

Company: **ESSO Australia Ltd.**

Well: **WTN-W48 A**

Field: Tuna

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

Schlumberger
GeoVISION Service
1 : 200 True Vertical Depth
Recorded Mode

NABORS 453
Tuna
Bass Strait
WTN-W48 A
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

Comp	
Well:	
Location:	
Field:	
Rig:	
API serial no.	
x = 5,771,791.69 m	Longitude
y = 621,538.528 m	Latitude
	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	
Type		Mud record	Borehole deviation record				
	from	to	Min	Max	from	to	
SeaWater	622 m	647 m	25.50 deg	25.67 deg	628 m	647 m	
KCL/PHPA	647 m	2268 m	25.67 deg	66.50 deg	647 m	2268 m	
Surface equipment							
Unit	OLU-FB-924	IDEAL wis	id6_1c_10	<div>IDEAL services from Anadrill</div>			
Depth system	PDA	SPM	id6_1c_10				
		LWD	See Toolsketch				
		MWD	See Toolsketch				

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 OF 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.

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 R_m), 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

hydrogen index (from mud weight, temperature and pressure).
Pulled out of the hole at 637 m to change the bit and motor bend after kicking off.

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).
Mud weight was increased from 9 to 10 lbm/gal at 1600 m before drilling into the Lakes Entrance formation.
Mud weight was increased from 10 to 10.5 lbm/gal at 2125 m to improve well stability.
Zoned processing used for mud weight and mud salinity.
Pulled out of the hole at 2268 m to run casing after reaching TD.

EQUIPMENT DESCRIPTION

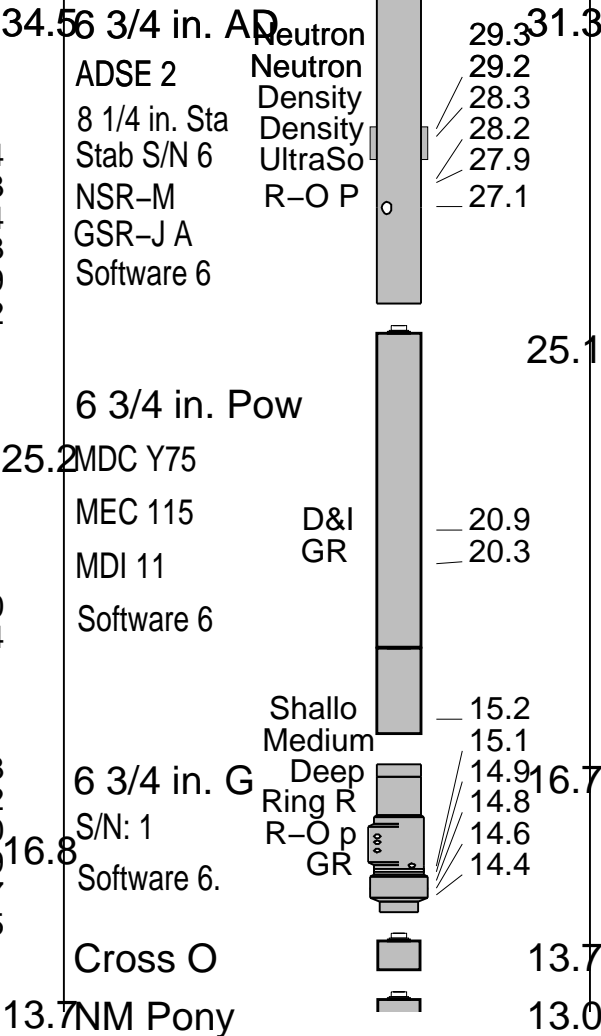
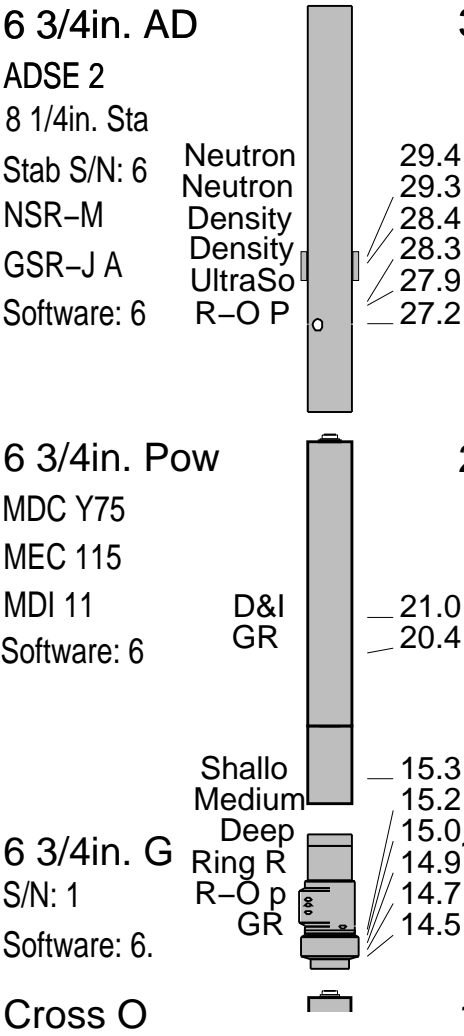
RUN1

RUN2

RUN

DOWNHOLE EQ

DOWNHOLE E



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					

True Vertical Depth Log

IDEAL Version: ID6_1C_10

IDF

RAB id6_1c_10 MWD_10 id6_1c_10
ADN id6_1c_10

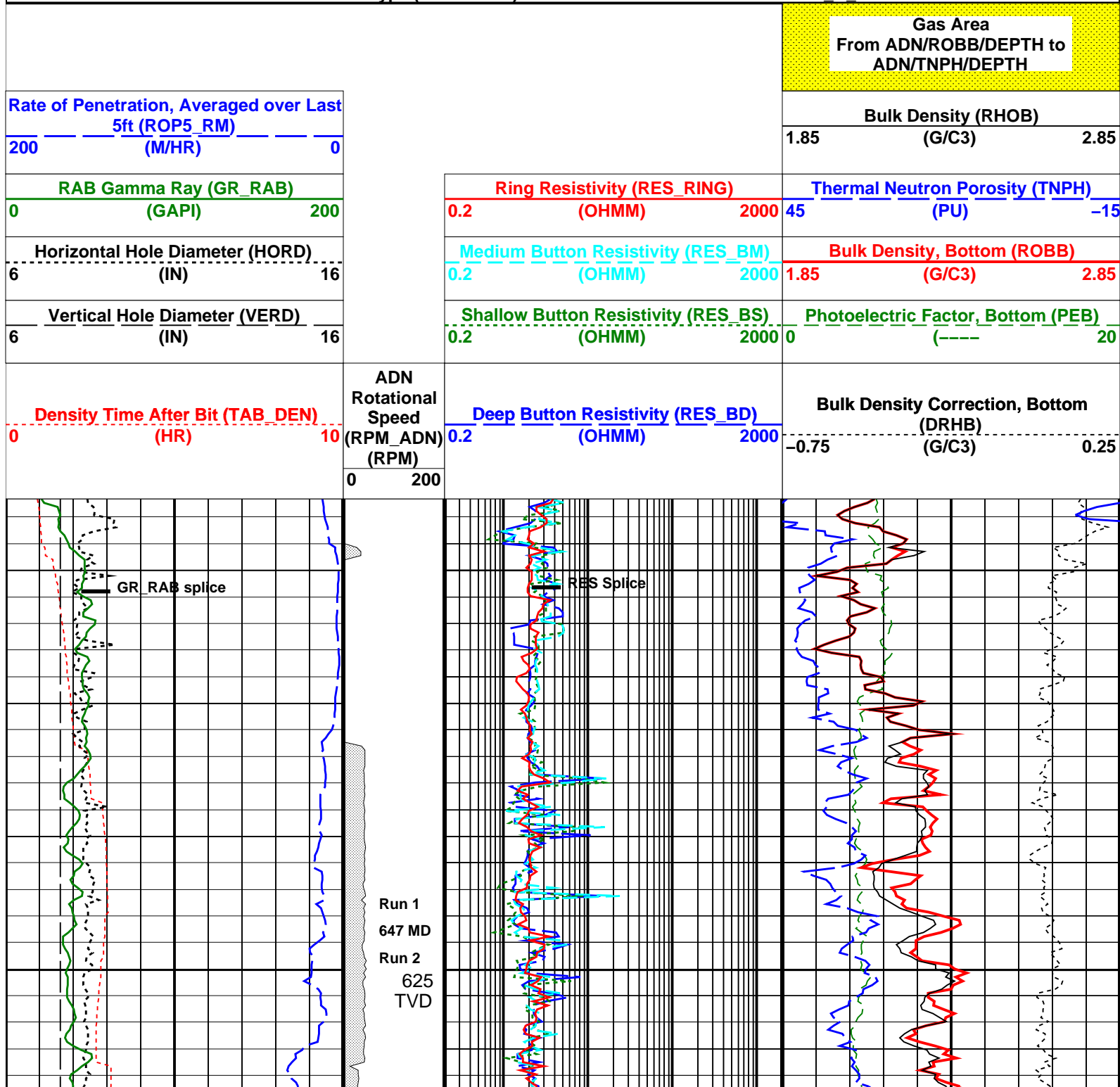
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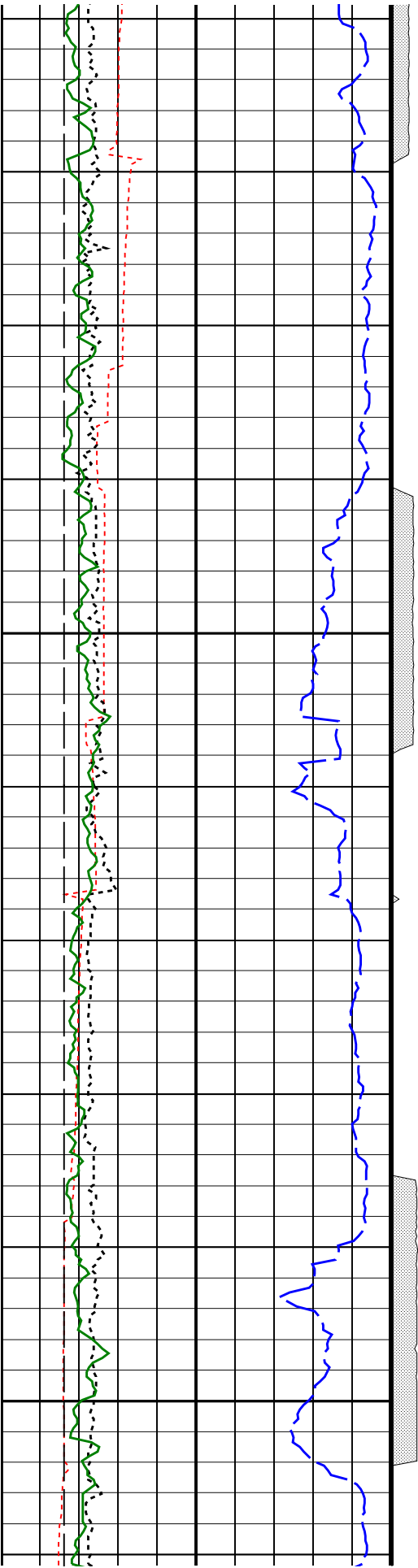
Parameters

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

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
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)		

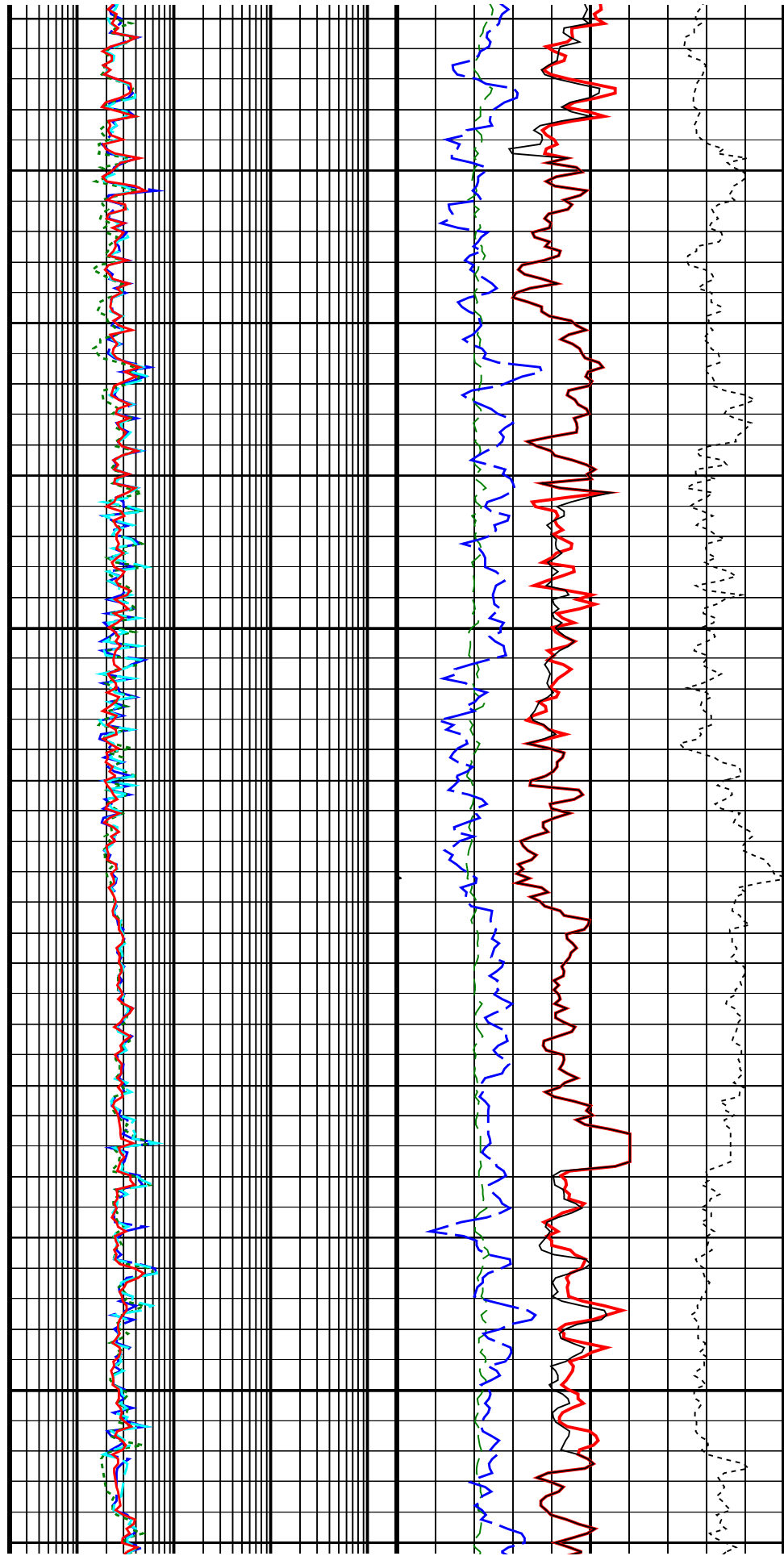
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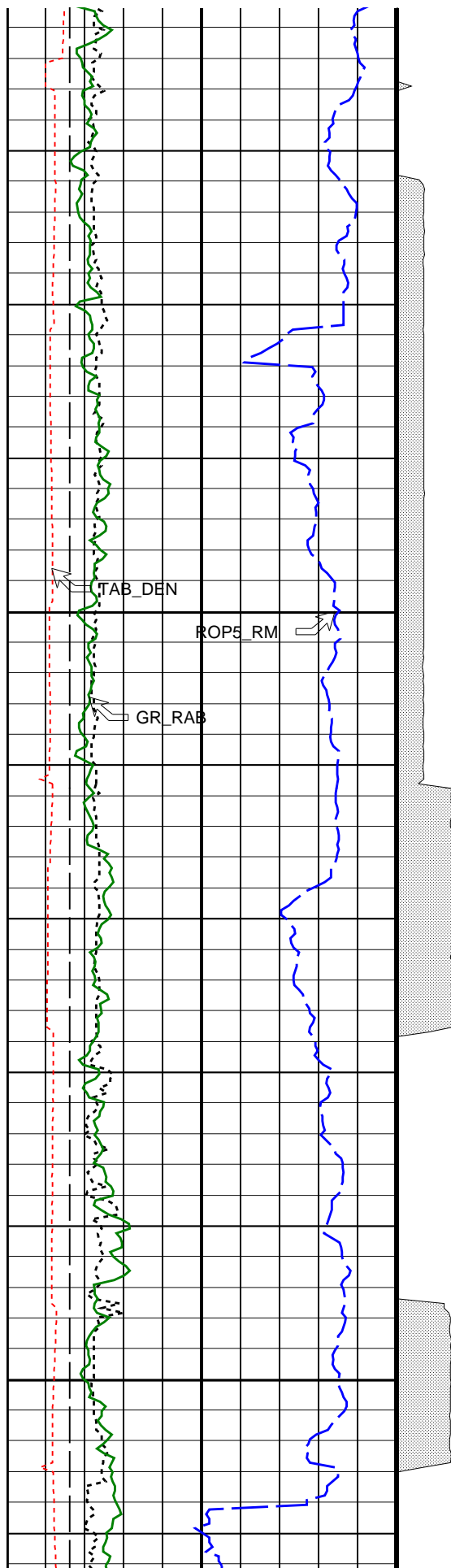




650
TVD

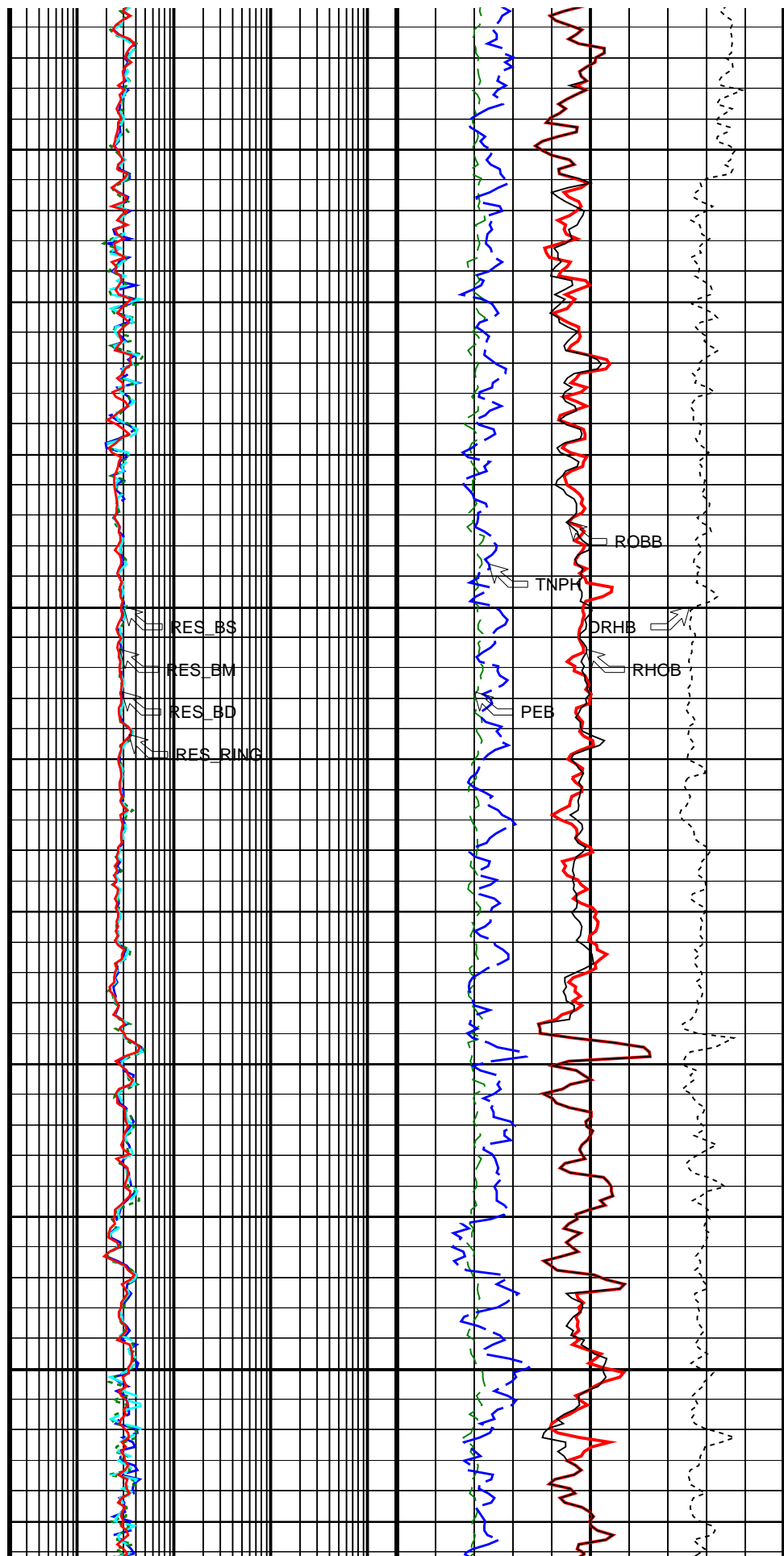
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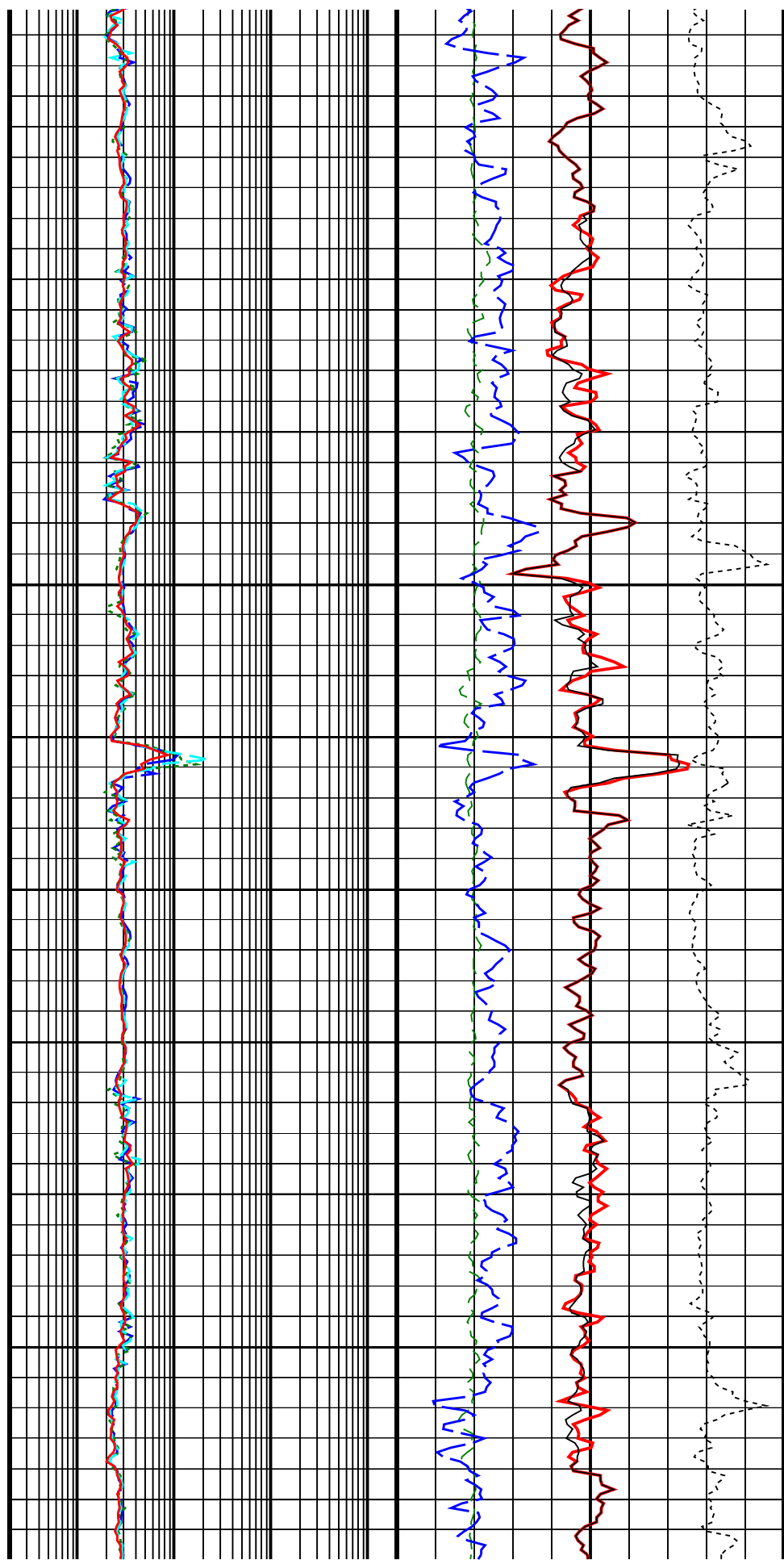
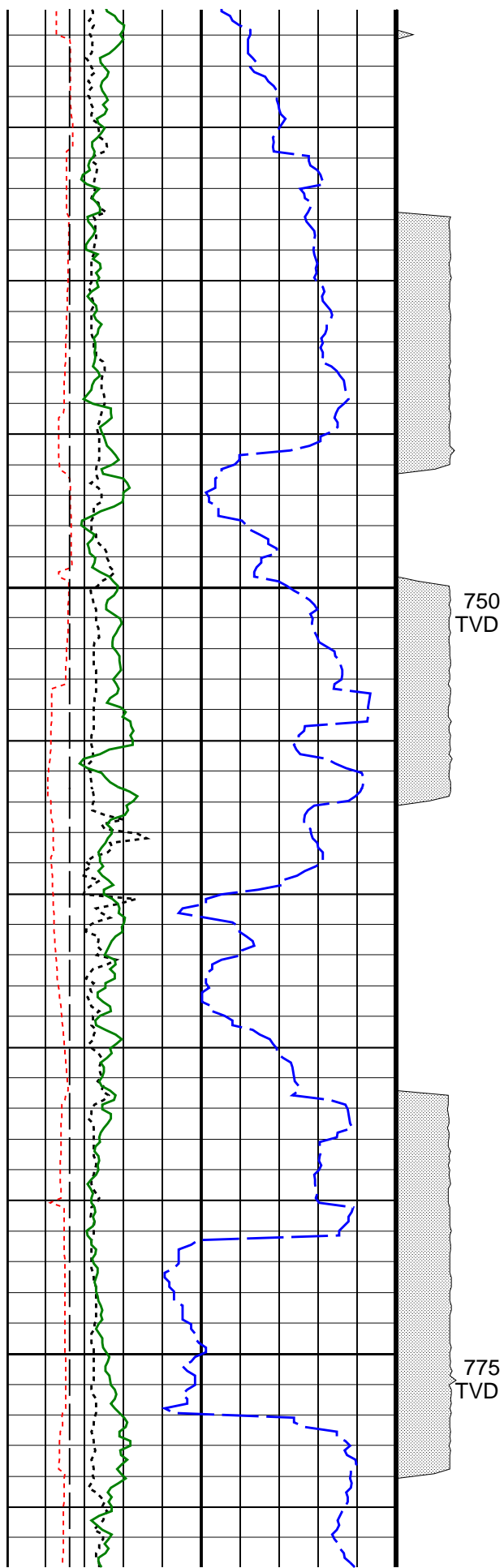


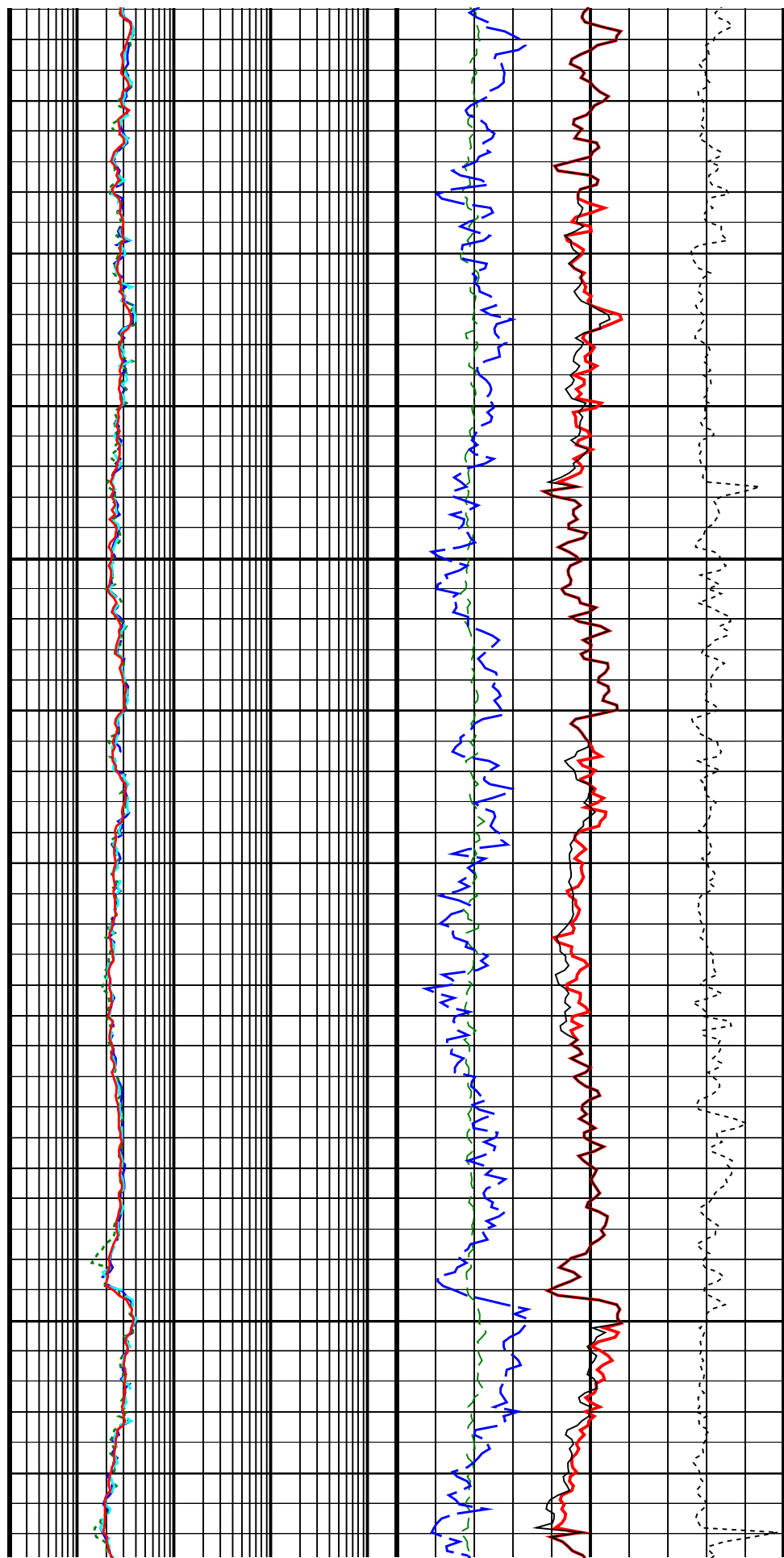
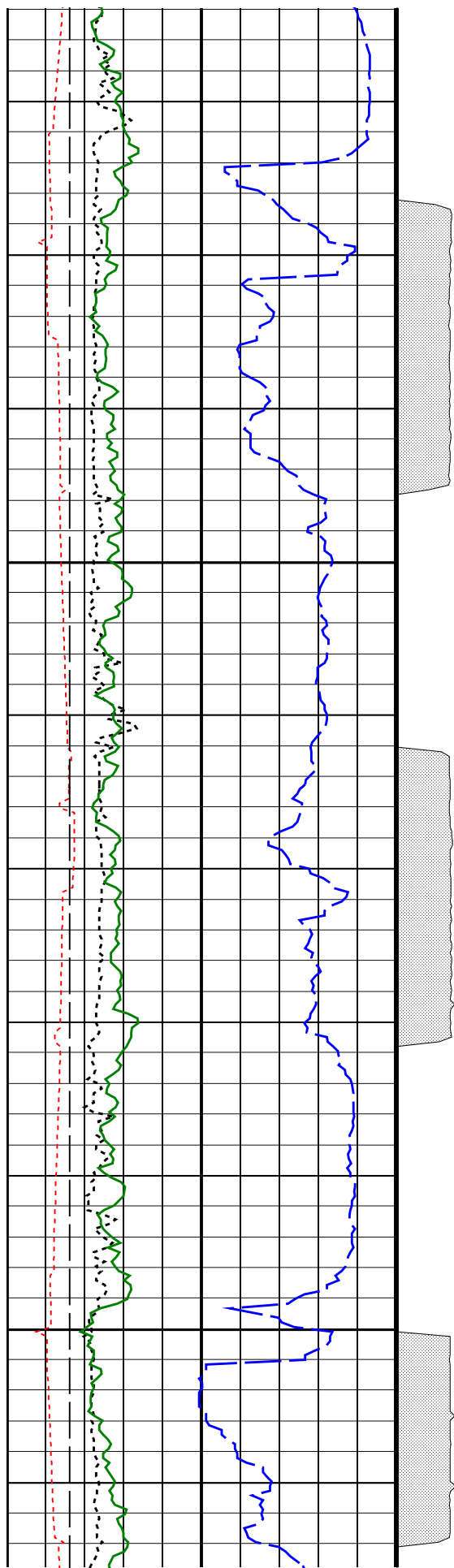


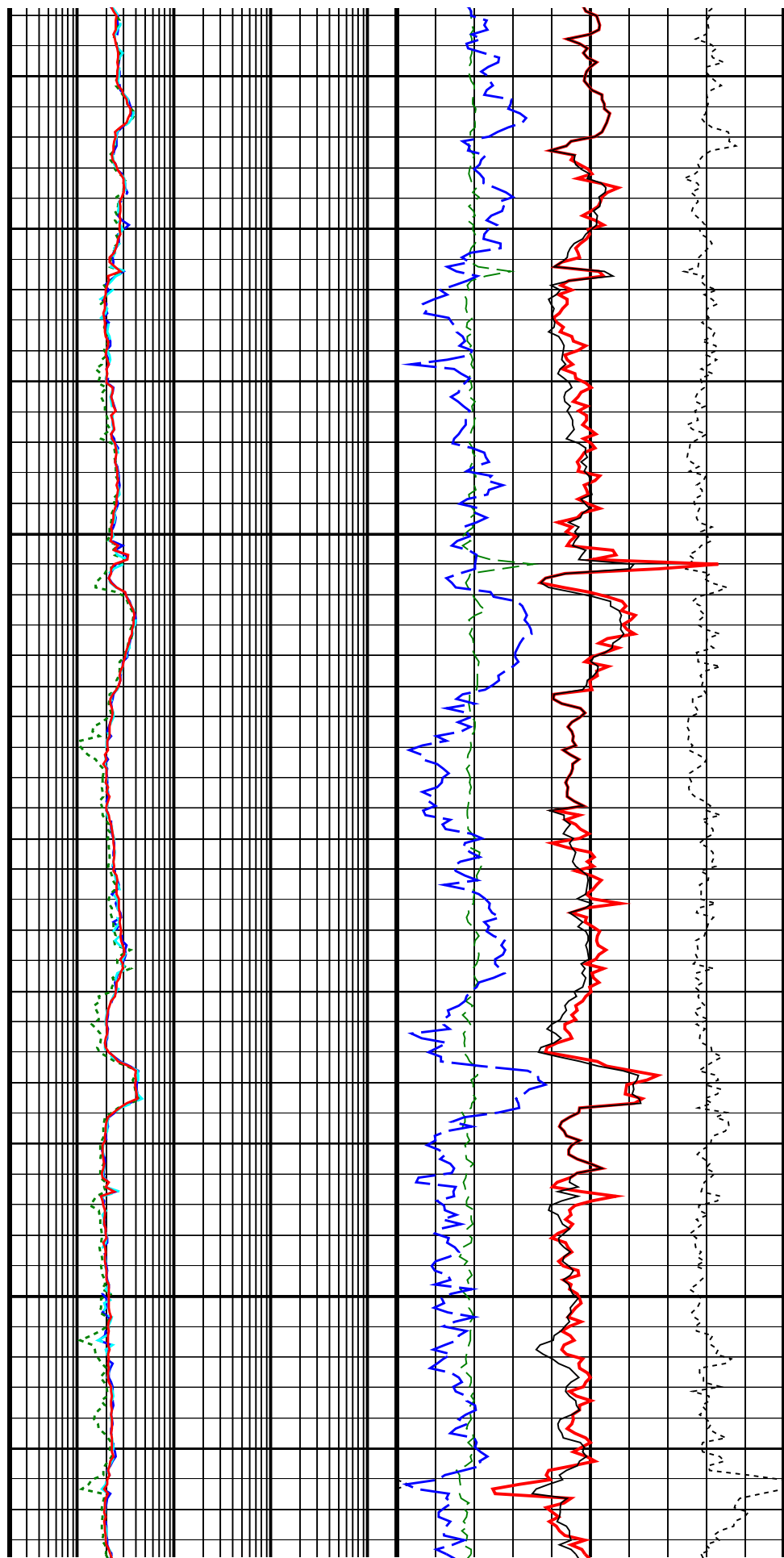
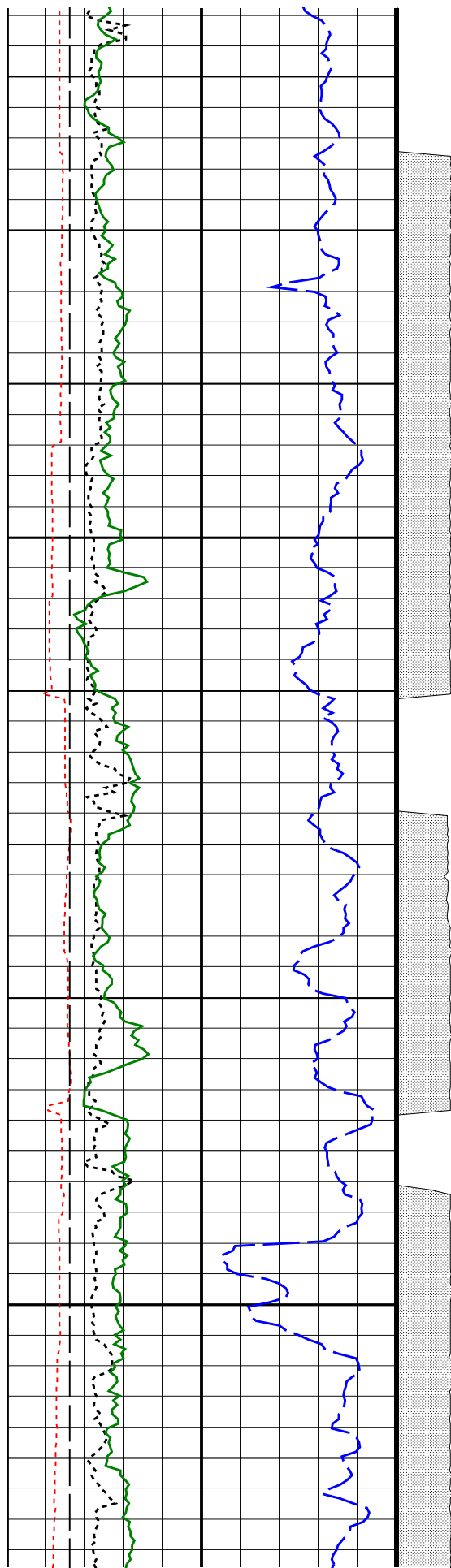
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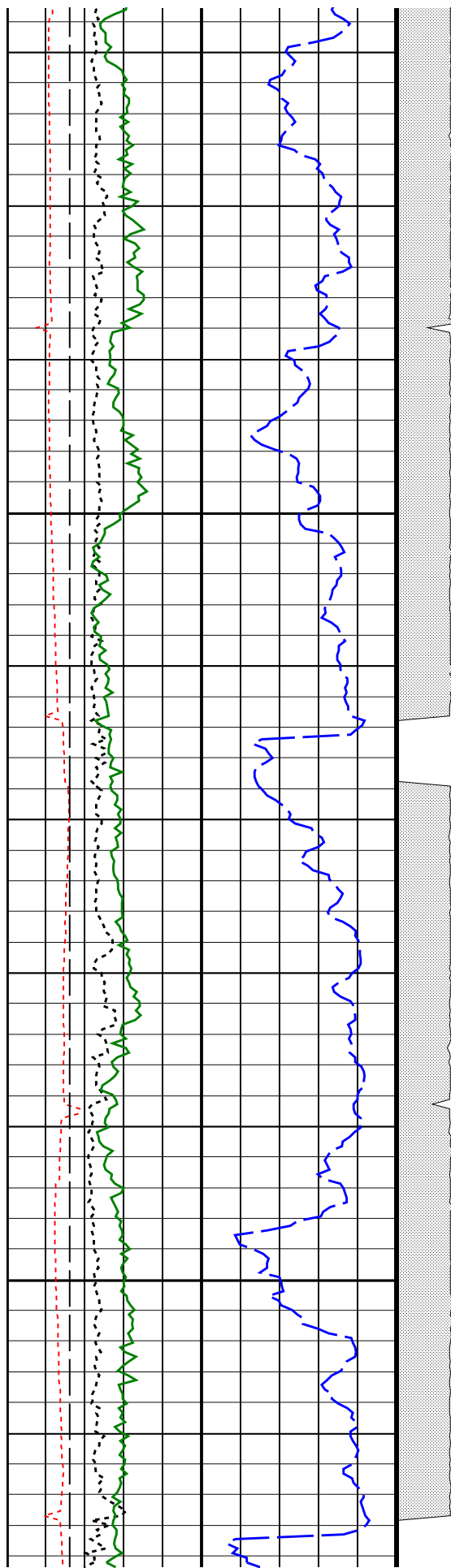
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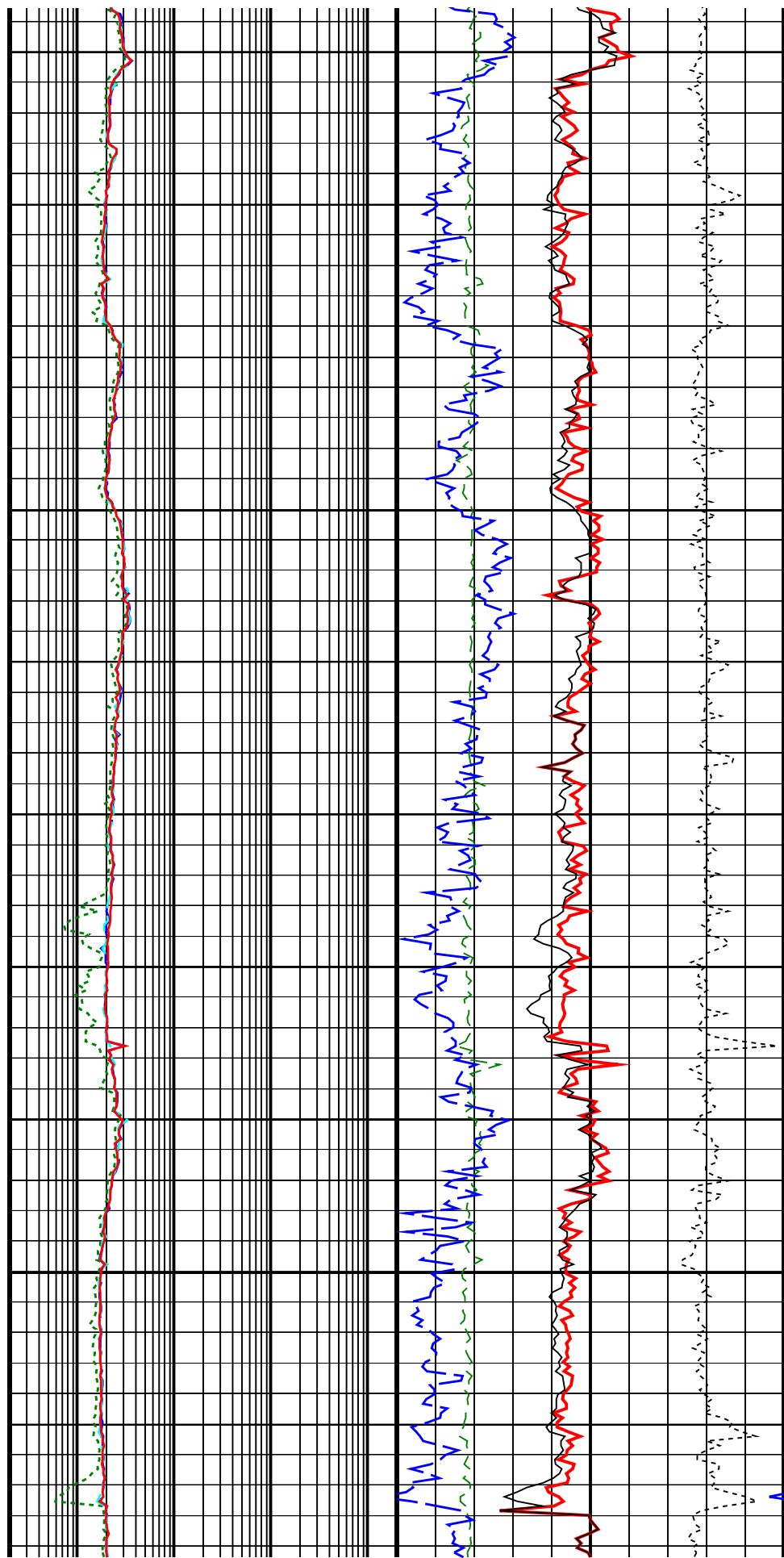


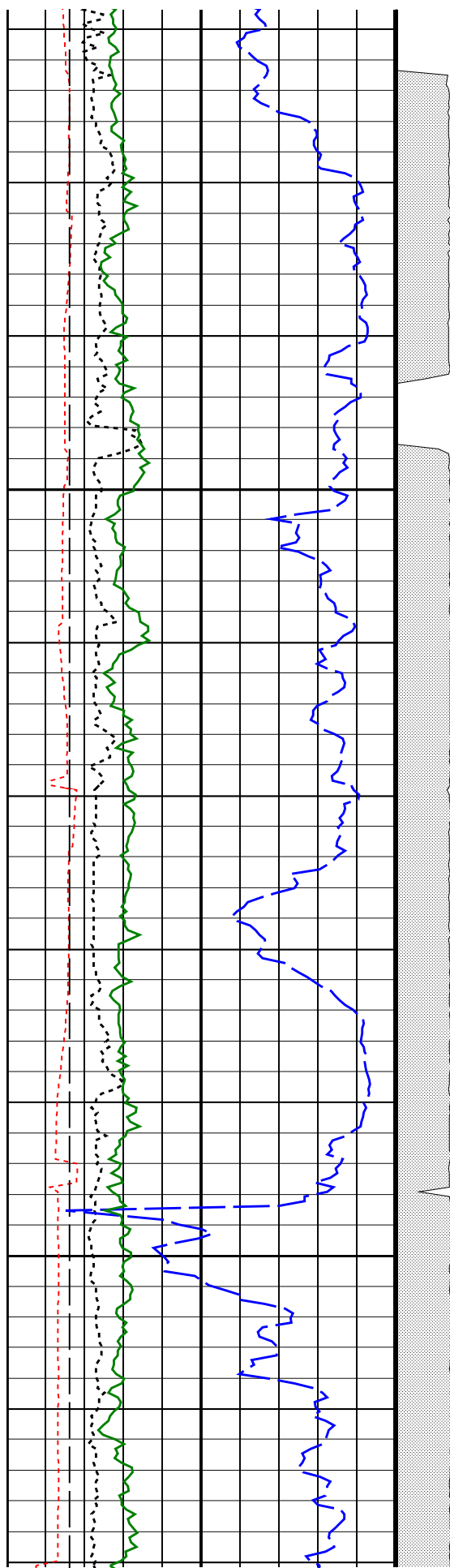




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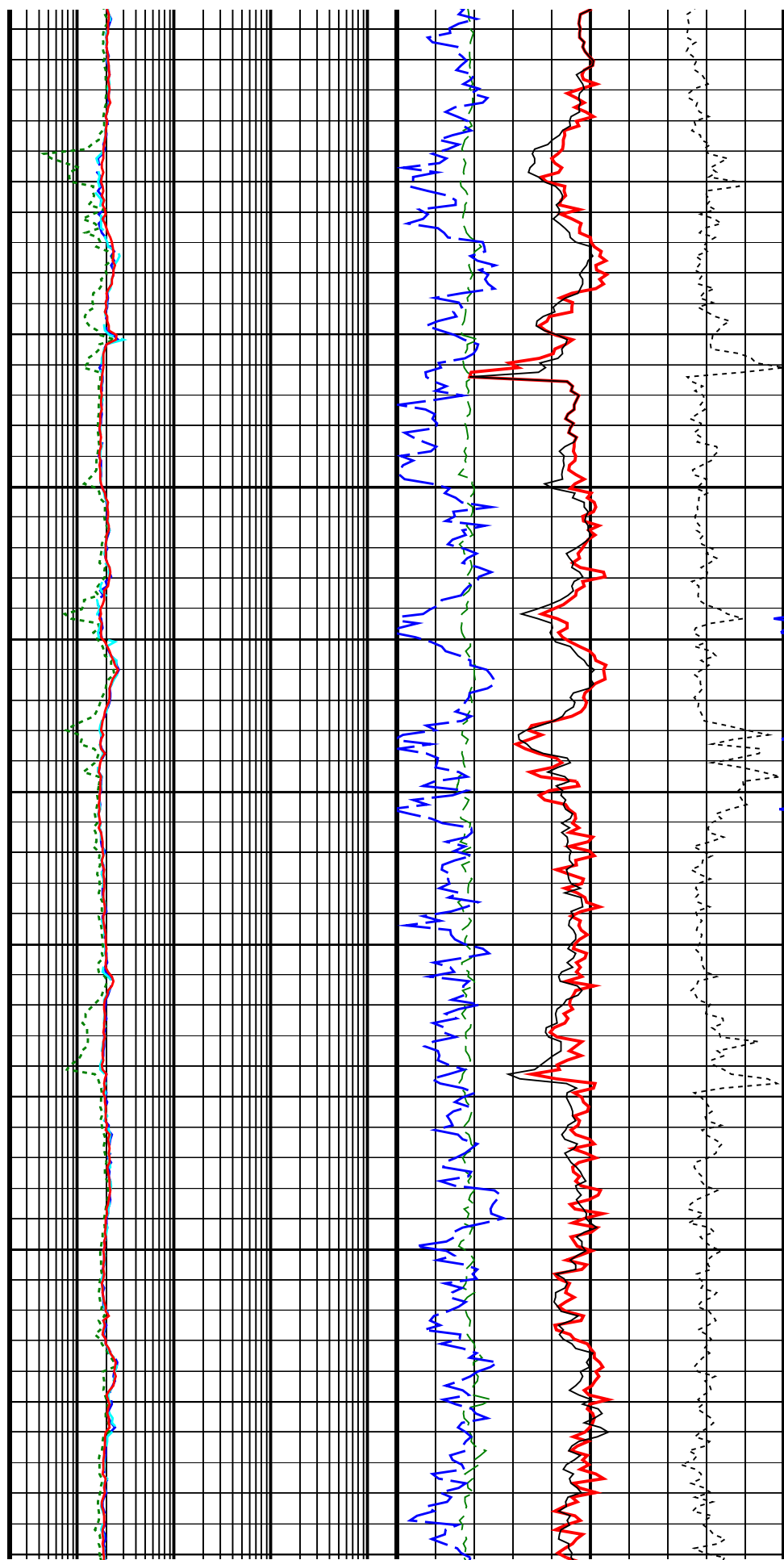
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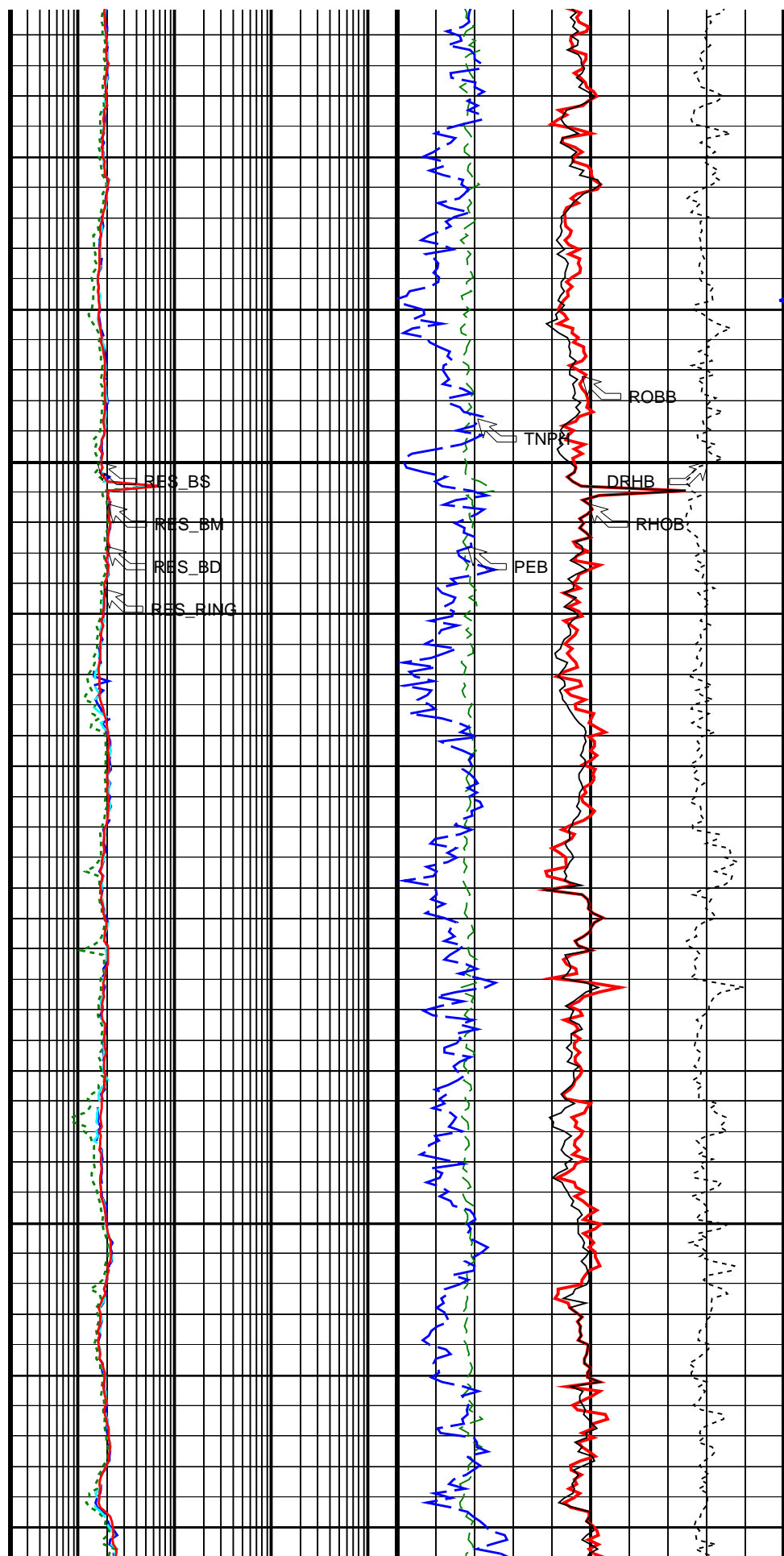
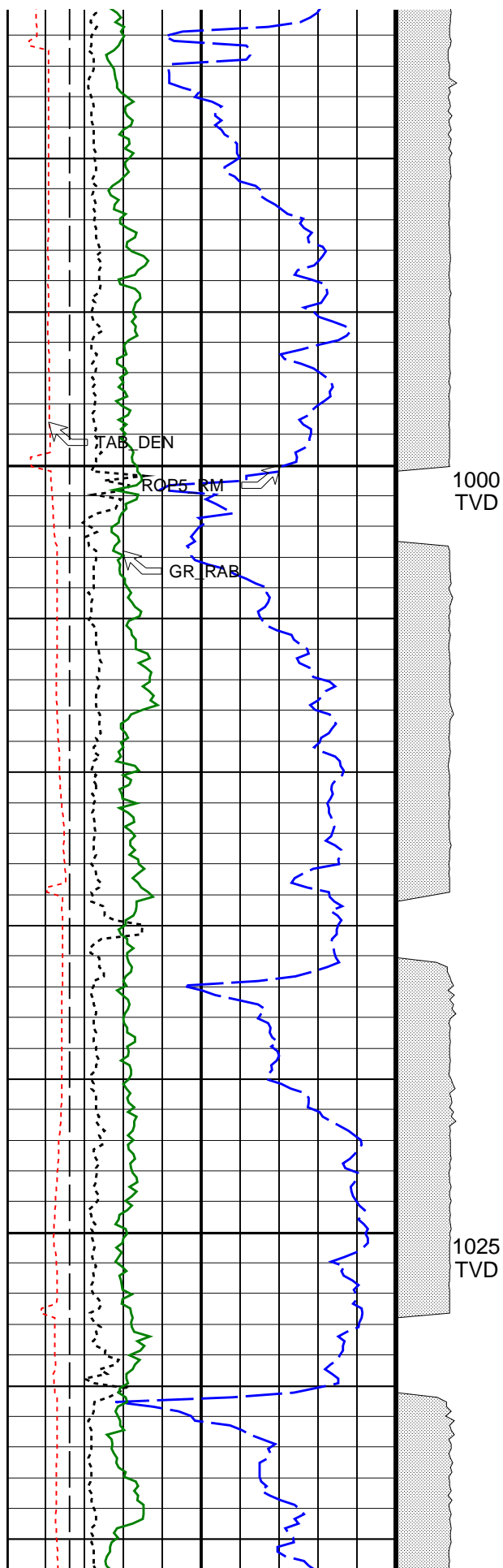


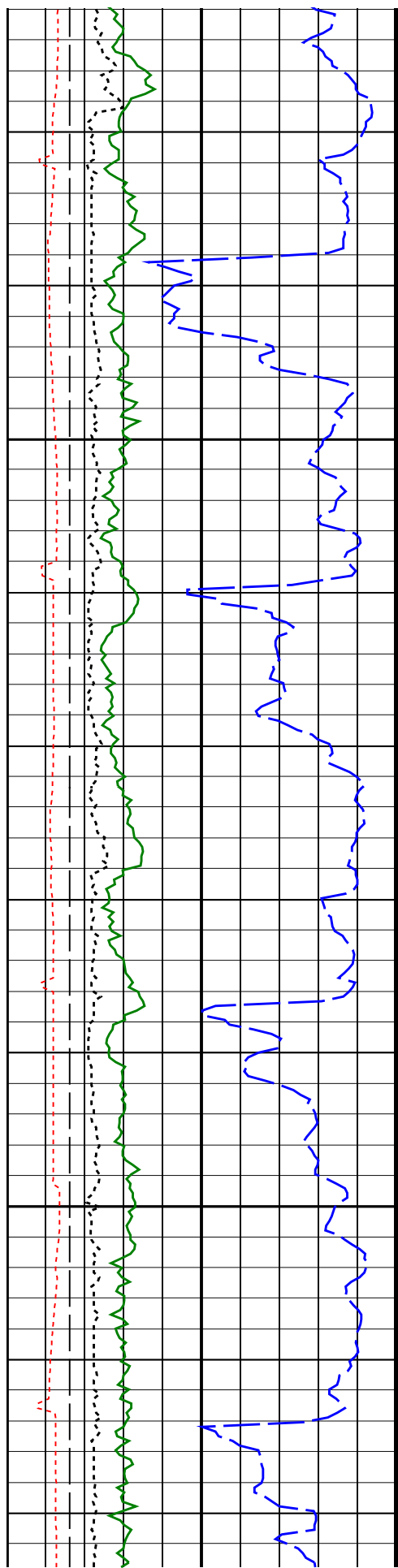


950
TVD

975
TVD

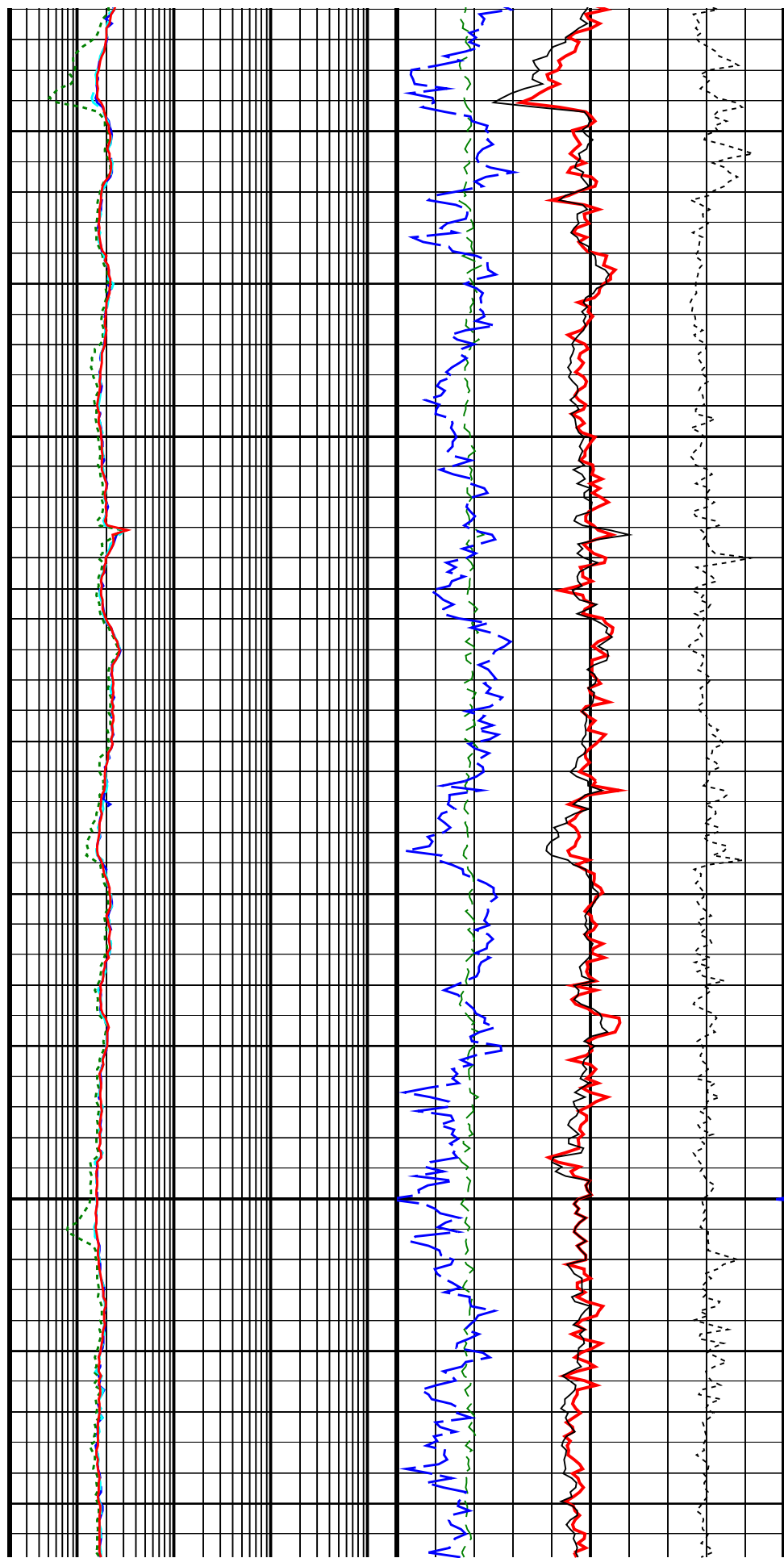


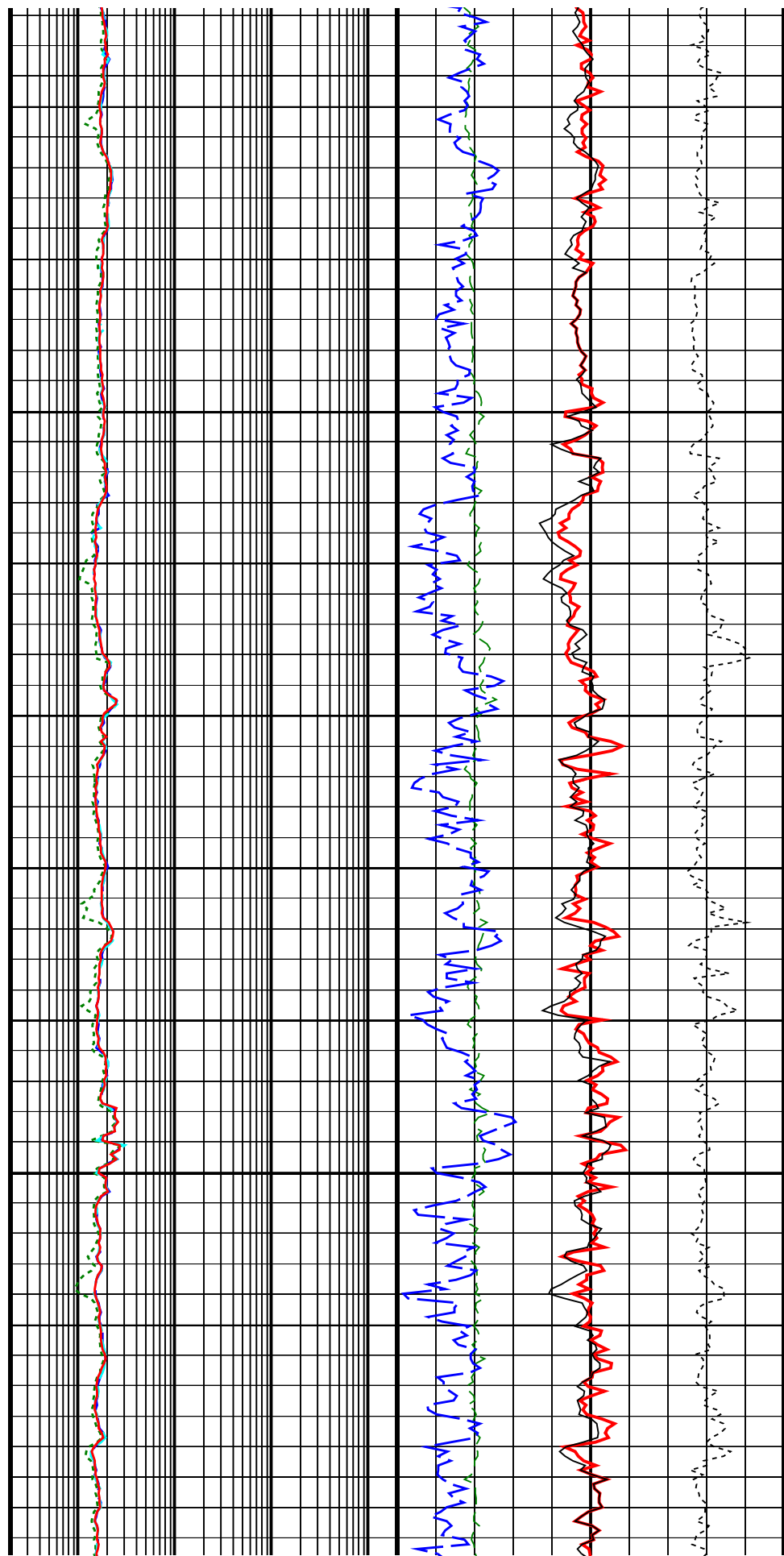
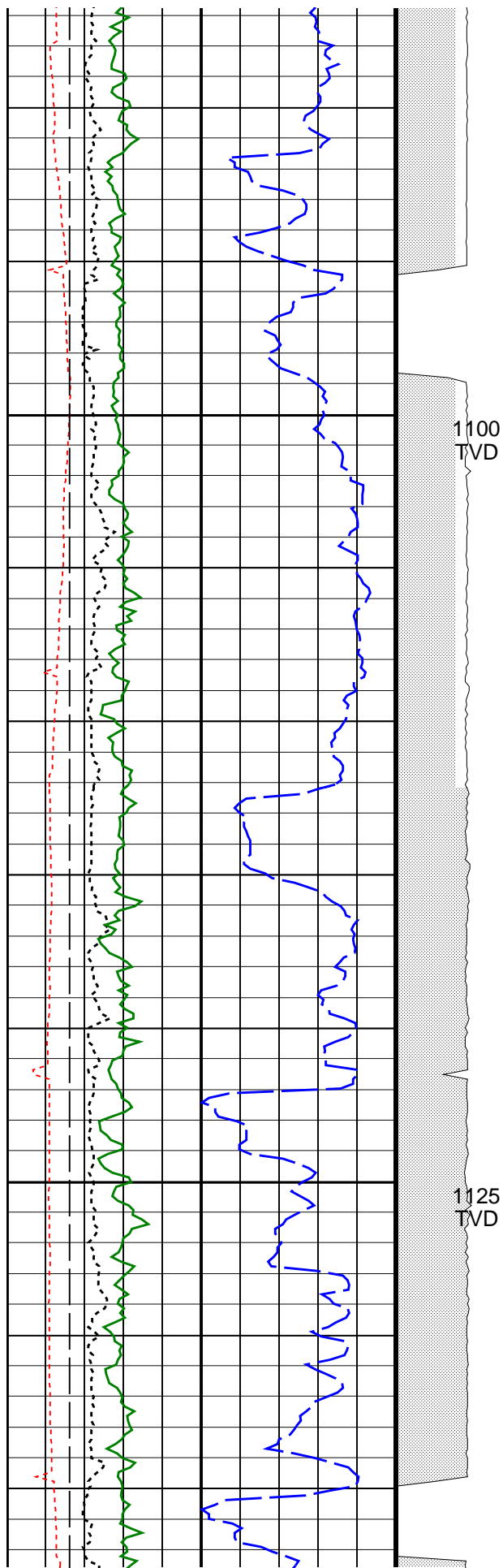


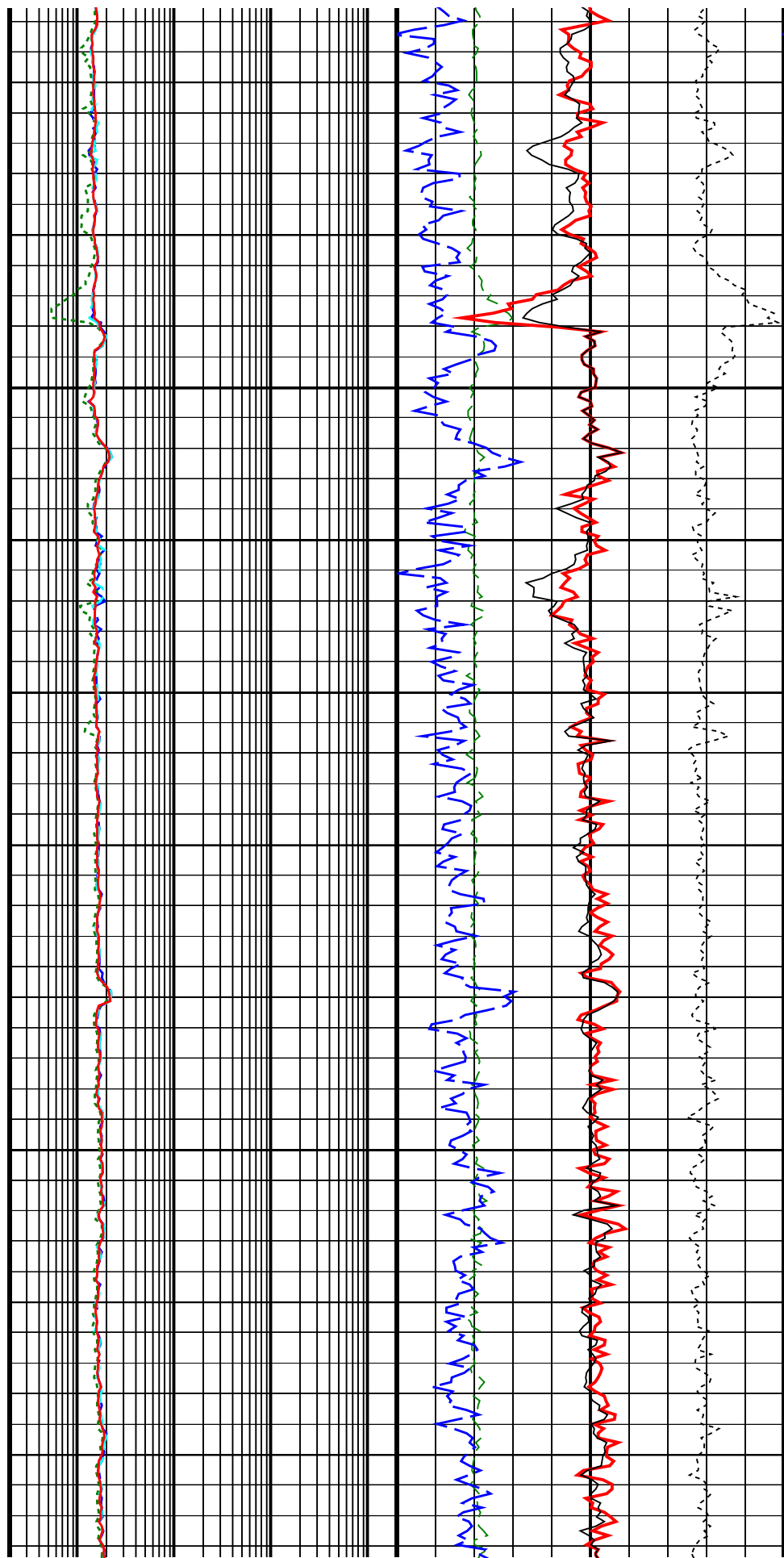
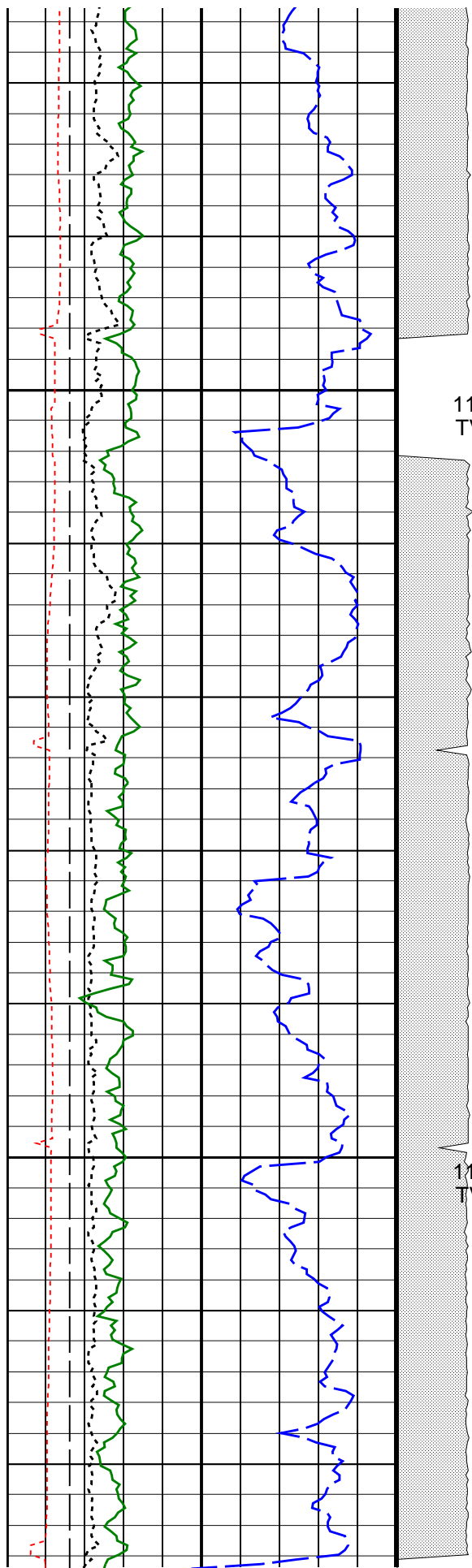


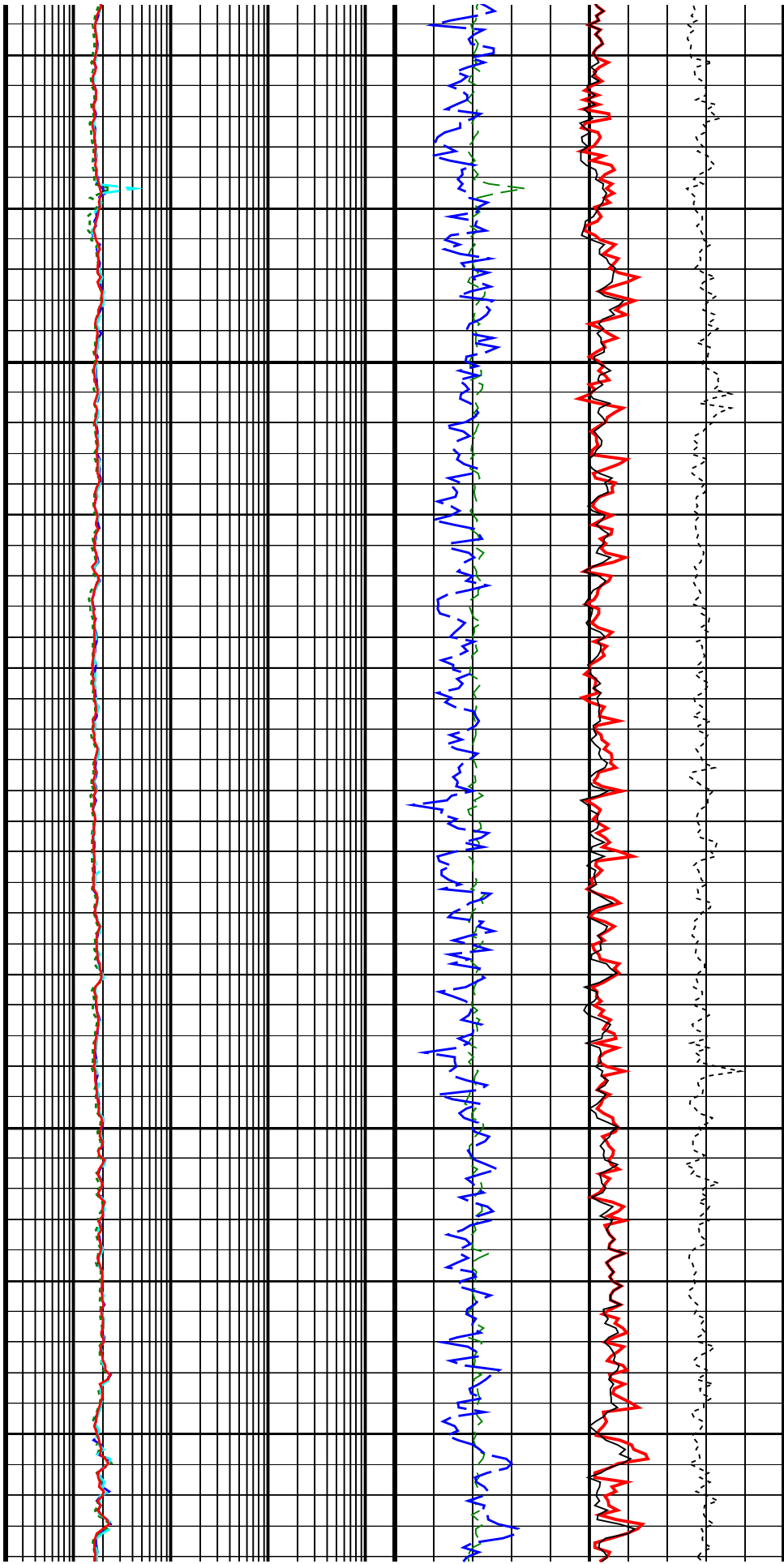
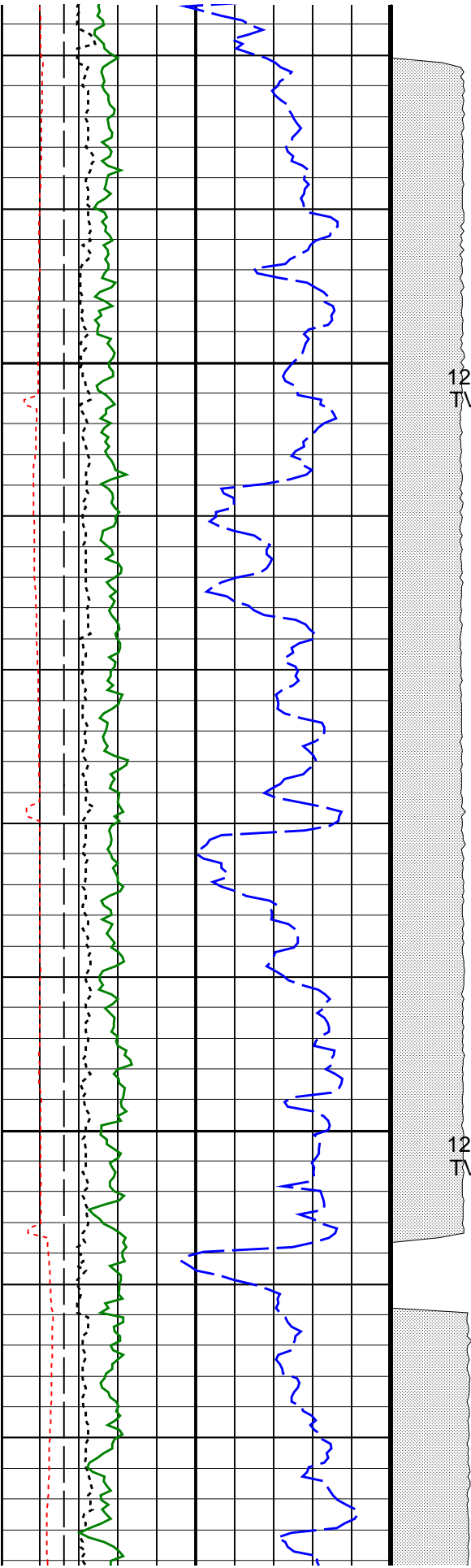
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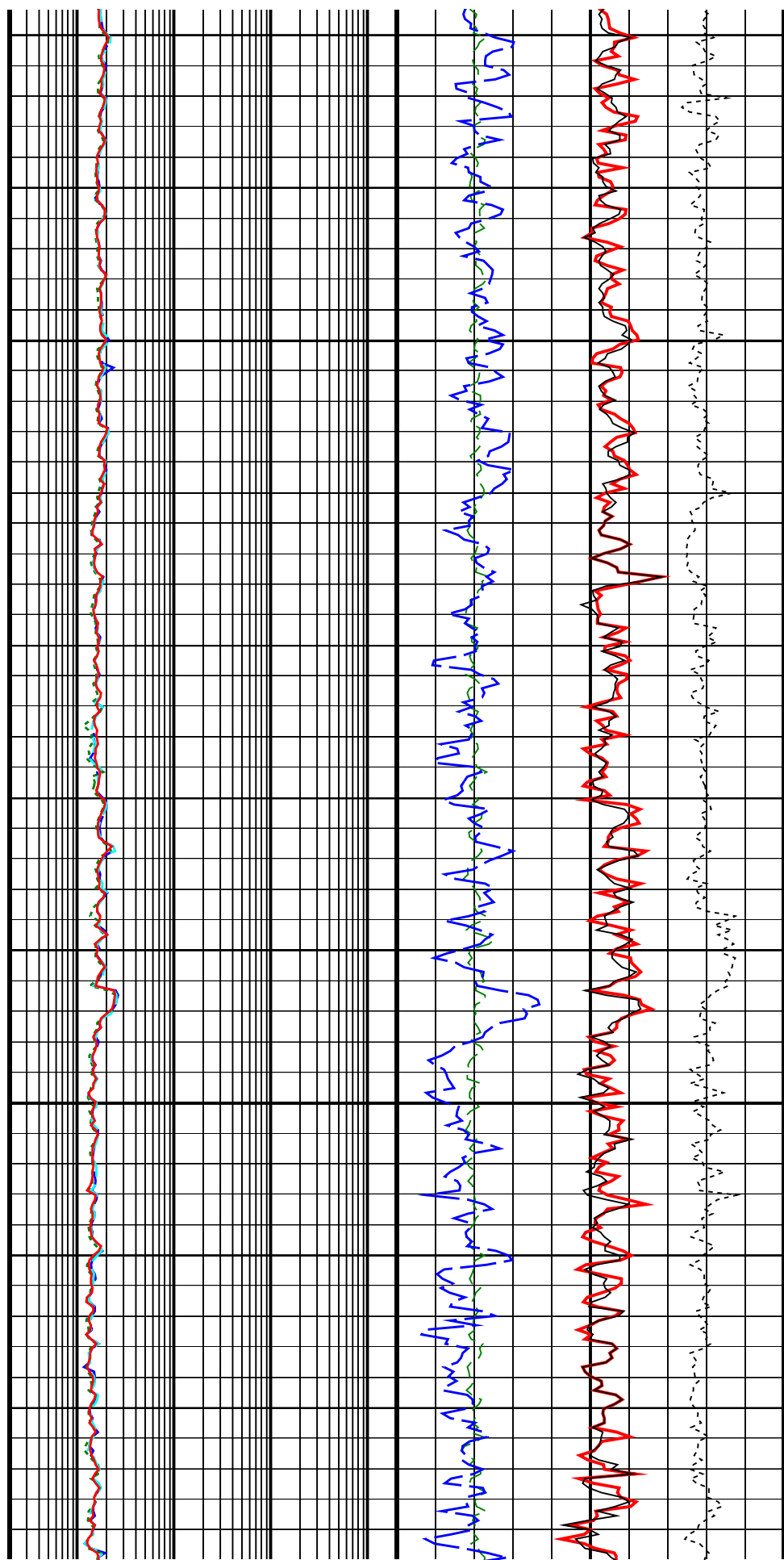
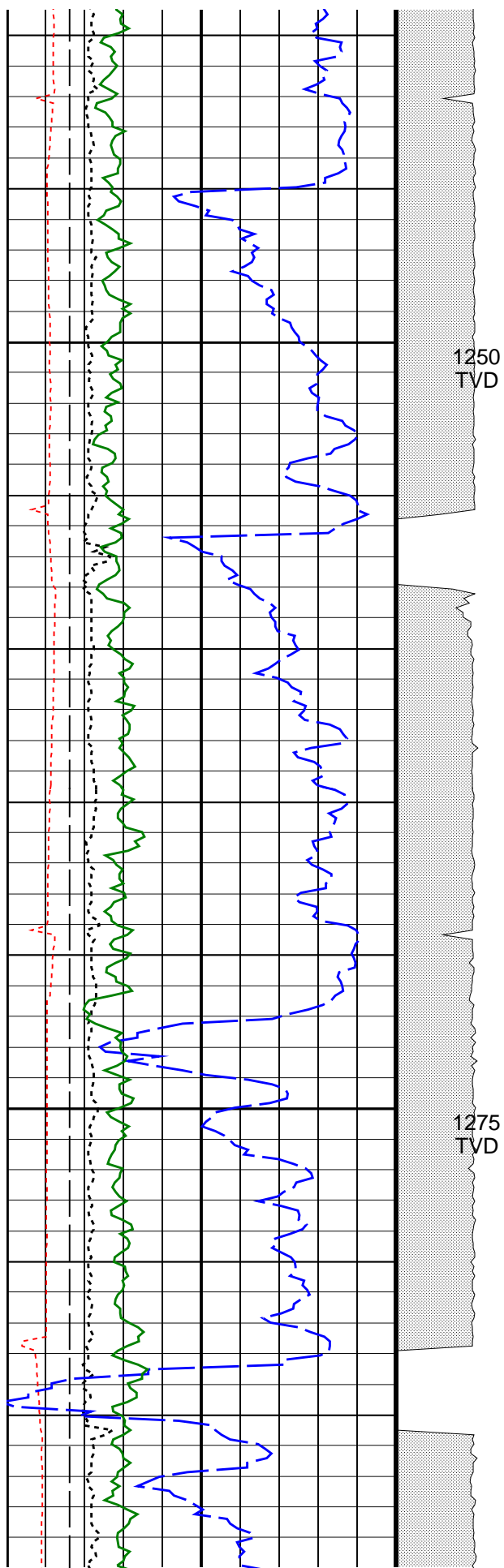
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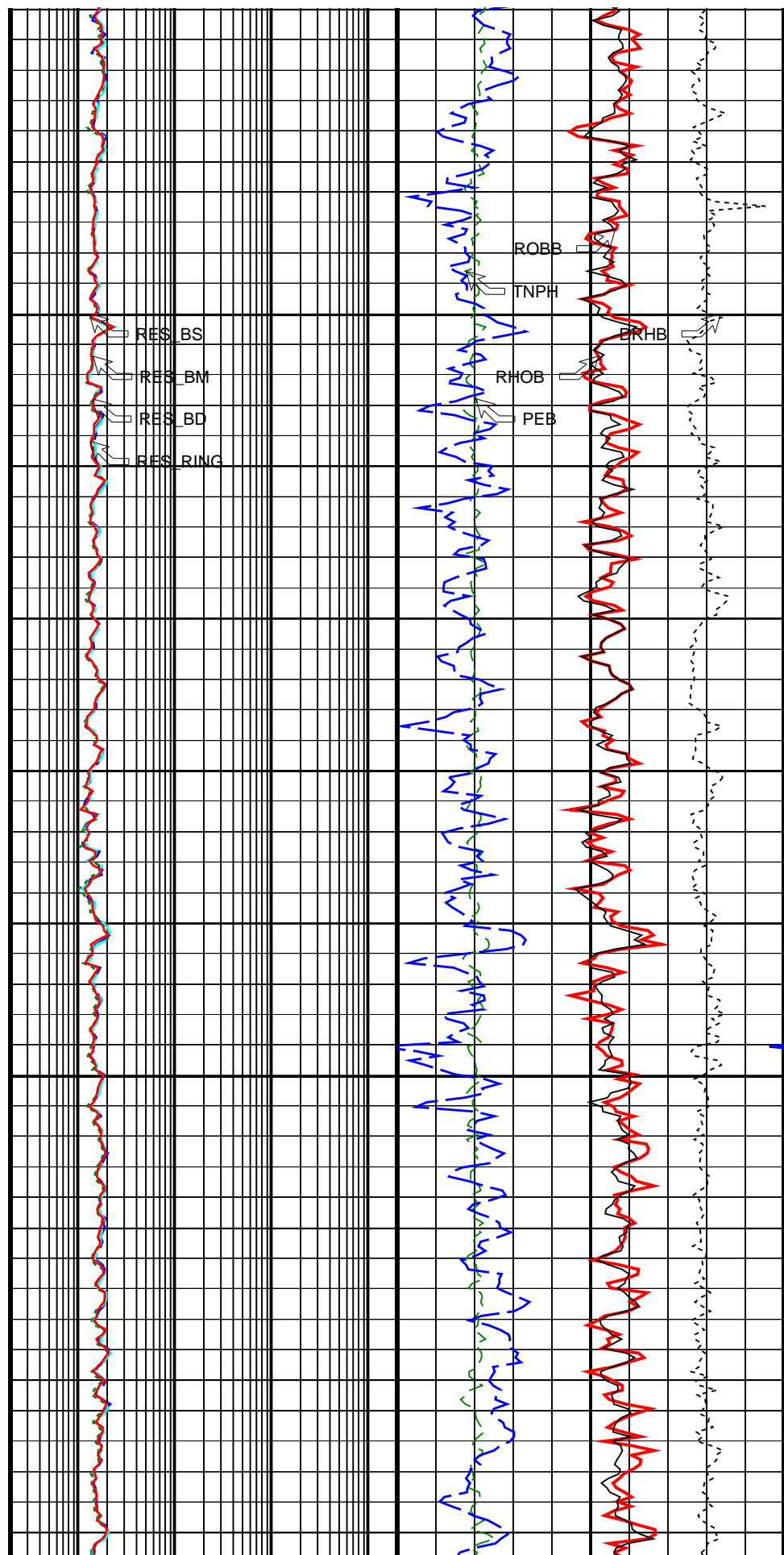
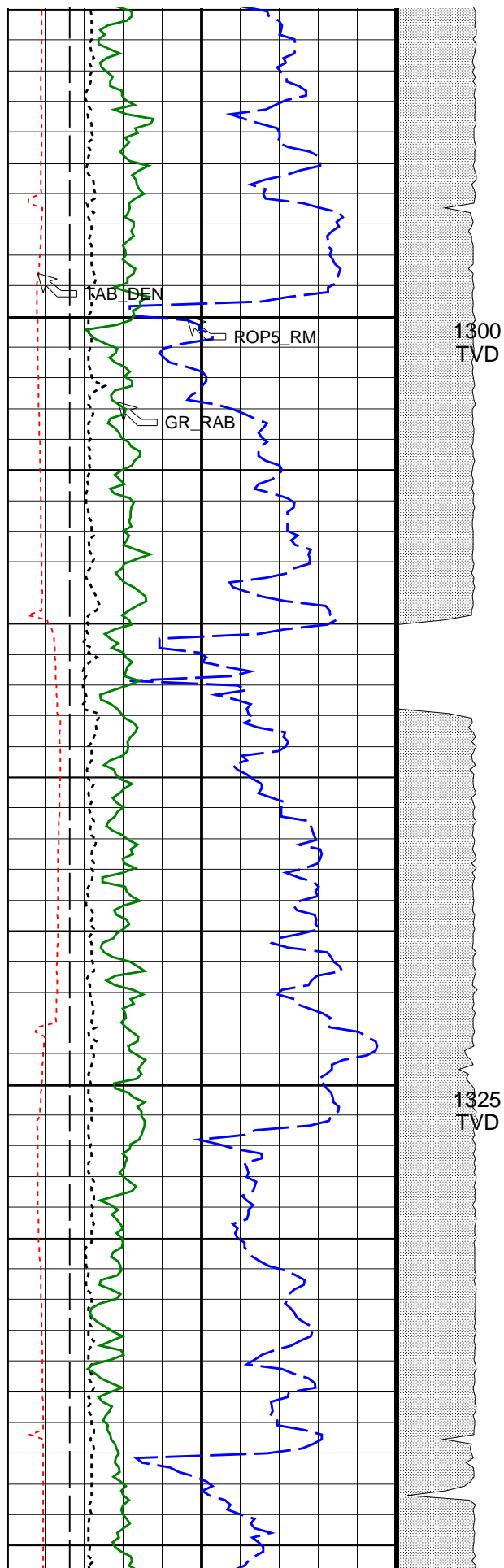


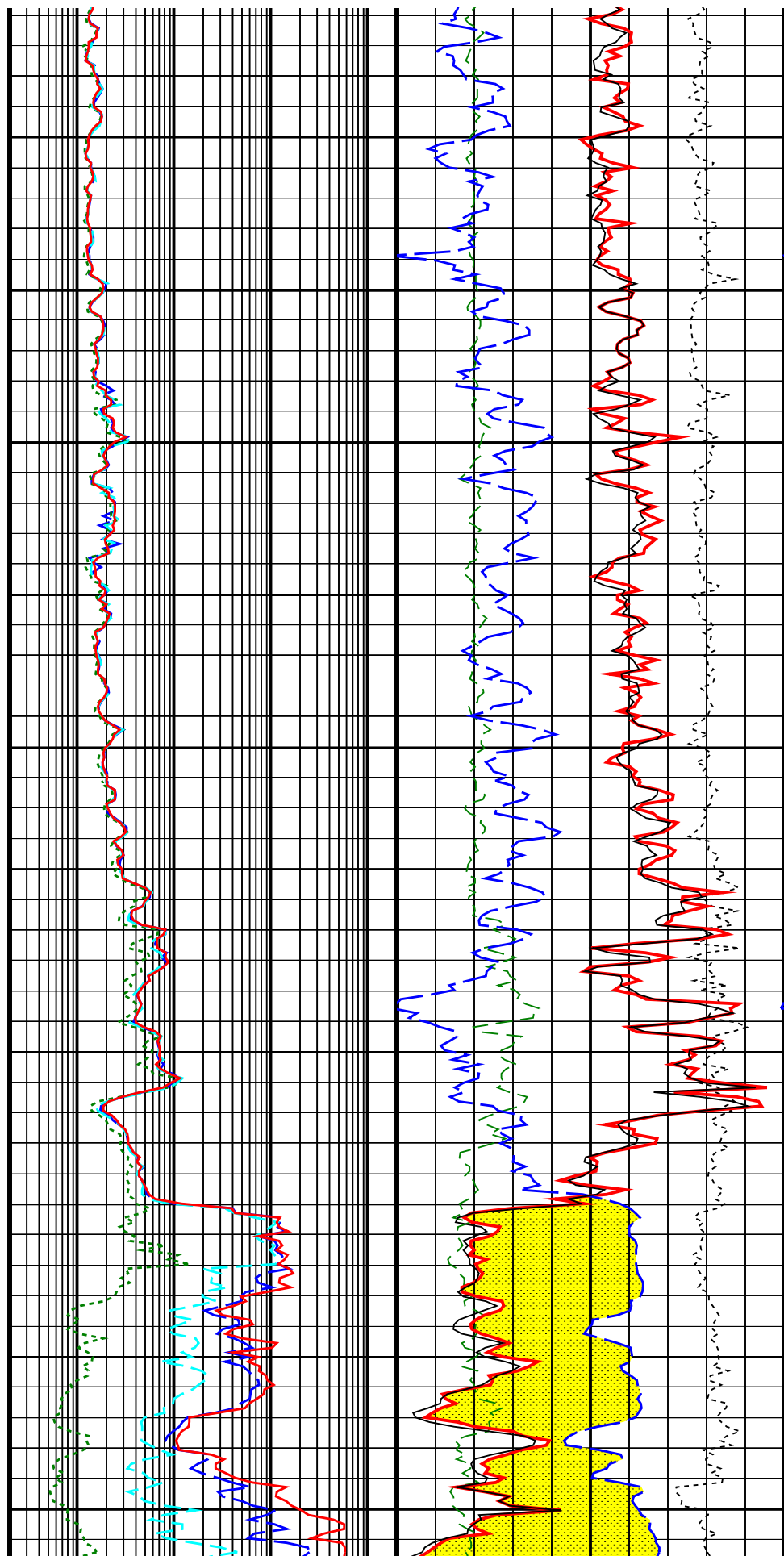
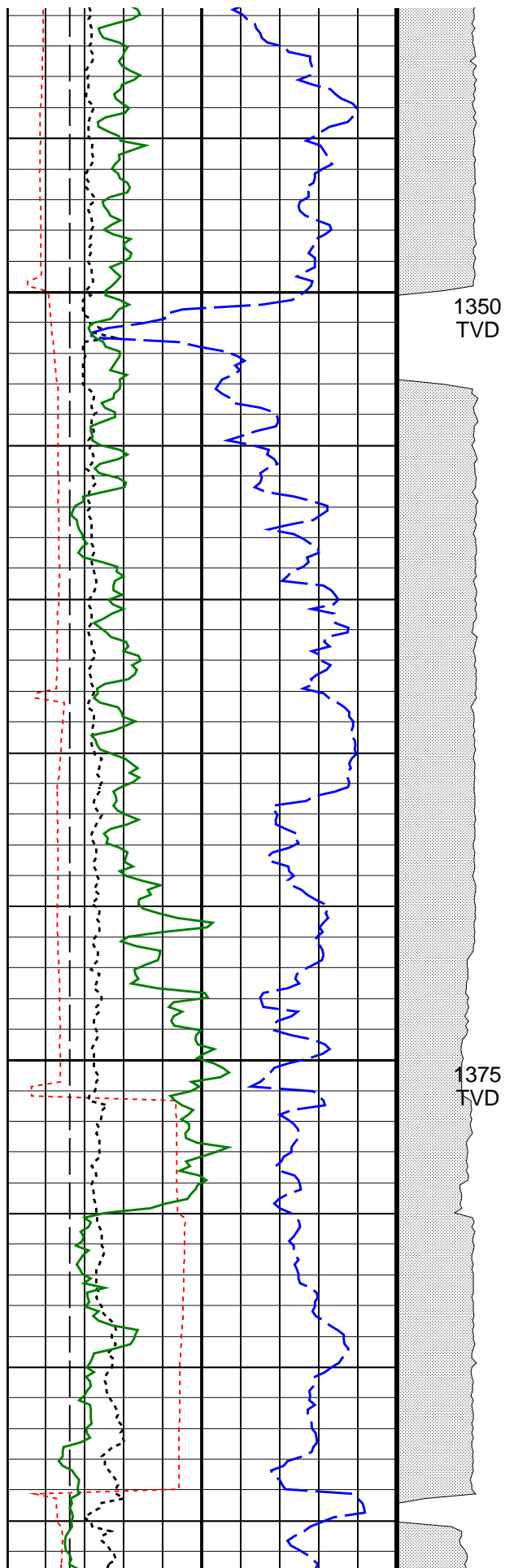


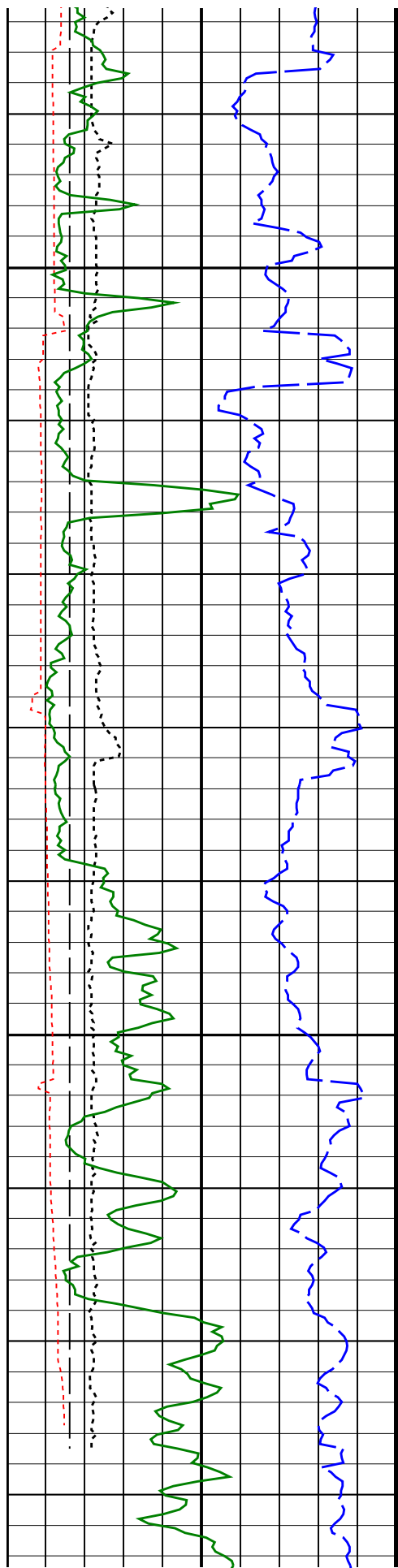






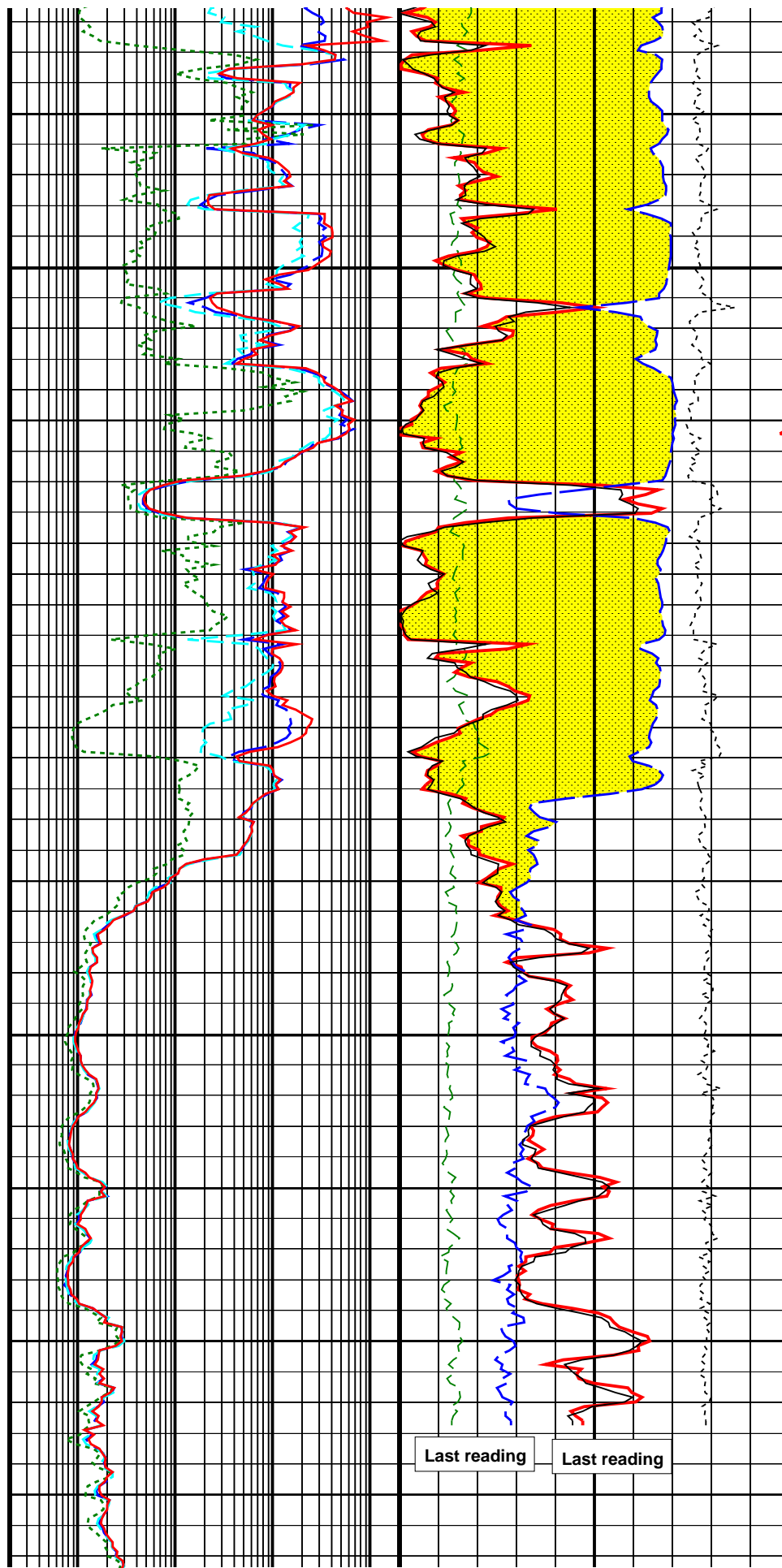






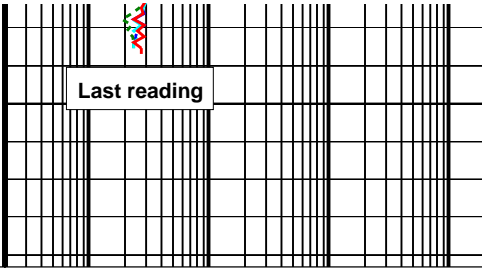
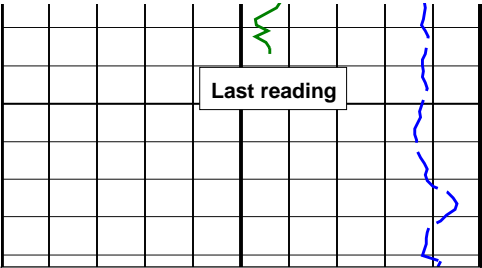
1400
TVD

1425
TVD



Last reading

Last reading



TD 2268 MD

Density Time After Bit (TAB_DEN) (HR)			ADN Rotational Speed (RPM_ADN) (RPM)		
0		10	0	200	
Vertical Hole Diameter (VERD) (IN)					
6		16			
Horizontal Hole Diameter (HORD) (IN)					
6		16			
RAB Gamma Ray (GR_RAB) (GAPI)					
0		200			
Rate of Penetration, Averaged over Last 5ft (ROP5_RM) (M/HR)					
200		0			

Deep Button Resistivity (RES_BD) (OHMM)			Bulk Density Correction, Bottom (DRHB) (G/C3)		
0.2		2000	-0.75		0.25
Shallow Button Resistivity (RES_BS) (OHMM)			Photoelectric Factor, Bottom (PEB) (----		
0.2		2000	0		20
Medium Button Resistivity (RES_BM) (OHMM)			Bulk Density, Bottom (ROBB) (G/C3)		
0.2		2000	1.85		2.85
Ring Resistivity (RES_RING) (OHMM)			Thermal Neutron Porosity (TNPH) (PU)		
0.2		2000	45		-15

Bulk Density (RHOB) (G/C3)		
1.85		2.85
Gas Area From ADN/ROBB/DEPTH to ADN/TNPH/DEPTH		

IDEAL Version: ID6_1C_10
IDF

RAB id6_1c_10 MWD_10 id6_1c_10
ADN id6_1c_10

True Vertical Depth Log

6.75-in. Azimuthal Density Neutron / Equipment Identification

Primary Equipment:					
Tool Name and Serial Number			ADN6 – CA 289		
Neutron Logging Source			NSR – M 161		
Density Logging Source			GSR – J/Z 2125		
Stabilizer Size			8.25 – in.		
Calibration Status			Valid		

Master: 16-NOV-2001 1:40

6.75-in. Azimuthal Density Neutron Calibration

Density: Magnesium Block




Phase	LS window 3 – Mg CPS	Value	Phase	SS window 1 – Mg CPS	Value	Phase	SS window 3 – Mg CPS	Value
Master		1325	Master		3006	Master		7495
	250.0 (Minimum)	4125 (Nominal)		700.0 (Minimum)	9350 (Nominal)		2500 (Minimum)	23750 (Nominal)
		8000 (Maximum)			18000 (Maximum)			45000 (Maximum)




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6.75-in. Azimuthal Density Neutron Calibration















Density: Aluminum Block

Phase	LS window 3 – Al CPS	Value	Phase	SS window 1 – Al CPS	Value	Phase	SS window 3 – Al CPS	Value
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Phase	LS window 3 – AI	CPS	Value	Phase	SS window 1 – AI	CPS	Value	Phase	SS window 3 – AI	CPS	Value
Master			207.4	Master			1606	Master			4870
	50.00 (Minimum)	725.0 (Nominal)	1400 (Maximum)		500.0 (Minimum)	4250 (Nominal)	8000 (Maximum)		1500 (Minimum)	15750 (Nominal)	30000 (Maximum)

Master: 16-NOV-2001 1:40											
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)	-1.200 (Minimum)			-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)	-1.200 (Minimum)			-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)	-1.200 (Minimum)			-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)	-1.200 (Minimum)			-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)	-1.200 (Minimum)			-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)	-1.200 (Minimum)			-0.6000 (Maximum)
Phase	Near 1 tube 1 gain		Value				
Master			1.073				
0.9000 (Minimum)			1.100 (Nominal)				
Phase	Near 2 tube 1 gain		Value				
Master			1.054				
0.9000 (Minimum)			1.100 (Nominal)				

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

Primary Equipment:

Tool Name and Serial Number

RAB6 – CA

125













Calibration Status

Valid

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

6.75-in. Resistivity At-the-Bit Calibration

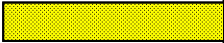
Resistivity: Fixture

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)		0.9750 (Minimum)	1.000 (Nominal)		0.9750 (Minimum)	1.000 (Nominal)
		1.025 (Maximum)			1.025 (Maximum)			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)		0.9750 (Minimum)	1.000 (Nominal)		0.9750 (Minimum)	1.000 (Nominal)
		1.025 (Maximum)			1.025 (Maximum)			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)		0.9750 (Minimum)	1.000 (Nominal)		0.9750 (Minimum)	1.000 (Nominal)
		1.025 (Maximum)			1.025 (Maximum)			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)		0.9750 (Minimum)	1.000 (Nominal)		0.9750 (Minimum)	1.000 (Nominal)
		1.025 (Maximum)			1.025 (Maximum)			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

----- Geomagnetic data -----
Magnetic model.....: BGGM version 2000
Magnetic date.....: 31-Dec-2001
Magnetic field strength...: 1200.65 HCNT
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 HCNT
Reference Dip.....: -68.71 degrees
Tolerance of G.....: (+/-) 2.50 mGal
Tolerance of H.....: (+/-) 6.00 HCNT
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

Company: ESSO Australia Ltd.

Well: WTN-W48 A

Field: Tuna

Rig: NABORS 453

State: Victoria

IDEAL services from **Anadrill**

GeoVISION Service
1 : 200 True Vertical Depth
Recorded Mode

Schlumberger