


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

Rig: ISDL 453 Field: Tuna Location: Bass Strait Well: TNA A-31 Company: Esso Australia Ltd.			GeoVISION Resistivity 1:500 Measured Depth Recorded Mode Log			
			Total depth: 3220 m Spud date: 30-May-02 Runs: 3 To 3		Elevation	K.B. Top Drive G.L. -59.40 m D.F. 31.30 m
	Permanent datum: Mean Sea Level		Elev.: 59.40 m			
	Log measured from: Drill Floor		31.30 m above Perm. datum			
	Depth reference: Driller's Pipe Tally					
	API serial no.		x = 5774227.40m (North) y = 624231.22m (East)		Longitude Latitude E 148 25 5.666 S 38 10 16.232	
	Depth logged: 829.0 m To 3206 m		Mag decl: 13.156 deg		Other services:	
	Date logged: 8-Jul-02 To 16-Jul-02		Mag dip: -68.695 deg		Directional Drilling	
	Bore hole record			Casing record		
	Hole size	from	to	Size	Density	from
12 1/4 in.	145.0 m	835.0 m	20 in.	84 lb/ft	Surface	147.3 m
8 1/2 in.	835.0 m	3220.0 m	9 5/8 in.	47 lb/ft	Surface	829.0 m
Mud record			Borehole deviation record			
Type	from	to	Min	Max	from	to
Seawater	145.0 m	835.0 m	2.88 deg	71.08 deg	145.0 m	835.0 m
KCL/PHPA	829 m	3220 m	68.84 deg	72.86 deg	829 m	3220 m
Surface equipment		Software record		<div>IDEAL services from Anadrill</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

[illegible]

Type	KCL/PHPA/GLYCOL									
Mud weight	ppg	10.3								
Solids	%vol	7.3								
Chlorides	mg/l	48,000								
Rm	Ohmm@degC	0.1419@20								
Rmf	Ohmm@degC	0.1046@20								
Rmc	Ohmm@degC	0.2120@20								
Potassium	%vol	4								
Environmental data										
GR										
Mud weight	ppg	10.3								
Bit size	in	8.5								
Resistivity										
Neutron porosity										
Hole Size	in	8.5								
Mud weight	ppg	10.3								
Temperature	DegC	75.29								
Mud salinity	mg/l	48,000								
Formation salinity										
Recording rate 1	SEC	10								
Recording rate 2	SEC	10								
Filtering GR		3 pt								
Filtering density		3 pt								
Filtering Neutron		3 pt								
Company representative	G. Cambell	B. Davies								
Anadrill personnel	J. Walta	L. Bon	W. Betheux							

DISCLAIMER

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OTHER SERVICES FOR RUN3 Directional Surveys	OTHER SERVICES FOR RUN	OTHER SERVICES FOR RUN
REMARKS: RUN NUMBER 3 8-1/2in Hole Section was logged from 829 m to 3206 m MD. Depth is referenced to the Driller's pipe tally. All data presented is from tool memory. 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, borehome 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. RAB6C Downhole Software 6C-V6.1 ADN6C Downhole Software 6.2B08	REMARKS: RUN NUMBER	REMARKS: RUN NUMBER

There were discrepancies in the pipe tally this run.

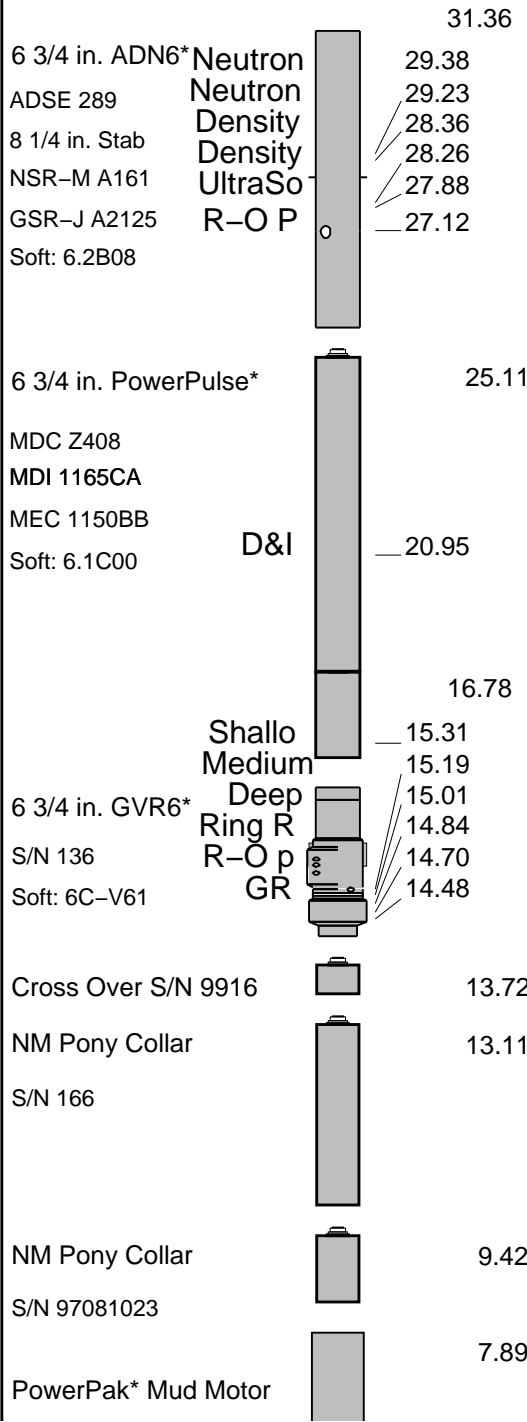
EQUIPMENT DESCRIPTION

RUN1

RUN

RUN

DOWNHOLE EQ



A675XP S/N 2179

0.78 deg bend



Bit-PDC

Geo-Diamond Model: S75HPX

MAXIMUM STRING DI

ALL LENGTHS I

IDEAL Version: ID7_0C_02

IDF

RAB
ADNIDEAL Version: ID7_0C_02
IDEAL Version: ID7_0C_02

MWD_10

IDEAL Version: ID7_0C_02

Format: A31 RM Resistivity Vertical Scale: 1:500

Graphics File Created: 21-Jul-2002 18:00

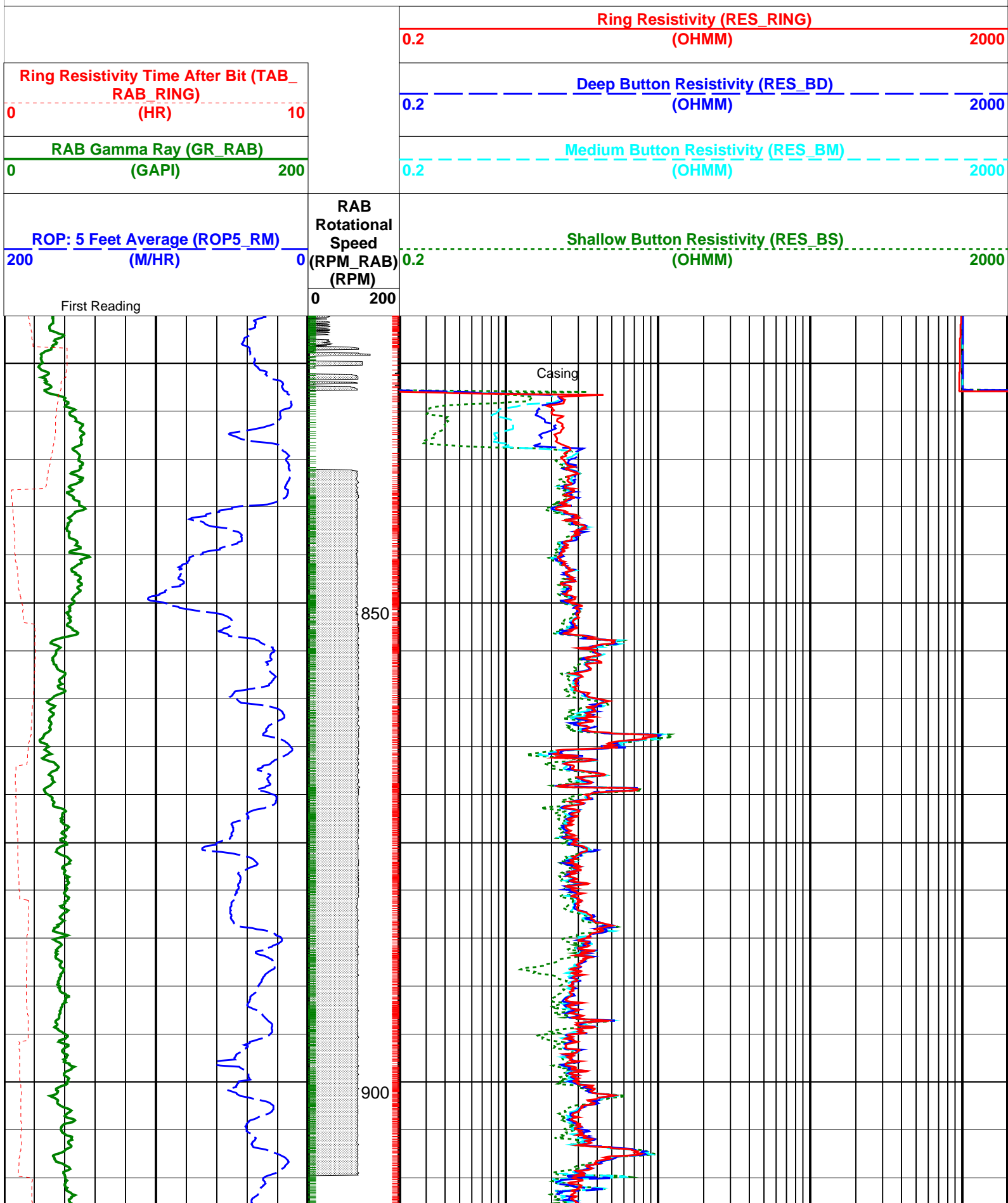
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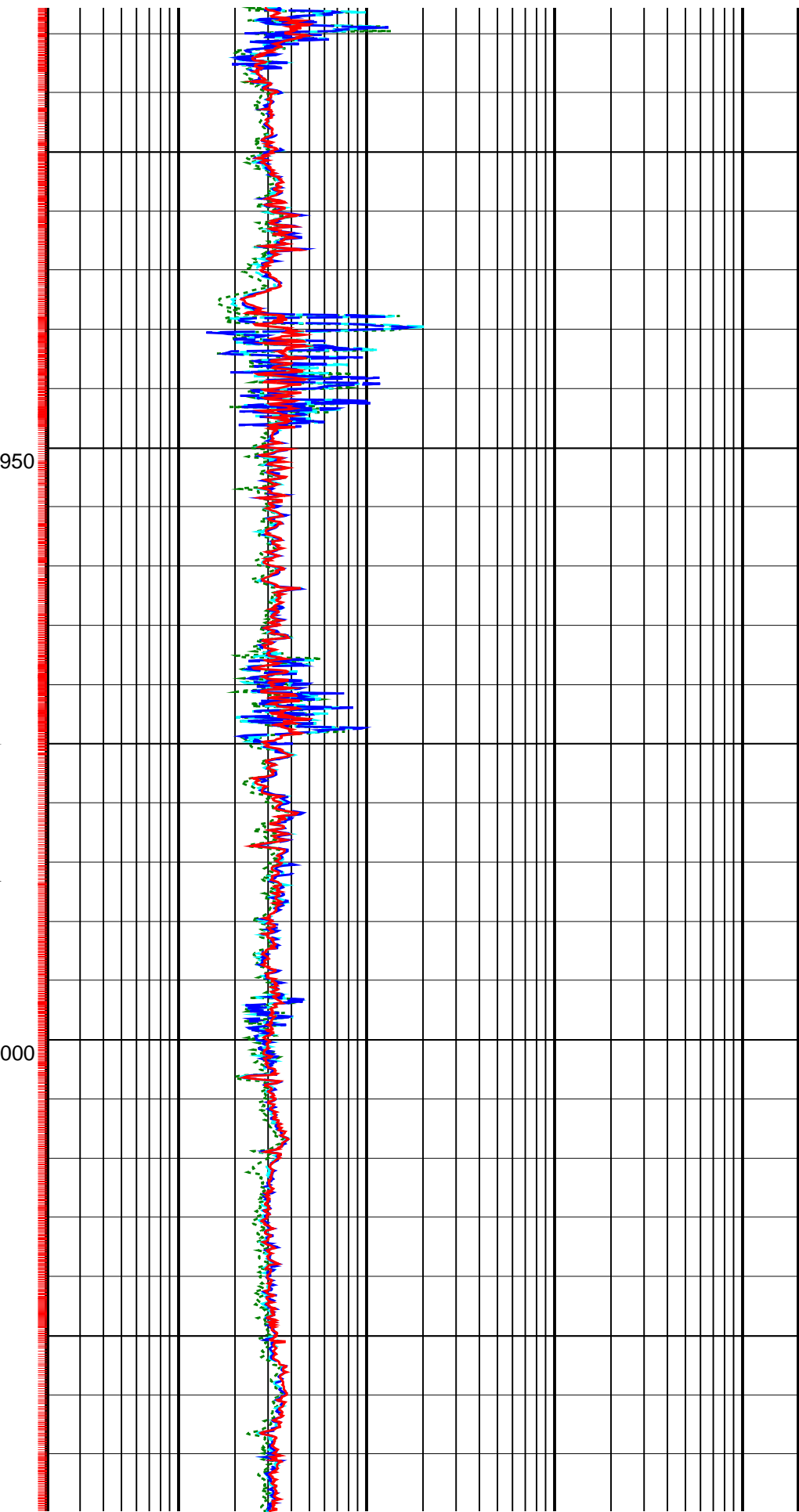
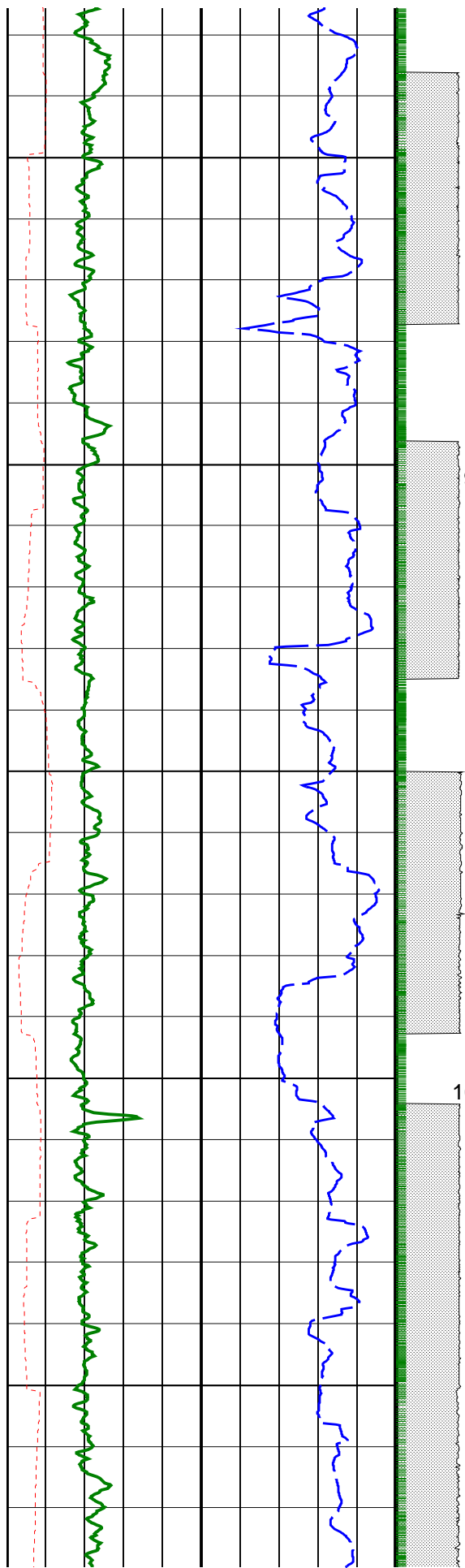
DLIS Name	Description	Value
BDBHCA	RAB: Button Deep Borehole A Factor	0.005
BDBHCB	RAB: Button Deep Borehole B Factor	0.000
BHA_COEF_VER	RAB: BHA Coef Generator Version	62012.0
BITBHCA	RAB: Bit A Borehole Factor	0.058
BITBHCB	RAB: Bit B Borehole Factor	0.000
BIT_K_FACTOR	RAB: Bit K Factor	17.223
BMBHCA	RAB: Button Medium Borehole A Factor	0.024
BMBHCB	RAB: Button Medium Borehole B Factor	0.000
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
DHS_VERSION	RAB: DownHole Software Version	6.101
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)	20.000 degC
MW_RM	Mud Weight (RM)	10.300 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	14.700 m
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)	0.142 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	6.101
VRAB6	Rab Tool type (ENP/PILOT)	RAB6_C_SERIES

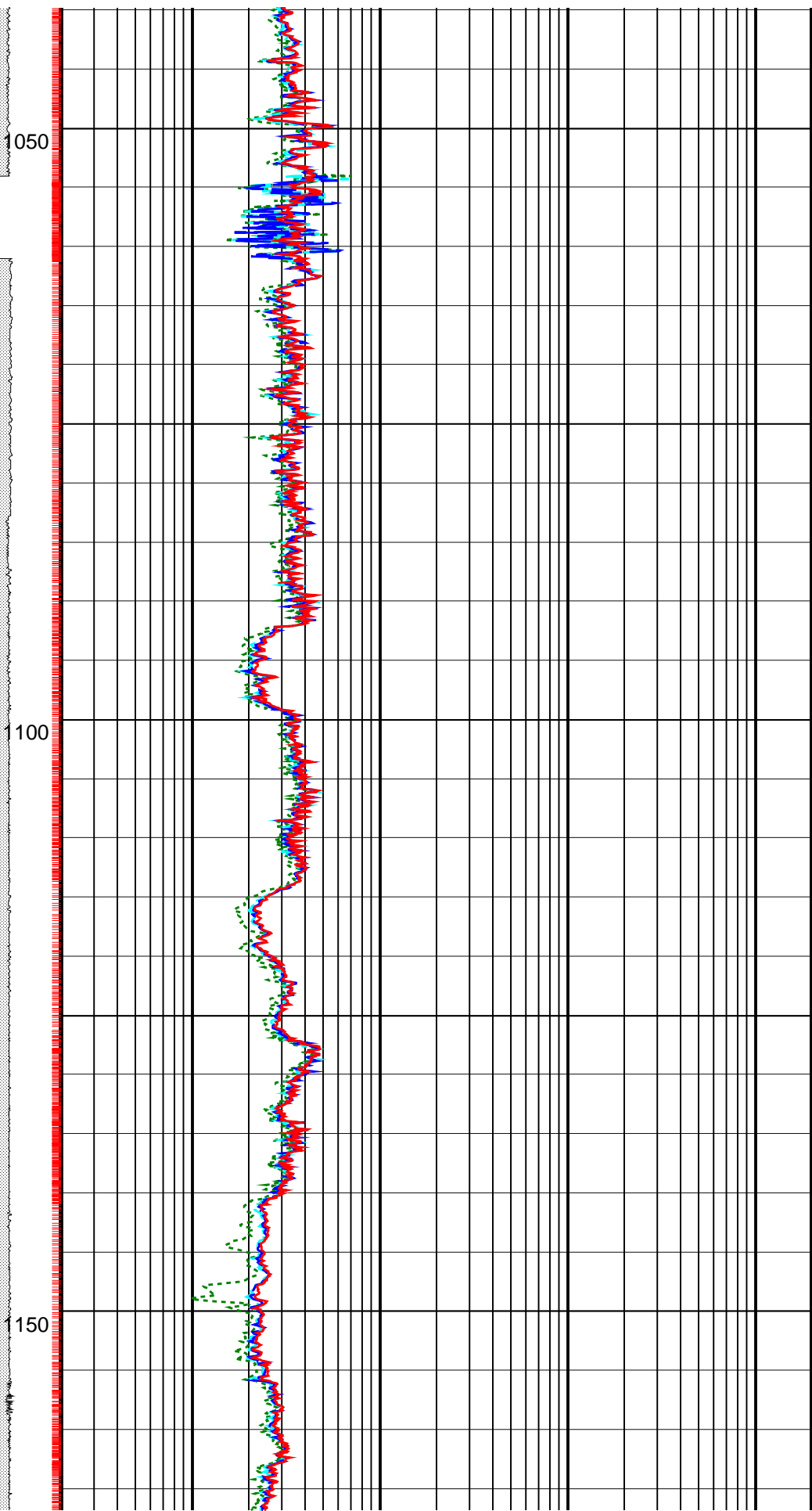
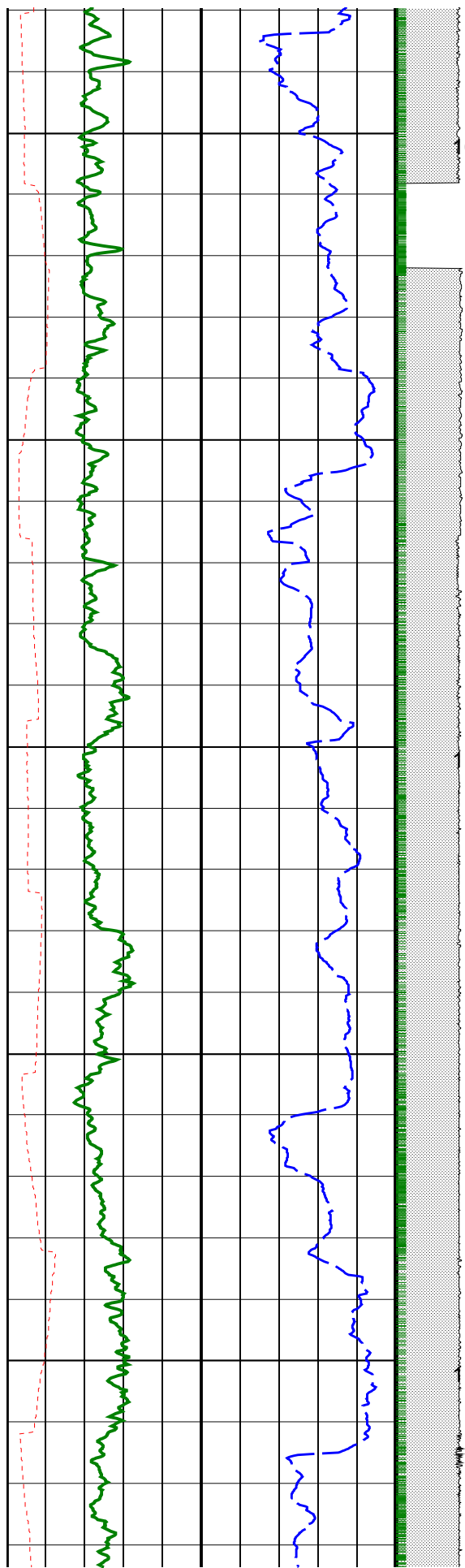
PIP SUMMARY

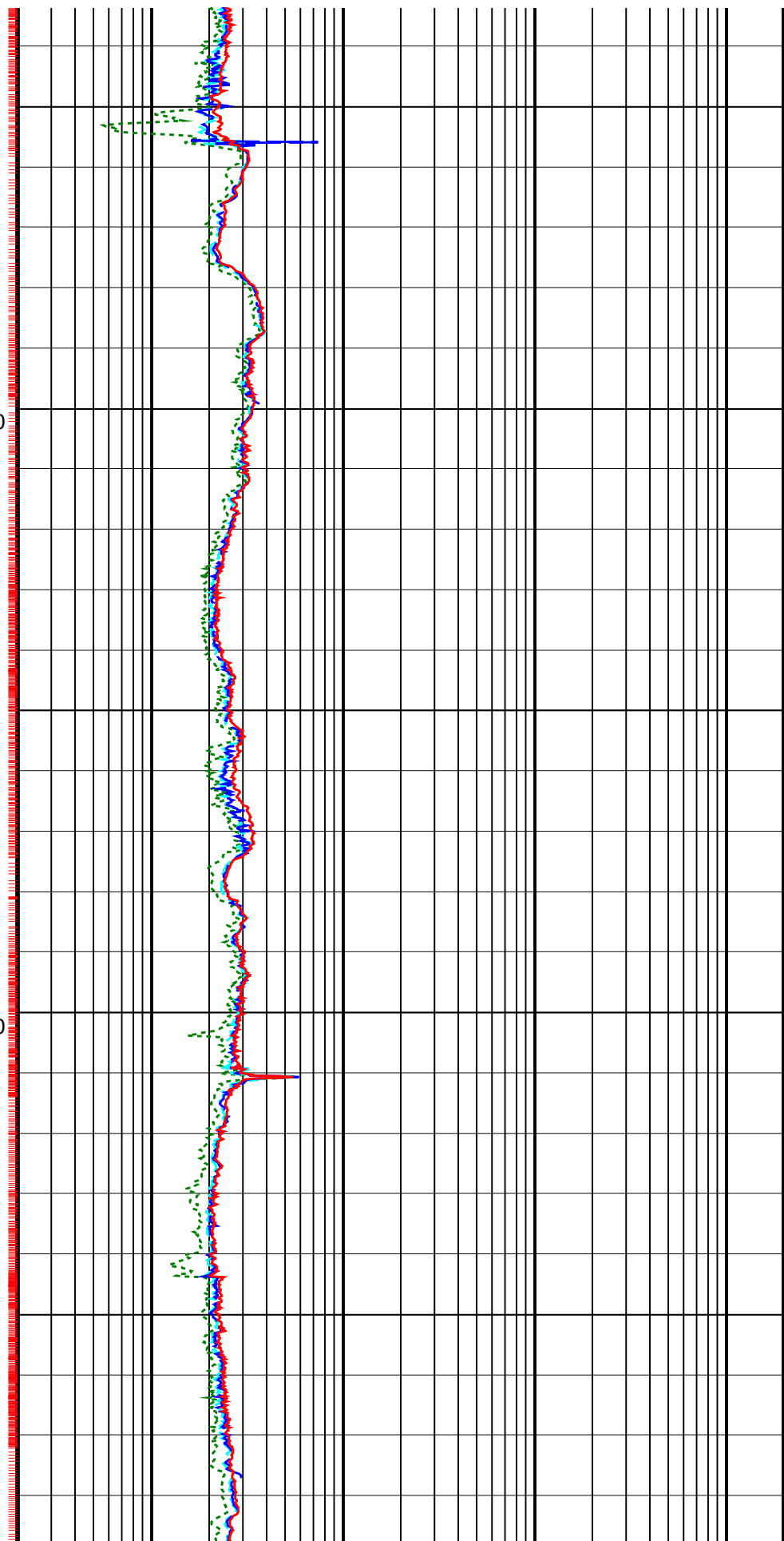
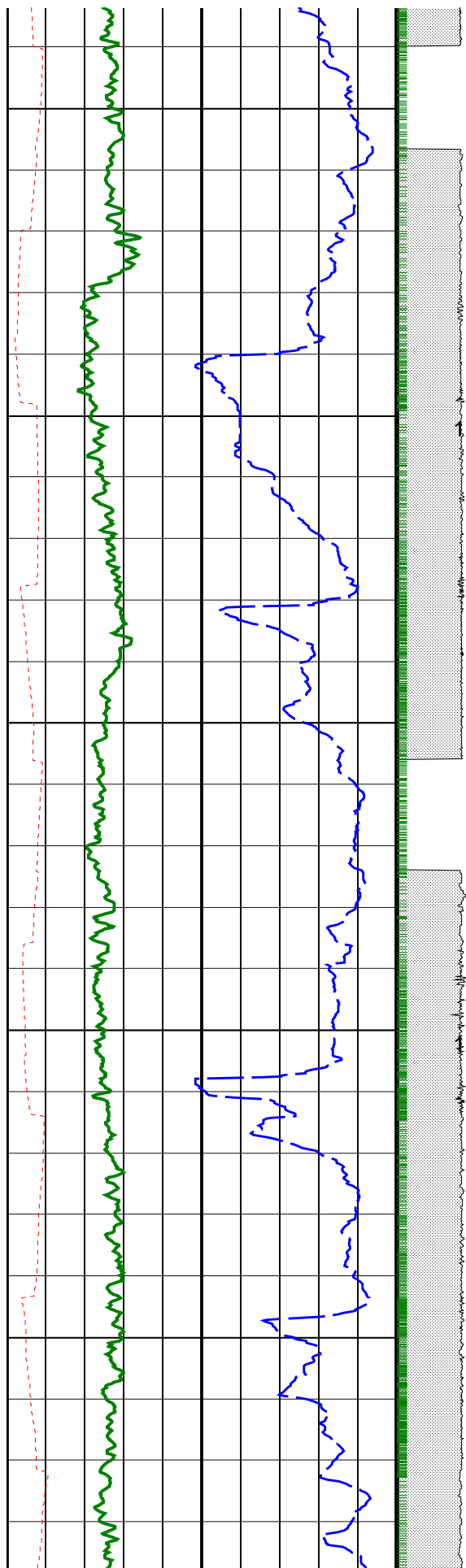
└ Gamma Ray Samples
└ Ring Samples

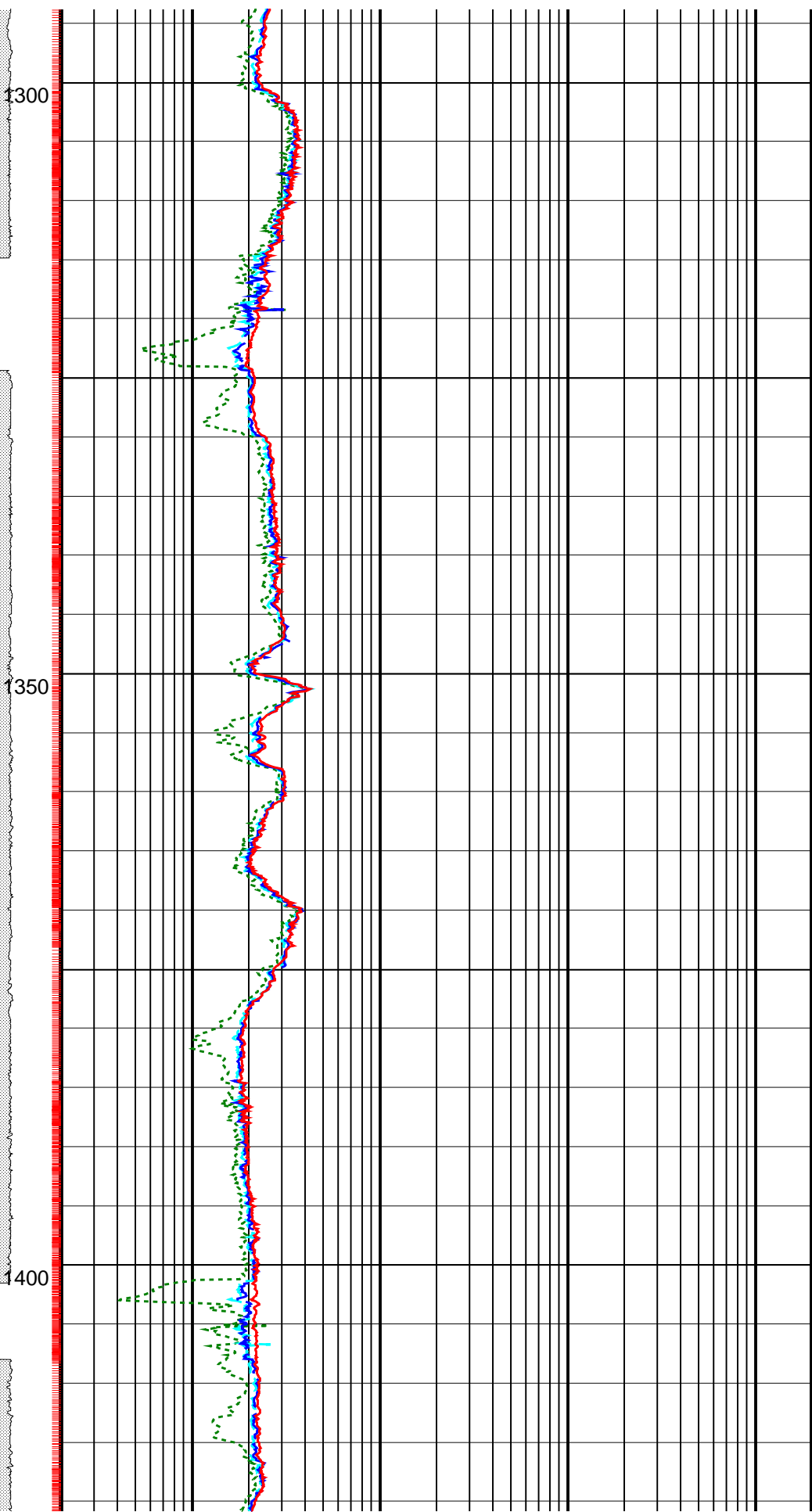
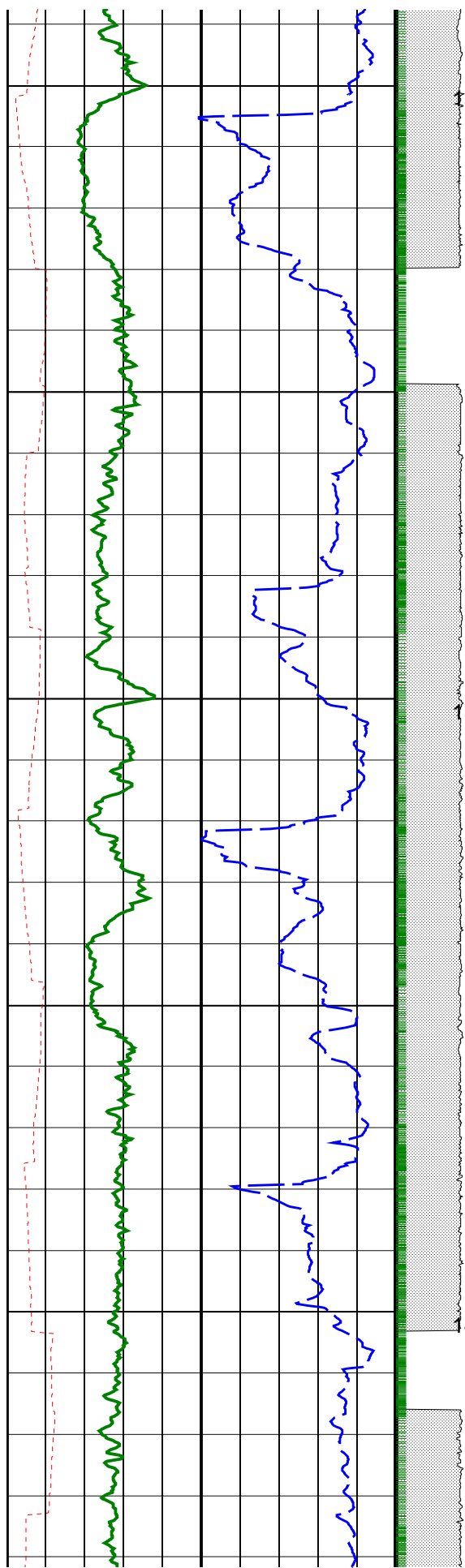
Ring Samples

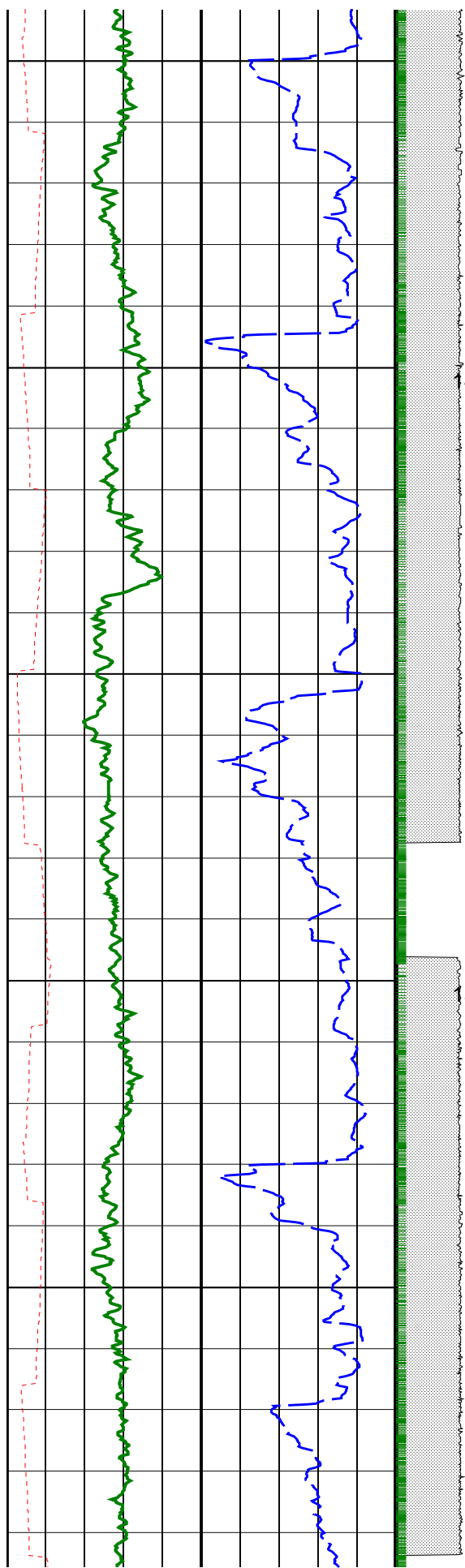






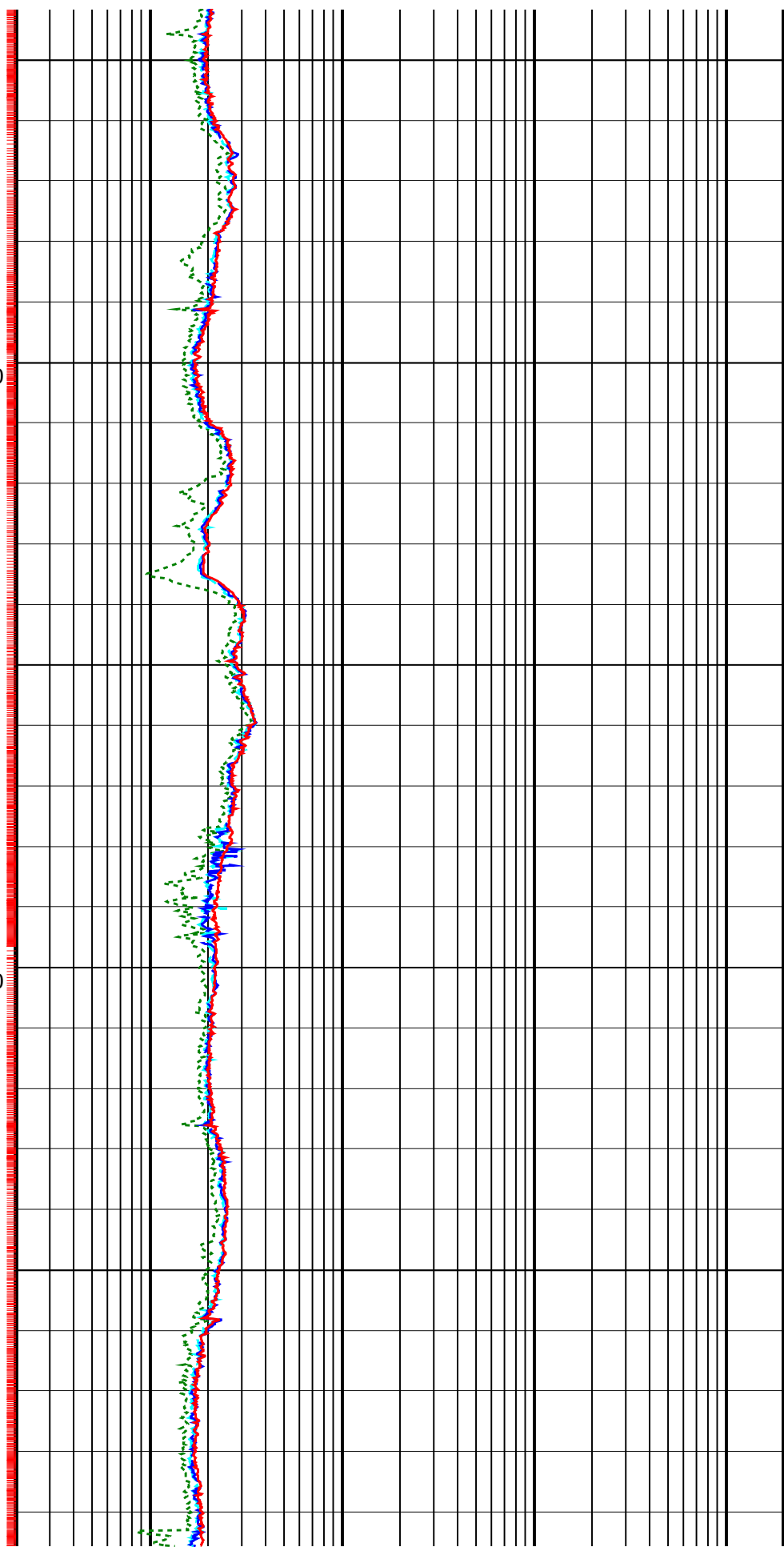


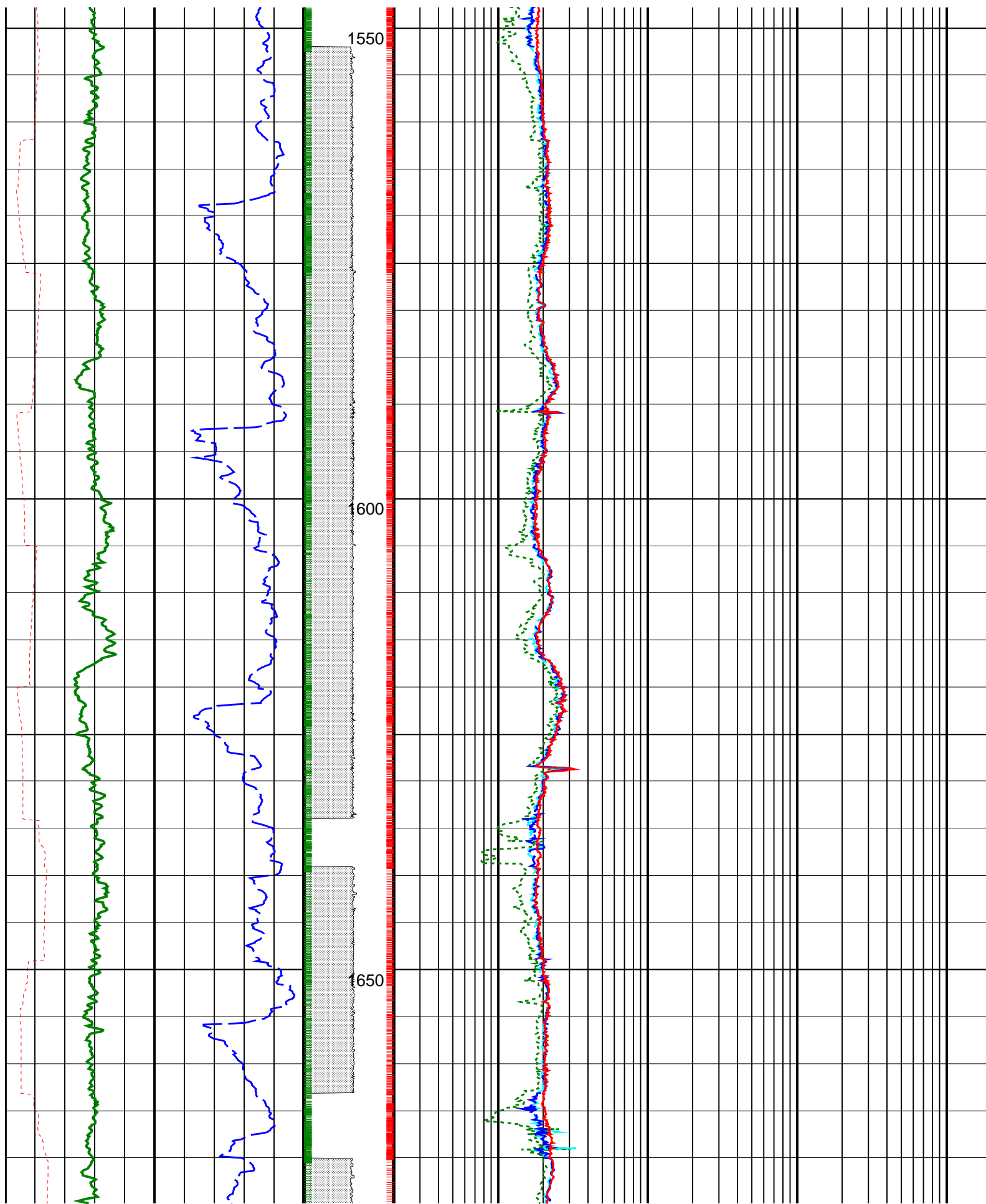


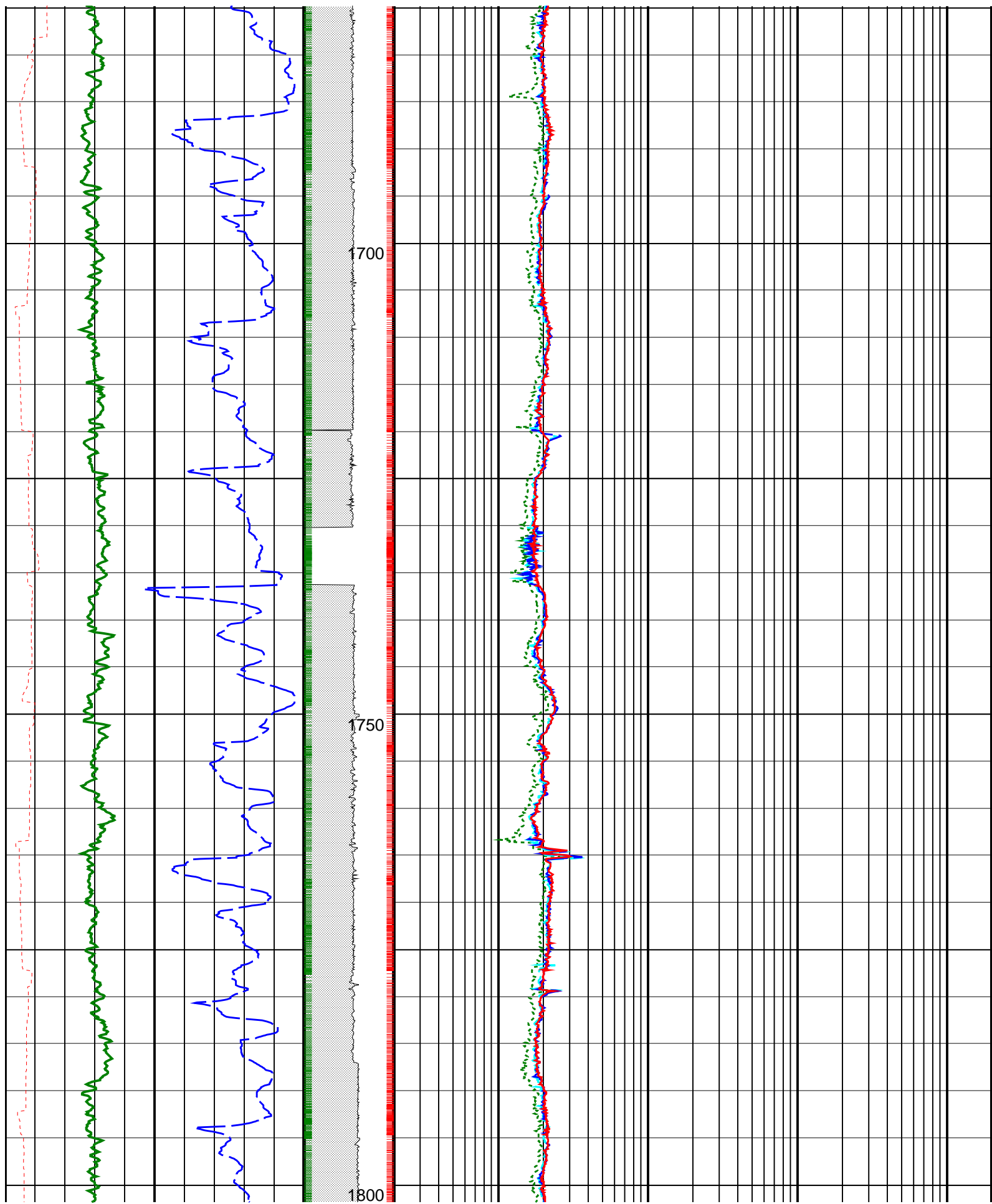


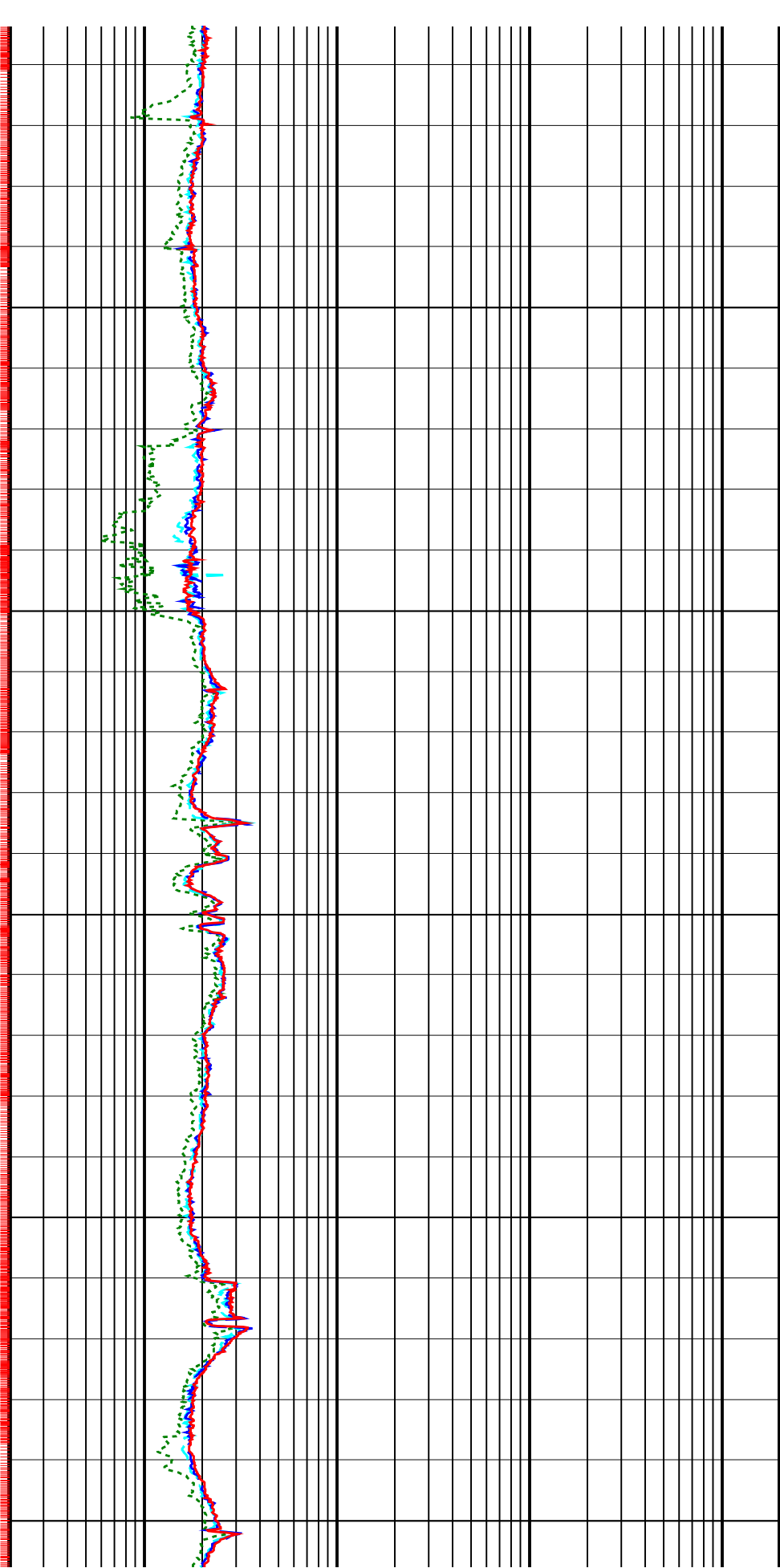
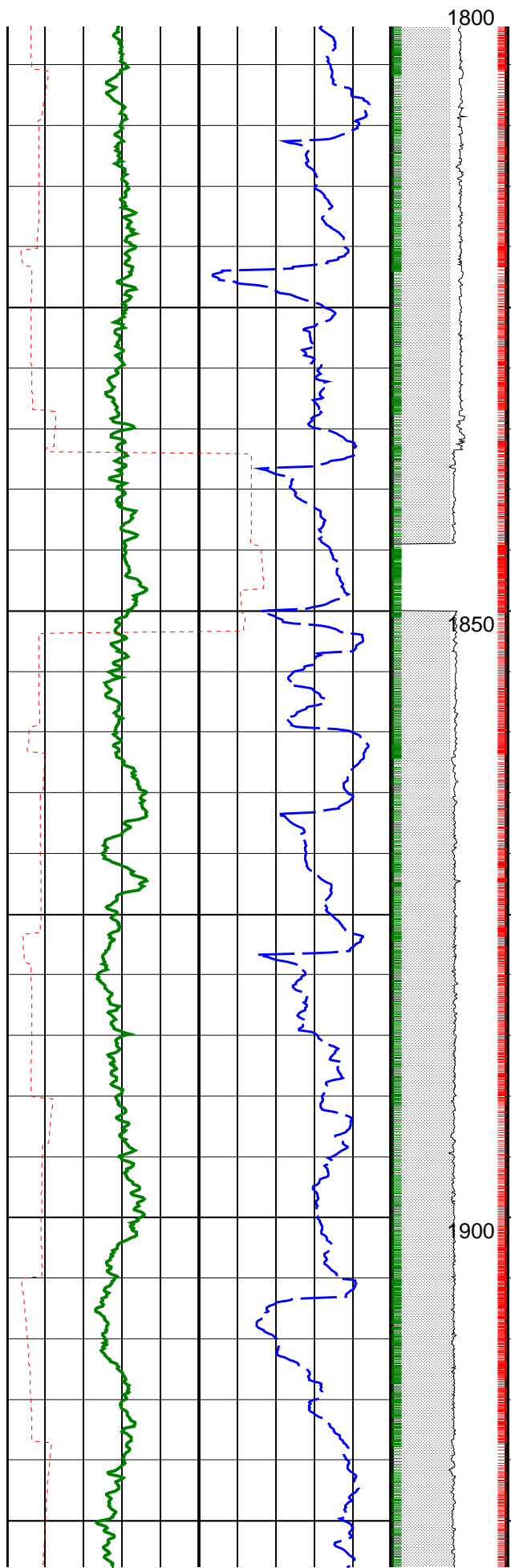
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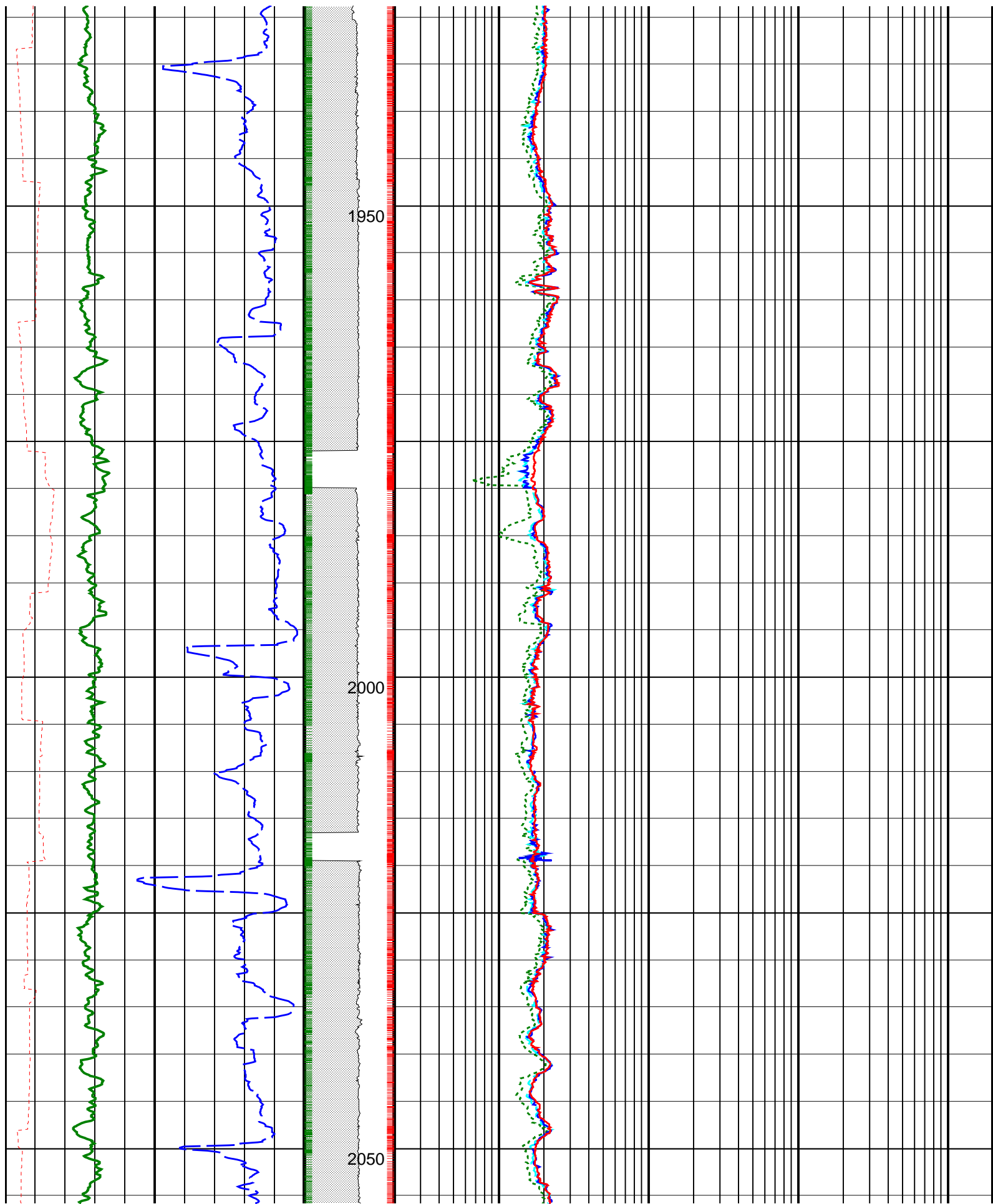
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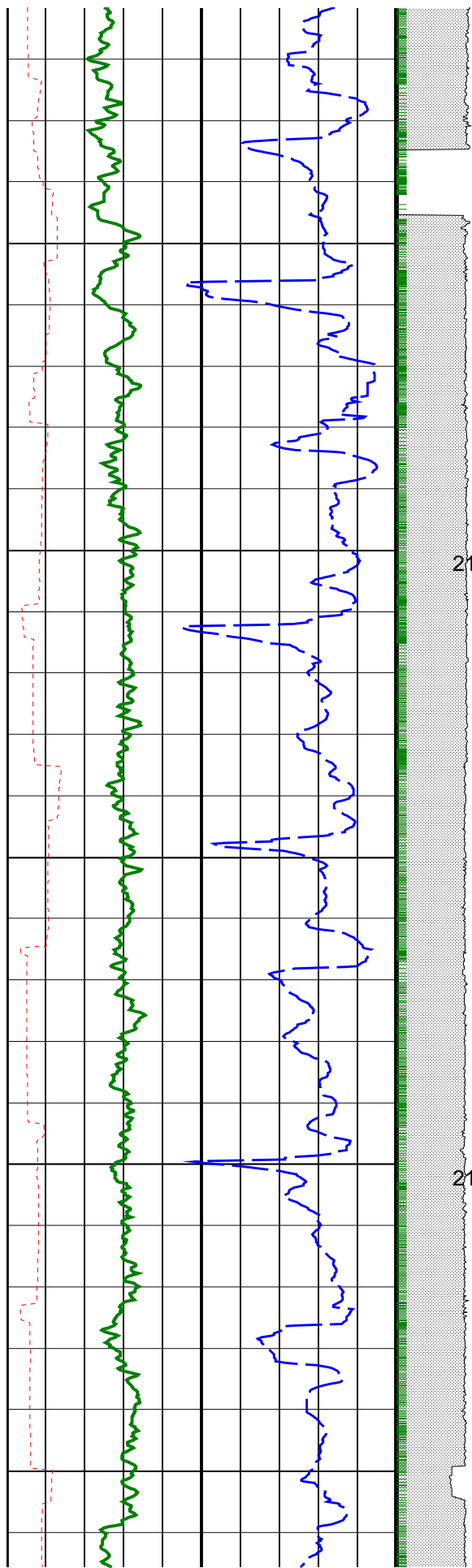






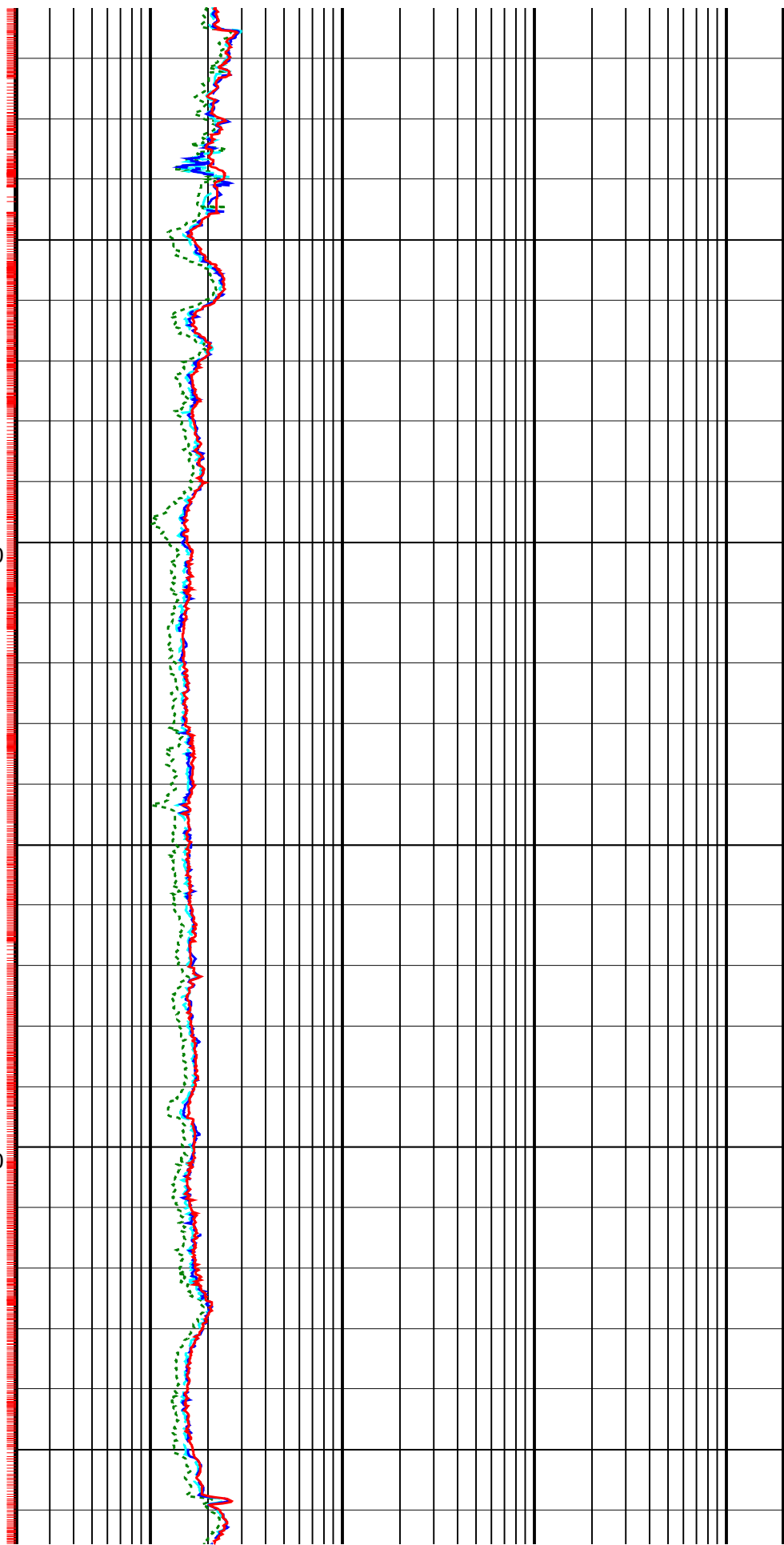


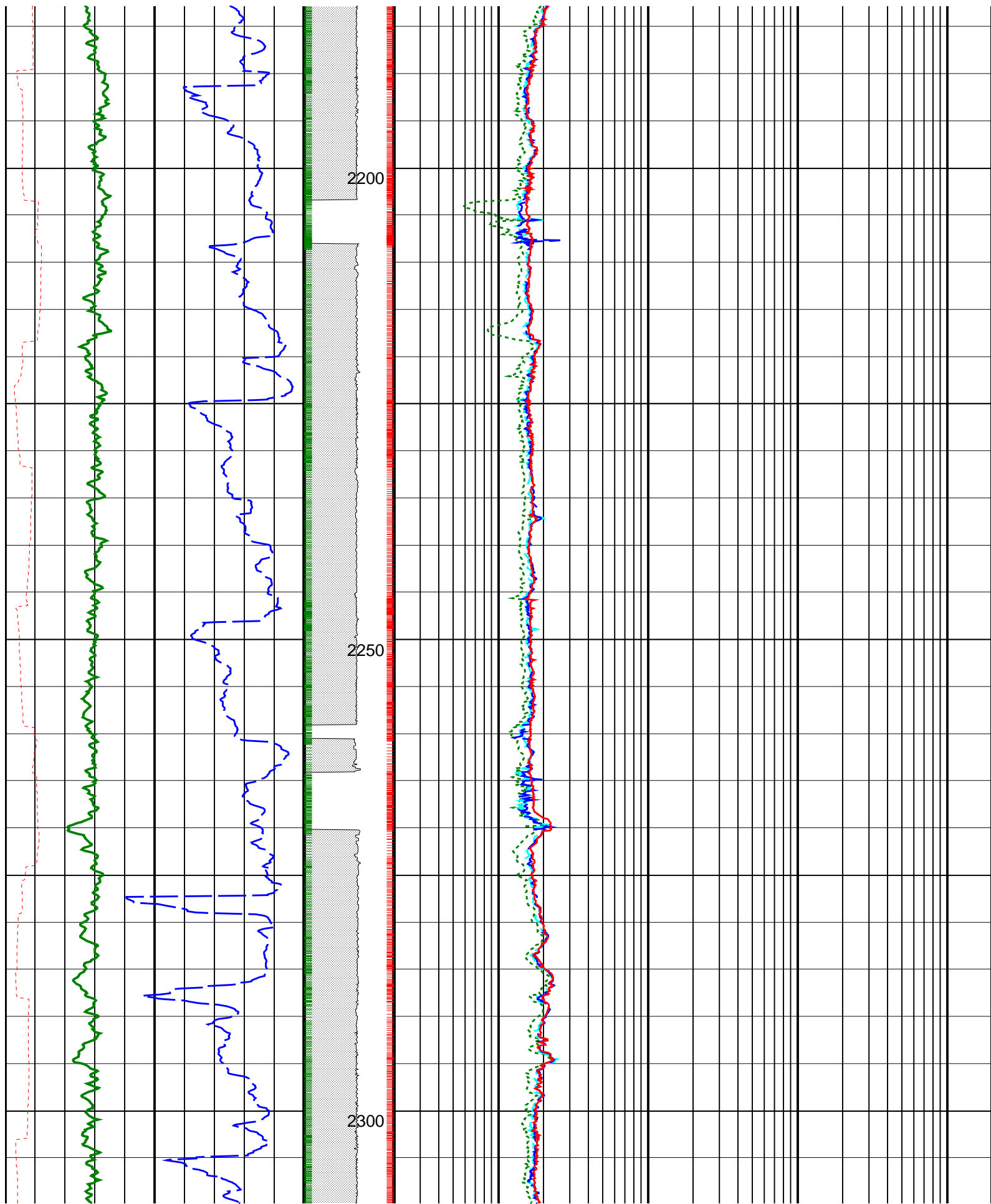


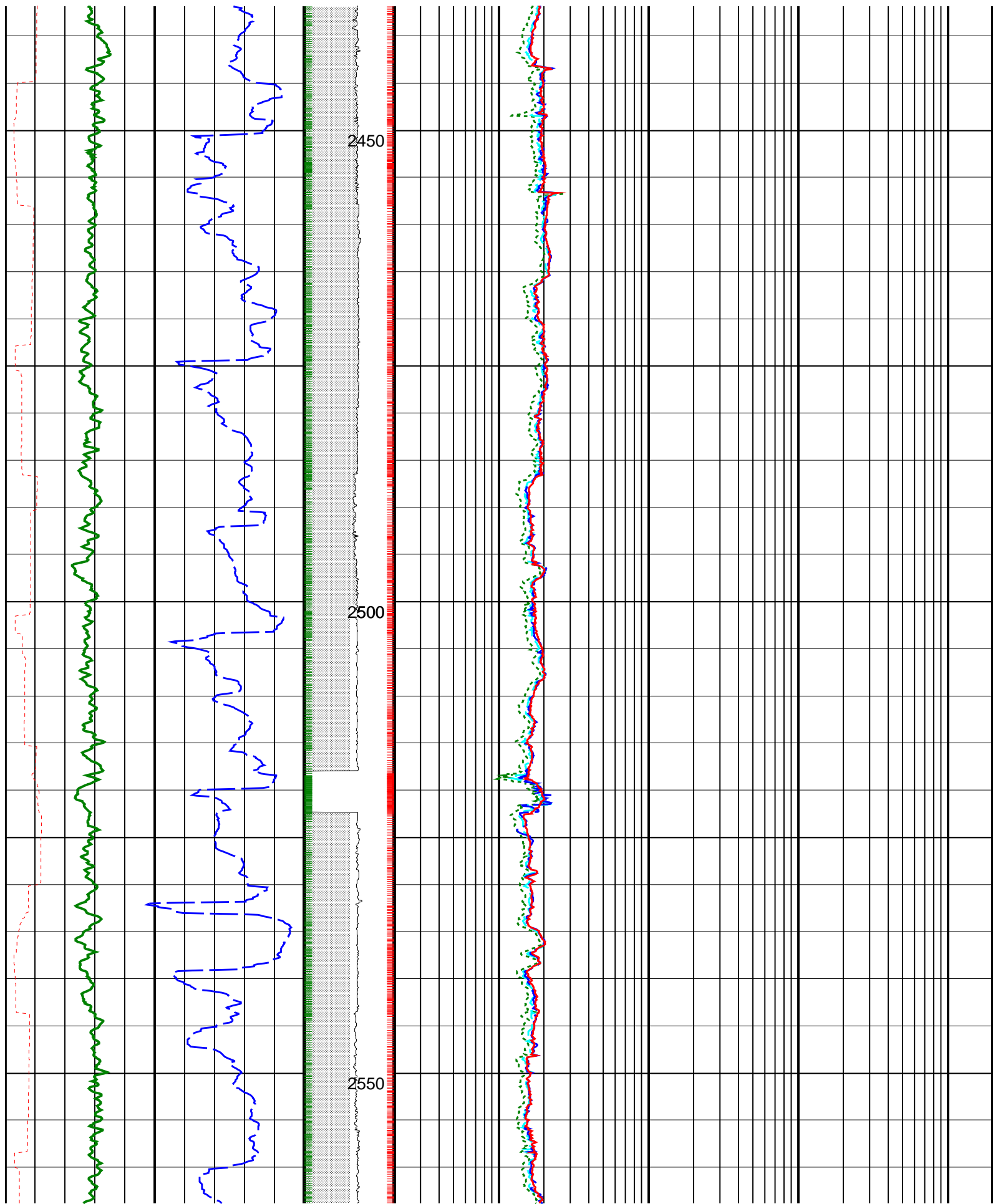


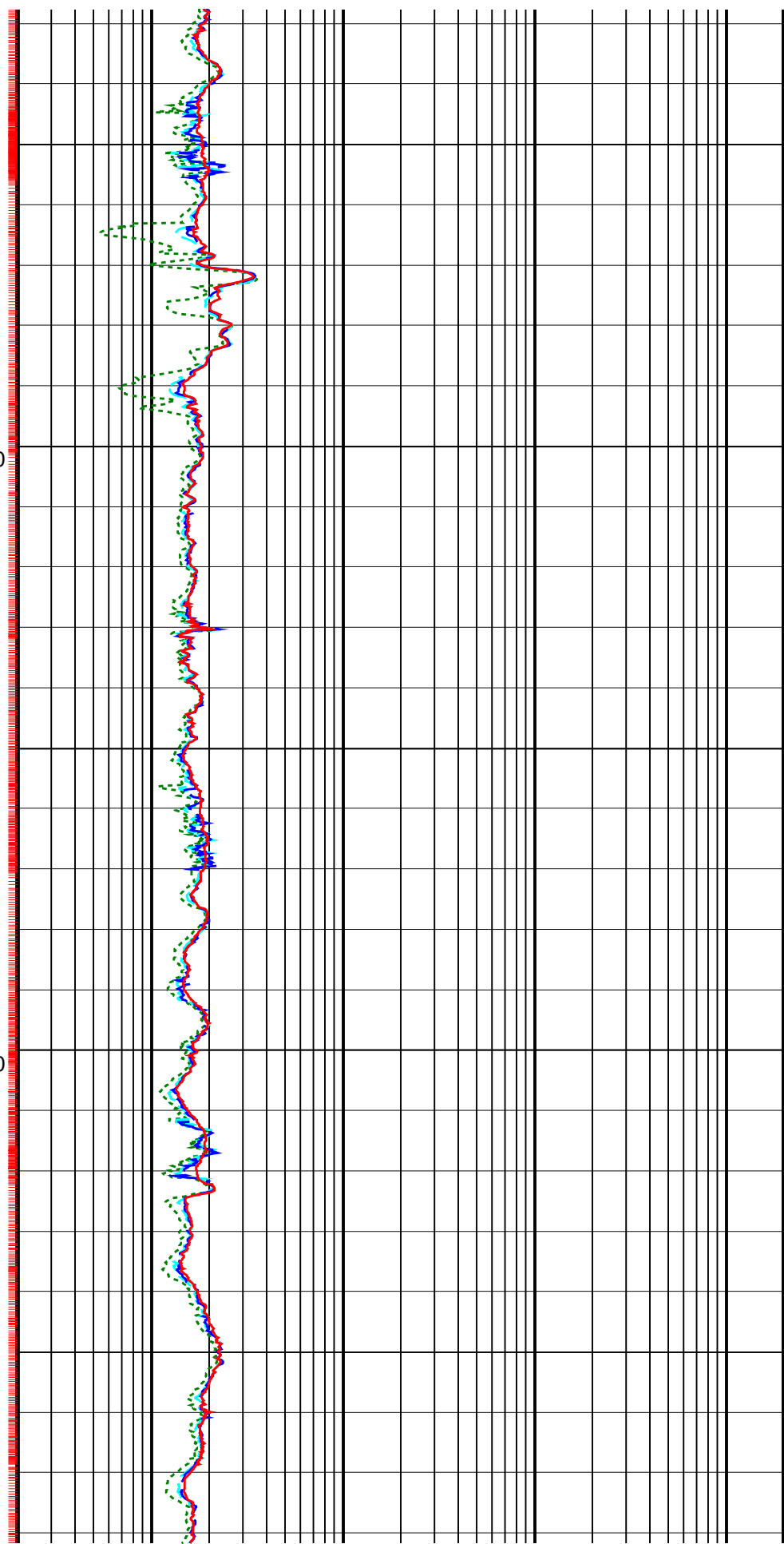
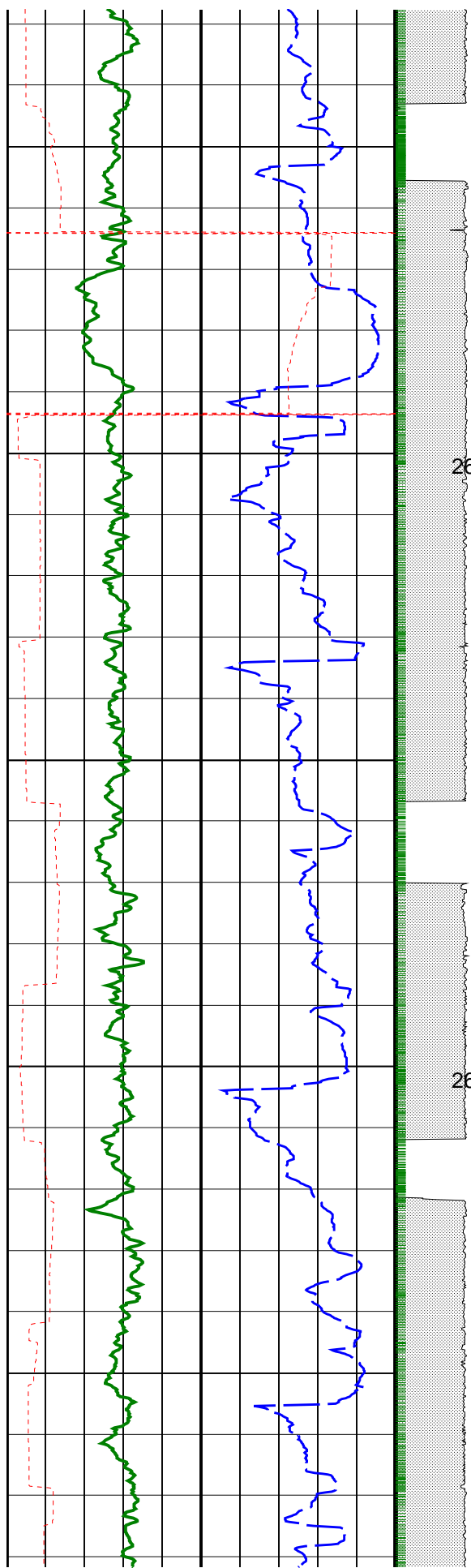
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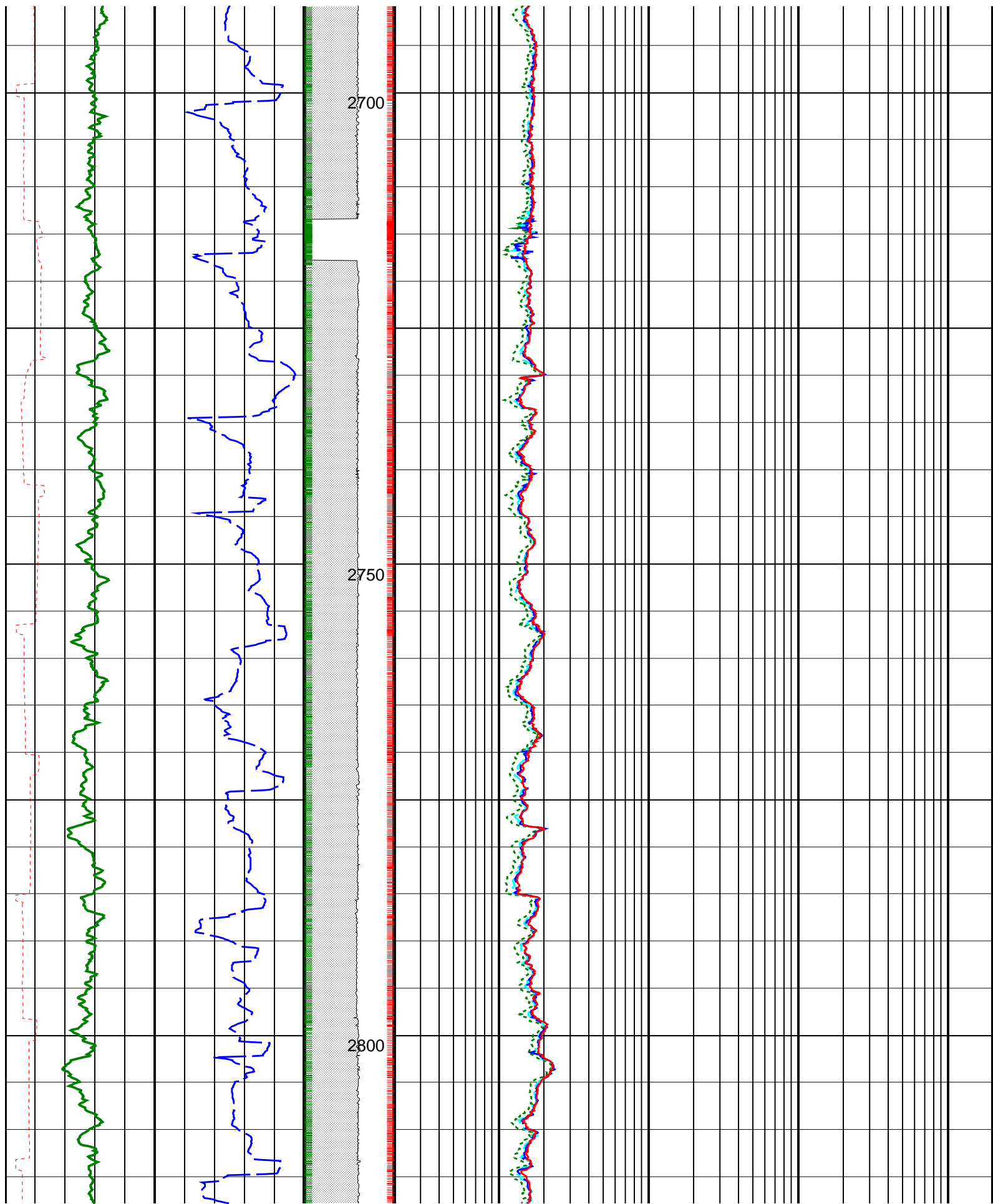
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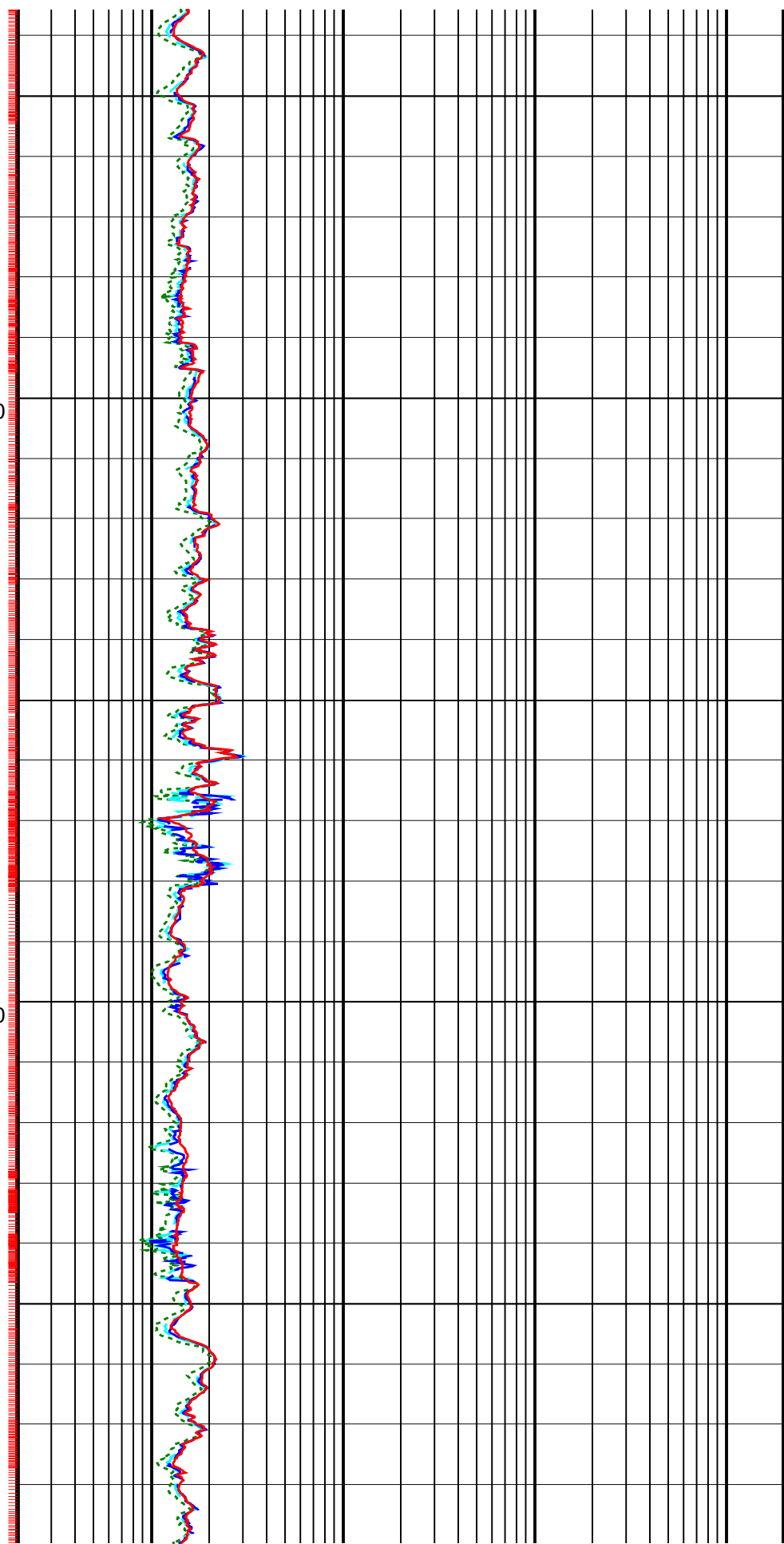
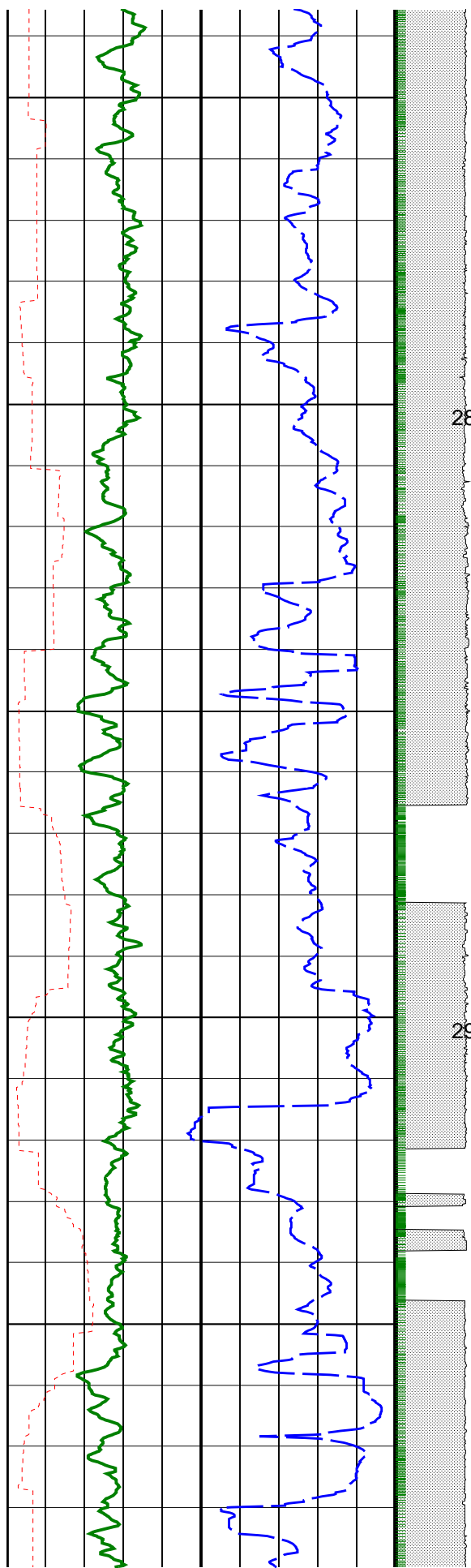


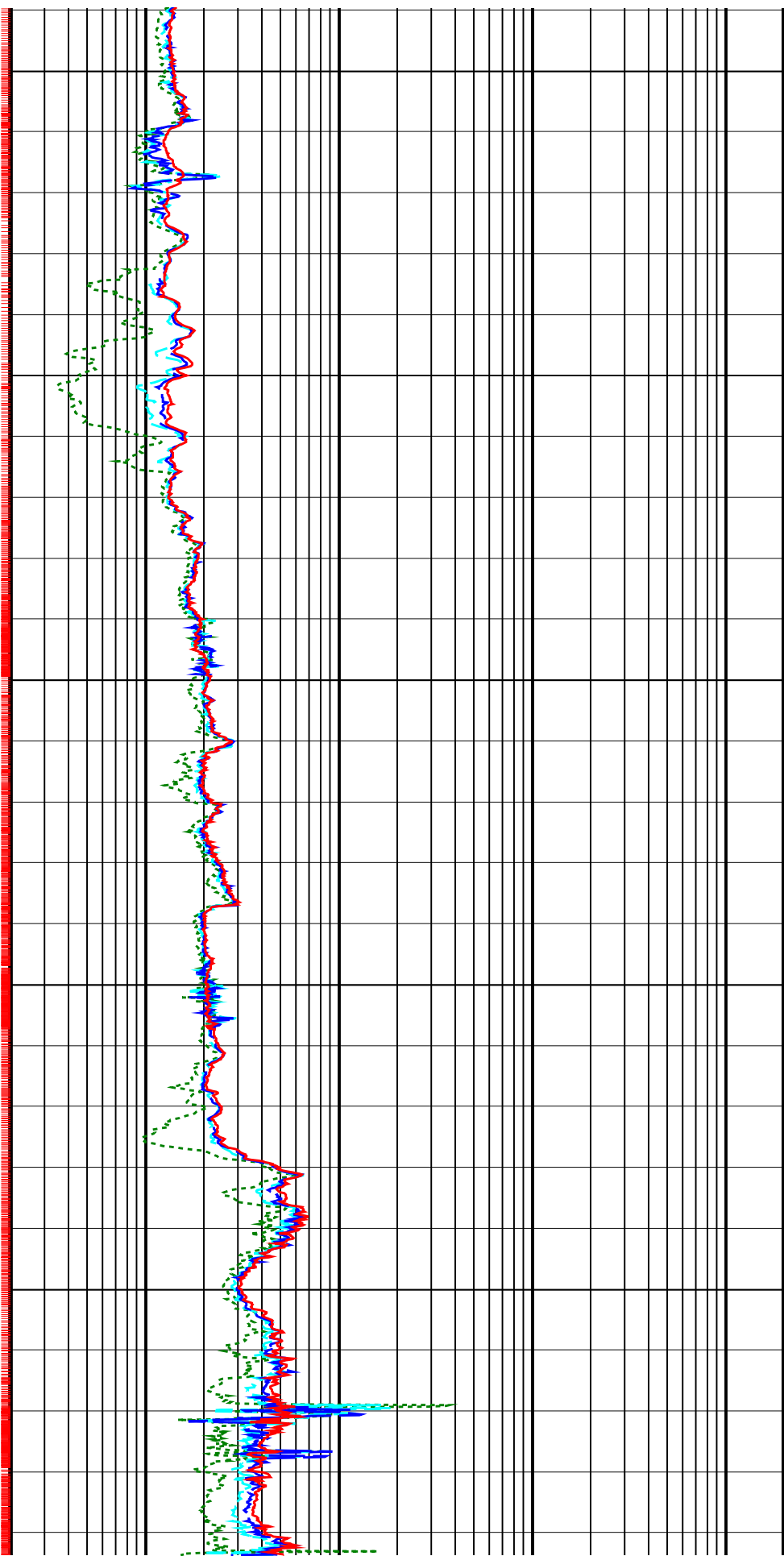
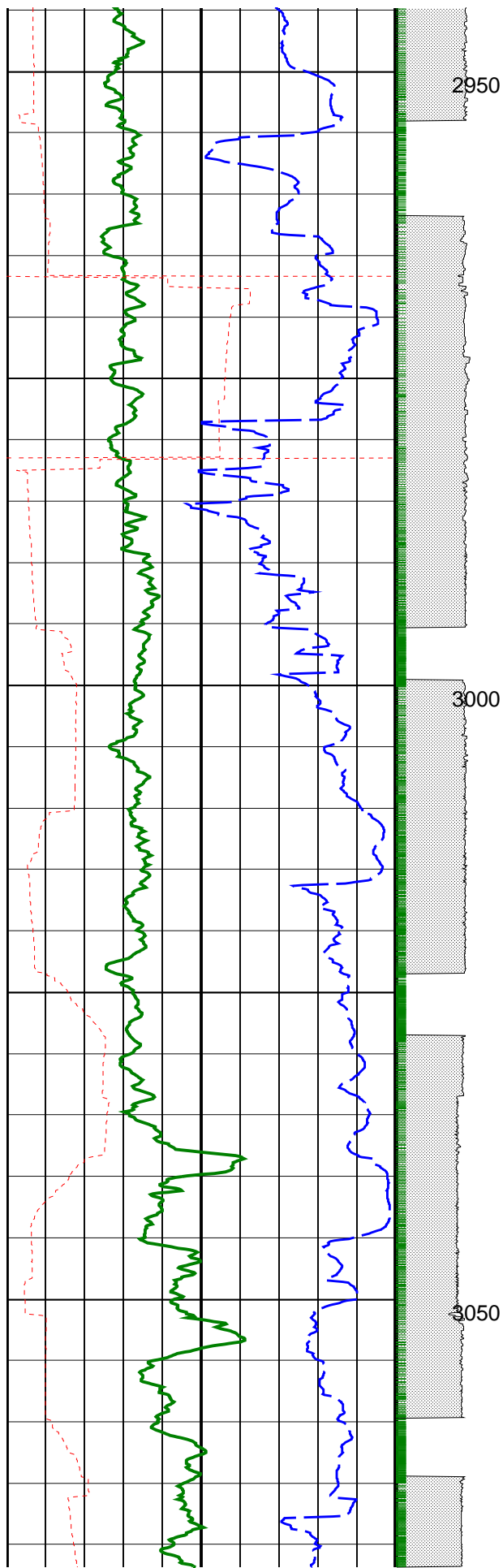


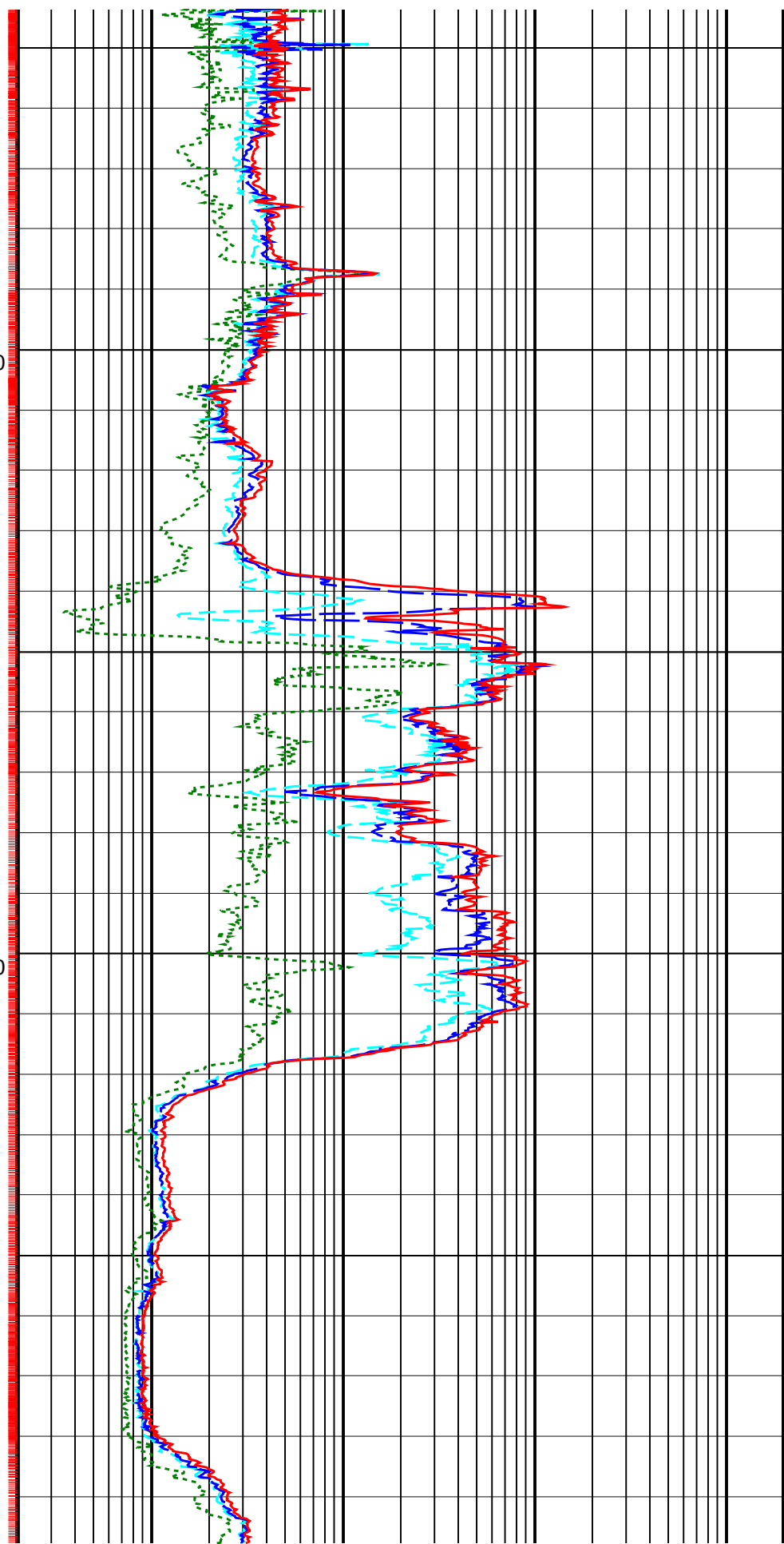
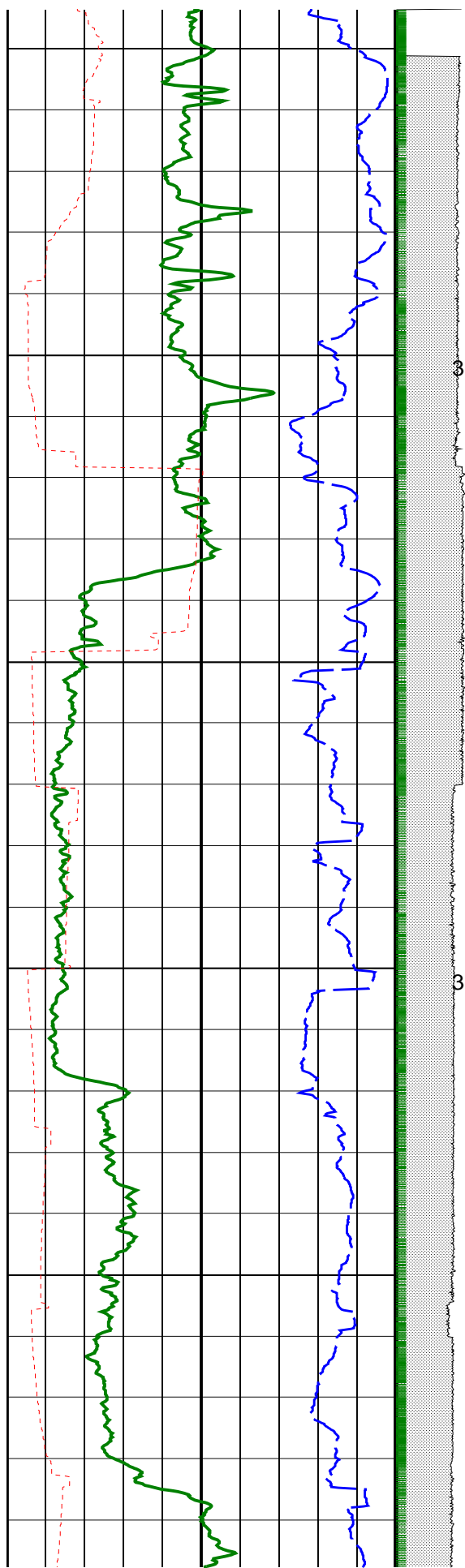


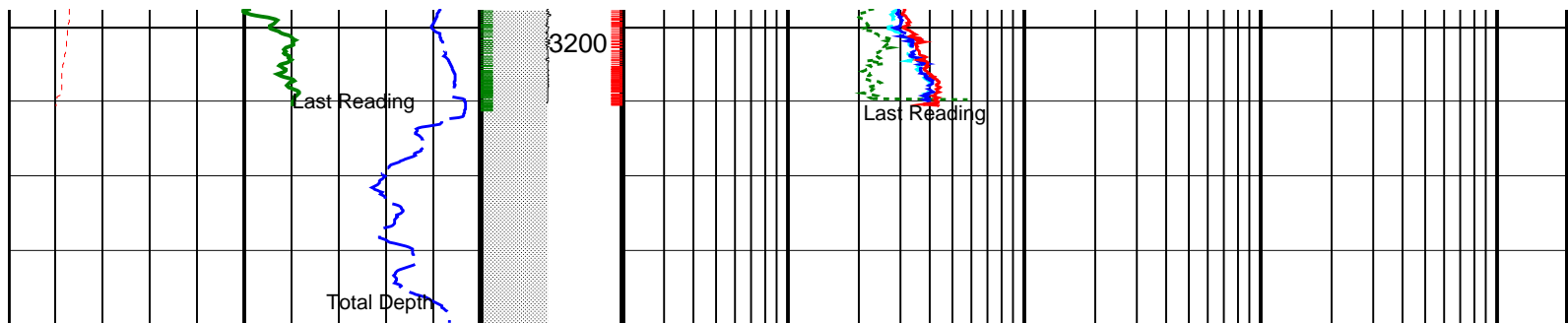












<div><div>ROP: 5 Feet Average (ROP5_RM)</div><div>200 (M/HR) 0</div></div>	<div>RAB Rotational Speed (RPM_RAB) (RPM) 0 200</div>	<div><div>Shallow Button Resistivity (RES_BS)</div><div>0.2 (OHMM) 2000</div></div>
<div><div>RAB Gamma Ray (GR_RAB)</div><div>0 (GAPI) 200</div></div>		<div><div>Medium Button Resistivity (RES_BM)</div><div>0.2 (OHMM) 2000</div></div>
<div><div>Ring Resistivity Time After Bit (TAB_RAB_RING)</div><div>0 (HR) 10</div></div>		<div><div>Deep Button Resistivity (RES_BD)</div><div>0.2 (OHMM) 2000</div></div>
		<div><div>Ring Resistivity (RES_RING)</div><div>0.2 (OHMM) 2000</div></div>

PIP SUMMARY

└ Gamma Ray Samples
+ Ring Samples

IDEAL Version: ID7_OC_02
IDF

RAB	IDEAL Version: ID7_OC_02	MWD_10	IDEAL Version: ID7_OC_02
ADN	IDEAL Version: ID7_OC_02		

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 A161
GSR – J/Z A2125
8.25 – in.
Valid

Master: 5–MAY–2002 12:34

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		1304	Master		3005	Master		7415
	250.0 (Minimum) 4125 (Nominal) 8000 (Maximum)			700.0 (Minimum) 9350 (Nominal) 18000 (Maximum)			2500 (Minimum) 23750 (Nominal) 45000 (Maximum)	



Master: 5–MAY–2002 12:34















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		201.7	Master		1593	Master		4761
	50.00 (Minimum) 725.0 (Nominal) 1400 (Maximum)			500.0 (Minimum) 4250 (Nominal) 8000 (Maximum)			1500 (Minimum) 15750 (Nominal) 30000 (Maximum)	

Master: 5-MAY-2002 12:34														
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				52.44	Master				125.1	Master				546.0
	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: 5-MAY-2002 12:34											
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					1.136
	1.015 (Minimum)	1.030 (Nominal)	1.045 (Maximum)				1.095 (Minimum)	1.120 (Nominal)	1.145 (Maximum)		

Master: 5-MAY-2002 12:34															
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							1.123	Master							-0.8040
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							-0.9360
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							1.093	Master							-0.6810
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							1.114	Master							-0.7390
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							0.9960	Master							-0.9070
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							1.117	Master							-0.7540
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							1.091								
0.9000 (Minimum)		1.100 (Nominal)		1.300 (Maximum)											
Phase	Near 2 tube 1 gain					----	Value								
Master							1.070								
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

Primary Equipment:

Tool Name and Serial Number

Calibration Status

RAB6 – CA

136

Valid

Master: 10–JUN–2002 14:00

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		0.9840	Master		0.9910	Master		0.9920
	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		0.9960	Master		0.9940	Master		0.9980
	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		1.016	Master		1.017	Master		1.019
	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		1.021	Master		1.018	Master		1.021
	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: Calibration date not found

6.75–in. Resistivity At-the-Bit Calibration

Gamma Ray: Blanket

Phase	Gamma ray factor ----	Value
Master		0.8800
	0.7500 (Minimum) 1.000 (Nominal) 1.250 (Maximum)	

ANADRILL

SCHLUMBERGER

Survey report

16-Jul-2002 15:22:12

Page 1 of 6

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

Well.....: A-31
 API number.....:
 Engineer.....: J. Walta

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-).....: 1.86 m
 Departure (+E/W-).....: 6.34 m

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

Azimuth from rotary table to target: 88.50 degrees

Spud date.....: 30-Jun-02
 Last survey date.....: 16-Jul-02
 Total accepted surveys...: 141
 MD of first survey.....: 0.00 m
 MD of last survey.....: 3220.00 m

----- Geomagnetic data -----
 Magnetic model.....: BGGM version 2001
 Magnetic date.....: 27-Jun-2002
 Magnetic field strength...: 1200.42 HCNT
 Magnetic dec (+E/W-).....: 13.16 degrees
 Magnetic dip.....: -68.69 degrees

----- MWD survey Reference Criteria -----
 Reference G.....: 1000.02 mGal
 Reference H.....: 1200.42 HCNT
 Reference Dip.....: -68.69 degrees
 Tolerance of G.....: (+/-) 2.50 mGal
 Tolerance of H.....: (+/-) 6.00 HCNT
 Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections -----
 Magnetic dec (+E/W-).....: 13.16 degrees
 Grid convergence (+E/W-)..: -0.88 degrees
 Total az corr (+E/W-).....: 14.04 degrees
 (Total az corr = magnetic dec - grid conv)

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	0.00	0.00	0.00	0.00	0.00	0.00	1.86	6.34	0.00	73.65	0.00	TIP	-
2	12.07	0.07	344.00	12.07	12.07	0.00	1.87	6.34	0.01	73.59	0.06	GYR	-
3	17.07	0.15	344.00	5.00	17.07	0.00	1.88	6.34	0.02	73.50	0.16	GYR	-
4	22.07	0.14	312.50	5.00	22.07	-0.01	1.89	6.33	0.03	73.40	0.16	GYR	-
5	27.07	0.33	283.90	5.00	27.07	-0.03	1.89	6.31	0.04	73.29	0.44	GYR	-
6	32.07	0.48	276.70	5.00	32.07	-0.06	1.90	6.28	0.07	73.15	0.32	GYR	-
7	37.07	0.50	274.50	5.00	37.07	-0.10	1.90	6.23	0.11	73.01	0.05	GYR	-
8	42.07	0.49	276.00	5.00	42.07	-0.15	1.91	6.19	0.16	72.87	0.03	GYR	-
9	47.07	0.50	278.80	5.00	47.07	-0.19	1.91	6.15	0.20	72.71	0.05	GYR	-
10	52.07	0.36	277.40	5.00	52.07	-0.23	1.92	6.11	0.24	72.56	0.28	GYR	-
11	57.07	0.47	259.00	5.00	57.07	-0.26	1.92	6.07	0.27	72.48	0.34	GYR	-
12	62.07	0.41	247.50	5.00	62.07	-0.30	1.91	6.04	0.30	72.48	0.21	GYR	-
13	67.07	0.43	215.40	5.00	67.07	-0.33	1.88	6.01	0.33	72.59	0.47	GYR	-
14	72.07	0.51	202.50	5.00	72.07	-0.35	1.85	5.99	0.35	72.85	0.26	GYR	-
15	77.07	0.58	176.30	5.00	77.07	-0.36	1.80	5.99	0.36	73.23	0.51	GYR	-
16	82.07	0.73	162.00	5.00	82.07	-0.35	1.75	6.00	0.36	73.75	0.44	GYR	-
17	87.07	0.88	153.60	5.00	87.07	-0.32	1.68	6.02	0.36	74.39	0.38	GYR	-
18	92.07	1.13	141.90	5.00	92.07	-0.28	1.61	6.07	0.37	75.15	0.64	GYR	-
19	97.07	1.40	130.90	5.00	97.07	-0.20	1.53	6.15	0.38	76.02	0.72	GYR	-
20	102.07	1.84	120.70	5.00	102.06	-0.09	1.45	6.26	0.42	76.97	1.05	GYR	-
21	107.07	2.20	115.70	5.00	107.06	0.07	1.37	6.42	0.50	77.97	0.80	GYR	-
22	112.07	2.55	109.80	5.00	112.06	0.25	1.29	6.61	0.63	78.97	0.85	GYR	-
23	117.07	2.98	107.40	5.00	117.05	0.48	1.21	6.84	0.82	79.95	0.89	GYR	-
24	122.07	3.35	103.90	5.00	122.04	0.75	1.14	7.10	1.05	80.90	0.83	GYR	-
25	127.07	4.20	102.50	5.00	127.03	1.06	1.06	7.42	1.35	81.85	1.71	GYR	-
26	132.07	4.33	100.60	5.00	132.02	1.43	0.99	7.79	1.69	82.77	0.38	GYR	-
27	137.07	5.10	98.60	5.00	137.00	1.83	0.92	8.19	2.08	83.59	1.57	GYR	-
28	137.97	5.16	98.30	0.90	137.90	1.91	0.91	8.27	2.16	83.73	0.73	GYR	-
29	146.90	4.51	98.30	8.93	146.80	2.65	0.80	9.02	2.88	84.93	0.73	GYR	-
30	158.50	3.99	103.00	11.60	158.36	3.48	0.64	9.86	3.73	86.27	0.54	GYR	-

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Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/10m)	Srvy tool type	Tool qual type
31	174.60	3.62	103.90	16.10	174.43	4.51	0.36	10.90	4.80	87.92	0.23	GYR	-
32	195.00	2.99	112.10	20.40	194.79	5.62	0.00	12.01	5.97	89.81	0.39	GYR	-
33	222.00	2.88	120.80	27.00	221.76	6.84	-0.61	13.25	7.34	92.47	0.17	GYR	-
34	241.10	3.91	130.60	19.10	240.83	7.73	-1.28	14.16	8.42	95.01	0.62	GYR	-
35	260.10	4.76	122.40	19.00	259.77	8.87	-2.13	15.31	9.82	97.85	0.55	GYR	-
36	279.30	5.31	103.40	19.20	278.90	10.39	-2.76	16.85	11.48	99.26	0.91	GYR	-
37	299.90	6.86	80.10	20.60	299.38	12.52	-2.77	18.99	13.47	98.27	1.40	GYR	-
38	316.15	10.55	72.73	16.25	315.44	14.92	-2.16	21.37	15.56	95.76	2.37	GYR	-
39	352.61	15.35	66.12	36.46	350.98	22.96	-0.84	29.38	23.19	91.56	1.54	MWD	6-axis
40	381.38	18.05	94.30	28.77	378.53	31.20	-0.92	37.62	31.40	91.40	1.24	MWD	6-axis
41	411.78	22.54	100.22	30.40	407.04	41.60	-2.31	48.06	41.93	92.70	1.62	MWD	6-axis
42	440.11	27.94	100.01	28.33	432.66	53.42	-4.42	59.95	53.97	94.18	1.91	MWD	6-axis
43	468.74	33.27	97.20	28.63	457.29	67.77	-6.58	74.35	68.54	95.08	1.93	MWD	6-axis
44	497.29	38.36	92.89	28.55	480.44	84.36	-8.01	90.99	85.22	95.00	1.99	MWD	6-axis
45	525.14	42.74	90.51	27.85	501.60	102.43	-8.53	109.08	103.26	94.45	1.67	MWD	6-axis
46	553.01	46.80	88.98	27.87	521.38	122.05	-8.43	128.70	122.79	93.73	1.51	MWD	6-axis
47	581.11	49.46	88.91	28.10	540.13	142.97	-8.04	149.62	143.62	93.06	0.95	MWD	6-axis
48	610.17	54.19	89.41	29.06	558.09	165.81	-7.71	172.45	166.39	92.55	1.63	MWD	6-axis
49	638.05	55.66	87.50	27.88	574.11	188.62	-7.09	195.26	189.13	92.07	0.77	MWD	6-axis
50	666.55	59.63	85.97	28.50	589.36	212.68	-5.72	219.29	213.08	91.48	1.46	MWD	6-axis
51	694.05	62.75	86.06	27.50	602.61	236.75	-4.04	243.32	237.06	91.04	1.13	MWD	6-axis
52	722.81	62.20	87.21	28.76	615.91	262.24	-2.54	268.78	262.48	90.53	0.40	MWD	6-axis
53	751.15	63.87	87.30	28.34	628.76	287.49	-1.33	294.01	287.69	90.25	0.59	MWD	6-axis
54	778.71	68.59	88.51	27.56	639.86	312.70	-0.42	319.21	312.88	90.07	1.76	MWD	6-axis
55	807.83	70.94	88.67	29.12	649.93	340.02	0.25	346.52	340.19	90.02	0.81	MWD	6-axis
56	812.33	71.08	88.93	4.50	651.40	344.28	0.34	350.78	344.44	89.94	0.63	MWD	6-axis
57	845.38	70.42	89.00	33.05	662.29	375.48	0.91	381.97	375.63	89.86	0.20	MWD	6-axis
58	874.18	71.18	89.28	28.80	671.77	402.67	1.32	409.17	402.83	89.81	0.28	MWD	6-axis
59	902.04	71.77	90.21	27.86	680.62	429.08	1.43	435.58	429.24	89.81	0.38	MWD	6-axis
60	931.93	71.89	89.41	29.89	689.94	457.48	1.53	463.98	457.64	89.81	0.26	MWD	6-axis

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Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/10m)	Srvy tool type	Tool qual type
61	960.85	71.56	88.10	28.92	699.01	484.94	2.12	491.44	485.10	89.75	0.45	MWD	6-axis

61	960.85	71.56	88.10	28.92	699.01	484.94	2.12	491.44	485.10	89.75	0.45	MWD	6-axis
62	989.81	70.75	87.66	28.96	708.36	512.34	3.14	518.82	512.49	89.65	0.31	MWD	6-axis
63	1018.64	69.68	87.09	28.83	718.12	539.46	4.38	545.92	539.59	89.54	0.42	MWD	6-axis
64	1047.42	68.84	87.34	28.78	728.31	566.37	5.69	572.81	566.48	89.43	0.30	MWD	6-axis
65	1076.22	70.95	88.00	28.80	738.21	593.41	6.79	599.83	593.51	89.35	0.76	MWD	6-axis
66	1104.92	71.26	88.33	28.70	747.50	620.57	7.65	626.97	620.65	89.30	0.15	MWD	6-axis
67	1133.56	70.77	88.57	28.64	756.82	647.65	8.39	654.04	647.73	89.26	0.19	MWD	6-axis
68	1162.76	69.60	88.22	29.20	766.72	675.12	9.16	681.50	675.20	89.23	0.42	MWD	6-axis
69	1192.29	70.68	87.70	29.53	776.75	702.89	10.15	709.25	702.96	89.18	0.40	MWD	6-axis
70	1220.68	70.21	87.93	28.39	786.25	729.64	11.17	735.99	729.71	89.13	0.18	MWD	6-axis
71	1249.53	71.42	88.09	28.85	795.74	756.89	12.11	763.22	756.95	89.09	0.42	MWD	6-axis
72	1278.47	70.83	88.55	28.94	805.10	784.27	12.91	790.59	784.33	89.06	0.25	MWD	6-axis
73	1307.78	70.41	88.78	29.31	814.82	811.92	13.56	818.23	811.98	89.05	0.16	MWD	6-axis
74	1336.76	71.90	87.82	28.98	824.18	839.35	14.37	845.65	839.40	89.02	0.60	MWD	6-axis
75	1365.54	71.58	88.03	28.78	833.20	866.67	15.36	872.96	866.72	89.01	0.13	MWD	6-axis
76	1394.99	70.65	87.88	29.45	842.73	894.54	16.36	900.81	894.58	89.01	0.32	MWD	6-axis
77	1423.91	71.30	88.18	28.92	852.16	921.88	17.30	928.13	921.92	88.93	0.25	MWD	6-axis
78	1453.13	70.73	88.04	29.22	861.67	949.51	18.21	982.91	976.73	88.91	0.20	MWD	6-axis
79	1482.00	69.94	87.98	28.87	871.38	976.69	19.15	982.91	976.73	88.88	0.27	MWD	6-axis
80	1511.29	71.58	88.27	29.29	881.03	1004.34	20.06	1010.55	1004.38	88.86	0.57	MWD	6-axis
81	1540.24	71.22	88.49	28.95	890.27	1031.78	20.83	1037.98	1031.81	88.85	0.14	MWD	6-axis
82	1569.45	71.83	88.59	29.21	899.52	1059.49	21.54	1065.67	1059.52	88.84	0.21	MWD	6-axis
83	1598.45	70.89	88.78	29.00	908.79	1086.96	22.17	1093.15	1086.99	88.84	0.33	MWD	6-axis
84	1627.03	70.31	88.62	28.58	918.29	1113.92	22.78	1120.10	1113.95	88.83	0.21	MWD	6-axis
85	1655.99	70.03	88.33	28.96	928.11	1141.16	23.51	1147.33	1141.19	88.82	0.13	MWD	6-axis
86	1684.63	70.80	88.15	28.64	937.71	1168.15	24.33	1174.30	1168.17	88.81	0.28	MWD	6-axis
87	1712.70	70.52	87.93	28.07	947.01	1194.63	25.24	1200.77	1194.66	88.79	0.12	MWD	6-axis
88	1741.50	70.18	87.75	28.80	956.69	1221.75	26.26	1227.87	1221.78	88.77	0.13	MWD	6-axis
89	1770.04	71.16	87.80	28.54	966.14	1248.68	27.31	1254.78	1248.70	88.75	0.34	MWD	6-axis
90	1798.12	71.43	87.83	28.08	975.14	1275.28	28.32	1281.36	1275.30	88.73	0.10	MWD	6-axis

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Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 10m)	Srvy tool type	Tool qual type
91	1826.11	70.51	87.92	27.99	984.27	1301.73	29.30	1307.80	1301.75	88.71	0.33	MWD	6-axis
92	1854.99	70.21	88.08	28.88	993.97	1328.93	30.25	1334.99	1328.95	88.70	0.12	MWD	6-axis
93	1883.45	71.73	88.50	28.46	1003.25	1355.84	31.05	1361.88	1355.85	88.69	0.55	MWD	6-axis
94	1911.83	71.46	88.41	28.38	1012.22	1382.77	31.78	1388.80	1382.78	88.69	0.10	MWD	6-axis
95	1940.74	70.88	88.18	28.91	1021.55	1410.13	32.59	1416.15	1410.14	88.68	0.21	MWD	6-axis
96	1969.40	70.59	87.87	28.66	1031.01	1437.18	33.53	1443.18	1437.19	88.67	0.15	MWD	6-axis
97	1997.53	70.80	87.93	28.13	1040.31	1463.73	34.50	1469.71	1463.74	88.65	0.08	MWD	6-axis
98	2025.72	70.53	88.02	28.19	1049.64	1490.33	35.44	1496.30	1490.34	88.64	0.10	MWD	6-axis
99	2054.36	70.76	87.93	28.64	1059.13	1517.35	36.39	1523.30	1517.36	88.63	0.09	MWD	6-axis
100	2082.32	71.12	87.77	27.96	1068.26	1543.77	37.39	1549.71	1543.78	88.62	0.14	MWD	6-axis
101	2110.78	71.56	87.78	28.46	1077.37	1570.73	38.43	1576.65	1570.74	88.60	0.15	MWD	6-axis
102	2139.97	71.34	88.05	29.19	1086.66	1598.41	39.44	1604.31	1598.41	88.59	0.12	MWD	6-axis
103	2168.08	71.08	88.00	28.11	1095.71	1625.02	40.36	1630.91	1630.91	88.58	0.09	MWD	6-axis
104	2196.66	70.48	88.06	28.58	1105.12	1652.00	41.28	1657.88	1652.01	88.57	0.21	MWD	6-axis
105	2224.04	70.56	88.41	27.38	1114.25	1677.81	42.08	1683.68	1677.82	88.57	0.12	MWD	6-axis
106	2252.28	69.98	88.12	28.24	1123.78	1704.4	42.88	1710.25	1704.40	88.56	0.23	MWD	6-axis
107	2281.17	70.52	88.43	28.89	1133.54	1731.59	43.70	1737.42	1731.59	88.56	0.21	MWD	6-axis
108	2309.72	70.74	88.71	28.55	1143.01	1758.52	44.37	1764.35	1758.52	88.56	0.12	MWD	6-axis
109	2338.26	71.66	88.51	28.54	1152.21	1785.54	45.03	1791.36	1795.54	88.56	0.33	MWD	6-axis
110	2366.50	70.97	88.30	28.24	1161.26	1812.29	45.77	1818.10	1812.29	88.56	0.25	MWD	6-axis
111	2394.81	71.70	88.78	28.31	1170.32	1839.11	46.46	1844.91	1839.11	88.56	0.30	MWD	6-axis
112	2423.21	71.20	88.59	28.40	1179.35	1866.03	47.08	1871.83	1866.04	88.56	0.19	MWD	6-axis
113	2451.21	72.24	88.33	28.00	1188.14	1892.62	47.62	1898.41	1892.62	88.56	0.38	MWD	6-axis
114	2479.83	71.81	88.61	28.62	1196.97	1919.84	48.52	1925.62	1919.85	88.56	0.18	MWD	6-axis
115	2508.56	71.30	88.90	28.73	1206.06	1947.10	49.11	1952.87	1947.10	88.56	0.20	MWD	6-axis
116	2536.94	71.30	88.28	28.38	1215.16	1973.98	49.77	1979.74	1973.98	88.56	0.21	MWD	6-axis
117	2565.00	70.95	88.92	28.06	1224.23	2000.53	50.42	2006.28	2000.53	88.56	0.25	MWD	6-axis
118	2593.75	71.06	88.00	28.75	1233.59	2027.71	51.15	2033.46	2027.72	88.56	0.30	MWD	6-axis
119	2621.34	70.89	88.69	27.59	1242.59	2053.80	51.90	2059.53	2053.80	88.56	0.24	MWD	6-axis
120	2649.12	71.64	88.05	27.78	1251.51	2080.10	52.65	2085.83	2080.11	88.55	0.35	MWD	6-axis

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Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 10m)	Srvy tool type	Tool qual type
121	2677.65	71.61	87.32	28.53	1260.50	2107.18	53.75	2112.88	2107.18	88.54	0.24	MWD	6-axis
122	2706.95	71.20	87.67	29.30	1269.85	2134.94	54.96	2140.62	2134.94	88.53	0.18	MWD	6-axis
123	2734.92	71.02	87.18	27.97	1278.90	2161.40	56.15	2167.06	2161.40	88.51	0.18	MWD	6-axis
124	2763.51	70.88	87.43	28.59	1288.23	2188.42	57.42	2194.06	2188.42	88.50	0.10	MWD	6-axis
125	2791.53	70.61	87.84	28.02	1297.47	2214.87	58.51	2220.49	2214.87	88.49	0.17	MWD	6-axis
126	2820.22	70.49	88.27	28.69	1307.03	2241.92	59.43	2247.52	2241.92	88.48	0.15	MWD	6-axis

126	2820.22	70.49	88.27	28.69	1307.03	2241.92	59.43	2247.52	2241.92	88.48	0.15	MWD	6-axis
127	2849.03	70.21	88.69	28.81	1316.71	2269.05	60.15	2274.64	2269.05	88.48	0.17	MWD	6-axis
128	2876.04	70.13	89.20	27.01	1325.88	2294.46	60.62	2300.05	2294.46	88.49	0.18	MWD	6-axis
129	2904.05	71.38	88.95	28.01	1335.11	2320.90	61.04	2326.49	2320.90	88.50	0.45	MWD	6-axis
130	2931.57	72.04	88.48	27.52	1343.75	2347.03	61.63	2352.61	2347.03	88.50	0.29	MWD	6-axis
131	2957.82	72.11	88.37	26.25	1351.82	2372.01	62.32	2377.58	2372.01	88.50	0.05	MWD	6-axis
132	2988.58	72.86	87.28	30.76	1361.08	2401.34	63.43	2406.89	2401.34	88.49	0.42	MWD	6-axis
133	3016.69	72.05	87.25	28.11	1369.56	2428.14	64.71	2433.66	2428.14	88.48	0.29	MWD	6-axis
134	3044.23	71.27	87.17	27.54	1378.22	2454.27	65.98	2459.77	2454.27	88.46	0.28	MWD	6-axis
135	3072.08	71.29	87.84	27.85	1387.16	2480.64	67.13	2486.12	2480.64	88.45	0.23	MWD	6-axis
136	3100.54	70.27	88.02	28.46	1396.53	2507.51	68.10	2512.98	2507.51	88.45	0.36	MWD	6-axis
137	3128.49	69.94	88.36	27.95	1406.04	2533.80	68.93	2539.25	2533.80	88.44	0.16	MWD	6-axis
138	3156.30	70.71	88.09	27.81	1415.40	2559.98	69.74	2565.42	2559.98	88.44	0.29	MWD	6-axis
139	3184.71	71.86	87.90	28.41	1424.52	2586.89	70.68	2592.31	2586.89	88.44	0.41	MWD	6-axis
140	3197.86	72.24	87.73	13.15	1428.57	2599.40	71.16	2604.81	2599.40	88.43	0.31	MWD	6-axis
141	3220.00	72.50	87.60	22.14	1435.28	2620.50	72.02	2625.90	2620.50	88.43	0.13	Projection TD	

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Company: **Esso Australia Ltd.**

Well: **TNA A-31**

Field: **Tuna**

Rig: **ISDL 453**

State: **Victoria**

IDEAL services from **Anadrill**

**GeoVISION Resistivity
1:500 Measured Depth
Recorded Mode Log**

Schlumberger