

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

Rig: ISDL 453 Field: Tuna Location: Bass Strait Well: TNA A-29 Company: Esso Australia Ltd.	GeoVISION Service 1:500 Measured Depth Recorded Mode Log												
	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				IDEAL services from Anadrill					
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						
<b>Environmental data</b>										
<b>GR</b>										
Mud weight	ppg	9.4	10.55	10.3						
Bit size	in	8.5	8.5	8.5						
<b>Resistivity</b>										
<b>Neutron porosity</b>										
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

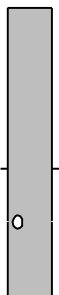
RUN6

### 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

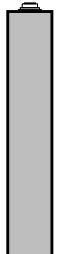
27.8  
27.6  
26.8  
26.7  
26.3  
25.5



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

D&I  
GR

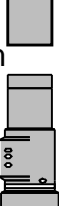
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18.7



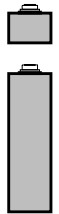
6-3/4" G  
S/N: 1  
Soft: 6.1

Shallo  
Medium  
Deep  
Ring R  
R-O p  
GR

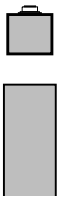
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13.6  
13.4  
13.2  
13.1  
12.9



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

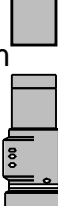
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18.7




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

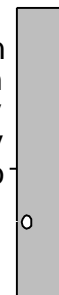


### DOWNHOLE EQ

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

Hughes Model: HCM60

MAXIMUM STRING DI

ALL LENGTHS I

Bit-PD

GeoDIAMOND Model: S7

MAXIMUM STRING DI

ALL LENGTHS I

Bit-PD

GeoDIAMOND Model: S7

MAXIMUM STRING DI

ALL LENGTHS I

## IDEAL Version: ID7\_0C\_02

IDF

RAB id6\_1c\_10  
ADN id6\_1c\_10

MWD\_10

id6\_1c\_10

Format: A-29 GeoVISION Service

Vertical Scale: 1:500

Graphics File Created: 18-Aug-2002 13:48

## Parameters

DLIS Name	Description	Value
AVE_ADN	ADN/Array Channels: perform averaging(RM) :	YES
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
BHT_RM	Bottom Hole Temperature (RM)	75.000 degC
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
BSAL_RM	Mud Salinity (RM)	79.200 ppk
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
DEVI	Average angle of the hole (RM)	59.450 deg
DHS_VERSION	RAB: DownHole Software Version	V6.1 B
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)	20.800 degC
MW_RM	Mud Weight (RM)	10.400 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	13.070 m
RHOF_RM	Mud Filtrate Density (RM)	1.000 g/cm3
RHOM_RM	Matrix density (RM)	2.710 g/cm3
RINGBHCA	RAB: Ring Borehole A Factor	0.160
RINGBHCB	RAB: Ring Borehole B Factor	0.000
RING_KIMP_A	RAB: Ring Impedance Coeff A	0.000
RING_KIMP_B	RAB: Ring Impedance Coeff B	0.000
RING_K_FACTOR	RAB: Ring K Factor	0.153
RMS_RM	Resistivity of Mud Sample (RM)	0.123 ohm.m
RWS_RM	Resistivity of Connate Water (RM)	1.000 ohm.m

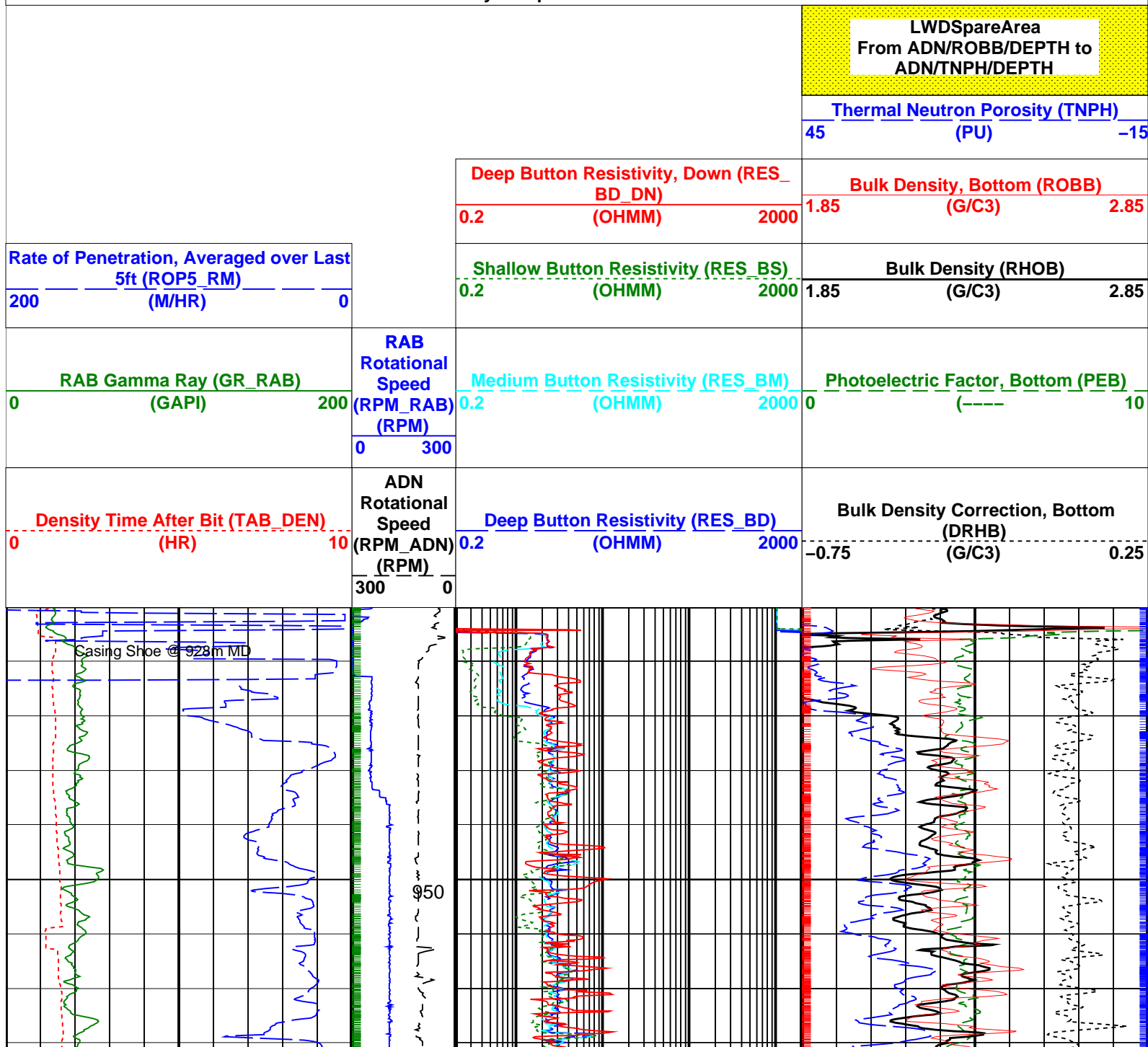
RMS_RM	Resistivity of Mud Sample (RM)	0.123	ohm.m
RWS_RM	Resistivity of Connate Water (RM)	1.000	ohm.m
SBUTTON_K_FACTOR	RAB: Button Shallow K Factor	0.007	
SHT_RM	Surface Hole Temperature (RM)	10.000	degC
SSIZ_ADN	ADN:Stabilizer Size (RM)	8.250	in
STAB	RAB: Run with Stabilizer	YES	
TD_RM	Total Measured Depth (RM)	3075.0	m
TOOLTYPE	RAB: Azimuthal Tool	YES	
TRPM_RM	Average Tool rotational Speed (RM)	20.000	c/min
TSIZ_ADN	ADN:Tool Size (RM)	6.750	in
TS_VERSION	RAB: ToolScope Software Version	V6.0 B017	
TWS_RM	Temperature of Connate Water (RM)	23.889	degC
VERS_ADN	ADN downhole software	6.100	
VRAB6	Rab Tool type (ENP/PILOT)	RAB6_C_SERIES	

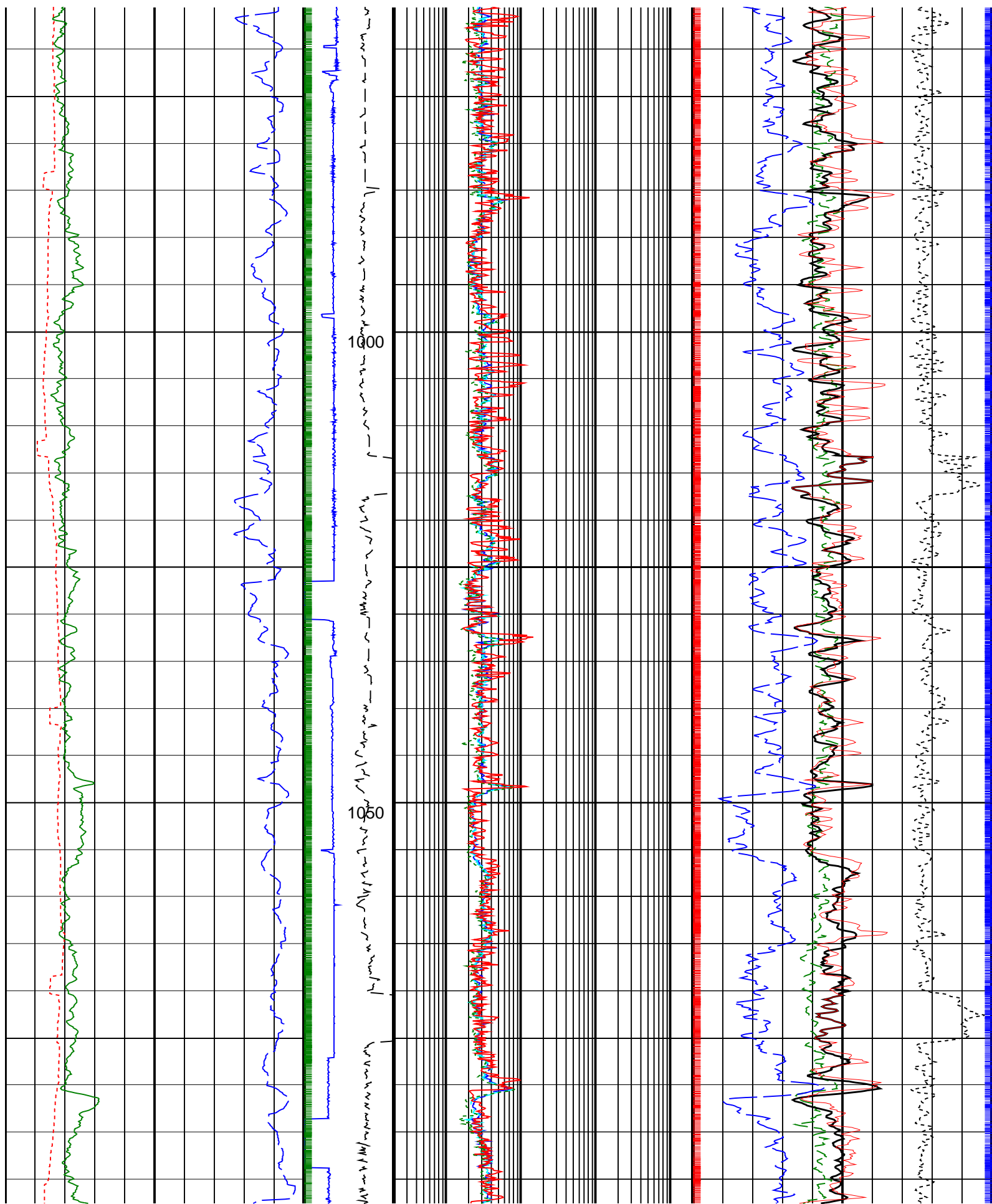
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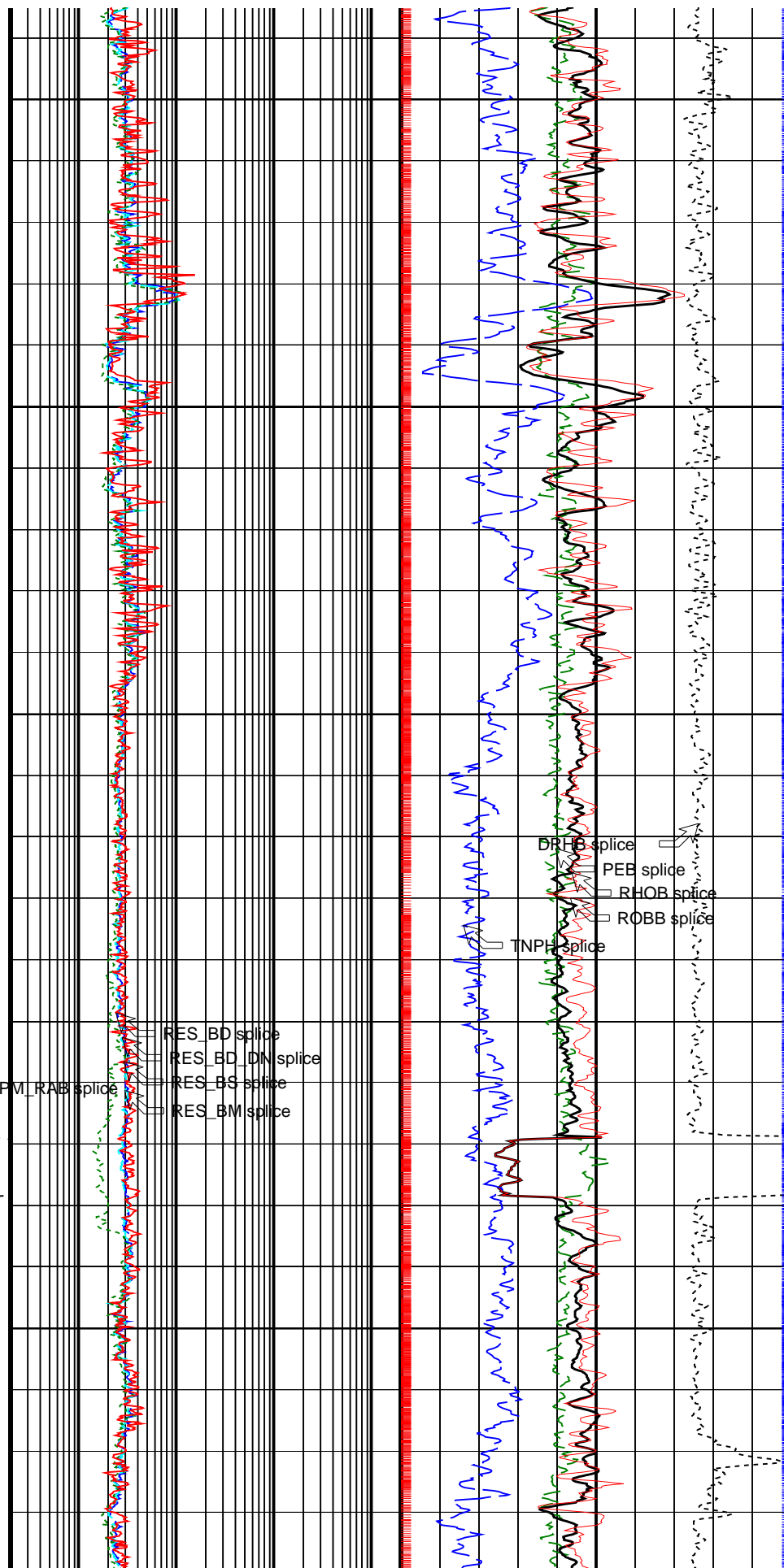
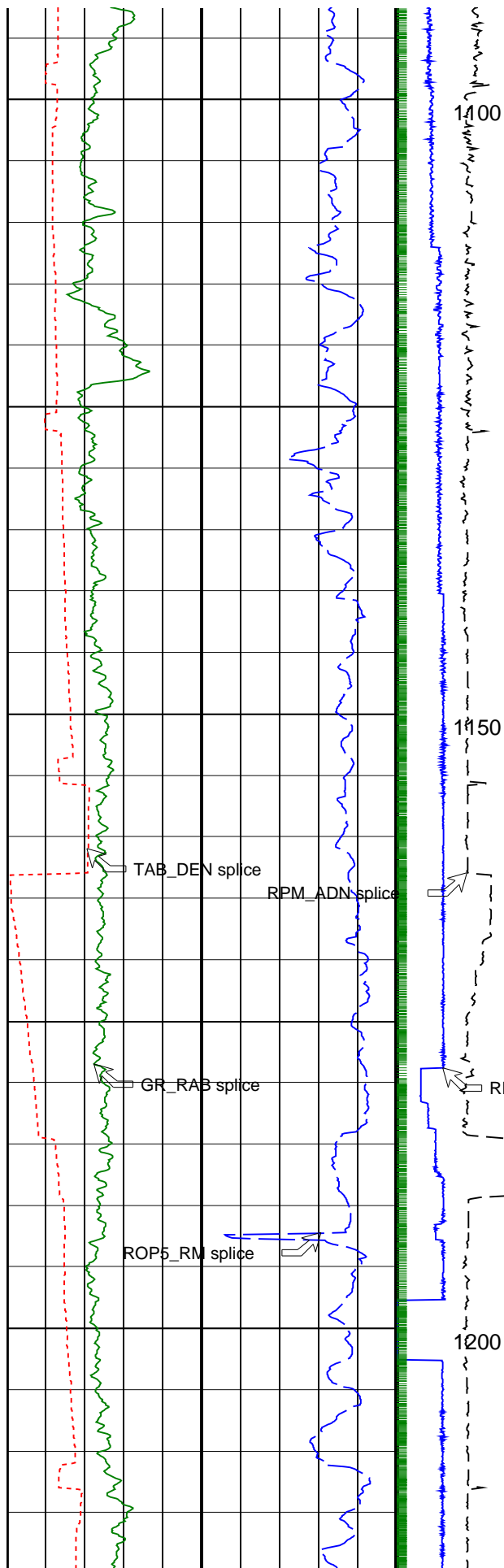
Density Ticks, 0.1 ft

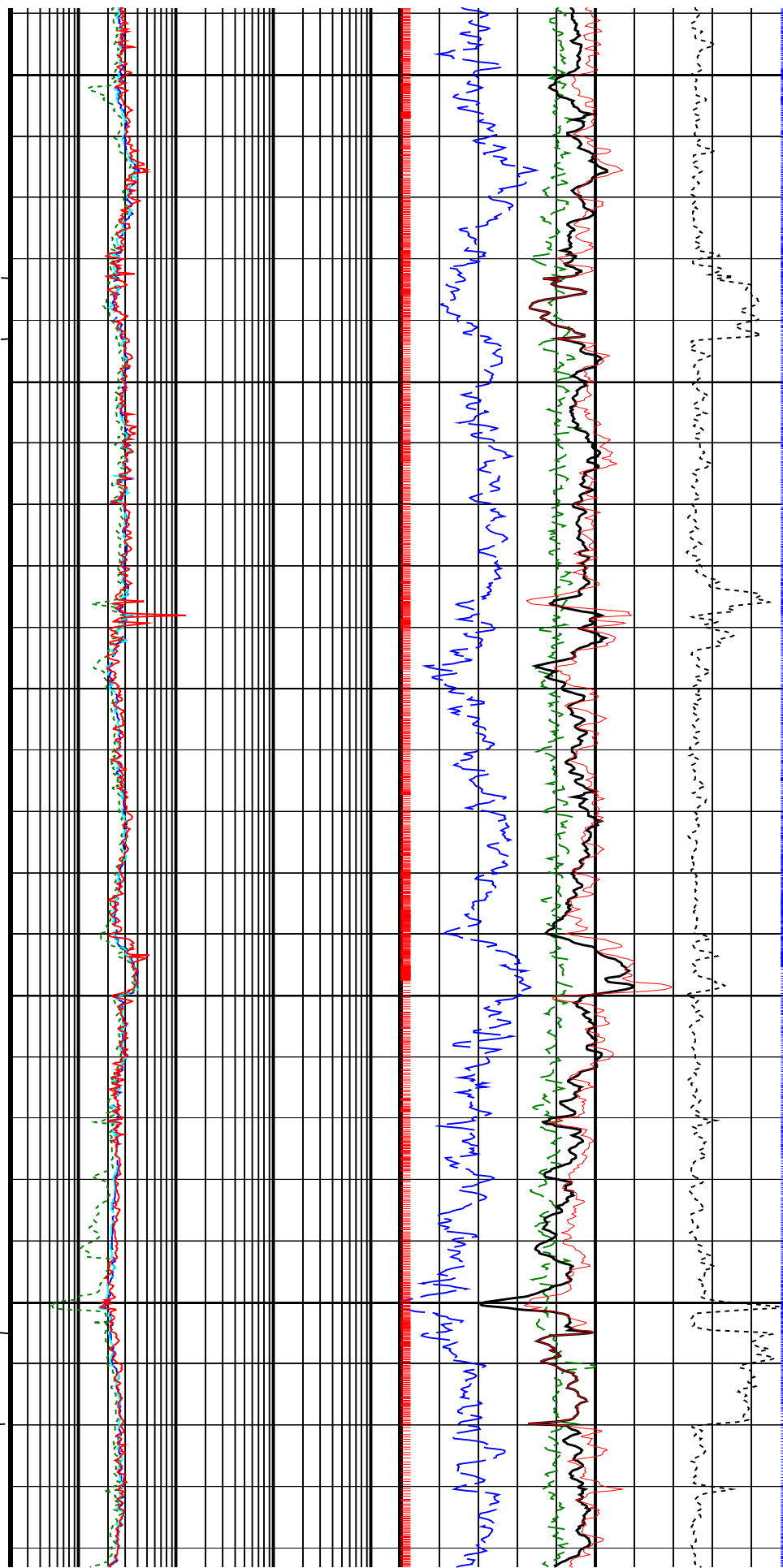
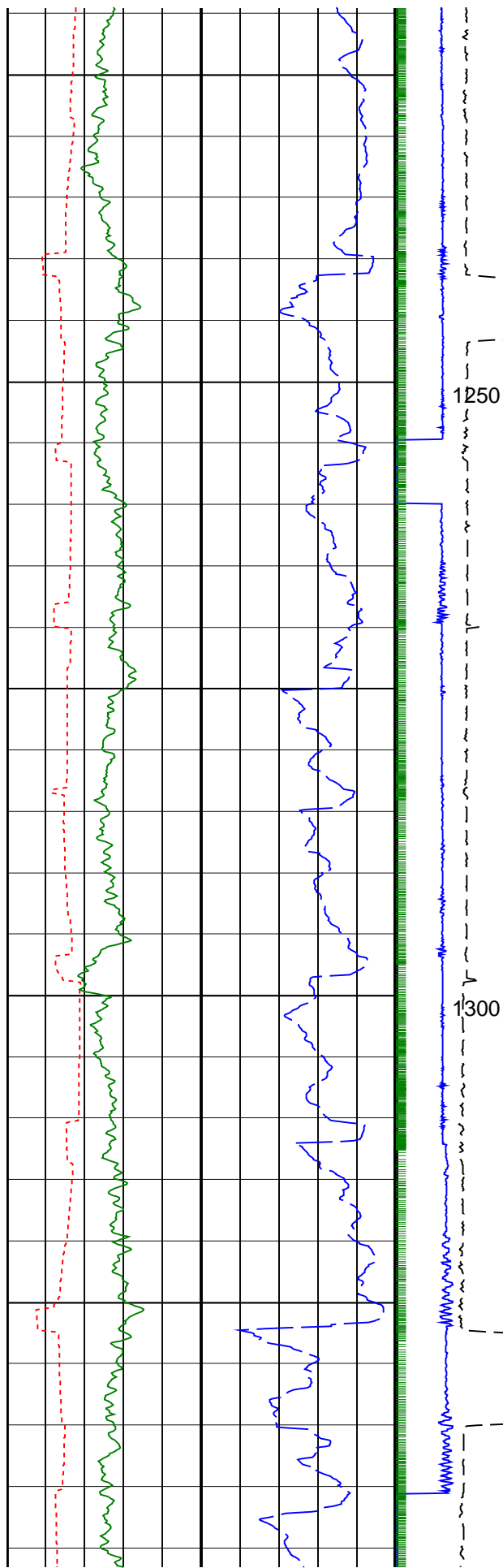
Neutron Ticks, 0.1 ft

Gamma Ray Samples

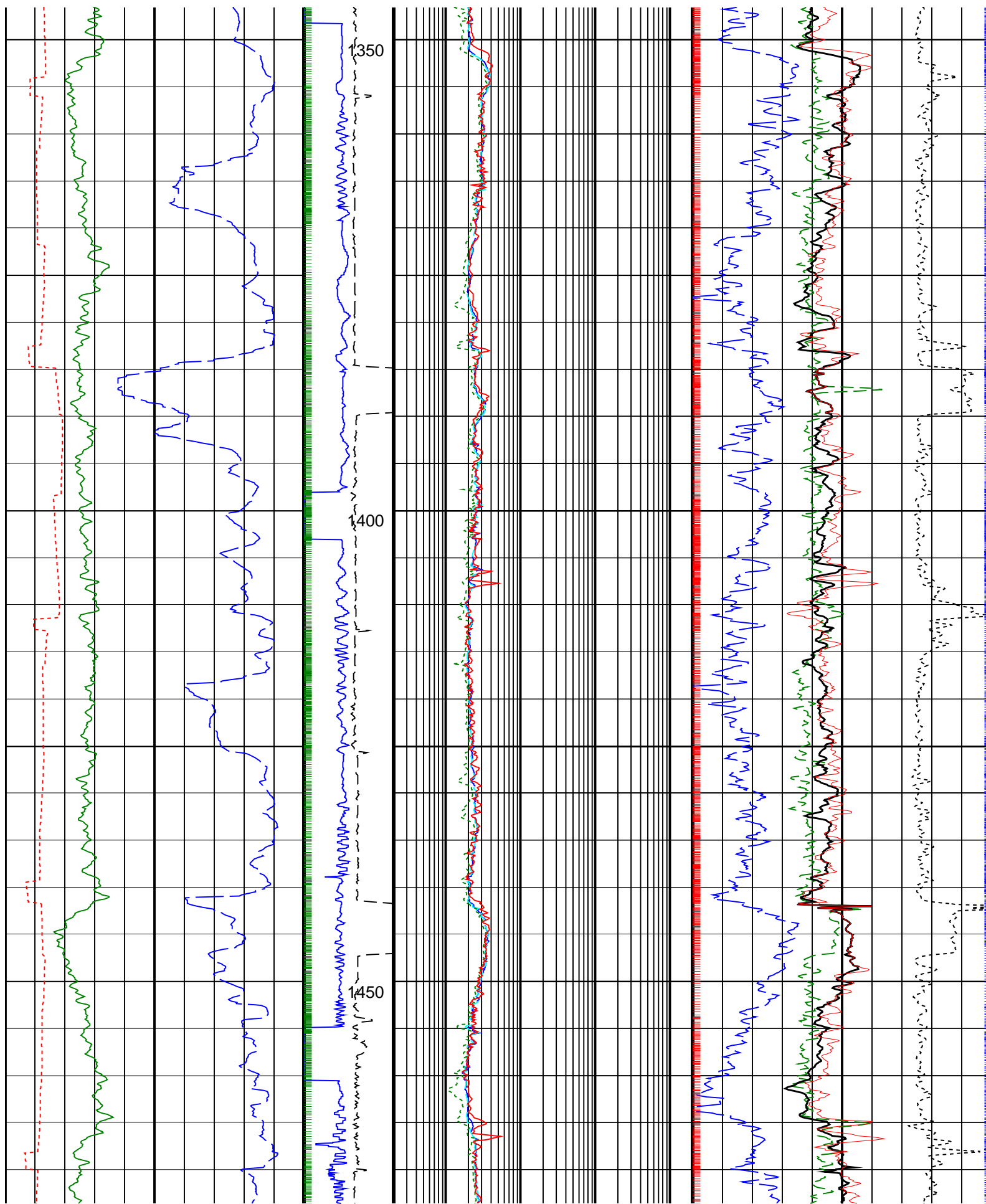


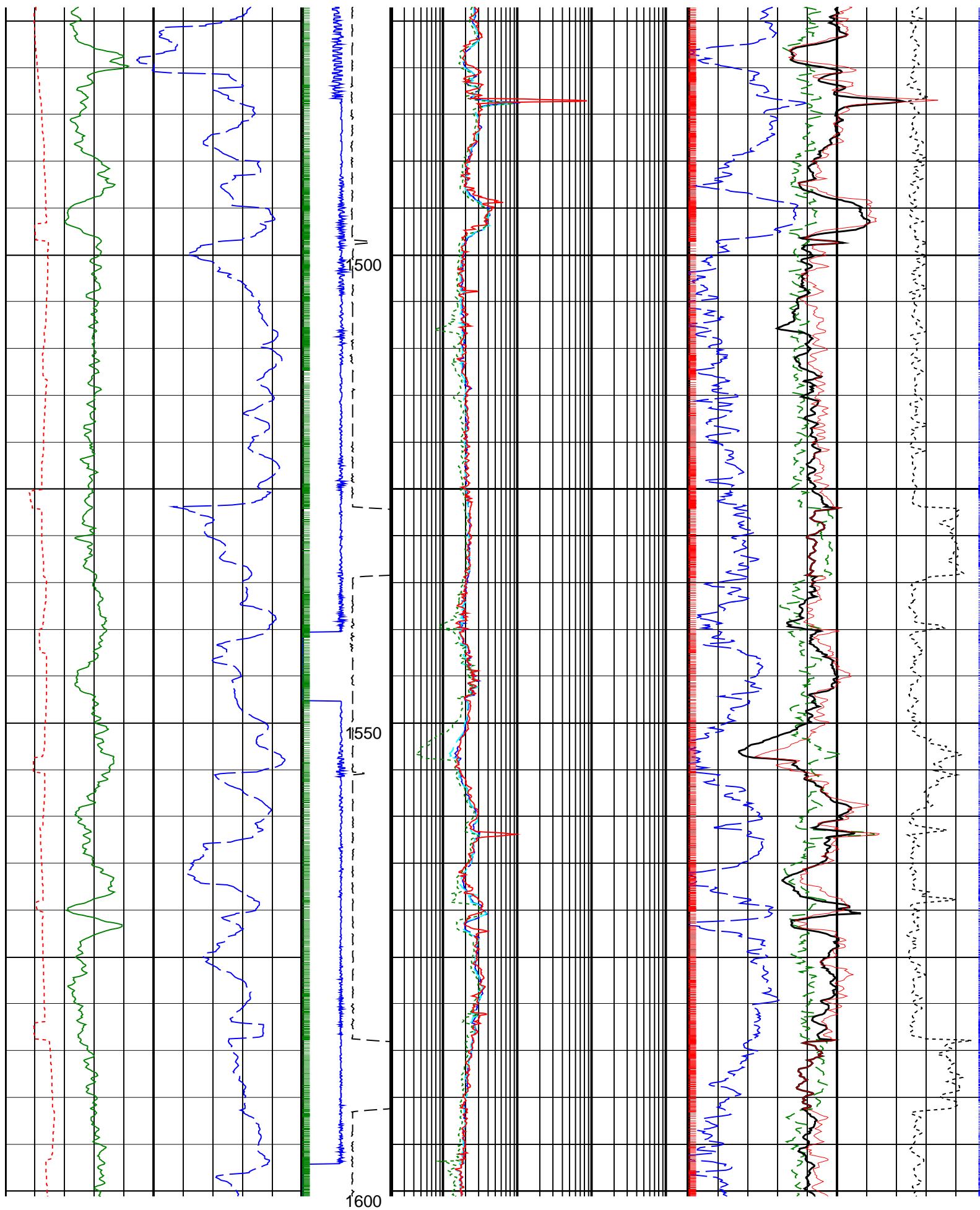


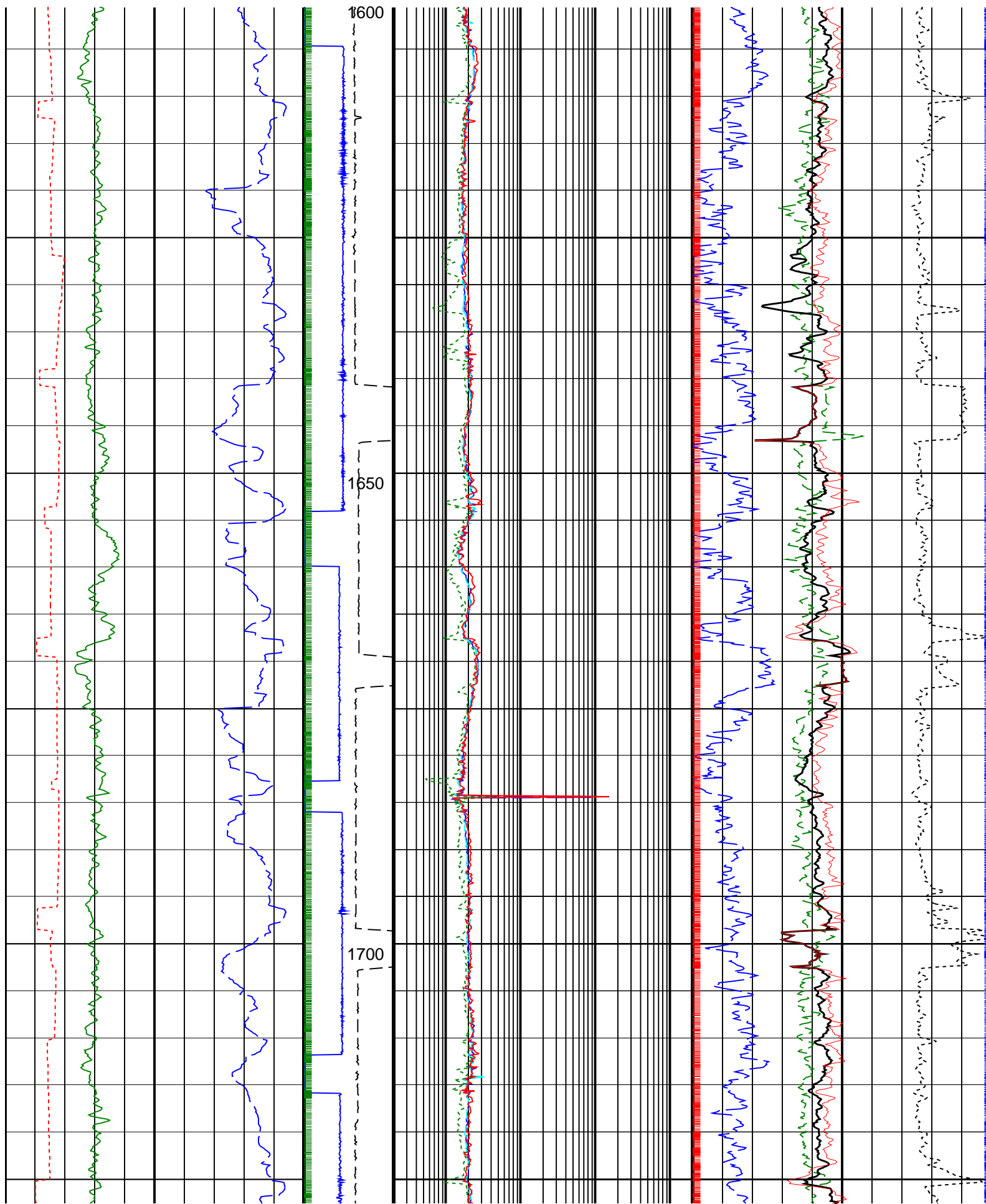


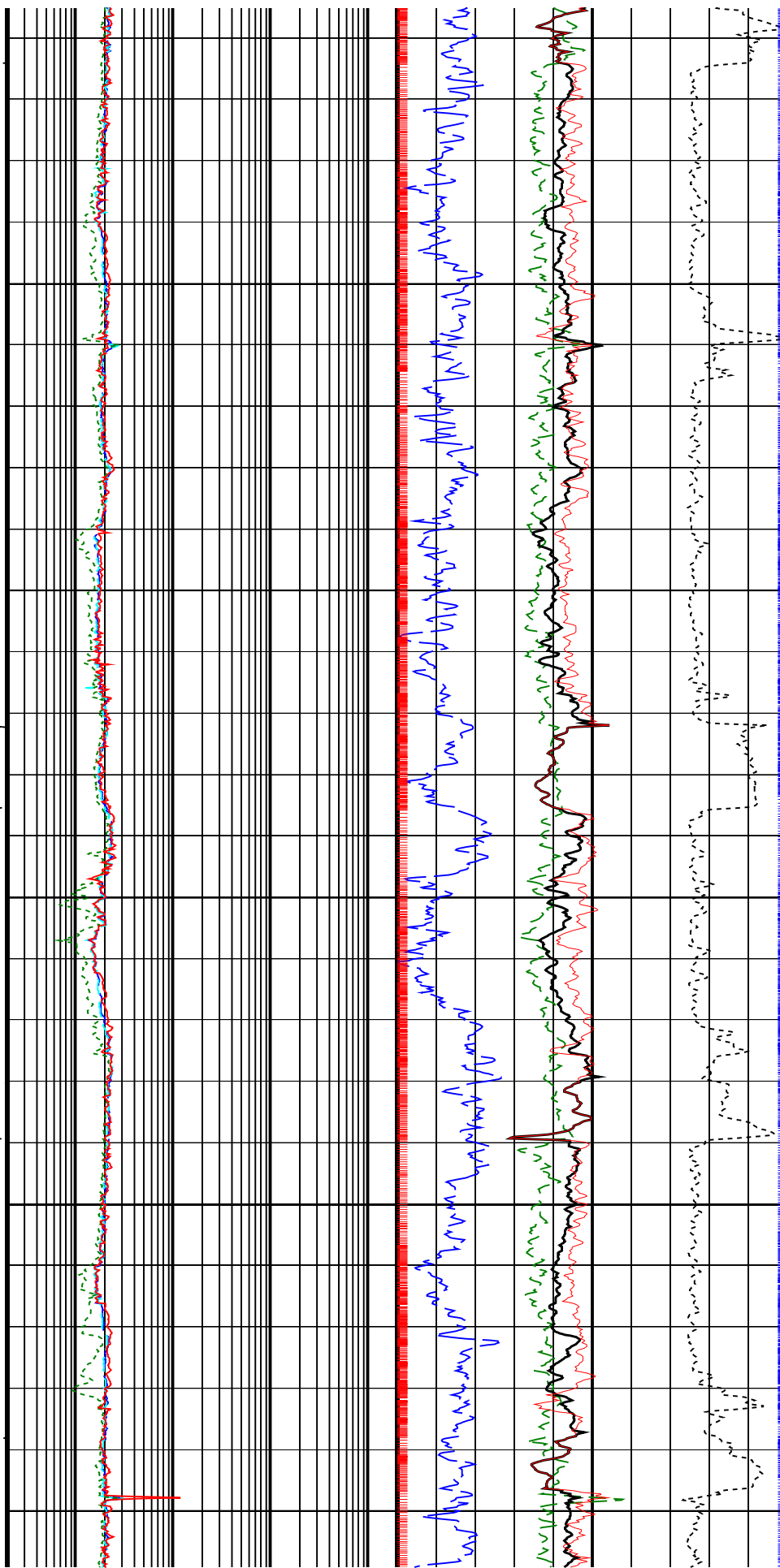
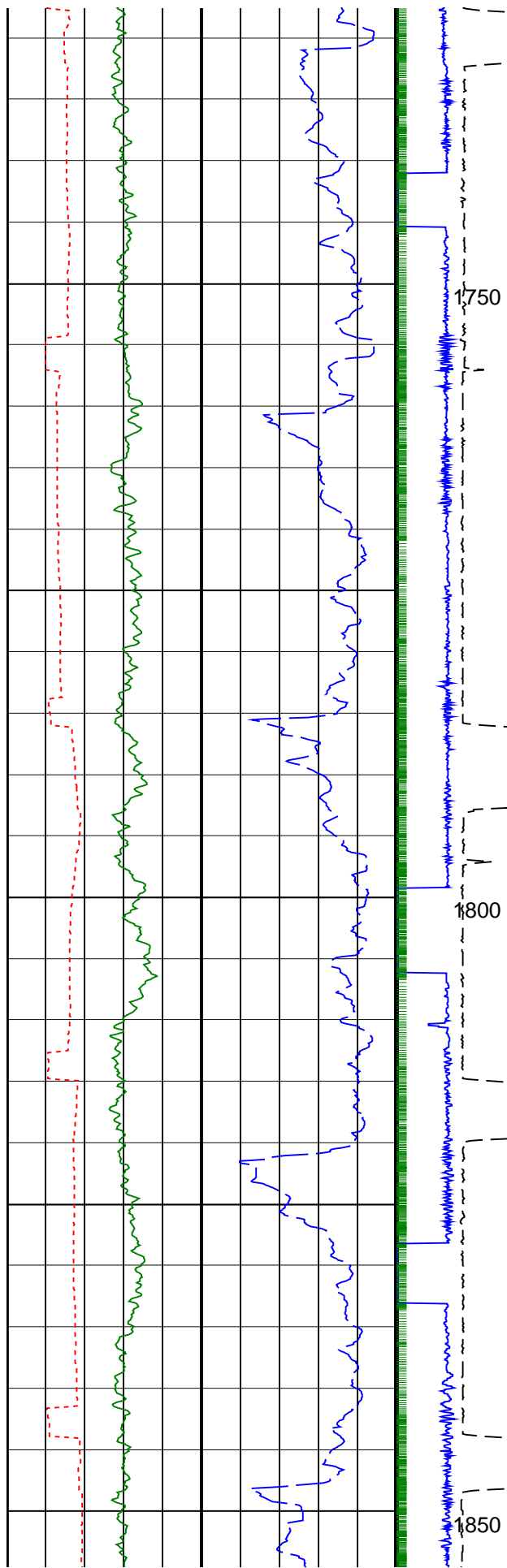


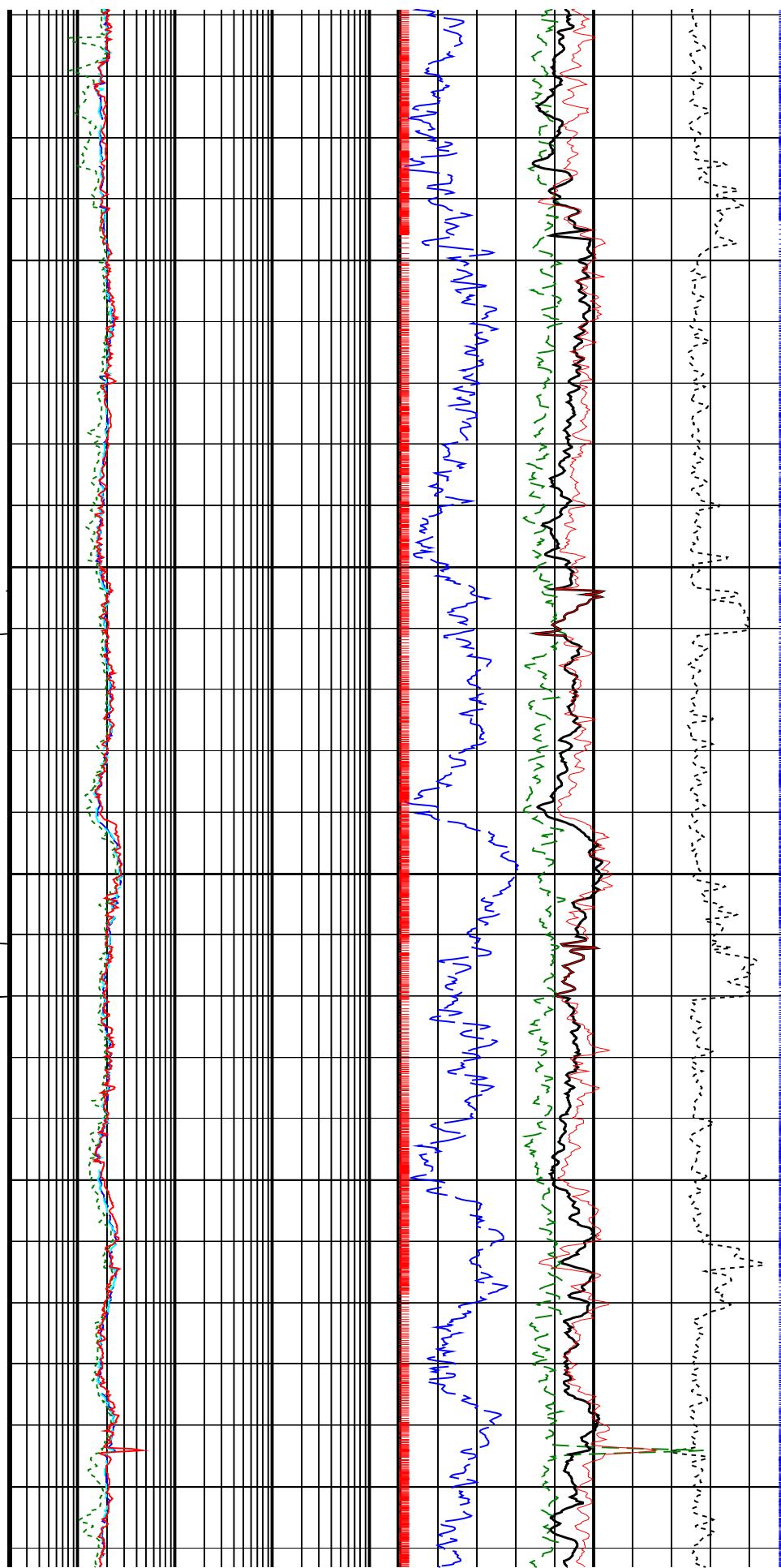
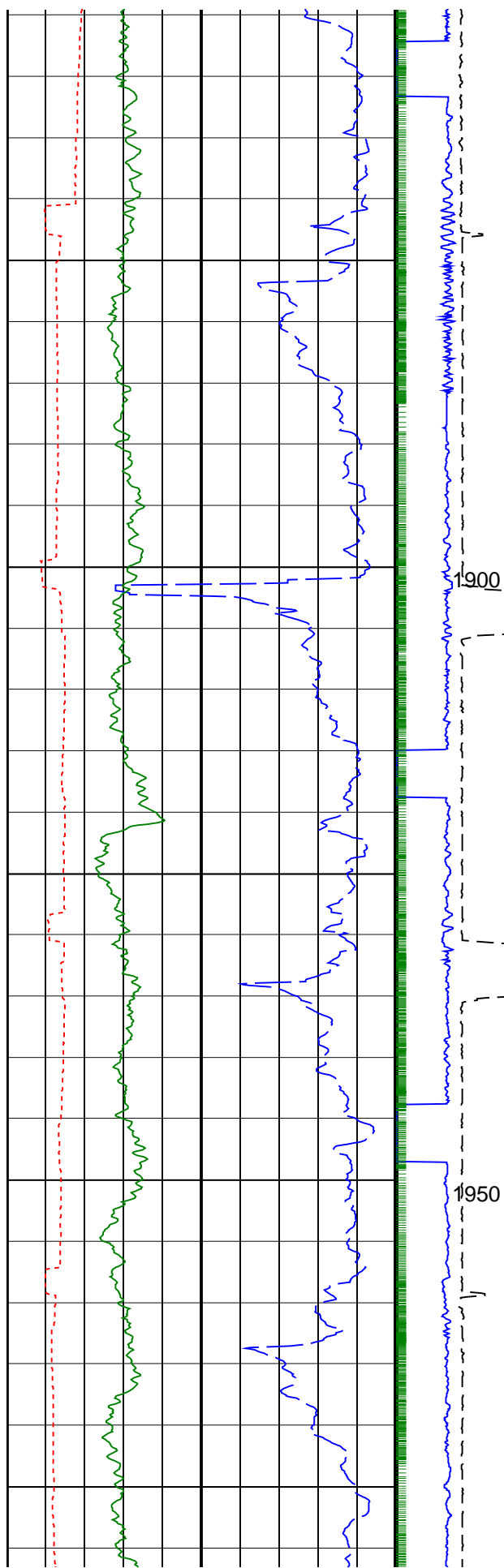


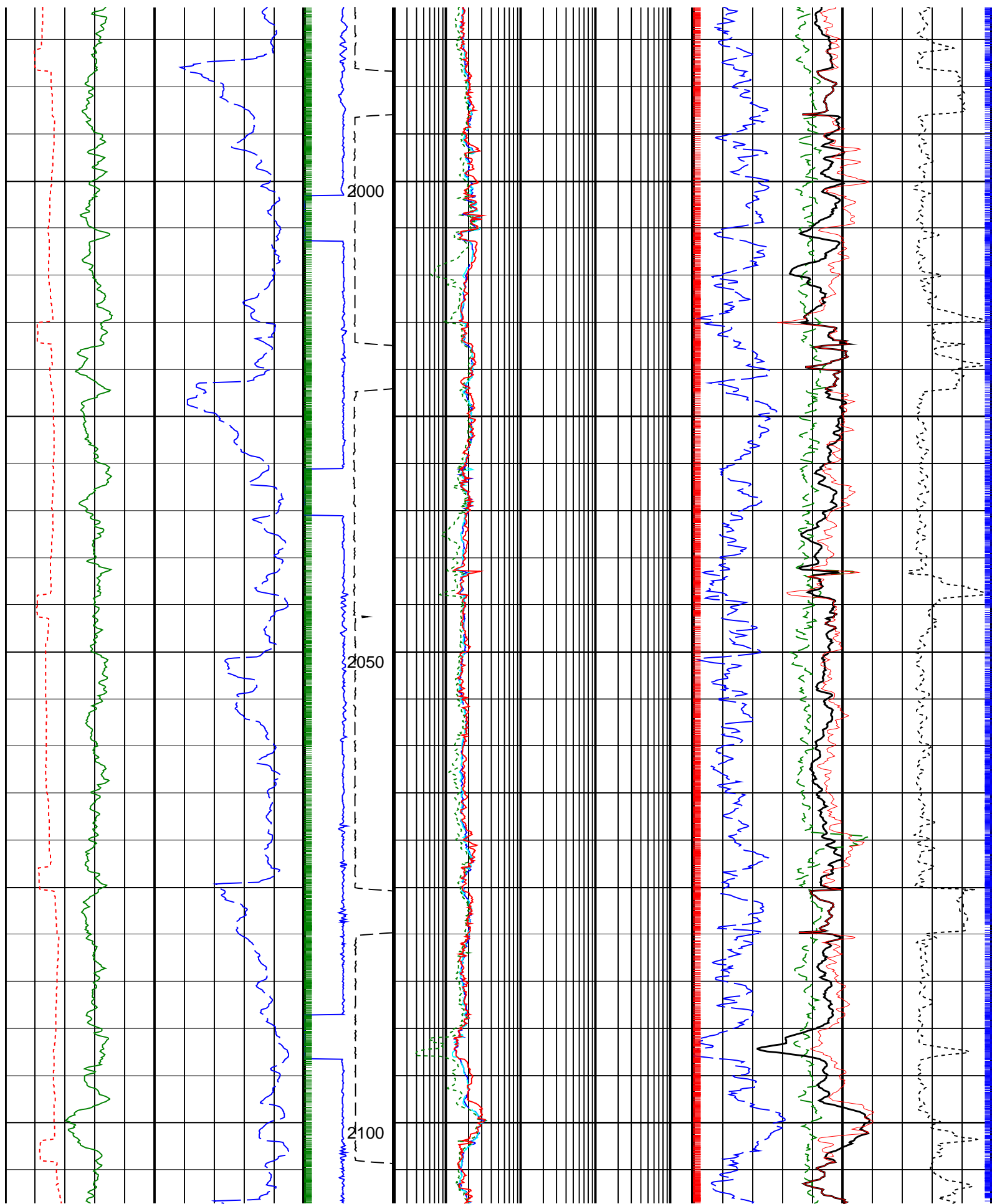


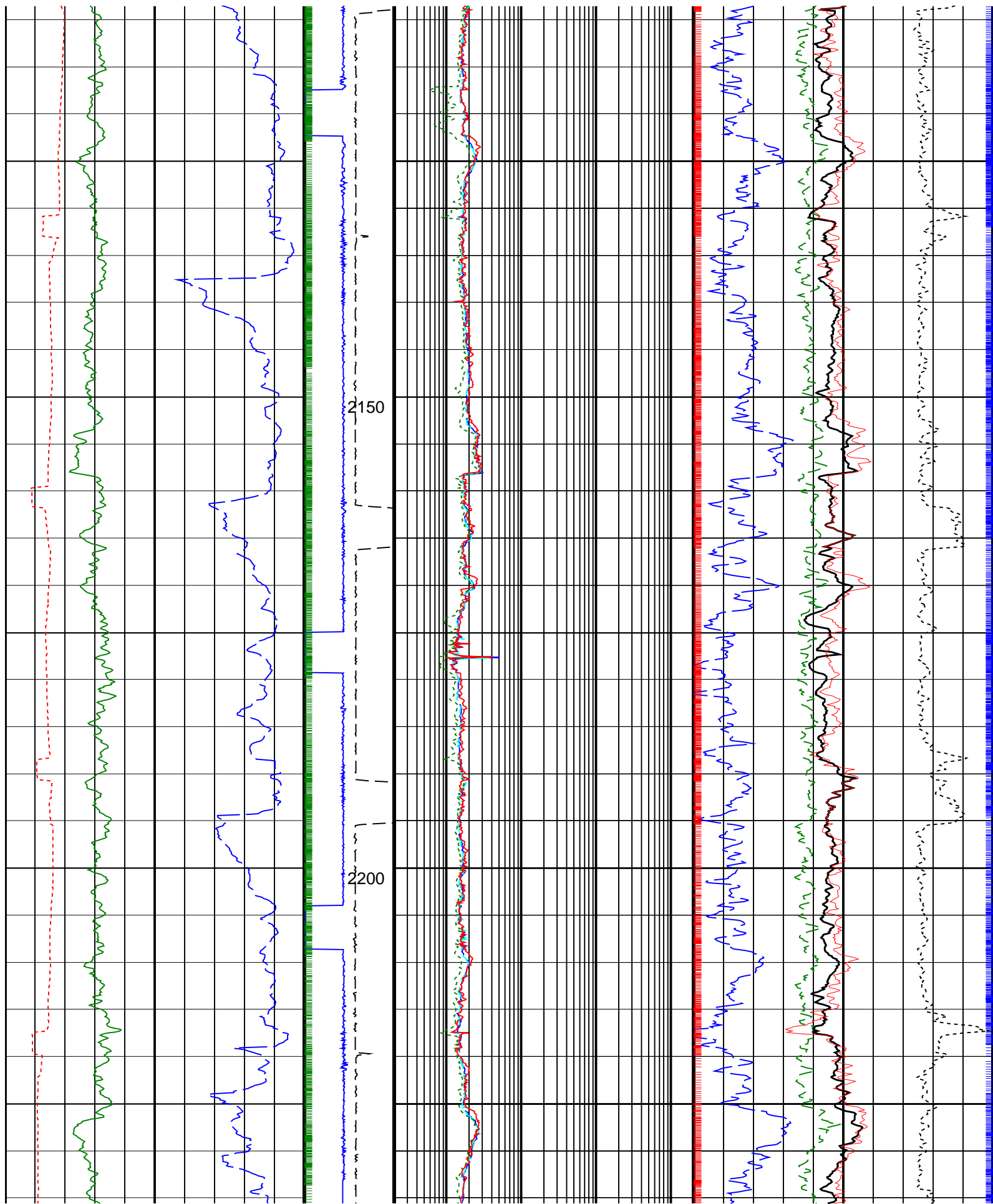


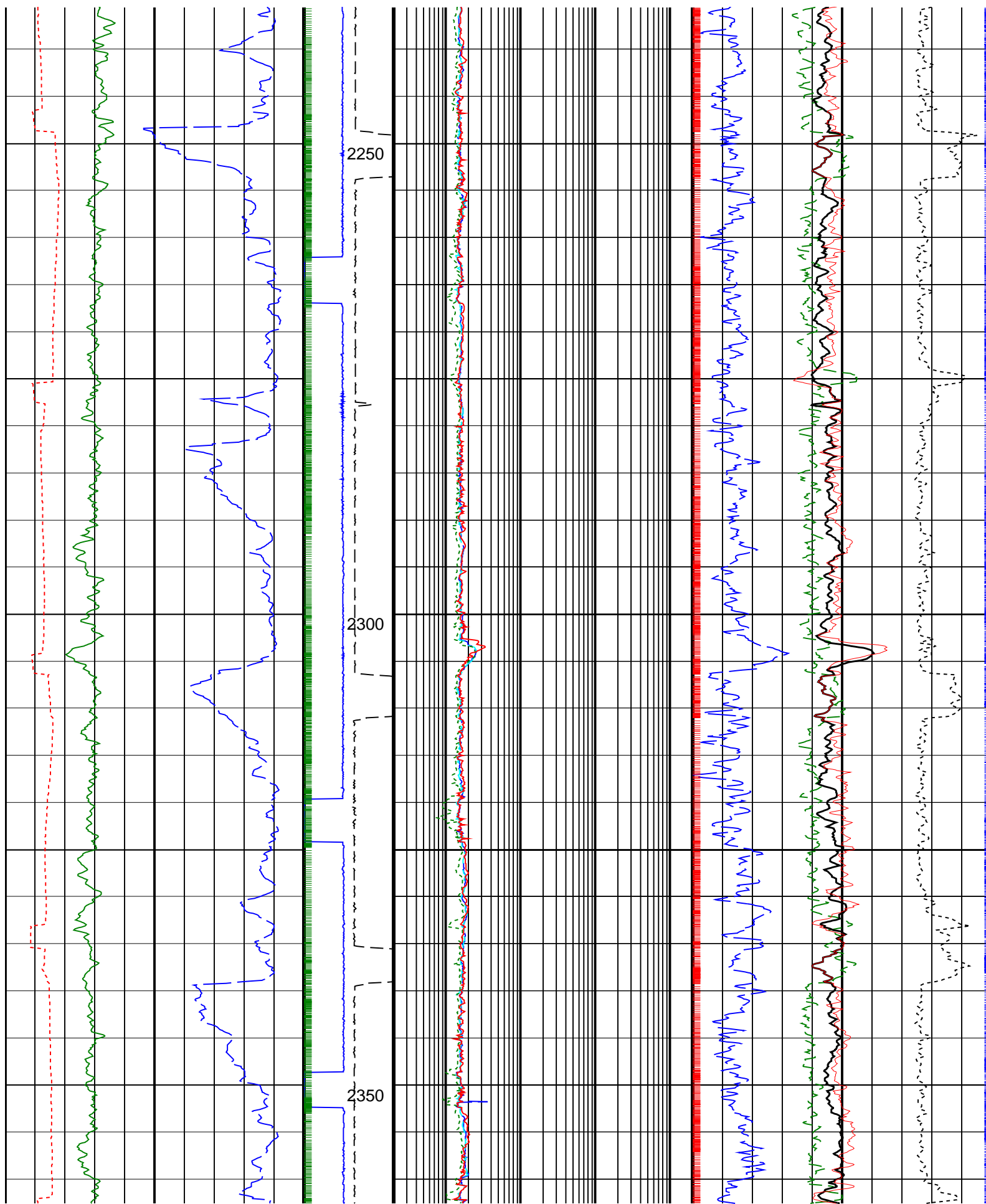




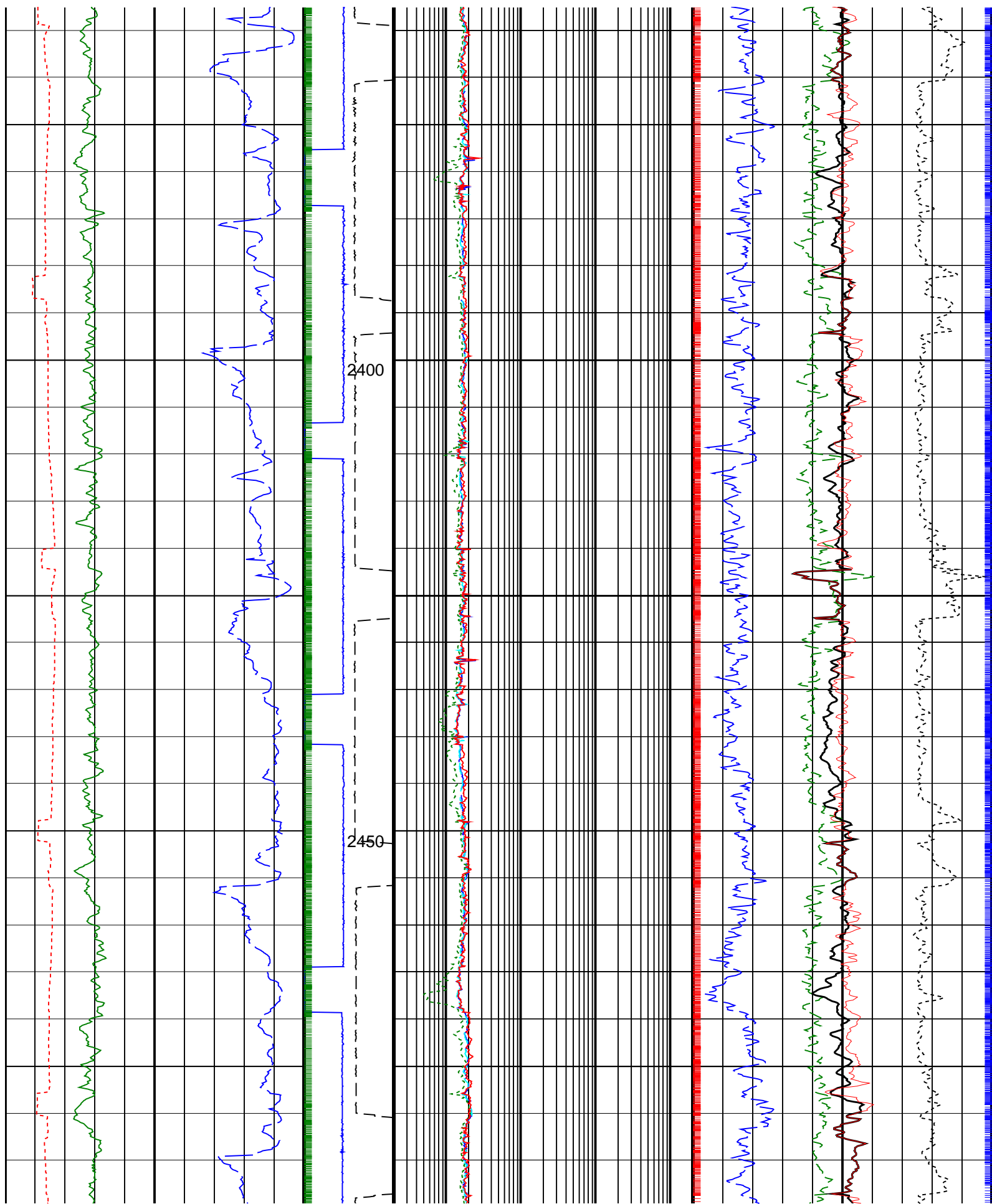


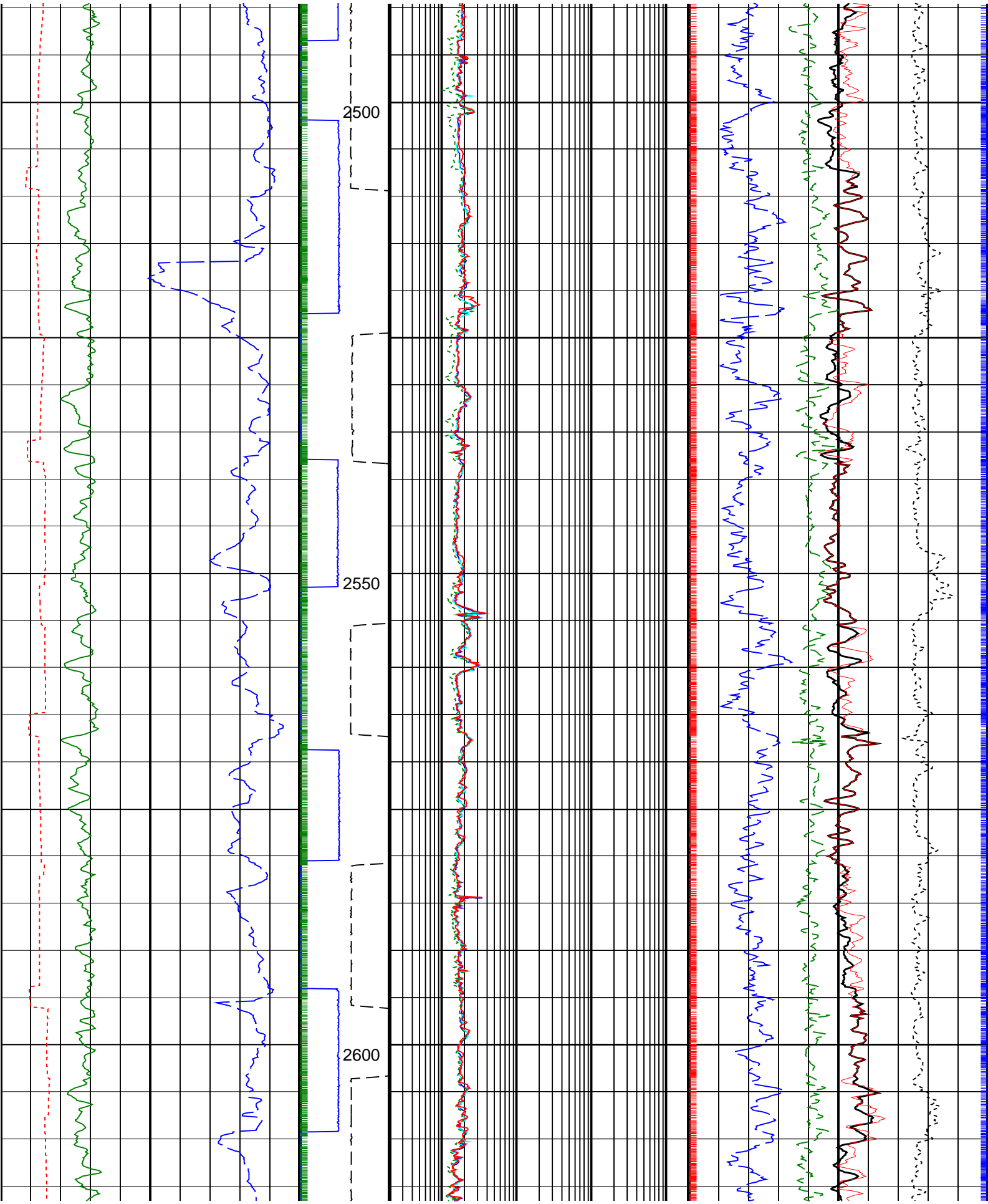


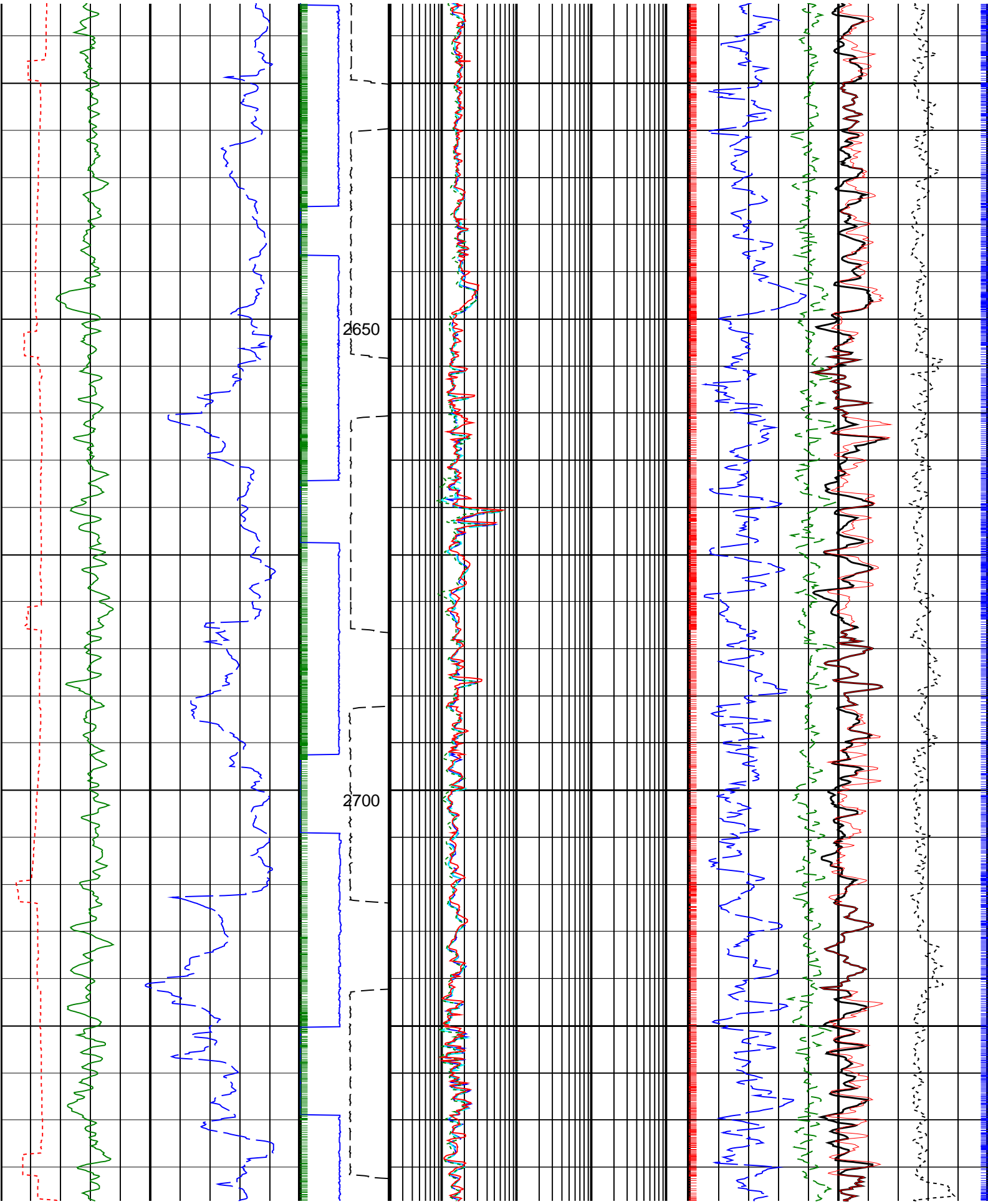


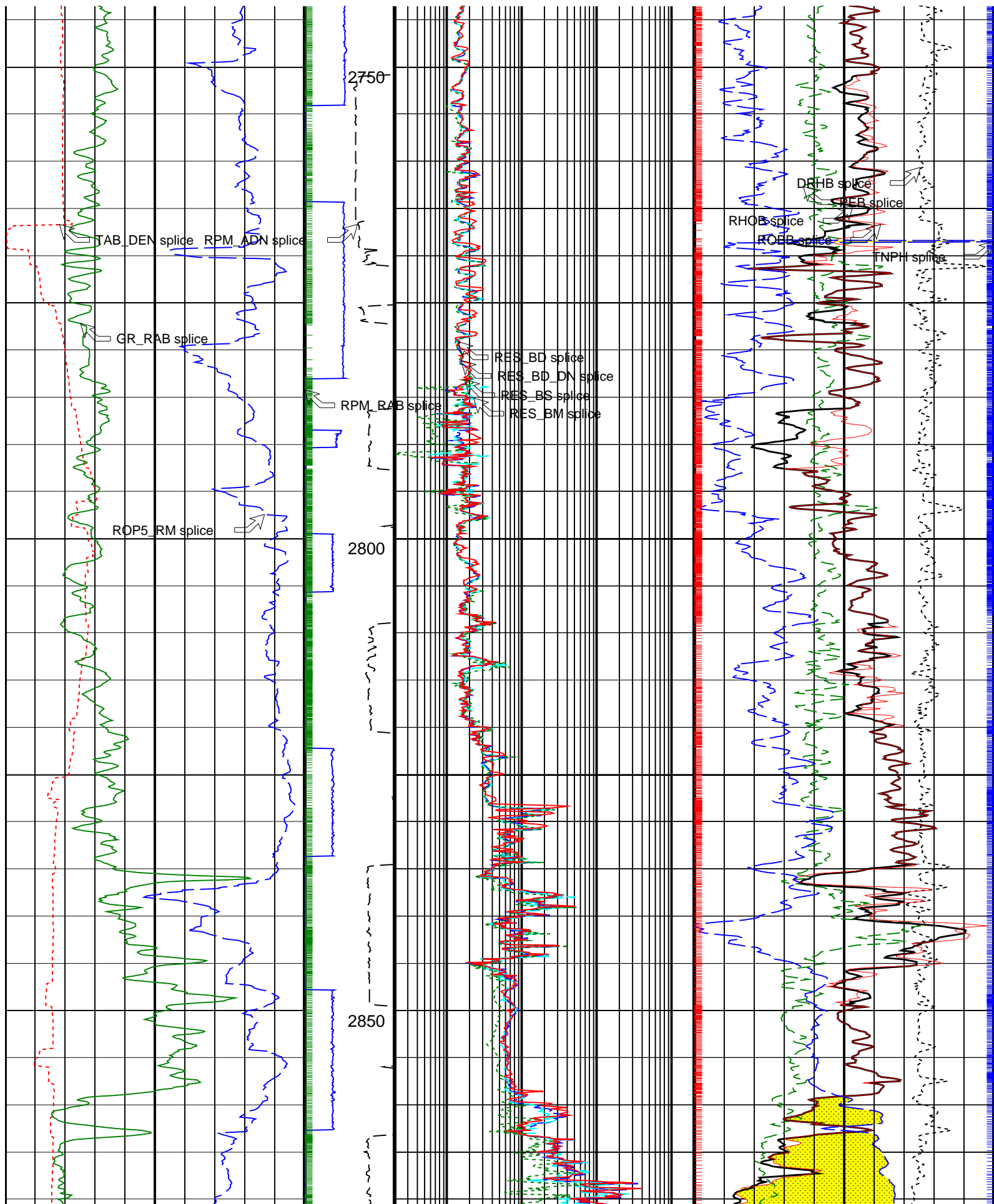


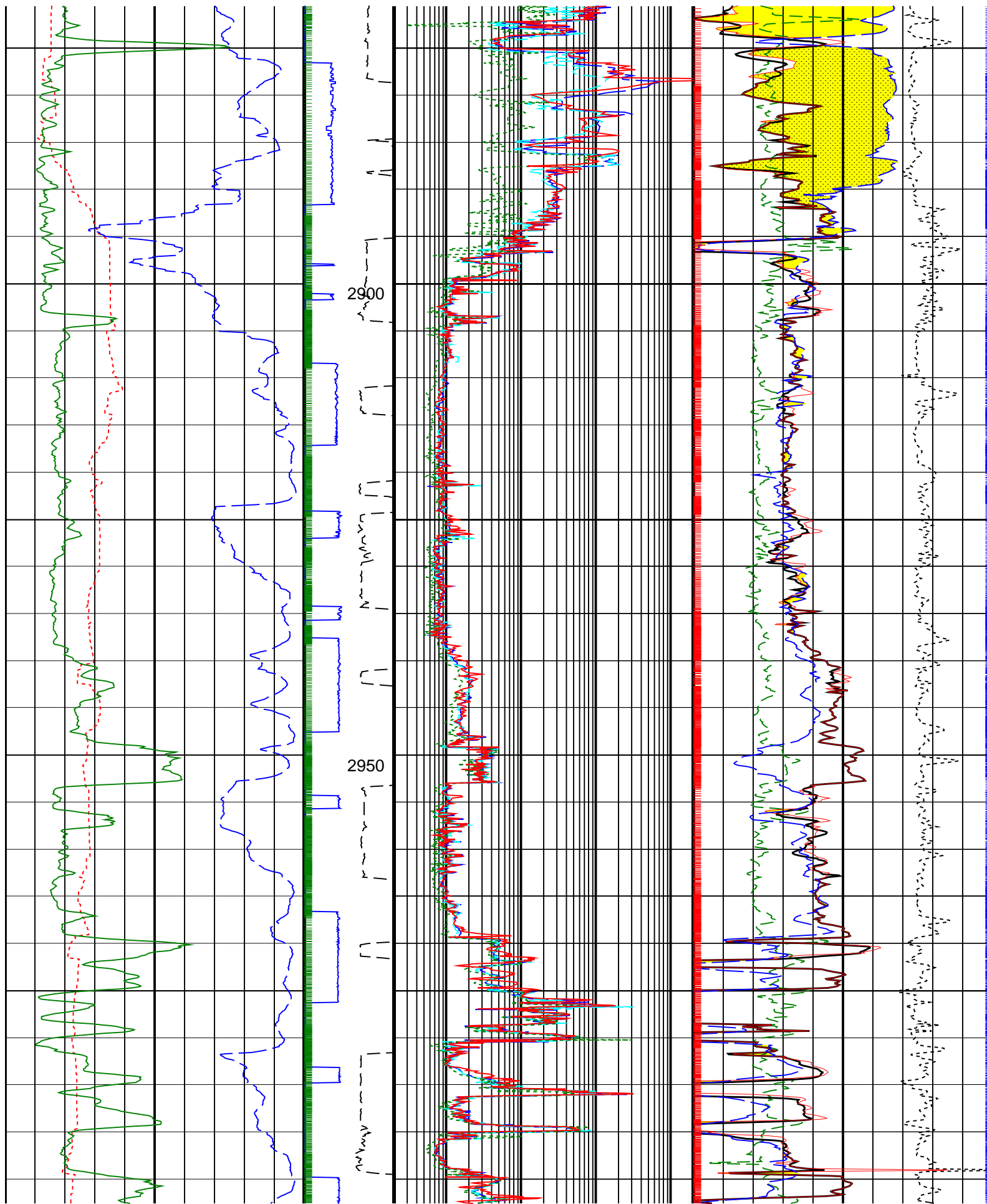


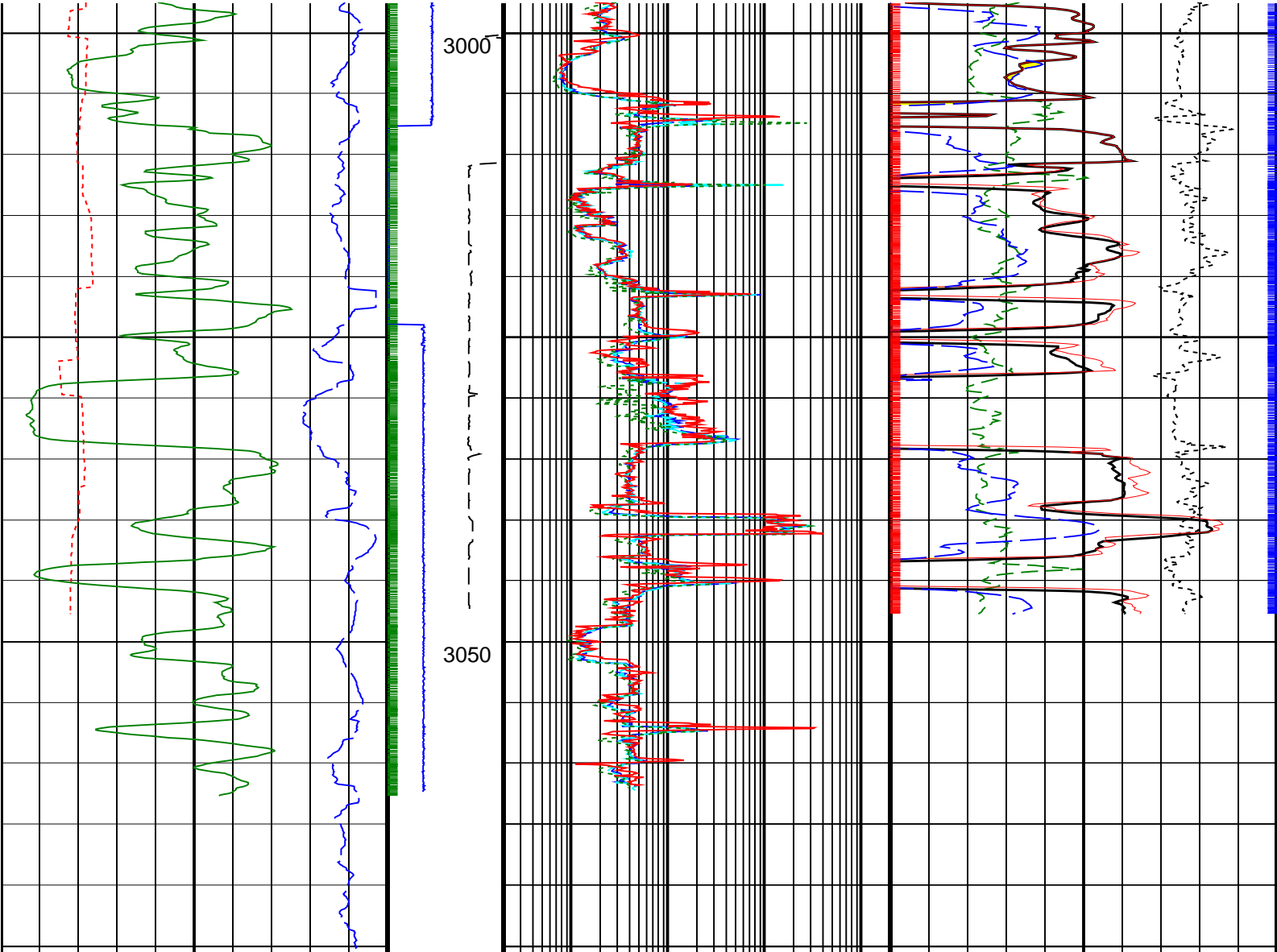












Density Time After Bit (TAB_DEN) (HR)	ADN Rotational Speed (RPM_ADN) (RPM)	Deep Button Resistivity (RES_BD) (OHMM)	Bulk Density Correction, Bottom (DRHB) (G/C3)
010	3000	0.22000	-0.750.25
RAB Gamma Ray (GR_RAB) (GAPI)	RAB Rotational Speed (RPM_RAB) (RPM)	Medium Button Resistivity (RES_BM) (OHMM)	Photoelectric Factor, Bottom (PEB) (----
0200	0300	0.22000	010
Rate of Penetration, Averaged over Last 5ft (ROP5_RM) (M/HR)		Shallow Button Resistivity (RES_BS) (OHMM)	Bulk Density (RHOB) (G/C3)
2000		0.22000	1.852.85
		Deep Button Resistivity, Down (RES_ BD_DN) (OHMM)	Bulk Density, Bottom (ROBB) (G/C3)
		0.22000	1.852.85
			Thermal Neutron Porosity (TNPH) (PU)
			45-15
LWDSpareArea From ADN/ROBB/DEPTH to			

# PIP SUMMARY

Density Ticks, 0.1 ft

Neutron Ticks, 0.1 ft

Gamma Ray Samples

IDEAL Version: ID7\_0C\_02  
IDF

RAB id6\_1c\_10 MWD\_10 id6\_1c\_10  
ADN id6\_1c\_10

## 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 (Minimum) 4125 (Nominal) 8000 (Maximum)			700.0 (Minimum) 9350 (Nominal) 18000 (Maximum)			2500 (Minimum) 23750 (Nominal) 45000 (Maximum)	

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### 6.75-in. Azimuthal Density Neutron Calibration

#### Density: Aluminum Block

Phase	LS window 3 – Al CPS	Value	Phase	SS window 1 – Al CPS	Value	Phase	SS window 3 – Al CPS	Value
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)	

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### 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)	

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### 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)	

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### 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

Master			1.106	Master			-0.8130	
0.9000 (Minimum)			1.100 (Nominal)	-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)	-1.200 (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)	-1.200 (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)	-1.200 (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)	-1.200 (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)	-1.200 (Minimum)			-0.9000 (Nominal)	-0.6000 (Maximum)
Phase	Near 1 tube 1 gain		Value					
Master			1.085					
0.9000 (Minimum)			1.100 (Nominal)					
Phase	Near 2 tube 1 gain		Value					
Master			1.058					
0.9000 (Minimum)			1.100 (Nominal)					

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

Primary Equipment:

Tool Name and Serial Number

Calibration Status

RAB6 - CA




136

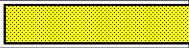
Valid

Master: 28-JUL-2002 11:01





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)	0.9750 (Minimum)			1.000 (Nominal)	0.9750 (Minimum)			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)	0.9750 (Minimum)			1.000 (Nominal)	0.9750 (Minimum)			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
0.9750 (Minimum)			1.000 (Nominal)	0.9750 (Minimum)			1.000 (Nominal)	0.9750 (Minimum)			1.025 (Maximum)
Phase	BTN medium/T2 factor		Value	Phase	BTN deep/T1 factor		Value	Phase	BTN deep/T2 factor		Value
Master			1.024	Master			1.015	Master			1.023

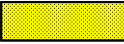
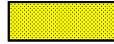
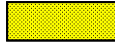
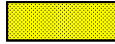






Master		1.024	Master		1.015	Master		1.023
0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)	0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)	0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)


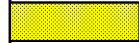
Master: 28-JUL-2002 11:01								
6.75-in. Resistivity At-the-Bit Calibration								
Gamma Ray: Blanket								
Phase	Gamma ray factor						Value	
Master							0.9010	
	0.7500 (Minimum)			1.000 (Nominal)			1.250 (Maximum)	



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: Magnesium Block								
Phase	LS window 3 – Mg CPS			Value	Phase	SS window 1 – Mg CPS		
Master				1294	Master			
	250.0 (Minimum)	4125 (Nominal)	8000 (Maximum)			700.0 (Minimum)	9350 (Nominal)	18000 (Maximum)
Phase	SS window 3 – Mg CPS			Value	Phase	SS window 3 – Mg CPS		
Master				7448	Master			
	2500 (Minimum)	23750 (Nominal)	45000 (Maximum)			2500 (Minimum)	23750 (Nominal)	45000 (Maximum)

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		
Master				190.8	Master			
	50.00 (Minimum)	725.0 (Nominal)	1400 (Maximum)			500.0 (Minimum)	4250 (Nominal)	8000 (Maximum)
Phase	SS window 3 – Al CPS			Value	Phase	SS window 3 – Al CPS		
Master				4662	Master			
	1500 (Minimum)	15750 (Nominal)	30000 (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		
Master				58.08	Master			
	15.00 (Minimum)	82.50 (Nominal)	150.0 (Maximum)			40.00 (Minimum)	220.0 (Nominal)	400.0 (Maximum)
Phase	SS window 3 – Background CPS			Value	Phase	SS window 3 – Background CPS		
Master				543.1	Master			
	150.0 (Minimum)	825.0 (Nominal)	1500 (Maximum)			150.0 (Minimum)	825.0 (Nominal)	1500 (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		
Master				1.043	Master			
	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								
Phase	Far 1 tube 1 gain			Value	Phase	Far 1 tube 1 offset CPS		
Master				1.077	Master			
	0.9000 (Minimum)	1.100 (Nominal)	1.300 (Maximum)			-1.200 (Minimum)	-0.9000 (Nominal)	-0.6000 (Maximum)

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

Calibration Status

RAB6 - CA

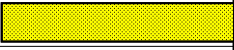
125

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 (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		1.001	Master		1.005	Master		0.9997			
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)
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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
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

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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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	1956.60	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
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

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	

Company: Esso Australia Ltd.

Well: TNA A-29

Field: Tuna

Rig: ISDL 453

State: Victoria

IDEAL services from Anadrill

GeoVISION Service  
1:500 Measured Depth  
Recorded Mode Log

Schlumberger