Schlumberger

Company: **ESSO Australia Pty Ltd**

8.5 in. Section

Well: **FTA A10AST1**

Field: **Fortescue**

Rig: **ISDL 175** State: **Victoria**

Rig: ISDL 175
Field: Fortescue
Location: Bass Strait
Well: FTA A10AST1
Company: ESSO Australia Pty Ltd

VISION Service
1:500 Measured Depth
Recorded Mode Log

Location

Total depth:	4410.3 m
Spud date:	23–Jul–07
Runs:	2 To 2

Elevation

K.B.	Top Drive
G.L.	–69.0 m
D.F.	42.5 m

Permanent datum: Mean Sea Level Elev.: 0.0 m
Log measured from: Drill Floor 42.5 m above Perm. datum
Depth reference: Driller's Depth

Service Order no.	X = E 611,592.48 m	Longitude Latitude
07ASQ0018	Y = N 5,748,242.46 m	E 148° 16' 41.149" S 38° 24' 25.529"

Depth logged: 2920.0 m To 4400.3 m
Date logged: 29–Jul–07 To 01–Aug–07
Mag decl: 13.210° deg.
Mag dip: –68.862° deg.
Other services: See Remarks

Bore hole record

Hole size	from	to
8.5 in.	2780.0 m	4410.3 m

Casing record

Size	Density	from	to
9.63 in.	43.5 lb/ft	21.0 m	2780.0 m

Mud record

Type	from	to
Accolade SBM	2780.0 m	4410.3 m

Borehole deviation record

Min	Max	from	to
56.52 deg	66.41 deg.	2780.0 m	2960.0 m
61.15 deg	66.89 deg.	2960.0 m	4410.3 m

Surface equipment

Unit	Esso Office Unit
Depth system	PDA

Software record

IDEAL Wis	ID12_0c_11		
SPM	hspm12_0c_04		
LWD	See Remarks		
MWD	See Remarks		

Bit Run Summary

Run number	2		
Bit size	8.5	in.	
Bit start depth	2958.0	m	
Bit end depth	4410.3	m	
Top interval logged	2920.0	m	
Bottom interval logged	4400.3	m	
Begin log: time	15:40		
Begin log: date	29–Jul–07		
End log: time	21:18		
End log: date	01–Aug–07		
Mud data			
Depth	4410.3	m	
Type	Accolade SBM		
Mud weight	11.3	ppg	
Solids	16.6	%	
Chlorides	47,966	mg/L	
Rm	n/a	ohm.m@°C	
Rmf	n/a	ohm.m@°C	
Rmc	n/a	ohm.m@°C	

Potassium	%	n/a									
Environmental data											
GR											
Mud weight	ppg	11.3									
Bit size	in.	8.5									
Resistivity											
Neutron porosity											
Hole Size	in.	8.5									
Mud weight	ppg	11.3									
Temperature	ºC	100									
Mud salinity	ppk	59.4									
Formation salinity		n/a									
Recording rate 1	SEC	5 (ADN, SON)									
Recording rate 2	SEC	6 (ARC)									
Filtering GR		3 pts									
Filtering density		3 pts									
Filtering Neutron		3 pts									
Company representative		G. Campbell	R. Spence	M. Calcicutt							
Schlumberger D&M Personnel		B. Pattarakorn	A. Kohli	M. Lu	C. Cocks	M. How					

DISCLAIMER

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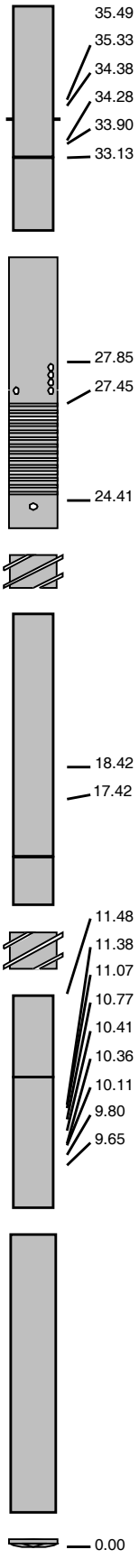
OTHER SERVICES FOR RUN2	OTHER SERVICES FOR RUN	OTHER SERVICES FOR RUN
Directional Drilling Directional Surveys Annular Pressure & Temperature Shock & Vibrations		
REMARKS: RUN NUMBER 2	REMARKS: RUN NUMBER	REMARKS: RUN NUMBER
Depth is referenced to Driller's Depth. Gamma ray readings are corrected for mud weight, tool size and bit size. Resistivity is borehole compensated and environmentally corrected. Neutron Porosity is corrected for the effects of borehole size (bit size), temperature, mud salinity and mud hydrogen index (a factor of mud weight, mud temperature and pressure). Neutron Porosity is calculated using a limestone matrix density of 2.71 g/cm3. Delta–T is borehole compensated. POOH due to reaching TD of FTA A10AST1.		

EQUIPMENT DESCRIPTION

RUN2	RUN	RUN
DOWNHOLE EQUIPMENT		

DOWNHOLE EQUIPMENT



6–3/4" adnVISION*
DHS: V8.3A02
BladeOD: 8.17""
S/N: AD41

37.31

6–3/4" sonicVISION*
DHS: V6.6B04
S/N: 649

31.12

8–3/8" ILS
SN#S–31746–1

23.66

6–3/4" TeleScope*
MDC: VL09
MEC: 280
MDI: 2102
MVC: 114

22.77

8–3/8" ILS
SN#OSS0701135

14.74

6–3/4" arcVISION*
DHS: V9.3B1.3
S/N: 1191

13.73

6–3/4" PowerDrive Xceed*
S/N: 111

7.88

8–1/2" Reed–Hycalog PDC Bit
S/N: 215733

0.22

Maximum string diameter 8.50 in.

All lengths in Meters

Variable Name	Variable Description	Run Name & Value
Run Number		2
General Information		
BHT_RM	Bottom Hole Temperature (RM)	100.000000
BSAL_RM	Mud Salinity (RM)	59.400000
BS_RM	Bit Size (RM)	8.500000
COEF_M	User Defined FEXP in Clean Sand	1.650000
C_WS	Overpressure correction to Sw and M	1.000000
FEXP	Formation Factor Exponent(RM)	2.000000
FNUM	Formation Factor Enumerator(RM)	1.000000
FPHI_RM	Formation Factor Porosity Source (RM)	XPLOT
MST_RM	Mud Sample temperature (RM)	20.000000
MW_RM	Mud Weight (RM)	11.300000
OBMF_RM	Oil Based Mud (RM)	YES
RHOF_RM	Mud Filtrate Density (RM)	1.000000
RHOM_RM	Matrix density (RM)	2.710000
RMS_RM	Resistivity of Mud Sample (RM)	1000.000000
RWA_COMP_M	Rwa computation model	BASIC
RWA_DEN_AD	Rwa Density Input ADN	RHOB
RWA_DEN_CD	Rwa Density Input CDN	RHOB
RWA_DEN_IN	Rwa Density Input	RHOB
RWA_FORM_M	Rwa computation formation model	CLASTIC
RWA_RES_IN	Rwa computation resistivity input	RT
RWS_RM	Resistivity of Connate Water (RM)	1.000000
SHT_RM	Surface Hole Temperature (RM)	
TD_RM	Total Measured Depth (RM)	4410.000000
TWS_RM	Temperature of Connate Water (RM)	23.000000
VF_ILLI	Fraction of illite in shales	0.500000
VF_KAOL	Fraction of kaolinite in shales	0.500000
VF_MONT	Fraction of montmorillonite in shales	0.000000
XPDM_RM	Cross plot density porosity multiplier	0.675000
XPNM_RM	Cross plot neutron porosity multiplier	0.325000
ARC		
LWD_RM/STATION_FILE/PARAMETERStation Time-frame file name		Station
A12A	ARC Air Cal Attenuation From T1 at 2 MHz	8.454470
A14A	ARC Air Cal Attenuation From T1 at 400 KHz	8.428760
A22A	ARC Air Cal Attenuation From T2 at 2 MHz	6.487210
A24A	ARC Air Cal Attenuation From T2 at 400 KHz	6.520190
A32A	ARC Air Cal Attenuation From T3 at 2 MHz	5.081830
A34A	ARC Air Cal Attenuation From T3 at 400 KHz	5.049050
A42A	ARC Air Cal Attenuation From T4 at 2 MHz	4.393750
A44A	ARC Air Cal Attenuation From T4 at 400 KHz	4.421190
A52A	ARC Air Cal Attenuation From T5 at 2 MHz	3.633010
A54A	ARC Air Cal Attenuation From T5 at 400 KHz	3.610840
ABNT	Abnormal Transmitter Indicator	No_Tx_Failed
ADHS	ARC Down Hole Software Version	No_Tx_Failed
ANISO_COMP	Anisotropy Computation Option	YES
APICG	ARC5 Gamma Ray Gain Factor	1.070470
APIG	ARC Gamma Ray API Gain Factor	-1.000000
ATMP_ARC	ARC Select Temperature Channel	Annulus_Temp
ATRN	ARC Tool Run Number	2
ATSN	ARC Tool Serial Number	Annulus_Temp
AZMF	Formation DIP Azimuth	0.000000
BH_COMPUTE	Borehole Inversion Computation Option	YES
CALG	ARC Gamma Ray Cal Gain Factor	1.070470
CALI_SLCT_	ARC Caliper Selection	BITSIZE
CDPTH_ARC	Process Start Depth	100.000000
DIELEC_COM	Dielectric Computation Option	YES
DIPF	Formation DIP Angle	0.000000
ERRCT	Percentage Error Cutoff	4.500000
GRSH	GR Shale (Invasion Computation Cutoff)	1000.000000
HIGH_BLEND	High Resistivity Threshold for Blending	2.000000
INCLIN_B0	ARC Bias Constant (mg)	0.000000
INCLIN_B1	ARC Bias First-order Coefficient (mg/degC)	0.000000
INCLIN_B2	ARC Bias Secod-order Coeeficient (mg/degC)	0.000000
INCLIN_B3	ARC Bias Third-order Coeeficient (mg/degC)	0.000000
INCLIN_C0	ARC Current Scale Factor Constant (mA/g)	1.000000
INCLIN_C1	ARC Scale First-order Coeeficient (mA/g/degC)	0.000000
INCLIN_C2	ARC Scale Second-order Coeeficient (mA/g/degC)	0.000000
INCLIN_C3	ARC Scale Third-order Coeeficient (mA/g/degC)	0.000000
INVAS_COMP	Invasion Computation Option	YES
JSD_ARC	ARC Acquisition start date	YES
KPER	Potassium Concentration (RM)	0.000000
LOW_BLEND	Low Resistivity Threshold for Blending	1.000000
MSWS	ARC Wizard Model Switch Window	5.000000
MULTIEFFEC	Multi Effect Option	YES
P12A	ARC Air Cal Phase-Shift From T1 at 2 MHz	1.806140
P14A	ARC Air Cal Phase-Shift From T1 at 400 KHz	-0.319793
P22A	ARC Air Cal Phase-Shift From T2 at 2 MHz	-1.722540
P24A	ARC Air Cal Phase-Shift From T2 at 400 KHz	0.224298
P32A	ARC Air Cal Phase-Shift From T3 at 2 MHz	1.739660
P34A	ARC Air Cal Phase-Shift From T3 at 400 KHz	-0.287066
P42A	ARC Air Cal Phase-Shift From T4 at 2 MHz	-1.763690
P44A	ARC Air Cal Phase-Shift From T4 at 400 KHz	0.206005
P52A	ARC Air Cal Phase-Shift From T5 at 2 MHz	1.719260
P54A	ARC Air Cal Phase-Shift From T5 at 400 KHz	-0.300926
POFFSET_AR	ARC: Pressure Offset	0.000000
PRTD	Preferred Resistivity Log for Rt Display while Multi-Effects	P34B
PSOF_ADJ_T	ARC: User Input Phase offset	0.000000

RESTIK	ARC resistivity tick source	Phase
SHIG	ARC High Shock Risk Level	0.500000
SHT_RM	Ground Level Temperature (Mud-Line When Offshore) (RM)	50.000000
SMED	ARC Medium Shock Risk Level	0.330000
SMIN	ARC Minimum Shock Risk Level	0.160000
SUPD	ARC Real Time Shock Update Rate	30.000000
TCODE_ARC	ARC Tool File Code	30.000000
TSIZ_ARC	ARC Tool Size	6.750000
UNIFORM_CO	Uniform Rock Option	YES
VERS_ARC	ARC Down hole software version Number	9.300000
WRK	Way to Report Potassium Concentration (RM)	K_by_Wgt_%

ISONIC

FP_SD	First Sample delay	400.00
STC_CF	Center frequency of Filter	13.00
STC_BW	Bandwidth (kHz)	Default
STC_RWI	Receiver waveform ignored	None
PM_TOFF	Tool Time offset from surface system	0.00
DT_COH	Delta-T Coherence Cutoff Value	0.70
PPC_PF	Porosity Formula	Raymer-Hunt
PPC_PS	Sonic Porosity Source	DTRA
PPC_MDT	Matrix Delta-T	47.60
PPC_FDT	Fluid Delta-T	189.00

ADN

ADN_CHASSI	ADN Chassis Type String	ADN
ADN_COLLAR	ADN Collar Type String	ADN
ADN_STAB_S	ADN Stabilizer Type String	ADN
ALPHA_COMP	Perform Density Enhanced Vertical Resolution process ?	YES
ALPHA_COMP	Perform Neutron Enhanced Vertical Resolution process ?	YES
AVE_ADN	ADN/Array Channels: perform averaging(RM) :	YES
A_DHS	ADN Down Hole Software Version String	YES
CHI_RM	Caliper High limit from BS (RM)	3.000000
CLO_RM	Caliper Low limit from BS (RM)	0.000000
DEVI	Well Section Deviation	56.070000
DTIK_SEL	ADN: Density Tick Channel Name	LSAZ
DTMUD	Delta-T for Mud	216.800003
DYN_IMG_CO	Generate Dynamic Normalized Image?	NO
ECC_CORR_A	Perform Eccentering Correction for TNPH?	YES
ENVCOR	Neutron Quadrant Processing: Environmental Correction?	YES
EVRL	EVR Process averaging number of samples (RM)	49
FCD	Future Casing (Outer) Diameter	0.000000
GCSE	Generalized Caliper Selection	BS
HPS	ADSE-EB (High Pressure Inconel Chassis)?	NO
IBS	Intergal Blade Stabilizer Collar?	YES
IDQT	Image Derived Quality Threshold	2.000000
IHVS	Integrated Hole Volume Start Value(RM)	0.000000
IMAGE_MAX_	Image SOA (Quadrant) Right Scale	2.500000
IMAGE_MAX_	Image PEF(Segment) Right Scale	6.000000
IMAGE_MAX_	Image RHOB(Segment) Right Scale	2.650000
IMAGE_MIN_	Image SOA (Quadrant) Left Scale	0.000000
IMAGE_MIN_	Image PEF(Segment) Left Scale	2.000000
IMAGE_MIN_	Image RHOB(Segment) Left Scale	2.050000
JSD_ADN	ADN Acquisition start date	2.050000
LITHO_TYPE	Lithology (RM)	LIME
N1FTU_6_RM	ADN: Neutron Bank 1 Far Tubes used :	1-2-3
N2FTU_6_RM	ADN: Neutron Bank 2 Far Tubes used :	1-2-3
NNTU_RM	ADN Neutron Near Banks Used	1-2
NTIK_SEL	ADN: Neutron Tick Channel Name	FR11
SOCNL	Standoff Distance of the CNL Tool	1.000000
SSIZ_ADN	ADN Stabilizer Size	8.170000
STOH	ADN Density Top of Hole Sector (Left Boundary):	SECTOR_0
TRPM_RM	Average Tool Rotational Speed	20.000000
USMIN_RM	ADN:Minimum Ultrasonic standoff (RM)	0.300000
USWF_RM	ADN:Process Ultrasonic Waveform?	YES
VERS_ADN	ADN Downhole Software Version	8.300000
WSDI	Window Size of Dynamic Normalization Image	15.000000

IDEAL Version: ID12_0C_11

IDF

ARC6A-AA **id12_0c_01** **ADN** **id12_0c_01**

Format: VISION Service RM Log **Vertical Scale: 1:500** **Graphics File Created: 08-Aug-2007 11:43**

PIP SUMMARY

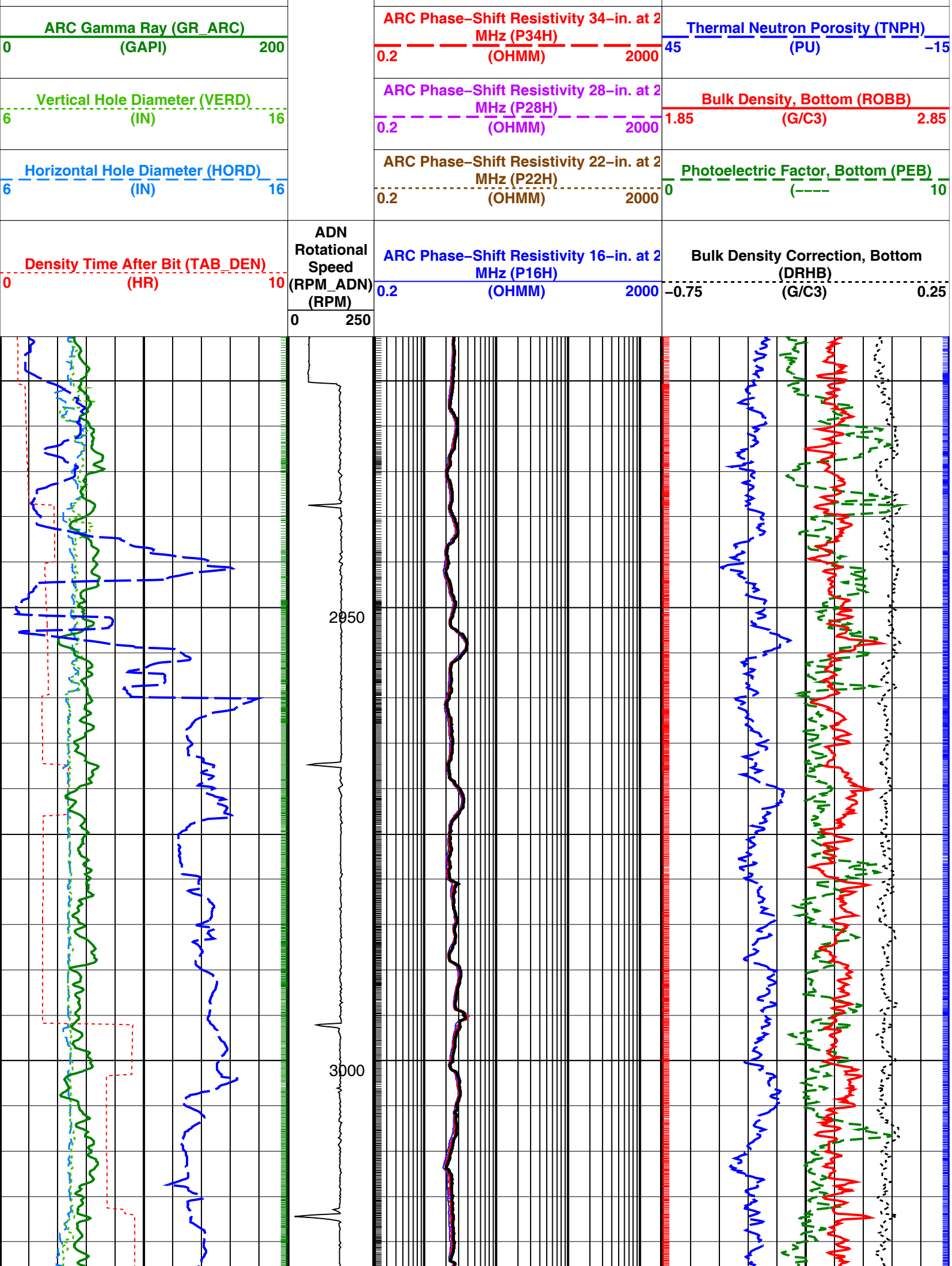
Density Samples

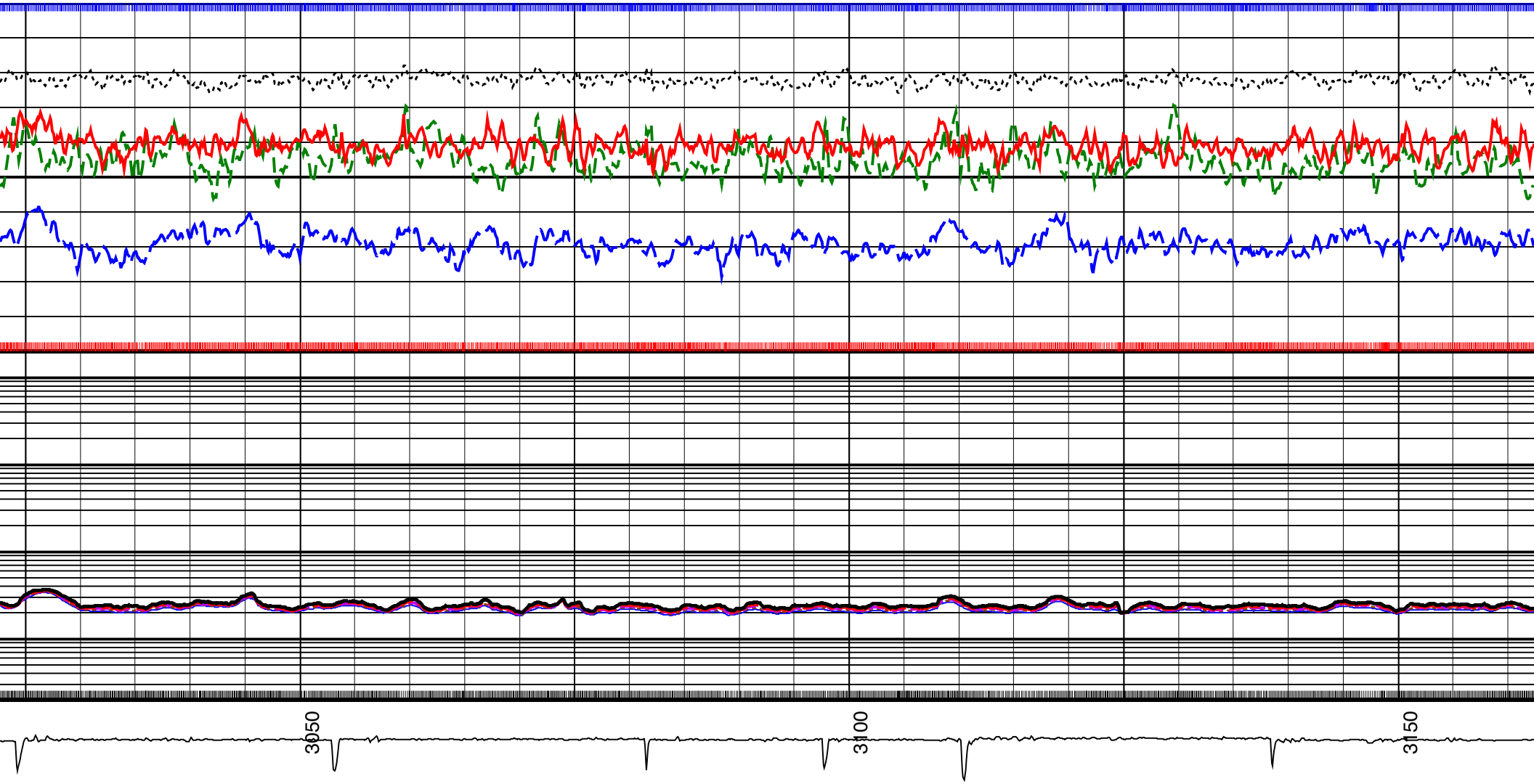
Neutron Samples

ARC Gamma Ray Samples

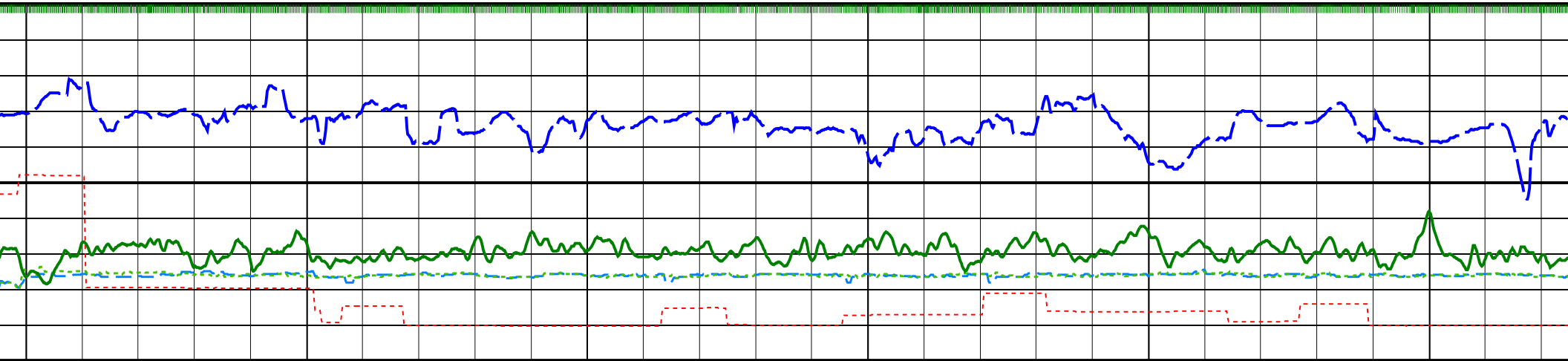
ARC Resistivity Samples

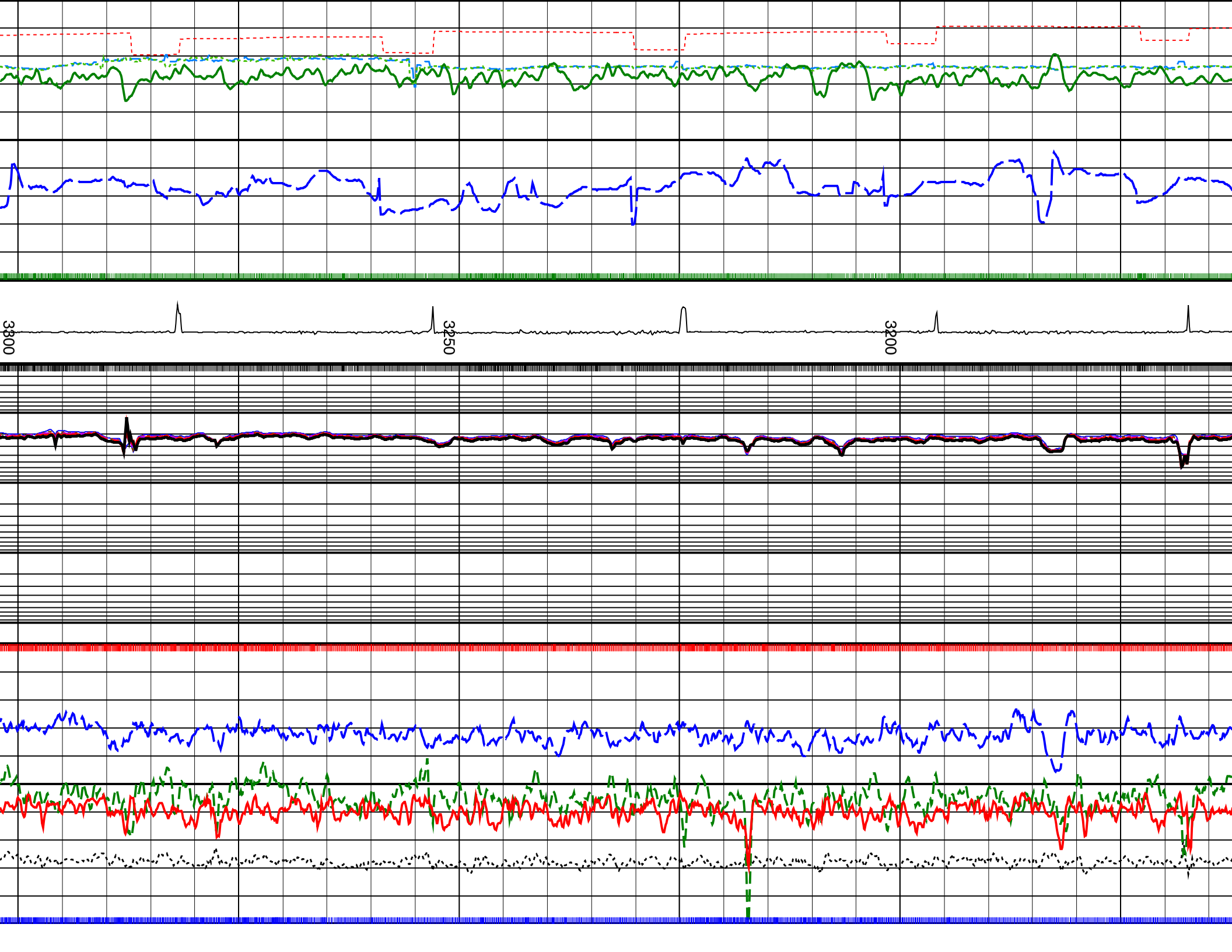
Rate of Penetration, Averaged over Last 5ft (ROP5_RM)			ARC Phase-Shift Resistivity 40-in. at 2 MHz (P40H)		
200	(M/HR)	0	0.2	(OHMM)	2000


ARC Gamma Ray (GR_ARC)
0
(GAPI)
200
Vertical Hole Diameter (VERD)
6
(IN)
16
Horizontal Hole Diameter (HORD)
6
(IN)
16
Density Time After Bit (TAB_DEN)
0
(HR)
10
ADN Rotational Speed (RPM_ADN)
(RPM)
0
250
ARC Phase–Shift Resistivity 34–in. at 2 MHz (P34H)
0.2
(OHMM)
2000
ARC Phase–Shift Resistivity 28–in. at 2 MHz (P28H)
0.2
(OHMM)
2000
ARC Phase–Shift Resistivity 22–in. at 2 MHz (P22H)
0.2
(OHMM)
2000
ARC Phase–Shift Resistivity 16–in. at 2 MHz (P16H)
0.2
(OHMM)
2000
Thermal Neutron Porosity (TNPH)
45
(PU)
–15
Bulk Density, Bottom (ROBB)
1.85
(G/C3)
2.85
Photoelectric Factor, Bottom (PEB)
0
(-----
10
Bulk Density Correction, Bottom (DRHB)
–0.75
(G/C3)
0.25
2950
3000



3050
3100
3150

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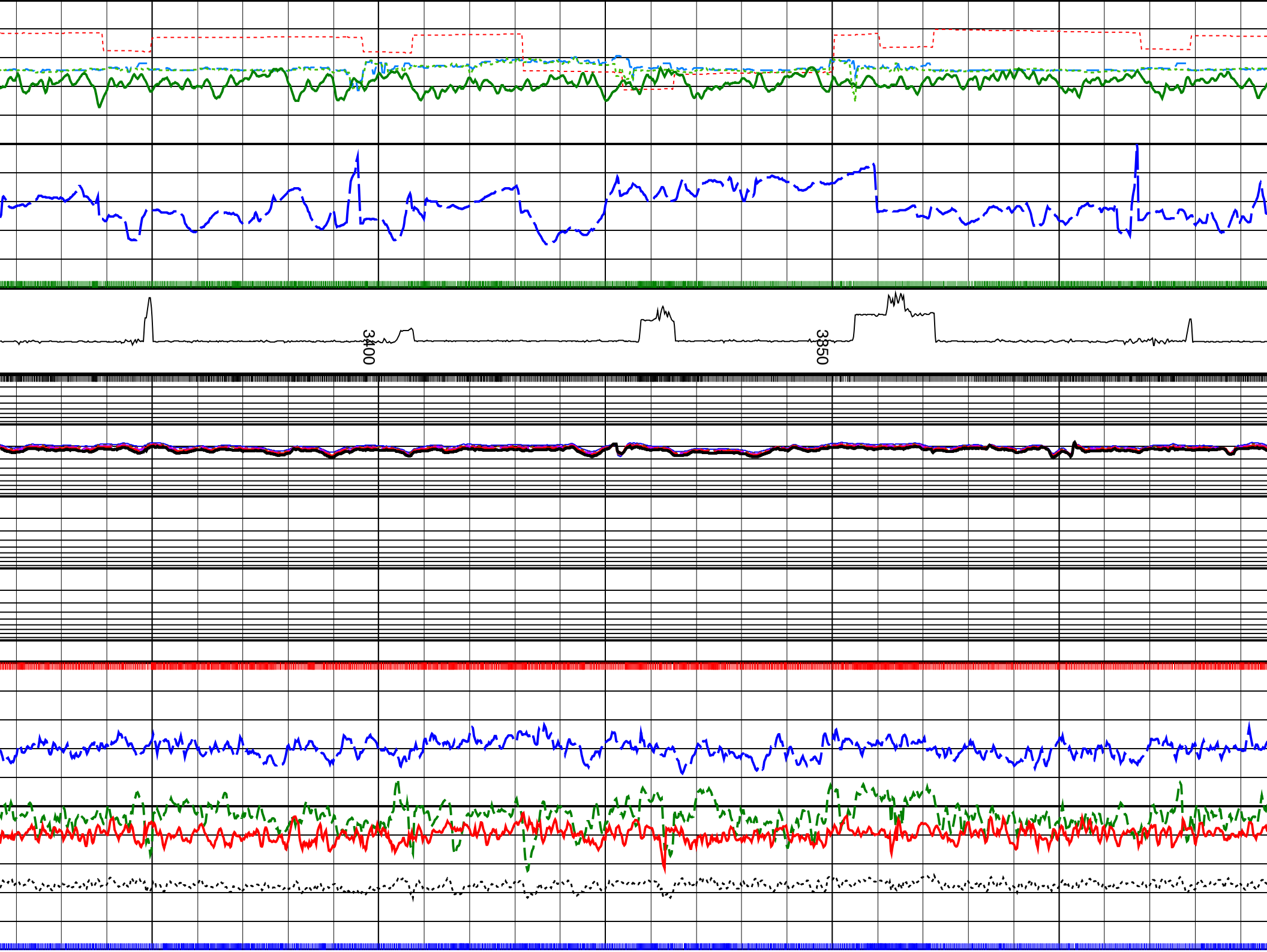
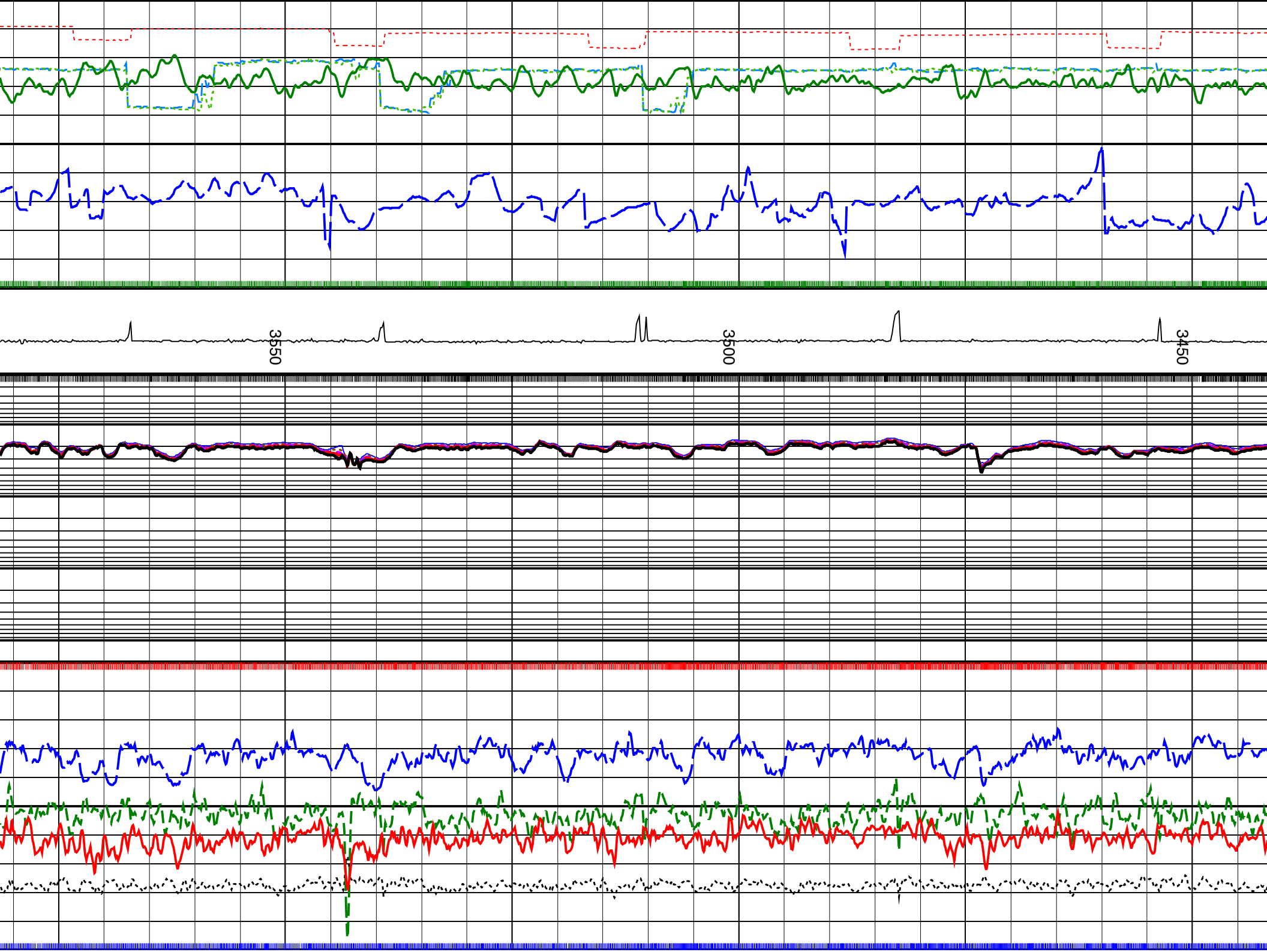
3250
3200


3400
3850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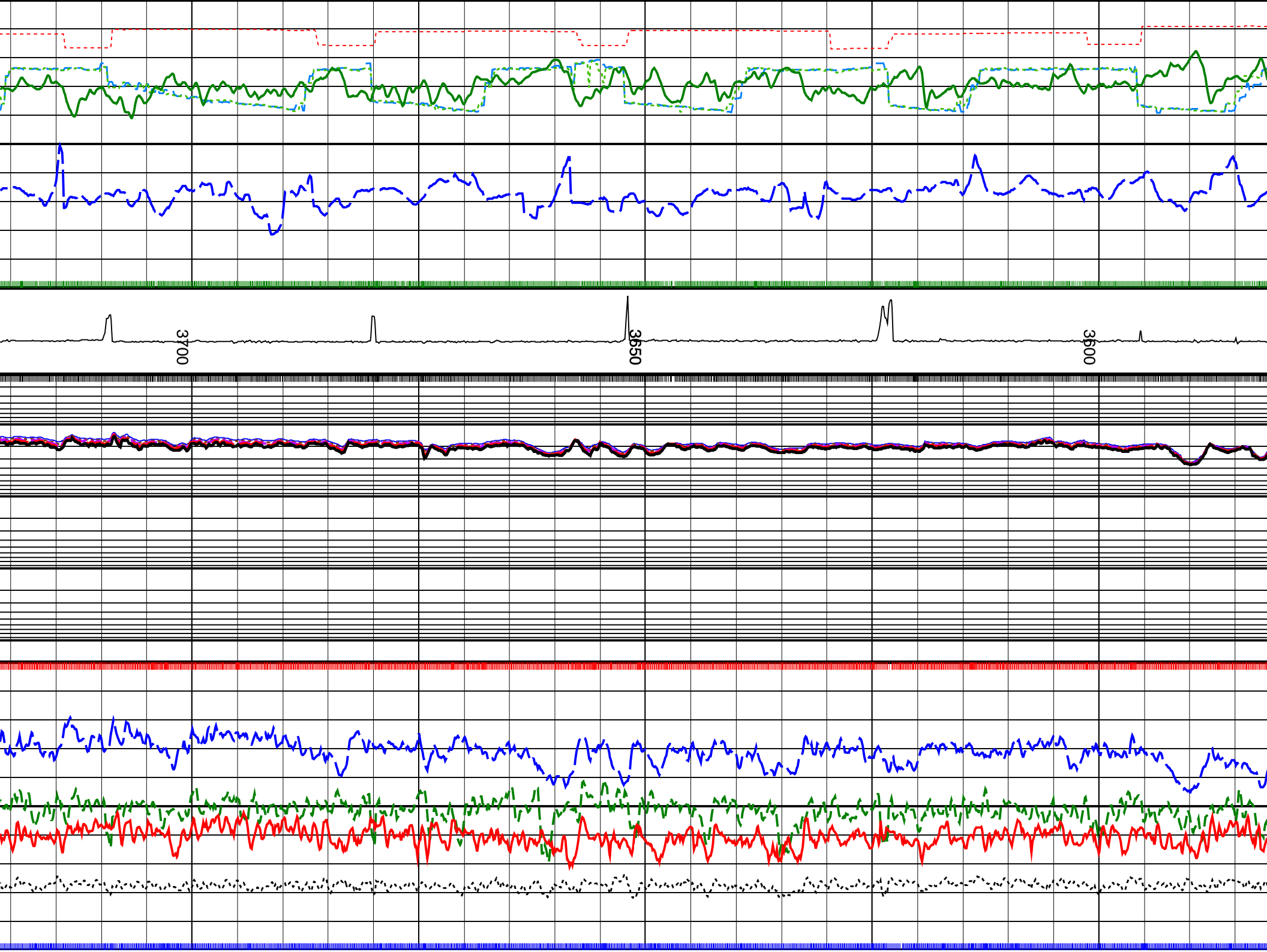
3500
3450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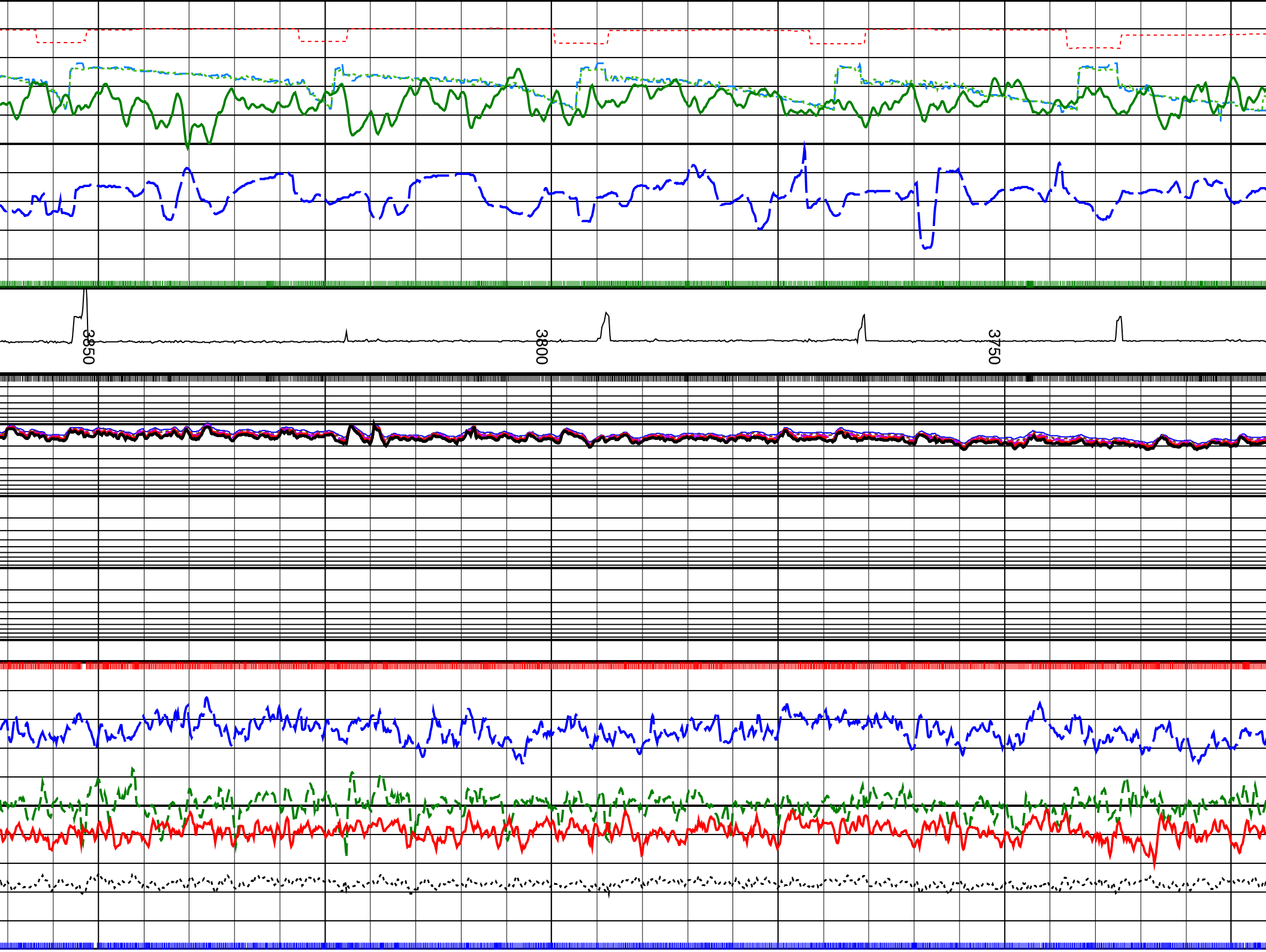
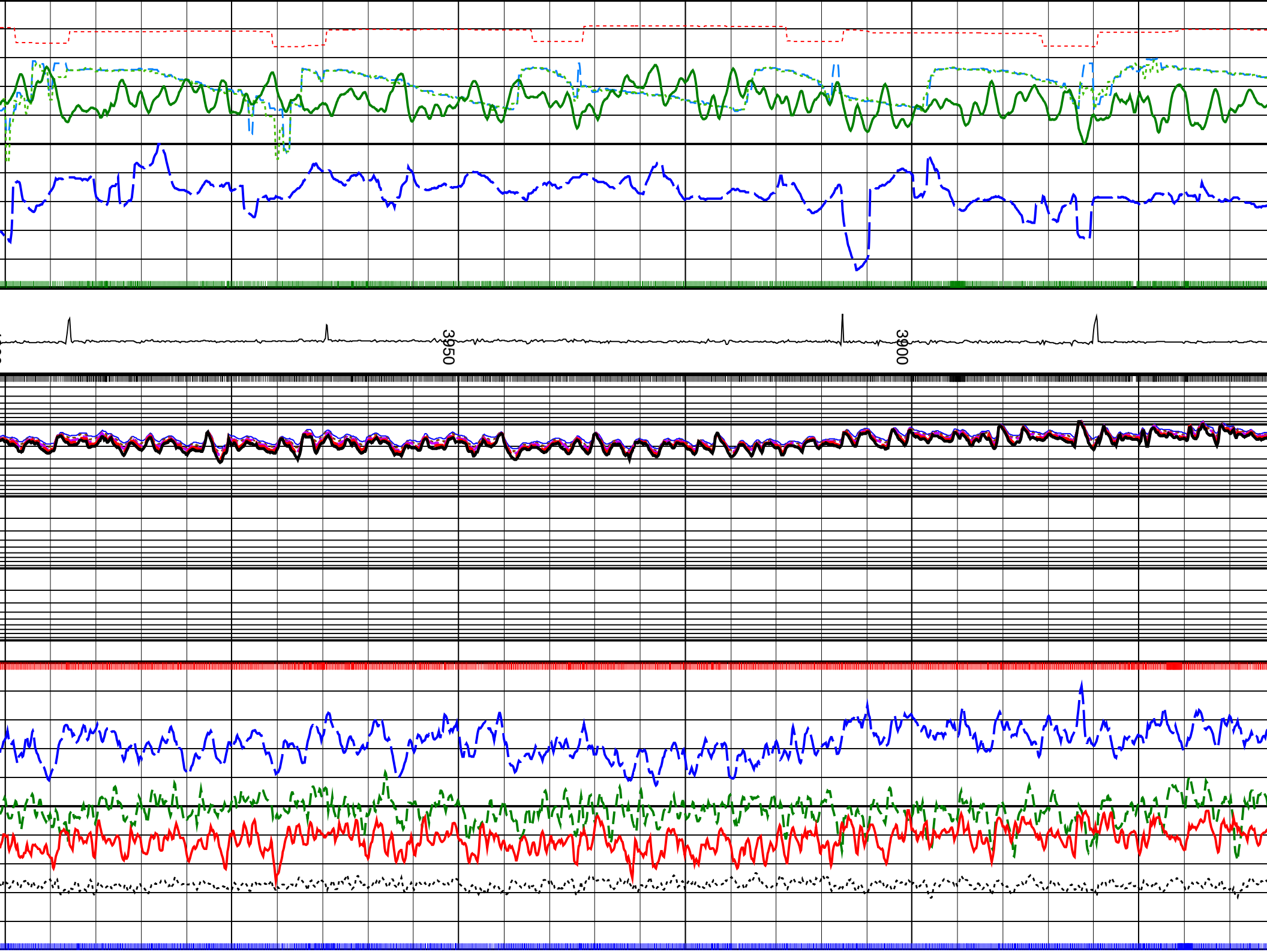
3650
3600


3850
3800
3750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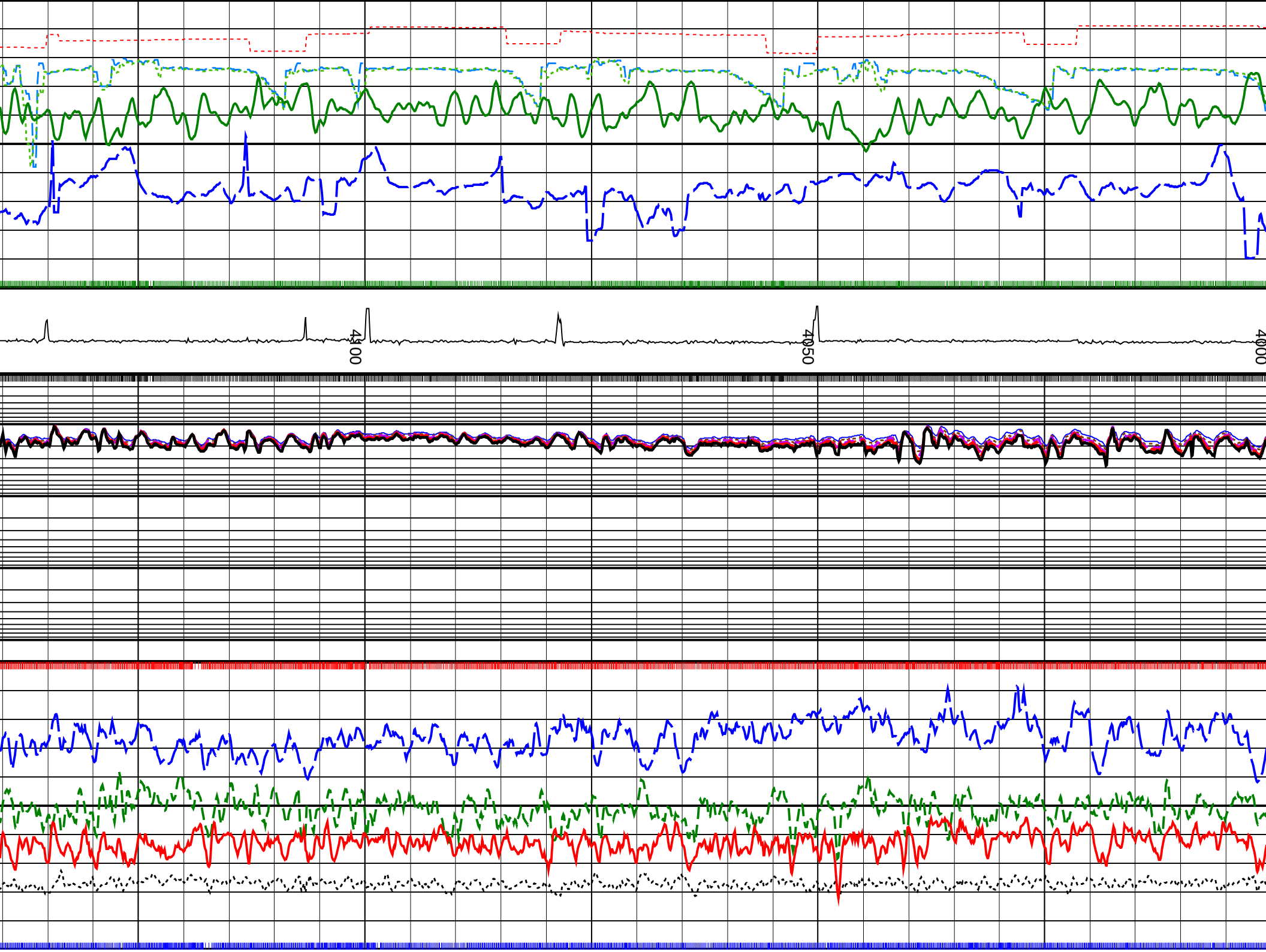
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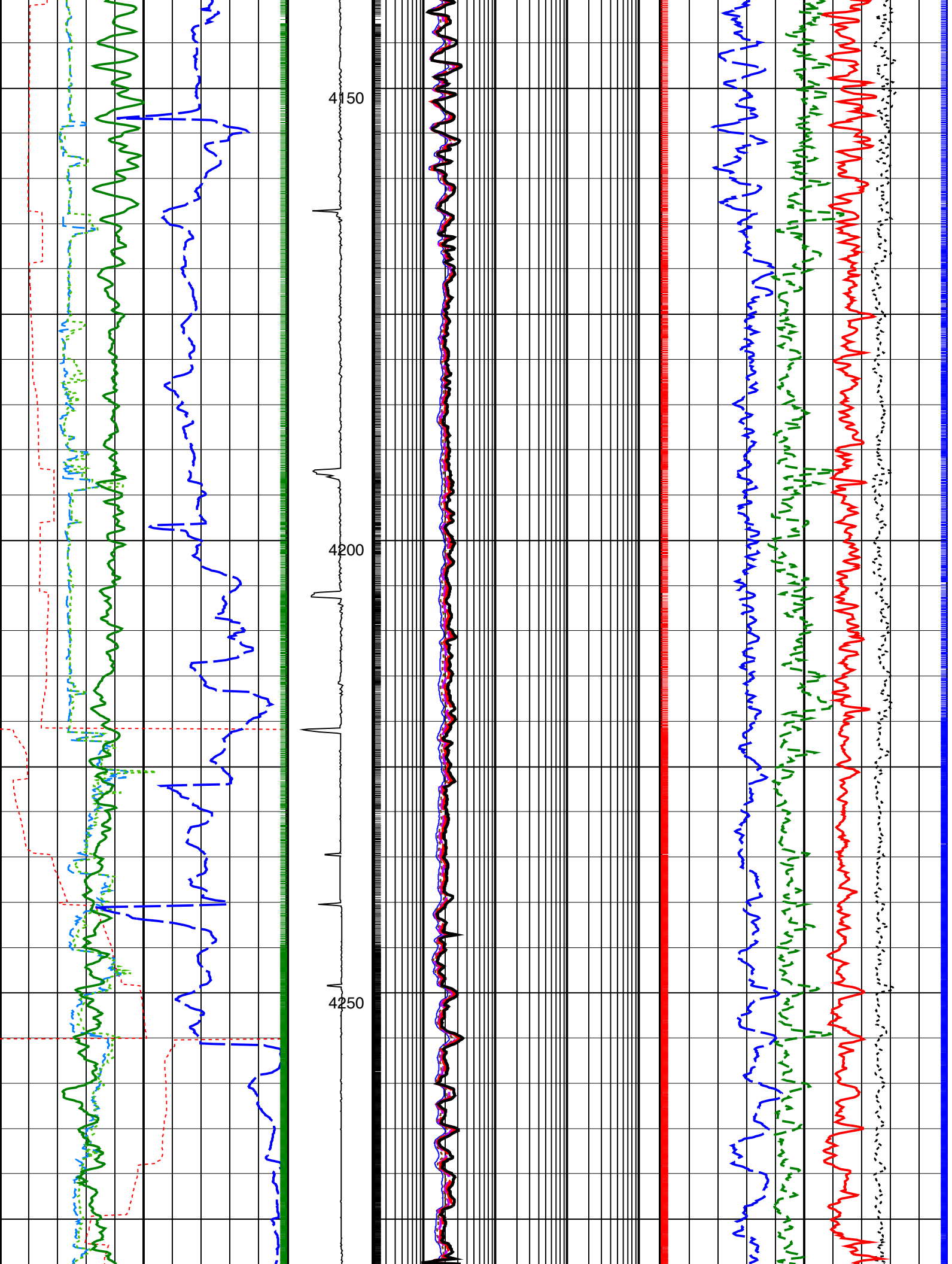
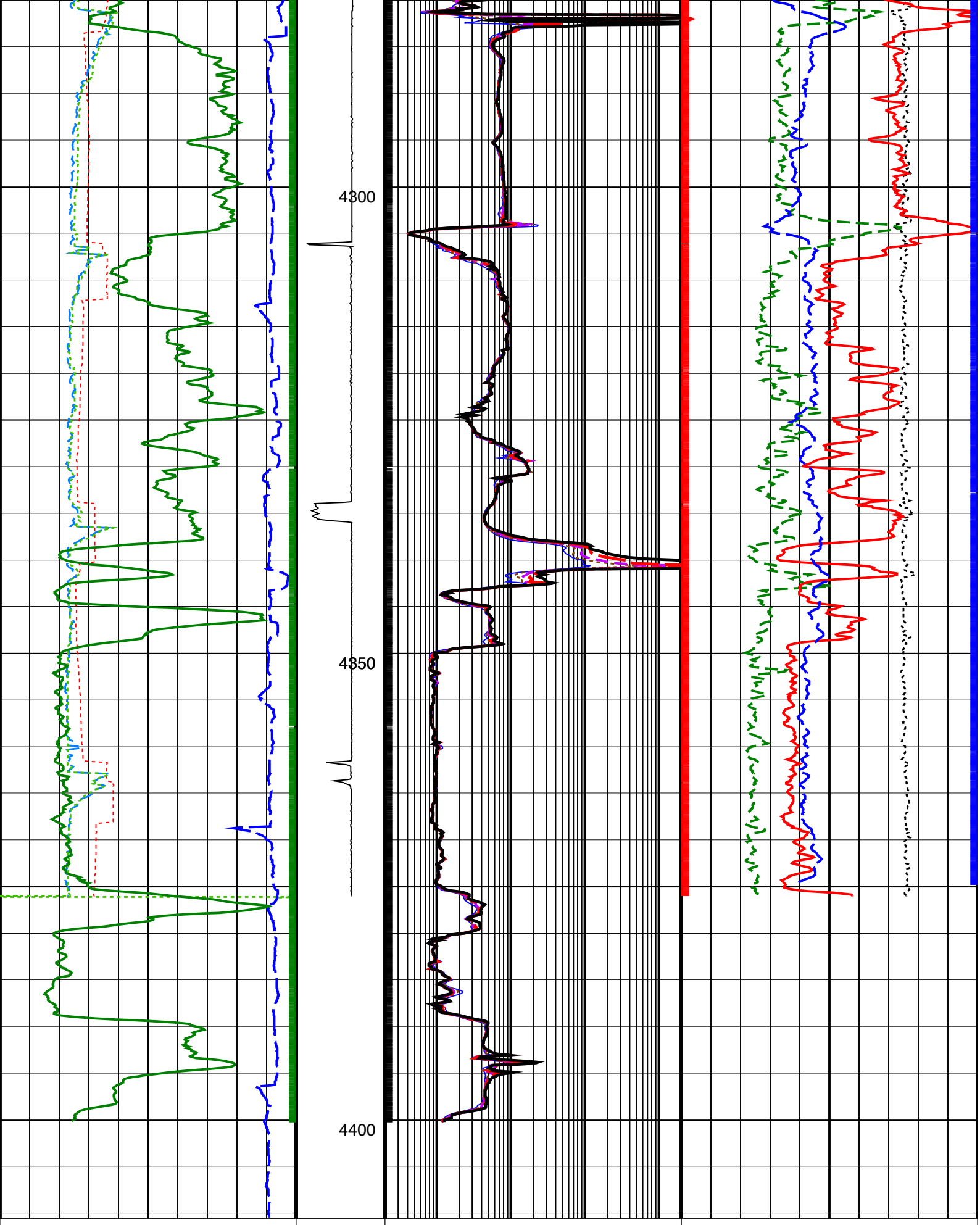
4050
4000


4150
4200
4250



Density Time After Bit (TAB_DEN)
0 (HR) 10

ADN Rotational Speed (RPM_ADN) (RPM)

ARC Phase-Shift Resistivity 16-in. at 2 MHz (P16H)
0.2 (OHMM) 2000

Bulk Density Correction, Bottom (DRHB)
-0.75 (G/C3) 0.25

0 250 (RPM)		
Horizontal Hole Diameter (HORD) 6 (IN) 16	ARC Phase–Shift Resistivity 22–in. at 2 MHz (P22H) 0.2 (OHMM) 2000	Photoelectric Factor, Bottom (PEB) 0 (---- 10
Vertical Hole Diameter (VERD) 6 (IN) 16	ARC Phase–Shift Resistivity 28–in. at 2 MHz (P28H) 0.2 (OHMM) 2000	Bulk Density, Bottom (ROBB) 1.85 (G/C3) 2.85
ARC Gamma Ray (GR_ARC) 0 (GAPI) 200	ARC Phase–Shift Resistivity 34–in. at 2 MHz (P34H) 0.2 (OHMM) 2000	Thermal Neutron Porosity (TNPH) 45 (PU) –15
Rate of Penetration, Averaged over Last 5ft (ROP5_RM) 200 (M/HR) 0	ARC Phase–Shift Resistivity 40–in. at 2 MHz (P40H) 0.2 (OHMM) 2000	

PIP SUMMARY

Density Samples

Neutron Samples

ARC Gamma Ray Samples

ARC Resistivity Samples

IDEAL Version: ID12_0C_11

IDF

ARC6A–AA id12_0c_01 **ADN** id12_0c_01

6.75–in. Azimuthal Density Neutron / Equipment Identification

Primary Equipment:		
Tool Name and Serial Number	ADN6 – CA	437
Collar Type and Serial Number	ADDC – AA	
Chassis Type and Serial Number	ADSE – EA	
Stabilizer Type and Serial Number	IBS	AD41
Neutron Logging Source	NSR – M	181
Density Logging Source	GSR – J/Z	2152
Stabilizer Size	8.25 – in.	
Calibration Status	Valid	

Master: 5–Jun–2007 22:52

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		1260	Master		3103	Master		7772
	250.0 (Minimum) 4125 (Nominal) 8000 (Maximum)			700.0 (Minimum) 9350 (Nominal) 18000 (Maximum)			2500 (Minimum) 23750 (Nominal) 45000 (Maximum)	

Master: 5–Jun–2007 22:52

6.75–in. Azimuthal Density Neutron Calibration

Density: Aluminum Block

Phase	LS window 3 – Al CPS	Value	Phase	SS window 1 – Al CPS	Value	Phase	SS window 3 – Al CPS	Value
Master		190.0	Master		1596	Master		4930
	50.00 (Minimum) 725.0 (Nominal) 1400 (Maximum)			500.0 (Minimum) 4250 (Nominal) 8000 (Maximum)			1500 (Minimum) 15750 (Nominal) 30000 (Maximum)	

Master: 5–Jun–2007 22:52

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		46.17	Master		130.4	Master		560.4
	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–Jun–2007 22:52

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		1.040	Master		1.135

Master						Master		
1.024 (Minimum)	1.039 (Nominal)	1.054 (Maximum)				1.096 (Minimum)	1.126 (Nominal)	1.156 (Maximum)

Master: 5–Jun–2007 22:52

6.75–in. Azimuthal Density Neutron Calibration

Neutron: 3–Point Calibration

Phase	Far 1 tube 1 Air Point Measure CPS	Value	Phase	Far 1 tube 1 Rod Point Measure CPS	Value	Phase	Far 1 tube 1 H2O Point Measure CPS	Value
Master		22.54	Master		5.441	Master		2.677
13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)	3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)	1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)

Phase	Far 1 tube 2 Air Point Measure CPS	Value	Phase	Far 1 tube 2 Rod Point Measure CPS	Value	Phase	Far 1 tube 2 H2O Point Measure CPS	Value
Master		23.65	Master		5.587	Master		2.757
13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)	3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)	1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)

Phase	Far 1 tube 3 Air Point Measure CPS	Value	Phase	Far 1 tube 3 Rod Point Measure CPS	Value	Phase	Far 1 tube 3 H2O Point Measure CPS	Value
Master		23.24	Master		5.623	Master		2.714
13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)	3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)	1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)

Phase	Far 2 tube 1 Air Point Measure CPS	Value	Phase	Far 2 tube 1 Rod Point Measure CPS	Value	Phase	Far 2 tube 1 H2O Point Measure CPS	Value
Master		22.73	Master		5.656	Master		2.671
13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)	3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)	1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)

Phase	Far 2 tube 2 Air Point Measure CPS	Value	Phase	Far 2 tube 2 Rod Point Measure CPS	Value	Phase	Far 2 tube 2 H2O Point Measure CPS	Value
Master		24.00	Master		5.803	Master		2.779
13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)	3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)	1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)

Phase	Far 2 tube 3 Air Point Measure CPS	Value	Phase	Far 2 tube 3 Rod Point Measure CPS	Value	Phase	Far 2 tube 3 H2O Point Measure CPS	Value
Master		22.27	Master		5.432	Master		2.612
13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)	3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)	1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)

Phase	Near 1 tube 1 Air Point Measure CPS	Value	Phase	Near 1 tube 1 Rod Point Measure CPS	Value	Phase	Near 1 tube 1 H2O Point Measure CPS	Value
Master		**556.2**	**Master**		**876.7**	**Master**		**379.2**
345.0 (Minimum)	487.5 (Nominal)	595.0 (Maximum)	535.0 (Minimum)	768.8 (Nominal)	925.0 (Maximum)	230.0 (Minimum)	343.7 (Nominal)	430.0 (Maximum)

Phase	Near 2 tube 1 Air Point Measure CPS	Value	Phase	Near 2 tube 1 Rod Point Measure CPS	Value	Phase	Near 2 tube 1 H2O Point Measure CPS	Value
Master		558.1	Master		871.4	Master		378.3
345.0 (Minimum)	487.5 (Nominal)	595.0 (Maximum)	535.0 (Minimum)	768.8 (Nominal)	925.0 (Maximum)	230.0 (Minimum)	343.7 (Nominal)	430.0 (Maximum)

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6.75–in. Azimuthal Density Neutron Calibration

Neutron: Water Block Check

Phase	Far Neutron water porosity PU	Value
Master		92.72
90.00 (Minimum)	100.0 (Nominal)	125.0 (Maximum)

6.75–in. Array Resistivity Compensated / Equipment Identification

Primary Equipment:

Tool Name and Serial Number	ARC6 – BA	1708
ARC675 Calibration Status	Valid	

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6.75–in. Array Resistivity Compensated Calibration

Resistivity: Air

Phase	Phase–Shift T1	Value	Phase	Phase–Shift T2	Value	Phase	Phase–Shift T3	Value

Phase		Value
Master		1.806
	−3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum)	

Phase	Phase−Shift T5	Value
Master		−1.723
	−3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum)	

Phase	Phase−Shift T1 at 400KHz	Value
Master		1.740
	−3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum)	

Phase	Phase−Shift T4	Value
Master		−1.764
	−3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum)	

Phase	Phase−Shift T5	Value
Master		1.719
	−3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum)	

Phase	Phase−Shift T1 at 400KHz	Value
Master		−0.3198
	−3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum)	

Phase	Phase−Shift T2 at 400KHz	Value
Master		0.2243
	−3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum)	

Phase	Phase−Shift T3 at 400KHz	Value
Master		−0.2871
	−3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum)	

Phase	Phase−Shift T4 at 400KHz	Value
Master		0.2060
	−3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum)	

Phase	Phase−Shift T5 at 400KHz	Value
Master		−0.3009
	−3.900 (Minimum) 0.1000 (Nominal) 4.100 (Maximum)	

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6.75−in. Array Resistivity Compensated Calibration

Resistivity: Air

Phase	Attenuation T1	Value
Master		8.454
	6.500 (Minimum) 8.500 (Nominal) 10.50 (Maximum)	

Phase	Attenuation T2	Value
Master		6.487
	4.500 (Minimum) 6.500 (Nominal) 8.500 (Maximum)	

Phase	Attenuation T3	Value
Master		5.082
	2.500 (Minimum) 4.500 (Nominal) 6.500 (Maximum)	

Phase	Attenuation T4	Value
Master		4.394
	2.600 (Minimum) 4.600 (Nominal) 6.600 (Maximum)	

Phase	Attenuation T5	Value
Master		3.633
	1.600 (Minimum) 3.600 (Nominal) 5.600 (Maximum)	

Phase	Attenuation T1 at 400KHz	Value
Master		8.429
	6.500 (Minimum) 8.500 (Nominal) 10.50 (Maximum)	

Phase	Attenuation T2 at 400KHz	Value
Master		6.520
	4.500 (Minimum) 6.500 (Nominal) 8.500 (Maximum)	

Phase	Attenuation T3 at 400KHz	Value
Master		5.049
	2.500 (Minimum) 4.500 (Nominal) 6.500 (Maximum)	

Phase	Attenuation T4 at 400KHz	Value
Master		4.421
	2.600 (Minimum) 4.600 (Nominal) 6.600 (Maximum)	

Phase	Attenuation T5 at 400KHz	Value
Master		3.611
	1.600 (Minimum) 3.600 (Nominal) 5.600 (Maximum)	

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6.75−in. Array Resistivity Compensated Calibration

Gamma Ray: Blanket

Phase	Gamma ray factor (equals Calibration Gain multiplied by API Gain Factor) CPS	Value
Master		5.138
	2.780 (Minimum) 4.800 (Nominal) 6.000 (Maximum)	

SCHLUMBERGER

Survey report 2−Aug−2007 05:34:29 Page 1 of 3

Client.....: ESSO Australia Pty Ltd
Field.....: Fortescue

Well.....: FTA A10AST1
API number.....: 07ASQ0018
Engineer.....: BP/AK/ML

Rig:.....: ISDL 175
State:.....: Victoria

----- 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.....: -69.00 m
KB above permanent.....: Top Drive
DF above permanent.....: 42.50 m

----- Vertical section origin----------
Latitude (+N/S-).....: -1.90 m
Departure (+E/W-).....: 4.37 m

Spud date.....: 23−Jul−07
Last survey date.....: 02−Aug−07
Total accepted surveys...: 60
MD of first survey.....: 2780.00 m
MD of last survey.....: 4410.00 m

----- Geomagnetic data ----------
Magnetic model.....: BGGM version 2007
Magnetic date.....: 24−Jul−2007
Magnetic field strength..: 1199.50 HCNT
Magnetic dec (+E/W-).....: 13.21 degrees
Magnetic dip.....: -68.86 degrees

----- MWD survey Reference Criteria ---------
Reference G.....: 1000.04 mGal
Reference H.....: 1199.50 HCNT
Reference Dip.....: -68.86 degrees
Tolerance of G.....: (+/-) 2.50 mGal
Tolerance of H.....: (+/-) 6.00 HCNT
Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections -----
Magnetic dec (+E/W-).....: 13.21 degrees
Grid convergence (+E/W-).: -0.79 degrees
Total az corr (+E/W-)....: 14.00 degrees
(Total az corr = magnetic dec - grid conv)
Survey Correction Type ...:
I=Sag Corrected Inclination
M=Schlumberger Magnetic Correction
S=Shell Magnetic Correction
F=Failed Axis Correction
R=Magnetic Resonance Tool Correction
D=Dmag Magnetic Correction

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/ 100f)	Srvy tool type	Tool Corr (deg)
1	2780.00	56.52	353.72	0.00	1766.63	1941.12	1862.19	-588.22	1952.88	342.47	0.00	TIP	None
2	2787.92	59.39	352.18	7.92	1770.83	1947.82	1868.85	-589.05	1959.48	342.51	12.13	GYR	None
3	2825.40	66.41	356.27	37.48	1787.90	1981.03	1902.02	-592.36	1992.13	342.70	6.43	GYR	None
4	2855.50	65.35	356.43	30.10	1800.20	2008.31	1929.44	-594.11	2018.83	342.89	1.08	GYR	None
5	2885.20	64.56	357.26	29.70	1812.77	2034.99	1956.30	-595.59	2044.96	343.07	1.12	GYR	None
6	2898.90	63.11	357.38	13.70	1818.81	2047.17	1968.58	-596.17	2056.88	343.15	3.23	GYR	None
7	2937.15	60.27	356.53	38.25	1836.95	2080.55	2002.21	-597.95	2089.59	343.37	2.34	PUP	None
8	2953.67	60.38	356.27	16.52	1845.13	2094.80	2016.53	-598.85	2103.58	343.46	0.46	PUP	None
9	2982.87	61.15	358.04	29.20	1859.39	2120.05	2041.98	-600.12	2128.34	343.62	1.80	PUP	None
10	3011.63	63.13	0.63	28.76	1872.83	2145.09	2067.40	-600.41	2152.82	343.81	3.21	PUP	None
11	3040.02	63.90	2.08	28.39	1885.50	169.95	2092.80	-599.81	2177.06	344.01	1.62	PUP	None
12	3068.87	64.15	1.21	28.85	1898.13	2195.30	2118.73	-599.06	2201.79	344.21	0.87	PUP	None
13	3097.14	65.64	359.83	28.27	1910.13	2220.42	2144.33	-598.83	2226.37	344.40	2.10	PUP	None
14	3125.96	66.67	359.38	28.82	1921.78	2246.37	2170.68	-599.01	2251.82	344.57	1.17	PUP	None
15	3153.83	66.89	358.11	27.87	1932.77	2271.64	2196.29	-599.57	2276.66	344.73	1.30	PUP	None
16	3182.85	65.89	357.76	29.02	1944.39	2297.94	2222.86	-600.53	2302.55	344.88	1.10	PUP	None
17	3210.95	64.25	358.49	28.10	1956.23	2323.13	2248.33	-601.37	2327.37	345.03	1.92	PUP	None
18	3239.64	63.16	359.34	28.69	1968.94	2348.50	2274.05	-601.85	2352.34	345.18	1.41	PUP	None
19	3268.11	63.16	359.50	28.47	1981.80	2373.52	2299.45	-602.11	2376.97	345.33	0.15	PUP	None
20	3297.21	63.19	0.12	29.10	1994.93	2399.06	2325.42	-602.20	2402.12	345.48	0.58	PUP	None
21	3325.97	63.39	0.22	28.76	2007.85	2424.30	2351.11	-602.12	2426.98	345.64	0.23	PUP	None
22	3354.40	63.35	0.44	28.43	2020.60	2449.26	2376.52	-601.98	2451.58	345.79	0.22	PUP	None
23	3382.78	63.89	1.82	28.38	2033.21	2474.16	2401.94	-601.47	2476.10	345.94	1.45	PUP	None
24	3411.63	64.95	0.92	28.85	2045.67	2499.62	2427.95	-600.85	2501.20	346.10	1.41	PUP	None
25	3440.50	64.95	1.08	28.87	2057.89	2525.24	2454.10	-600.40	2526.48	346.25	0.15	PUP	None
26	3469.03	64.76	359.67	28.53	2070.01	2550.60	2479.93	-600.23	2551.53	346.39	1.38	PUP	None
27	**3497.85**	**64.60**	**359.00**	**28.82**	**2082.34**	**2576.26**	**2505.98**	**-600.53**	**2576.93**	**346.52**	**0.66**	**PUP**	**None**
28	**3526.23**	**64.31**	**357.54**	**28.38**	**2094.58**	**2601.56**	**2531.57**	**-601.30**	**2602.00**	**346.64**	**1.45**	**PUP**	**None**
29	3554.53	64.09	356.75	28.30	2106.89	2626.81	2557.02	-602.57	2627.06	346.74	0.80	PUP	None
30	3582.91	63.64	357.01	28.38	2119.39	2652.07	2582.46	-603.96	2652.14	346.84	0.54	PUP	None

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/ 100f)	Srvy tool type	Tool Corr (deg)
31	3610.60	63.26	357.65	27.69	2131.77	2676.61	2607.20	-605.11	2676.50	346.93	0.76	PUP	None
32	3637.87	63.58	357.68	27.27	2143.97	2700.75	2631.57	-606.10	2700.47	347.03	0.36	PUP	None
33	3667.13	64.57	358.10	29.26	2156.77	2726.78	2657.87	-607.07	2726.31	347.13	1.10	PUP	None
34	3695.23	64.37	357.93	28.10	2168.88	2751.85	2683.21	-607.95	2751.22	347.23	0.27	PUP	None
35	3724.36	64.22	358.14	29.13	2181.51	2777.80	2709.44	-608.85	2777.01	347.34	0.25	PUP	None
36	3752.52	63.45	357.51	28.16	2193.93	2802.80	2734.69	-609.81	2801.86	347.43	1.03	PUP	None
37	3780.64	62.94	358.13	28.12	2206.61	2827.63	2759.77	-610.76	2826.55	347.52	0.82	PUP	None
38	3808.97	62.90	1.05	28.33	2219.51	2852.46	2784.99	-610.95	2851.22	347.63	2.80	PUP	None
39	3837.82	63.45	1.11	28.85	2232.53	2877.68	2810.74	-610.46	2876.26	347.75	0.58	PUP	None
40	3866.50	63.89	2.35	28.68	2245.25	2902.79	2836.43	-609.68	2901.21	347.87	1.27	PUP	None
41	3894.55	64.79	1.46	28.05	2257.40	2927.48	2861.70	-608.84	2925.75	347.99	1.31	PUP	None
42	3922.77	64.66	2.71	28.22	2269.44	2952.38	2887.20	-607.92	2950.50	348.11	1.23	PUP	None
43	3951.31	64.25	3.20	28.54	2281.75	2977.41	2912.91	-606.59	2975.40	348.24	0.64	PUP	None
44	3979.33	64.15	2.89	28.02	2293.95	3001.93	2938.10	-605.25	2999.80	348.36	0.32	PUP	None
45	4008.07	64.39	1.76	28.74	2306.42	3027.17	2963.97	-604.20	3024.93	348.48	1.11	PUP	None
46	4036.03	64.95	359.78	27.96	2318.39	3051.95	2989.24	-603.86	3049.62	348.58	2.04	PUP	None
47	4064.93	65.52	357.29	28.90	2330.49	3077.86	3015.47	-604.53	3075.47	348.66	2.46	PUP	None
48	4093.51	66.09	357.87	28.58	2342.21	3103.66	3041.52	-605.63	3101.23	348.74	0.83	PUP	None
49	4121.30	65.29	357.86	27.79	2353.65	3128.72	3066.83	-606.58	3126.24	348.81	0.88	PUP	None
50	4149.87	64.69	357.13	28.57	2365.73	3154.35	3092.69	-607.71	3151.83	348.88	0.95	PUP	None
51	4178.61	64.95	356.34	28.74	2377.96	3180.15	3118.66	-609.19	3177.60	348.95	0.81	PUP	None
52	4207.11	64.15	357.06	28.50	2390.20	3205.68	3144.35	-610.67	3203.10	349.01	1.10	PUP	None
53	4235.94	64.15	357.77	28.83	2402.77	3231.37	3170.27	-611.84	3228.77	349.08	0.68	PUP	None
54	4263.05	64.28	359.31	27.11	2414.57	3255.48	3194.67	-612.46	3252.85	349.15	1.57	PUP	None
55	4291.35	64.12	359.40	28.30	2426.88	3280.57	3220.15	-612.75	3277.93	349.23	0.19	PUP	Npne
56	4319.88	64.09	358.97	28.53	2439.34	3305.87	3245.81	-613.11	3303.21	349.30	0.41	PUP	None
57	4347.72	64.15	358.85	27.84	2451.49	3330.58	3270.85	-613.59	3327.91	349.38	0.14	PUP	None
58	4376.37	63.94	358.35	28.65	2464.03	3356.01	3296.61	-614.22	3353.34	349.45	0.53	PUP	None
59	4390.93	64.09	359.36	14.56	2470.41	3368.92	3309.69	-614.48	3366.25	349.48	1.93	PUP	None
60	4410.00	64.28	0.64	19.07	2478.72	3385.79	3326.86	-614.48	3383.13	349.54	1.87	Projected to TD	

Company:	**ESSO Australia Pty Ltd**
Well:	**FTA A10AST1**
Field:	**Fortescue**
Rig:	**ISDL 175**
State:	**Victoria**

Schlumberger

8.5 in. Section

VISION Service
1:500 Measured Depth
Recorded Mode Log