



Weatherford

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

COMPANY	CMX, INC.		
WELL	WOODS TRUST #2		
FIELD	UN-NAMED		
PROVINCE/COUNTY	PAWNEE		
COUNTRY/STATE	U.S.A. / KANSAS		
LOCATION	990' FNL & 1320' FWL		
SEC 27	TWP 21S	RGE 19W	Other Services
Latitude	MPD/MDN		
Longitude			
API Number	15-145-21770		
Permanent Datum GL, Elevation	2074 feet		
Log Measured From	KB		Elevations: KB 2087.00
Drilling Measured From	KB @ 13 feet		DF 2085.00
			GL 2074.00
Date	27-JUN-2014		
Run Number	ONE		
Service Order	7577-91017557		
Depth Driller	4340.00		feet
Depth Logger	4337.00		feet
First Reading	4334.00		feet
Last Reading	1029.00		feet
Casing Driller	1026.00		feet
Casing Logger	1029.00		feet
Bit Size	7.875		inches
Hole Fluid Type	CHEMICAL		
Density / Viscosity	9.10 lb/USg	54.00 CP	
PH / Fluid Loss	8.60	8.40 ml/30Min	
Sample Source	MUD PIT		
Rm @ Measured Temp	1.33 @ 88.0		ohm-m
Rmf @ Measured Temp	1.06 @ 88.0		ohm-m
Rmc @ Measured Temp	1.60 @ 88.0		ohm-m
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	1.06 @ 88.0		ohm-m
Time Since Circulation	3 HOURS		
Max Recorded Temp	112.00		deg F
Equipment / Base	13096	LIB	
Recorded By	JEFFREY RANDLE		
Witnessed By	LEAH A. KASTEN		JUSTIN HICKS
JOB #	LB14-191		

BOREHOLE RECORD				Last Edited: 27-JUN-2014 01:20
Bit Size inches		Depth From feet		Depth To feet
7.875		1026.00		4340.00
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	1026.00	24.00

REMARKS
- SOFTWARE ISSUE: WLS 13.08.2113
- TOOL STRING: MCG, MML, MDN, MPD, MFE, MAI RUN IN COMBINATION
- HARDWARE: MDN: DUAL BOWSPRING ECCENTRALIZER MFE: 1 X 0.5 INCH STANDOFF MAI: 2 X 0.5 INCH STANDOFF
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 1492 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH CASING FROM TD TO 3300 FT.: 169 CU. FT.

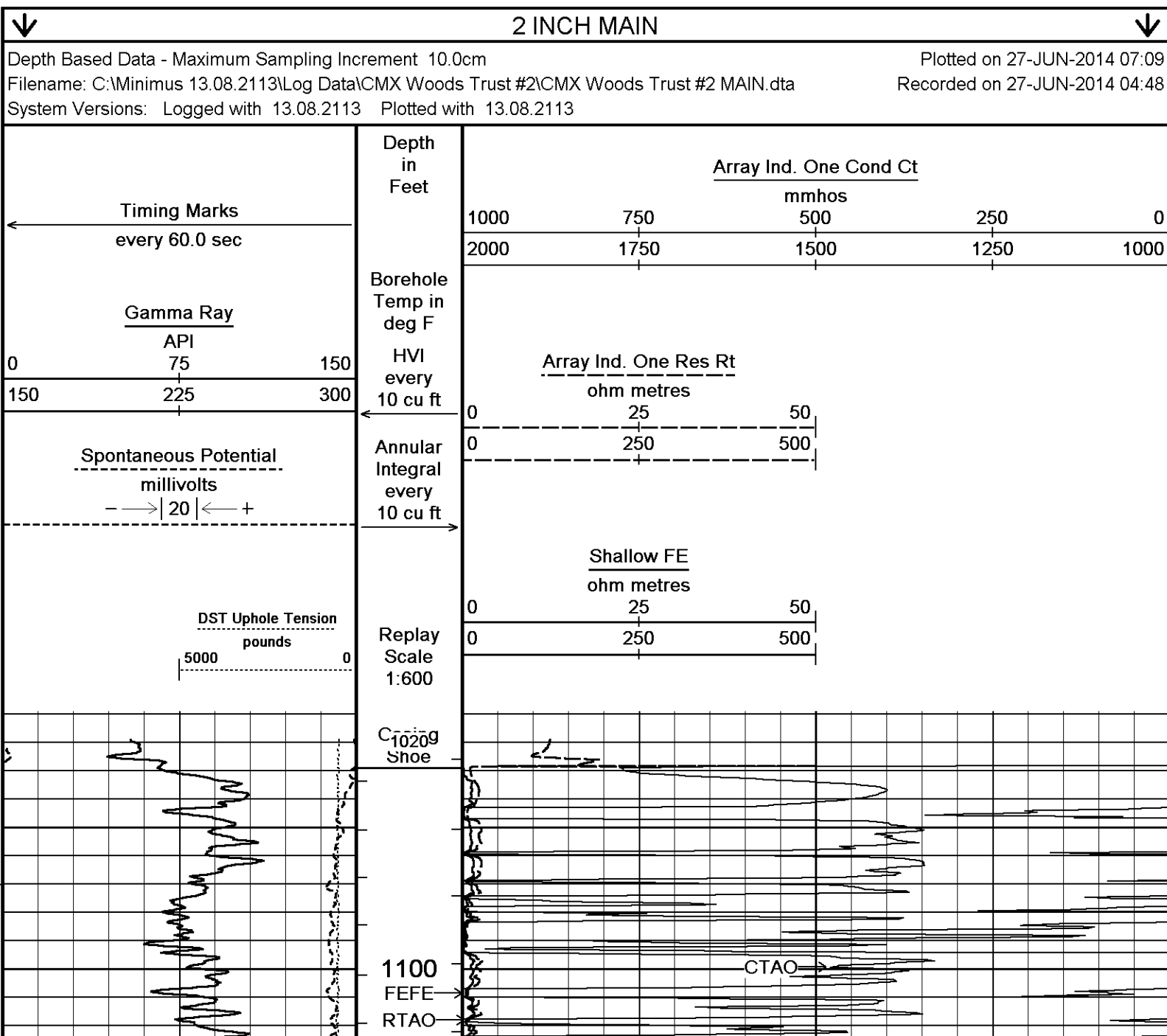
- RIG: DUKE DRILLING RIG #7.

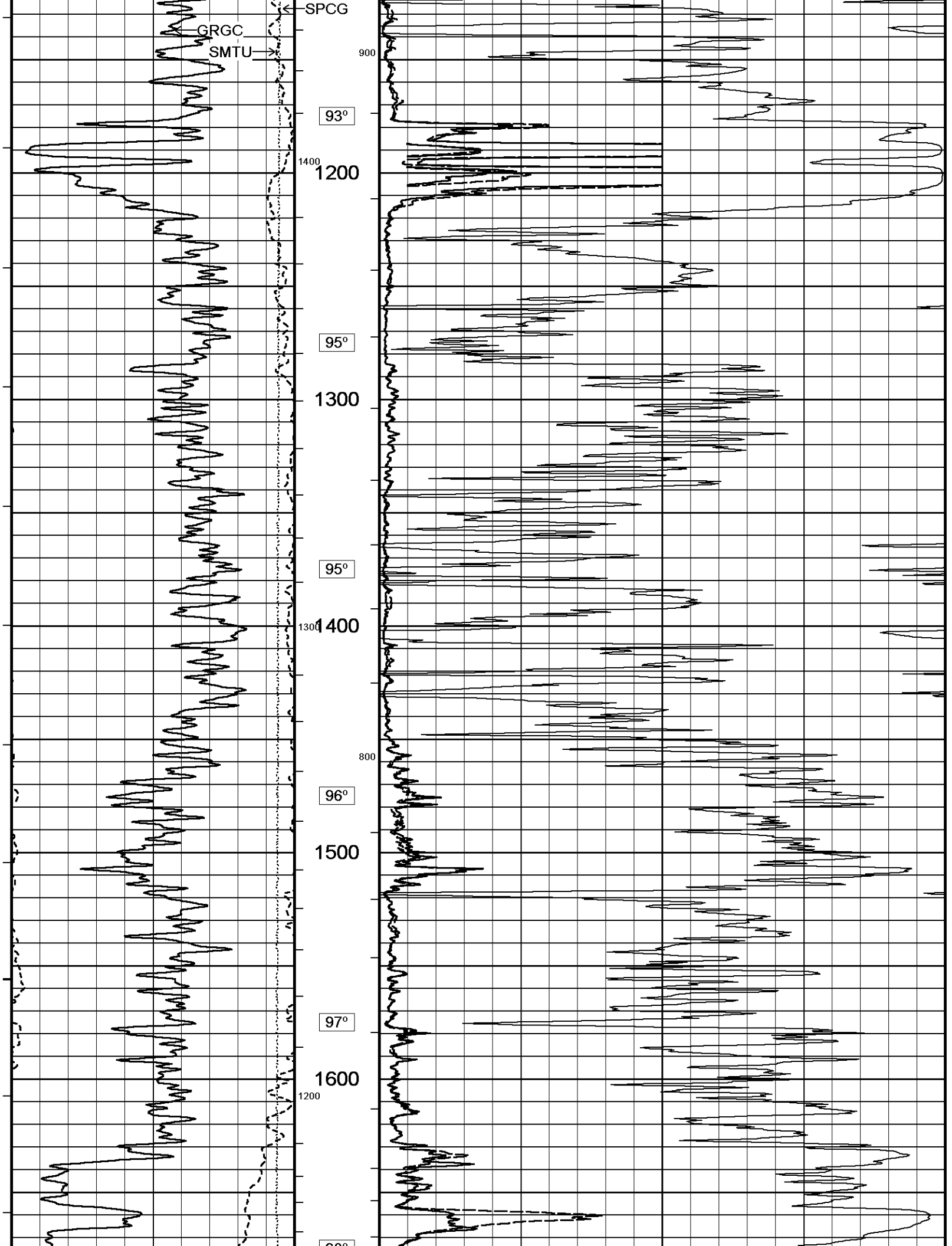
- ENGINEER: JUSTIN HICKS.

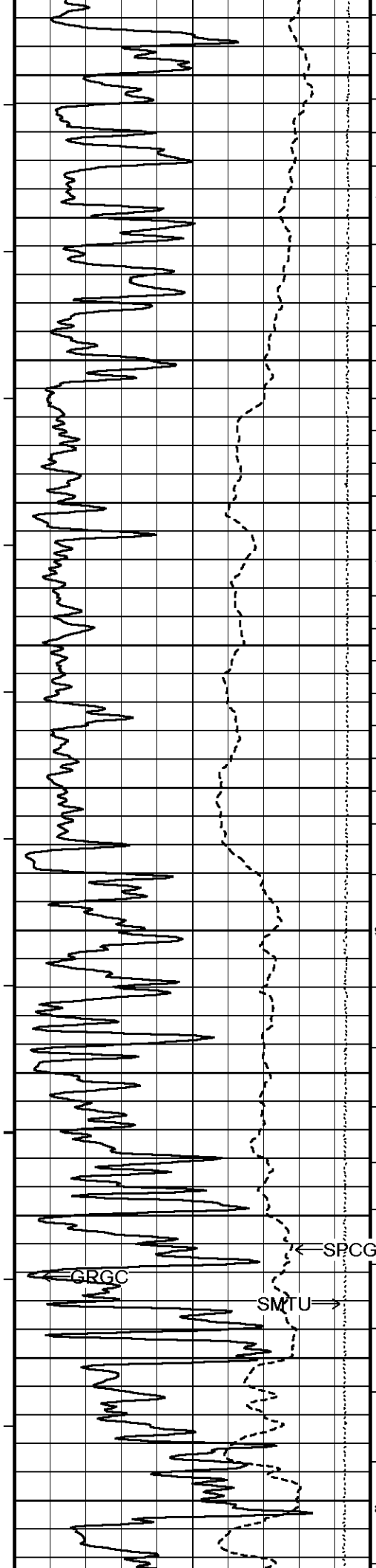
- JUNIOR FIELD ENGINEER: JEFFREY RANDLE.

- OPERATOR: KENNETH RINEHART.

In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.

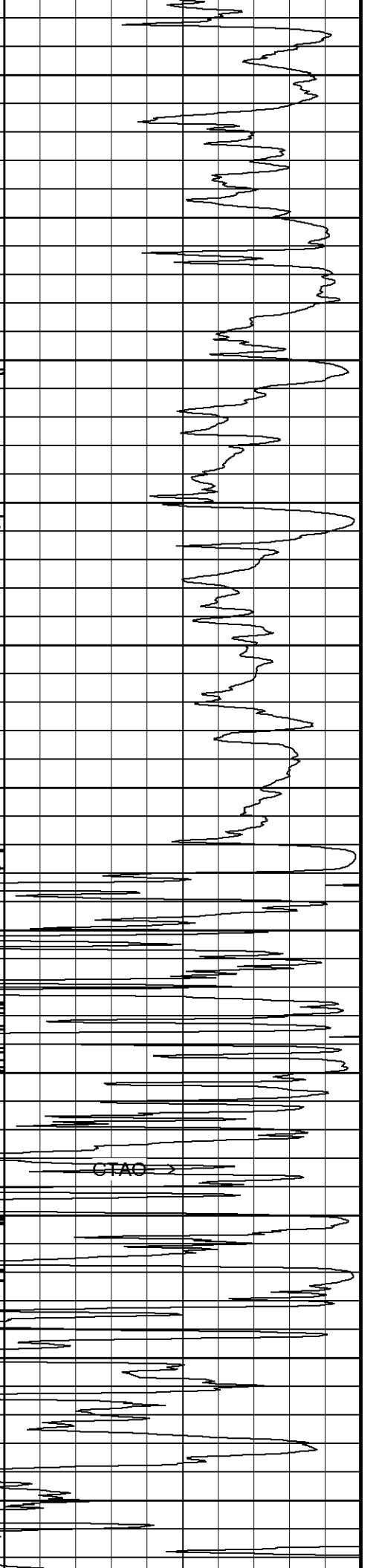
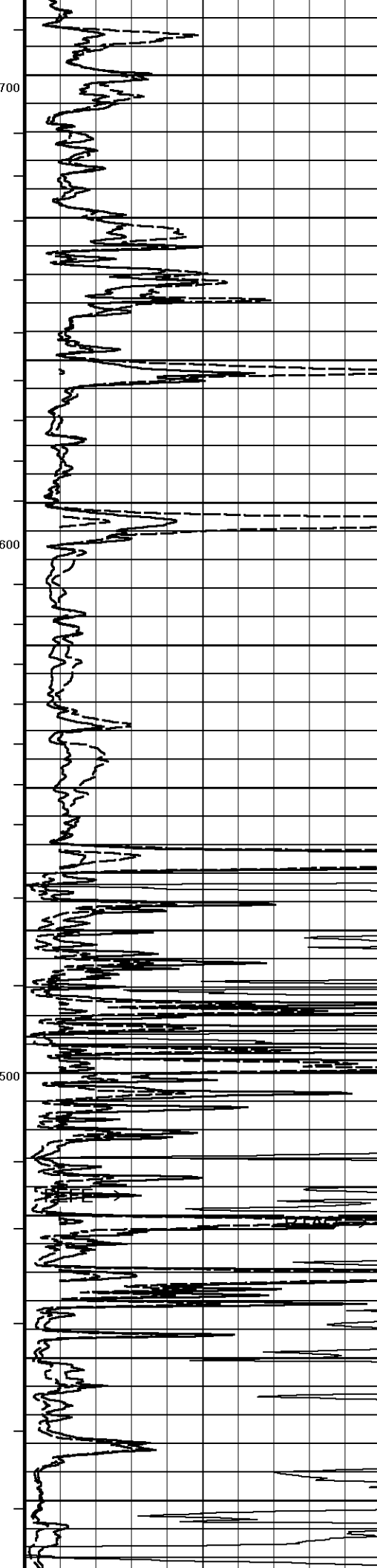


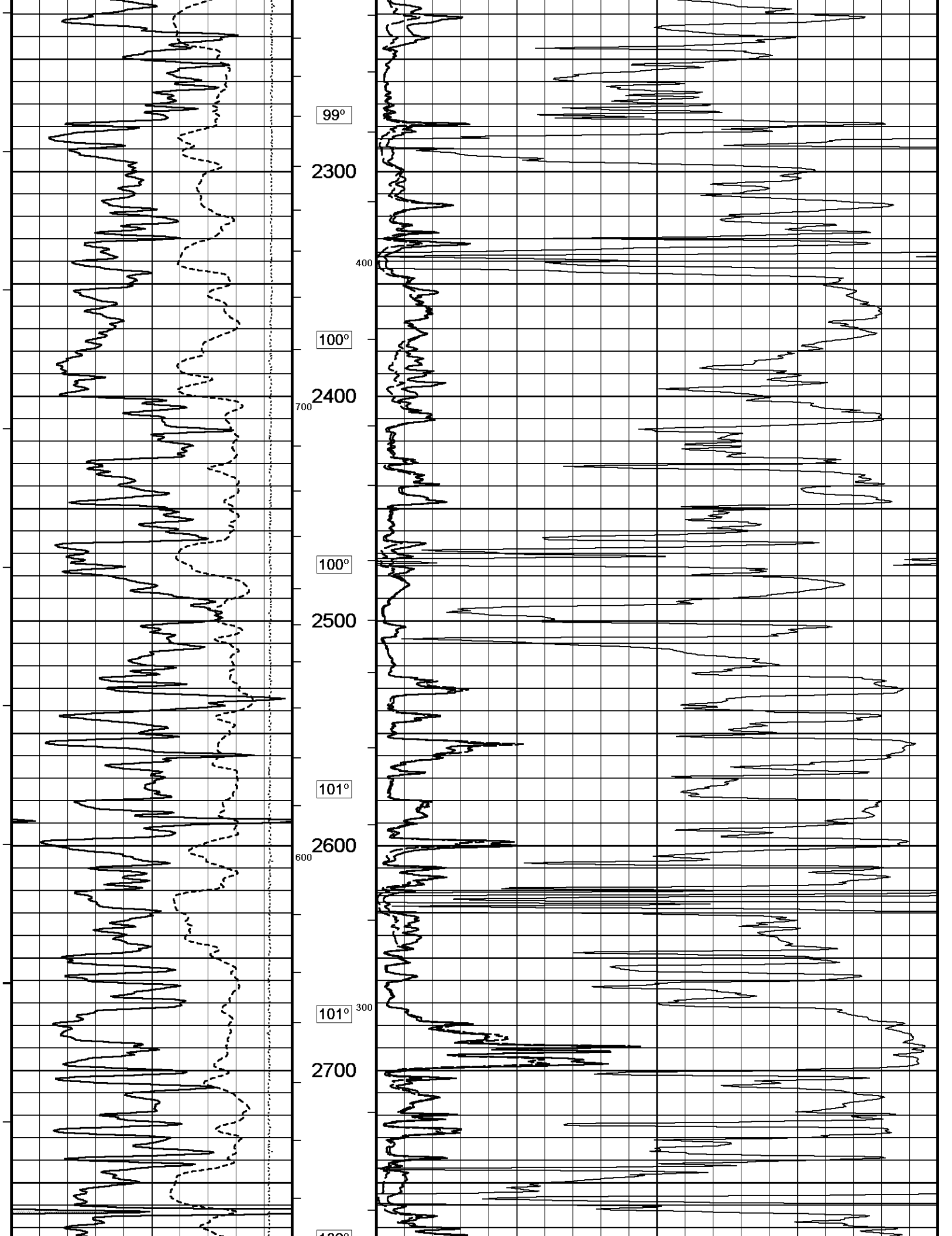


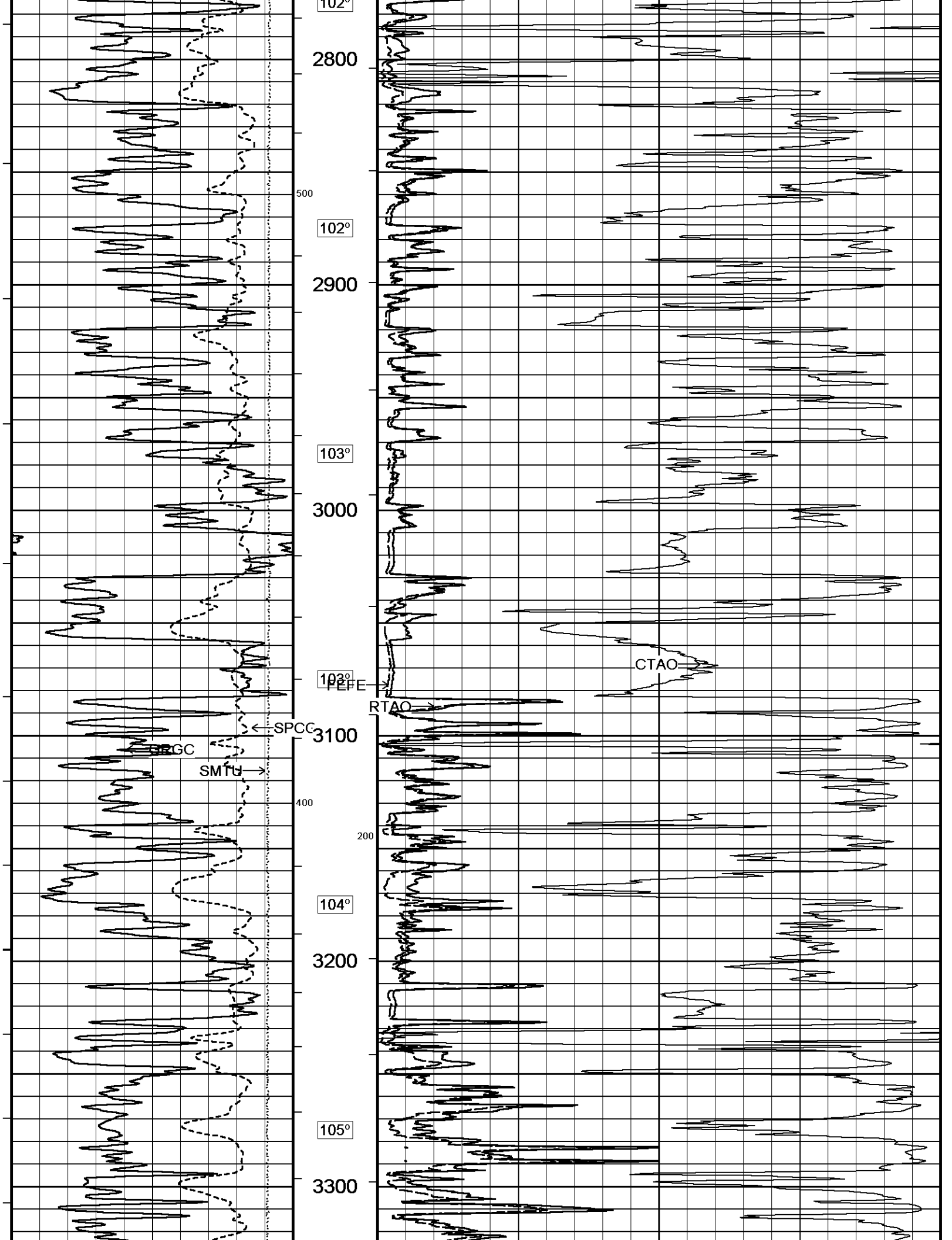


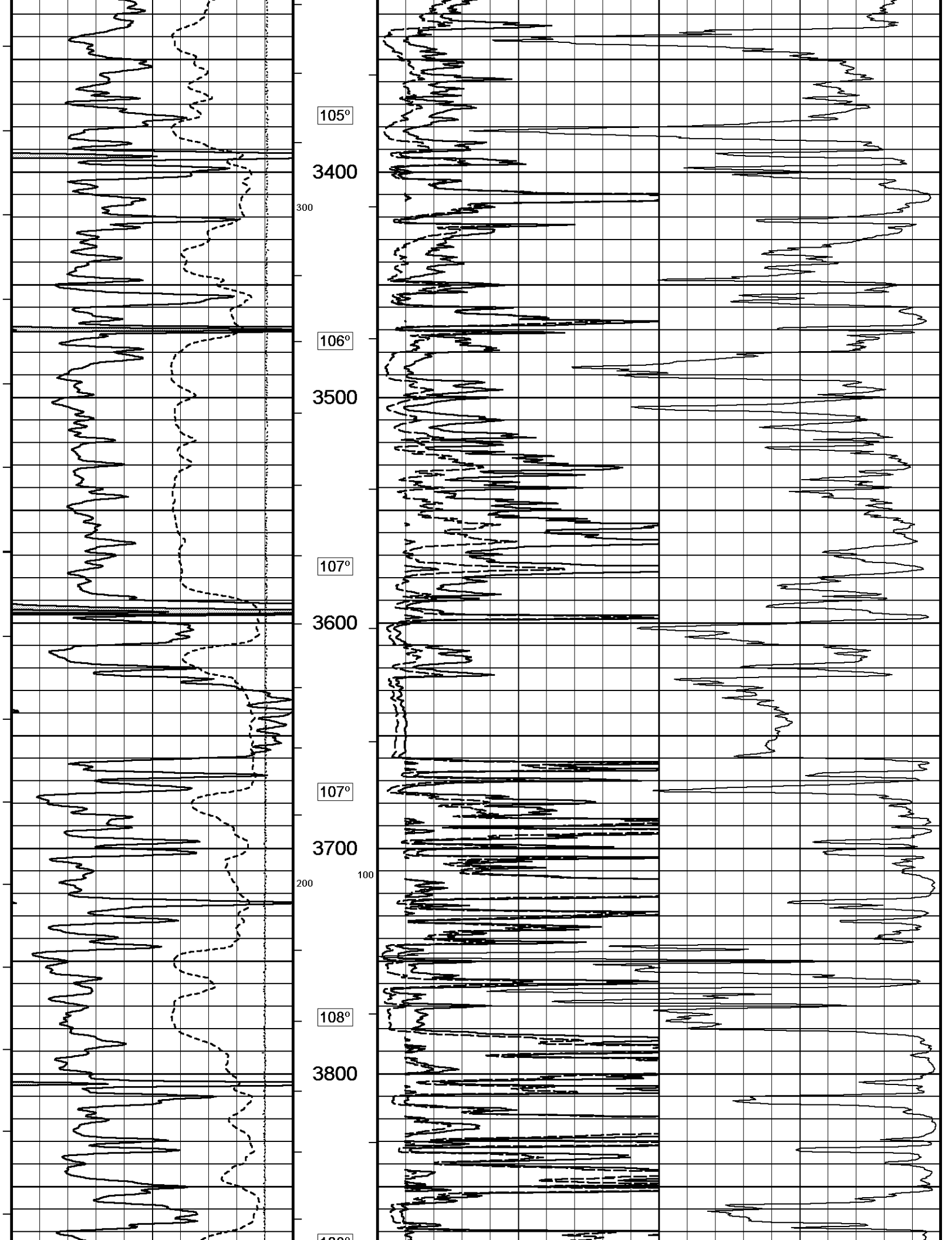
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1800
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2000
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2200

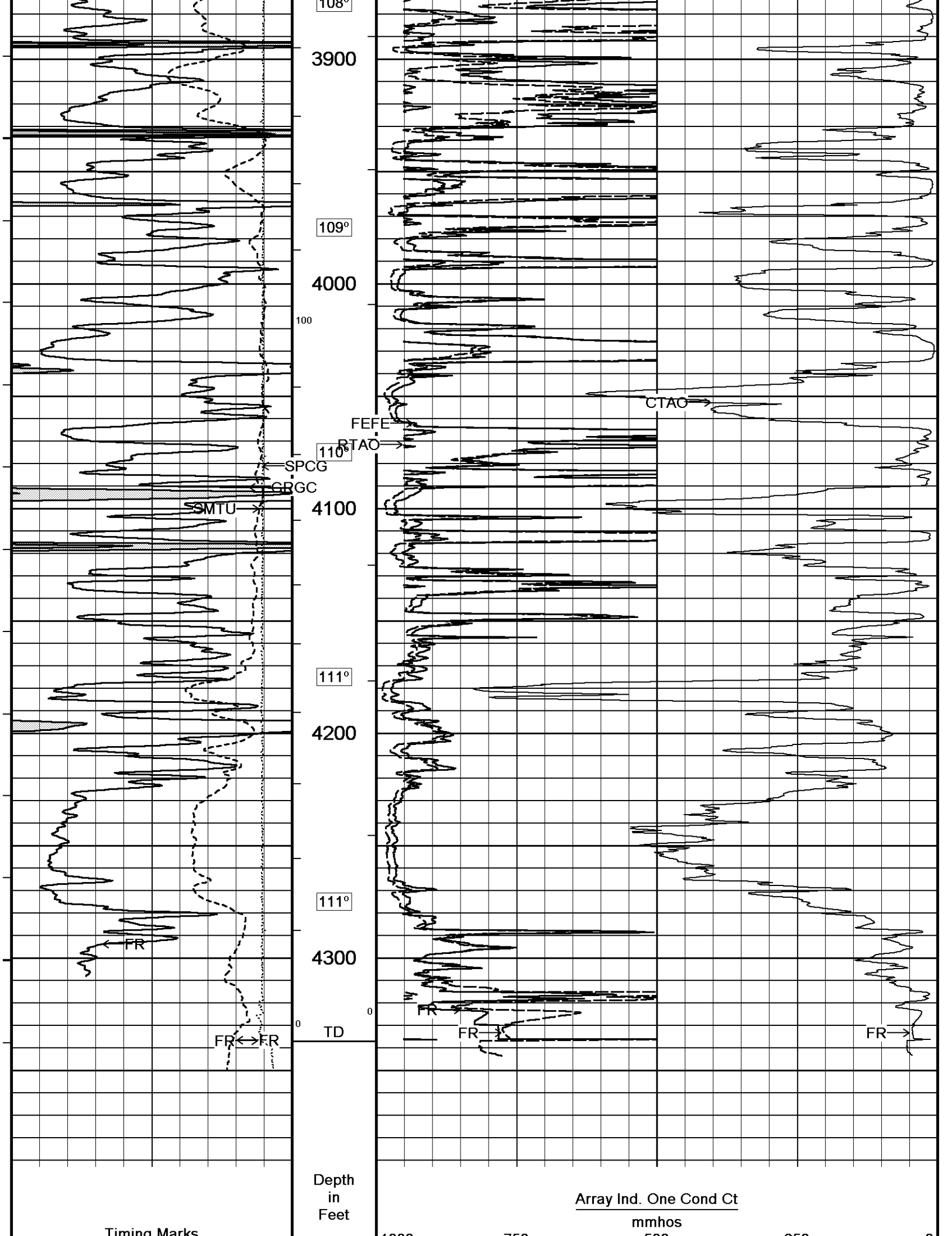
98°
99°
99°
97°
98°
99°

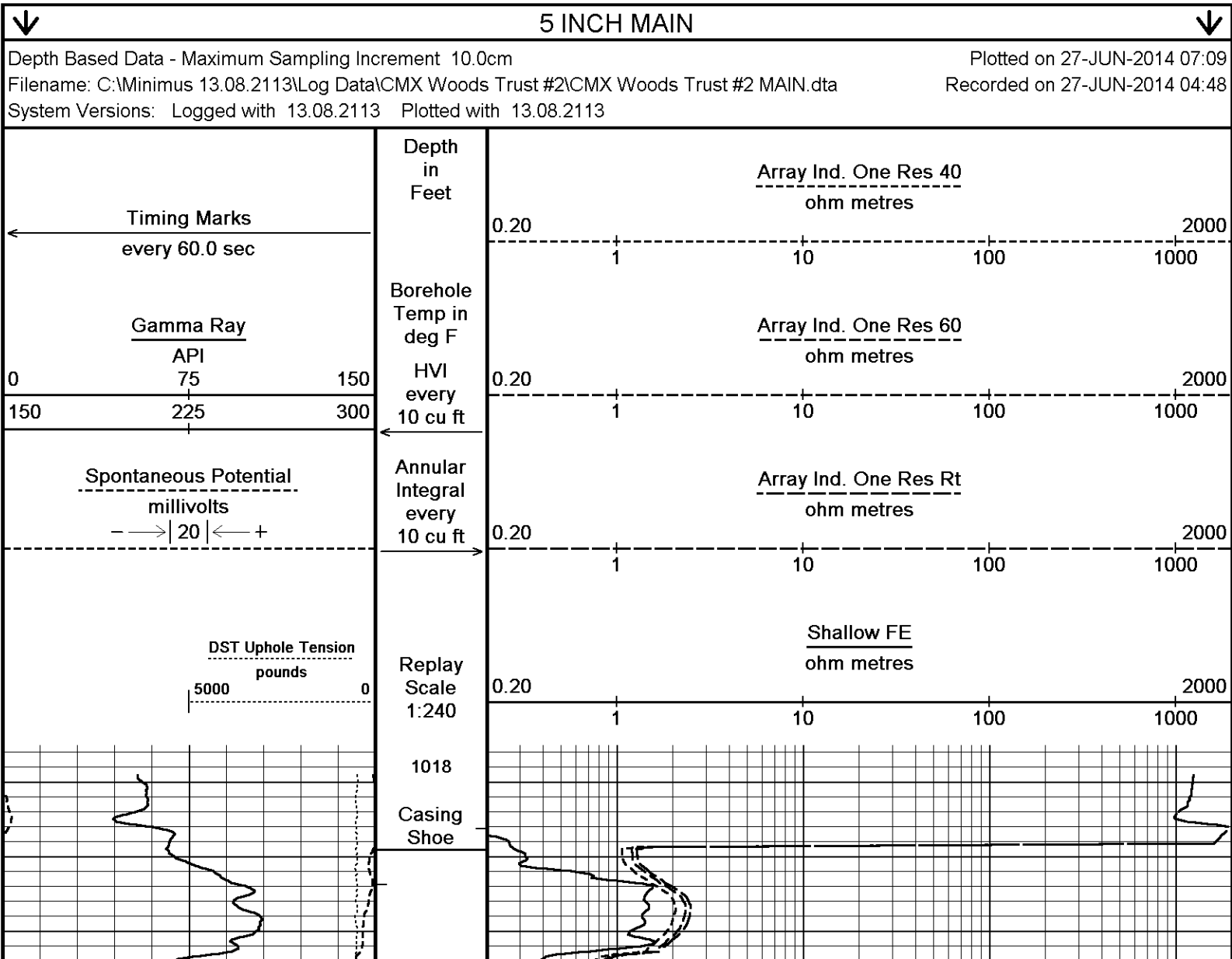
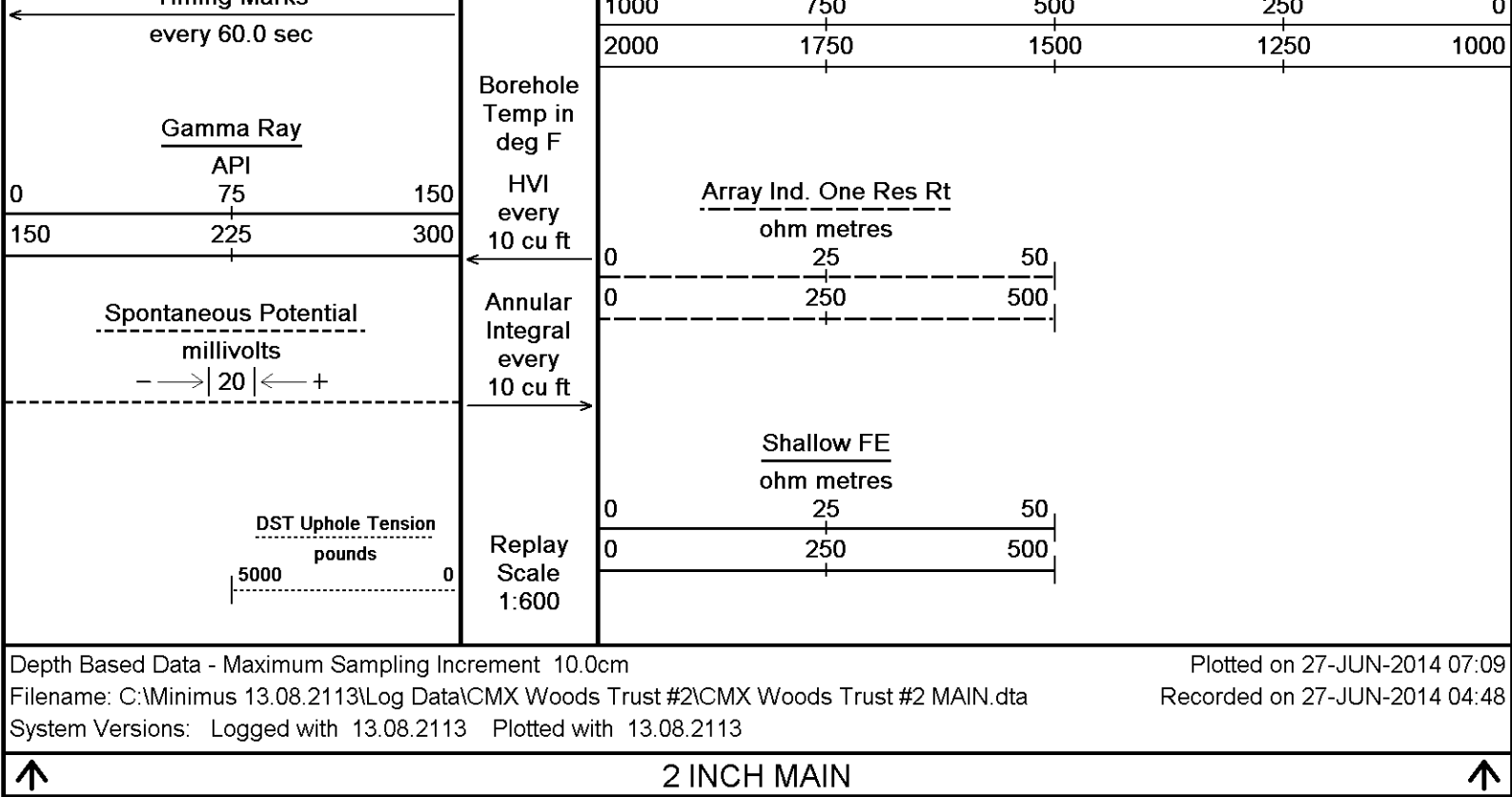


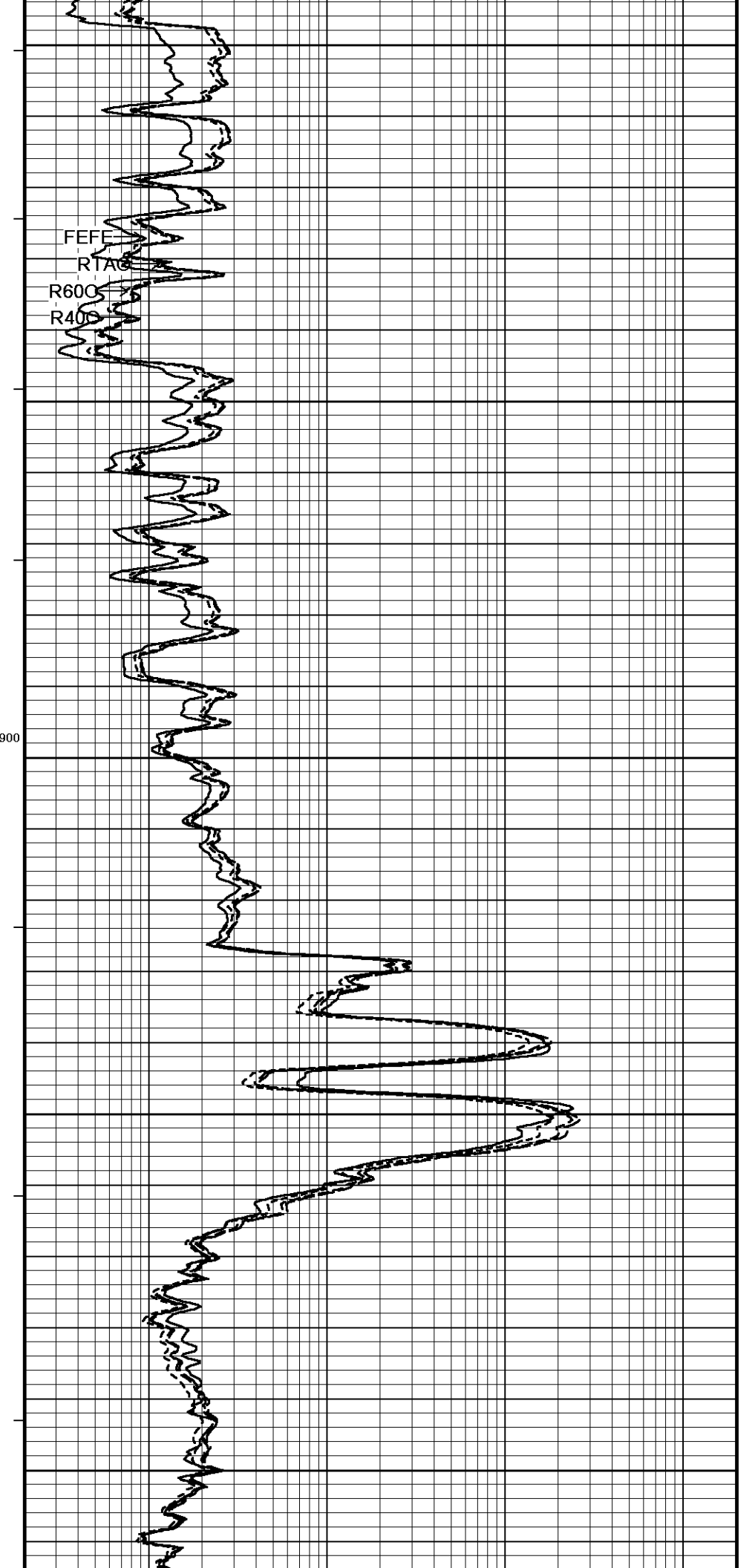
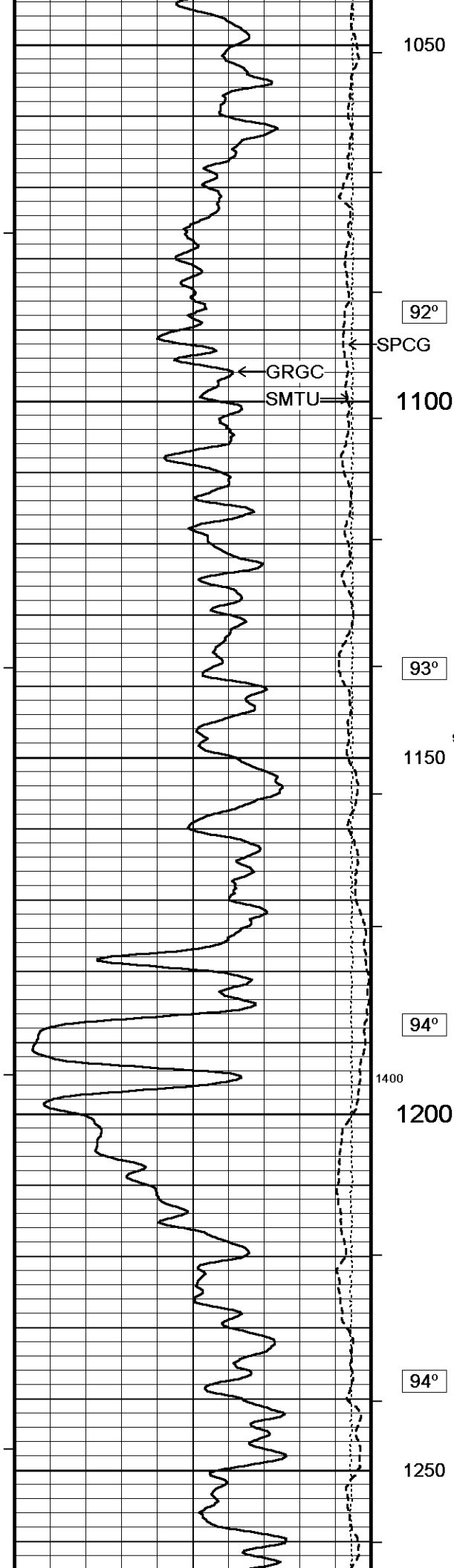


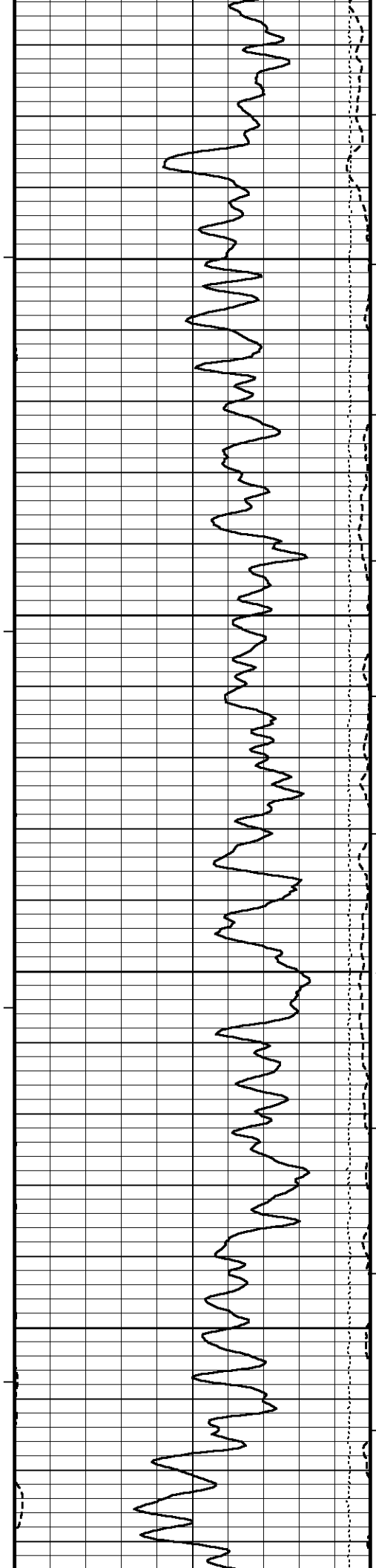












94°

1300

95°

1350

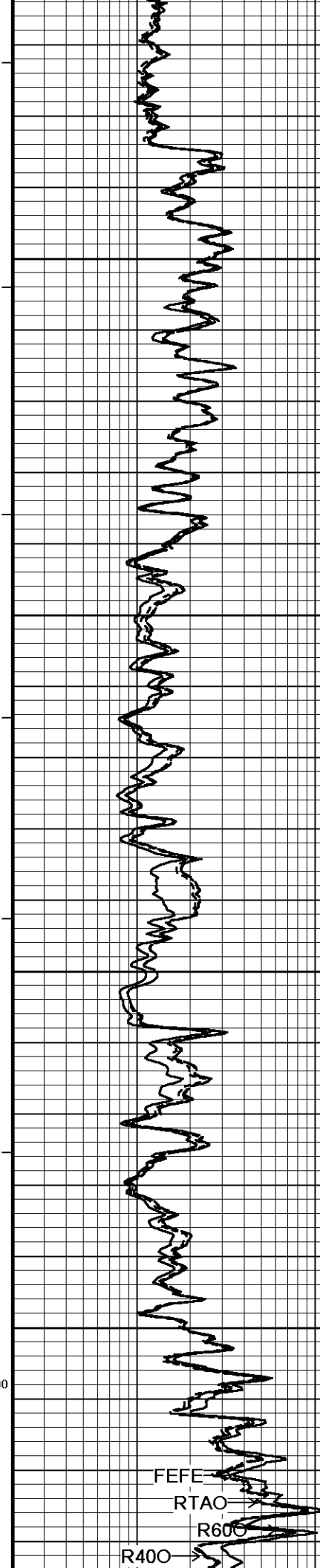
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1400

95°

1450

800

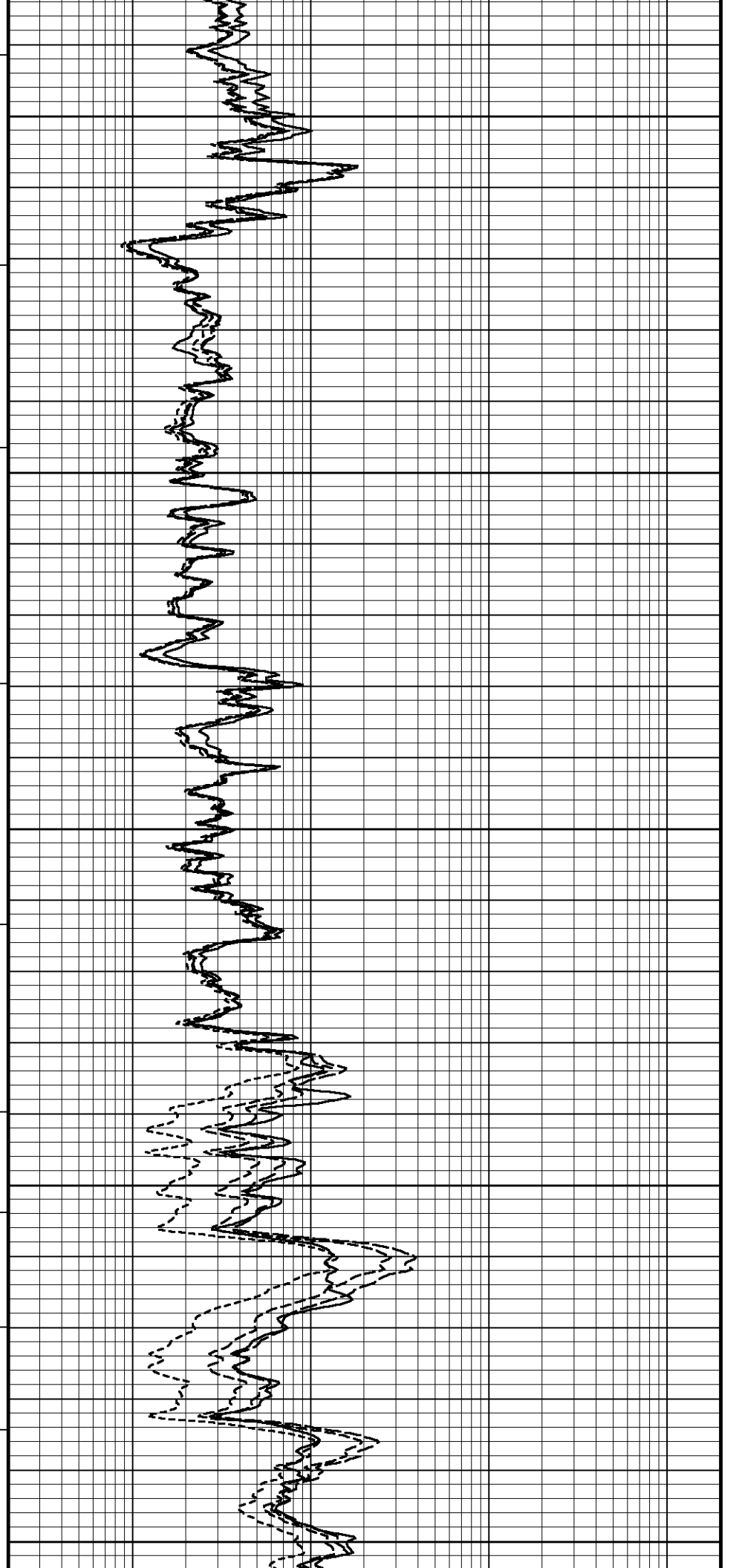
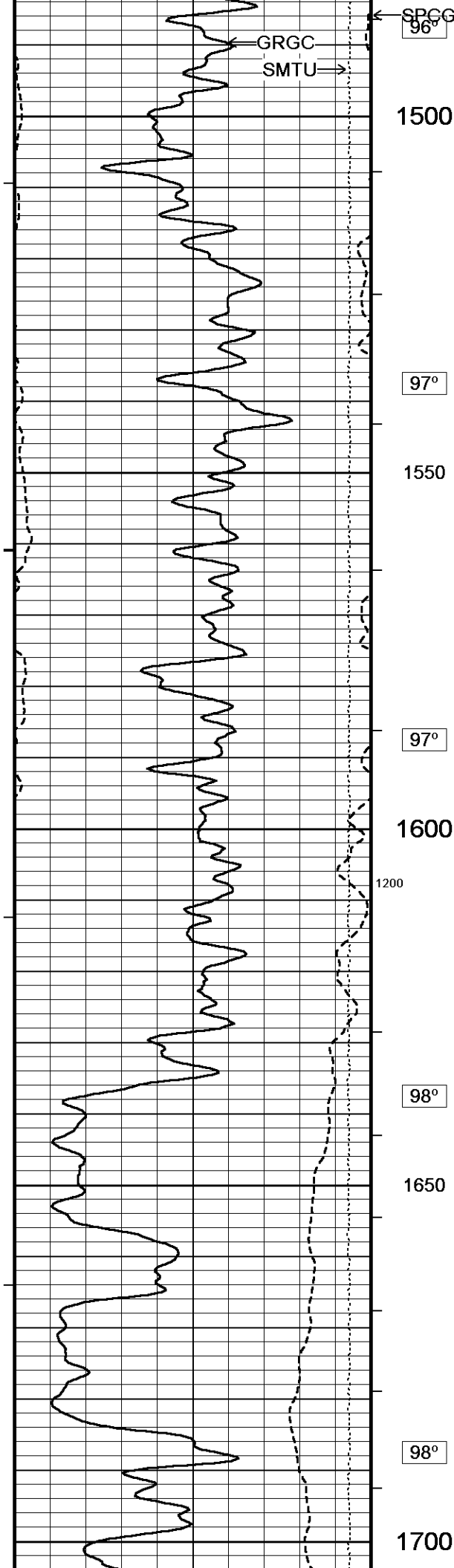


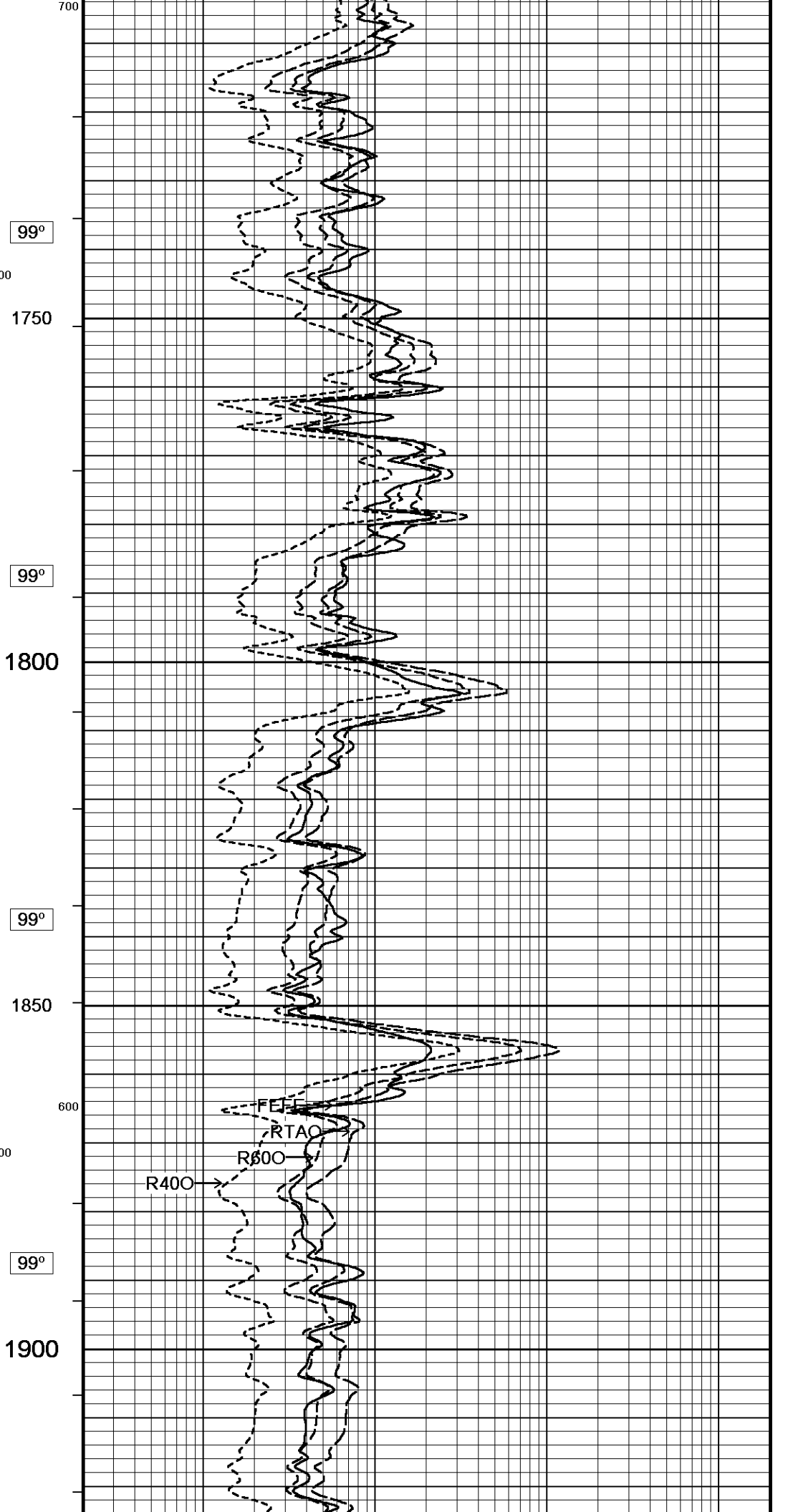
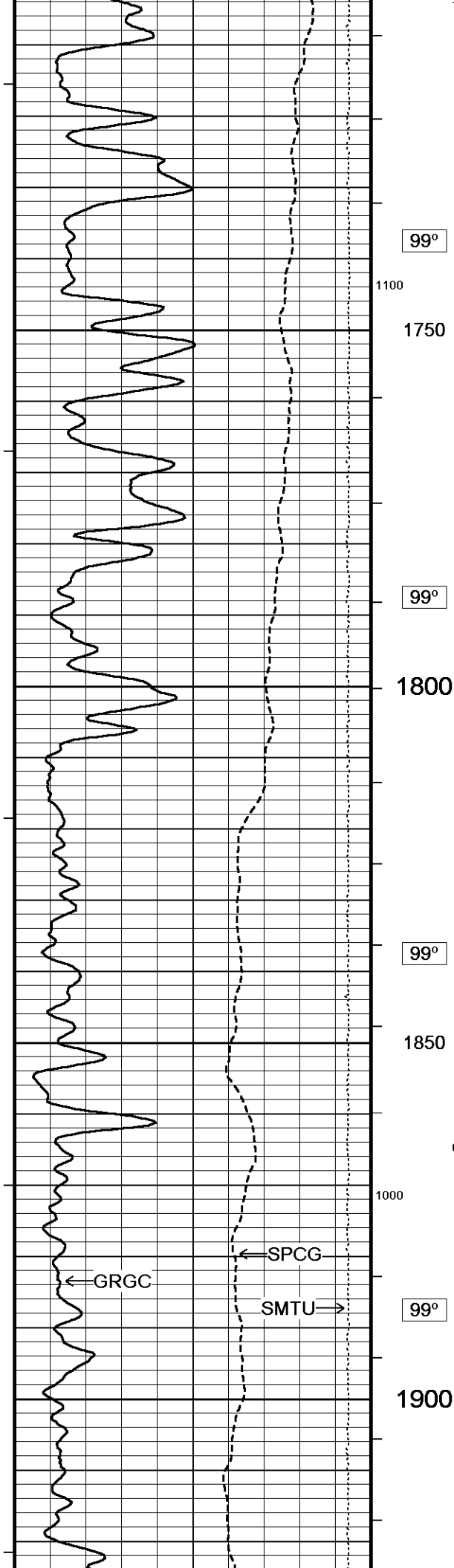
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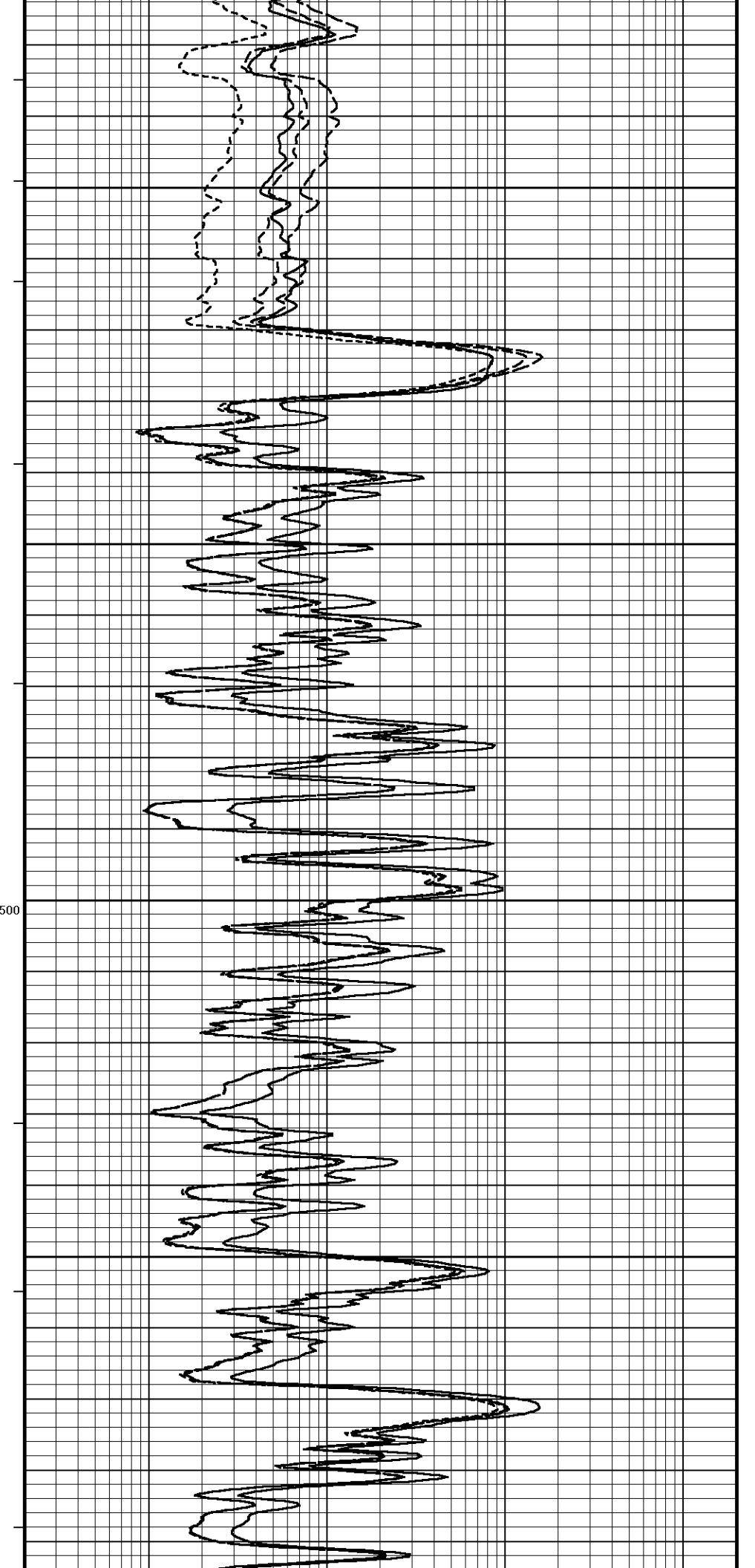
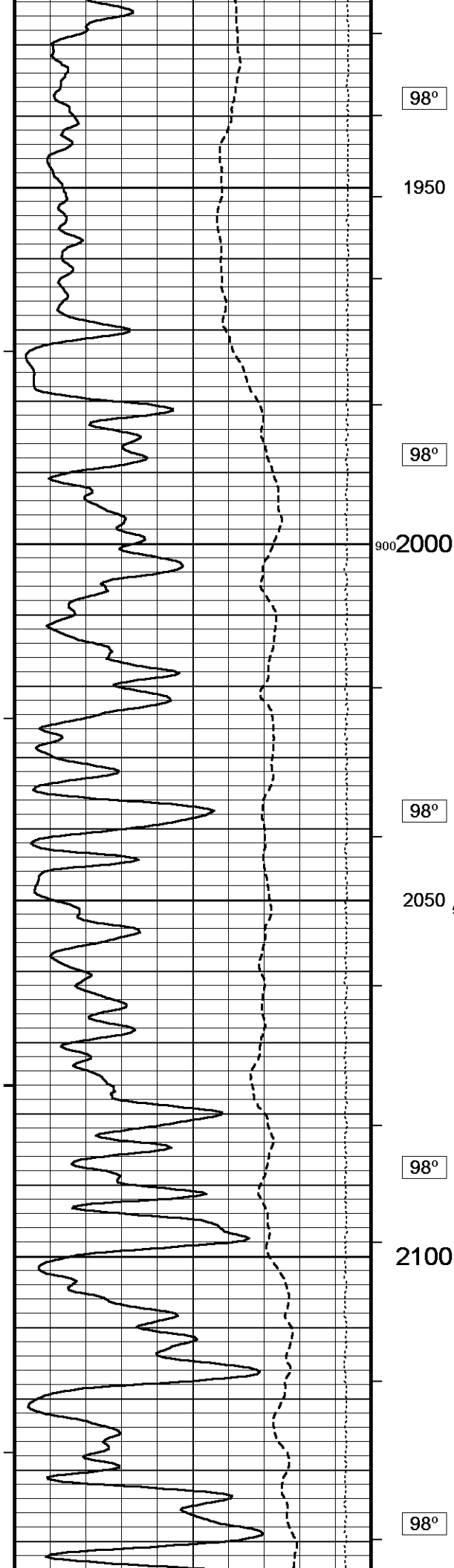
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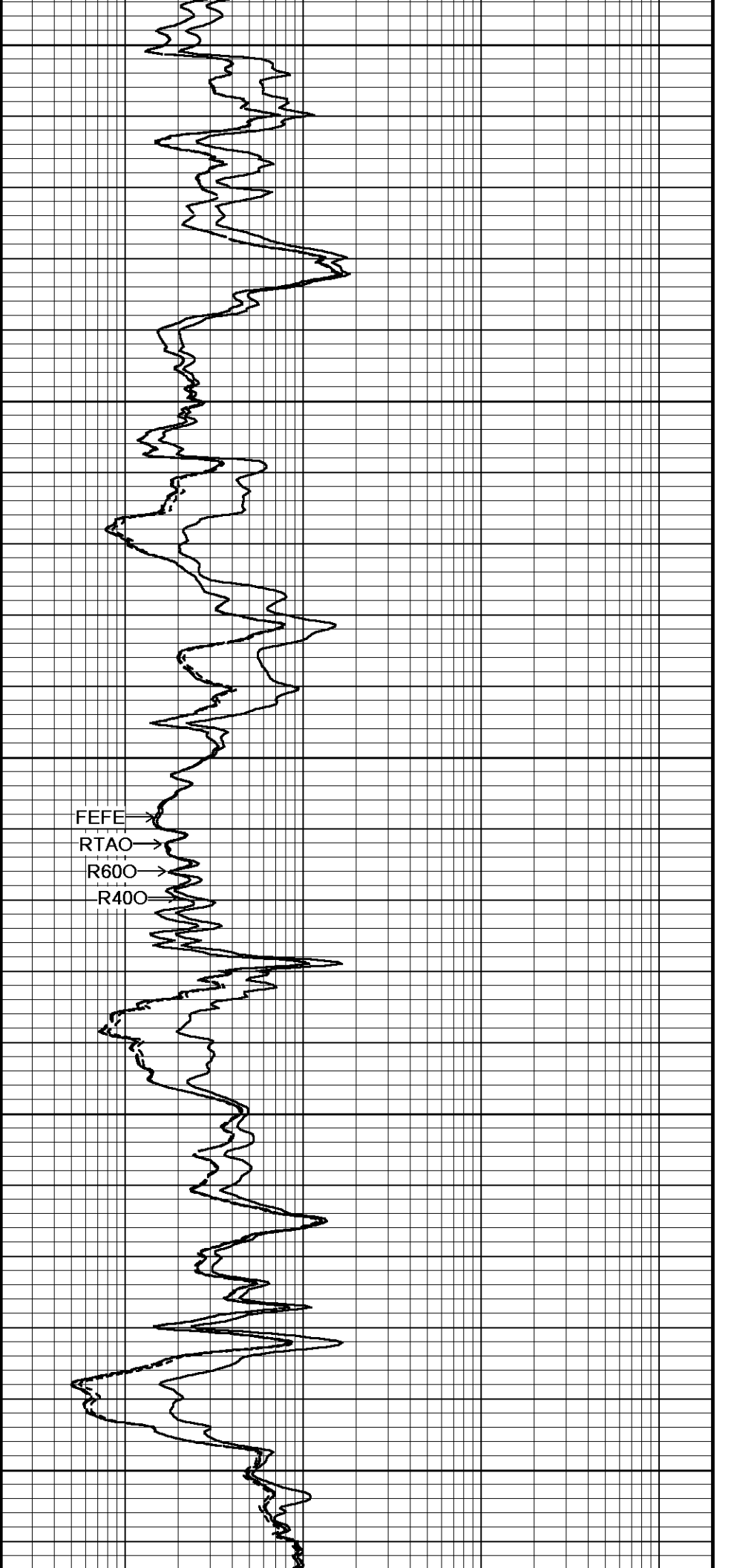
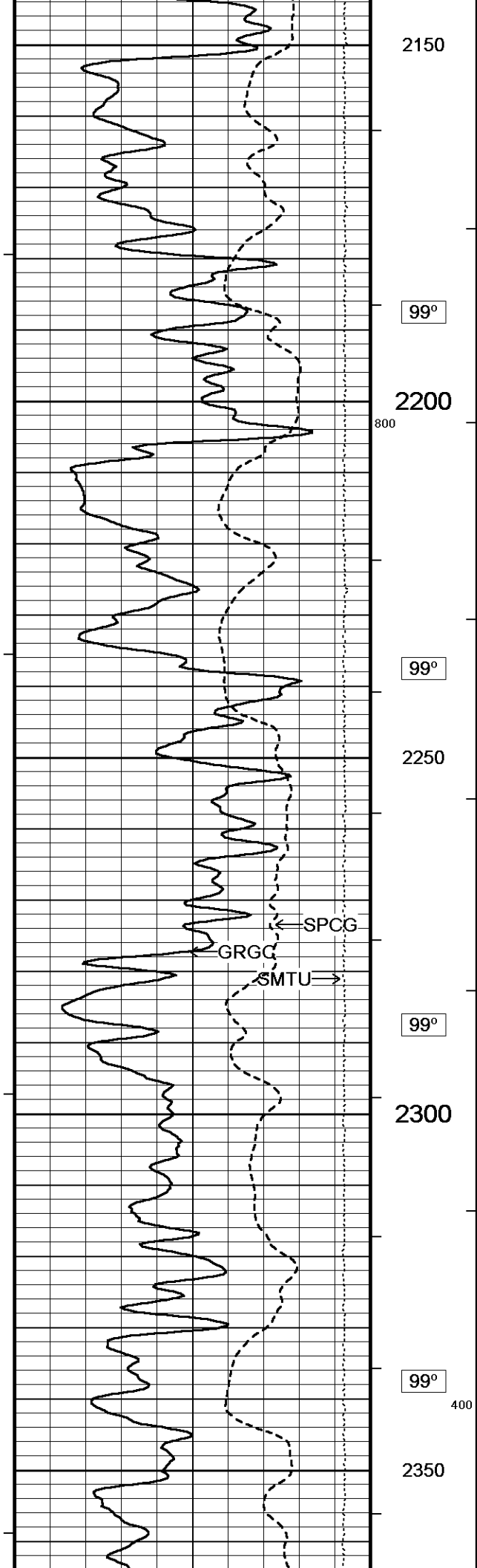
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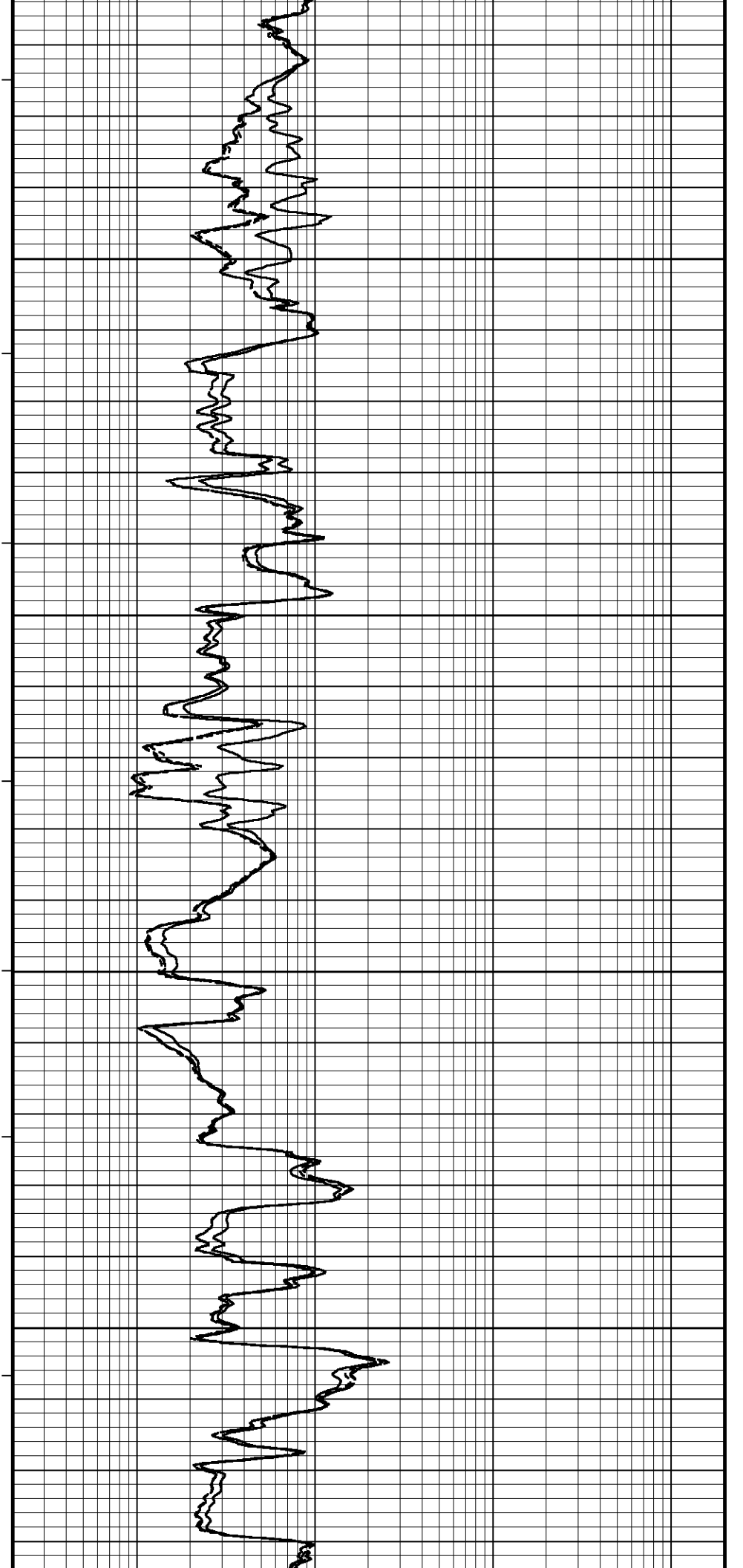
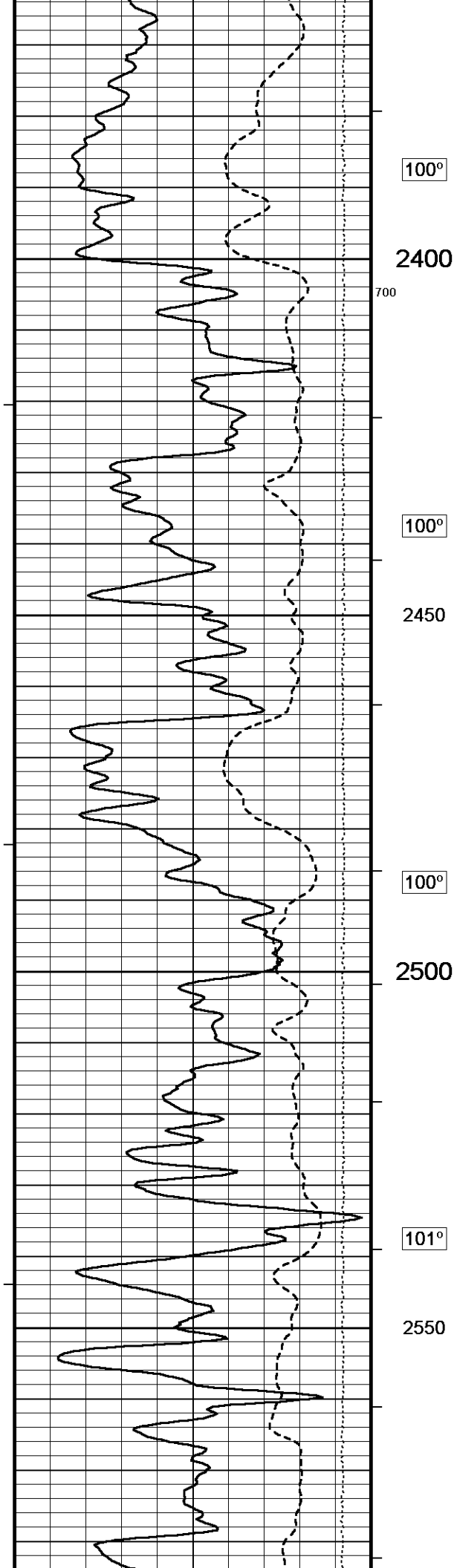
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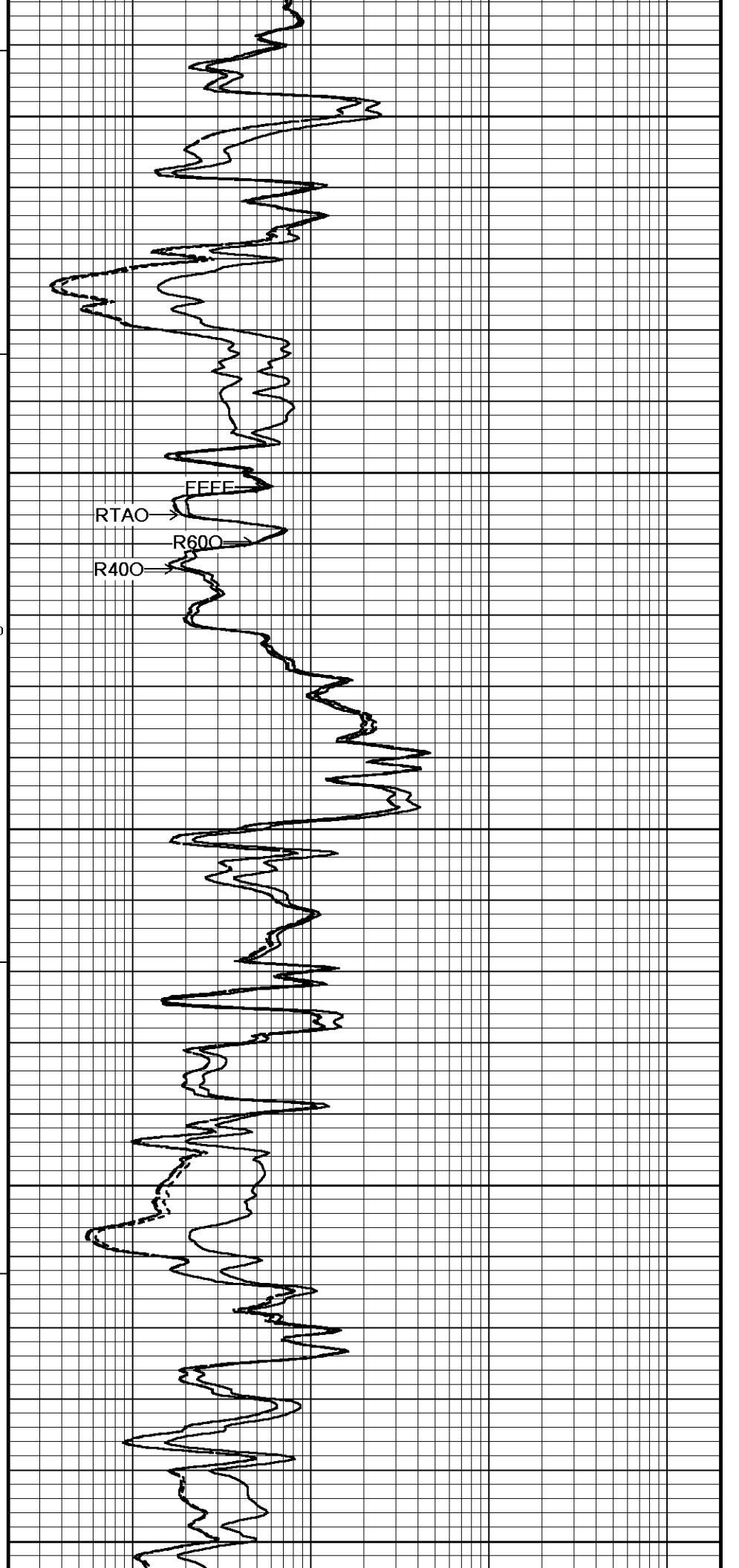
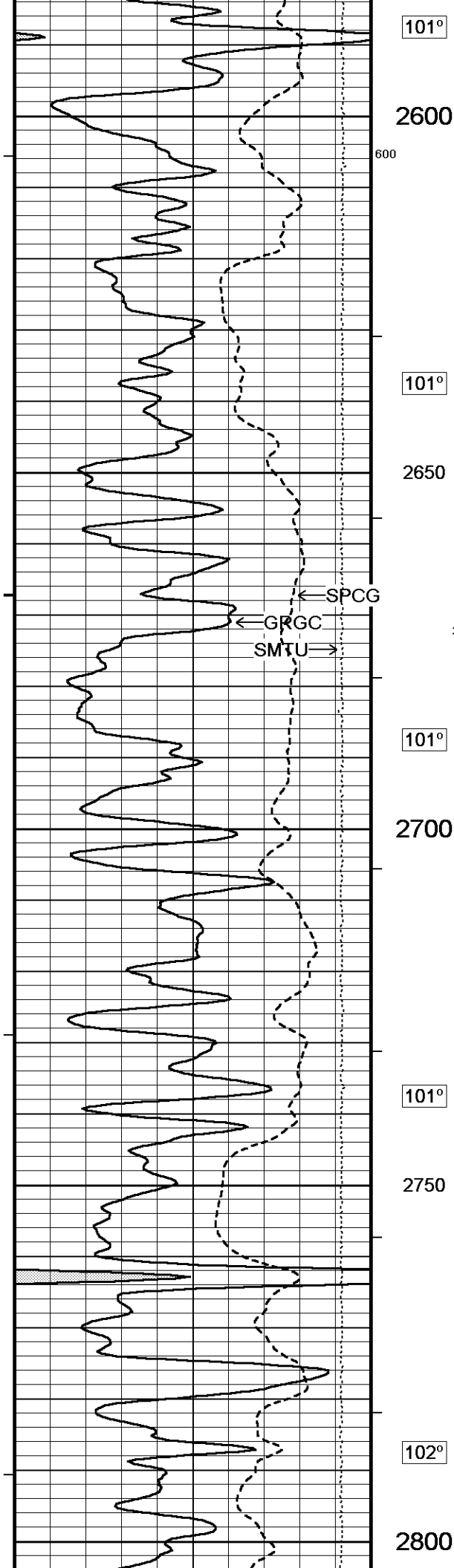


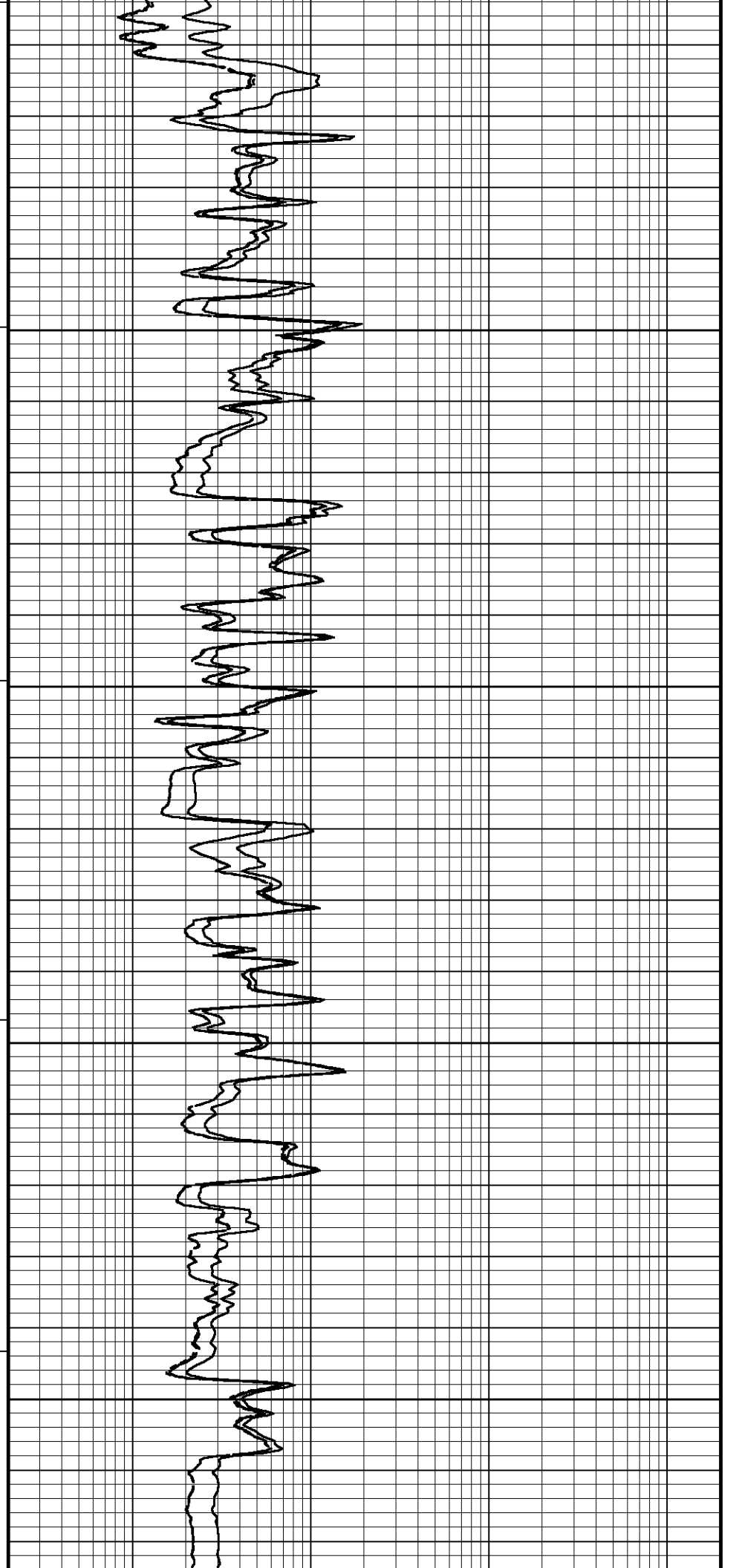
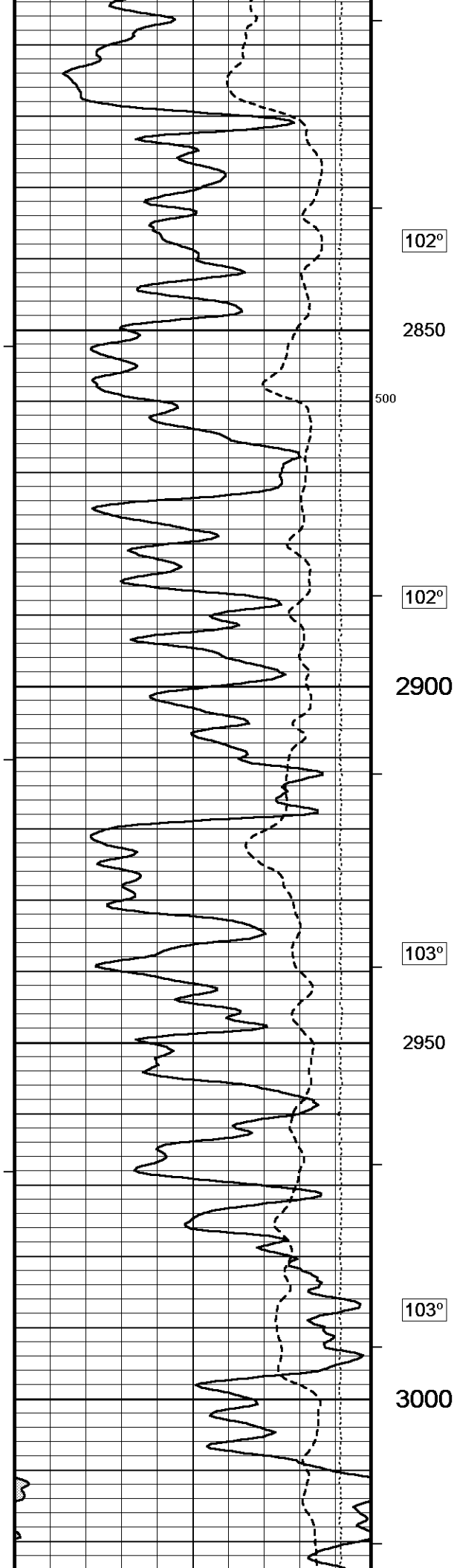


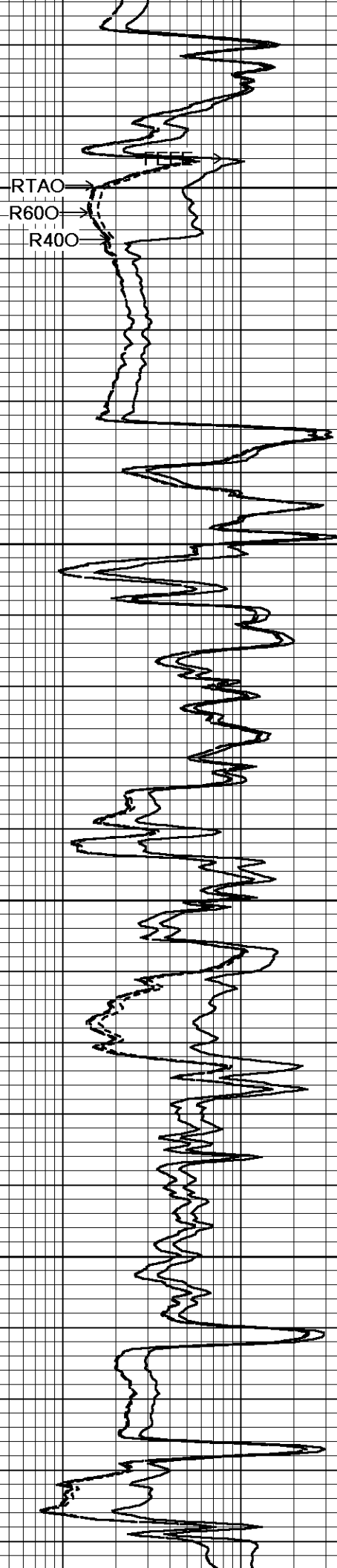
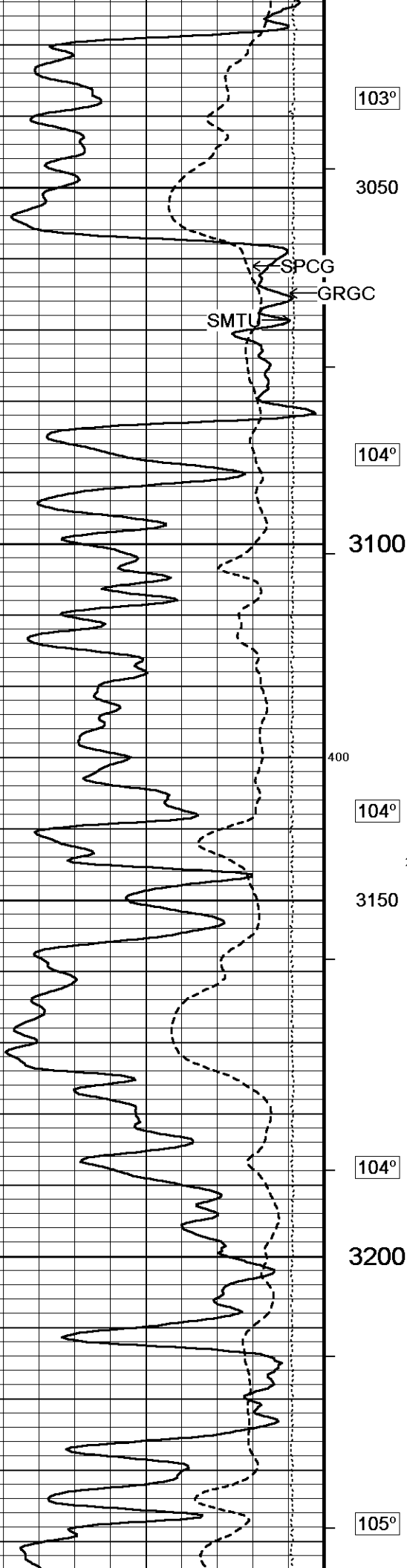


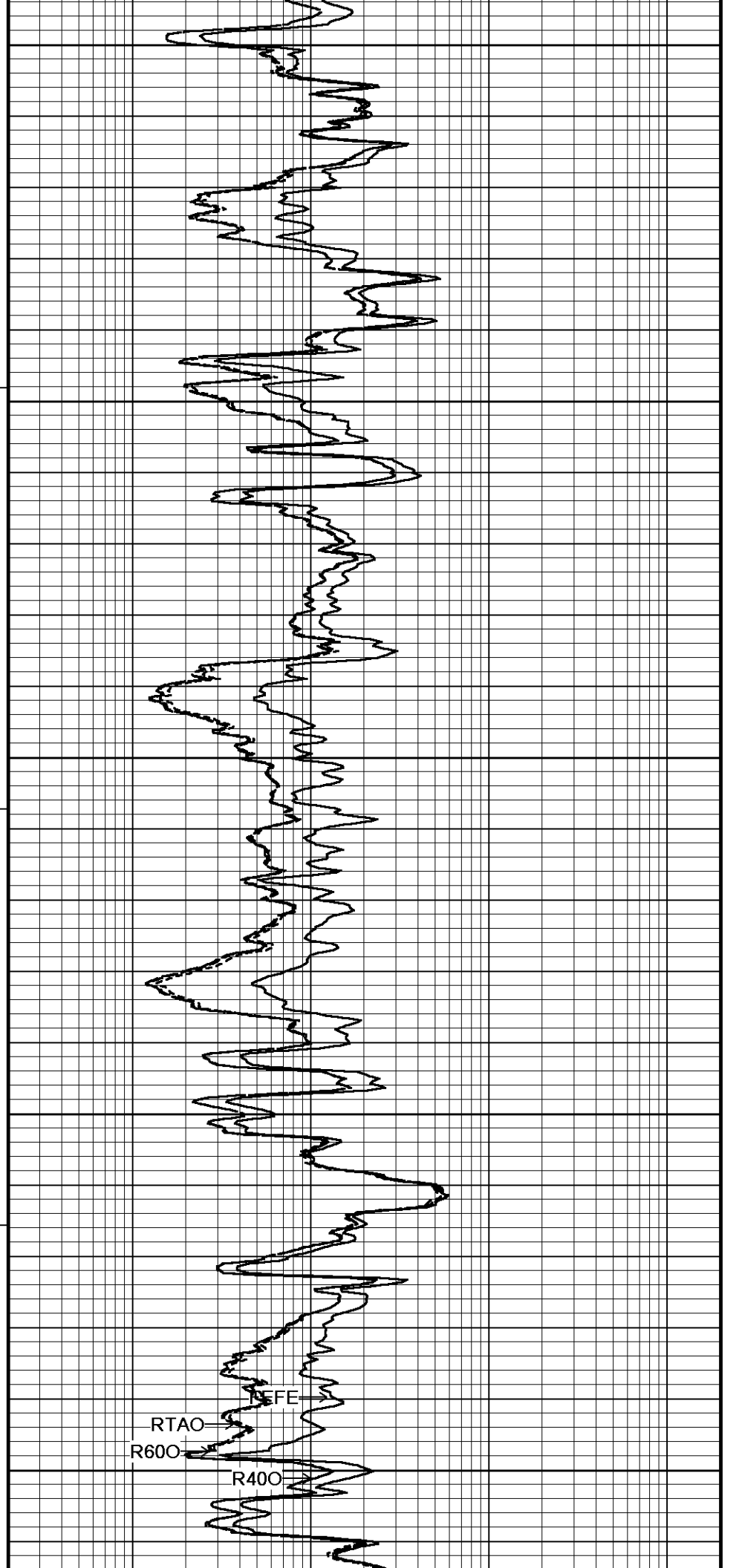
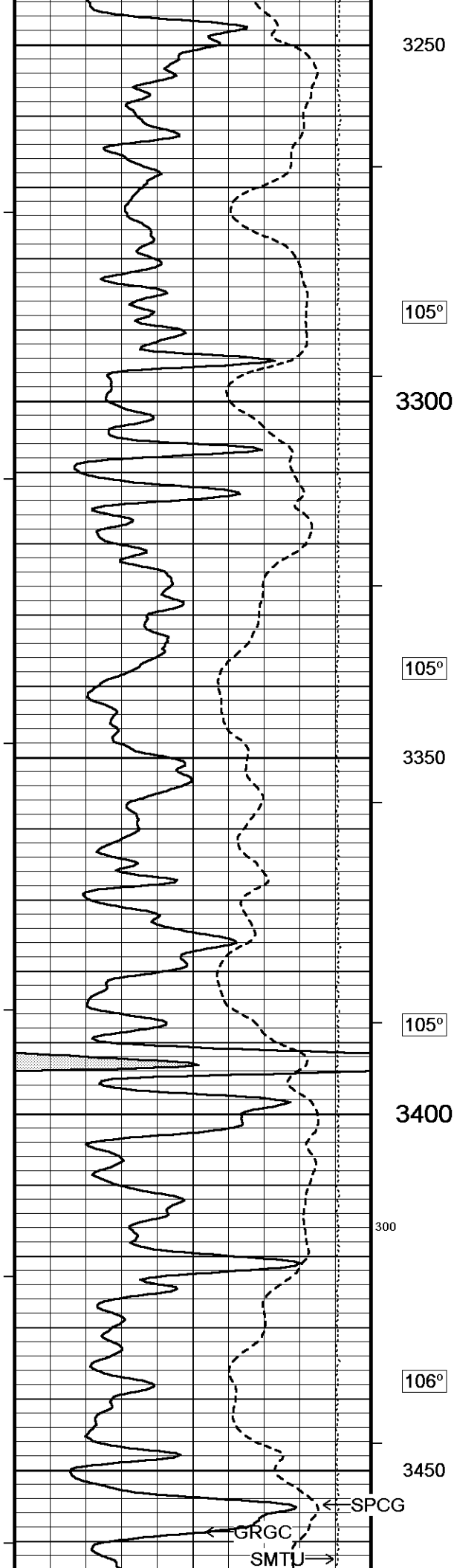


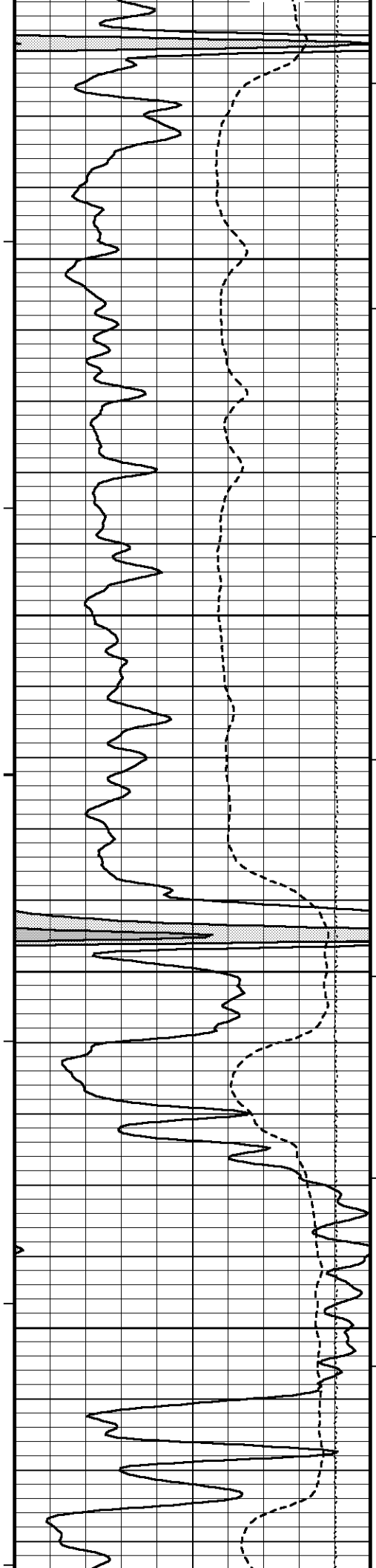












106°

3500

106°

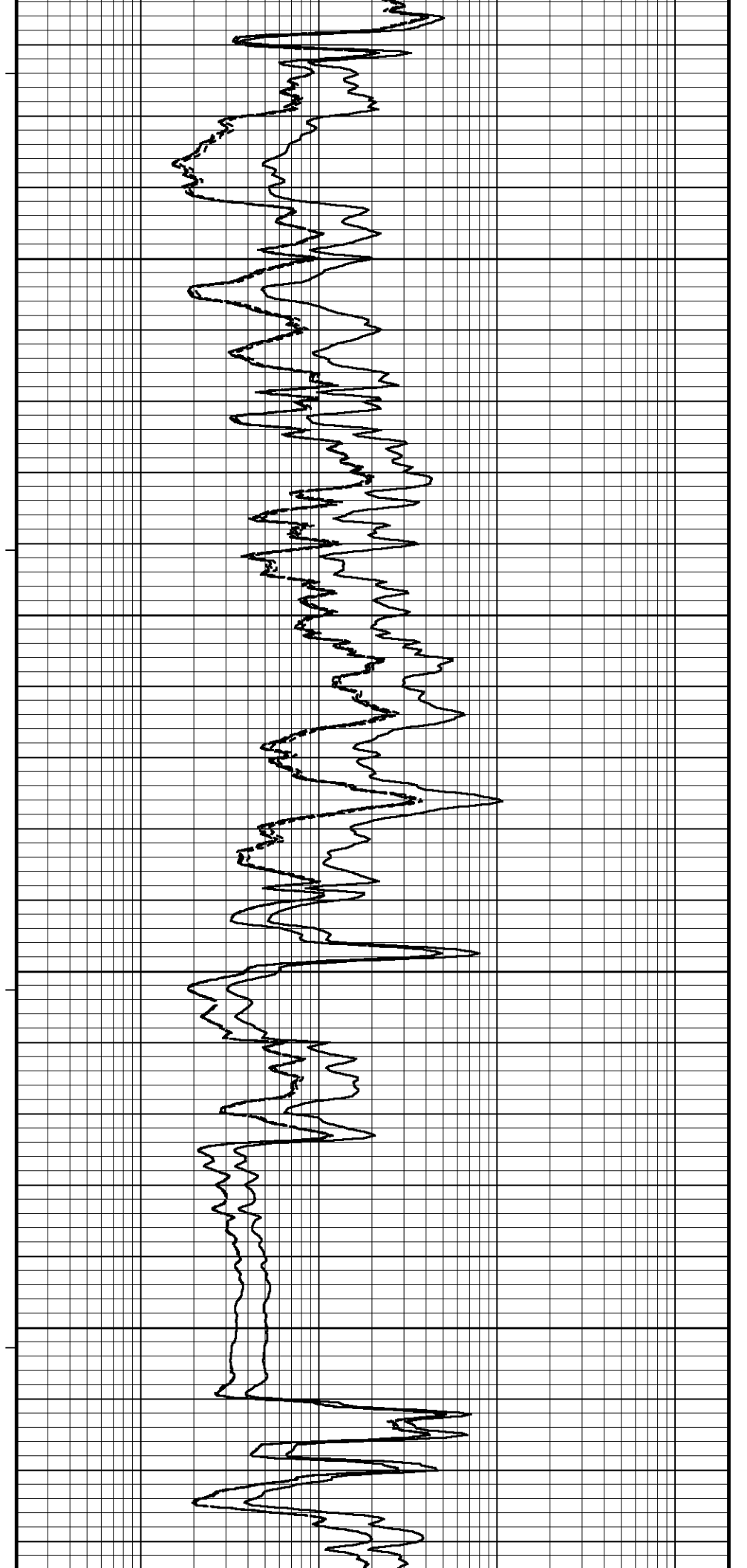
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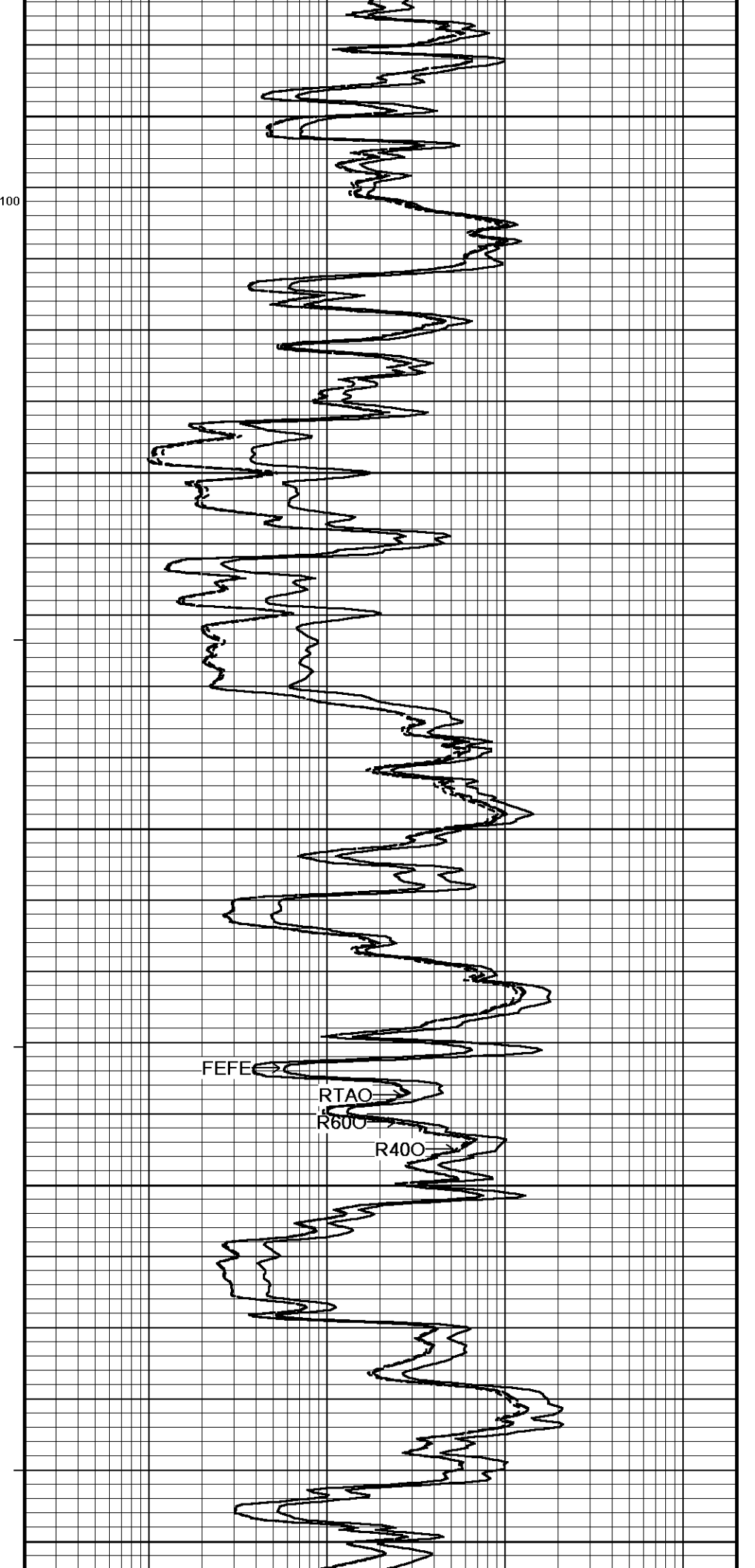
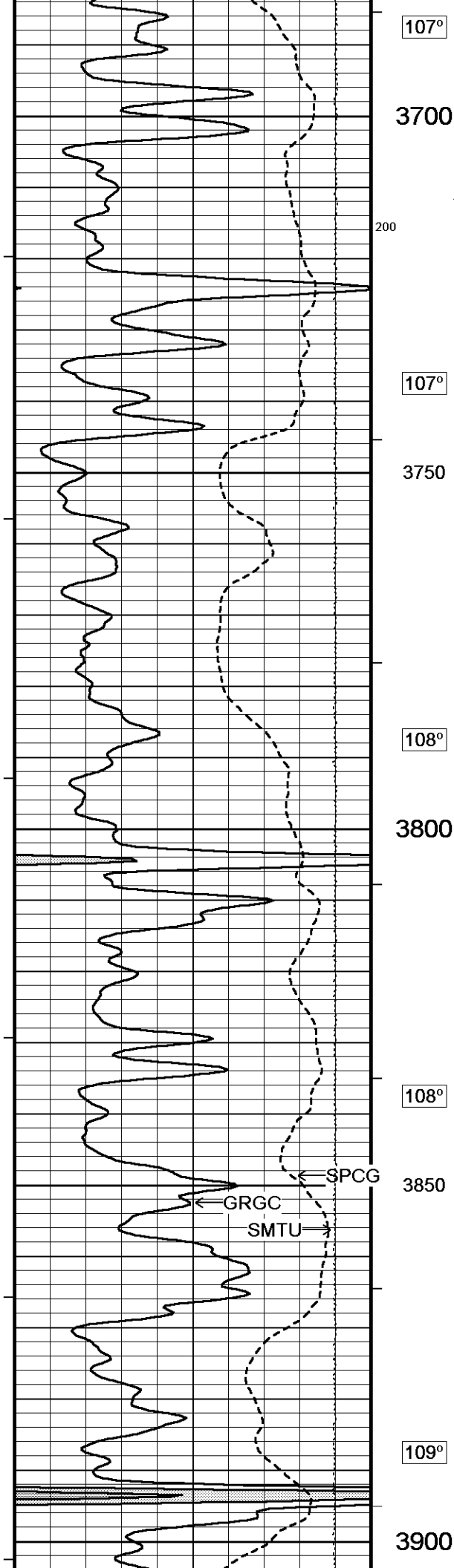
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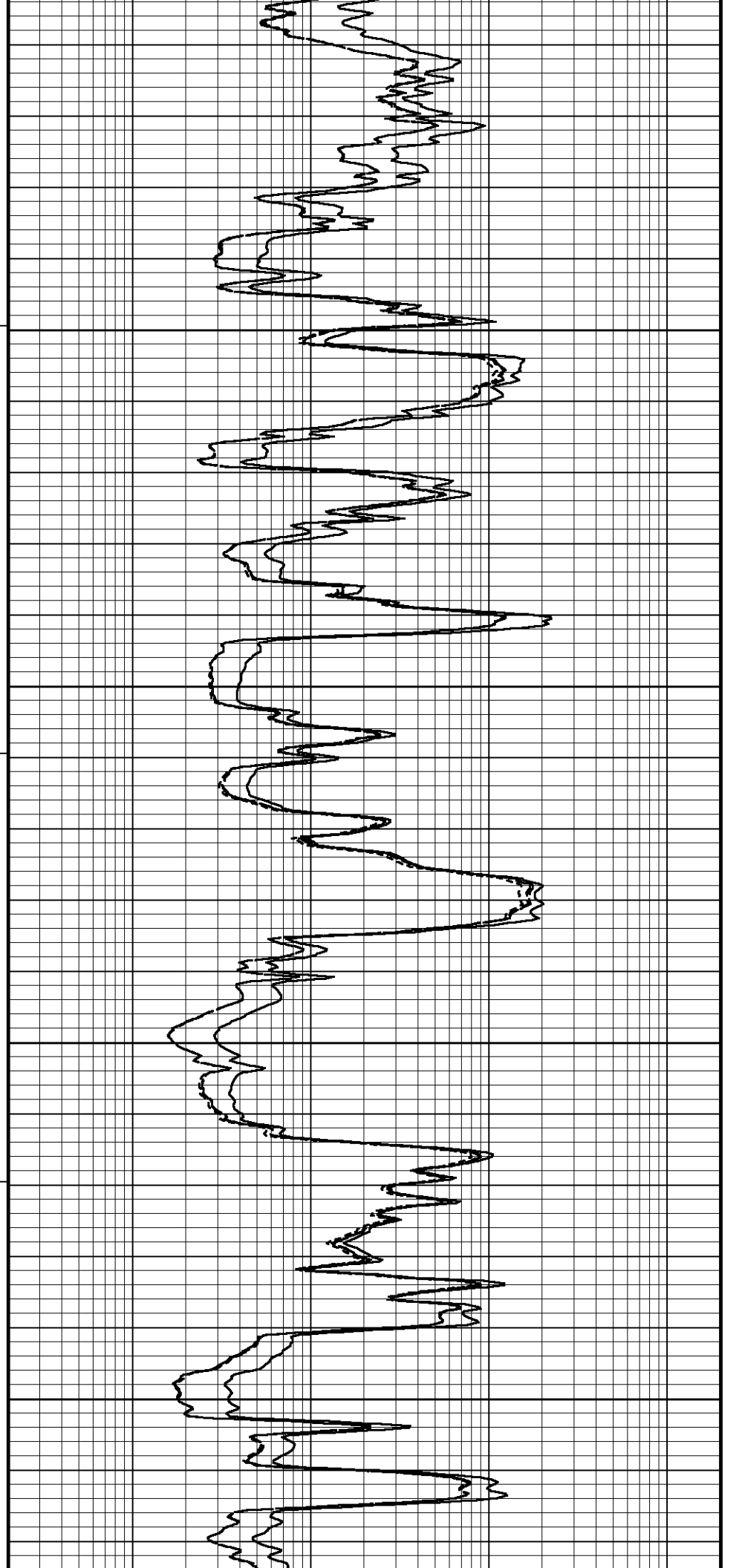
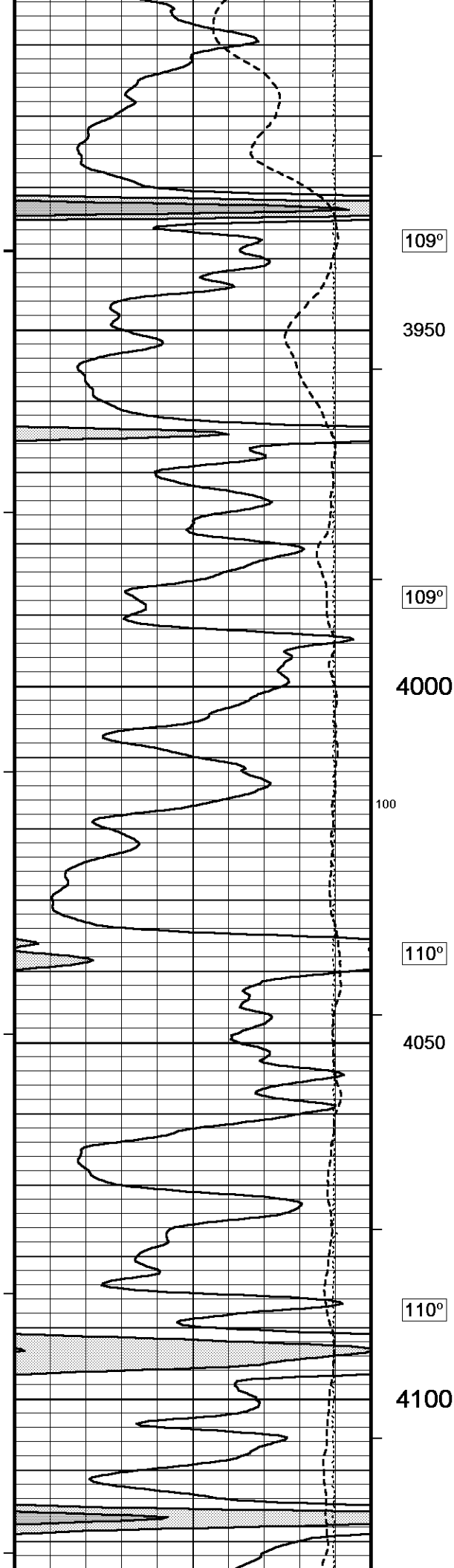
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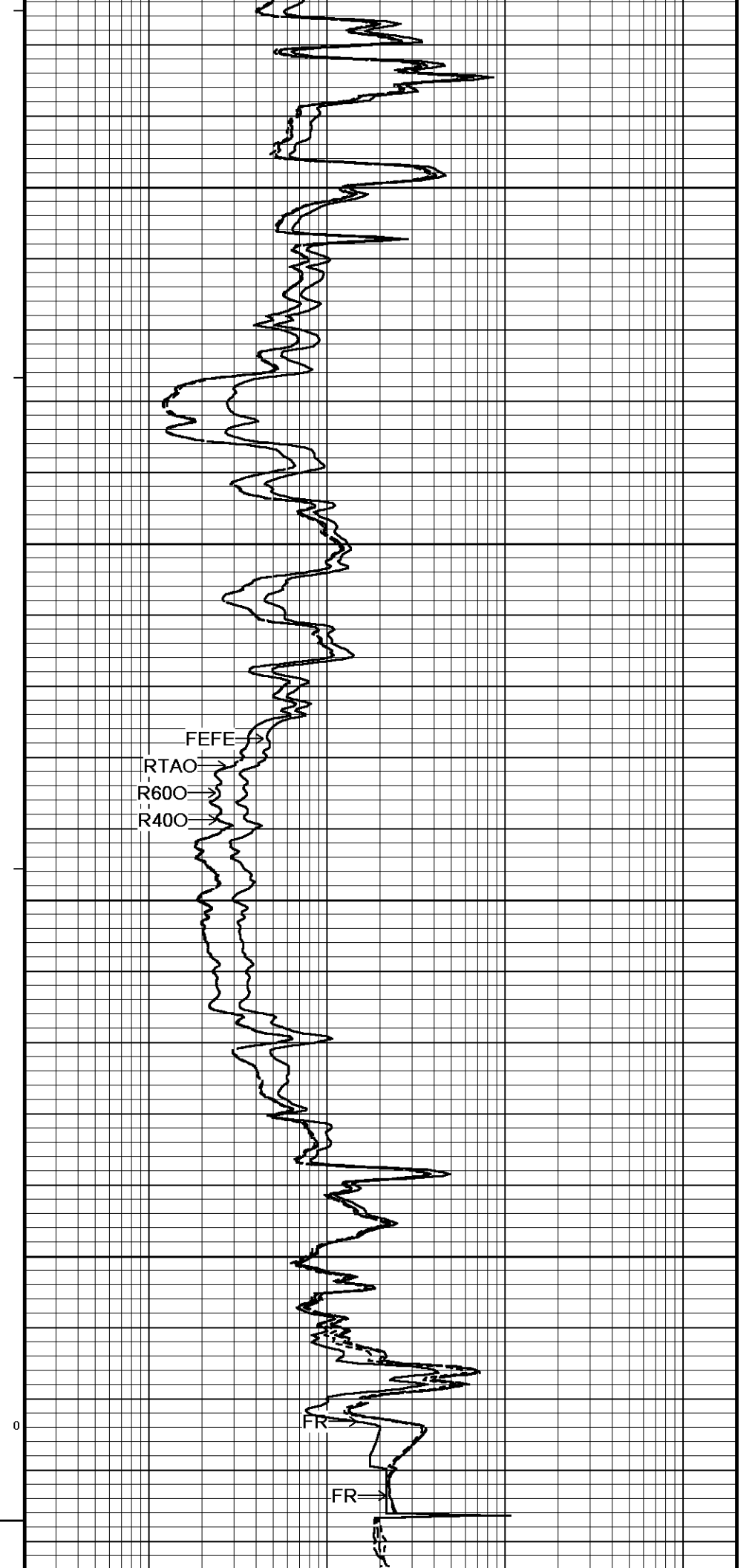
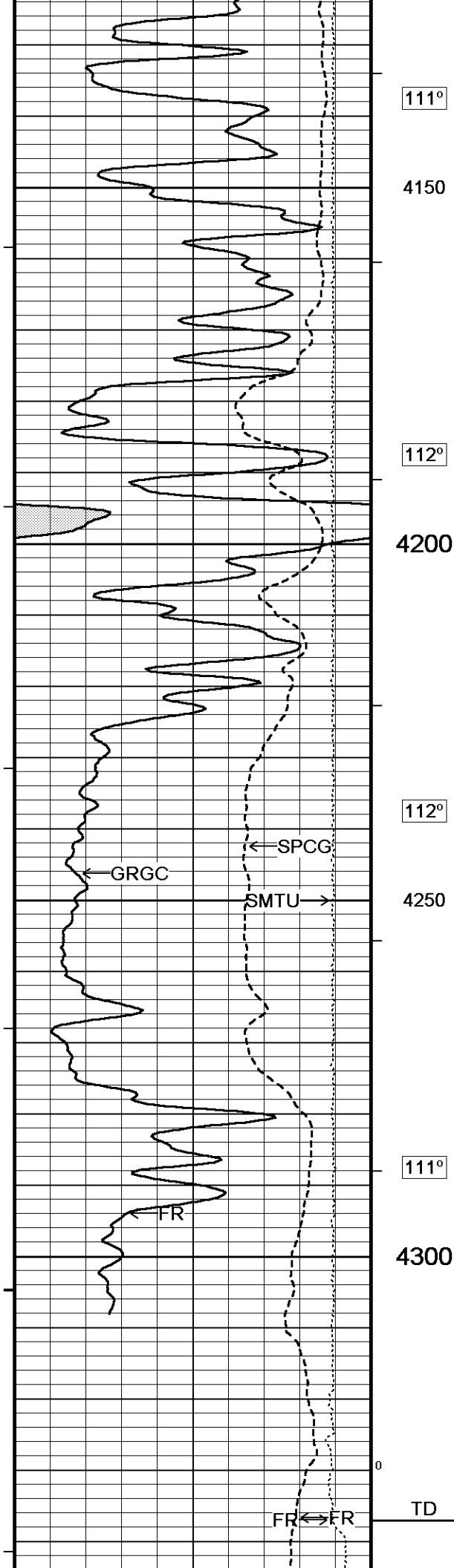
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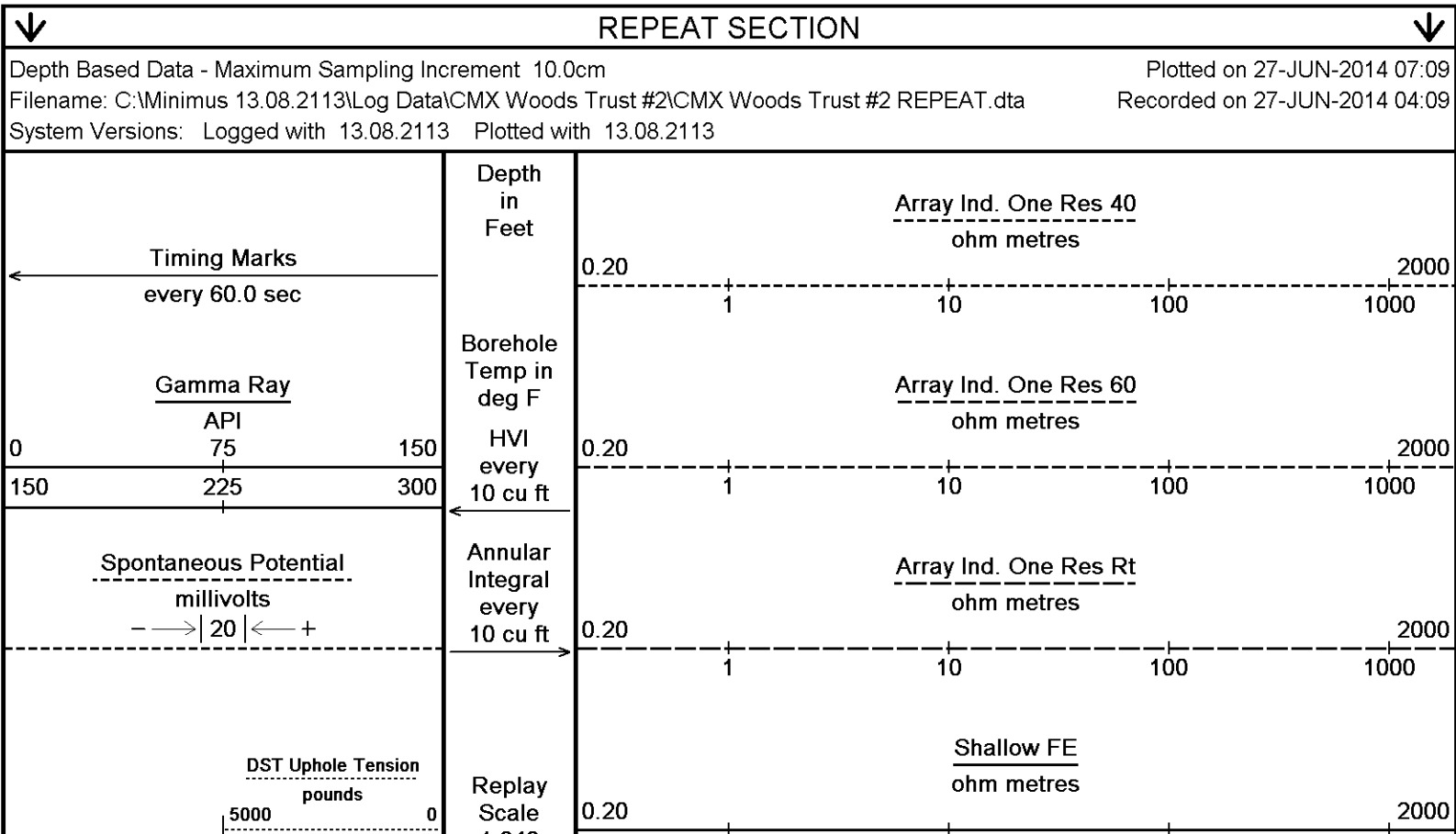
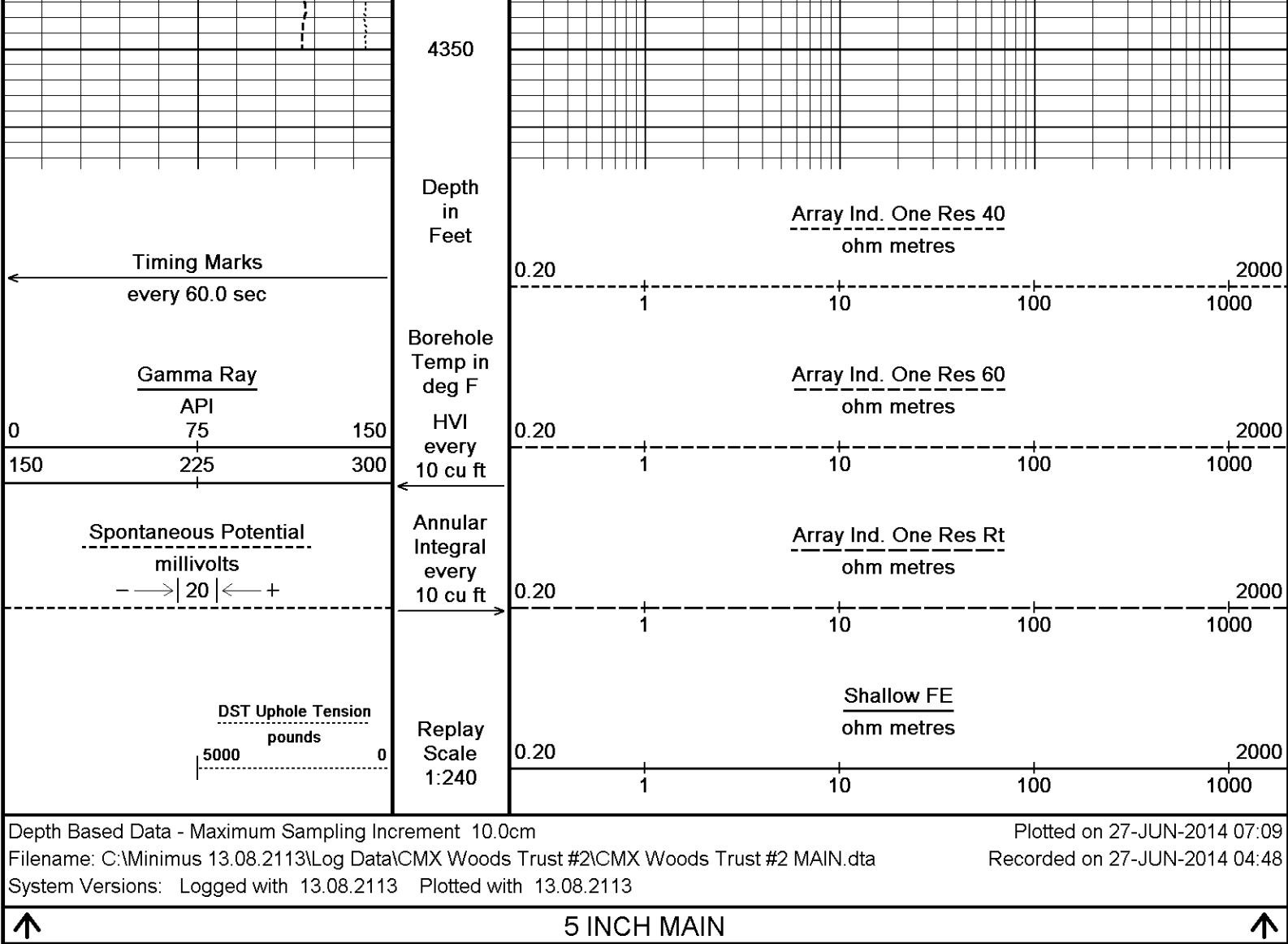
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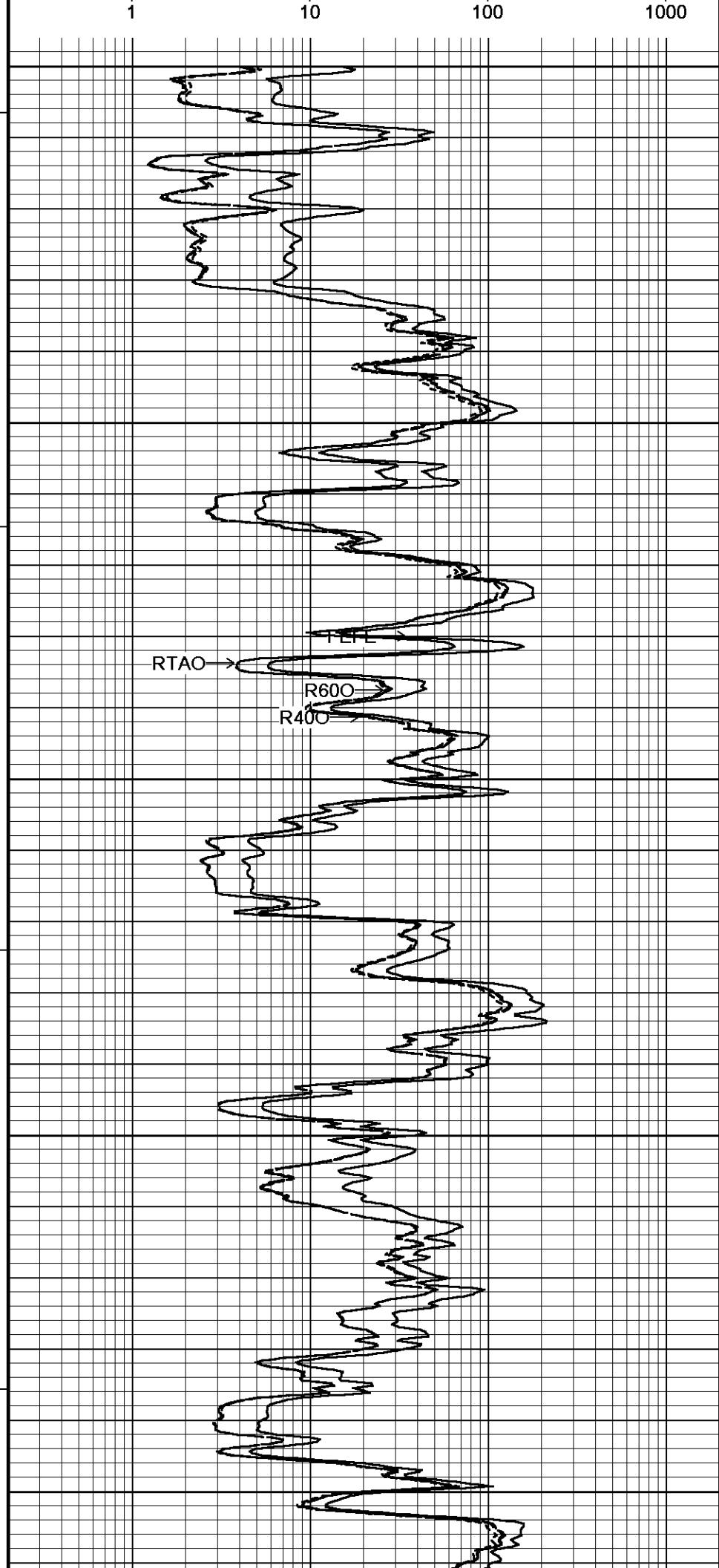
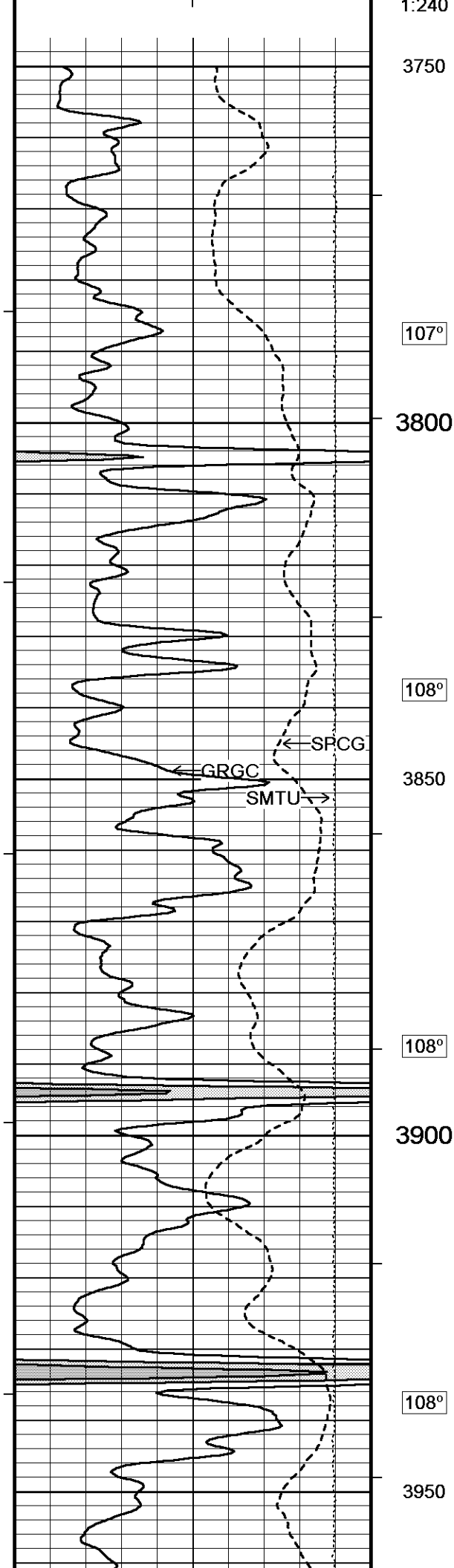


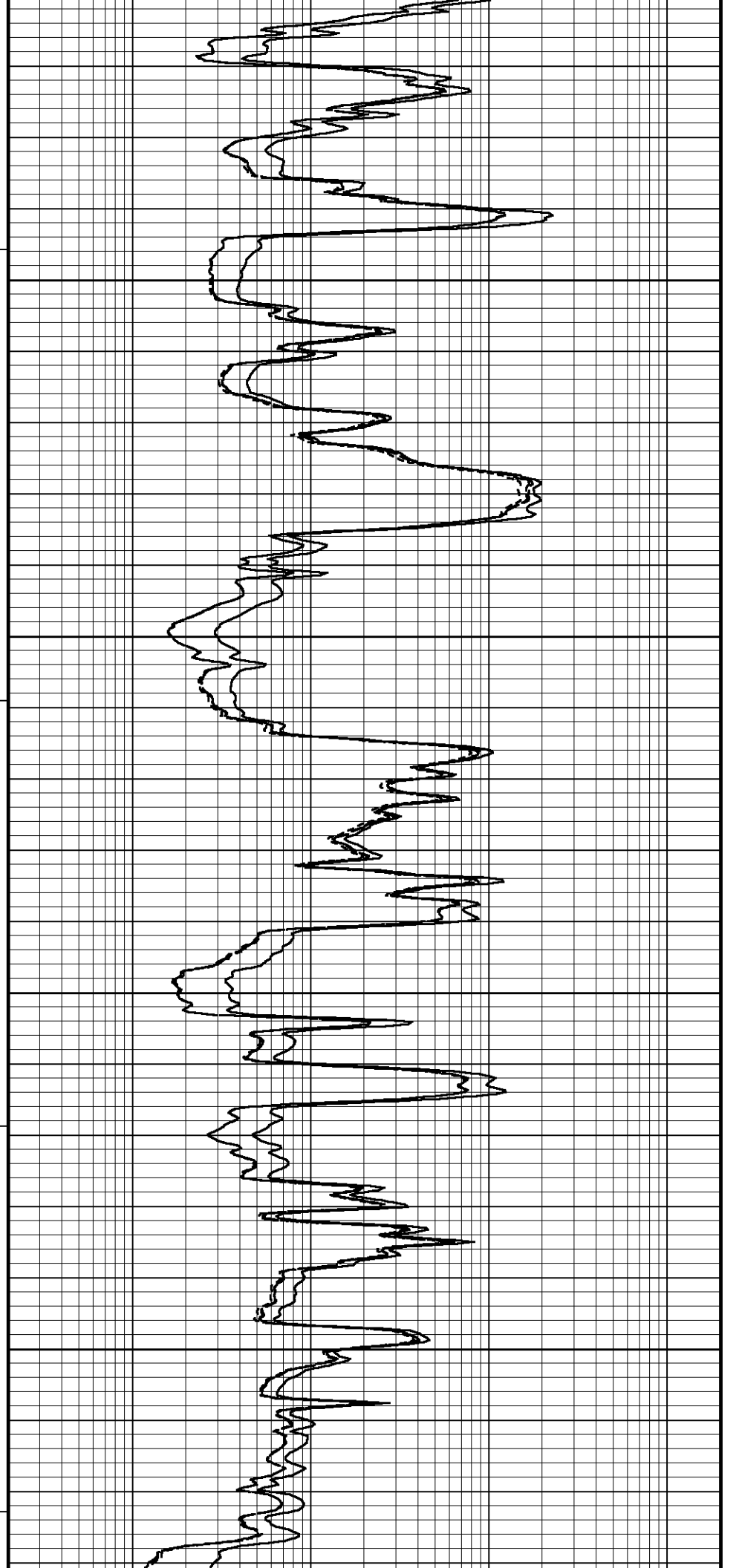
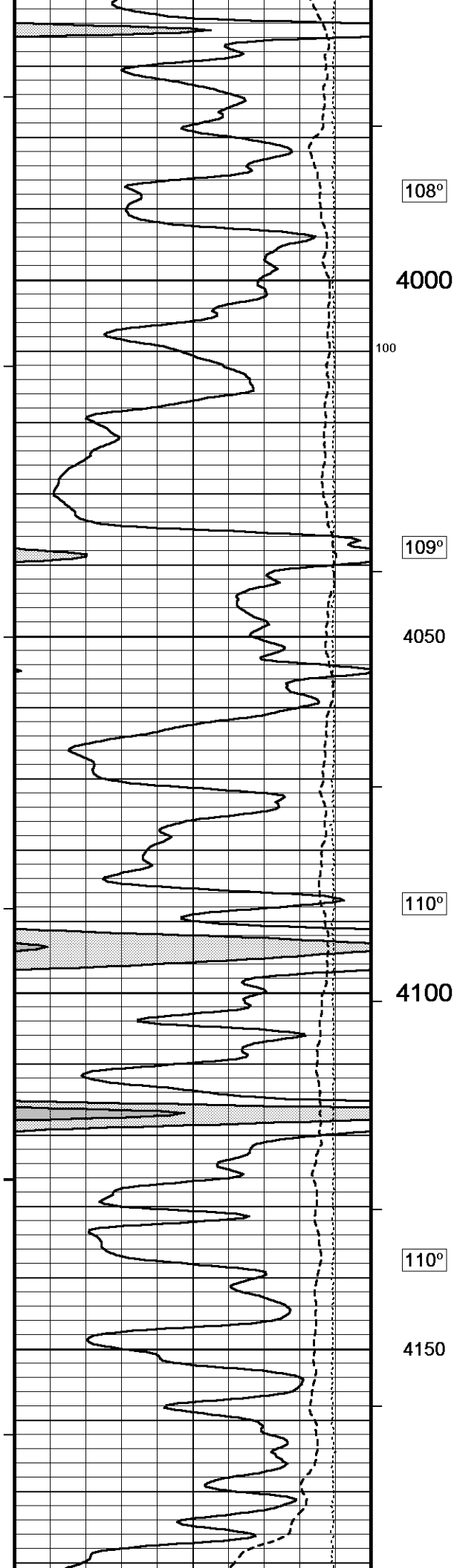


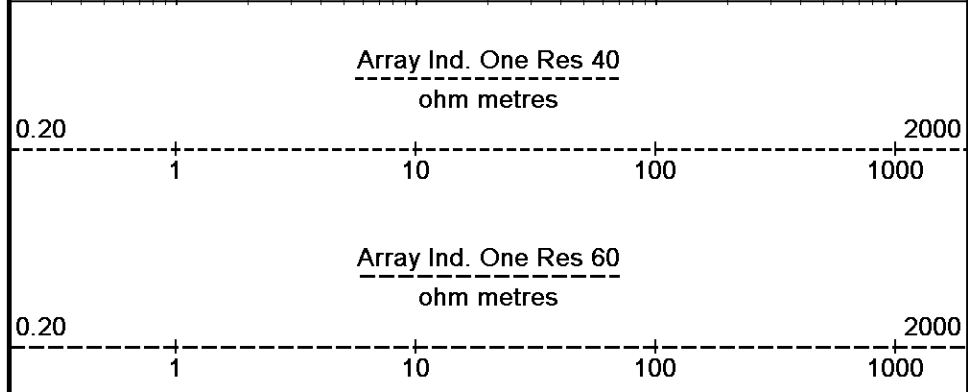
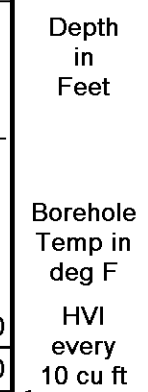
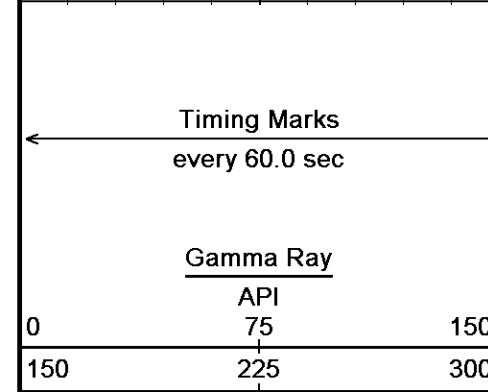
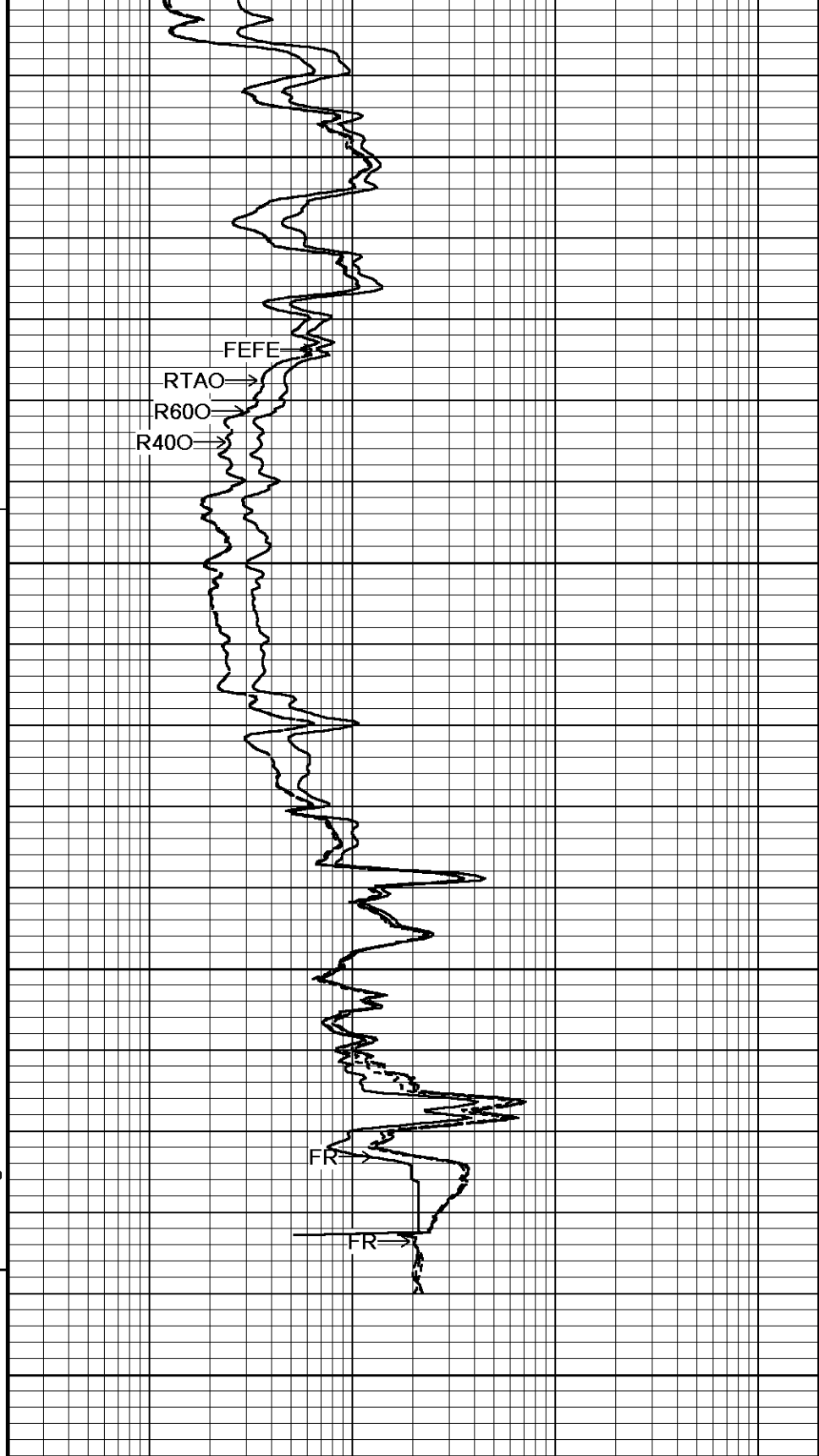
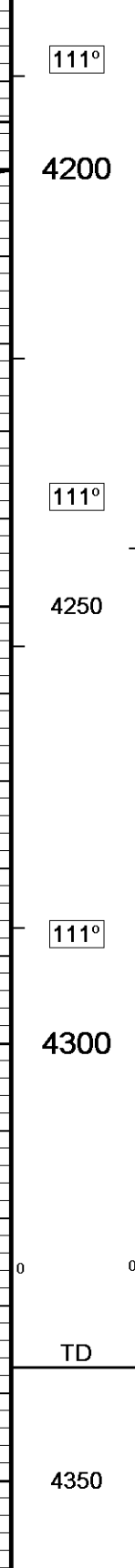
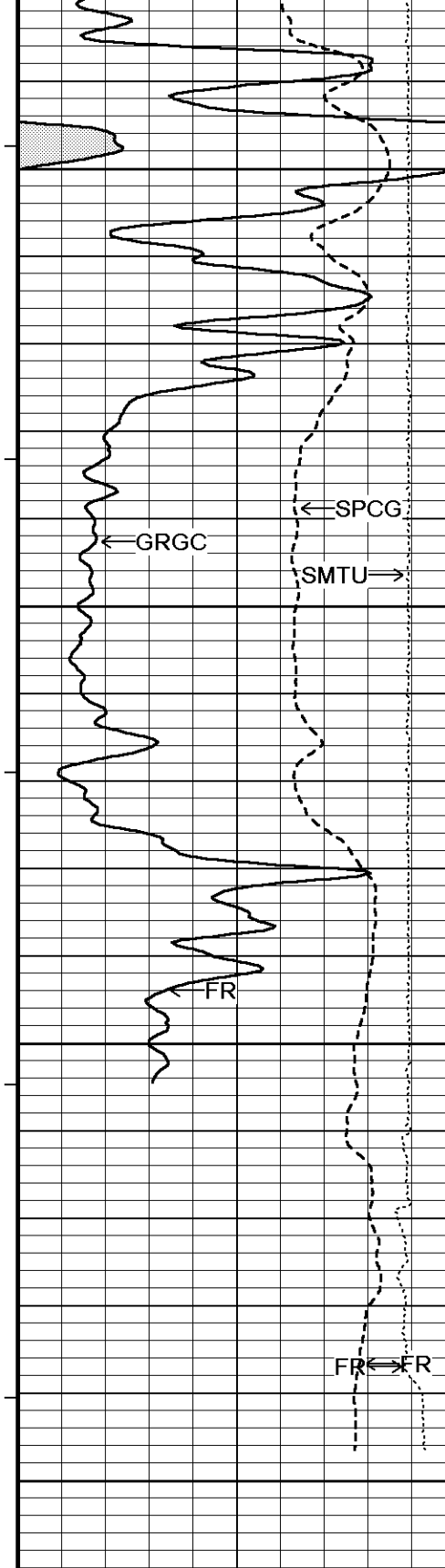


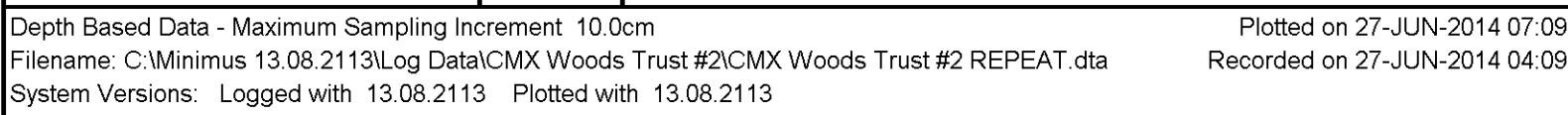












Pre-filter Length	11
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FE Calibration MFE-A.A 135

Base Calibration on 03-JUN-2014 20:44

Field Check on 26-JUN-2014 15:00

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	963.0	126.8
Base Check		281.2
Field Check		281.3

FE Constants MFE-A.A 135

Last Edited on 27-JUN-2014,01:37

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

Induction Calibration MAI-A.A 111

Base Calibration on 26-MAY-2010,08:56

Field Check on 26-JUN-2014 15:10

Base Calibration

Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel		Low	High	Low	High
1		17.6	473.6	9.3	966.2
2		6.4	385.9	7.6	821.4
3		3.2	264.0	5.2	566.0
4		2.1	135.5	2.6	279.2
Array Temperature		23.0		Deg F	

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			13.8	3870.4
2			30.1	3524.0
3			29.2	3017.6
4			19.1	2055.8
Deep			17.8	1959.7
Medium			43.0	3971.3
Shallow			44.9	5226.9

Array Temperature	87.4	Deg F
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Induction Constants MAI-A.A 111

Last Edited on 27-JUN-2014,01:37

Induction Model	RtAP-WBM
Caliper for Borehole Corr.	Density Caliper
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	8.0000
Stand-off Fin Angle	45.00 degrees
Stand-off Fin Width	0.5000 inches
Borehole Corr. Rm Source	Temperature Corr
Temp. for Rm Corr.	MCG External Temperature
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
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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-C.A 216

Base Calibration on 18-JUN-2014 10:39

Field Calibration on 26-JUN-2014 15:03

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16948	3.99
2	27088	5.98
3	37015	7.97
4	46800	9.86
5	58001	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.97	7.97

DOWNHOLE EQUIPMENT

C:\Minimus 13.08.2113\Log Data\CMX Woods Trust #2\CMX Woods Trust #2 REPEAT.dta

CBH-C, Cablehead, 11 pin

CBH-CA 170 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma

MCG-D.K 469 LG: 8.70 ft WT: 63.9 lb OD: 2.240 in

Compact Micro-log

MML-A 3 LG: 7.97 ft WT: 81.6 lb OD: 2.240 in

Compact Neutron

MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper

MPD-C.A 216 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

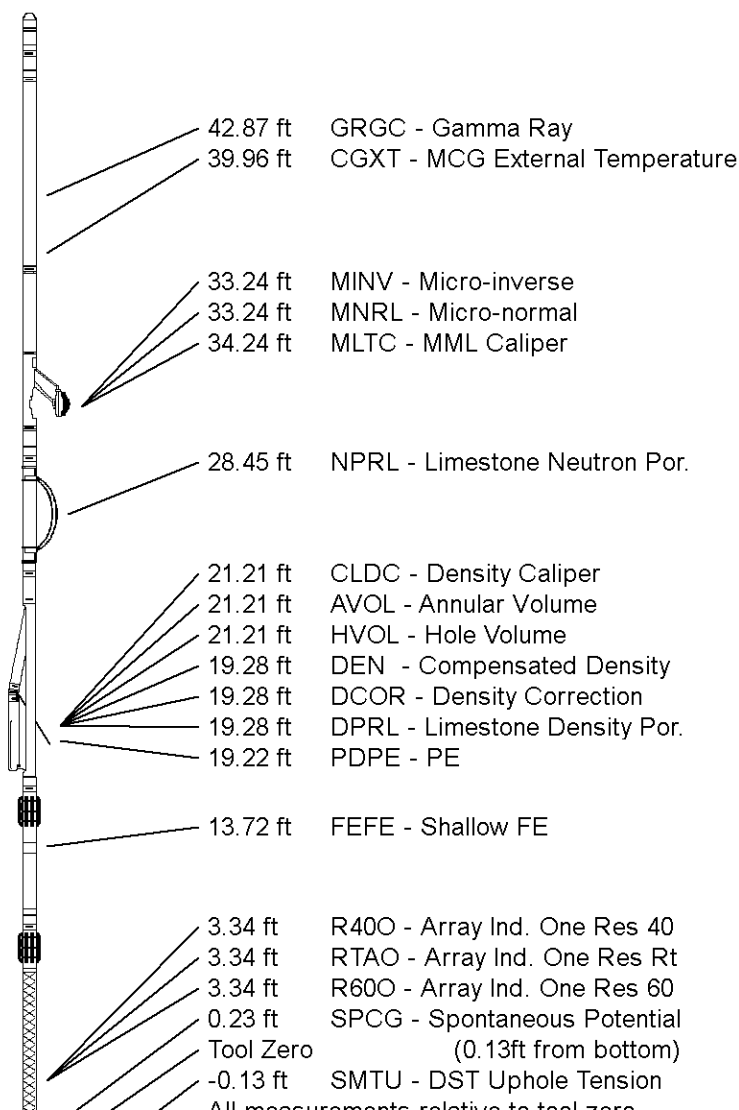
Compact Focussed Electric

MFE-A.A 135 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Induction

MAI-A.A 111 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 50.55 ft Weight: 407.9 lb



COMPANY CMX, INC.
WELL WOODS TRUST #2
FIELD UN-NAMED
PROVINCE/COUNTY PAWNEE
COUNTRY/STATE U.S.A. / KANSAS

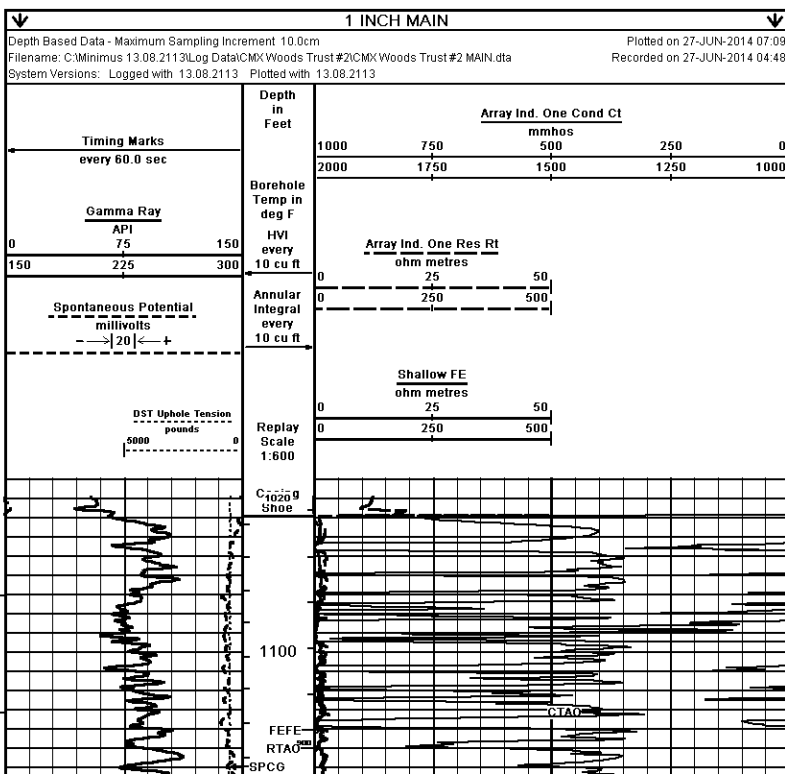
Elevation Kelly Bushing	2087.00	feet	First Reading	4334.00	feet
Elevation Drill Floor	2085.00	feet	Depth Driller	4340.00	feet
Elevation Ground Level	2074.00	feet	Depth Logger	4337.00	feet

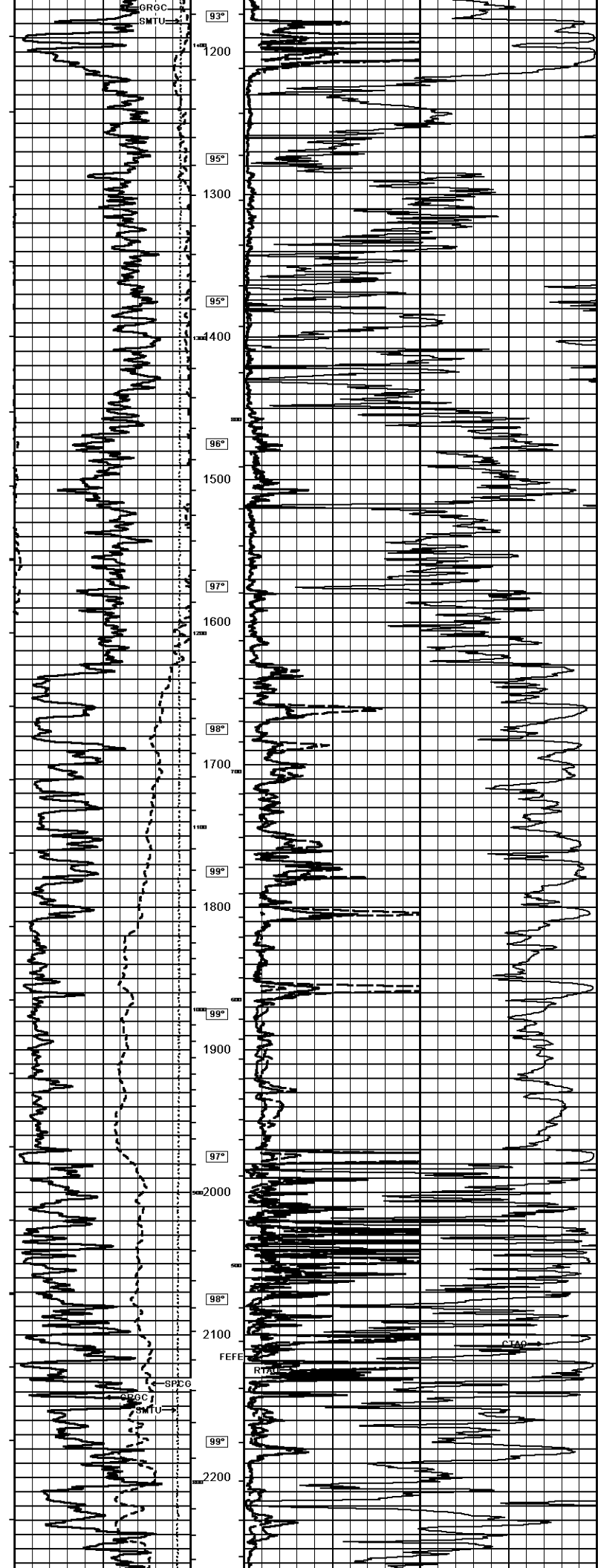


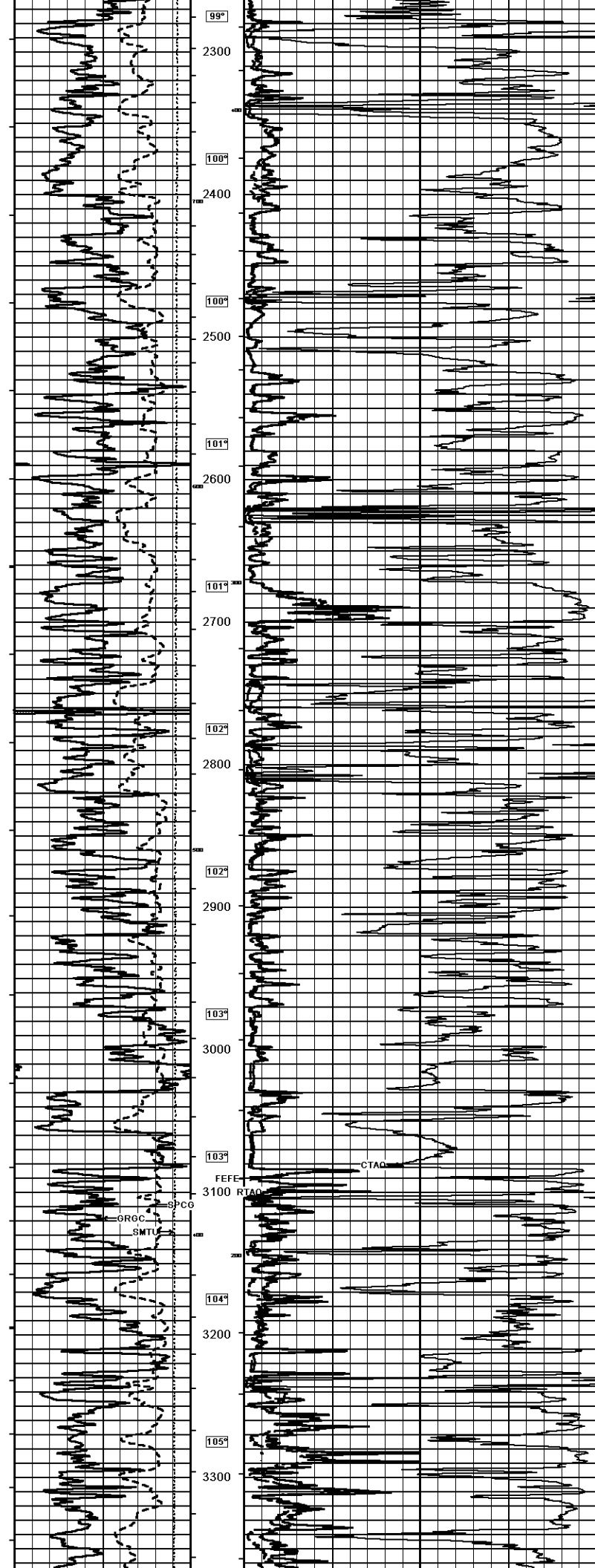
ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

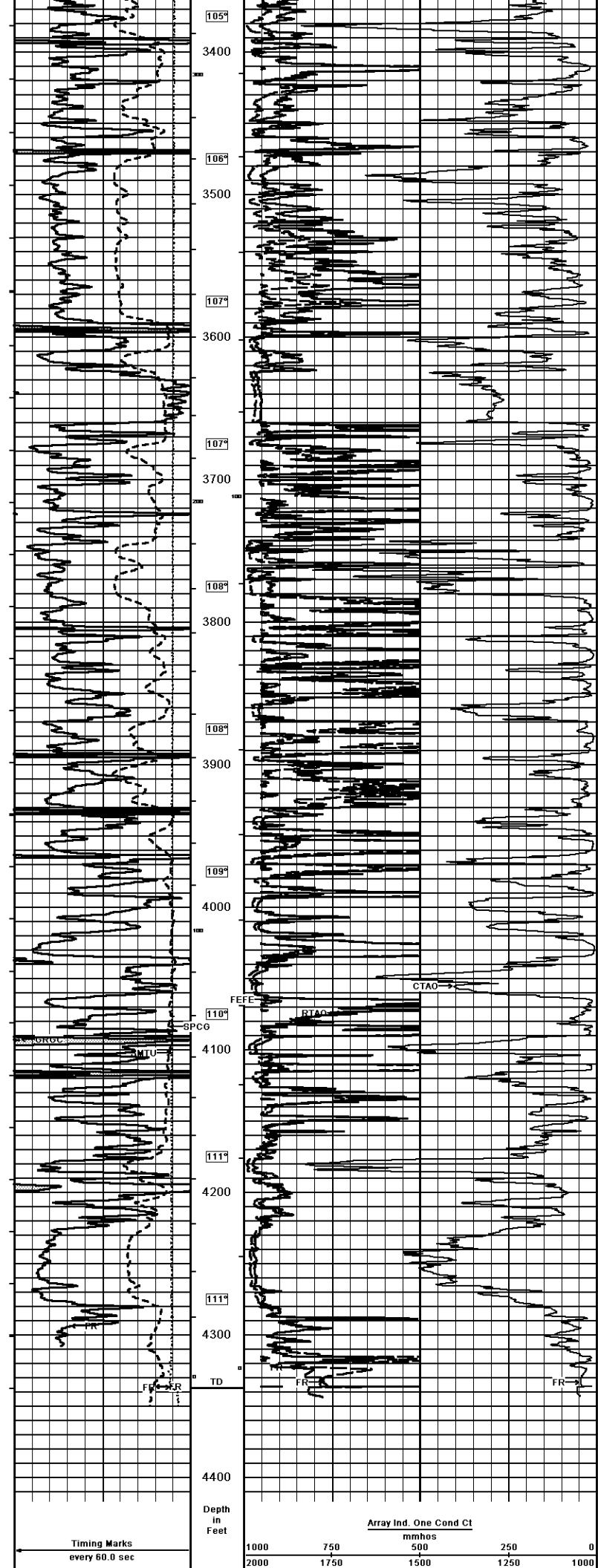
Weatherford®

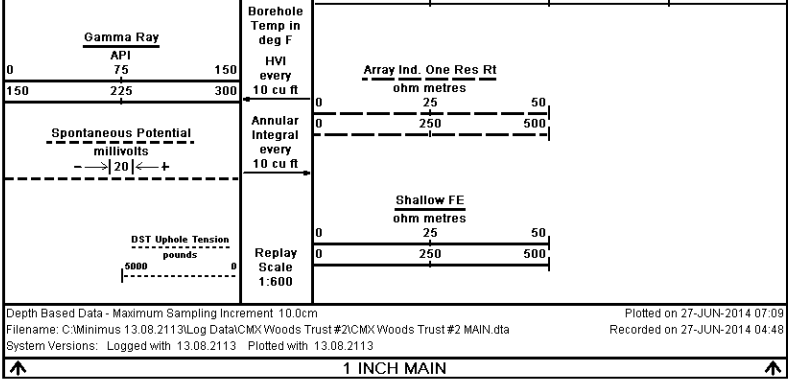
Weatherford		ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG	
COMPANY	CMX, INC.	WELL	WOODS TRUST #2
FIELD	UN-NAMED	PROVINCE/COUNTY	PAWNEE
COUNTRY/STATE	U.S.A. / KANSAS	LOCATION	990' ENL & 1320' FWL
SEC. 27	TWP. 21S	REC. 13NE	Forest Services
DATE	15-145-217D	LOGGING	MP/DIMON
LOG NUMBER	15-145-217D	PERMANENT DATUM G.L. Elevation 2074 feet	Log Measured From KB @ 13 feet
DATE	27-JUN-2014	Run Number	ONE
Service Order	757-9101757	Depth Driller	4340.00 feet
Depth Logger	4337.00 feet	First Reading	4334.00 feet
Last Reading	1028.00 feet	Casing Driller	1028.00 feet
Casing Logger	7.875	Bit Size	7.875 inches
Hole Fluid Type	CHEMICAL	Density/Viscosity	9.10 lb/lb 54.00 CP
PH/Fluid Loss	8.60	MLD P/T	8.40 ml/30min
Sample Source	MLD P/T	Rm @ Measured Temp	1.33 @ 88.0 ohm-m
Rm @ Measured Temp	1.06 @ 88.0 ohm-m	Rm @ Measured Temp	1.06 @ 88.0 ohm-m
Source RmT / RmC	CALC	Rm @ BHT	1.06 @ 88.0 ohm-m
Time Since Circulation	3 HOURS	Max Recorded Temp	112.00 deg F
Equipment Base	11306	Recorded By	JEFFREY RANDEL
Witnessed By	LEAH KASTEN		JUSTIN HIGGS
LOG #	LEH 4 191		











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Elevation Kelly Bushing	2087.00	feet	First Reading	4334.00	feet
Elevation Drill Floor	2085.00	feet	Depth Driller	4340.00	feet
Elevation Ground Level	2074.00	feet	Depth Logger	4337.00	feet



ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG