



Weatherford[®]

**ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG**

COMPANY				SHAKESPEARE OIL CO., INC.			
WELL				ORTEGA #1-25			
FIELD				WILDCAT			
PROVINCE/COUNTY				SCOTT			
COUNTRY/STATE				U.S.A. / KANSAS			
LOCATION				2000' FNL & 2287' FEL			
SEC	TWP	RGE	Other Services		MML		
25	16S	34W	MPD/MDN				
API Number		15-171-21017		MSS			
Permit Number							
Permanent Datum GL, Elevation 3095 feet							
Log Measured From KB							
Drilling Measured From KB							
Date	24-FEB-2014						
Run Number	ONE						
Service Order	4558-80419553						
Depth Driller	4870.00			feet			
Depth Logger	4868.00			feet			
First Reading	4865.00			feet			
Last Reading	263.00			feet			
Casing Driller	265.00			feet			
Casing Logger	263.00			feet			
Bit Size	7.875			inches			
Hole Fluid Type	CHEMICAL						
Density / Viscosity	9.20 lb/USg		58.00 CP				
PH / Fluid Loss	10.50		10.00 ml/30Min				
Sample Source	FLOWLINE						
Rm @ Measured Temp	0.41 @ 76.0		ohm-m				
Rmf @ Measured Temp	0.33 @ 76.0		ohm-m				
Rmc @ Measured Temp	0.49 @ 76.0		ohm-m				
Source Rmf / Rmc	CALC	CALC					
Rm @ BHT	0.29 @109.0		ohm-m				
Time Since Circulation	5 HOURS						
Max Recorded Temp	109.00		deg F				
Equipment / Base	13057		LIB				
Recorded By	ADAM SILL			JEFFREY RANDLE			
Witnessed By	TIM PRIEST						
JOB #	LB14-053						

BOREHOLE RECORD					Last Edited: 24-FEB-2014 07:27
Bit Size inches		Depth From feet		Depth To feet	
7.875		265.00		4870.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	265.00	24.00	

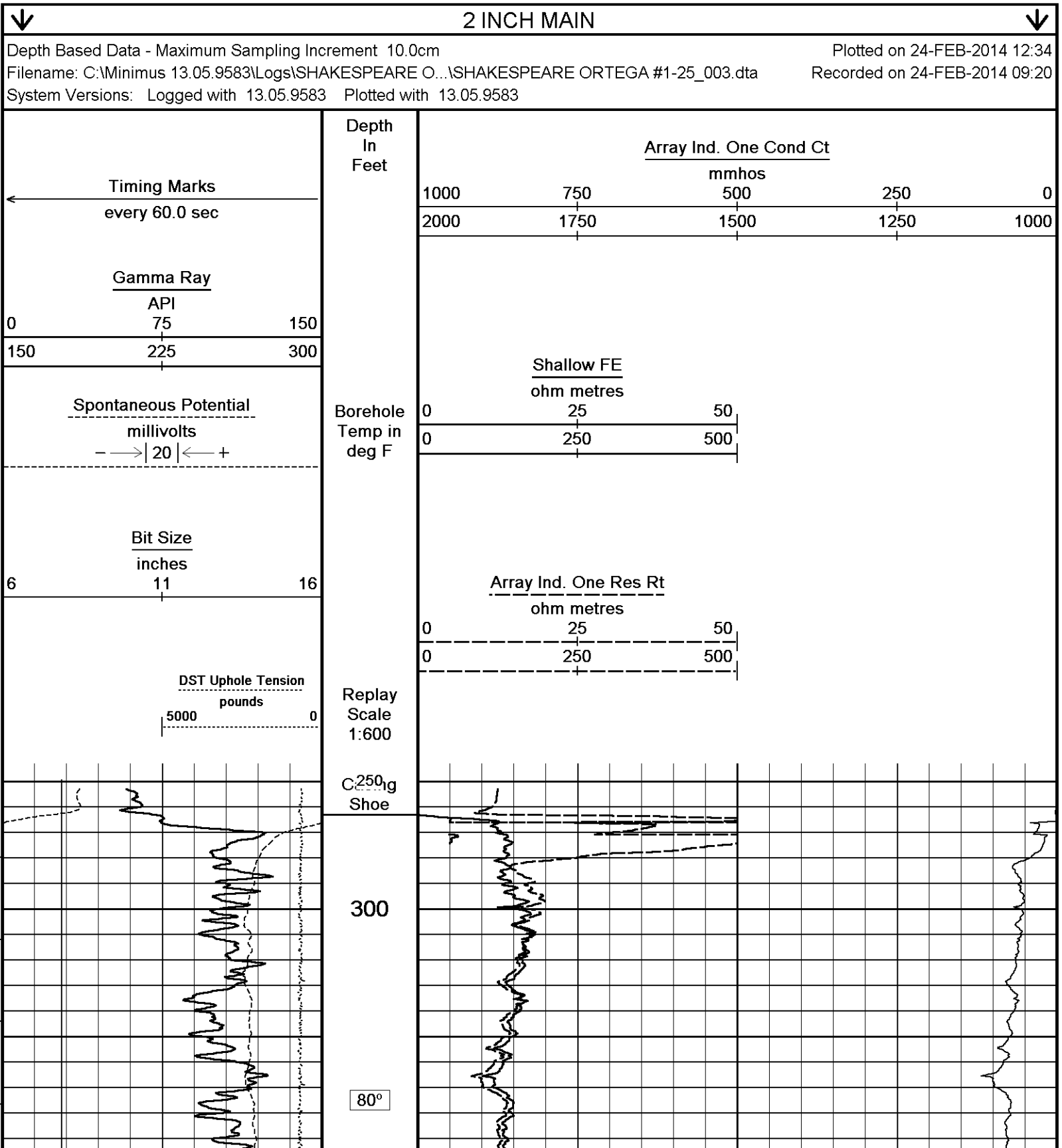
REMARKS
- SOFTWARE ISSUE: WLS 13.05.9583.
- RUN 1: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION. - HARDWARE: DUAL ECCENTRALISER USED ON MDN 0.5 INCH STANDOFF USED ON MFE. TWO 0.5 INCH STANDOFFS USED ON MSS. 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE 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: 2253 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3800 FEET: 212 CU. FT.

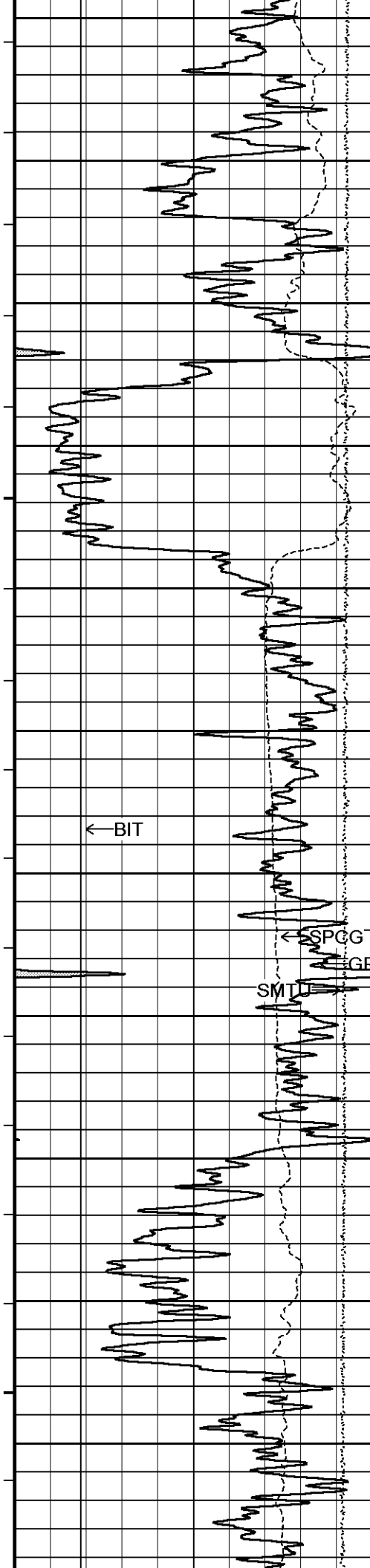
- RIG: HD DRILLING #2

- ENGINEER: A. SILL, J. RANDLE.

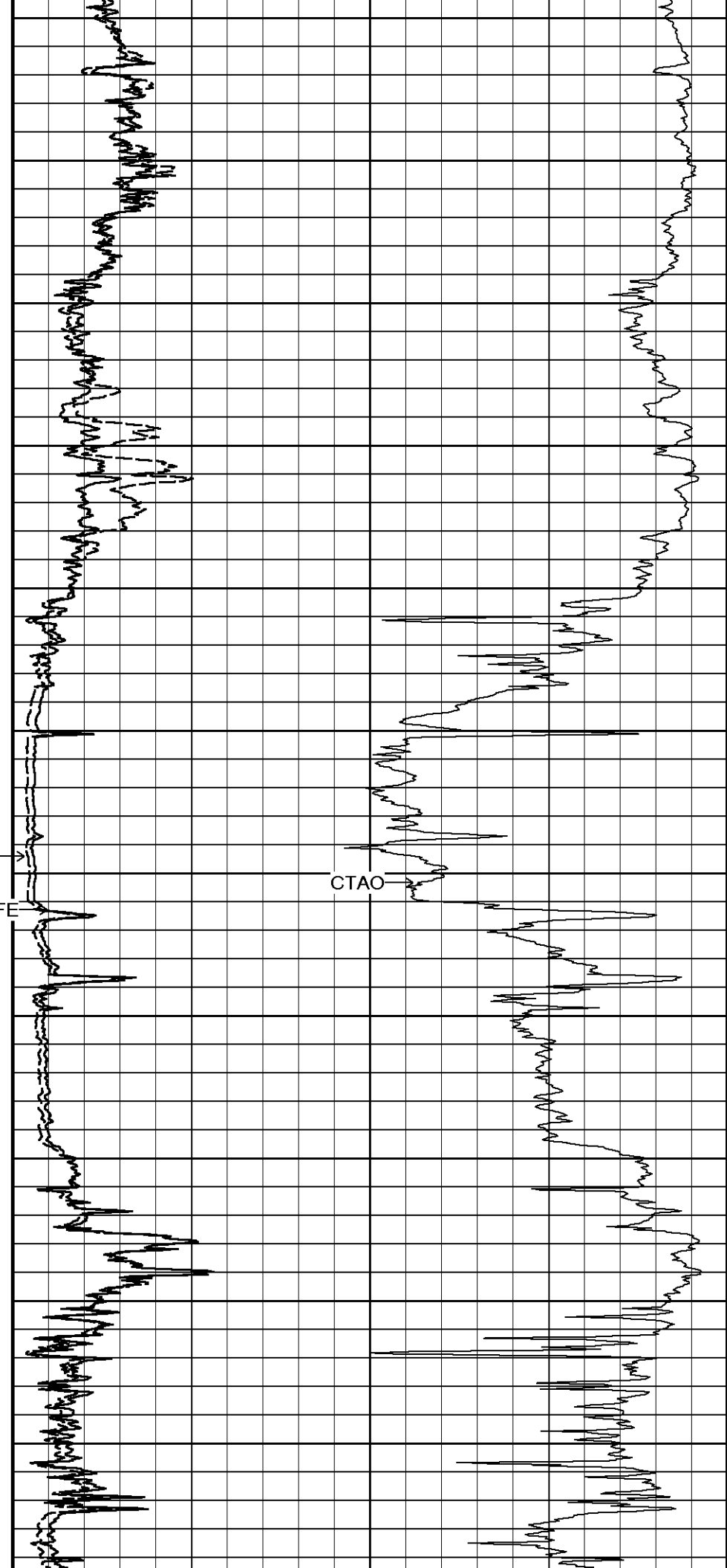
- OPERATOR(S): K. RINEHART.

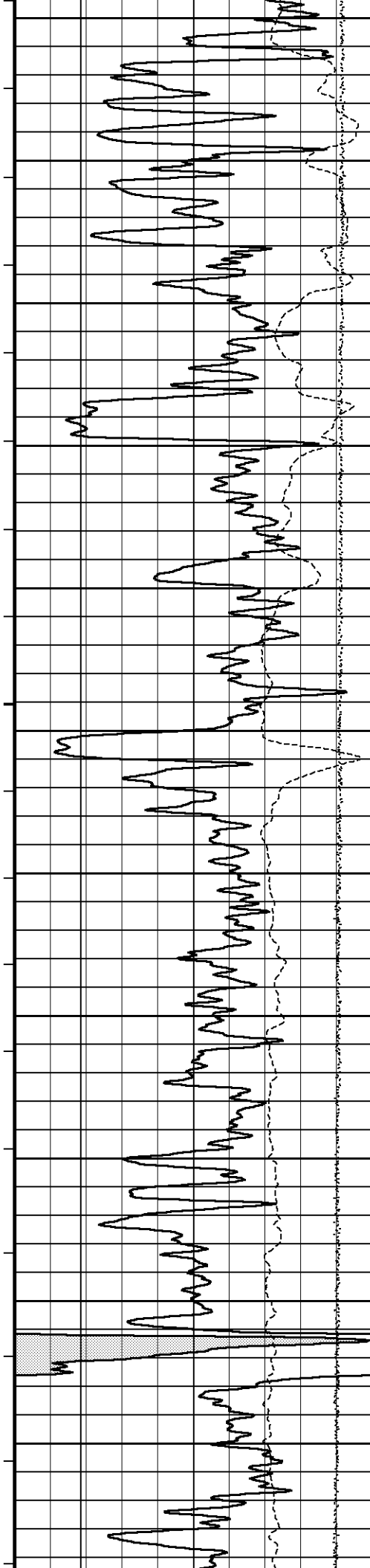
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, 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.





400
81°
500
82°
600
84°
PTAO
700
FEFE
85°
800
86°
900





86°

1000

87°

1100

88°

1200

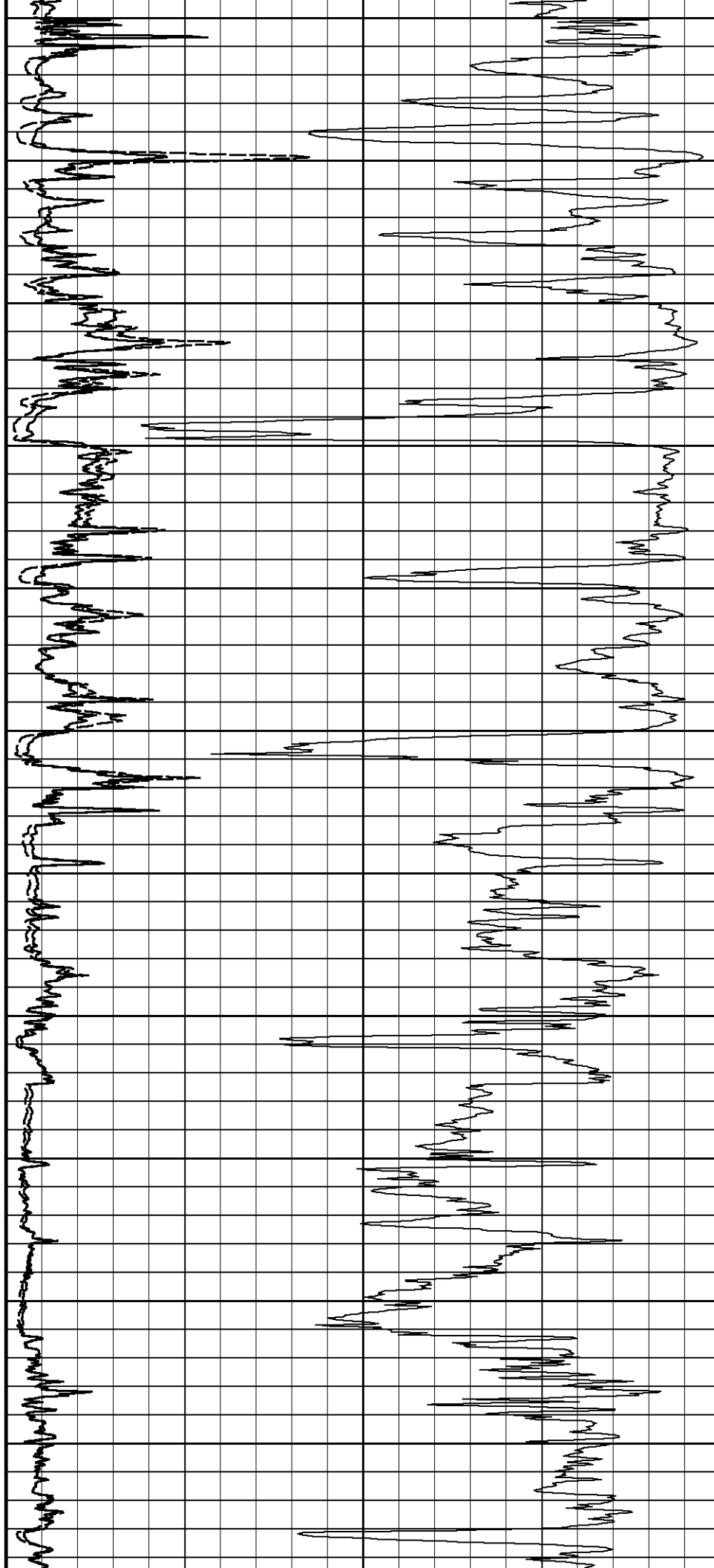
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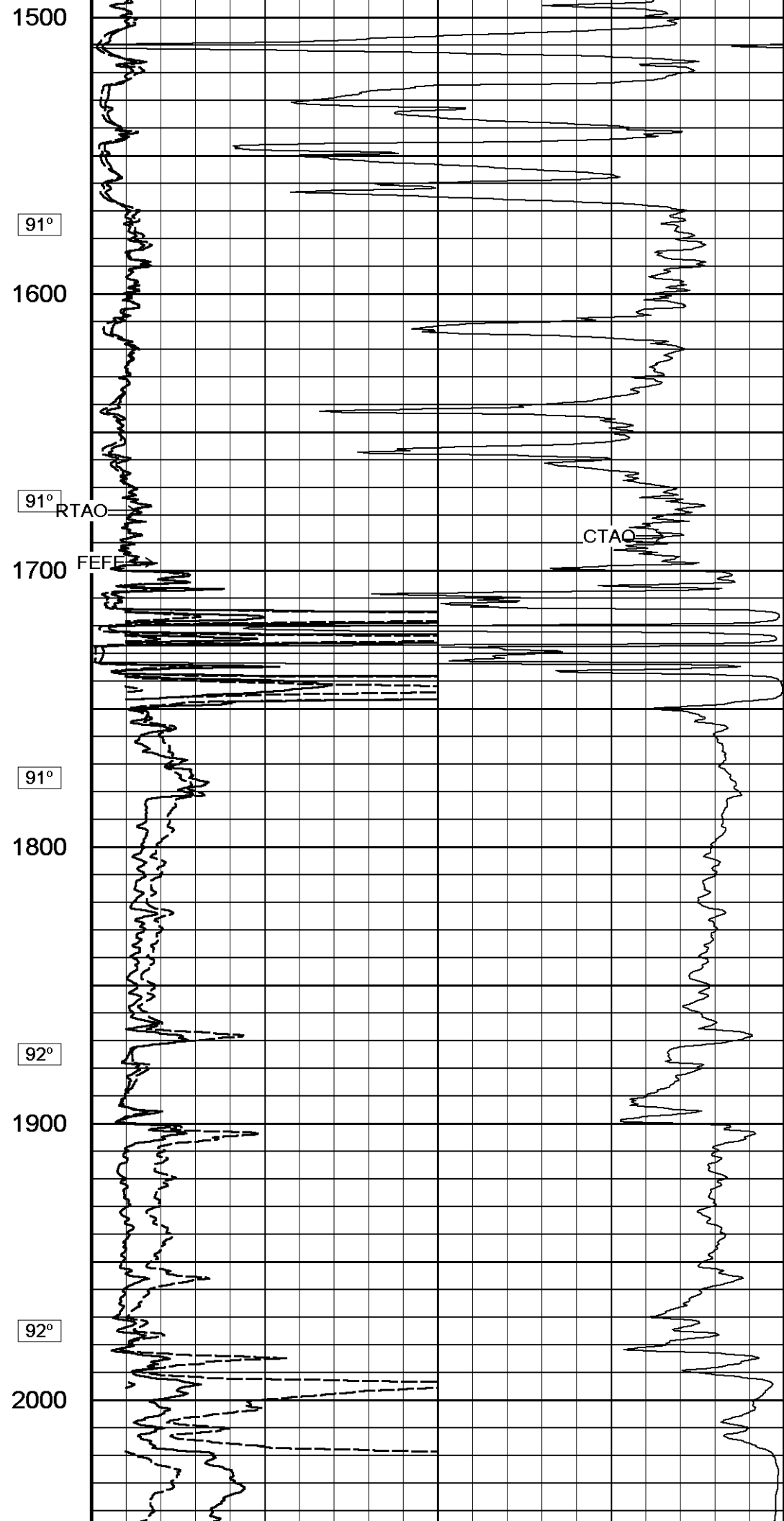
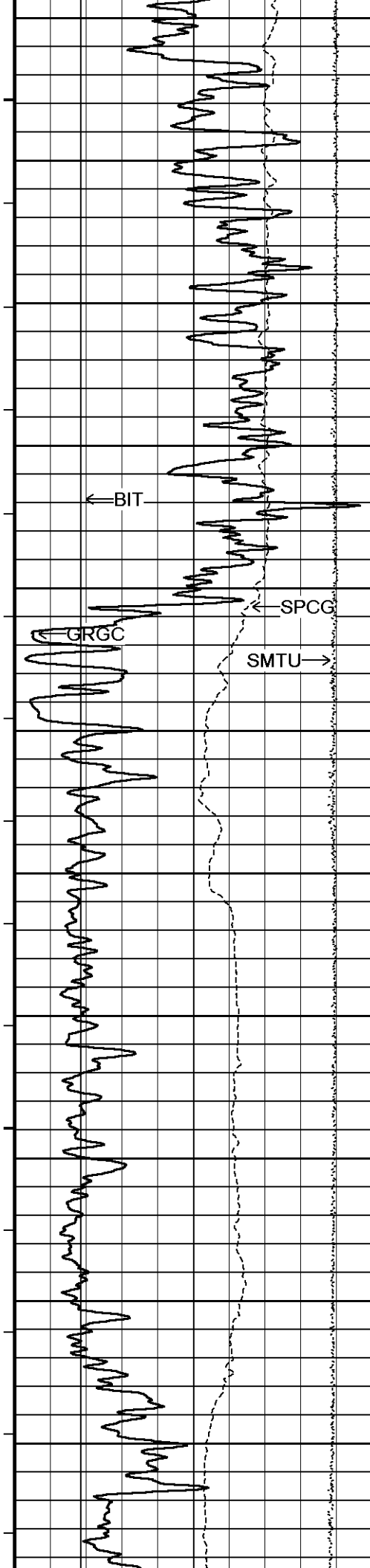
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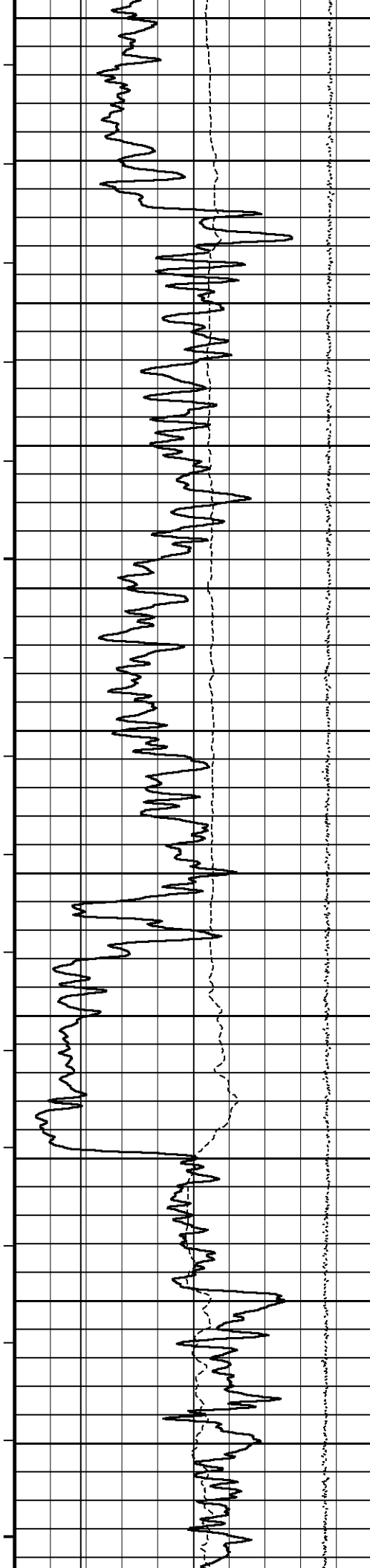
90°

1400

90°







92°

2100

92°

2200

93°

2300

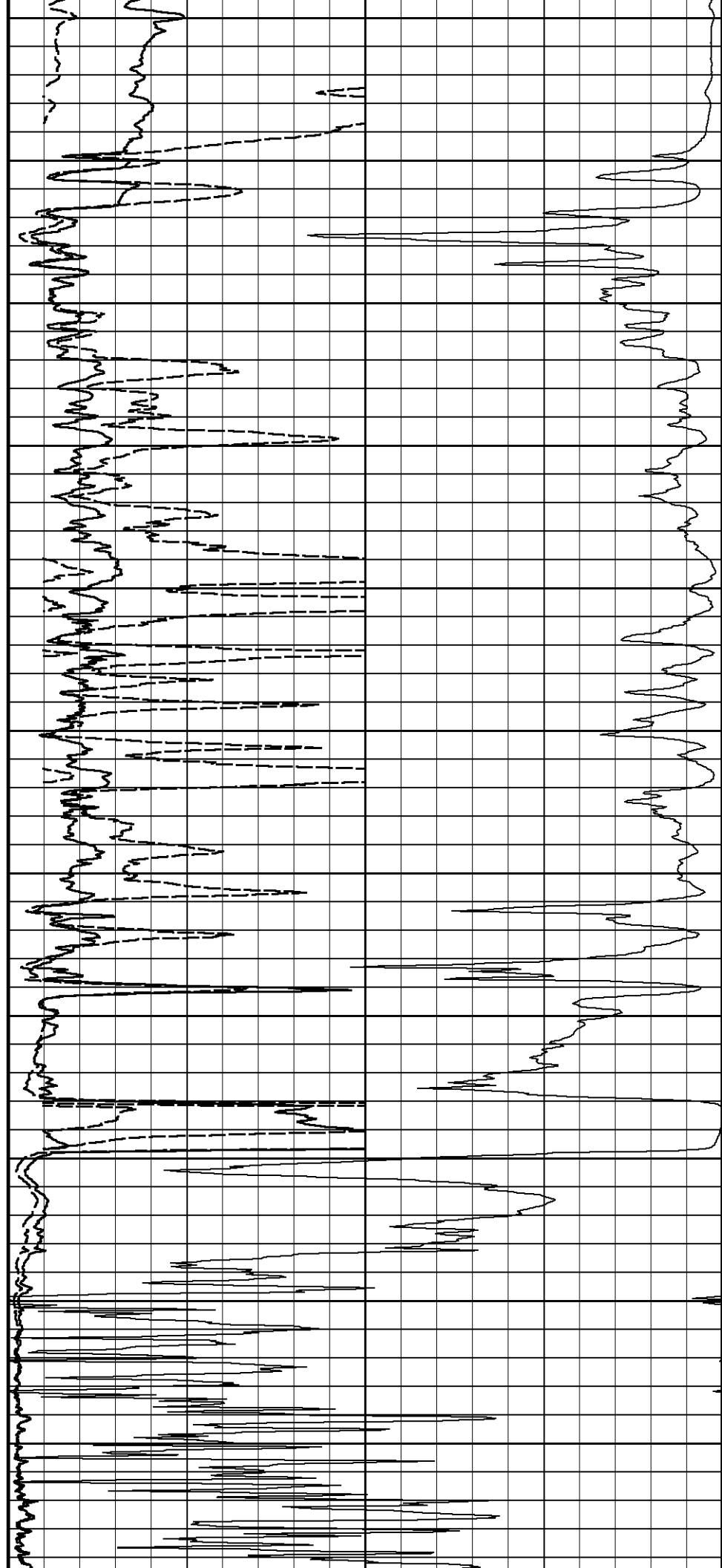
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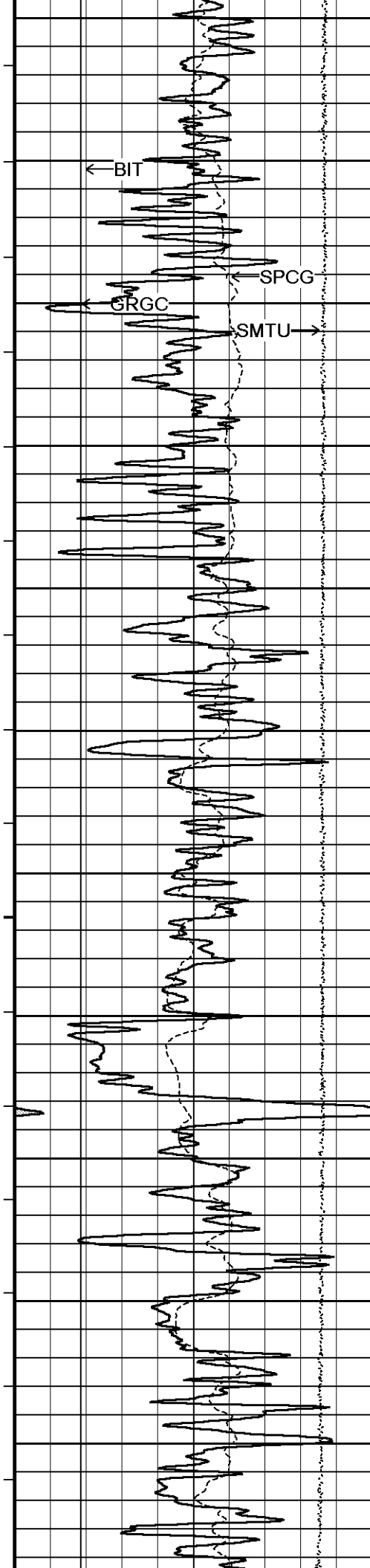
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94°

2500

94°





2600

RTAO

95°
FEFE

2700

95°

2800

96°

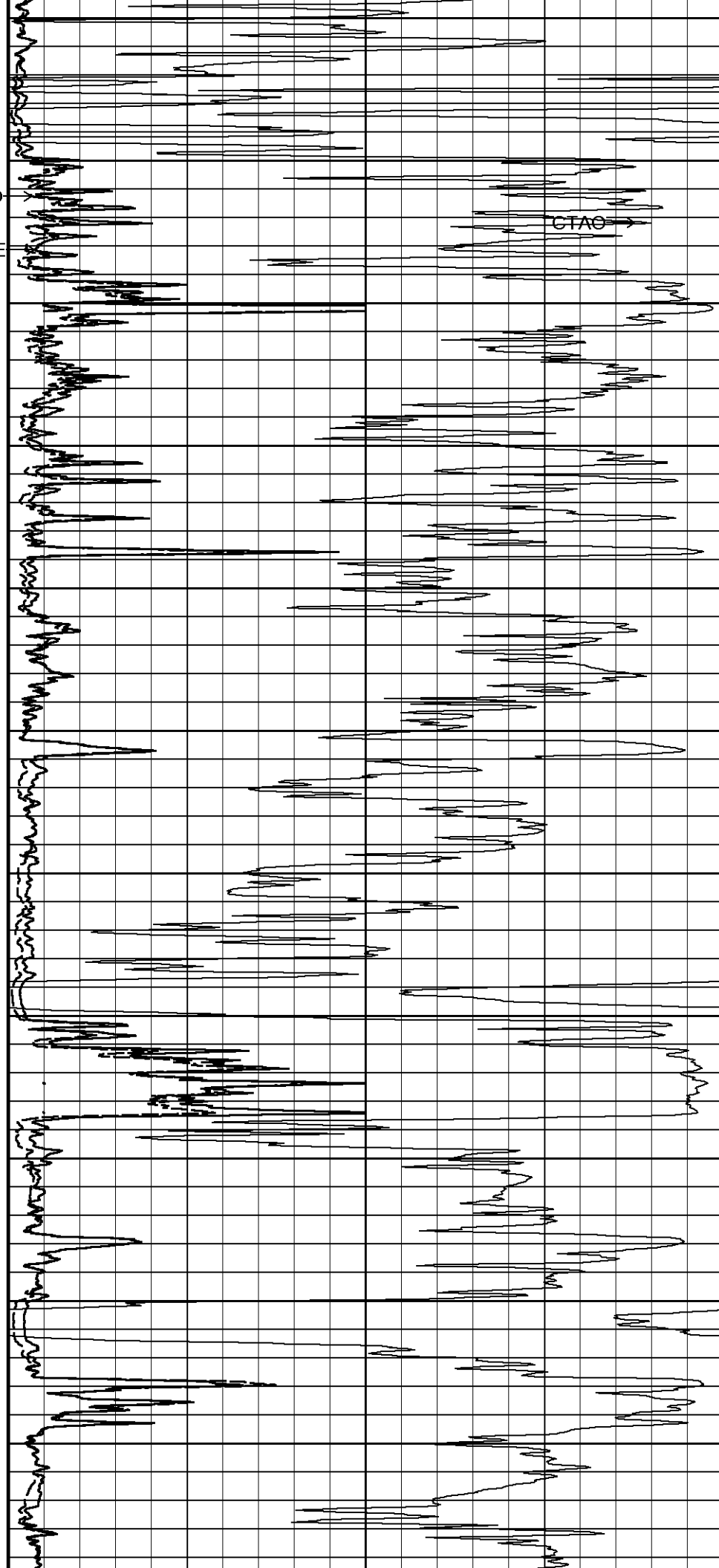
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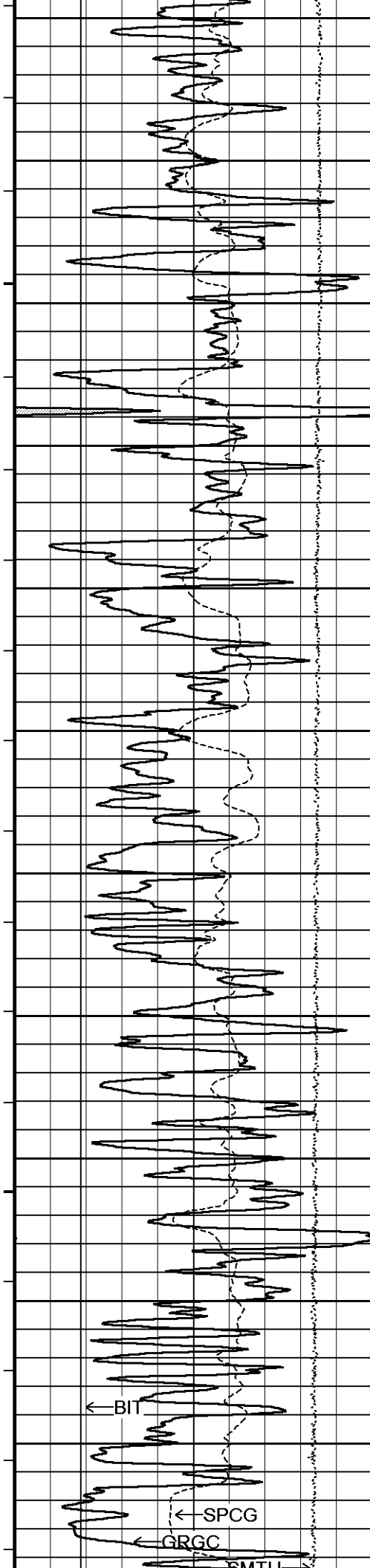
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3000

97°

3100





97°

3200

98°

3300

98°

3400

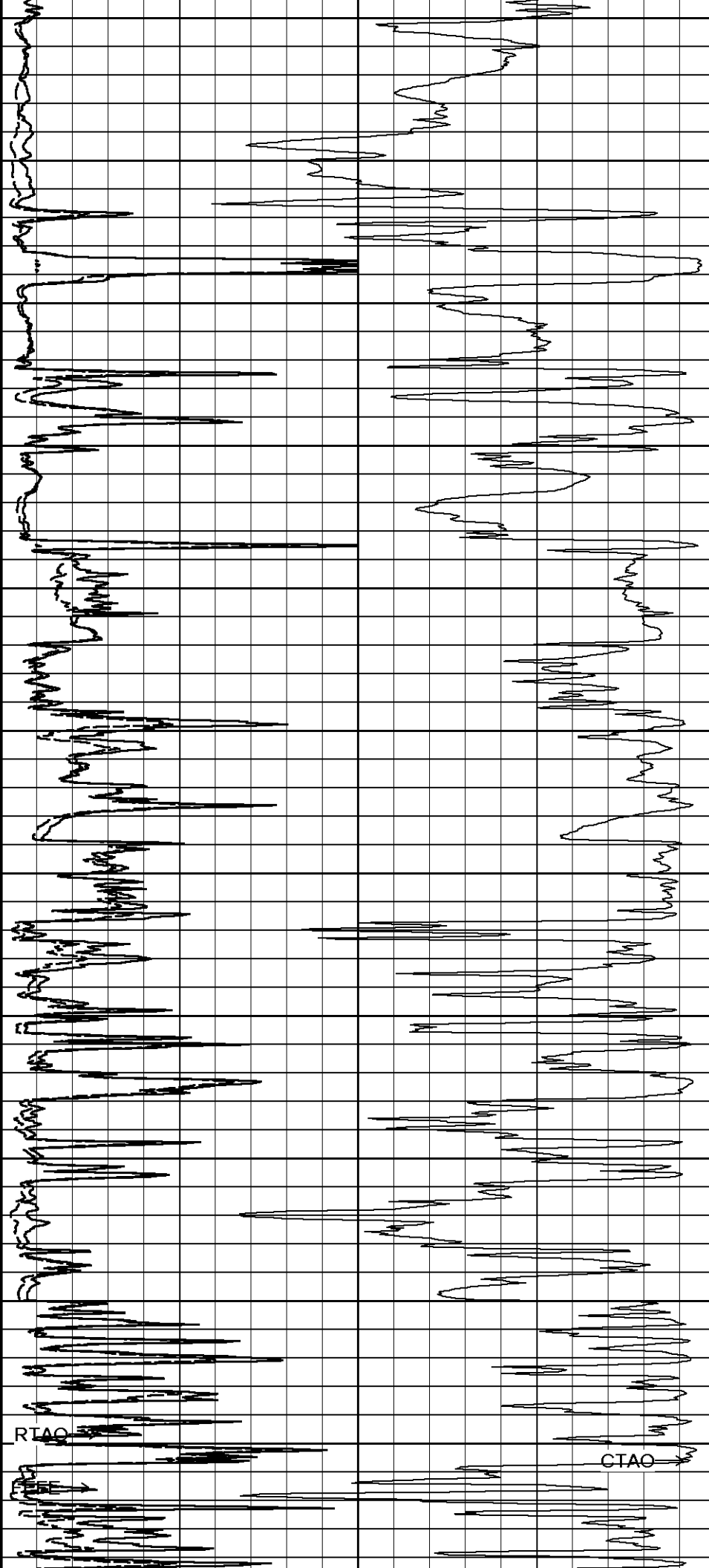
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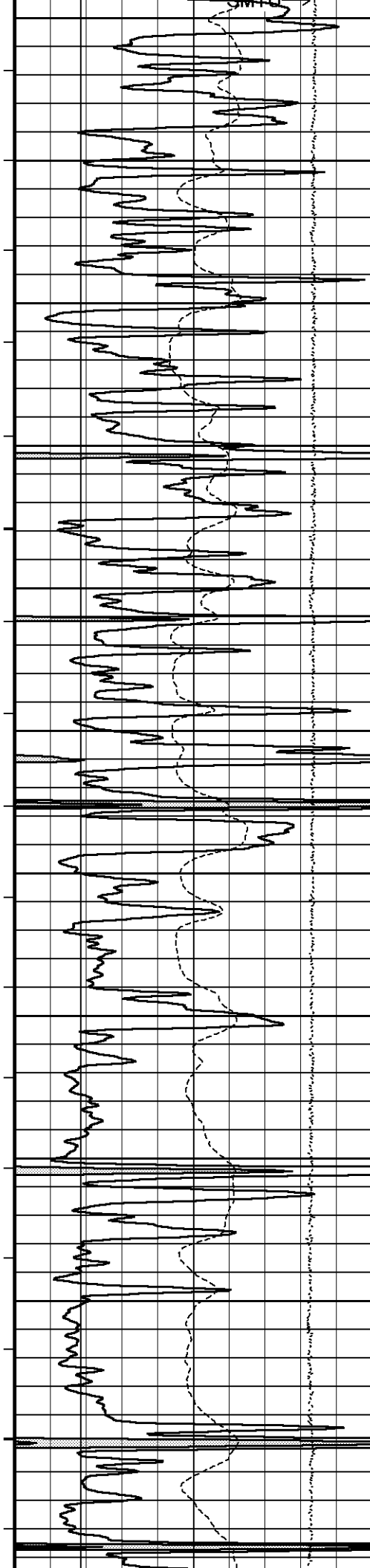
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99°

3600

100°





3700

100°

3800

101°

3900

101°

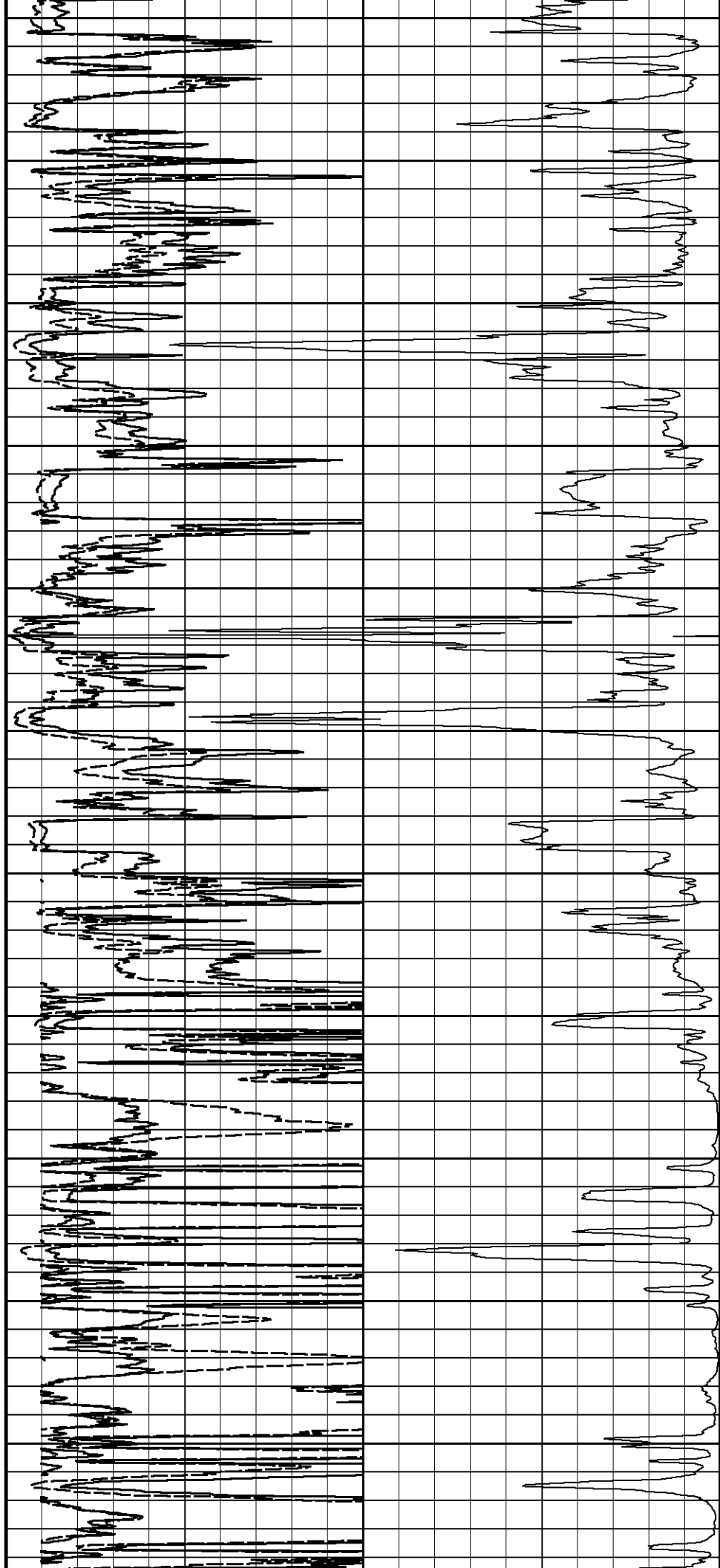
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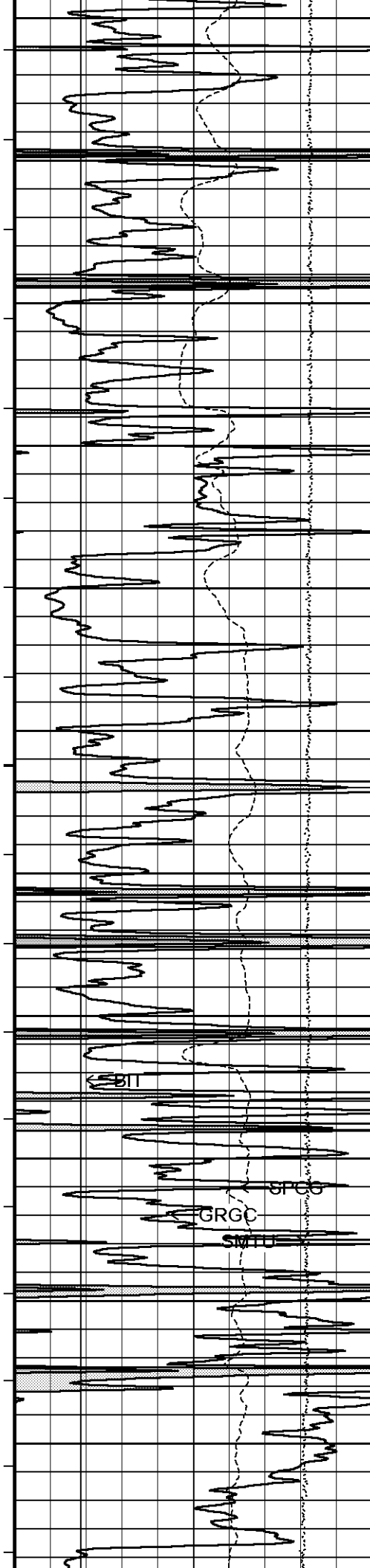
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4100

103°

4200





103°

4300

104°

4400

105°

4500

106°

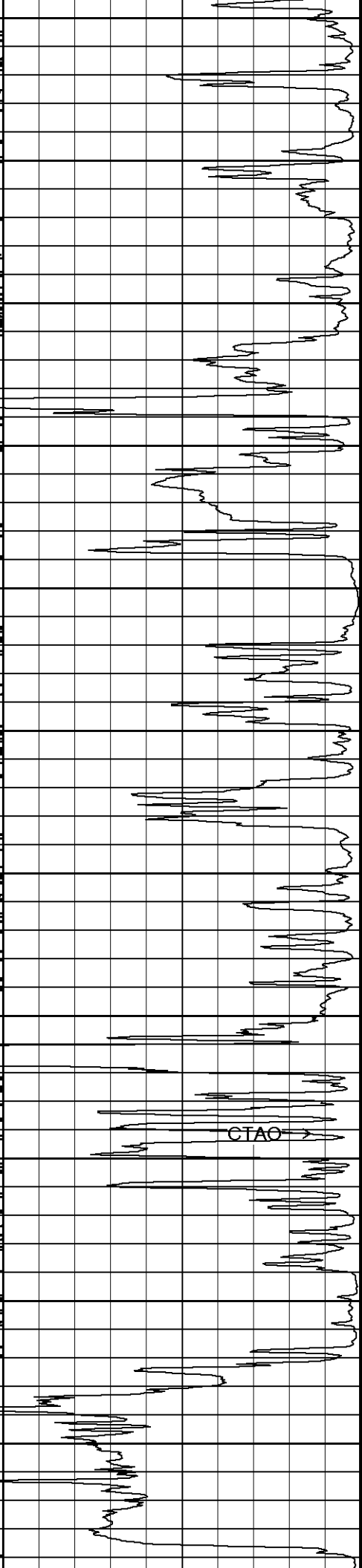
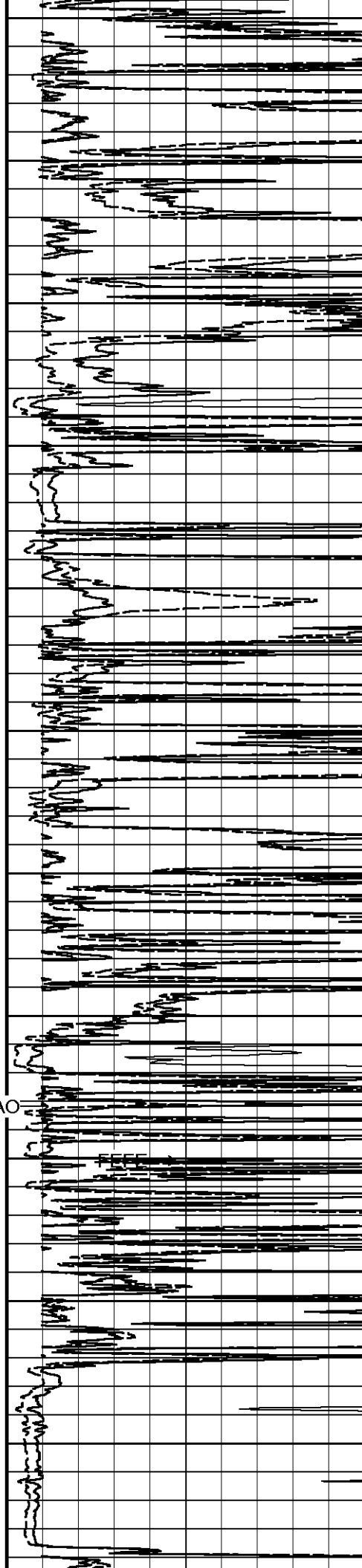
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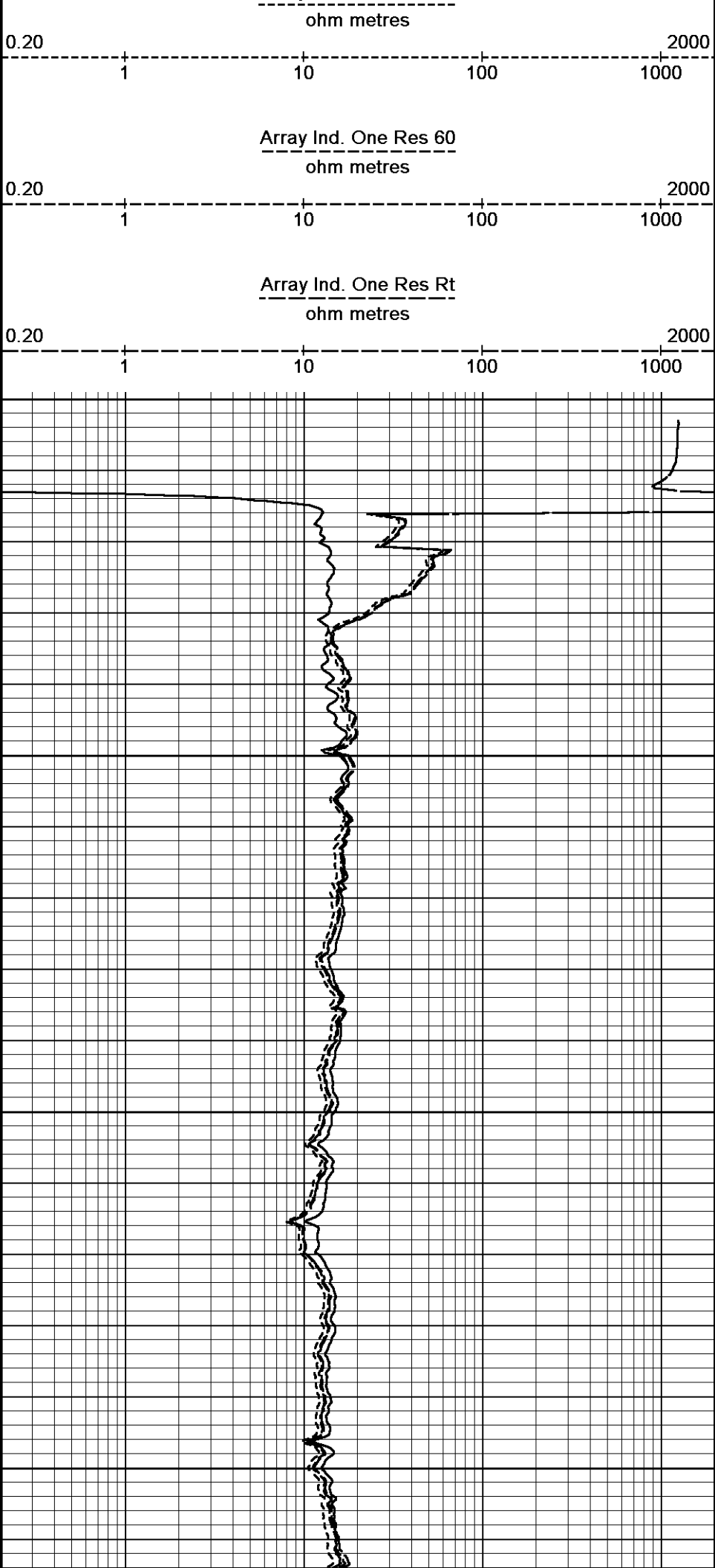
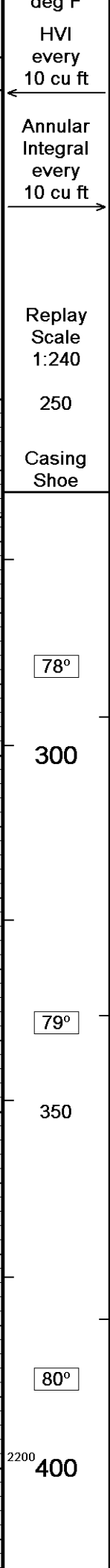
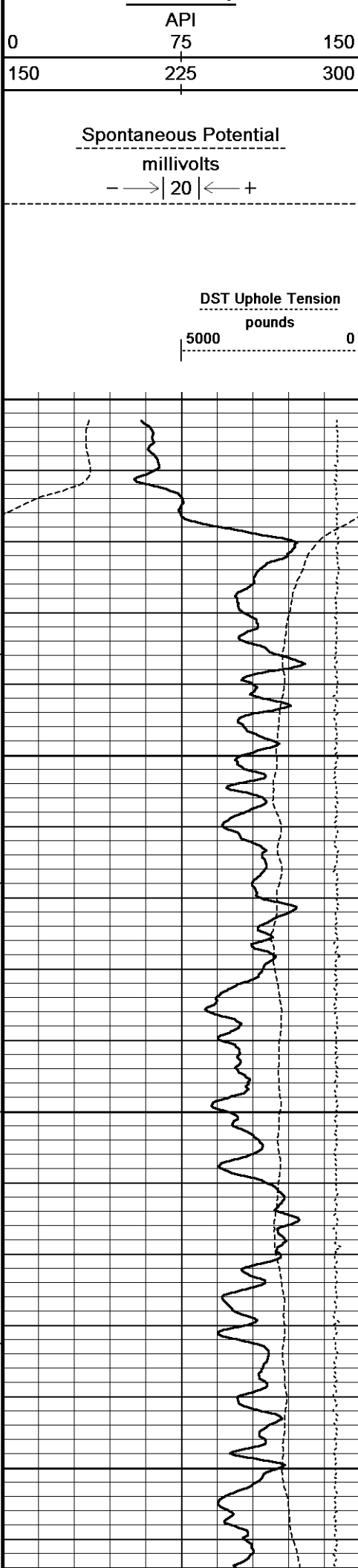
RTAO

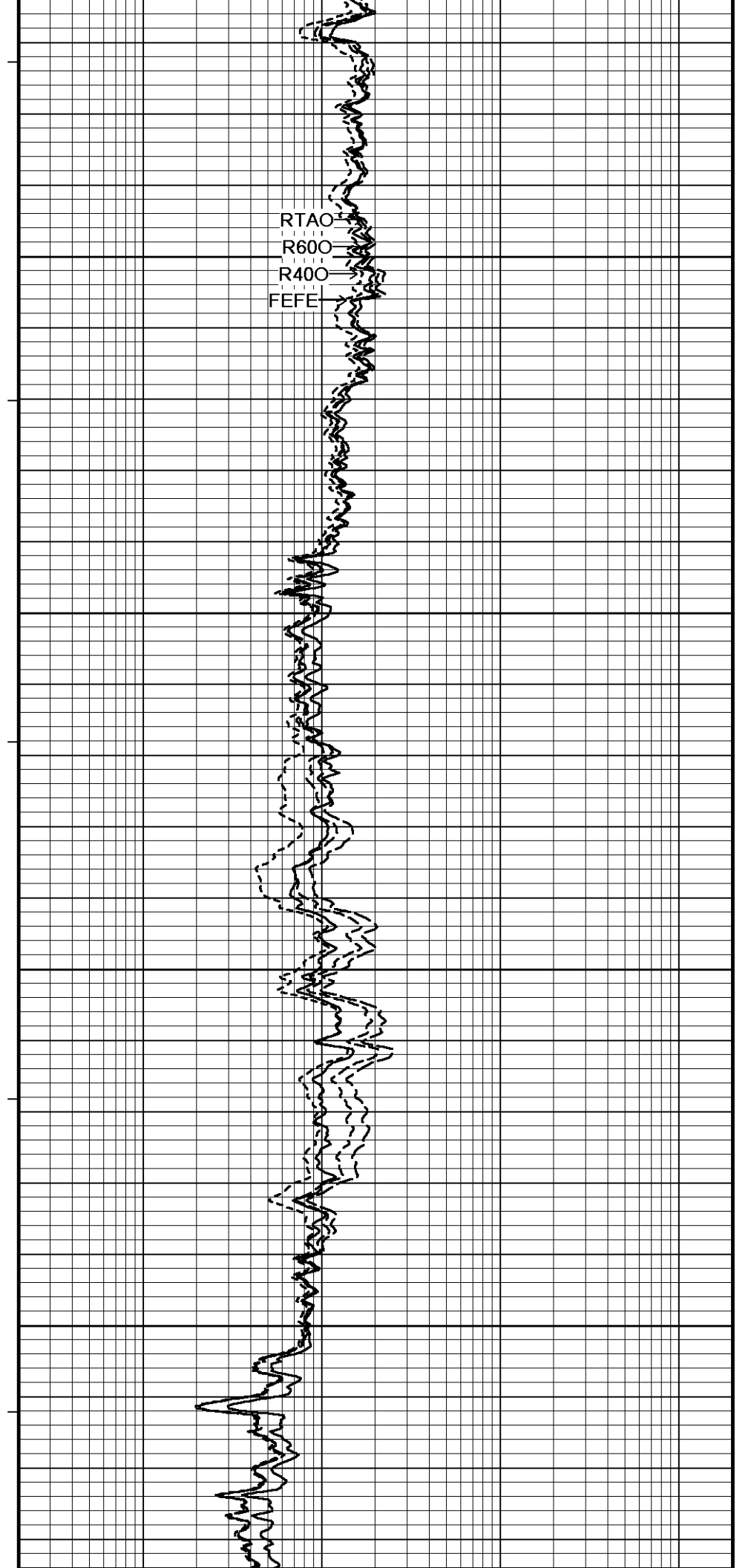
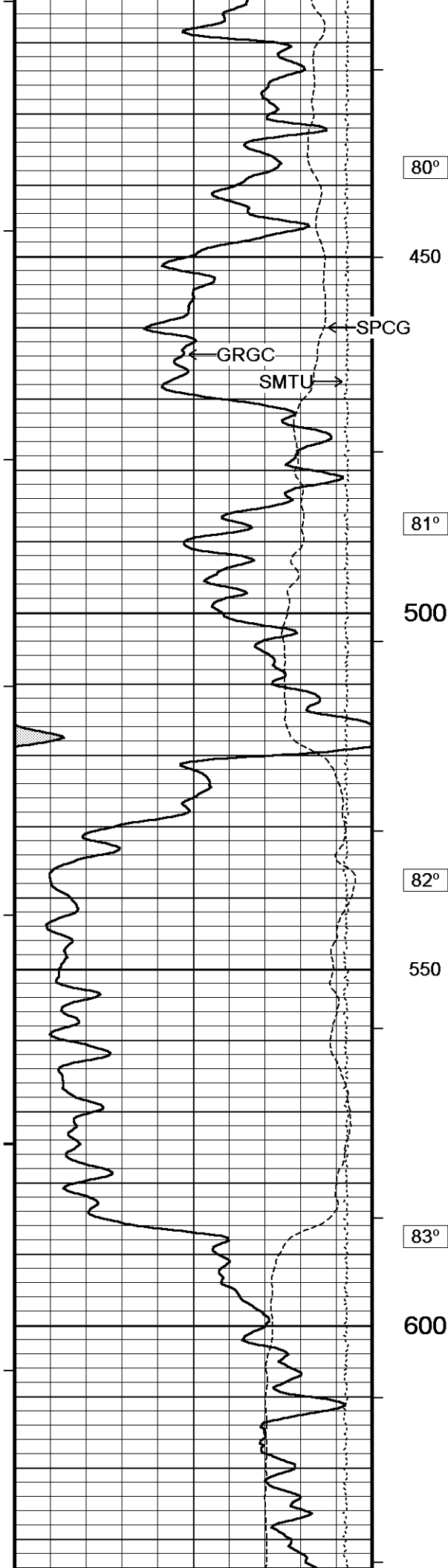
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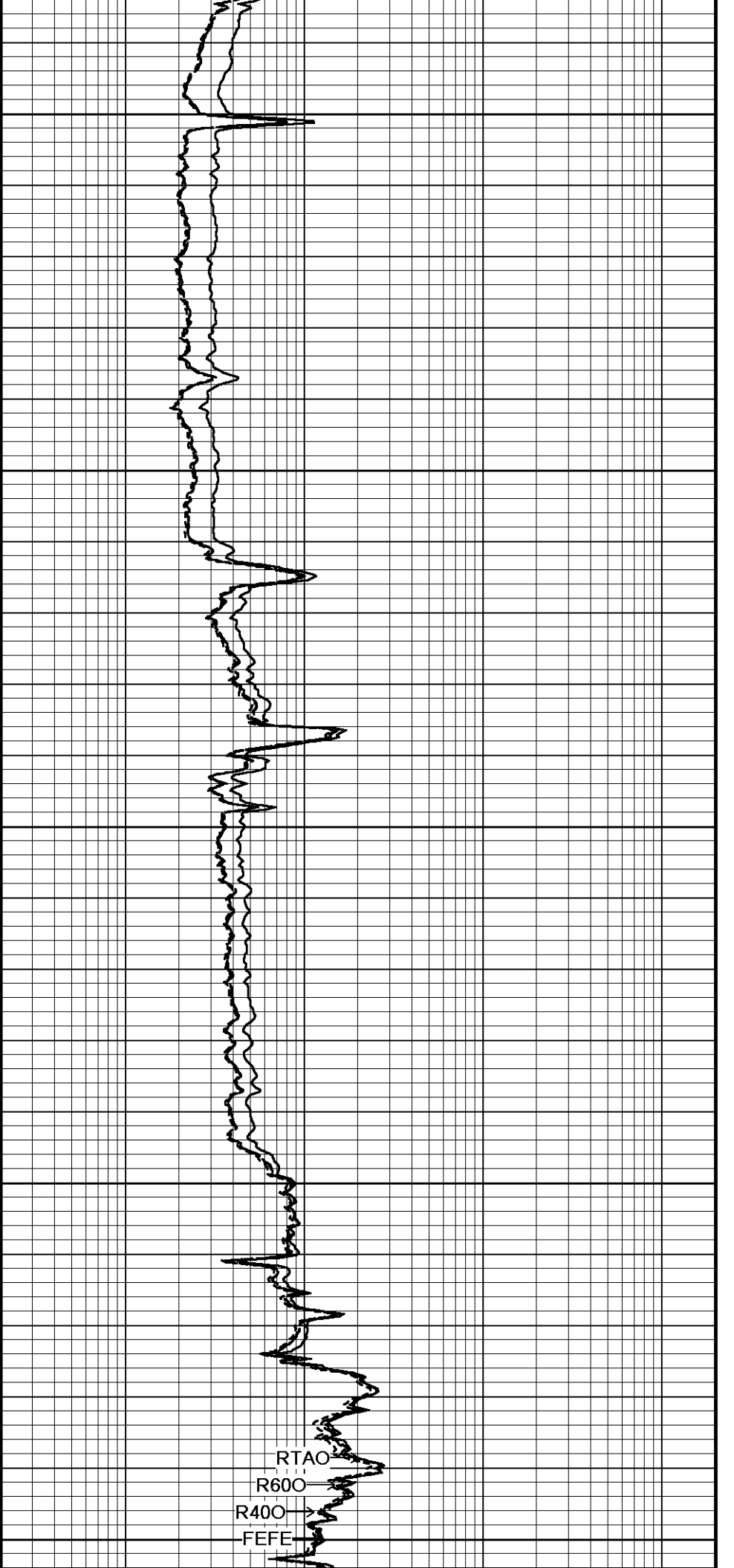
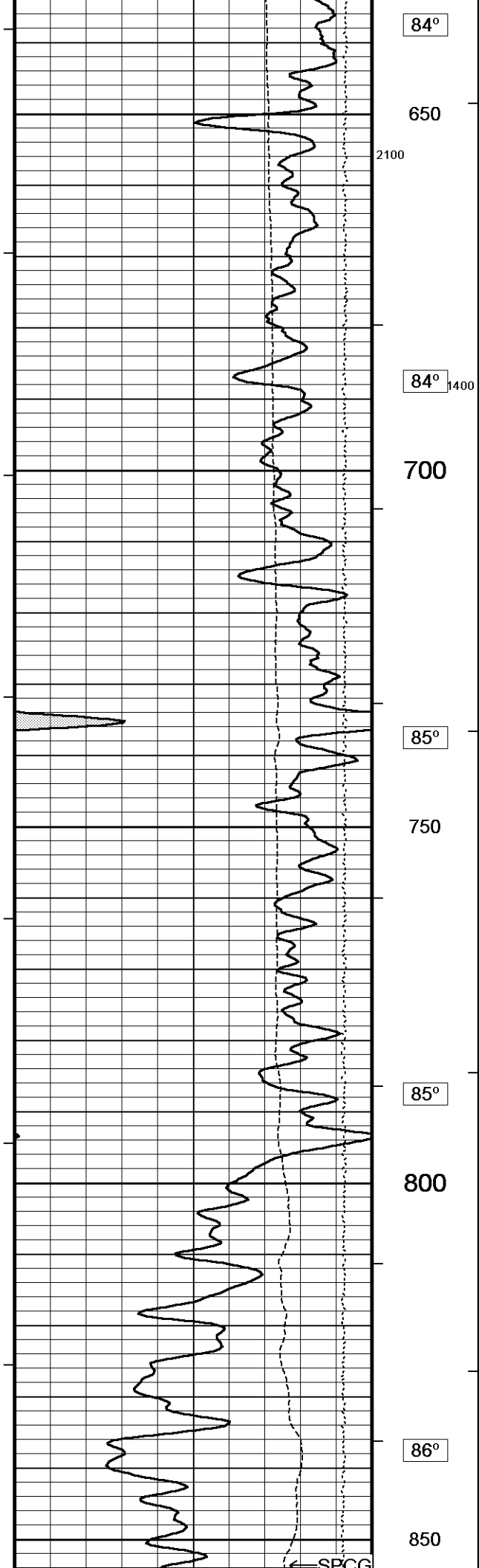
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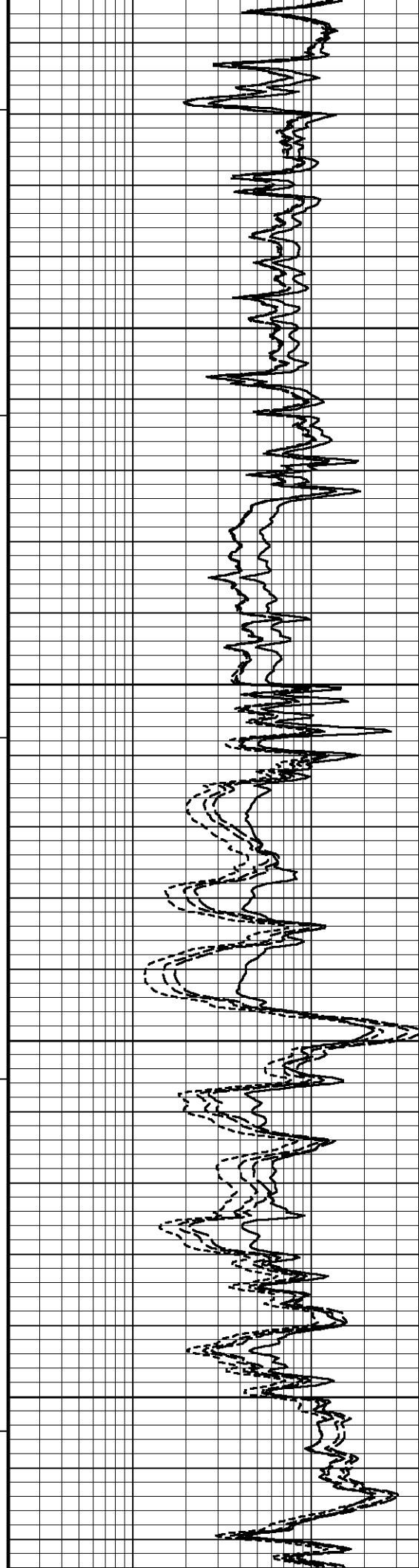
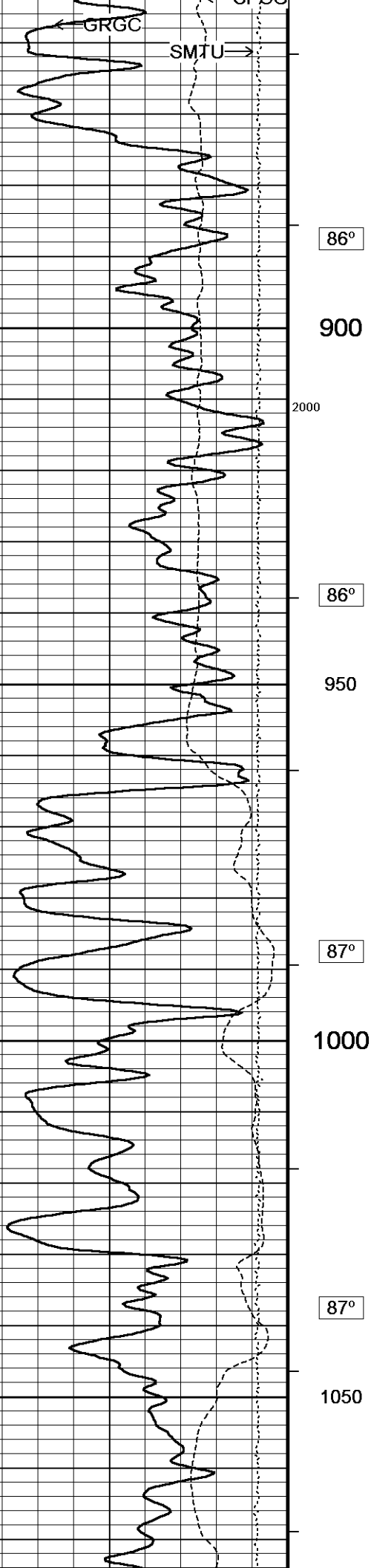
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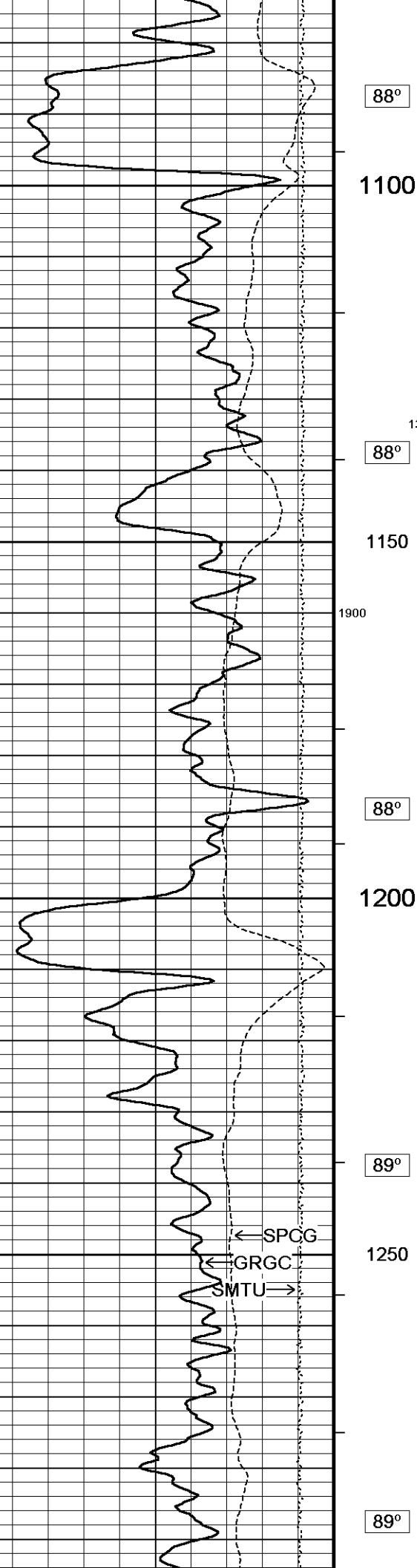












88°

1100

88°

1150

1900

88°

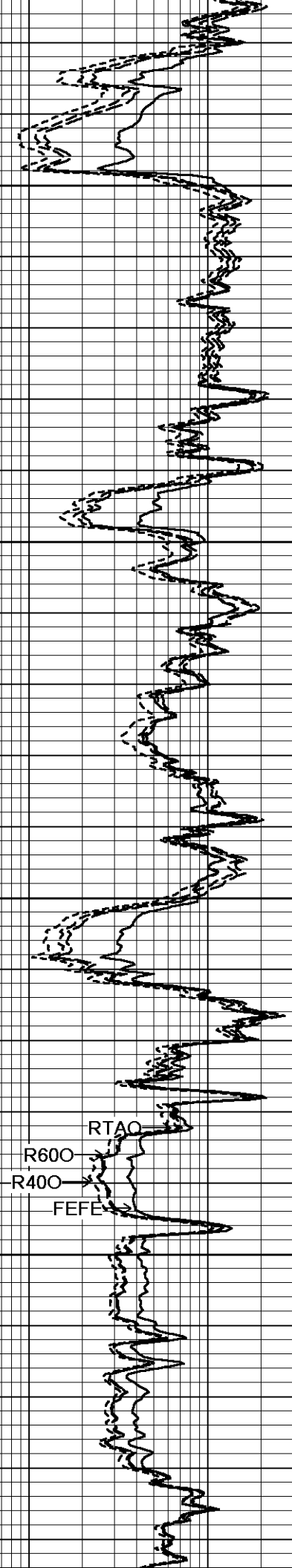
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89°

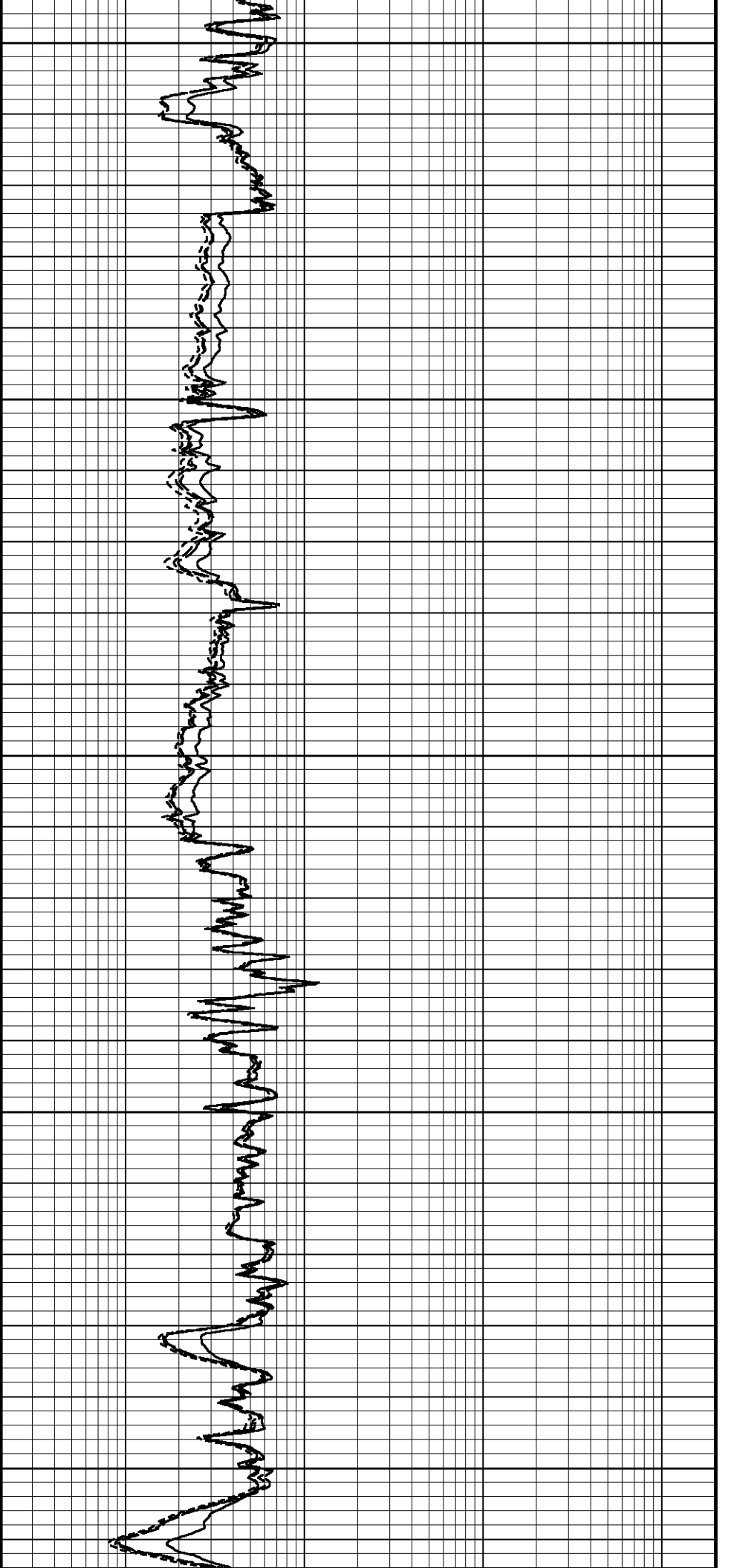
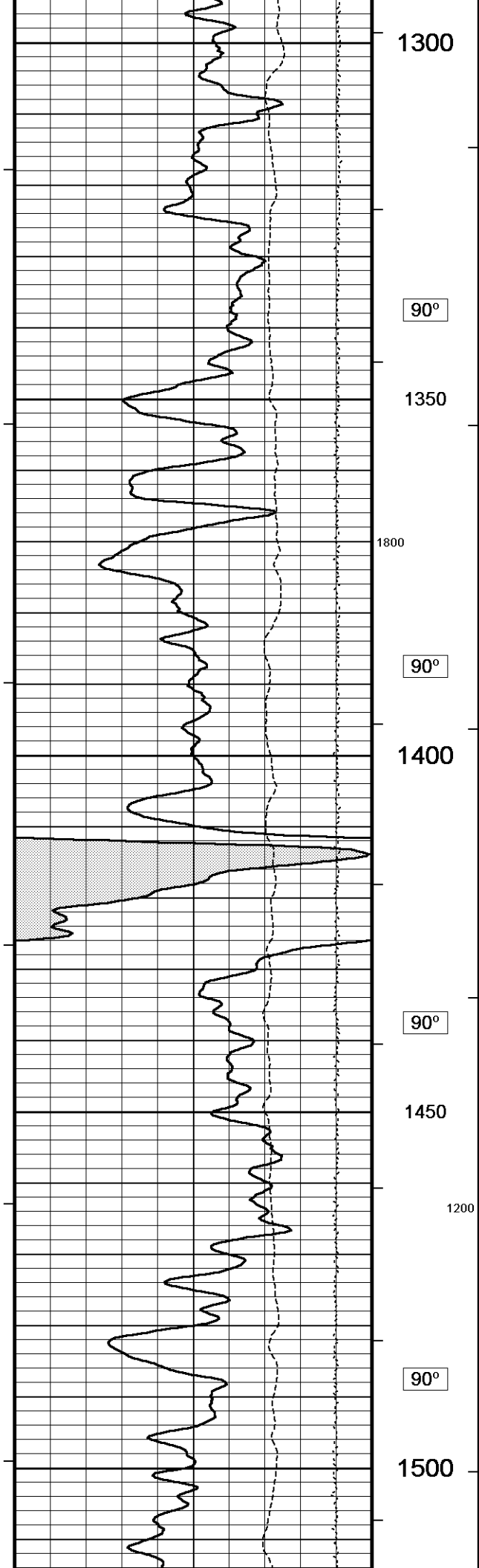
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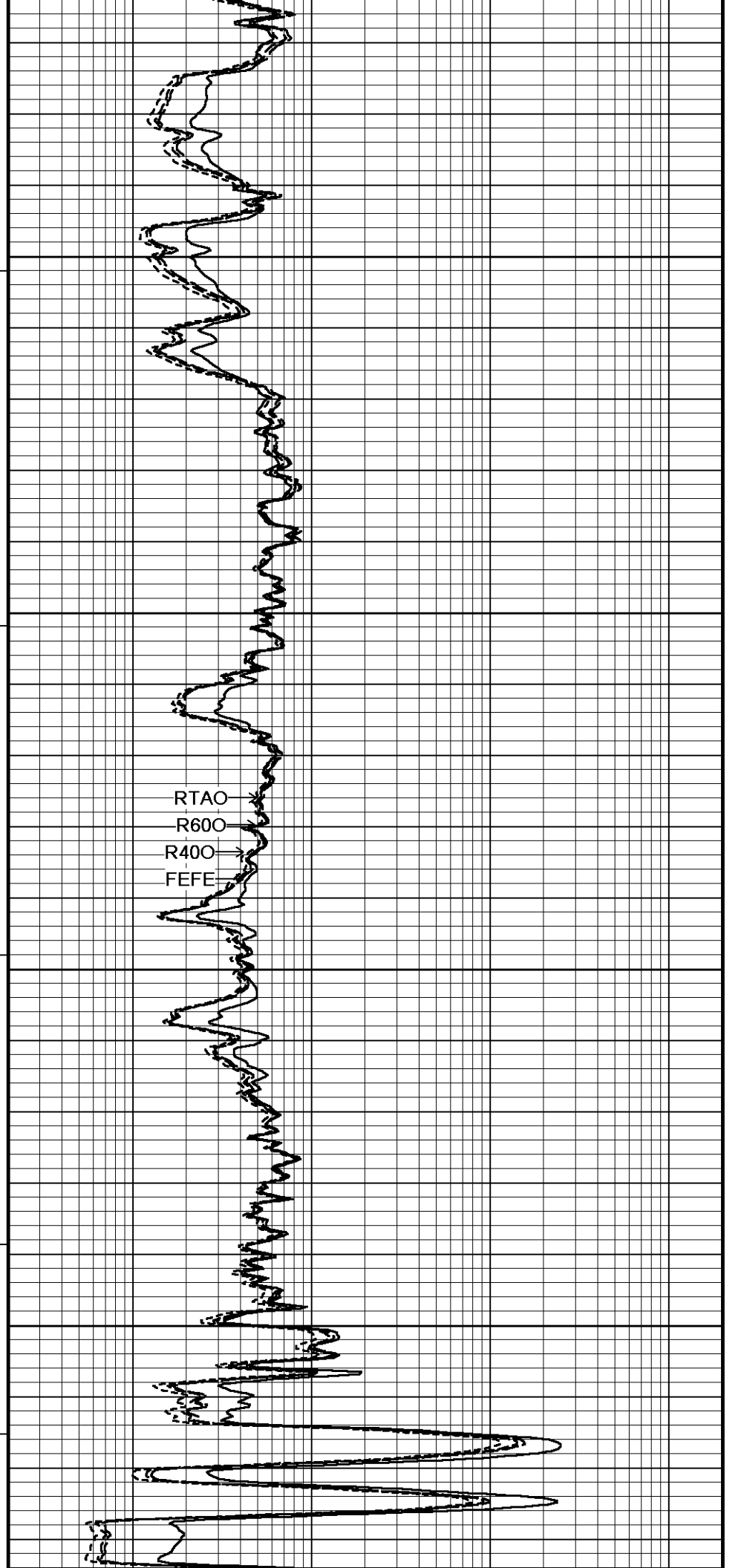
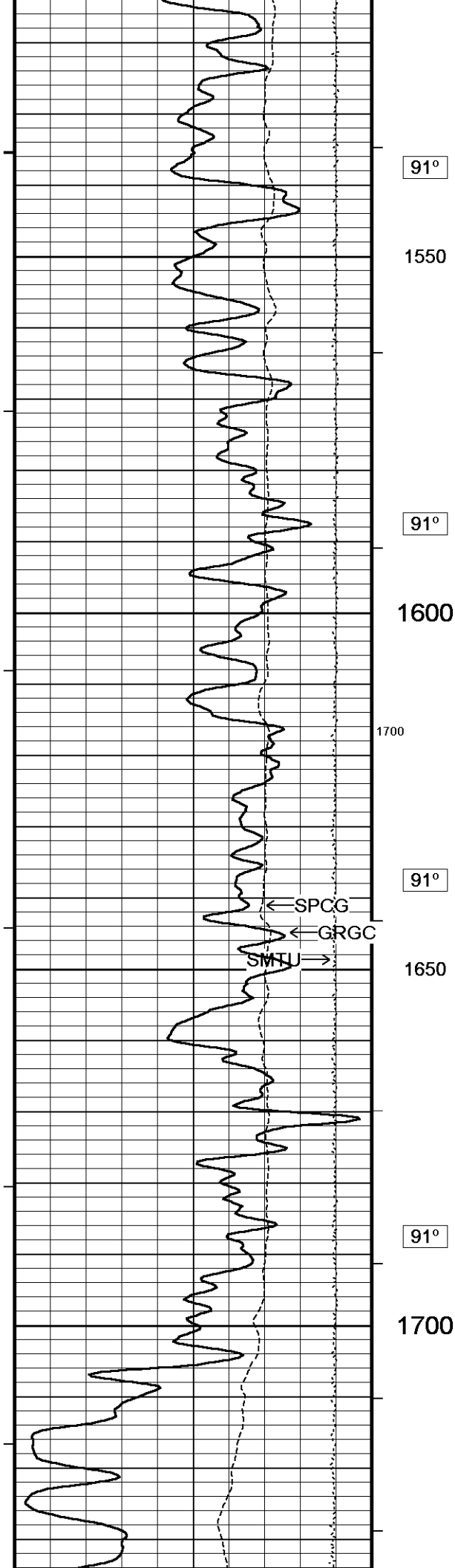
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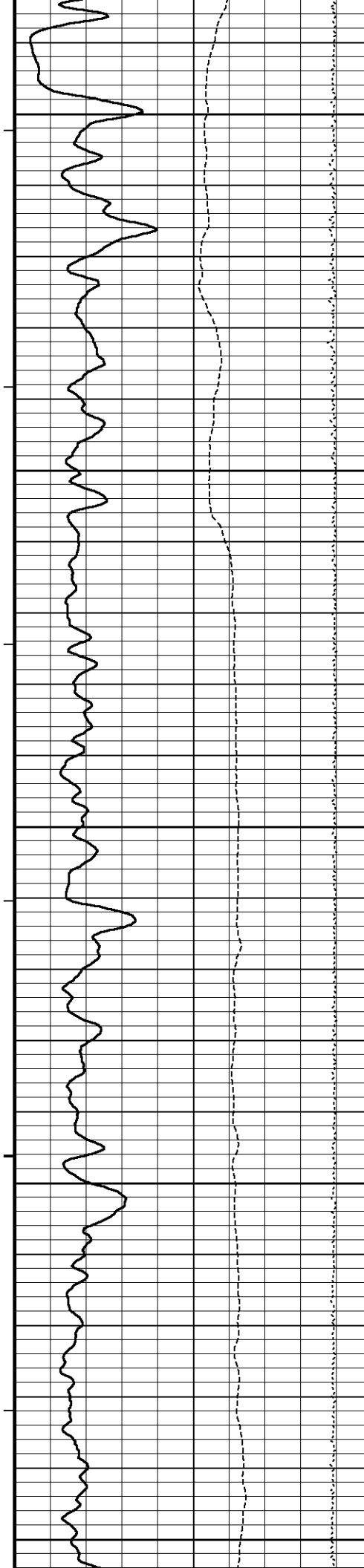
← SPCG
← GRGC
SMTU →



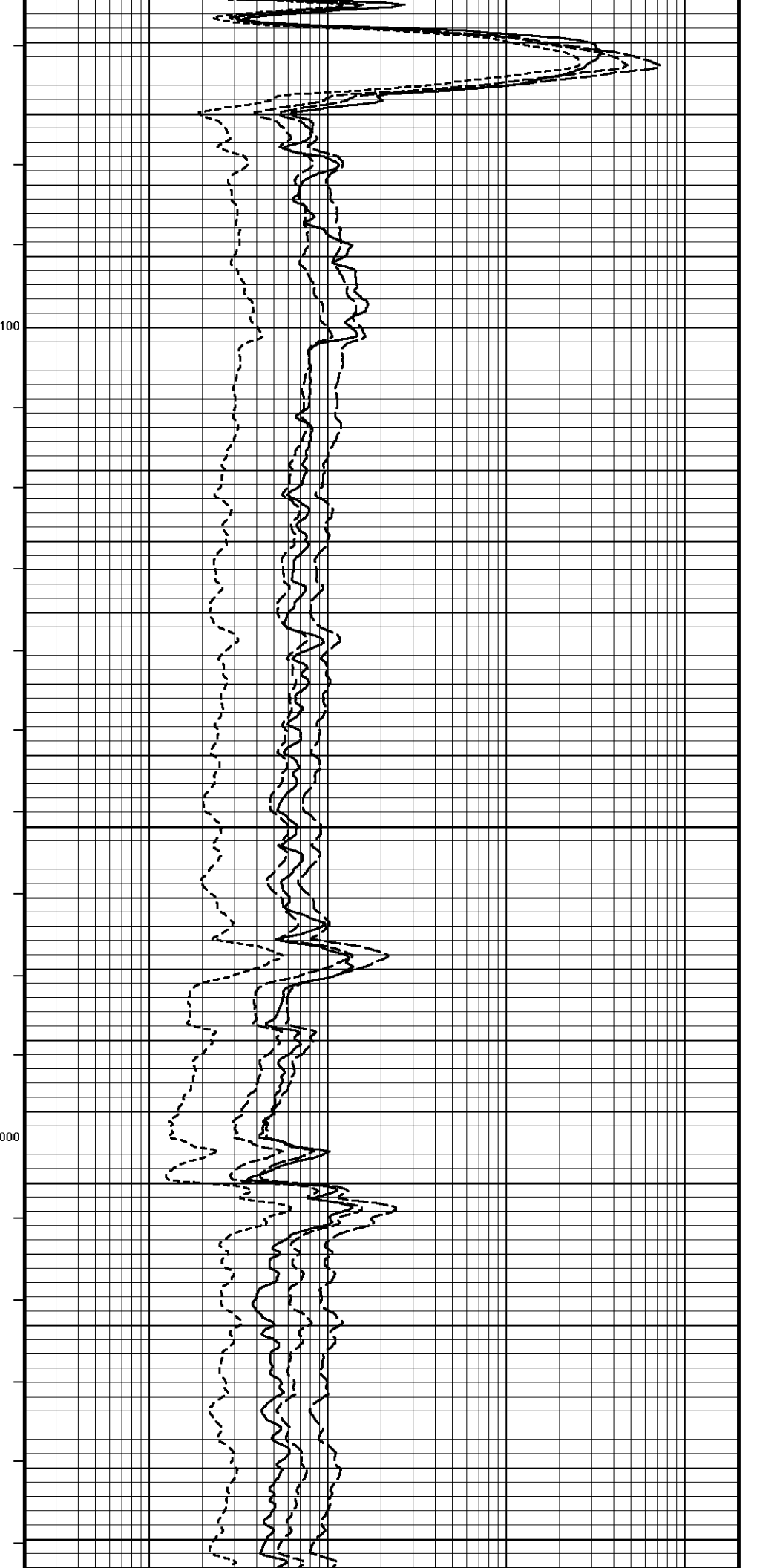
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R600
R400
FEFE

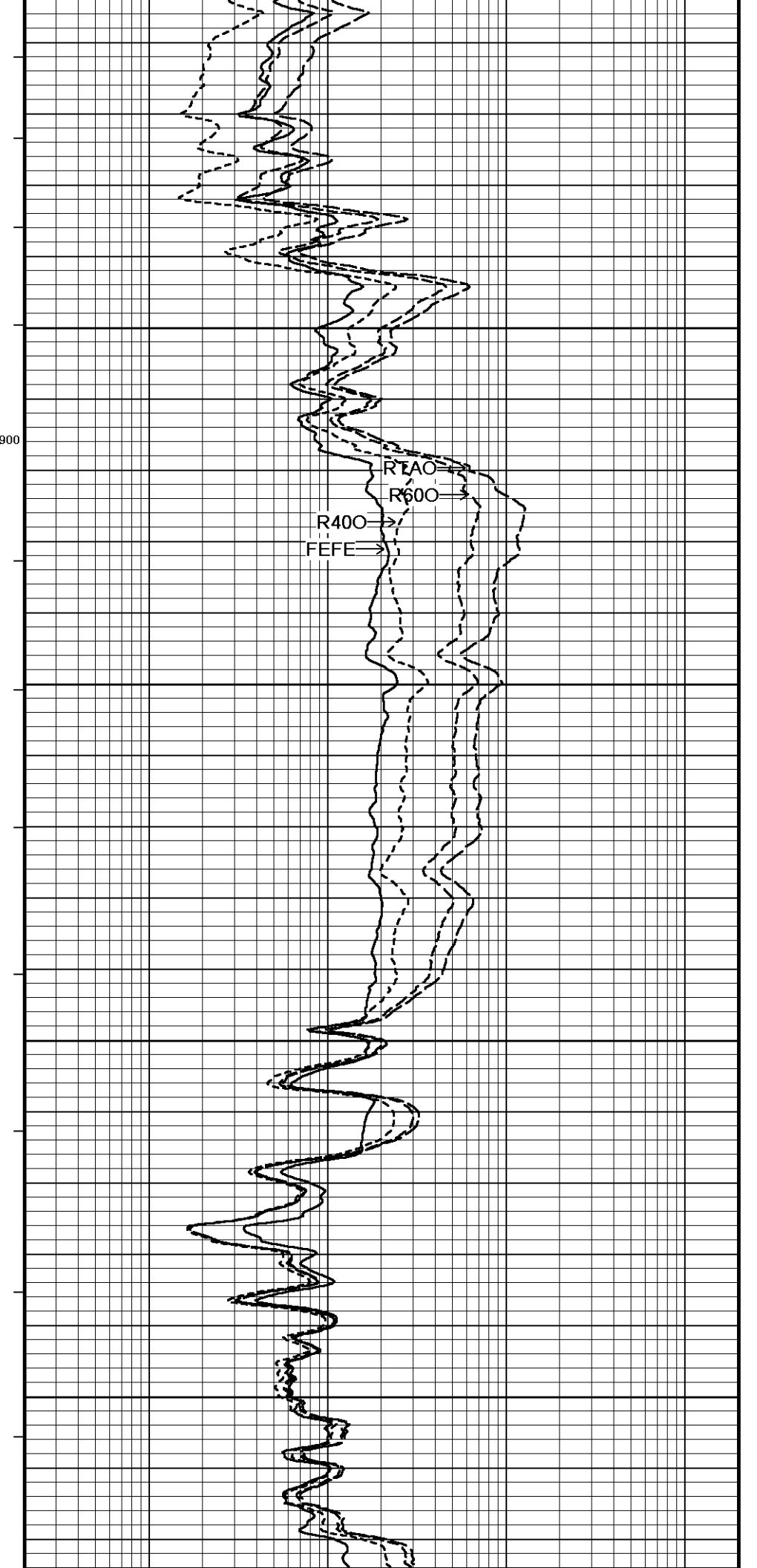
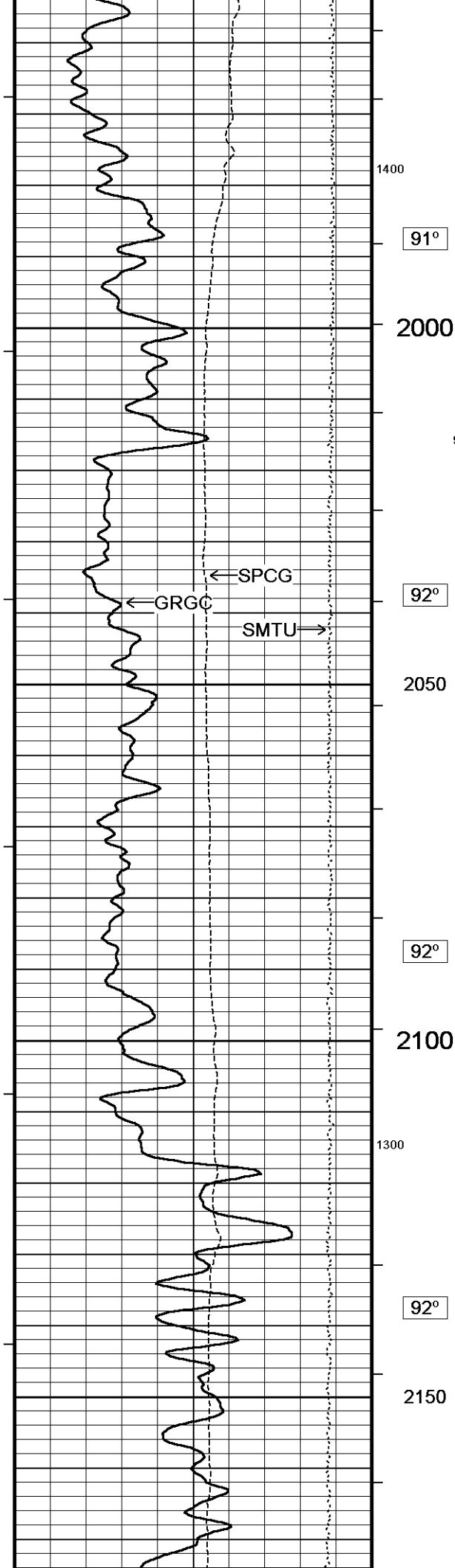


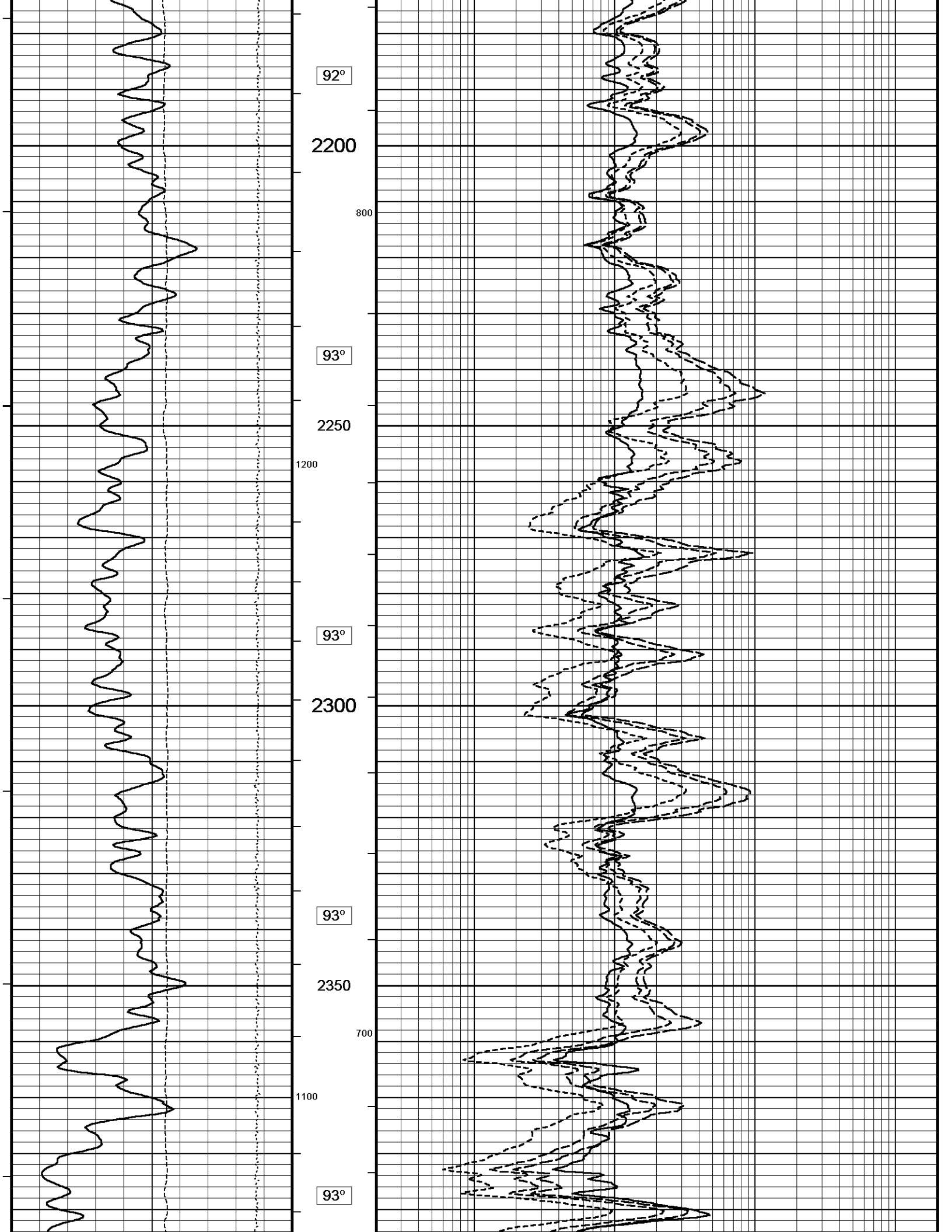


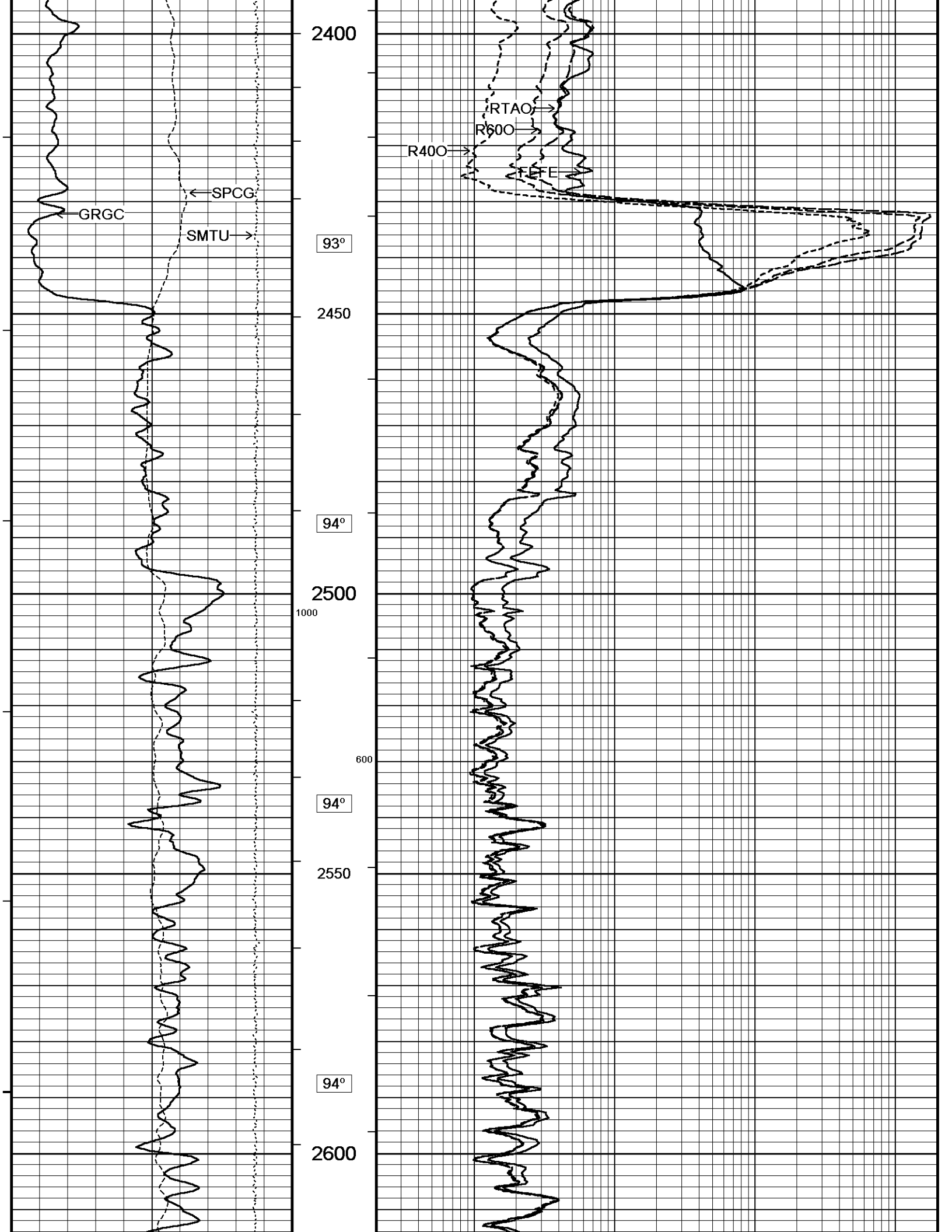


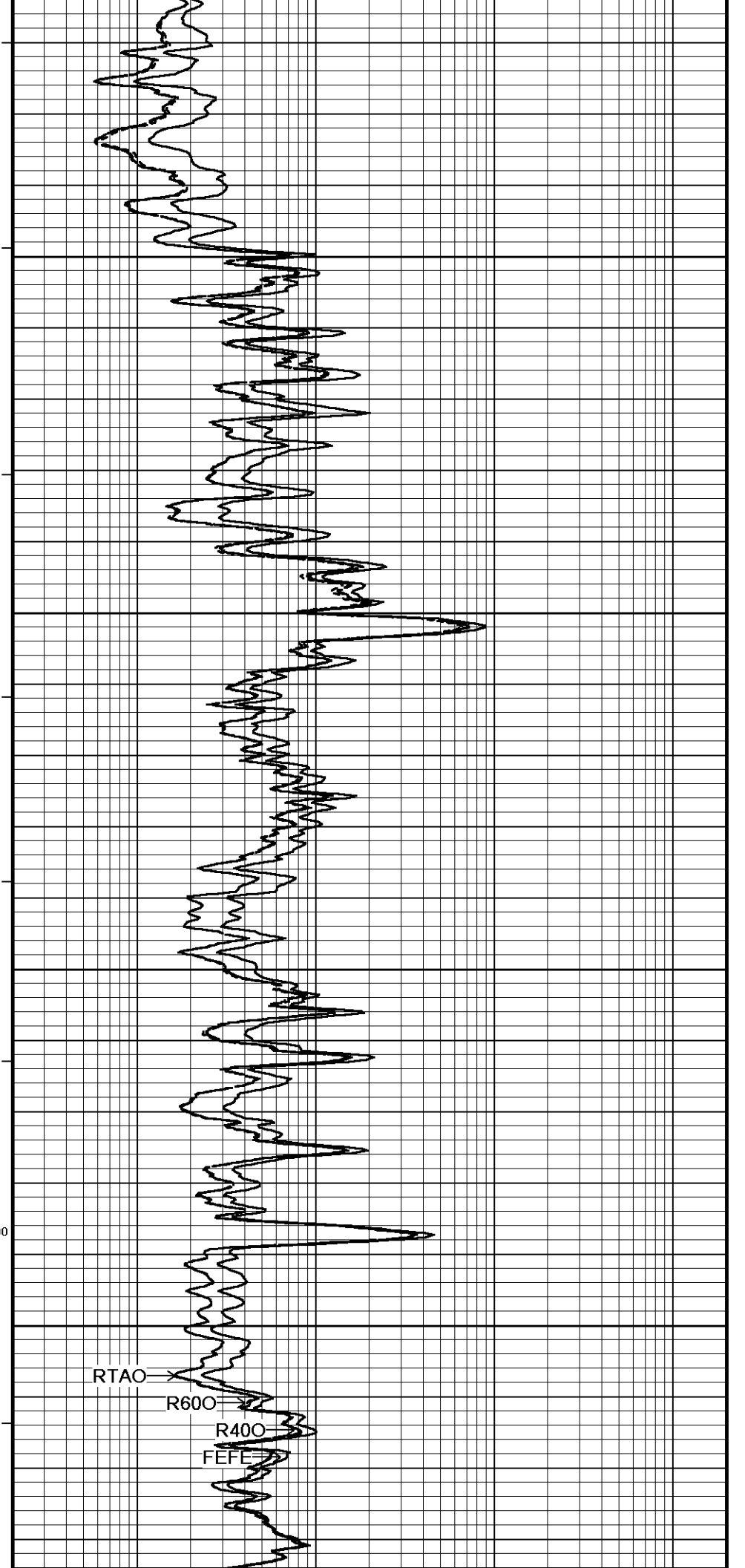
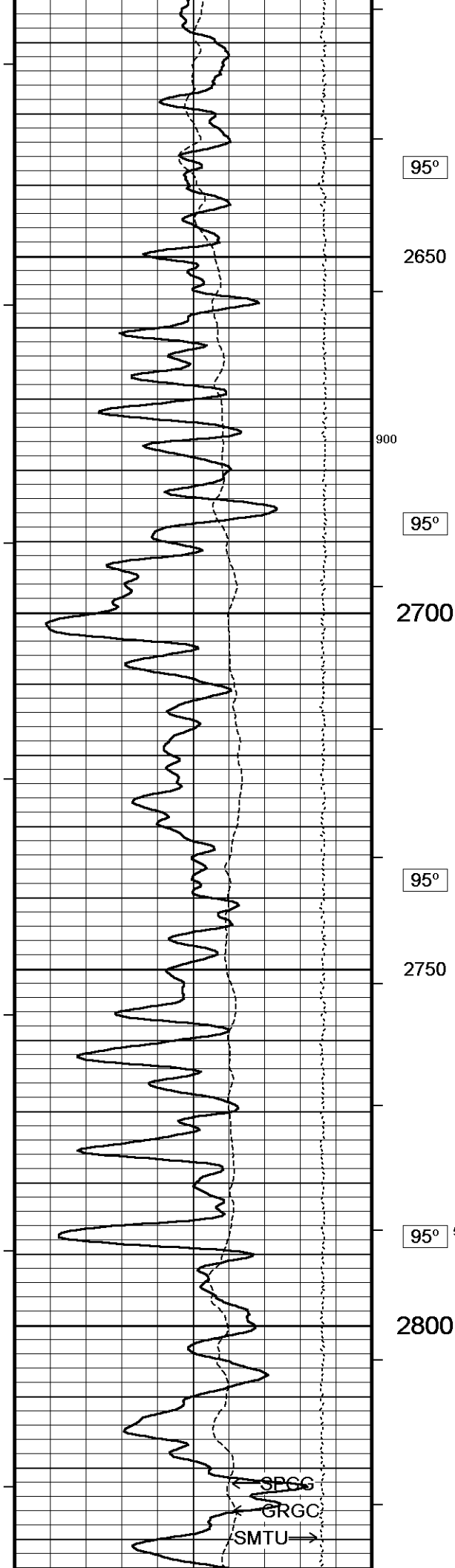
91°
1750
1100
1600
91°
1800
92°
1850
1500
91°
1000
1900
91°
1950

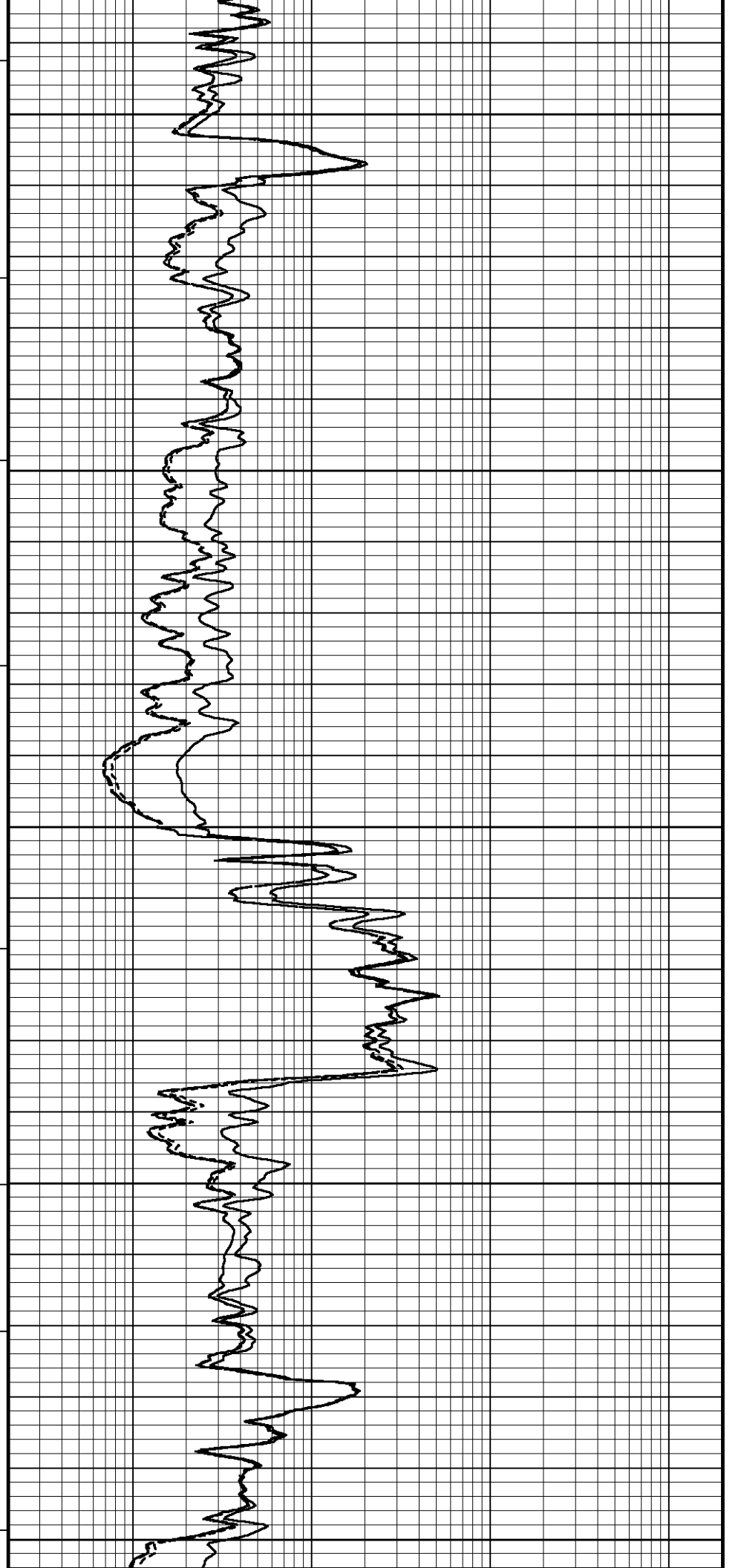
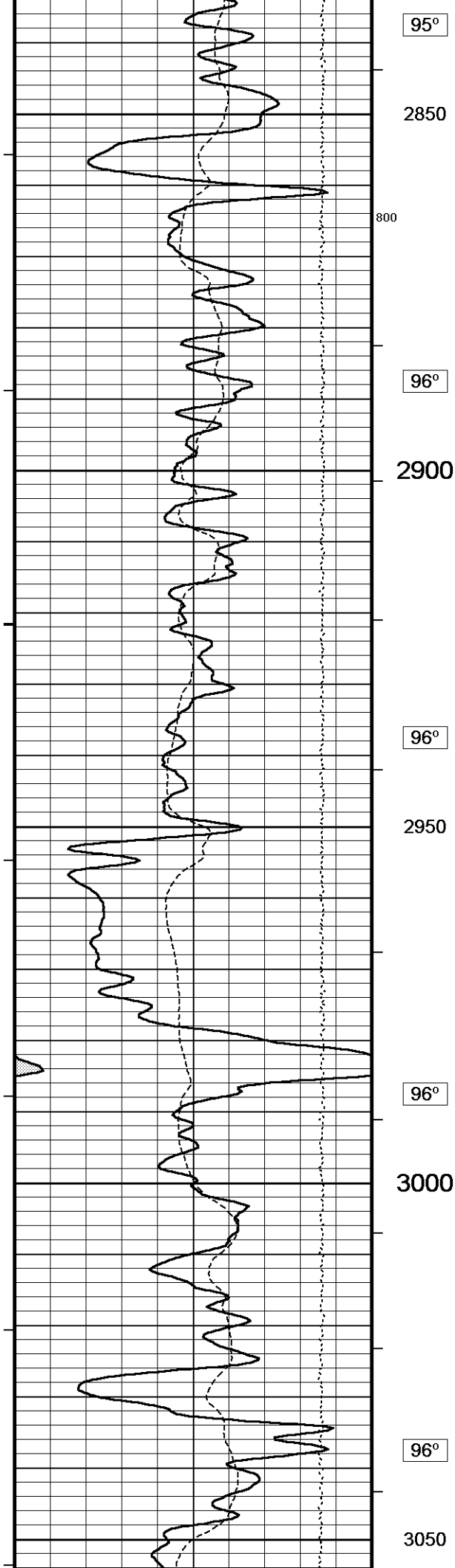


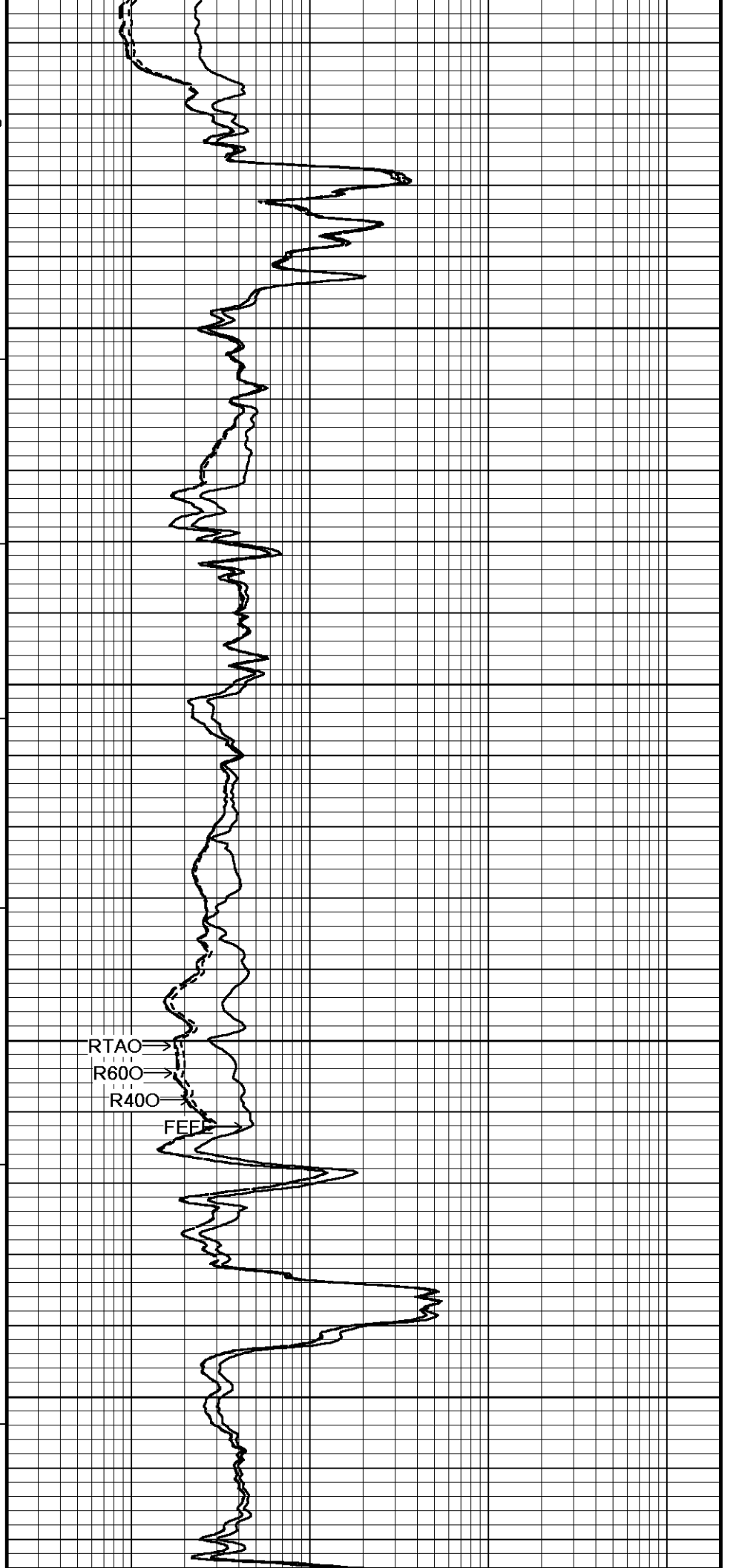
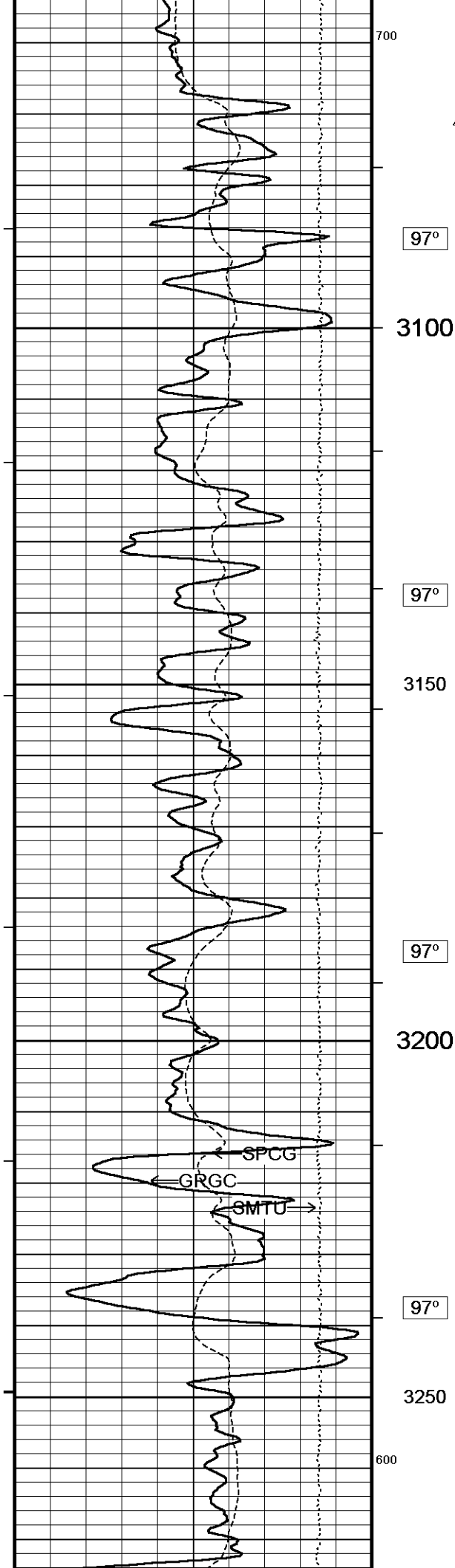


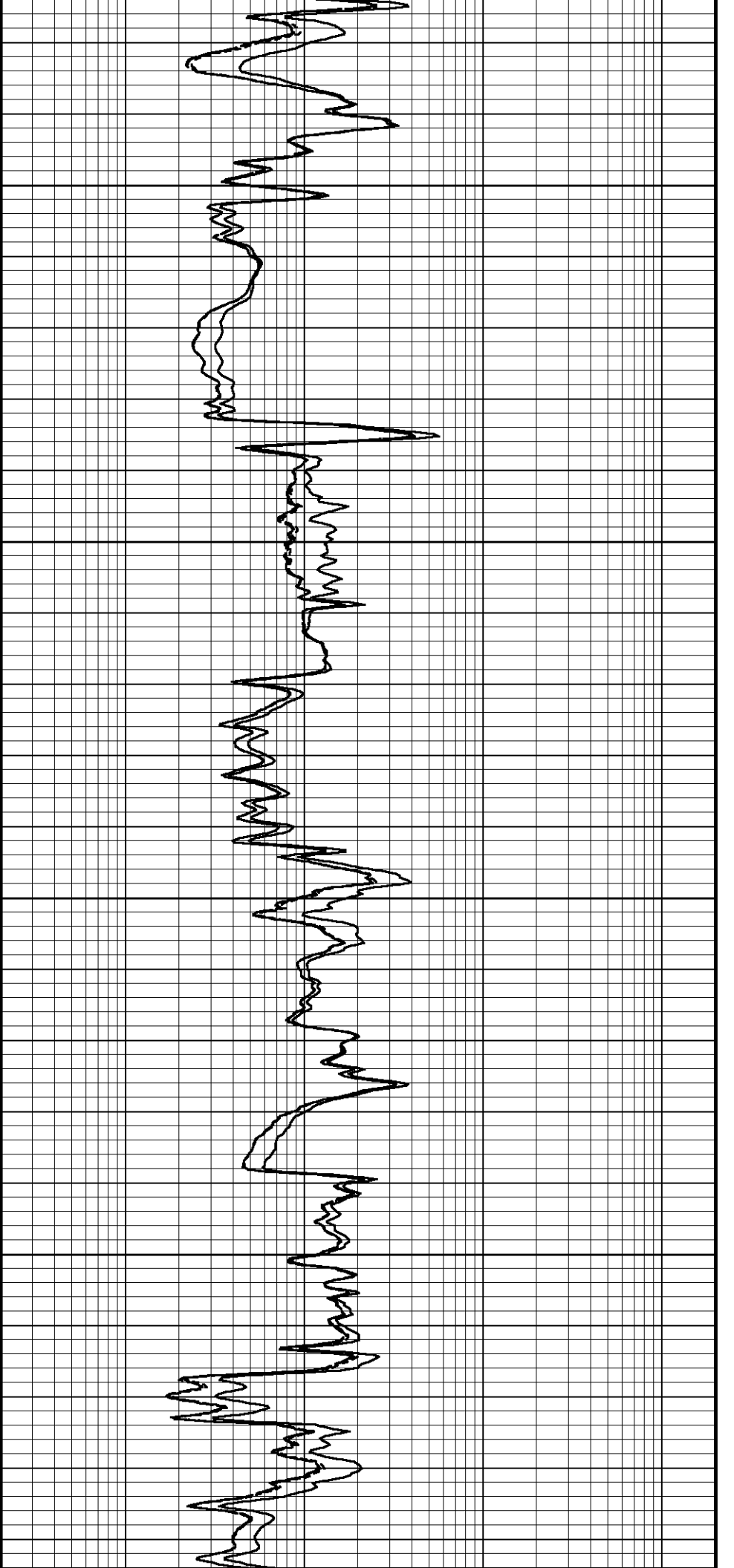
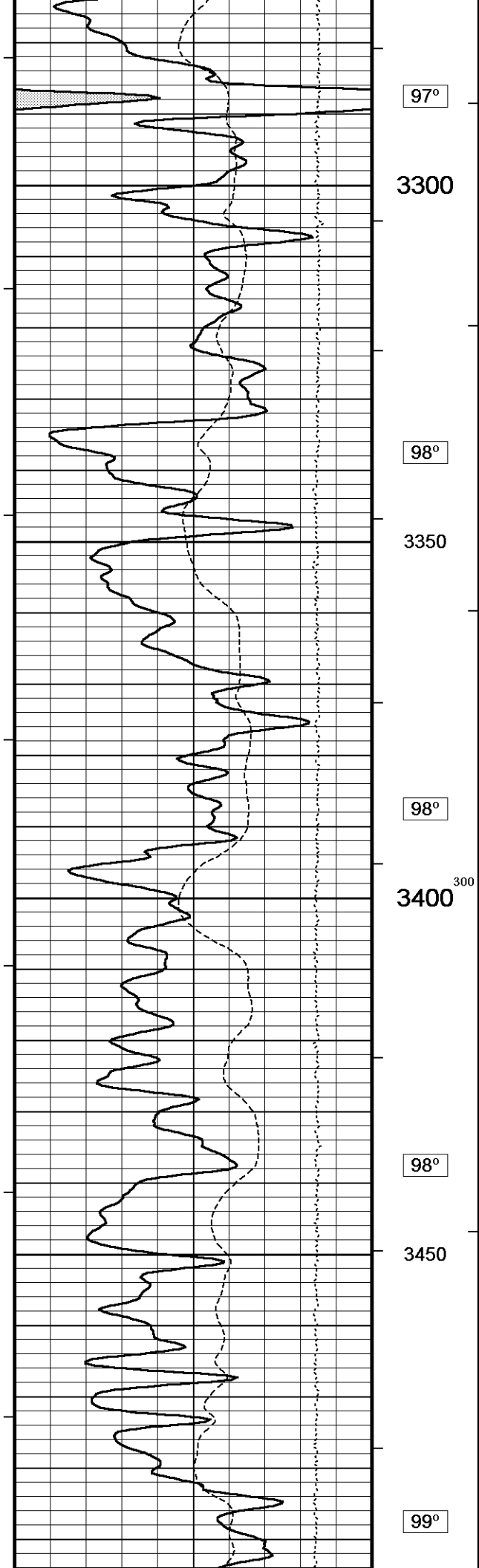


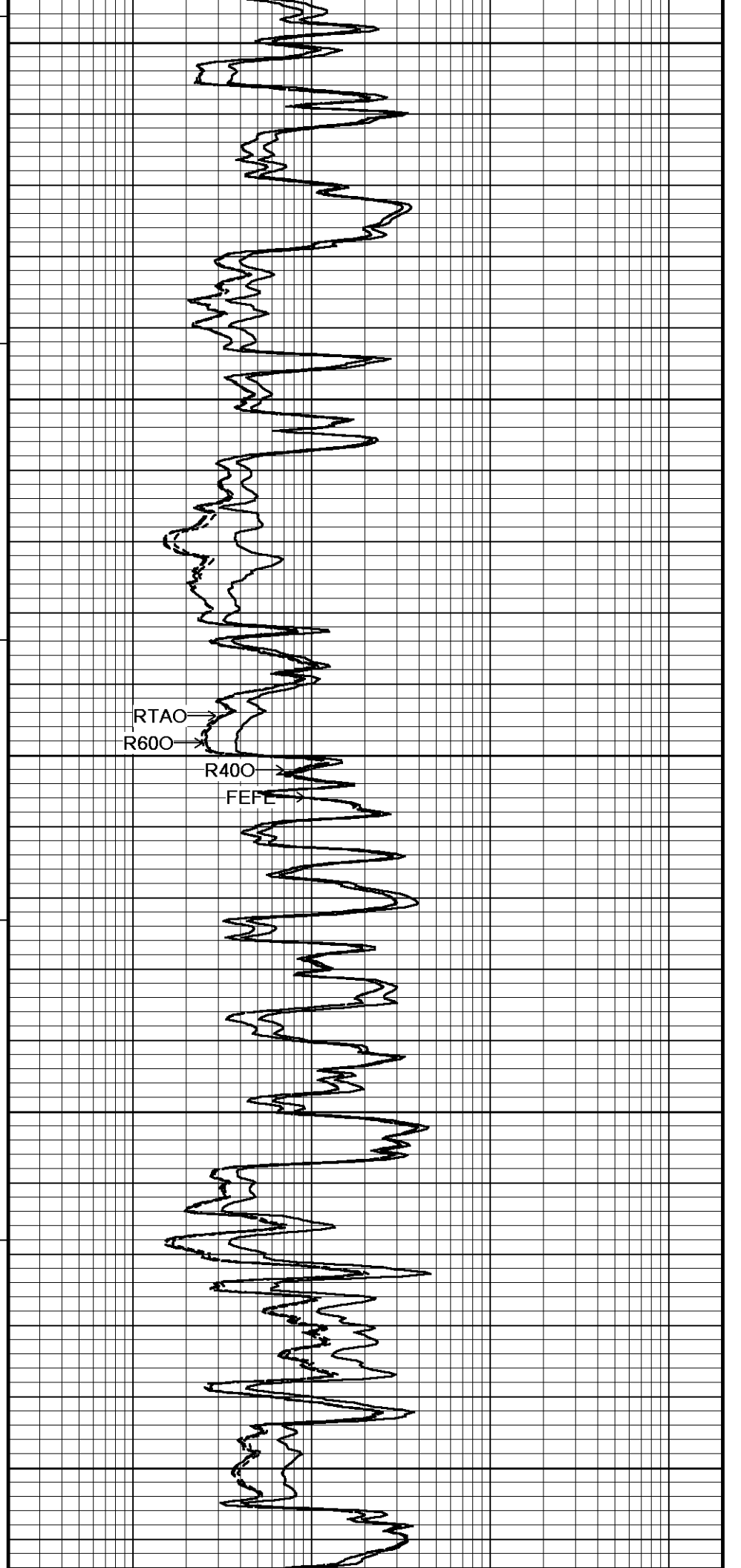
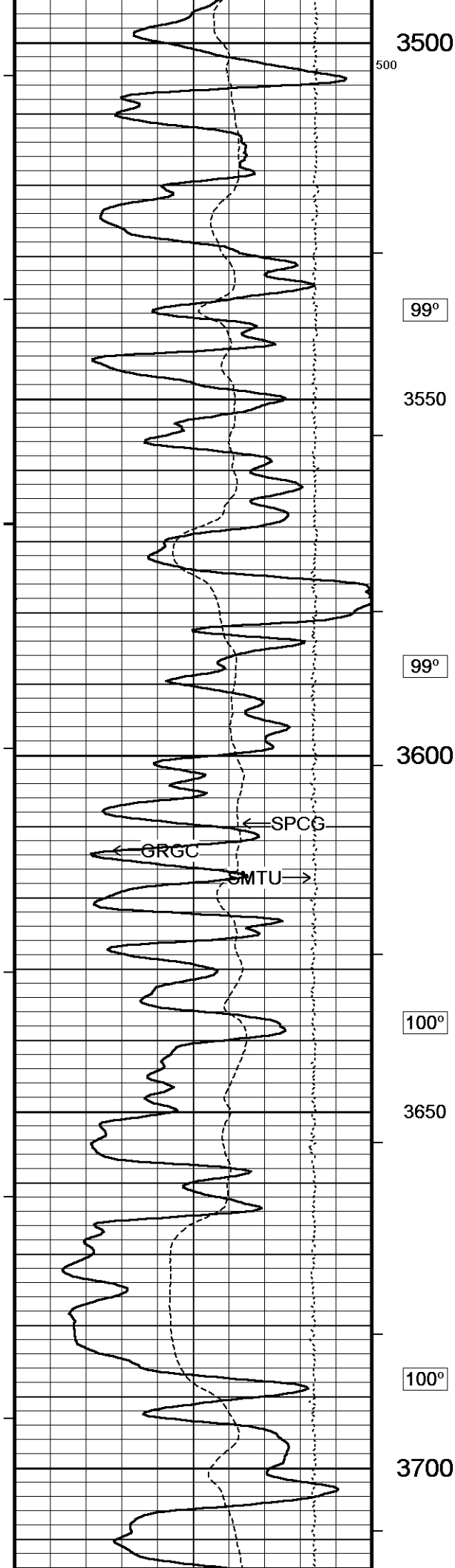


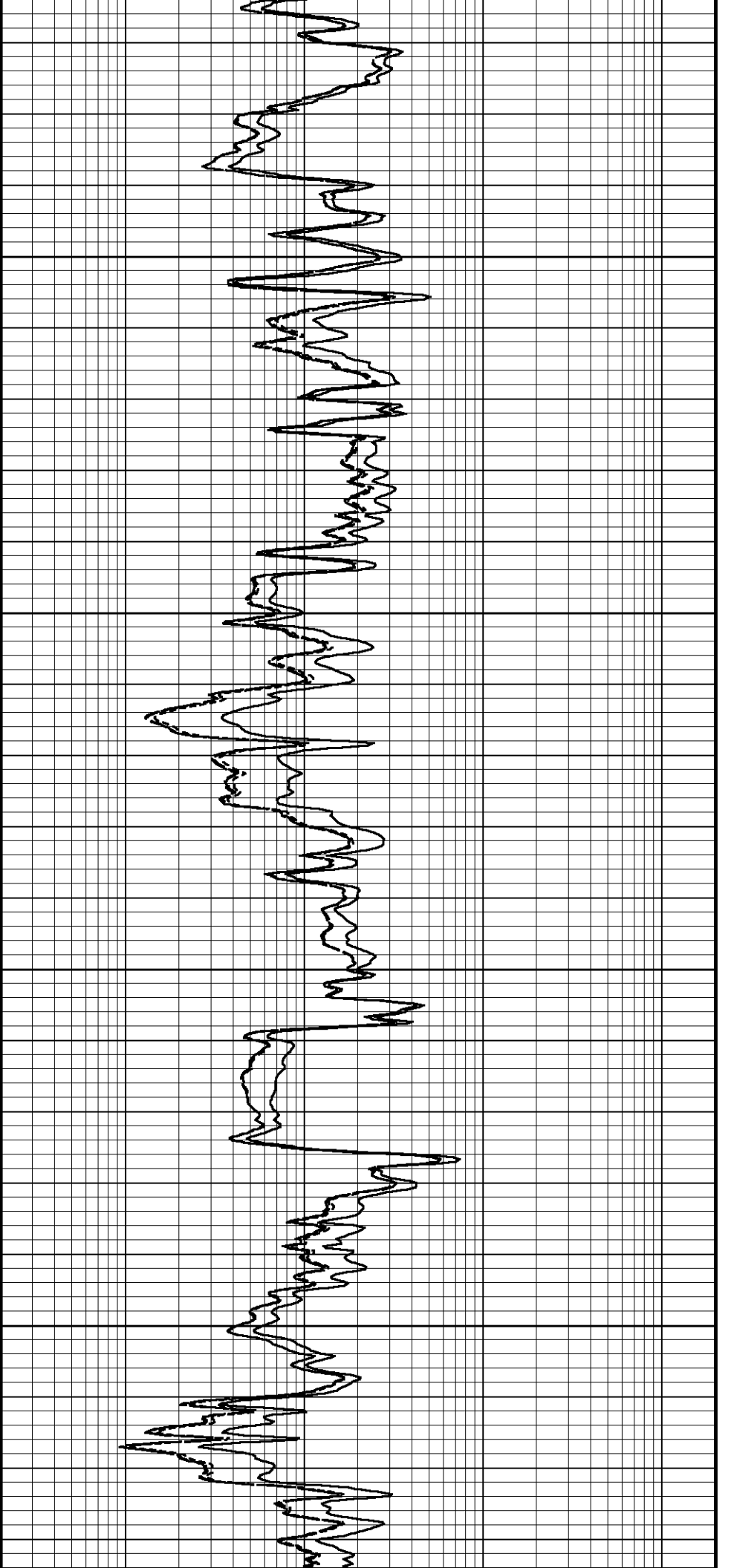
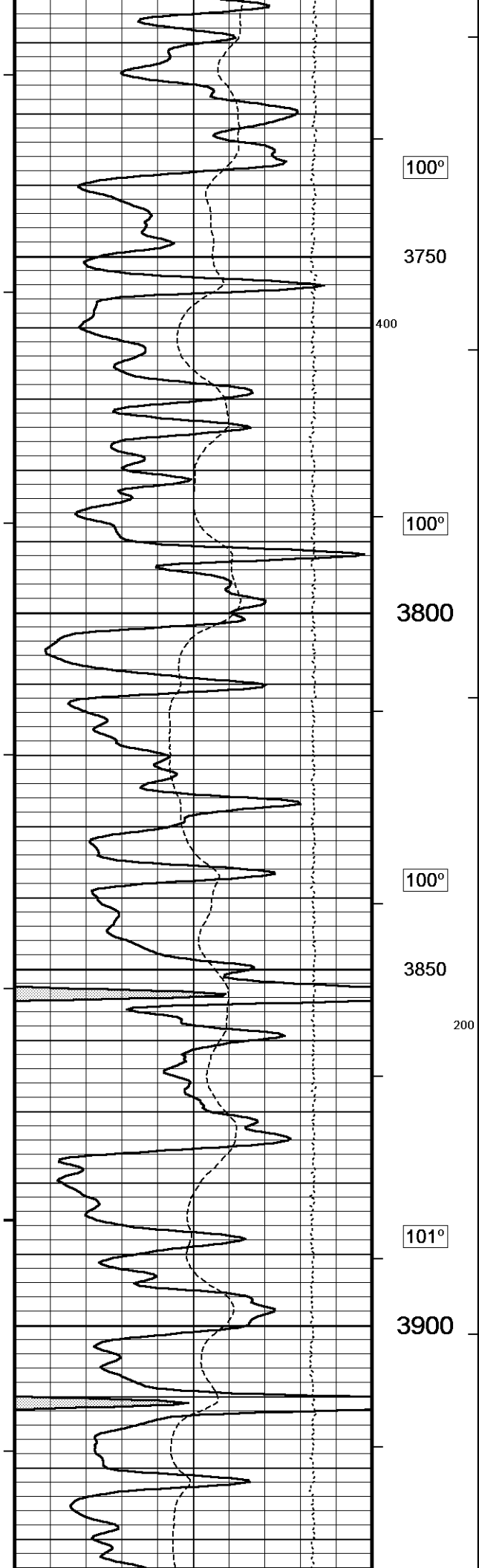


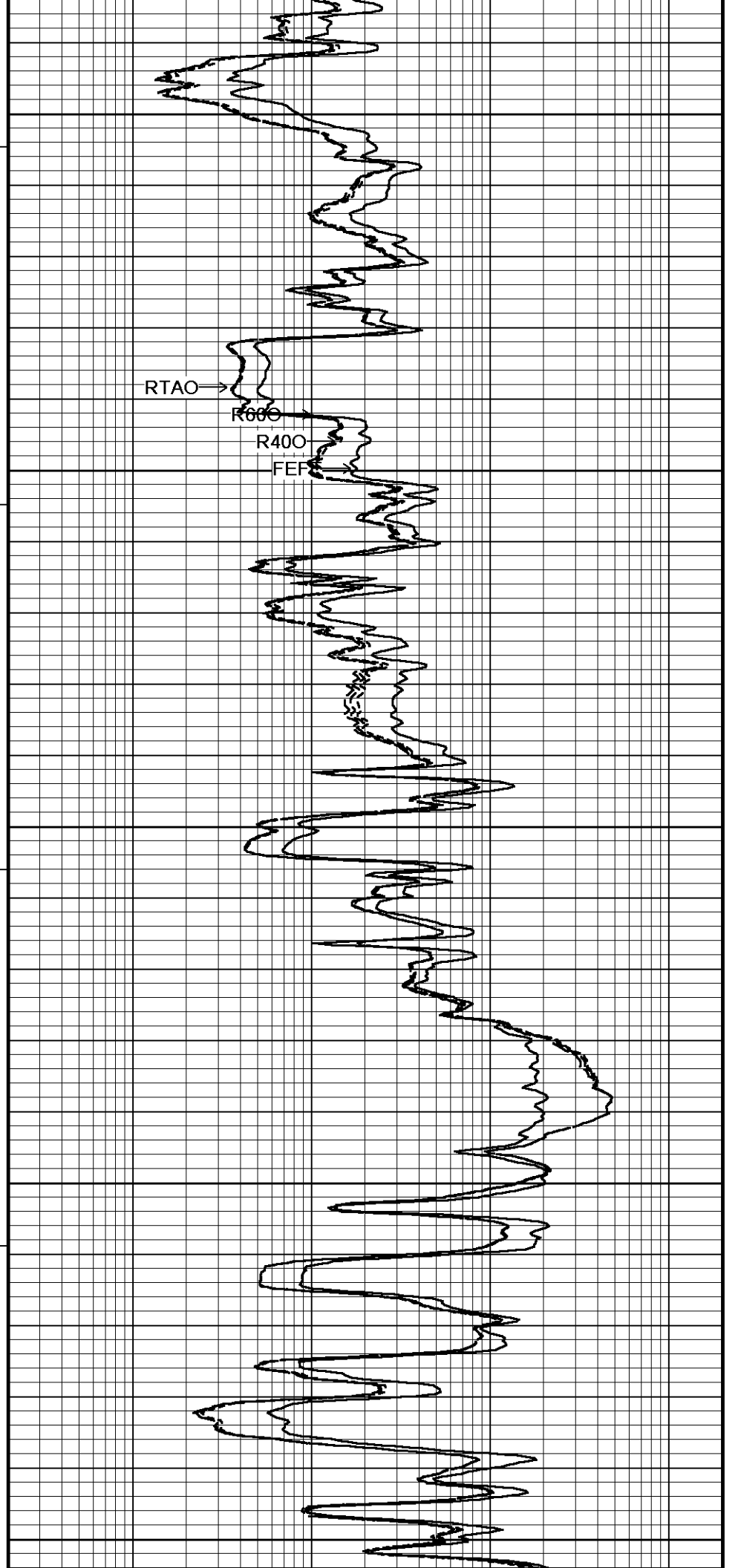
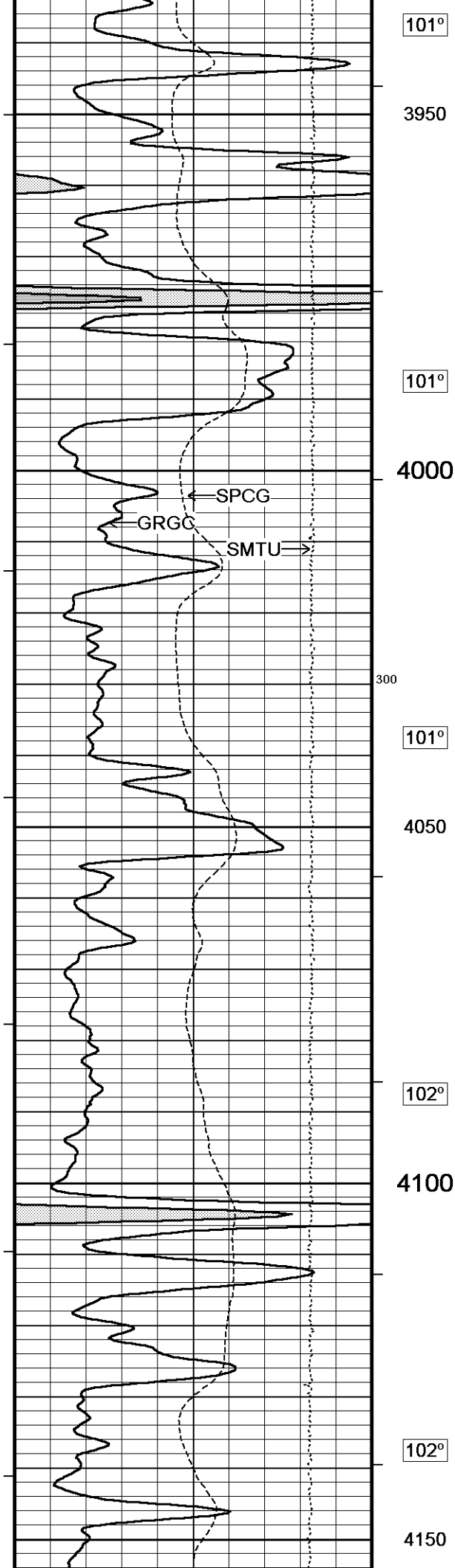


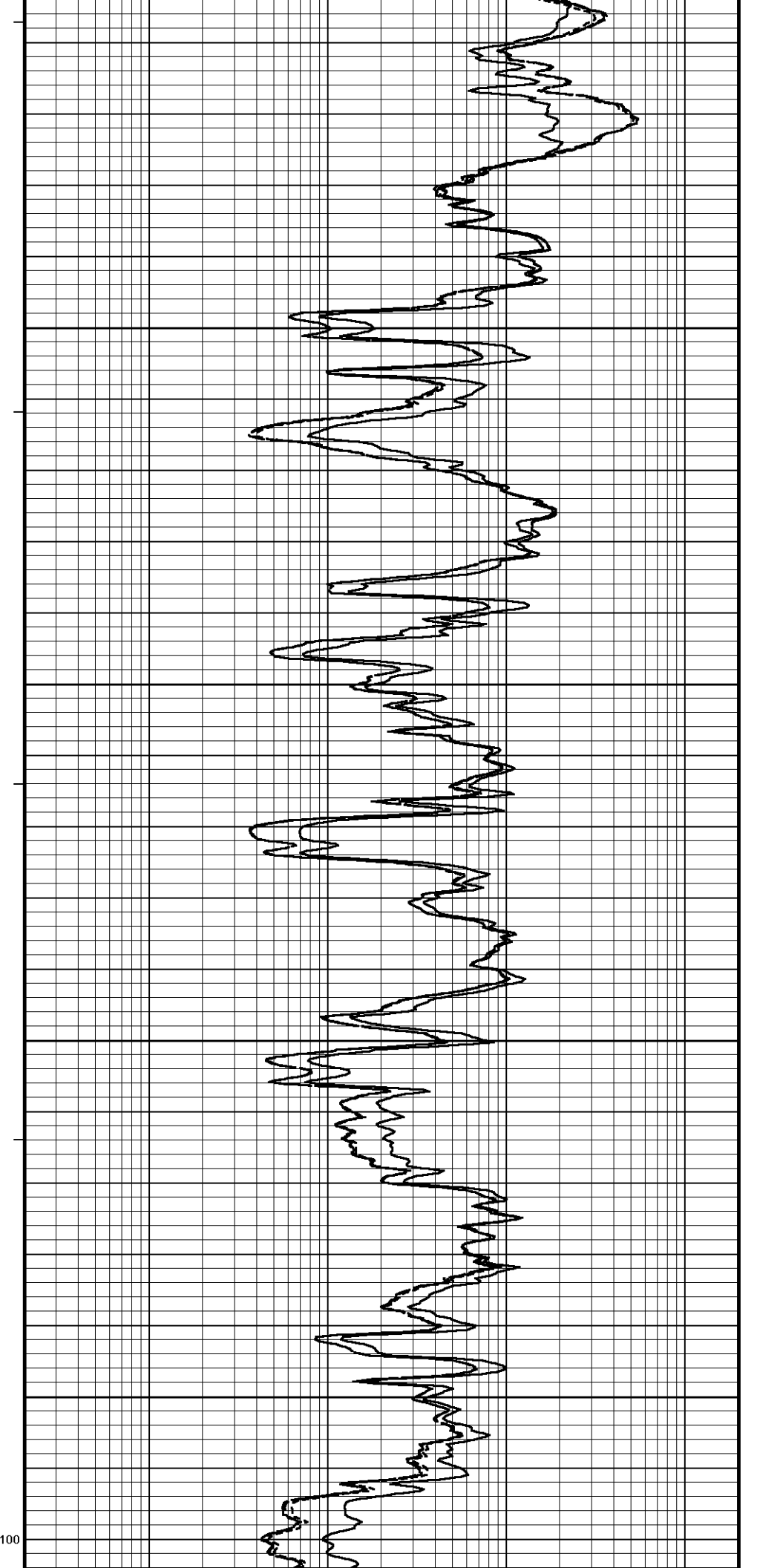
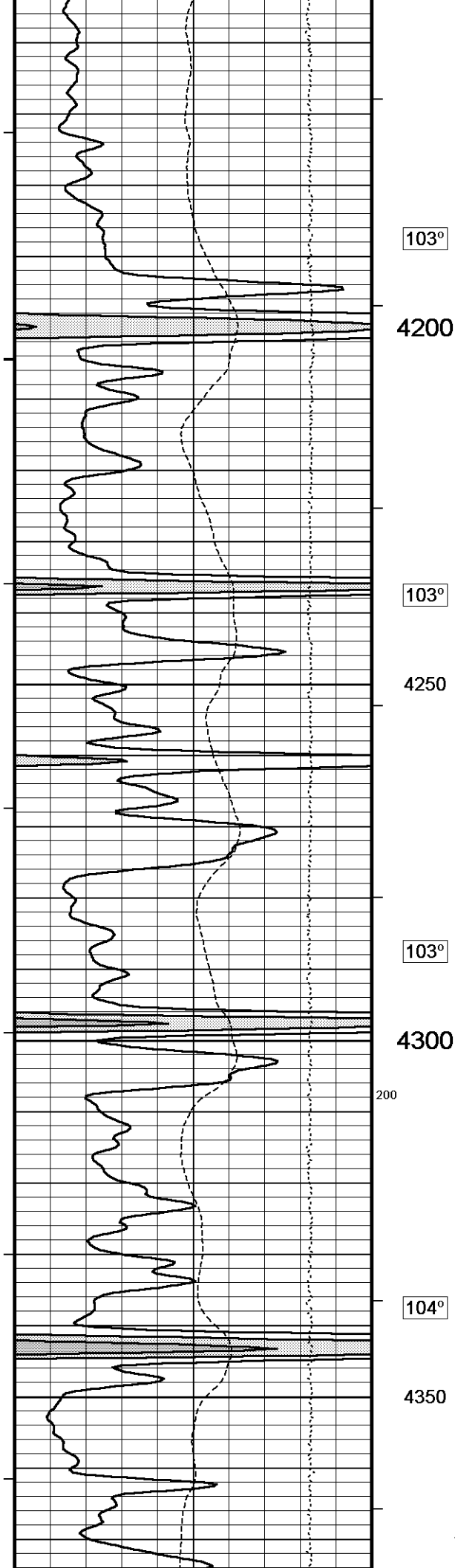


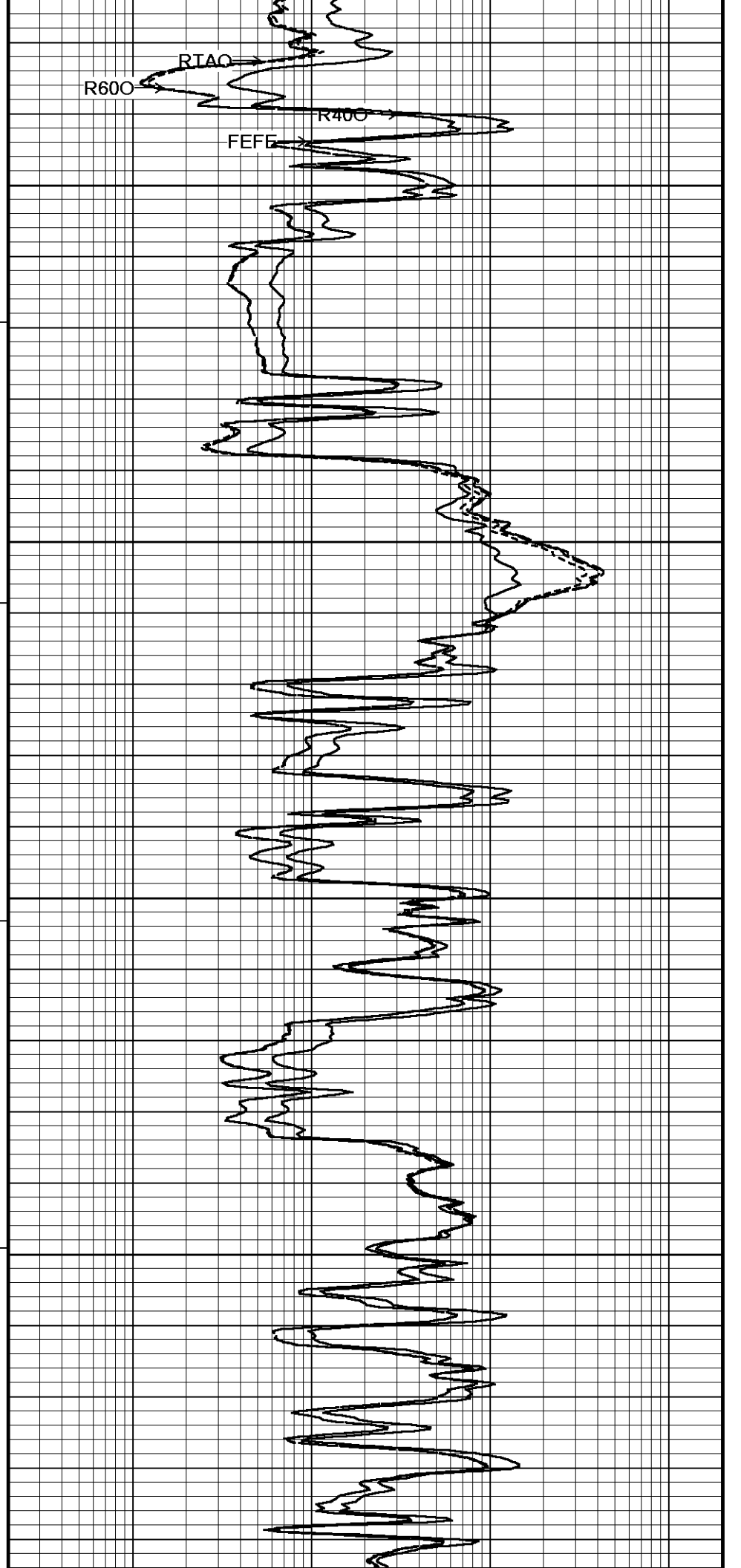
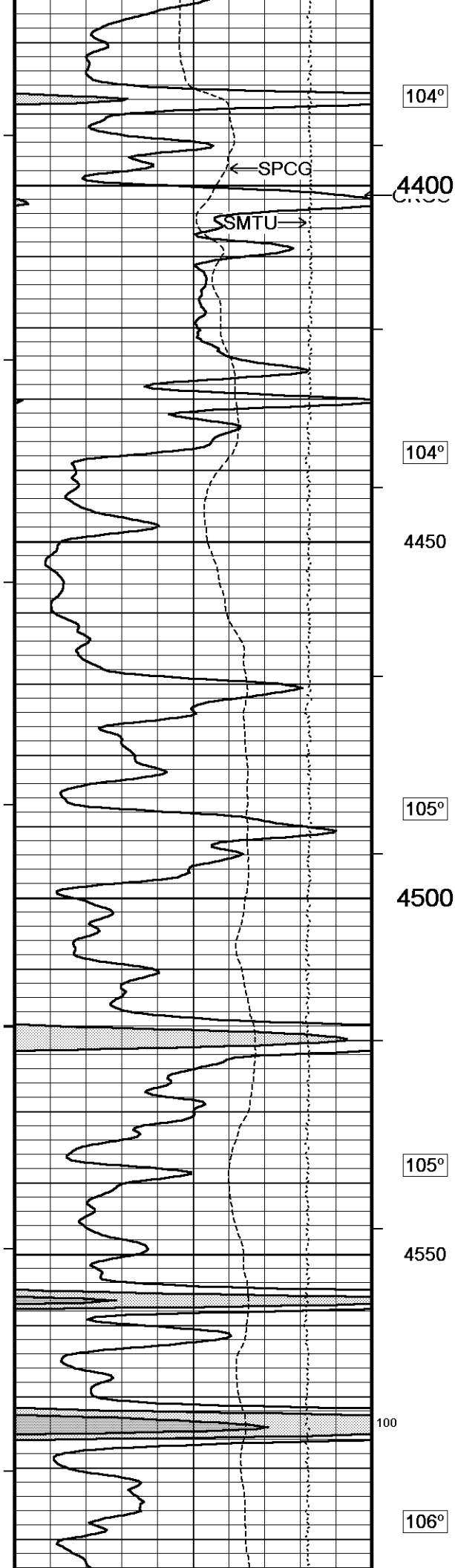


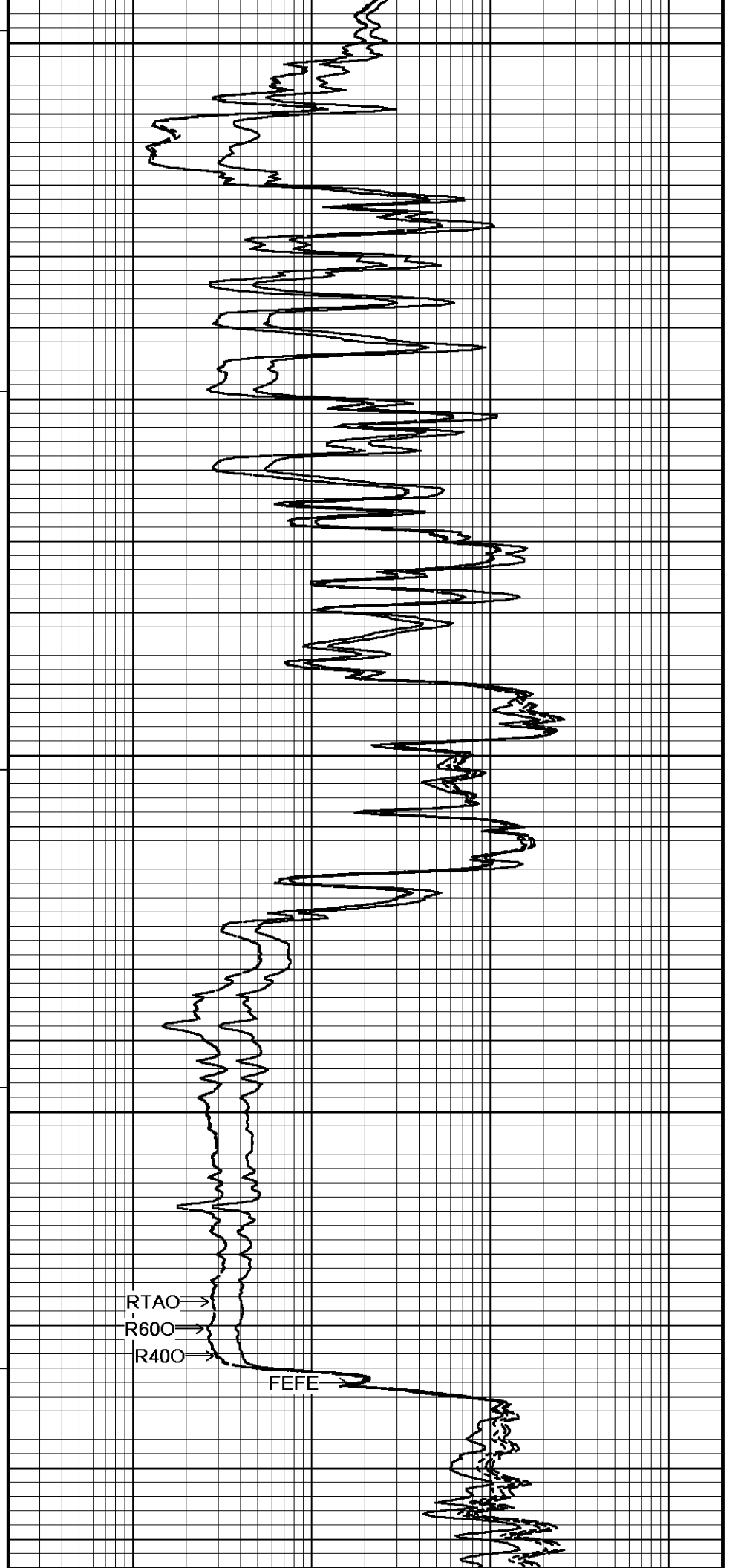
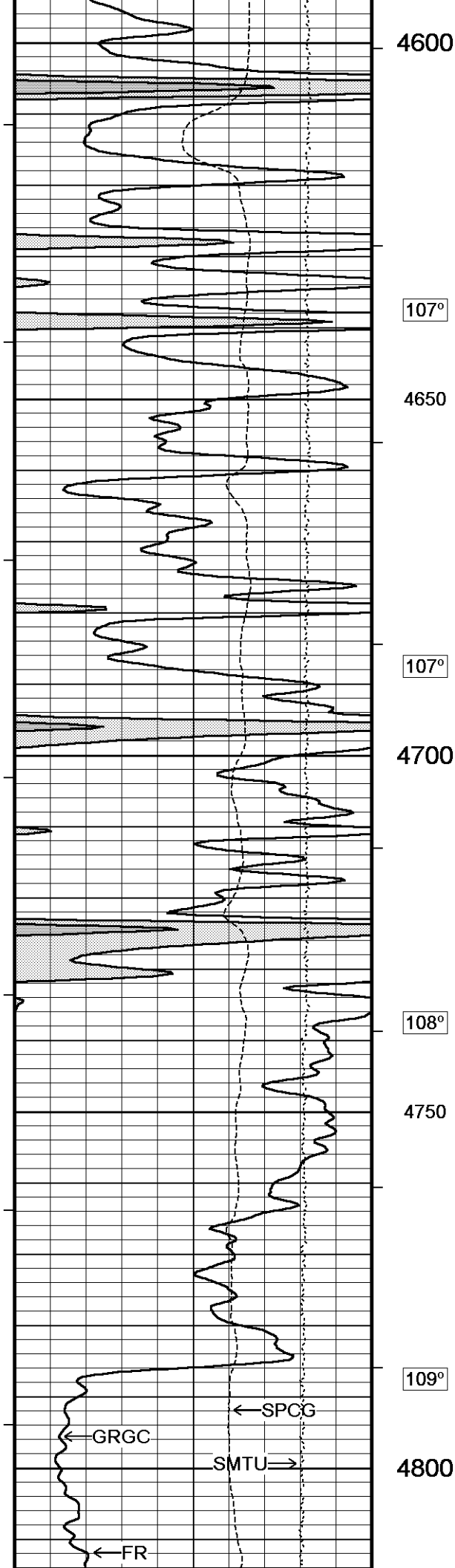


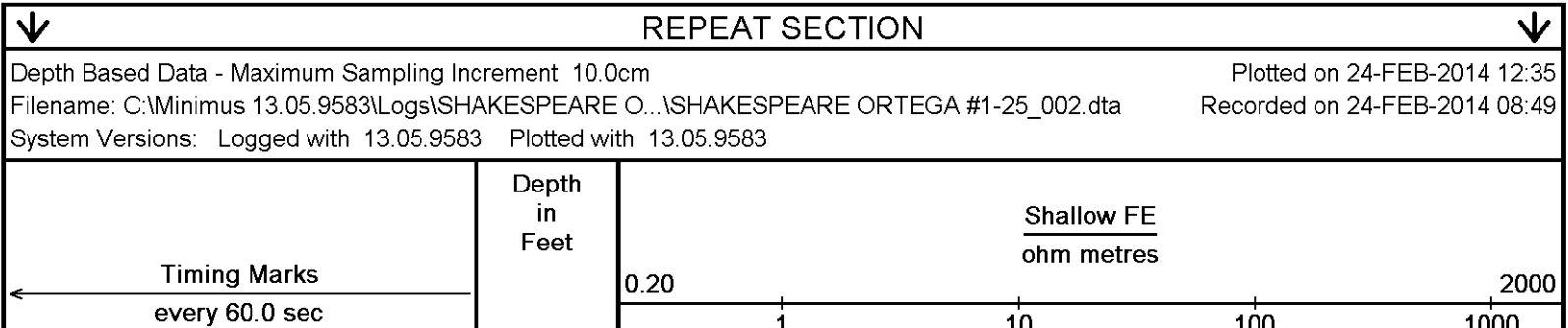
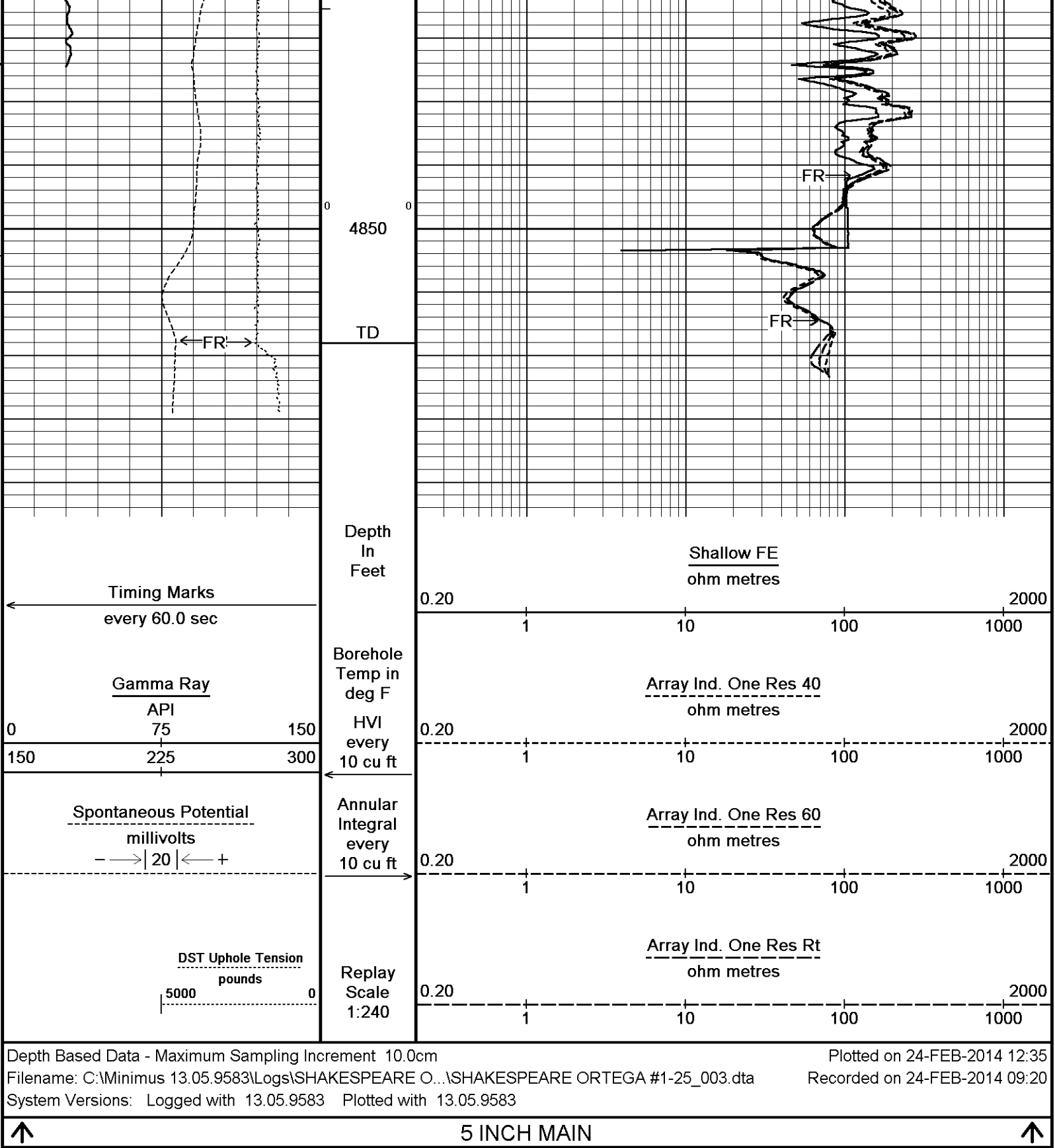


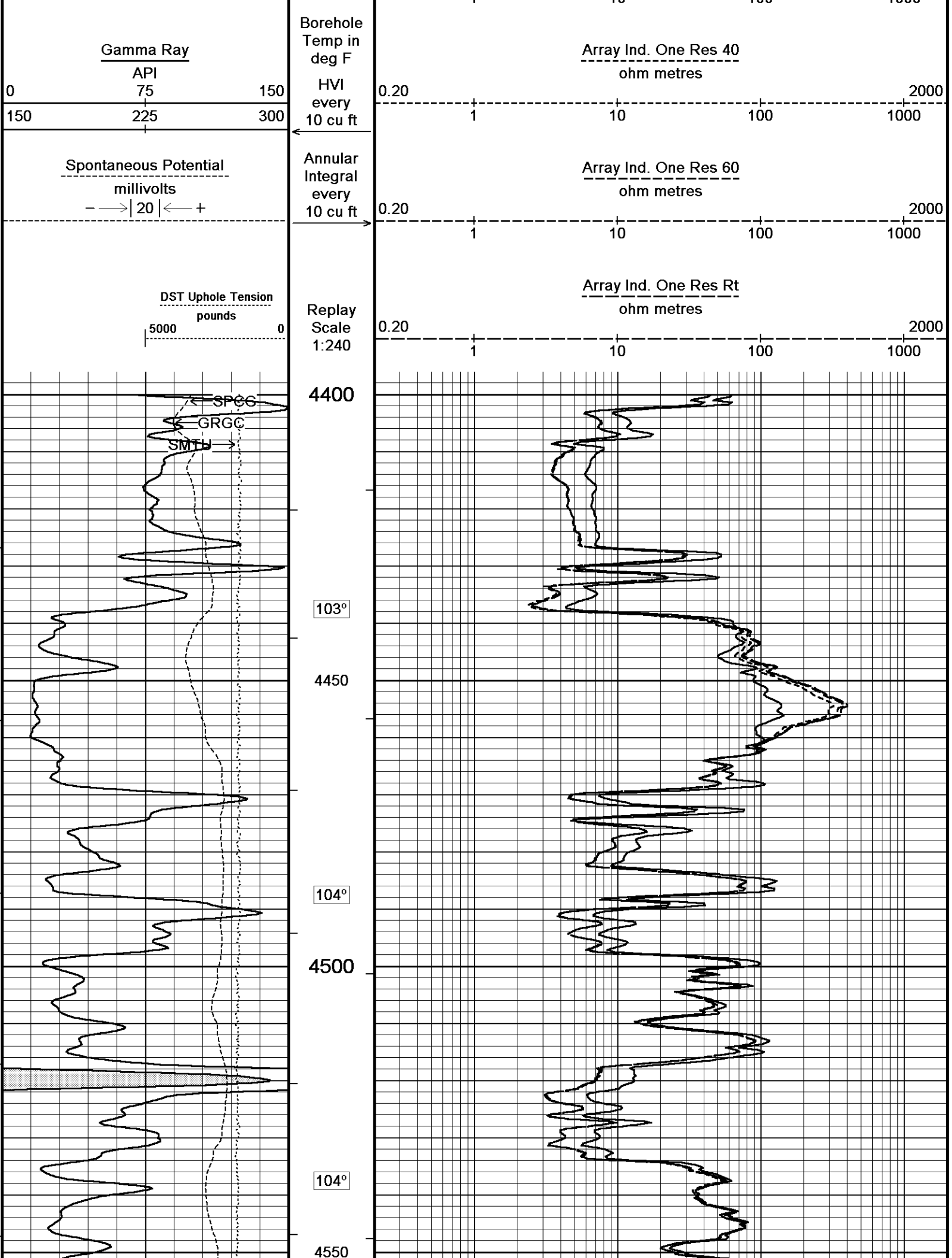


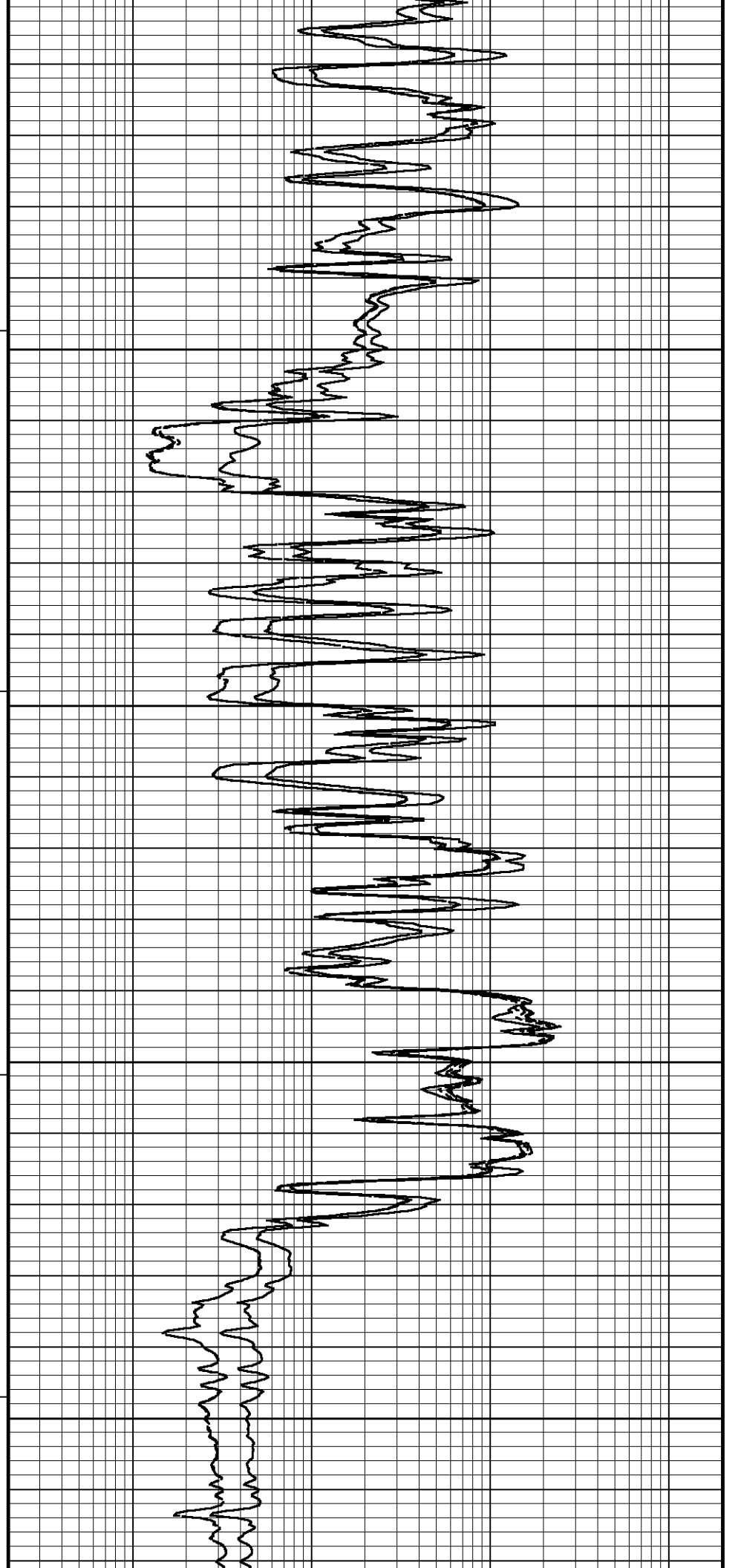
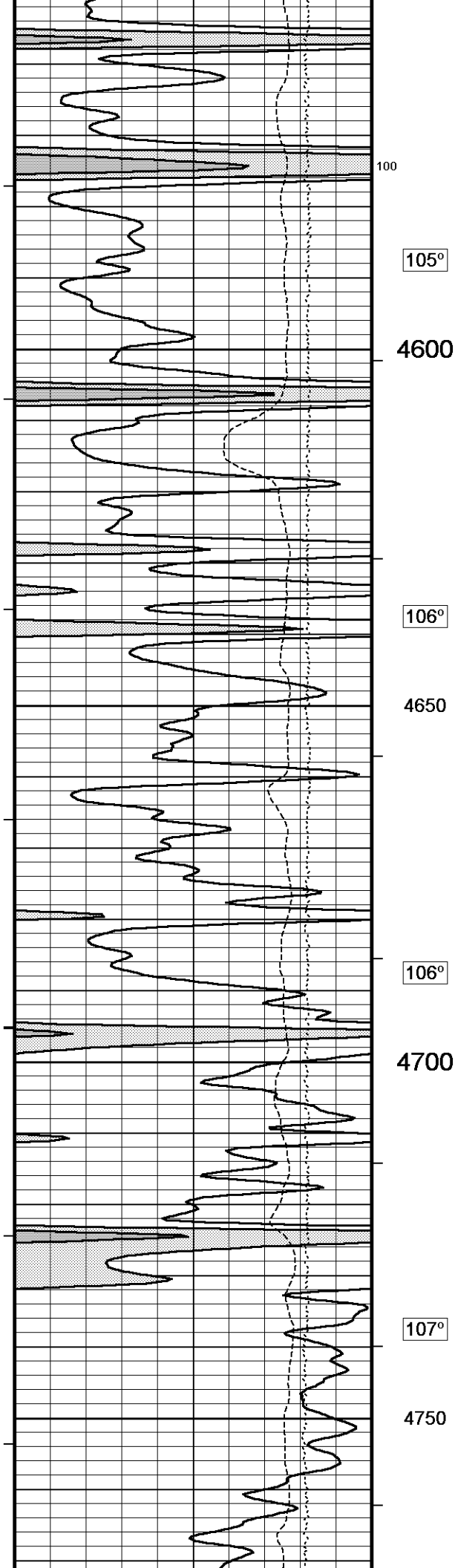


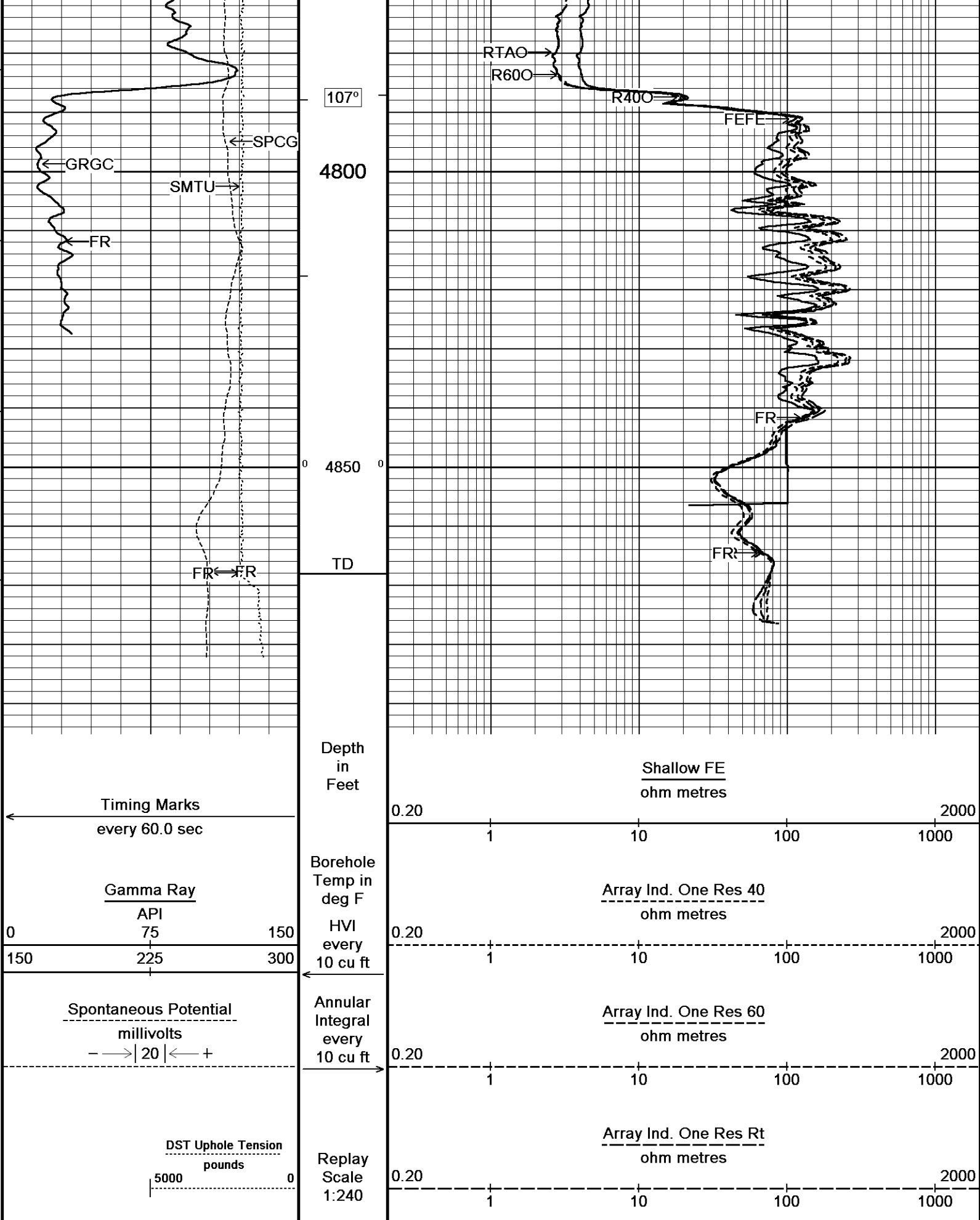














BEFORE SURVEY CALIBRATION

C:\Minimus 13.05.9583\Logs\SHAKESPEARE ORTEGA #1-25\SHAKESPEARE ORTEGA #1-25_002.dta

General Constants All 000

Last Edited on 24-FEB-2014,08:20

General Parameters

Mud Resistivity	0.410	ohm-metres
Mud Resistivity Temperature	76.000	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	MMR Caliper	

Rwa Parameters

Porosity used	Base Density Porosity
Resistivity used	Array Ind. One Res Rt
RWA Constant A	0.610
RWA Constant M	2.150
SW/APOR Tool Source	0.000

Down-hole Tension Calibration SMS 0

Field Calibration on 19-JAN-2014 09:34

Reading No	Measured	Calibrated (lbs)
1	15482.72	0.00
2	16610.36	408.00

High Resolution Temperature Calibration MCG-C 84

Field Calibration on 21-AUG-2013,11:52

	Measured	Calibrated(Deg F)
Lower	11.00	11.00
Upper	111.00	111.00

High Resolution Temperature Constants MCG-C 84

Last Edited on 21-AUG-2013,11:52

Pre-filter Length	11
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SP Calibration MCG-C 84

Field Calibration on 21-AUG-2013 12:25

	Measured	Calibrated (mV)
Reference 1	105.4	100.7
Reference 2	-96.3	-100.8

Gamma Calibration MCG-C 84

Field Calibration on 20-FEB-2014 09:39

	Measured	Calibrated (API)
Background	65	44
Calibrator (Gross)	1143	769
Calibrator (Net)	1078	725

Gamma Constants MCG-C 84

Last Edited on 24-FEB-2014,07:21

Gamma Calibrator Number	GRC38	
Mud Density	1.10	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

Micro Laterolog Calibration MMR-A 11

Base Calibration on 31-DEC-1999 00:00

Field Check on 31-DEC-1999 00:00

Base Calibration

	Measured	Calibrated (ohm-m)
	Ref 1	Ref 2
	0.0	0.0

Base Check (ohm-m)	Field Check (ohm-m)
0.0	0.0

Micro Laterolog Constants MMR-A 11

Last Edited on

Pad Type	6 in Solid Nylon B23059
Micro Laterolog K Factor	0.0128
Standoff Offset	0.0000 inches

Mudcake Thickness Correction Constants

Mud Cake Source	Constant Value
Mud Cake Thickness	0.4000 inches
Mud Cake Thickness Caliper	
Mud Cake Resistivity	0.1500 ohm-m
Mud Cake Resistivity Temp.	68.00 Deg F
Mud Cake Resistivity Source	Constant Value
Temp. Source Rmc Correc.	MCG External Temperature

Caliper Calibration MMR-A 11

Base Calibration on 20-JAN-2014 14:07
Field Calibration on 20-FEB-2014 09:23

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	14089	5.98
2	17229	7.97
3	20490	9.86
4	24430	11.92
5	0	0.00
6	N/A	N/A

Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	7.99	7.97

Micro Normal and Micro Inverse Calibration MMR-A 11

Base Calibration on 20-JAN-2014 13:46
Field Check on 20-FEB-2014 09:28

Base Calibration					
Channel	Resistor 1	Measured		Calibrated (ohm-m)	
		Resistor 2	Resistor 1	Resistor 2	
Micro Normal	12.2	59.7	5.0	25.0	
Micro Inverse	15.5	77.5	5.0	25.0	
Channel		Base Check (ohm-m)	Field Check (ohm-m)		
Micro Normal		76.5	76.5		
Micro Inverse		58.7	58.7		

Micro Normal and Micro Inverse Constants MMR-A 11

Last Edited on 18-APR-2013,13:52

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

Neutron Calibration MDN-A.B 65

Base Calibration on 20-JAN-2014 15:06
Field Check on 20-FEB-2014 09:43

Base Calibration				
	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	2981	92	3714	110
	32.404		33.764	
Field Calibrator at Base			Calibrated (cps)	
			1702	2459
Ratio			0.692	
Field Check			Calibrated (cps)	
			1709	2452
Ratio			0.689	

Neutron Constants MDN-A.B 65

Last Edited on 24-FEB-2014,07:20

Neutron Source Id	PN-521
Neutron Jig Number	5824NE

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	None	
Formation Pressure	N/A	kpsi
Temperature Source	Constant Value	
Temperature	68.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	N/A	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-B.J 352			Base Calibration on 17-JAN-2014 13:04 Field Check on 20-FEB-2014 09:16		
Base Calibration					
	Measured	Calibrated (ohm-m)			
Reference 1	9.9	1.3			
Reference 2	962.7	126.8			
Base Check		281.7			
Field Check		282.0			

FE Constants MFE-B.J 352			Last Edited on 24-FEB-2014,07:20		
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-A.A 126			Last Edited on 24-FEB-2014,07:20		
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 Sonic				
Correction for Sonde Skew	Applied				
Cycle Stretch Algorithm	Applied				
MN3FT	N/A	micro-sec			
MX3FT	N/A	micro-sec			
Hunt-Raymer Constant	83.13	micro-sec/ft			
Sonde Mode	Compensated				
Hole Type	Open Hole				
Sonde Parameters					
	Measured	Calibrated			
Offset	N/A	0.0000			
Free Pipe	N/A	N/A			
Peak Amplitude Source	N/A				
Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	N/A	N/A	N/A	N/A	N/A
4'	N/A	N/A	N/A	N/A	N/A
5'	N/A	N/A	N/A	N/A	N/A
6'	N/A	N/A	N/A	N/A	N/A
Processed Fixed Gate Parameters					
Waveform Used For Processing	N/A				
Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)	N/A		

N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Full Waveform Parameters

Use 3' Waveform to derive TR	N/A	
Use 4' Waveform to derive TR	N/A	
Use 5' Waveform to derive TR	N/A	
Use 6' Waveform to derive TR	N/A	
3' Waveform Discriminator Level	N/A	mV
4' Waveform Discriminator Level	N/A	mV
5' Waveform Discriminator Level	N/A	mV
6' Waveform Discriminator Level	N/A	mV
3' Waveform Filter	N/A	
4' Waveform Filter	N/A	
5' Waveform Filter	N/A	
6' Waveform Filter	N/A	
Semblance Level	N/A	
Semblance Window Width	N/A	micro-sec
Sonic 1 Despiker	N/A	N/A
Sonic 2 Despiker	N/A	N/A

High Resolution Temperature Calibration MAI-A.A 45

Field Calibration on 29-OCT-2013,14:20

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MAI-A.A 45

Last Edited on 29-OCT-2013,14:20

Pre-filter Length	11
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Induction Calibration MAI-A.A 45

Base Calibration on 21-MAY-2013,16:47
Field Check on 20-FEB-2014 09:15

Base Calibration

Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel		Low	High	Low	High
1		14.4	472.6	9.3	966.2
2		5.7	374.0	7.6	821.4
3		3.4	261.2	5.2	566.0
4		2.5	133.9	2.6	279.2

Array Temperature	0.0	Deg F
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Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			18.6	3850.3
2			31.8	3628.6
3			28.8	3048.7
4			18.4	2078.7
Deep			16.1	1910.7
Medium			42.7	4059.7
Shallow			49.8	5482.0

Array Temperature	60.1	Deg F
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Induction Constants MAI-A.A 45

Last Edited on 24-FEB-2014,07:24

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		
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		

Photo Density Calibration MPD-B 31

Base Calibration on 20-JAN-2014 16:43

Field Check on 20-FEB-2014 09:22

Density Calibration		Measured		Calibrated (sdu)	
Base Calibration		Near	Far	Near	Far
Reference 1	43628	22294	59556	30836	
Reference 2	17956	1856	24941	2541	
Field Check at Base					
	665.1	818.8			
Field Check					
	664.6	820.3			

PE Calibration		Measured		Calibrated	
Base Calibration		WH	Ratio	Ratio	
Background	WS 124	593			
Reference 1	17926	43516	0.415	0.371	
Reference 2	5248	17873	0.297	0.272	
Field Check at Base					
	123.9	593.3			
Field Check					
	121.9	588.3			

Density Constants MPD-B 31

Last Edited on 24-FEB-2014,07:20

Density Source Id	254	
Nylon Calibrator Number	DNCE695	
Aluminium Calibrator Number	DACD698	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.10	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

Caliper Calibration MPD-B 31

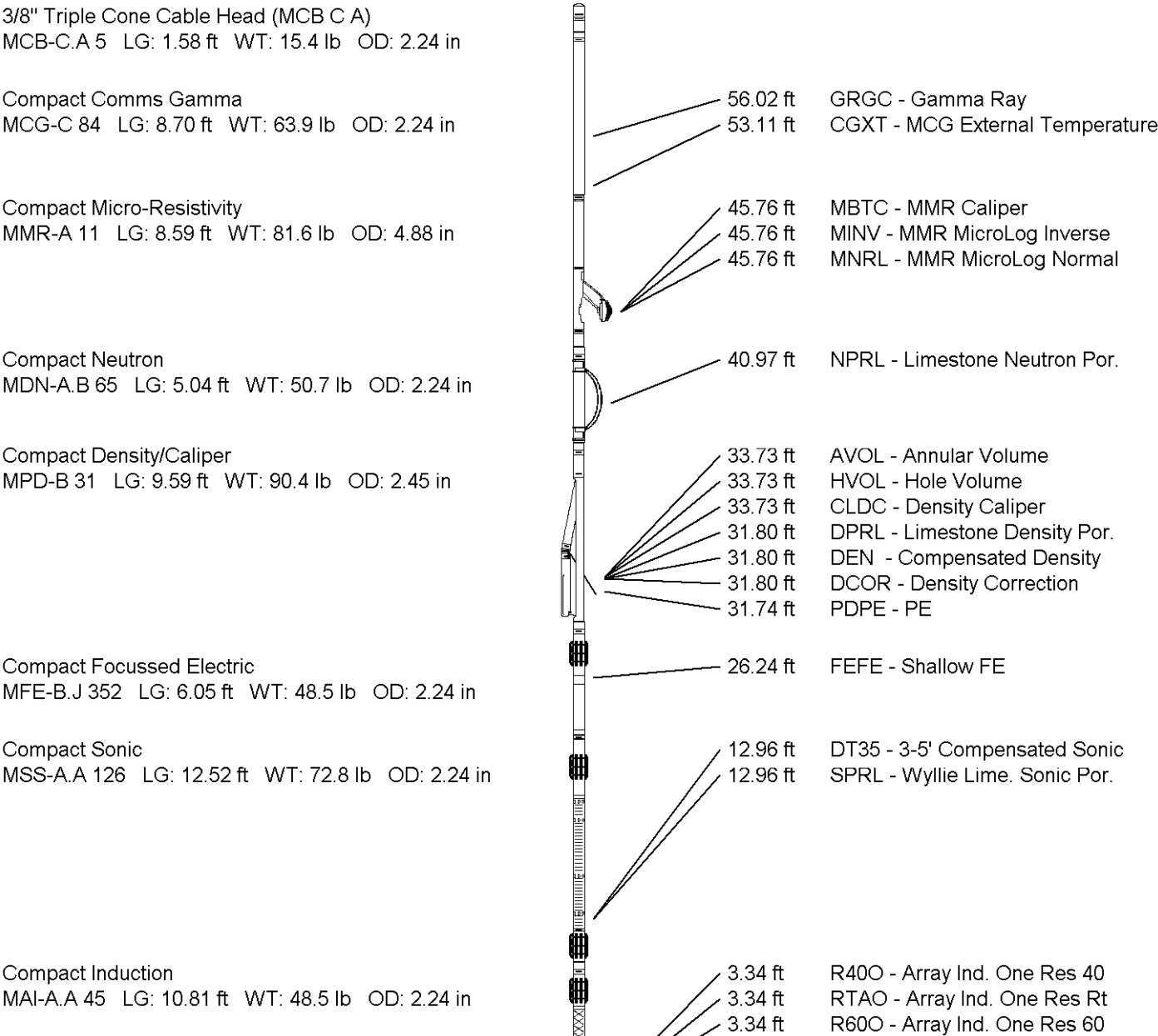
Base Calibration on 24-FEB-2014 03:42
Field Calibration on 24-FEB-2014 03:43

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	18272	3.99
2	26496	5.98
3	35155	7.97
4	43472	9.86
5	52816	11.92
6	N/A	N/A

Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	7.97	7.97

DOWNHOLE EQUIPMENT

C:\Minimus 13.05.9583\Logs\SHAKESPEARE ORTEGA #1-25\SHAKESPEARE ORTEGA #1-25_002.dta



Total Length: 62.88 ft Weight: 471.8 lb

0.23 ft SPCG - Spontaneous Potential
Tool Zero (0.13ft from bottom)
-0.13 ft SMTU - DST Uphole Tension
All measurements relative to tool zero.

COMPANY SHAKESPEARE OIL CO., INC.
WELL ORTEGA #1-25
FIELD WILDCAT
PROVINCE/COUNTY SCOTT
COUNTRY/STATE U.S.A. / KANSAS

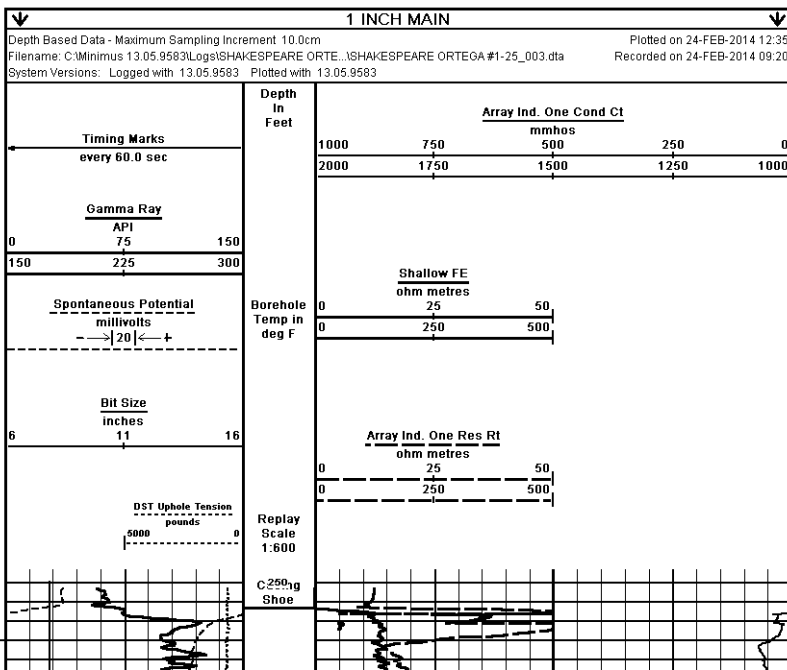
Elevation Kelly Bushing	3105.00	feet	First Reading	4865.00	feet
Elevation Drill Floor	3103.00	feet	Depth Driller	4870.00	feet
Elevation Ground Level	3095.00	feet	Depth Logger	4868.00	feet

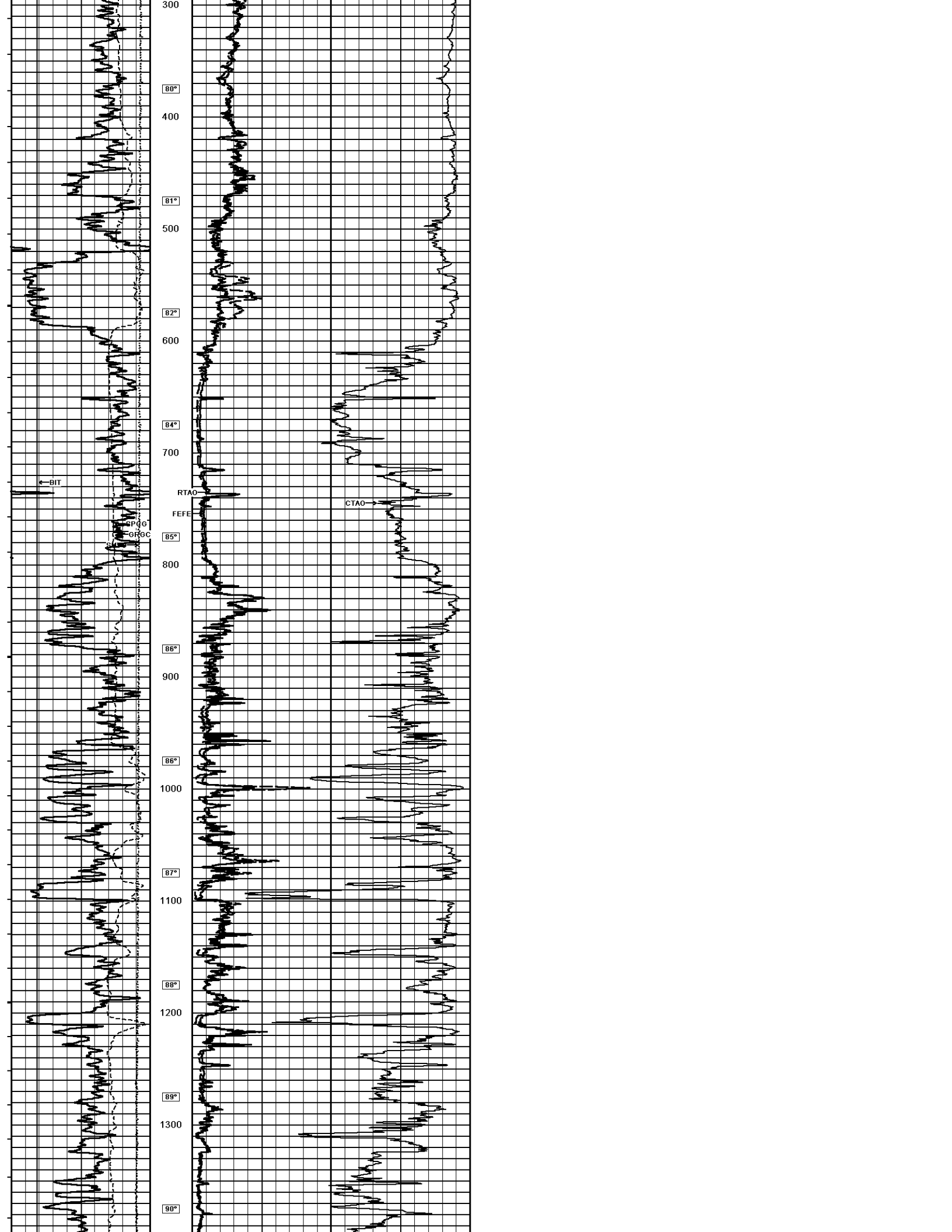


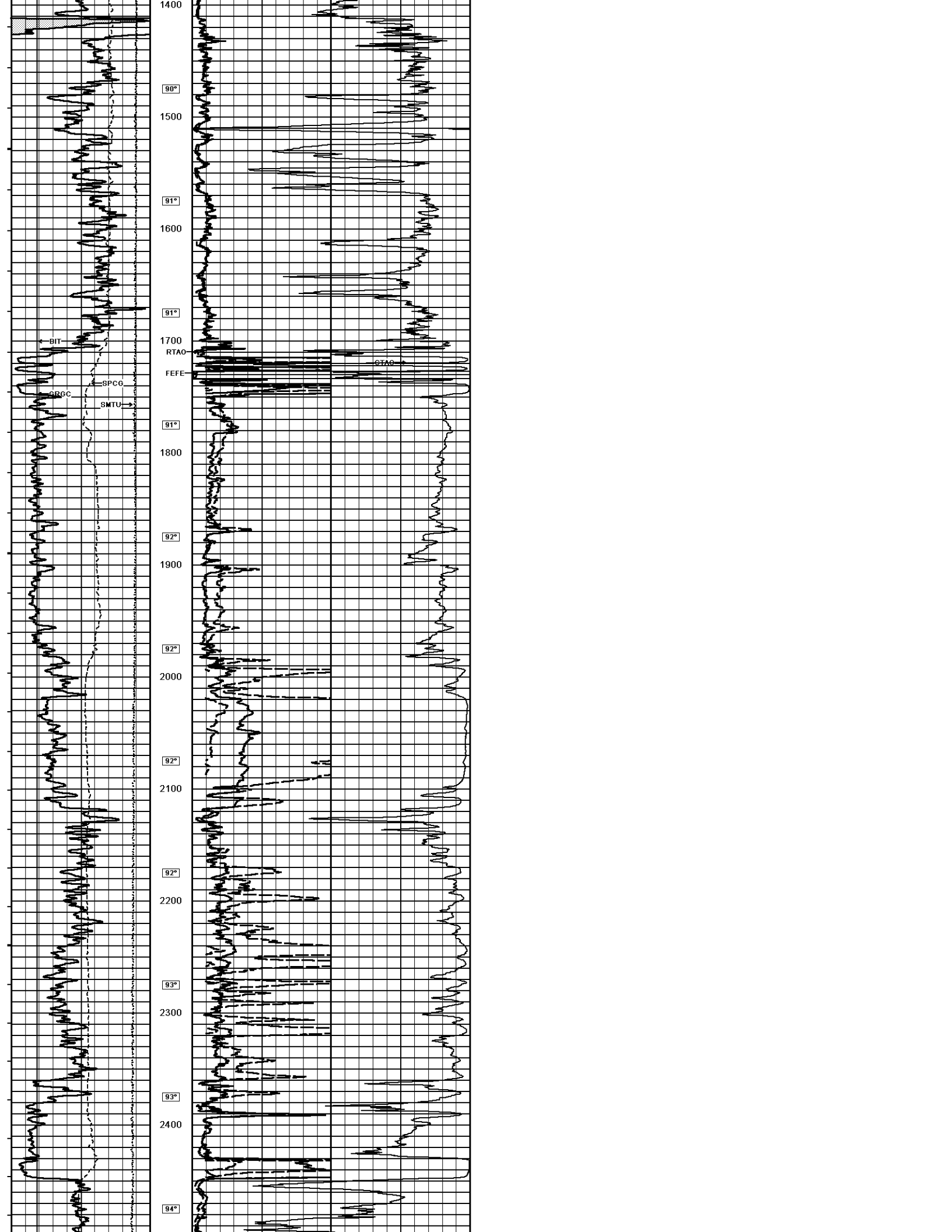
ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

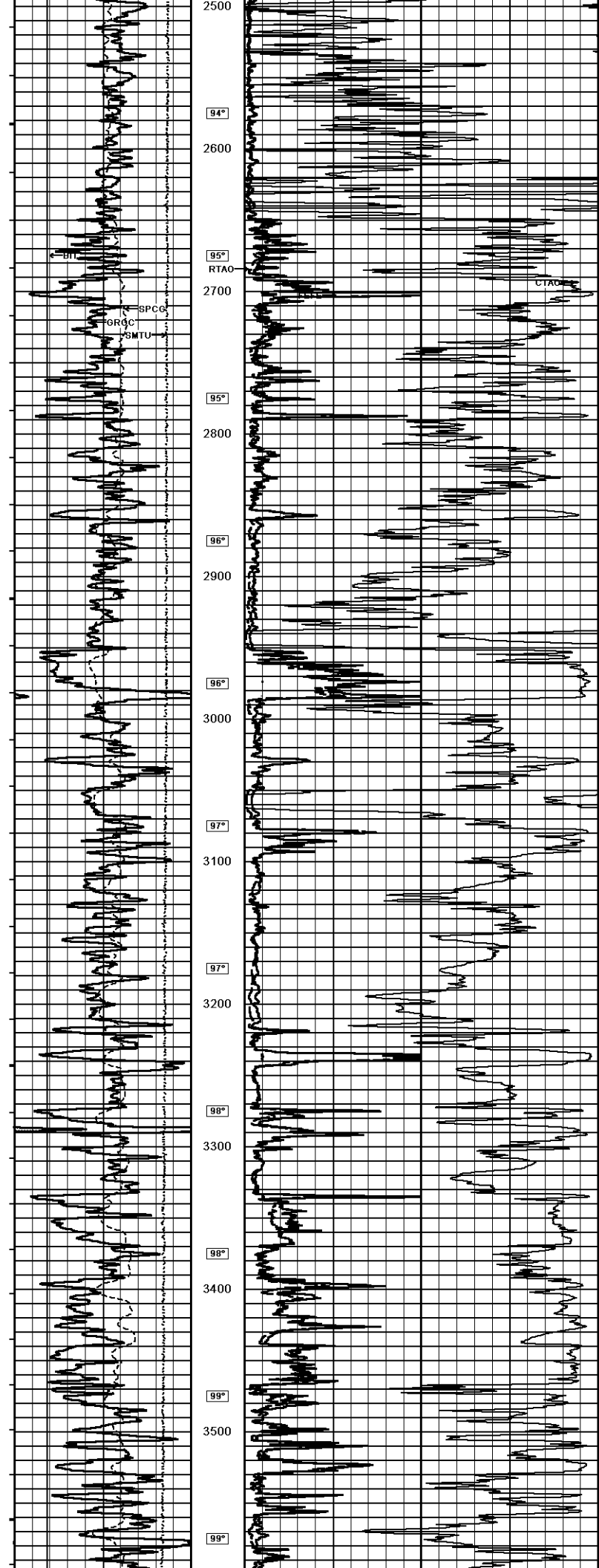
Weatherford

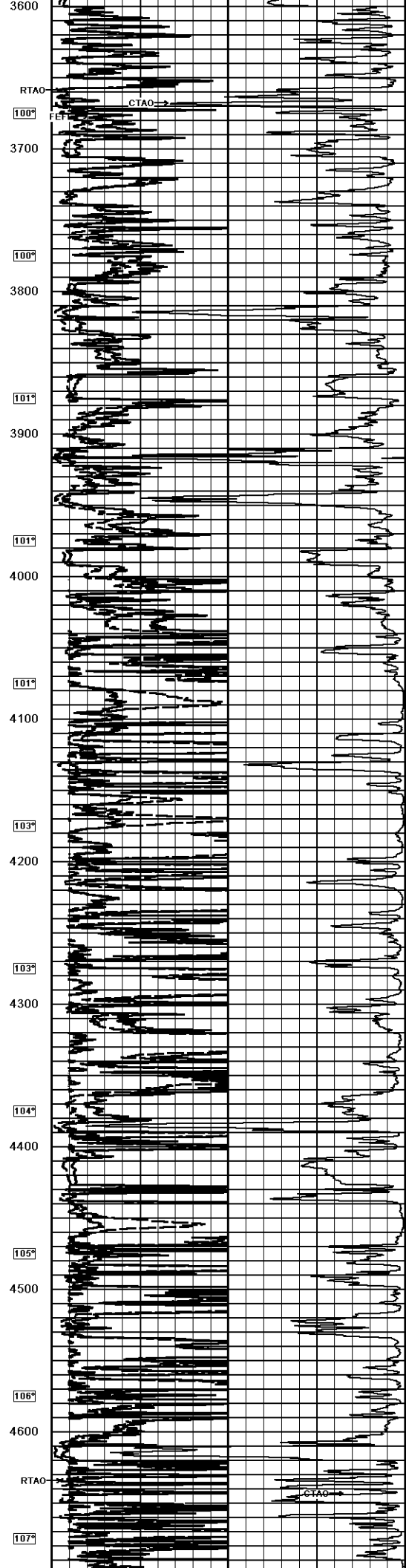
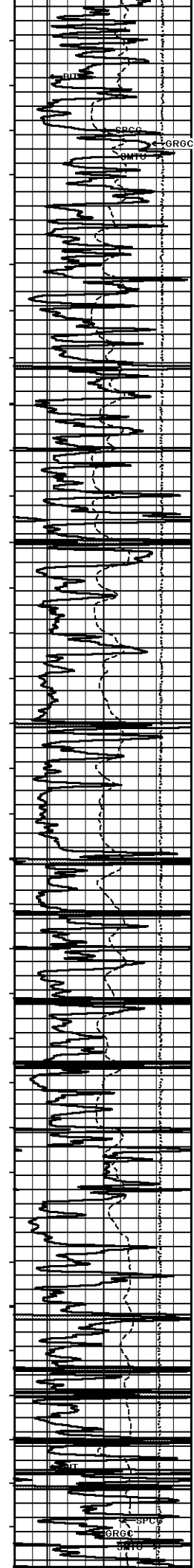
Weatherford		ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG	
COMPANY	SHAKESPEARE OIL CO., INC.	WELL	ORTEGA #1-25
FIELD	WILDCAT	PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS	LOCATION	2000' ENL & 2287' FEL
SEC	165	TIME	34W
DATE	15-17-2-1017	LOG NUMBER	MSS
LOG MEASURED FROM	LOG MEASURED FROM	LOG MEASURED FROM	LOG MEASURED FROM
DATE	24-FEB-2014	DATE	24-FEB-2014
SERVICE ORDER	4558-80419553	SERVICE ORDER	4558-80419553
DEPTH DRILLER	4870.00	DEPTH DRILLER	4870.00
DEPTH LOGGER	4868.00	DEPTH LOGGER	4868.00
FIRST READING	263.00	FIRST READING	263.00
LAST READING	263.00	LAST READING	263.00
CASING DRILLER	263.00	CASING DRILLER	263.00
CASING LOGGER	263.00	CASING LOGGER	263.00
BIT SIZE	7.875	BIT SIZE	7.875
HOLE FLUID TYPE	CHEMICAL	HOLE FLUID TYPE	CHEMICAL
DENSITY/VISCOSITY	9.20	DENSITY/VISCOSITY	9.20
PH/FLUID LOSS	10.50	PH/FLUID LOSS	10.50
SAMPLE SOURCE	FLOWLINE	SAMPLE SOURCE	FLOWLINE
RM @ MEASURED TEMP	0.41 @ 76.0	RM @ MEASURED TEMP	0.41 @ 76.0
RM @ MEASURED TEMP	0.33 @ 76.0	RM @ MEASURED TEMP	0.33 @ 76.0
RM @ MEASURED TEMP	0.48 @ 76.0	RM @ MEASURED TEMP	0.48 @ 76.0
RM @ BHT	0.29 @ 100.0	RM @ BHT	0.29 @ 100.0
TIME SINCE CIRCULATION	5 HOURS	TIME SINCE CIRCULATION	5 HOURS
MAX RECORDED TEMP	109.00	MAX RECORDED TEMP	109.00
EQUIPMENT/BASE	13067	EQUIPMENT/BASE	13067
RECORDED BY	ACOM BIL	RECORDED BY	ACOM BIL
LOGGED BY	TIM PREST	LOGGED BY	TIM PREST
LOG #	1B14-005	LOG #	1B14-005

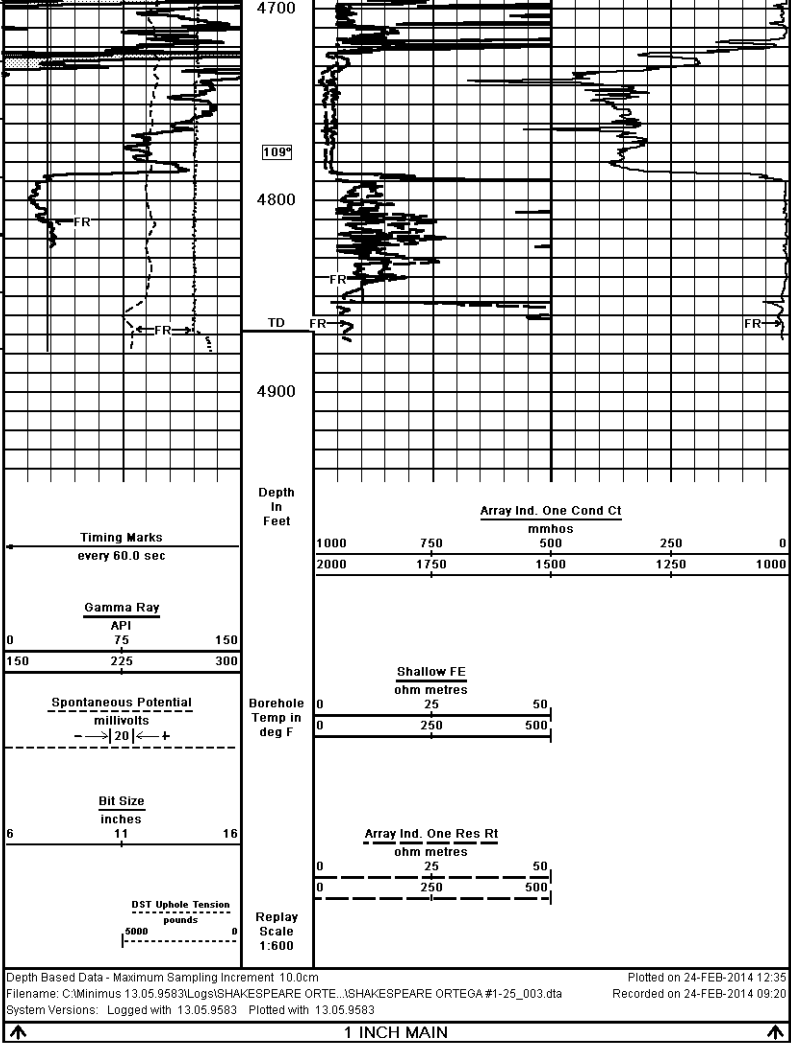












COMPANY		SHAKESPEARE OIL CO., INC.			
WELL		ORTEGA #1-25			
FIELD		WILDCAT			
PROVINCE/COUNTY		SCOTT			
COUNTRY/STATE		U.S.A. / KANSAS			
Elevation Kelly Bushing	3105.00	feet	First Reading	4865.00	feet
Elevation Drill Floor	3103.00	feet	Depth Driller	4870.00	feet
Elevation Ground Level	3095.00	feet	Depth Logger	4868.00	feet
		ARRAY INDUCTION			
		SHALLOW FOCUSED			
		ELECTRIC LOG			