



Weatherford

**COMPOSITE
DENSITY / NEUTRON / INDUCTION
LOG**

COMPANY										FUTURE PETROLEUM COMPANY									
WELL										WEST MADDIX UNIT # 9									
FIELD										MADDIX NORTH									
PROVINCE/COUNTY										COWLEY									
COUNTRY/STATE										U.S.A. / KANSAS									
LOCATION										2475 FSL & 5115 FEL									
										NE-NW-SE-SW									
SEC		TWP		RGE		Other Services													
2		33S		5E		MML													
API Number				15-035-24501				MSS											
Permit Number																			
Permanent Datum GL, Elevation 1275 feet														Elevations:		feet			
Log Measured From KB														KB		1285.00			
Drilling Measured From KB														DF		1284.00			
														GL		1275.00			
Date		21-APR-2013																	
Run Number		ONE																	
Service Order		3540413																	
Depth Driller		3600.00								feet									
Depth Logger		3600.00								feet									
First Reading		3597.00								feet									
Last Reading		228.00								feet									
Casing Driller		230.00								feet									
Casing Logger		228.00								feet									
Bit Size		7.875								inches									
Hole Fluid Type		GEL																	
Density / Viscosity		9.50		lb/USg		48.00		CP											
PH / Fluid Loss		10.50				8.80		ml/30Min											
Sample Source		FLOW LINE																	
Rm @ Measured Temp		1.90 @ 86.0								ohm-m									
Rmf @ Measured Temp		1.52 @ 86.0								ohm-m									
Rmc @ Measured Temp		2.28 @ 86.0								ohm-m									
Source Rmf / Rmc		CALC				CALC													
Rm @ BHT		1.55 @106.0				ohm-m													
Time Since Circulation		3 HOURS																	
Max Recorded Temp		106.00				deg F													
Equipment / Base		13145				OKC													
Recorded By		L. HEATON																	
Witnessed By																			

BOREHOLE RECORD					Last Edited: 21-APR-2013 18:49
Bit Size inches		Depth From feet		Depth To feet	
7.875		228.00		3600.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	228.00	24.00	

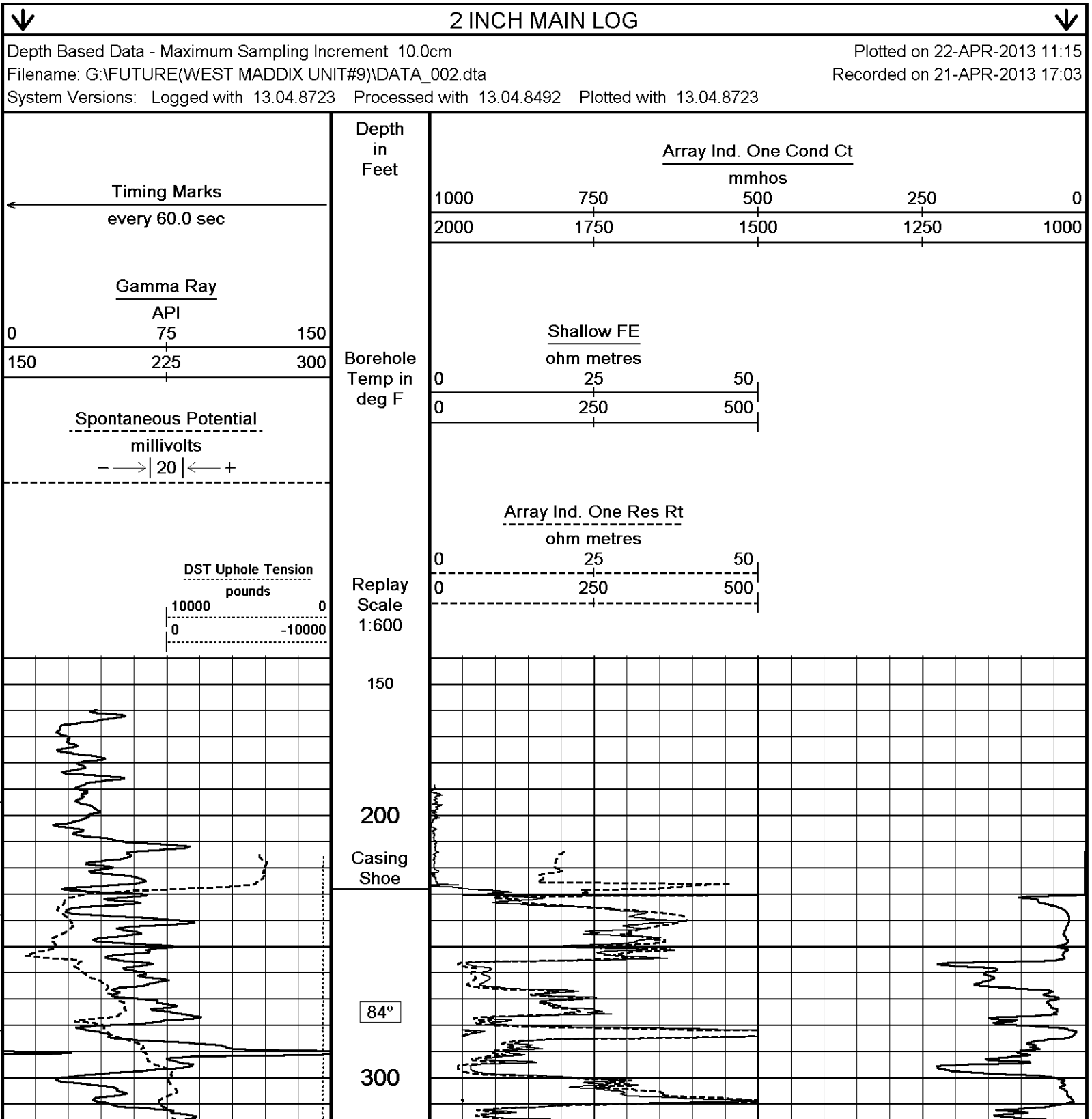
REMARKS
TOOLS RAN: SHA, MCG, MML, MDN, MPD, MFE, MSS, MAI RAN IN COMBINATION
HARDWARE: MAI: TWO 0.5 INCH STANDOFFS USED. MFE: ONE 0.5 INCH STANDOFF USED. MDN: DUAL NEUTRON BOW SPRINGS USED. MPD: 8 INCH PROFILE PLATE USED. MSS: THRE 0.5 INCH STANDOFFS USED 2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
TOTAL HOLE VOLUME FROM TD TO 228' = 1190 CU.FT. ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 228' =640 CU.FT.
SERVICE ORDER # 3540413
RIG: VAL #3

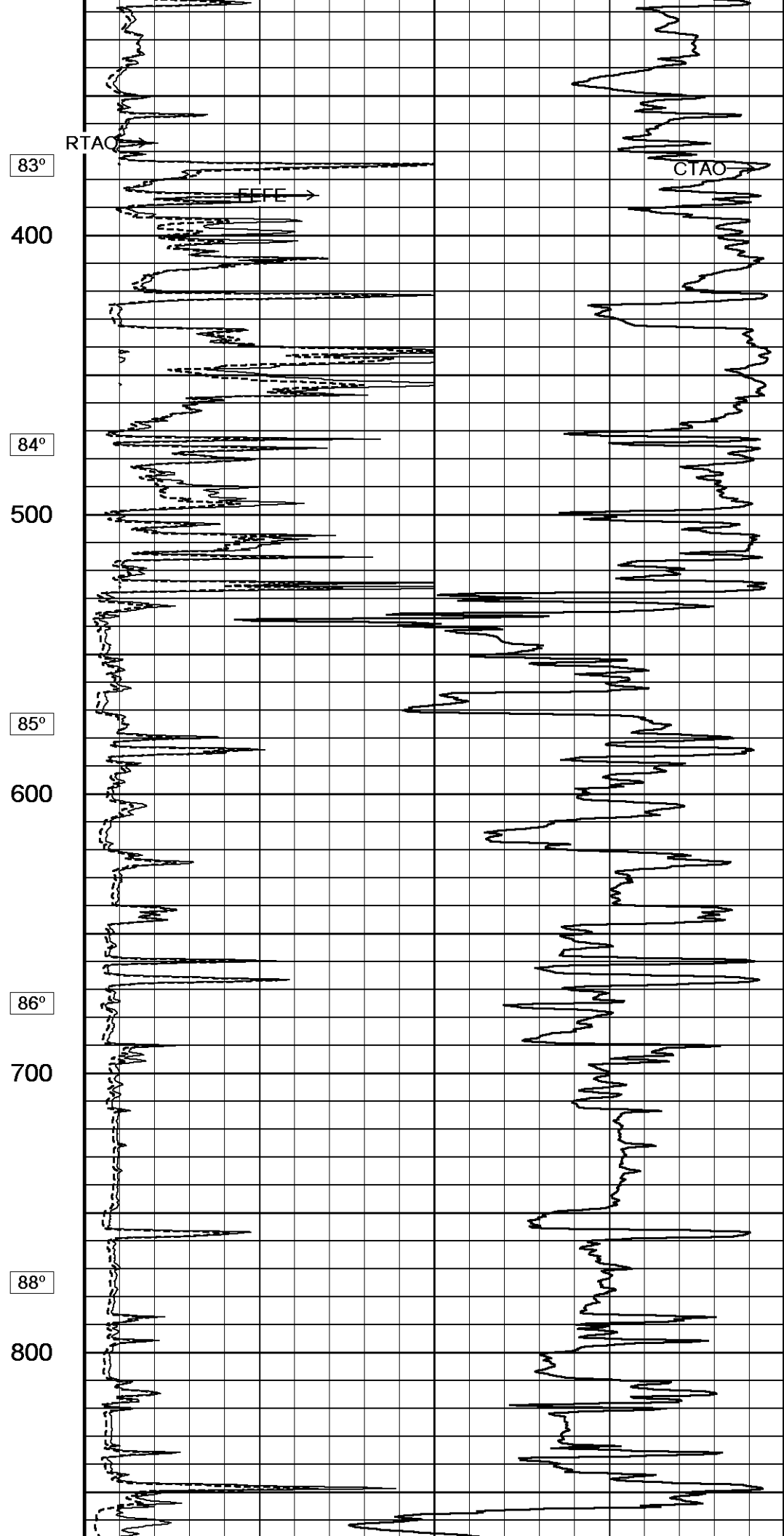
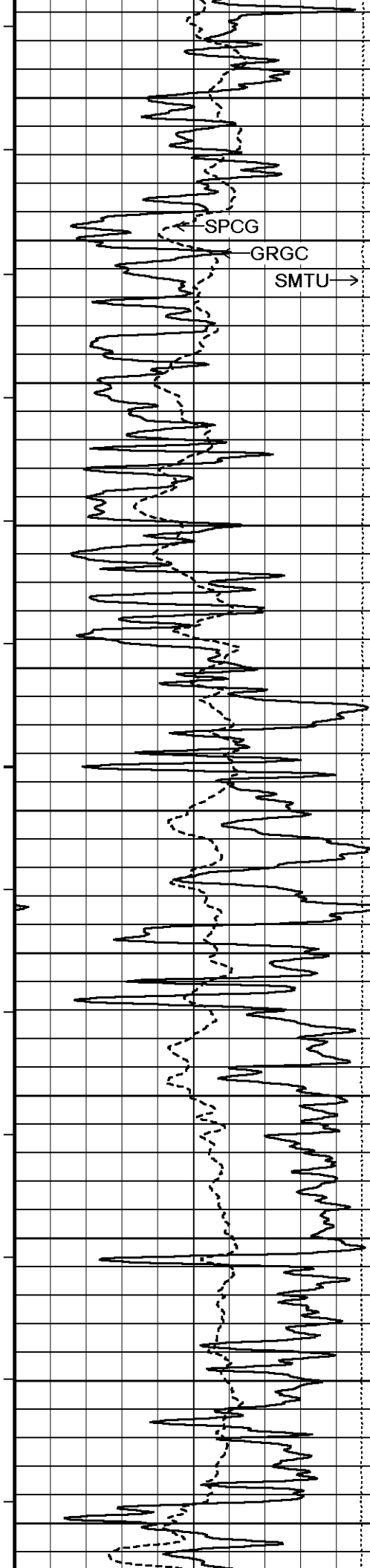
RISE: WALE #0

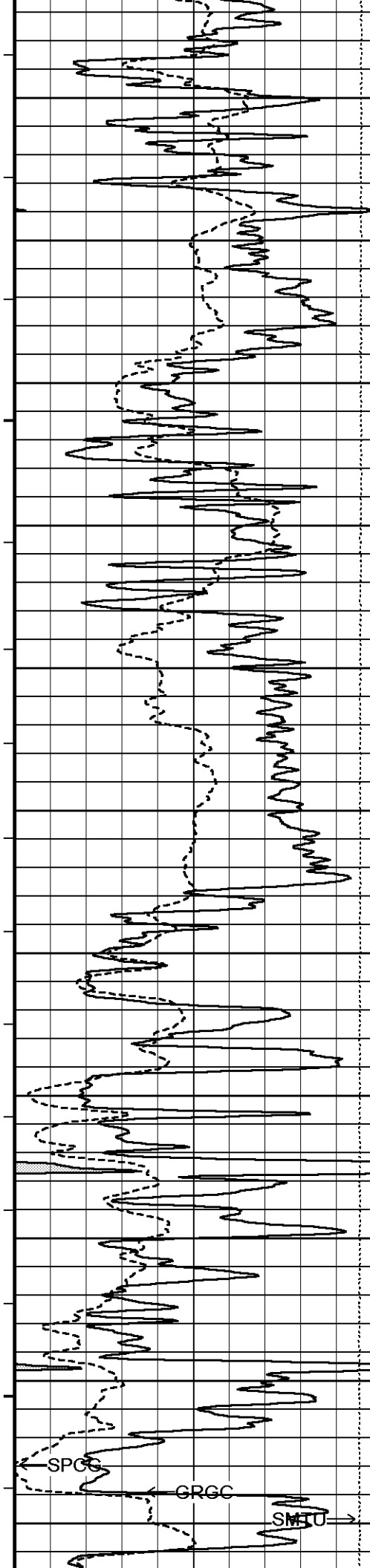
OPERATOR(S):
C. COUSINS / G. NANNEY

HOLE WASHOUTS AND RUGOSITY WILL AFFECT LOG QUALITY AND REPEATABILITY

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions in our price schedule.







88°

900

88°

1000

89°

1100

90°

1200

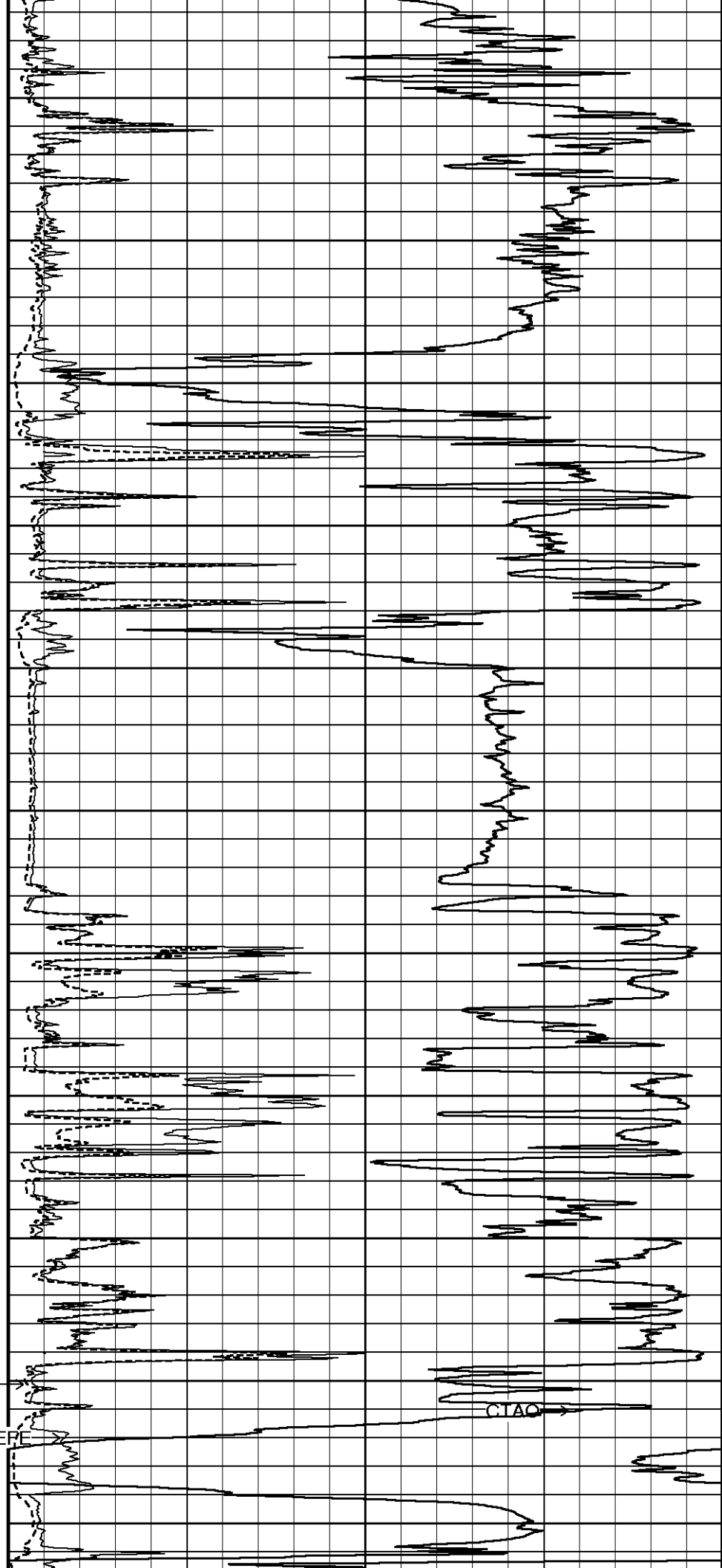
91°

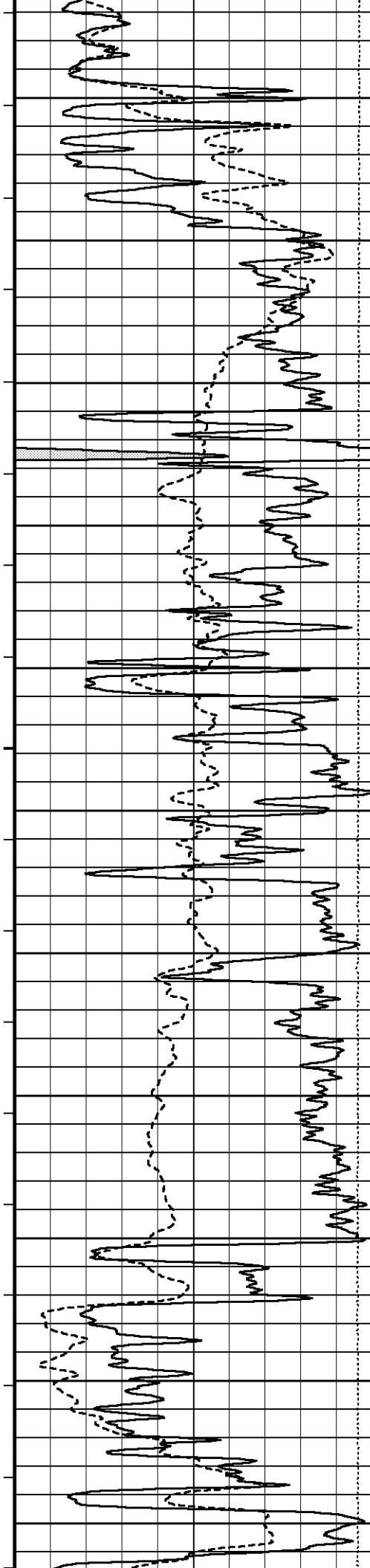
1300

RTAO

91°

1400





92°

1500

93°

1600

94°

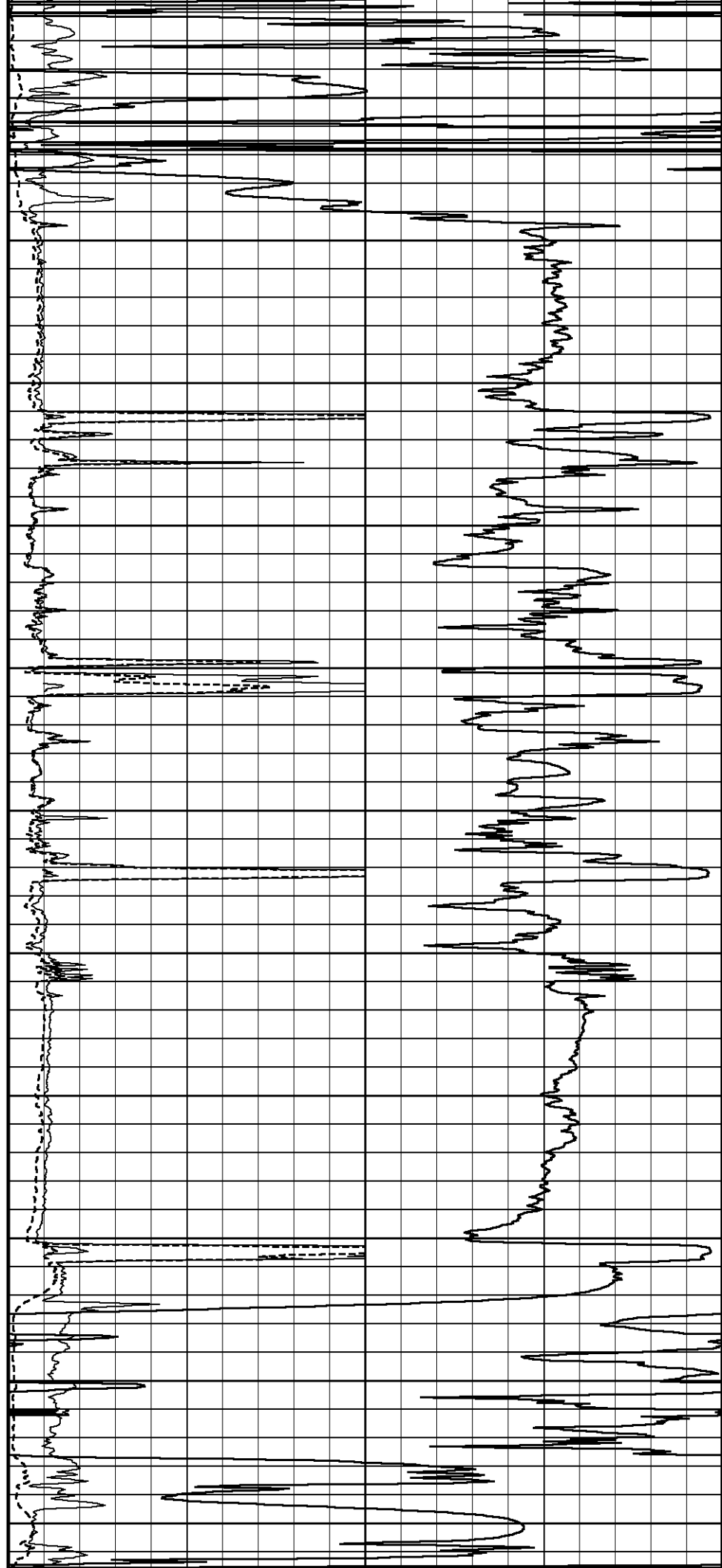
1700

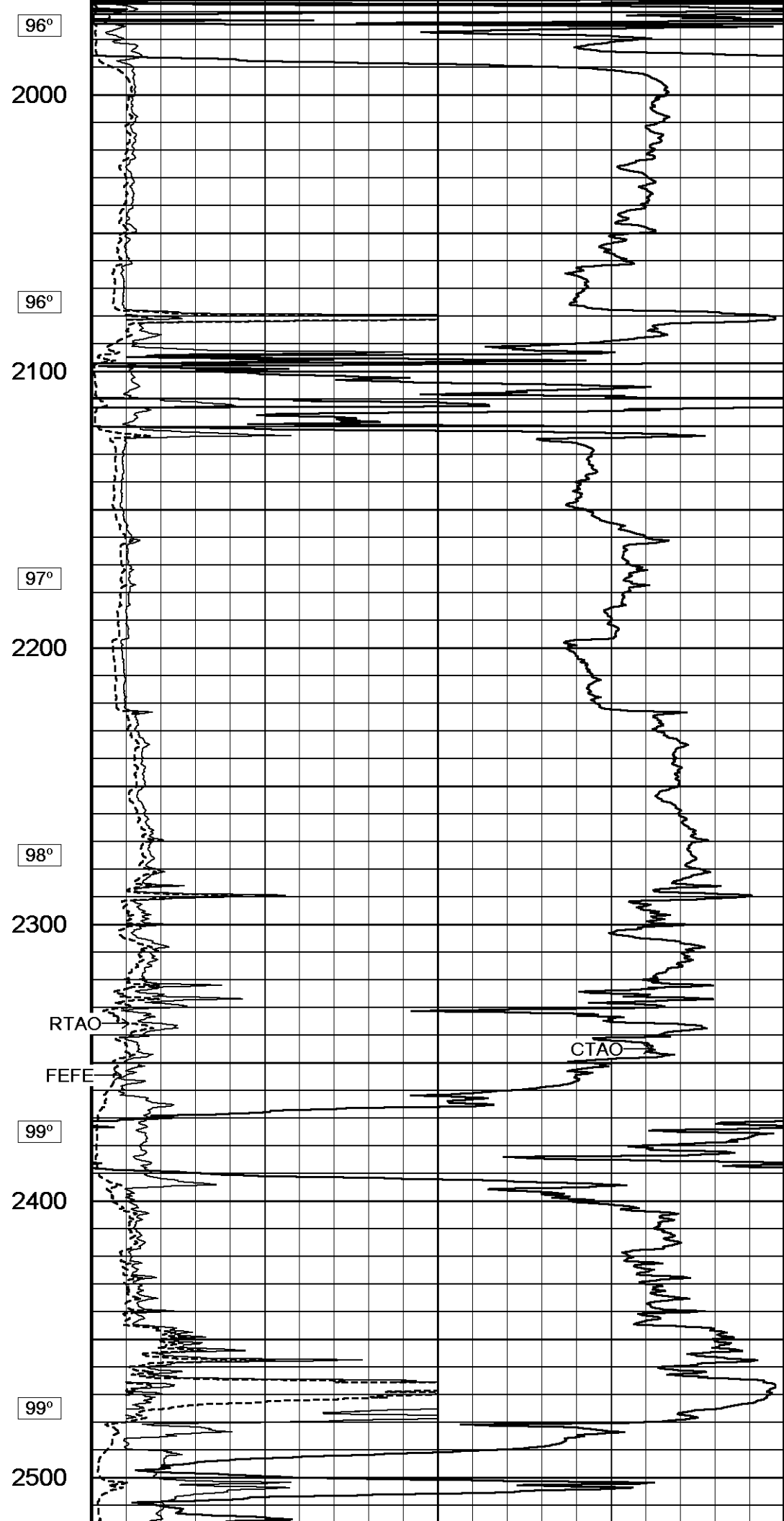
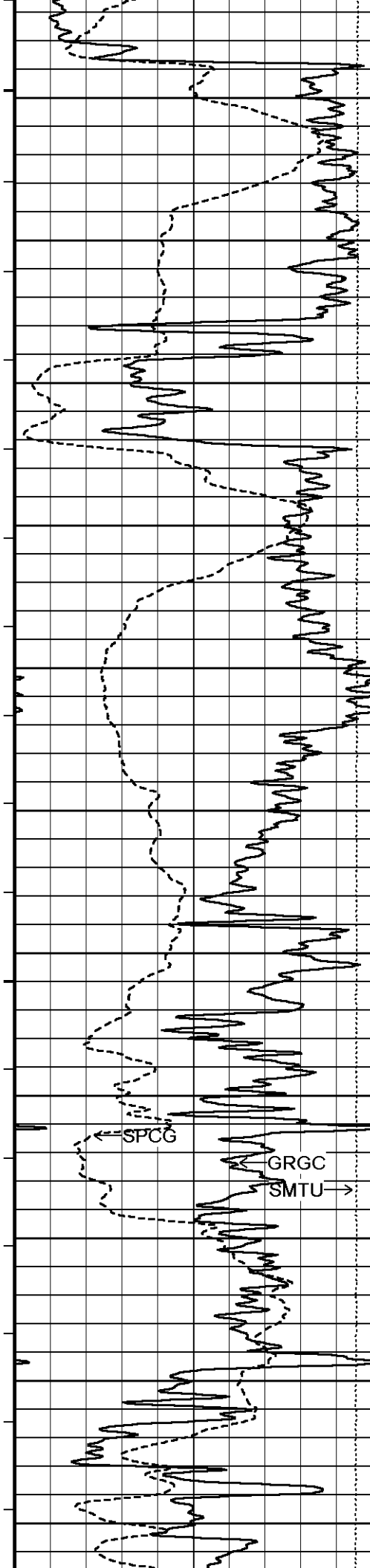
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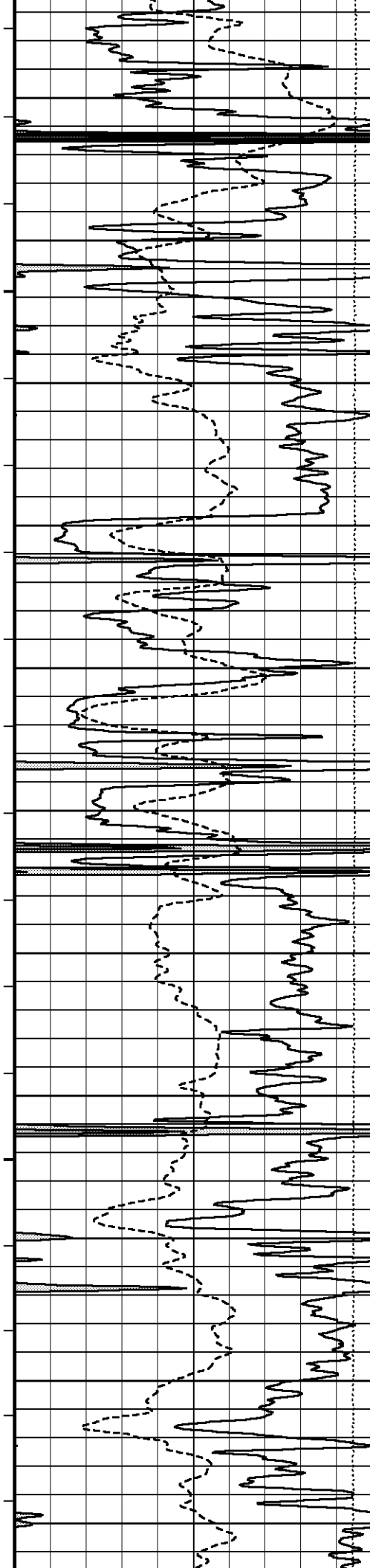
1800

95°

1900







100°

2600

100°

2700

101°

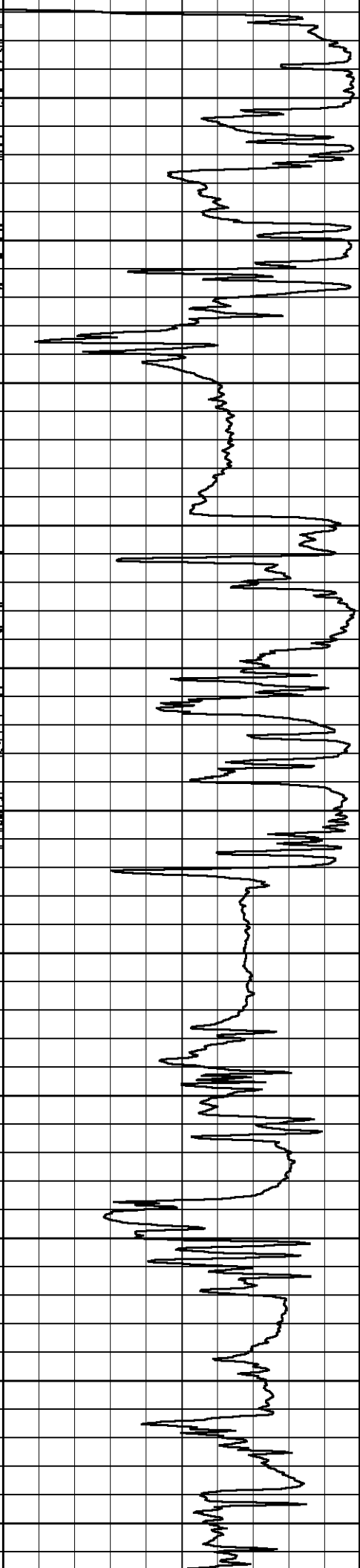
2800

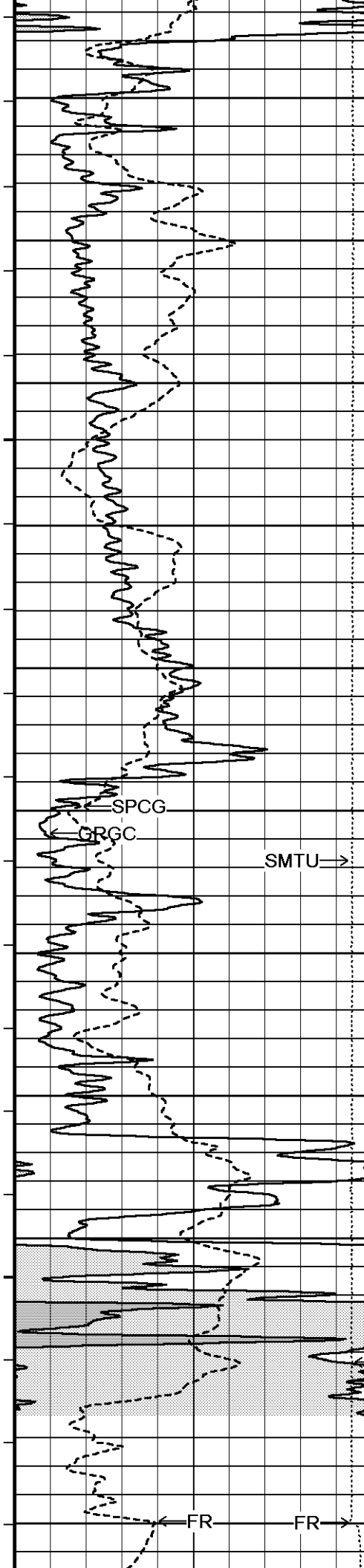
101°

2900

103°

3000





104°

3100

104°

3200

105°

3300

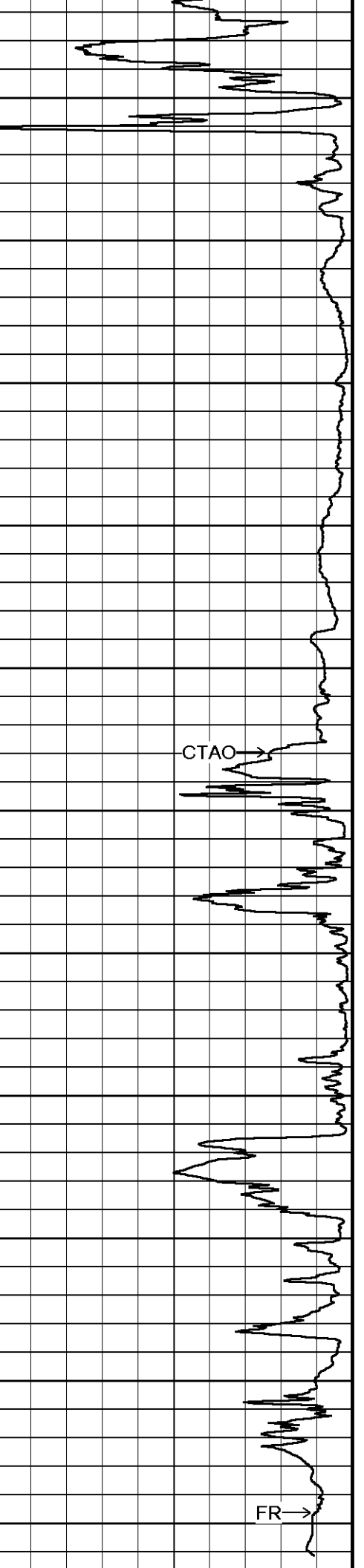
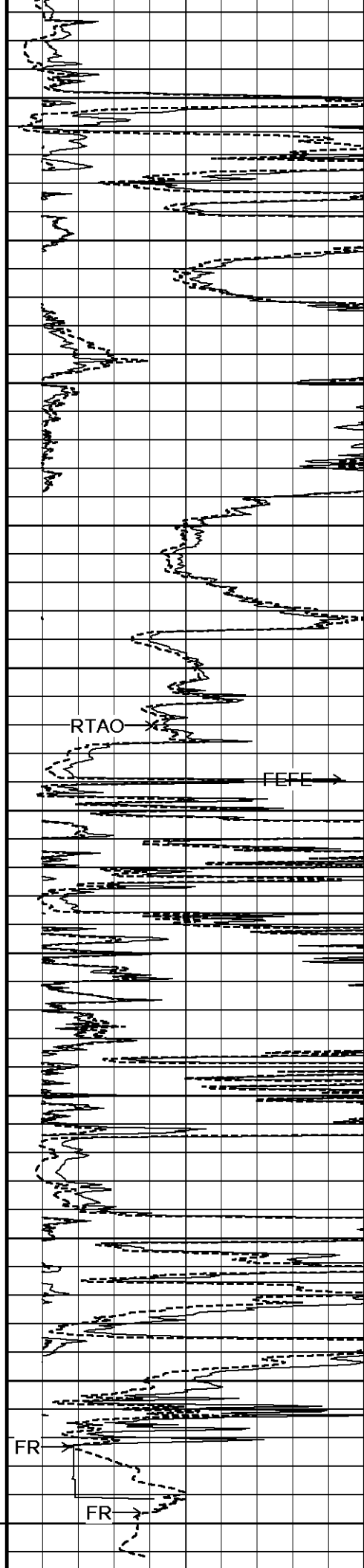
106°

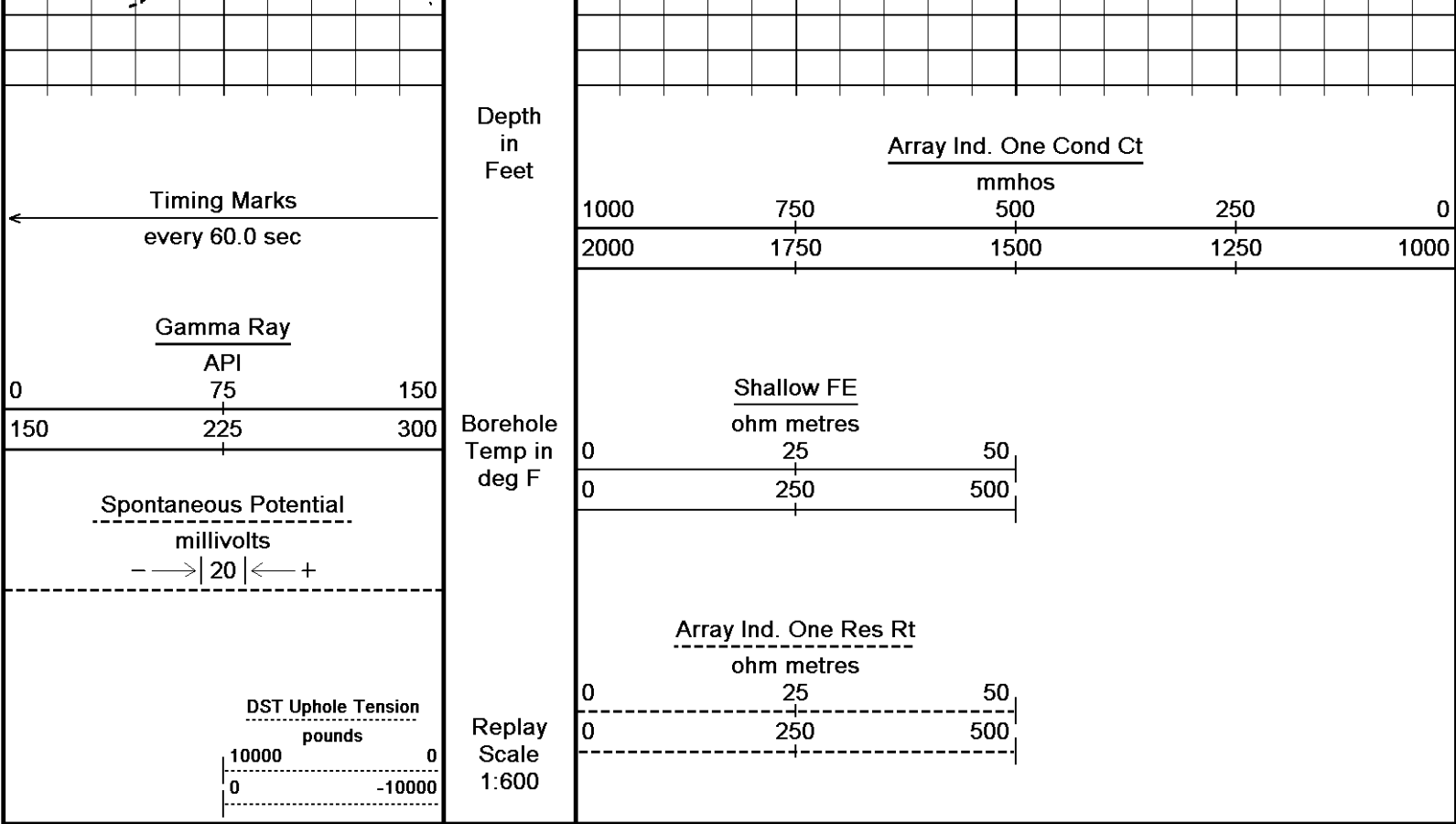
3400

106°

3500

3600





Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: G:\FUTURE(WEST MADDIX UNIT#9)\DATA_002.dta
System Versions: Logged with 13.04.8723 Processed with 13.04.8492 Plotted with 13.04.8723

Plotted on 22-APR-2013 11:15
Recorded on 21-APR-2013 17:03

↑

2 INCH MAIN LOG

↑

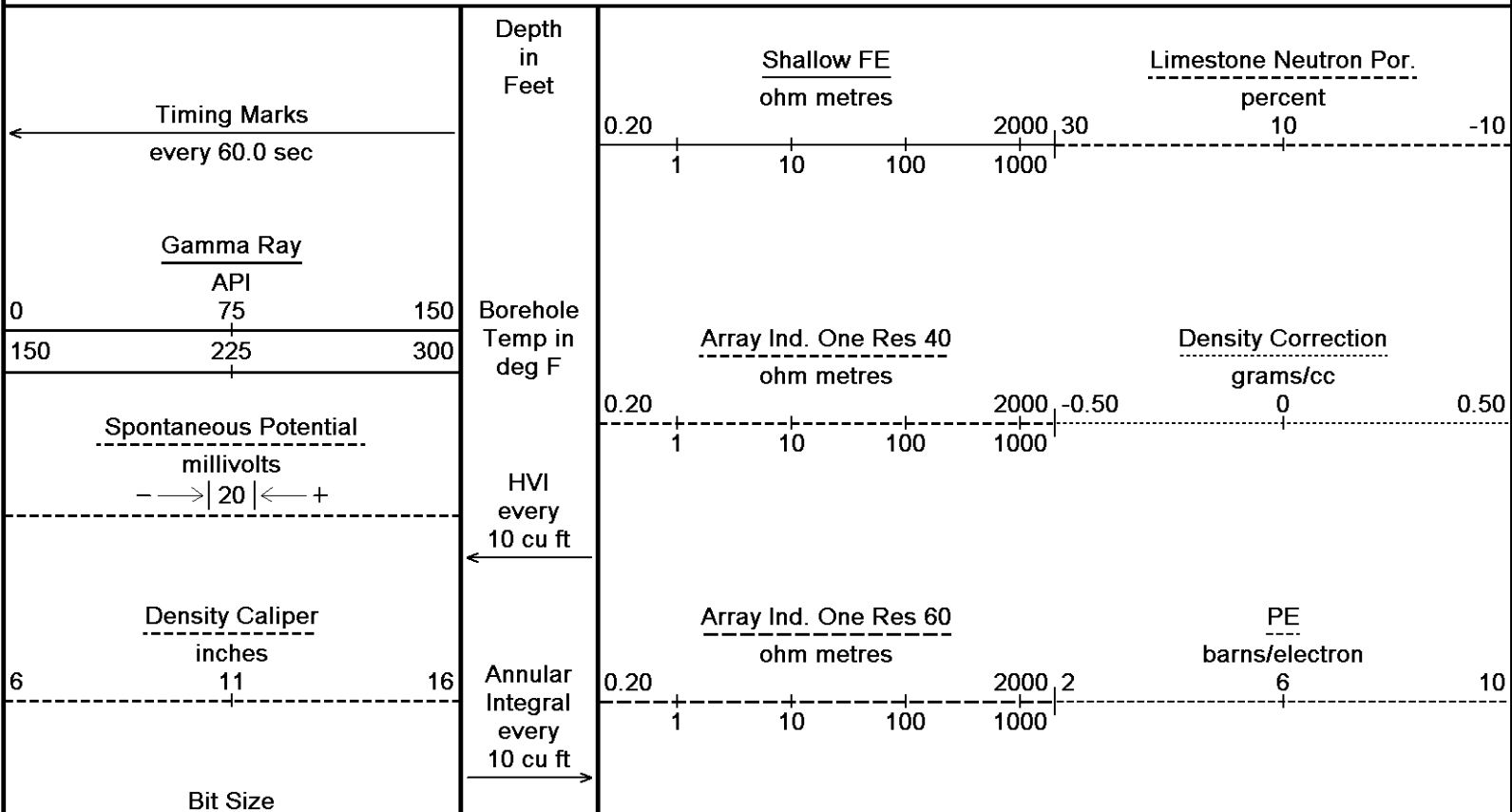
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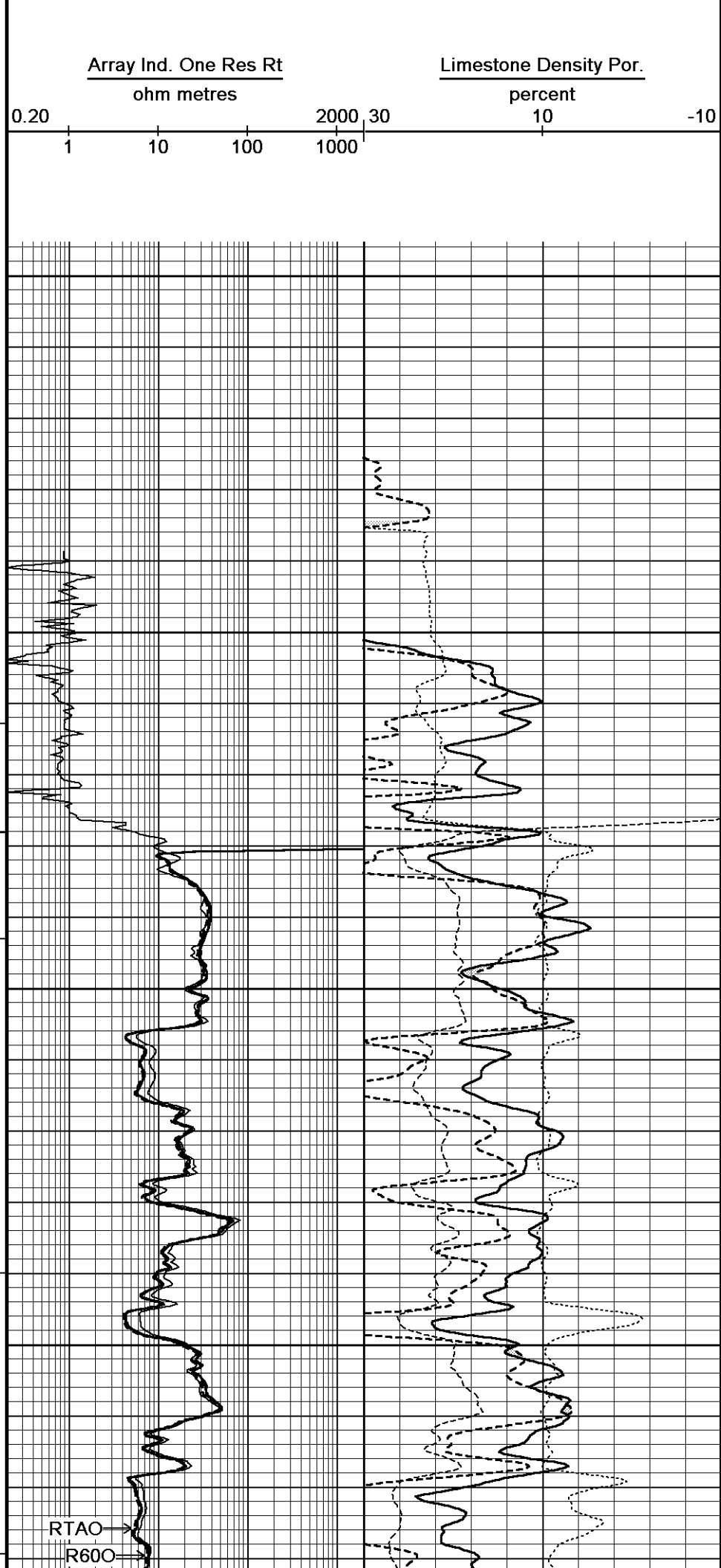
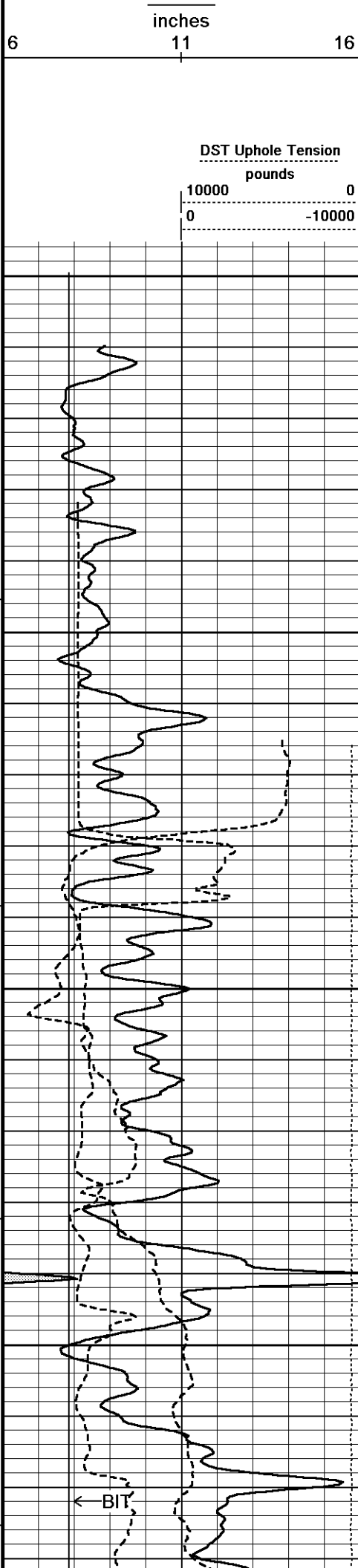
5 INCH MAIN LOG

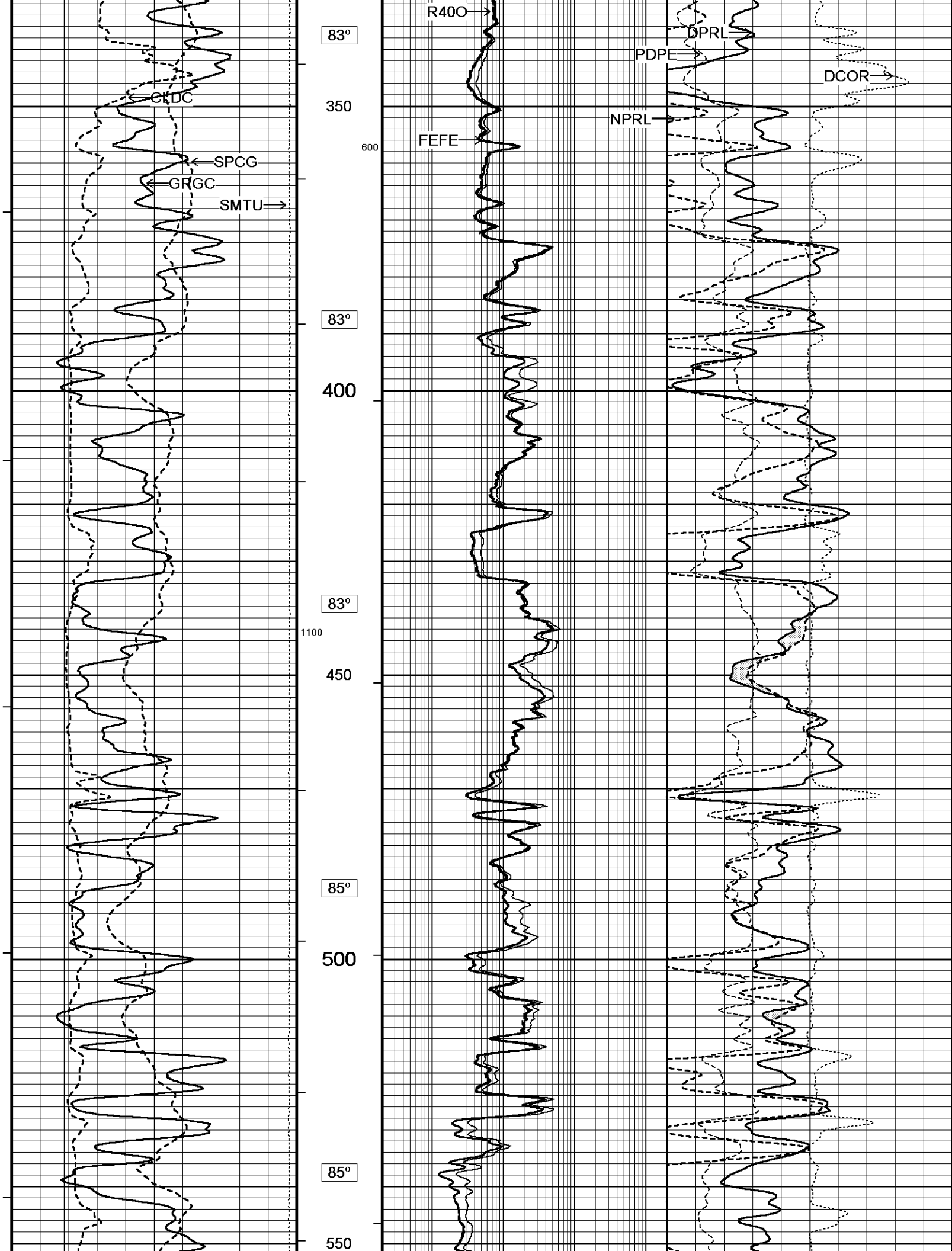
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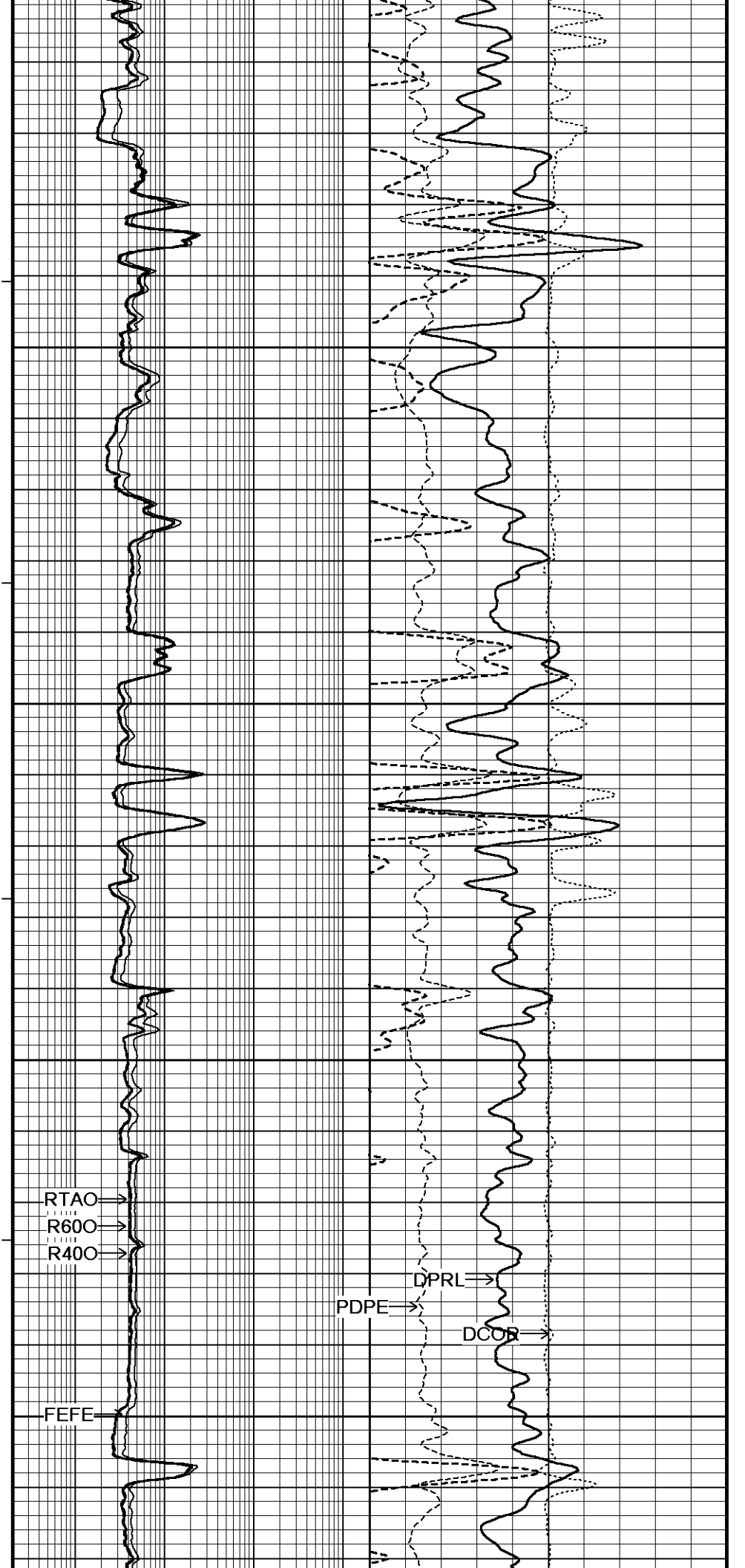
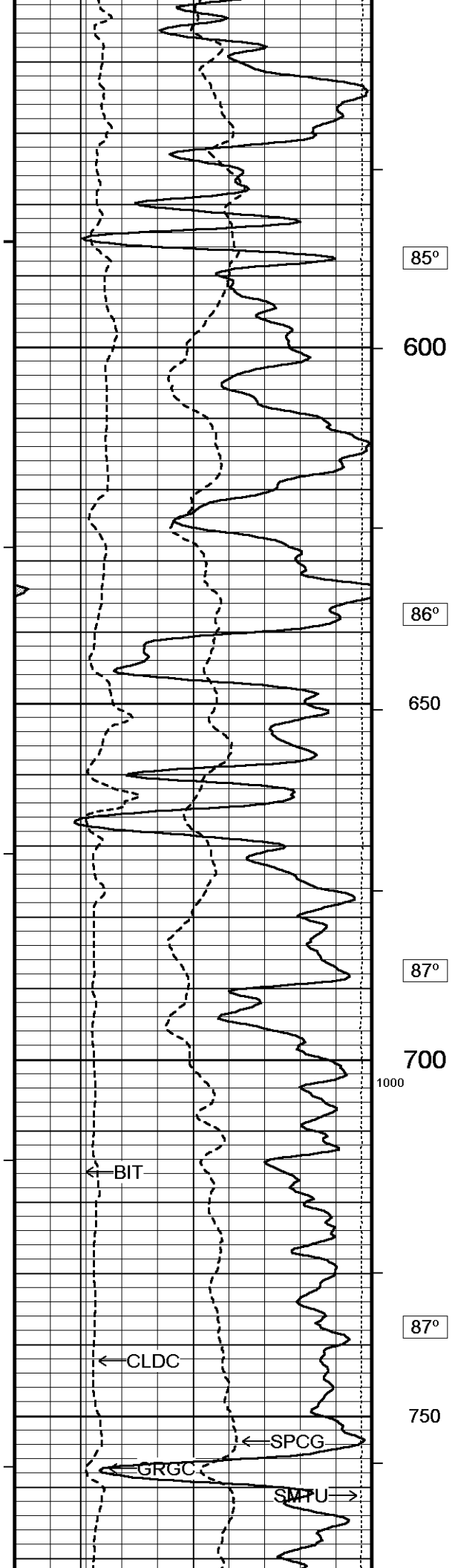
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: G:\FUTURE(WEST MADDIX UNIT#9)\DATA_002.dta
System Versions: Logged with 13.04.8723 Processed with 13.04.8492 Plotted with 13.04.8723

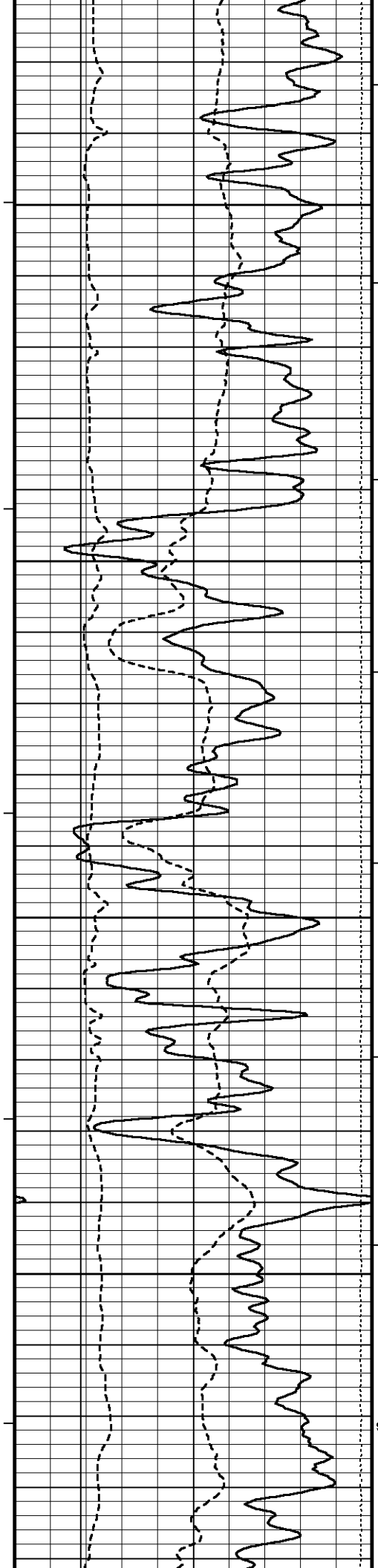
Plotted on 22-APR-2013 11:15
Recorded on 21-APR-2013 17:03











88°

800

500

88°

850

88°

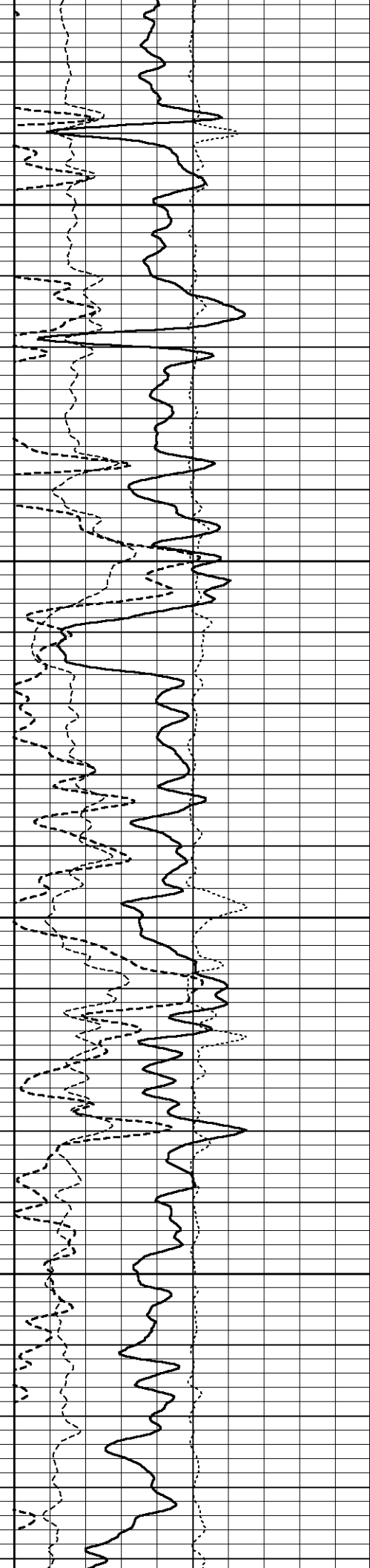
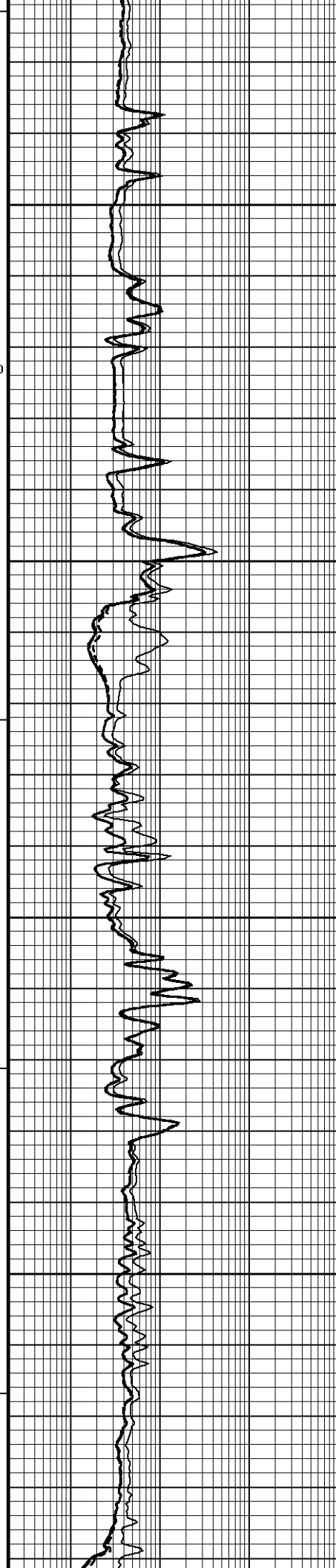
900

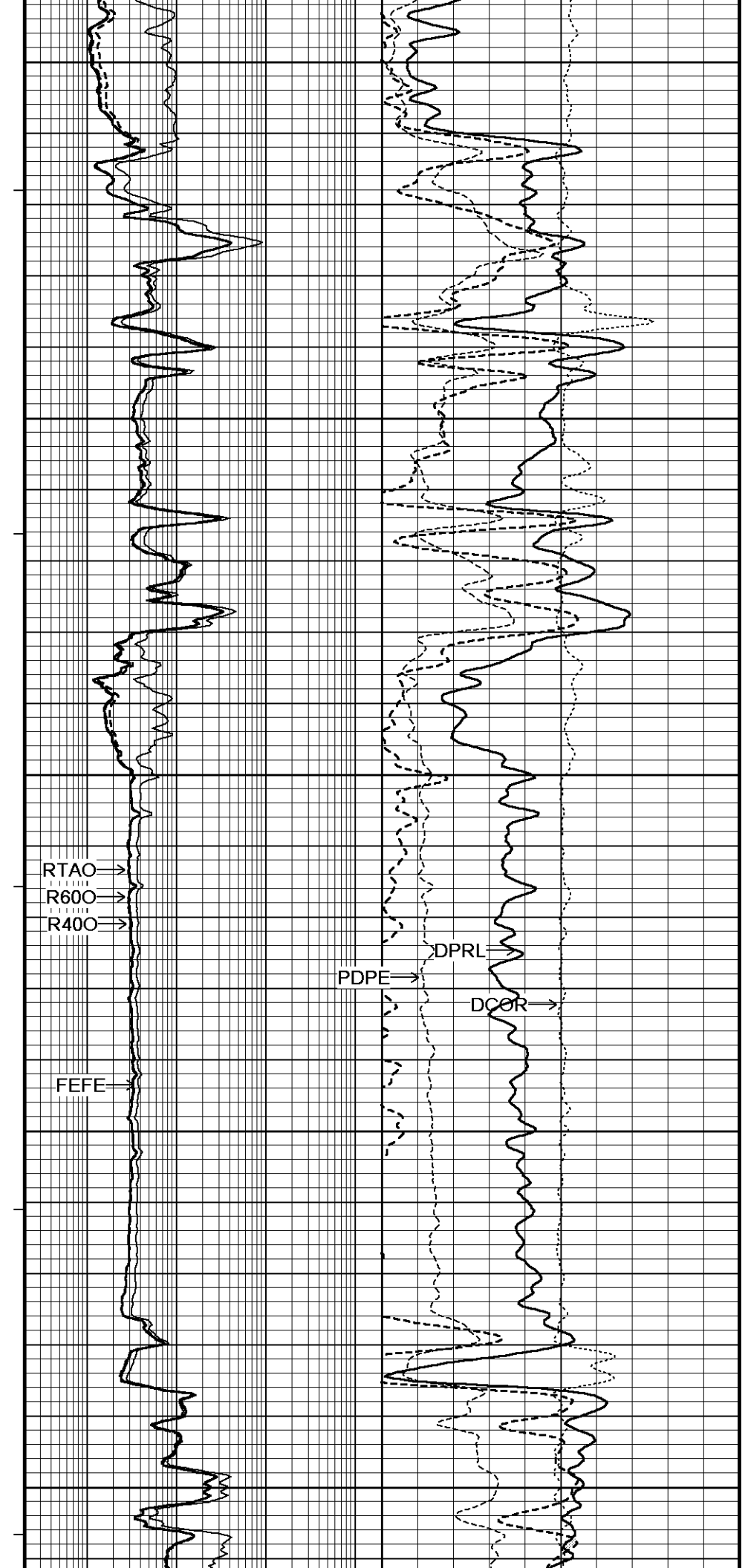
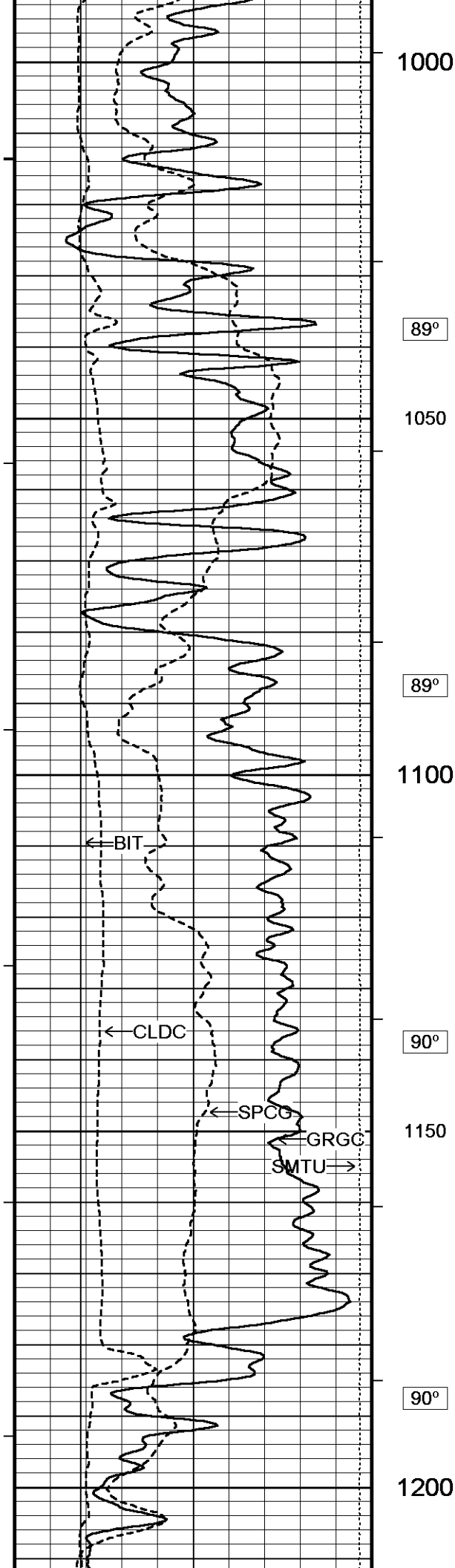
88°

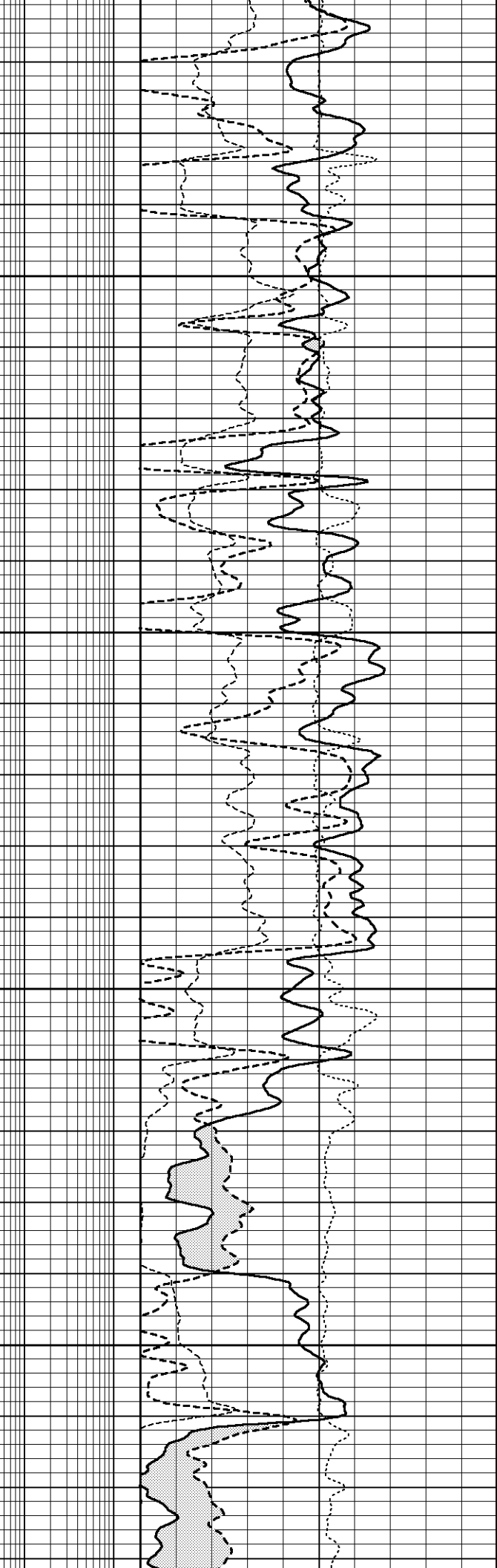
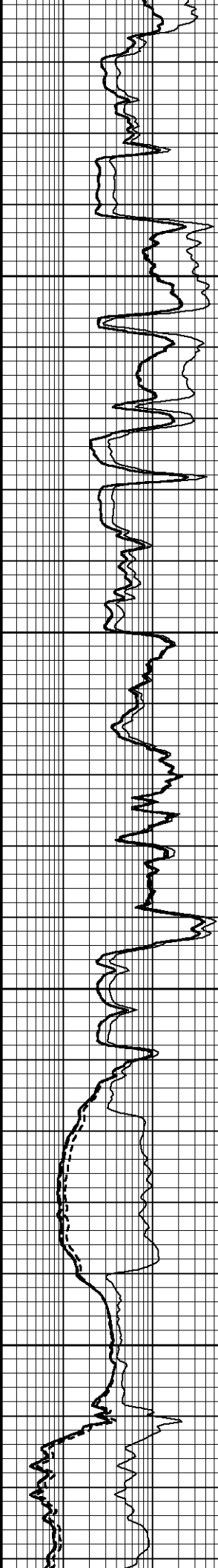
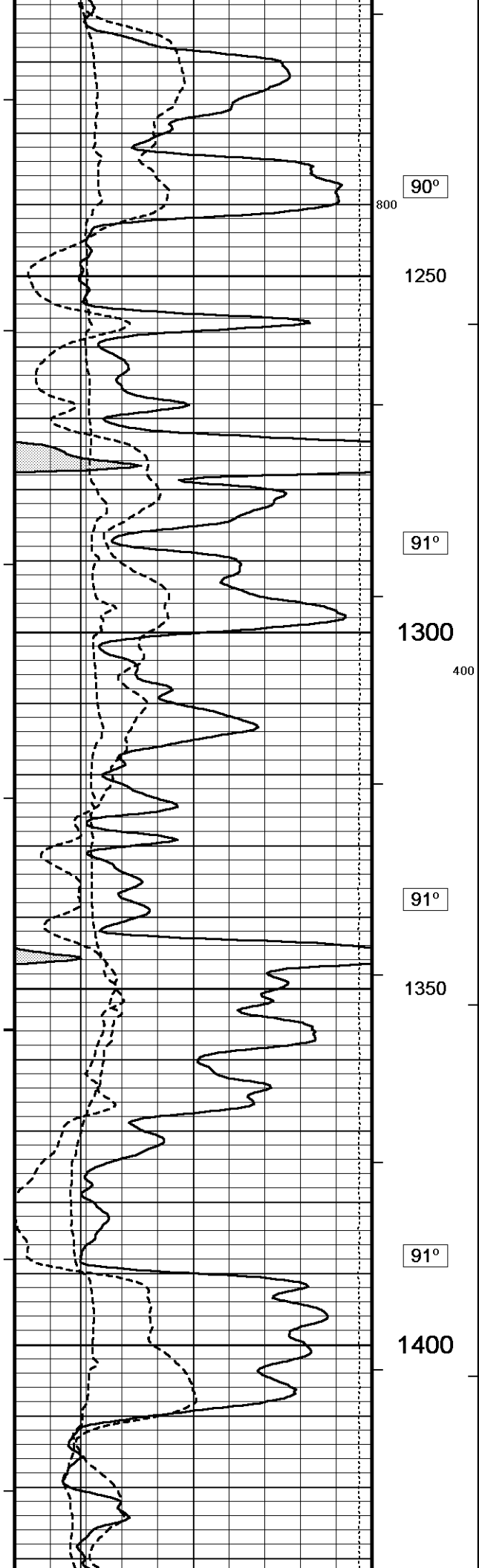
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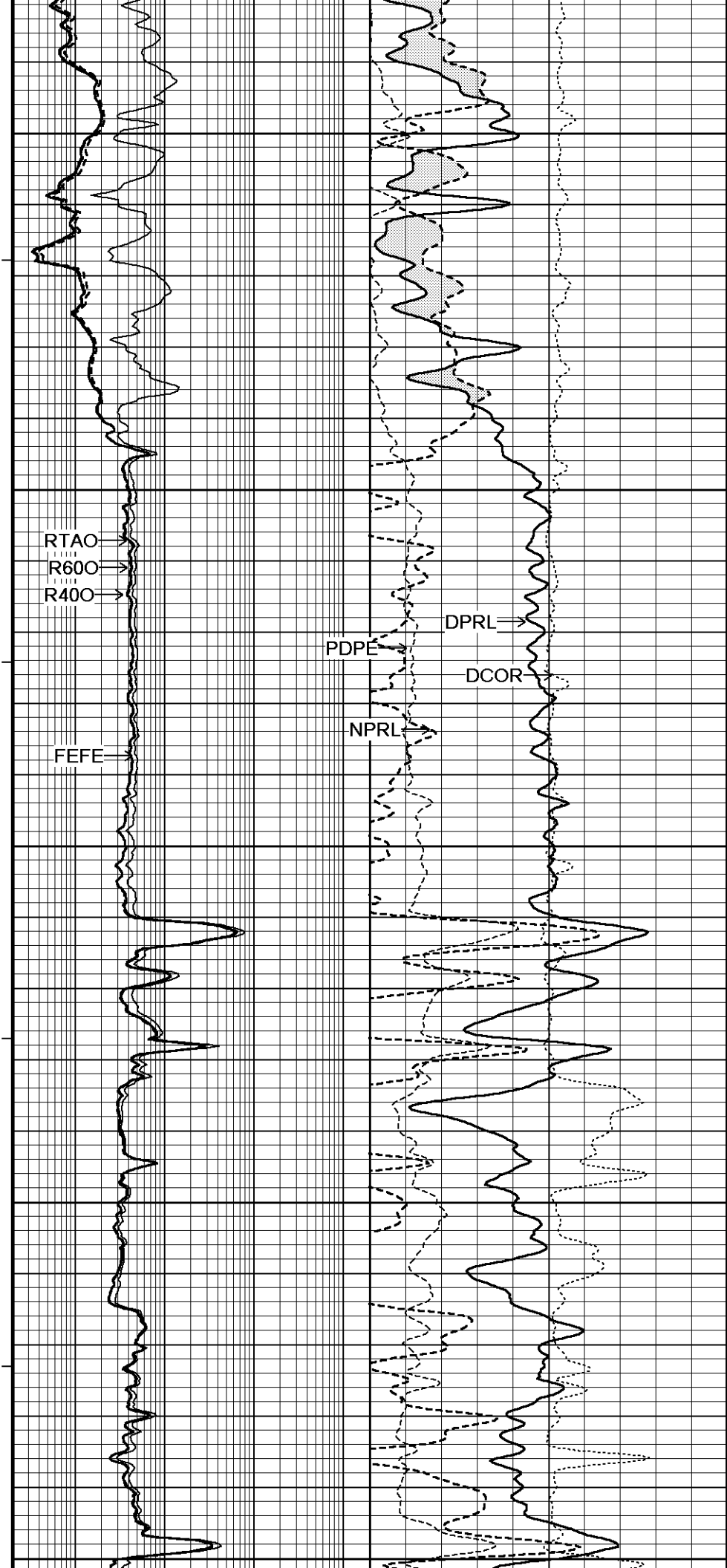
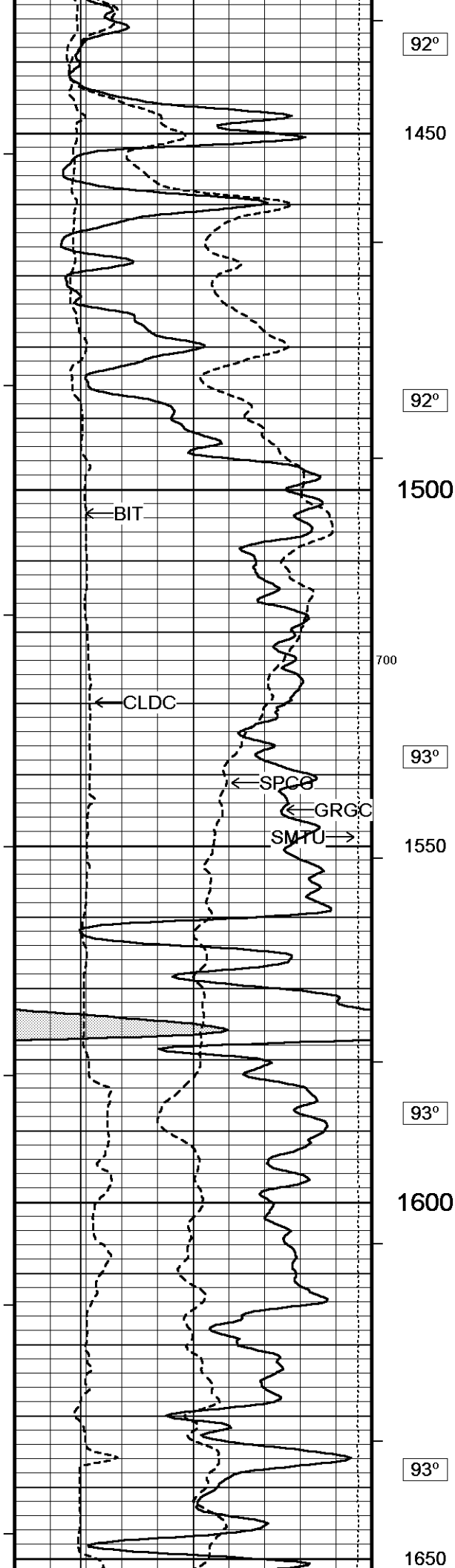
900

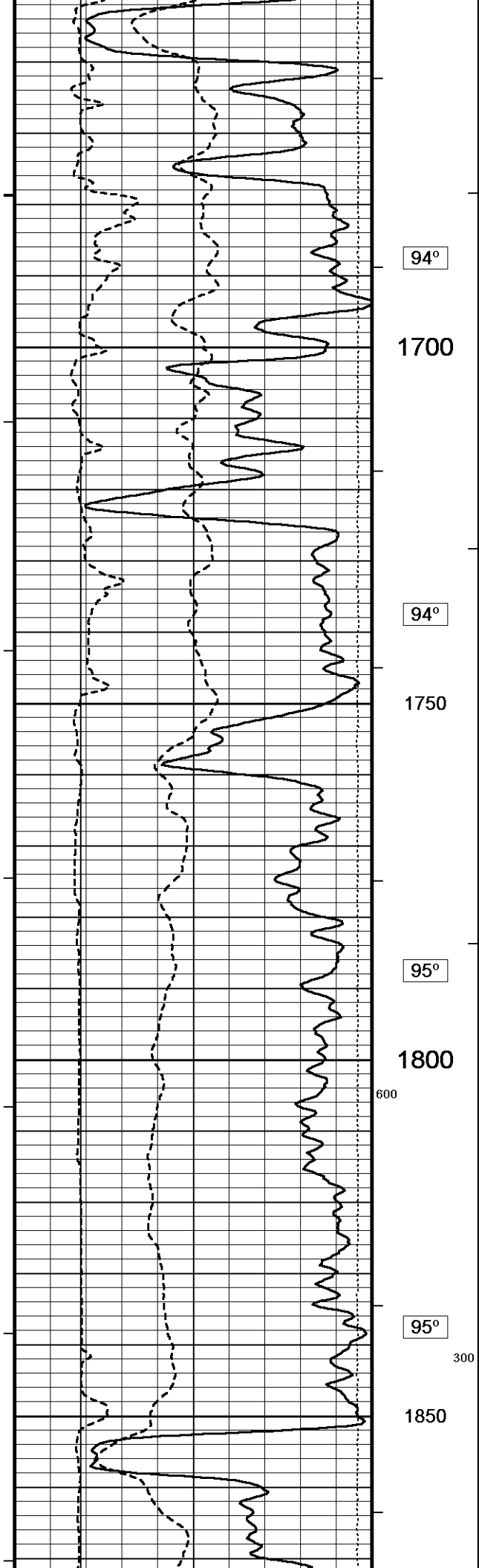
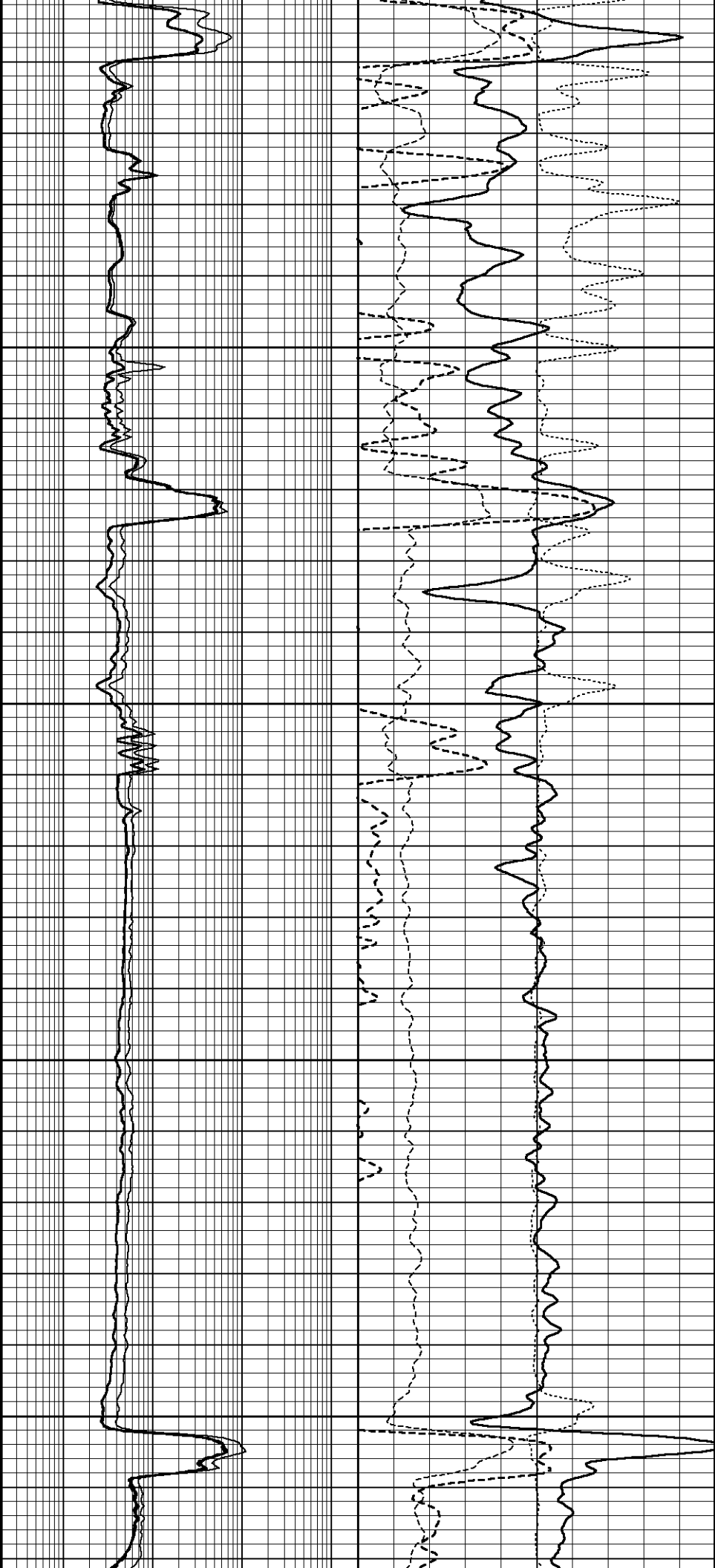
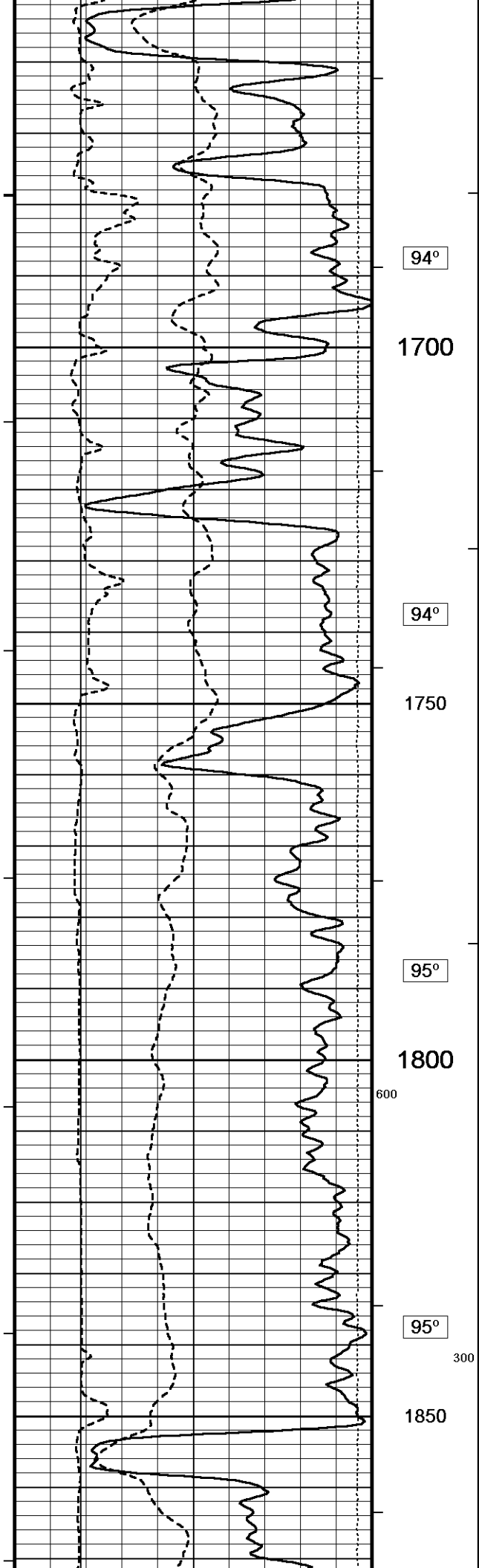
89°

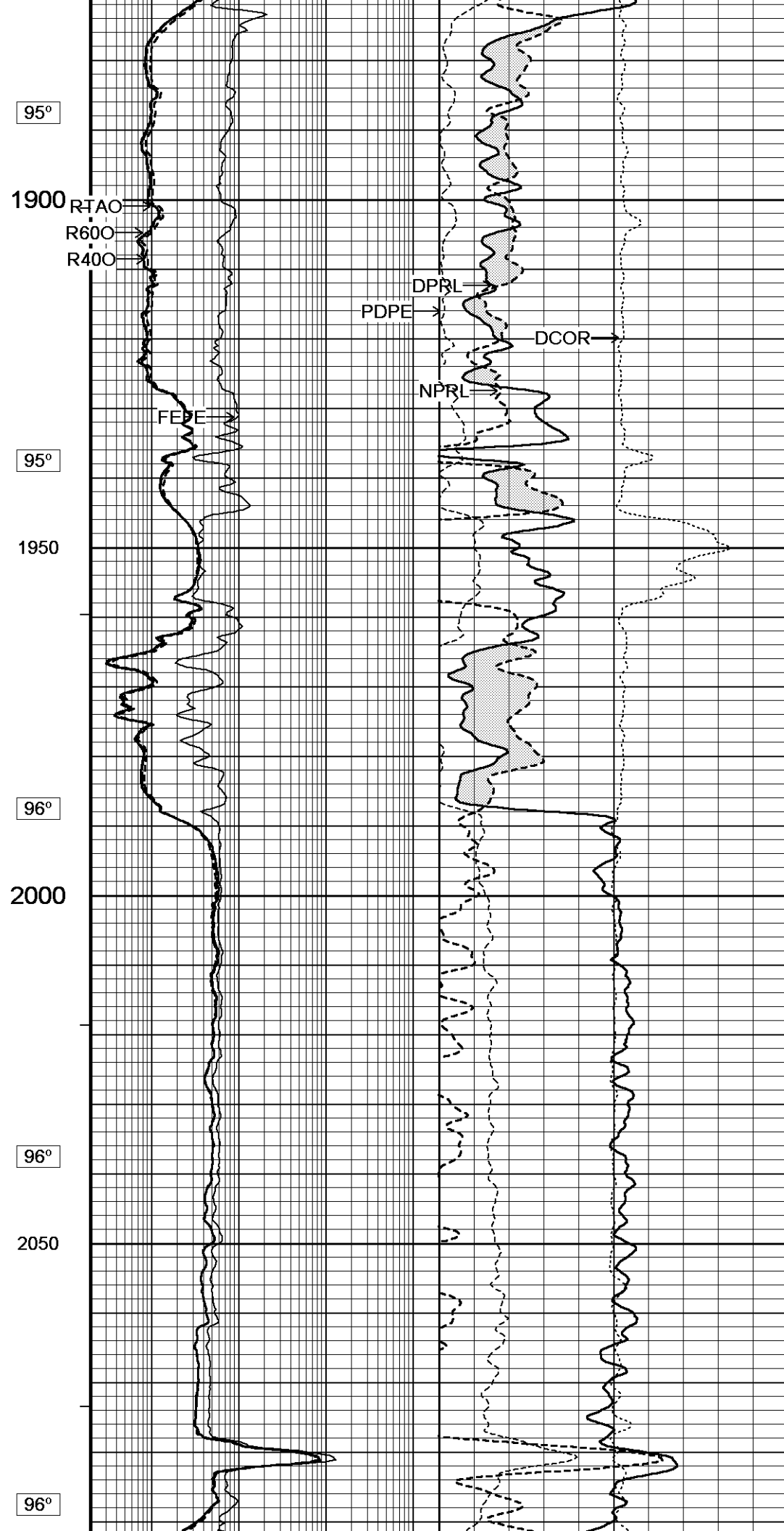
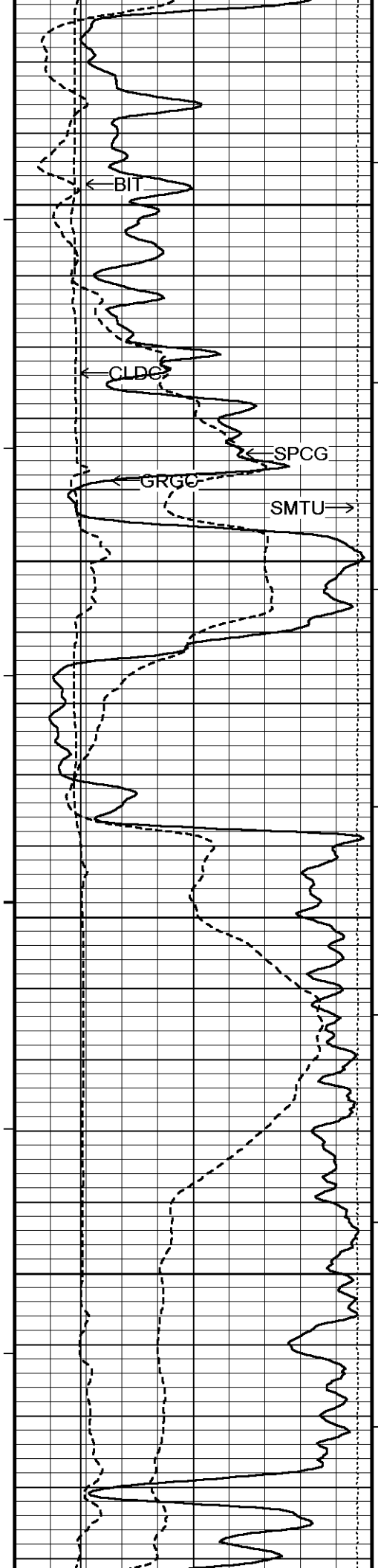


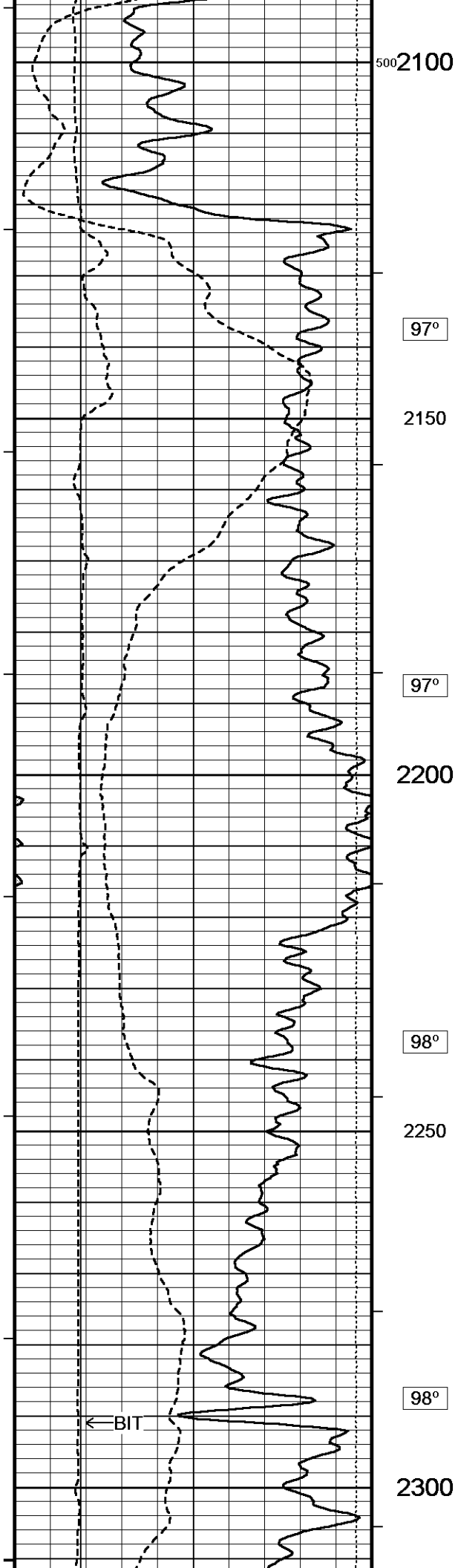












500
2100

97°

2150

97°

2200

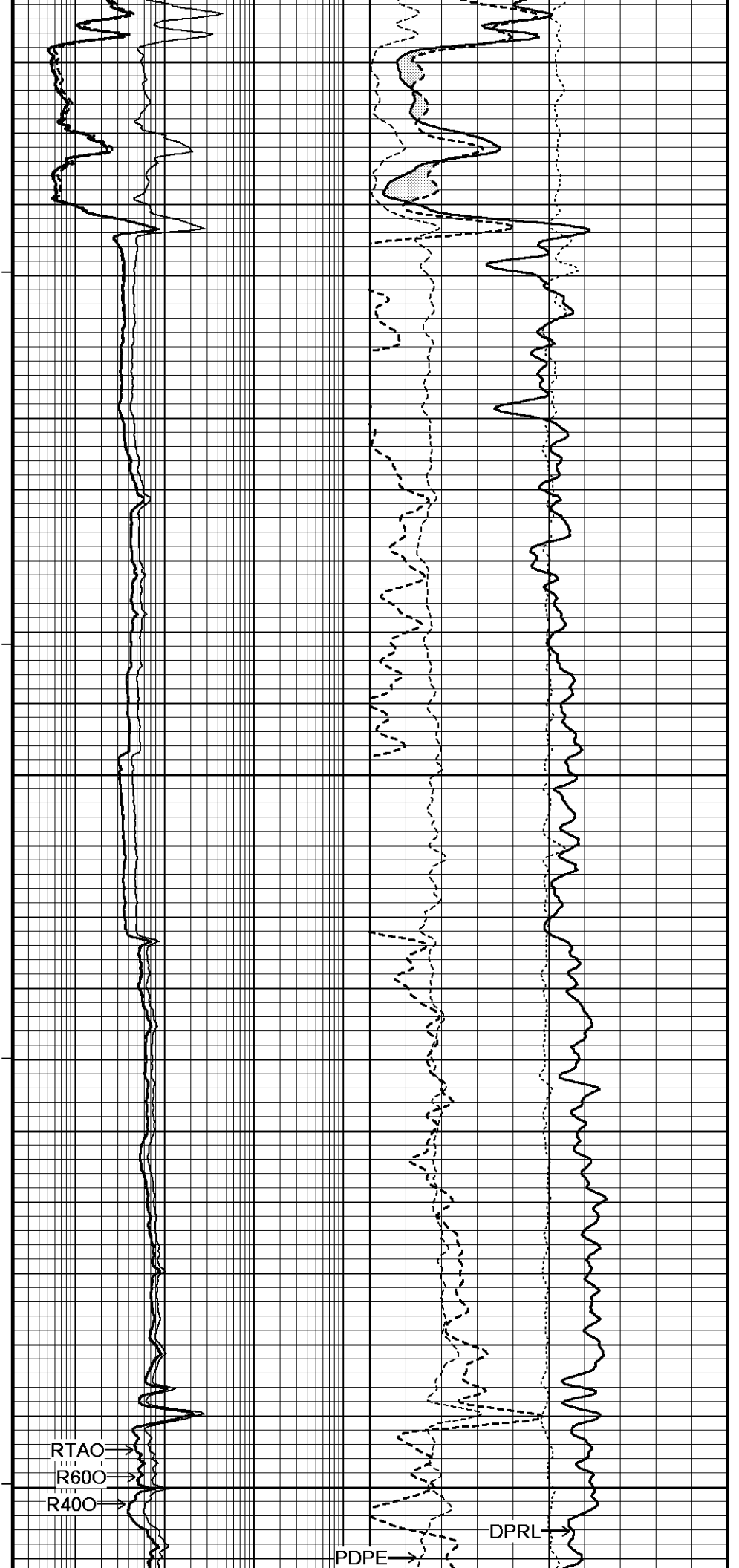
98°

2250

98°

2300

←BIT



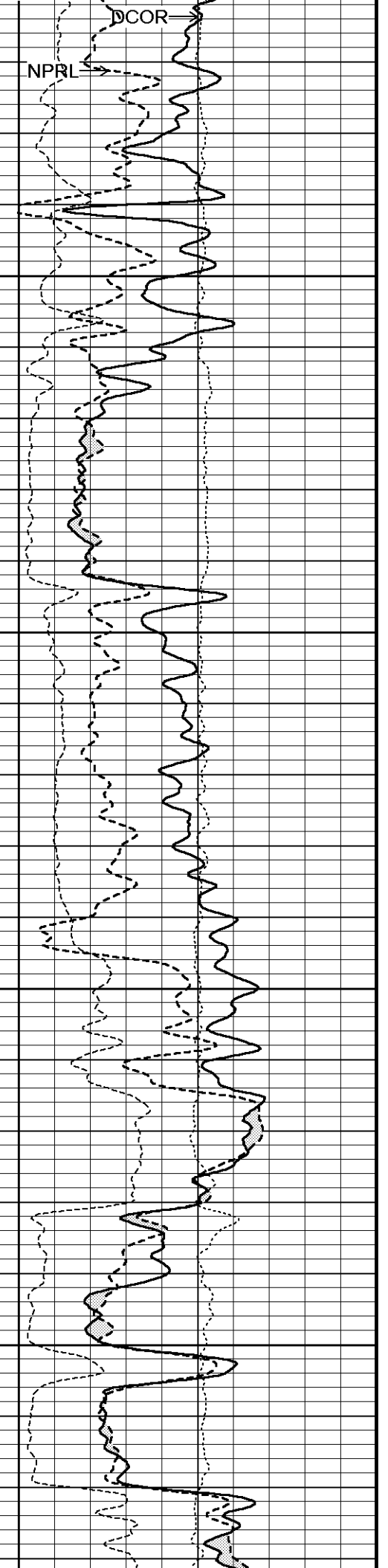
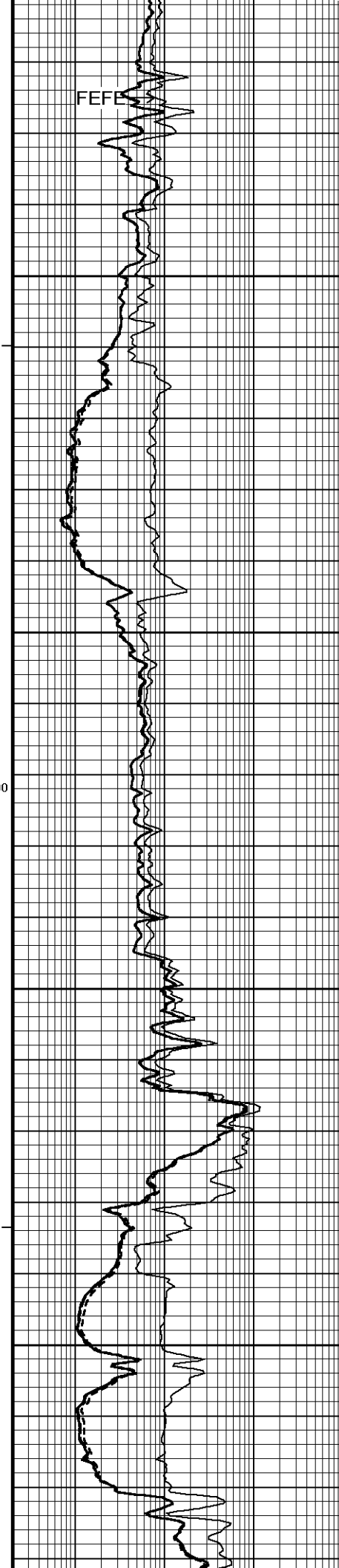
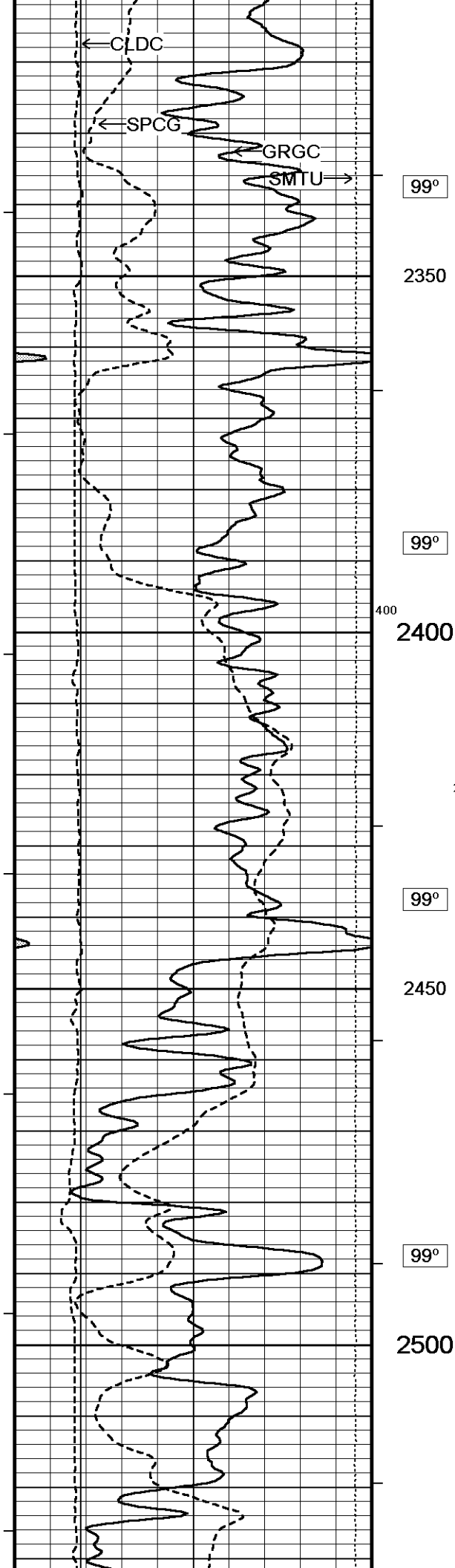
RTAO

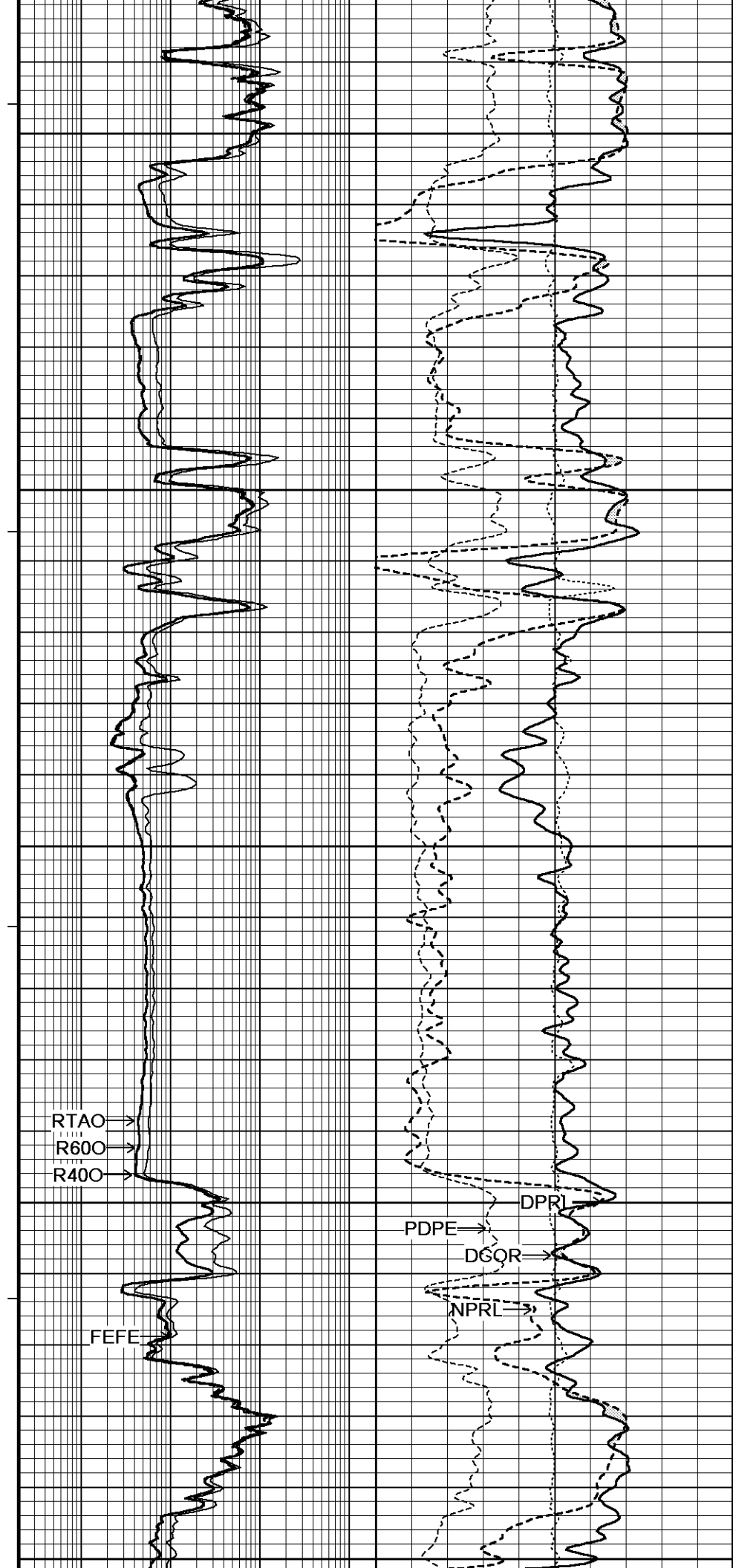
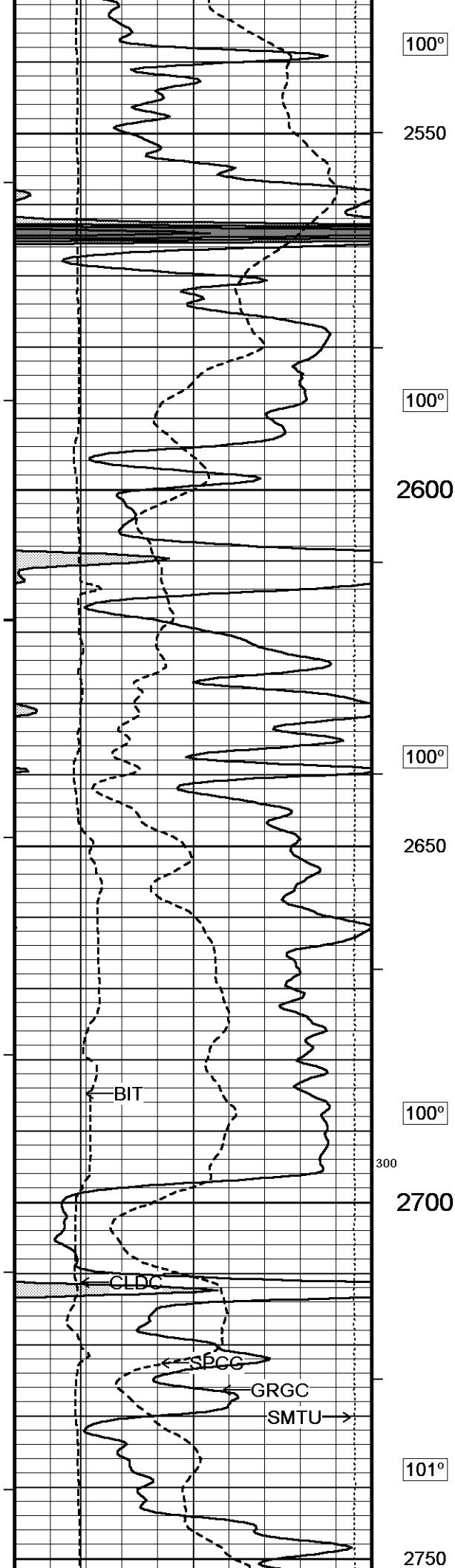
R600

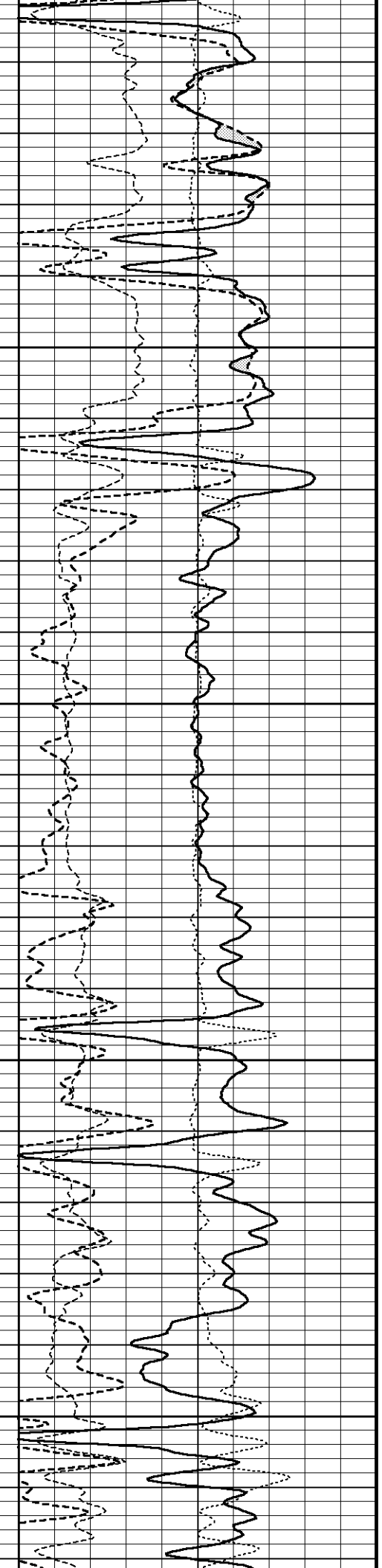
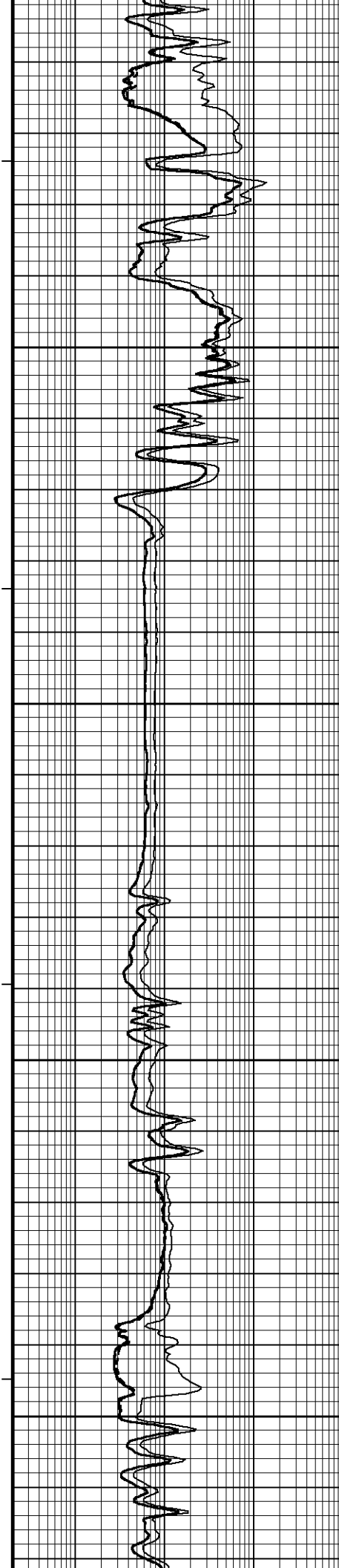
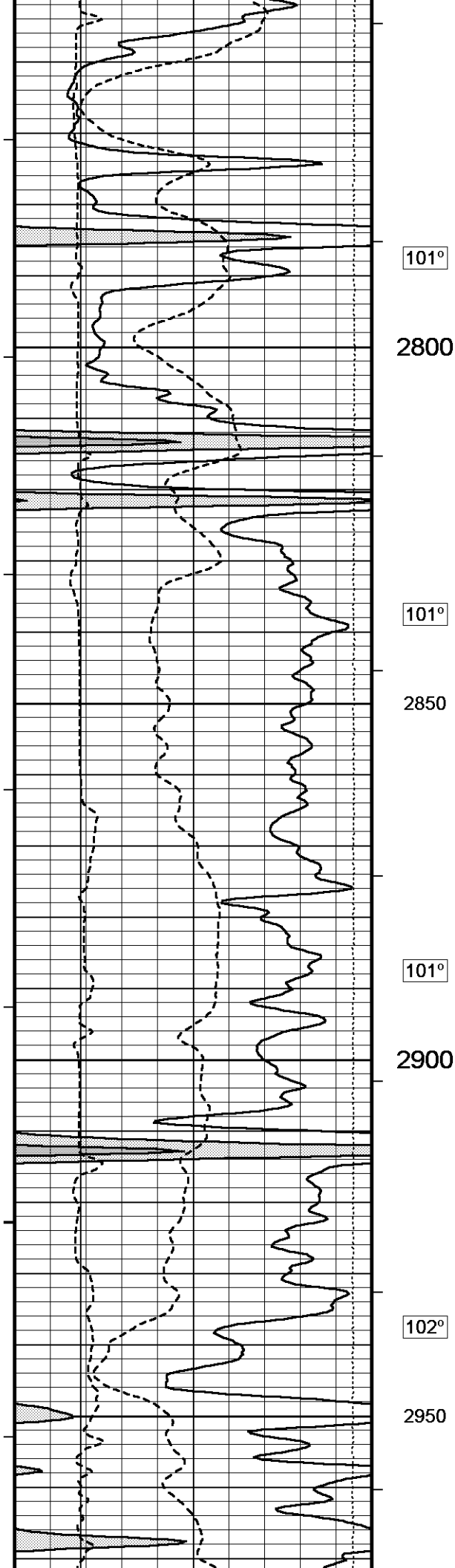
R400

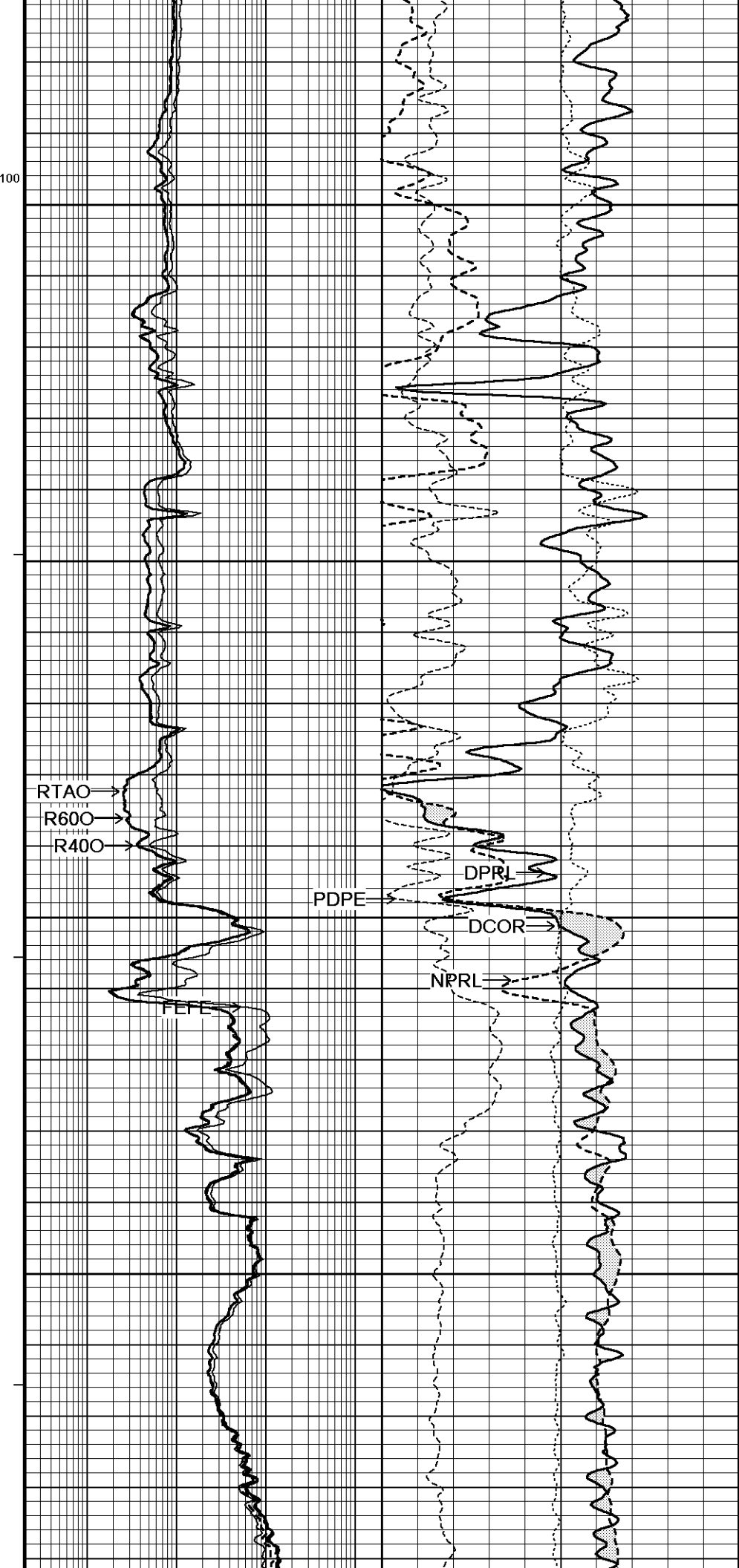
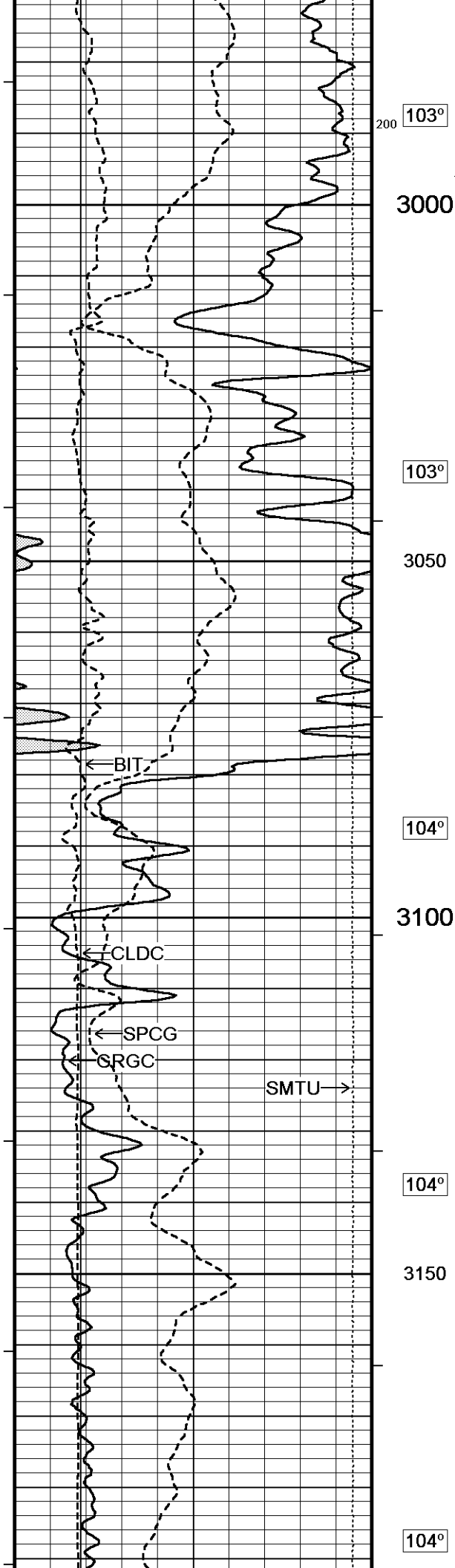
PDPE

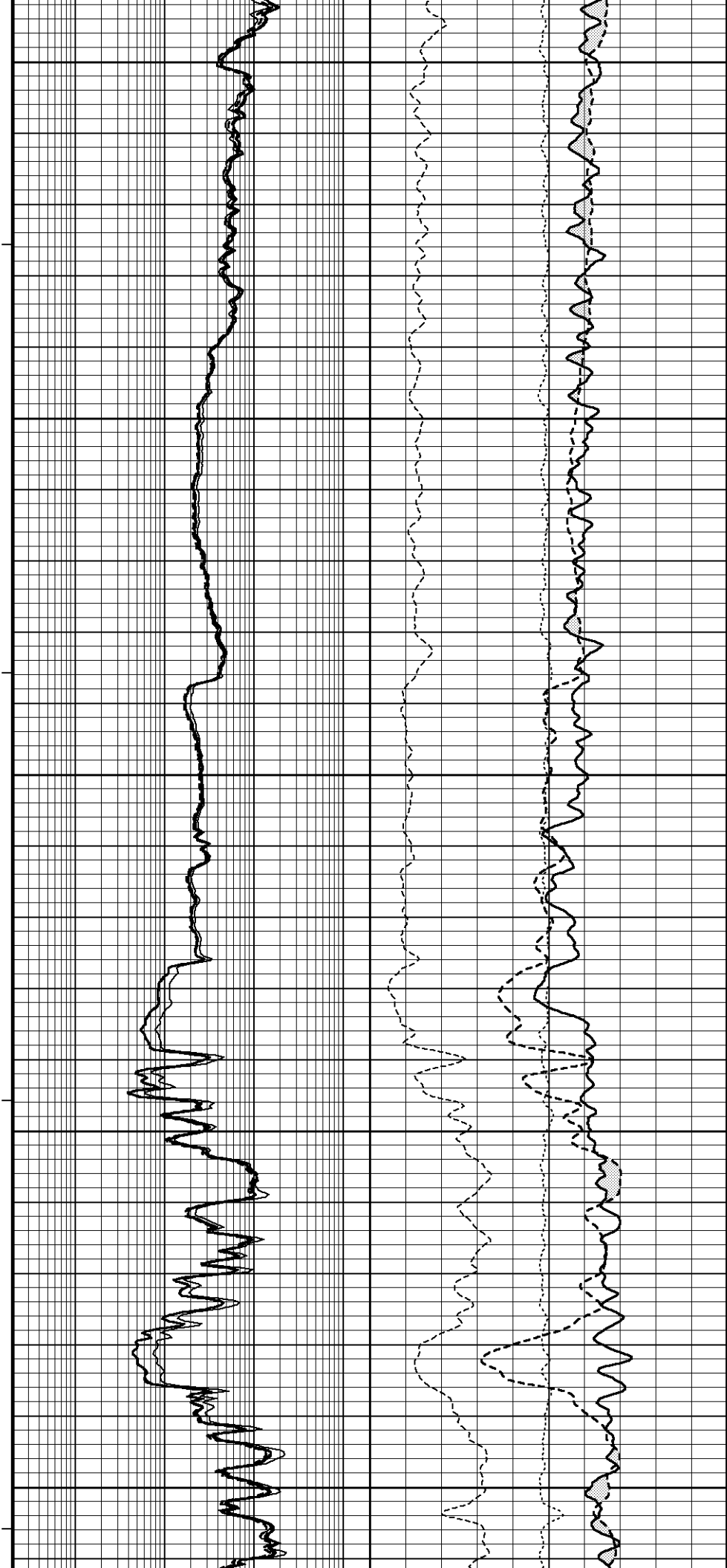
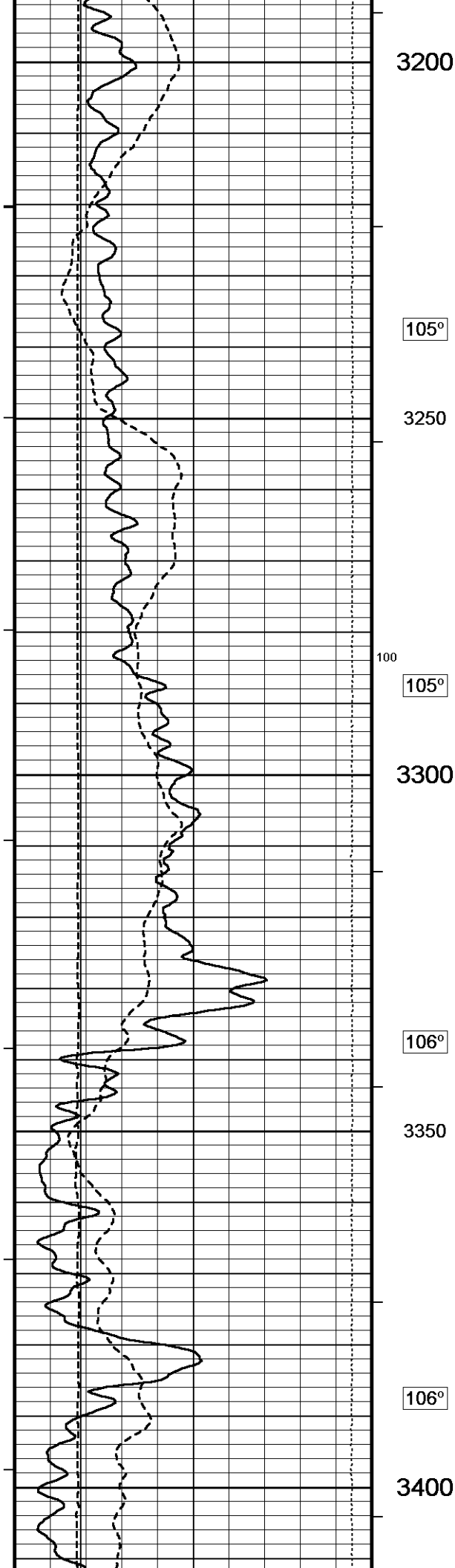
DPRL

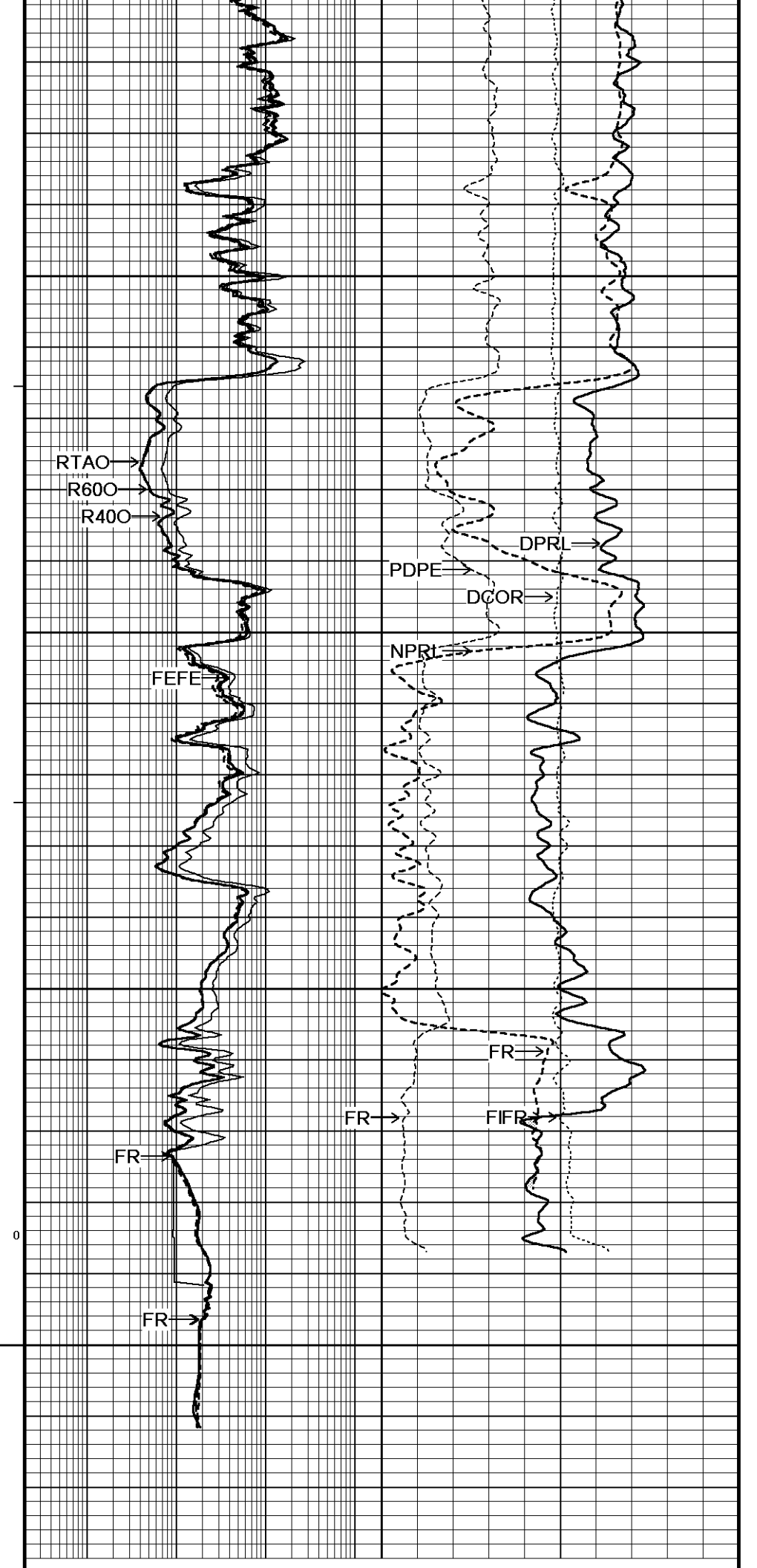
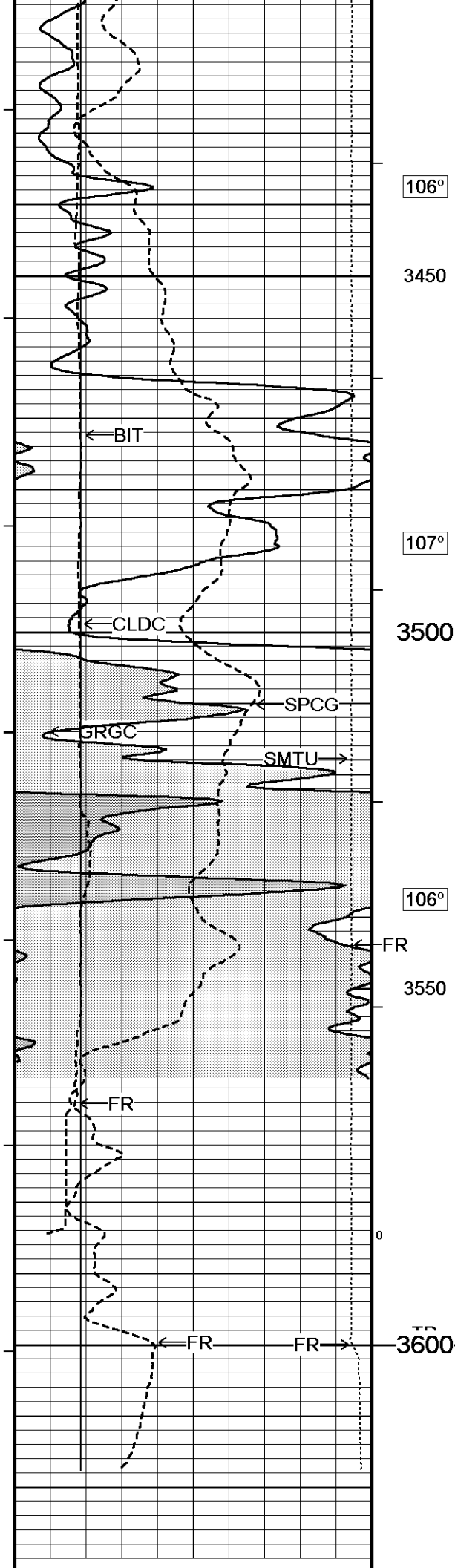


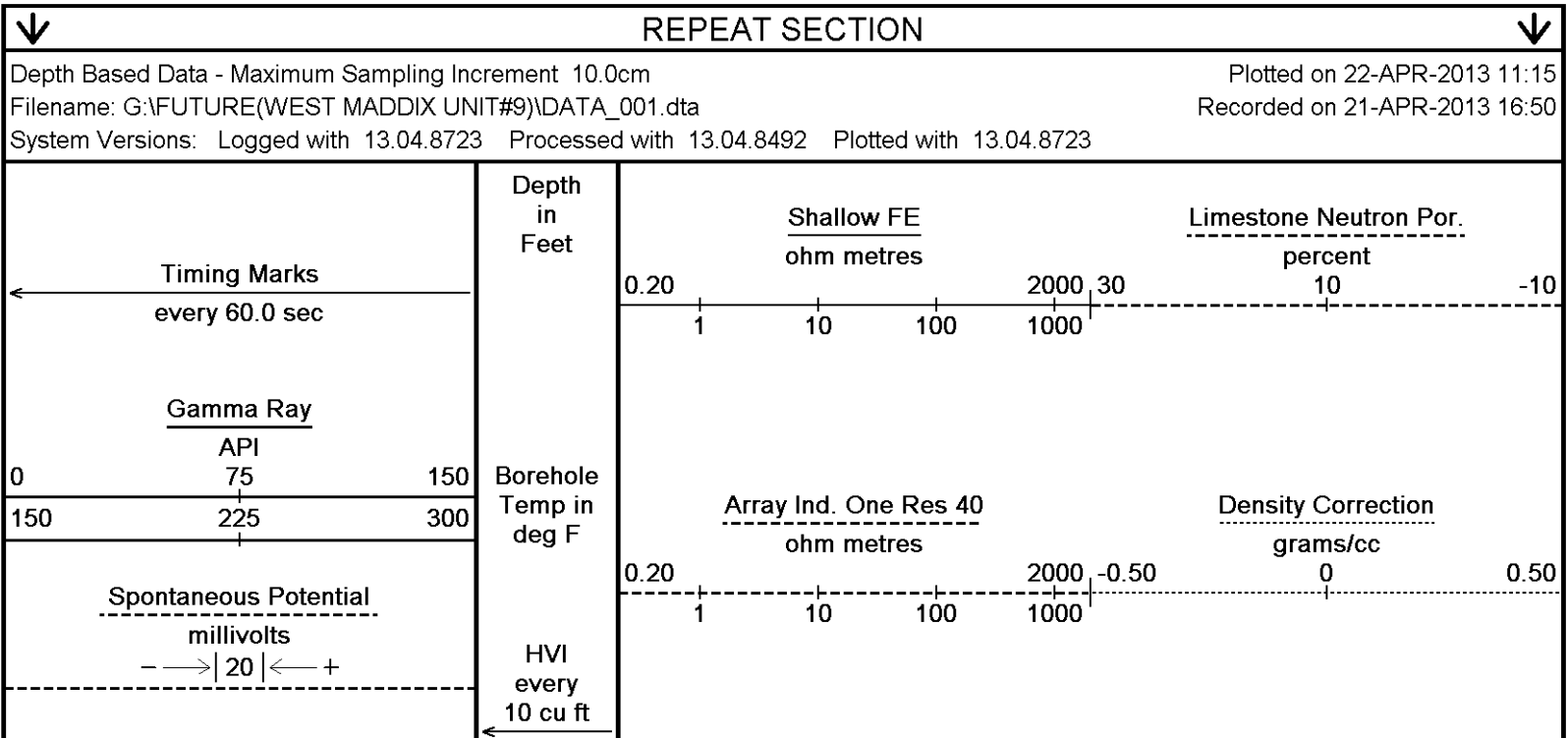
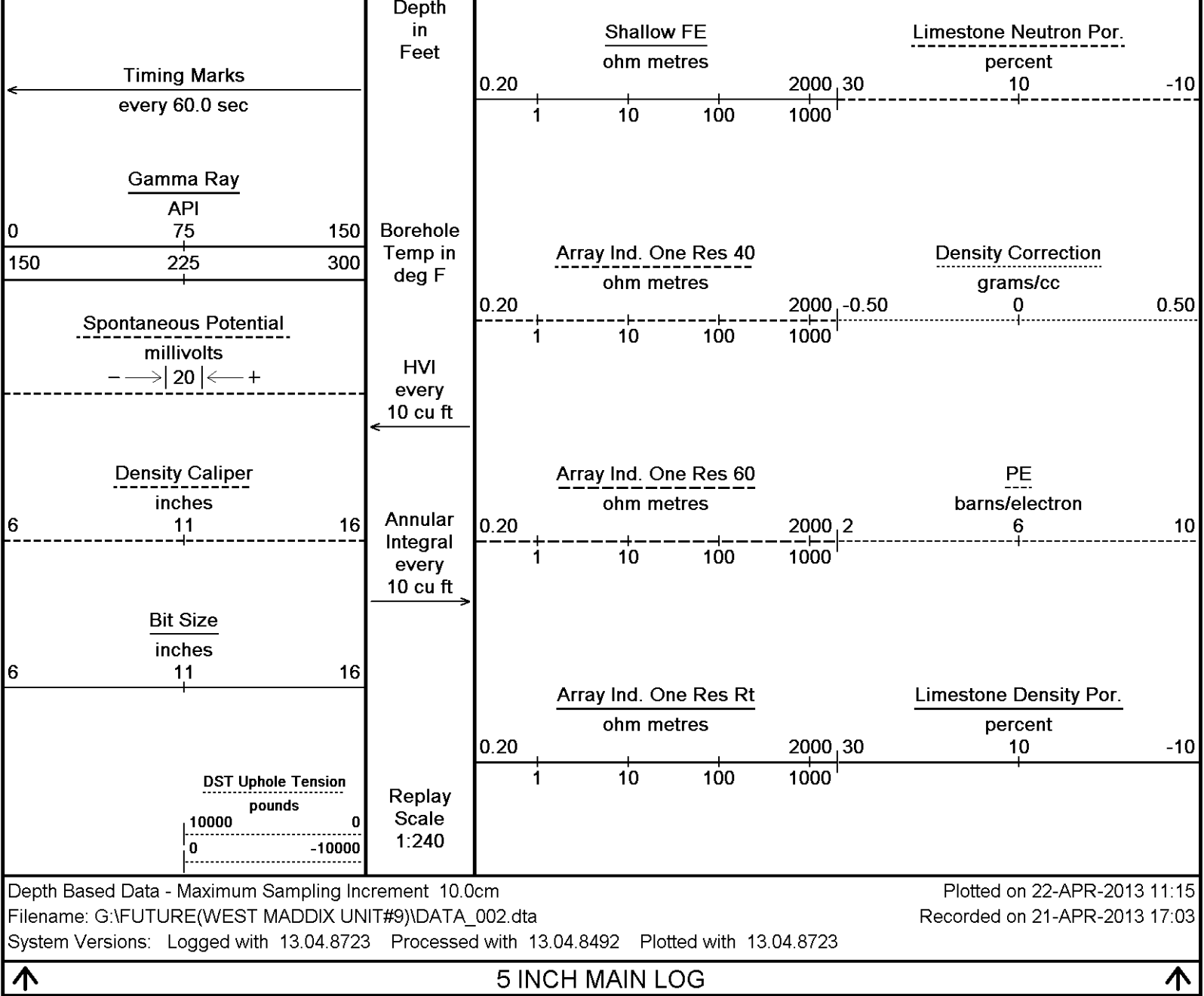


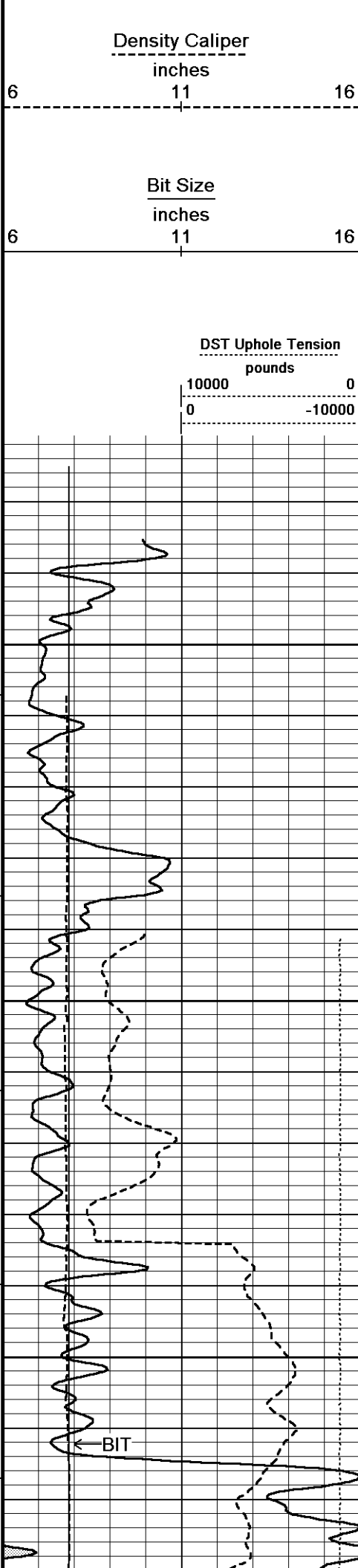








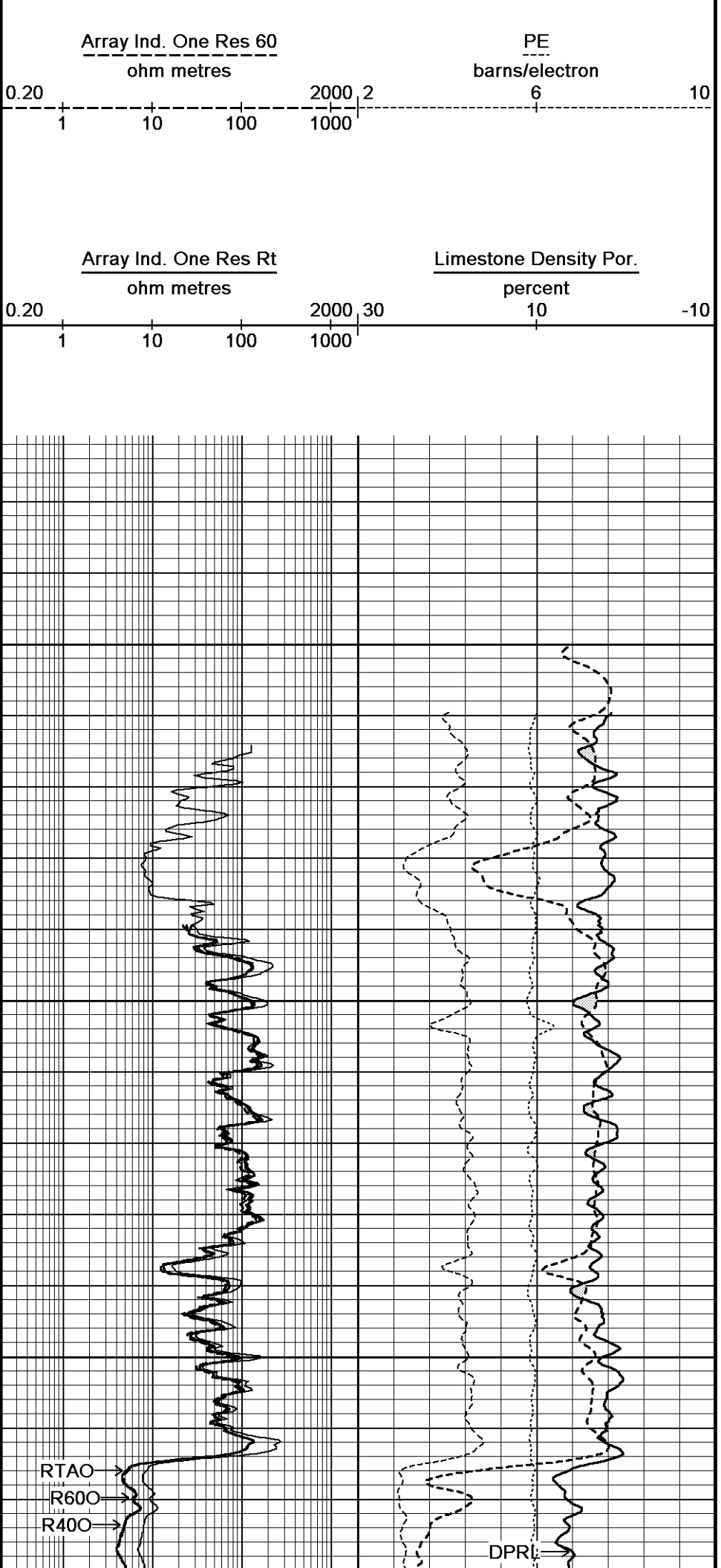


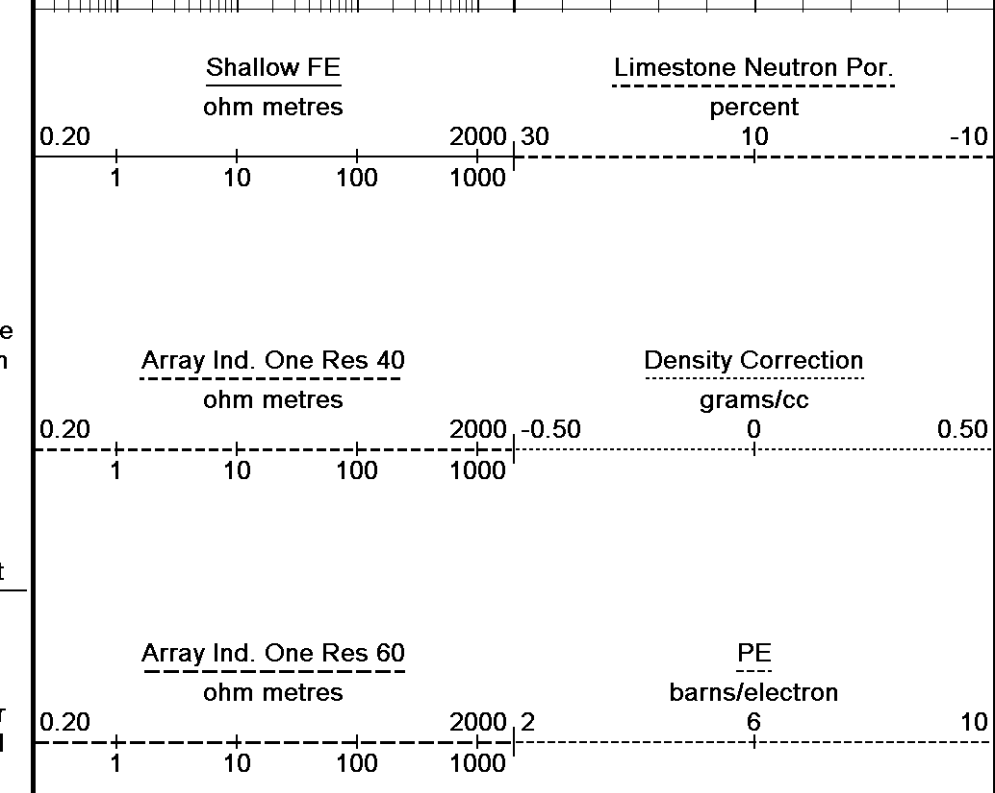
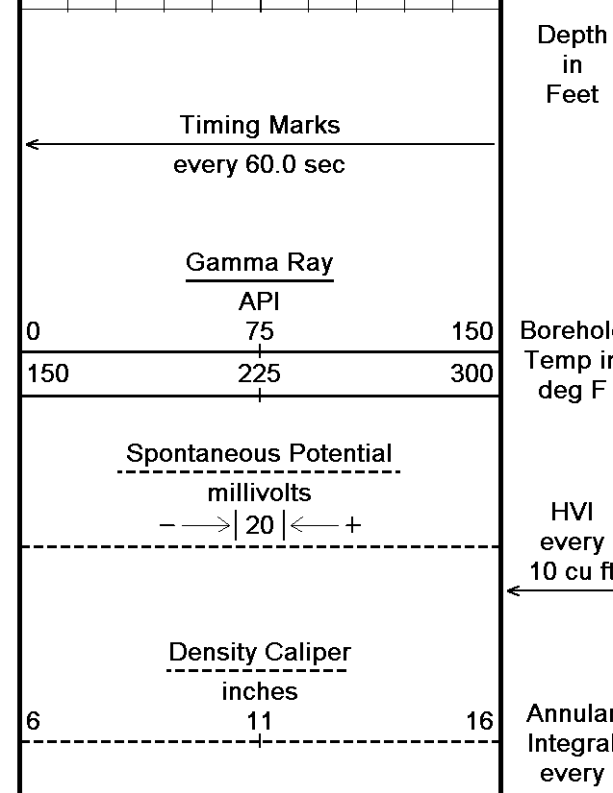
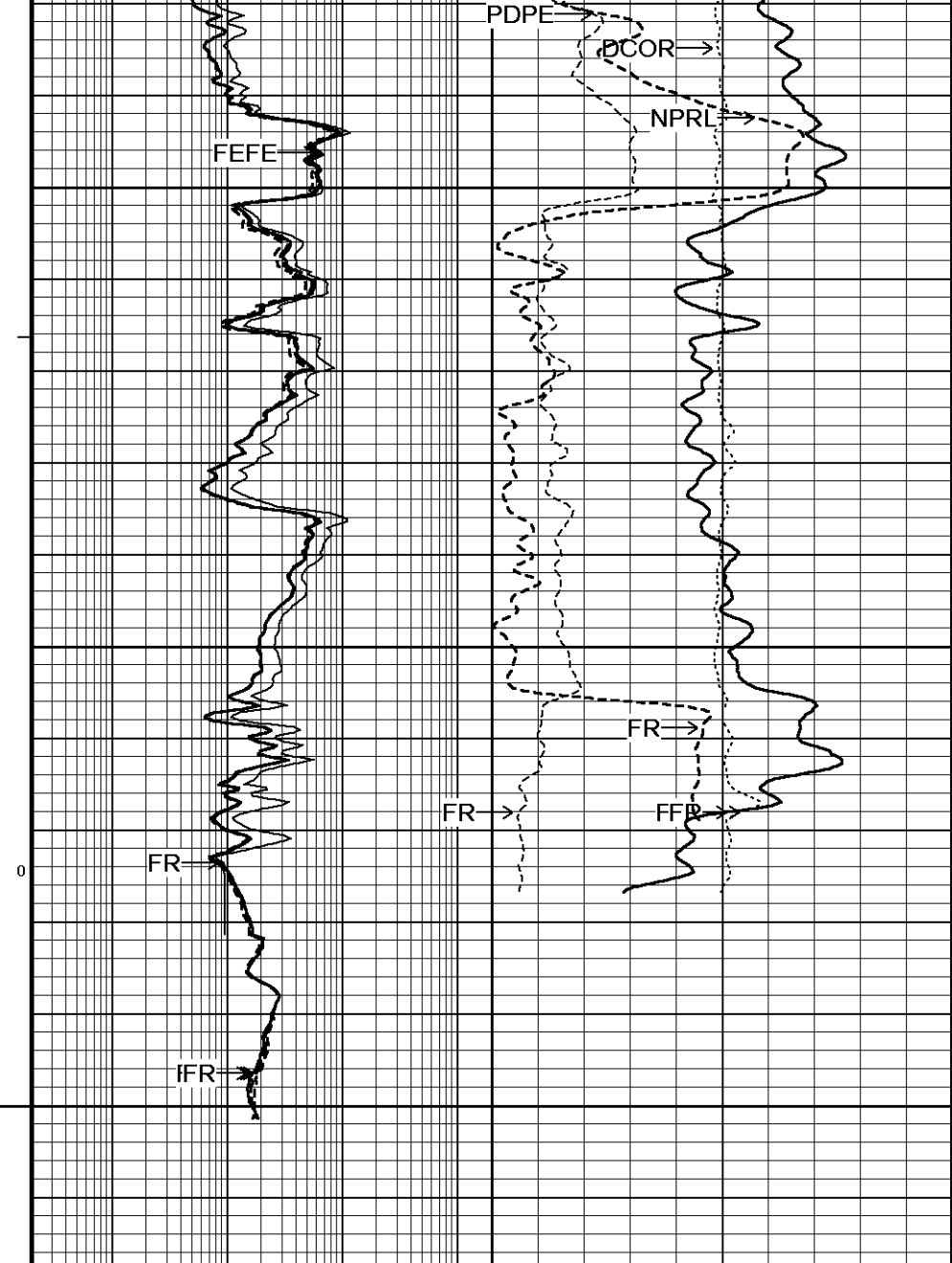
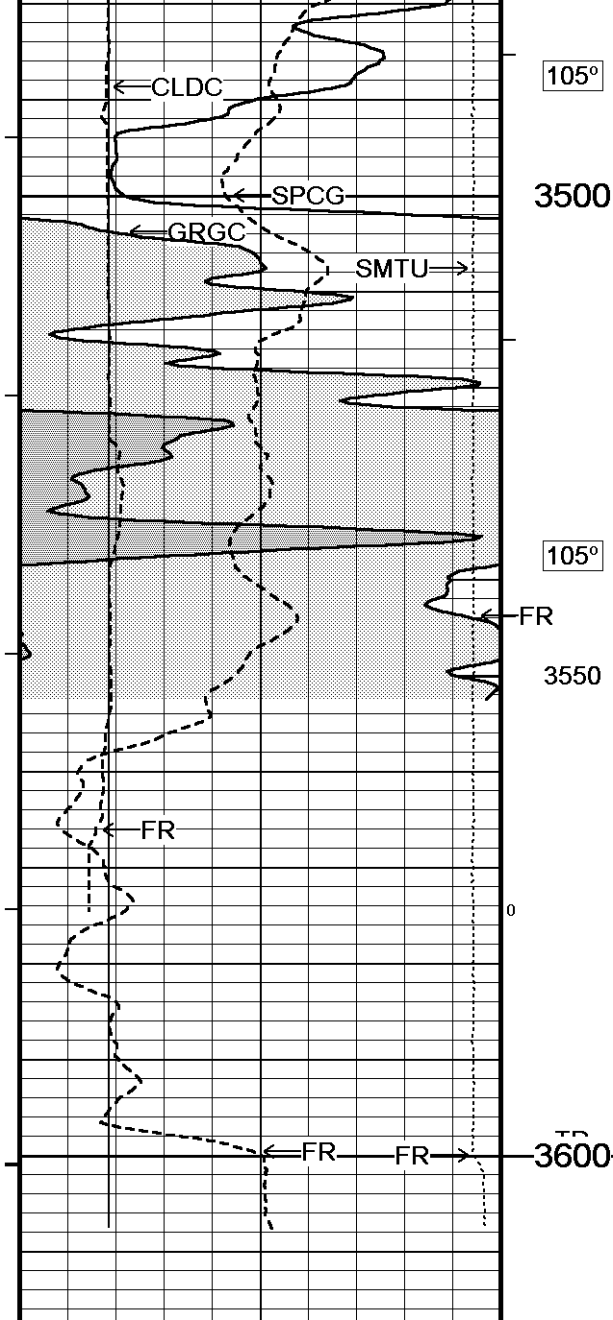


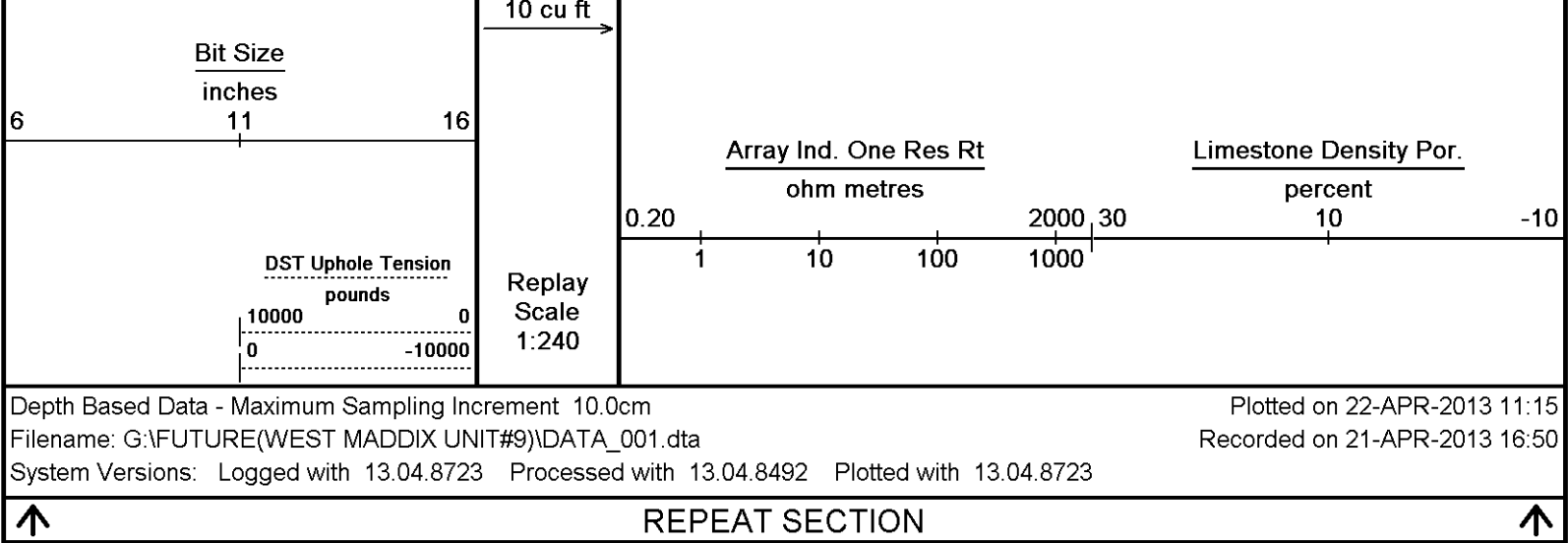
Annular
Integral
every
10 cu ft

→

Replay
Scale
1:240







BEFORE SURVEY CALIBRATION			
G:\FUTURE(WEST MADDIX UNIT#9)\DATA_002.dta			
General Constants All 000			Last Edited on 21-APR-2013,16:11
General Parameters			
Mud Resistivity	1.900	ohm-metres	
Mud Resistivity Temperature	86.000	degrees F	
Water Level	0.000	feet	
Borehole Fluid Processing	Wet Hole		
Hole/Annular Volume and Differential Caliper Parameters			
HVOL Method	Single Caliper		
HVOL Caliper 1	Density Caliper		
HVOL Caliper 2	N/A		
Annular Volume Diameter	5.500	inches	
Caliper for Differential Caliper	None		
Rwa Parameters			
Porosity used	Limestone Density Por.		
Resistivity used	Array Ind. One Res Rt		
RWA Constant A	0.610		
RWA Constant M	2.150		
Down-hole Tension Calibration SMS 0			Field Calibration on 18-APR-2013 10:53
Reading No	Measured	Calibrated (lbs)	
1	14322.36	0.00	
2	14708.87	377.00	
High Resolution Temperature Calibration MCG-D.K 430			Field Calibration on 18-APR-2013,07:34
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	100.00	100.00	
High Resolution Temperature Constants MCG-D.K 430			Last Edited on 18-APR-2013,07:34
Pre-filter Length	11		
SP Calibration MCG-D.K 430			Field Calibration on 18-APR-2013,07:34
	Measured	Calibrated (mV)	
Reference 1	100.0	100.0	
Reference 2	-100.0	-100.0	
Gamma Calibration MCG-D.K 430			Field Calibration on 21-APR-2013,16:14
	Measured	Calibrated (API)	
Background	40	27	
Calibrator (Gross)	1078	723	
Calibrator (Net)	1038	696	

Gamma Constants MCG-D.K 430

Last Edited on 21-APR-2013,16:14

Gamma Calibrator Number	46	
Mud Density	1.14	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

Micro Normal and Micro Inverse Calibration MMR-B.A 68

Base Calibration on 28-MAR-2013 10:32

Field Check on 21-APR-2013,16:14

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	11.9	58.8	5.0	25.0
Micro Inverse	15.5	77.0	5.0	25.0

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	77.5	77.5
Micro Inverse	59.2	59.2

Micro Normal and Micro Inverse Constants MMR-B.A 68

Last Edited on 11-MAR-2013,02:26

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159
Micro Normal K Factor	1.0000
Micro Inverse K Factor	1.0000
Standoff Offset	0.0000 inches

Caliper Calibration MMR-B.A 68

Base Calibration on 18-APR-2013,10:18

Field Calibration on

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14007	5.96
2	17124	7.98
3	20434	9.94
4	24160	11.91
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
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Neutron Calibration MDN-A.B 55

Base Calibration on 12-APR-2013,13:12

Field Check on 21-APR-2013,16:15

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3091	97	3714	110
Ratio	31.818		33.764	

Field Calibrator at Base

	Calibrated (cps)
	2024 3009
Ratio	0.673

Field Check

	Calibrated (cps)
	2024 3009
Ratio	0.684

Neutron Constants MDN-A.B 55

Last Edited on 21-APR-2013,16:14

Neutron Source Id	P14033B
Neutron Jig Number	NEC056
Epithermal Neutron	No
Caliper Source for Processing	Density Caliper
Stand-off	0.00 inches
Mud Density	1.00 gm/cc
Limestone Sigma	7.10 cu
Sandstone Sigma	4.26 cu
Dolomite Sigma	4.70 cu
Formation Pressure Source	Constant Value
Formation Pressure	0.00 kpsi
Temperature Source	Constant Value

Temperature	68.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	
FE Calibration MFE-A.A 65		Base Calibration on 28-MAR-2013 10:44 Field Check on 21-APR-2013,16:15
Base Calibration		
	Measured	Calibrated (ohm-m)
Reference 1	9.7	1.3
Reference 2	956.6	126.8
Base Check		282.0
Field Check		282.0
FE Constants MFE-A.A 65		Last Edited on 21-APR-2013,16:15
Running Mode	No Sleeve	
MFE K Factor	0.1268	
Caliper Source for FE correction	Density Caliper	
Caliper Value for FE correction	N/A	inches
Rm Source for FE correction	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
Stand-off	0.5	inches
Sonic Constants MSS-C.K 368		Last Edited on
Maximum Boundary Contrast	100.00	micro-sec/ft
Fluid Transit Time	189.00	micro-sec/ft
Limestone Transit Time	47.50	micro-sec/ft
Sandstone Transit Time	55.50	micro-sec/ft
Dolomite Transit Time	43.50	micro-sec/ft
Sonic used for Porosities	3-5' Compensated	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	0.00	micro-sec
MX3FT	1500.00	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft
Sonde Mode	Compensated	
Hole Type	Open Hole	
Sonde Parameters		
	Measured	Calibrated
Offset	0.0000	0.0000
Free Pipe	0.0000	
Peak Amplitude Source		
Waveform	Start Time (micro-sec)	Width (micro-sec)
3'	N/A	N/A
4'	N/A	N/A
5'	N/A	N/A
6'	N/A	N/A
Pre Gain		
Start Gain		
Discriminator (mV)		
Processed Fixed Gate Parameters		
Waveform Used For Processing	N/A	
Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
Depth (m)		
0.00		
Full Waveform Parameters		
Use 3' Waveform to derive TR	No	
Use 4' Waveform to derive TR	No	
Use 5' Waveform to derive TR	No	

Use 5' Waveform to derive TR	No	
3' Waveform Discriminator Level	0.30	mV
4' Waveform Discriminator Level	0.30	mV
5' Waveform Discriminator Level	0.15	mV
6' Waveform Discriminator Level	0.15	mV
3' Waveform Filter		
4' Waveform Filter		
5' Waveform Filter		
6' Waveform Filter		
Semblance Level	0.50	
Semblance Window Width	120.00	micro-sec
Sonic 1 Despiker	100.00	micro-sec/ft
Sonic 2 Despiker	100.00	micro-sec/ft

High Resolution Temperature Calibration MAI-A.A 102			Field Calibration on 18-APR-2013,07:06
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	100.00	100.00	

High Resolution Temperature Constants MAI-A.A 102		Last Edited on 18-APR-2013,07:06
Pre-filter Length	11	

Induction Calibration MAI-A.A 102					Base Calibration on 12-APR-2013,13:15	
					Field Check on 21-APR-2013,16:16	
Base Calibration						
Test Loop Calibration		Measured		Calibrated (mmho/m)		
Channel		Low	High	Low	High	
1		18.0	481.9	9.3	966.2	
2		6.6	378.8	7.6	821.4	
3		4.0	256.0	5.2	566.0	
4		3.8	134.5	2.6	279.2	
Array Temperature			86.5	Deg F		
Channel	Base Check (mmho/m)			Field Check (mmho/m)		
		Low	High	Low	High	
1		0.0	0.0	10.9	3808.4	
2		0.0	0.0	29.5	3604.3	
3		0.0	0.0	28.0	3131.7	
4		0.0	0.0	15.9	2101.1	
Deep				14.2	2019.2	
Medium				44.6	4177.9	
Shallow				47.9	5350.2	
Array Temperature			0.0	61.5	Deg F	

Induction Constants MAI-A.A 102		Last Edited on 21-APR-2013,16:16
Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Bit Size	
Hole Size for Borehole Correction	N/A	inches
Tool Centred	No	
Stand-off Type	Fins	
Stand-off	0.50	inches
Number of Fins on Stand-off	6.0000	
Stand-off Fin Angle	60.00	degrees
Stand-off Fin Width	0.5000	inches
Borehole Corr. Rm Source	Temperature Corr	
Temp. for Rm Corr.	Borehole Temp. Unfilt.	
Squasher Start	0.0020	mhos/metre
Squasher Offset	N/A	mhos/metre
Borehole Normalisation		
DRM1	0.0000	DRC1 0.0000
DRM2	0.0000	DRC2 0.0000
MRM1	0.0000	MRC1 0.0000
MRM2	0.0000	MRC2 0.0000
SRM1	0.0000	SRC1 0.0000
SRM2	0.0000	SRC2 0.0000

Calibration Site Corrections		
Channel 1	0.00	mmhos/metre
Channel 2	0.00	mmhos/metre
Channel 3	0.00	mmhos/metre
Channel 4	0.00	mmhos/metre

Apparent Porosity and Water Saturation Constants

Archie Constant (A)	1.00	
Cementation Exponent (M)	2.00	
Saturation Exponent (N)	2.00	
Saturation of Water for Apor	100.00	percent
Resistivity of Water for Apor and Sw	0.05	ohm-m
Resistivity of Mud Filtrate for Sw	0.00	ohm-m
Source for Rt	0.00	
Source for Rxo	0.00	

Caliper Calibration MPD-D.A 479

Base Calibration on 19-FEB-2013 10:18

Field Calibration on 18-APR-2013 07:18

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	18652	4.01
2	28442	5.96
3	38384	7.97
4	48746	9.94
5	59428	11.91
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.98	7.98

Photo Density Calibration MPD-D.A 479

Base Calibration on 28-MAR-2013 11:16

Field Check on 21-APR-2013,16:15

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	47371	23690	59869	31110
Reference 2	20097	2626	24557	2522

Field Check at Base

1272.9	1522.7
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Field Check

1266.6	1525.1
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PE Calibration

Base Calibration	WS	Measured		Calibrated Ratio
		WH	Ratio	
Background	241	1129		
Reference 1	21120	47170	0.453	0.369
Reference 2	6157	19947	0.314	0.271

Field Check at Base

240.9	1129.4
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Field Check

241.6	1124.3
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Density Constants MPD-D.A 479

Last Edited on 21-APR-2013,16:12

Density Source Id	260	
Nylon Calibrator Number	DNCE 633	
Aluminium Calibrator Number	DACD 633	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.14	gm/cc
Mud Density Z/A Multiplier	1.11	
Mud Filtrate Density	1.00	gm/cc
Dry Hole Mud Filtrate Density	1.00	gm/cc

DNCT	0.00	gm/cc
CRCT	0.00	gm/cc
Density Z/A Correction	Hybrid	
Matrix Density (gm/cc)	Depth (ft)	
2.71	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	

DOWNHOLE EQUIPMENT

G:\FUTURE(WEST MADDIX UNIT#9)\DATA_002.dta

Compact Comms Gamma
MCG-D.K 430 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-Resistivity
MMR-B.A 68 LG: 8.59 ft WT: 81.6 lb OD: 4.88 in

Compact Neutron
MDN-A.B 55 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

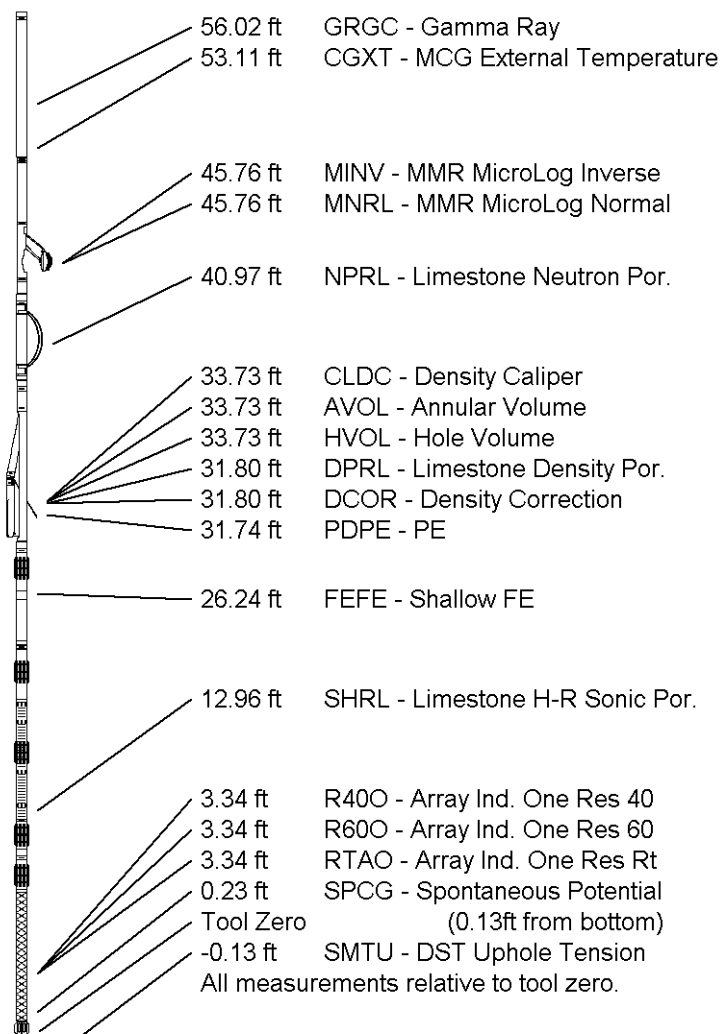
Compact Density/Caliper
MPD-D.A 479 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric
MFE-A.A 65 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-C.K 368 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Induction
MAI-A.A 102 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

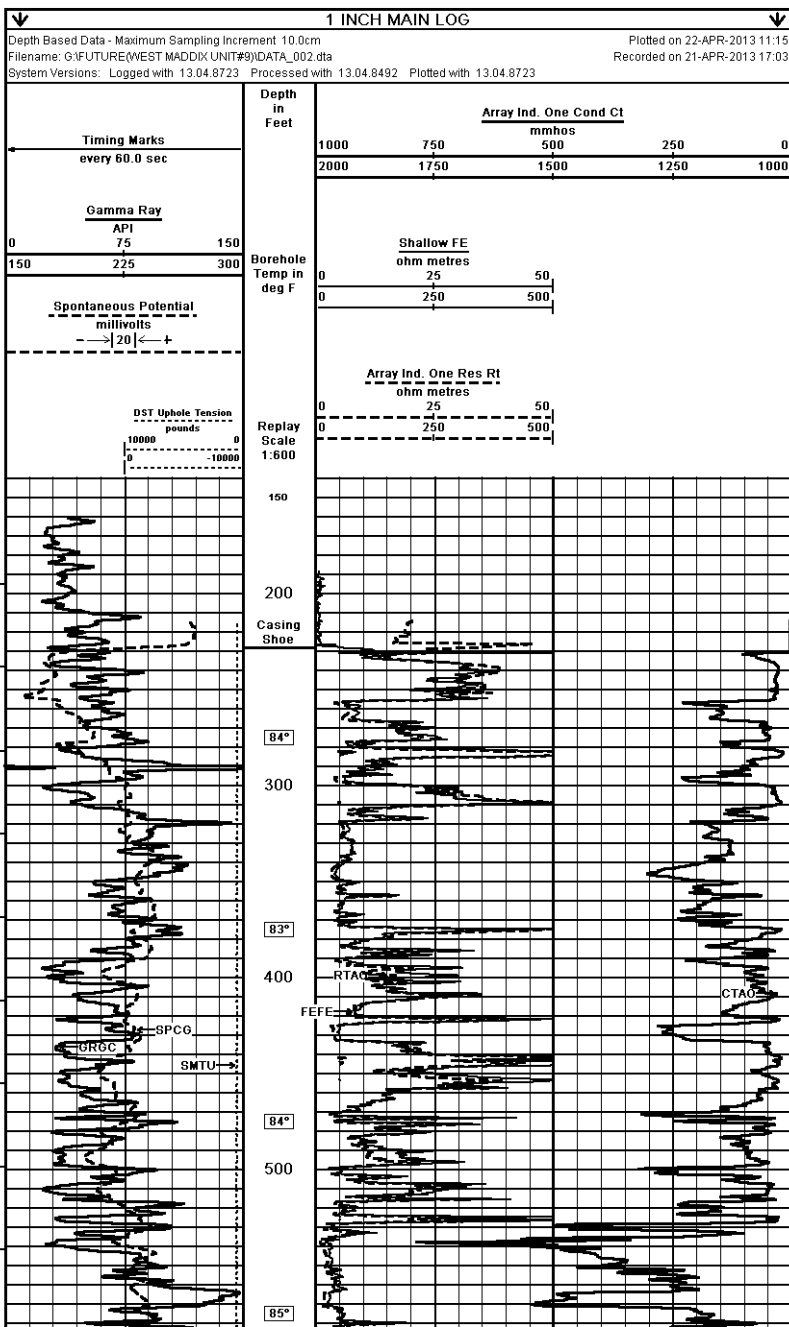
Total Length: 61.30 ft Weight: 456.4 lb

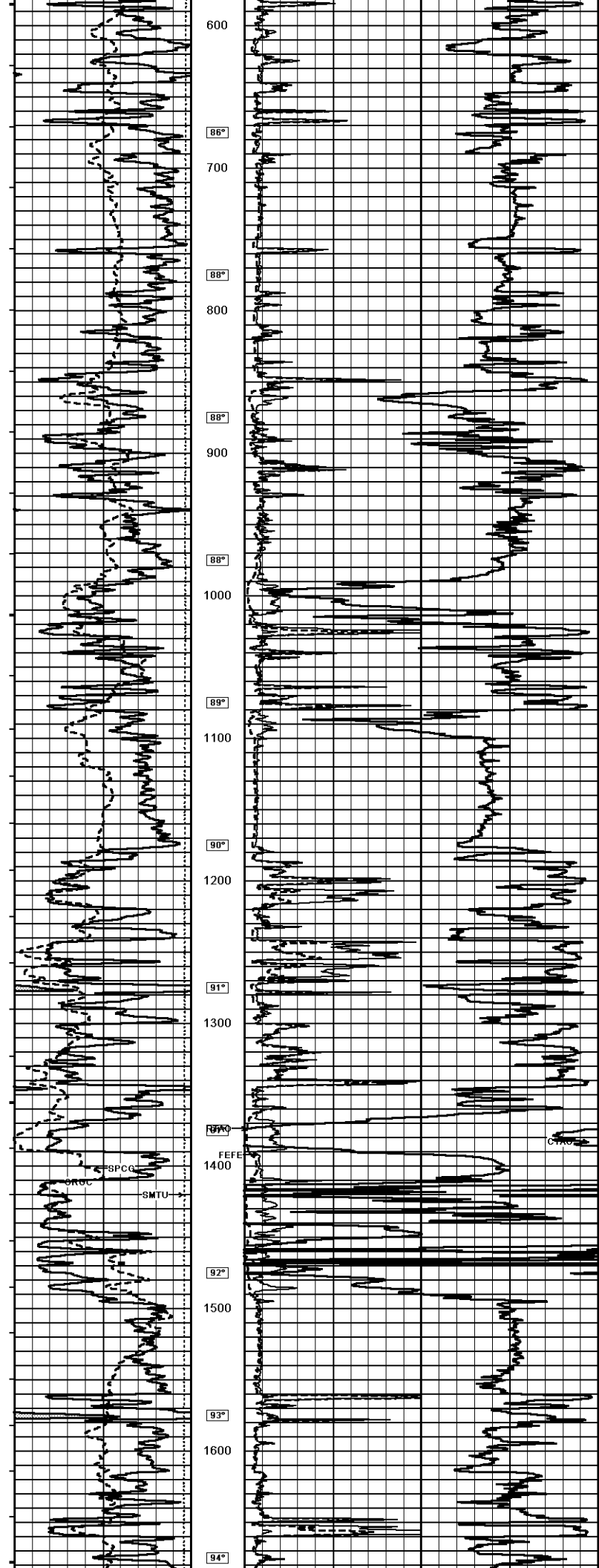


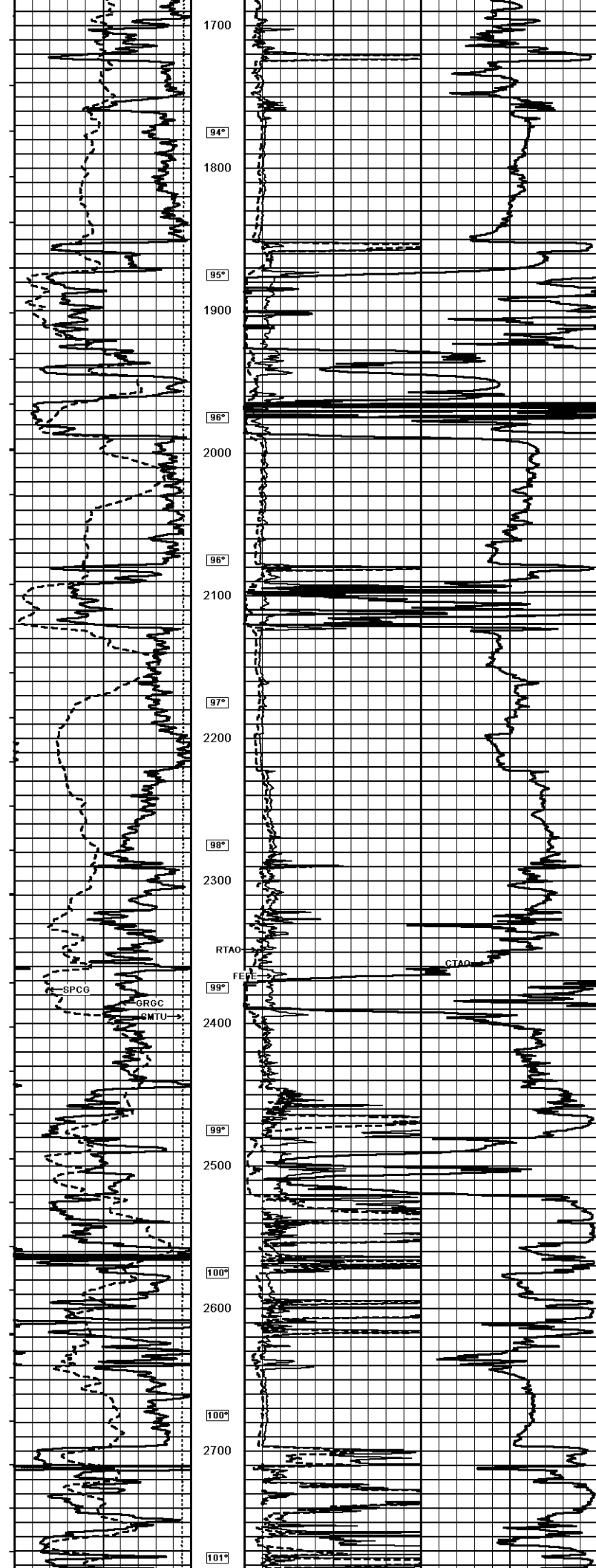
COMPANY	FUTURE PETROLEUM COMPANY
WELL	WEST MADDIX UNIT # 9
FIELD	MADDIX NORTH
PROVINCE/COUNTY	COWLEY
COUNTRY/STATE	U.S.A. / KANSAS

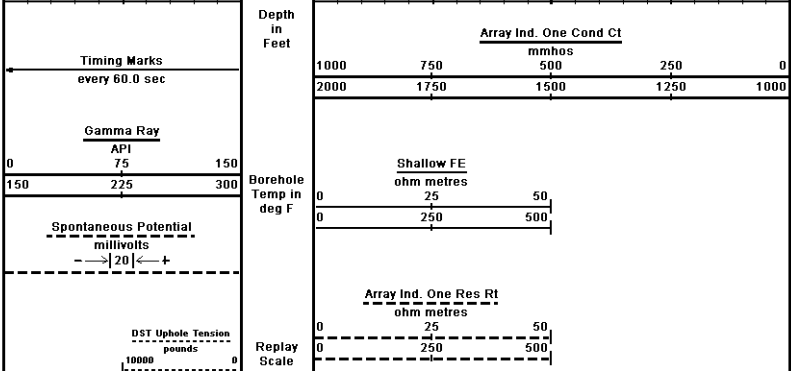
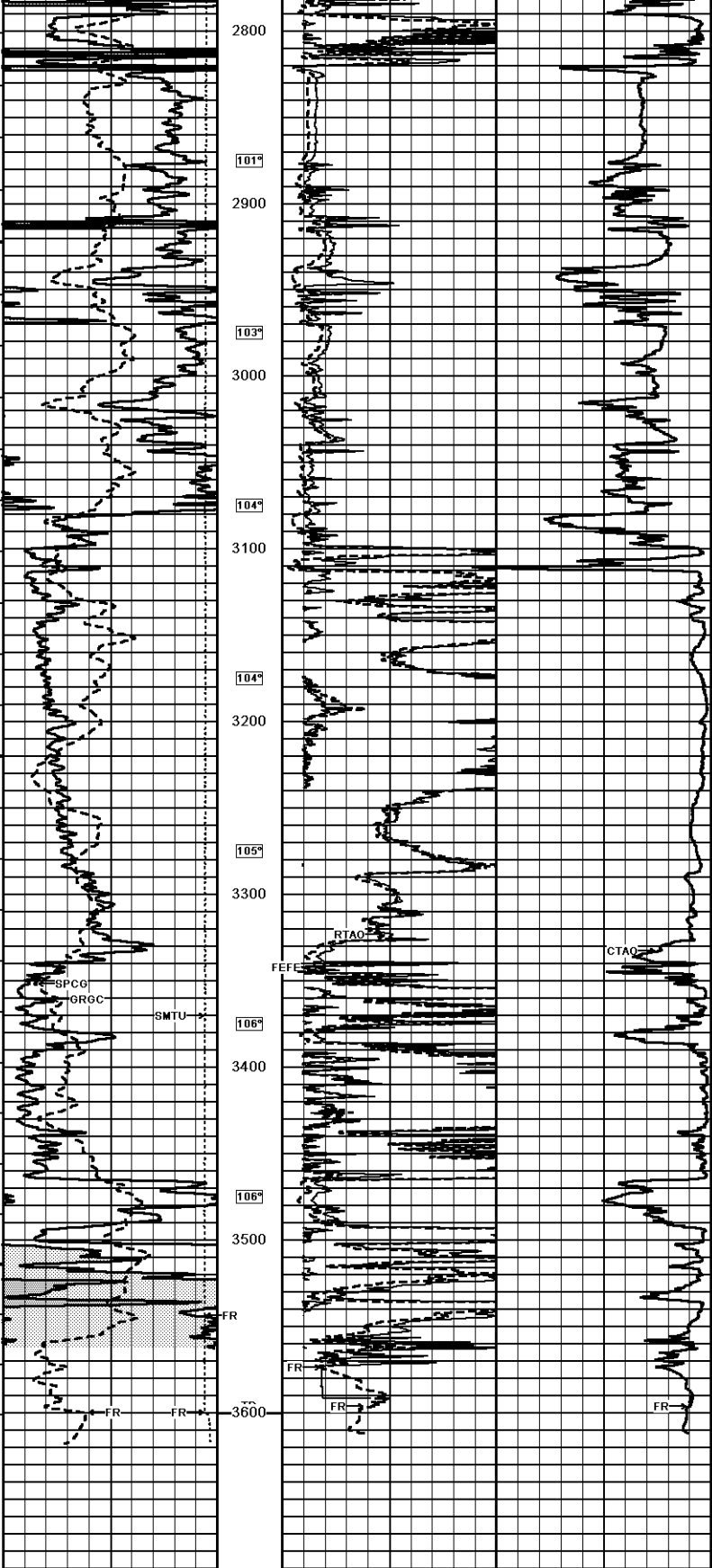
Elevation Kelly Bushing	1285.00	feet	First Reading	3597.00	feet
Elevation Drill Floor	1284.00	feet	Depth Driller	3600.00	feet
Elevation Ground Level	1275.00	feet	Depth Logger	3600.00	feet

Weatherford		COMPOSITE DENSITY / NEUTRON / INDUCTION LOG	
COMPANY: FUTURE PETROLEUM COMPANY WELL: WEST MADDIX UNIT # 9 FIELD: MADDIX NORTH PROVINCE/COUNTRY: COWLEY U.S.A. / KANSAS STATE: 2475 FSL & 5115 FEL LOCATION: NE NW-SE SW			
SEC 2	TWP 33S	RGE 06E	Other Services
API Number 15-035-24901	DE	MSS	
Permanent Datum Q.L. Elevation 1275 feet Log Measured From KB Drilling Measured From KB		Benchmarks: 1286 feet 1284 feet 1275 feet	
Date	21-APR-2013		
Run Number	ONE		
Service Order	3540413		
Depth Driller	3600.00 feet		
Depth Logger	3600.00 feet		
First Reading	3697.00 feet		
Last Reading	228.00 feet		
Casing Driller	230.00 feet		
Casing Logger	228.00 feet		
Bit Size	7.875 inches		
Hole Fluid Type	GEL		
Density / Viscosity	9.50 lbm/gal	48.00 CP	
PH / Fluid Loss	10.50	8.80 ml/30min	
Sample Source	FLOW LINE		
Rm @ Measured Temp	1.90 @ 86.0	ohm-m	
Rmt @ Measured Temp	1.52 @ 86.0	ohm-m	
Rmc @ Measured Temp	2.28 @ 86.0	ohm-m	
Source Rmt / Rmc	CALC	CALC	
Rm @ BHT	1.56 @ 100.0	ohm-m	
Time Since Circulation	3 HOURS	deg F	
Max Recorded Temp	106.00		
Equipment / Base	13145	OKC	
Witnessed By			









COMPANY

WELL

FIELD

PROVINCE/COUNTY

COUNTRY/STATE

FUTURE PETROLEUM COMPANY

WEST MADDIX UNIT # 9

MADDIX NORTH

COWLEY

U.S.A. / KANSAS

Elevation Kelly Bushing	1285.00	feet	First Reading	3597.00	feet
Elevation Drill Floor	1284.00	feet	Depth Driller	3600.00	feet
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COMPOSITE

DENSITY / NEUTRON / INDUCTION

LOG