

Rig: **ISDL 453** State: **Victoria**

Rig: ISDL 453 Field: Tuna Location: Bass Strait Well: TNA A-29 Company: Esso Australia Ltd.	<div><div>Schlumberger</div><div>GeoVISION Resistivity 1:200 True Vertical Depth Recorded Mode Log</div></div>						
	Location	Total depth: 3075 m			Elevation	K.B. Top Drive	
		Spud date: 27-July-02				G.L. -59.4 m	
		Runs: 3 To 6				D.F. 31.3 m	
		Permanent datum: Mean Sea Level			Elev.: 59.4 m		
		Log measured from: Drill Floor			31.3 m above Perm. datum		
	Depth reference: Driller's Pipe Tally						
	API serial no.		x = 5774225.50m (North) y = 624224.90m (East)		Longitude Latitude		
					E 148 25 5.513 S 38 10 16.237		
	Depth logged: 928 m To 3075 m		Mag decl: 13.19°		Other services:		
Date logged: 3-Aug-02 To 11-Aug-02		Mag dip: -68.68°		Directional Drilling			
Bore hole record				Casing record			
Hole size		from	to	Size	Density	from to	
12 1/4 in.		164.9 m	937 m	20 in.	84 lb/ft	Surface 164.9 m	
8 1/2 in.		928 m	3075 m	9 5/8 in.	47 lb/ft	Surface 928 m	
Mud record				Borehole deviation record			
Type		from	to	Min	Max	from to	
Seawater		164.9 m	937 m	6.35°	69.39°	165 m 634 m	
KCL/PHPA/GLYCOL		928 m	3075 m	67.92°	70.43°	634 m 2515 m	
				26.61°	67.38°	2515 m 3075 m	
Surface equipment		Software record		<div><div>IDEAL</div><div>services from</div><div>Anadrill</div></div>			
Unit	OLU-FB-924	IDEAL Wis	ID6_1C_10r				
Depth system	PDA	SPM	ID6_1C_10r				
		LWD	see toolsketch				
		MWD	see toolsketch				

Bit Run Summary

Type		KCL/PHPA/GLYCOL	KCL/PHPA/GLYCOL							
Mud weight	ppg	9.4	10.55	10.4						
Solids	%vol	4.3	10.4	9.4						
Chlorides	mg/l	45,500	47,900	47,900						
Rm	Ohmms @ °C	0.0963@20	0.0945@20	0.1230@21						
Rmf	Ohmms @ °C	0.0878@20	0.1302@20	0.0880@21						
Rmc	Ohmms @ °C	0.0677@20	0.2170@21	0.3830@22						
Potassium	%vol	4	4	4						
Environmental data										
GR										
Mud weight	ppg	9.4	10.55	10.3						
Bit size	in	8.5	8.5	8.5						
Resistivity										
Neutron porosity										
Hole Size	in	8.5	8.5	8.5						
Mud weight	ppg	9.4	10.55	10.3						
Temperature	degC	47.1	78	75						
Mud salinity	mg/l	75,000	79,035	79,035						
Formation salinity										
Recording rate 1	SEC	10	10	10						
Recording rate 2	SEC	10	10	10						
Filtering GR		3 pt	3 pt	3 pt						
Filtering density		3 pt	3 pt	3 pt						
Filtering Neutron		3 pt	3 pt	3 pt						
Company representative		B. Davies	B. Steel	G. Campbell						
Anadrill personnel		J. Walta	L. Bon	J. Dolan						

DISCLAIMER

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OTHER SERVICES FOR RUN3 Directional Surveys	OTHER SERVICES FOR RUN4 Directional Surveys	OTHER SERVICES FOR RUN6 Directional Surveys
REMARKS: RUN NUMBER 3 8-1/2in Hole Section was logged from 928m to 1192m MD Depth is referenced to driller's pipe tally All data is presented from tool memory Button deep down resistivity is presented in replacement for absent ring resistivity. GR corrected for mud weight, tool and bit size. RAB6 resistivity is corrected for the bit size, mud resistivity and borehole temperature. Bottom quadrant density is presented. Neutron porosity is calculated with limestone matrix and is corrected for the bit size, borehole salinity, temperature and mud hydrogen index (from mud weight, temperature and pressure) Mud type is water based KCL/PHPA/GLYCOL Barite is present in the mud.	REMARKS: RUN NUMBER 4 8-1/2in Hole Section was logged from 1192m to 2797m MD Depth is referenced to driller's pipe tally All data is presented from tool memory Button deep down resistivity is presented in replacement for absent ring resistivity. GR corrected for mud weight, tool and bit size. RAB6 resistivity is corrected for the bit size, mud resistivity and borehole temperature. Bottom quadrant density is presented. Neutron porosity is calculated with limestone matrix and is corrected for the bit size, borehole salinity, temperature and mud hydrogen index (from mud weight, temperature and pressure) Mud type is water based KCL/PHPA/GLYCOL Barite is present in the mud.	REMARKS: RUN NUMBER 6 8-1/2in Hole Section was logged from 2797m to 3075m MD Depth is referenced to driller's pipe tally All data is presented from tool memory Button deep down resistivity is presented in replacement for absent ring resistivity. GR corrected for mud weight, tool and bit size. RAB6 resistivity is corrected for the bit size, mud resistivity and borehole temperature. Bottom quadrant density is presented. Neutron porosity is calculated with limestone matrix and is corrected for the bit size, borehole salinity, temperature and mud hydrogen index (from mud weight, temperature and pressure) Mud type is water based KCL/PHPA/GLYCOL Barite is present in the mud.

Barite is present in the mud.

RAB6C* Downhole Software 6.1B14
ADN6C* Downhole Software 6.2B08

Barite is present in the mud.

RAB6C* Downhole Software 6.1B14
ADN6C* Downhole Software 6.2B08

Barite is present in the mud.

RAB6C* Downhole Software 6.1B12
ADN6C* Downhole Software 6.1B01

EQUIPMENT DESCRIPTION

RUN3

RUN4

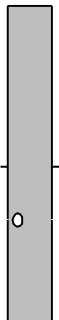
RUN6

DOWNHOLE EQ

6-3/4" A
ADSE
8-1/4in
NSR-M
GSR-J A
Soft: 6.2

Neutron
Neutron
Density
Density
UltraSo
R-O P

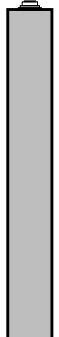
27.8
27.6
26.8
26.7
26.3
25.5



6-3/4" Powe
MDC Z
MDI 116
MEC 115
Soft: 6.1

D&I
GR


19.4
18.7



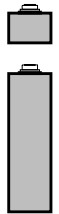
6-3/4" G
S/N: 1
Soft: 6.1

Shallo
Medium
Deep
Ring R
R-O p
GR

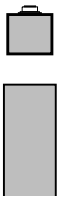
13.7
13.6
13.4
13.2
13.1
12.9



Cross Over S
NM Pony
S/N ANA9



ADOS S/N
PowerPak* Mu
A675XP7850
1.15 deg bent B




DOWNHOLE E

6-3/4" A
ADSE
8-1/4in
NSR-M
GSR-J A
Soft: 6.2

Neutron
Neutron
Density
Density
UltraSo
R-O P


27.7
27.6
26.7
26.6
26.2
25.4



6-3/4" Powe
MDC Z
MDI 116
MEC 115
Soft: 6.1

D&I
GR


19.3
18.7




6-3/4" G
S/N: 1
Soft: 6.1

Shallo
Medium
Deep
Ring R
R-O p
GR


13.6
13.5
13.3
13.2
13.0
12.8



Cross Over S
NM Pony
S/N ANA9



ADOS S/N
PowerPak* Mu
A675XP7850
1.15 deg bent B

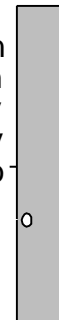


DOWNHOLE EQ

6-3/4" A
ADSE
8-1/4in
NSR-M
GSR-J A
Soft: 6.1

Neutron
Neutron
Density
Density
UltraSo
R-O P


27.6
27.5
26.6
26.5
26.1
25.4



6-3/4" Powe
MDC Z
MDI 116
MEC 115
Soft: 6.1

D&I
GR


19.3
18.7




6-3/4" G
S/N: 1
Soft: 6.1

Shallo
Medium
Deep
Ring R
R-O p
GR


13.6
13.5
13.3
13.2
13.0
12.8






Cross Over S
NM Pony
S/N ANA9



ADOS S/N
PowerPak* Mu
A675XP7850
1.15 deg bent B



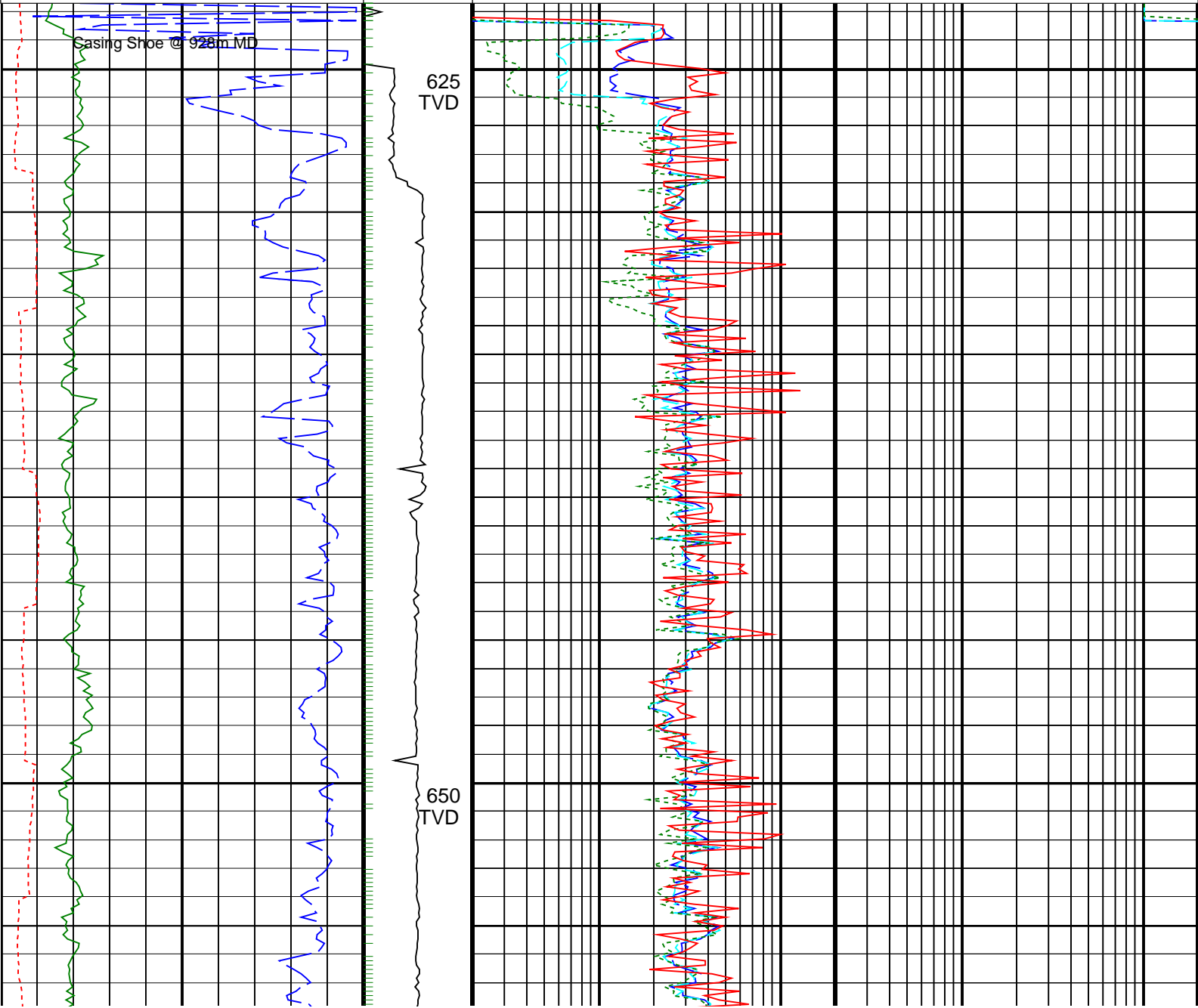
1.15 deg bent B		1.15 deg bent B		1.15 deg bent B	
Bit-PD	0.00	Bit-PD	0.00	Bit-PD	0.00
Hughes Model: HCM60		GeoDIAMOND Model: S7		GeoDIAMOND Model: S7	
MAXIMUM STRING DI		MAXIMUM STRING DI		MAXIMUM STRING DI	
ALL LENGTHS I		ALL LENGTHS I		ALL LENGTHS I	

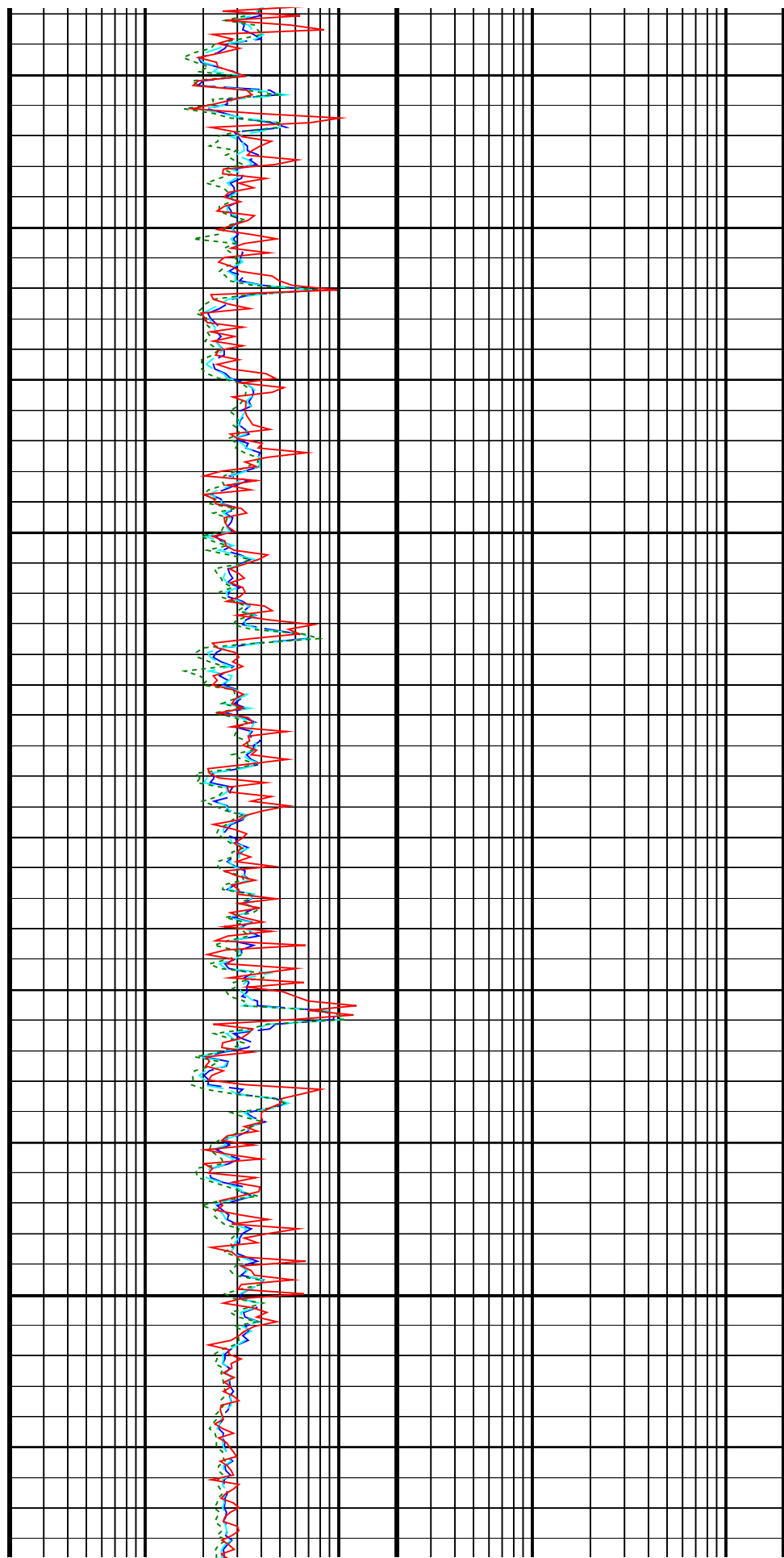
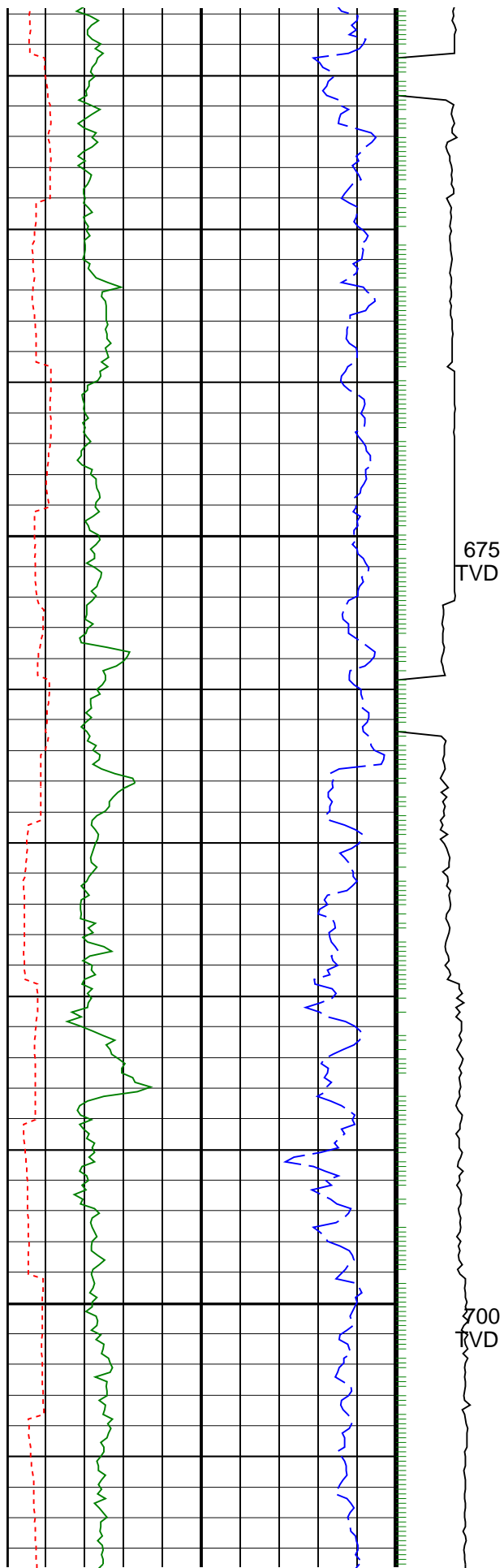
True Vertical Depth Log			
IDEAL Version: ID7_0C_02			
IDF			
RAB	id6_1c_10	MWD_10	id6_1c_10
ADN	id6_1c_10		
Format: A-29 GeoVISION Resistivity		Vertical Scale: 1:200	Graphics File Created: 18-Aug-2002 14:21
Parameters			
DLIS Name	Description	Value	
BDBHCA	RAB: Button Deep Borehole A Factor	0.004	
BDBHCB	RAB: Button Deep Borehole B Factor	0.000	
BHA_COEF_VER	RAB: BHA Coef Generator Version	2.000	
BITBHCA	RAB: Bit A Borehole Factor	0.058	
BITBHCB	RAB: Bit B Borehole Factor	0.000	
BIT_K_FACTOR	RAB: Bit K Factor	15.703	
BMBHCA	RAB: Button Medium Borehole A Factor	0.023	
BMBHCB	RAB: Button Medium Borehole B Factor	0.000	
BSBHCA	RAB: Button Shallow Borehole A Factor	0.023	
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	
DHS_VERSION	RAB: DownHole Software Version	V6.1 B	
DO	Depth Offset	0.0	m
GRDC	Grid corr angle	-0.880	deg
MBUTTON_K_FACTOR	RAB: Button Medium K Factor	0.005	
MST_RM	Mud Sample temperature (RM)	20.800	degC
MW_RM	Mud Weight (RM)	10.400	lbm/gal
OBM	RAB: Oil base Mud	NO	
RABEC	RAB: Resistivity Env-Cor	YES	
RAB_TEMP_SELECT	RAB Temperature Selection	MEAS	
READOUT_PORT_MP	RAB: ROP to Bit Face Distance	13.070	m
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)	0.123	ohm.m
SBUTTON_K_FACTOR	RAB: Button Shallow K Factor	0.007	
STAB	RAB: Run with Stabilizer	YES	
TOOLTYPE	RAB: Azimuthal Tool	YES	
TS_VERSION	RAB: ToolScope Software Version	V6.0 B017	
VRAB6	Rab Tool type (ENP/PILOT)	RAB6 C SERIES	

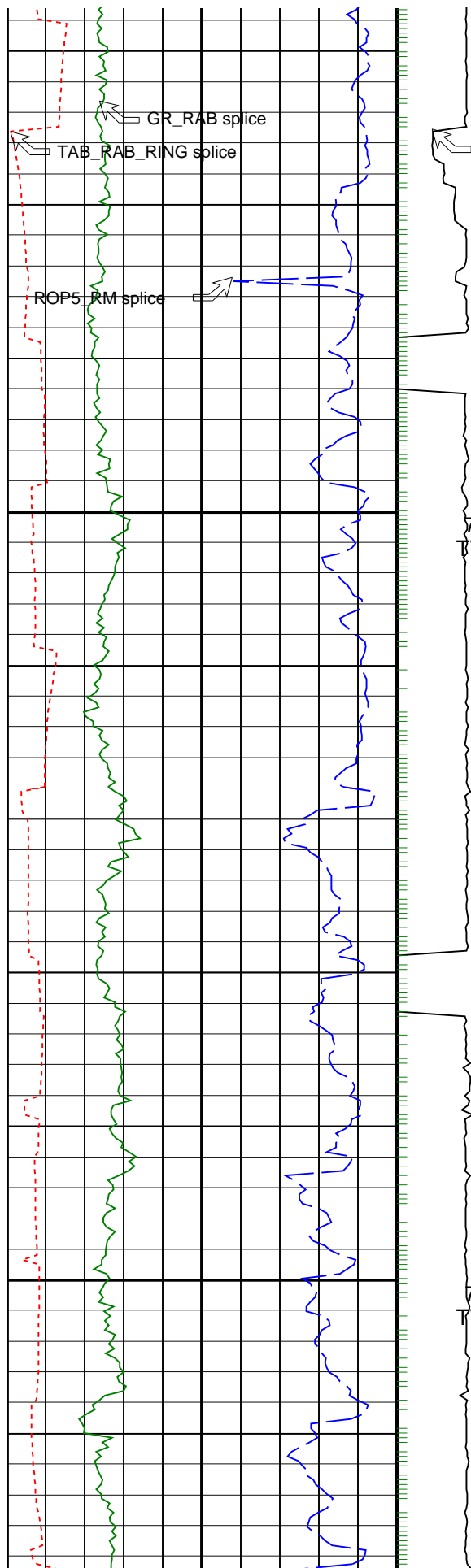
PIP SUMMARY

Gamma Ray Samples

Ring Resistivity Time After Bit (TAB_RAB_RING) (HR)		Deep Button Resistivity, Down (RES_BD_DN) (OHMM)	
0 10		0.2 2000	
Rate of Penetration, Averaged over Last 5ft (ROP5_RM) (M/HR)		Shallow Button Resistivity (RES_BS) (OHMM)	
200 0		0.2 2000	
RAB Gamma Ray (GR_RAB) (GAPI)		Medium Button Resistivity (RES_BM) (OHMM)	
0 200		0.2 2000	
RAB Rotational Speed (RPM_RAB) (RPM)		Deep Button Resistivity (RES_BD) (OHMM)	
0 200		0.2 2000	

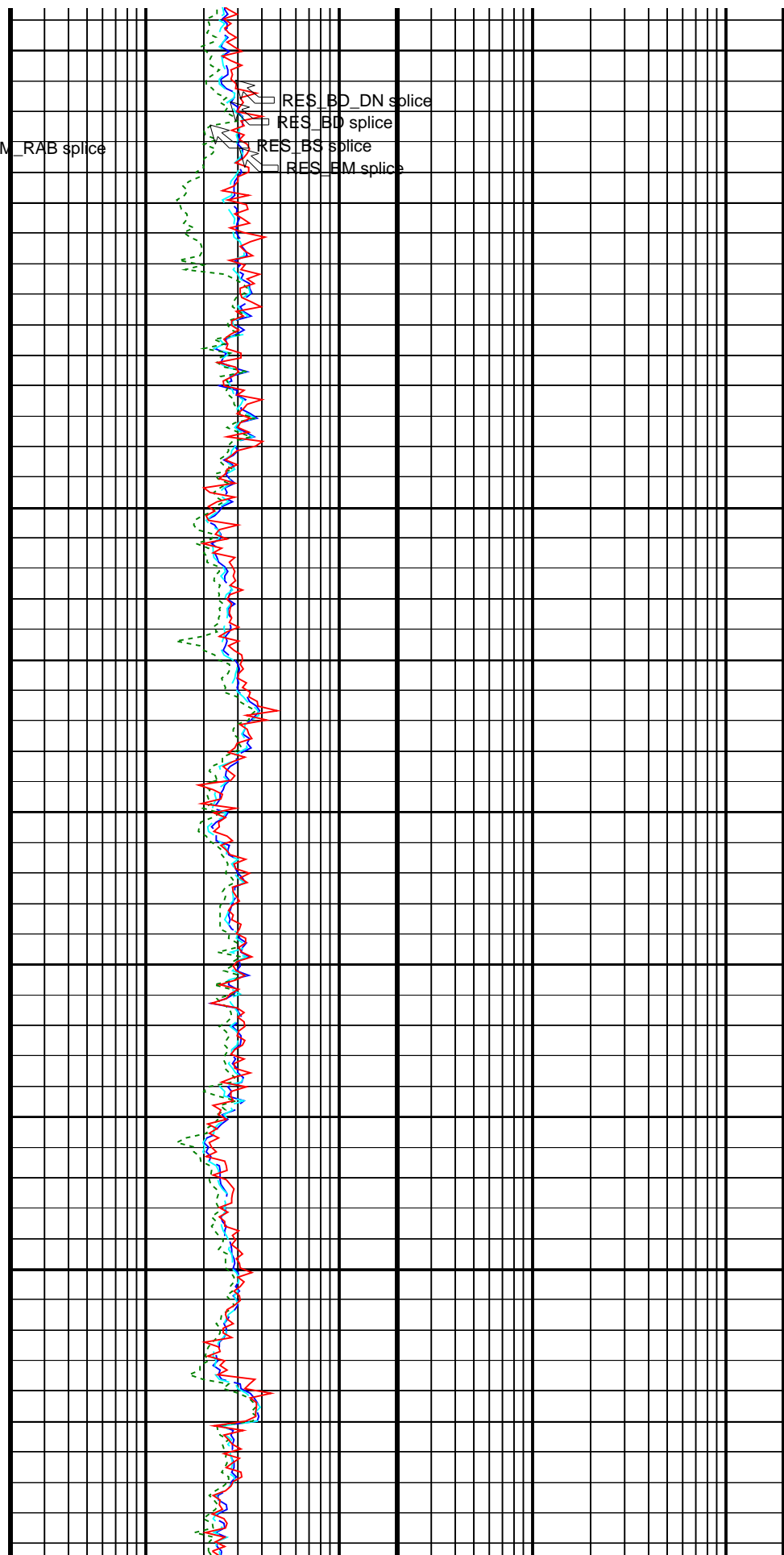


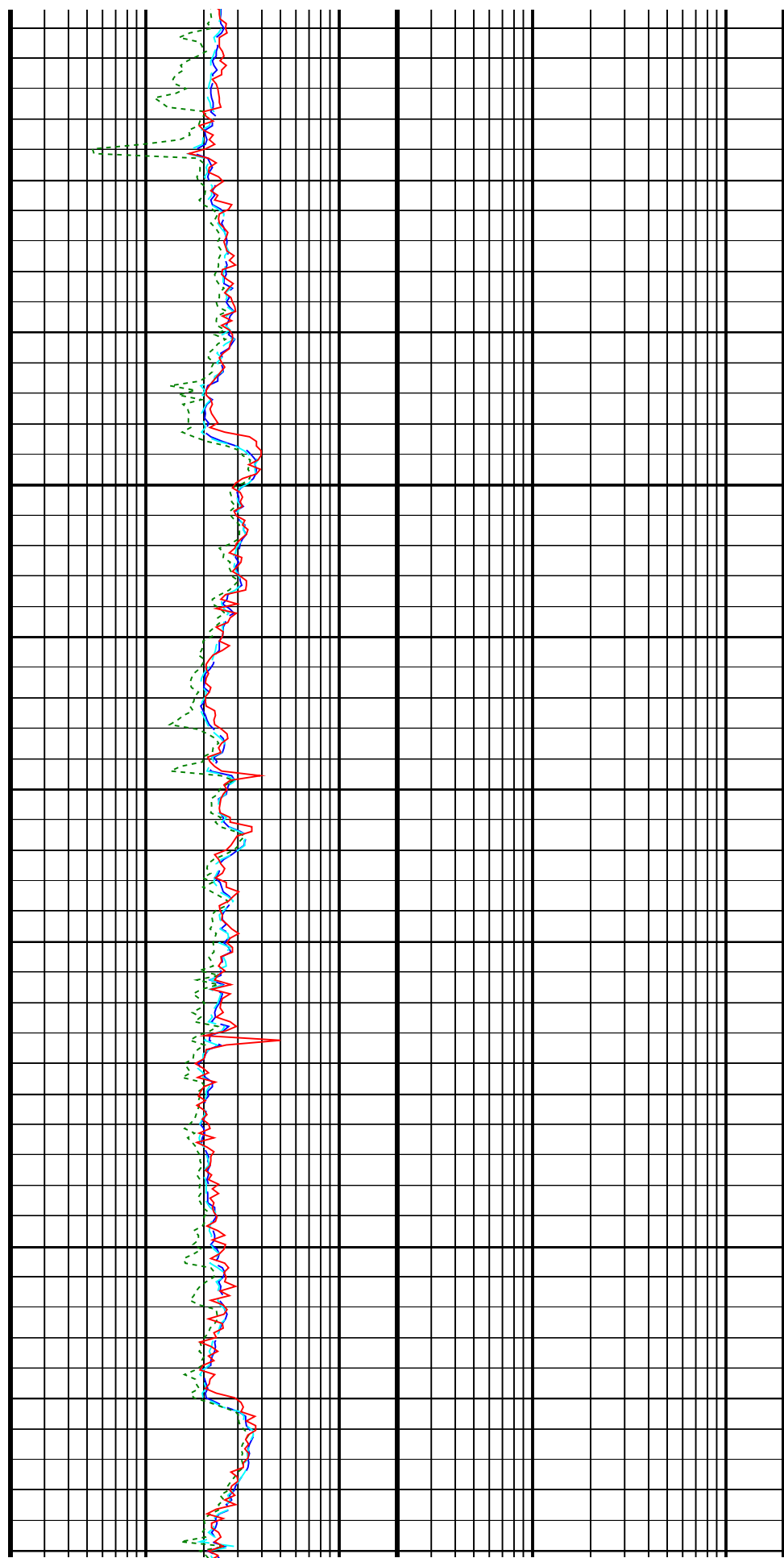
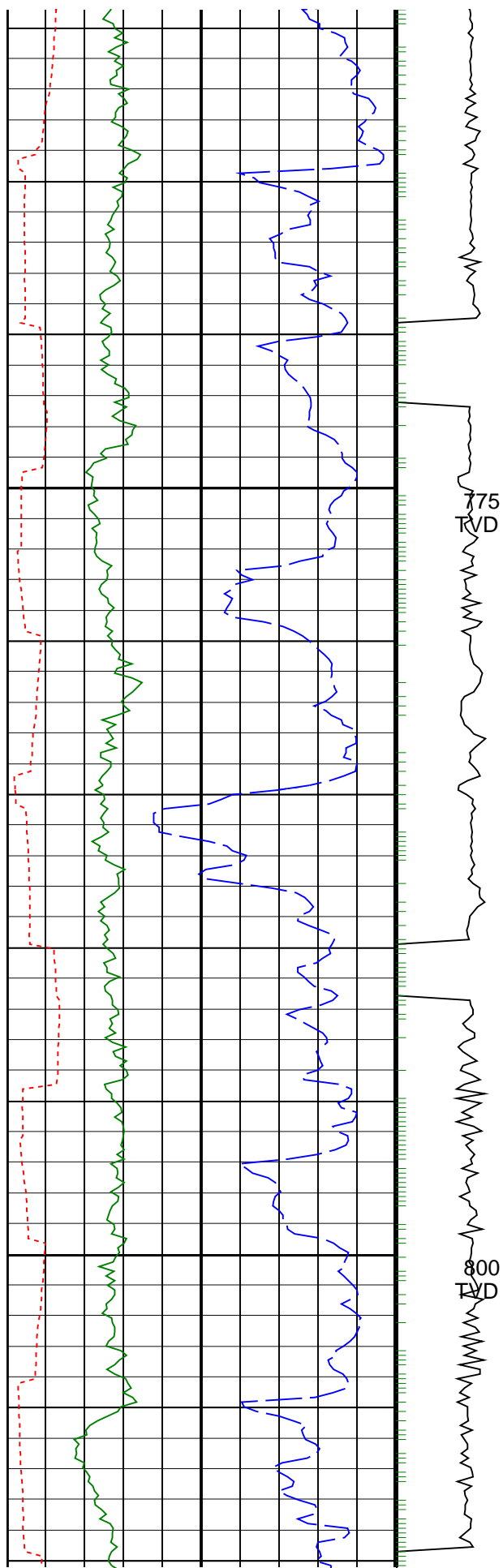


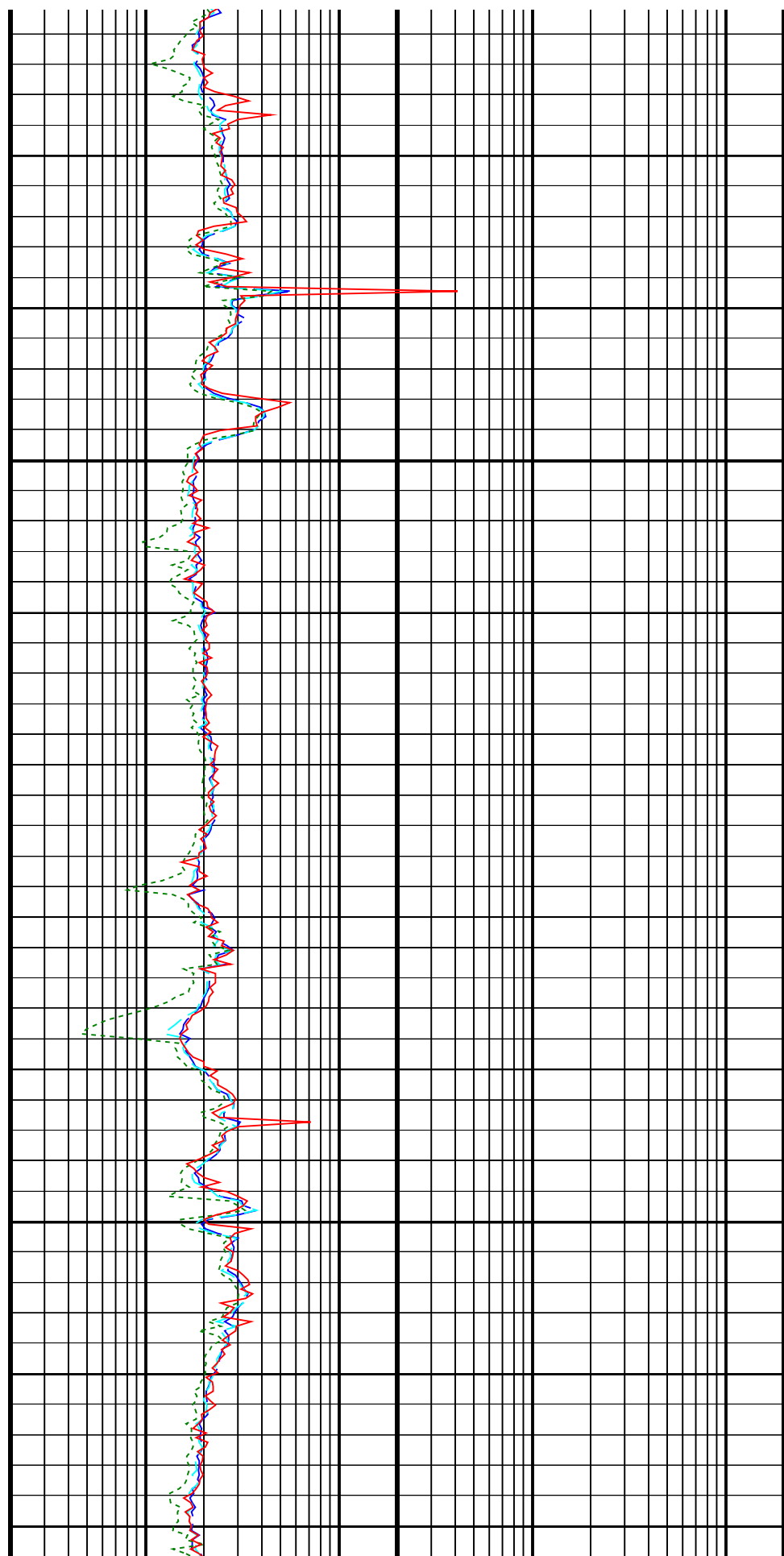
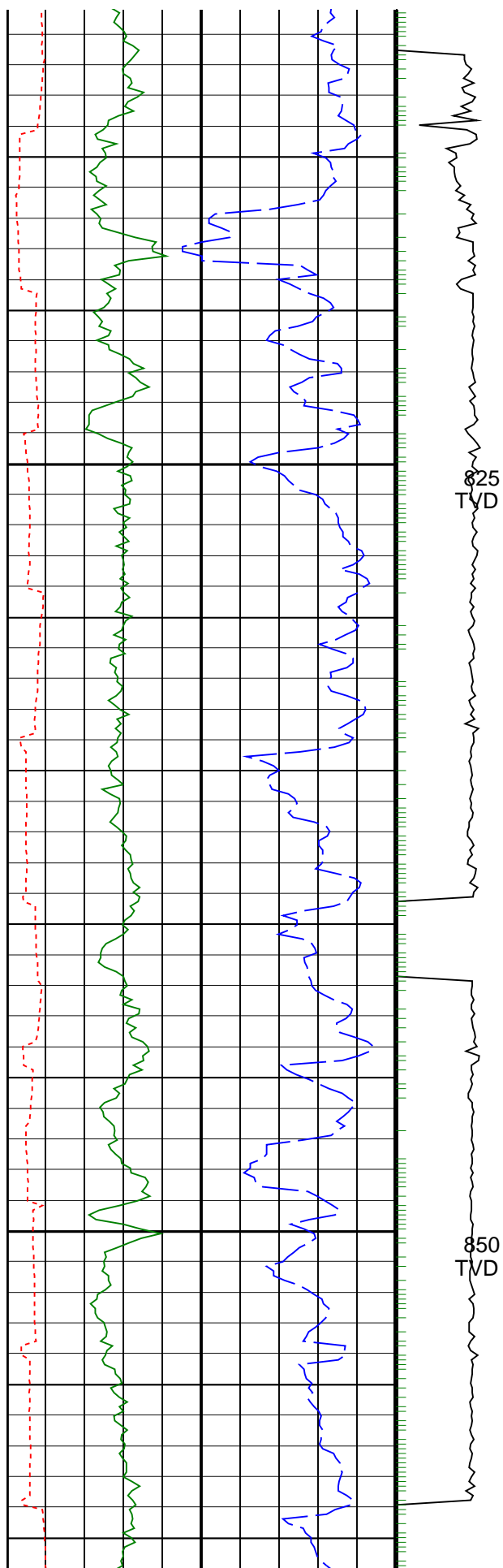


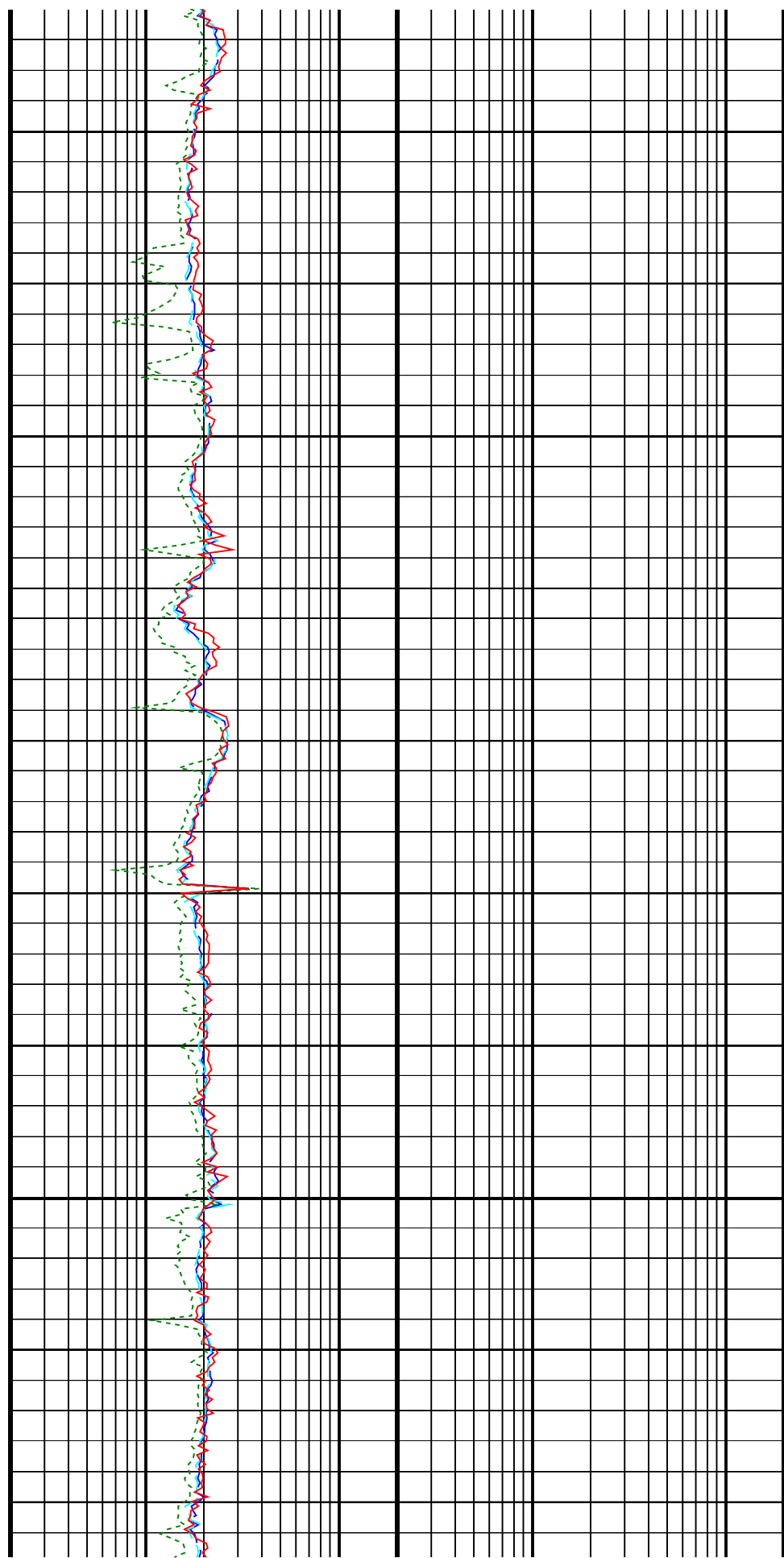
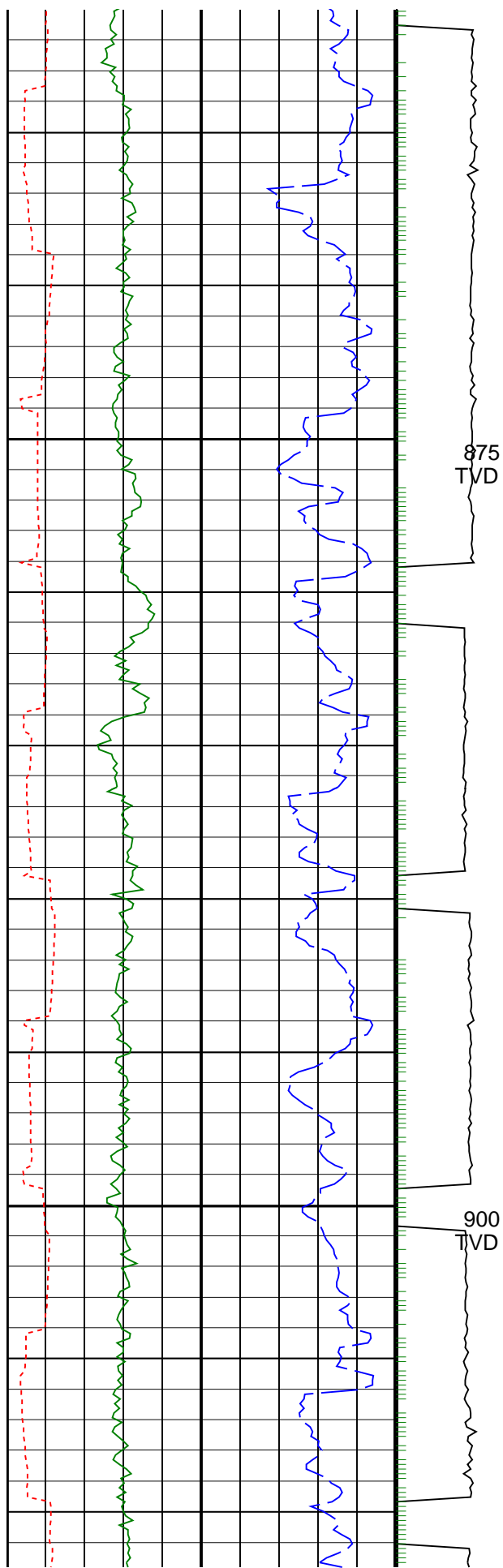
725
TVD

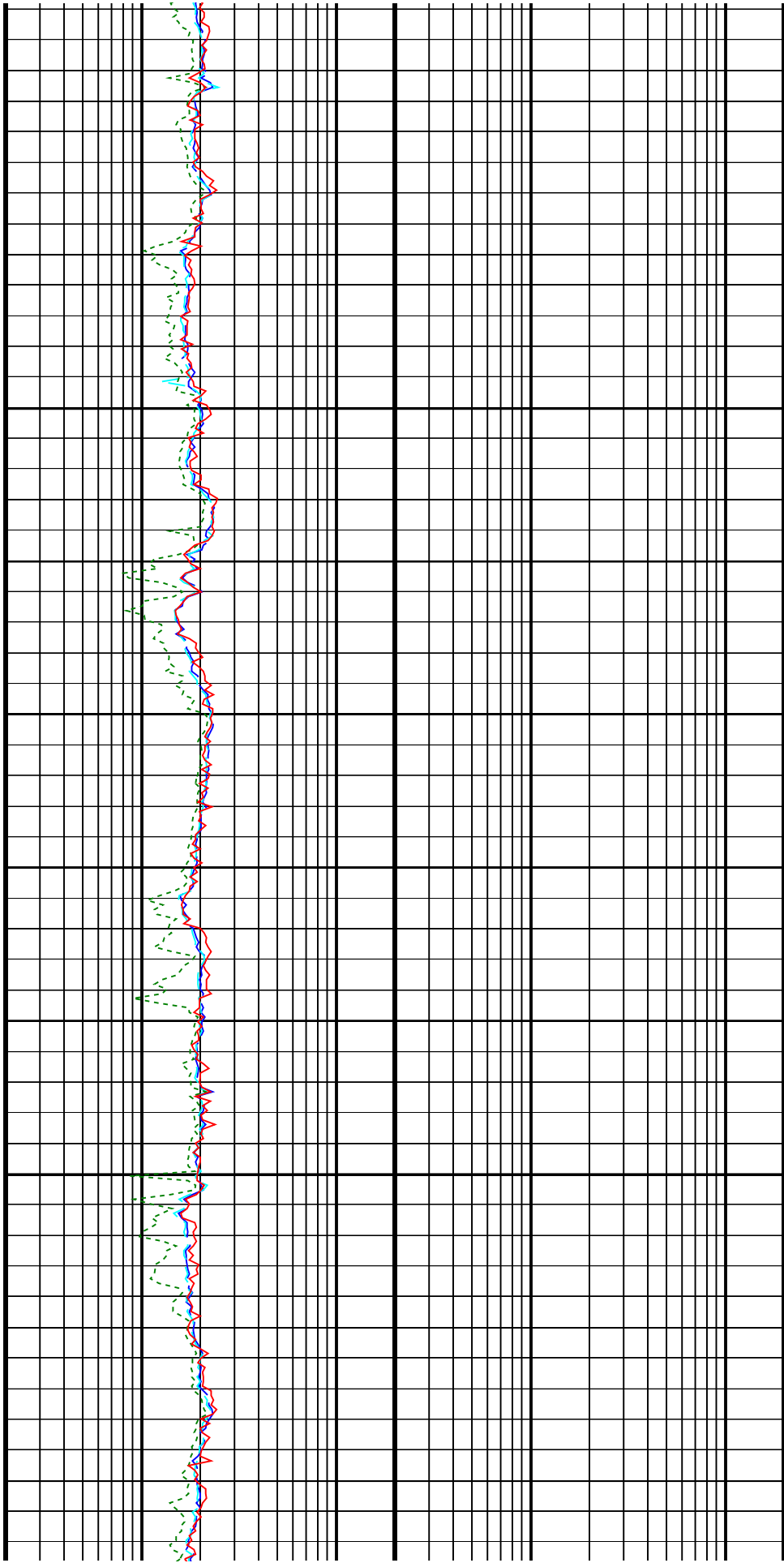
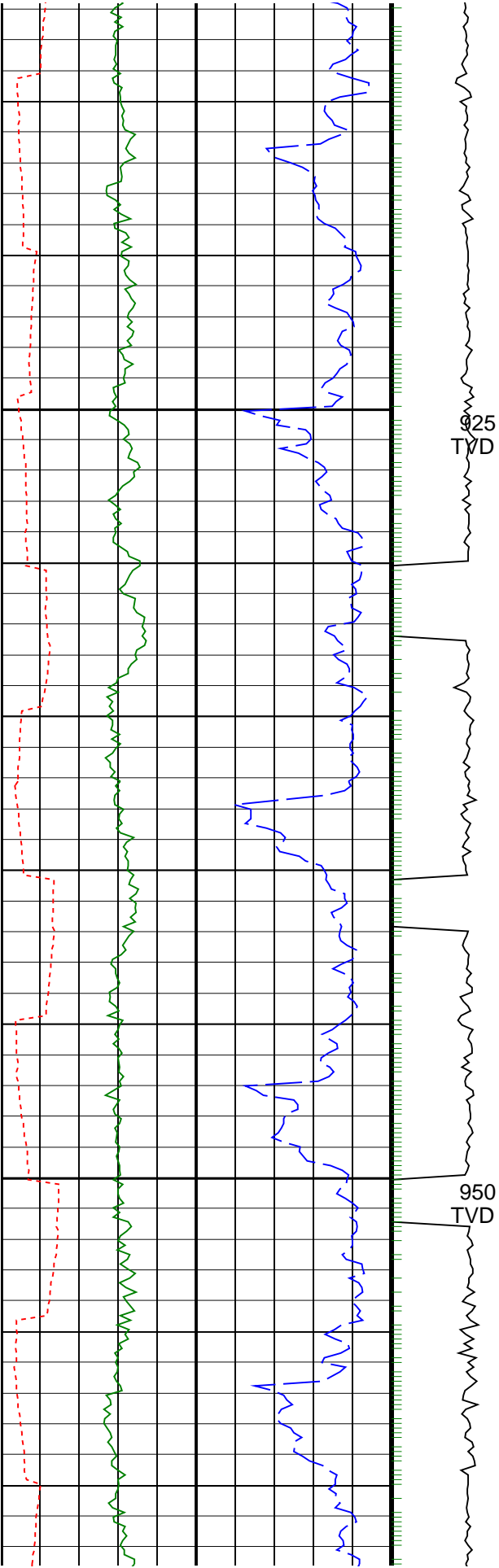
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TVD

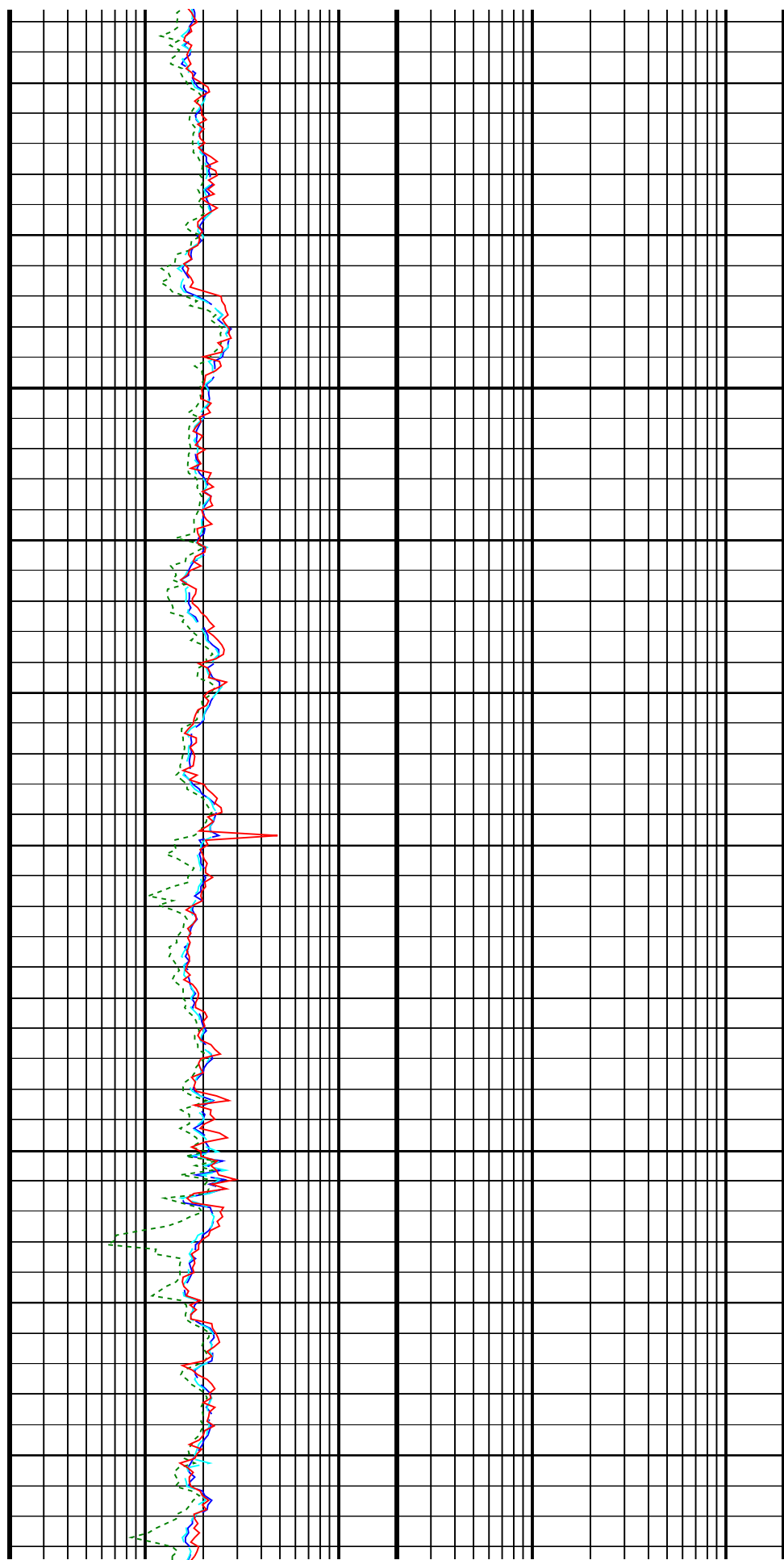
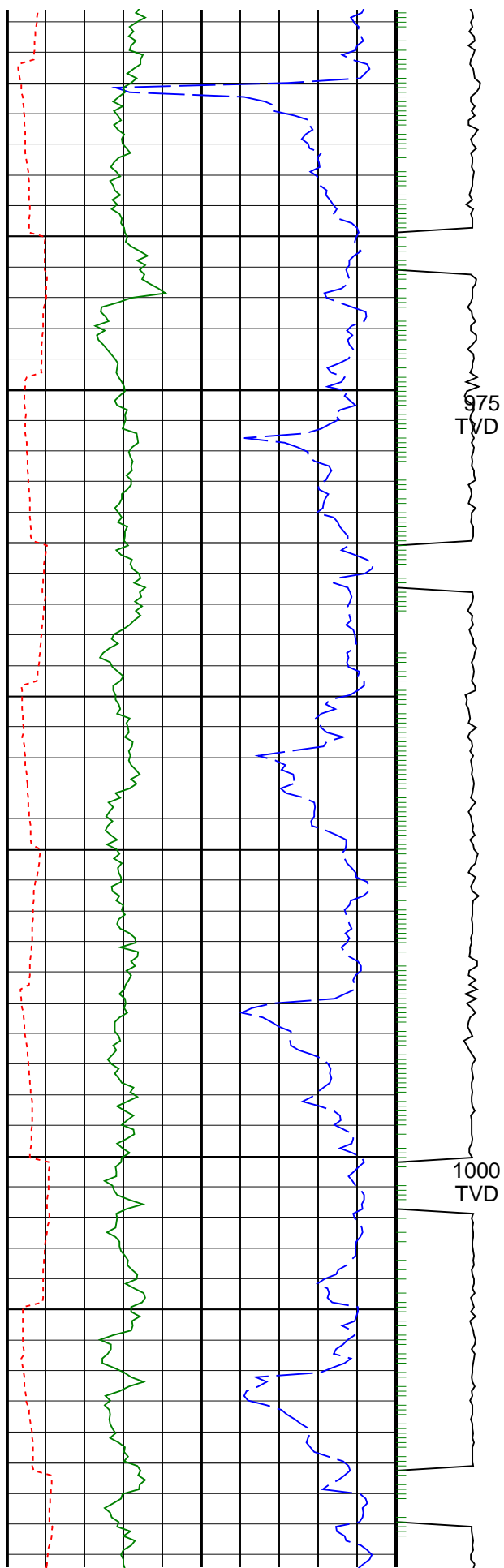


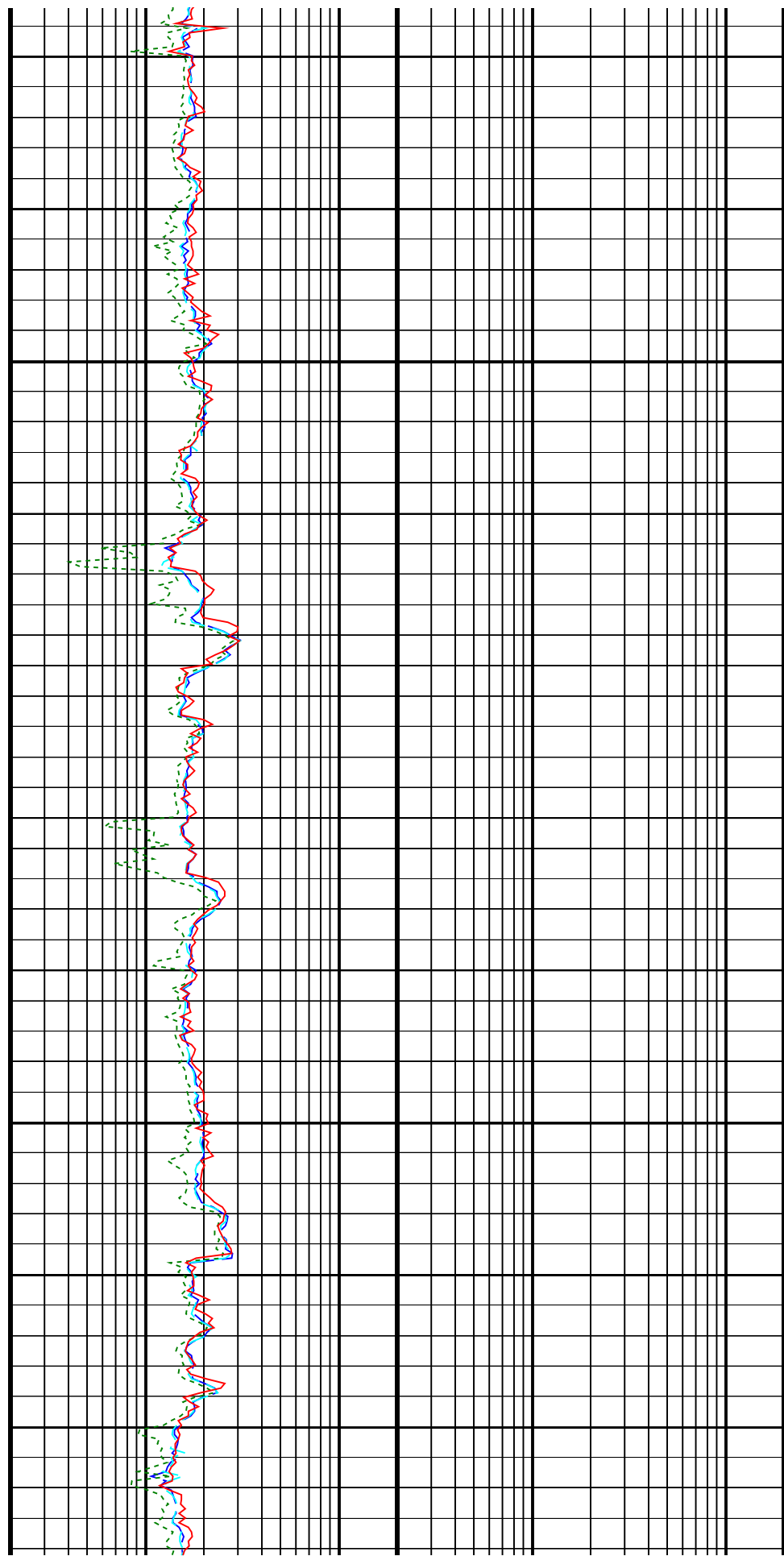
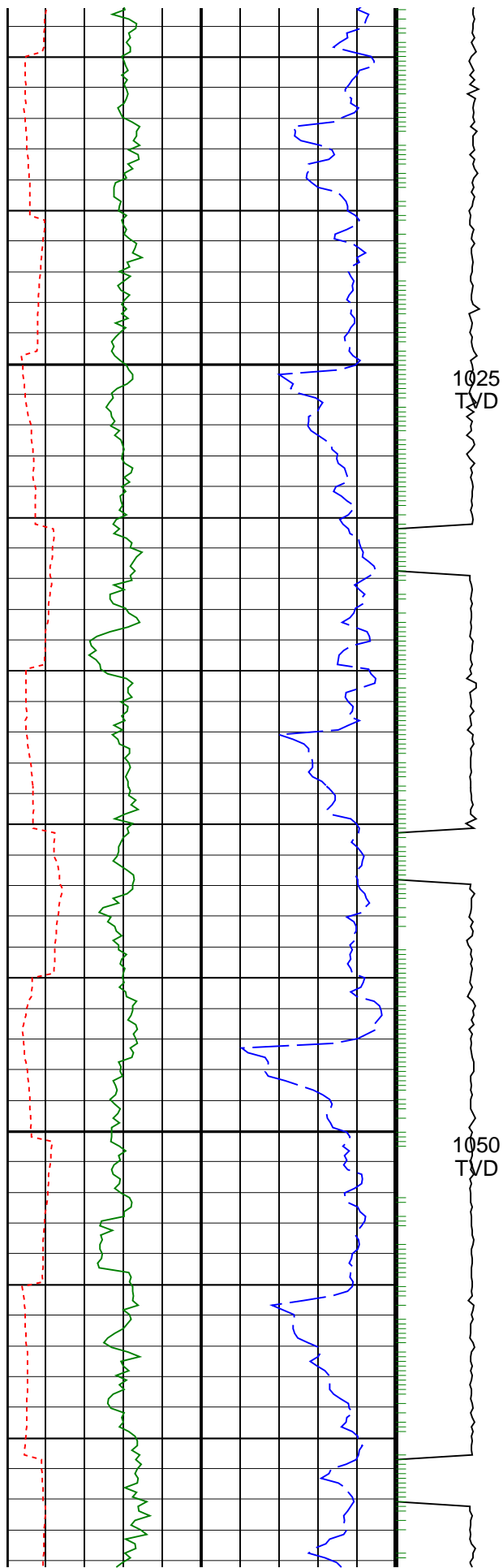


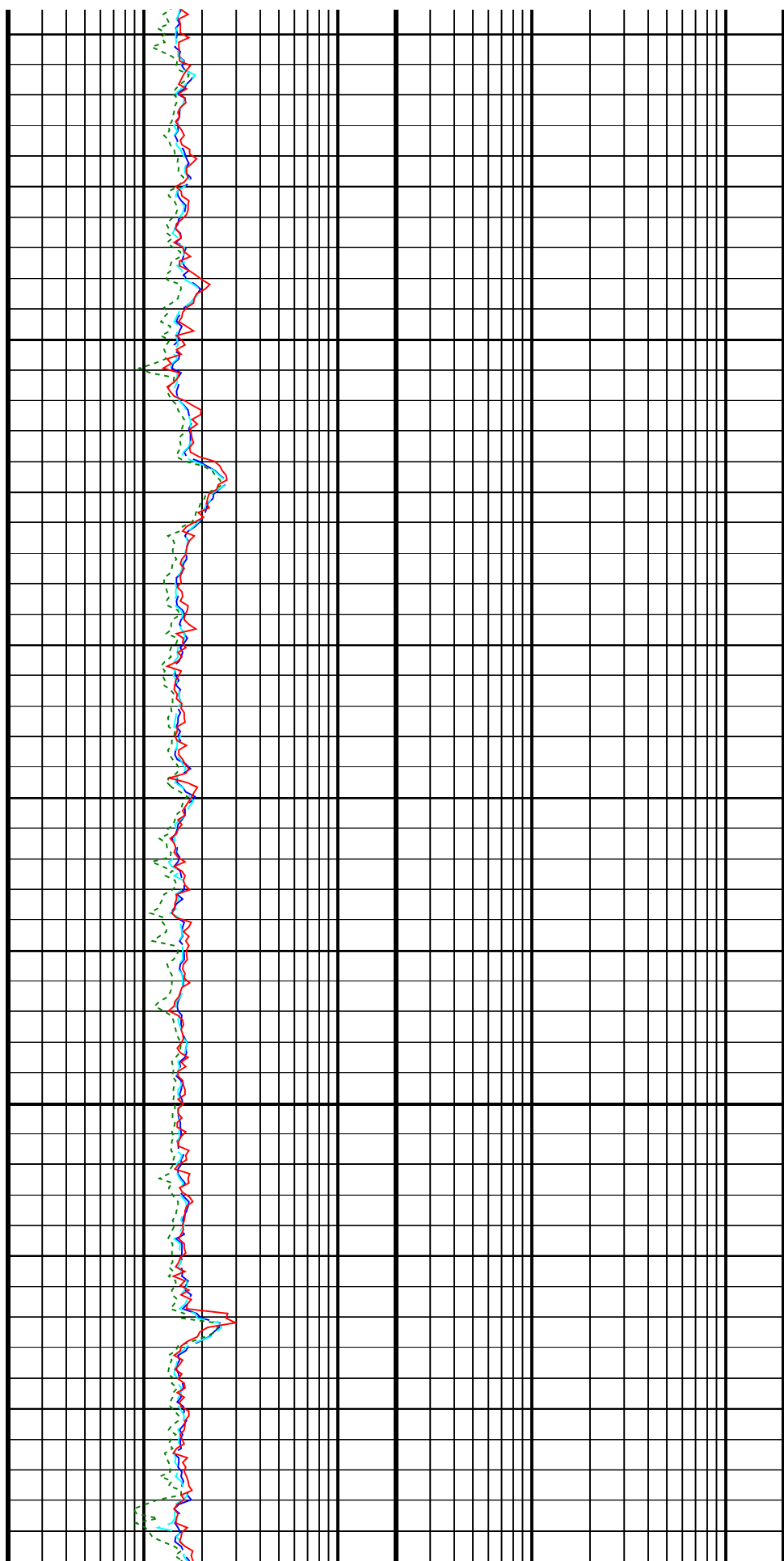
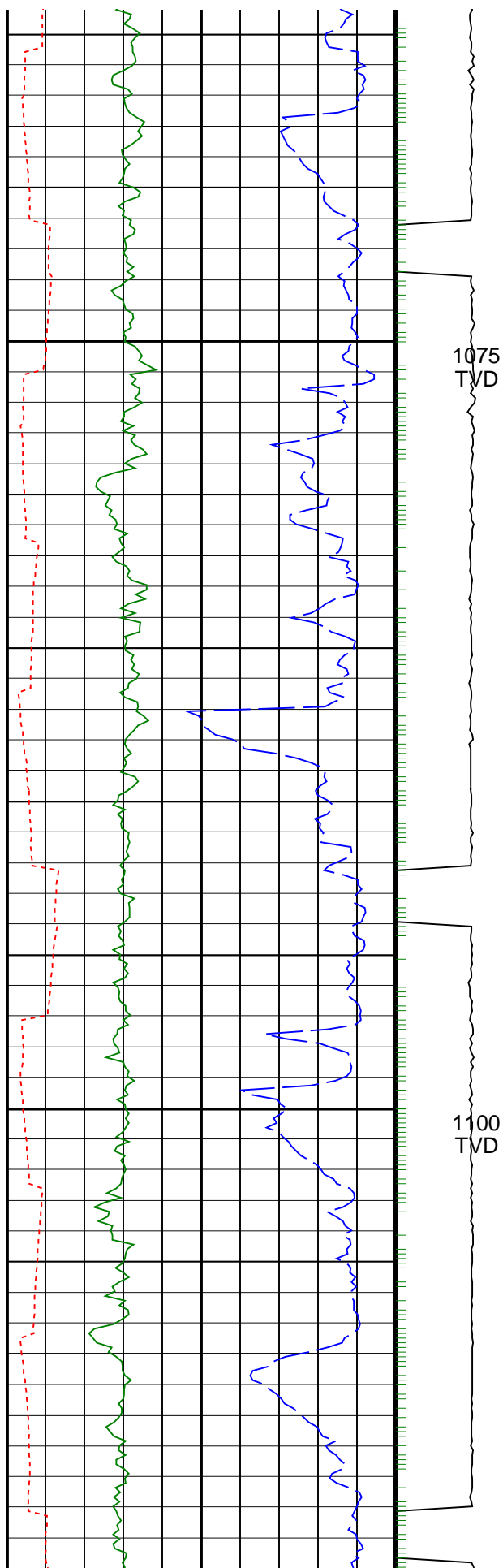


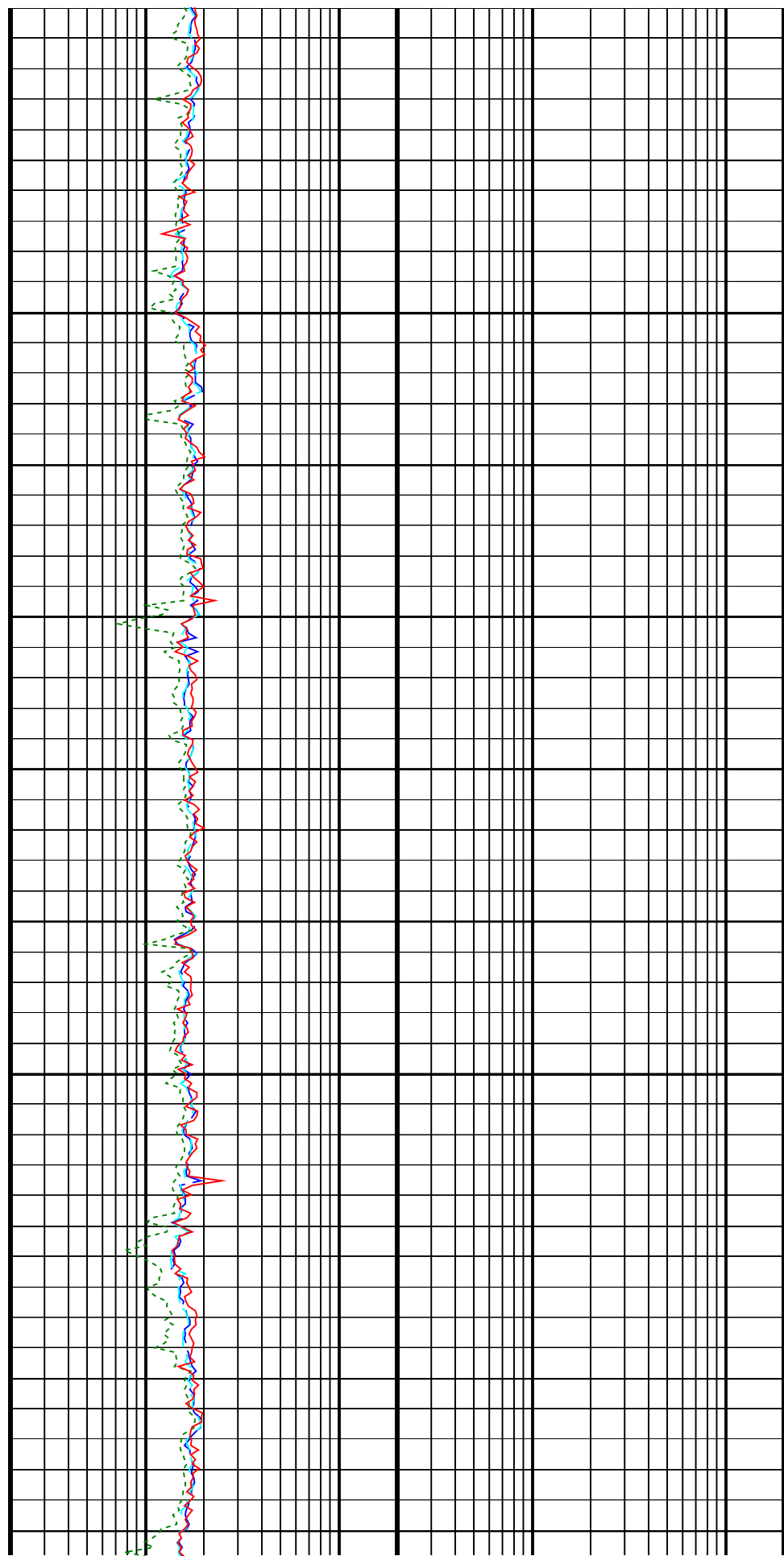
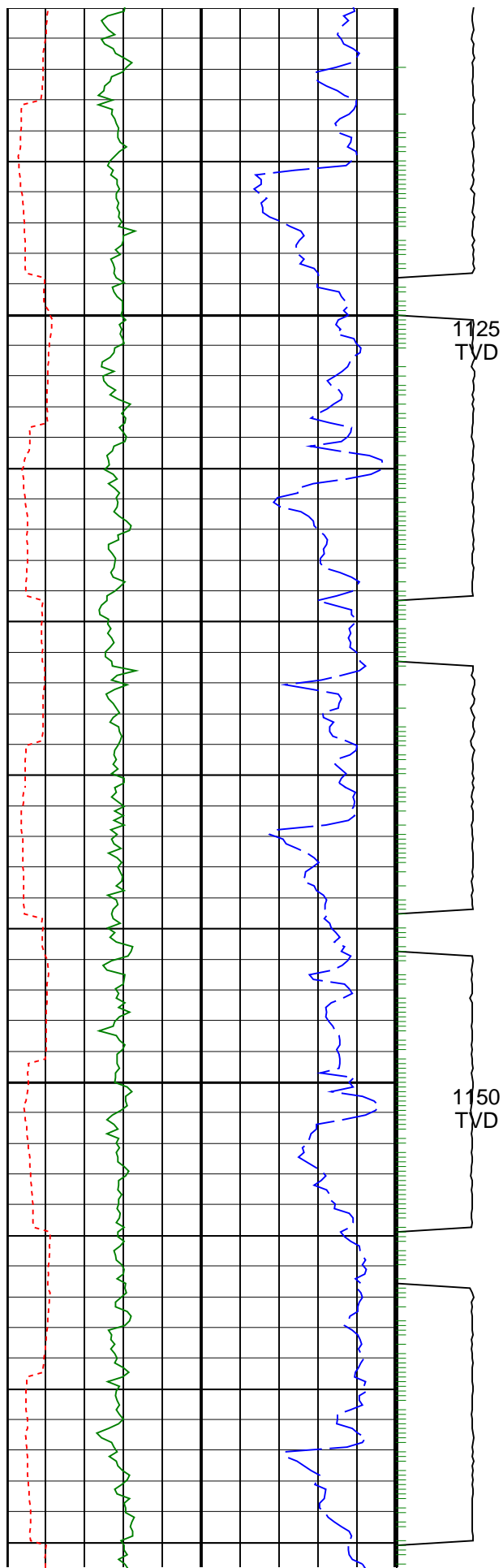


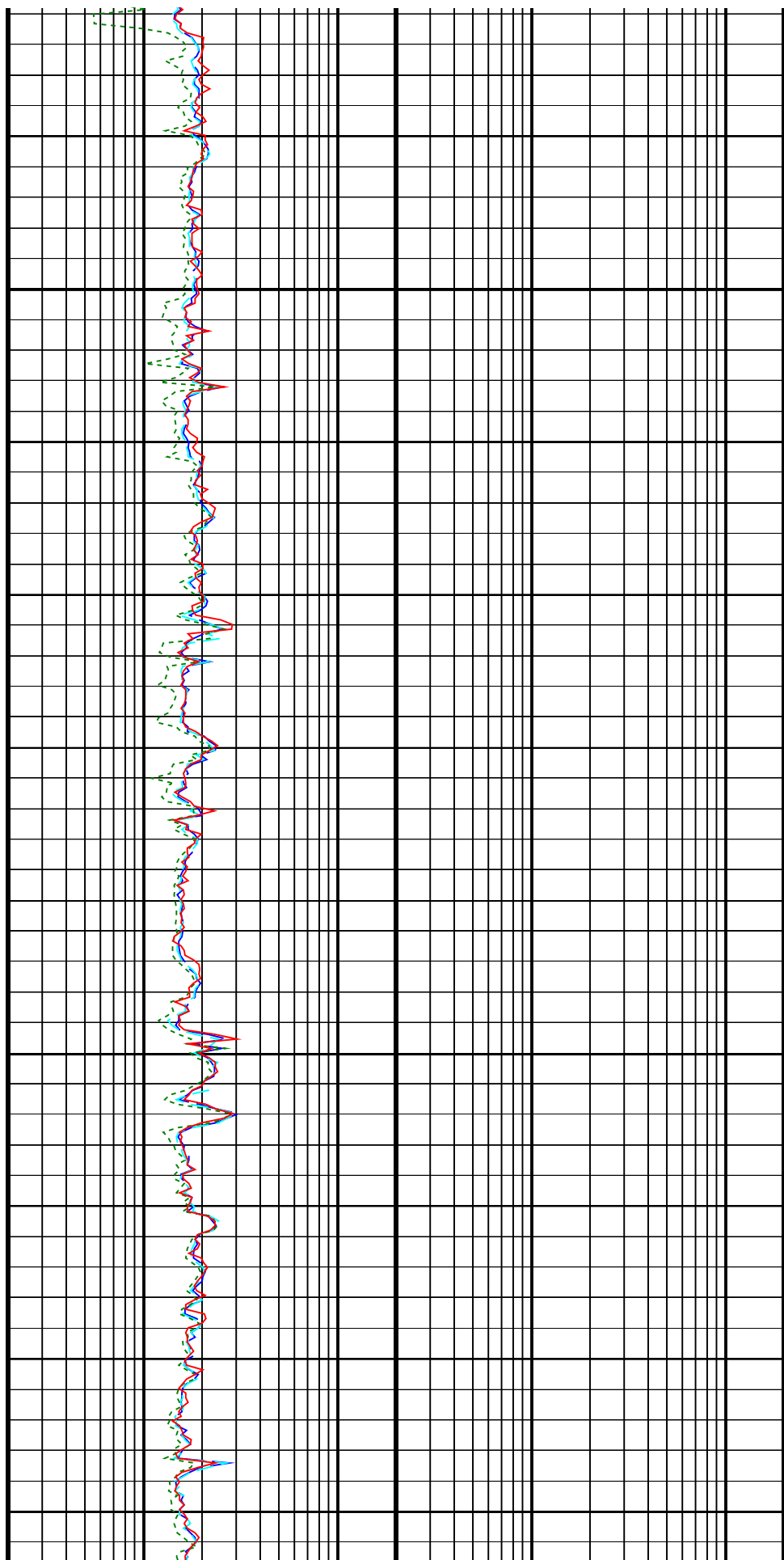
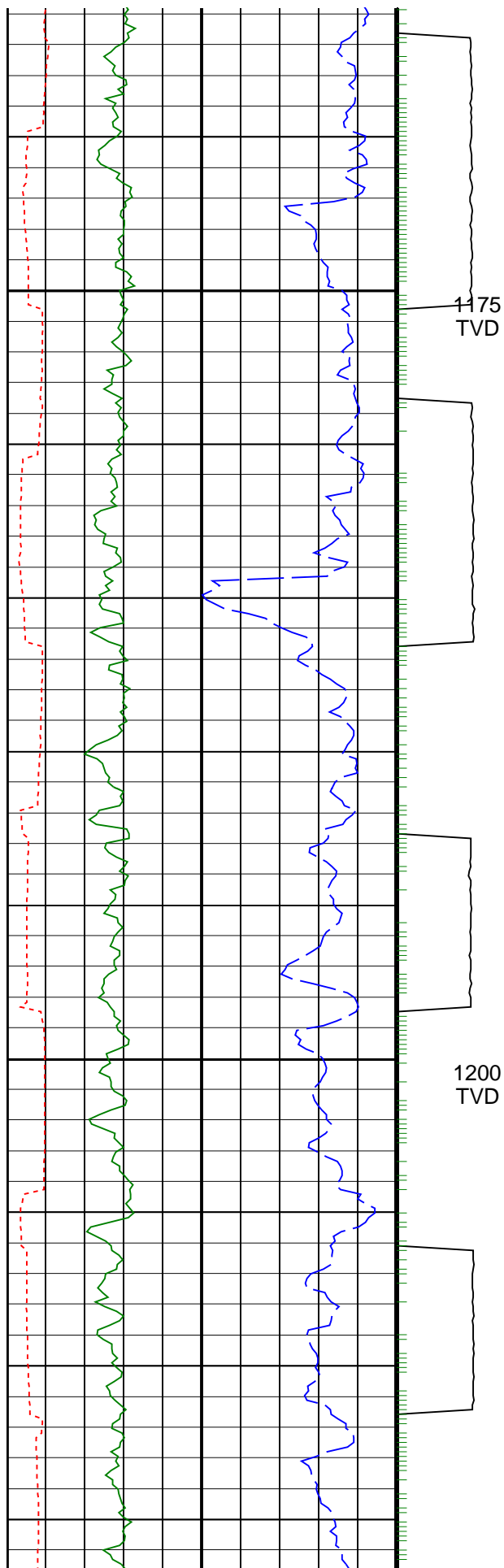


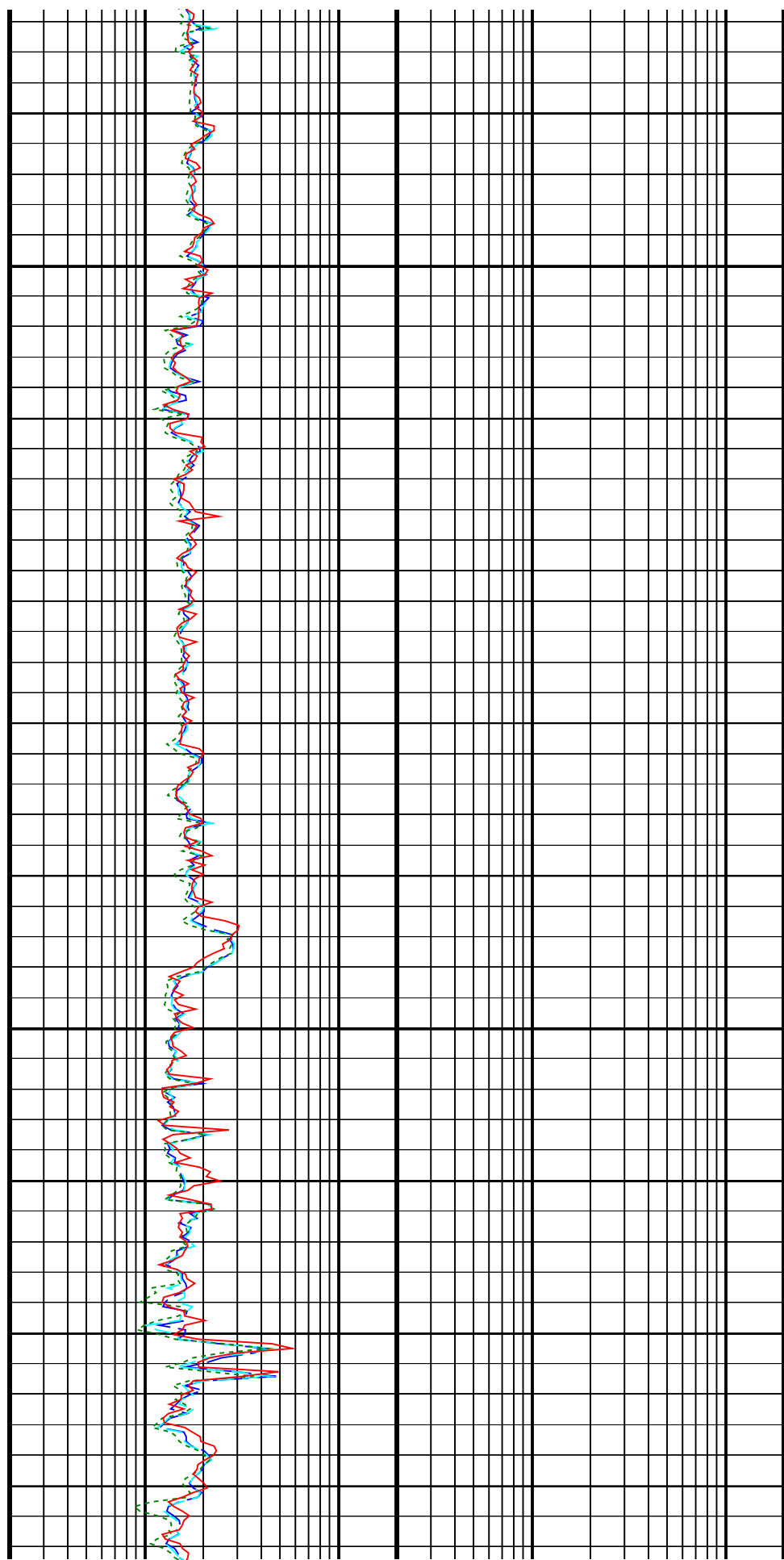
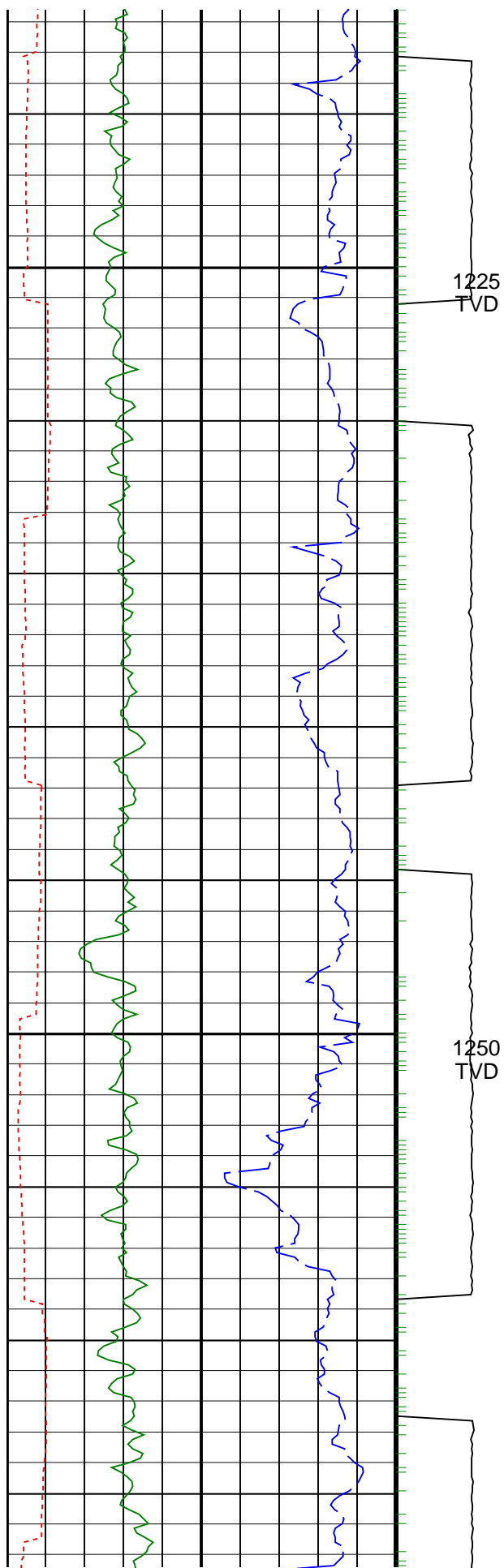


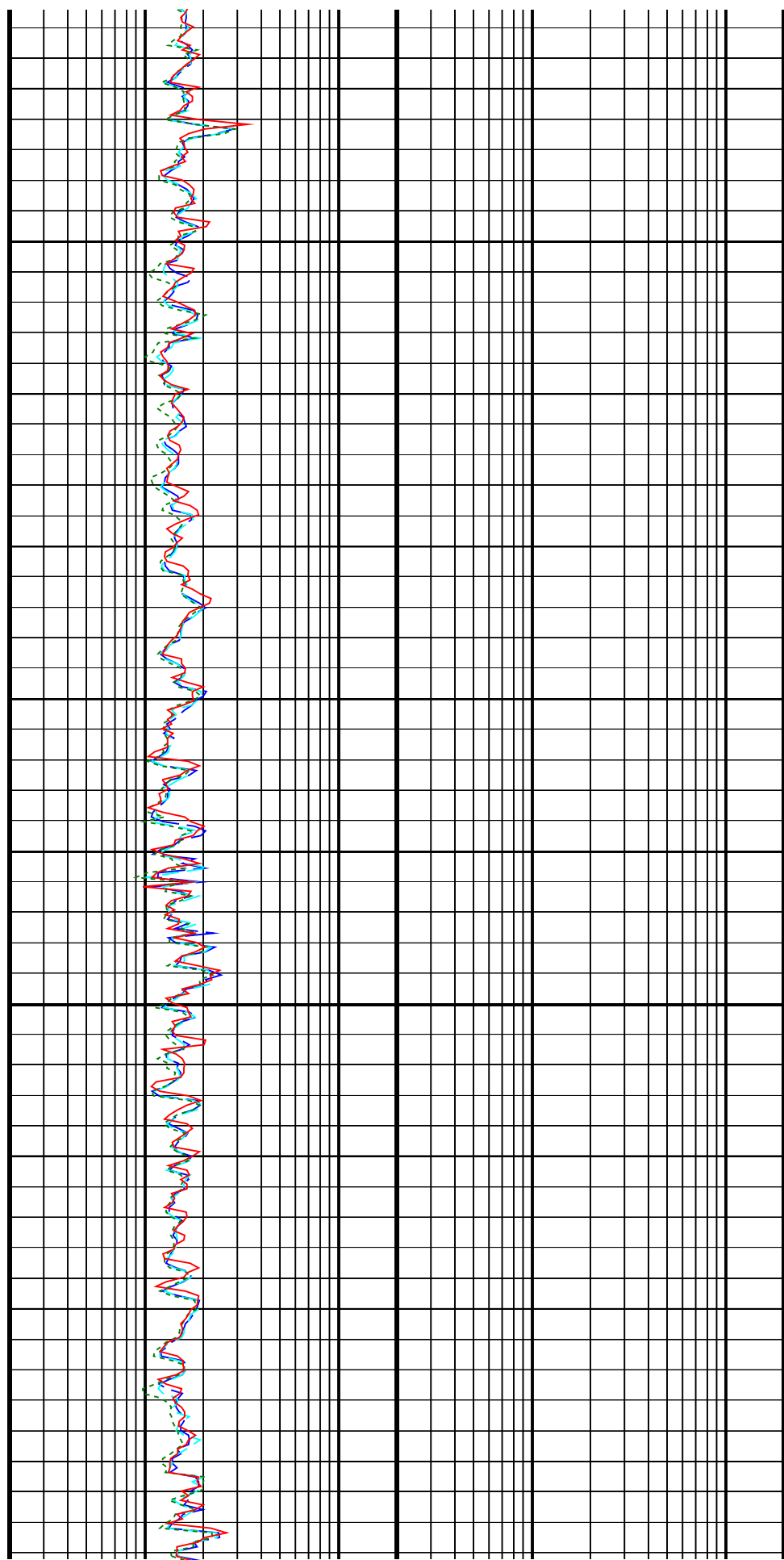
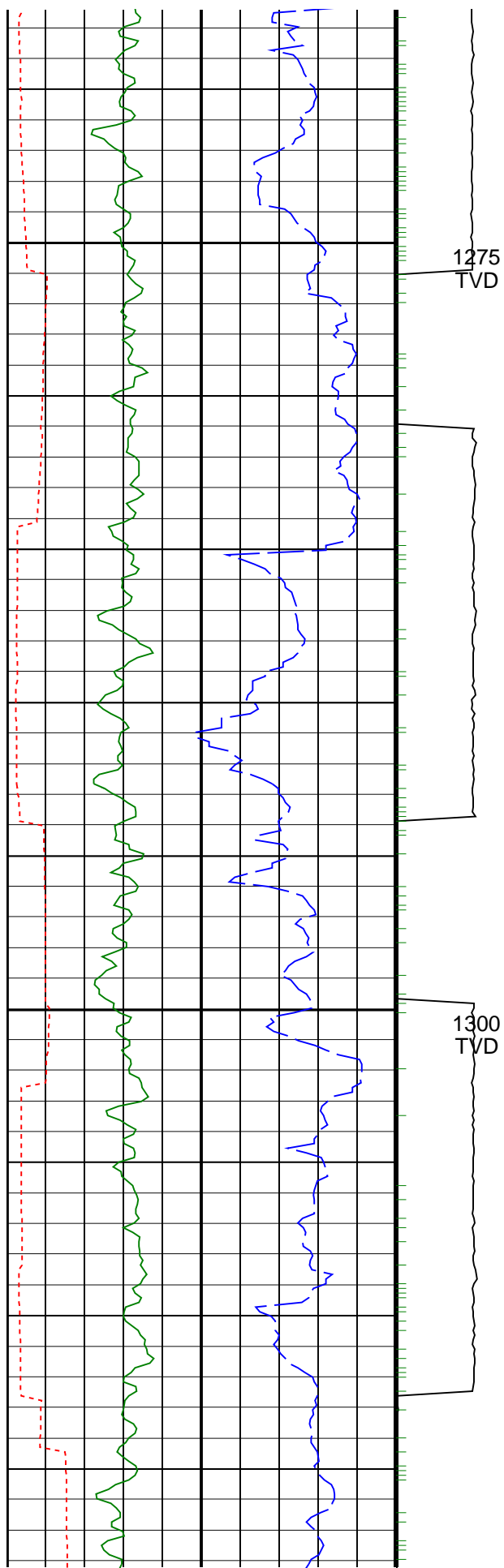


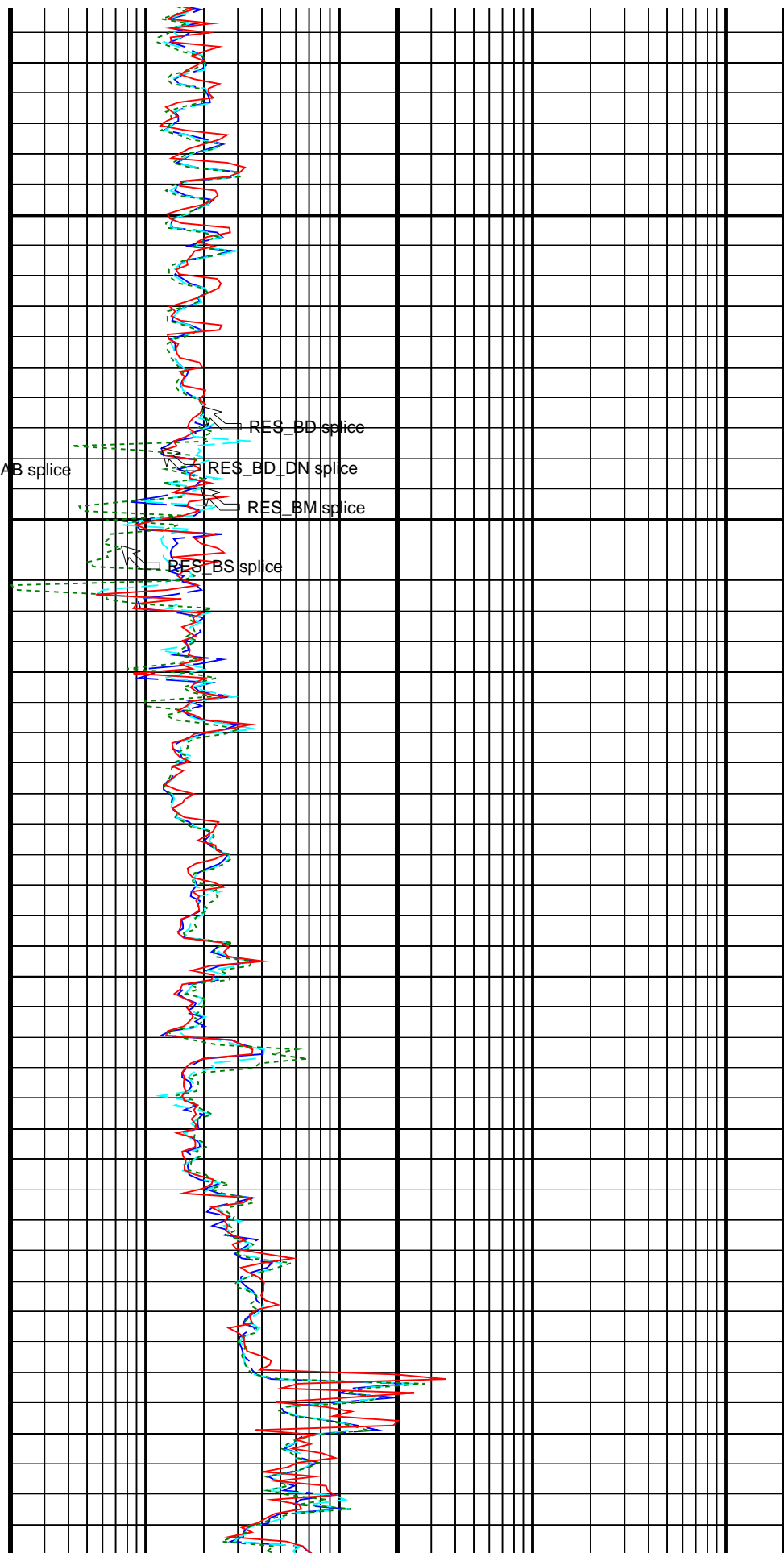
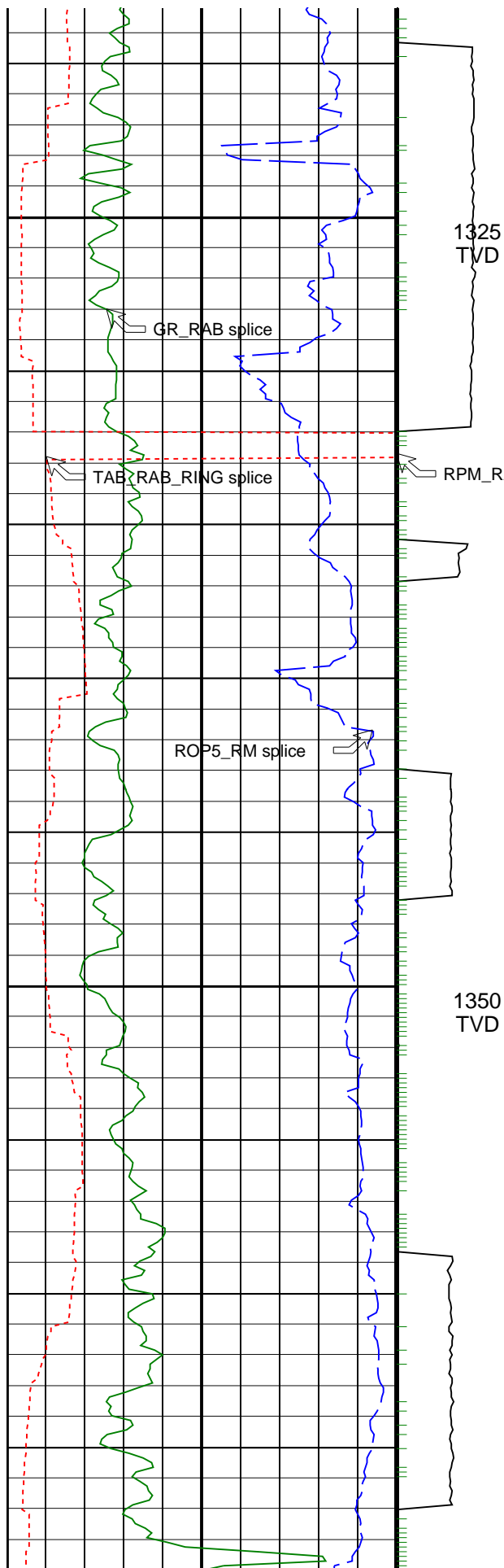


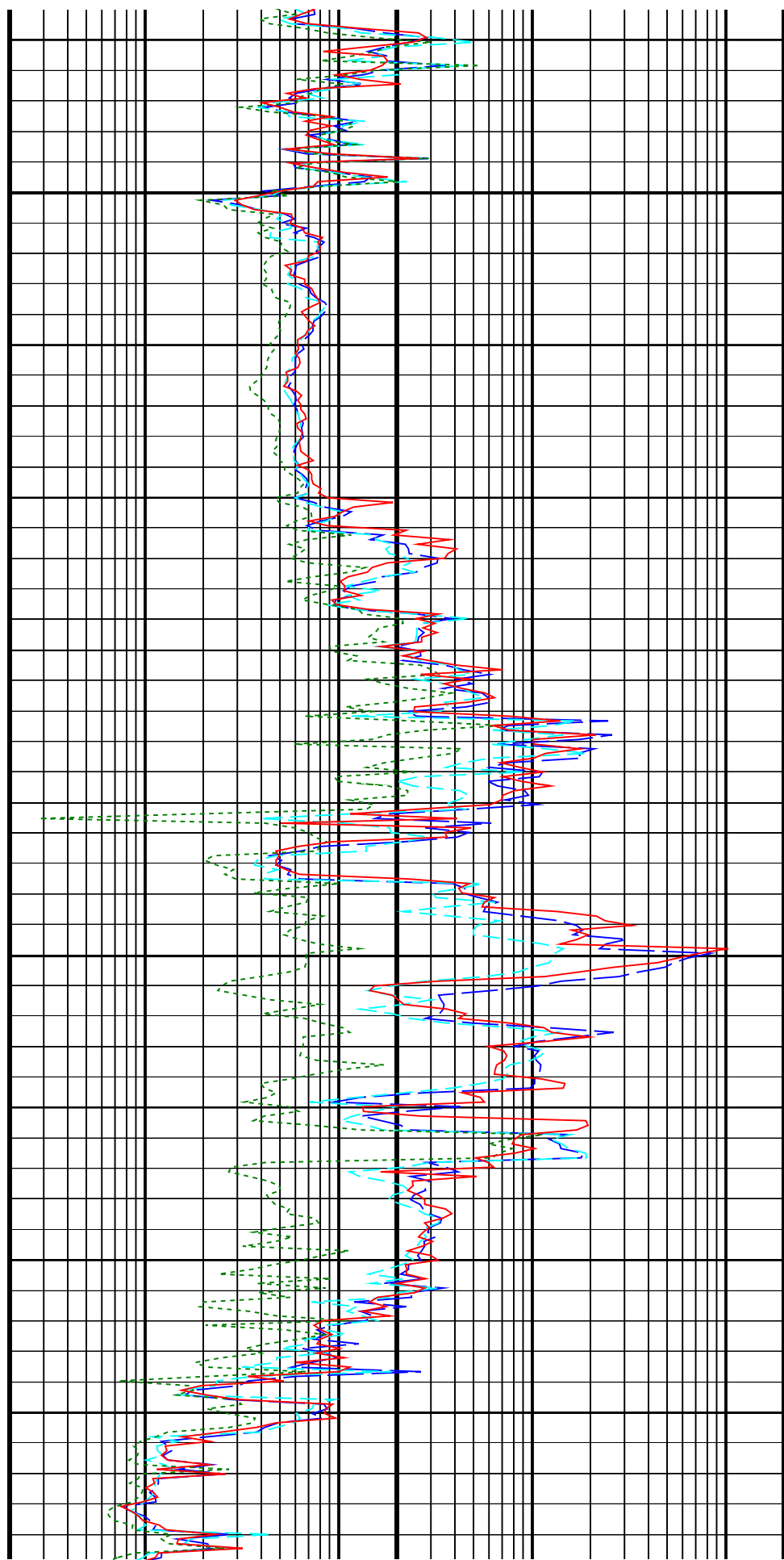
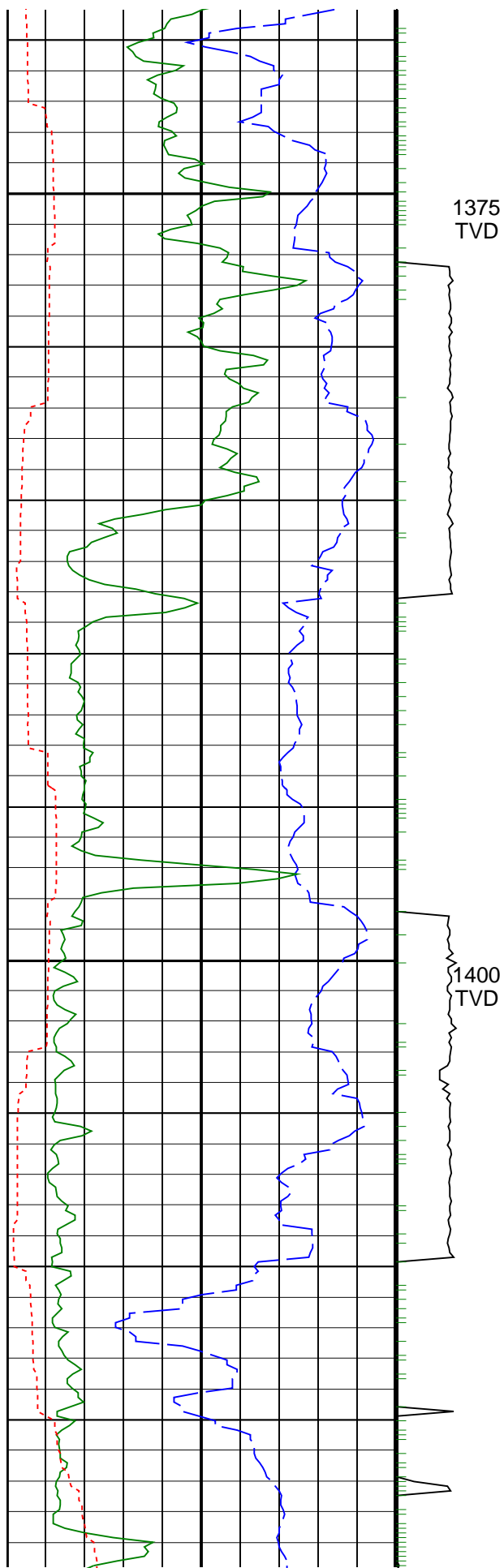


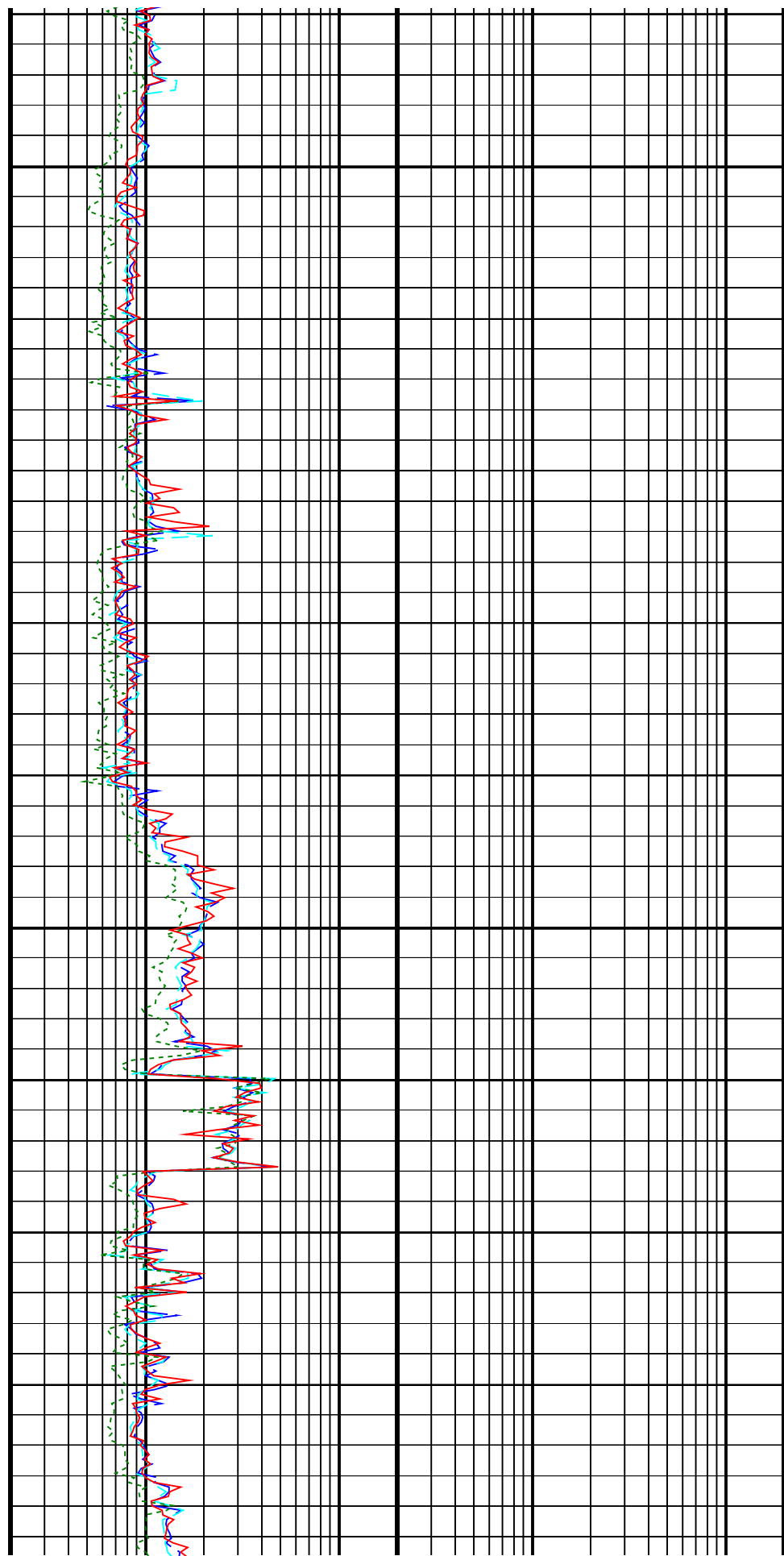
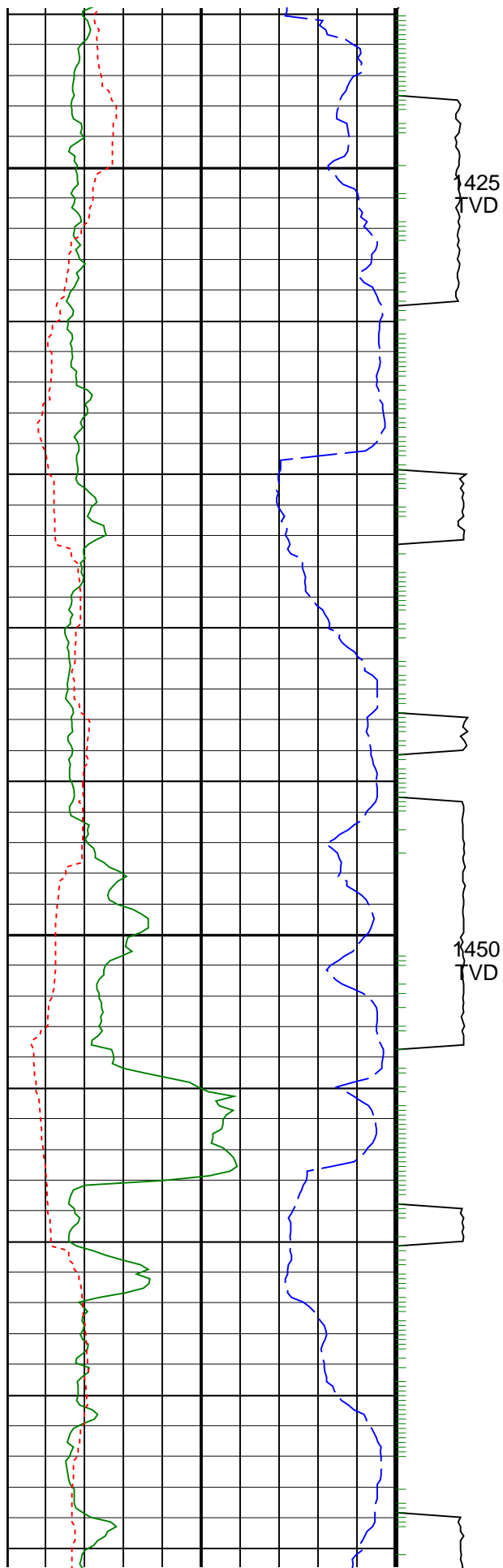


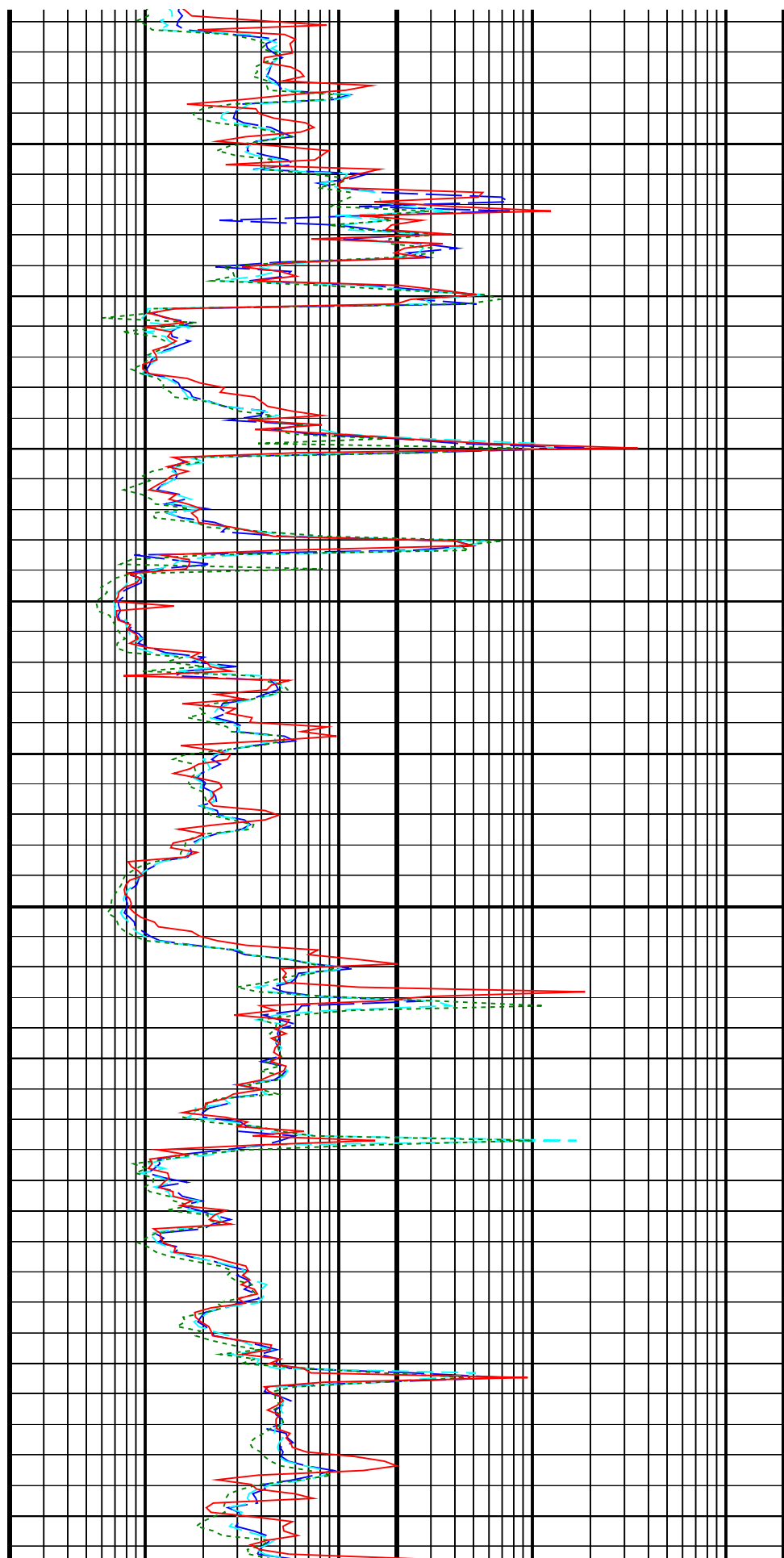
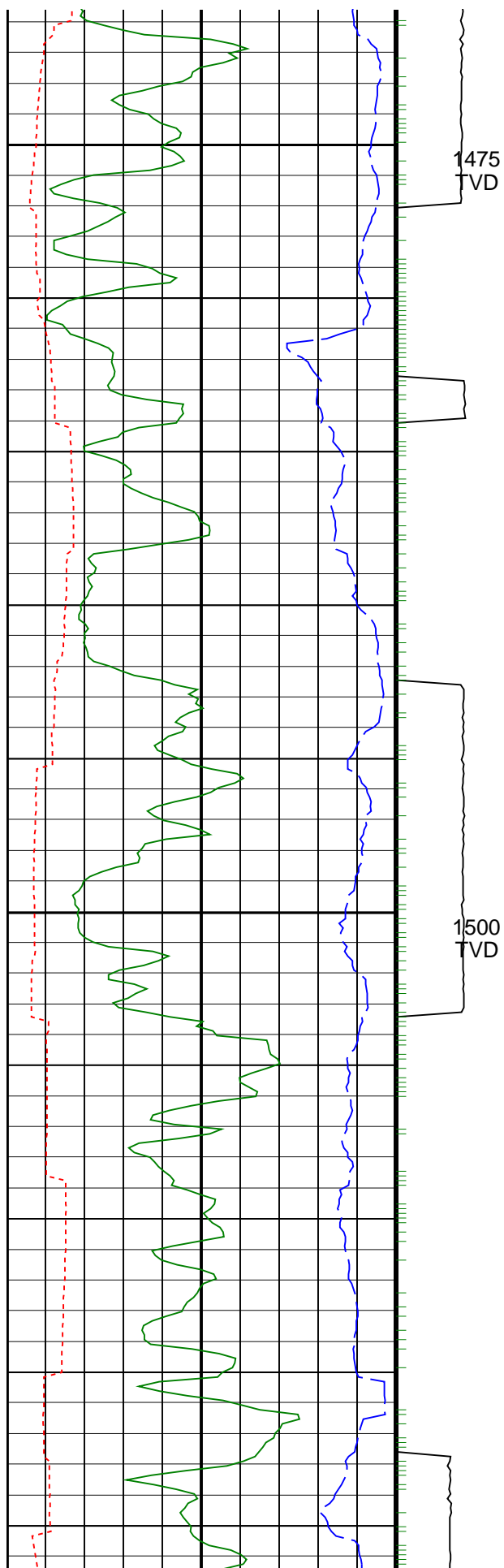


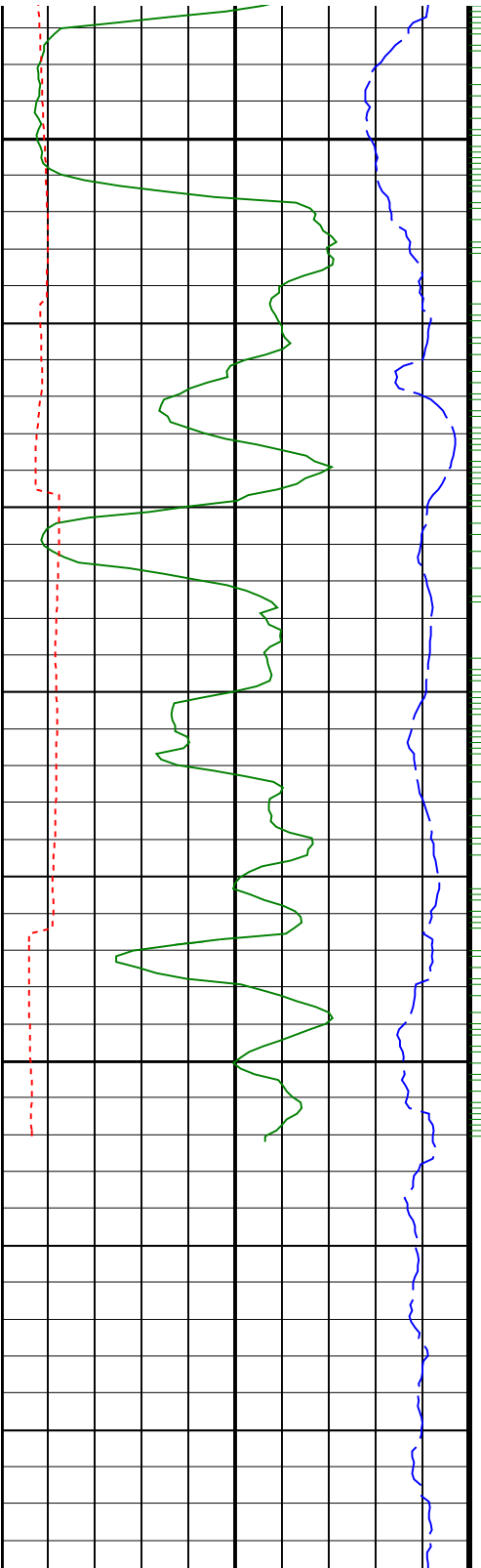






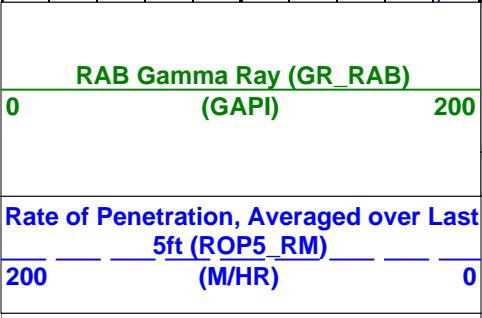
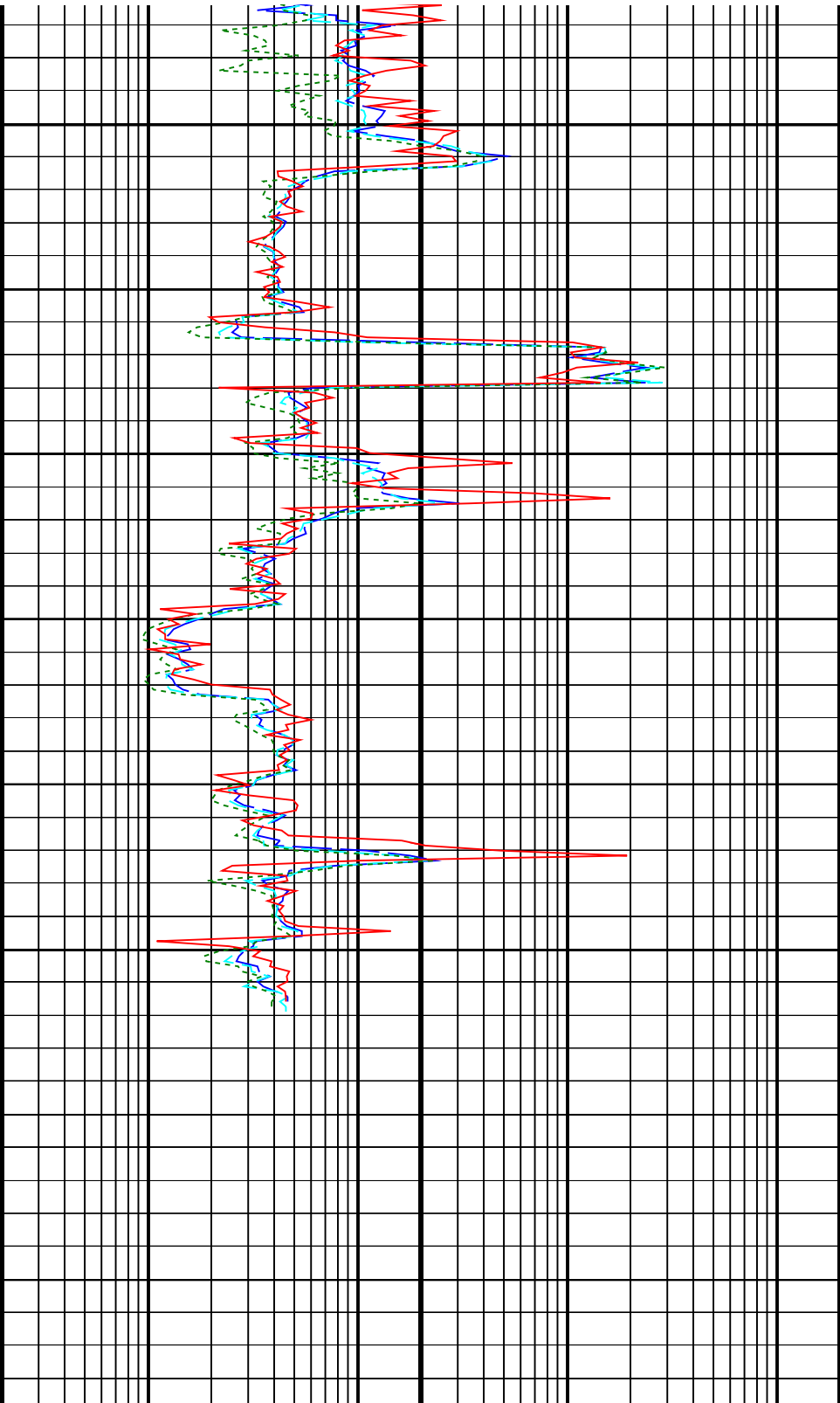




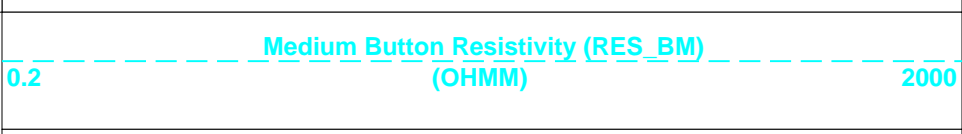
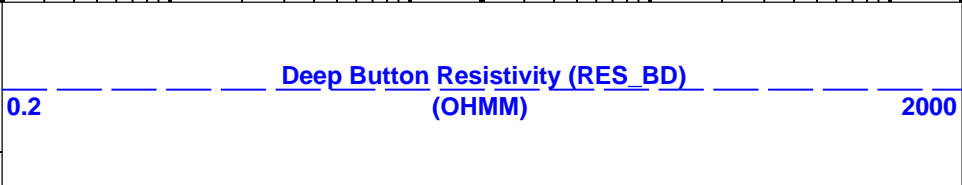


1525
TVD

1550
TVD



RAB
Rotational
Speed
(RPM_RAB)
(RPM)
0 200



Rate of Penetration, Averaged over Last
5ft (ROP5_RM)
(M/HR) 200 0

Ring Resistivity Time After Bit (TAB_

Deep Button Resistivity (RES_BD)
(OHMM) 0.2 2000

Medium Button Resistivity (RES_BM)
(OHMM) 0.2 2000

Shallow Button Resistivity (RES_BS)

Ring Resistivity Time After Bit (TAB_ RAB_RING)

0 (HR) 10

Shallow Button Resistivity (RES_BS)		
0.2	(OHMM)	2000
Deep Button Resistivity, Down (RES_BD_DN)		
0.2	(OHMM)	2000

PIP SUMMARY

Gamma Ray Samples

IDEAL Version: ID7_0C_02
IDF




RAB	id6_1c_10	MWD_10	id6_1c_10
ADN	id6_1c_10		




True Vertical Depth Log




6.75-in. Azimuthal Density Neutron / Equipment Identification

Primary Equipment:
Tool Name and Serial Number
Neutron Logging Source
Density Logging Source
Stabilizer Size
Calibration Status

ADN6 – CA	289
NSR – M	161
GSR – J/Z	2125
8.25 – in.	
Valid	

Master: 24-JUL-2002 8:49														
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				1334	Master				3054	Master				7545
	250.0	4125	8000		700.0	9350	18000		2500	23750	45000			
	(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)			

Master: 24--JUL--2002 8:49														
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				208.1	Master				1635	Master				4899
	50.00 (Minimum)	725.0 (Nominal)	1400 (Maximum)			500.0 (Minimum)	4250 (Nominal)	8000 (Maximum)			1500 (Minimum)	15750 (Nominal)	30000 (Maximum)	















Master: 24--JUL--2002 8:49											
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			52.11	Master			125.8	Master			548.2
	15.00 (Minimum)	82.50 (Nominal)	150.0 (Maximum)		40.00 (Minimum)	220.0 (Nominal)	400.0 (Maximum)		150.0 (Minimum)	825.0 (Nominal)	1500 (Maximum)

Master: 24-JUL-2002 8:49									
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				1.035	Master				1.126
	1.011 (Minimum)	1.026 (Nominal)	1.041 (Maximum)			1.093 (Minimum)	1.118 (Nominal)	1.143 (Maximum)	

Master: 24-JUL-2002 8:49 6.75-in. Azimuthal Density Neutron Calibration

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		1.106	Master		-0.8130
	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		1.054	Master		-0.9150
	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		1.064	Master		-0.8000
	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		1.106	Master		-0.7490
	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		1.005	Master		-0.8300
	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		1.103	Master		-0.8040
	0.9000 (Minimum) 1.100 (Nominal) 1.300 (Maximum)			-1.200 (Minimum) -0.9000 (Nominal) -0.6000 (Maximum)	
Phase	Near 1 tube 1 gain	Value			
Master		1.085			
	0.9000 (Minimum) 1.100 (Nominal) 1.300 (Maximum)				
Phase	Near 2 tube 1 gain	Value			
Master		1.058			
	0.9000 (Minimum) 1.100 (Nominal) 1.300 (Maximum)				

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

Primary Equipment:

Tool Name and Serial Number

RAB6 - CA










136







Calibration Status

Valid




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		0.9850	Master		0.9970	Master		0.9930
	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		0.9970	Master		0.9980	Master		1.003
	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		1.014	Master		1.020	Master		1.018

Master		1.014	Master		1.020	Master		1.018
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		Phase	BTN deep/T1 factor		Phase	BTN deep/T2 factor	
	Value			Value			Value	
Master		1.024	Master		1.015	Master		1.023
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)

6.75–in. Azimuthal Density Neutron / Equipment Identification		
Primary Equipment:		
Tool Name and Serial Number	ADN6 – CA	219
Neutron Logging Source	NSR – M	161
Density Logging Source	GSR – J/Z	2125
Stabilizer Size	8.25 – in.	
Calibration Status	Valid	

Master: 23-JUL-2002 14:16											
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			190.8	Master			1547	Master			4662
	50.00 (Minimum)	725.0 (Nominal)	1400 (Maximum)		500.0 (Minimum)	4250 (Nominal)	8000 (Maximum)		1500 (Minimum)	15750 (Nominal)	30000 (Maximum)












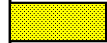

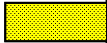
Master: 23-JUL-2002 14:16														
6.75-in. Azimuthal Density Neutron Calibration														
Density: Background														
Phase	LS window 3 – Background		CPS	Value	Phase	SS window 1 – Background		CPS	Value	Phase	SS window 3 – Background		CPS	Value
Master			150.0	58.08	Master			400.0	125.9	Master			1500	543.1
	15.00 (Minimum)	82.50 (Nominal)	(Maximum)			40.00 (Minimum)	220.0 (Nominal)	(Maximum)			150.0 (Minimum)	825.0 (Nominal)	(Maximum)	

Master: 23-JUL-2002 14:16									
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				1.043	Master				1.131
	1.016 (Minimum)	1.032 (Nominal)	1.047 (Maximum)			1.062 (Minimum)	1.107 (Nominal)	1.151 (Maximum)	

Master: 23-JUL-2002 14:16
6.75-in. Azimuthal Density Neutron Calibration
Neutron: Water Tank

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		1.077	Master		-0.9260
	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		1.034	Master		-0.9100
	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		1.085	Master		-0.8150
	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		1.064	Master		-0.8090
	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		1.052	Master		-0.8120
	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		1.081	Master		-0.7770
	0.9000 (Minimum) 1.100 (Nominal) 1.300 (Maximum)			-1.200 (Minimum) -0.9000 (Nominal) -0.6000 (Maximum)	
Phase	Near 1 tube 1 gain	Value			
Master		1.046			
	0.9000 (Minimum) 1.100 (Nominal) 1.300 (Maximum)				
Phase	Near 2 tube 1 gain	Value			
Master		1.011			
	0.9000 (Minimum) 1.100 (Nominal) 1.300 (Maximum)				

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

Primary Equipment:

Tool Name and Serial Number

RAB6 – CA

125










Calibration Status

Valid

Master: 11-JUN-2002 15:39

6.75-in. Resistivity At-the-Bit Calibration

Resistivity: Fixture

Phase	Ring/T1 factor	Value	Phase	Ring/T2 factor	Value	Phase	M0/T1 factor	Value
Master		1.002	Master		0.9974	Master		1.004
	0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)			0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)			0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)	
Phase	M0/T2 factor	Value	Phase	M2/T1 factor	Value	Phase	M2/T2 factor	Value
Master		0.9992	Master		0.9985	Master		0.9932
	0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)			0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)			0.9750 (Minimum) 1.000 (Nominal) 1.025 (Maximum)	
Phase	BTN shallow/T1 factor	Value	Phase	BTN shallow/T2 factor	Value	Phase	BTN medium/T1 factor	Value
Master		1.003	Master		0.9977	Master		1.007
	0.9750 1.000 1.025			0.9750 1.000 1.025			0.9750 1.000 1.025	

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		Phase	BTN deep/T1 factor		Phase	BTN deep/T2 factor	
Master			Master			Master		
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)
		1.001			1.005			0.9997

Master: 11-JUN-2002 10:07								
6.75-in. Resistivity At-the-Bit Calibration								
Gamma Ray: Blanket								
Phase	Gamma ray factor						Value	
Master							0.8760	
	0.7500 (Minimum)			1.000 (Nominal)			1.250 (Maximum)	

ANADRILL
SCHLUMBERGER

Survey report 11-Aug-2002 11:07:47 Page 1 of 5

Client.....: Esso Australia Ltd.
Field.....: TUNA

Well.....: A-29 Spud date.....: 27-Jul-2002
API number.....: Last survey date.....: 11-Aug-02
Engineer.....: J. Walta Total accepted surveys...: 106
MD of first survey.....: 156.07 m
MD of last survey.....: 3075.00 m

COUNTY.....: ISDL 453
STATE.....: Victoria

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

----- Depth reference -----
Permanent datum.....: GROUND LEVEL
Depth reference.....: Driller's Pipe Tally
GL above permanent.....: -59.40 m
KB above permanent.....: 31.30 m
DF above permanent.....: 31.30 m

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

----- Platform reference point -----
Latitude (+N/S-).....: 1.86 m
Departure (+E/W-).....: 6.34 m

Azimuth from rotary table to target: 277.51 degrees

----- Geomagnetic data -----
Magnetic model.....: BGGM version 2001
Magnetic date.....: 27-Jul-2002
Magnetic field strength...: 1200.21 HCNT
Magnetic dec (+E/W-).....: 13.19 degrees
Magnetic dip.....: -68.68 degrees

----- MWD survey Reference Criteria -----
Reference G.....: 1000.02 mGal
Reference H.....: 1200.21 HCNT
Reference Dip.....: -68.68 degrees
Tolerance of G.....: (+/-) 2.50 mGal
Tolerance of H.....: (+/-) 6.00 HCNT
Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections -----
Magnetic dec (+E/W-).....: 13.19 degrees
Grid convergence (+E/W-)..: -0.88 degrees
Total az corr (+E/W-).....: 14.07 degrees
(Total az corr = magnetic dec - grid conv)
Sag applied (Y/N).....: No degree: 0.00

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ANADRILL SCHLUMBERGER Survey Report

11-Aug-2002 11:07:47 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	156.07	6.35	307.91	0.00	155.95	2.02	4.61	1.11	3.23	13.48	0.00	TIP	-
2	170.00	5.97	310.00	13.93	169.80	3.33	5.55	-0.06	4.64	359.41	0.32	GYR	-
3	180.00	6.25	311.20	10.00	179.74	4.26	6.25	-0.86	5.68	352.12	0.31	GYR	-
4	190.00	6.50	311.00	10.00	189.68	5.21	6.98	-1.70	6.77	346.39	0.25	GYR	-
5	199.00	7.95	302.40	9.00	198.61	6.23	7.64	-2.61	7.87	341.14	2.01	GYR	-
6	207.87	9.50	297.60	8.87	207.38	7.50	8.31	-3.78	9.16	335.55	1.93	GYR	-
7	257.64	15.09	289.75	49.77	255.99	17.84	12.41	-13.52	19.34	312.53	1.17	MWD	6-axis
8	286.91	18.18	284.12	29.27	284.03	26.16	14.81	-21.54	26.46	304.51	1.19	MWD	6-axis
9	316.01	22.01	284.09	29.10	311.36	36.14	17.25	-31.24	37.23	298.90	1.32	MWD	6-axis
10	344.67	26.97	284.20	28.66	337.43	48.00	20.15	-42.75	48.96	295.23	1.73	MWD	6-axis
11	373.47	32.36	282.80	28.80	362.45	62.23	23.46	-56.61	63.08	292.51	1.89	MWD	6-axis
12	402.99	38.21	282.39	29.52	386.53	79.26	27.17	-73.24	80.01	290.35	1.98	MWD	6-axis
13	430.93	41.02	283.93	27.94	408.06	97.06	31.24	-90.59	97.67	289.02	1.07	MWD	6-axis
14	460.99	45.41	281.38	30.06	429.96	117.62	35.72	-110.67	118.27	287.89	1.57	MWD	6-axis
15	488.83	49.30	278.57	27.84	448.82	138.09	39.25	-130.83	138.62	286.70	1.58	MWD	6-axis
16	518.55	53.78	276.06	29.72	467.30	161.31	42.20	-153.91	161.67	285.33	1.65	MWD	6-axis
17	546.96	58.08	276.70	28.41	483.21	184.77	44.82	-177.29	184.99	284.19	1.52	MWD	6-axis
18	576.09	62.87	277.64	29.13	497.56	201.07	47.99	-202.43	201.19	283.34	1.67	MWD	6-axis
19	604.84	65.59	277.64	28.75	510.06	232.92	51.43	-228.09	235.99	282.71	0.95	MWD	6-axis
20	633.75	69.39	278.17	28.91	521.13	260.59	55.10	-254.53	262.63	282.22	1.33	MWD	6-axis
21	662.68	69.86	277.82	28.93	531.20	289.68	58.87	-281.39	289.70	281.82	0.20	MWD	6-axis
22	691.52	69.82	277.82	28.84	541.14	316.72	62.56	-308.21	316.72	281.47	0.01	MWD	6-axis

21	662.68	69.86	277.82	28.93	531.20	289.68	58.87	-281.39	289.70	281.82	0.20	MWD	6-axis
22	691.52	69.82	277.82	28.84	541.14	316.72	62.56	-308.21	316.72	281.47	0.01	MWD	6-axis
23	720.51	69.92	277.99	28.99	551.12	343.90	66.30	-335.17	343.90	281.19	0.06	MWD	6-axis
24	749.83	69.95	278.05	29.32	561.18	371.41	70.14	-362.44	371.41	280.95	0.02	MWD	6-axis
25	778.98	69.97	278.33	29.15	571.16	398.77	74.04	-389.55	398.78	280.76	0.09	MWD	6-axis
26	807.96	69.69	278.22	28.98	581.16	425.95	77.96	-416.47	425.96	280.60	0.10	MWD	6-axis
27	836.68	69.70	278.05	28.72	591.12	452.86	81.77	-443.13	452.88	280.46	0.06	MWD	6-axis
28	865.69	69.28	277.61	29.01	601.29	480.00	85.47	-470.05	480.03	280.31	0.20	MWD	6-axis
29	894.90	69.07	277.19	29.21	611.67	507.25	88.99	-497.13	507.30	280.15	0.15	MWD	6-axis
30	912.12	68.72	277.44	17.22	617.87	523.29	91.04	-513.06	523.35	280.06	0.24	MWD	6-axis

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ANADRILL SCHLUMBERGER Survey Report

11-Aug-2002 11:07:47

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	934.47	67.92	275.65	22.35	626.13	544.00	93.40	-533.69	544.09	279.93	0.83	MWD	6-axis
32	963.02	68.84	276.78	28.55	636.67	570.51	96.28	-560.12	570.63	279.75	0.49	MWD	6-axis
33	991.59	69.13	276.94	28.57	646.90	597.07	99.46	-586.55	597.22	279.62	0.11	MWD	6-axis
34	1019.91	69.09	276.77	28.32	656.99	623.47	102.62	-612.82	623.65	279.51	0.06	MWD	6-axis
35	1048.55	69.47	277.21	28.64	667.13	650.20	105.88	-639.41	650.42	279.40	0.20	MWD	6-axis
36	1076.12	68.94	276.89	27.57	676.91	675.92	109.04	-664.99	676.18	279.31	0.22	MWD	6-axis
37	1104.52	69.75	277.83	28.40	686.93	702.45	112.45	-691.35	702.74	279.24	0.42	MWD	6-axis
38	1133.71	70.22	278.09	29.19	696.92	729.85	116.25	-718.51	730.16	279.19	0.18	MWD	6-axis
39	1162.50	69.60	277.75	28.80	706.82	756.86	119.97	-745.30	757.20	279.14	0.24	MWD	6-axis
40	1191.22	68.78	277.44	28.71	717.37	784.59	123.64	-772.83	784.97	279.09	0.30	MWD	6-axis
41	1219.65	69.73	277.16	28.43	727.09	810.20	126.90	-798.27	810.61	279.03	0.35	MWD	6-axis
42	1248.12	69.03	277.03	28.47	737.11	836.79	130.20	-824.71	837.24	278.97	0.25	MWD	6-axis
43	1276.77	70.00	277.74	28.65	747.14	863.59	133.65	-851.33	864.07	278.92	0.41	MWD	6-axis
44	1304.64	69.61	277.23	27.87	756.76	889.70	137.05	-877.26	890.22	278.88	0.22	MWD	6-axis
45	1333.27	68.53	276.72	28.63	766.99	916.38	140.30	-903.80	916.95	278.82	0.41	MWD	6-axis
46	1362.51	69.76	277.56	29.24	777.40	943.66	143.70	-930.91	944.26	278.78	0.50	MWD	6-axis
47	1390.59	69.10	277.80	28.08	787.26	969.91	147.21	-956.97	970.55	278.75	0.25	MWD	6-axis
48	1419.55	70.10	277.74	28.96	797.36	997.02	150.88	-983.86	997.69	278.72	0.35	MWD	6-axis
49	1447.26	69.14	277.71	27.71	807.01	1022.96	154.37	-1009.60	1023.66	278.69	0.35	MWD	6-axis
50	1475.75	70.48	277.78	28.49	816.84	1049.66	157.98	-1036.10	1050.50	278.67	0.47	MWD	6-axis
51	1504.20	69.80	277.36	28.45	826.51	1076.38	161.50	-1062.62	1077.15	278.64	0.28	MWD	6-axis
52	1532.83	68.89	276.77	28.63	836.60	1103.11	164.80	-1089.21	1103.93	278.60	0.37	MWD	6-axis
53	1562.01	70.11	277.19	29.18	846.82	1130.39	168.12	-1116.34	1131.25	278.56	0.44	MWD	6-axis
54	1590.59	69.57	277.20	28.58	856.67	1157.17	171.48	-1142.95	1158.08	278.53	0.19	MWD	6-axis
55	1619.04	69.80	279.22	28.45	866.55	1183.82	175.29	-1169.36	1184.76	278.53	0.67	MWD	6-axis
56	1647.25	68.42	278.44	28.21	876.61	1210.16	179.33	-1195.40	1211.11	278.53	0.55	MWD	6-axis
57	1676.33	69.58	277.93	29.08	887.03	1237.28	183.20	-1222.27	1238.26	278.52	0.43	MWD	6-axis
58	1705.18	69.52	277.87	28.85	897.11	1264.28	186.91	-1249.05	1265.29	278.51	0.03	MWD	6-axis
59	1734.51	69.49	278.30	29.33	907.38	1291.73	190.78	-1276.25	1292.67	278.50	0.14	MWD	6-axis
60	1762.84	70.02	278.16	28.33	917.18	1318.28	194.58	-1302.55	1319.34	278.50	0.19	MWD	6-axis

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ANADRILL SCHLUMBERGER Survey Report

11-Aug-2002 11:07:47

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	1791.89	68.75	277.51	29.05	927.41	1345.44	198.29	-1329.49	1346.53	278.48	0.48	MWD	6-axis
62	1820.89	69.70	278.23	29.00	937.70	1372.52	202.00	-1356.35	1373.64	278.47	0.40	MWD	6-axis
63	1849.94	70.22	278.36	29.05	947.65	1399.78	205.94	-1383.35	1400.93	278.47	0.18	MWD	6-axis
64	1878.96	70.43	278.43	29.02	957.42	1427.09	209.93	-1410.39	1428.26	278.47	0.08	MWD	6-axis
65	1907.42	69.37	278.19	28.46	967.20	1453.79	213.79	-1436.83	1454.98	278.46	0.38	MWD	6-axis
66	1936.61	69.40	277.83	29.19	977.48	1481.08	217.60	-1463.89	1482.30	278.45	0.12	MWD	6-axis
67	1965.40	70.13	277.70	28.79	987.44	1508.46	221.25	-1490.65	1509.32	278.44	0.26	MWD	6-axis
68	1994.90	69.00	277.57	29.50	997.74	1535.66	224.92	-1518.05	1536.96	278.43	0.39	MWD	6-axis
69	2023.87	69.58	277.53	28.97	1007.98	1562.72	228.48	-1544.91	1564.05	278.41	0.20	MWD	6-axis
70	2053.01	70.40	277.19	29.14	1017.95	1590.05	231.99	-1572.07	1591.43	278.39	0.30	MWD	6-axis
71	2081.95	69.28	276.84	28.94	1027.93	1617.16	235.31	-1599.03	1618.59	278.37	0.40	MWD	6-axis
72	2110.89	69.88	276.72	28.94	1038.01	1644.18	238.51	-1625.92	1645.66	278.35	0.21	MWD	6-axis
73	2139.84	69.69	277.89	28.95	1048.03	1671.34	241.96	-1652.91	1672.86	278.33	0.38	MWD	6-axis
74	2168.61	68.47	277.69	28.77	1058.30	1698.18	245.61	-1679.53	1699.73	278.32	0.43	MWD	6-axis
75	2196.77	68.73	278.43	28.16	1068.58	1724.37	249.28	-1705.49	1725.95	278.32	0.26	MWD	6-axis
76	2225.63	69.28	277.51	28.86	1078.92	1751.28	253.02	-1732.17	1752.90	278.31	0.35	MWD	6-axis
77	2254.91	68.25	277.29	29.28	1089.52	1778.53	256.53	-1759.24	1780.18	278.30	0.36	MWD	6-axis
78	2283.60	69.15	277.10	28.69	1099.94	1805.21	259.86	-1785.76	1806.91	278.28	0.32	MWD	6-axis
79	2312.77	68.10	276.88	29.17	1110.57	1832.31	263.15	-1812.73	1834.07	278.26	0.37	MWD	6-axis
80	2341.36	68.69	277.40	28.59	1121.10	1858.48	266.45	-1839.10	1856.64	278.24	0.27	MWD	6-axis
81	2370.89	68.94	276.86	29.53	1131.77	1886.32	269.87	-1866.42	1888.17	278.23	0.19	MWD	6-axis
82	2399.55	69.12	277.90	28.66	1142.03	1913.04	273.30	-1892.96	1914.93	278.22	0.34	MWD	6-axis
83	2428.92	69.05	277.42	29.37	1152.51	1940.43	276.96	-1920.15	1942.37	278.21	0.15	MWD	6-axis
84	2457.83	69.47	277.99	28.91	1162.75	1967.43	280.59	-1946.94	1969.40	278.20	0.23	MWD	6-axis
85	2486.94	68.79	278.64	29.11	1173.12	1994.61	284.52	-1973.86	1996.60	278.20	0.31	MWD	6-axis
86	2515.88	67.38	279.85	28.94	1183.92	2021.45	288.83	-2000.36	2023.44	278.25	0.62	MWD	6-axis
87	2545.04	65.00	281.43	29.16	1195.70	2048.12	293.75	-2026.57	2050.09	278.25	0.95	MWD	6-axis

86	2515.88	67.38	279.85	28.94	1183.92	2021.45	288.83	-2000.36	2023.44	278.25	0.62	MWD	6-axis
87	2545.04	65.00	281.43	29.16	1195.70	2048.12	293.75	-2026.57	2050.09	278.25	0.95	MWD	6-axis
88	2573.83	62.39	283.61	28.79	1208.45	2073.92	299.34	-2051.76	2075.83	278.30	1.13	MWD	6-axis
89	2602.58	58.65	285.62	28.75	1222.60	2098.88	305.65	-2075.98	2100.70	278.38	1.44	MWD	6-axis
90	2631.33	56.13	286.51	28.75	1238.09	2122.99	312.35	-2099.25	2124.69	278.46	0.91	MWD	6-axis

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ANADRILL SCHLUMBERGER Survey Report

11-Aug-2002 11:07:47

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	2659.69	54.32	286.63	28.36	1254.27	2146.16	318.99	-2121.58	2147.75	278.55	0.64	MWD	6-axis
92	2688.71	53.11	287.55	29.02	1271.44	2169.41	325.86	-2143.93	2170.88	278.64	0.49	MWD	6-axis
93	2718.07	51.22	289.76	29.36	1289.45	2192.37	333.27	-2165.90	2193.72	278.75	0.88	MWD	6-axis
94	2746.79	49.16	290.96	28.72	1307.84	2214.12	340.94	-2186.59	2215.33	278.86	0.79	MWD	6-axis
95	2776.50	47.88	292.40	29.71	1327.52	2235.97	349.16	-2207.27	2237.03	278.99	0.56	MWD	6-axis
96	2805.24	46.70	293.44	28.74	1347.01	2256.61	357.39	-2226.72	2257.53	279.12	0.49	MWD	6-axis
97	2833.96	43.73	298.05	28.72	1367.25	2273.28	366.22	-2245.08	2277.05	279.26	1.54	MWD	6-axis
98	2862.50	42.39	302.54	28.54	1388.10	2294.63	376.03	-2261.90	2295.24	279.44	1.17	MWD	6-axis
99	2891.25	40.70	305.19	28.75	1409.62	2312.16	386.65	-2277.73	2312.61	279.63	0.85	MWD	6-axis
100	2920.00	38.59	306.07	28.75	1431.76	2328.80	397.33	-2292.64	2329.10	279.83	0.76	MWD	6-axis
101	2948.89	36.50	309.17	28.89	1454.67	2344.50	408.06	-2306.59	2344.68	280.03	0.97	MWD	6-axis
102	2977.95	33.86	311.42	29.06	1478.42	2359.06	418.88	-2319.36	2359.15	280.24	1.01	MWD	6-axis
103	3006.85	30.56	313.56	28.90	1502.87	2372.17	429.26	-2330.75	2372.30	280.44	1.21	MWD	6-axis
104	3036.40	27.10	314.14	29.55	1528.75	2384.11	439.10	-2341.04	2384.12	280.63	1.17	MWD	6-axis
105	3053.55	26.87	314.19	17.15	1544.03	2390.60	444.53	-2346.62	2390.60	280.73	0.13	MWD	6-axis
106	3075.00	26.61	314.25	21.45	1563.19	2398.65	451.26	-2353.54	2398.65	280.86	0.12	Projection	

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Company: Esso Australia Ltd.

Well: TNA A-29

Field: Tuna

Rig: ISDL 453

State: Victoria

IDEAL services from Anadrill

GeoVISION Resistivity
1:200 True Vertical Depth
Recorded Mode Log

Schlumberger