

State: **Victoria**

Rig: ISDL 453 Field: Tuna Location: Bass Strait Well: TNA A-30 Company: Esso Australia Ltd.	VISION Neutron Density 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: 832.0 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]

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							

#### DISCLAIMER

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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

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

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0.78 deg

0.78 deg



0.78 deg



GeoDiamond  
S75HVPX S/N

MAXIMUM STRING DI

ALL LENGTHS I

0.20

— 0.00

GeoDiamond  
S75HVPX S/N

MAXIMUM STRING DI

ALL LENGTHS I

0.20

— 0.00

## True Vertical Depth Log

IDEAL Version: ID7\_0C\_02

IDF

RAB  
ADN

IDEAL Version: ID7\_0C\_02  
IDEAL Version: ID7\_0C\_02

MWD\_10

IDEAL Version: ID7\_0C\_02

Format: A-30 GeoVISION Density Neutron

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	
BHA_COEF_VER	RAB: BHA Coef Generator Version	62012.0	
BHT_RM	Bottom Hole Temperature (RM)	70.000	degC
BSAL_RM	Mud Salinity (RM)	66.000	ppk
BS_RM	Bit Size (RM)	8.500	in
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	
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	
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
RMS_RM	Resistivity of Mud Sample (RM)	0.148	ohm.m
RWS_RM	Resistivity of Connate Water (RM)	1.000	ohm.m
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

┤ Gamma Ray Samples

Neutron Ticks, 0.1 ft ┤

Rate of Penetration, Averaged over Last  
5ft (ROP5\_RM)  
200 (M/HR) 0

RAB Gamma Ray (GR\_RAB)  
0 (GAPI) 200

Gas Area  
From ADN/ROBB/DEPTH to ADN/TNPH/DEPTH

Thermal Neutron Porosity (TNPH)  
45 (PU) -15

Bulk Density, Bottom (ROBB)  
1.85 (G/C3) 2.85

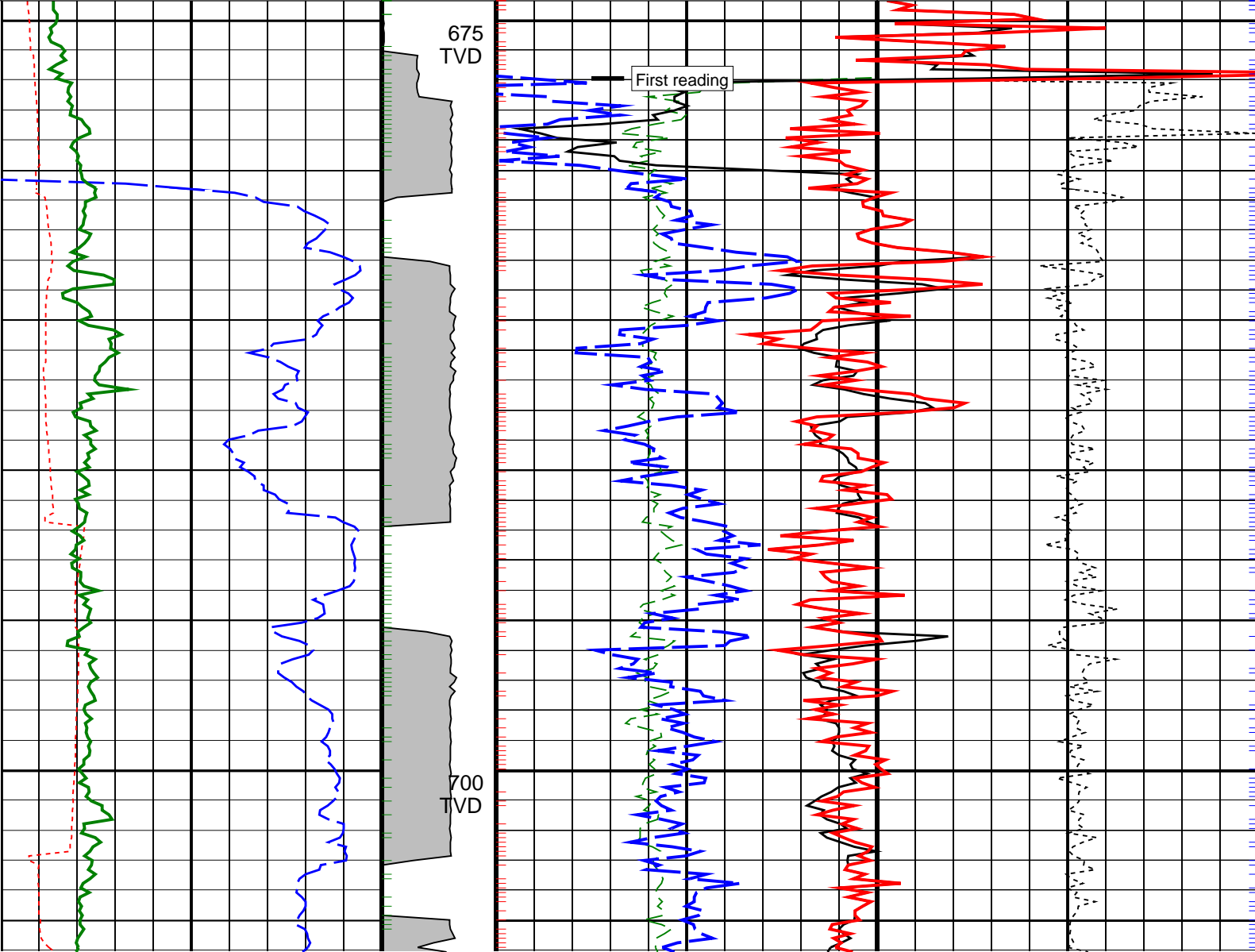
Bulk Density (RHOB)  
1.85 (G/C3) 2.85

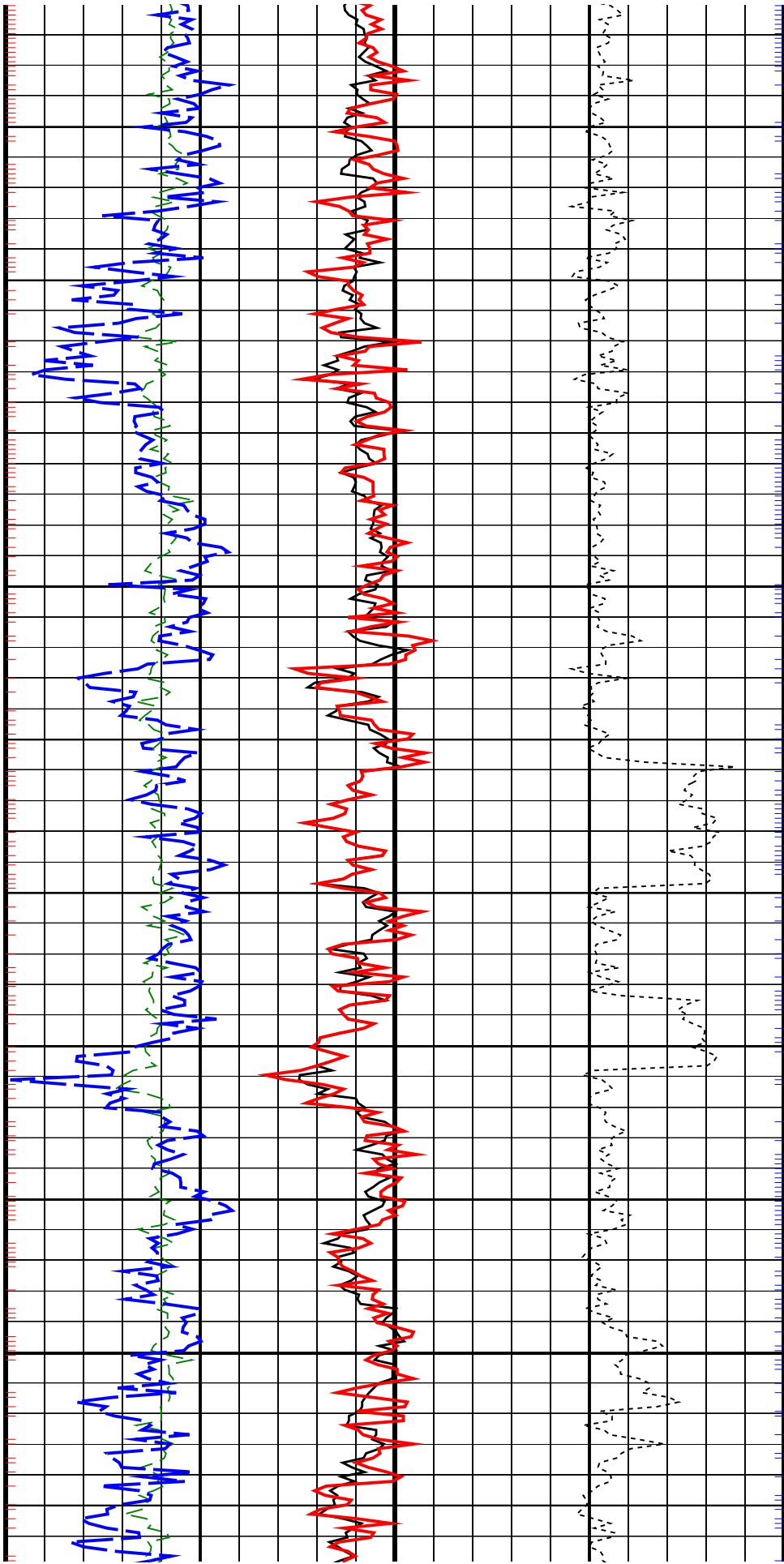
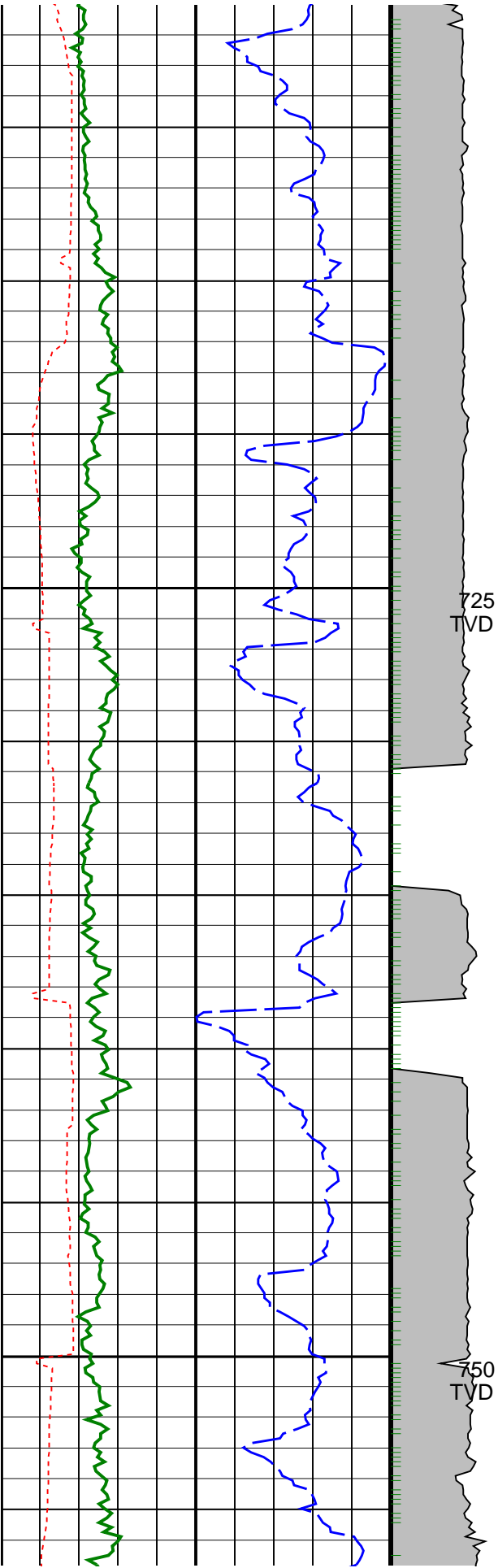
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0 (HR) 10

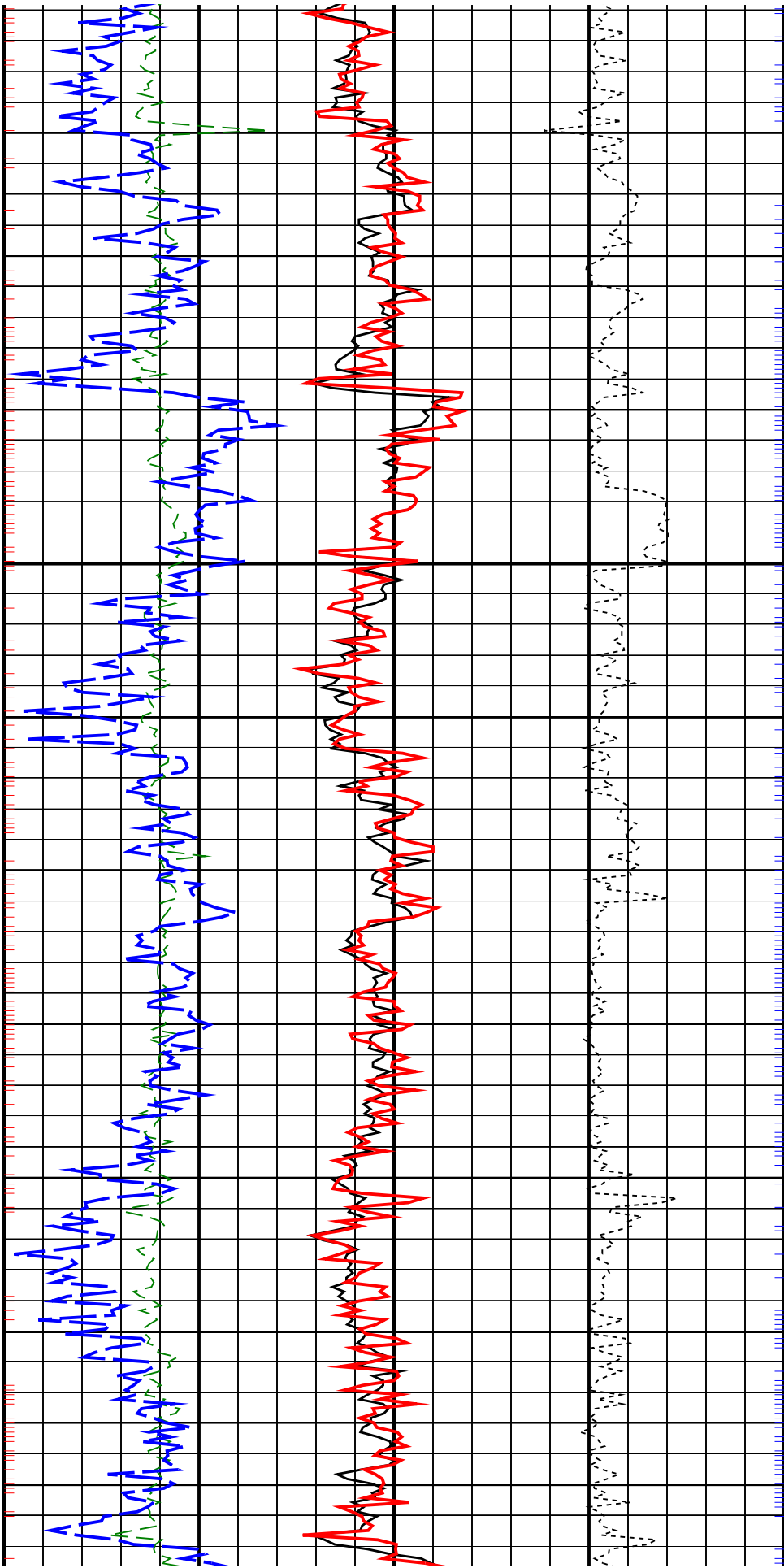
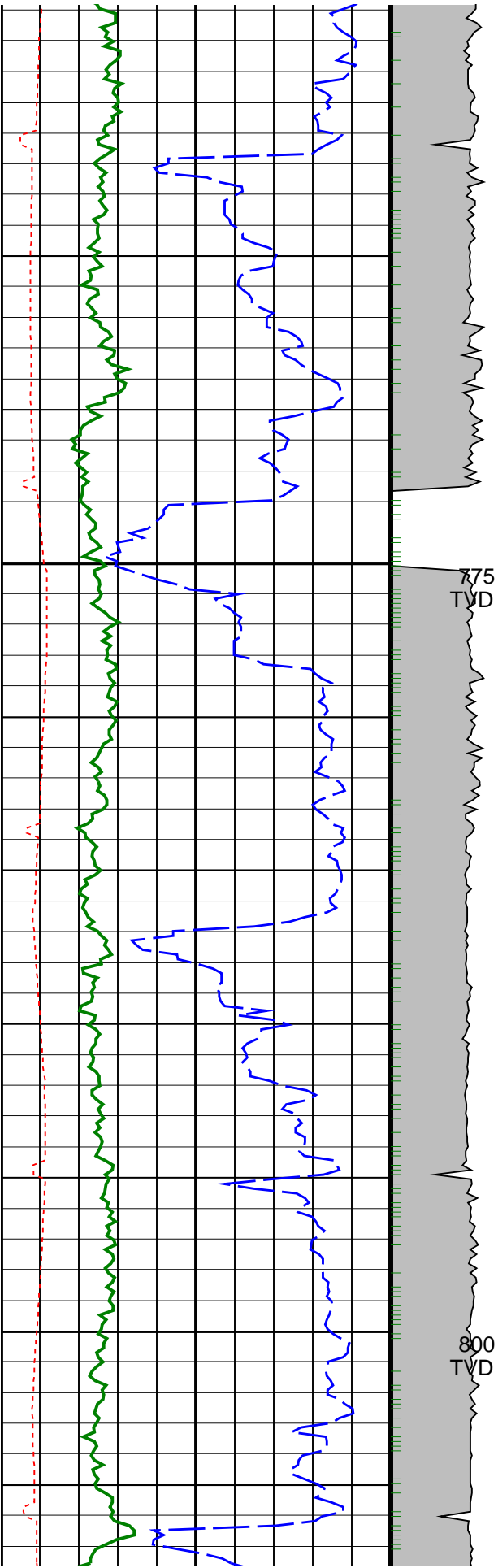
ADN  
Rotational  
Speed  
(RPM\_ADN)  
(RPM)  
0 200

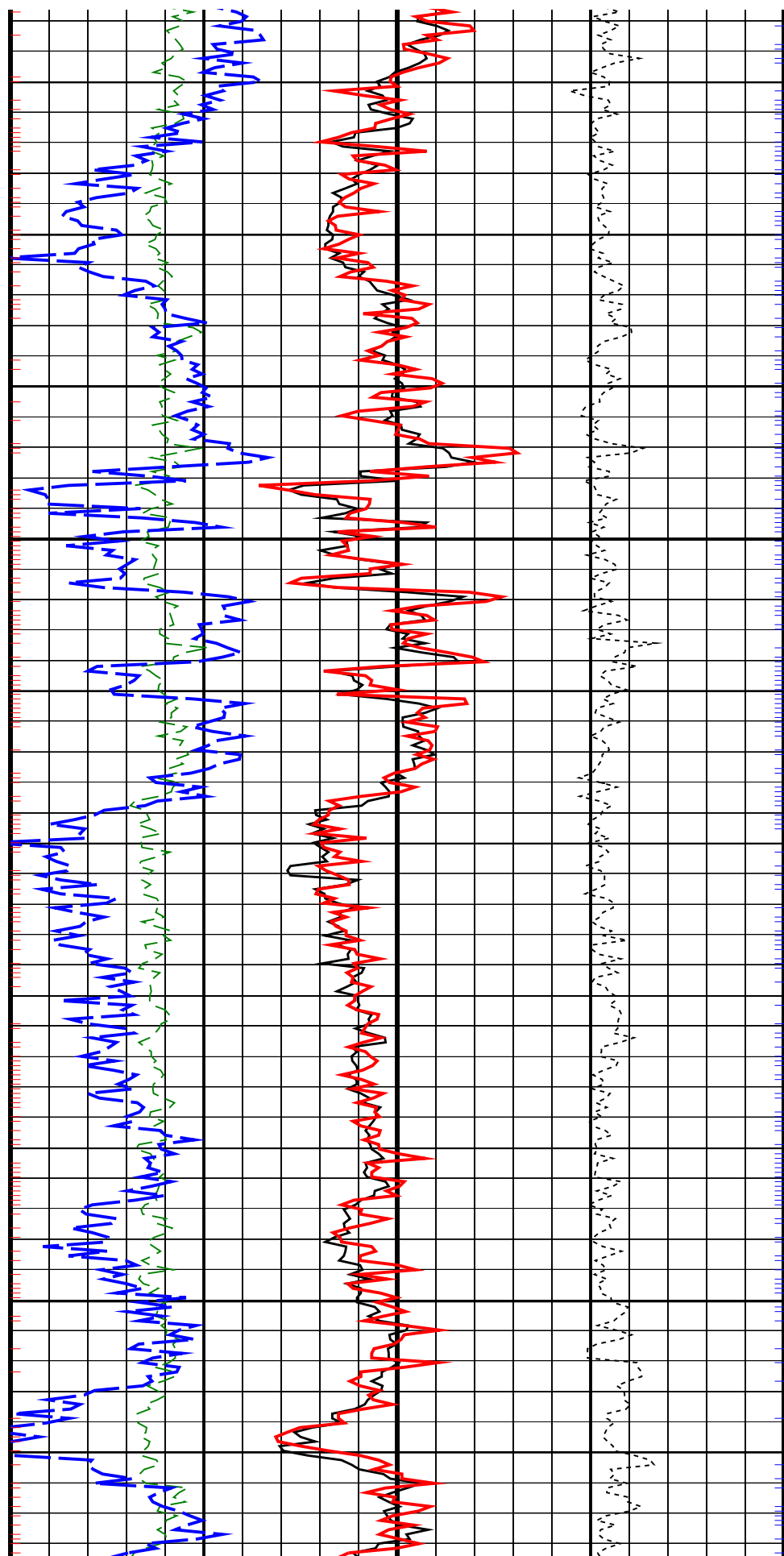
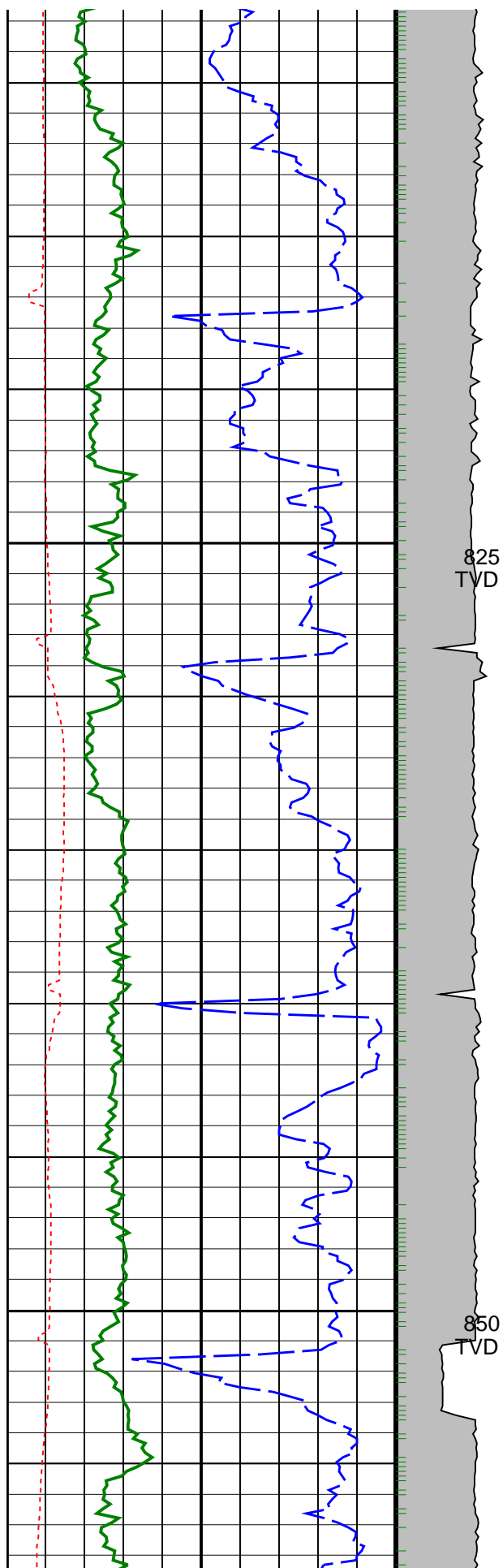
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0 (----) 10

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

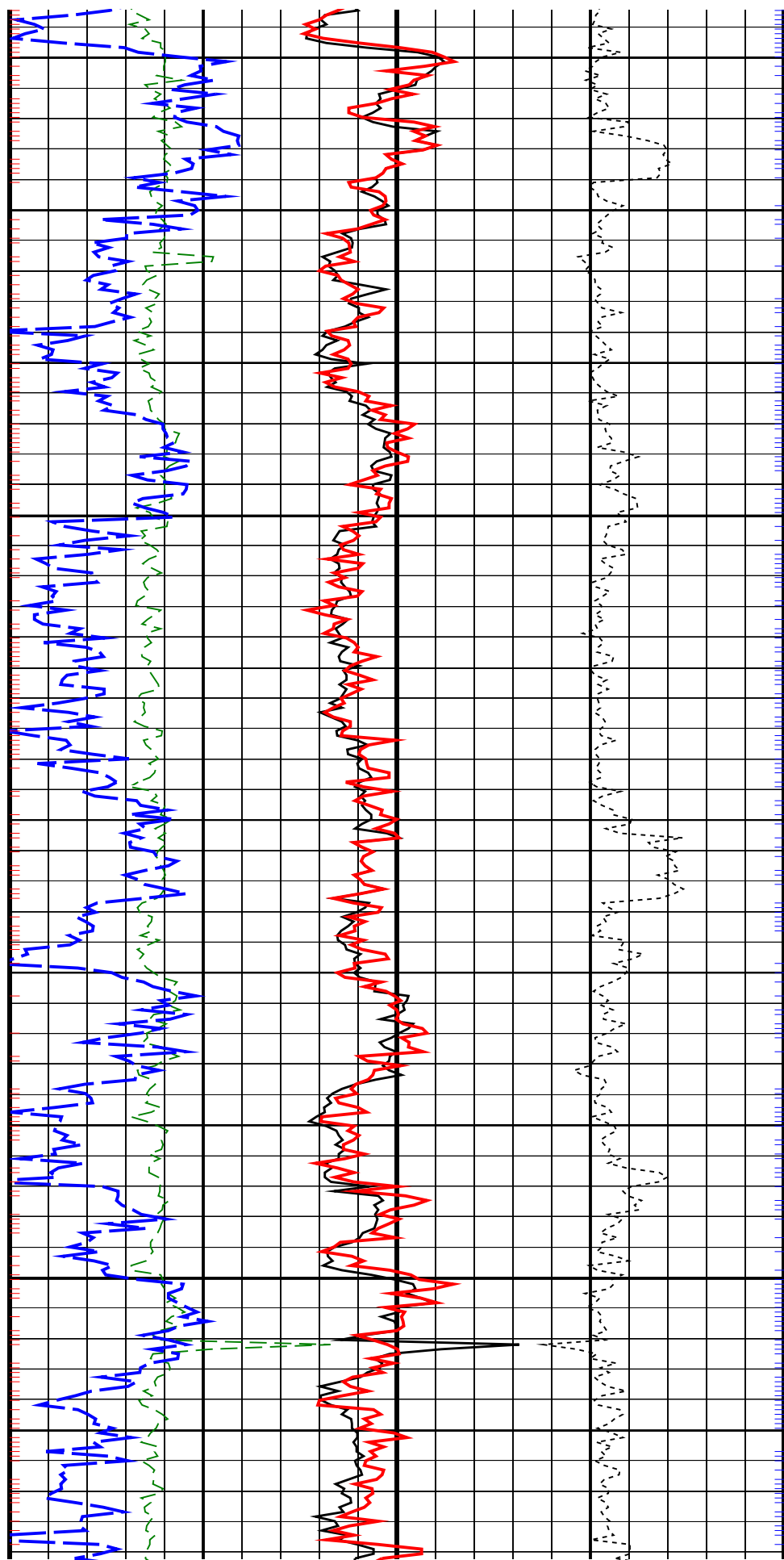
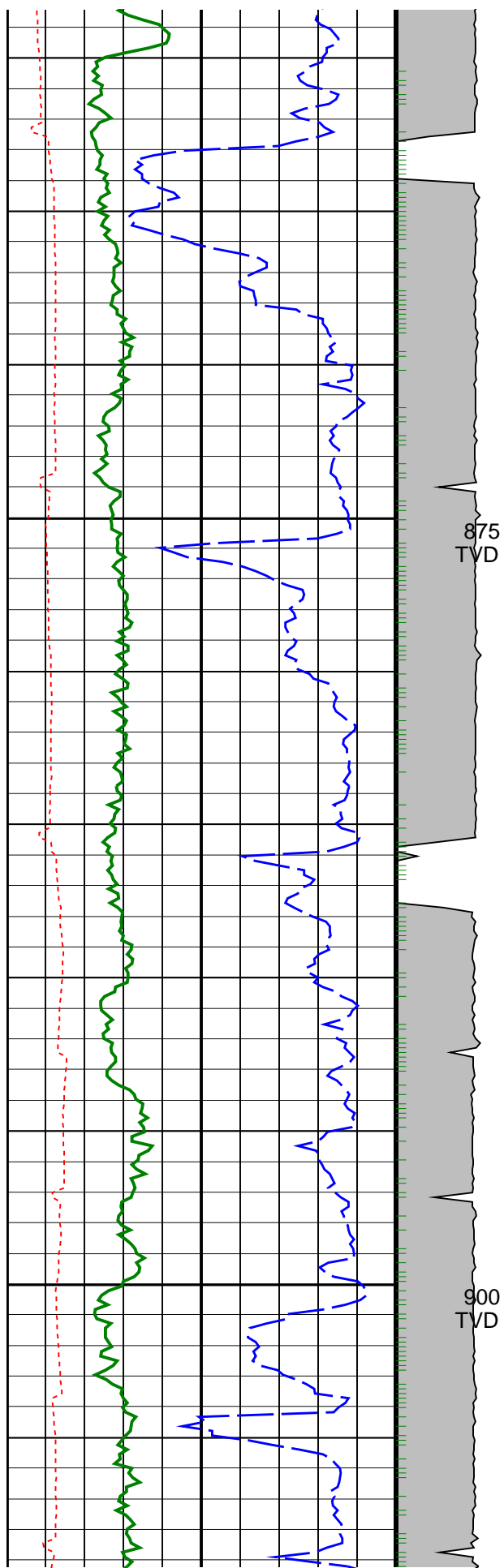


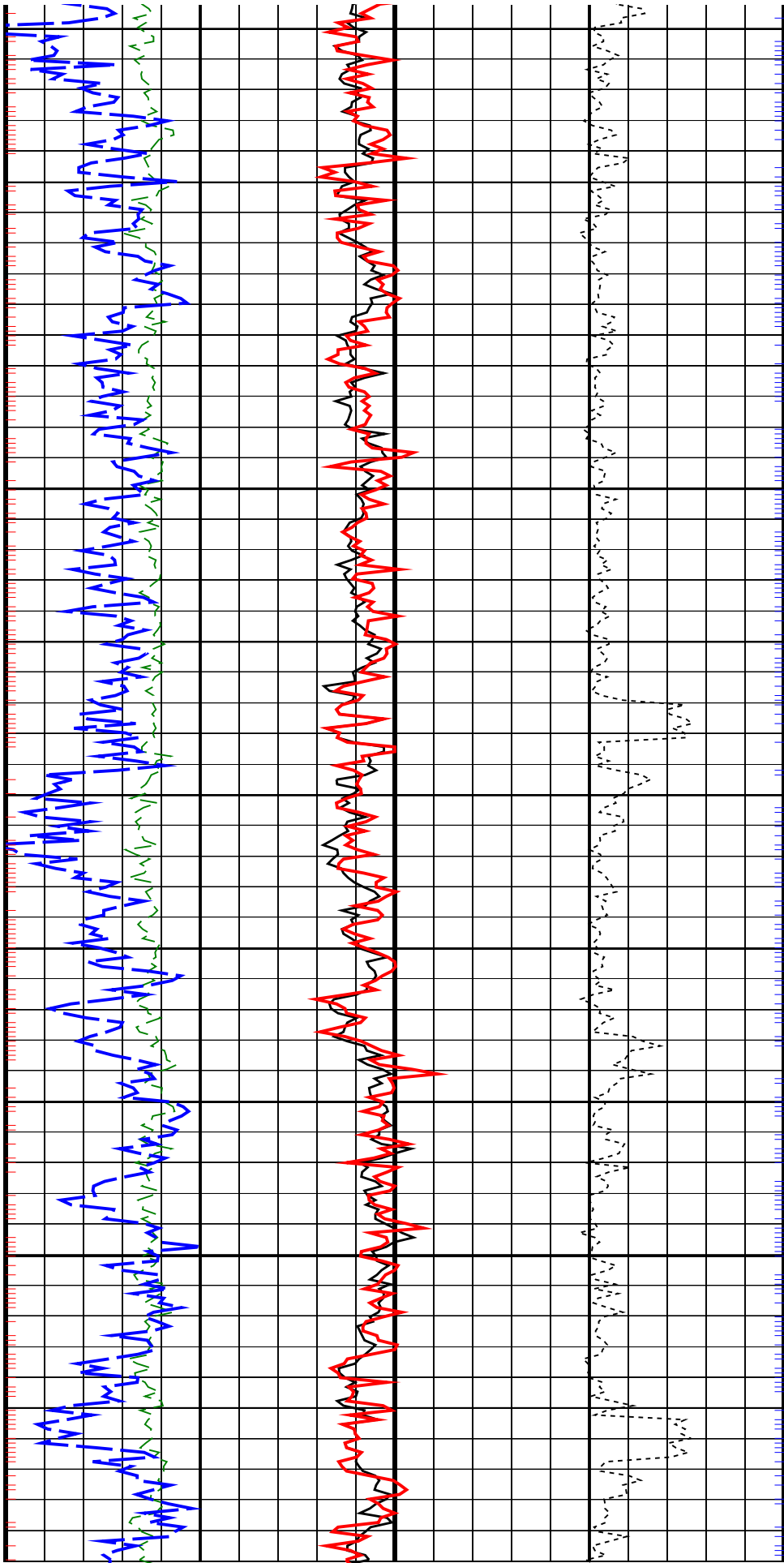
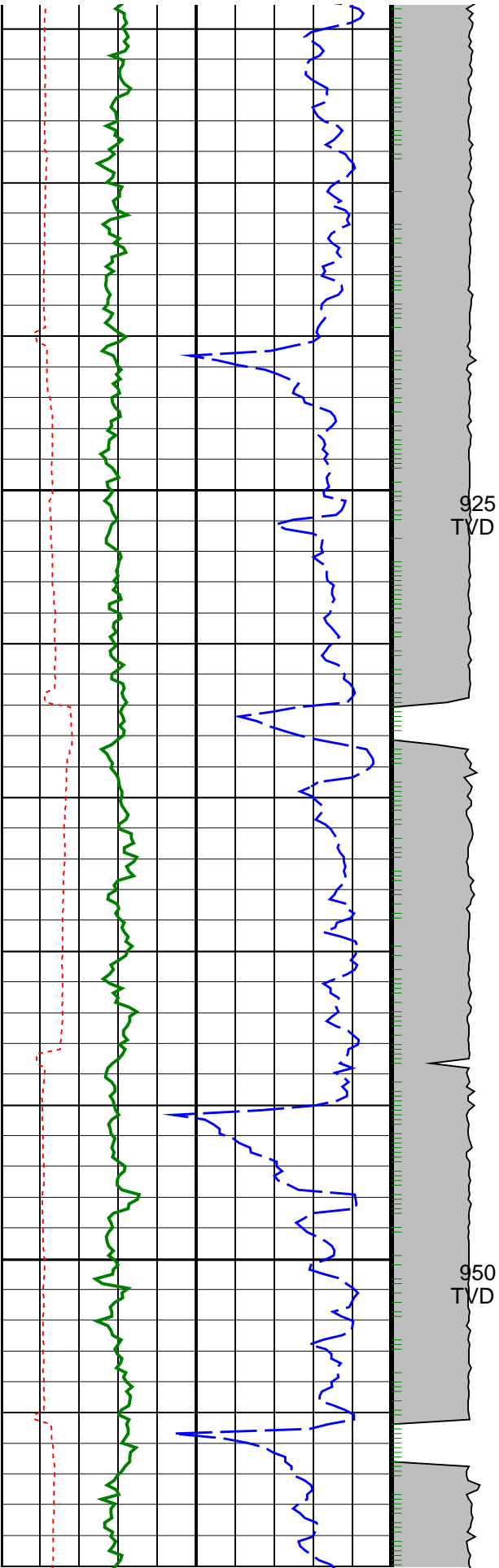


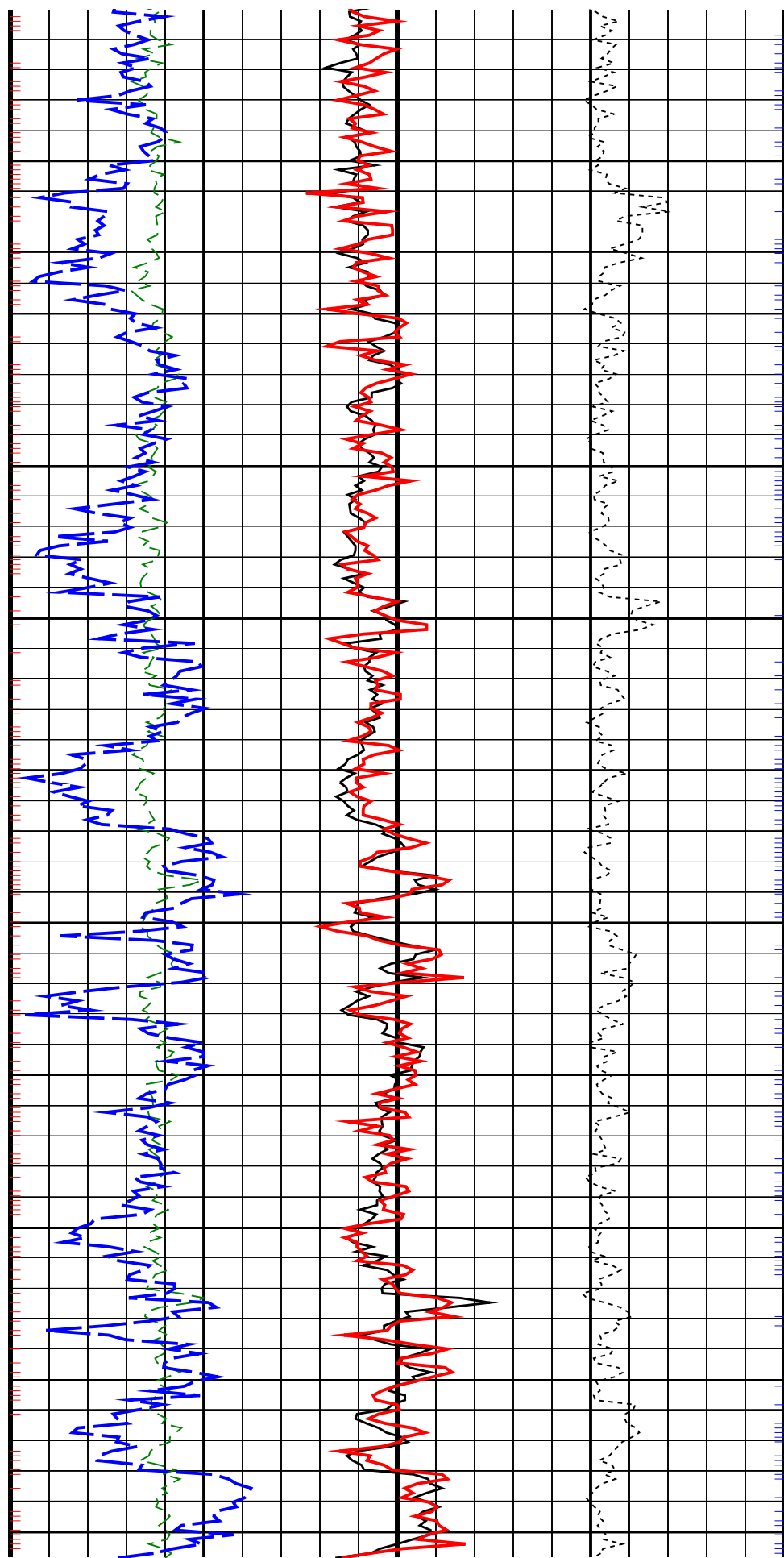
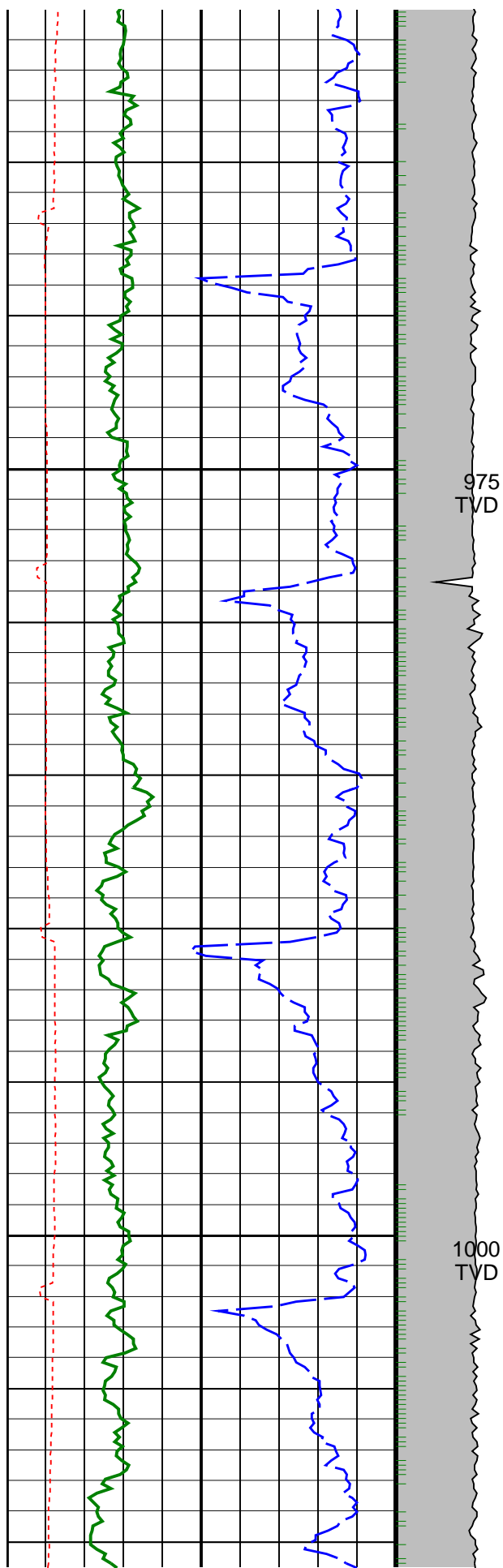


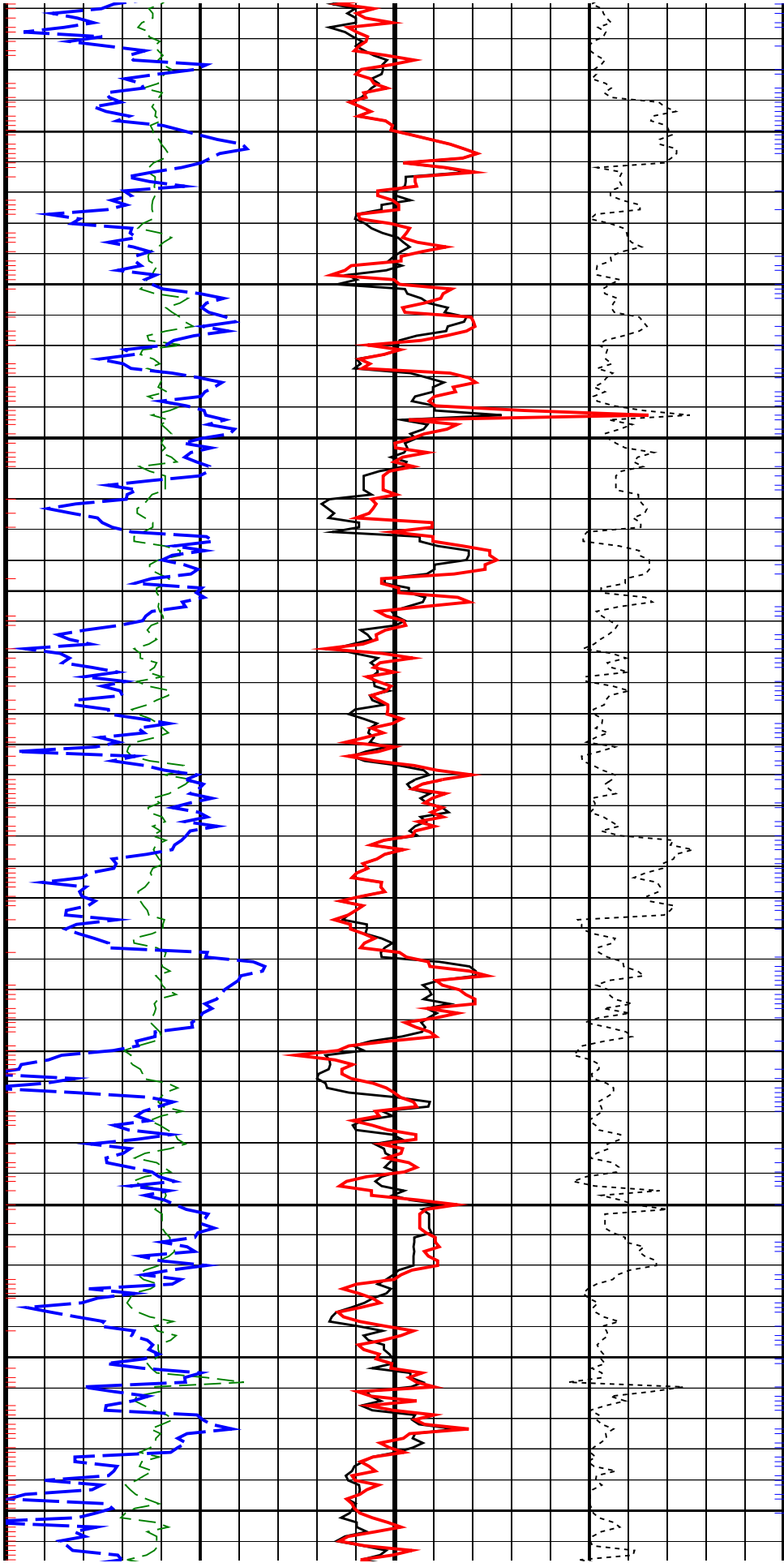
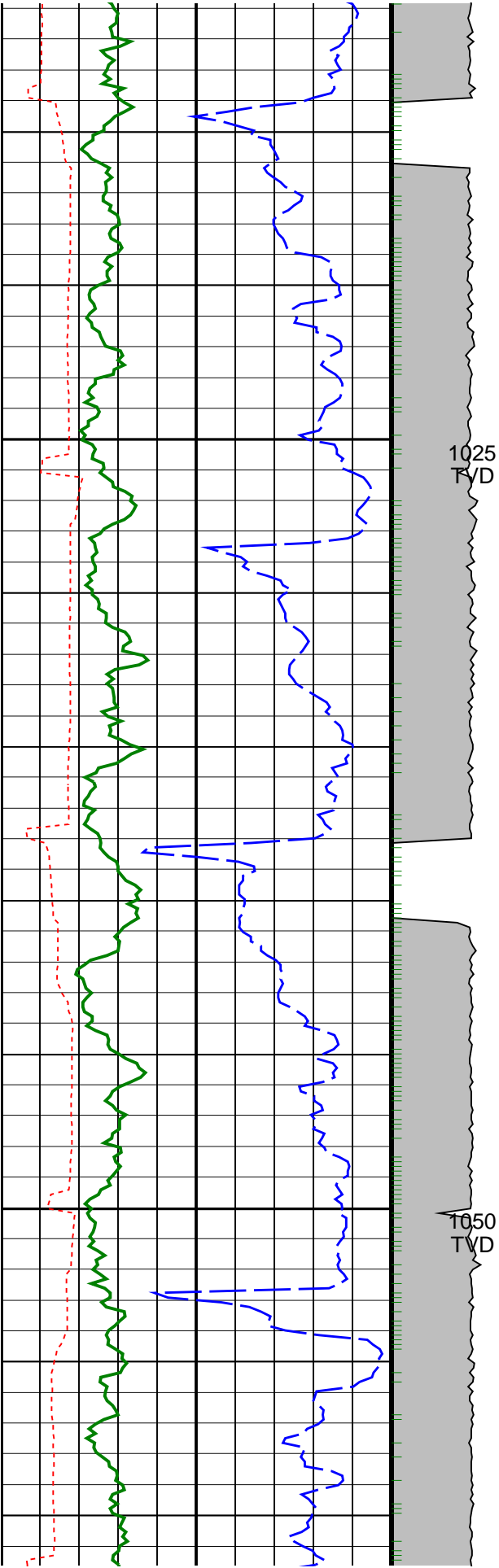


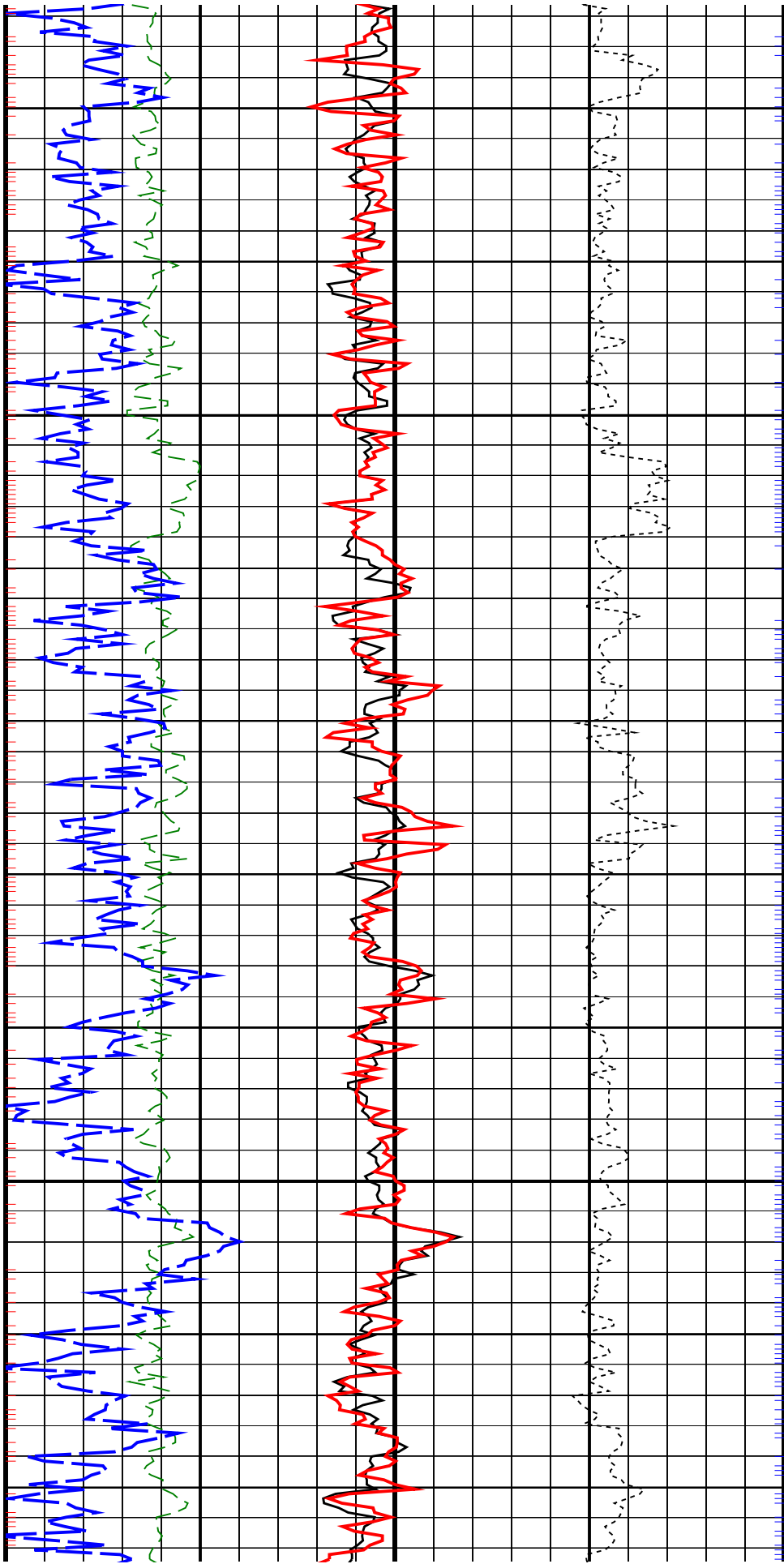
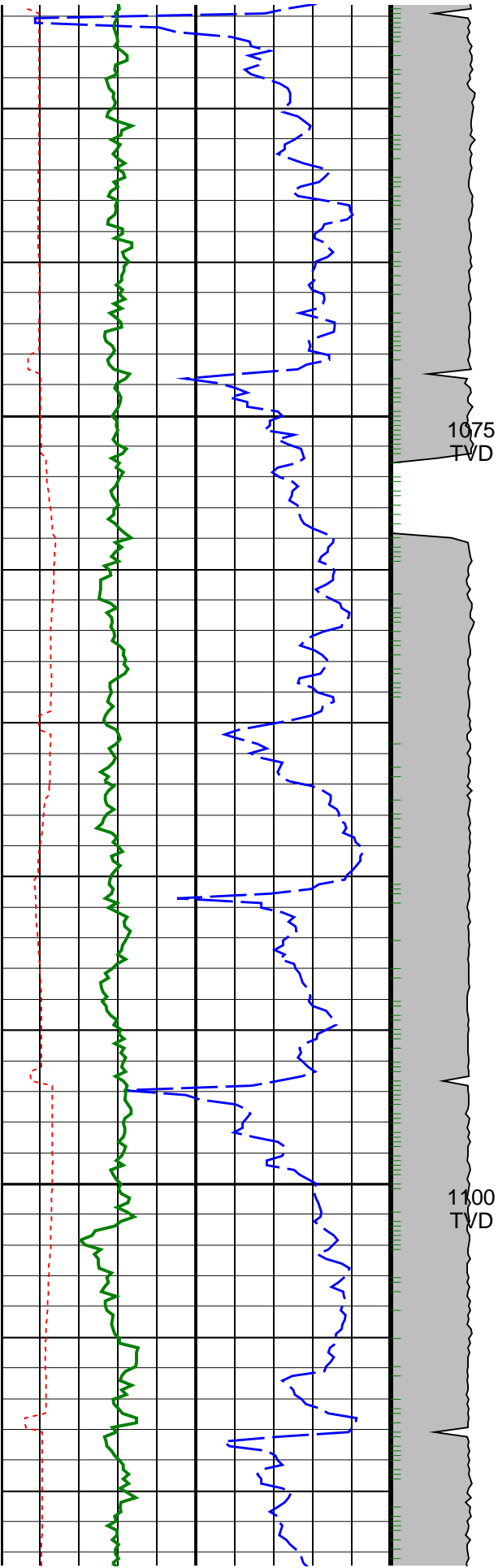


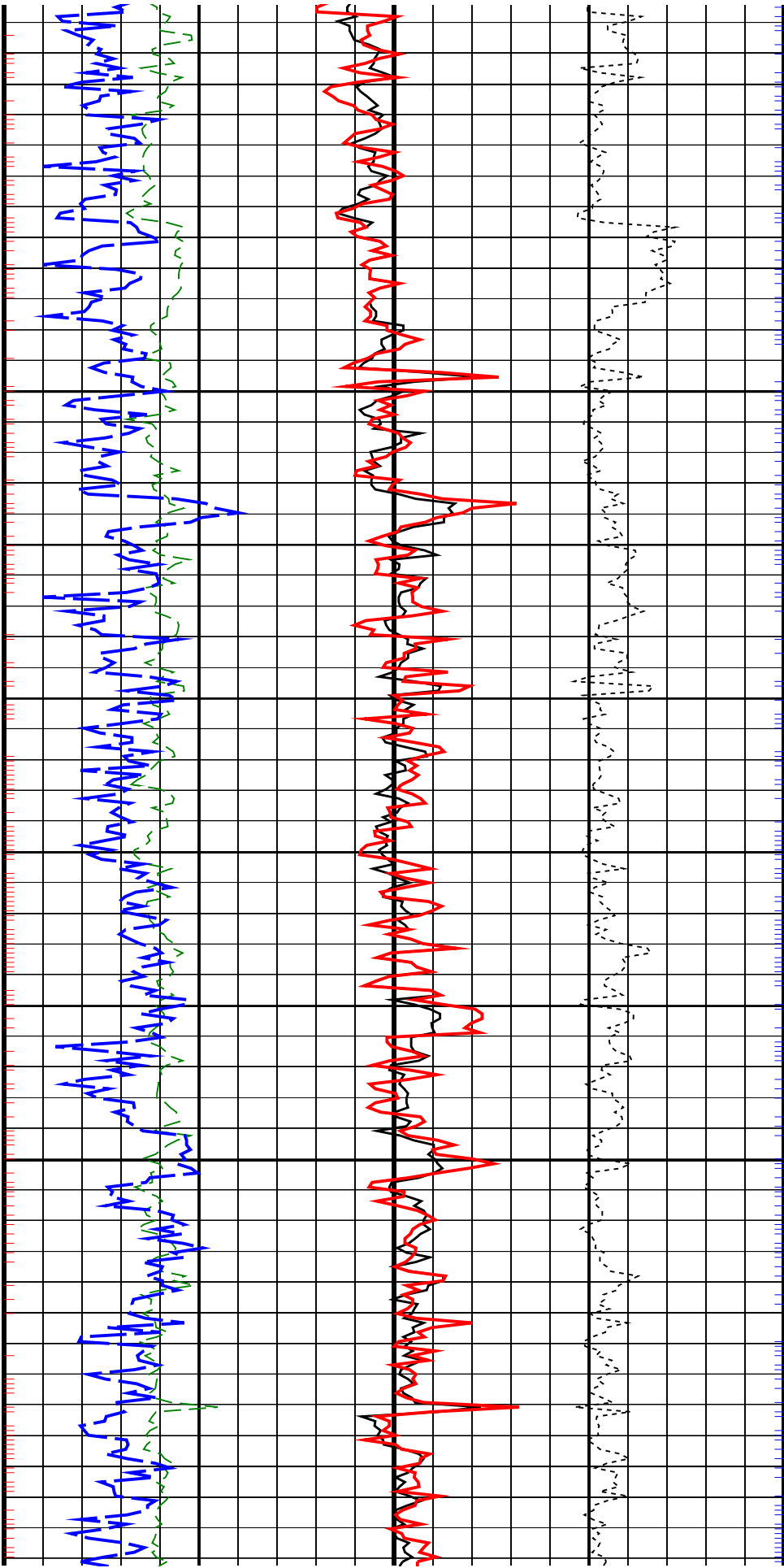
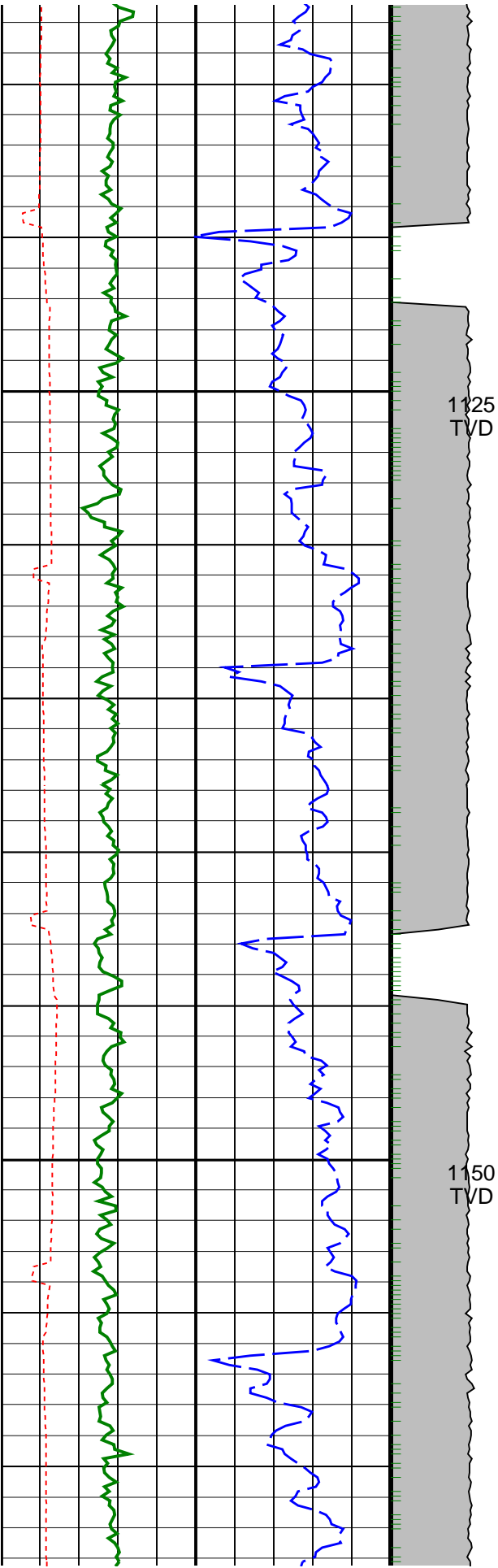


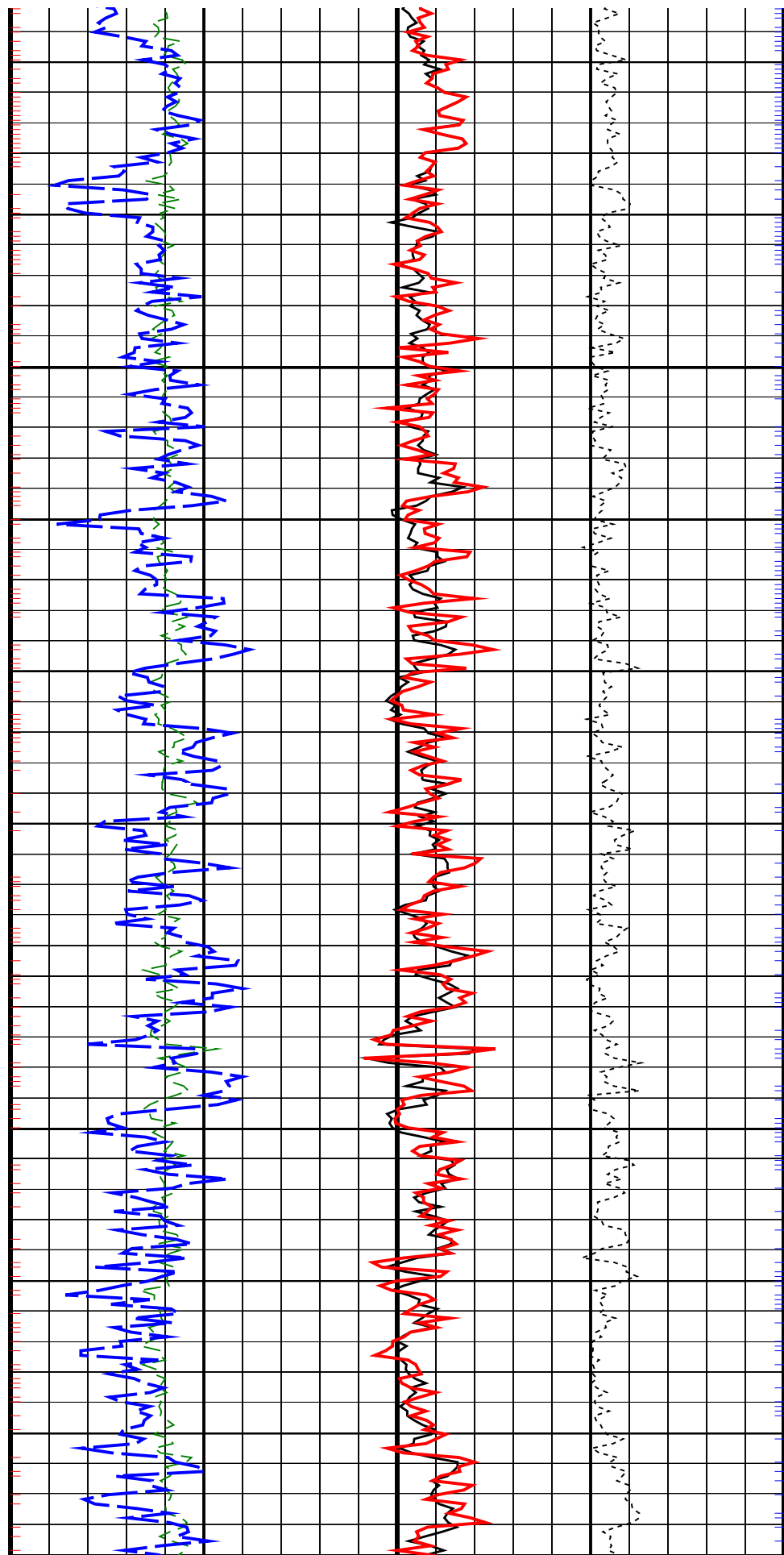
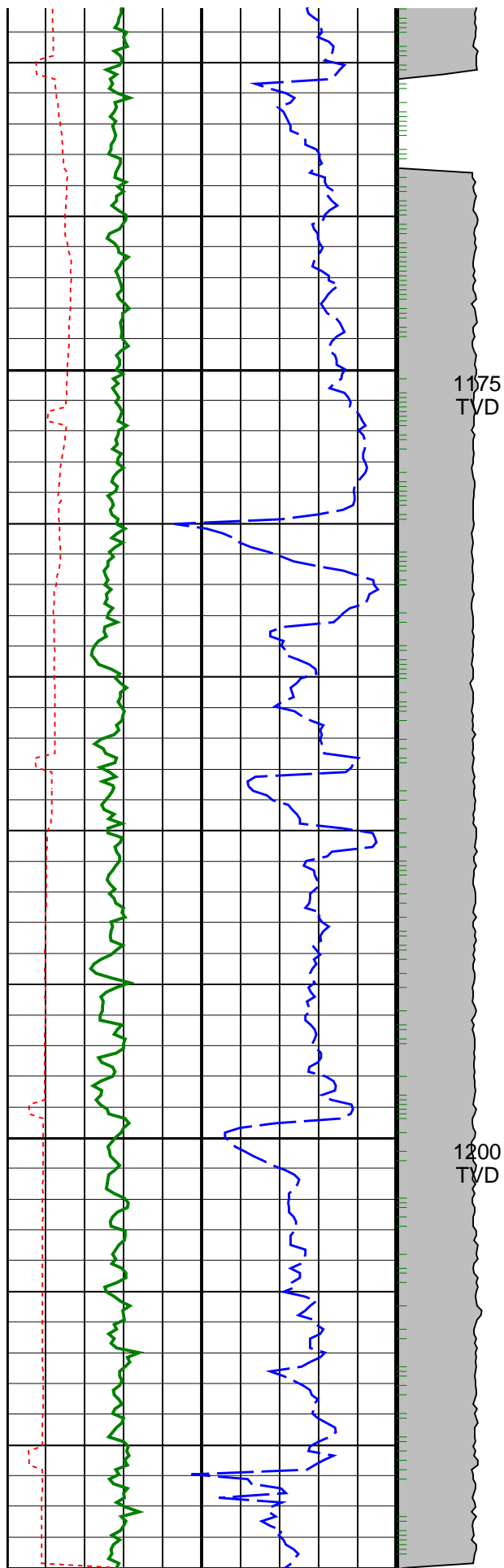


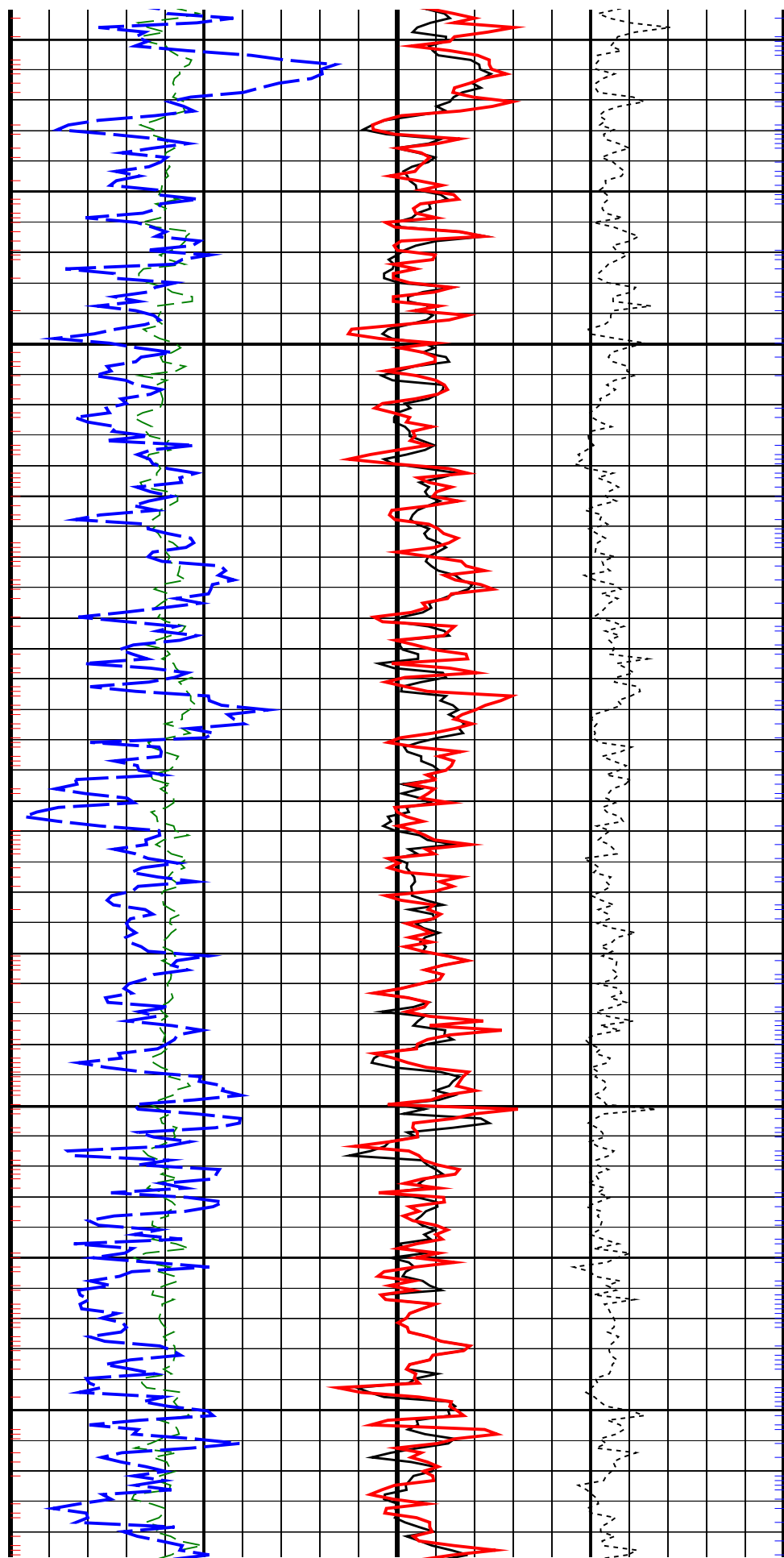
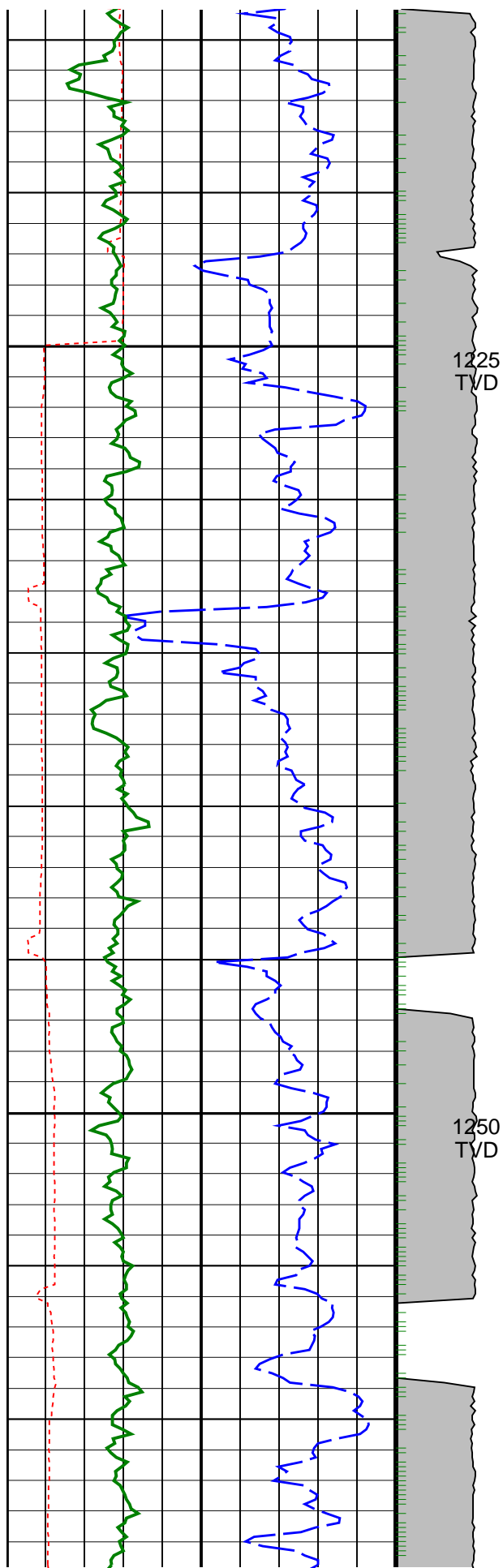




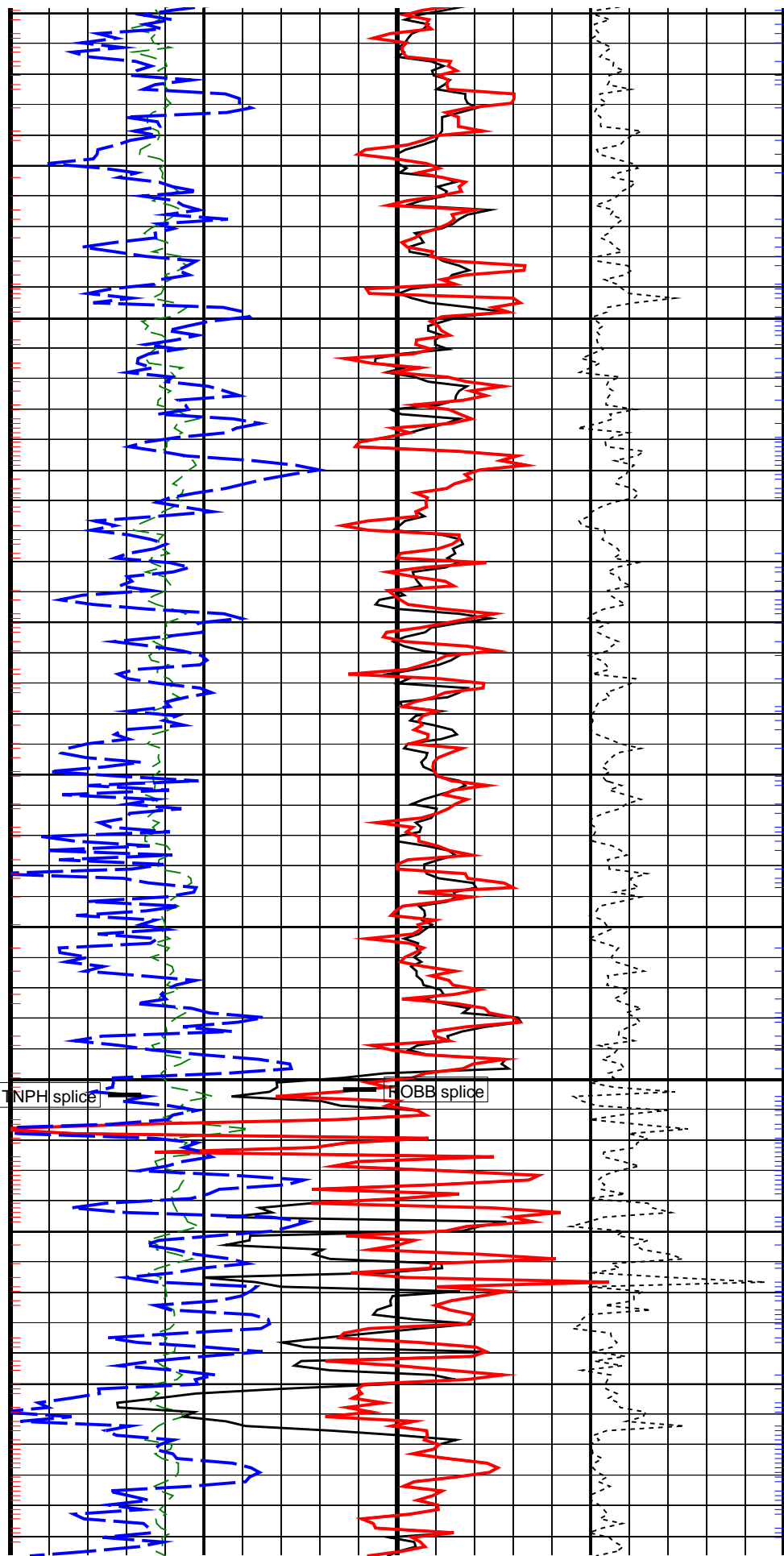
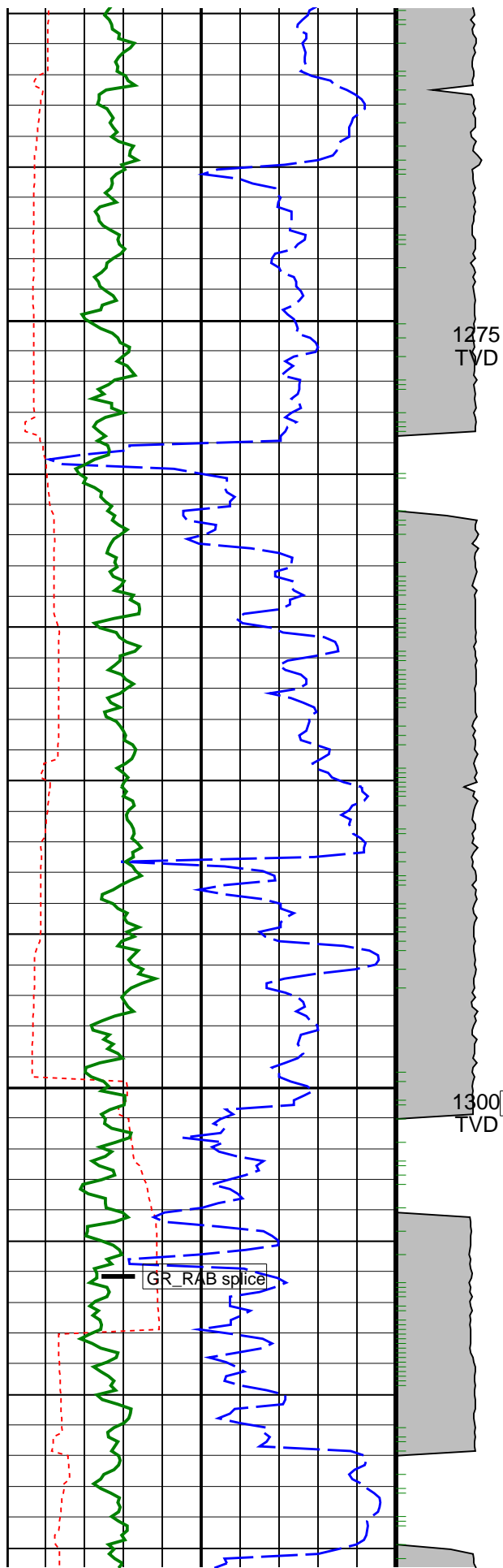


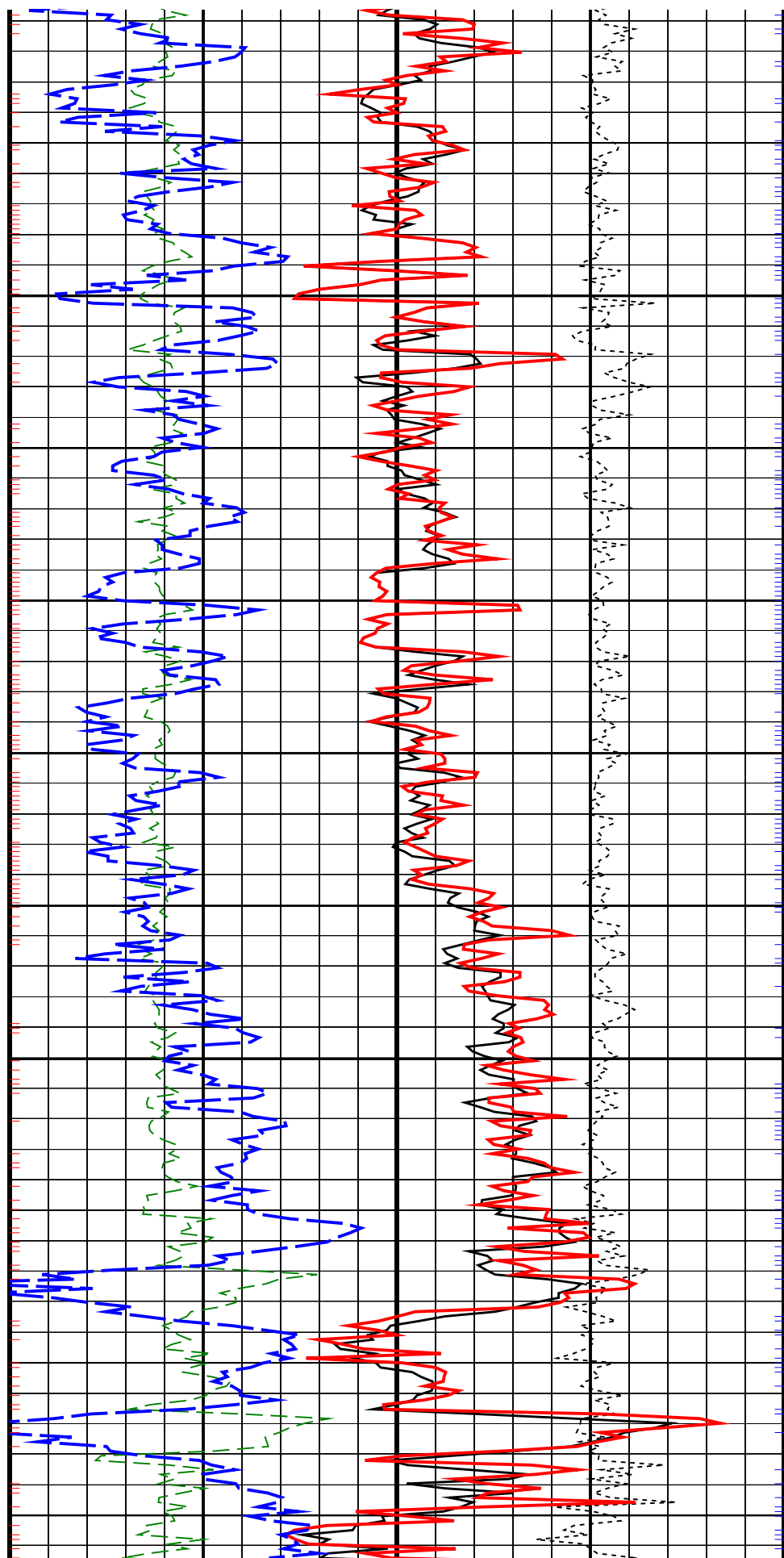
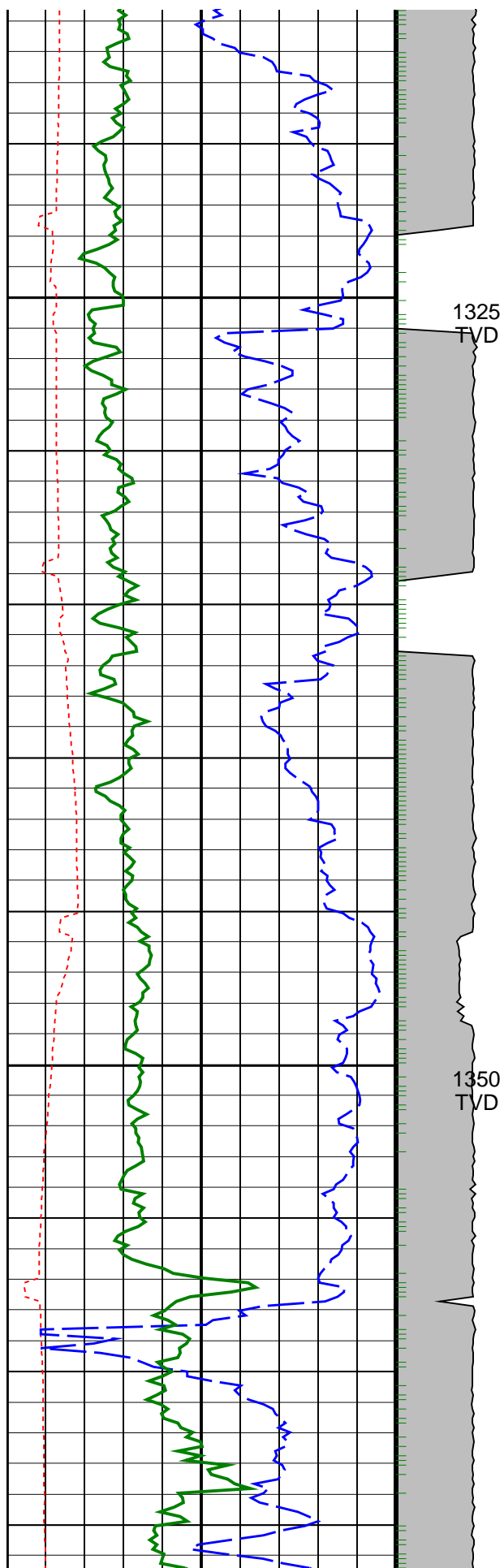


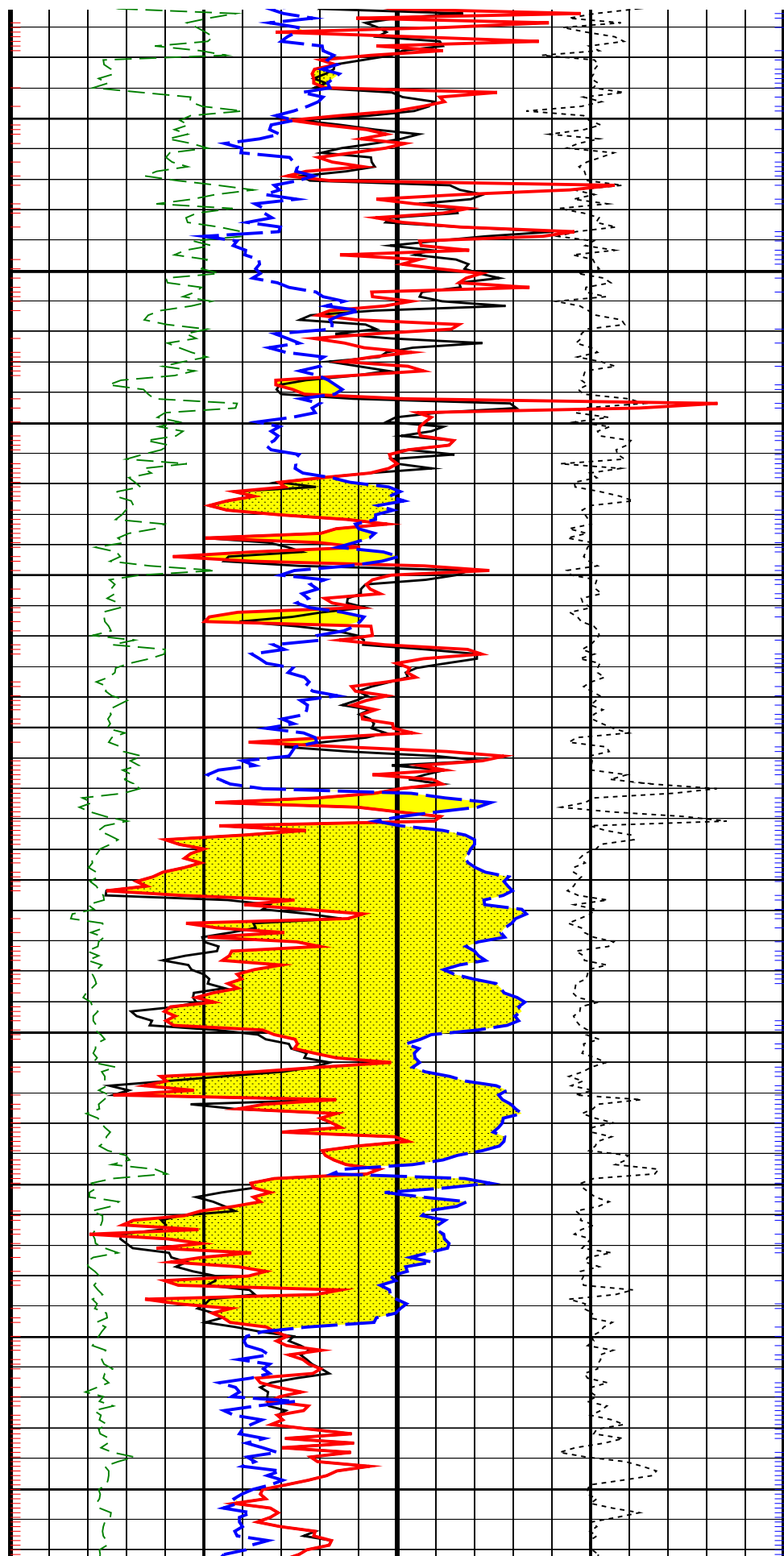
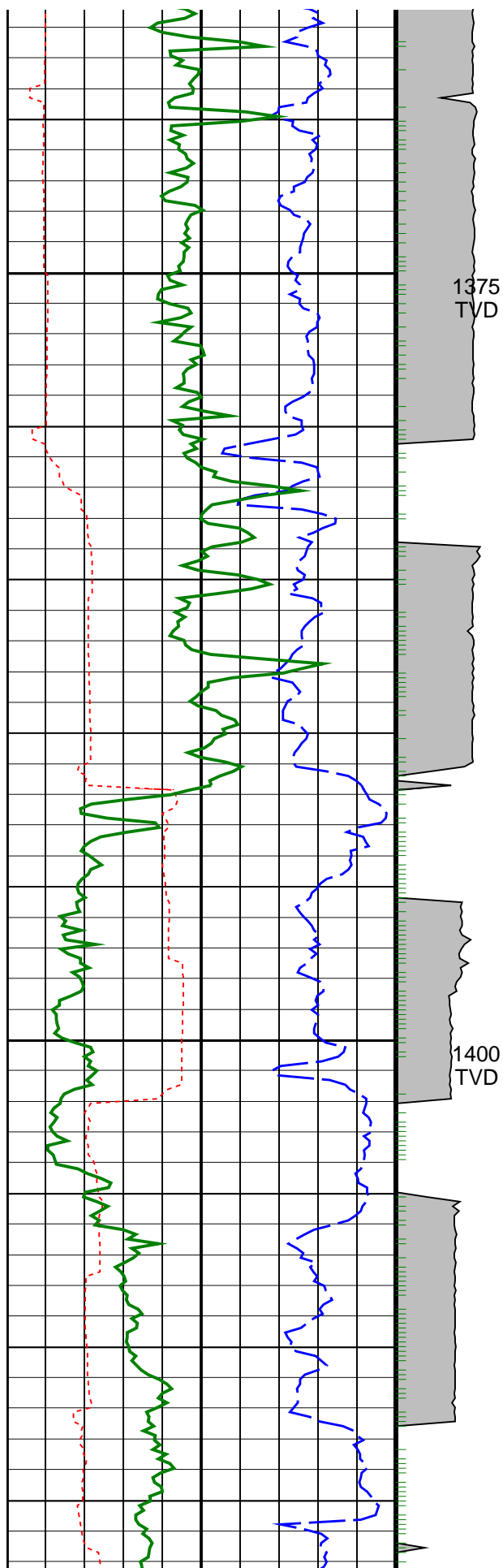


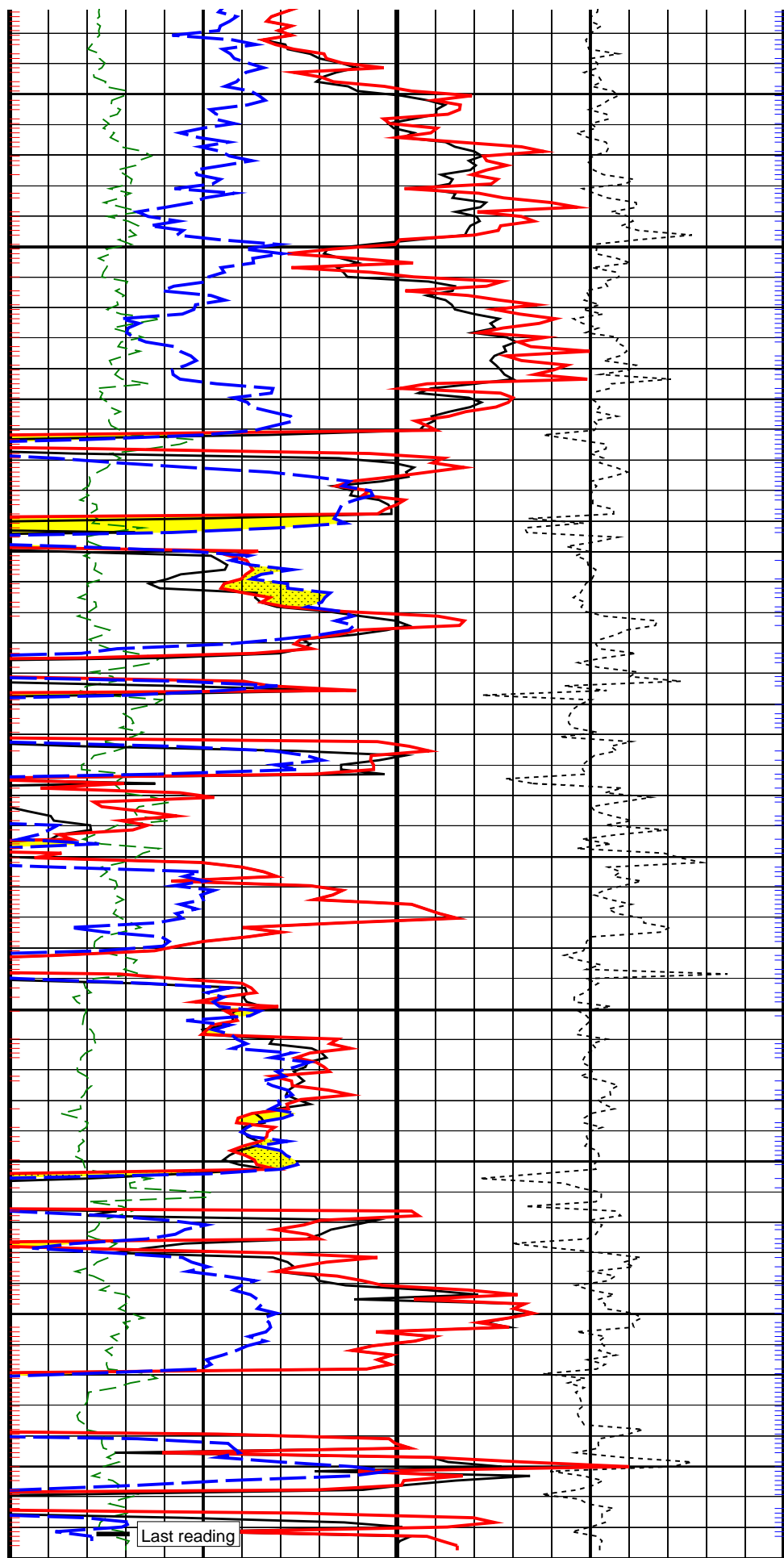
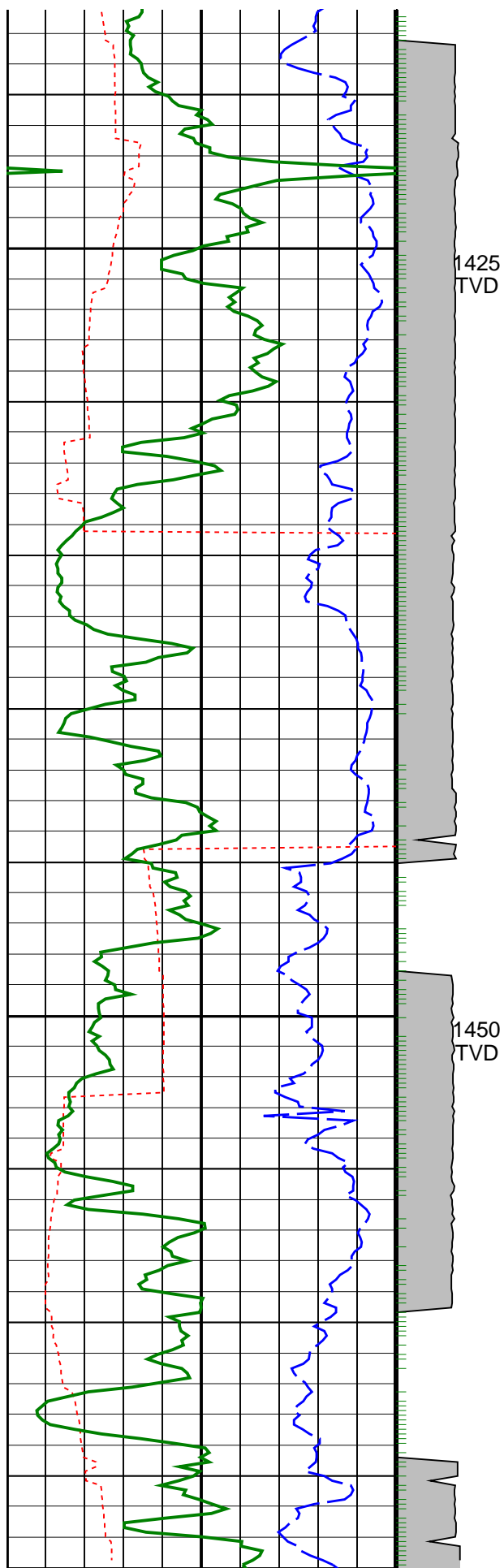


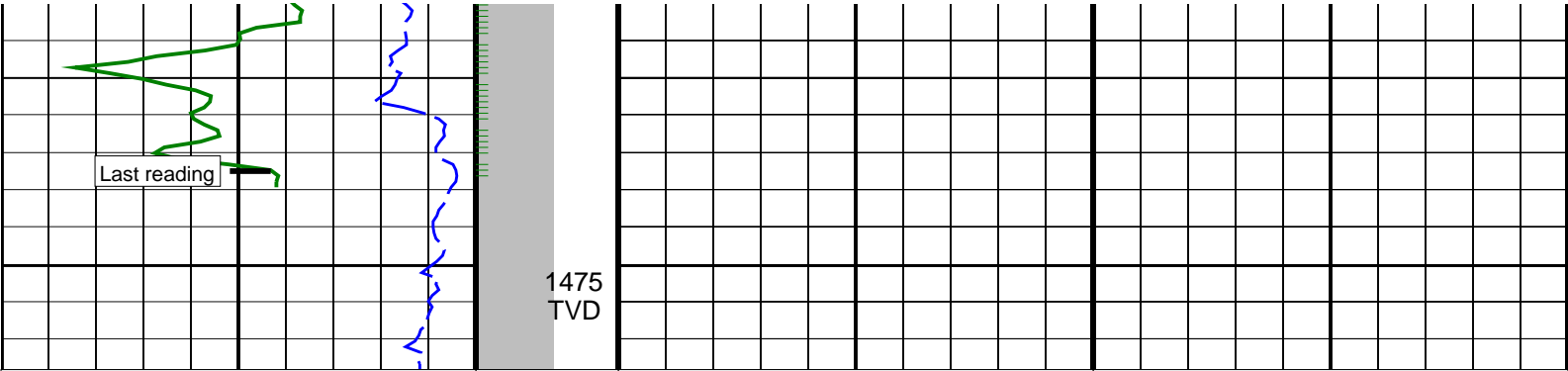












Density Time After Bit (TAB_DEN) (HR)		ADN Rotational Speed (RPM_ADN) (RPM)	Photoelectric Factor, Bottom (PEB) (----	Bulk Density Correction, Bottom (DRHB) (G/C3)
0	10	0	10	-0.25
RAB Gamma Ray (GR_RAB) (GAPI)		0	200	0.25
Rate of Penetration, Averaged over Last 5ft (ROP5_RM) (M/HR)		Bulk Density (RHOB) (G/C3)		
200	0	1.85		
		Bulk Density, Bottom (ROBB) (G/C3)		
		1.85		
		Thermal Neutron Porosity (TNPH) (PU)		
		45		
		Gas Area From ADN/ROBB/DEPTH to ADN/TNPH/DEPTH		

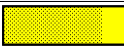
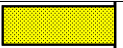
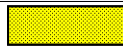
PIP SUMMARY		
┐ Density Ticks, 0.1 ft		Neutron Ticks, 0.1 ft ┐
┐ Gamma Ray Samples		




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



## True Vertical Depth Log






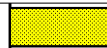

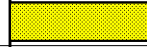
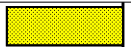


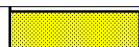




6.75-in. Azimuthal Density Neutron / Equipment Identification		
Primary Equipment: Tool Name and Serial Number Collar Type and Serial Number Chassis Type and Serial Number Stabilizer Type and Serial Number Neutron Logging Source Density Logging Source Stabilizer Size Calibration Status	ADN6 - CA ADDC - AA ADSE - Clamp-On NSR - M GSR - JZ 8.25 - in. Valid	289   699051 A161 A2125



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 (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)				

(Minimum)			(Nominal)			(Maximum)			(Minimum)			(Nominal)			(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
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)	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		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)		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)		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)		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)		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	----- Geomagnetic data -----
Method for DLS.....: Mason & Taylor	Magnetic model.....: BGM version 2001
	Magnetic date.....: 20-Aug-2002
	Magnetic field strength..: 1200.32 HCNT
	Magnetic dec (+E/W-).....: 13.16 degrees
----- Depth reference -----	Magnetic dip.....: -68.69 degrees
Permanent datum.....: MEAN SEA LEVEL	
Depth reference.....: Driller's Pipe Tally	
GL above permanent.....: -59.40 m	
	----- MWD survey Reference Criteria -----



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

----- 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

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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
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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 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
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

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
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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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**

**VISION Neutron Density**

**VISION Neutron Density**  
**1:200 True Vertical Depth**  
**Recorded Mode Log**

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