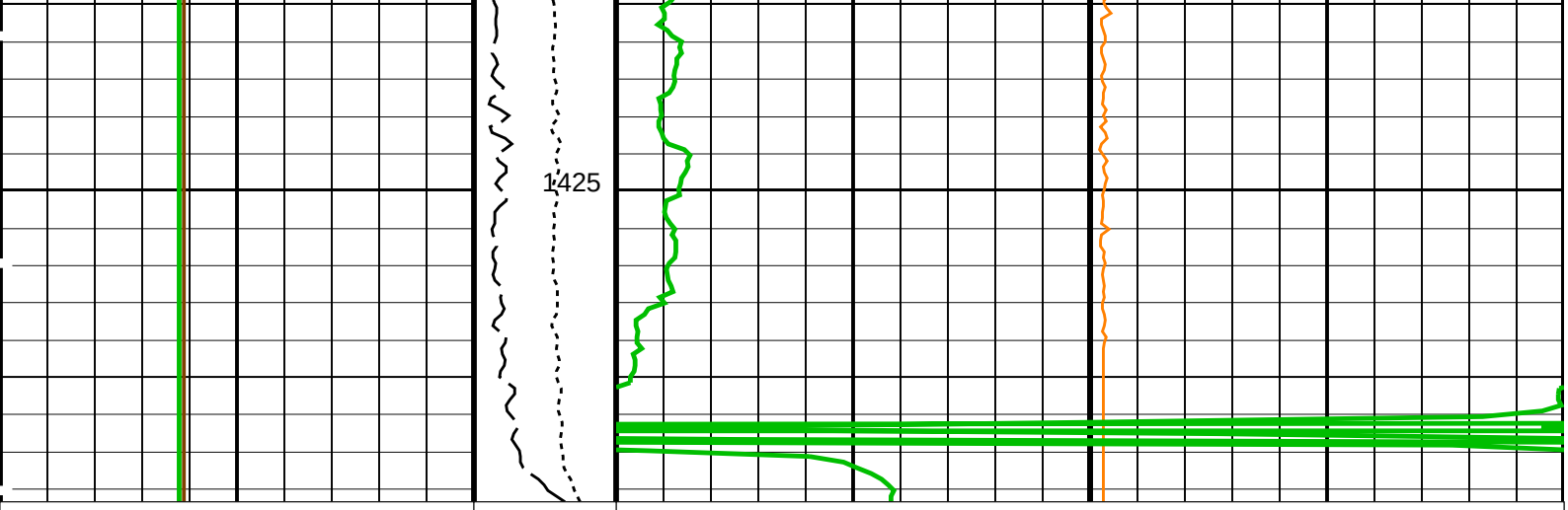

1150
1175


1200
1225
1250


1275
1300


1325
1350


1375
1400



HLDS Caliper (LCAL)	Tension (TENS)	Axial Acceleration (MSSZACC_LDEO)
0 (IN) 20	(LBF) 10000 0	0 (M/S2) 20
Gamma Ray (GR_EDTC)	**Calibrated Downhole Force (CDF) (LBF)**	**Dual−Coil Susceptibility (MSSLSUS_LDEO)**
0 (GAPI) 50	3000 0	0 (PPM) 5000

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HRLT−B: High Resolution Laterolog Array − B		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	22.8987	DEGC
FREQ0	HRLT Frequency Index for Mode 0	32	
FREQ1	HRLT Frequency Index for Mode 1	128	
FREQ2	HRLT Frequency Index for Mode 2	104	
FREQ3	HRLT Frequency Index for Mode 3	86	
FREQ4	HRLT Frequency Index for Mode 4	56	
FREQ5	HRLT Frequency Index for Mode 5	44	
FREQ6	HRLT Frequency Index for Mode 6	116	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
KFAC_HRLT	HRLT K Factor Option	SONDE	
LOOPCOEF_S	HRLT Loop Coefficient for Shallow Modes	LOW	
LOOPMOD0	HRLT Mode 0 Loop Mode	AUTO	
LOOPMOD1	HRLT Mode 1 Loop Mode	AUTO	
LOOPMOD2	HRLT Mode 2 Loop Mode	AUTO	
LOOPMOD3	HRLT Mode 3 Loop Mode	AUTO	
LOOPMOD4	HRLT Mode 4 Loop Mode	AUTO	
LOOPMOD5	HRLT Mode 5 Loop Mode	AUTO	
LOOPMOD6	HRLT Mode 6 Loop Mode	AUTO	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
PROCINV	Inversion Selection	ON	
PROCMFL	Inversion Micro−Resistivity Selection	NO_EXTERNAL_RXO	
PROCMSO	Mechanical Standoff Fin Size	0	IN
PROCRM	Processing Mud Resistivity Select	HRLT_Compute	
PROCSPO	Sonde Position	Centered	
SHT	Surface Hole Temperature	20	DEGC
	HLDS: Hostile Litho−Density Sonde		
CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3

LATC	HLDS Activation Correction	ON	
LLDL	HLDS LS Low Level Discriminator DAC	14000	
LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.6	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
APS−C: Accelerator−Porosity Tool			
	APS Software Version	5	
AASD	APS Thermal and Array Detectors High Voltage Setting	1941.83	V
ADSO	APS Array Detectors Data Source Switch	Both	
AFSD	APS Far Detector High Voltage Setting	2032.14	V
AHCS	APS Holesize Correction Source	GCSE	
AHSS	APS Holesize Correction Switch	ON	
AMTY	APS Environmental Corrections Mud Type	WaterBaseBarite	
ANSD	APS Near Detector High Voltage Setting	1700.66	V
ASOS	APS Standoff Correction Switch	ON	
ATSS	APS Temperature−Pressure−Salinity Correction Switch	OFF	
BHFL_APS	APS TNPH Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
BSCO_APS	APS TNPH Borehole Salinity Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
DSCO_APS	APS TNPH Density Source Correction Option	MEASURED	
FSAL	Formation Salinity	−50000	PPM
FSCO_APS	APS TNPH Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO_APS	APS TNPH Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO_APS	APS TNPH Mud Cake Correction Option	NO	
MCOR_APS	APS TNPH Mud Correction	NATU	
MWCO_APS	APS TNPH Mud Weight Correction Option	YES	
NARC	APS Near/Array Calibration Ratio	1.08475	
NFRC	APS Near/Far Calibration Ratio	0.978244	
PTCO_APS	APS TNPH Pressure/Temperature Correction Option	NO	
SHT	Surface Hole Temperature	20	DEGC
TNCO_APS	APS TNPH Computation Option	YES	
HNGS−BA: Hostile Natural Gamma Ray Sonde			
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	−0.000873751	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
SHT	Surface Hole Temperature	20	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.00541	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.984728	
EDTC−B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	

DPPM	Density Porosity Processing Mode	HIRS	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO	Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
ISSBAR_EDTC	Nuclear Mud Type	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	YES	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	20	DEGC
SOCN	Standoff Distance	0.5	IN
SOCO	Standoff Correction Option	NO	
TPOS_EDTC	EDTC Tool Centered/Eccentered	Eccentered	
U−ETELM_EDTS	Telemetry Mode for eWAFE	Standard_EDTS	
U−TELM_EDTS	Telemetry Mode for WAFE	Standard_EDTS	
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	38000.00	PPM
CSIZ	Current Casing Size	5.500	IN
CWEI	Casing Weight	168.00	LB/F
DFD	Drilling Fluid Density	1.05	G/C3
FLEV	Fluid Level	−50000.00	M
MST	Mud Sample Temperature	23.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	1212.2	M
TDD	Total Depth − Driller	1434.00	M
TDL	Total Depth − Logger	1434.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: MSS_Logging Vertical Scale: 1:200 Graphics File Created: 26−Nov−2015 03:12

OP System Version: 19C0−187

MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
APS−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_009LUP	FN:10	PRODUCER	26−Nov−2015 03:12	
RTB	MSS_LDEO_HRLA_LDL_009LUP	FN:11	PRODUCER	26−Nov−2015 03:12	

Schlumberger

Repeat Pass

MAXIS Field Log

Output DLIS Files

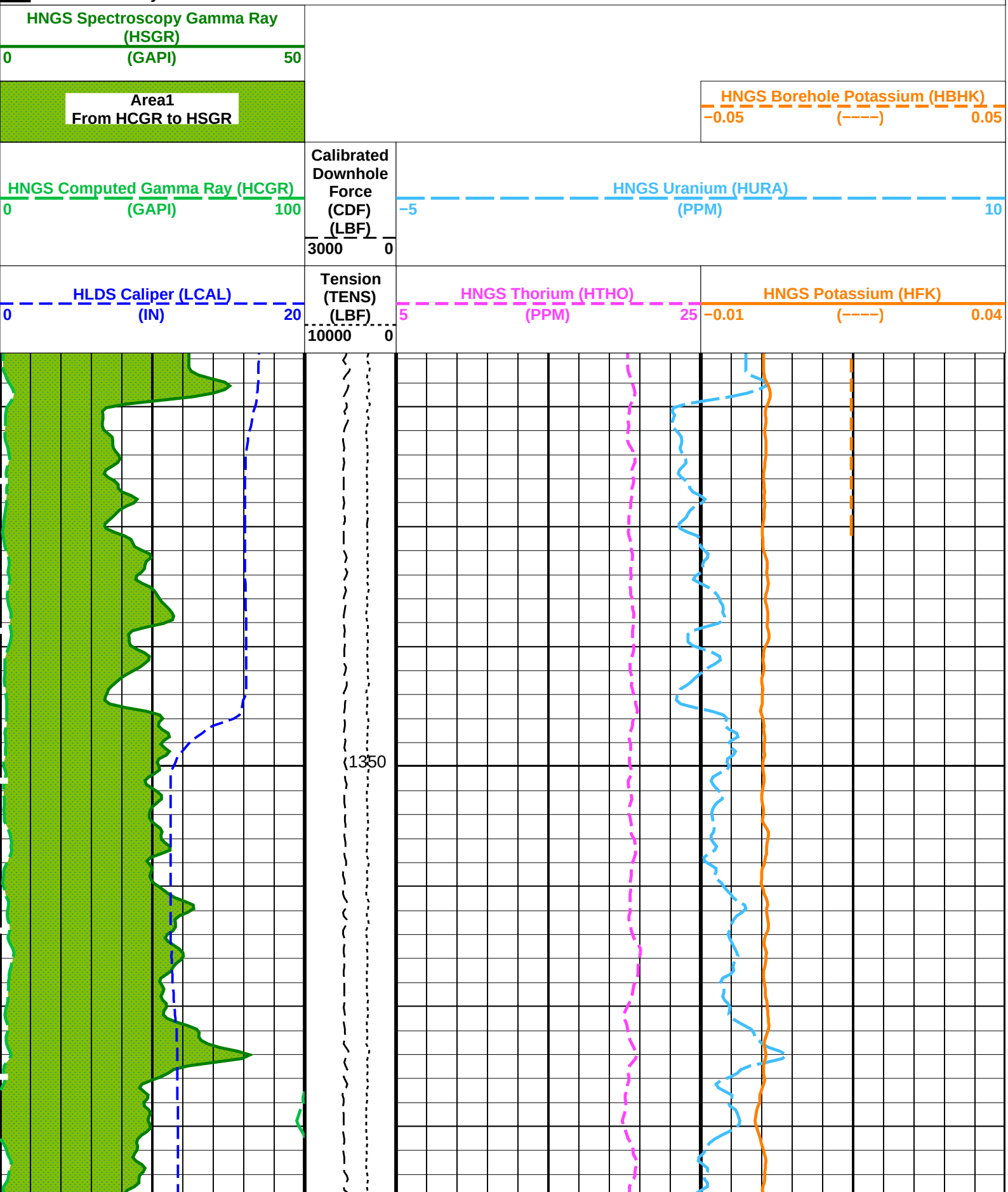
DEFAULT	MSS_LDEO_HRLA_LDL_008LUP	FN:8	PRODUCER	26−Nov−2015 02:42	1433.3 M	1332.7 M
RTB	MSS_LDEO_HRLA_LDL_008LUP	FN:9	PRODUCER	26−Nov−2015 02:42	1433.3 M	1332.7 M

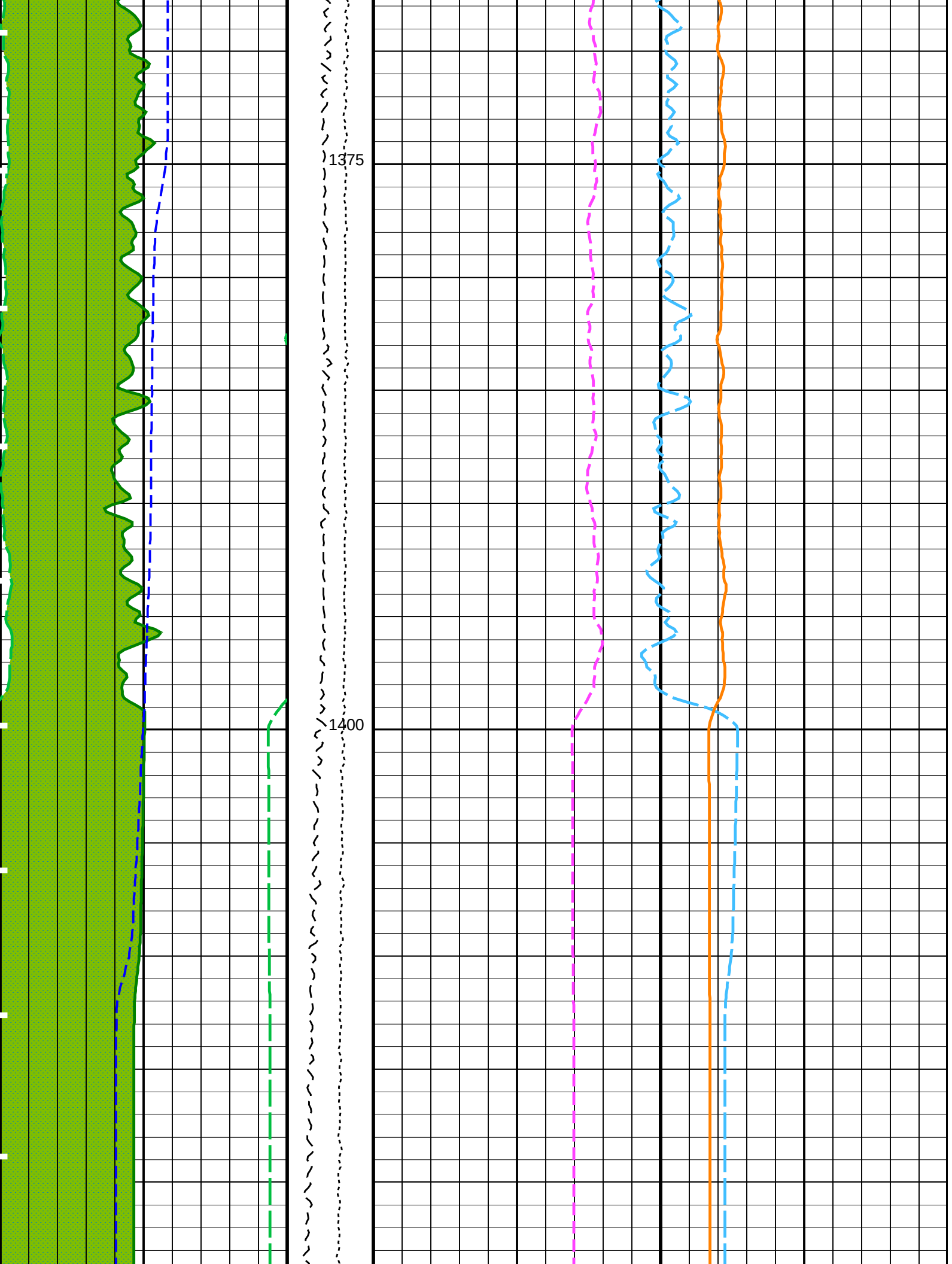
OP System Version: 19C0−187

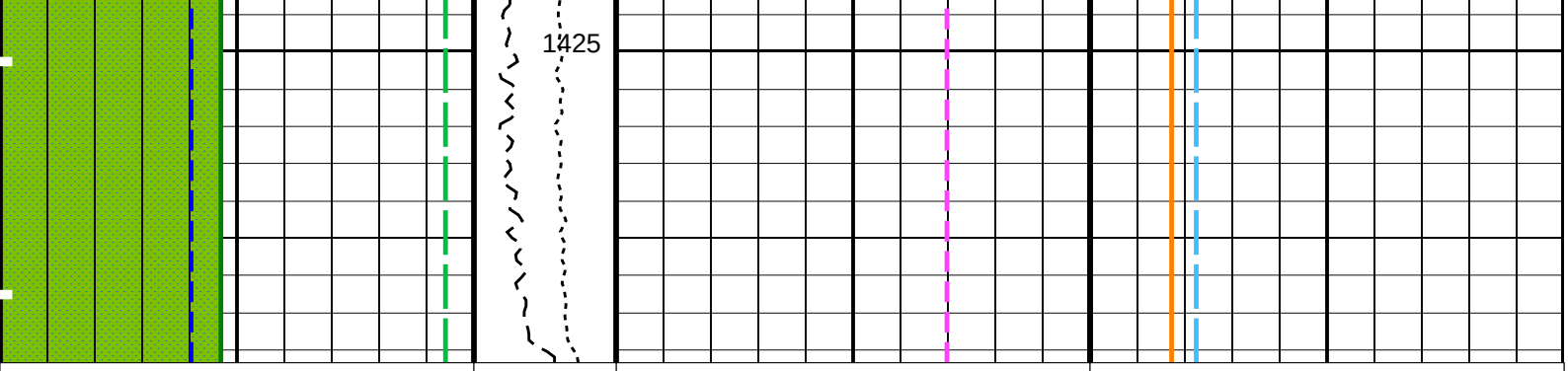
MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
APS−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

PIP SUMMARY

Time Mark Every 60 S




1375
1400



HLDS Caliper (LCAL)
0 (IN) 20

Tension (TENS) (LBF)
10000 0

HNGS Thorium (HTHO)
5 (PPM) 25

HNGS Potassium (HFK)
−0.01 (−−−−) 0.04

HNGS Computed Gamma Ray (HCGR)
0 (GAPI) 100

Calibrated Downhole Force (CDF) (LBF)
3000 0

HNGS Uranium (HURA)
−5 (PPM) 10

Area1
From HCGR to HSGR

HNGS Borehole Potassium (HBHK)
−0.05 (−−−−) 0.05

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 50

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HRLT−B: High Resolution Laterolog Array − B		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	LCAL	
	APS−C: Accelerator−Porosity Tool		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	LCAL	
	HNGS−BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	LCAL	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	−0.0201185	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.03473	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.01098	
	EDTC−B: Enhanced DTS Cartridge		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	LCAL	
	System and Miscellaneous		
BS	Bit Size	9.875	IN
DFD	Drilling Fluid Density	1.05	G/C3

Format: HNGSYields Vertical Scale: 1:200 Graphics File Created: 26−Nov−2015 02:42

OP System Version: 19C0−187

MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
APS−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_008LUP	FN:8	PRODUCER	26−Nov−2015 02:42		
RTB	MSS_LDEO_HRLA_LDL_008LUP	FN:9	PRODUCER	26−Nov−2015 02:42		

Output DLIS Files

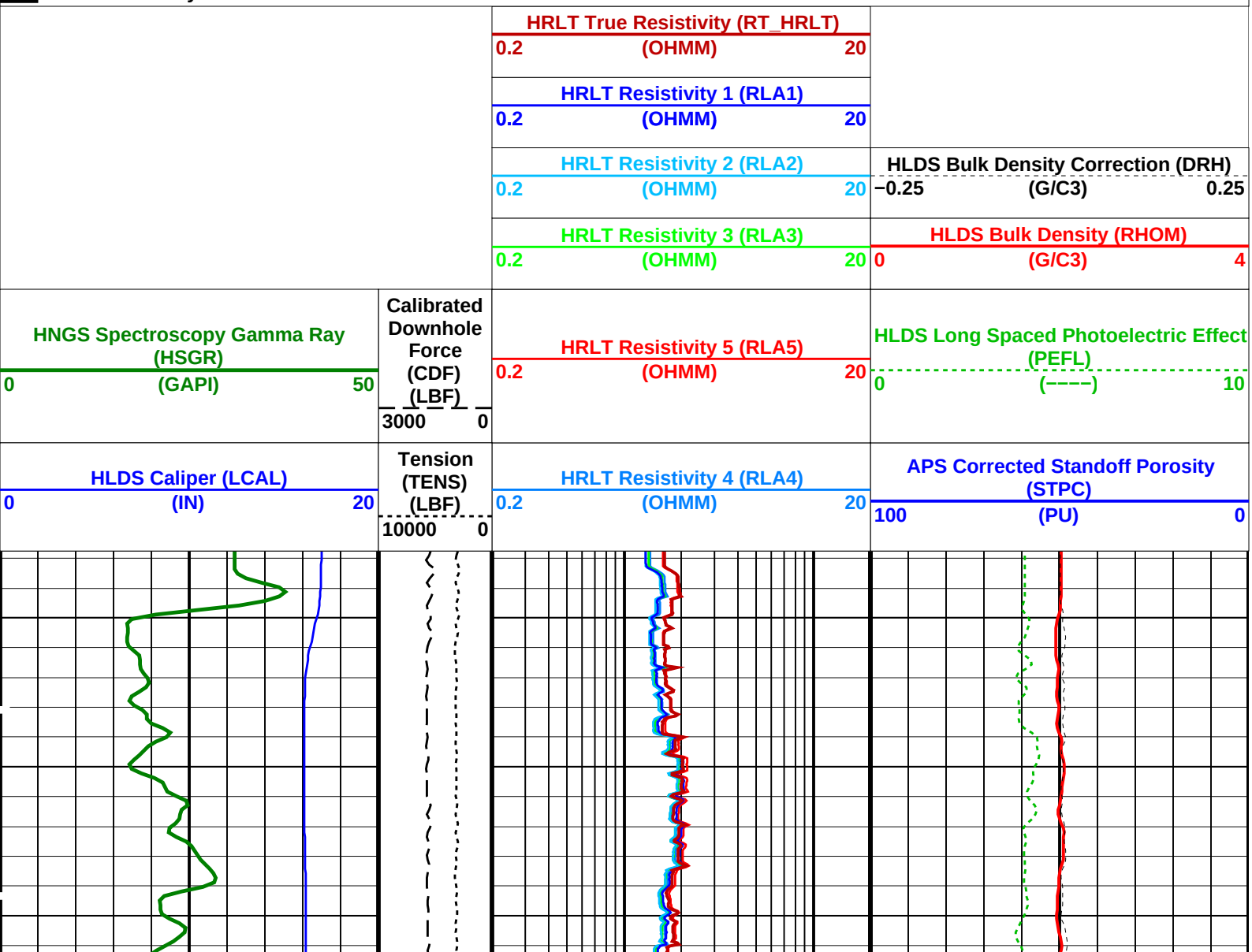
DEFAULT	MSS_LDEO_HRLA_LDL_008LUP	FN:8	PRODUCER	26−Nov−2015 02:42	1433.3 M	1332.7 M
RTB	MSS_LDEO_HRLA_LDL_008LUP	FN:9	PRODUCER	26−Nov−2015 02:42	1433.3 M	1332.7 M

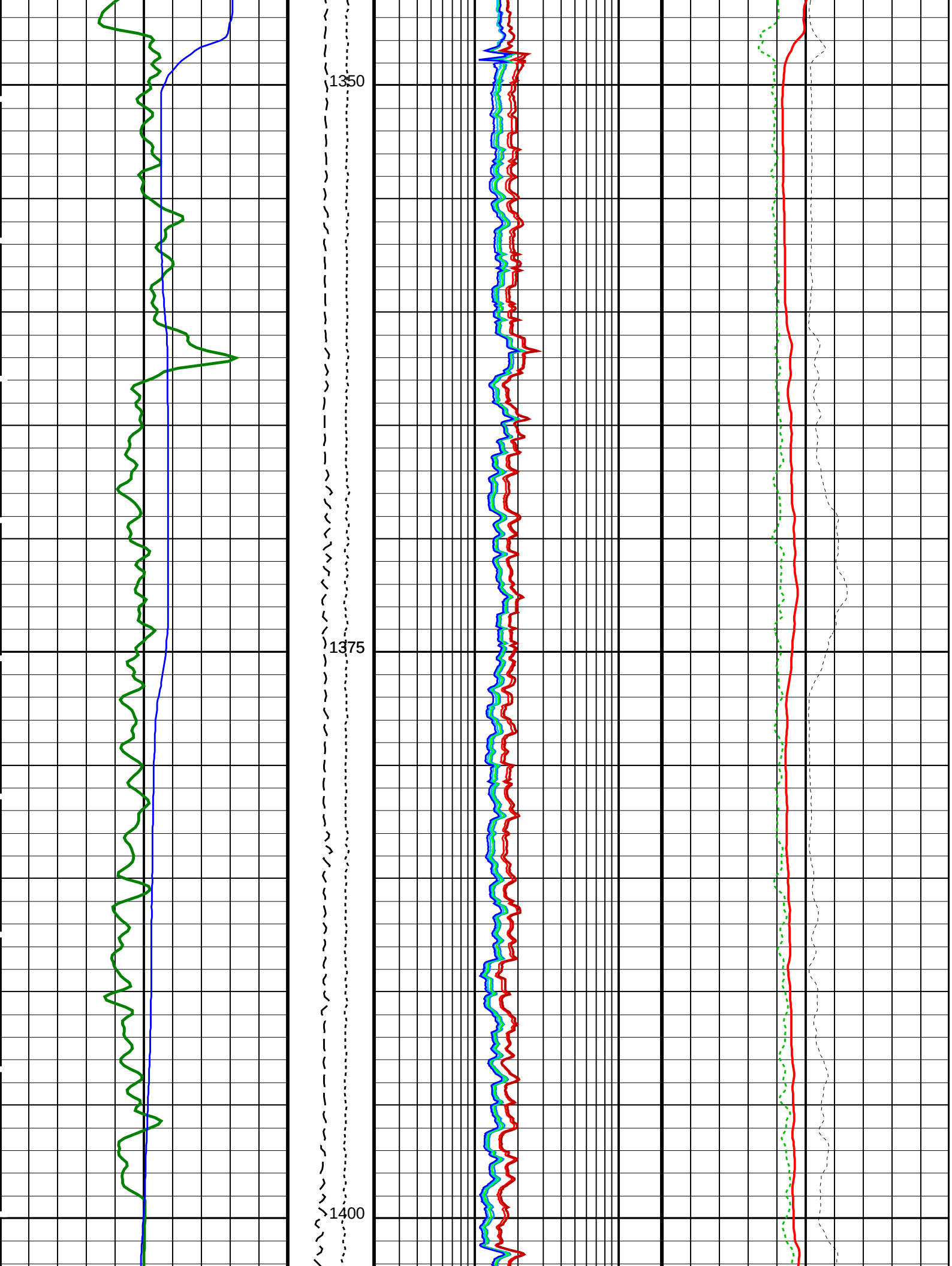
OP System Version: 19C0−187

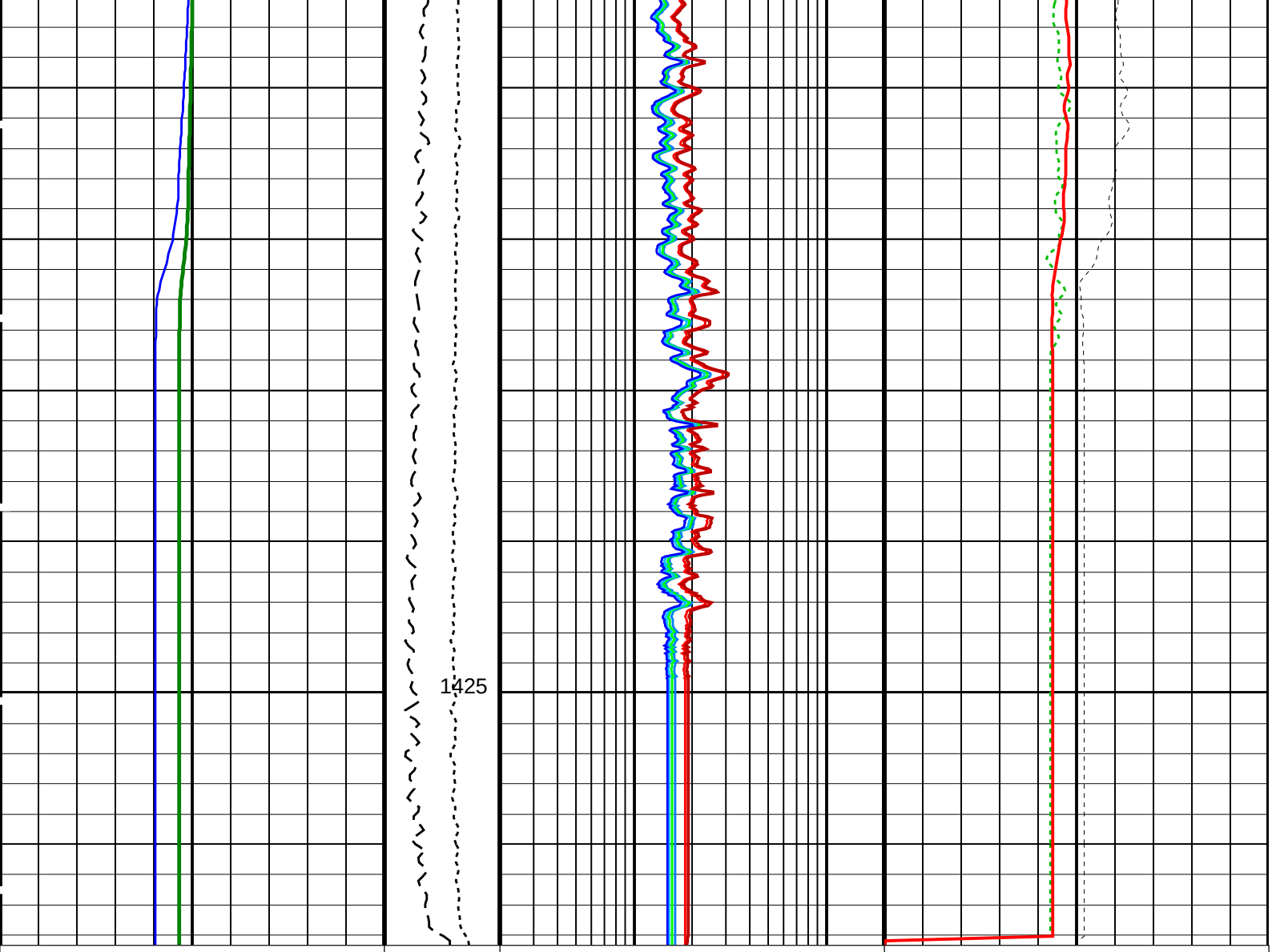
MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
APS−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

PIP SUMMARY

Time Mark Every 60 S




1350
1375
1400



HLDS Caliper (LCAL) 0 (IN) 20	Tension (TENS) (LBF) 10000 0	HRLT Resistivity 4 (RLA4) 0.2 (OHMM) 20	APS Corrected Standoff Porosity (STPC) 100 (PU) 0
HNGS Spectroscopy Gamma Ray (HSGR) 0 (GAPI) 50	Calibrated Downhole Force (CDF) (LBF) 3000 0	HRLT Resistivity 5 (RLA5) 0.2 (OHMM) 20	HLDS Long Spaced Photoelectric Effect (PEFL) 0 (----) 10
		HRLT Resistivity 3 (RLA3) 0.2 (OHMM) 20	HLDS Bulk Density (RHOM) 0 (G/C3) 4
		HRLT Resistivity 2 (RLA2) 0.2 (OHMM) 20	HLDS Bulk Density Correction (DRH) −0.25 (G/C3) 0.25
		HRLT Resistivity 1 (RLA1) 0.2 (OHMM) 20	
		HRLT True Resistivity (RT_HRLT) 0.2 (OHMM) 20	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
HRLT−B: High Resolution Laterolog Array − B		

BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	24.8518	DEGC
FREQ0	HRLT Frequency Index for Mode 0	32	
FREQ1	HRLT Frequency Index for Mode 1	128	
FREQ2	HRLT Frequency Index for Mode 2	104	
FREQ3	HRLT Frequency Index for Mode 3	86	
FREQ4	HRLT Frequency Index for Mode 4	56	
FREQ5	HRLT Frequency Index for Mode 5	44	
FREQ6	HRLT Frequency Index for Mode 6	116	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
KFAC_HRLT	HRLT K Factor Option	SONDE	
LOOPCOEF_S	HRLT Loop Coefficient for Shallow Modes	LOW	
LOOPMOD0	HRLT Mode 0 Loop Mode	AUTO	
LOOPMOD1	HRLT Mode 1 Loop Mode	AUTO	
LOOPMOD2	HRLT Mode 2 Loop Mode	AUTO	
LOOPMOD3	HRLT Mode 3 Loop Mode	AUTO	
LOOPMOD4	HRLT Mode 4 Loop Mode	AUTO	
LOOPMOD5	HRLT Mode 5 Loop Mode	AUTO	
LOOPMOD6	HRLT Mode 6 Loop Mode	AUTO	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
PROCINV	Inversion Selection	ON	
PROCMFL	Inversion Micro−Resistivity Selection	NO_EXTERNAL_RXO	
PROCMSO	Mechanical Standoff Fin Size	0	IN
PROCRM	Processing Mud Resistivity Select	HRLT_Compute	
PROCSPO	Sonde Position	Centered	
SHT	Surface Hole Temperature	20	DEGC
HLDS: Hostile Litho−Density Sonde			
CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	ON	
LLDL	HLDS LS Low Level Discriminator DAC	14000	
LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.6	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
APS−C: Accelerator−Porosity Tool			
	APS Software Version	5	
AASD	APS Thermal and Array Detectors High Voltage Setting	1941.83	V
ADSO	APS Array Detectors Data Source Switch	Both	
AFSD	APS Far Detector High Voltage Setting	2032.14	V
AHCS	APS Holesize Correction Source	GCSE	
AHSS	APS Holesize Correction Switch	ON	
AMTY	APS Environmental Corrections Mud Type	WaterBaseBarite	
ANSD	APS Near Detector High Voltage Setting	1700.66	V
ASOS	APS Standoff Correction Switch	ON	
ATSS	APS Temperature−Pressure−Salinity Correction Switch	OFF	
BHFL_APS	APS TNPH Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
BSCO_APS	APS TNPH Borehole Salinity Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
DSCO_APS	APS TNPH Density Source Correction Option	MEASURED	
FSAL	Formation Salinity	−50000	PPM
FSCO_APS	APS TNPH Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO_APS	APS TNPH Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO_APS	APS TNPH Mud Cake Correction Option	NO	
MCOR_APS	APS TNPH Mud Correction	NATU	
MWCO_APS	APS TNPH Mud Weight Correction Option	YES	
NARC	APS Near/Array Calibration Ratio	1.08475	
NFRC	APS Near/Far Calibration Ratio	0.978244	

NFRC	APS Near/Far Calibration Ratio	0.978244	
PTCO_APS	APS TNPH Pressure/Temperature Correction Option	NO	
SHT	Surface Hole Temperature	20	DEGC
TNCO_APS	APS TNPH Computation Option	YES	
HNGS−BA: Hostile Natural Gamma Ray Sonde			
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	−0.0201185	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
SHT	Surface Hole Temperature	20	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.03473	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.01098	
EDTC−B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO	Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
ISSBAR_EDTC	Nuclear Mud Type	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	YES	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	20	DEGC
SOCN	Standoff Distance	0.5	IN
SOCO	Standoff Correction Option	NO	
TPOS_EDTC	EDTC Tool Centered/Eccentered	Eccentered	
U−ETELM_EDTS	Telemetry Mode for eWAFE	Standard_EDTS	
U−TELM_EDTS	Telemetry Mode for WAFE	Standard_EDTS	
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	38000.00	PPM
CSIZ	Current Casing Size	5.500	IN
CWEI	Casing Weight	168.00	LB/F
DFD	Drilling Fluid Density	1.05	G/C3
FLEV	Fluid Level	−50000.00	M
MST	Mud Sample Temperature	23.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	1212.2	M
TDD	Total Depth − Driller	1434.00	M
TDL	Total Depth − Logger	1434.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: TripleCombo Vertical Scale: 1:200 Graphics File Created: 26−Nov−2015 02:42

OP System Version: 19C0−187

MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
APS−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_008LUP	FN:8	PRODUCER	26−Nov−2015 02:42	
RTB	MSS_LDEO_HRLA_LDL_008LUP	FN:9	PRODUCER	26−Nov−2015 02:42	

Company: International Ocean Discovery Program — Well: Expedition 359, Site U1471E

Output DLIS Files

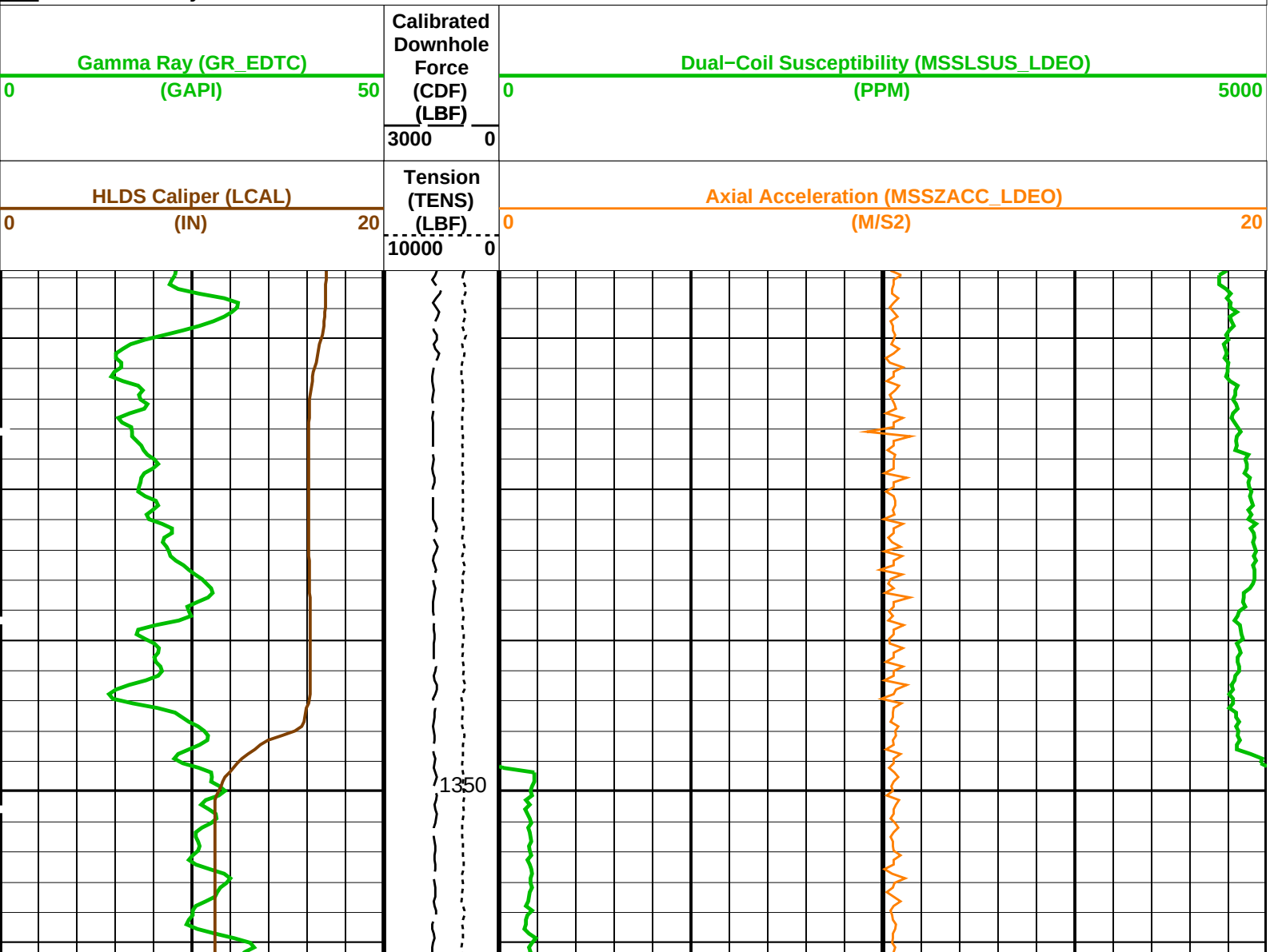
DEFAULT	MSS_LDEO_HRLA_LDL_008LUP	FN:8	PRODUCER	26−Nov−2015 02:42	1433.3 M	1332.7 M
RTB	MSS_LDEO_HRLA_LDL_008LUP	FN:9	PRODUCER	26−Nov−2015 02:42	1433.3 M	1332.7 M

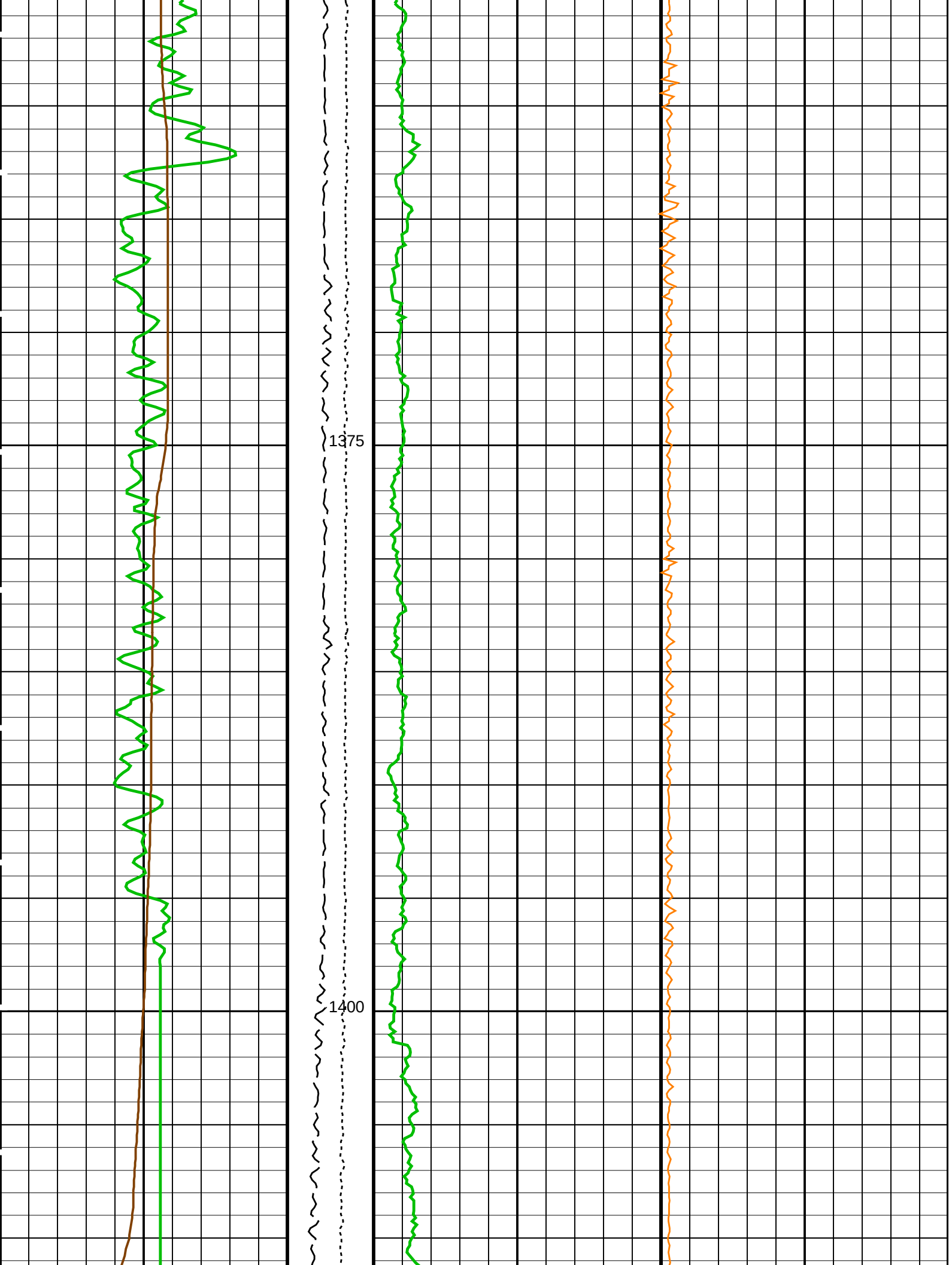
OP System Version: 19C0−187

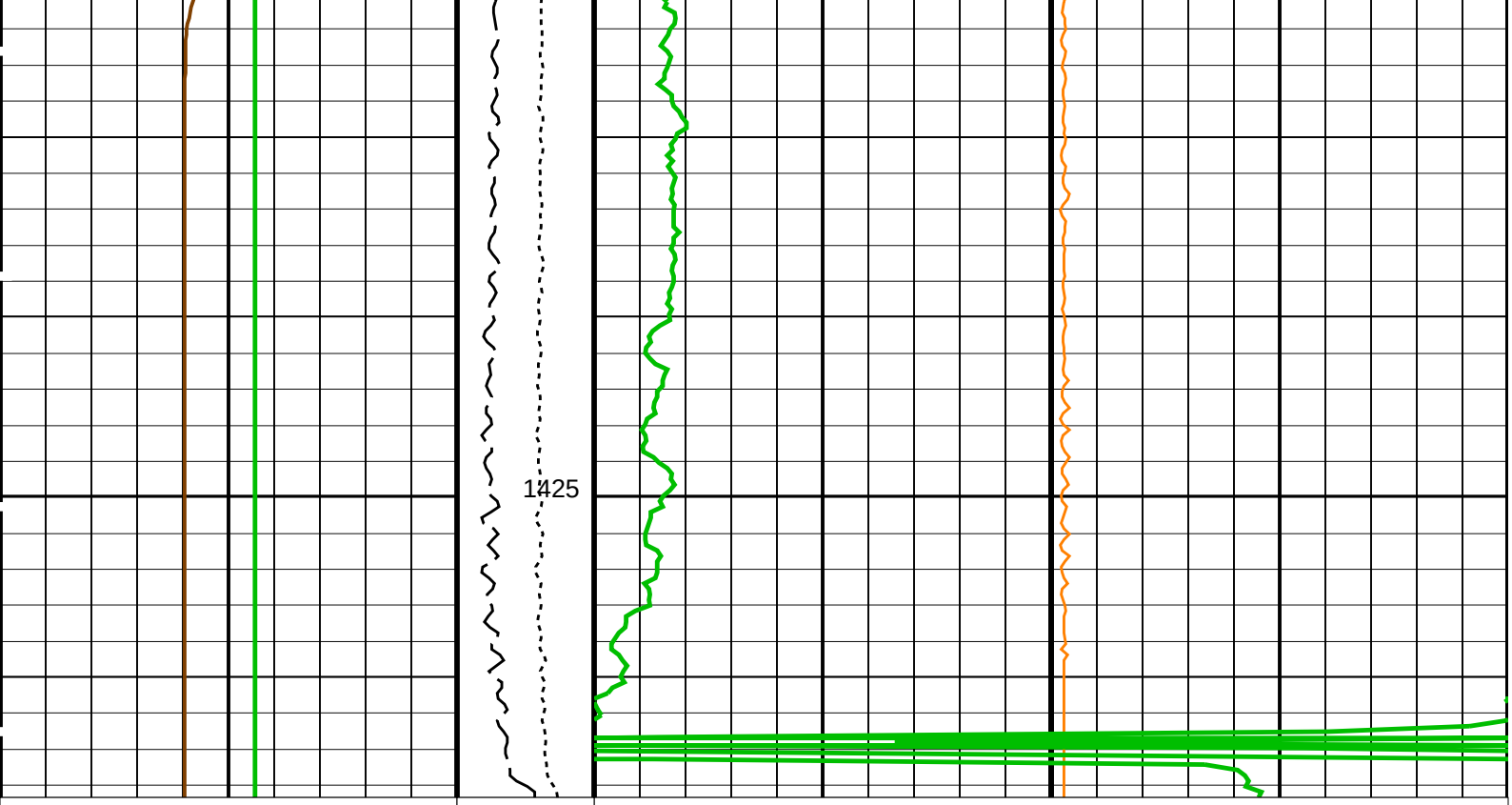
MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
APS−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

PIP SUMMARY

Time Mark Every 60 S




1375
1400



HLDS Caliper (LCAL)	Tension (TENS)	Axial Acceleration (MSSZACC_LDEO)
0 (IN) 20	(LBF) 10000 0	0 (M/S2) 20
Gamma Ray (GR_EDTC)	**Calibrated Downhole Force (CDF) (LBF)**	**Dual−Coil Susceptibility (MSSLSUS_LDEO)**
0 (GAPI) 50	3000 0	0 (PPM) 5000

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HRLT−B: High Resolution Laterolog Array − B		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	24.8518	DEGC
FREQ0	HRLT Frequency Index for Mode 0	32	
FREQ1	HRLT Frequency Index for Mode 1	128	
FREQ2	HRLT Frequency Index for Mode 2	104	
FREQ3	HRLT Frequency Index for Mode 3	86	
FREQ4	HRLT Frequency Index for Mode 4	56	
FREQ5	HRLT Frequency Index for Mode 5	44	
FREQ6	HRLT Frequency Index for Mode 6	116	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
KFAC_HRLT	HRLT K Factor Option	SONDE	
LOOPCOEF_S	HRLT Loop Coefficient for Shallow Modes	LOW	
LOOPMOD0	HRLT Mode 0 Loop Mode	AUTO	
LOOPMOD1	HRLT Mode 1 Loop Mode	AUTO	
LOOPMOD2	HRLT Mode 2 Loop Mode	AUTO	
LOOPMOD3	HRLT Mode 3 Loop Mode	AUTO	
LOOPMOD4	HRLT Mode 4 Loop Mode	AUTO	
LOOPMOD5	HRLT Mode 5 Loop Mode	AUTO	
LOOPMOD6	HRLT Mode 6 Loop Mode	AUTO	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
PROCINV	Inversion Selection	ON	

PROCMFL	Inversion Micro−Resistivity Selection	NO_EXTERNAL_RXO	
PROCMSO	Mechanical Standoff Fin Size	0	IN
PROCRM	Processing Mud Resistivity Select	HRLT_Compute	
PROCSPO	Sonde Position	Centered	
SHT	Surface Hole Temperature	20	DEGC
HLDS: Hostile Litho−Density Sonde			
CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	ON	
LLDL	HLDS LS Low Level Discriminator DAC	14000	
LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.6	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
APS−C: Accelerator−Porosity Tool			
	APS Software Version	5	
AASD	APS Thermal and Array Detectors High Voltage Setting	1941.83	V
ADSO	APS Array Detectors Data Source Switch	Both	
AFSD	APS Far Detector High Voltage Setting	2032.14	V
AHCS	APS Holesize Correction Source	GCSE	
AHSS	APS Holesize Correction Switch	ON	
AMTY	APS Environmental Corrections Mud Type	WaterBaseBarite	
ANSD	APS Near Detector High Voltage Setting	1700.66	V
ASOS	APS Standoff Correction Switch	ON	
ATSS	APS Temperature−Pressure−Salinity Correction Switch	OFF	
BHFL_APS	APS TNPH Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
BSCO_APS	APS TNPH Borehole Salinity Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
DSCO_APS	APS TNPH Density Source Correction Option	MEASURED	
FSAL	Formation Salinity	−50000	PPM
FSCO_APS	APS TNPH Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO_APS	APS TNPH Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO_APS	APS TNPH Mud Cake Correction Option	NO	
MCOR_APS	APS TNPH Mud Correction	NATU	
MWCO_APS	APS TNPH Mud Weight Correction Option	YES	
NARC	APS Near/Array Calibration Ratio	1.08475	
NFRC	APS Near/Far Calibration Ratio	0.978244	
PTCO_APS	APS TNPH Pressure/Temperature Correction Option	NO	
SHT	Surface Hole Temperature	20	DEGC
TNCO_APS	APS TNPH Computation Option	YES	
HNGS−BA: Hostile Natural Gamma Ray Sonde			
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	−0.0201185	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	

MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
SHT	Surface Hole Temperature	20	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.03473	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.01098	
EDTC−B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO	Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
ISSBAR_EDTC	Nuclear Mud Type	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	YES	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	20	DEGC
SOCN	Standoff Distance	0.5	IN
SOCO	Standoff Correction Option	NO	
TPOS_EDTC	EDTC Tool Centered/Eccentered	Eccentered	
U−ETELM_EDTS	Telemetry Mode for eWAFE	Standard_EDTS	
U−TELM_EDTS	Telemetry Mode for WAFE	Standard_EDTS	
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	38000.00	PPM
CSIZ	Current Casing Size	5.500	IN
CWEI	Casing Weight	168.00	LB/F
DFD	Drilling Fluid Density	1.05	G/C3
FLEV	Fluid Level	−50000.00	M
MST	Mud Sample Temperature	23.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	1212.2	M
TDD	Total Depth − Driller	1434.00	M
TDL	Total Depth − Logger	1434.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: MSS_Logging Vertical Scale: 1:200 Graphics File Created: 26−Nov−2015 02:42

OP System Version: 19C0−187

MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
APS−C	19C0−187	HNGC−B	19C0−187
HNGS−BA	19C0−187	EDTC−B	SKK−5169−EDTCB

Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_008LUP	FN:8	PRODUCER	26−Nov−2015 02:42
RTB	MSS_LDEO_HRLA_LDL_008LUP	FN:9	PRODUCER	26−Nov−2015 02:42

Schlumberger

Calibrations

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High Resolution Laterolog Array − B Wellsite Calibration − HRLT M01							
Before: 26−Nov−2015 3:07 After: 26−Nov−2015 6:24							
HRLT M0−M1 Voltage Plus − 0	0	N/A	−318.9	−318.8	0.08551	9.681	UV
HRLT M0−M1 Voltage Plus − 1	0	N/A	−332.0	−331.8	0.1361	9.681	UV
HRLT M0−M1 Voltage Plus − 2	0	N/A	−339.5	−339.8	−0.3105	9.681	UV
HRLT M0−M1 Voltage Plus − 3	0	N/A	−329.8	−329.7	0.08557	9.681	UV
HRLT M0−M1 Voltage Plus − 4	0	N/A	−320.1	−320.0	0.02884	9.681	UV
HRLT M0−M1 Voltage Plus − 5	0	N/A	−321.9	−321.9	−0.008453	9.681	UV
HRLT M0−M1 Voltage Plus − 6	0	N/A	321.7	321.9	0.2045	9.681	UV
HRLT M0−M1 Voltage Plus − 7	0	N/A	−322.7	−322.7	0	9.681	UV
High Resolution Laterolog Array − B Wellsite Calibration − HRLT M12							
Before: 26−Nov−2015 3:07 After: 26−Nov−2015 6:24							
HRLT M1−M2 Voltage Plus − 0	0	N/A	1742	1742	−0.07397	53.42	UV
HRLT M1−M2 Voltage Plus − 1	0	N/A	1820	1820	0.3646	53.42	UV
HRLT M1−M2 Voltage Plus − 2	0	N/A	1854	1856	2.441	53.42	UV
HRLT M1−M2 Voltage Plus − 3	0	N/A	1799	1800	0.3700	53.42	UV
HRLT M1−M2 Voltage Plus − 4	0	N/A	1746	1746	0.07739	53.42	UV
HRLT M1−M2 Voltage Plus − 5	0	N/A	1756	1757	0.5289	53.42	UV
HRLT M1−M2 Voltage Plus − 6	0	N/A	−1772	−1774	−2.393	53.42	UV
HRLT M1−M2 Voltage Plus − 7	0	N/A	1781	1781	0	53.42	UV
High Resolution Laterolog Array − B Wellsite Calibration − HRLT M23							
Before: 26−Nov−2015 3:07 After: 26−Nov−2015 6:24							
HRLT M2−M3 Voltage Plus − 0	0	N/A	1733	1733	−0.1029	53.42	UV
HRLT M2−M3 Voltage Plus − 1	0	N/A	1821	1821	0.2983	53.42	UV
HRLT M2−M3 Voltage Plus − 2	0	N/A	1857	1860	2.400	53.42	UV
HRLT M2−M3 Voltage Plus − 3	0	N/A	1807	1807	0.3260	53.42	UV
HRLT M2−M3 Voltage Plus − 4	0	N/A	1747	1747	−0.09595	53.42	UV
HRLT M2−M3 Voltage Plus − 5	0	N/A	1759	1759	0.5175	53.42	UV
HRLT M2−M3 Voltage Plus − 6	0	N/A	−1762	−1764	−2.211	53.42	UV
HRLT M2−M3 Voltage Plus − 7	0	N/A	1781	1781	0	53.42	UV
High Resolution Laterolog Array − B Wellsite Calibration − HRLT V34							
Before: 26−Nov−2015 3:07 After: 26−Nov−2015 6:24							
HRLT A3−A4 Voltage Plus − 0	0	N/A	68700	68700	1.883	2100	UV
HRLT A3−A4 Voltage Plus − 1	0	N/A	72010	72030	22.86	2100	UV
HRLT A3−A4 Voltage Plus − 2	0	N/A	73760	73840	86.26	2100	UV
HRLT A3−A4 Voltage Plus − 3	0	N/A	71980	72000	29.60	2100	UV
HRLT A3−A4 Voltage Plus − 4	0	N/A	69550	69560	6.023	2100	UV
HRLT A3−A4 Voltage Plus − 5	0	N/A	70040	70050	5.180	2100	UV
HRLT A3−A4 Voltage Plus − 6	0	N/A	−68670	−68770	−91.01	2100	UV
HRLT A3−A4 Voltage Plus − 7	0	N/A	70000	70000	0	2100	UV
High Resolution Laterolog Array − B Wellsite Calibration − HRLT V45							
Before: 26−Nov−2015 3:07 After: 26−Nov−2015 6:24							
HRLT A4−A5 Voltage Plus − 0	0	N/A	68780	68780	0	2100	UV
HRLT A4−A5 Voltage Plus − 1	0	N/A	72220	72250	33.84	2100	UV
HRLT A4−A5 Voltage Plus − 2	0	N/A	73950	74030	85.45	2100	UV
HRLT A4−A5 Voltage Plus − 3	0	N/A	72130	72140	9.109	2100	UV
HRLT A4−A5 Voltage Plus − 4	0	N/A	69680	69690	9.359	2100	UV
HRLT A4−A5 Voltage Plus − 5	0	N/A	70140	70140	2.594	2100	UV
HRLT A4−A5 Voltage Plus − 6	0	N/A	−68880	−68970	−89.27	2100	UV
HRLT A4−A5 Voltage Plus − 7	0	N/A	70000	70000	0	2100	UV
High Resolution Laterolog Array − B Wellsite Calibration − HRLT V56							
Before: 26−Nov−2015 3:07 After: 26−Nov−2015 6:24							
HRLT A5−A6 Voltage Plus − 0	0	N/A	68640	68640	−3.133	2100	UV
HRLT A5−A6 Voltage Plus − 1	0	N/A	72070	72080	4.570	2100	UV
HRLT A5−A6 Voltage Plus − 2	0	N/A	73770	73860	94.48	2100	UV
HRLT A5−A6 Voltage Plus − 3	0	N/A	72000	72010	12.91	2100	UV
HRLT A5−A6 Voltage Plus − 4	0	N/A	69540	69540	−0.6641	2100	UV
HRLT A5−A6 Voltage Plus − 5	0	N/A	70000	70030	33.66	2100	UV
HRLT A5−A6 Voltage Plus − 6	0	N/A	−68730	−68820	−87.55	2100	UV
HRLT A5−A6 Voltage Plus − 7	0	N/A	70000	70000	0	2100	UV
High Resolution Laterolog Array − B Wellsite Calibration − HRLT VTP							
Before: 26−Nov−2015 3:07 After: 26−Nov−2015 6:24							
HRLT Torpedo−M0 Voltage − 0	0	N/A	−68160	−68160	−2.992	2100	UV
HRLT Torpedo−M0 Voltage − 1	0	N/A	−71890	−71890	−3.477	2100	UV
HRLT Torpedo−M0 Voltage − 2	0	N/A	−73620	−73710	−82.12	2100	UV

HRLT Torpedo−M0 Voltage − 2	0	N/A	−73620	−73710	−82.12	2100	UV
HRLT Torpedo−M0 Voltage − 3	0	N/A	−71900	−71910	−10.13	2100	UV
HRLT Torpedo−M0 Voltage − 4	0	N/A	−69500	−69490	6.383	2100	UV
HRLT Torpedo−M0 Voltage − 5	0	N/A	−69960	−69970	−7.414	2100	UV
HRLT Torpedo−M0 Voltage − 6	0	N/A	68490	68580	88.23	2100	UV
HRLT Torpedo−M0 Voltage − 7	0	N/A	−70000	−70000	0	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT VBD
Before: 26−Nov−2015 3:07 After: 26−Nov−2015 6:24

HRLT Bridle#9−M0 Voltage − 0	0	N/A	−68200	−68200	0	2100	UV
HRLT Bridle#9−M0 Voltage − 1	0	N/A	−71980	−71980	−2.602	2100	UV
HRLT Bridle#9−M0 Voltage − 2	0	N/A	−73720	−73800	−80.55	2100	UV
HRLT Bridle#9−M0 Voltage − 3	0	N/A	−71970	−71990	−15.19	2100	UV
HRLT Bridle#9−M0 Voltage − 4	0	N/A	−69530	−69540	−5.109	2100	UV
HRLT Bridle#9−M0 Voltage − 5	0	N/A	−70000	−70010	−10.52	2100	UV
HRLT Bridle#9−M0 Voltage − 6	0	N/A	68580	68680	100.6	2100	UV
HRLT Bridle#9−M0 Voltage − 7	0	N/A	−70000	−70000	0	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT ISO
Before: 26−Nov−2015 3:07 After: 26−Nov−2015 6:24

HRLT Source Current Plus − 0	0	N/A	284.5	284.5	0.04724	8.520	UA
HRLT Source Current Plus − 1	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 2	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 3	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 4	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 5	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 6	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 7	0	N/A	281.1	281.1	0	8.520	UA

High Resolution Laterolog Array − B Wellsite Calibration − HRLT MV
Before: 26−Nov−2015 3:07 After: 26−Nov−2015 6:24

HRLT Vertical Voltage Pl − 0	0	N/A	−320.8	−320.5	0.3672	9.681	UV
HRLT Vertical Voltage Pl − 1	0	N/A	−326.7	−326.5	0.2265	9.681	UV
HRLT Vertical Voltage Pl − 2	0	N/A	−332.9	−333.0	−0.1342	9.681	UV
HRLT Vertical Voltage Pl − 3	0	N/A	−321.7	−321.3	0.3300	9.681	UV
HRLT Vertical Voltage Pl − 4	0	N/A	−309.3	−308.9	0.3059	9.681	UV
HRLT Vertical Voltage Pl − 5	0	N/A	−325.9	−325.7	0.2107	9.681	UV
HRLT Vertical Voltage Pl − 6	0	N/A	329.3	329.4	0.06342	9.681	UV
HRLT Vertical Voltage Pl − 7	0	N/A	−322.7	−322.7	0	9.681	UV

Hostile Litho−Density Sonde Wellsite Calibration − Background Measurement
Master: 22−Sep−2015 7:15 Before: 26−Nov−2015 0:27 After: 26−Nov−2015 6:27

SS Cs Resolution Bkg	9.000	7.728	7.808	7.770	−0.03753	1.800	%
LS Cs Resolution Bkg	9.000	8.059	8.041	8.021	−0.01965	1.800	%
LSW1 Background	100.0	81.31	80.97	80.65	−0.3209	3.000	CPS
LSW2 Background	100.0	75.17	73.37	73.08	−0.2957	3.000	CPS
LSW3 Background	200.0	168.0	167.1	167.2	0.04852	6.000	CPS
LSW4 Background	250.0	205.6	204.5	205.3	0.7993	7.500	CPS
LSW5 Background	600.0	476.6	478.8	474.2	−4.595	18.00	CPS
SSW1 Background	100.0	78.62	77.99	76.91	−1.076	3.000	CPS
SSW2 Background	200.0	135.7	135.4	134.7	−0.7154	6.000	CPS
SSW3 Background	500.0	379.3	374.1	373.4	−0.7088	15.00	CPS
SSW4 Background	270.0	203.8	201.6	203.1	1.425	8.100	CPS
SSW5 Background	200.0	144.7	144.2	142.7	−1.575	6.000	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Aluminum Measurement
Master: 22−Sep−2015 7:39

LSW1 Aluminum	600.0	462.8	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	677.5	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	817.0	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	409.5	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	376.3	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2135	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	5895	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	8280	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	3414	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	402.0	N/A	N/A	N/A	N/A	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Lithology Measurement
Master: 22−Sep−2015 7:34

LSW1 Iron	400.0	334.3	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	571.3	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	757.3	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	393.2	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	363.5	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1631	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	5118	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	7868	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3269	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	378.7	N/A	N/A	N/A	N/A	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Caliper Calibration

Before: 22−Sep−2015 9:12

HLDS Caliper Small Ring	12.00	N/A	14.62	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	15.19	N/A	18.14	N/A	N/A	N/A	IN

Accelerator−Porosity Tool Wellsite Calibration − Detector Background
Master: 22−Sep−2015 8:52 Before: 26−Nov−2015 0:27 After: 26−Nov−2015 6:27

Near Det Bkg Cntrate	30.00	26.37	27.30	27.33	0.03337	N/A	CPS
Far Det Bkg Cntrate	30.00	27.82	27.38	26.80	−0.5841	N/A	CPS
Array−1 Det Bkg Cntrate	30.00	25.57	26.89	25.89	−1.001	N/A	CPS
Array−2 Det Bkg Cntrate	30.00	26.87	27.23	26.59	−0.6339	N/A	CPS
Array Therm Det Bkg Cntrate	30.00	25.48	29.60	25.41	−4.187	N/A	CPS

Accelerator−Porosity Tool Wellsite Calibration − Calibration Ratios
Master: 22−Sep−2015 8:52

Near/Far Calibration Ratio	0.9250	0.9782	N/A	N/A	N/A	N/A	
Near/Array Calibration Ratio	1.030	1.085	N/A	N/A	N/A	N/A	
Near/Array Cal Ratio Up/Down	1.000	1.007	N/A	N/A	N/A	N/A	

Accelerator−Porosity Tool Wellsite Calibration − Tank Check
Master: 22−Sep−2015 8:52

Array−1 Standoff Porosity	11.75	10.13	N/A	N/A	N/A	N/A	PU
Array−2 Standoff Porosity	11.75	10.30	N/A	N/A	N/A	N/A	PU
Average Slowing Down Time	6.000	6.081	N/A	N/A	N/A	N/A	US
Array−1 SDT Ratio Up/Down	1.000	0.9680	N/A	N/A	N/A	N/A	
Array−2 SDT Ratio Up/Down	1.000	0.9638	N/A	N/A	N/A	N/A	
Sigma Formation	27.50	35.35	N/A	N/A	N/A	N/A	CU

Accelerator−Porosity Tool Wellsite Calibration − CCR7 signal boxes
Master: 22−Sep−2015 7:57

Near Detector Plateau Setting	1650	1701	N/A	N/A	N/A	N/A	V
Far Detector Plateau Setting	2000	2032	N/A	N/A	N/A	N/A	V
Array Detector Plateau Setting	2000	1942	N/A	N/A	N/A	N/A	V

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 1 Check
Master: 28−Sep−2015 3:37 Before: 26−Nov−2015 0:28 After: 26−Nov−2015 6:28

Na 511 Peak Loc	40.00	37.67	37.54	37.57	0.03237	1.000	
Na 511 Peak Res	15.50	16.19	16.67	17.33	0.6540	2.000	%
High Voltage	1150	1229	1226	1228	1.288	N/A	V
Na 1785 Peak Loc	142.6	136.2	136.4	136.2	−0.1835	7.000	
Na 1785 Peak Res	8.500	9.111	10.14	9.349	−0.7880	2.000	%
Temperature	15.50	32.00	33.23	32.55	−0.6844	N/A	DEGC
Na Count Rate	45.00	42.40	40.35	40.56	0.2106	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 2 Check
Master: 28−Sep−2015 3:37 Before: 26−Nov−2015 0:28 After: 26−Nov−2015 6:28

Na 511 Peak Loc	40.00	39.57	39.55	39.66	0.1136	1.000	
Na 511 Peak Res	15.50	16.65	16.80	16.85	0.04815	2.000	%
High Voltage	1150	1107	1106	1109	3.072	N/A	V
Na 1785 Peak Loc	142.6	143.5	142.7	143.4	0.6647	7.000	
Na 1785 Peak Res	8.500	9.036	9.119	9.794	0.6754	2.000	%
Temperature	15.50	31.75	33.20	33.21	0.006504	N/A	DEGC
Na Count Rate	45.00	42.43	40.44	40.54	0.1043	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Ratio Of Detector 1 To Detector 2
Master: 28−Sep−2015 3:37 Before: 26−Nov−2015 0:28 After: 26−Nov−2015 6:28

Coincidence Count Rate Ratio	1.000	0.9929	0.9926	0.9944	0.001796	0.05000	

Enhanced DTS Cartridge Wellsite Calibration − EDTC Accelerometer Calibration
Before: 26−Nov−2015 0:24

EDTC Z−Axis Acceleration	9.810	N/A	9.824	N/A	N/A	N/A	M/S2

Enhanced DTS Cartridge Wellsite Calibration − Detector Calibration
Before: 26−Nov−2015 0:26 After: 26−Nov−2015 6:25

Gamma Ray (Jig − Bkg)	163.8	N/A	163.8	162.7	−1.099	14.89	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	163.9	−1.107	15.00	GAPI

Accelerator−Porosity Tool − Detector Plateau Settings :

Near Detector Plateau Setting 1701 V
Far Detector Plateau Setting 2032 V
Array Detector Plateau Setting 1942 V

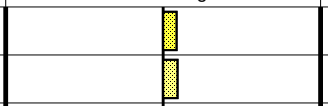
High Resolution Laterolog Array − B / Equipment Identification

Primary Equipment:
HRLT Sonde HRLS − B 768

Auxiliary Equipment:		
HRLT lower Housing	HRLH − B	968
HRLT Lower Cartridge	HRLC − B	974
HRLT upper Housing	HRUH − B	978
HRLT Upper Cartridge	HRUC − B	764

High Resolution Laterolog Array − B Wellsite Calibration

HRLT_M01

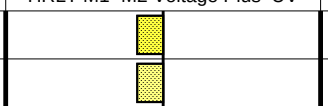
Idx	Phase	HRLT M0−M1 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−318.9	−322.7	−280.7	−379.7
	After		−318.8			
1	Before		−332.0	−322.7	−280.7	−379.7
	After		−331.8			
2	Before		−339.5	−322.7	−280.7	−379.7
	After		−339.8			
3	Before		−329.8	−322.7	−280.7	−379.7
	After		−329.7			
4	Before		−320.1	−322.7	−280.7	−379.7
	After		−320.0			
5	Before		−321.9	−322.7	−280.7	−379.7
	After		−321.9			
6	Before		321.7	322.7	379.7	280.7
	After		321.9			
7	Before		−322.7	−322.7	−280.7	−379.7
	After		**−322.7**			
	(Minimum)	(Nominal) (Maximum)				

Before: 26−Nov−2015 3:07

After: 26−Nov−2015 6:24

High Resolution Laterolog Array − B Wellsite Calibration

HRLT_M12

Idx	Phase	HRLT M1−M2 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1742	1781	2095	1549
	After		1742			
1	Before		1820	1781	2095	1549
	After		1820			
2	Before		1854	1781	2095	1549
	After		1856			
3	Before		1799	1781	2095	1549
	After		1800			
4	Before		1746	1781	2095	1549
	After		1746			
5	Before		1756	1781	2095	1549
	After		1757			
6	Before		−1772	−1781	−1549	−2095
	After		−1774			
7	Before		1781	1781	2095	1549
	After		1781			

		(Minimum) (Nominal) (Maximum)				
Before: 26−Nov−2015 3:07						
After: 26−Nov−2015 6:24						

High Resolution Laterolog Array − B Wellsite Calibration

HRLT M23

Idx	Phase	HRLT M2−M3 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1733	1781	2095	1549
	After		1733			
1	Before		1821	1781	2095	1549
	After		1821			
2	Before		1857	1781	2095	1549
	After		1860			
3	Before		1807	1781	2095	1549
	After		1807			
4	Before		1747	1781	2095	1549
	After		1747			
5	Before		1759	1781	2095	1549
	After		1759			
6	Before		−1762	−1781	−1549	−2095
	After		−1764			
7	Before		1781	1781	2095	1549
	After		1781			
		(Minimum) (Nominal) (Maximum)				

Before: 26−Nov−2015 3:07

After: 26−Nov−2015 6:24

High Resolution Laterolog Array − B Wellsite Calibration

HRLT V34

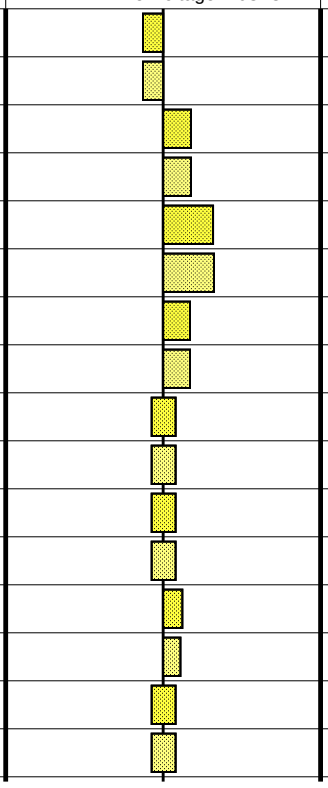
Idx	Phase	HRLT A3−A4 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68700	70000	82360	60900
	After		68700			
1	Before		72010	70000	82360	60900
	After		72030			
2	Before		73760	70000	82360	60900
	After		73840			
3	Before		71980	70000	82360	60900
	After		72000			
4	Before		69550	70000	82360	60900
	After		69560			
5	Before		70040	70000	82360	60900
	After		70050			
6	Before		−68670	−70000	−60900	−82360
	After		−68770			
7	Before		70000	70000	82360	60900
	After		70000			
		(Minimum) (Nominal) (Maximum)				

Before: 26−Nov−2015 3:07

After: 26−Nov−2015 6:24

High Resolution Laterolog Array − B Wellsite Calibration

HRLT V45

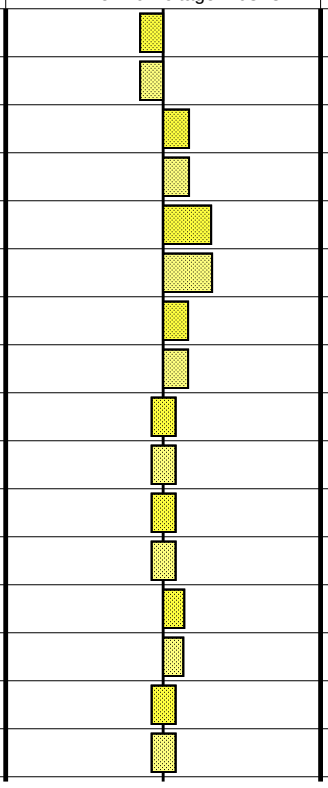
Idx	Phase	HRLT A4−A5 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68780	70000	82360	60900
	After		68780			
1	Before		72220	70000	82360	60900
	After		72250			
2	Before		73950	70000	82360	60900
	After		74030			
3	Before		72130	70000	82360	60900
	After		72140			
4	Before		69680	70000	82360	60900
	After		69690			
5	Before		70140	70000	82360	60900
	After		70140			
6	Before		−68880	−70000	−60900	−82360
	After		−68970			
7	Before		70000	70000	82360	60900
	After		70000			
		(Minimum) (Nominal) (Maximum)				

Before: 26−Nov−2015 3:07

After: 26−Nov−2015 6:24

High Resolution Laterolog Array − B Wellsite Calibration

HRLT V56

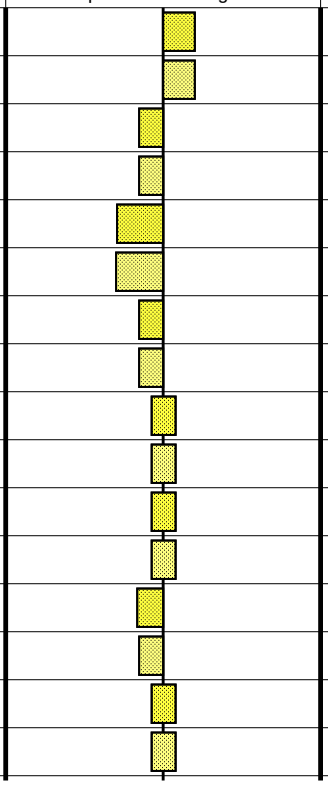
Idx	Phase	HRLT A5−A6 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68640	70000	82360	60900
	After		68640			
1	Before		72070	70000	82360	60900
	After		72080			
2	Before		73770	70000	82360	60900
	After		73860			
3	Before		72000	70000	82360	60900
	After		72010			
4	Before		69540	70000	82360	60900
	After		69540			
5	Before		70000	70000	82360	60900
	After		70030			
6	Before		−68730	−70000	−60900	−82360
	After		−68820			
7	Before		70000	70000	82360	60900
	After		70000			
		(Minimum) (Nominal) (Maximum)				

Before: 26−Nov−2015 3:07

After: 26−Nov−2015 6:24

High Resolution Laterolog Array − B Wellsite Calibration

HRLT VTP

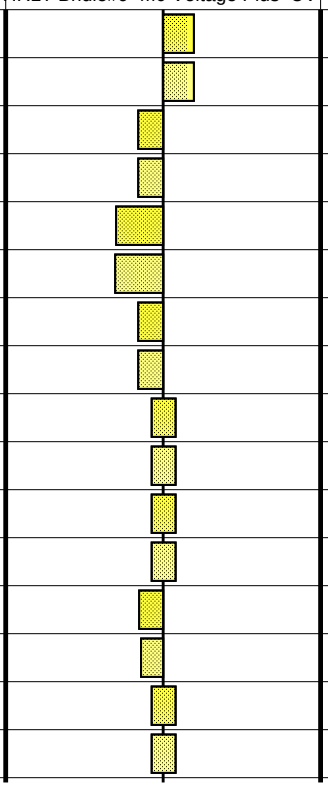
Idx	Phase	HRLT Torpedo−M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−68160	−70000	−60900	−82360
	After		−68160			
1	Before		−71890	−70000	−60900	−82360
	After		−71890			
2	Before		−73620	−70000	−60900	−82360
	After		−73710			
3	Before		−71900	−70000	−60900	−82360
	After		−71910			
4	Before		−69500	−70000	−60900	−82360
	After		−69490			
5	Before		−69960	−70000	−60900	−82360
	After		−69970			
6	Before		68490	70000	82360	60900
	After		68580			
7	Before		−70000	−70000	−60900	−82360
	After		−70000			
		(Minimum) (Nominal) (Maximum)				

Before: 26−Nov−2015 3:07

After: 26−Nov−2015 6:24

High Resolution Laterolog Array − B Wellsite Calibration

HRLT VBD

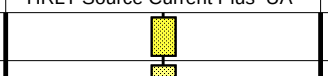
Idx	Phase	HRLT Bridle#9−M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−68200	−70000	−60900	−82360
	After		−68200			
1	Before		−71980	−70000	−60900	−82360
	After		−71980			
2	Before		−73720	−70000	−60900	−82360
	After		−73800			
3	Before		−71970	−70000	−60900	−82360
	After		−71990			
4	Before		−69530	−70000	−60900	−82360
	After		−69540			
5	Before		−70000	−70000	−60900	−82360
	After		−70010			
6	Before		68580	70000	82360	60900
	After		68680			
7	Before		−70000	−70000	−60900	−82360
	After		−70000			
		(Minimum) (Nominal) (Maximum)				

Before: 26−Nov−2015 3:07

After: 26−Nov−2015 6:24

High Resolution Laterolog Array − B Wellsite Calibration

HRLT ISO

Idx	Phase	HRLT Source Current Plus UA	Value	Nominal	Maximum	Minimum
0	Before		284.5	284.0	334.1	247.0
	After					

	After	284.5			
1	Before	281.1	281.1	330.7	244.4
	After	281.1			
2	Before	281.1	281.1	330.7	244.4
	After	281.1			
3	Before	281.1	281.1	330.7	244.4
	After	281.1			
4	Before	281.1	281.1	330.7	244.4
	After	281.1			
5	Before	281.1	281.1	330.7	244.4
	After	281.1			
6	Before	281.1	281.1	330.7	244.4
	After	281.1			
7	Before	281.1	281.1	330.7	244.4
	After	281.1			
	(Minimum) (Nominal) (Maximum)				

Before: 26−Nov−2015 3:07
After: 26−Nov−2015 6:24

High Resolution Laterolog Array − B Wellsite Calibration

HRLT MV

Idx	Phase	HRLT Vertical Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−320.8	−322.7	−280.7	−379.7
	After		−320.5			
1	Before		−326.7	−322.7	−280.7	−379.7
	After		−326.5			
2	Before		−332.9	−322.7	−280.7	−379.7
	After		−333.0			
3	Before		−321.7	−322.7	−280.7	−379.7
	After		−321.3			
4	Before		−309.3	−322.7	−280.7	−379.7
	After		−308.9			
5	Before		−325.9	−322.7	−280.7	−379.7
	After		−325.7			
6	Before		329.3	322.7	379.7	280.7
	After		329.4			
7	Before		−322.7	−322.7	−280.7	−379.7
	After		−322.7			
	(Minimum) (Nominal) (Maximum)					

Before: 26−Nov−2015 3:07
After: 26−Nov−2015 6:24

Hostile Litho−Density Sonde / Equipment Identification

Primary Equipment:

Hostile Litho Density Sonde	HLDS − D	35
Hostile Litho Density High Voltage	HLDV − D	35
Gamma Source Radioactive	GSR − Z	8113

Auxiliary Equipment:

Hostile Litho Density Pad	HLDP − C	35
Hostile Litho Density High Voltage Housi	HEH − H	35

Hostile Litho−Density Sonde Wellsite Calibration

Background Measurement

Phase	SS Cs Resolution Bkg %	Value
Master		7.728
Before		7.808
After		7.770
	7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)	

Phase	LS Cs Resolution Bkg %	Value
Master		8.059
Before		8.041
After		8.021
	7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)	

Phase	LSW1 Background CPS	Value
Master		81.31
Before		80.97
After		80.65
	55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)	

Phase	LSW2 Background CPS	Value
Master		75.17
Before		73.37
After		73.08
	50.00 (Minimum) 100.0 (Nominal) 140.0 (Maximum)	

Phase	LSW3 Background CPS	Value
Master		168.0
Before		167.1
After		167.2
	110.0 (Minimum) 200.0 (Nominal) 290.0 (Maximum)	

Phase	LSW4 Background CPS	Value
Master		205.6
Before		204.5
After		205.3
	140.0 (Minimum) 250.0 (Nominal) 360.0 (Maximum)	

Phase	LSW5 Background CPS	Value
Master		476.6
Before		478.8
After		474.2
	330.0 (Minimum) 600.0 (Nominal) 830.0 (Maximum)	

Phase	SSW1 Background CPS	Value
Master		78.62
Before		77.99
After		76.91
	55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)	

Phase	SSW2 Background CPS	Value
Master		135.7
Before		135.4
After		134.7
	100.0 (Minimum) 200.0 (Nominal) 260.0 (Maximum)	

Phase	SSW3 Background CPS	Value
Master		379.3
Before		374.1
After		373.4
	280.0 (Minimum) 500.0 (Nominal) 700.0 (Maximum)	

Phase	SSW4 Background CPS	Value
Master		203.8
Before		201.6
After		203.1
	150.0 (Minimum) 270.0 (Nominal) 380.0 (Maximum)	

Phase	SSW5 Background CPS	Value
Master		144.7
Before		144.2
After		142.7
	110.0 (Minimum) 200.0 (Nominal) 270.0 (Maximum)	

Master: 22−Sep−2015 7:15 Before: 26−Nov−2015 0:27 After: 26−Nov−2015 6:27

Litho−Density Spectroscopy Cartridge − B / Equipment Identification

Primary Equipment:		
LDSC Cartridge	LDSC − B	326
Auxiliary Equipment:		
LDSC Housing	LDSH − A	303

Accelerator−Porosity Tool / Equipment Identification

Primary Equipment:		
Accelerator−Porosity Sonde	APS − C	212
APS Minitron	MNTR − F	6504
Auxiliary Equipment:		
Accelerator−Porosity Housing	APH − AC	121
APS Calibration Water Tank	SFT − 178	1
APS Aluminum Calibrator Sleeve	SFT − 281	1

Accelerator−Porosity Tool Wellsite Calibration

Detector Background

Phase	Near Det Bkg Cntrate CPS	Value
Master		26.37
Before		27.30
After		27.33
	1.000 (Minimum) 30.00 (Nominal) 50.00 (Maximum)	

Phase	Far Det Bkg Cntrate CPS	Value
Master		27.82
Before		27.38
After		26.80
	1.000 (Minimum) 30.00 (Nominal) 50.00 (Maximum)	

Phase	Array−1 Det Bkg Cntrate CPS	Value
Master		25.57
Before		26.89
After		25.89
	1.000 (Minimum) 30.00 (Nominal) 50.00 (Maximum)	

Phase	Array−2 Det Bkg Cntrate CPS	Value

Phase	Array Therm Det Bkg Cntrate CPS	Value

Phase	Array−2 Dec Dig Shrate CPS	Value	Phase	Array−1 Dec Dig Shrate CPS	Value
Master		26.87	Master		25.48
Before		27.23	Before		29.60
After		26.59	After		25.41
	1.000 (Minimum) 30.00 (Nominal) 50.00 (Maximum)			1.000 (Minimum) 30.00 (Nominal) 50.00 (Maximum)	

Master: 22−Sep−2015 8:52 Before: 26−Nov−2015 0:27 After: 26−Nov−2015 6:27

Accelerator−Porosity Tool Wellsite Calibration

Calibration Ratios

Phase	Near/Far Calibration Ratio	Value	Phase	Near/Array Calibration Ratio	Value	Phase	Near/Array Cal Ratio Up/Down	Value
Master		0.9782	Master		1.085	Master		1.007
	0.8000 (Minimum) 0.9250 (Nominal) 1.050 (Maximum)			0.9000 (Minimum) 1.030 (Nominal) 1.170 (Maximum)			0.9700 (Minimum) 1.000 (Nominal) 1.030 (Maximum)	

Master: 22−Sep−2015 8:52

Accelerator−Porosity Tool Wellsite Calibration

Tank Check

Phase	Array−1 Standoff Porosity PU	Value	Phase	Array−2 Standoff Porosity PU	Value	Phase	Average Slowing Down Time US	Value
Master		10.13	Master		10.30	Master		6.081
	9.900 (Minimum) 11.75 (Nominal) 13.60 (Maximum)			9.900 (Minimum) 11.75 (Nominal) 13.60 (Maximum)			5.500 (Minimum) 6.000 (Nominal) 6.250 (Maximum)	
Phase	Array−1 SDT Ratio Up/Down	Value	Phase	Array−2 SDT Ratio Up/Down	Value	Phase	Sigma Formation CU	Value
Master		0.9680	Master		0.9638	Master	EXCEEDS LIMIT	35.35
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)			0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)			20.00 (Minimum) 27.50 (Nominal) 35.00 (Maximum)	

Master: 22−Sep−2015 8:52

Hostile Natural Gamma Ray Cartridge − B / Equipment Identification

Primary Equipment:		
HNGC Cartridge	HNGC − B	439
Auxiliary Equipment:		
HNGC Housing	HNGH − A	380

Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:		
HNGS Sonde	HNGS − BA	177
Auxiliary Equipment:		
HNGS Sonde Housing	HNSH − BA	174
Gamma Source Radioactive	GSR − U	616008

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 1 Check

Phase	Na 511 Peak Loc	Value	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		37.67	Master		16.19	Master		1229
Before		37.54	Before		16.67	Before		1226
After		37.57	After		17.33	After		1228
	37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)			12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)			900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)	
Phase	Na 1785 Peak Loc	Value	Phase	Na 1785 Peak Res %	Value	Phase	Temperature DEGC	Value
Master		136.2	Master		9.111	Master		32.00
Before		136.4	Before		10.14	Before		33.23
After		136.2	After		9.349	After		32.55
	135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)			7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)			−28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)	

Phase	Na Count Rate CPS	Value
Master		42.40

Phase	Value
Before	40.35
After	40.56

10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)

Master: 28−Sep−2015 3:37 Before: 26−Nov−2015 0:28 After: 26−Nov−2015 6:28

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value
Master		39.57
Before		39.55
After		39.66

37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)

Phase	Na 511 Peak Res %	Value
Master		16.65
Before		16.80
After		16.85

12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)

Phase	High Voltage V	Value
Master		1107
Before		1106
After		1109

900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)

Phase	Na 1785 Peak Loc	Value
Master		143.5
Before		142.7
After		143.4

135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)

Phase	Na 1785 Peak Res %	Value
Master		9.036
Before		9.119
After		9.794

7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)

Phase	Temperature DEGC	Value
Master		31.75
Before		33.20
After		33.21

−28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)

Phase	Na Count Rate CPS	Value
Master		42.43
Before		40.44
After		40.54

10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)

Master: 28−Sep−2015 3:37 Before: 26−Nov−2015 0:28 After: 26−Nov−2015 6:28

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Ratio Of Detector 1 To Detector 2

Phase	Coincidence Count Rate Ratio	Value
Master		0.9929
Before		0.9926
After		0.9944

0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)

Master: 28−Sep−2015 3:37
Before: 26−Nov−2015 0:28
After: 26−Nov−2015 6:28

Enhanced DTS Cartridge / Equipment Identification

Primary Equipment:		
EDTC Gamma Ray Detector	EDTG − A/B	8305
Enhanced DTS Cartridge	EDTC − B	8317
Auxiliary Equipment:		
EDTC Housing	EDTH − B	8303

Enhanced DTS Cartridge Wellsite Calibration

EDTC Accelerometer Calibration

Phase	EDTC Z−Axis Acceleration M/S2	Value
Before		9.824

9.610 (Minimum) 9.810 (Nominal) 10.01 (Maximum)

Before: 26−Nov−2015 0:24

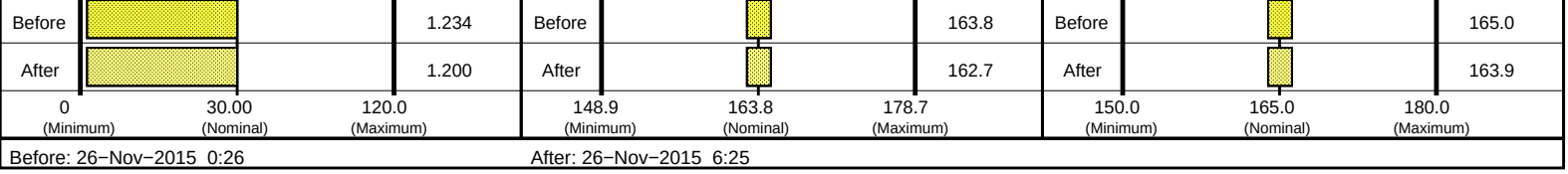
Enhanced DTS Cartridge Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value

Phase	Gamma Ray (Jig − Bkg) GAPI	Value

Phase	Gamma Ray (Calibrated) GAPI	Value



Before: 26−Nov−2015 0:26 After: 26−Nov−2015 6:25

Company: **International Ocean Discovery Program**

Schlumberger

Well: **Expedition 359, Site U1471E**
Field: **Maldives Monsoon & Sea Level**
Rig: **JOIDES Resolution**
Country:

High Resolution Laterolog Array (HRLA)
Nuclear (HNGS, HLDS, APS)
Magnetic Susceptibility (MSS)