

# MWD - Gamma Ray

# Schlumberger

## Recorded Mode

Company: Trias Westland B.V.

Well: NLW-GT-02-S1

Field: Naaldwijk

Rig Name: KCA Deutag T-207

Country: Netherlands

Latitude: 51° 59' 26.962" N

UWID:

17HOL0035

Longitude: 4° 14' 22.357" E

Rig Name:

KCA Deutag T-207

Rig Type:

Land Rig

FL: NLW-GT-02-S1

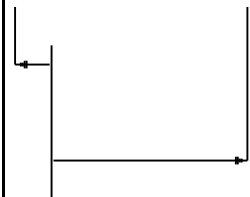
FL1: Section: 24 in.

FL2: Job no.: 17HOL0035

Log Measured From: - Drill Floor: 8.42 m

Reference Datum - Mean Sea Level/Permanent Datum: - NAP

Ground Level: 0.90 m



Acquisition Dates: 22-Mar-2018 -- 27-Mar-2018

Other Services:

Log Interval: 123.00(m) -- 1106.00(m)

Direction & Inclination (Surveys)

Index Types: Measured Depth

Directional Drilling

Index Scales: 1:200, 1:1000

Depth Source: Driller's Depth

Depth Sensor: 3rd Party Depth

Print Type: Final

Spud Date: 08-Mar-2018

## 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.

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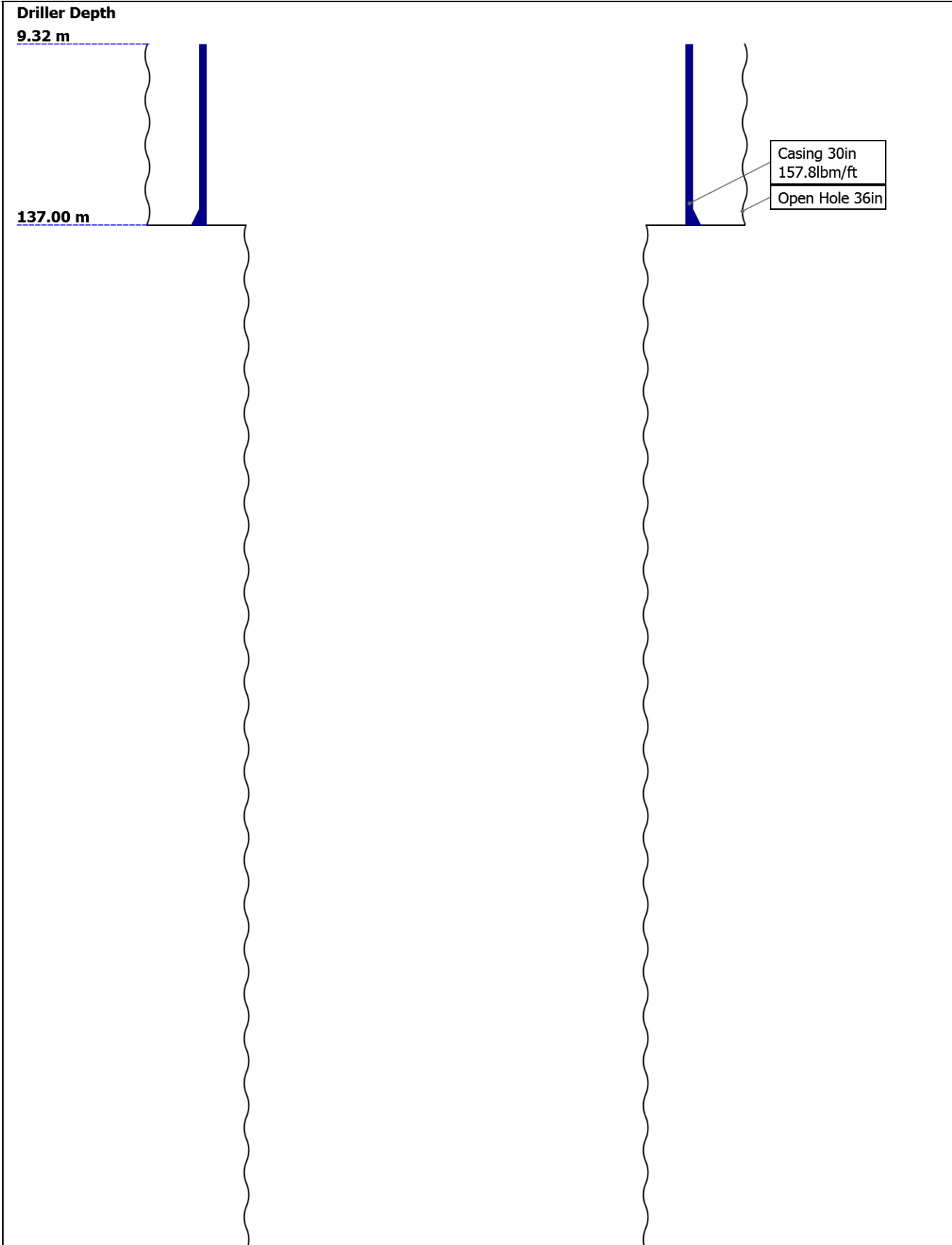
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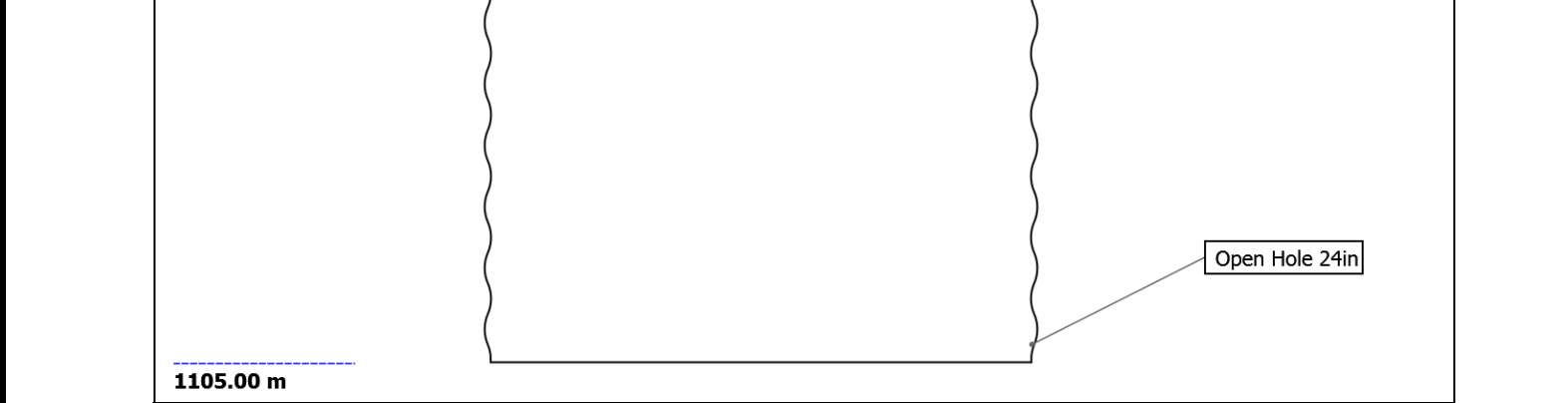
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Well Sketch





Borehole Size/Casing Record						
Bit						
Bit Size ( in )	36	24				
Top Driller ( m )	9.32	137				
Bottom Driller ( m )	137	1105				
Casing						
Size ( in )	30					
Weight ( lbm/ft )	157.8					
Inner Diameter ( in )	29.021					
Grade	X52					
Top Driller ( m )	9.32					
Bottom Driller ( m )	137					

Operational Run Summary						
Parameter ( unit )	Run 1					
Date Log Started	21-Mar-2018					
Time Log Started	11:10:57					
Date Log Finished	27-Mar-2018					
Time Log Finished	19:08:27					
Bit Size ( in )	24.000					
Bit Start Depth ( m )	141.00					
Bit Stop Depth ( m )	1105.00					
Top Log Interval ( m )	124.66					
Bottom Log Interval ( m )	1089.05					
Max Hole Deviation ( deg )	14.17					
Azimuth of Max Deviation ( deg )	112.21					
Logging Unit Number	N/A					
Logging Unit Location						
Recorded By	N.Nsanov					
Witnessed By	P. Gwalter					
Service Order Number	17HOL0035					


## Borehole Fluids

Parameter( unit )	Run 1					
Fluid Type	Water					
Fluid Name	KCl/Polymer					
Max Recorded Temperatures ( degC )	54.1					
Source of Sample	Active Tank					
Salinity ( ppm )	34972.18					
Density ( g/cm3 )	Zoned					
Funnel Viscosity ( s )	49					
Fluid Loss ( cm3 )	5.5					
PH	9.5					
Source RMF	Calculated					
RMC	Calculated					
RM @ Meas Temp ( ohm.m@degC )	0.2 @ 20					
RMF @ Meas Temp ( ohm.m@degC )	0.15 @ 20					
RMC @ Meas Temp ( ohm.m@degC )						
RM @ BHT ( ohm.m@degC )	0.11 @ 54.1					
RMF @ BHT ( ohm.m@degC )	0.08 @ 54.1					
RMC @ BHT ( ohm.m@degC )	NaN @ 54.1					
Total Solid ( % )	14					
High Gravity Solids ( % )						

## Run 1

Parameter	Value	Start
Density	1.05	3/21/2018 11:10:57
Density	1.07	3/23/2018 03:30:36
Density	1.12	3/23/2018 21:00:41
Density	1.16	3/24/2018 04:00:00
Density	1.19	3/24/2018 16:00:08
Density	1.2	3/25/2018 04:00:14
Density	1.23	3/25/2018 11:00:00
Density	1.26	3/25/2018 11:00:21
Density	1.24	3/25/2018 21:00:00
Density	1.22	3/26/2018 11:00:00
Density	1.24	3/26/2018 15:50:00

### Run 1: Toolstring

<b>Equip name</b> <b>Stab: 9 1/2":OW</b> <b>S-Stab-9641</b>	<b>Length</b> <b>23.65</b>		<b>MP name</b> 22 3/4 in. String Stab	<b>Offset</b>	All depths referenced to driller's depth. See EOWR for depth tracking details.	
					All data from tool memory. All data acquired while drilling.	
					Gamma Ray measurement is environmentally corrected for mud weight, bit size, collar thickness and Potassium content.	
					This well is a sidetrack of NLW-GT-02 kicked off from cement plug at 141 m.	
					Run 1 and 24 in. section TD at 1105 m.	
<b>X/O: 9 1/2"[2]:</b> <b>OWS-XOS-4159</b>	<b>21.34</b>		X-Over			
<b>TELE900:E6072</b> MSSU900:68362 Upper Extender MDC900:E6072 MMA:4042 MDI:2141 PMGR:223	<b>20.75</b>		TeleScope			



X/O: 9 1/2"[2]: 21.34  
OWS-XOS-4159

## X-Over

**TELE900:E6072 20.75**

TeleScope

MSSU900:68362  
Upper Extender  
MDC900:E6072  
MMA:4042  
MDI:2141  
PMGR:223

All depths referenced to driller's depth. See EOWR for depth tracking details.

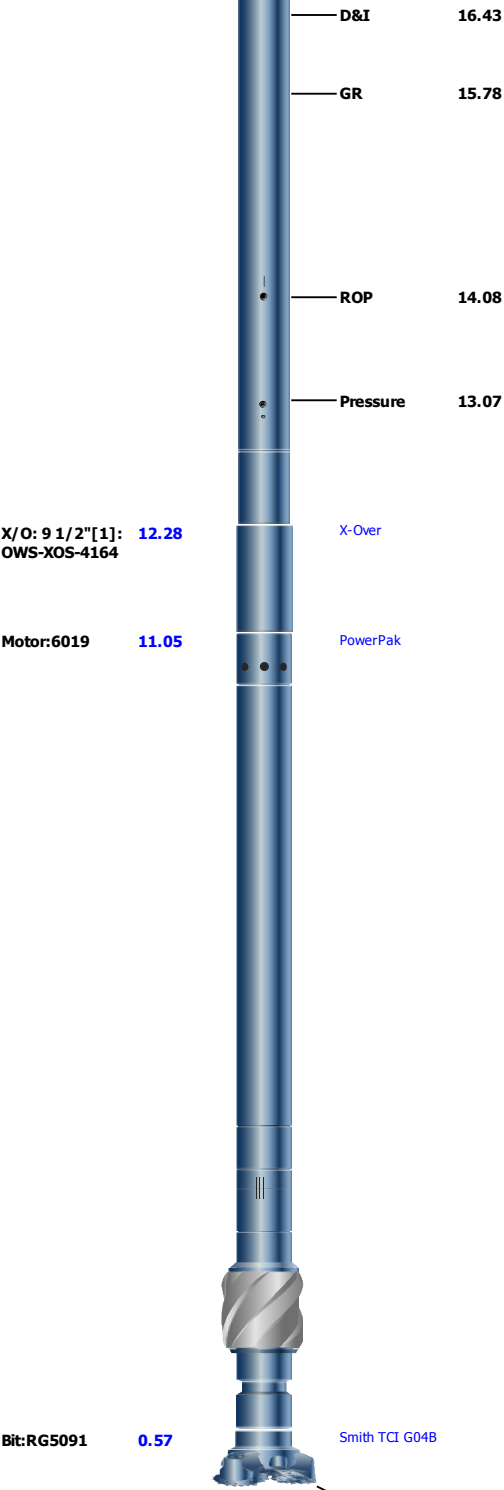
All data from tool memory. All data acquired while drilling.

Gamma Ray measurement is environmentally corrected for mud weight, bit size, collar thickness and Potassium content.

This well is a sidetrack of NLW-GT-02 kicked off from cement plug at 141 m.

Run 1 and 24 in. section TD at 1105 m.

PMEA:3830  
MTA:2309  
MTK900:2311  
APWD:0124  
MSSD900:68888A  
Lower Extender:B  
A23-11-12



Lengths are in m  
Maximum Outer Diameter = 24.000 in  
Line: Sensor Location, Value: Gating Offset  
All measurements are relative to TOOL\_ZERO

Run 1

MWD - Gamma Ray 1:200 MD

# Software Version

Acquisition System			Version	
Maxwell 2018 SP1			8.1.99839.3100	
Tool Interface	System Version		Loaded Version	
HSPM	20.3c.062		8.1.99839.3100	
Tool Elements	Description		Software Version	Firmware Version
PMGR	TeleScope - M10 Gamma Ray Assembly		8.1.99839.3100	V14.0
DRILLING_SURFACE	DRILLING_SURFACE		8.1.99839.3100	

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Include Parallel Data
Run 1	Drilling	Down	140.21 m	1104.98 m	22-Mar-2018 08:11:51	27-Mar-2018 19:08:27	Yes

All depths are referenced to toolstring zero

## Log

Company: Trias Westland B.V.

Well: NLW-GT-02-S1

Run 1: Drilling: S097

Description: TeleScope Gamma Ray Depth RT    Format: Log ( GR MWD and PD with ticks )    Index Scale: 1:200    Index Unit: m    Index Type: Measured  
Depth    Creation Date: 05-Apr-2018 09:09:51

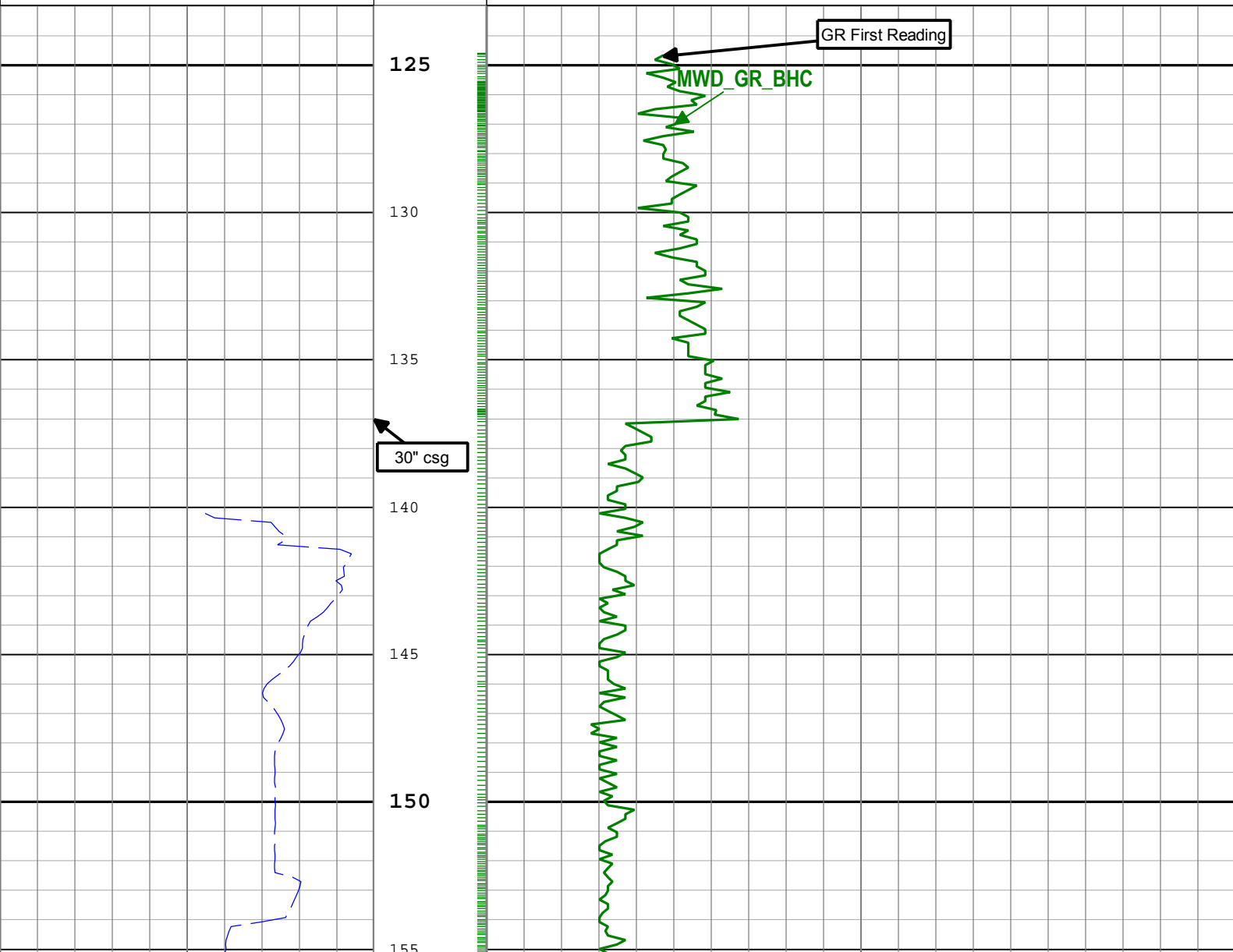
-TICKS\_GR - Gamma Ray Tick Marks TELE900 RM

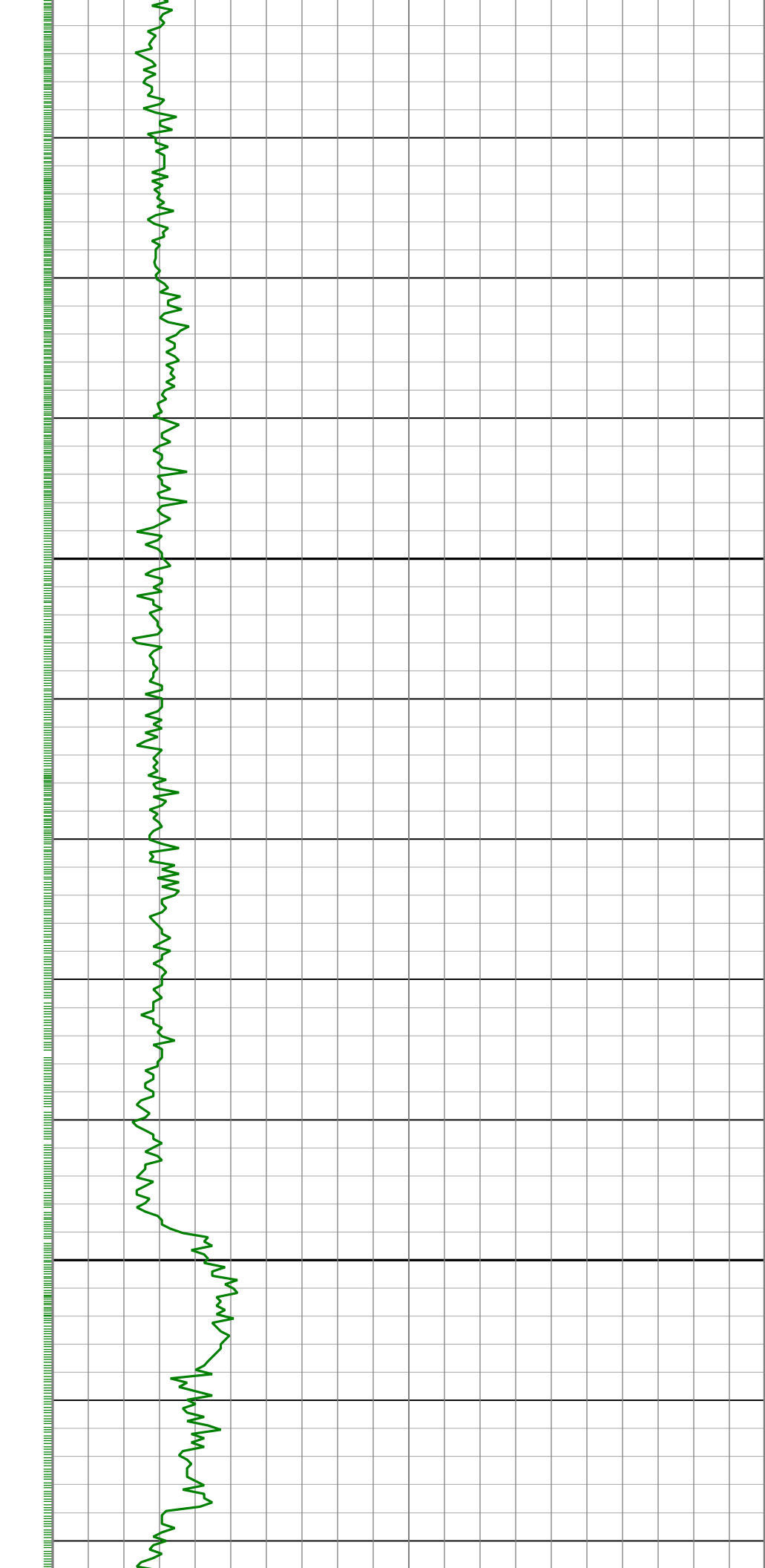
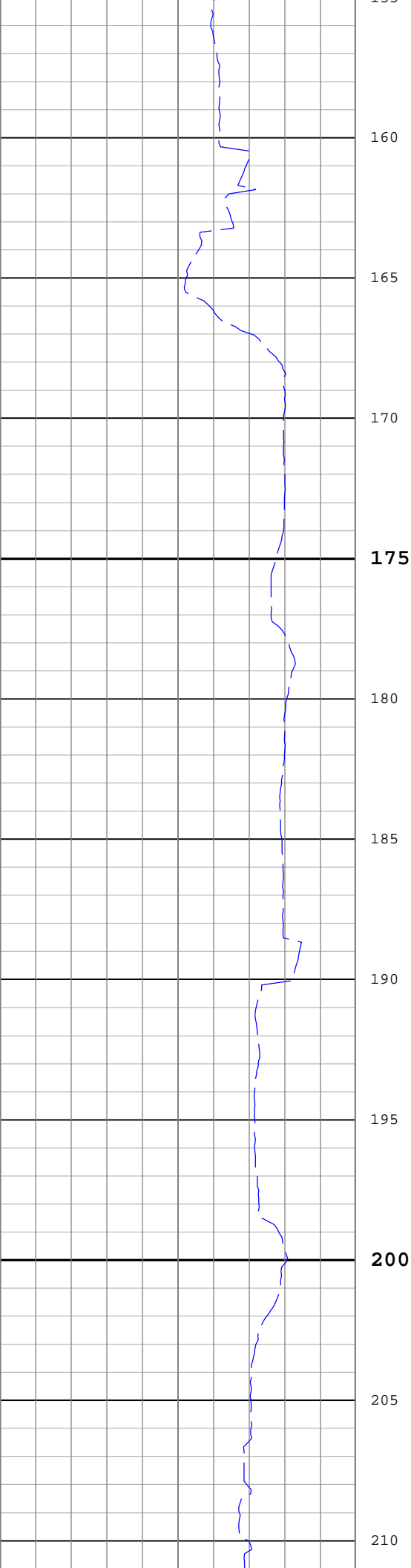
Rate of penetration averaged over the last 5 ft  
(1.5 m) (ROP5) RT

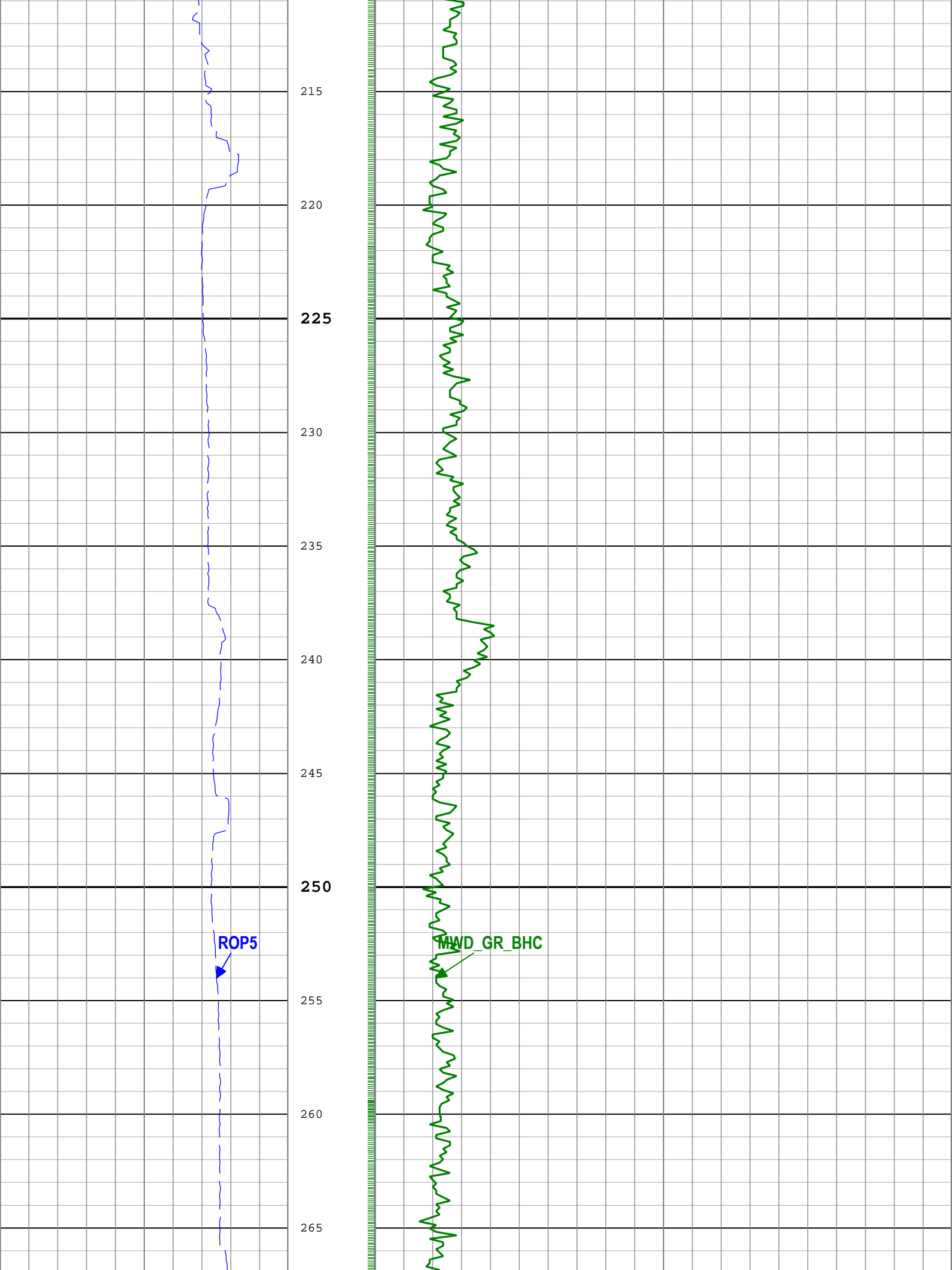
100 m/h 0

Gamma Ray (MWD\_GR\_BHC) TELE900 RM

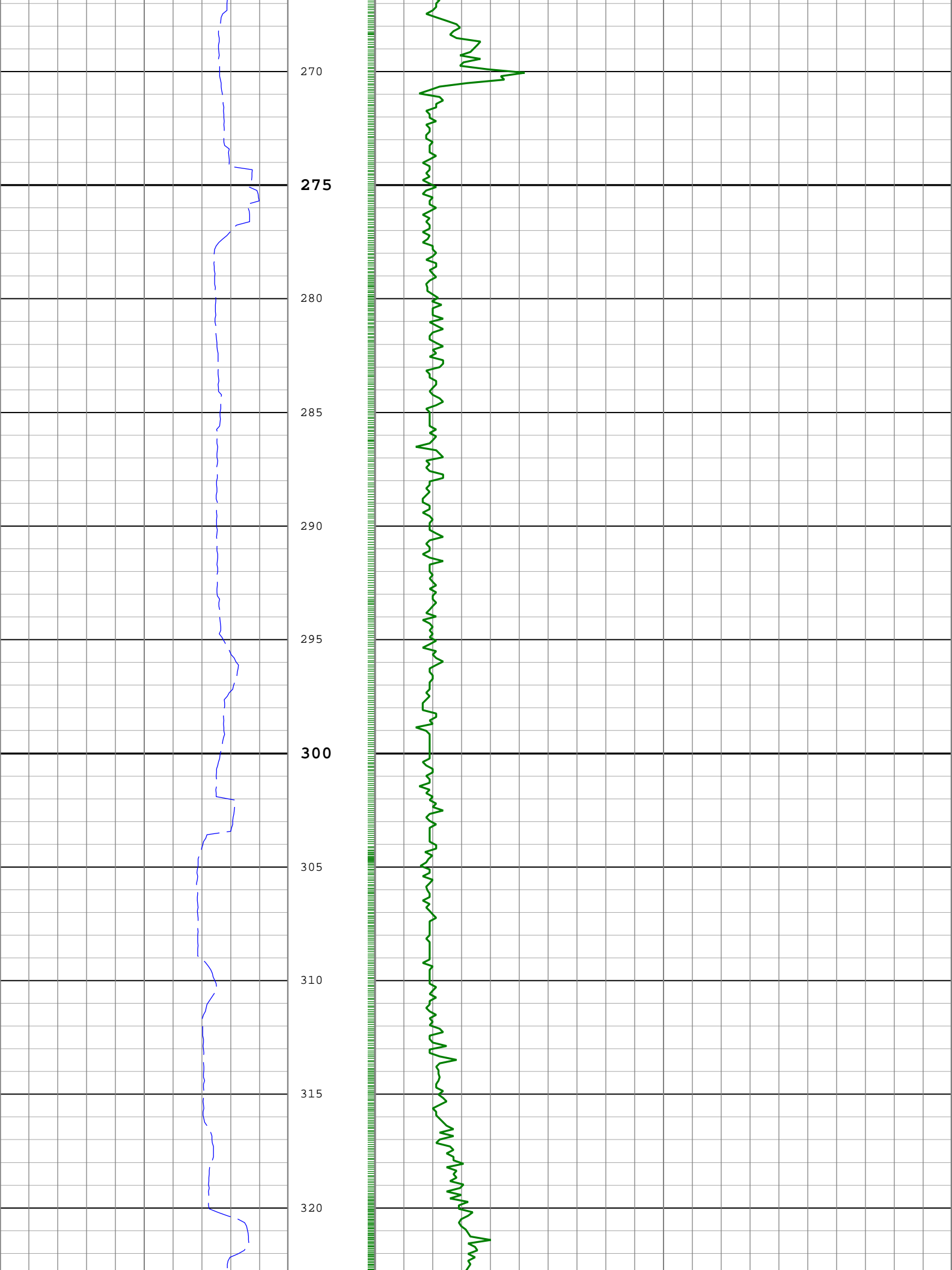
0 gAPI 300

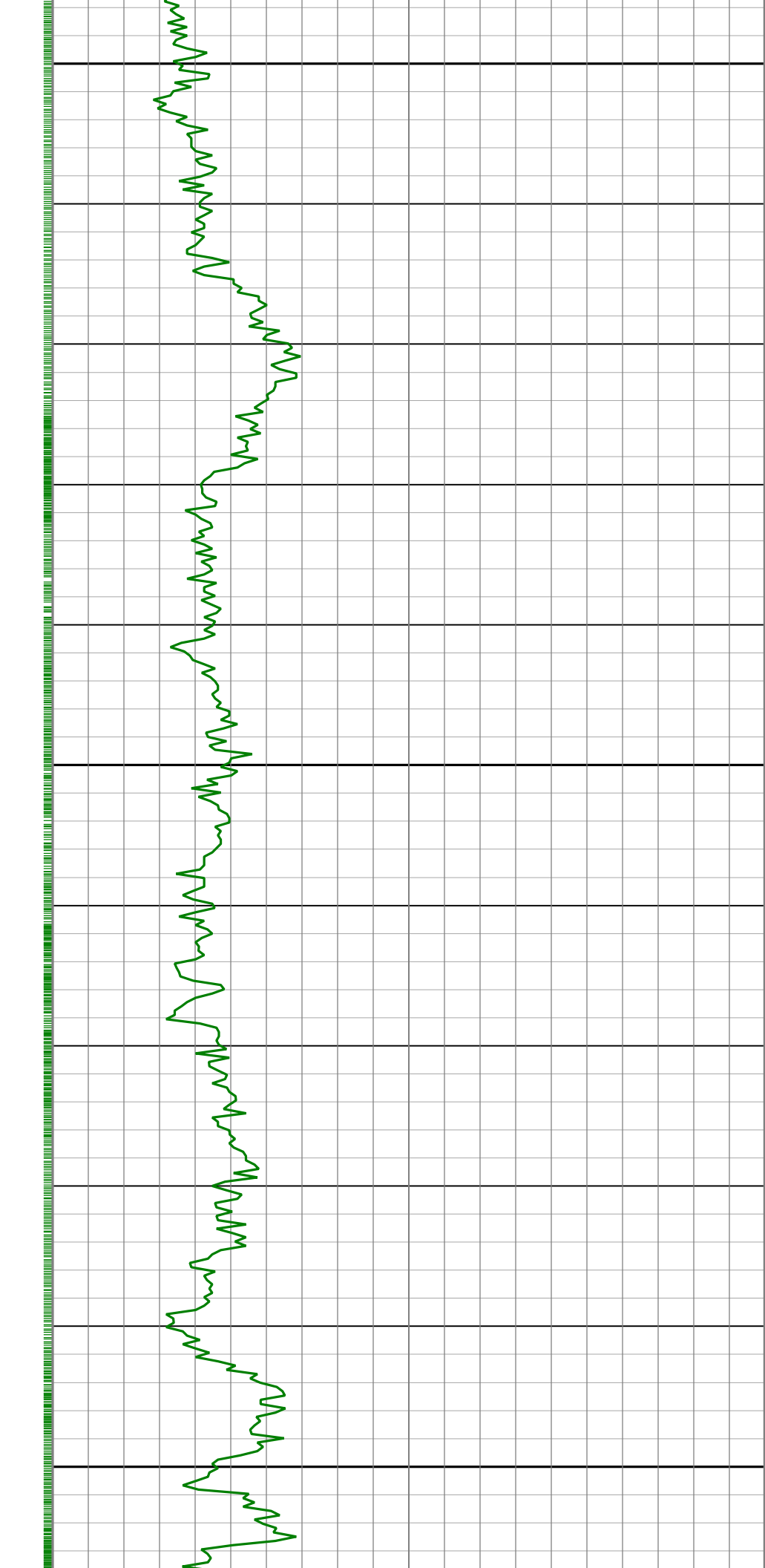
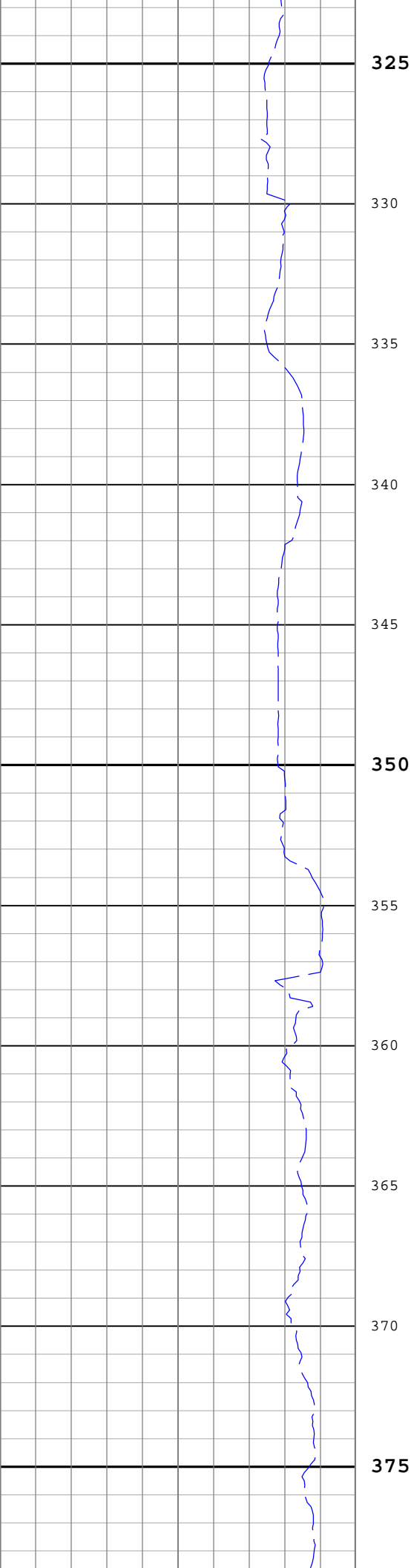


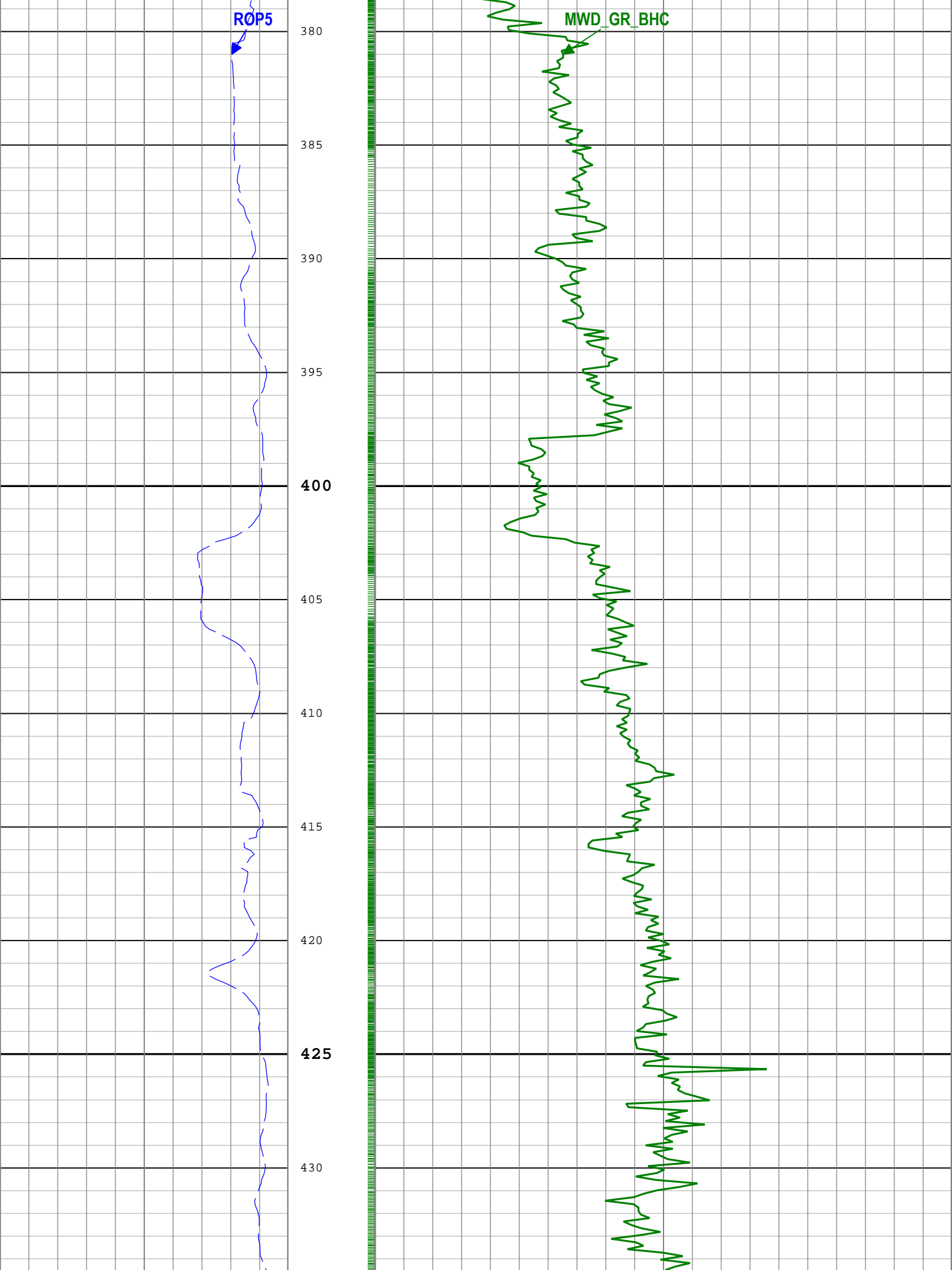


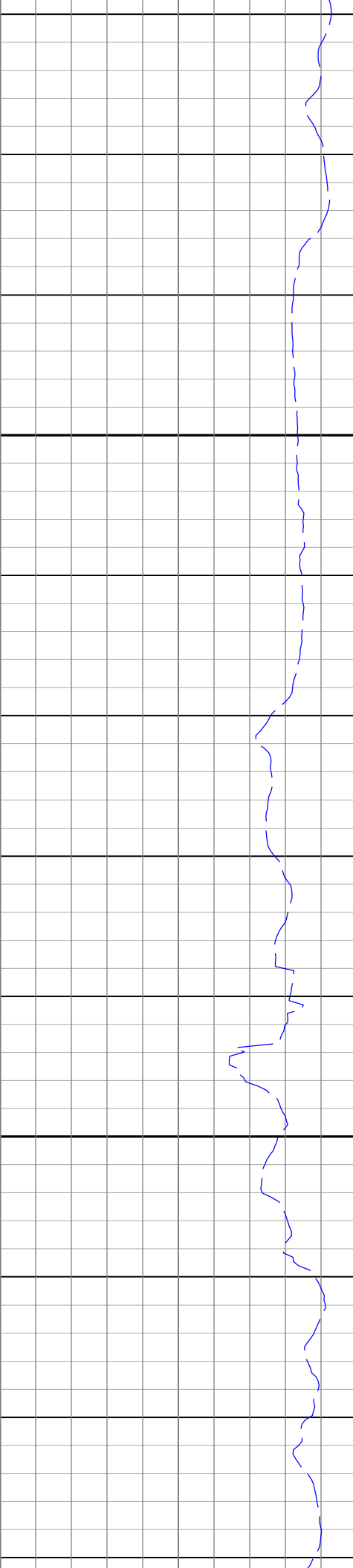




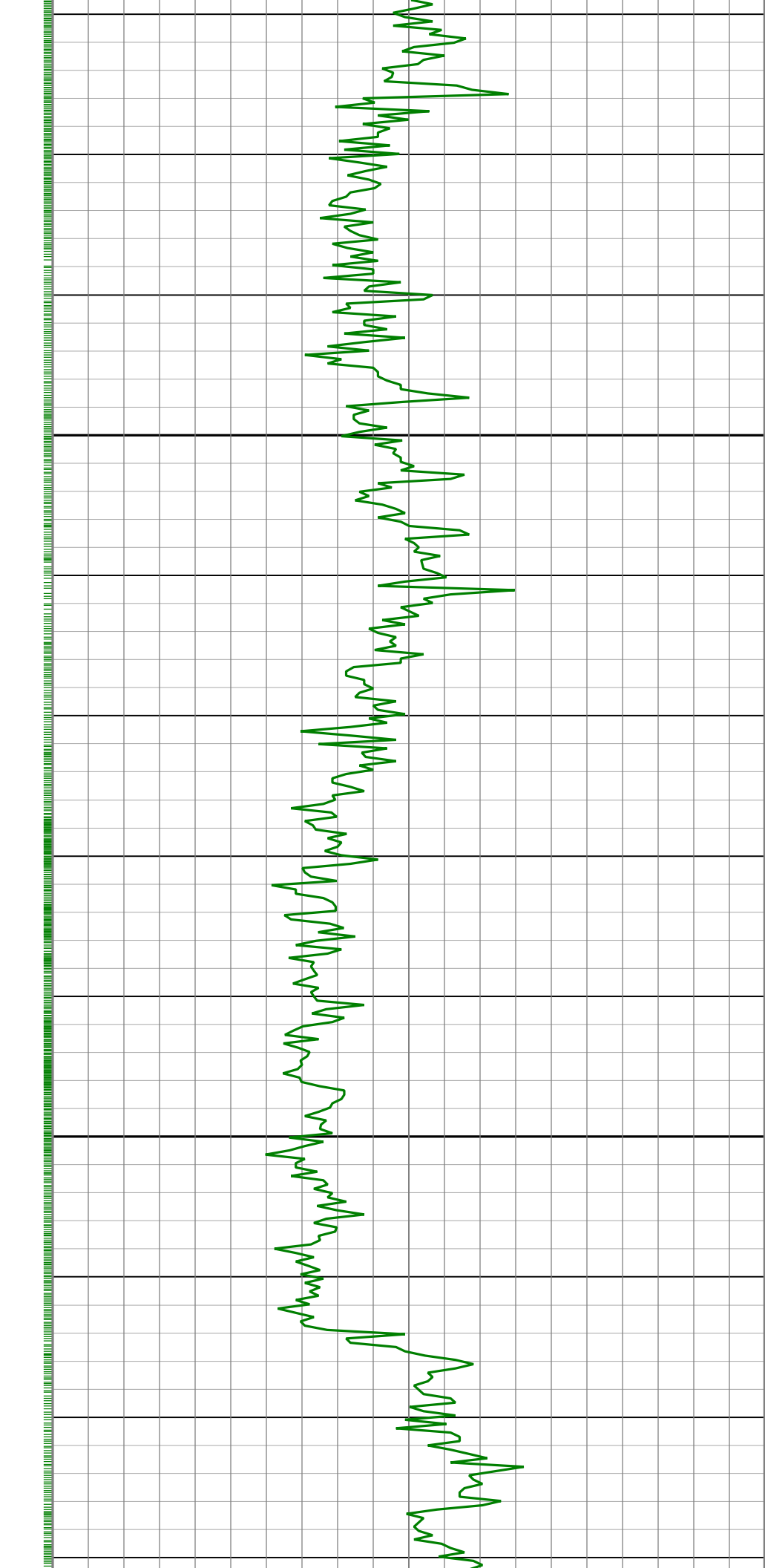


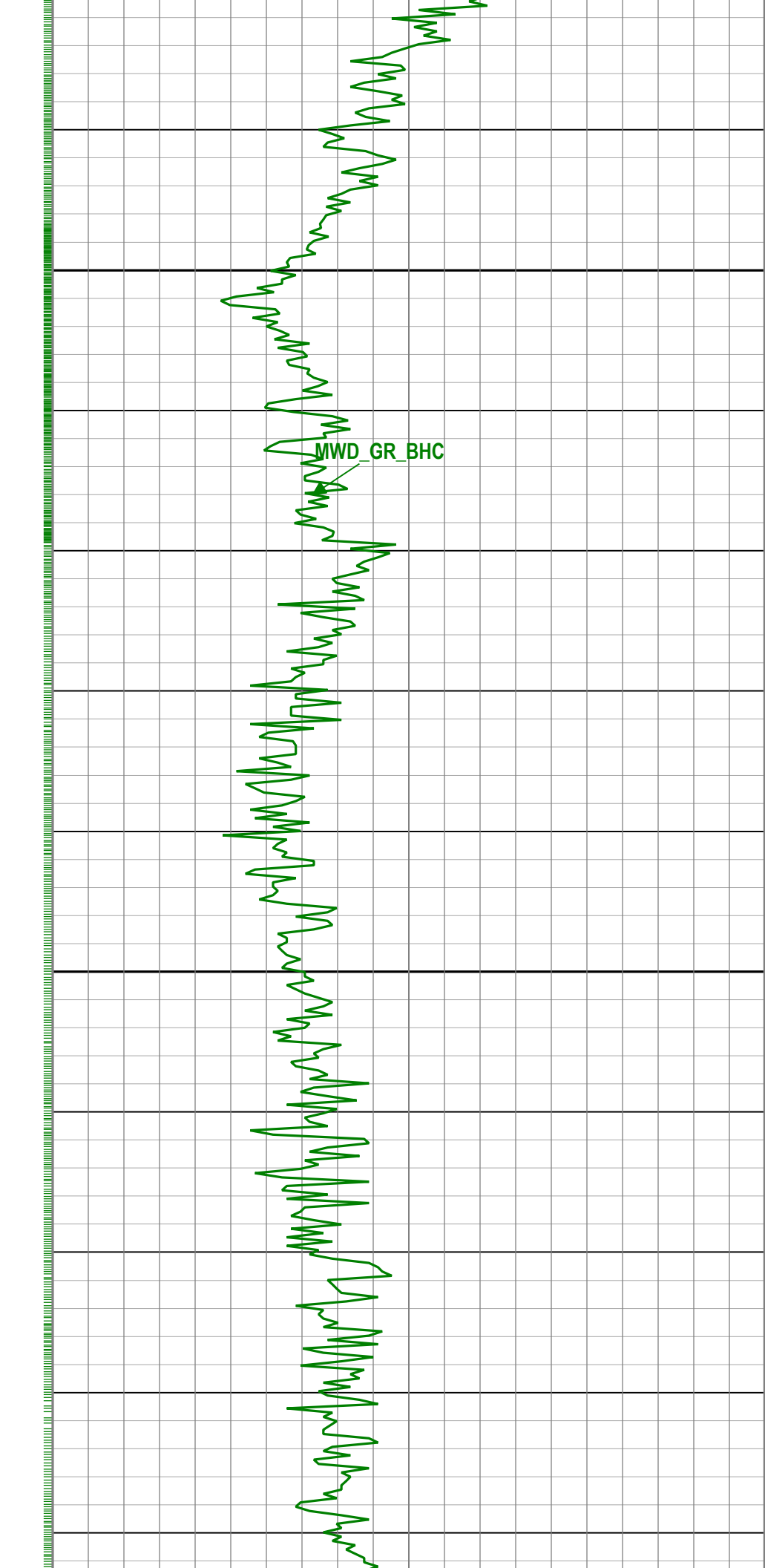
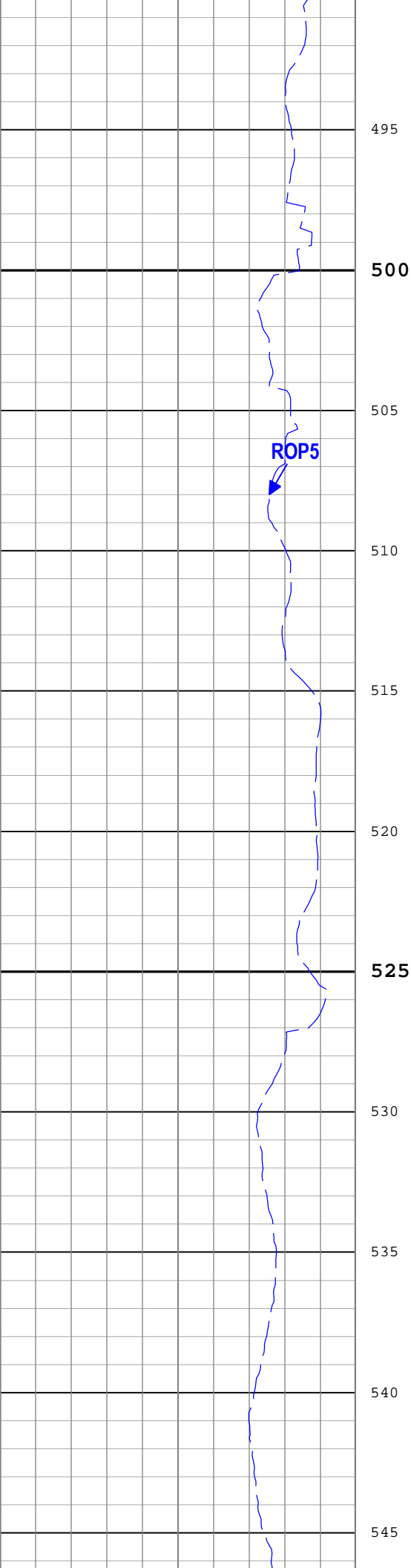


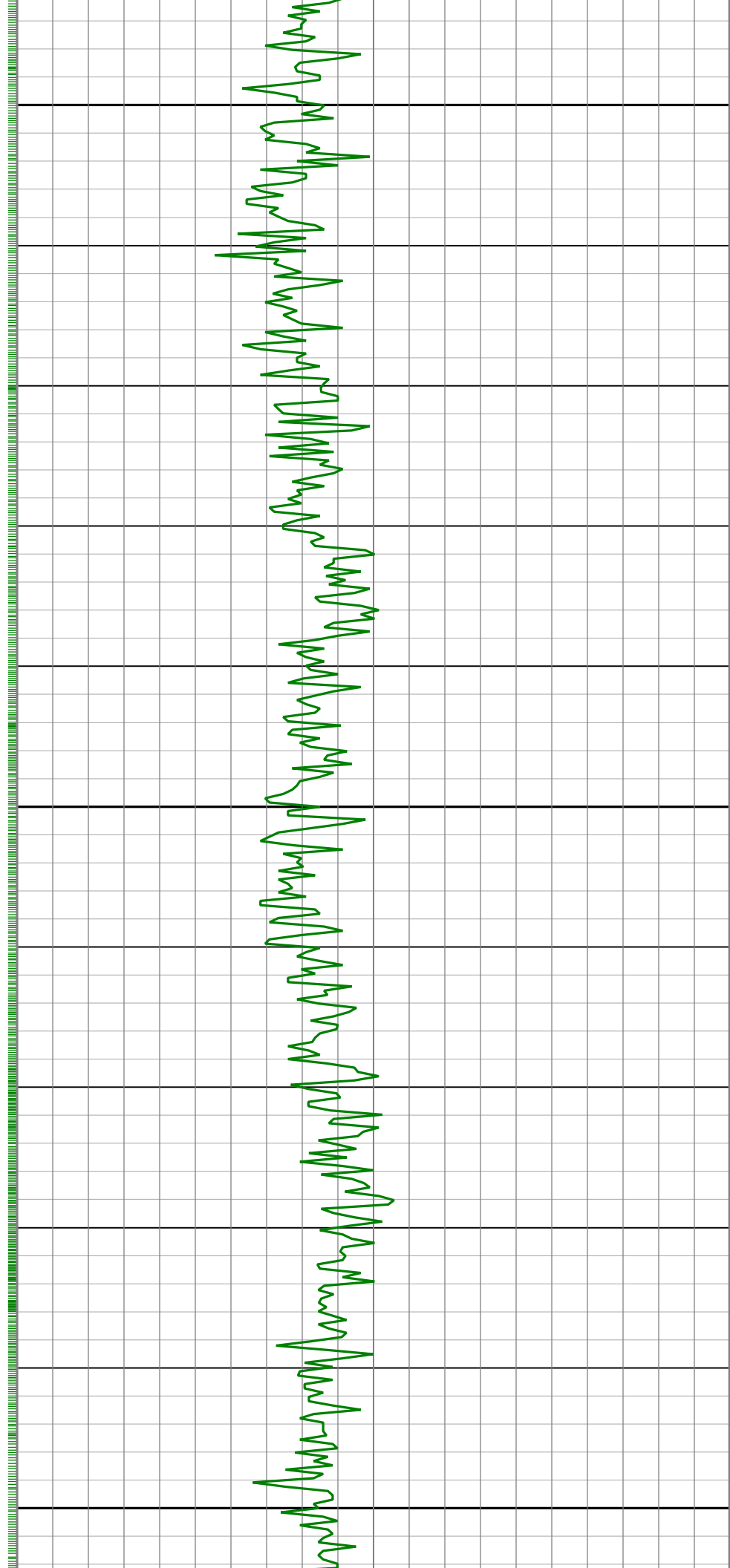
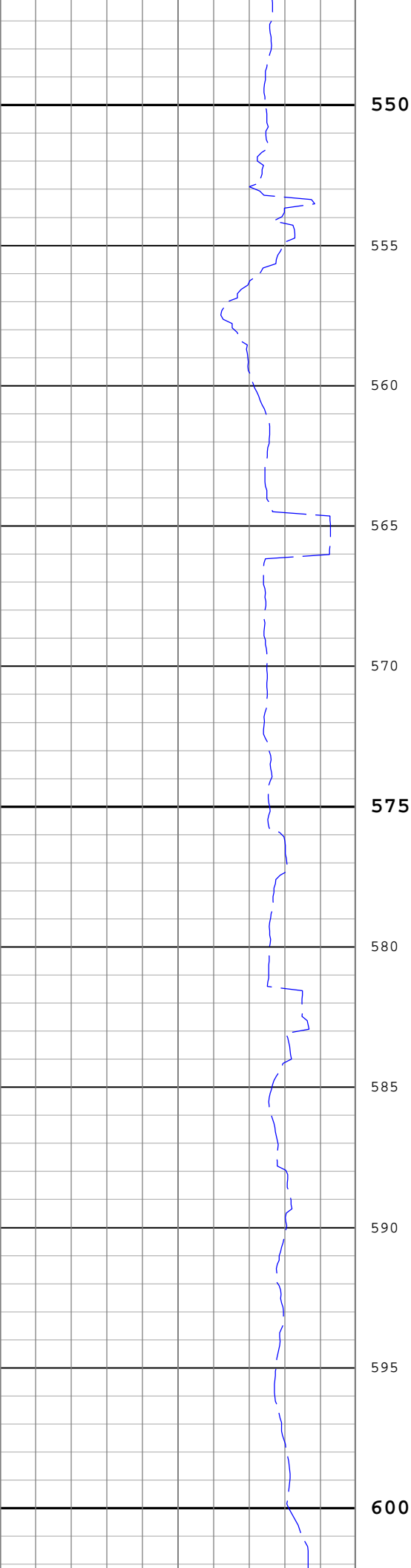


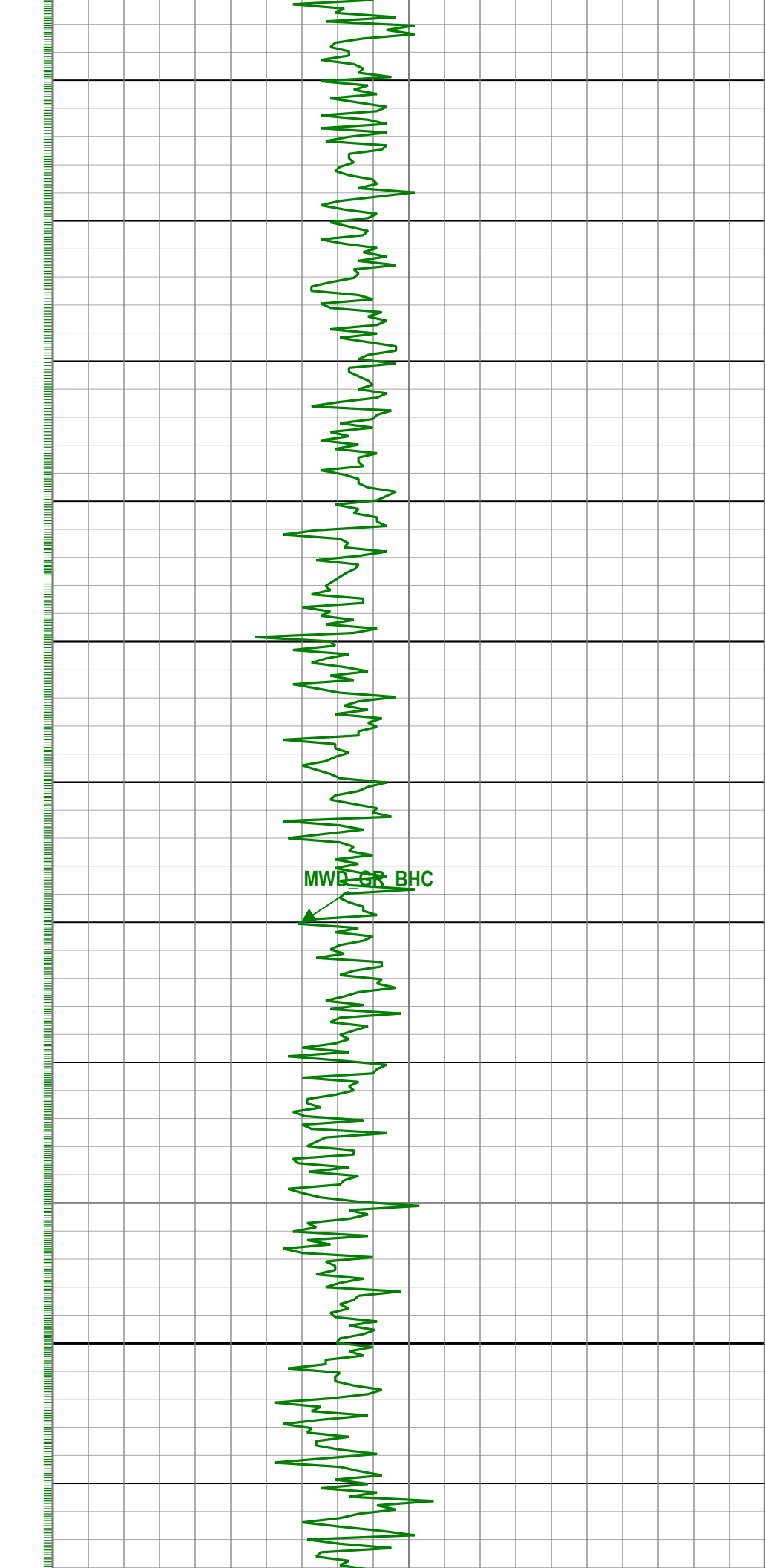
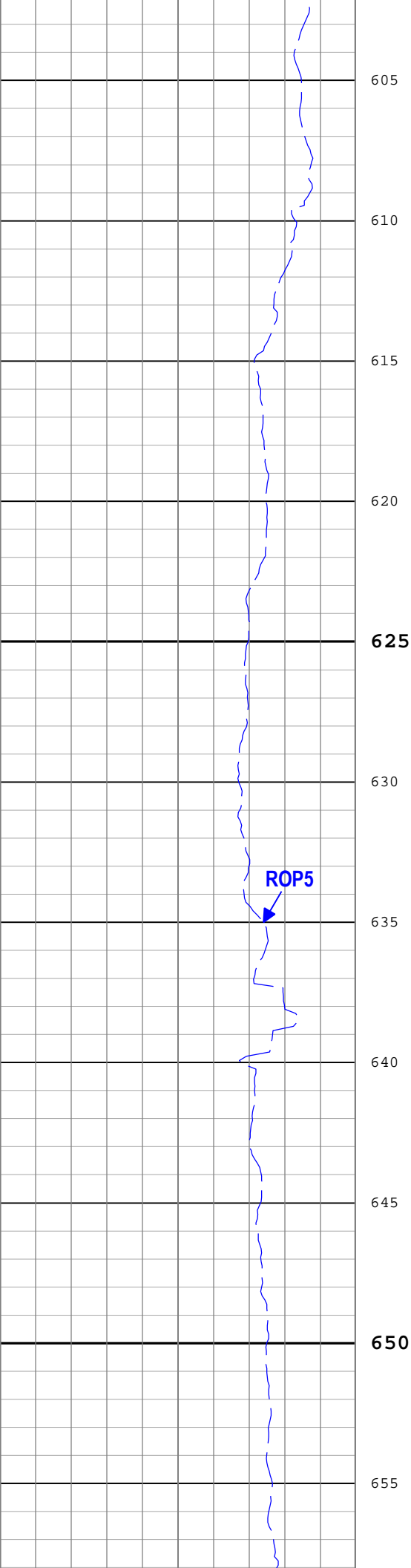


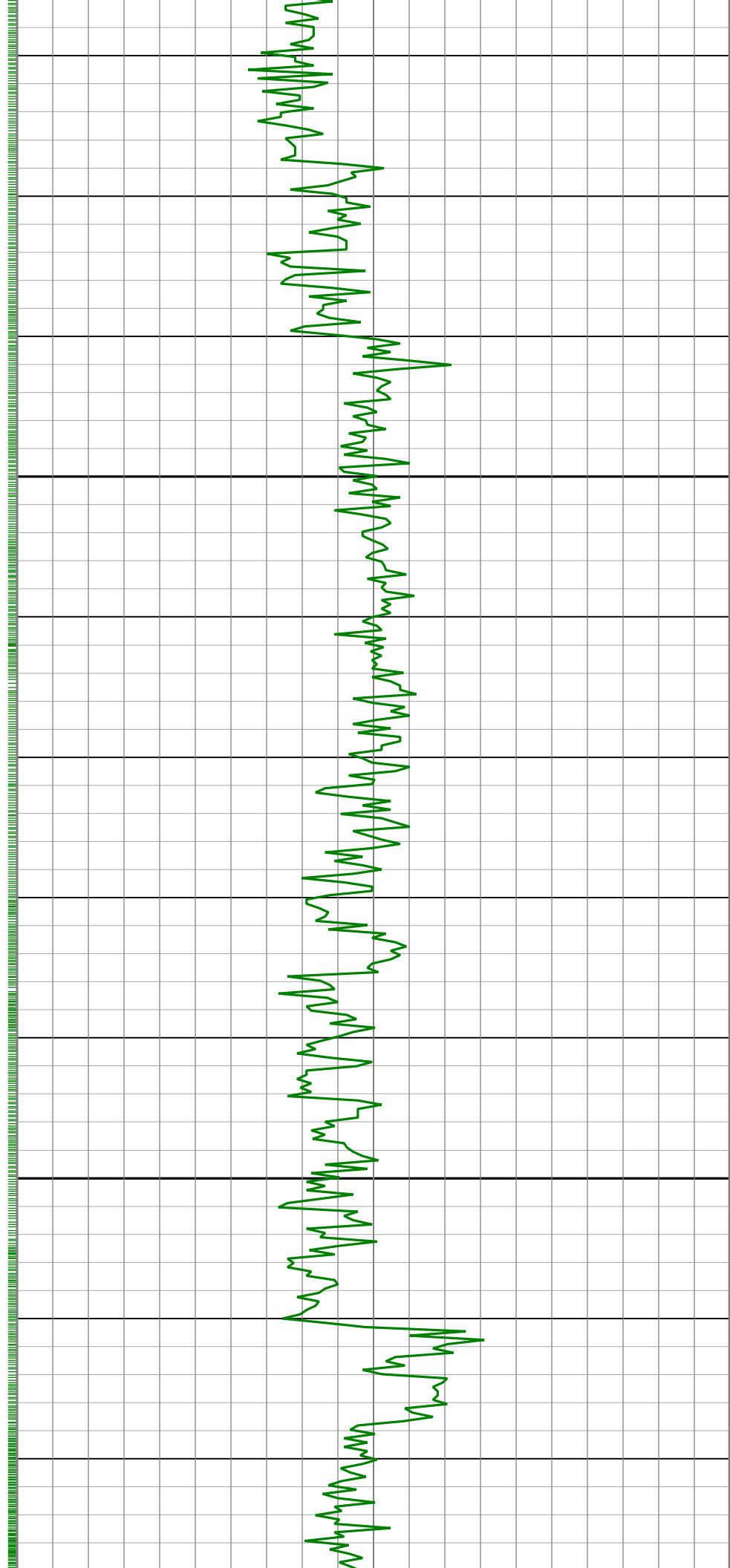
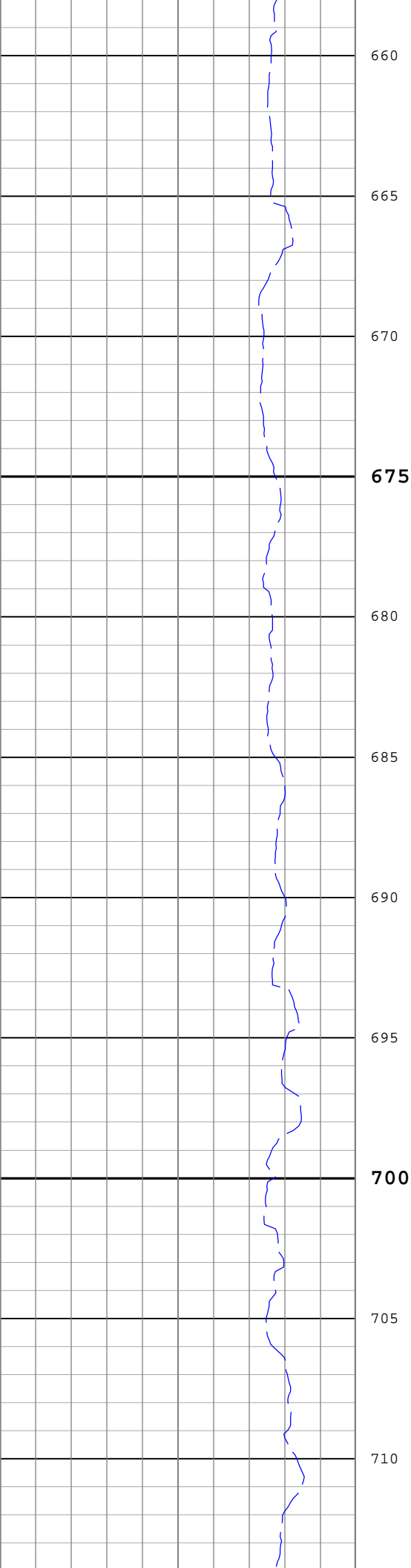
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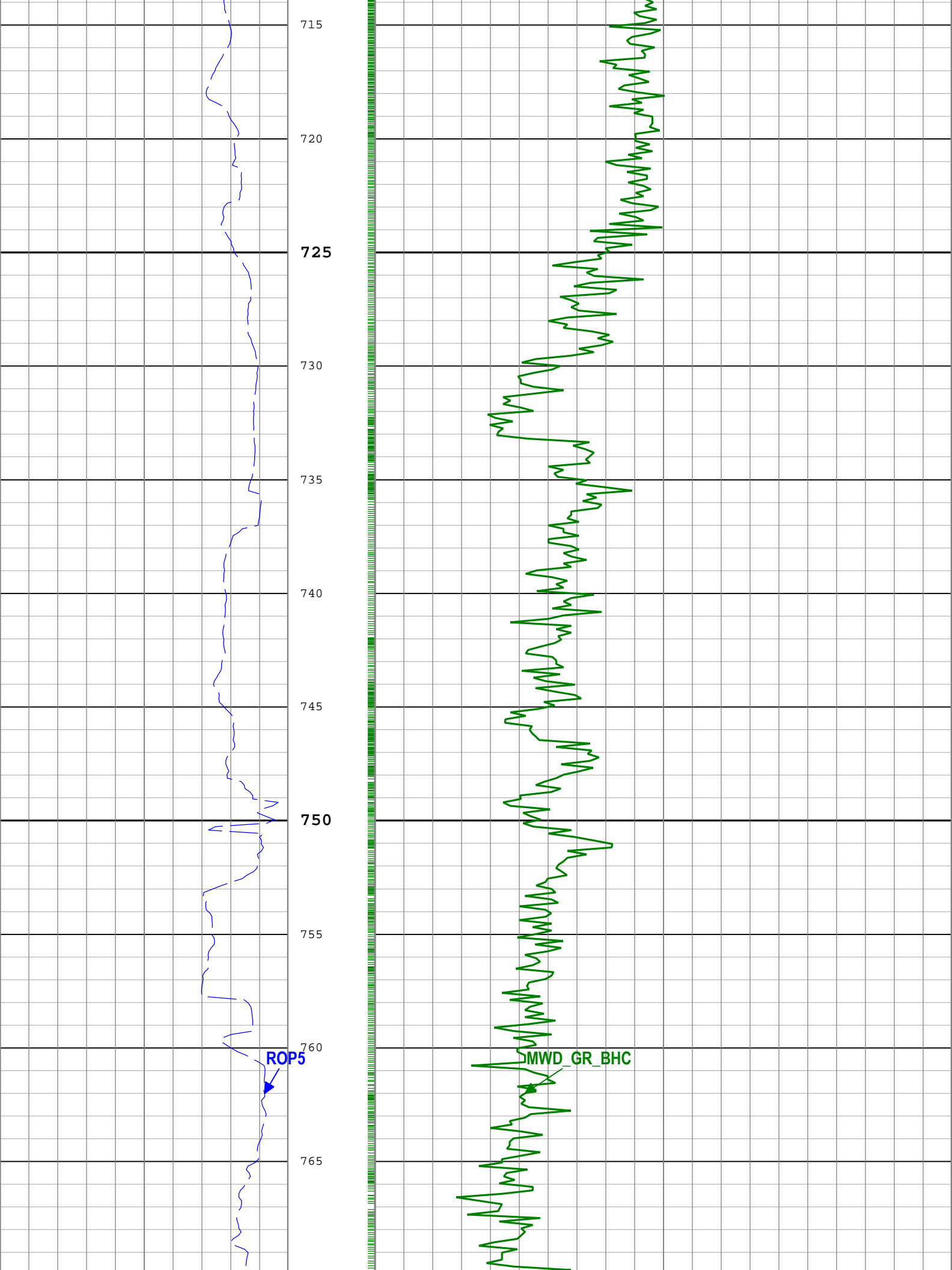


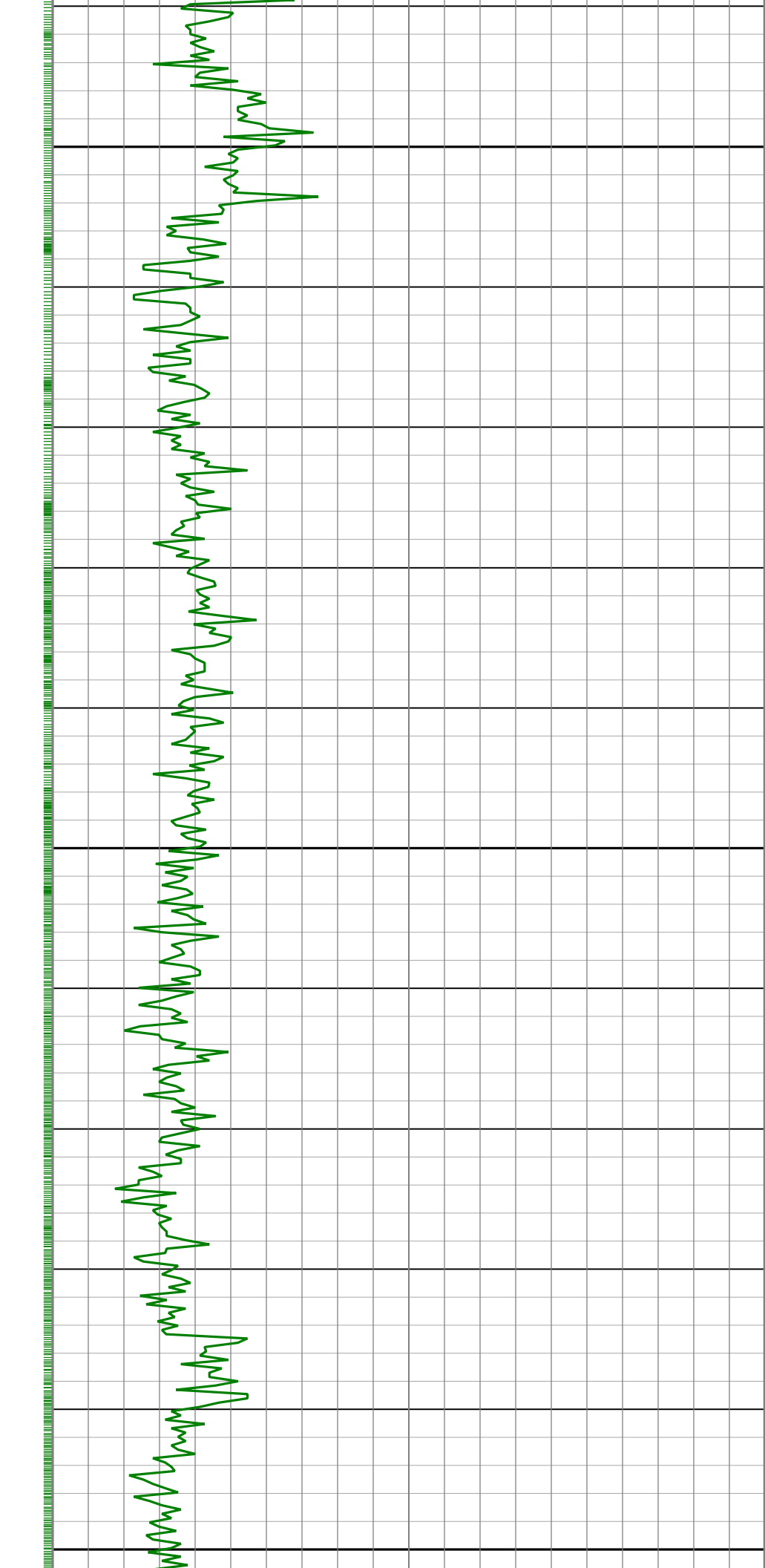
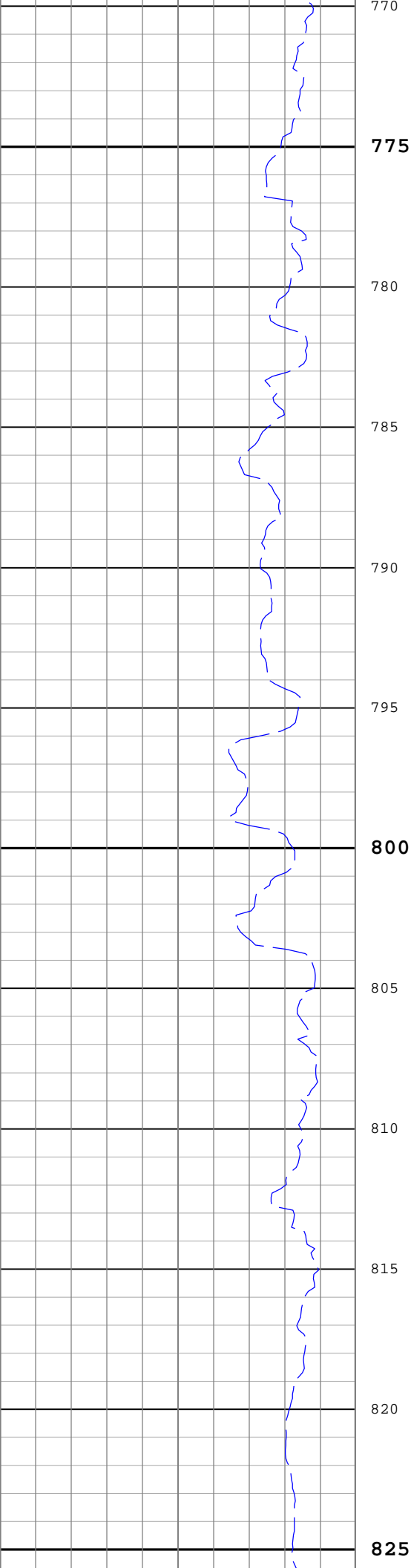


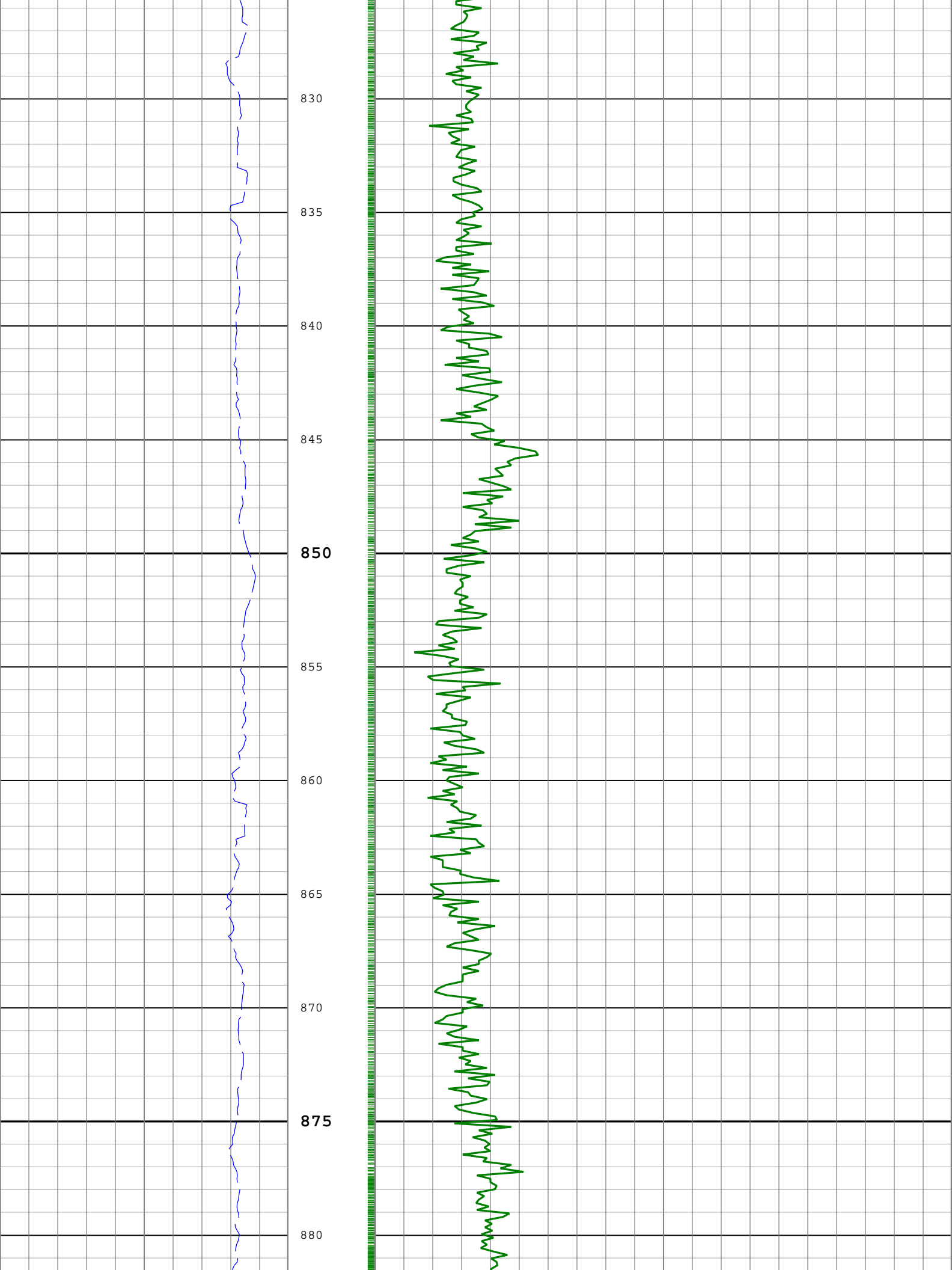


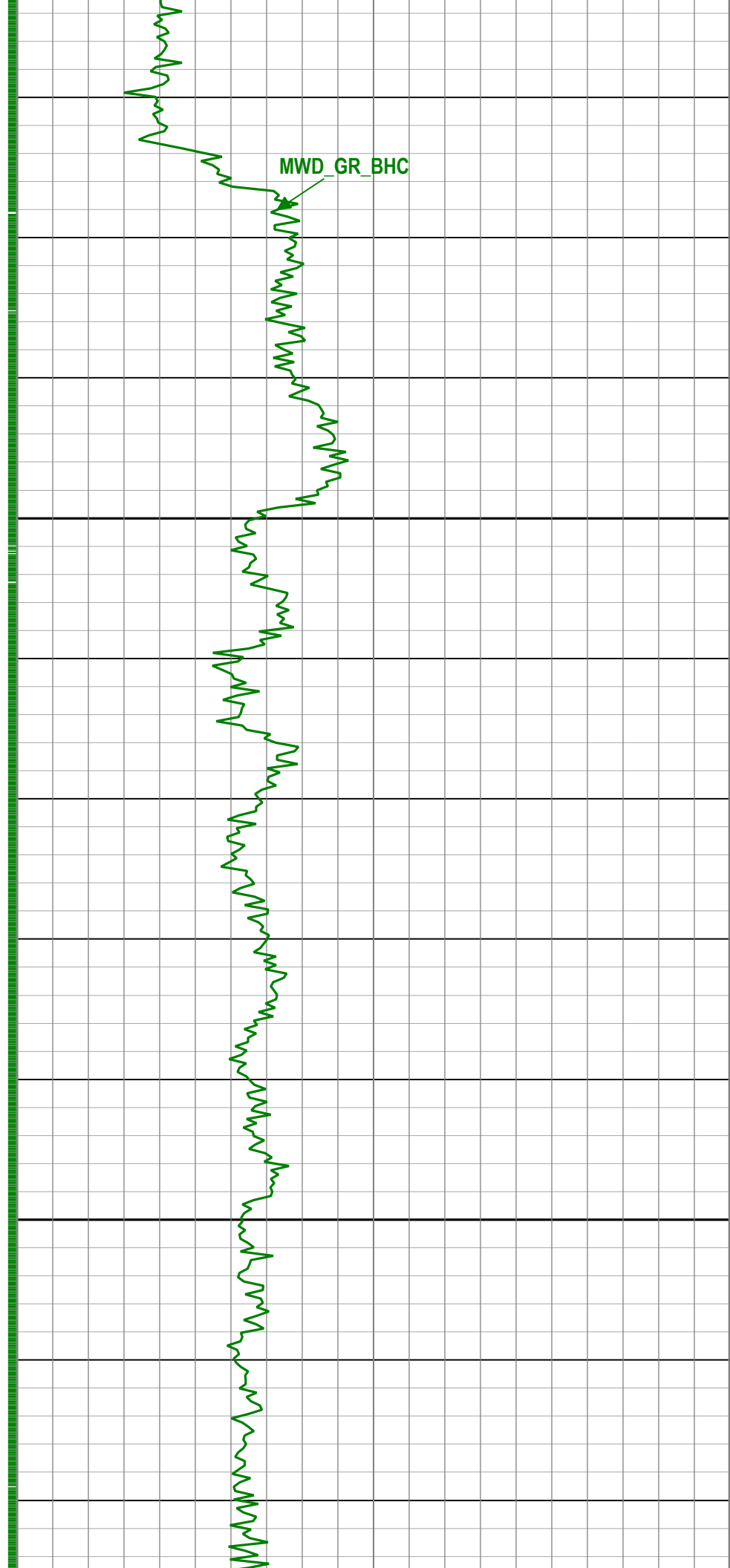
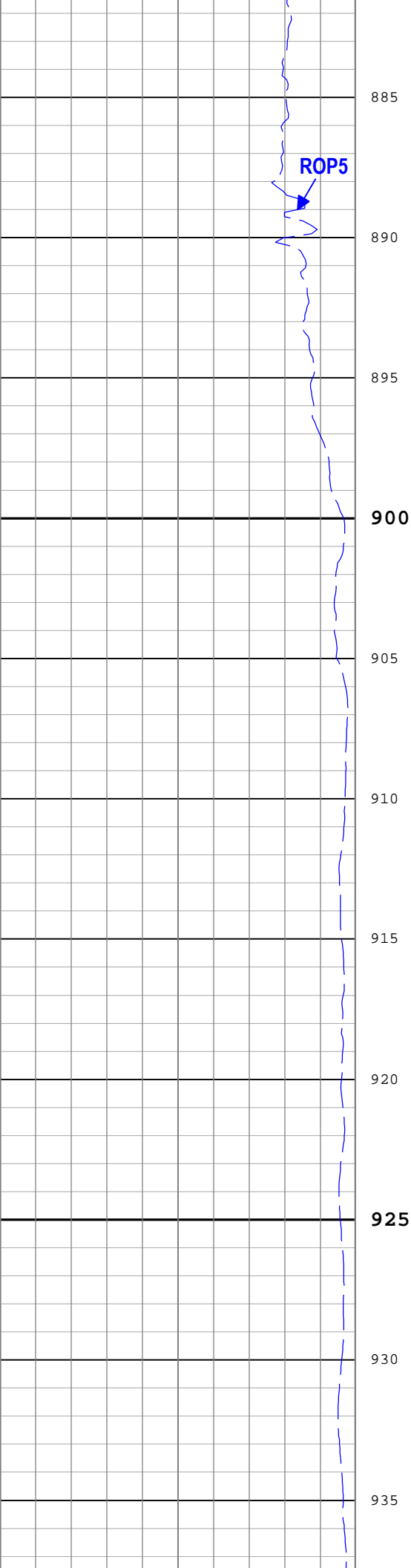


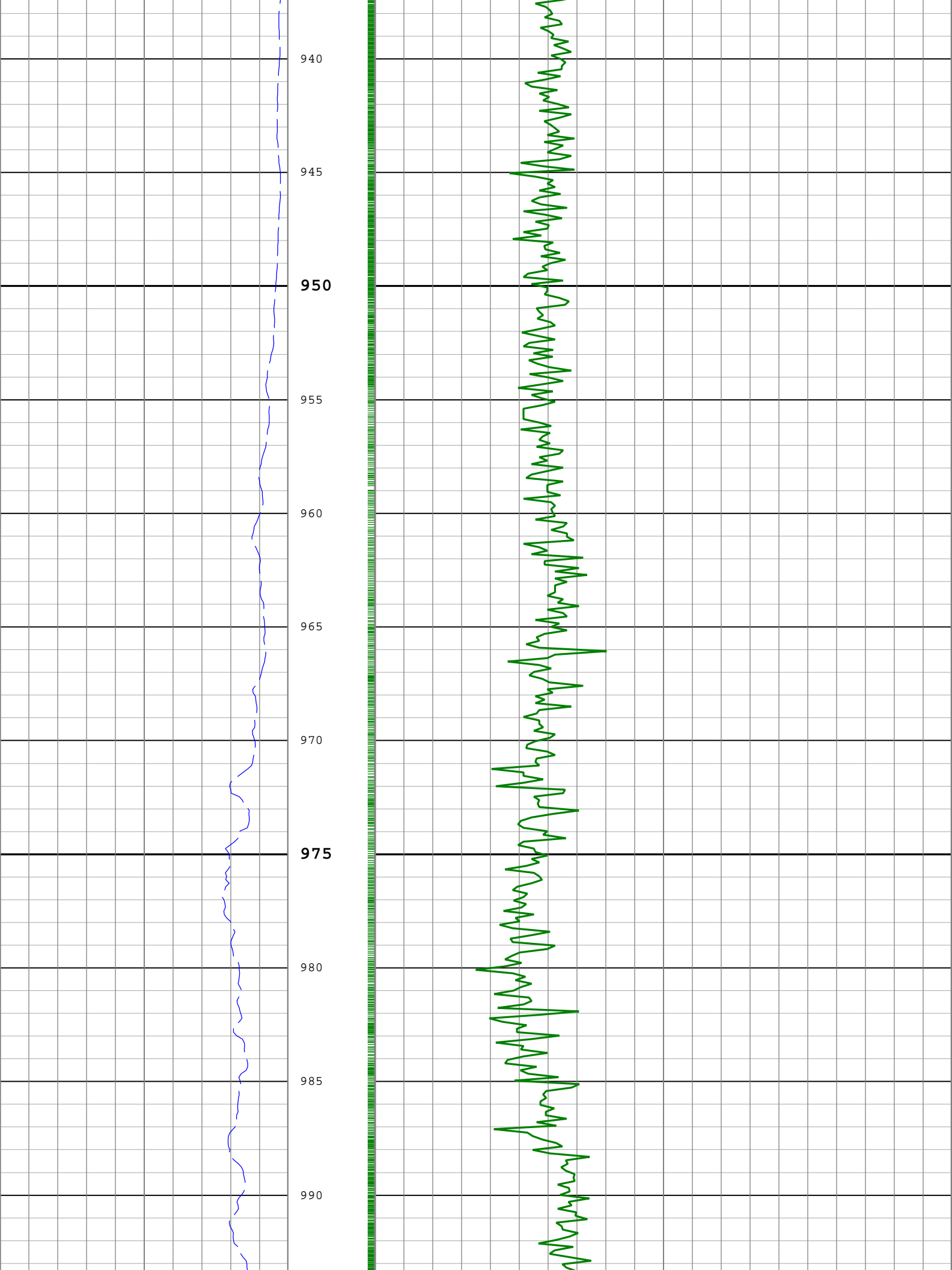


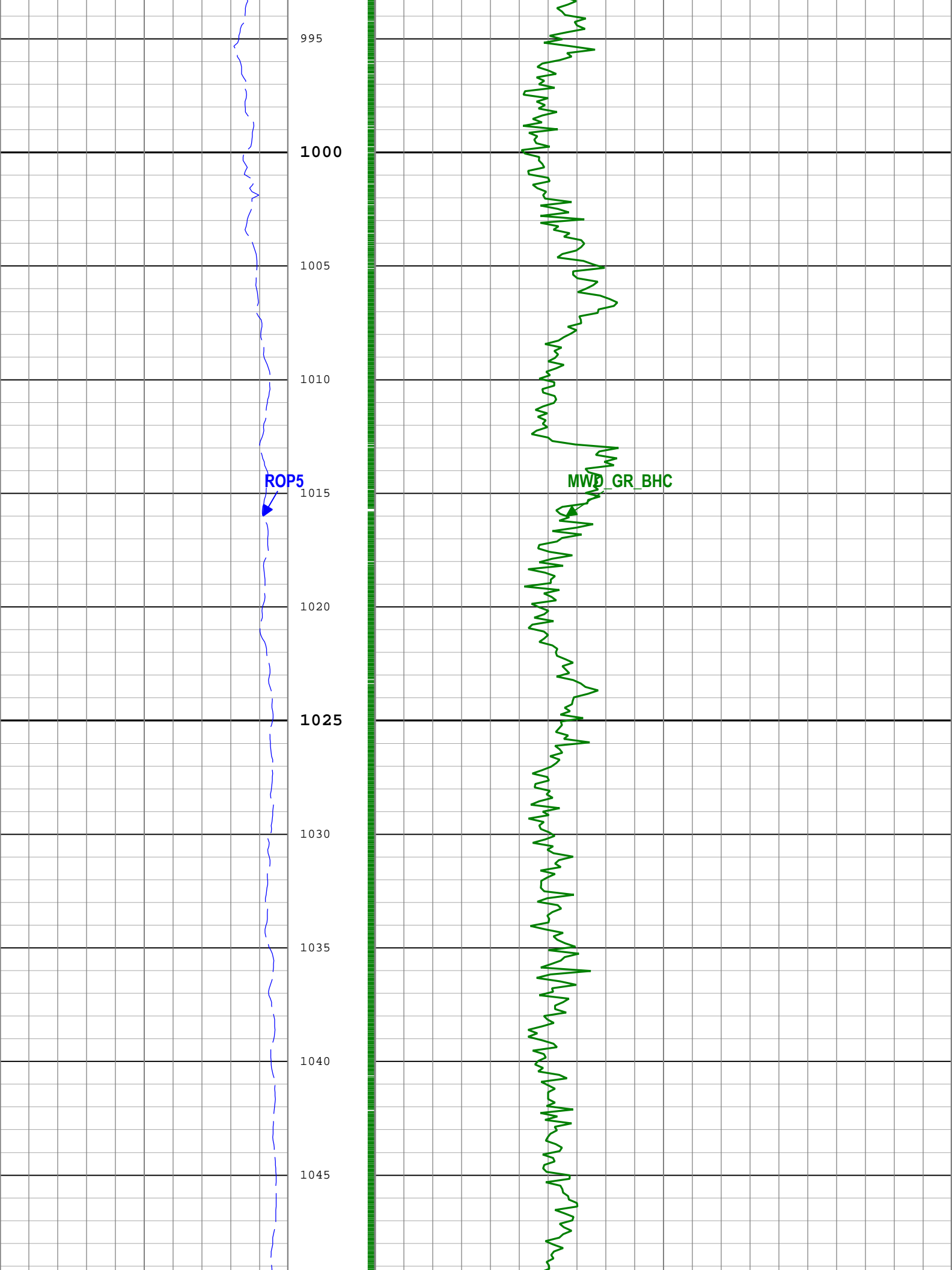


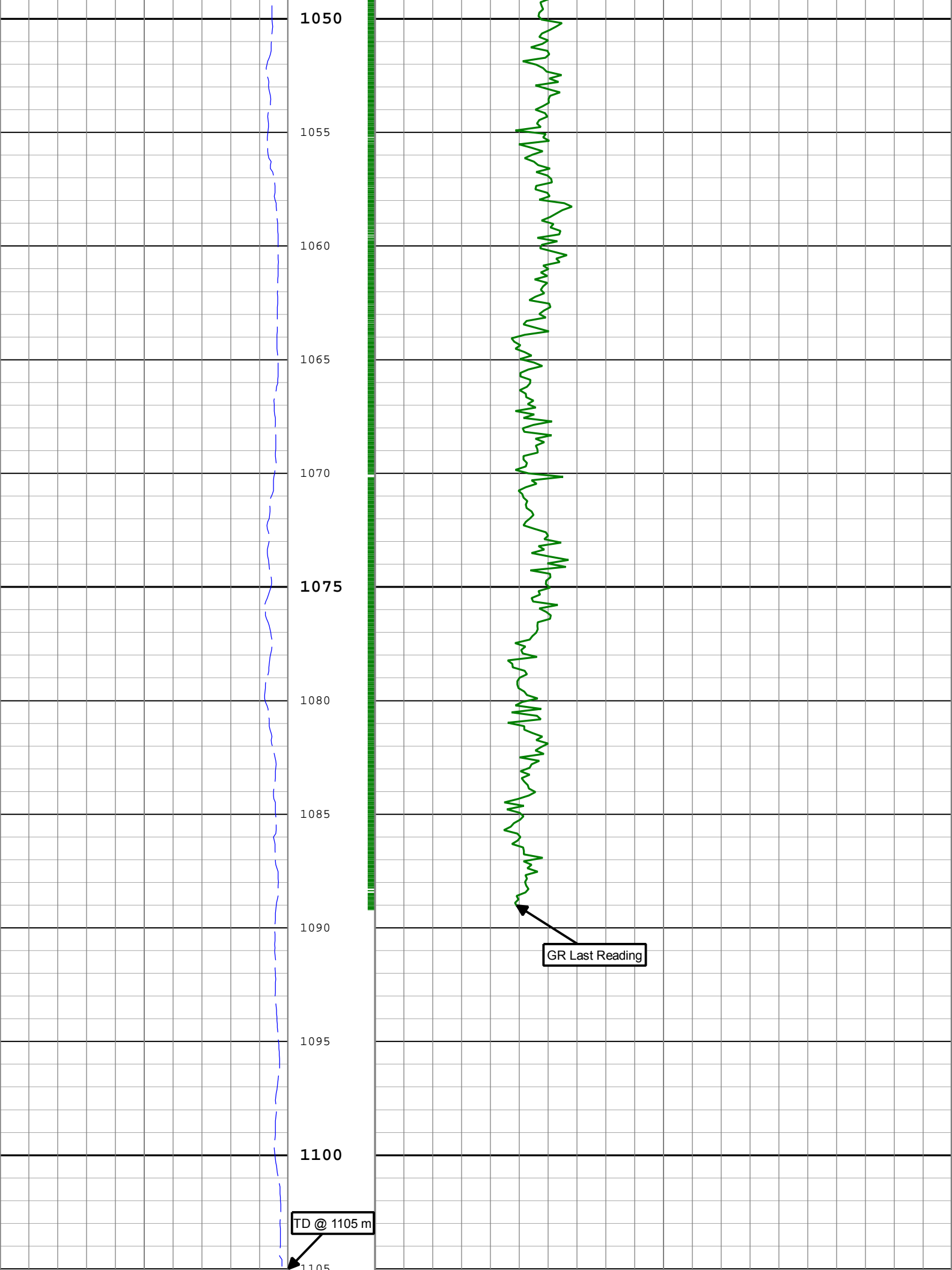






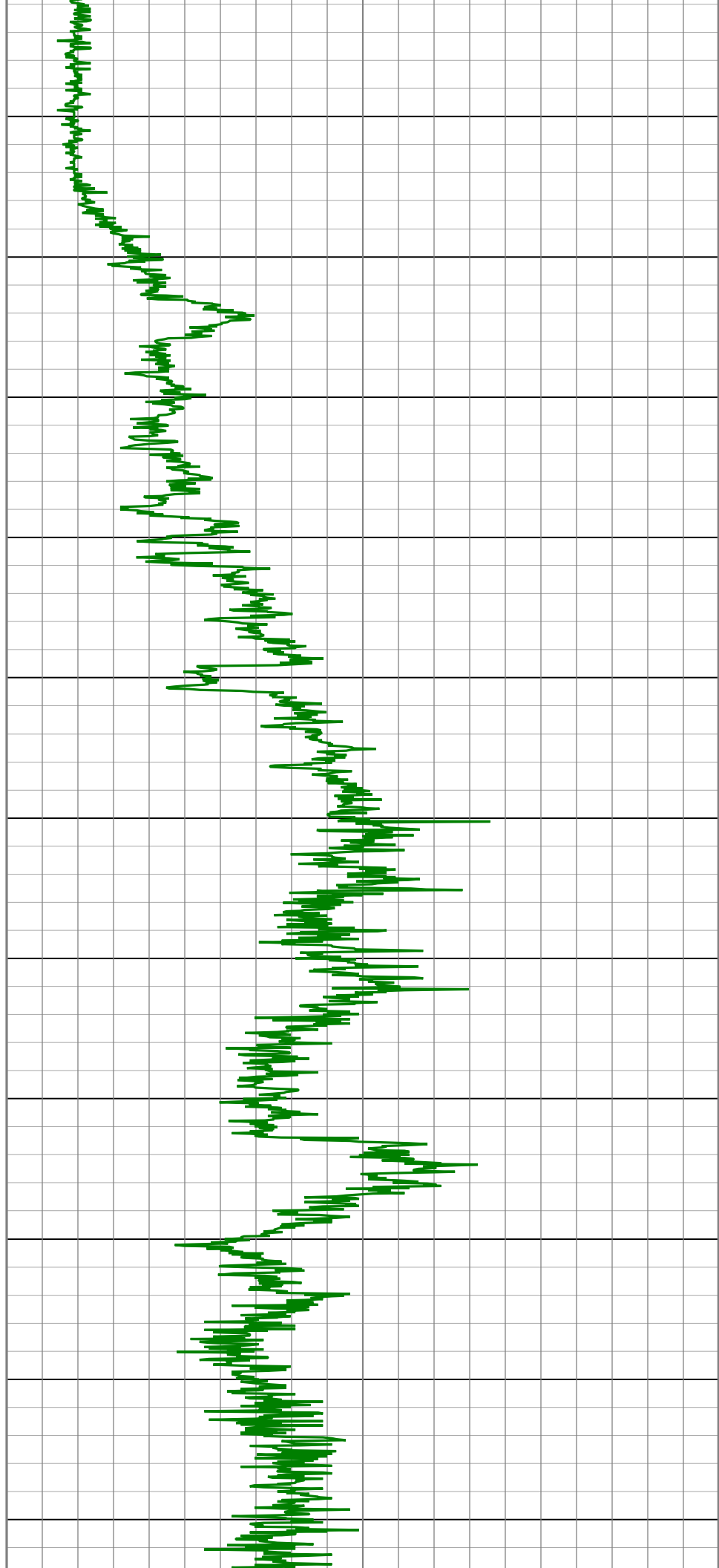
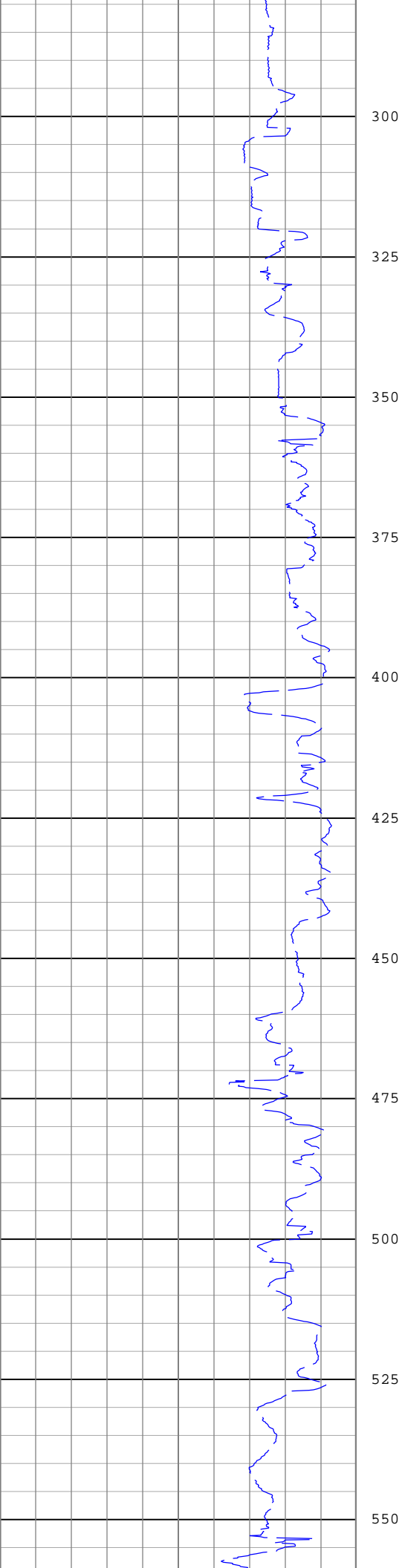


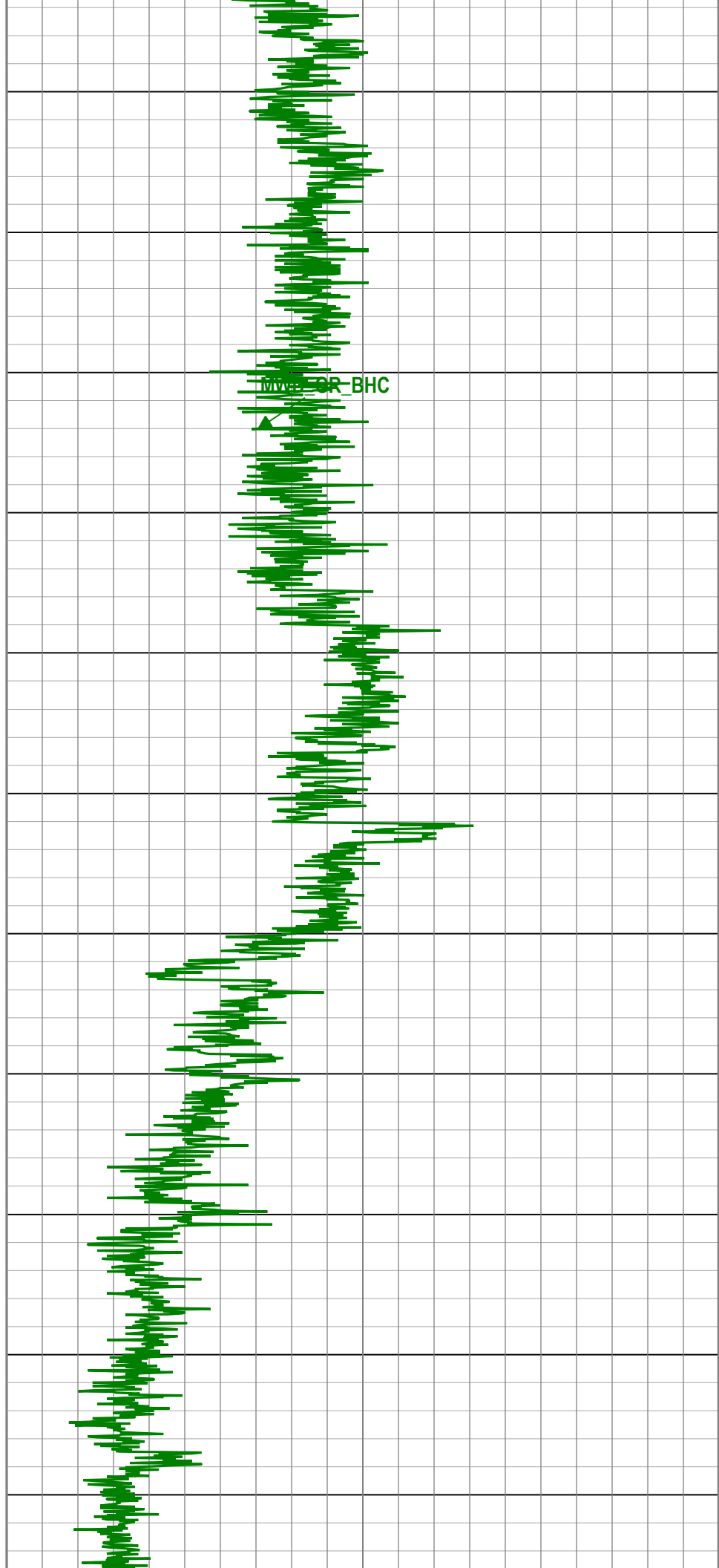
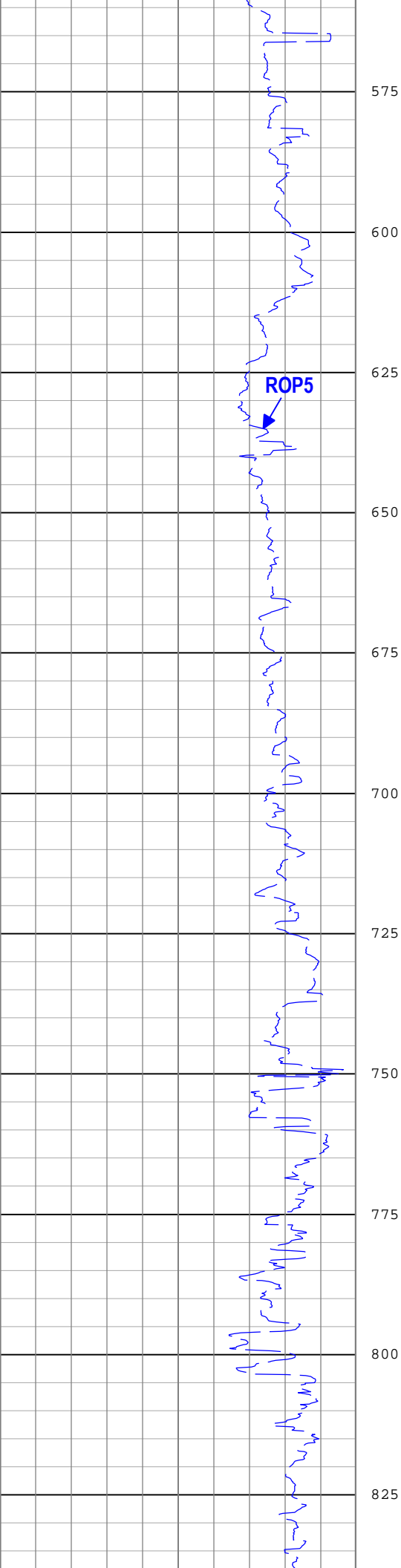


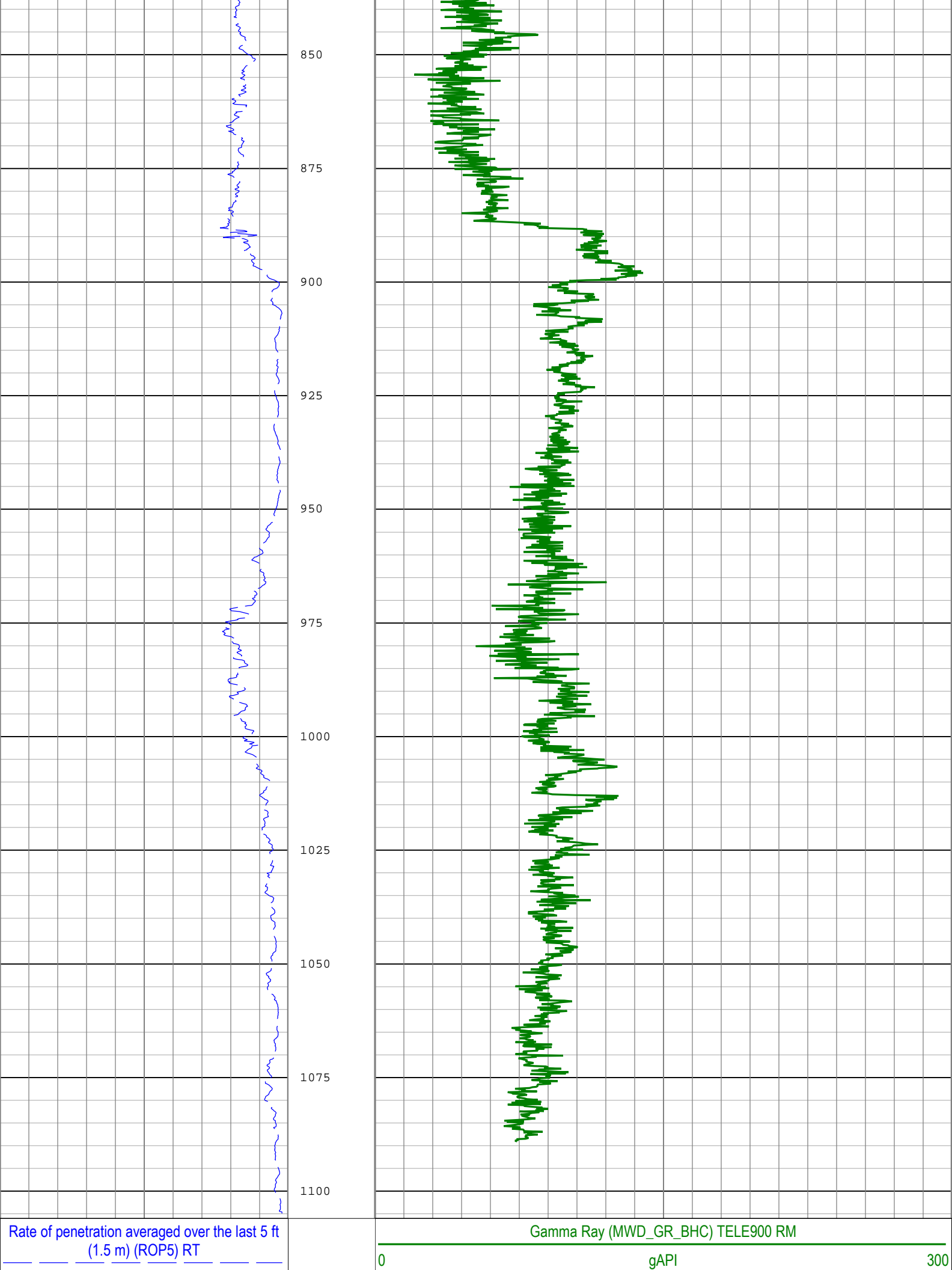


Rate of penetration averaged over the last 5 ft (1.5 m) (ROP5) RT										Gamma Ray (MWD_GR_BHC) TELE900 RM									
100 m/h 0										0 gAPI 300									
- TICKS_GR - Gamma Ray Tick Marks TELE900 RM																			
Description: TeleScope Gamma Ray Depth RT    Format: Log ( GR MWD and PD with ticks )    Index Scale: 1:200    Index Unit: m    Index Type: Measured Depth    Creation Date: 05-Apr-2018 09:09:51																			
Run 1																			
MWD - Gamma Ray 1:1000 MD																			
Pass Summary																			
Run Name		Pass Objective		Direction		Top		Bottom		Start		Stop		Include Parallel Data					
Run 1		Drilling		Down		140.21 m		1104.98 m		22-Mar-2018 08:11:51		27-Mar-2018 19:08:27		Yes					
All depths are referenced to toolstring zero																			
Log																			
										Company:Trias Westland B.V.    Well:NLW-GT-02-S1 Run 1: Drilling:S097									
Description: TeleScope Gamma Ray Depth RT    Format: Log ( GR MWD and PD no ticks )    Index Scale: 1:1000    Index Unit: m    Index Type: Measured Depth    Creation Date: 05-Apr-2018 09:09:57																			
Rate of penetration averaged over the last 5 ft (1.5 m) (ROP5) RT										Gamma Ray (MWD_GR_BHC) TELE900 RM									
100 m/h 0										0 gAPI 300									









Rate of penetration averaged over the last 5 ft  
(1.5 m) (ROP5) RT

Gamma Ray (MWD\_GR\_BHC) TELE900 RM

0 gAPI 300

Description: TeleScope Gamma Ray Depth RT    Format: Log ( GR MWD and PD no ticks )    Index Scale: 1:1000    Index Unit: m    Index Type: Measured Depth    Creation Date: 05-Apr-2018 09:09:57

Channel Processing Parameters

Run 1: Parameters

Parameter	Description	Tool	Value	Unit
BHK	Drilling Fluid Potassium Concentration	Borehole	Time Zoned	%
BS	Bit Size	DNMSESSION	Depth Zoned	in
DFD	Drilling Fluid Density	Borehole	Time Zoned	g/cm3
GR_SRC	GR Input Channel Name	TELE900	GAMMA_CPS	

Depth Zone Parameters

Parameter	Value	Start ( m )	Stop ( m )
BS	36	123	137
BS	24	137	1105

All depth are actual.

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth ( m )	Stop Depth ( m )
BHK	0	22-Mar-2018 08:11:51	24-Mar-2018 04:20:10	140.21	441.4
BHK	5.5	24-Mar-2018 04:20:10	24-Mar-2018 21:00:00	441.4	685.83
BHK	4.77	24-Mar-2018 21:00:00	25-Mar-2018 15:00:00	685.83	902.59
BHK	4.17	25-Mar-2018 15:00:00	25-Mar-2018 21:00:00	902.59	920.39
BHK	4.35	25-Mar-2018 21:00:00	27-Mar-2018 19:08:27	920.39	1104.98
DFD	1.05	22-Mar-2018 08:11:51	23-Mar-2018 03:30:36	140.21	182.7
DFD	1.07	23-Mar-2018 03:30:36	23-Mar-2018 21:00:41	182.7	427.94
DFD	1.12	23-Mar-2018 21:00:41	24-Mar-2018 04:00:00	427.94	441.38
DFD	1.16	24-Mar-2018 04:00:00	24-Mar-2018 16:00:08	441.38	608.56
DFD	1.19	24-Mar-2018 16:00:08	25-Mar-2018 04:00:14	608.56	768.12
DFD	1.2	25-Mar-2018 04:00:14	25-Mar-2018 11:00:00	768.12	861.03
DFD	1.23	25-Mar-2018 11:00:00	25-Mar-2018 11:00:21	861.03	861.03
DFD	1.26	25-Mar-2018 11:00:21	25-Mar-2018 21:00:00	861.03	920.39
DFD	1.24	25-Mar-2018 21:00:00	26-Mar-2018 11:00:00	920.39	1000.46
DFD	1.22	26-Mar-2018 11:00:00	26-Mar-2018 15:50:00	1000.46	1032.26
DFD	1.24	26-Mar-2018 15:50:00	27-Mar-2018 19:08:27	1032.26	1104.98

All depth are at tool zero.

Tool Control Parameters

Calibration Report

TELE900 (TeleScope 900) Calibration - Run 1

Primary Equipment :	Gamma Ray Cartridge	PMGR	223
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GAMMA\_SF - Gamma Ray: Blanket

Master (Time Frame File):    22:50:15 02-Mar-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Calibration Gain		Master	1.0000	0.7500	0.8431	1.2500	

**Company:** Trias Westland B.V.

**Well:** NLW-GT-02-S1

**Field:** Naaldwijk

**Rig Name:** KCA Deutag T-207

**Country:** Netherlands



MWD - Gamma Ray

**Schlumberger**

Recorded Mode