

State: **Victoria**

Rig: ISDL 453 Field: Tuna Location: Bass Strait Well: TNA A-30 Company: Esso Australia Ltd.	GeoVISION Service 1:200 Measured Depth Recorded Mode Log						
	Location	Total depth: 2862.0 m				Elevation	K.B. 31.32 m
		Spud date: 22-August-02					G.L. -59.40 m
		Runs: 4 To 5					D.F. 31.32 m
		Permanent datum: Mean Sea Level				Elev.: 59.40 m	
		Log measured from: Drill Floor				31.32 m above Perm. datum	
	Depth reference: Driller's Depth						
	API serial no.		y = 5774227.340m (North) x = 624229.320m (East)		Longitude Latitude		
					E 148° 25' 5.588" S 38° 10' 16.235"		
	Depth logged: 832.1 m To 2848.3 m		Mag decl: 13.16 deg.		Other services:		
Date logged: 27-Aug-02 To 02-Sept-02		Mag dip: -68.69 deg.		Directional Drilling, D&I			
Bore hole record				Casing record			
Hole size	from	to	Size	Density	from	to	
12 1/4 in.	222.8 m	838.4 m	20 in.	285 lbm/m	0.0 m	148.8 m	
8 1/2 in.	838.4 m	2862.0 m	9 5/8 in.	154 lbm/m	0.0 m	832.1 m	
Mud record			Borehole deviation record				
Type	from	to	Min	Max	from	to	
Sea Water	164.9 m	838.4 m	0.95 deg.	68.2 deg.	222.8 m	838.4 m	
KCL/PHPA/Glycol	838.4 m	2862.0 m	68.2 deg.	68.7 deg.	838.4 m	2862.0 m	
Surface equipment		Software record					
Unit	OLU-FB-924	IDEAL Wis	ID7_0C_02r				
Depth system	PDA	SPM	ID7_0C_10a				
		LWD	See Toolsketch				
		MWD	See Toolsketch				

Bit Run Summary

[illegible]

<p style="text-align: center;">DISCLAIMER</p> <p>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.</p>		
<p>OTHER SERVICES FOR RUN4</p> <p>Directional Surveys Directional Drilling</p>	<p>OTHER SERVICES FOR RUN5</p> <p>Directional Surveys Directional Drilling</p>	<p>OTHER SERVICES FOR RUN</p>
<p>REMARKS: RUN NUMBER 4</p> <p>8-1/2 in. Hole section was drilled from 843.0 m to 2421.5 m.</p> <p>Depth is referenced to the Driller's Depth.</p> <p>All data presented is from tool memory.</p> <p>GR corrected for mud weight, tool and bit size.</p> <p>GVR6* resistivity is corrected for the bit size, mud resistivity and borehole temperature.</p> <p>Bottom quadrant density is presented.</p> <p>Neutron porosity is calculated with a limestone matrix and is corrected for the bit size, borehole salinity, temperature and mud hydrogen index.</p> <p>Mud type is water-based KCl/PHPA/Glycol.</p> <p>Barite was present in the mud system.</p> <p>GVR6* Shallow, Medium and Deep Button Resistivity curves not presented due to failure.</p>	<p>REMARKS: RUN NUMBER 5</p> <p>8-1/2 in. Hole section was drilled between 2421.5 m to 2862.0 m.</p> <p>Depth is referenced to the Driller's Depth.</p> <p>All data presented is from tool memory.</p> <p>GR corrected for mud weight, tool and bit size.</p> <p>GVR6* resistivity is corrected for the bit size, mud resistivity and borehole temperature.</p> <p>Bottom quadrant density is presented.</p> <p>Neutron porosity is calculated with a limestone matrix and is corrected for the bit size, borehole salinity, temperature and mud hydrogen index.</p> <p>Mud type is water-based KCl/PHPA/Glycol.</p> <p>Barite was present in the mud system.</p>	<p>REMARKS: RUN NUMBER</p>

Resistivity curves not presented due to failure.

GVR6* downhole software: 6.1B14
ADN6* downhole software: 6.2B08

GVR6* downhole software: 6.1B14
ADN6* downhole software: 6.2B08

EQUIPMENT DESCRIPTION

RUN4

RUN5

RUN

DOWNHOLE EQ

6 3/4 in. AD Neutron 28.730.5
ADSE Neutron 28.6
8 1/4 in. S Density 27.7
NSR-M Density 27.6
GSR-J A UltraSo 27.2
R-O P 26.4
Software: 6

6 3/4 in. Pow 24.3
MDC AC-
MDI 116
MEC 115
Software: 6 D&I 20.1

6 3/4 in. G Shallo 14.5
S/N: 1 Medium 14.4
Software: 6 Deep 14.2
Ring R 14.0
R-O p 13.9
GR 13.7

Cross Over Sub 12.9

NM Pony 12.3
S/N: ASS1

NM Pony 9.59
S/N: ANA9

PowerPak* Mu 7.89
A675XP S/N: A
0.78 deg

DOWNHOLE EQ

6 3/4 in. AD Neutron 28.730.5
ADSE Neutron 28.6
8 1/4 in. S Density 27.7
NSR-M Density 27.6
GSR-J A UltraSo 27.2
R-O P 26.5
Software: 6

6 3/4 in. Pow 24.3
MDC AC-
MDI 116
MEC 115
Software: 6 D&I 20.2

6 3/4 in. G Shallo 14.5
S/N: 1 Medium 14.4
Software: 6 Deep 14.2
Ring R 14.0
R-O p 13.9
GR 13.7

Cross Over Sub 12.9

NM Pony 12.3
S/N: ASS1

NM Pony 9.59
S/N: ANA9

PowerPak* Mu 7.89
A675XP S/N: A
0.78 deg

0.78 deg



0.78 deg

GeoDiamond
S75HVPX S/N

MAXIMUM STRING DI

ALL LENGTHS I

— 0.00

0.20

GeoDiamond
S75HVPX S/N

MAXIMUM STRING DI

ALL LENGTHS I

— 0.00

0.20

IDEAL Version: ID7_0C_02

IDF

RAB
ADNIDEAL Version: ID7_0C_02
IDEAL Version: ID7_0C_02

MWD_10

IDEAL Version: ID7_0C_02

Format: A-30 GeoVISION Service

Vertical Scale: 1:200

Graphics File Created: 09-Sep-2002 17:07

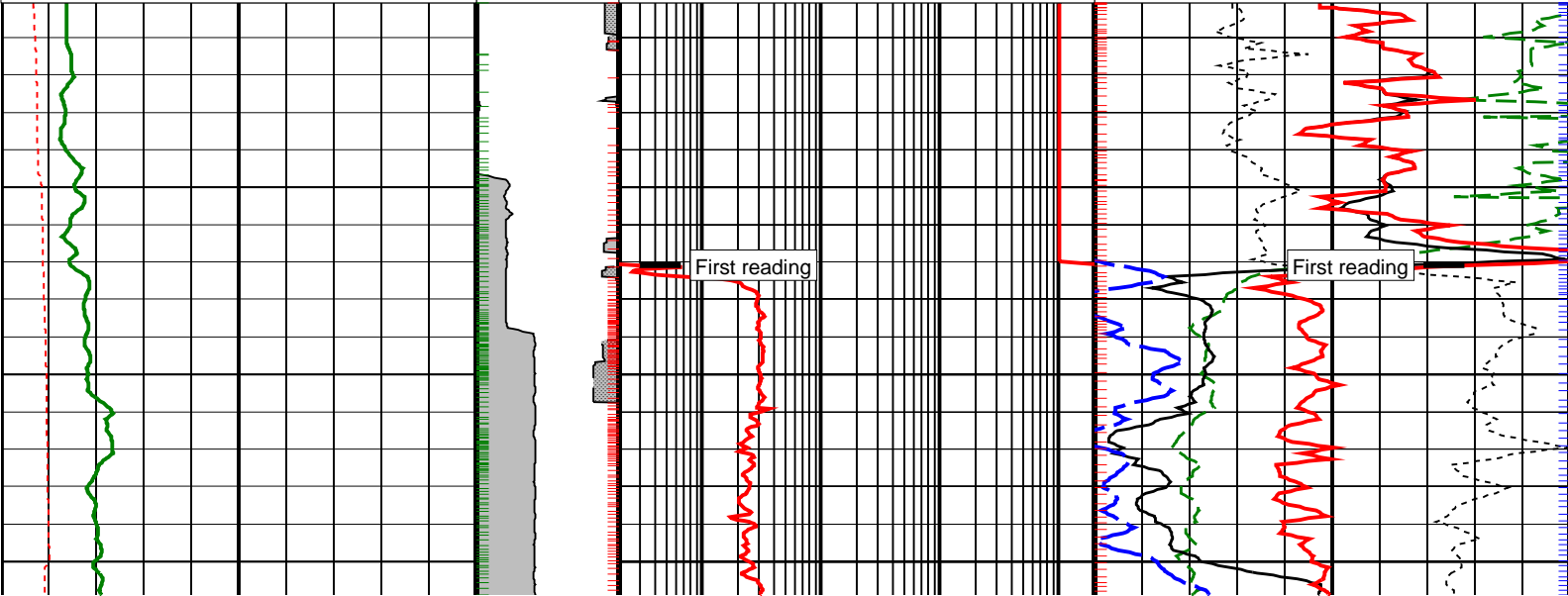
Parameters**DLIS Name****Description****Value**

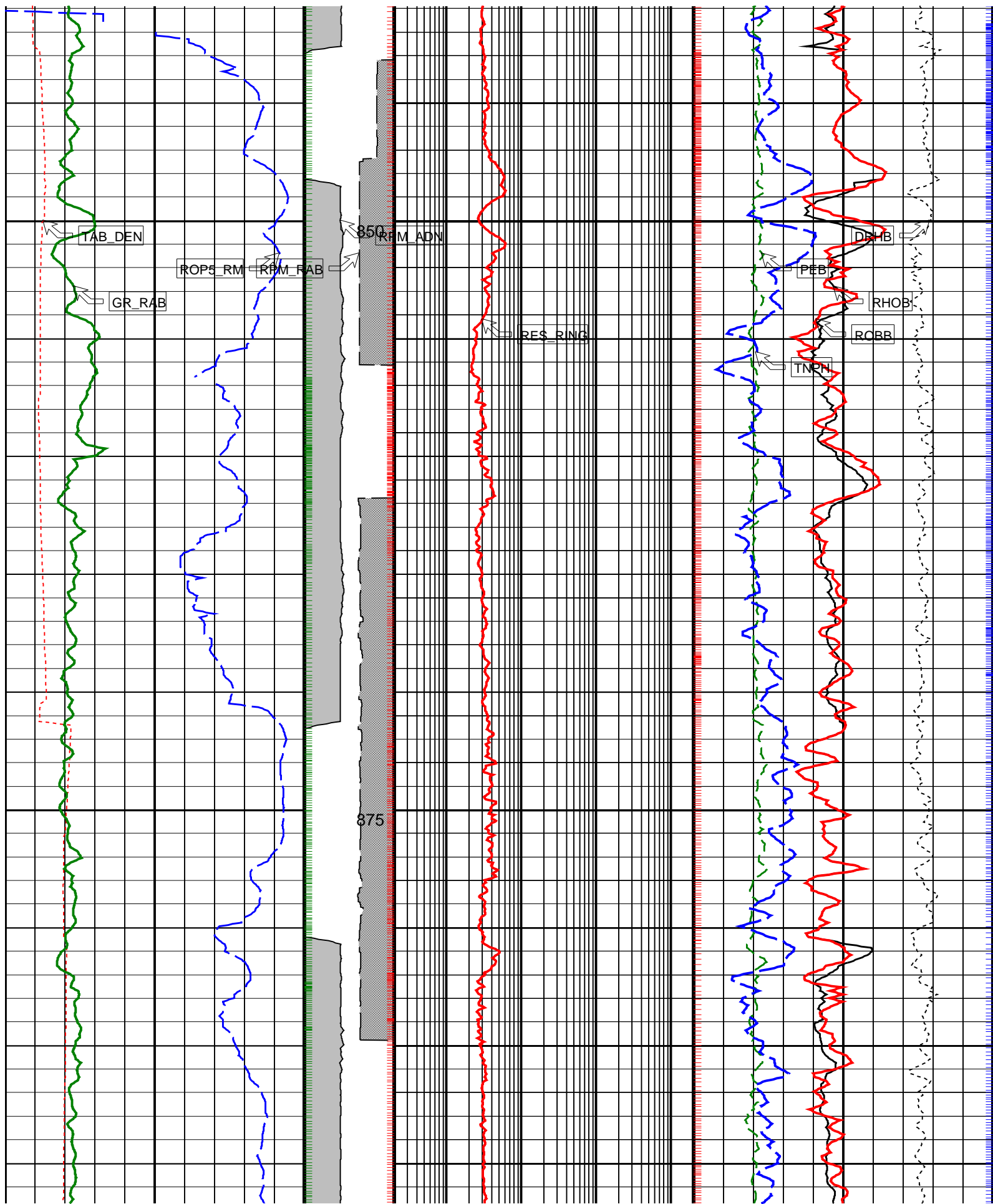
ADN_COLLAR_STR	ADN Collar Type String	ADDC-AA: Slick
ADN_STAB_STR	ADN Stabilizer Type String	None
AVE_ADN	ADN/Array Channels: perform averaging(RM) :	YES
A_DHS	ADN Down Hole Software Version String	V6.2B
BDBHCA	RAB: Button Deep Borehole A Factor	0.005
BDBHCB	RAB: Button Deep Borehole B Factor	0.000
BHA_COEF_VER	RAB: BHA Coef Generator Version	62012.0
BHT_RM	Bottom Hole Temperature (RM)	70.000 degC
BMBHCA	RAB: Button Medium Borehole A Factor	0.023
BMBHCB	RAB: Button Medium Borehole B Factor	0.000
BSAL_RM	Mud Salinity (RM)	66.000 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	Well Section Deviation	58.900 deg
DHS_VERSION	RAB: DownHole Software Version	6.101
DO	Depth Offset	0.0 m
ENVCOR	Neutron Quadrant Processing: Environmental Correction?	YES
GRDC	Grid corr angle	-0.880 deg
LITHO_TYPE_ADN	Lithology (RM)	LIME
MBUTTON_K_FACTOR	RAB: Button Medium K Factor	0.005
MST_RM	Mud Sample temperature (RM)	20.500 degC
MW_RM	Mud Weight (RM)	10.100 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	13.940 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	0.160
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)	0.148 ohm.m
RWS_RM	Resistivity of Connate Water (RM)	1.000 ohm.m

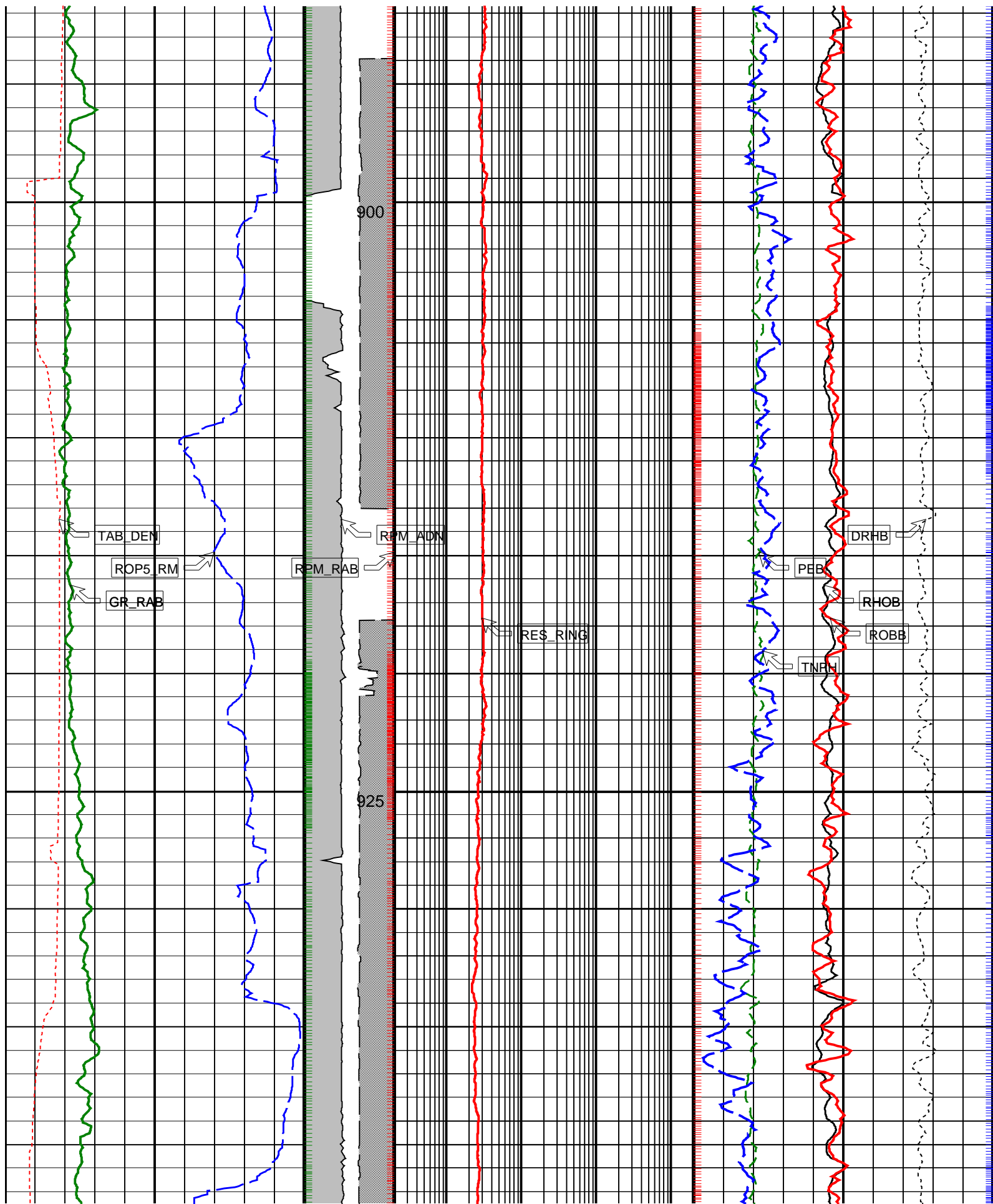
RMS_RM	Resistivity of Mud Sample (RM)	0.148	ohm.m
RWS_RM	Resistivity of Connate Water (RM)	1.000	ohm.m
SBUTTON_K_FACTOR	RAB: Button Shallow K Factor	0.007	
SHT_RM	Surface Hole Temperature (RM)	18.000	degC
SSIZ_ADN	ADN Stabilizer Size	8.250	in
STAB	RAB: Run with Stabilizer	YES	
TD_RM	Total Measured Depth (RM)	2862.0	m
TOOLTYPE	RAB: Azimuthal Tool	YES	
TRPM_RM	Average Tool Rotational Speed	20.000	c/min
TSIZ_ADN	ADN Tool Size	6.750	in
TS_VERSION	RAB: ToolScope Software Version	6.101	
TWS_RM	Temperature of Connate Water (RM)	23.889	degC
VERS_ADN	ADN Downhole Software Version	6.200	
VRAB6	Rab Tool type (ENP/PILOT)	RAB6_C_SERIES	

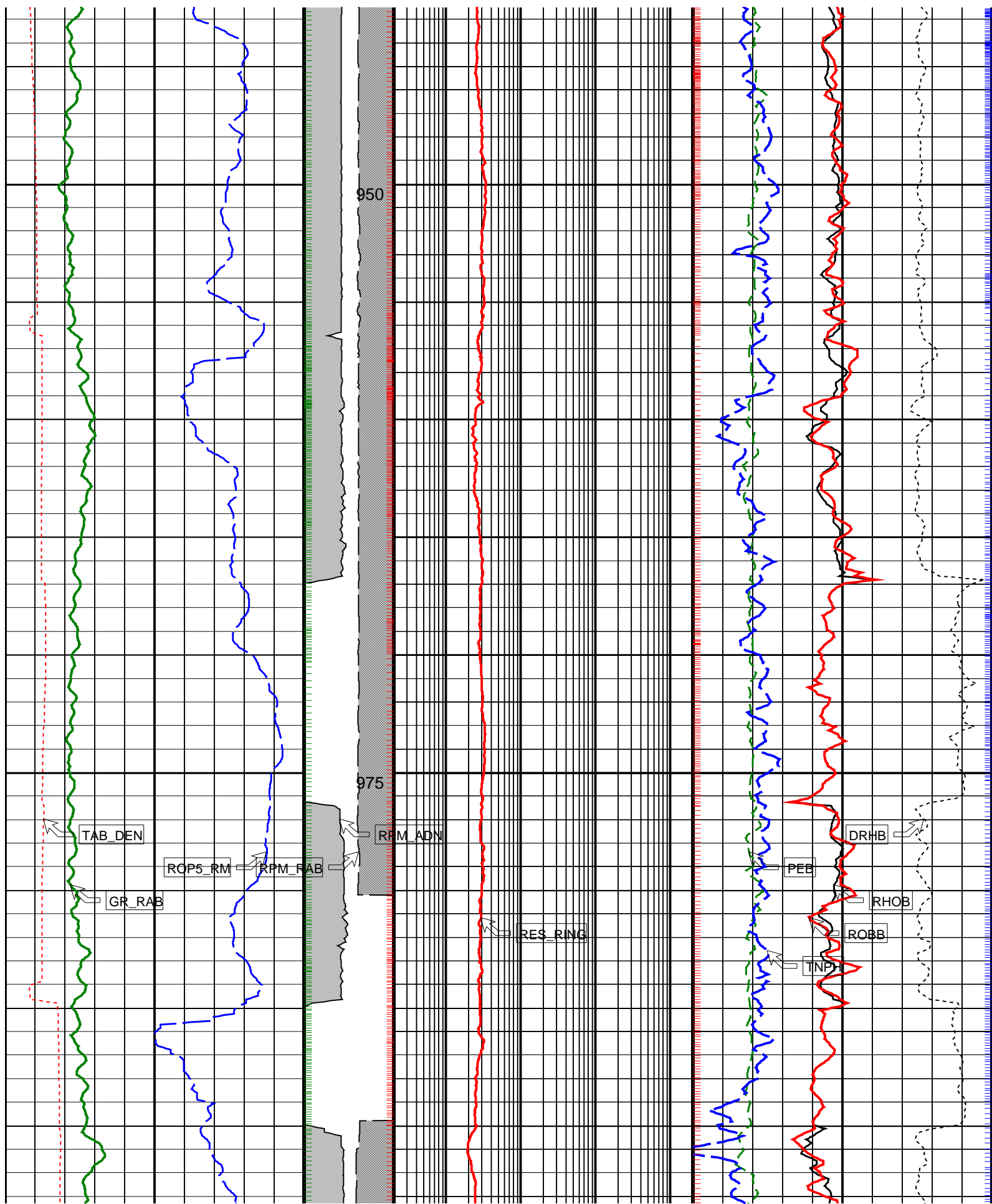
PIP SUMMARY			
		Density Ticks, 0.1 ft	+
		Neutron Ticks, 0.1 ft	
		<div> <div>Gamma Ray Samples</div> <div>Ring Samples</div> </div>	

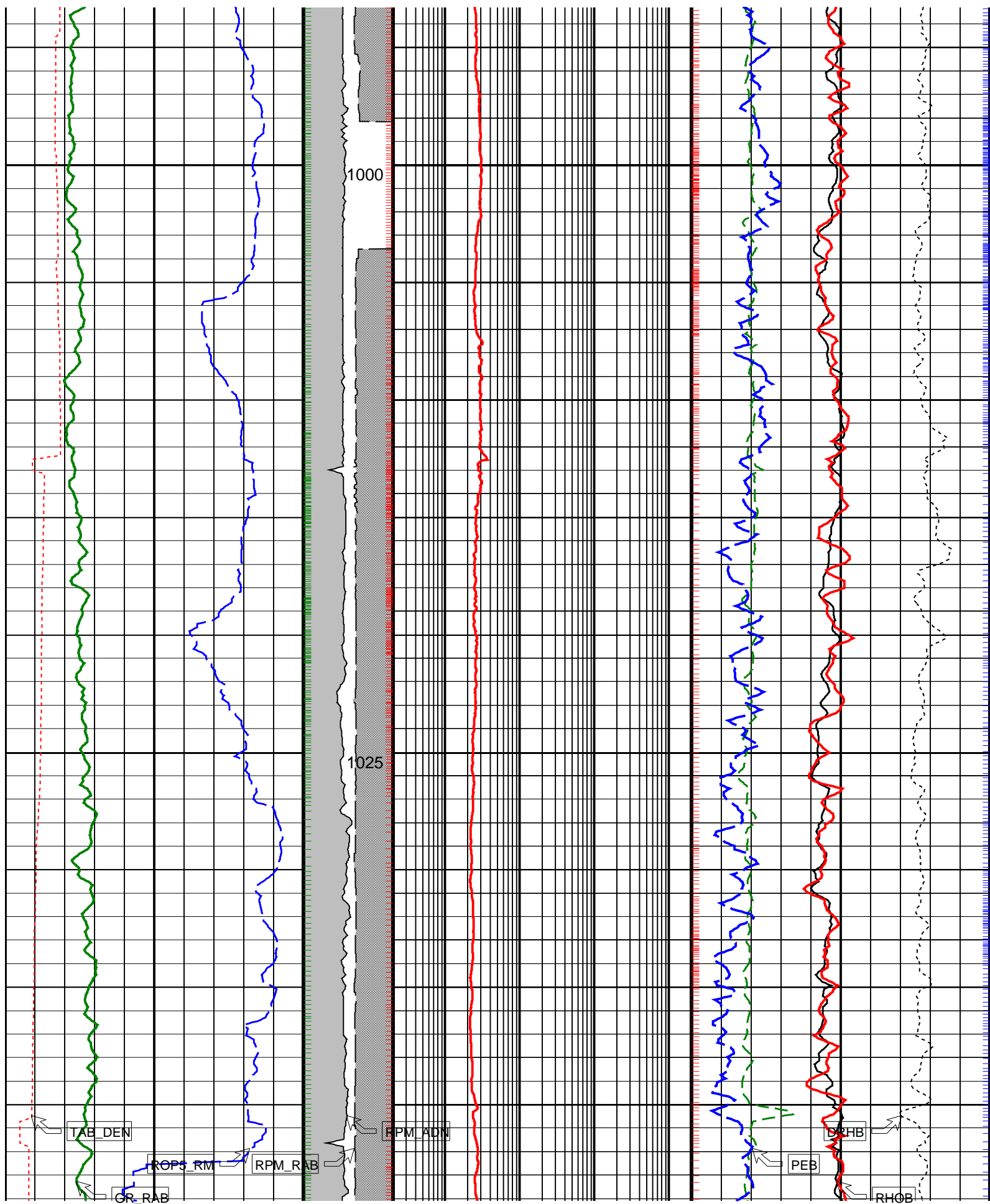
		<div>Gas Area</div> <div>From ADN/ROBB/DEPTH to</div> <div>ADN/TNPH/DEPTH</div>	
		<div>Thermal Neutron Porosity (TNPH)</div> <div>45 (PU) -15</div>	
		<div>Ring Resistivity (RES_RING)</div> <div>0.2 (OHMM) 2000</div>	
		<div>Bulk Density, Bottom (ROBB)</div> <div>1.85 (G/C3) 2.85</div>	
<div>Rate of Penetration, Averaged over Last</div> <div>5ft (ROP5_RM)</div> <div>200 (M/HR) 0</div>		<div>Shallow Button Resistivity (RES_BS)</div> <div>0.2 (OHMM) 2000</div>	
		<div>Bulk Density (RHOB)</div> <div>1.85 (G/C3) 2.85</div>	
<div>RAB Gamma Ray (GR_RAB)</div> <div>0 (GAPI) 200</div>		<div>Medium Button Resistivity (RES_BM)</div> <div>0.2 (OHMM) 2000</div>	
<div>RAB Rotational Speed (RPM_RAB)</div> <div>(RPM)</div> <div>300 0</div>		<div>Photoelectric Factor, Bottom (PEB)</div> <div>0 (----) 20</div>	
<div>Density Time After Bit (TAB_DEN)</div> <div>0 (HR) 10</div>		<div>Deep Button Resistivity (RES_BD)</div> <div>0.2 (OHMM) 2000</div>	
<div>ADN Rotational Speed (RPM_ADN)</div> <div>(RPM)</div> <div>0 300</div>		<div>Bulk Density Correction, Bottom (DRHB)</div> <div>-0.75 (G/C3) 0.25</div>	

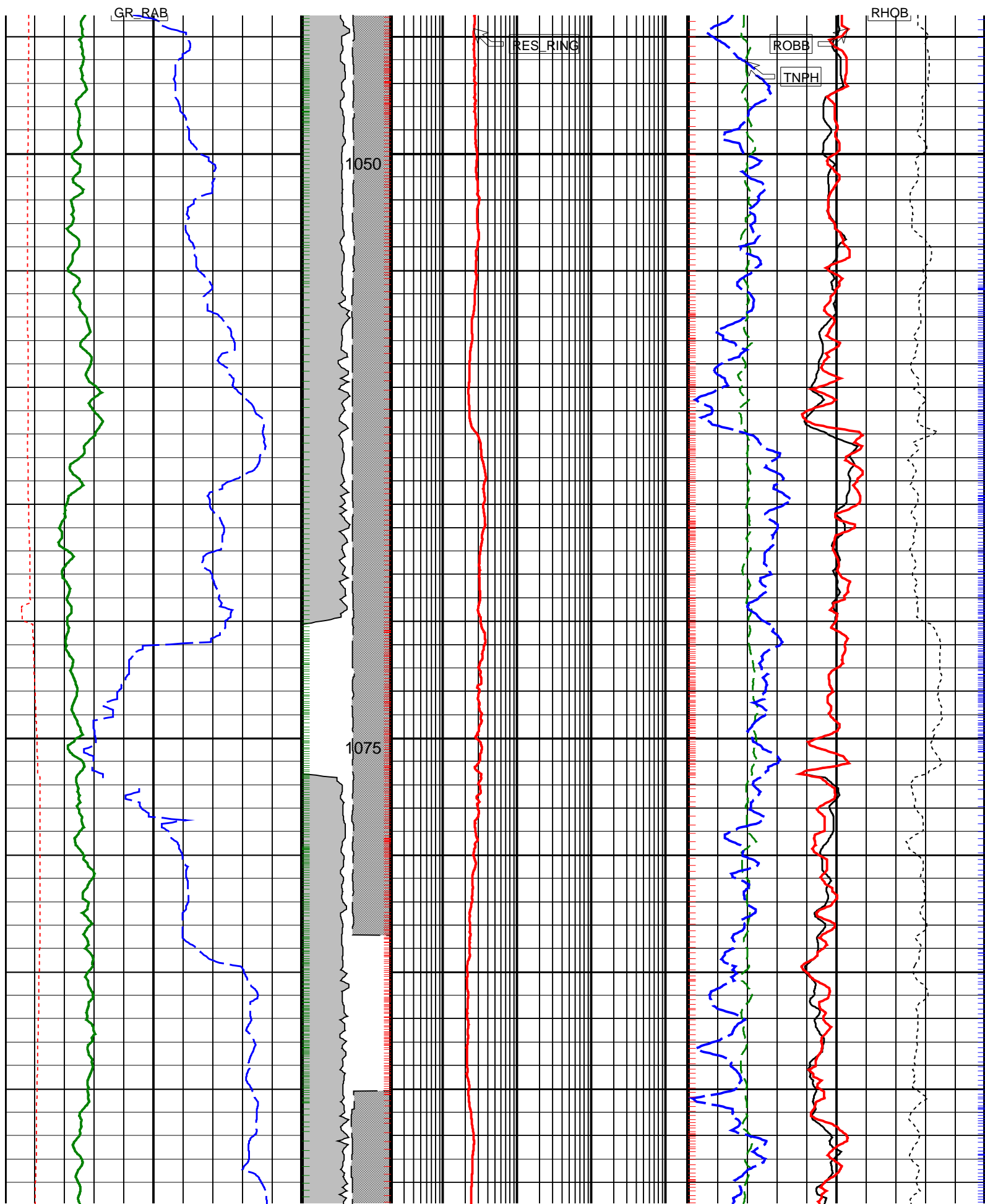


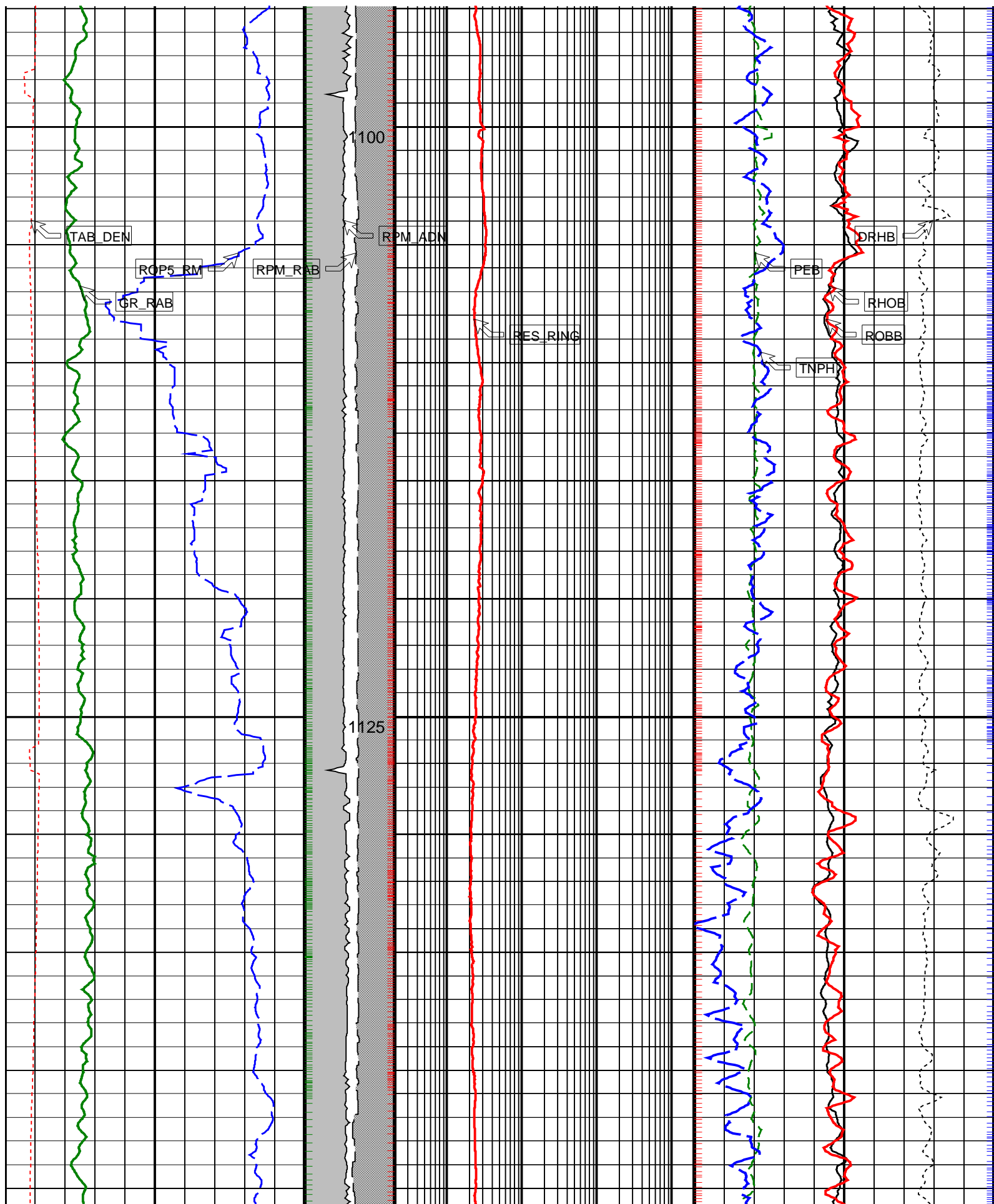


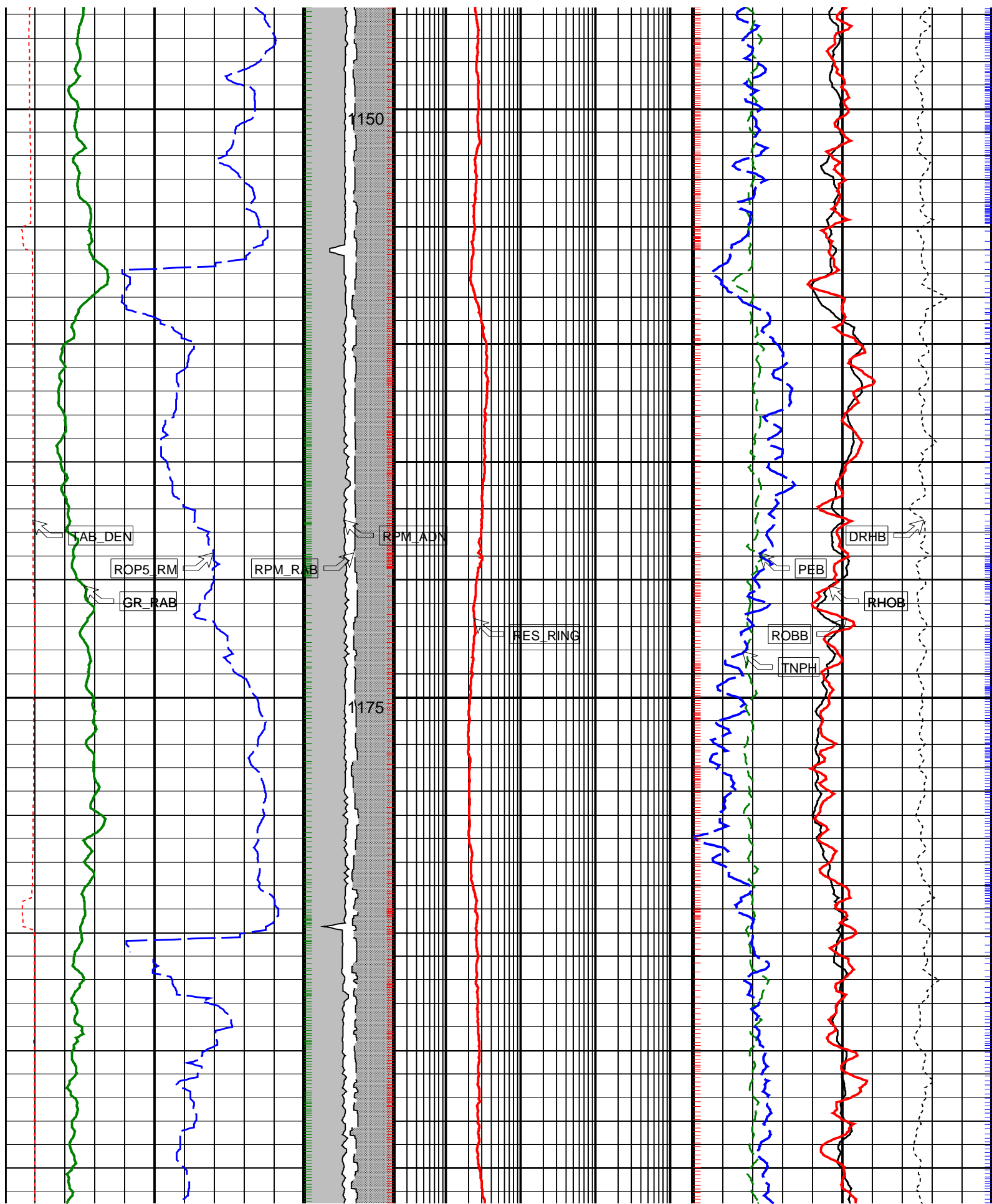


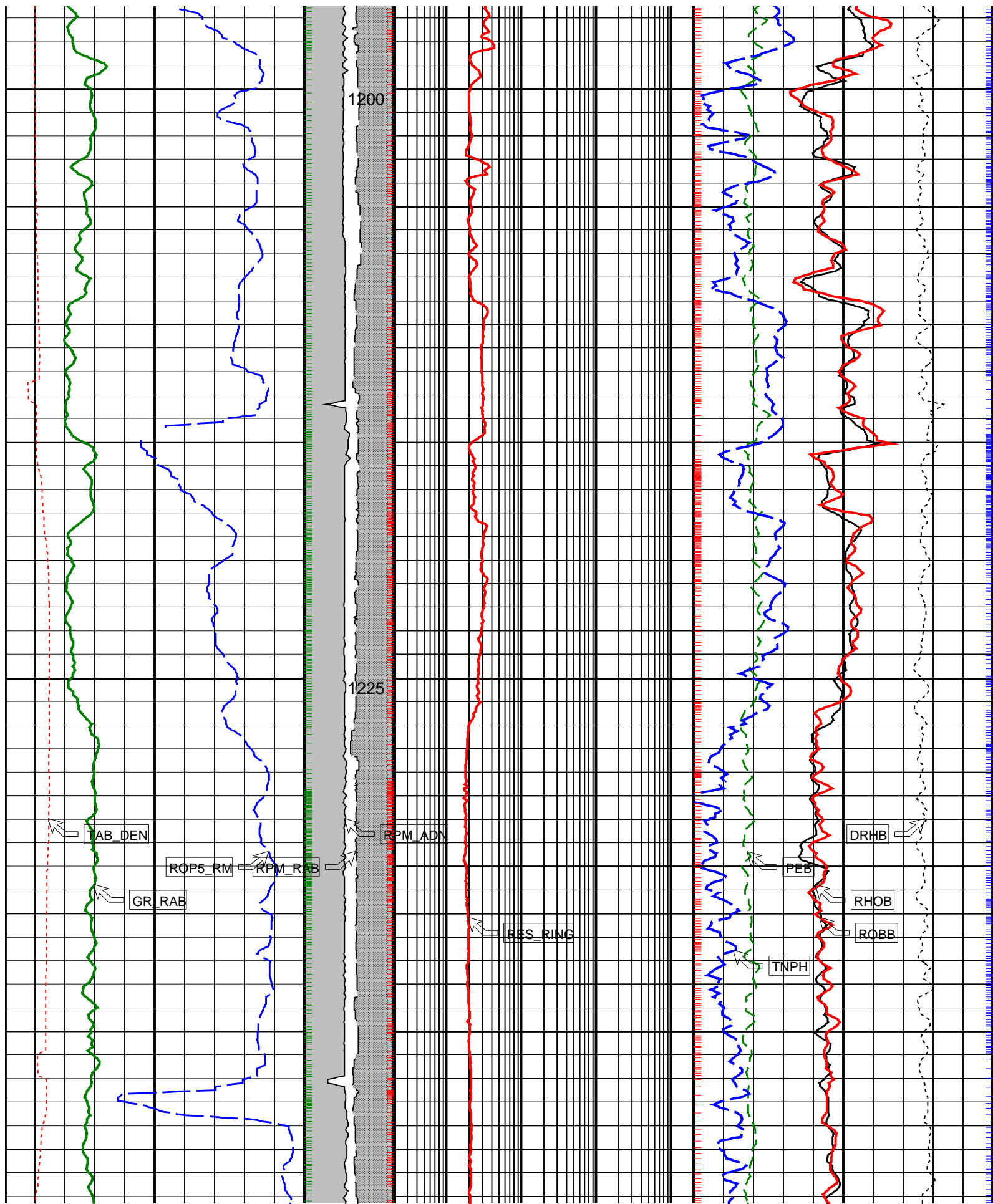


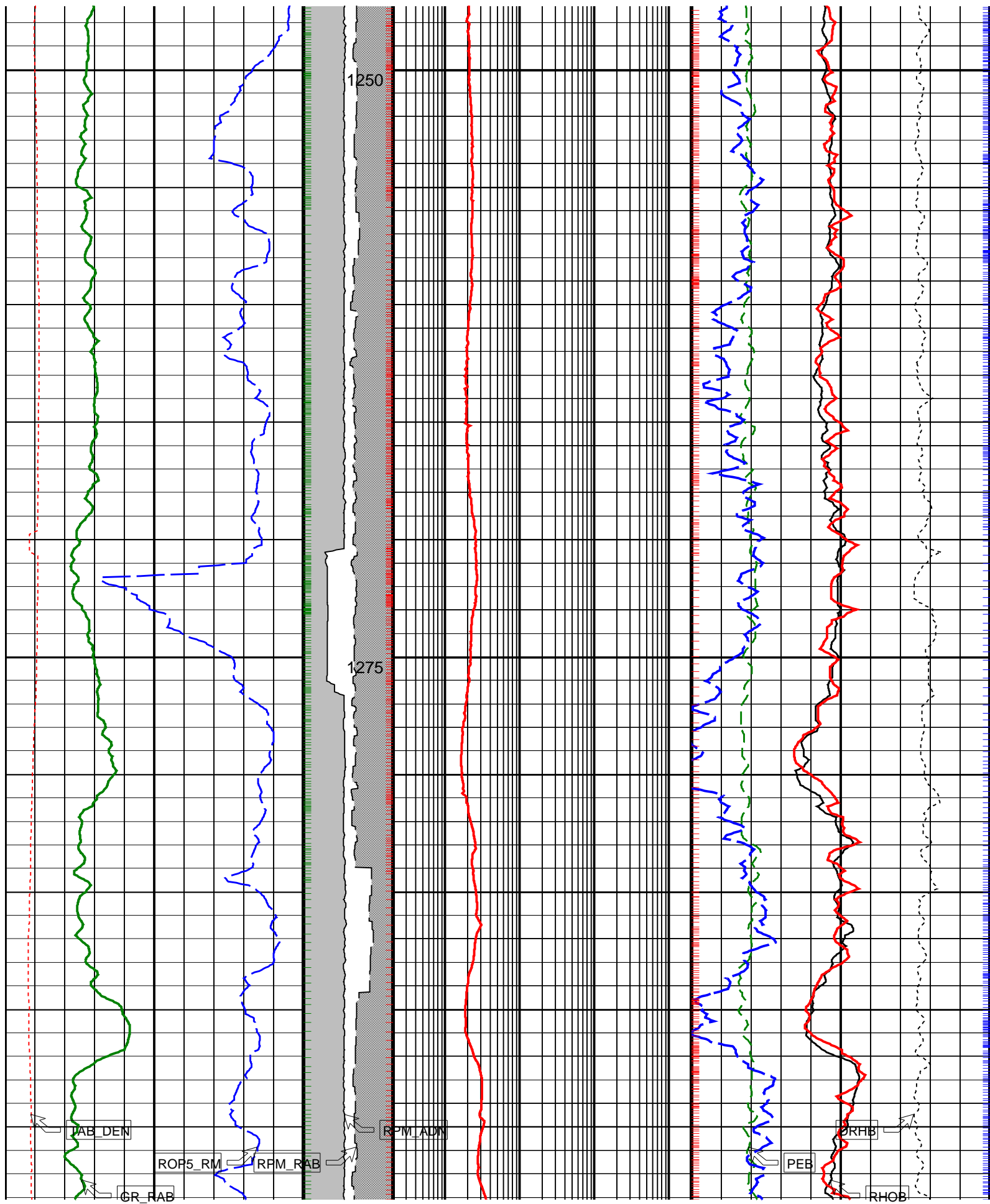


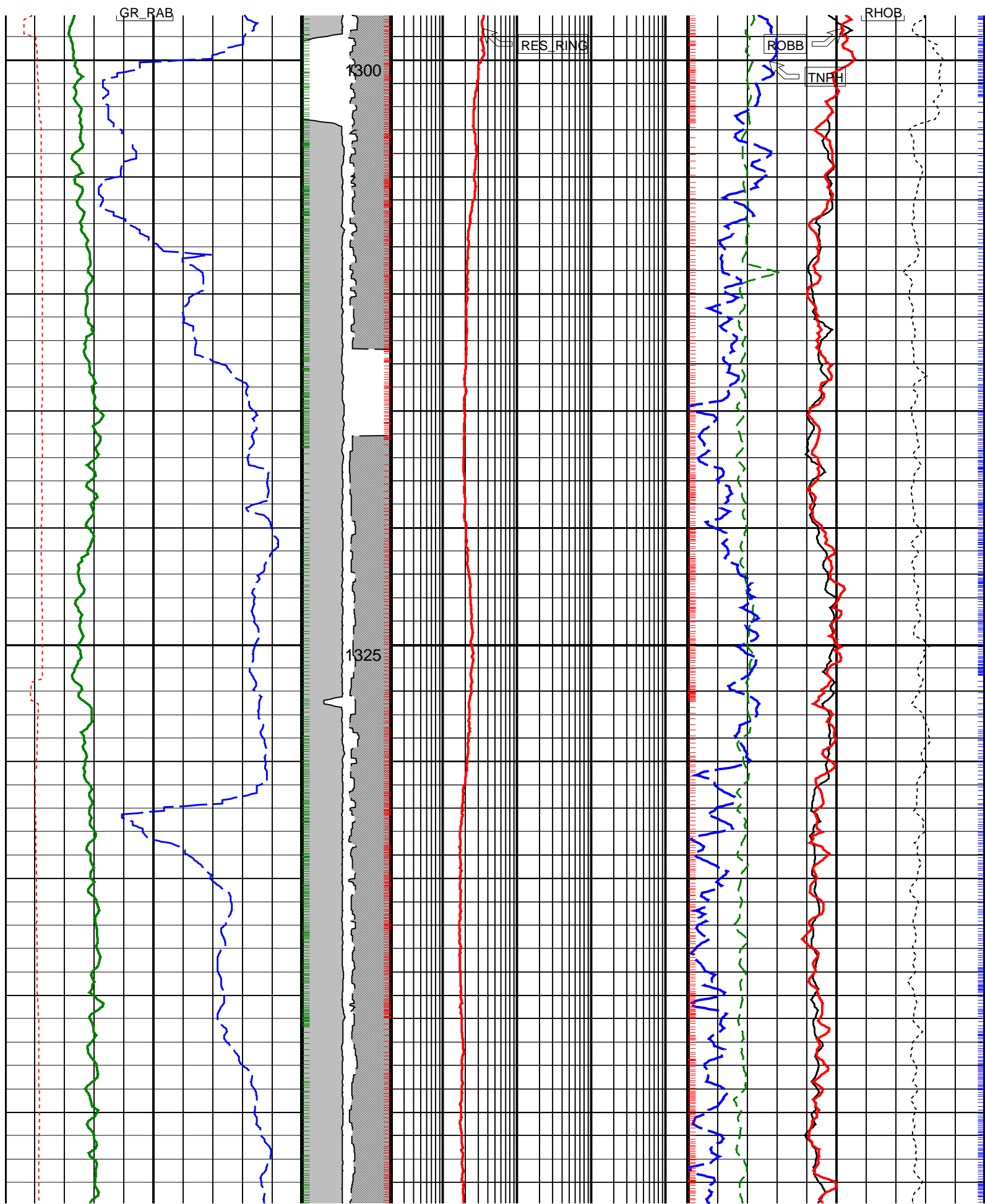


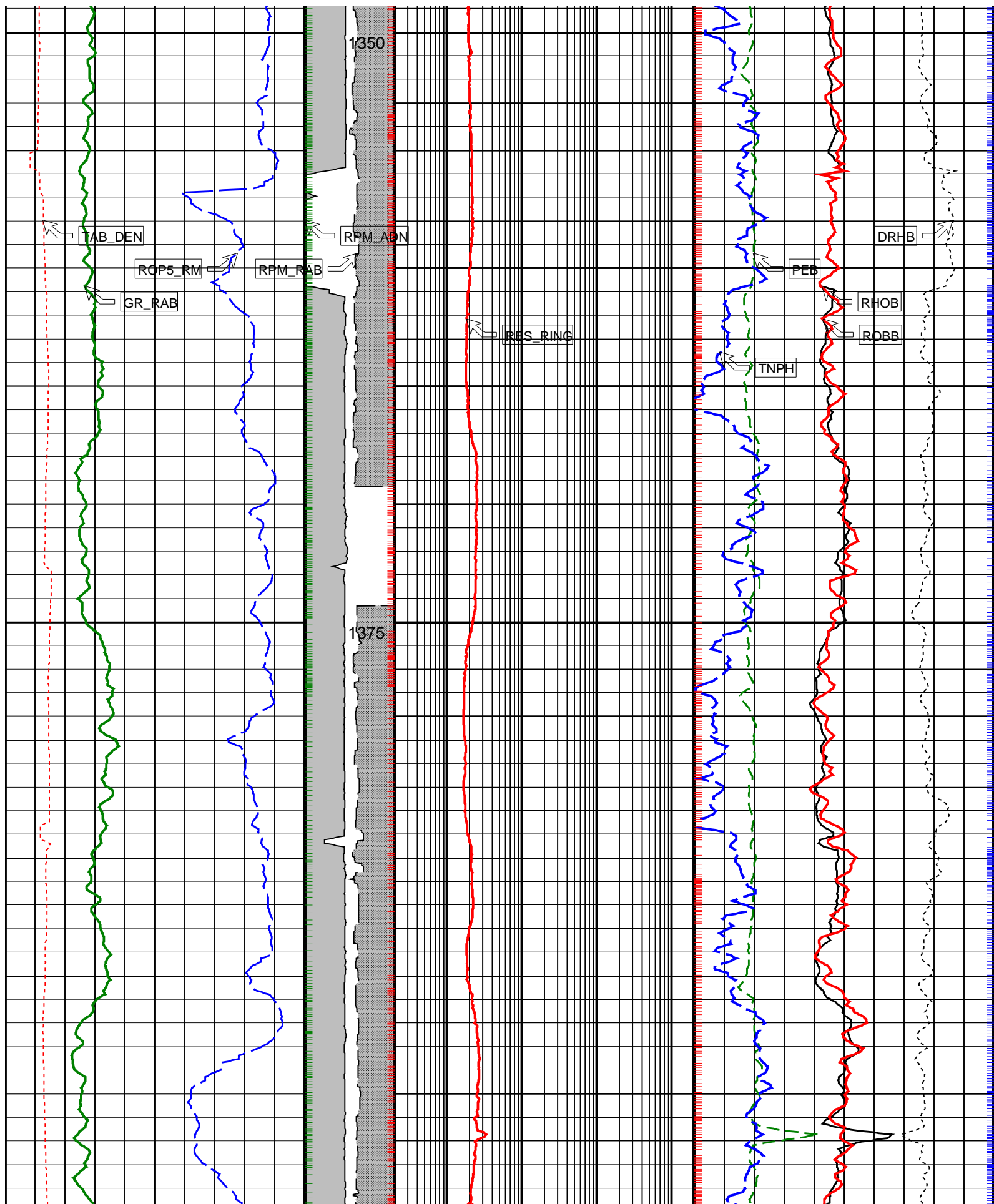


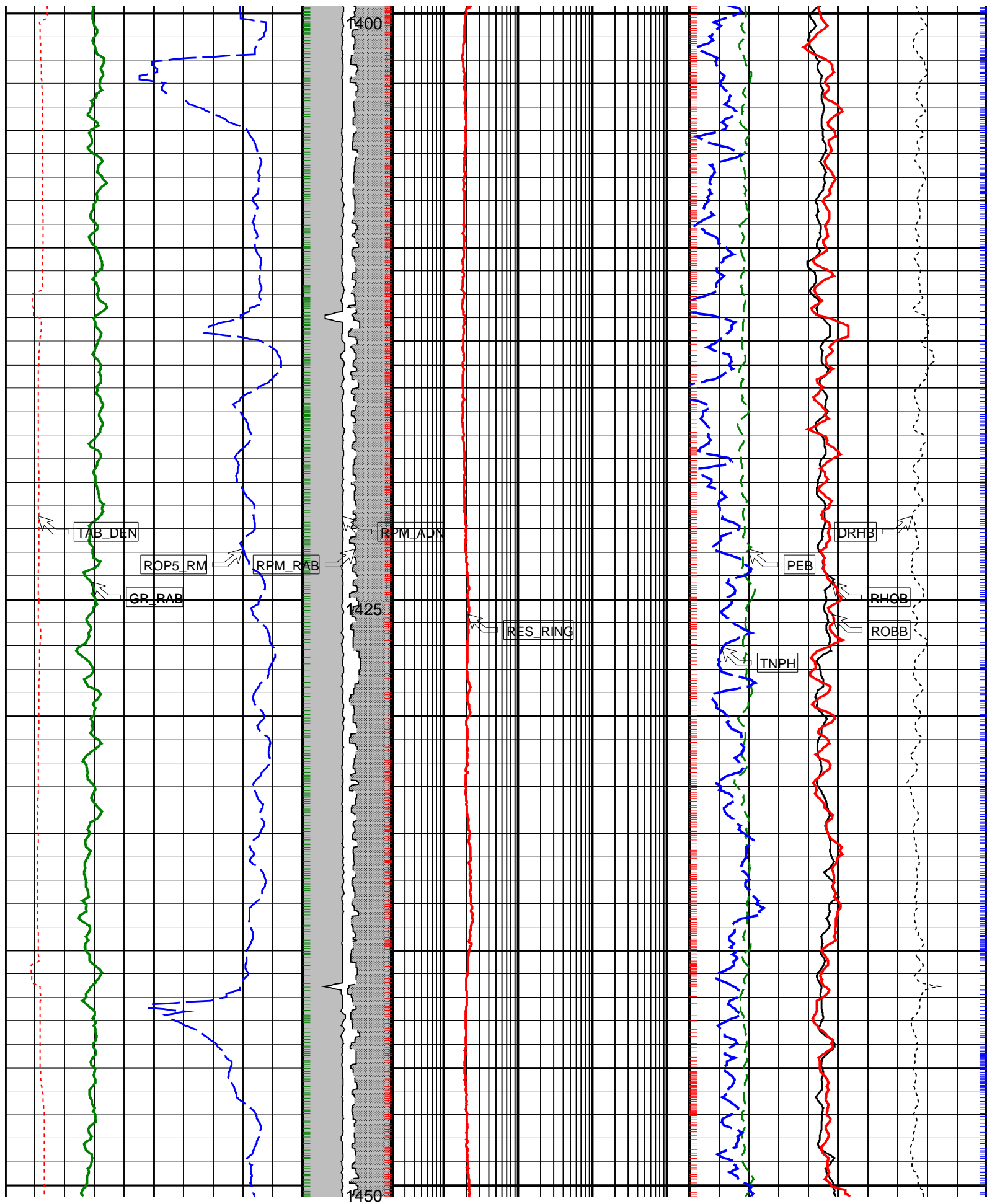


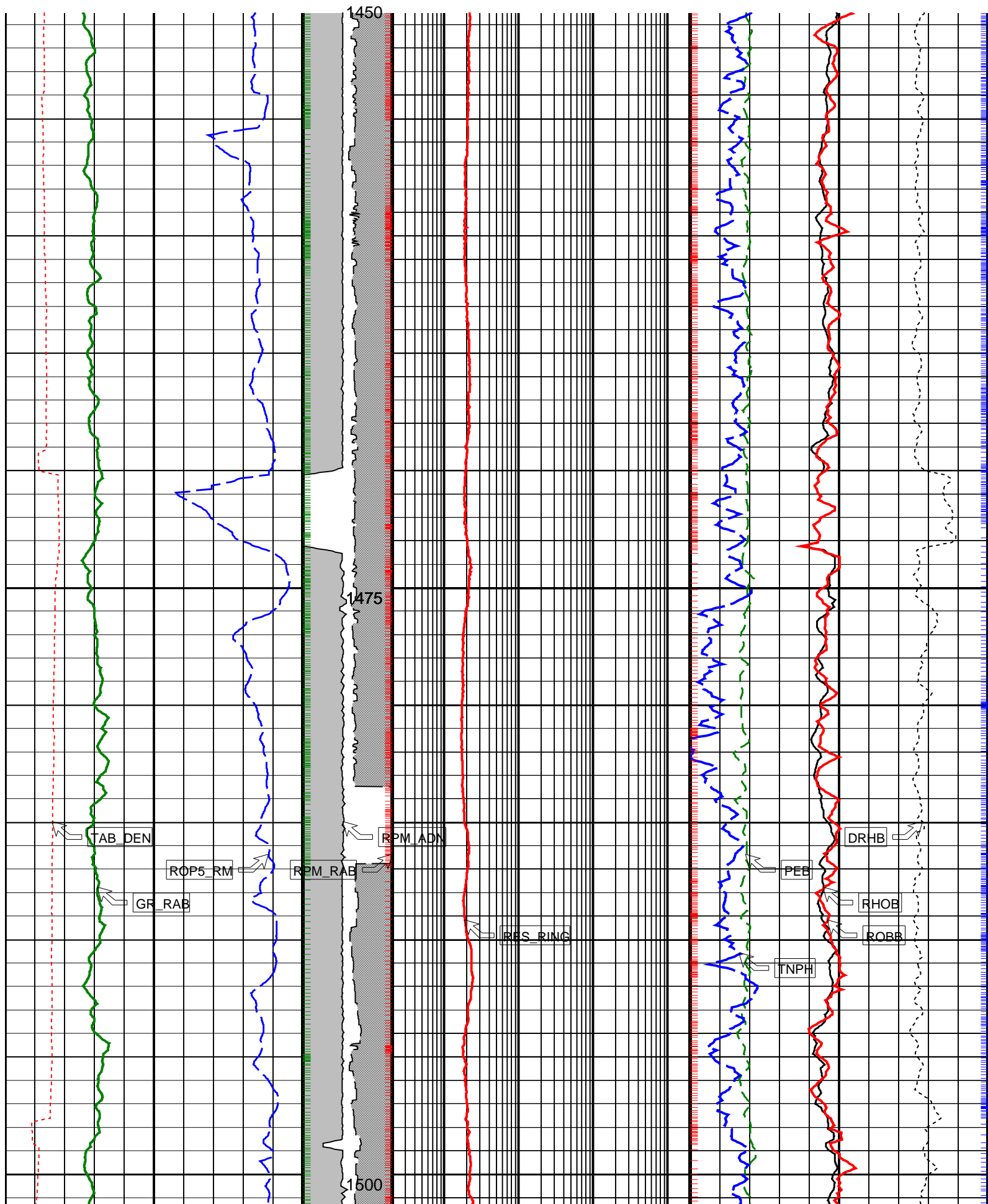


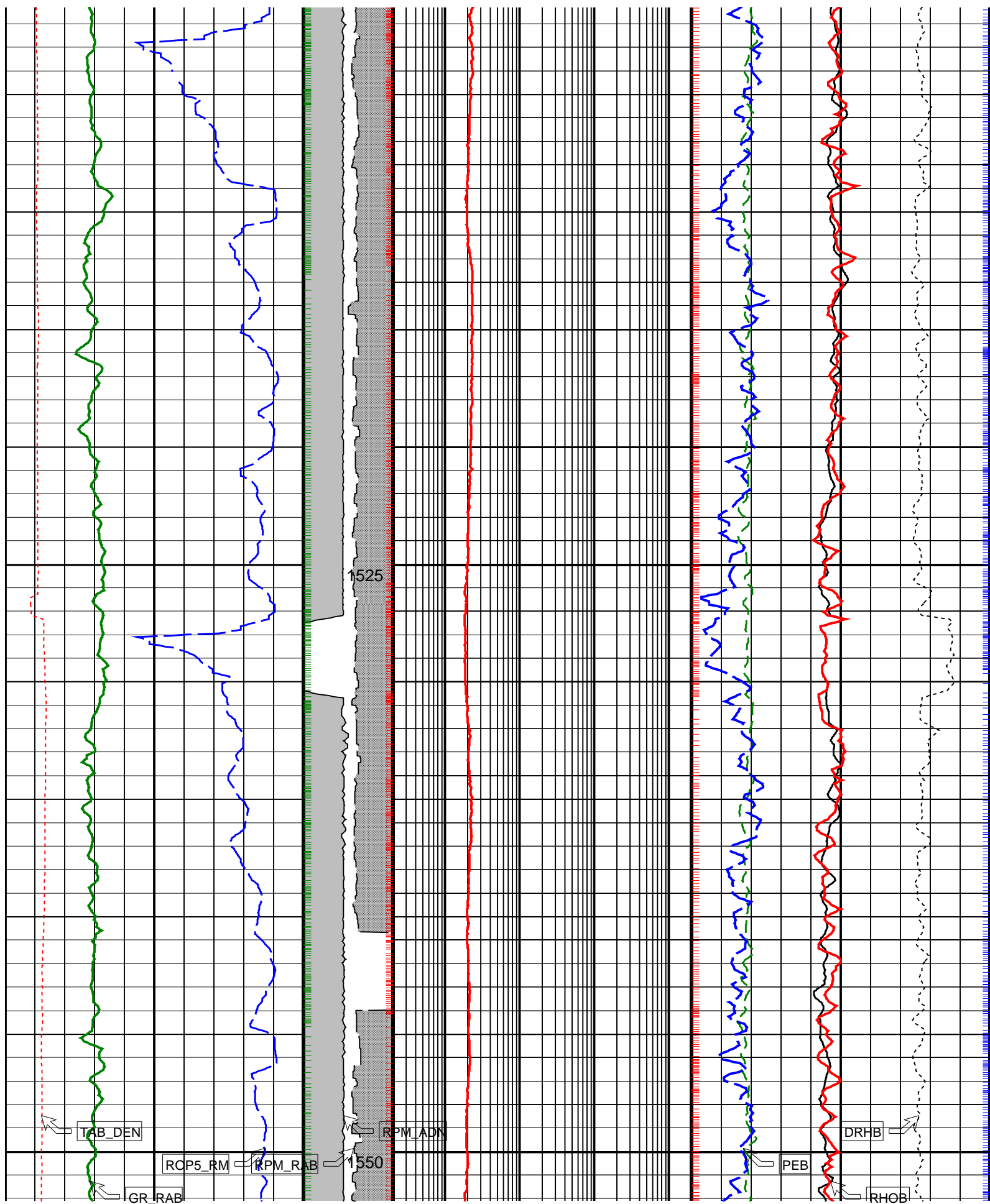


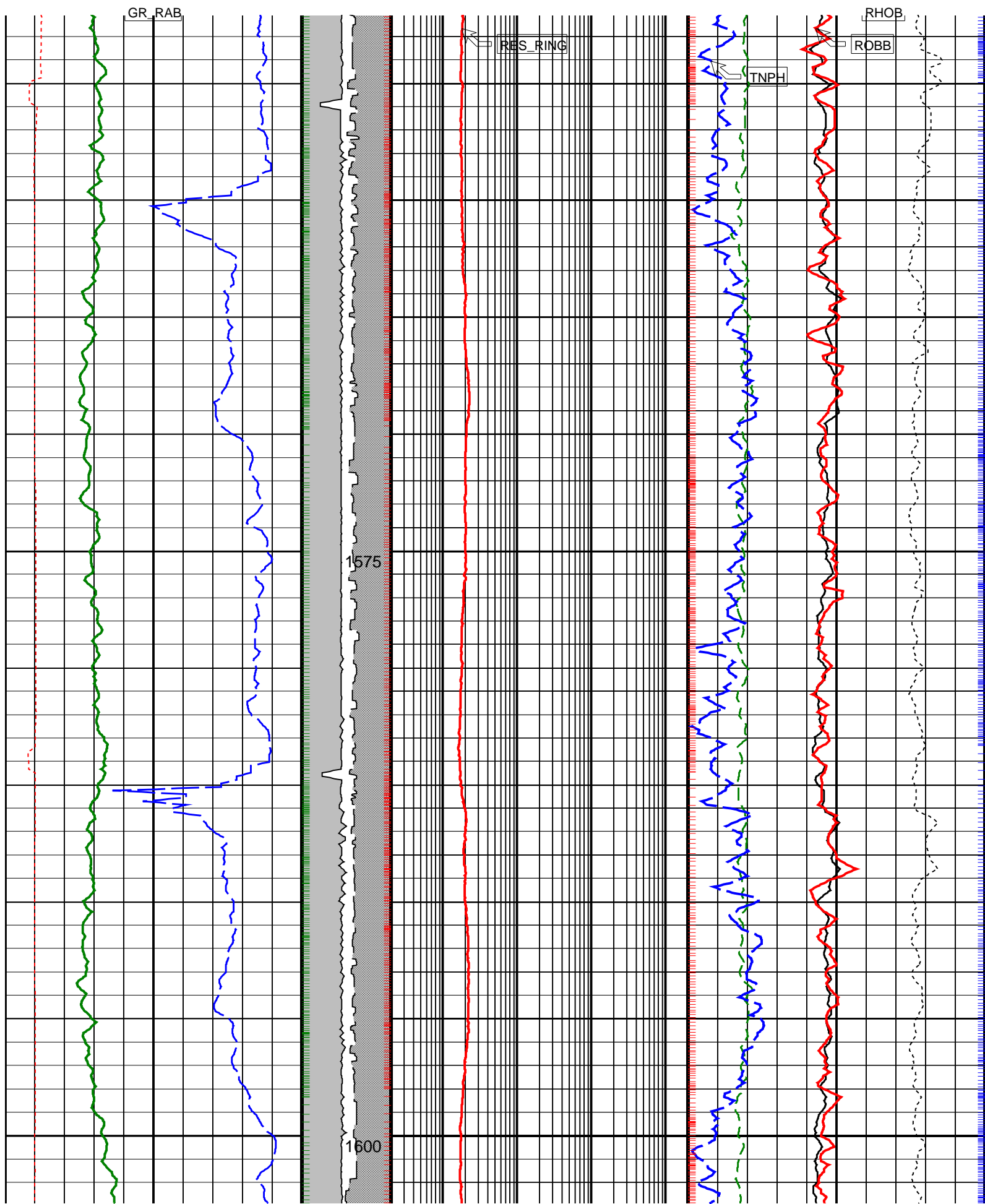


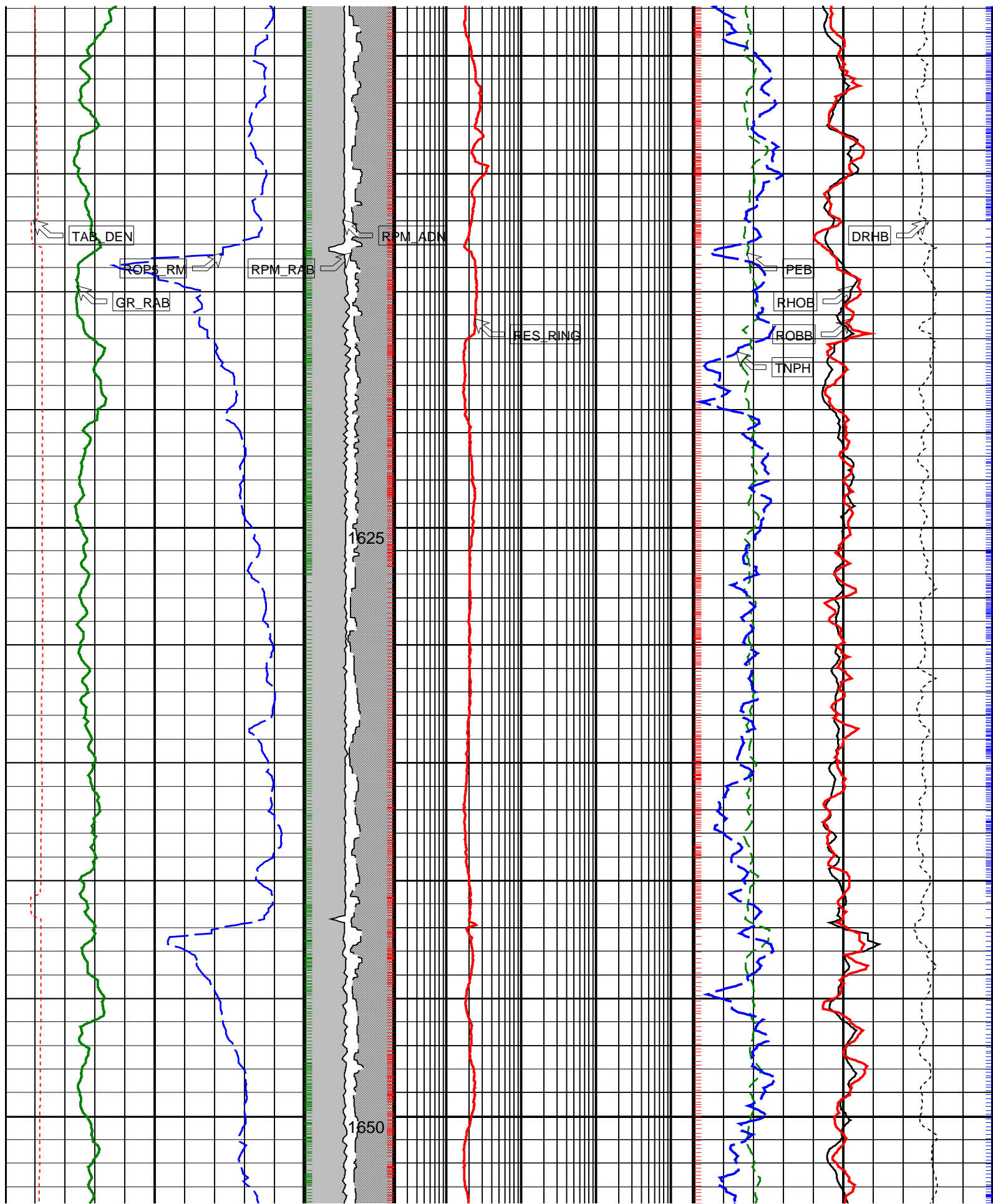


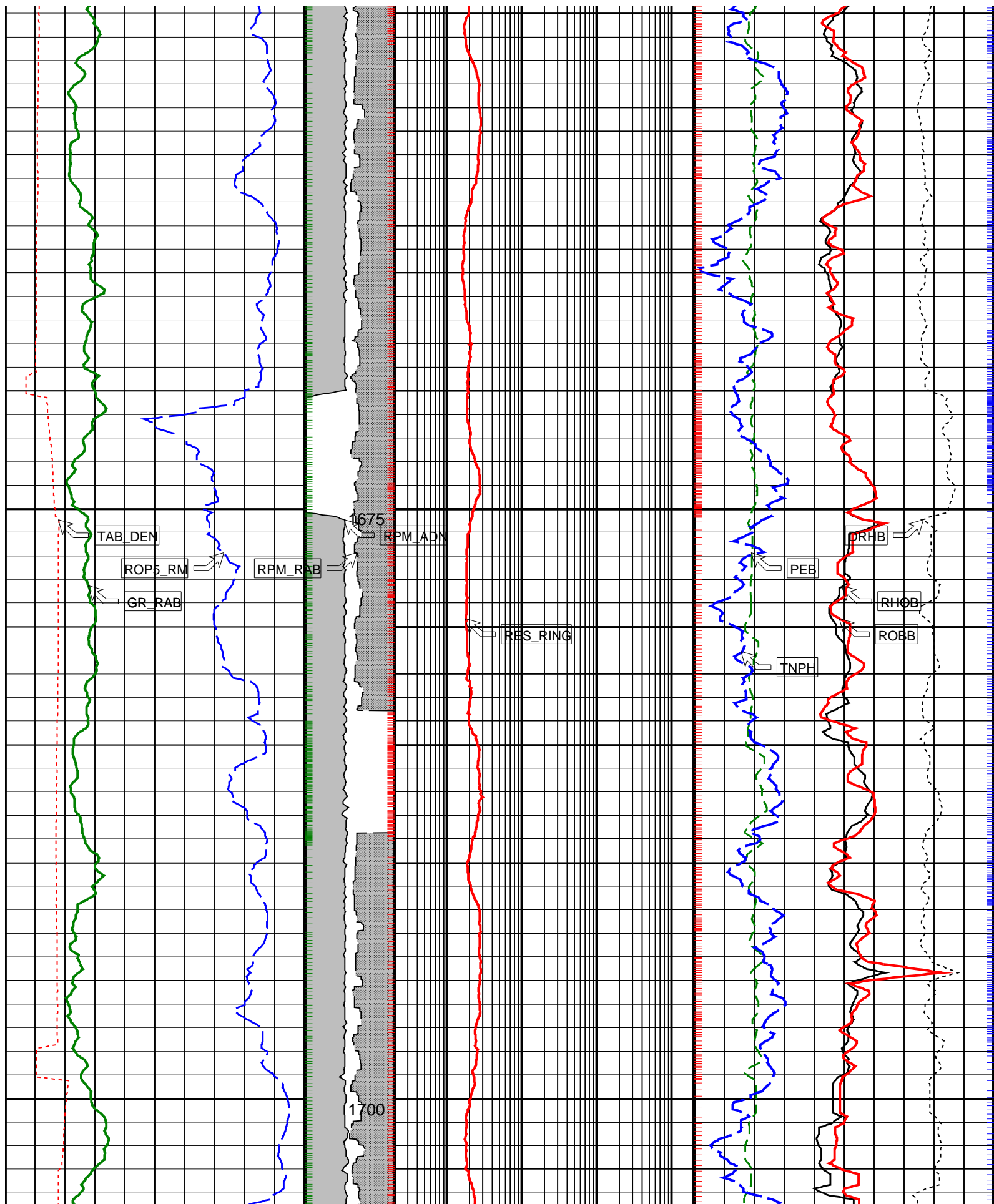


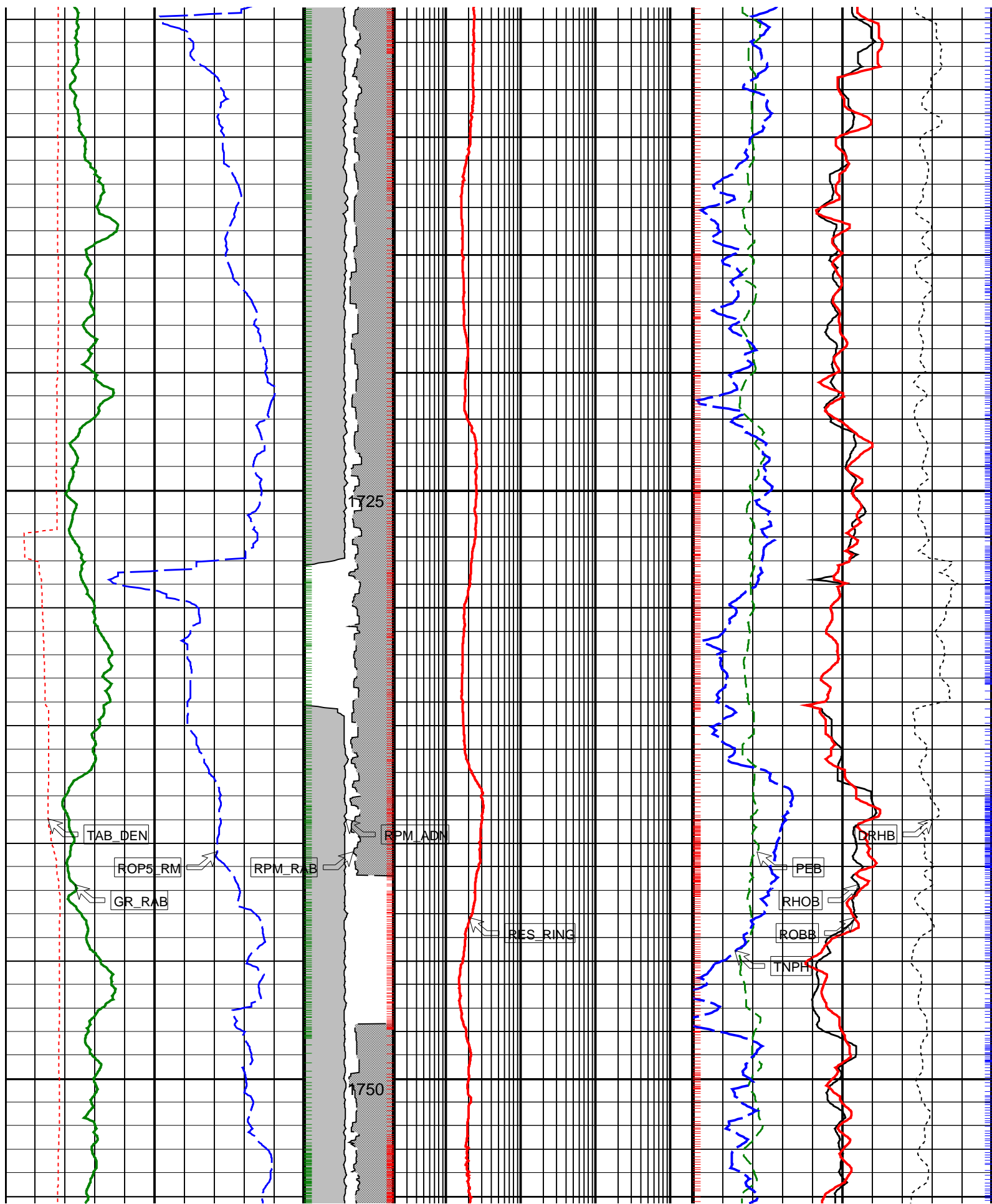


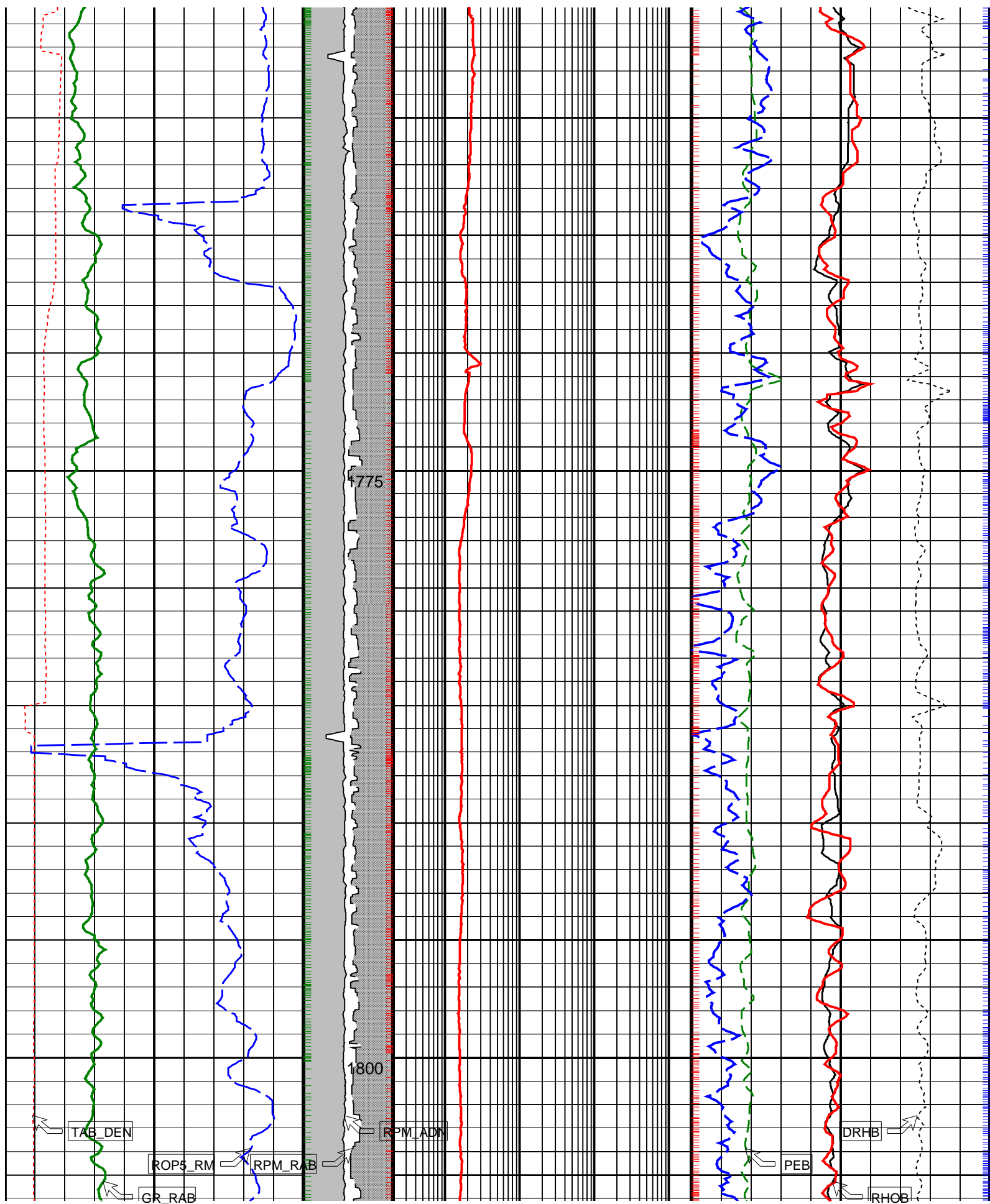


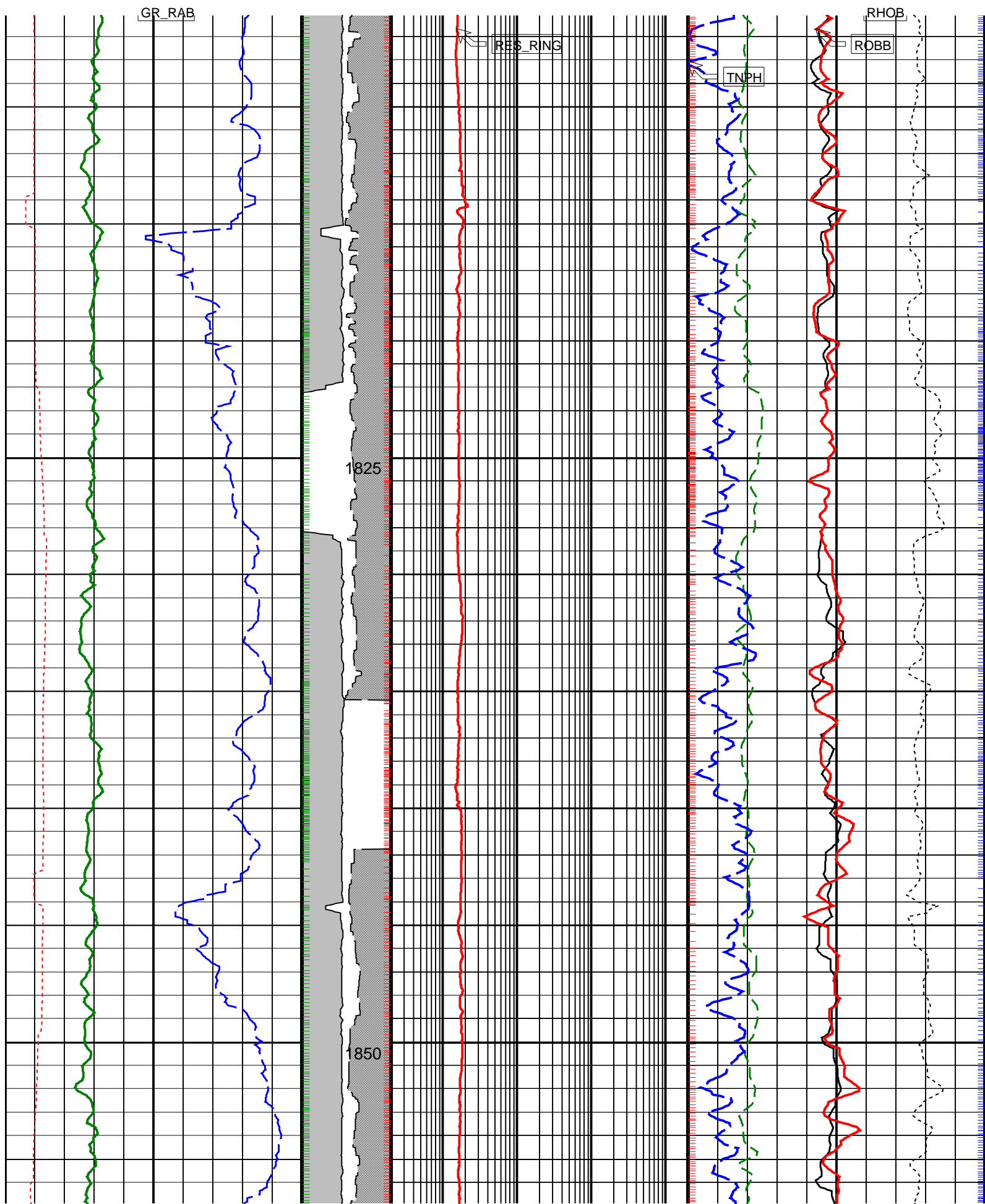


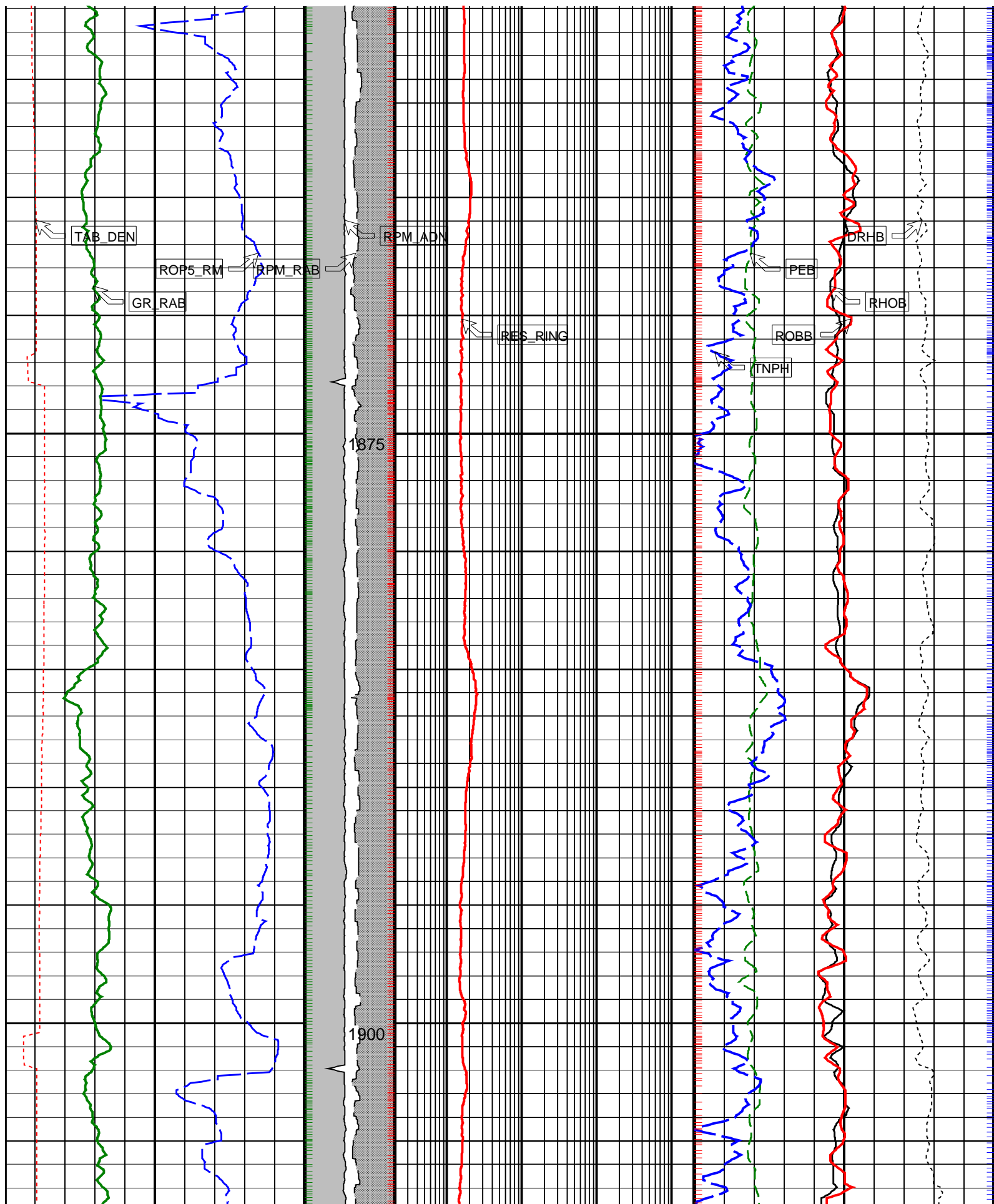


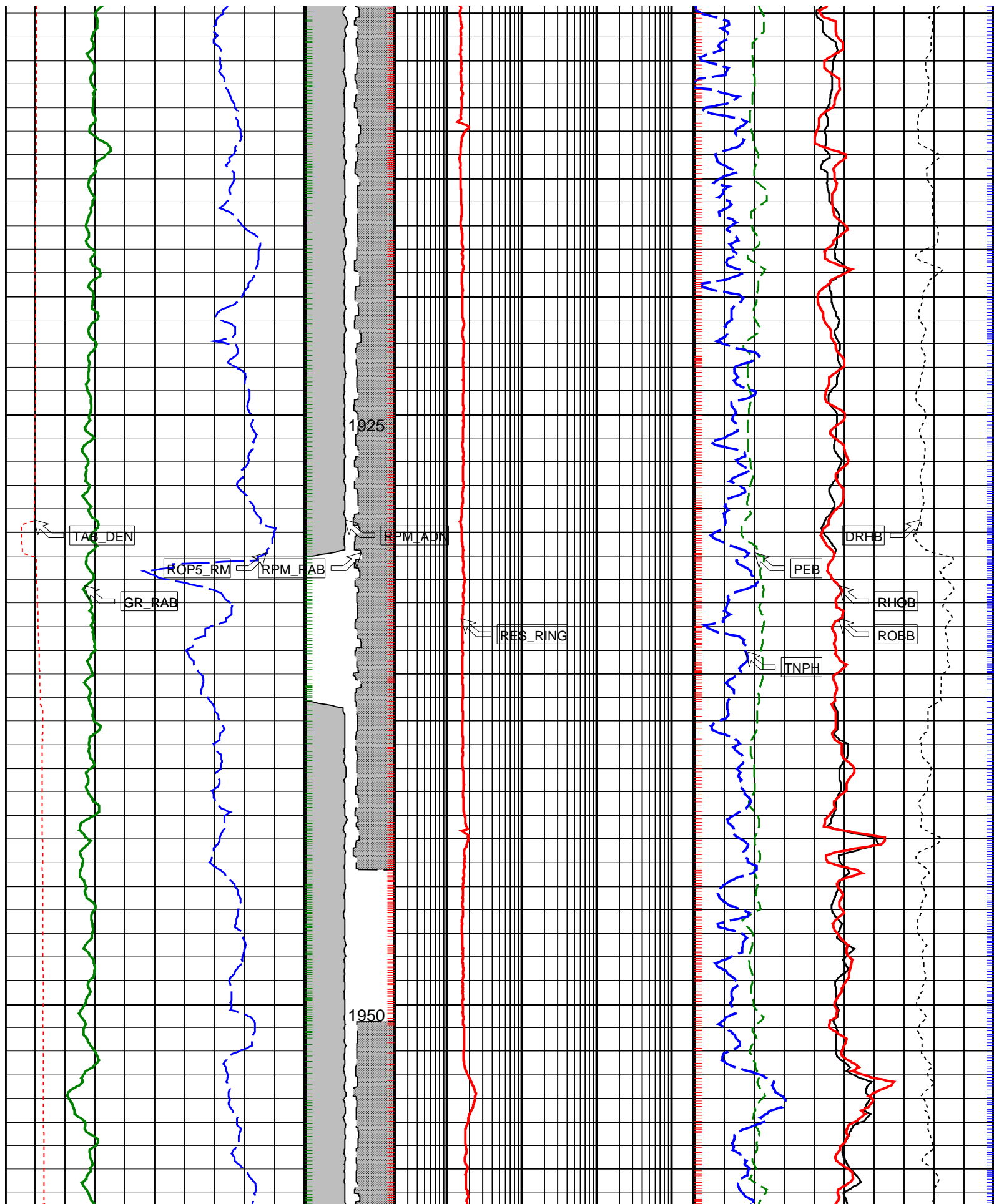


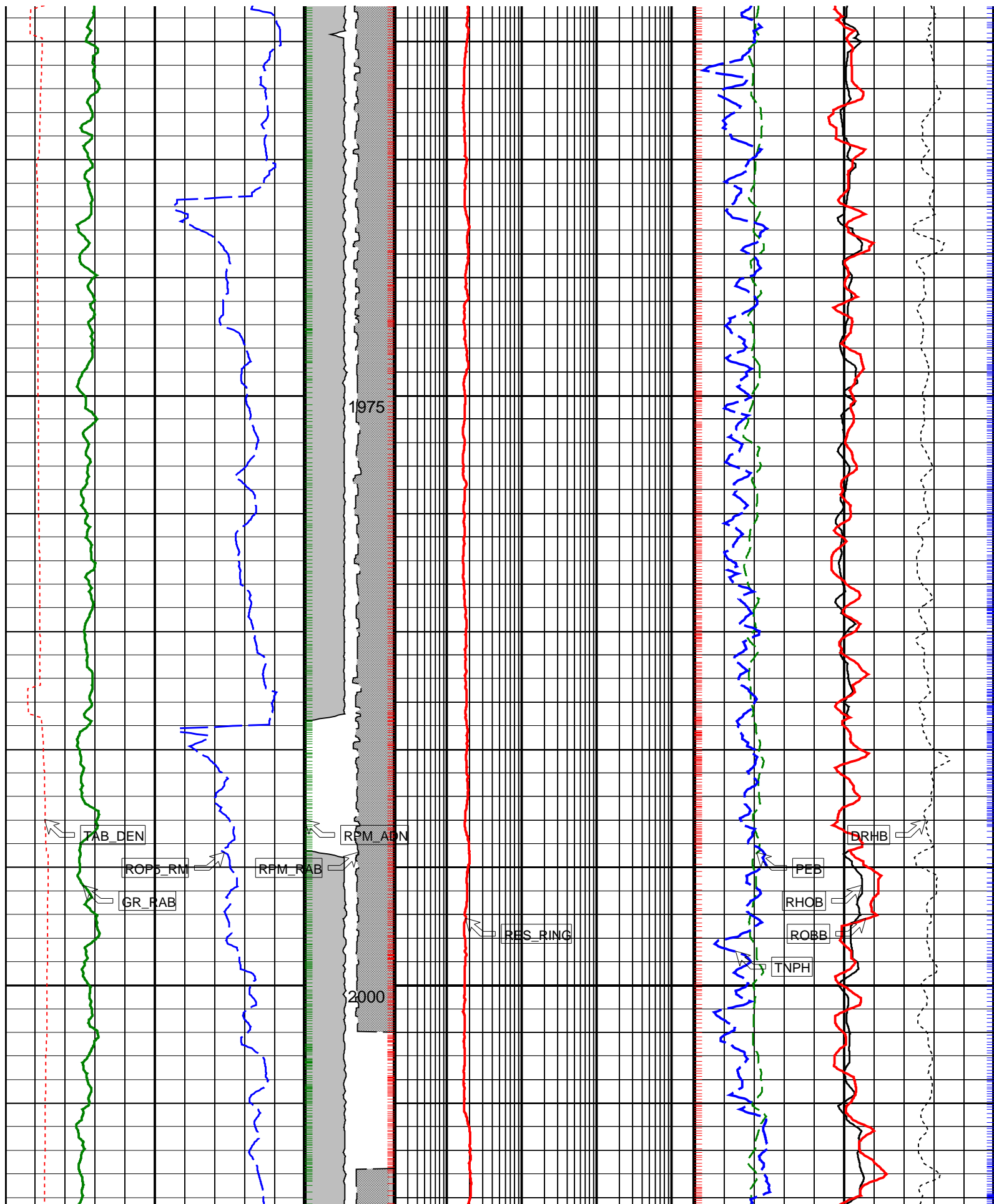


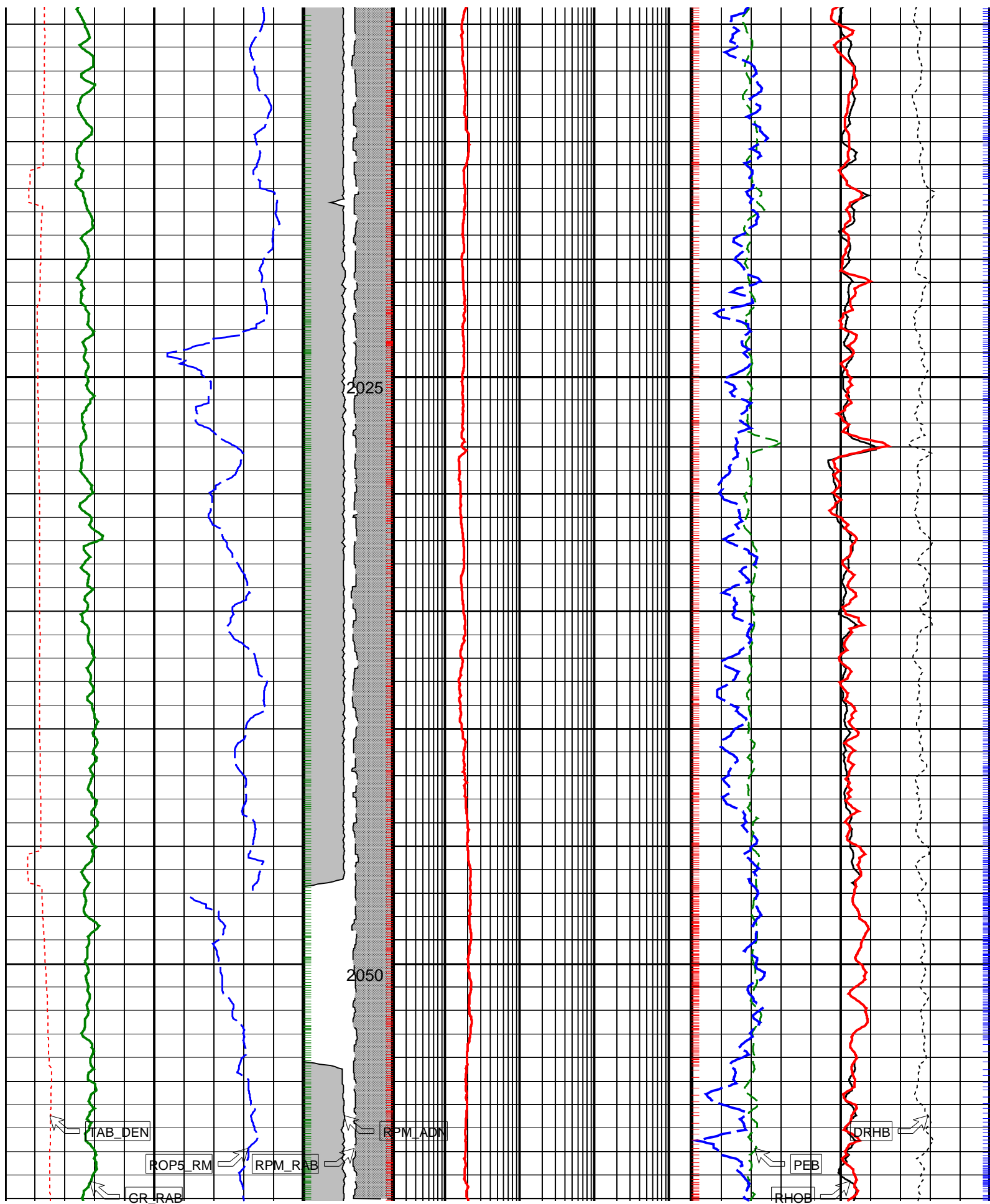


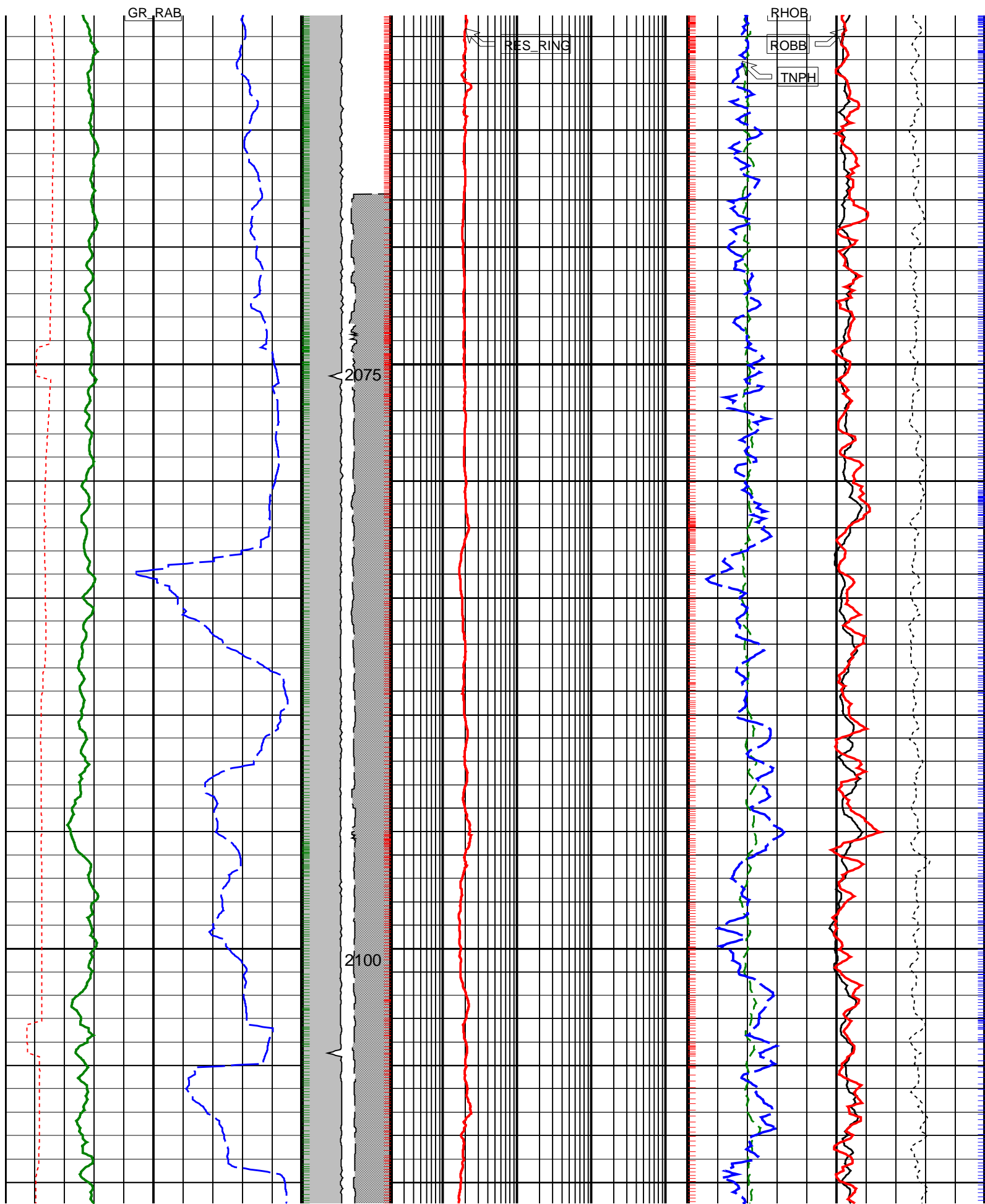


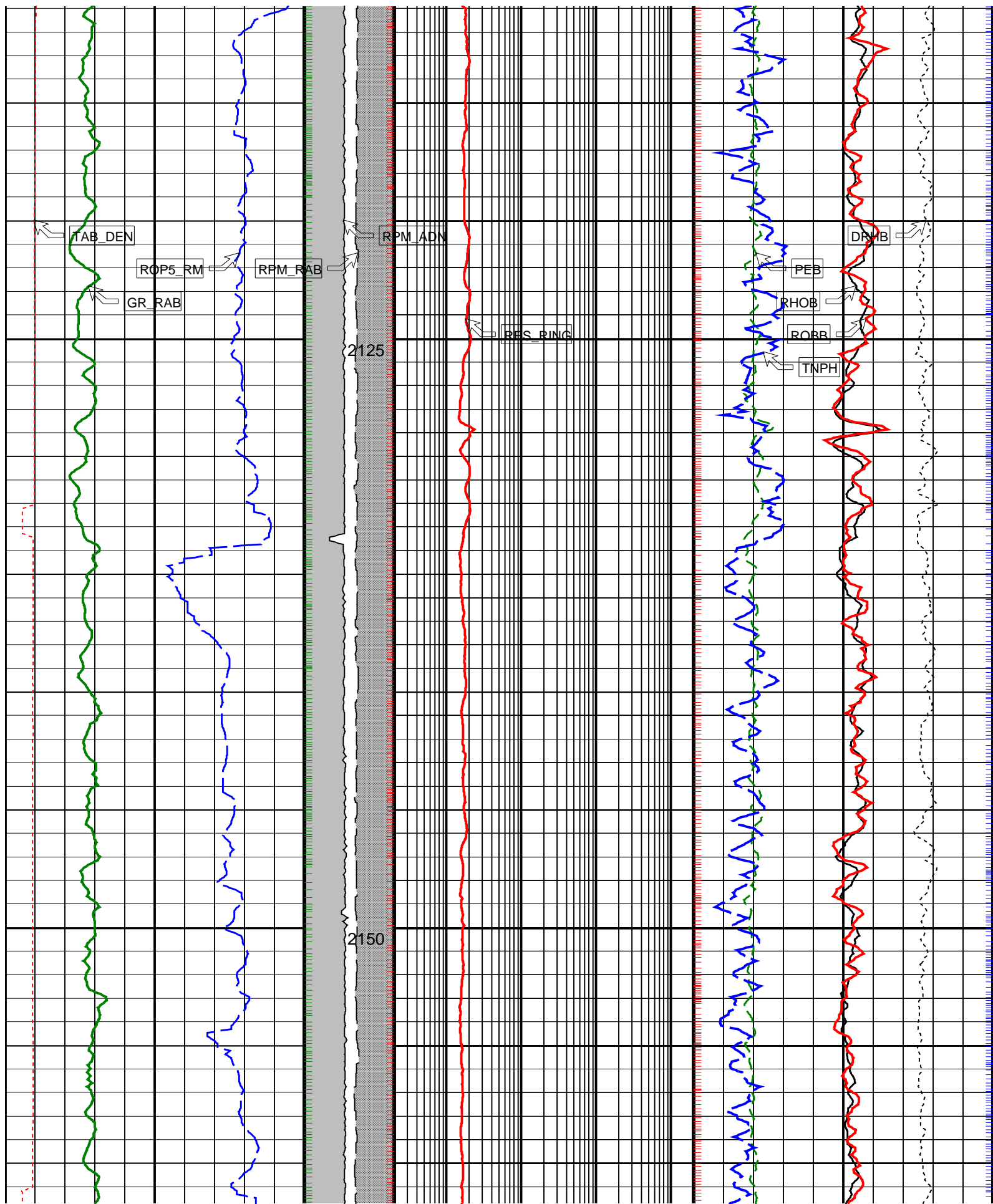


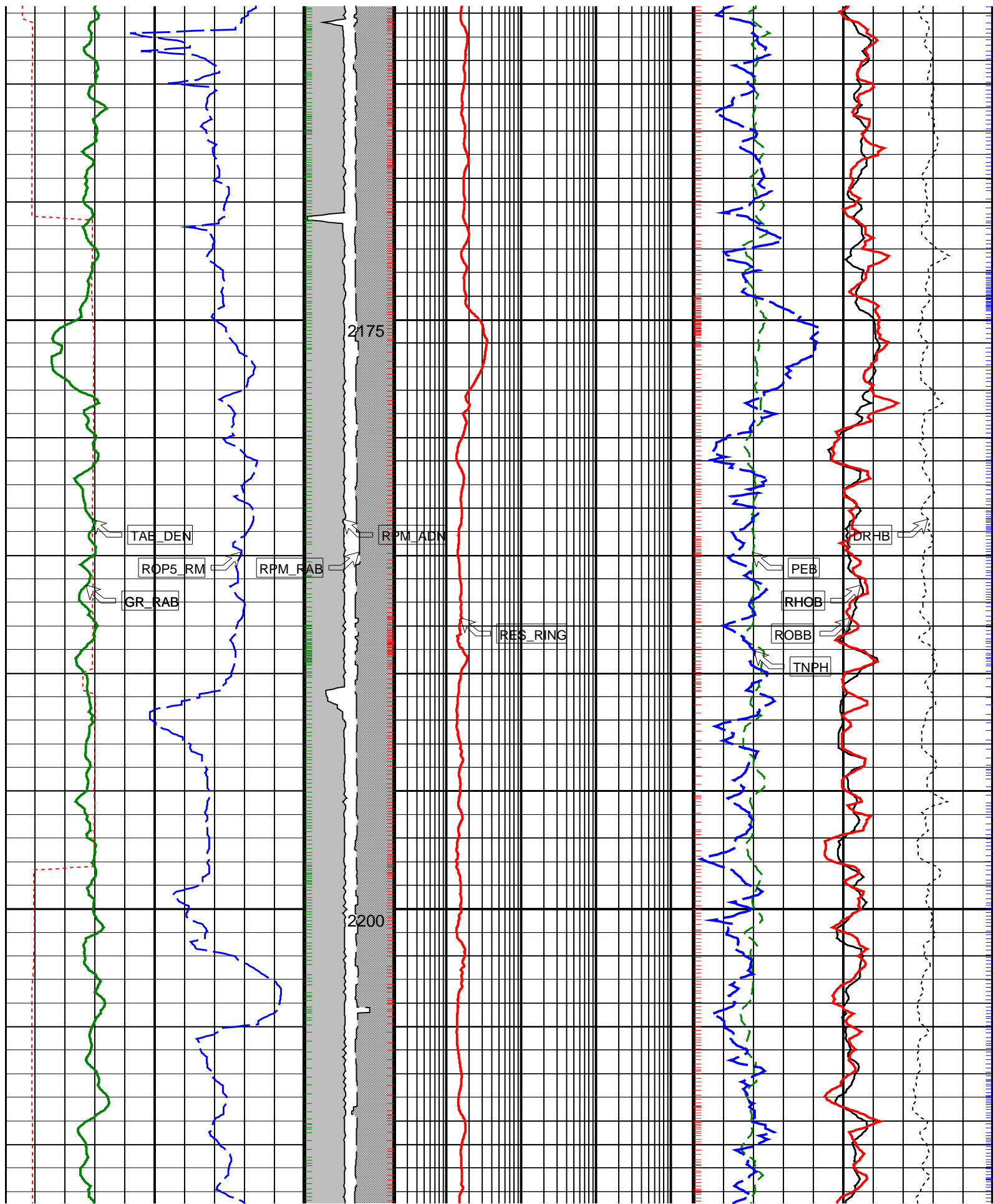


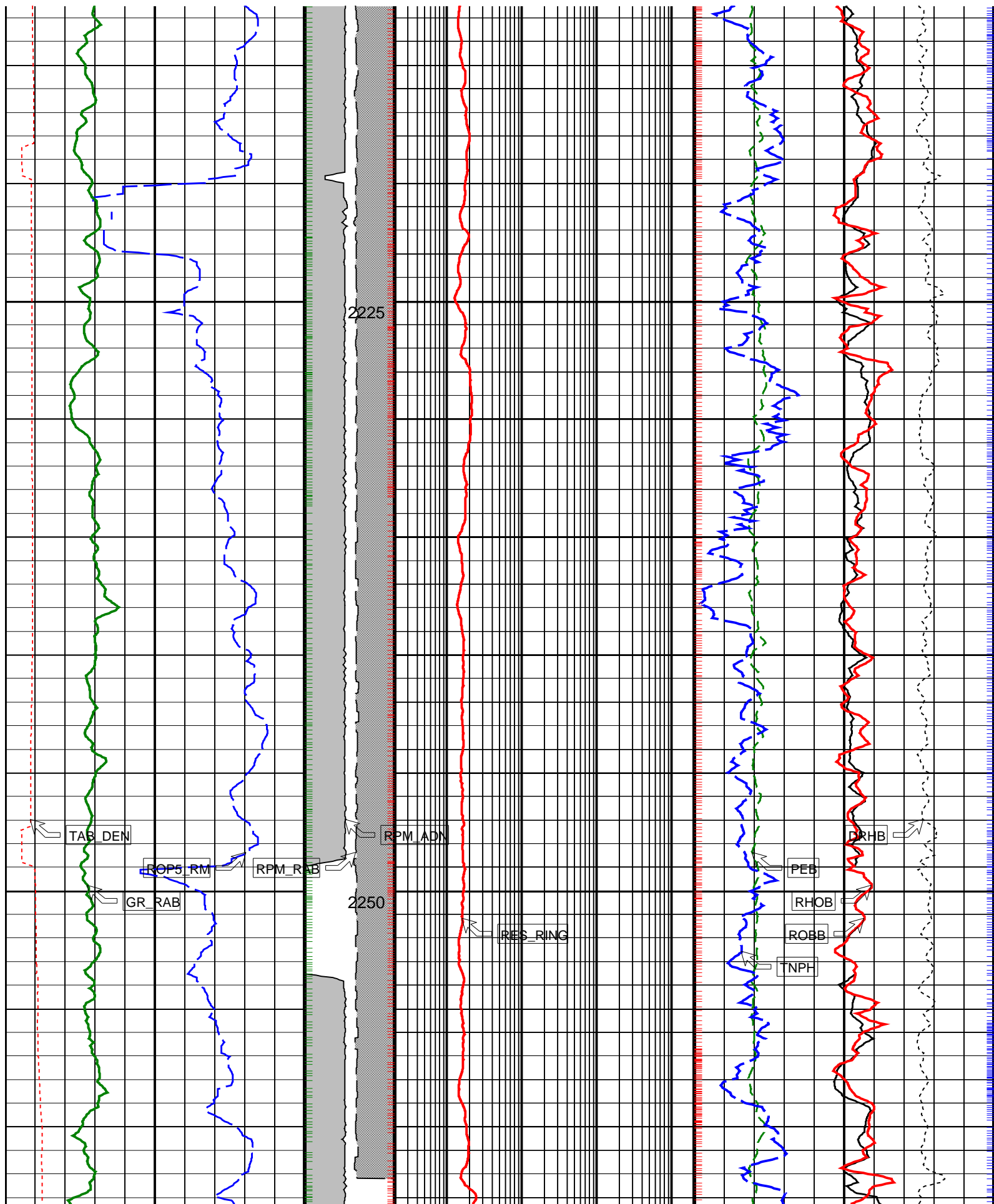


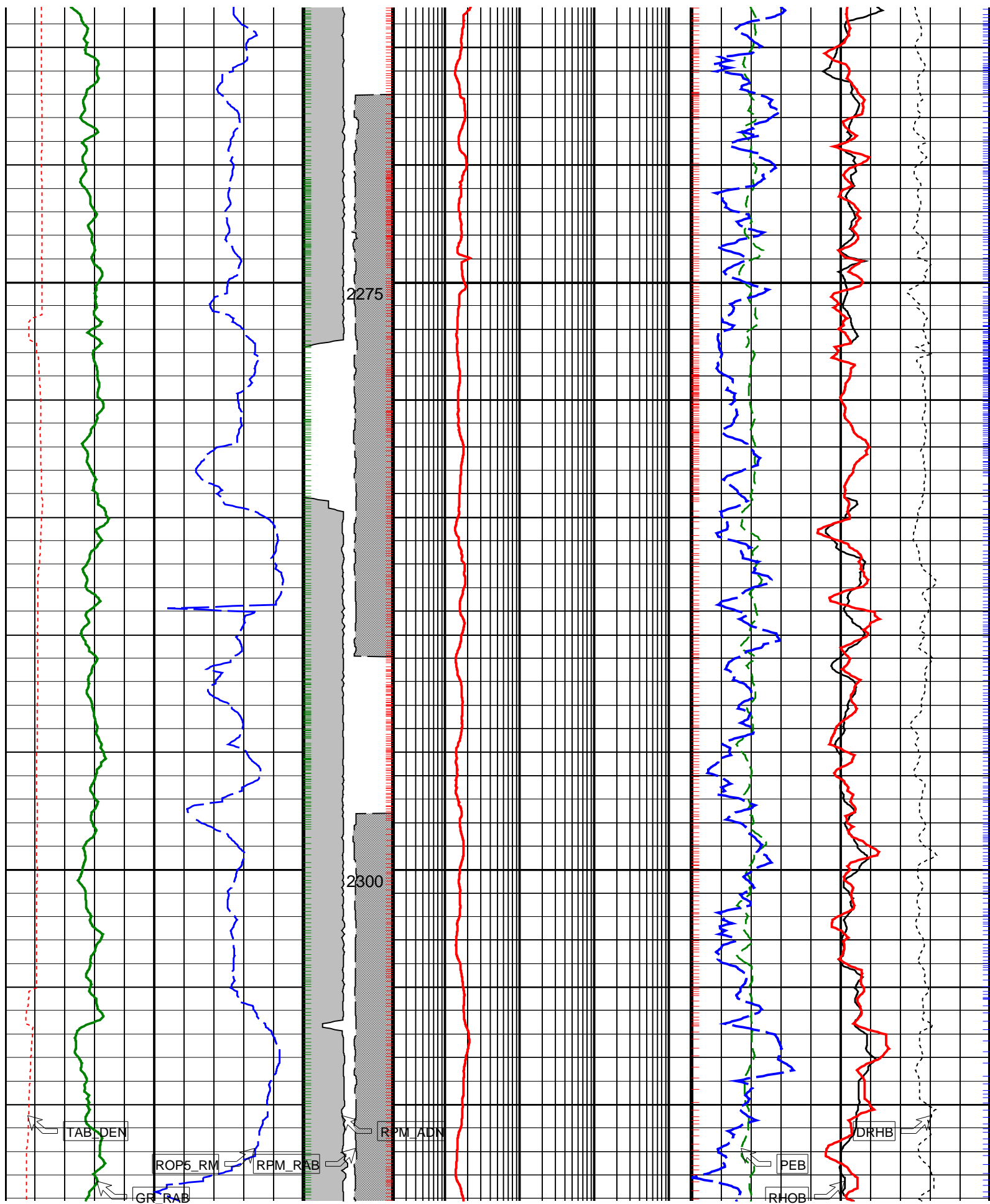


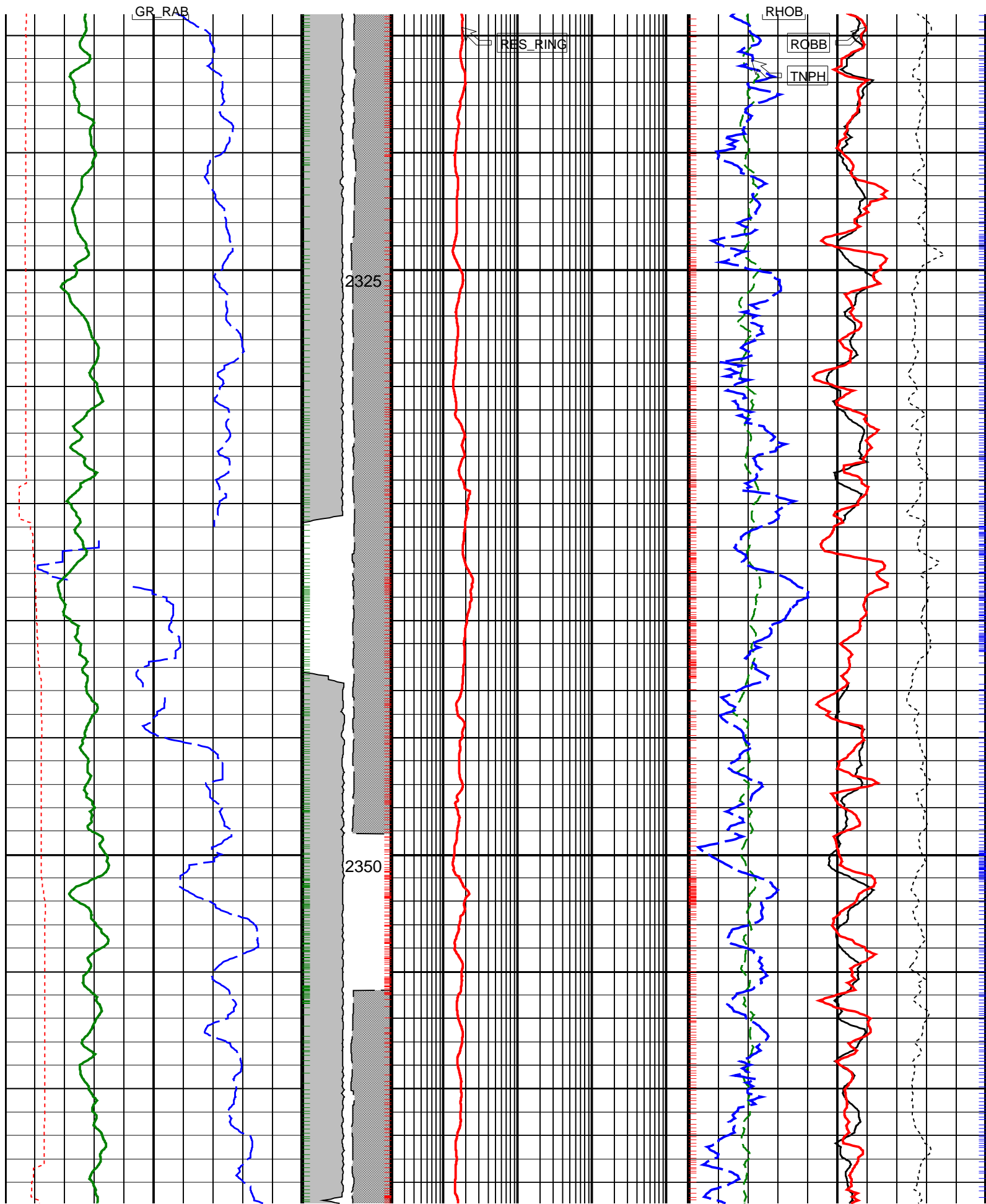


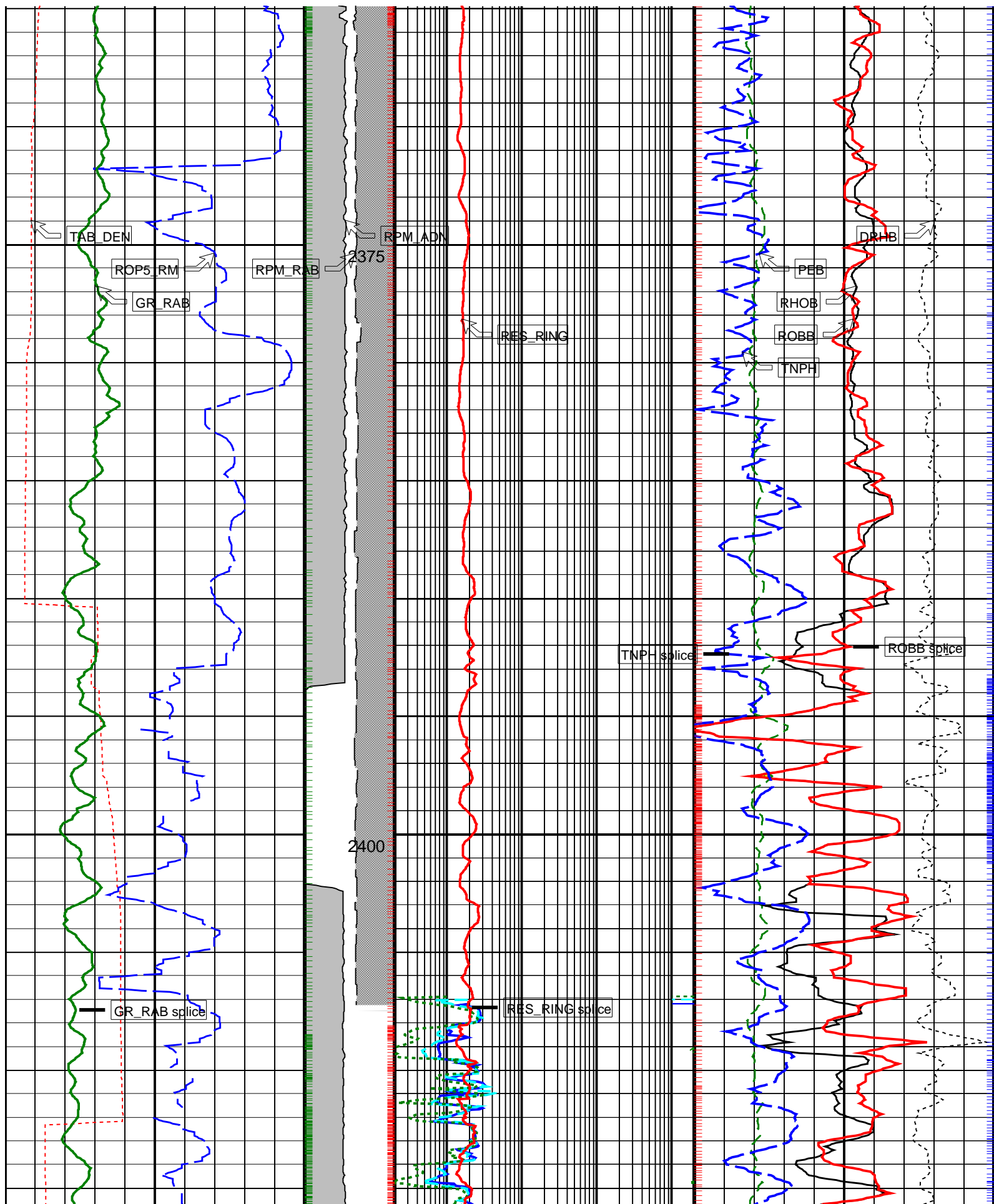


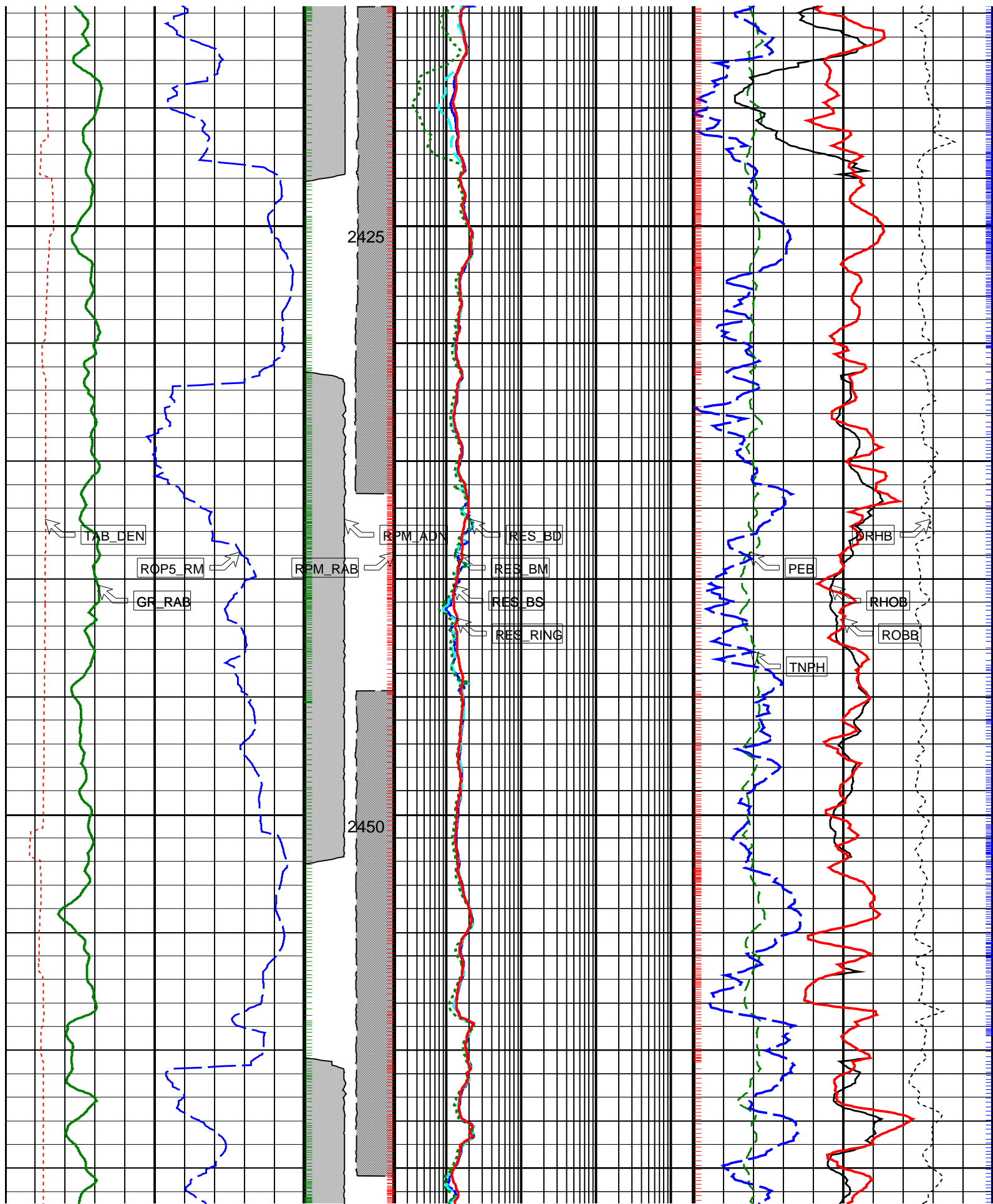


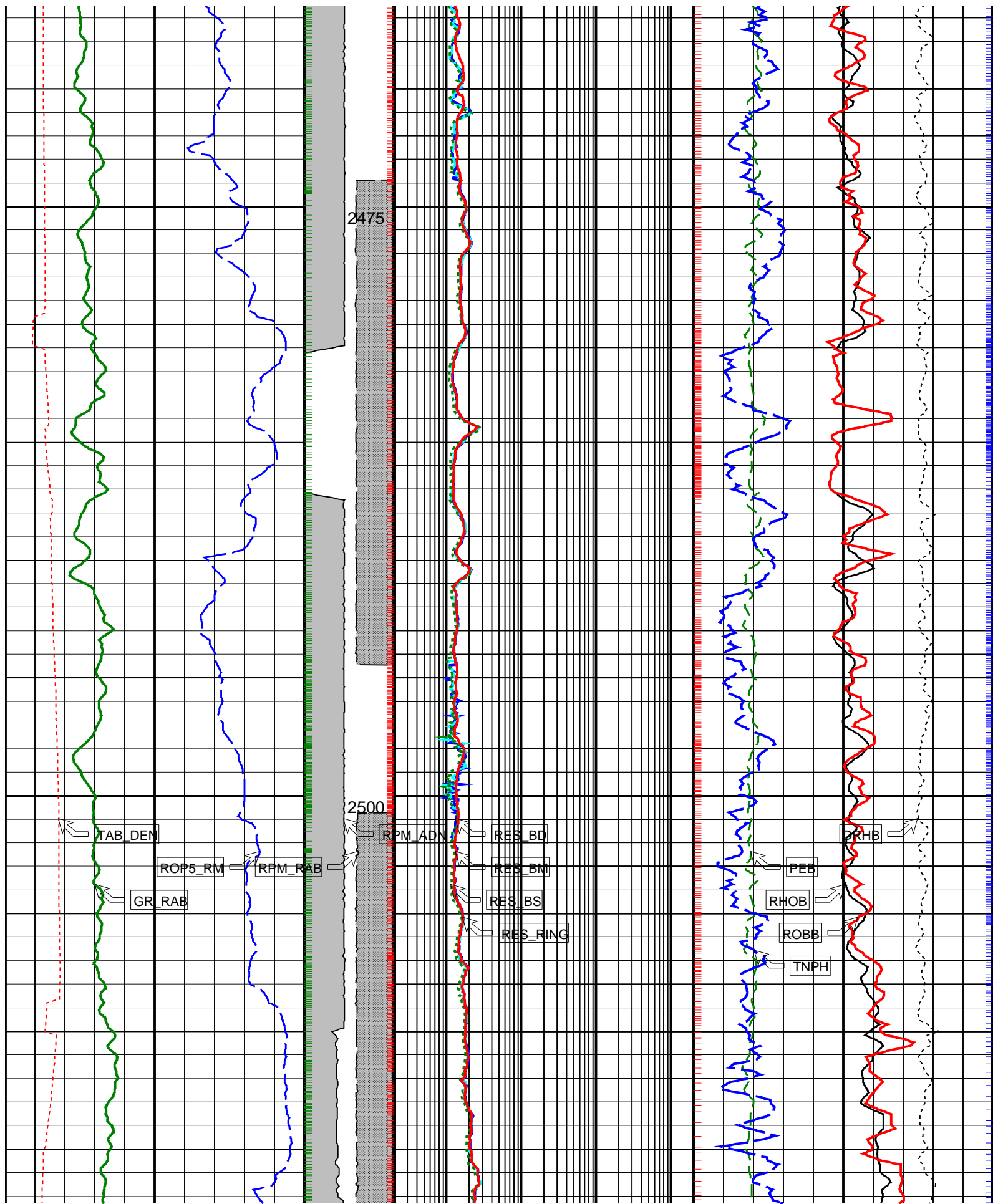


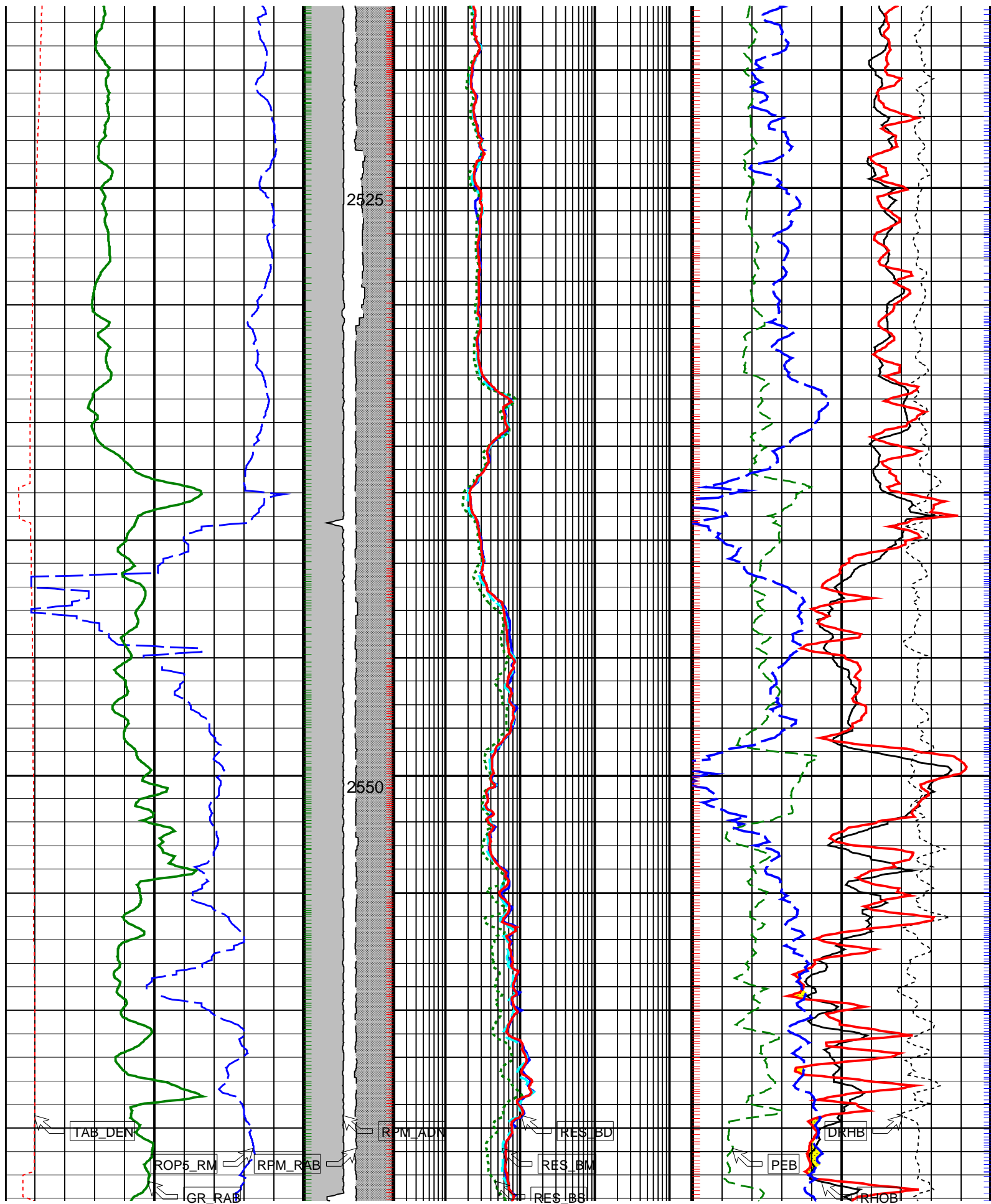












GR_RAB

RES_BS

RES_RING

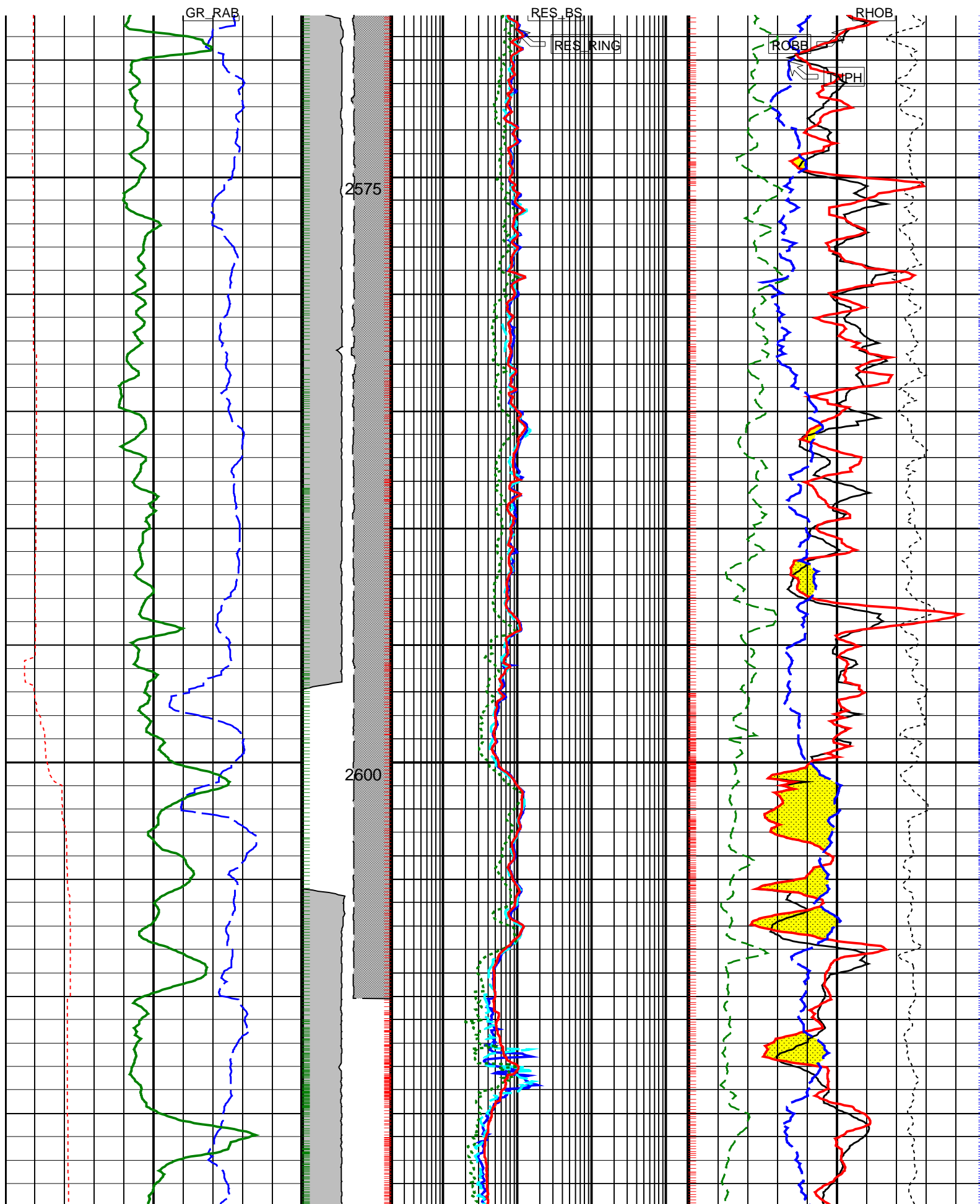
RHOB

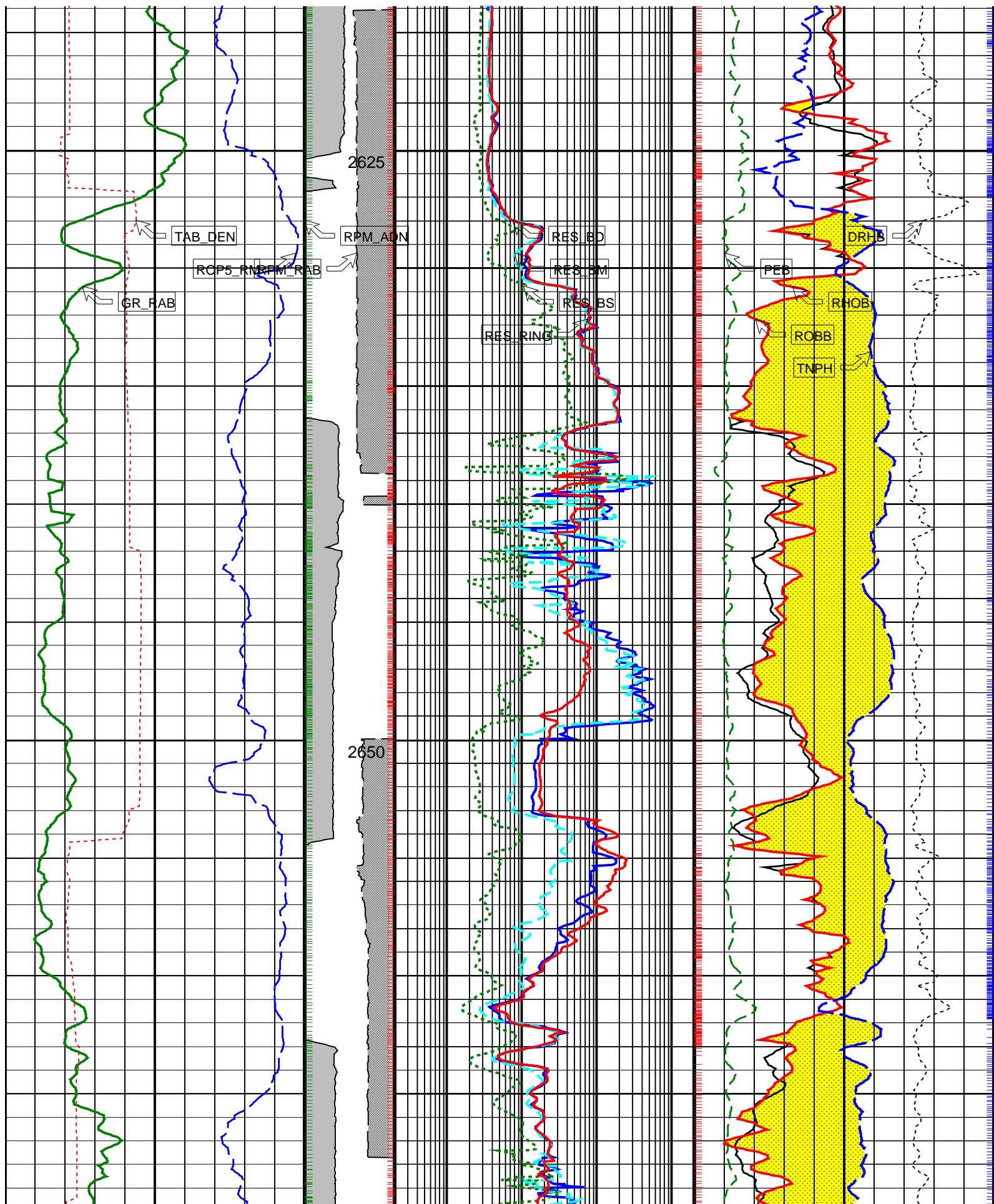
ROBP

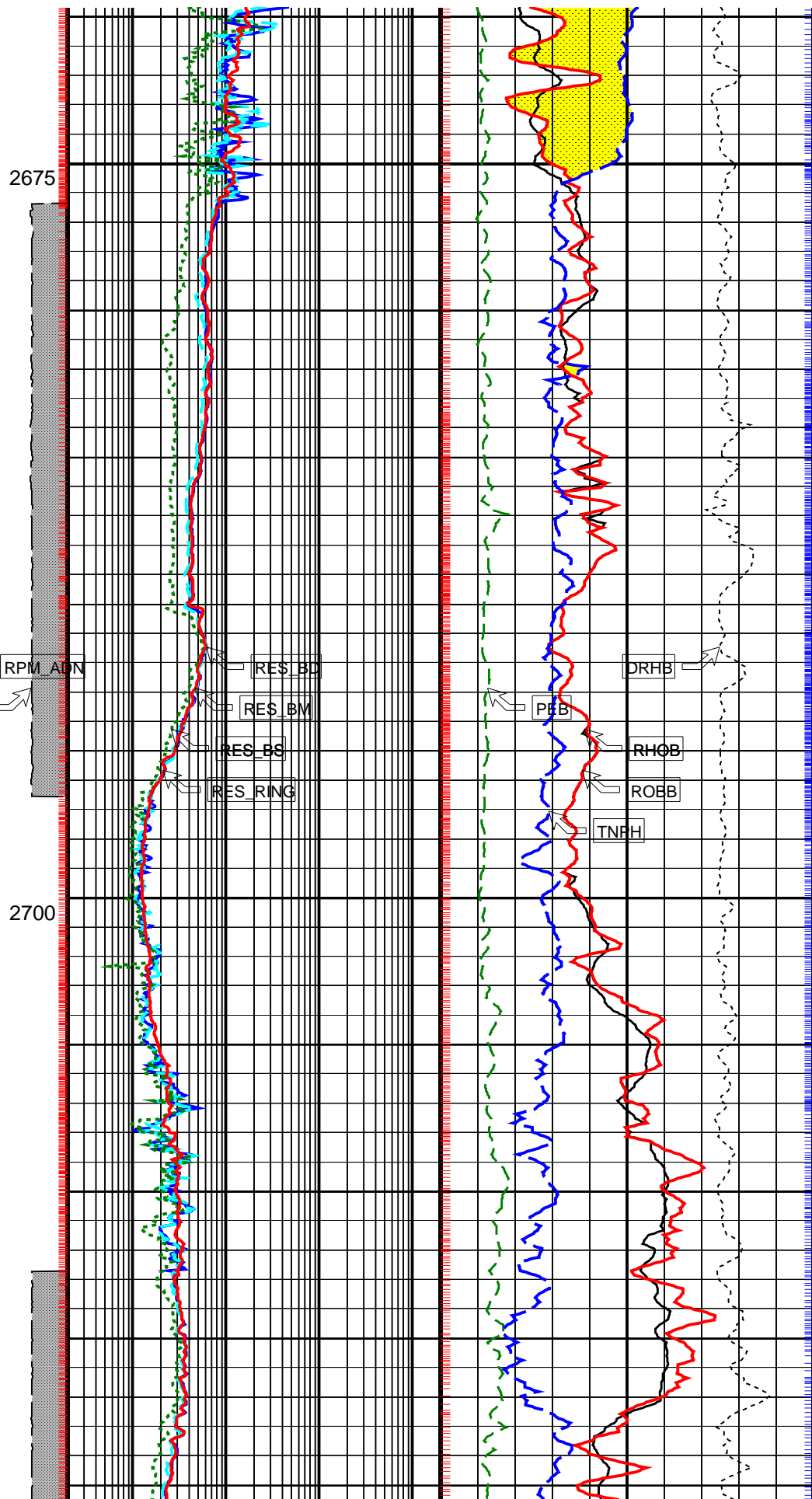
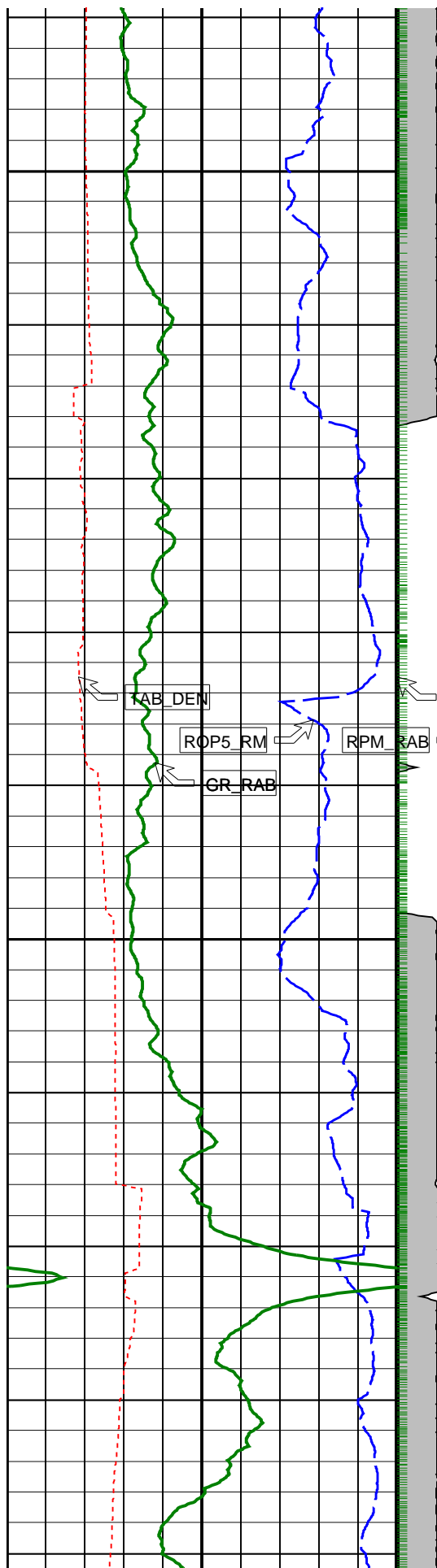
NPH

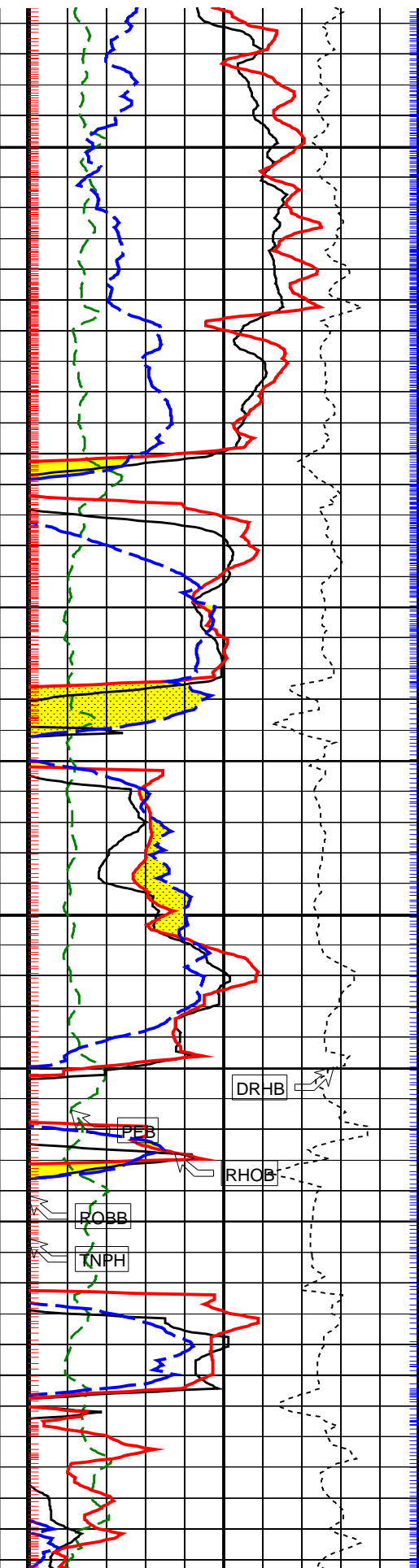
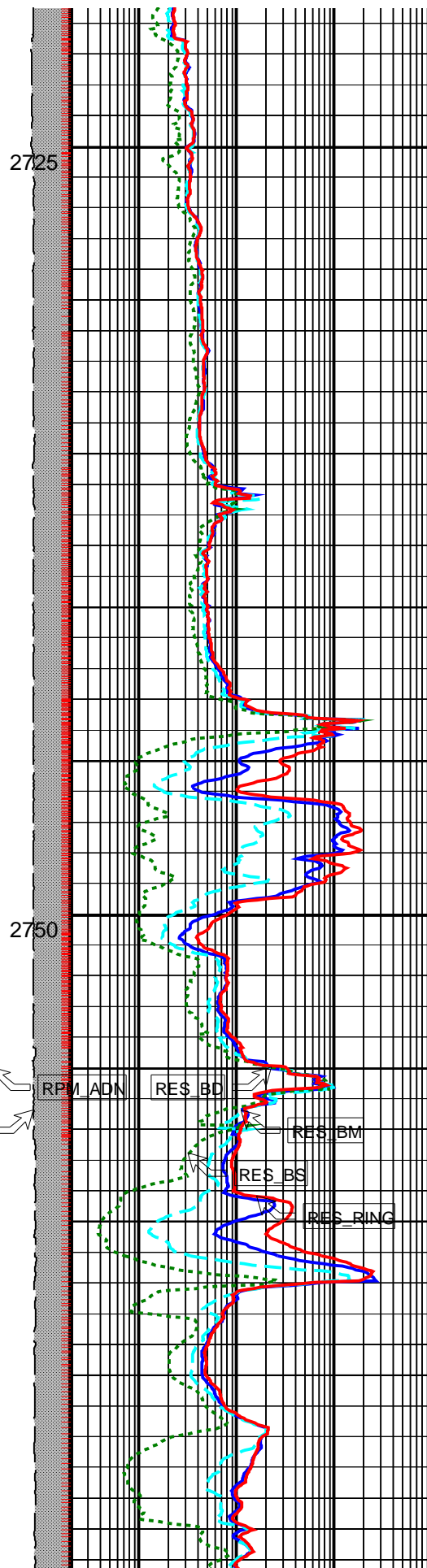
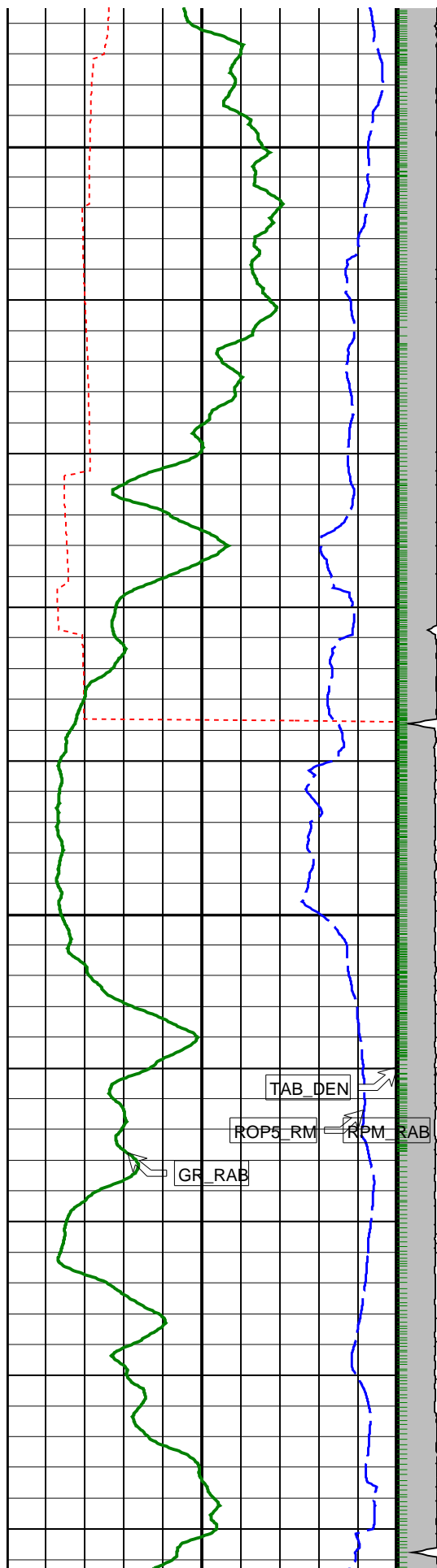
2575

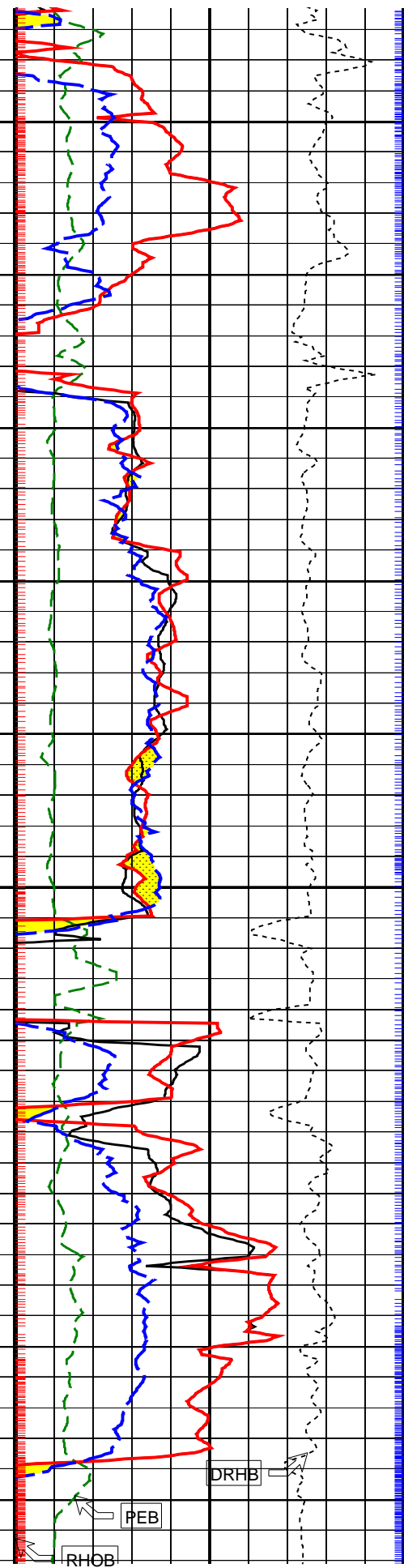
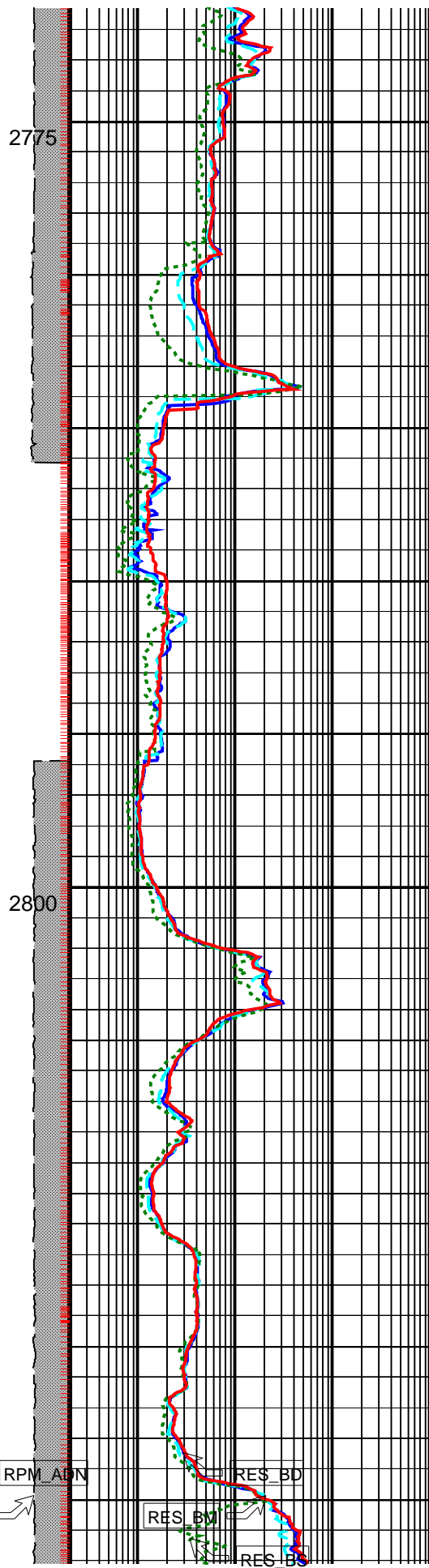
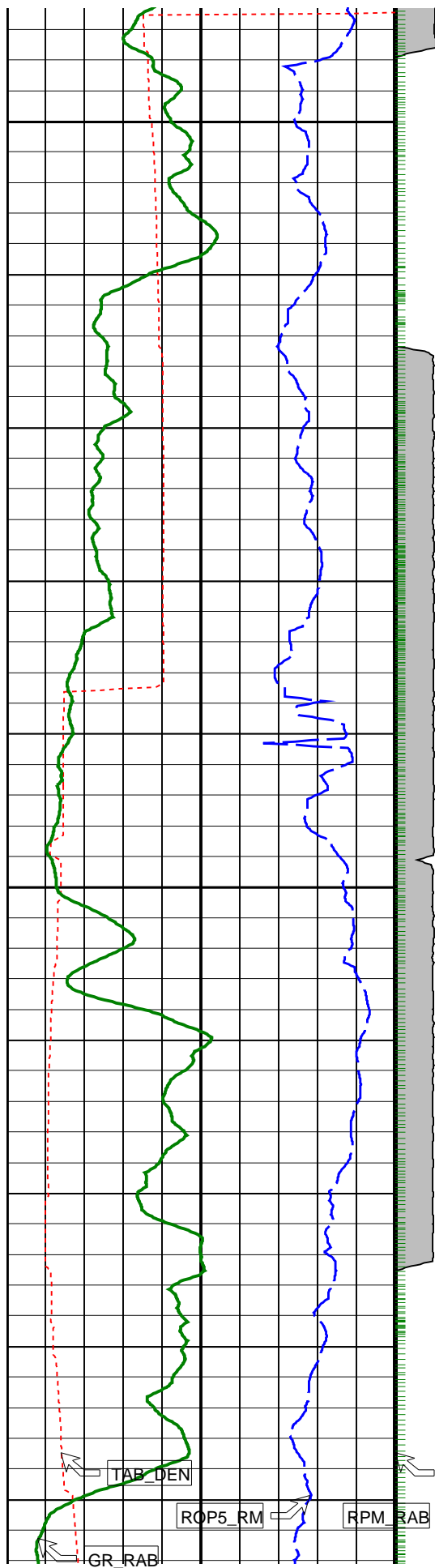
2600

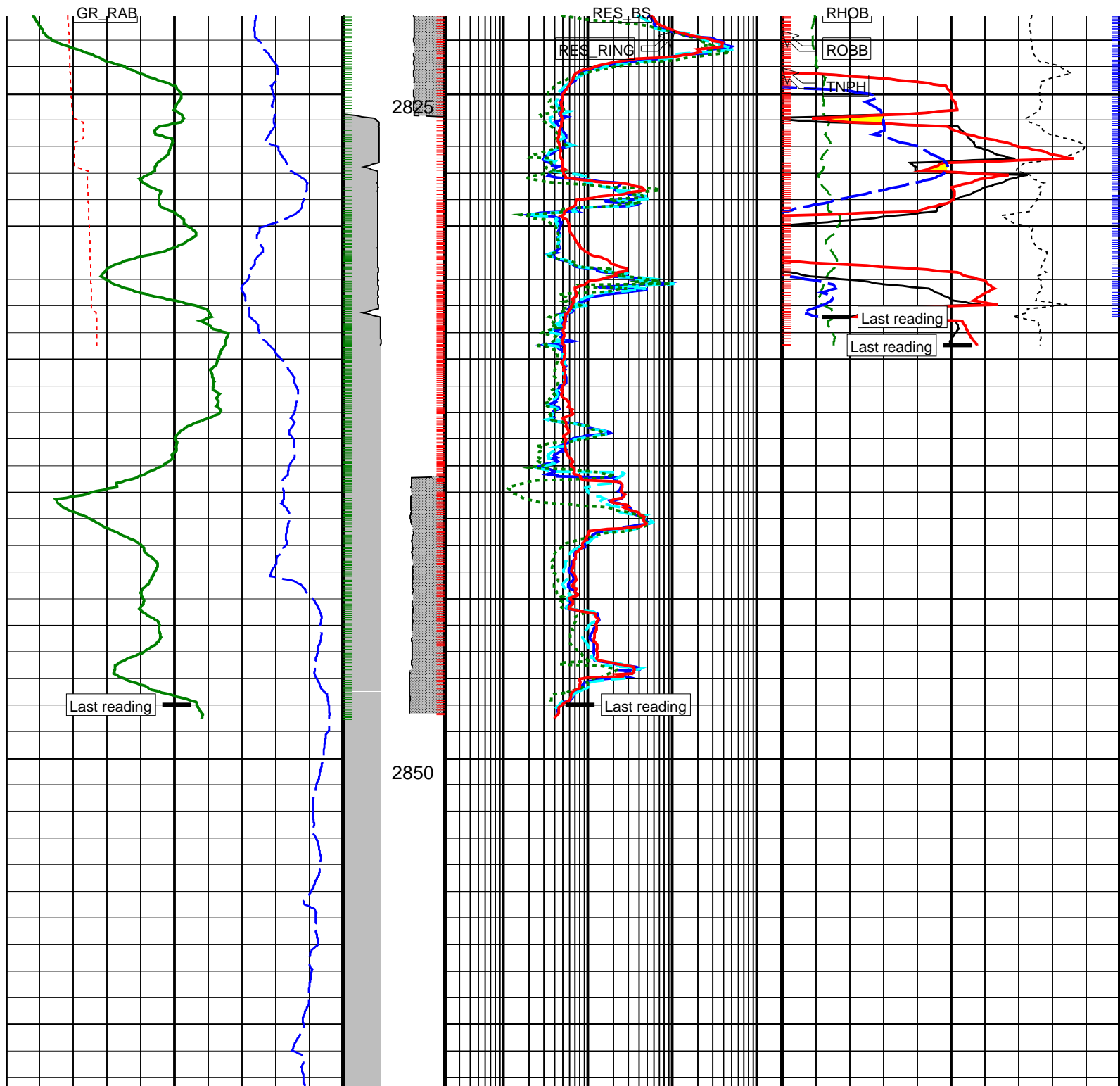












<div>Density Time After Bit (TAB_DEN) (HR)</div> <div>010</div>	<div>ADN Rotational Speed (RPM_ADN) (RPM)</div> <div>0300</div>	<div>Deep Button Resistivity (RES_BD) (OHMM)</div> <div>0.22000</div>	<div>Bulk Density Correction, Bottom (DRHB) (G/C3)</div> <div>-0.750.25</div>
<div>RAB Gamma Ray (GR_RAB) (GAPI)</div> <div>0200</div>	<div>RAB Rotational Speed (RPM_RAB) (RPM)</div> <div>3000</div>	<div>Medium Button Resistivity (RES_BM) (OHMM)</div> <div>0.22000</div>	<div>Photoelectric Factor, Bottom (PEB) (----</div> <div>020</div>

Rate of Penetration, Averaged over Last

Shallow Button Resistivity (RES_BS)

Bulk Density (RHOB)

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

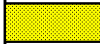

Density Ticks, 0.1 ft









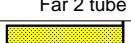







Neutron Ticks, 0.1 ft



- Gamma Ray Samples
- Ring Samples

RAB	IDEAL Version: ID7_0C_02	MWD_10	IDEAL Version: ID7_0C_02
ADN	IDEAL Version: ID7_0C_02		

Master: 21-Aug-2002 2:00
6.75-in. Azimuthal Density Neutron Calibration
Density: Water Block Check

Density: Water Block Check									
Phase	Long spacing water density G/C3			Value	Phase	Short spacing water density G/C3			Value
Master				1.034	Master				1.130
	1.011 (Minimum)	1.026 (Nominal)	1.041 (Maximum)			1.093 (Minimum)	1.118 (Nominal)	1.143 (Maximum)	

Master: 21-Aug-2002 2:00							
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			1.102	Master			-0.8340
	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			1.048	Master			-0.9090
	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			1.071	Master			-0.7690
	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			1.107	Master			-0.7220
	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			1.000	Master			-0.8370
	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			1.108	Master			-0.7300
	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	Phase	Near 1 tube 1 offset CPS		Value
Master			1.088	Master			0
	0.9000 (Minimum)	1.100 (Nominal)	1.300 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
Phase	Near 2 tube 1 gain		Value	Phase	Near 2 tube 1 offset CPS		Value
Master			1.062	Master			0
	0.9000 (Minimum)	1.100 (Nominal)	1.300 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)

Master: 21-Aug-2002 2:00							
6.75-in. Azimuthal Density Neutron Calibration							
Neutron: Water Block Check							
Phase	Far Neutron water porosity V/V		Value	Phase	Near Neutron water porosity V/V		Value
Master			1.000	Master			1.000
	0.9000 (Minimum)	1.000 (Nominal)	1.150 (Maximum)		0.9000 (Minimum)	1.000 (Nominal)	1.150 (Maximum)

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

Primary Equipment:

Tool Name and Serial Number

RAB6 - CA













136

Tool Name and Serial Number
Calibration Status


RAB6 – CA
Valid

136

Master: 22–Aug–2002 13:30

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			0.9969	Master			0.9980	Master			0.9945
	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			0.9952	Master			0.9930	Master			0.9935
	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			0.9977	Master			0.9982	Master			0.9983
	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			0.9989	Master			0.9936	Master			0.9942
	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: 22–Aug–2002 13:30

6.75–in. Resistivity At–the–Bit Calibration											
Gamma Ray: Blanket											
Phase		Gamma ray factor								Value	
Master										0.8809	
		0.7500 (Minimum)	1.000 (Nominal)						1.250 (Maximum)		













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

Primary Equipment:
Tool Name and Serial Number
Calibration Status

RAB6 – CA
Valid

160

Master: 28–Aug–2002 6:45

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			0.9974	Master			0.9993	Master			1.002
	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			1.003	Master			0.9986	Master			0.9997
	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			1.006	Master			1.007	Master			1.002
	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			1.004	Master			1.012	Master			1.013

Master		1.004	Master		1.012	Master		1.013
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: 28-Aug-2002 6:45		
6.75-in. Resistivity At-the-Bit Calibration		
Gamma Ray: Blanket		
Phase	Gamma ray factor	Value
Master		0.8590
0.7500 (Minimum)	1.000 (Nominal)	1.250 (Maximum)

ANADRILL
SCHLUMBERGER

Survey report 2-Sep-2002 20:25:20 Page 1 of 5

Client.....: Esso Australia Ltd.
Field.....: Tuna

Well.....: TNA A-30 Spud date.....: 22-Aug-2002
API number.....: Last survey date.....: 02-Sep-02
Engineers.....: L. Bon, J. Dolan, K. Handley Total accepted surveys...: 103
MD of first survey.....: 141.57 m
MD of last survey.....: 2862.00 m

RIG.....: ISDL 453
STATE.....: Victoria

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

----- Depth reference-----
Permanent datum.....: MEAN SEA LEVEL Magnetic dip.....: -68.69 degrees

Depth reference.....: Driller's Pipe Tally
GL above permanent.....: -59.40 m
KB above permanent.....: 31.32 m
DF above permanent.....: 31.32 m

----- Geomagnetic data -----
Magnetic model.....: BGGM version 2001
Magnetic date.....: 20-Aug-2002
Magnetic field strength..: 1200.32 HCNT
Magnetic dec (+E/W-).....: 13.16 degrees

----- MWD survey Reference Criteria -----
Reference G.....: 1000.02 mGal
Reference H.....: 1200.32 HCNT
Reference Dip.....: -68.69 degrees
Tolerance of G.....: (+/-) 2.50 mGal
Tolerance of H.....: (+/-) 6.00 HCNT
Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections -----
Magnetic dec (+E/W-).....: 13.16 degrees
Grid convergence (+E/W-)..: -0.88 degrees
Total az corr (+E/W-).....: 14.04 degrees
(Total az corr = magnetic dec - grid conv)
Sag applied (Y/N).....: No degree: 0.00

Azimuth from rotary table to target: 64.25 degrees

[(c)2002 Anadrill IDEAL ID7_OC_02]
ANADRILL SCHLUMBERGER Survey Report 2-Sep-2002 20:25:20 Page 2 of 5

Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/10m)	Srvy tool type	Tool qual type
1	141.57	5.19	335.25	0.00	141.51	0.77	3.67	4.40	1.87	50.17	5.40	TIP	-
2	161.00	3.86	321.90	19.43	160.88	0.65	4.99	3.63	3.29	36.06	0.87	GYR	-
3	170.00	2.48	290.70	9.00	169.87	0.45	5.29	3.26	3.69	31.64	2.40	GYR	-
4	180.30	2.44	282.10	10.30	180.16	0.12	5.42	2.83	3.96	27.65	0.36	GYR	-
5	190.00	1.95	232.10	9.70	189.85	-0.20	5.36	2.50	4.05	25.06	1.97	GYR	-
6	198.60	2.04	226.50	8.60	198.45	-0.49	5.16	2.28	4.00	23.81	0.25	GYR	-
7	202.00	1.95	196.30	3.40	201.85	-0.59	5.07	2.22	3.95	23.65	3.07	GYR	-

6	198.60	2.04	226.50	8.60	198.45	-0.49	5.16	2.28	4.00	23.81	0.25	GYR	-
7	202.00	1.95	196.30	3.40	201.85	-0.59	5.07	2.22	3.95	23.65	3.07	GYR	-
8	215.60	2.10	181.10	13.60	215.44	-0.85	4.60	2.15	3.62	25.06	0.41	GYR	-
9	230.00	0.95	286.20	14.40	229.83	-1.06	4.37	2.03	3.52	24.94	1.75	GYR	-
10	245.00	4.08	326.00	15.00	244.82	-1.23	4.84	1.61	4.16	18.40	2.27	GYR	-
11	262.60	6.81	328.10	17.60	262.34	-1.44	6.25	0.71	5.81	6.47	1.56	GYR	-
12	298.48	13.78	346.48	35.88	297.63	-0.76	12.22	-1.42	11.95	353.38	2.12	MWD	6-axis
13	329.37	14.54	3.03	30.89	327.59	1.88	19.67	-2.08	19.02	354.00	1.33	MWD	6-axis
14	364.34	16.63	21.01	34.97	361.29	7.64	28.73	-0.05	27.30	359.91	1.50	MWD	6-axis
15	384.29	17.03	34.38	19.95	380.39	12.25	33.81	2.63	32.06	4.45	1.95	MWD	6-axis
16	412.85	19.71	52.41	28.56	407.52	20.59	40.21	8.81	38.65	12.36	2.19	MWD	6-axis
17	441.27	24.95	63.98	28.42	433.81	31.29	45.76	18.01	46.01	21.48	2.40	MWD	6-axis
18	469.94	30.52	68.22	28.67	459.18	44.61	51.12	30.21	55.65	30.58	2.06	MWD	6-axis
19	498.49	35.29	68.48	28.55	483.14	60.08	56.84	44.62	68.15	38.14	1.67	MWD	6-axis
20	526.92	39.31	68.78	28.43	505.75	77.25	63.12	60.66	83.19	43.87	1.42	MWD	6-axis
21	555.02	40.81	69.02	28.10	527.26	95.28	69.63	77.54	99.72	48.08	0.54	MWD	6-axis
22	584.04	42.58	68.14	29.02	548.93	114.53	76.68	95.50	117.90	51.24	0.64	MWD	6-axis
23	612.19	46.18	63.18	28.15	569.05	134.19	84.81	113.42	136.99	53.21	1.78	MWD	6-axis
24	641.18	49.79	61.45	28.99	588.45	155.71	94.82	132.48	158.26	54.41	1.32	MWD	6-axis
25	669.84	55.31	61.95	28.66	605.87	178.44	105.60	152.51	180.83	55.30	1.93	MWD	6-axis
26	697.69	59.09	62.71	27.85	620.96	201.83	116.47	173.24	204.06	56.09	1.38	MWD	6-axis
27	725.97	62.88	63.64	28.28	634.67	226.55	127.62	195.30	228.61	56.84	1.37	MWD	6-axis
28	754.87	65.08	63.77	28.90	647.35	252.52	139.13	218.59	254.40	57.52	0.76	MWD	6-axis
29	783.26	67.76	63.40	28.39	658.70	278.53	150.70	241.89	280.27	58.08	0.95	MWD	6-axis
30	812.07	68.20	63.20	28.81	669.50	305.24	162.70	265.75	306.87	58.52	0.17	MWD	6-axis

[(c)2002 Anadrill IDEAL ID7_OC_02]
ANADRILL SCHLUMBERGER Survey Report

2-Sep-2002 20:25:20

Page 3 of 5

Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 10m)	Srvy tool type	Tool qual type
31	849.18	67.93	64.03	37.11	683.37	339.66	178.00	296.58	341.17	59.03	0.22	MWD	6-axis
32	877.21	66.92	63.52	28.03	694.13	365.54	189.44	319.80	366.96	59.36	0.40	MWD	6-axis
33	905.55	66.11	63.23	28.34	705.42	391.53	201.09	343.04	392.89	59.62	0.30	MWD	6-axis
34	934.29	65.40	62.76	28.74	717.22	417.72	212.98	366.39	419.05	59.83	0.29	MWD	6-axis
35	962.68	65.13	62.61	28.39	729.10	443.50	224.82	389.30	444.80	59.99	0.11	MWD	6-axis
36	991.59	64.40	62.43	28.91	741.43	469.64	236.88	412.50	470.93	60.13	0.26	MWD	6-axis
37	1019.43	67.41	63.46	27.84	752.79	495.04	248.44	435.13	496.31	60.28	1.13	MWD	6-axis
38	1047.66	66.80	63.49	28.23	763.78	521.04	260.05	458.40	522.28	60.43	0.22	MWD	6-axis
39	1076.02	66.44	63.42	28.36	775.03	547.07	271.69	481.68	548.27	60.58	0.13	MWD	6-axis
40	1105.19	67.44	64.15	29.17	786.45	573.91	283.54	505.76	575.07	60.72	0.41	MWD	6-axis
41	1133.55	67.19	64.42	28.36	797.39	600.08	294.90	529.34	601.18	60.88	0.12	MWD	6-axis
42	1161.95	67.09	64.68	28.40	808.43	626.24	306.14	552.97	627.30	61.03	0.09	MWD	6-axis
43	1191.26	67.10	64.60	29.31	819.83	653.24	317.70	577.36	654.25	61.18	0.03	MWD	6-axis
44	1219.45	66.89	65.03	28.19	830.85	679.19	328.75	600.85	680.14	61.32	0.16	MWD	6-axis
45	1248.06	66.61	65.07	28.61	842.14	705.47	339.83	624.68	706.37	61.45	0.10	MWD	6-axis
46	1276.46	66.23	65.05	28.40	853.50	731.50	350.81	648.28	732.35	61.58	0.13	MWD	6-axis
47	1304.92	66.25	64.81	28.46	864.97	757.55	361.85	671.87	758.35	61.69	0.08	MWD	6-axis
48	1333.37	66.16	65.44	28.45	876.45	783.58	372.80	695.49	784.34	61.81	0.21	MWD	6-axis
49	1361.83	65.70	65.35	28.46	888.06	809.56	383.62	719.12	810.28	61.92	0.16	MWD	6-axis
50	1390.44	66.21	65.57	28.61	899.71	835.68	394.47	742.88	836.35	62.03	0.19	MWD	6-axis
51	1419.15	66.41	65.75	28.71	911.39	862.29	405.44	767.14	862.92	62.14	0.09	MWD	6-axis
52	1447.72	65.92	65.66	28.57	922.79	888.09	416.06	790.66	888.68	62.25	0.17	MWD	6-axis
53	1476.39	65.69	65.98	28.67	934.54	914.23	426.77	814.51	914.78	62.35	0.13	MWD	6-axis
54	1505.10	65.99	65.73	28.71	946.29	940.41	437.48	838.42	940.92	62.44	0.13	MWD	6-axis
55	1533.68	65.71	65.54	28.58	957.99	966.49	448.24	862.17	966.96	62.53	0.12	MWD	6-axis
56	1562.36	66.13	65.45	28.68	969.69	992.66	459.10	886.00	993.11	62.61	0.15	MWD	6-axis
57	1590.84	65.99	65.21	28.48	981.25	1018.69	469.97	909.65	1019.11	62.68	0.09	MWD	6-axis
58	1618.84	65.74	65.32	28.00	992.69	1044.24	480.66	932.86	1044.64	62.74	0.10	MWD	6-axis
59	1647.57	65.52	65.65	28.73	1004.55	1070.40	491.52	956.67	1070.78	62.81	0.13	MWD	6-axis
60	1676.76	64.94	65.63	29.19	1016.78	1096.90	502.45	980.82	1097.25	62.88	0.20	MWD	6-axis

[(c)2002 Anadrill IDEAL ID7_OC_02]
ANADRILL SCHLUMBERGER Survey Report

2-Sep-2002 20:25:20

Page 4 of 5

Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 10m)	Srvy tool type	Tool qual type
61	1705.38	65.72	65.83	28.62	1028.73	1122.90	513.14	1004.52	1123.23	62.94	0.28	MWD	6-axis
62	1734.91	65.29	65.75	29.53	1040.97	1149.76	524.16	1029.03	1150.07	63.01	0.15	MWD	6-axis
63	1763.45	66.14	65.53	28.54	1052.71	1175.77	534.89	1052.73	1176.05	63.07	0.31	MWD	6-axis
64	1792.45	66.19	65.58	29.00	1064.43	1202.29	545.87	1076.88	1202.55	63.12	0.02	MWD	6-axis
65	1821.50	66.09	65.72	29.05	1076.18	1228.85	556.82	1101.08	1229.10	63.17	0.06	MWD	6-axis
66	1850.59	66.42	65.81	29.09	1087.89	1255.47	567.75	1125.37	1255.70	63.23	0.12	MWD	6-axis
67	1879.80	67.05	65.93	29.21	1099.43	1282.29	578.72	1149.86	1282.50	63.28	0.22	MWD	6-axis
68	1908.64	66.75	65.97	28.84	1110.74	1308.81	589.53	1174.08	1309.00	63.34	0.10	MWD	6-axis
69	1937.75	65.98	66.36	29.11	1122.41	1335.46	600.31	1198.47	1335.64	63.39	0.29	MWD	6-axis
70	1966.62	67.05	66.51	28.87	1133.92	1361.92	610.89	1222.74	1362.08	63.45	0.37	MWD	6-axis
71	1995.42	66.59	66.77	28.80	1145.25	1388.38	621.39	1247.05	1388.51	63.51	0.18	MWD	6-axis
72	2024.42	66.81	66.27	29.00	1156.72	1414.99	632.00	1271.48	1415.11	63.57	0.18	MWD	6-axis

71	1995.42	66.59	66.77	28.80	1145.25	1388.38	621.39	1247.05	1388.51	63.51	0.18	MWD	6-axis
72	2024.42	66.81	66.27	29.00	1156.72	1414.99	632.00	1271.48	1415.11	63.57	0.18	MWD	6-axis
73	2053.46	66.76	66.60	29.04	1168.17	1441.66	642.67	1295.94	1441.77	63.62	0.11	MWD	6-axis
74	2082.33	67.22	65.10	28.87	1179.46	1468.22	653.55	1320.19	1468.32	63.66	0.50	MWD	6-axis
75	2111.48	67.19	65.27	29.15	1190.75	1495.09	664.82	1344.58	1495.18	63.69	0.05	MWD	6-axis
76	2140.12	66.80	65.51	28.64	1201.94	1521.45	675.80	1368.55	1521.53	63.72	0.16	MWD	6-axis
77	2168.53	66.62	65.72	28.41	1213.18	1547.54	686.58	1392.31	1547.61	63.75	0.09	MWD	6-axis
78	2197.38	66.66	66.19	28.85	1224.62	1574.01	697.37	1416.50	1574.08	63.79	0.15	MWD	6-axis
79	2226.14	66.83	66.87	28.76	1235.97	1600.42	707.89	1440.74	1600.47	63.83	0.23	MWD	6-axis
80	2255.30	66.78	67.69	29.16	1247.46	1627.18	718.24	1465.46	1627.23	63.89	0.26	MWD	6-axis
81	2283.87	67.01	66.98	28.57	1258.67	1653.43	728.37	1489.71	1653.46	63.94	0.24	MWD	6-axis
82	2313.12	67.24	65.84	29.25	1270.04	1680.36	739.15	1514.41	1680.38	63.98	0.37	MWD	6-axis
83	2341.98	67.19	66.22	28.86	1281.22	1706.95	749.96	1538.72	1706.97	64.02	0.12	MWD	6-axis
84	2370.96	67.60	65.23	28.98	1292.35	1733.70	760.96	1563.11	1733.72	64.04	0.35	MWD	6-axis
85	2399.92	67.81	65.95	28.96	1303.34	1760.48	772.04	1587.51	1760.50	64.07	0.24	MWD	6-axis
86	2429.90	68.23	65.11	29.98	1314.56	1788.28	783.55	1612.81	1788.29	64.09	0.30	MWD	6-axis
87	2458.75	67.43	64.73	28.85	1325.45	1815.00	794.88	1637.02	1815.02	64.10	0.30	MWD	6-axis
88	2487.78	66.52	64.83	29.03	1336.80	1841.71	806.26	1661.18	1841.72	64.11	0.32	MWD	6-axis
89	2516.91	65.73	64.81	29.13	1348.59	1868.35	817.59	1685.28	1868.36	64.12	0.27	MWD	6-axis
90	2545.34	65.89	65.33	28.43	1360.24	1894.28	828.52	1708.80	1894.29	64.13	0.18	MWD	6-axis

[(c)2002 Anadrill IDEAL ID7_OC_02]
ANADRILL SCHLUMBERGER Survey Report

2-Sep-2002 20:25:20

Page 5 of 5

Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/10m)	Srvy tool type	Tool qual type
91	2574.33	66.74	65.56	28.98	1371.88	1920.81	839.55	1732.94	1920.82	64.15	0.30	MWD	6-axis
92	2603.16	67.82	65.51	28.84	1383.02	1947.41	850.57	1757.15	1947.41	64.17	0.37	MWD	6-axis
93	2631.64	68.29	65.15	28.48	1393.67	1973.82	861.60	1781.16	1973.82	64.19	0.20	MWD	6-axis
94	2660.62	68.44	65.11	28.98	1404.35	2000.75	872.93	1805.60	2000.76	64.20	0.05	MWD	6-axis
95	2689.47	69.00	65.79	28.85	1414.82	2027.63	884.09	1830.05	2027.63	64.22	0.29	MWD	6-axis
96	2718.62	69.14	65.98	29.15	1425.24	2054.85	895.22	1854.90	2054.85	64.24	0.08	MWD	6-axis
97	2747.58	68.33	66.24	28.96	1435.74	2081.82	906.15	1879.58	2081.82	64.26	0.29	MWD	6-axis
98	2771.75	68.29	66.10	23.42	1444.67	2104.27	915.21	1900.12	2104.27	64.28	0.02	MWD	6-axis
99	2776.06	68.54	66.10	4.31	1446.26	2108.27	916.84	1903.79	2108.27	64.28	0.06	MWD	6-axis
100	2805.45	68.37	65.90	29.39	1457.05	2135.60	927.97	1928.76	2135.60	64.28	0.09	MWD	6-axis
101	2834.52	68.94	65.80	29.07	1467.63	2162.66	939.04	1953.46	2162.66	64.28	0.02	MWD	6-axis
102	2841.21	68.73	65.90	6.69	1470.05	2168.90	941.59	1959.16	2168.90	64.28	0.32	MWD	6-axis
103	2862.00	68.20	65.90	20.79	1477.68	2188.23	949.49	1976.81	2188.23	64.28	0.26	MWD	Projection to TD

[(c)2002 Anadrill IDEAL ID7_OC_02]

Company: **Esso Australia Ltd.**

Schlumberger

Well: **TNA A-30**

Field: **Tuna**

Rig: **ISDL 453**

State: **Victoria**

**GeoVISION Service
1:200 Measured Depth
Recorded Mode Log**