Schlumberger

Company: **Lamont Doherty Earth Observatory**

Well: **Expedition 340T, Site U1309D**
Field: **Atlantis Massif**
Rig: **JOIDES Resolution** Country: **USA**

Rig: JOIDES Resolution
Field: Atlantis Massif
Location: Latitude: N 30* 10.1195'
Well: Expedition 340T, Site U1309D
Company: Lamont Doherty Earth Observato

Hostile Litho−Density Sonde (HLDS)

LOCATION

Latitude: N 30* 10.1195'
Longitude: W 42* 7.1131'

Elev.: K.B. 11.00 m
G.L. −1656.00 m
D.F. 11.00 m

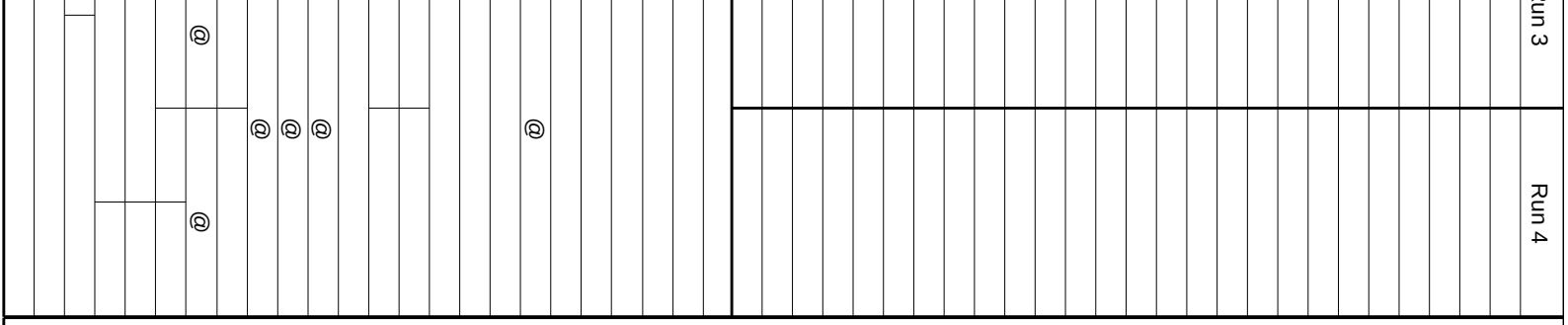
Permanent Datum: Mean Sea Level
Log Measured From: Drill Floor
Drilling Measured From: Drill Floor

Elev.: 0.00 m
11.00 m above Perm. Datum

Ocean: Atlantic	Max. Well Deviation 0 deg	Longitude N 30* 10.1195'	Latitude W 42* 7.1131'

	Run 1	Run 2	R
Logging Date	21−Feb−2012		
Run Number	1		
Depth Driller	3071.5 m		
Schlumberger Depth	3048 m		
Bottom Log Interval	3032 m		
Top Log Interval	1737.5 m		
Casing Driller Size @ Depth	13.375 in @ 1711 m	@	
Casing Schlumberger	1713 m		
Bit Size	9.875 in		
Type Fluid In Hole	Seawater		
MUD Density / Viscosity	1.05 g/cm3		
MUD Fluid Loss / PH			
MUD Source Of Sample	N/A		
RM @ Measured Temperature	@	@	
RMF @ Measured Temperature	@	@	
RMC @ Measured Temperature	@	@	
Source RMF / RMC	N/A / N/A		
RM @ MRT / RMF @ MRT	@ 149 / @ 149	@ / @	
Maximum Recorded Temperatures	149 degC		
Circulation Stopped / Time	31−Jan−2005 / 12:00		
Logger On Bottom / Time	21−Feb−2012 / 21:05		
Unit Number / Location	625003 / Houston		
Recorded By	C. Furman		
Witnessed By	A. Slagle, G. Guerrin		

	Run 1	Run 2	R
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

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OTHER SERVICES1

OS1: MTT
OS2: HRLA
OS3: DSI
OS4: MSS
OS5: VSI

REMARKS: RUN NUMBER 1

Hole U1309D was originally drilled during ODP Leg 304 in 2004 and deepened during Leg 305 in 2005.
This is the first re−entry since deepening and the first descent is being made without a pipe trip
in order to preserve temperature data A shut−in temperature profile is one of the main objectives of this run.
The purpose of this expedition is to acquire additional logging information that could not be acquired during Exp 304/305.
Logs correlated to "Dual−Laterolog Tool" log recorded by Schlumberger on 31 JAN 05.
Tools became stuck while re−entering drill pipe after completing the logging run and had to be fished by use of Kinley devices.
All tools were recovered, and the cause of the sticking was found to be that the arms on the MCD centralizers had
worn thin over the long open−hole section and then broken while entering pipe, making the tool OD too large for the bit.
No after survey calibrations were possible due to fishing the string, so before−survey calibrations are presented instead.
Data corrected for borehole diameter using HLDS caliper.
Density data is valid only where the caliper is open.
Standard bulk density scales (3g/cc to 1g/cc) changed to a range of 4g/cc to 2g/cc to avoid excessive wrapping.

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

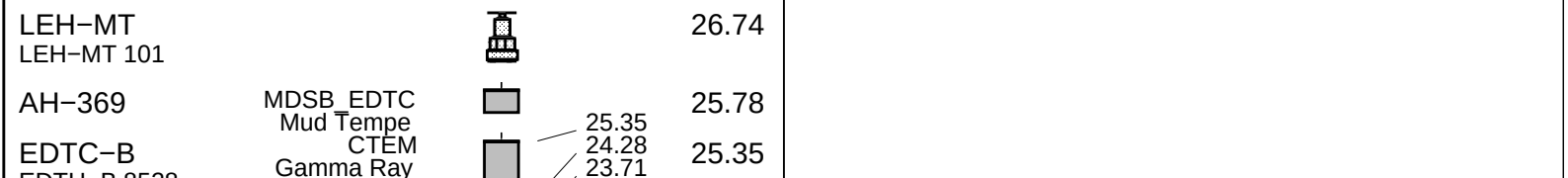
EQUIPMENT DESCRIPTION

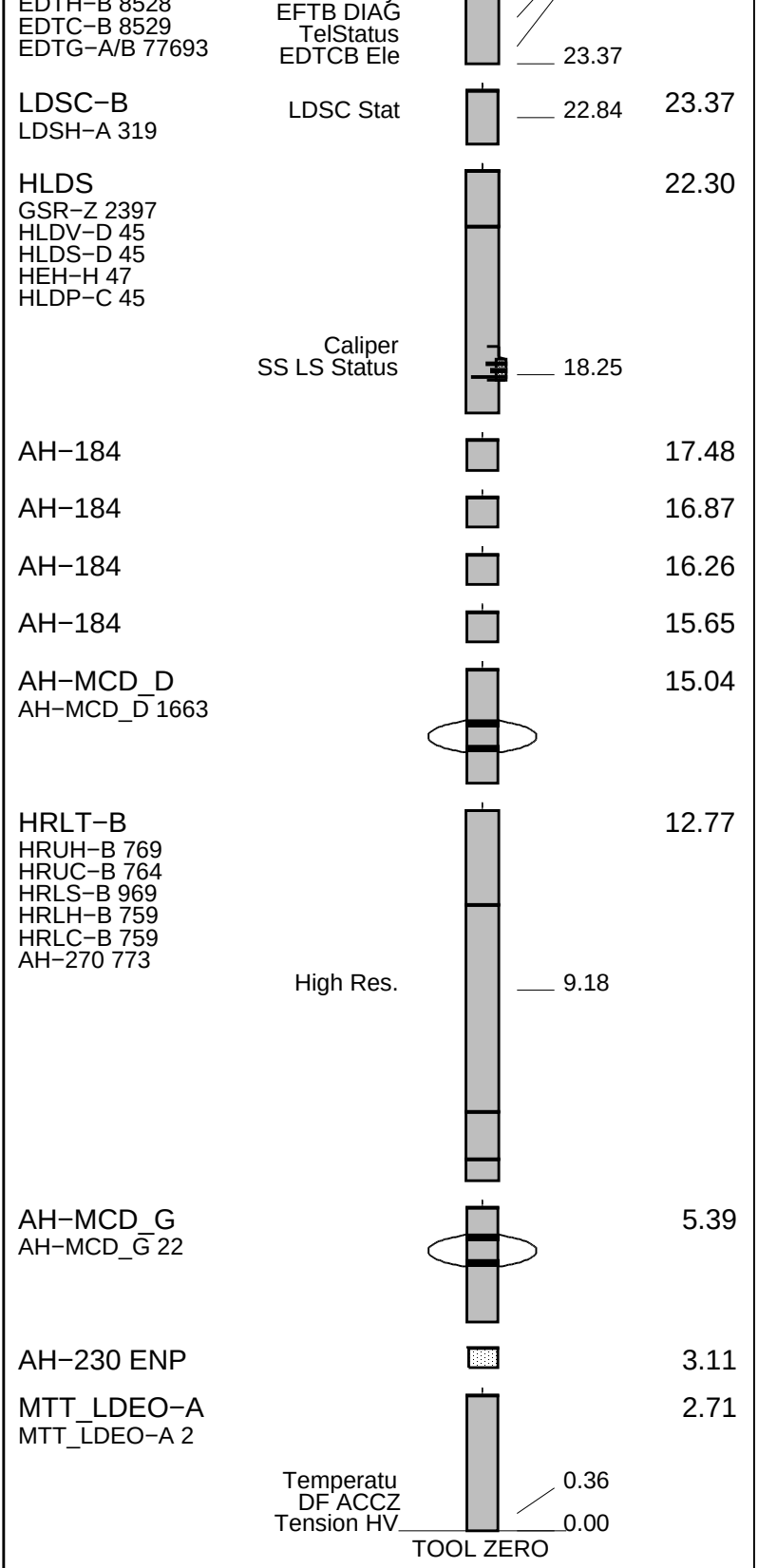
RUN 1 RUN 2

SURFACE EQUIPMENT

WITM (EDTS)−A

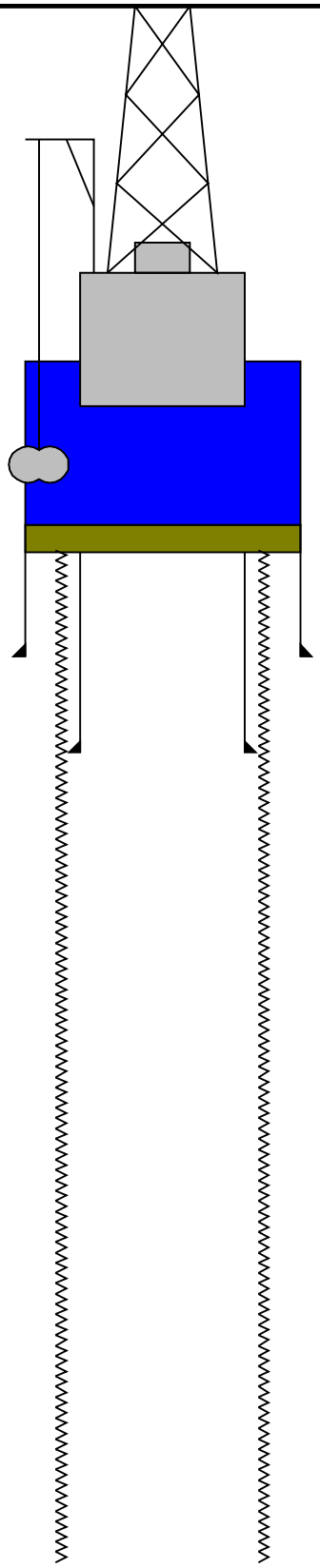
DOWNHOLE EQUIPMENT





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

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

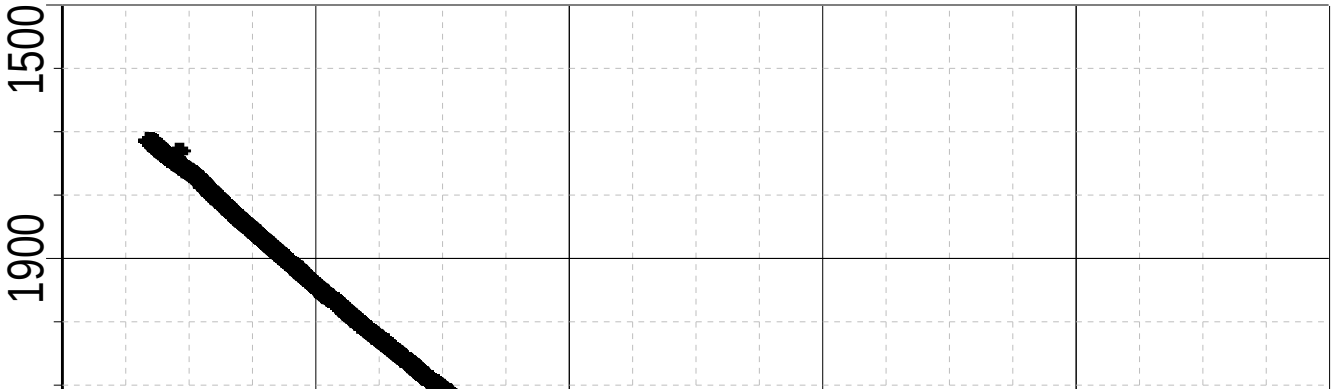
Kelly Bushing Elevation			0.0				
Derrick Floor Elevation			0.0				
Mean Sea Level			11.0				
Seismic Gun depth below MSL			7.0				
					1650.0		Top of Re−entry Cone
					1656.0	9.875	Sea Bed
					1676.0	13.375	Casing Shoe
					1711.0	8.000	Drill Pipe (Driller's Depth) 1711mbrf for Triple−Combo 1759mbrf for VSI & MSS 2356mbrf for DSI
					3071.5	9.875	Driller's Total Depth

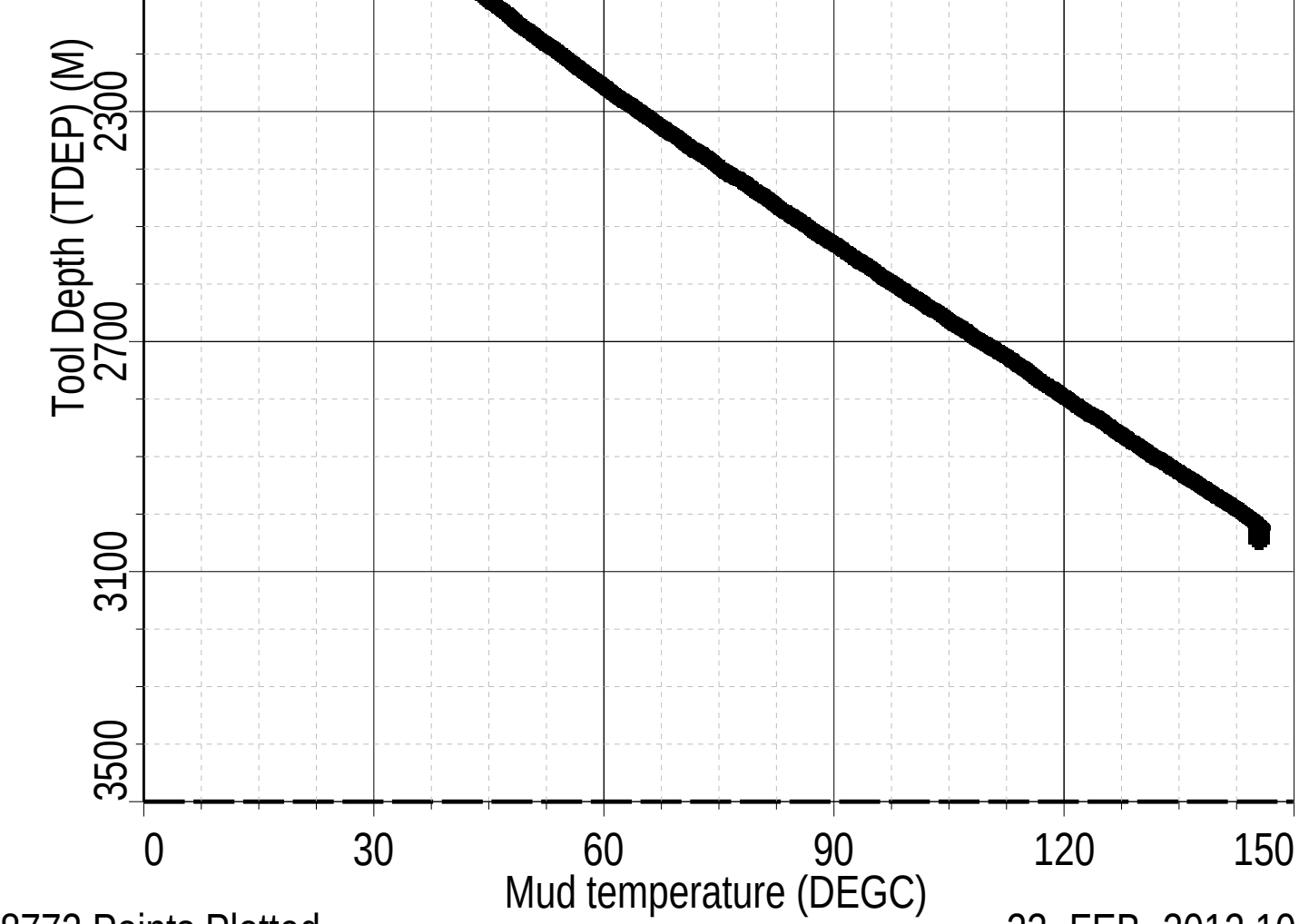
Schlumberger

LEH−MT Mud Temperature

MAXIS Field Log

Index: 3049.5 − 1712.8 M





8772 Points Plotted

23−FEB−2012 10:20

Schlumberger

Down Log

MAXIS Field Log

Company: Lamont Doherty	**Well: Expedition 340T, Site U1309D**

Input DLIS Files

DEFAULT	**Flip_MTT_LDEO_HRLA_024LUP**		**PRODUCER**	**23−Feb−2012 10:31**	**3059.7 M**	**1674.9 M**

Output DLIS Files

DEFAULT	**MTT_LDEO_HRLA_LDL_025PUP**	**FN:13**	**PRODUCER**	**23−Feb−2012 10:32**	**3063.7 M**	**1678.8 M**

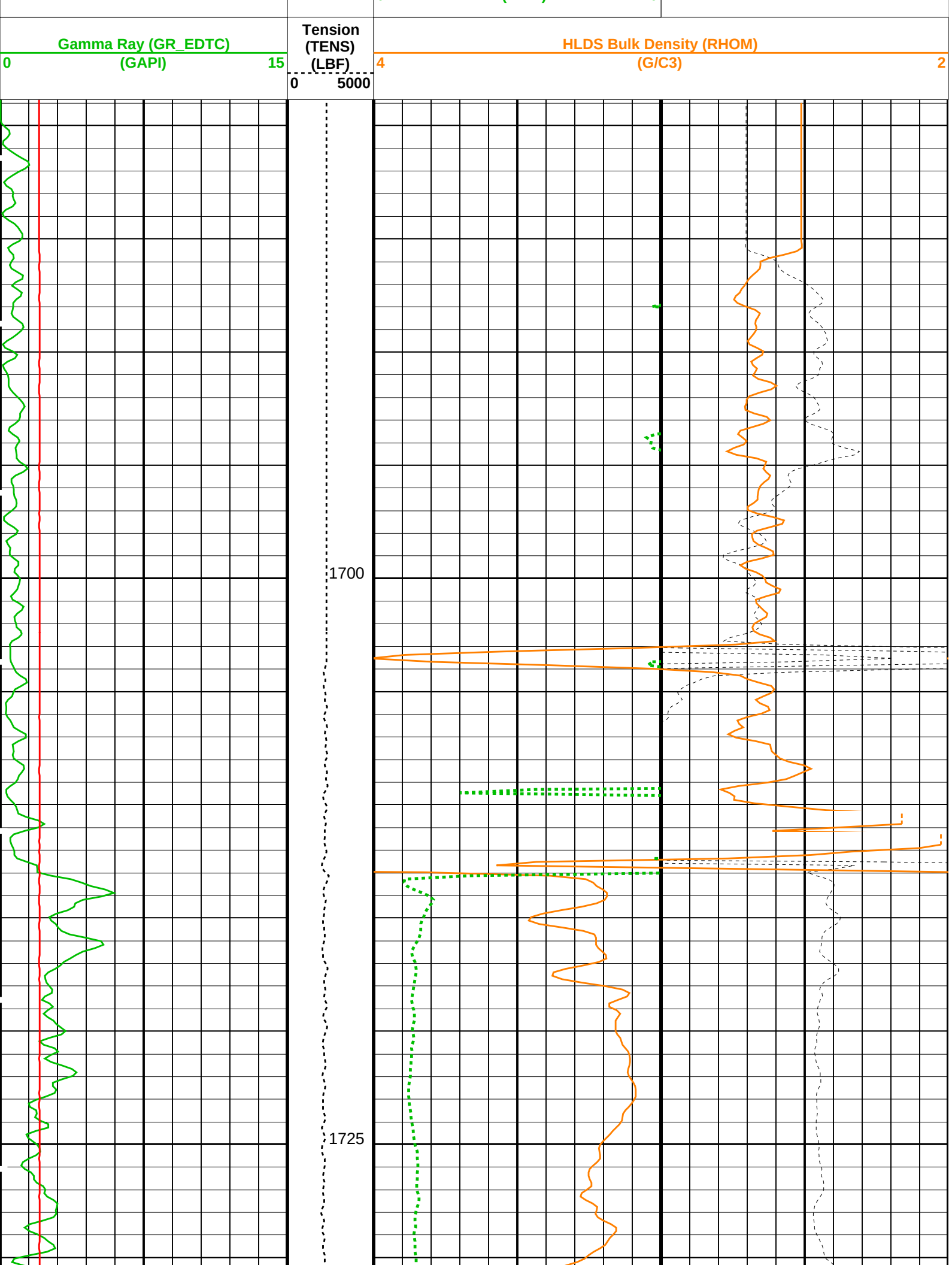
OP System Version: 19C0−187

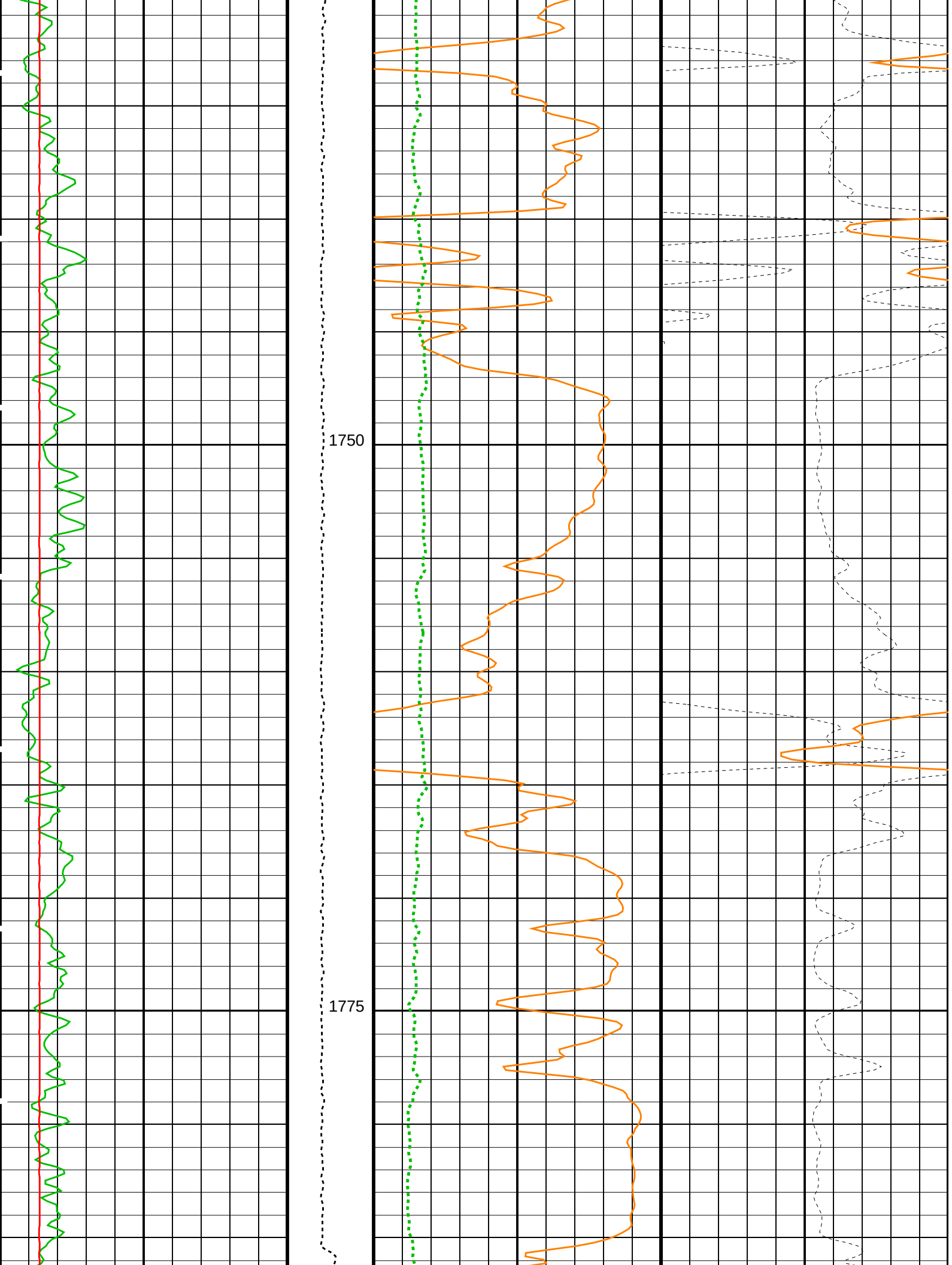
MTT_LDEO−A	**19C0−187**	**HRLT−B**	**19C0−187**
HLDS	**19C0−187**	**LDSC−B**	**19C0−187**
EDTC−B	**19C0−187**		

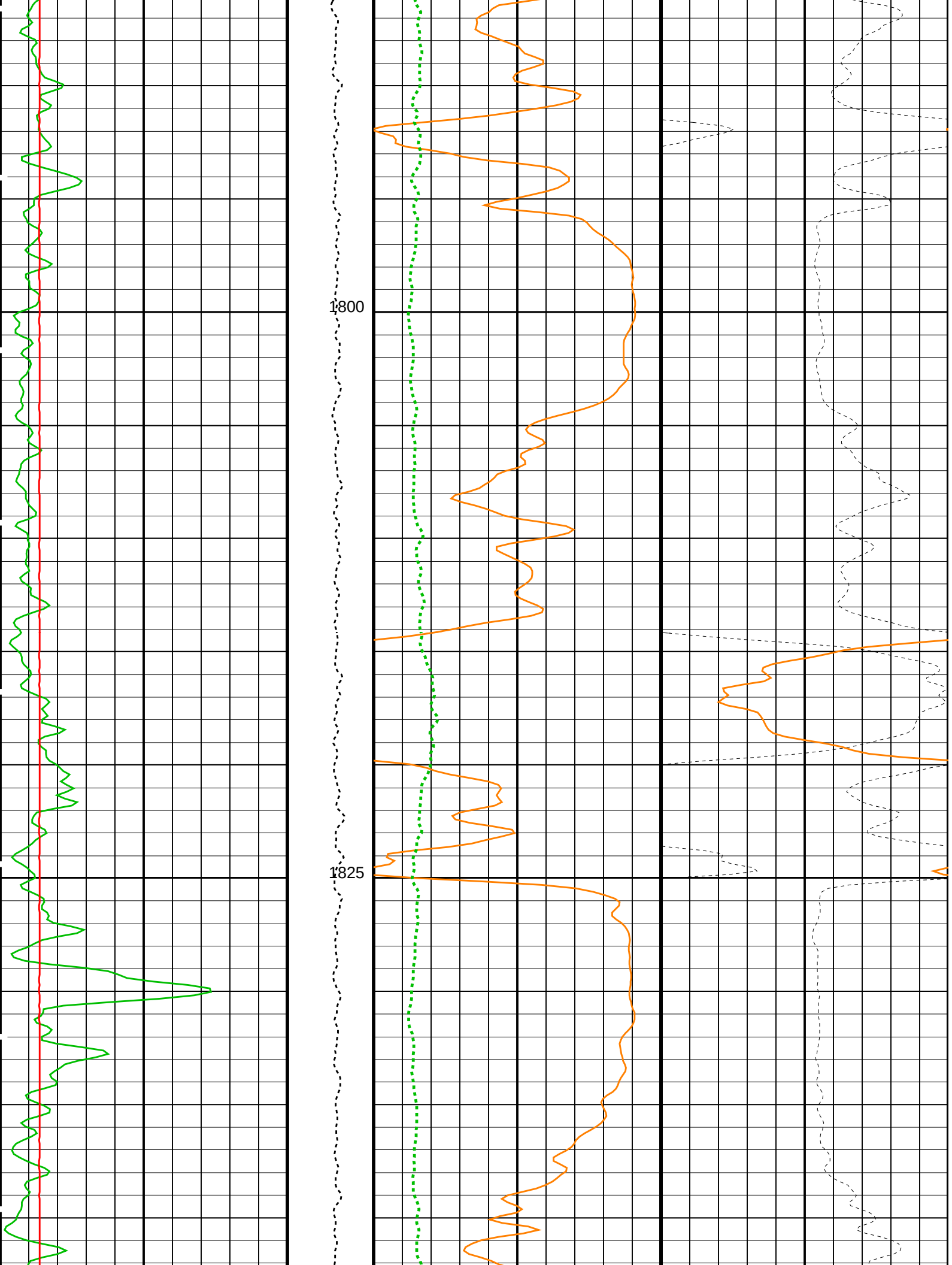
PIP SUMMARY

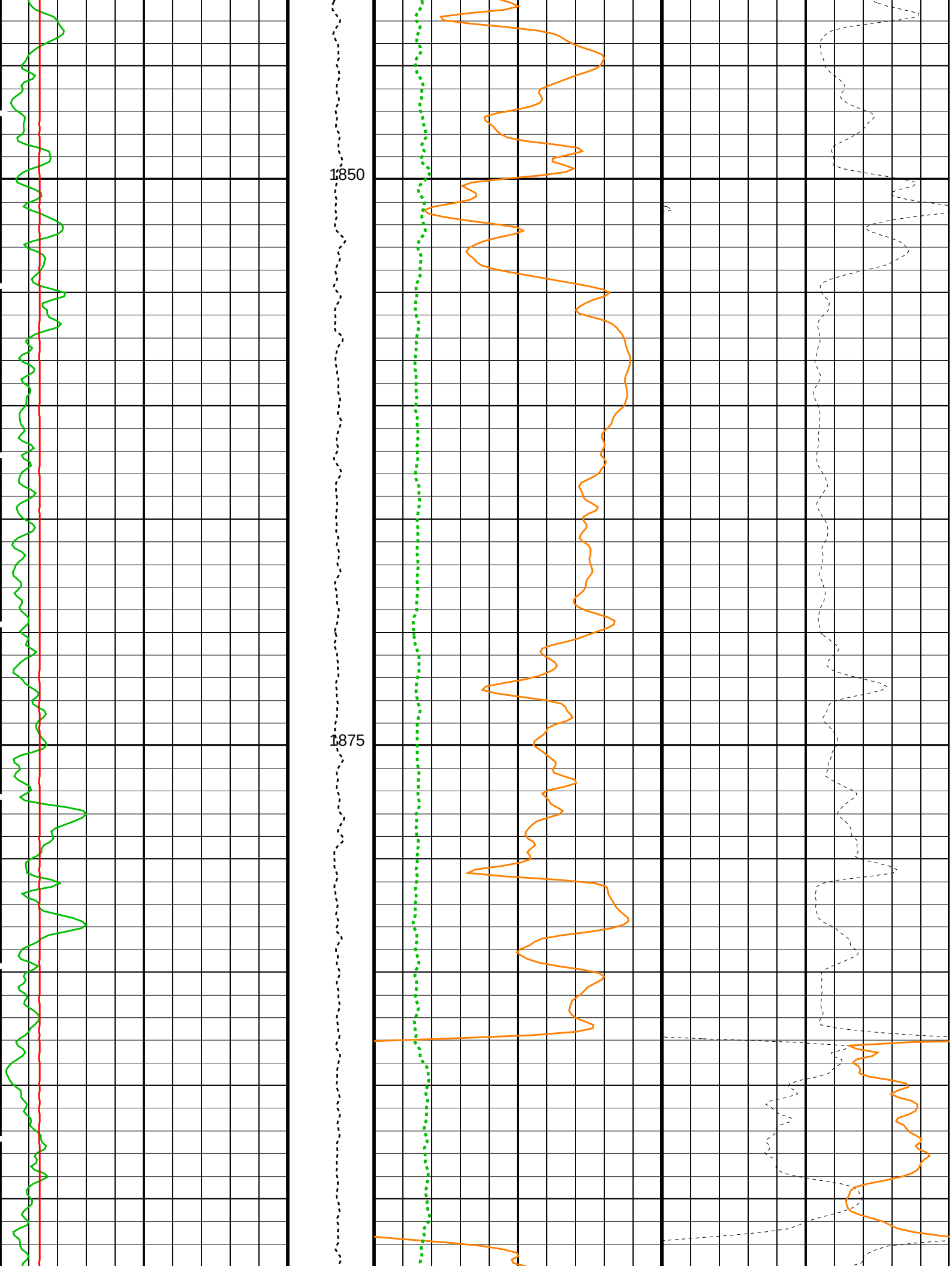
Time Mark Every 60 S

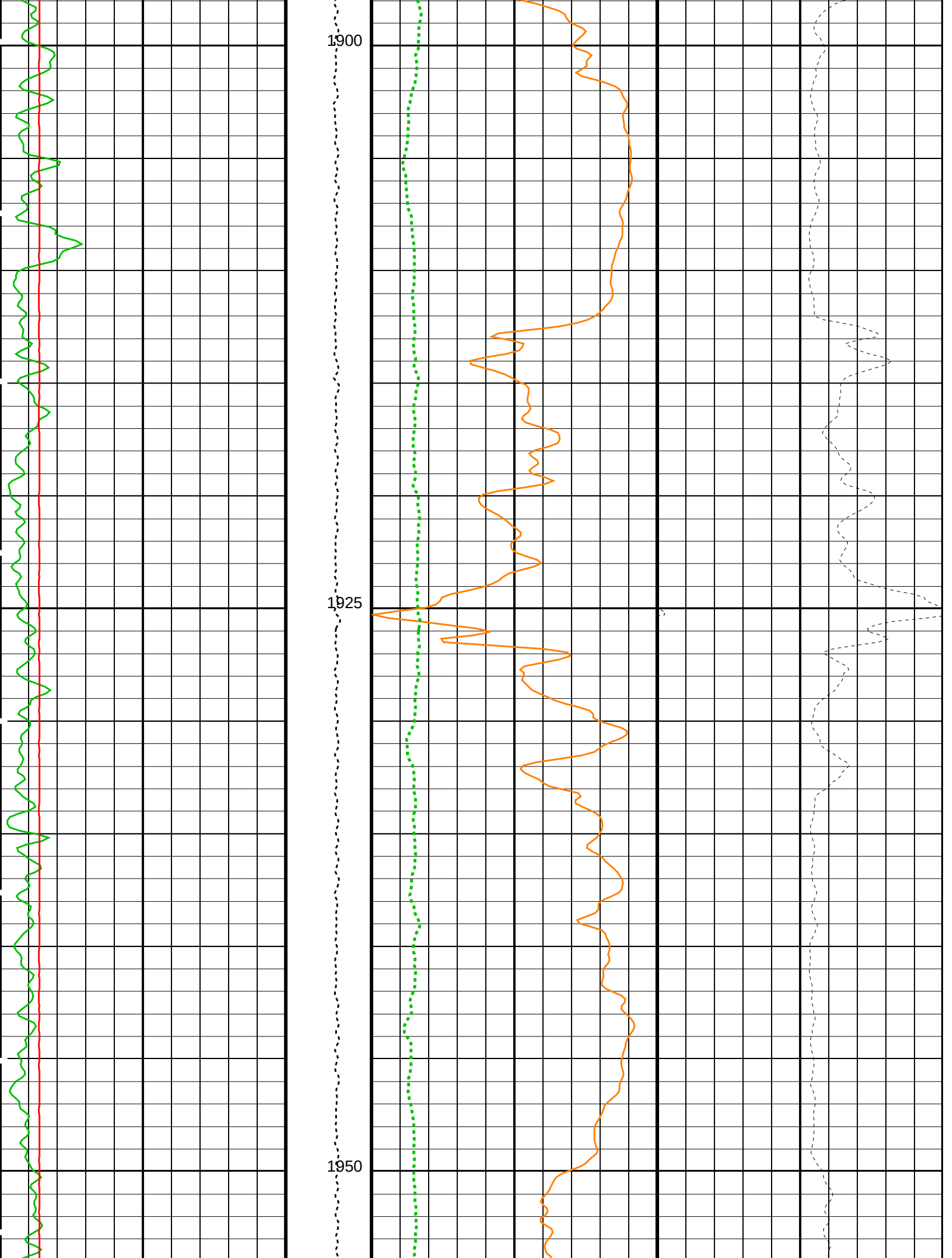
HLDS Caliper (LCAL)		HLDS Long Spaced Photoelectric Effect (PEFL)	HLDS Bulk Density Correction (DRH)
0 (IN) 20		0 (−−−−) 10	−0.25 (G/C3) 0.25

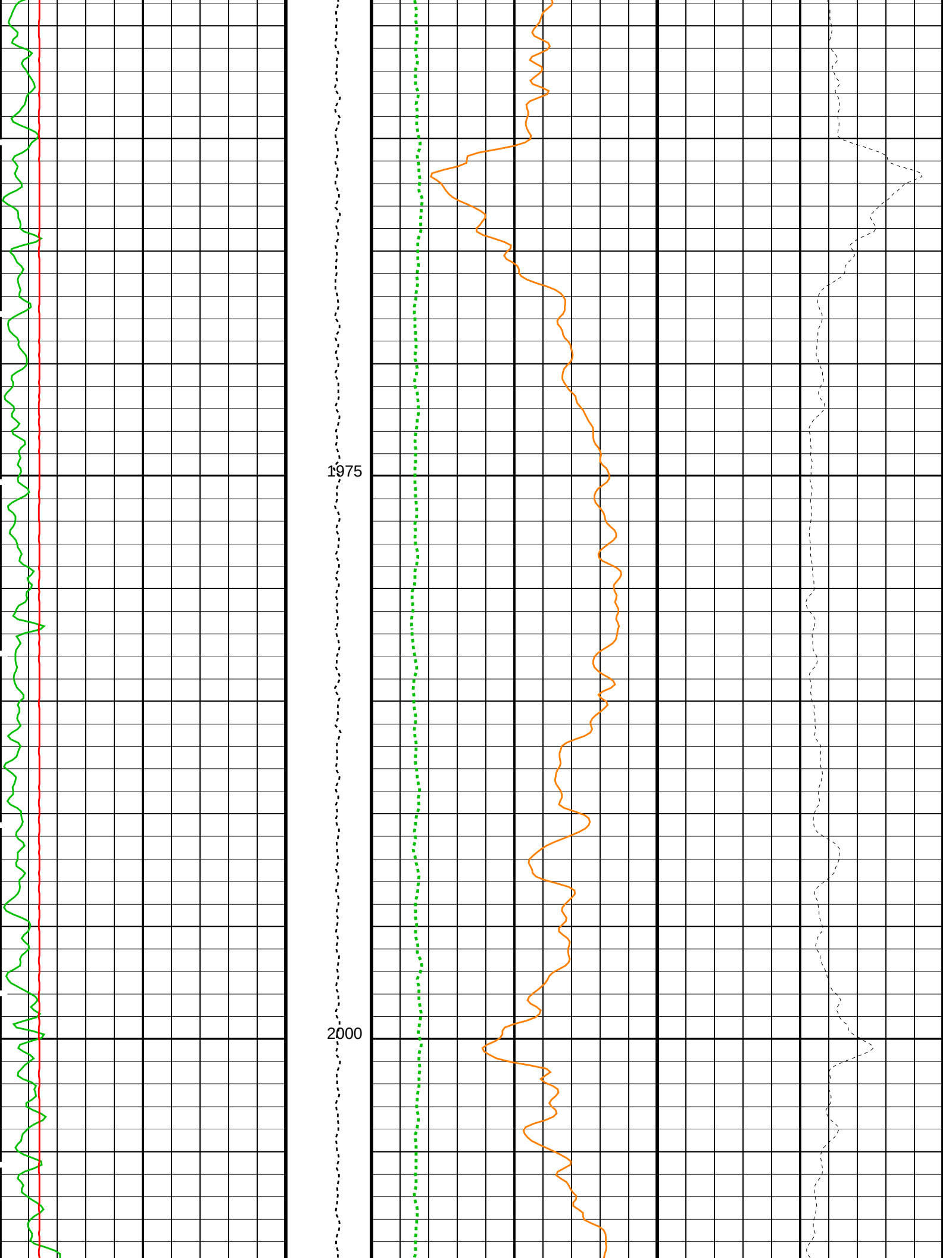

Gamma Ray (GR_EDTC)
0
(GAPI)
15
Tension
(TENS)
(LBF)
0
5000
HLDS Bulk Density (RHOM)
4
(G/C3)
2
1700
1725

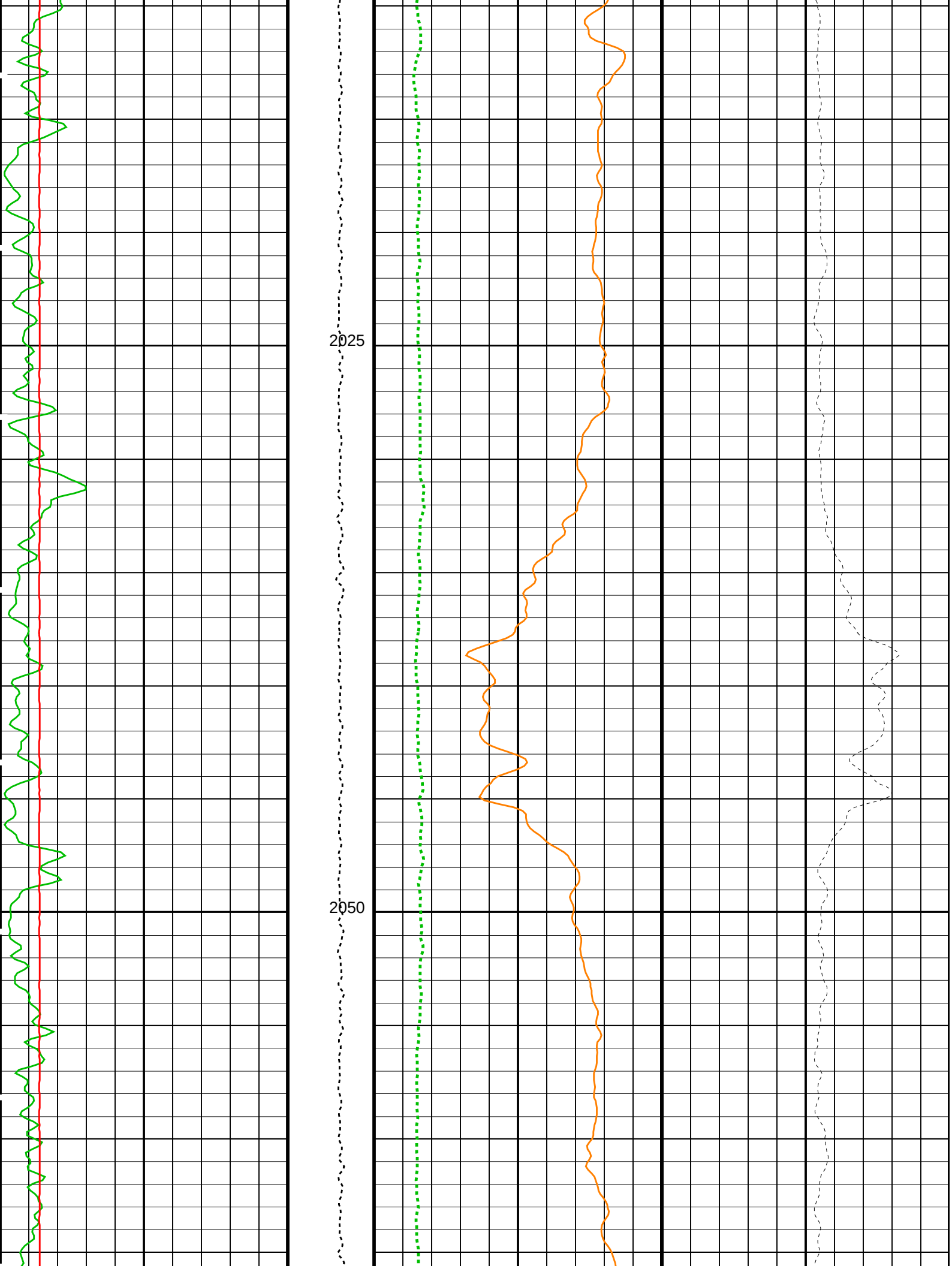

1750
1775

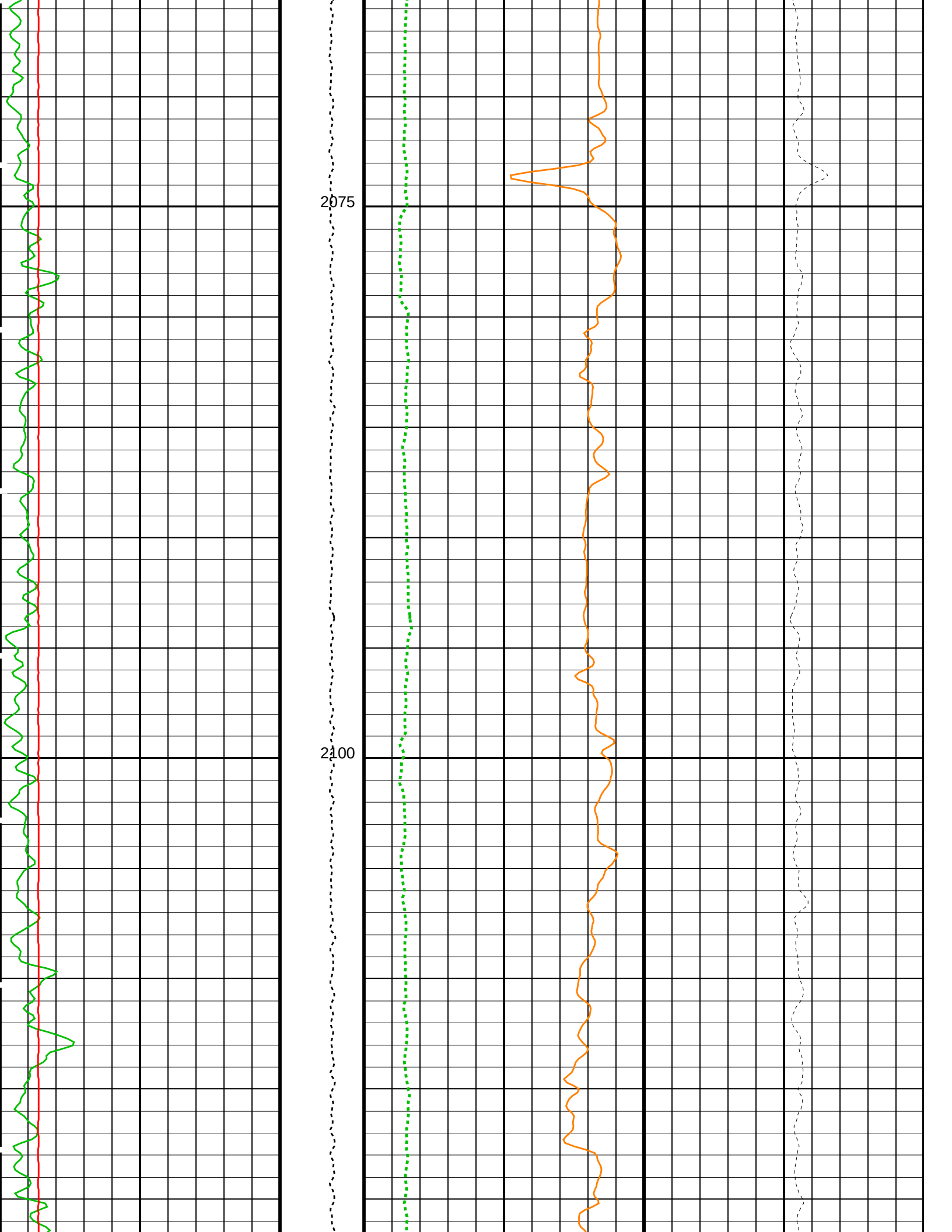

1800
1825

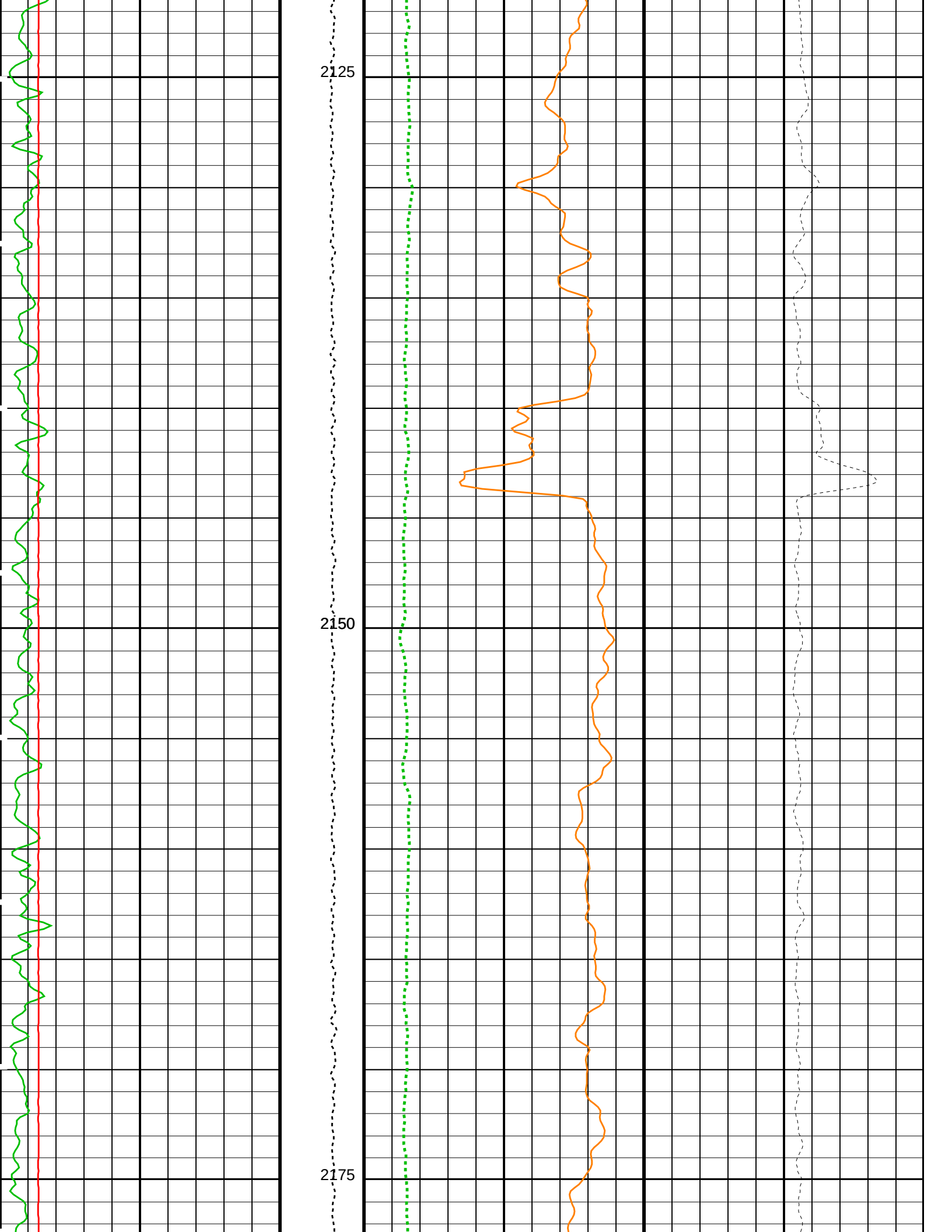

1850
1875

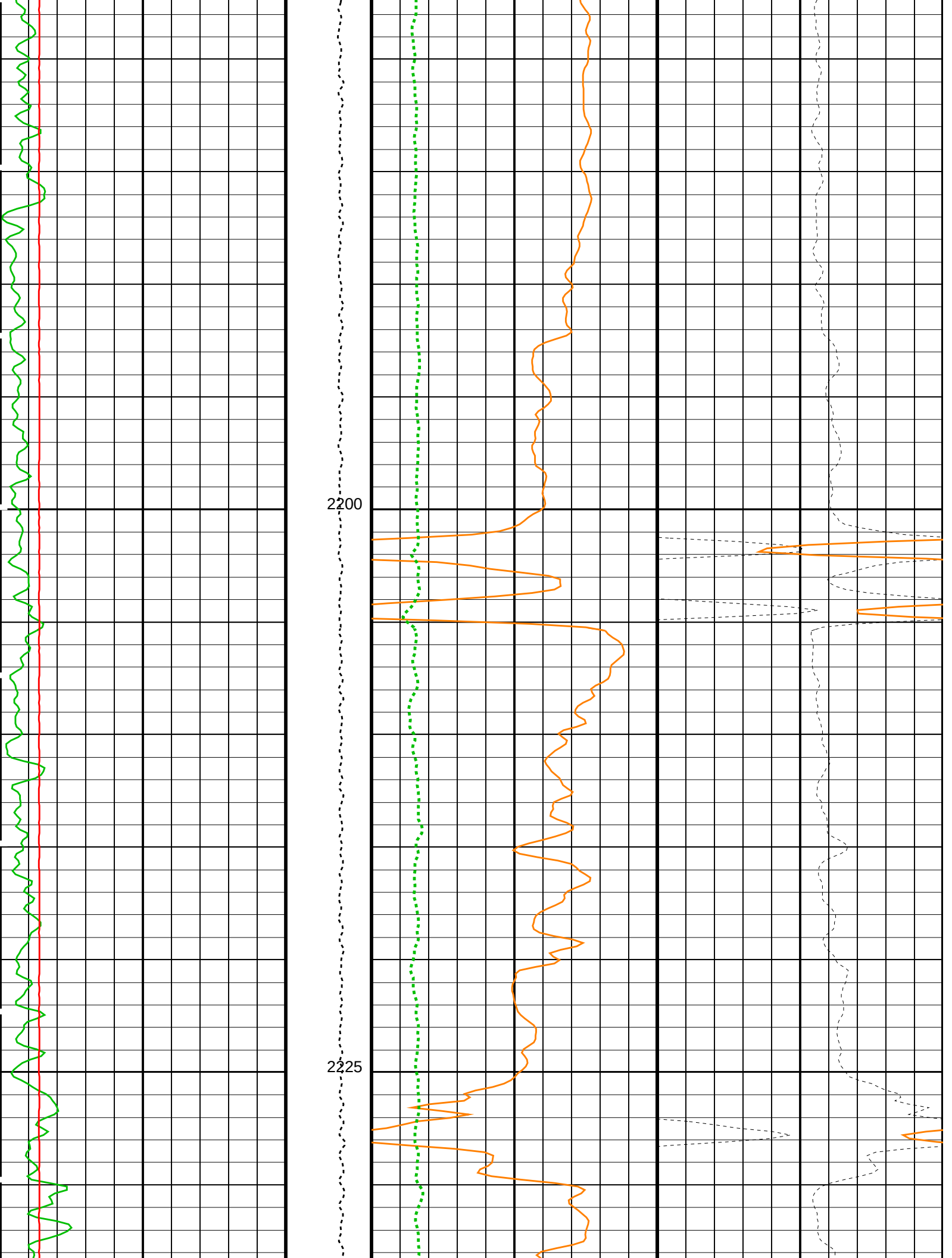

1900
1925
1950

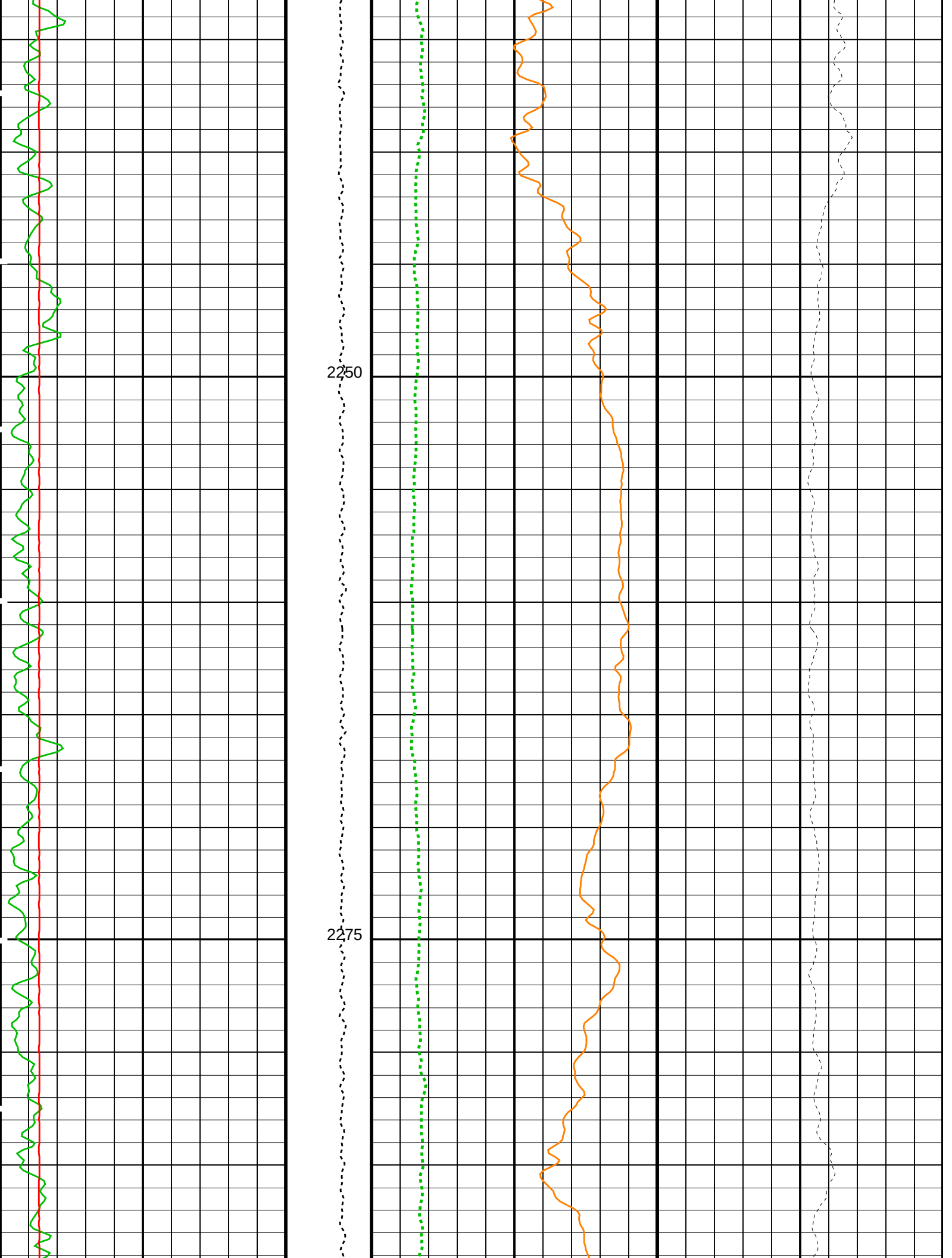

1975
2000

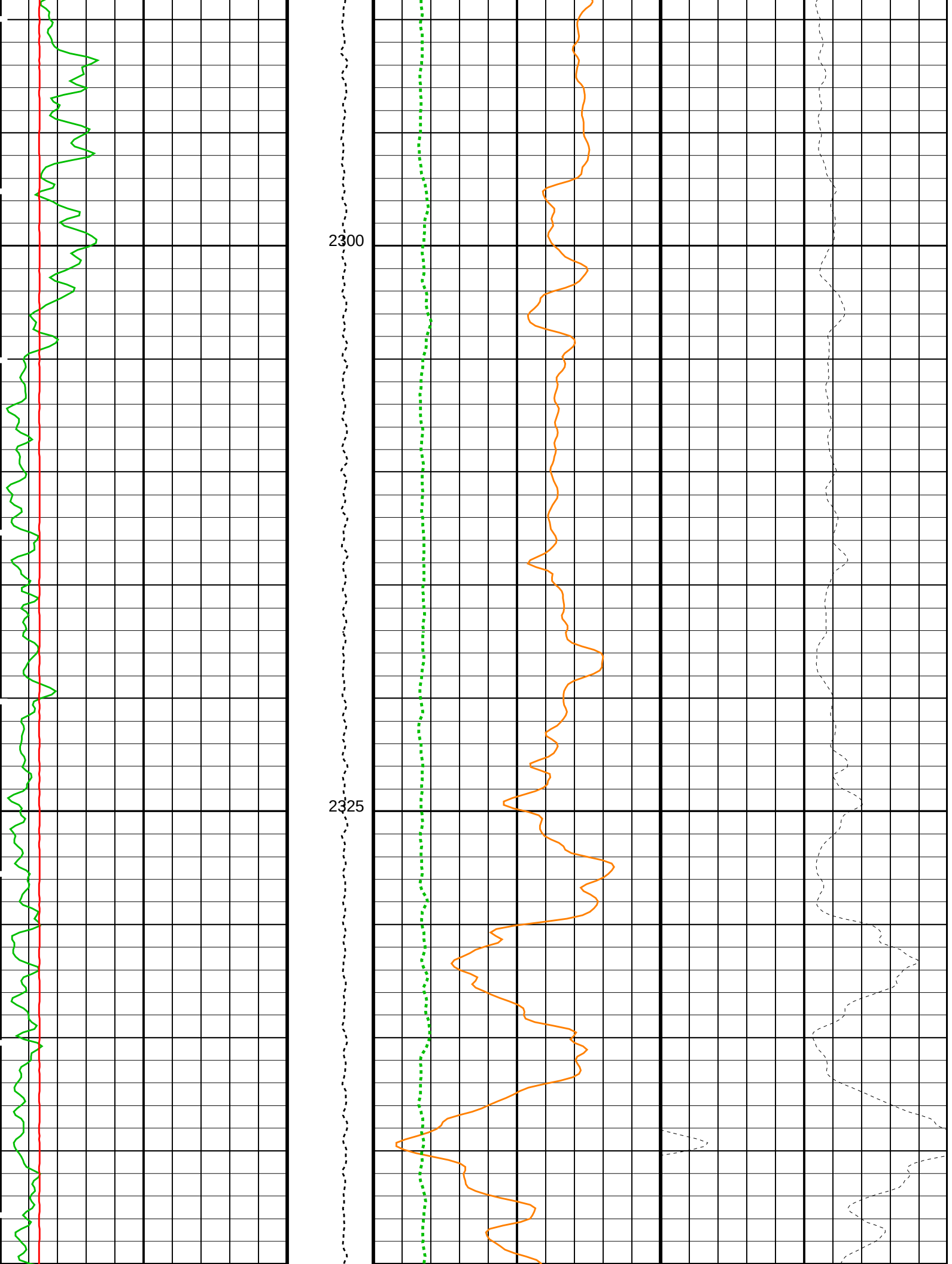

2025
2050


2075
2100


2125
2150
2175


2200
2225


2250
2275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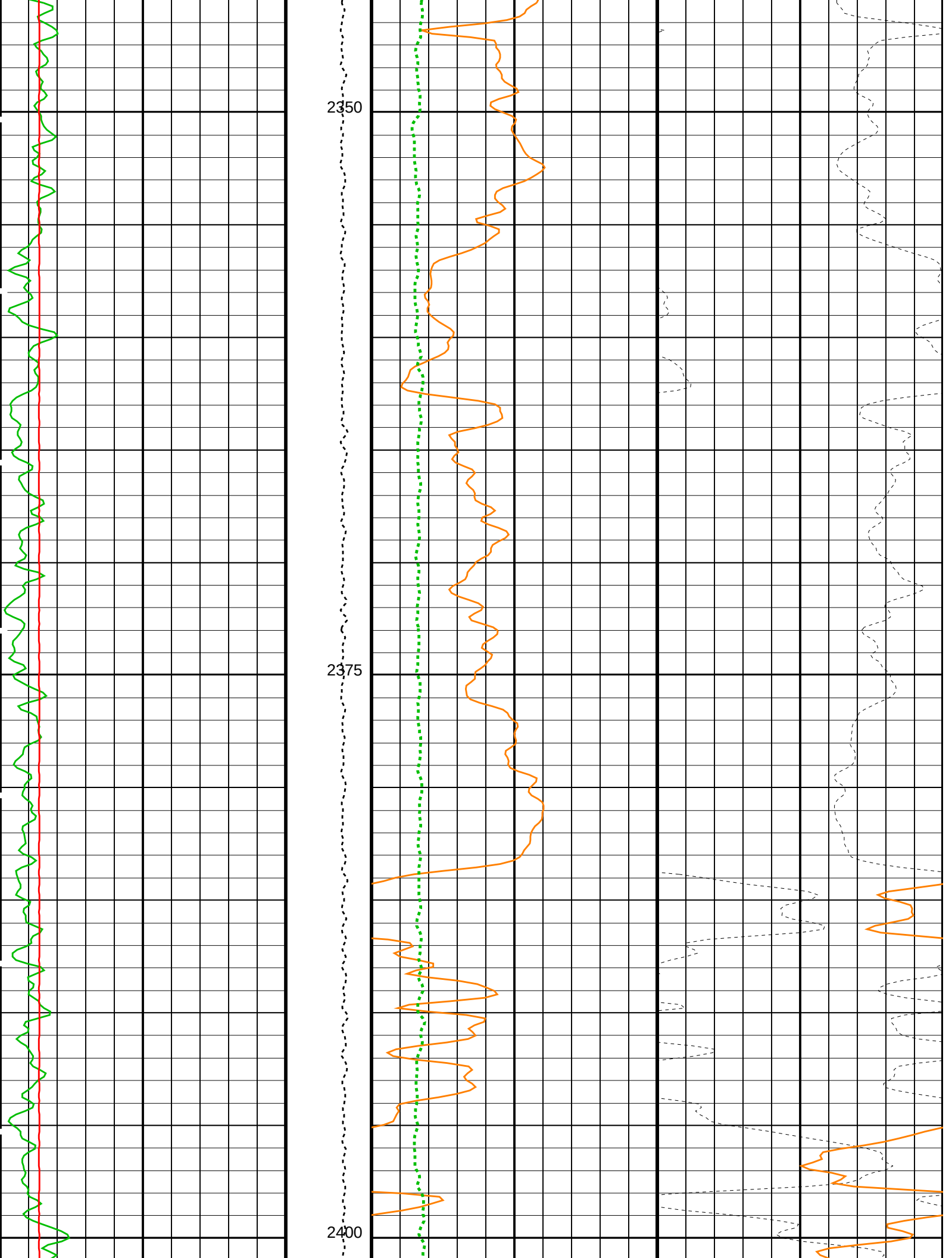
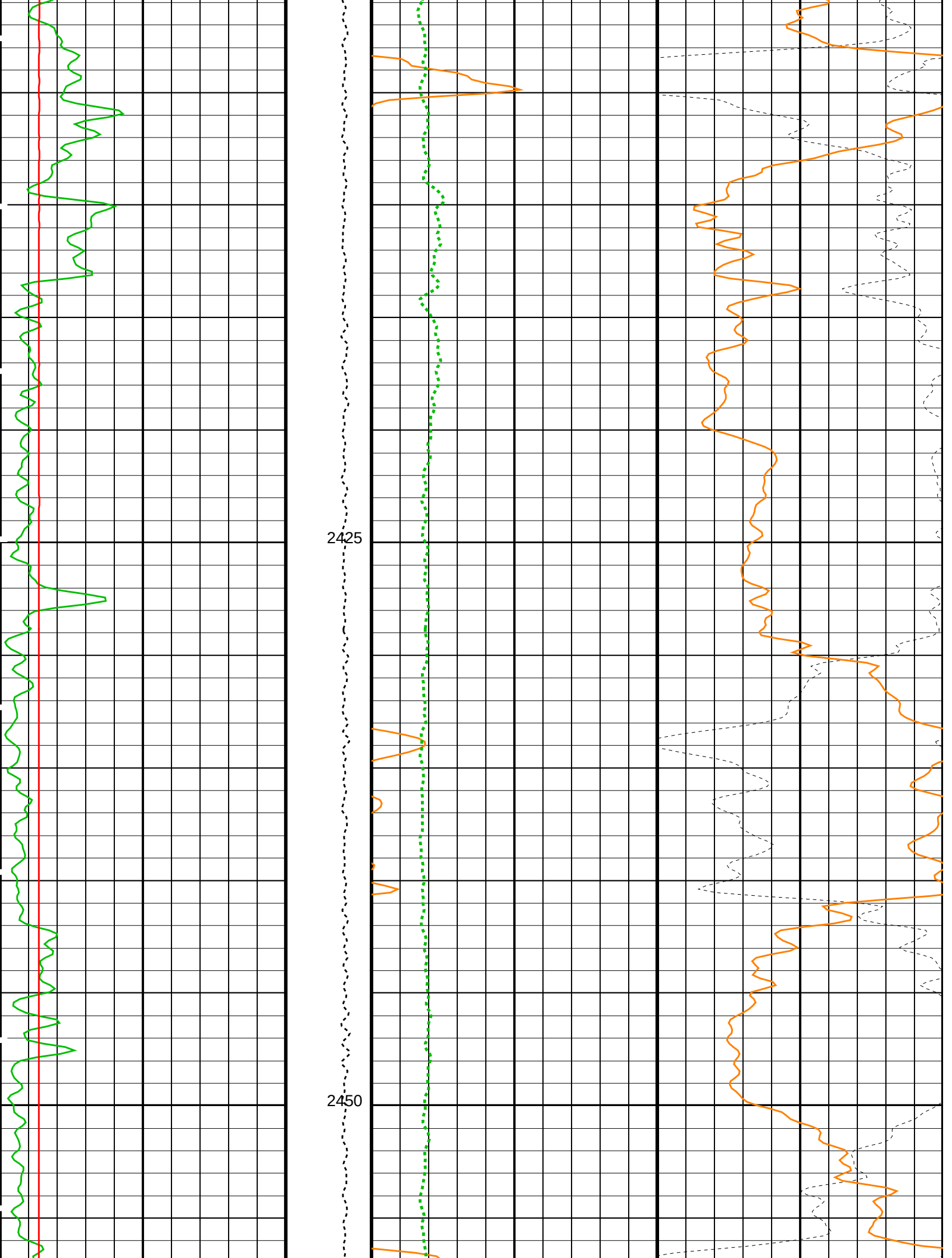
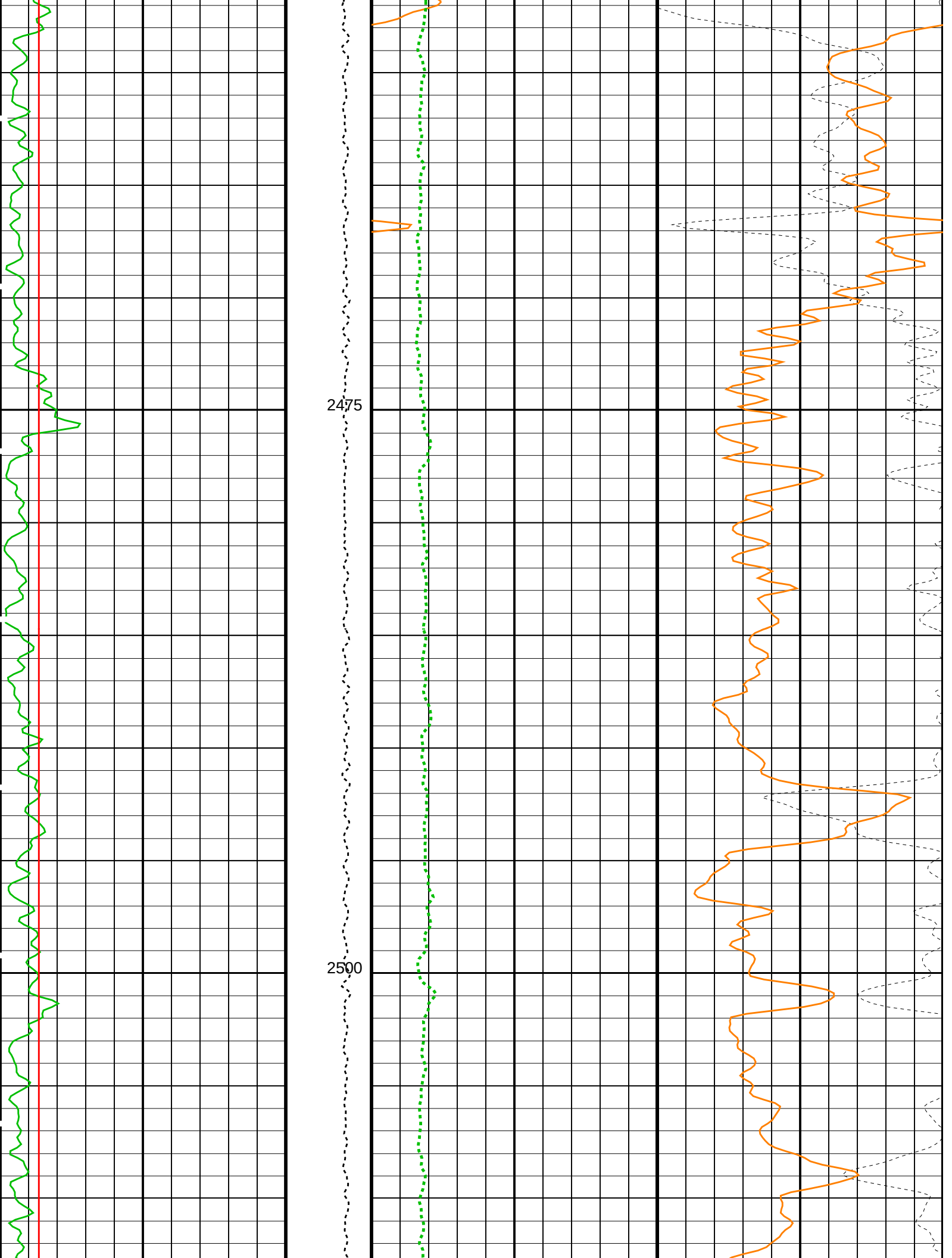
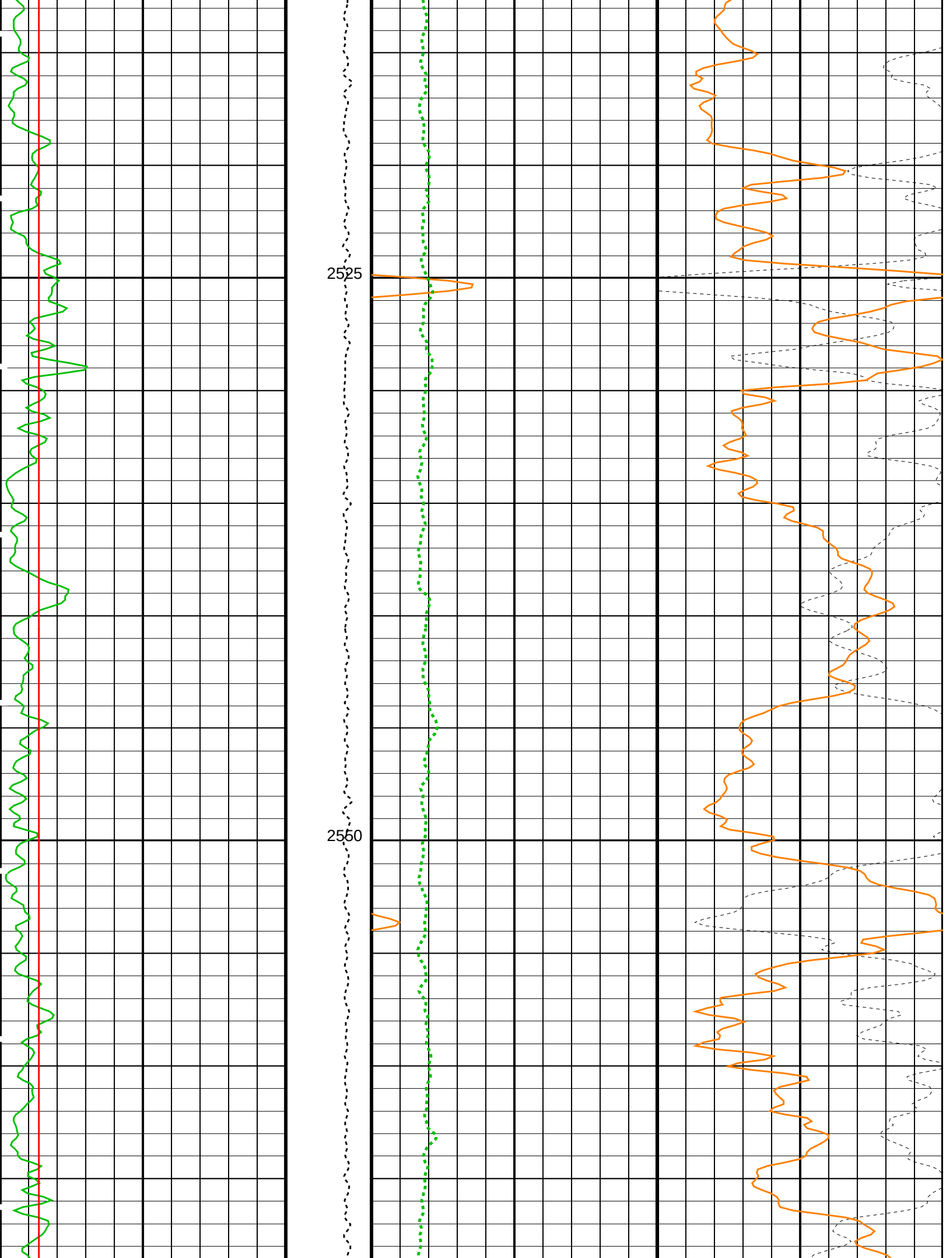
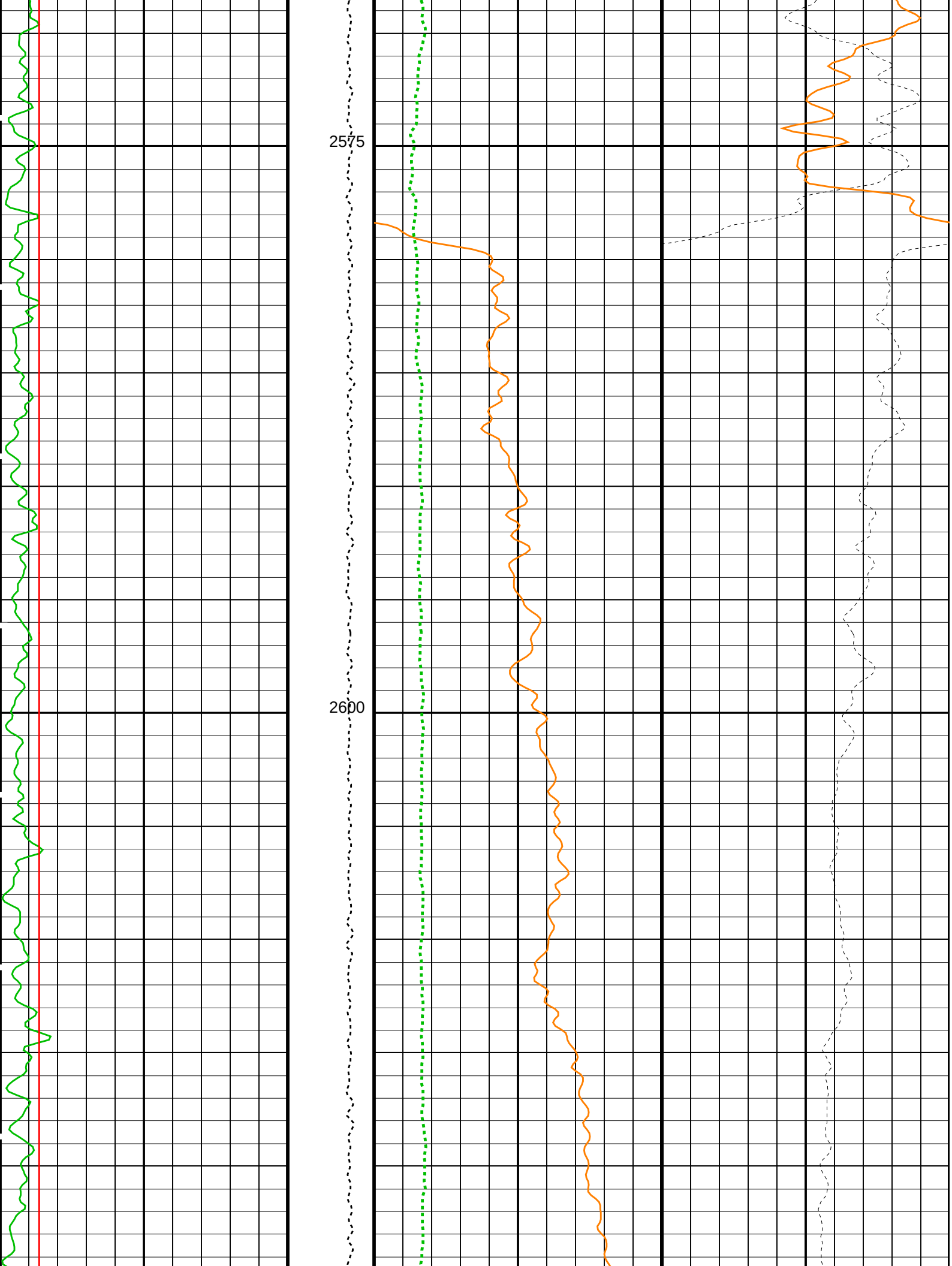
2325

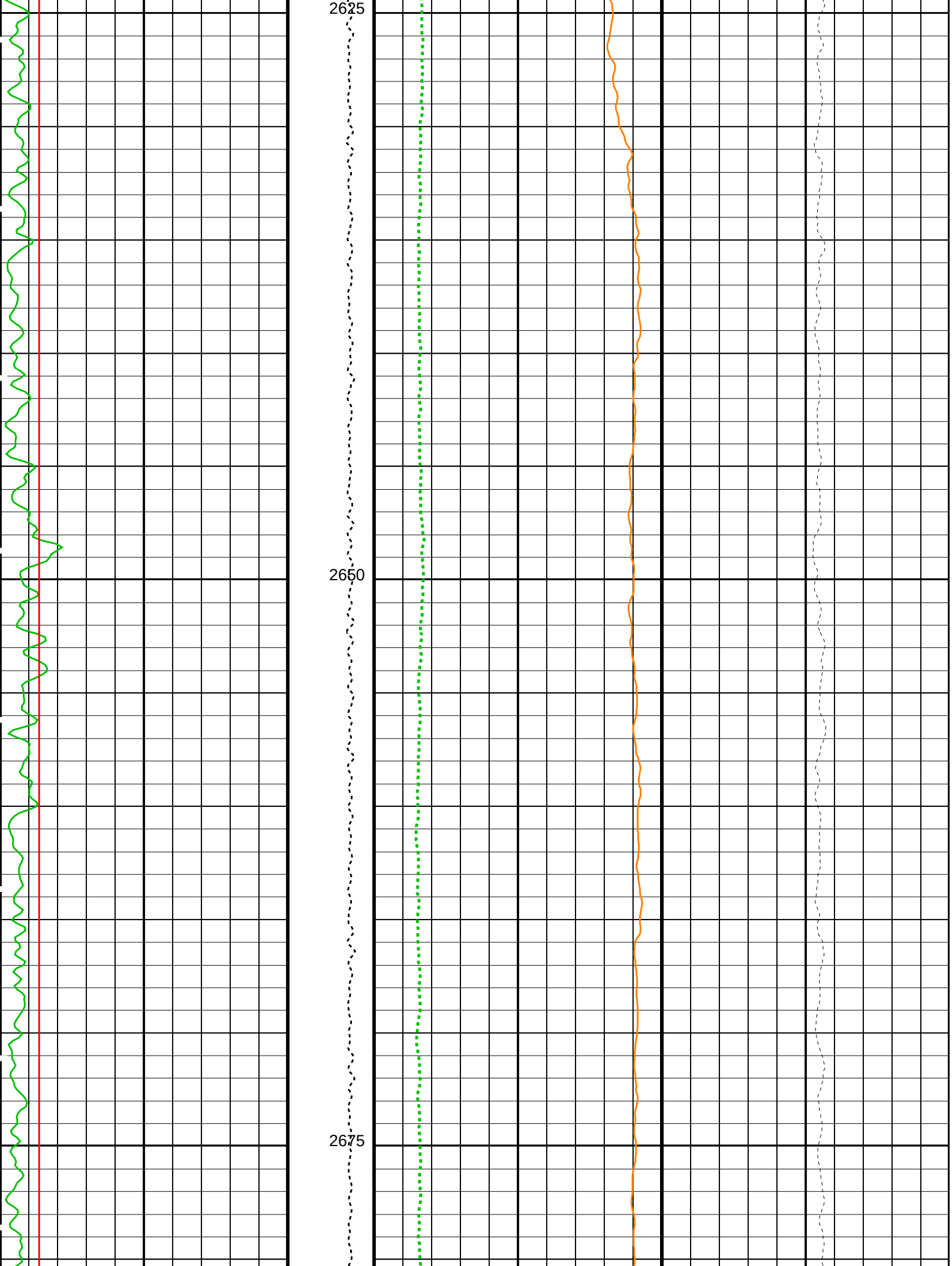

2350
2375
2400


2425
2450

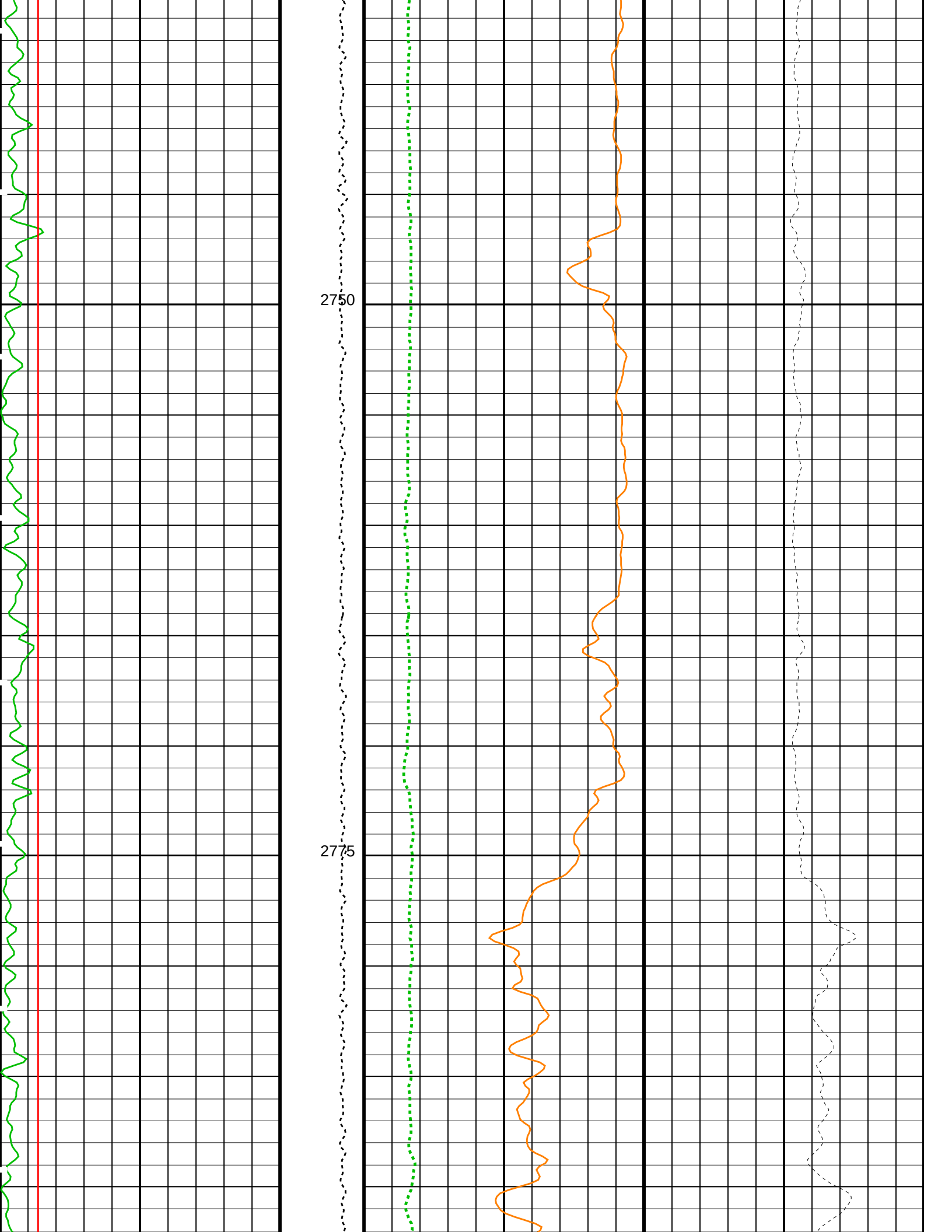

2475
2500


2525
2550


2575
2600


2625
2650
2675


2700
2725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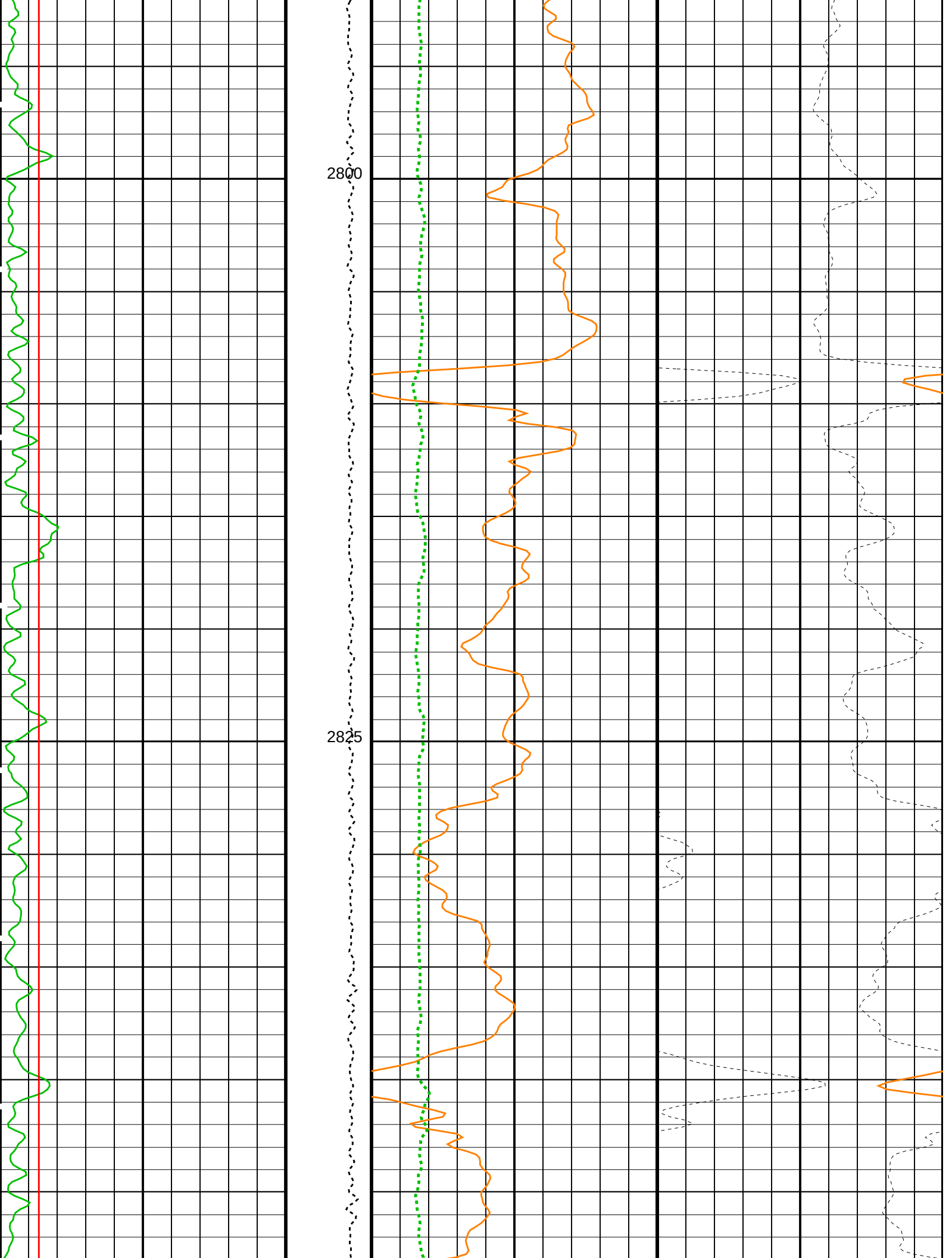
2775


2800
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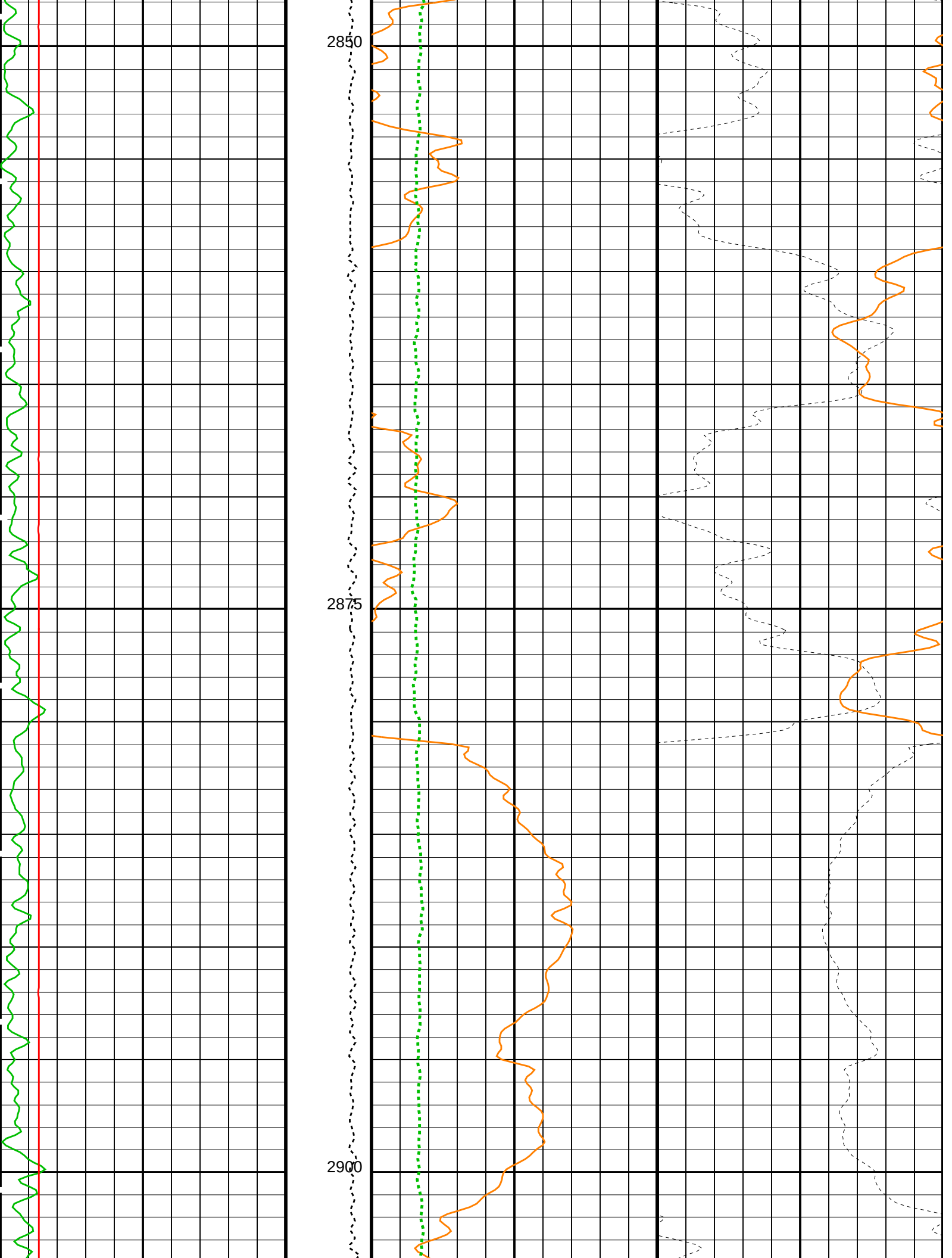
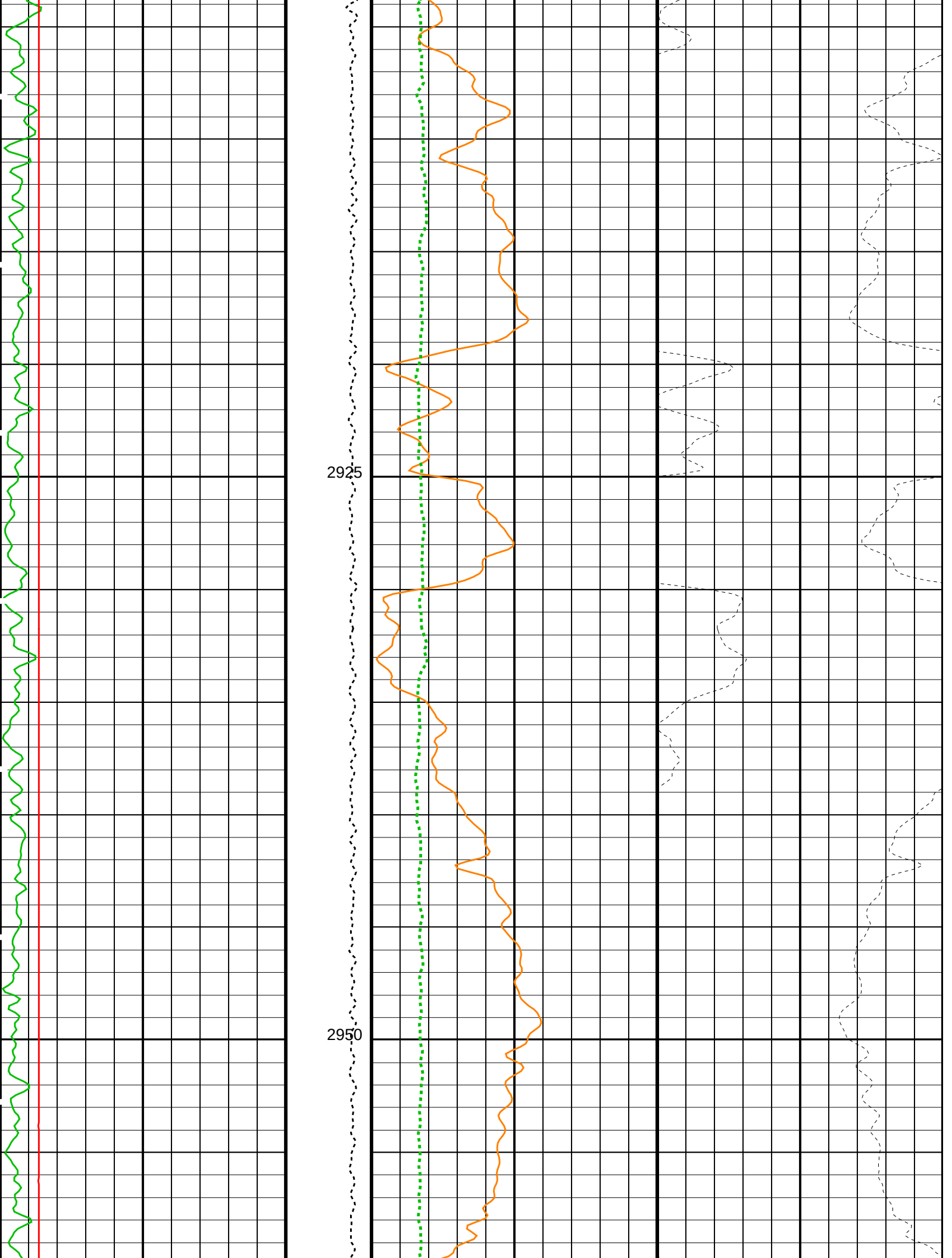
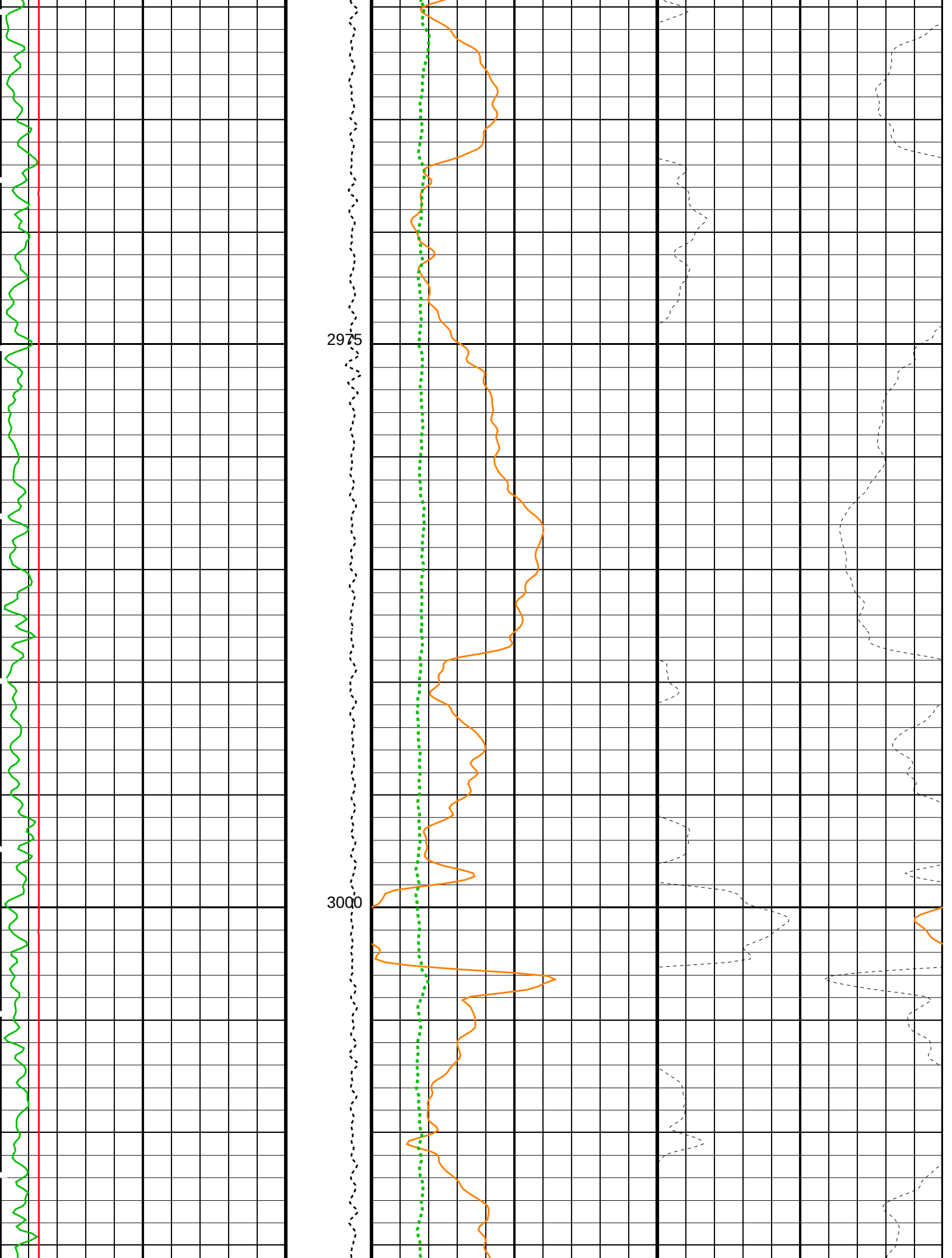

2850
2875
2900


2925
2950


2975
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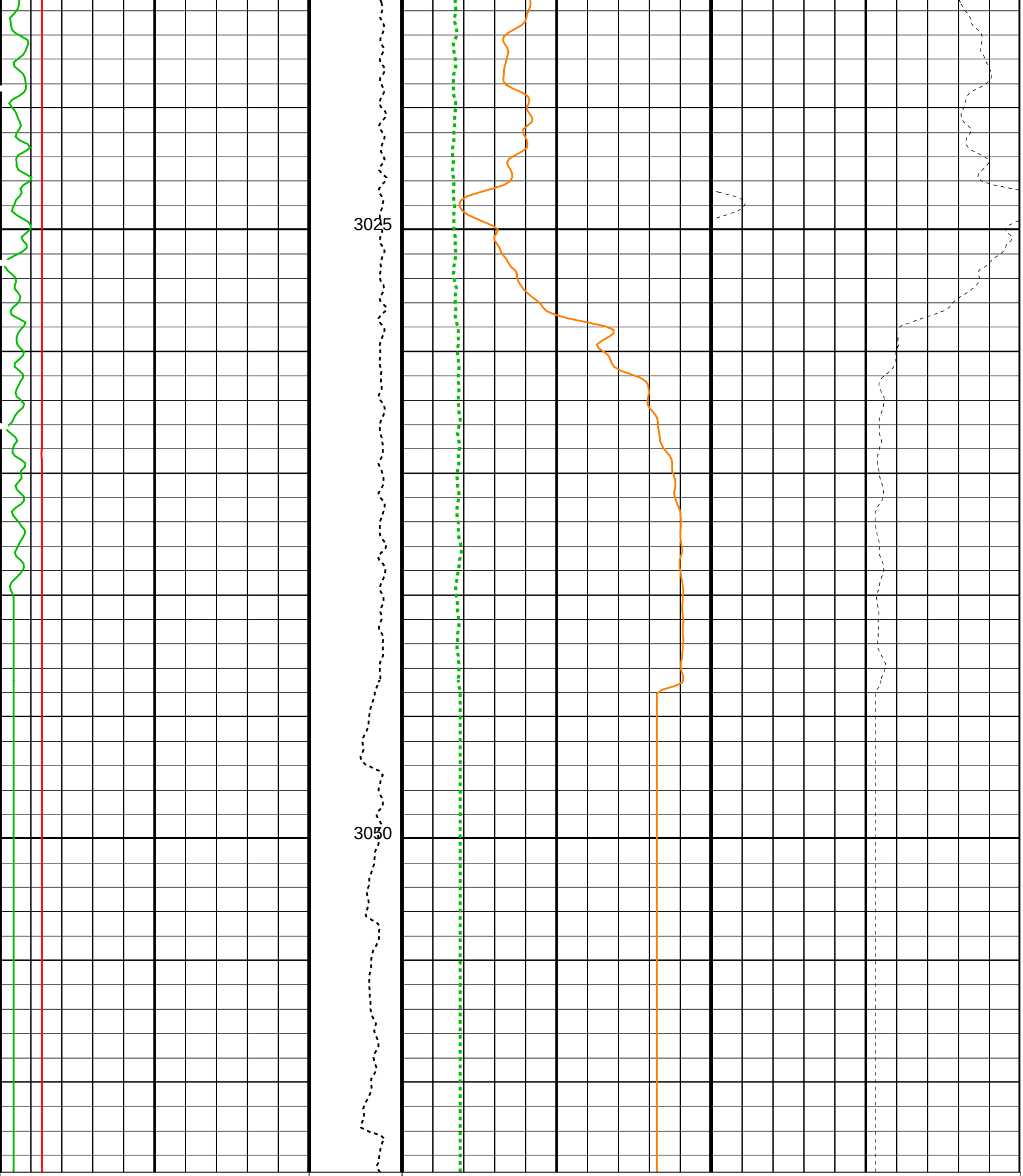


Gamma Ray (GR_EDTC)	Tension (TENS)	HLDS Bulk Density (RHOM)
0 (GAPI) 15	(LBF) 0 5000	4 (G/C3) 2

HLDS Caliper (LCAL)		HLDS Long Spaced Photoelectric Effect (PEFL)	HLDS Bulk Density Correction (DRH)
0 (IN) 20		0 (----) 10	−0.25 (G/C3) 0.25

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HLDS: Hostile Litho−Density Sonde		
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	ON	
MDEN	Matrix Density	2.71	G/C3
	EDTC−B: Enhanced DTS Cartridge		
DPPM	Density Porosity Processing Mode	HIRS	
	System and Miscellaneous		
BS	Bit Size	11.875	IN
DFD	Drilling Fluid Density	1.05	G/C3
DO	Depth Offset for Playback	4.0	M
PP	Playback Processing	NORMAL	

Format: HLDSDensityPE Vertical Scale: 1:200 Graphics File Created: 23−Feb−2012 10:32

OP System Version: 19C0−187

MTT_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
EDTC−B	19C0−187		

Input DLIS Files

DEFAULT	Flip_MTT_LDEO_HRLA_024LUP		PRODUCER	23−Feb−2012 10:31	3059.7 M	1674.9 M

Output DLIS Files

DEFAULT	MTT_LDEO_HRLA_LDL_025PUP	FN:13	PRODUCER	23−Feb−2012 10:32		

Schlumberger

Repeat Pass

MAXIS Field Log

Company: Lamont Doherty Well: Expedition 340T, Site U1309D

Input DLIS Files

DEFAULT	MTT_LDEO_HRLA_LDL_018LUP	FN:7	PRODUCER	22−Feb−2012 00:04	3059.4 M	2900.9 M

Output DLIS Files

DEFAULT	MTT_LDEO_HRLA_LDL_023PUP	FN:12	PRODUCER	23−Feb−2012 10:25	3064.8 M	2906.0 M

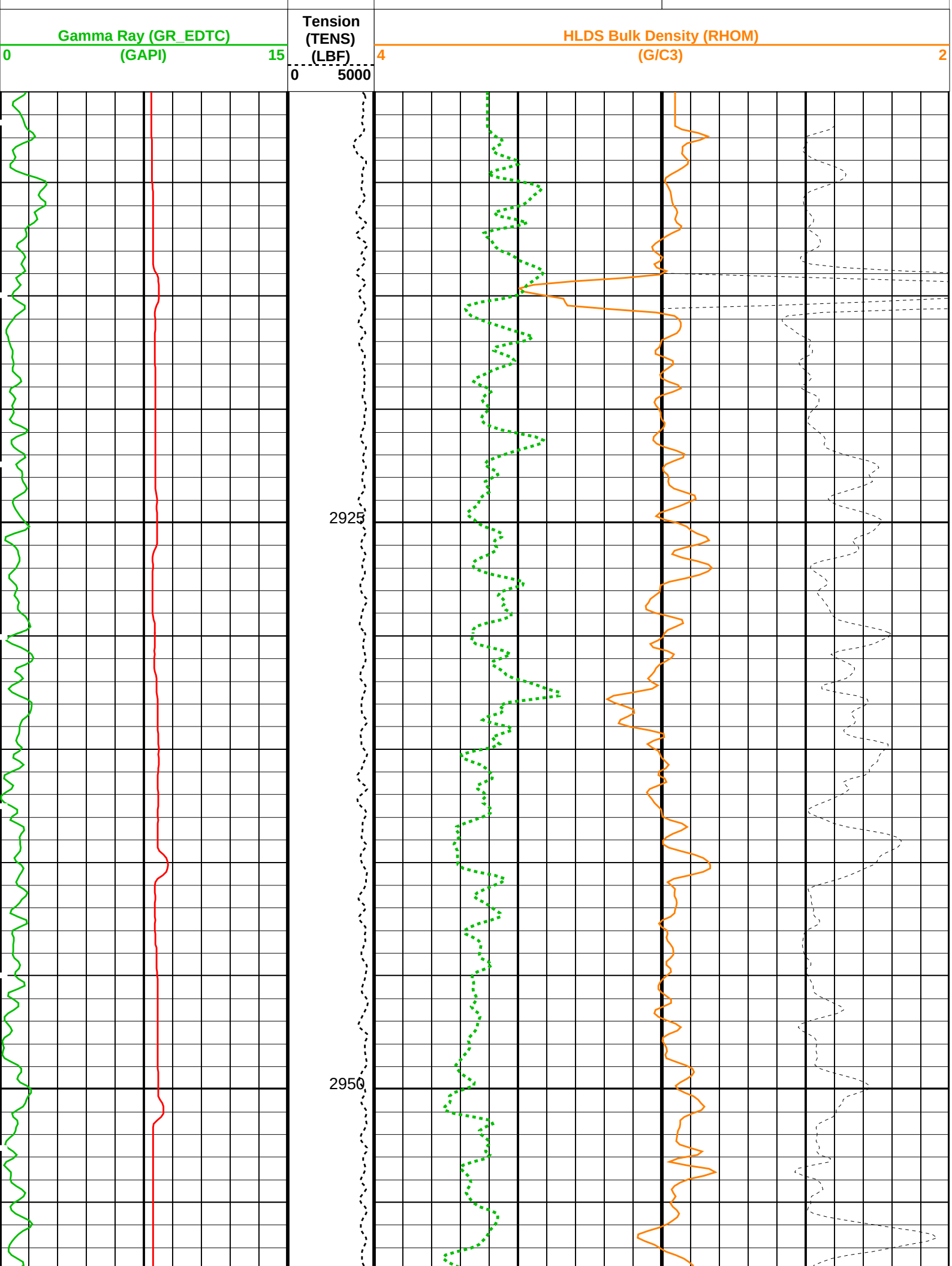
OP System Version: 19C0−187

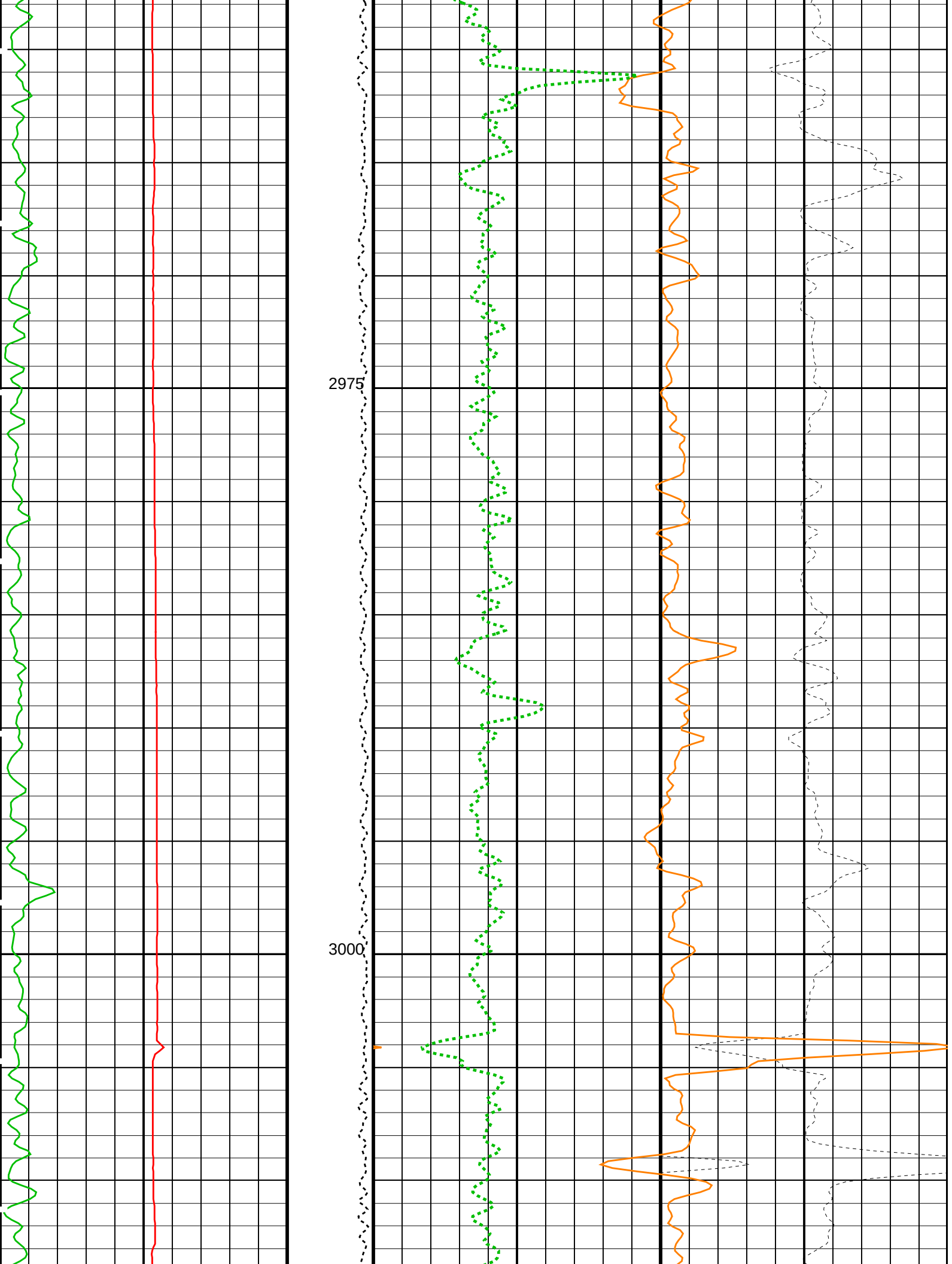
MTT_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
EDTC−B	19C0−187		

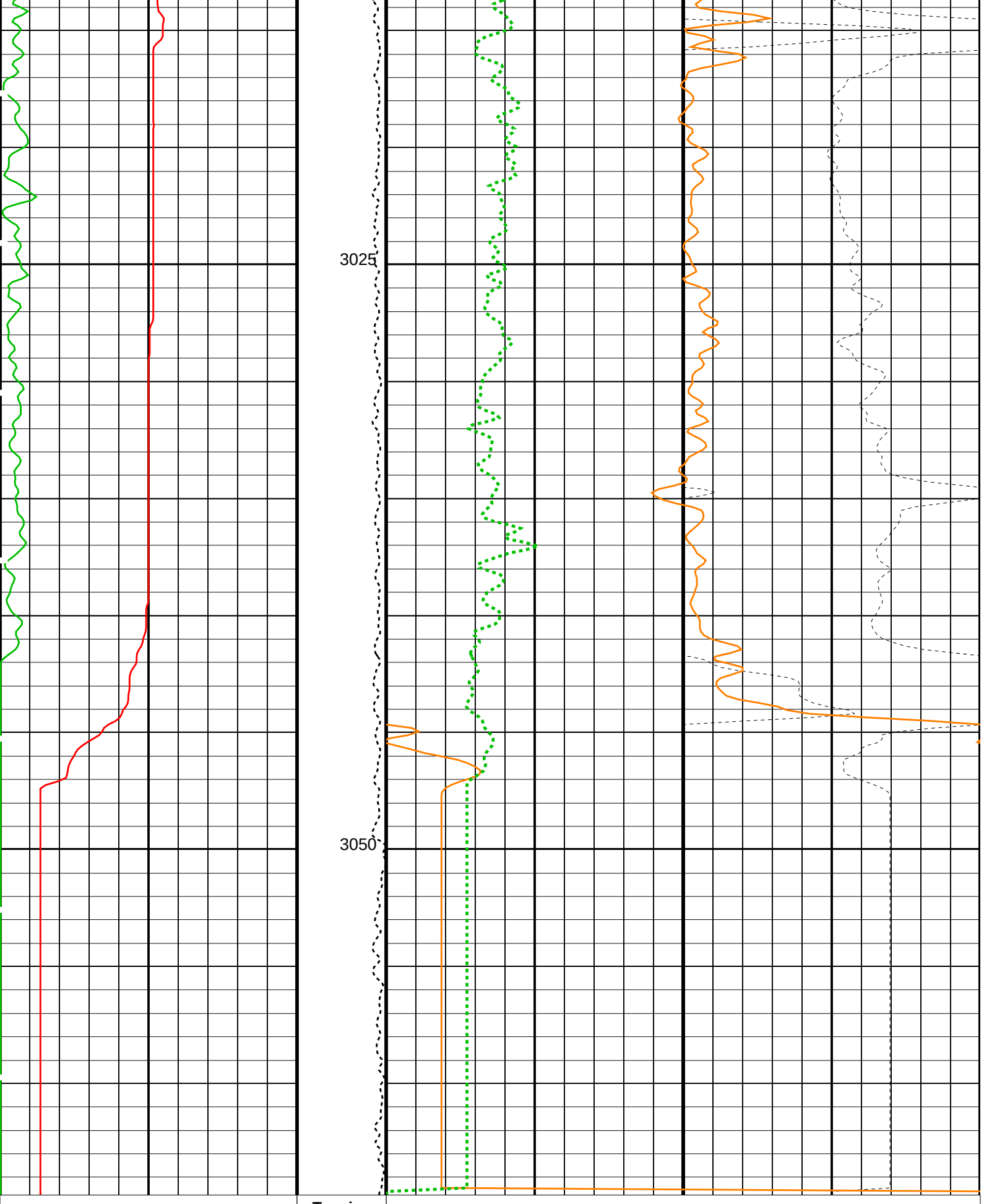
PIP SUMMARY

Time Mark Every 60 S

HLDS Caliper (LCAL)		HLDS Long Spaced Photoelectric Effect (PEFL)	HLDS Bulk Density Correction (DRH)	
0	(IN) 20	0	(−−−−) 10	−0.25 (G/C3) 0.25


Gamma Ray (GR_EDTC)
0
(GAPI)
15
Tension
(TENS)
(LBF)
0
5000
HLDS Bulk Density (RHOM)
4
(G/C3)
2
2925
2950


2975
3000



Gamma Ray (GR_EDTC)
0 (GAPI) 15

Tension (TENS) (LBF)
0 5000

HLDS Bulk Density (RHOM)
4 (G/C3) 2

HLDS Caliper (LCAL)

HLDS Long Spaced Photoelectric Effect

HLDS Bulk Density Correction (DRH)

0 (IN) 20	(PEFL) 0 (----) 10	−0.25 (G/C3) 0.25

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HLDS: Hostile Litho−Density Sonde		
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	ON	
MDEN	Matrix Density	2.71	G/C3
	EDTC−B: Enhanced DTS Cartridge		
DPPM	Density Porosity Processing Mode	HIRS	
	System and Miscellaneous		
BS	Bit Size	11.875	IN
DFD	Drilling Fluid Density	1.05	G/C3
DO	Depth Offset for Playback	5.4	M
PP	Playback Processing	NORMAL	

Format: HLDSDensityPE Vertical Scale: 1:200 Graphics File Created: 23−Feb−2012 10:25

OP System Version: 19C0−187

MTT_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
EDTC−B	19C0−187		

Input DLIS Files

DEFAULT	MTT_LDEO_HRLA_LDL_018LUP	FN:7	PRODUCER	22−Feb−2012 00:04	3059.4 M	2900.9 M

Output DLIS Files

DEFAULT	MTT_LDEO_HRLA_LDL_023PUP	FN:12	PRODUCER	23−Feb−2012 10:25

Schlumberger

Main Pass

MAXIS Field Log

Company: Lamont Doherty Well: Expedition 340T, Site U1309D

Input DLIS Files

DEFAULT	MTT_LDEO_HRLA_LDL_019LUP	FN:8	PRODUCER	22−Feb−2012 00:42	3044.2 M	1707.2 M

Output DLIS Files

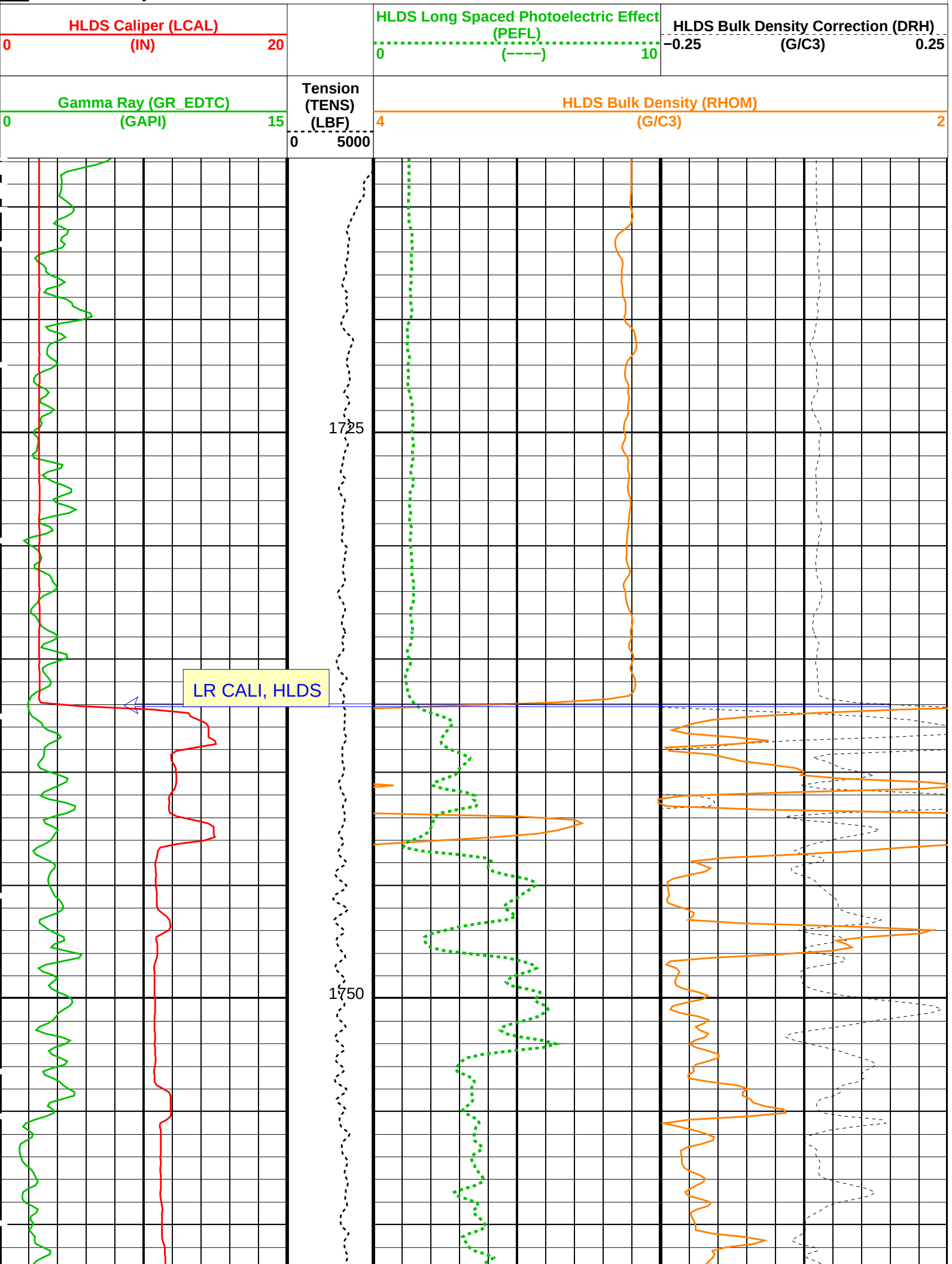
DEFAULT	MTT_LDEO_HRLA_LDL_022PUP	FN:11	PRODUCER	23−Feb−2012 10:18	3049.5 M	1712.8 M

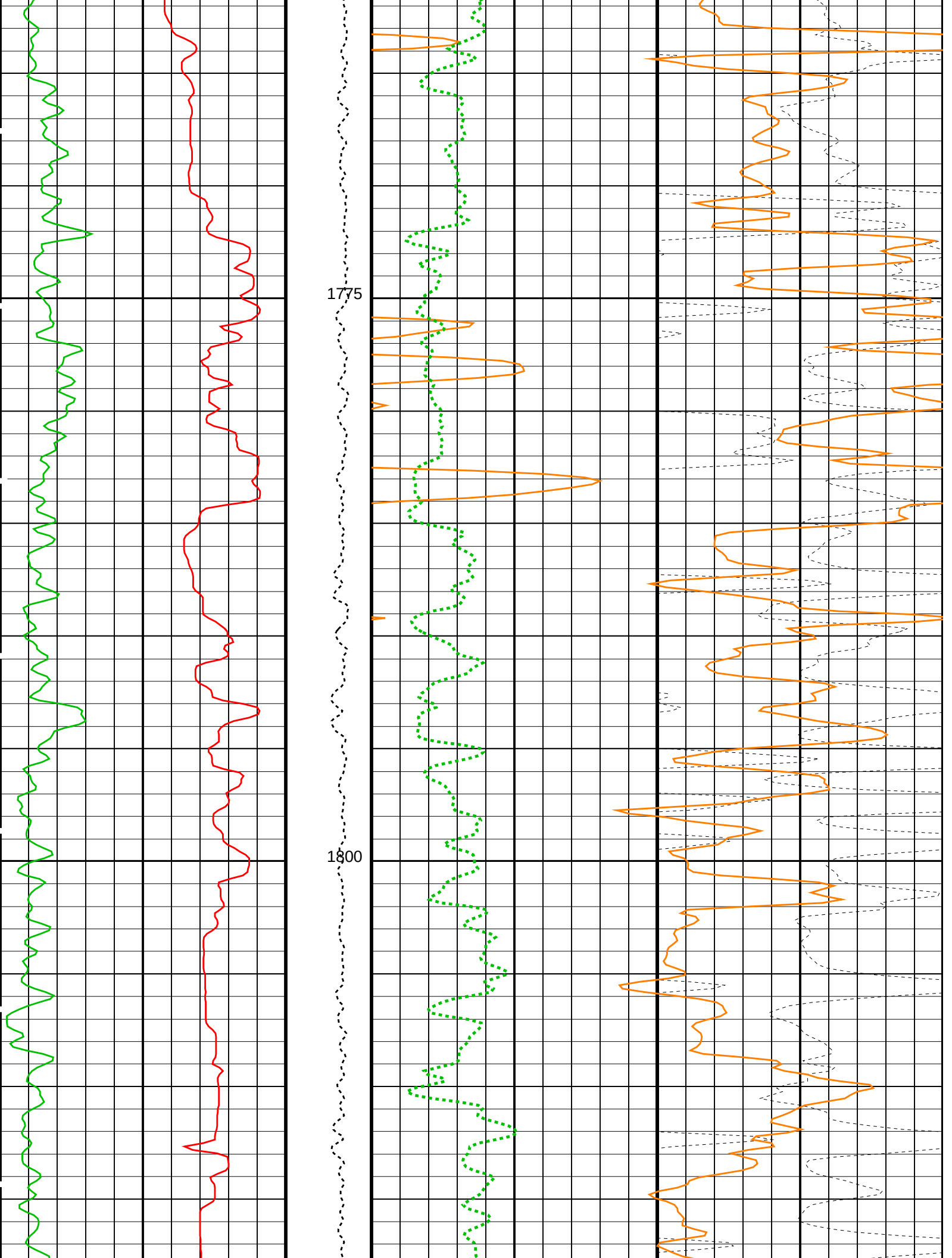
OP System Version: 19C0−187

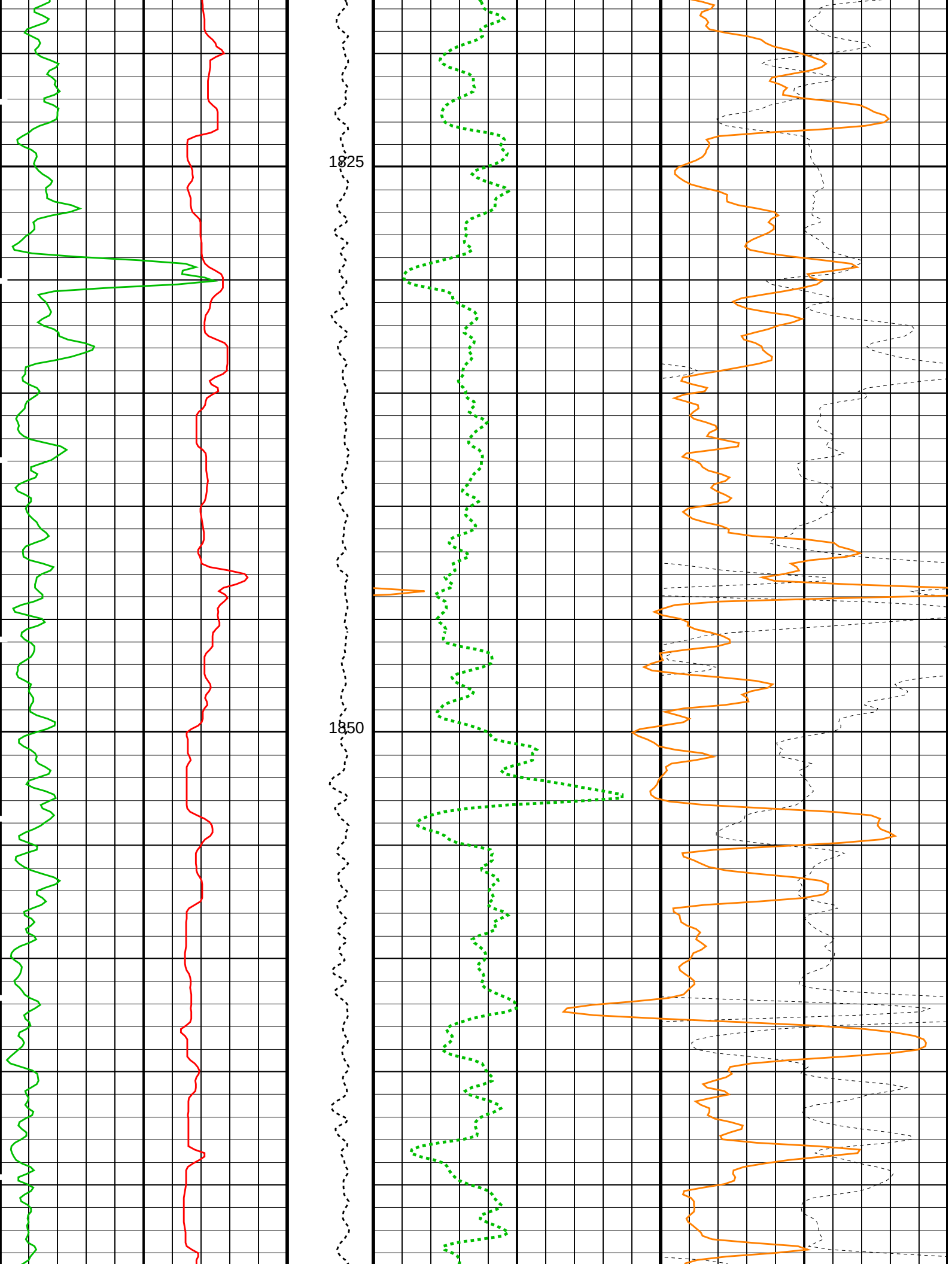
MTT_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
EDTC−B	19C0−187		

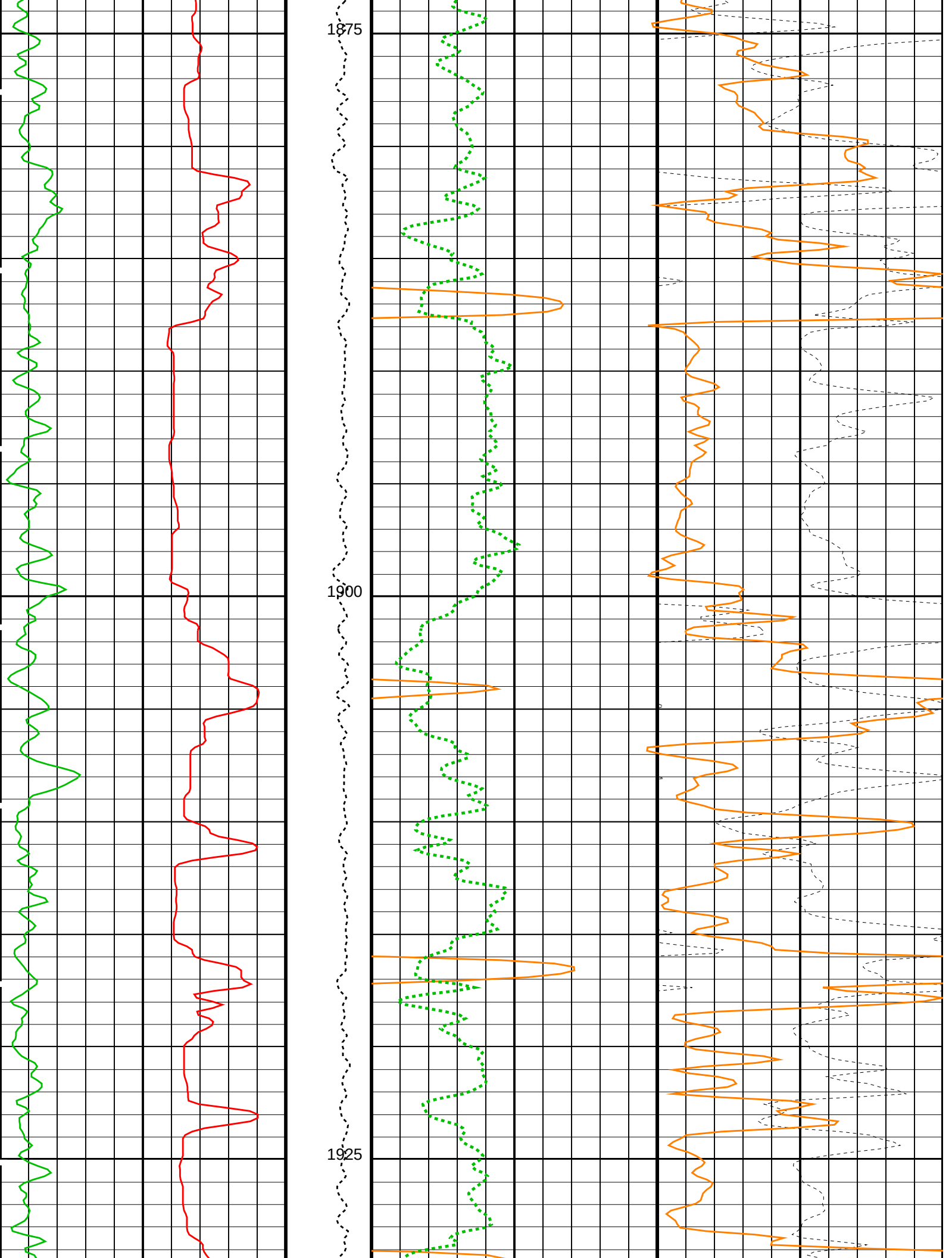
PIP SUMMARY

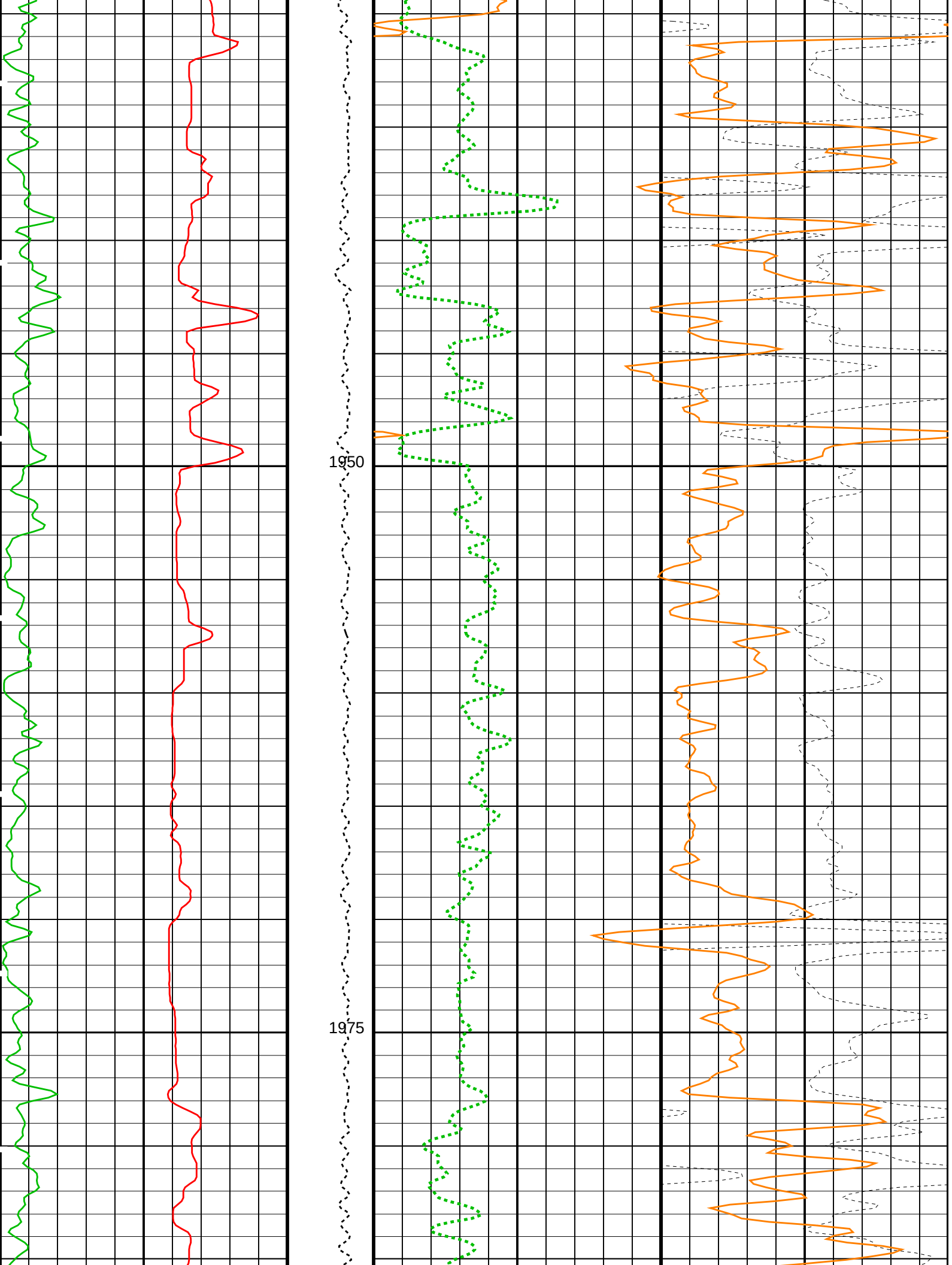
Time Mark Every 60 S

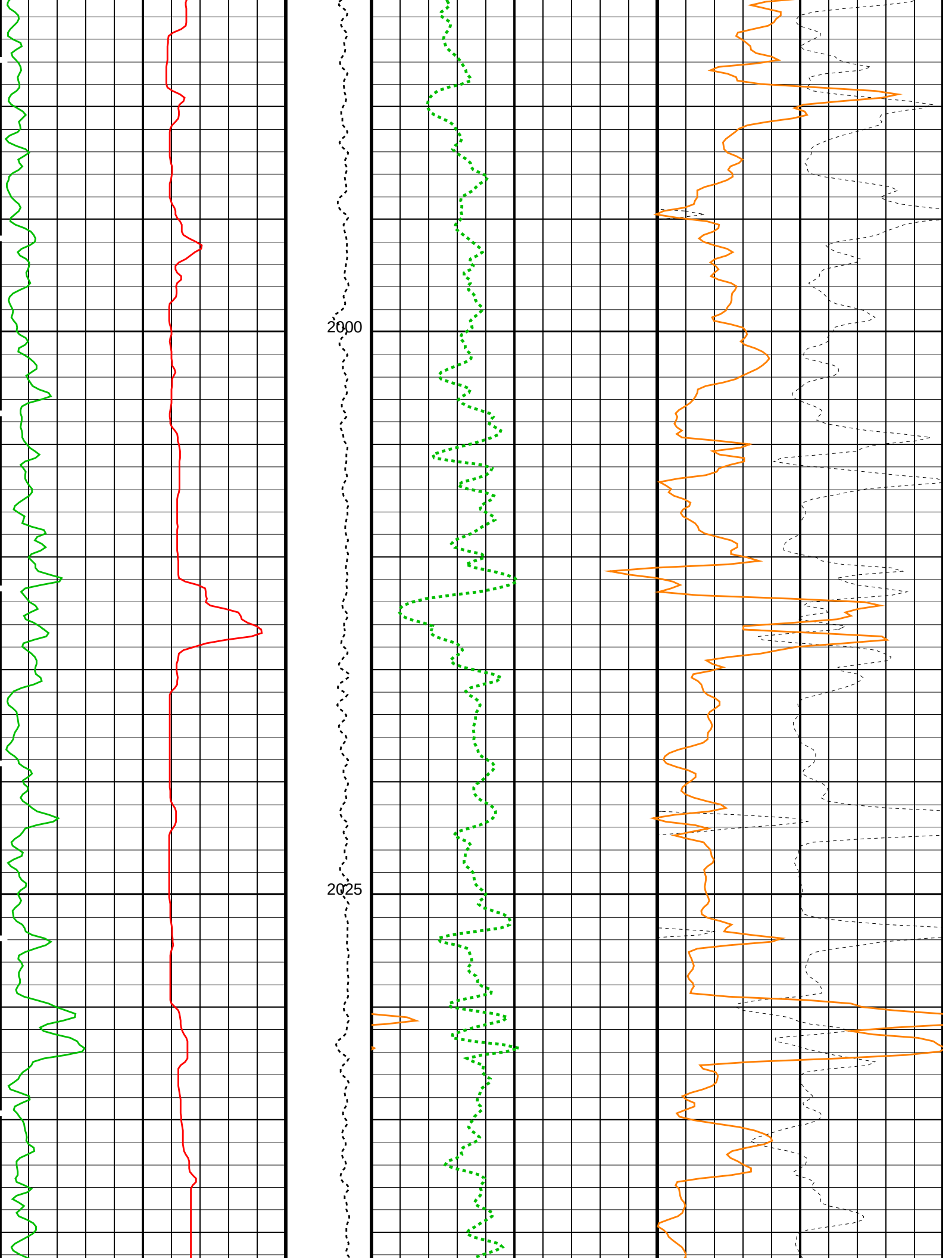

HLDS Caliper (LCAL)
0
(IN)
20
HLDS Long Spaced Photoelectric Effect (PEFL)
0
(----)
10
HLDS Bulk Density Correction (DRH)
-0.25
(G/C3)
0.25
Gamma Ray (GR_EDTC)
0
(GAPI)
15
Tension (TENS) (LBF)
0
5000
HLDS Bulk Density (RHOM)
4
(G/C3)
2
1725
1750
LR CALI, HLDS

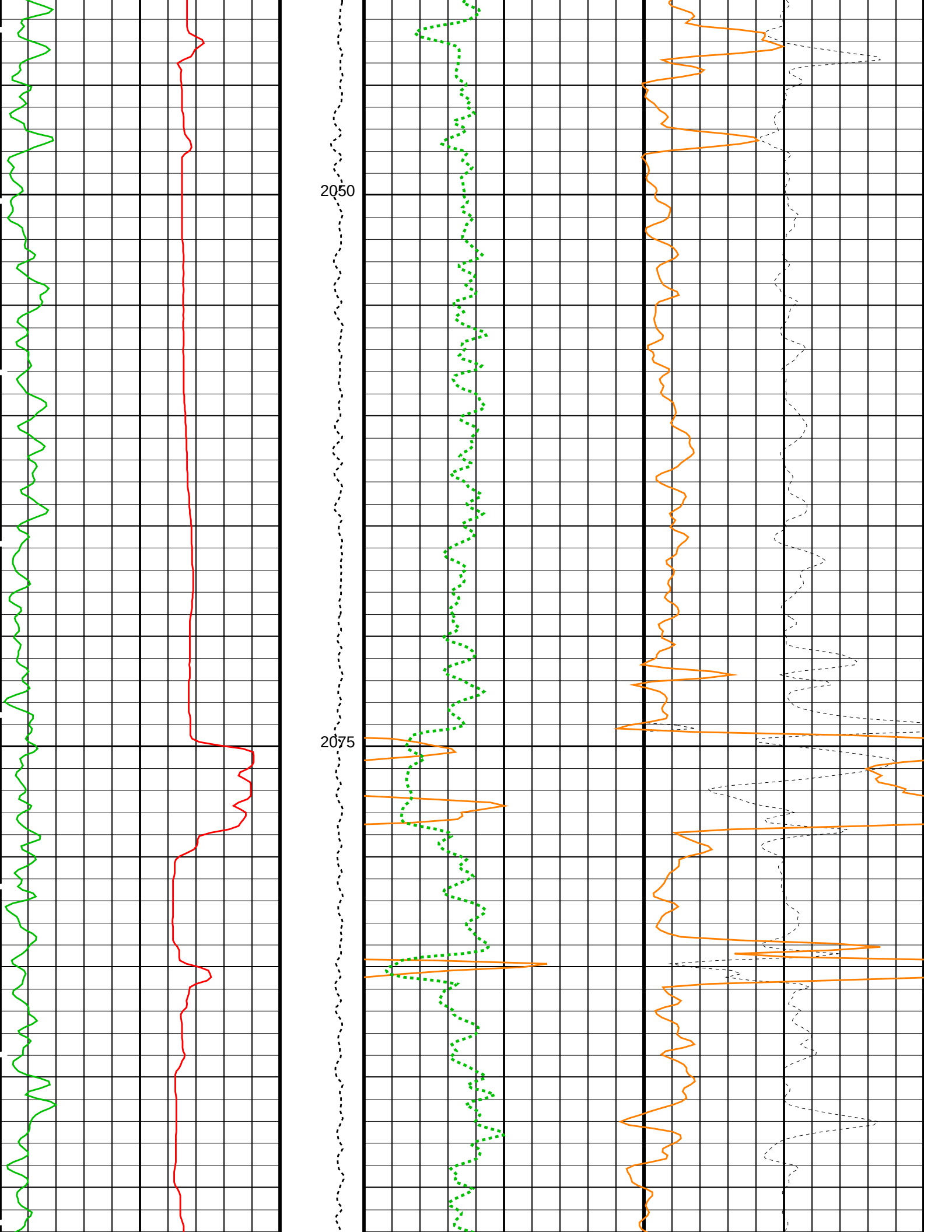

1775
1800

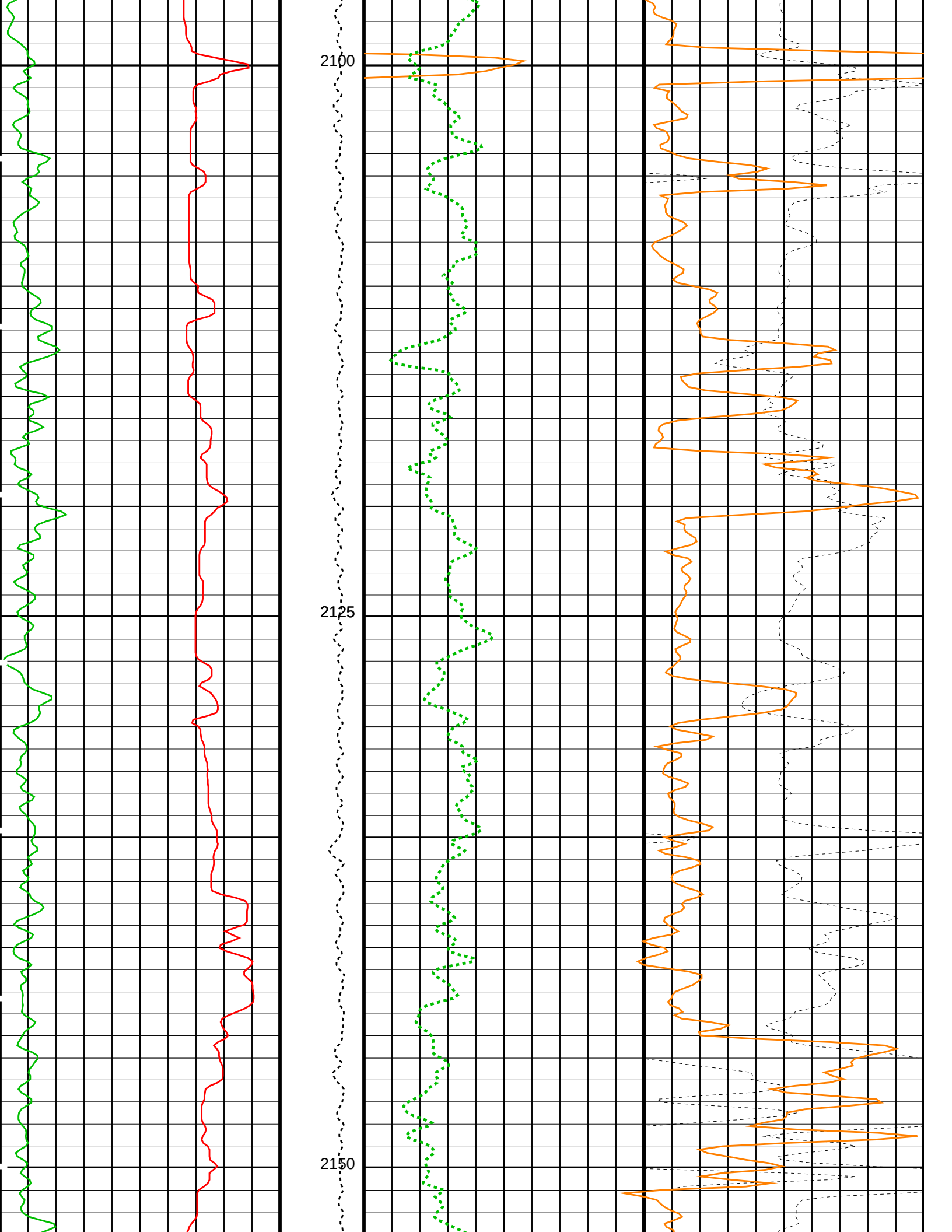

1825
1850

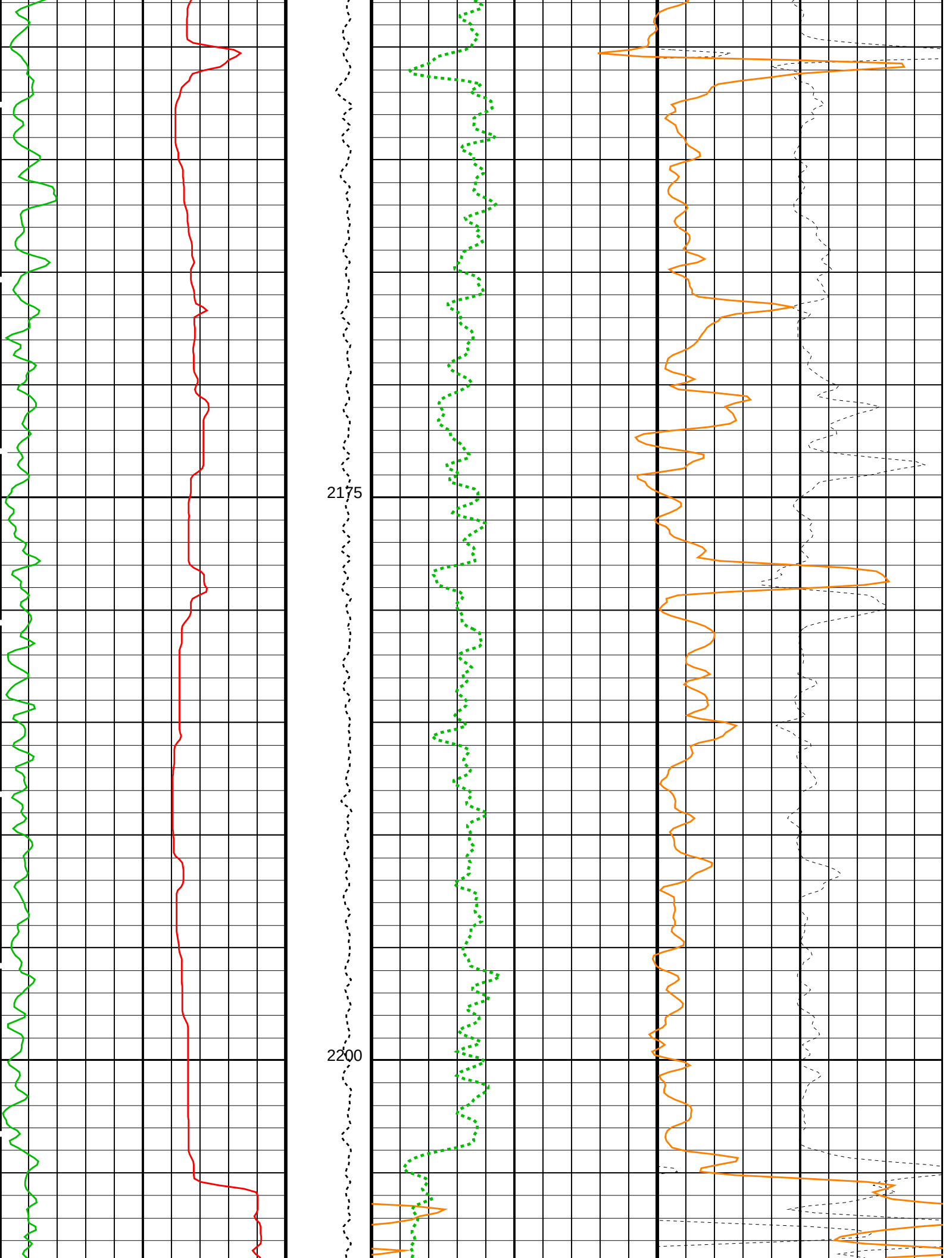

1875
1900
1925

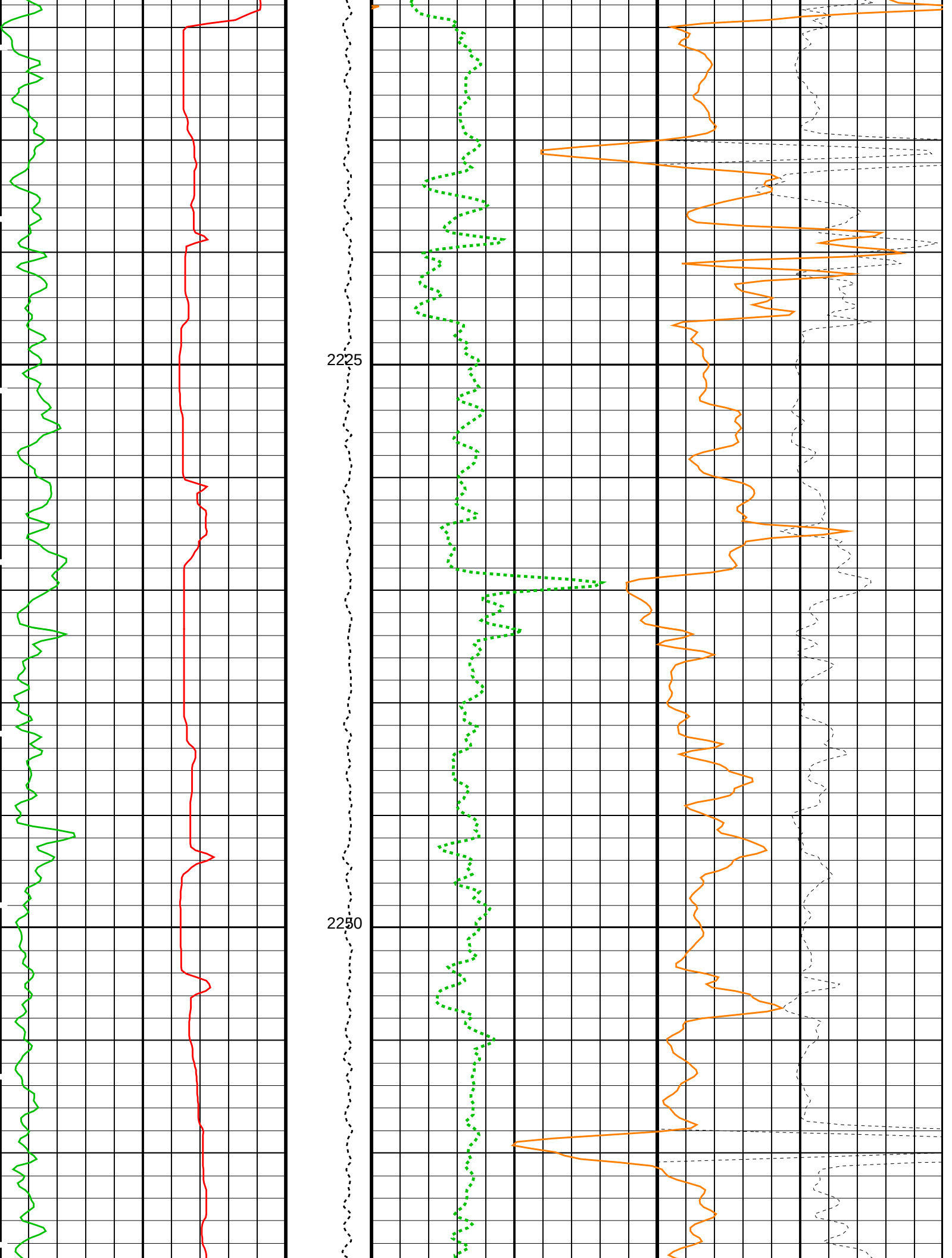

1950
1975

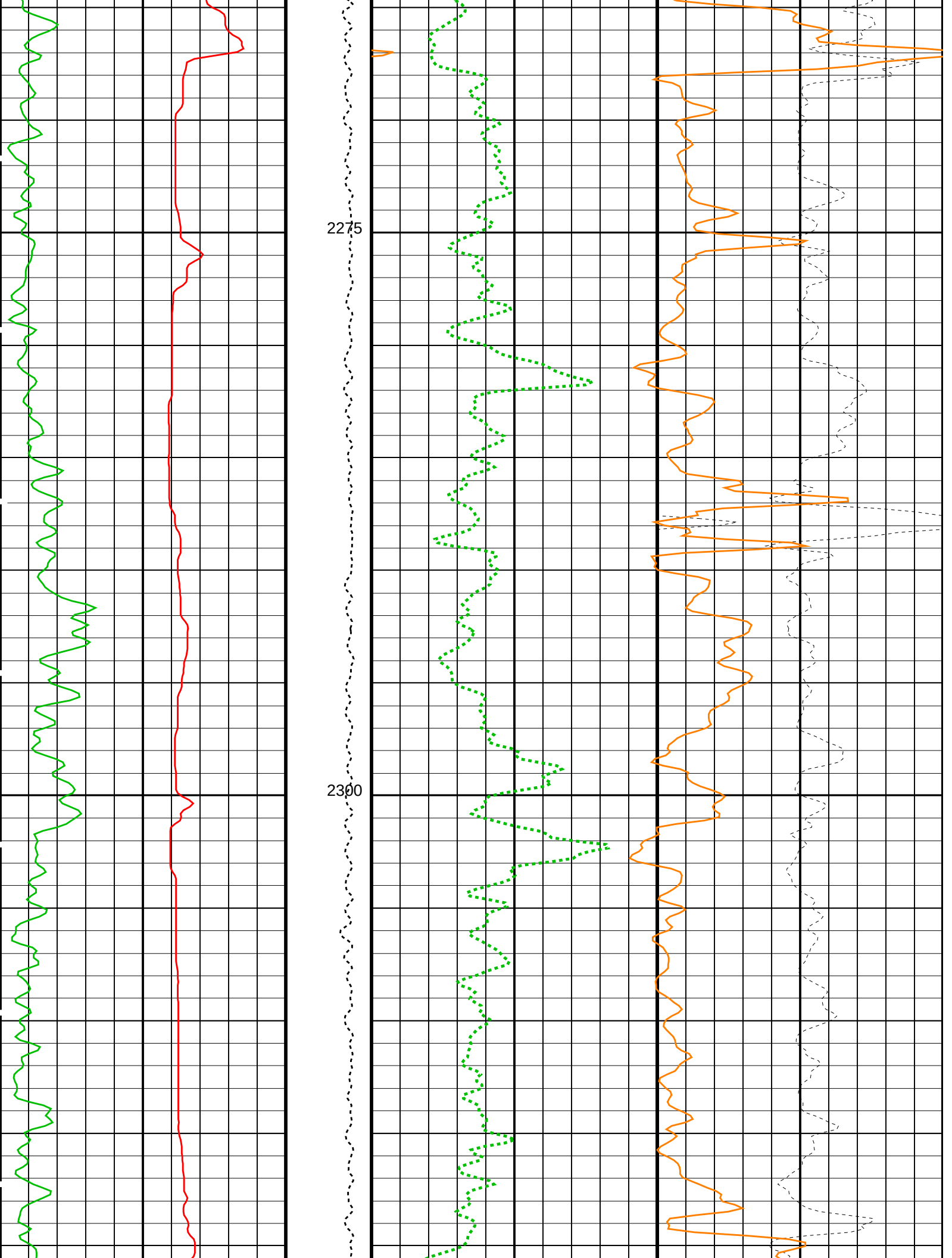

2000
2025

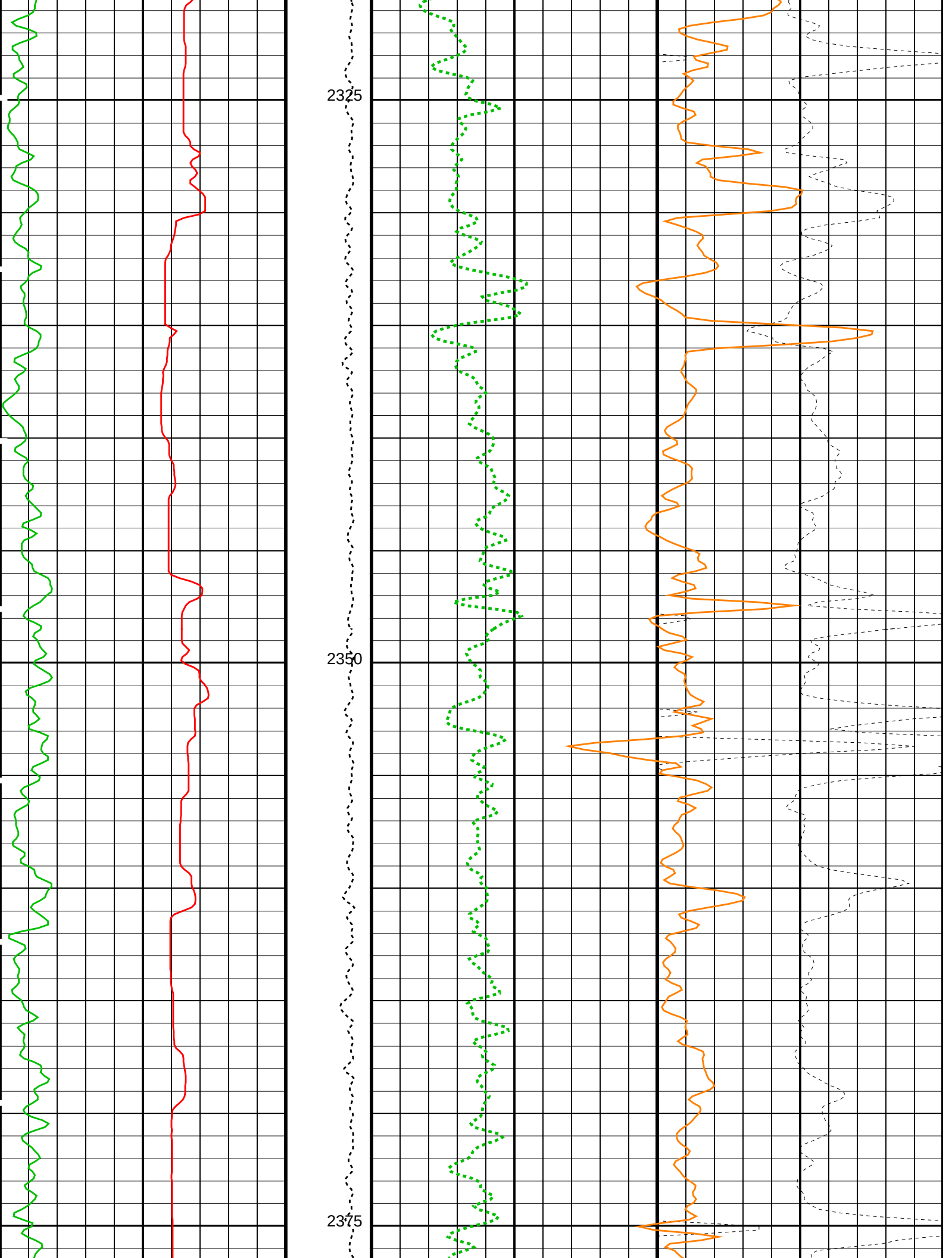

2050
2075

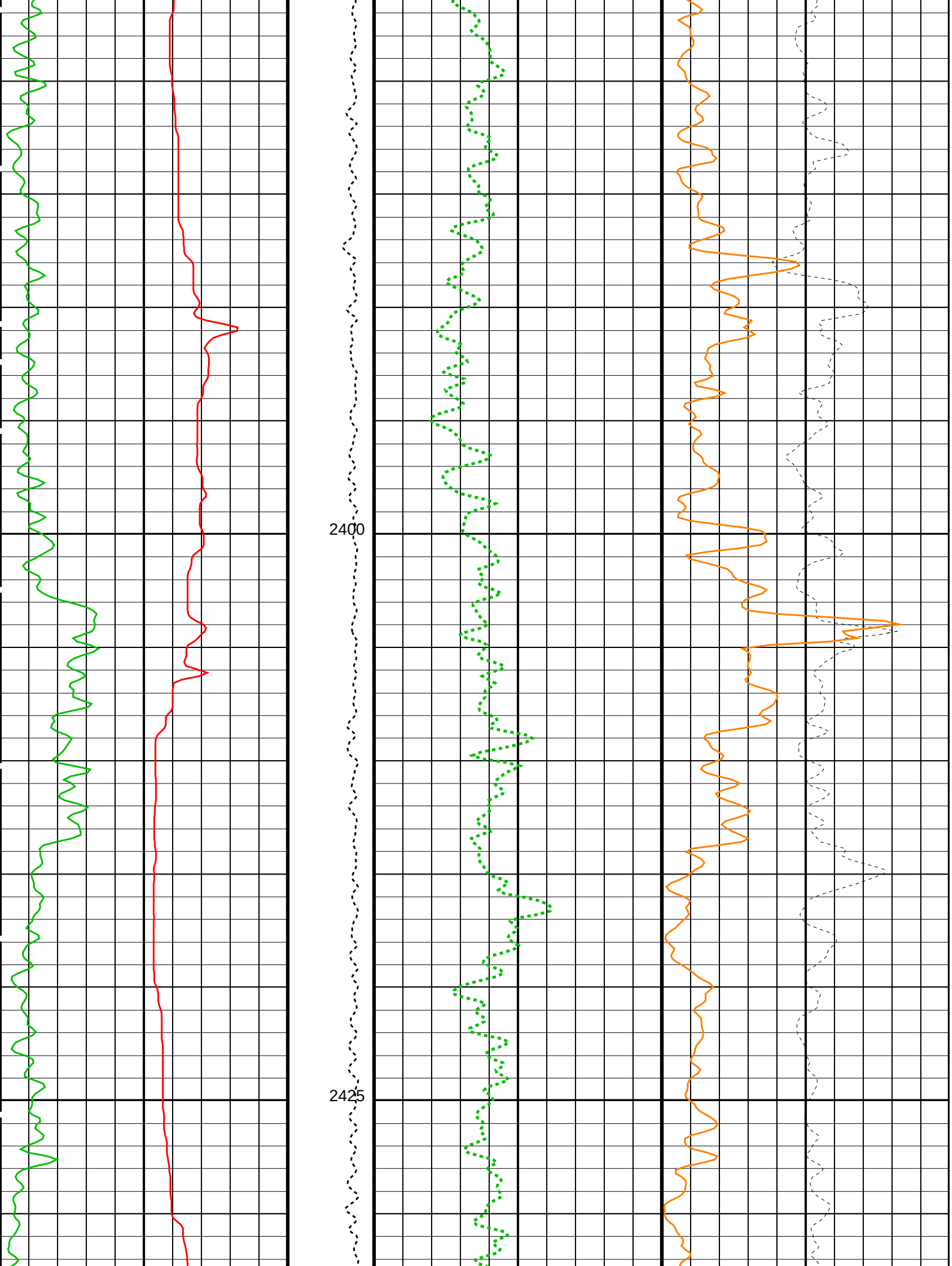

2100
2125
2150

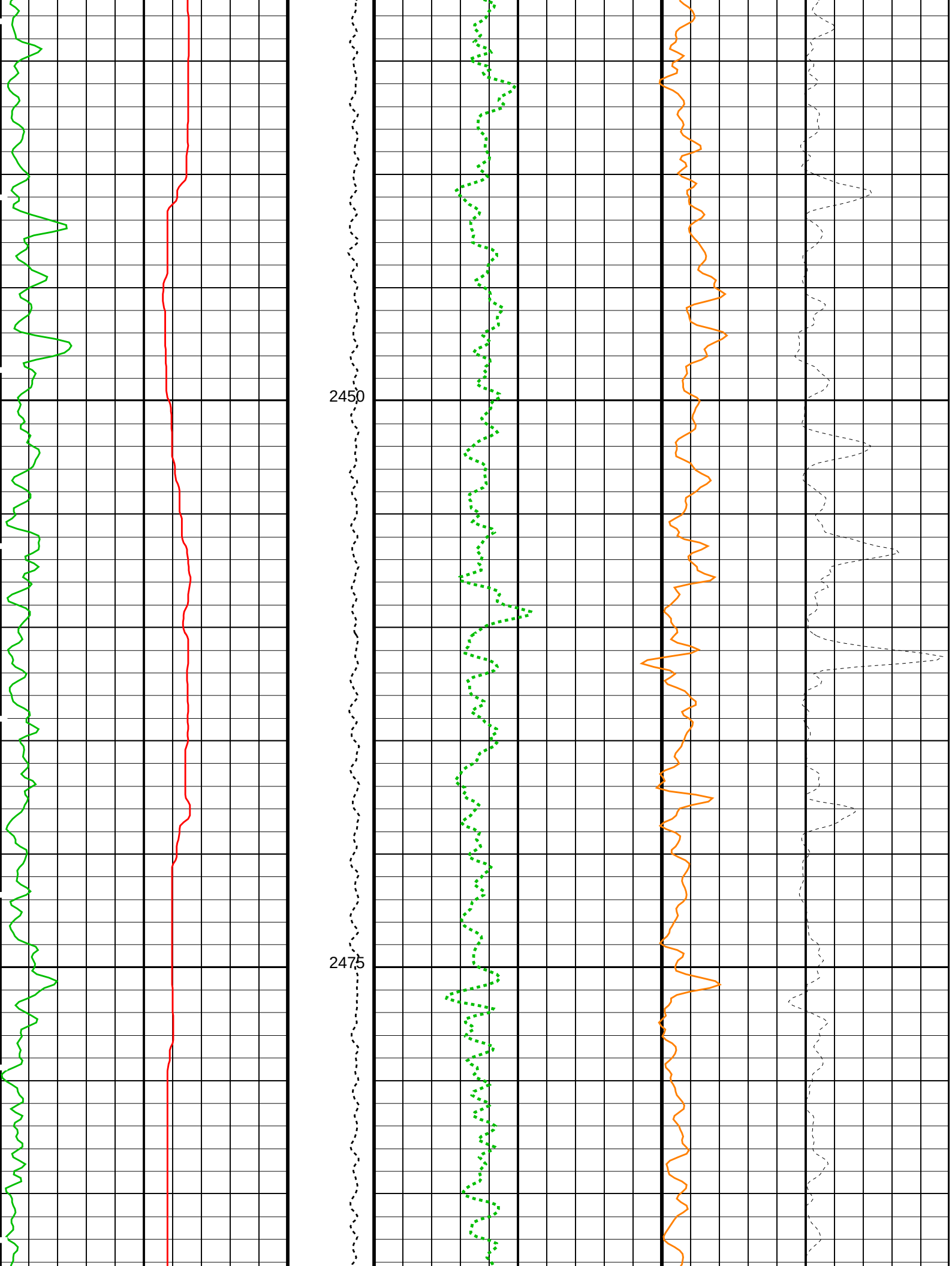

2175
2200

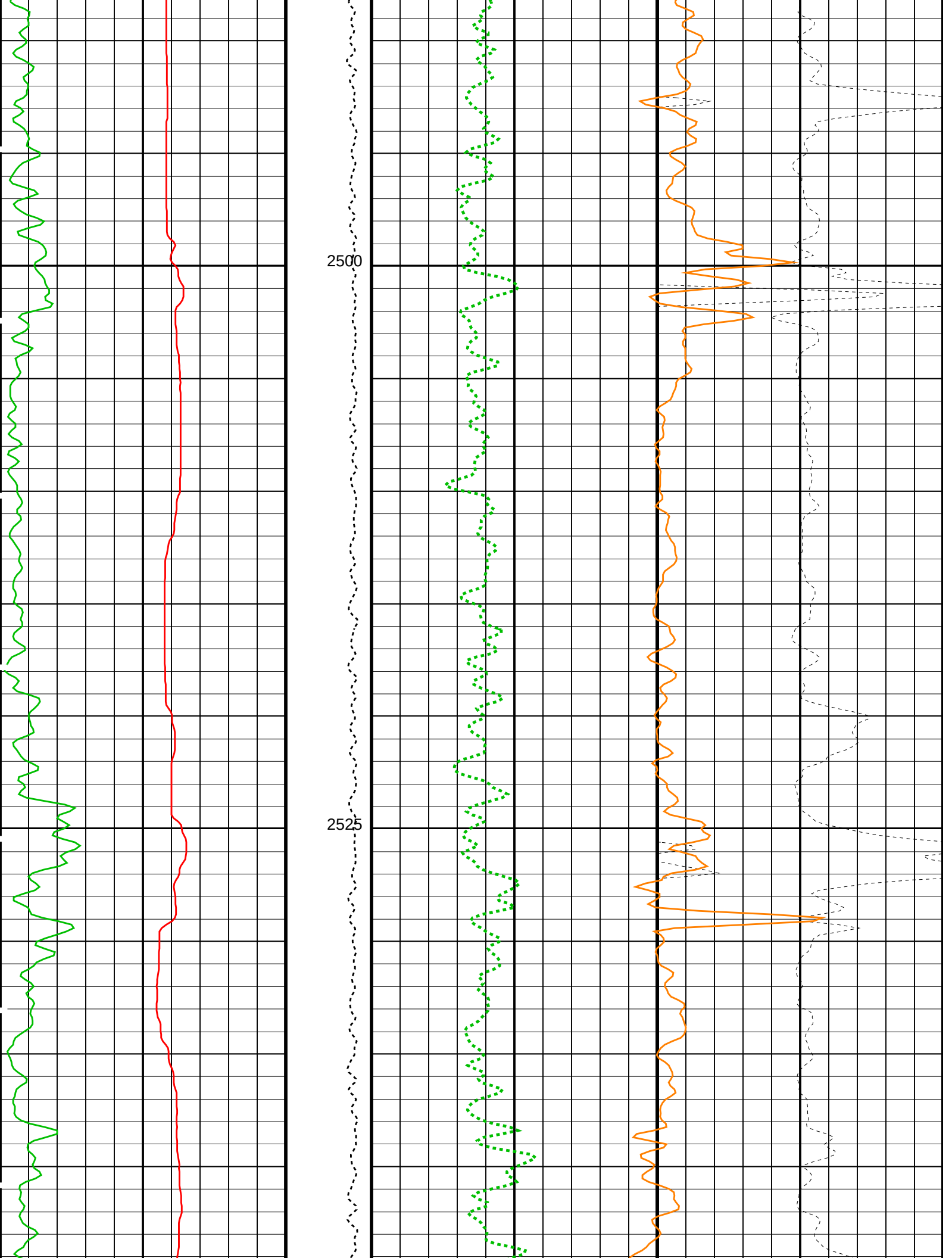

2225
2250

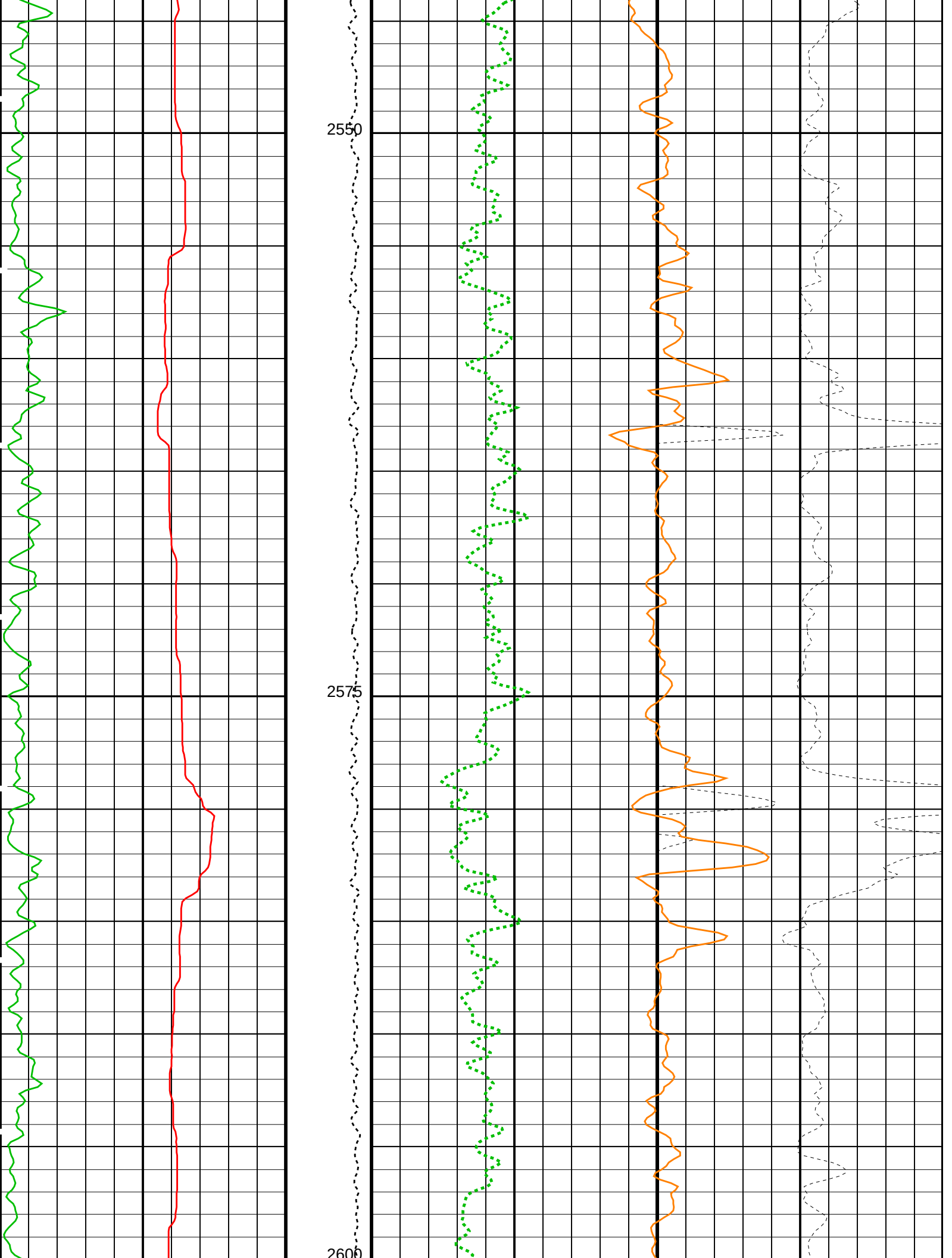

2275
2300

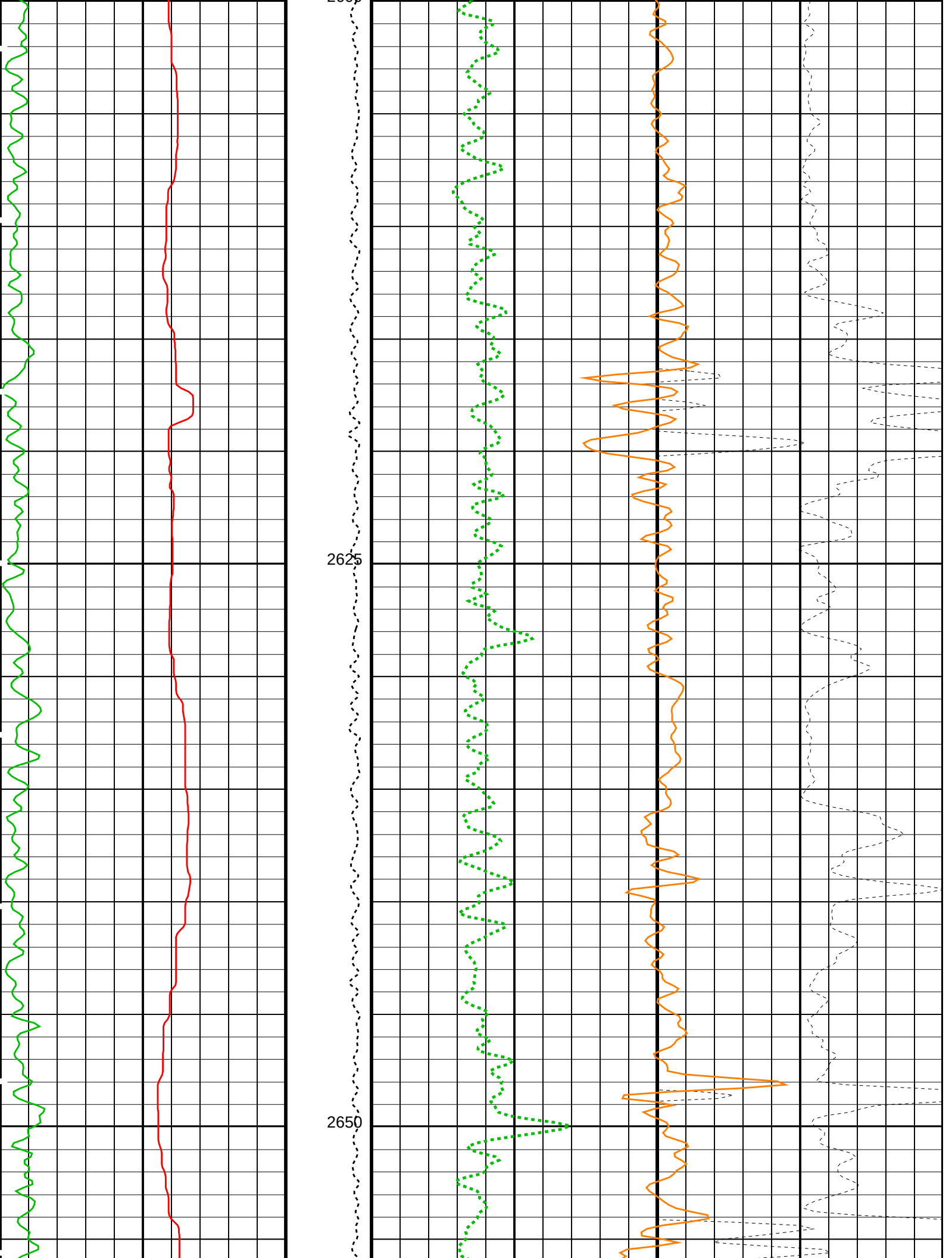

2325
2350
2375

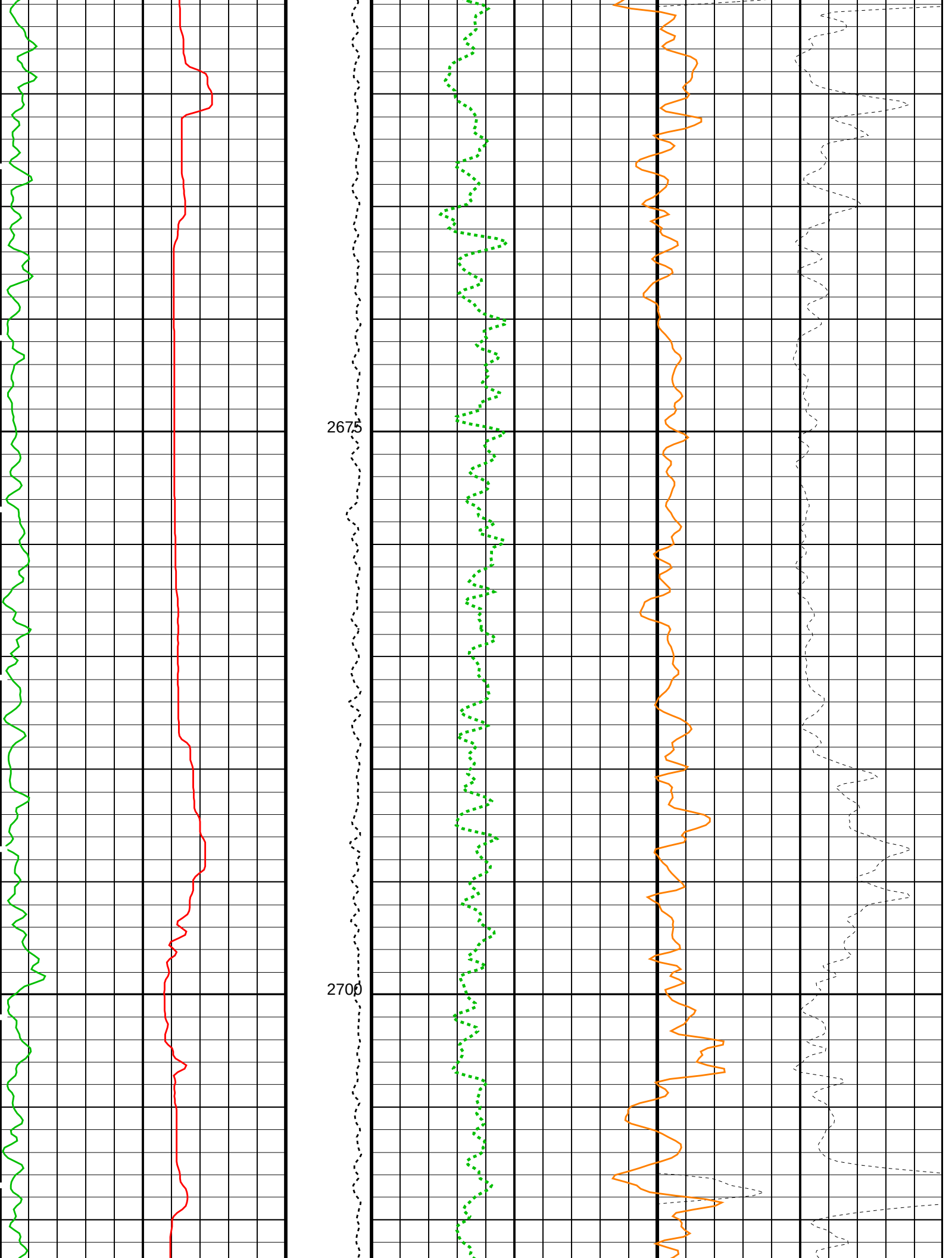

2400
2425

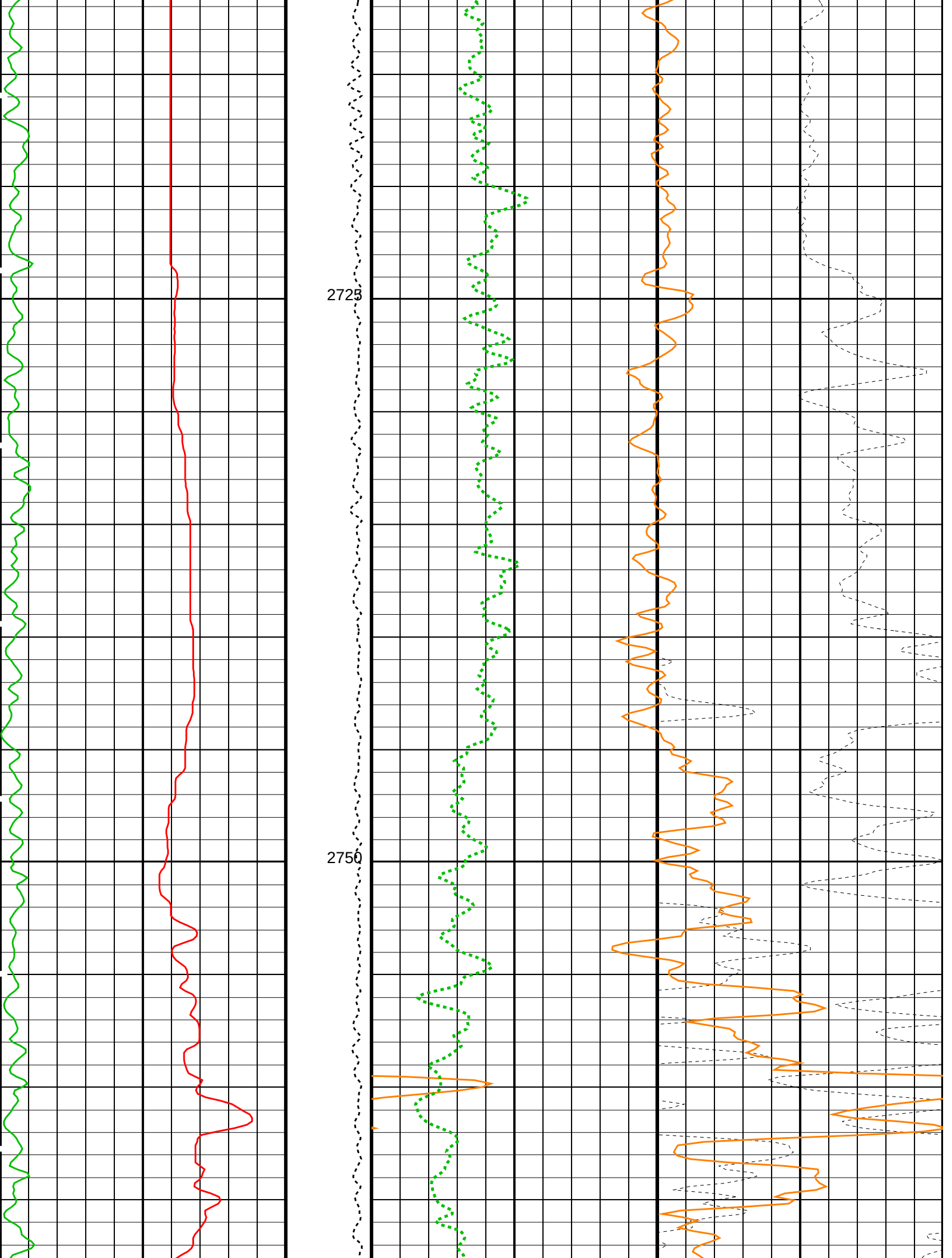

2450
2475

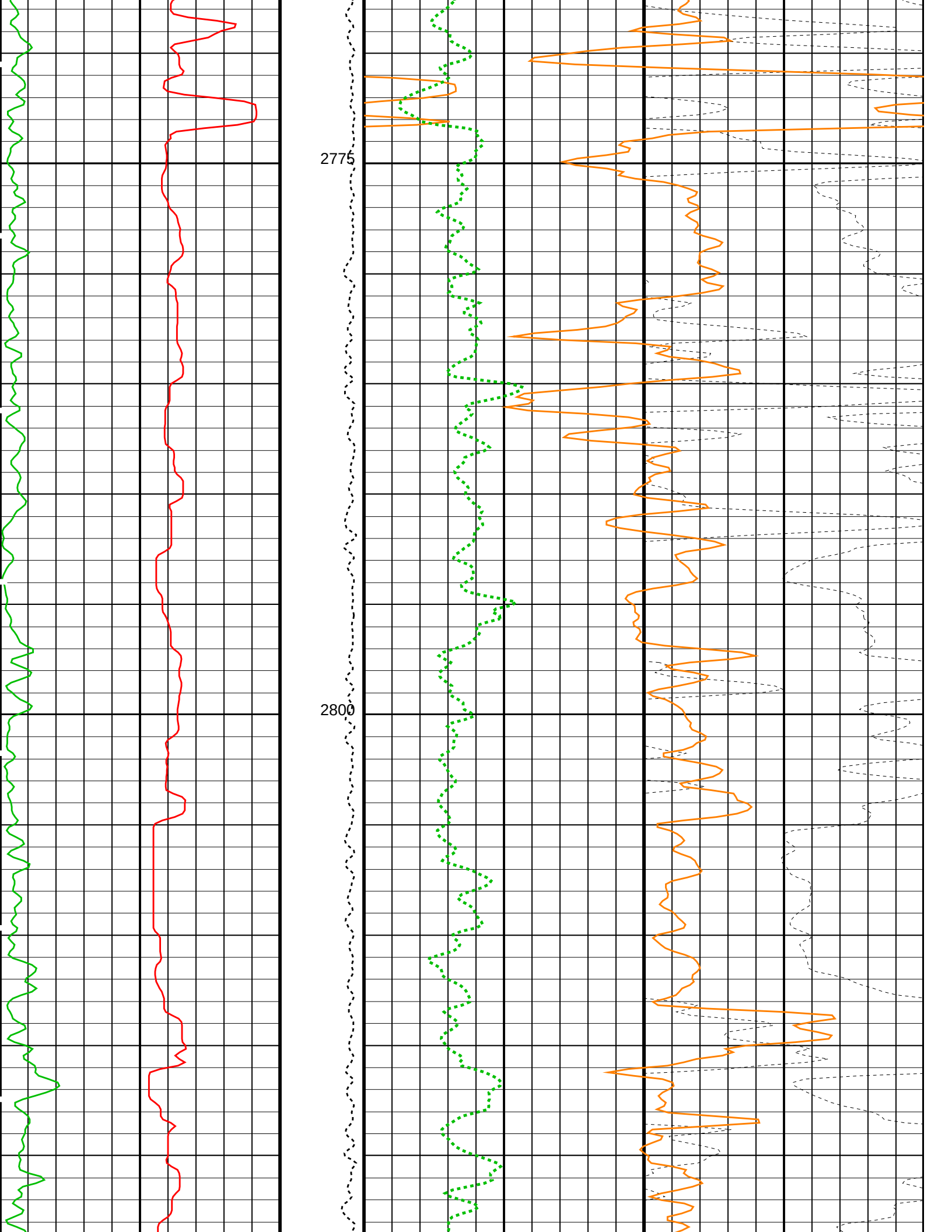

2500
2525

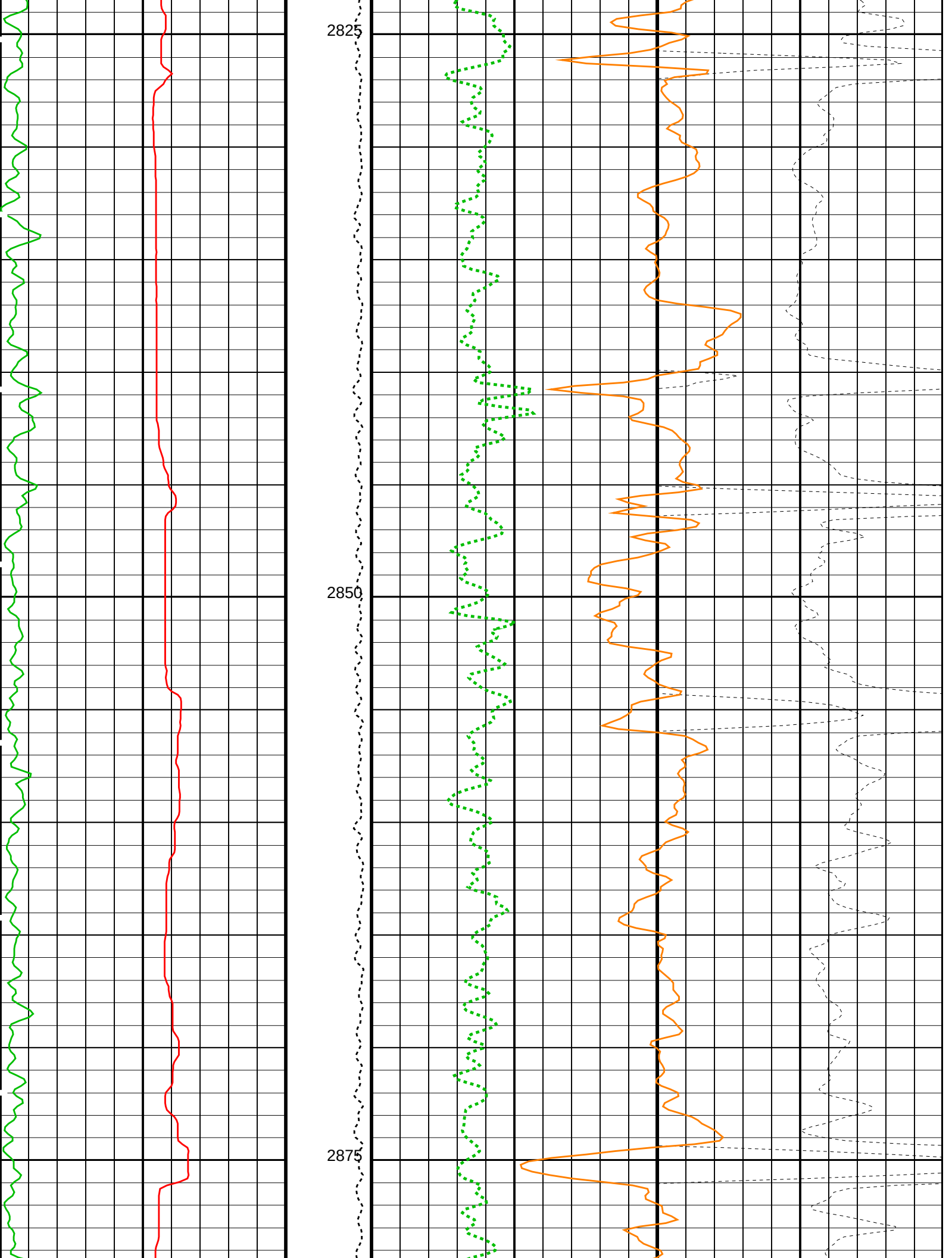

2550
2575
2600

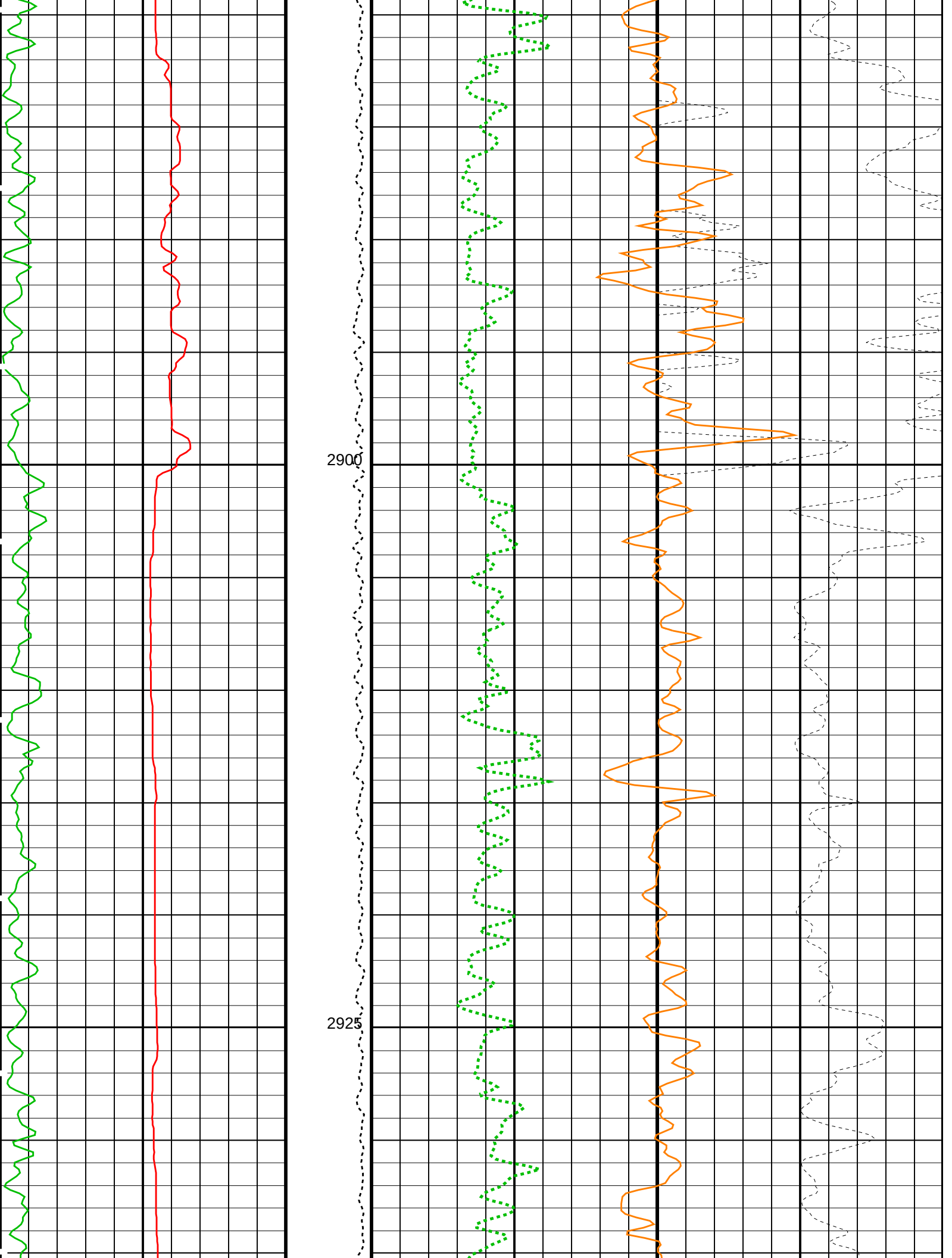

2625
2650

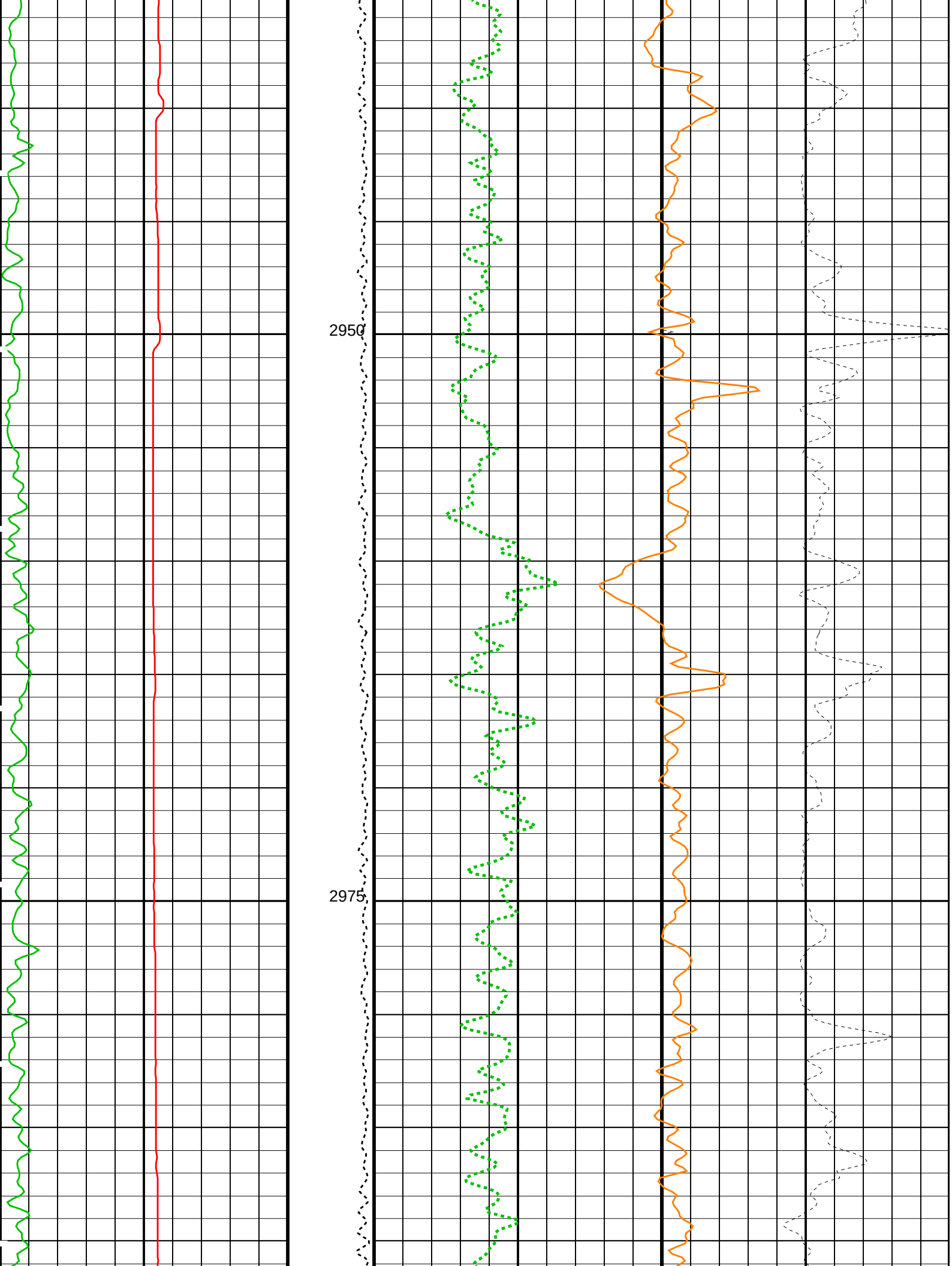

2675
2700

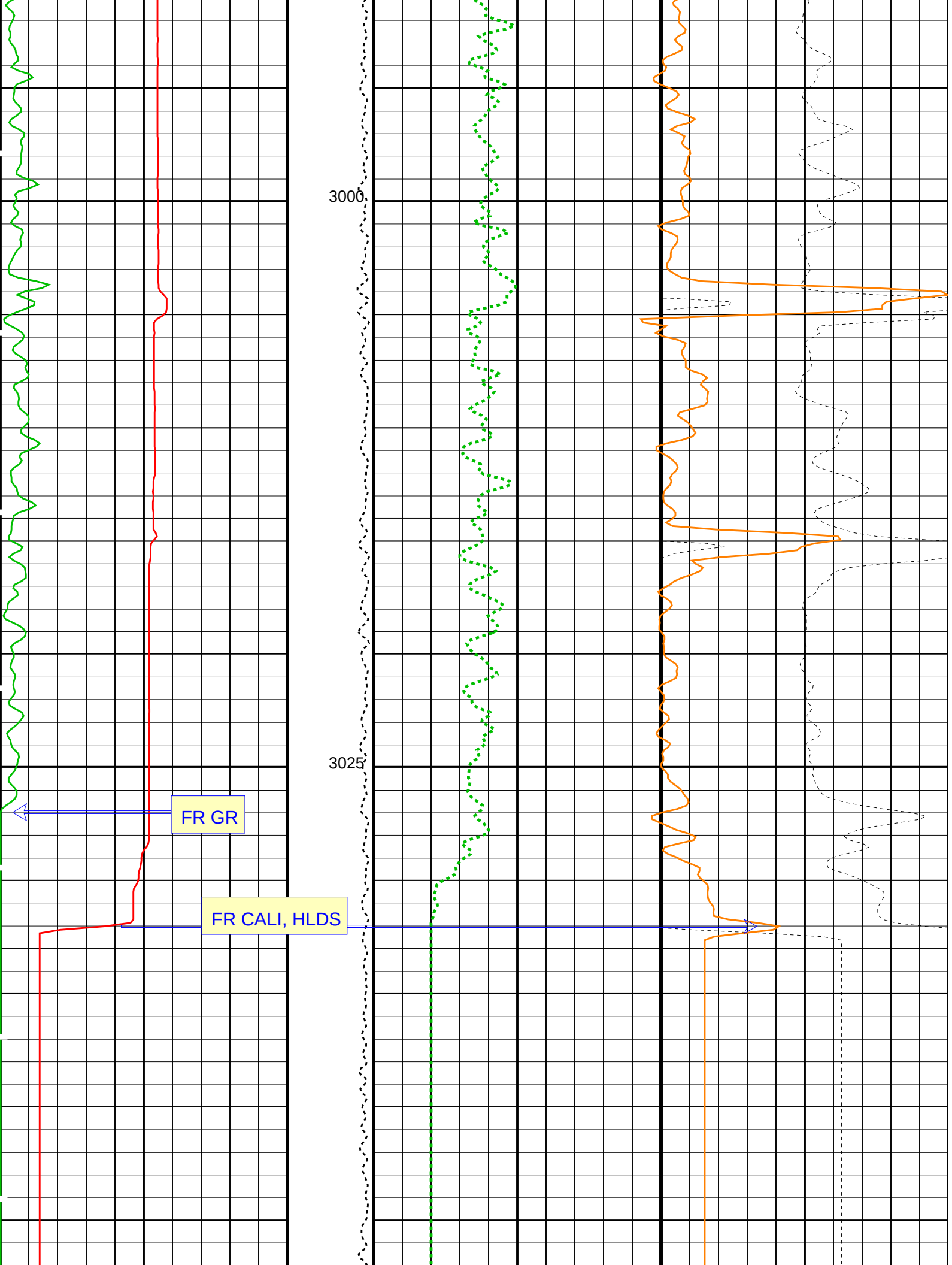

2725
2750

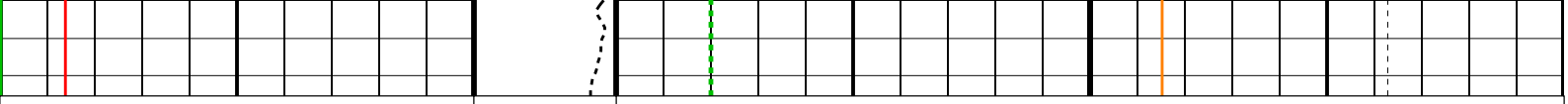

2775
2800


2825
2850
2875


2900
2925


2950
2975


3000
3025
FR GR
FR CALI, HLDS



Gamma Ray (GR_EDTC)	Tension (TENS)	HLDS Bulk Density (RHOM)
0 (GAPI) 15	0 (LBF) 5000	4 (G/C3) 2

HLDS Caliper (LCAL)		HLDS Long Spaced Photoelectric Effect (PEFL)	HLDS Bulk Density Correction (DRH)
0 (IN) 20		0 (----) 10	−0.25 (G/C3) 0.25

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HLDS: Hostile Litho−Density Sonde		
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	ON	
MDEN	Matrix Density	2.71	G/C3
	EDTC−B: Enhanced DTS Cartridge		
DPPM	Density Porosity Processing Mode	HIRS	
	System and Miscellaneous		
BS	Bit Size	11.875	IN
DFD	Drilling Fluid Density	1.05	G/C3
DO	Depth Offset for Playback	5.5	M
PP	Playback Processing	NORMAL	

Format: HLDSDensityPE **Vertical Scale: 1:200** **Graphics File Created: 23−Feb−2012 10:18**

OP System Version: 19C0−187

MTT_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
EDTC−B	19C0−187		

Input DLIS Files

DEFAULT	MTT_LDEO_HRLA_LDL_019LUP	FN:8	PRODUCER	22−Feb−2012 00:42	3044.2 M	1707.2 M

Output DLIS Files

DEFAULT	MTT_LDEO_HRLA_LDL_022PUP	FN:11	PRODUCER	23−Feb−2012 10:18

Schlumberger

Calibrations

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High Resolution Laterolog Array − B Wellsite Calibration − HRLT M01							
Before: 21−Feb−2012 19:04							
HRLT M0−M1 Voltage Plus −	0	0	N/A	−319.0	N/A	N/A	9.681	UV

HRLT M0−M1 Voltage Plus − 1	0	N/A	−332.5	N/A	N/A	9.681	UV
HRLT M0−M1 Voltage Plus − 2	0	N/A	−333.6	N/A	N/A	9.681	UV
HRLT M0−M1 Voltage Plus − 3	0	N/A	−337.5	N/A	N/A	9.681	UV
HRLT M0−M1 Voltage Plus − 4	0	N/A	−325.9	N/A	N/A	9.681	UV
HRLT M0−M1 Voltage Plus − 5	0	N/A	−321.9	N/A	N/A	9.681	UV
HRLT M0−M1 Voltage Plus − 6	0	N/A	324.0	N/A	N/A	9.681	UV
HRLT M0−M1 Voltage Plus − 7	0	N/A	−322.7	N/A	N/A	9.681	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT M12
Before: 21−Feb−2012 19:04

HRLT M1−M2 Voltage Plus − 0	0	N/A	1755	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 1	0	N/A	1827	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 2	0	N/A	1829	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 3	0	N/A	1851	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 4	0	N/A	1789	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 5	0	N/A	1768	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 6	0	N/A	−1788	N/A	N/A	53.42	UV
HRLT M1−M2 Voltage Plus − 7	0	N/A	1781	N/A	N/A	53.42	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT M23
Before: 21−Feb−2012 19:04

HRLT M2−M3 Voltage Plus − 0	0	N/A	1741	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 1	0	N/A	1826	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 2	0	N/A	1829	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 3	0	N/A	1854	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 4	0	N/A	1786	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 5	0	N/A	1766	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 6	0	N/A	−1776	N/A	N/A	53.42	UV
HRLT M2−M3 Voltage Plus − 7	0	N/A	1781	N/A	N/A	53.42	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT V34
Before: 21−Feb−2012 19:04

HRLT A3−A4 Voltage Plus − 0	0	N/A	68410	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 1	0	N/A	71530	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 2	0	N/A	71940	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 3	0	N/A	73210	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 4	0	N/A	70460	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 5	0	N/A	69710	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 6	0	N/A	−68580	N/A	N/A	2100	UV
HRLT A3−A4 Voltage Plus − 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT V45
Before: 21−Feb−2012 19:04

HRLT A4−A5 Voltage Plus − 0	0	N/A	68690	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 1	0	N/A	71930	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 2	0	N/A	72300	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 3	0	N/A	73550	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 4	0	N/A	70750	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 5	0	N/A	69990	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 6	0	N/A	−68950	N/A	N/A	2100	UV
HRLT A4−A5 Voltage Plus − 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT V56
Before: 21−Feb−2012 19:04

HRLT A5−A6 Voltage Plus − 0	0	N/A	68590	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 1	0	N/A	71660	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 2	0	N/A	72060	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 3	0	N/A	73340	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 4	0	N/A	70610	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 5	0	N/A	69880	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 6	0	N/A	−68690	N/A	N/A	2100	UV
HRLT A5−A6 Voltage Plus − 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT VTP
Before: 21−Feb−2012 19:04

HRLT Torpedo−M0 Voltage − 0	0	N/A	−68260	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 1	0	N/A	−71980	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 2	0	N/A	−72350	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 3	0	N/A	−73630	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 4	0	N/A	−70820	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 5	0	N/A	−70040	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 6	0	N/A	68950	N/A	N/A	2100	UV
HRLT Torpedo−M0 Voltage − 7	0	N/A	−70000	N/A	N/A	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT VBD
Before: 21−Feb−2012 19:04

HRLT Bridle#9−M0 Voltage − 0	0	N/A	−68260	N/A	N/A	2100	UV
HRLT Bridle#9−M0 Voltage − 1	0	N/A	−71950	N/A	N/A	2100	UV
HRLT Bridle#9−M0 Voltage − 2	0	N/A	−72320	N/A	N/A	2100	UV
HRLT Bridle#9−M0 Voltage − 3	0	N/A	−73610	N/A	N/A	2100	UV
HRLT Bridle#9−M0 Voltage − 4	0	N/A	−70800	N/A	N/A	2100	UV
HRLT Bridle#9−M0 Voltage − 5	0	N/A	−70020	N/A	N/A	2100	UV

HRLT Bridle#9−M0 Voltage − 6	0	N/A	68920	N/A	N/A	2100	UV
HRLT Bridle#9−M0 Voltage − 7	0	N/A	−70000	N/A	N/A	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT ISO
Before: 21−Feb−2012 19:04

HRLT Source Current Plus − 0	0	N/A	284.6	N/A	N/A	8.520	UA
HRLT Source Current Plus − 1	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus − 2	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus − 3	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus − 4	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus − 5	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus − 6	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus − 7	0	N/A	281.1	N/A	N/A	8.520	UA

High Resolution Laterolog Array − B Wellsite Calibration − HRLT MV
Before: 21−Feb−2012 19:04

HRLT Vertical Voltage Pl − 0	0	N/A	−321.6	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 1	0	N/A	−326.8	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 2	0	N/A	−327.1	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 3	0	N/A	−329.4	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 4	0	N/A	−315.4	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 5	0	N/A	−326.8	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 6	0	N/A	331.3	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl − 7	0	N/A	−322.7	N/A	N/A	9.681	UV

Hostile Litho−Density Sonde Wellsite Calibration − Background Measurement
Master: 9−Jan−2012 3:31 Before: 21−Feb−2012 19:07

SS Cs Resolution Bkg	9.000	7.671	7.676	N/A	N/A	1.800	%
LS Cs Resolution Bkg	9.000	7.932	8.092	N/A	N/A	1.800	%
LSW1 Background	100.0	86.47	85.93	N/A	N/A	3.000	CPS
LSW2 Background	100.0	79.53	78.97	N/A	N/A	3.000	CPS
LSW3 Background	200.0	181.2	181.6	N/A	N/A	6.000	CPS
LSW4 Background	250.0	222.9	222.8	N/A	N/A	7.500	CPS
LSW5 Background	600.0	520.3	519.9	N/A	N/A	18.00	CPS
SSW1 Background	100.0	84.85	84.50	N/A	N/A	3.000	CPS
SSW2 Background	200.0	146.1	146.3	N/A	N/A	6.000	CPS
SSW3 Background	500.0	411.2	408.7	N/A	N/A	15.00	CPS
SSW4 Background	270.0	221.2	218.7	N/A	N/A	8.100	CPS
SSW5 Background	200.0	157.4	157.9	N/A	N/A	6.000	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Aluminum Measurement
Master: 9−Jan−2012 3:31

LSW1 Aluminum	600.0	529.4	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	768.5	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	932.7	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	473.3	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	425.6	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2541	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	6940	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	9683	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	3909	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	464.7	N/A	N/A	N/A	N/A	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Lithology Measurement
Master: 9−Jan−2012 3:31

LSW1 Iron	400.0	371.1	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	638.6	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	849.1	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	442.4	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	405.0	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1889	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	5949	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	9074	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3693	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	431.1	N/A	N/A	N/A	N/A	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Caliper Calibration
Before: 9−Jan−2012 5:30

HLDS Caliper Small Ring	12.00	N/A	14.30	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	15.19	N/A	18.07	N/A	N/A	N/A	IN

Enhanced DTS Cartridge Wellsite Calibration − EDTC Accelerometer Calibration
Before: 21−Feb−2012 19:04

EDTC Z−Axis Acceleration	9.810	N/A	9.740	N/A	N/A	N/A	M/S2

Enhanced DTS Cartridge Wellsite Calibration − Detector Calibration
Before: 21−Feb−2012 19:03

Gamma Ray (Jig − Bkg)	163.3	N/A	163.3	N/A	N/A	14.85	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

High Resolution Laterolog Array − B / Equipment Identification

Primary Equipment:		
HRLT Sonde	HRLS − B	969
Auxiliary Equipment:		
HRLT lower Housing	HRLH − B	759
HRLT Lower Cartridge	HRLC − B	759
HRLT upper Housing	HRUH − B	769
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		−319.0	−322.7	−280.7	−379.7
1	Before		−332.5	−322.7	−280.7	−379.7
2	Before		−333.6	−322.7	−280.7	−379.7
3	Before		−337.5	−322.7	−280.7	−379.7
4	Before		−325.9	−322.7	−280.7	−379.7
5	Before		−321.9	−322.7	−280.7	−379.7
6	Before		324.0	322.7	379.7	280.7
7	Before		−322.7	−322.7	−280.7	−379.7
		(Minimum) (Nominal) (Maximum)				

Before: 21−Feb−2012 19:04

High Resolution Laterolog Array − B Wellsite Calibration

HRLT M12

Idx	Phase	HRLT M1−M2 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1755	1781	2095	1549
1	Before		1827	1781	2095	1549
2	Before		1829	1781	2095	1549
3	Before		1851	1781	2095	1549
4	Before		1789	1781	2095	1549
5	Before		1768	1781	2095	1549
6	Before		−1788	−1781	−1549	−2095
7	Before		1781	1781	2095	1549
		(Minimum) (Nominal) (Maximum)				

Before: 21−Feb−2012 19:04

High Resolution Laterolog Array − B Wellsite Calibration

HRLT M23

Idx	Phase	HRLT M2−M3 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1741	1781	2095	1549
1	Before		1826	1781	2095	1549
2	Before		1829	1781	2095	1549
3	Before		1854	1781	2095	1549
4	Before		1786	1781	2095	1549
5	Before		1766	1781	2095	1549
6	Before		−1776	−1781	−1549	−2095
7	Before		1781	1781	2095	1549
		(Minimum) (Nominal) (Maximum)				

Before: 21−Feb−2012 19:04

High Resolution Laterolog Array − B Wellsite Calibration

HRLT V34

Idx	Phase	HRLT A3−A4 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68410	70000	82360	60900
1	Before		71530	70000	82360	60900
2	Before		71940	70000	82360	60900
3	Before		73210	70000	82360	60900
4	Before		70460	70000	82360	60900
5	Before		69710	70000	82360	60900
6	Before		−68580	−70000	−60900	−82360
7	Before		70000	70000	82360	60900
		(Minimum) (Nominal) (Maximum)				

Before: 21−Feb−2012 19:04

High Resolution Laterolog Array − B Wellsite Calibration

HRLT V45

Idx	Phase	HRLT A4−A5 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68690	70000	82360	60900
1	Before		71930	70000	82360	60900
2	Before		72300	70000	82360	60900
3	Before		73550	70000	82360	60900
4	Before		70750	70000	82360	60900
5	Before		69990	70000	82360	60900
6	Before		−68950	−70000	−60900	−82360
7	Before		70000	70000	82360	60900
		(Minimum) (Nominal) (Maximum)				

Before: 21−Feb−2012 19:04

High Resolution Laterolog Array − B Wellsite Calibration

HRLT V56

Idx	Phase	HRLT A5−A6 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68590	70000	82360	60900
1	Before		71660	70000	82360	60900
2	Before		72060	70000	82360	60900
3	Before		73340	70000	82360	60900
4	Before		70610	70000	82360	60900
5	Before		69880	70000	82360	60900
6	Before		−68690	−70000	−60900	−82360
7	Before		70000	70000	82360	60900
		(Minimum) (Nominal) (Maximum)				

Before: 21−Feb−2012 19:04

High Resolution Laterolog Array − B Wellsite Calibration

HRLT VTP

Idx	Phase	HRLT Torpedo−M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−68260	−70000	−60900	−82360
1	Before		−71980	−70000	−60900	−82360
2	Before		−72350	−70000	−60900	−82360
3	Before		−73630	−70000	−60900	−82360

4	Before		−70820	−70000	−60900	−82360
5	Before		−70040	−70000	−60900	−82360
6	Before		68950	70000	82360	60900
7	Before		−70000	−70000	−60900	−82360
		(Minimum) (Nominal) (Maximum)				

Before: 21−Feb−2012 19:04

High Resolution Laterolog Array − B Wellsite Calibration

HRLT VBD

Idx	Phase	HRLT Bridle#9−M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−68260	−70000	−60900	−82360
1	Before		−71950	−70000	−60900	−82360
2	Before		−72320	−70000	−60900	−82360
3	Before		−73610	−70000	−60900	−82360
4	Before		−70800	−70000	−60900	−82360
5	Before		−70020	−70000	−60900	−82360
6	Before		68920	70000	82360	60900
7	Before		−70000	−70000	−60900	−82360
		(Minimum) (Nominal) (Maximum)				

Before: 21−Feb−2012 19:04

High Resolution Laterolog Array − B Wellsite Calibration

HRLT ISO

Idx	Phase	HRLT Source Current Plus UA	Value	Nominal	Maximum	Minimum
0	Before		284.6	284.0	334.1	247.0
1	Before		281.1	281.1	330.7	244.4
2	Before		281.1	281.1	330.7	244.4
3	Before		281.1	281.1	330.7	244.4
4	Before		281.1	281.1	330.7	244.4
5	Before		281.1	281.1	330.7	244.4
6	Before		281.1	281.1	330.7	244.4
7	Before		281.1	281.1	330.7	244.4
		(Minimum) (Nominal) (Maximum)				

Before: 21−Feb−2012 19:04

High Resolution Laterolog Array − B Wellsite Calibration

HRLT MV

Idx	Phase	HRLT Vertical Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−321.6	−322.7	−280.7	−379.7
1	Before		−326.8	−322.7	−280.7	−379.7
2	Before		−327.1	−322.7	−280.7	−379.7
3	Before		−329.4	−322.7	−280.7	−379.7
4	Before		−315.4	−322.7	−280.7	−379.7
5	Before		−326.8	−322.7	−280.7	−379.7
6	Before		331.3	322.7	379.7	280.7
7	Before		−322.7	−322.7	−280.7	−379.7
		(Minimum) (Nominal) (Maximum)				

Before: 21−Feb−2012 19:04

Hostile Litho−Density Sonde / Equipment Identification

Primary Equipment:		
Hostile Litho Density Sonde	HLDS − D	45
Hostile Litho Density High Voltage	HLDV − D	45
Gamma Source Radioactive	GSR − Z	2397
Auxiliary Equipment:		
Hostile Litho Density Pad	HLDP − C	45
Hostile Litho Density High Voltage Housi	HEH − H	47

Hostile Litho−Density Sonde Wellsite Calibration

Background Measurement

Phase	SS Cs Resolution Bkg %	Value
Master		7.671
Before		7.676
	7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)	

Phase	LS Cs Resolution Bkg %	Value
Master		7.932
Before		8.092
	7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)	

Phase	LSW1 Background CPS	Value
Master		86.47
Before		85.93
	55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)	

Phase	LSW2 Background CPS	Value
Master		79.53
Before		78.97
	50.00 (Minimum) 100.0 (Nominal) 140.0 (Maximum)	

Phase	LSW3 Background CPS	Value
Master		181.2
Before		181.6
	110.0 (Minimum) 200.0 (Nominal) 290.0 (Maximum)	

Phase	LSW4 Background CPS	Value
Master		222.9
Before		222.8
	140.0 (Minimum) 250.0 (Nominal) 360.0 (Maximum)	

Phase	LSW5 Background CPS	Value
Master		520.3
Before		519.9
	330.0 (Minimum) 600.0 (Nominal) 830.0 (Maximum)	

Phase	SSW1 Background CPS	Value
Master		84.85
Before		84.50
	55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)	

Phase	SSW2 Background CPS	Value
Master		146.1
Before		146.3
	100.0 (Minimum) 200.0 (Nominal) 260.0 (Maximum)	

Phase	SSW3 Background CPS	Value
Master		411.2
Before		**408.7**
	280.0 (Minimum) 500.0 (Nominal) 700.0 (Maximum)	

Phase	SSW4 Background CPS	Value
Master		221.2
Before		**218.7**
	150.0 (Minimum) 270.0 (Nominal) 380.0 (Maximum)	

Phase	SSW5 Background CPS	Value
Master		157.4
Before		**157.9**
	110.0 (Minimum) 200.0 (Nominal) 270.0 (Maximum)	

Master: 9−Jan−2012 3:31 Before: 21−Feb−2012 19:07

Litho−Density Spectroscopy Cartridge − B / Equipment Identification

Primary Equipment:		
LDSC Cartridge	LDSC − B	521
Auxiliary Equipment:		
LDSC Housing	LDSH − A	319

Enhanced DTS Cartridge / Equipment Identification

Primary Equipment:		
EDTC Gamma Ray Detector	EDTG − A/B	77693
Enhanced DTS Cartridge	EDTC − B	8529
Auxiliary Equipment:		
EDTC Housing	EDTH − B	8528

Enhanced DTS Cartridge Wellsite Calibration

EDTC Accelerometer Calibration

Phase	EDTC Z−Axis Acceleration M/S2	Value
Before		9.740
	9.610 (Minimum) 9.810 (Nominal) 10.01 (Maximum)	

Before: 21−Feb−2012 19:04

Enhanced DTS Cartridge Wellsite Calibration

Detector Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value
Before		1.492
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)	

Phase	Gamma Ray (Jig − Bkg) GAPI	Value
Before		163.3
	148.5 (Minimum) 163.3 (Nominal) 178.2 (Maximum)	

Phase	Gamma Ray (Calibrated) GAPI	Value
Before		165.0
	150.0 (Minimum) 165.0 (Nominal) 180.0 (Maximum)	

Before: 21−Feb−2012 19:03

Company: **Lamont Doherty Earth Observatory**

Schlumberger

Well: **Expedition 340T, Site U1309D**
Field: **Atlantis Massif**
Rig: **JOIDES Resolution**
Country: **USA**

Hostile Litho−Density Sonde (HLDS)