



LWD MEMORY LOG

Azimuthal Gamma Ray

Baker Hughes				LWD MEMORY LOG													
Scale: 1:240 Measured Depth				Azimuthal Gamma Ray													
				Company: Bonanza Creek Energy													
				Well: State Antelope Y-E-13HNC													
				Field: Weld County													
				Country: Weld County				Country: United States									
Depth Reference:		Driller's Depth		State: Colorado		Other Services:											
Status: Final Print		Surface Location:		Latitude: 40° 24' 03.622" N Longitude: 104° 15' 49.212" W				Directional									
API No: 05-123-50291-00		Job ID: 110213807		SEC: 13		TWN: 5N		RGE: 62W									
Permanent Datum (P.D.):		Mean Sea Level		Elevation: Above P.D.:		0.00 ft 4590.00 ft		Elev. KB: Elev. DF: Elev. GL:		N/A 4590.00 ft 4573.00 ft							
Log Measured From:		Rig Floor															
Dates		Interval		Magnetic Field Reference													
From: 2020-01-11		Drilled (ft)		Logged (ft)		Azi Reference North:		True Dip Angle: (deg)		66.91							
To: 2020-01-12		Top: 17.00		Top: 1636.00		Total Magnetic Field Strength: (nT)				52004							
Spud: 2020-01-09		Bottom: 12481.00		Bottom: 6170.00		Mag to Reference North Correction: (deg)				7.79							
Borehole Record												Casing Record					
Hole Size (in)		From (ft)		To (ft)		Size (in)		Weight (lb/ft)		From (ft)		To (ft)					
13.500		17.00		1645.00		9.625		36.00		17.00		1635.00					
8.500		1645.00		12481.00													
Mud Record												Deviation Record					
Type		From (ft)		To (ft)		Hole Size (in)		Interval (ft)		Inc Az (Start)		Inc Az (End)					
Water Based Mud		17.00		1646.00		13.500		1629.00		0.29 255.94		25.92 152.64					
Diesel-Oil Based Mud		1646.00		12481.00		8.500		10835.00		25.92 152.64		90.58 268.01					
Acquisition System												Software Version		Other			
Cadence		RT 5.5				Rig: Akita 519											
Plot Studio		5.5.8724.1				Contractor: Akita Drilling						Unit: D&E					
						District: RMD											

(C) 2019 Baker Hughes Company. All rights reserved. Baker Hughes Company and its affiliates ("BHC") provides this information on an "as is" basis for general information purposes and believes it to be accurate as of the date of publication. BHC 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. BHC 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 BHC logo is a trademark of Baker Hughes Company.

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)			
2	1	8.500	PDC	3.00	Rotary Steerable	1635.00	6170.00	1646.00	12481.00	2020-01-11 21:20	2020-01-12 08:01	38.09

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Steve Bueghly	2020-01-09	2020-01-12						

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+ (%)
2020-01-10 16:00	2	2860.00	Diesel-Oil Based Mud	9.2	14	N/A	13.2	78/16	Active Pit	37392	0.00
2020-01-11 15:30	2	7570.00	Diesel-Oil Based Mud	9.2	12	N/A	12.8	77/16	Active Pit	37392	0.00

Mud Resistivity Record

Mud Resistivity Record				Surface			Downhole			
Date / Time	Run No.	Depth (ft)	Surface Temp (degF)	Rm (ohm.m)	Rmf (ohm.m)	Rmc (ohm.m)	BHCT (degF)	Rm @ BHCT (ohm.m)	Rmf @ BHCT (ohm.m)	Rmc @ BHCT (ohm.m)
2020-01-11 16:14	2	7570.00	134.0	100.000	N/A	N/A	185.0	100.000	N/A	N/A
2020-01-12 16:15	2	12481.00	148.0	100.000	N/A	N/A	239.0	100.000	N/A	N/A

Equipment and Service Data

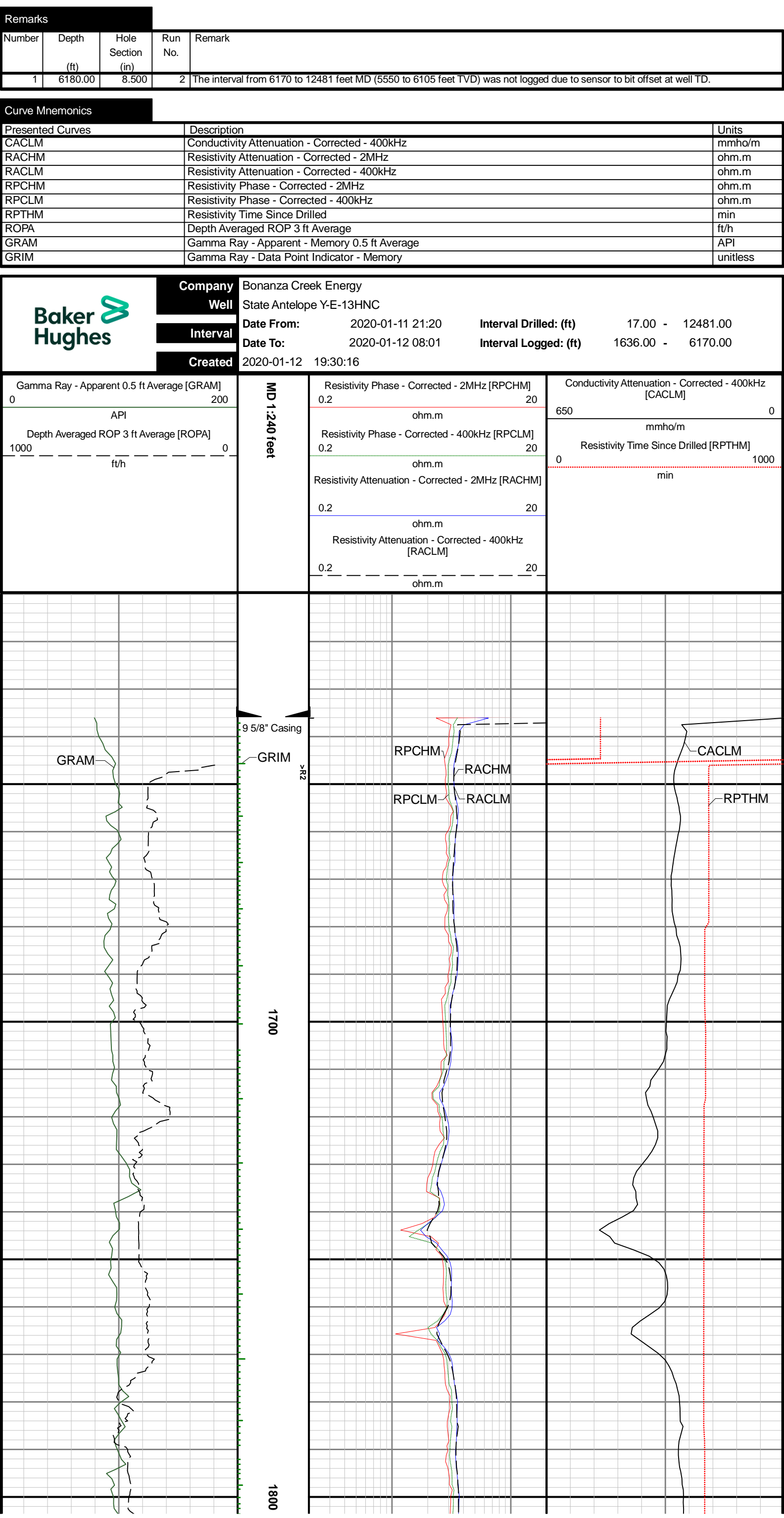
Run No.	Tool	Serial Number	Measurement	Sensor Offset (ft)	Bit Offset (ft)	Max O.D. (in)	Min I.D. (in)
2	AutoTrak Curve Steering Unit	14367829	Near Bit VSS	5.93	6.73	7.000	4.330
2	AutoTrak Curve Steering Unit	14367829	Near Bit Inclination	5.93	6.73	7.000	4.330
2	AutoTrak Curve MWD	12304740	Gamma (single)	2.08	12.90	7.000	3.250
2	AutoTrak Curve MWD	12304740	Directional (mag)	11.60	22.42	7.000	3.250
2	OnTrak	10453201	Pressure	1.02	6308.55	6.750	0.000
2	OnTrak	10453201	Gamma (double)	1.91	6309.44	6.750	0.000
2	OnTrak	10453201	Resistivity (4tx)	5.95	6313.48	6.750	0.000
2	OnTrak	10453201	Directional (mag)	11.74	6319.27	6.750	0.000

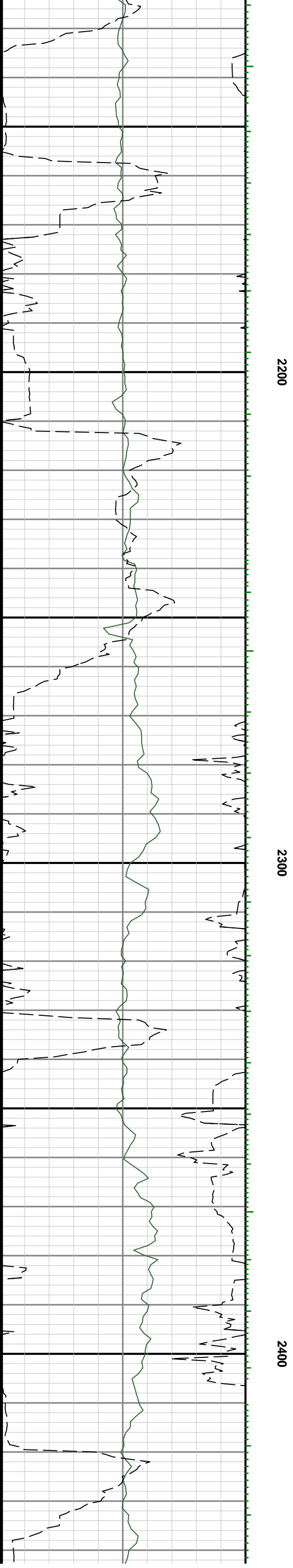
Service and Tool Mnemonics

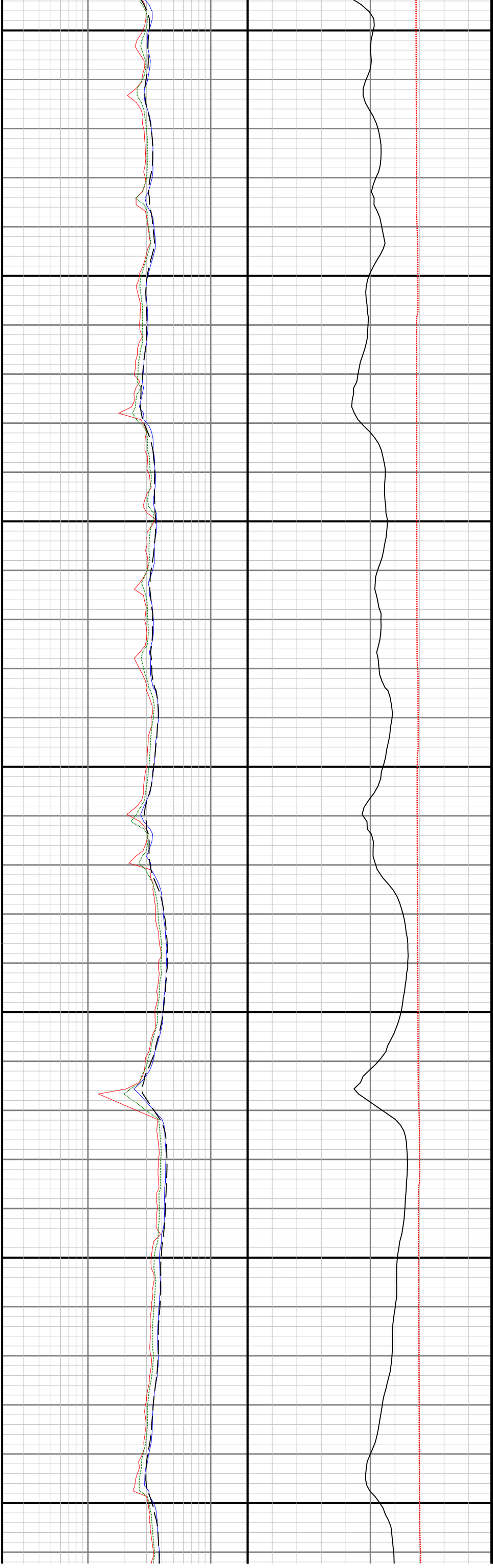
Mnemonic	Name	Description
ATC SU	AutoTrak Curve SU	Auto Trak Curve Steering Unit
ATC MWD	AutoTrak Curve MWD	Auto Trak Curve MWD
ATC LCPM	AutoTrak Curve LCPM	Auto Trak Curve LCPM
OTK	OnTrak	Sensor Sub (Inc, Azi, Temp, Azimuthal GR, Res, AP, VSS), OnTrak Platform
BCPM	BCPM	Bi-Directional Communication 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 lack of control by Baker Hughes, depth calibrations and measurements could not be independently verified.
- 2 Baker Hughes LWD Run 2 utilized 6 ¾ inch OnTrak Service (Gamma Ray, Multiple Propagation Resistivity and Directional) behind an 8 ½ inch bit and a rotary steerable assembly from 1636 to 6170 feet MD (1577 to 5550 feet TVD).
- 3 The Gamma Ray Apparent (GRAM) data is presented from 0 to 200 API, per customer's request.





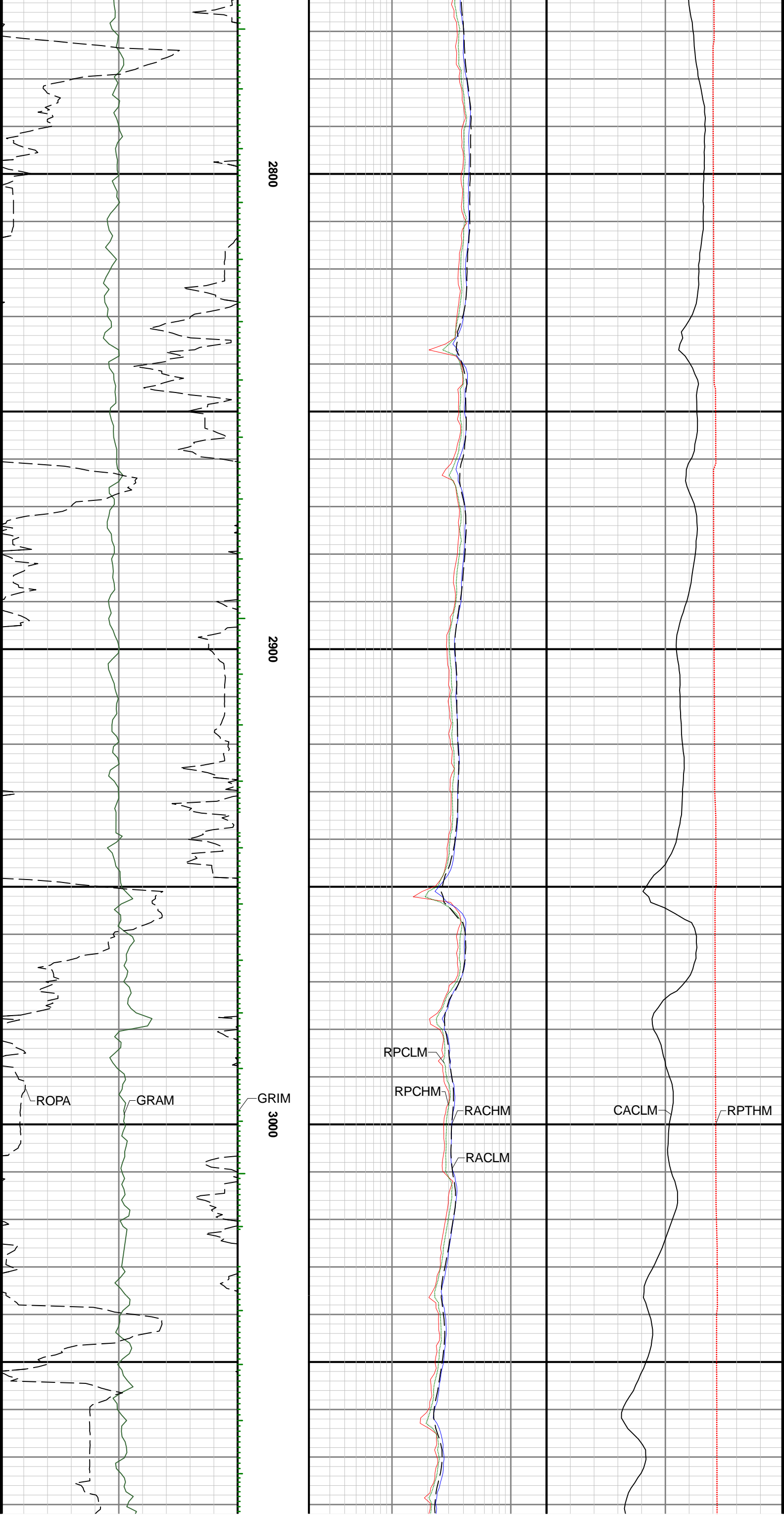


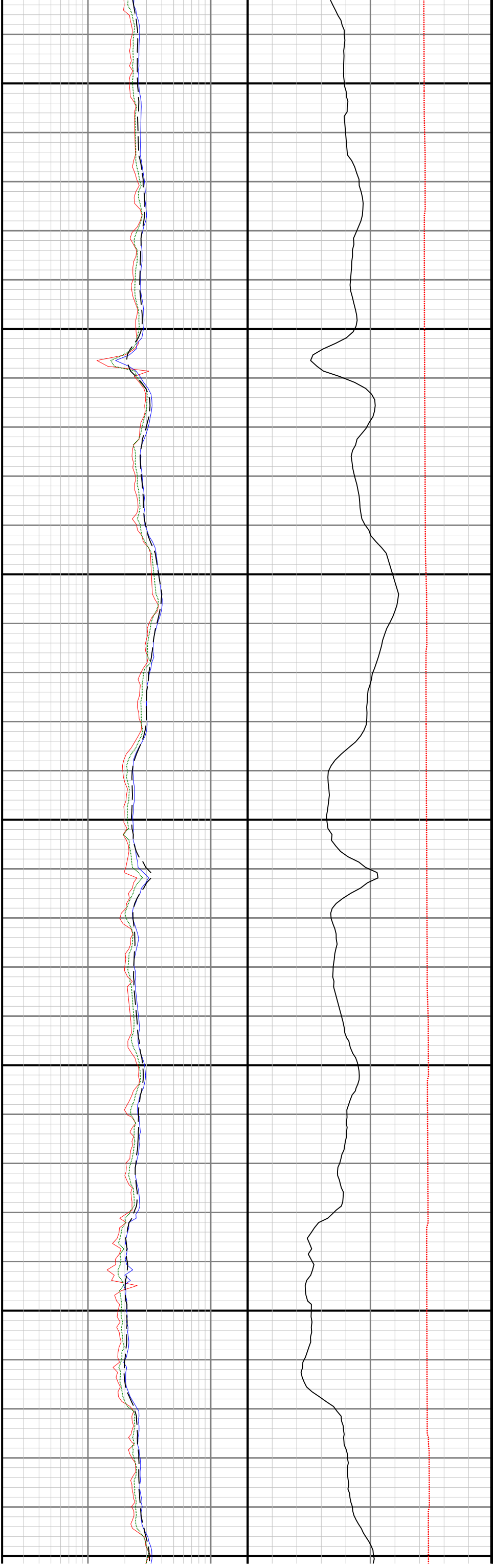
2500

2600

2700





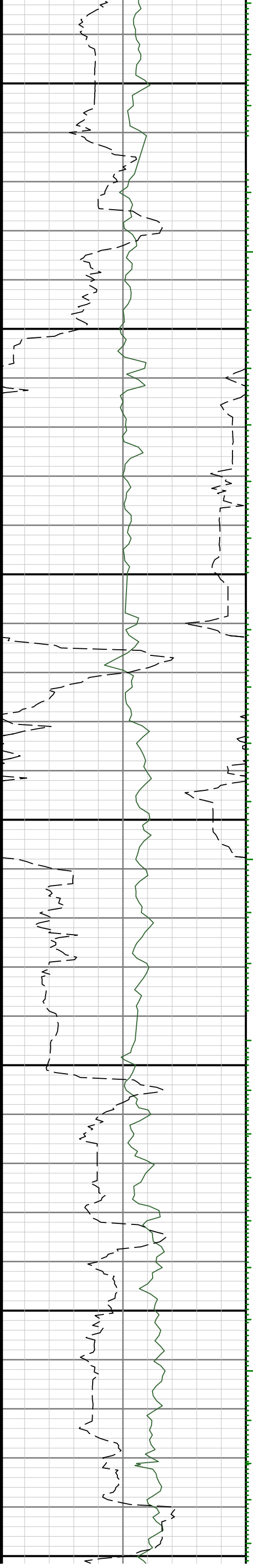


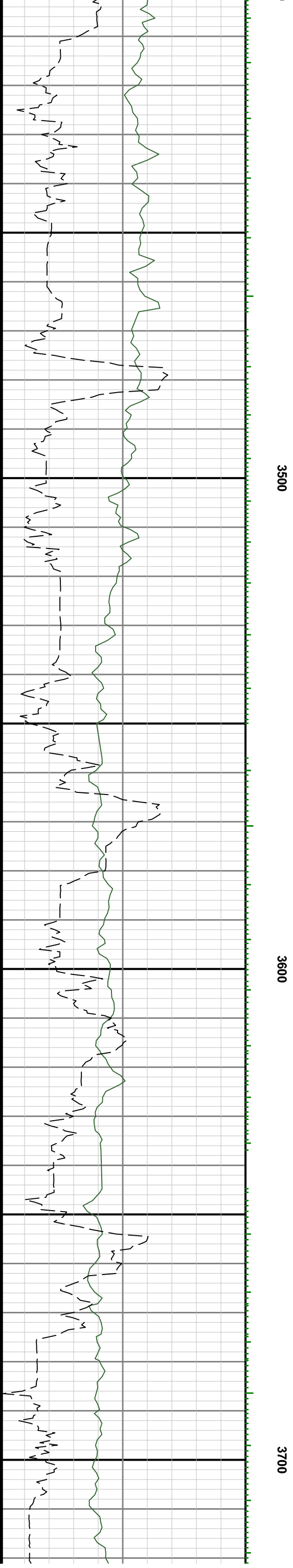
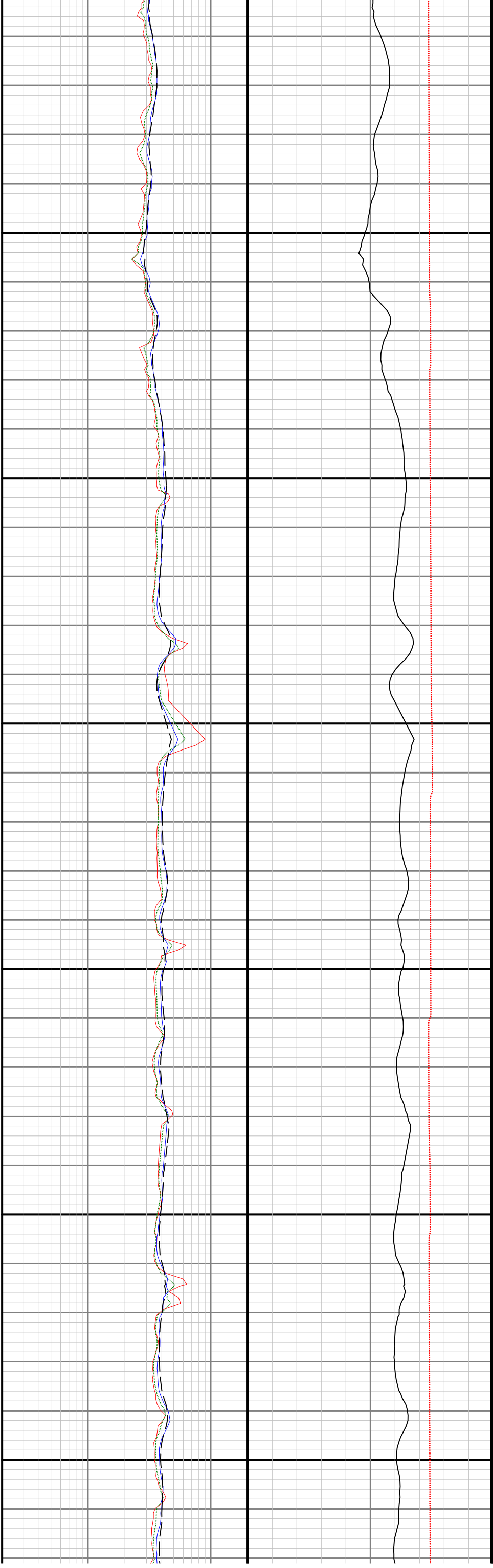
3100

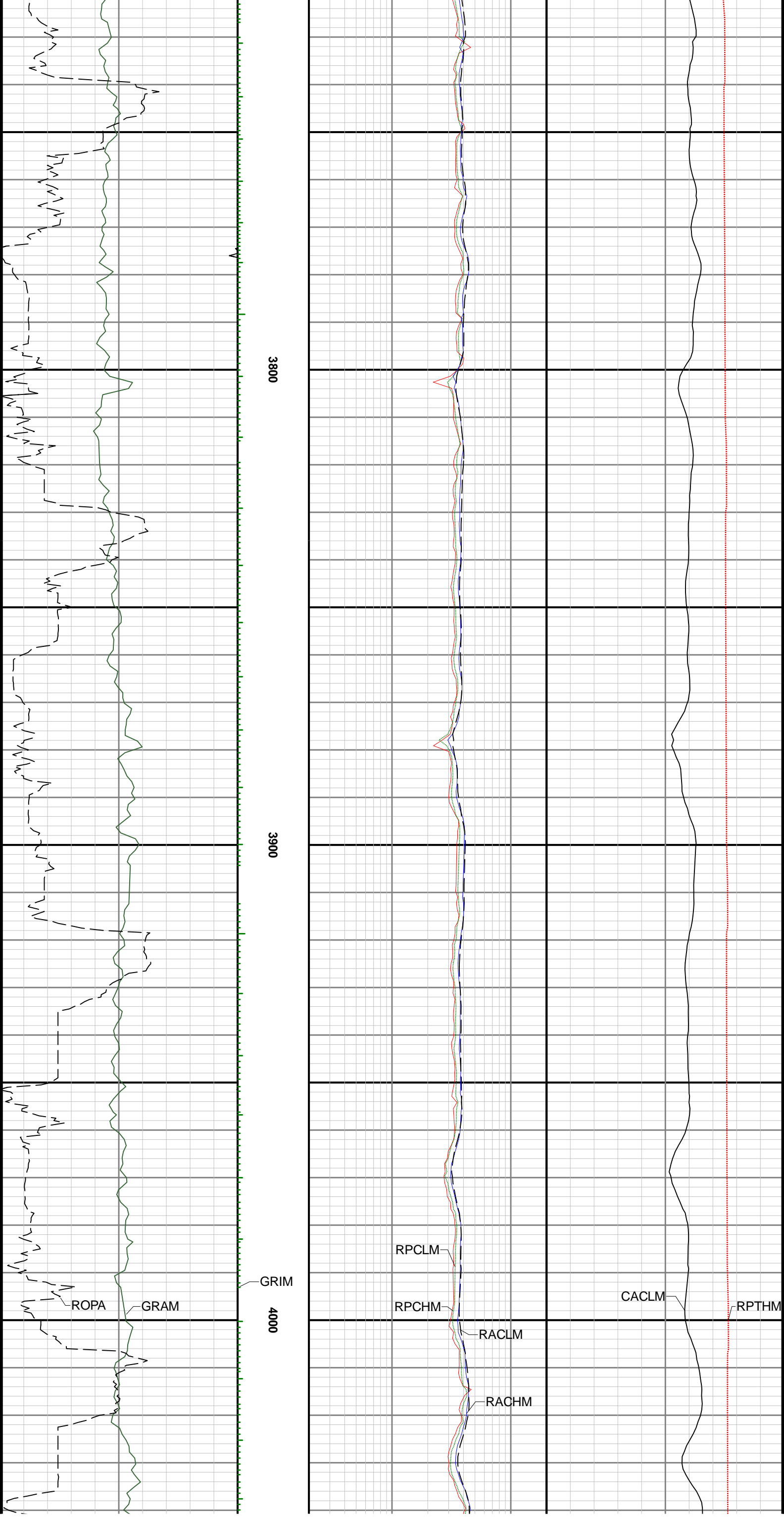
3200

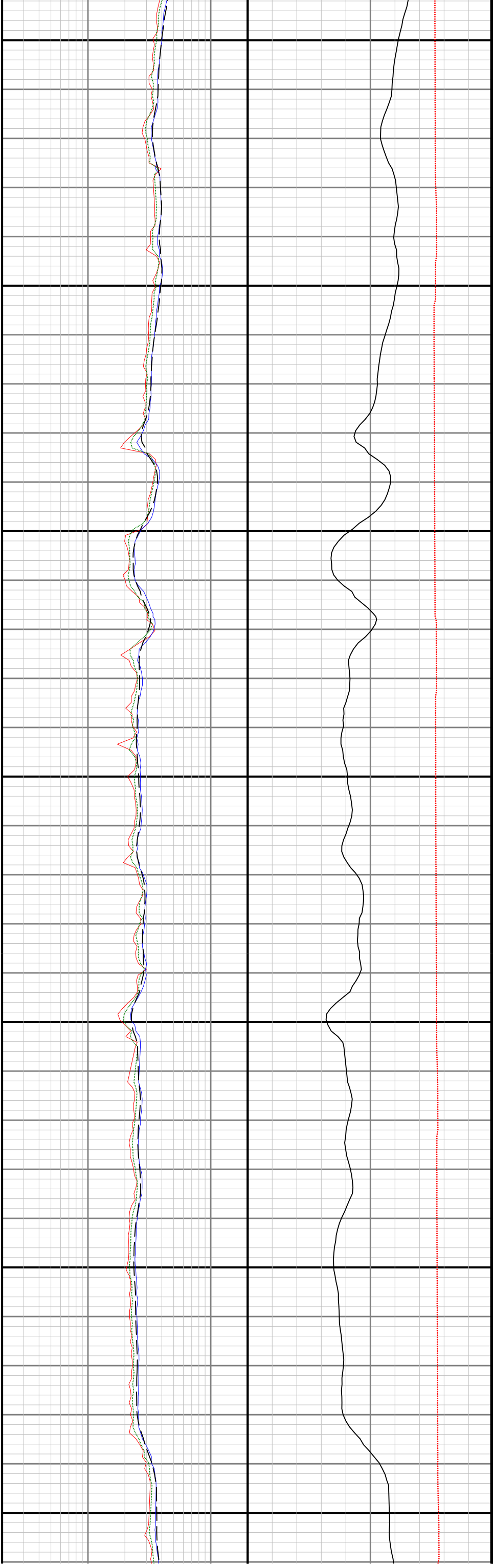
3300

3400





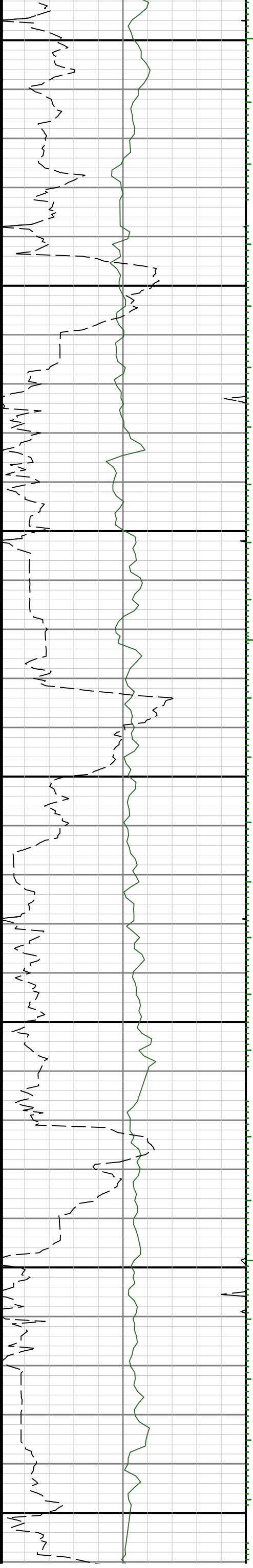




4100

4200

4300

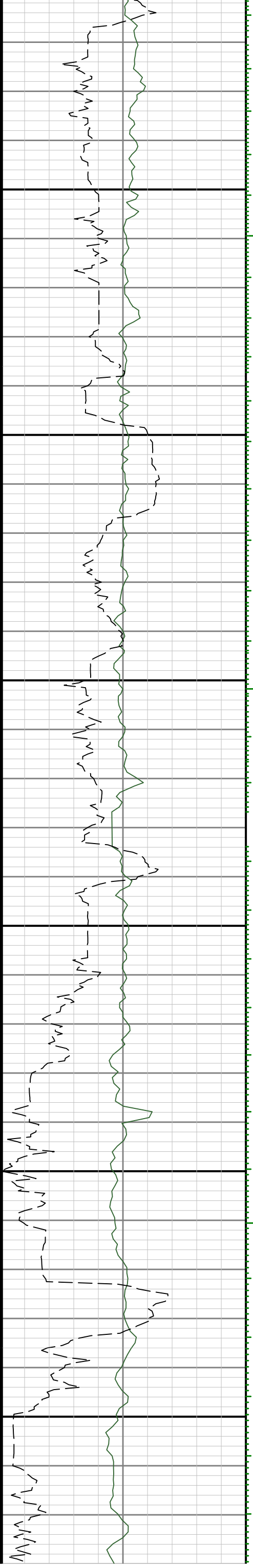


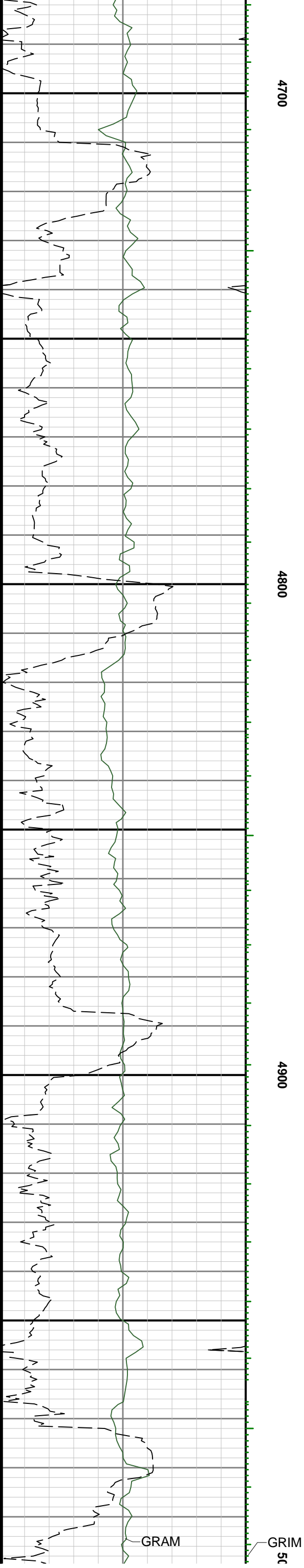
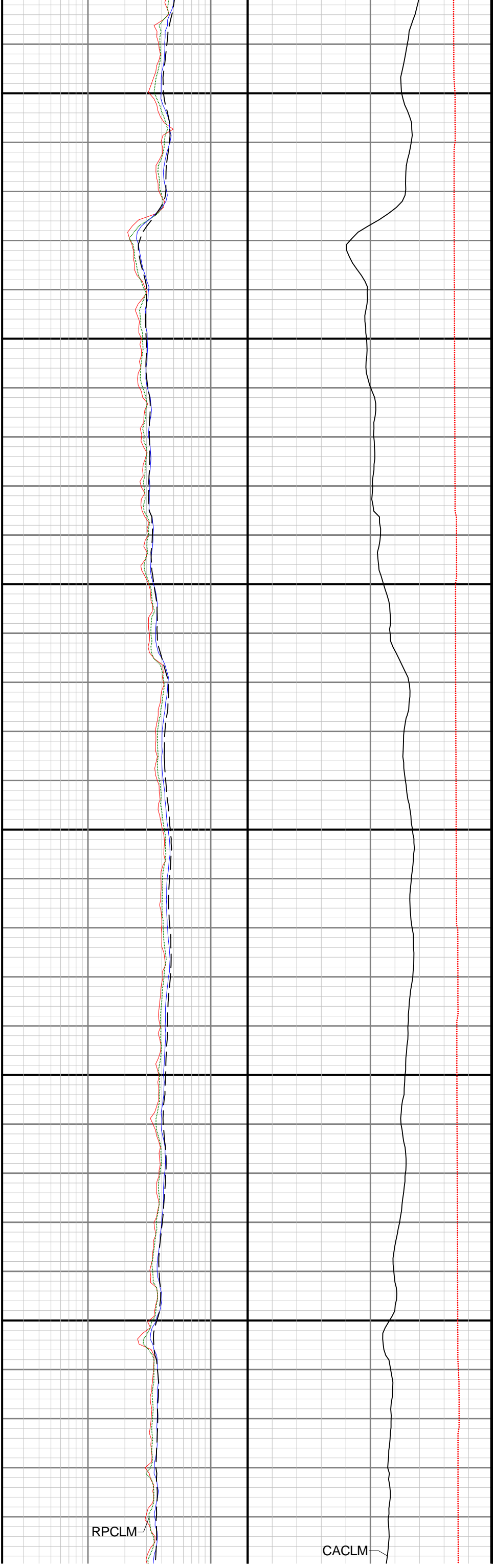


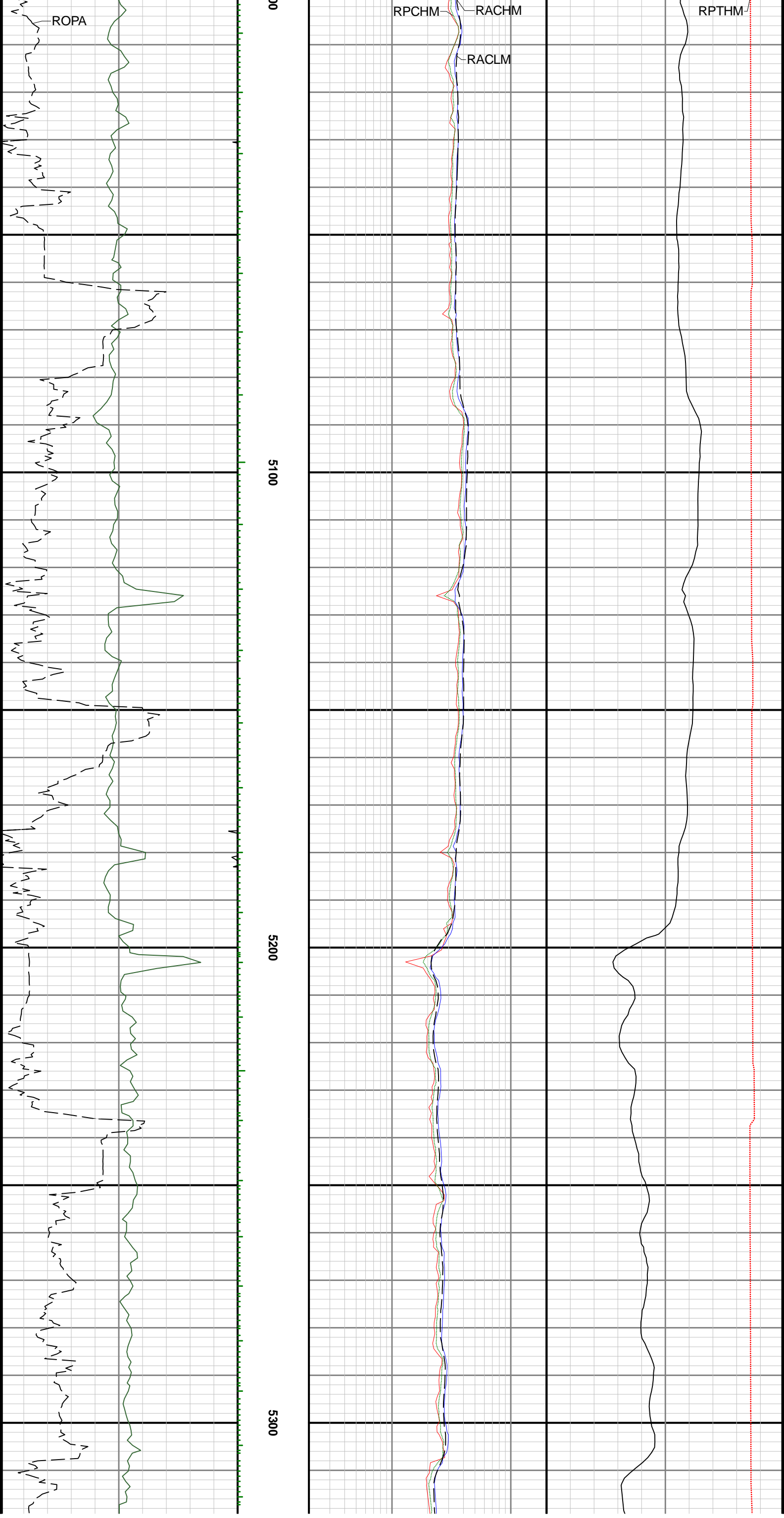
4400

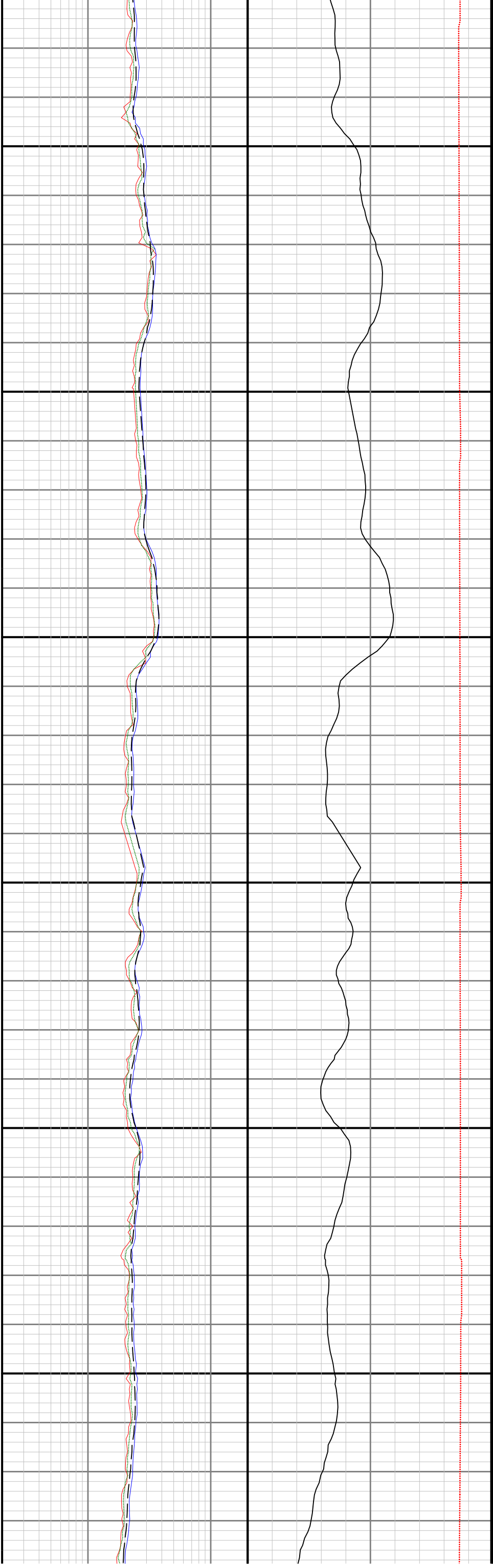
4500

4600









5400

5500

5600

