

Company: **ESSO Australia Ltd.**

Well: **WTN-W48 A**

Field: Tuna

Rig: **NABORS 453** State: **Victoria**

Schlumberger

GeoVISION Service
1 : 200 Measured Depth
Recorded Mode

Rig: NABORS 453
Field: Tuna
Location: Bass Strait
Well: WTN-W48 A
Company: ESSO Australia Ltd.

Location	
Total depth:	2268 m
Spud date:	19-Jan-02
Runs:	1 To 2
Permanent datum:	Mean Sea Level
Log measured from:	Drill Floor
Depth reference:	Driller's Depth
	Elev.: 0 m
	34.69 m above Perm. datum

API serial no.	Longitude	Latitude
x = 5,771,791.69 m		
y = 621,538.528 m	E 148 23' 16.531"	S 38 11' 36.558"

Depth logged:	622 m	To	2253 m	Mag decl:	13.18 deg	Other services:
Date logged:	20-Jan-02	To	24-Jan-02	Mag dip:	-68.71 deg	Directional Surveys

Bore hole record

Casing record

Hole size	from	to	Size	Density	from	to
8.5 in.	622 m	2268 m	10.75 in.	40.5 lbm/ft	Surface	622 m

8.5 in.	622 m	2268 m	10.75 in.	40.5 lbm/ft	Surface	622 m

[illegible]

[illegible]

Mud record		Borehole deviation record	
Turns from	to	Mins from	to

Type	from	to	Min	Max	from	to
Wind record						
Sea/water	632 m	647 m	25 EN dec	25 67 dec	638 m	647 m

Type	Depth	Latitude	Longitude
SeaWater	622 m	25.50 deg	628 m
SeaWater	647 m	25.67 deg	647
SeaWater	647 m	25.67 deg	647

Octadecyl	0.22 m	0.47 m	20.30 deg	20.30 deg	0.20 m	0.47
KCl/PHPA	647 m	2268 m	25.67 deg	66.50 deg	647 m	2266

KCL/PTFA	04 / III	2200 III	23.0 / deg	00.30 deg	04 / III	2200

Surface equipment				
Software record				

Surface equipment	Software record
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Unit	OLU-FB-924	IDEAL Wis	id6_1c_10
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Unit	OLU-T-B-924	IDEAL wis	ide6_1c_10
Depth system	PDA	SPM	ide6_1c_10

Depth system	PDA	SPM	id6_1c_10

	LWD	See Toolsketch

	LWD	See Toolsketch
	MWD	See Toolsketch

		MWD	See Toolsketch
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DISCLAIMER

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OTHER SERVICES FOR RUN1

Directional Surveys

OTHER SERVICES FOR RUN2

Directional Surveys

OTHER SERVICES FOR RUN

REMARKS: RUN NUMBER 1

622 to 637 m interval was drilled in sliding mode.

All data presented is from memory.

GR is corrected for mud weight and bit size.

GVR Resistivity is corrected for bit size, mud resistivity and borehole temperature.

Neutron porosity is calculated with a limestone matrix, and is corrected for bit size, borehole salinity (from Rm), temperature, and mud hydrogen index (from mud weight, temperature and pressure).

REMARKS: RUN NUMBER 2

637 to 2268 m interval was drilled in rotating and sliding mode.

All data presented is from memory.

GR is corrected for mud weight and bit size.

GVR Resistivity is corrected for bit size, mud resistivity and borehole temperature.

There was barite in the mud.

The PEF curve is not presented.

Bottom quadrant density is presented.

Neutron porosity is calculated with a limestone matrix, and is corrected for bit size, borehole

REMARKS: RUN NUMBER

Pulled out of the hole at 637 m to change the bit and motor bend after kicking off.

Pulled out of the hole at 2268 m to run casing after reaching TD.

Environmental data

GR											
Mud weight	lbm/gal	8.5	10.5								
Bit size	in.	8.5	8.5								
Resistivity											
Neutron porosity											
Hole Size	in.	8.5	8.5								
Mud weight	lbm/gal	8.5	10.5								
Temperature	deg C	30	74.5								
Mud salinity	mg/l	0.0	72,600								
Formation salinity	mg/l	n/a	n/a								
Recording rate 1	SEC	10	10	GR/Res							
Recording rate 2	SEC	10	10	Den/Neut							
Filtering GR		3 pt.	3 pt.								
Filtering density		3 pt.	3 pt.								
Filtering Neutron		3 pt.	3 pt.								
Company representative	B.Woodward	J.Booker	B.Davis								
Anadrill personnel	T.Sims	T.Ford	L.Bon	C.Soper	T.Harvey	C.Cocks					

IDEAL Version: ID6_1C_10

IDF

RAB	id6_1c_10	MWD_10	id6_1c_10
ADN	id6_1c_10		

Format: TripleComboDepthLog

Vertical Scale: 1:200

Graphics File Created: 28-Jan-2002 17:48

Parameters

DLIS Name	Description	Value	
AVE_ADN	ADN/Array Channels: perform averaging(RM) :	YES	
BDBHCA	RAB: Button Deep Borehole A Factor	0.005	
BDBHCB	RAB: Button Deep Borehole B Factor	0.000	
BHA_COEF_VER	RAB: BHA Coef Generator Version	62012.0	
BHT_RM	Bottom Hole Temperature (RM)	74.500	degC
BMBHCA	RAB: Button Medium Borehole A Factor	0.024	
BMBHCB	RAB: Button Medium Borehole B Factor	0.000	
BSAL_RM	Mud Salinity (RM)	57.700	ppk
BSBHCA	RAB: Button Shallow Borehole A Factor	0.024	
BSBHCB	RAB: Button Shallow Borehole B Factor	0.000	
BS_RM	Bit Size (RM)	8.500	in
BUT_KIMP_A	RAB: Button Impedance Coeff A	0.000	
BUT_KIMP_B	RAB: Button Impedance Coeff B	0.000	
DBUTTON_K_FACTOR	RAB: Button Deep K factor	0.005	
DEVI	Average angle of the hole (RM)	61.000	deg
DHS_VERSION	RAB: DownHole Software Version	6.101	
DO	Depth Offset	0.0	m
DTMUD	Delta-T for Mud	645.2	us/m
ENVCOR	Neutron Quadrant Processing: Environmental Correction?	YES	
LITHO_TYPE_ADN	Lithology (RM)	LIME	
MBUTTON_K_FACTOR	RAB: Button Medium K Factor	0.005	
MST_RM	Mud Sample temperature (RM)	21.000	degC
MW_RM	Mud Weight (RM)	10.500	lbm/gal
OBM	RAB: Oil base Mud	NO	
OBMF_RM	Oil Based Mud	NO	
RABEC	RAB: Resistivity Env-Cor	YES	
RAB_TEMP_SELECT	RAB Temperature Selection	MEAS	
READOUT_PORT_MP	RAB: ROP to Bit Face Distance	14.718	m
RHOF_RM	Mud Filtrate Density (RM)	1.000	g/cm3
RHOM_RM	Matrix density (RM)	2.710	g/cm3
RINGBHCA	RAB: Ring Borehole A Factor	0.161	
RINGBHCB	RAB: Ring Borehole B Factor	0.000	
RING_KIMP_A	RAB: Ring Impedance Coeff A	0.000	
RING_KIMP_B	RAB: Ring Impedance Coeff B	0.000	
RING_K_FACTOR	RAB: Ring K Factor	0.153	
RMS_RM	Resistivity of Mud Sample (RM)	0.130	ohm.m
RWS_RM	Resistivity of Connate Water (RM)	1.000	ohm.m
SBUTTON_K_FACTOR	RAB: Button Shallow K Factor	0.007	
SHT_RM	Surface Hole Temperature (RM)	23.889	degC
SSIZ_ADN	ADN:Stabilizer Size (RM)	8.250	in

SHT_RM	Surface Hole Temperature (RM)	23.889	degC
SSIZ_ADN	ADN:Stabilizer Size (RM)	8.250	in
STAB	RAB: Run with Stabilizer	YES	
TD_RM	Total Measured Depth (RM)	2268.0	m
TOOLTYPE	RAB: Azimuthal Tool	YES	
TRPM_RM	Average Tool rotational Speed (RM)	20.000	c/min
TSIZ_ADN	ADN:Tool Size (RM)	6.750	in
TS_VERSION	RAB: ToolScope Software Version	6.101	
TWS_RM	Temperature of Connate Water (RM)	23.889	degC
USMIN_RM	ADN:Minimum ultra-sonic standoff (RM)	0.300	in
VERS_ADN	ADN downhole software	6.200	
VRAB6	Rab Tool type (ENP/PILOT)	RAB6_C_SERIES	

PIP SUMMARY

Density Samples ▬

Neutron Samples ▬

▬ Gamma Ray Samples
▬ Ring Samples

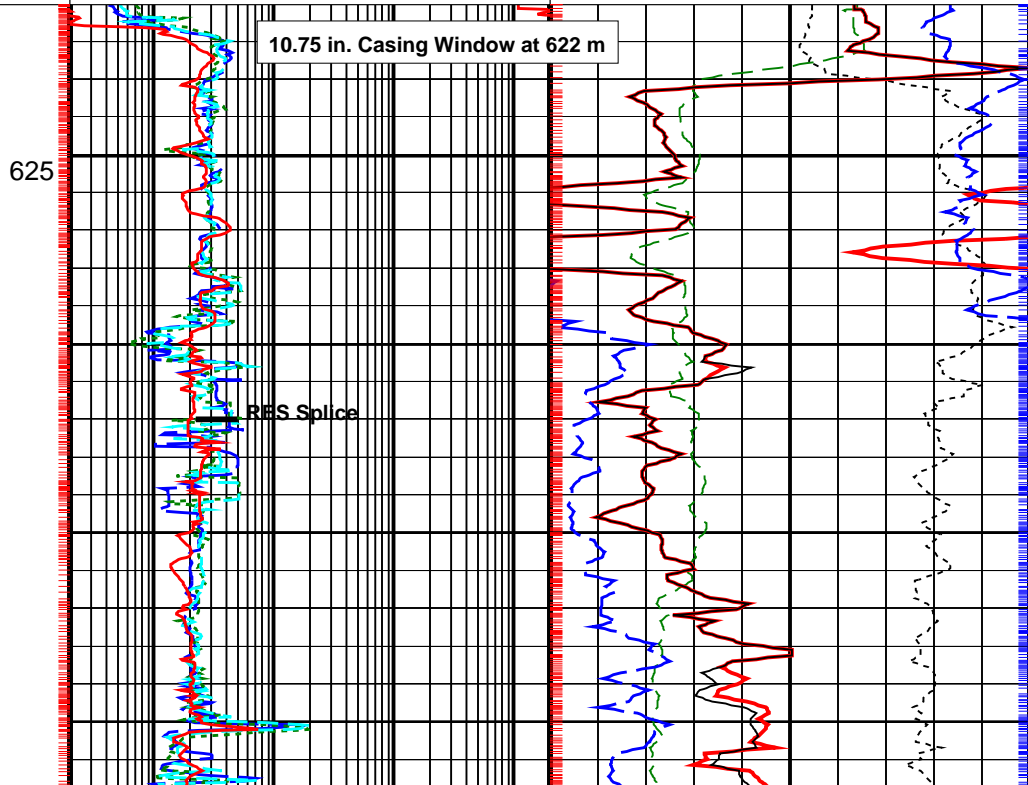
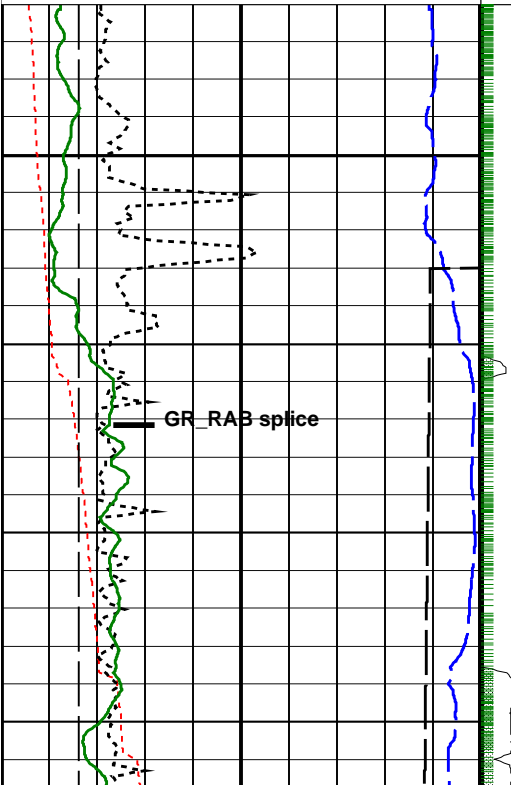
Rate of Penetration, Averaged over Last 5ft (ROP5_RM)		
200	(M/HR)	0
RAB Gamma Ray (GR_RAB)		
0	(GAPI)	200
True vertical Depth (TVDE)		
1500	(M)	500
Horizontal Hole Diameter (HORD)		
6	(IN)	16
Vertical Hole Diameter (VERD)		
6	(IN)	16

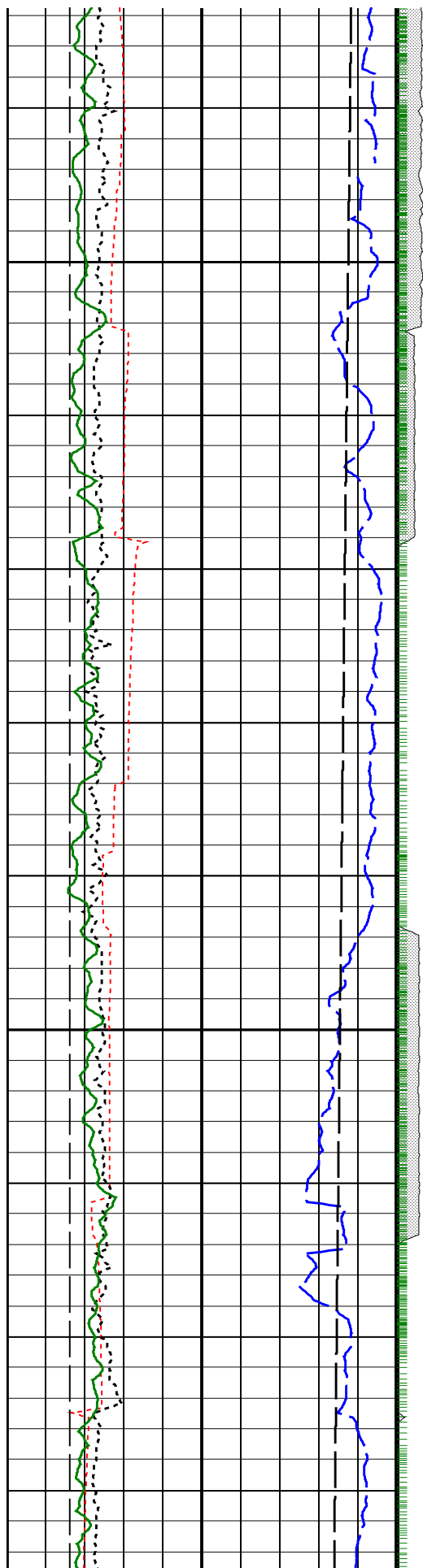
Gas Area From ADN/ROBB/DEPTH to ADN/TNPH/DEPTH		
Bulk Density (RHOB)		
1.85	(G/C3)	2.85
Ring Resistivity (RES_RING)		
0.2	(OHMM)	2000
Thermal Neutron Porosity (TNPH)		
45	(PU)	-15
Medium Button Resistivity (RES_BM)		
0.2	(OHMM)	2000
Bulk Density, Bottom (ROBB)		
1.85	(G/C3)	2.85
Shallow Button Resistivity (RES_BS)		
0.2	(OHMM)	2000
Photoelectric Factor, Bottom (PEB)		
0	(----	20

Density Time After Bit (TAB_DEN)		
0	(HR)	10
ADN Rotational Speed (RPM_ADN) (RPM)		
0		200

Deep Button Resistivity (RES_BD)		
0.2	(OHMM)	2000

Bulk Density Correction, Bottom (DRHB)		
-0.75	(G/C3)	0.25

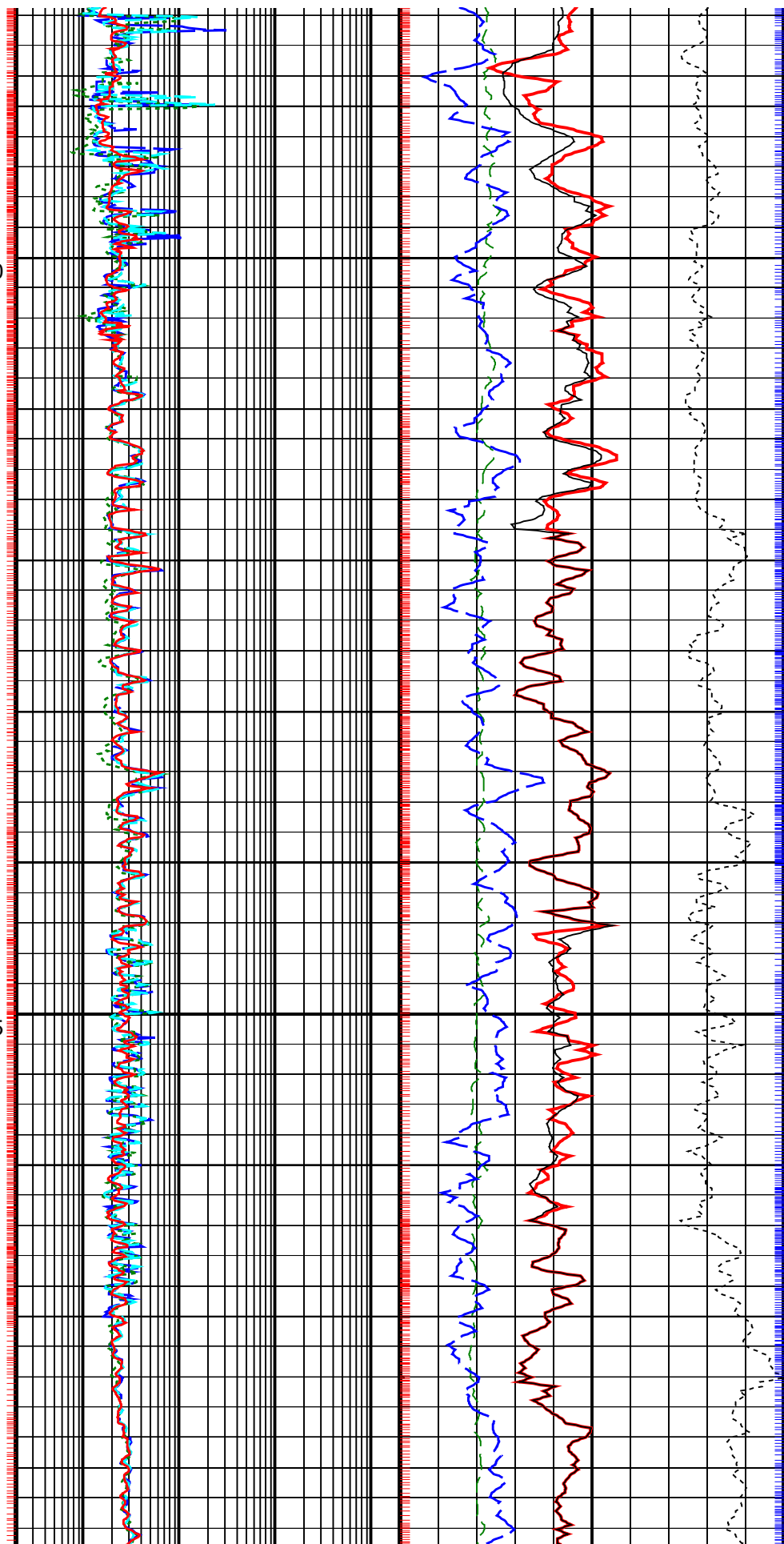


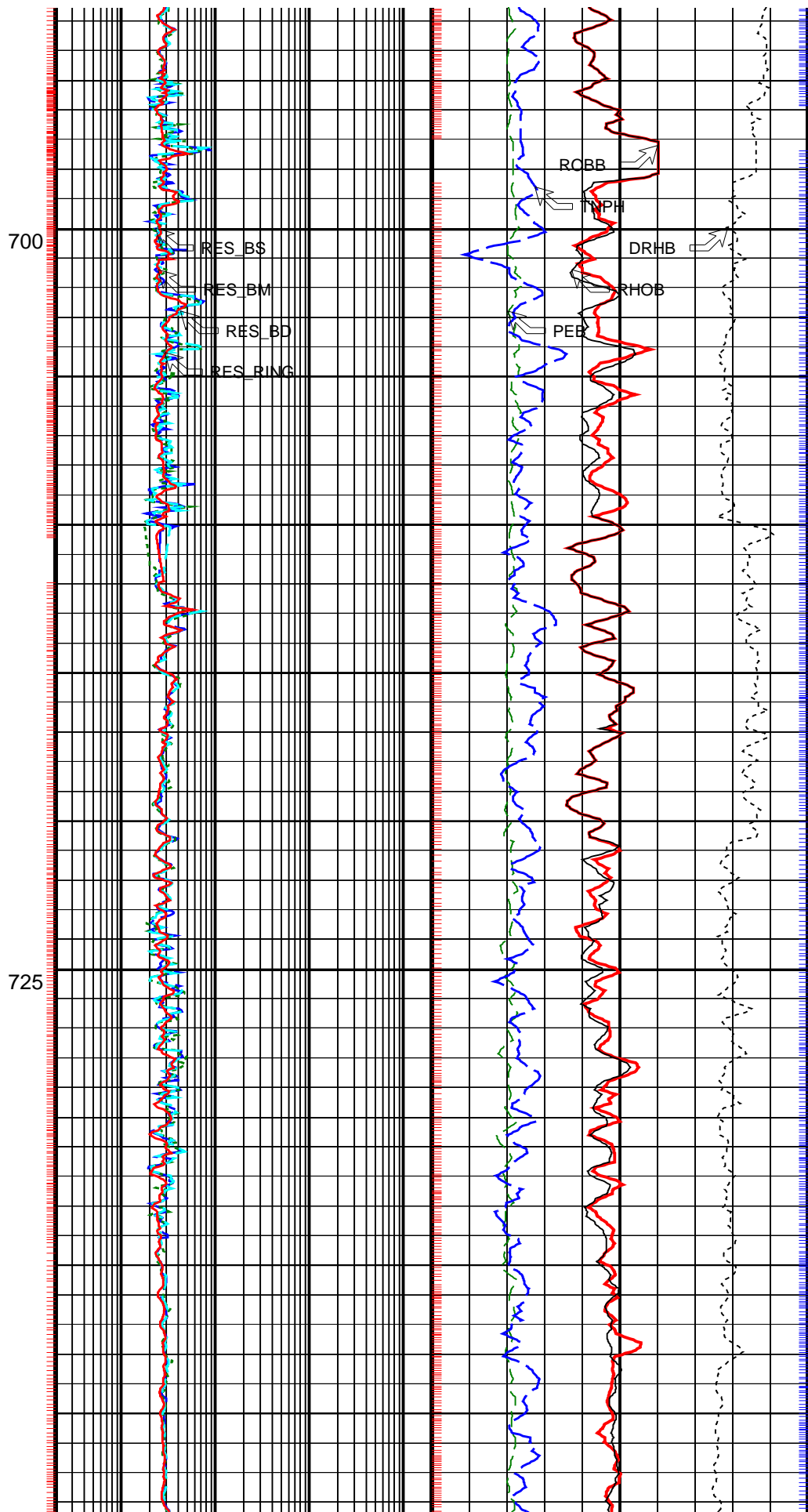
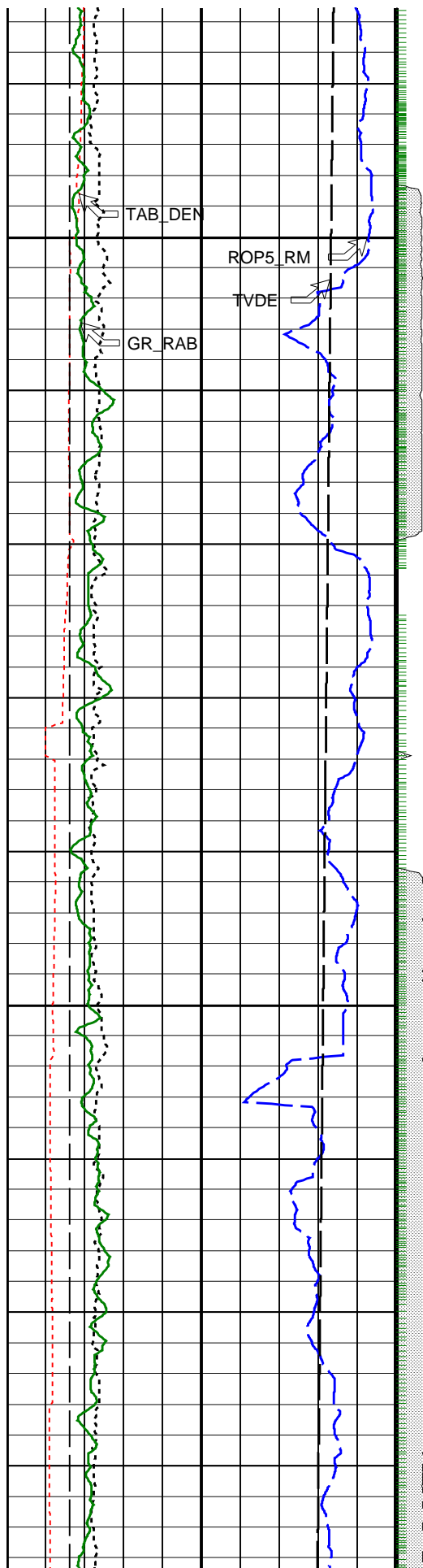


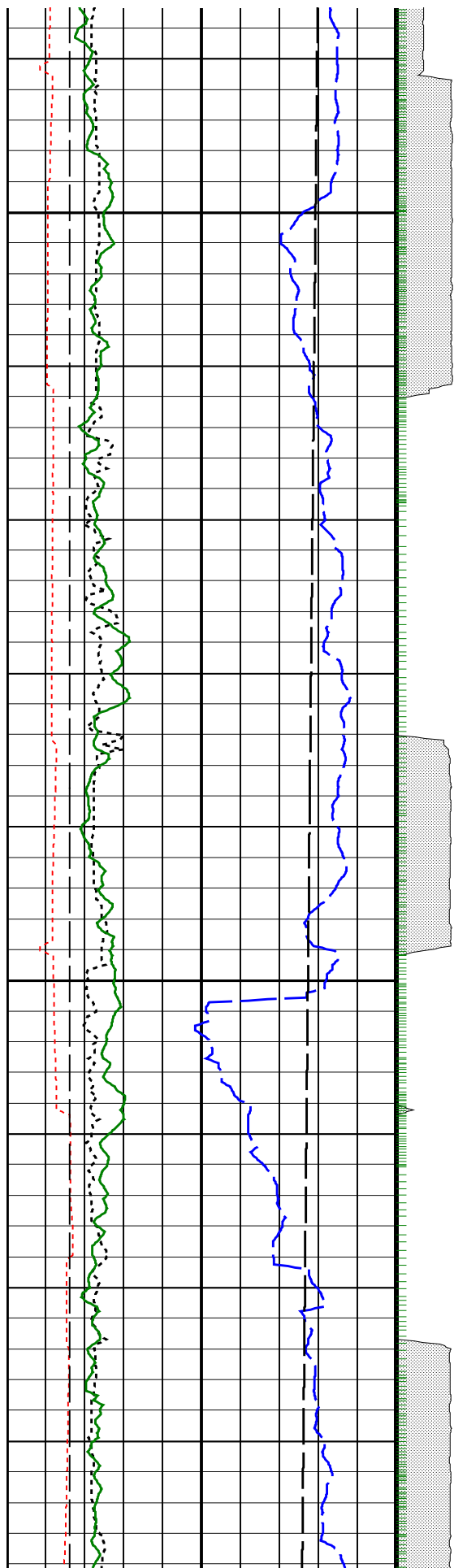
Run 1
647 m
Run 2

650

675

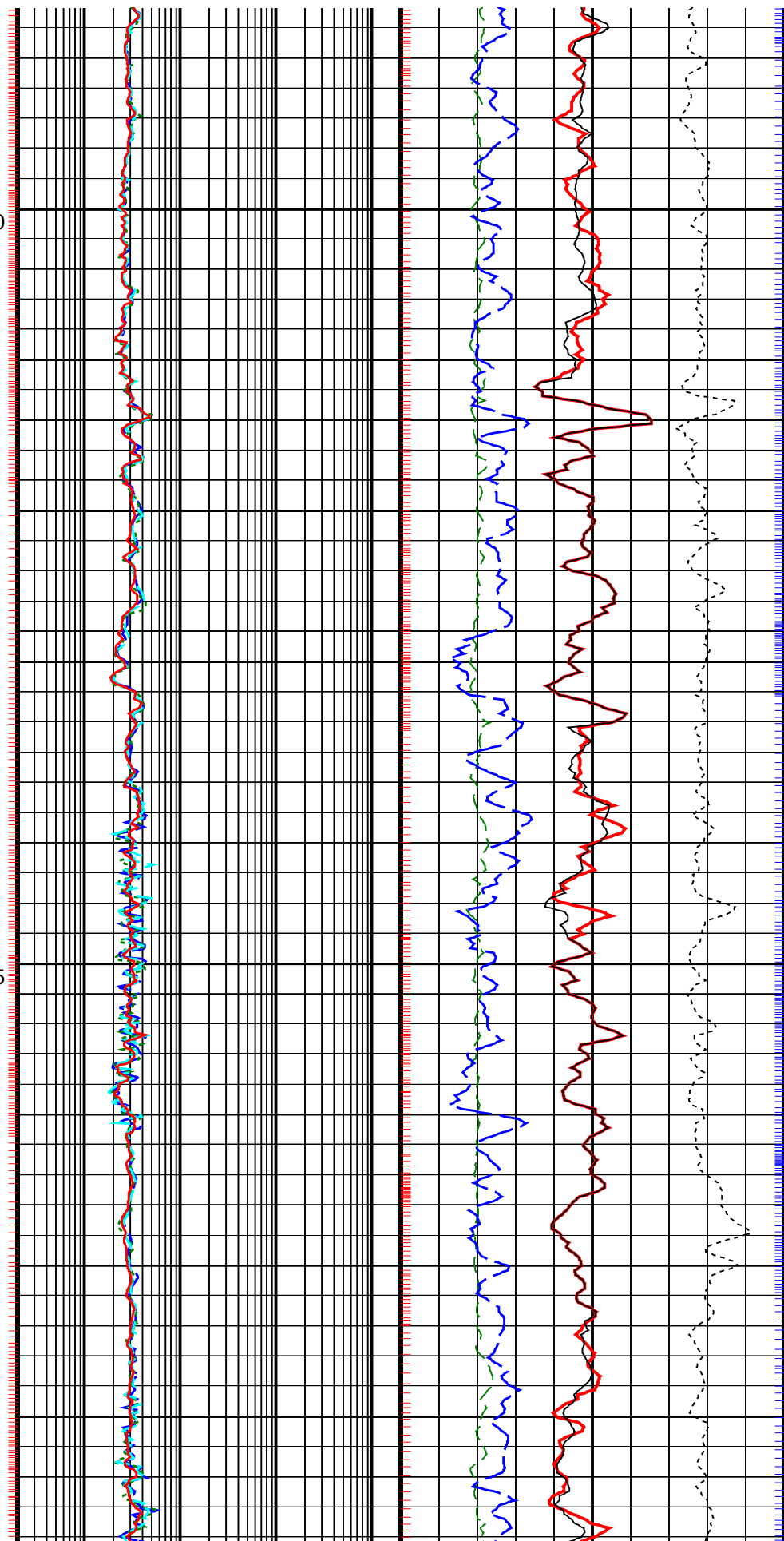


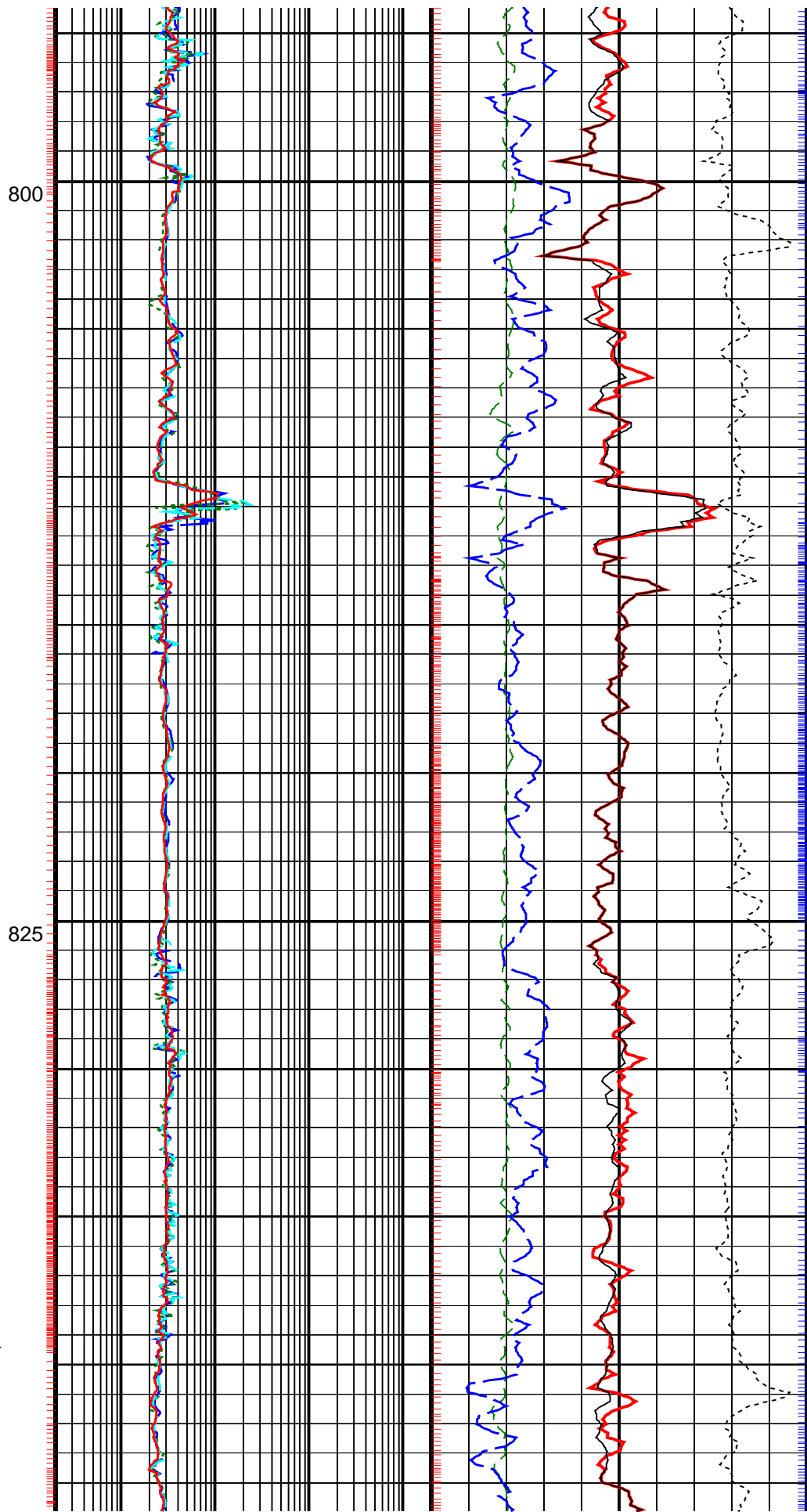
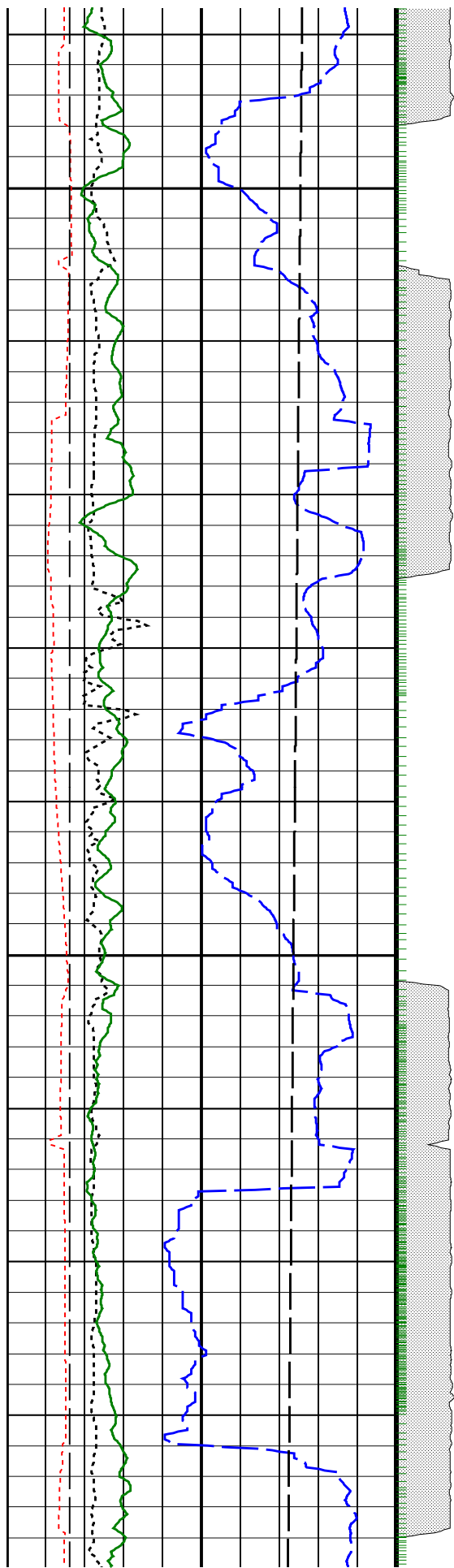


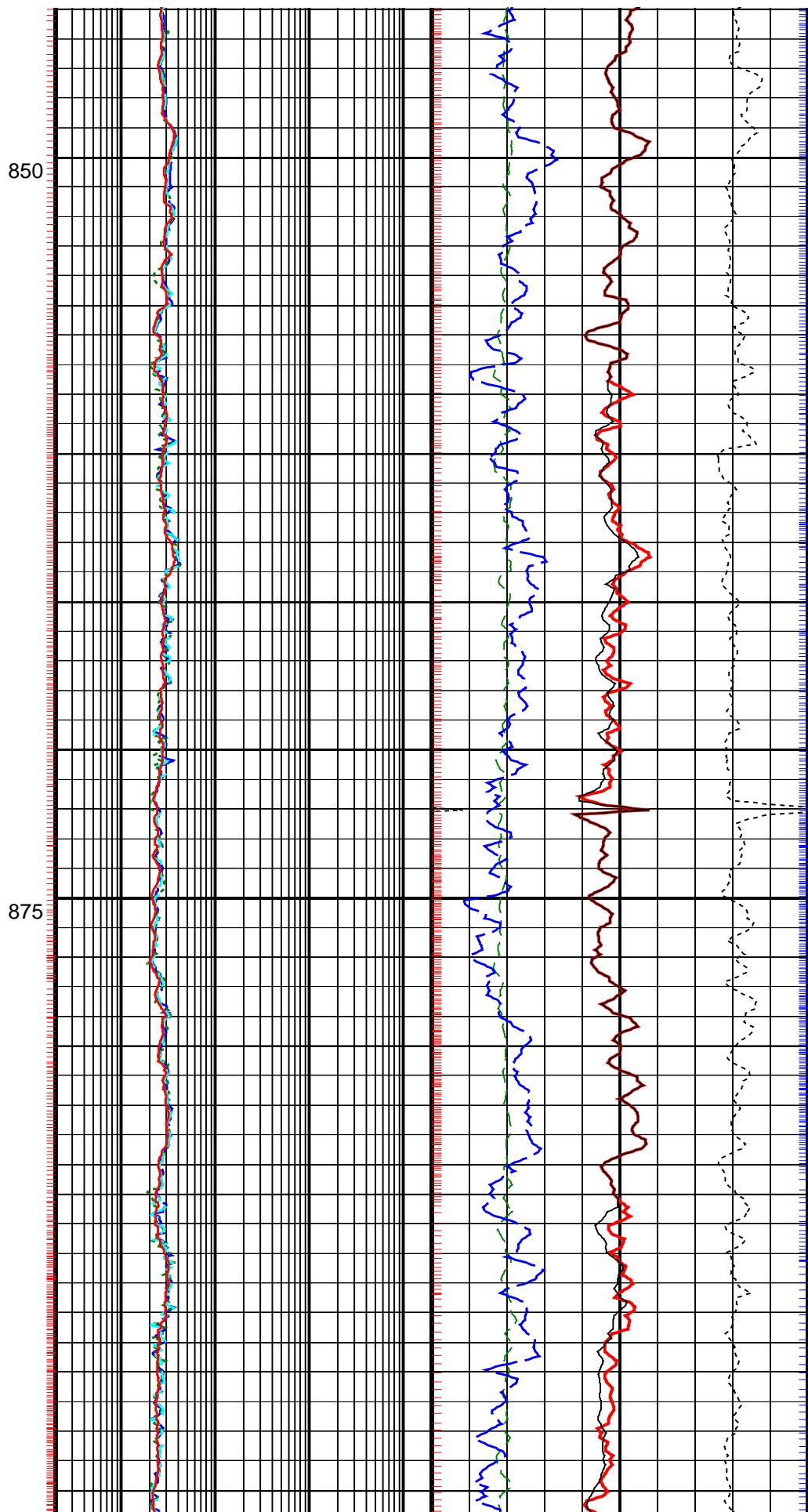
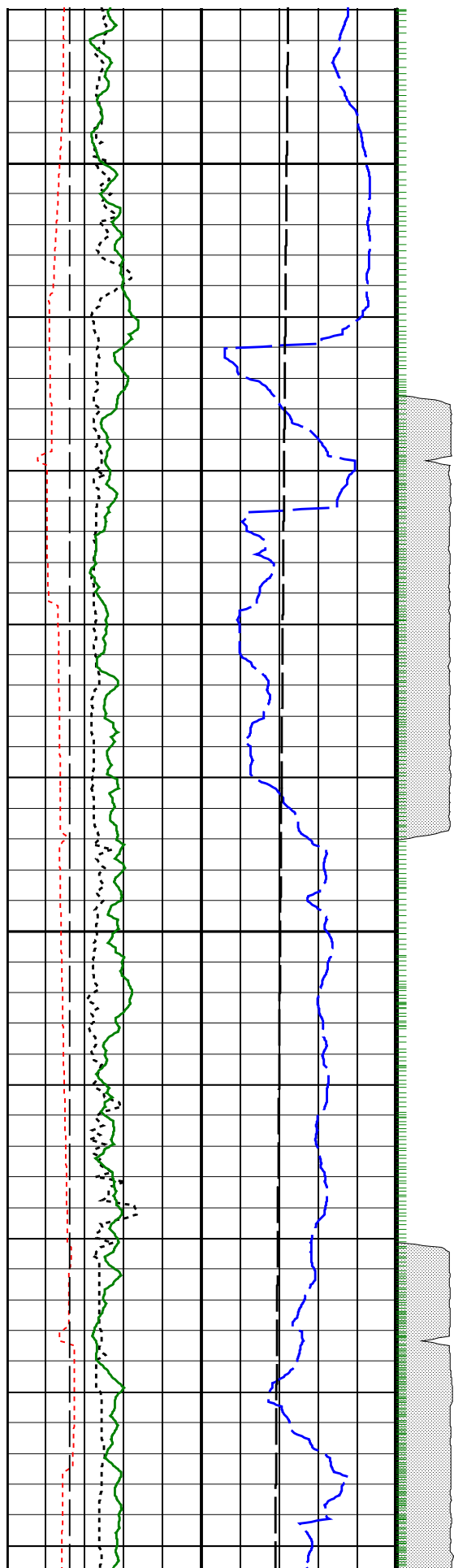


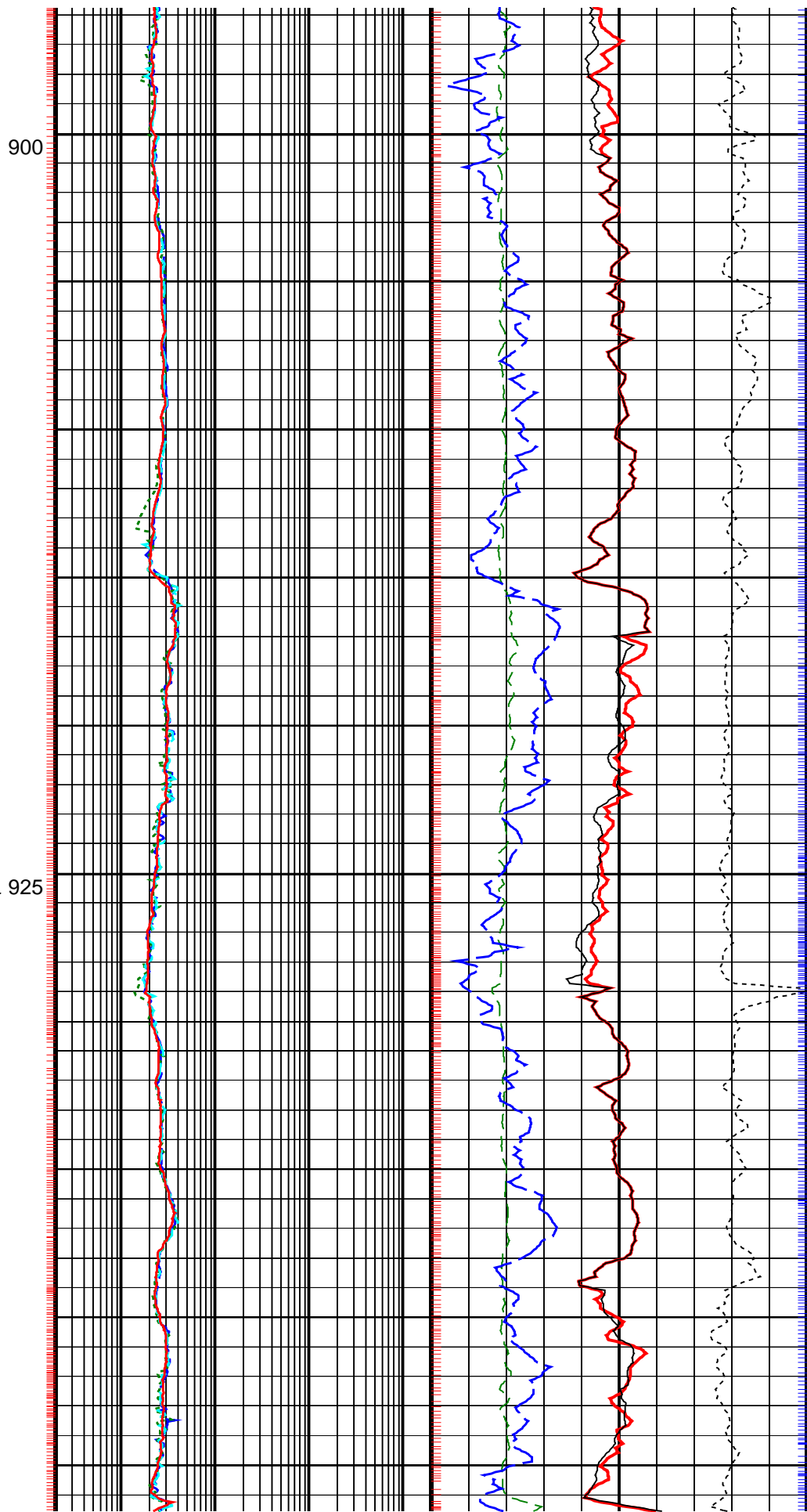
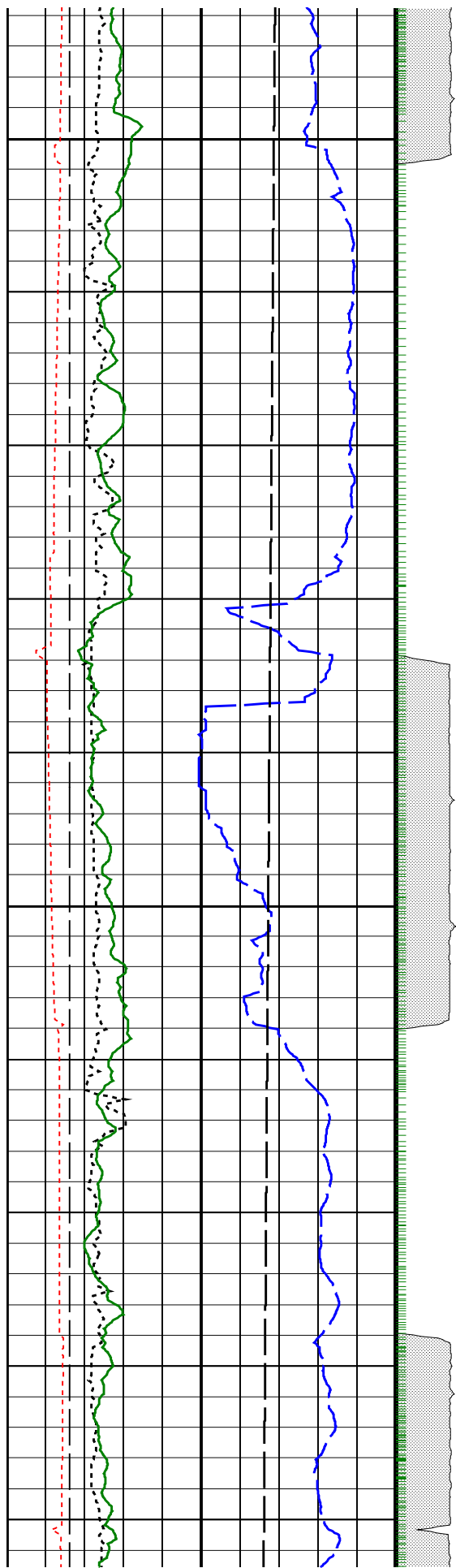
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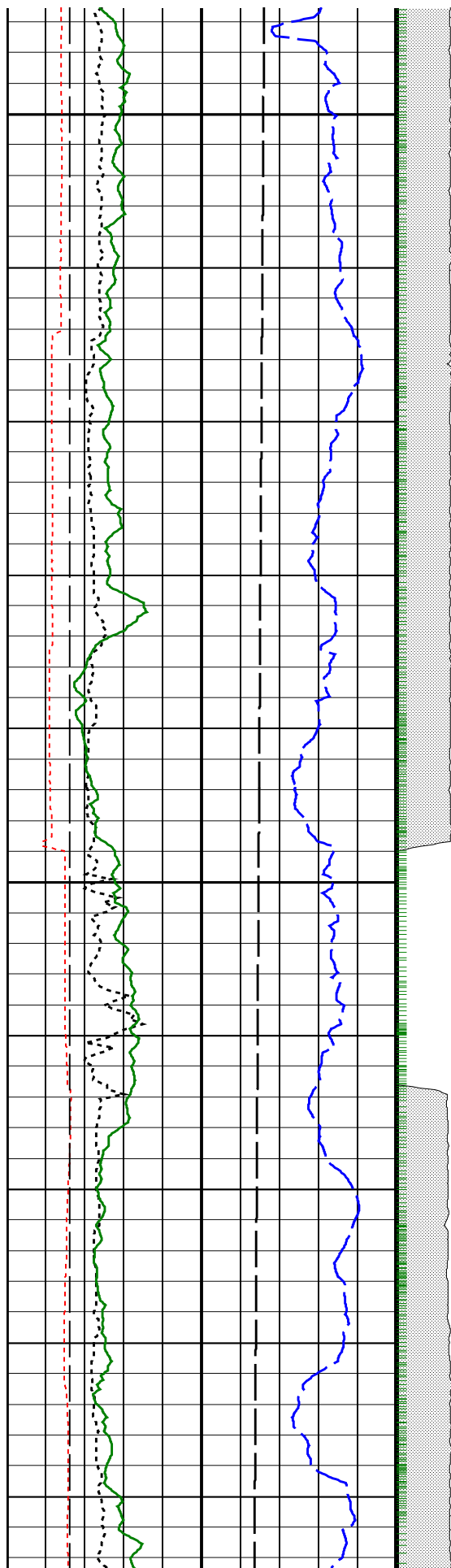
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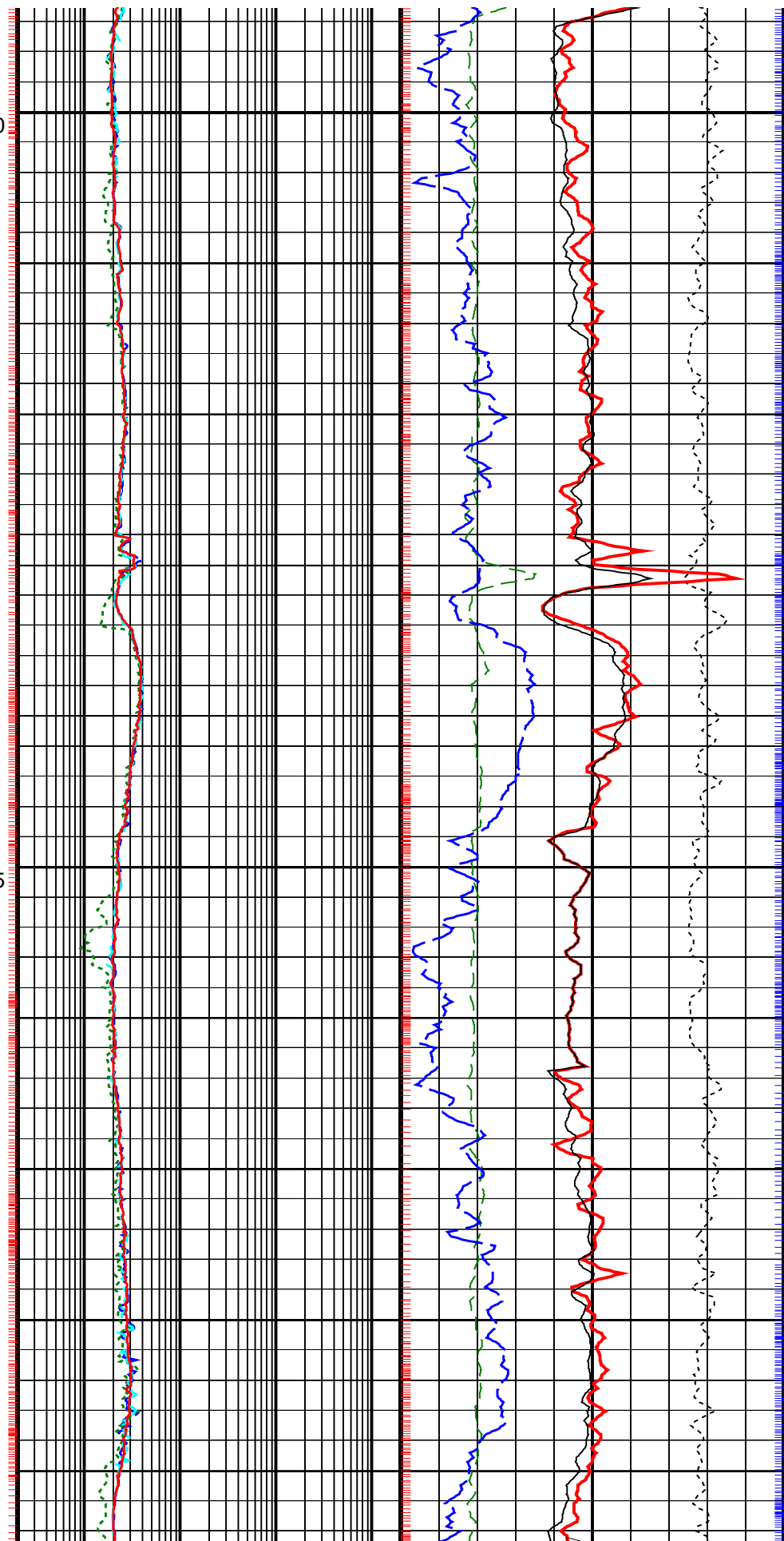


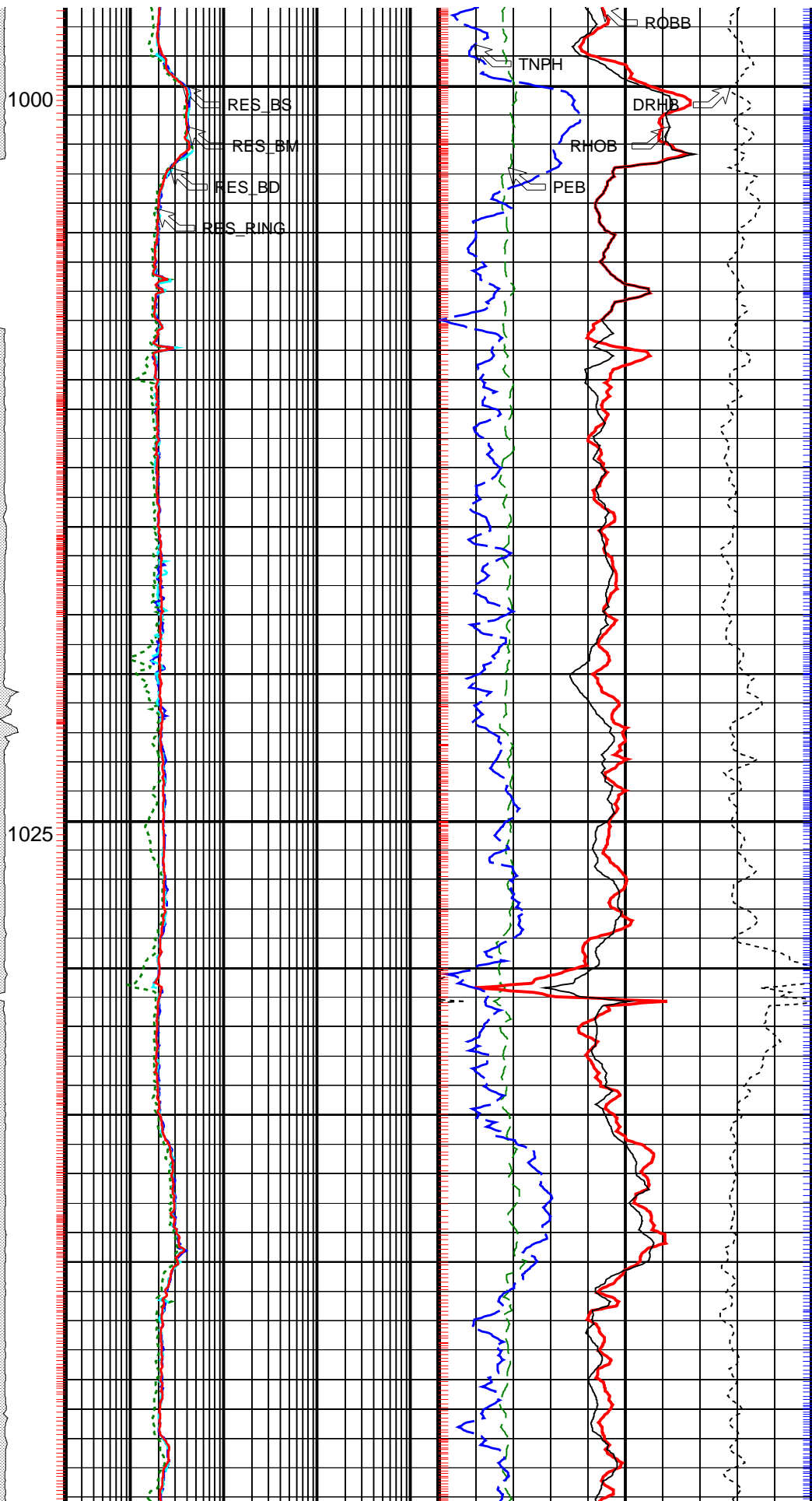
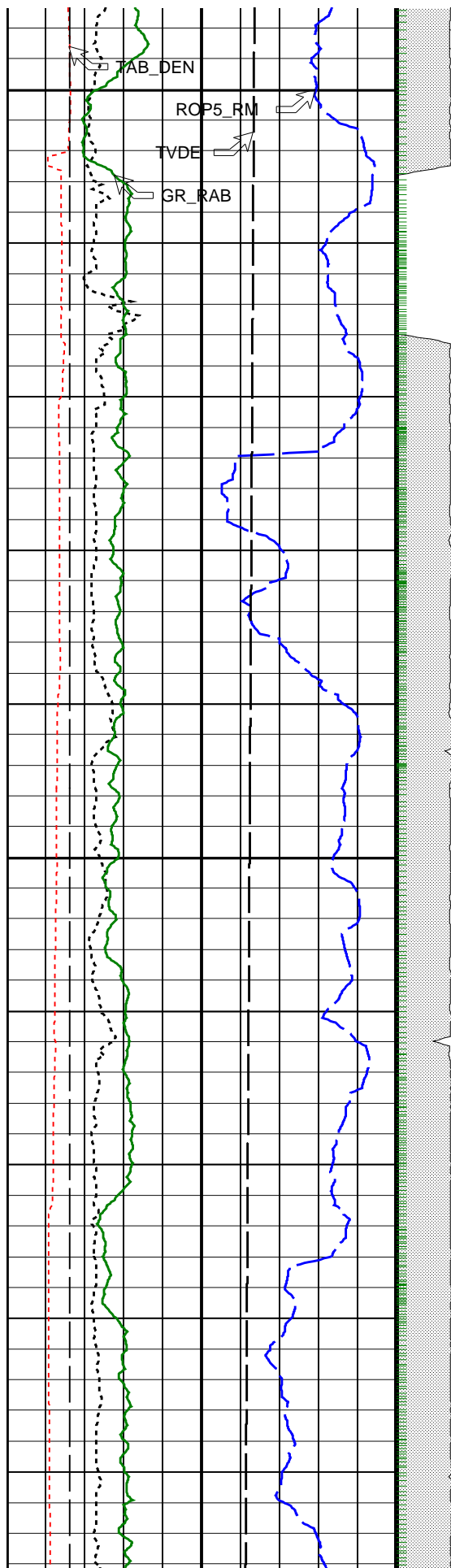


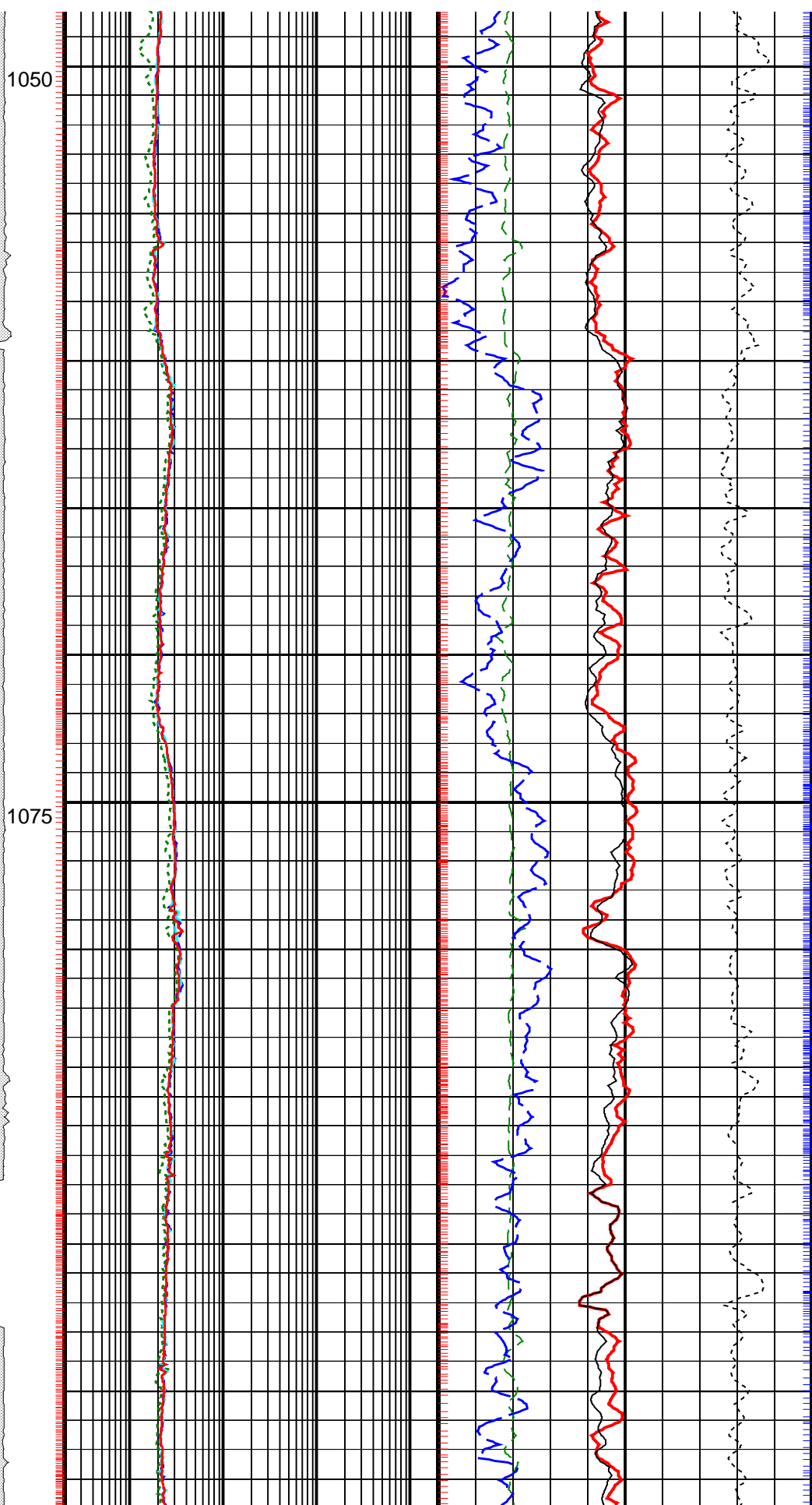
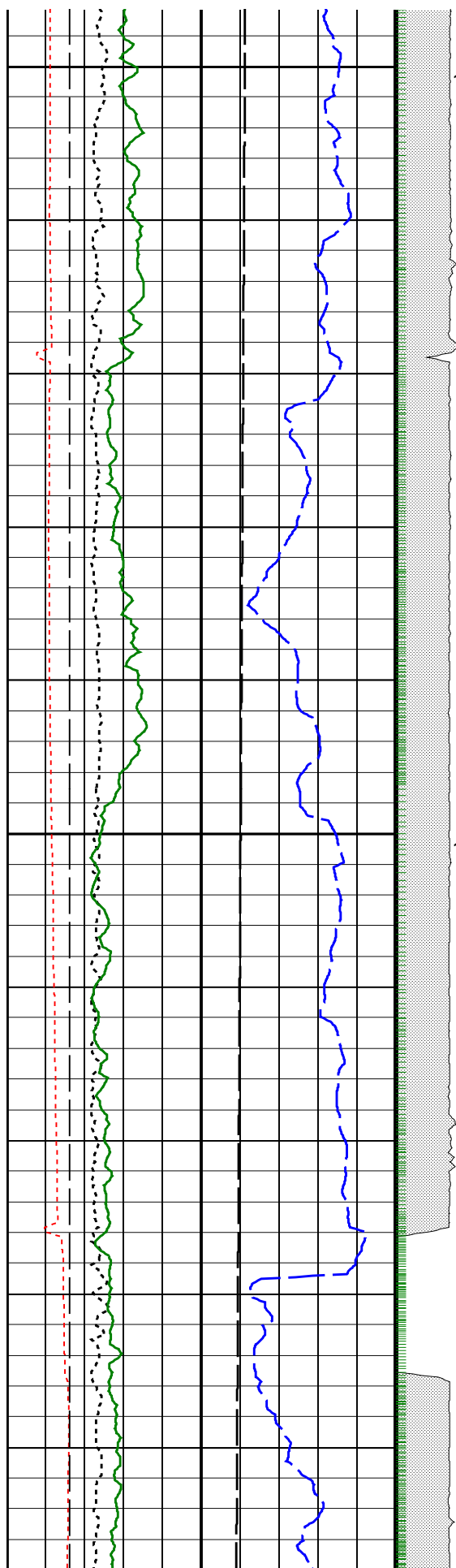


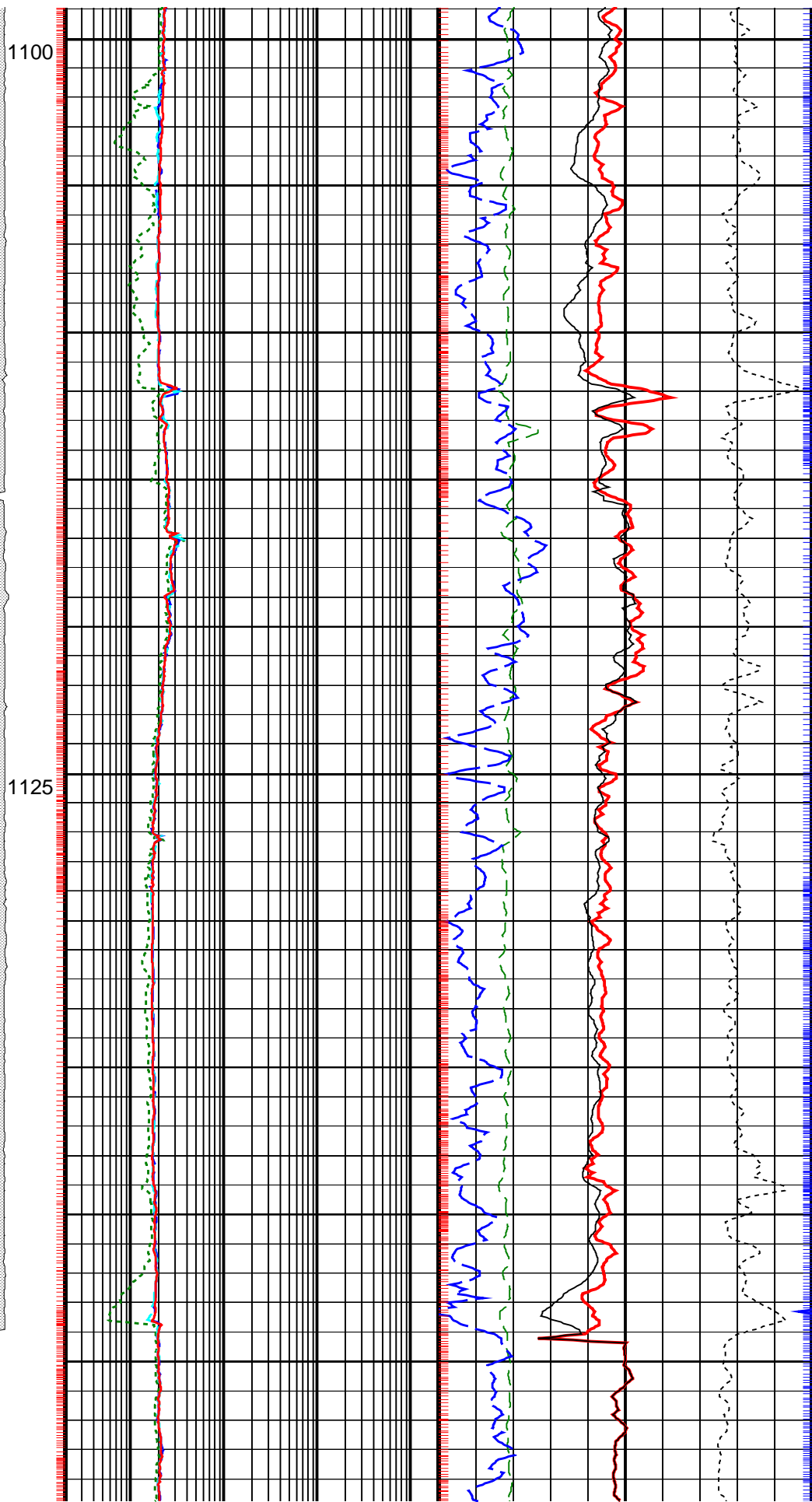
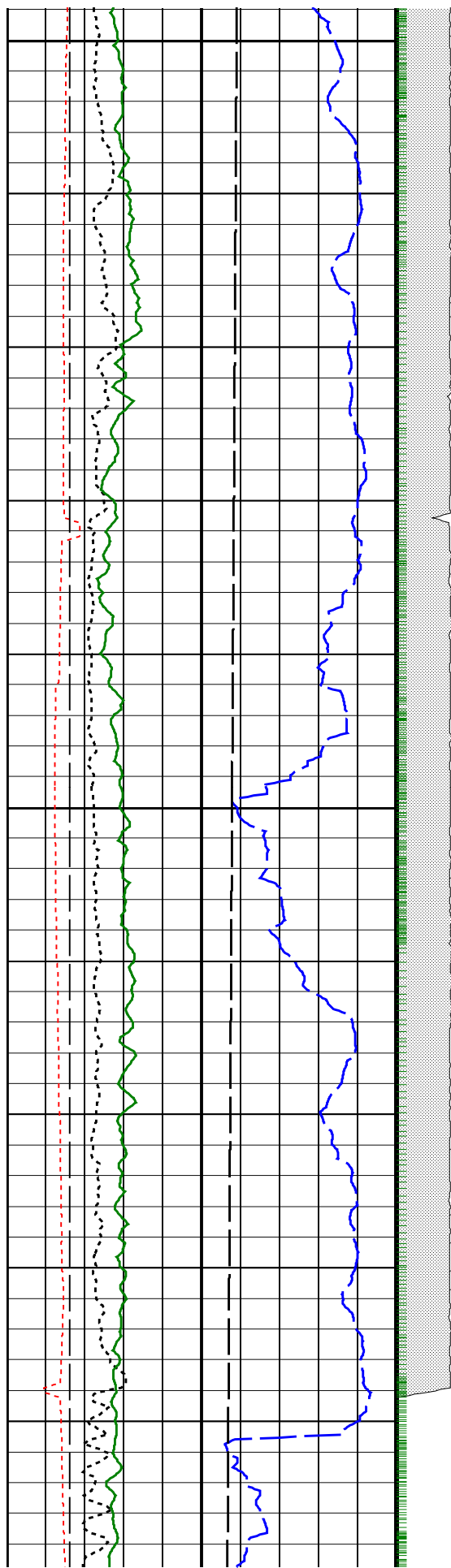
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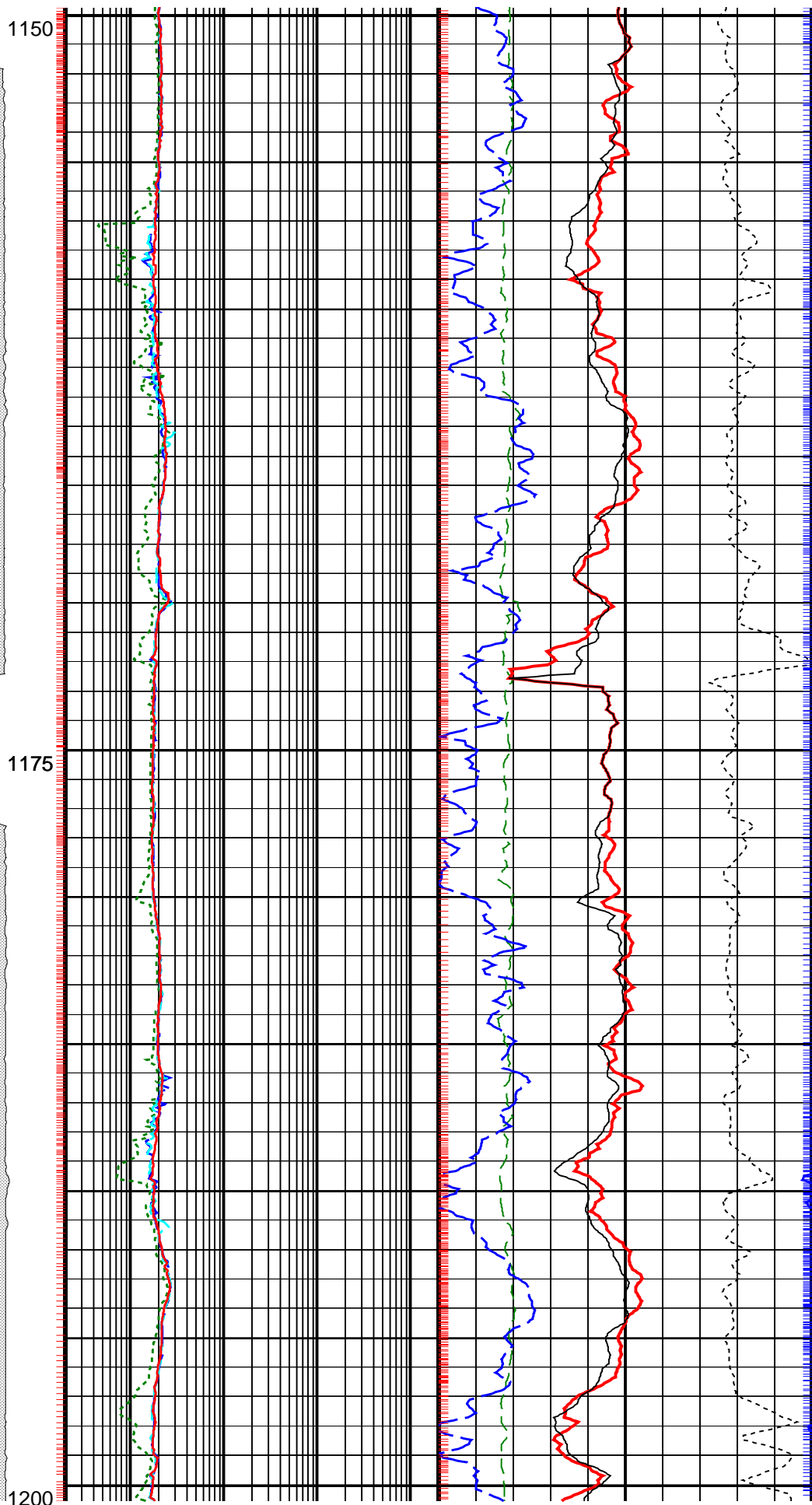
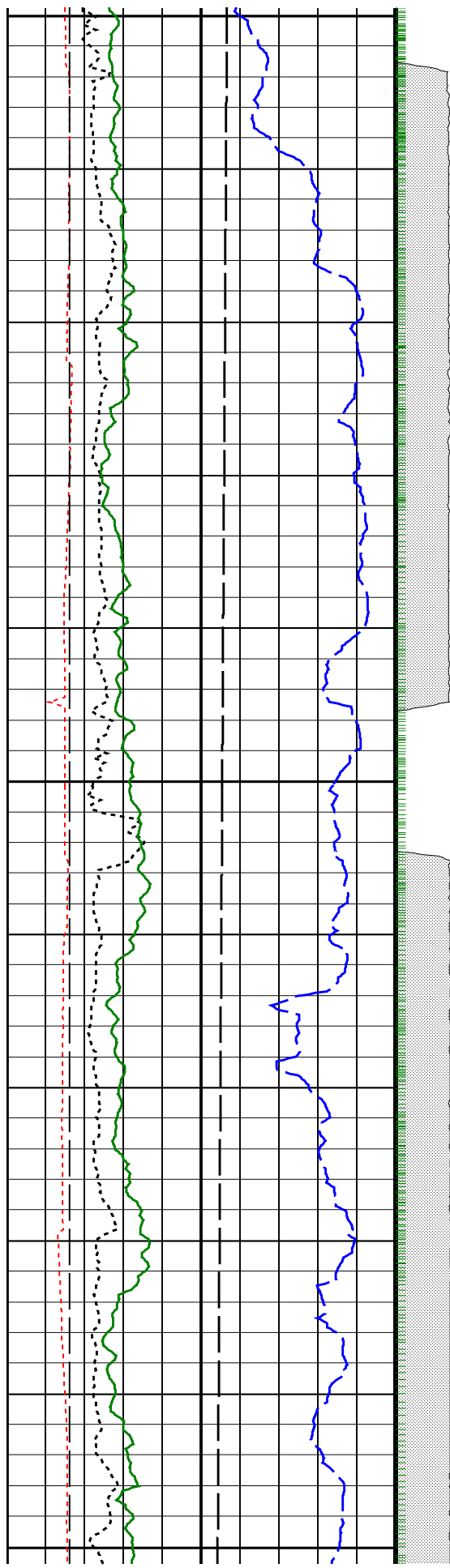
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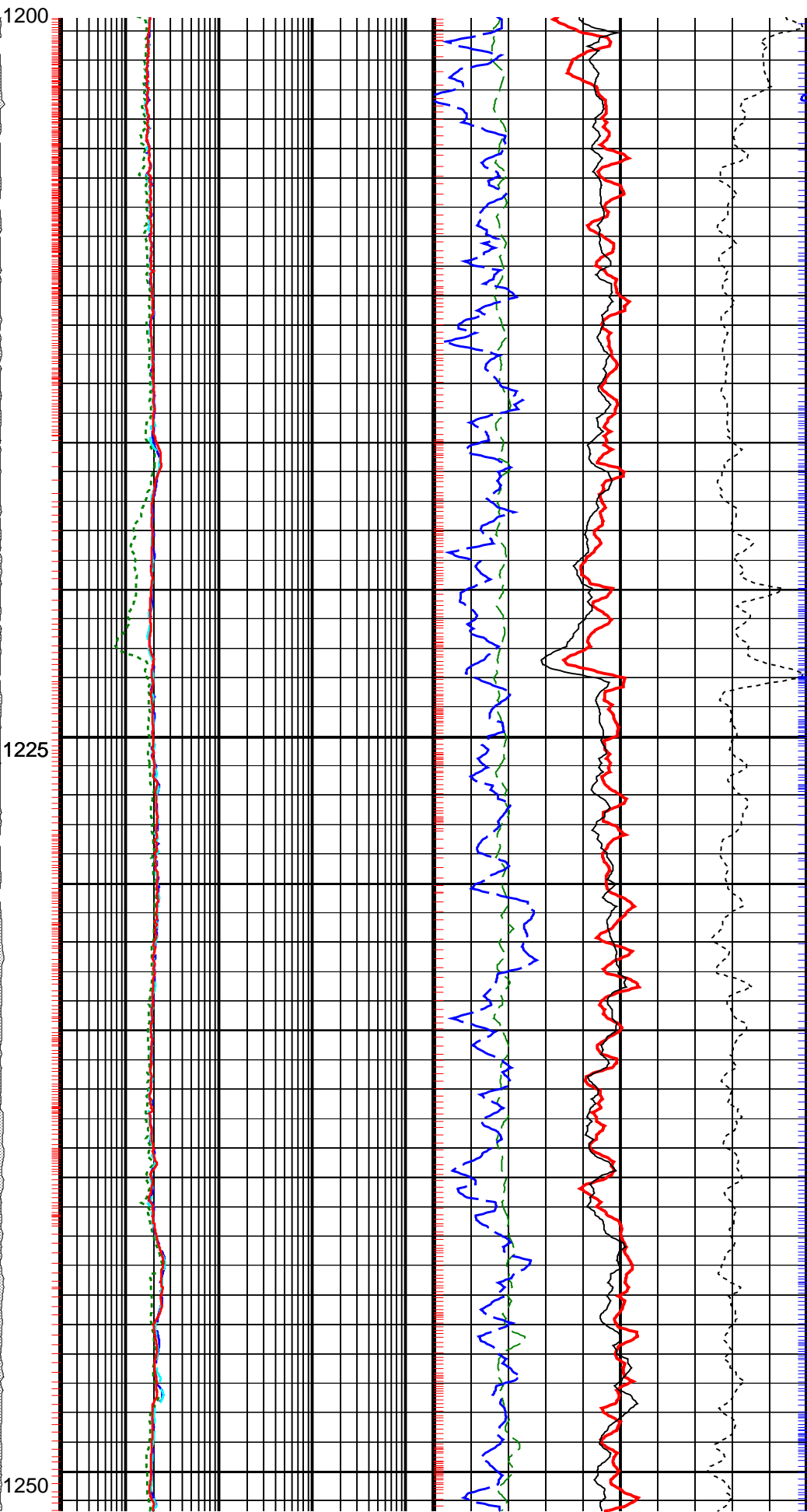
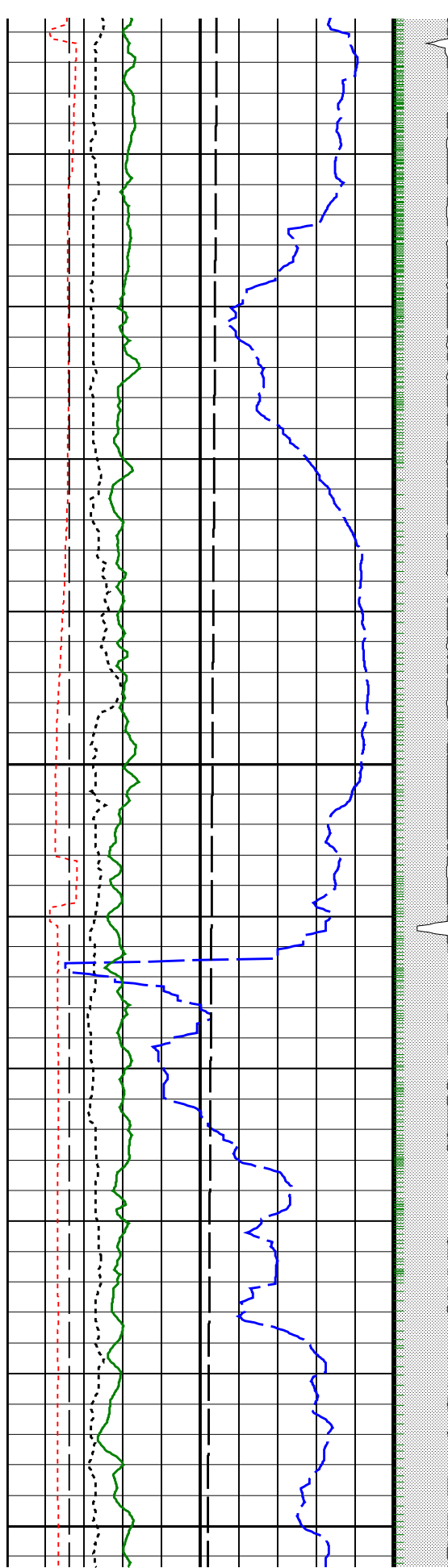


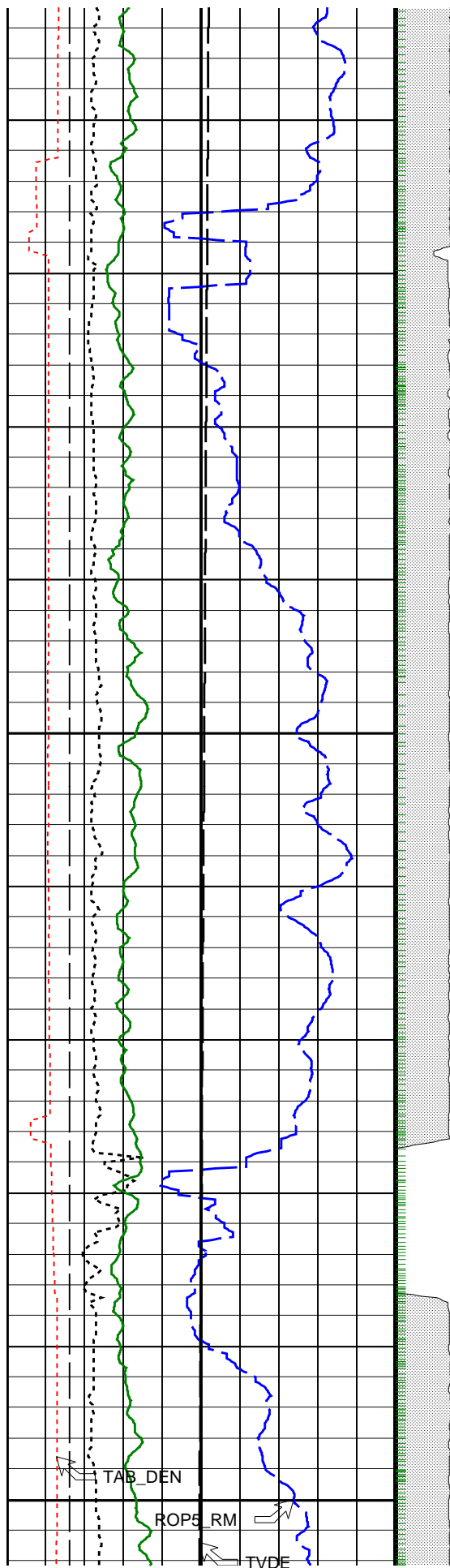






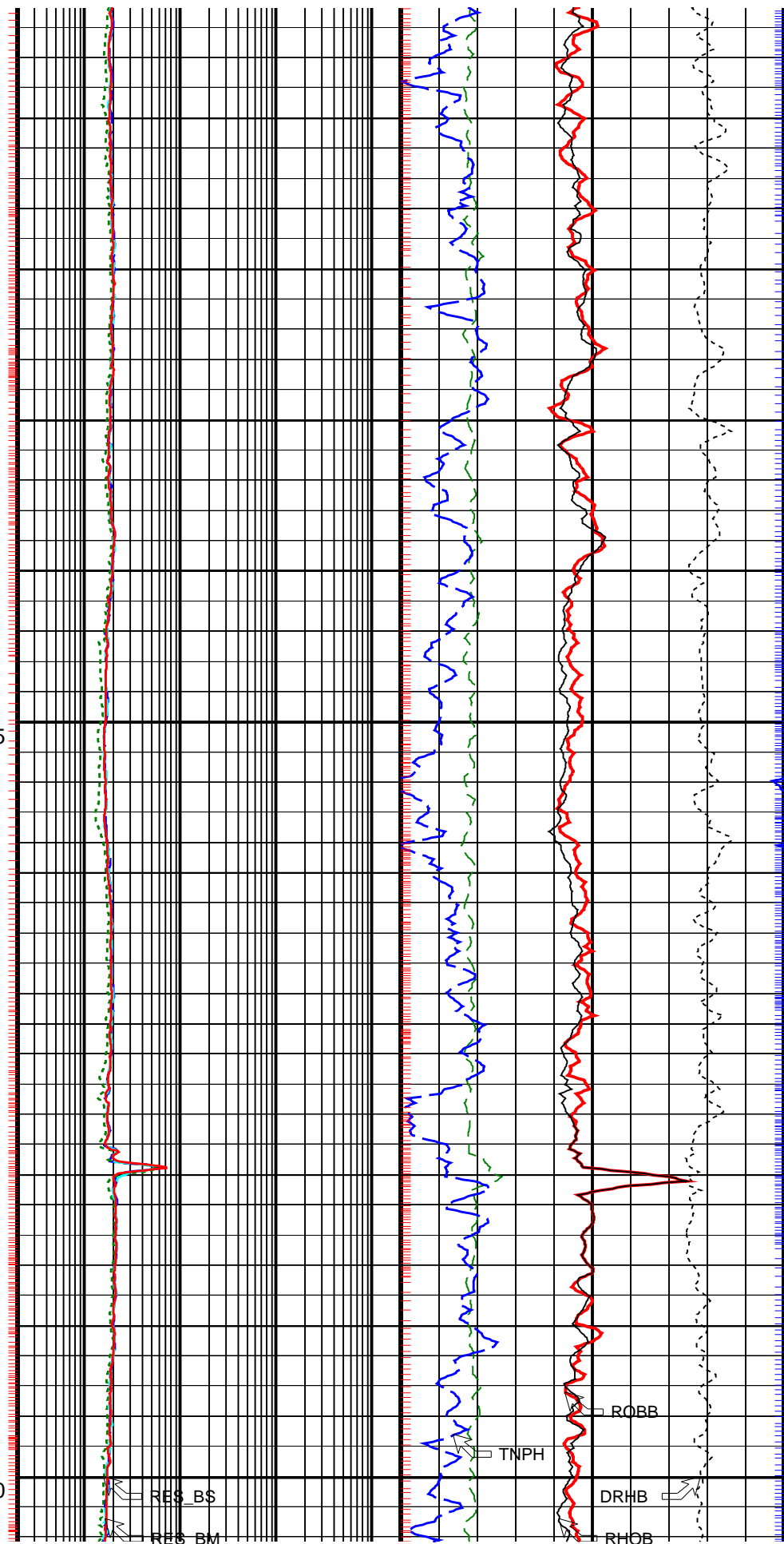


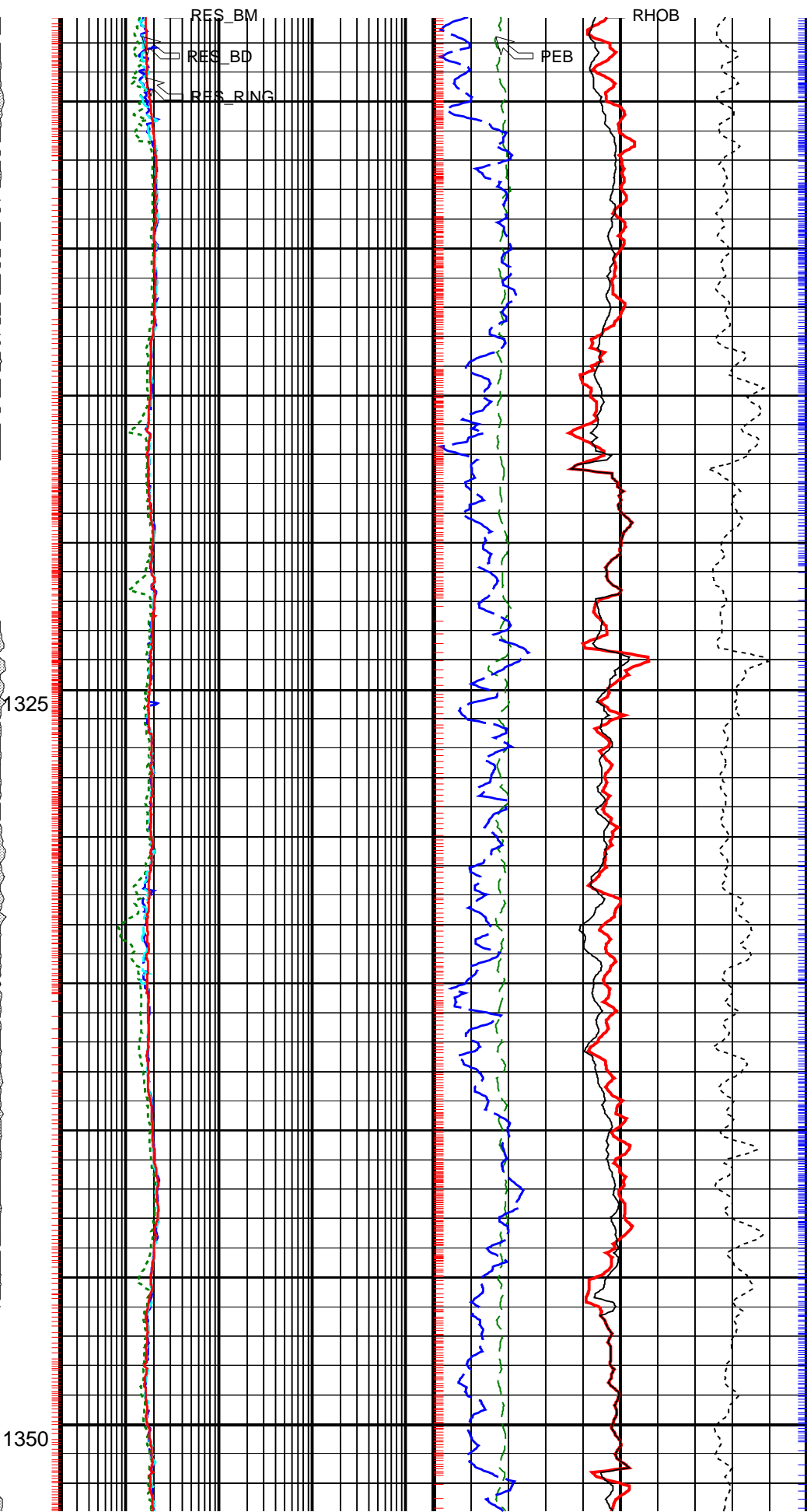
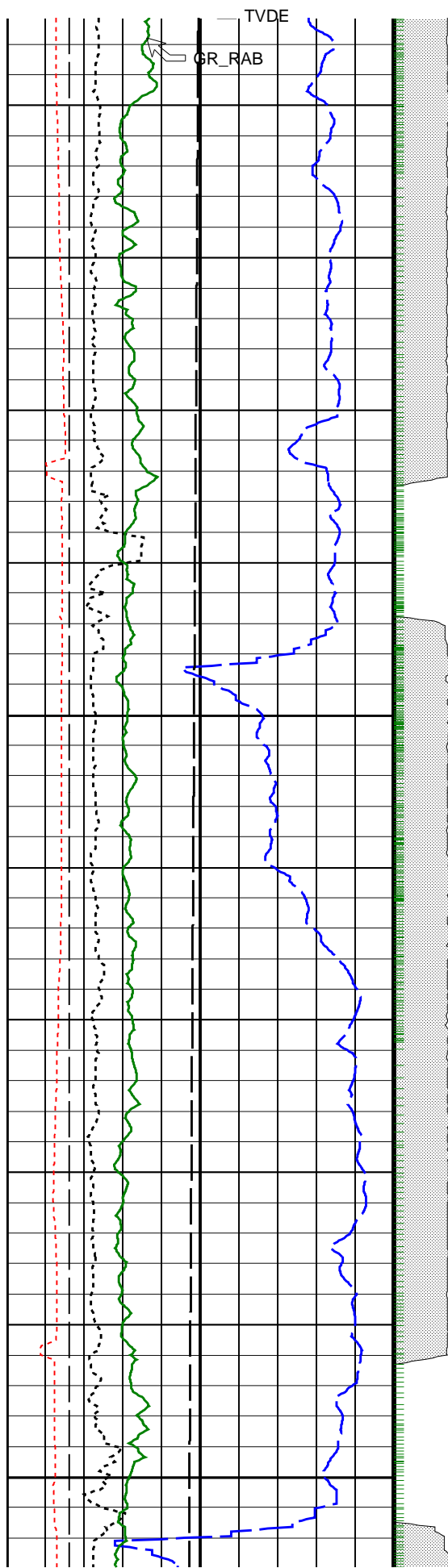


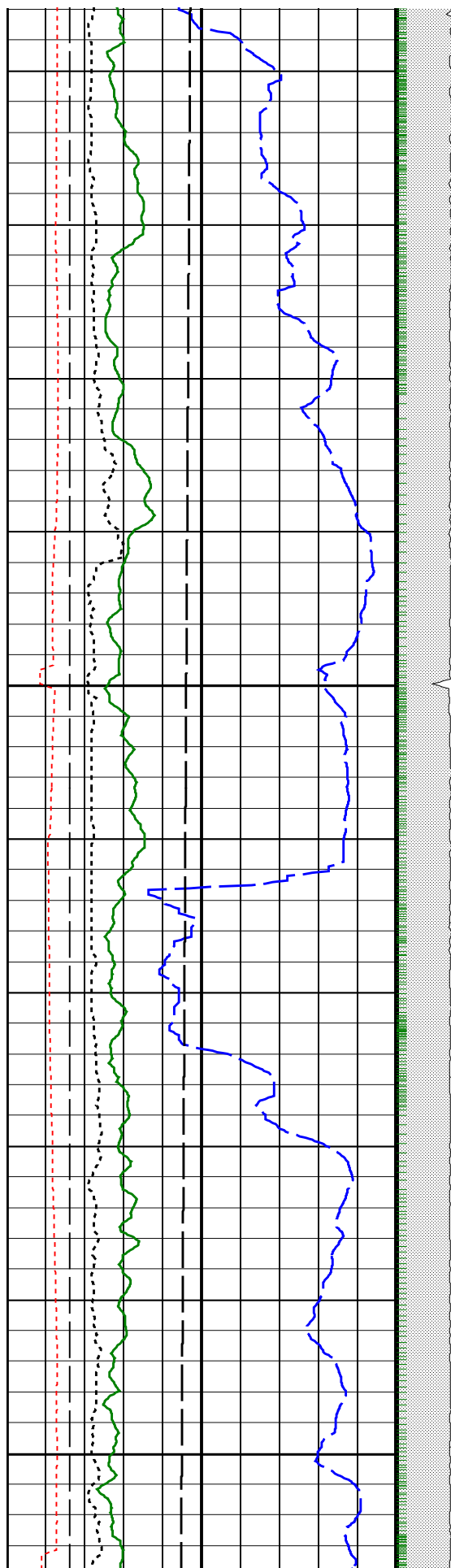


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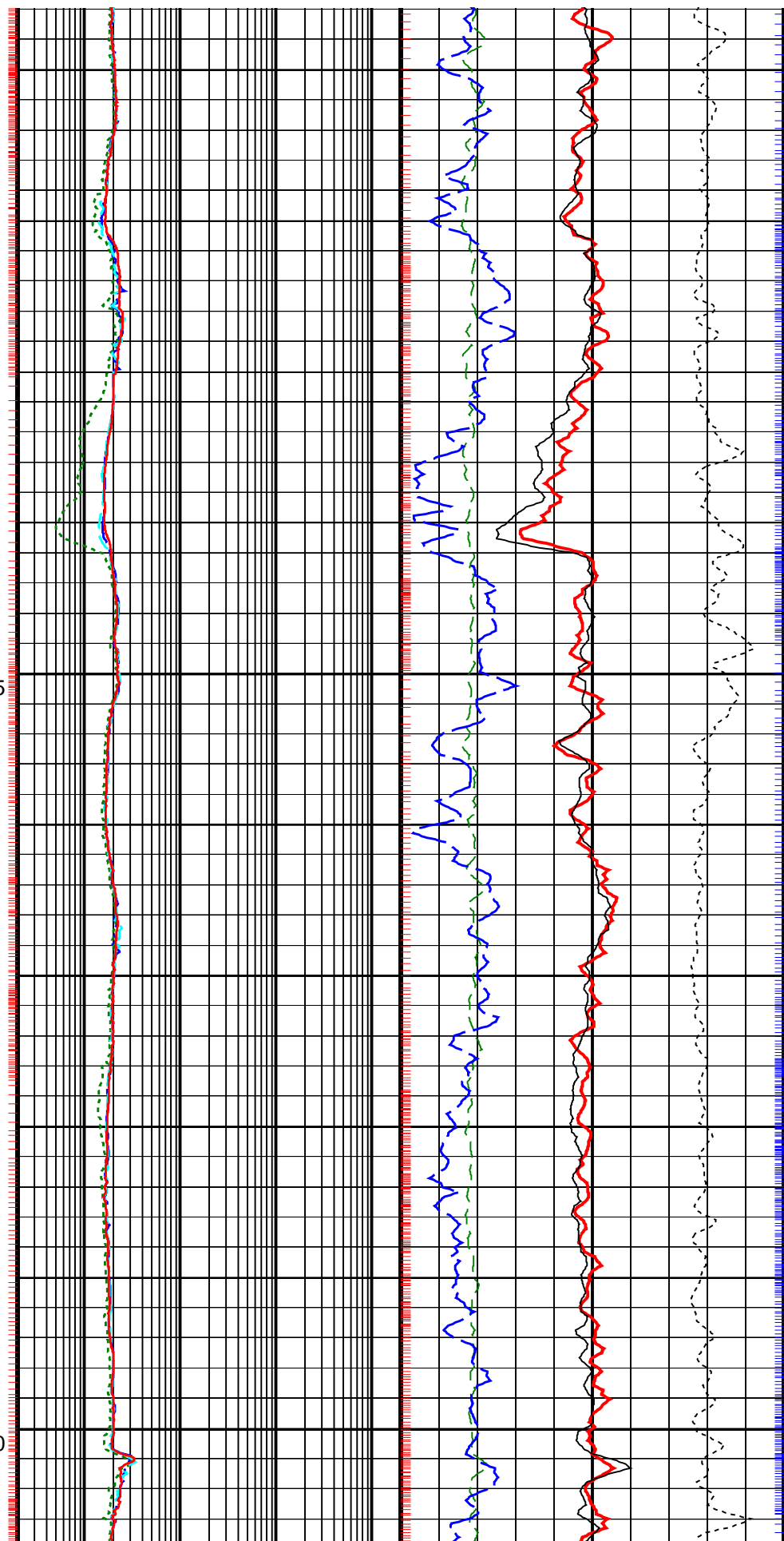


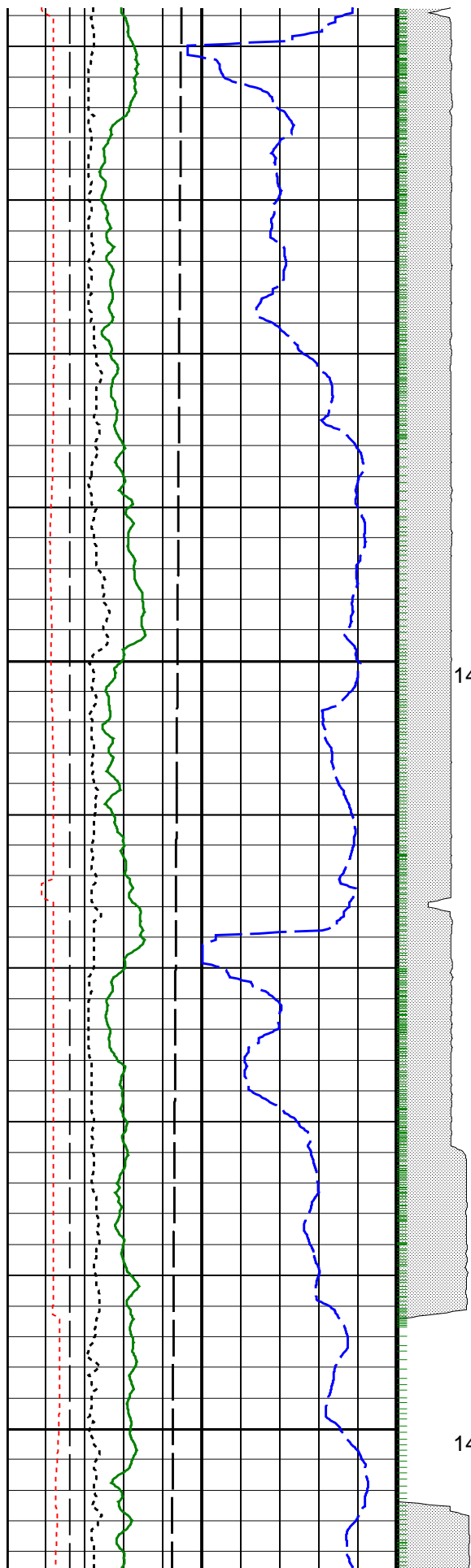




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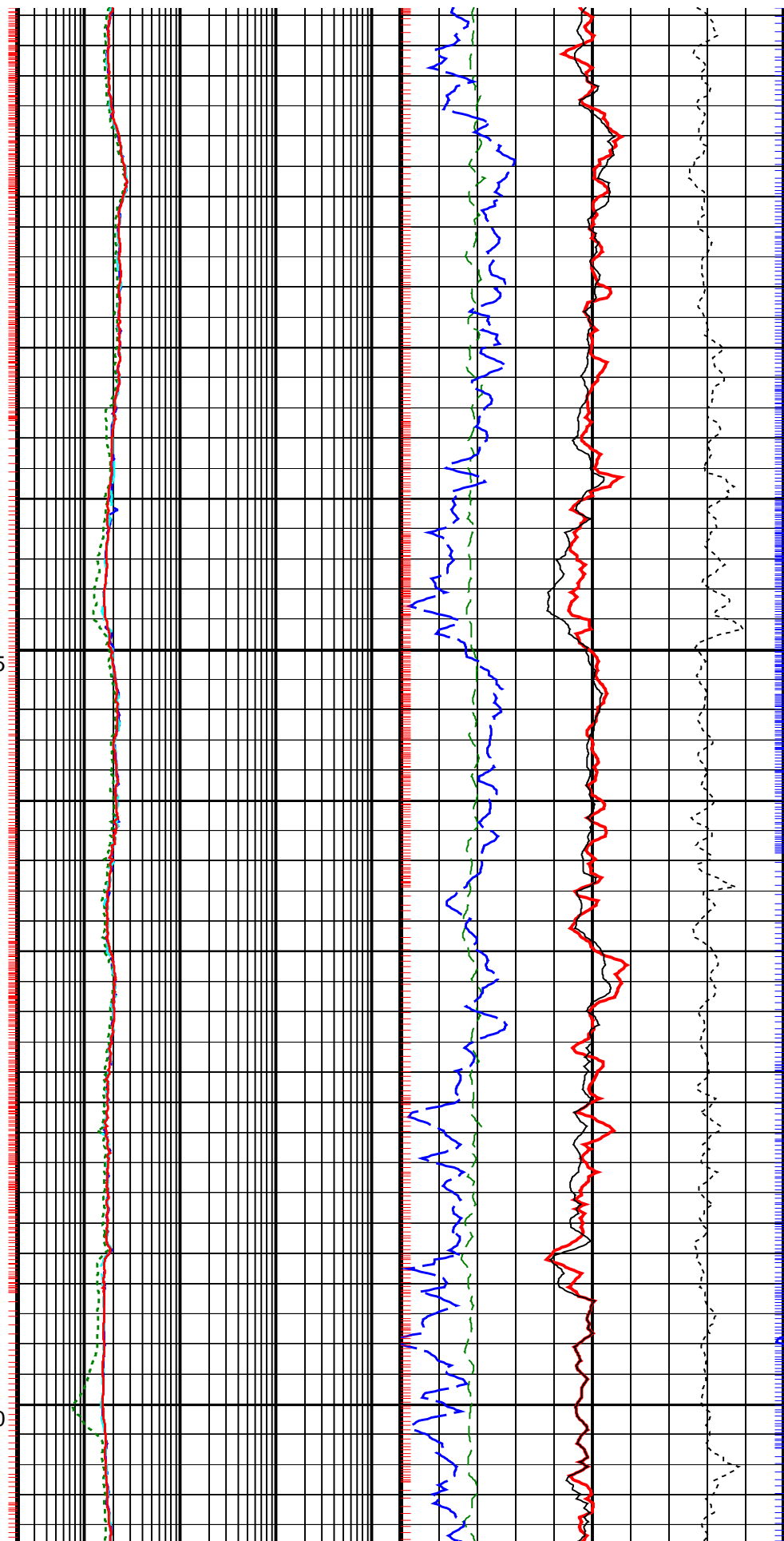
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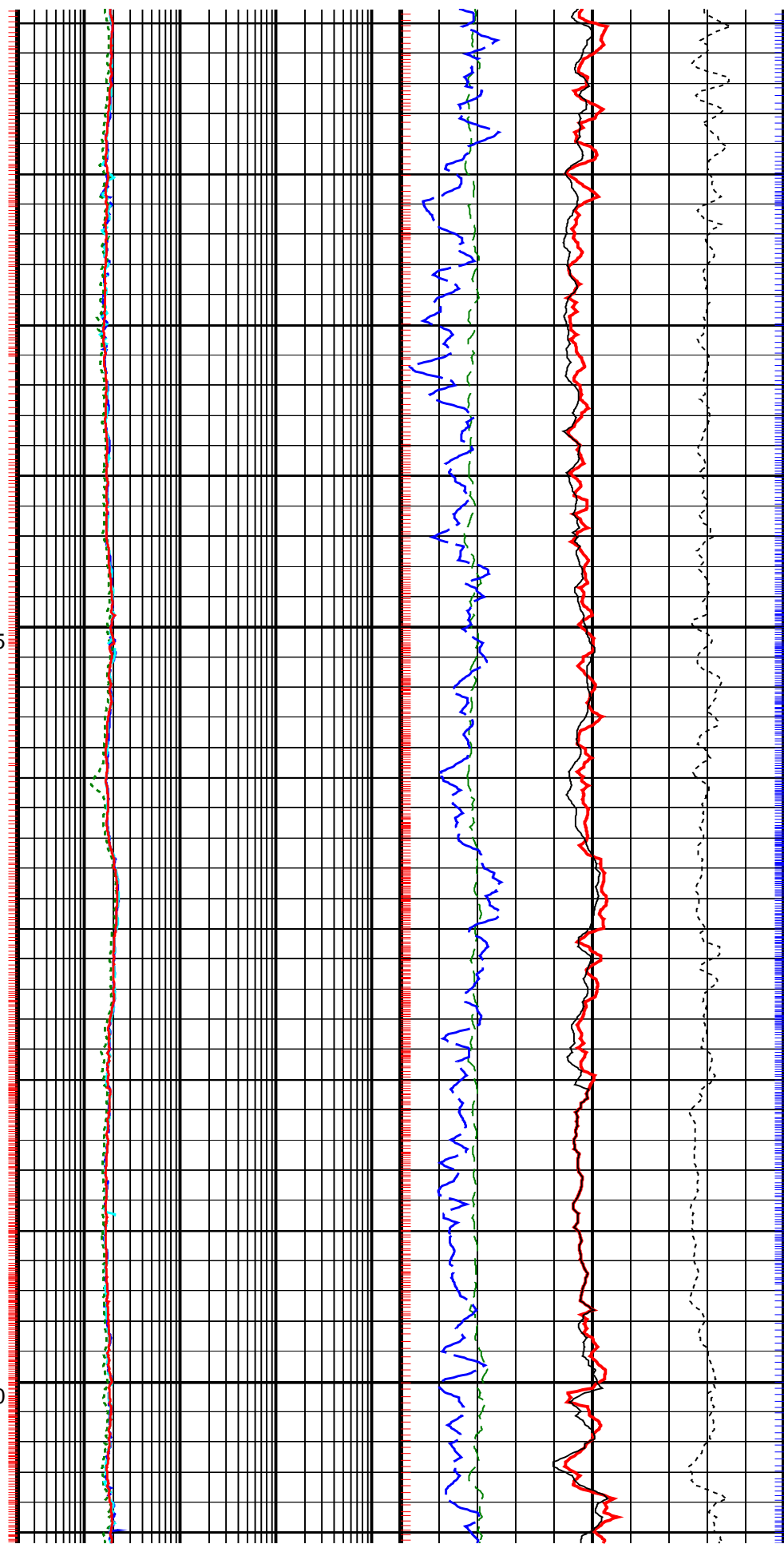
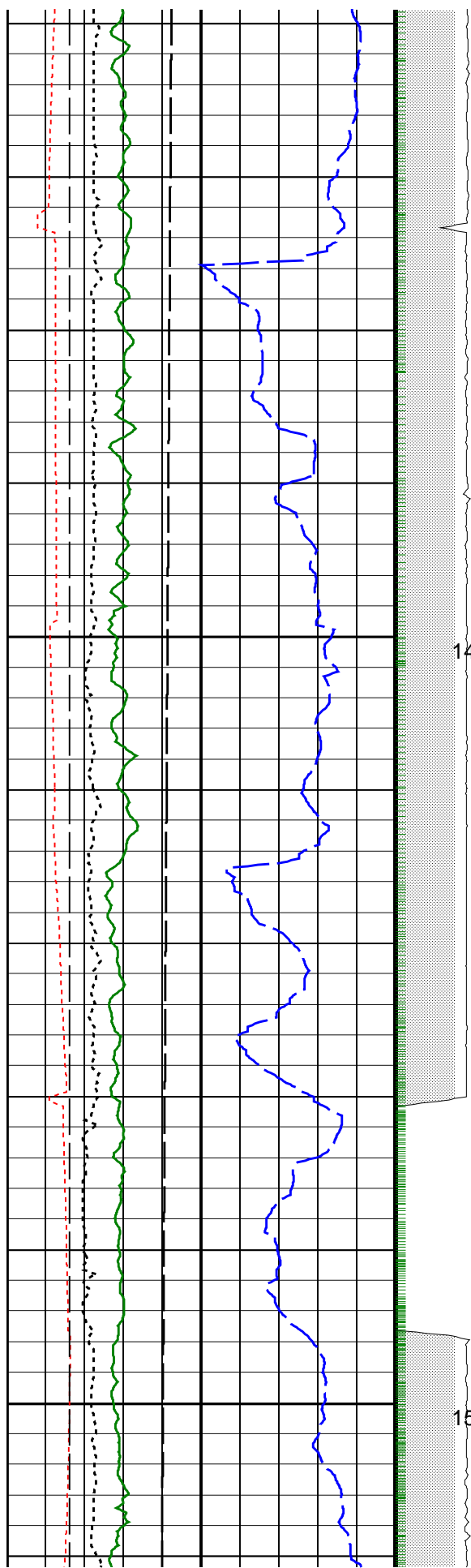


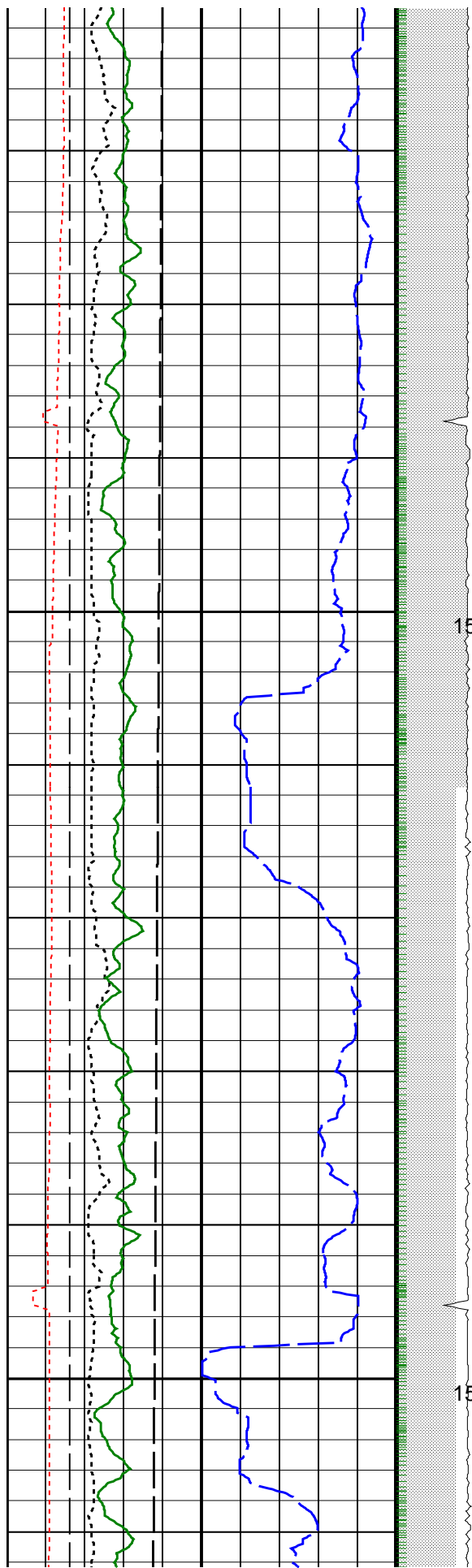


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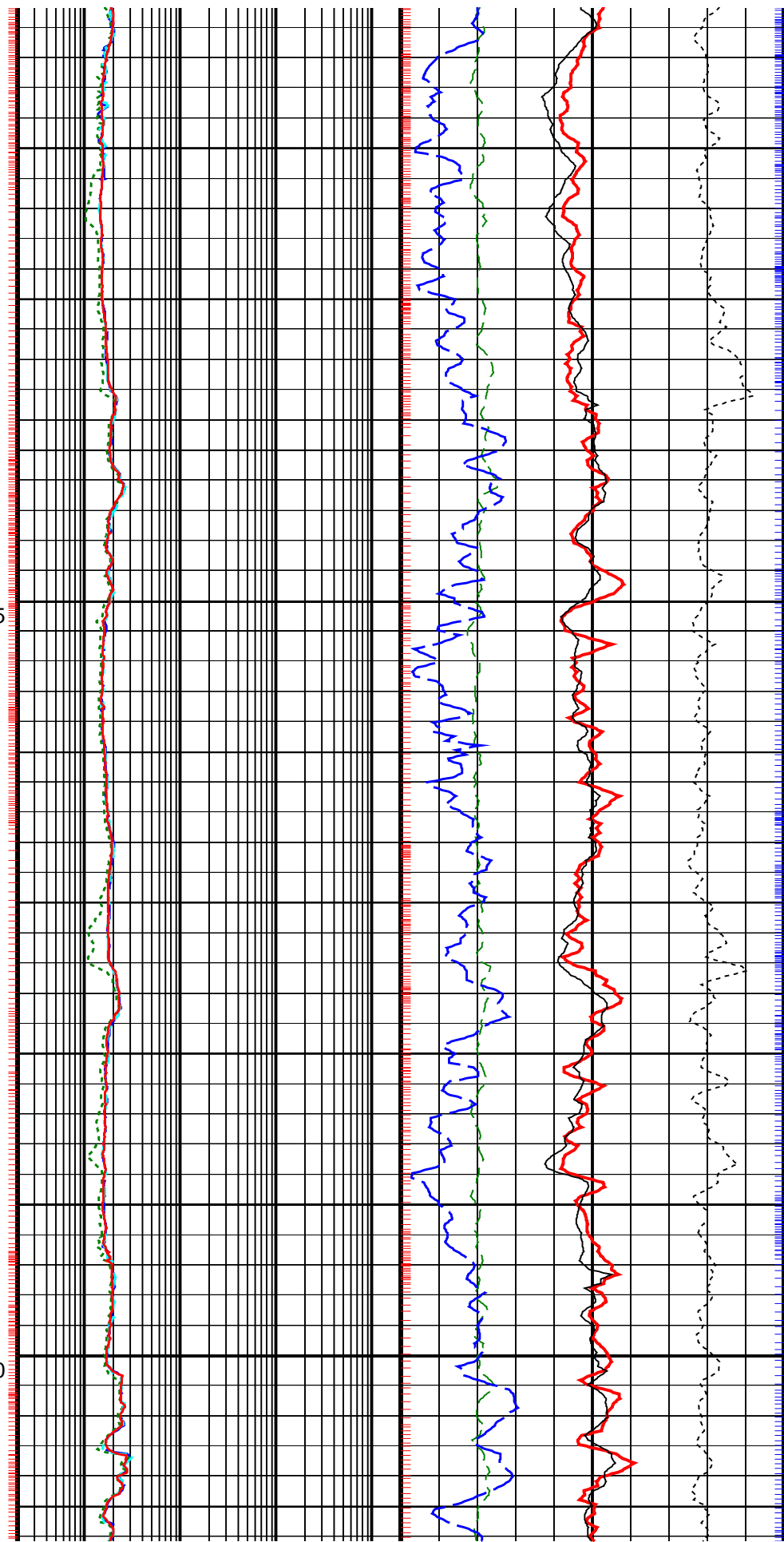


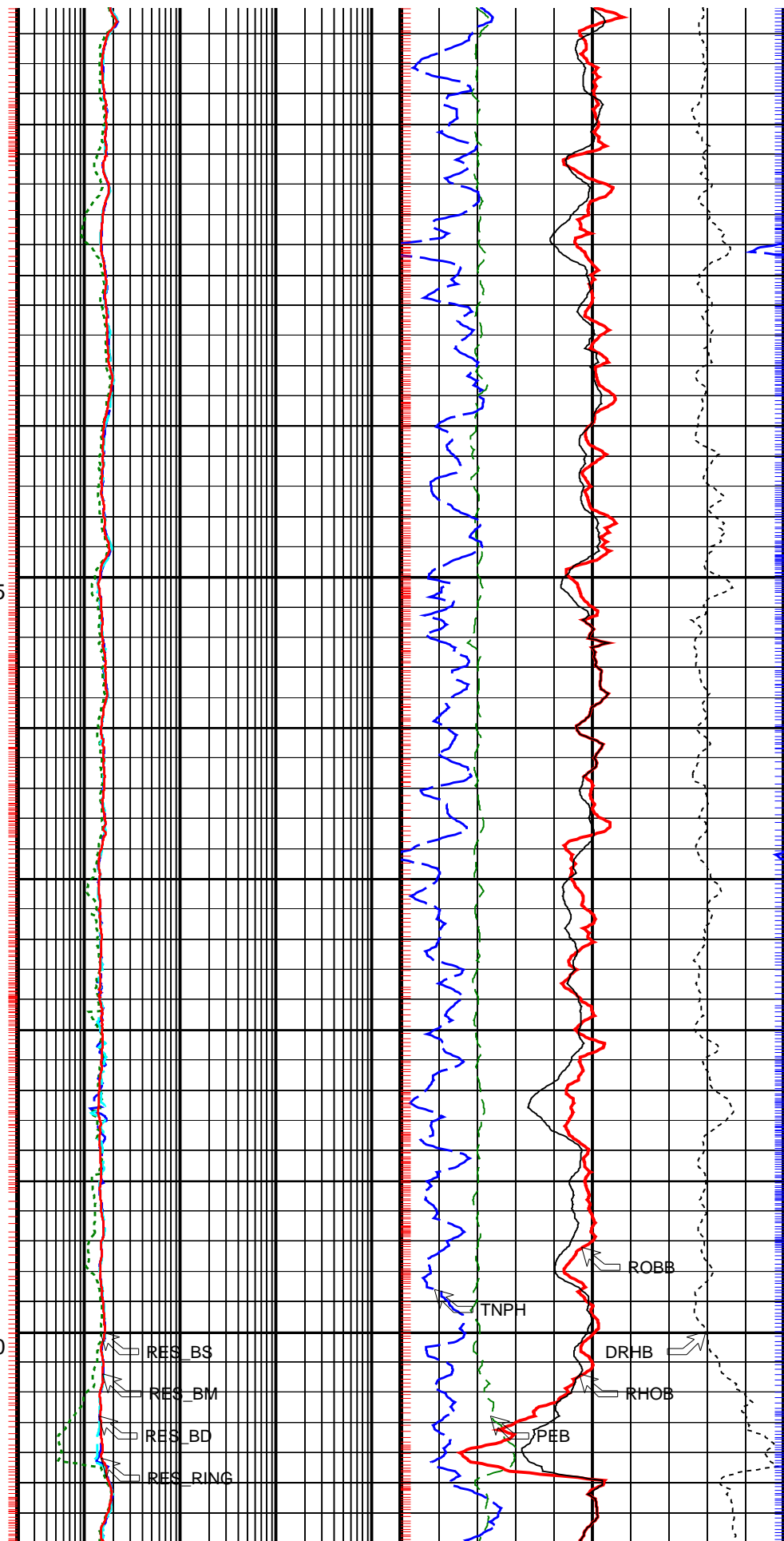
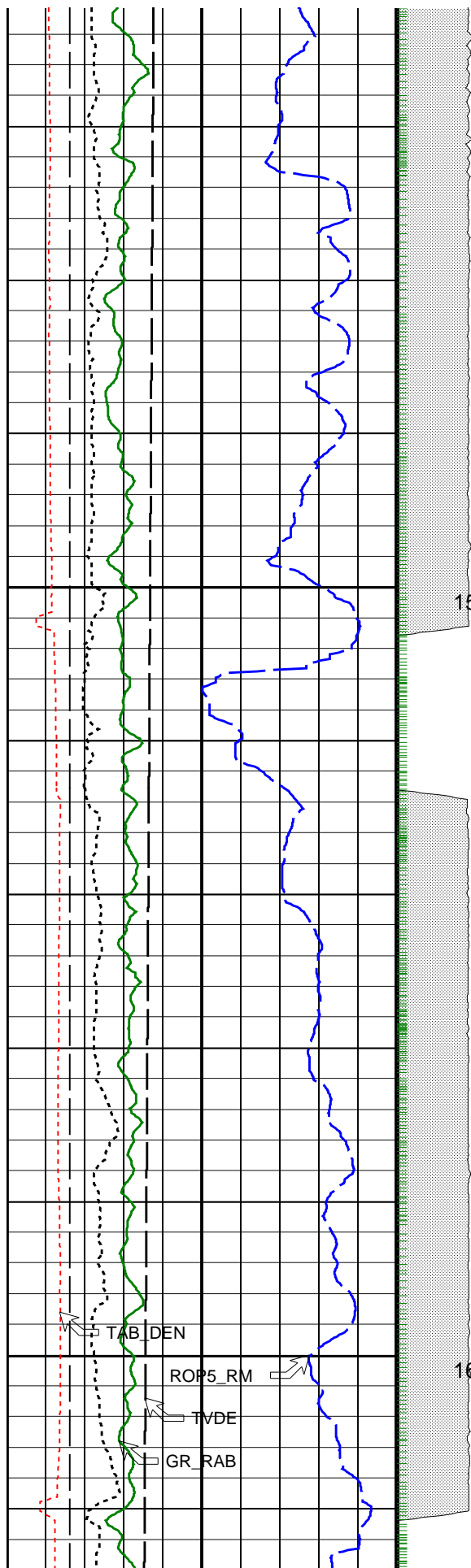


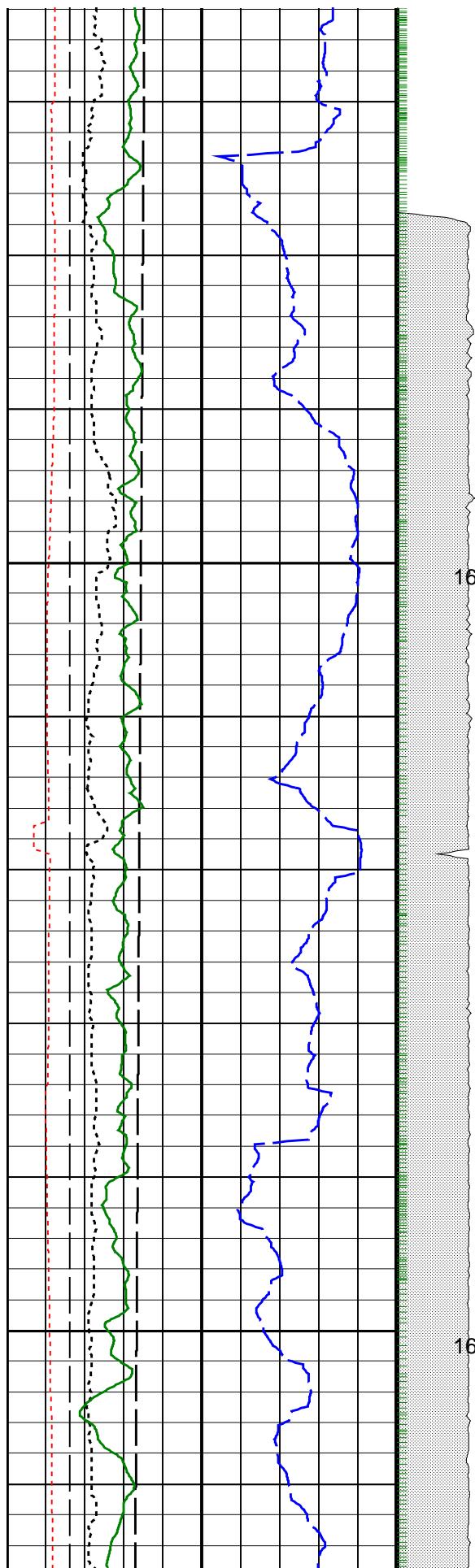


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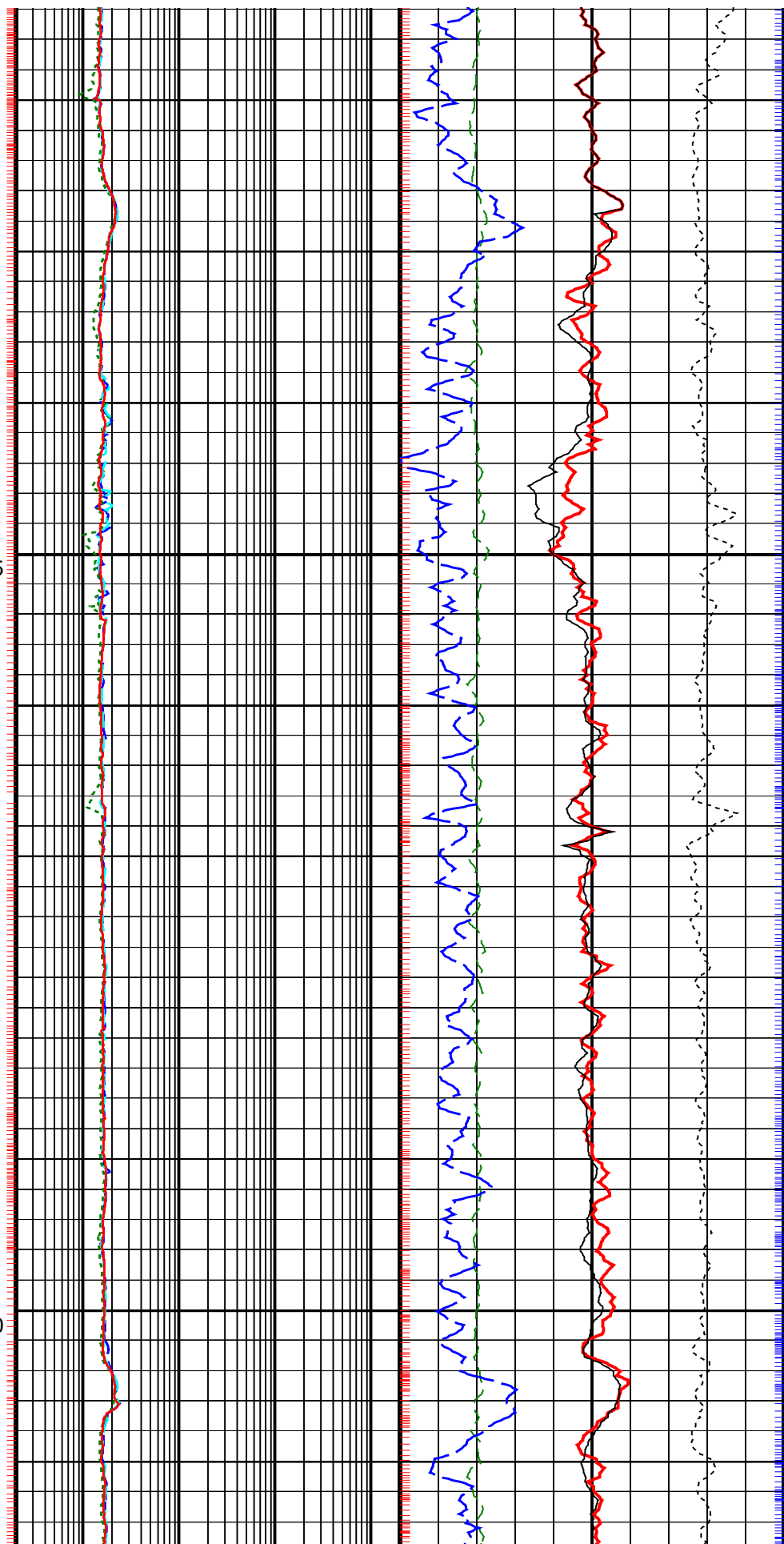


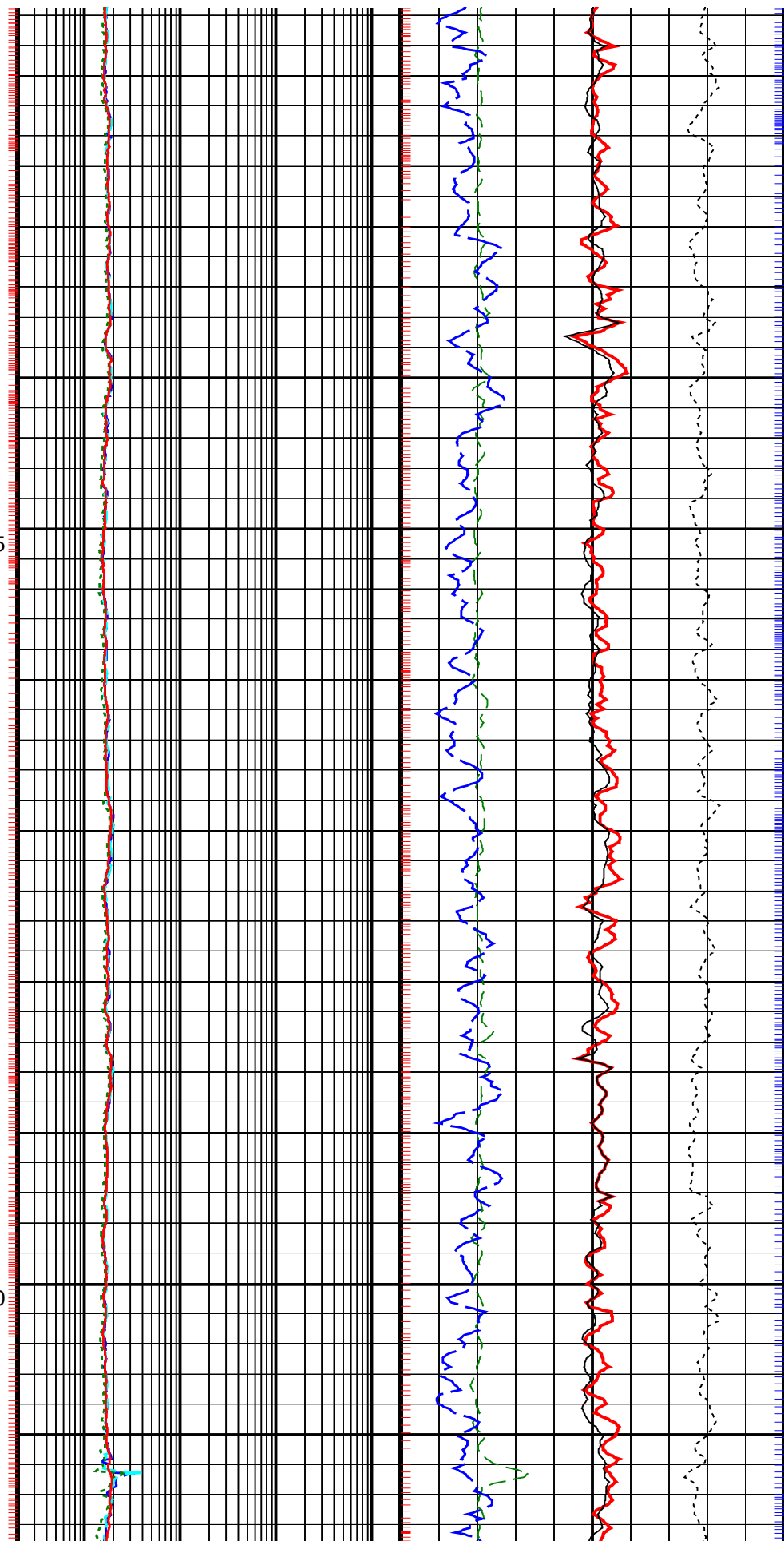
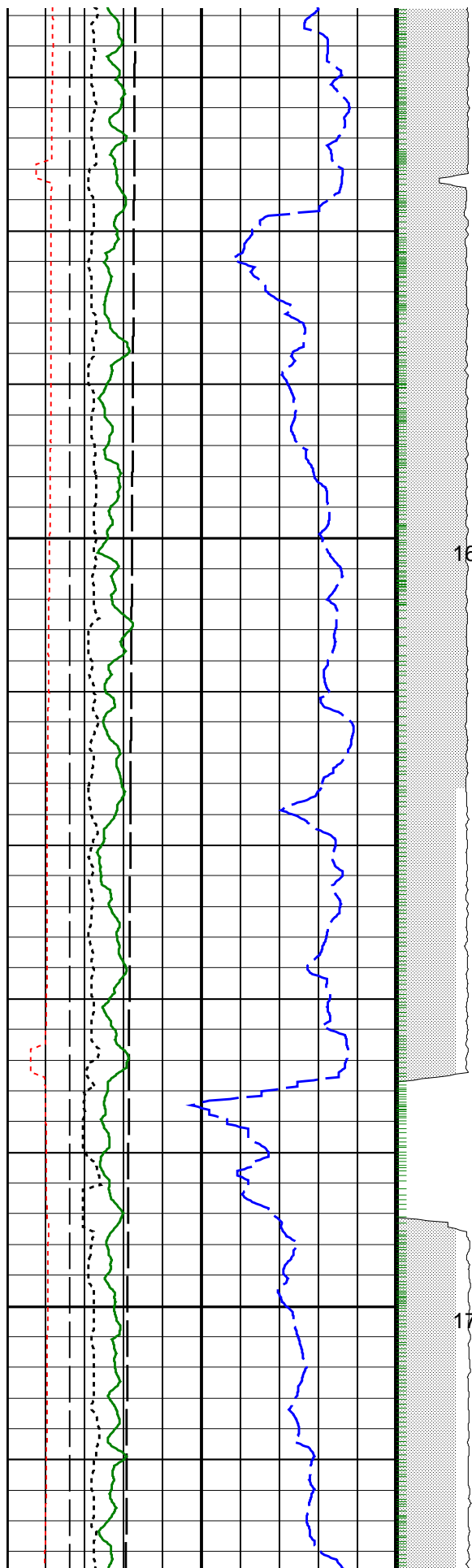


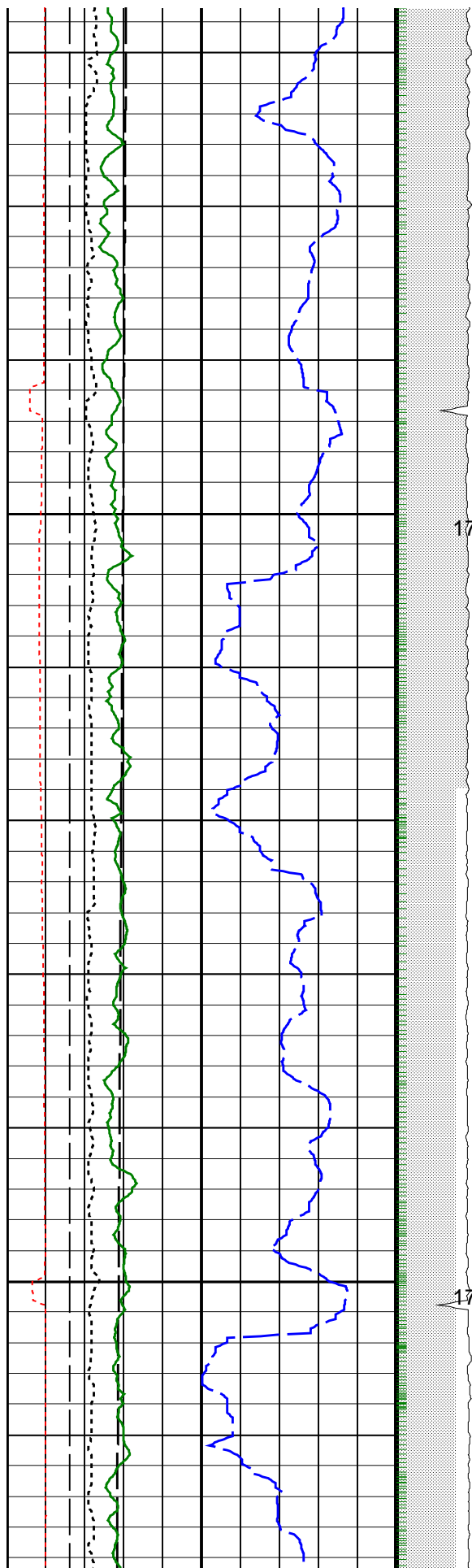


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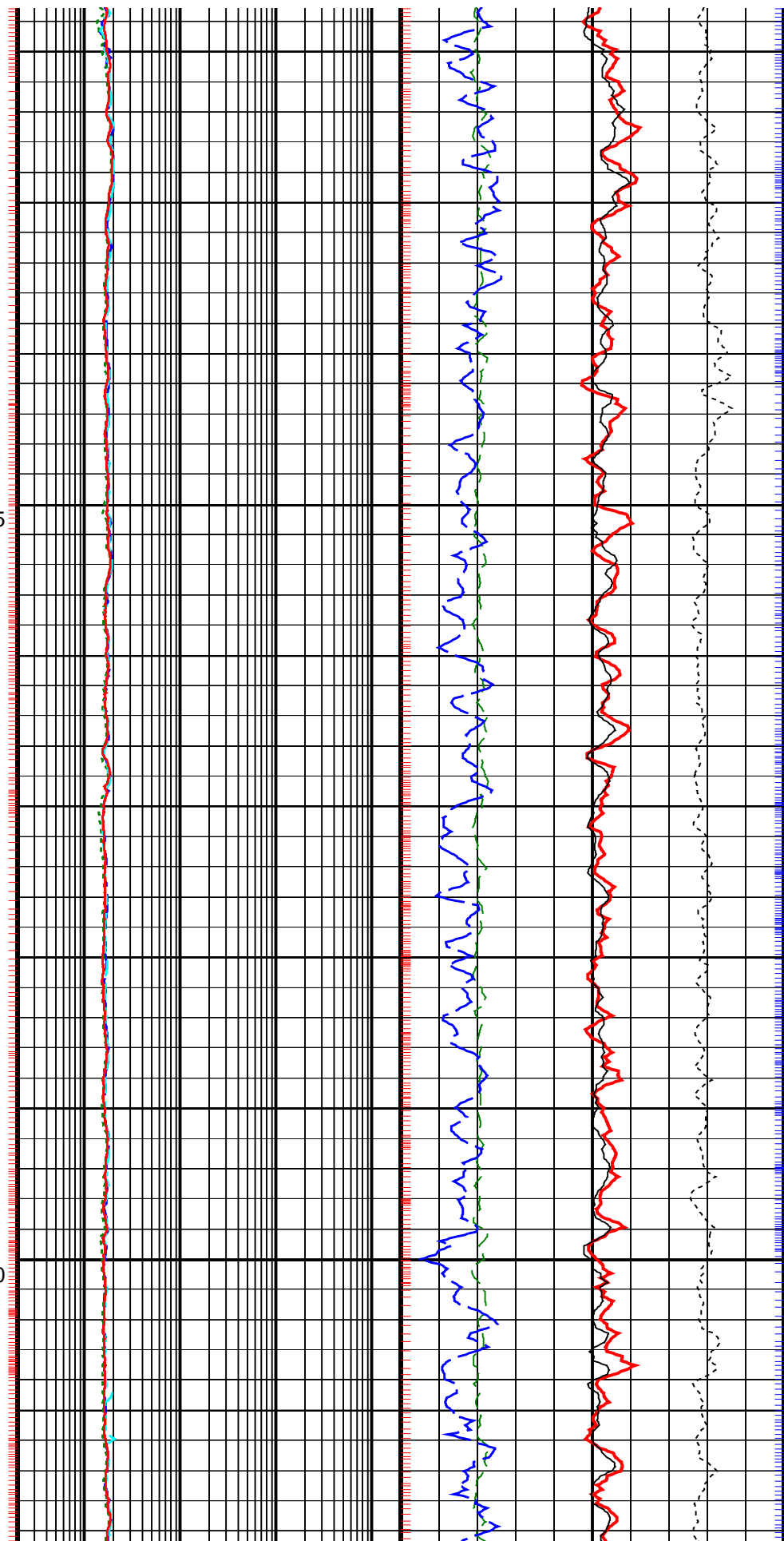


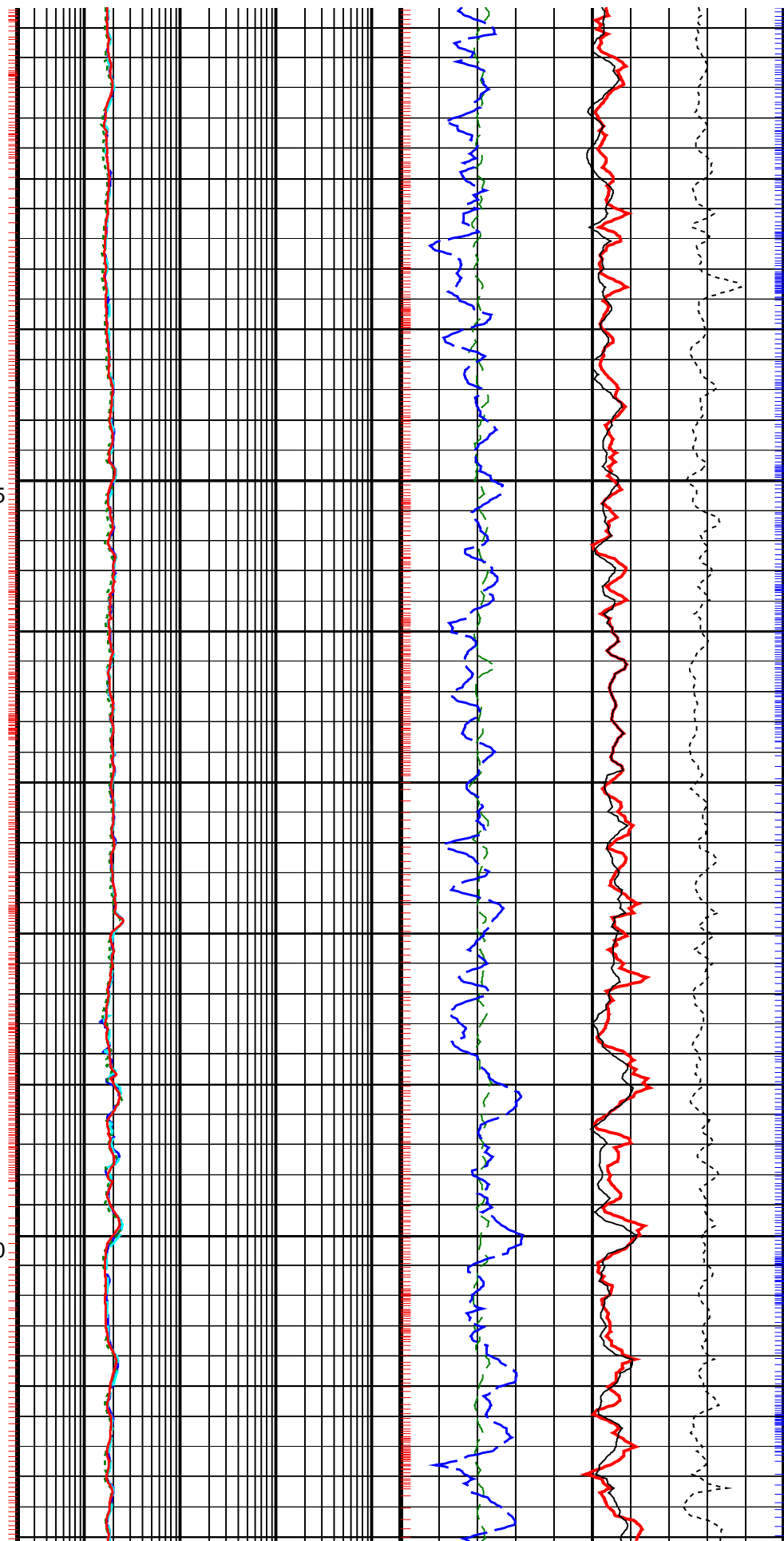
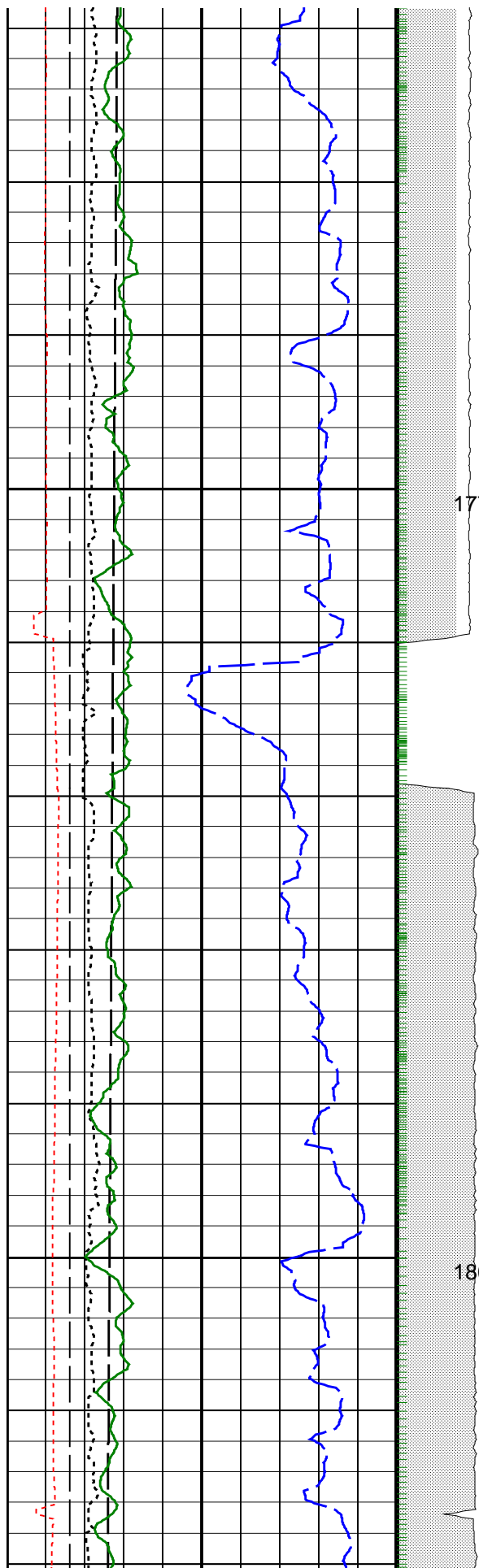


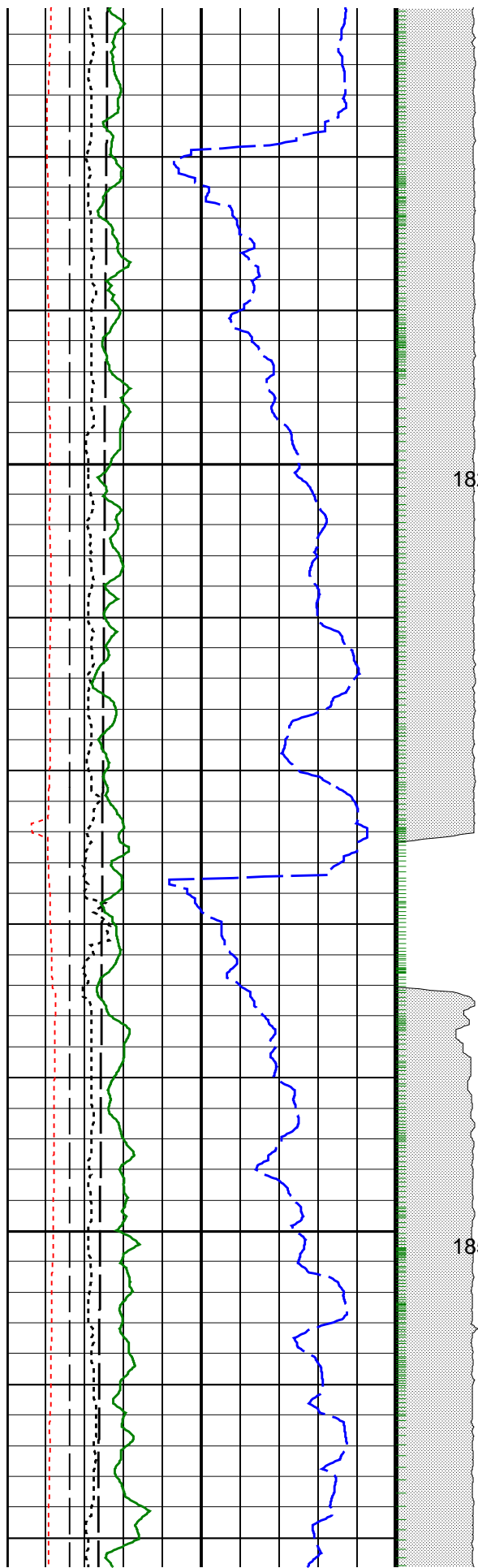


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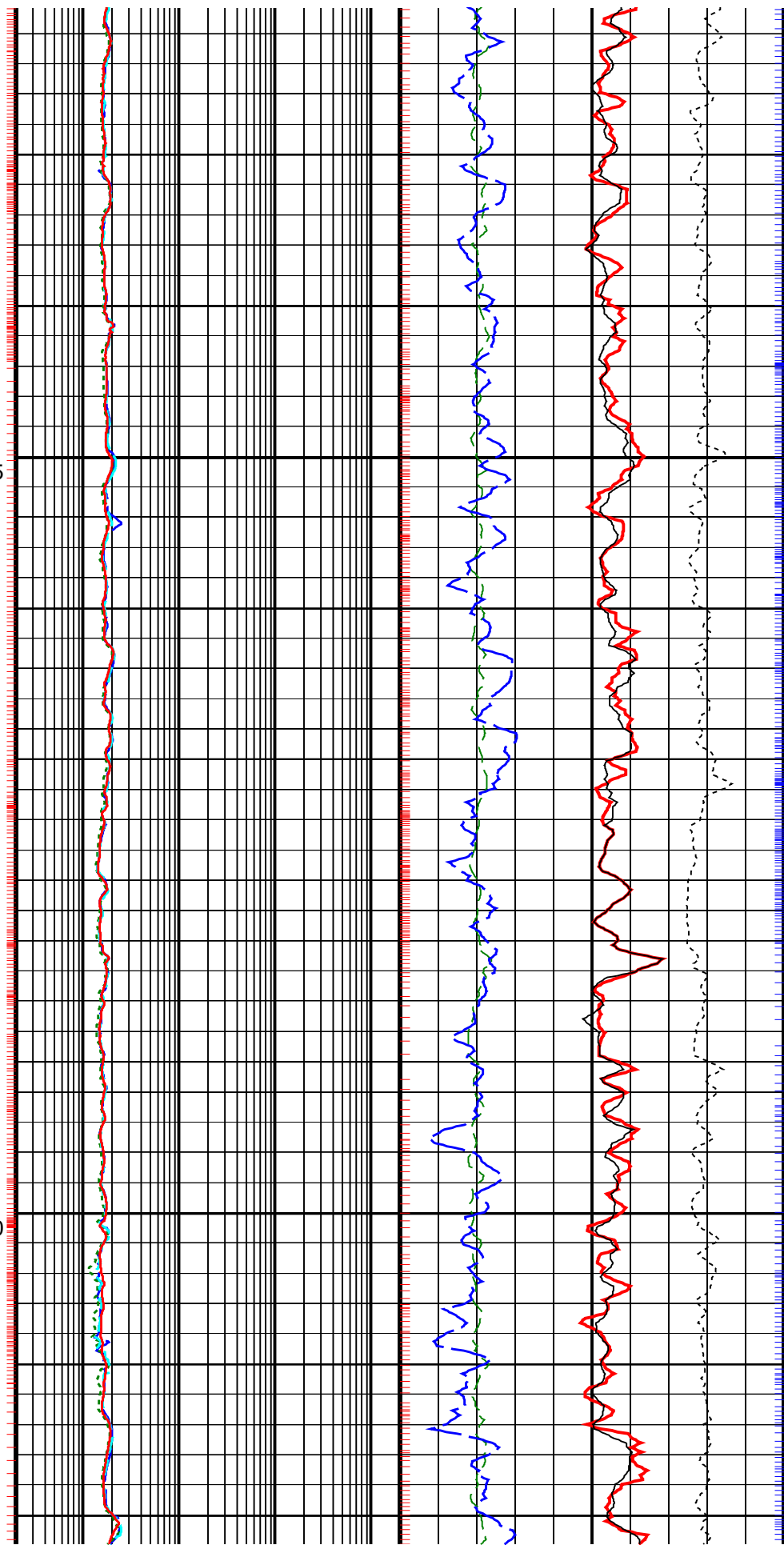


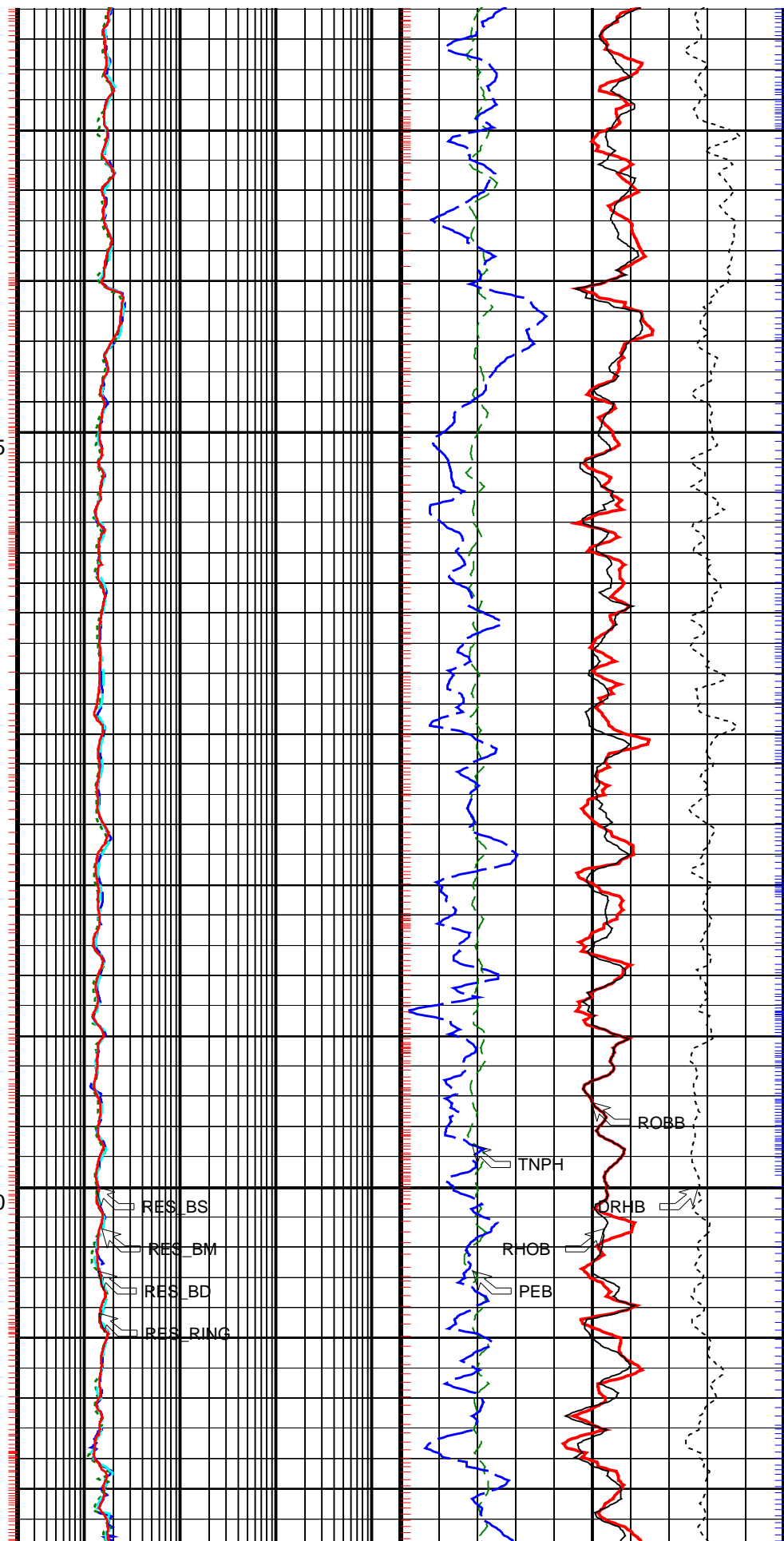
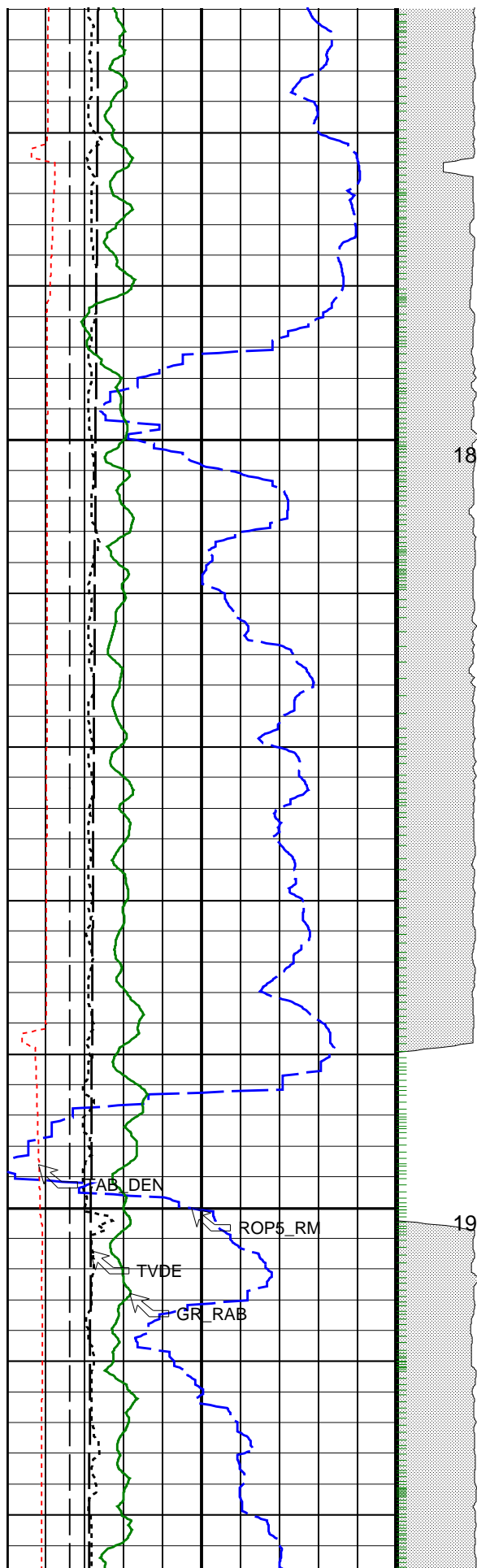


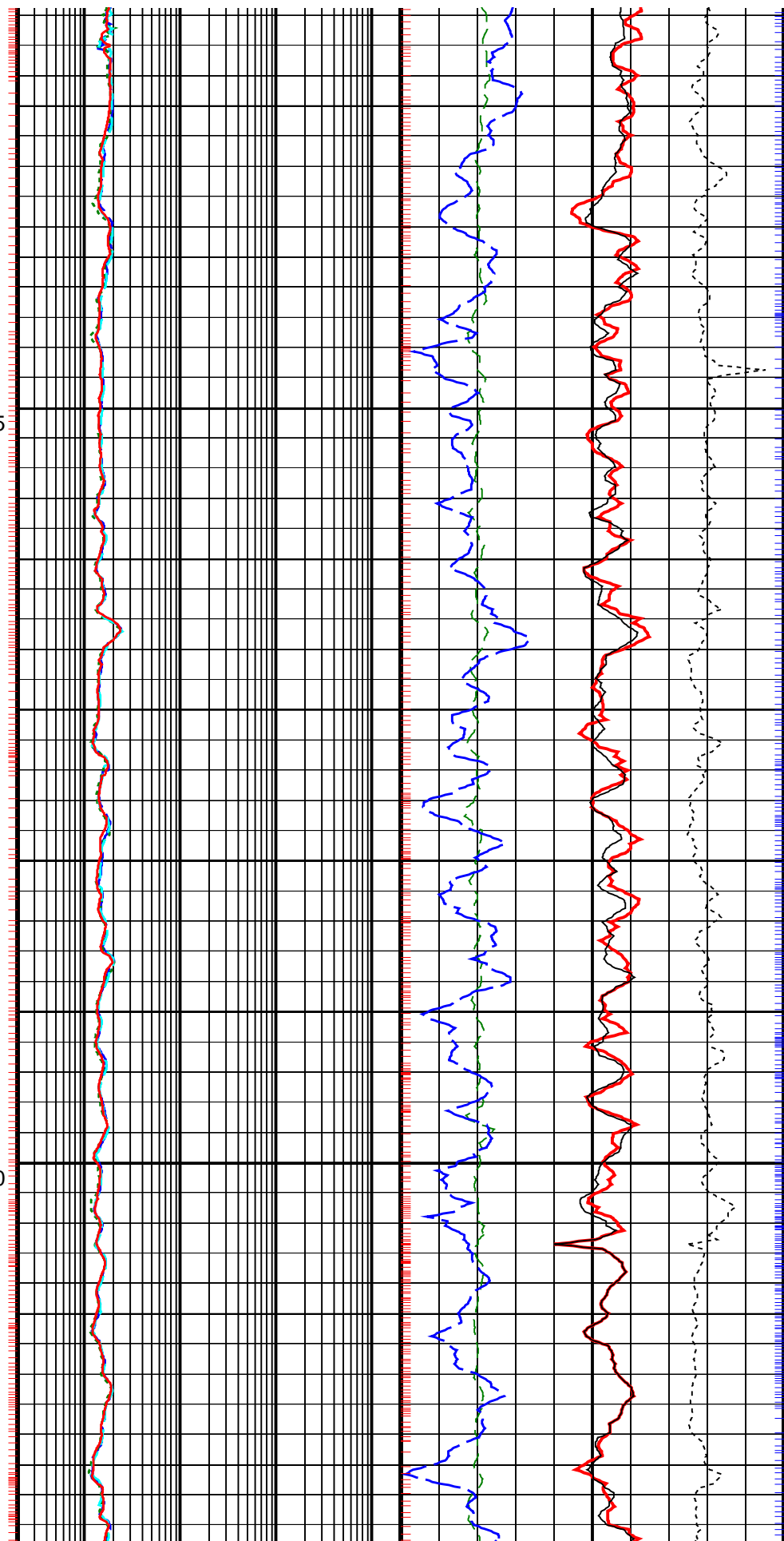
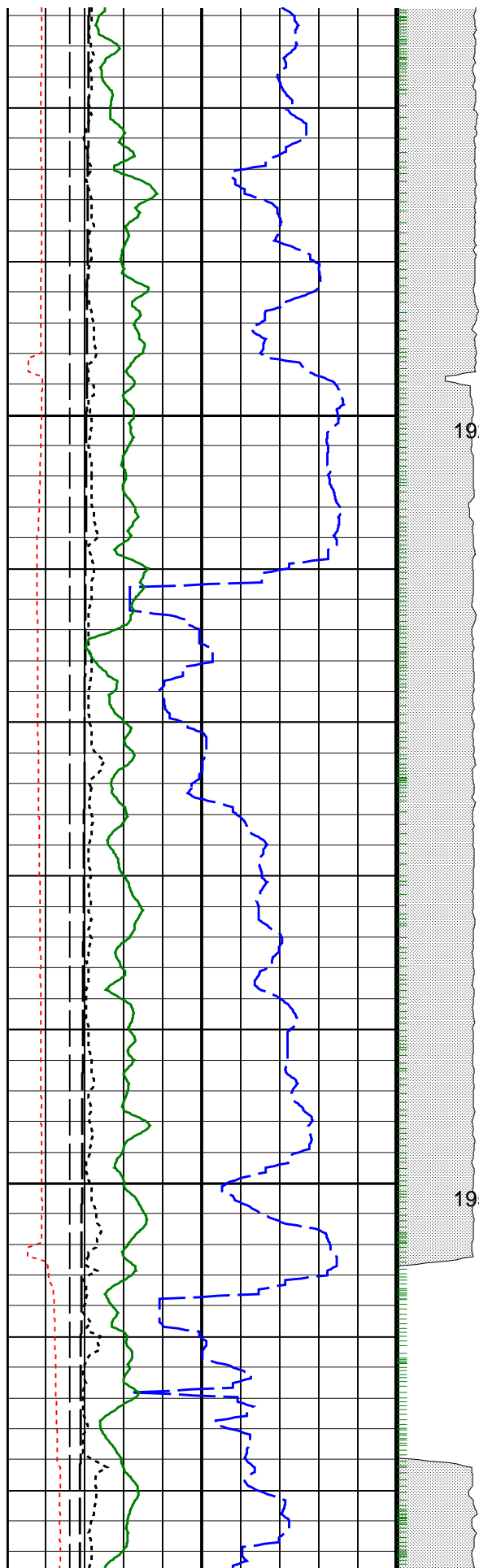


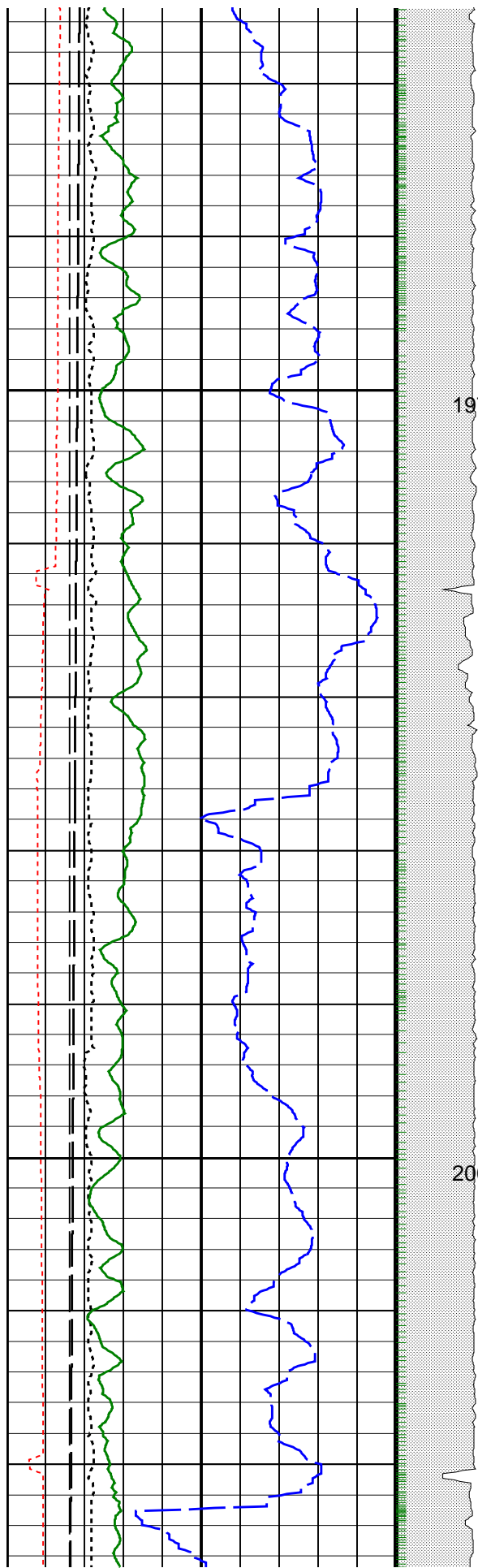
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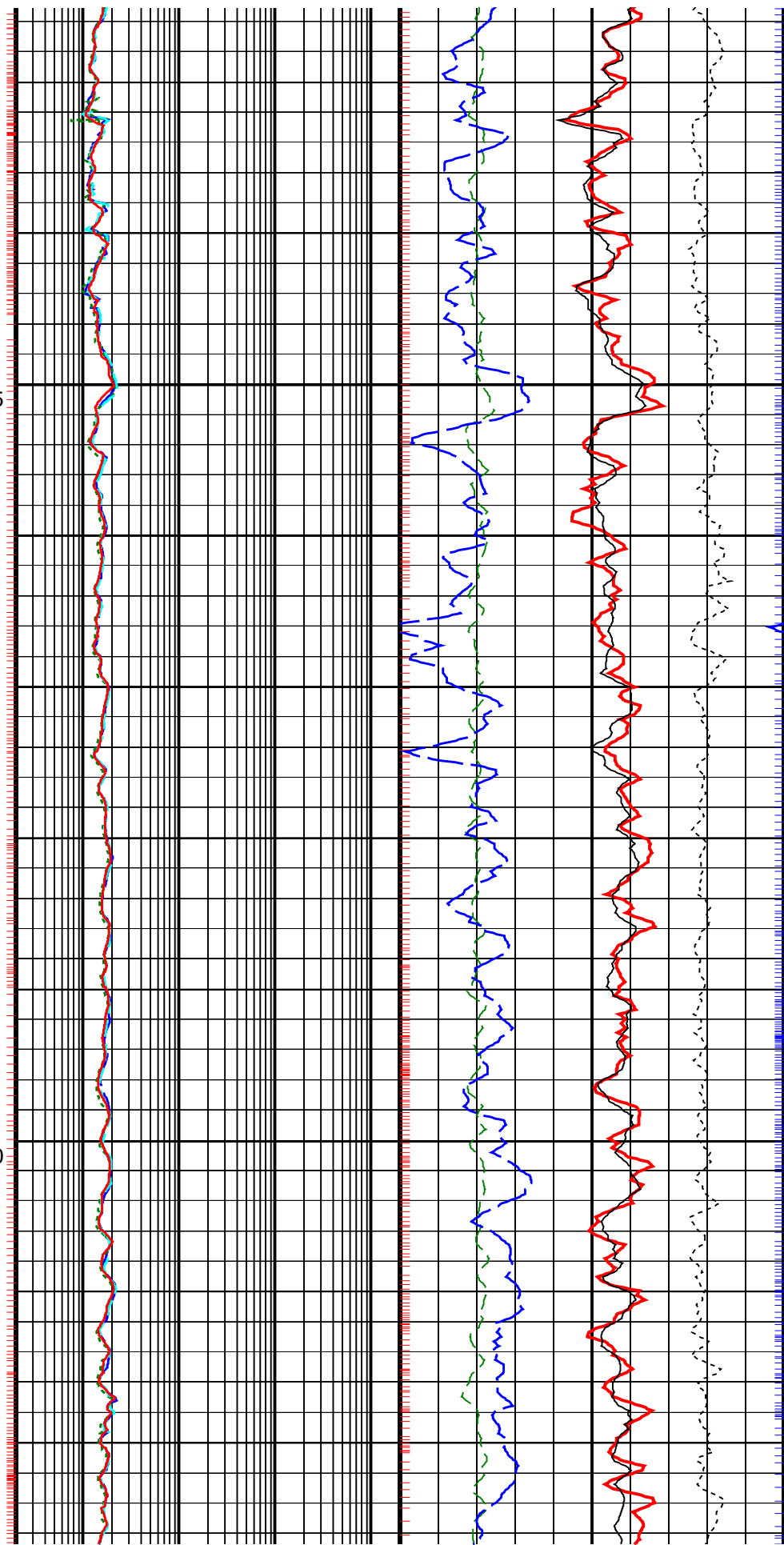


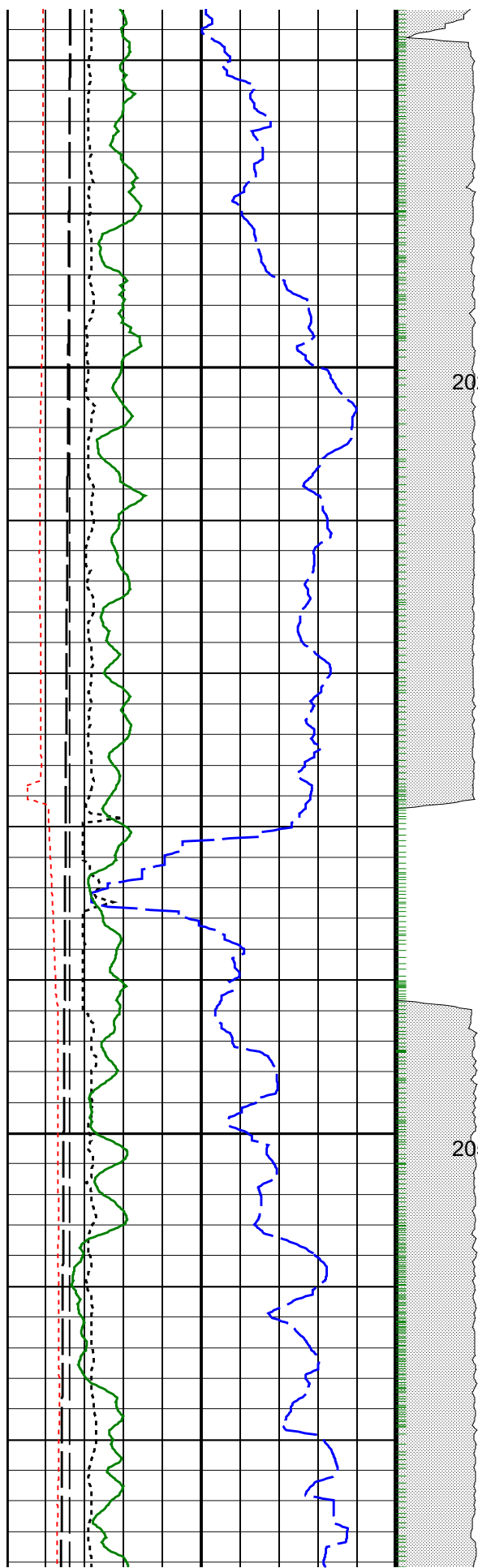




1975

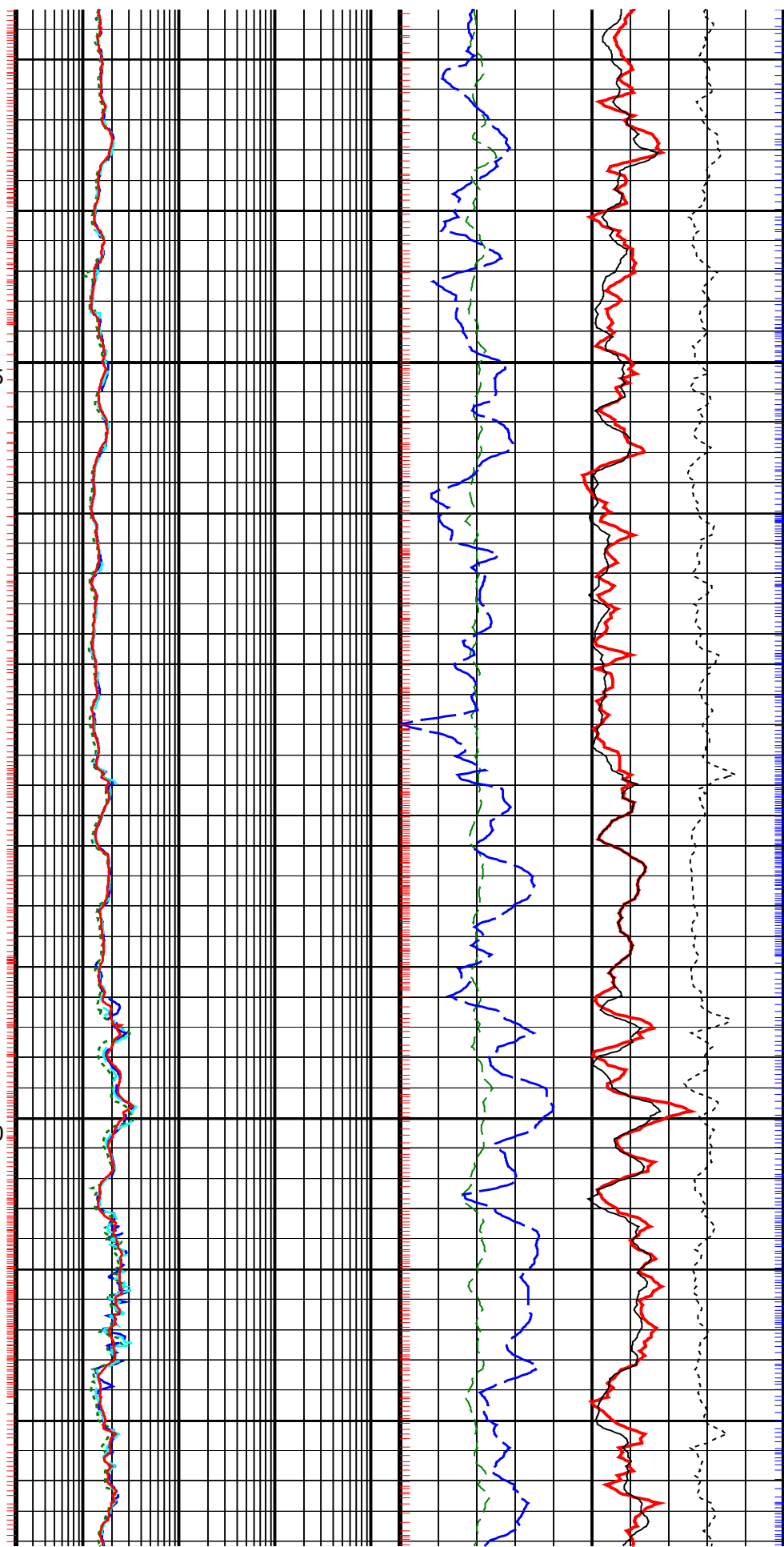
2000

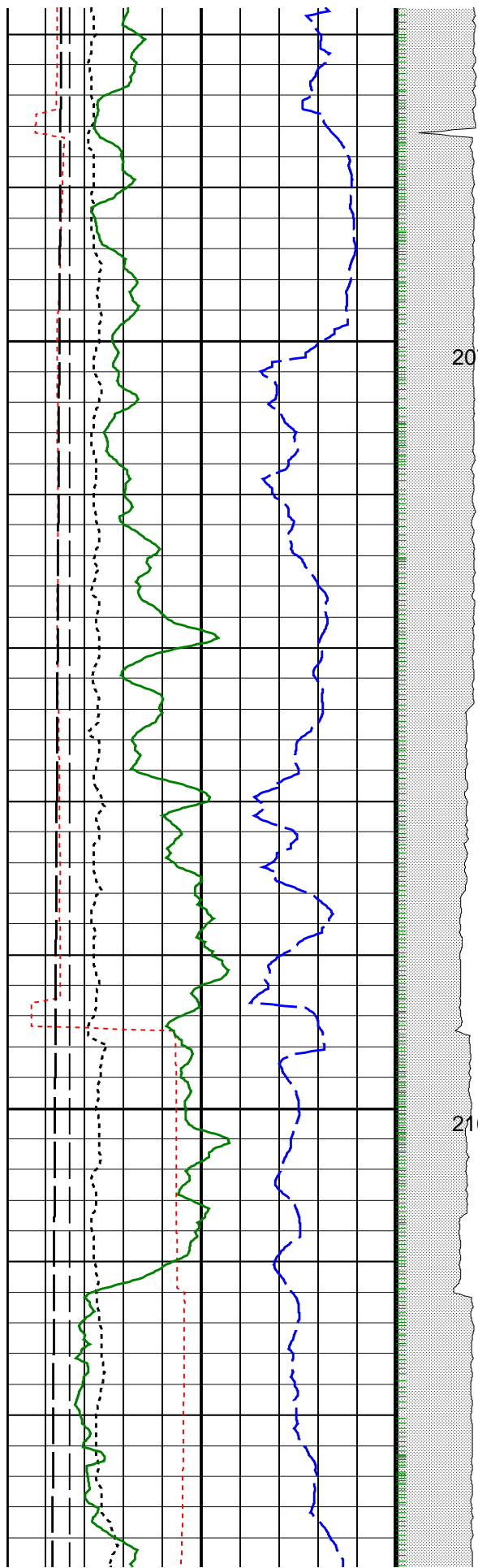




2025

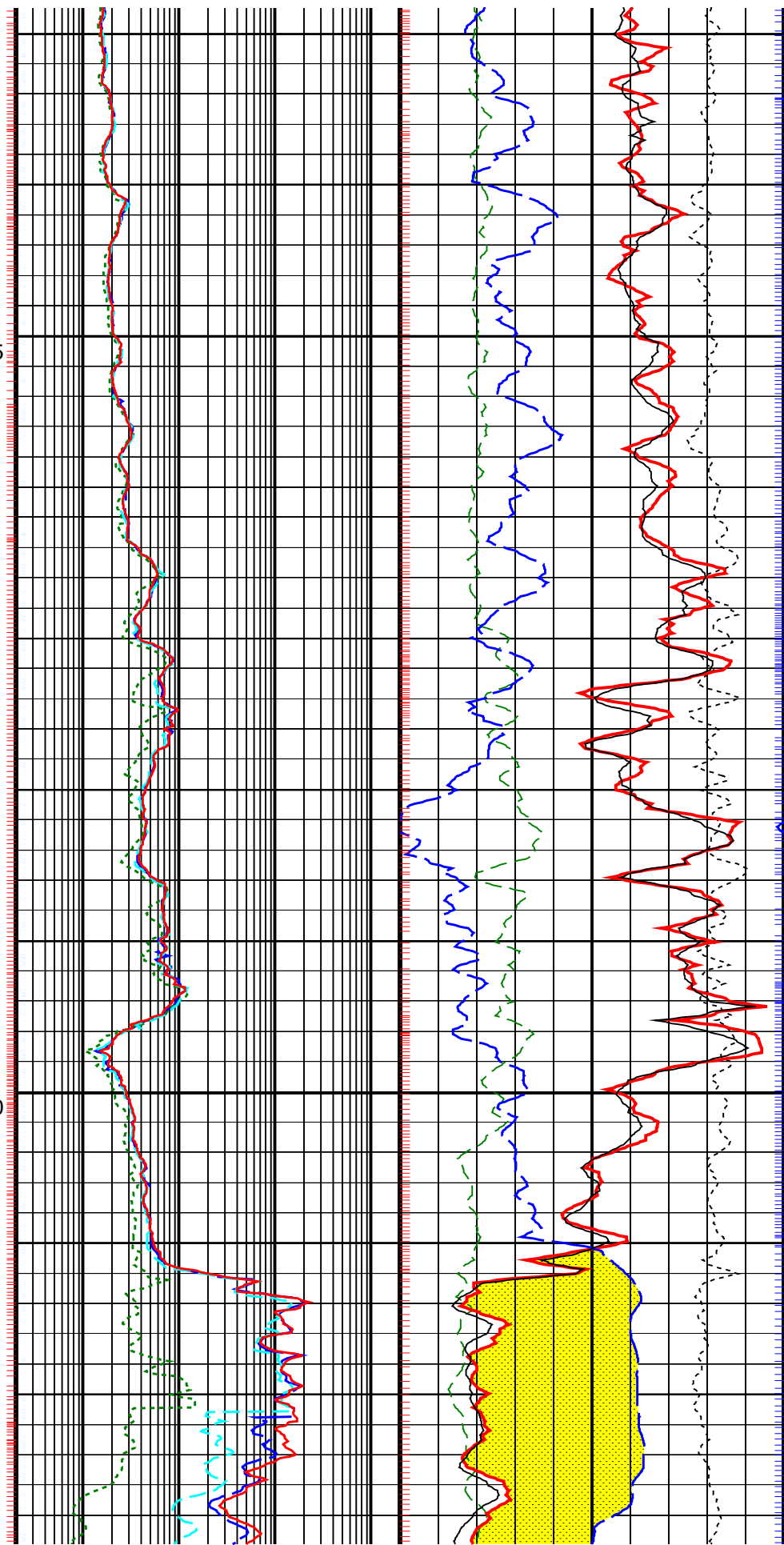
2050

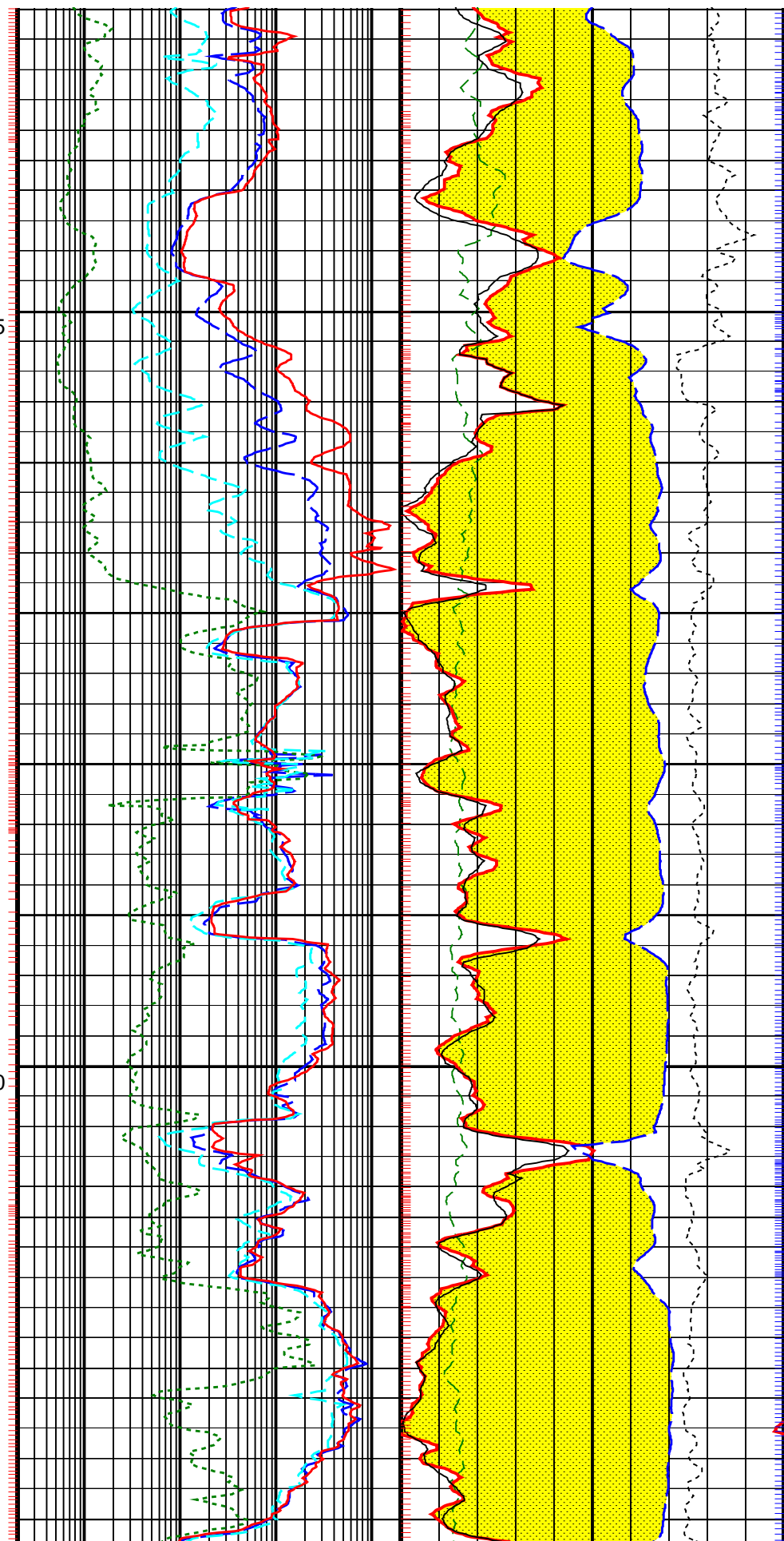
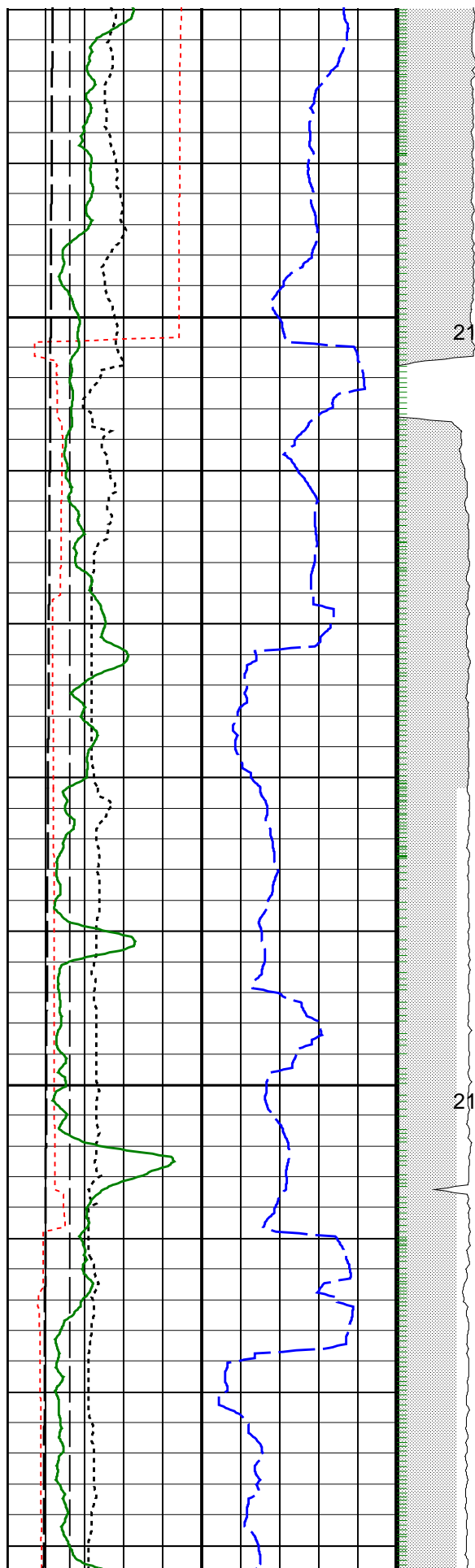


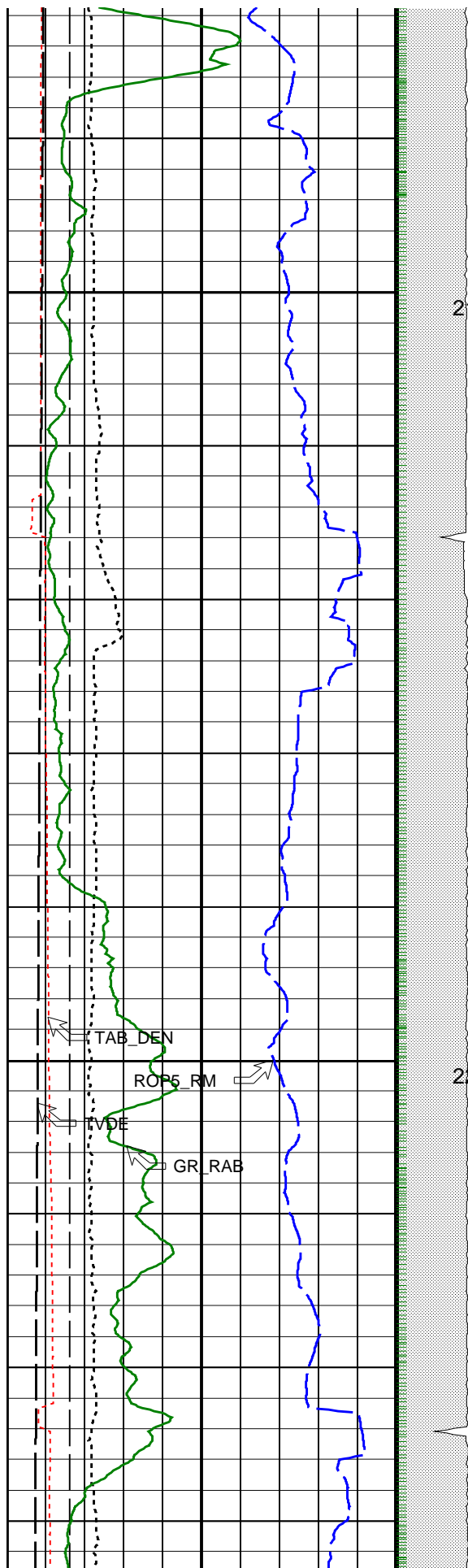


2075

2100

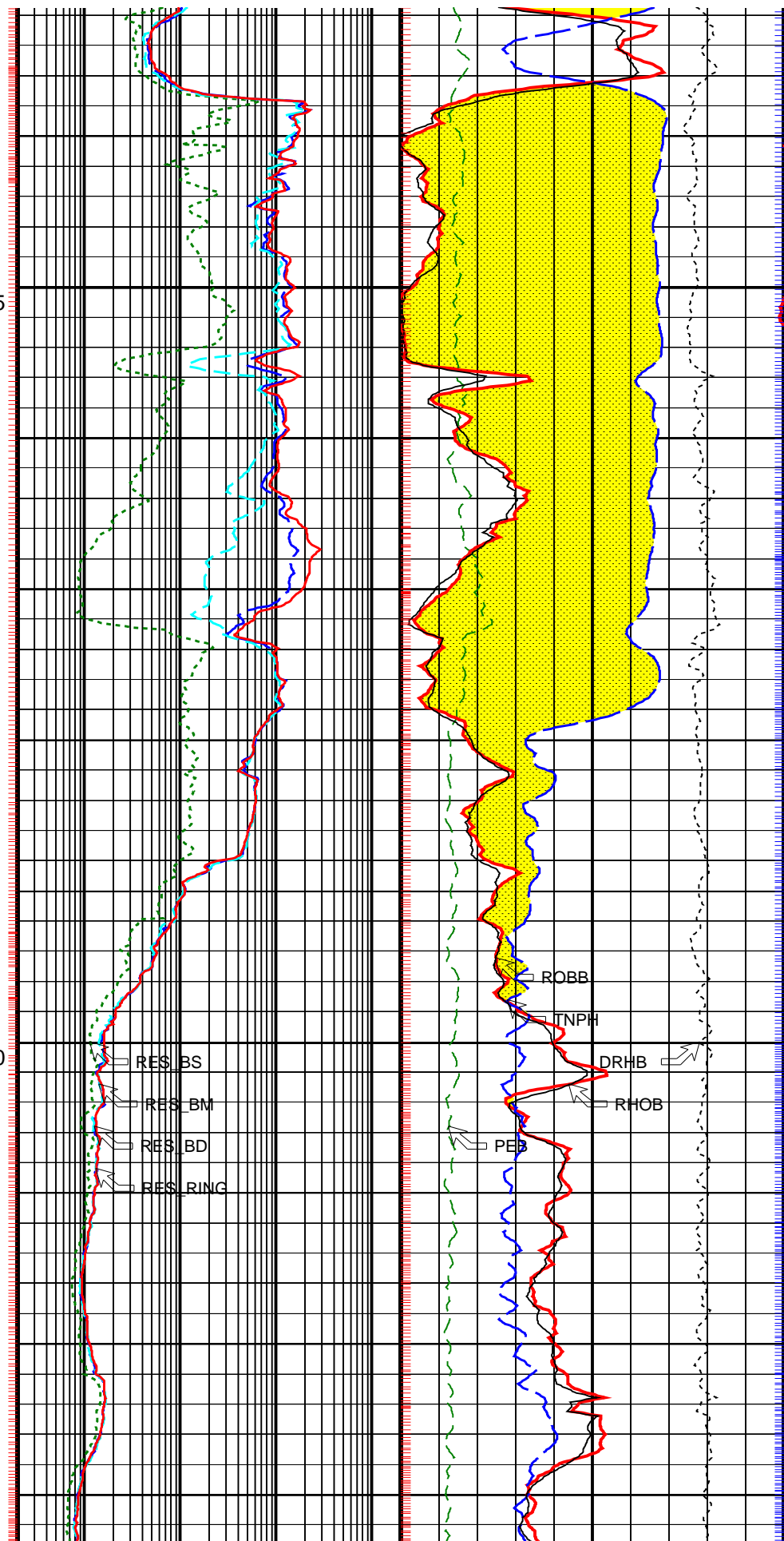


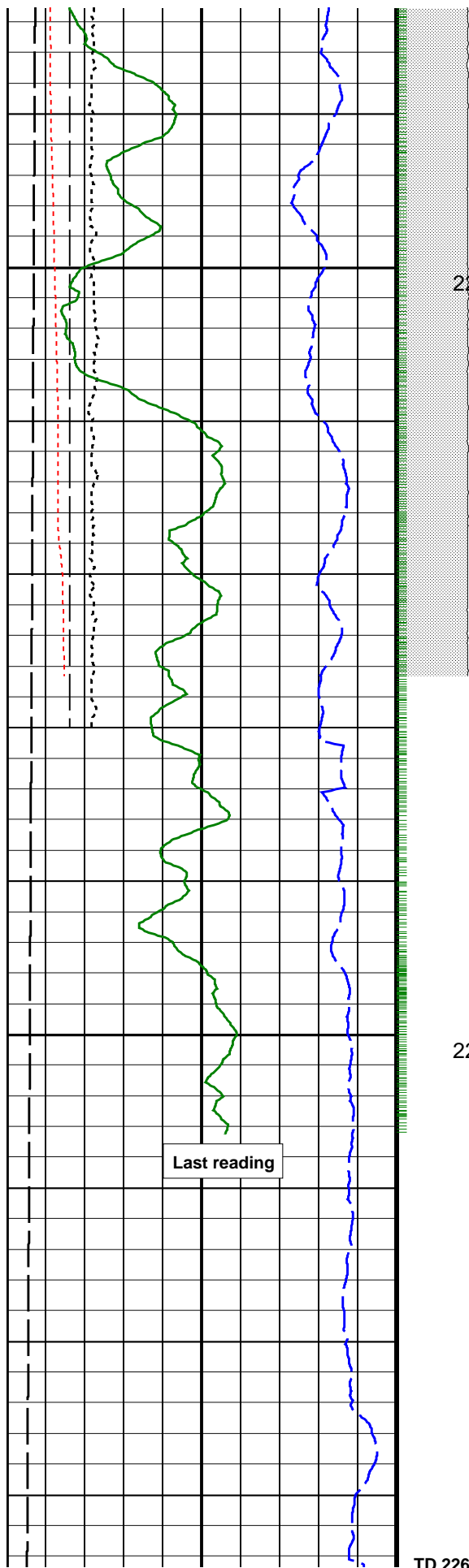




2175

2200

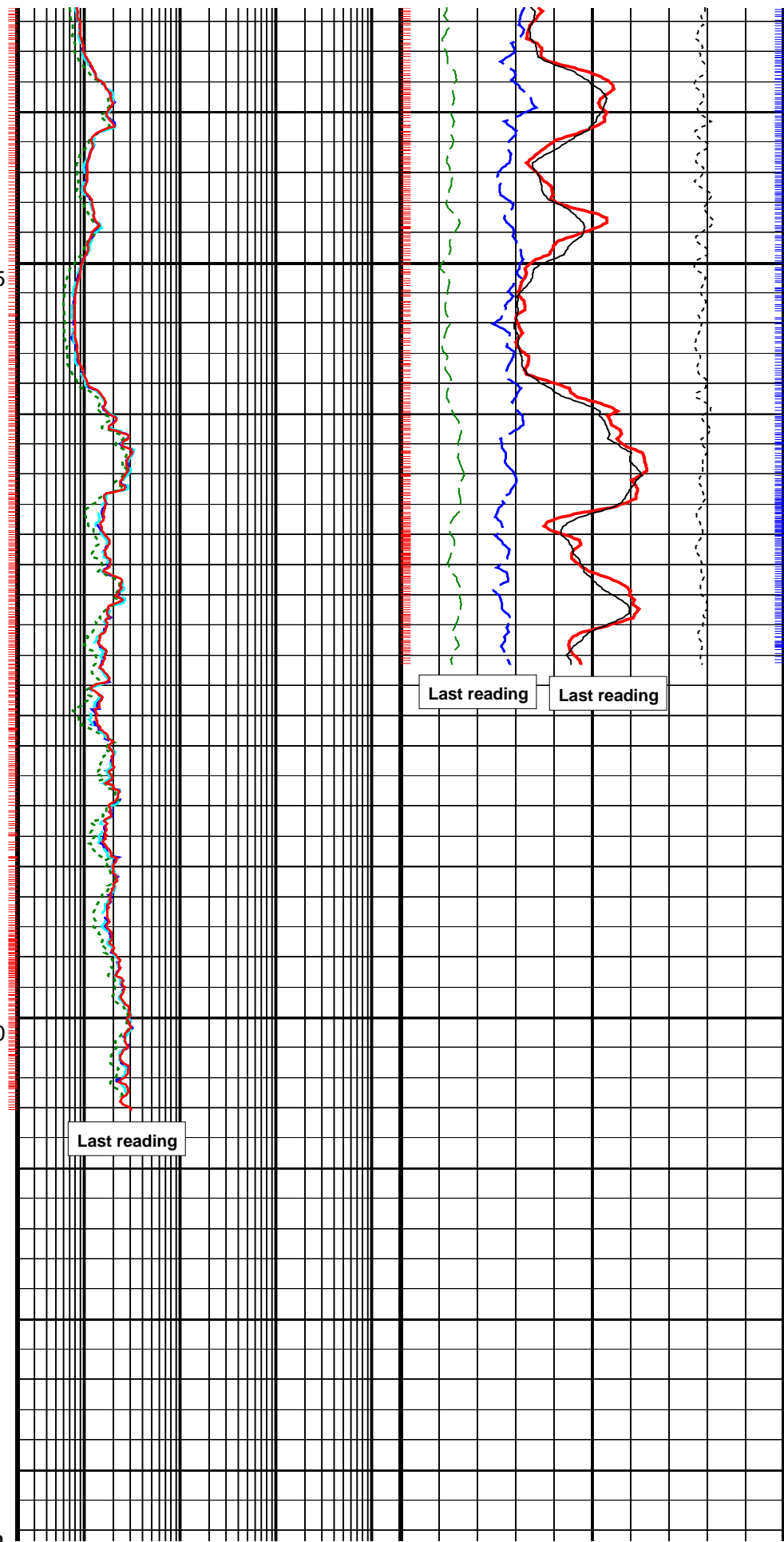




2225

2250

TD 2268 m



Last reading

Last reading

Last reading

6.75-in. Azimuthal Density Neutron Calibration

Density: Background											
Phase	LS window 3 – Background	CPS	Value	Phase	SS window 1 – Background	CPS	Value	Phase	SS window 3 – Background	CPS	Value
Master			53.02	Master			122.8	Master			539.2
	15.00 (Minimum)	82.50 (Nominal)	150.0 (Maximum)		40.00 (Minimum)	220.0 (Nominal)	400.0 (Maximum)		150.0 (Minimum)	825.0 (Nominal)	1500 (Maximum)

Master: 16–NOV–2001 1:40

6.75-in. Azimuthal Density Neutron Calibration

Density: Water Block Check											
Phase	Long spacing water density G/C3			Value	Phase	Short spacing water density G/C3			Value		
Master				1.033	Master				1.116		
	1.011 (Minimum)	1.026 (Nominal)	1.041 (Maximum)			1.093 (Minimum)	1.118 (Nominal)	1.143 (Maximum)			

Master: 16–NOV–2001 1:40

6.75-in. Azimuthal Density Neutron Calibration

Neutron: Water Tank											
Phase		Far 1 tube 1 gain			Value	Phase		Far 1 tube 1 offset CPS			Value
Master					1.108	Master					-0.7570
0.9000 (Minimum)		1.100 (Nominal)		1.300 (Maximum)		-1.200 (Minimum)		-0.9000 (Nominal)		-0.6000 (Maximum)	
Phase		Far 1 tube 2 gain			Value	Phase		Far 1 tube 2 offset CPS			Value
Master					1.045	Master					-0.9770
0.9000 (Minimum)		1.100 (Nominal)		1.300 (Maximum)		-1.200 (Minimum)		-0.9000 (Nominal)		-0.6000 (Maximum)	
Phase		Far 1 tube 3 gain			Value	Phase		Far 1 tube 3 offset CPS			Value
Master					1.070	Master					-0.7650
0.9000 (Minimum)		1.100 (Nominal)		1.300 (Maximum)		-1.200 (Minimum)		-0.9000 (Nominal)		-0.6000 (Maximum)	
Phase		Far 2 tube 1 gain			Value	Phase		Far 2 tube 1 offset CPS			Value
Master					1.104	Master					-0.7610
0.9000 (Minimum)		1.100 (Nominal)		1.300 (Maximum)		-1.200 (Minimum)		-0.9000 (Nominal)		-0.6000 (Maximum)	
Phase		Far 2 tube 2 gain			Value	Phase		Far 2 tube 2 offset CPS			Value
Master					0.9970	Master					-0.8130
0.9000 (Minimum)		1.100 (Nominal)		1.300 (Maximum)		-1.200 (Minimum)		-0.9000 (Nominal)		-0.6000 (Maximum)	
Phase		Far 2 tube 3 gain			Value	Phase		Far 2 tube 3 offset CPS			Value
Master					1.097	Master					-0.7910
0.9000 (Minimum)		1.100 (Nominal)		1.300 (Maximum)		-1.200 (Minimum)		-0.9000 (Nominal)		-0.6000 (Maximum)	
Phase		Near 1 tube 1 gain			Value						
Master					1.073						
0.9000 (Minimum)		1.100 (Nominal)		1.300 (Maximum)							
Phase		Near 2 tube 1 gain			Value						
Master					1.054						
0.9000 (Minimum)		1.100 (Nominal)		1.300 (Maximum)							

6.75-in. Resistivity At-the-Bit / Equipment Identification

Primary Equipment:

Tool Name and Serial Number

Calibration Status

RAB6 – CA













Valid

125

Master: Calibration out of date 20-MAY-2001 9:46

6.75-in. Resistivity At-the-Bit Calibration


Resistivity: Fixture

Phase	Ring/T1 factor		Value	Phase	Ring/T2 factor		Value	Phase	M0/T1 factor		Value
Master			1.001	Master			0.9962	Master			1.004
	0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)
Phase	M0/T2 factor		Value	Phase	M2/T1 factor		Value	Phase	M2/T2 factor		Value
Master			0.9992	Master			0.9975	Master			0.9926
	0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)
Phase	BTN shallow/T1 factor		Value	Phase	BTN shallow/T2 factor		Value	Phase	BTN medium/T1 factor		Value
Master			1.003	Master			0.9987	Master			1.006
	0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)
Phase	BTN medium/T2 factor		Value	Phase	BTN deep/T1 factor		Value	Phase	BTN deep/T2 factor		Value
Master			1.001	Master			1.005	Master			1.000
	0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)

Master: Calibration out of date 20-MAY-2001 9:46

6.75-in. Resistivity At-the-Bit Calibration

Gamma Ray: Blanket

Phase	Gamma ray factor		Value
Master			0.8812
	0.7500 (Minimum)	1.000 (Nominal)	1.250 (Maximum)

ANADRILL

SCHLUMBERGER

Survey report

24-Jan-2002 04:41:48

Page 1 of 3

Client.....: ESSO Australia Ltd.
Field.....: Tuna

Well.....: WTN-W48 A
API number.....:
Engineer.....: T.Sims

Rig.....: NABORS 453
STATE.....: Victoria

Spud date.....: 19-Jan-02
Last survey date.....: 24-Jan-02
Total accepted surveys...: 59
MD of first survey.....: 628.00 m
MD of last survey.....: 2268.00 m

----- Survey calculation methods-----
Method for positions.....: Minimum curvature
Method for DLS.....: Mason & Taylor

----- Depth reference -----
Permanent datum.....: Mean Sea Level
Depth reference.....: Driller's Depth
GL above permanent.....: -61.00 m
KB above permanent.....: 34.70 m
DF above permanent.....: 34.70 m

----- Vertical section origin-----
Latitude (+N/S-).....: 0.00 m
Departure (+E/W-).....: 0.00 m

----- Platform reference point-----
Latitude (+N/S-).....: -5.06 m
Departure (+E/W-).....: 55.86 m

Azimuth from rotary table to target: 64.64 degrees

----- Geomagnetic data -----
Magnetic model.....: BGGM version 2000
Magnetic date.....: 31-Dec-2001
Magnetic field strength..: 1200.65 HCONT
Magnetic dec (+E/W-).....: 13.18 degrees
Magnetic dip.....: -68.71 degrees

----- MWD survey Reference Criteria -----
Reference G.....: 1000.02 mGal
Reference H.....: 1200.65 HCONT
Reference Dip.....: -68.71 degrees
Tolerance of G.....: (+/-) 2.50 mGal
Tolerance of H.....: (+/-) 6.00 HCONT
Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections -----
Magnetic dec (+E/W-).....: 13.18 degrees
Grid convergence (+E/W-)..: -0.86 degrees
Total az corr (+E/W-).....: 14.04 degrees
(Total az corr = magnetic dec - grid conv)
Sag applied (Y/N).....: No degree: 0.00

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ANADRILL SCHLUMBERGER Survey Report

24-Jan-2002 04:41:48

Page 2 of 3

Seq #	Measured depth	Incl angle	Azimuth angle	Course length	TVD depth	Vertical section	Displ +N/S-	Displ +E/W-	Total displ	At Azim	DLS (deg/	Srvy tool	Tool qual
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Well: WTN-W48 A
Field: Tuna
Rig: NABORS 453
State: Victoria

IDEAL services from **Anadrill**

GeoVISION Service
1 : 200 Measured Depth
Recorded Mode

Schlumberger