



LWD MEMORY LOG

Gamma Ray

Scale: 1:240 Measured Depth	Company: Verdad Resources						
	Well:		BOYD 24-1H				
	Field:		Weld County				
	County:		Weld County		Country: United States		
	Depth Reference:						
Driller's Depth		State:		Colorado			
Status:	Surface Location:			Other Services:			
Final Print		Latitude:		040° 07' 14.167" N			
API No: 05-123-46594-00		Longitude:		104° 30' 03.856" W			
Job ID: 109600970		SEC: 24 TWN: 2N RGE: 64W		Well Bore Survey			
Permanent Datum (P.D.): Mean Sea Level		Elevation:		0.00 ft		Elev. KB: 24.00 ft	
Log Measured From: Rig Floor		Above P.D.		4947.00 ft		Elev. DF: 4947.00 ft	
						Elev. GL: 4923.00 ft	
Dates	Interval Drilled			Magnetic Field Reference			
Date From: 2019-02-23	Top: (ft) 1768.00		Azi Reference North: True		Dip Angle: (deg)		66.61
Date To: 2019-02-28	Bottom: (ft) 17361.00		Total Magnetic Field Strength: (nT)				52088
Spud Date: 2019-02-23			Mag to Reference North Correction: (deg)				8.05
Borehole Record				Casing Record			
Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)	
8.500	1768.00	17361.00	9.625	36.00	24.00	1675.00	
Mud Record							
Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc Az (Start)	Inc Az (End)	
Synthetic Based Mud	1768.00	17361.00	8.500	15593.00	24.94 220.37	90.55 0.76	
Acquisition System							
Baker Hughes Cadence	RT 5.0		Rig: H&P 290		Contractor: Helmerich & Payne Drilling Co		
Prior Studio	5.0.8260.3		District: RMD		Unit: RMA		

© 2018 Baker Hughes, a GE company, LLC – All rights reserved. Baker Hughes, a GE company, LLC and its affiliates (“BHGE”) provides this information on an “as is” basis for general information purposes and believes it to be accurate as of the date of publication. BHGE does not make any representation as to the accuracy or completeness of the information and makes no warranties of any kind, specific, implied or oral, to the fullest extent permissible by law, including those of merchantability and fitness for a particular purpose or use. BHGE hereby disclaims any and all liability for any direct, indirect, consequential or special damages, claims for lost profits, or third party claims arising from the use of the information, whether a claim is asserted in contract, tort, or otherwise. The BHGE logo is a trademark of Baker Hughes, a GE company, LLC. GE and the GE monogram are trademarks of General Electric Company used under trademark license.

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	8.500	PDC	3.00	AutoTrak Curve	1768.00	17349.00	1768.00	17361.00	2019-02-23 17:45	2019-02-27 06:52	81.55

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Emuobosan Onosu	2019-02-21	2019-02-27						

Mud Properties Record

Date / Time	Run No.	Measured Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2019-02-23 07:00	1	1768.00	Synthetic Based Mud	9.5	77	N/A	N/A	73/27	Active Pit	33000	0.00
2019-02-24 05:46	1	5117.00	Synthetic Based Mud	9.5	50	N/A	N/A	73/27	Active Pit	34000	0.00
2019-02-25 04:59	1	9730.00	Synthetic Based Mud	9.7	52	N/A	N/A	71/29	Active Pit	38000	0.00
2019-02-25 16:15	1	12000.00	Synthetic Based Mud	9.7	45	N/A	N/A	71/29	Active Pit	30000	0.00
2019-02-26 04:59	1	14100.00	Synthetic Based Mud	9.7	48	N/A	N/A	71/29	Active Pit	34000	0.00

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	AutoTrak Curve Steering Unit	14178989	Near Bit Inclination	5.93	6.75	7.000	4.330
1	AutoTrak Curve Steering Unit	14178989	Near Bit VSS	5.93	6.75	7.000	4.330
1	AutoTrak Curve MWD	12558532	Gamma (single)	2.76	12.92	7.000	3.250
1	AutoTrak Curve MWD	12558532	Directional (mag)	12.28	22.44	7.000	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
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

Comments

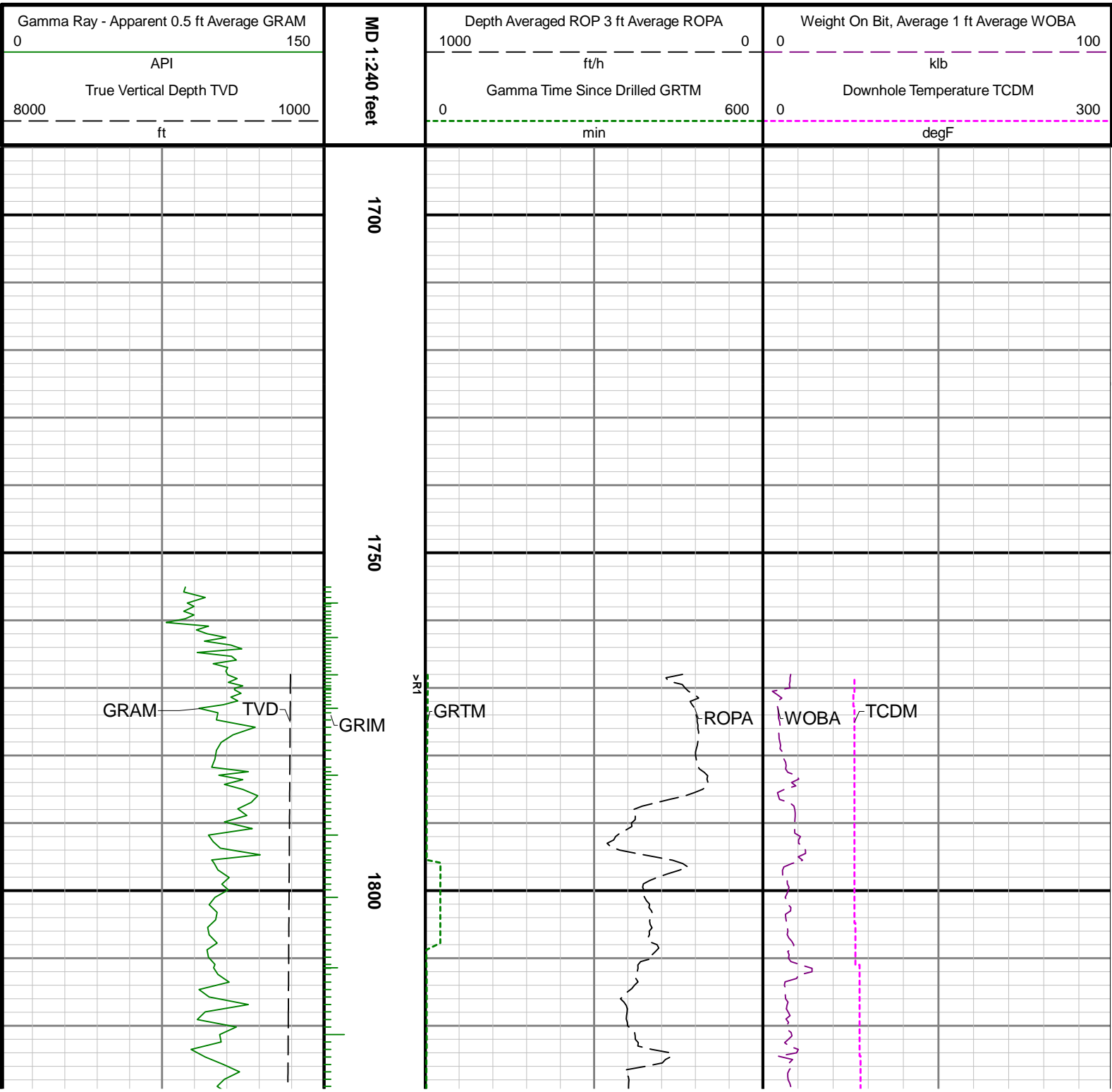
- 1
- Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
- 2
- Baker Hughes Run 2 utilized 6 3/4 inch Navigamma services (Gamma Ray and Directional) to log the interval from 1768 to 17361 feet MD (1725 to 6778 feet TVD).

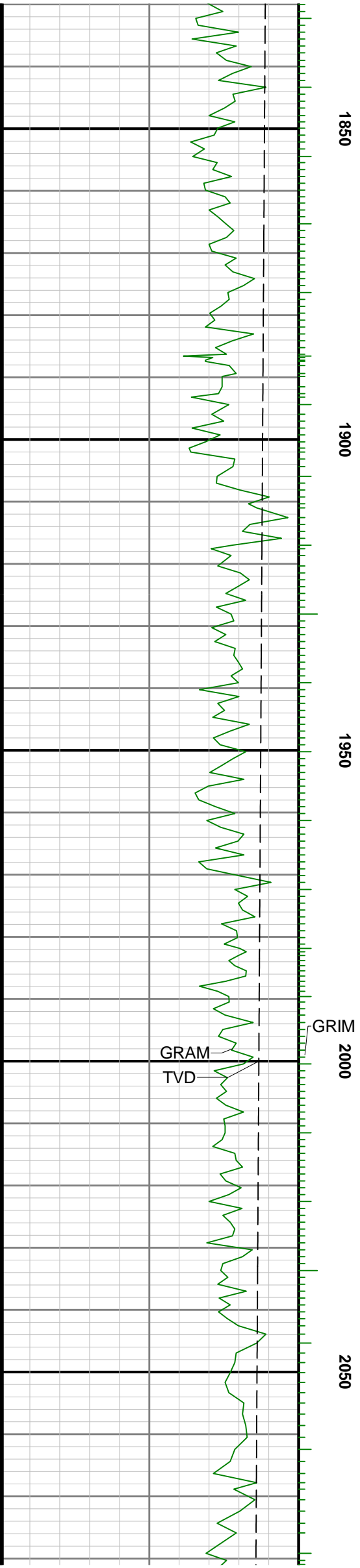
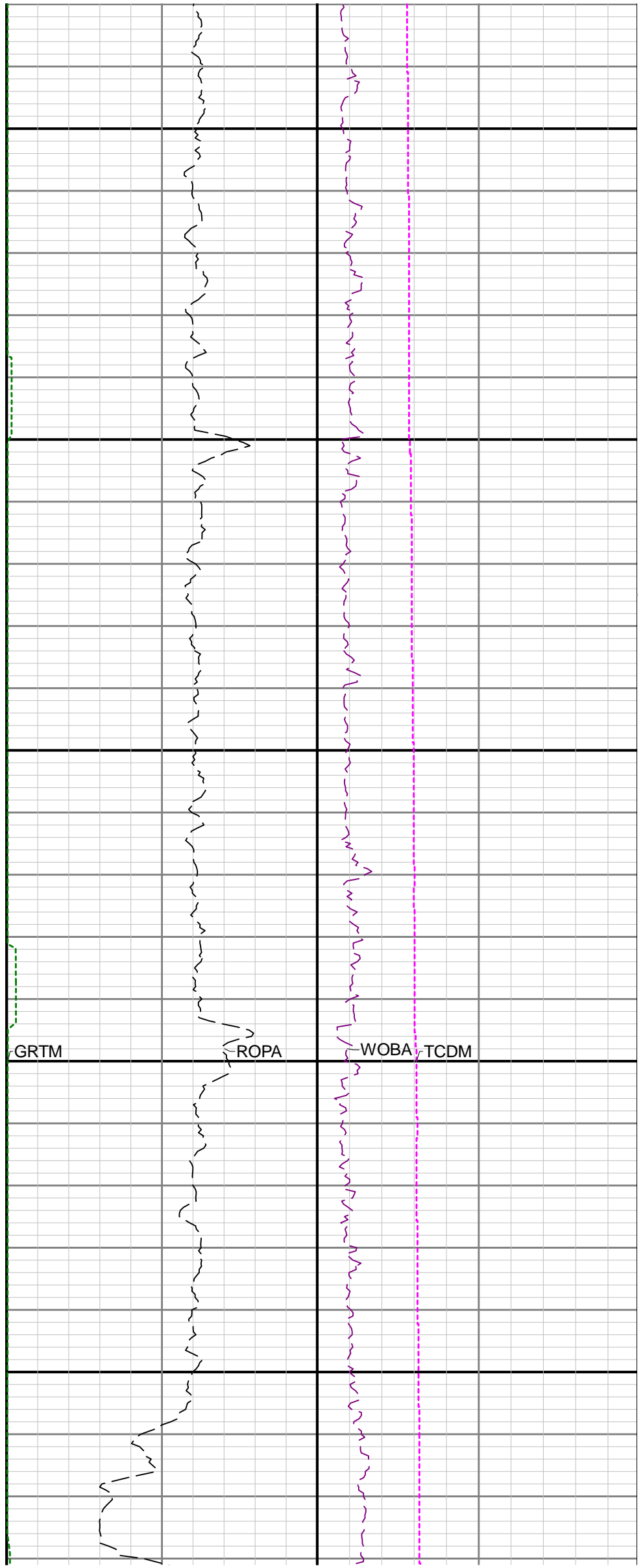
Remarks

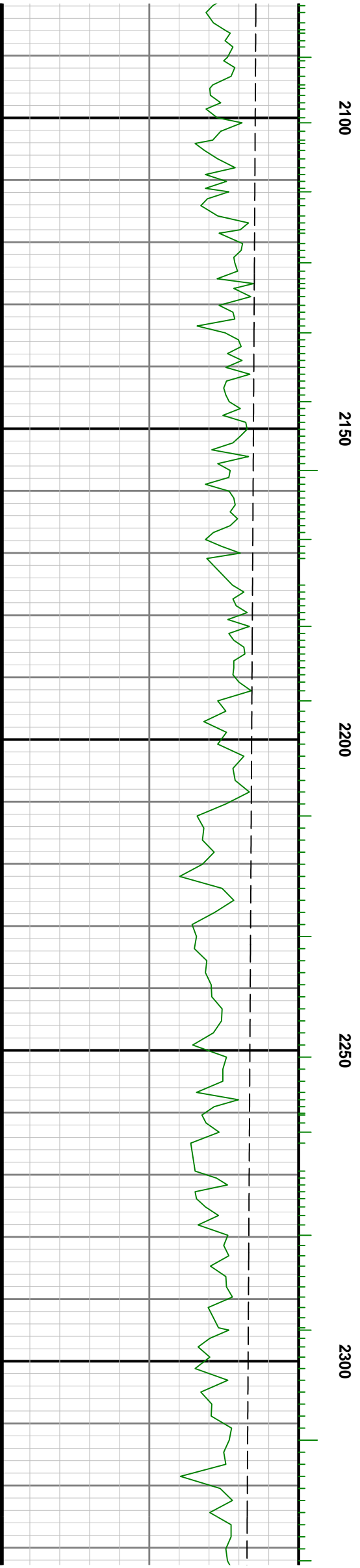
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	17350.00	8.500	1	The interval from 17349 to 17361 feet MD (6778 feet TVD) was not logged due to sensor to bit offset at Section TD.

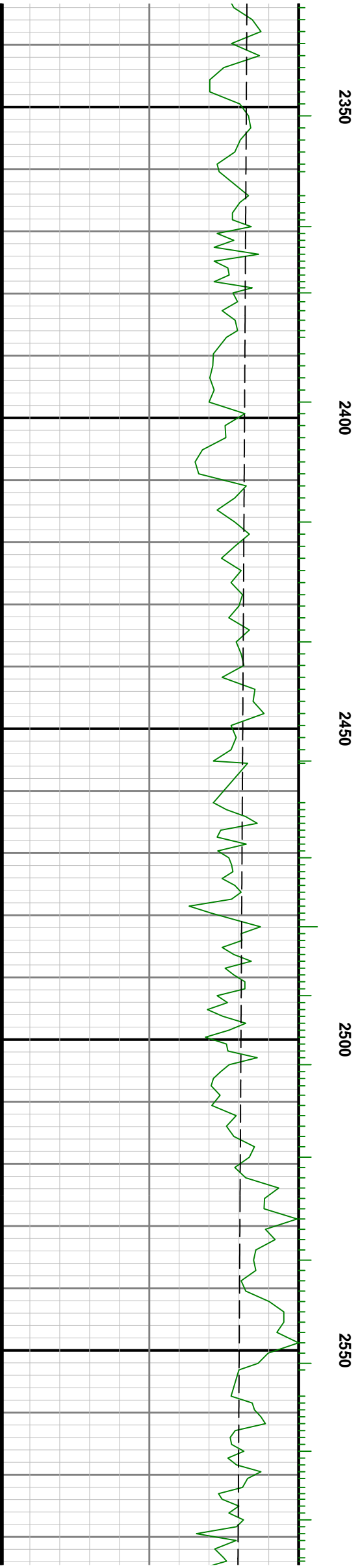
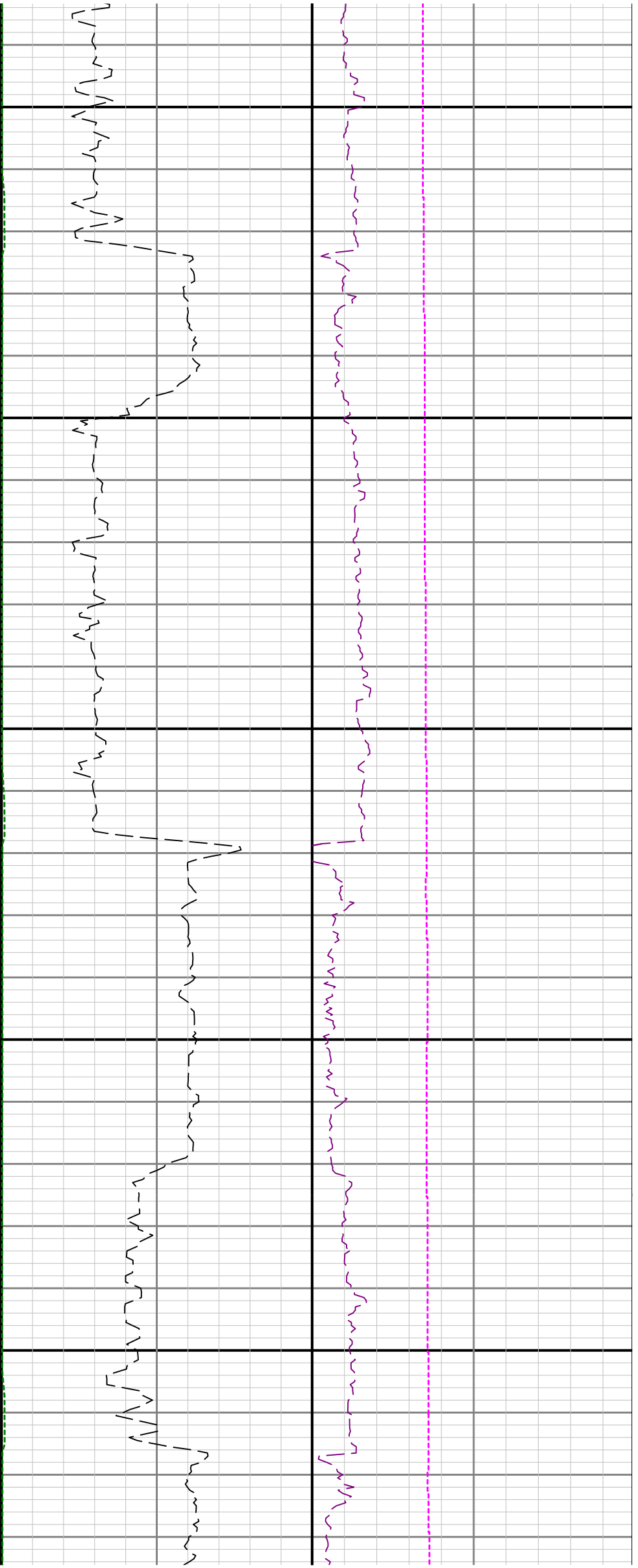
Curve Mnemonics

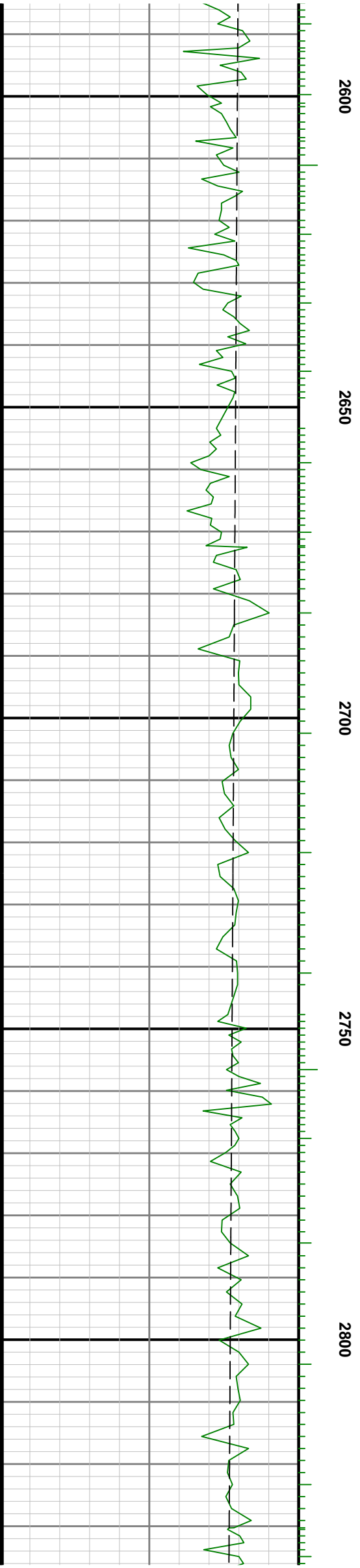
Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAM	Gamma Ray - Apparent - Memory 0.5 ft Average	API
GRIM	Gamma Ray - Data Point Indicator - Memory	unitless
GRTM	Gamma Ray - Time Since Drilled - Memory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

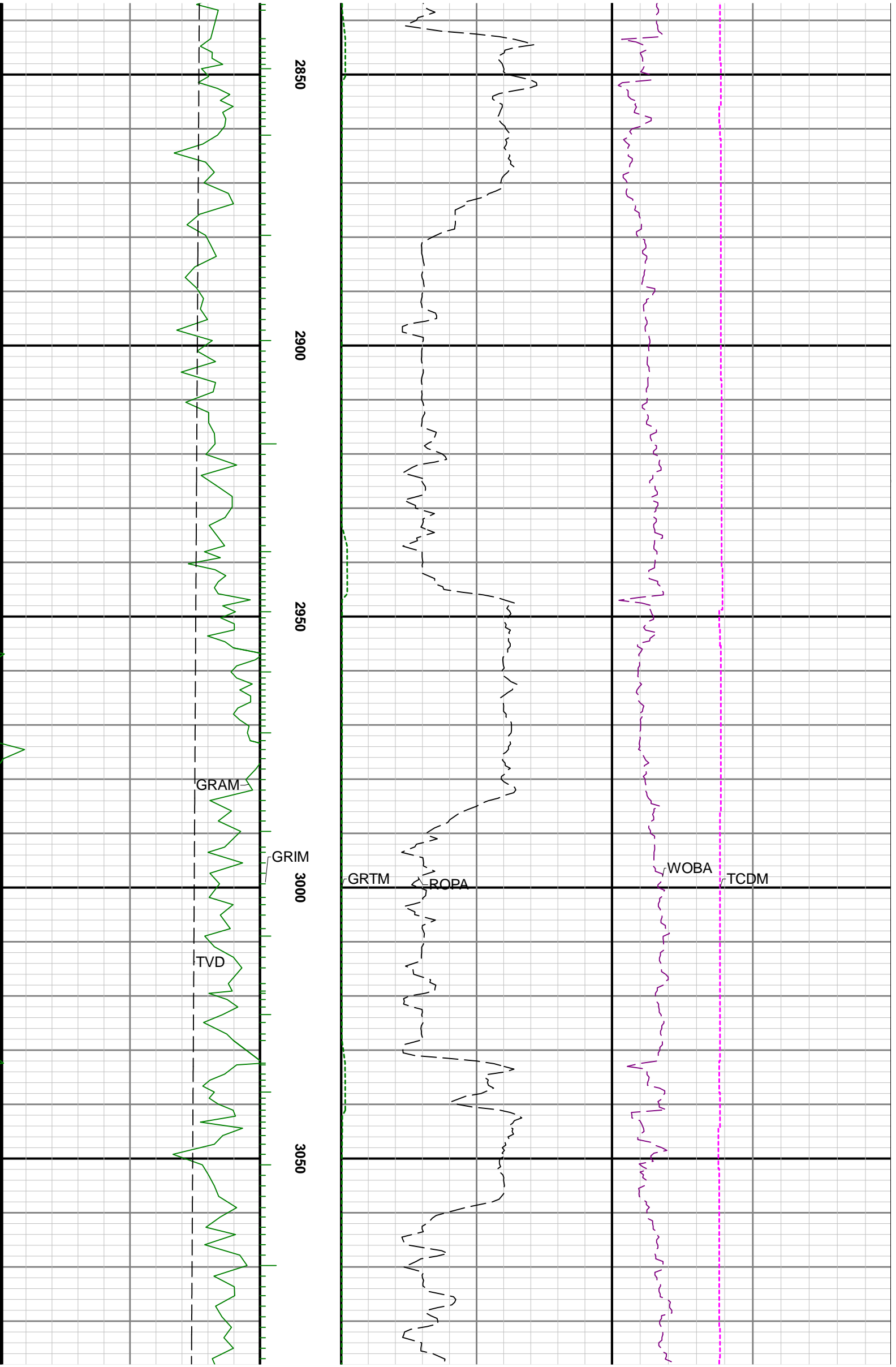






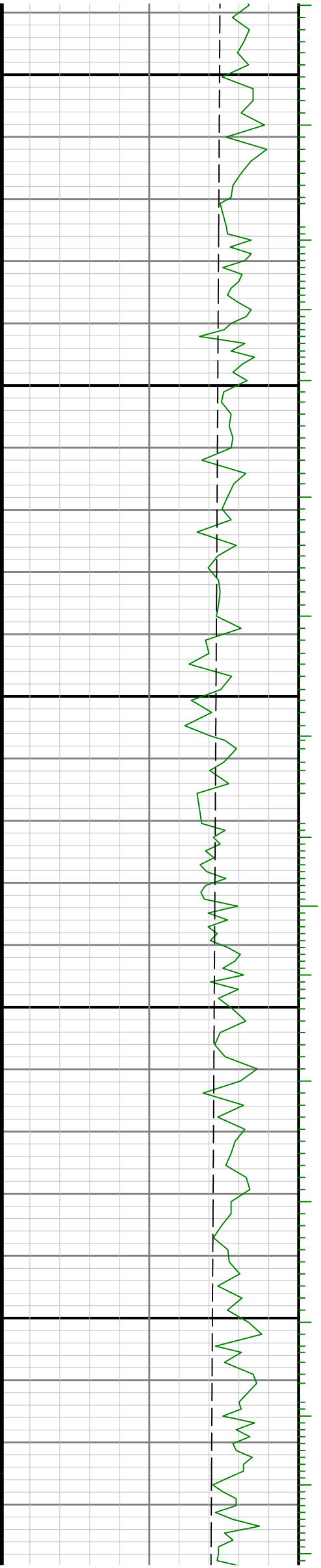


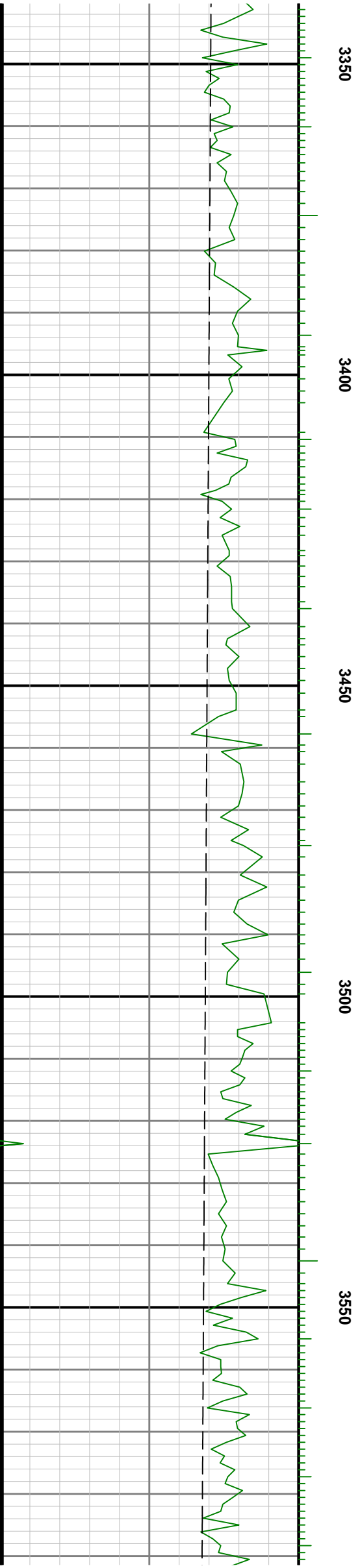
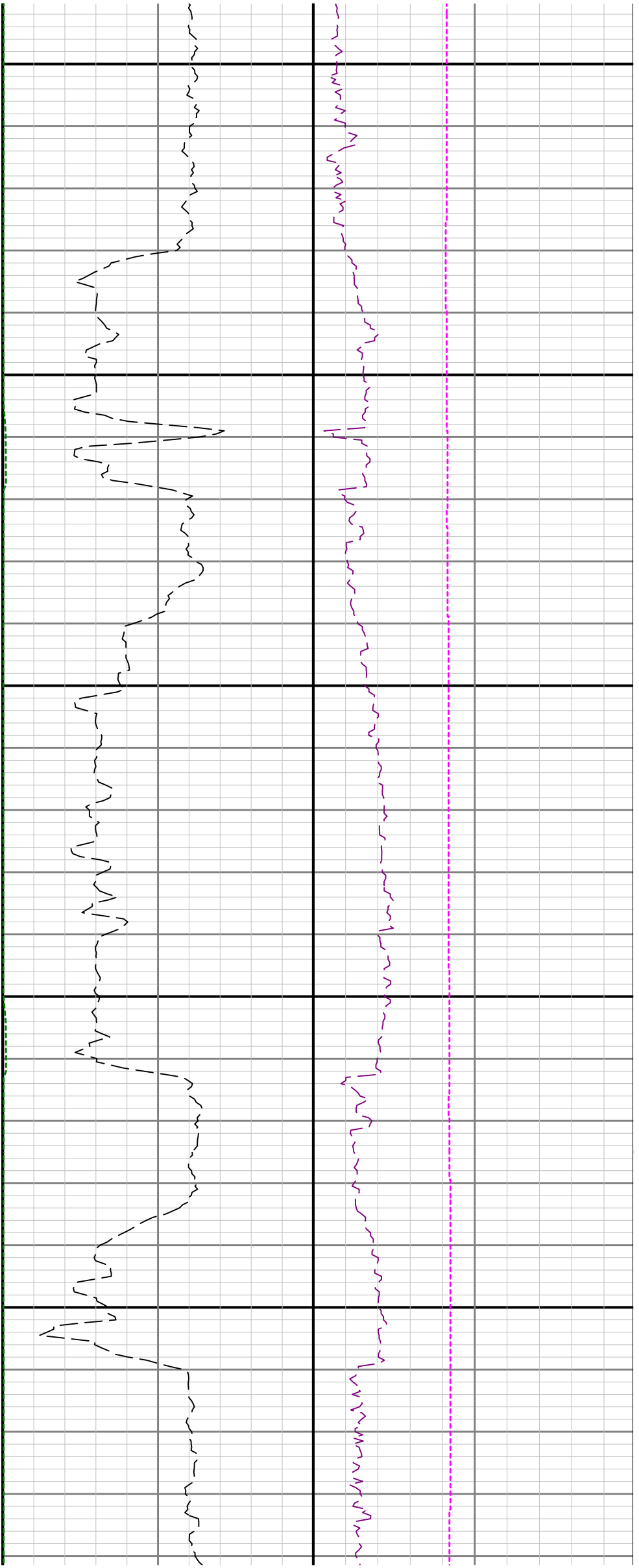


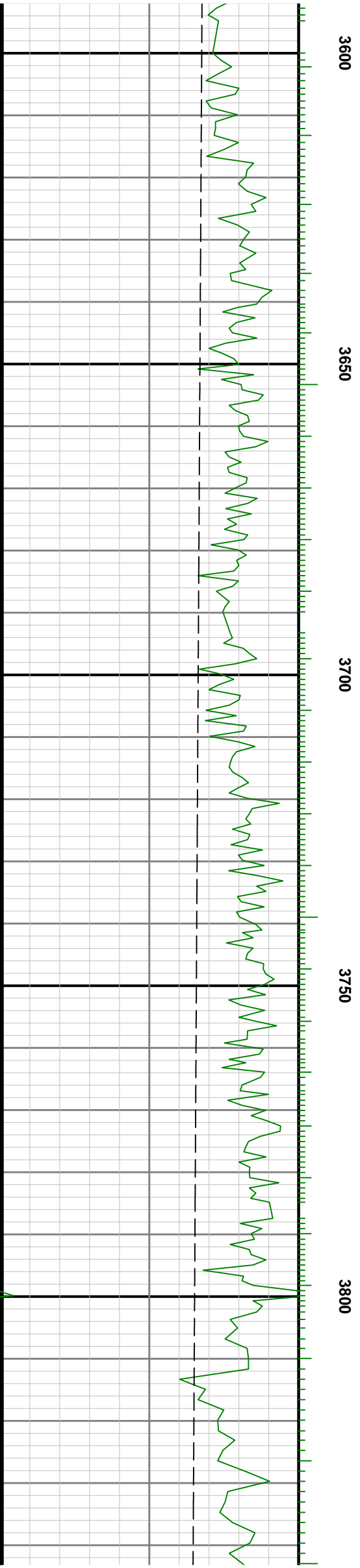
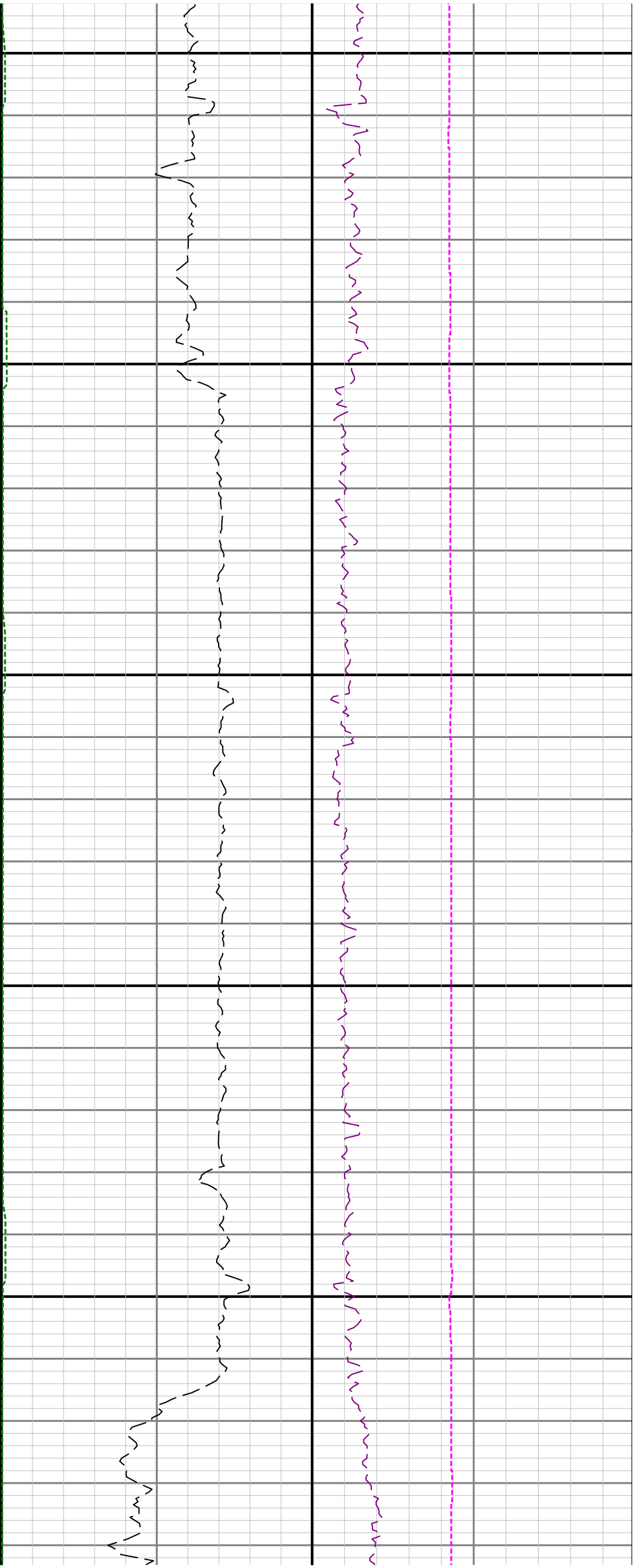


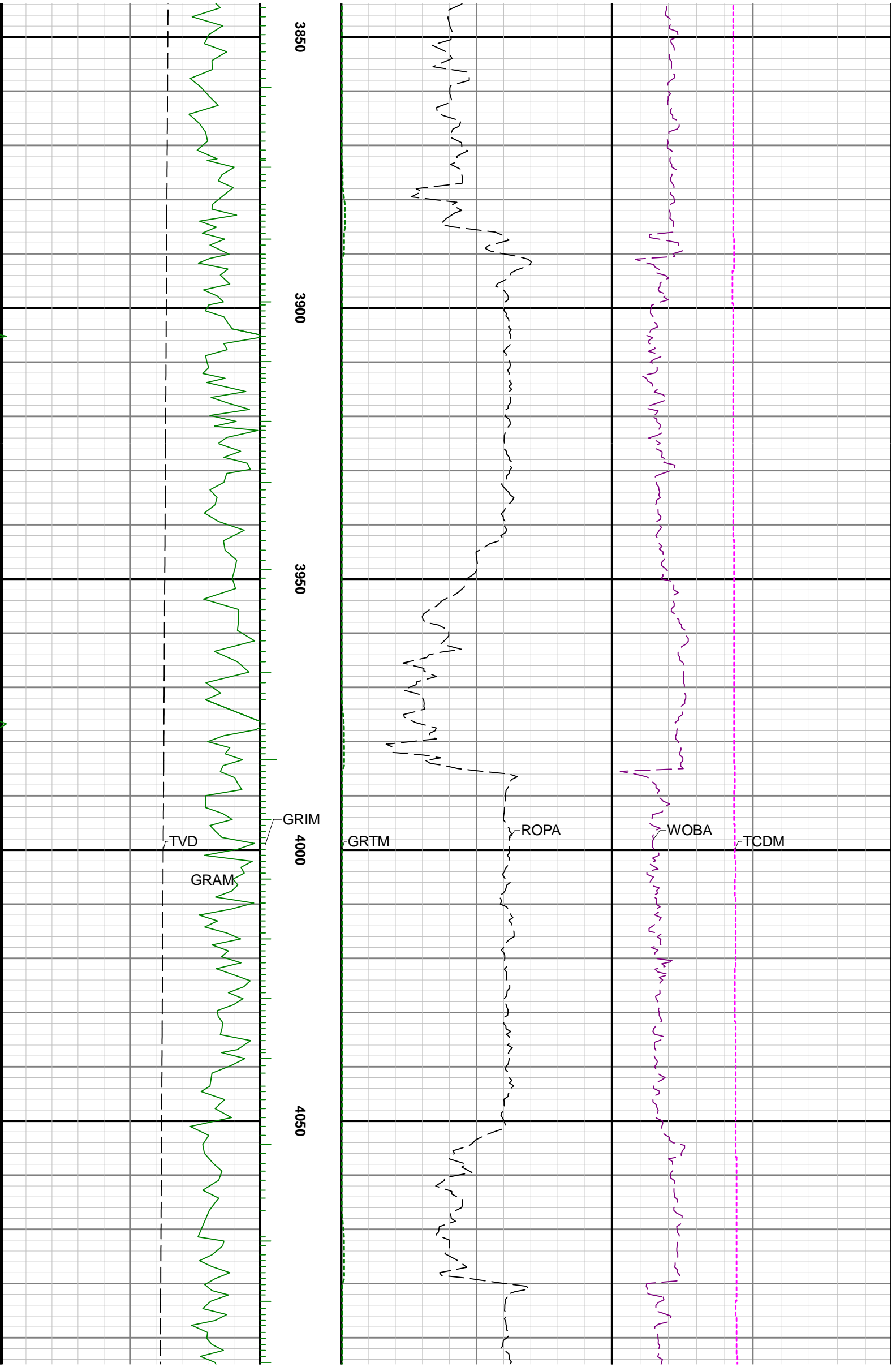


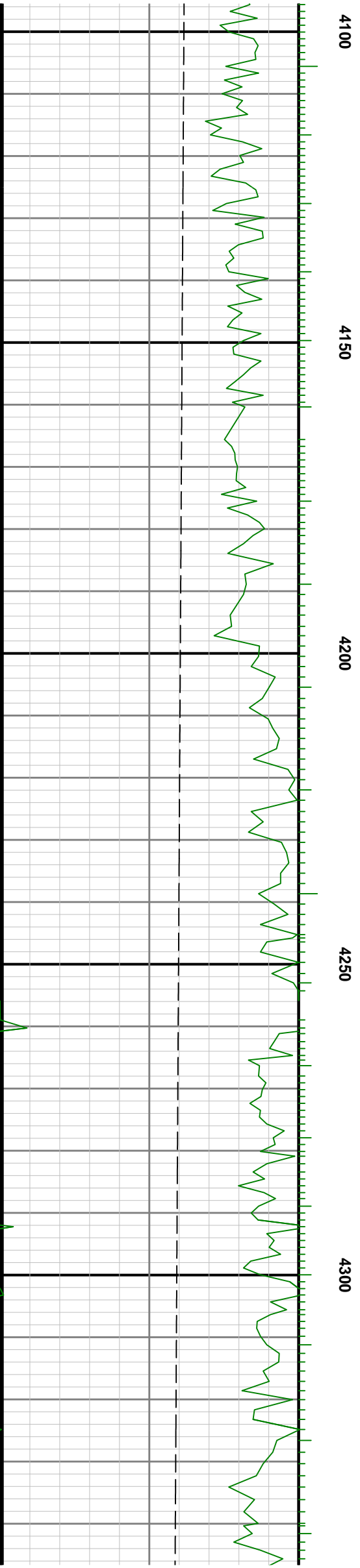
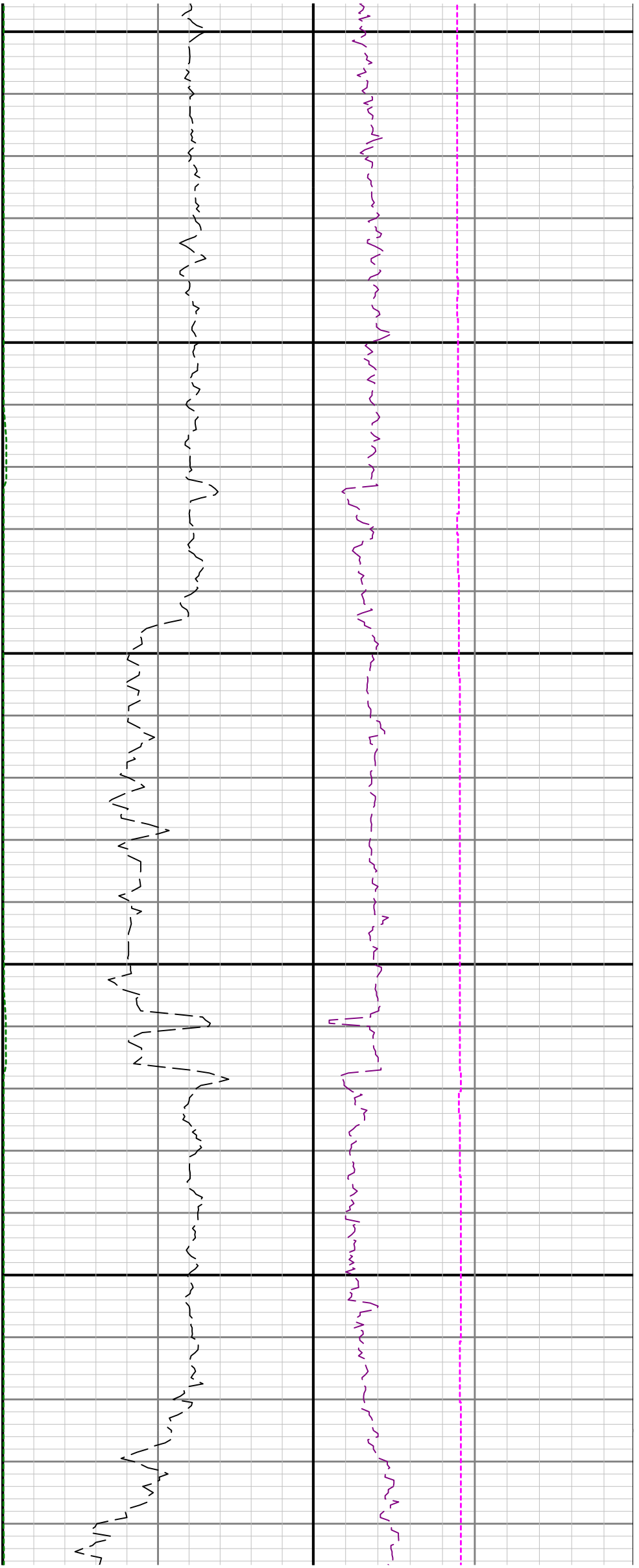
3100 3150 3200 3250 3300

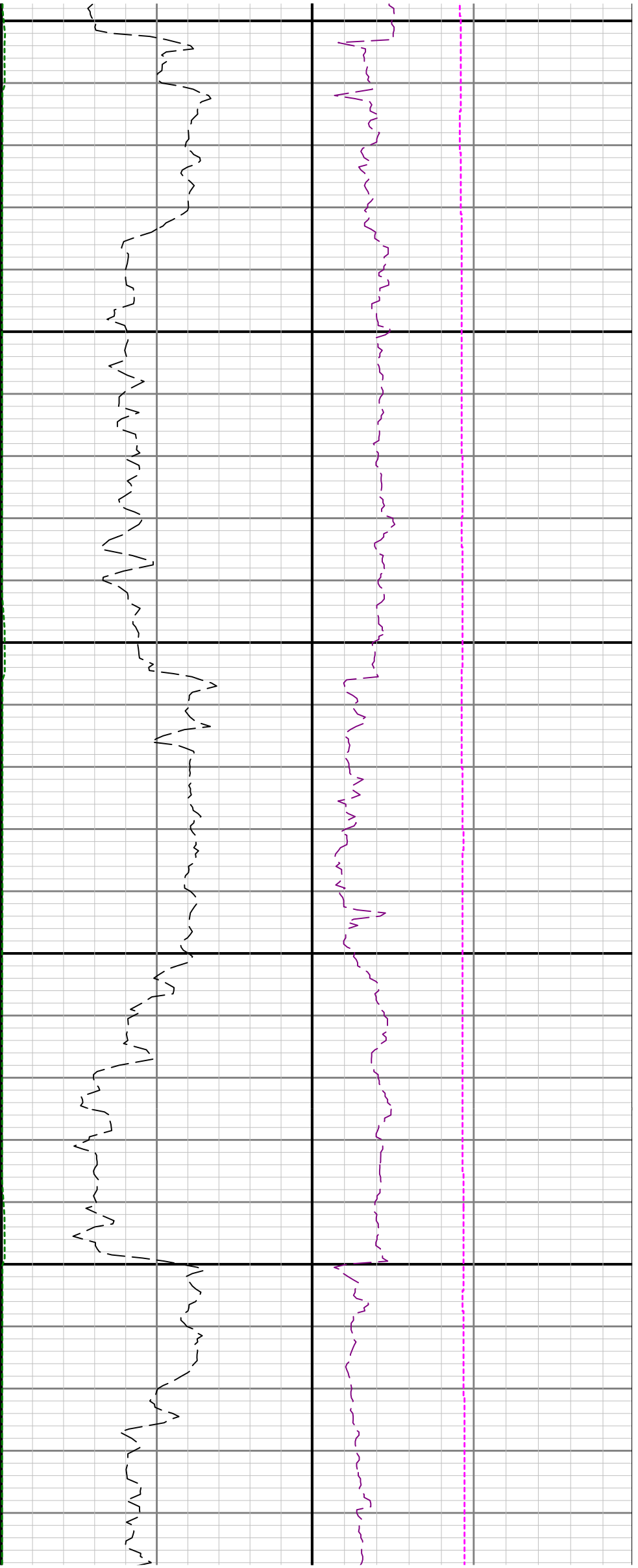












4350

4400

4450

4500

4550

4

