

Company: TEP ROCKY MOUNTAIN LLC

Well: TR 344-22-597

Field: Trail Ridge

County: Garfield State: Colorado

Triple Combo
Platform Express

County: Garfield
Field: Trail Ridge
Location: NESW
Well: TR 344-22-597
Company: TEP ROCKY MOUNTAIN LLC

Location:	NESW	Elev.:	K.B.	8158.00 ft
	1322 FSL & 2383 FWL		G.L.	8134.00 ft
	Lat/Long: 39.595531, -108.265247		D.F.	8158.00 ft
	Permanent Datum:	Ground Level	Elev.:	8134.00 f
Log Measured From:		Kelly Bushing	24.00 ft	above Perm.Datum
Drilling Measured From:		Kelly Bushing		
API Serial No.	Section:	Township:	Range:	
05-045-23698	22	5S	97W	

Logging Date 09-Mar-2019

Run Number 1A

Depth Driller 9430.00 ft

Schlumberger Depth 9371.00 ft

Bottom Log Interval 9371.00 ft

Top Log Interval 600.00 ft

Casing Driller Size @ Depth 9.625 in @ 2750.00 ft

Casing Schlumberger 2755 ft

Bit Size 8.75 in

Type Fluid In Hole Water

Density 9.1 lbm/gal 80 s

Fluid Loss PH 8.8

MUD Source of Sample Active Tank

RM @ Meas Temp 0.2 ohm.m @ 68 degF

RMF @ Meas Temp 0.15 ohm.m @ 68 degF

RMC @ Meas Temp

Source RMF RMC

RM @ BHT 0.07 @ 212 0.05 @ 212

Max Recorded Temperatures 180 degF

Circulation Stopped 09-Mar-2019 03:45:00

Logger on Bottom 09-Mar-2019 06:30:00

Unit Number 2143

Recorded By Evan Grzecki

Witnessed By Darrell Leatherman

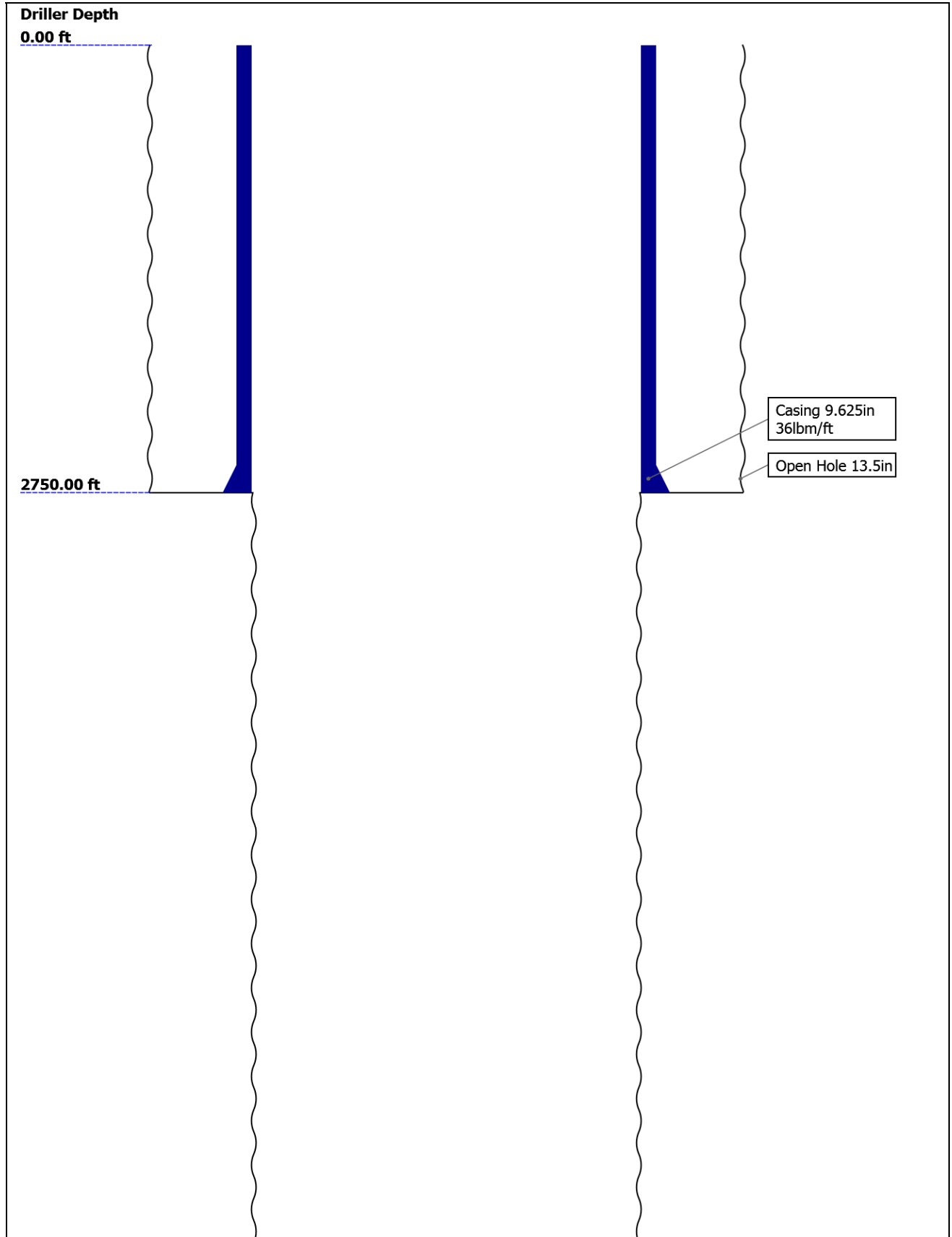
Disclaimer

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Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	13.5	8.75				
Top Driller (ft)	0	2750				
Top Logger (ft)	0	2755				
Bottom Driller (ft)	2750	9430				
Bottom Logger (ft)	2755	9371				
Casing						
Size (in)	9.625					
Weight (lbm/ft)	36					
Inner Diameter (in)	8.921					
Grade	N/A					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	2750					
Bottom Logger (ft)	2755					

Remarks and Equipment Summary

1A: Toolstring				1A: Remarks
Equip name	Length	MP name	Offset	<p>Thank you for choosing Schlumberger!</p> <p>Log run for formation evaluation</p> <p>Toolstring run as per toolsketch</p> <p>Log depth recorded as driller depth</p> <p>Logs processed from memory data</p> <p>Matrix: Sandstone; MDEN: 2.65g/cc</p> <p>Crew: Tim Ludgate, Juceiin Flores-Machado</p>
PEH-EFA	71.44			
AH-317-TB	69.08			
TBDOT-BA	68.01			
TBHO-BA	64.52			

SAH-TB 58.58

TBAT-AA[2]
] 56.24

TBAT-AA[1]
] 50.12

TMG-A:38 43.99
TMG-A:38

Gamma-Ray 43.19

TILE-AB 37.86

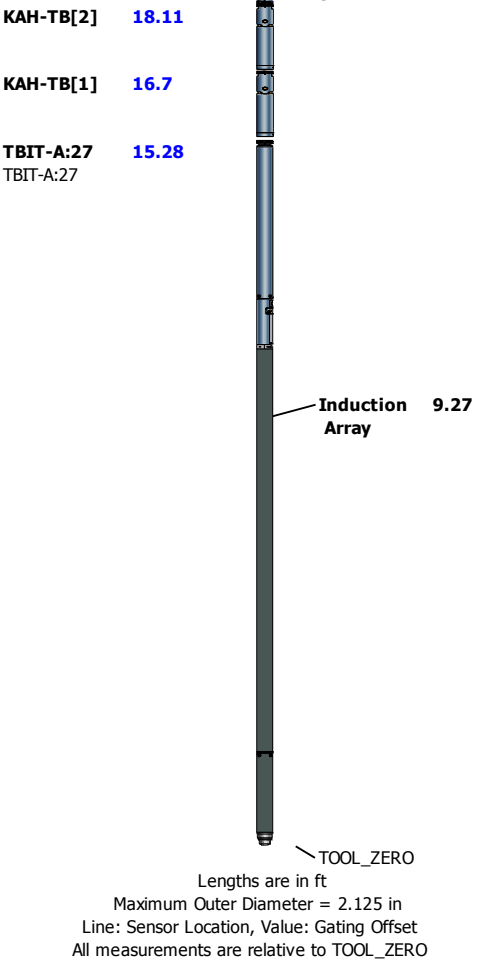
Status 37.86

TBN-B:5 33.36
TBN-B:5
NNLS-EWA:
5975

Neutron Porosity 31.05

TBD-B:25 28.59
TBD-B:25
GGLS-FZ:339
8

Density LS 20.07
Caliper 19.94
Density S 19.68



1A

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	2035.03	ft3
IHV	Integrated Hole Volume	GCSE_UP_PASS	2766.48	ft3

Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.102758.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[1]:Up	Up	686.28 ft	9381.33 ft	09-Mar-2019 1:08:11 AM	09-Mar-2019 7:10:30 AM	ON	0.00 ft	Yes

All depths are referenced to toolstring zero

Log

Company:TEP ROCKY MOUNTAIN LLC Well:TR 344-22-597
1A: Log[1]:Up:S016

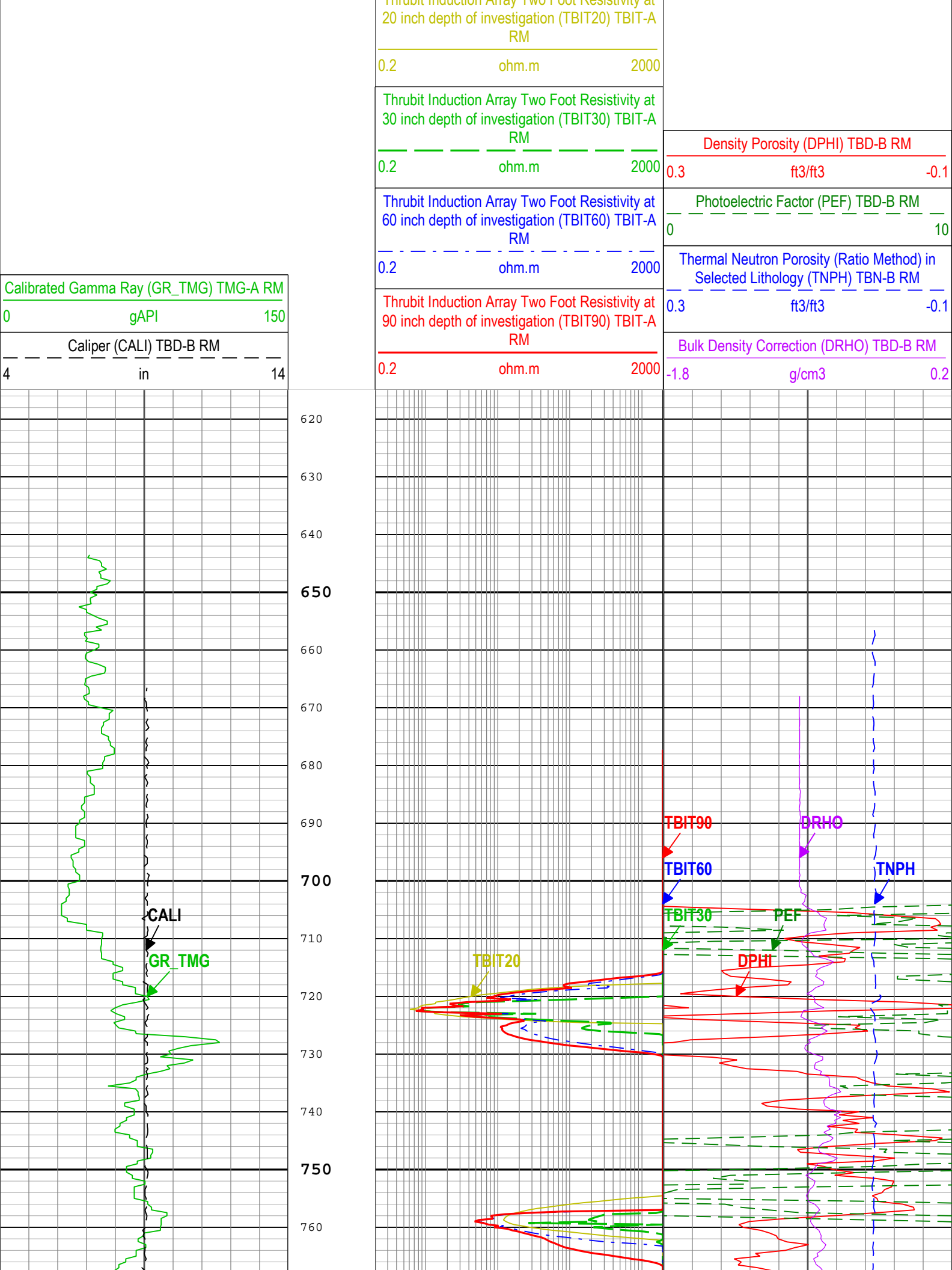
Description: ThruBit_TCOM_RM Format: Log (ThruBit_TCOM_RM) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 09-Mar-2019 23:45:25

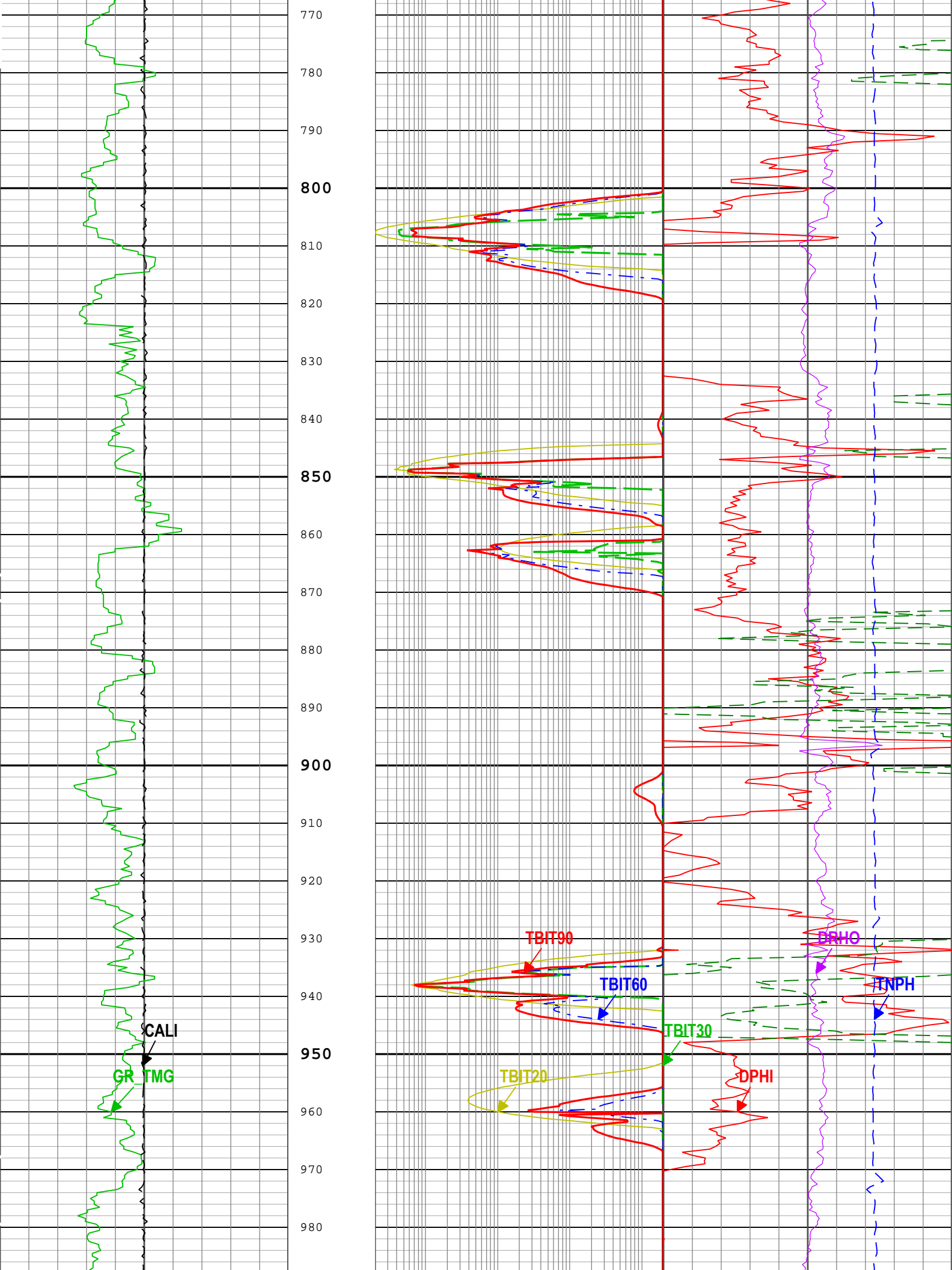
- IHV_RM - Integrated Hole Volume every 10.00 (ft3)
- IHV_RM - Integrated Hole Volume every 100.00 (ft3)

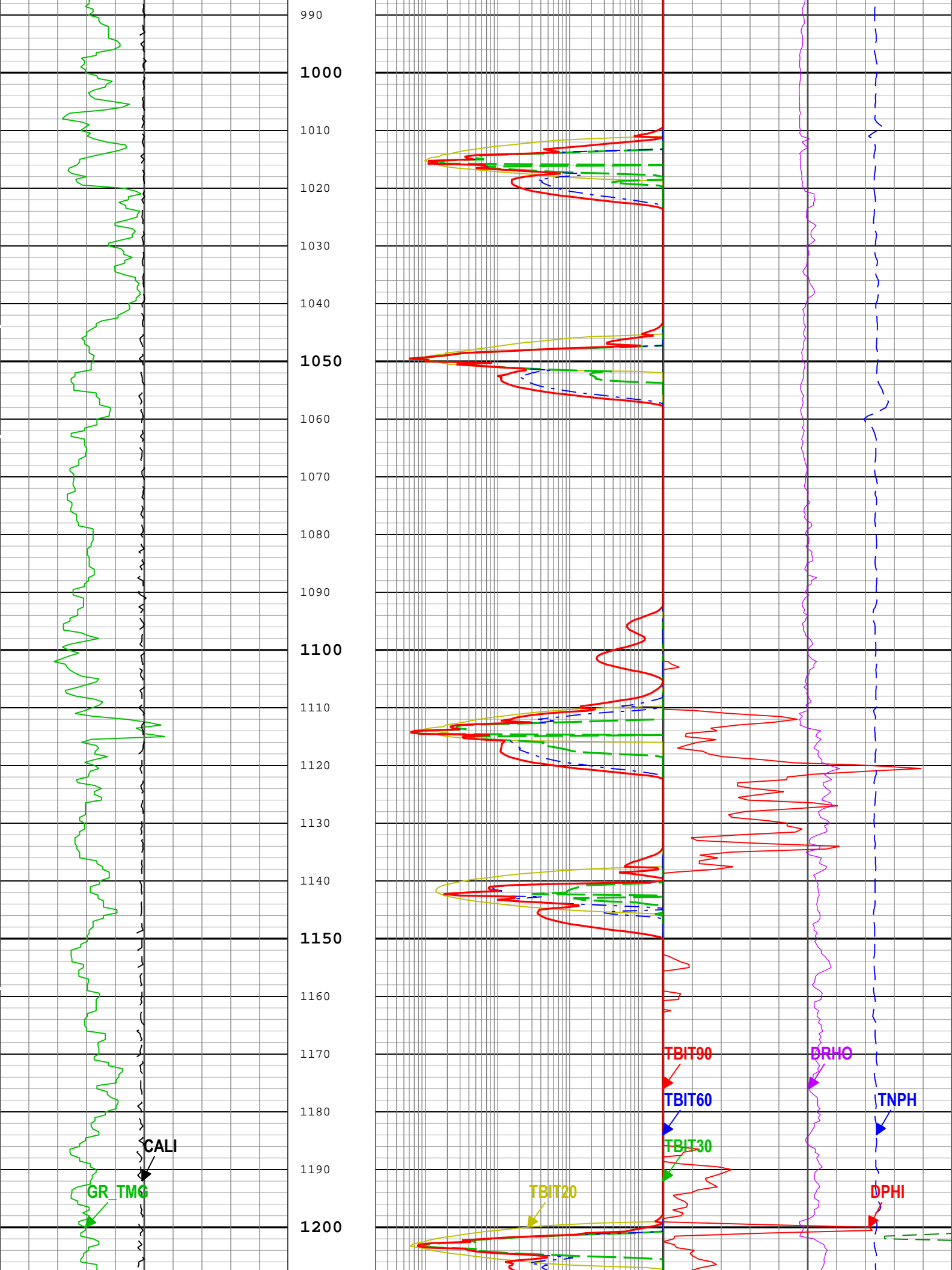
TIME_1900 - Time Marked every 60.00 (s)

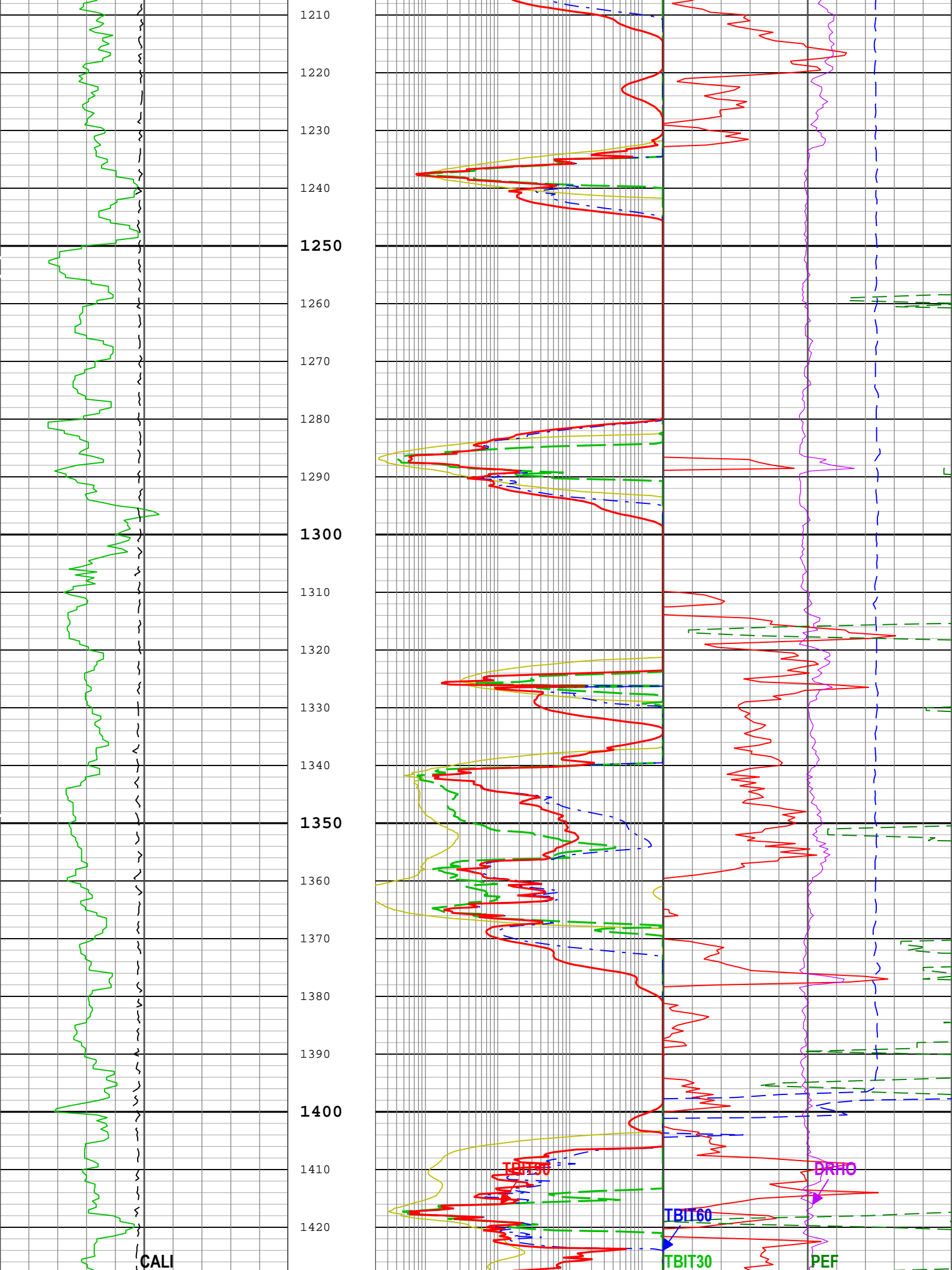
- ICV_RM - Integrated Cement Volume every 10.00 (ft3)
- ICV_RM - Integrated Cement Volume every 100.00 (ft3)

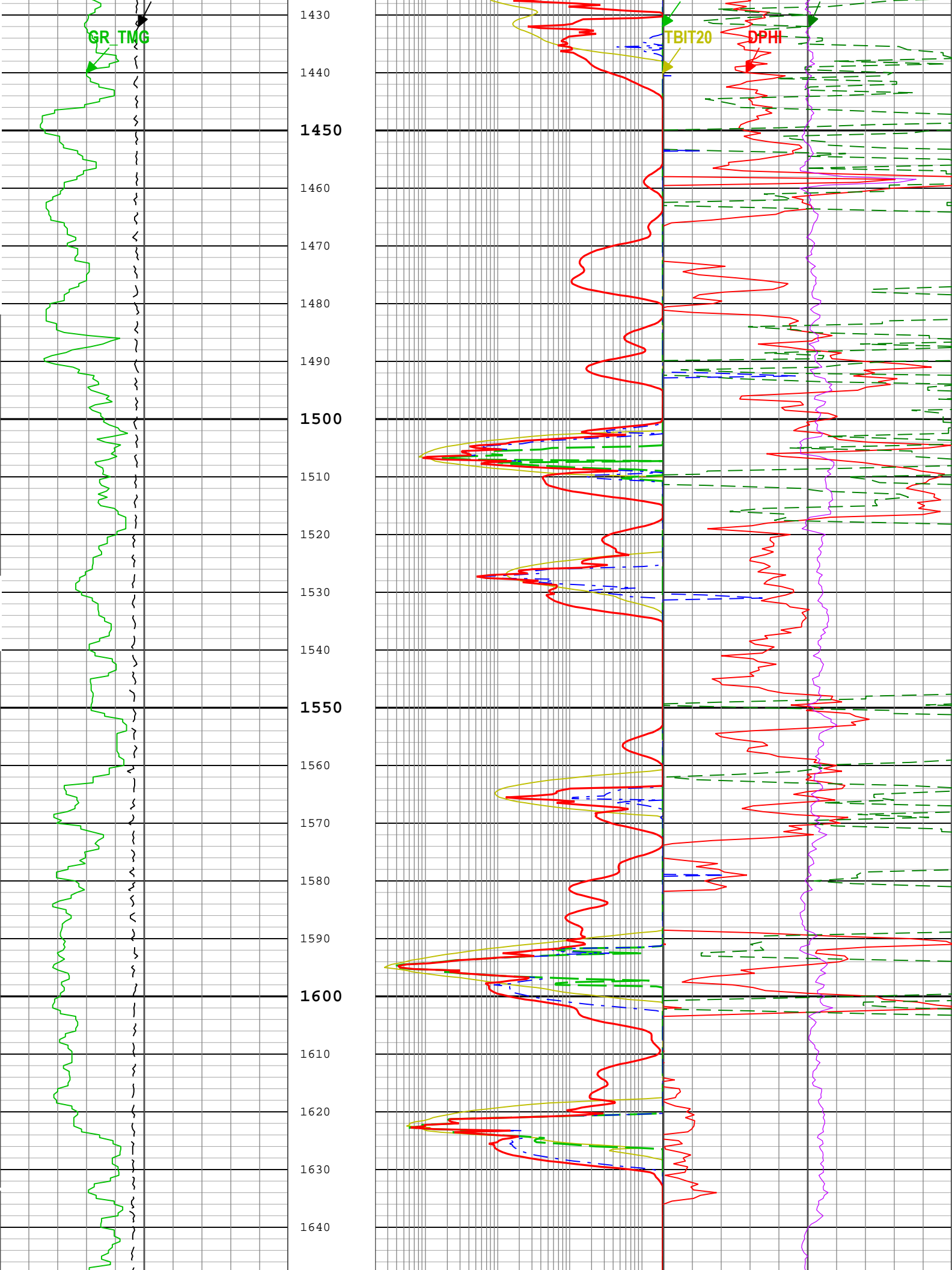
ThruBit Induction Array Two Foot Resistivity at

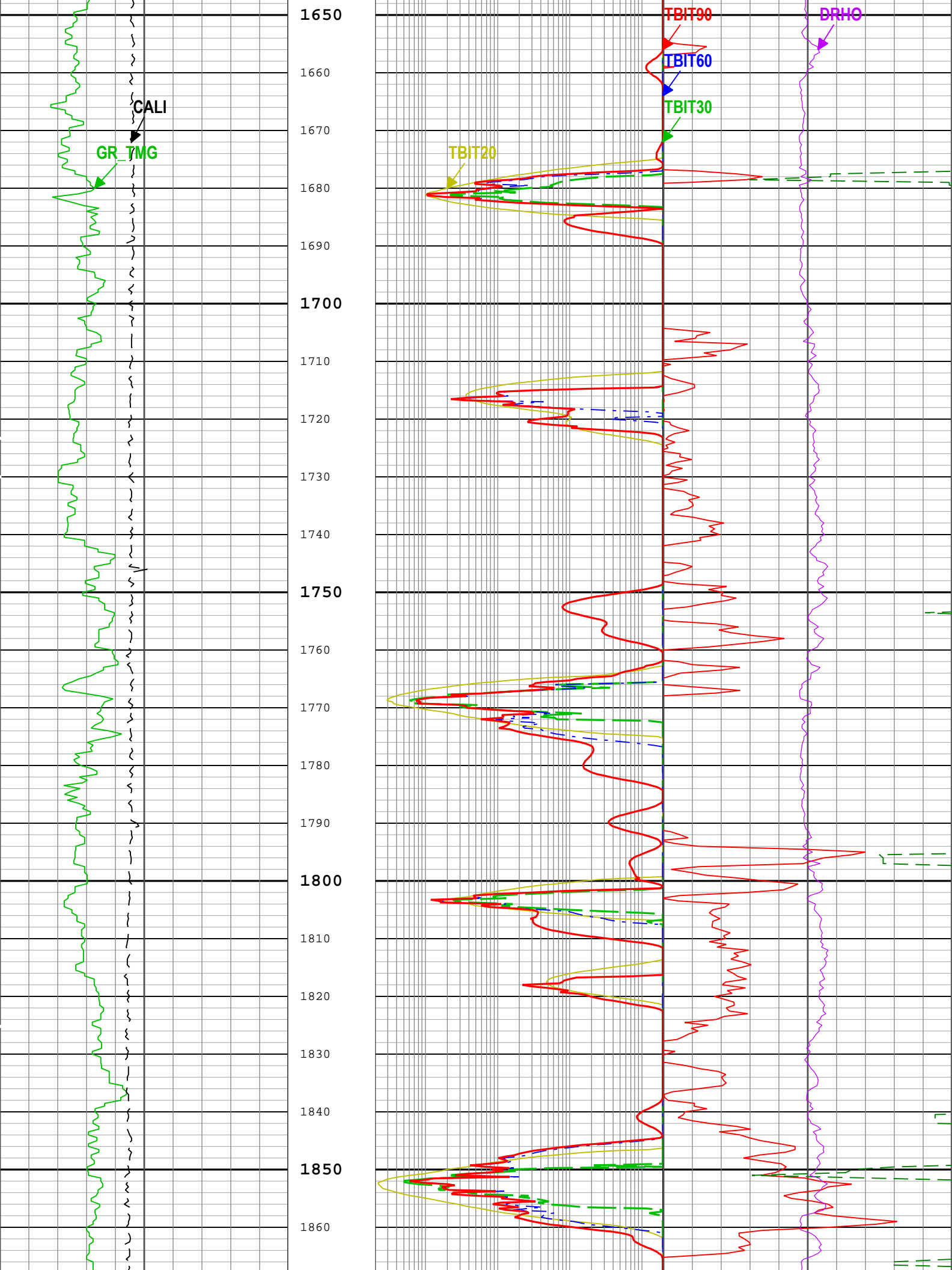


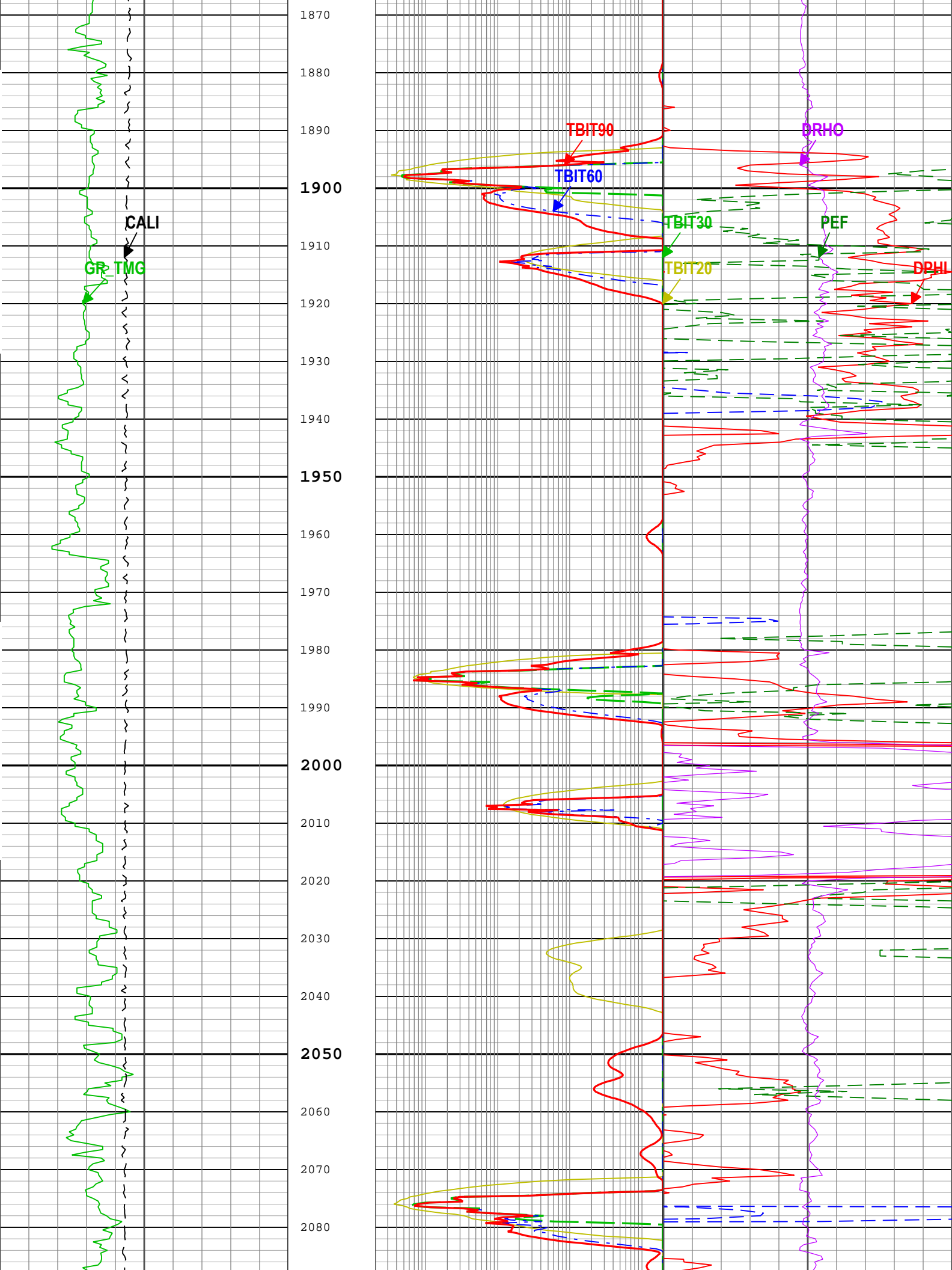


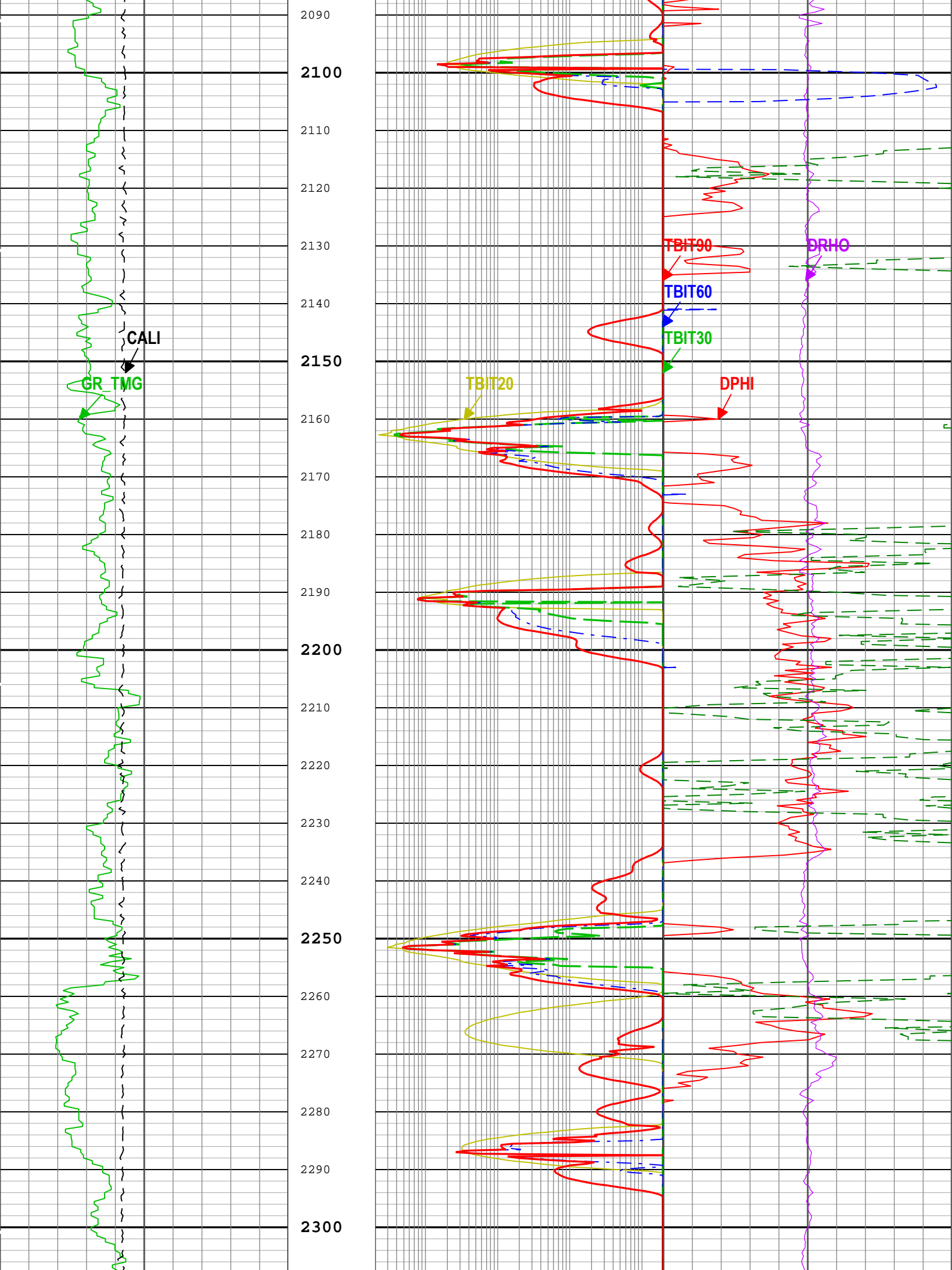


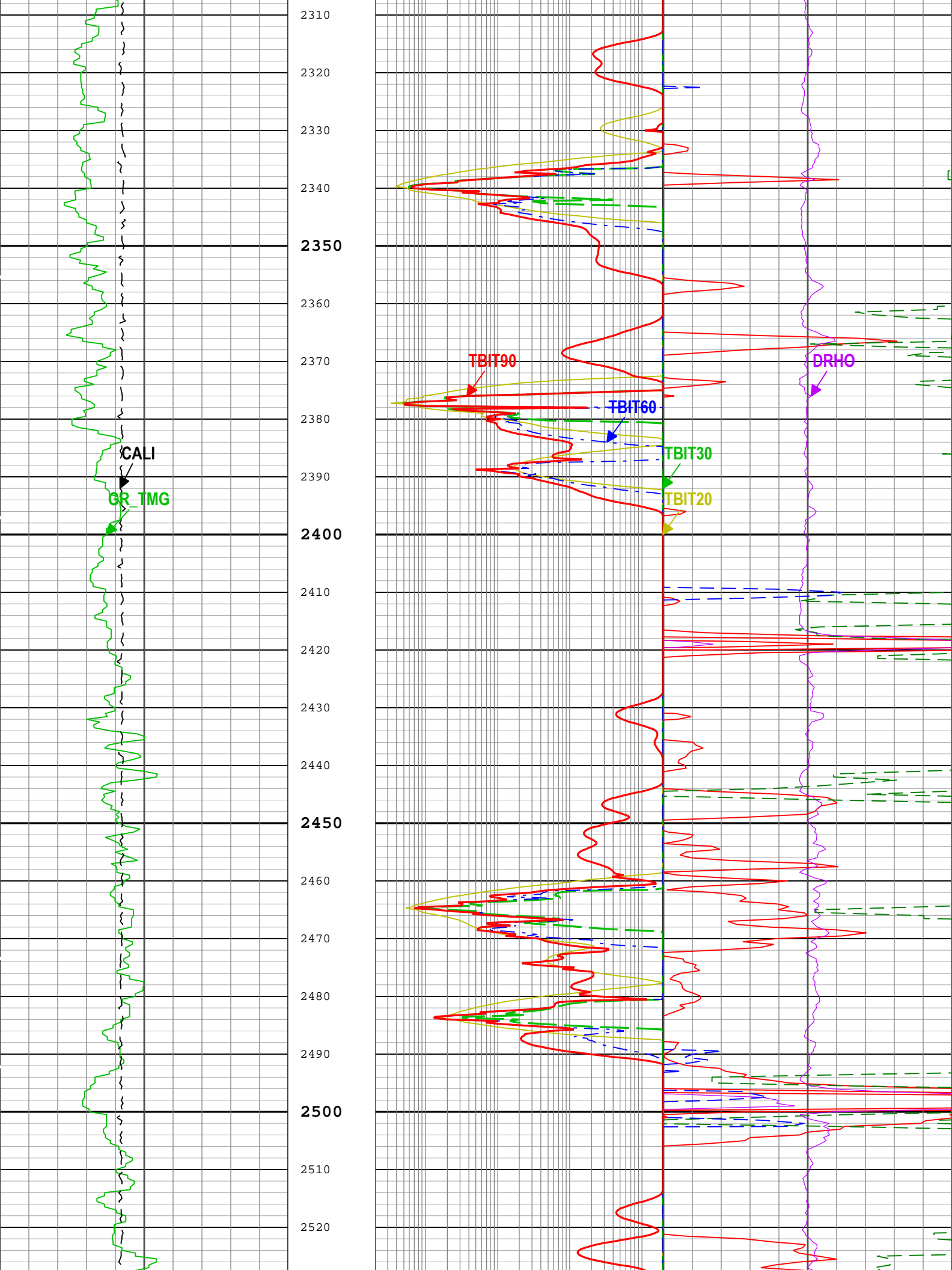


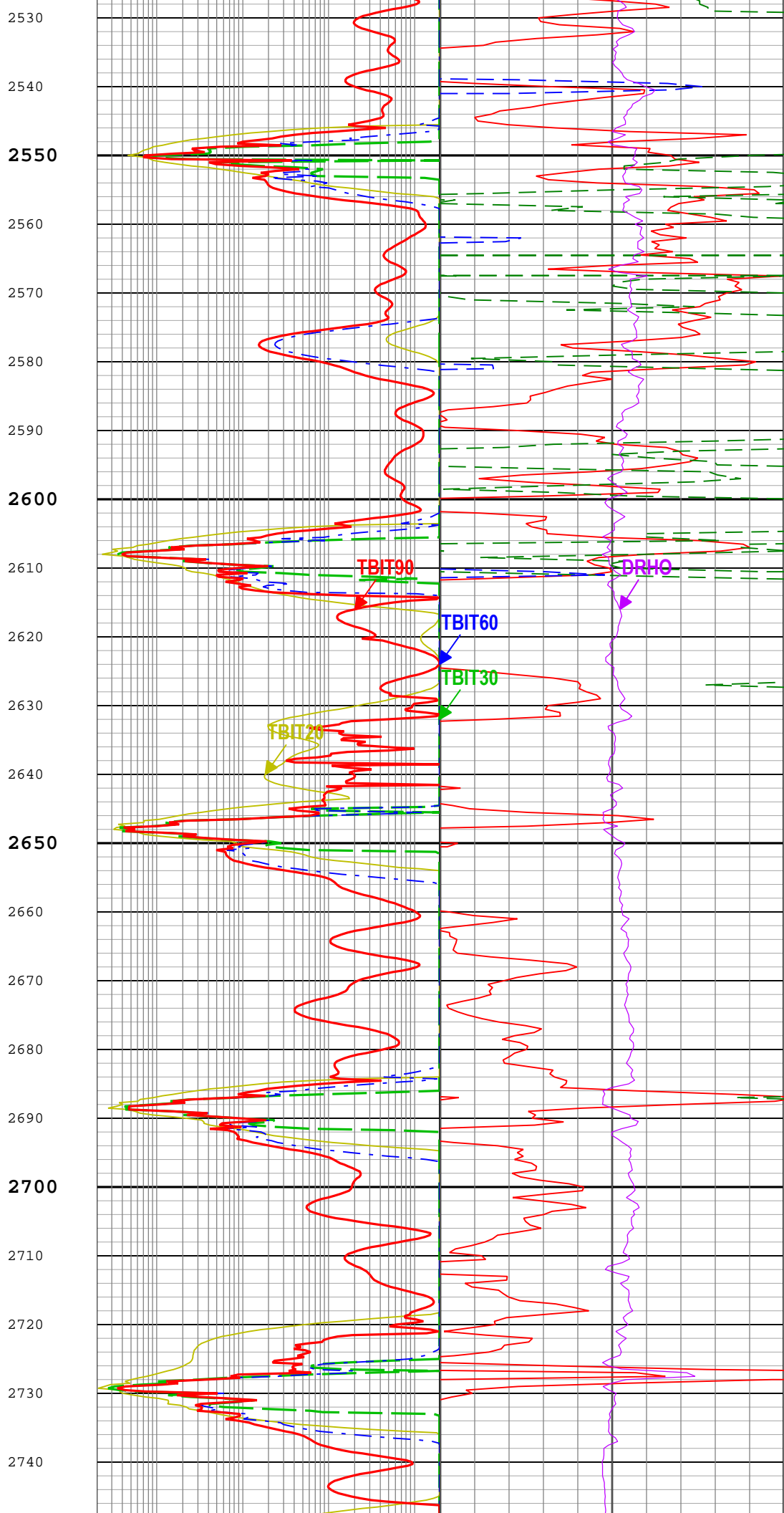
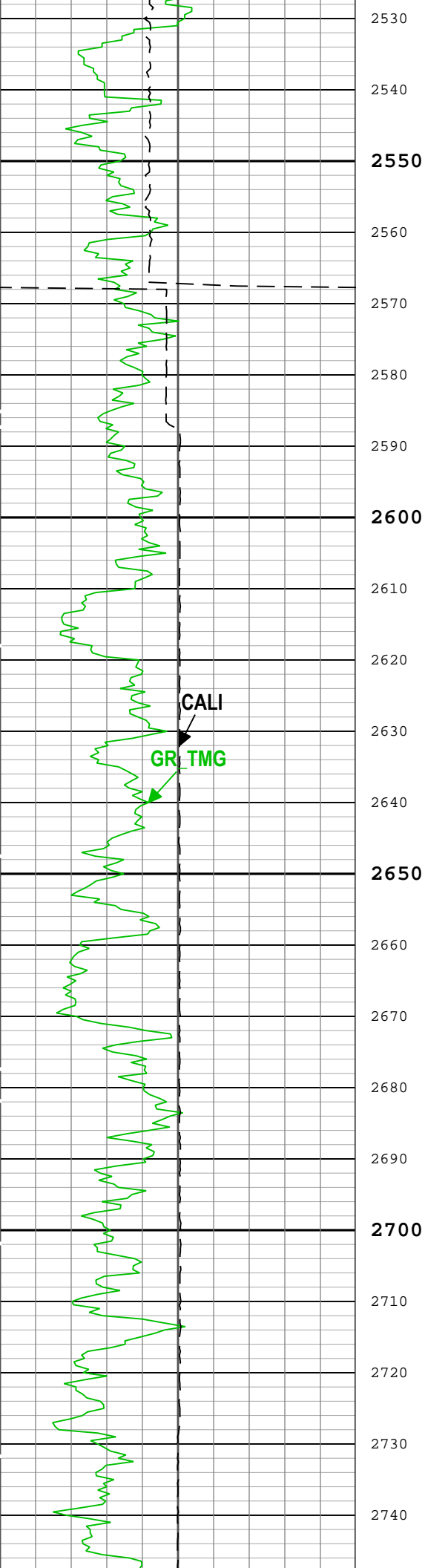


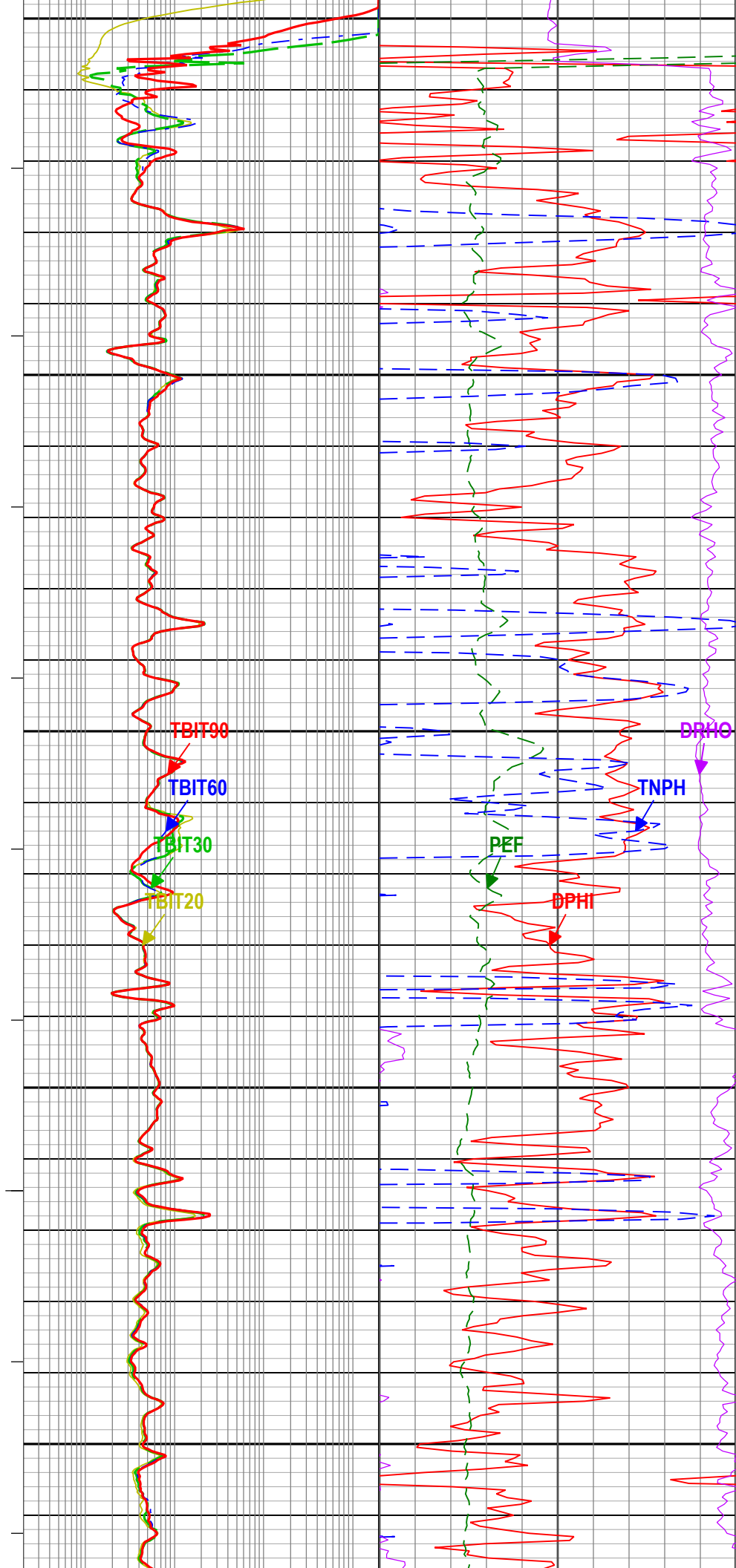
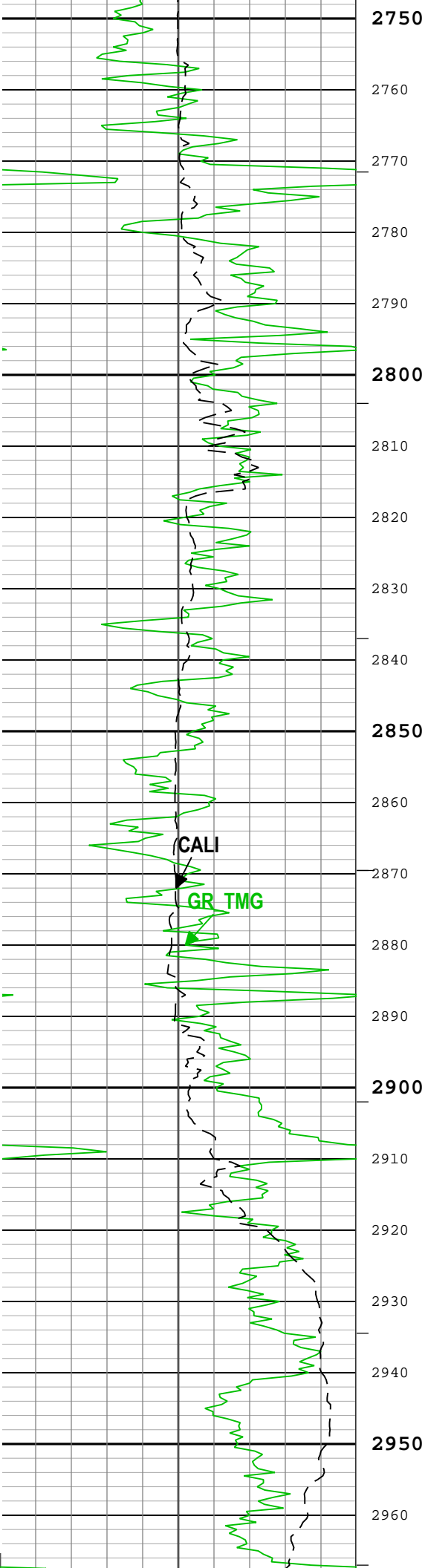


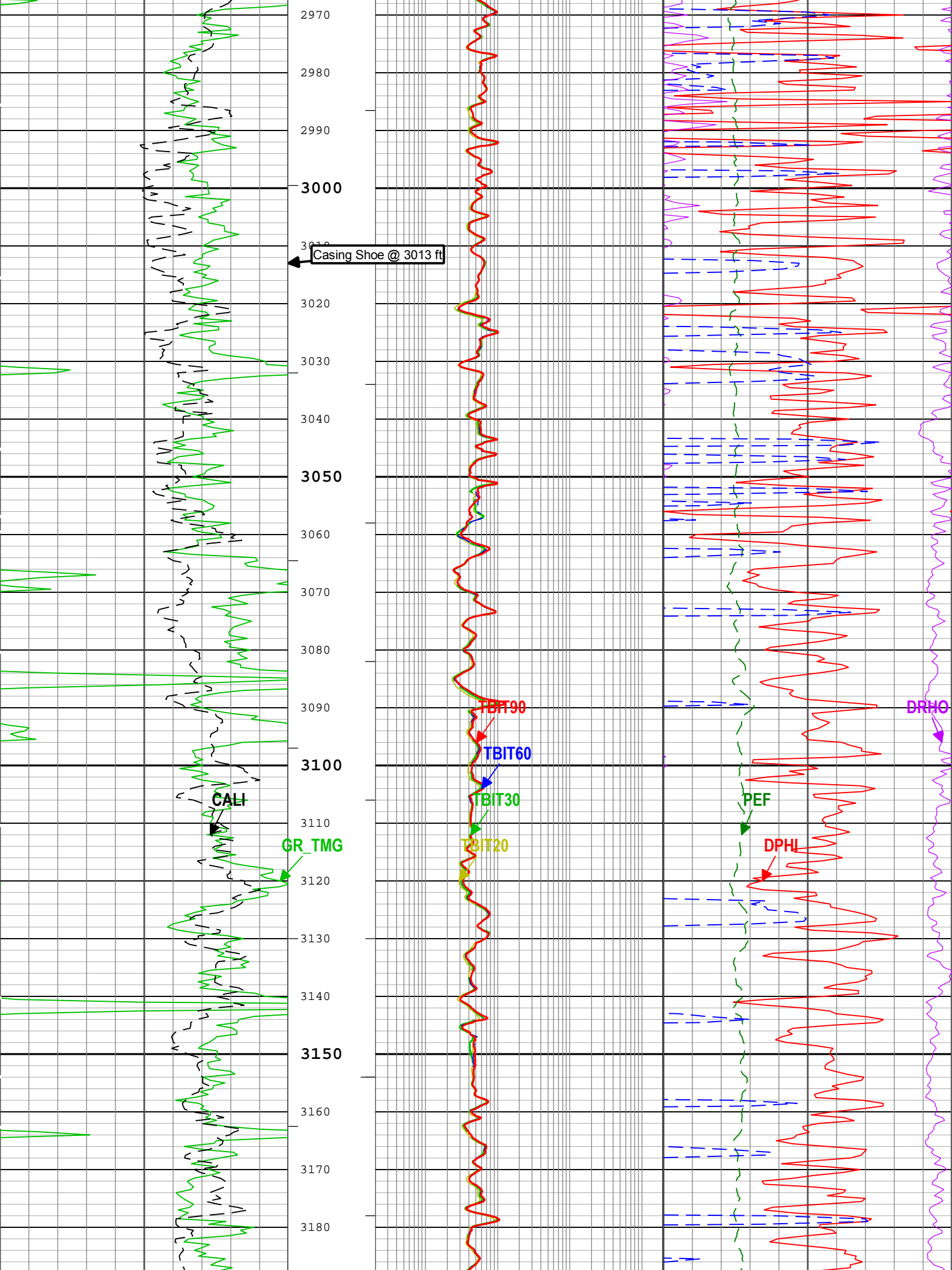


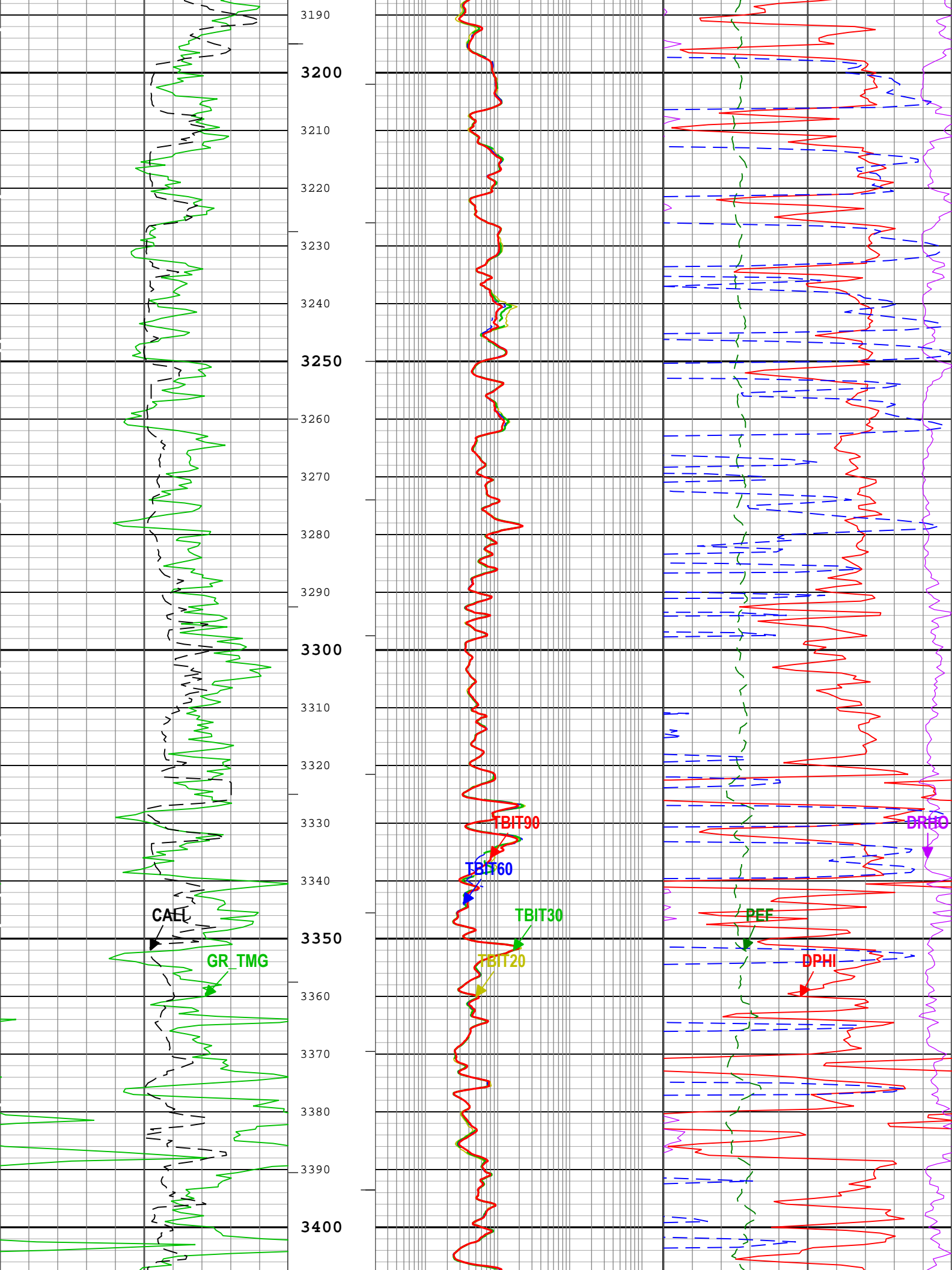


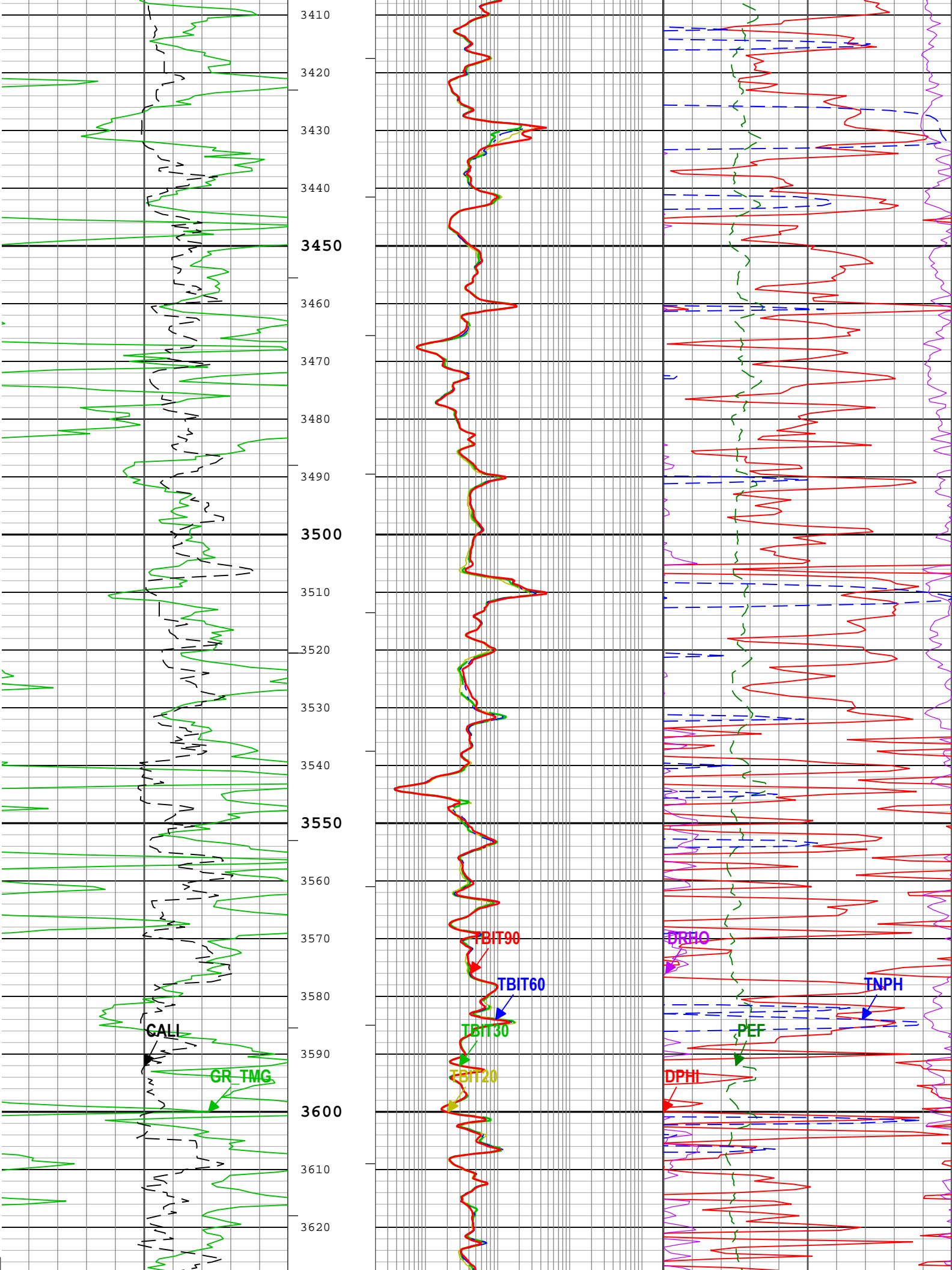


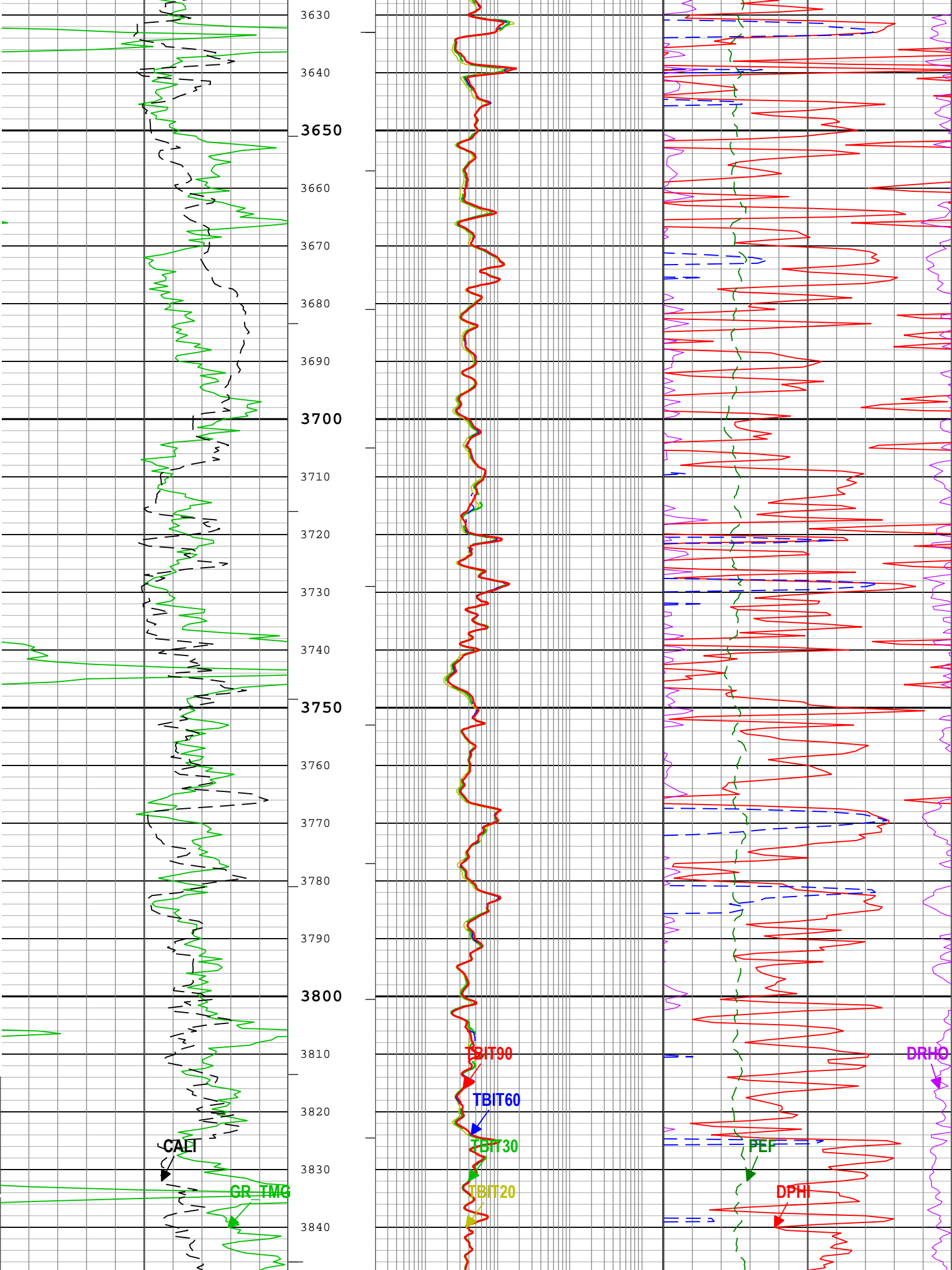


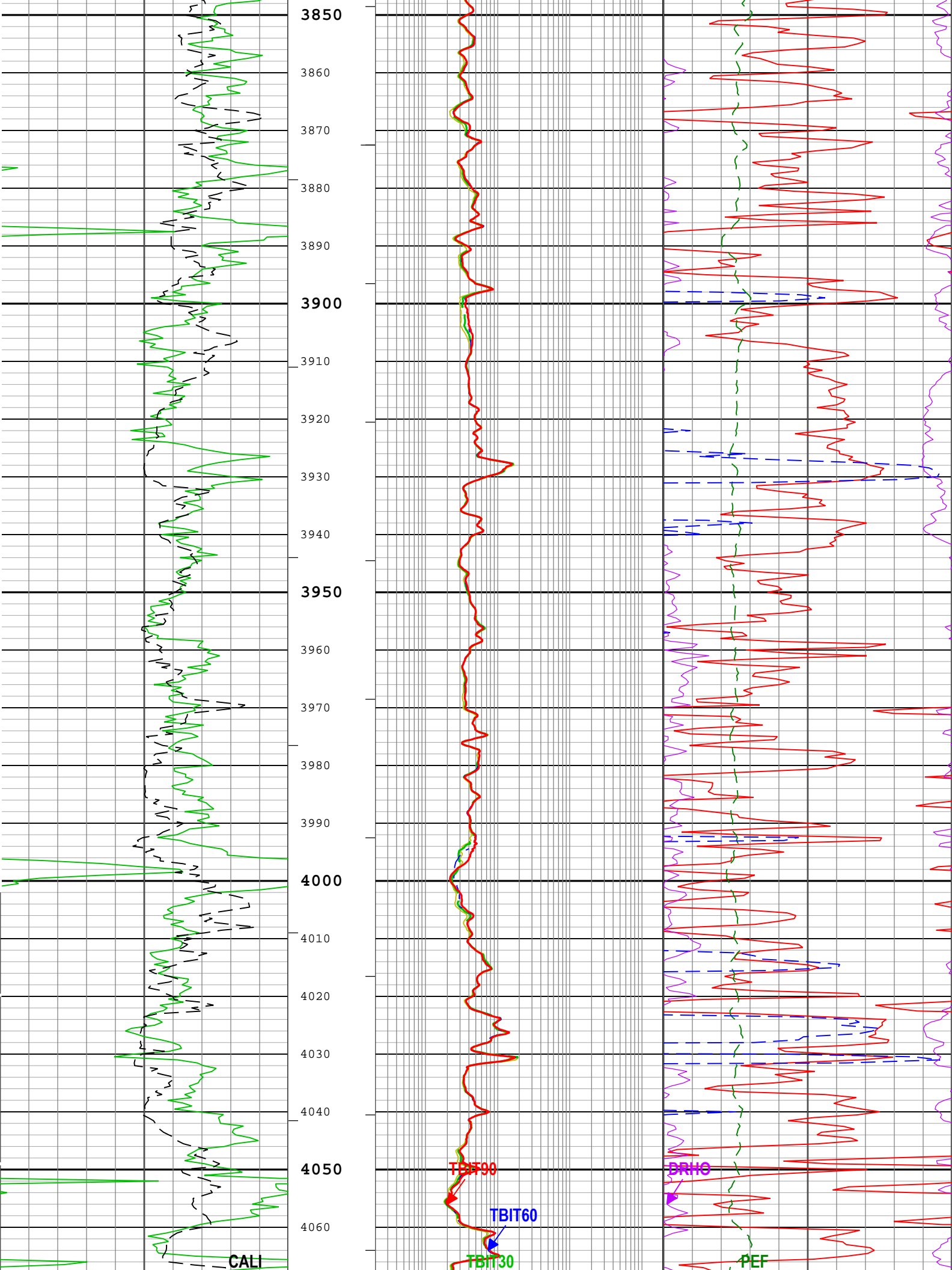


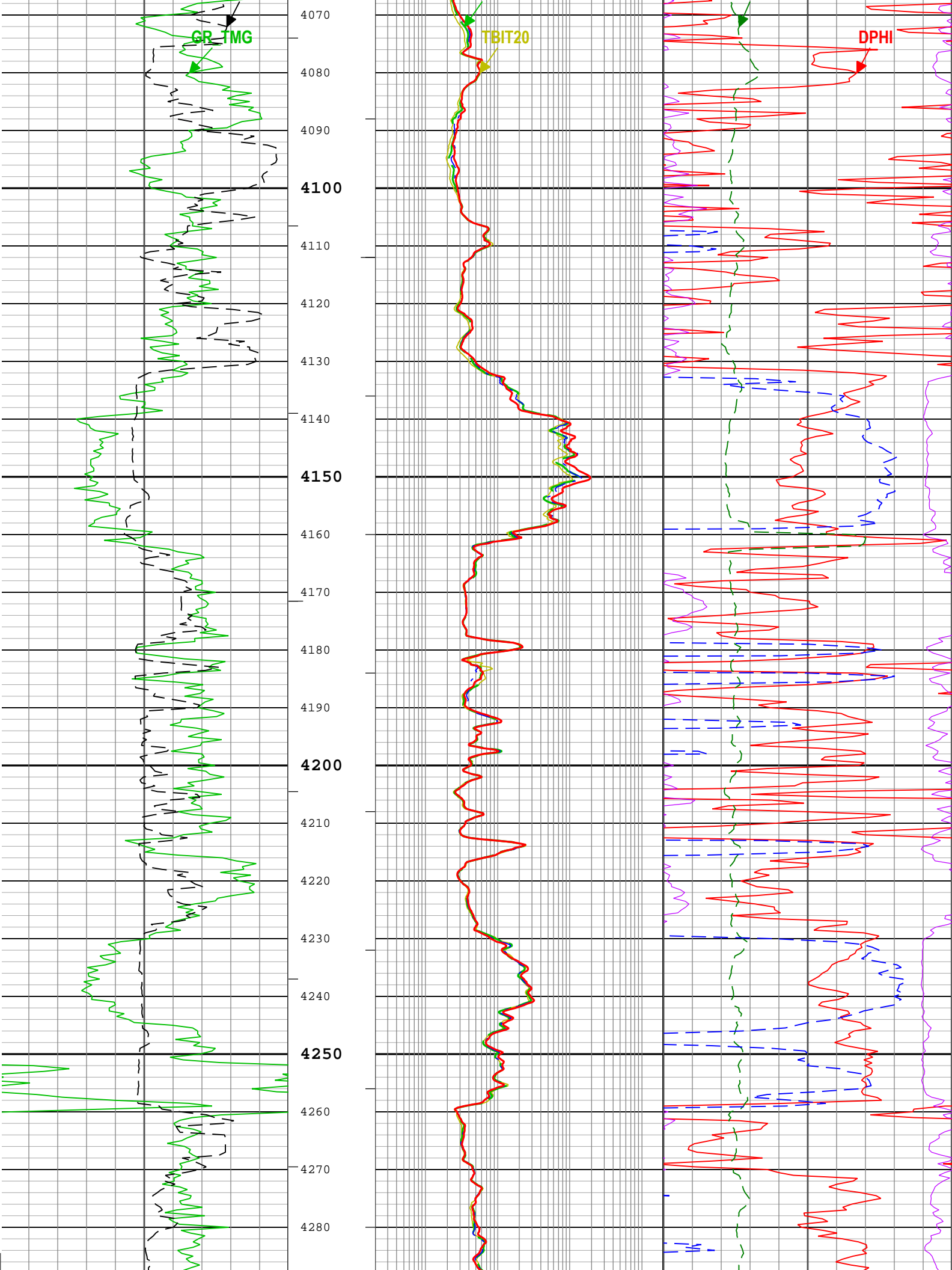


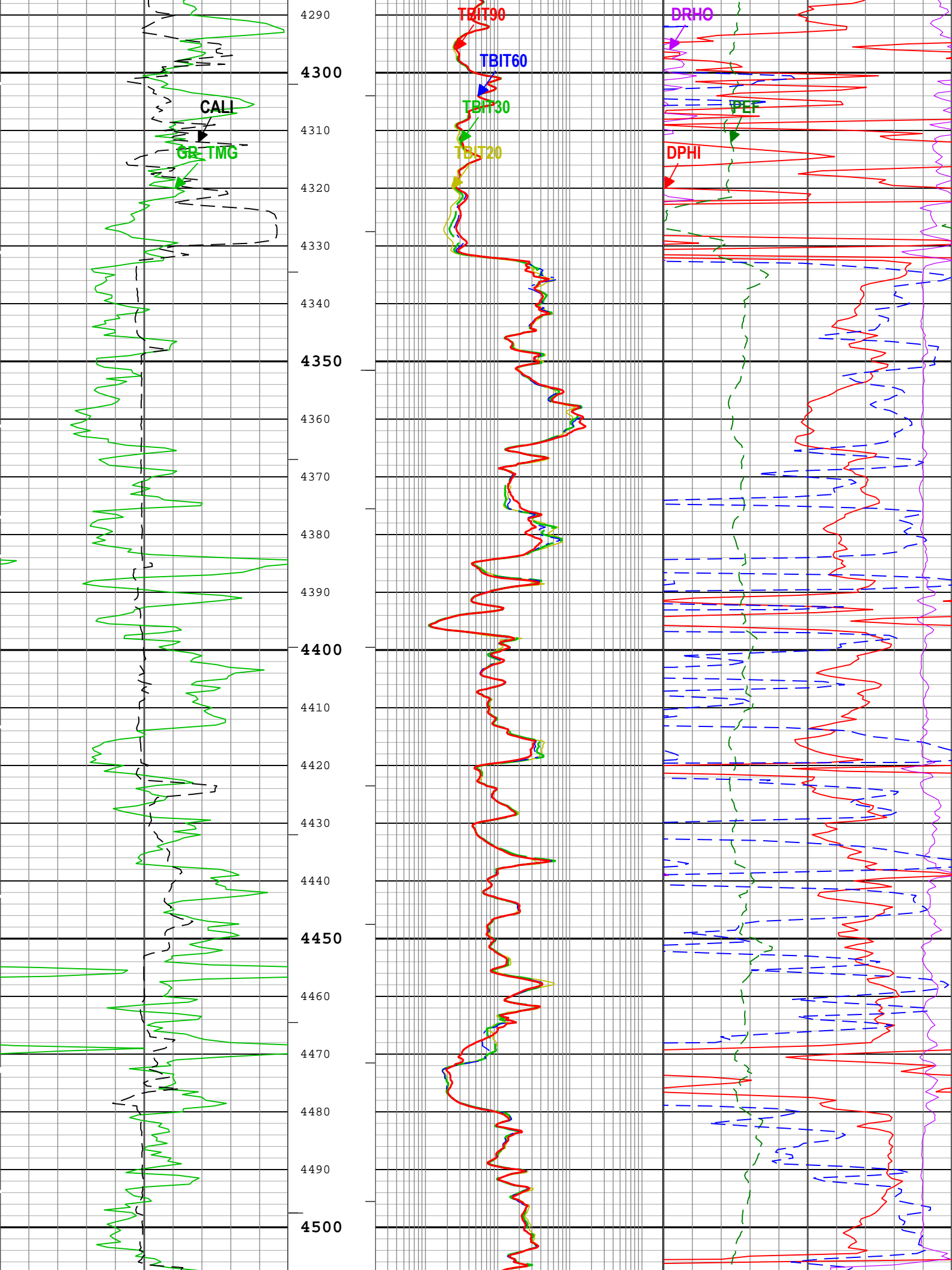


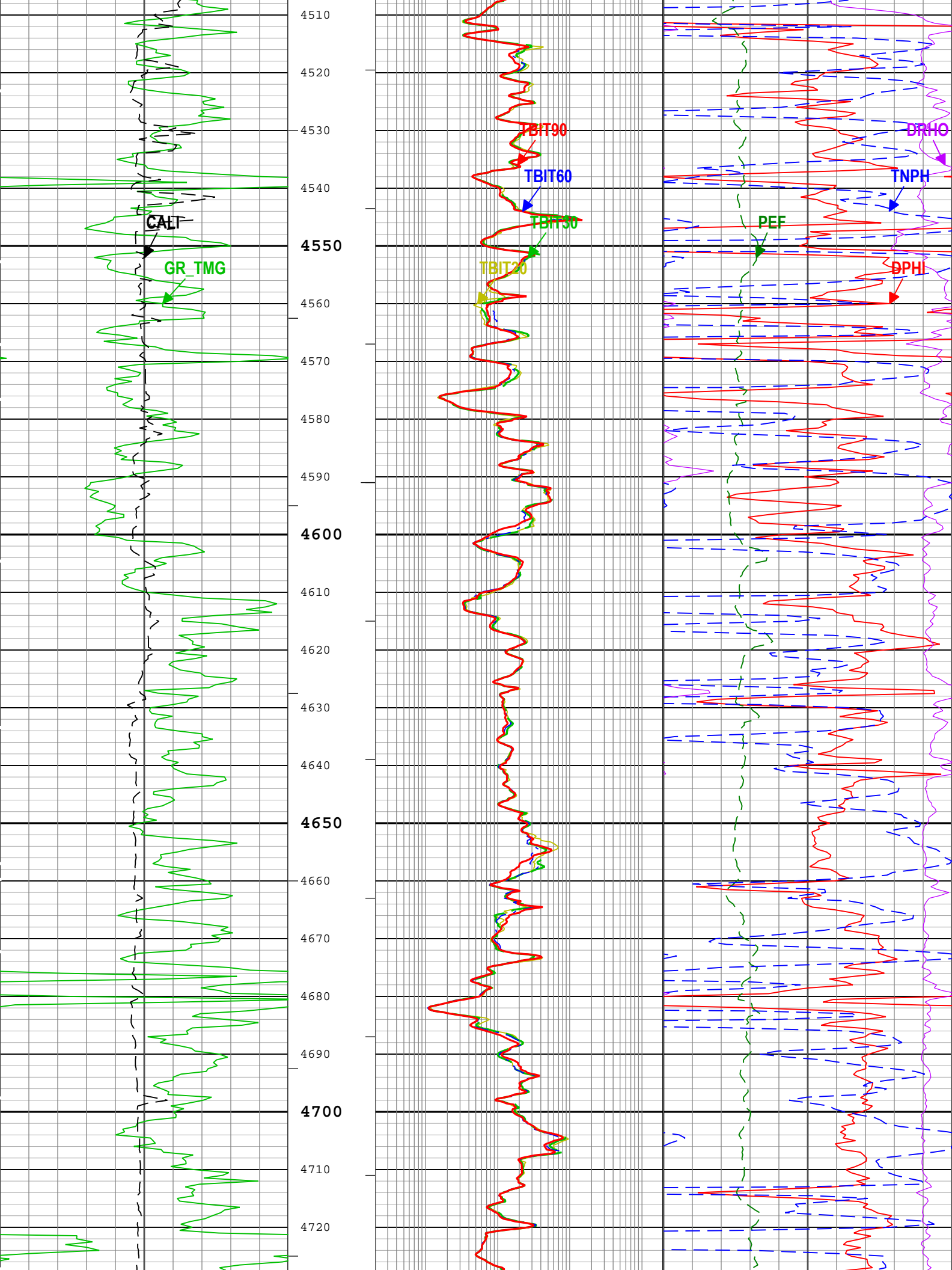


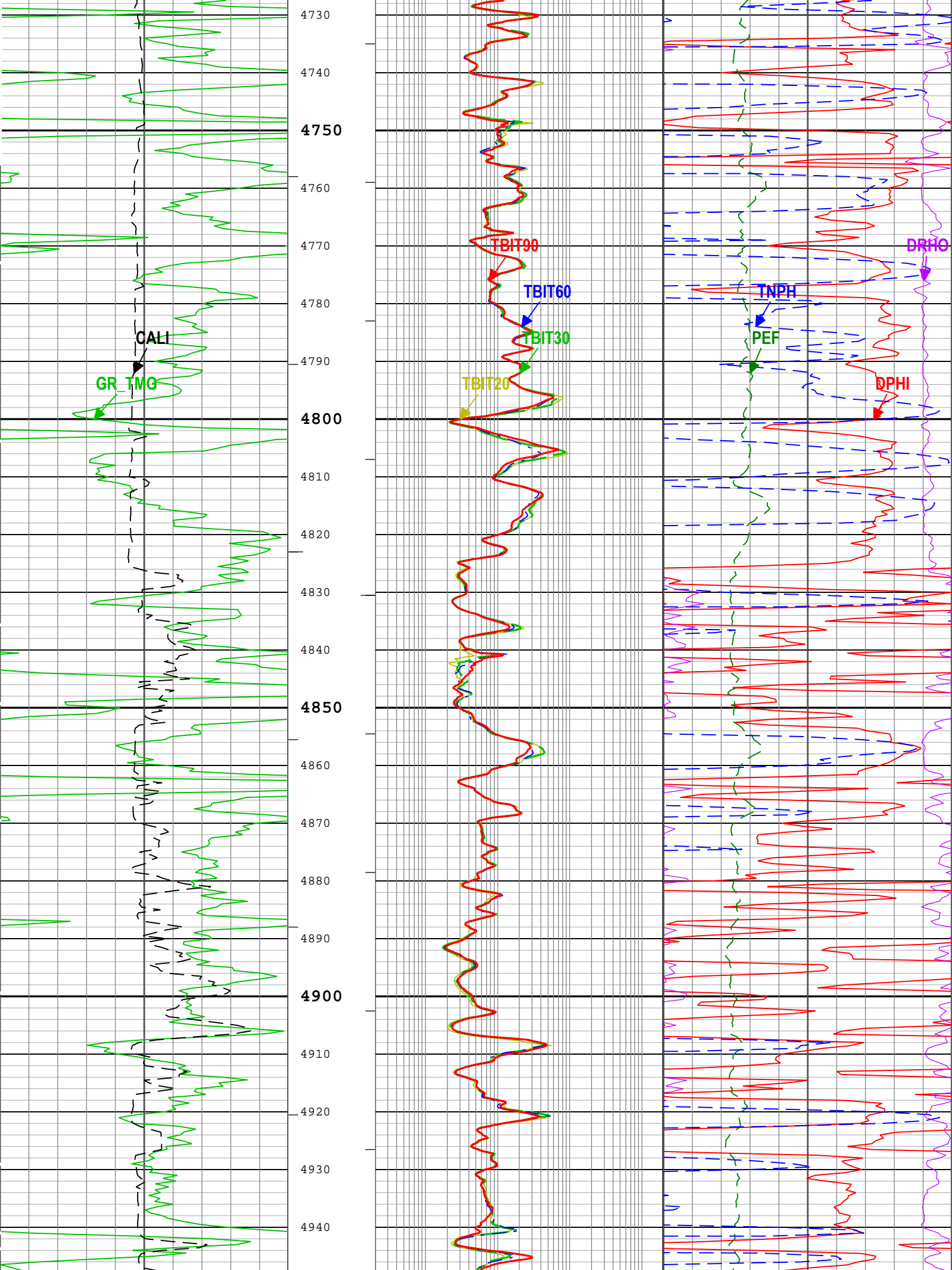


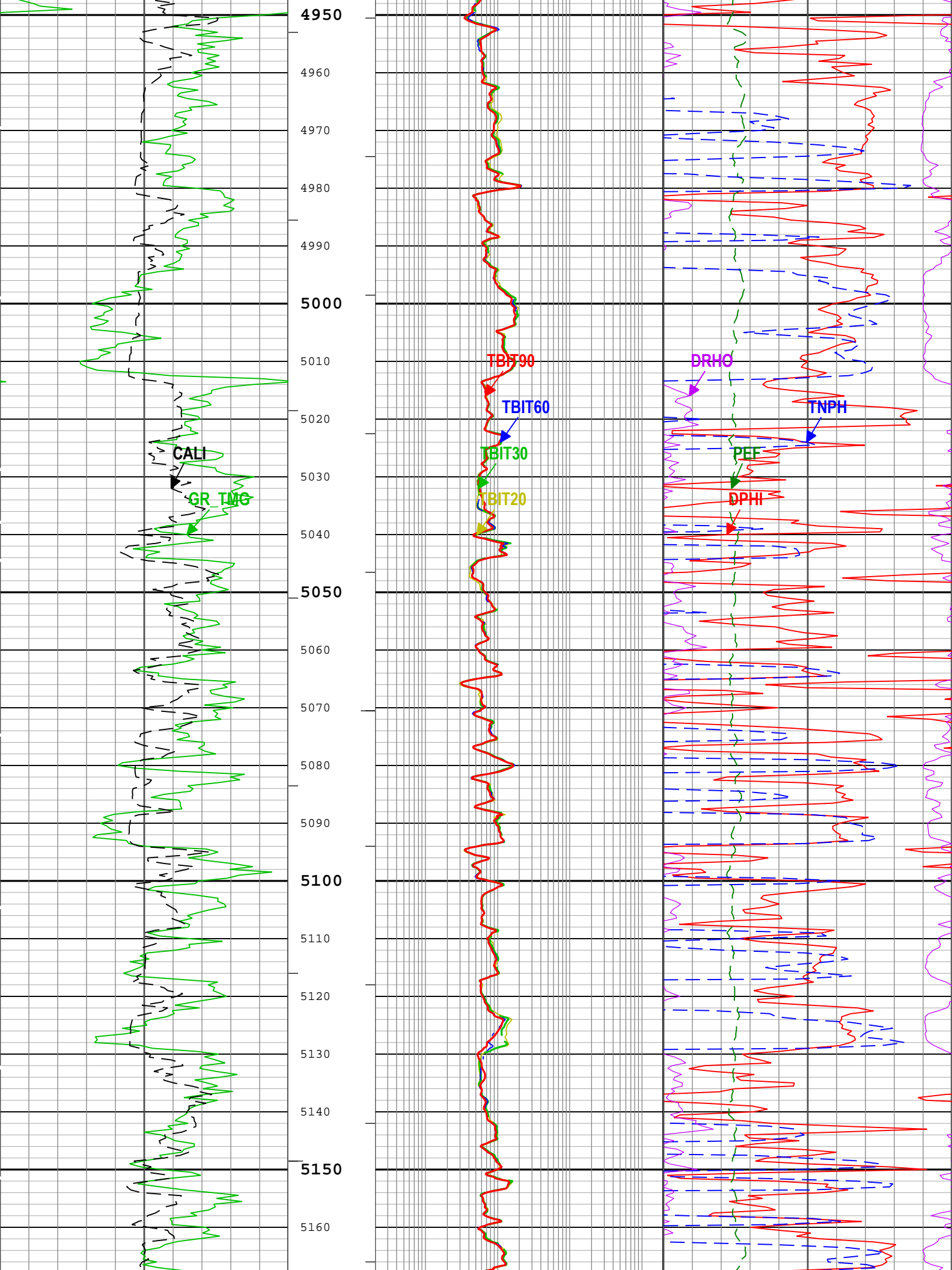


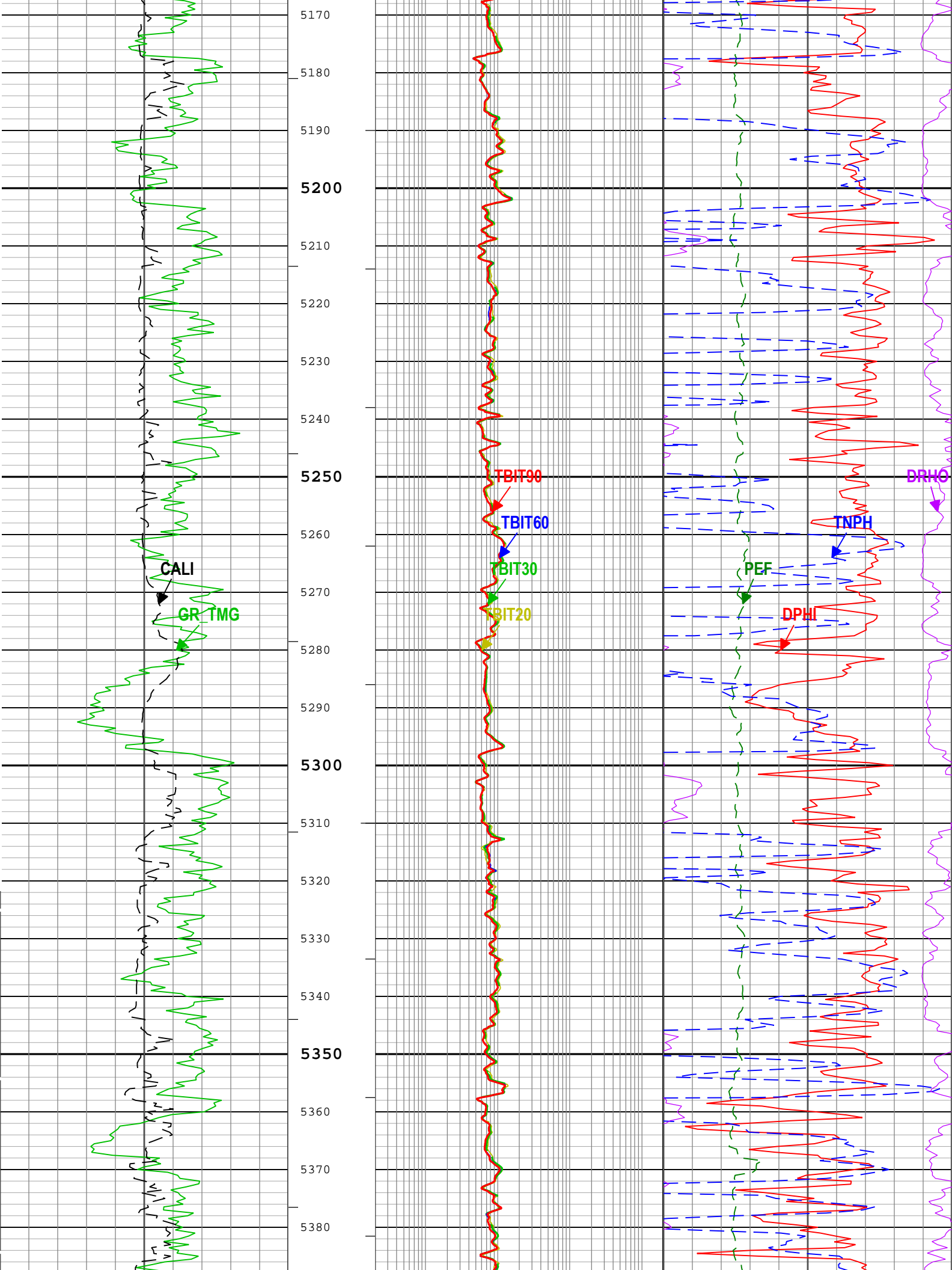


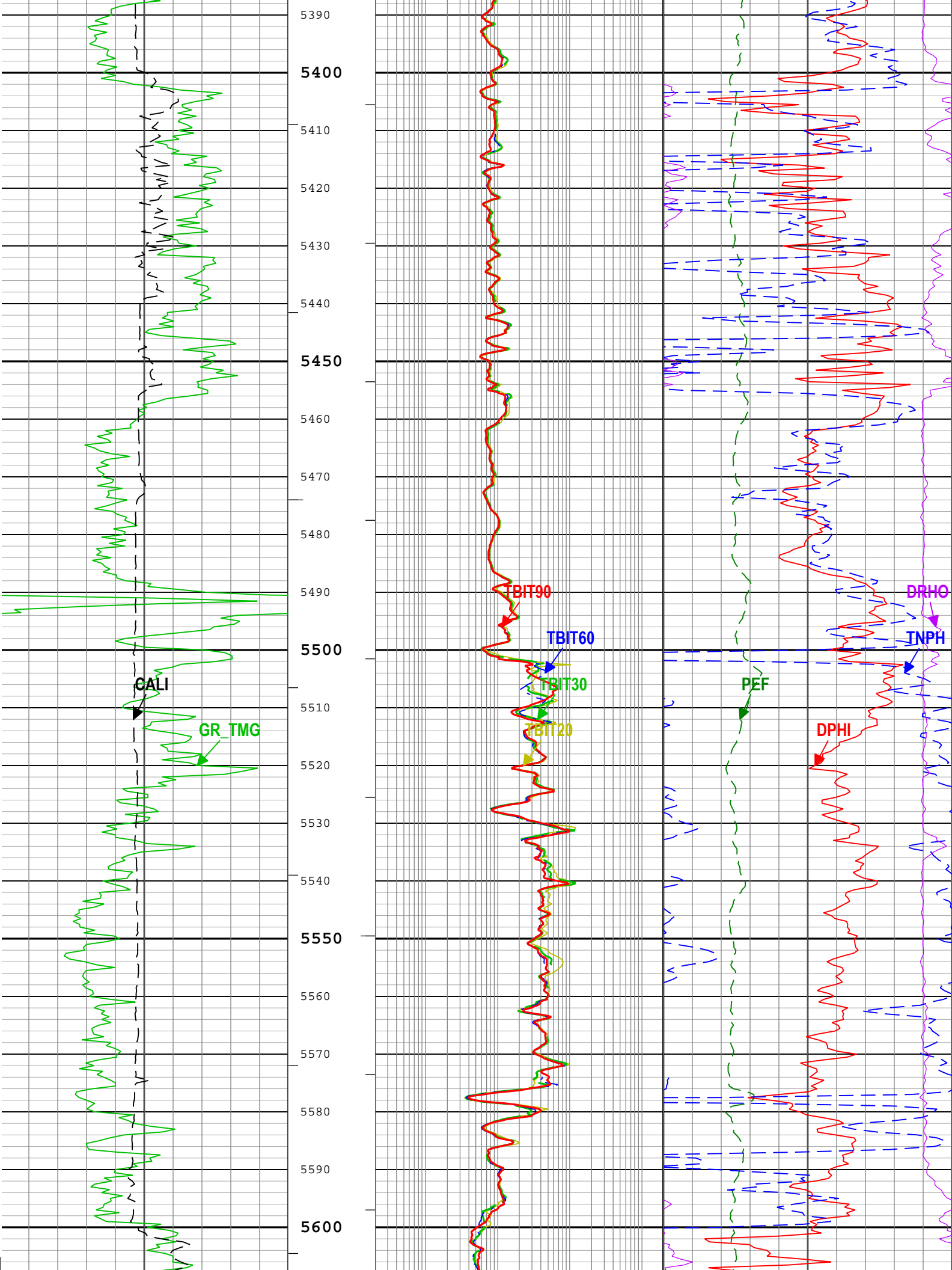


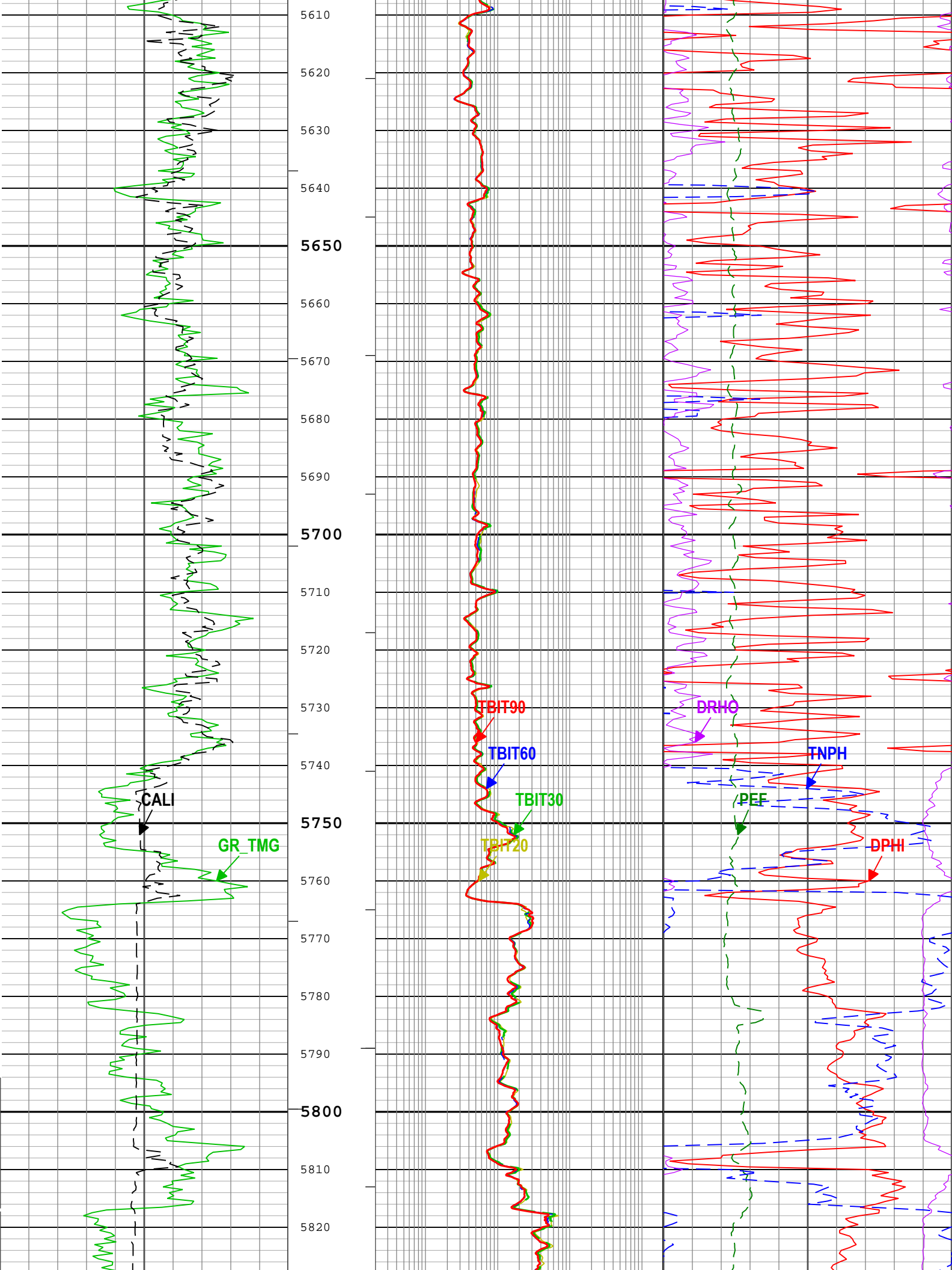


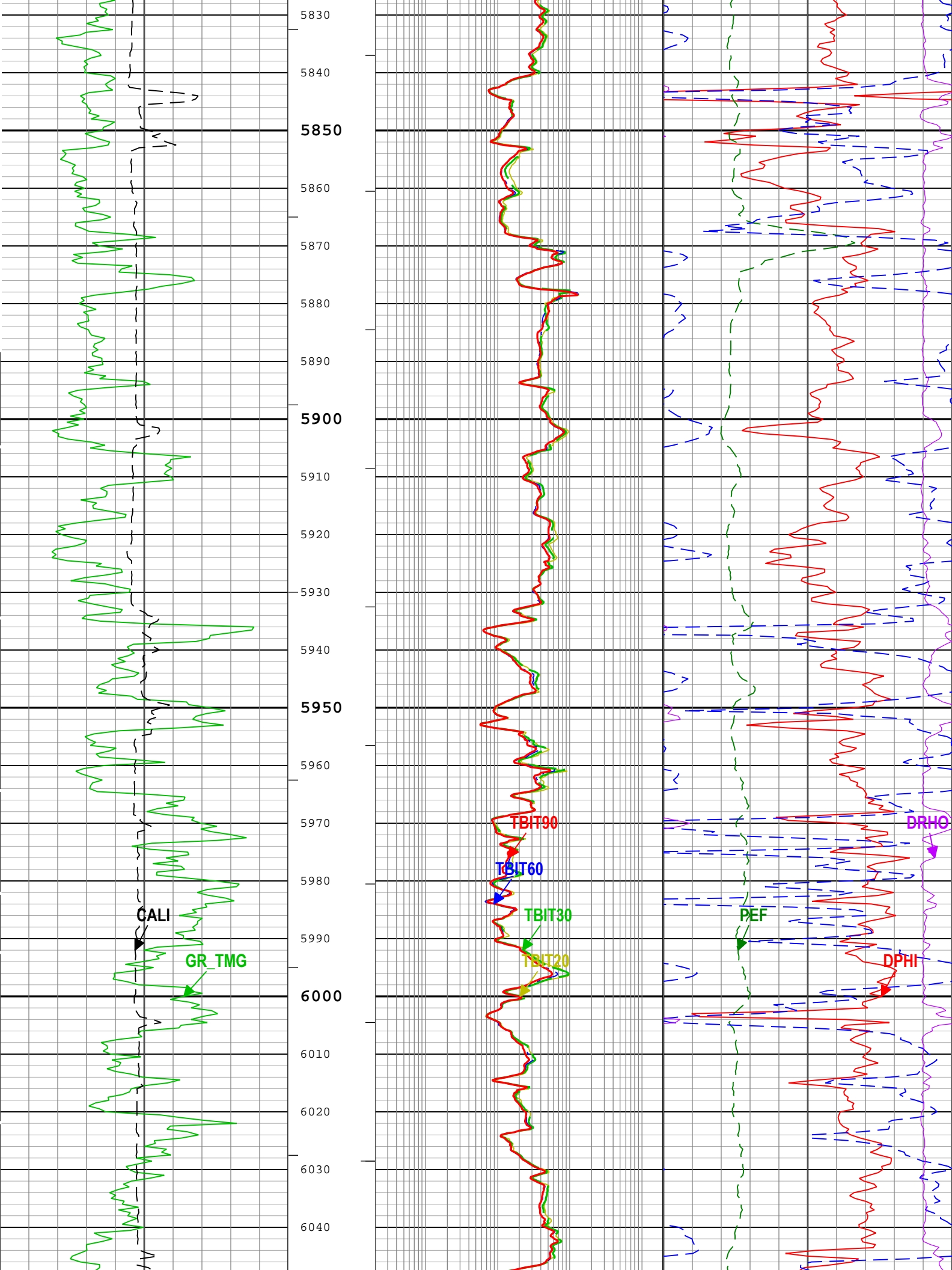


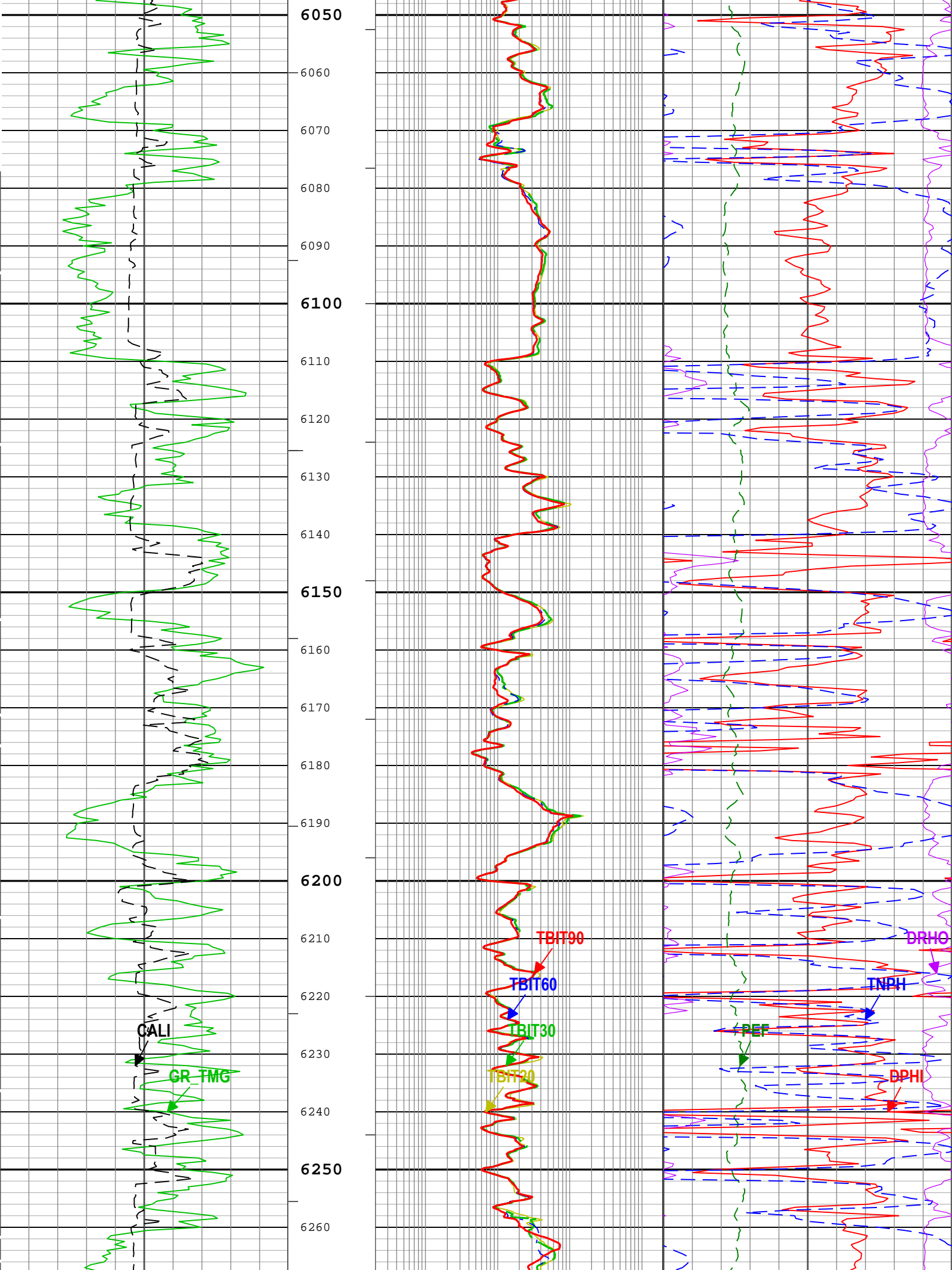


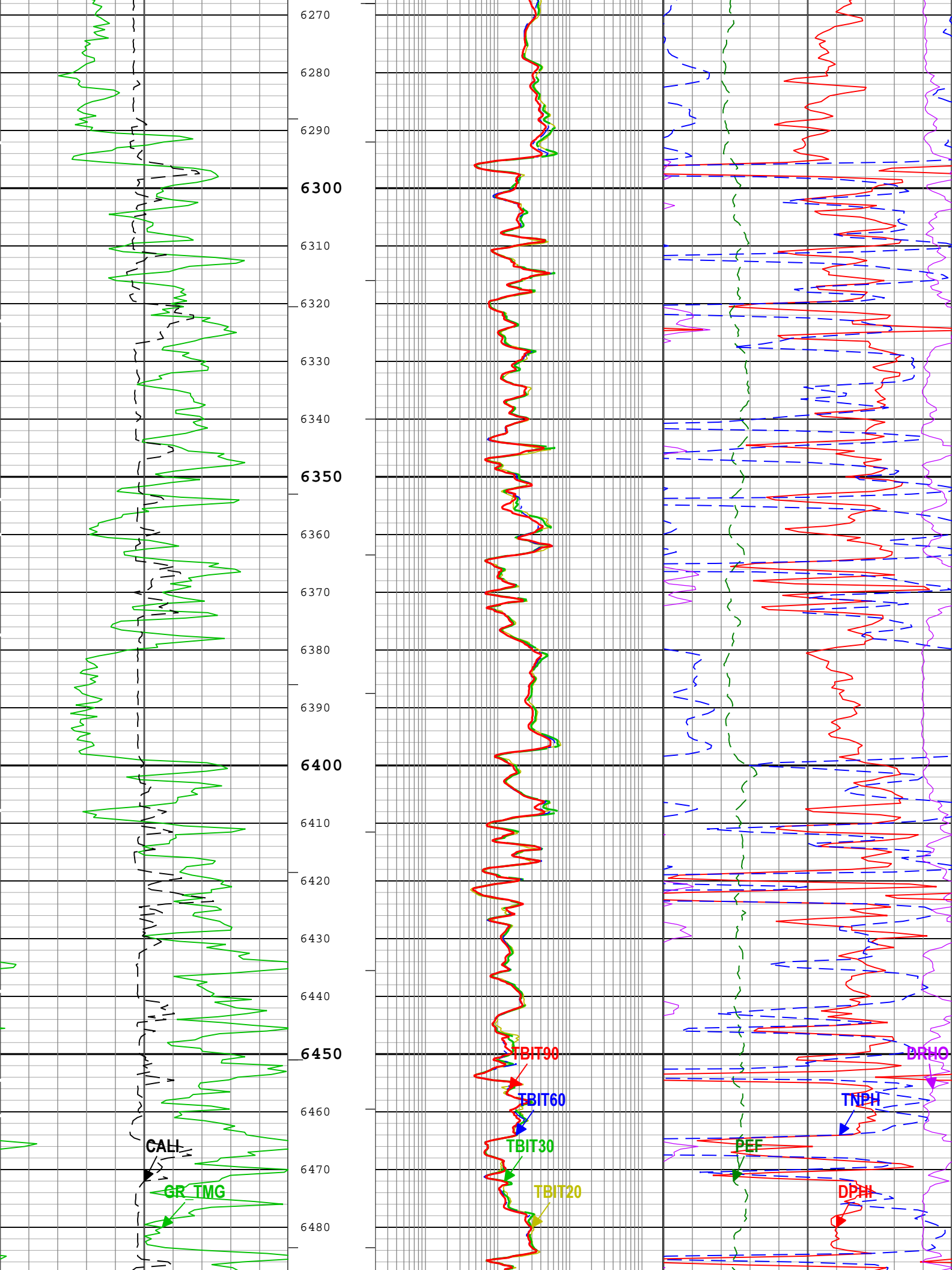


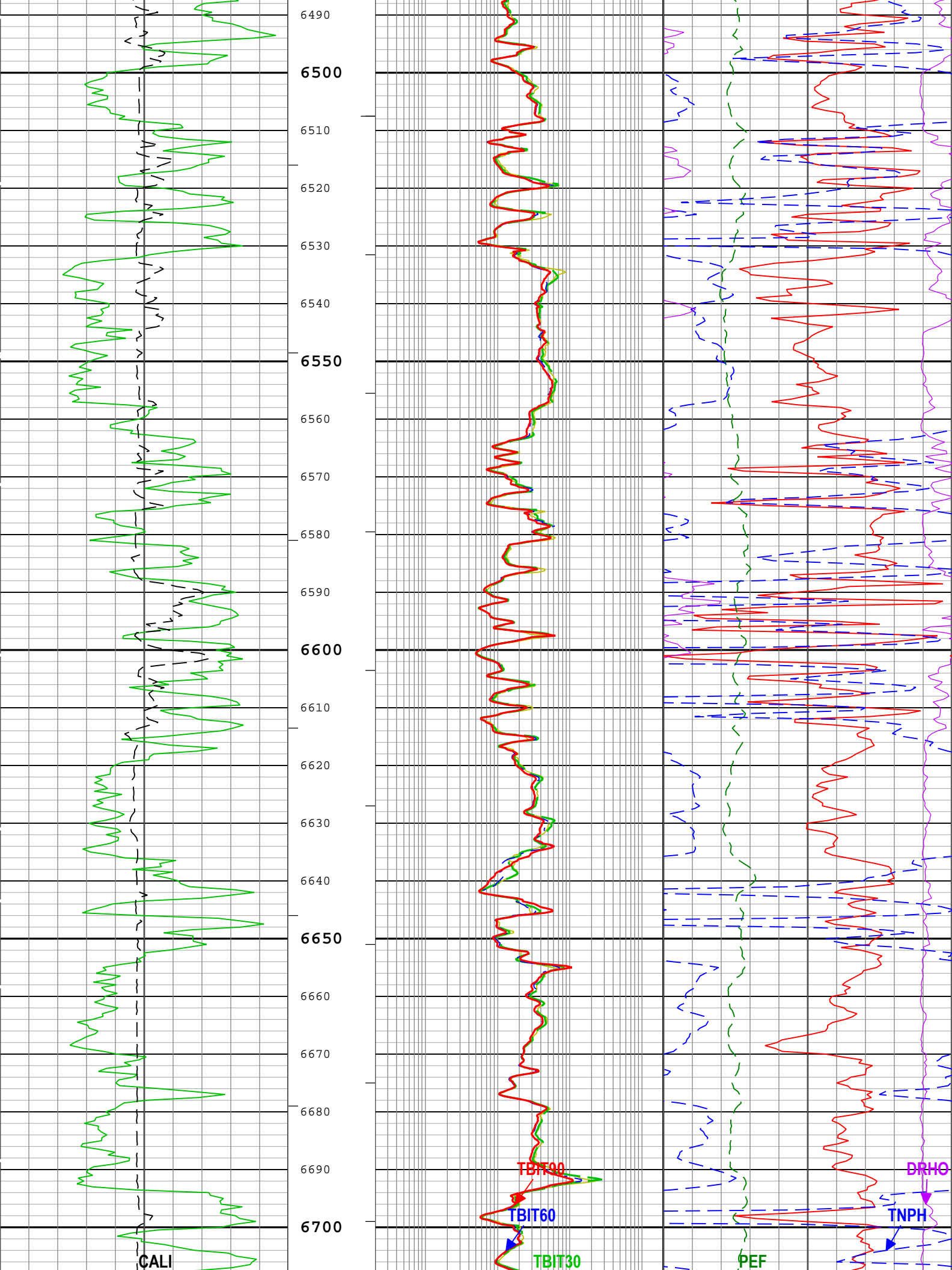


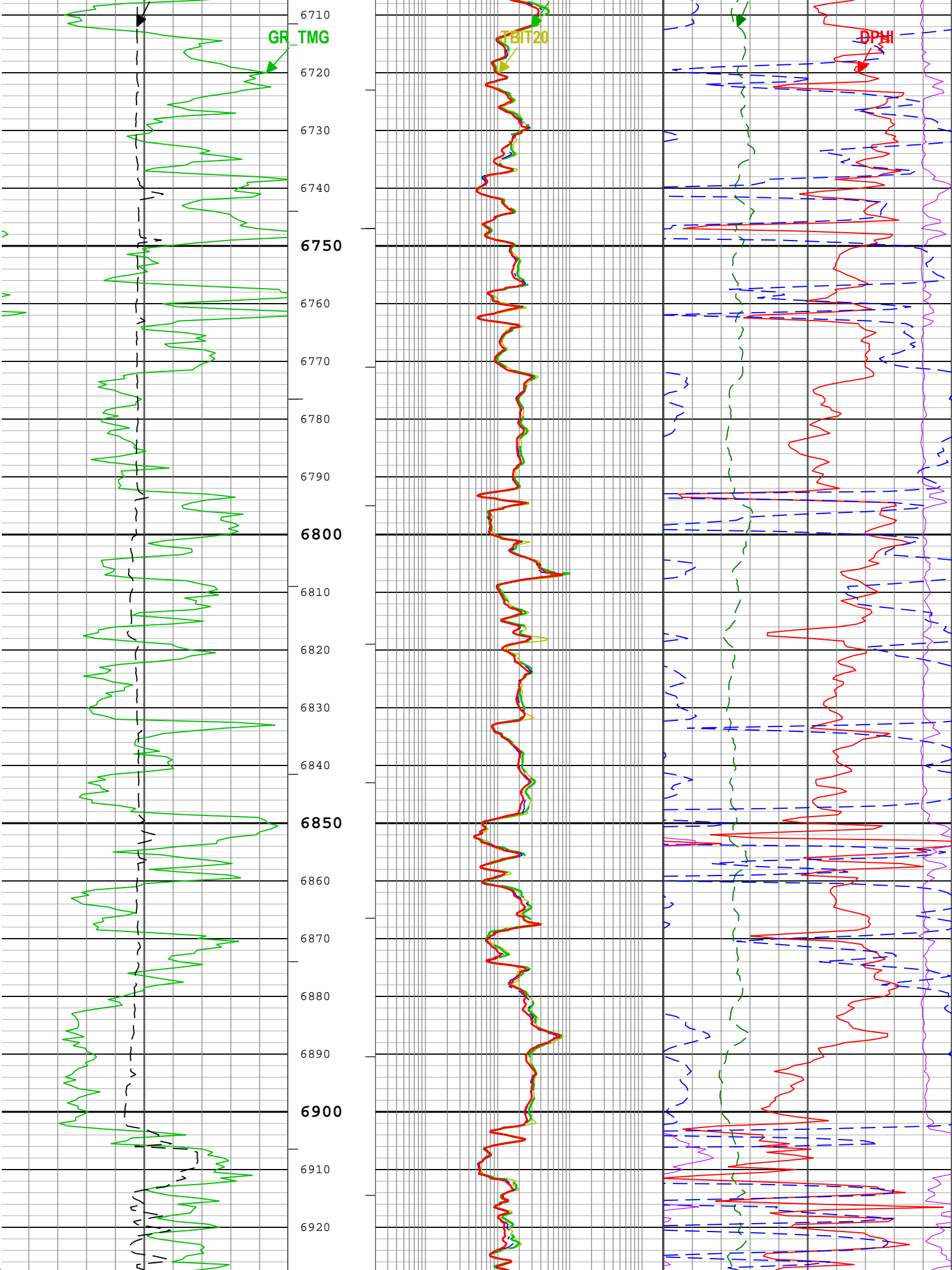


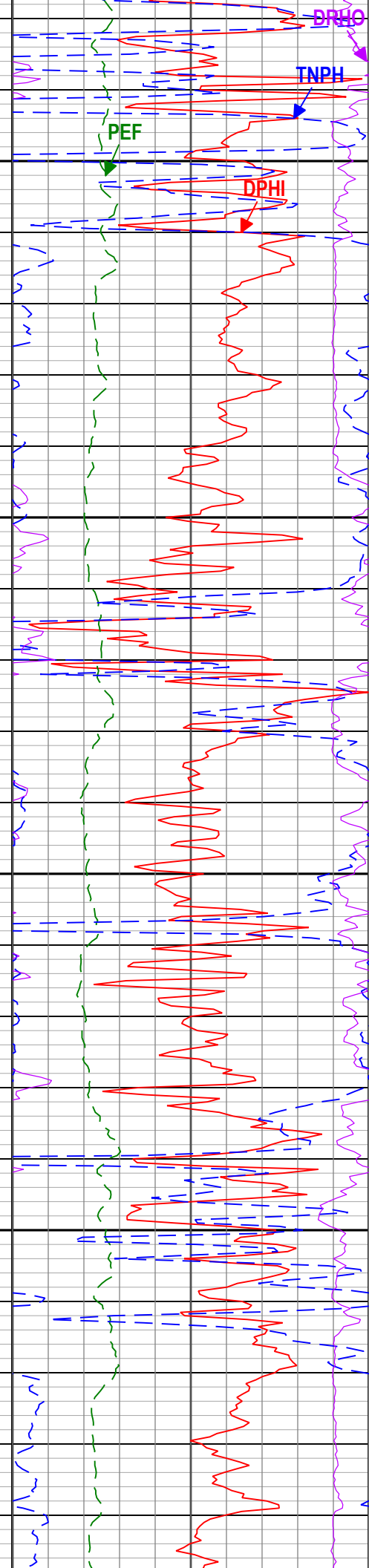
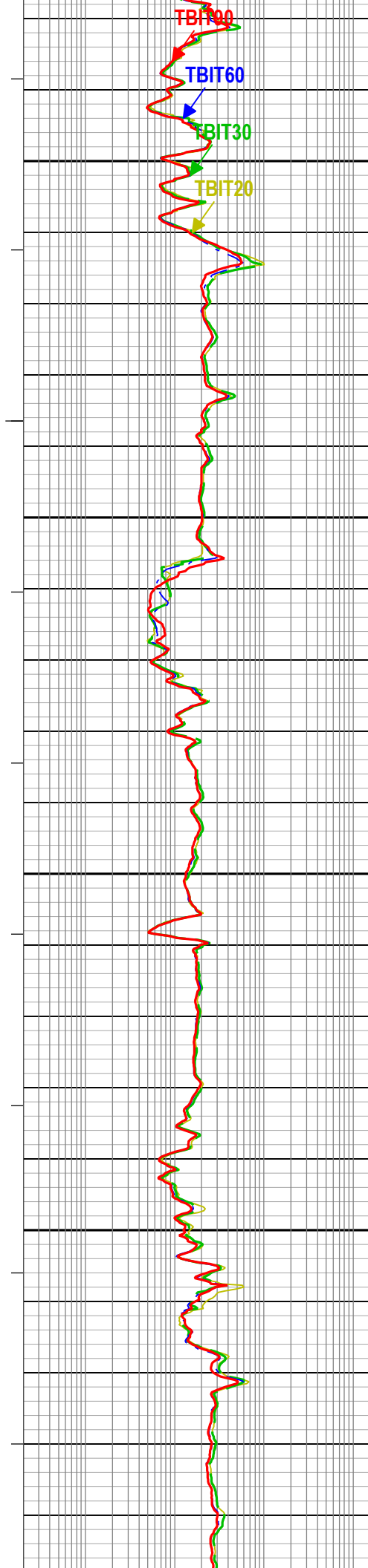
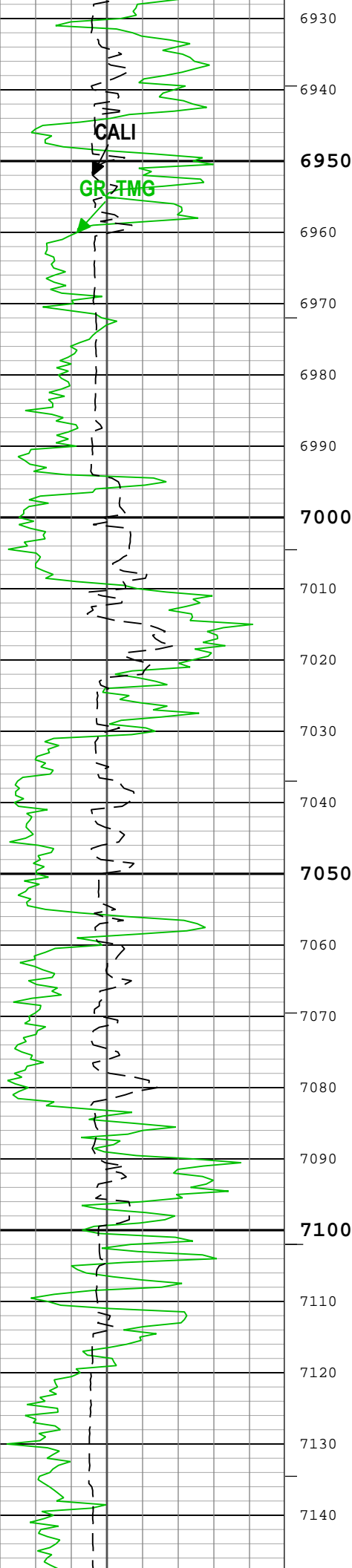


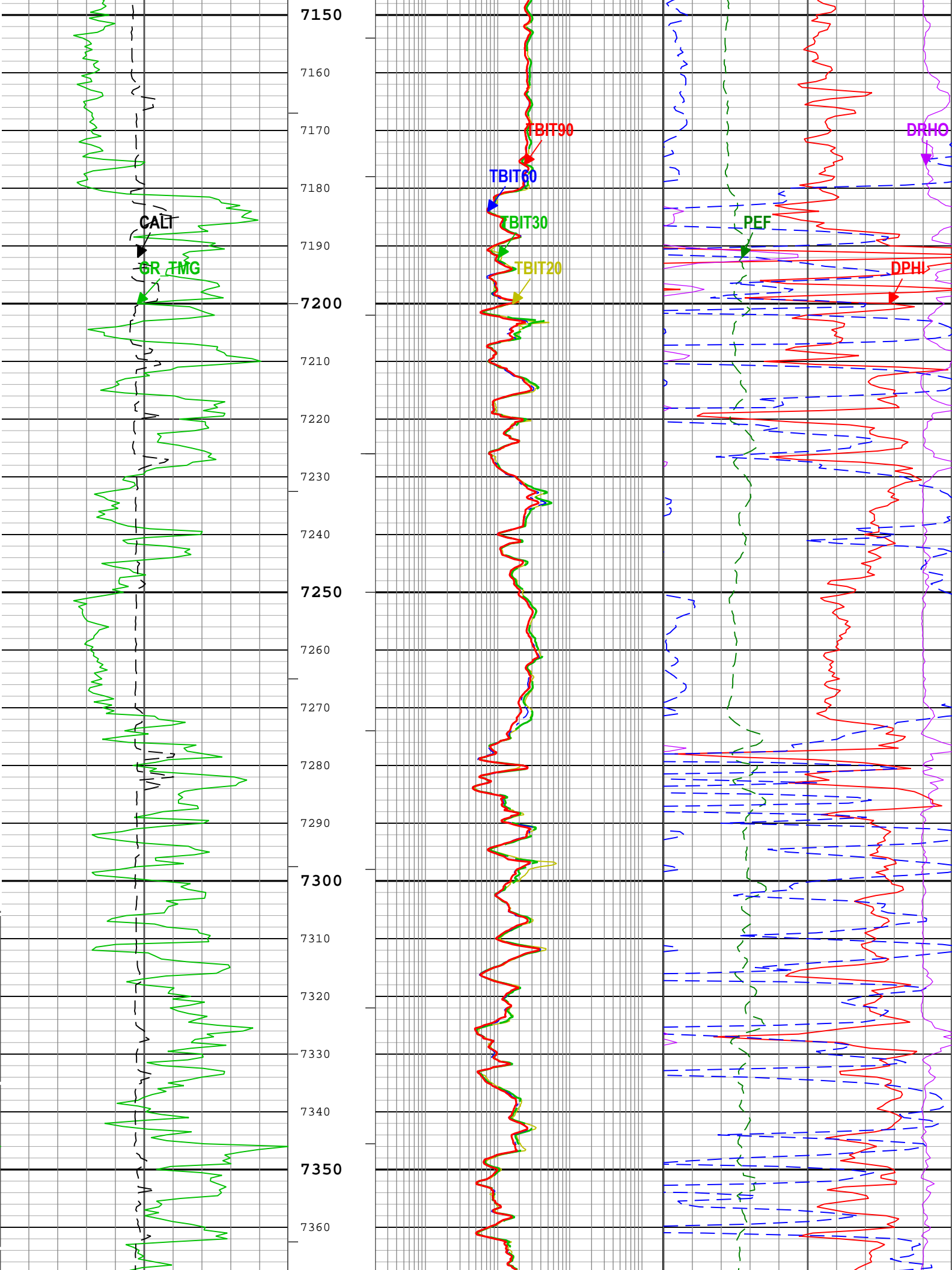


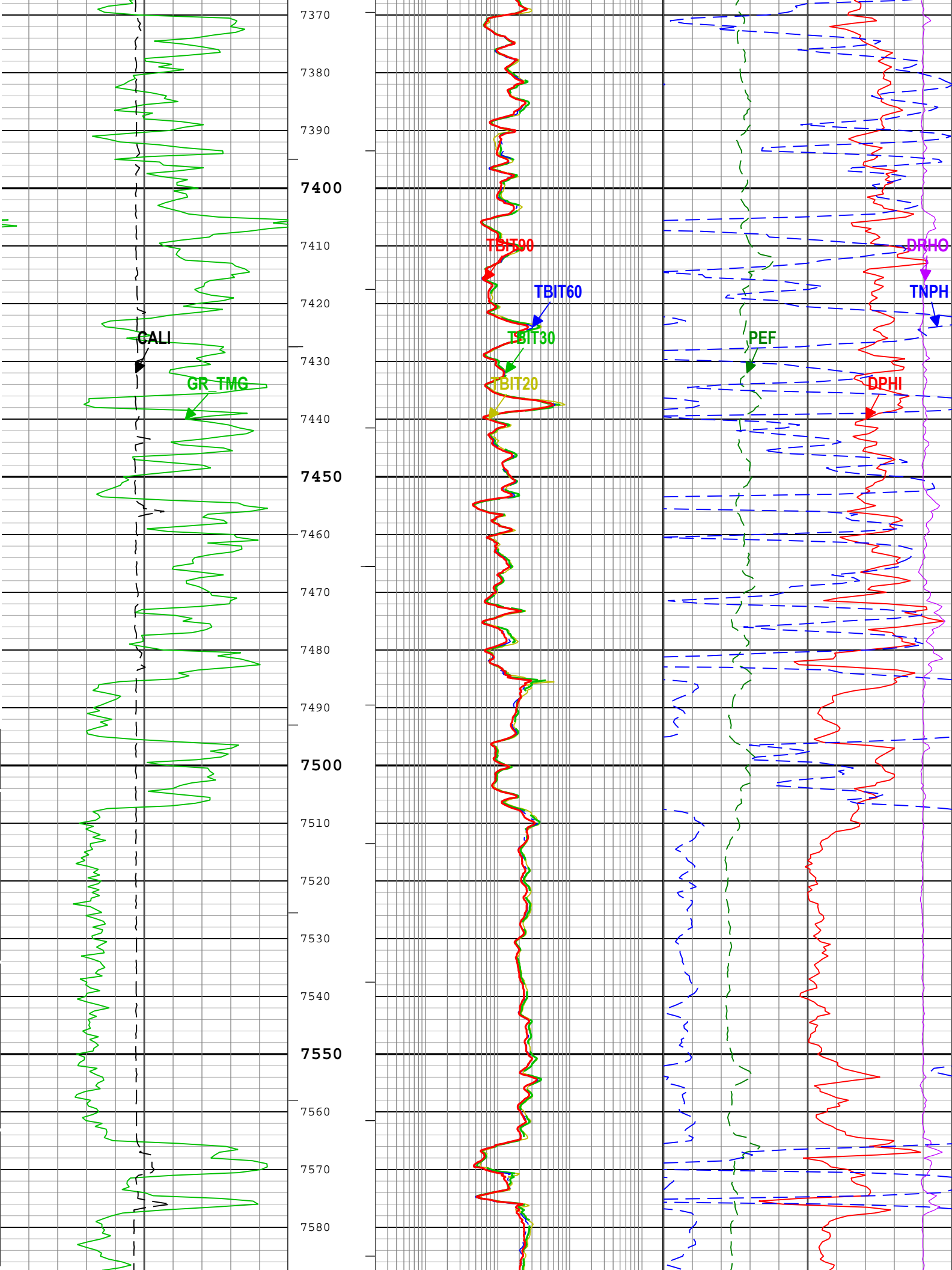


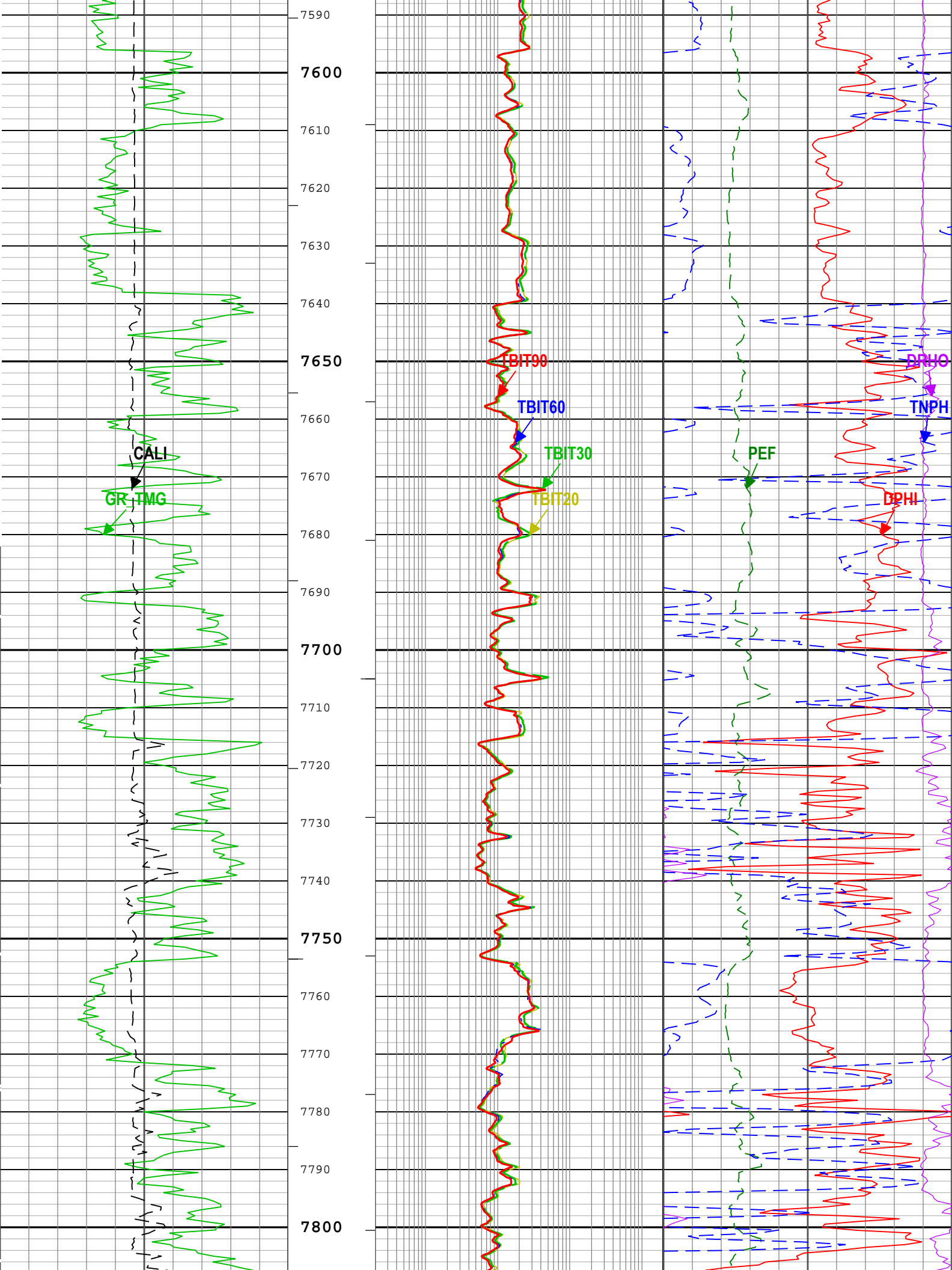


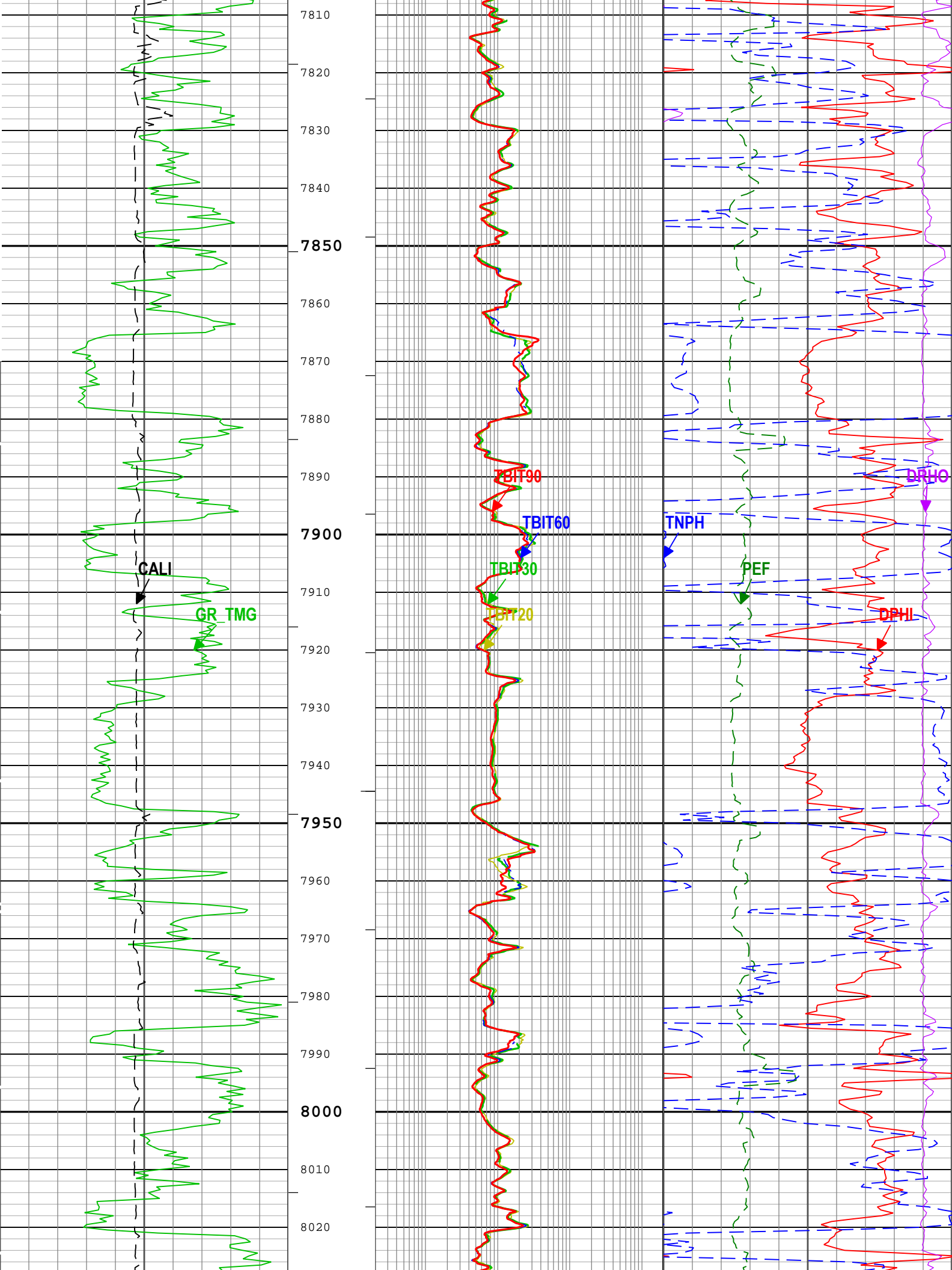


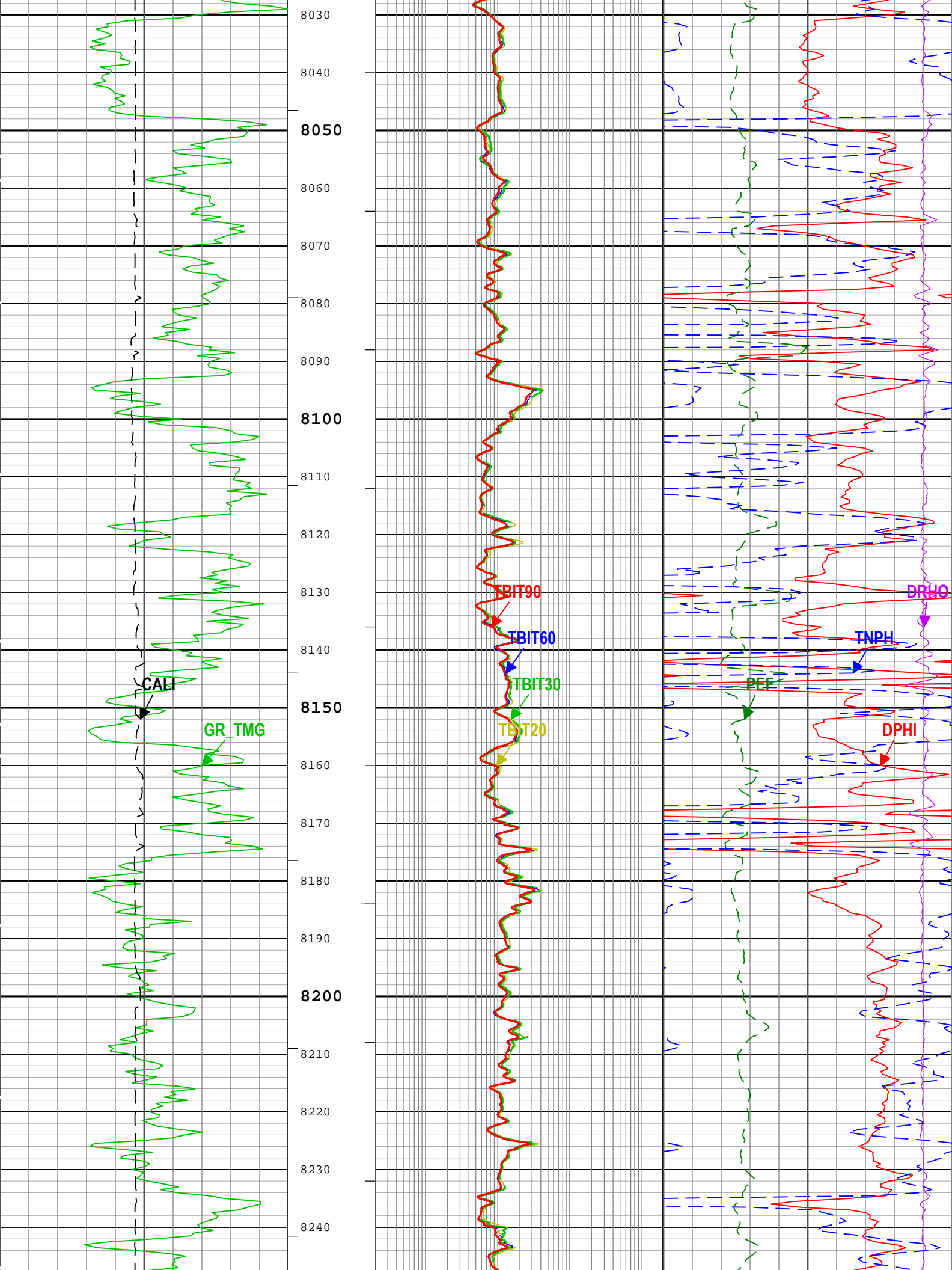


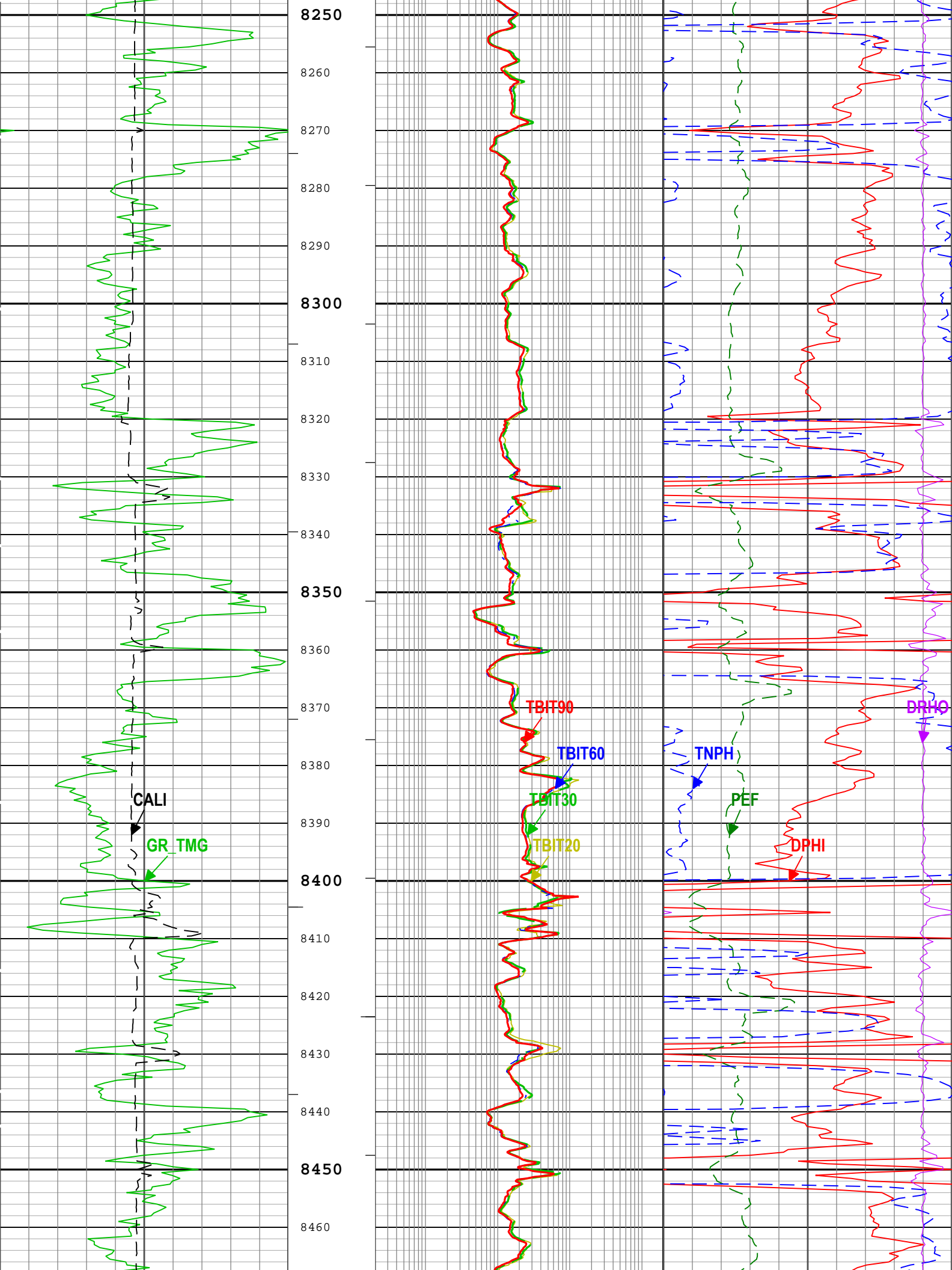


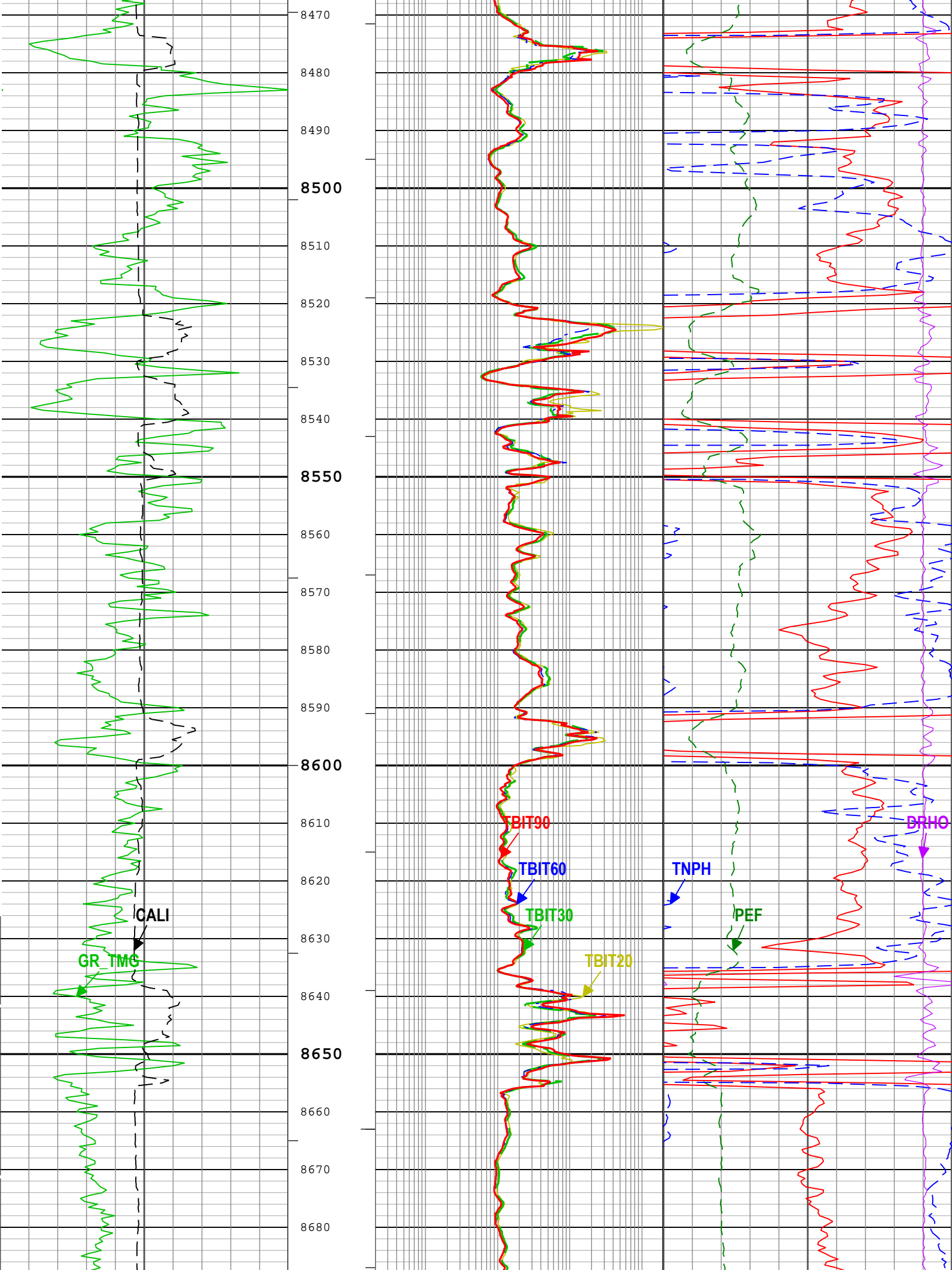


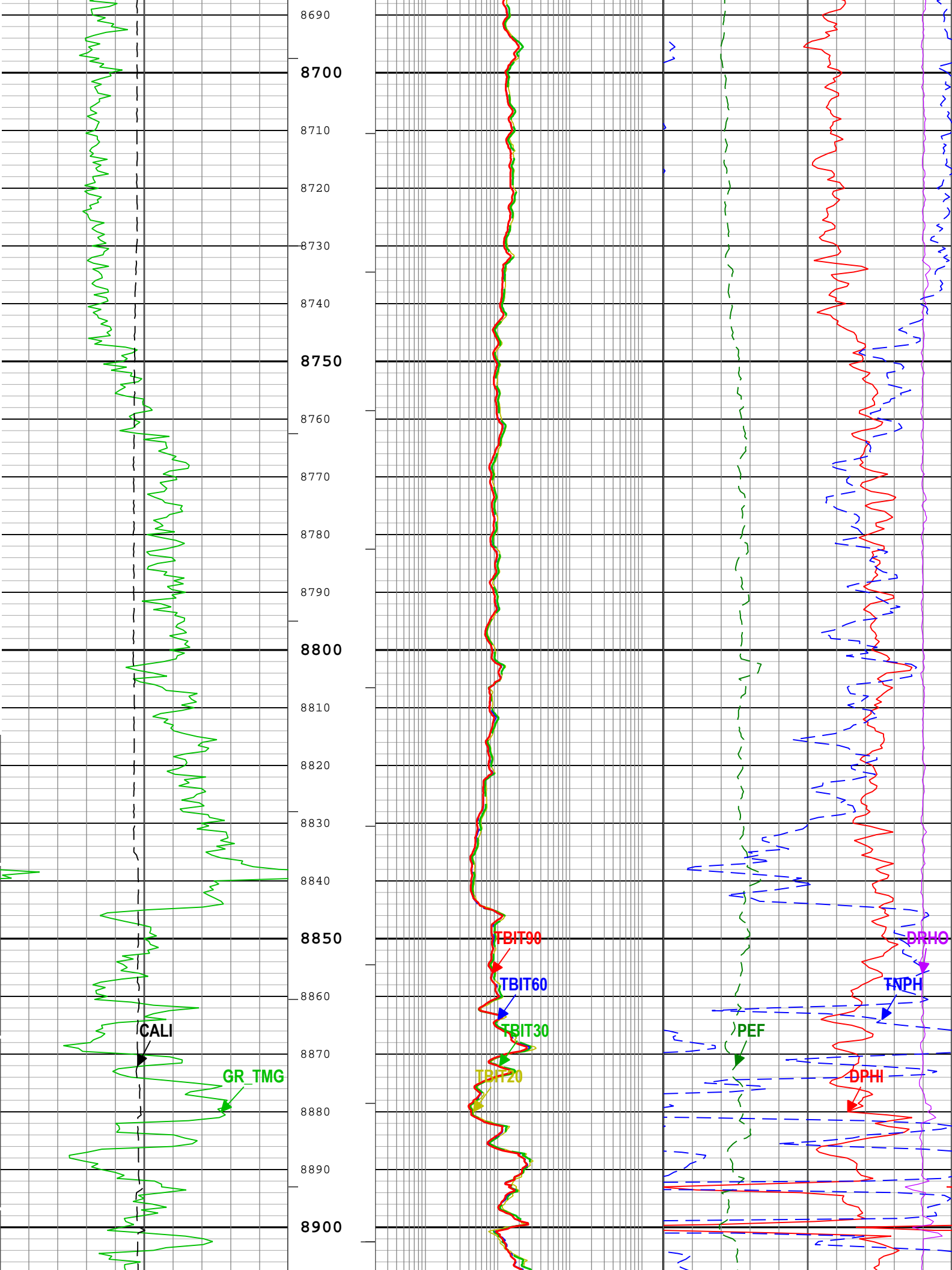


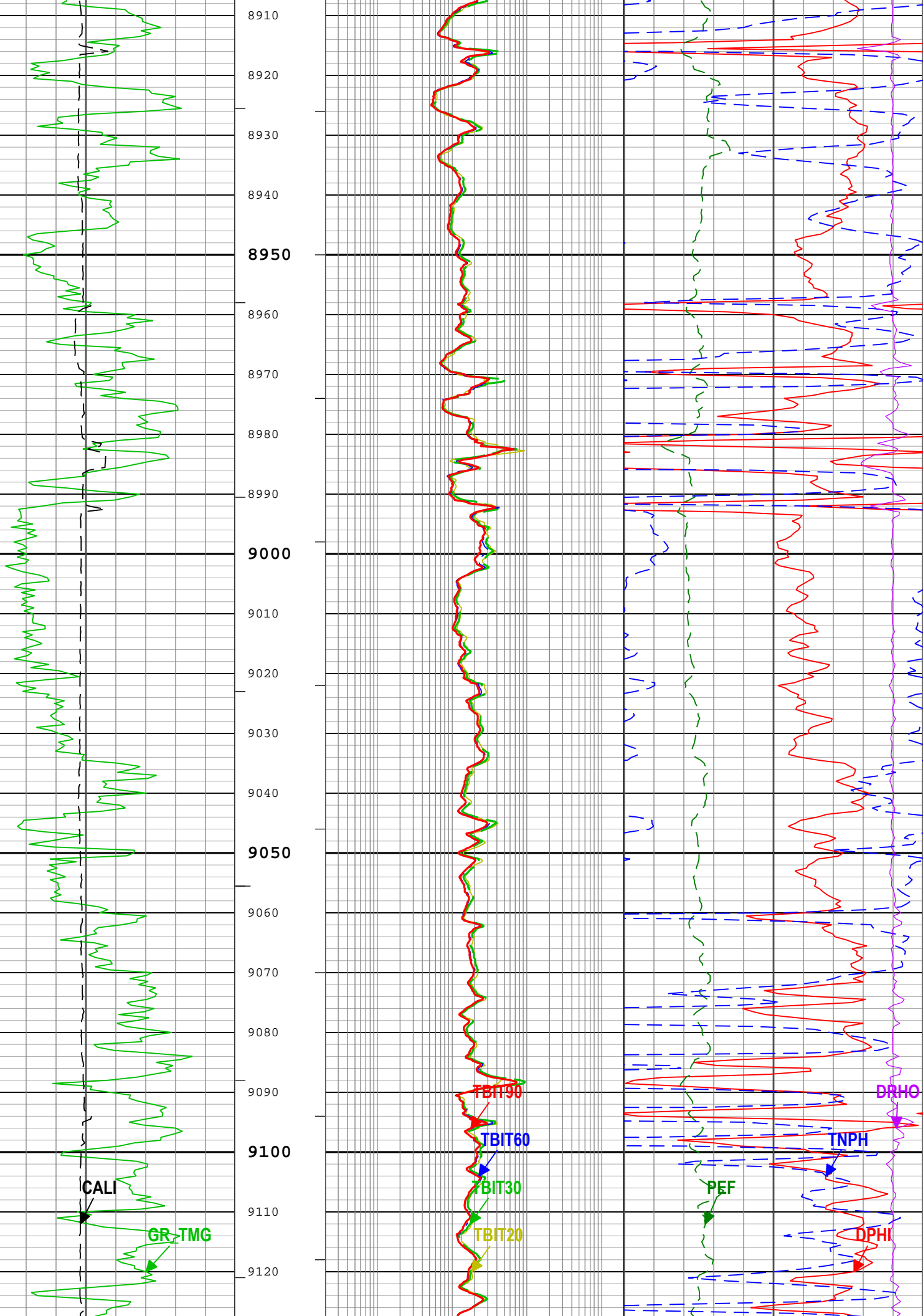


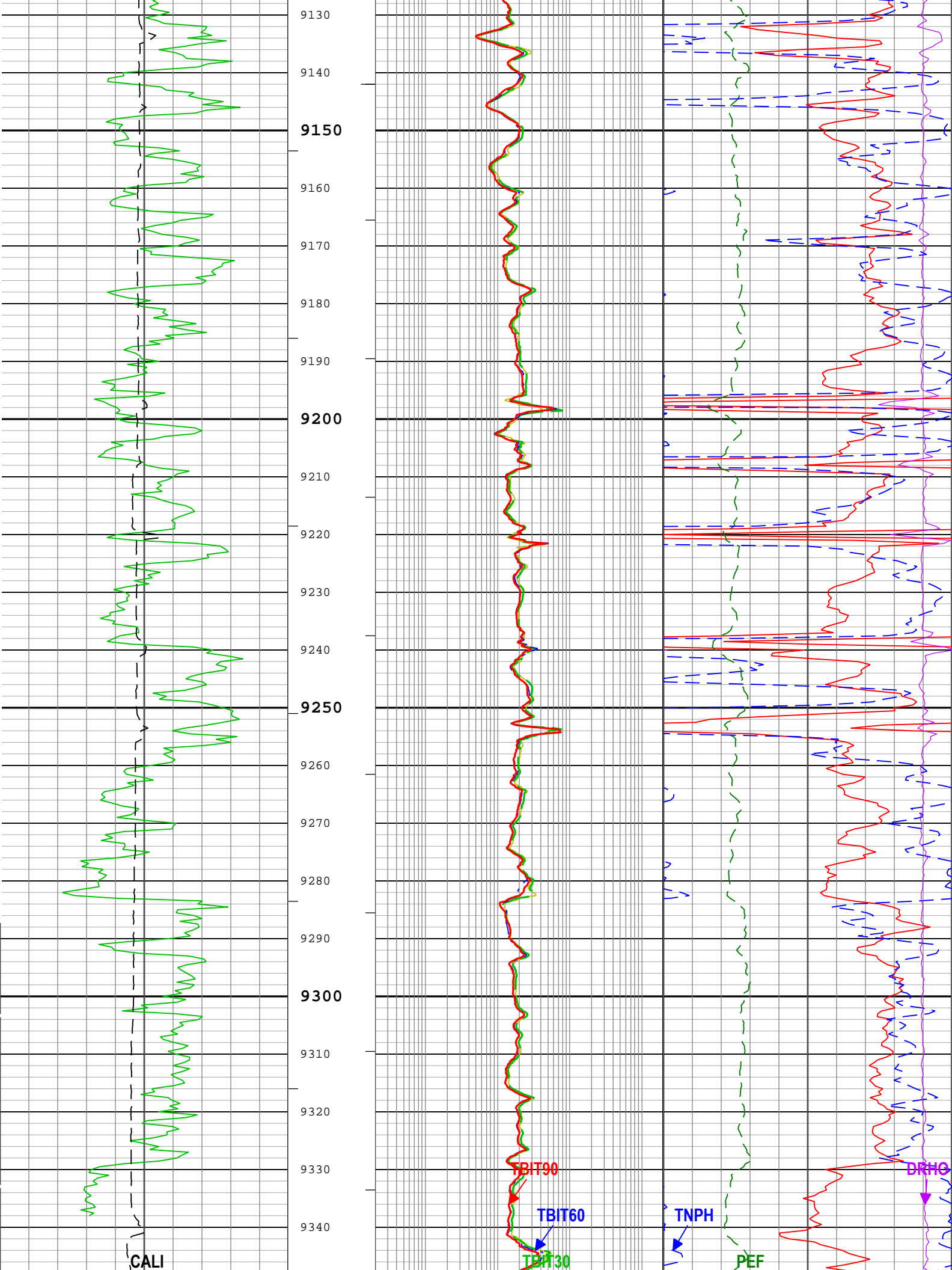


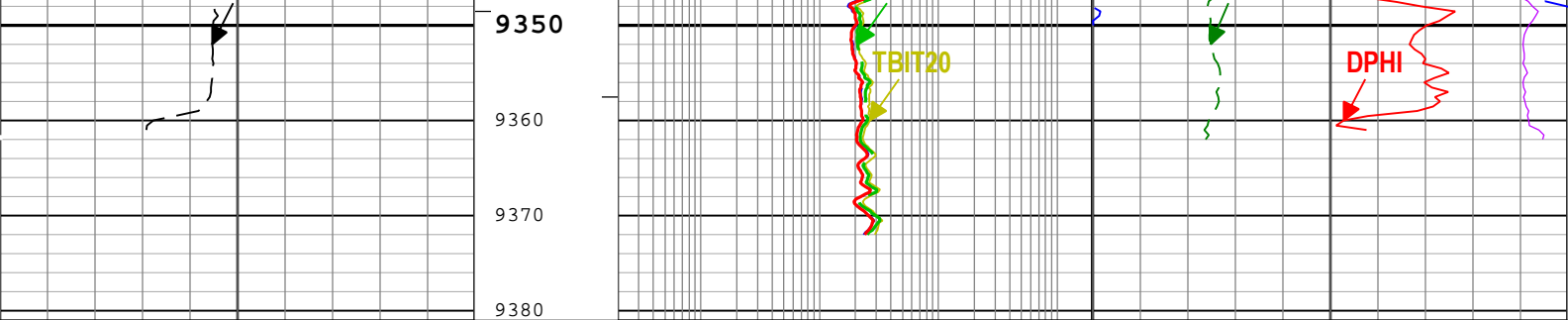












Calibrated Gamma Ray (GR_TMG) TMG-A RM		
0	gAPI	150
Caliper (CALI) TBD-B RM		
4	in	14

ThruBit Induction Array Two Foot Resistivity at 20 inch depth of investigation (TBIT20) TBIT-A RM		
0.2	ohm.m	2000
ThruBit Induction Array Two Foot Resistivity at 30 inch depth of investigation (TBIT30) TBIT-A RM		
0.2	ohm.m	2000
ThruBit Induction Array Two Foot Resistivity at 60 inch depth of investigation (TBIT60) TBIT-A RM		
0.2	ohm.m	2000
ThruBit Induction Array Two Foot Resistivity at 90 inch depth of investigation (TBIT90) TBIT-A RM		
0.2	ohm.m	2000

Density Porosity (DPHI) TBD-B RM		
0.3	ft3/ft3	-0.1
Photoelectric Factor (PEF) TBD-B RM		
0		10
Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) TBN-B RM		
0.3	ft3/ft3	-0.1
Bulk Density Correction (DRHO) TBD-B RM		
-1.8	g/cm3	0.2

— ICV_RM - Integrated Cement Volume every 100.00 (ft3)

— ICV_RM - Integrated Cement Volume every 10.00 (ft3)

TIME_1900 - Time Marked every 60.00 (s)

— IHV_RM - Integrated Hole Volume every 100.00 (ft3)

— IHV_RM - Integrated Hole Volume every 10.00 (ft3)

Description: ThruBit_TCOM_RM Format: Log (ThruBit_TCOM_RM) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 09-Mar-2019 23:45:25

Channel Processing Parameters				
1A: Parameters				
Parameter	Description	Tool	Value	Unit
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
BSAL	Borehole Salinity	Borehole	1500	ppm
BSCO	Borehole Salinity Correction Option	TBN-B	No	
CBLO	Casing Bottom (Logger)	WLSESSION	2755	ft
CQCO	Cement Quality Correction Option	TBN-B	No	
CSAL	Cement Salinity	TBN-B	0	ppm
CSCOR	Cement Salinity Correction Option	TBN-B	No	
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	9.625	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9.1	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DHC	Density Hole Correction	TBD-B	Bit Size	
ECCO	Eccentricity Coorection Option	TBN-B	No	
FCD	Future Casing (Outer) Diameter	WLSESSION	4.5	in
FD	Fluid Density	Borehole	1	lbm/gal

FD	Fluid Density	Borehole	1	g/cm3
FSAL	Formation Salinity	Borehole	0	ppm
FSCO	Formation Salinity Correction Option	TBN-B	No	
HSCOT	Hole Size Correction Option (None, Bit Size, Density Caliper, GCSE)	TBIT-A	GCSE	
HSCOT	Hole Size Correction Option (None, Bit Size, Density Caliper, GCSE)	TBN-B	GCSE	
TBN_WPRE	Well Pressure for Horizontal Section	TBN-B	0	psi
TBI_TC_OP	Induction Temperature Correction Option	TBIT-A	Lower	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	SANDSTONE	
MDEN	Matrix Density for Density Porosity	Borehole	2.65	g/cm3
MWCO	Mud Weight Correction Option	TBN-B	No	
PTCO	Pressure Temperature Correction Option	TBN-B	No	
SOCN	Standoff Distance	TBN-B	0.125	in
SOCO	Standoff Correction Option	TBN-B	No	
TBD_SPIKE_REJECT	Spike Detection Option	TBD-B	Correct	
TBD_SPIKE_THRESHOLD	Attenuation Change Threshold for Spike Detection	TBD-B	5	%
TBI_REPL_ARRAY_DEST	Thru-bit Induction Array to Replace	TBIT-A	None	
TBI_REPL_ARRAY_SOURCE	Thru-bit Induction Array to Replace with	TBIT-A	None	
TBI_RMUD_SRC	TBI Mud Resistivity Source for Borehole Correction	TBIT-A	Data_Channel_RMUD	
TBN_ALGO	TBN Porosity Algorithm Option	TBN-B	Schmid_McKeon	

Depth Zone Parameters			
Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	615	2755
BS	8.75	2755	9371
All depth are actual.			

Tool Control Parameters	
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Company:	TEP ROCKY MOUNTAIN LLC	Schlumberger
Well:	TR 344-22-597	
Field:	Trail Ridge	
County:	Garfield	
State:	Colorado	

Triple Combo
Platform Express