



LWD MEMORY LOG

Gamma Ray
Azimuthal Gamma Ray

Scale: **Company: Bonanza Cre**

Well: Latnam R-O-14HNC

Measured Depth	Field:	Weld County
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County: **Weid** County: **United States**

Driller's Depth	State: Colorado
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Status:	Surface Location:	Other Services
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Final Print

AP No:	05-123-49901-00	Directional
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Job ID: 109851313

SEC:	14	TWN:	4N	RGE:	63W
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Permanent Datum (P.D.):	Mean Sea Level	Elevation:	0.00 ft	Elev. KB:	Elev. 25
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Log Measured From:	Rig Floor	Above P.D.:	4620.80 ft	Elev. GL:	4620.80 ft
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[illegible]

From: 2019-06-07	Drilled (ft)	Logged (ft)	Azi Reference North:	True	Dip Angle: (deg)	66.60
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To: 2019-06-16	Top: 17.00	Top: 5000.00	Total Magnetic Field Strength: (nT)	52235
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Spud: 2019-06-08	Bottom: 11802.00	Bottom: 11789.00	Mag to Reference North Correction: (deg)	7.98
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Borehole Record

Casing Record

Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
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13.500	17.00	1610.00	9.625	36.00	17.00	1610.00
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8.500	1610.00	11802.00			
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2020年12月25日 星期三 12:00:00

Waktu (kecepatan)		Deviasi (kecepatan)	
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
12	12	12	12
13	13	13	13
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90	90	90	90
91	91	91	91
92	92	92	92
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94	94	94	94
95	95	95	95
96	96	96	96
97	97	97	97
98	98	98	98
99	99	99	99
100	100	100	100

type	I (14)	II (11)	III (10)	IV (10)	V (10)
I					
II					
III					
IV					
V					

Water Based Mud	17.00	1010.00	13.300	1394.00	0.33	3.04	0.34	309.38
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Dissect-Cell Based Mmu	10/0.00	11002.00	0.000	10/0.00	0.00	000.00	00/00	1/0.00

[illegible][illegible][illegible]

Acquisition System	Software Version	Other
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Cadence	RT 5.2	Rig:	Akita 519
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Plot Studio 5.2.84/2.1 Contractor: Akita Drilling

District:	RMA	Unit:	RMA
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Log Run Summary

Run No	Bit Run No.	Bit Size (in)	Bit Type	Bit Gauge Length (in)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Hours
						Top	Bottom	From	To	Start Logging	End Logging	
						(ft)	(ft)	(ft)	(ft)			
1	1	13.500	PDC	4.00	Steerable	0.00	0.00	17.00	1611.00	2019-06-07 20:19	2019-06-08 01:23	4.49
2	2	8.500	PDC	3.00	Rotary Steerable	5000.00	11789.00	1611.00	11802.00	2019-06-14 23:16	2019-06-16 05:52	51.45

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Alozie Obuh	2019-06-07	2019-06-08	Steve Bueghly	2019-06-12	2019-06-16			

Mud Properties Record

Date / Time	Run No.	Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2019-06-07 20:00	1	17.00	Water Based Mud	8.5	1	8.5	N/A	0/96	Active Pit	596	0.00
2019-06-13 15:00	2	1611.00	Diesel-Oil Based Mud	8.8	7	N/A	N/A	83/14	Active Pit	28958	0.00
2019-06-14 15:00	2	4975.00	Diesel-Oil Based Mud	9.1	9	N/A	N/A	81/14	Active Pit	2582	0.00
2019-06-15 16:00	2	8200.00	Diesel-Oil Based Mud	9.2	42	N/A	N/A	76/16	Active Pit	31853	0.00

Mud Resistivity Record

Mud Resistivity Record					Surface			Downhole		
Date / Time	Run	Depth	Surface	Rm	Rmf	Rmc	BHCT	Rm	Rmf	Rmc

	No.	(ft)	Temp (degF)	(ohm.m)	(ohm.m)	(ohm.m)	(degF)	@ BHCT (ohm.m)	@ BHCT (ohm.m)	@ BHCT (ohm.m)
2019-06-14 15:00	2	4975.00	88.0	100.000	N/A	N/A	150.0	100.000	N/A	N/A
2019-06-15 15:00	2	8200.00	111.0	100.000	N/A	N/A	209.0	100.000	N/A	N/A

Equipment and Service Data

Run No.	Tool	Serial Number	Measurement	Sensor Offset (ft)	Bit Offset (ft)	Max O.D. (in)	Min I.D. (in)
1	NaviTrak	10350729	Directional (mag)	16.10	51.98	8.000	0.000
1	NaviTrak	10350729	VSS	16.10	51.98	8.000	0.000
2	AutoTrak Curve Steering Unit	14367829	Near Bit Inclination	5.93	6.73	7.000	4.330
2	AutoTrak Curve Steering Unit	14367829	Near Bit VSS	5.93	6.73	7.000	4.330
2	AutoTrak Curve MWD	14270075	Gamma (single)	2.73	12.90	7.000	3.250
2	AutoTrak Curve MWD	14270075	Directional (mag)	12.27	22.44	7.000	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
NTK	NaviTrak	Probe Based Directional Module, NaviTrak Platform
ATC SU	AutoTrak Curve SU	Auto Trak Curve Steering Unit
ATC MWD	AutoTrak Curve MWD	Auto Trak Curve MWD
ATC LCPM	AutoTrak Curve LCPM	Auto Trak Curve LCPM
BCPM	BCPM	Bi-Directional Communication and Power Module, OnTrak Platform

Comments

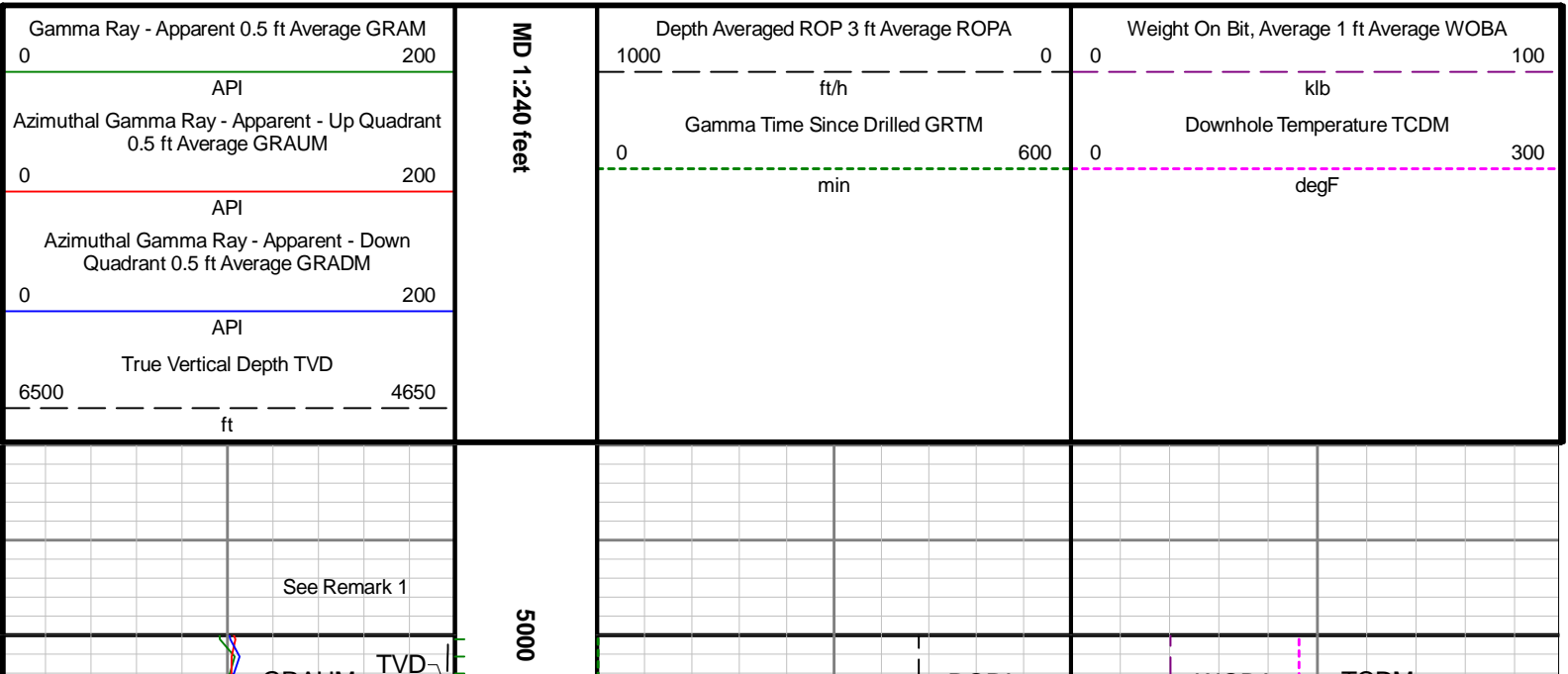
1	Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to the lack of control by Baker Hughes, depth calibrations and measurements could not be independently verified.
2	Baker Hughes LWD Run 1 used the 8 inch NaviTrak service (Directional) behind an 13 1/2 inch bit and steerable assembly to drill from 17 to 1611 feet MD (17 to 1601 feet TVD). No logging data was acquired through out this run.
3	The Gamma Ray Apparent (GRAM) data is presented from 0 to 200 API, per customer's request.
4	Baker Hughes LWD Run 2 used the 6 3/4 inch NaviGamma service (Gamma Ray, Azimuthal Gamma Ray and Directional) behind an 8 1/2 inch bit and rotary steerable assembly to drill from 1611 to 11802 feet MD (1601 to 6408 feet TVD).

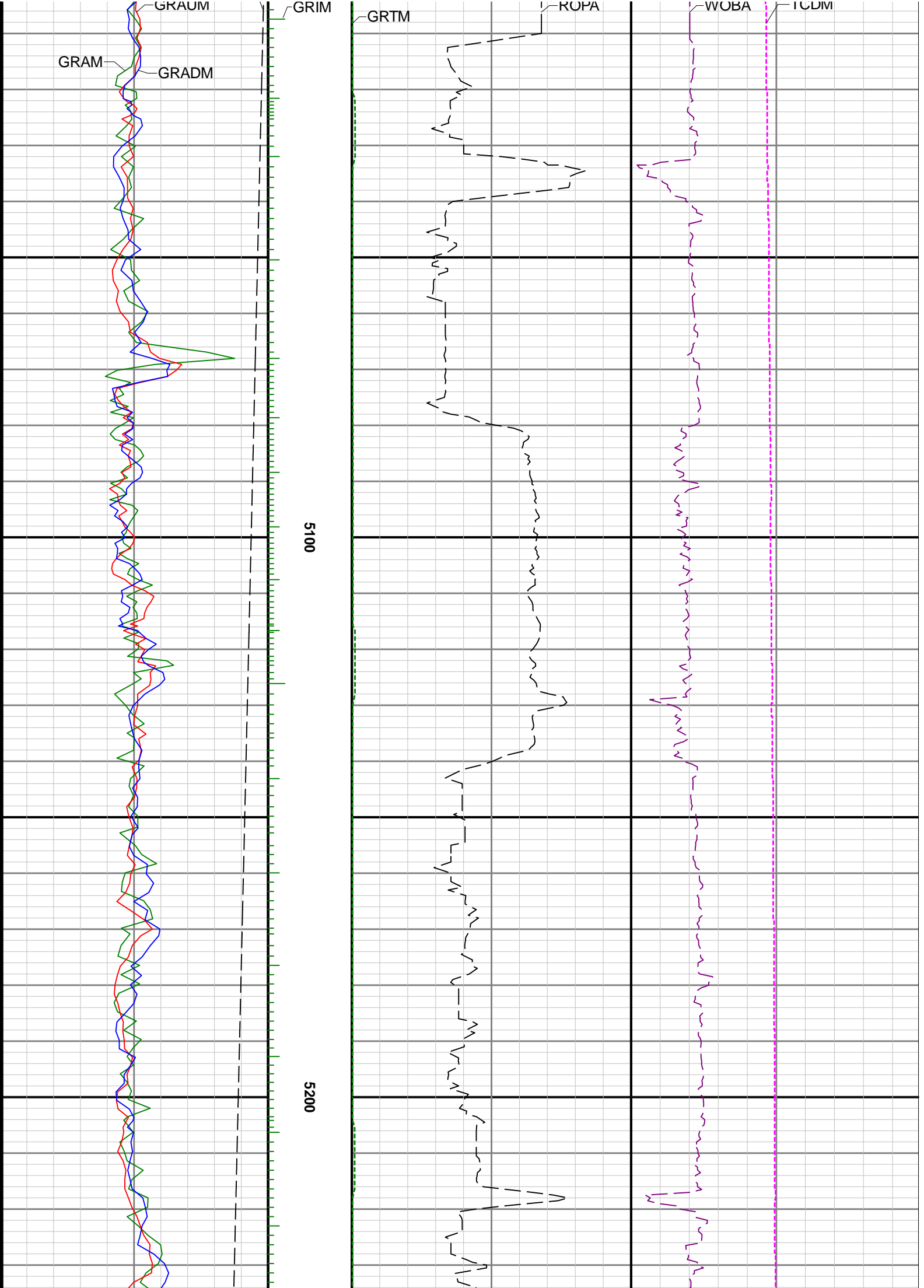
Remarks

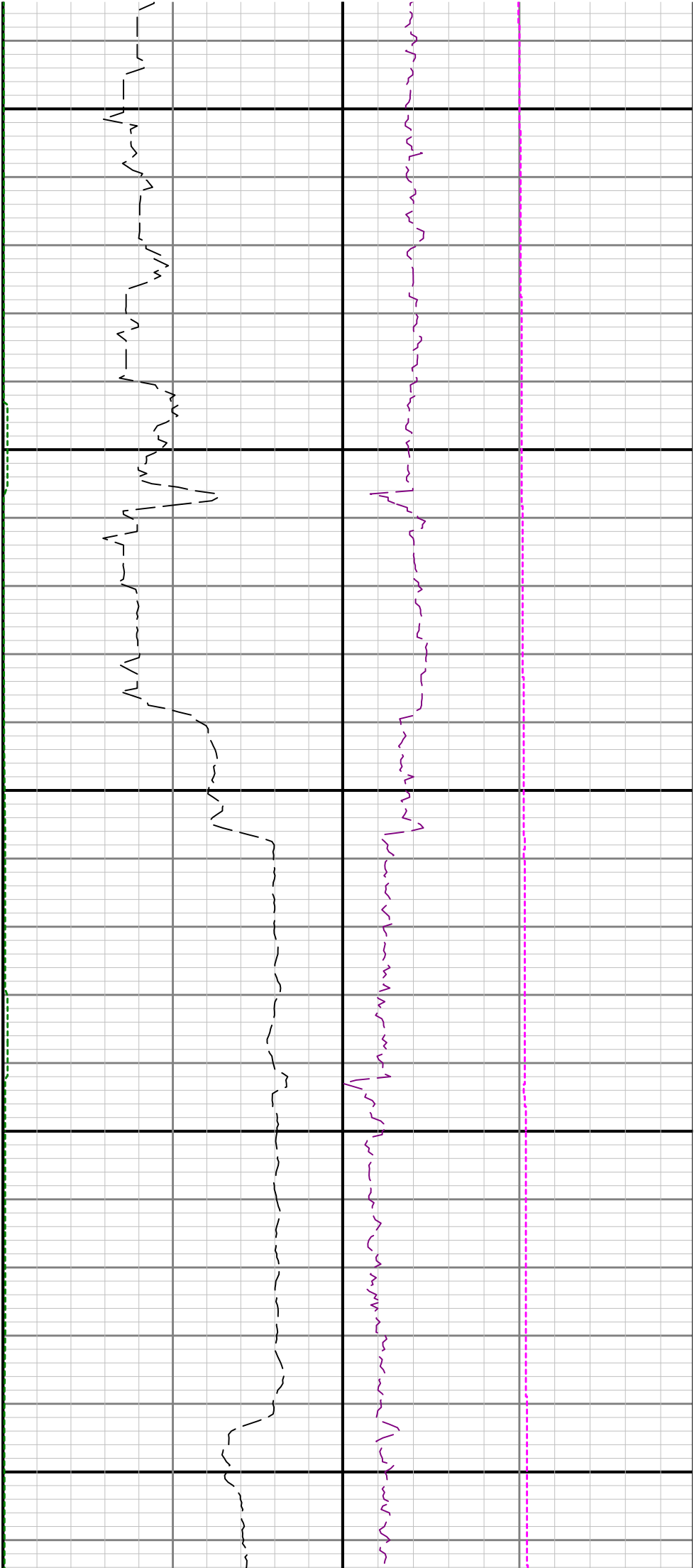
Number	Depth (ft)	Hole Section (in)	Run No.	Remark
1	5350.00	8.500	2	The Gamma Ray Apparent (GRAM) log starts at 5000 feet, per customer's request.
2	11795.00	8.500	2	The interval from 11789 to 11802 feet MD (6408 feet TVD) was not logged due to sensor to bit offset at well TD.

Curve Mnemonics

Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAM	Gamma Ray - Apparent - Memory 0.5 ft Average	API
GRIM	Gamma Ray - Data Point Indicator - Memory	unitless
GRTM	Gamma Ray - Time Since Drilled - Memory	min
GRADM	Gamma Ray - Apparent - Down Quadrant - Memory 0.5 ft Average	API
GRAUM	Gamma Ray - Apparent - Up Quadrant - Memory 0.5 ft Average	API
TCDM	Directional Real-Time Survey Temperature	degF

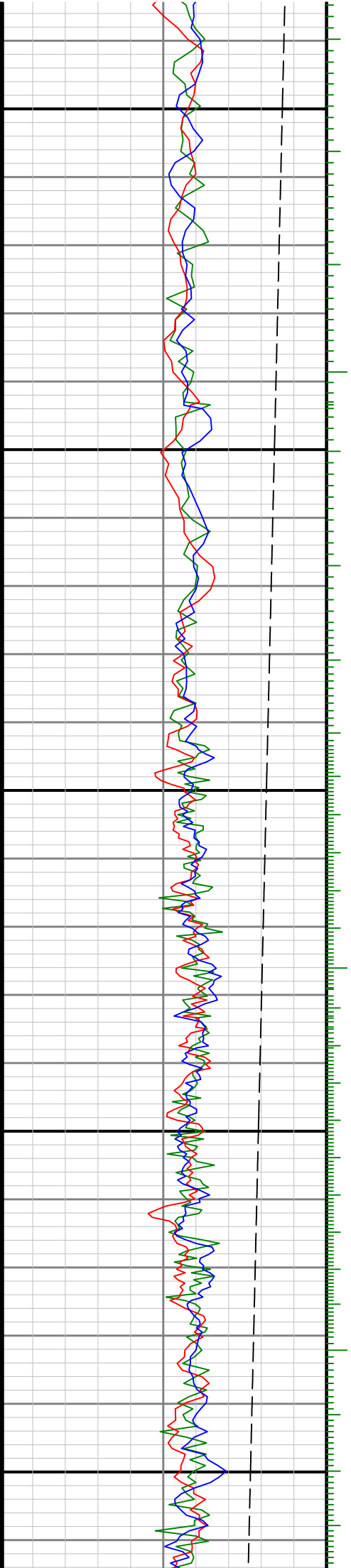


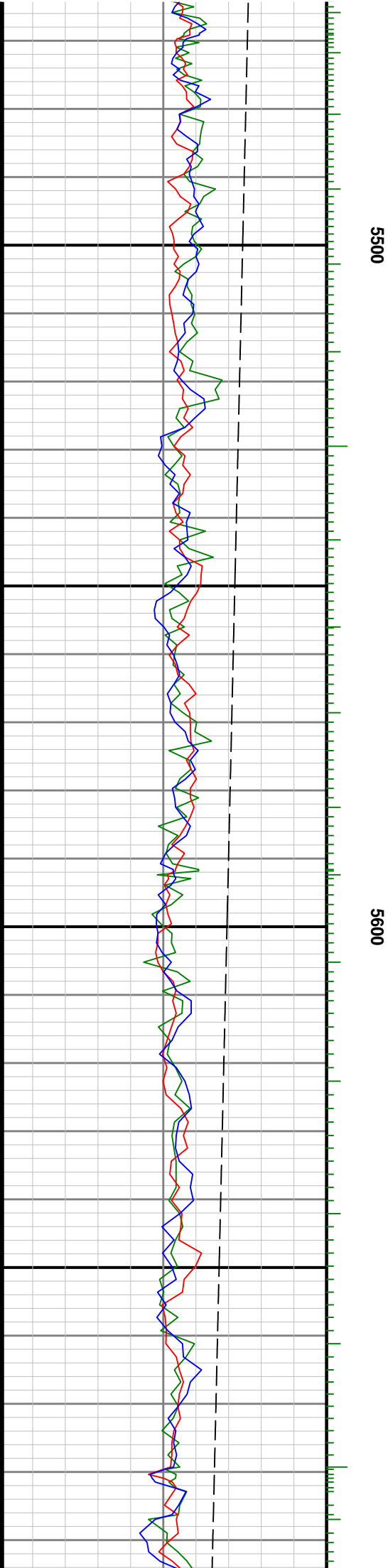
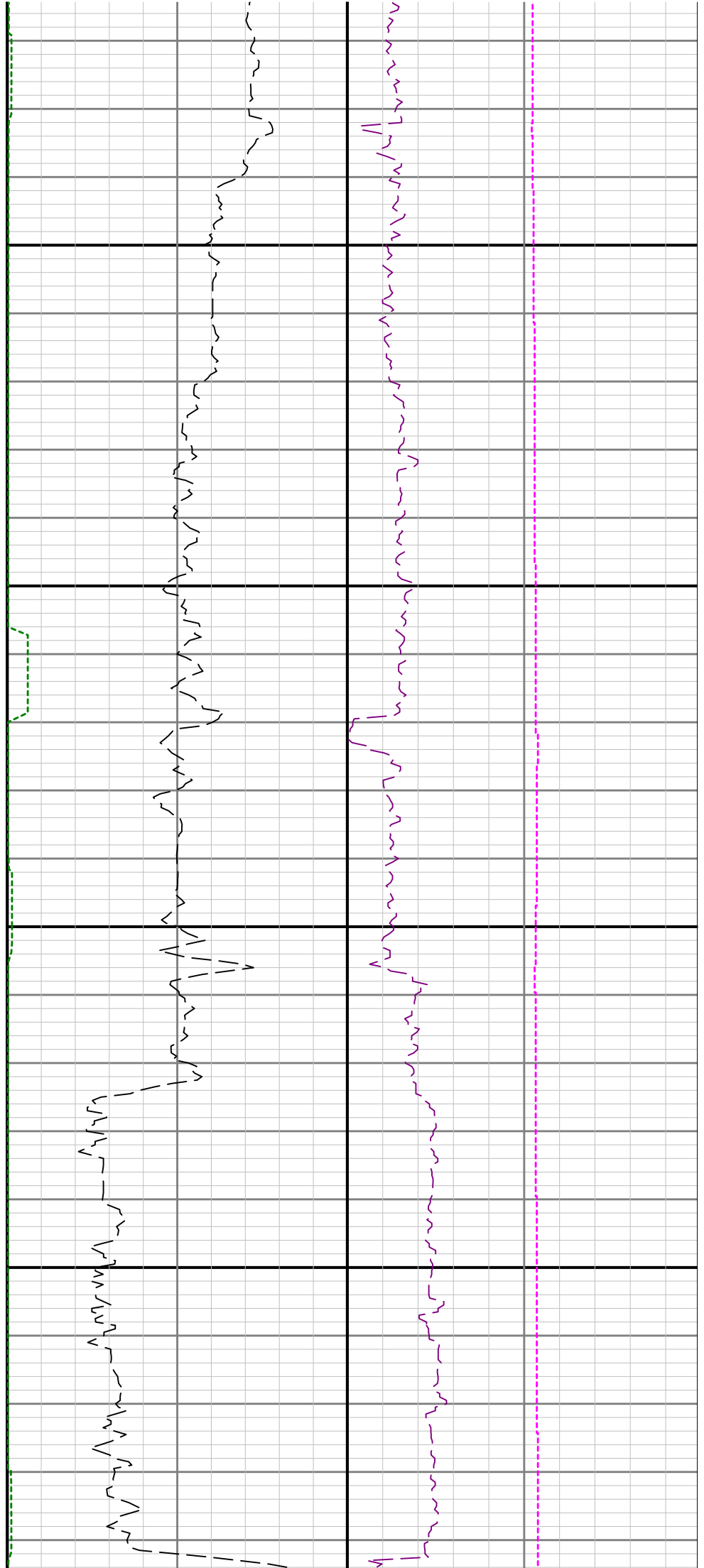


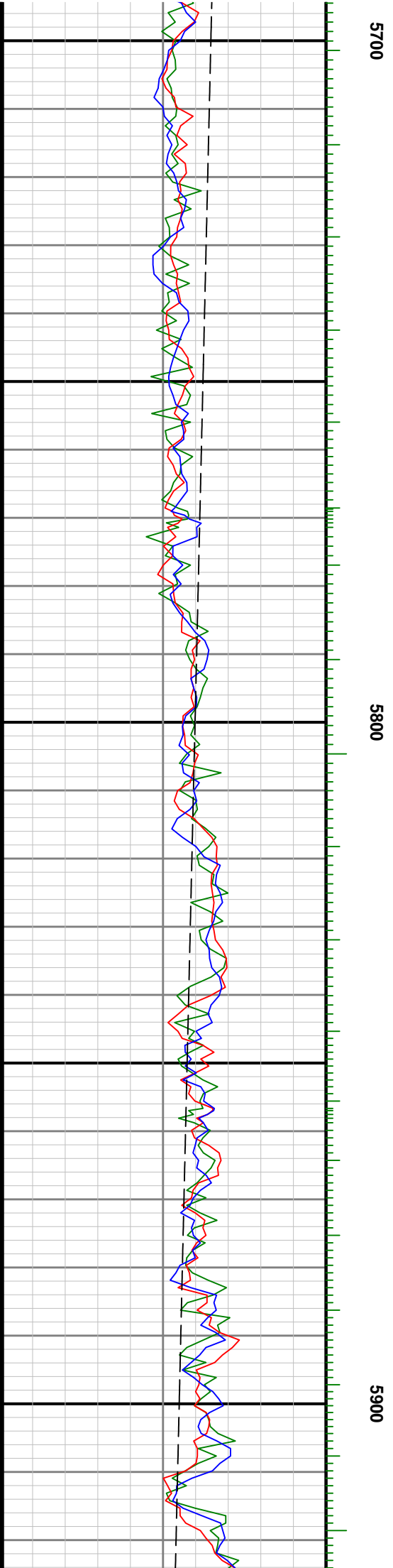
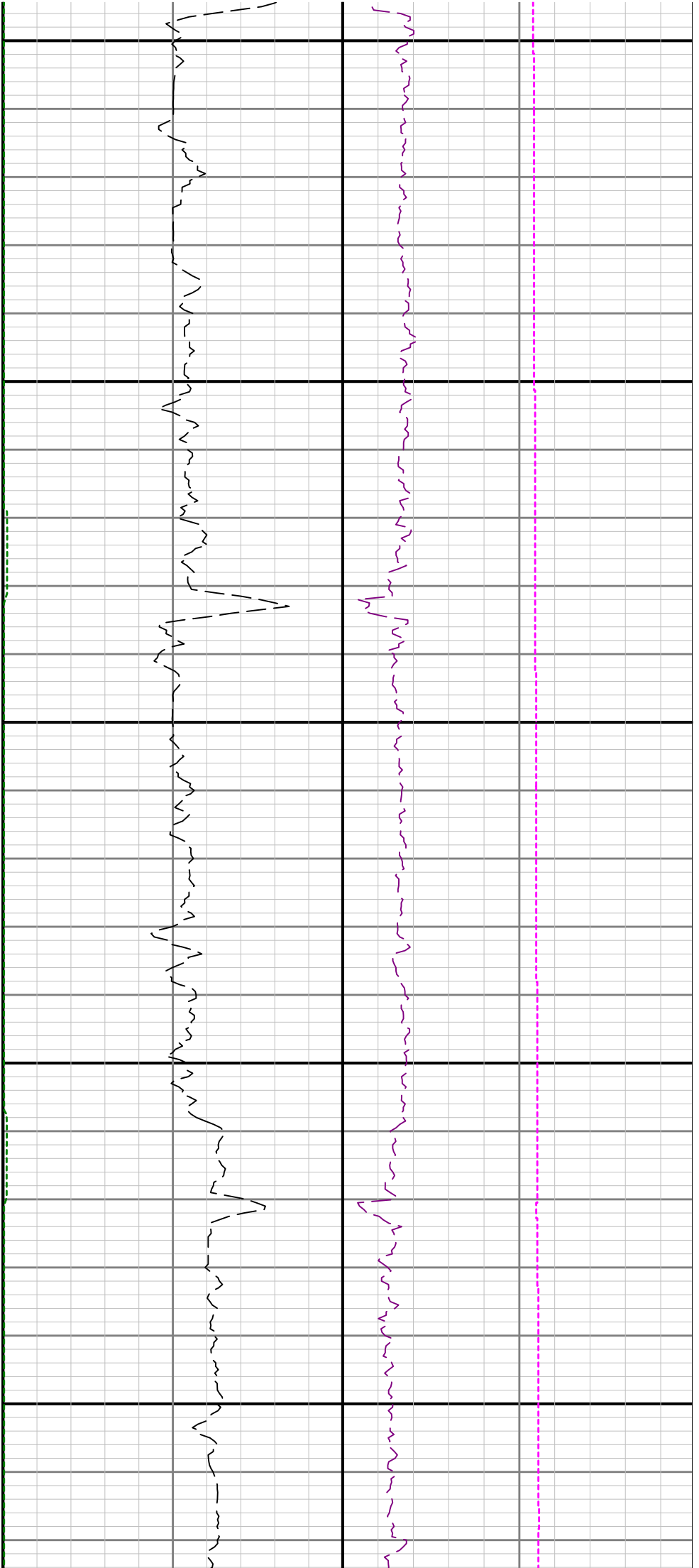


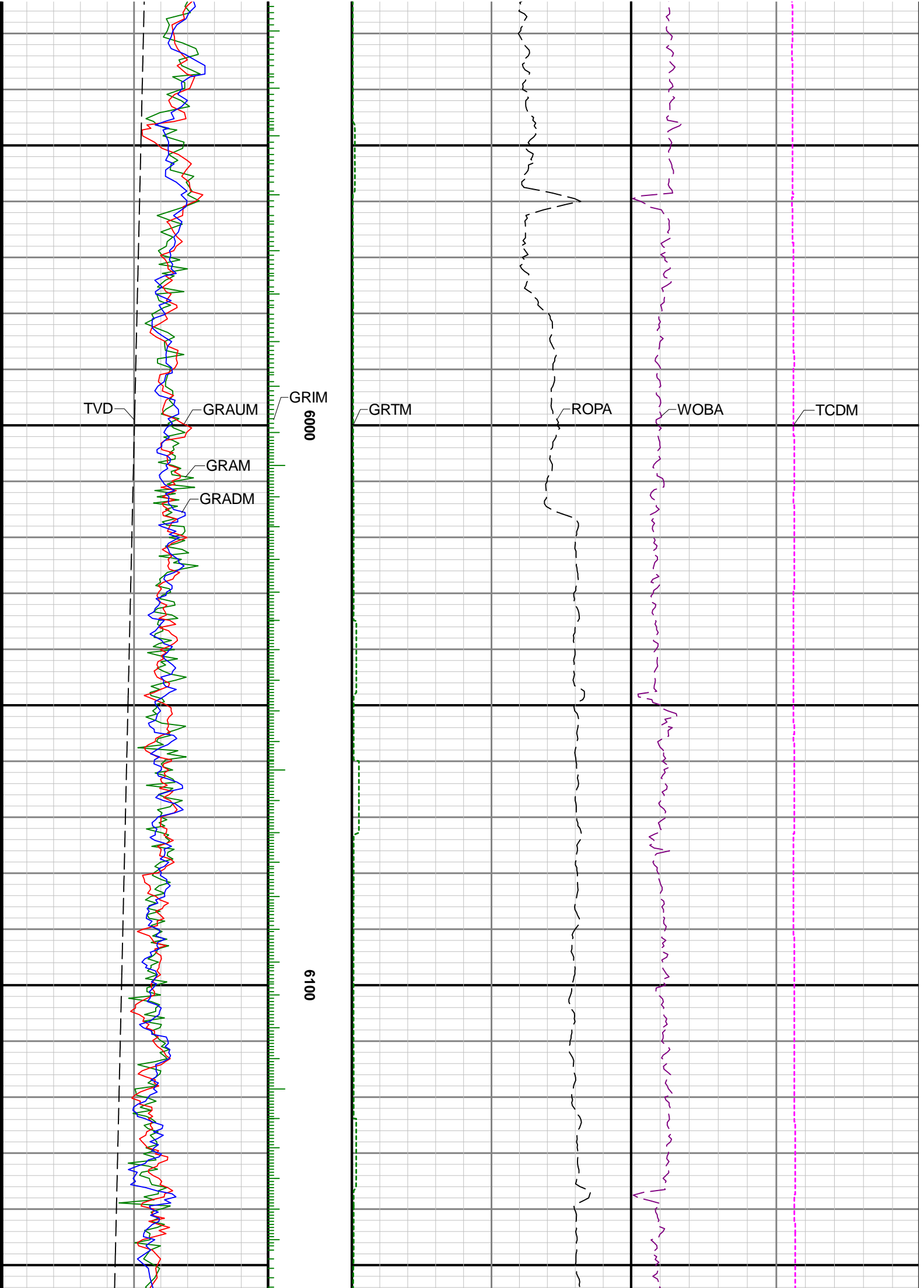
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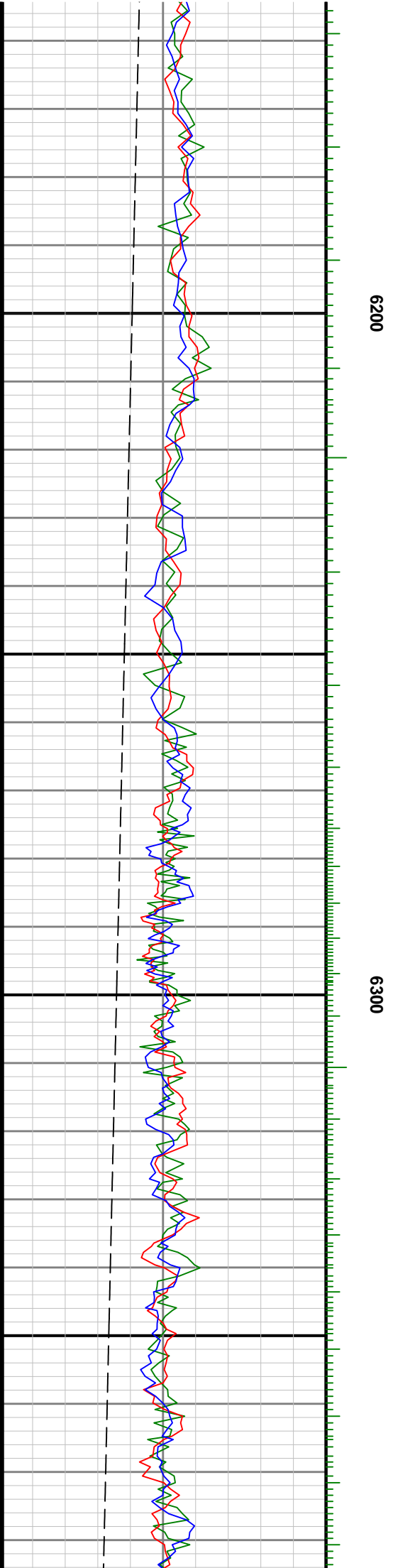
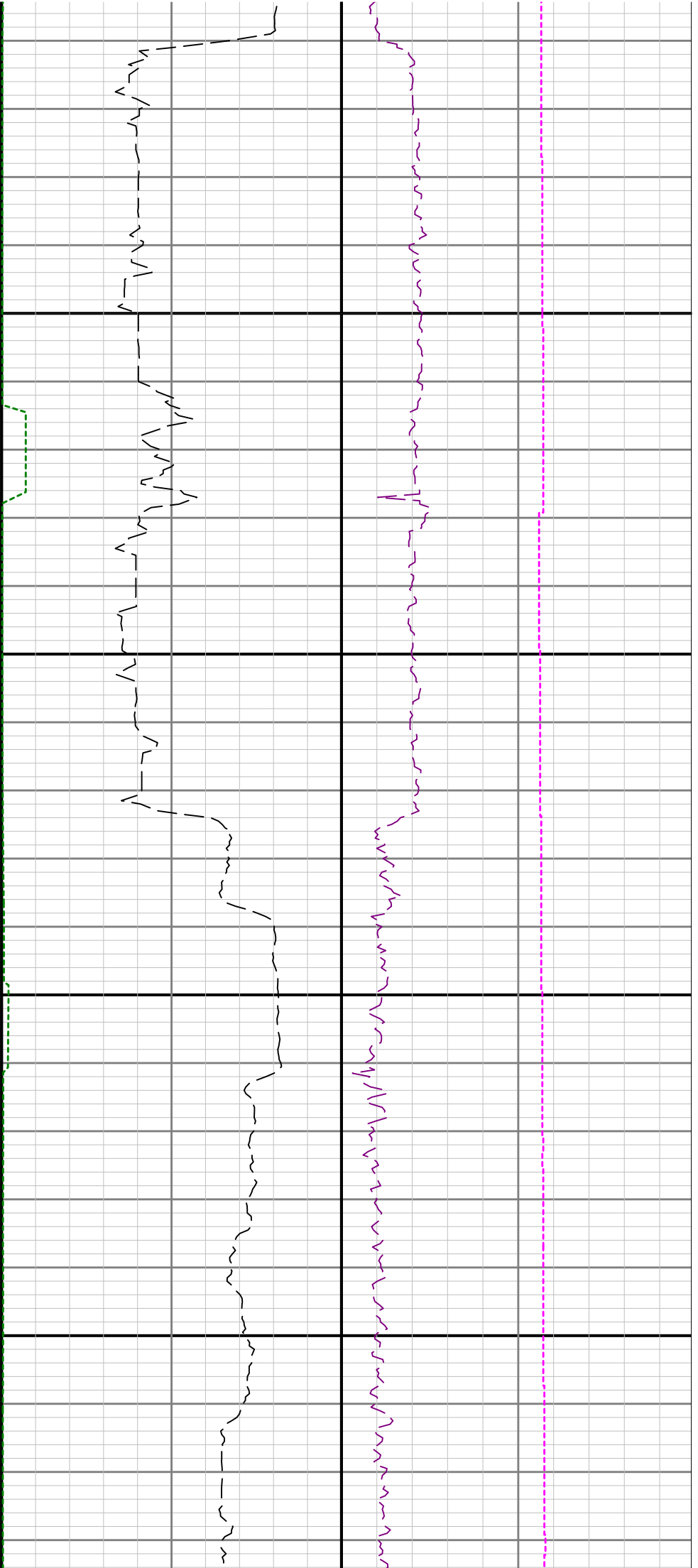
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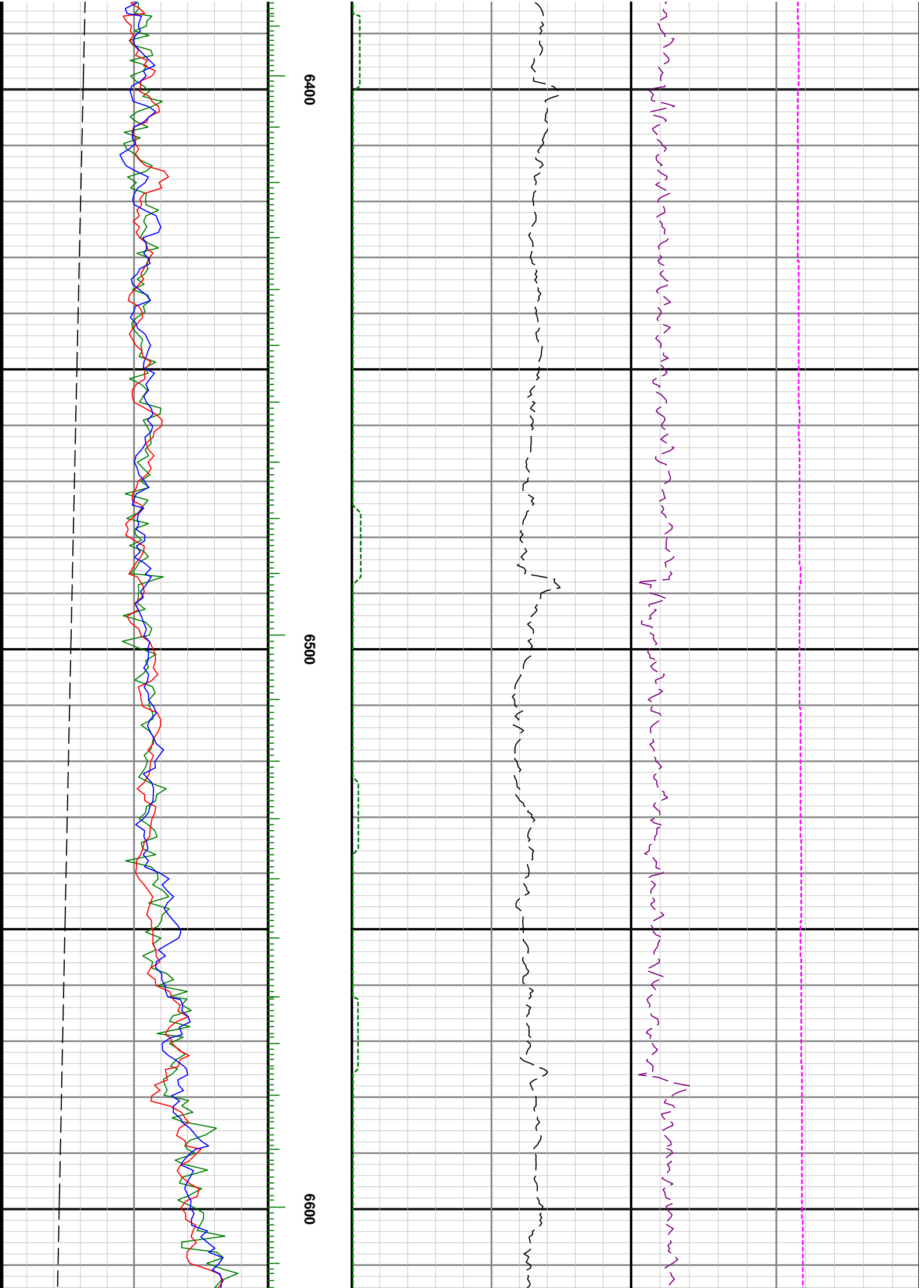


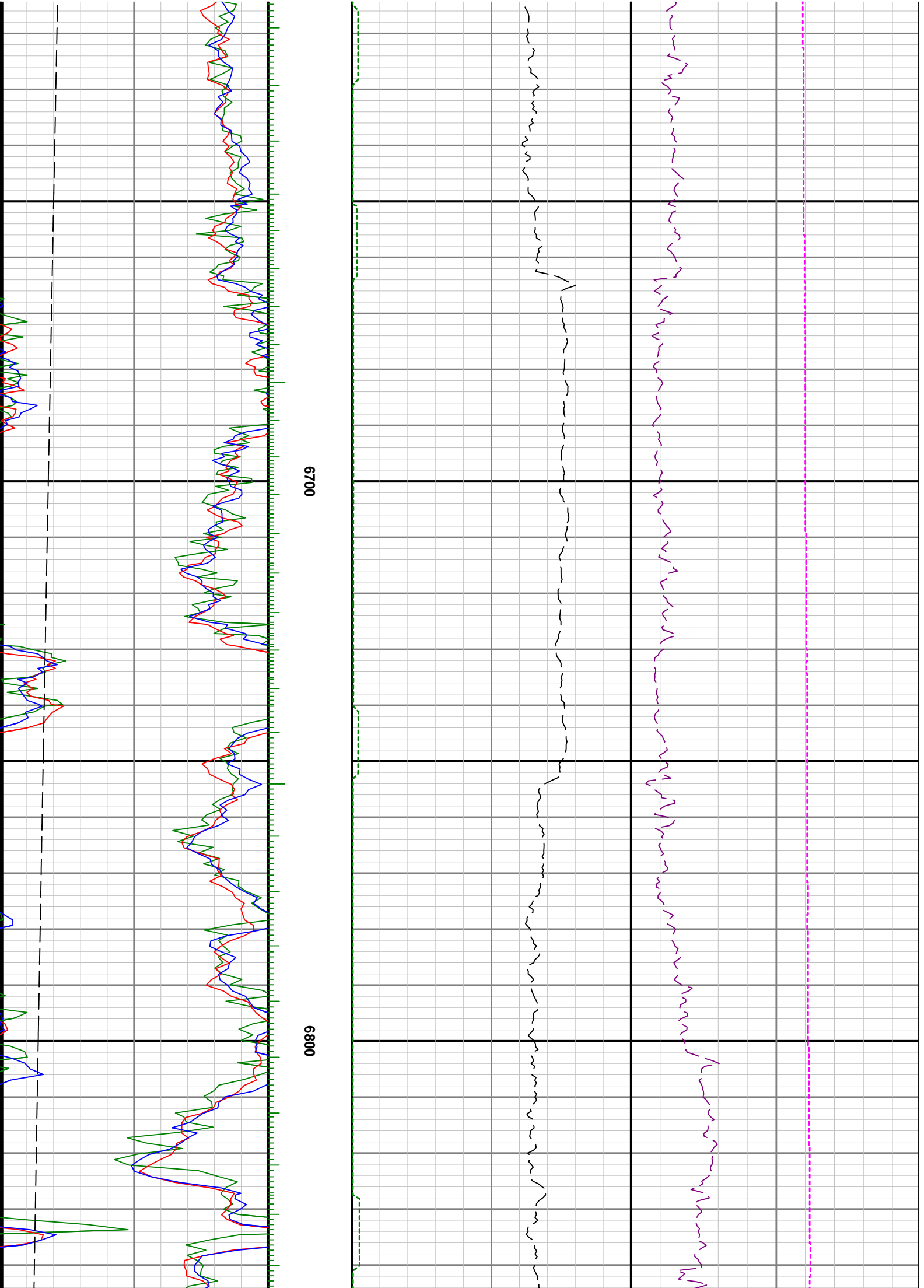


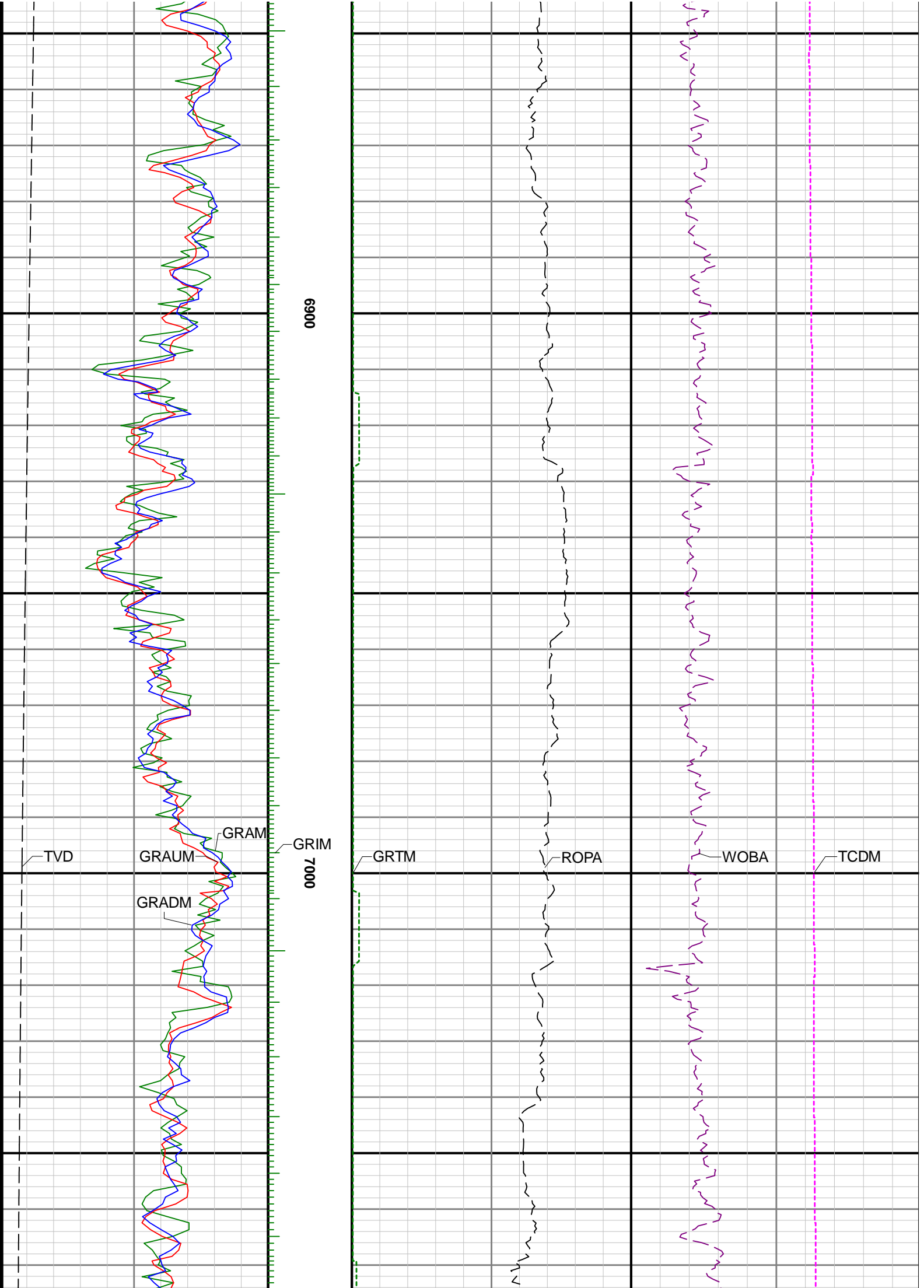


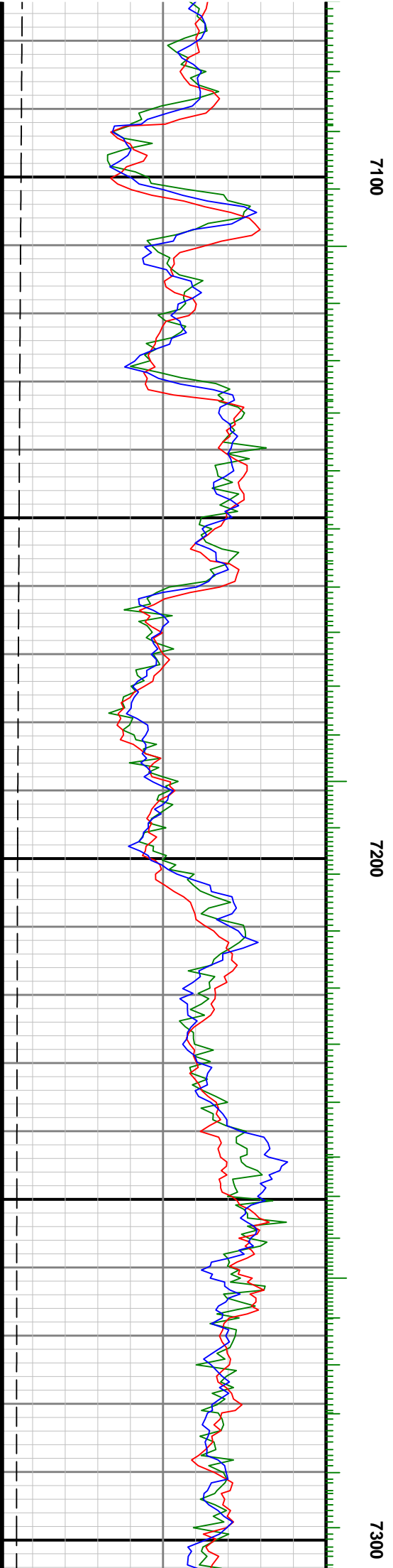
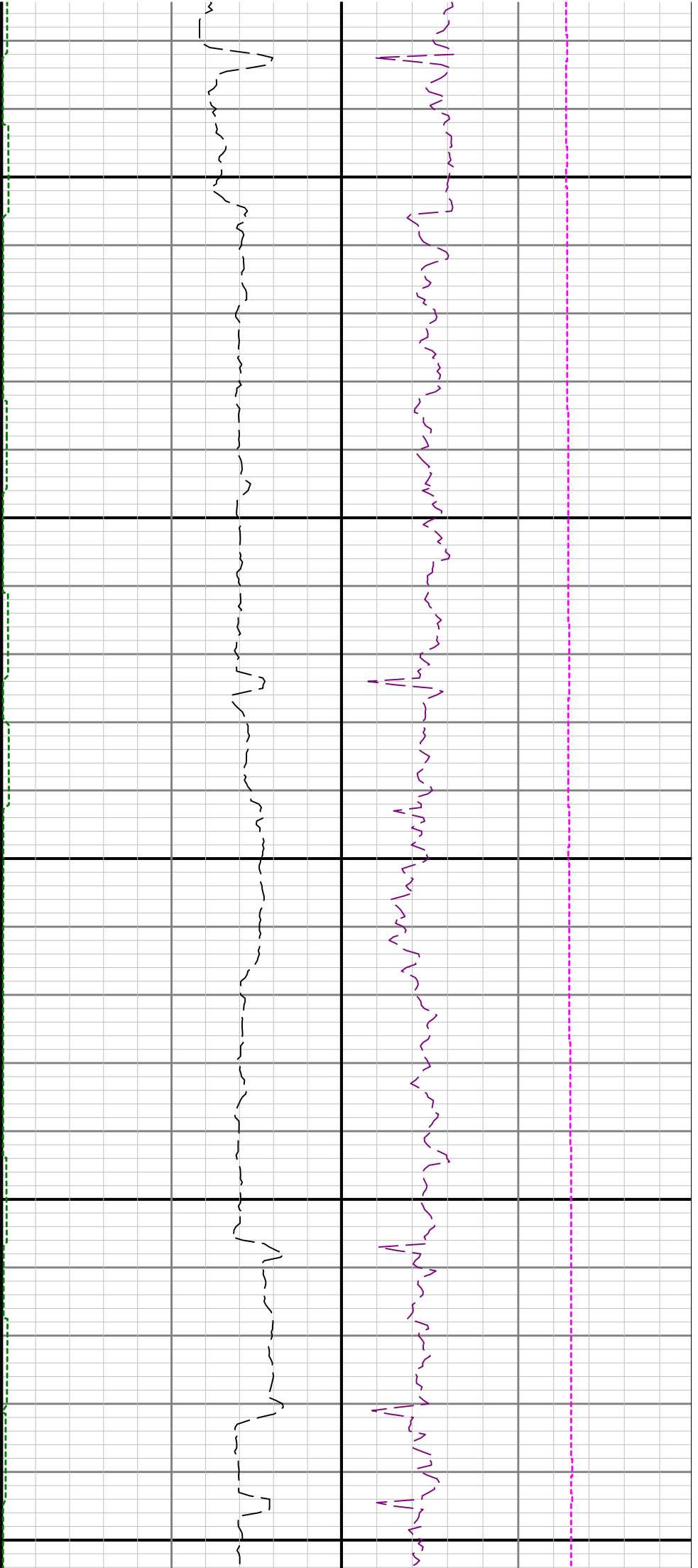


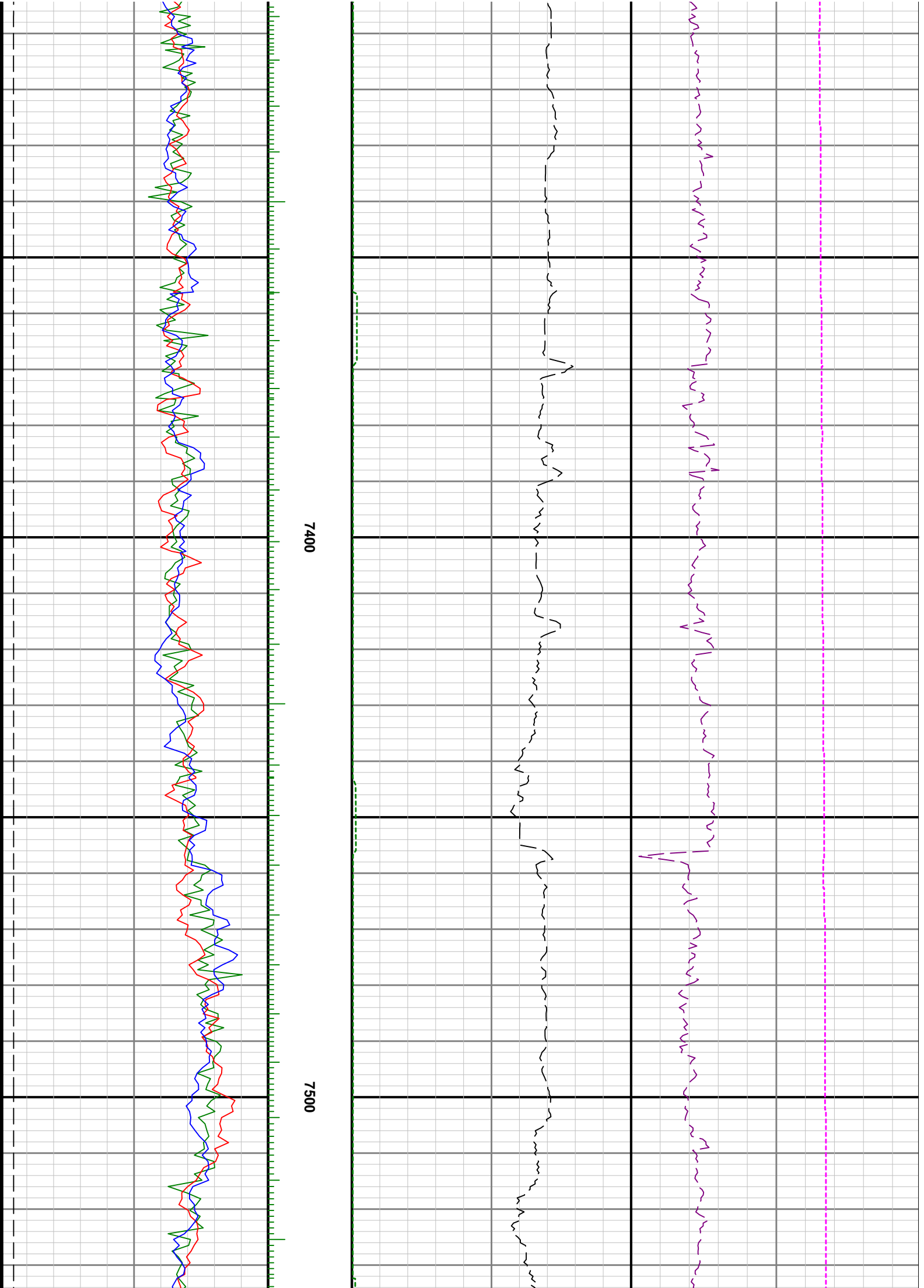


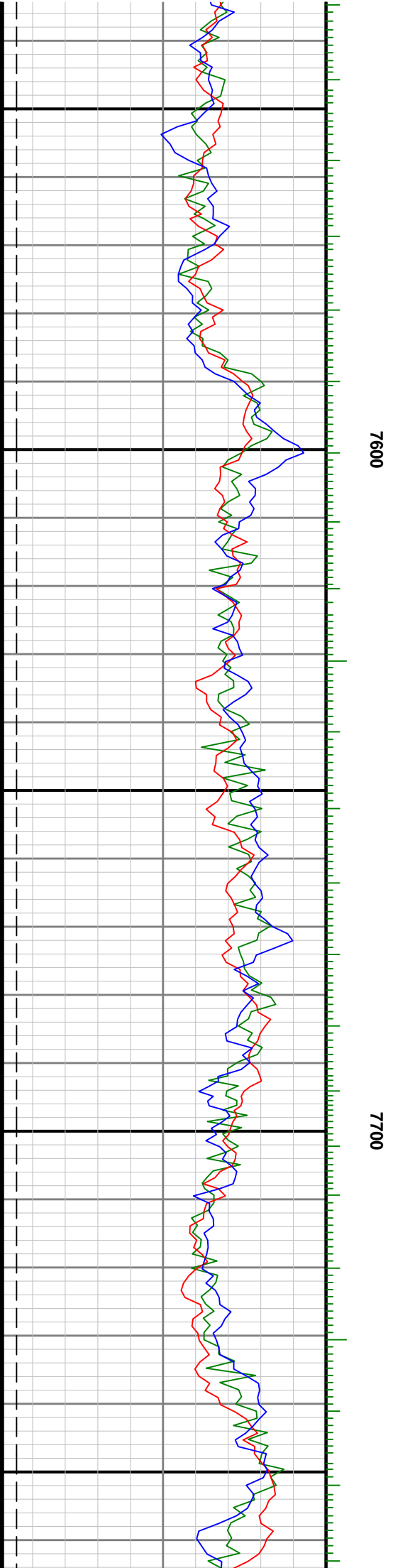
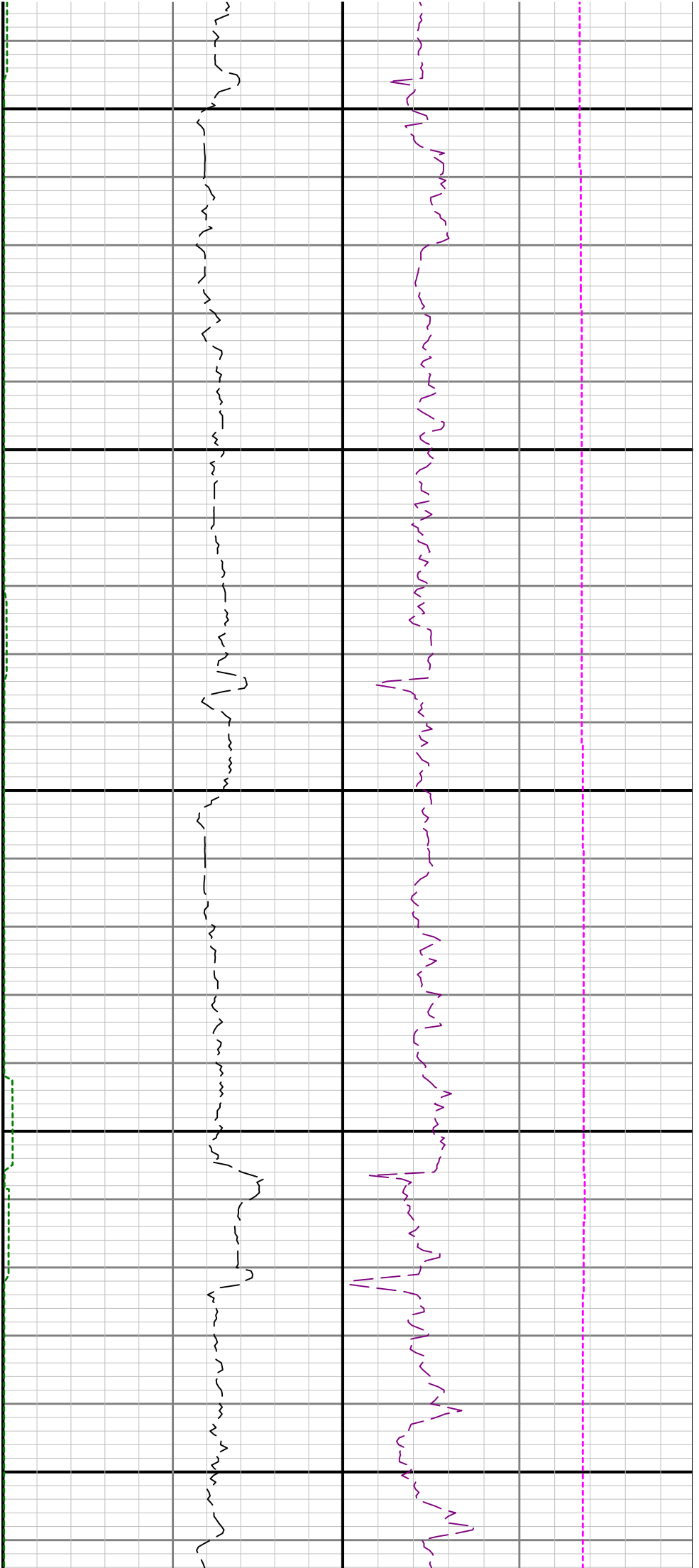


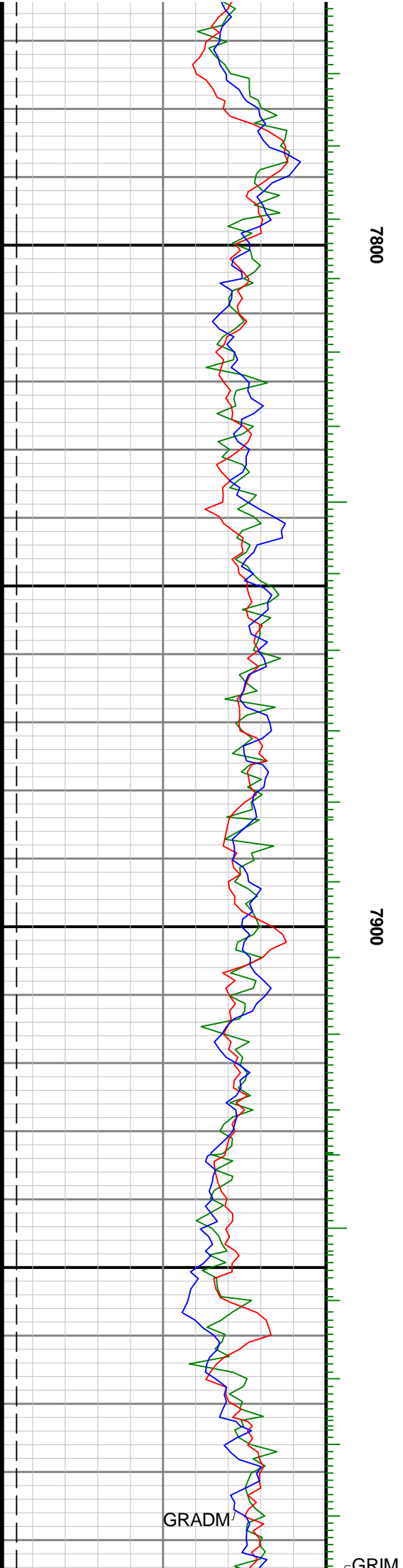
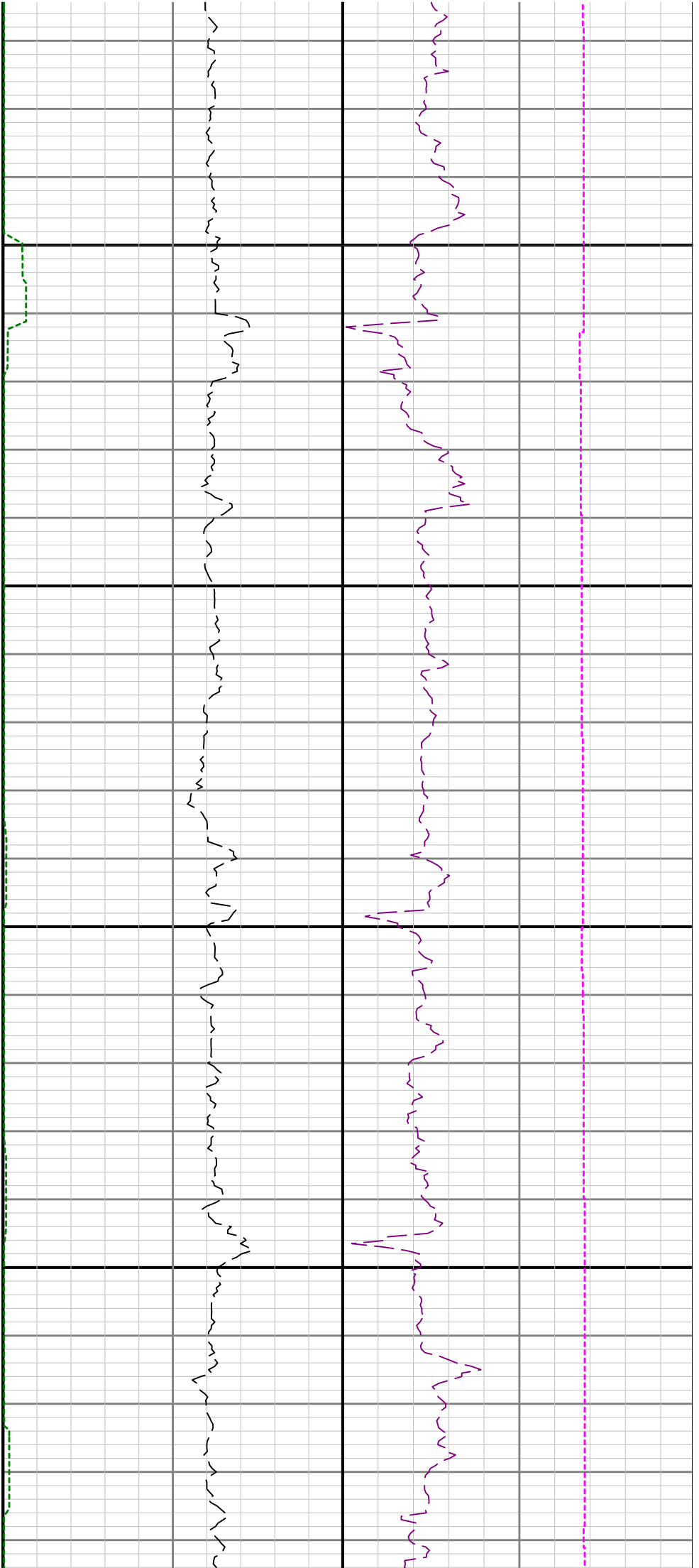


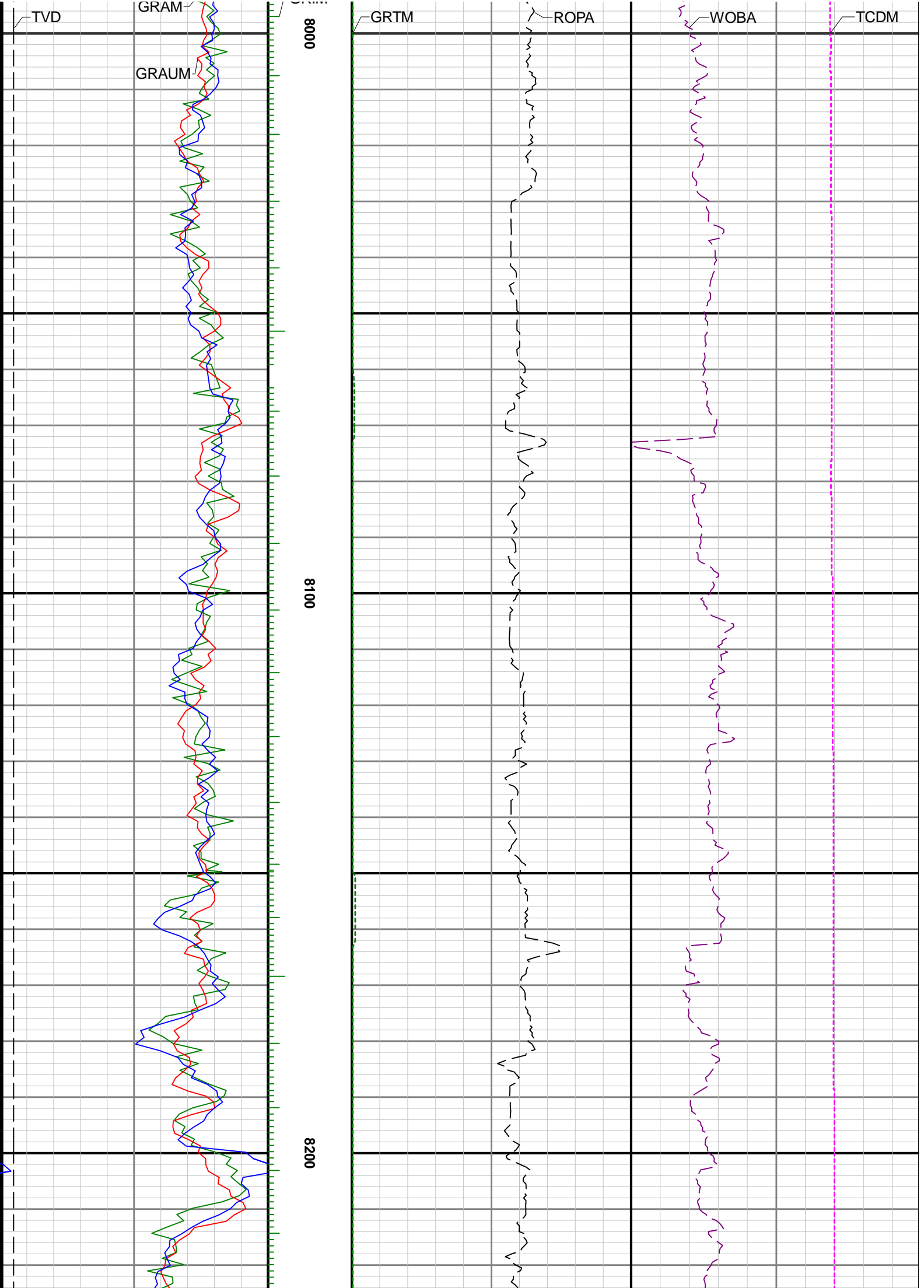


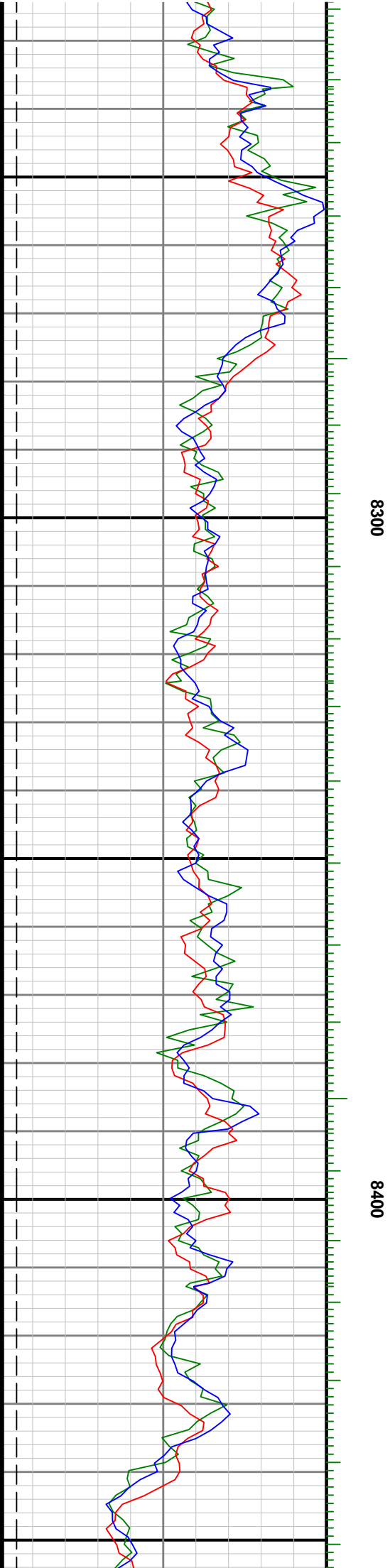
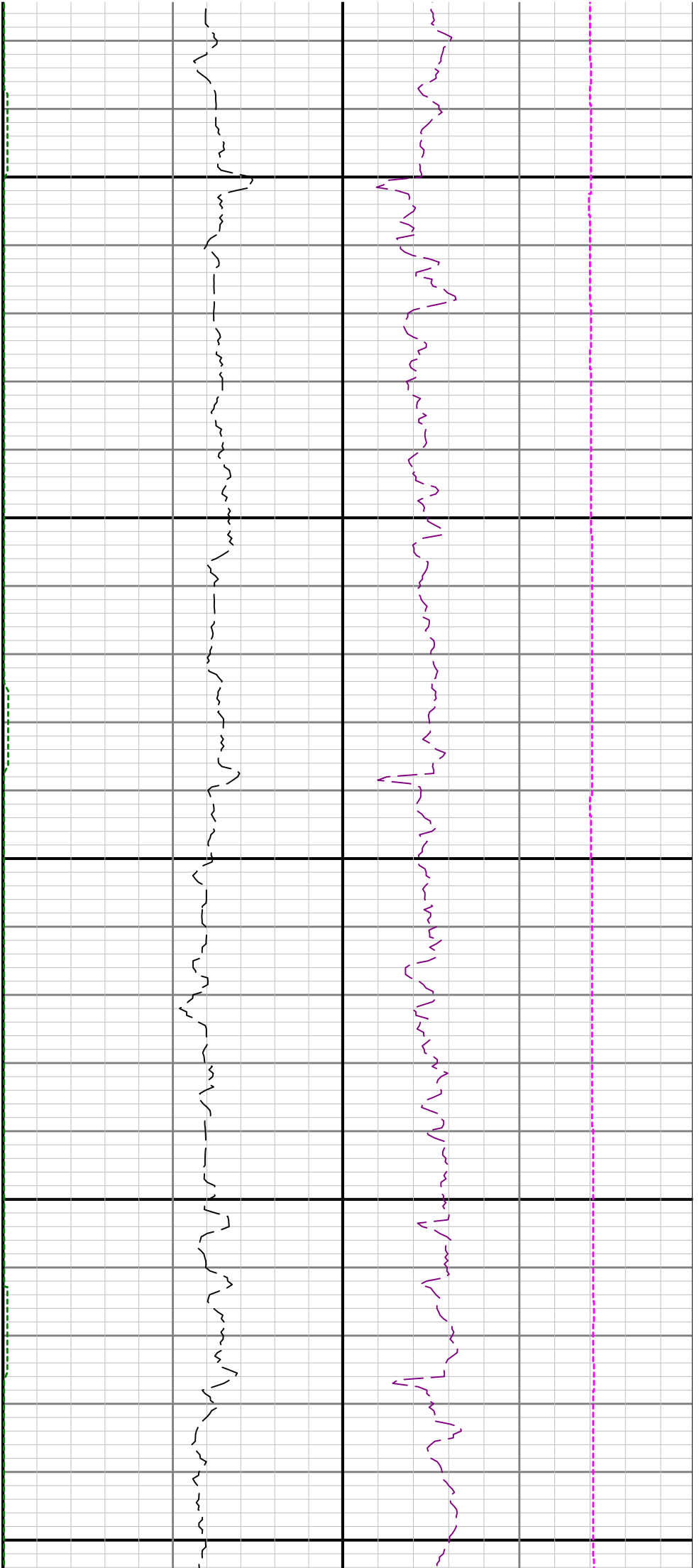


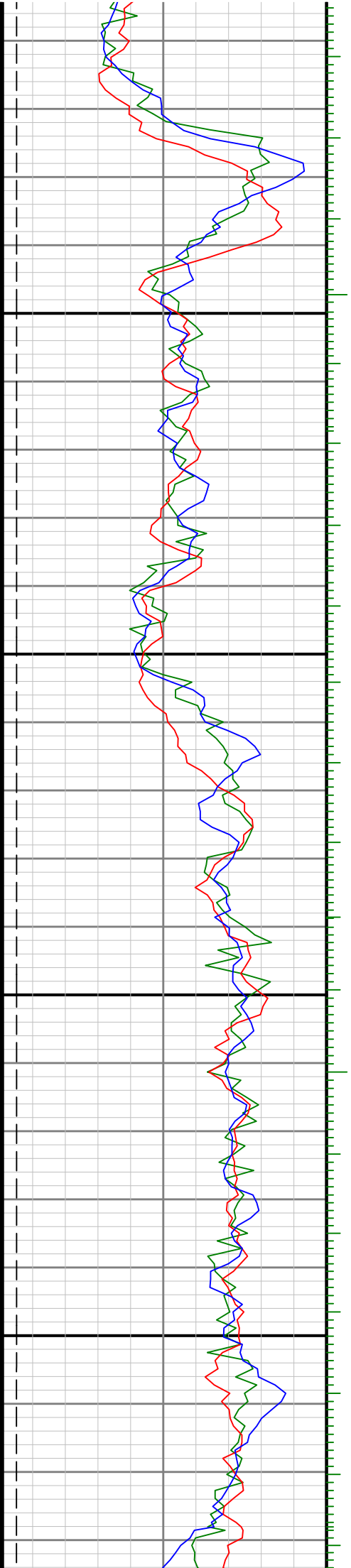








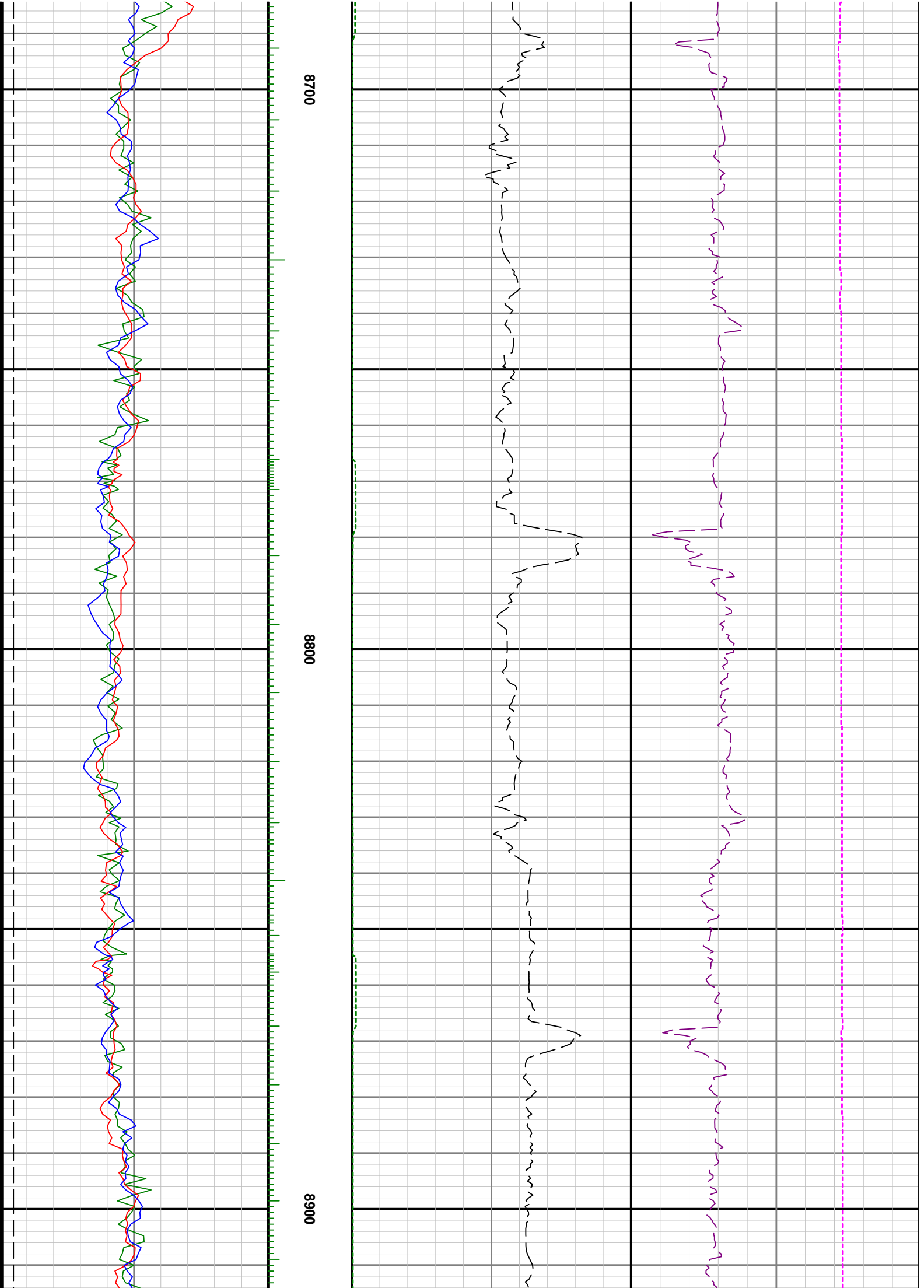


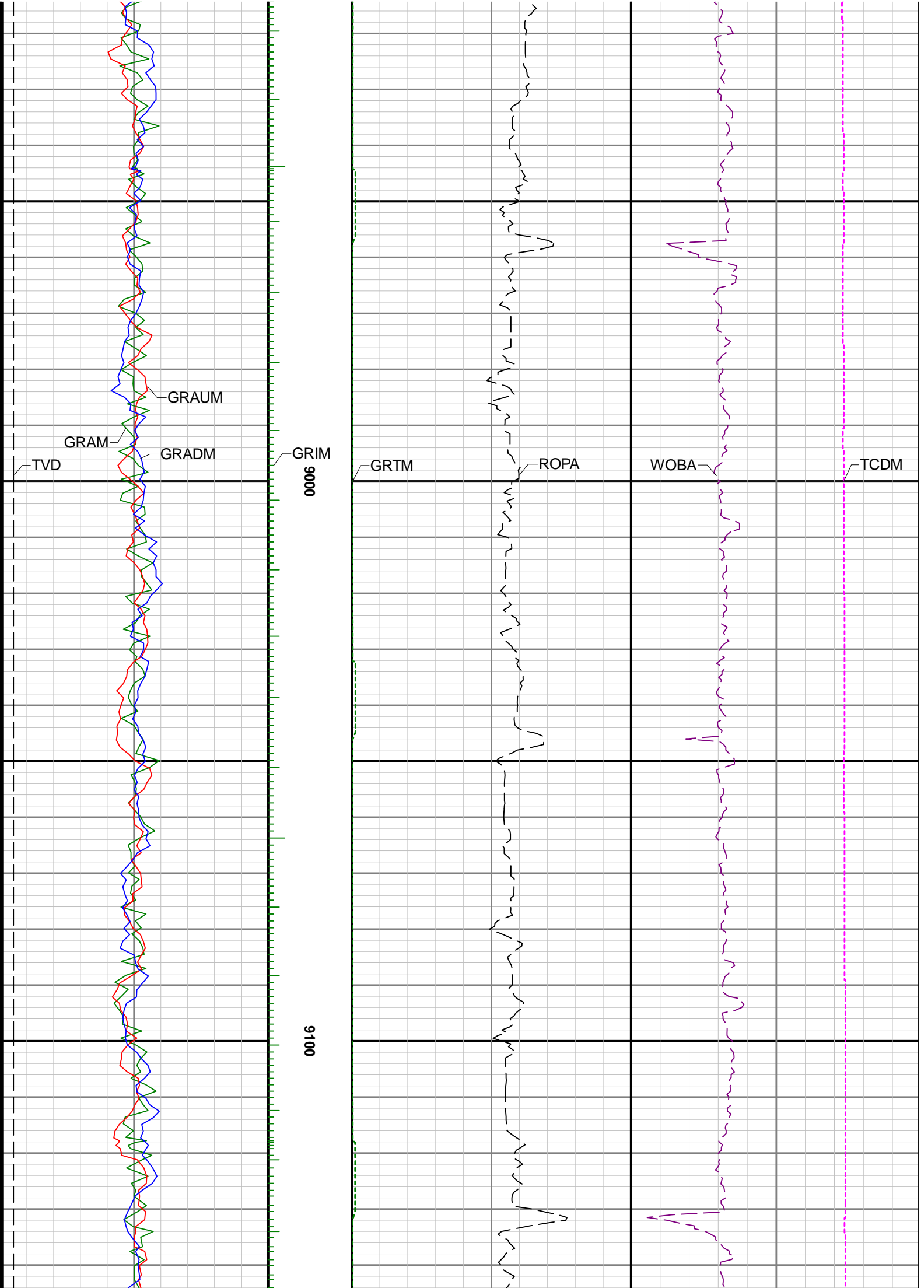


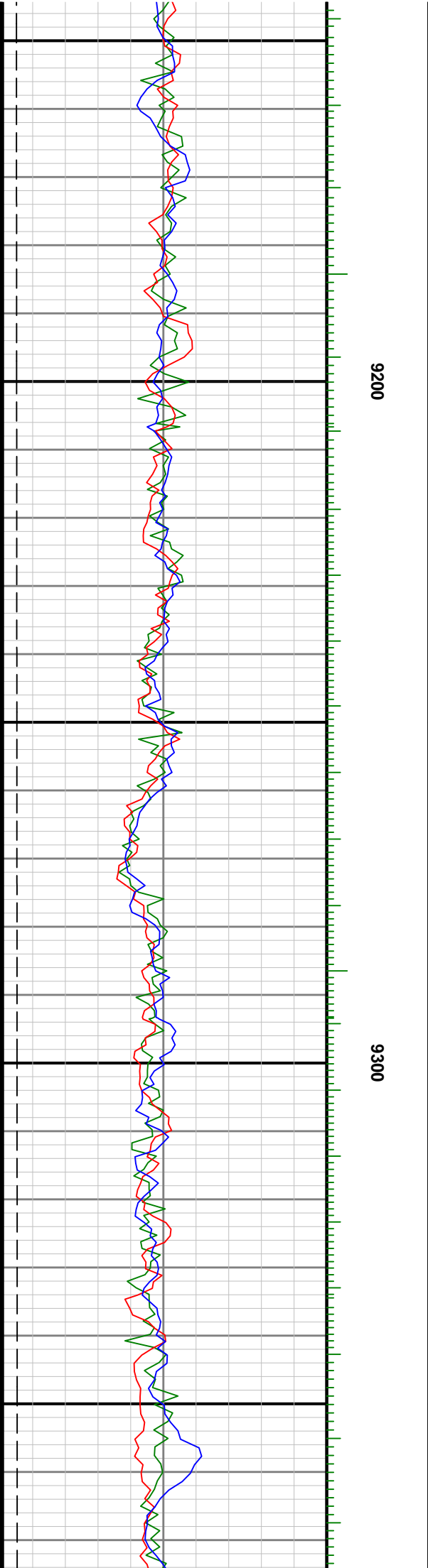
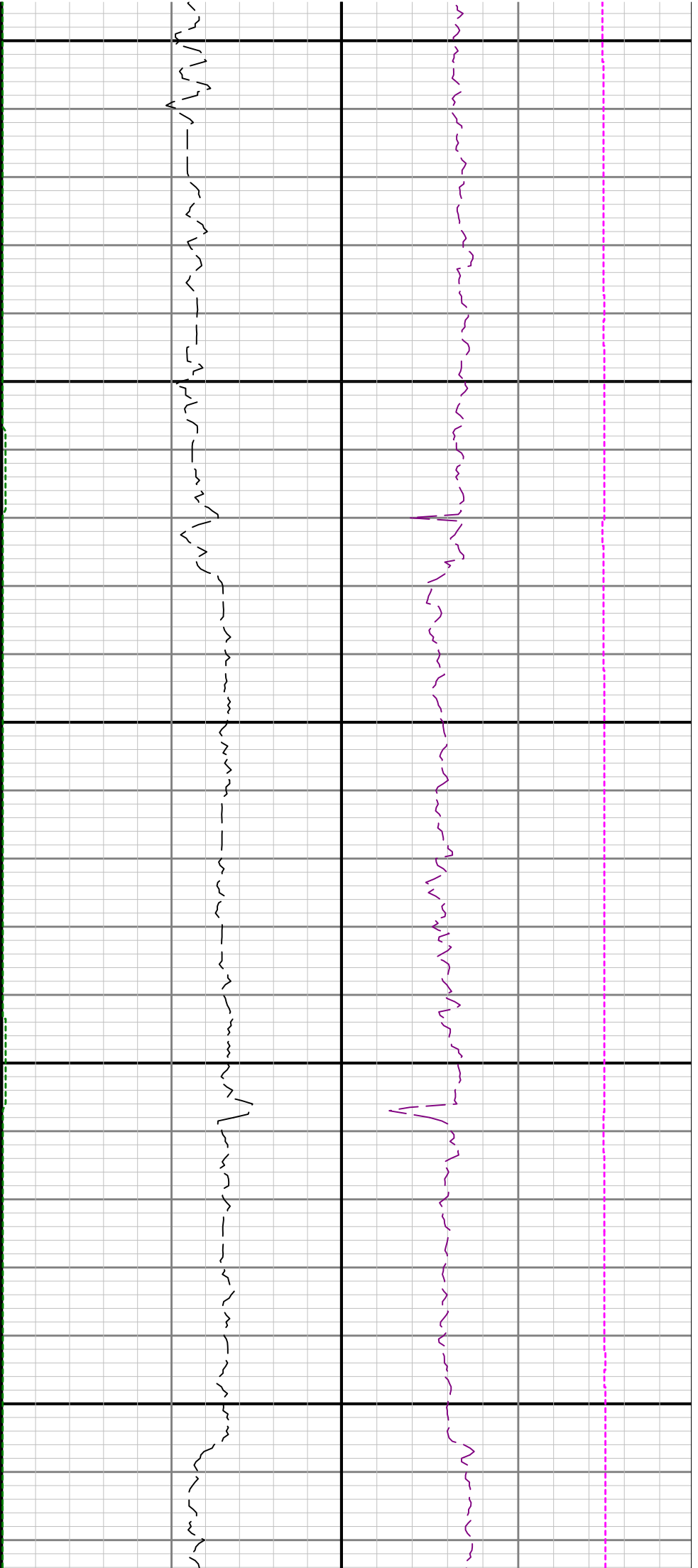
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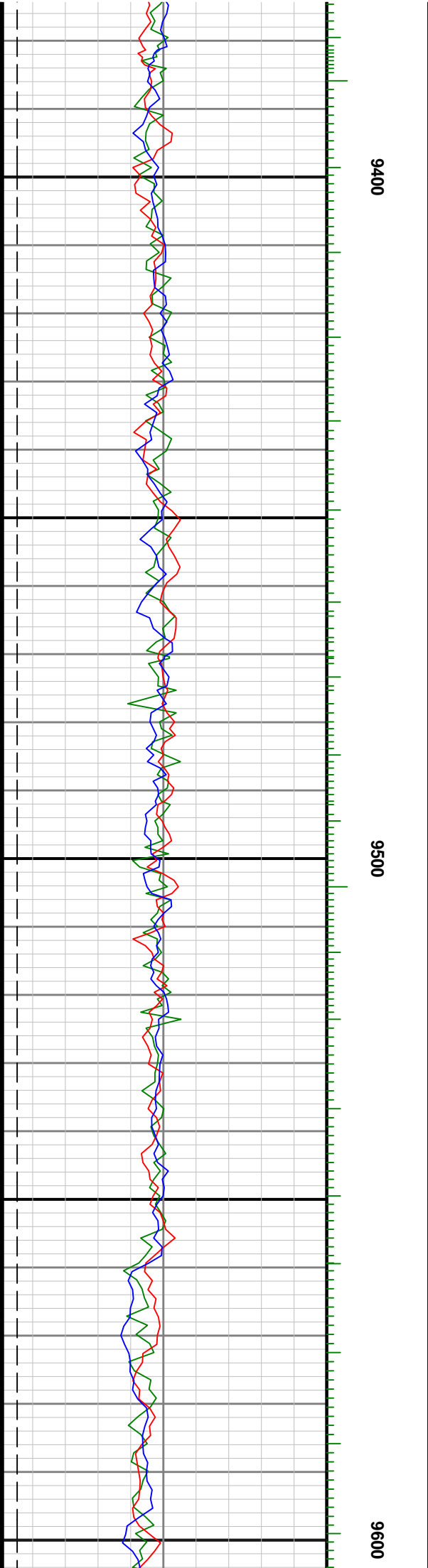
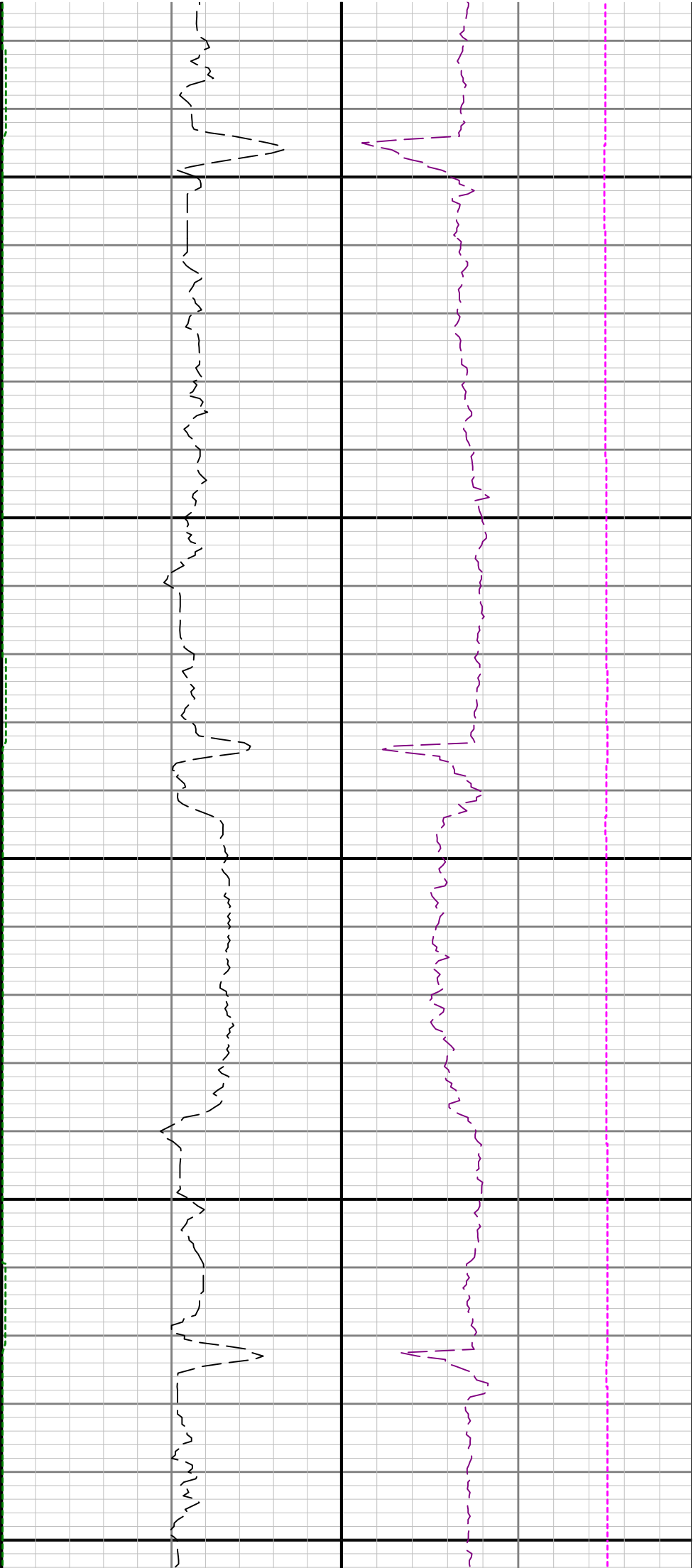
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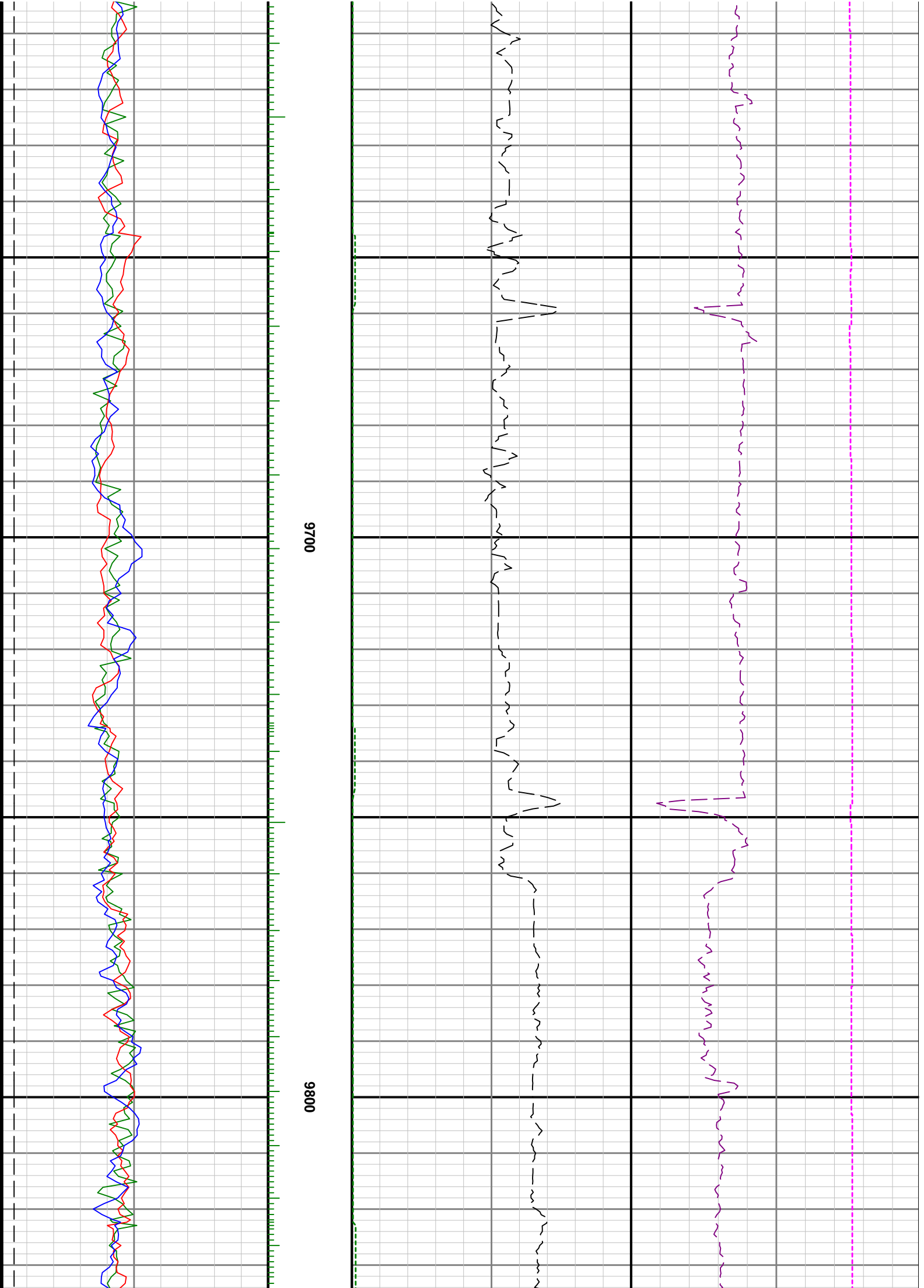


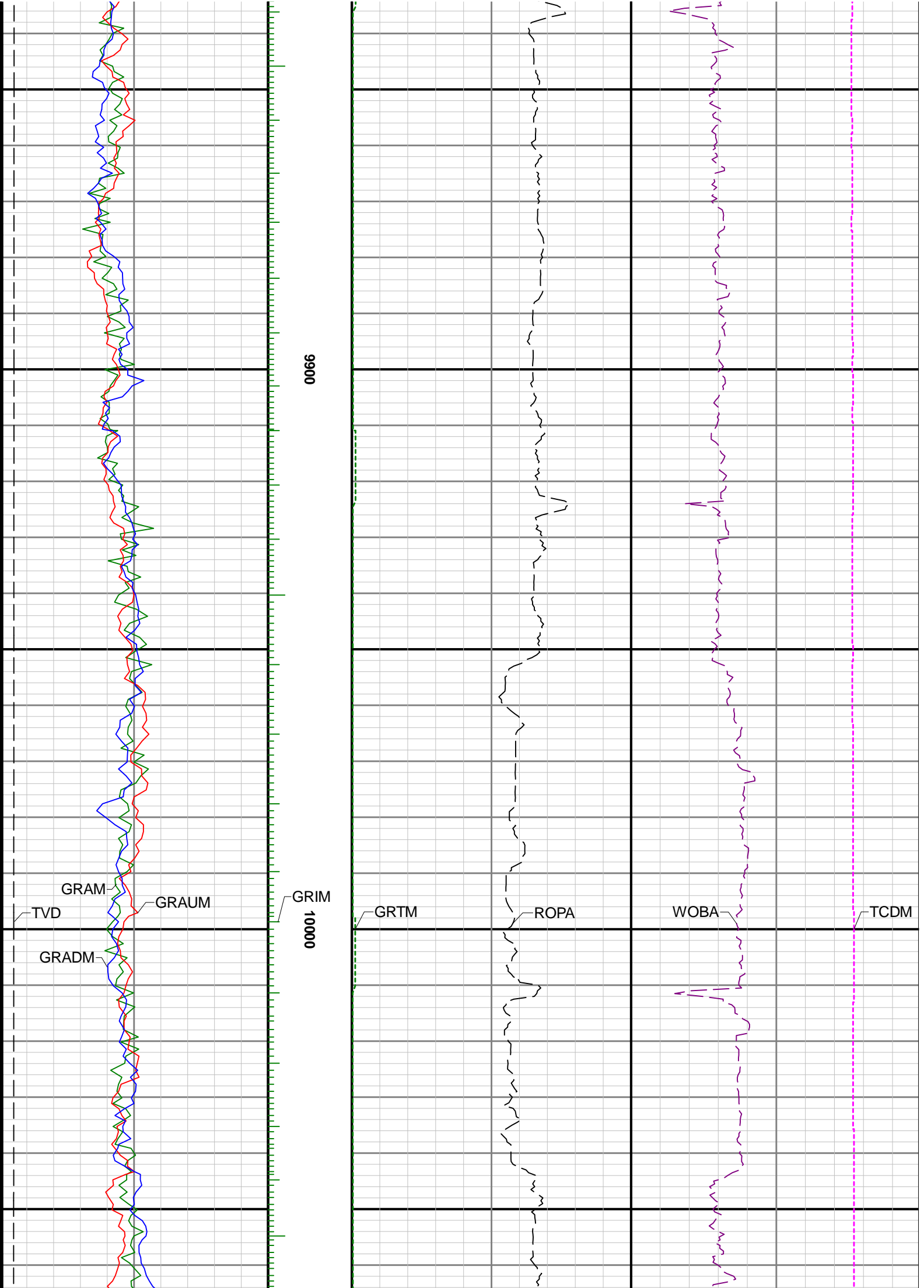


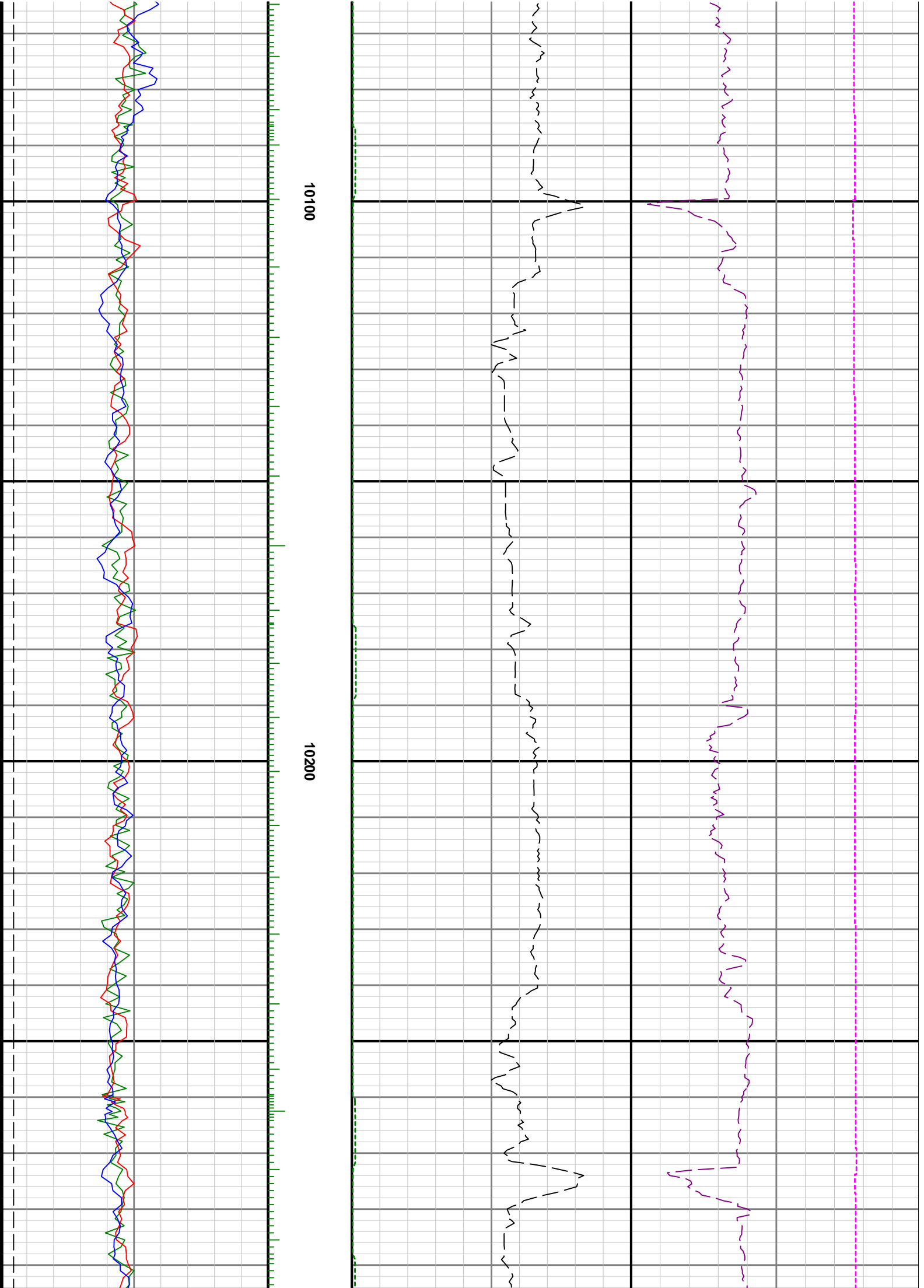


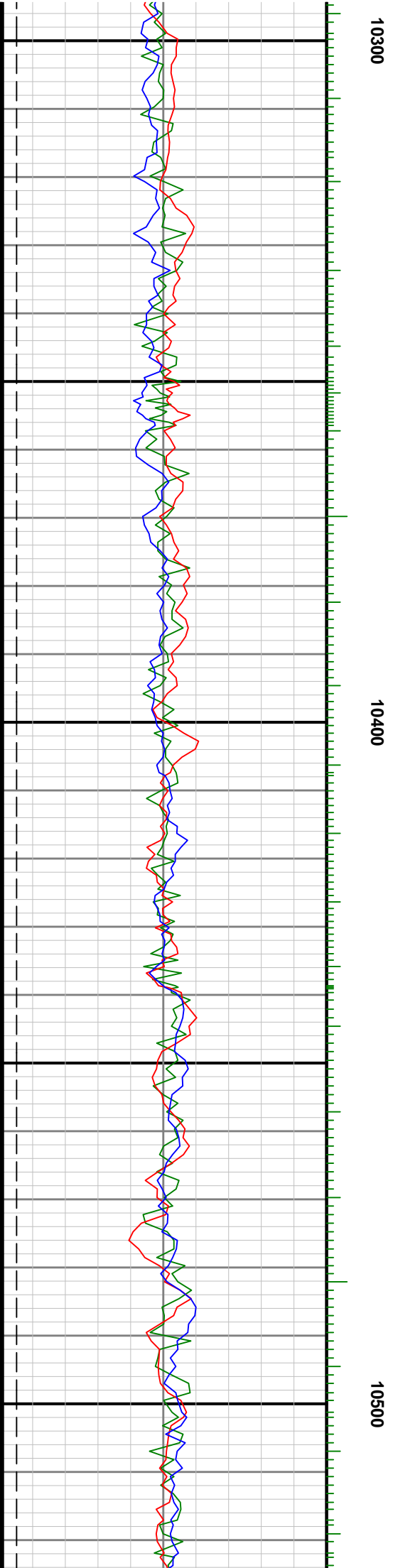
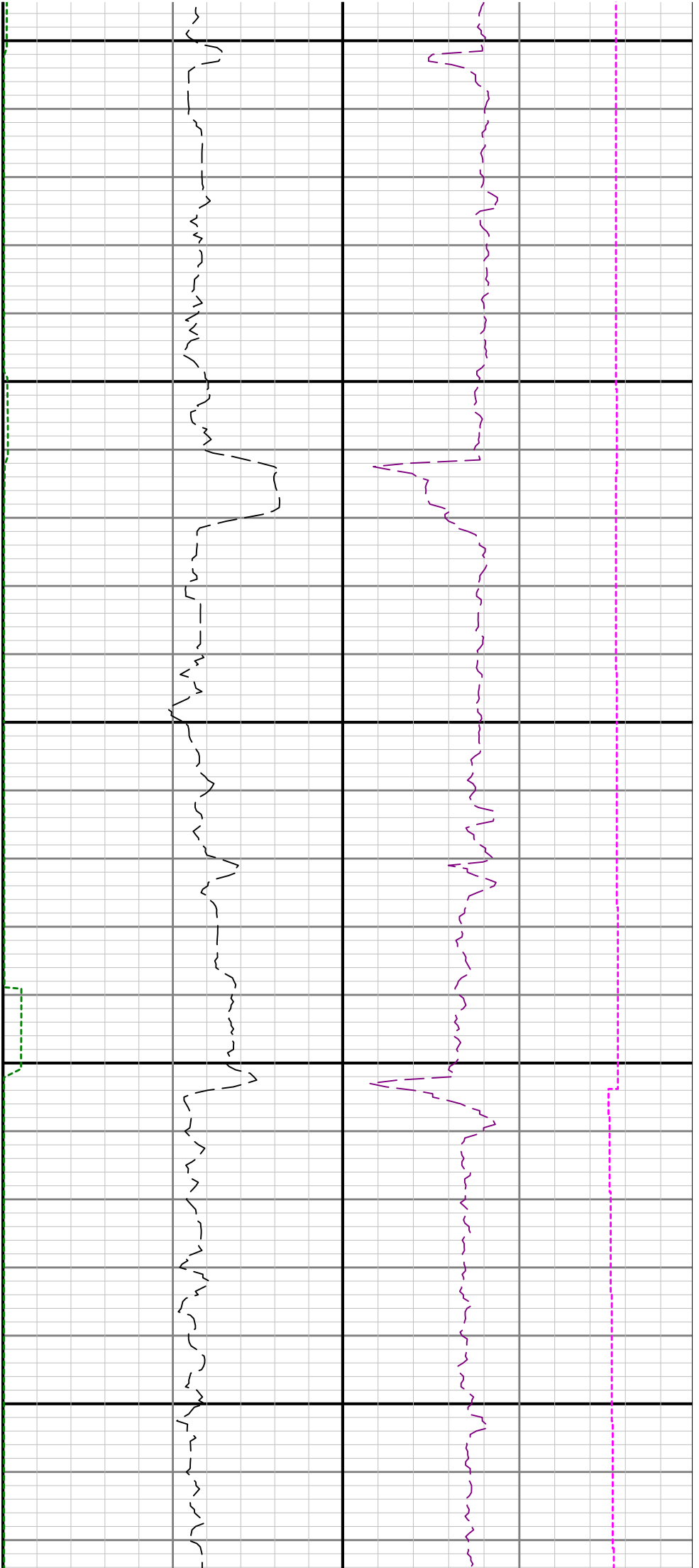


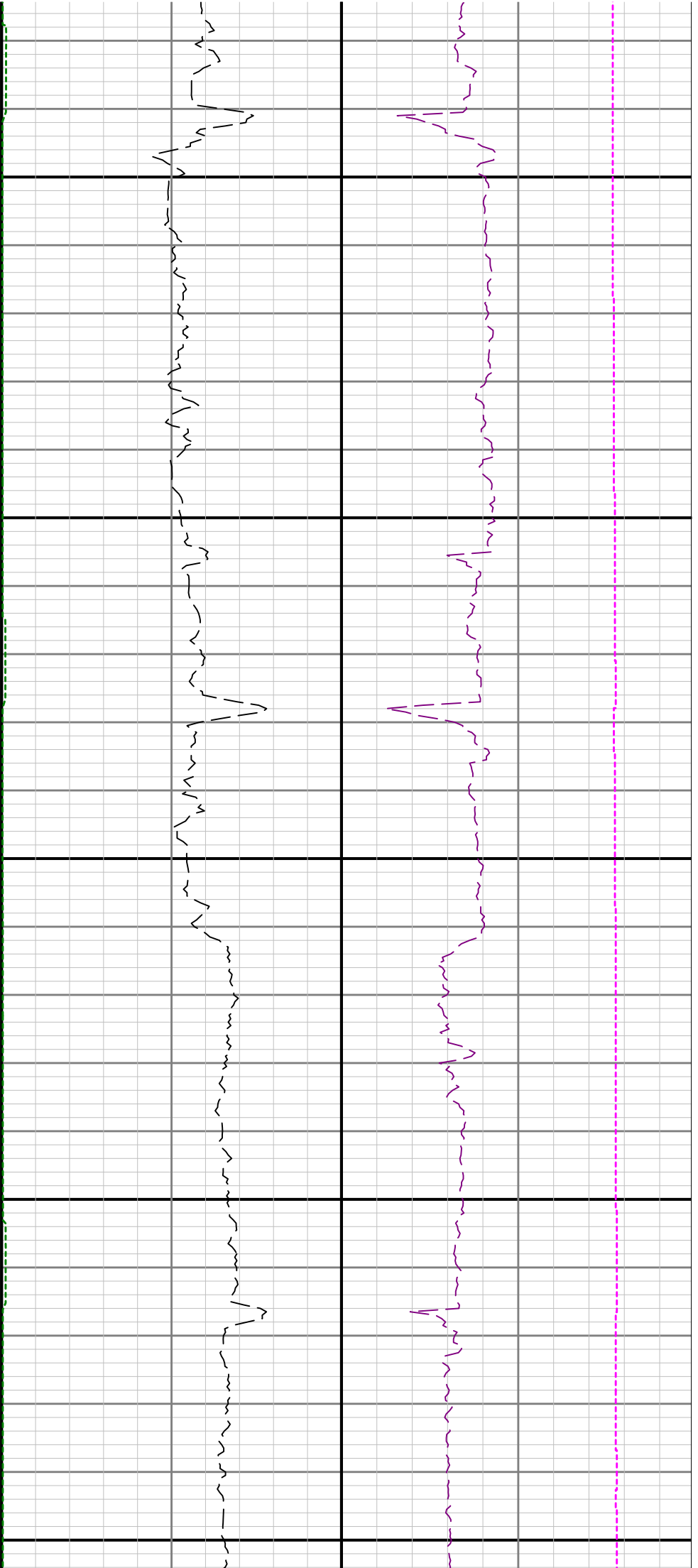












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