

Company: North East Natural Energy LLC

Well: Boggress 17H

Field: Wildcat

County: Monongalia State: West Virginia

County: Monongalia
Field: Wildcat
Location: Lat and Long:
Well: Boggress 17H
Company: North East Natural Energy LLC

PLATFORM EXPRESS
HIGH RESOLUTION LATERLOG ARRAY
RESISTIVITY / GAMMA RAY / CALIPER

Location:	Lat and Long:	Elev.:	K.B.	1296.00 ft
	39:40:12.6 N		G.L.	1268.00 ft
	80:5:35.8 W		D.F.	1296.00 ft
Permanent Datum:	Ground Level	Elev.:	1268.00 f	
Log Measured From:	Kelly Bushing	28.00 ft	above Perm.Datum	
Drilling Measured From:	Kelly Bushing			
API Serial No.	District	Township:	Quad	
47-061-01812-00-00	Clay	Core	Blacksville	

Logging Date	15-Apr-2019		
Run Number	1A		
Depth Driller	8400.00 ft		
Schlumberger Depth	8400.00 ft		
Bottom Log Interval	8400.00 ft		
Top Log Interval	2543.00 ft		
Casing Driller Size @ Depth	9.625 in @ 2538.00 ft		
Casing Schlumberger	2543 ft		
Bit Size	8.5 in		
Type Fluid In Hole	Water		
Density	9.5 lbm/gal		
Fluid Loss	PH		
MUD			
Source of Sample	Active Tank		
RM @ Meas Temp	0.04 ohm.m @ 103 degF		
RMF @ Meas Temp	0.03 ohm.m @ 103 degF		
RMC @ Meas Temp	0.04 ohm.m @ 102 degF		
Source RMF	RMC	Pressed	
RM @ BHT	0.04 @ 158	0.02 @ 158	
Max Recorded Temperatures	158 degF		
Circulation Stopped	14-Apr-2019	23:00:00	
Logger on Bottom	15-Apr-2019	09:04:00	
Unit Number	3703	Bradford, PA	
Recorded By	Elizabeth Morrone		
Witnessed By	BJ Varney		

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.

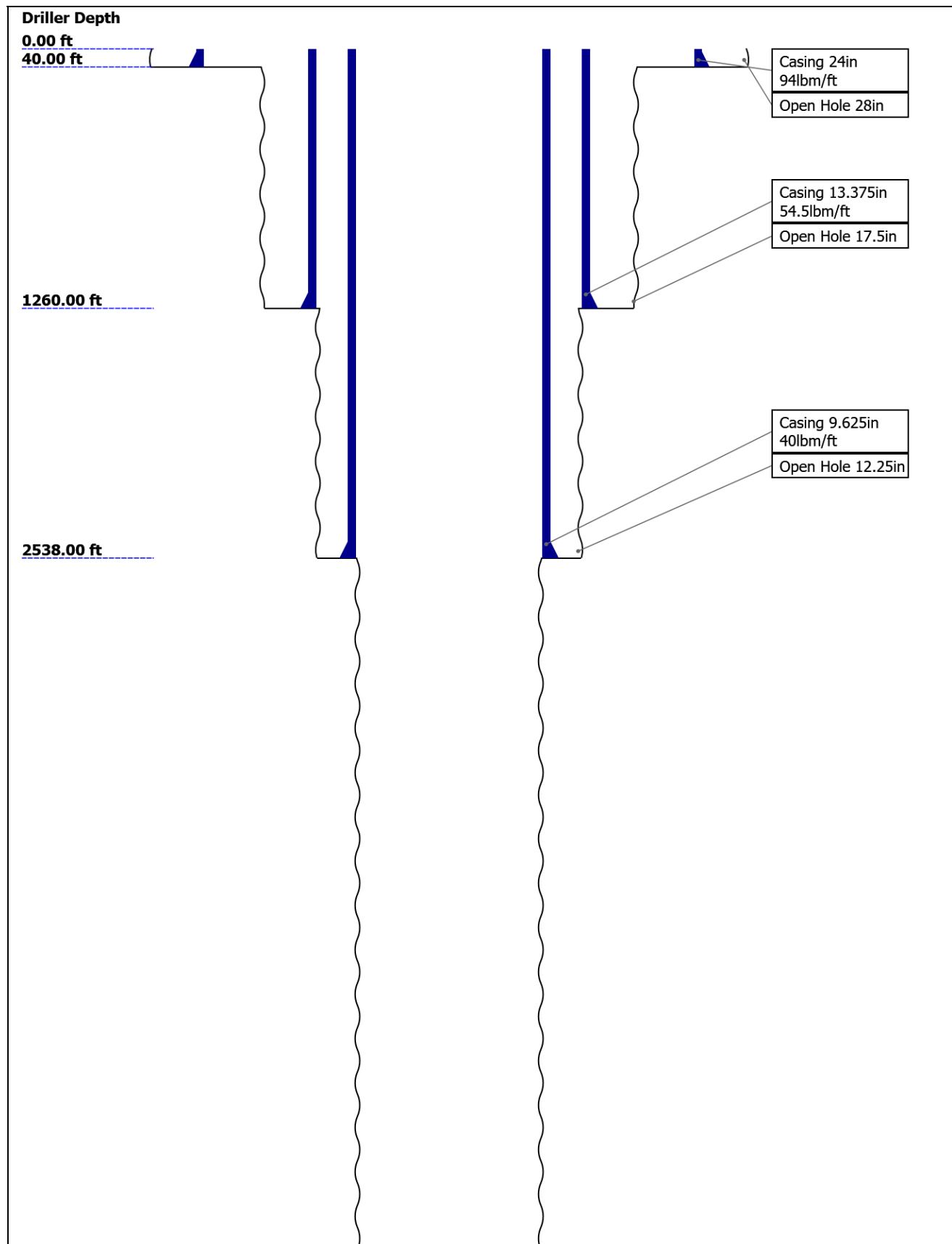
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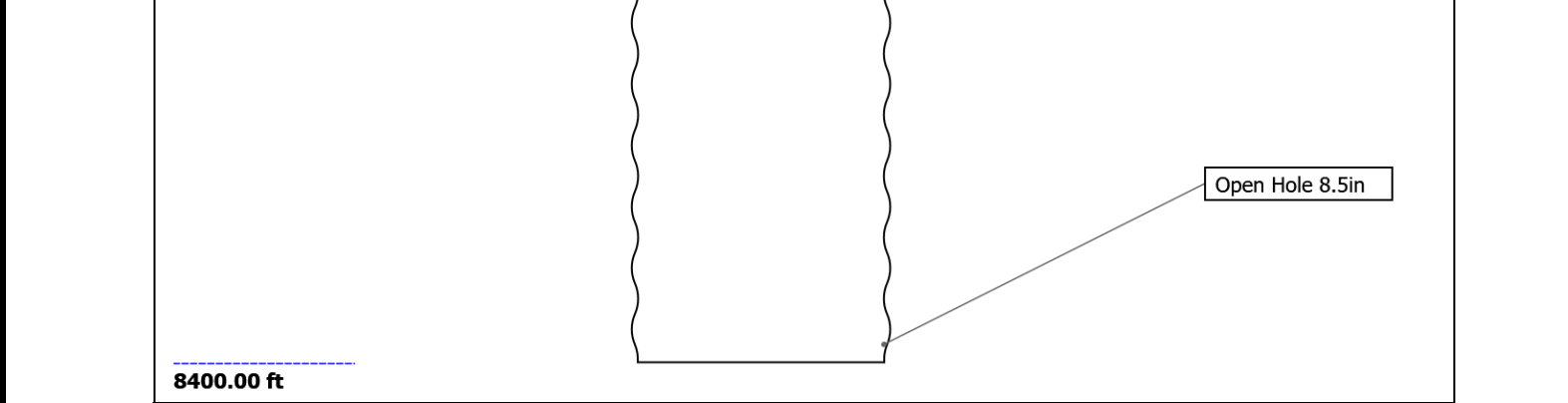
- 1. Header
- 2. Disclaimer
- 3. Contents
- 4. Well Sketch
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Well Sketch



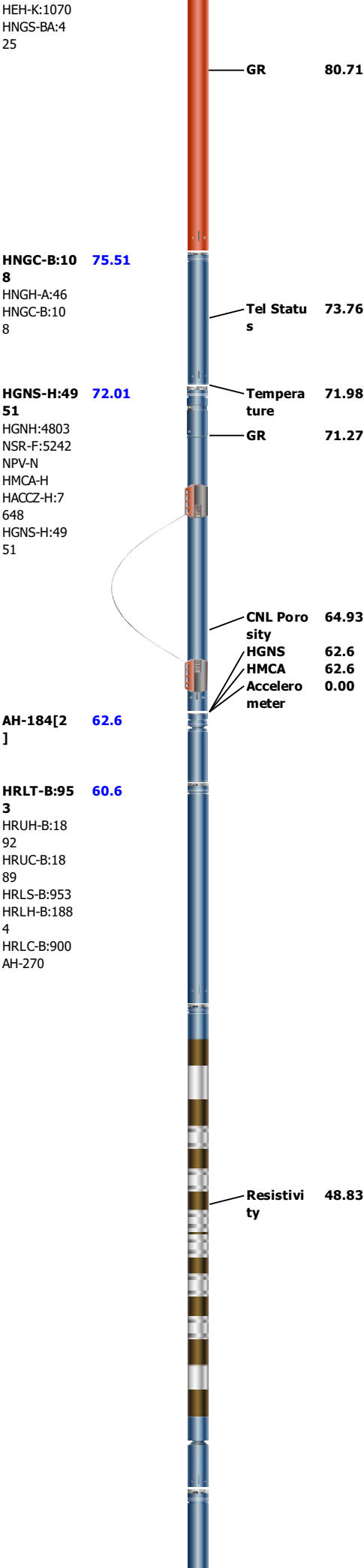


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	28	17.5	12.25	8.5		
Top Driller (ft)	0	40	1260	2538		
Top Logger (ft)	0	40	1260	2543		
Bottom Driller (ft)	40	1260	2538	8400		
Bottom Logger (ft)	40	1260	2543	8400		
Casing						
Size (in)	24	13.375	9.625			
Weight (lbm/ft)	94	54.5	40			
Inner Diameter (in)	23.272	12.615	8.835			
Grade	N/A	N/A	N/A			
Top Driller (ft)	0	0	0			
Top Logger (ft)	0	0	0			
Bottom Driller (ft)	40	1260	2538			
Bottom Logger (ft)	40	1260	2543			

Remarks and Equipment Summary

1A: Toolstring				1A: Remarks	
Equip name Length LEH-MT 99.63 MP name Offset LEH-MT Mud Tem perature 97.69 SAH-F 96.48 AH-369 91.63 EDTC-B:92 90.2 31 EDTH-B:929 1 EDTG-B:794 27 EDTC-B:923 1 HNGS-BA:4 83.7 25 CTEM 86.7 ACCZ 0.00 HV 0.00 Gamma R 84.83 ay TelStatu 83.7 s	Thank you for choosing Schlumberger!				
	Crew: Morrone, Kornacki, Shirley				
	Tool ran per tool sketch; 6" standoffs placed on HRUC and HRLC				



AH-184[1 36.4]

HDRS-H:3 34.4

791
ECH-MEB:3
963
HRCC-H:49
45
HRMS-H:37
91
Long Spacing
HRGD-H:39
21
GSR-J:5542
Short Spacing
Backscatter
GPV-Q

HRCC 30.4

MCFL 24.97
Caliper 24.48
TLD Density 24.09

NEXT-A:4 22.16

NEXH-A:4
PNG-G
NEXS-A:4

Spect 16.28

Status 14.87

ILE-F 8.46

BNS-STD 0.46

Head Tension
TOOL_ZERO

Lengths are in ft
Maximum Outer Diameter = 6.370 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Depth Summary

1A

Depth Measuring Device

Type	IDW-JA								
Serial Number	7173								
Calibration Date	20-Mar-2018								
Calibrator Serial Number	IDWC-C-57								
Calibration Cable Type	7-46 AXS								
Wheel Correction 1	-5								
Wheel Correction 2	-3								
Tension Device									
Type	CMTD-B/A								
Serial Number	5054								
Calibration Date	08-Jan-2019								
Calibrator Serial Number	232970A								
Number of Calibration Points	10								
Calibration Root Mean Square Error	13								
Calibration Peak Error	22								
Logging Cable									
Type	7-46A-XS								
Serial Number	U715008								
Length	11750.00 ft								
Conveyance Type	Wireline								
Rig Type	Land								
1A:Depth Control Parameters		Depth Control Remarks							
Log Sequence	First Log In the Well	All Schlumberger depth control procedures followed							
Rig Up Length At Surface		IDW used as primary depth control							
Rig Up Length At Bottom		Z-Chart used as secondary depth control							
Rig Up Length Correction									
Stretch Correction									
Tool Zero Check At Surface									
Main Pass									
MAIN PASS 2"									
Integration Summary									
Output Channel(s)	Output Description	Input Parameter	Output Value	Unit					
IHV	Integrated Hole Volume	GCSE_UP_PASS, GCSE_DOWN_PASS:1A	2499.44	ft3					
ICV	Integrated Cement Volume	GCSE_UP_PASS, GCSE_DOWN_PASS:1A, FCD	1533.73	ft3					
Software Version									
Acquisition System			Version						
Maxwell 2019			9.0.106845.3100						
Composite Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[2]:Up	Up	8266.17 ft	8396.38 ft	15-Apr-2019 7:56:45 AM	15-Apr-2019 8:17:05 AM	ON	2.60 ft	Yes
1A	Log[8]:Up	Up	8021.42 ft	8407.18 ft	15-Apr-2019 9:44:04 AM	15-Apr-2019 10:51:09 AM	ON	3.12 ft	Yes

1A	Log[9]:Up	Up	2500.63 ft	8126.68 ft	15-Apr-2019 10:57:49 AM	15-Apr-2019 4:11:56 PM	ON	4.17 ft	Yes
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All depths are referenced to toolstring zero

Log	Company:North East Natural Energy LLC	Well:Boggess 17H
		Main Pass:S012

Description: Triple Combo standard resolution template for Platform Express Format: Log (BRADFORD HRLA) Index Scale: 2 in per 100 ft Index Unit: ft

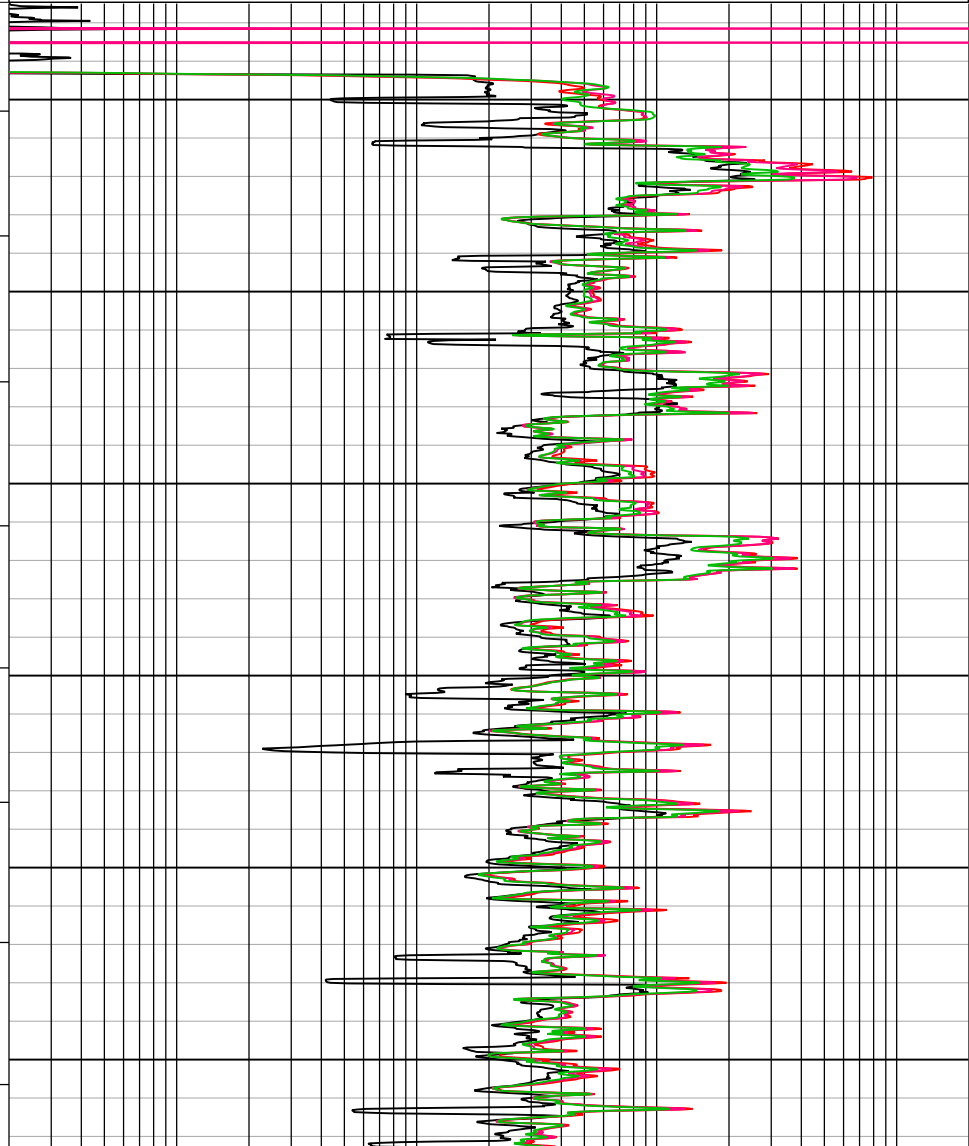
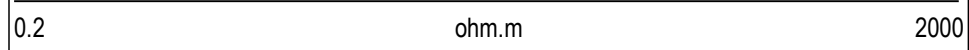
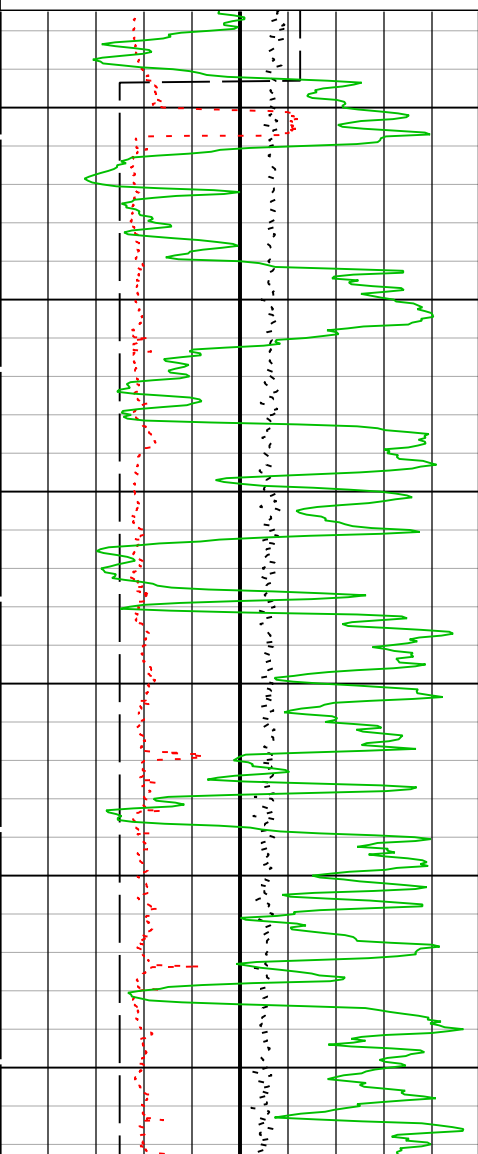
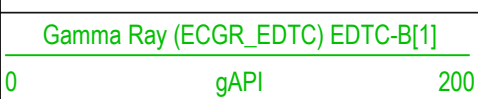
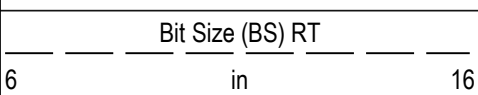
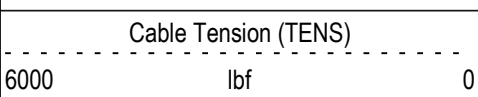
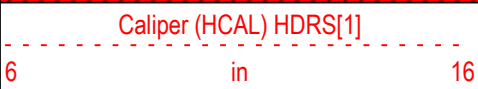
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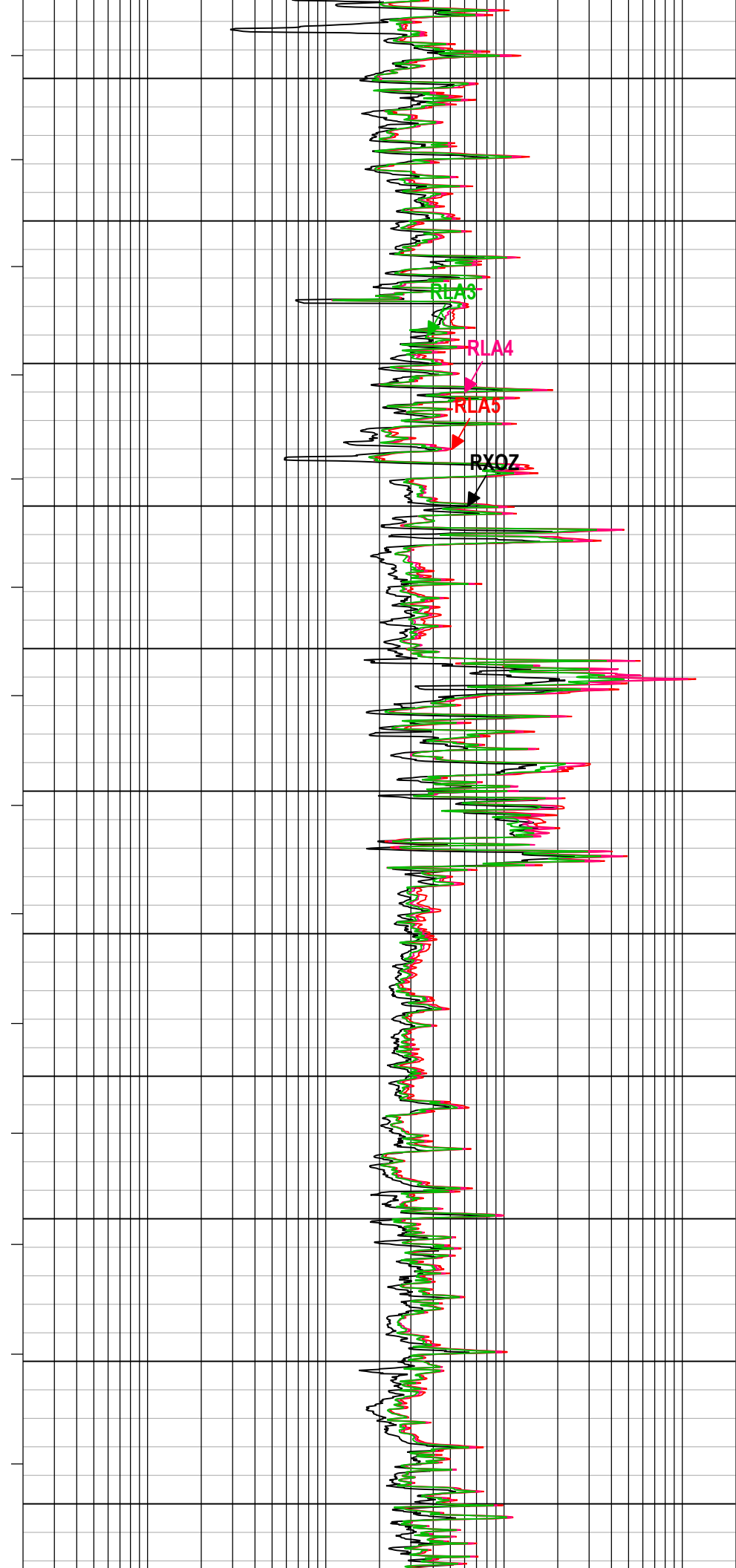
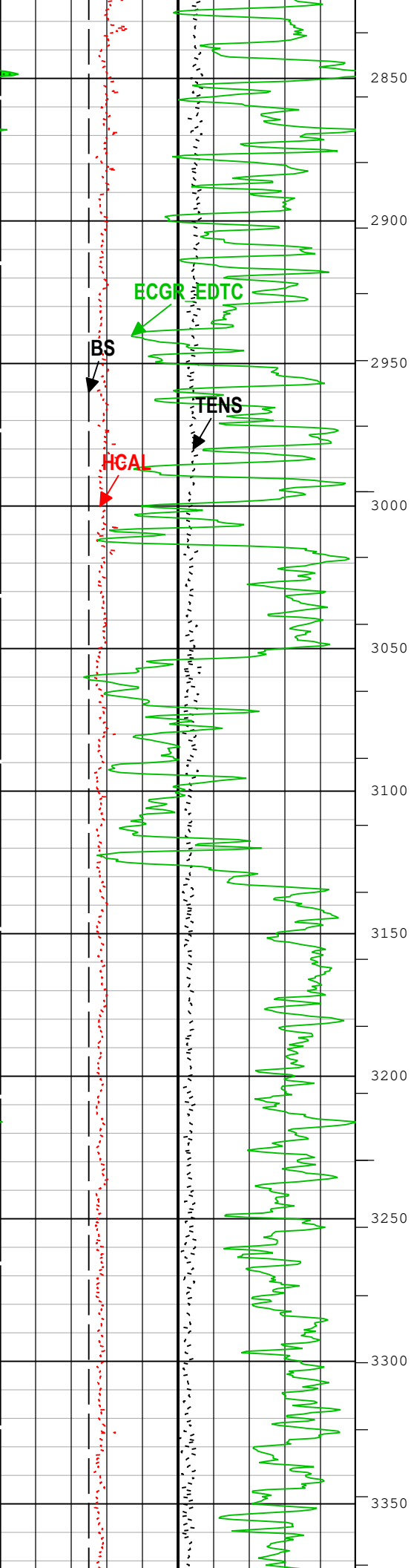
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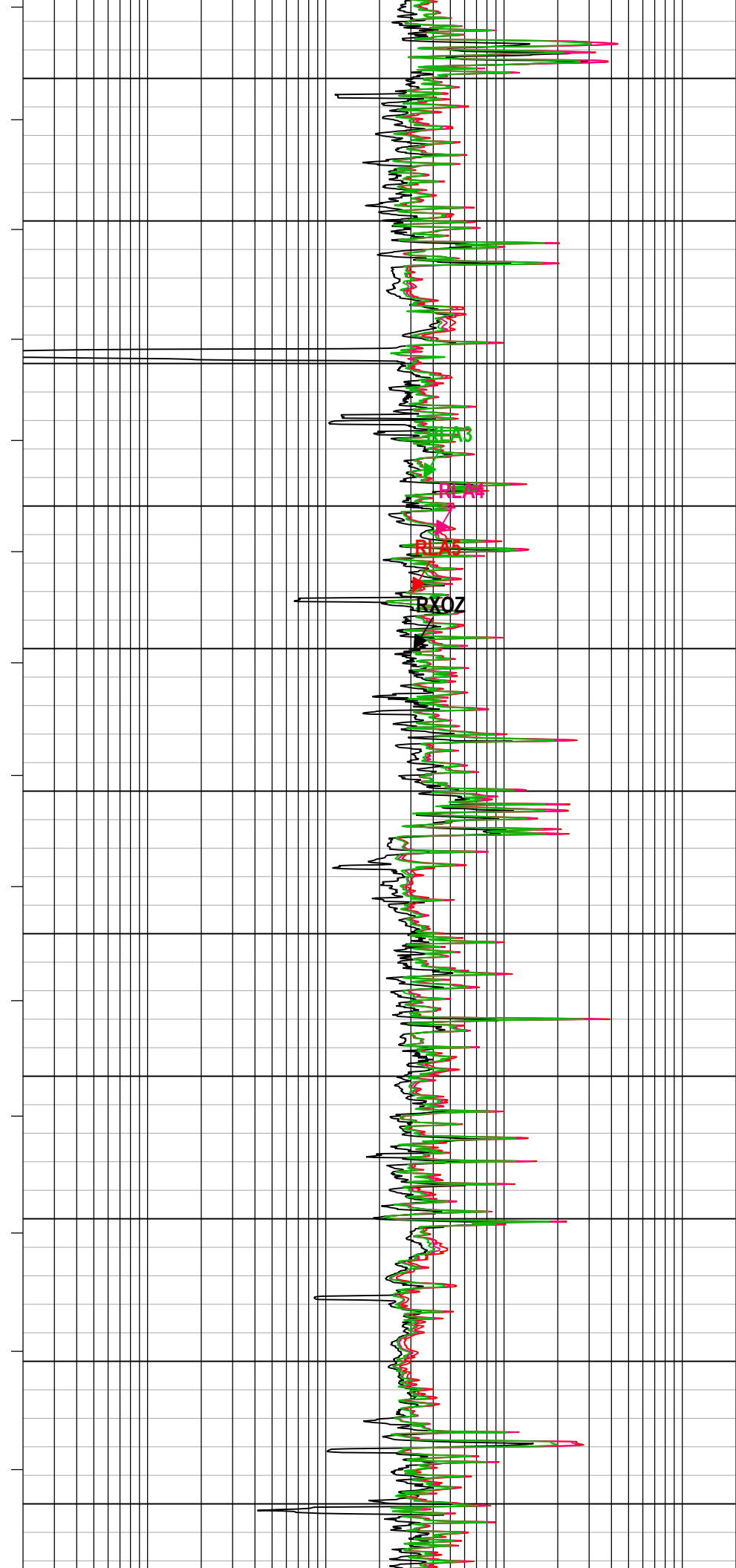
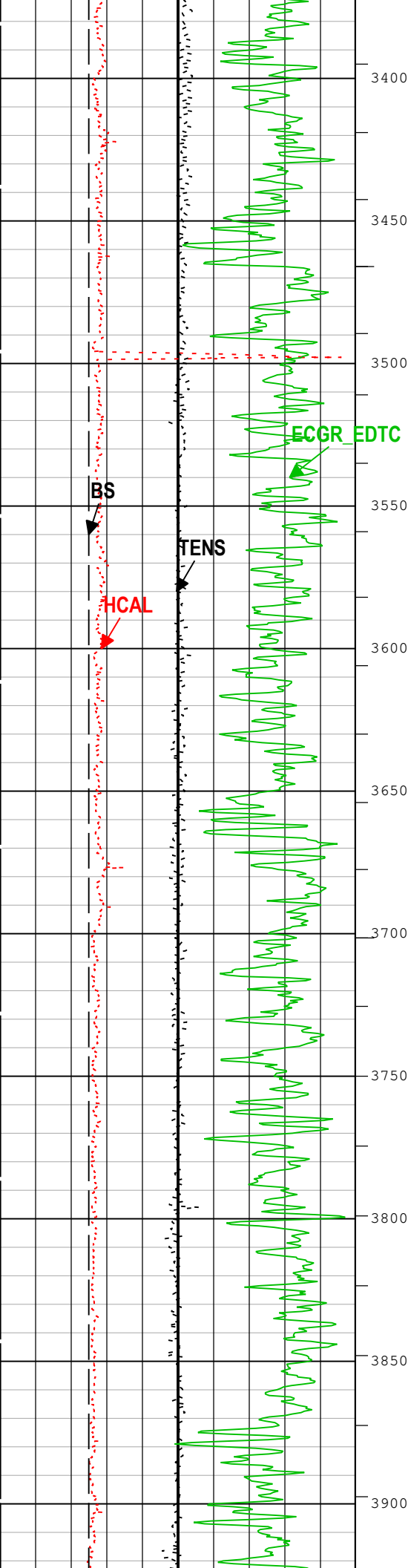
—ICV - Integrated Cement Volume every 10.00 (ft3)

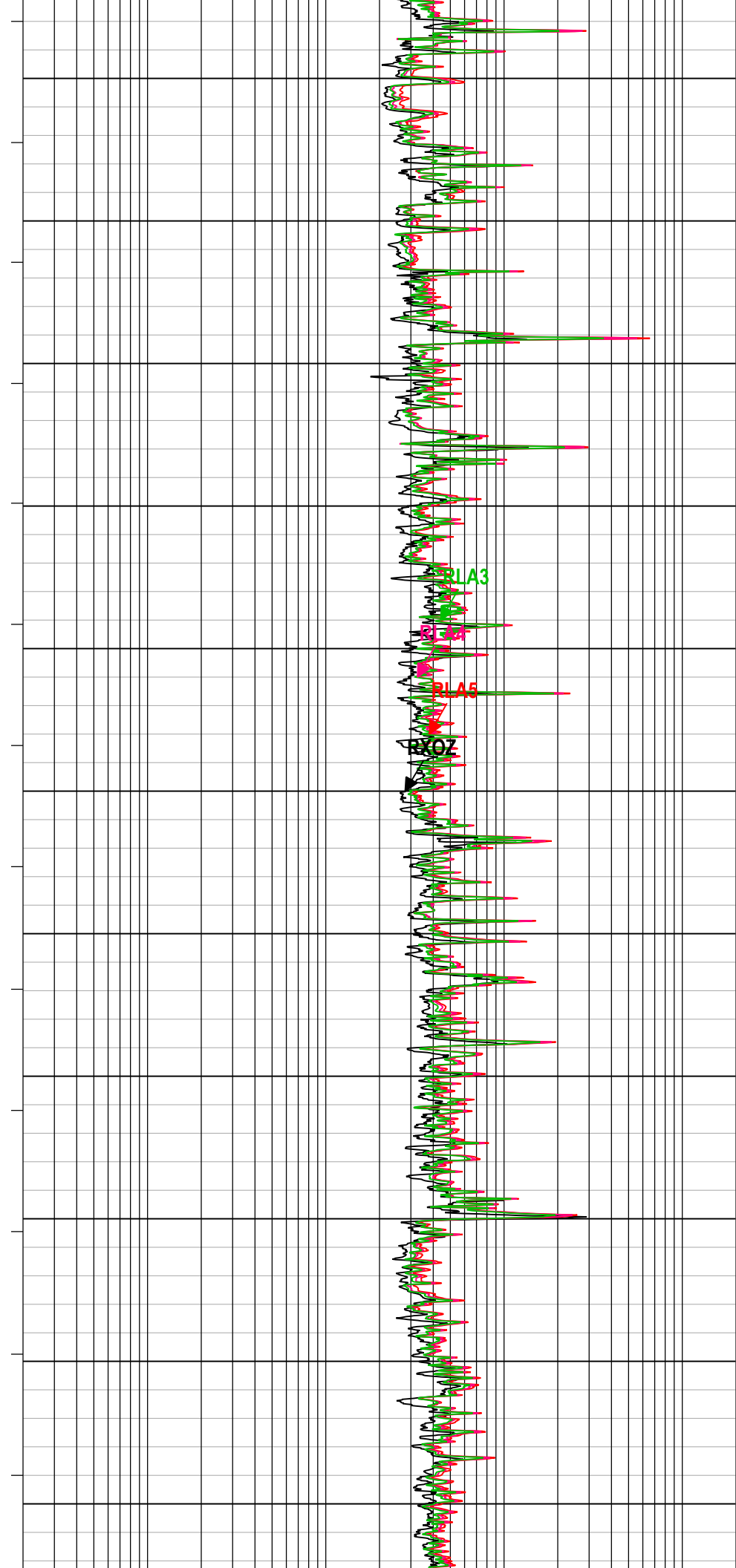
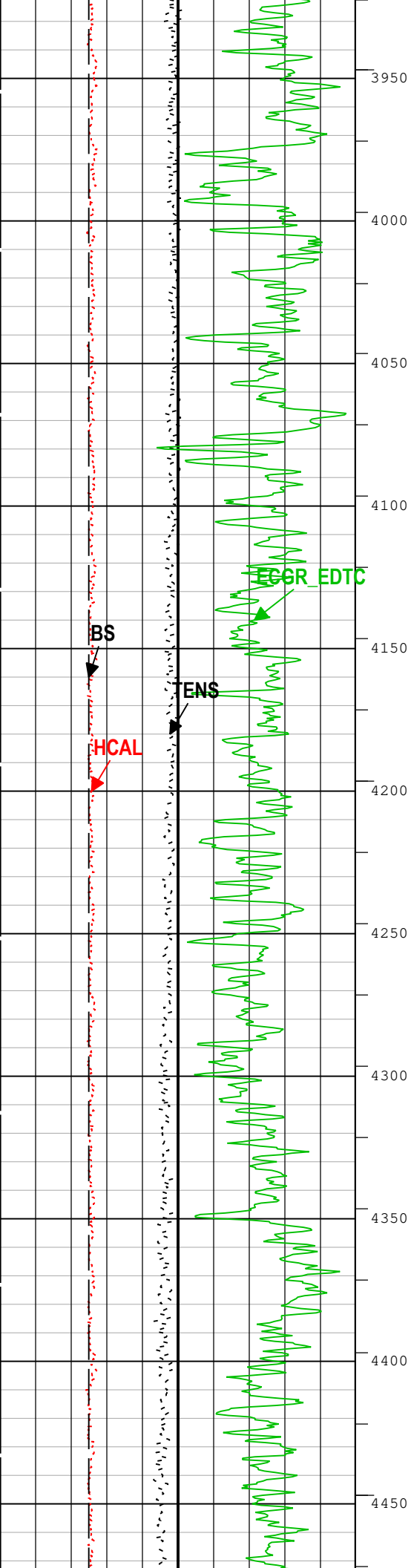
—IHV - Integrated Hole Volume every 10.00 (ft3)

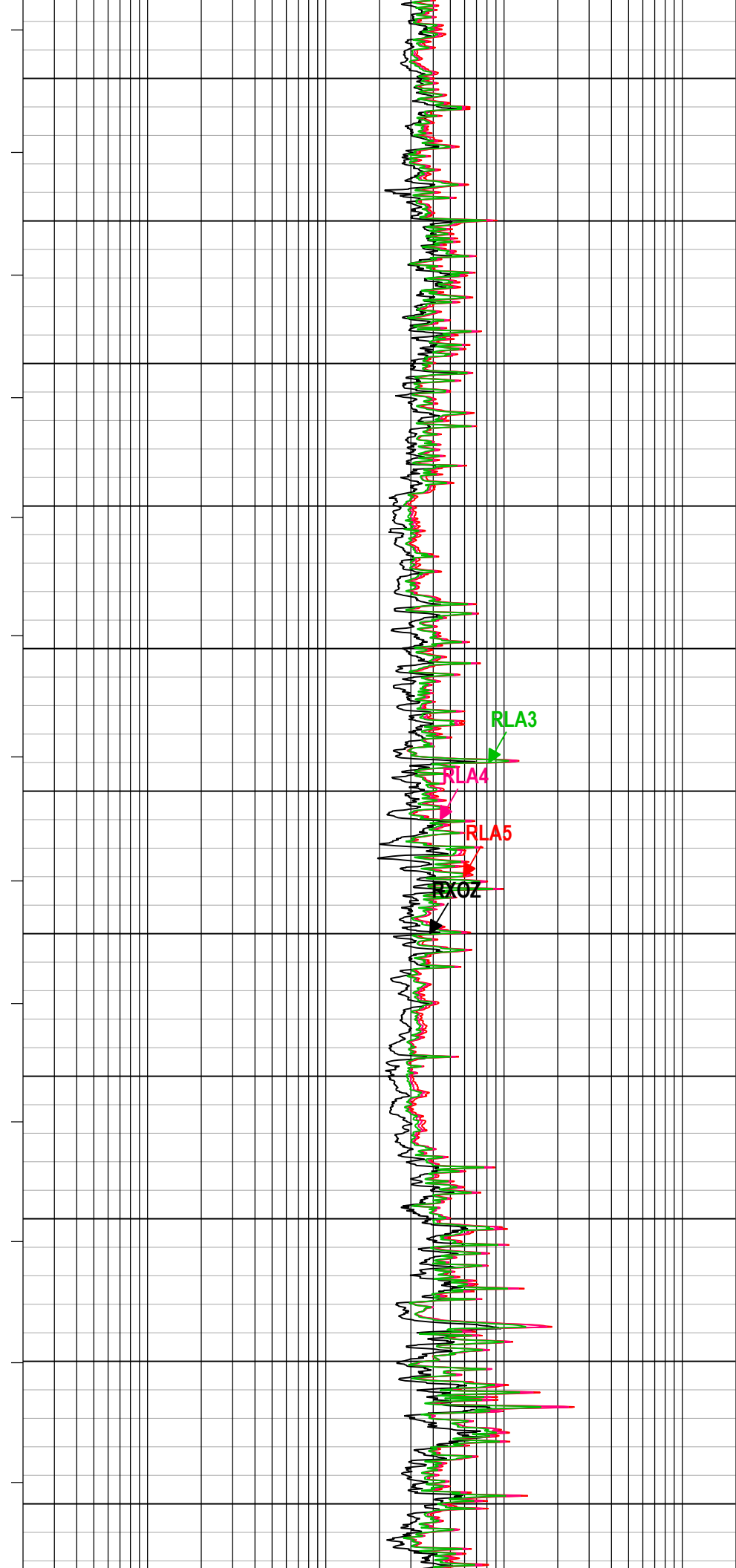
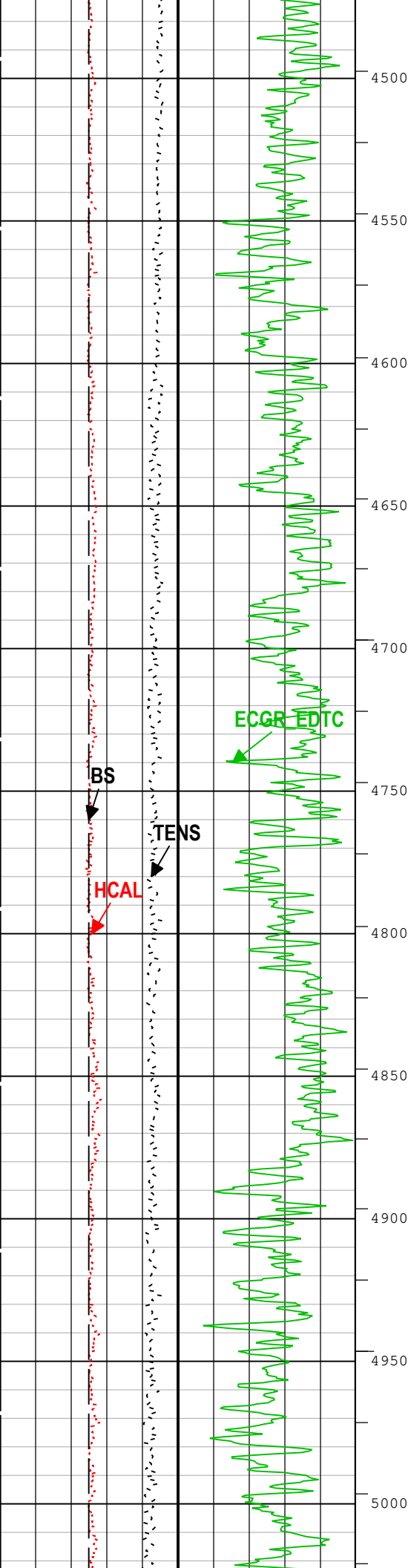
—IHV - Integrated Hole Volume every 100.00 (ft3)

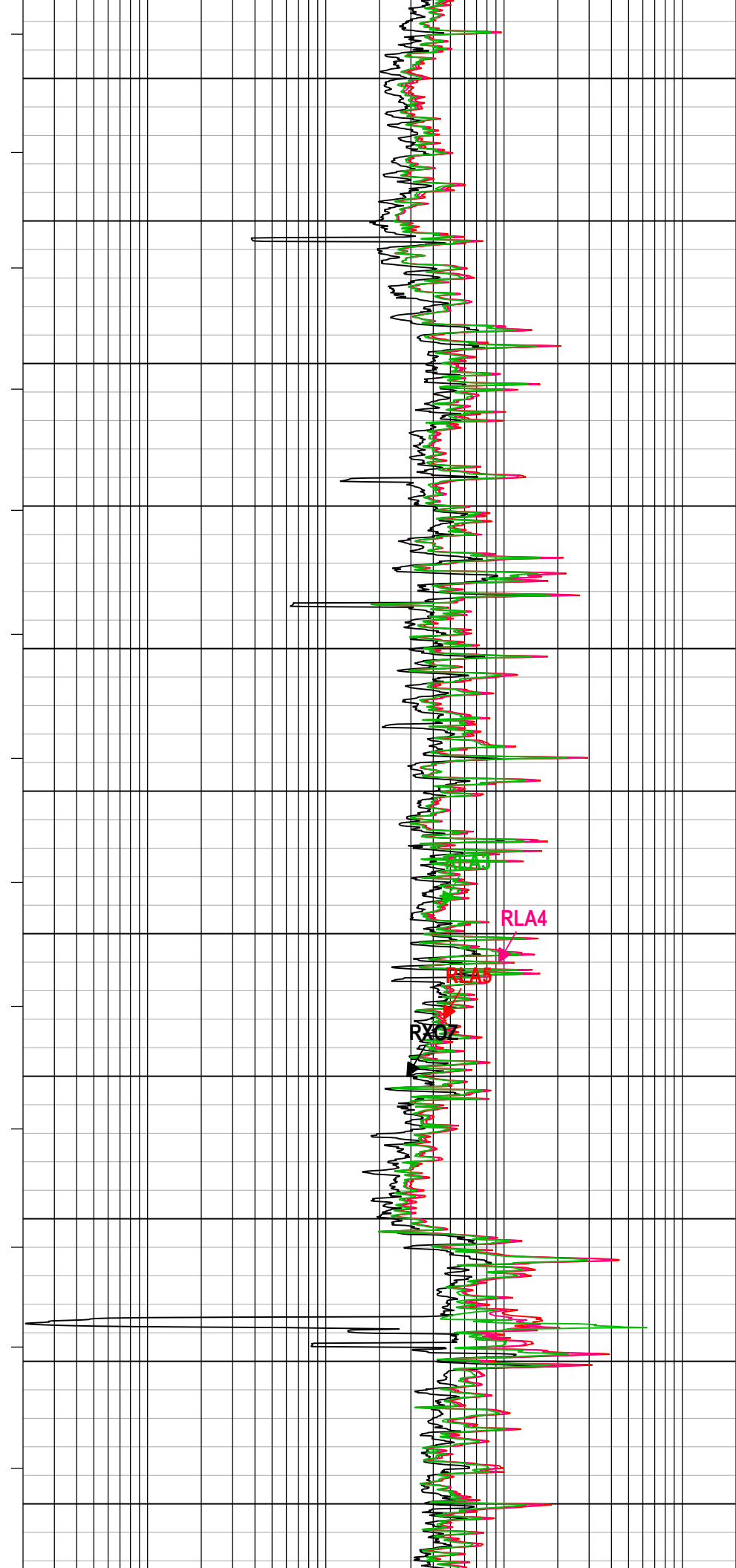
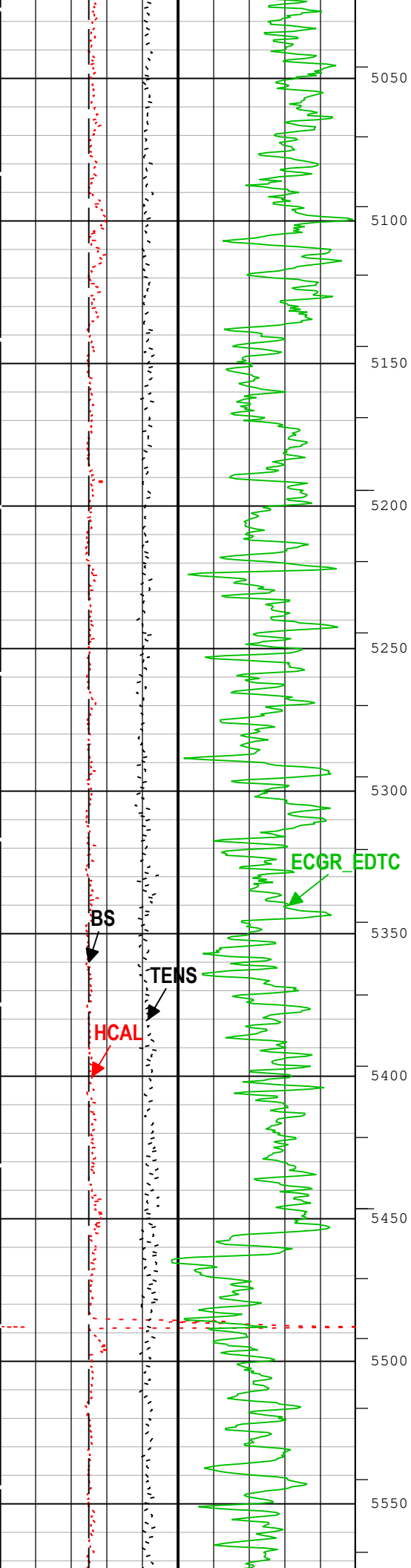


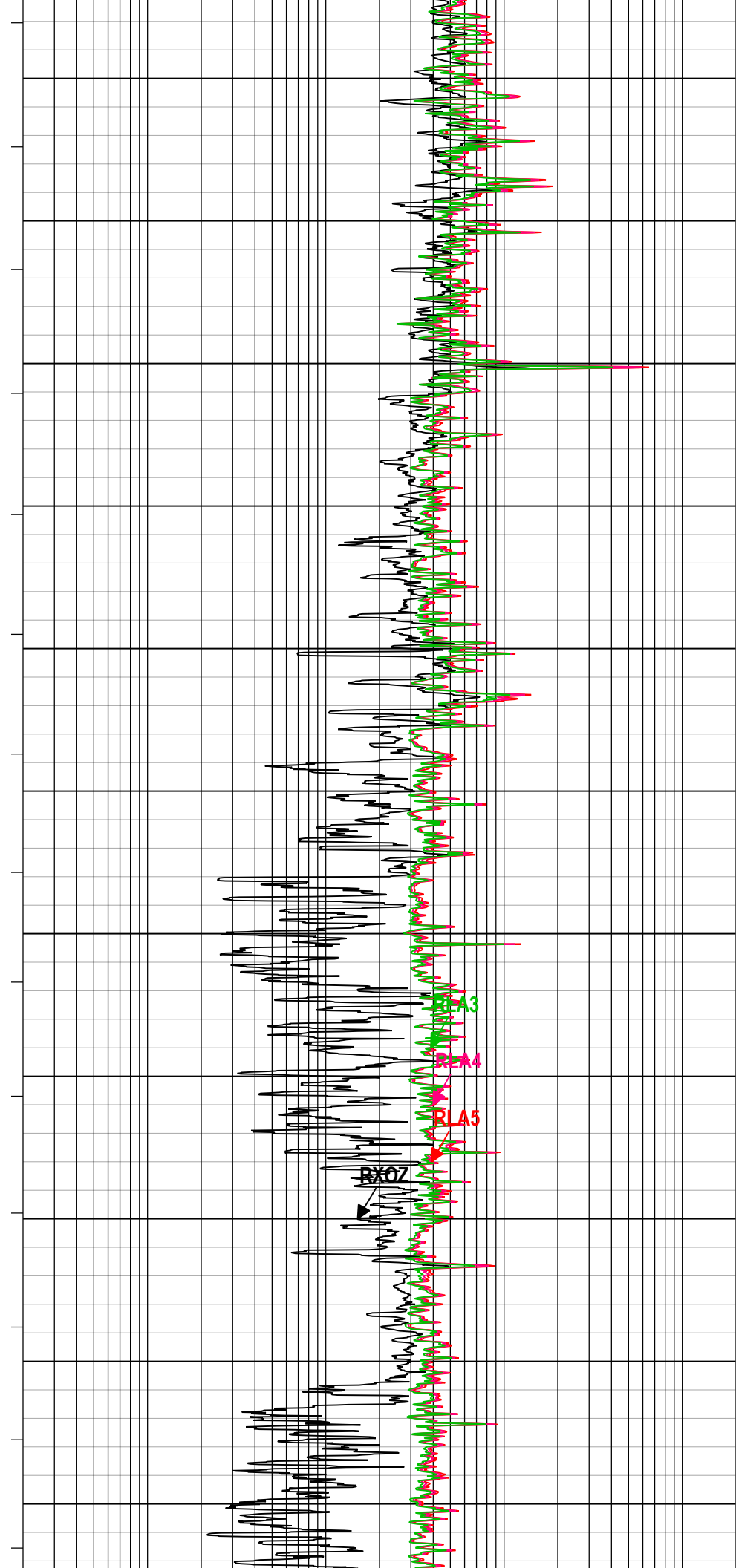
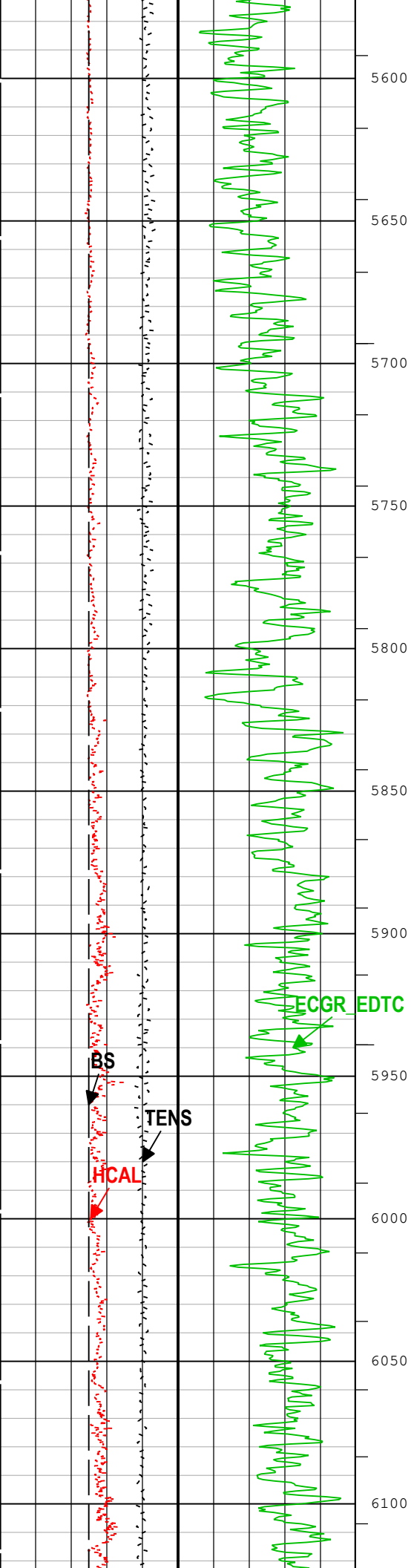


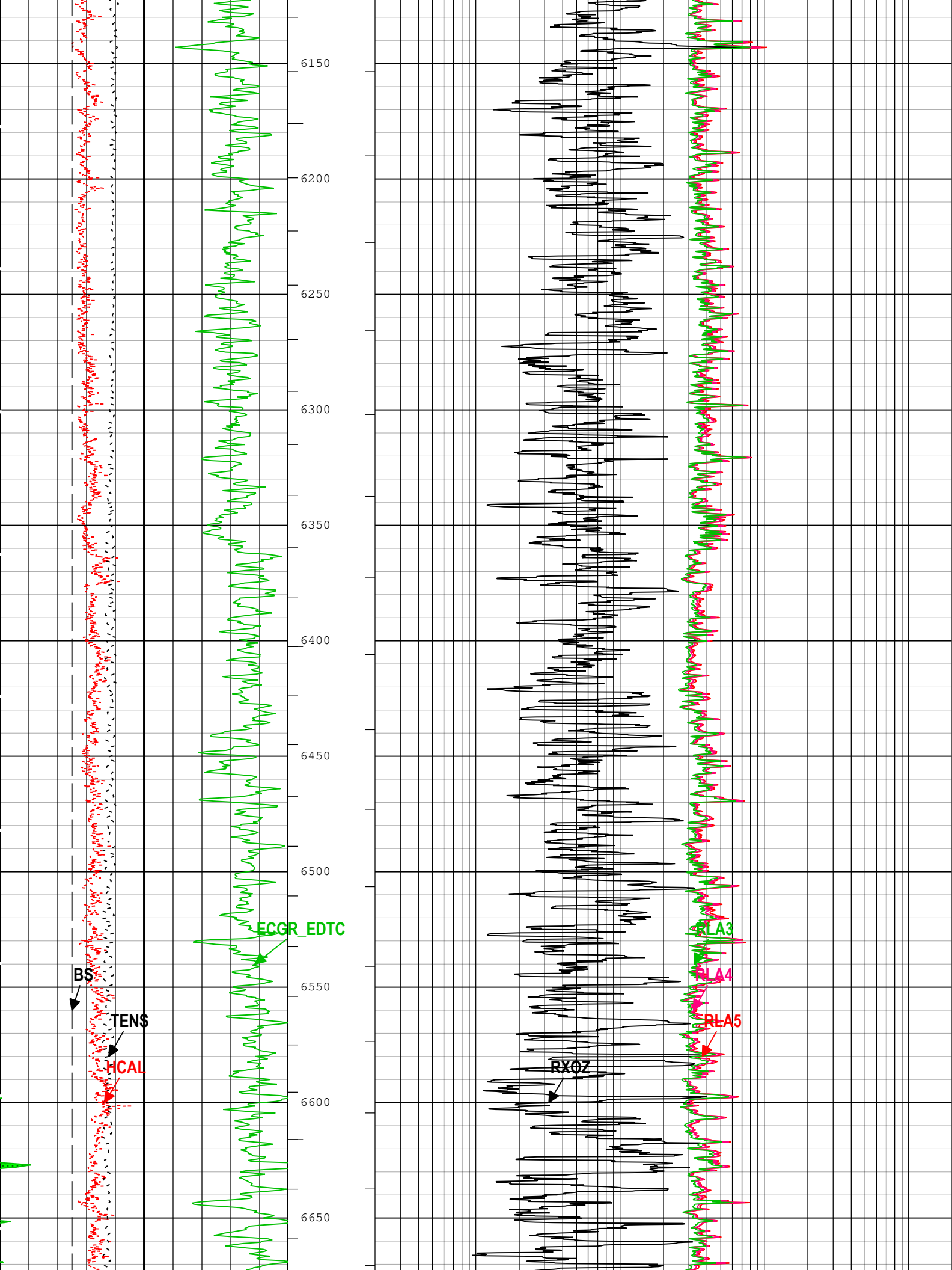


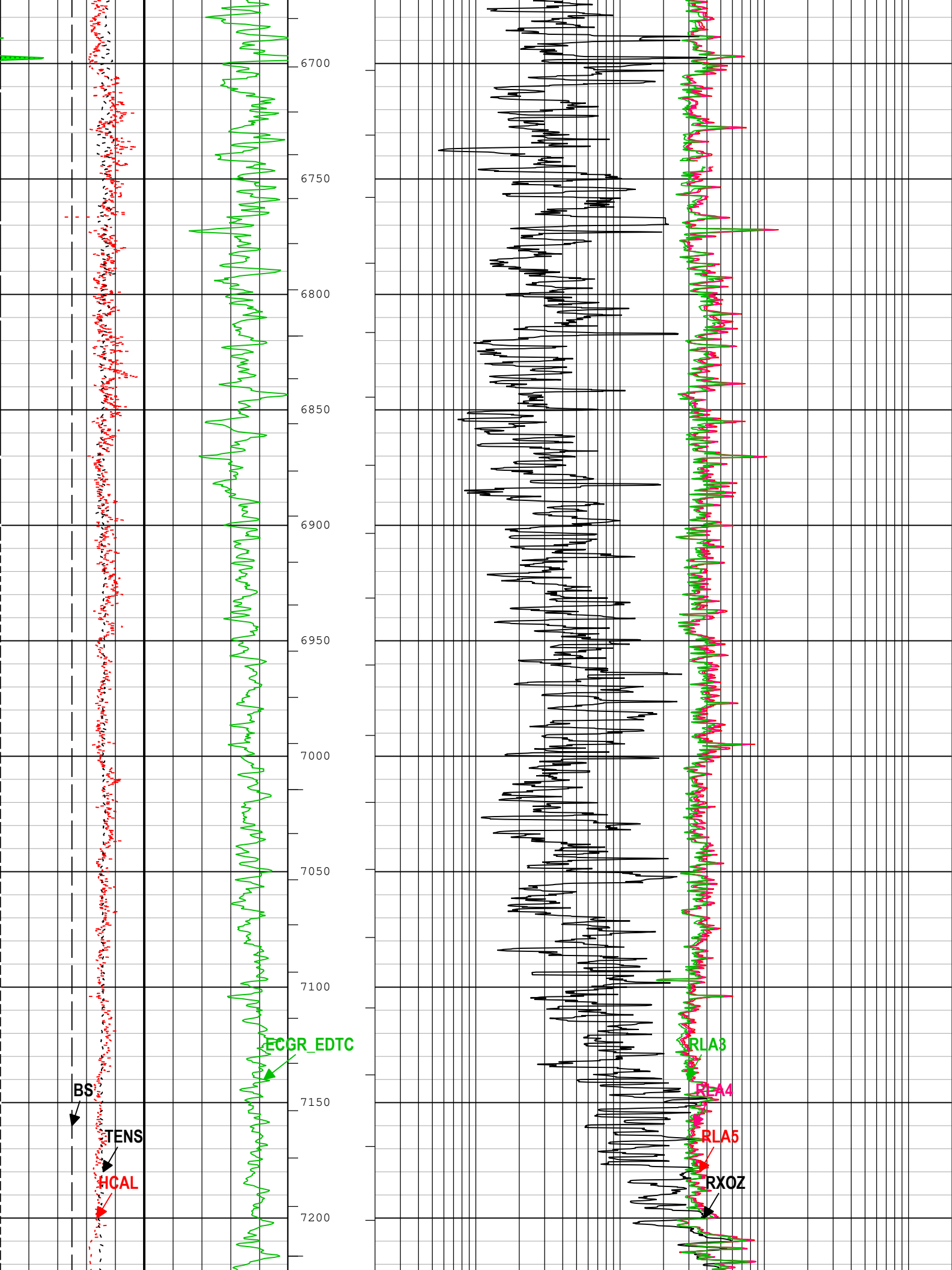


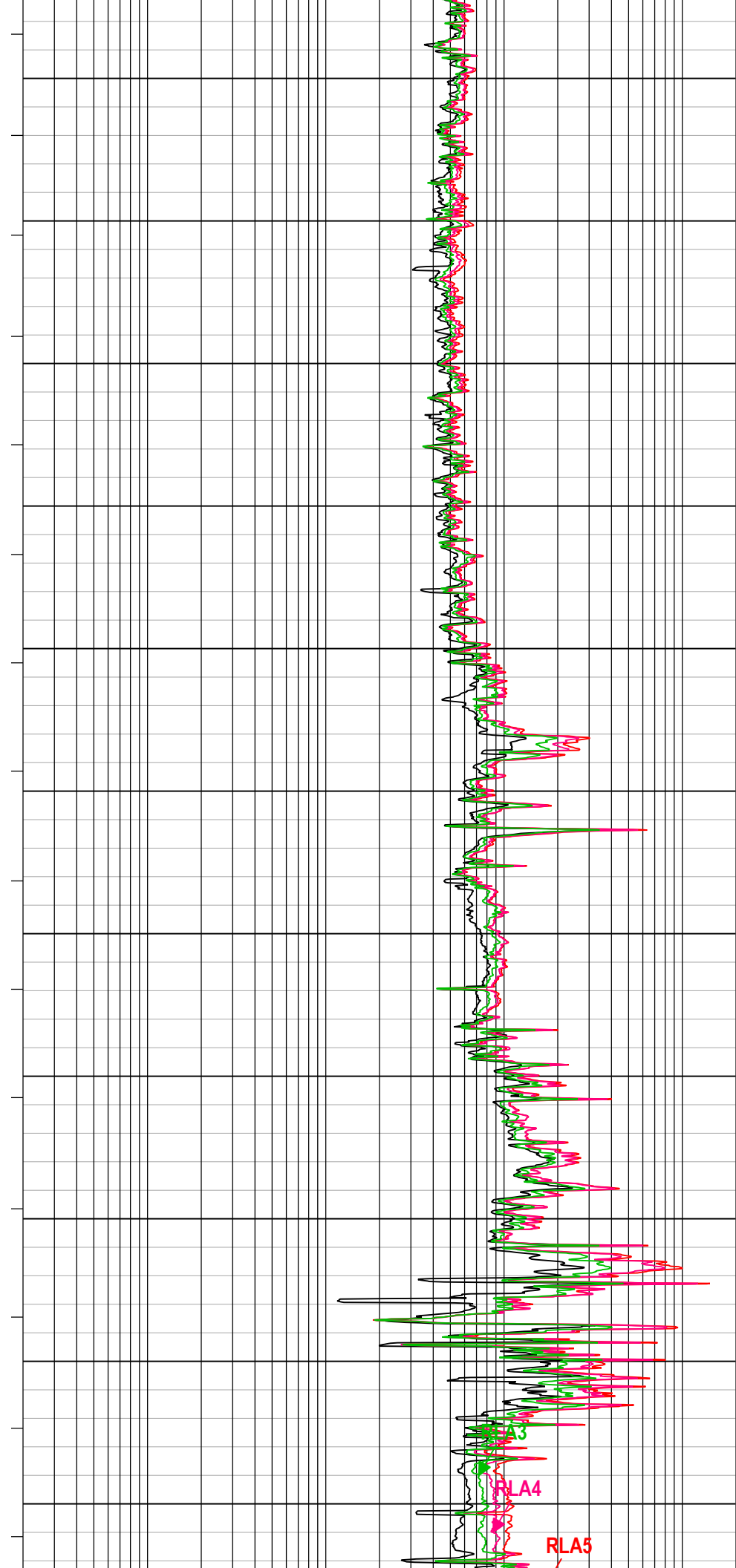
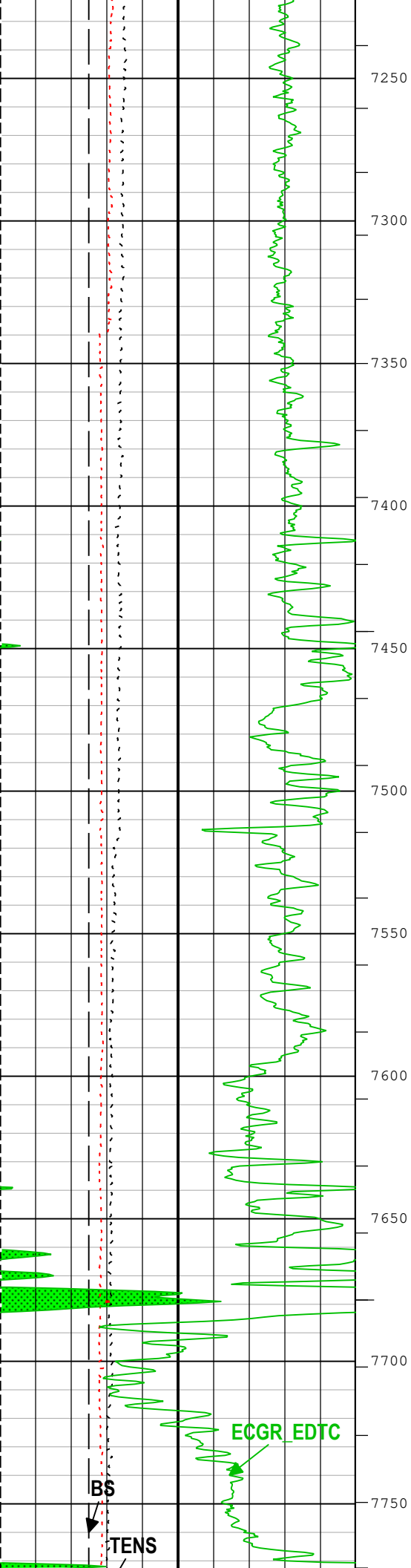


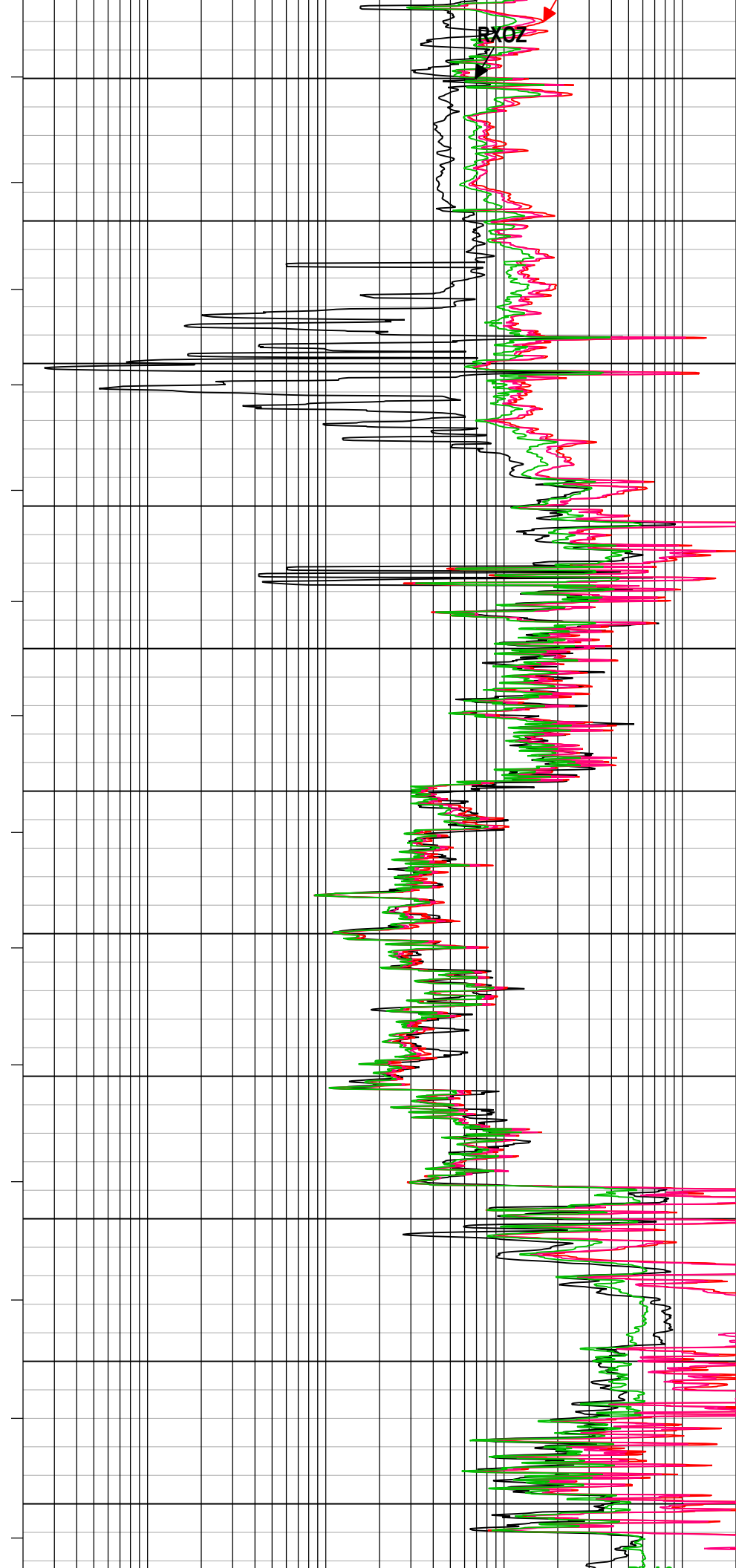
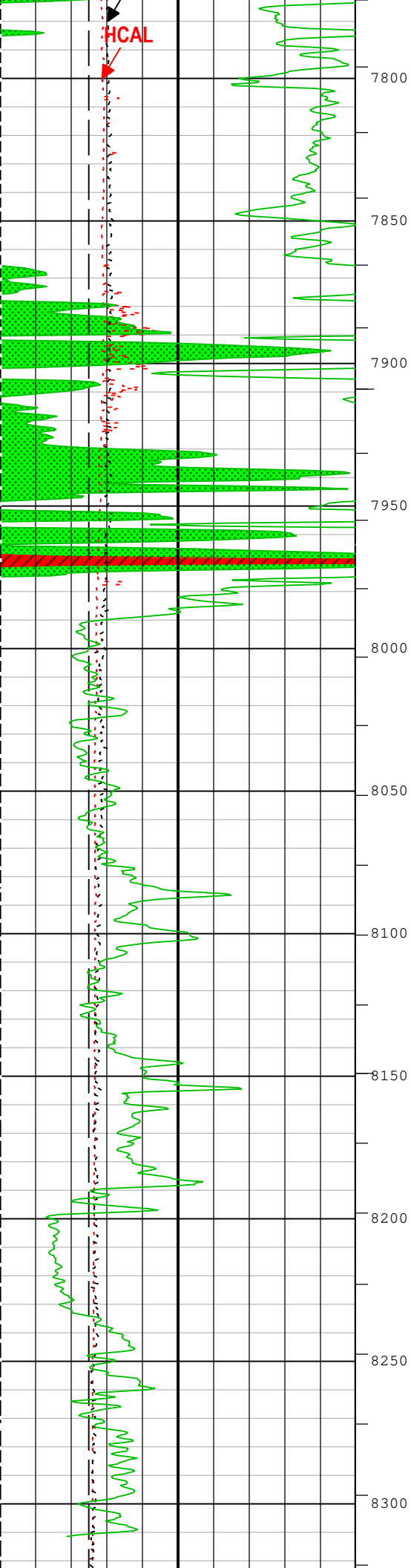


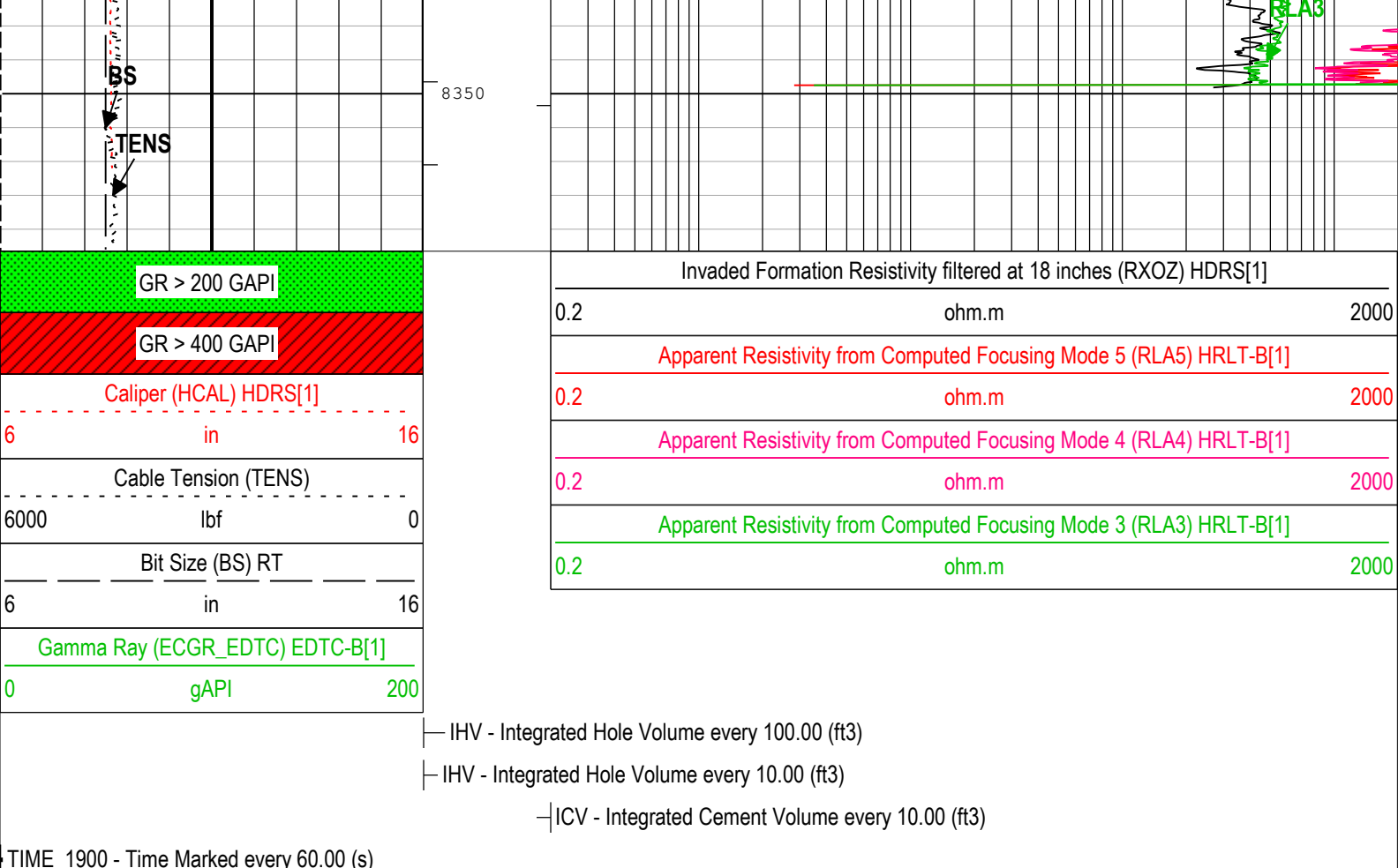












Description: Triple Combo standard resolution template for Platform Express Format: Log (BRADFORD HRLA) Index Scale: 2 in per 100 ft Index Unit: ft
Index Type: Measured Depth Creation Date: 15-Apr-2019 17:59:20

Channel Processing Parameters				
1A: Parameters				
Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.446	in
CBLO	Casing Bottom (Logger)	WLSESSION	2543	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	9.625	in
DFD	Drilling Fluid Density	Borehole	9.5	lbm/gal
FCD	Future Casing (Outer) Diameter	WLSESSION	5.5	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	MRES	
PROCRM	Mud Resistivity Select	HRLT-B	HRLT Compute	
KFAC_HRLT	HRLT Geometrical Factor Option	HRLT-B	Sonde	
PROCMSO	Mechanical Standoff Size	HRLT-B	1.5	in
PROCSP0	Sonde Position	HRLT-B	Eccentered	

1ADepth Zoned Parameters			
Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	2525	2543
BS	8.5	2543	8396.5

All depth are actual.

Tool Control Parameters

1A: Parameters

Parameter	Description	Tool	Value	Unit
HRGD_BOARD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	1800	ft/h

Main Pass

MAIN PASS 5"

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
IHV	Integrated Hole Volume	GCSE_UP_PASS, GCSE_DOWN_PASS:1A	2499.44	ft3
ICV	Integrated Cement Volume	GCSE_UP_PASS, GCSE_DOWN_PASS:1A, FCD	1533.73	ft3

Software Version

Acquisition System	Version
Maxwell 2019	9.0.106845.3100

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[2]:Up	Up	8266.17 ft	8396.38 ft	15-Apr-2019 7:56:45 AM	15-Apr-2019 8:17:05 AM	ON	2.60 ft	Yes
1A	Log[8]:Up	Up	8021.42 ft	8407.18 ft	15-Apr-2019 9:44:04 AM	15-Apr-2019 10:51:09 AM	ON	3.12 ft	Yes
1A	Log[9]:Up	Up	2500.63 ft	8126.68 ft	15-Apr-2019 10:57:49 AM	15-Apr-2019 4:11:56 PM	ON	4.17 ft	Yes

All depths are referenced to toolstring zero

Log

Company:North East Natural Energy LLC Well:Boggess 17H
Main Pass:S012

Description: Triple Combo standard resolution template for Platform Express Format: Log (BRADFORD HRLA) Index Scale: 5 in per 100 ft Index Unit: ft
Index Type: Measured Depth Creation Date: 15-Apr-2019 17:59:25

—ICV - Integrated Cement Volume every 10.00 (ft3)
—IHV - Integrated Hole Volume every 10.00 (ft3)
—IHV - Integrated Hole Volume every 100.00 (ft3)

TIME_1900 - Time Marked every 60.00 (s)

GR > 200 GAPI

GR > 400 GAPI

Caliper (HCAL) HDRS[1]
6 in 16

Cable Tension (TENS)
6000 lbf 0

Bit Size (BS) RT
6 in 16

Gamma Ray (ECGR_EDTC) EDTC-B[1]
0 gAPI 200



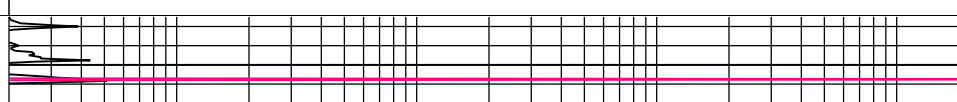
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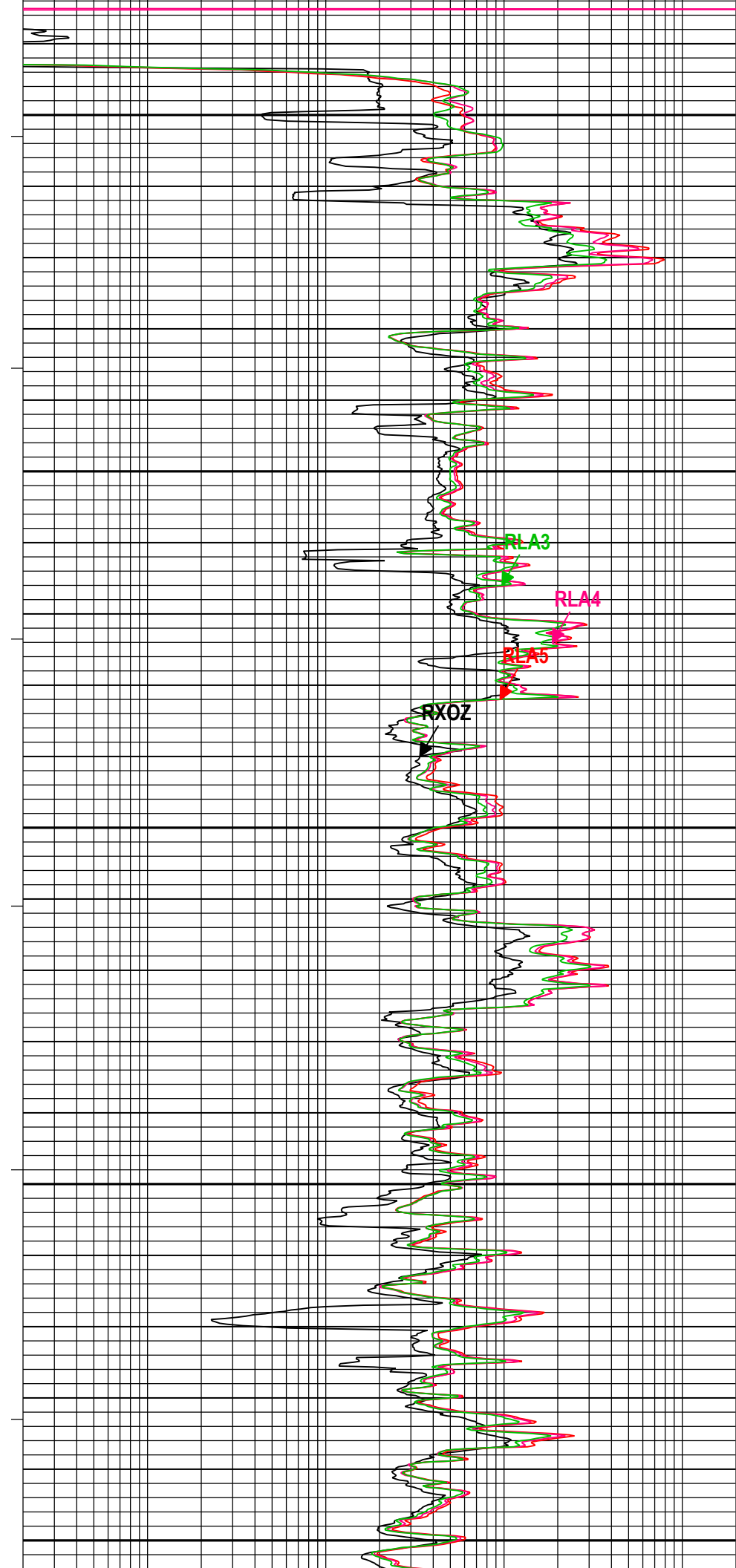
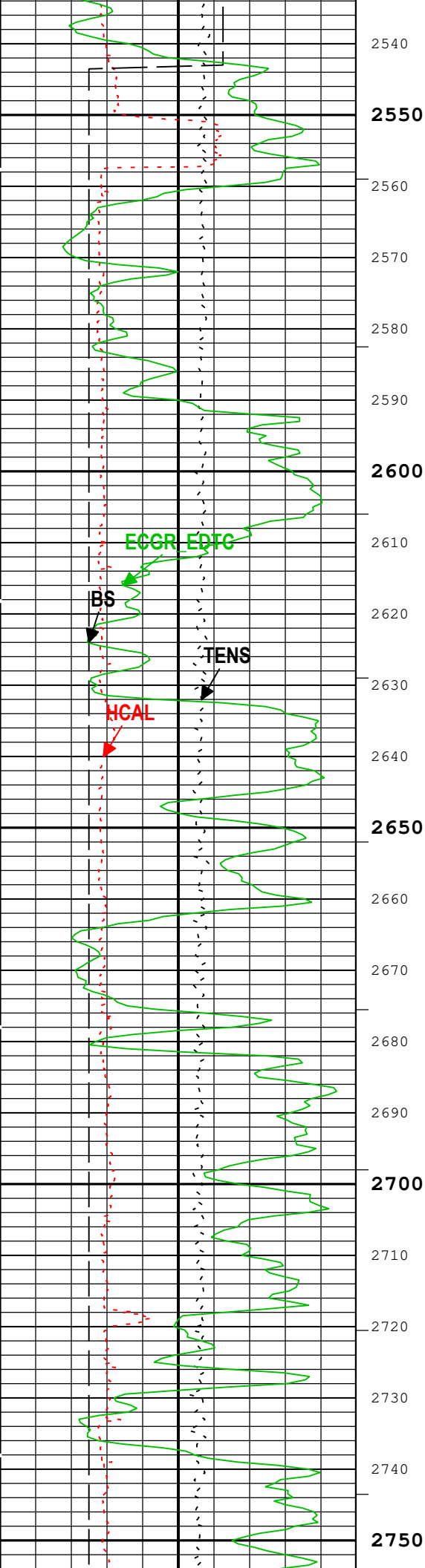
Invaded Formation Resistivity filtered at 18 inches (RXOZ) HDRS[1]
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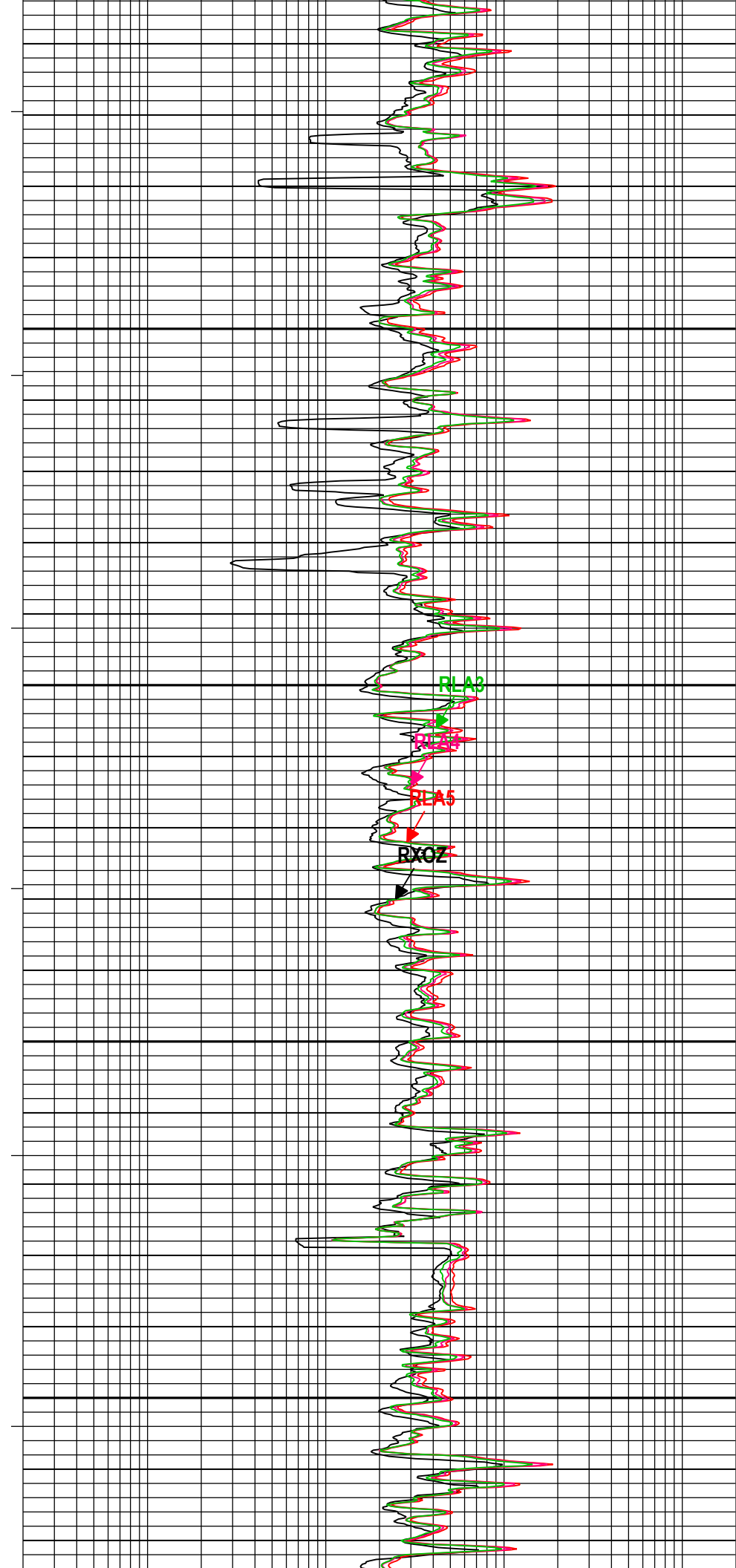
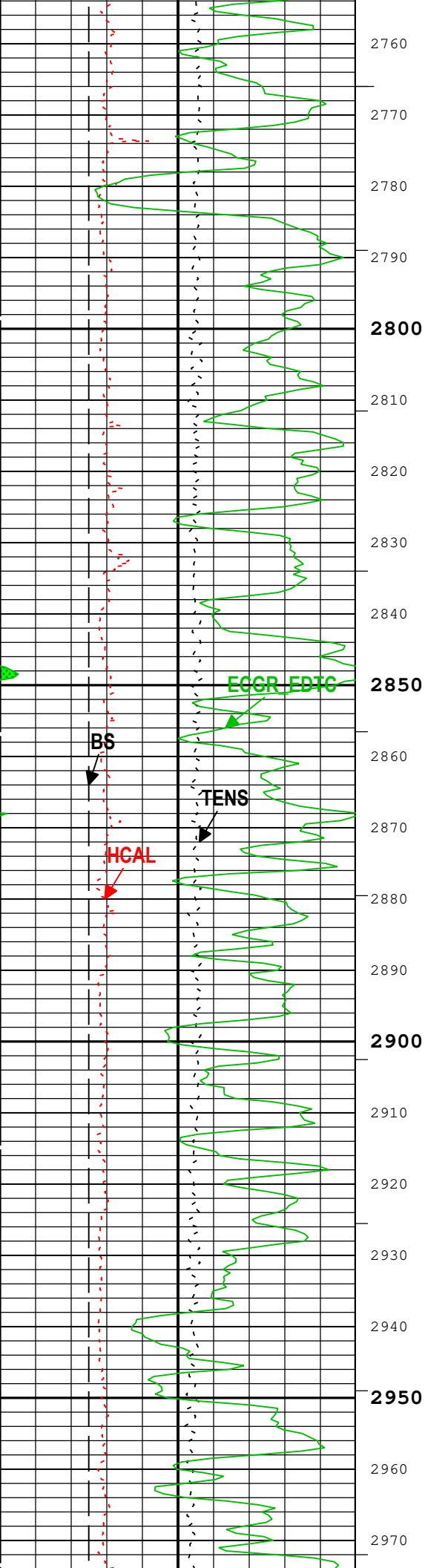
Apparent Resistivity from Computed Focusing Mode 5 (RLA5) HRLT-B[1]
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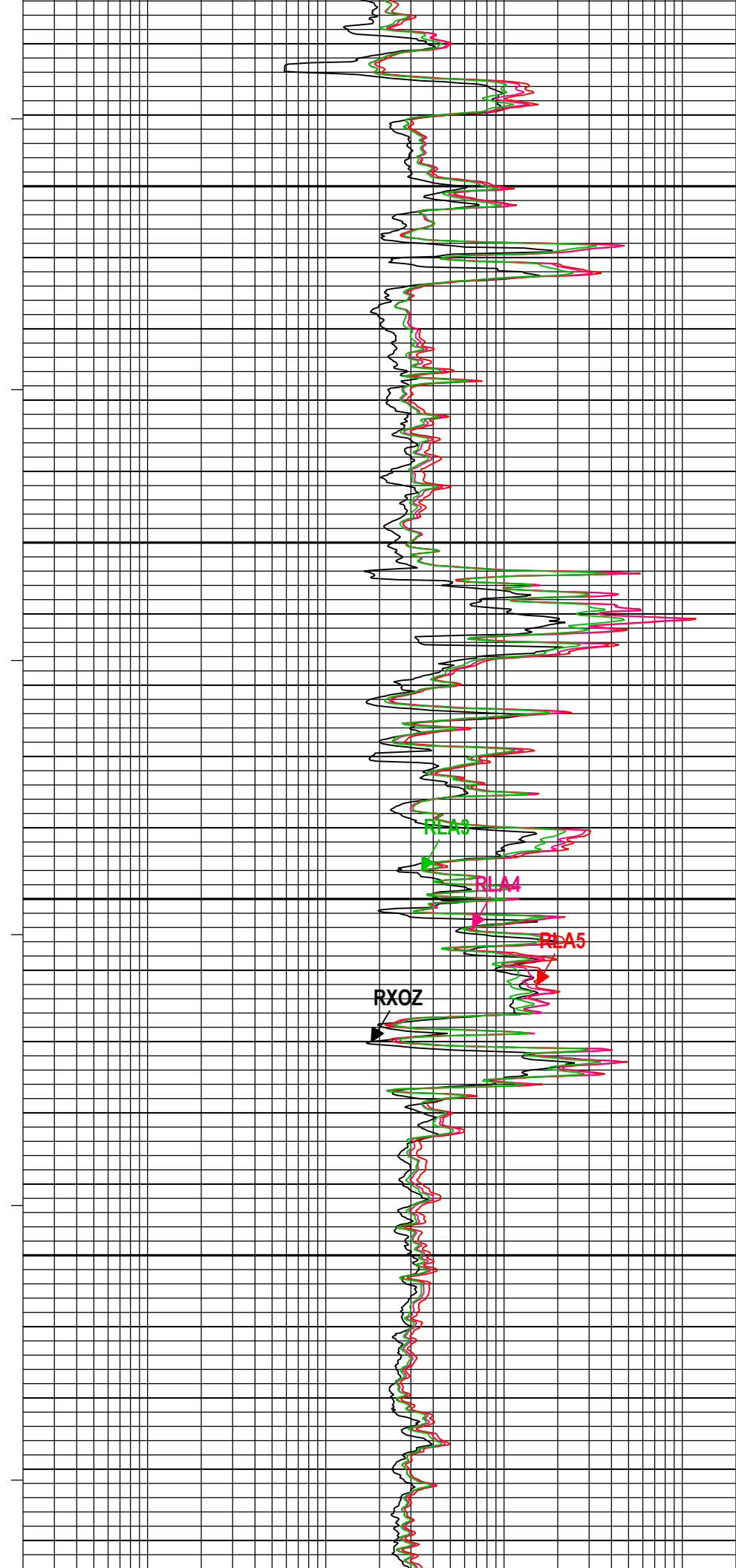
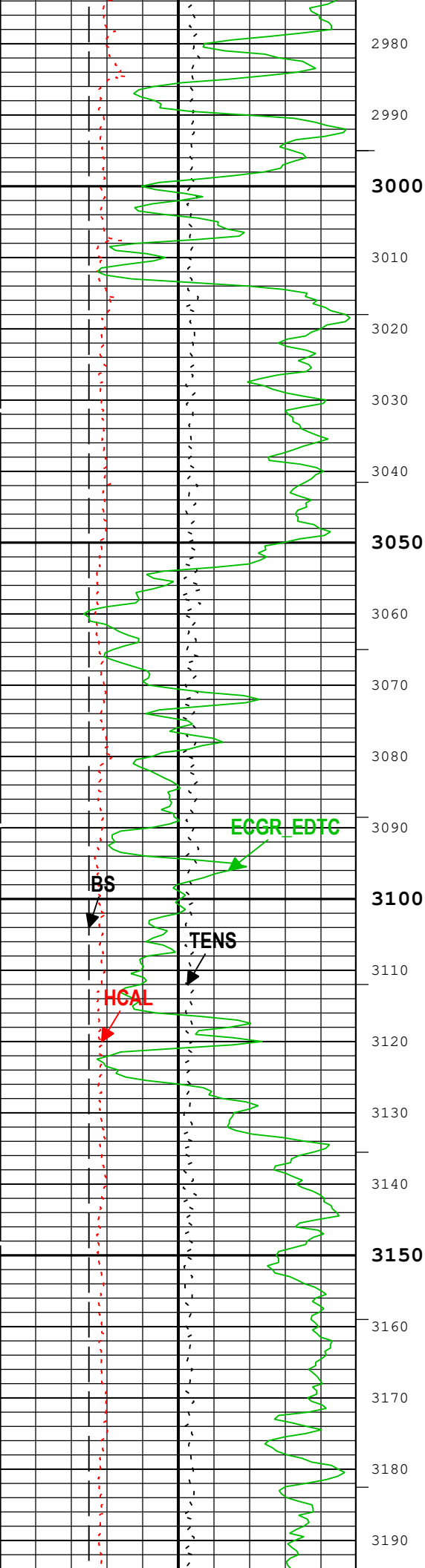
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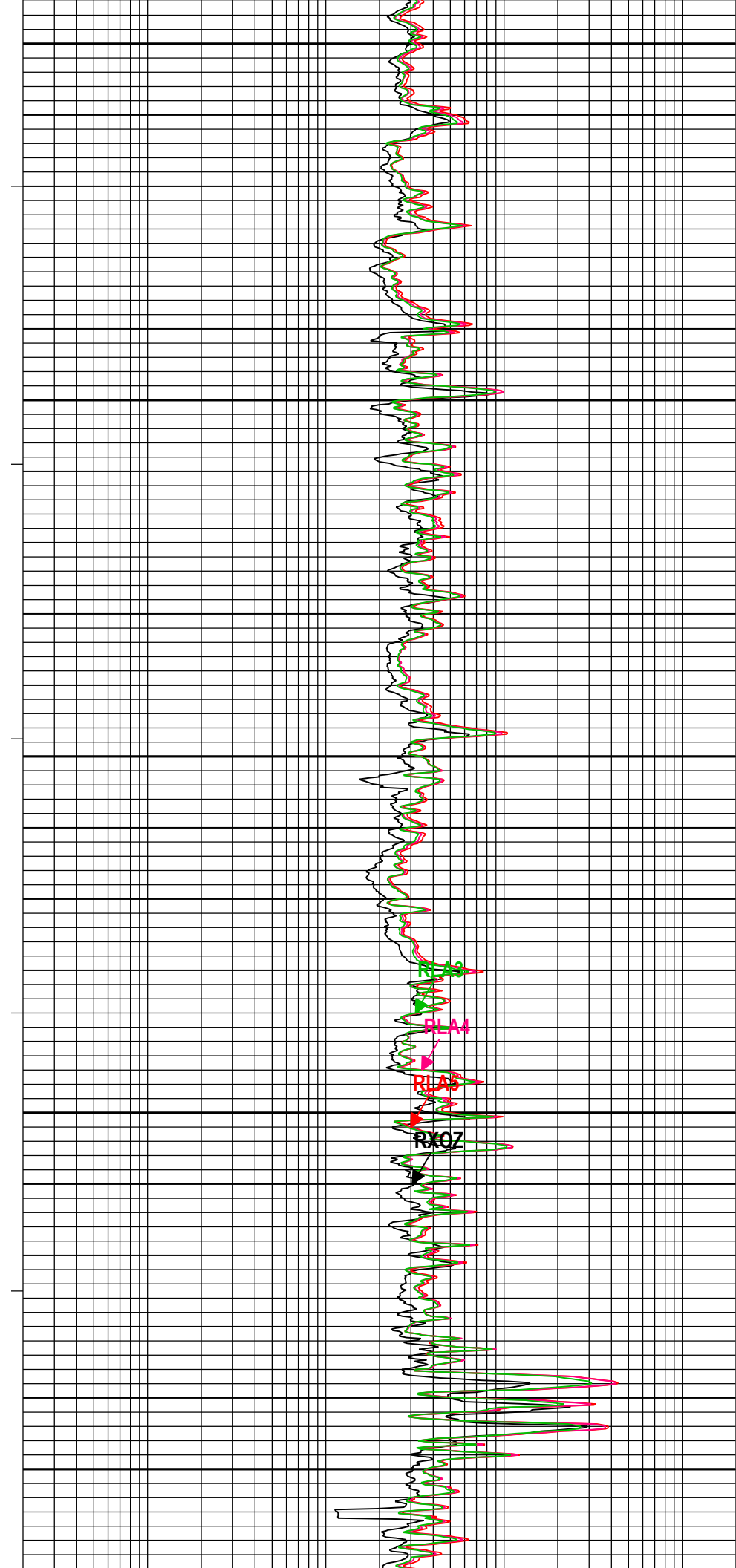
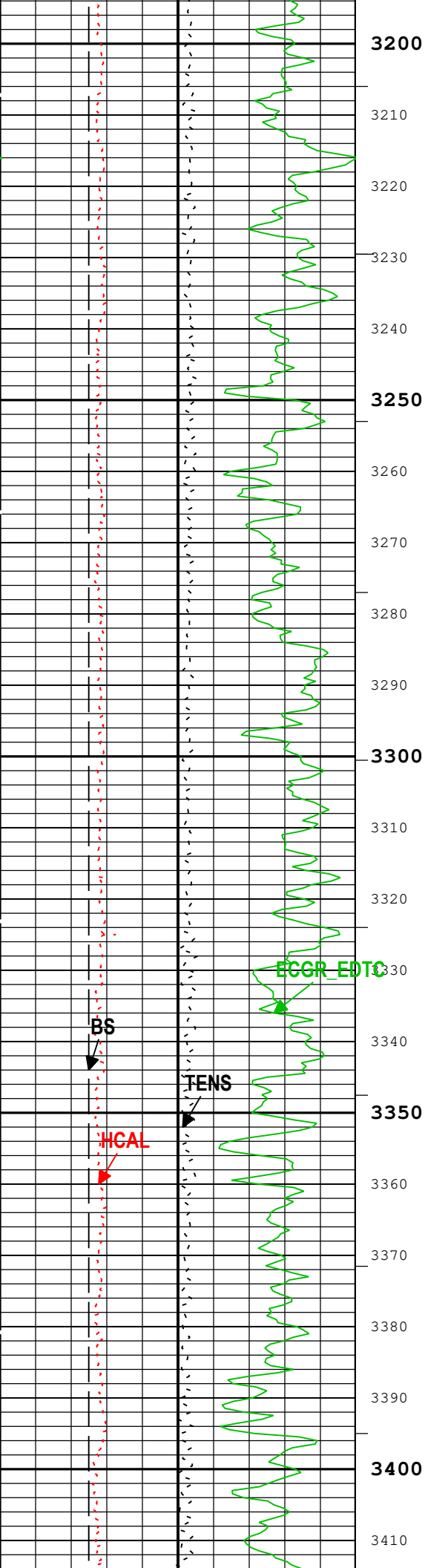
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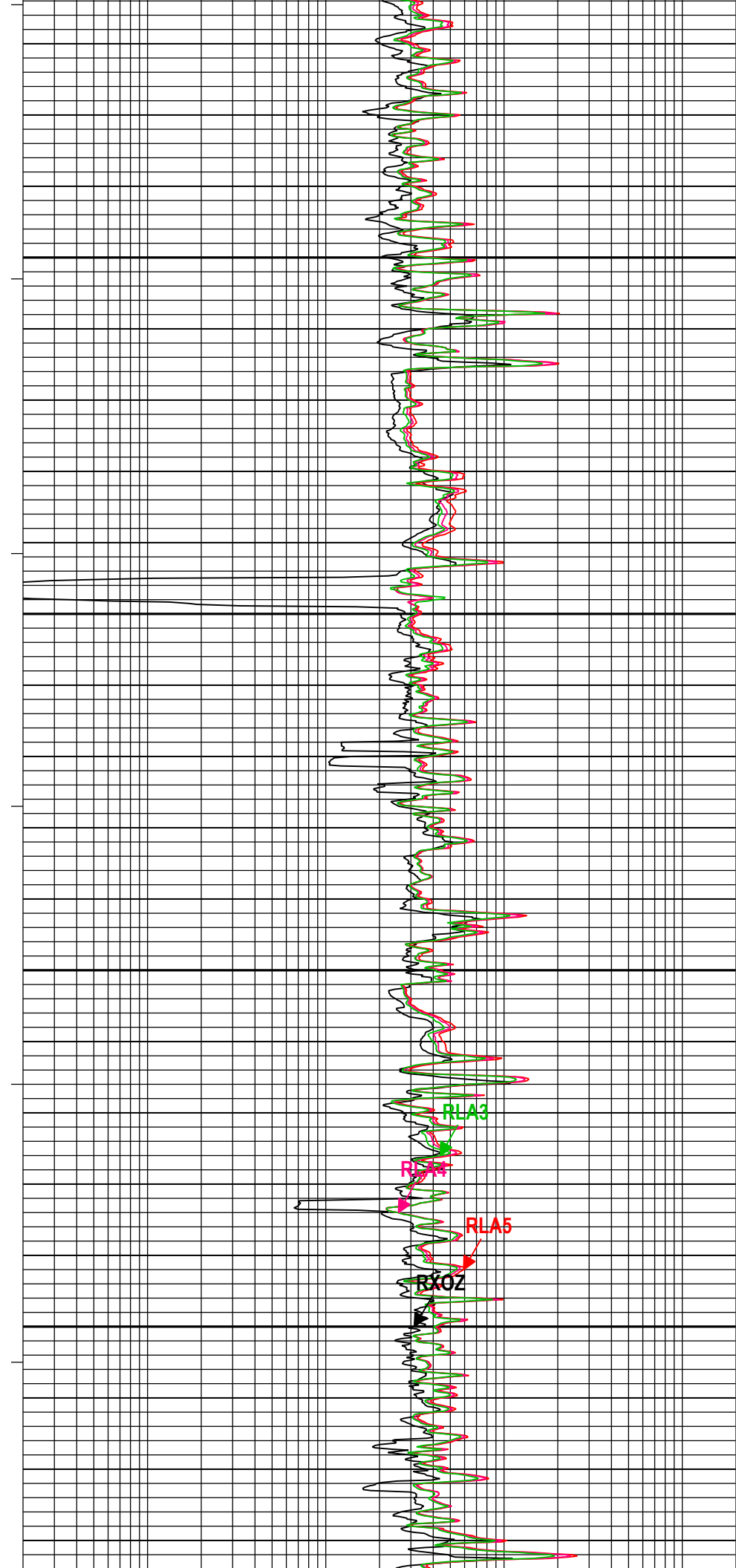
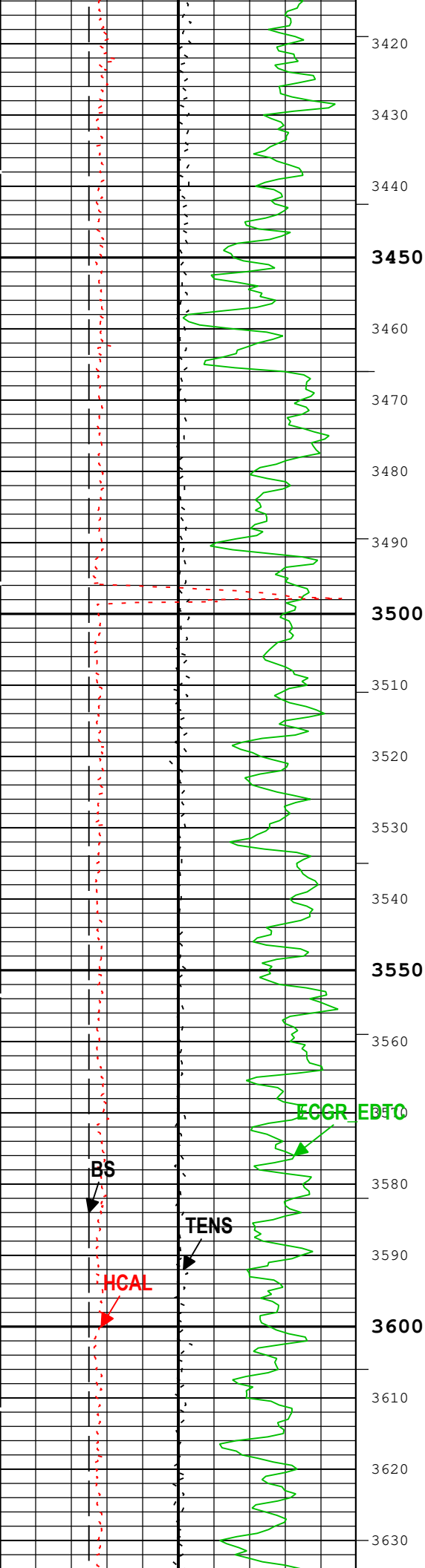


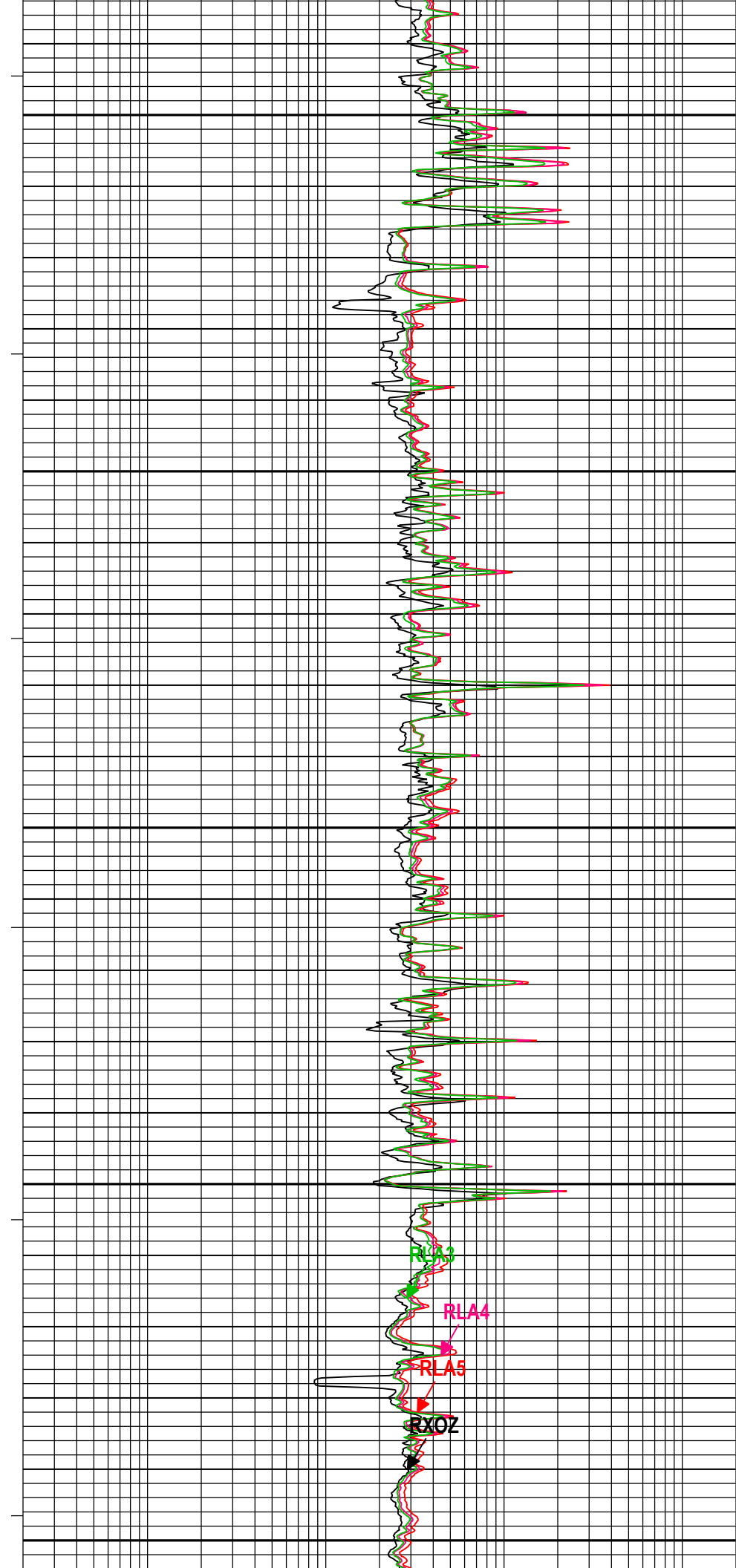
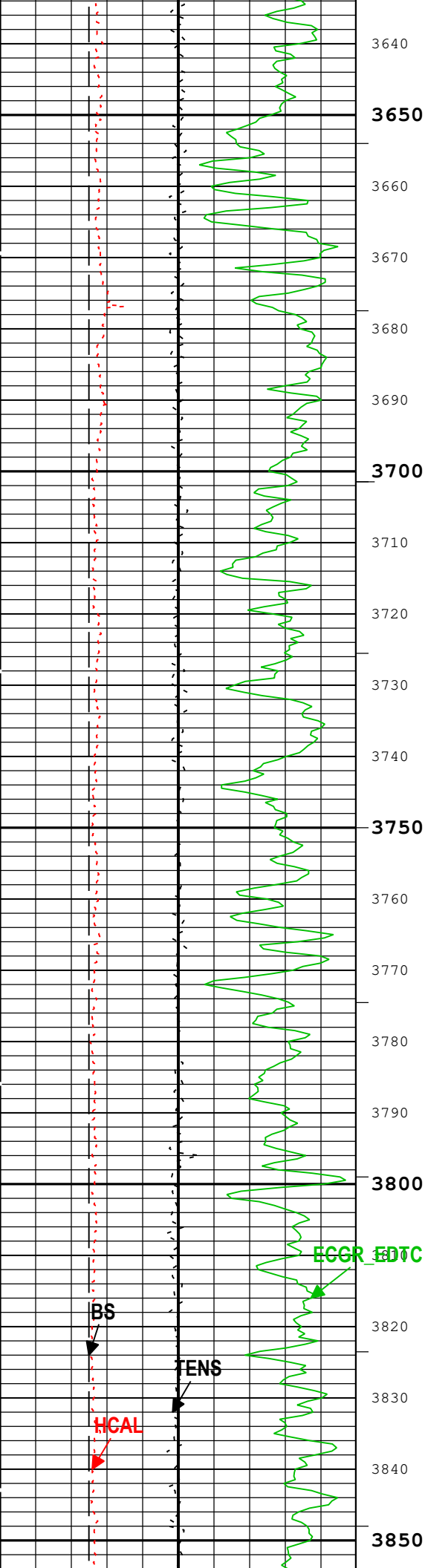


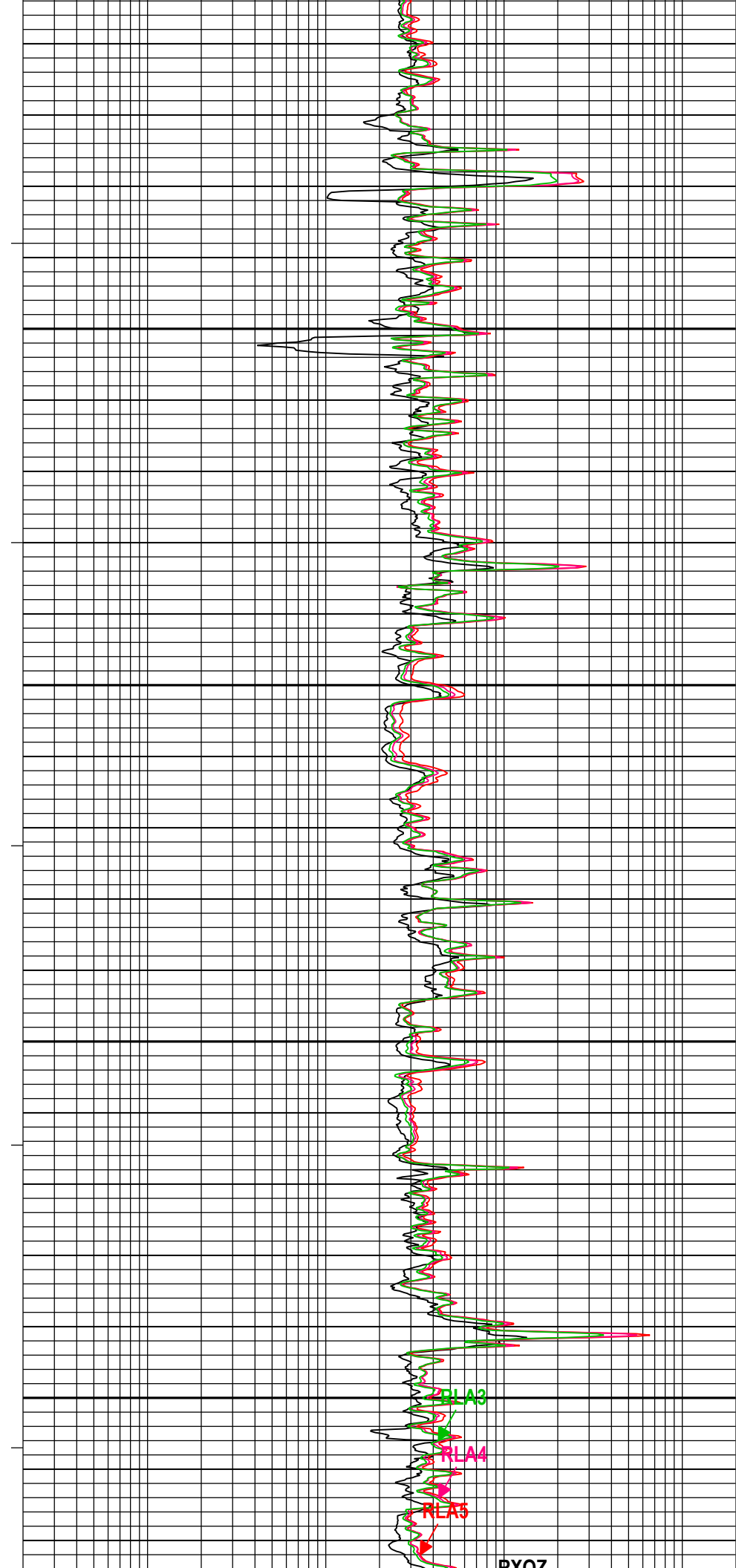
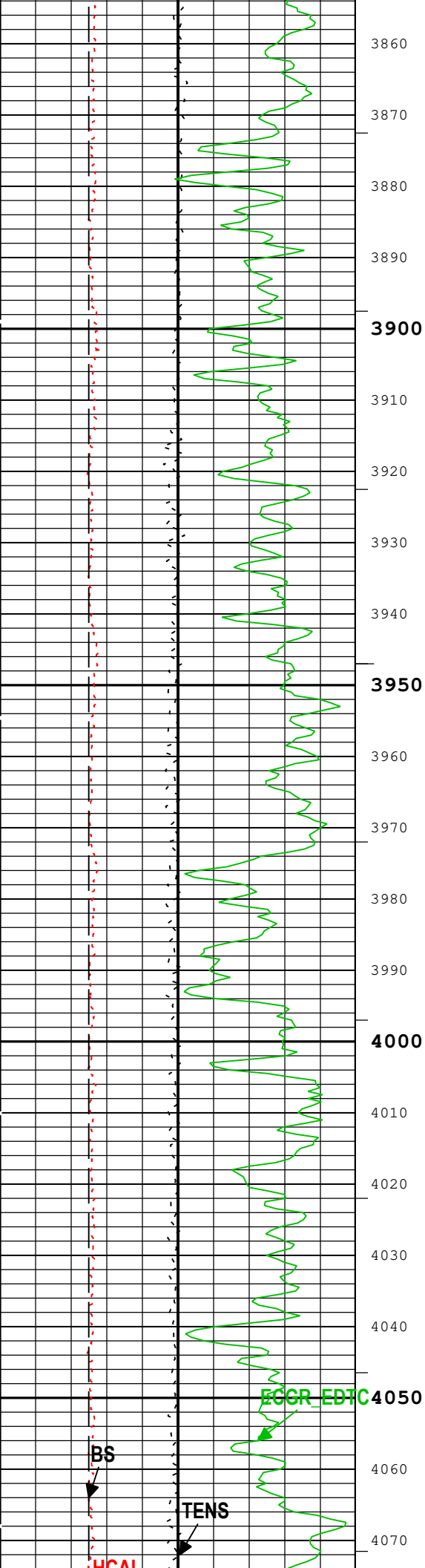


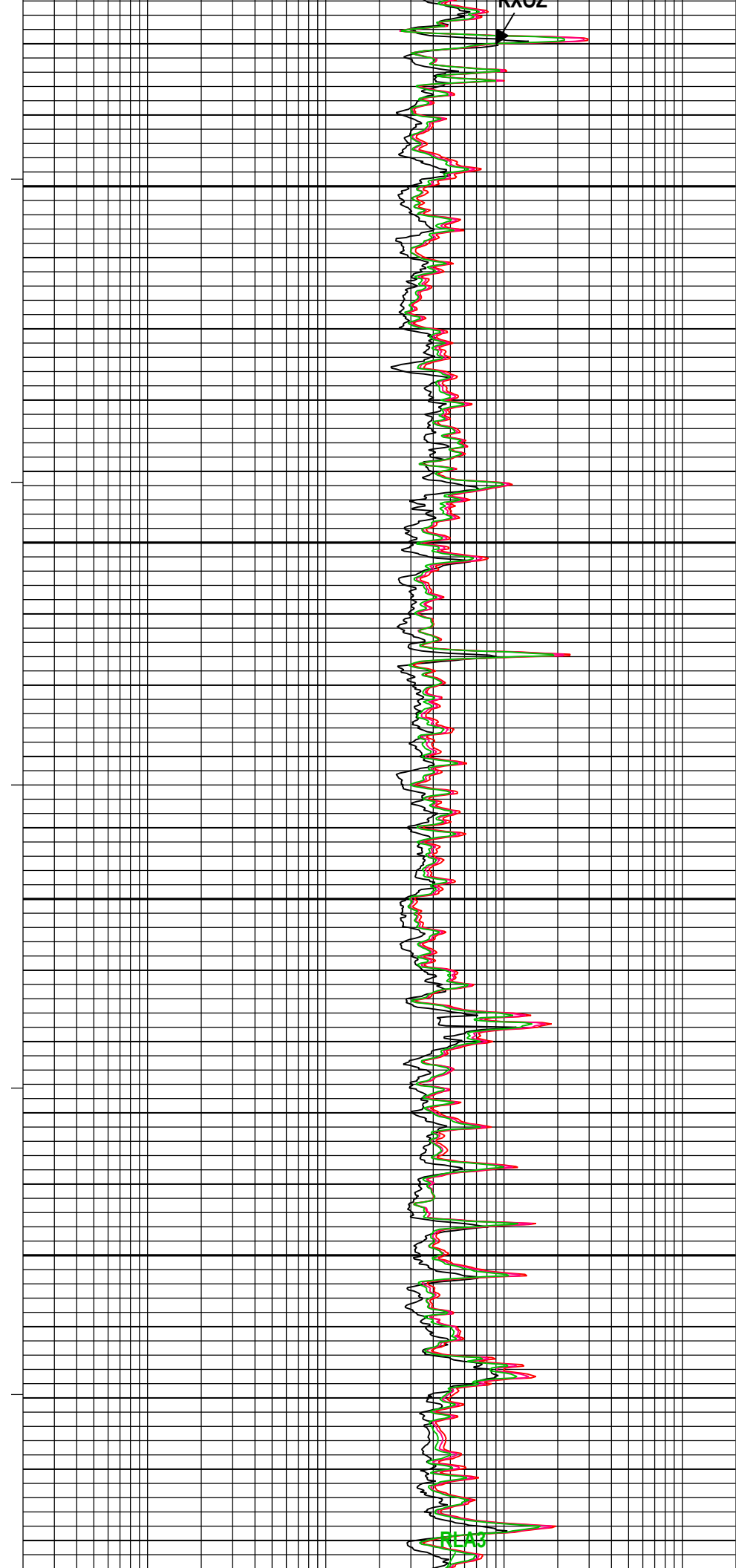
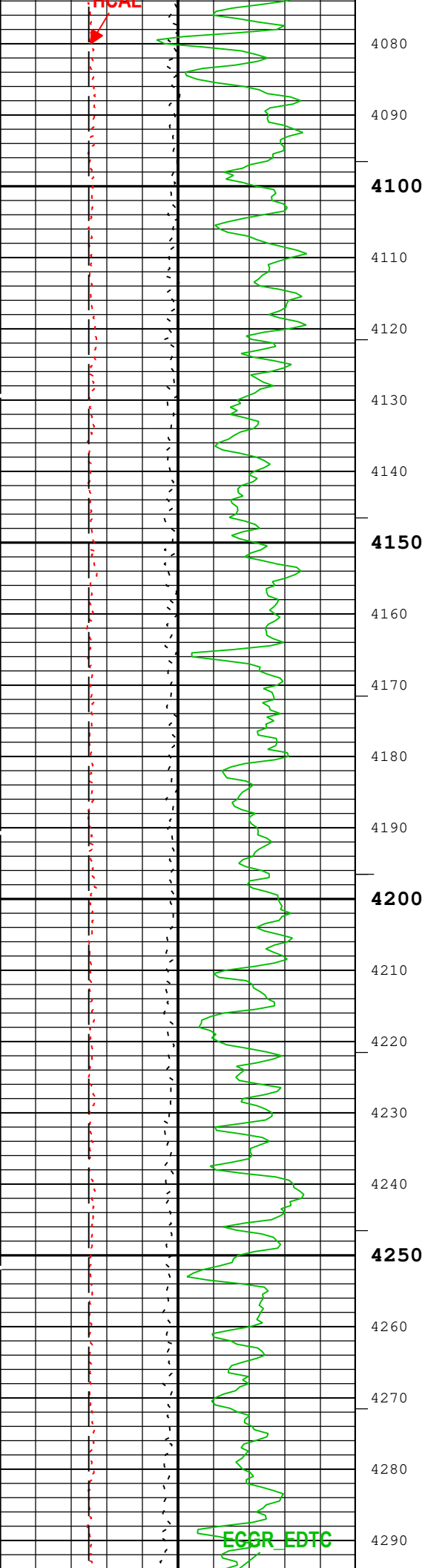


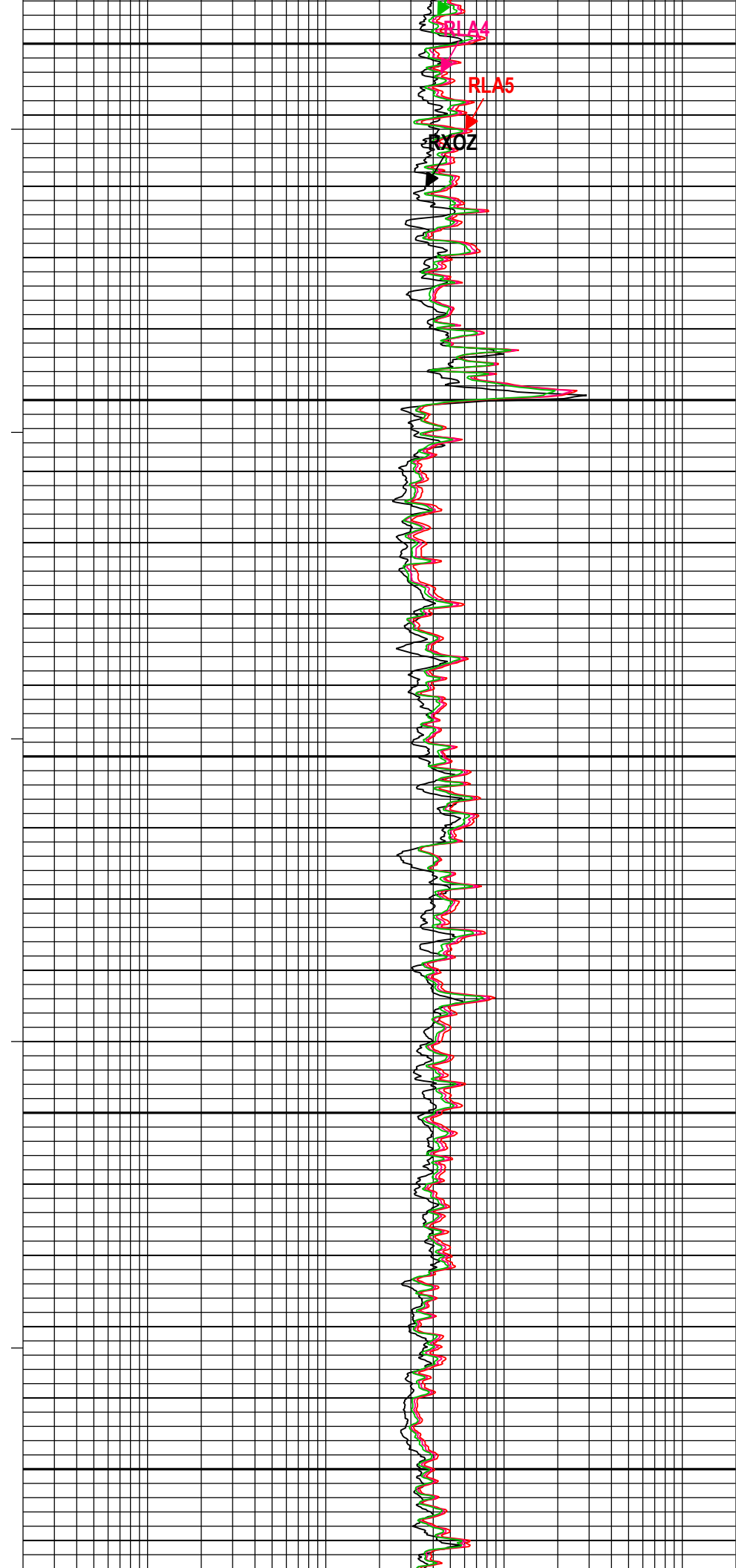
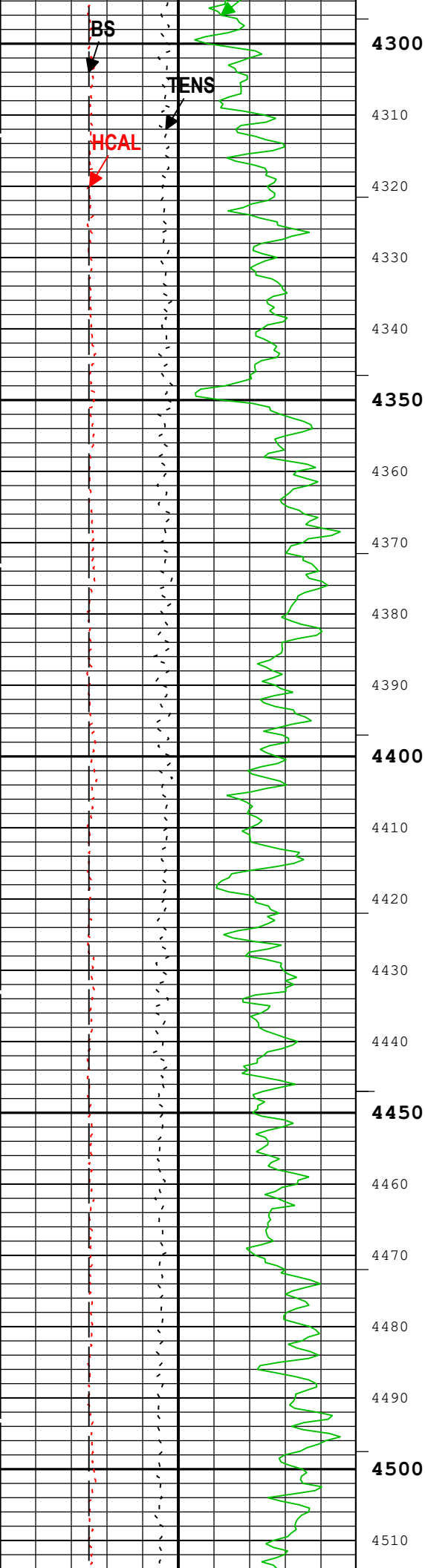


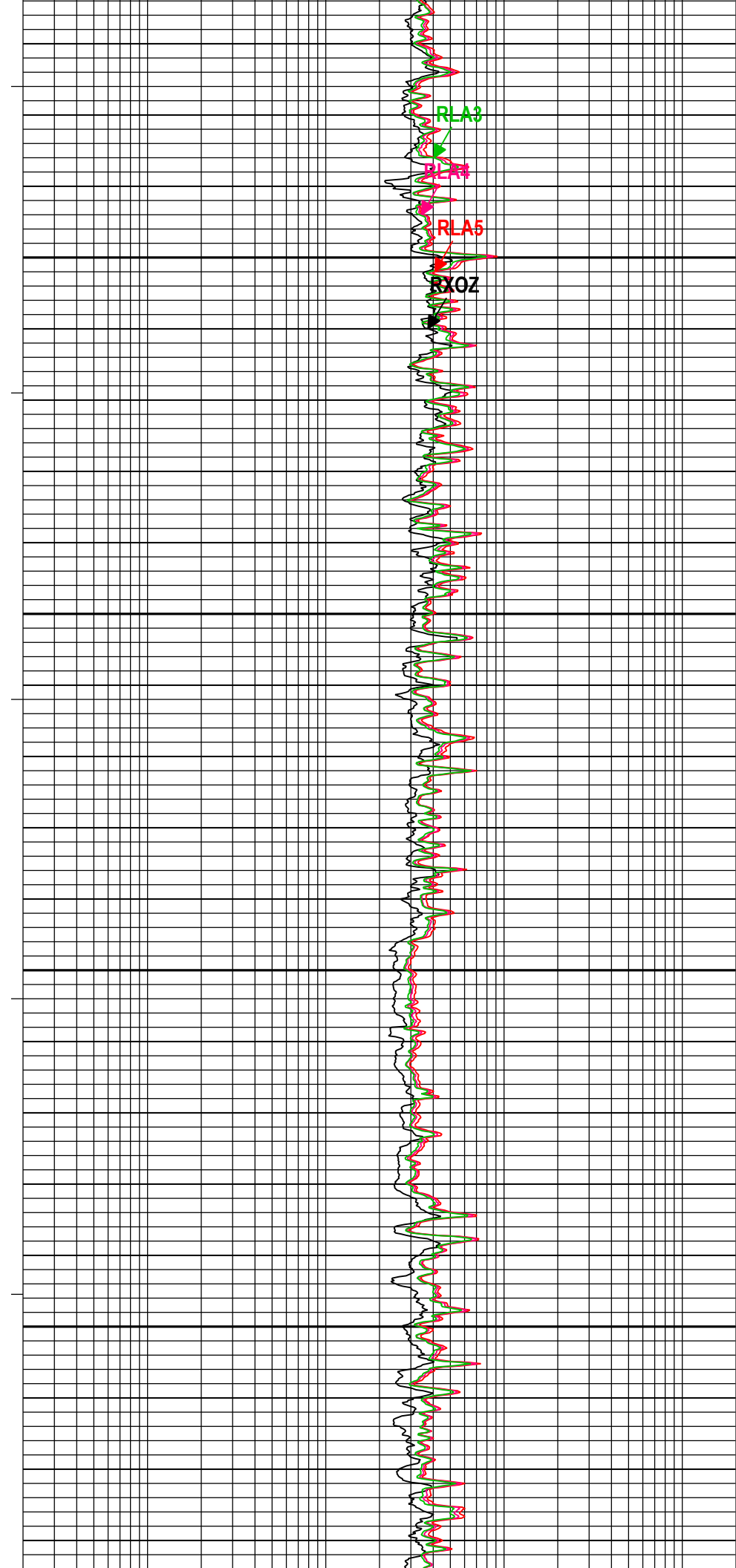
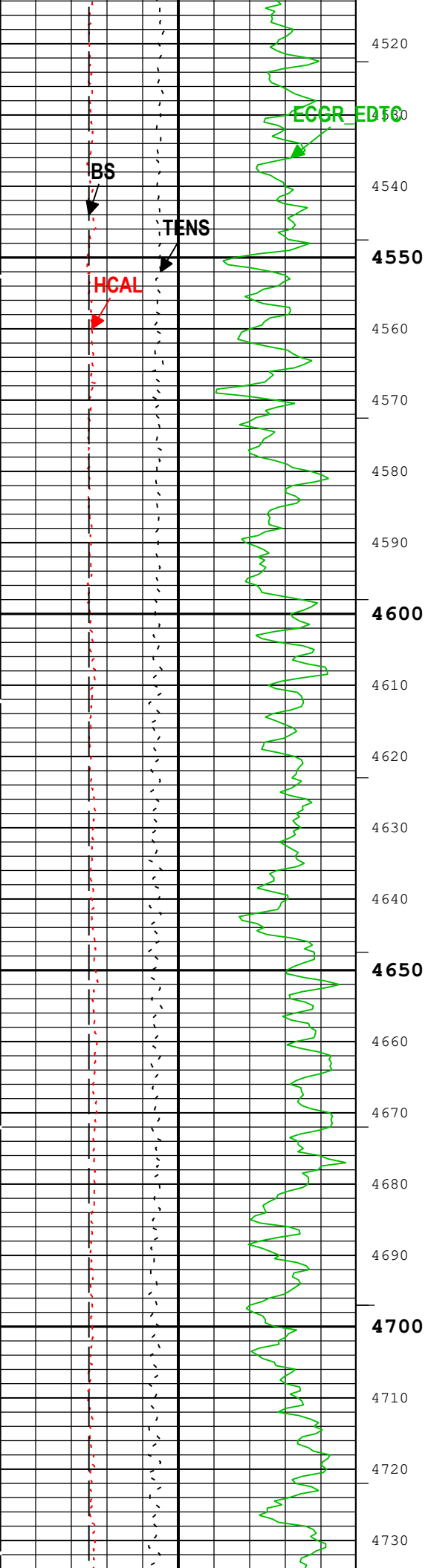


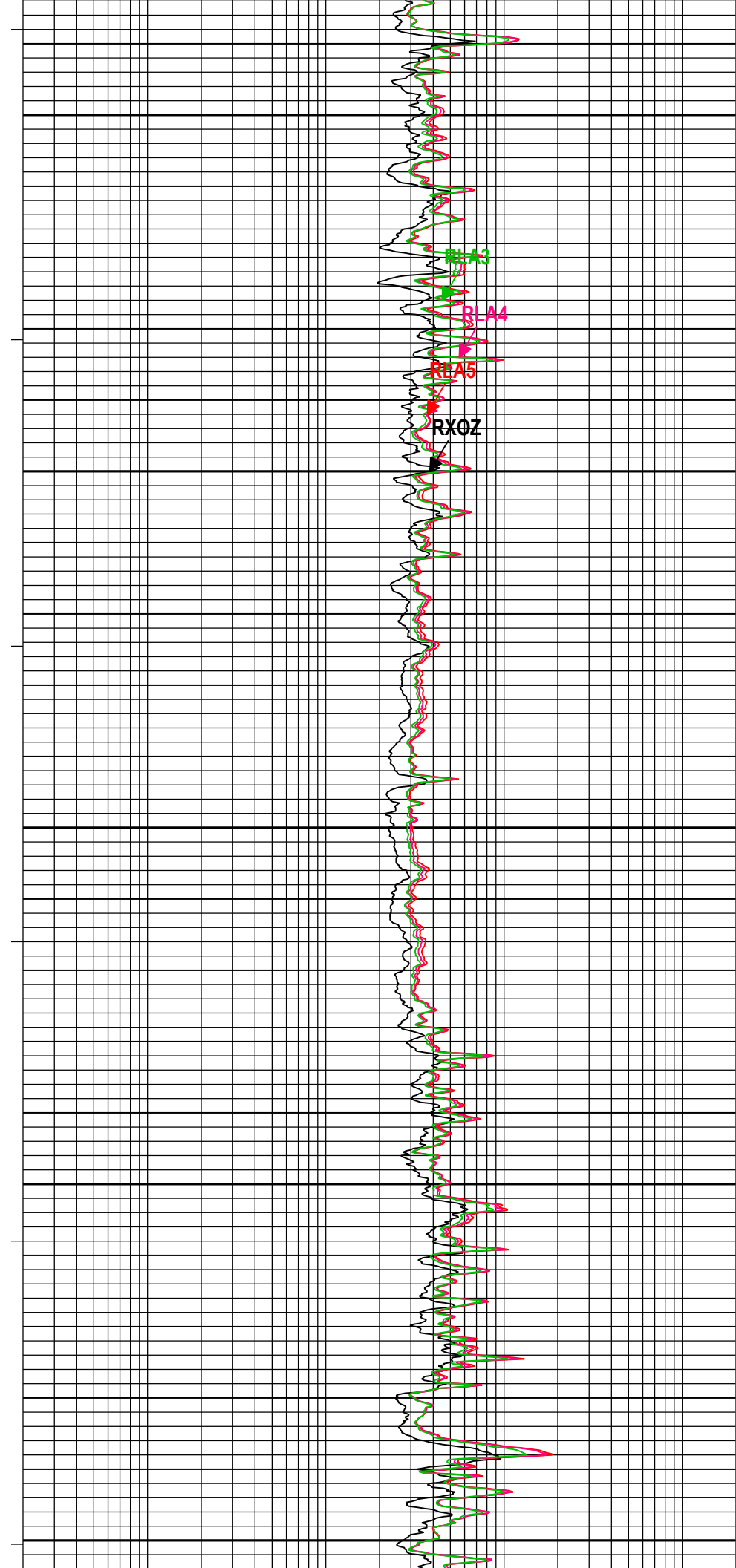
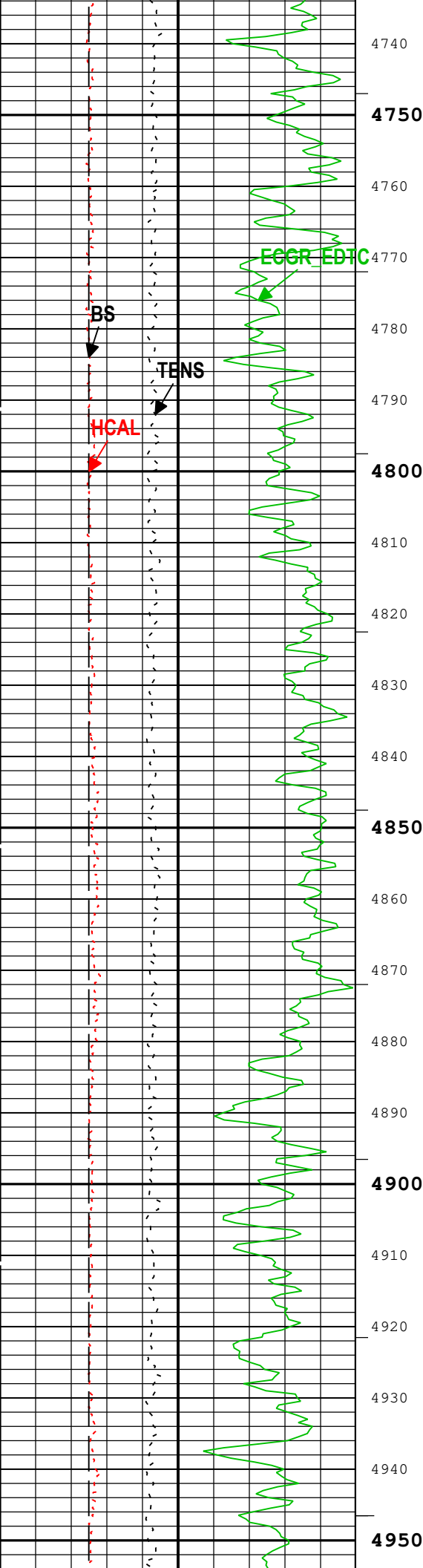


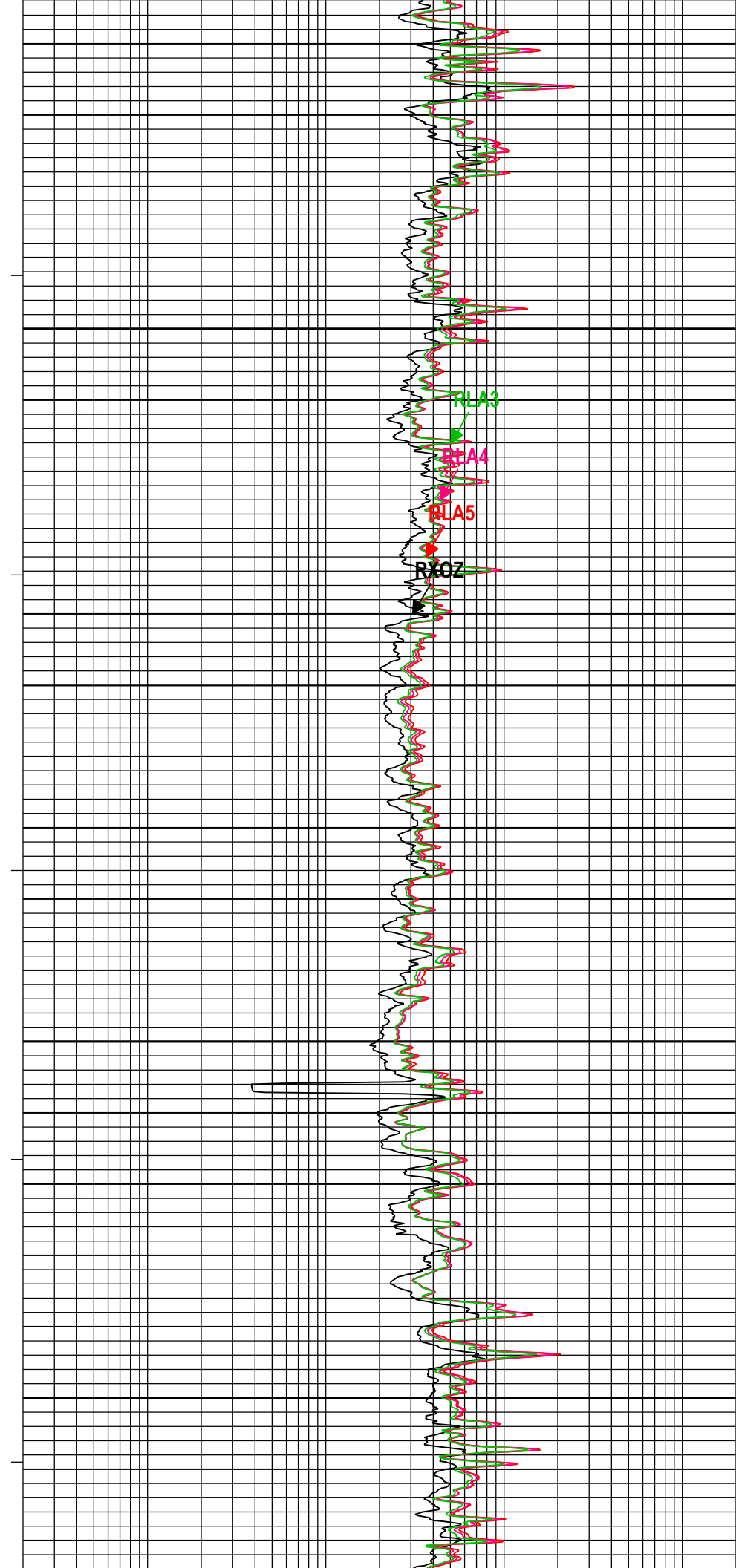
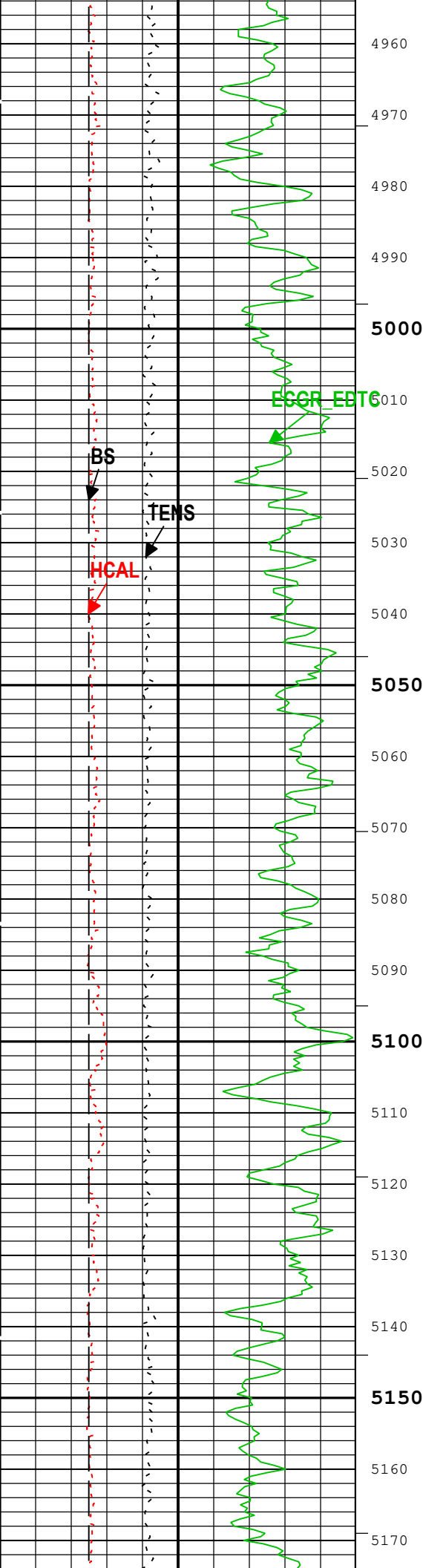


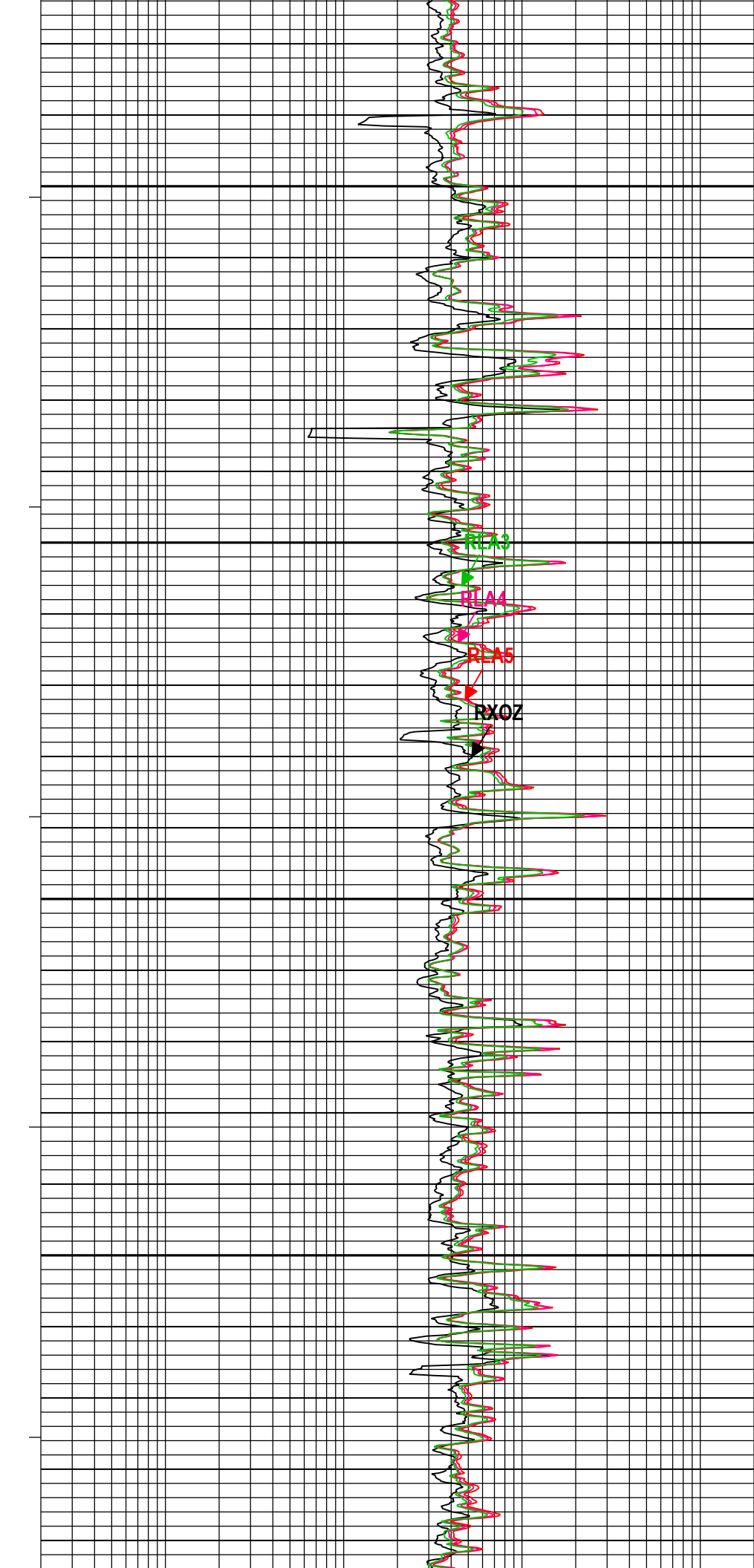
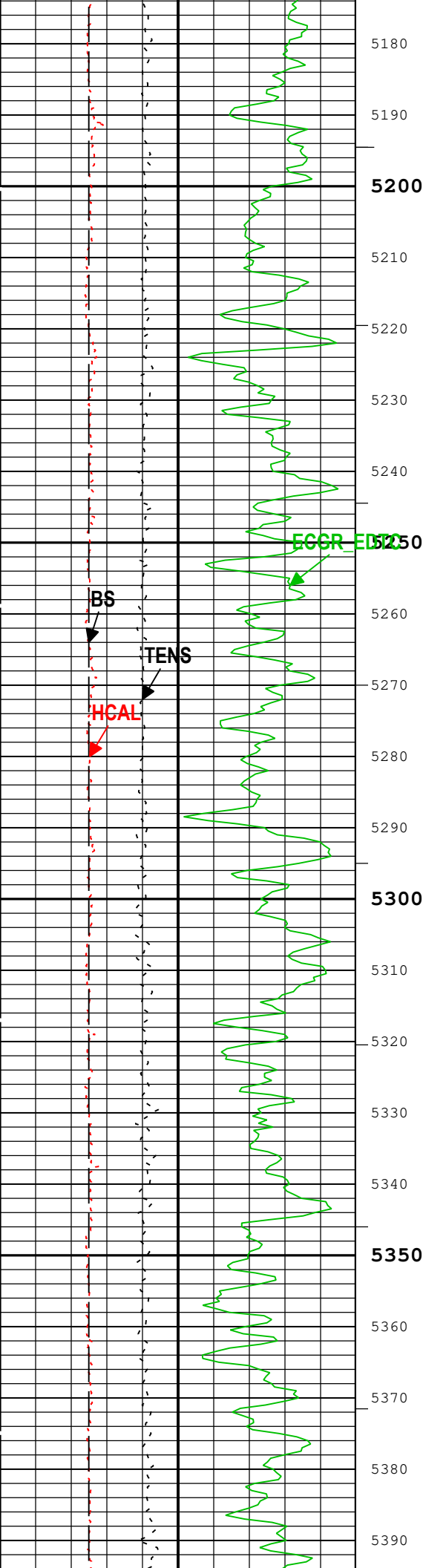


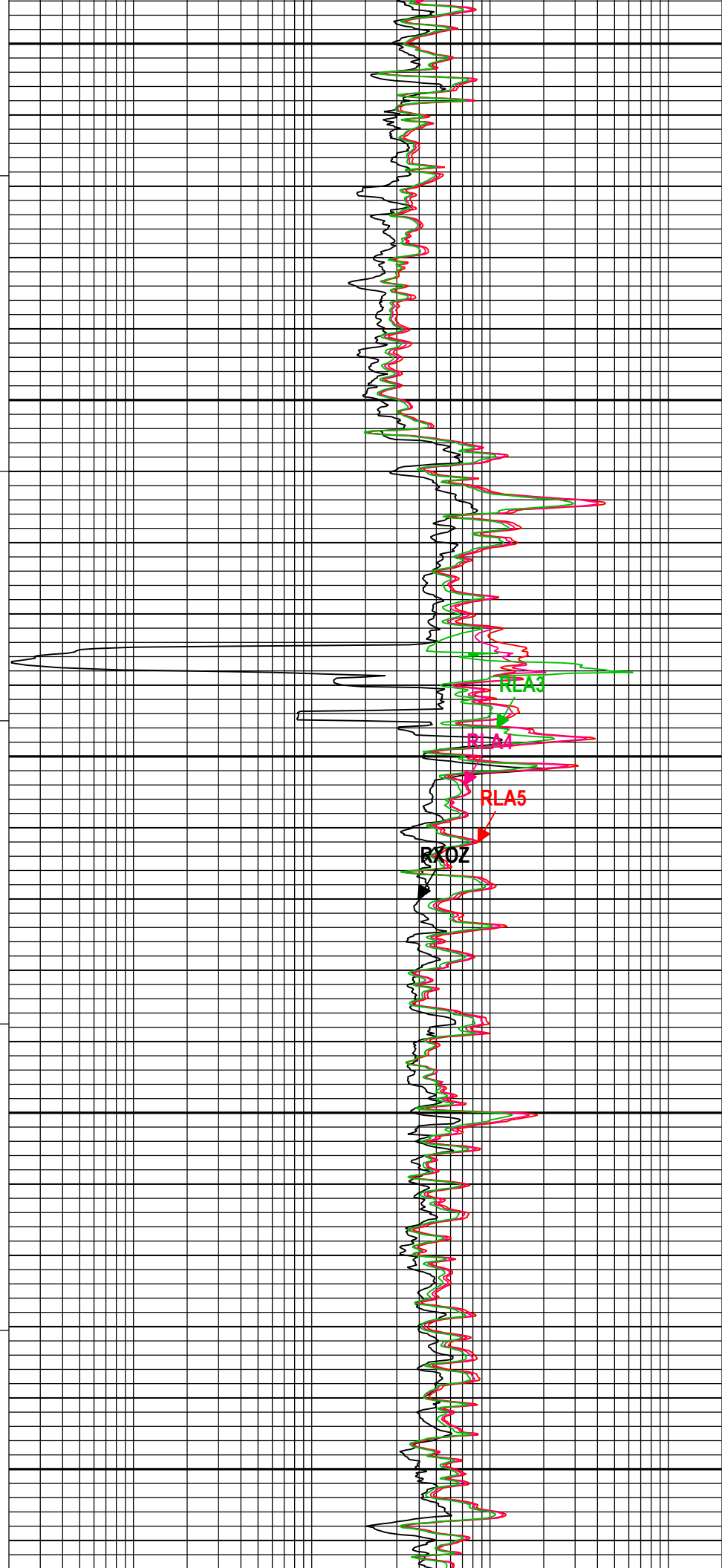
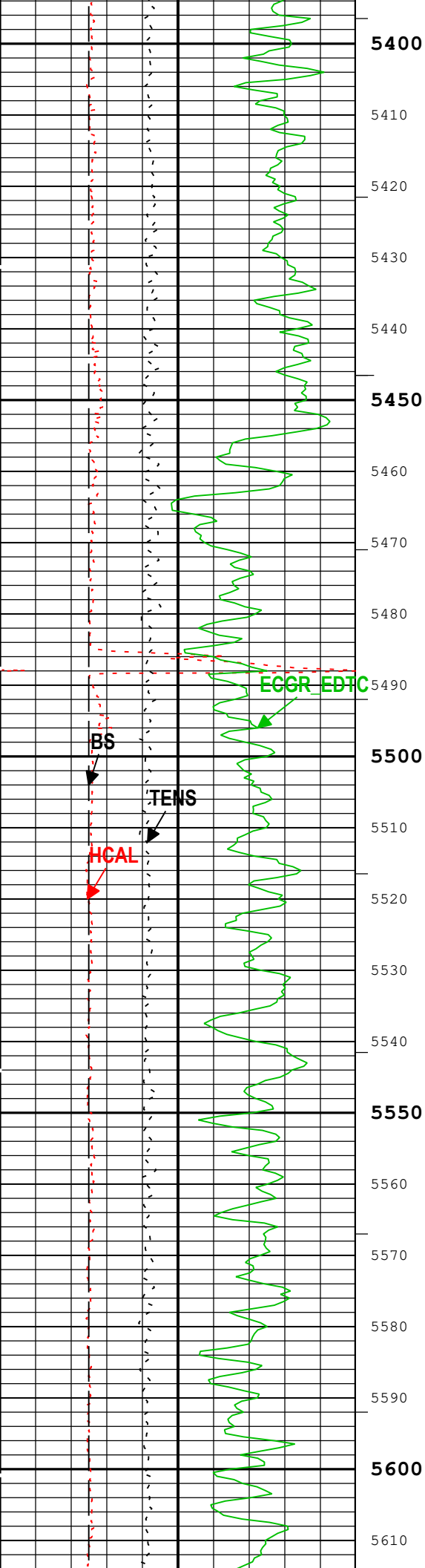


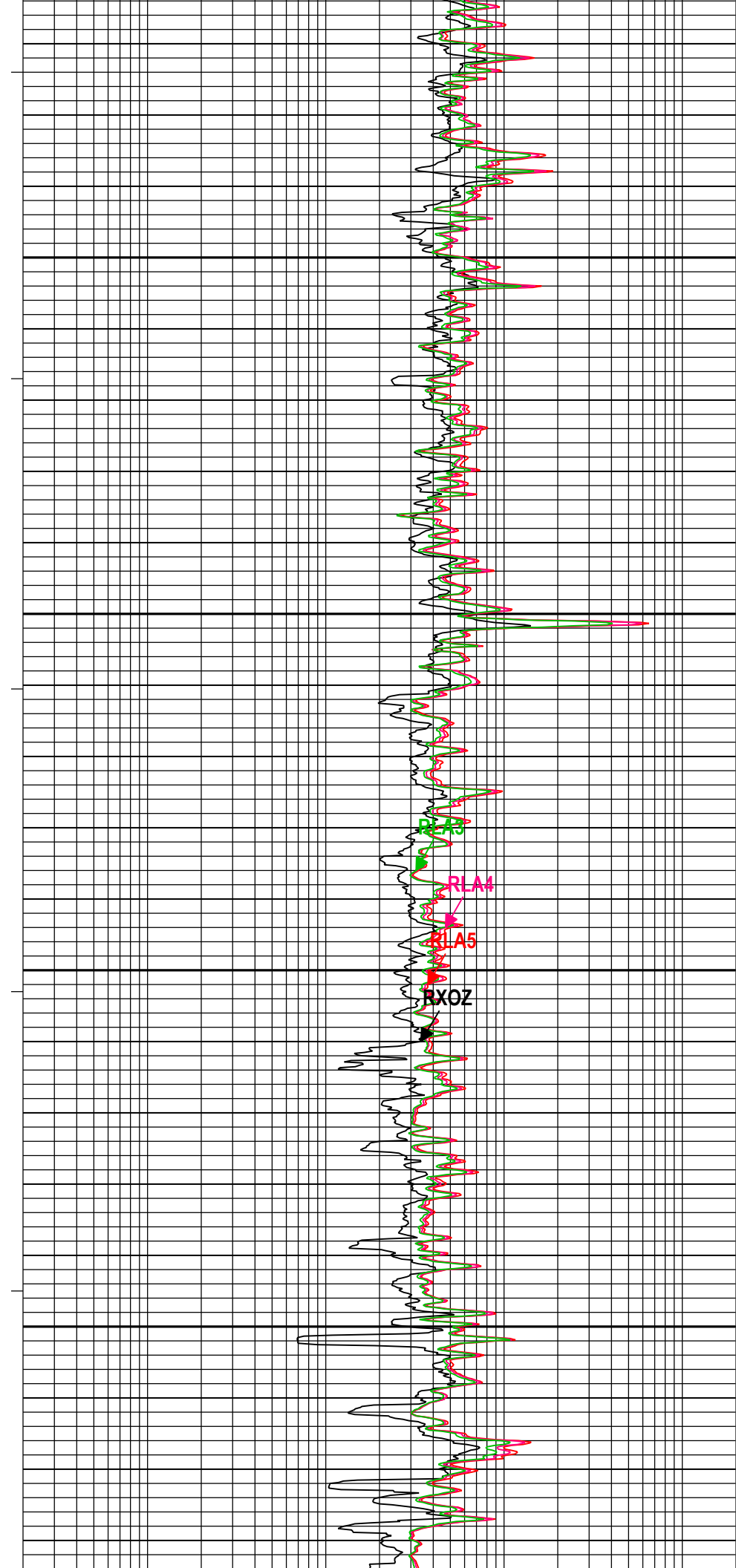
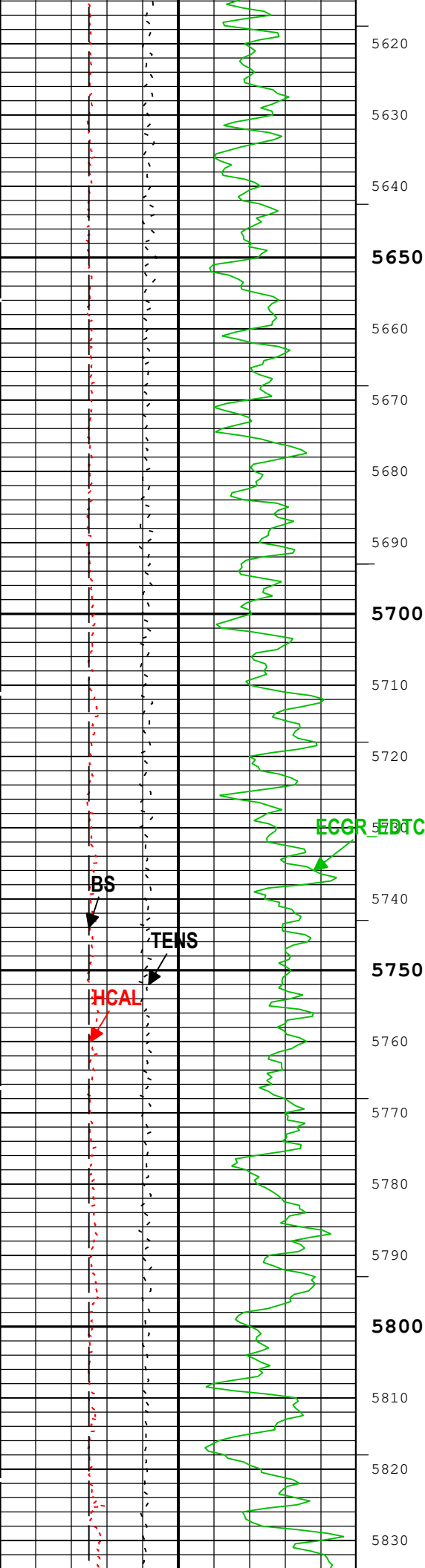


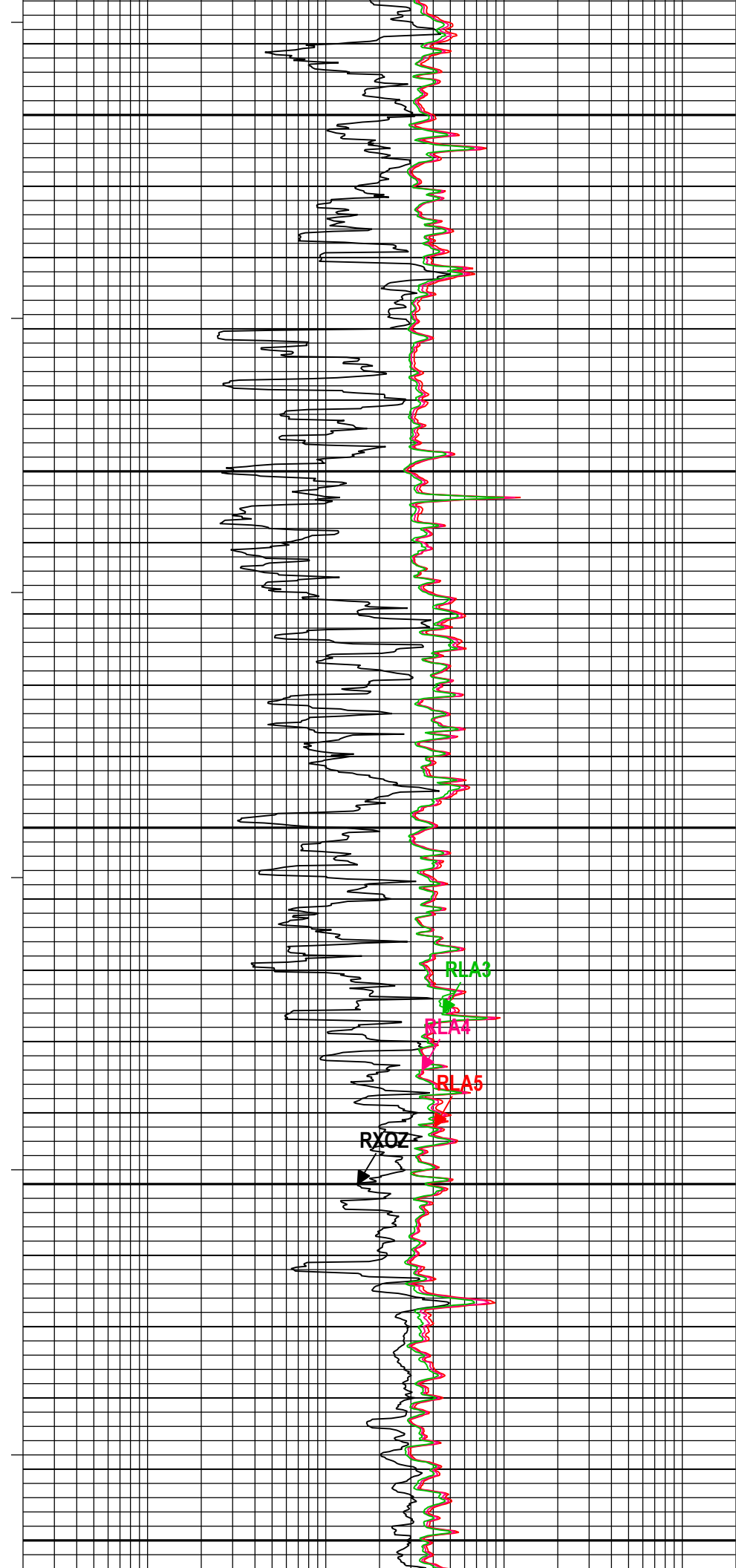
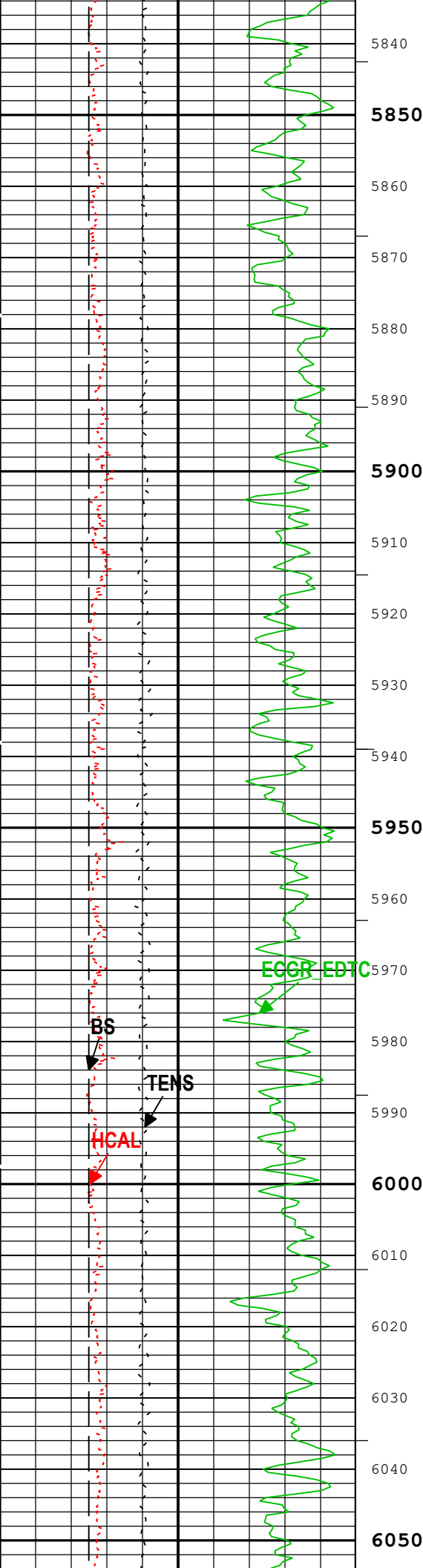


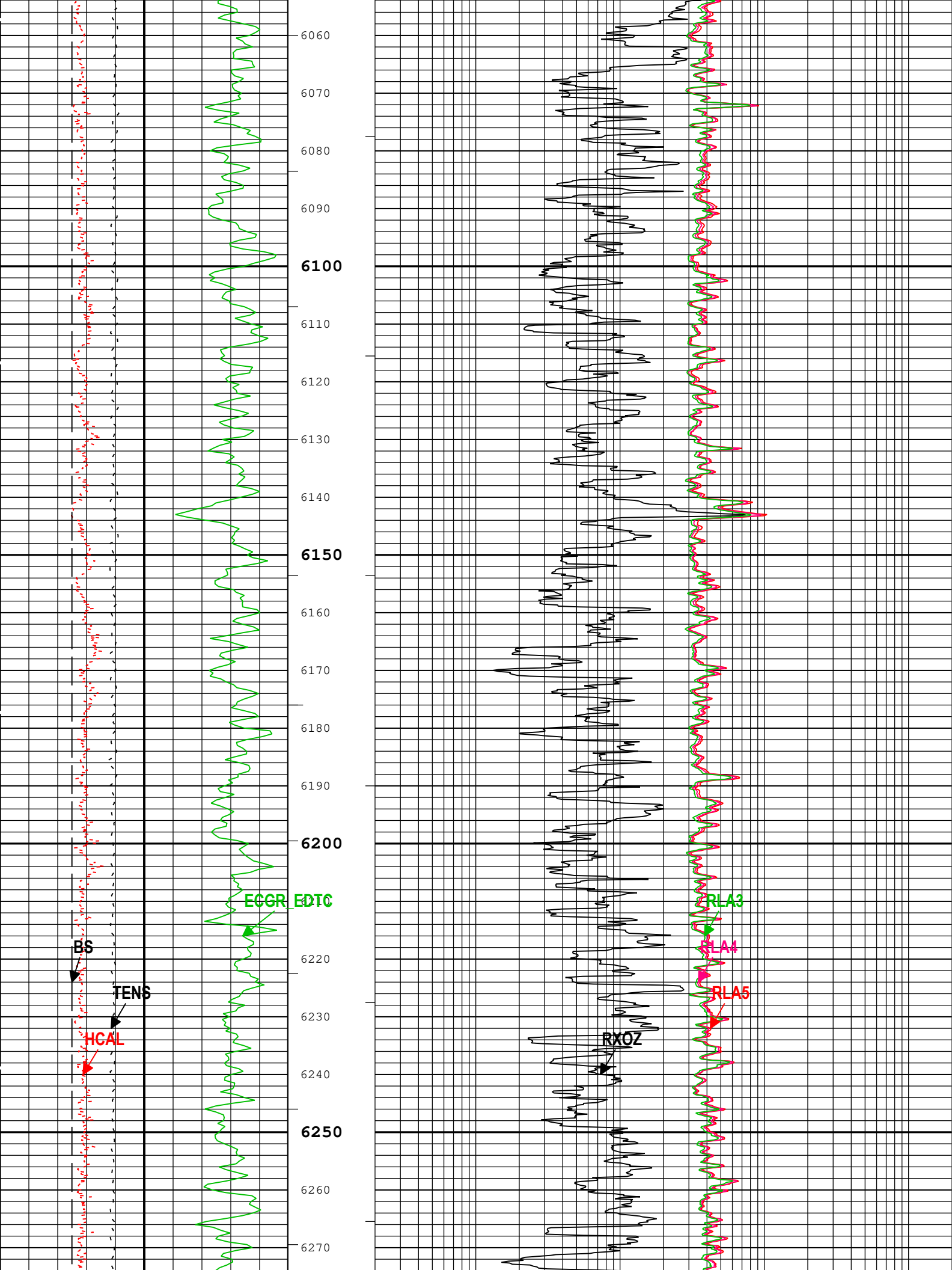


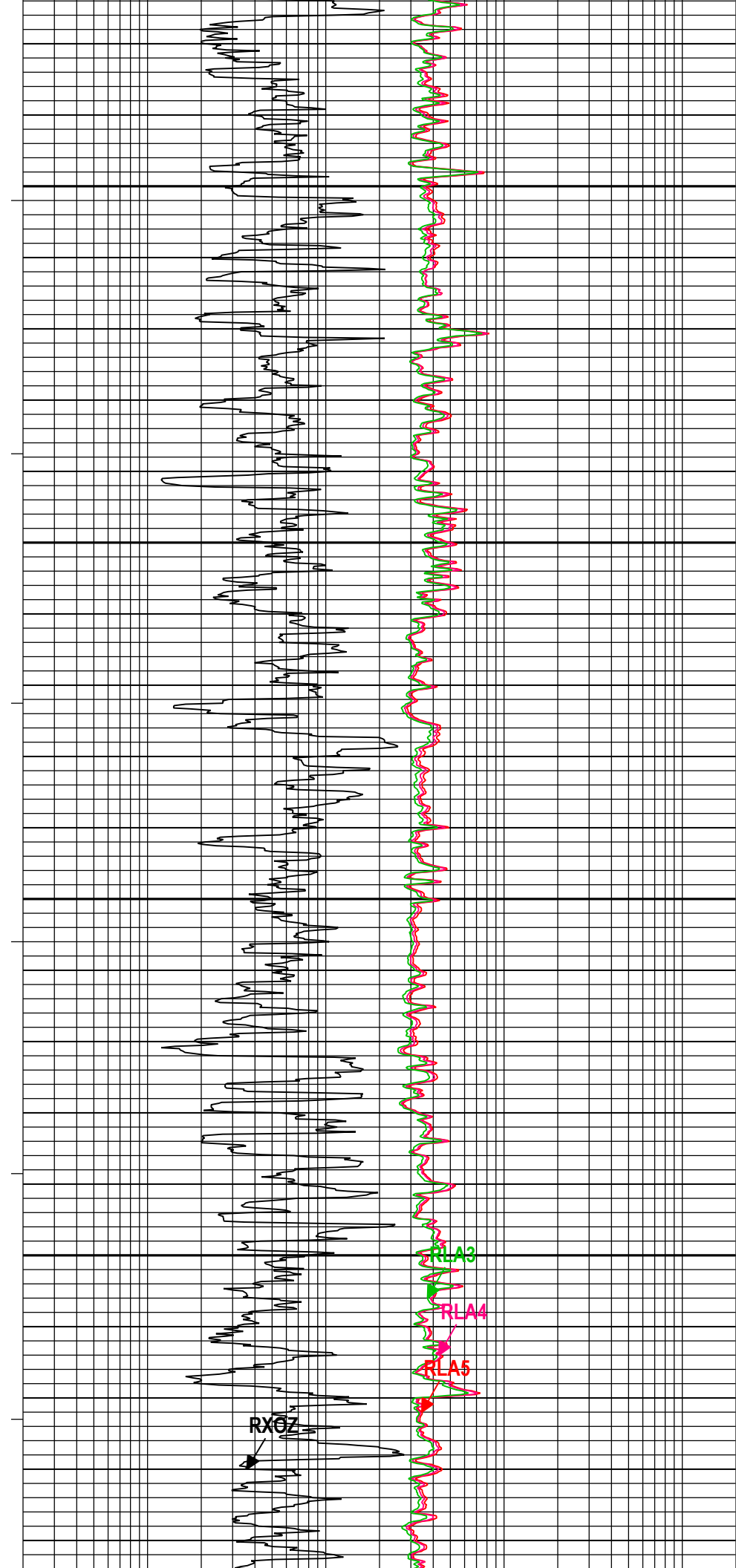
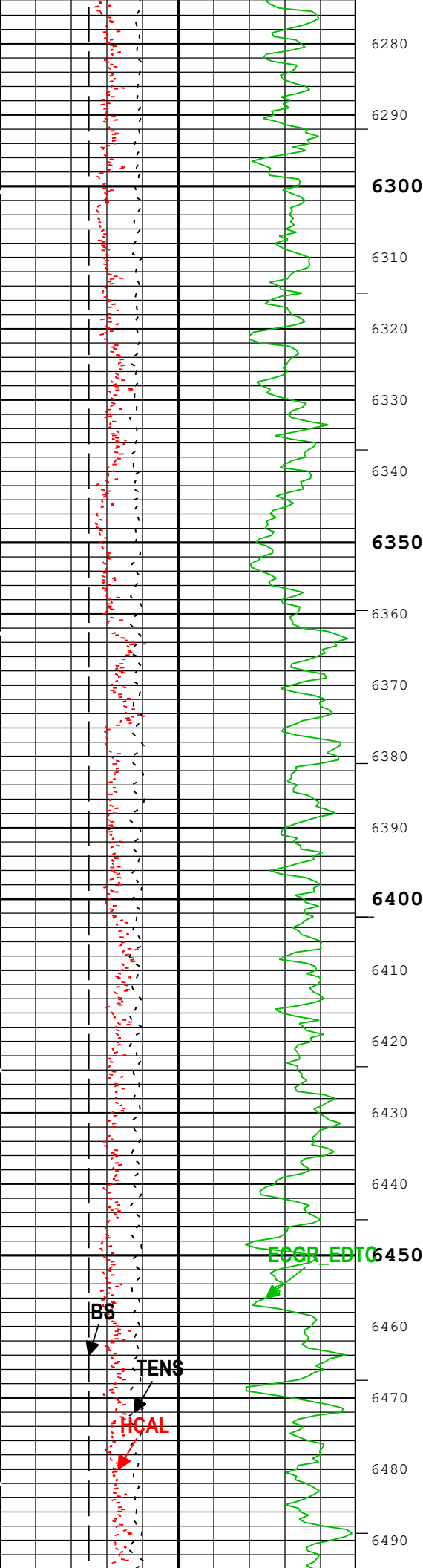


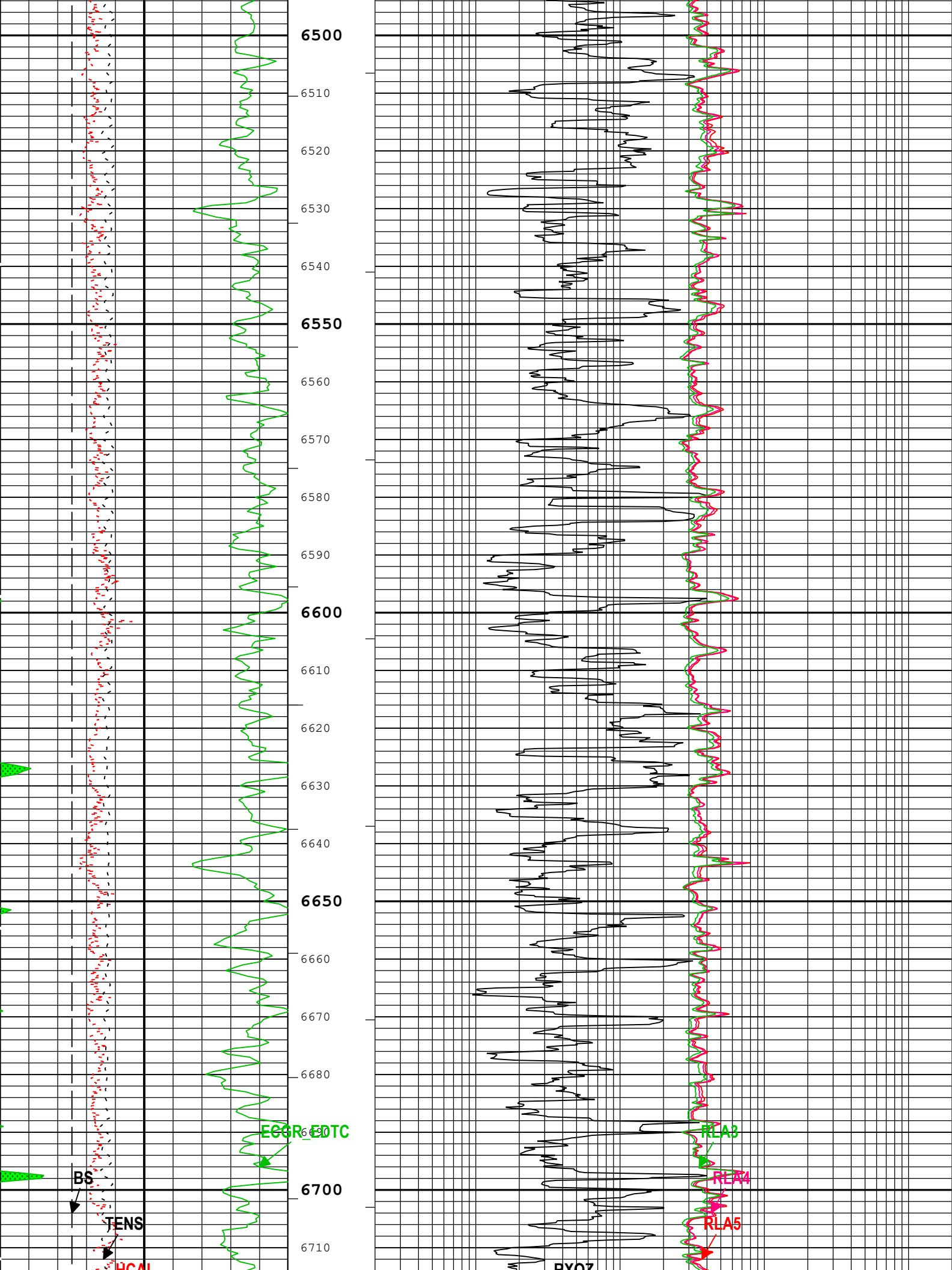


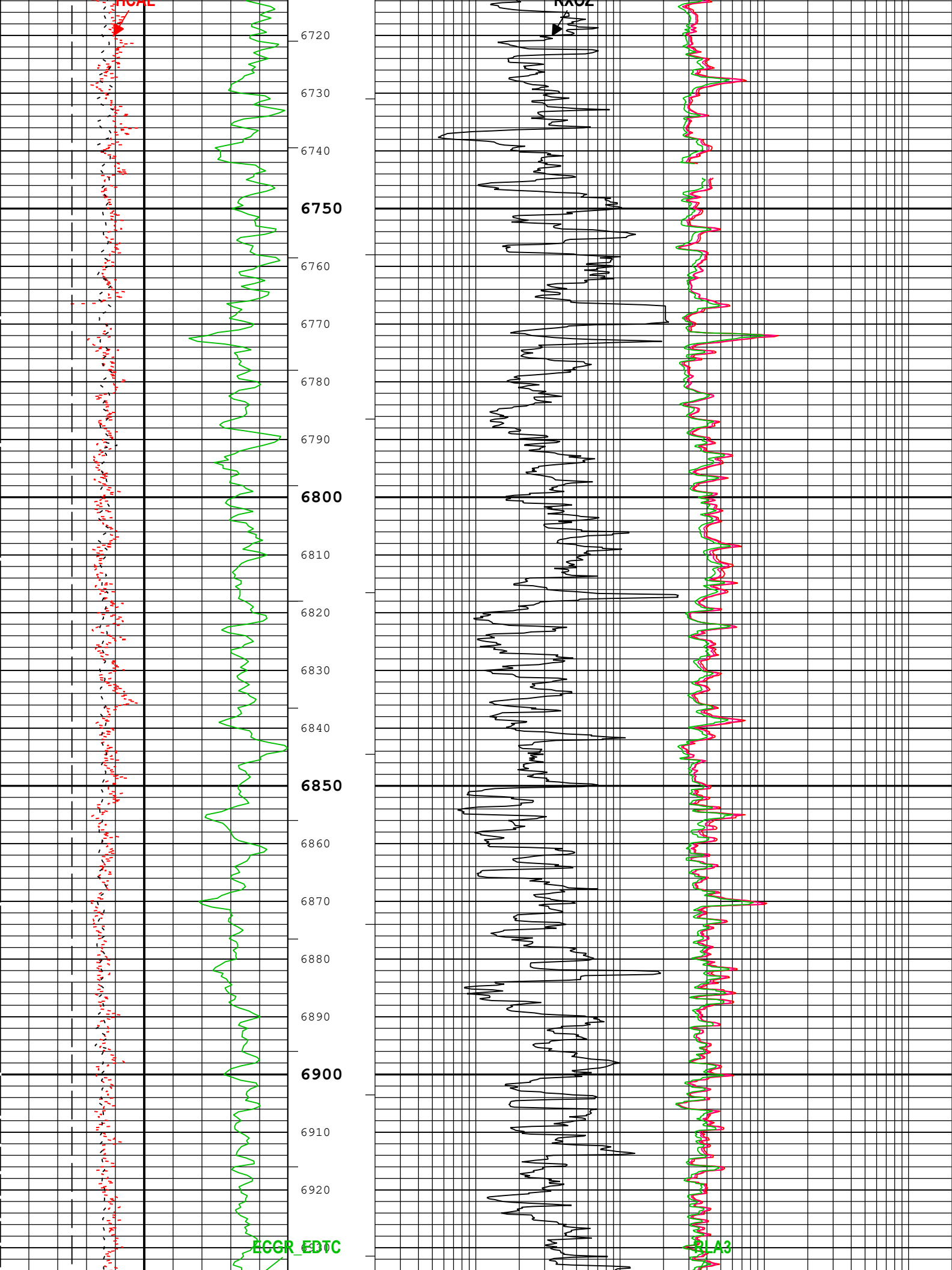


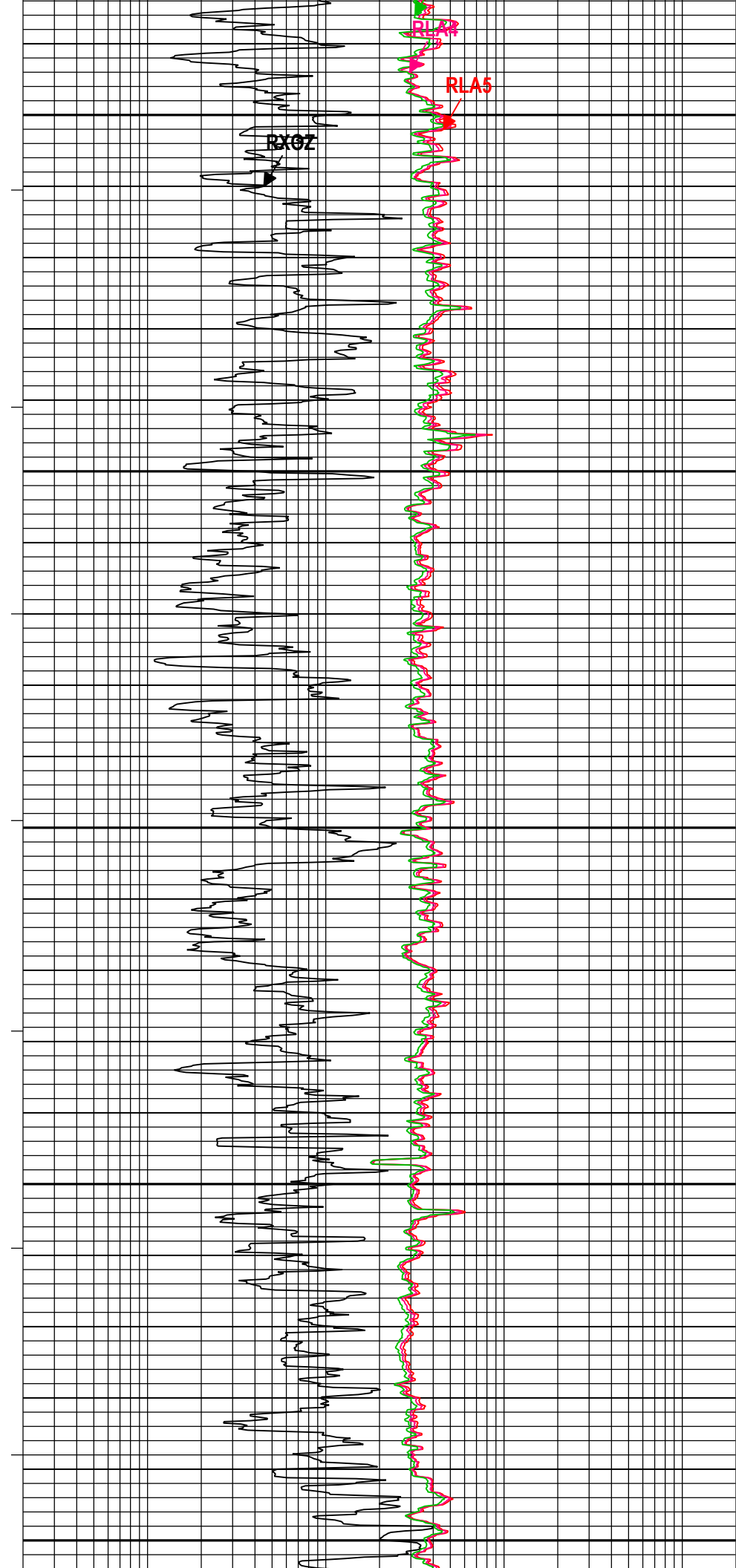
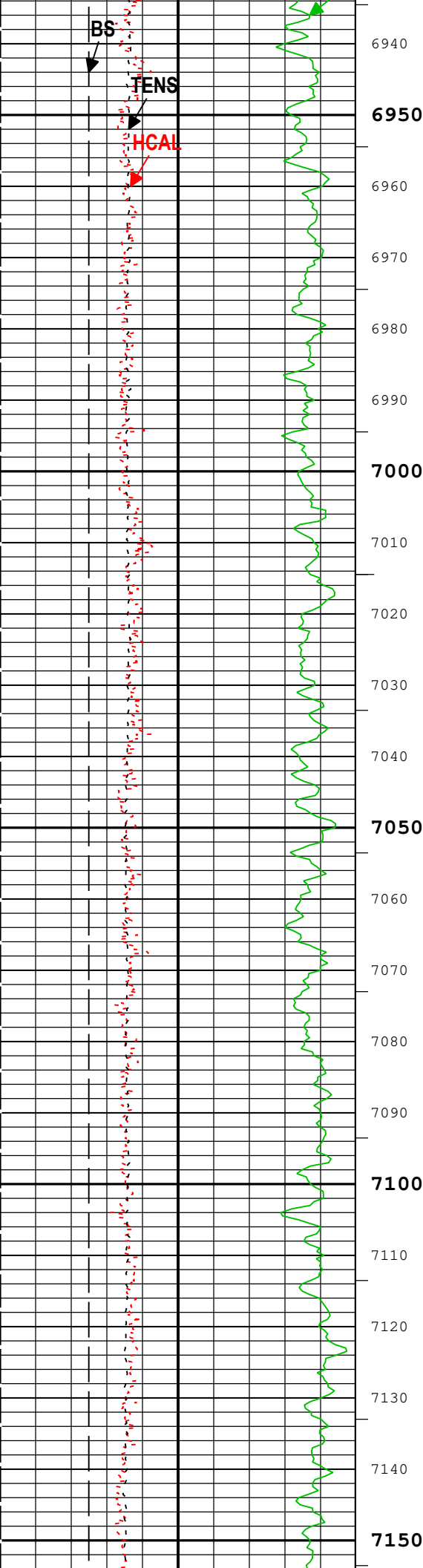


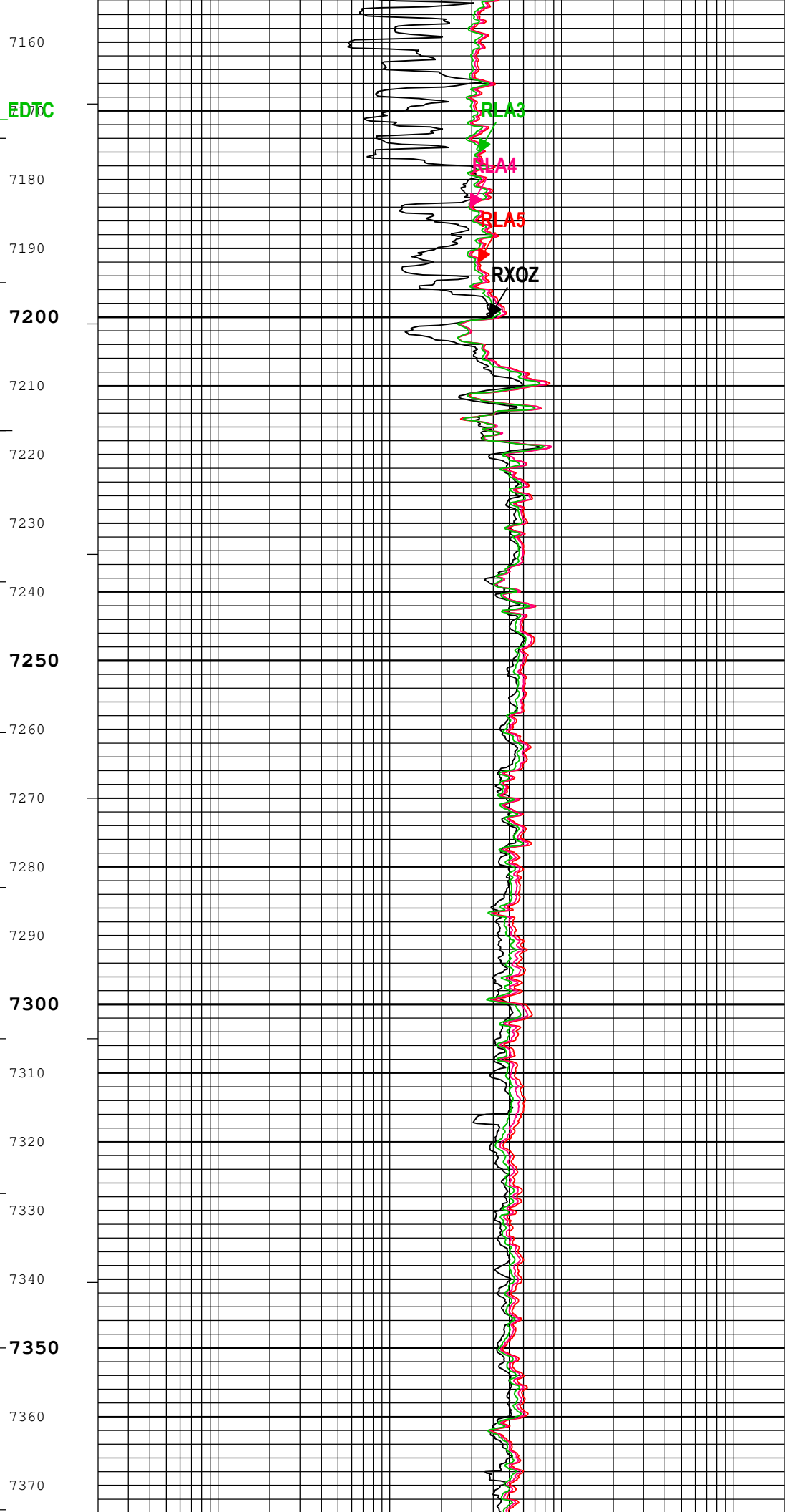
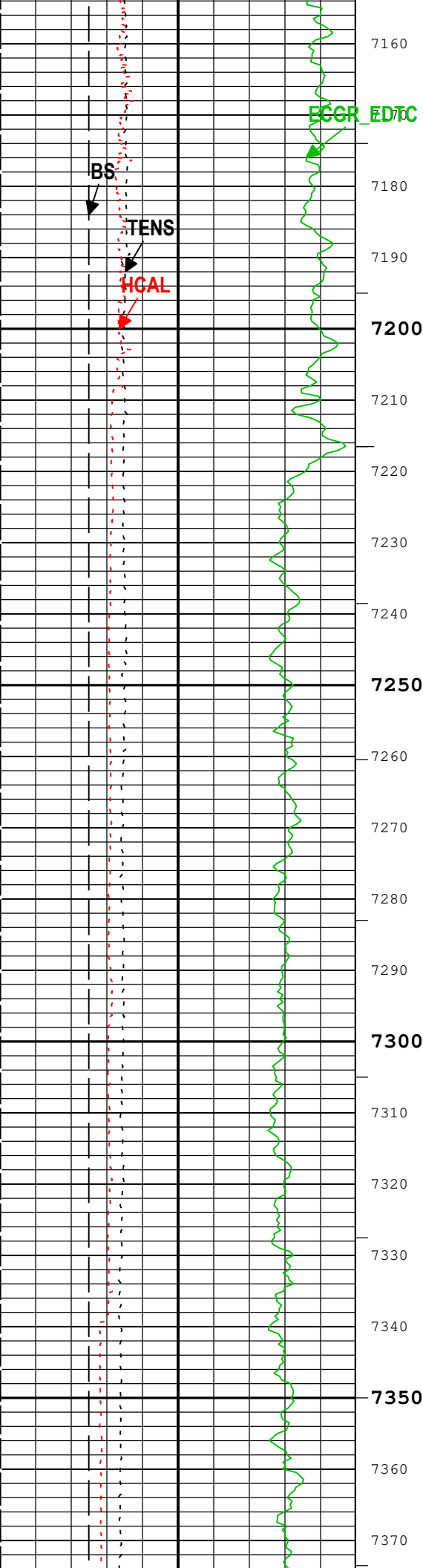


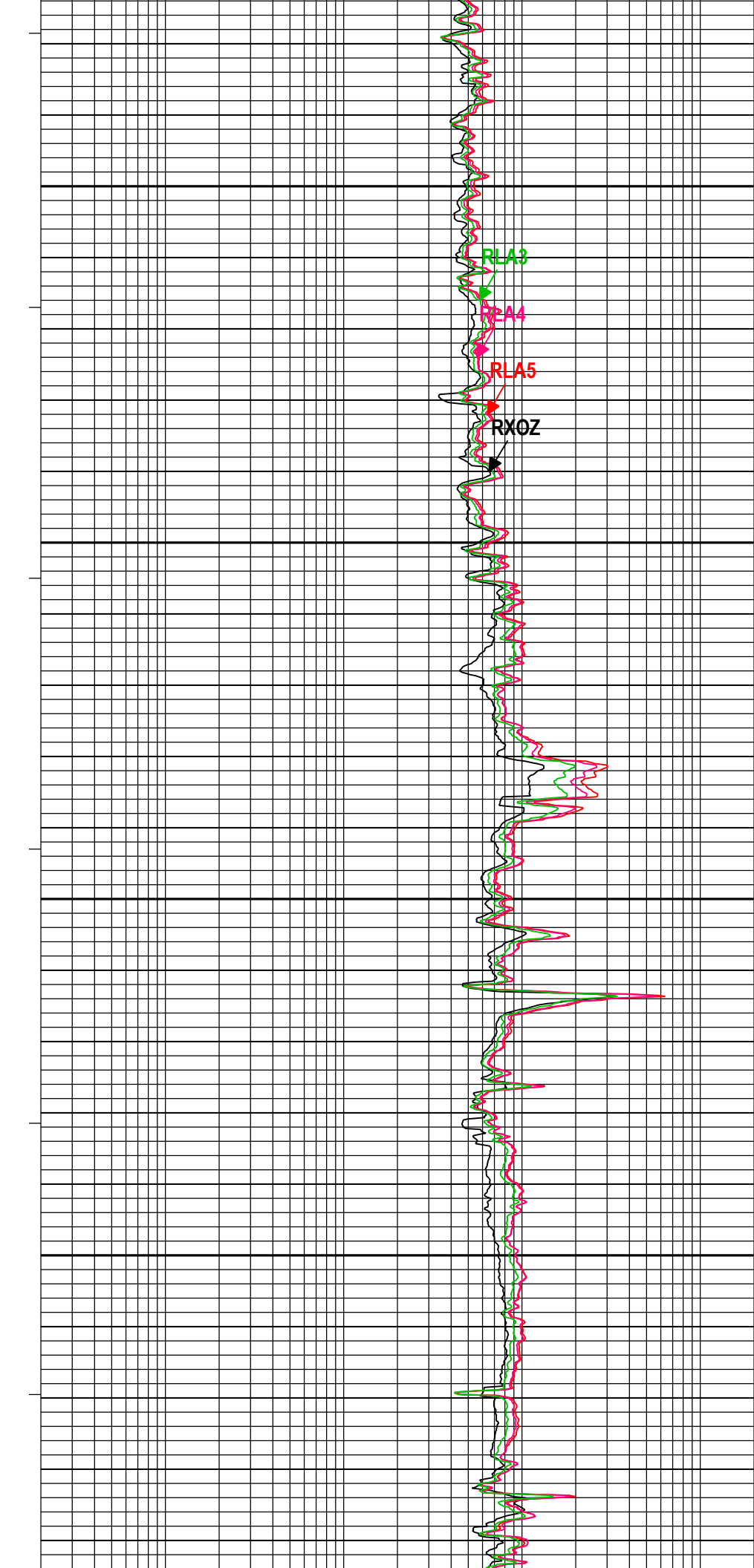
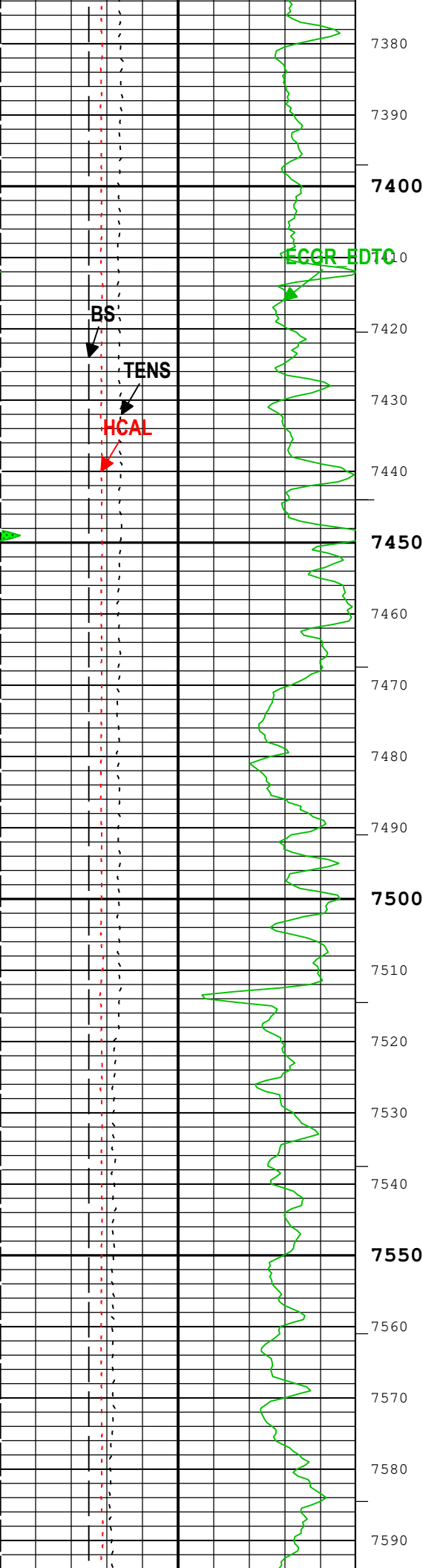


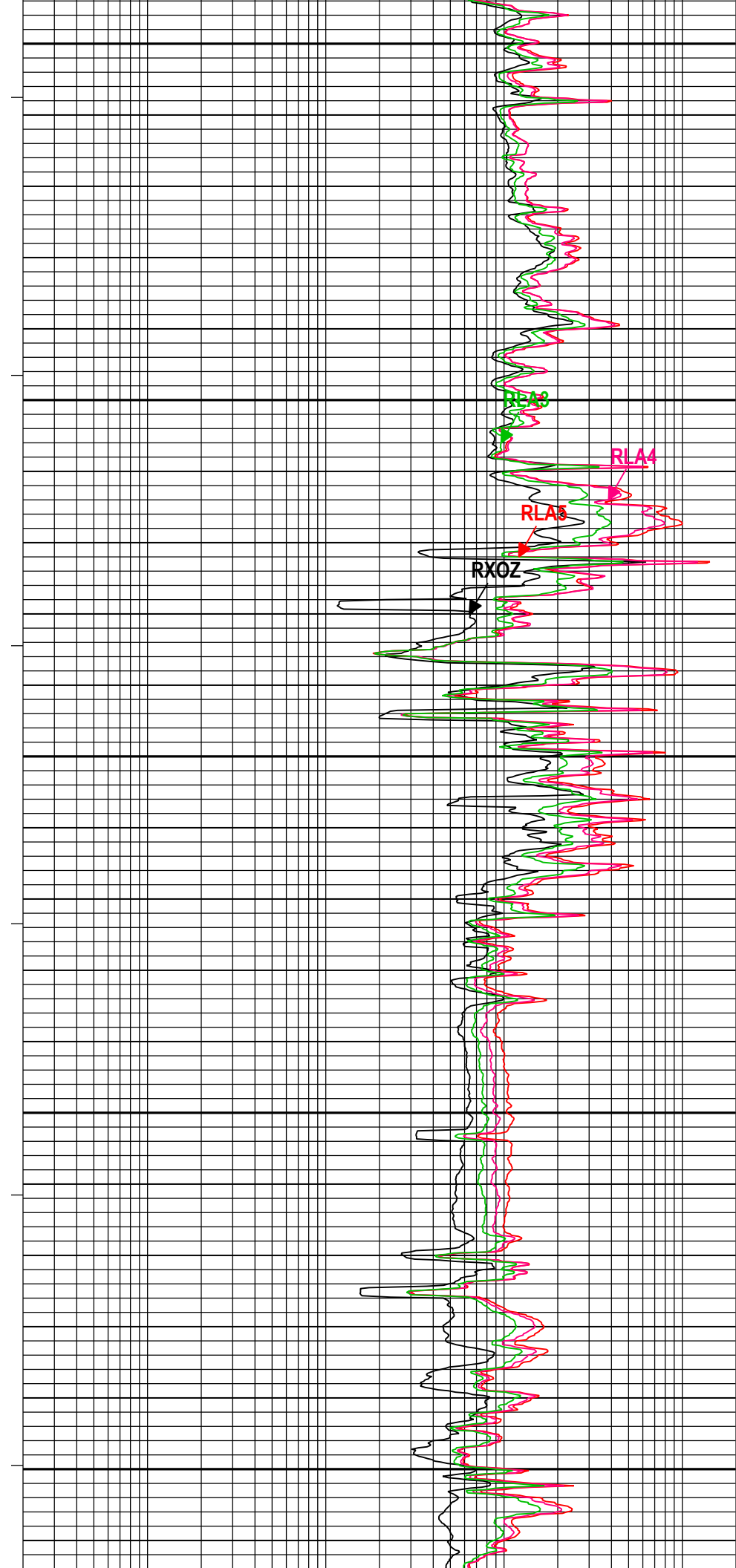
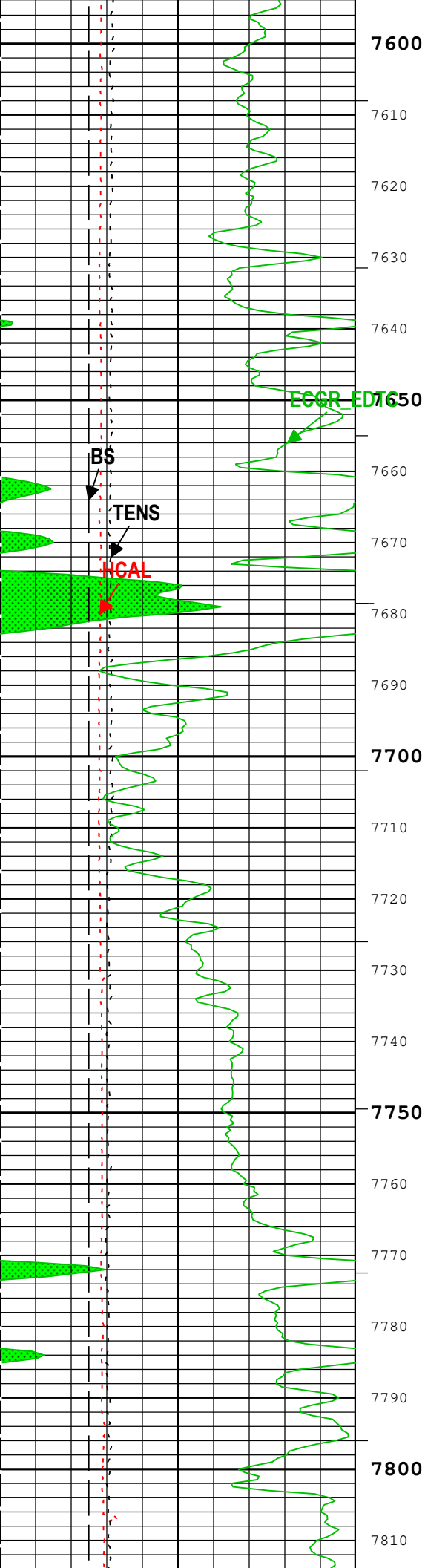


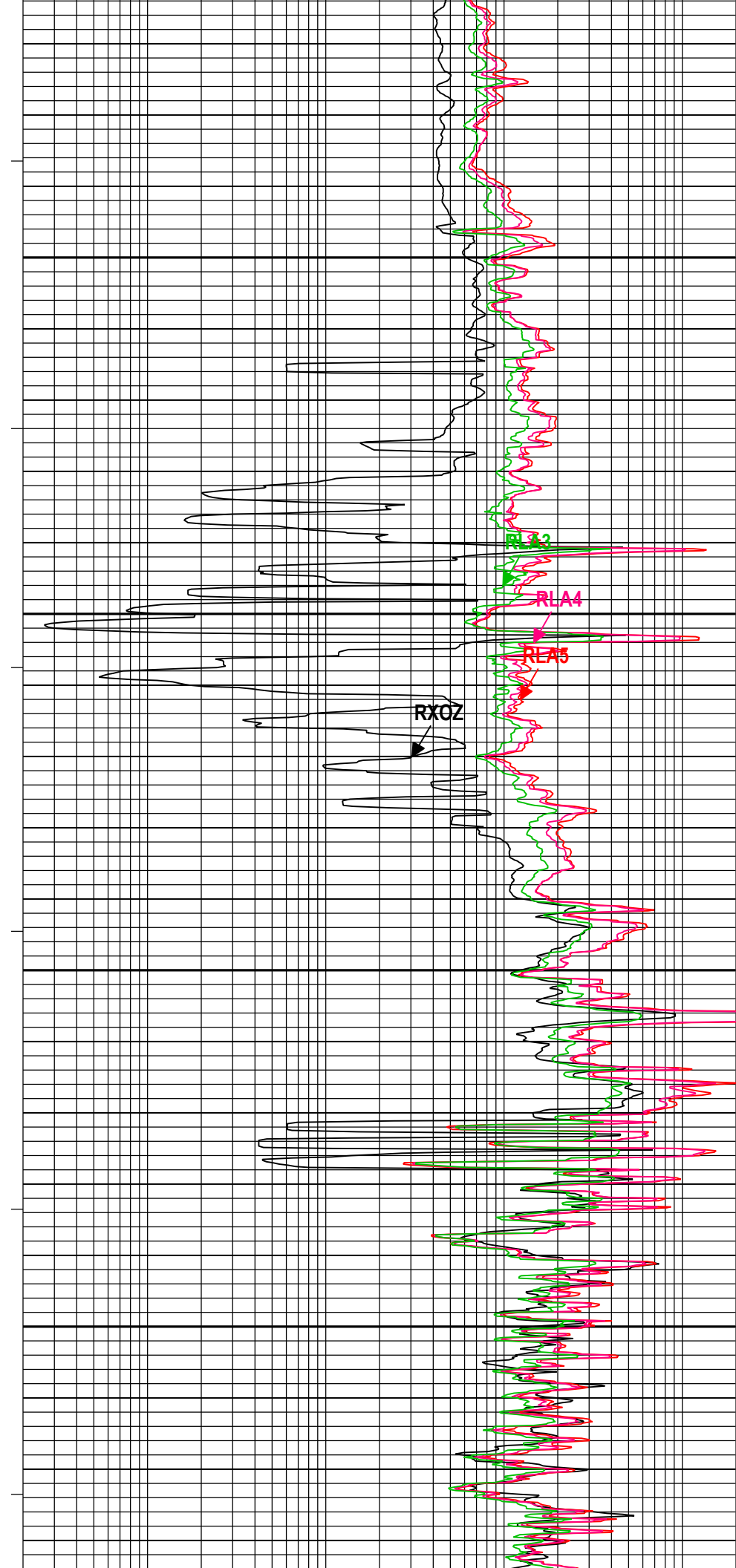
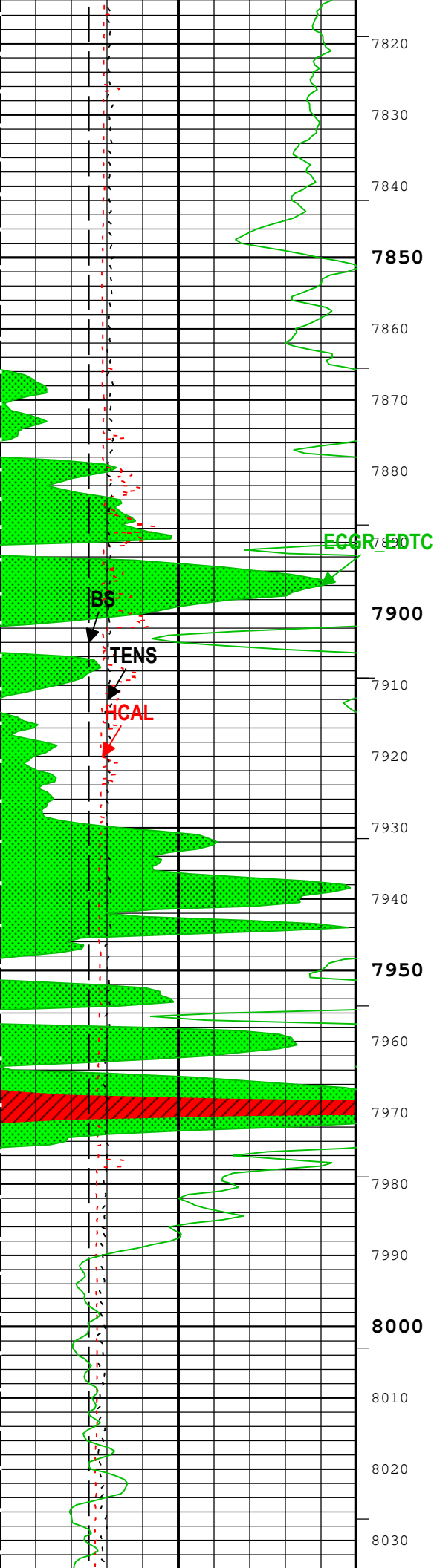


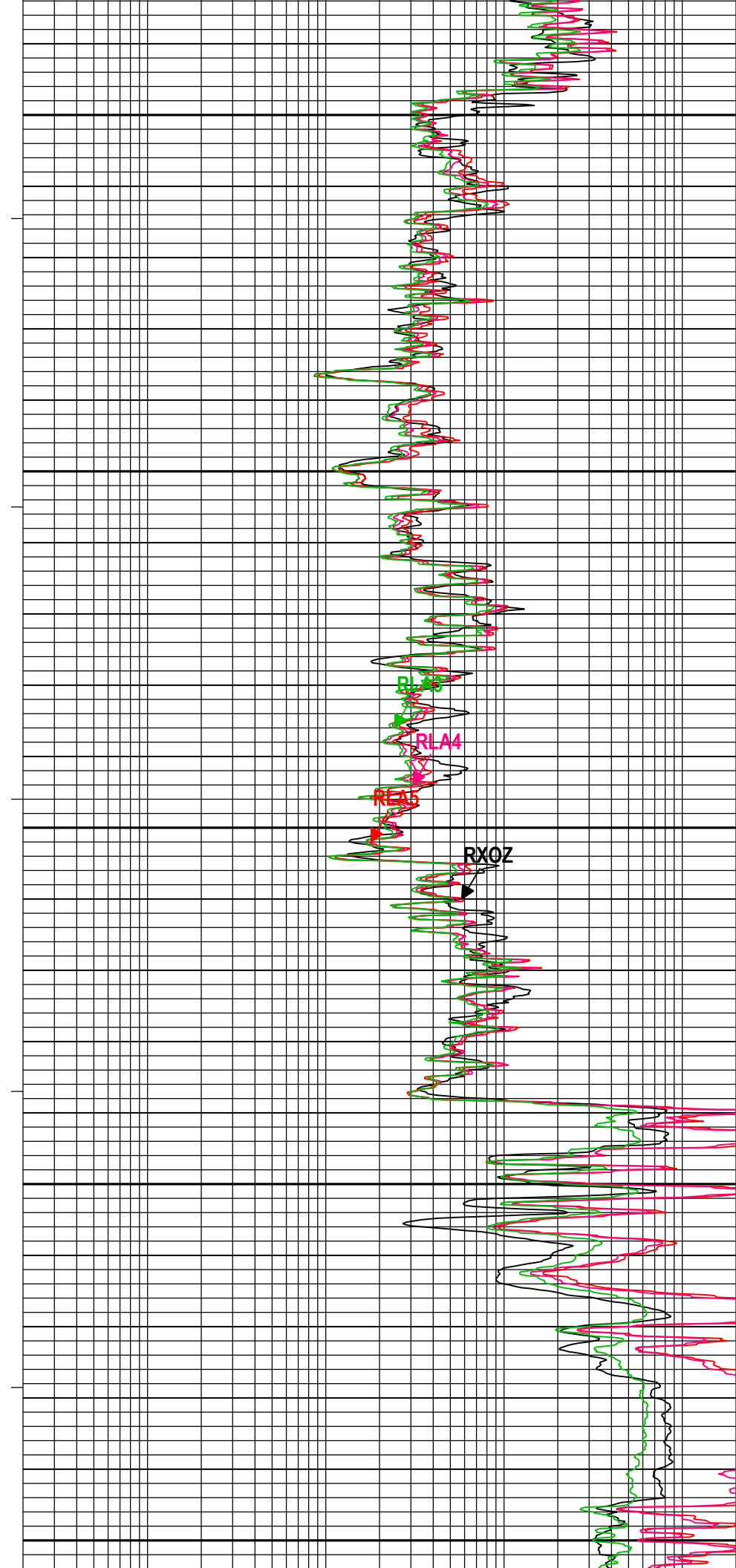
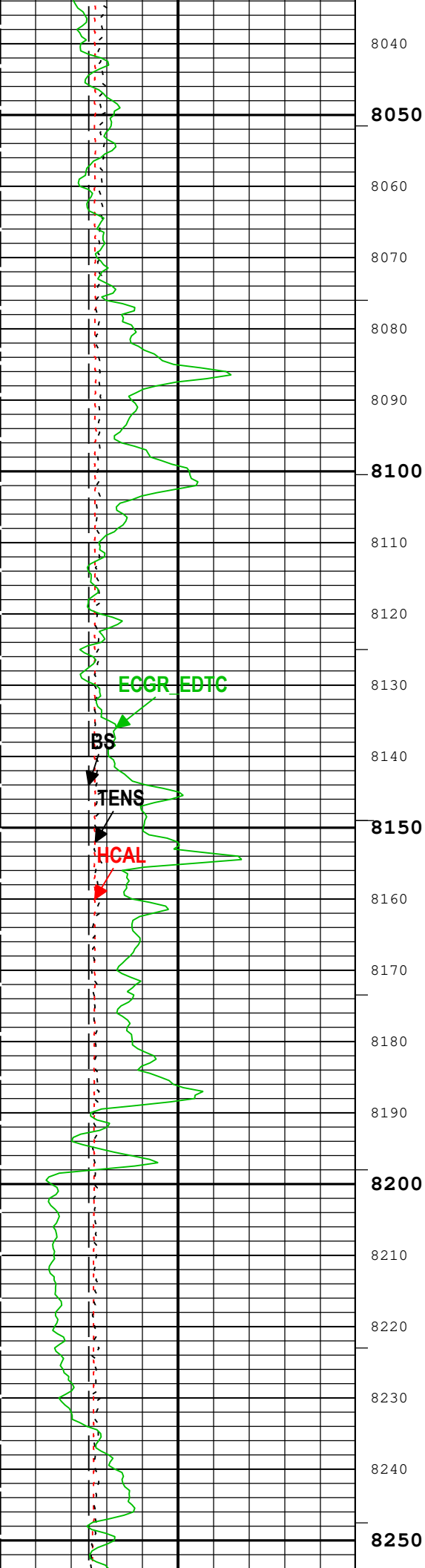


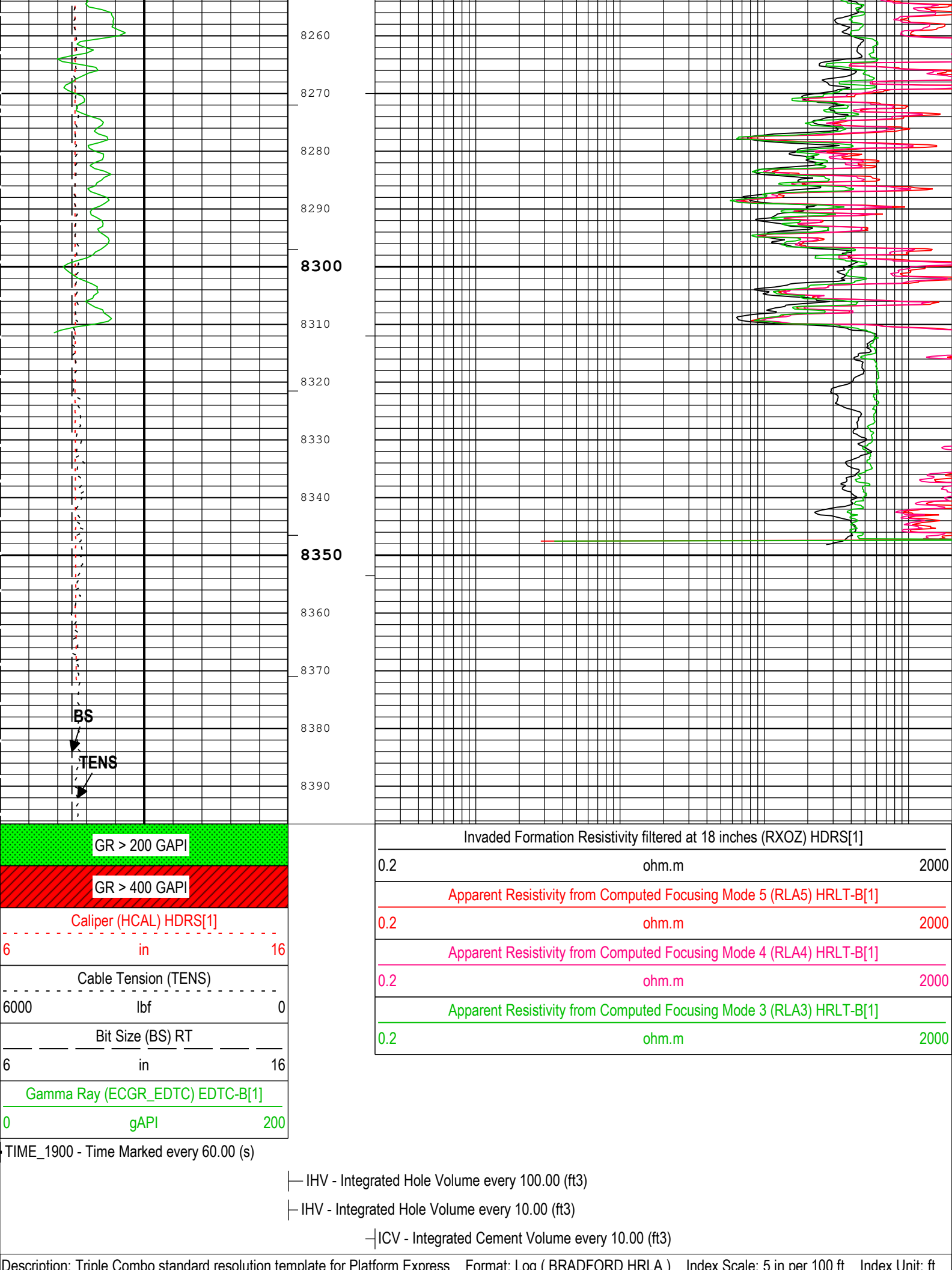












Description: Triple Combo standard recording template for National Express Format: Log (DTH-BT ORB HRLT) Index Scale: 0 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 15-Apr-2019 17:59:25									
Channel Processing Parameters									
1A: Parameters									
Parameter	Description				Tool	Value		Unit	
BARI(ISSBAR)	Barite Mud Presence Flag				Borehole	No			
BHS	Borehole Status (Open or Cased Hole)				Borehole	Open			
BS	Bit Size				WLSESSION	Depth Zoned		in	
CALI_SHIFT	CALI Supplementary Offset				HDRS-H	0.446		in	
CBLO	Casing Bottom (Logger)				WLSESSION	2543		ft	
CDEN	Cement Density				EDTC-B	2		g/cm3	
CSODDRL	Casing Outer Diameter - Zoned along driller depths				WLSESSION	9.625		in	
DFD	Drilling Fluid Density				Borehole	9.5		lbm/gal	
FCD	Future Casing (Outer) Diameter				WLSESSION	5.5		in	
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes				Borehole	BS(RT)			
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes				Borehole	CALI			
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity				Borehole	MRES			
PROCRM	Mud Resistivity Select				HRLT-B	HRLT Compute			
KFAC_HRLT	HRLT Geometrical Factor Option				HRLT-B	Sonde			
PROCMSO	Mechanical Standoff Size				HRLT-B	1.5		in	
PROCSP0	Sonde Position				HRLT-B	Eccentered			
1ADepth Zoned Parameters									
Parameter	Value		Start (ft)			Stop (ft)			
BS	12.25		2525			2543			
BS	8.5		2543			8396.5			
All depth are actual.									
Tool Control Parameters									
1A: Parameters									
Parameter	Description				Tool	Value		Unit	
HRGD_BOARD_TYPE	HRGD Board Type				HDRS-H	WITH_HET			
MAX_LOG_SPEED	Toolstring Maximum Logging Speed				WLSESSION	1800		ft/h	
1A									
REPEAT SECTION 5"									
Integration Summary									
Output Channel(s)	Output Description			Input Parameter		Output Value		Unit	
IHV	Integrated Hole Volume			GCSE_UP_PASS		280.81		ft3	
ICV	Integrated Cement Volume			GCSE_UP_PASS, FCD		163.75		ft3	
Software Version									
Acquisition System					Version				
Maxwell 2019					9.0.106845.3100				
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[10]:Up	Up	7693.14 ft	8410.89 ft	15-Apr-2019 4:41:25 PM	15-Apr-2019 5:26:23 PM	ON	10.94 ft	Yes
All depths are referenced to toolstring zero									
Log					Company:North East Natural Energy LLC			Well:Bogges 17H	

Description: Triple Combo standard resolution template for Platform Express Format: Log (BRADFORD HRLA) Index Scale: 5 in per 100 ft Index Unit: ft
Index Type: Measured Depth Creation Date: 15-Apr-2019 17:59:30

—|ICV - Integrated Cement Volume every 10.00 (ft3)

—|IHV - Integrated Hole Volume every 10.00 (ft3)

—|IHV - Integrated Hole Volume every 100.00 (ft3)

TIME_1900 - Time Marked every 60.00 (s)

GR > 200 GAPI

GR > 400 GAPI

Caliper (HCAL) HDRS-H

6 in 16

Cable Tension (TENS)

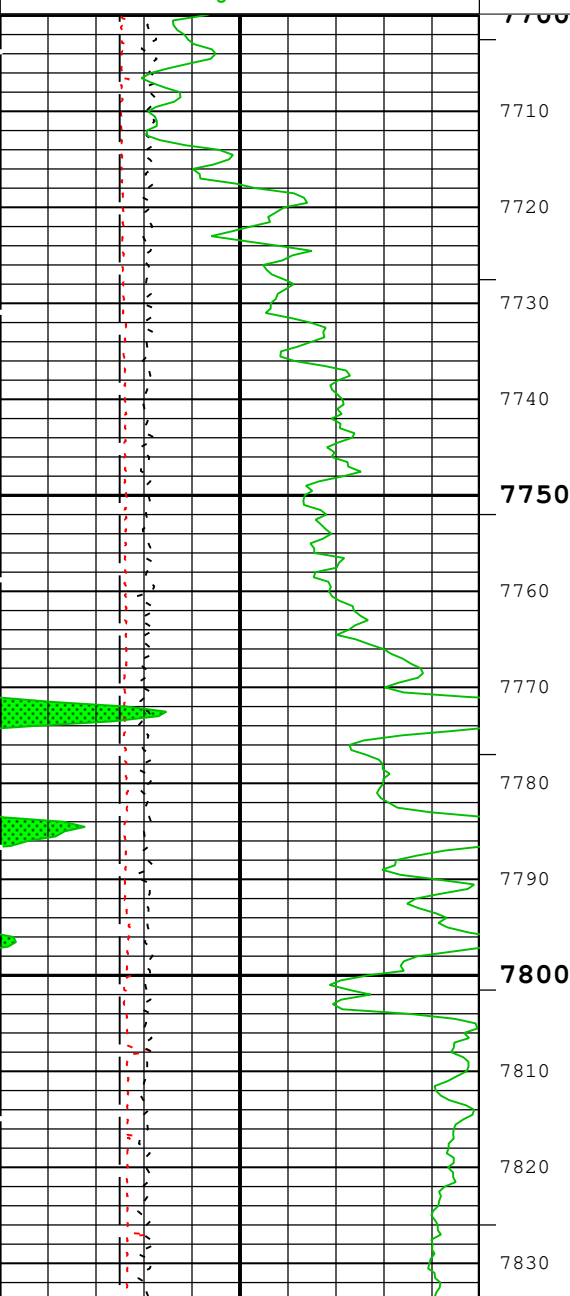
6000 lbf 0

Bit Size (BS) RT

6 in 16

Gamma Ray (ECGR_EDTC) EDTC-B

0 gAPI 200



Invaded Formation Resistivity filtered at 18 inches (RXOZ) HDRS-H

0.2 ohm.m 2000

Apparent Resistivity from Computed Focusing Mode 5 (RLA5) HRLT-B

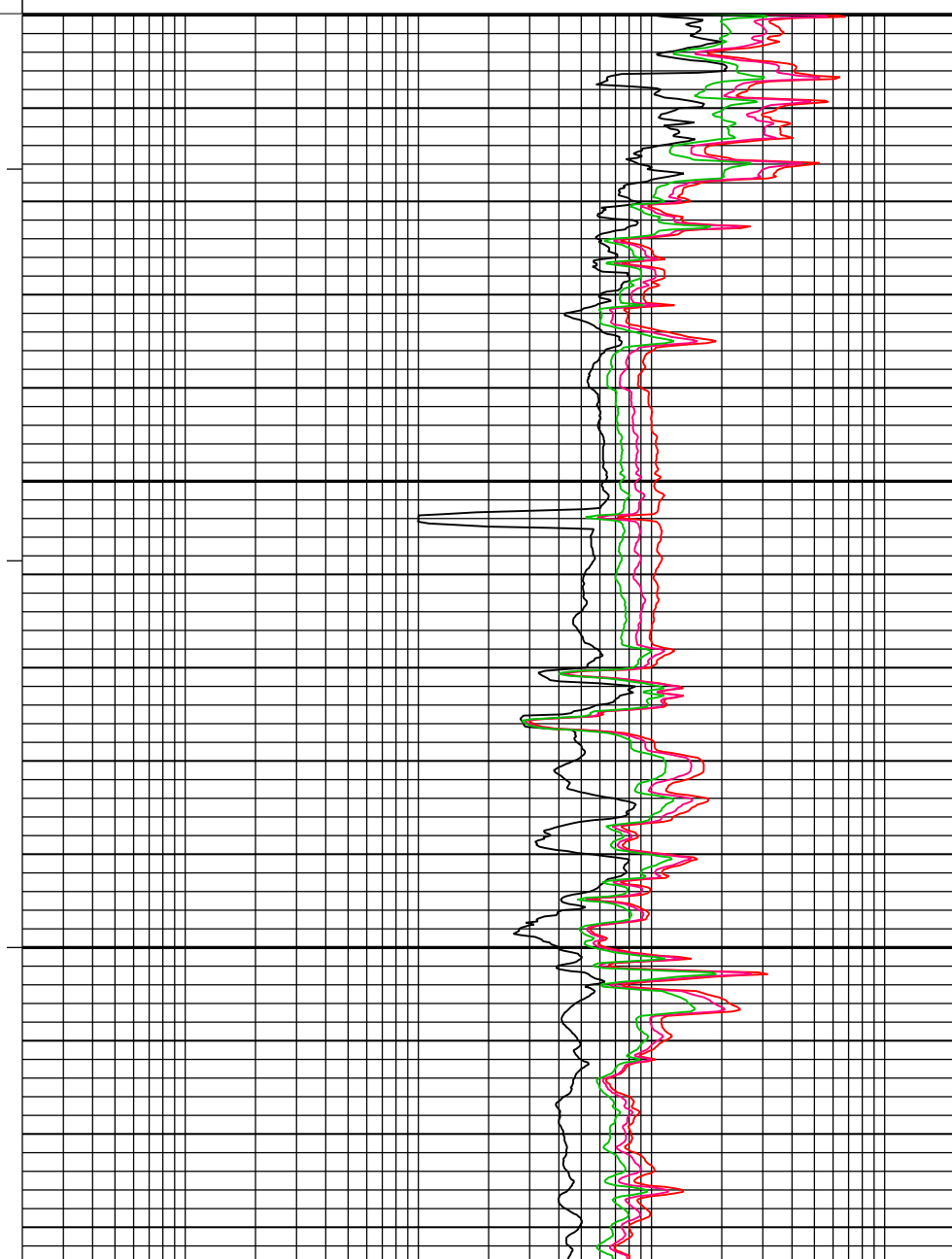
0.2 ohm.m 2000

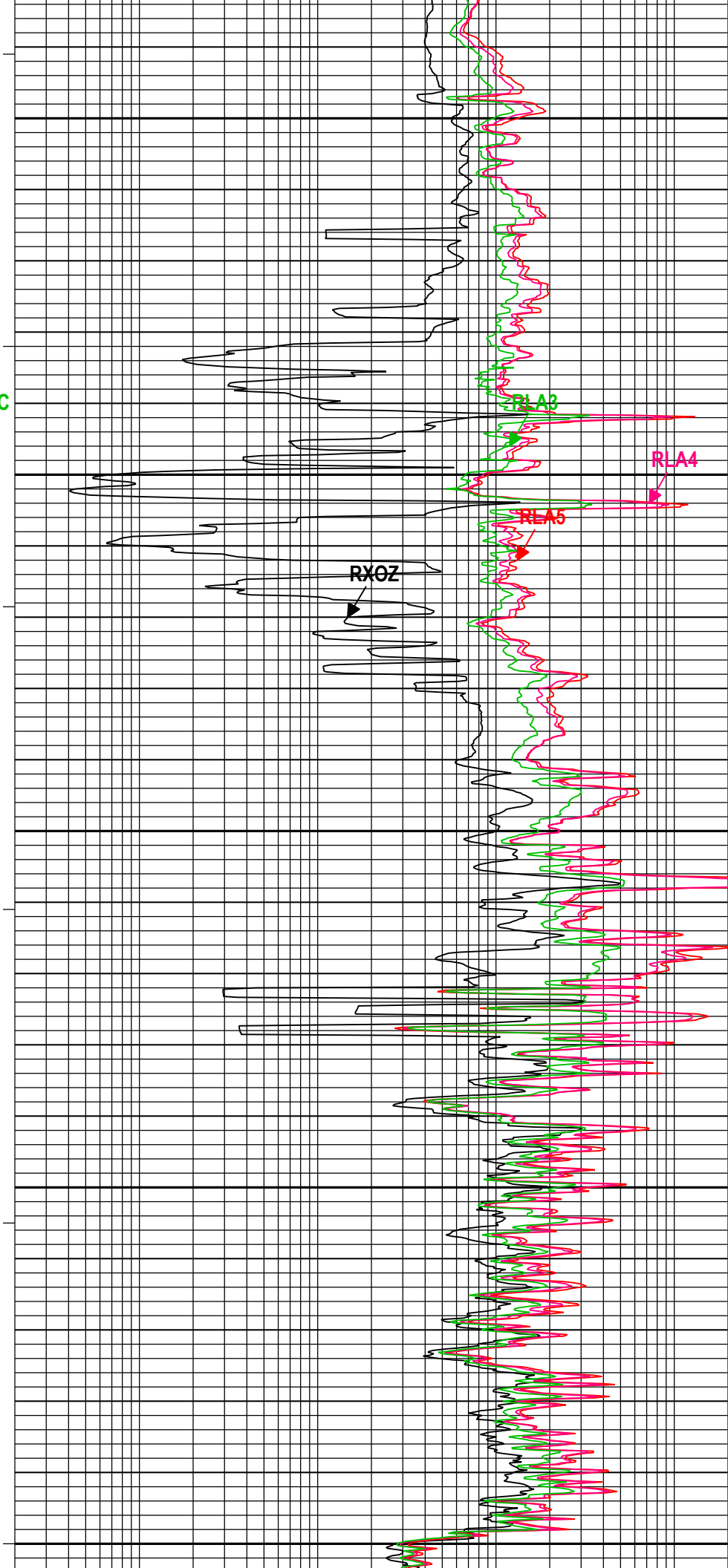
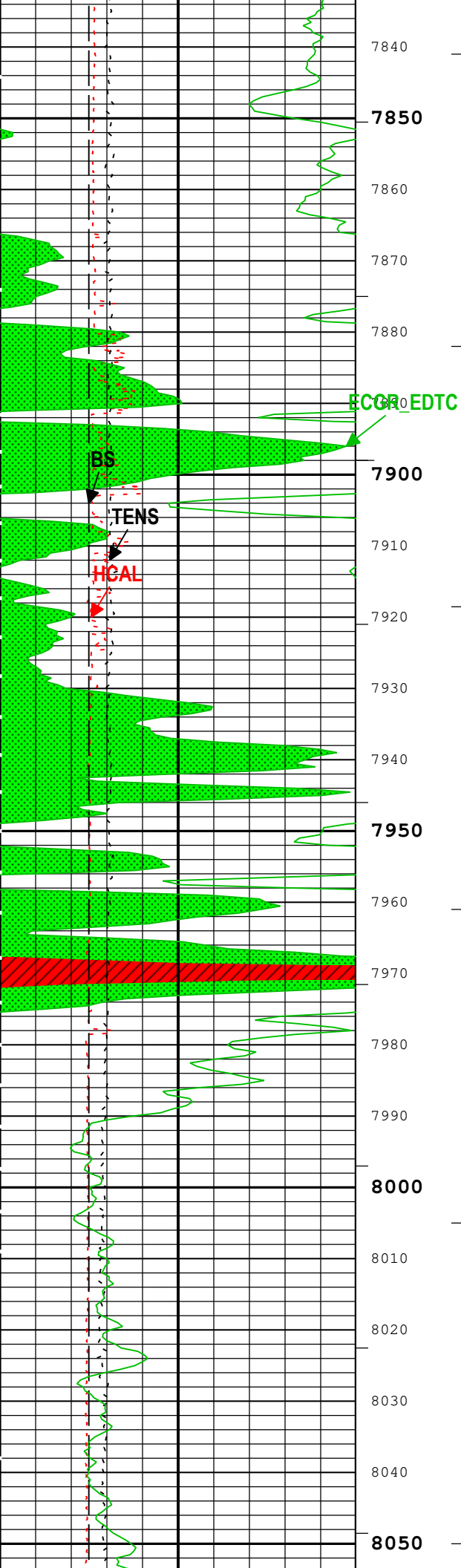
Apparent Resistivity from Computed Focusing Mode 4 (RLA4) HRLT-B

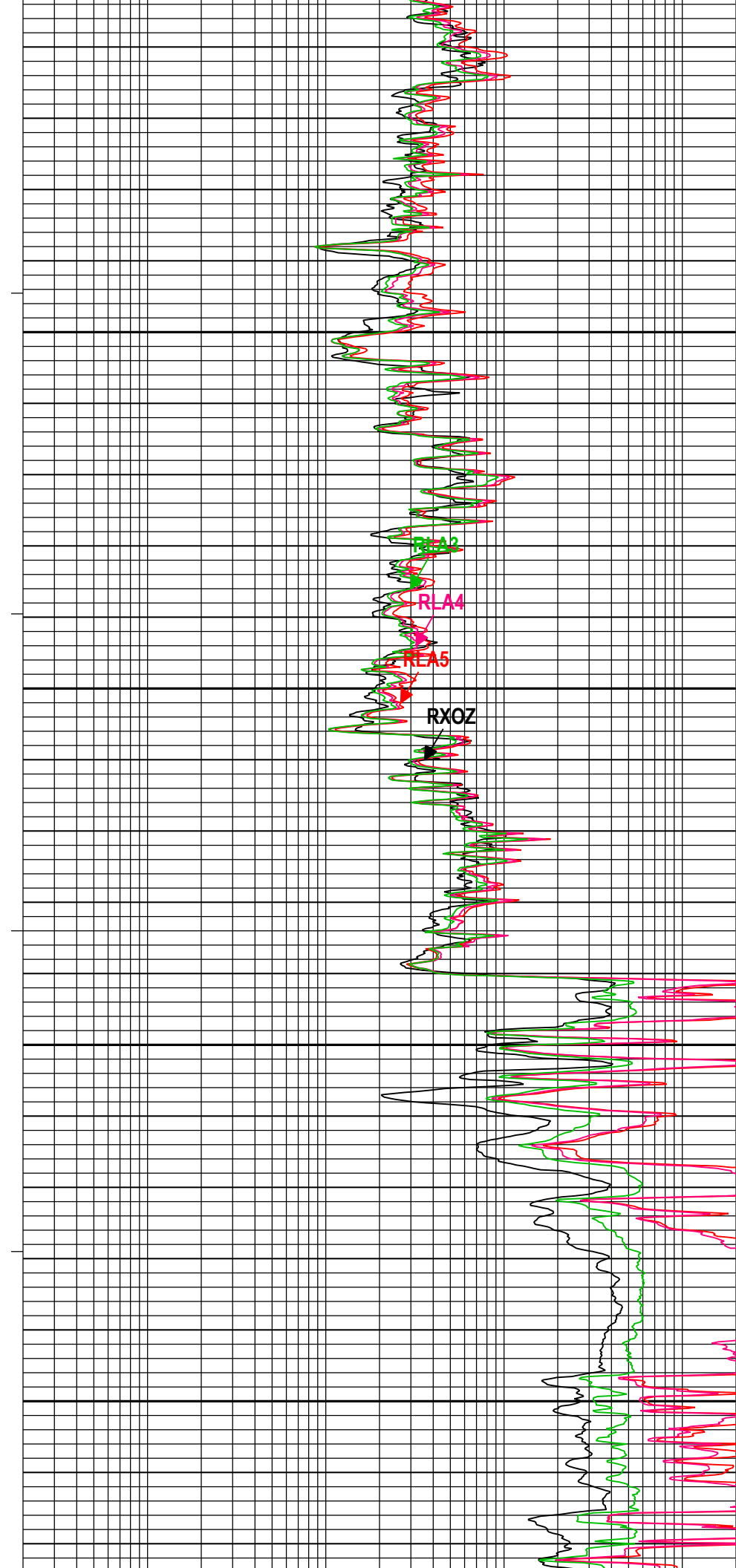
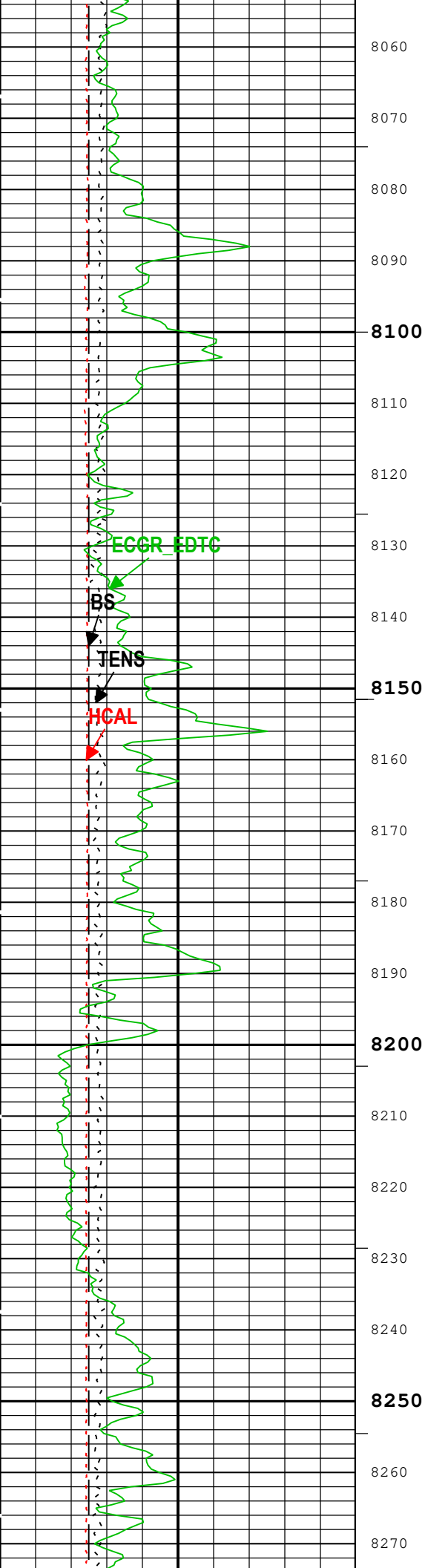
0.2 ohm.m 2000

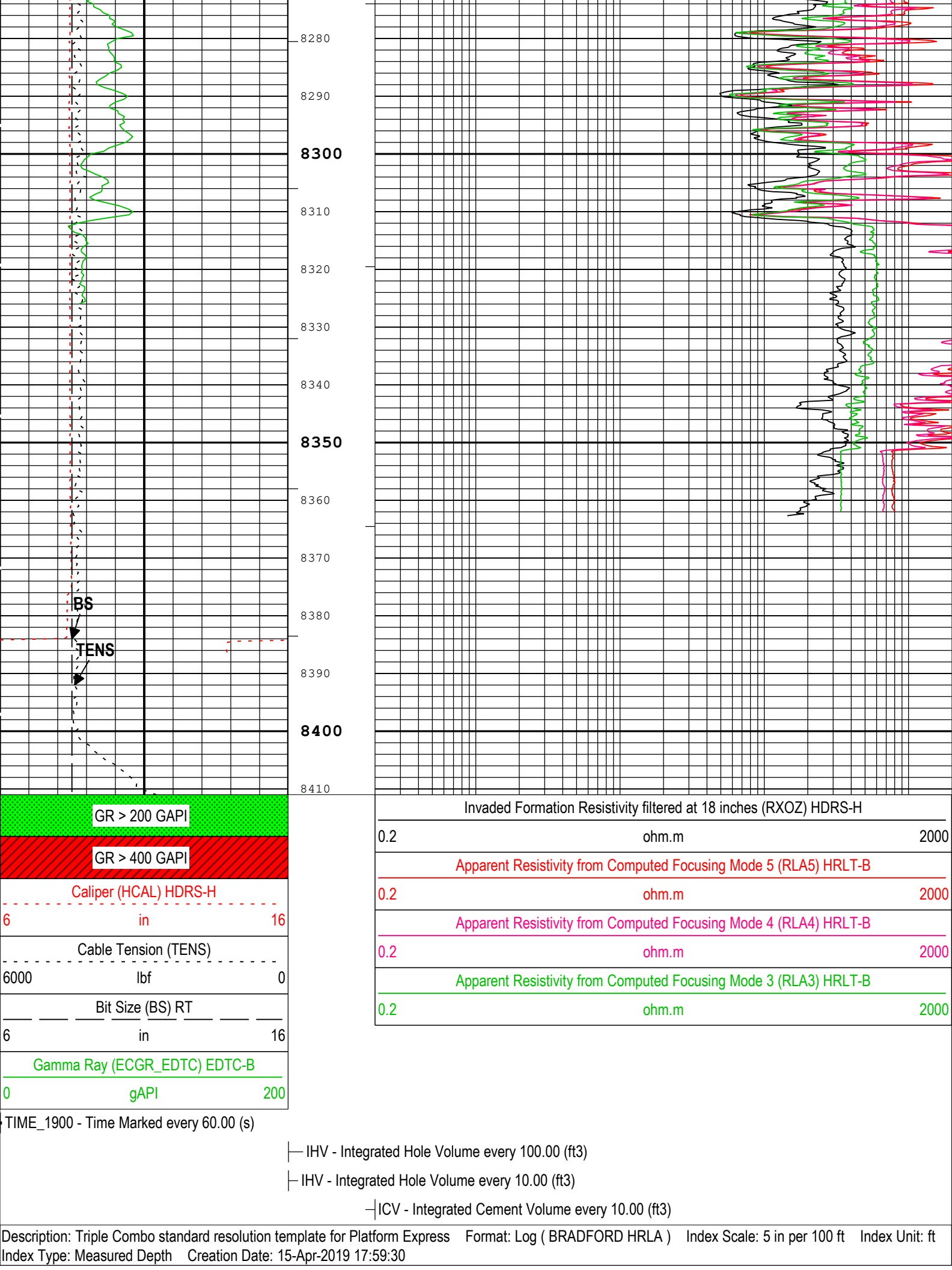
Apparent Resistivity from Computed Focusing Mode 3 (RLA3) HRLT-B

0.2 ohm.m 2000









Channel Processing Parameters

1A: Parameters

Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.5	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.446	in
CBLO	Casing Bottom (Logger)	WLSESSION	2543	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
DFD	Drilling Fluid Density	Borehole	9.5	lbm/gal
FCD	Future Casing (Outer) Diameter	WLSESSION	5.5	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	MRES	
PROCRM	Mud Resistivity Select	HRLT-B	HRLT Compute	
KFAC_HRLT	HRLT Geometrical Factor Option	HRLT-B	Sonde	
PROCMSO	Mechanical Standoff Size	HRLT-B	1.5	in
PROCSP0	Sonde Position	HRLT-B	Eccentered	

Tool Control Parameters

1A: Parameters

Parameter	Description	Tool	Value	Unit
HRGD_BOARD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	1800	ft/h

Calibration Report

HDRS-H (HILT Density and Rxo Sonde, 150 degC) Calibration - Run 1A

Primary Equipment :

HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	4945
HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H	3921

Auxiliary Equipment :

HRDD Backscatter Detector	Backscatter	
HRDD Long Spacing Detector	Long Spacing	
HRDD Short Spacing Detector	Short Spacing	
Cesium 137 Gamma-Ray Logging Source	GSR-J	5542
HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	4945
HILT High-Resolution Mechanical Sonde, 150 degC	HRMS-H	3791

Calibration Parameter :

Small Ring Size (Caliper Calibration Small Ring)	8.00
Large Ring Size (Caliper Calibration Large Ring)	12.00

HDRS Caliper Calibration - Caliper Accumulations

Before (Measured): 11:08:58 10-Apr-2019 Expired by 3 days							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	7.61	10.00	
Large Ring	in	Before	12.00	9.00	11.97	15.00	

HDRS Density Calibration - Inversion Results

Master (EEPROM): 12:07:48 13-Mar-2019 Expired by 2 days							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.598	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.688	1.696	

Pe Aluminum		Master	2.570	2.470	2.513	2.670	
Pe Magnesium		Master	2.650	2.550	2.635	2.750	

HDRS Density Calibration - Deviation Summary

Master (EEPROM): 12:07:48 13-Mar-2019 Expired by 2 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.3604	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.6871	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.4723	1.0000	
SS Max Deviation	%	Master	0	-2.5000	1.6763	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.5493	1.5000	
LS Max Deviation	%	Master	0	-3.5000	1.5827	3.5000	

HDRS Density Calibration - Background Summary

Master (EEPROM): 12:07:48 13-Mar-2019 Expired by 2 days Before (Measured): 11:02:55 10-Apr-2019 Expired by 3 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7369		
		Before	0.7369	0.7001	0.7368	0.7738	
		Before-Master	-----	-----	-0.0001	-----	
BS Window Sum	1/s	Master	1		23763		
		Before	23763	22575	23754	24951	
		Before-Master	-----	-----	-9	-----	
SS Window Ratio		Master	1.0000		0.4870		
		Before	0.4870	0.4626	0.4878	0.5113	
		Before-Master	-----	-----	0.0008	-----	
SS Window Sum	1/s	Master	1		12000		
		Before	12000	11400	11981	12600	
		Before-Master	-----	-----	-19	-----	
LS Window Ratio		Master	1.0000		0.3002		
		Before	0.3002	0.2852	0.3000	0.3152	
		Before-Master	-----	-----	-0.0002	-----	
LS Window Sum	1/s	Master	1		1202		
		Before	1202	1142	1195	1262	
		Before-Master	-----	-----	-7	-----	

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM): 12:07:48 13-Mar-2019 Expired by 2 days Before (Measured): 11:02:55 10-Apr-2019 Expired by 3 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000.0	1404.2	2400.0	
		Before		1000.0	1396.5	2400.0	
		Before-Master	-----	-100.0	-7.7	100.0	
SS PM High Voltage	V	Master		1000.0	1531.6	2400.0	
		Before		1000.0	1527.3	2400.0	
		Before-Master	-----	-100.0	-4.3	100.0	
LS PM High Voltage	V	Master		1000.0	1324.6	2400.0	
		Before		1000.0	1319.7	2400.0	
		Before-Master	-----	-100.0	-4.9	100.0	

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM): 12:07:48 13-Mar-2019 Expired by 2 days Before (Measured): 11:02:55 10-Apr-2019 Expired by 3 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	12.36	25.00	
		Before		5.00	12.27	25.00	
		Before-Master	-----	-1.00	-0.09	1.00	
SS Crystal Resolution	%	Master		5.00	9.62	20.00	
		Before		5.00	9.66	20.00	
		Before-Master	-----	-1.00	0.04	1.00	
LS Crystal Resolution	%	Master		5.00	8.54	20.00	
		Before		5.00	8.42	20.00	
		Before-Master	-----	-1.00	-0.12	1.00	

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured): 07:00:29 15-Apr-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3888	4185	

HRLT-B Calibration - HRLT M2-M3 Voltage Plus							
Before (Measured):		10:59:26 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT M23 - 0	uV	Before	1781.0	1548.7	1732.1	2095.3	
		After	----	----	----	----	
		After-Before	----	----	----	----	

HRLT M23 - 1	uV	Before After After-Before	1781.0 ---- ----	1548.7 ---- ----	2048.6 ---- ----	2095.3 ---- ----	
HRLT M23 - 2	uV	Before After After-Before	1781.0 ---- ----	1548.7 ---- ----	1955.1 ---- ----	2095.3 ---- ----	
HRLT M23 - 3	uV	Before After After-Before	1781.0 ---- ----	1548.7 ---- ----	1762.7 ---- ----	2095.3 ---- ----	
HRLT M23 - 4	uV	Before After After-Before	1781.0 ---- ----	1548.7 ---- ----	1728.0 ---- ----	2095.3 ---- ----	
HRLT M23 - 5	uV	Before After After-Before	1781.0 ---- ----	1548.7 ---- ----	1786.4 ---- ----	2095.3 ---- ----	
HRLT M23 - 6	uV	Before After After-Before	-1781.0 ---- ----	-2095.3 ---- ----	-1842.4 ---- ----	-1548.7 ---- ----	

HRLT-B Calibration - HRLT A3-A4 Voltage Plus

Before (Measured):		10:59:26 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT V34 - 0	uV	Before After After-Before	70000.0 ---- ----	60869.6 ---- ----	68873.9 ---- ----	82352.9 ---- ----	
HRLT V34 - 1	uV	Before After After-Before	70000.0 ---- ----	60869.6 ---- ----	81622.0 ---- ----	82352.9 ---- ----	
HRLT V34 - 2	uV	Before After After-Before	70000.0 ---- ----	60869.6 ---- ----	78130.2 ---- ----	82352.9 ---- ----	
HRLT V34 - 3	uV	Before After After-Before	70000.0 ---- ----	60869.6 ---- ----	70598.3 ---- ----	82352.9 ---- ----	
HRLT V34 - 4	uV	Before After After-Before	70000.0 ---- ----	60869.6 ---- ----	69081.6 ---- ----	82352.9 ---- ----	
HRLT V34 - 5	uV	Before After After-Before	70000.0 ---- ----	60869.6 ---- ----	71368.4 ---- ----	82352.9 ---- ----	
HRLT V34 - 6	uV	Before After After-Before	-70000.0 ---- ----	-82352.9 ---- ----	-72369.0 ---- ----	-60869.6 ---- ----	

HRLT-B Calibration - HRLT A4-A5 Voltage Plus

Before (Measured):		10:59:26 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT V45 - 0	uV	Before After After-Before	70000.0 ---- ----	60869.6 ---- ----	68726.6 ---- ----	82352.9 ---- ----	
HRLT V45 - 1	uV	Before After After-Before	70000.0 ---- ----	60869.6 ---- ----	81383.8 ---- ----	82352.9 ---- ----	
HRLT V45 - 2	uV	Before After After-Before	70000.0 ---- ----	60869.6 ---- ----	77904.8 ---- ----	82352.9 ---- ----	
HRLT V45 - 3	uV	Before After After-Before	70000.0 ---- ----	60869.6 ---- ----	70423.0 ---- ----	82352.9 ---- ----	
HRLT V45 - 4	uV	Before After After-Before	70000.0 ---- ----	60869.6 ---- ----	68925.2 ---- ----	82352.9 ---- ----	
HRLT V45 - 5	uV	Before After	70000.0 ----	60869.6 ----	71216.4 ----	82352.9 ----	

		After-Before	----	----	----	----	
HRLT V45 - 6	uV	Before	-70000.0	-82352.9	-72138.0	-60869.6	
		After	----	----	----	----	
		After-Before	----	----	----	----	

HRLT-B Calibration - HRLT A5-A6 Voltage Plus

Before (Measured):		10:59:26 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT V56 - 0	uV	Before	70000.0	60869.6	68875.1	82352.9	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT V56 - 1	uV	Before	70000.0	60869.6	81863.8	82352.9	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT V56 - 2	uV	Before	70000.0	60869.6	78315.0	82352.9	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT V56 - 3	uV	Before	70000.0	60869.6	70712.1	82352.9	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT V56 - 4	uV	Before	70000.0	60869.6	69124.4	82352.9	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT V56 - 5	uV	Before	70000.0	60869.6	71393.3	82352.9	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT V56 - 6	uV	Before	-70000.0	-82352.9	-72588.8	-60869.6	
		After	----	----	----	----	
		After-Before	----	----	----	----	

HRLT-B Calibration - HRLT Torpedo-M0 Voltage

Before (Measured):		10:59:26 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT VTP - 0	uV	Before	-70000.0	-82352.9	-68225.6	-60869.6	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT VTP - 1	uV	Before	-70000.0	-82352.9	-81150.6	-60869.6	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT VTP - 2	uV	Before	-70000.0	-82352.9	-77724.9	-60869.6	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT VTP - 3	uV	Before	-70000.0	-82352.9	-70310.4	-60869.6	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT VTP - 4	uV	Before	-70000.0	-82352.9	-68869.0	-60869.6	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT VTP - 5	uV	Before	-70000.0	-82352.9	-71153.2	-60869.6	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT VTP - 6	uV	Before	70000.0	60869.6	71885.7	82352.9	
		After	----	----	----	----	
		After-Before	----	----	----	----	

HRLT-B Calibration - HRLT Bridle#9-M0 Voltage

Before (Measured):		10:59:26 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT VBD - 0	uV	Before	-70000.0	-82352.9	-68239.8	-60869.6	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT VBD - 1	uV	Before	-70000.0	-82352.9	-81160.0	-60869.6	
		After	----	----	----	----	
		After-Before	----	----	----	----	
HRLT VBD - 2	uV	Before	-70000.0	-82352.9	-77729.5	-60869.6	
		After	----	----	----	----	
		After-Before	----	----	----	----	

		After After-Before	----	----	----	----	
HRLT VBD - 3	uV	Before After After-Before	-70000.0 ----- ----	-82352.9 ----- ----	-70321.1 ----- ----	-60869.6 ----- ----	
HRLT VBD - 4	uV	Before After After-Before	-70000.0 ----- ----	-82352.9 ----- ----	-68877.8 ----- ----	-60869.6 ----- ----	
HRLT VBD - 5	uV	Before After After-Before	-70000.0 ----- ----	-82352.9 ----- ----	-71163.6 ----- ----	-60869.6 ----- ----	
HRLT VBD - 6	uV	Before After After-Before	70000.0 ----- ----	60869.6 ----- ----	71897.9 ----- ----	82352.9 ----- ----	

HRLT-B Calibration - HRLT Source Current Plus

Before (Measured):		10:59:26 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT ISO - 0	uA	Before After After-Before	284.0 ----- ----	247.0 ----- ----	285.1 ----- ----	334.1 ----- ----	
HRLT ISO - 1	uA	Before After After-Before	281.1 ----- ----	244.4 ----- ----	281.1 ----- ----	330.7 ----- ----	
HRLT ISO - 2	uA	Before After After-Before	281.1 ----- ----	244.4 ----- ----	281.1 ----- ----	330.7 ----- ----	
HRLT ISO - 3	uA	Before After After-Before	281.1 ----- ----	244.4 ----- ----	281.1 ----- ----	330.7 ----- ----	
HRLT ISO - 4	uA	Before After After-Before	281.1 ----- ----	244.4 ----- ----	281.1 ----- ----	330.7 ----- ----	
HRLT ISO - 5	uA	Before After After-Before	281.1 ----- ----	244.4 ----- ----	281.1 ----- ----	330.7 ----- ----	
HRLT ISO - 6	uA	Before After After-Before	281.1 ----- ----	244.4 ----- ----	281.1 ----- ----	330.7 ----- ----	

HRLT-B Calibration - HRLT Vertical Voltage PI

Before (Measured):		10:59:26 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT MV - 0	uV	Before After After-Before	-322.7 ----- ----	-379.6 ----- ----	-321.2 ----- ----	-280.6 ----- ----	
HRLT MV - 1	uV	Before After After-Before	-322.7 ----- ----	-379.6 ----- ----	-369.9 ----- ----	-280.6 ----- ----	
HRLT MV - 2	uV	Before After After-Before	-322.7 ----- ----	-379.6 ----- ----	-352.4 ----- ----	-280.6 ----- ----	
HRLT MV - 3	uV	Before After After-Before	-322.7 ----- ----	-379.6 ----- ----	-315.3 ----- ----	-280.6 ----- ----	
HRLT MV - 4	uV	Before After After-Before	-322.7 ----- ----	-379.6 ----- ----	-306.7 ----- ----	-280.6 ----- ----	
HRLT MV - 5	uV	Before After After-Before	-322.7 ----- ----	-379.6 ----- ----	-331.8 ----- ----	-280.6 ----- ----	
HRLT MV - 6	uV	Before After After-Before	322.7 ----- ----	280.6 ----- ----	347.3 ----- ----	379.6 ----- ----	

HRLT-B Calibration - HRLT Calibration Temperature

Before (Measured):		10:59:26 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CTEM_HRLT	degF	Before			63.7		
		After	----	----	----	----	
		After-Before	----	----	----	----	

HGNS-H (HILT Gamma-Ray and Neutron Sonde, 150 degC) Calibration - Run 1A

Primary Equipment :			
HILT Gamma-Ray and Neutron Sonde, 150 degC		HGNS-H	4951
Auxiliary Equipment :			
HGNS Accelerometer, 150 degC		HACCZ-H	7648
AmBe Neutron Logging Source		NSR-F	5242
Calibration Parameter :			
Water Temperature			
Housing Size			
JIG-BKG (Jig minus background reference)		165	

HGNS Accelerometer Calibration - Accelerometer Accumulations

Before:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement - 0	ft/s2	Before	----	----	----	----	

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM):		19:00:00 14-Jan-2008					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Accelerometer Manufacturer		Master			QAT_160		
Accelerometer Reference Temperature	degF	Master		30.2	77.0	122.0	
Accelerometer Coefficients - 0		Master	----	----	-1672.000	----	
Accelerometer Coefficients - 1		Master	----	----	16.298	----	
Accelerometer Coefficients - 2		Master	----	----	-0.016	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	2.745	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	298.600	----	
Accelerometer Coefficients - 9		Master	----	----	1.005	----	

HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM): 13:14:24 17-Feb-2019 Before (Measured): 11:02:20 10-Apr-2019 Expired by 3 days After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	28.7	40.0	
		Before	0	5.0	27.5	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.3	-1.2	4.3	
		After-Before	----	----	----	----	
Far Zero Measurement	1/s	Master	0	5.0	28.6	40.0	
		Before	0	5.0	29.8	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.3	1.2	4.3	
		After-Before	----	----	----	----	
Near Plus Measurement	1/s	Master	6031.0	4700.0	4861.0	6900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Plus Measurement	1/s	Master	2793.0	1900.0	2083.0	2900.0	

Far Plus Measurement	1/s	Master	2700.0	1900.0	2000.0	2000.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Near Corrected Plus Measurement	1/s	Master		4700.0	4828.0	6900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Corrected Plus Measurement	1/s	Master		1900.0	2051.0	2900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured): 11:09:30 10-Apr-2019 Expired by 3 days After:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	43.7	120.0	
		After	----	----	----	----	
		After-Before	----	----	----	----	
RGR Plus Measurement	gAPI	Before	185.4	157.1	177.9	206.3	
		After	----	----	NOT DONE	----	
		After-Before	----	----	----	----	
GR Calibration Gain		Before	0.89	0.80	0.93	1.05	
		After	----	----	----	----	
		After-Before	----	----	----	----	

HNGS-BA (Hostile-environment Natural Gamma-ray Sonde) Calibration - Run 1A

Primary Equipment :							
	HNGS Sonde Element		HNGS-BA		425		
Auxiliary Equipment :							
	Hostile Natural Gamma Ray Cartridge		HNGC-B		108		
	HNGS Housing Element		HEH-K		1070		
					0		
	Housing for the HNGC		HNGH-A		46		

Calibration History - Calibration History

Master:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
- 0		Master	----	----	----	----	

HNGS Background and Na22 Set Point Determination - Detector 1 Check

Master (EEPROM): 13:40:25 26-Oct-2018		Before (Measured): 11:04:20 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Location		Master	40.000	37.500	38.569	42.500	
		Before	40.000	37.500	38.552	42.500	
		After	40.000	37.500	NOT DONE	42.500	
		Before-Master	----	----	-0.017	----	
		After-Before	----	----	----	----	
Na 511 Peak Resolution	%	Master	15.500	12.000	13.853	19.000	
		Before	15.500	12.000	14.771	19.000	
		After	15.500	12.000	NOT DONE	19.000	
		Before-Master	----	----	0.918	----	
		After-Before	----	----	----	----	
High Voltage DAC Value	V	Master			932.830		
		Before	1150.000	850.000	936.847	1600.000	
		After	----	----	----	----	
		Before-Master	----	----	4.017	----	
		After-Before	----	----	----	----	
Na 1785 Peak Location		Master	142.650	135.000	139.621	150.300	

		Before	142.650	135.000	139.444	150.300	
		After	142.650	135.000	NOT DONE	150.300	
		Before-Master	----	----	-0.177	----	
		After-Before	----	----	----	----	
Na 1785 Peak Resolution	%	Master	8.500	6.500	8.477	11.000	
		Before	8.500	6.500	8.782	11.000	
		After	8.500	6.500	NOT DONE	11.000	
		Before-Master	----	----	0.305	----	
		After-Before	----	----	----	----	
Temperature - 0	degF	Master	----	----	----	----	
		Before	59.900	-20.002	69.262	140.000	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Na Count Rate	CPS	Master	45.000	15.000	21.874	100.000	
		Before	45.000	15.000	20.271	100.000	
		After	45.000	15.000	NOT DONE	100.000	
		Before-Master	----	----	-1.603	----	
		After-Before	----	----	----	----	

HNGS Background and Na22 Set Point Determination - Detector 2 Check							
Master (EEPROM): 13:40:25 26-Oct-2018		Before (Measured): 11:04:20 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Location		Master	40.000	37.500	38.688	42.500	
		Before	40.000	37.500	38.571	42.500	
		After	40.000	37.500	NOT DONE	42.500	
		Before-Master	----	----	-0.117	----	
		After-Before	----	----	----	----	
Na 511 Peak Resolution	%	Master	15.500	12.000	14.863	19.000	
		Before	15.500	12.000	14.764	19.000	
		After	15.500	12.000	NOT DONE	19.000	
		Before-Master	----	----	-0.099	----	
		After-Before	----	----	----	----	
High Voltage DAC Value	V	Master			932.385		
		Before	1150.000	850.000	935.360	1600.000	
		After	----	----	----	----	
		Before-Master	----	----	2.975	----	
		After-Before	----	----	----	----	
Na 1785 Peak Location		Master	142.650	135.000	139.138	150.300	
		Before	142.650	135.000	139.247	150.300	
		After	142.650	135.000	NOT DONE	150.300	
		Before-Master	----	----	0.109	----	
		After-Before	----	----	----	----	
Na 1785 Peak Resolution	%	Master	8.500	6.500	7.905	11.000	
		Before	8.500	6.500	7.981	11.000	
		After	8.500	6.500	NOT DONE	11.000	
		Before-Master	----	----	0.076	----	
		After-Before	----	----	----	----	
Temperature - 0	degF	Master	----	----	----	----	
		Before	59.900	-20.002	69.731	140.000	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Na Count Rate	CPS	Master	45.000	15.000	21.259	100.000	
		Before	45.000	15.000	19.419	100.000	
		After	45.000	15.000	NOT DONE	100.000	
		Before-Master	----	----	-1.840	----	
		After-Before	----	----	----	----	

HNGS Background and Na22 Set Point Determination - Ratio of Detector 1 to Detector 2							
Master (EEPROM): 13:40:25 26-Oct-2018		Before (Measured): 11:04:20 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coincidence Count Rate Ratio		Master			1.030		
		Before	1.000	0.950	1.041	1.050	
		After	----	----	----	----	

		Before-Master	----	----	0.011	----	
		After-Before	----	----	----	----	

HNGS Background and Na22 Set Point Determination - Detector 1 Calibration

Master (EEPROM): 13:40:25 26-Oct-2018		Before (Measured): 11:04:20 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Th Peak Location		Master	209.630	201.000	208.272	218.250	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Th Peak Resolution	%	Master	7.000	5.000	7.280	9.000	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Background Count Rate	CPS	Master			78.744		
		Before	142.500	15.000	131.168	265.000	
		After	----	----	----	----	
		Before-Master	----	----	52.424	----	
		After-Before	----	----	----	----	
Gain Ratio		Master	1.000	0.940	1.027	1.060	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

HNGS Background and Na22 Set Point Determination - Detector 2 Calibration

Master (EEPROM): 13:40:25 26-Oct-2018		Before (Measured): 11:04:20 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Th Peak Location		Master	209.630	201.000	207.627	218.250	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Th Peak Resolution	%	Master	7.000	5.000	6.663	9.000	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Background Count Rate	CPS	Master			77.082		
		Before	142.500	15.000	130.502	265.000	
		After	----	----	----	----	
		Before-Master	----	----	53.420	----	
		After-Before	----	----	----	----	
Gain Ratio		Master	1.000	0.940	1.021	1.060	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

HNGS Background and Na22 Set Point Determination - Detector 1 Calibration

Master (EEPROM): 13:40:25 26-Oct-2018		Before (Measured): 11:04:20 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Set Point		Master	40.000	38.000	40.000	43.500	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

HNGS Background and Na22 Set Point Determination - Detector 2 Calibration

Master (EEPROM): 13:40:25 26-Oct-2018		Before (Measured): 11:04:20 10-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Set Point		Master	40.000	38.000	40.000	43.500	
		Before	----	----	----	----	

		After	----	----	----	----		
		Before-Master	----	----	----	----		
		After-Before	----	----	----	----		

EDTC-B (Enhanced Digital Telemetry Cartridge - Version B) Calibration - Run 1A

Primary Equipment :		EDTC-B	EDTC-B	9231
Calibration Parameter :		Plus Reference (Jig minus background reference)	165	

EDTC-B Accelerometer Calibration - EDTC-B Accelerometer Calibration

Before:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement - 0	ft/s2	Before	----	----	----	----	

EDTC-B Memory Data - EDTC-B Memory Data

Master (EEPROM):		09:57:01 15-Apr-2019					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Initial PMT HV	V	Master			1395.000		
Accelerometer Serial Number		Master			144		
Accelerometer Coefficients - 0		Master	----	----	2.938E+000	----	
Accelerometer Coefficients - 1		Master	----	----	2.077E-004	----	
Accelerometer Coefficients - 2		Master	----	----	7.563E-007	----	
Accelerometer Coefficients - 3		Master	----	----	-2.103E-008	----	
Accelerometer Coefficients - 4		Master	----	----	5.623E-010	----	
Accelerometer Coefficients - 5		Master	----	----	-4.367E-012	----	
Accelerometer Coefficients - 6		Master	----	----	1.152E-014	----	
Accelerometer Coefficients - 7		Master	----	----	-1.113E-003	----	
Accelerometer Coefficients - 8		Master	----	----	2.612E-005	----	
Accelerometer Coefficients - 9		Master	----	----	1.450E-007	----	
Accelerometer Coefficients - 10		Master	----	----	-1.743E-009	----	
Accelerometer Coefficients - 11		Master	----	----	3.857E-012	----	
Gamma-Ray Detector Serial Number		Master			79427		

EDTC-B Gamma-Ray Calibration - Gamma Ray Coefficients

Before (Measured):		10:54:27 09-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Gain		Before	1.000	0.900	1.023	1.100	
		After	----	----	----	----	
		After-Before	----	----	----	----	

EDTC-B Gamma-Ray Calibration - Gamma Ray Accumulations

Before (Measured):		10:54:27 09-Apr-2019		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before		0	41.860	120.000	
		After	----	----	----	----	
		After-Before	----	----	----	----	
RGR Plus Measurement	gAPI	Before	165.000	150.000	161.285	180.000	
		After			NOT DONE		
		After-Before	----	----	----	----	

LEH-MT (Logging Equipment Head - MT, 3-3/8 inch 31 pin HPHT with Tension and Temperature Sensor (Need STGC/HTGC to process temperature signal)) Calibration - Run 1A

Primary Equipment :		Logging Equipment Head - MT, 3-3/8 inch 31 pin HPHT with Tension and Temperature Sensor (Need STGC/HTGC to process temperature signal)	LEH-MT
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HTEN Master Calibration - HTEN Master Calibration

Master:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HTEN Shop Gain		Master	1.000	0.800	NOT DONE	4.500	

HTEN Shop Offset	lbf	Master	0	-1000.000	NOT DONE	1000.000	
HTEN Before Calibration - HTEN Before Calibration							
Before:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RHTE Zero Measurement - 0	lbf	Before	----	----	----	----	
RHTE Plus Measurement - 0	lbf	Before	----	----	----	----	
HTEN Gain - 0		Before	----	----	----	----	
HTEN Offset - 0	lbf	Before	----	----	----	----	

Company:

North East Natural Energy LLC

Schlumberger

Well:

Boggess 17H

Field:

Wildcat

County:

Monongalia

State:

West Virginia

PLATFORM EXPRESS

HIGH RESOLUTION LATERLOG ARRAY

RESISTIVITY / GAMMA RAY / CALIPER