

Company: **ESSO Australia Ltd.**

Well: **WTN-W48 A**

# Field: Tuna

Rig: **NABORS 453** State: **Victoria**

**Schlumberger**  
GeoVISION Service  
1 : 500 True Vertical Depth  
Recorded Mode

Rig: NABORS 453  
Field: Tuna  
Location: Bass Strait  
Well: WTN-W48 A  
Company: ESSO Australia Ltd.

Location	
Total depth:	2268 m
Spud date:	19-Jan-02
Runs:	1 To 2
Permanent datum:	Mean Sea Level
Log measured from:	Drill Floor
Depth reference:	Driller's Depth

API serial no.	Longitude	Latitude
x = 5,771,791.69 m y = 621,538.528 m	E 148 23' 16.531"	S 38 11' 36.558"

Depth logged:	622 m	To	2253 m	Mag decl:	13.18 deg	Other services:
Date logged:	20-Jan-02	To	24-Jan-02	Mag dip:	-68.71 deg	Directional Surveys

Bore hole record

## Casing record

Hole size	from	to	Size	Density	from	to
8.5 in.	622 m	2268 m	10.75 in.	40.5 lbm/ft	Surface	622 m

8.5 in.	622 m	2268 m	10.75 in.	40.5 lbm/ft	Surface	622 m





[illegible][illegible]

Mud record		Borehole deviation record	
Turns from	to	Mis	Max from to

type	min	max	min	max
1	633 m	3560 doc	638 m	647
2	647 m	3567 doc	647	647

047 III	026 III	23.07 ueg	25.07 ueg	047 III
047 III	047 III	23.07 ueg	25.07 ueg	047 III

KCL/PHPA	64 / m	2268 m	25.6 / deg	66.50 deg	64 / m	2268
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[illegible][illegible]

Surface equipment	Software record
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[illegible]

Unit	OLU-FB-924	IDEAL Wis	id6_1c_10
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Depth system	PDA	SPM	id6 1c 10	services from
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[illegible]

			<b>Anadrill</b>
	LWD	See Toolsketch	

MWD	See Toolsketch
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### OTHER SERVICES FOR RUN1

#### Directional Surveys

## OTHER SERVICES FOR RUN2

### Directional Surveys

OTHER SERVICES FOR RUN

REMARKS: RUN NUMBER 1  
622 to 637 m interval was drilled in sliding mode.  
All data presented is from memory.  
GR is corrected for mud weight and bit size.  
GVR Resistivity is corrected for bit size, mud resistivity and borehole temperature.  
Neutron porosity is calculated with a limestone matrix, and is corrected for bit size, borehole salinity (from  $R_m$ ), temperature, and mud hydrogen index (from mud weight, temperature and pressure).

REMARKS: RUN NUMBER 2  
637 to 2268 m interval was drilled in rotating and sliding mode.  
All data presented is from memory.  
GR is corrected for mud weight and bit size.  
GVR Resistivity is corrected for bit size, mud resistivity and borehole temperature.  
There was barite in the mud.  
The PEF curve is not presented.  
Bottom quadrant density is presented.  
Neutron porosity is calculated with a limestone matrix, and is corrected for bit size, borehole

REMARKS: RUN NUMBER

hydrogen index (from mud weight, temperature and pressure).  
Pulled out of the hole at 637 m to change the bit and motor bend after kicking off.

Neutron porosity is calculated with a limestone matrix, and is corrected for bit size, borehole salinity (from Rm), temperature, and mud hydrogen index (from mud weight, temperature and pressure).  
Mud weight was increased from 9 to 10 lbm/gal at 1600 m before drilling into the Lakes Entrance formation.  
Mud weight was increased from 10 to 10.5 lbm/gal at 2125 m to improve well stability.  
Zoned processing used for mud weight and mud salinity.  
Pulled out of the hole at 2268 m to run casing after reaching TD.

EQUIPMENT DESCRIPTION

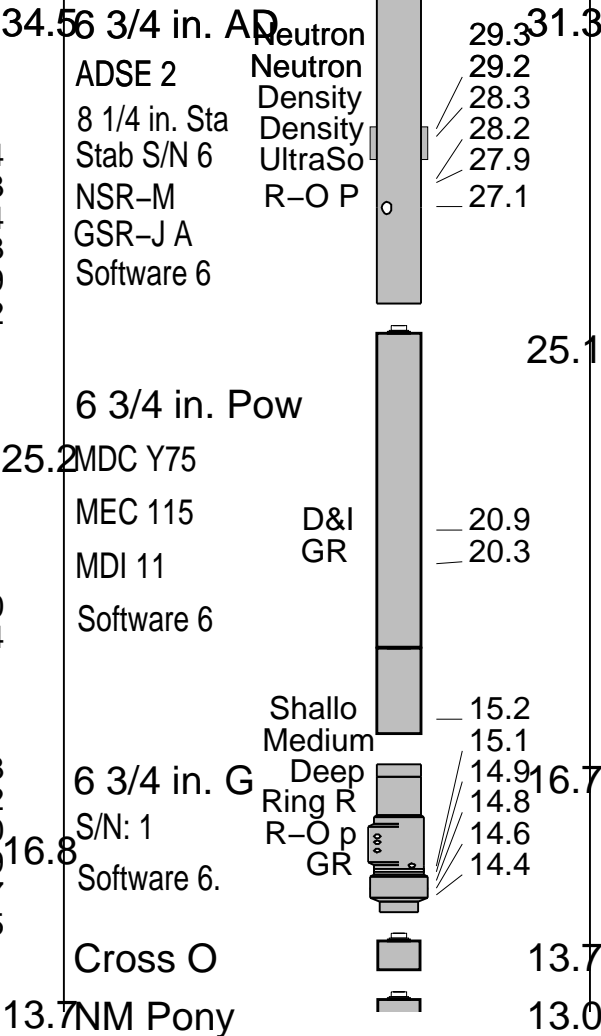
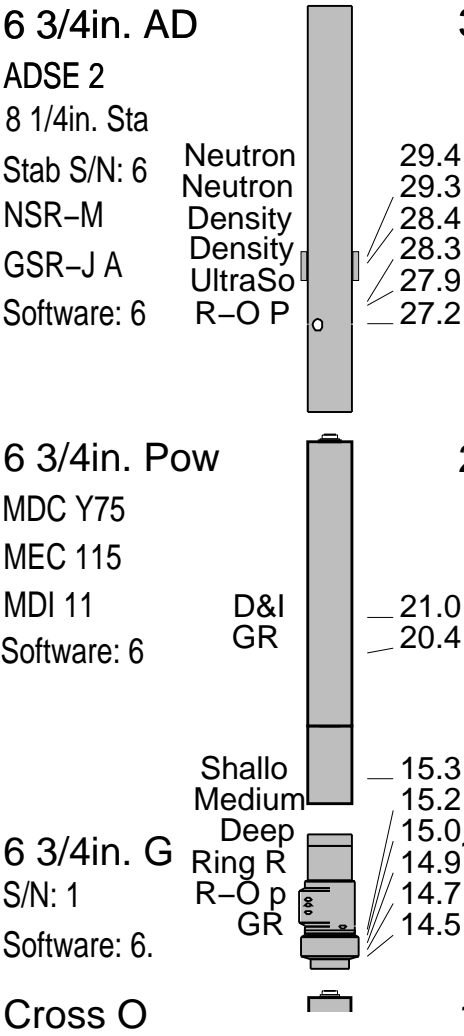
RUN1

RUN2

RUN

DOWNHOLE EQ

DOWNHOLE E





**Environmental data**

<b>GR</b>											
Mud weight	lbm/gal	8.5	10.5								
Bit size	in.	8.5	8.5								
<b>Resistivity</b>											
<b>Neutron porosity</b>											
Hole Size	in.	8.5	8.5								
Mud weight	lbm/gal	8.5	10.5								
Temperature	deg C	30	74.5								
Mud salinity	mg/l	0.0	72,600								
Formation salinity	mg/l	n/a	n/a								
Recording rate 1	SEC	10	10	GR/Res Den/Neut							
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.Woodward	J.Booker	B.Davis								
Anadrill personnel	T.Sims	T.Ford	L.Bon	C.Soper	T.Harvey	C.Cocks					

## True Vertical Depth Log

**IDEAL Version: ID6\_1C\_10**

IDF

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

Format: TripleComboDepthLog Vertical Scale: 1:500 Graphics File Created: 28-Jan-2002 18:15

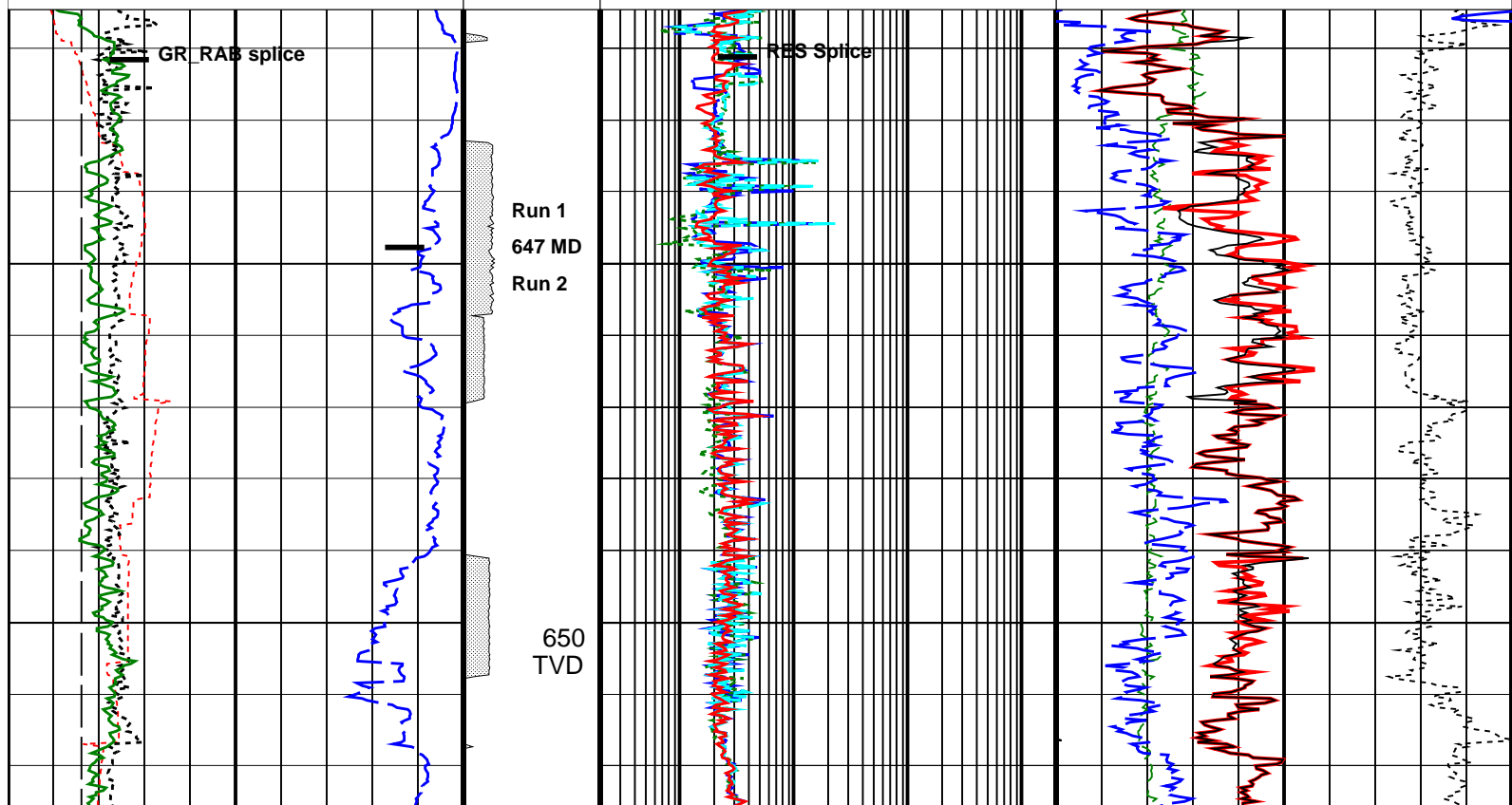
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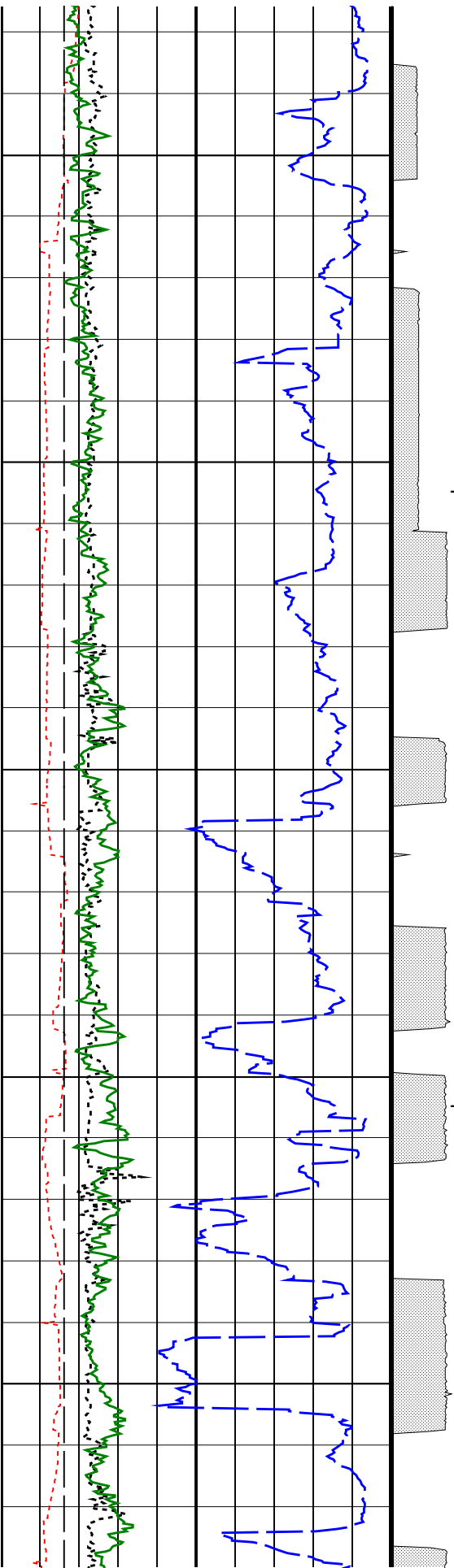
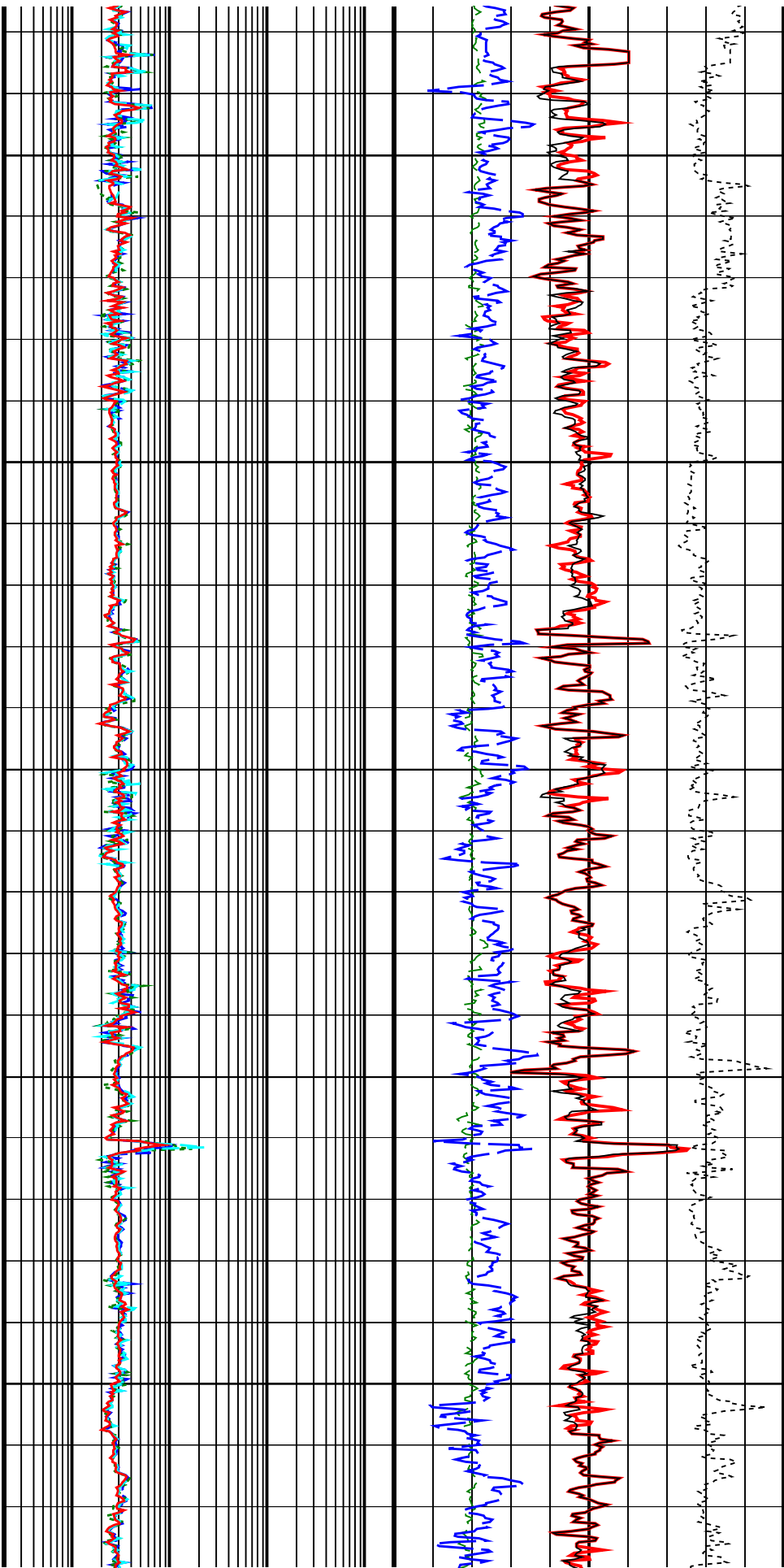
DLIS Name	Description	Value
AVE_ADN	ADN/Array Channels: perform averaging(RM) :	YES
BDBHCA	RAB: Button Deep Borehole A Factor	0.005
BDBHCB	RAB: Button Deep Borehole B Factor	0.000
BHA_COEF_VER	RAB: BHA Coef Generator Version	62012.0
BHT_RM	Bottom Hole Temperature (RM)	74.500 degC
BMBHCA	RAB: Button Medium Borehole A Factor	0.024
BMBHCB	RAB: Button Medium Borehole B Factor	0.000
BSAL_RM	Mud Salinity (RM)	57.700 ppk
BSBHCA	RAB: Button Shallow Borehole A Factor	0.024
BSBHCB	RAB: Button Shallow Borehole B Factor	0.000
BS_RM	Bit Size (RM)	8.500 in
BUT_KIMP_A	RAB: Button Impedance Coeff A	0.000
BUT_KIMP_B	RAB: Button Impedance Coeff B	0.000
DBUTTON_K_FACTOR	RAB: Button Deep K factor	0.005
DEVI	Average angle of the hole (RM)	61.000 deg
DHS_VERSION	RAB: DownHole Software Version	6.101
DO	Depth Offset	0.0 m
DTMUD	Delta-T for Mud	645.2 us/m
ENVCOR	Neutron Quadrant Processing: Environmental Correction?	YES
LITHO_TYPE_ADN	Lithology (RM)	LIME
MBUTTON_K_FACTOR	RAB: Button Medium K Factor	0.005
MST_RM	Mud Sample temperature (RM)	21.000 degC
MW_RM	Mud Weight (RM)	10.500 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	14.718 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	0.161
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)	0.130 ohm.m

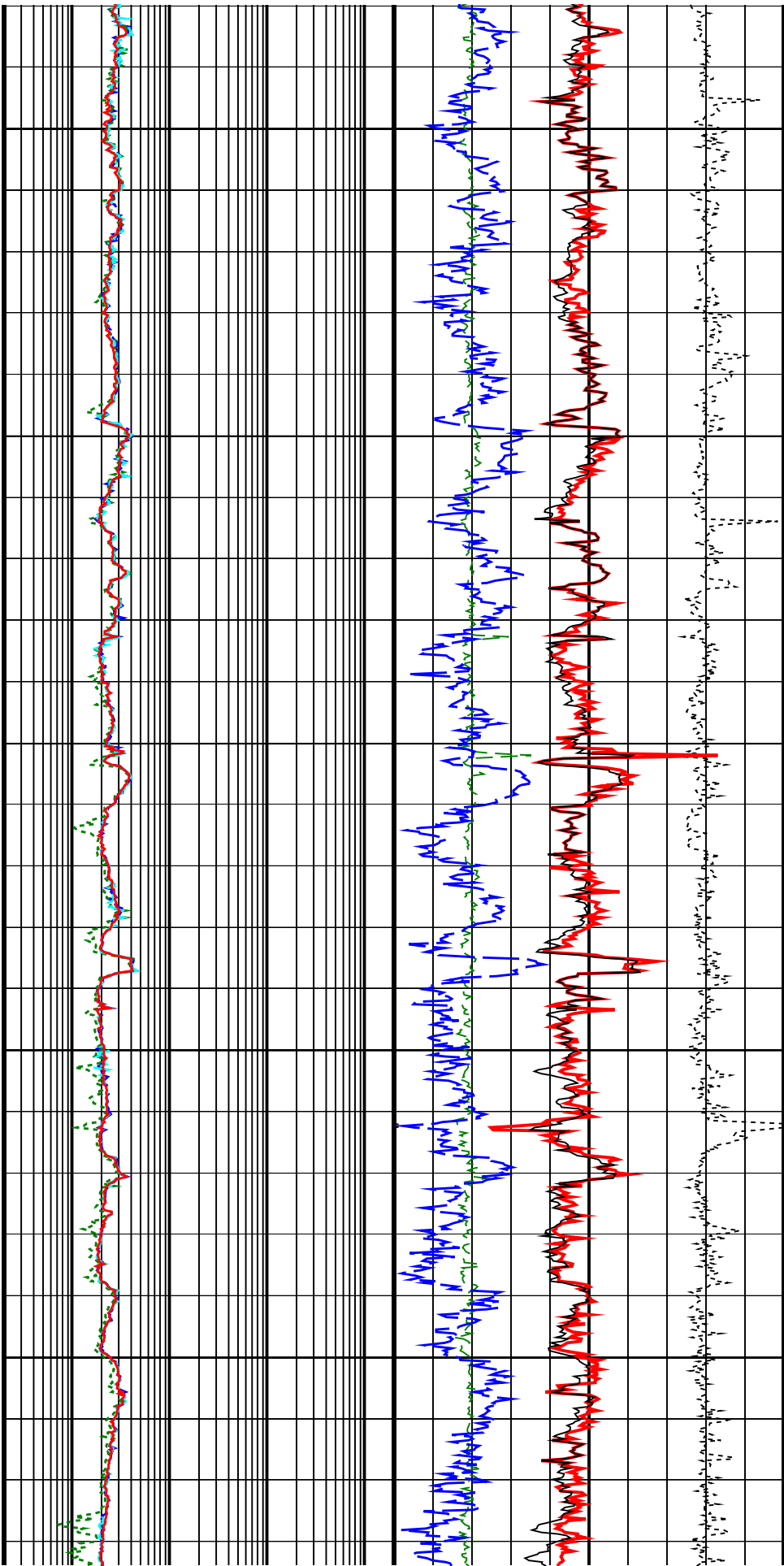
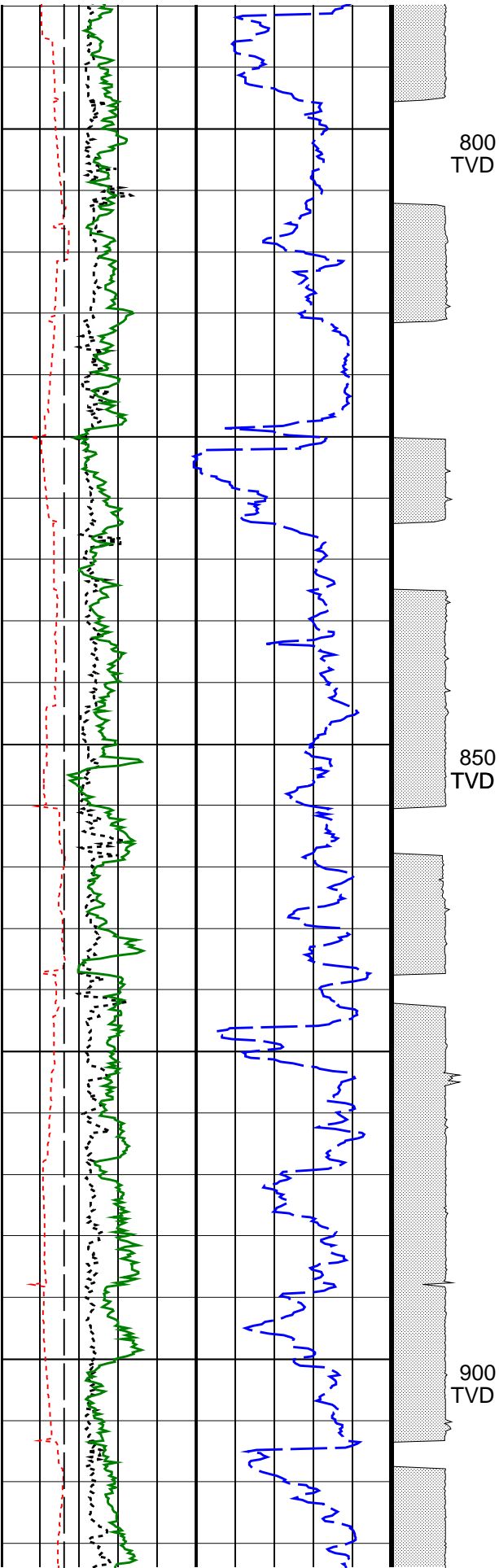
RING_K_FACTOR	RAB: Ring K Factor	0.153	
RMS_RM	Resistivity of Mud Sample (RM)	0.130	ohm.m
RWS_RM	Resistivity of Connate Water (RM)	1.000	ohm.m
SBUTTON_K_FACTOR	RAB: Button Shallow K Factor	0.007	
SHT_RM	Surface Hole Temperature (RM)	23.889	degC
SSIZ_ADN	ADN:Stabilizer Size (RM)	8.250	in
STAB	RAB: Run with Stabilizer	YES	
TD_RM	Total Measured Depth (RM)	2268.0	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	6.101	
TWS_RM	Temperature of Connate Water (RM)	23.889	degC
USMIN_RM	ADN:Minimum ultra-sonic standoff (RM)	0.300	in
VERS_ADN	ADN downhole software	6.200	
VRAB6	Rab Tool type (ENP/PILOT)		

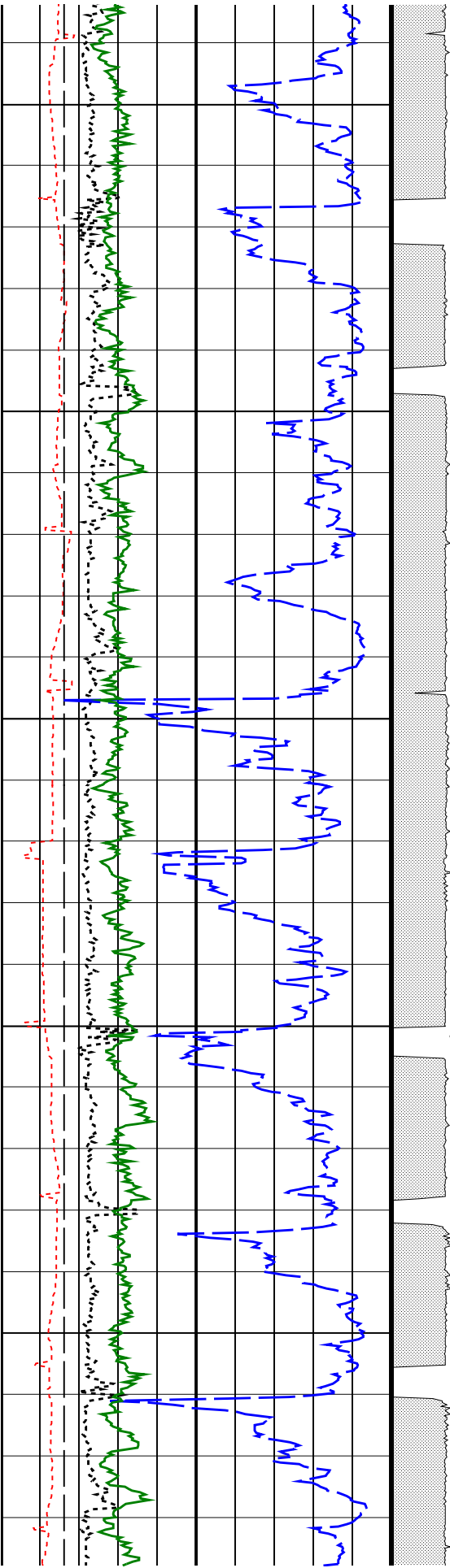
RAB6 C SERIES

Rate of Penetration, Averaged over Last 5ft (ROP5_RM)		Gas Area From ADN/ROBB/DEPTH to ADN/TNPH/DEPTH	
200	0	Bulk Density (RHOB)	
		1.85	2.85
		(G/C3)	
RAB Gamma Ray (GR_RAB)		Ring Resistivity (RES_RING)	
0	200	0.2	2000
		(OHMM)	
Horizontal Hole Diameter (HORD)		Thermal Neutron Porosity (TNPH)	
6	16	45	-15
		(PU)	
Vertical Hole Diameter (VERD)		Medium Button Resistivity (RES_BM)	
6	16	0.2	2000
		(OHMM)	
		Bulk Density, Bottom (ROBB)	
		1.85	2.85
		(G/C3)	
		Shallow Button Resistivity (RES_BS)	
6	16	0.2	2000
		(OHMM)	
		Photoelectric Factor, Bottom (PEB)	
		0	20
		(-----)	
Density Time After Bit (TAB_DEN)		Deep Button Resistivity (RES_BD)	
0	10	0.2	2000
		(OHMM)	
ADN Rotational Speed (RPM_ADN)		Bulk Density Correction, Bottom	
0	200	-0.75	0.25
		(DRHB)	
		(G/C3)	



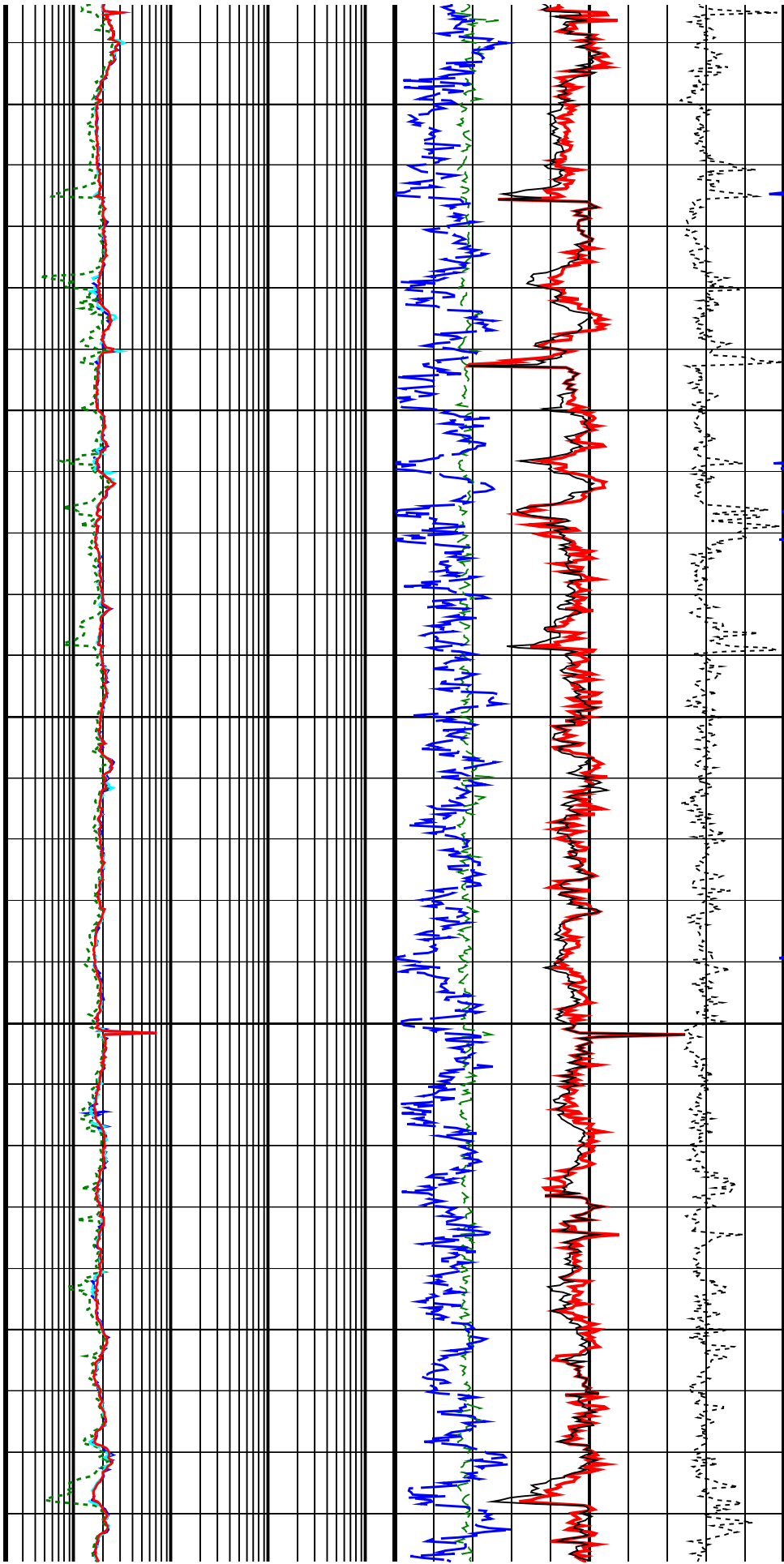


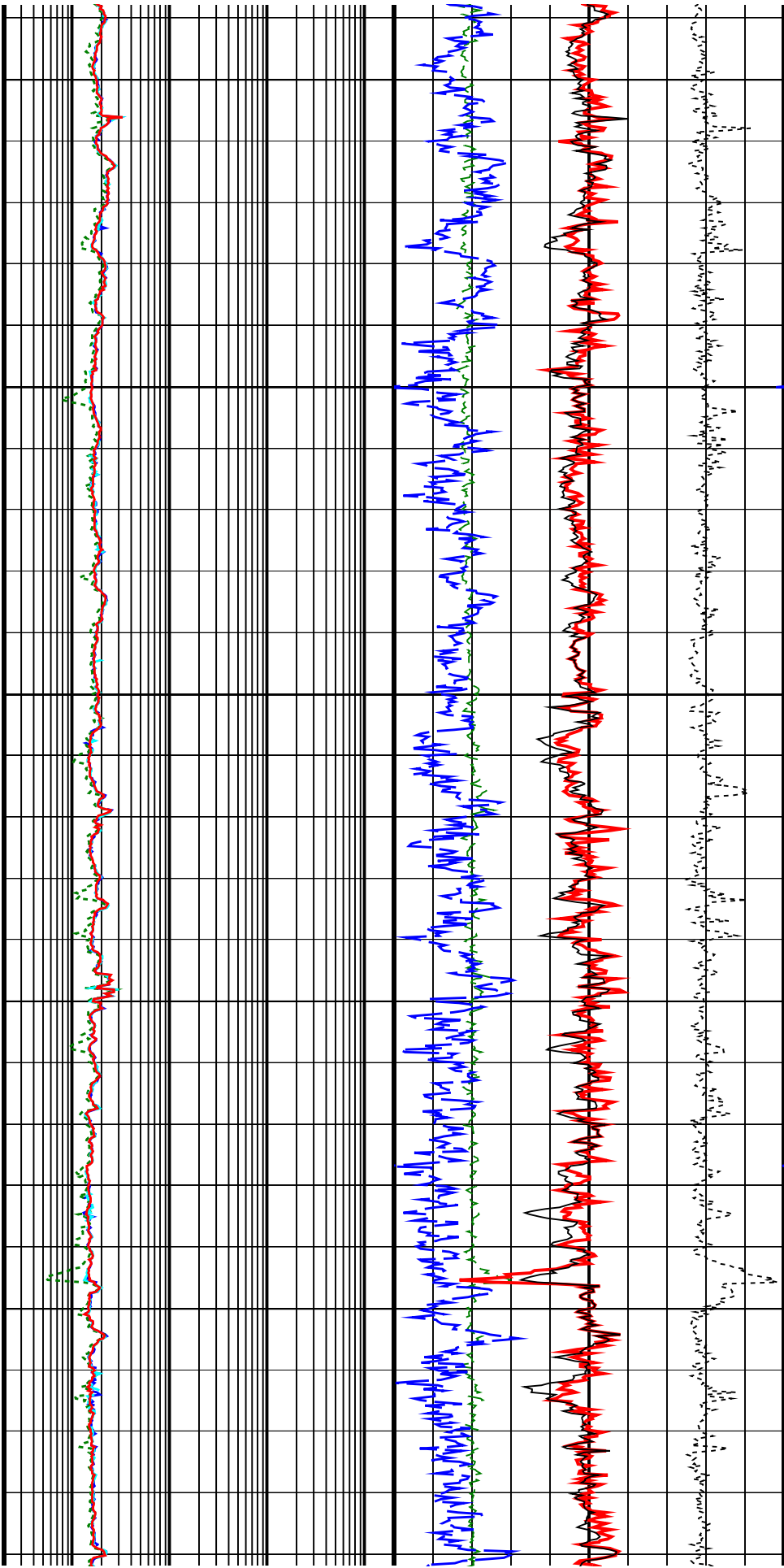
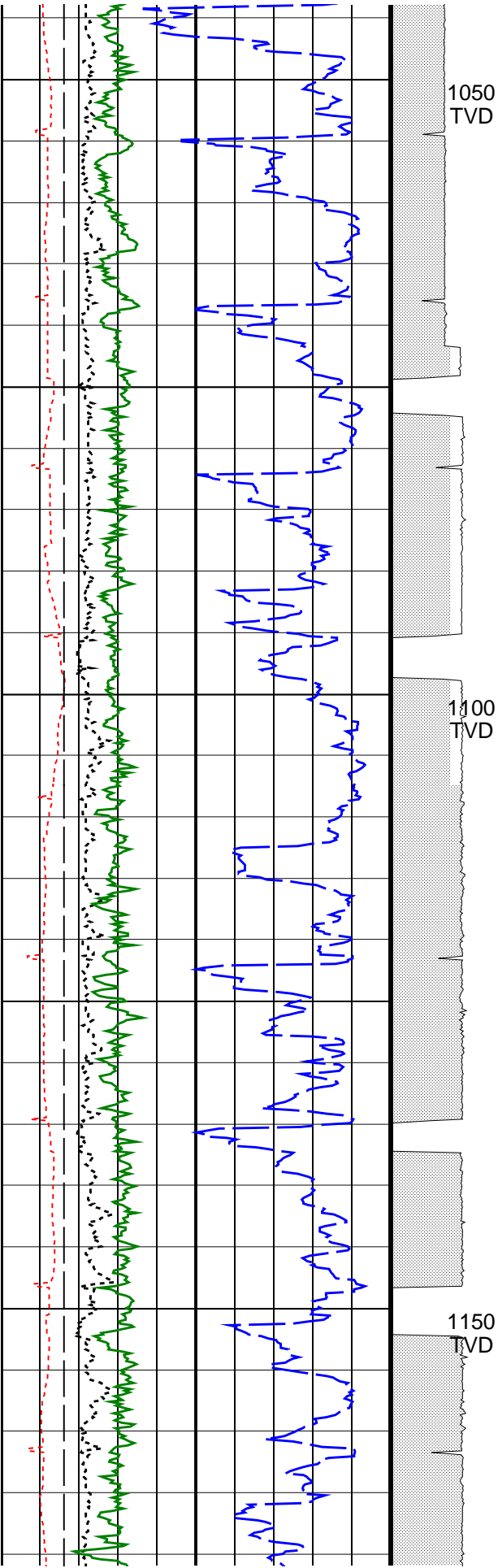


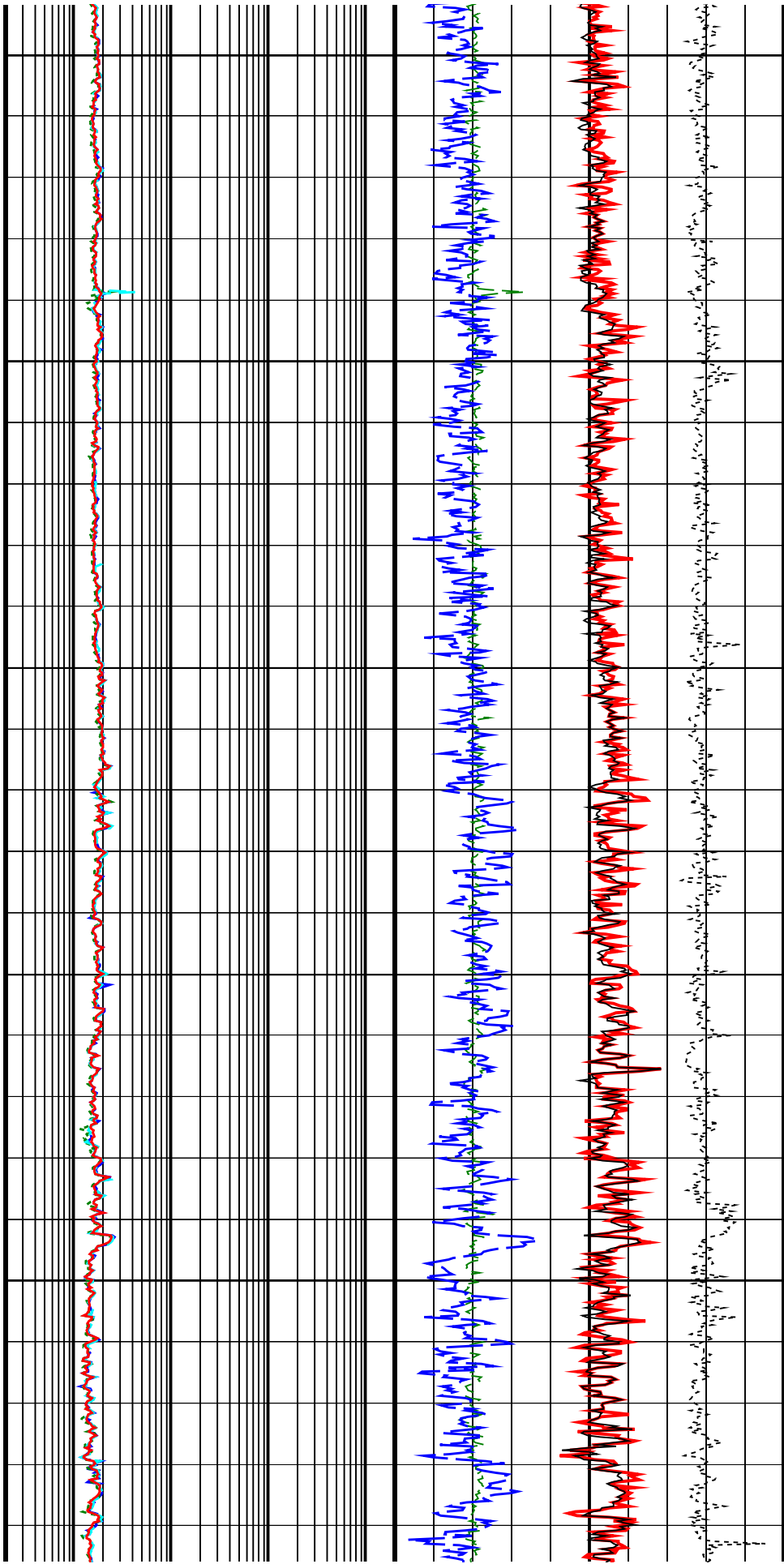
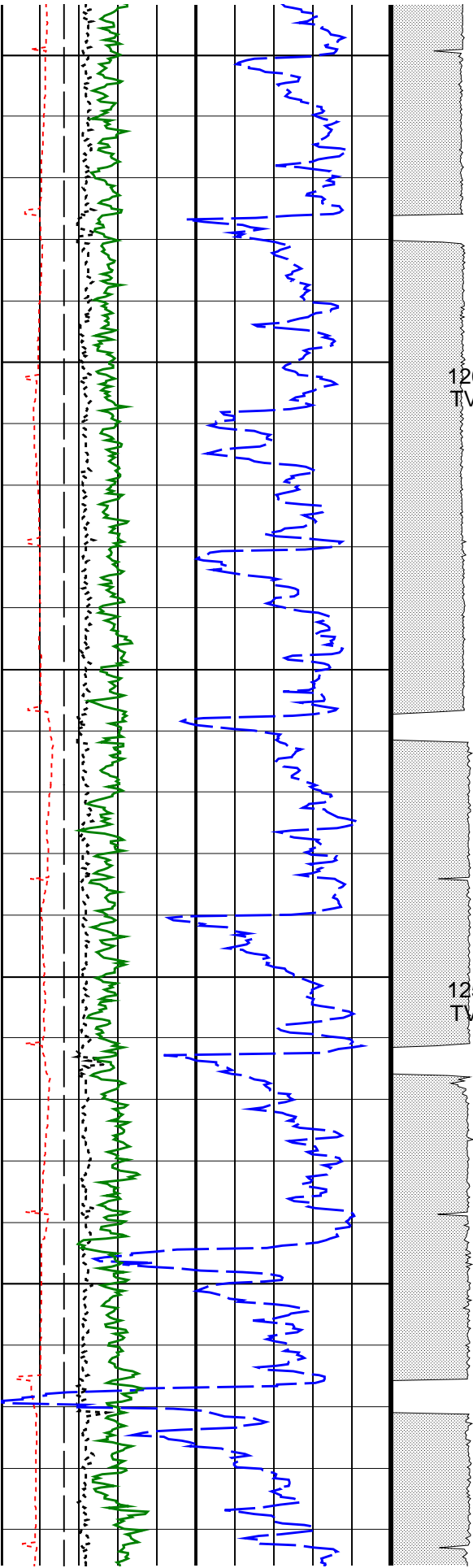


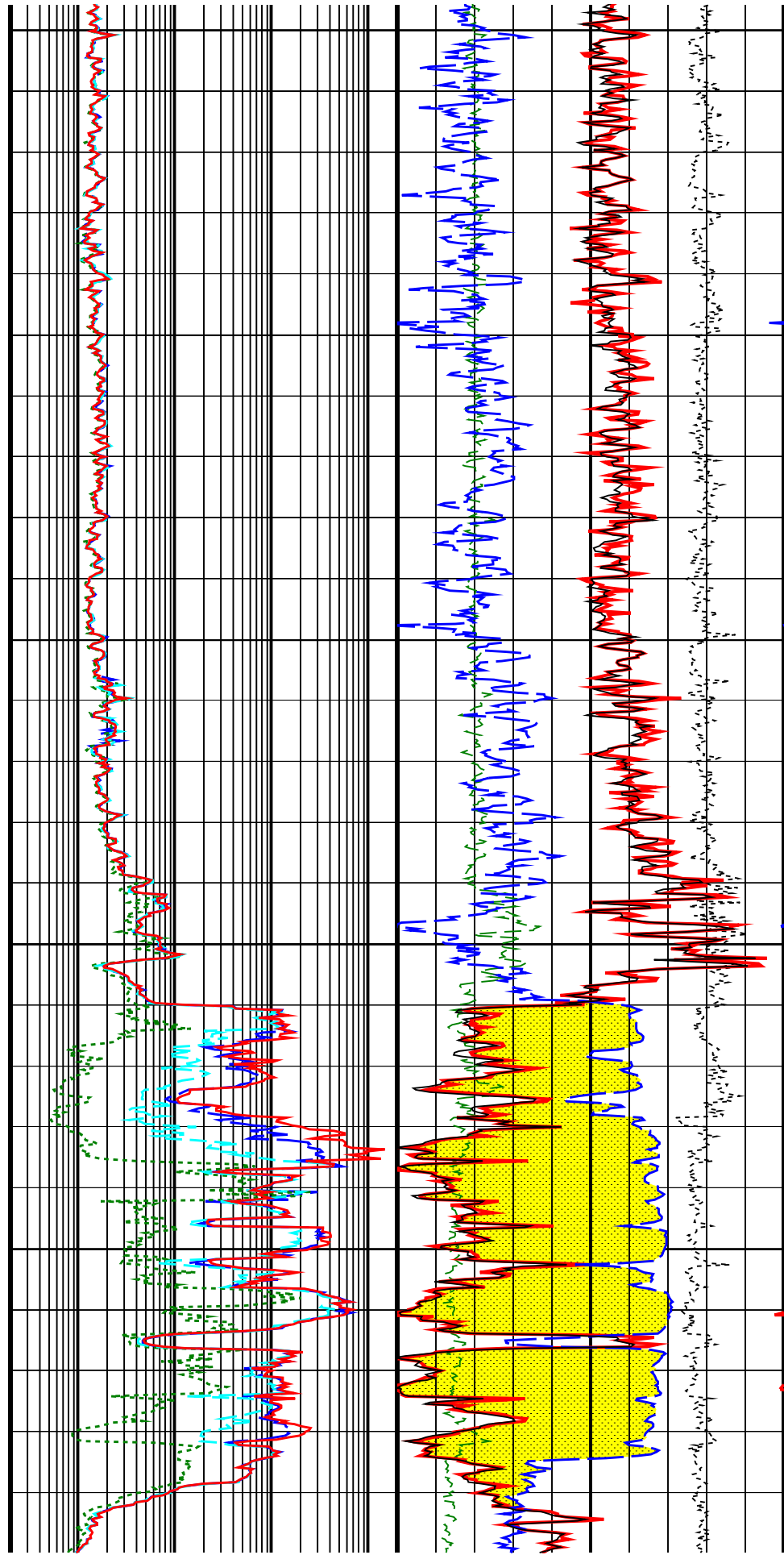
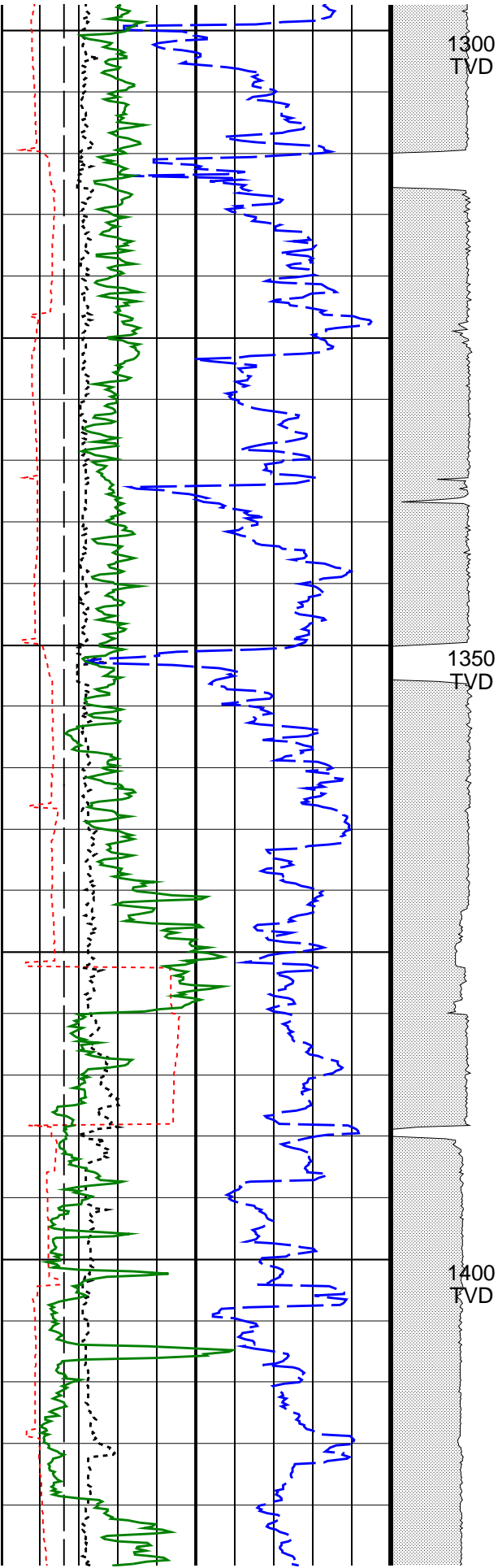
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TVD

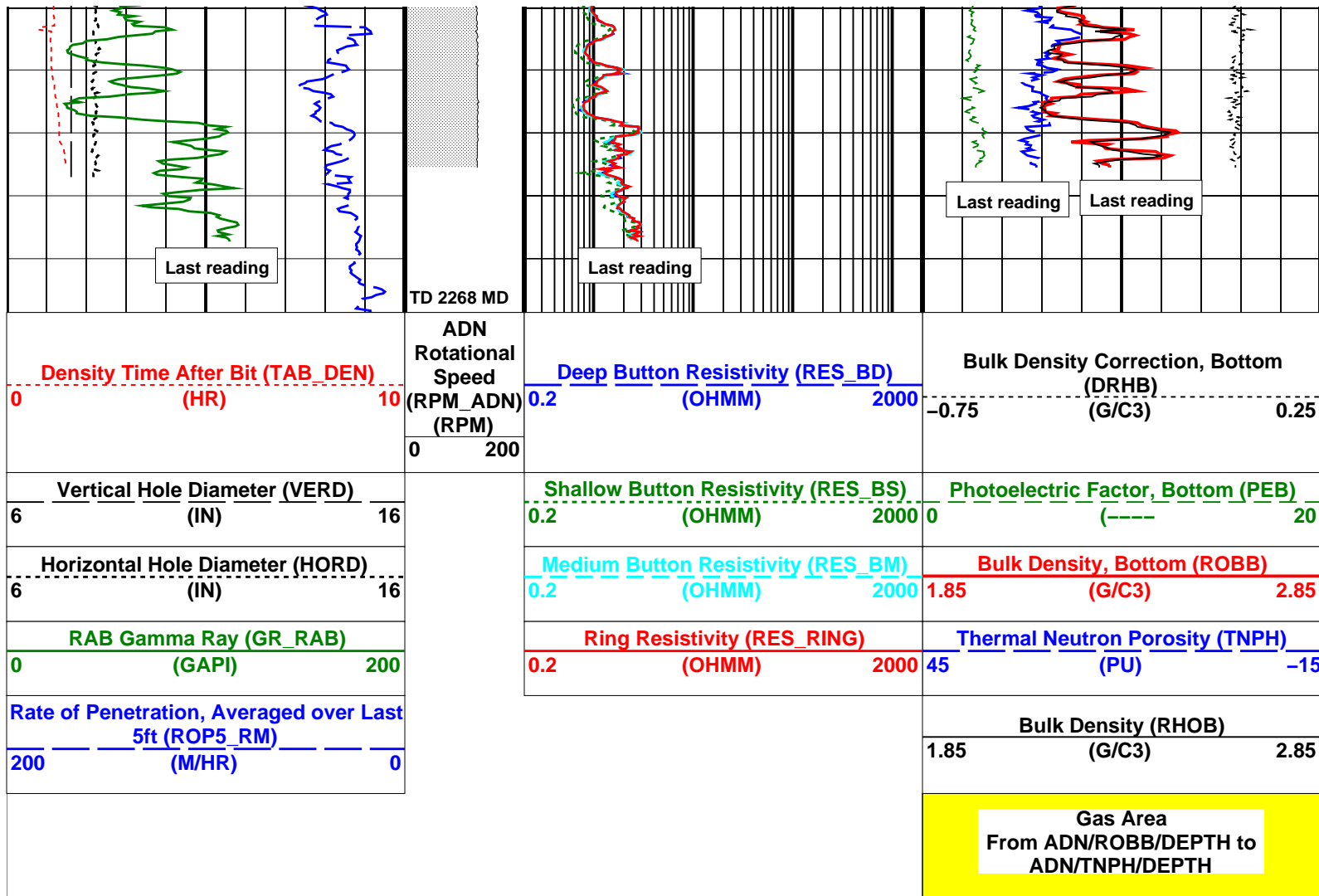
1000  
TVD











IDEAL Version: ID6\_1C\_10

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: 16-NOV-2001 1:40

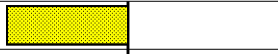
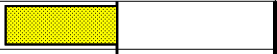
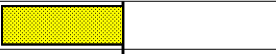
### 6.75-in. Azimuthal Density Neutron Calibration

#### 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			1325	Master			3006	Master			7495
	250.0 (Minimum)	4125 (Nominal)	8000 (Maximum)		700.0 (Minimum)	9350 (Nominal)	18000 (Maximum)		2500 (Minimum)	23750 (Nominal)	45000 (Maximum)

Master: 16-NOV-2001 1:40



Master: 16-NOV-2001 1:40

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				207.4	Master				1606	Master				4870
	50.00 (Minimum)	725.0 (Nominal)	1400 (Maximum)		500.0 (Minimum)	4250 (Nominal)	8000 (Maximum)			1500 (Minimum)	15750 (Nominal)	30000 (Maximum)		


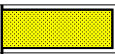



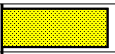

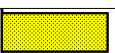
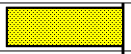





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6.75-in. Azimuthal Density Neutron Calibration														
Density: Background														
Phase	LS window 3 – Background		CPS	Value	Phase	SS window 1 – Background		CPS	Value	Phase	SS window 3 – Background		CPS	Value
Master				53.02	Master				122.8	Master				539.2
	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: 16-NOV-2001 1:40

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			1.033	Master			1.116	
	1.011 (Minimum)	1.026 (Nominal)	1.041 (Maximum)		1.093 (Minimum)	1.118 (Nominal)	1.143 (Maximum)	

Master: 16-NOV-2001 1:40

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			1.108	Master			-0.7570	
	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			1.045	Master			-0.9770	
	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			1.070	Master			-0.7650	
	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			1.104	Master			-0.7610	
	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			0.9970	Master			-0.8130	
	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			1.097	Master			-0.7910	
	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			1.073					
	0.9000 (Minimum)	1.100 (Nominal)	1.300 (Maximum)					
Phase	Near 2 tube 1 gain		Value					
Master			1.054					
	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: Calibration out of date 20-MAY-2001 9:46

## 6.75-in. Resistivity At-the-Bit Calibration

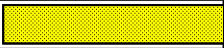
### Resistivity: Fixture

Phase	Ring/T1 factor		Value	Phase	Ring/T2 factor		Value	Phase	M0/T1 factor		Value
Master			1.001	Master			0.9962	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			0.9975	Master			0.9926
	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			0.9987	Master			1.006
	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			1.000
	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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## 6.75-in. Resistivity At-the-Bit Calibration

### Gamma Ray: Blanket

Phase	Gamma ray factor		Value
Master			0.8812
	0.7500 (Minimum)	1.000 (Nominal)	1.250 (Maximum)

ANADRILL

SCHLUMBERGER

Survey report

24-Jan-2002 04:41:48

Page 1 of 3

Client.....: ESSO Australia Ltd.  
Field.....: Tuna

Well.....: WTN-W48 A  
API number.....:  
Engineer.....: T.Sims

Rig.....: NABORS 453  
STATE.....: Victoria

Spud date.....: 19-Jan-02  
Last survey date.....: 24-Jan-02  
Total accepted surveys...: 59  
MD of first survey.....: 628.00 m  
MD of last survey.....: 2268.00 m

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

----- Depth reference -----  
Permanent datum.....: Mean Sea Level  
Depth reference.....: Driller's Depth  
GL above permanent.....: -61.00 m  
KB above permanent.....: 34.70 m  
DF above permanent.....: 34.70 m

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

----- Geomagnetic data -----  
Magnetic model.....: BGGM version 2000  
Magnetic date.....: 31-Dec-2001  
Magnetic field strength...: 1200.65 HCNT  
Magnetic dec (+E/W-).....: 13.18 degrees  
Magnetic dip.....: -68.71 degrees

----- MWD survey Reference Criteria -----  
Reference G.....: 1000.02 mGal  
Reference H.....: 1200.65 HCNT  
Reference Dip.....: -68.71 degrees  
Tolerance of G.....: (+/-) 2.50 mGal  
Tolerance of H.....: (+/-) 6.00 HCNT  
Tolerance of Dip.....: (+/-) 0.45 degrees



Company: **ESSO Australia Ltd.**

Well: **WTN-W48 A**

Field: **Tuna**

Rig: **NABORS 453**

State: **Victoria**

**IDEAL** services from **Anadrill**

**GeoVISION Service**  
**1 : 500 True Vertical Depth**  
**Recorded Mode**

**Schlumberger**