Weatherford®

ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

COMPANY	McELVAIN ENERGY, INC.
WELL	GUSTAFSON #11-6
FIELD	DUSSAULT
PROVINCE/COUNTY	GRAHAM
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	1914' FNL & 2357' FWL

SEC	TWP	RGE
11	105	22W

API Number 15-065-23996
Permit Number

Other Services
MPD/MDN MML
MSS

Permanent Datum GL, Elevation 2324 feet
Log Measured From KB
Drilling Measured From KB

Elevations:	feet
KB	2334.00
DF	2332.00
GL	2324.00

Date	26-FEB-2014				
Run Number	ONE				
Service Order	4558-80590102				
Depth Driller	4065.00	feet			
Depth Logger	4063.00	feet			
First Reading	4060.00	feet			
Last Reading	307.00	feet			
Casing Driller	303.00	feet			
Casing Logger	307.00	feet			
Bit Size	7.875	inches			
Hole Fluid Type	CHEMICAL				
Density / Viscosity	9.20	lb/USg	55.00	CP	
PH / Fluid Loss	10.50		7.20	ml/30Min	
Sample Source	FLOWLINE				
Rm @ Measured Temp	1.28 @ 76.0	ohm-m			
Rmf @ Measured Temp	1.02 @ 76.0	ohm-m			
Rmc @ Measured Temp	1.54 @ 76.0	ohm-m			
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	0.90 @108.0	ohm-m			
Time Since Circulation	4 HOURS				
Max Recorded Temp	108.00	deg F			
Equipment / Base	13057		LIB		
Recorded By	ADAM SILL				JEFFREY RANDLE
Witnessed By	TOM FLOWERS				
JOB #	LB14-055				

BOREHOLE RECORD

Last Edited: 26-FEB-2014 10:31

Bit Size inches	Depth From feet	Depth To feet
7.875	303.00	4065.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	303.00	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: 1571 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING: 954 CU. FT.

- RIG: VAL #6

- ENGINEER: A. SILL, J. RANDLE.

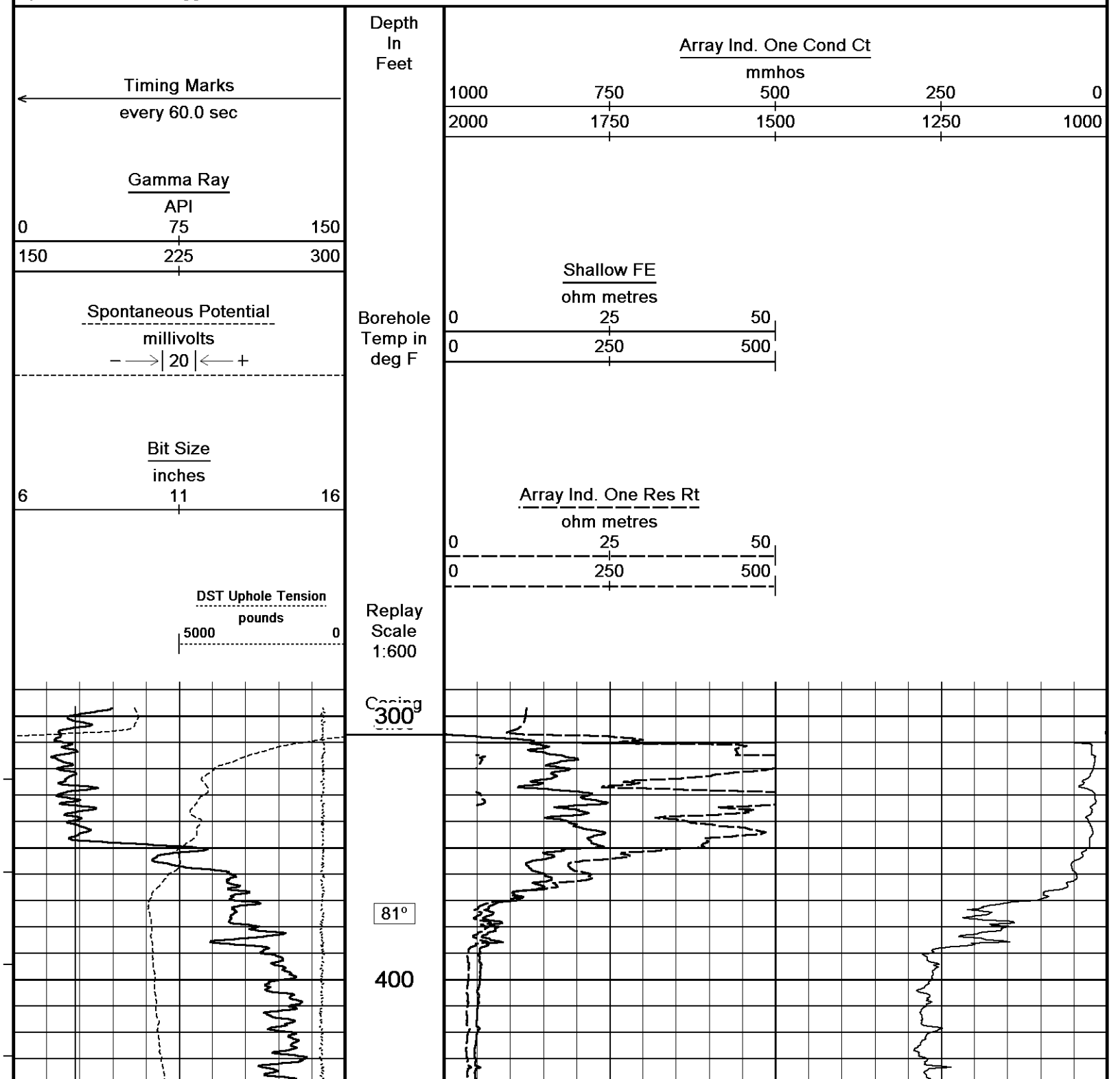
- OPERATOR(S): J. DUNLAP.

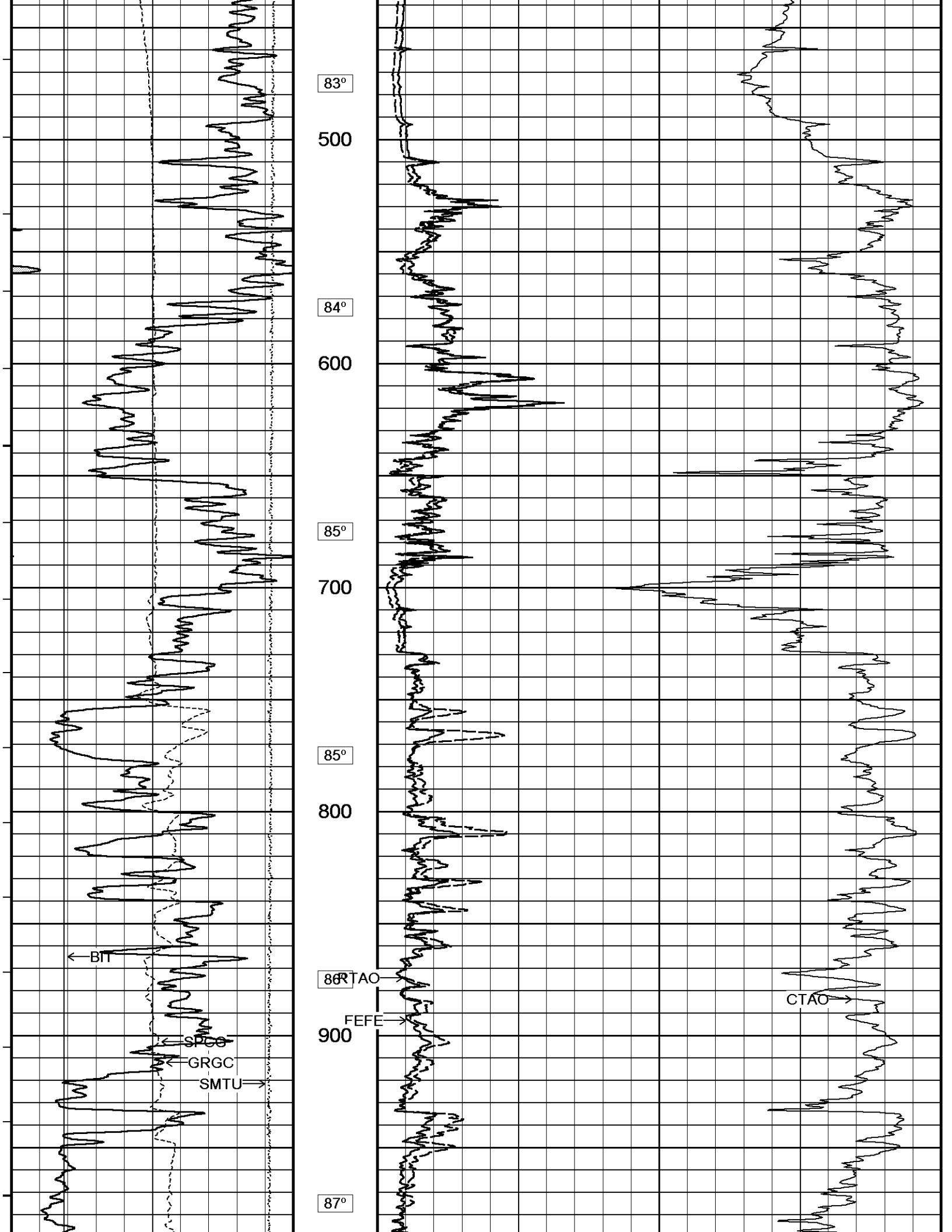
2 INCH MAIN

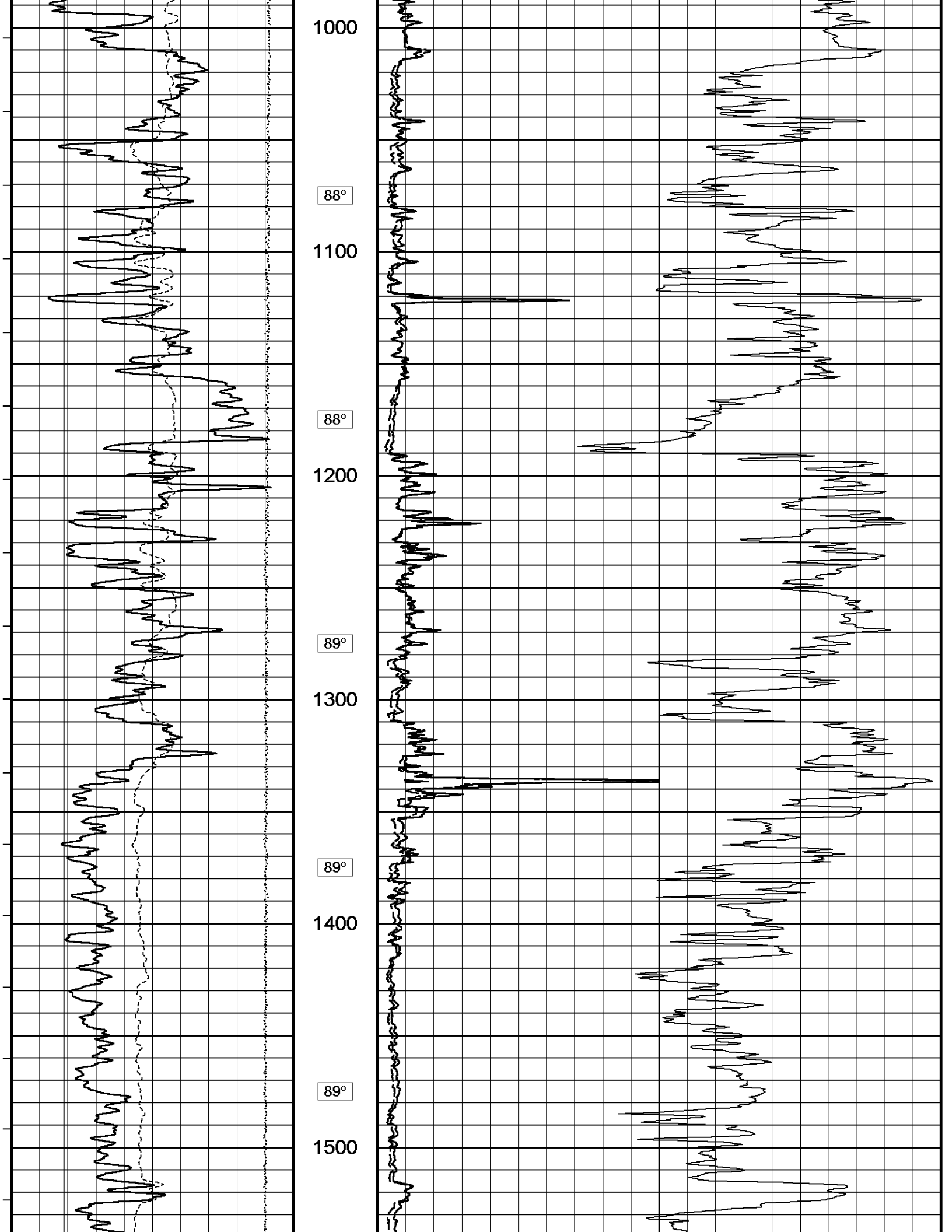
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 28-JUL-2014 08:43

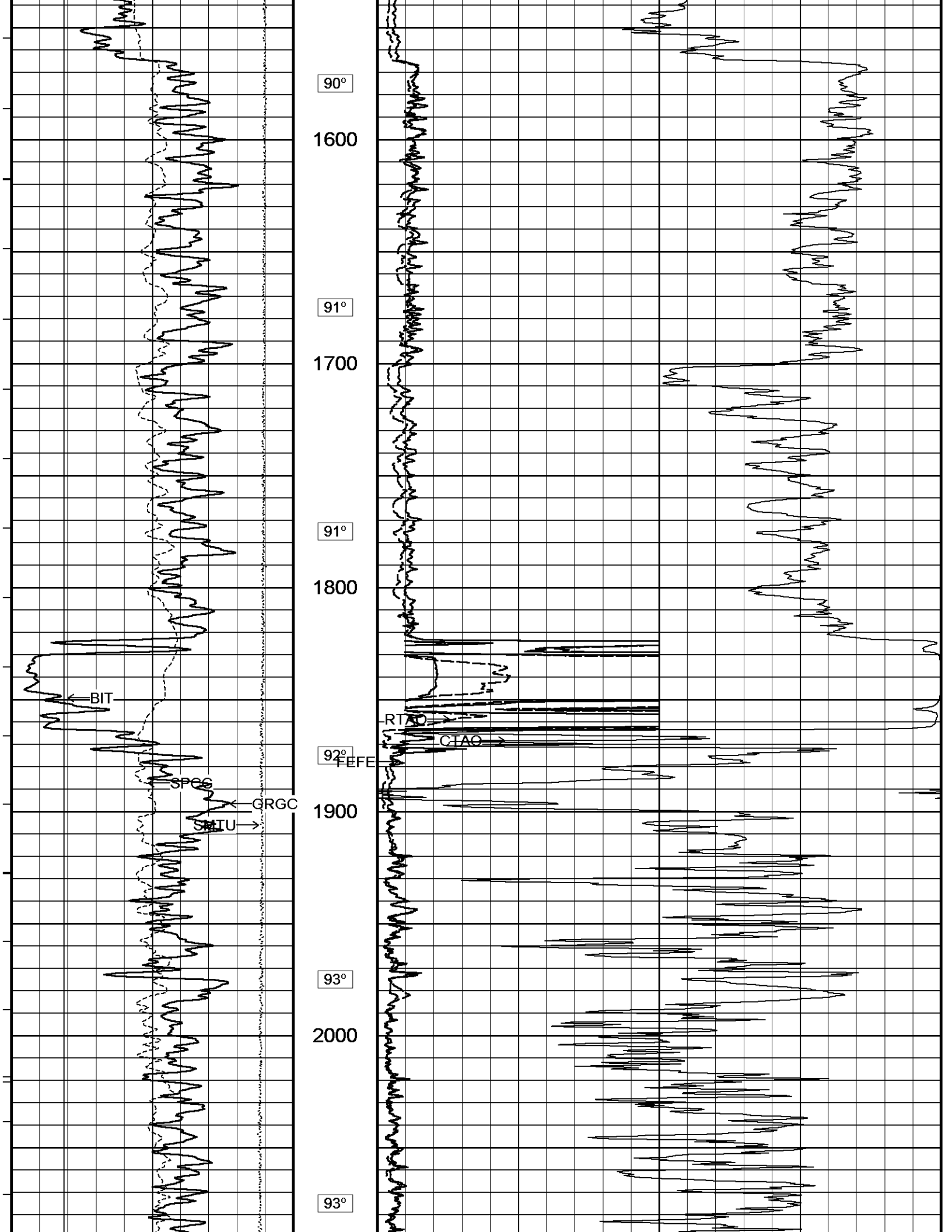
Filename: C:\Users\mrigby\AppData\Local\Temp\Weatherford Pre...\McElvain Gustafson #11-6_003.dta — Recorded on 26-FEB-2014 12:38

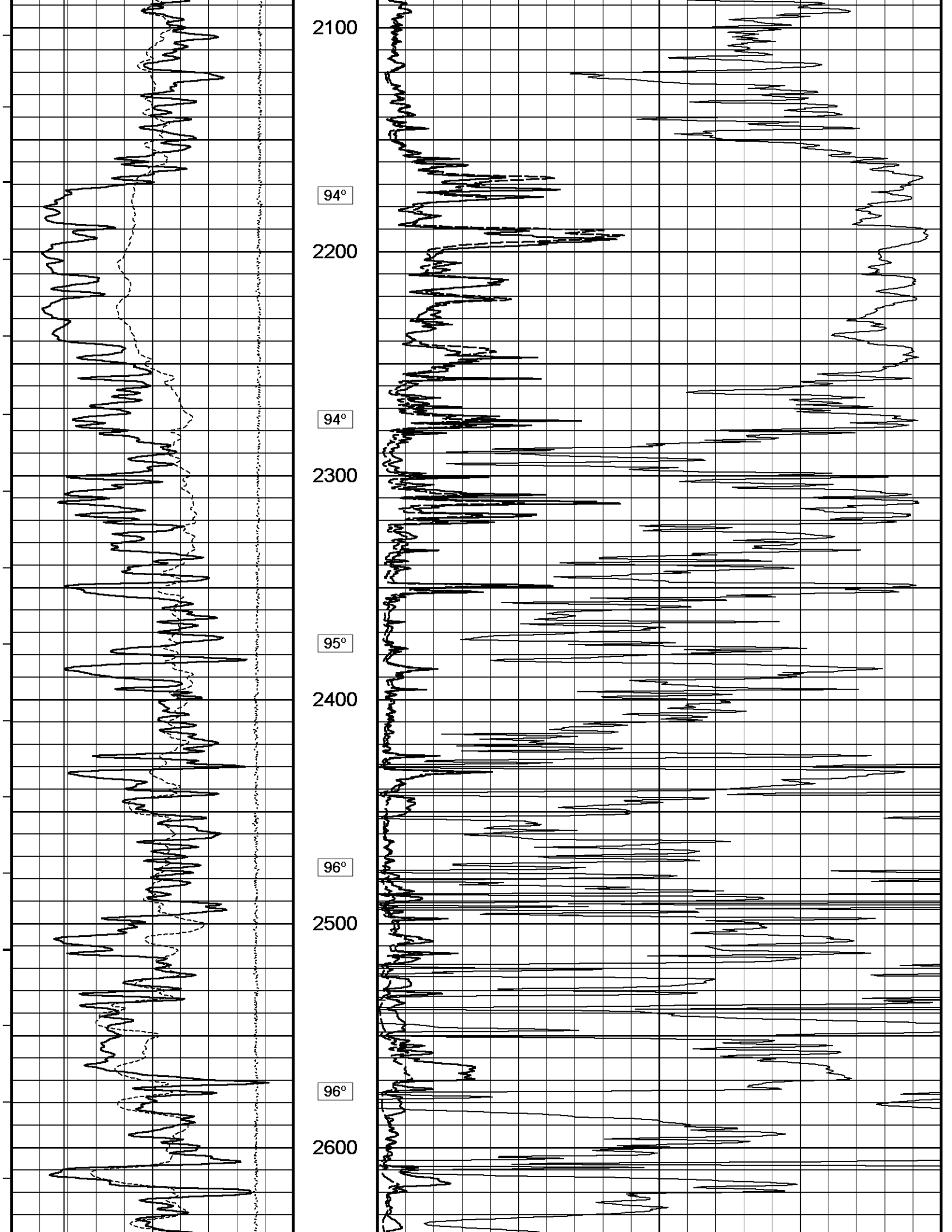
System Versions: Logged with 13.05.9583 Plotted with 13.06.9284

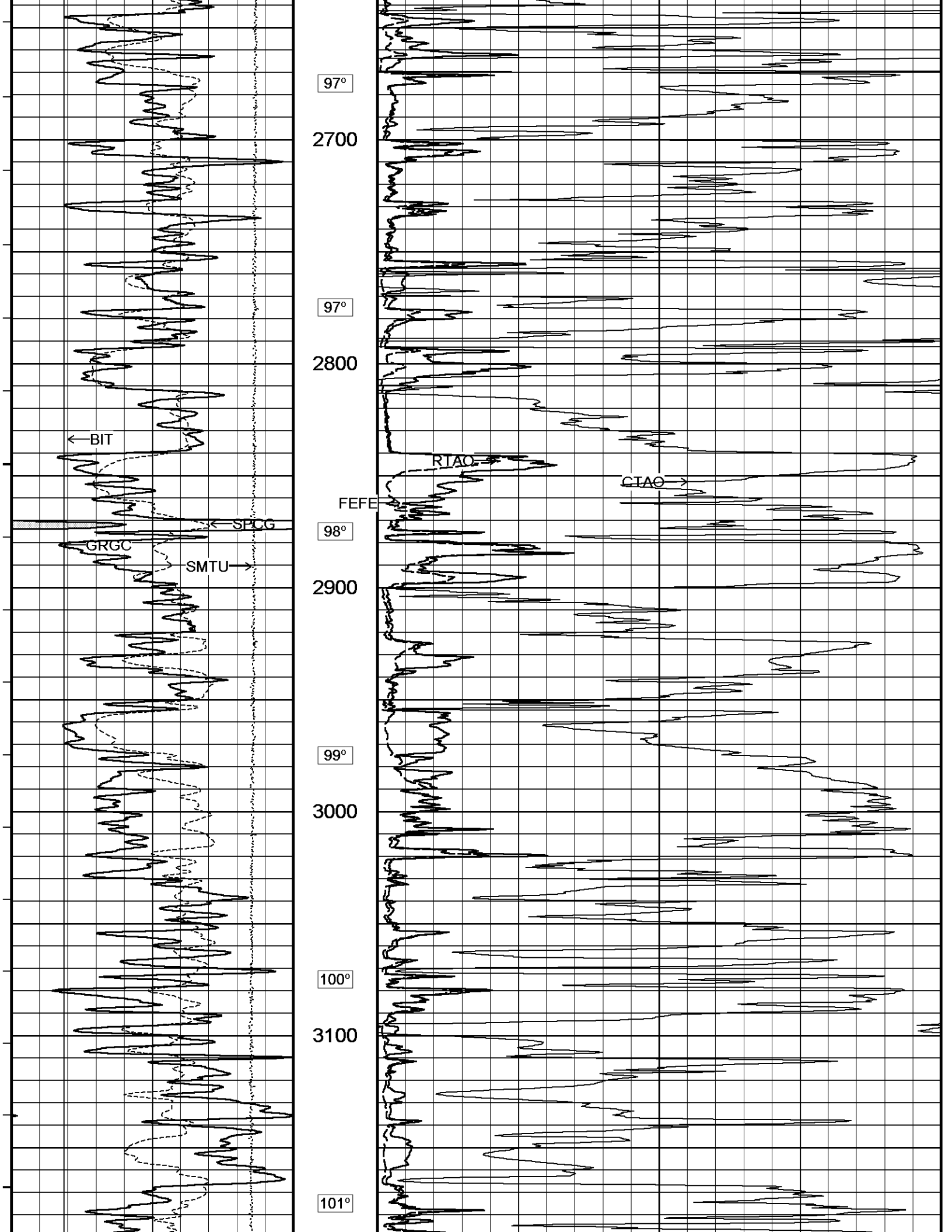


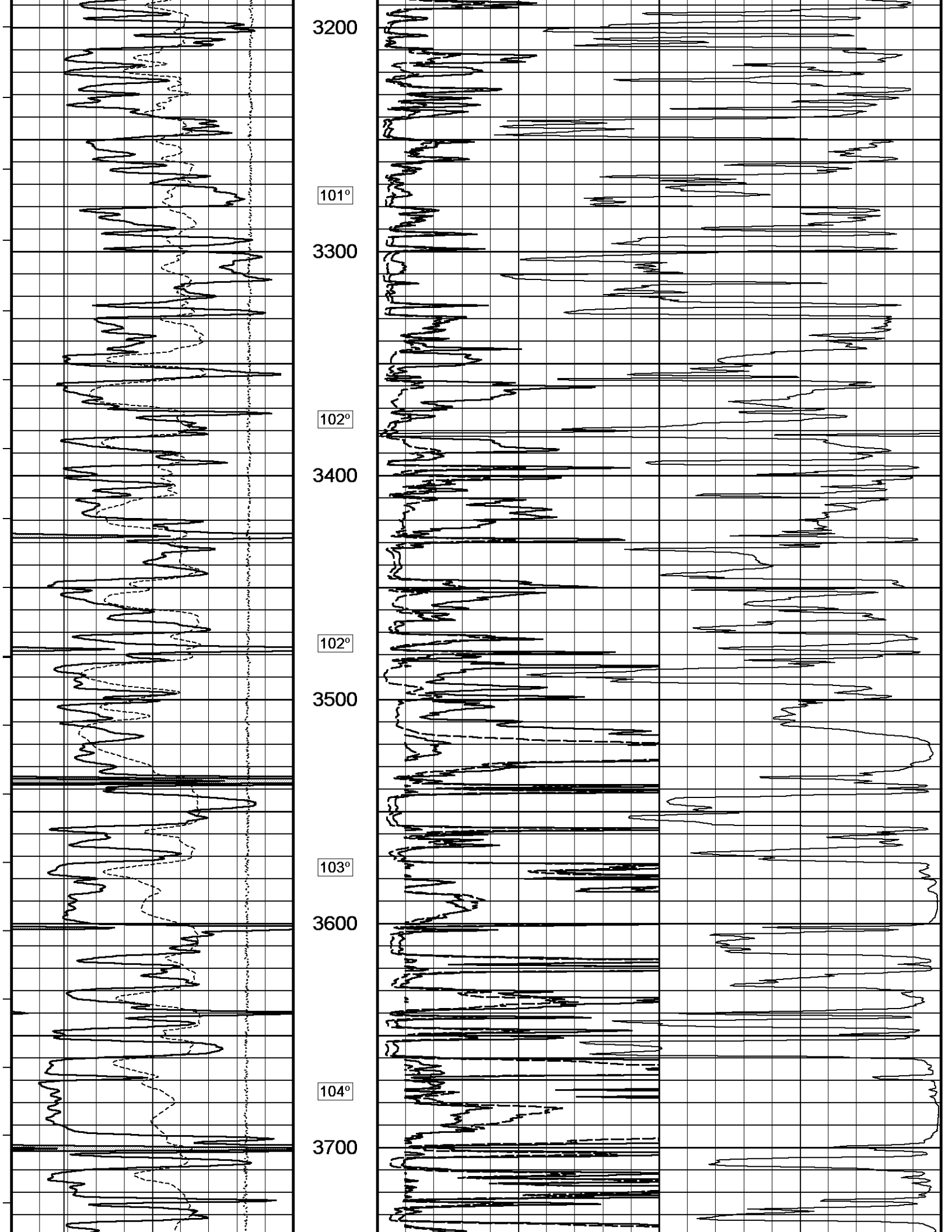

83°
500
84°
600
85°
700
85°
800
BIT
86
RTAO
FEFE
900
SPCO
GRGC
SMTU
87°
CTAO

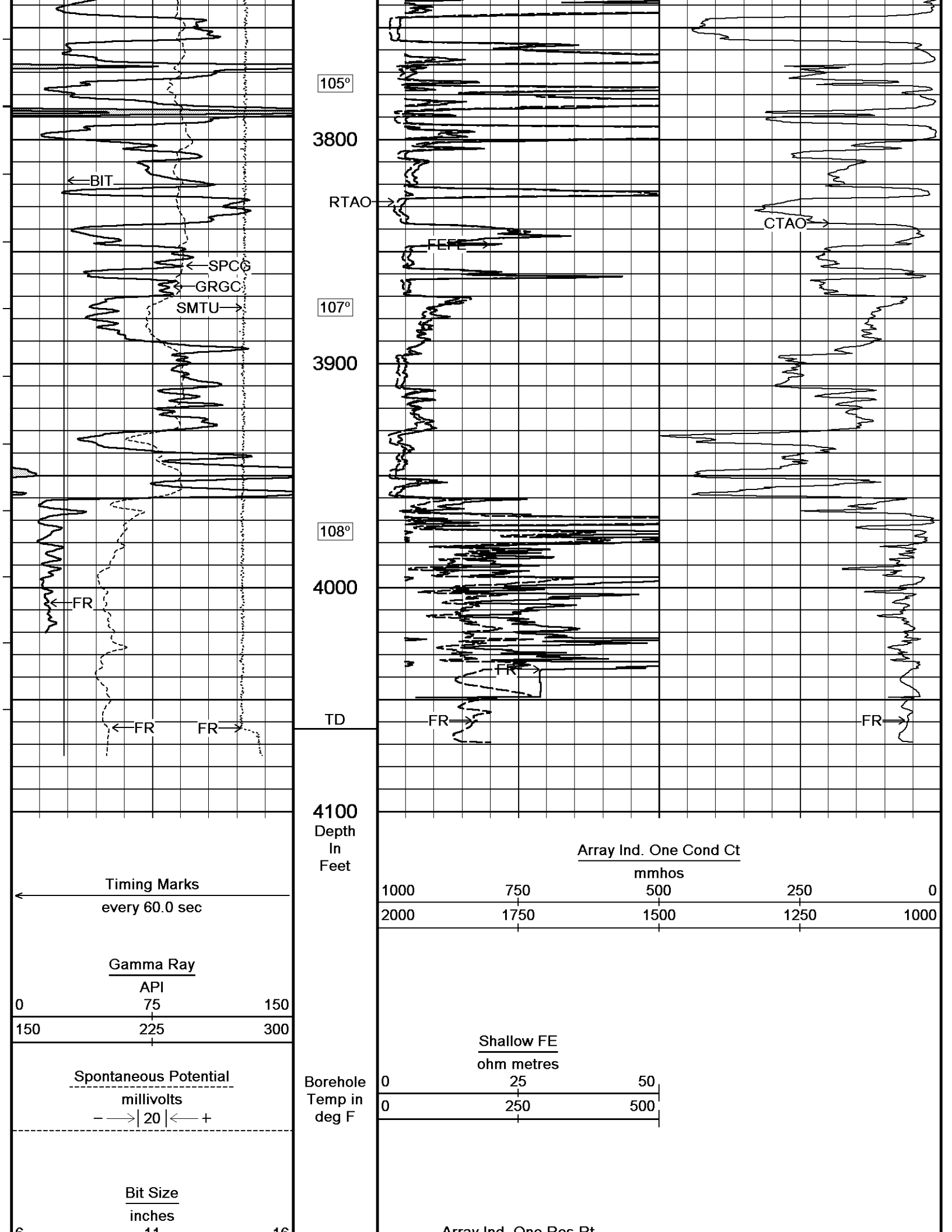

1000
88°
1100
88°
1200
89°
1300
89°
1400
89°
1500


90°
1600
91°
1700
91°
1800
BIT
RTAO
CTAO
92°
TEFE
SPCC
GRGC
SMTU
1900
93°
2000
93°


2100
94°
2200
94°
2300
95°
2400
96°
2500
96°
2600


97°
2700
97°
2800
BIT
RTAO
CTAO
FEFE
SPCG
98°
GRGC
SMTU
2900
99°
3000
100°
3100
101°


3200
101°
3300
102°
3400
102°
3500
103°
3600
104°
3700


105°
3800
BIT
RTAO
CTAO
FEPE
SPCG
GRGC
SMTU
107°
3900
108°
4000
FR
FR
FR
FR
FR
TD
4100
Depth
In
Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Spontaneous Potential
millivolts
– 20 +
Bit Size
inches
Borehole
Temp in
deg F
Array Ind. One Cond Ct
mmhos
1000
750
500
250
0
2000
1750
1500
1250
1000
Shallow FE
ohm metres
0
25
50
0
250
500

6 11 16

DST Uphole Tension
pounds
5000 0

Replay
Scale
1:600

Array Ind. One Res Rt
ohm metres
0 25 50
0 250 500

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 28-JUL-2014 08:43
Filename: C:\Users\mrigby\AppData\Local\Temp\Weatherford Pre...\McElvain Gustafson #11-6_003.dta
Recorded on 26-FEB-2014 12:38
System Versions: Logged with 13.05.9583 Plotted with 13.06.9284

2 INCH MAIN

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 28-JUL-2014 08:43
Filename: C:\Users\mrigby\AppData\Local\Temp\Weatherford Pre...\McElvain Gustafson #11-6_003.dta
Recorded on 26-FEB-2014 12:38
System Versions: Logged with 13.05.9583 Plotted with 13.06.9284

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
− → | 20 | ← +

DST Uphole Tension
pounds
5000 0

Depth
In
Feet

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft

Replay
Scale
1:240

300
Casing
Shoe

80°

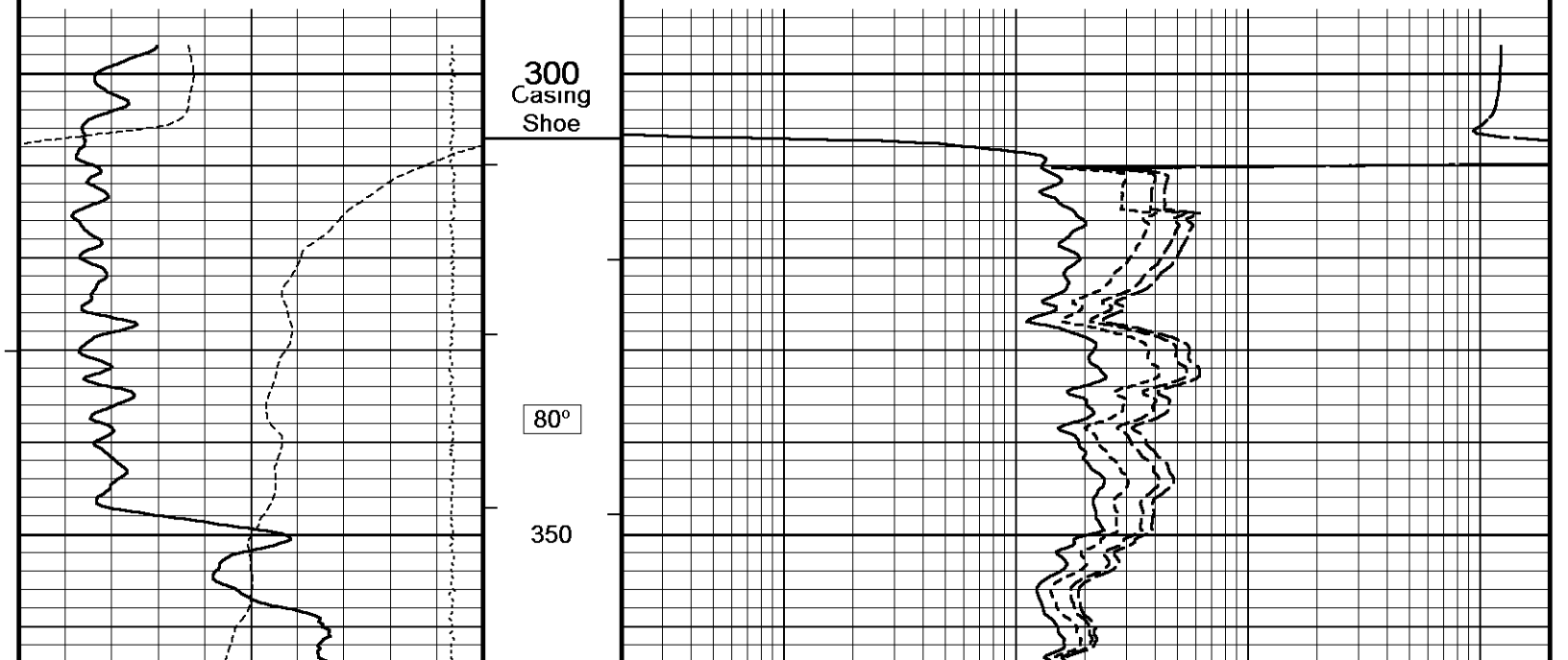
350

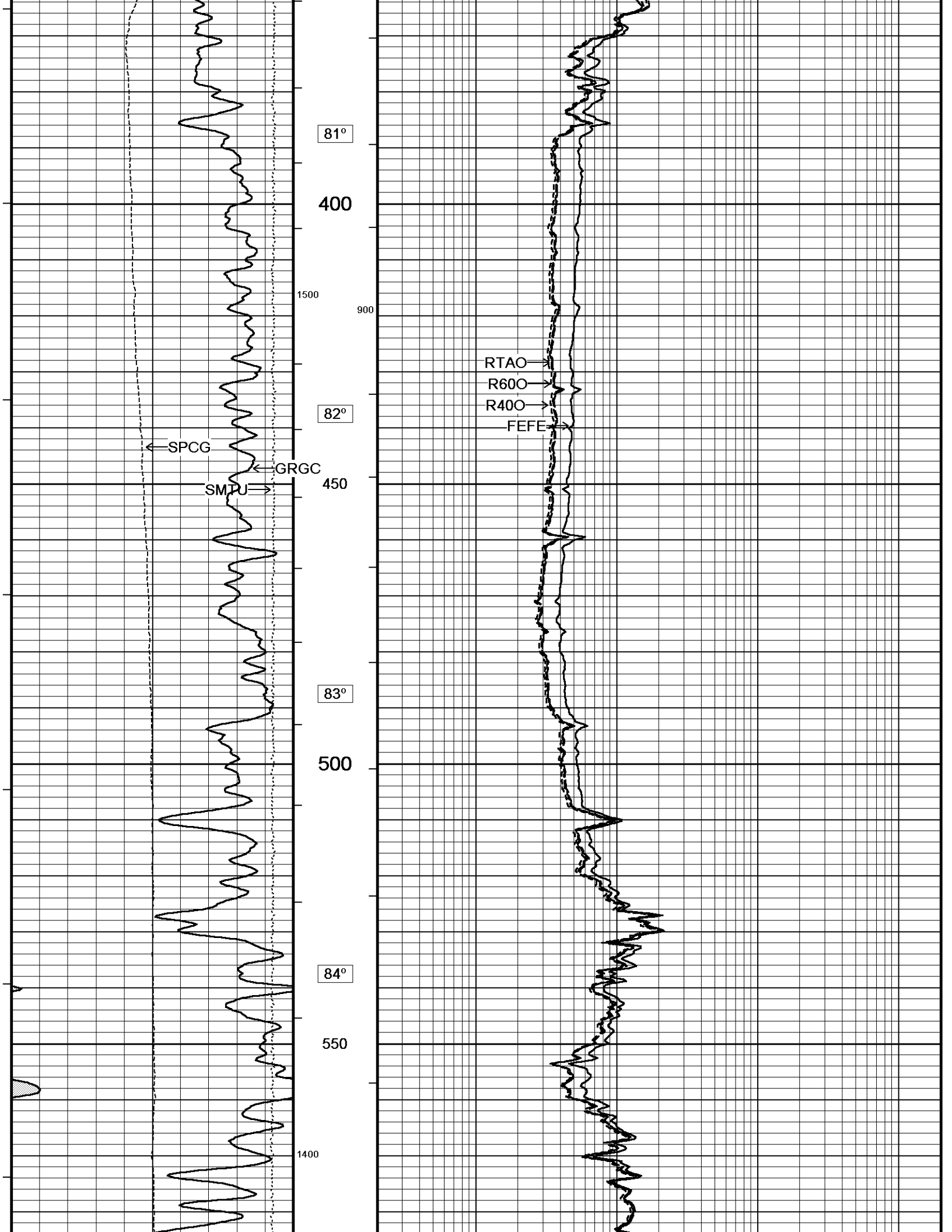
Shallow FE
ohm metres
0.20 2000
1 10 100 1000

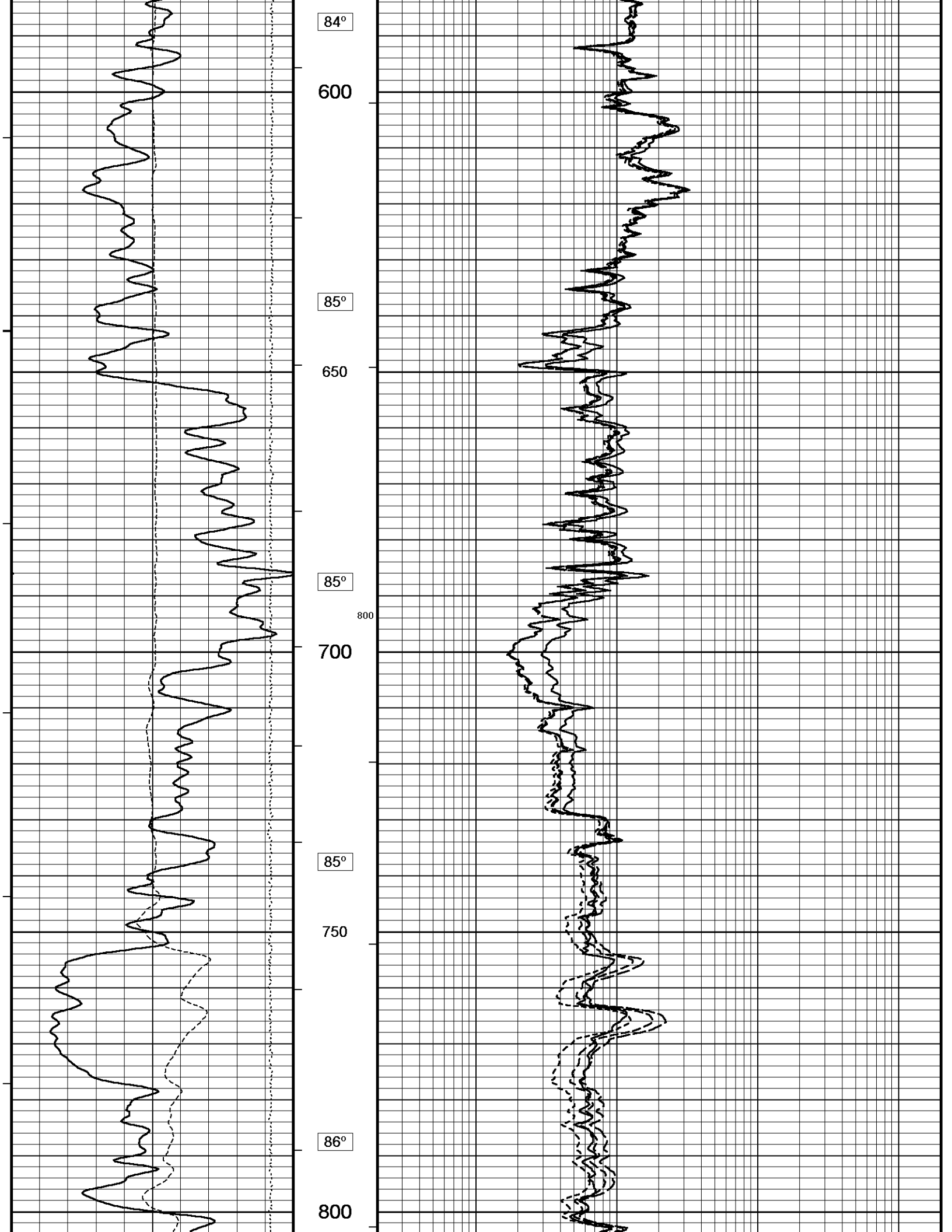
Array Ind. One Res 40
ohm metres
0.20 2000
1 10 100 1000

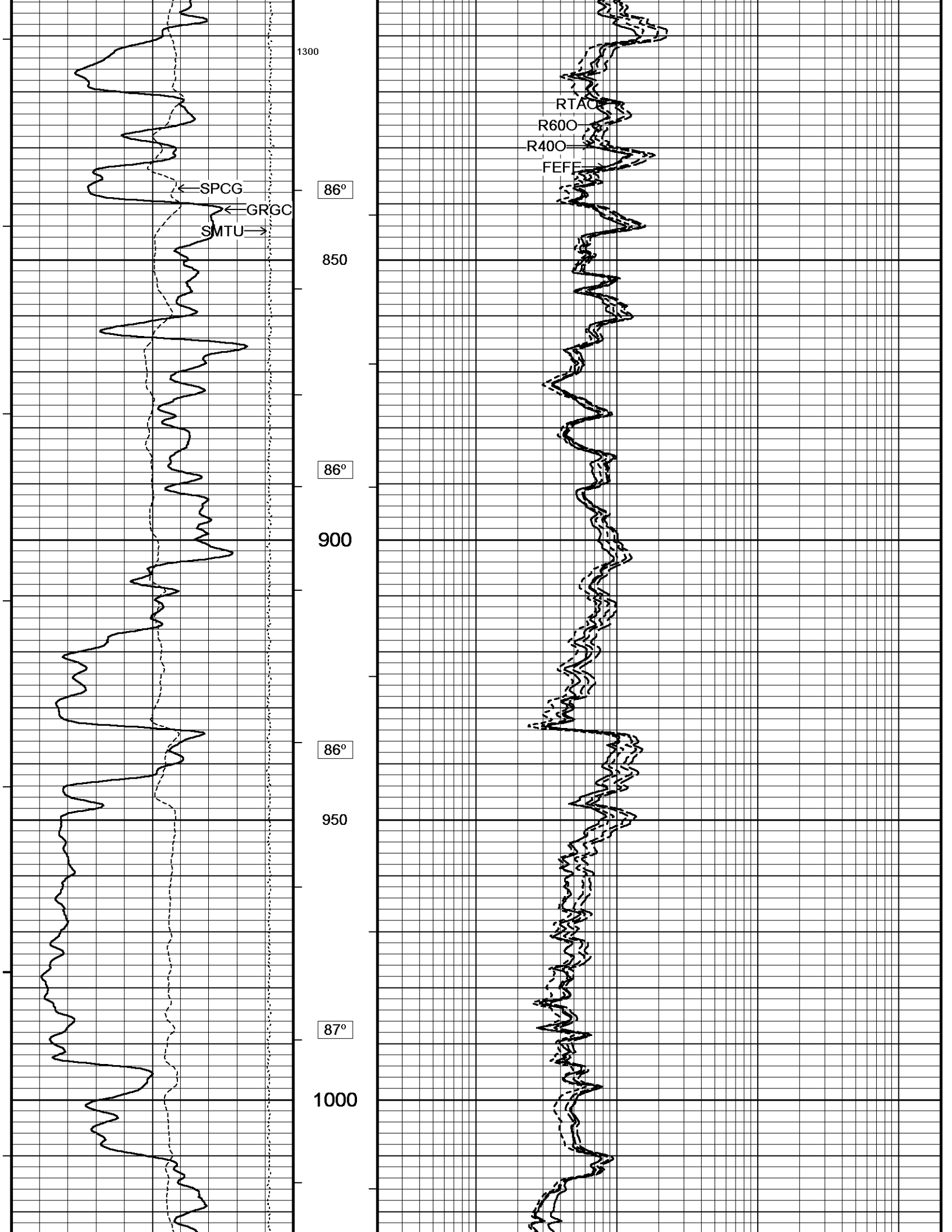
Array Ind. One Res 60
ohm metres
0.20 2000
1 10 100 1000

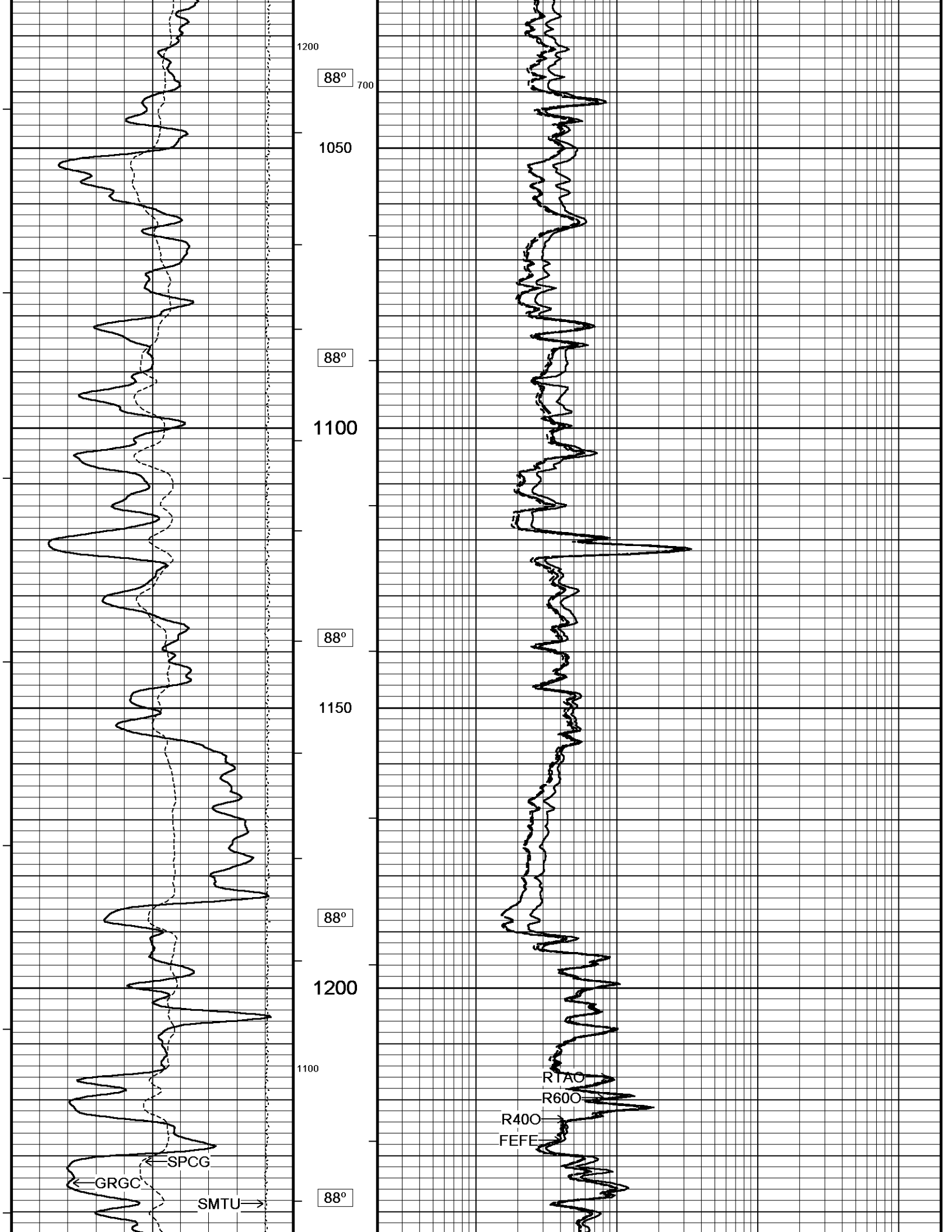
Array Ind. One Res Rt
ohm metres
0.20 2000
1 10 100 1000

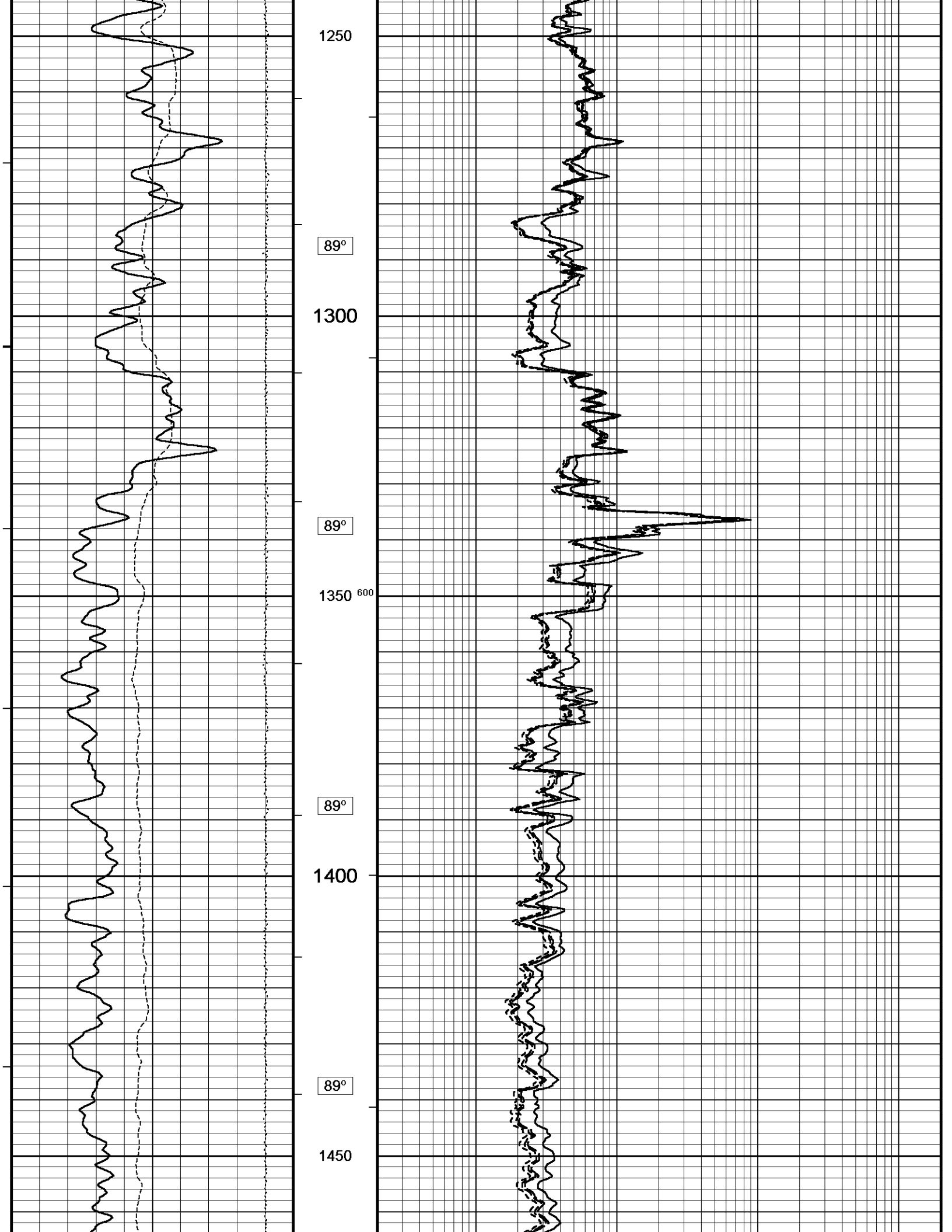


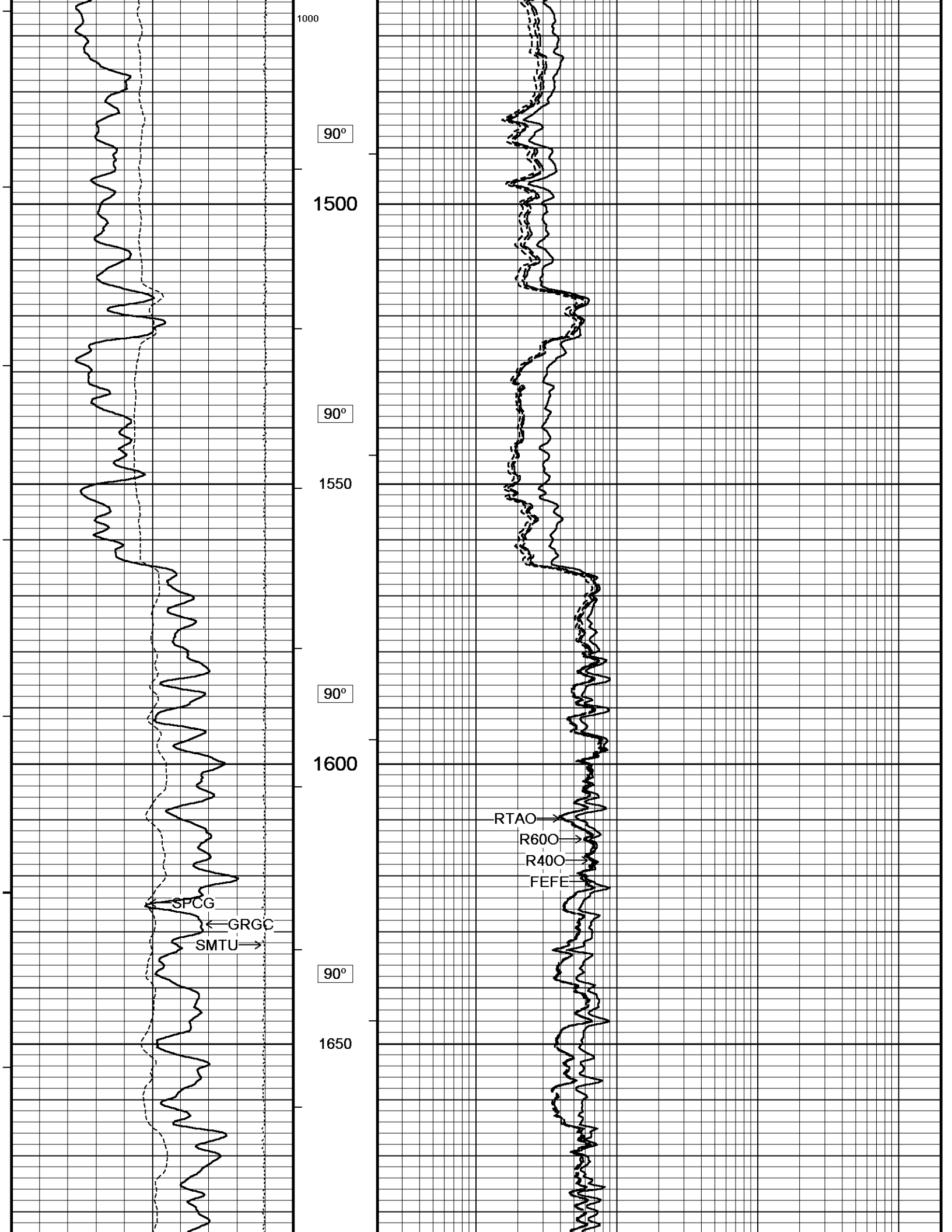

81°
400
1500
900
RTAO
R60O
R40O
FEFE
82°
SPCG
GRGC
SMTU
450
83°
500
84°
550
1400

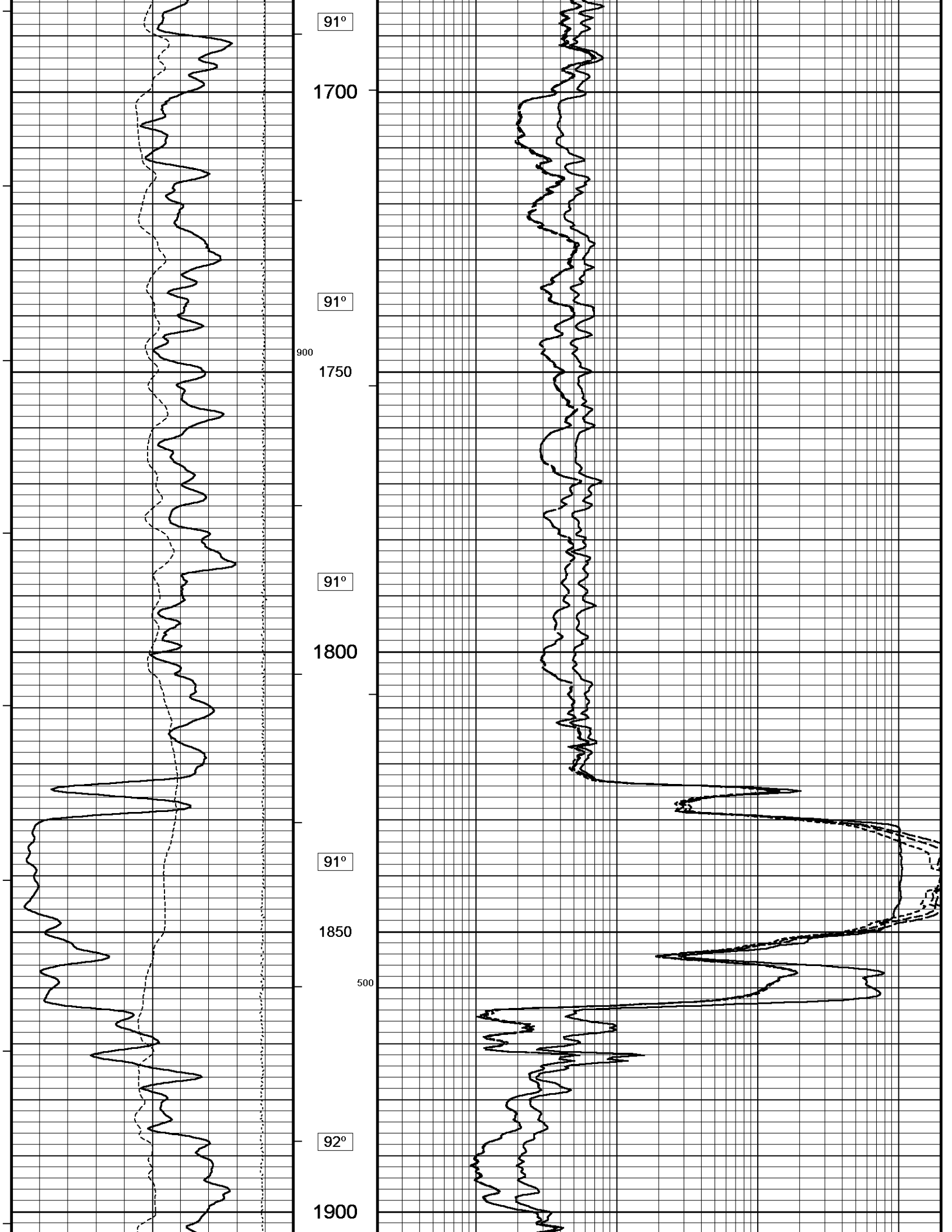

84°
600
85°
650
85°
800
700
85°
750
86°
800

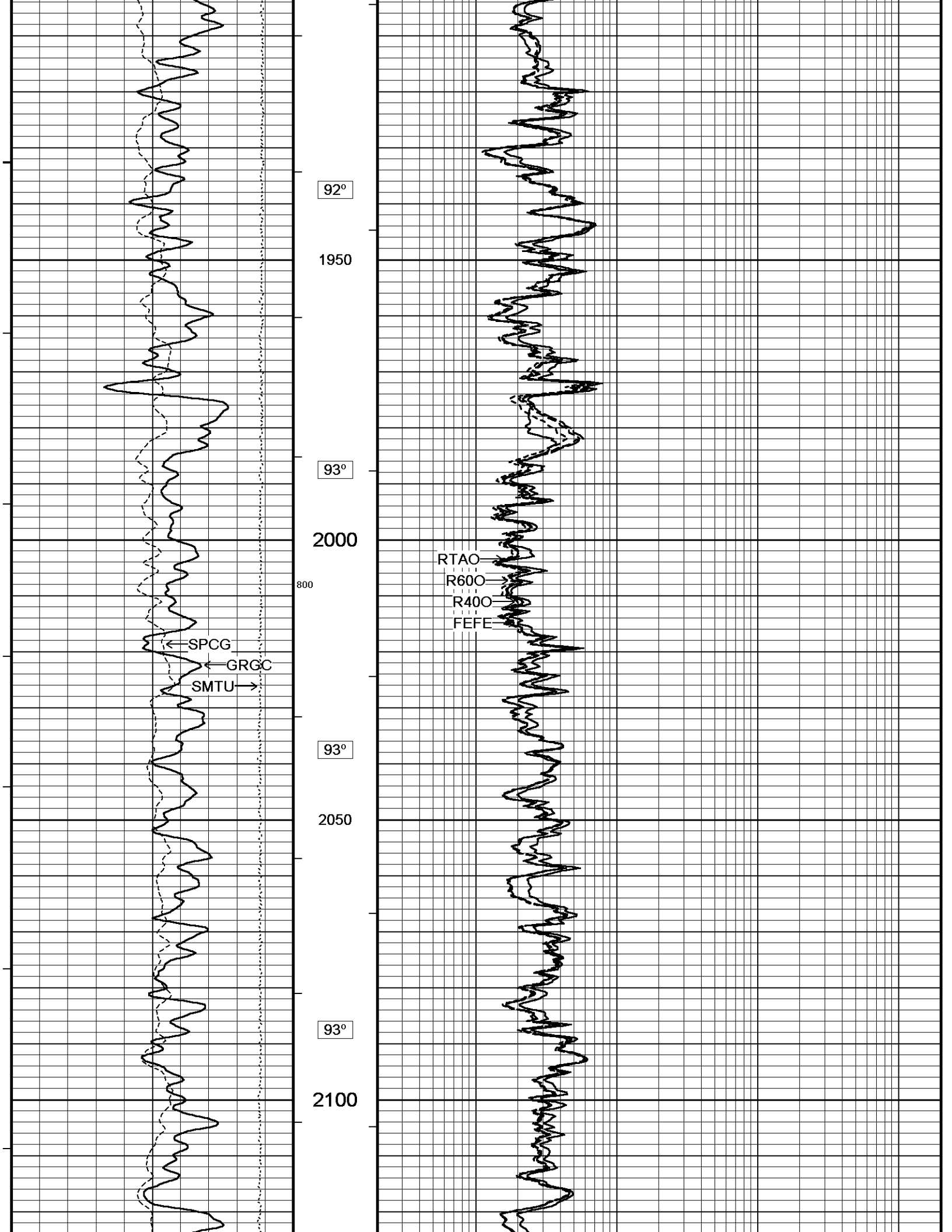

1300
SPCG
GRGC
SMTU
86°
850
86°
900
86°
950
87°
1000
RTAO
R60O
R40O
FEFE

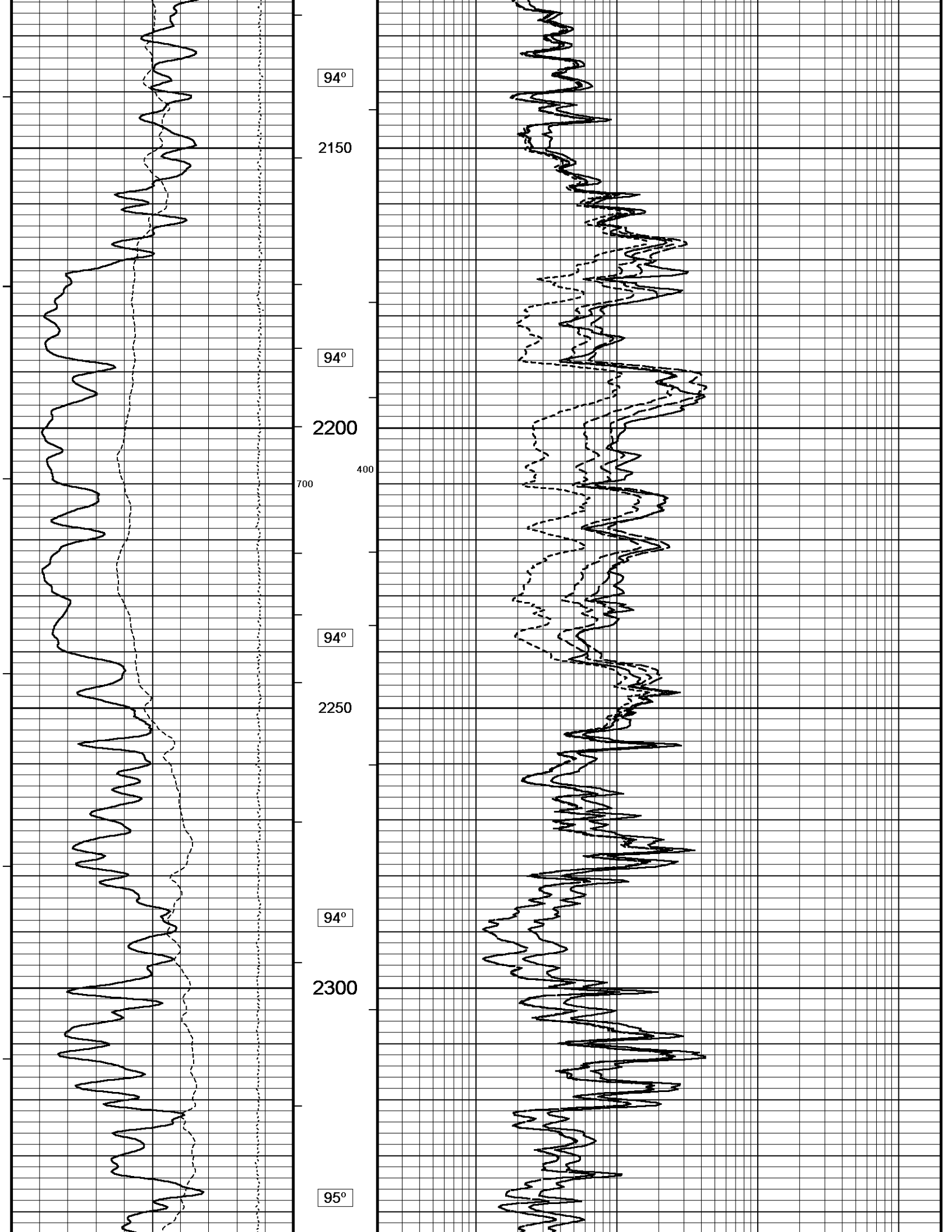

1200
88°
700
1050
88°
1100
88°
1150
88°
1200
1100
88°
SPCG
GRGC
SMTU
RTAO
R60O
R40O
FEFE

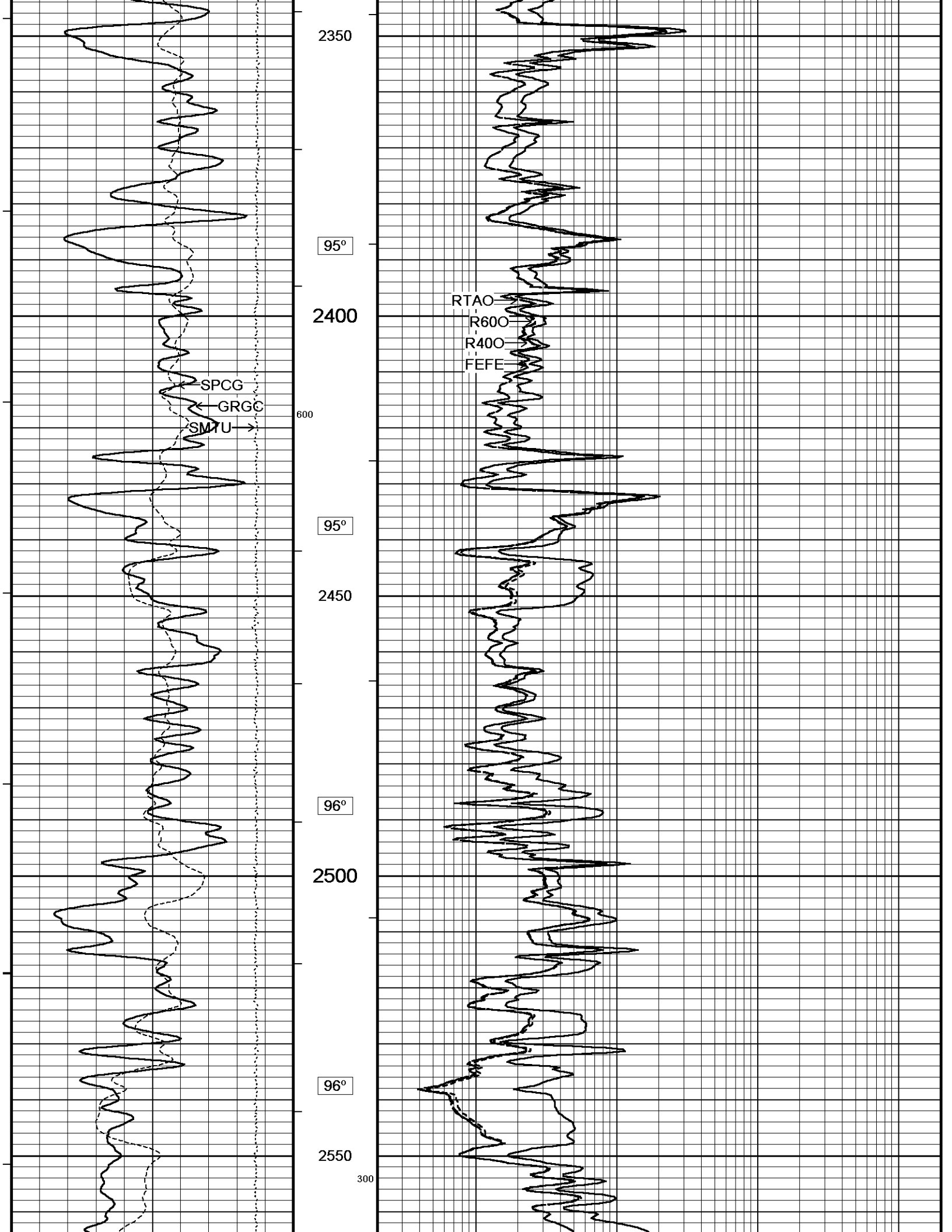

1250
89°
1300
89°
1350
600
89°
1400
89°
1450

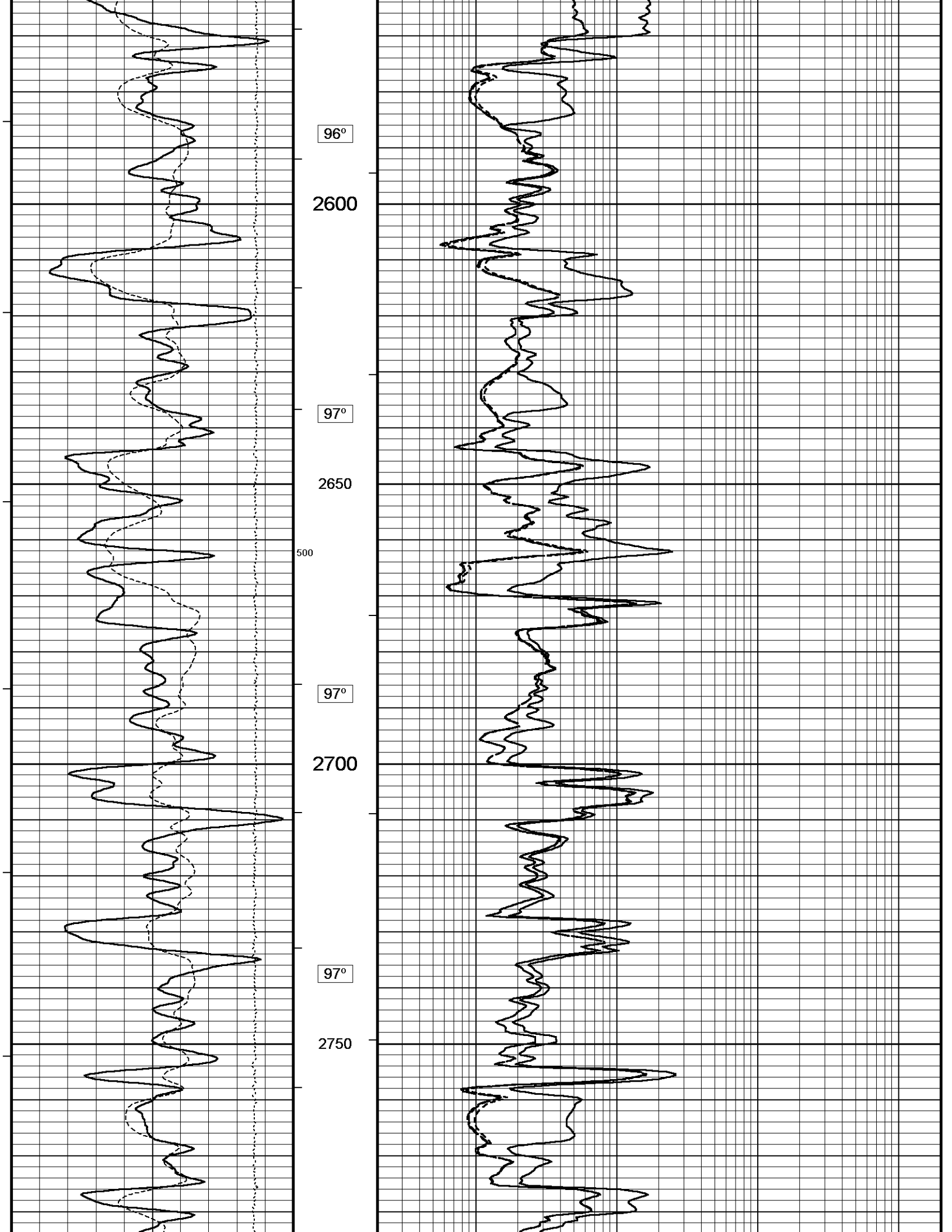

1000
90°
1500
90°
1550
90°
1600
90°
1650
SPCG
GRGC
SMTU
RTAO
R60O
R40O
FEFE

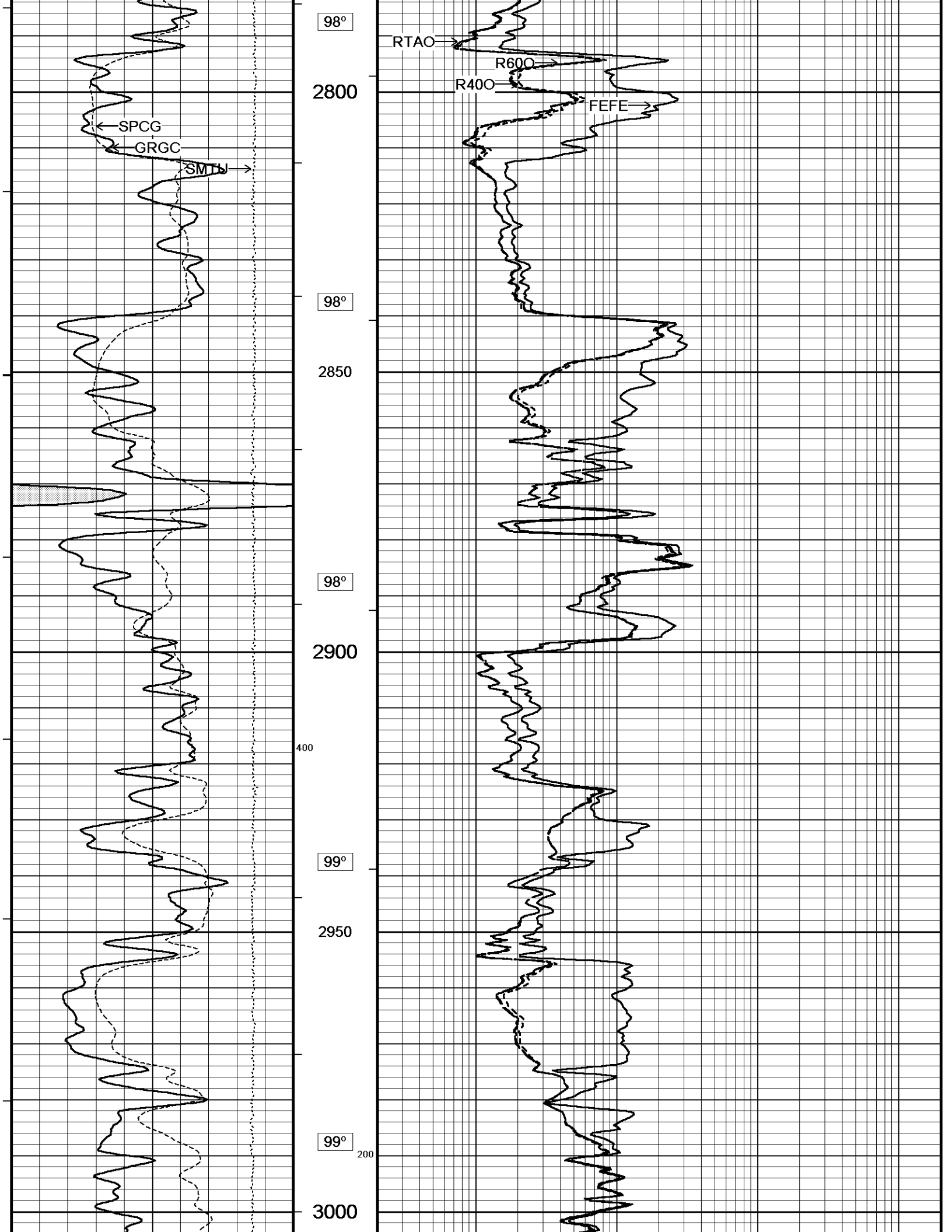

91°
1700
91°
900
1750
91°
1800
91°
1850
500
92°
1900

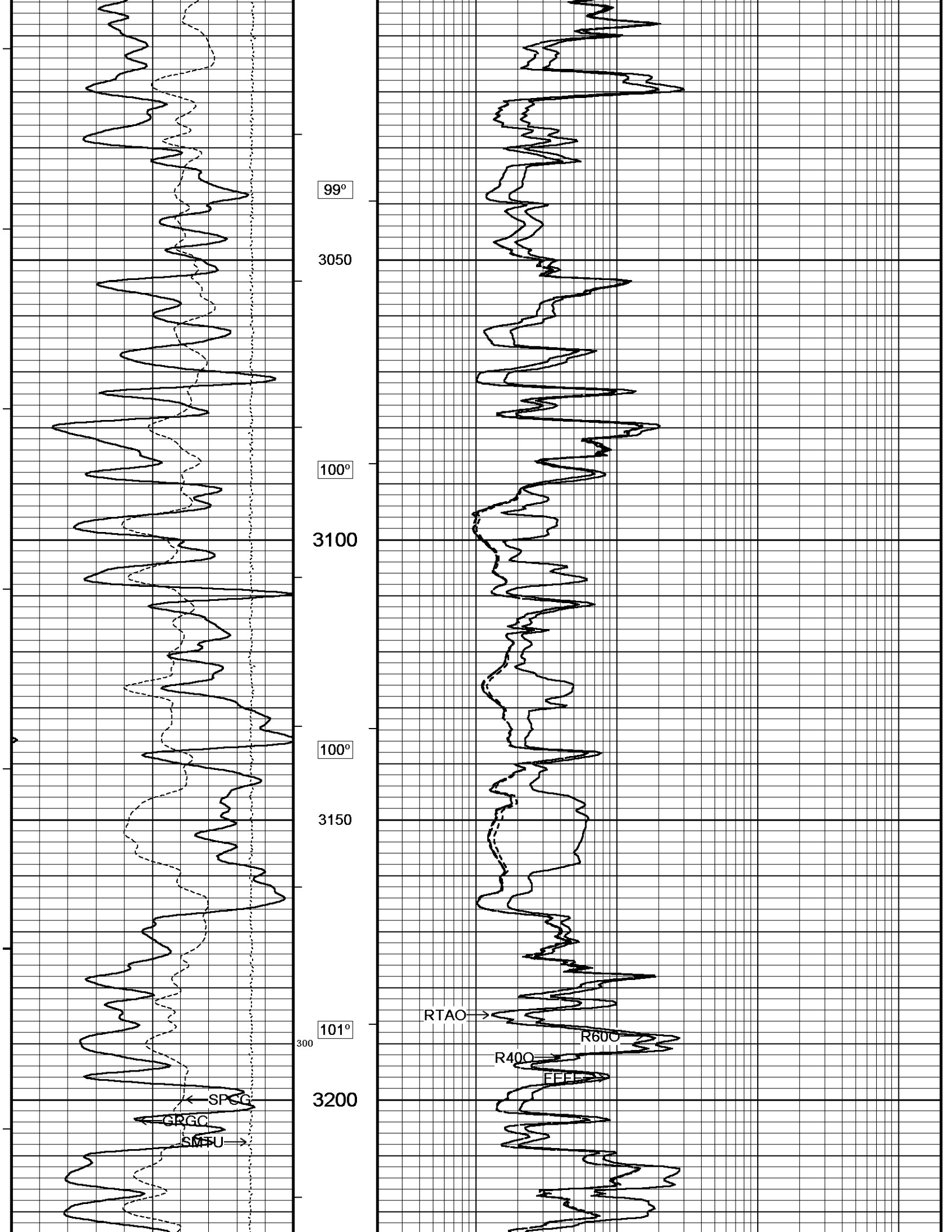

92°
1950
93°
2000
800
RTAO
R60O
R40O
FEFE
SPCG
GRGC
SMTU
93°
2050
93°
2100

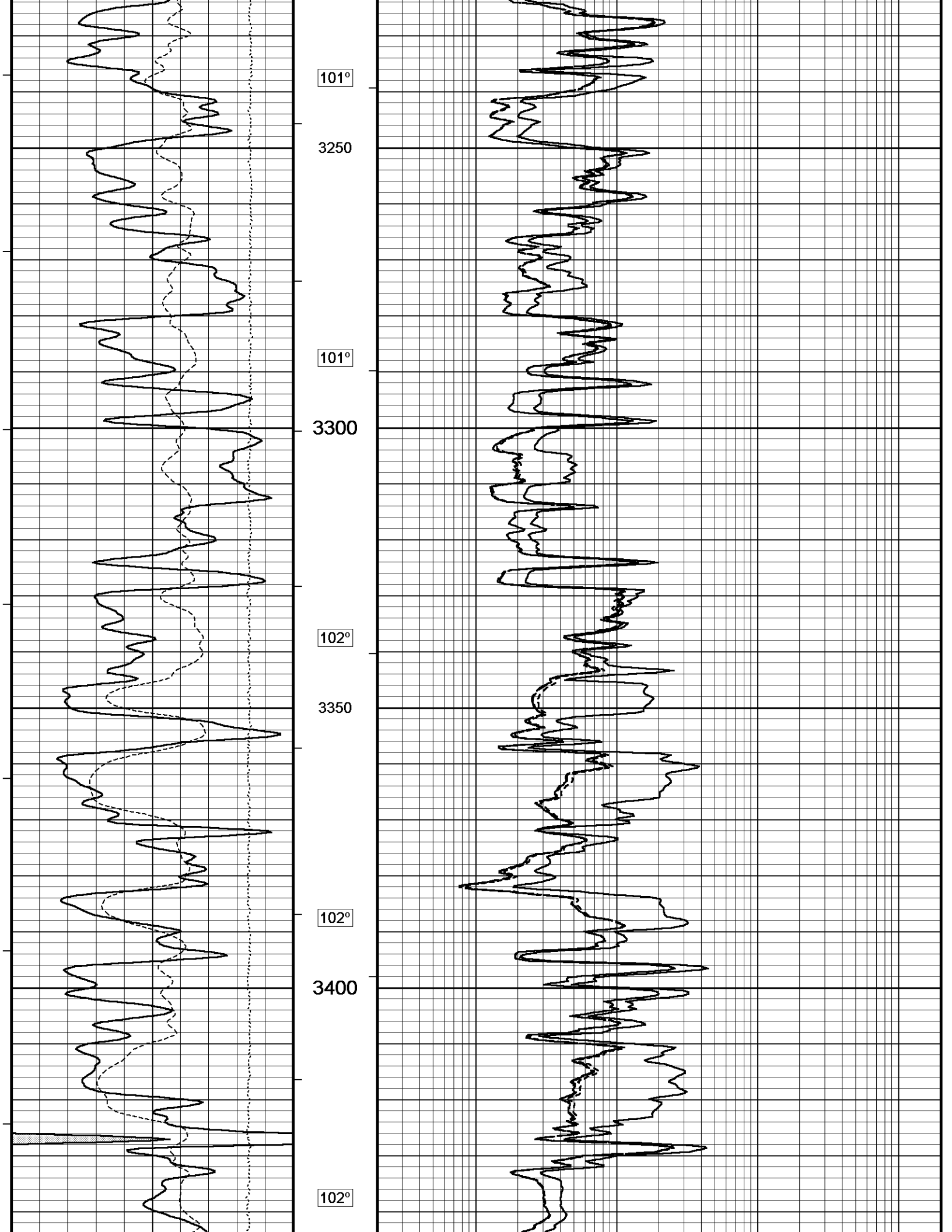

94°
2150
94°
2200
700
400
94°
2250
94°
2300
95°

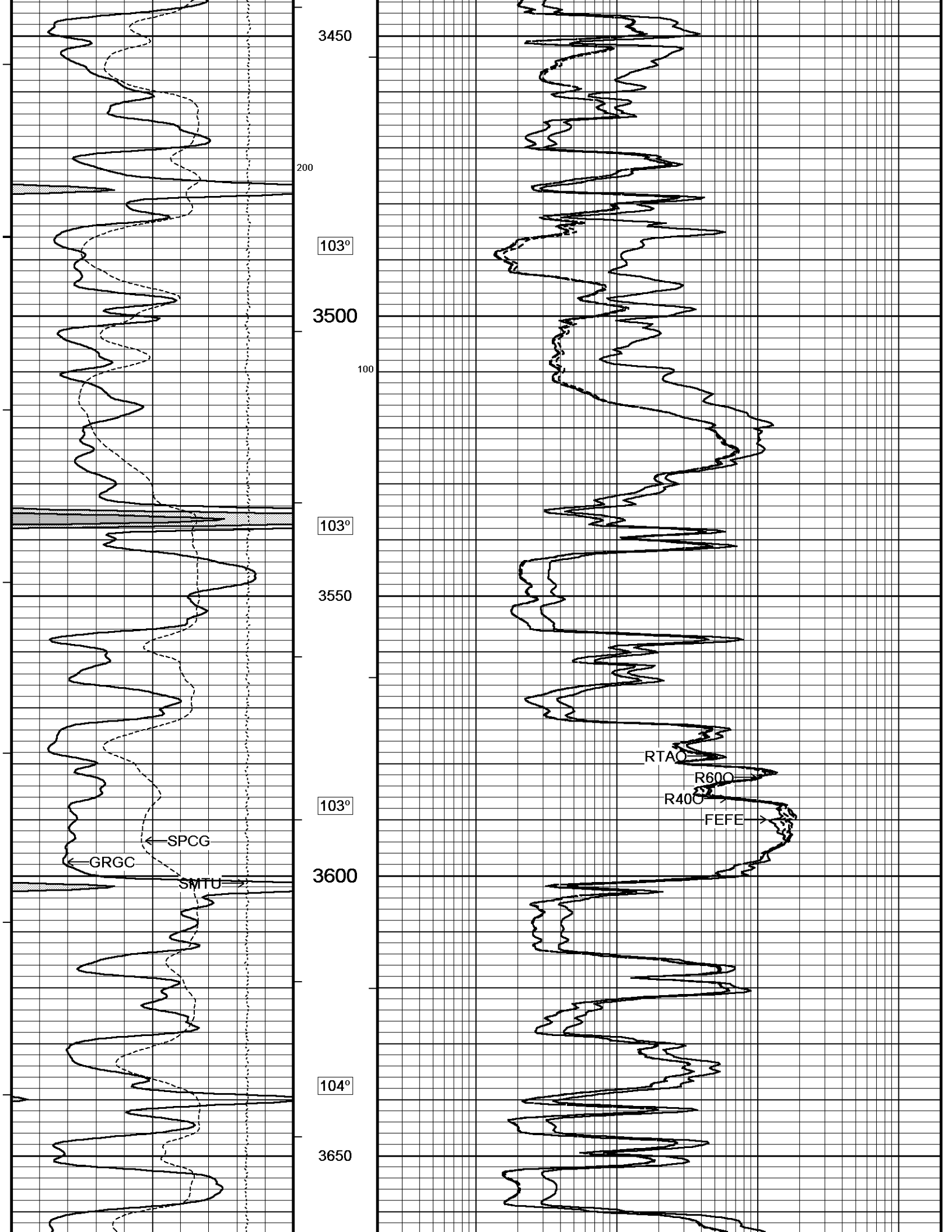

2350
95°
2400
RTAO
R60O
R40O
FEFE
SPCG
GRGC
SMTU
600
95°
2450
96°
2500
96°
2550
300

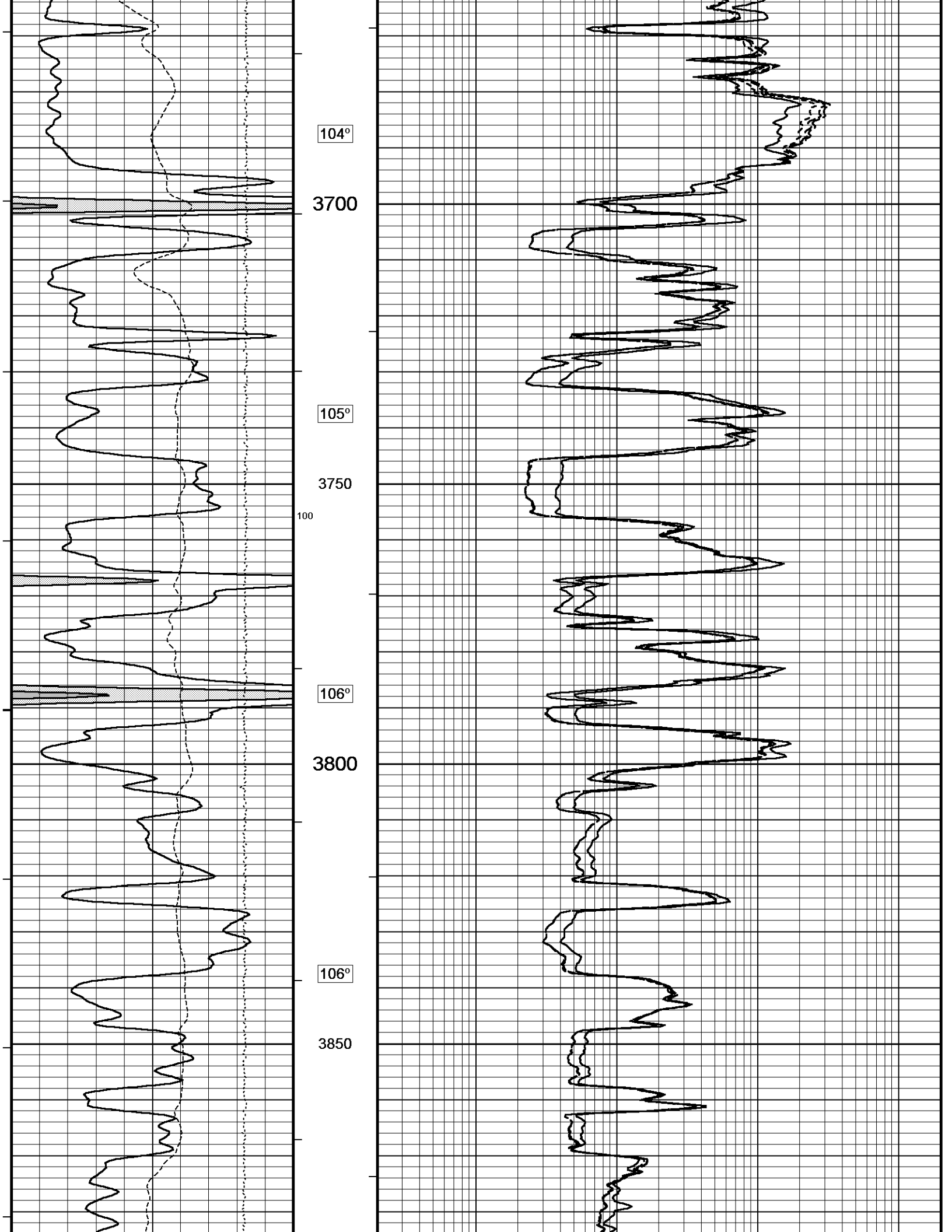

96°
2600
97°
2650
500
97°
2700
97°
2750

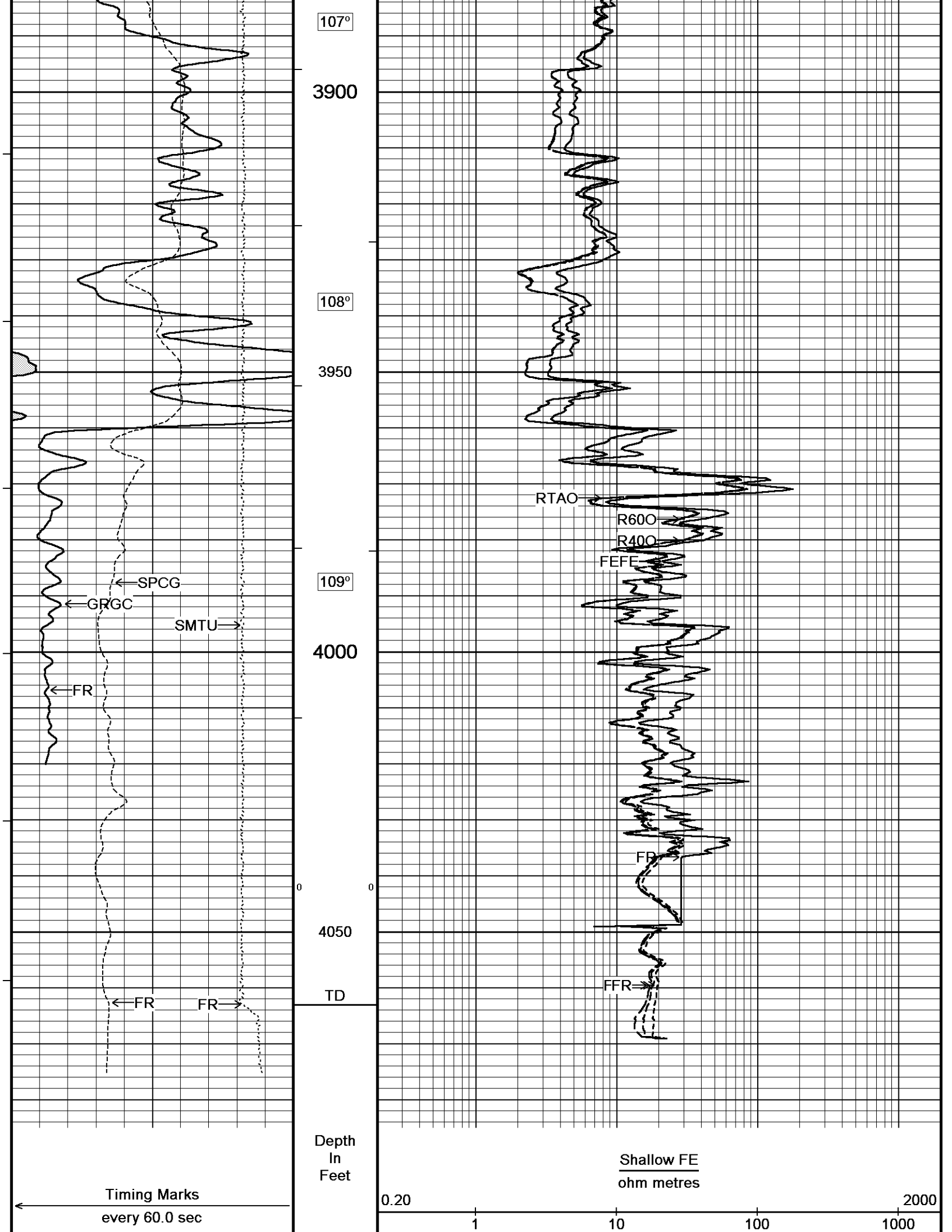

98°
RTAO
R60O
R40O
FEFE
2800
SPCG
GRGC
SMTU
98°
2850
98°
2900
400
99°
2950
99°
200
3000


99°
3050
100°
3100
100°
3150
101°
300
3200
SPCG
GRGC
SMTU
RTAO
R60O
R40O
FFLT


101°
3250
101°
3300
102°
3350
102°
3400
102°


3450
200
103°
3500
100
103°
3550
RTAO
R60O
R40O
FEFE
103°
SPCG
GRGC
SMTU
3600
104°
3650


104°
3700
105°
3750
100
106°
3800
106°
3850


107°
3900
108°
3950
109°
4000
4050
TD
SPCG
GRGC
SMTU
FR
FR
FR
RTAO
R60O
R40O
FEFE
FR
FFR
Depth
In
Feet
Timing Marks
every 60.0 sec
Shallow FE
ohm metres
0.20
2000
1
10
100
1000

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
– → | 20 | ← +

DST Uphole Tension
pounds
5000 0

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240

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 28-JUL-2014 08:43
Filename: C:\Users\mrigby\AppData\Local\Temp\Weatherford Pre...\McElvain Gustafson #11-6_003.dta
Recorded on 26-FEB-2014 12:38
System Versions: Logged with 13.05.9583 Plotted with 13.06.9284

5 INCH MAIN

10 INCH HIGH RESOLUTION

Depth Based Data - Maximum Sampling Increment 2.5cm
Plotted on 28-JUL-2014 08:43
Filename: C:\Users\mrigby\AppData\Local\Temp\Weatherford Pre...\McElvain Gustafson #11-6_001.dta
Recorded on 26-FEB-2014 11:27
System Versions: Logged with 13.05.9583 Plotted with 13.06.9284

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
– → | 20 | ← +

DST Uphole Tension
pounds
5000 0

Depth in Feet

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:120

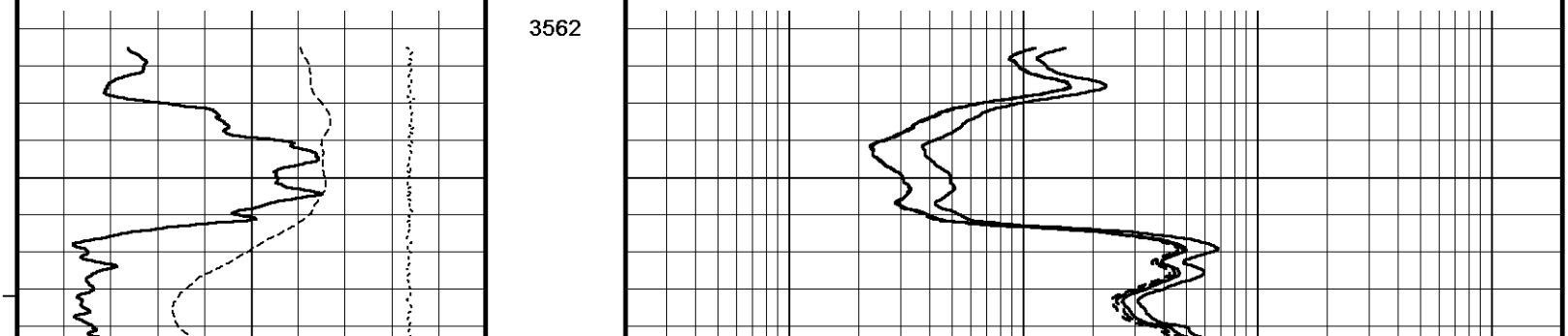
3562

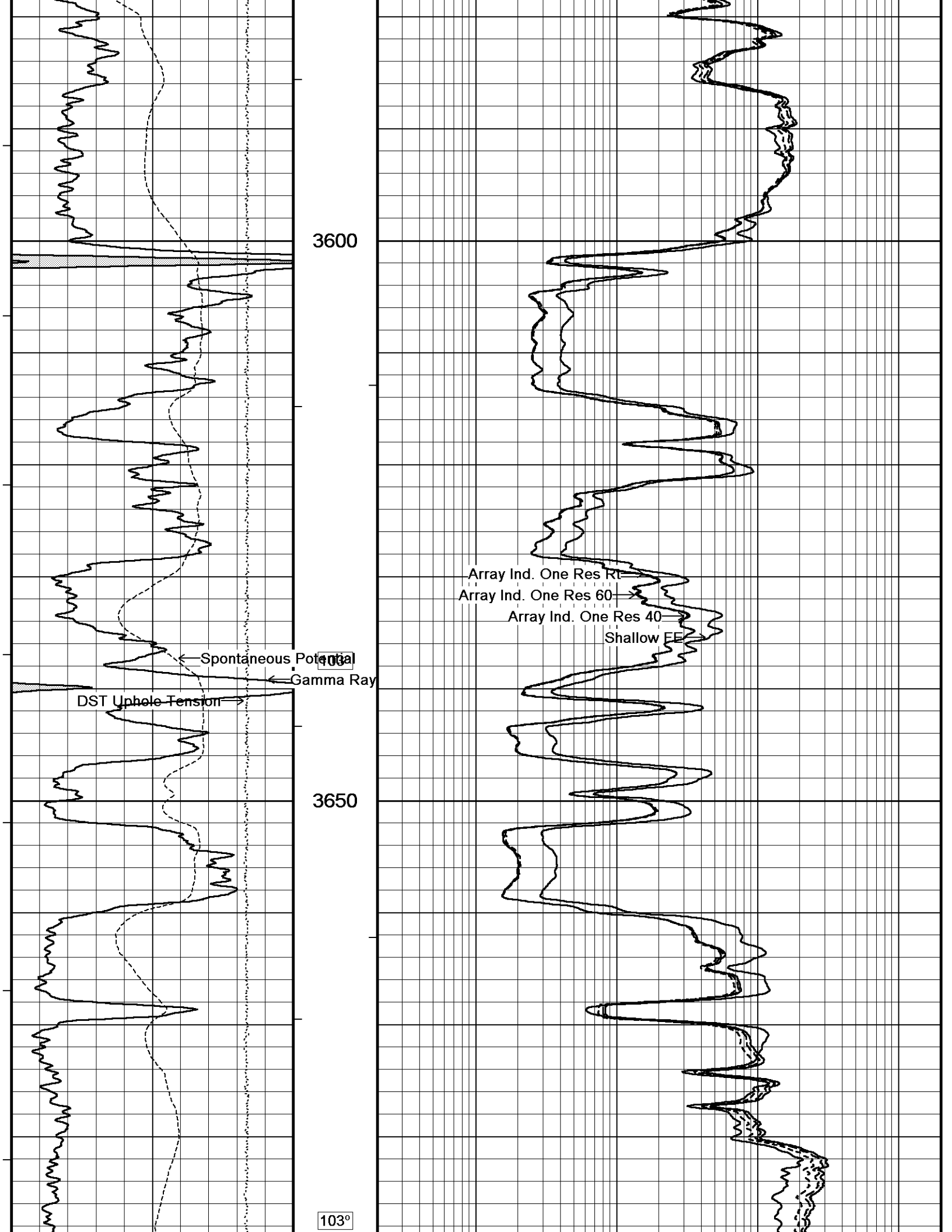
Shallow FE
ohm metres
0.20 2000
1 10 100 1000

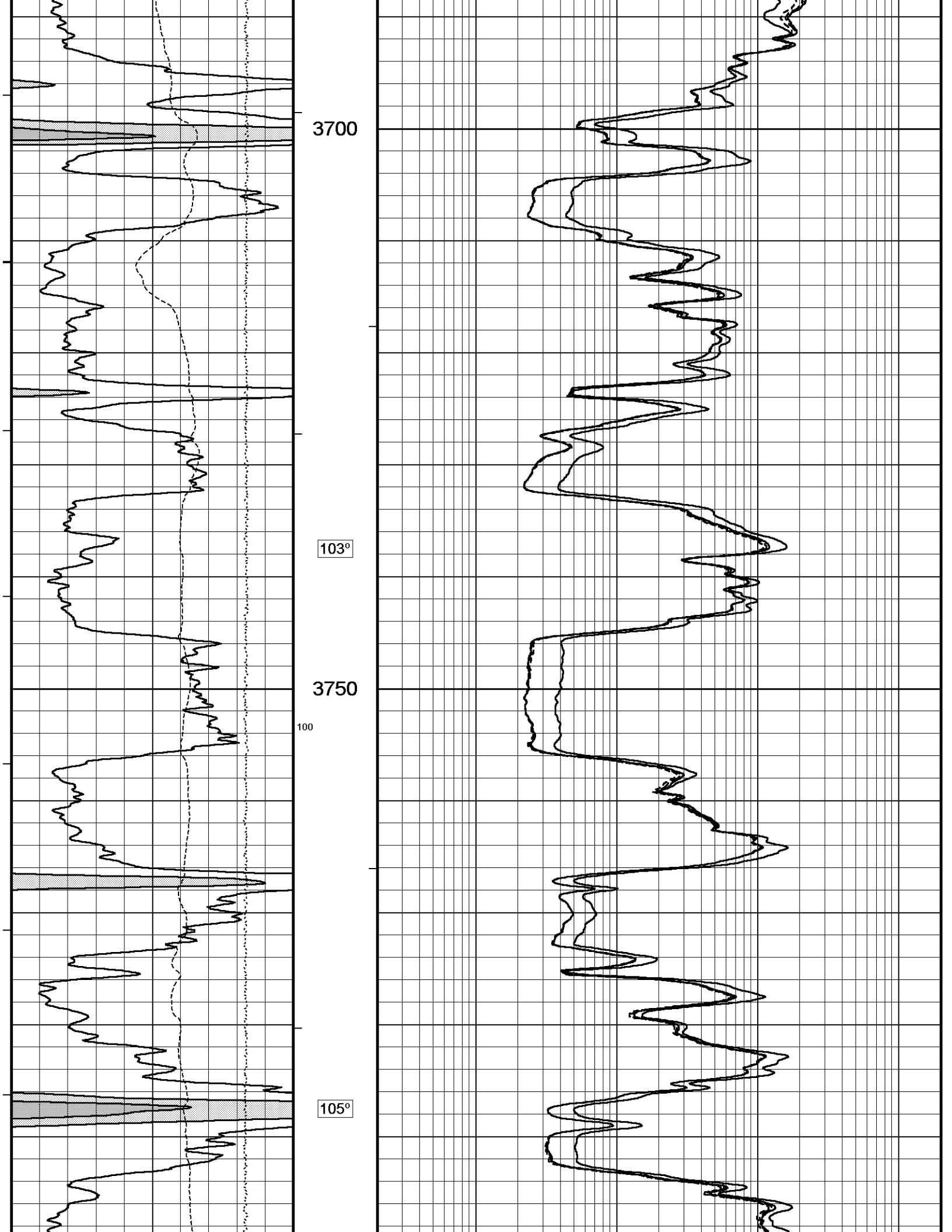
Array Ind. One Res 40
ohm metres
0.20 2000
1 10 100 1000

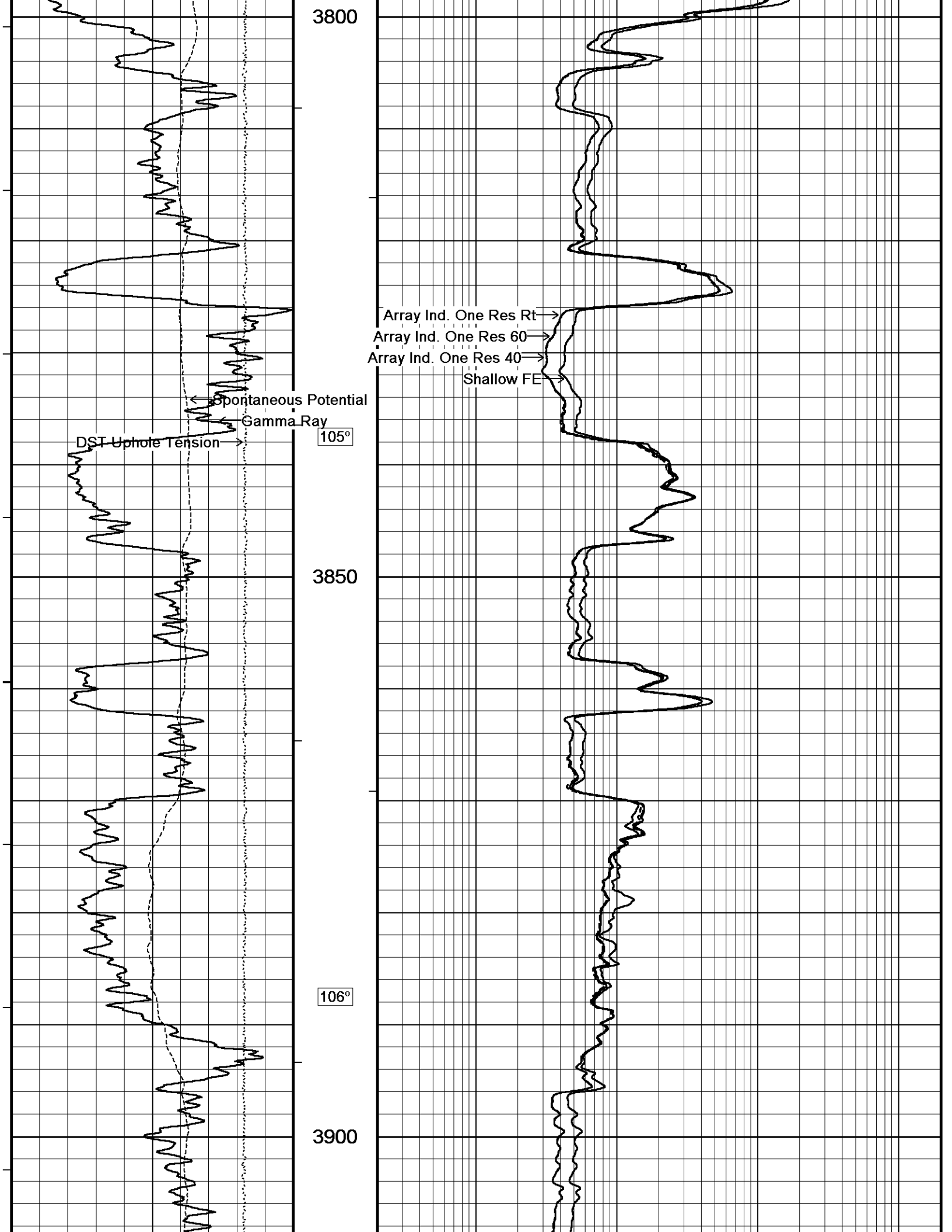
Array Ind. One Res 60
ohm metres
0.20 2000
1 10 100 1000

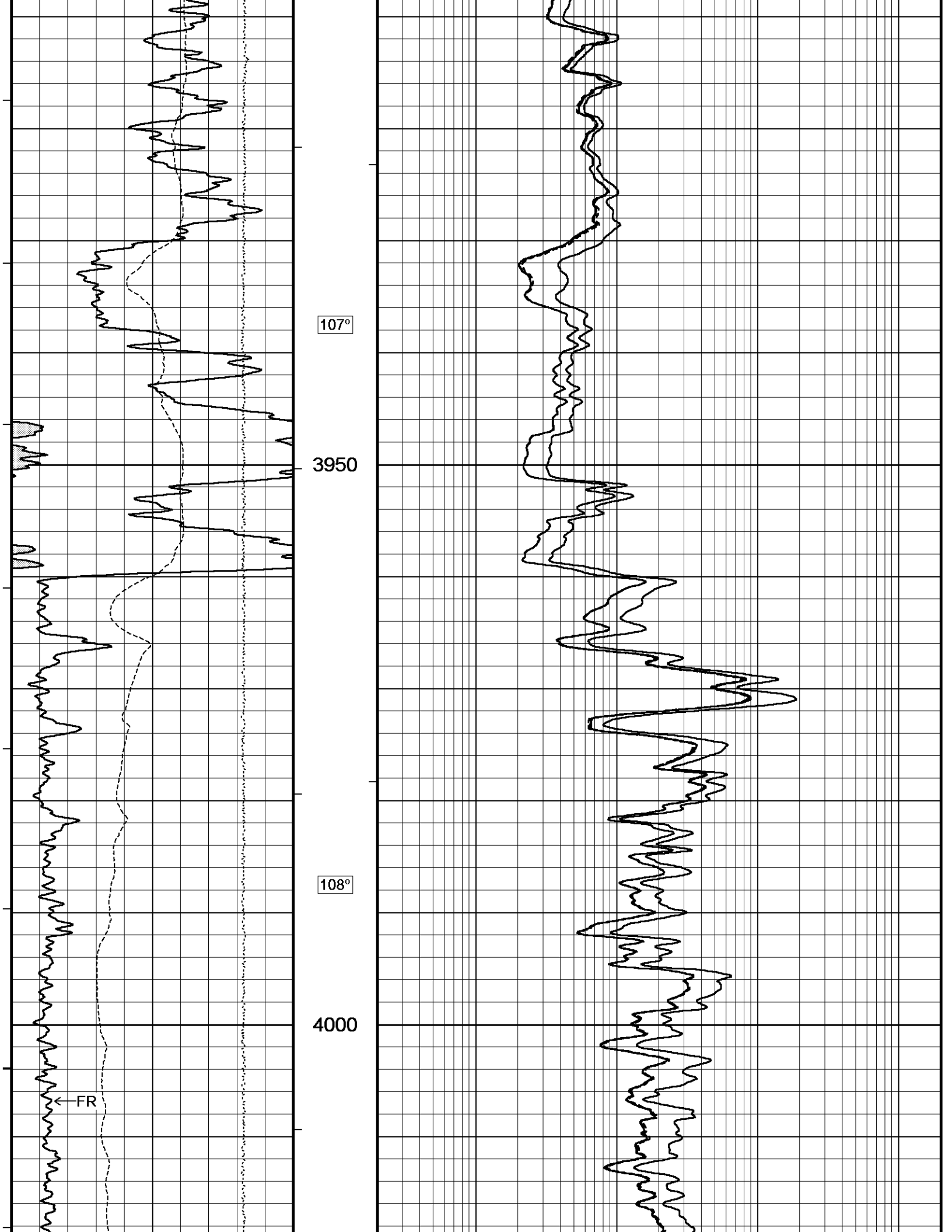
Array Ind. One Res Rt
ohm metres
0.20 2000
1 10 100 1000

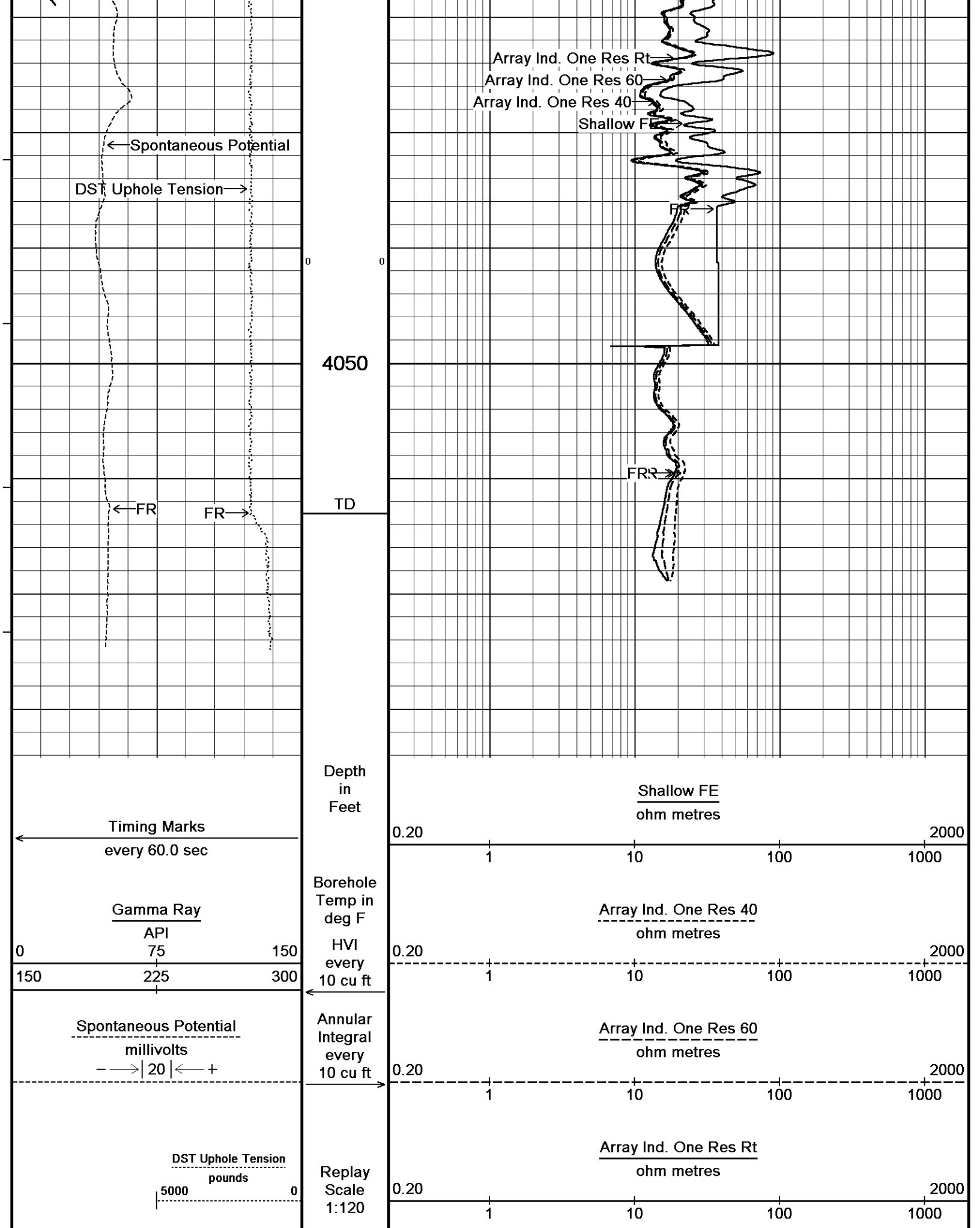



3600
3650
Array Ind. One Res RT
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
103°


3700
103°
3750
100
105°


3800
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
105°
3850
106°
3900


107°
3950
108°
4000
←FR



Depth Based Data - Maximum Sampling Increment 2.5cm

Plotted on 28-JUL-2014 08:43

Filename: C:\Users\mrigby\AppData\Local\Temp\Weatherford Pre...\McElvain Gustafson #11-6_001.dta

Recorded on 26-FEB-2014 11:27

Filename: C:\Users\mrigby\AppData\Local\Temp\Weatherford Pre...\McElvain Gustafson #11-6_001.dta Recorded on 26-FEB-2014 11:27
System Versions: Logged with 13.05.9583 Plotted with 13.06.9284

10 INCH HIGH RESOLUTION

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 28-JUL-2014 08:43
Filename: C:\Users\mrigby\AppData\Local\Temp\Weatherford Pre...\McElvain Gustafson #11-6_002.dta Recorded on 26-FEB-2014 11:27
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.06.9284

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
– 20 +

DST Uphole Tension
pounds
5000 0

Depth in Feet

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240

Shallow FE
ohm metres
0.20 1 10 100 1000 2000

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

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

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

3562

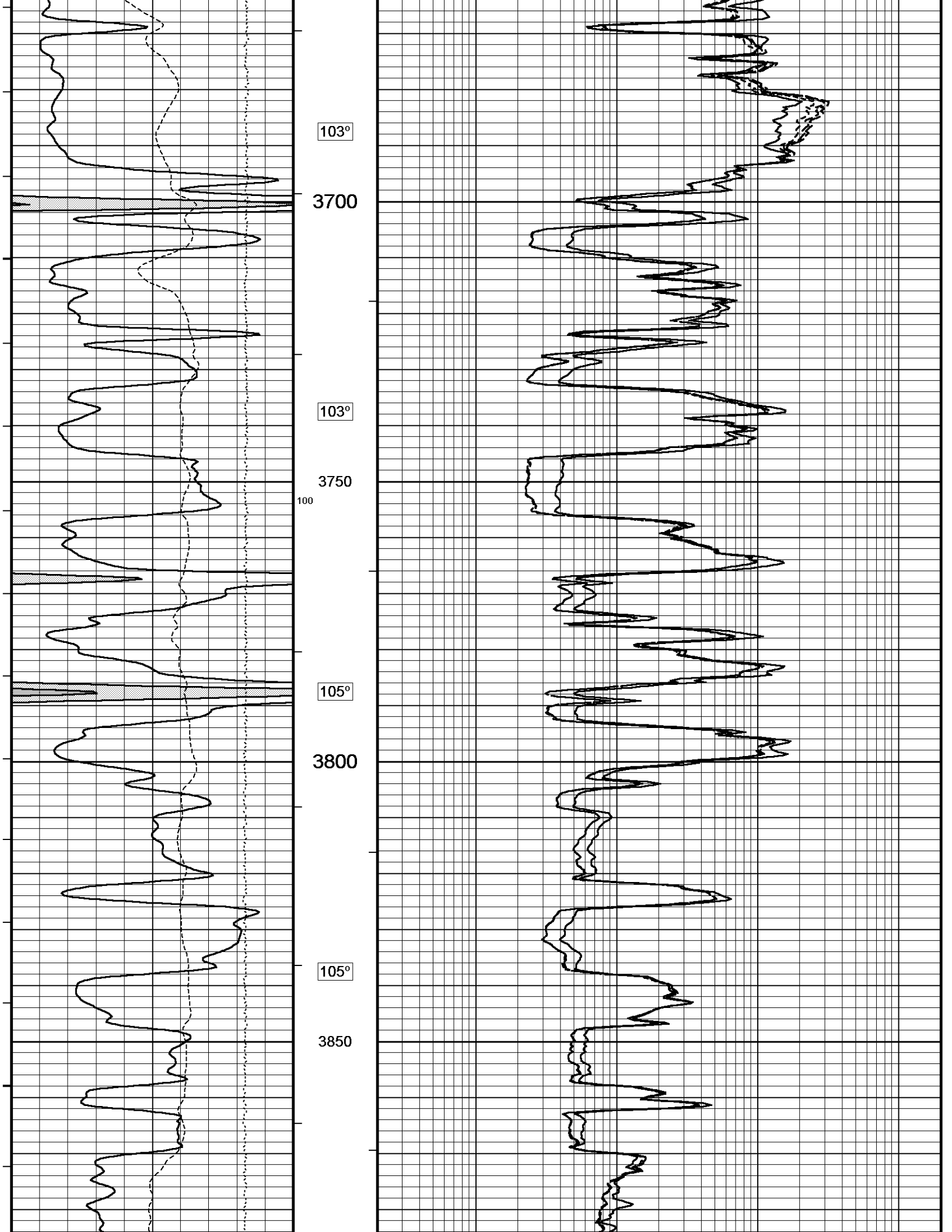
SPCG
GRGC
SMTU

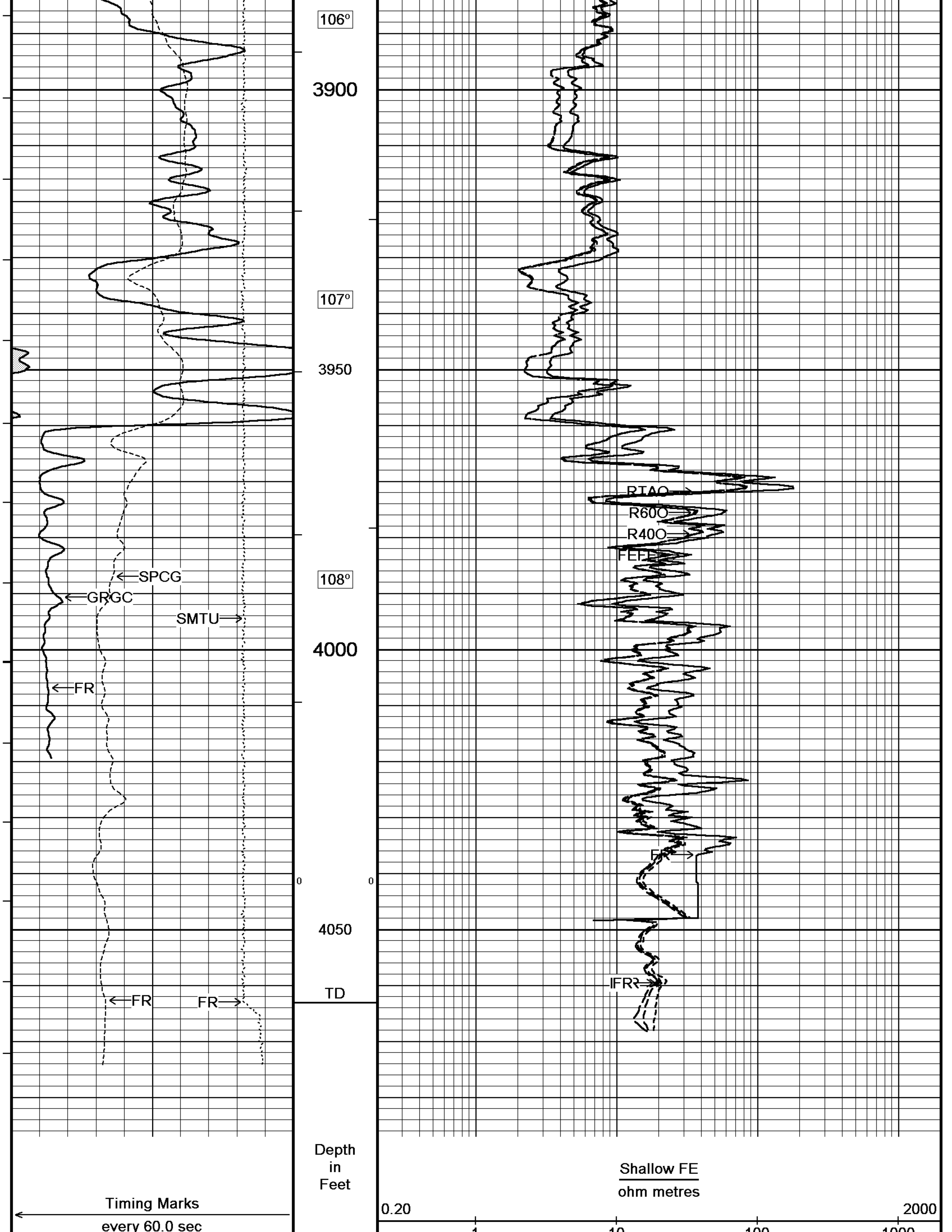
3600

RTAO
R60O
R40O
FEFE

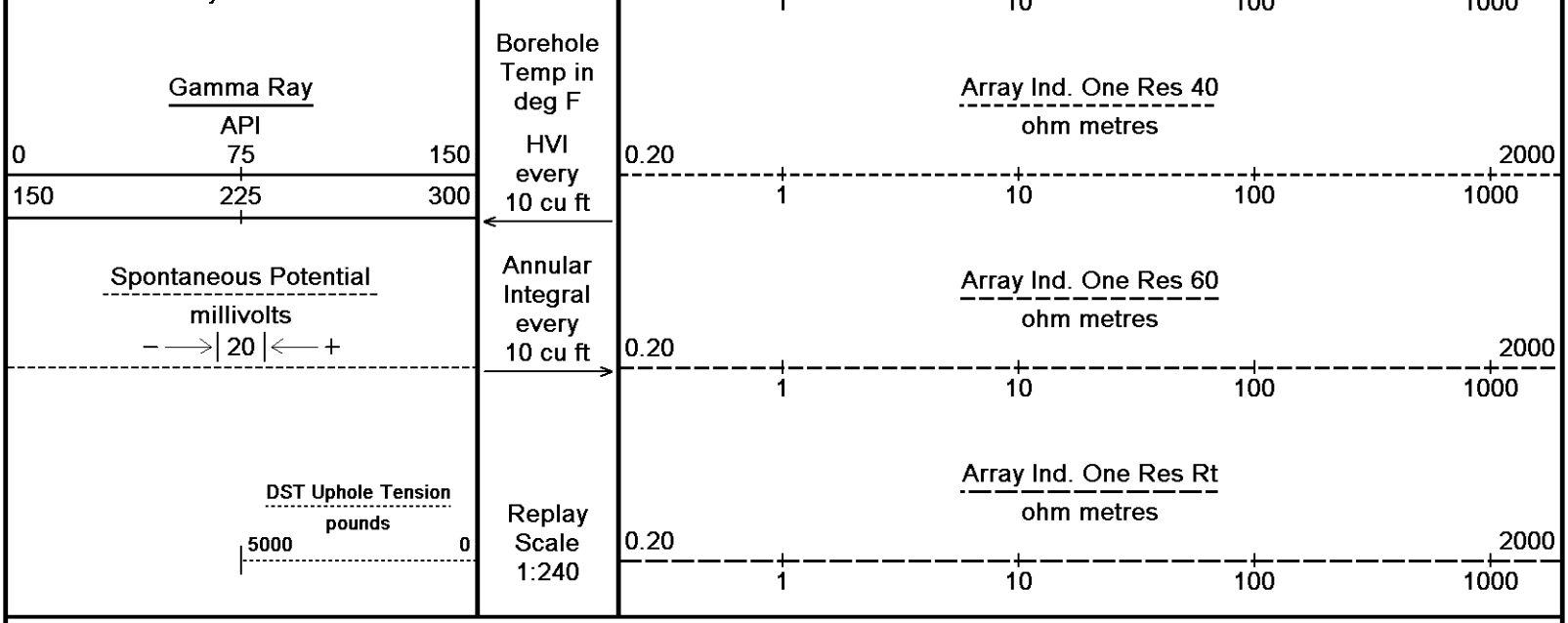
103°

3650


103°
3700
103°
3750
100
105°
3800
105°
3850



106°
3900
107°
3950
108°
4000
4050
TD
SPCG
GRGC
SMTU
FR
FR
FR
RTAO
R60O
R40O
FEFE
FR
IFRR
Depth
in
Feet
Timing Marks
every 60.0 sec
Shallow FE
ohm metres
0.20
2000
1
10
100
1000



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 28-JUL-2014 08:43

Filename: C:\Users\mrigby\AppData\Local\Temp\Weatherford Pre...\McElvain Gustafson #11-6_002.dta — Recorded on 26-FEB-2014 11:27

System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.06.9284

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Users\mrigby\AppData\Local\Temp\Weatherford PreView\0\McElvain Gustafson #11-6_002.dta

General Constants All 000

Last Edited on 26-FEB-2014,10:56

General Parameters		
Mud Resistivity	1.280	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

SP Calibration MCG-C 84

Field Calibration on 21-AUG-2013 12:25

	Measured	Calibrated (mV)

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

Gamma Calibration MCG-C 84

Field Calibration on 26-FEB-2014 02:09

	Measured	Calibrated (API)
Background	66	44
Calibrator (Gross)	1141	769
Calibrator (Net)	1076	725

Gamma Constants MCG-C 84

Last Edited on 26-FEB-2014,10:33

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	Ref 1	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

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 26-FEB-2014 01:47

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)
8.06	7.97

Micro Normal and Micro Inverse Calibration MMR-A 11

Base Calibration on 20-JAN-2014 13:46
Field Check on 26-FEB-2014 01:43

Base Calibration

	Measured		Calibrated (ohm-m)	
Channel	Resistor 1	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

Micro Normal and Micro Inverse Constants MMR-A 11

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 26-FEB-2014 02:00

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2981	92	3714	110
Ratio	32.404		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	1702	2459
Ratio	0.692	

Field Check

	Calibrated (cps)	
	1723	2472
Ratio	0.697	

Neutron Constants MDN-A.B 65

Last Edited on 26-FEB-2014,10:33

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 26-FEB-2014 01:42

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 26-FEB-2014,10:32

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 26-FEB-2014,10:32

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

Induction Calibration MAI-A.A 45

Base Calibration on 21-MAY-2013,16:47
Field Check on 26-FEB-2014 01:34

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

Channel	Base Check (mmho/m) Low	Base Check (mmho/m) High	Field Check (mmho/m) Low	Field Check (mmho/m) High	
1			18.2	3849.6	
2			31.6	3627.9	
3			28.6	3048.4	
4			18.3	2078.6	
Deep			16.0	1910.8	
Medium			42.5	4059.1	
Shallow			49.5	5480.5	
Array Temperature				56.6	Deg F

Induction Constants MAI-A.A 45

Last Edited on 26-FEB-2014,10:32

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
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 26-FEB-2014 01:41

Density Calibration

Base Calibration	Measured Near	Measured Far	Calibrated (sdu) Near	Calibrated (sdu) Far
Reference 1	43628	22294	59556	30836
Reference 2	17956	1856	24941	2541

Field Check at Base

	665.1	818.8

Field Check

	664.5	823.8

PE Calibration

Base Calibration	Measured WS	Measured WH	Measured Ratio	Calibrated Ratio
Background	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

123.3	588.1

Density Constants MPD-B 31

Last Edited on 26-FEB-2014,10:32

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 26-FEB-2014 01:36

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)
7.94	7.97

DOWNHOLE EQUIPMENT

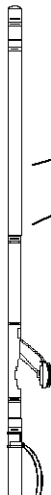
C:\Users\mrigby\AppData\Local\Temp\Weatherford PreView\0\McElvain Gustafson #11-6_002.dta

3/8" Triple Cone Cable Head (MCB C A)
MCB-C.A 5 LG: 1.58 ft WT: 15.4 lb OD: 2.24 in

Compact Comms Gamma
MCG-C 84 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-Resistivity
MMR-A 11 LG: 8.59 ft WT: 81.6 lb OD: 4.88 in

Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in



56.02 ft GRGC - Gamma Ray
53.11 ft CGXT - MCG External Temperature
45.76 ft MBTC - MMR Caliper
45.76 ft MINV - MMR MicroLog Inverse
45.76 ft MNRL - MMR MicroLog Normal
40.97 ft NPRL - Limestone Neutron Por.

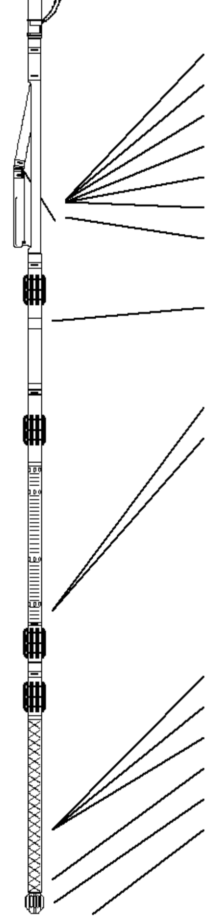
Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-A.A 126 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Induction
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 62.88 ft Weight: 471.8 lb



33.73 ft AVOL - Annular Volume
33.73 ft HVOL - Hole Volume
33.73 ft CLDC - Density Caliper
31.80 ft DPRL - Limestone Density Por.
31.80 ft DEN - Compensated Density
31.80 ft DCOR - Density Correction
31.74 ft PDPE - PE

26.24 ft FEFE - Shallow FE

12.96 ft DT35 - 3-5' Compensated Sonic
12.96 ft SPRL - Wyllie Lime. Sonic Por.

3.34 ft R40O - Array Ind. One Res 40
3.34 ft RTAO - Array Ind. One Res Rt
3.34 ft R60O - Array Ind. One Res 60
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	McELVAIN ENERGY, INC.
WELL	GUSTAFSON #11-6
FIELD	DUSSAULT
PROVINCE/COUNTY	GRAHAM
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2334.00	feet	First Reading	4060.00	feet
Elevation Drill Floor	2332.00	feet	Depth Driller	4065.00	feet
Elevation Ground Level	2324.00	feet	Depth Logger	4063.00	feet

Weatherford®

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

Weatherford

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

COMPANY McELVAIN ENERGY, INC.
WELL GUSTAFSON #11-6
FIELD DUSSAULT
PROVINCE/COUNTY GRAHAM
COUNTRY/STATE U.S.A. / KANSAS
LOCATION 1914' FNL & 2357' FWL

SEC	TWP	RGE	Other Services
11	105	22W	MPD/MDN MML
			MSS

API Number 15-065-23996
Permit Number

Permanent Datum GL, Elevation 2324 feet
Log Measured From KB
Drilling Measured From KB

Elevations:
KB
DF
GL

Date	26-FEB-2014		
Run Number	ONE		
Service Order	4558-80590102		
Depth Driller	4065.00 feet		
Depth Logger	4063.00 feet		
First Reading	4060.00 feet		
Last Reading	307.00 feet		
Casing Driller	303.00 feet		
Casing Logger	307.00 feet		
Bit Size	7.875 inches		
Hole Fluid Type	CHEMICAL		
Density / Viscosity	9.20 lb/USg	55.00 CP	
PH / Fluid Loss	10.50	7.20 ml/30Min	
Sample Source	FLOWLINE		
Rm @ Measured Temp	1.28 @76.0 ohm-m		
Rmf @ Measured Temp	1.02 @76.0 ohm-m		
Rmc @ Measured Temp	1.54 @76.0 ohm-m		
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.90 @108.0 ohm-m		
Time Since Circulation	4 HOURS		
Max Recorded Temp	108.00 deg F		
Equipment / Base	13057	LIB	
Recorded By	ADAM SILL		JEFFREY RANDLE
Witnessed By	TOM FLOWERS		
JOB #	LB14-055		

1 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 28-JUL-2014 08:43

Filename: C:\Users\mrigby\AppData\Local\Temp\Weatherford PreVie...\McElvain Gustafson #11-6_003.dta — Recorded on 26-FEB-2014 12:38

System Versions: Logged with 13.05.9583 Plotted with 13.06.9284

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
−→ 20 ←+

Bit Size
inches
6 11 16

DST Uphole Tension
pounds
5000 0

Depth In Feet

Borehole Temp in deg F

Replay Scale 1:600

Array Ind. One Cond Ct
mmhos
1000 750 500 250 0
2000 1750 1500 1250 1000

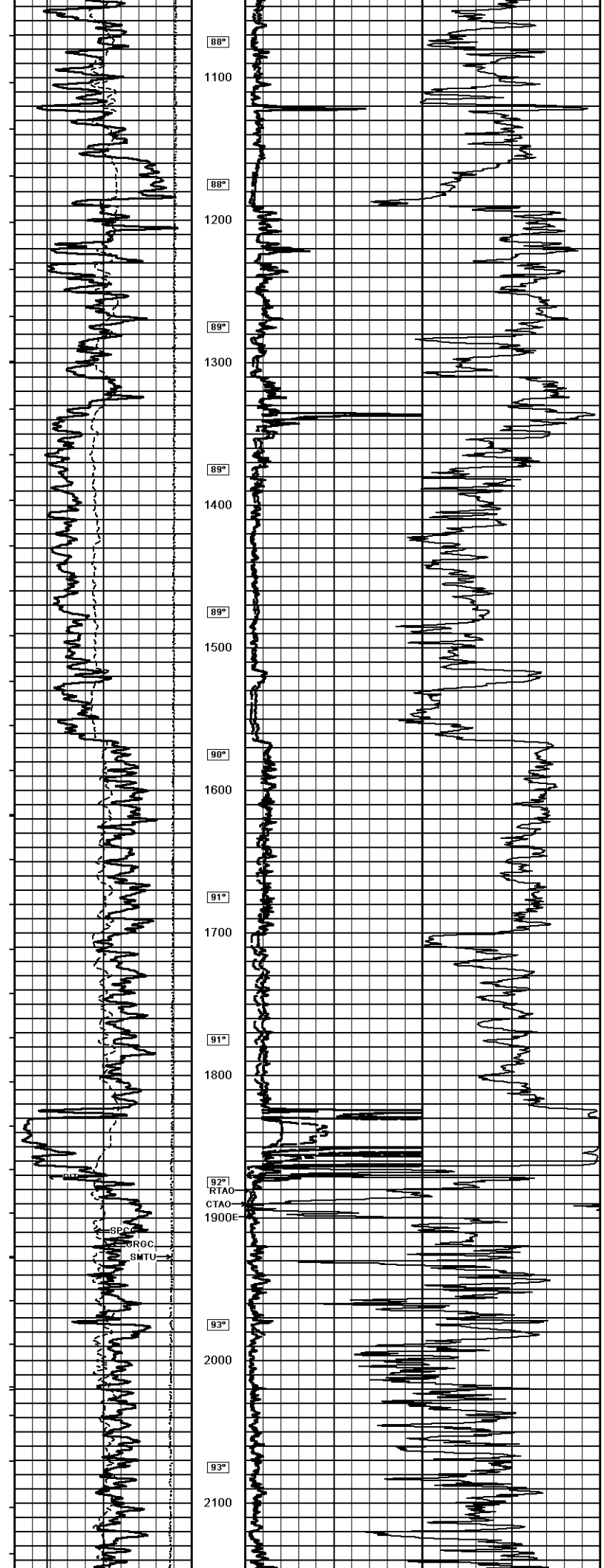
Shallow FE
ohm metres
0 25 50
0 250 500

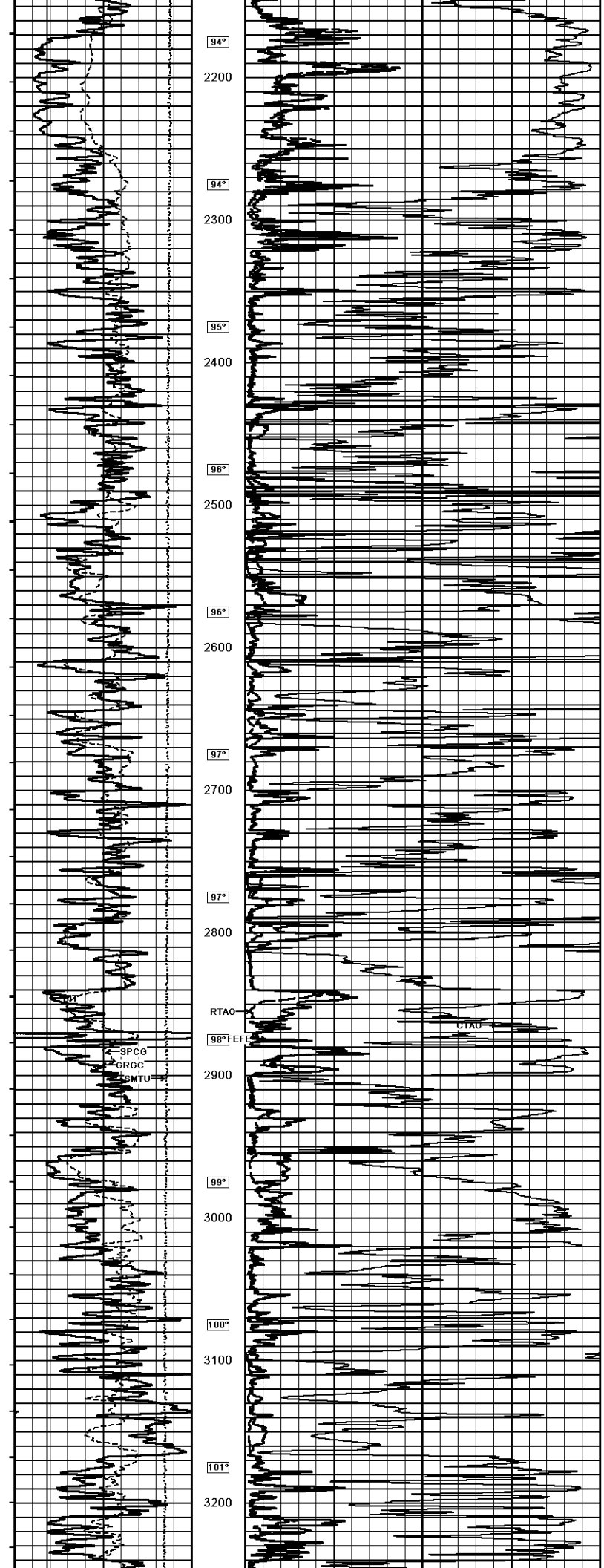
Array Ind. One Res Rt
ohm metres
0 25 50
0 250 500

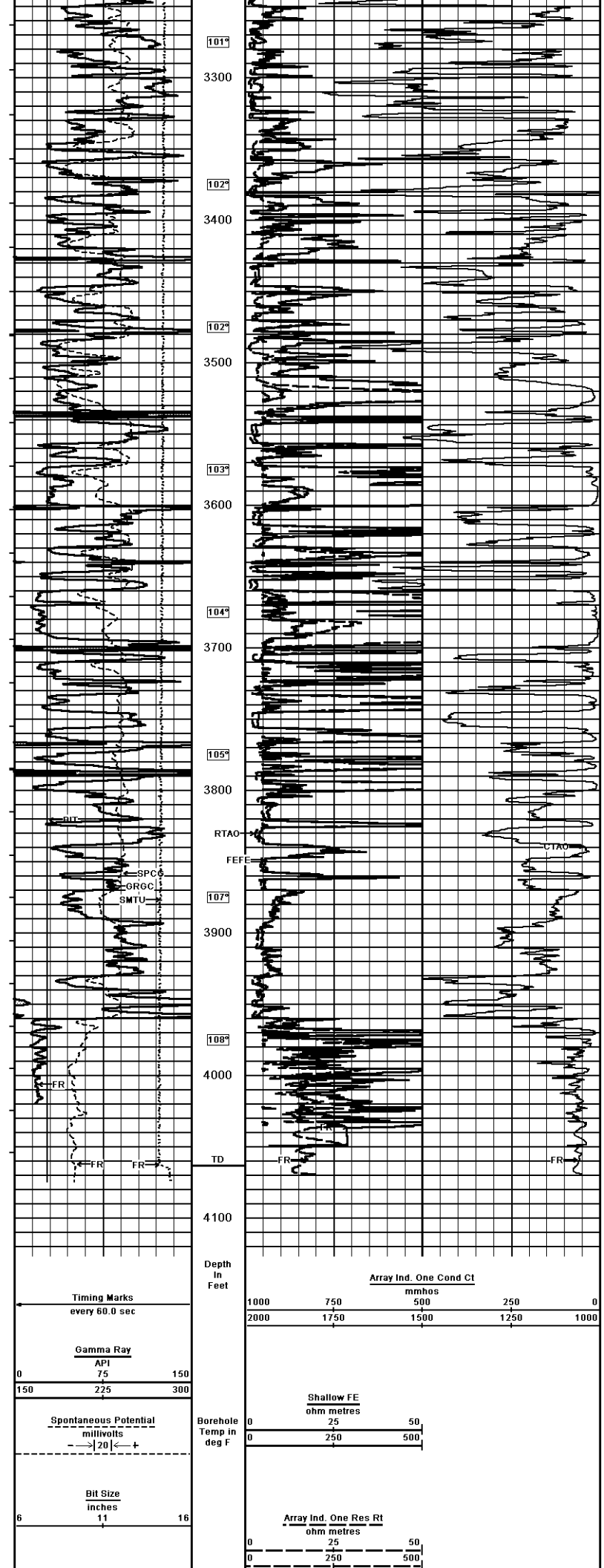
Casing
300

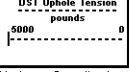
81°
400
83°
500
84°
600
85°
700
85°
800
86°
900
87°
1000

BIT
RTAO
FEFE
SPCG
GROC
SMTU
CTAO


88°
1100
88°
1200
89°
1300
89°
1400
89°
1500
90°
1600
91°
1700
91°
1800
92°
RTAO
CTAO
1900E
SPCC
GRGC
SMTU
93°
2000
93°
2100


94°
2200
94°
2300
95°
2400
96°
2500
96°
2600
97°
2700
97°
2800
RTAO
98°
EFE
SPCG
GRGC
SMTU
2900
99°
3000
100°
3100
101°
3200
CTAO


101°
3300
102°
3400
102°
3500
103°
3600
104°
3700
105°
3800
BIT
RTAO
CTAO
FEFE
SPCG
GRGC
SMTU
107°
3900
108°
4000
FR
FR
FR
FR
FR
TD
4100
Depth In Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0 75 150
150 225 300
Spontaneous Potential
millivolts
−→|20|←+
Bit Size
inches
6 11 16
Borehole Temp in deg F
Array Ind. One Cond Ct
mmhos
1000 750 500 250 0
2000 1750 1500 1250 1000
Shallow FE
ohm metres
0 25 50
0 250 500
Array Ind. One Res Rt
ohm metres
0 25 50
0 250 500



Replay Scale 1:600

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 28-JUL-2014 08:43
Filename: C:\Users\mrigby\AppData\Local\Temp\Weatherford PreVie...\McElvain Gustafson #11-6_003.dta — Recorded on 26-FEB-2014 12:38
System Versions: Logged with 13.05.9583 Plotted with 13.06.9284

1 INCH MAIN

COMPANY	McELVAIN ENERGY, INC.
WELL	GUSTAFSON #11-6
FIELD	DUSSAULT
PROVINCE/COUNTY	GRAHAM
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2334.00	feet	First Reading	4060.00	feet
Elevation Drill Floor	2332.00	feet	Depth Driller	4065.00	feet
Elevation Ground Level	2324.00	feet	Depth Logger	4063.00	feet

Weatherford

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG