

Company: LARAMIE ENERGY LLC

Well: CC 0697-04-08E

Field: GRAND VALLEY

County: GARFIELD State: Colorado

County: GARFIELD
Field: GRAND VALLEY
Location: 4-6S-97W
Well: CC 0697-04-08E
Company: LARAMIE ENERGY LLC

ThruBit

Induction

4-6S-97W	Elev.:	K.B.	8632.00 ft
		G.L.	8602.00 ft
		D.F.	8632.00 ft
Permanent Datum:	Ground Level	Elev.:	8602.00 f
Log Measured From:	Kelly Bushing	30.00 ft	above Perm.Datum
Drilling Measured From:	Kelly Bushing		
API Serial No.	Section:	Township:	Range:
05-045-23987	4	6S	97W

Logging Date 19-May-2019

Run Number ThruBit

Depth Driller 9953.00 ft

Schlumberger Depth 9953.00 ft

Bottom Log Interval 9890.00 ft

Top Log Interval 2568.00 ft

Casing Driller Size @ Depth 9.625 in @ 2568.00 ft

Casing Schlumberger 2568 ft

Bit Size 8.75 in

Type Fluid In Hole Water

Density 8.8 lbm/gal

Viscosity 56 s

Fluid Loss PH 9.9

Source of Sample Flowline

RM @ Meas Temp 2.54 ohm.m @ 92 degF

RMF @ Meas Temp 2.16 ohm.m @ 92 degF

RMC @ Meas Temp 2.92 ohm.m @ 92 degF

Source RMF RMC

RM @ BHT RMF @ BHT 1.15 @ 212 0.98 @ 212

Max Recorded Temperatures 174 degF

Circulation Stopped 19-May-2019 02:30:00

Logger on Bottom 19-May-2019 05:30:00

Unit Number MSLC-AR2 2161 FtMorgan

Recorded By L. Awalt

Witnessed By Aaron Duncan

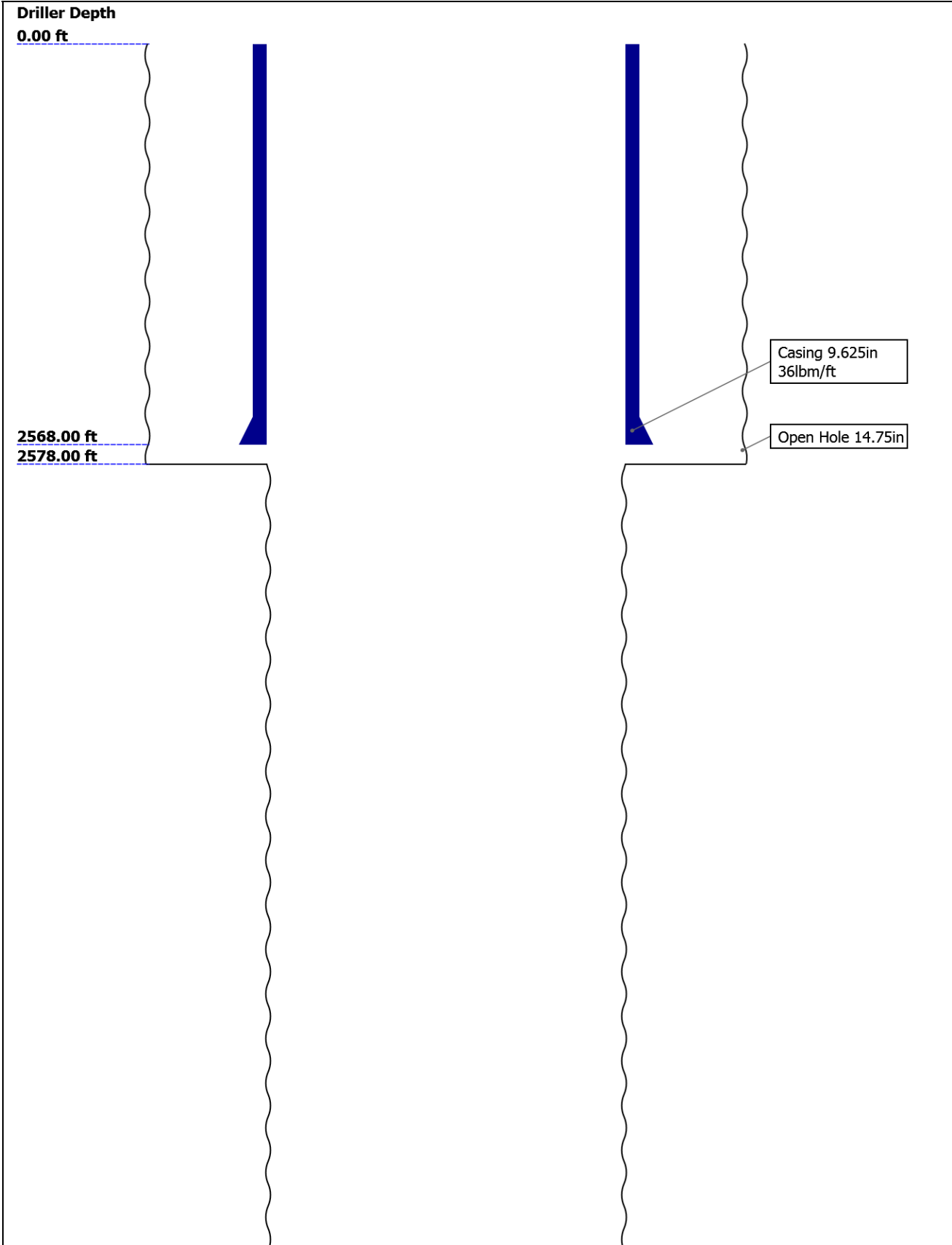
Disclaimer

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

Contents

- 1. Header
- 2. Disclaimer
- 3. Contents
- 4. Well Sketch
- 5. Borehole Size/Casing/Tubing Record
- 6. Remarks and Equipment Summary
- 7. Depth Summary
- 8. ThruBit
 - 8.1 Integration Summary
 - 8.2 Software Version
 - 8.3 Composite Summary
 - 8.4 Log (ThruBit_TBI_4ft_RM_1)
 - 8.5 Parameter Listing
- 9. Tail

Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	14.75	8.75				
Top Driller (ft)	0	2578				
Top Logger (ft)	0	2578				
Bottom Driller (ft)	2578	9953				
Bottom Logger (ft)	2578	9953				
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)	2568					
Bottom Logger (ft)	2568					

Remarks and Equipment Summary

ThruBit: Toolstring				ThruBit: Remarks	
Equip name	Length	MP name	Offset	Thank you for choosing Schlumberger	
PEH-EFA	67.02			Log run for formation evaluation	
				Tools run as per tool sketch	
AH-317-TB	64.66			Matrix: LimeStone 2.71 g/cc	
TBCCL-A	63.59			Client choice to run at higher speeds than recommended for certian intervals of log, shown below	
TBCCL-A				TD-6000' @ 30ft/min	
TBDOT-BA	61.88	CCL	61.88	6000'-5100' @ 60 ft/min	
				5100-4300 @ 30 ft/min	
				4300-Casing @ 90 ft/min	
TBHO-BA	58.4			Log correlated to Casing Shoe @ 2568ft	
				Rig lost connection to Pason during trip out from 8240ft-8160ft	
				Crew: Tyler Mozena, Jake Quinn	

SAH-TB 52.45

TBSB-BA:1 50.12
TBSB-BA:1

TMG-A:106 43.99
TMG-A:106

Status 43.99
Gamma-Ray 43.19

TILE-AB 37.86

Status 37.86

TBN-B:58 33.36
TBN-B:58
NNLS-EWA:5975

Neutron Porosity 31.05

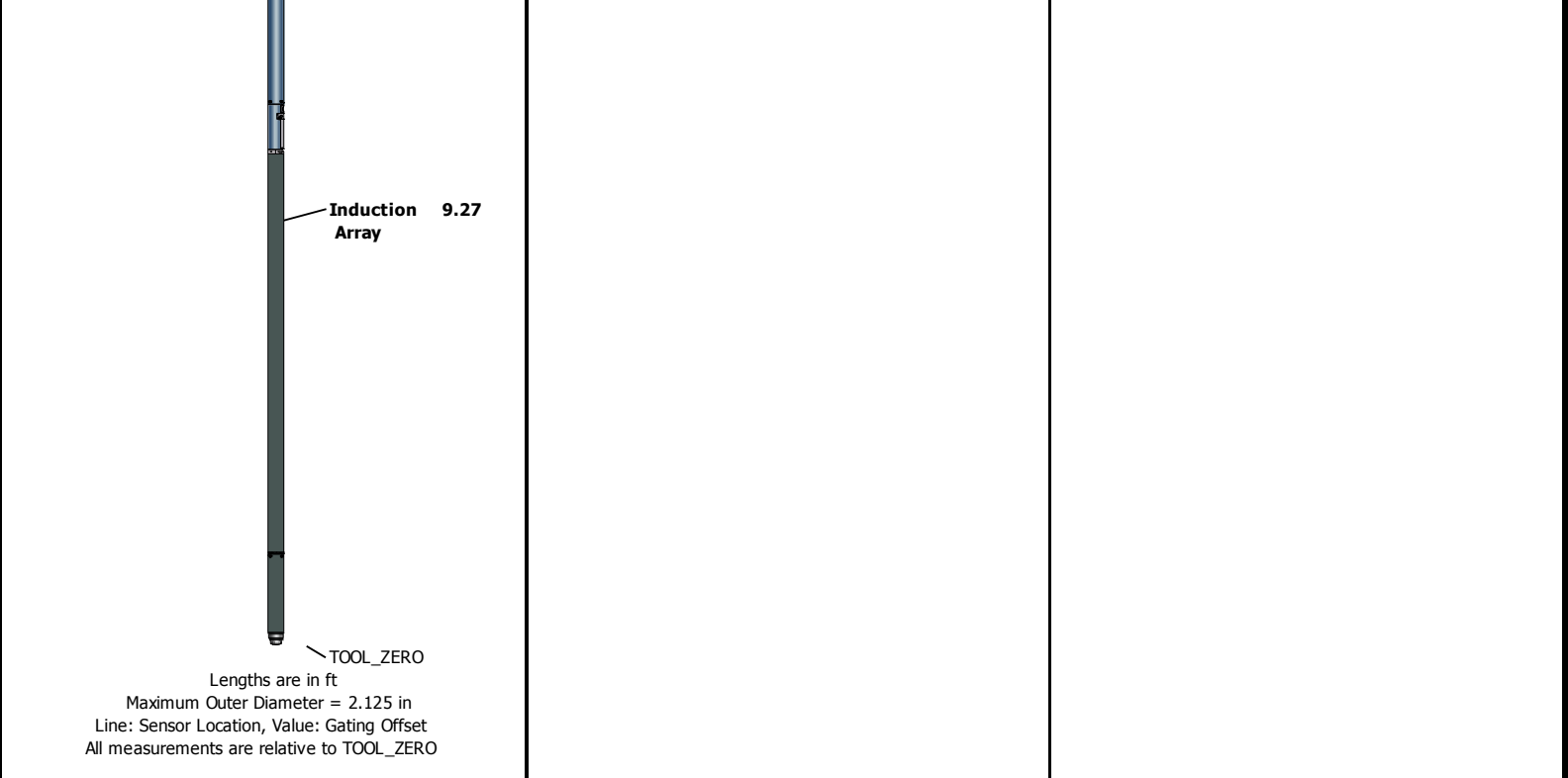
TBD-B:43 28.59
TBD-B:43
GGLS-FZ:3398

Density Logs 20.07
Caliper 19.94
Density S 19.68

KAH-TB[2] 18.11

KAH-TB[1] 16.7

TBIT-A:47 15.28
TBIT-A:47



Depth Summary			
	ThruBit		
Depth Measuring Device			
Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		
Tension Device			
Type	CMTD-B/A		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Number of Calibration Points	0		
Logging Cable			
Type	7-39AI-XS		
Serial Number			
Length	15000.00 ft		
Conveyance Type	Wireline		
Rig Type			
ThruBit:Depth Control Parameters		Depth Control Remarks	
Log Sequence	First Log In the Well		
Rig Up Length At Surface			
Rig Up Length At Bottom			
Rig Up Length Correction			
Stretch Correction			

Tool Zero Check At Surface

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	2263.47	ft3
IHV	Integrated Hole Volume	GCSE_UP_PASS	3074.1	ft3

Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ThruBit	Log[1]:Up	Up	2180.17 ft	9911.67 ft	19-May-2019 6:26:19 AM	19-May-2019 11:57:23 AM	ON	-7.17 ft	Yes

All depths are referenced to toolstring zero

Log

Company:LARAMIE ENERGY LLC

Well:CC 0697-04-08E

ThruBit: Log[1]:Up:S016

Description: ThruBit_TBI_4ft_RM Format: Log (ThruBit_TBI_4ft_RM_1) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth

Creation Date: 21-May-2019 17:07:50

—IHV_RM - Integrated Hole Volume every 10.00 (ft3)

—IHV_RM - Integrated Hole Volume every 100.00 (ft3)

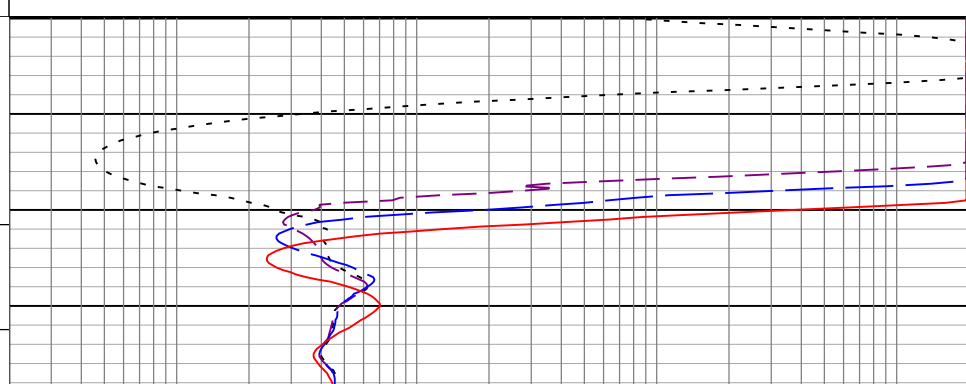
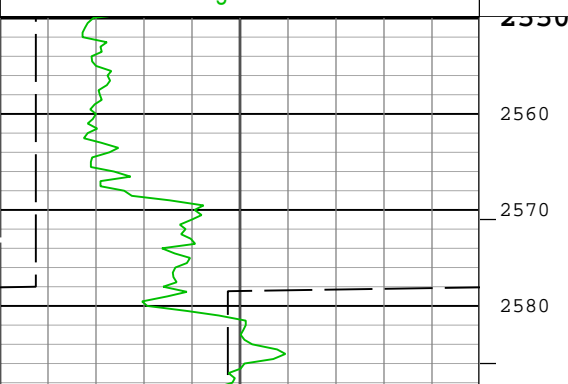
└ ICV RM - Integrated Cement Volume every 10.00 (ft3)

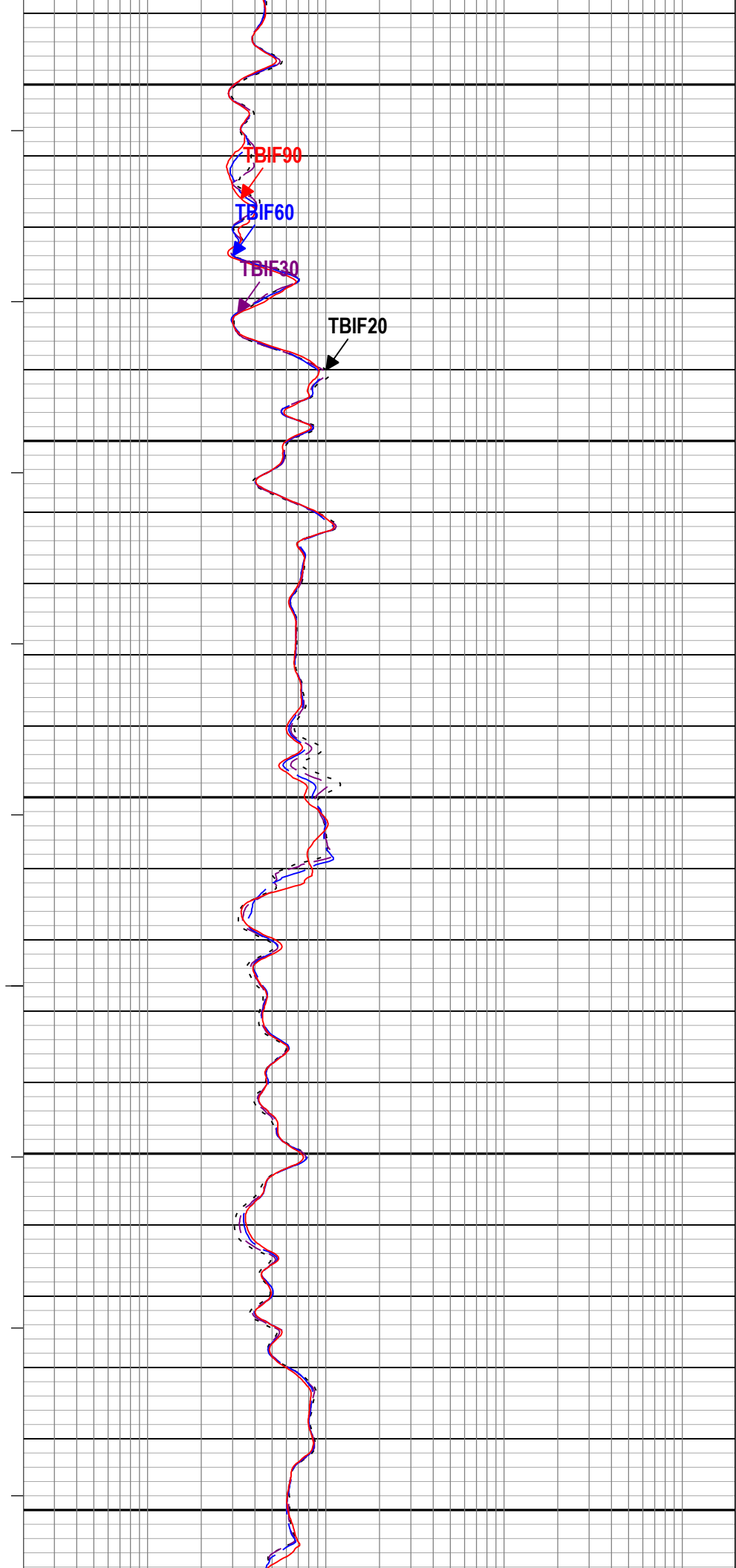
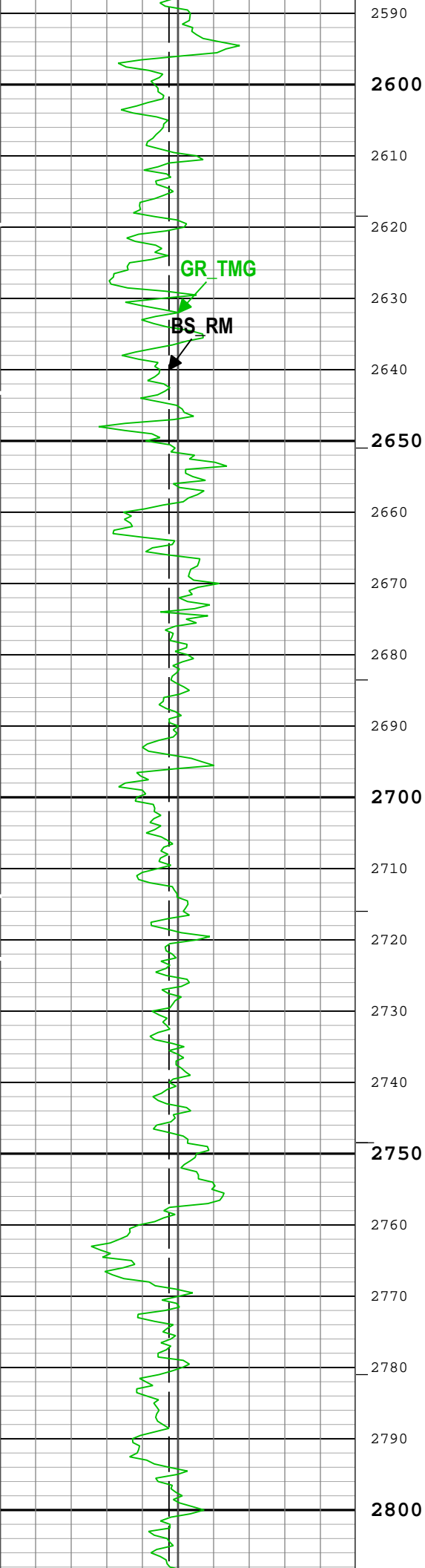
— ICV_RM - Integrated Cement Volume every 100.00 (ft3)

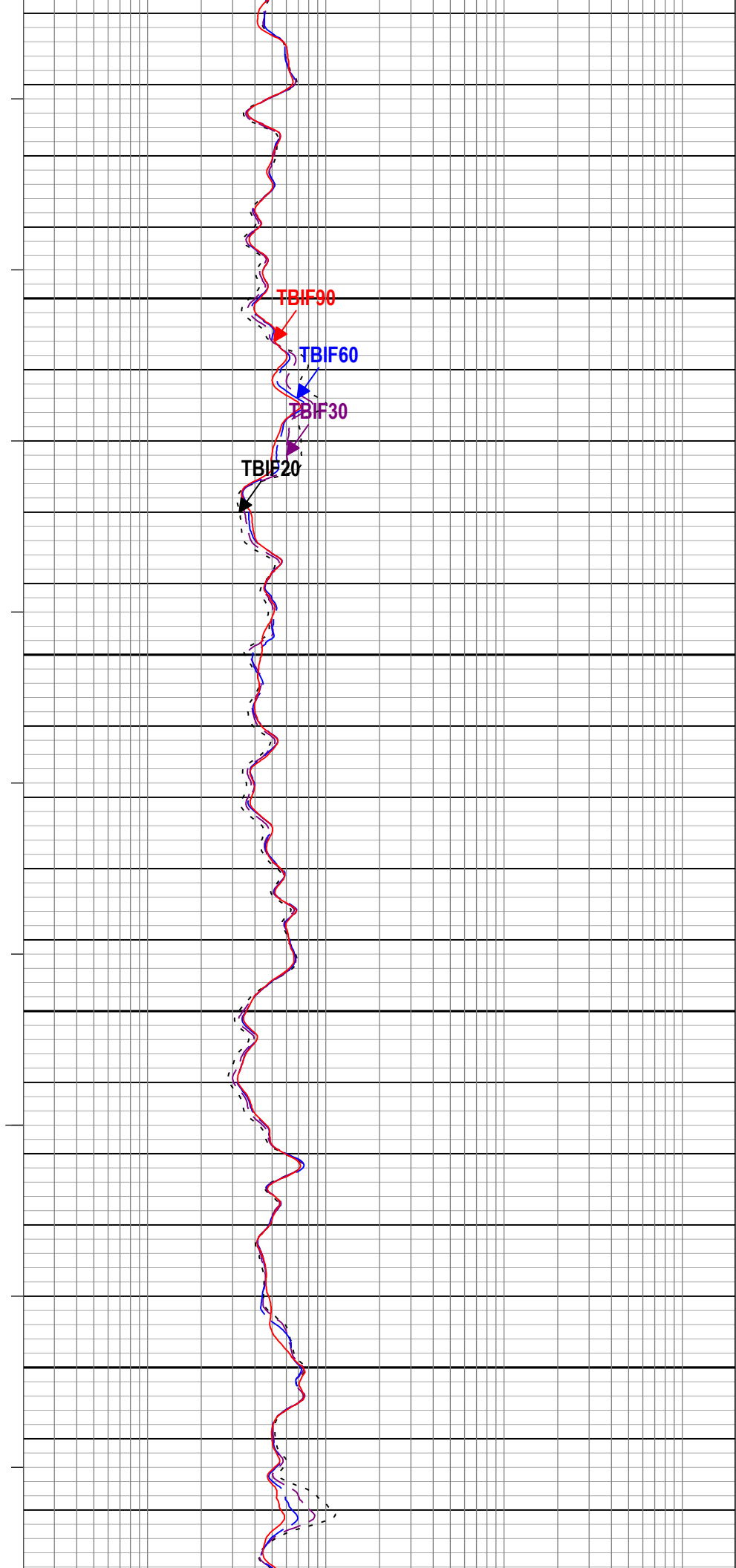
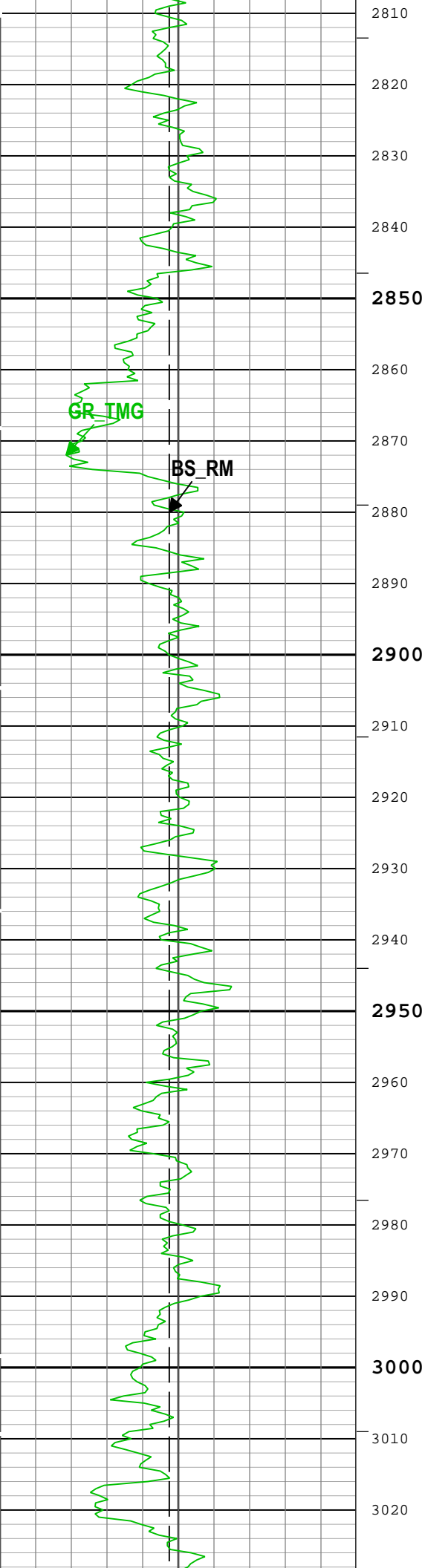
TIME_1900 - Time Marked every 60.00 (s)

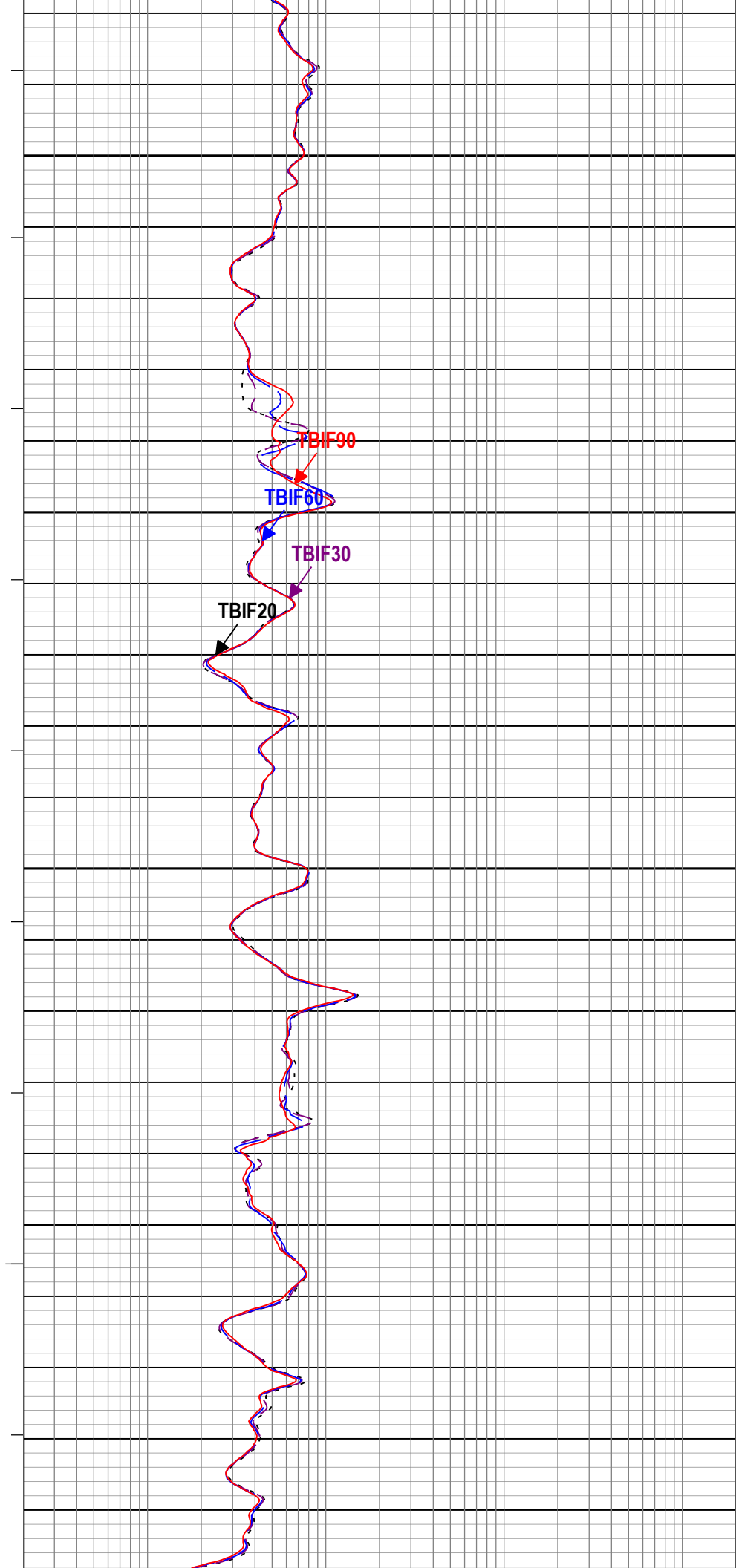
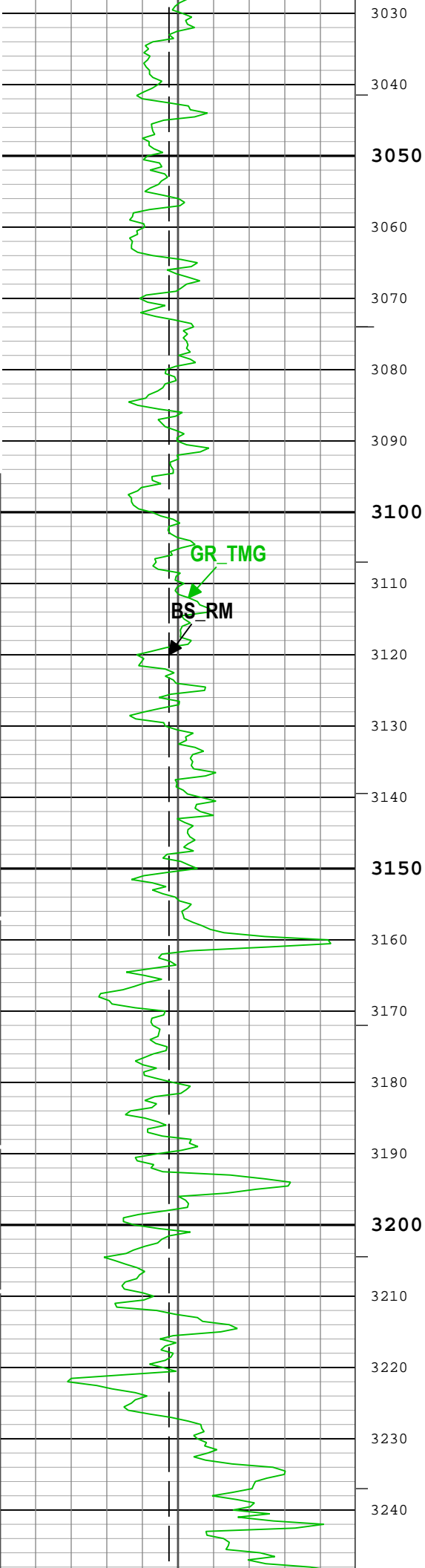
Thrubit Induction Array Four Foot Resistivity at 20 inch depth of investigation (TBIF20) TBIT-A		
RM		
0.2	ohm.m	2000
Thrubit Induction Array Four Foot Resistivity at 30 inch depth of investigation (TBIF30) TBIT-A		
RM		
0.2	ohm.m	2000
Thrubit Induction Array Four Foot Resistivity at 60 inch depth of investigation (TBIF60) TBIT-A		
RM		
0.2	ohm.m	2000
Thrubit Induction Array Four Foot Resistivity at 90 inch depth of investigation (TBIF90) TBIT-A		
RM		
0.2	ohm.m	2000

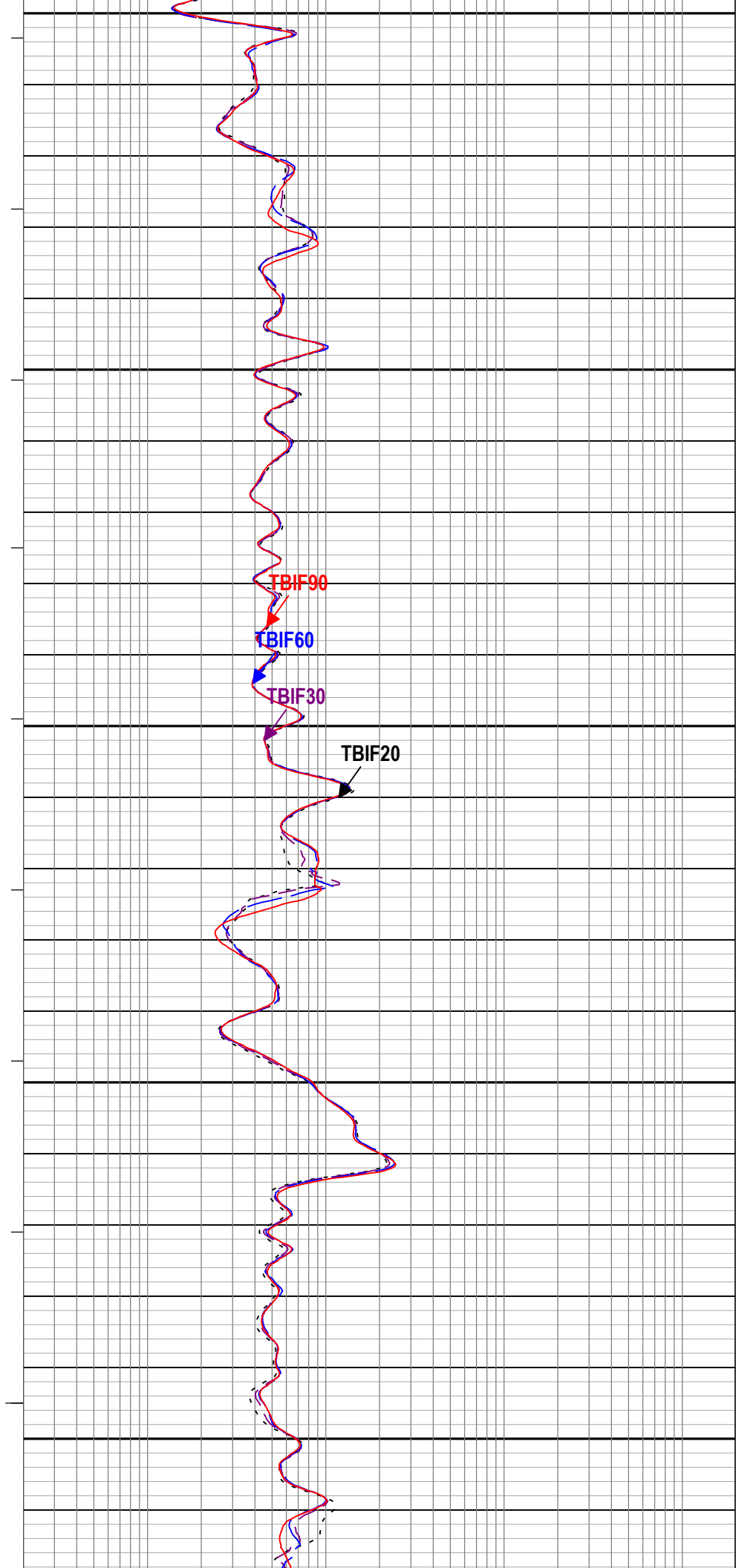
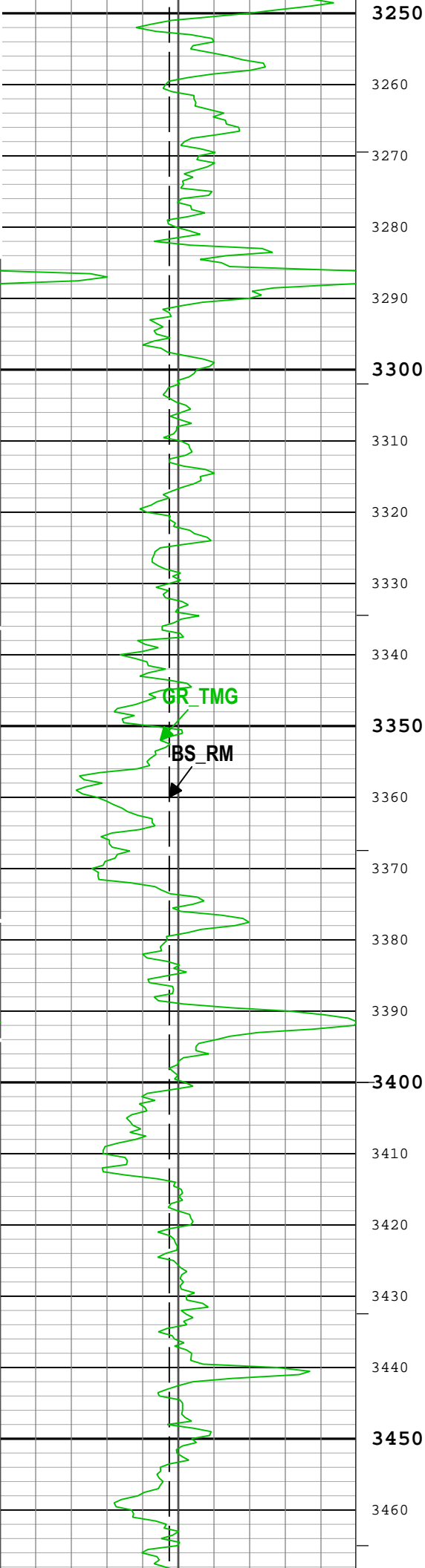
Bit Size (BS_RM) RM		
4	in	14
Calibrated Gamma Ray (GR_TMG) TMG-A RM		
0	qAPI	200

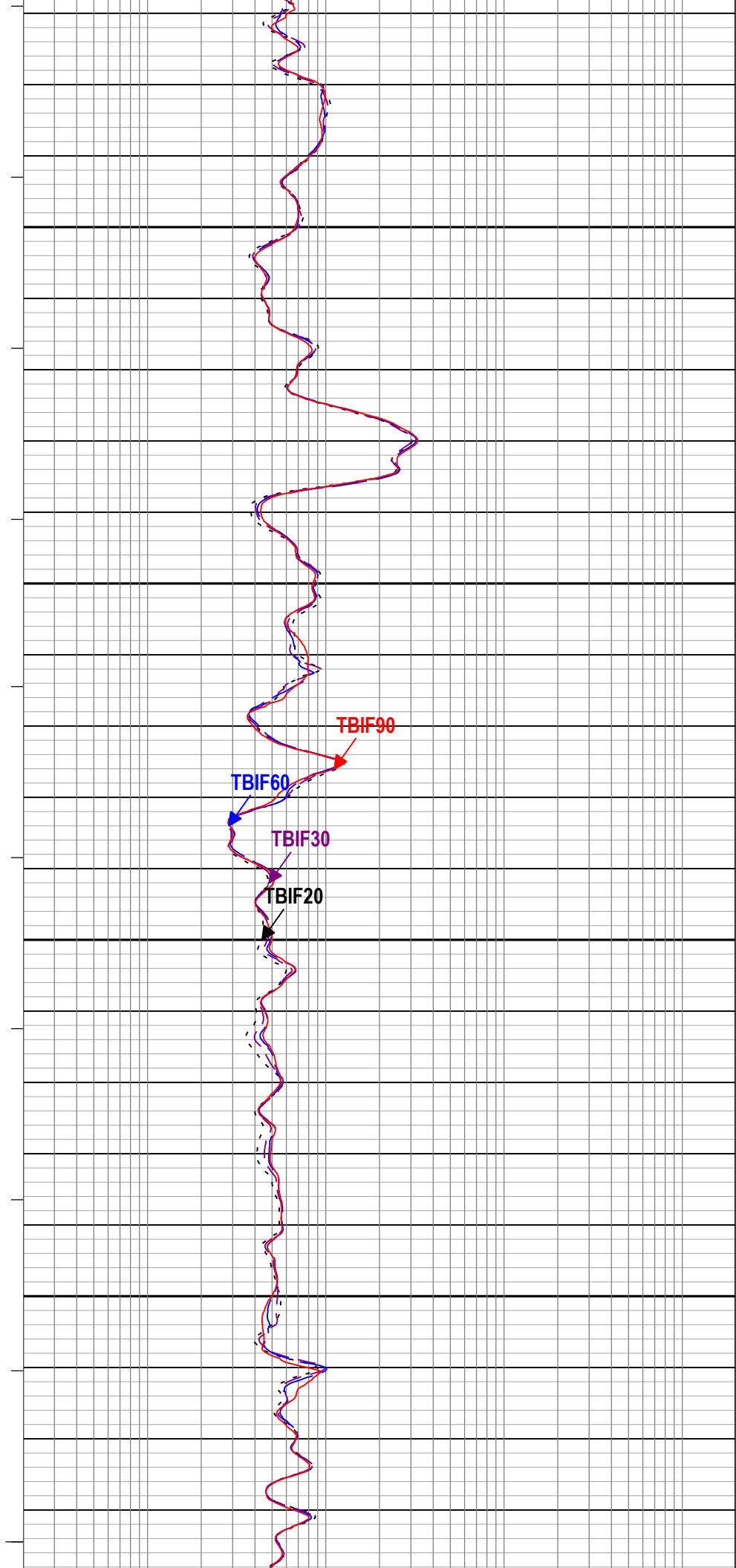
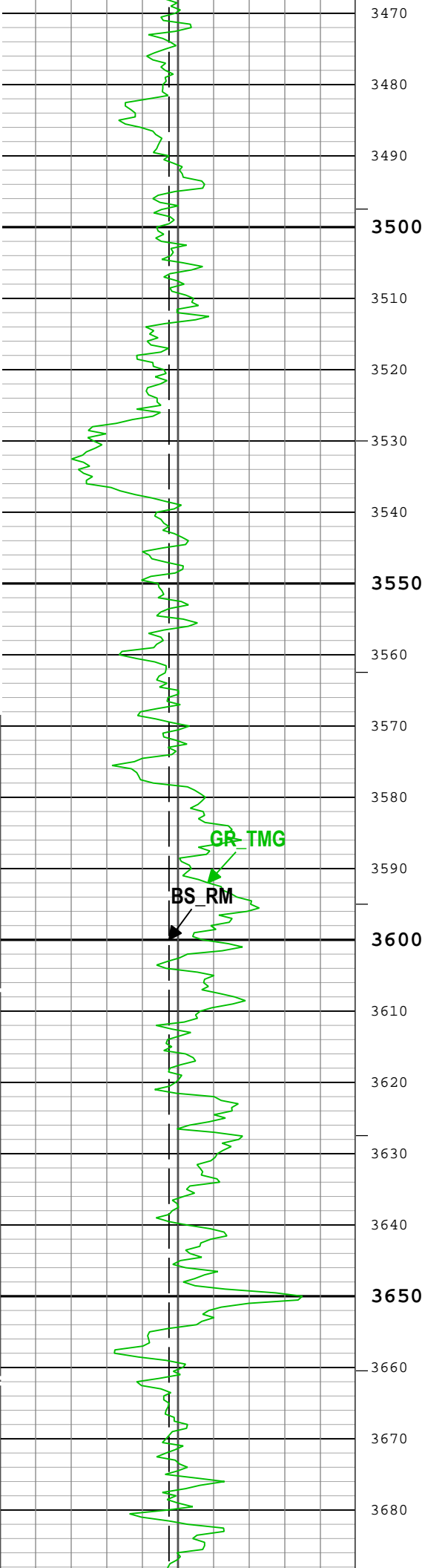


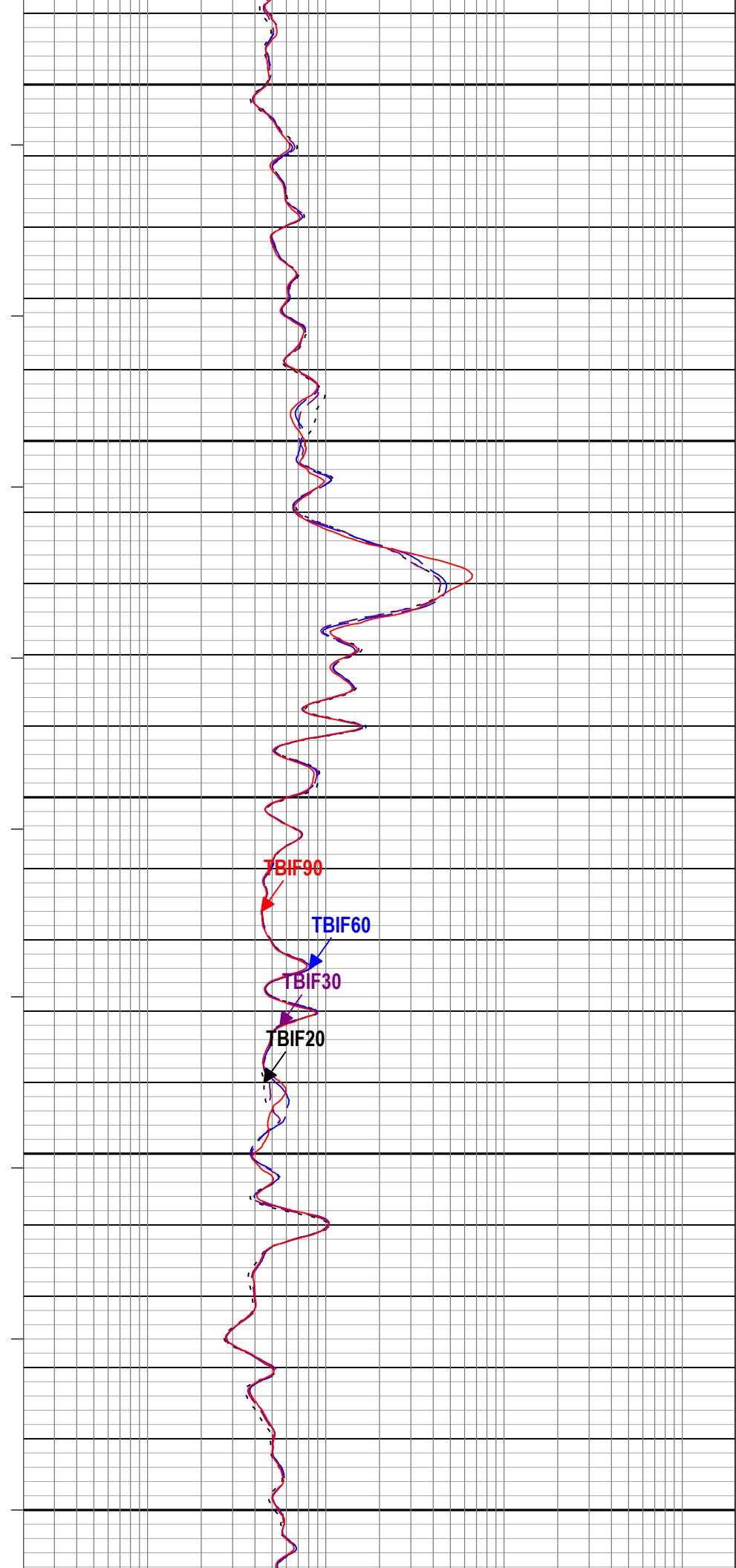
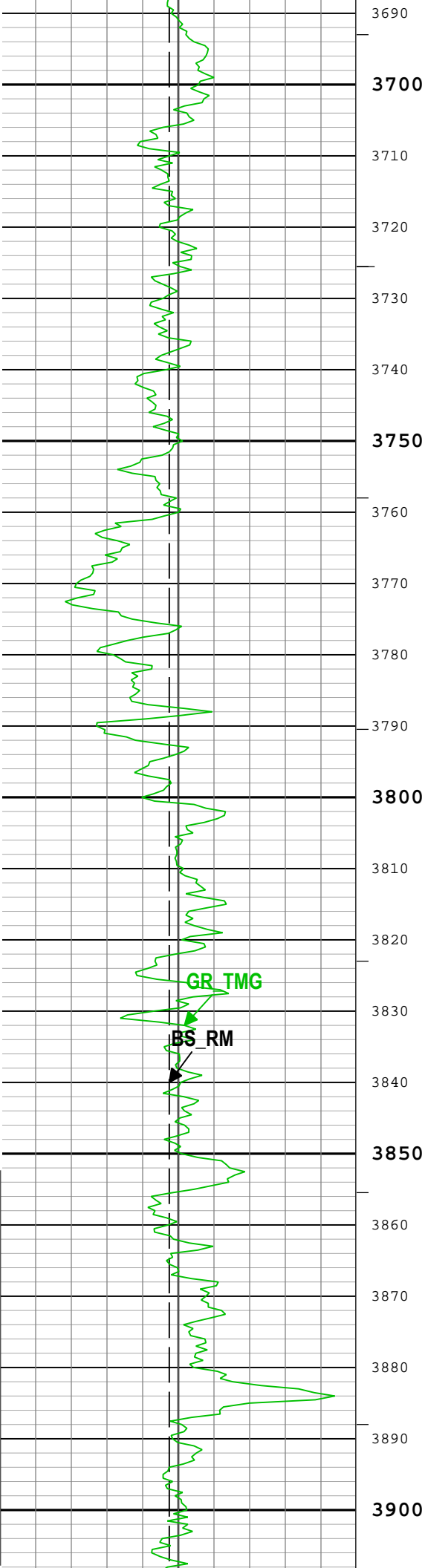


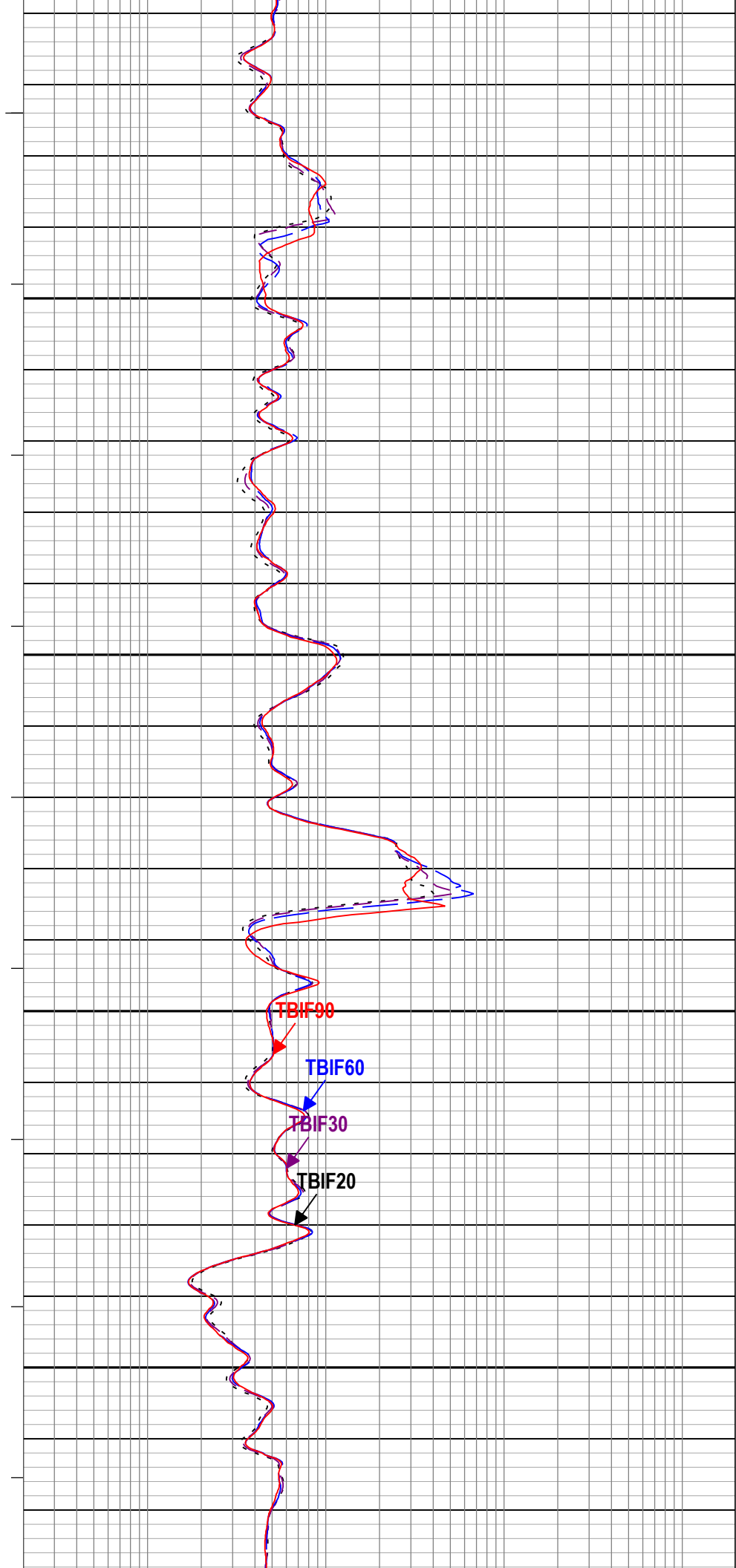
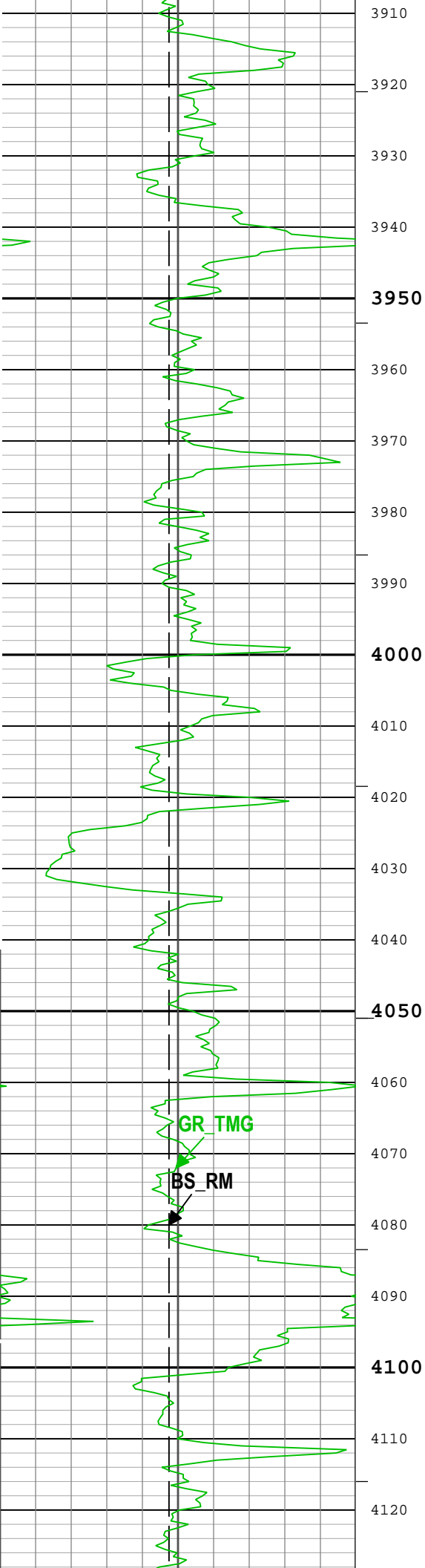


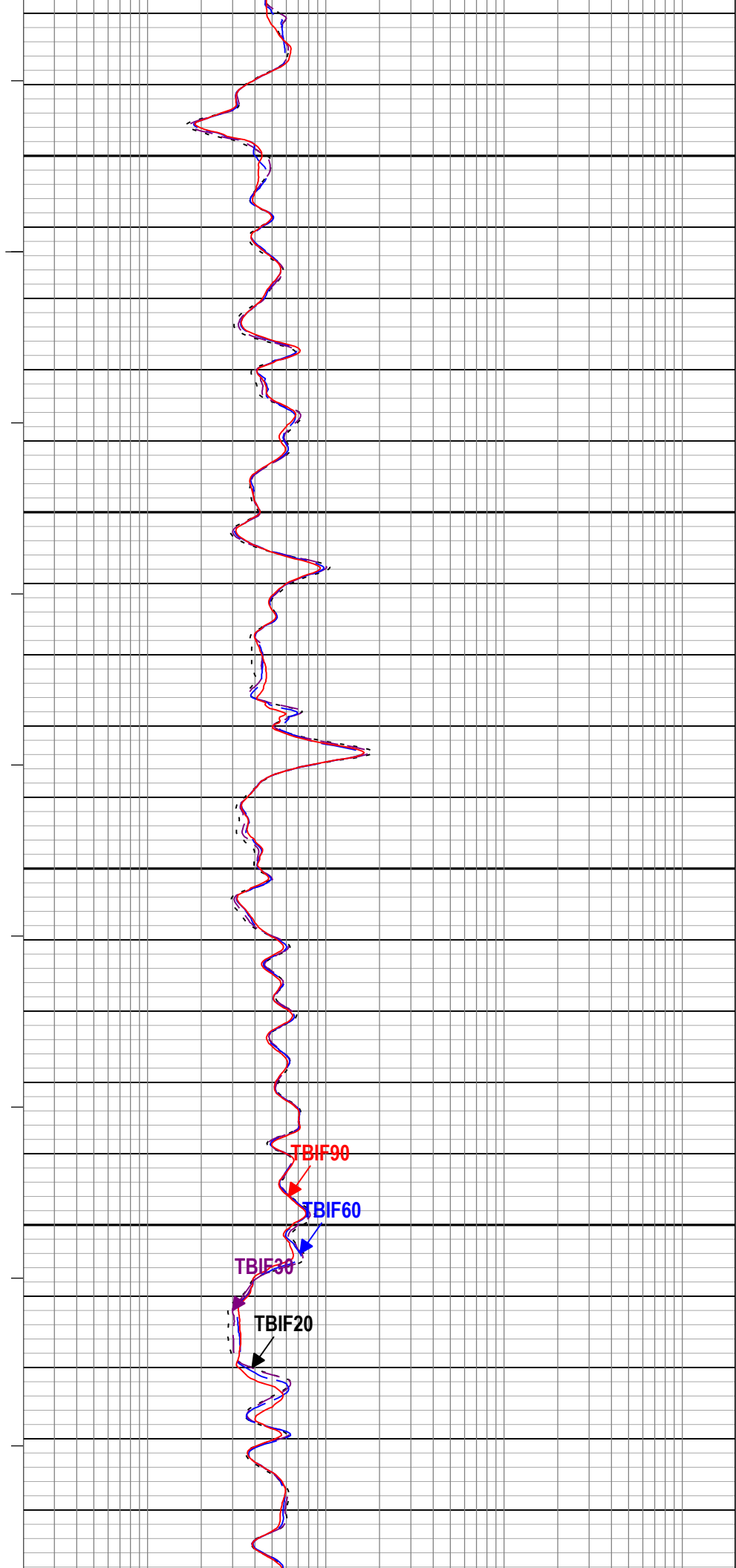
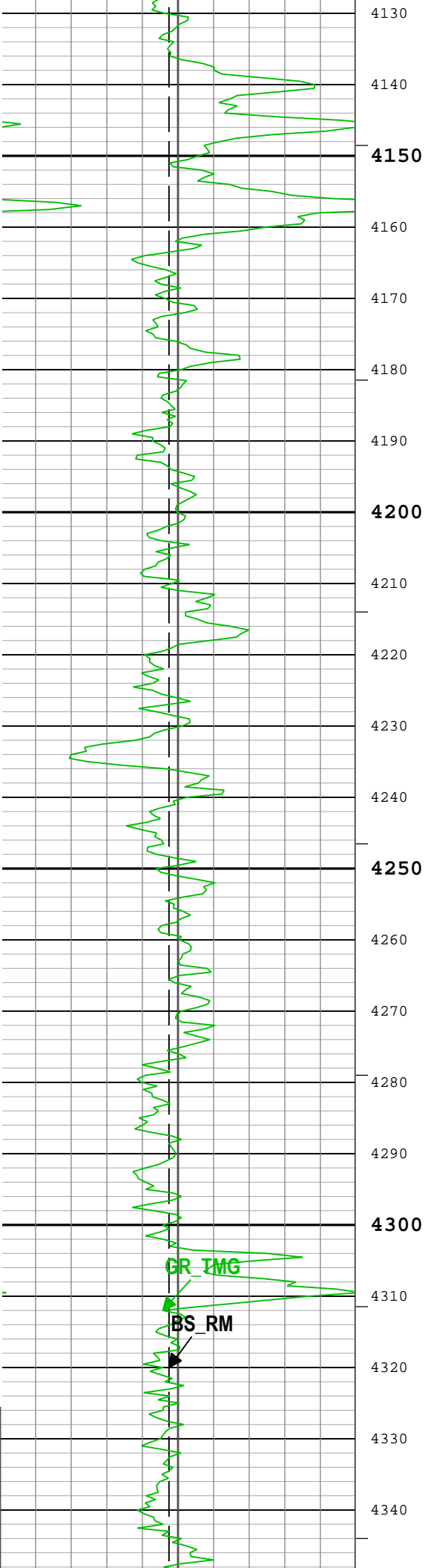


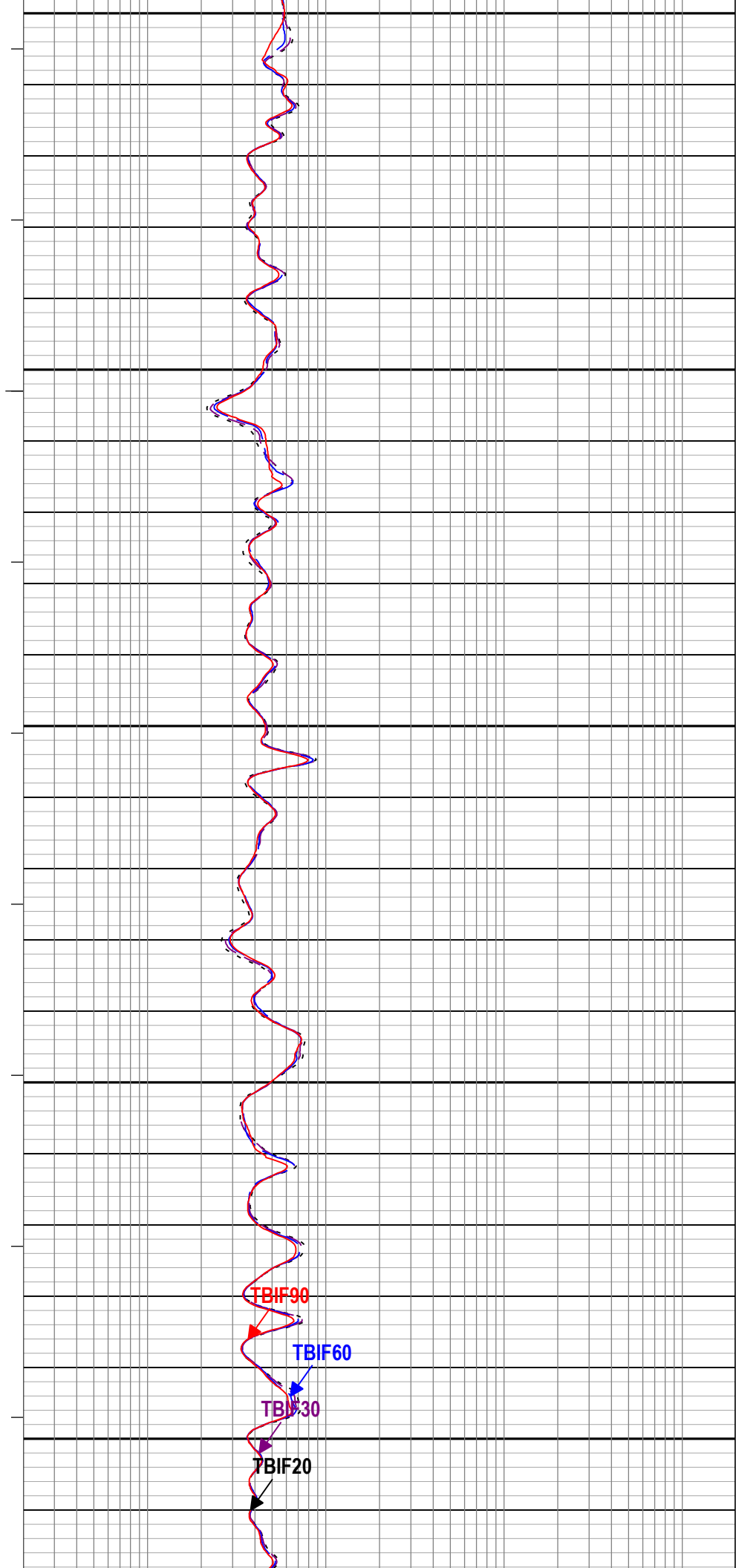
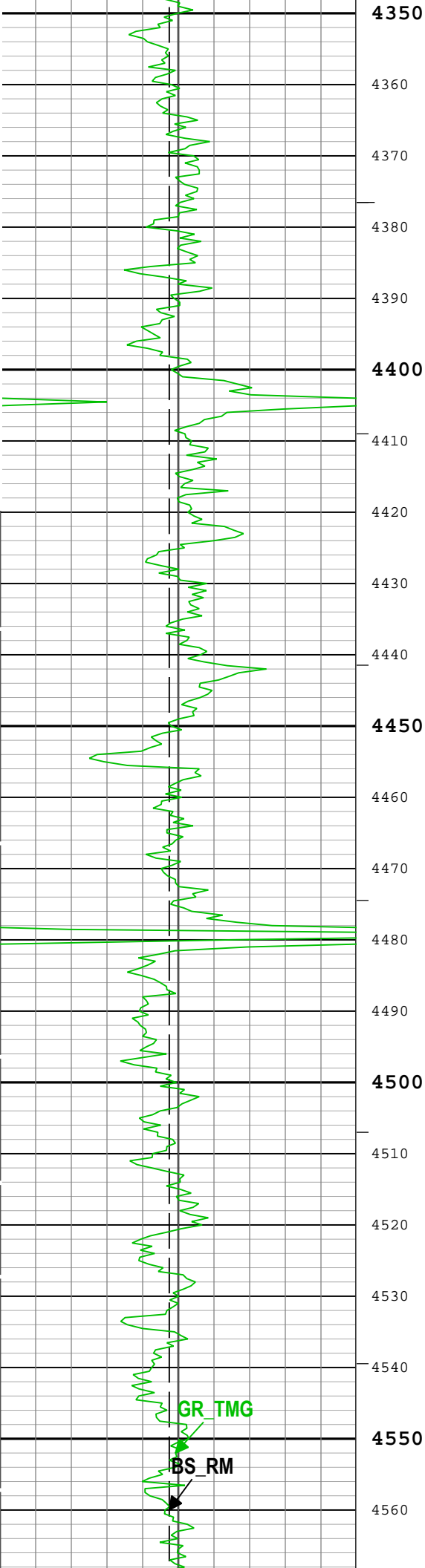


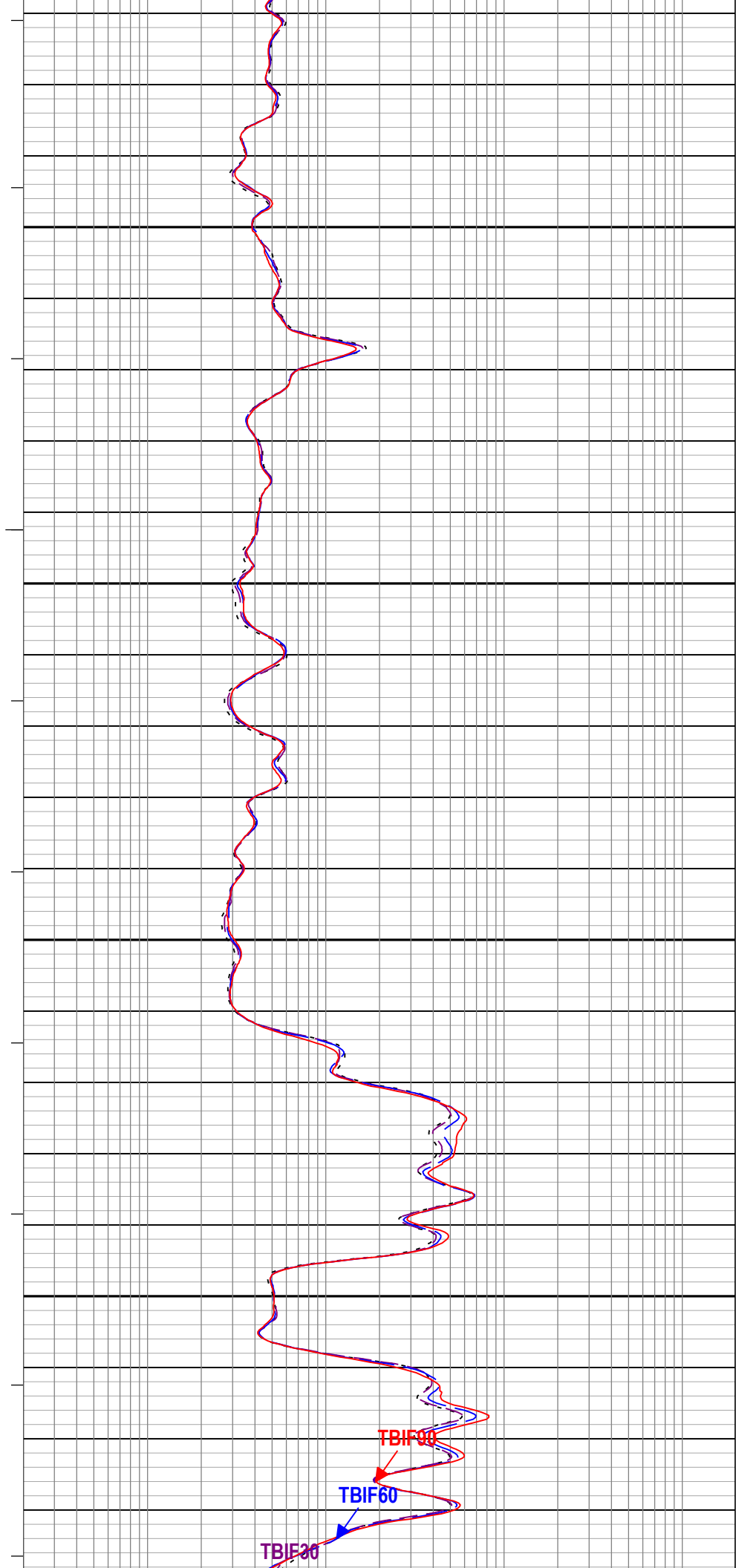
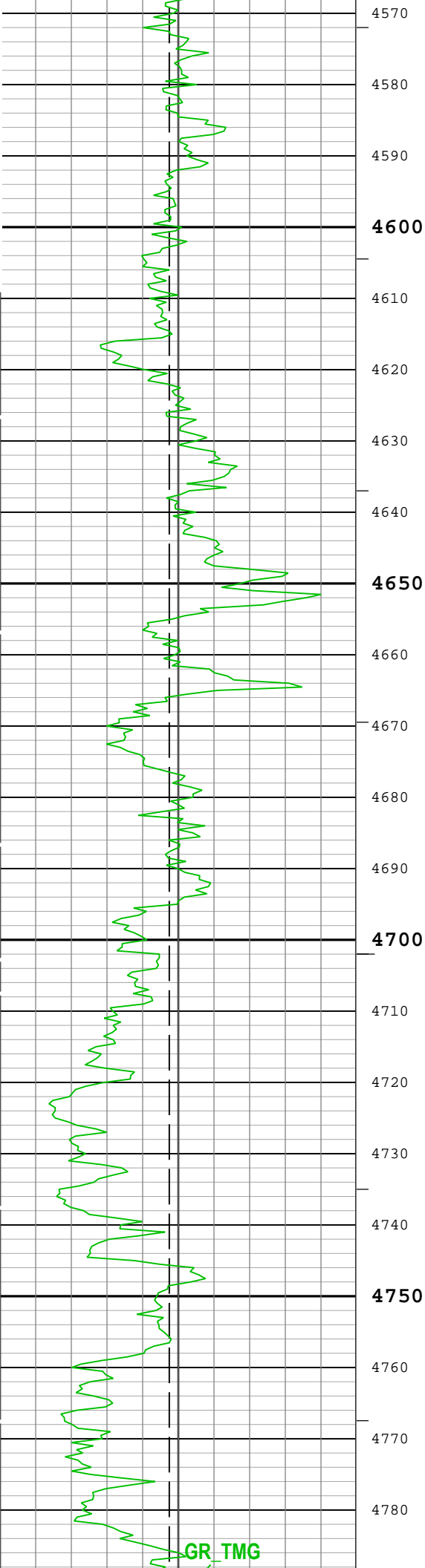


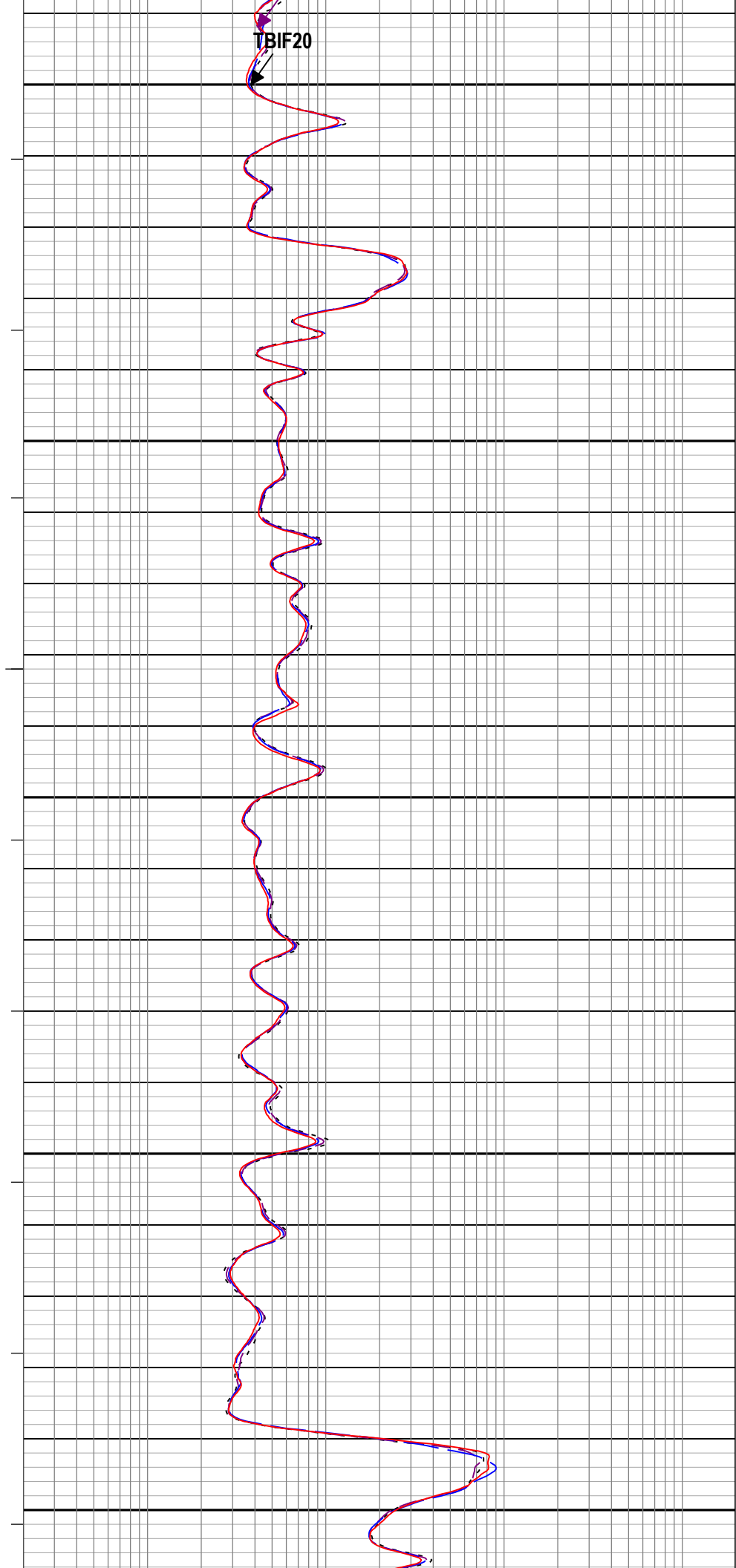
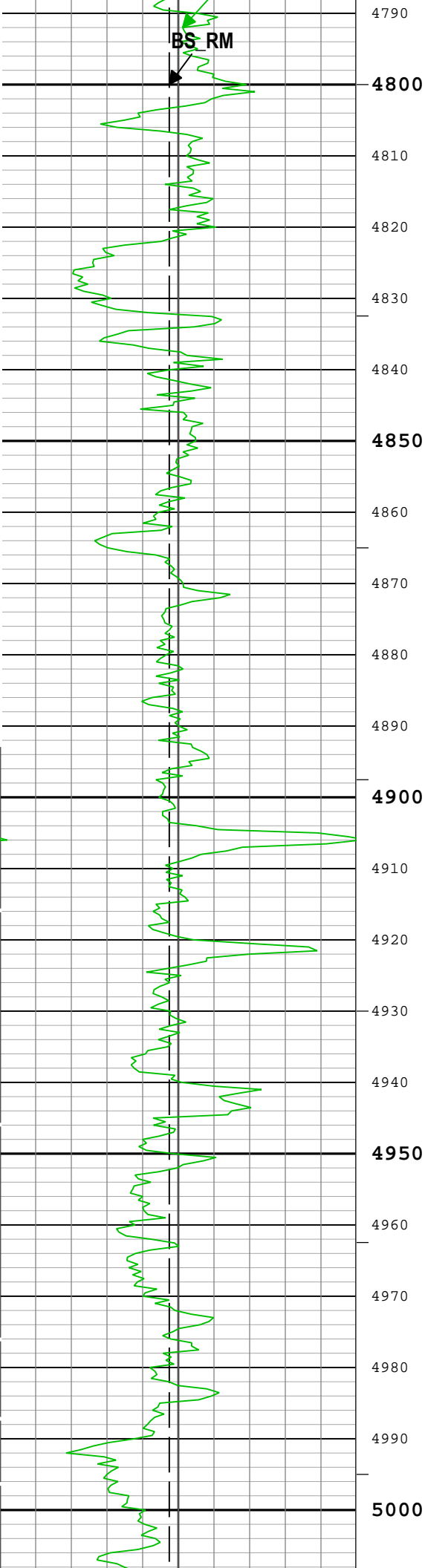


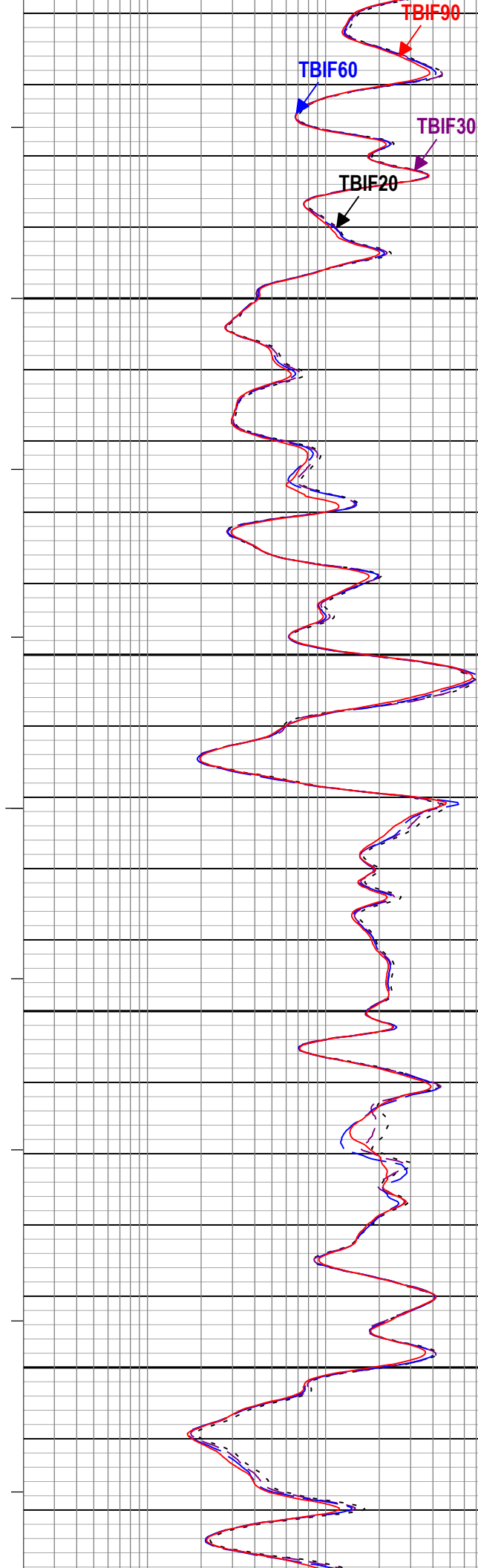
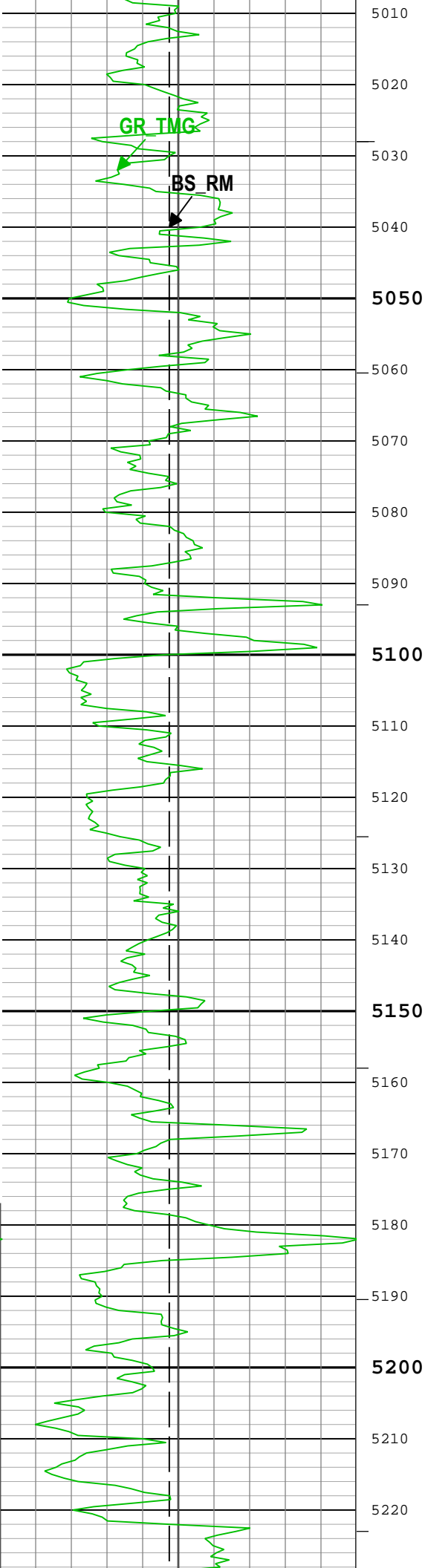


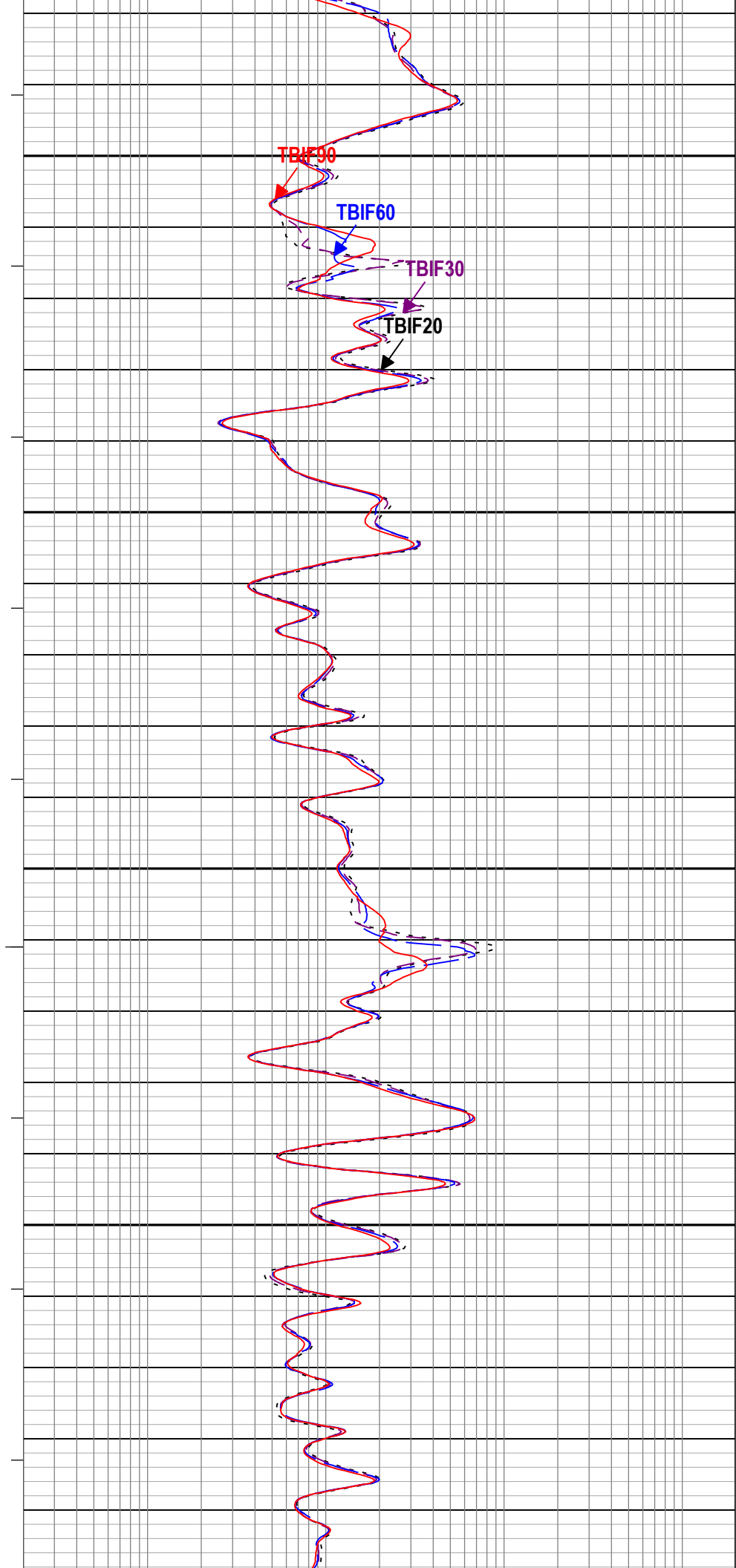
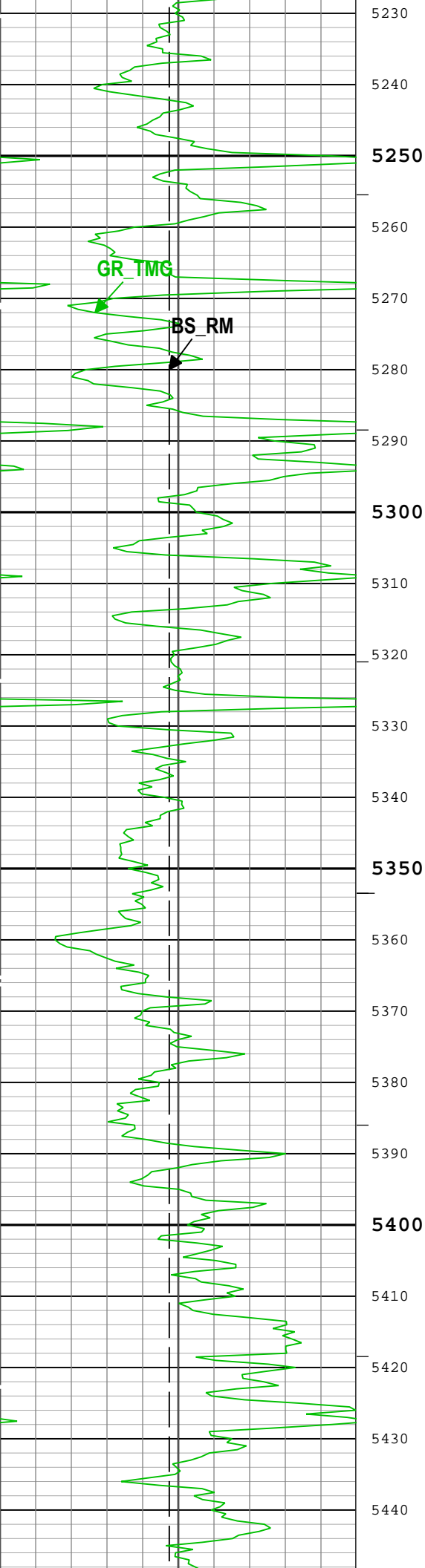


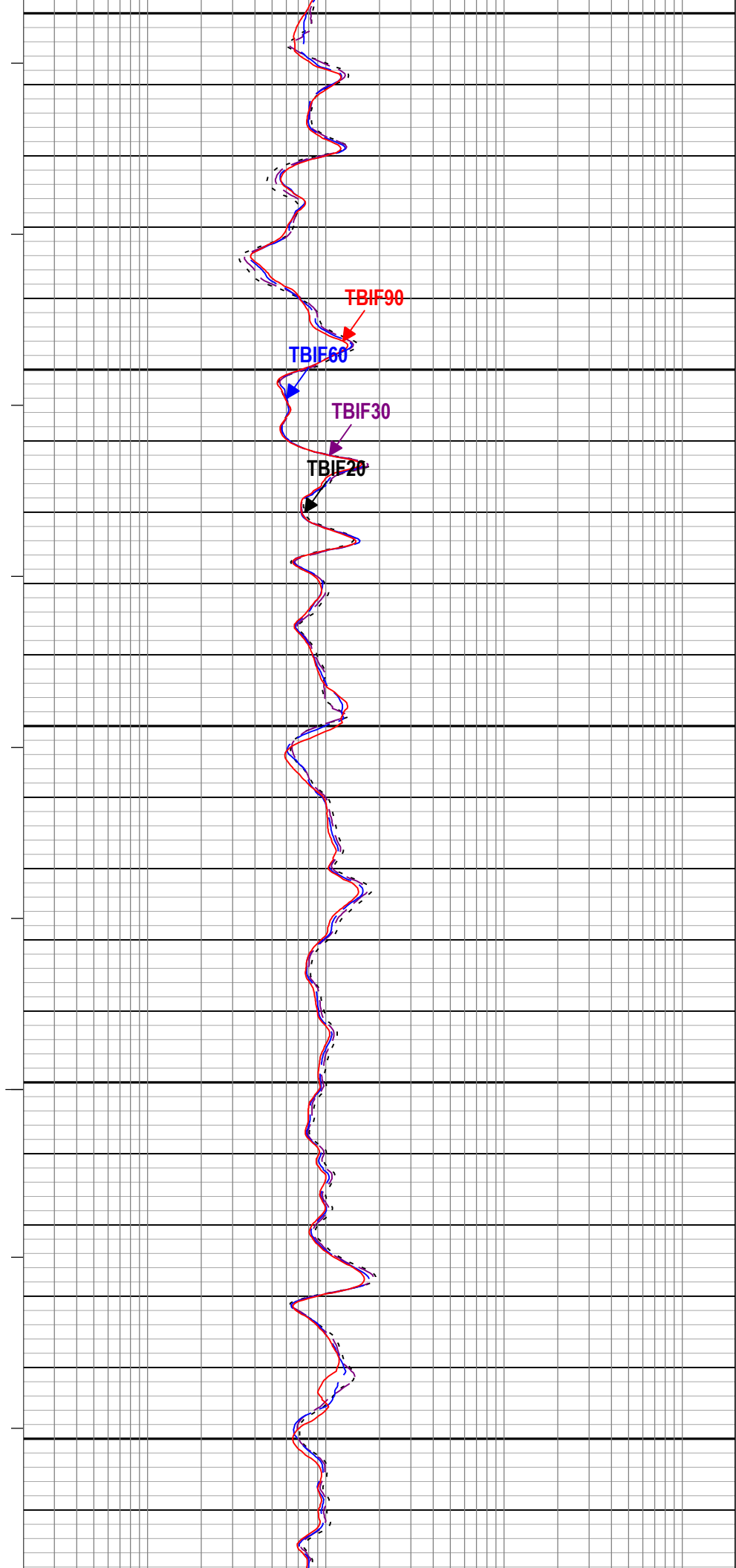
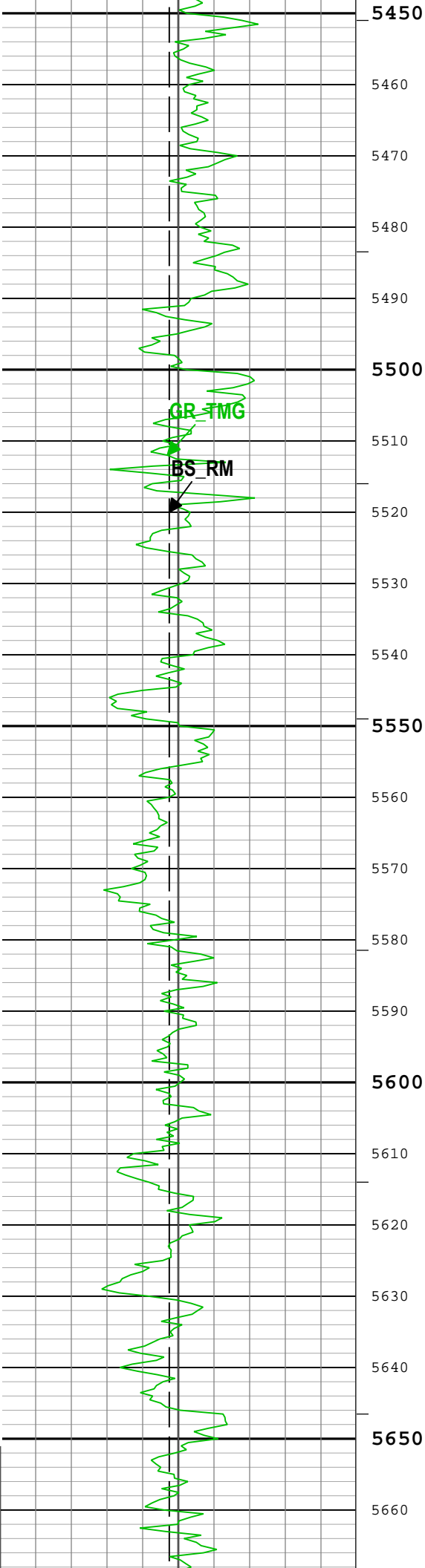


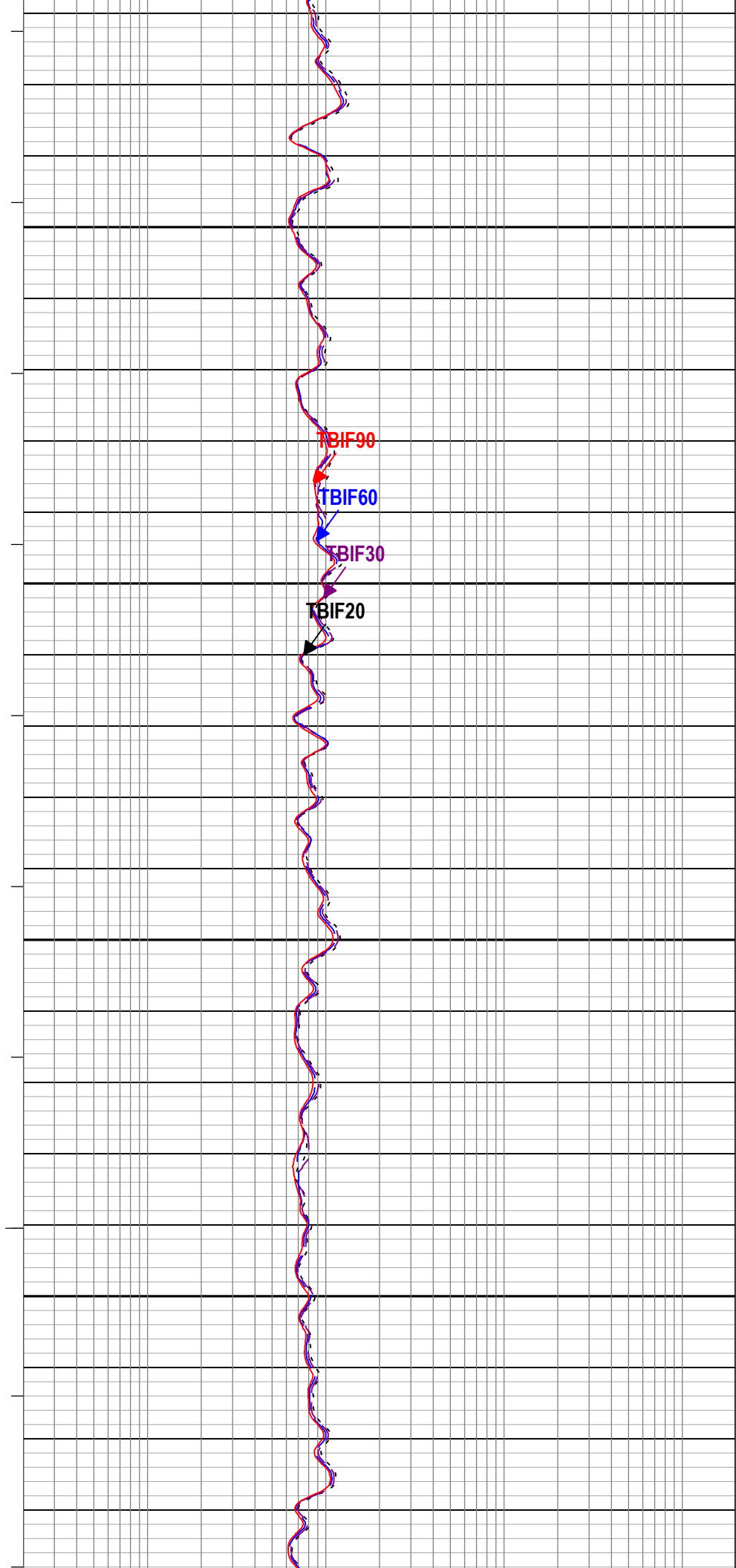
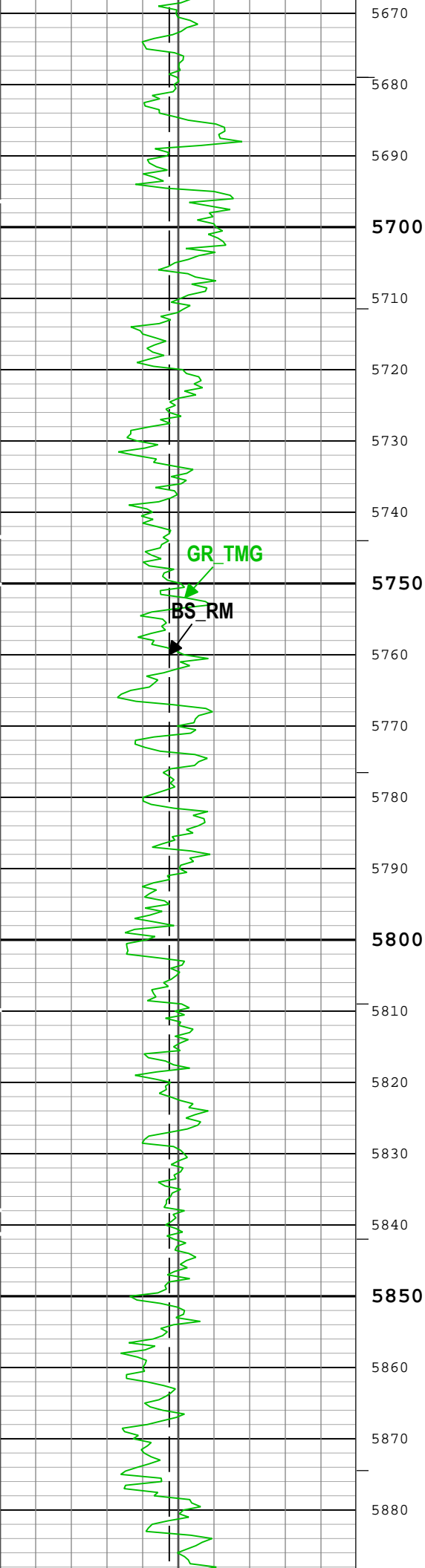


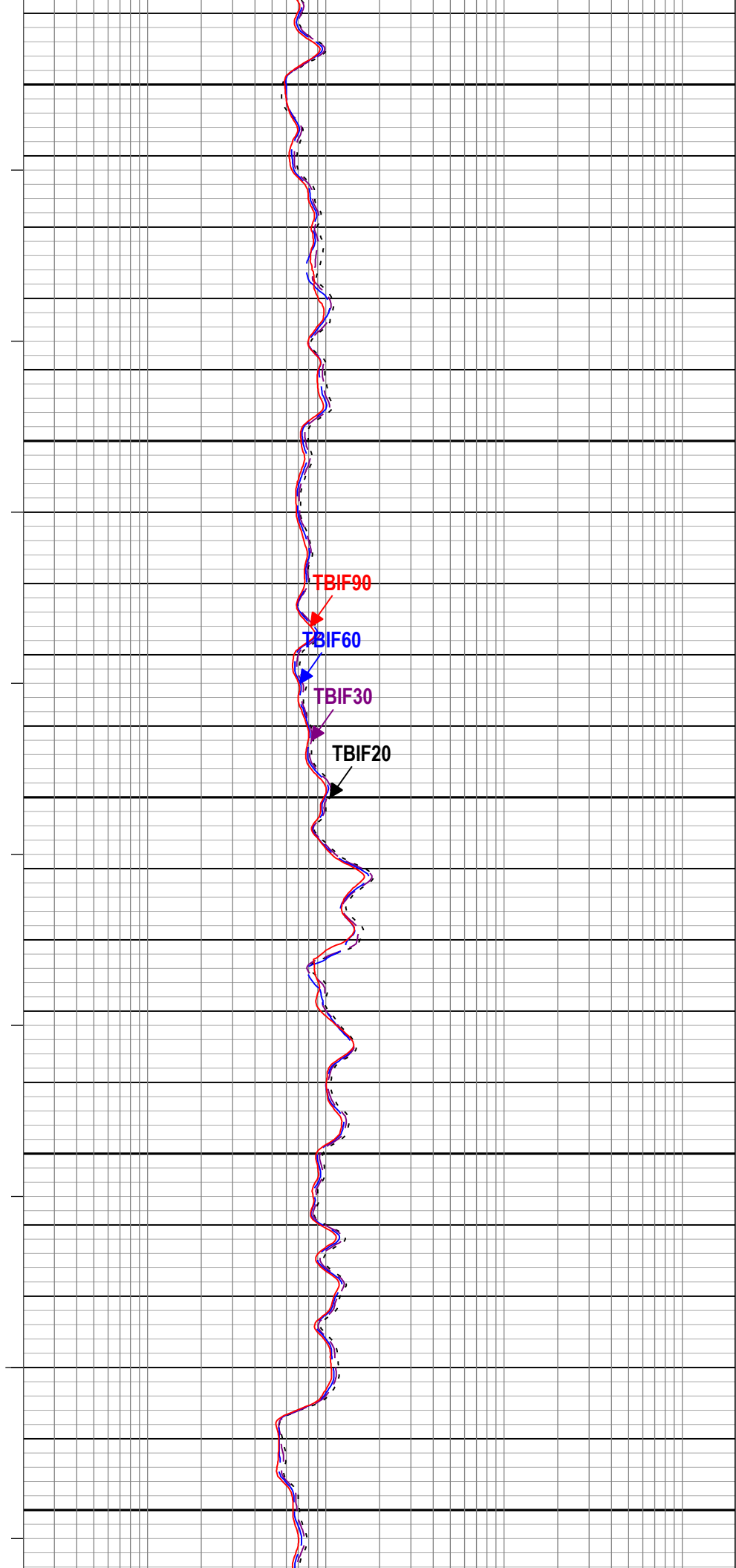
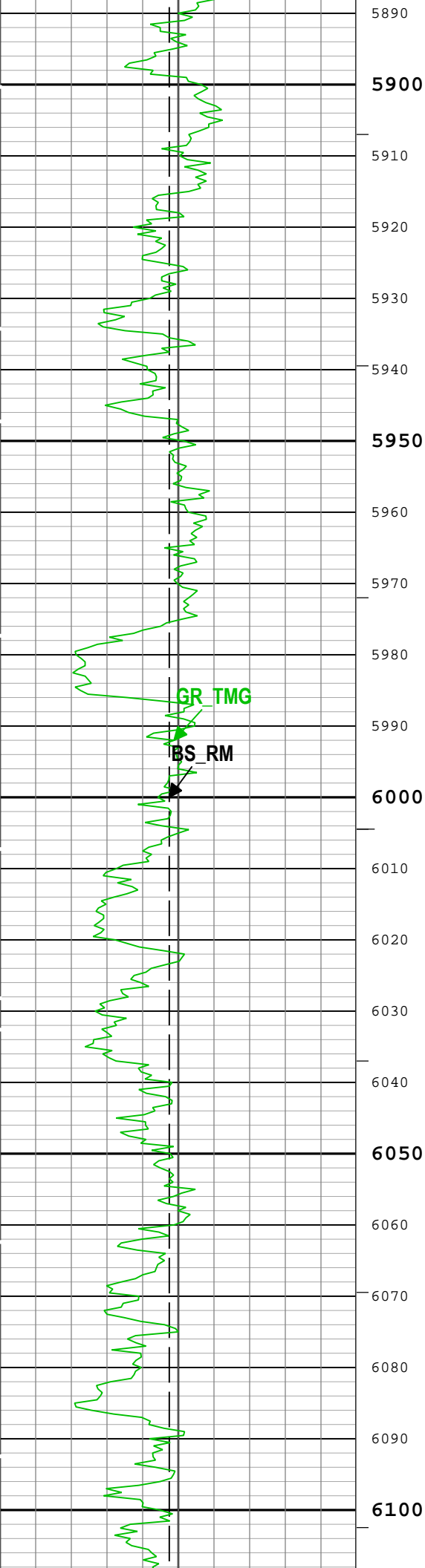


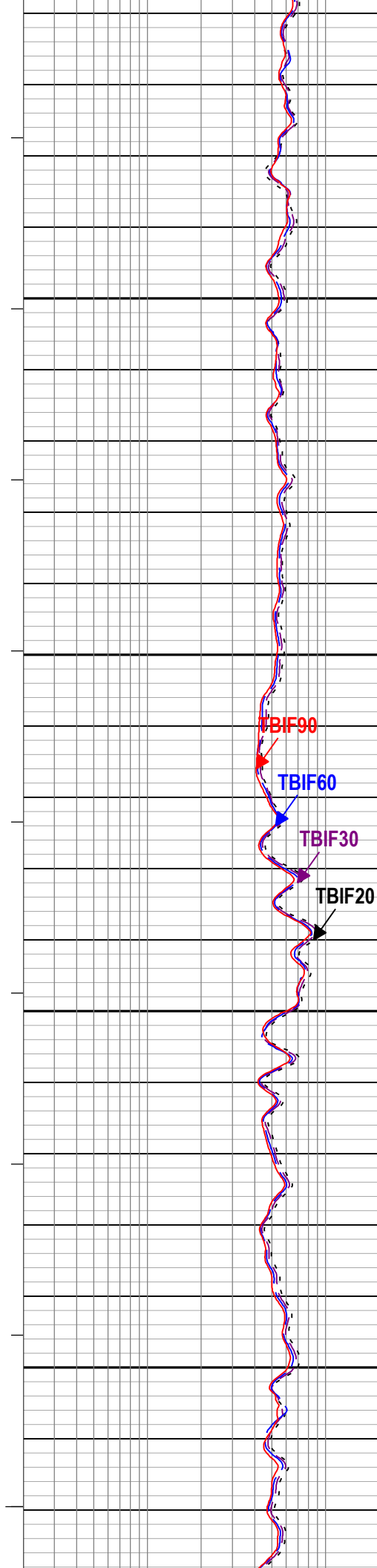
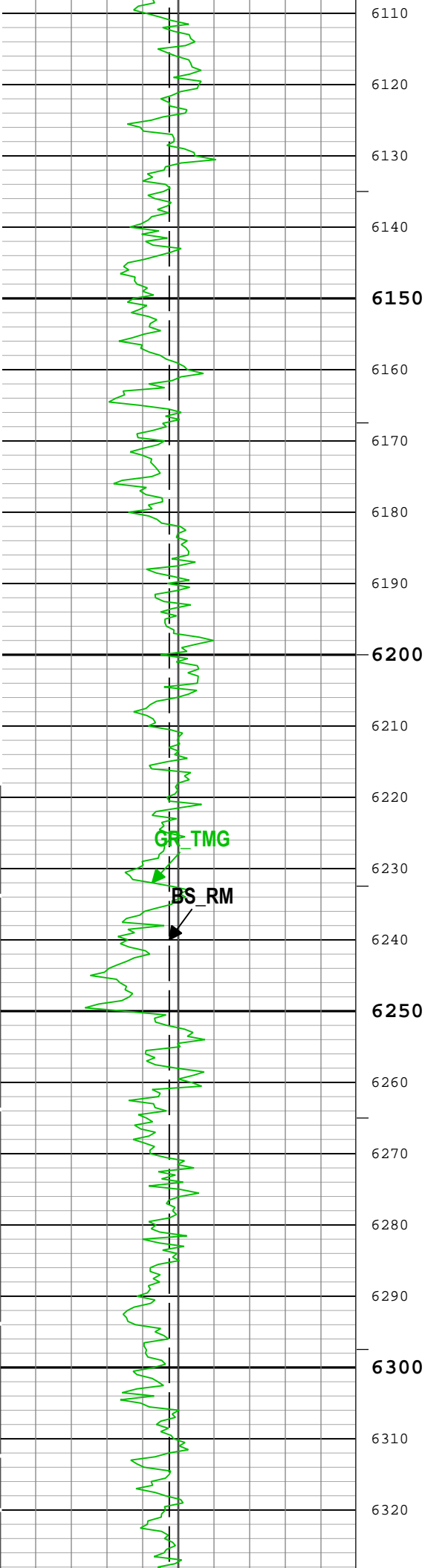


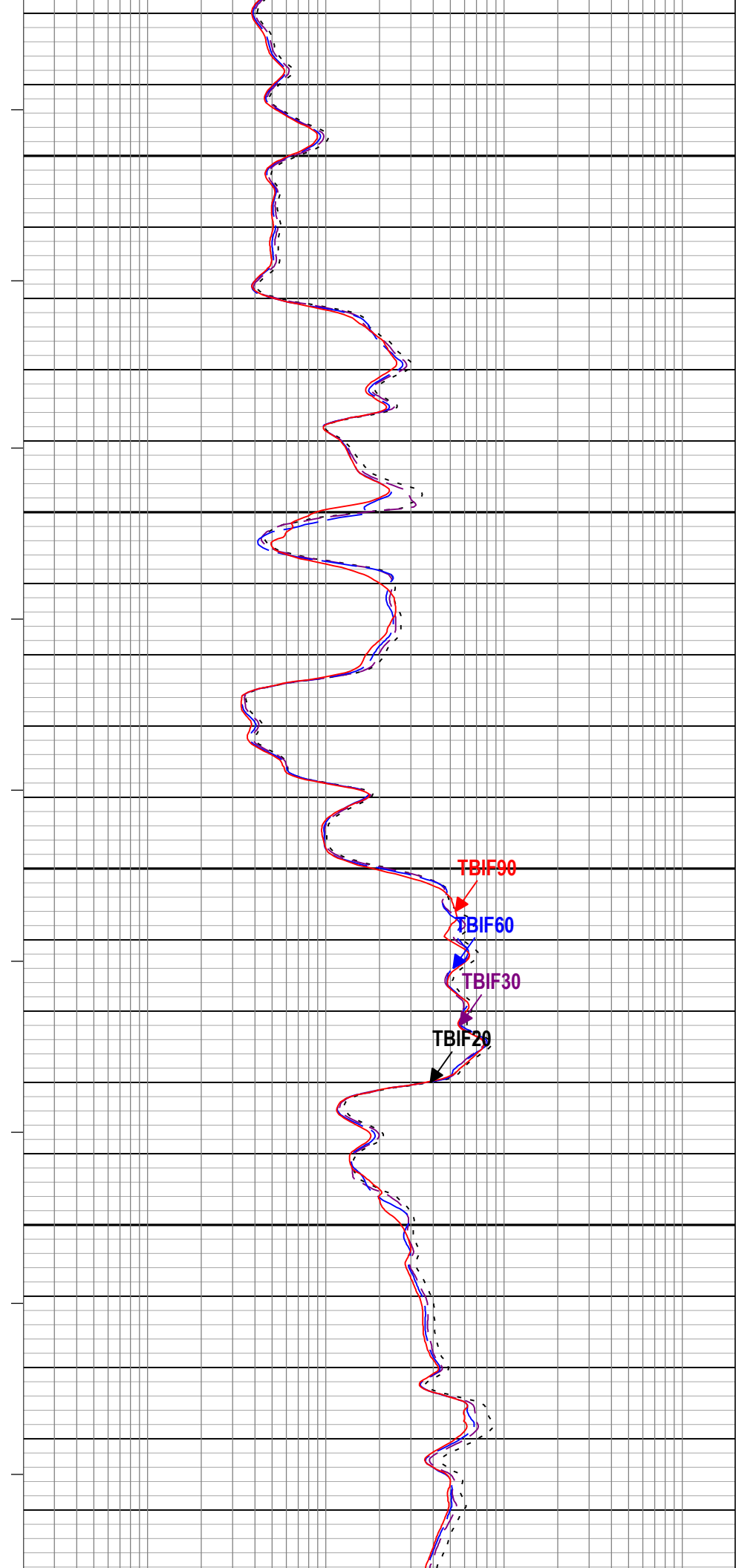
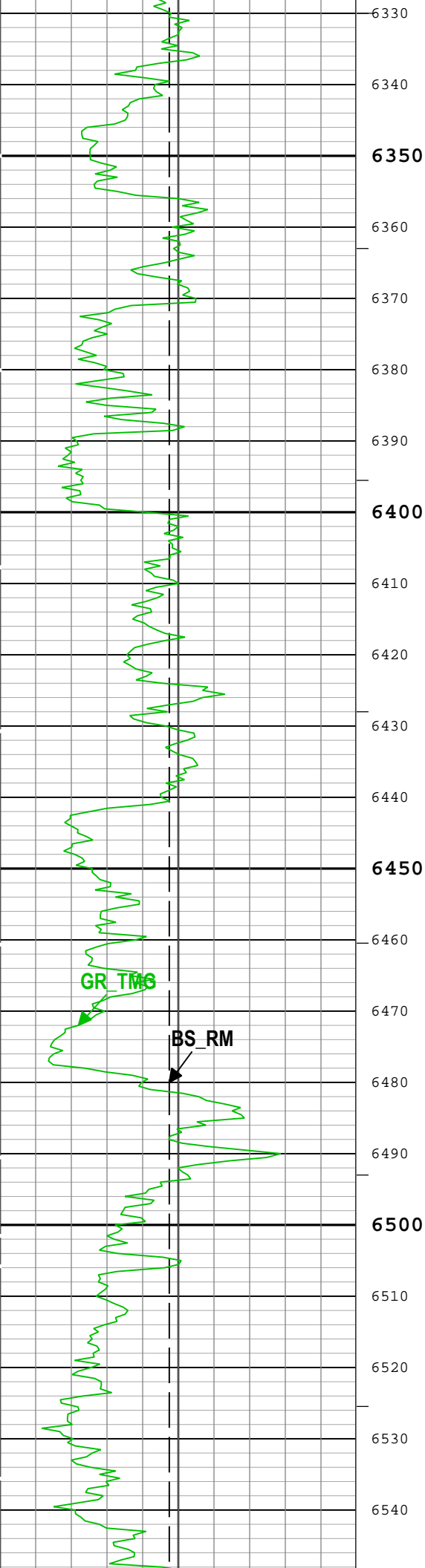


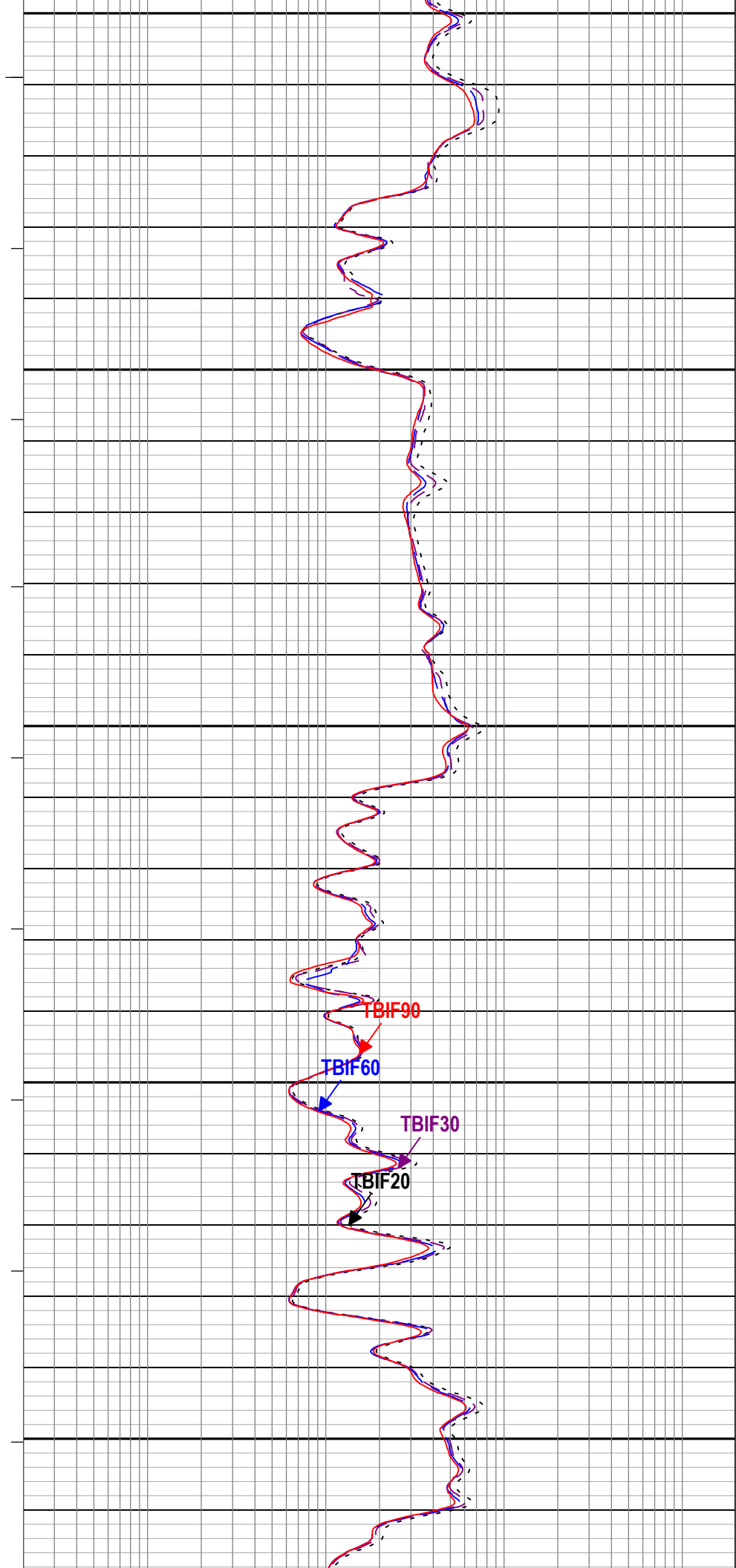
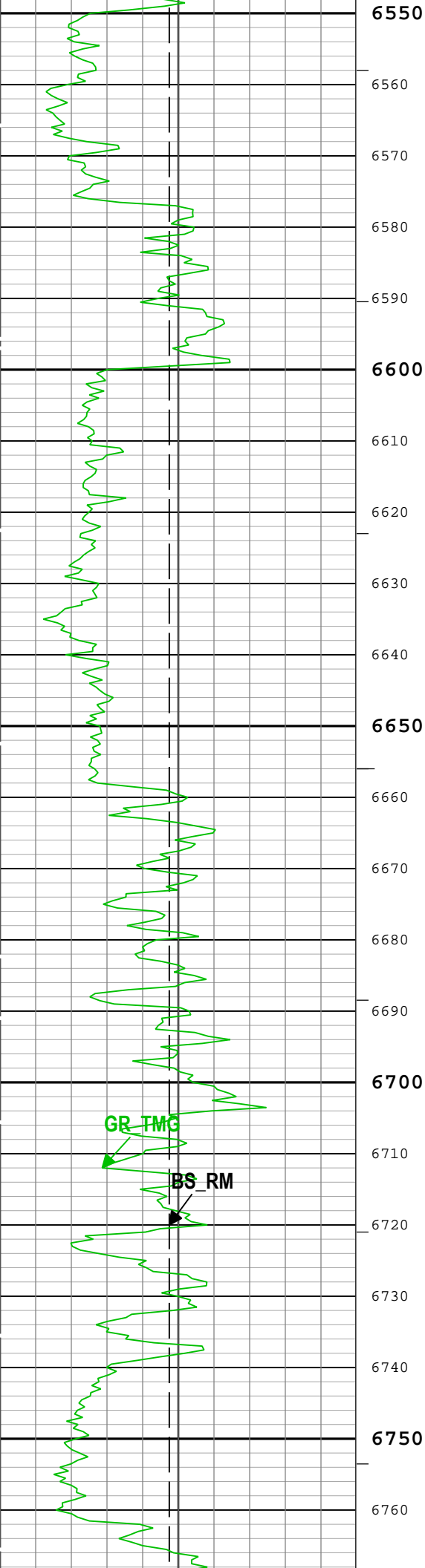


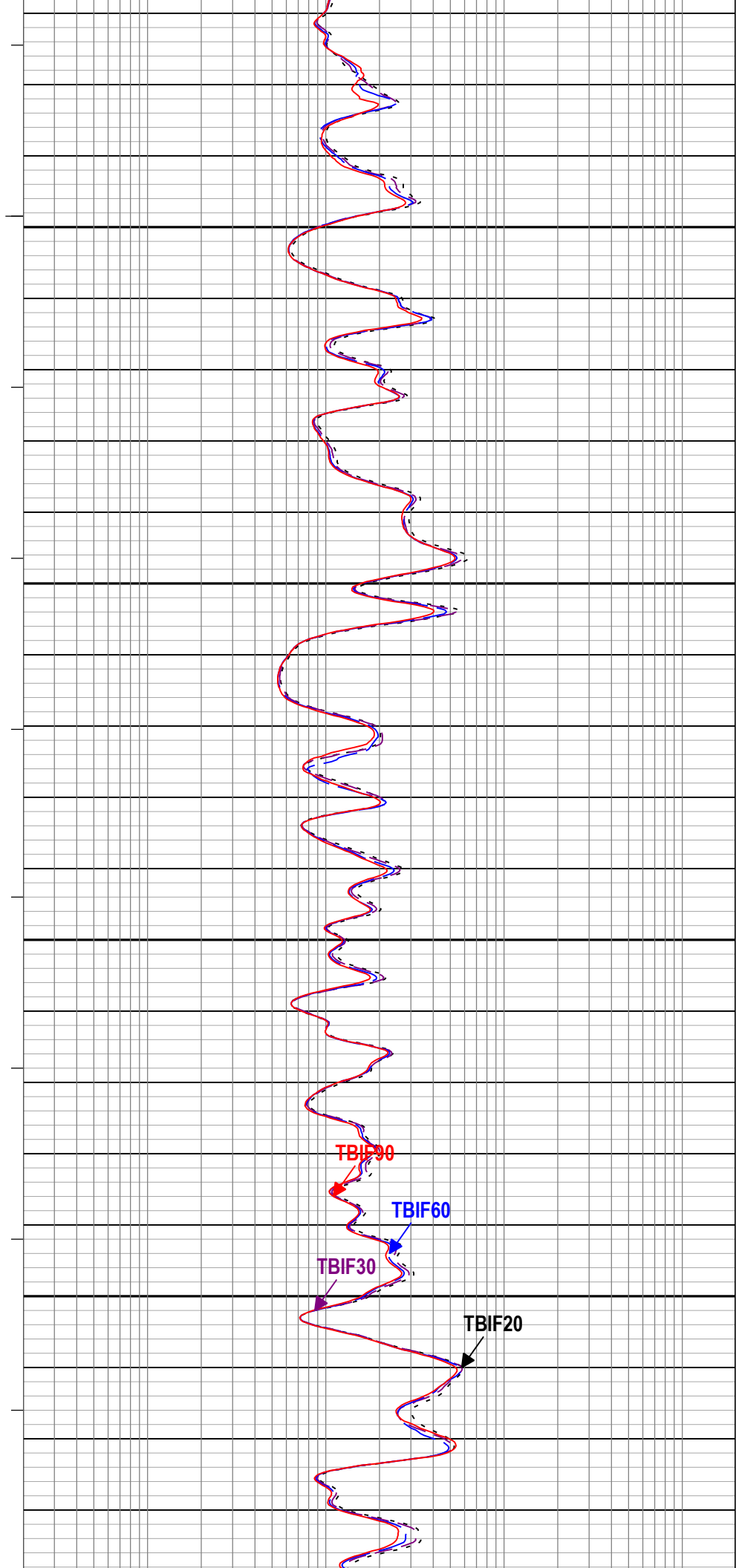
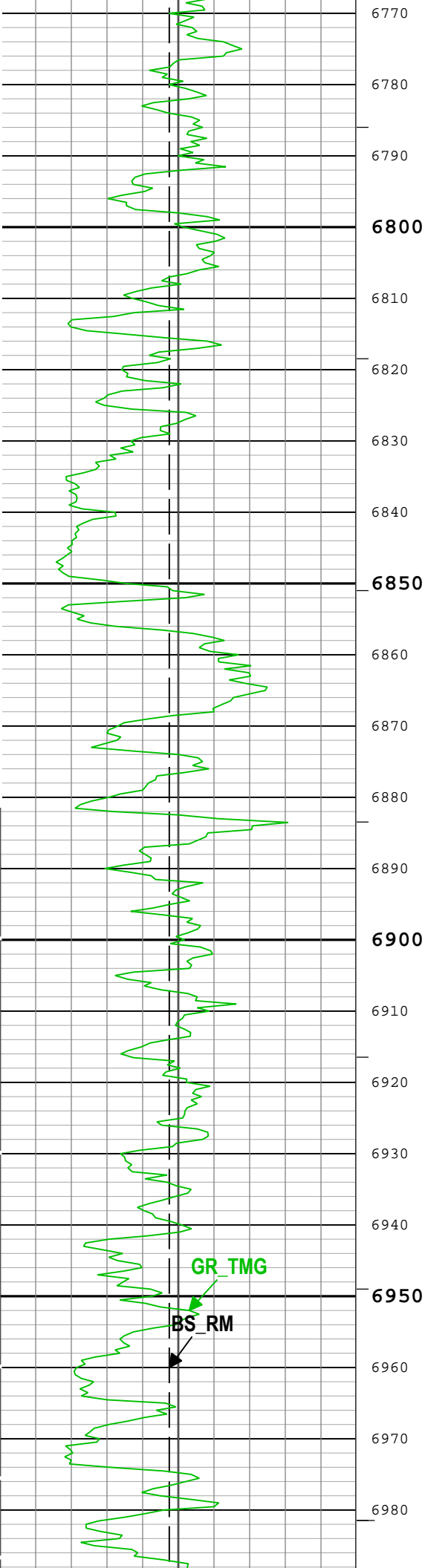


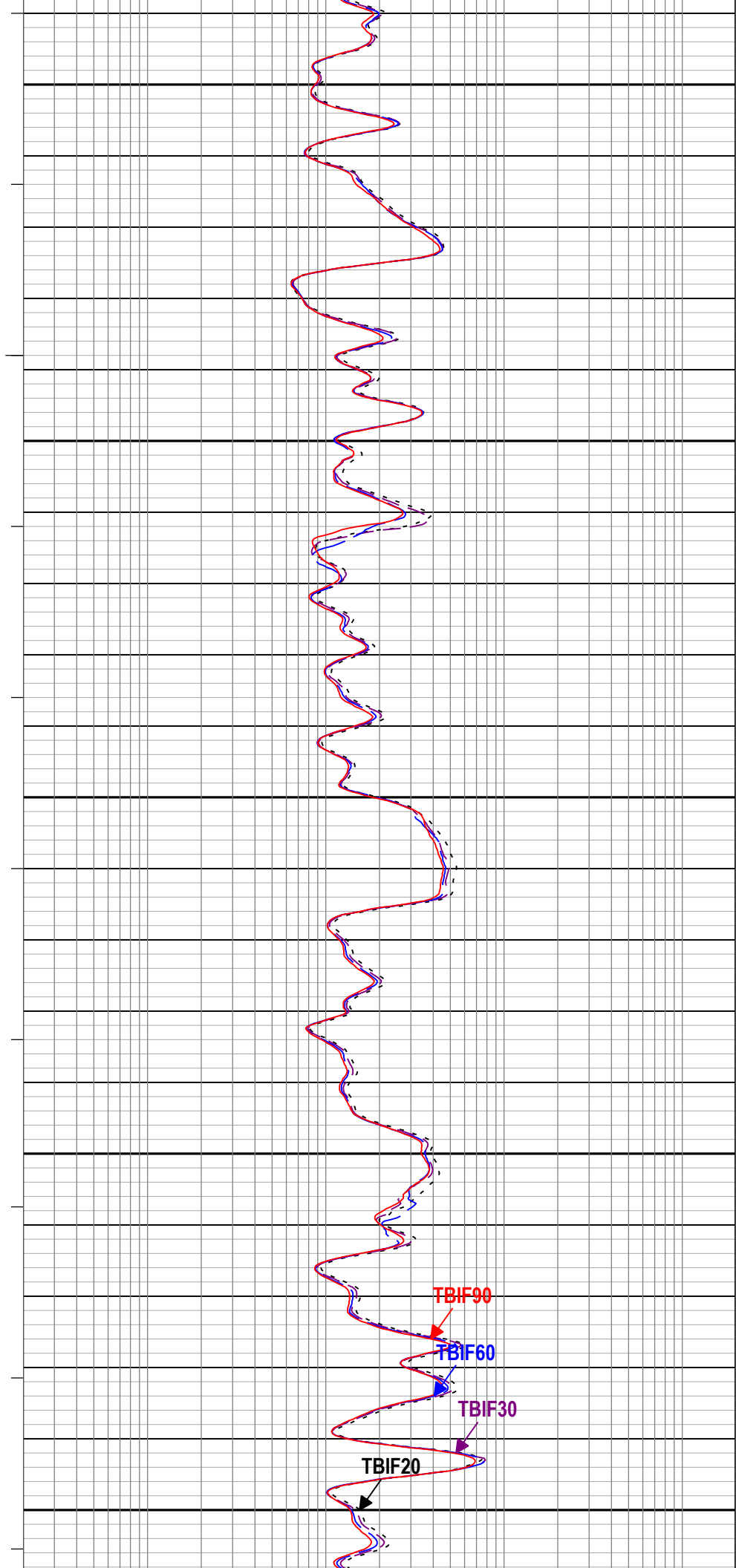
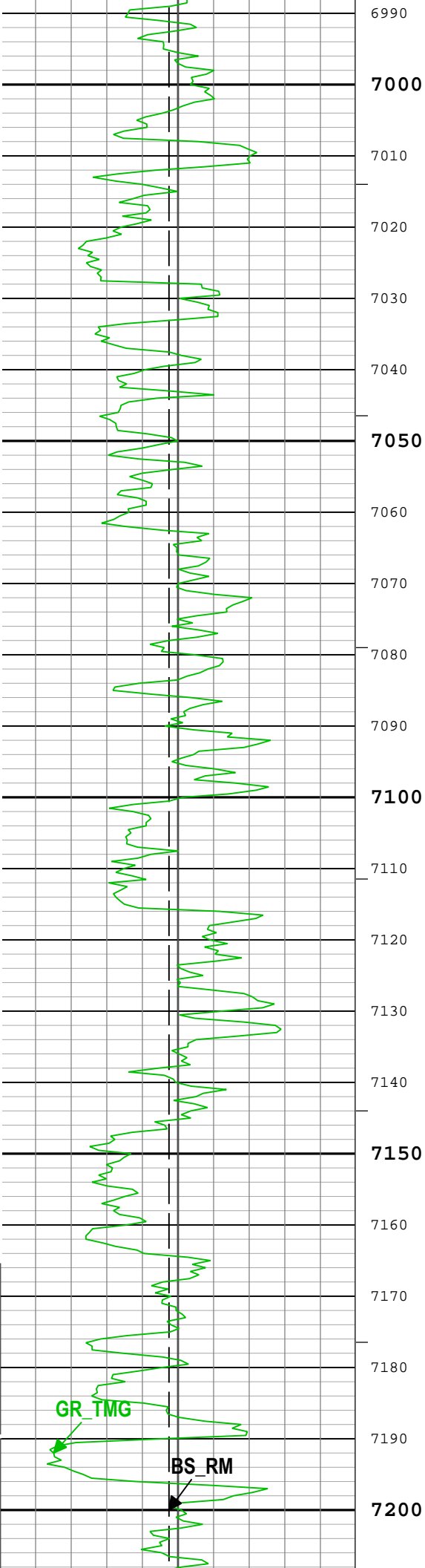


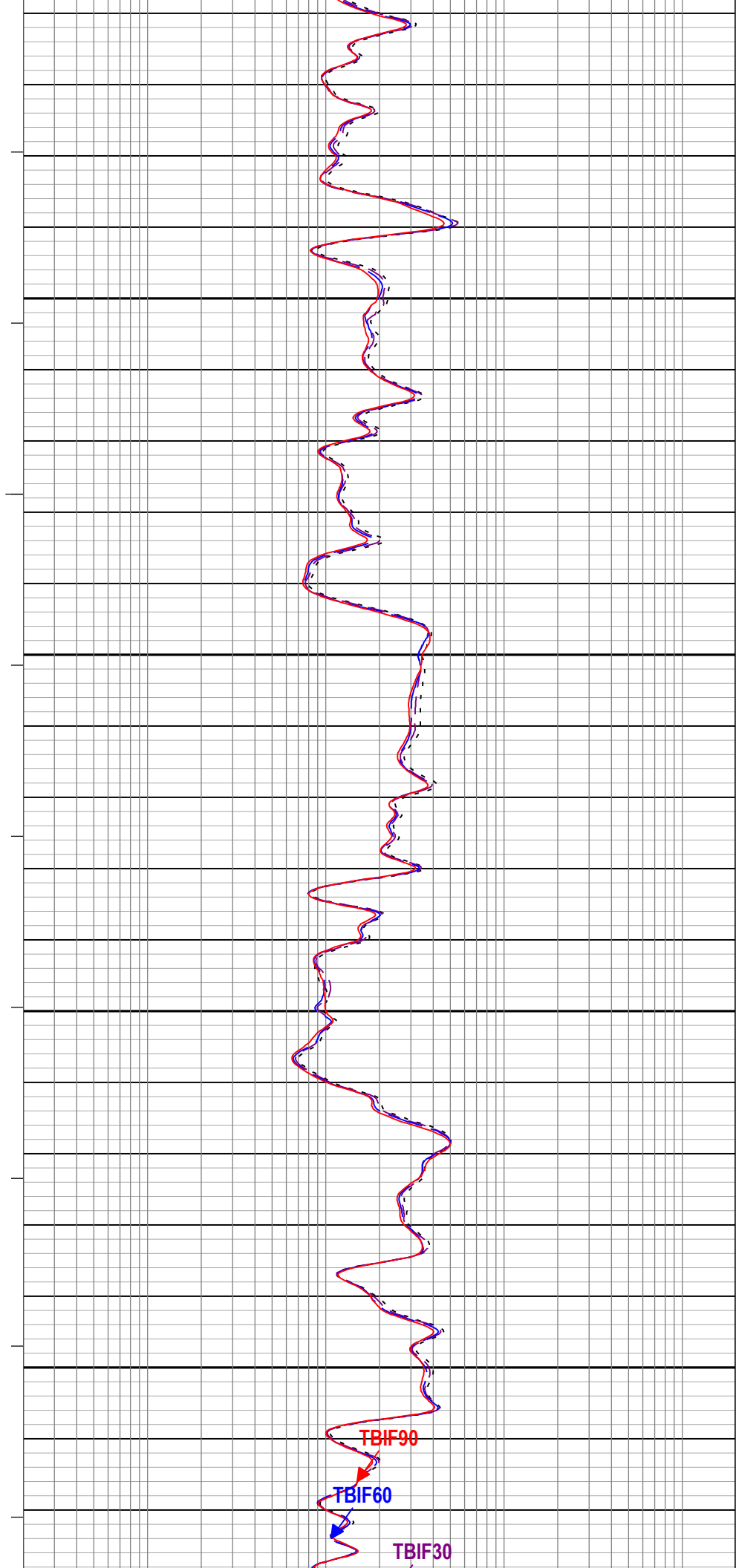
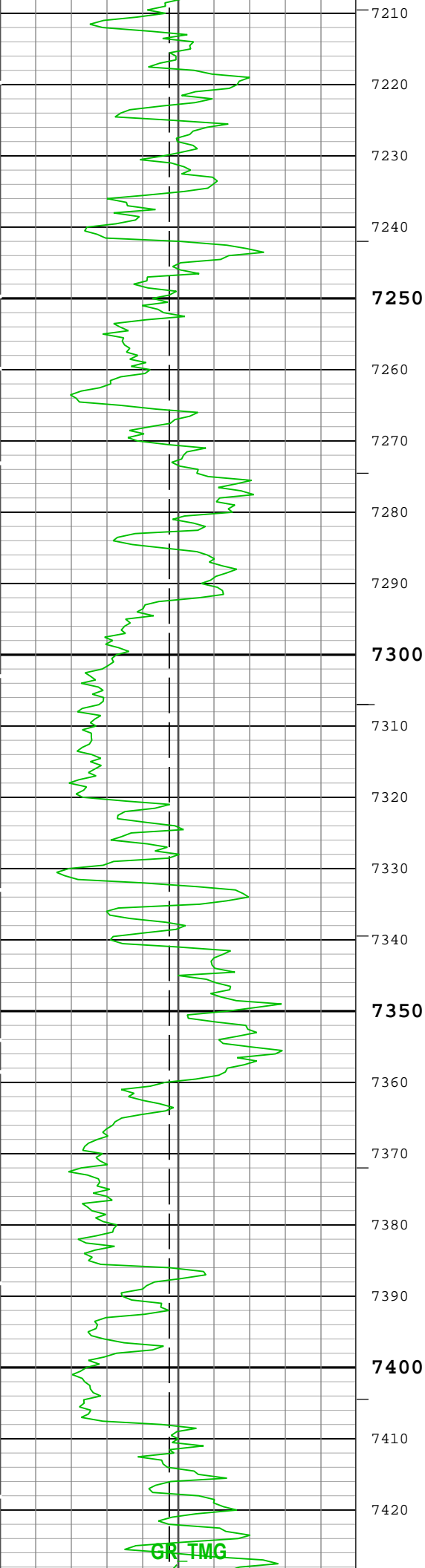


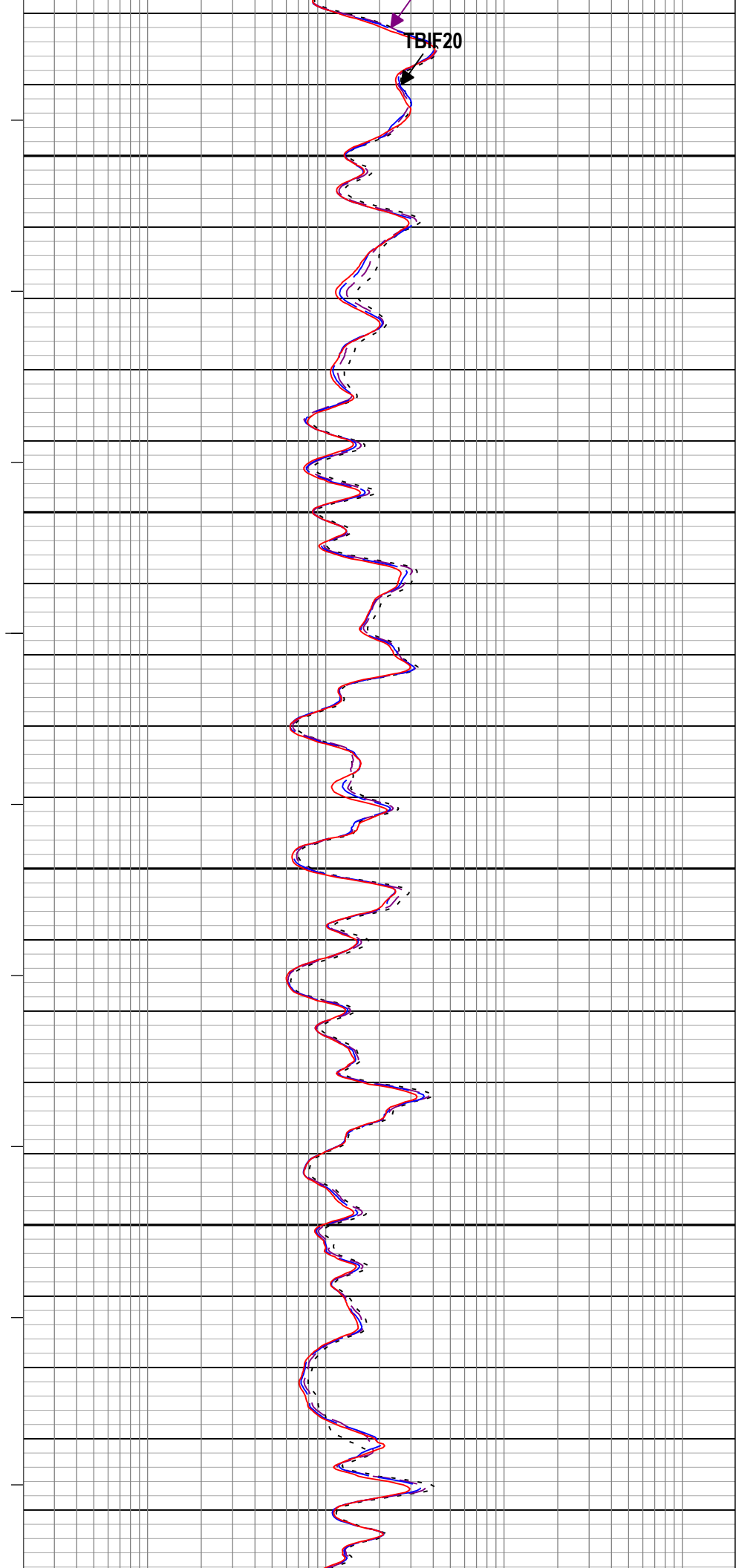
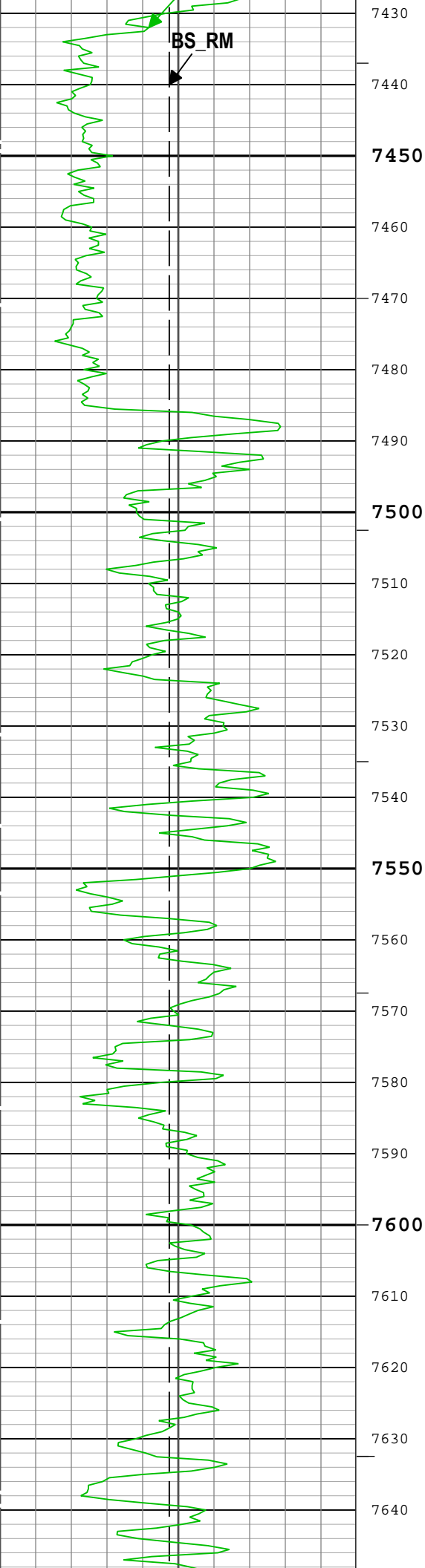


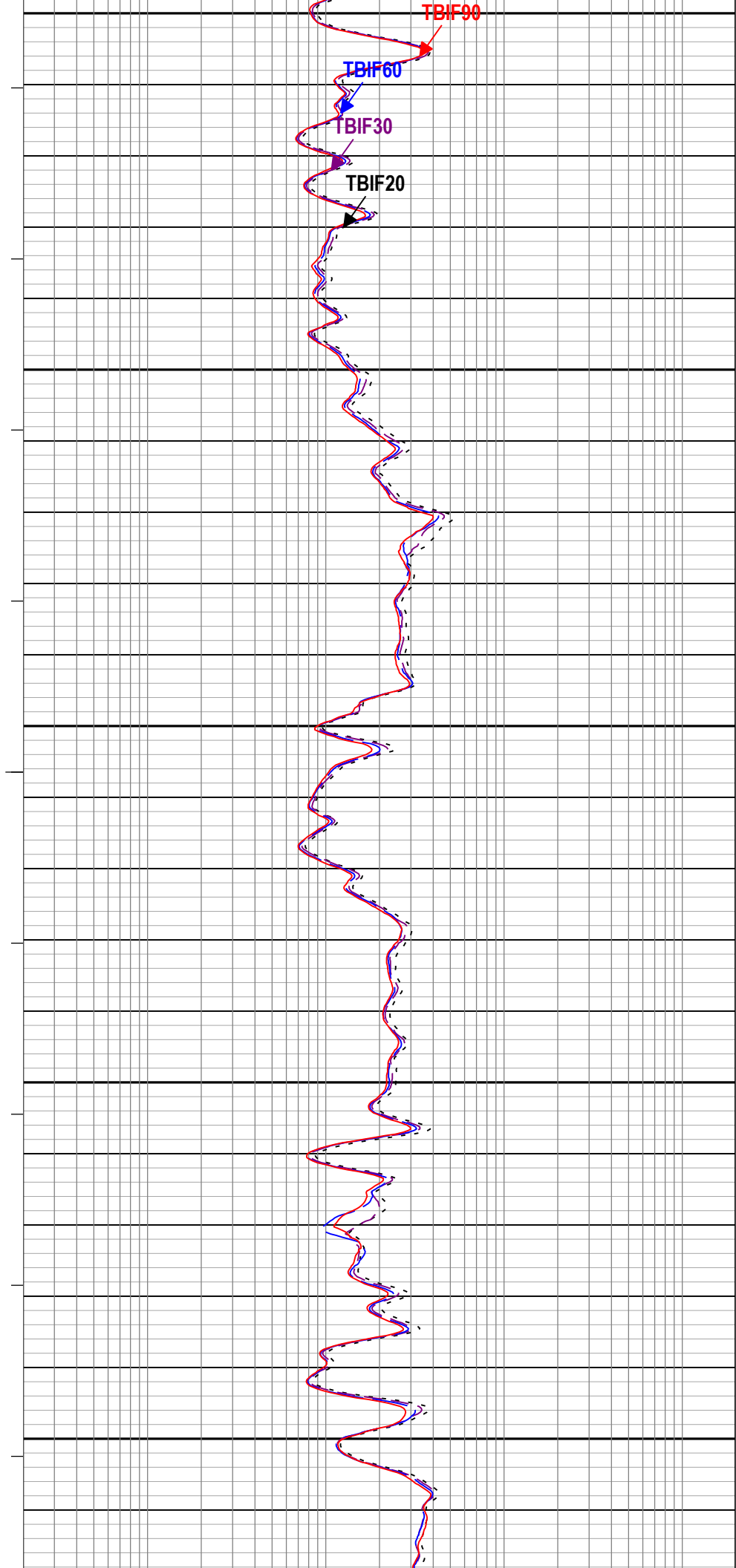
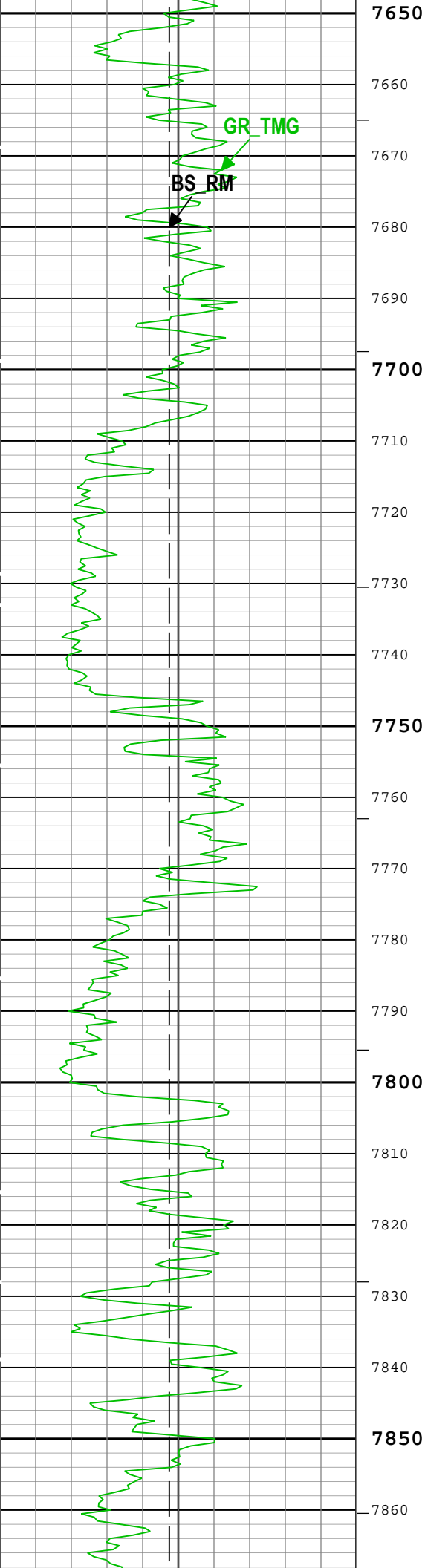


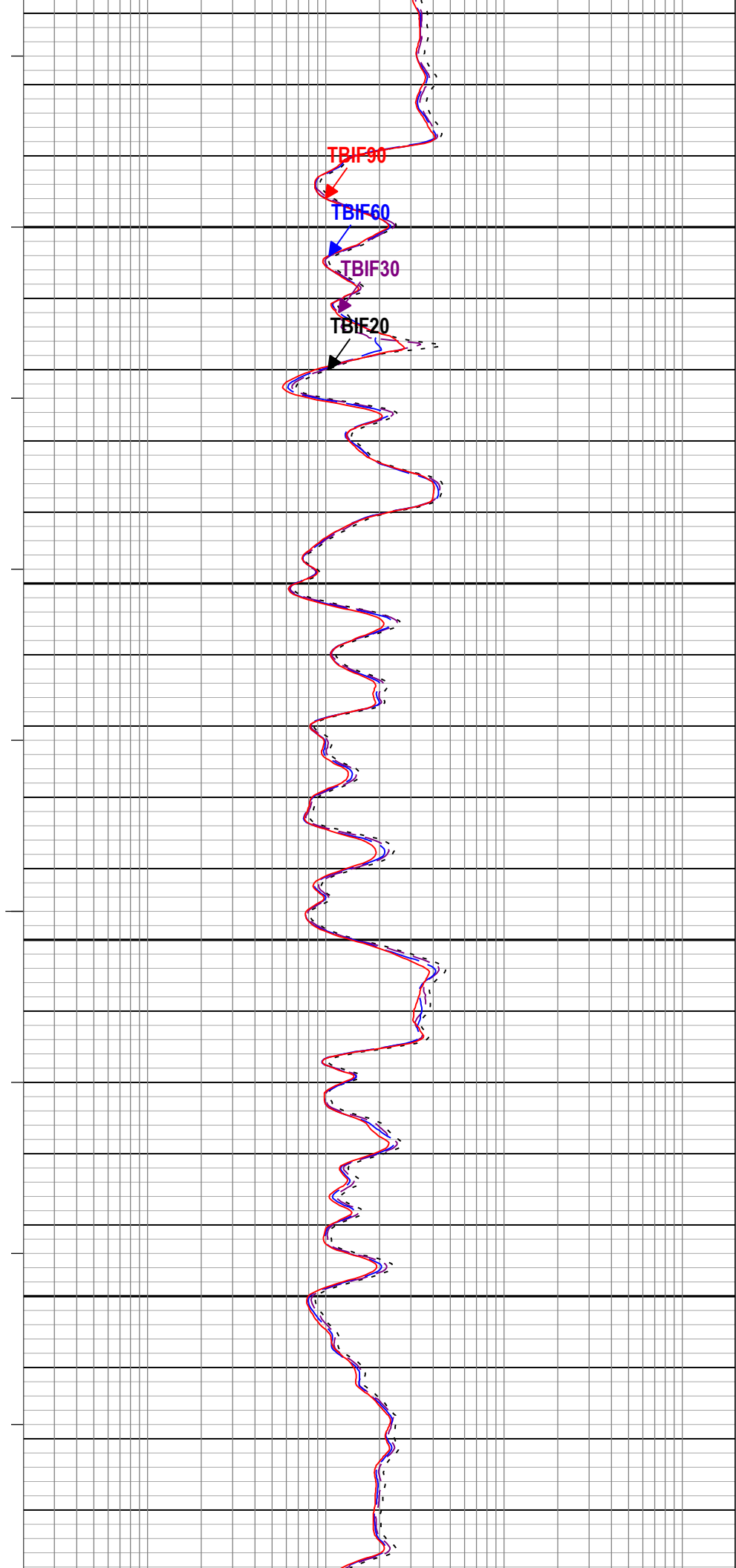
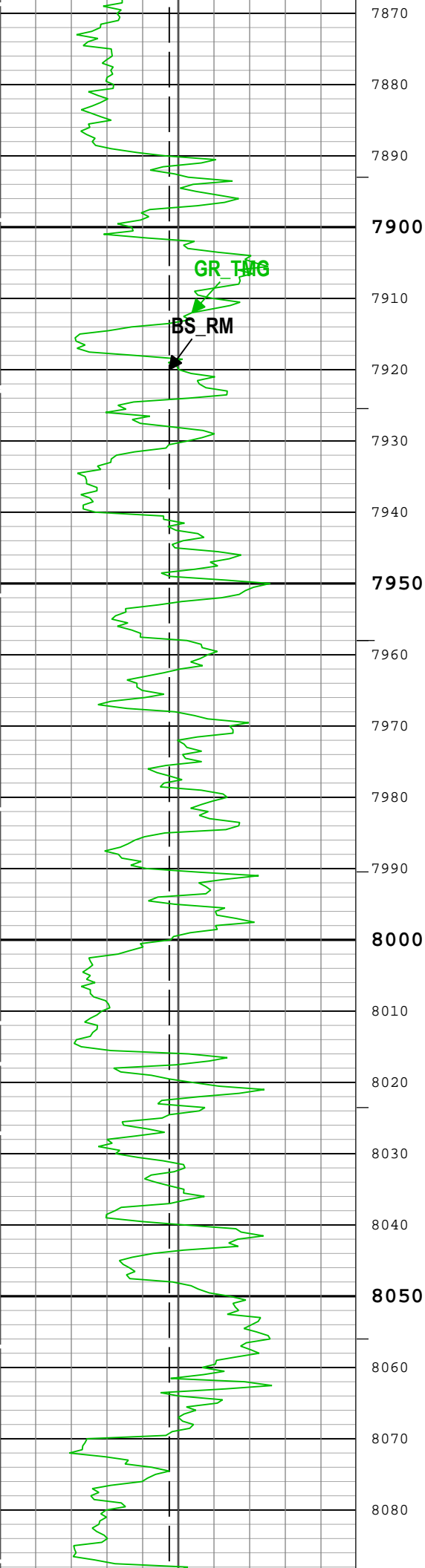


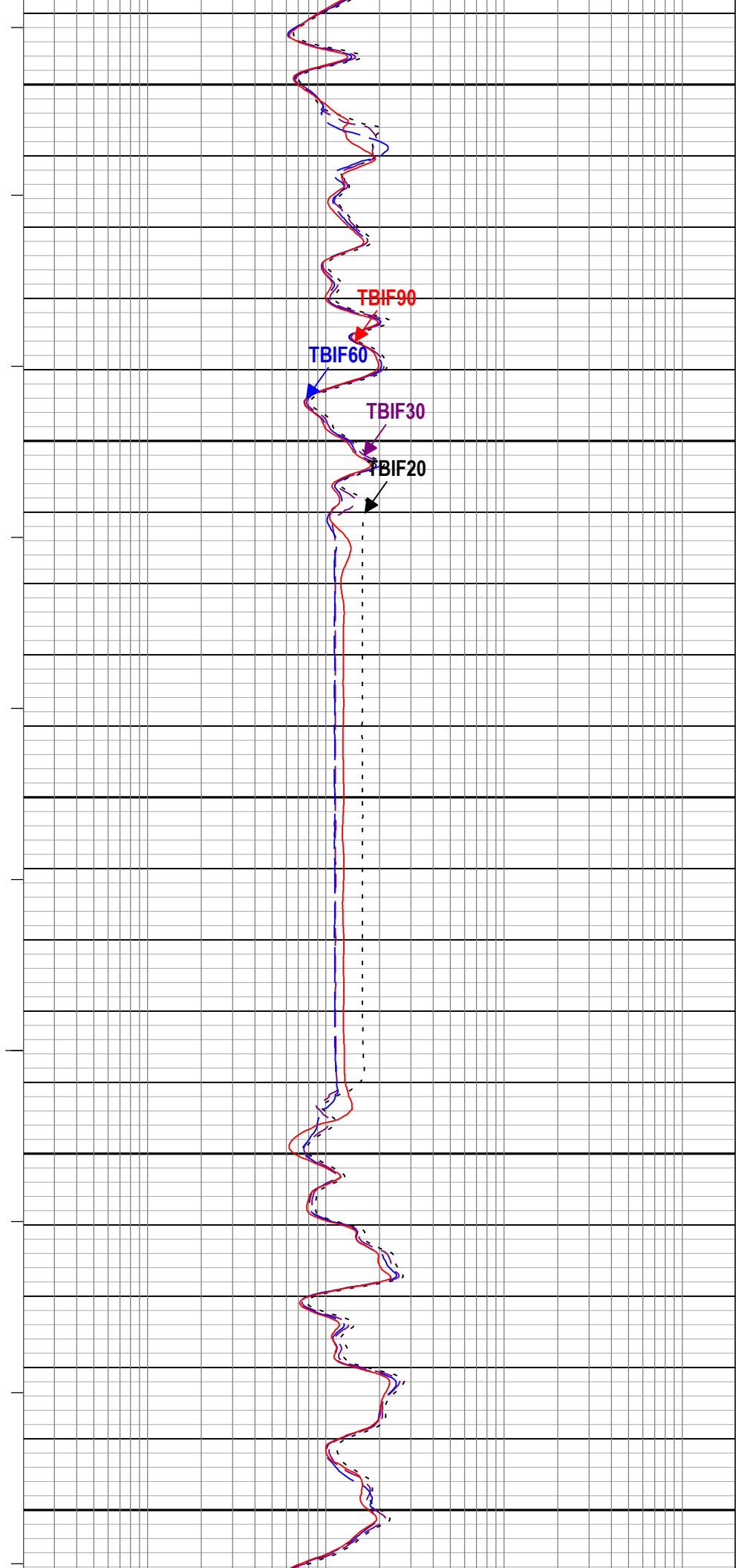
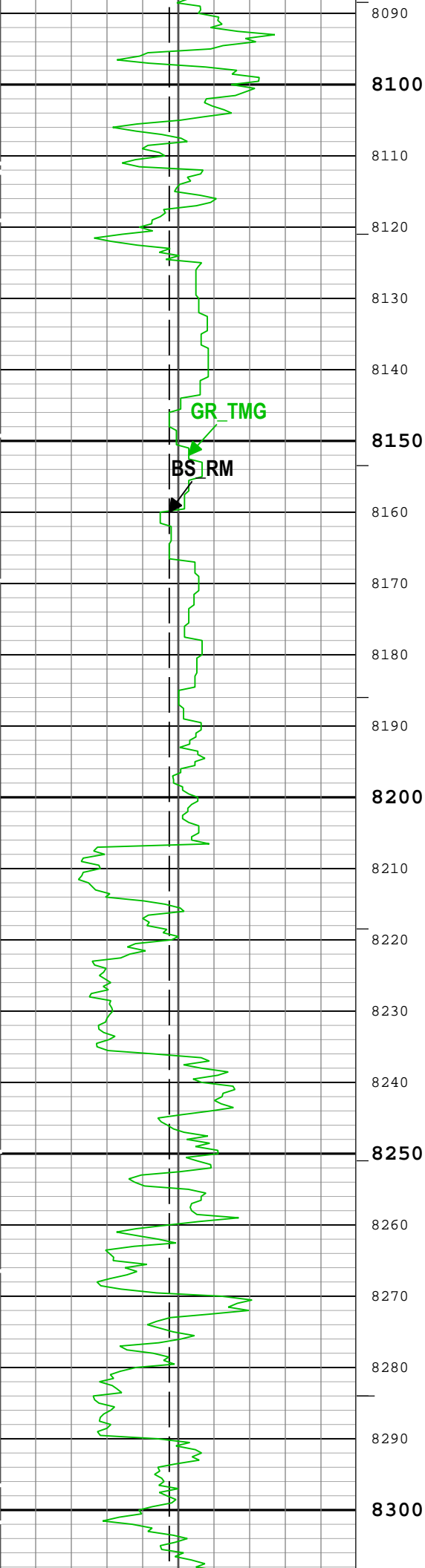


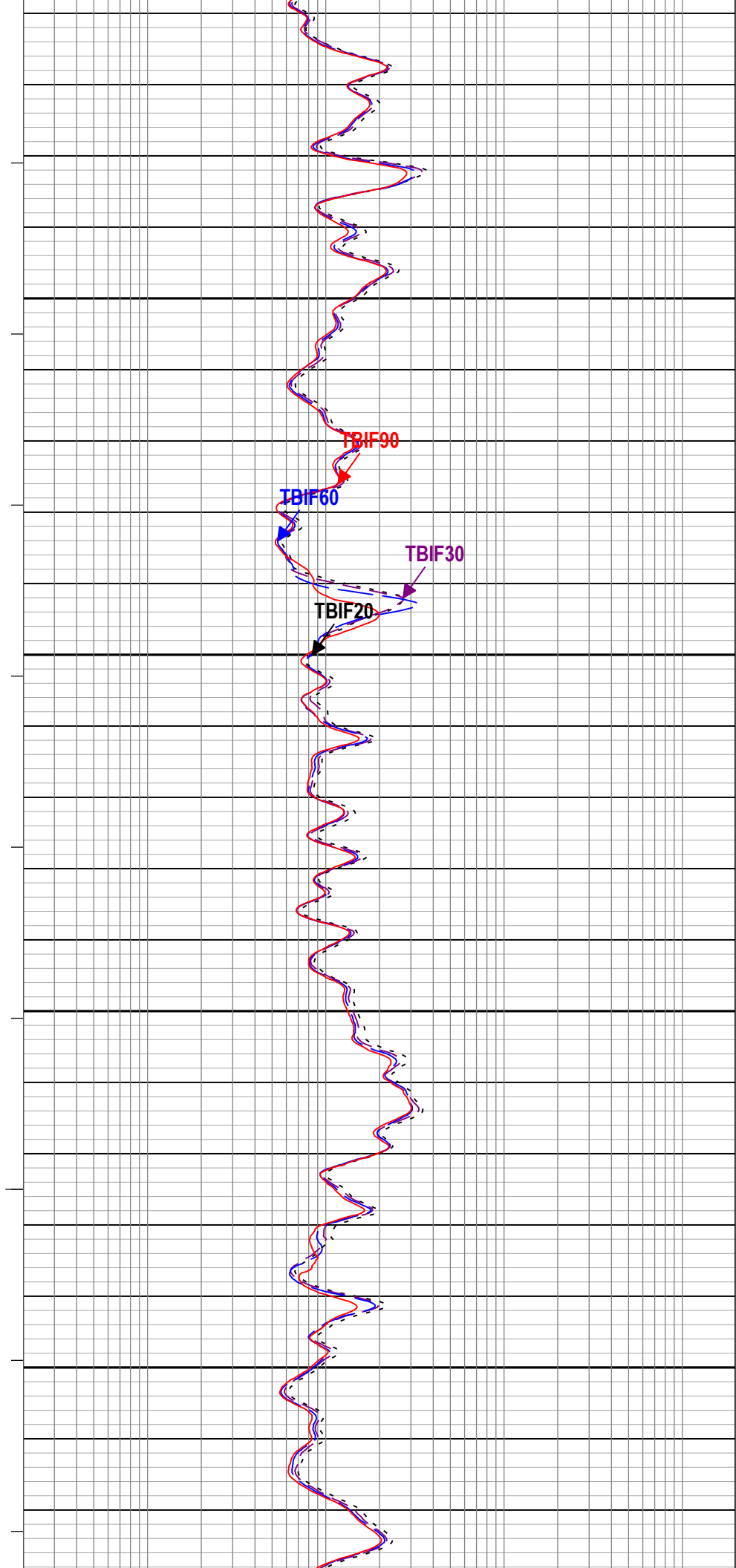
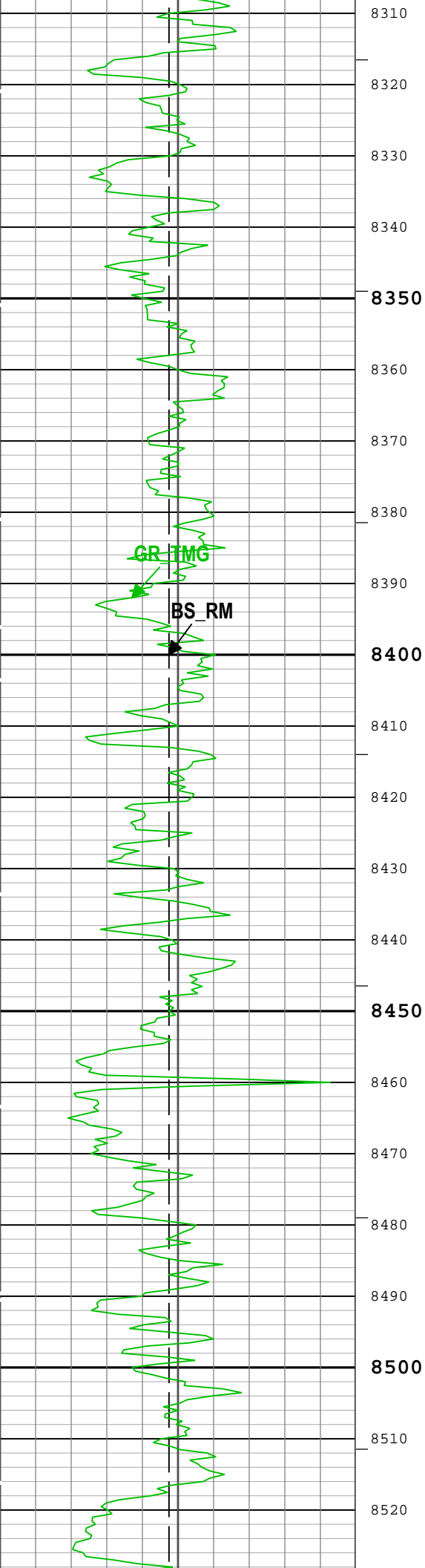


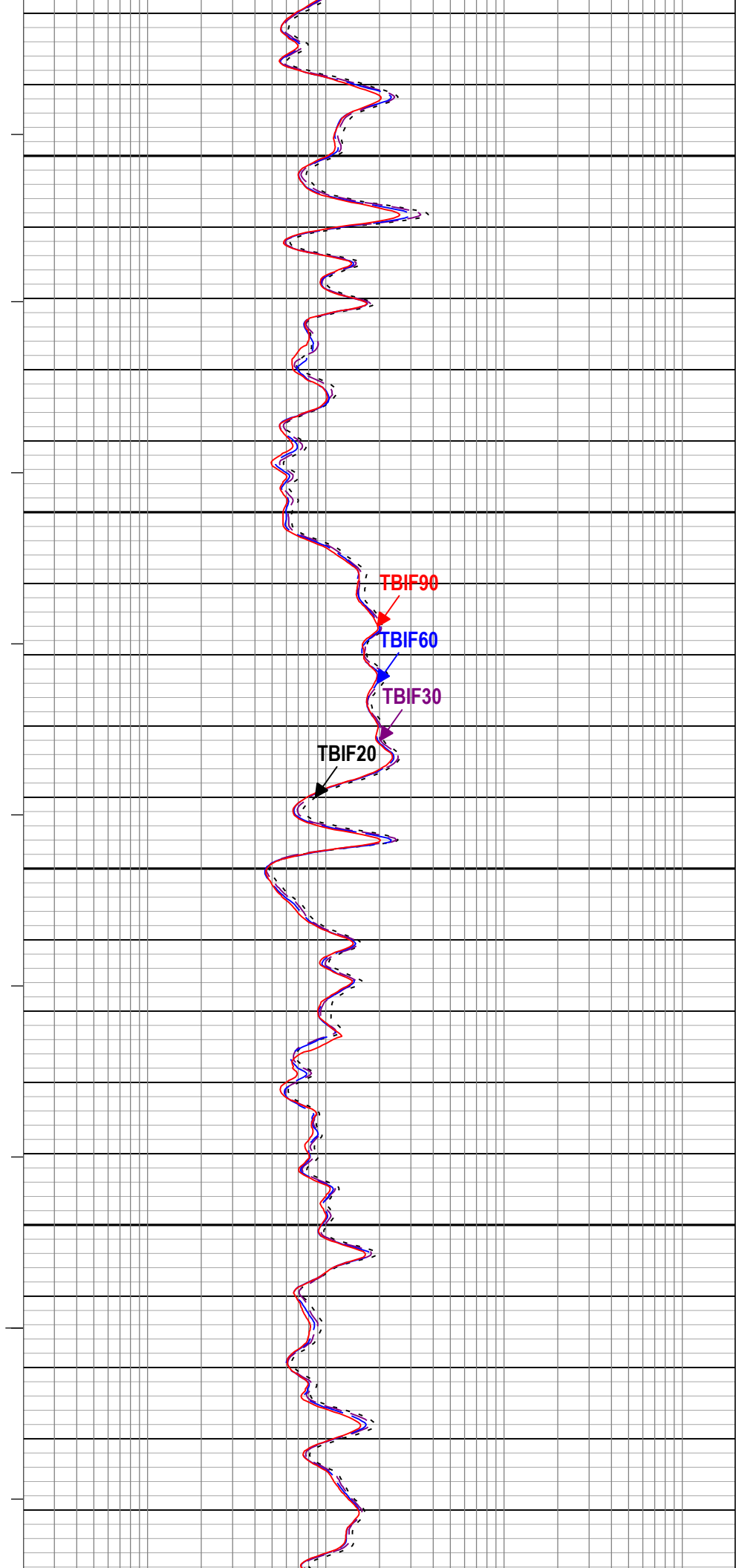
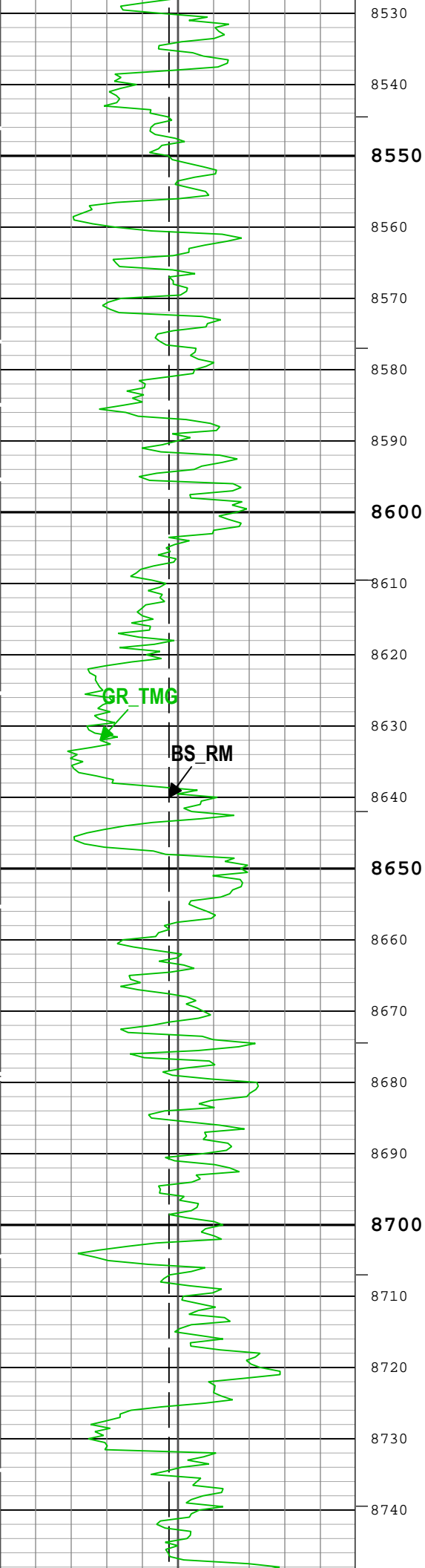


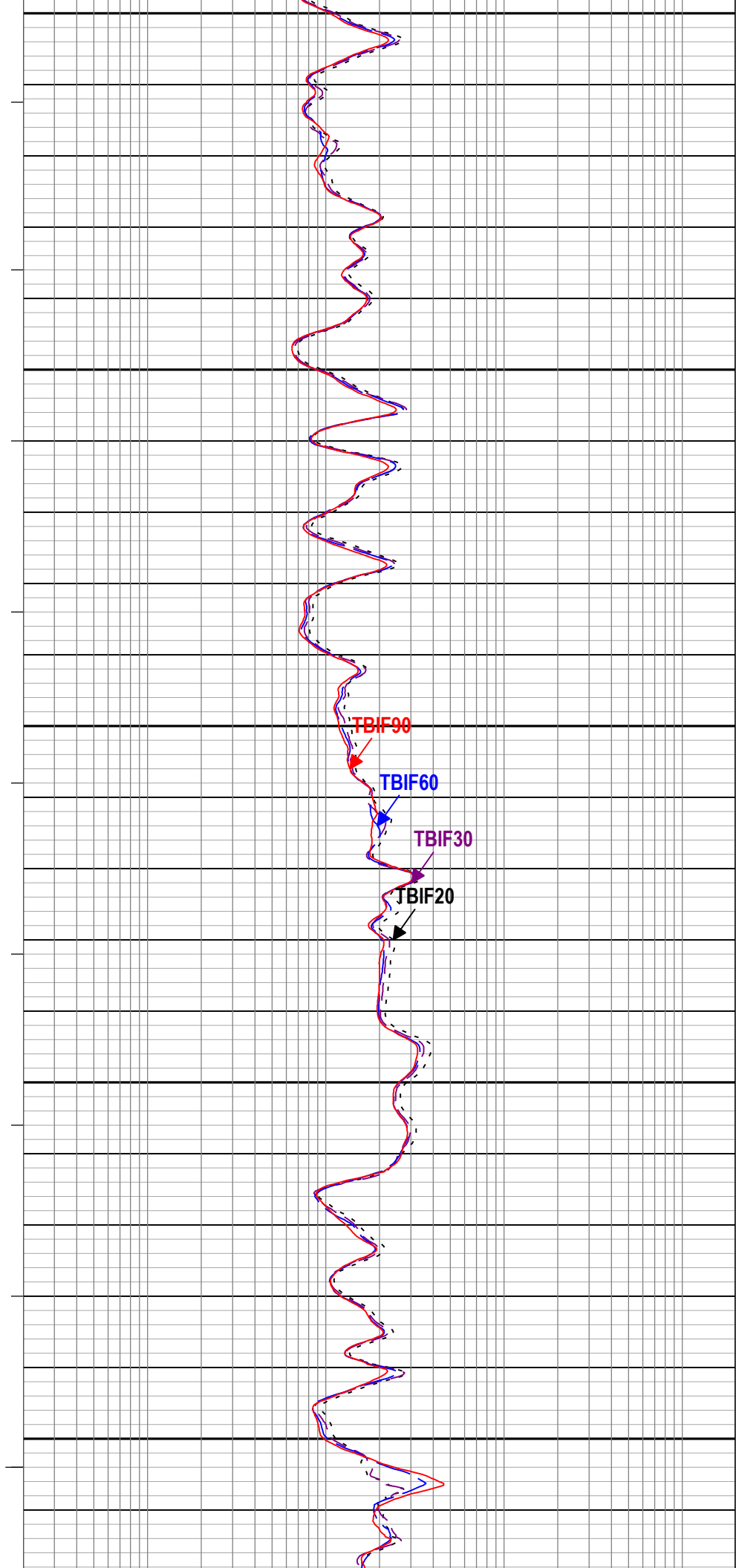
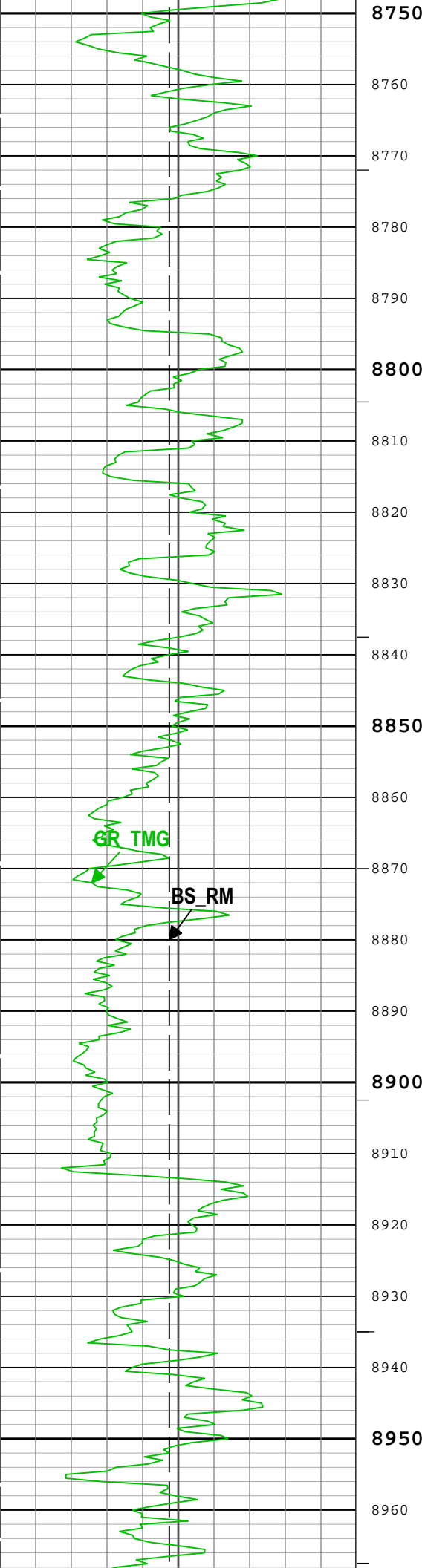


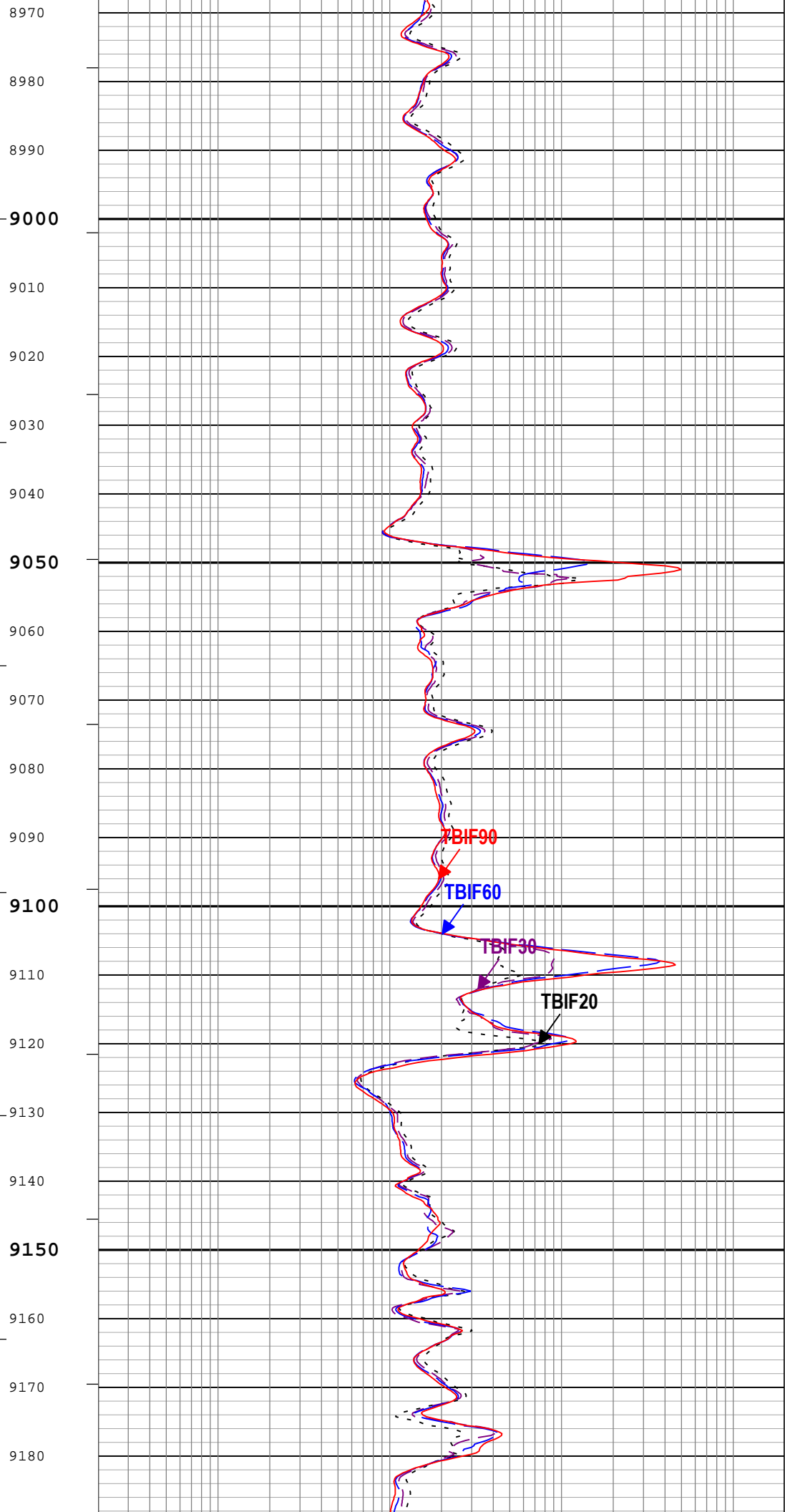
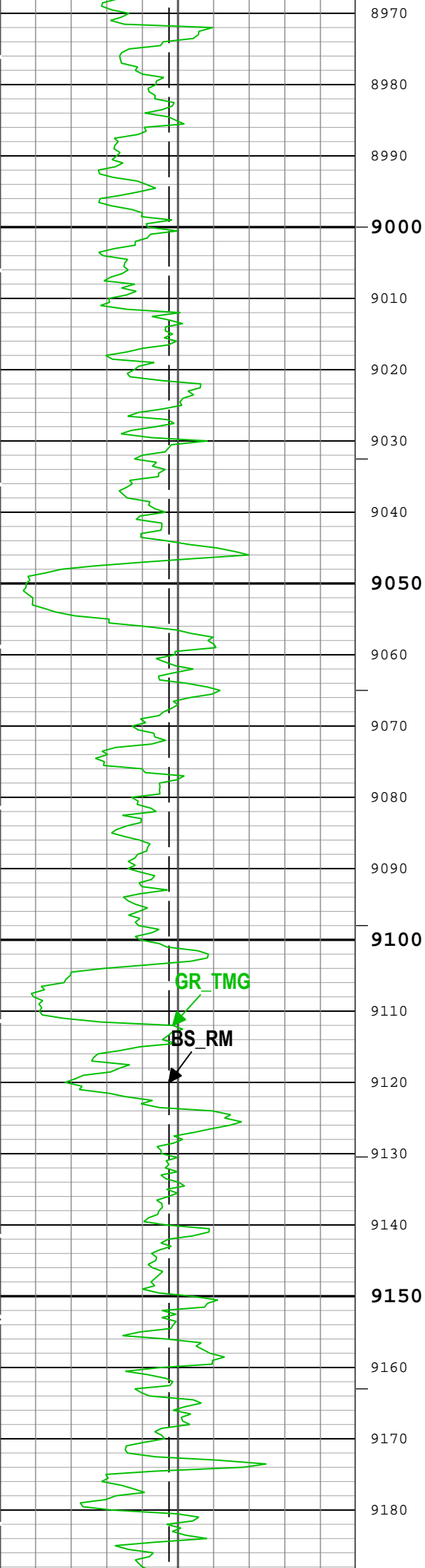


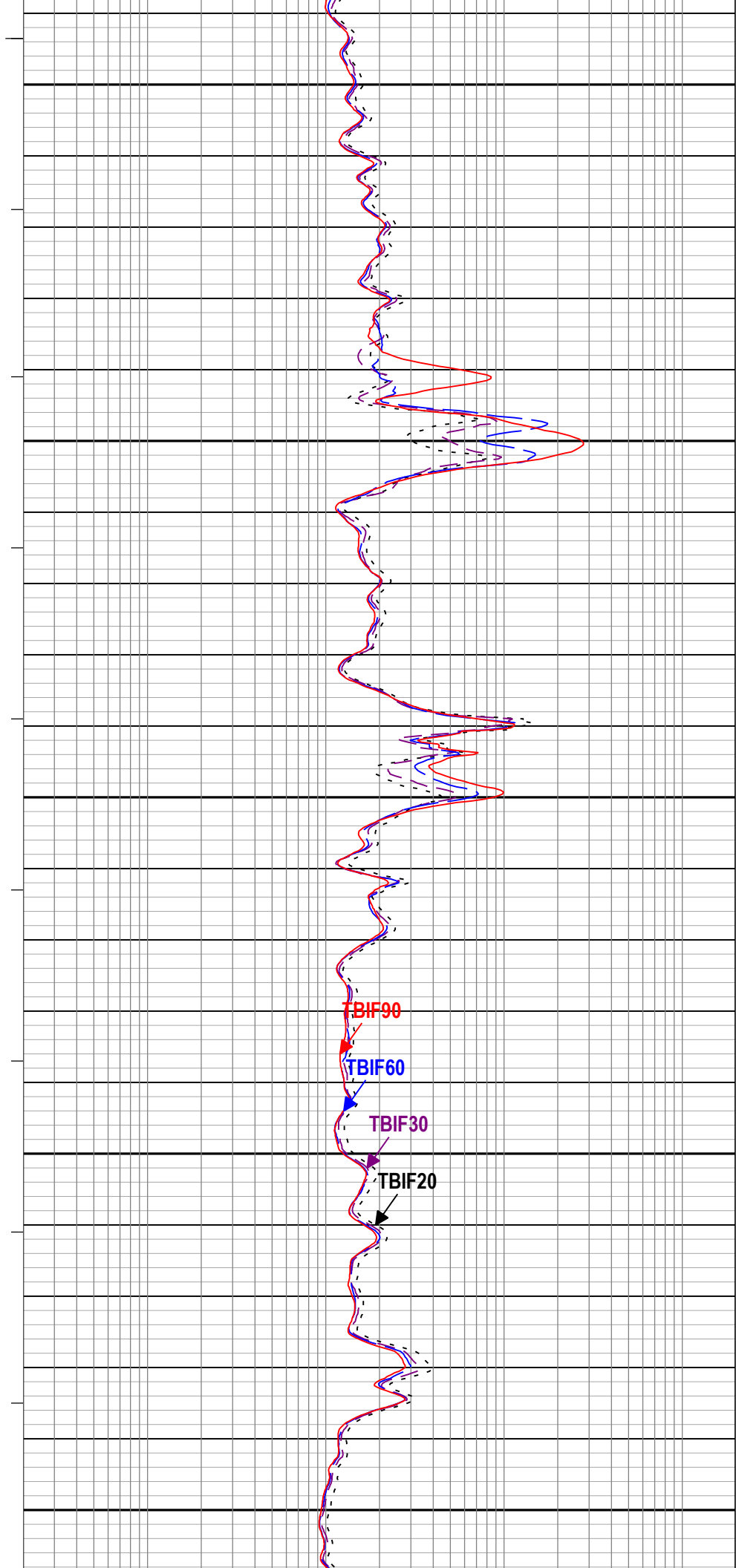
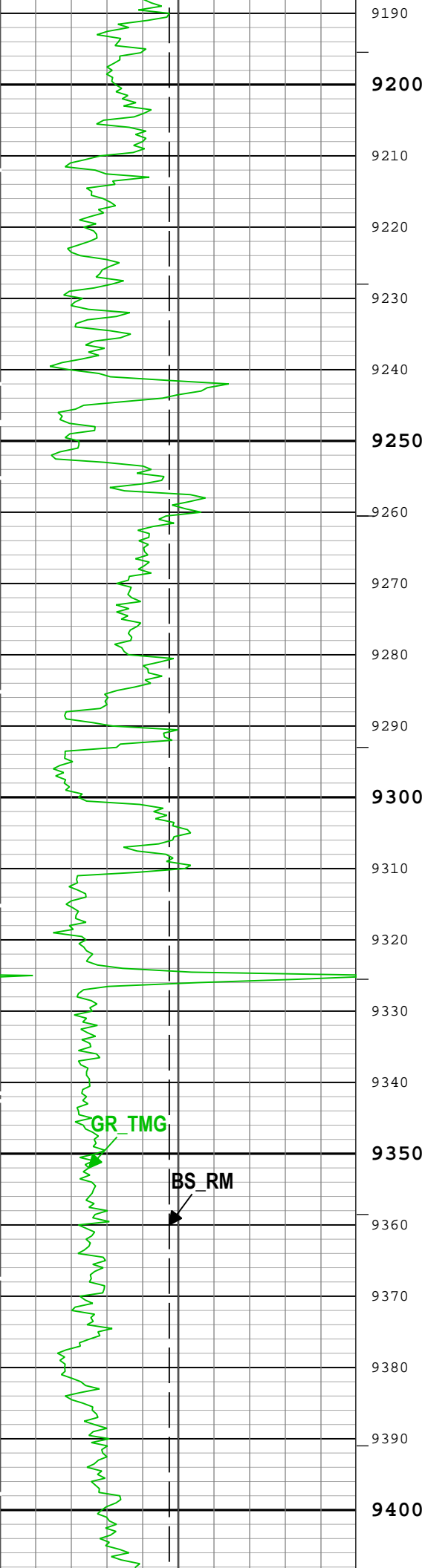


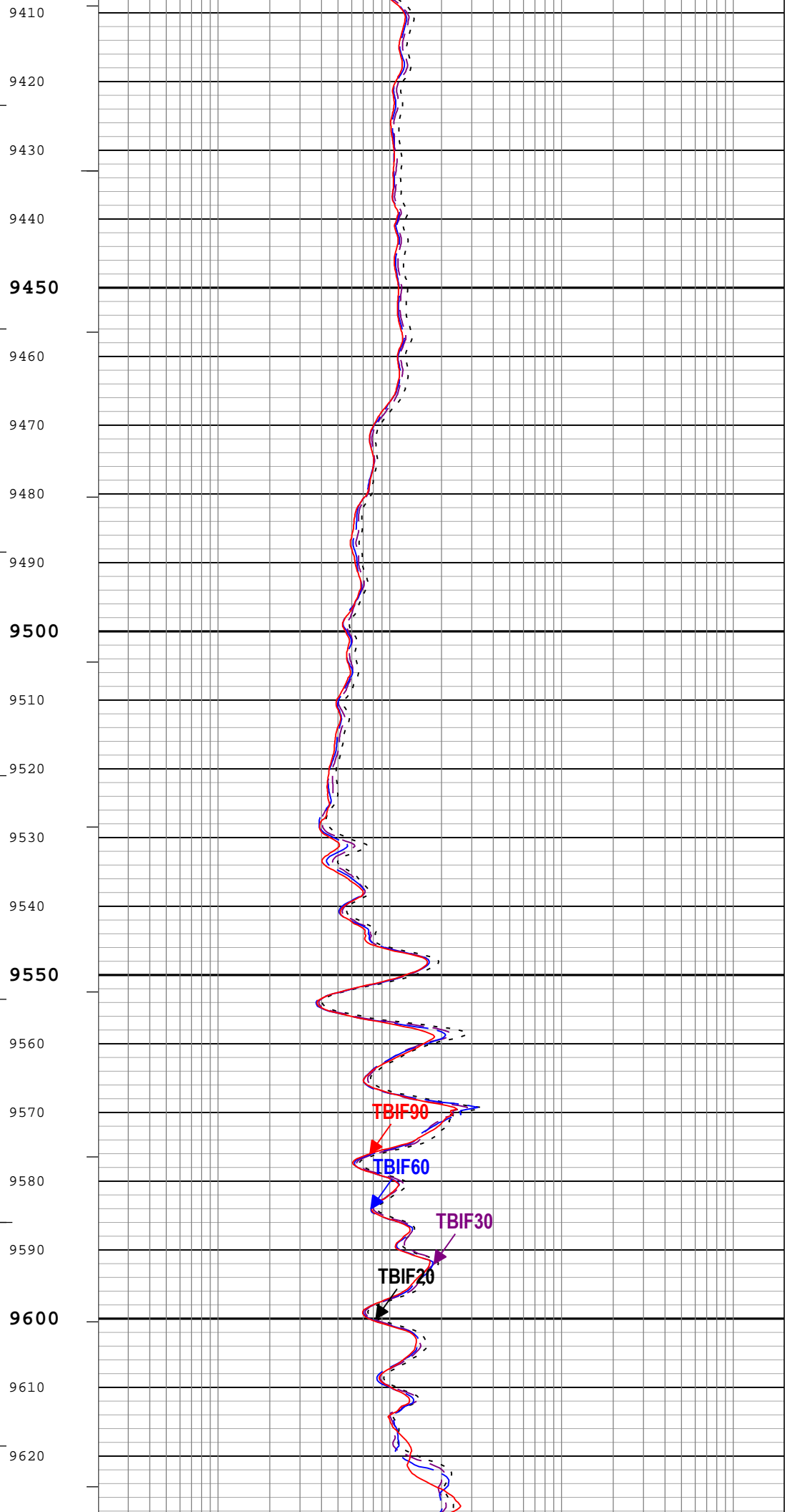
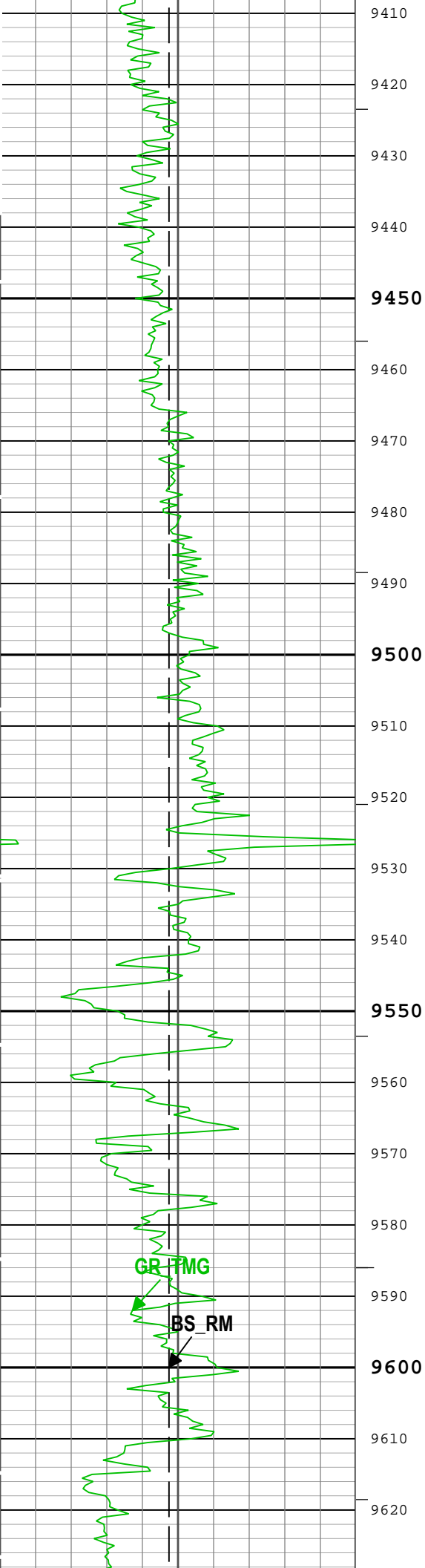


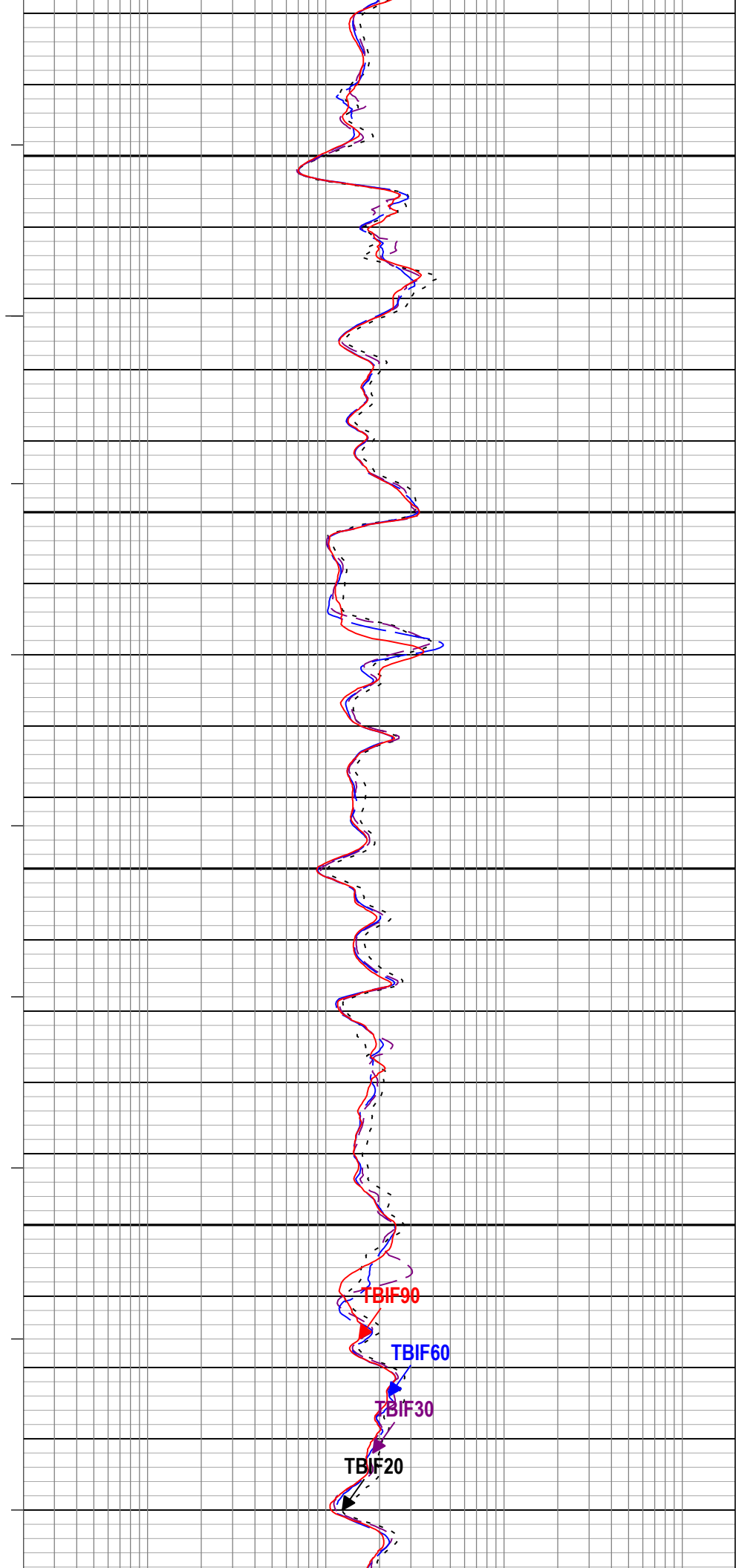
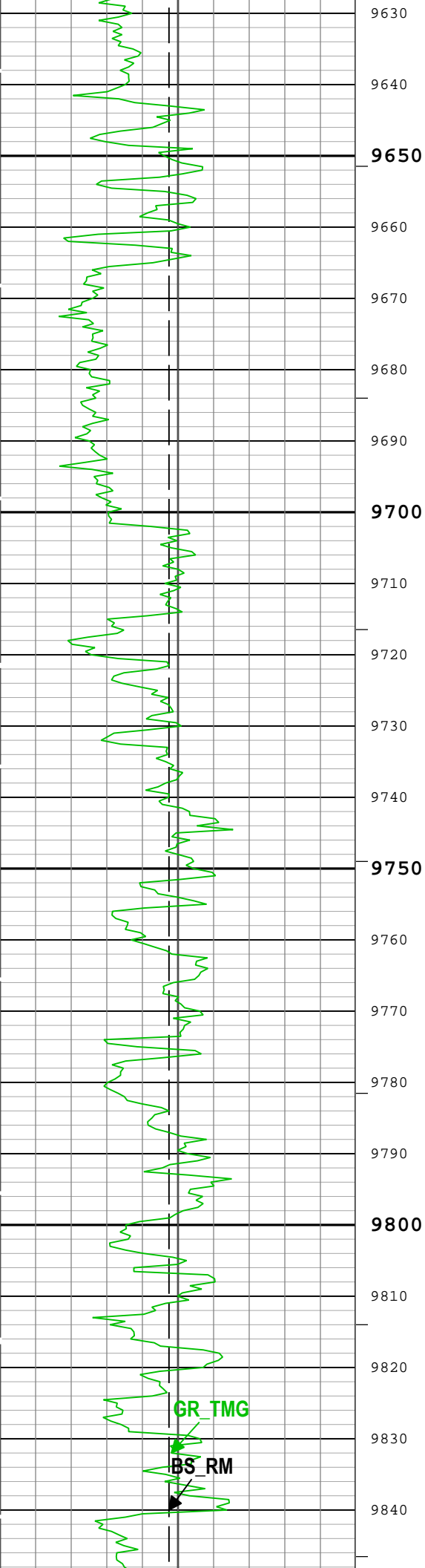


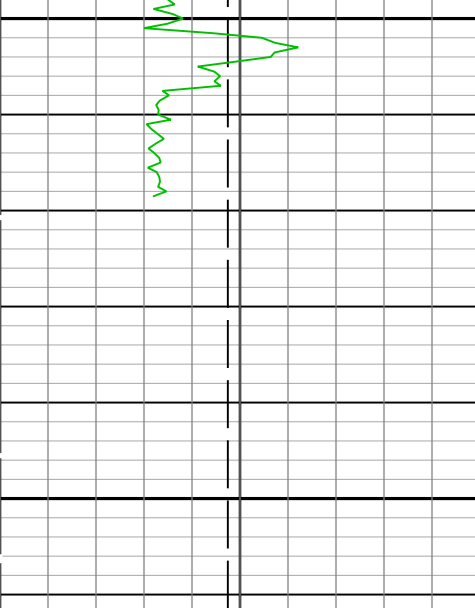






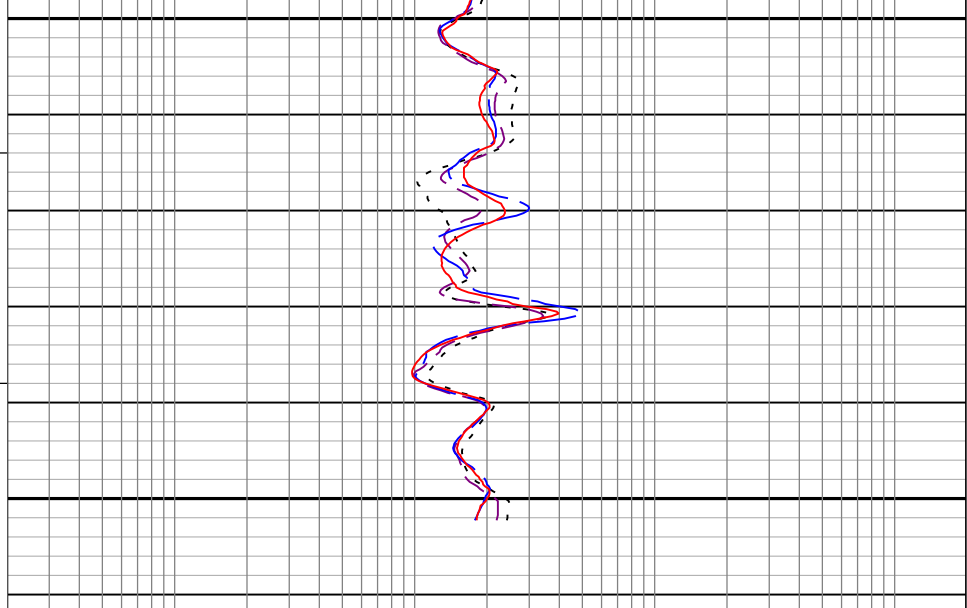






Bit Size (BS_RM) RM		
4	in	14
Calibrated Gamma Ray (GR_TMG) TMG-A RM		
0	gAPI	200

9850
9860
9870
9880
9890
9900
9910



ThruBit Induction Array Four Foot Resistivity at 20 inch depth of investigation (TBIF20) TBIT-A RM		
0.2	ohm.m	2000
ThruBit Induction Array Four Foot Resistivity at 30 inch depth of investigation (TBIF30) TBIT-A RM		
0.2	ohm.m	2000
ThruBit Induction Array Four Foot Resistivity at 60 inch depth of investigation (TBIF60) TBIT-A RM		
0.2	ohm.m	2000
ThruBit Induction Array Four Foot Resistivity at 90 inch depth of investigation (TBIF90) TBIT-A RM		
0.2	ohm.m	2000

TIME_1900 - Time Marked every 60.00 (s)

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

Description: ThruBit_TBI_4ft_RM Format: Log (ThruBit_TBI_4ft_RM_1) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 21-May-2019 17:07:50

Channel Processing Parameters

ThruBit: Parameters

Parameter	Description	Tool	Value	Unit
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	2568	ft
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	9.625	in
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
FCD	Future Casing (Outer) Diameter	WLSESSION	4.5	in
HSCOT	Hole Size Correction Option (None, Bit Size, Density Caliper, GCSE)	TBIT-A	GCSE	
TBI_TC_OP	Induction Temperature Correction Option	TBIT-A	Lower	
TBI_REPL_ARRAY_DEST	ThruBit Induction Array to Replace	TBIT-A	None	
TBI_REPL_ARRAY_SOURCE	ThruBit Induction Array to Replace with	TBIT-A	None	
TBI_RMUD_SRC	TBI Mud Resistivity Source for Borehole Correction	TBIT-A	Data_Channel_RMUD	

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	14.75	2550	2578
BS	8.75	2578	9911.5

All depth are actual.

Tool Control Parameters

Company:

LARAMIE ENERGY LLC

Schlumberger

Well:

CC 0697-04-08E

Field:

GRAND VALLEY

County:

GARFIELD

State:

Colorado

ThruBit
Induction