ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

Weatherford®

COMPANY	SHAKESPEARE OIL CO., INC.
WELL	BURNS #1-19
FIELD	SWIFT FOX SOUTHEAST
PROVINCE/COUNTY	GOVE
COUNTRY/STATE	USA / KANSAS
LOCATION	1600' FNL & 335' FWL OF NW/4

SEC 19	TWP 13	RGE 30	Other Services
			MPD/MDN
			MMR
API Number	15-063-22203		

Permanent Datum GL, Elevation 2877 feet
Log Measured From KB
Drilling Measured From KB

Elevations:	feet
KB	2887.00
DF	2885.00
GL	2877.00

Date	22-DEC-2014			
Run Number	ONE			
Service Order	7055-106443839			
Depth Driller	4660.00	feet		
Depth Logger	4661.00	feet		
First Reading	4658.00	feet		
Last Reading	260.00	feet		
Casing Driller	261.00	feet		
Casing Logger	260.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	WBM			
Density / Viscosity	9.30 lb/USg	53.00 sec/qt		
PH / Fluid Loss	10.30	6.40 ml/30Min		
Sample Source	FLOWLINE			
Rm @ Measured Temp	1.25 @ 96.0	ohm-m		
Rmf @ Measured Temp	1.0 @ 96.0	ohm-m		
Rmc @ Measured Temp	1.50 @ 96.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	1.0 @120.0	ohm-m		
Time Since Circulation	6 HOURS			
Max Recorded Temp	120.00	deg F		
Equipment / Base	13057	LIB		
Recorded By	JUSTIN HICKS			
Witnessed By	TOBY ECK			

Last Edited: 22-DEC-2014 05:41

BOREHOLE RECORD

Bit Size inches	Depth From feet	Depth To feet
7.850	261.00	4660.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	261.00	36.00

REMARKS

TOOLS RAN: CBH, MCG, MMR, MDN, MPD, MFE, MAI RAN IN COMBINATION.

HARDWARE USED:
MAI: TWO 0.5 INCH STANDOFFS.
MFE: ONE 0.5 INCH STANDOFF.
MDN: DUAL NEUTRON BOWSPRING.
MPD: 8 INCH PROFILE PLATE.

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 SURFACE CASING = 1842 CU.FT.
ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING = 1118 CU.FT.

FIELD TICKET NUMBER: 7055-106443839

RIG: H-D DRILLING, RIG #2

OPERATOR(S): J. LAPOINT

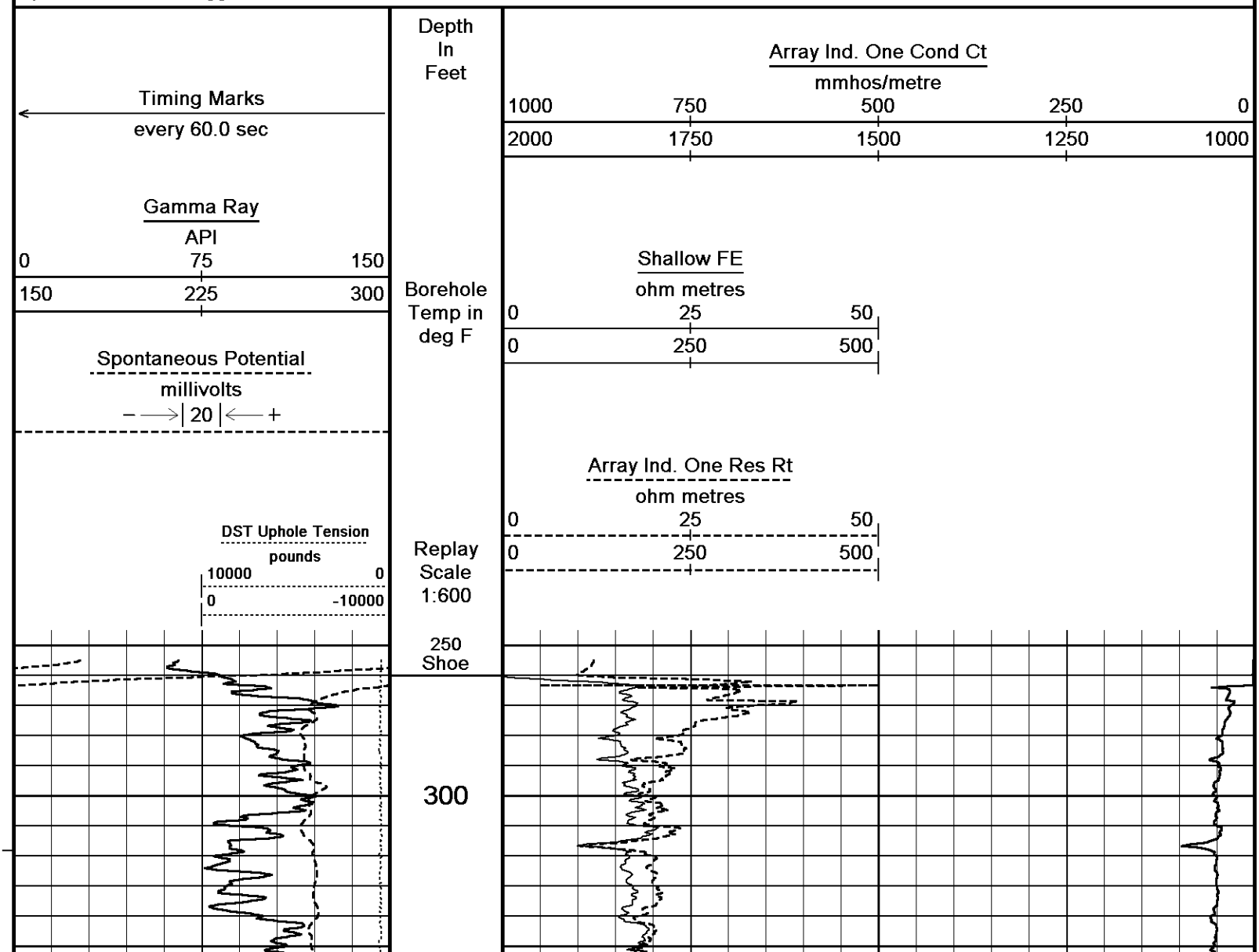
MUD PROPERTIES:
CHLORIDES: 2500 MG/L
LCM: 1 PPB

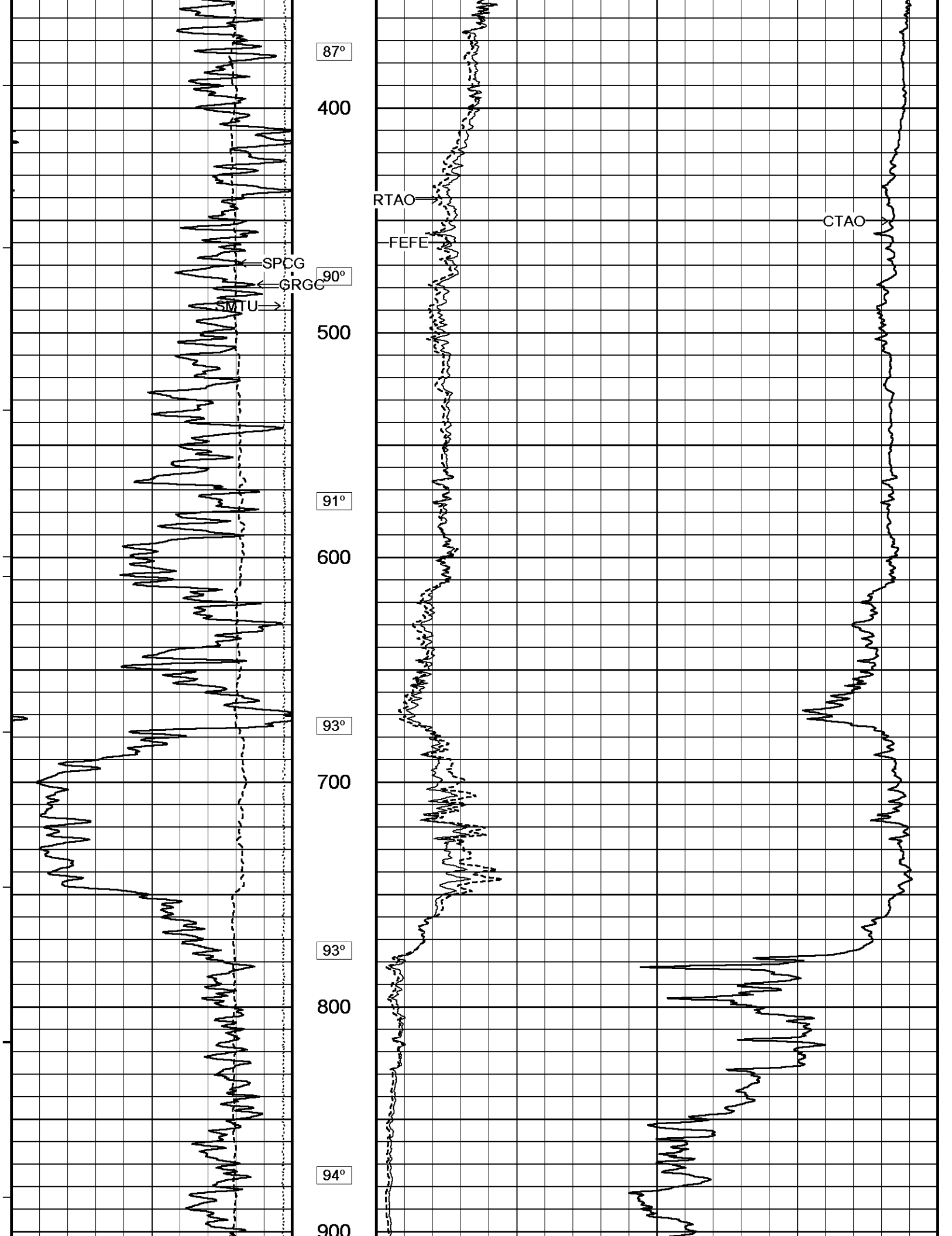
HOLE WASHOUTS AND RUGOSITY WILL AFFECT LOG QUALITY AND REPEATABILITY.

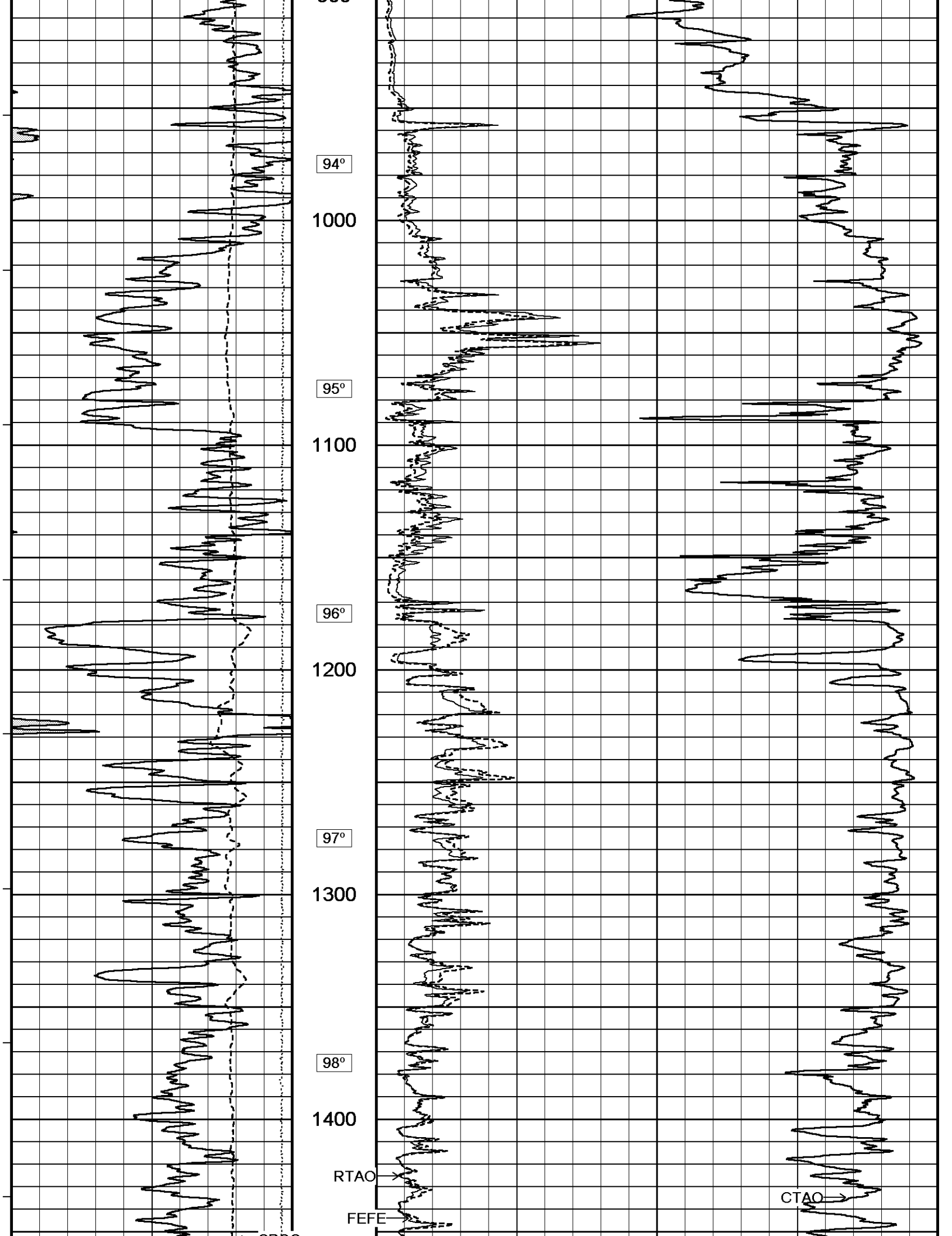
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will 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.

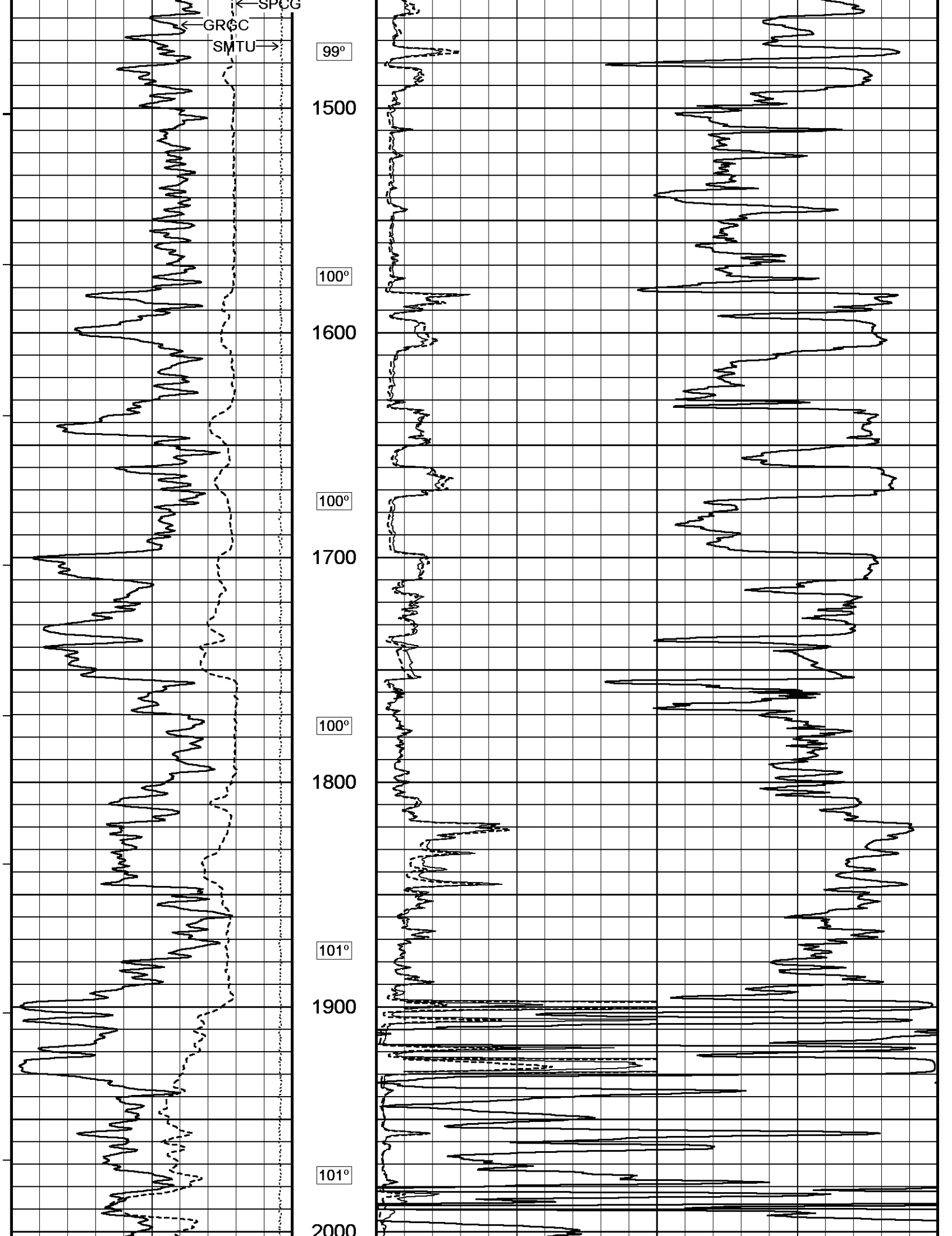
2 INCH MAIN LOG

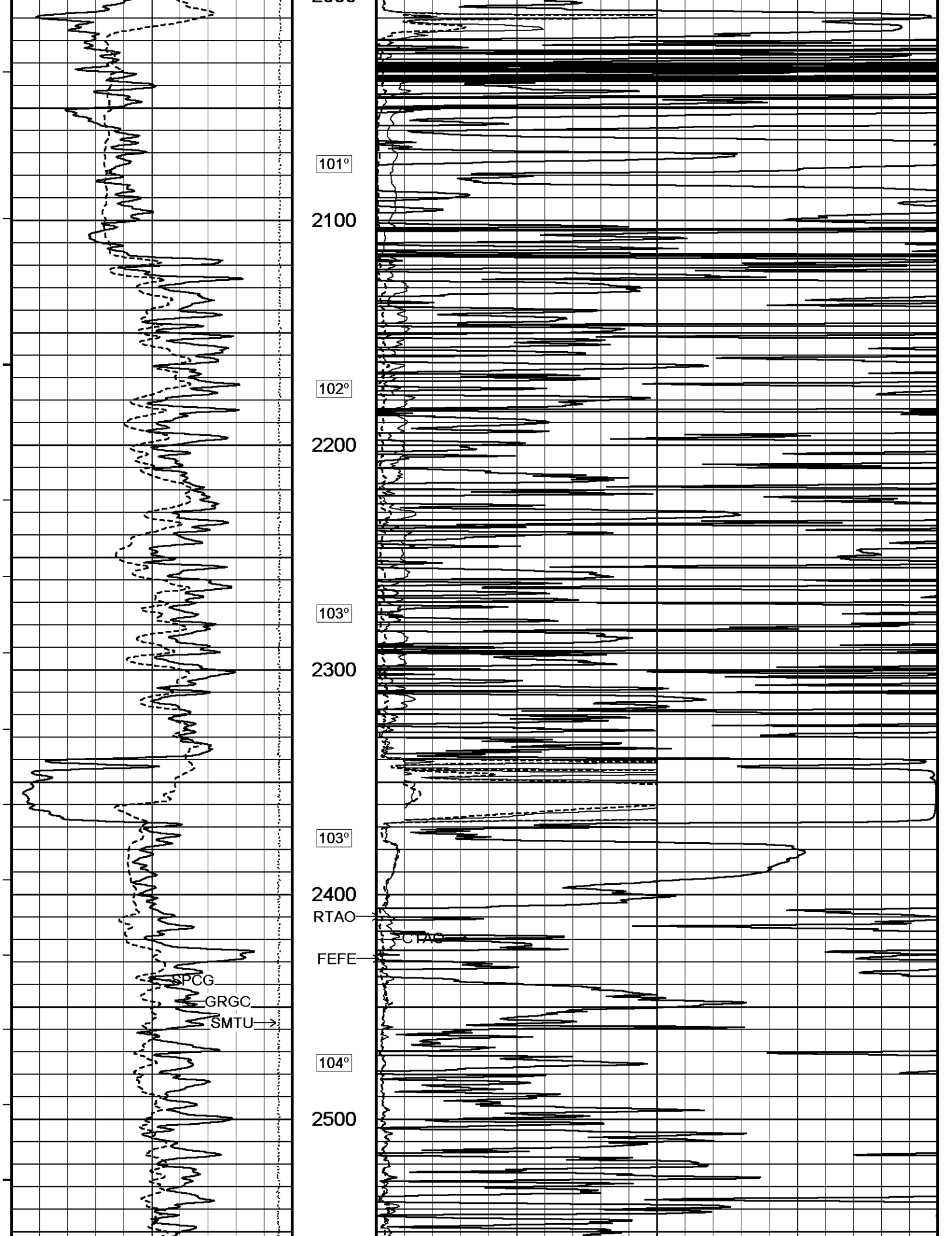
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 22-DEC-2014 10:20
Filename: C:\Minimus 14.05.5331\Data\Shakespeare (Burns #1-19)\MAIN PASS.dta — Recorded on 22-DEC-2014 07:24
System Versions: Logged with 14.05.5331 Plotted with 14.05.5331

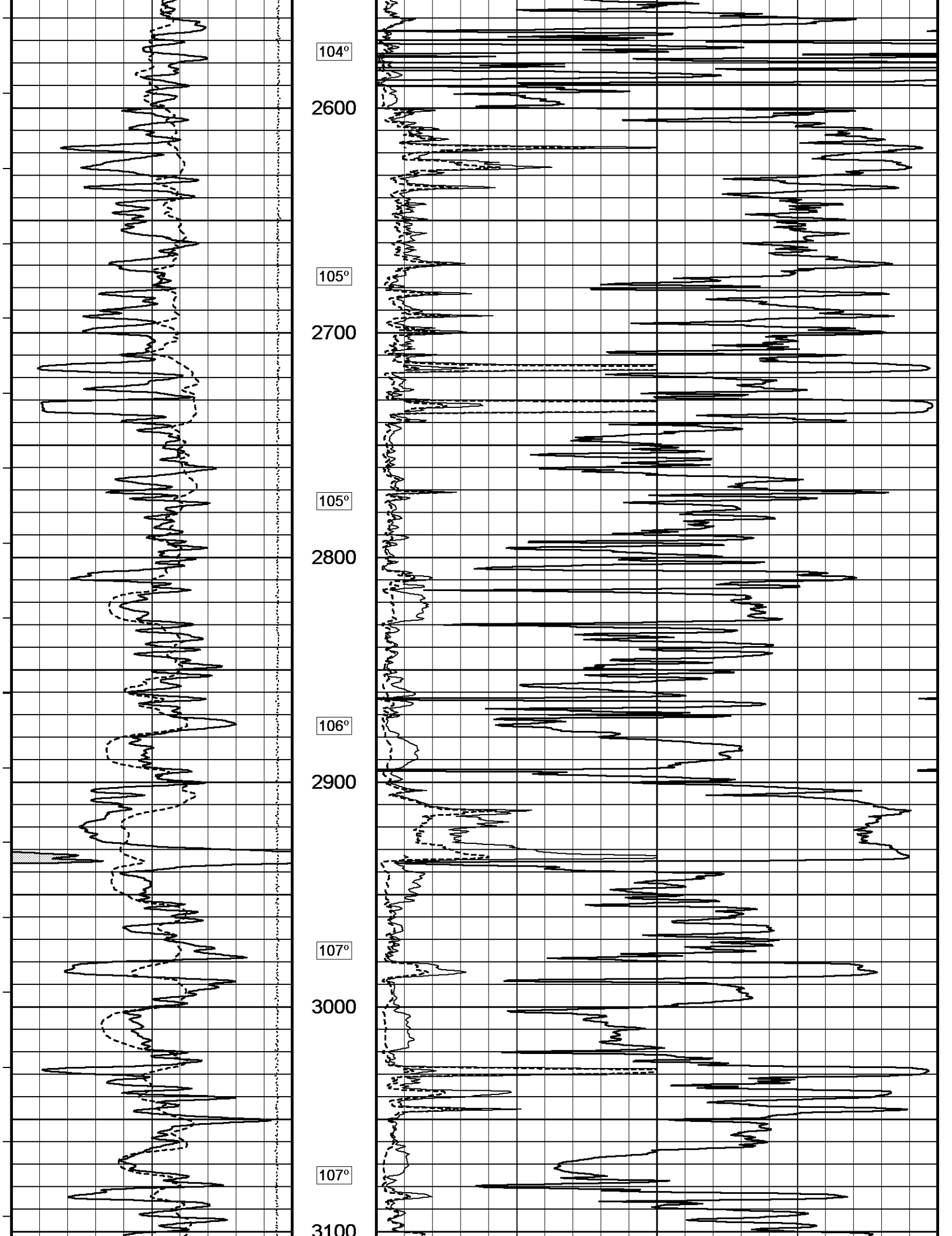


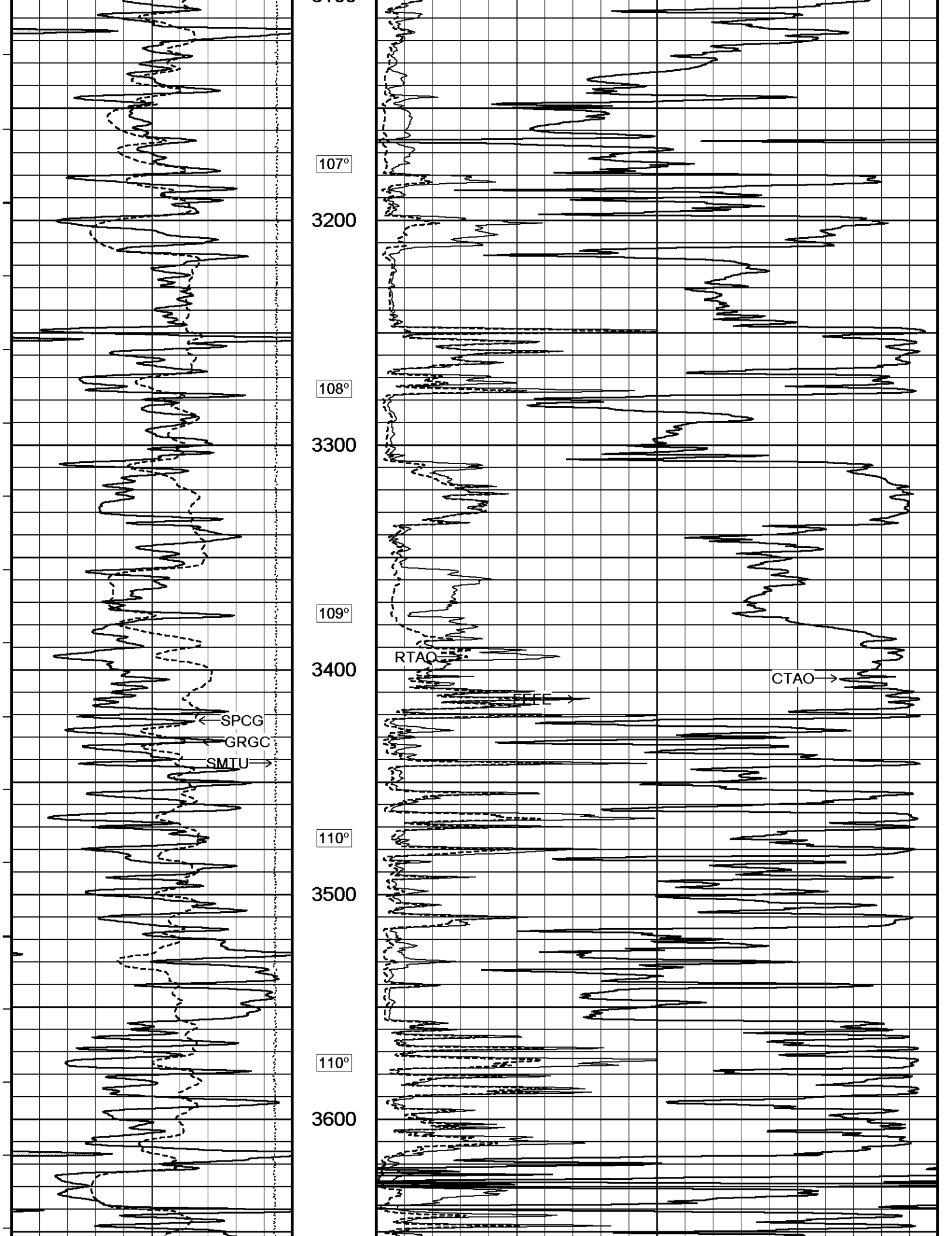

87°
400
RTAO
FEFE
CTAO
SPCG
GRGC
90°
SMTU
500
91°
600
93°
700
93°
800
94°
900

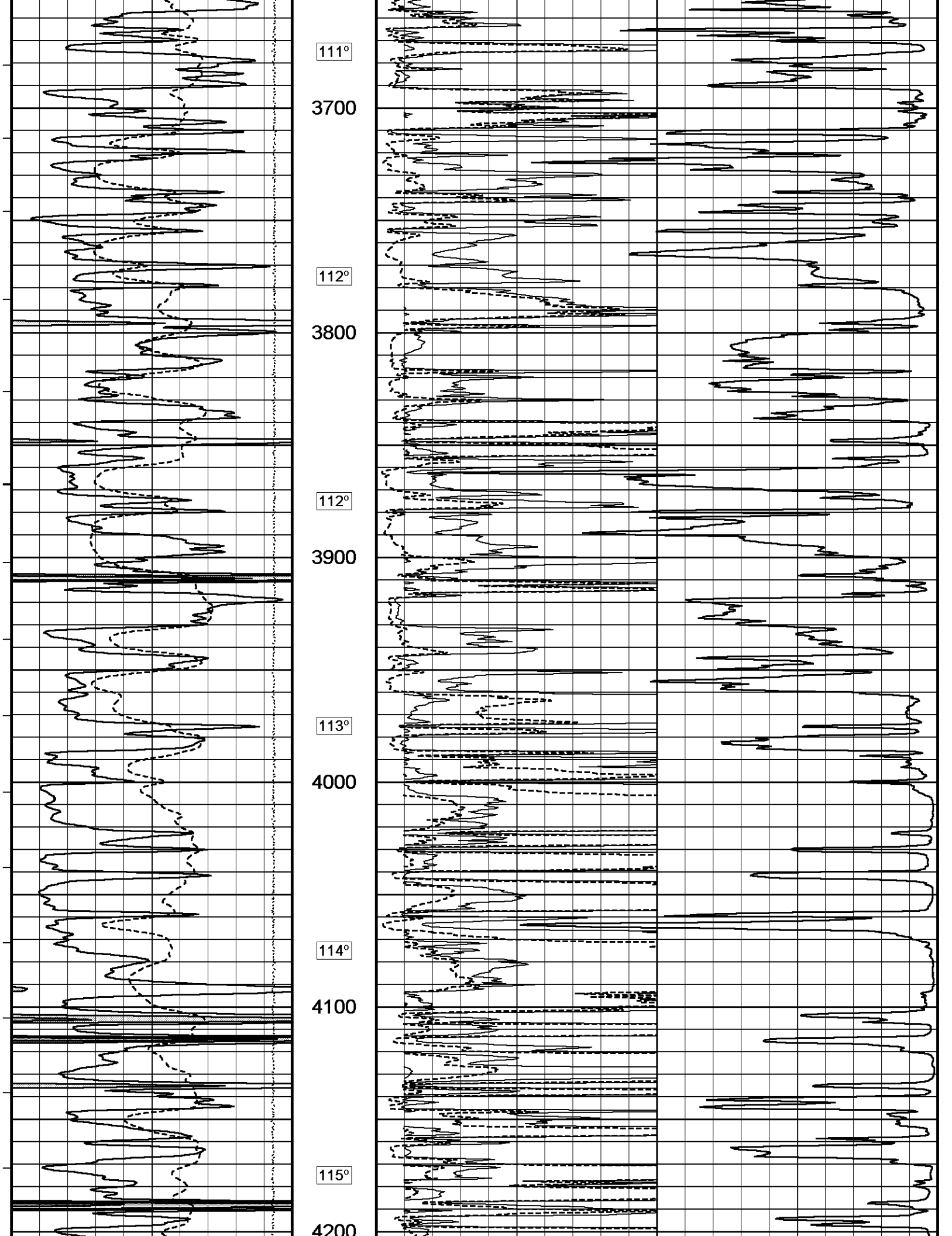

94°
1000
95°
1100
96°
1200
97°
1300
98°
1400
RTAO
FEFE
CTAO

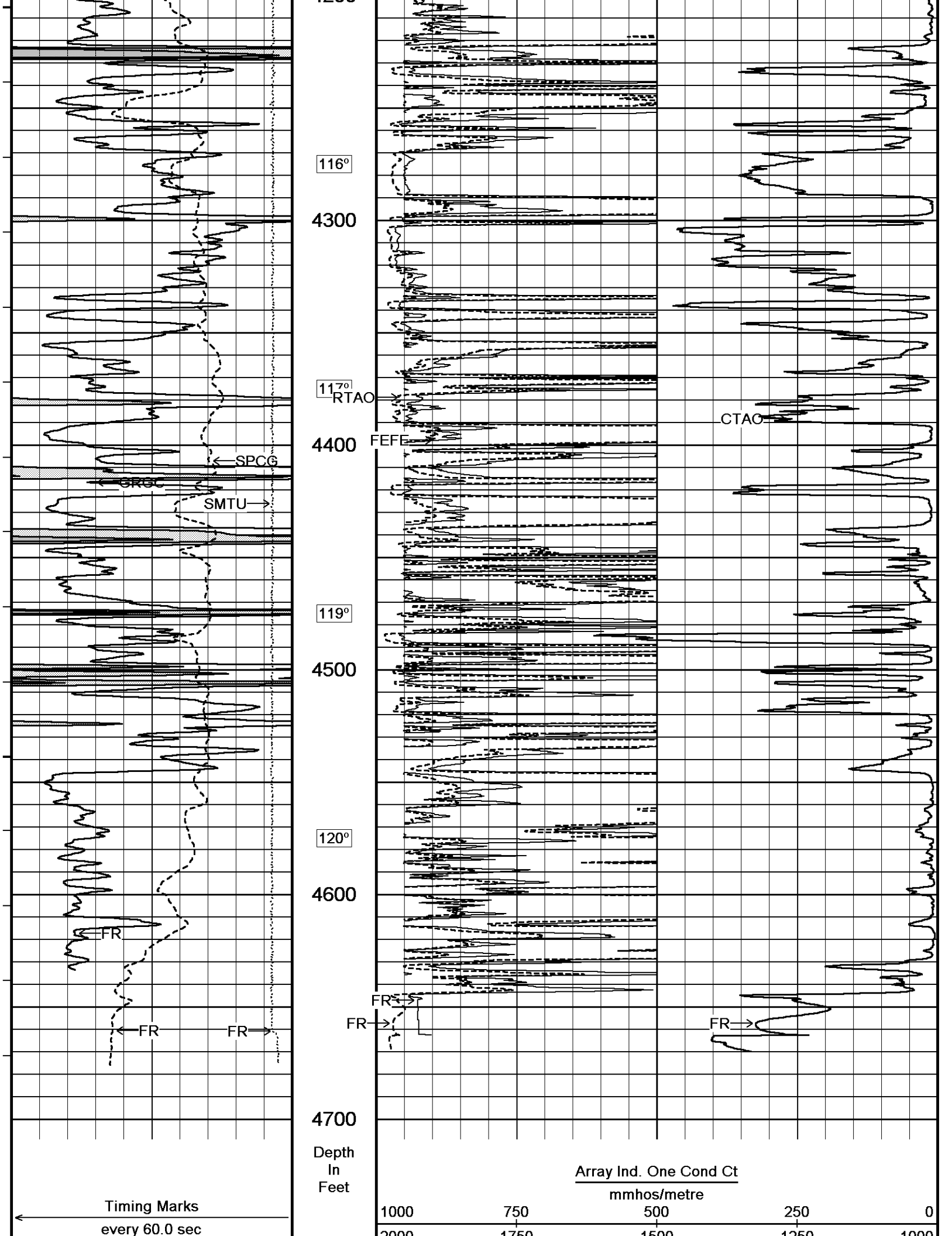

SPCG
GRGC
SMTU
99°
1500
100°
1600
100°
1700
100°
1800
101°
1900
101°
2000

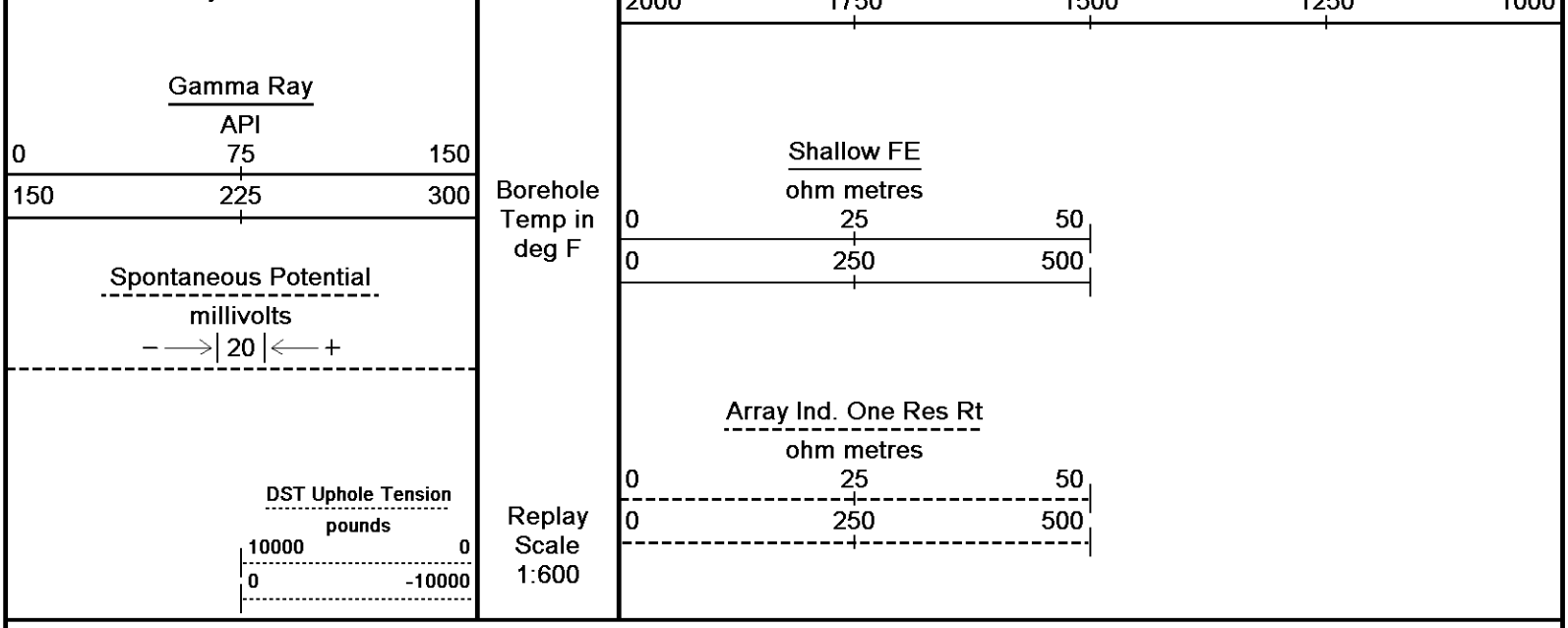

101°
2100
102°
2200
103°
2300
103°
2400
RTAO
CTAO
FEFE
SPCG
GRGC
SMTU
104°
2500


104°
2600
105°
2700
105°
2800
106°
2900
107°
3000
107°
3100


107º
3200
108º
3300
109º
3400
110º
3500
110º
3600
SPCG
GRGC
SMTU
RTAO
CTAO


111°
3700
112°
3800
112°
3900
113°
4000
114°
4100
115°
4200


116°
4300
117°
RTAO
CTAO
4400
FEFE
SPCG
GRGC
SMTU
119°
4500
120°
4600
FR
FR
FR
FR
FR
4700
Depth
In
Feet
Timing Marks
every 60.0 sec
Array Ind. One Cond Ct
mmhos/metre
1000
750
500
250
0
2000
1750
1500
1250
1000

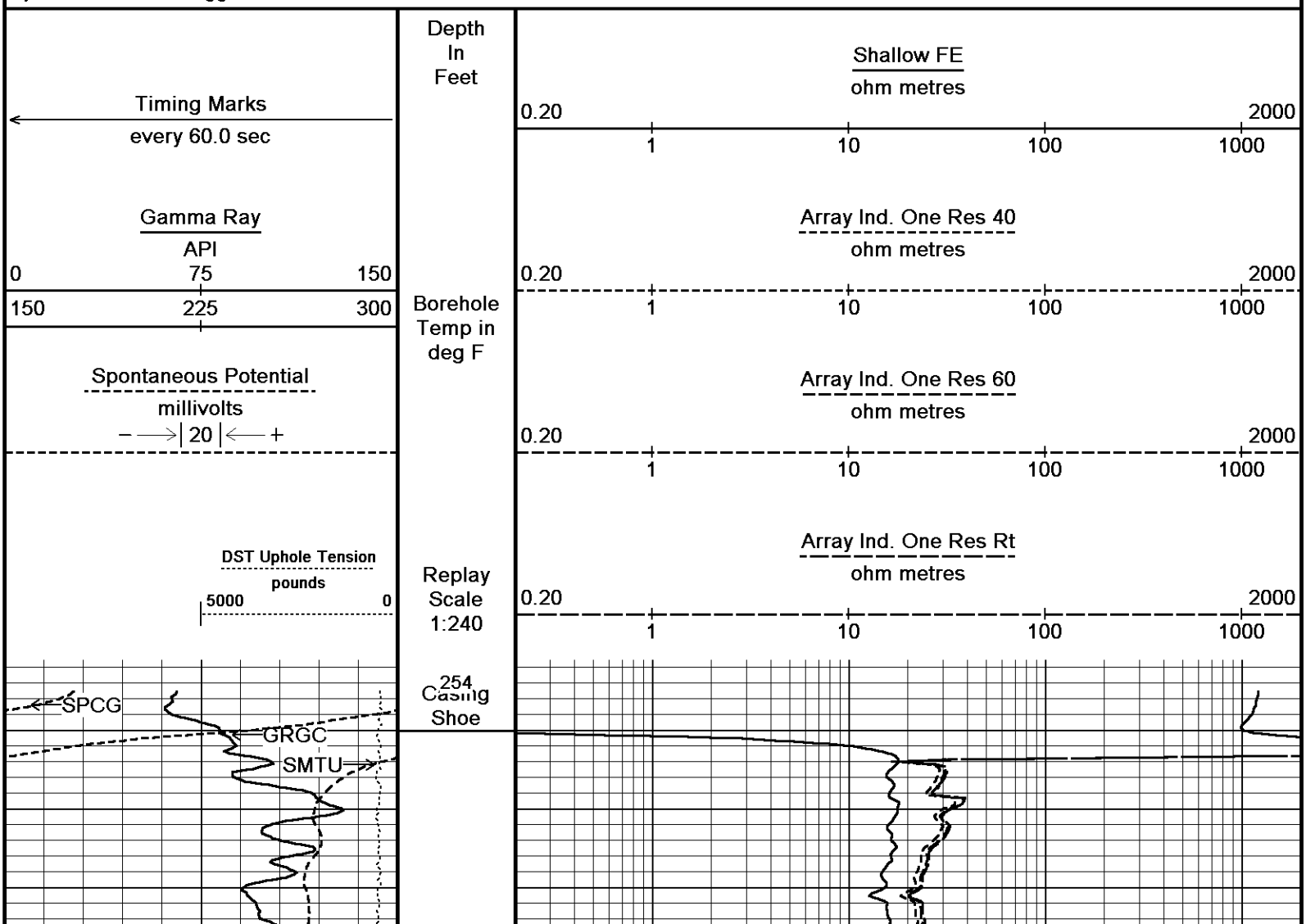


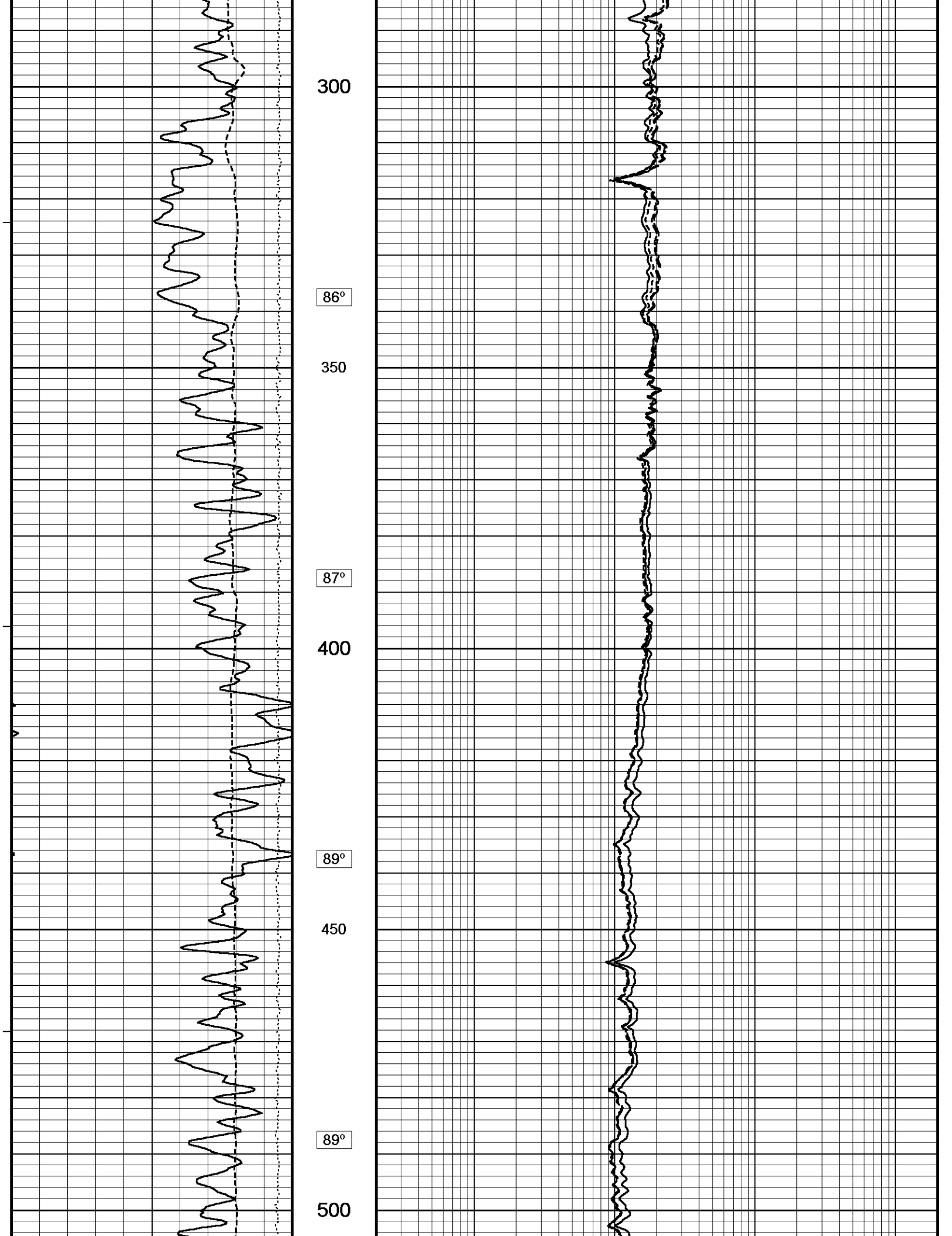
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-DEC-2014 10:20
Filename: C:\Minimus 14.05.5331\Data\Shakespeare (Burns #1-19)\MAIN PASS.dta
Recorded on 22-DEC-2014 07:24
System Versions: Logged with 14.05.5331 Plotted with 14.05.5331

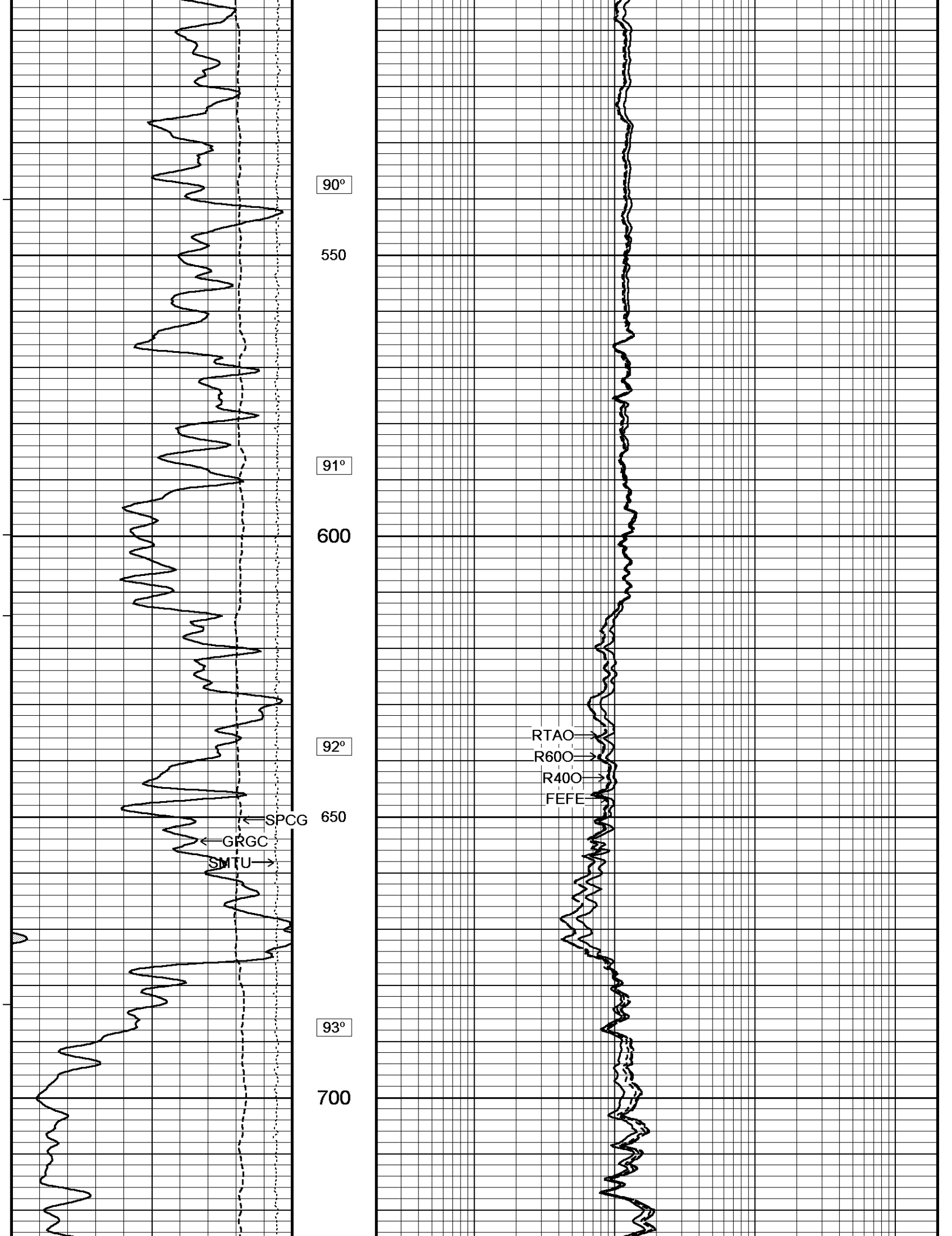
2 INCH MAIN LOG

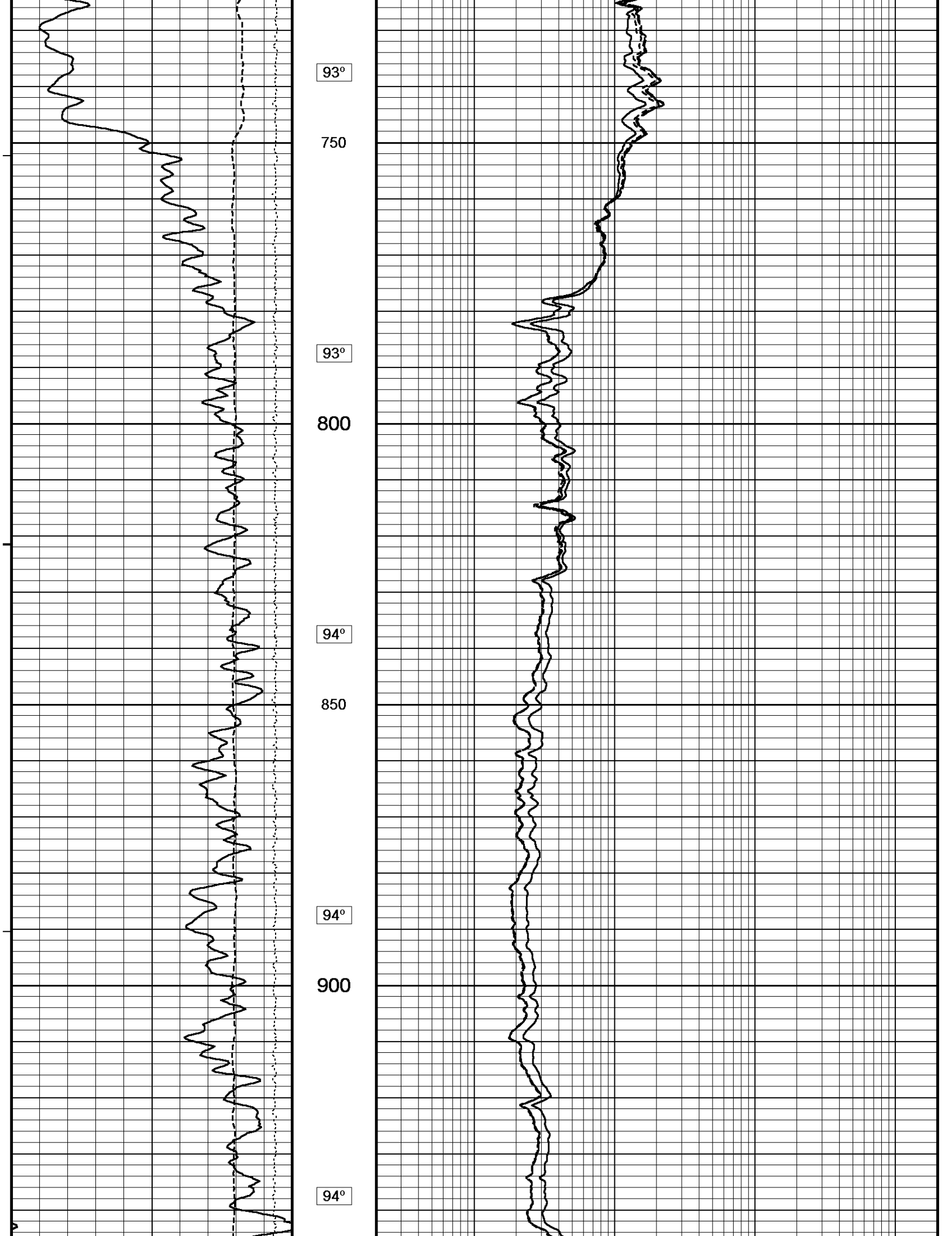
5 INCH MAIN LOG

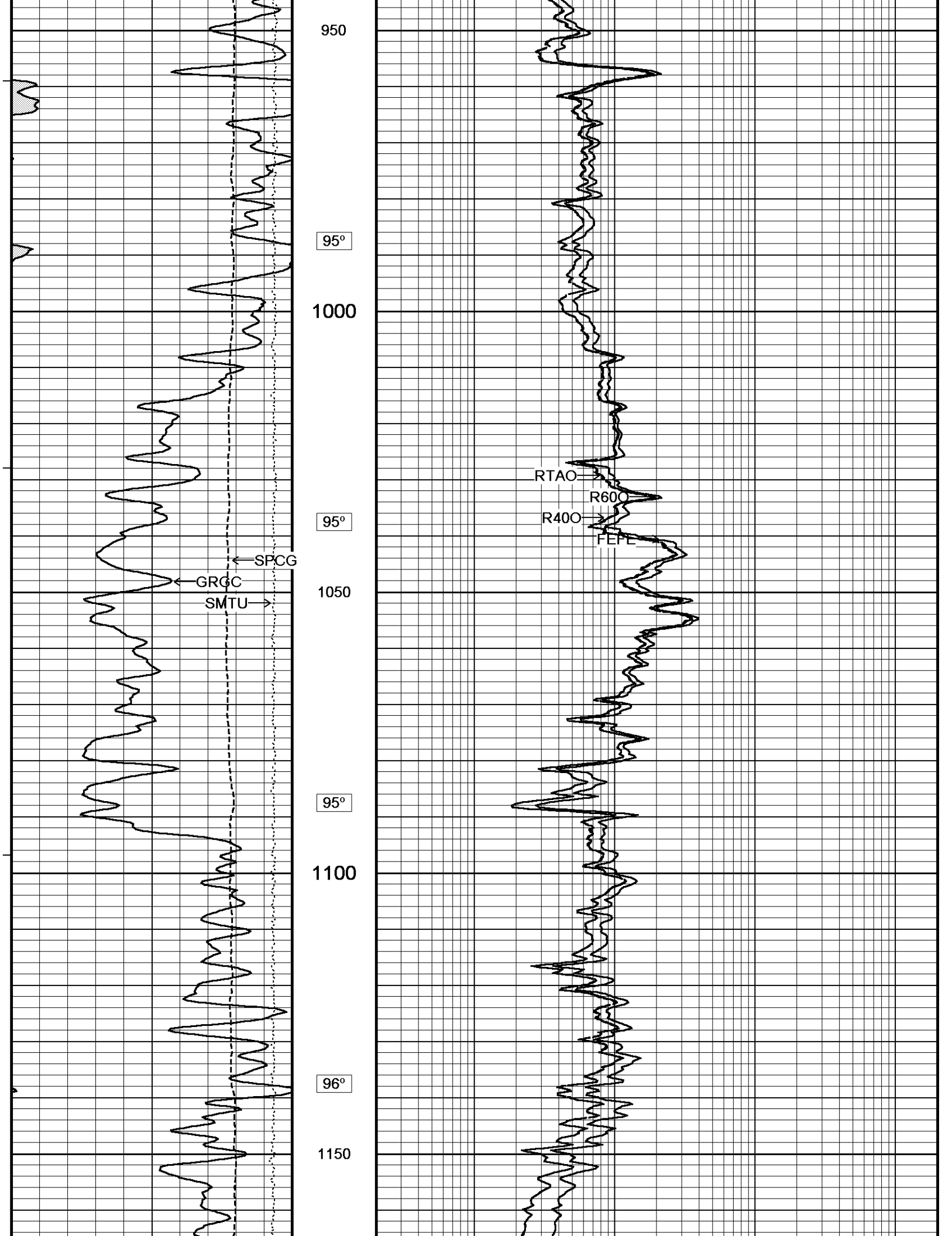
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-DEC-2014 10:20
Filename: C:\Minimus 14.05.5331\Data\Shakespeare (Burns #1-19)\MAIN PASS.dta
Recorded on 22-DEC-2014 07:24
System Versions: Logged with 14.05.5331 Plotted with 14.05.5331

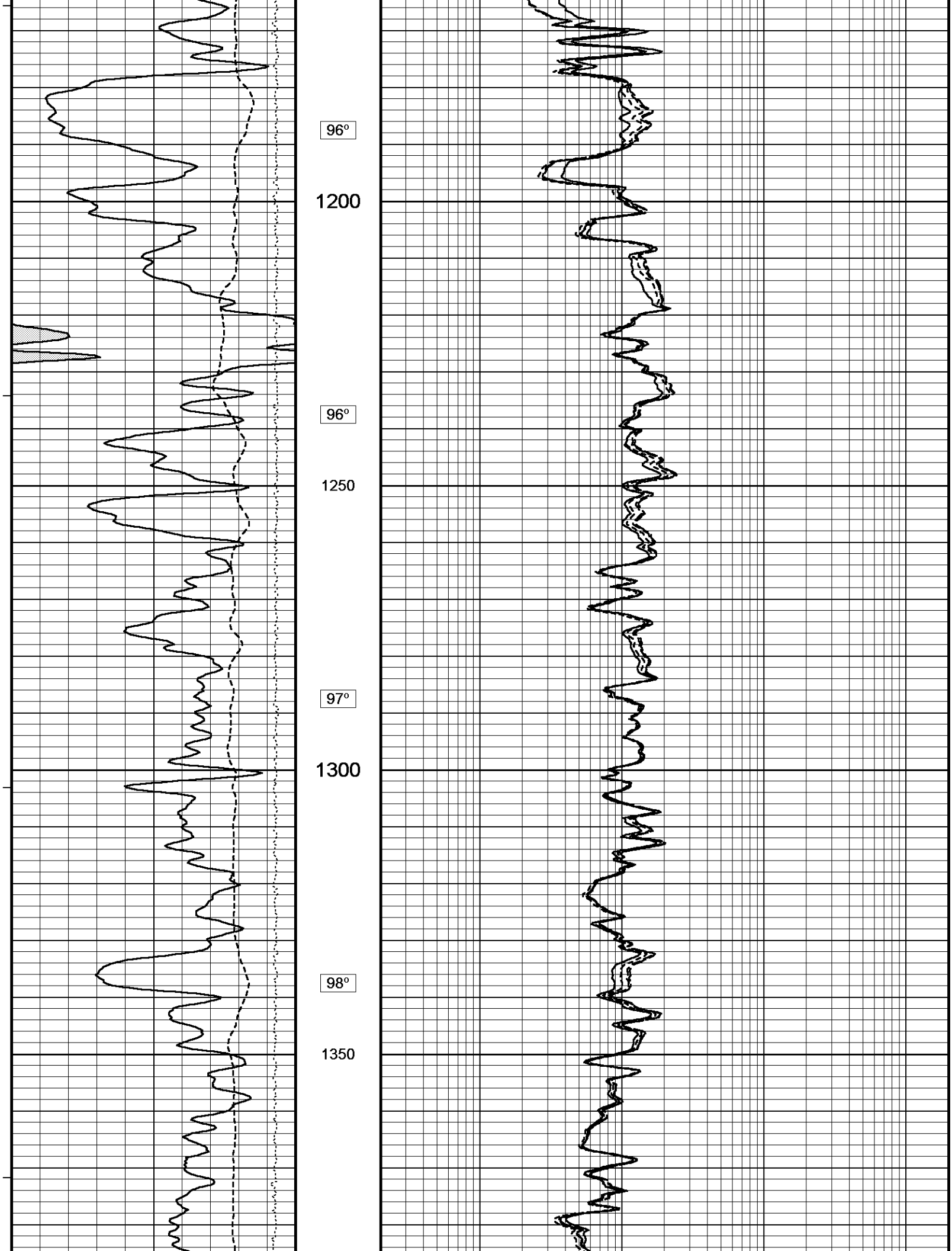


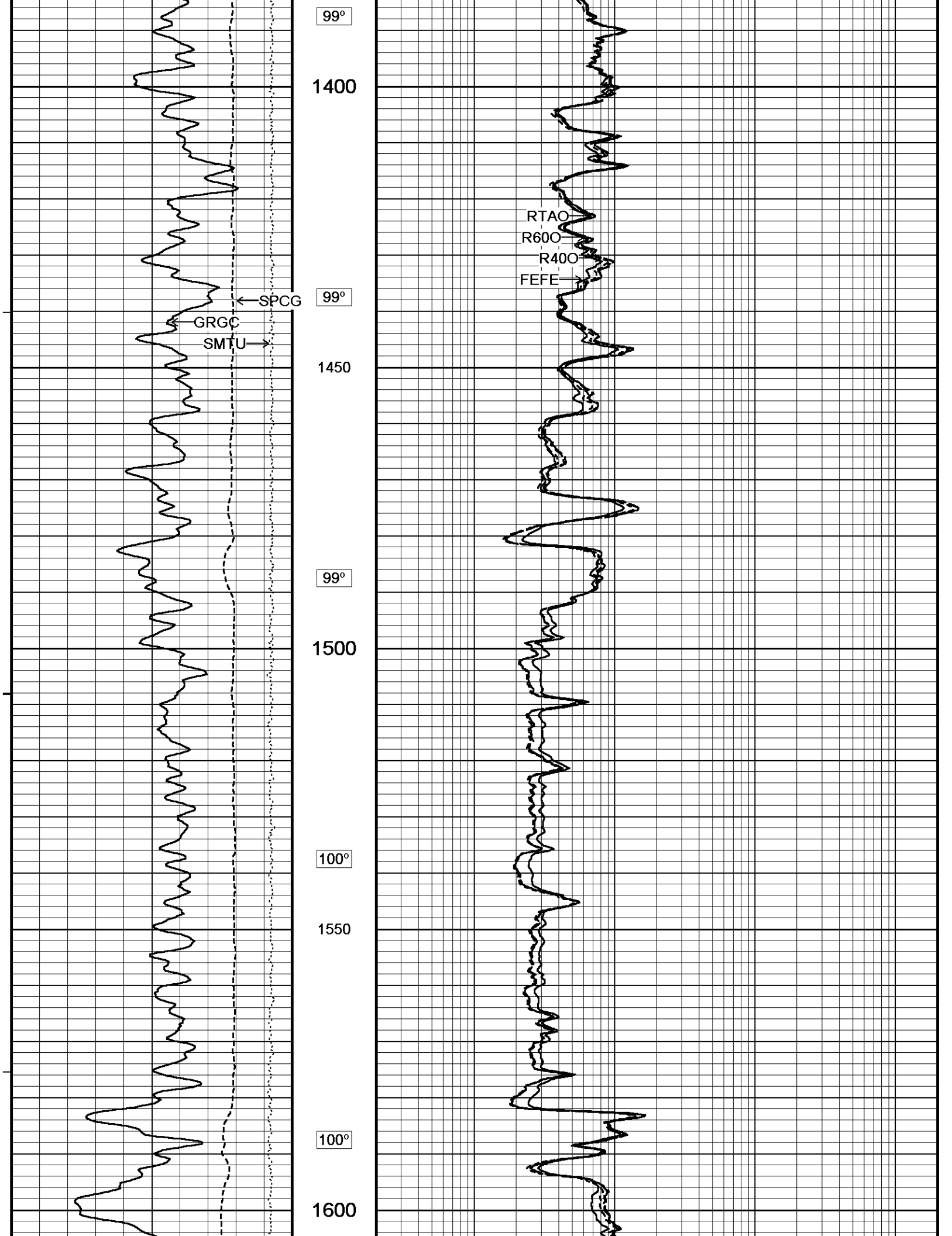

300
86°
350
87°
400
89°
450
89°
500

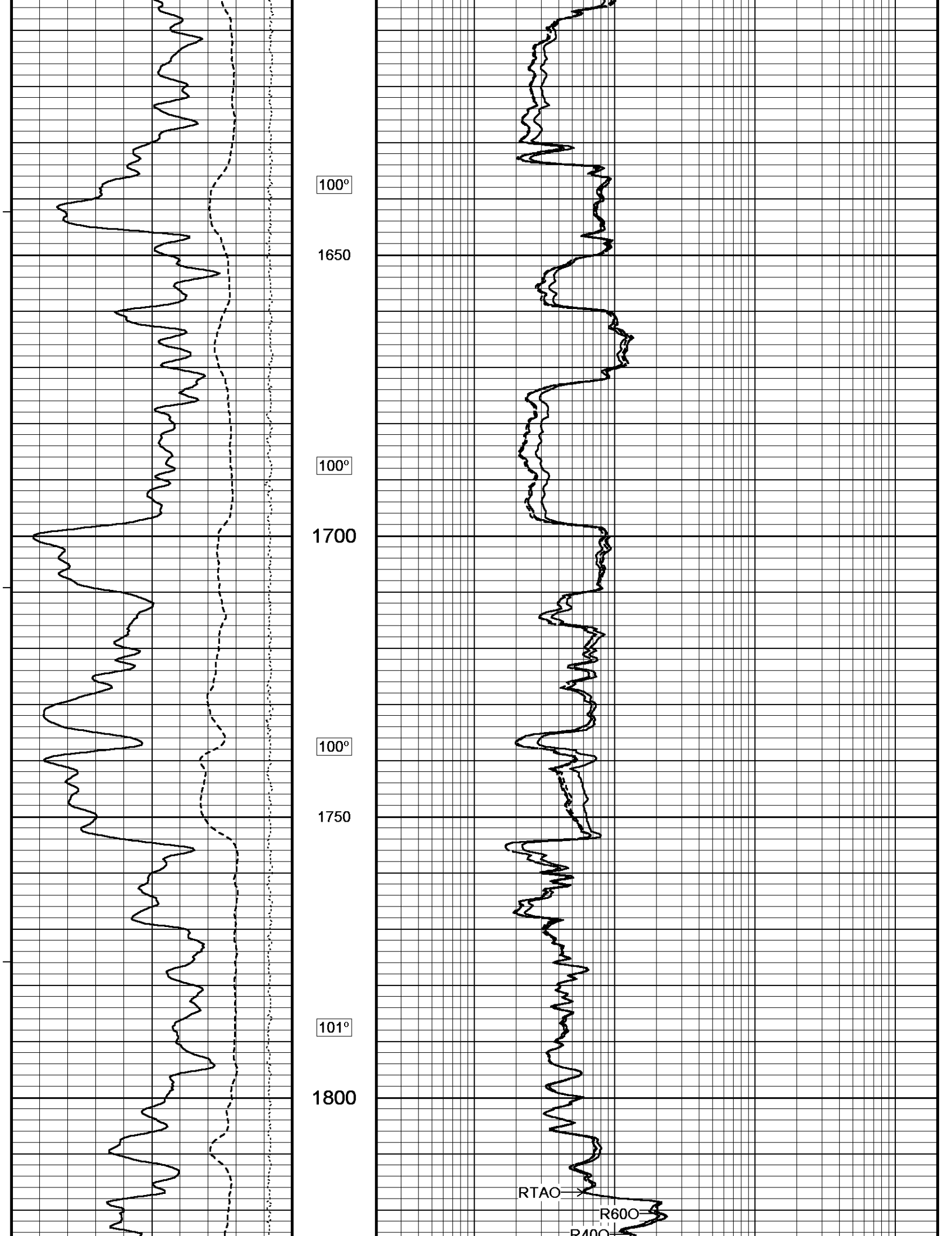

90°
550
91°
600
92°
650
93°
700
SPCG
GRGC
SMTU
RTAO
R60O
R40O
FEFE

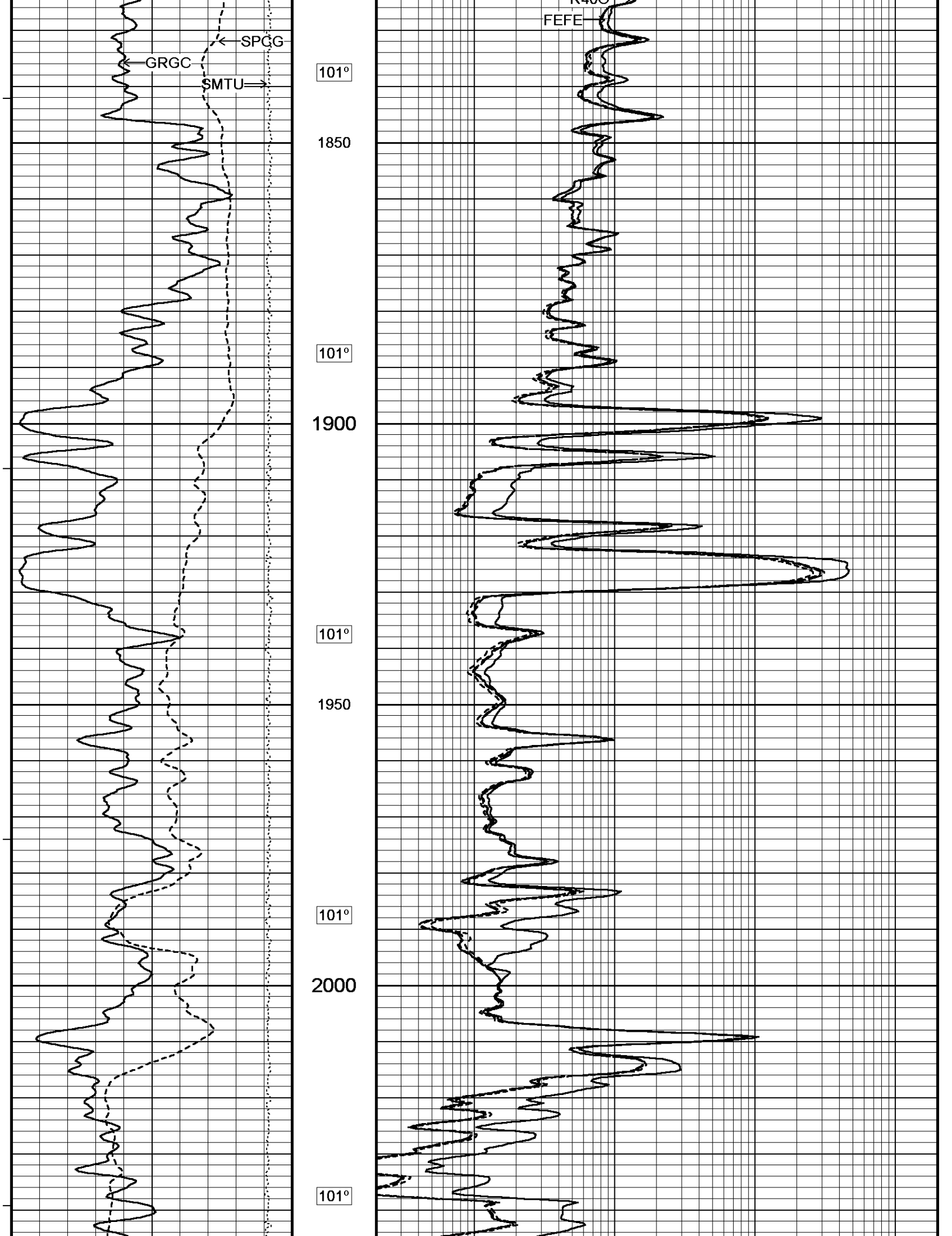

93°
750
93°
800
94°
850
94°
900
94°

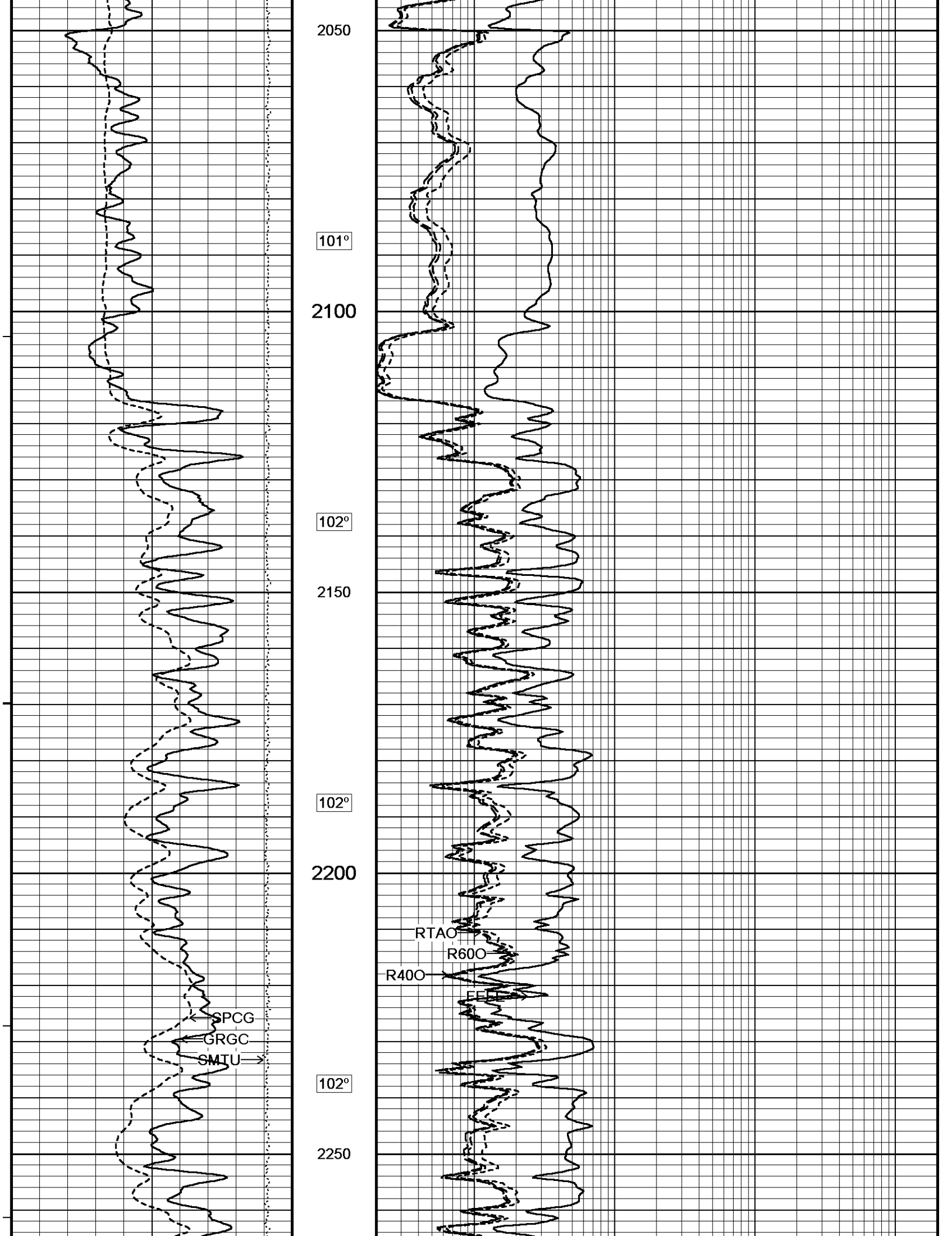

950
95°
1000
95°
SPCG
GRCC
SMTU
1050
95°
1100
96°
1150
RTAO
R60O
R40O
FEFE

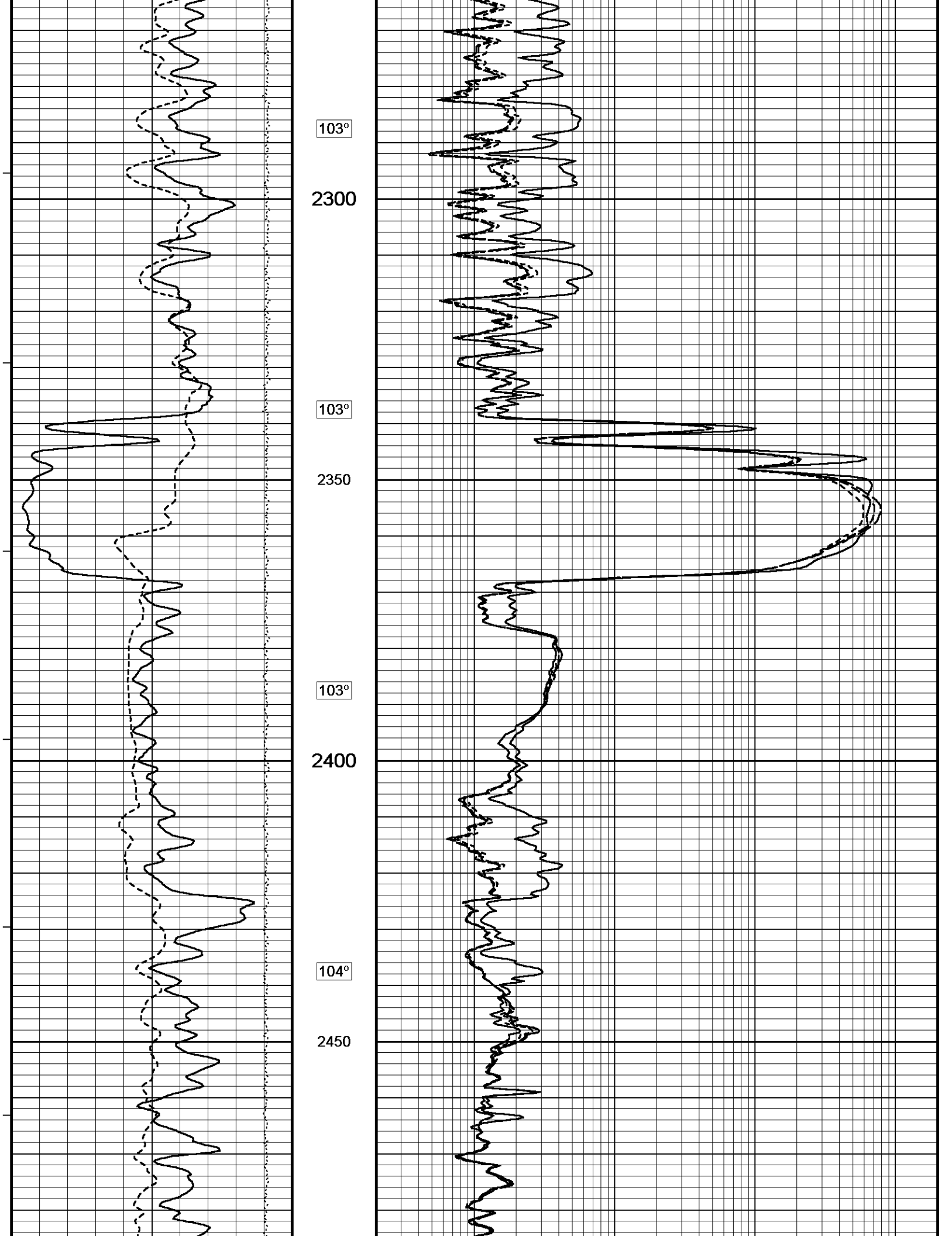

96°
1200
96°
1250
97°
1300
98°
1350

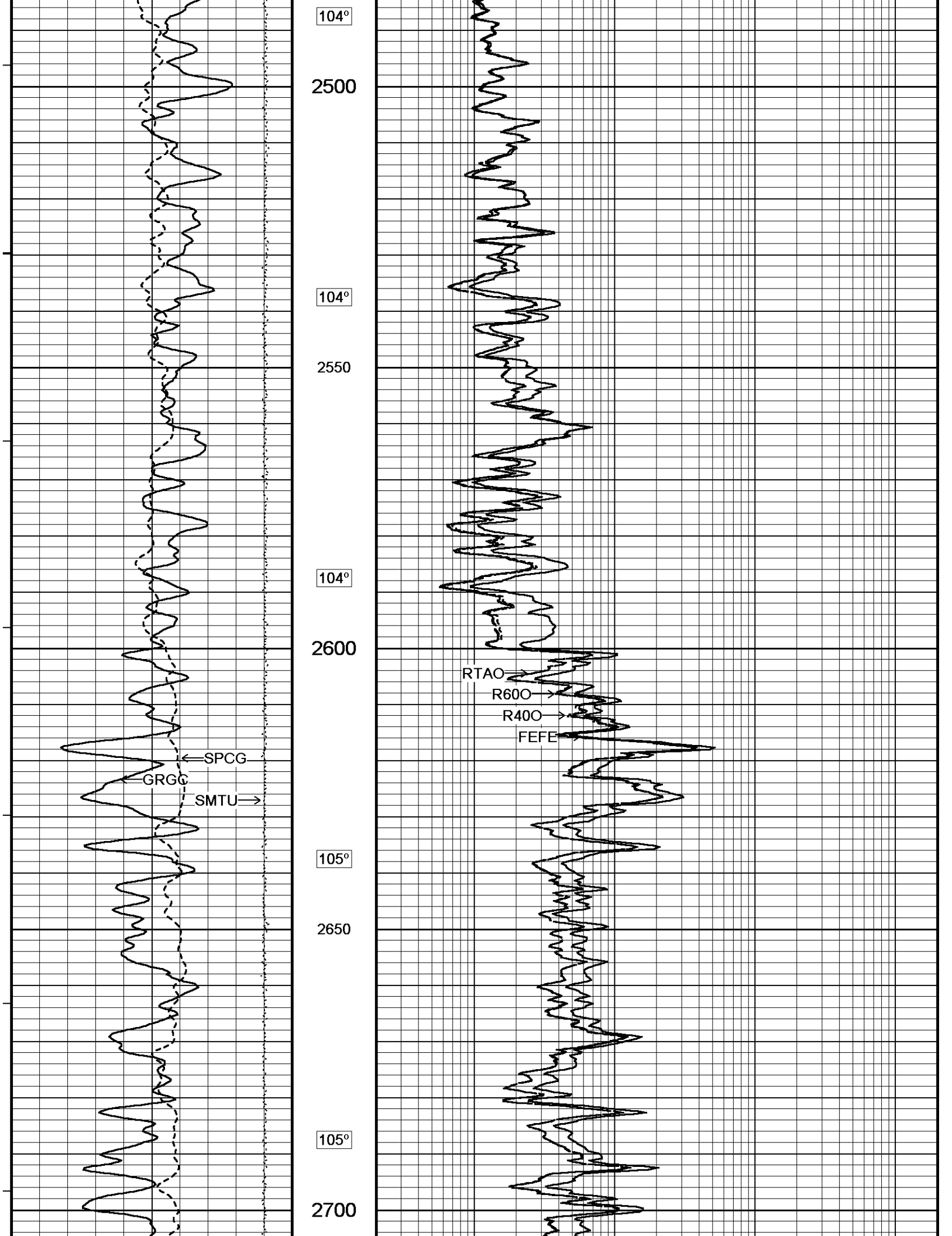

99°
1400
99°
SPCG
GRGC
SMTU
1450
99°
1500
100°
1550
100°
1600
RTAO
R60O
R40O
FEFE

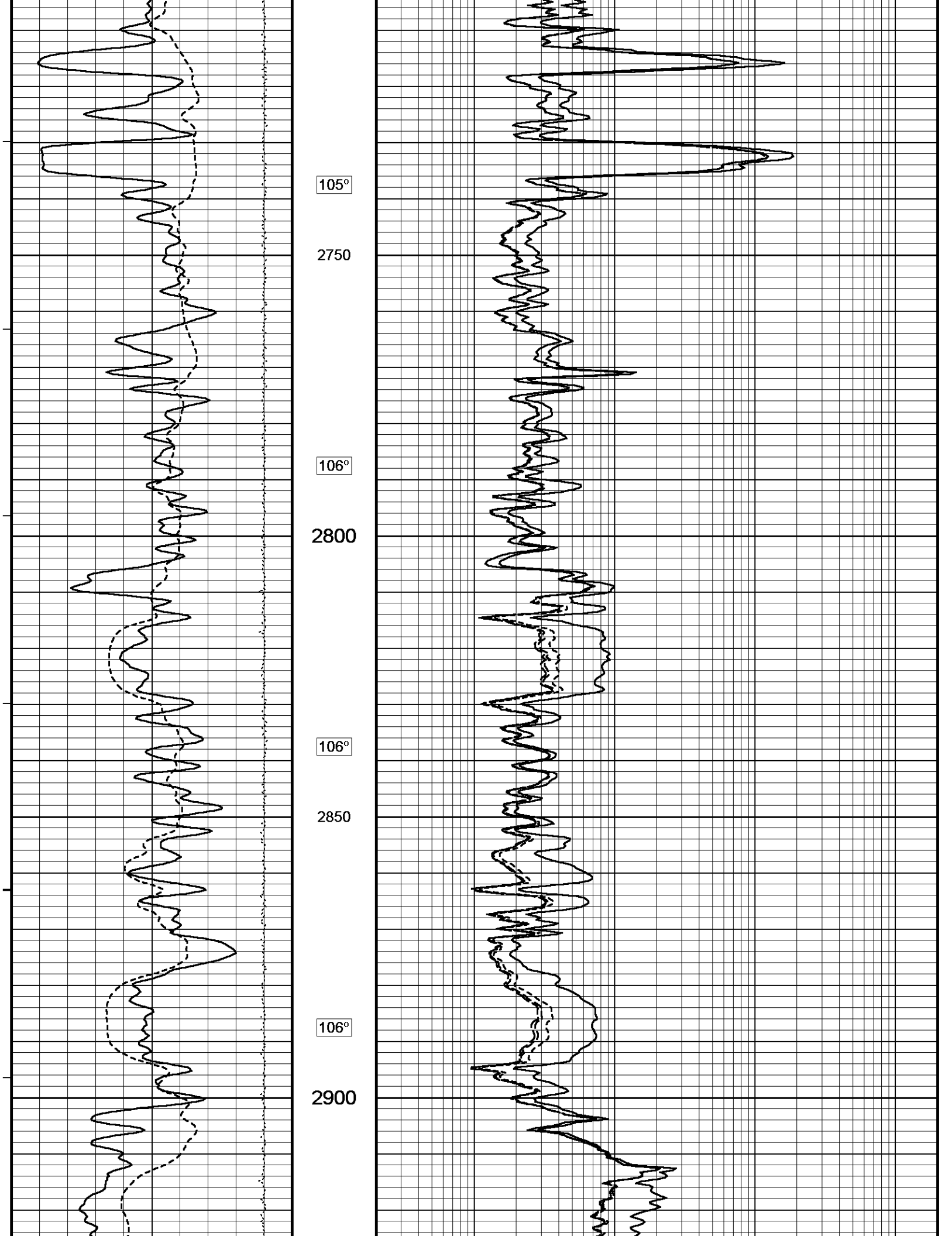

100º
1650
100º
1700
100º
1750
101º
1800
RTAO
R60O
R40O

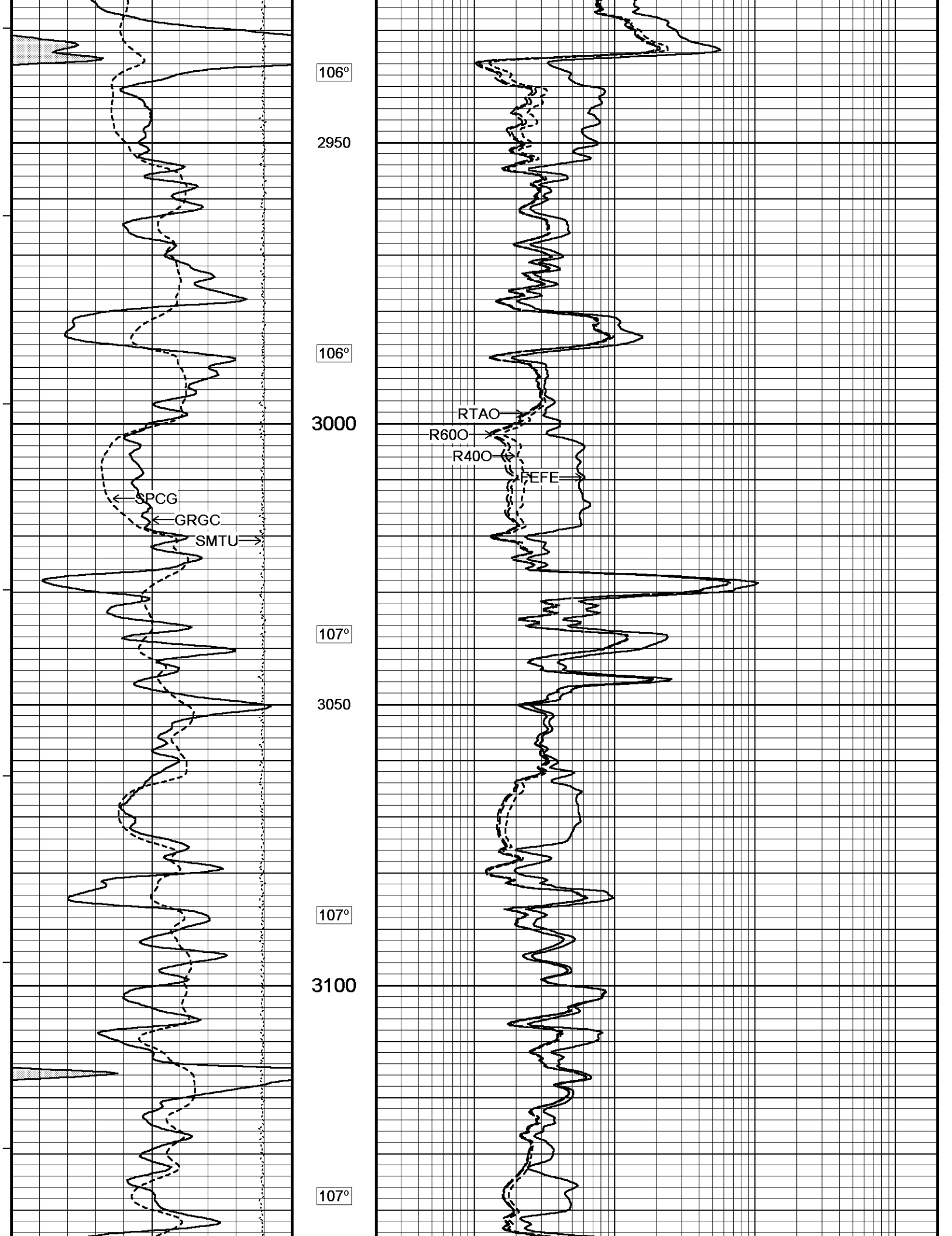

SPCG
GRGC
SMTU
R40C
FEFE
101°
1850
101°
1900
101°
1950
101°
2000
101°

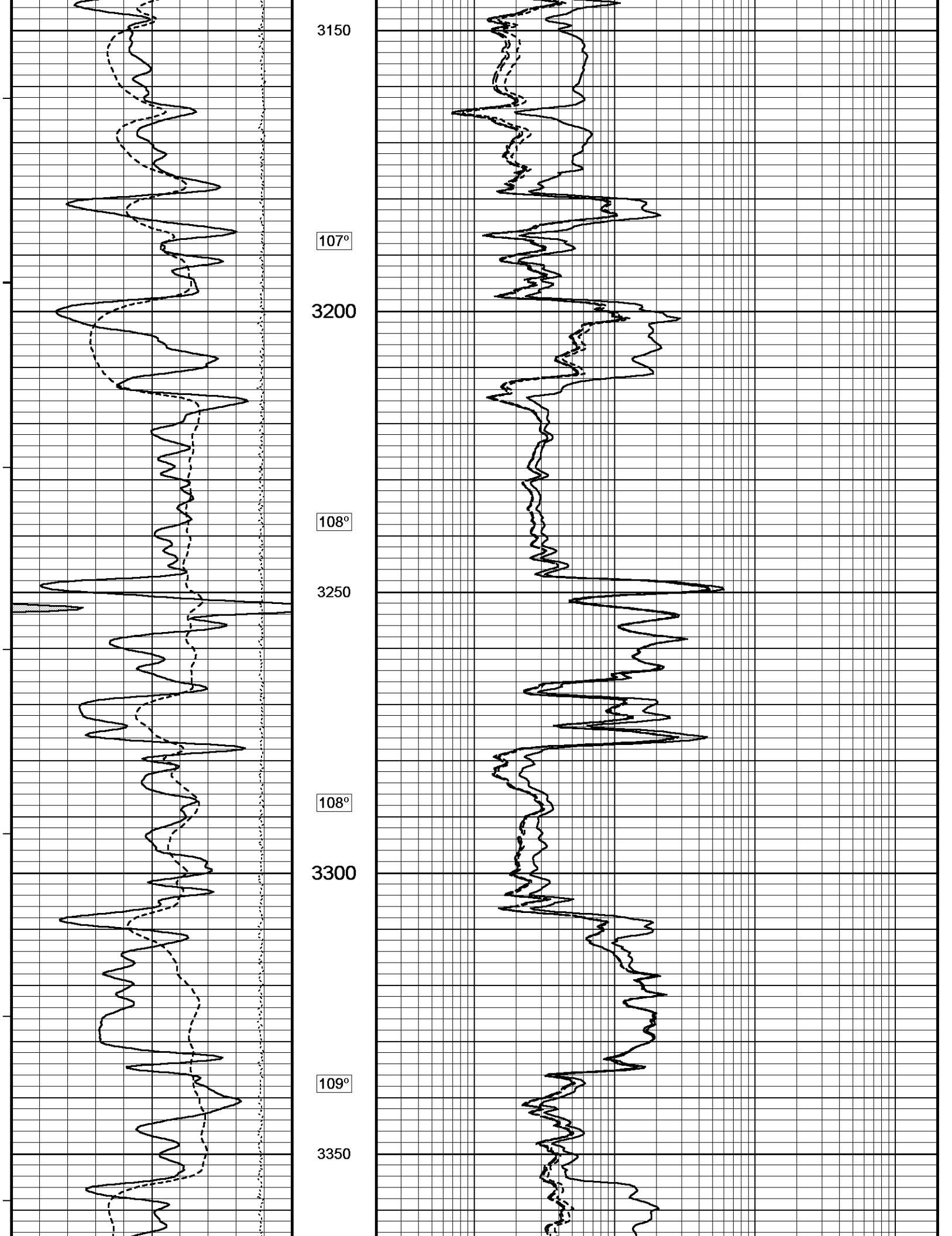

2050
101°
2100
102°
2150
102°
2200
RTAO
R60O
R40O
SPCG
GRGC
SMTU
102°
2250

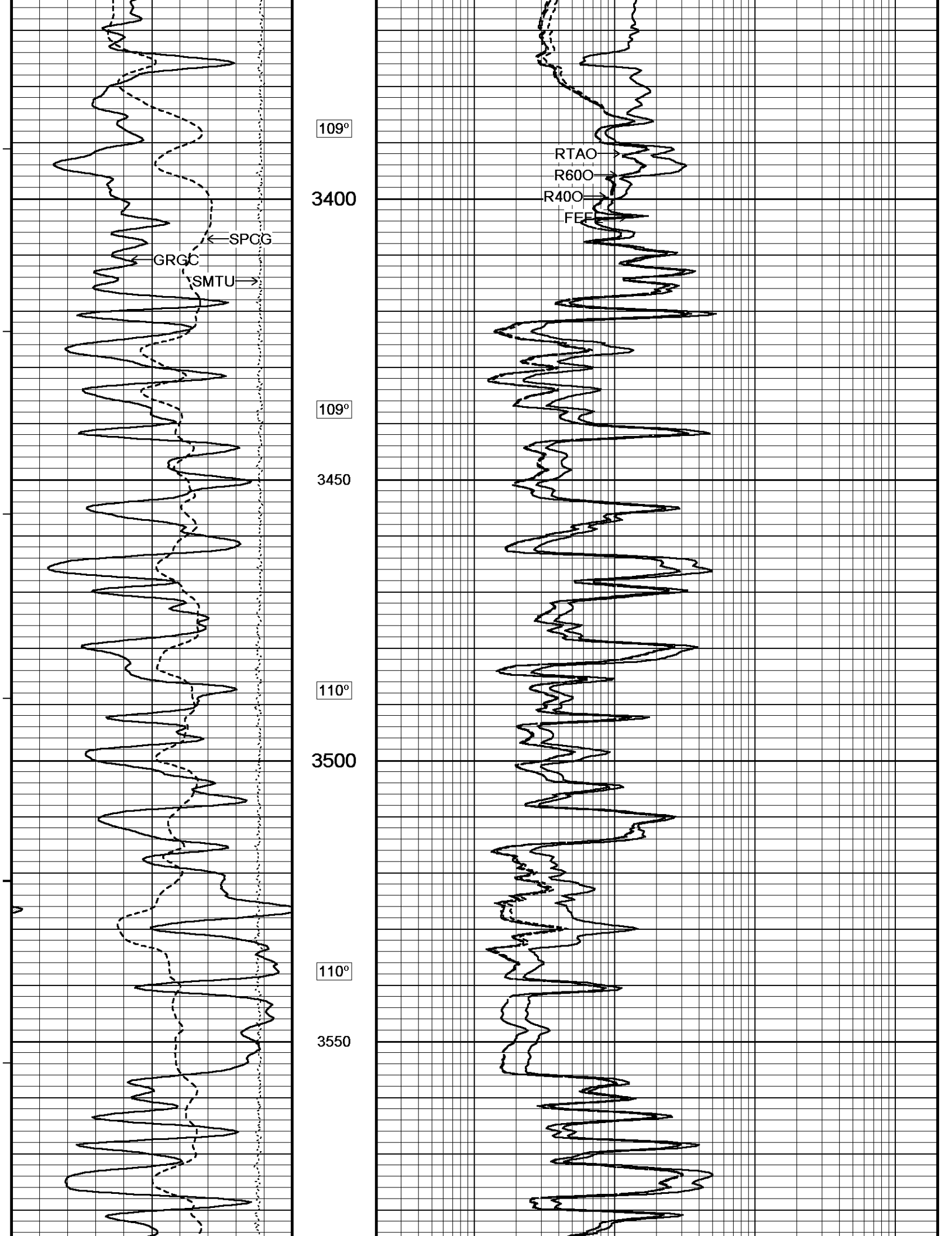

103°
2300
103°
2350
103°
2400
104°
2450

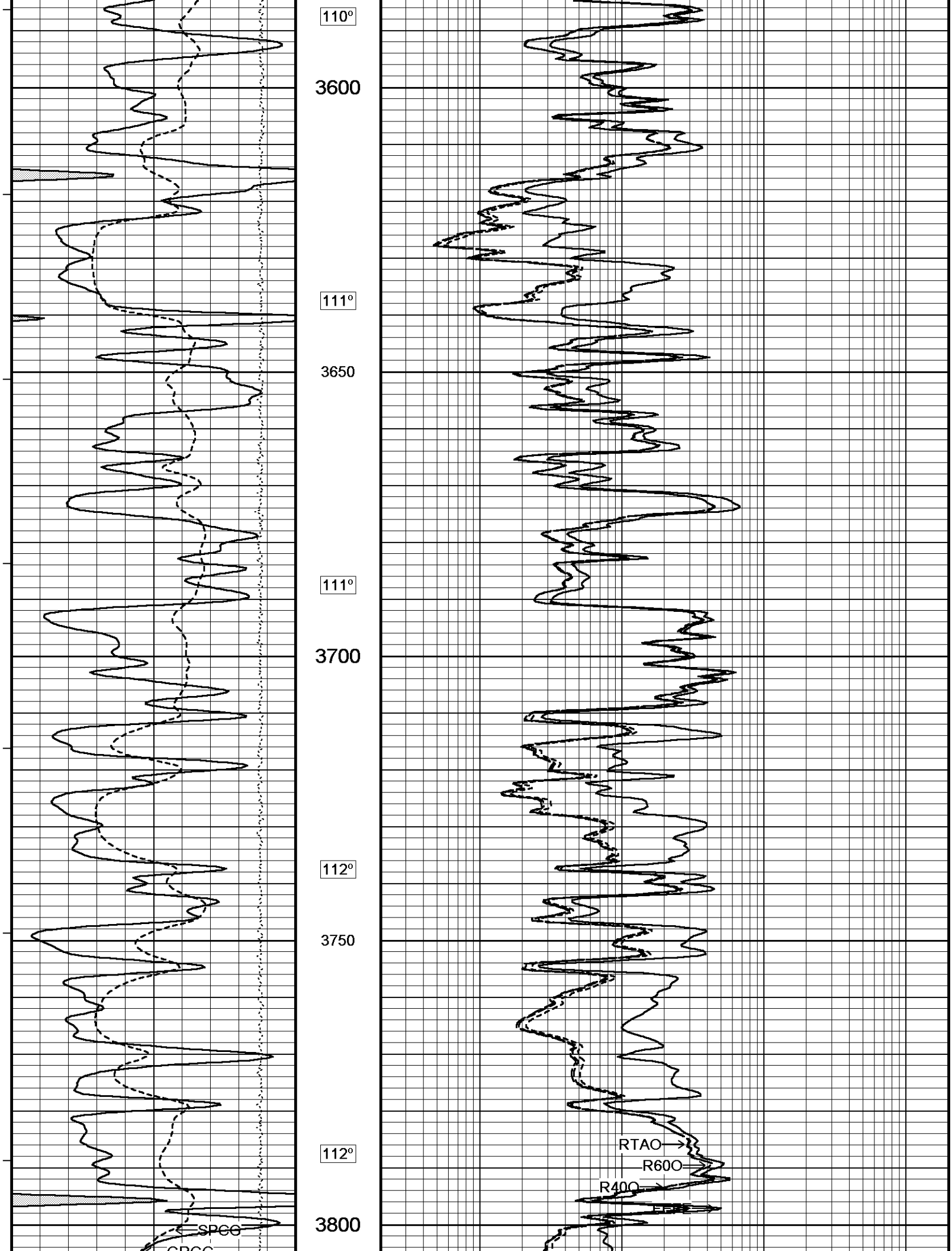

104°
2500
104°
2550
104°
2600
105°
2650
105°
2700
SPCG
GRGC
SMTU
RTAO
R60O
R40O
FEFE

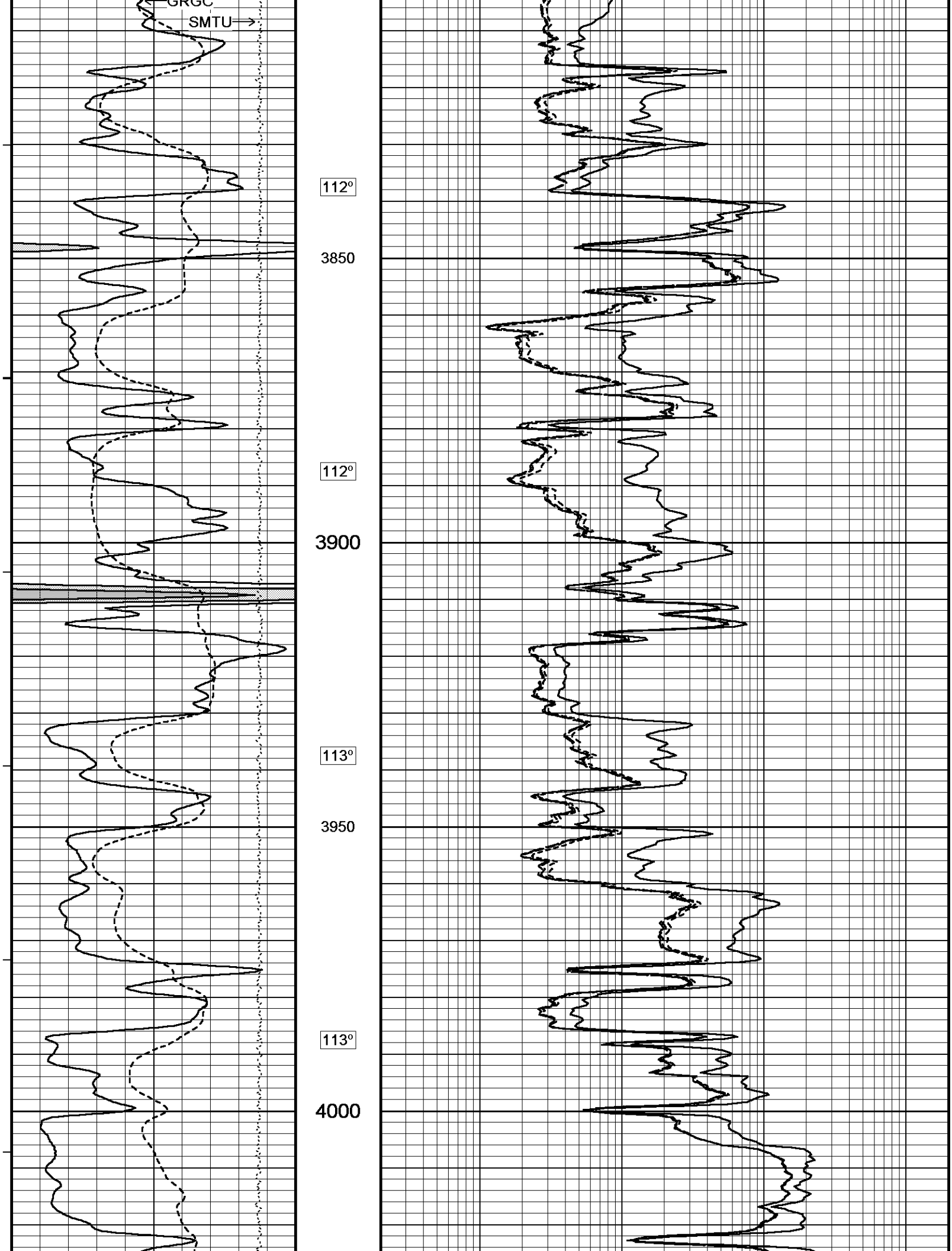

105º
2750
106º
2800
106º
2850
106º
2900

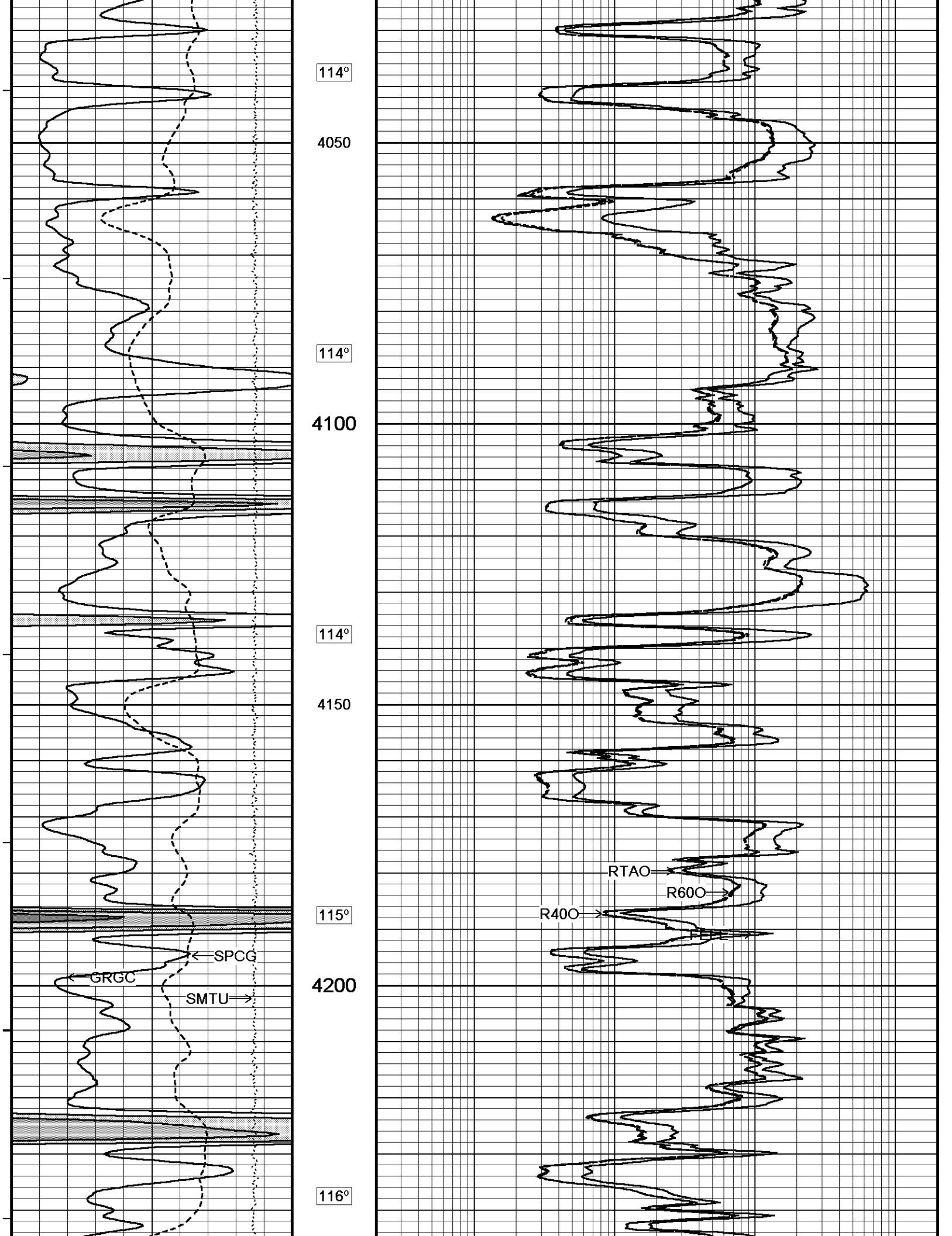

106º
2950
106º
3000
107º
3050
107º
3100
107º
SPCG
GRGC
SMTU
RTAO
R60O
R40O
PEFE

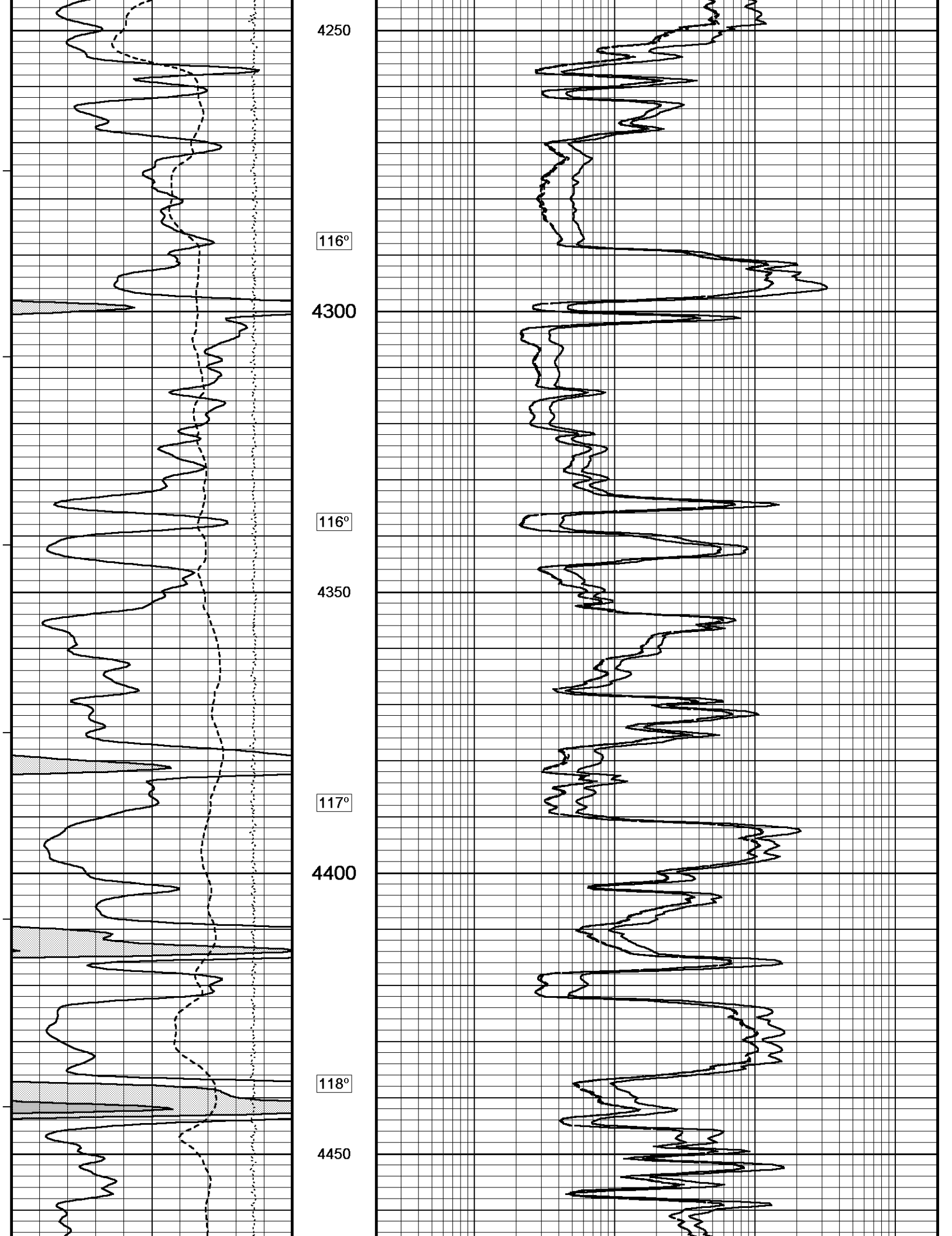

3150
107°
3200
108°
3250
108°
3300
109°
3350

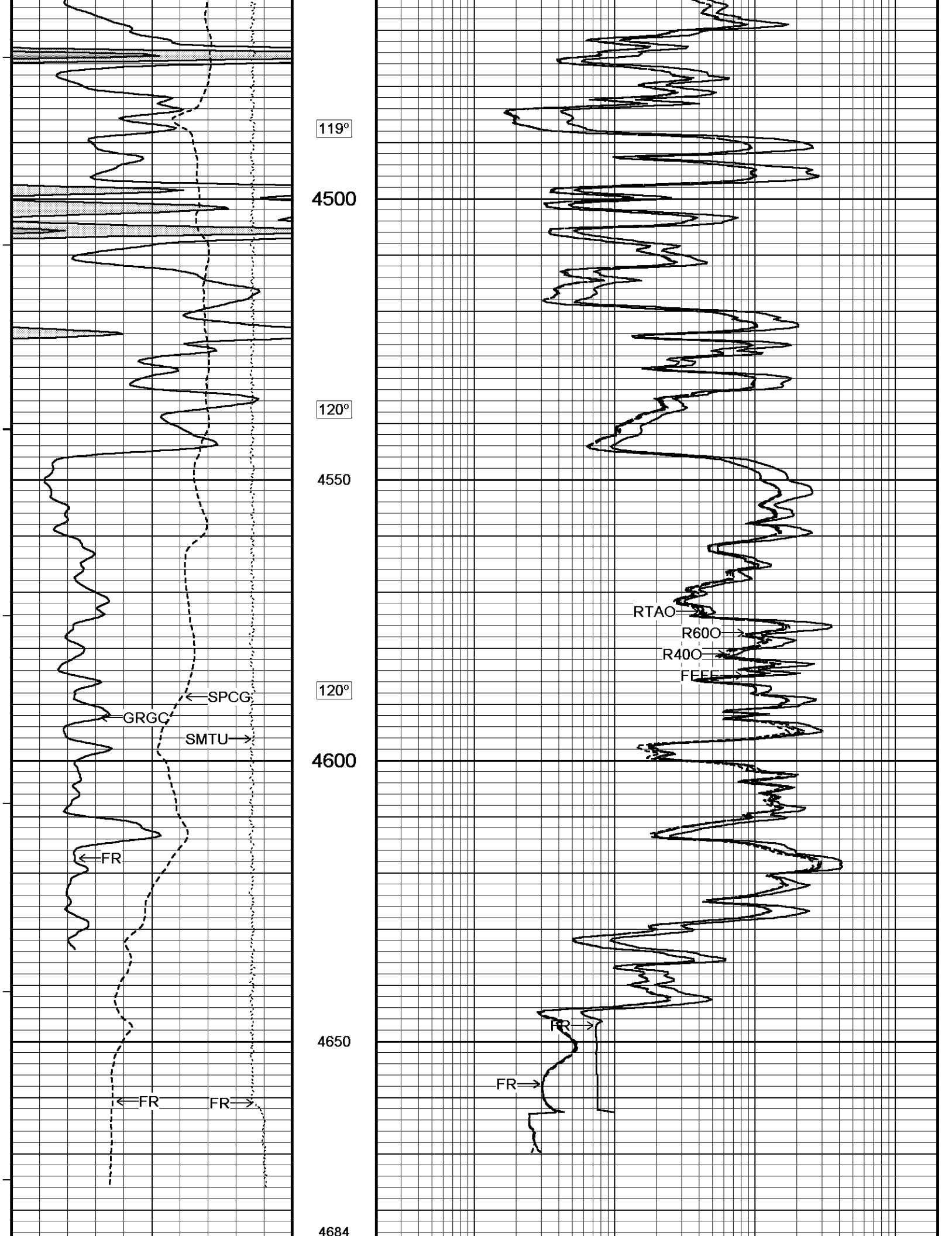

109°
3400
SPCG
GRCC
SMTU
109°
3450
110°
3500
110°
3550
RTAO
R60O
R40O
FEET


110º
3600
111º
3650
111º
3700
112º
3750
112º
3800
SPCO
RTAO
R60O
R40O


GRGC
SMTU
112°
3850
112°
3900
113°
3950
113°
4000


114°
4050
114°
4100
114°
4150
115°
SPCG
GRGC
SMTU
4200
116°
RTAO
R60O
R40O


4250
116°
4300
116°
4350
117°
4400
118°
4450


119°
4500
120°
4550
120°
SPCG
GRGC
SMTU
4600
FR
4650
FR
FR
4684
RTAO
R60O
R40O
FEEE
FR
FR

Depth In Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Borehole Temp in deg F

Spontaneous Potential
millivolts
− → | 20 | ← +

DST Uphole Tension
pounds
5000 0

Replay Scale 1:240

Shallow FE
ohm metres
0.20 2000
1 10 100 1000

Array Ind. One Res 40
ohm metres
0.20 2000
1 10 100 1000

Array Ind. One Res 60
ohm metres
0.20 2000
1 10 100 1000

Array Ind. One Res Rt
ohm metres
0.20 2000
1 10 100 1000

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-DEC-2014 10:20
Filename: C:\Minimus 14.05.5331\Data\Shakespeare (Burns #1-19)\MAIN PASS.dta
Recorded on 22-DEC-2014 07:24
System Versions: Logged with 14.05.5331 Plotted with 14.05.5331

5 INCH MAIN LOG

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-DEC-2014 10:20
Filename: C:\Minimus 14.05.5331\Data\Shakespeare (Burns #1-19)\REPEAT PASS.dta
Recorded on 22-DEC-2014 06:54
System Versions: Logged with 14.05.5331 Plotted with 14.05.5331

Depth in Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Borehole Temp in deg F

Spontaneous Potential
millivolts
− → | 20 | ← +

DST Uphole Tension
pounds
5000 0

Replay Scale 1:240

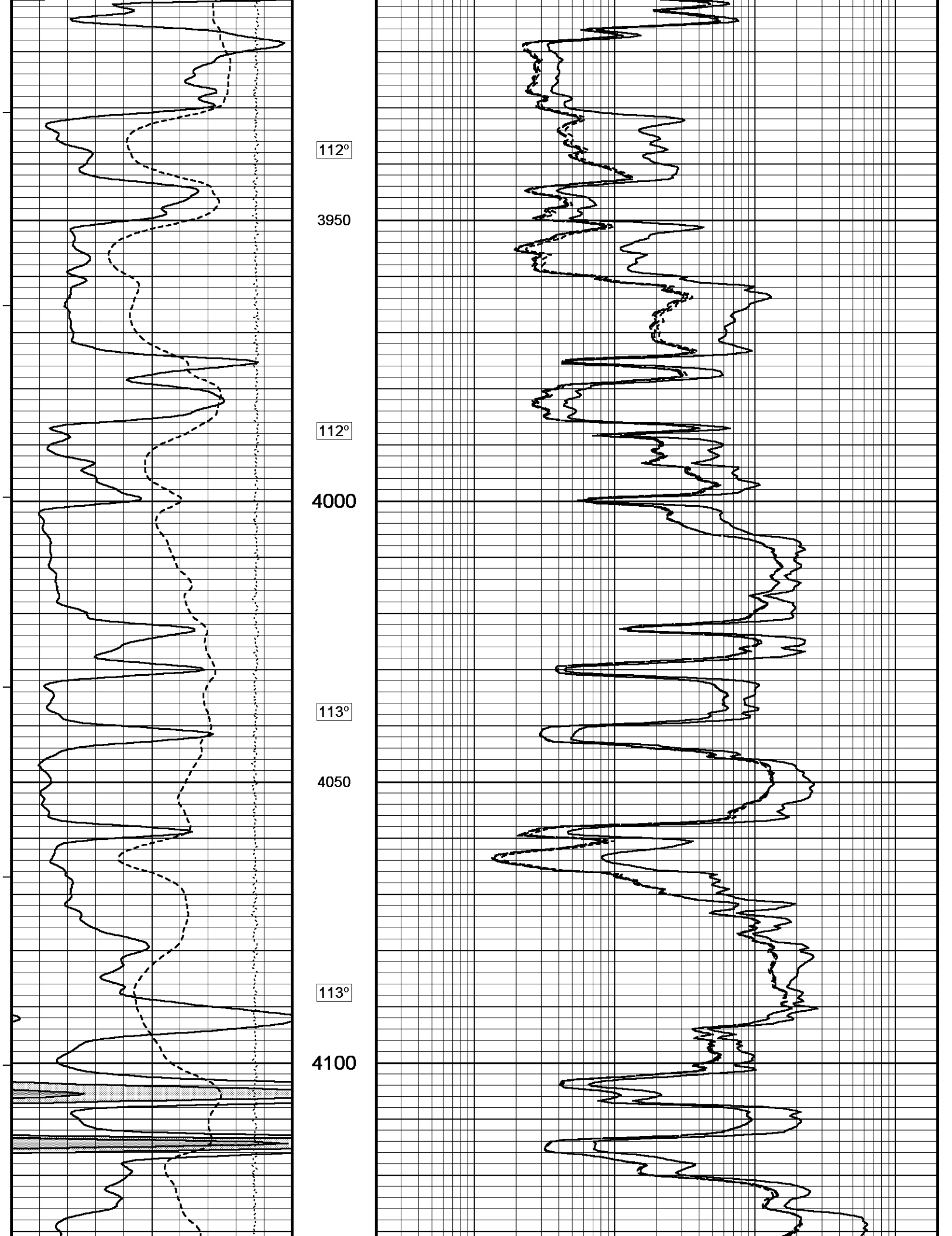
3900

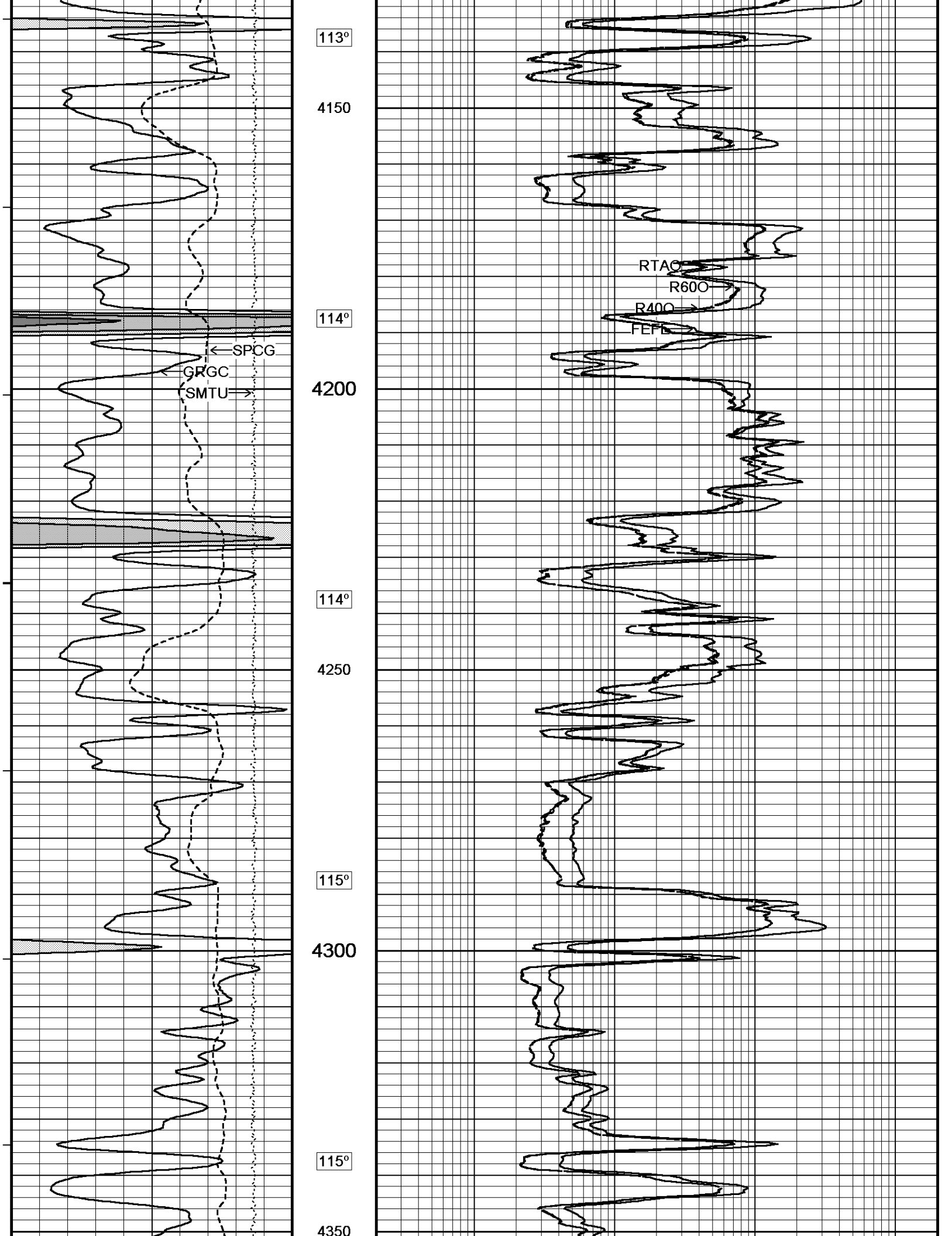
Shallow FE
ohm metres
0.20 2000
1 10 100 1000

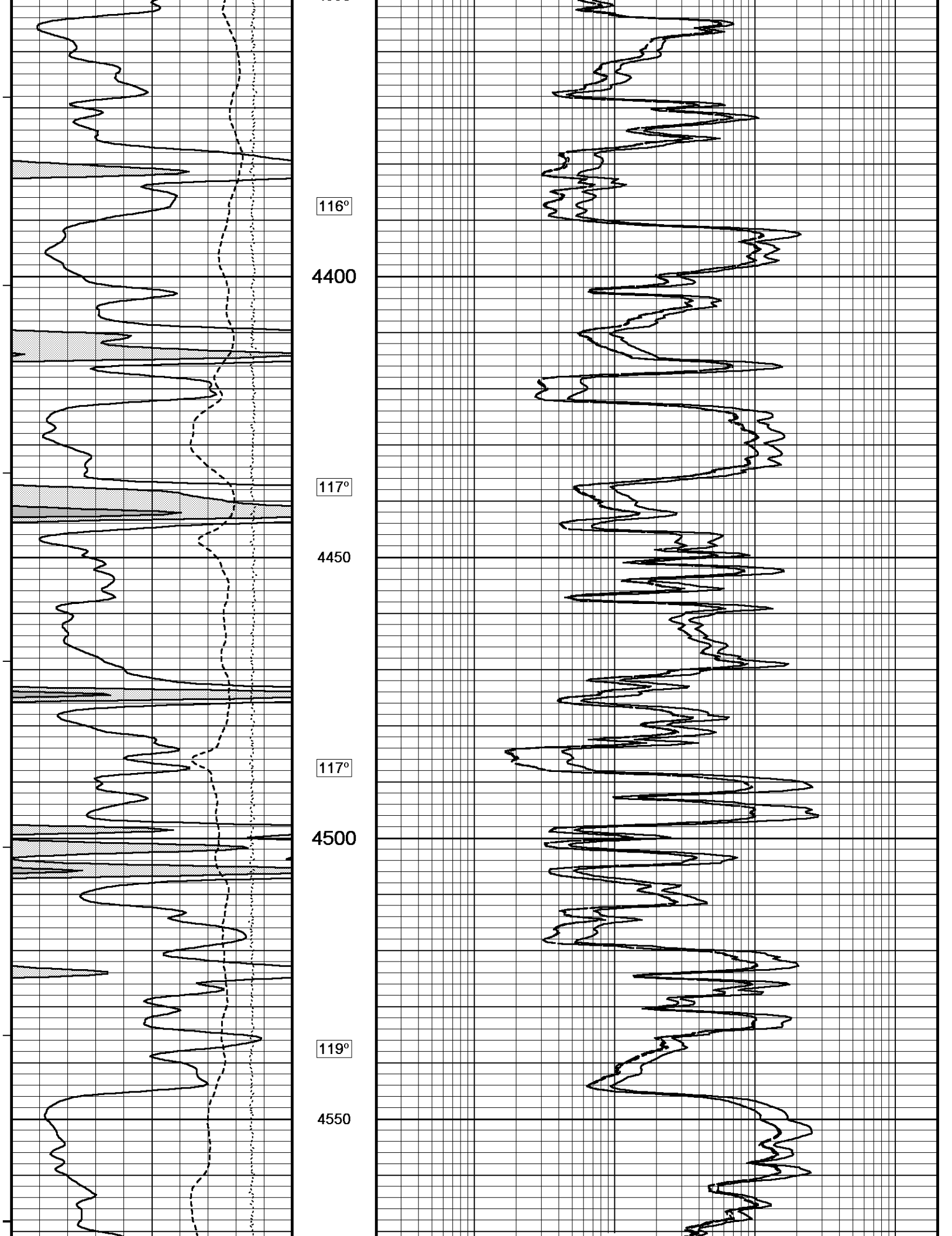
Array Ind. One Res 40
ohm metres
0.20 2000
1 10 100 1000

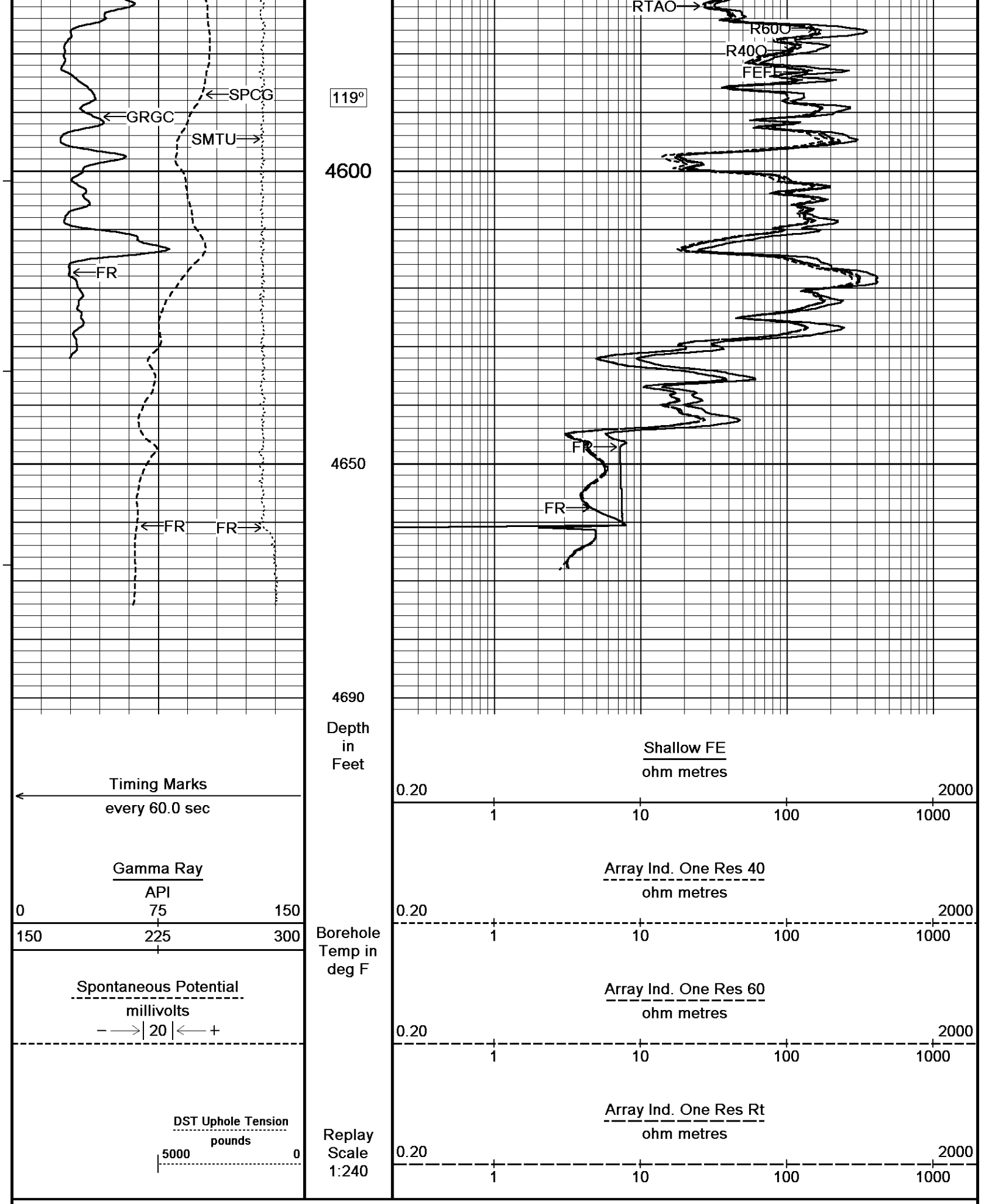
Array Ind. One Res 60
ohm metres
0.20 2000
1 10 100 1000

Array Ind. One Res Rt
ohm metres
0.20 2000
1 10 100 1000


112°
3950
112°
4000
113°
4050
113°
4100


113°
4150
114°
SPCG
GRGC
SMTU
4200
114°
4250
115°
4300
115°
4350
RTAO
R60O
R40O
FEFE


116°
4400
117°
4450
117°
4500
119°
4550



Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 22-DEC-2014 10:20

Filename: C:\Minimus 14.05.5331\Data\Shakespeare (Burns #1-19)\REPEAT PASS.dta

Recorded on 22-DEC-2014 06:54

System Versions: Logged with 14.05.5331 Plotted with 14.05.5331

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 14.05.5331\Data\Shakespeare (Burns #1-19)\DATA.dta

General Constants All 000

Last Edited on 22-DEC-2014,05:34

General Parameters		
Mud Resistivity	1.250	ohm-metres
Mud Resistivity Temperature	96.000	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	Crossplot 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 22-DEC-2014 05:59

Reading No	Measured	Calibrated (lbs)
1	15275.94	0.00
2	15875.13	407.90

High Resolution Temperature Calibration MCG-D.K 443

Field Calibration on 05-MAR-2014,20:50

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

High Resolution Temperature Constants MCG-D.K 443

Last Edited on 22-JUL-2014,11:40

Pre-filter Length	11

SP Calibration MCG-D.K 443

Field Calibration on 29-SEP-2014 14:22

	Measured	Calibrated (mV)
Reference 1	102.0	100.7
Reference 2	-99.4	-100.8

Gamma Calibration MCG-D.K 443

Field Calibration on 06-DEC-2014 23:53

	Measured	Calibrated (API)
Background	74	49
Calibrator (Gross)	1165	774
Calibrator (Net)	1092	725

Gamma Calibration Tolerances MCG-D.K 443

Ratio 1.506 (1.40 – 1.475 – 1.55) Counts/API

Gamma Constants MCG-D.K 443

Last Edited on 22-DEC-2014,05:40

Gamma Calibrator Number	GRC038	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.11	gm/cc
Caliper Source for Processing	Bit Size	
Tool Position	Centred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

Micro-Resistivity Caliper Constants MMR-A 11

Last Edited on

Sonde Configuration Resistivity Mode

Micro Normal and Micro Inverse Calibration MMR-A 11

Base Calibration on 01-DEC-2014 10:00
Field Check on 06-DEC-2014 23:38

Base Calibration

Channel	Measured Resistor 1	Measured Resistor 2	Calibrated (ohm-m) Resistor 1	Calibrated (ohm-m) Resistor 2
Micro Normal	10.2	49.9	5.1	25.6
Micro Inverse	10.0	49.5	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	93.7	93.7
Micro Inverse	62.3	62.3

Micro Normal & Micro Inverse Calibration Tolerance MMR-A 11

Micro Normal Res. 1	10.2	-5% 10.0 +5%	ohm	Micro Normal Res. 2	49.9	-5% 50.0 +5%	ohm
Micro Inverse Res. 1	10.0	-5% 10.0 +5%	ohm	Micro Inverse Res. 2	49.5	-5% 50.0 +5%	ohm
Micro Normal Base Check	93.7	-2% 93.28 +2%	ohm-m				
Micro Inverse Base Check	62.3	-2% 62.20 +2%	ohm-m				
Micro Normal Field Check	93.7	-2% 93.7 +2%	ohm-m				
Micro Inverse Field Check	62.3	-2% 62.3 +2%	ohm-m				

Micro Normal and Micro Inverse Constants MMR-A 11

Last Edited on 10-JUL-2014,16:35

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159	
Micro Normal K Factor	0.5110	
Micro Inverse K Factor	0.3380	
Standoff Offset	0.0000	inches

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 Ref 1	Measured Ref 2	Calibrated (ohm-m) Ref 1	Calibrated (ohm-m) Ref 2
0.0	0.0	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 12-MAR-2014,18:50

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	N/A	
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.	N/A	

Caliper Calibration MMR-A 11

Base Calibration on 01-DEC-2014 09:55
Field Calibration on 06-DEC-2014 23:37

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14033	5.98
2	17158	7.97
3	20363	9.86
4	24256	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.88	7.97

Caliper Calibration Tolerances MMR-A 11

Short Arm Field Cal. 7.88 in (7.77 – 7.97 – 8.17)

Neutron Calibration MDN-A.B 65

Base Calibration on 02-OCT-2014 11:43
Field Check on 06-DEC-2014 23:57

Base Calibration

	Measured Near	Measured Far	Calibrated (cps) Near	Calibrated (cps) Far
	3078	95	3714	110
Ratio	32.249		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	1681	2420
Ratio	0.695	

Field Check

	Calibrated (cps)	
	1669	2414
Ratio	0.691	

Neutron Calibration Tolerances MDN-A.B 65

Near Reading 3078 cps (-25% – 3500 – +25%)

Far Reading 95 cps (-50% – 106 – +50%)

Ratio 32.249 (-5% – 33 – +5%)

Base Check 0.695 (0.65 – 0.7 – 0.75)

Field Check 0.691 (0.675 – 0.695 – 0.715)

Neutron Constants MDN-A.B 65

Last Edited on 14-DEC-2014,20:36

Neutron Source Id	PN-521	
Neutron Jig Number	5824NE	
Air Hole Processing	Legacy	
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 01-DEC-2014 09:46
Field Check on 06-DEC-2014 23:36

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	963.7	126.8
Base Check		281.5
Field Check		281.6

FE Calibration Tolerances MFE-B.J 352

Reference 2 963.7 ohm (-3% – 980.0 – +3%)

Base Check 281.5 ohm-m (-2% – 277.0 – +2%)

Field Check	281.6	-2% 281.5 +2%	ohm-m

FE Constants MFE-B.J 352

Last Edited on 06-DEC-2014,23:34

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	Check Value: Temperature Corrected	
Temp. for Rm Corr.	MCG External Temperature	
Stand-off	0.5	inches

High Resolution Temperature Calibration MAI-A.A 158

Field Calibration on 03-APR-2014,15:43

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

High Resolution Temperature Constants MAI-A.A 158

Last Edited on 22-MAY-2014,10:26

Pre-filter Length	11

Induction Calibration MAI-A.A 158

Base Calibration on 03-APR-2014,15:01
Field Check on 11-DEC-2014 09:52

Base Calibration

Test Loop Calibration

Channel	Measured Low	Measured High	Calibrated (mmho/m) Low	Calibrated (mmho/m) High
1	17.2	475.3	9.3	966.2
2	6.1	381.2	7.6	821.4
3	3.8	265.2	5.2	566.0
4	2.7	132.2	2.6	279.2
Array Temperature		22.3	Deg F	

Test Loop Calibration Verified 11-DEC-2014 09:50

Channel	Base Check (mmho/m) Low	Base Check (mmho/m) High	Field Check (mmho/m) Low	Field Check (mmho/m) High	
1	11.8	3814.7	11.8	3814.8	
2	30.0	3531.3	30.0	3531.3	
3	27.2	2982.0	27.2	2982.1	
4	18.1	2098.0	18.1	2098.0	
Deep	14.9	1944.0	14.9	1944.2	
Medium	41.1	3888.3	41.1	3888.4	
Shallow	47.3	5237.5	47.3	5237.4	
Array Temperature		52.0		51.7	Deg F

Induction Calibration Tolerances MAI-A.A 158

Low Conductivity 1	17.2	13.0 17.0 21.0	mmho/m	High Conductivity 1	475.3	430.0 475.0 520.0 mmho/m
Low Conductivity 2	6.1	4.5 6.0 7.5	mmho/m	High Conductivity 2	381.2	345.0 385.0 425.0 mmho/m
Low Conductivity 3	3.8	1.0 3.5 6.0	mmho/m	High Conductivity 3	265.2	240.0 260.0 280.0 mmho/m
Low Conductivity 4	2.7	0.0 2.0 4.0	mmho/m	High Conductivity 4	132.2	120.0 135.0 150.0 mmho/m
Background Vx 1	0.0	-110.0 -32.5 45.0	mmho/m	Phase Check Loop 1	0.0	-2.0 0.0 2.0 %
Background Vx 2	0.0	-35.0 20.0 75.0	mmho/m	Phase Check Loop 2	0.0	-2.0 0.0 2.0 %
Background Vx 3	0.0	-60.0 2.5 65.0	mmho/m	Phase Check Loop 3	0.0	-2.0 0.0 2.0 %
Background Vx 4	0.0	-50.0 -17.5 15.0	mmho/m	Phase Check Loop 4	0.0	-2.0 0.0 2.0 %

Induction Constants MAI-A.A 158

Last Edited on 14-DEC-2014,20:36

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	

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	Global Value: Temperature Corrected	
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
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 482

Base Calibration on 25-NOV-2014 10:21
Field Calibration on 06-DEC-2014 23:39

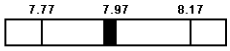
Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16588	3.99
2	26783	5.98
3	37020	7.97
4	46817	9.86
5	57838	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.93	7.97

Caliper Calibration Tolerances MPD-D.A 482

Short Arm Field Cal. 7.93 

in

Photo Density Calibration MPD-D.A 482

Base Calibration on 25-NOV-2014 10:39
Field Check on 06-DEC-2014 23:43

Density Calibration

Base Calibration	Measured Near	Measured Far	Calibrated (sdu) Near	Calibrated (sdu) Far
Background	1221	1393		
Reference 1	46352	21700	59556	30836
Reference 2	19381	2407	24941	2541

Field Check at Base

1220.9	1393.1

Field Check

1221.5	1392.6

PE Calibration

Base Calibration	WS	Measured WH	Ratio	Calibrated Ratio
Background	231	1093		
Reference 1	20382	46170	0.447	0.371
Reference 2	5959	16947	0.318	0.270

Reference 2	5852	19247	0.310	0.272
Field Check at Base	230.8	1092.6		
Field Check	231.7	1093.4		

Photo Density Calibration Tolerances MPD-D.A 482

Near Density Ratio	2.49	-5% 2.52 +5%	Far Density Ratio	20.03	-5% 21.00 +5%
PE Calibration	0.129	0.089 0.110 0.131			
Near Den. Field Check	1221.5	-3% 1220.9 +3%	Far Den. Field Check	1392.6	-3% 1393.1 +3%
PE WS Field Check	231.7	-6% 230.8 +6%	PE WH Field Check	1093.4	-6% 1092.6 +6%

Density Constants MPD-D.A 482

Last Edited on 22-DEC-2014,05:40

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	1.11	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 (m)
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	

DOWNHOLE EQUIPMENT

C:\Minimus 14.05.5331\Data\Shakespeare (Burns #1-19)\DATA.dta

CBH-C, Cablehead, 11 pin
CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma
MCG-D.K 443 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity
MMR-A 11 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

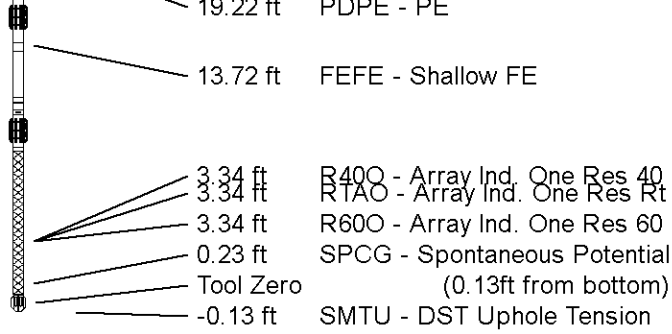
Compact Density/Caliper
MPD-D.A 482 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

43.50 ft	GRGC - Gamma Ray
40.59 ft	CGXT - MCG External Temperature
34.24 ft	MBTC - MMR Caliper
33.24 ft	MINV - MMR MicroLog Inverse
33.24 ft	MNRL - MMR MicroLog Normal
28.45 ft	NPRL - Limestone Neutron Por.
21.21 ft	AVOL - Annular Volume
21.21 ft	HVOL - Hole Volume
21.21 ft	CLDC - Density Caliper
19.28 ft	DCOR - Density Correction
19.28 ft	DPRL - Limestone Density Por.

Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Induction
MAI-A.A 158 LG: 10.81 ft WT: 48.5 lb OD: 2.240 in

Total Length: 51.18 ft Weight: 407.9 lb



COMPANY	SHAKESPEARE OIL CO., INC.
WELL	BURNS #1-19
FIELD	SWIFT FOX SOUTHEAST
PROVINCE/COUNTY	GOVE
COUNTRY/STATE	USA / KANSAS

Elevation Kelly Bushing	2887.00	feet	First Reading	4658.00	feet
Elevation Drill Floor	2885.00	feet	Depth Driller	4660.00	feet
Elevation Ground Level	2877.00	feet	Depth Logger	4661.00	feet

Weatherford®

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

Weatherford

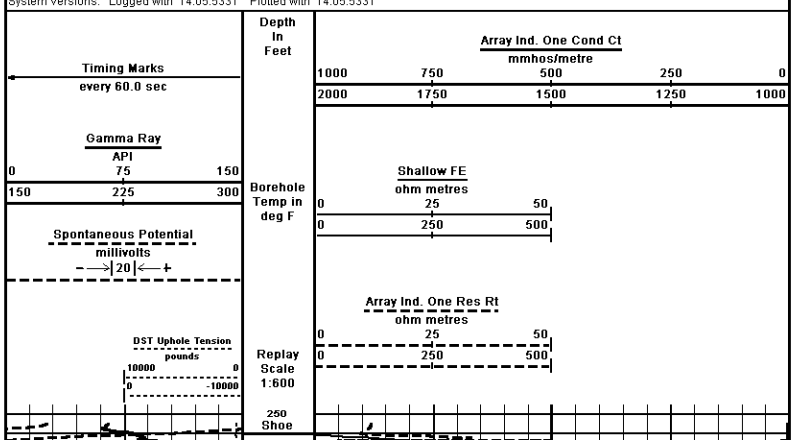
ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

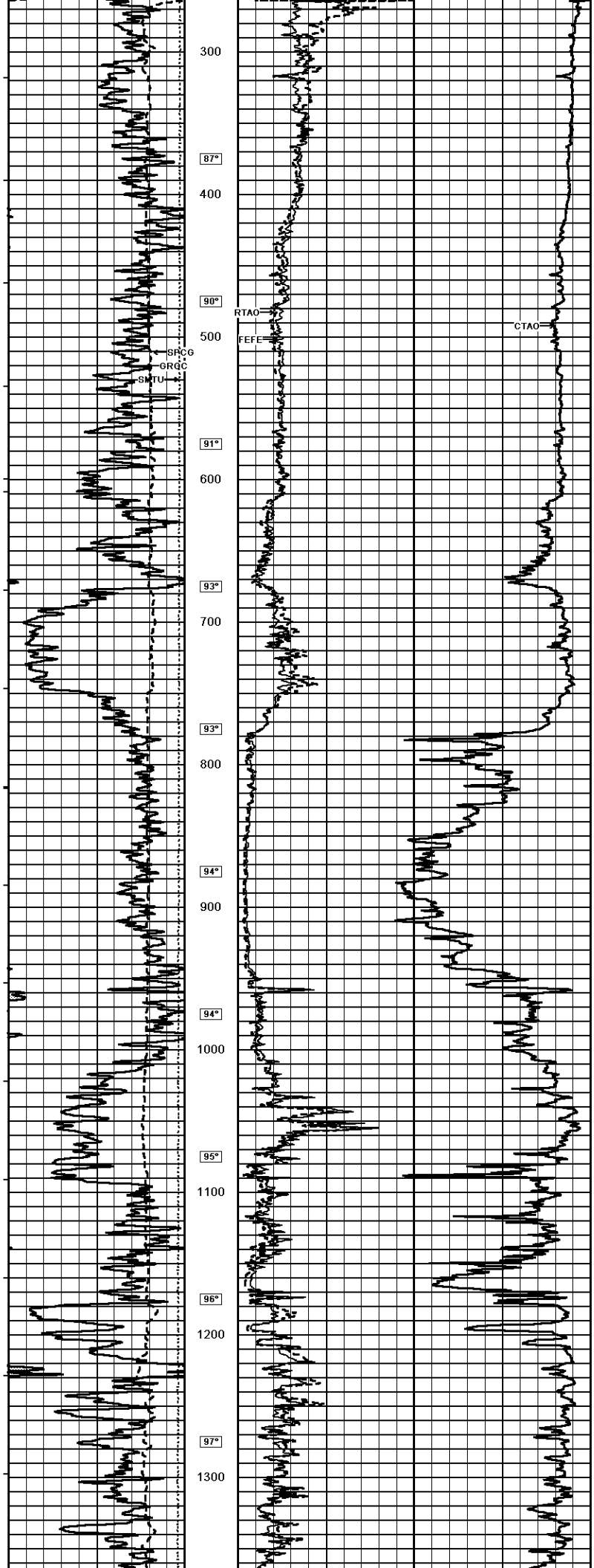
COMPANY	SHAKESPEARE OIL CO., INC.		
WELL	BURNS #1-19		
FIELD	SWIFT FOX SOUTHEAST		
PROVINCE/COUNTY	GOVE		
COUNTRY/STATE	USA / KANSAS		
LOCATION	1600' FNL & 335' FWL OF NW/4		
SEC 19	TWP 13	RGE 30	Other Services
			MFD/MDN
			IMIR
API Number	15-063-22203		
Permanent Datum GL, Elevation 2877 feet			
Log Measured From KB			Elevations:
Drilling Measured From KB			KB 2887.00 feet
			DF 2885.00
			GL 2877.00
Date	22-DEC-2014		
Run Number	ONE		
Service Order	7055-106443839		
Depth Driller	4660.00	feet	
Depth Logger	4661.00	feet	
First Reading	4658.00	feet	
Last Reading	260.00	feet	
Casing Driller	261.00	feet	
Casing Logger	260.00	feet	
Bit Size	7.875	inches	
Hole Fluid Type	WBM		
Density / Viscosity	9.30	lb/USg	53.00 sec/qt
PH / Fluid Loss	10.30		6.40 ml/30Min
Sample Source	FLOWLINE		
Rm @ Measured Temp	1.25 @ 96.0	ohm-m	
Rmf @ Measured Temp	1.0 @ 96.0	ohm-m	
Rmc @ Measured Temp	1.50 @ 96.0	ohm-m	
Source Rmf / Rmc	CALC		CALC
Rm @ BHT	1.0 @120.0	ohm-m	
Time Since Circulation	6 HOURS		
Max Recorded Temp	120.00	deg F	
Equipment / Base	13057		LIB
Recorded By	JUSTIN HICKS		
Witnessed By	TOBY ECK		

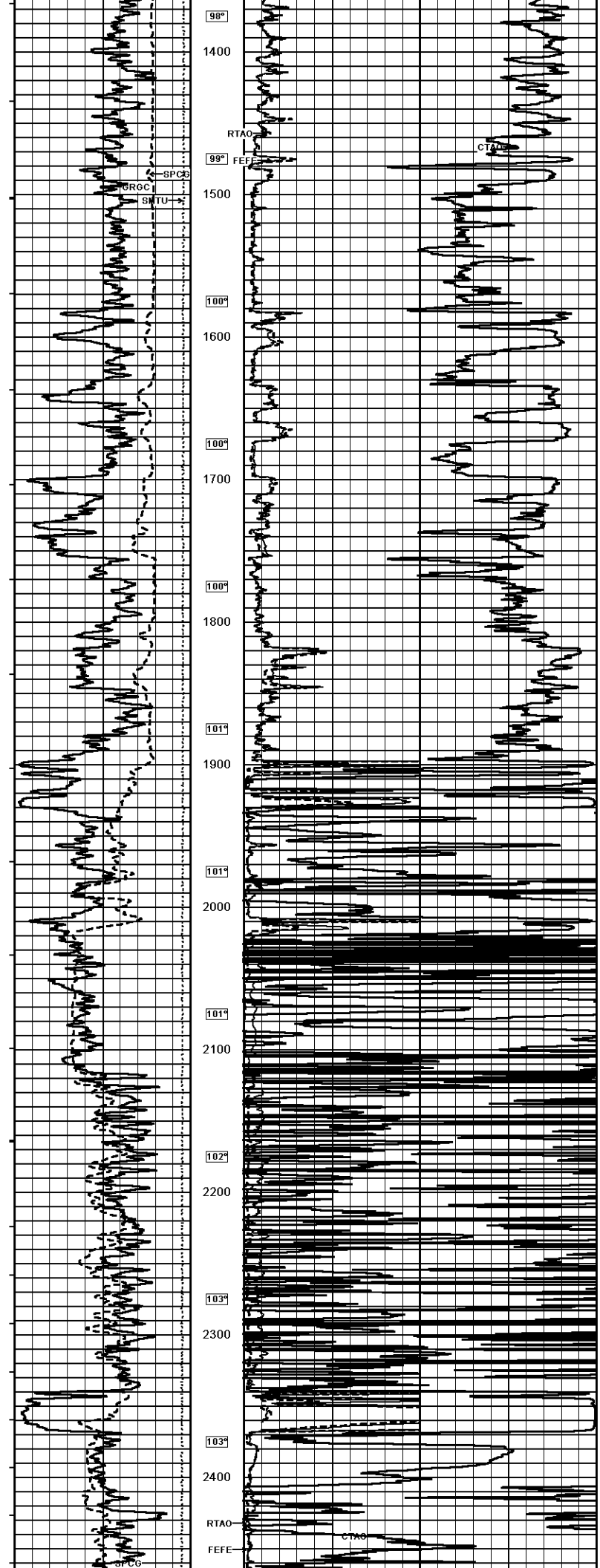
1 INCH MAIN LOG

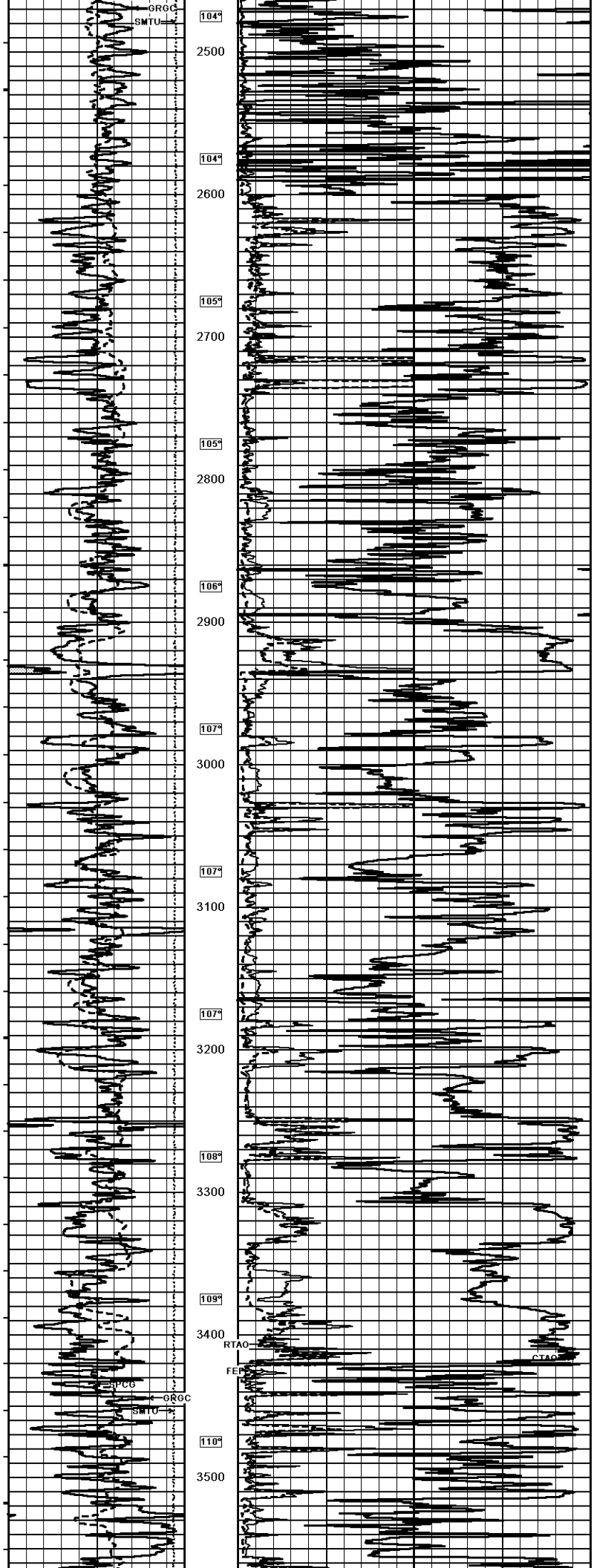
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 14.05.5331\Data\Shakespeare (Burns #1-19)\MAIN PASS.dta
System Versions: Logged with 14.05.5331 Plotted with 14.05.5331

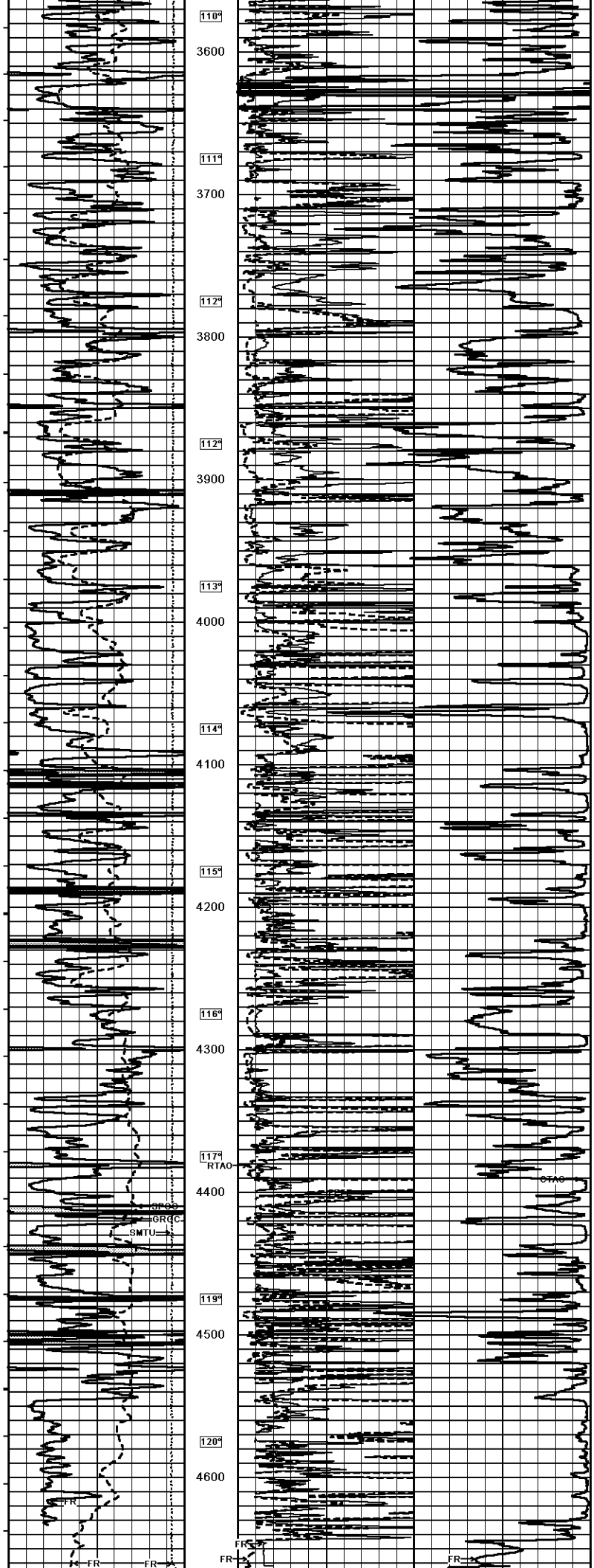
Plotted on 22-DEC-2014 10:20
Recorded on 22-DEC-2014 07:24

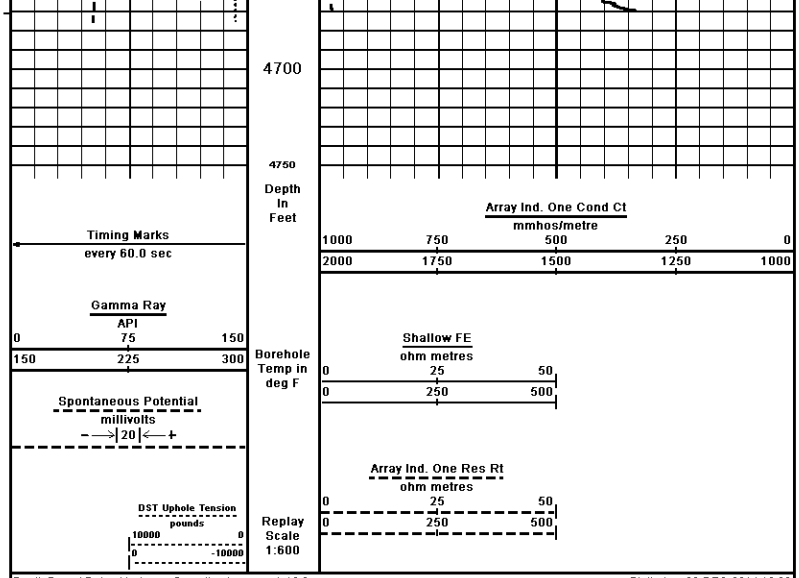



300
87°
400
90°
RTAO
500
FEFE
SRCG
GRGC
SMTU
91°
600
93°
700
93°
800
94°
900
94°
1000
95°
1100
96°
1200
97°
1300
CTAO


98°
1400
RTAO
99°
FEFE
CTAO
SPCO
CROC
SNTU
1500
100°
1600
100°
1700
100°
1800
101°
1900
101°
2000
101°
2100
102°
2200
103°
2300
103°
2400
RTAO
CTAO
FEFE
SPCO


GRGC
SMTU
104°
2500
104°
2600
105°
2700
105°
2800
106°
2900
107°
3000
107°
3100
107°
3200
108°
3300
109°
3400
RTAO
FEP
PCG
GRGC
SMTU
110°
3500


110°
3600
111°
3700
112°
3800
112°
3900
113°
4000
114°
4100
115°
4200
116°
4300
117°
RTAO
4400
GPOC
GRQC
SMTU
119°
4500
120°
4600
FR
FR
FR
FR
FR
OTAO



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 22-DEC-2014 10:20

Filename: C:\Minimus 14.05.5331\Data\Shakespeare (Burns #1-19)\MAIN PASS.dta — Recorded on 22-DEC-2014 07:24

System Versions: Logged with 14.05.5331 Plotted with 14.05.5331

1 INCH MAIN LOG

COMPANY	SHAKESPEARE OIL CO., INC.
WELL	BURNS #1-19
FIELD	SWIFT FOX SOUTHEAST
PROVINCE/COUNTY	GOVE
COUNTRY/STATE	USA / KANSAS

Elevation Kelly Bushing	2887.00	feet	First Reading	4658.00	feet
Elevation Drill Floor	2885.00	feet	Depth Driller	4660.00	feet
Elevation Ground Level	2877.00	feet	Depth Logger	4661.00	feet

Weatherford

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG