

State: **Victoria**

Rig: ISDL 453 Field: Tuna Location: Bass Strait Well: TNA A-30 Company: Esso Australia Ltd.	GeoVISION Service 1:200 True Vertical 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-02To 02-Sept-02		Mag dip: -68.69 deg.		Directional Drilling, D&I			
Bore hole record				Casing record			
Hole size		from to		Size		Density	
12 1/4 in.		222.8 m 838.4 m		20 in.		285 lbm/m	
8 1/2 in.		838.4 m 2862.0 m		9 5/8 in.		154 lbm/m	
Mud record				Borehole deviation record			
Type		from to		Min		Max	
Sea Water		164.9 m 838.4 m		0.95 deg.		68.2 deg.	
KCL/PHPA/Glycol		838.4 m 2862.0 m		68.2 deg.		68.7 deg.	
Surface equipment		Software record					
Unit		OLU-FB-924		IDEAL Wis		ID7_OC_02r	
Depth system		PDA		SPM		ID7_OC_10a	
				LWD		See Toolsketch	
				MWD		See Toolsketch	

# Bit Run Summary

[illegible]

Type		KCL/PHPA/GLYCOL									
Mud weight	ppg	10.5	10.1								
Solids	%	10.6	8.3								
Chlorides	mg/l	45,500	39,500								
Rm	ohm-m@°C	0.1382@21	0.1477@20								
Rmf	ohm-m@°C	0.0992@22	0.1136@20								
Rmc	ohm-m@°C	0.271@22	0.338@21								
Potassium	%	4.0	3.75								
<b>Environmental data</b>											
<b>GR</b>											
Mud weight	ppg	10.5	10.1								
Bit size	in.	8.5	8.5								
<b>Resistivity</b>											
<b>Neutron porosity</b>											
Hole Size	in.	8.5	8.5								
Mud weight	ppg	10.5	10.1								
Temperature	°C	70	70								
Mud salinity	ppk	75.1	66.0								
Formation salinity											
Recording rate 1	SEC	10	10								
Recording rate 2	SEC	10	10								
Filtering GR		3 pt	3 pt								
Filtering density		3 pt	3 pt								
Filtering Neutron		3 pt	3 pt								
Company representative		B. Steel	B. Davies								
Anadrill personnel		L. Bon	J. Dolan	K. Handley							

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

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			DOWNHOLE EQ					
6 3/4 in. AD	Neutron	28.7	30.5	6 3/4 in. AD	Neutron	28.7	30.5	
ADSE	Neutron	28.6		ADSE	Neutron	28.6		
8 1/4 in. S	Density	27.7		8 1/4 in. S	Density	27.7		
NSR-M	Density	27.6		NSR-M	Density	27.6		
GSR-J A	UltraSo	27.2		GSR-J A	UltraSo	27.2		
Software: 6	R-O P	26.4		Software: 6	R-O P	26.5		
6 3/4 in. Pow		24.3		6 3/4 in. Pow		24.3		
MDC AC-				MDC AC-				
MDI 116				MDI 116				
MEC 115				MEC 115				
Software: 6	D&I	20.1		Software: 6	D&I	20.2		
	Shallo	14.5			Shallo	14.5		
	Medium	14.4			Medium	14.4		
6 3/4 in. G	Deep	14.2	16.0	6 3/4 in. G	Deep	14.2	16.0	
S/N: 1	Ring R	14.0		S/N: 1	Ring R	14.0		
Software: 6	R-O p	13.9		Software: 6	R-O p	13.9		
	GR	13.7			GR	13.7		
Cross Over Sub		12.9		Cross Over Sub		12.9		
NM Pony		12.3		NM Pony		12.3		
S/N: ASS1				S/N: ASS1				
NM Pony		9.59		NM Pony		9.59		
S/N: ANA9				S/N: ANA9				
PowerPak* Mu		7.89		PowerPak* Mu		7.89		
A675XP S/N: A				A675XP S/N: A				
0.78 deg				0.78 deg				

0.78 deg



0.78 deg

GeoDiamond  
S75HVPX S/N

MAXIMUM STRING DI

ALL LENGTHS I

GeoDiamond  
S75HVPX S/N

MAXIMUM STRING DI

ALL LENGTHS I

## True Vertical Depth Log

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 17:15

## 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

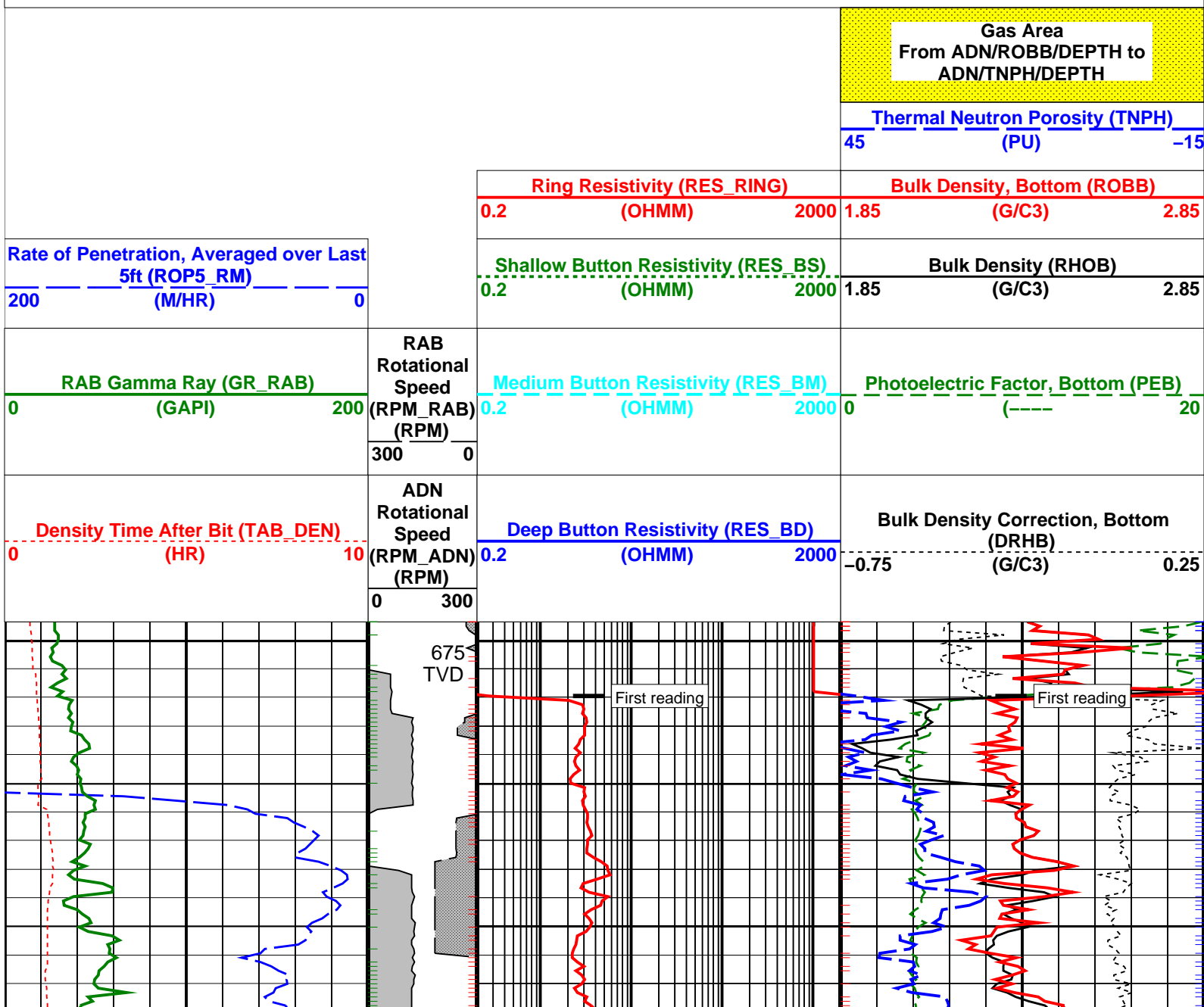
RINGBHCB	RAB: Ring Borehole B Factor	0.000	
RING_KIMP_A	RAB: Ring Impedance Coeff A	0.000	
RING_KIMP_B	RAB: Ring Impedance Coeff B	0.000	
RING_K_FACTOR	RAB: Ring K Factor	0.153	
RMS_RM	Resistivity of Mud Sample (RM)	0.148	ohm.m
RWS_RM	Resistivity of Connate Water (RM)	1.000	ohm.m
SBUTTON_K_FACTOR	RAB: 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	

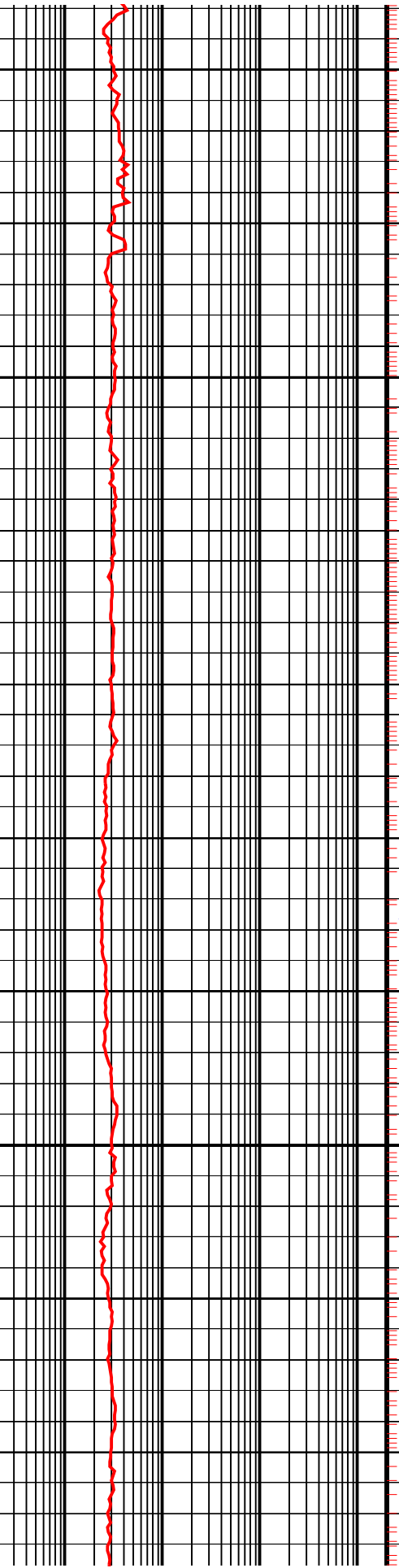
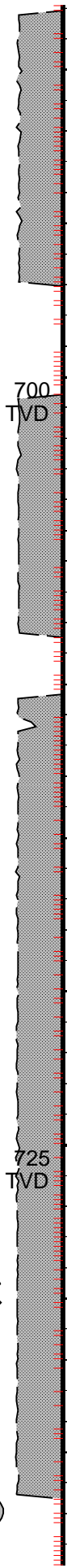
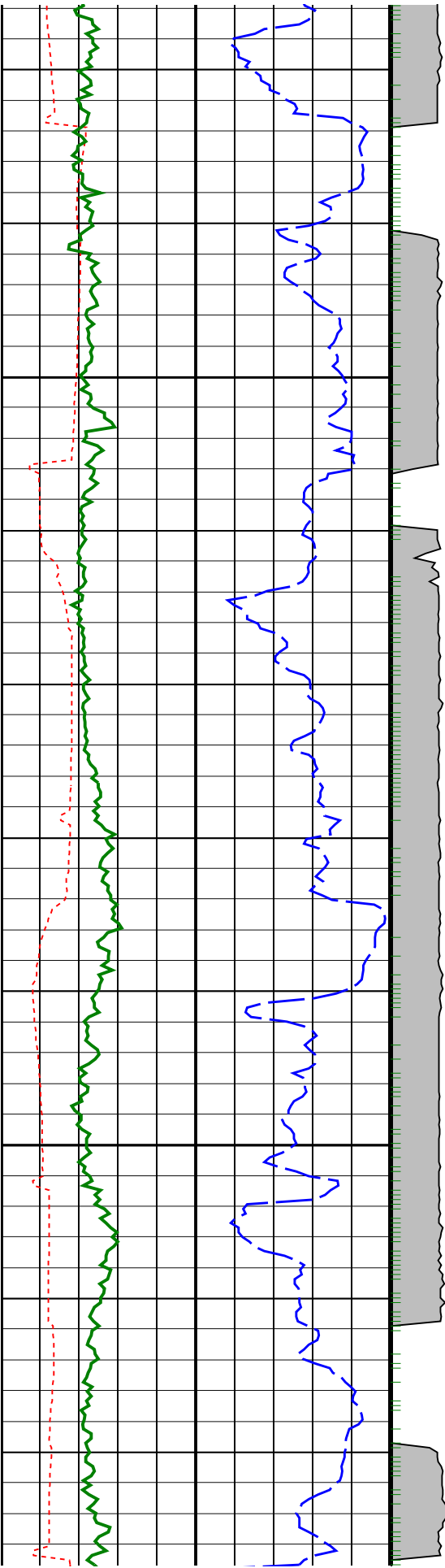
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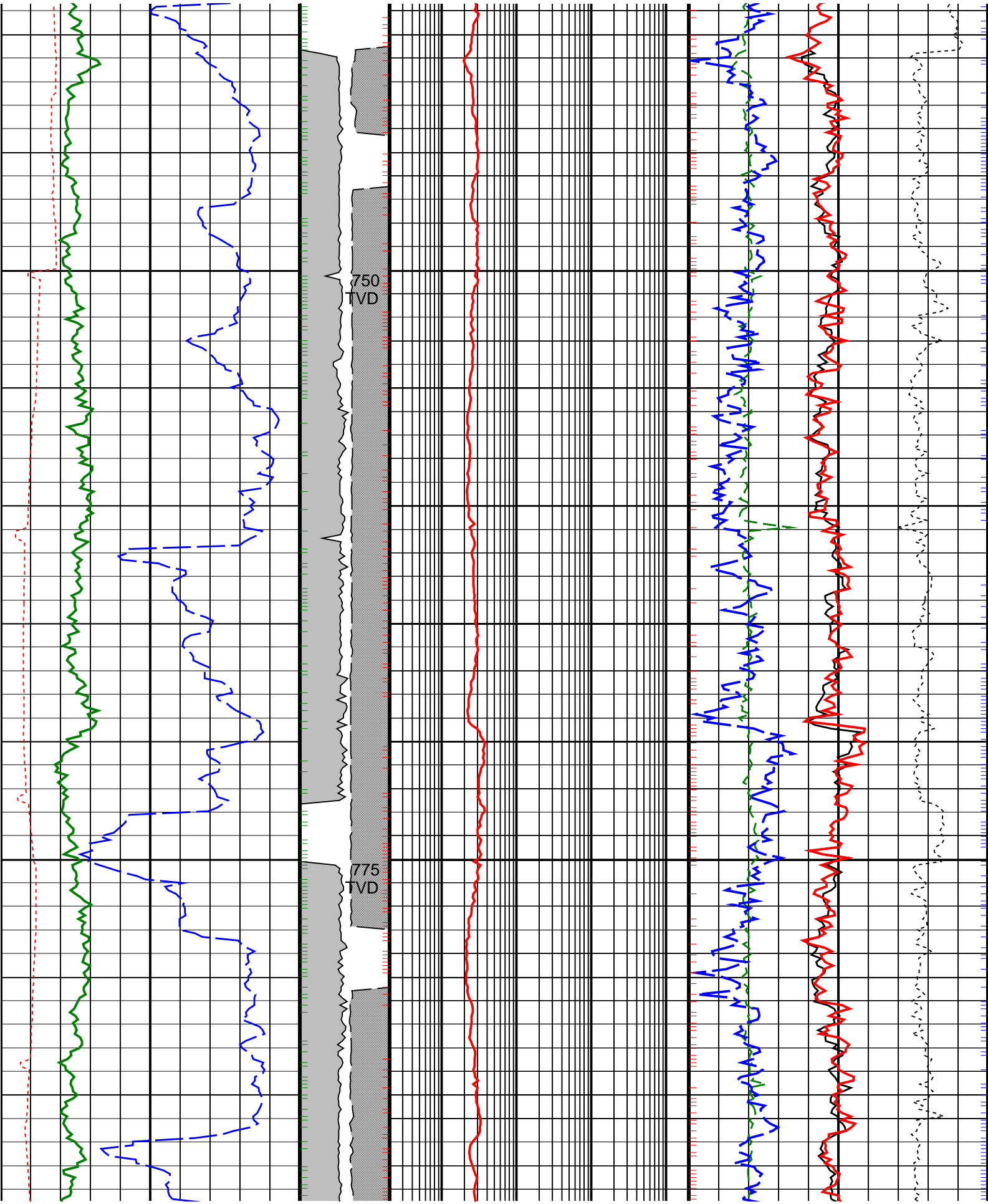
Density Ticks, 0.1 ft

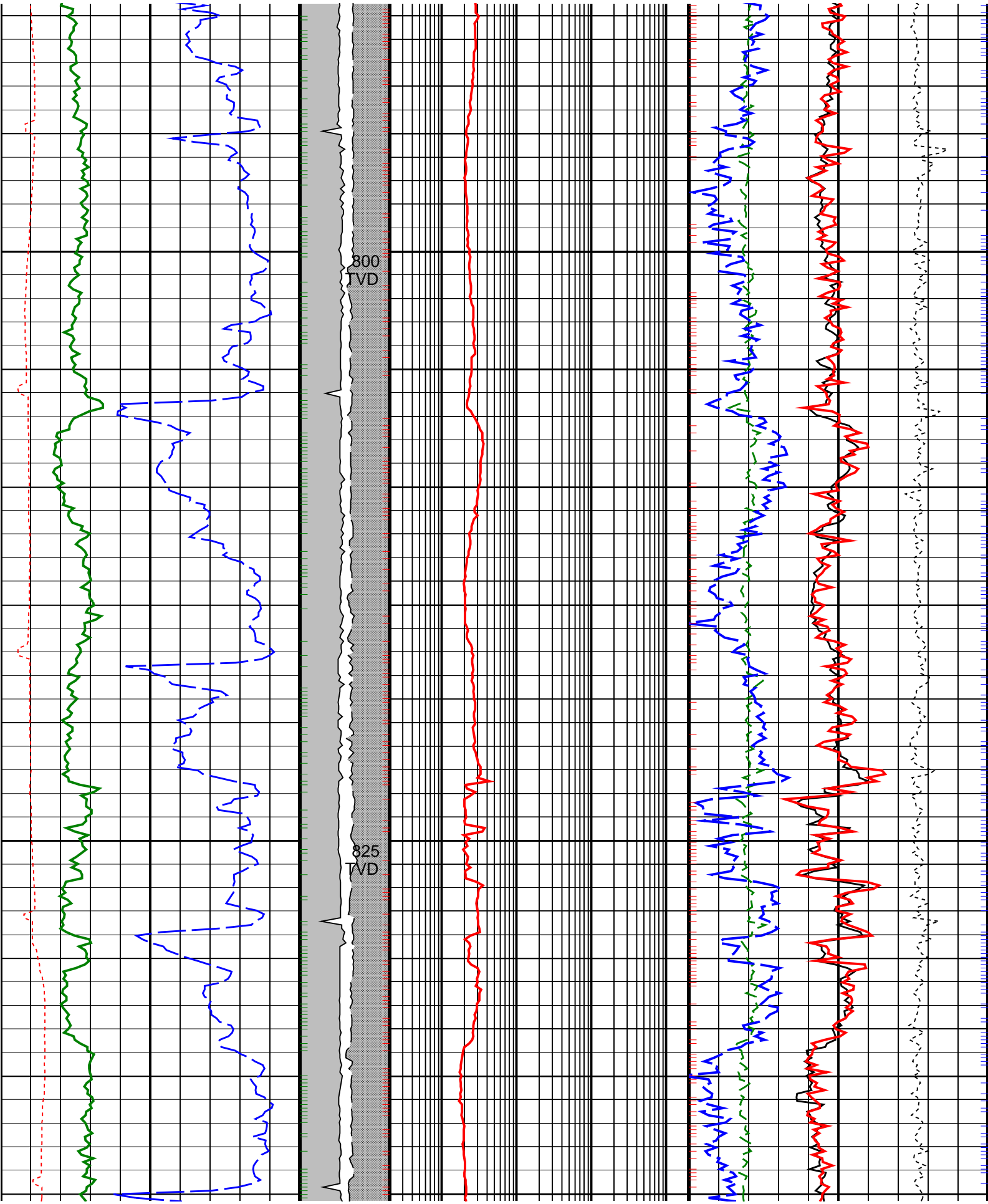
Neutron Ticks, 0.1 ft

Gamma Ray Samples  
Ring Samples

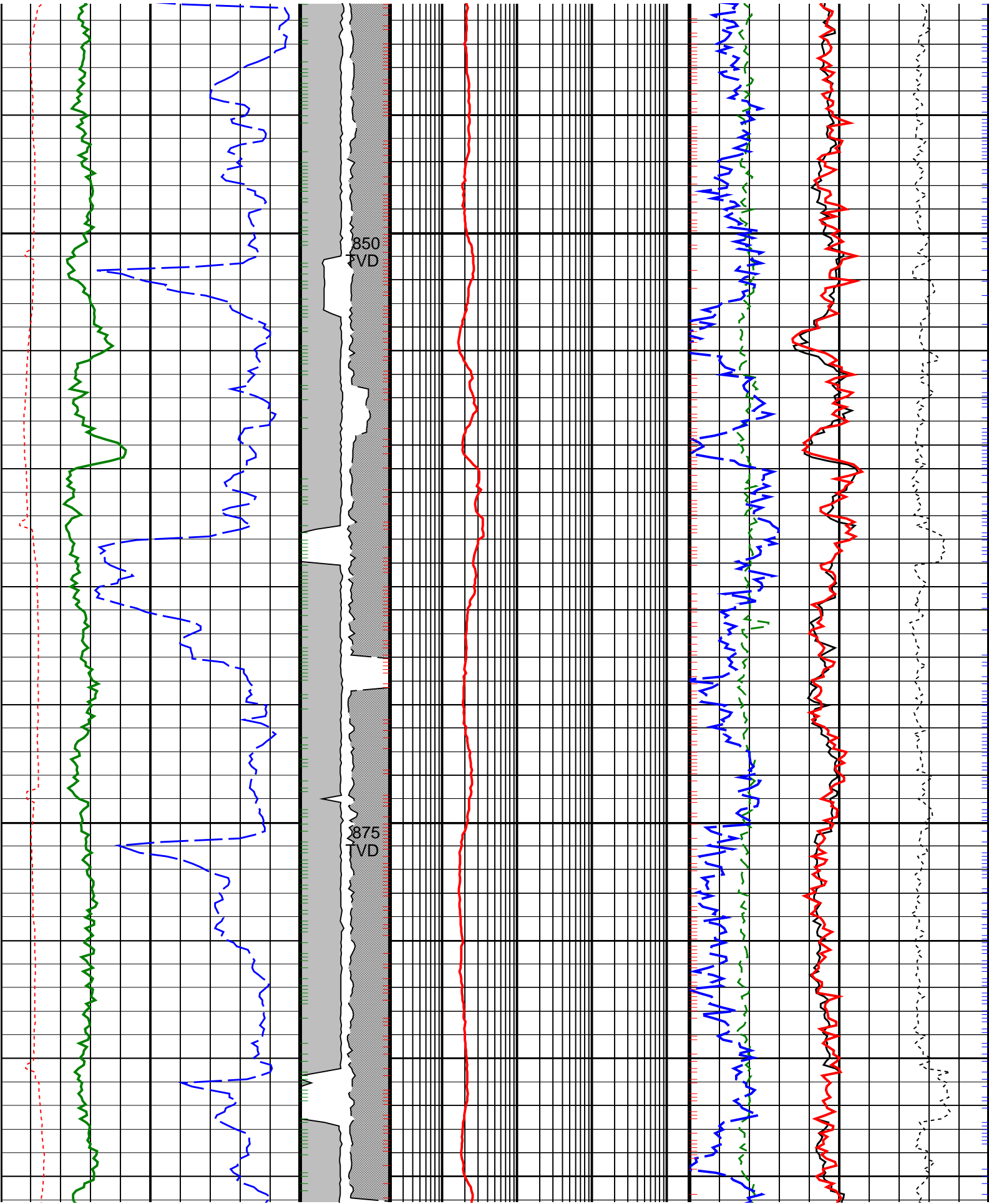


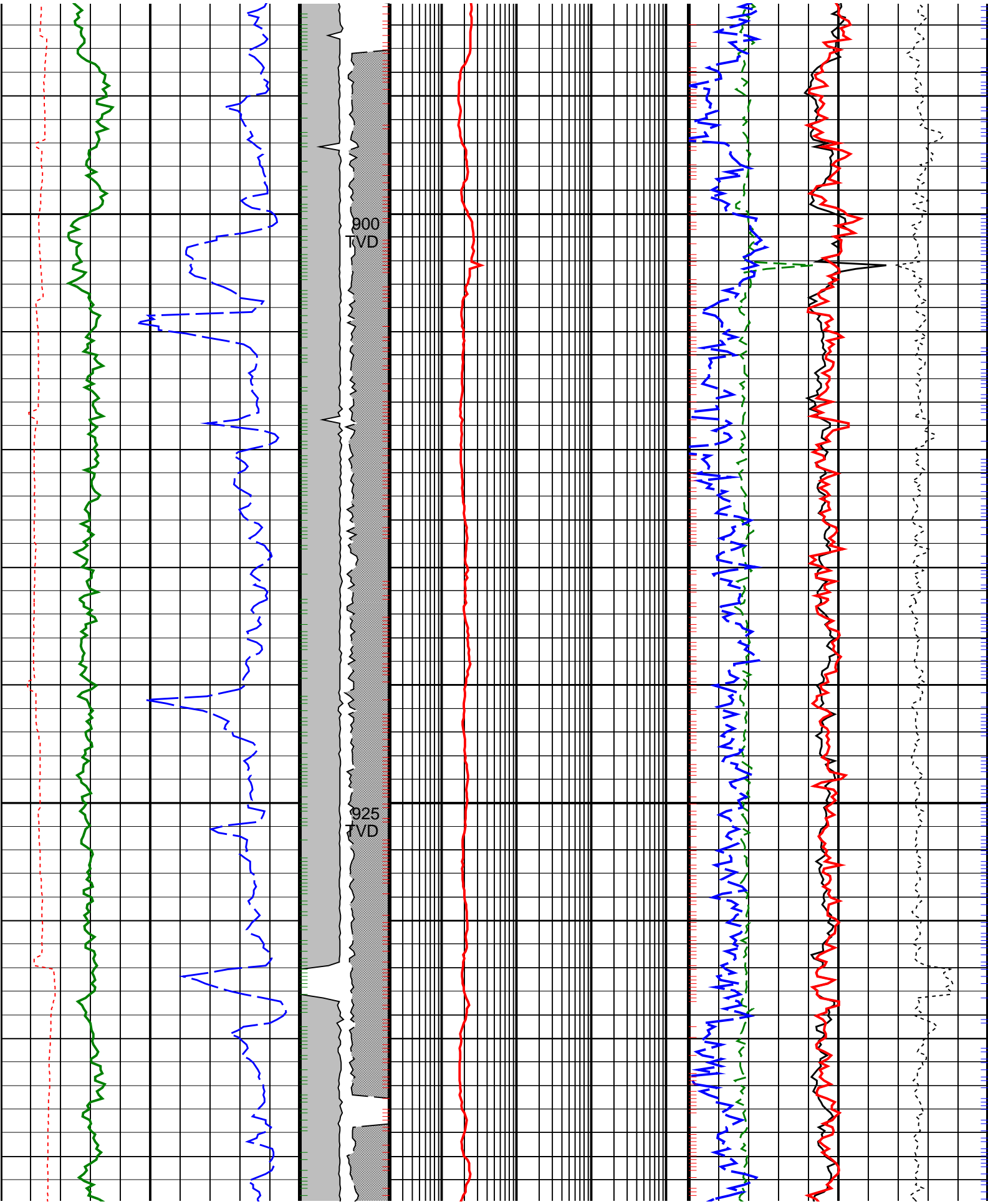


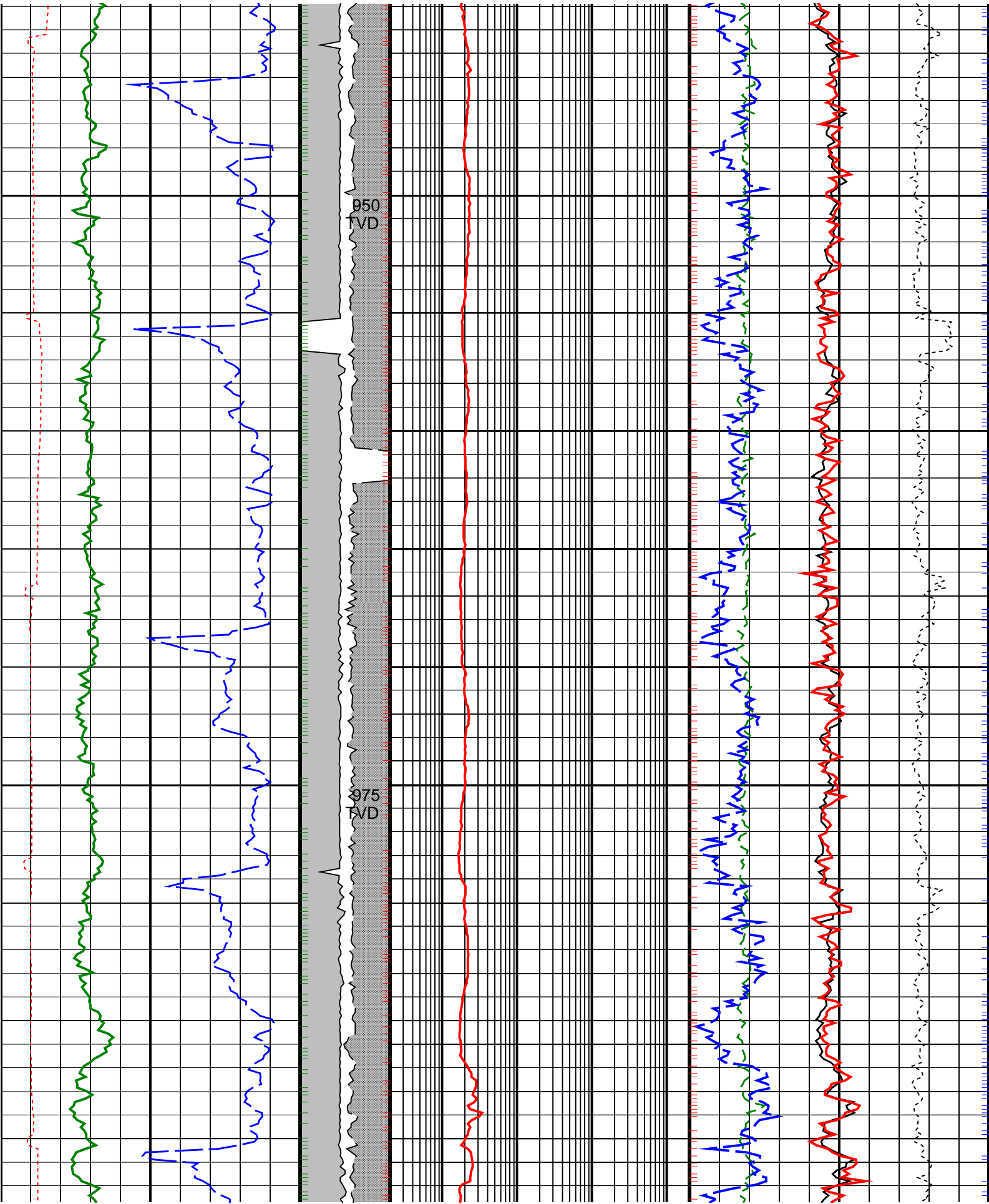


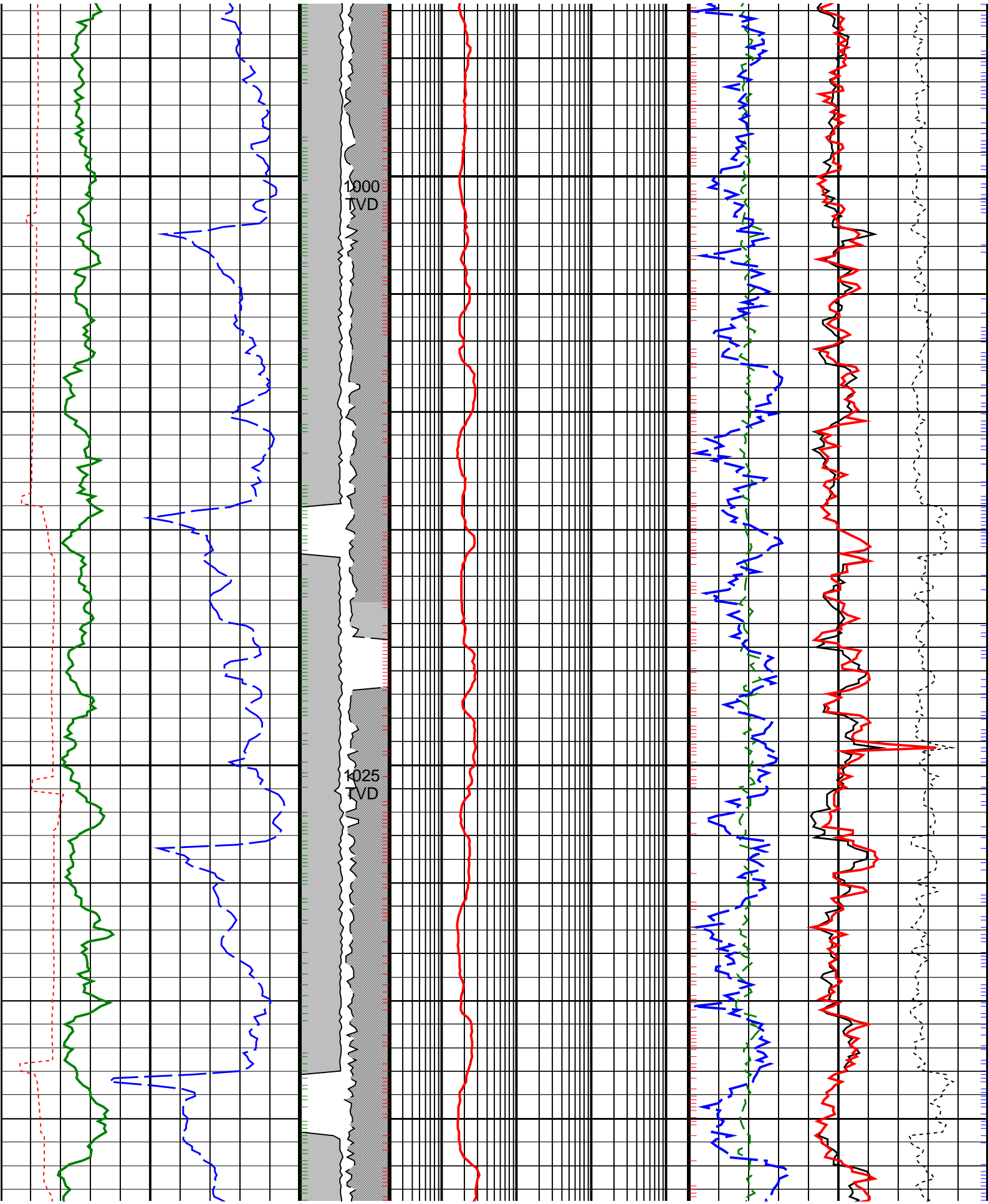


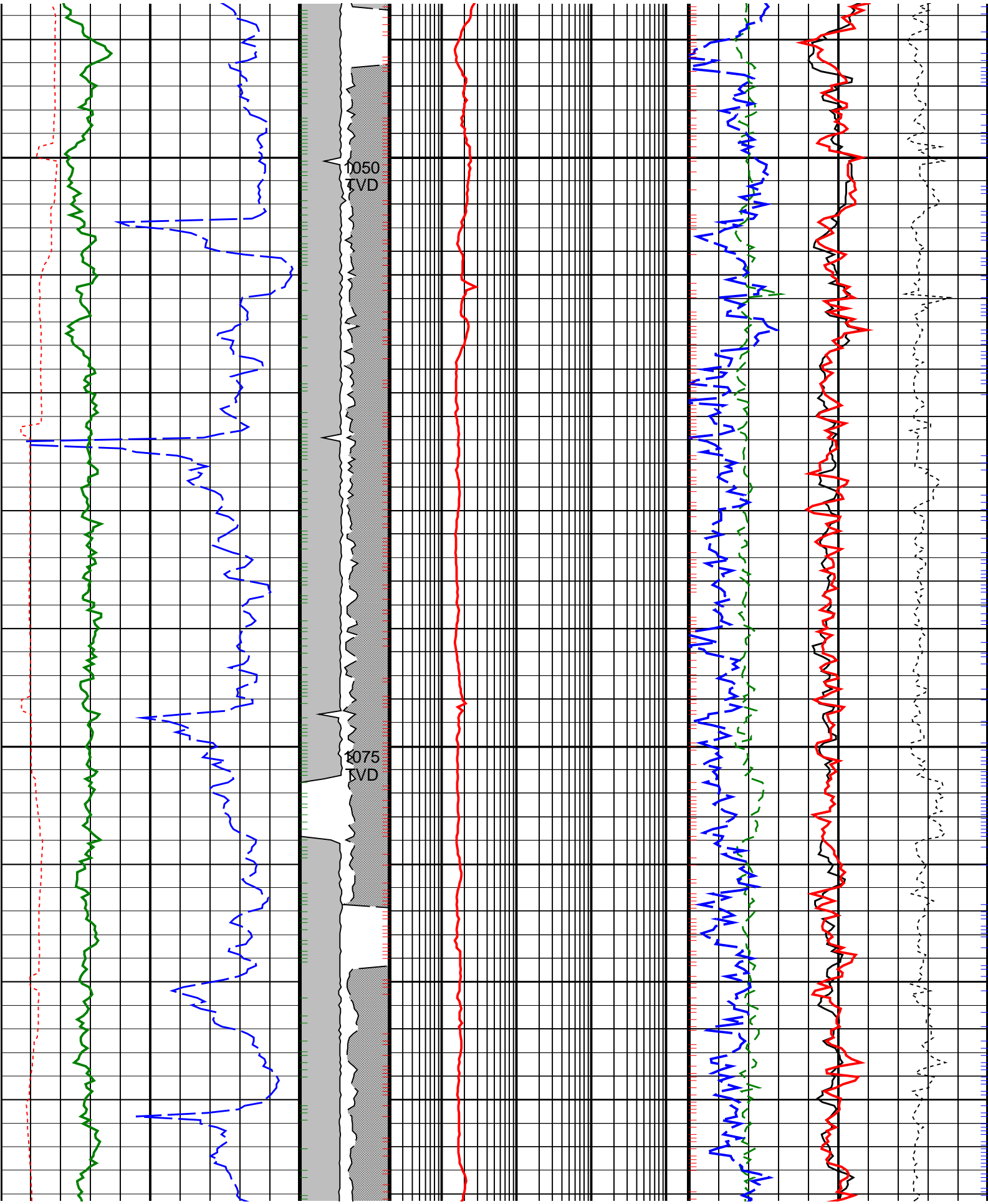


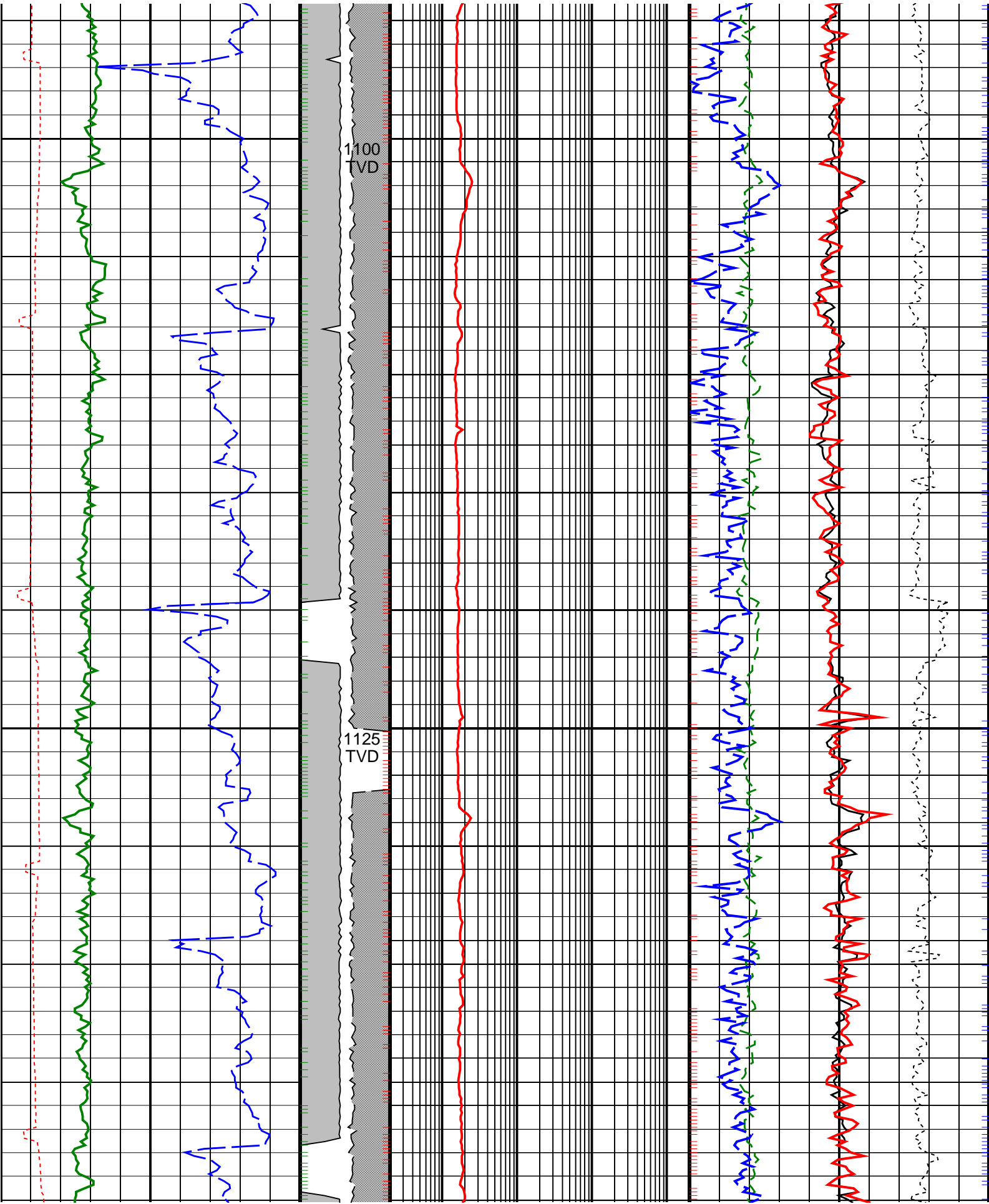


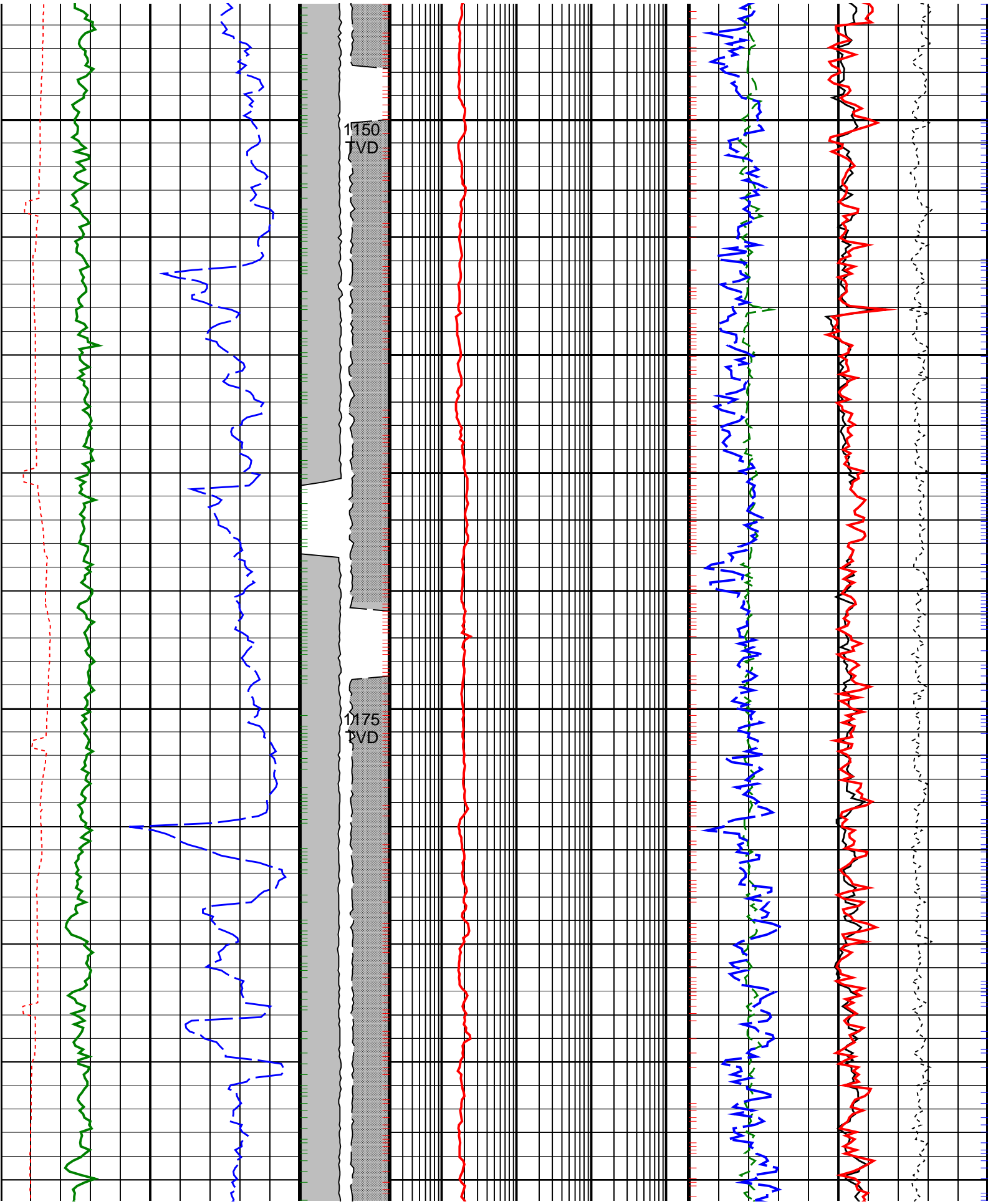




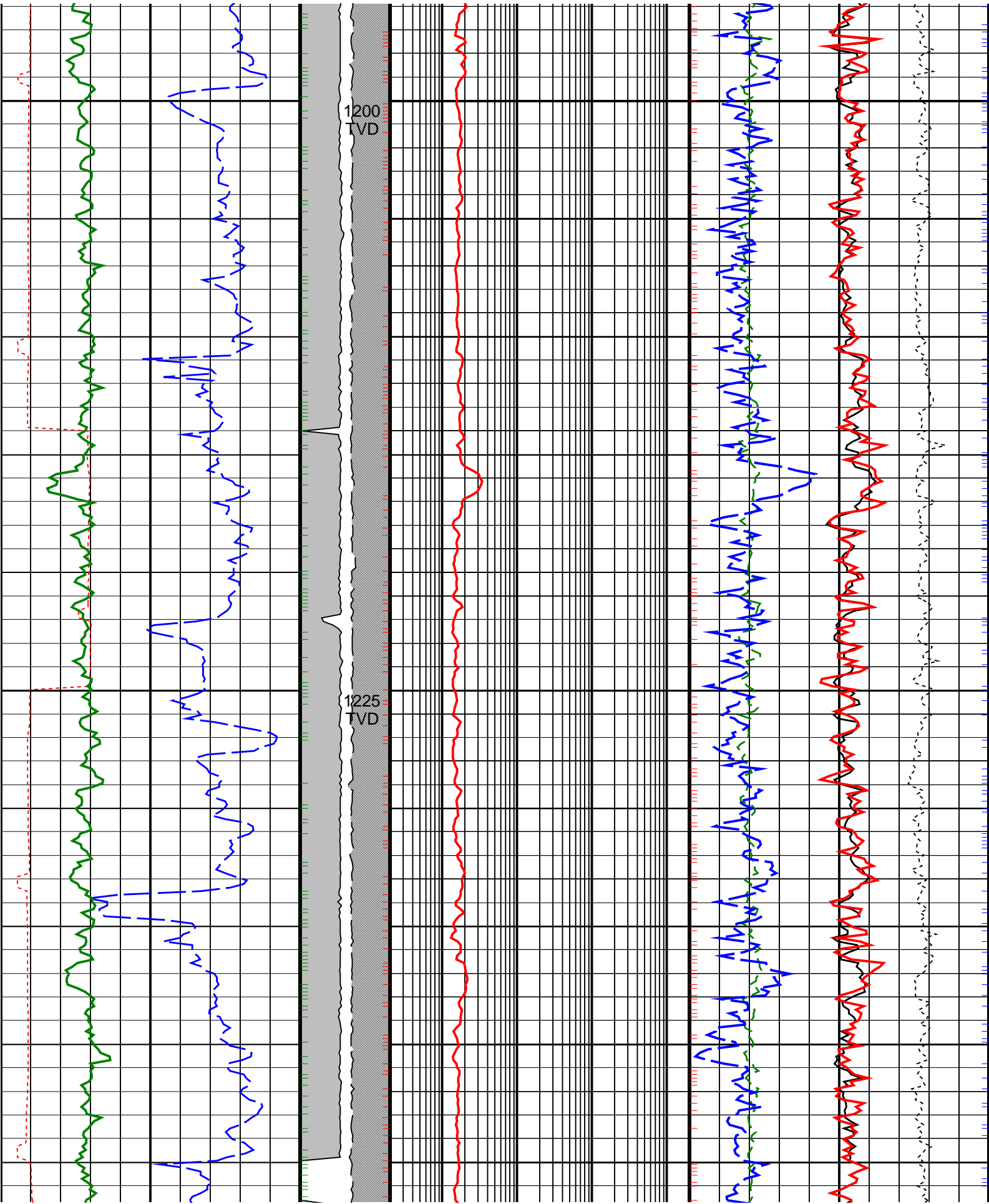




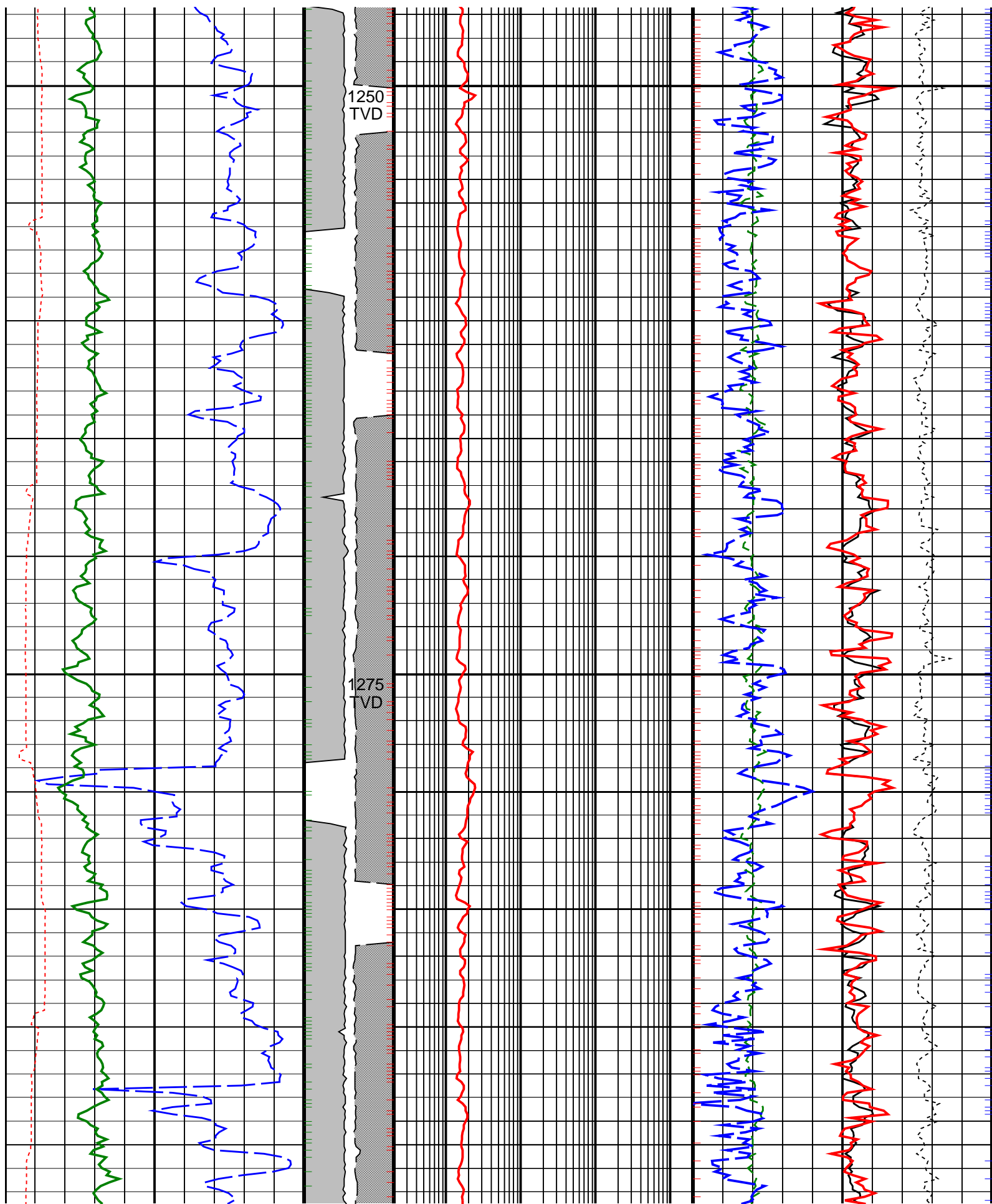


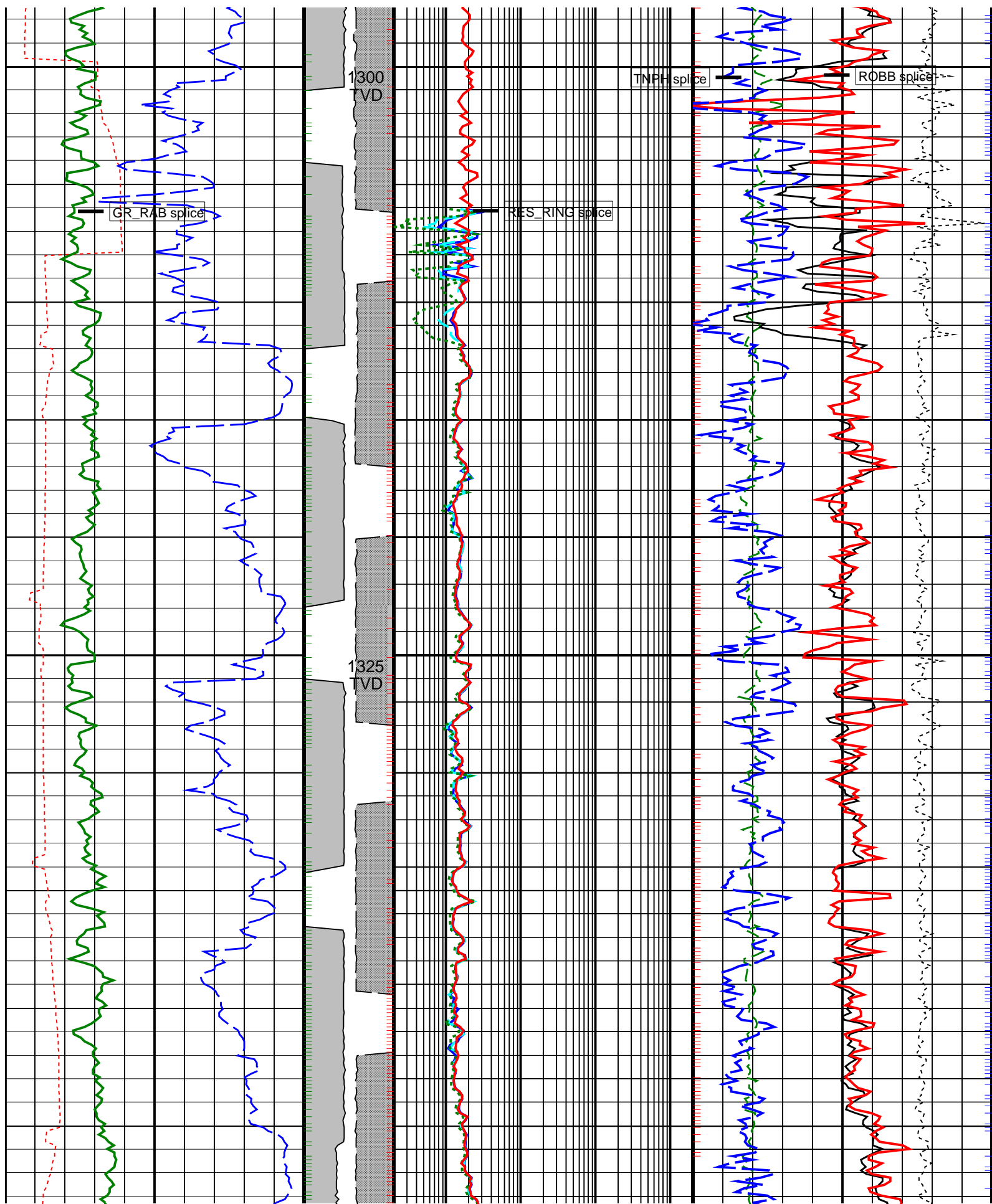


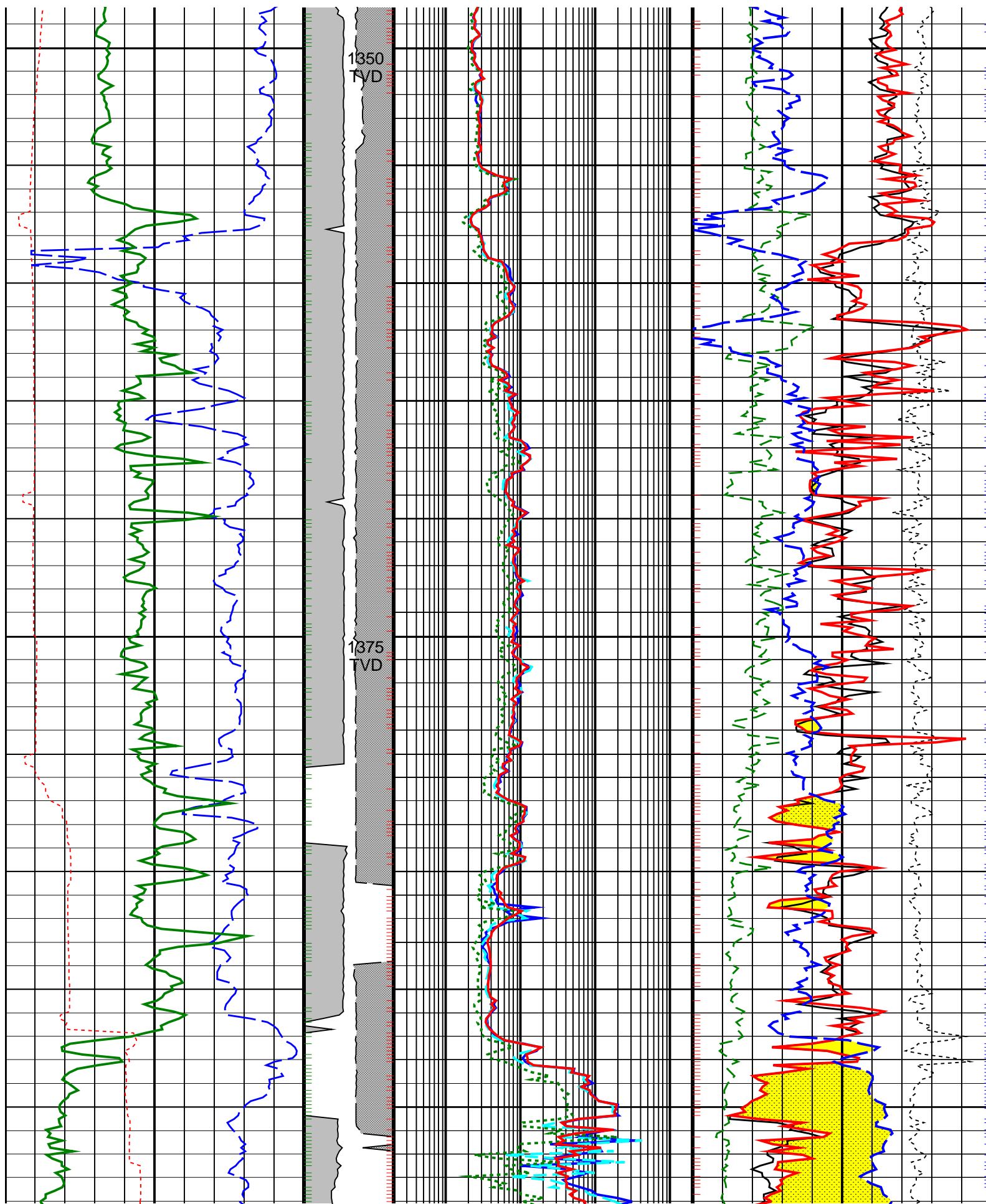


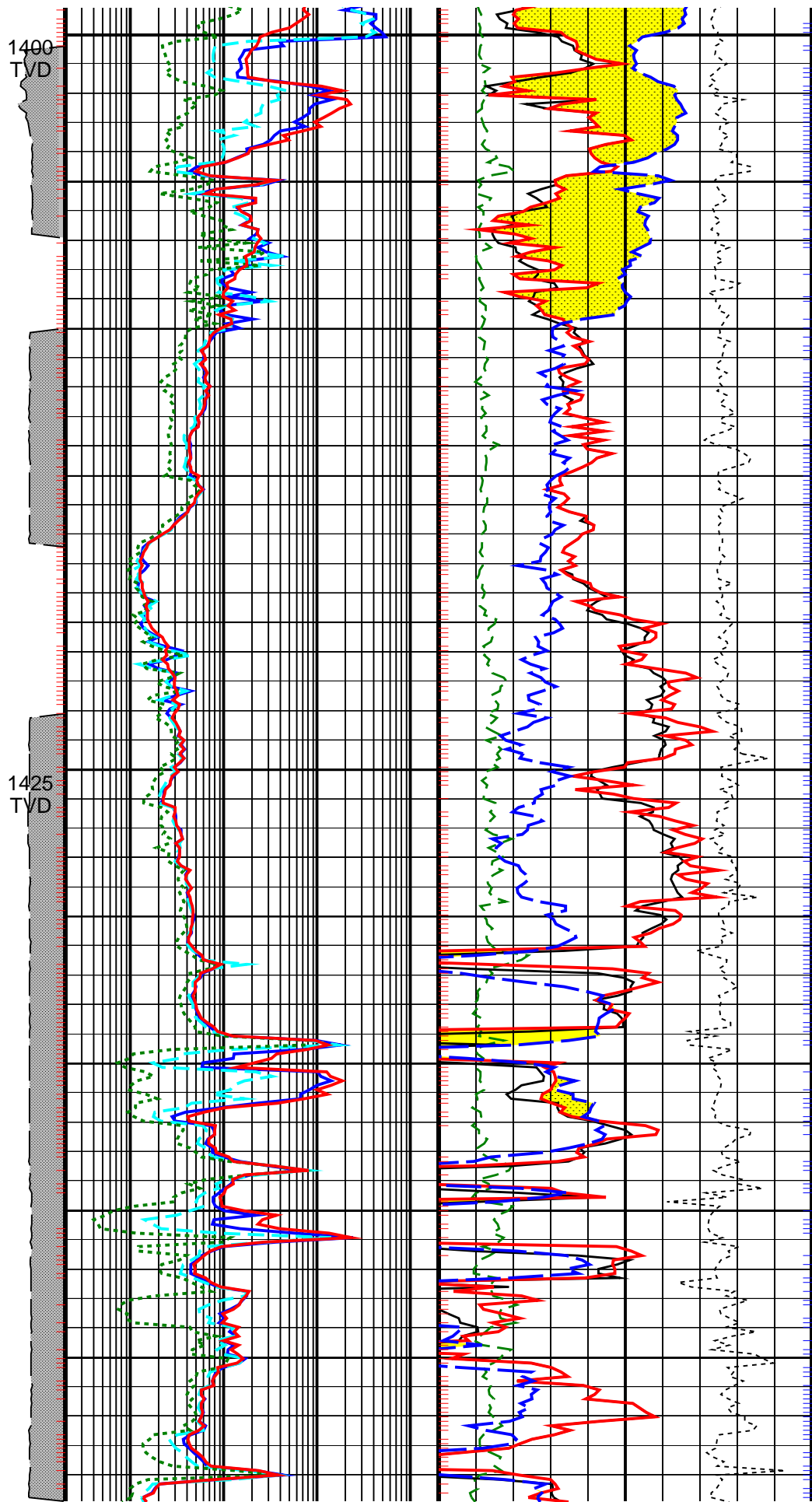
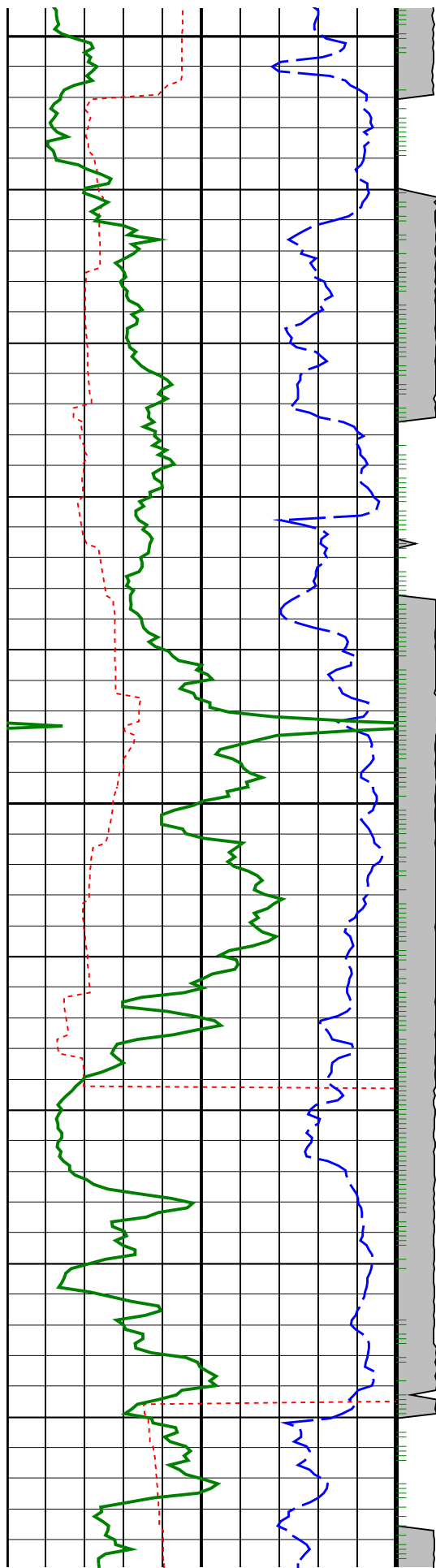




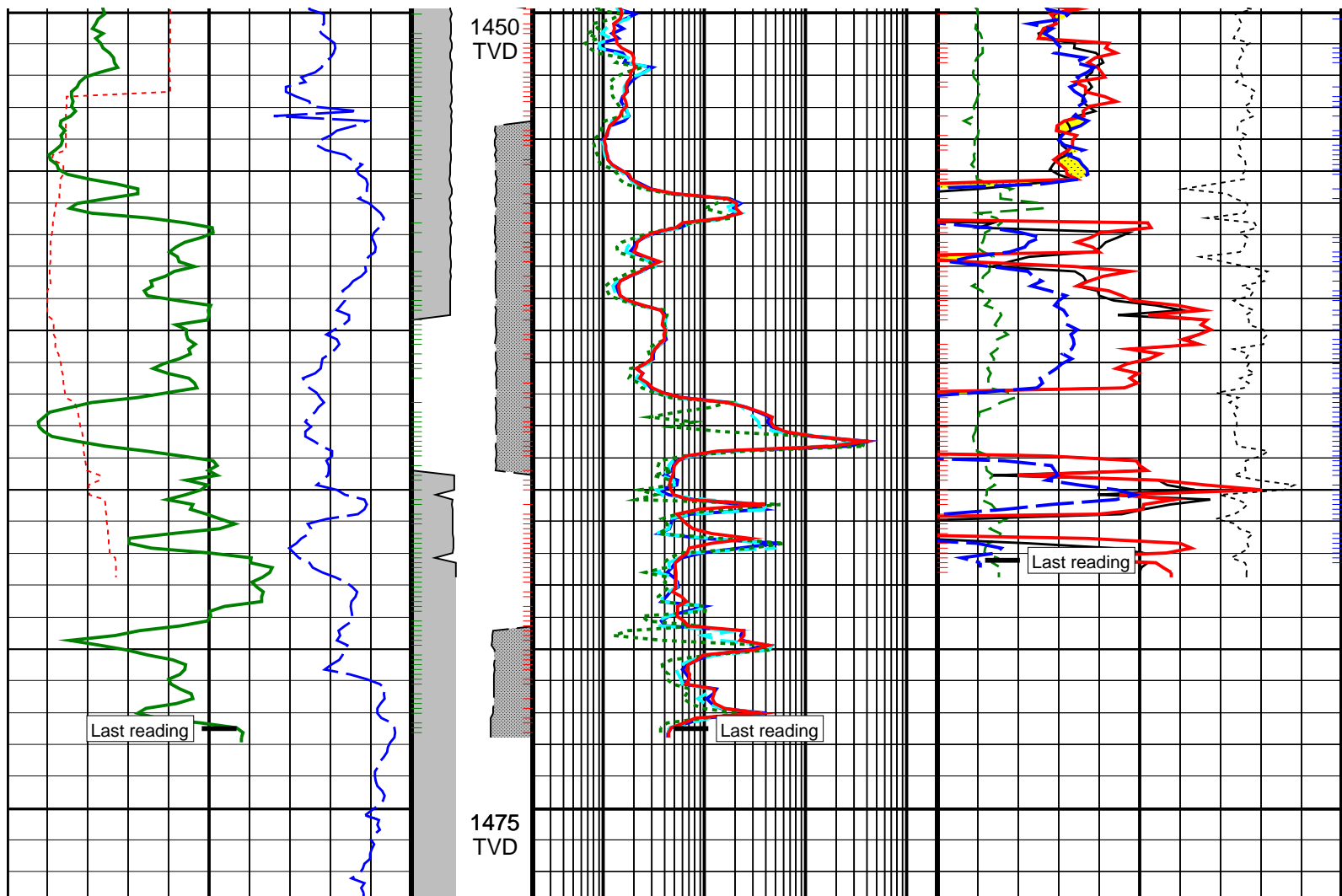








1450



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

PIP SUMMARY

Density Ticks, 0.1 ft

Density Ticks, 0.1 ft

Neutron Ticks, 0.1 ft

Gamma Ray Samples  
Ring SamplesIDEAL Version: ID7\_0C\_02  
IDFRAB  
ADNIDEAL Version: ID7\_0C\_02  
IDEAL Version: ID7\_0C\_02

MWD\_10

IDEAL Version: ID7\_0C\_02

## True Vertical Depth Log

## 6.75-in. Azimuthal Density Neutron / Equipment Identification

Primary Equipment:  
Tool Name and Serial Number  
Collar Type and Serial Number  
Chassis Type and Serial Number  
Stabilizer Type and Serial Number  
Neutron Logging Source  
Density Logging Source  
Stabilizer Size  
Calibration StatusADN6 - CA 289  
ADDC - AA  
ADSE -  
Clamp-On 699051  
NSR - M A161  
GSR - JZ A2125  
8.25 - in.  
Valid

Master: 21-Aug-2002 2:00

## 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		1286	Master		2974	Master		7375
	250.0 (Minimum) 4125 (Nominal) 8000 (Maximum)			700.0 (Minimum) 9350 (Nominal) 18000 (Maximum)			2500 (Minimum) 23750 (Nominal) 45000 (Maximum)	

Master: 21-Aug-2002 2:00

## 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
Master		199.3	Master		1579	Master		4746
	50.00 (Minimum) 725.0 (Nominal) 1400 (Maximum)			500.0 (Minimum) 4250 (Nominal) 8000 (Maximum)			1500 (Minimum) 15750 (Nominal) 30000 (Maximum)	

Master: 21-Aug-2002 2:00

## 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		51.89	Master		125.3	Master		546.5
	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: 21-Aug-2002 2:00

## 6.75-in. Azimuthal Density Neutron Calibration

## Density: Water Block Check




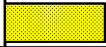

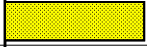
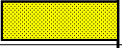







Phase	Long spacing water density G/C3	Value	Phase	Short spacing water density G/C3	Value
Master		1.034	Master		1.130
	1.011 (Minimum) 1.026 (Nominal) 1.041 (Maximum)			1.093 (Minimum) 1.118 (Nominal) 1.143 (Maximum)	



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 1.100 1.300			-1.200 -0.9000 -0.6000	

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	
Master				1.000	
0.9000 (Minimum)		1.000 (Nominal)		1.150 (Maximum)	
Phase		Near Neutron water porosity V/V		Value	
Master				1.000	
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

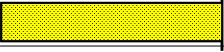
RAB6 – CA136

Calibration Status













Valid


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)		
Phase	M0/T2 factor			Value	Phase	M2/T1 factor			Value	Phase	M2/T2 factor			Value			

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				RAB6 – CA				160			
Calibration Status				Valid							

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
	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

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

Well.....: TNA A-30  
API number.....:  
Engineers.....: L. Bon, J. Dolan, K. Handley  
RIG:.....: ISDL 453  
STATE:.....: Victoria

Spud date.....: 22-Aug-2002  
Last survey date.....: 02-Sep-02  
Total accepted surveys...: 103  
MD of first survey.....: 141.57 m  
MD of last survey.....: 2862.00 m

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

----- 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

----- 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

----- 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

Azimuth from rotary table to target: 64.25 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

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ANADRILL SCHLUMBERGER Survey Report

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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	-
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

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

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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

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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
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

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

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ANADRILL SCHLUMBERGER Survey Report

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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

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Company: **Esso Australia Ltd.**

**Schlumberger**

Well: **TNA A-30**

Field: **Tuna**

Rig: **ISDL 453**

State: **Victoria**

**GeoVISION Service  
1:200 True Vertical Depth  
Recorded Mode Log**