

**Weatherford****ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG**

COMPANY					SHAKESPEARE OIL CO, INC.				
WELL					TUCKER 1-5				
FIELD					WILDCAT				
PROVINCE/COUNTY					SCOTT				
COUNTRY/STATE					U.S.A. / KANSAS				
LOCATION					2305' FSL & 2310' FEL				
SEC	TWP	RGE	Other Services						
5	16	34W	MPD/MDN						
API Number		15-171-20976		MML					
Permit Number				MSS					
Permanent Datum GL, Elevation 3102 feet						Elevations:			
Log Measured From KB						KB 3112.00			
Drilling Measured From KB						DF 3110.00			
						GL 3102.00			
Date	20-OCT-2013								
Run Number	ONE								
Service Order	3539909								
Depth Driller	4865.00					feet			
Depth Logger	4864.00					feet			
First Reading	4860.66					feet			
Last Reading	262.00					feet			
Casing Driller	268.00					feet			
Casing Logger	262.00					feet			
Bit Size	7.875					inches			
Hole Fluid Type	CHEM								
Density / Viscosity	8.80 lb/USg		46.00 CP						
PH / Fluid Loss	10.50		8.80 ml/30Min						
Sample Source	MUDPIT								
Rm @ Measured Temp	0.46 @ 62.0		ohm-m						
Rmf @ Measured Temp	0.37 @ 62.0		ohm-m						
Rmc @ Measured Temp	0.55 @ 62.0		ohm-m						
Source Rmf / Rmc	CALC	CALC							
Rm @ BHT	0.27 @109.0		ohm-m						
Time Since Circulation	4 HRS								
Max Recorded Temp	109.00		deg F						
Equipment / Base	13057	LIB							
Recorded By	ROB HOFFMAN					DEREK CARTER			
Witnessed By	TIM PRIEST								
JOB #	LB13-297								

BOREHOLE RECORD

Last Edited: 21-OCT-2013 03:14

Bit Size inches	Depth From feet	Depth To feet
7.875	268.00	4865.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	268.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 13.05.9583
- TOOLS: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION
- HARDWARE:
 - MDN: DUAL BOWSPRING ECCENTRALIZER
 - MFE: 1 X 0.5 INCH STANDOFF
 - MSS: 2 X 0.5 INCH STANDOFF
 - MAI: 2 X 0.5 INCH STANDOFF
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST
- TOTAL HOLE VOLUME FROM TD TO 3800 FT.: 370 CU. FT.

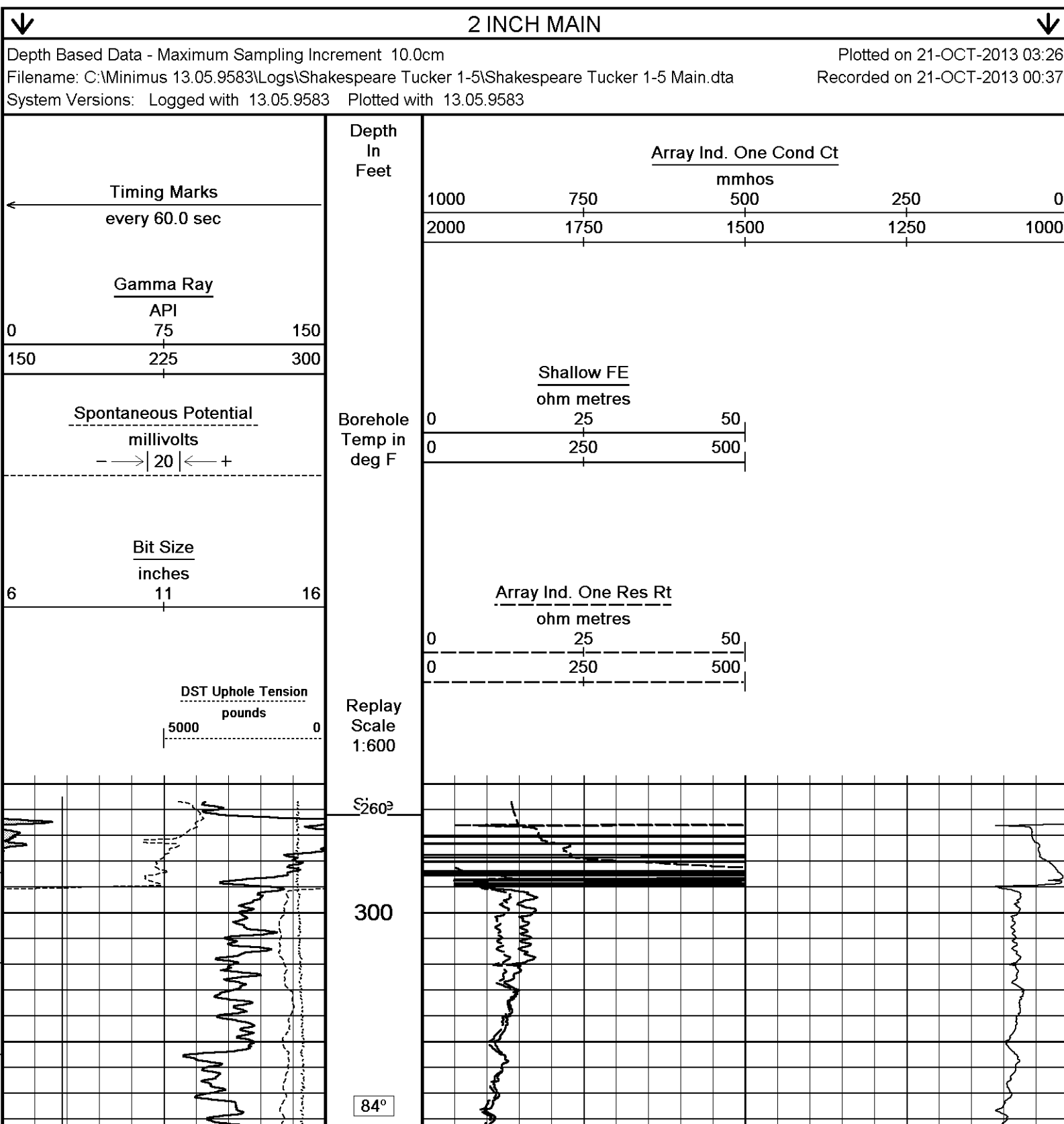
- ANNULAR HOLE VOLUME WITH 4.5 INCH CASING FROM TD TO 3800 FT.: 260 CU. FT.

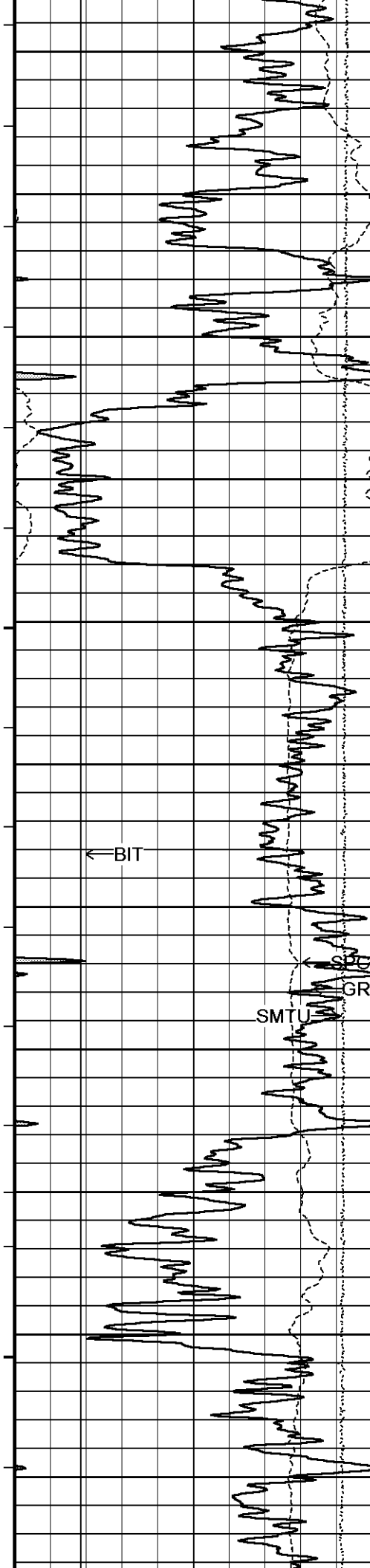
- RIG: HD DRILLING #2

- ENGINEER: ROB HOFFMAN, DEREK CARTER

- OPERATOR: OSCAR CRUZ

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

85°

500

86°

600

87°

RTAO

700

FEFE

SPCG

GRGC

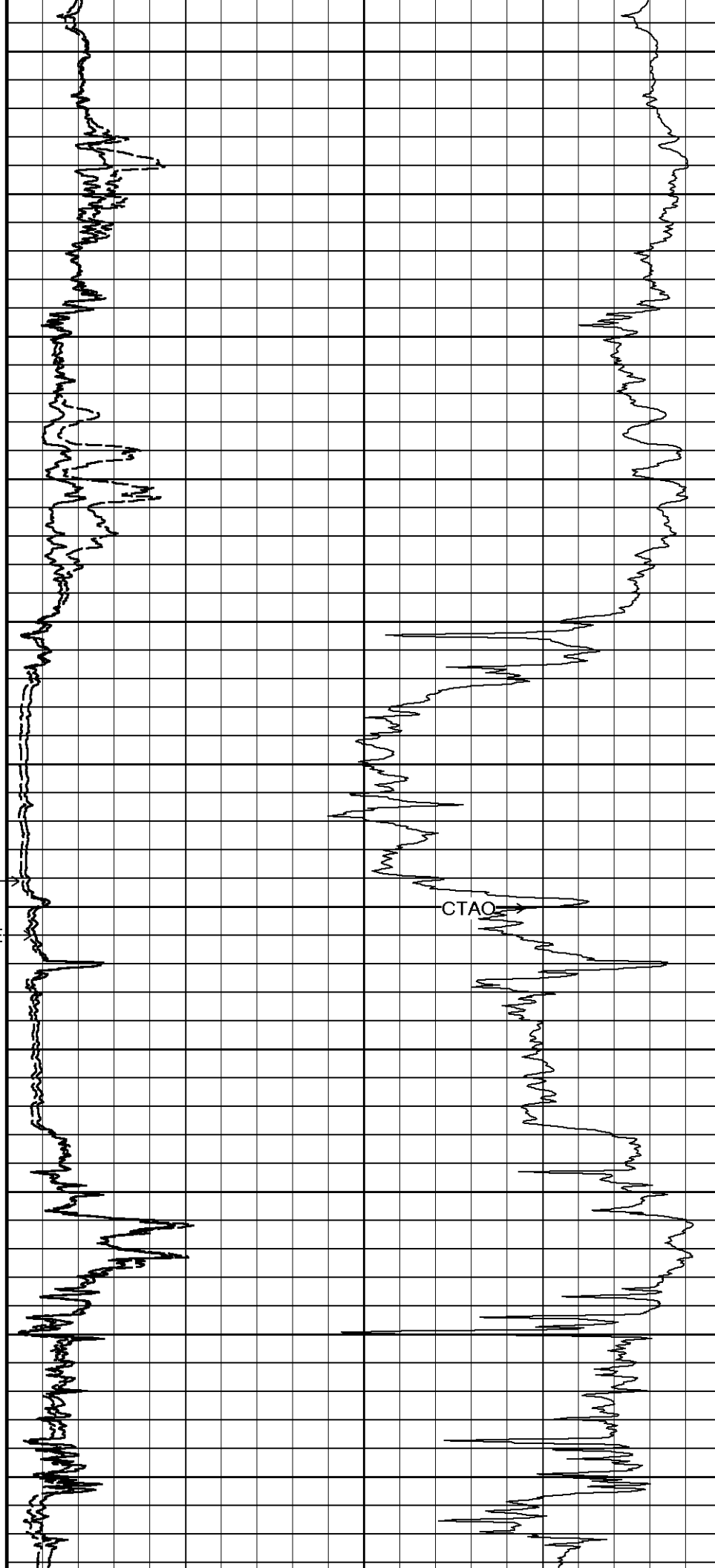
SMTU

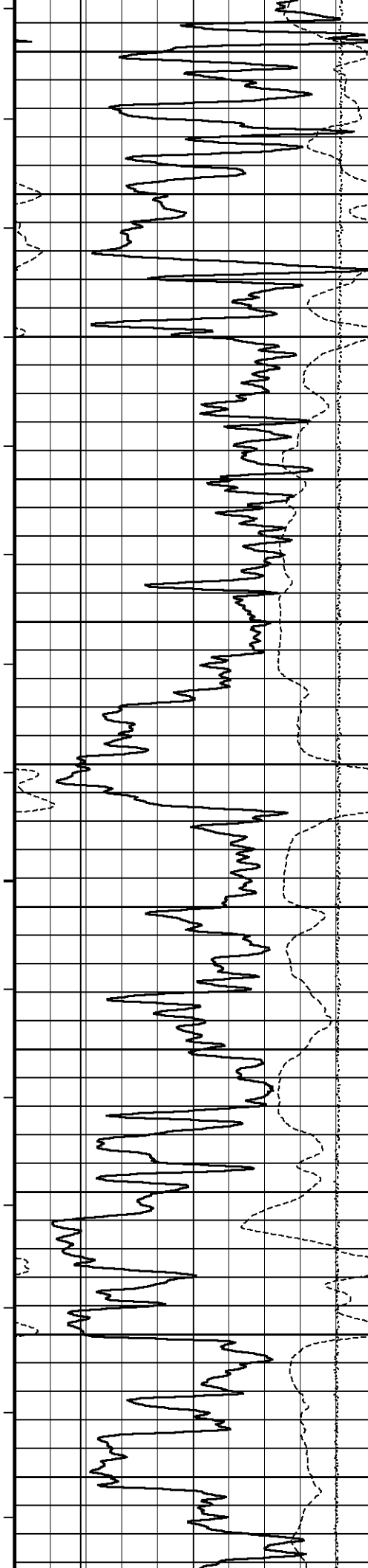
88°

800

89°

900





89°

1000

89°

1100

90°

1200

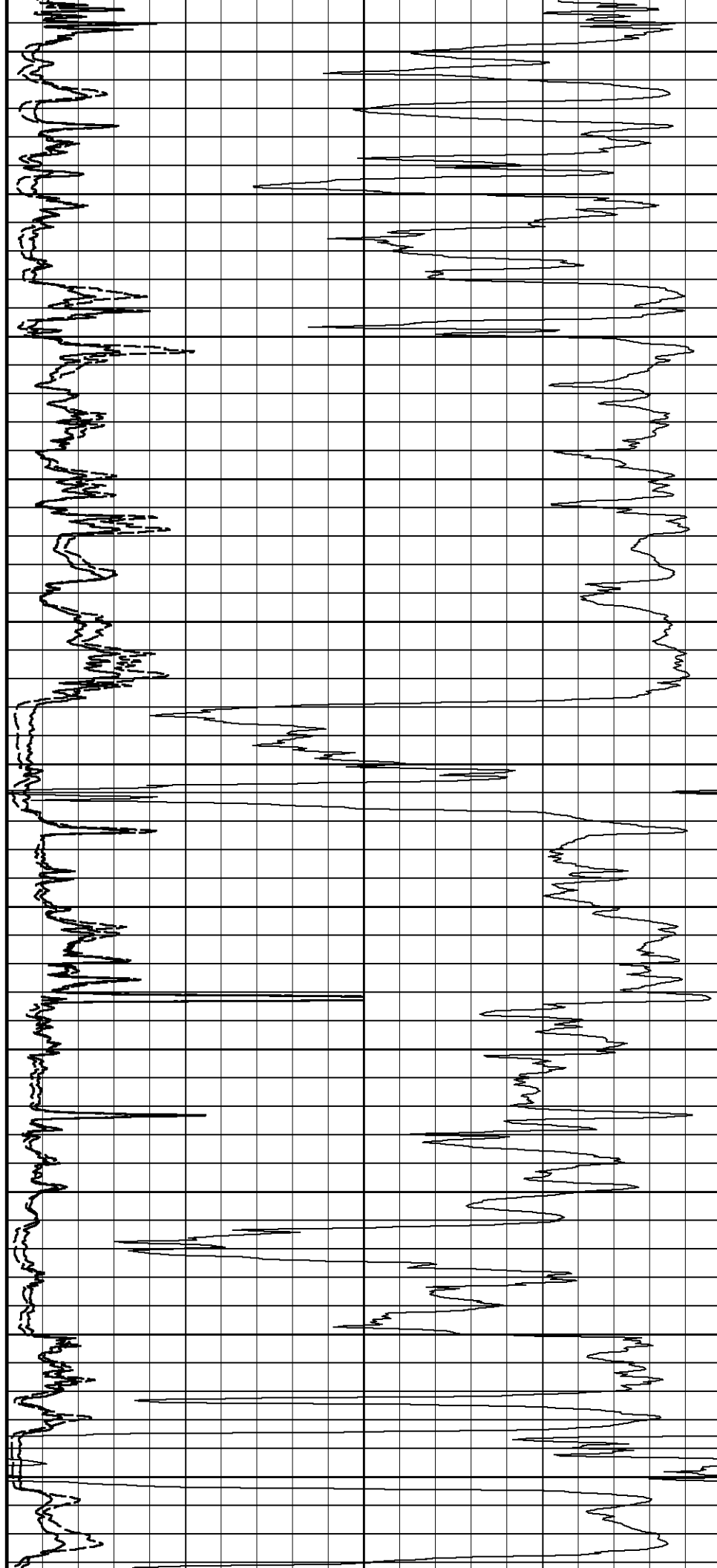
90°

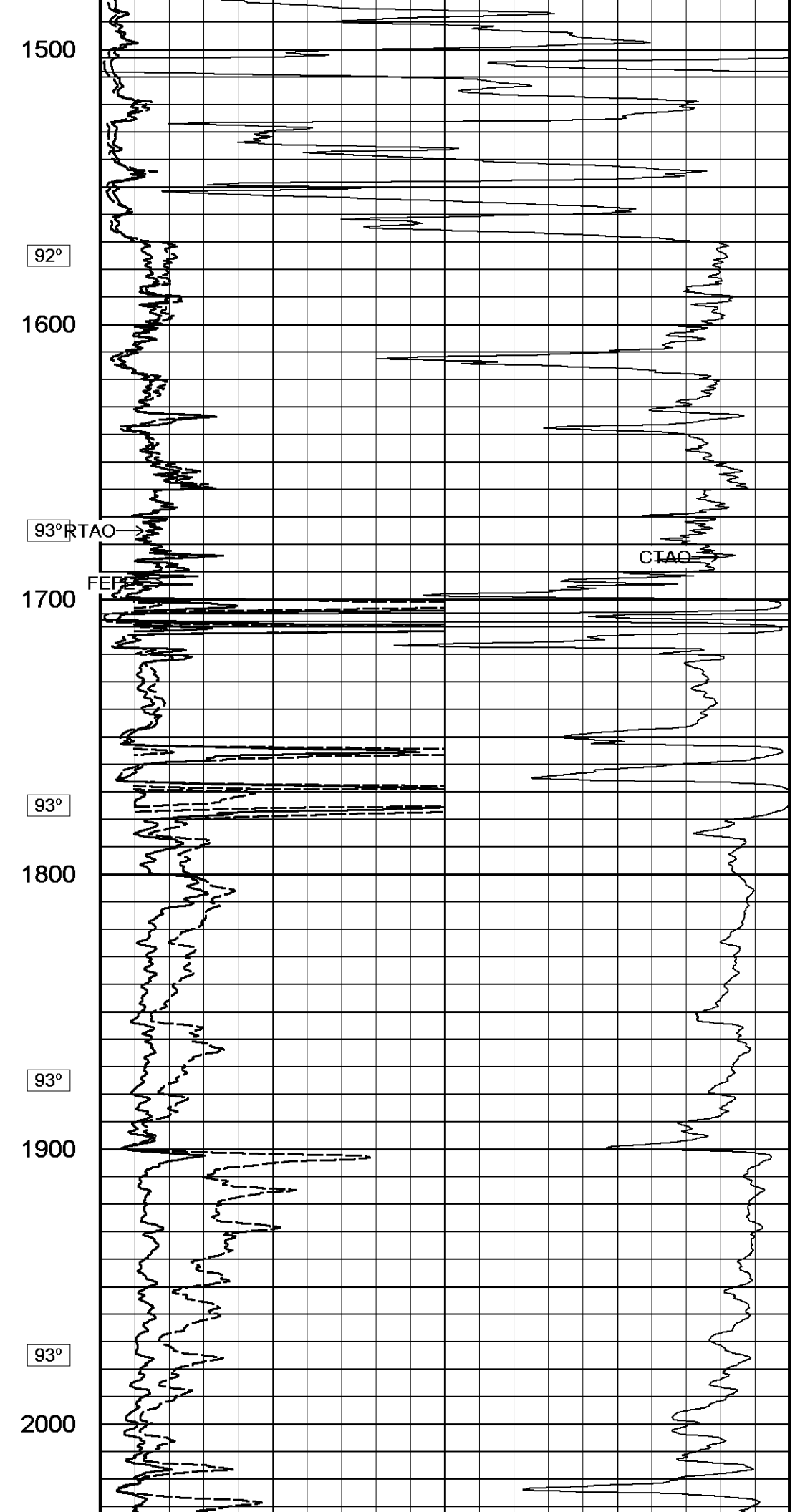
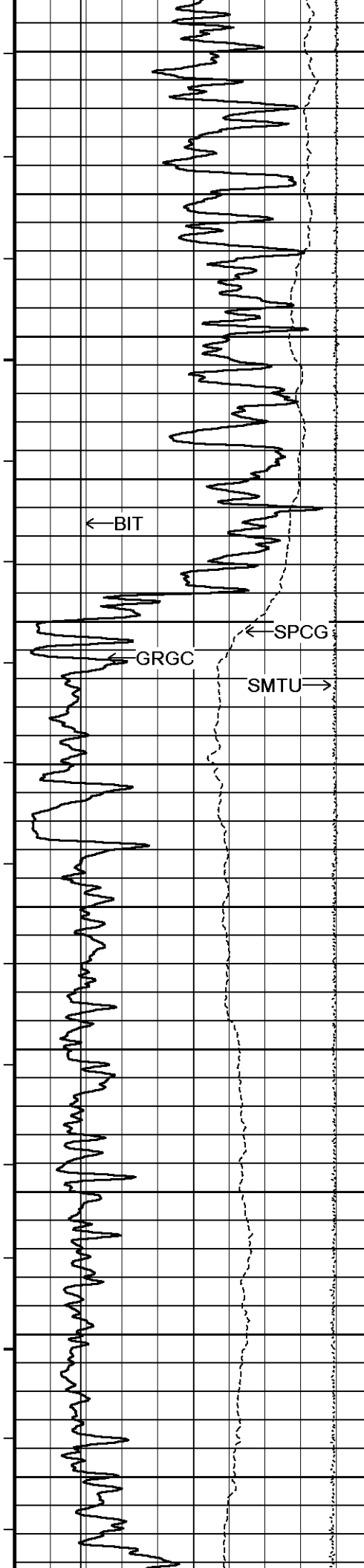
1300

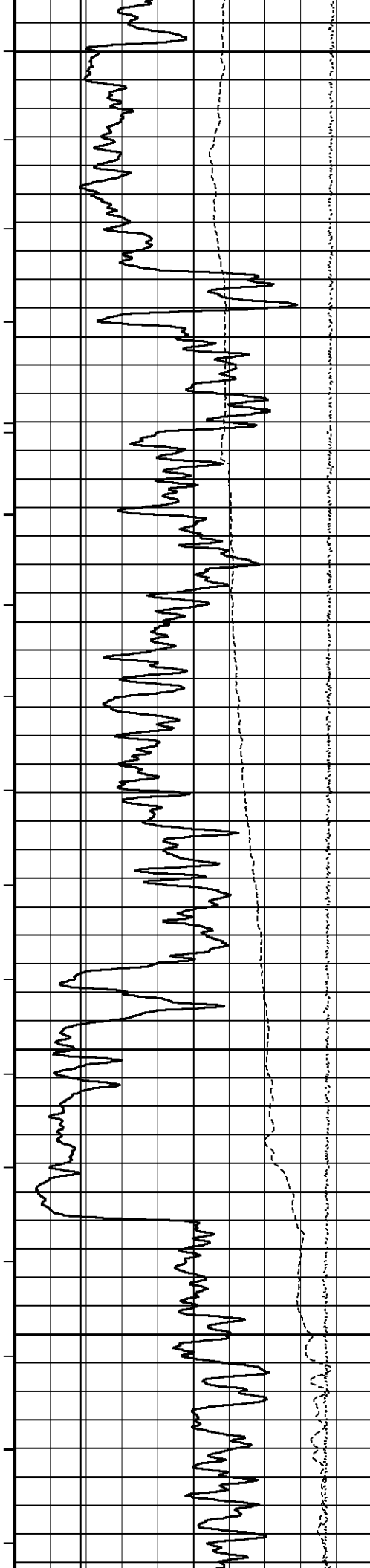
91°

1400

92°







93°

2100

93°

2200

94°

2300

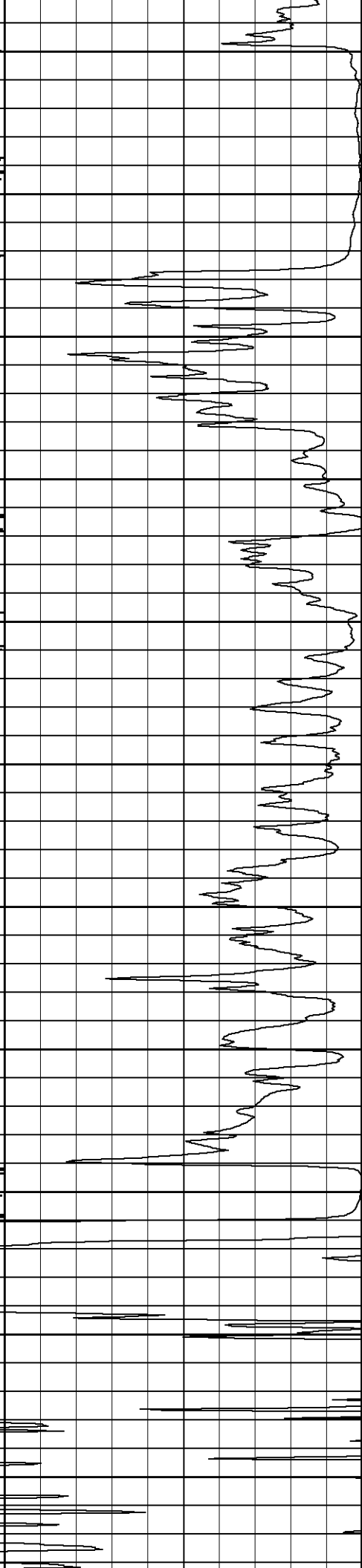
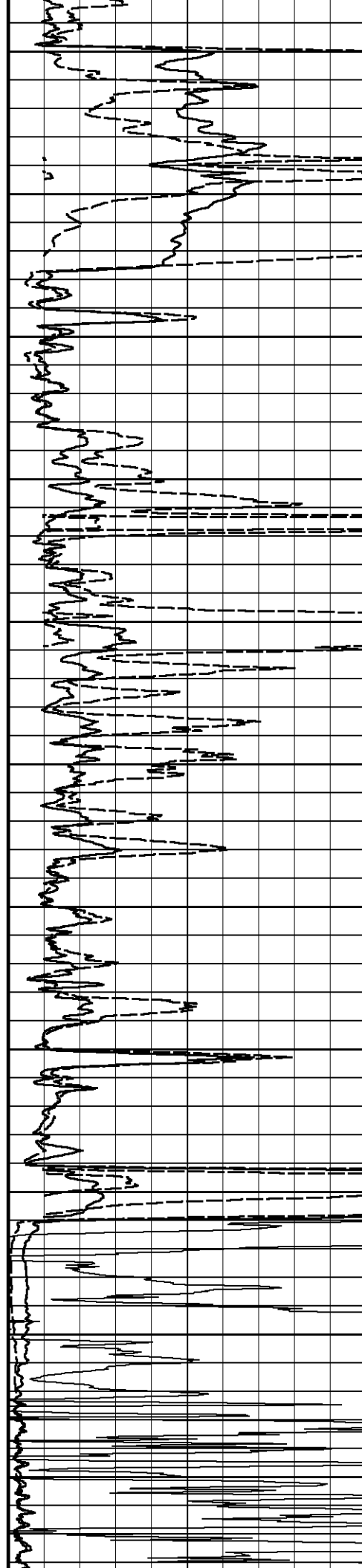
95°

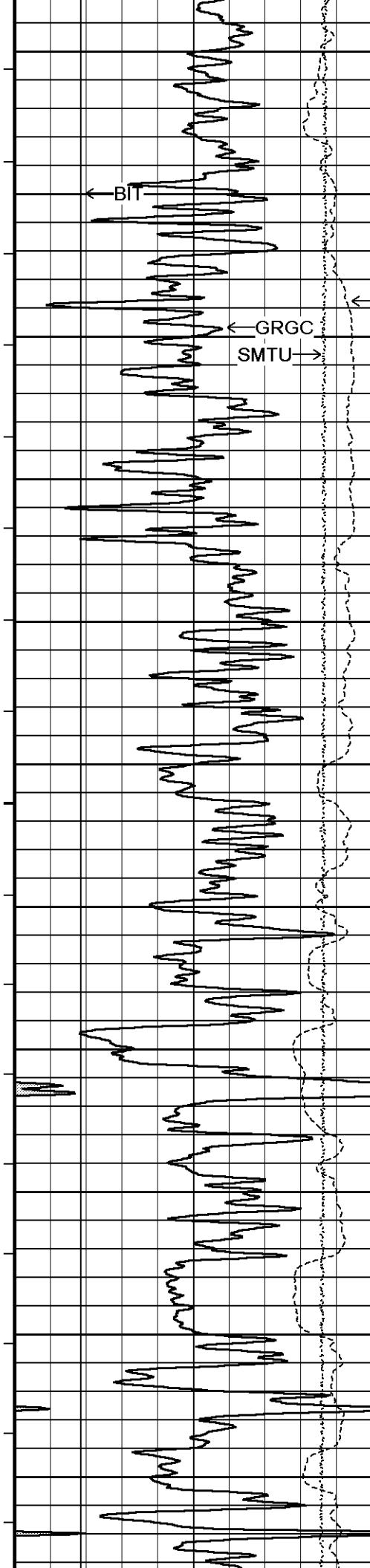
2400

95°

2500

96°





2600

96°
FEFE

SPCG

2700

97°

2800

97°

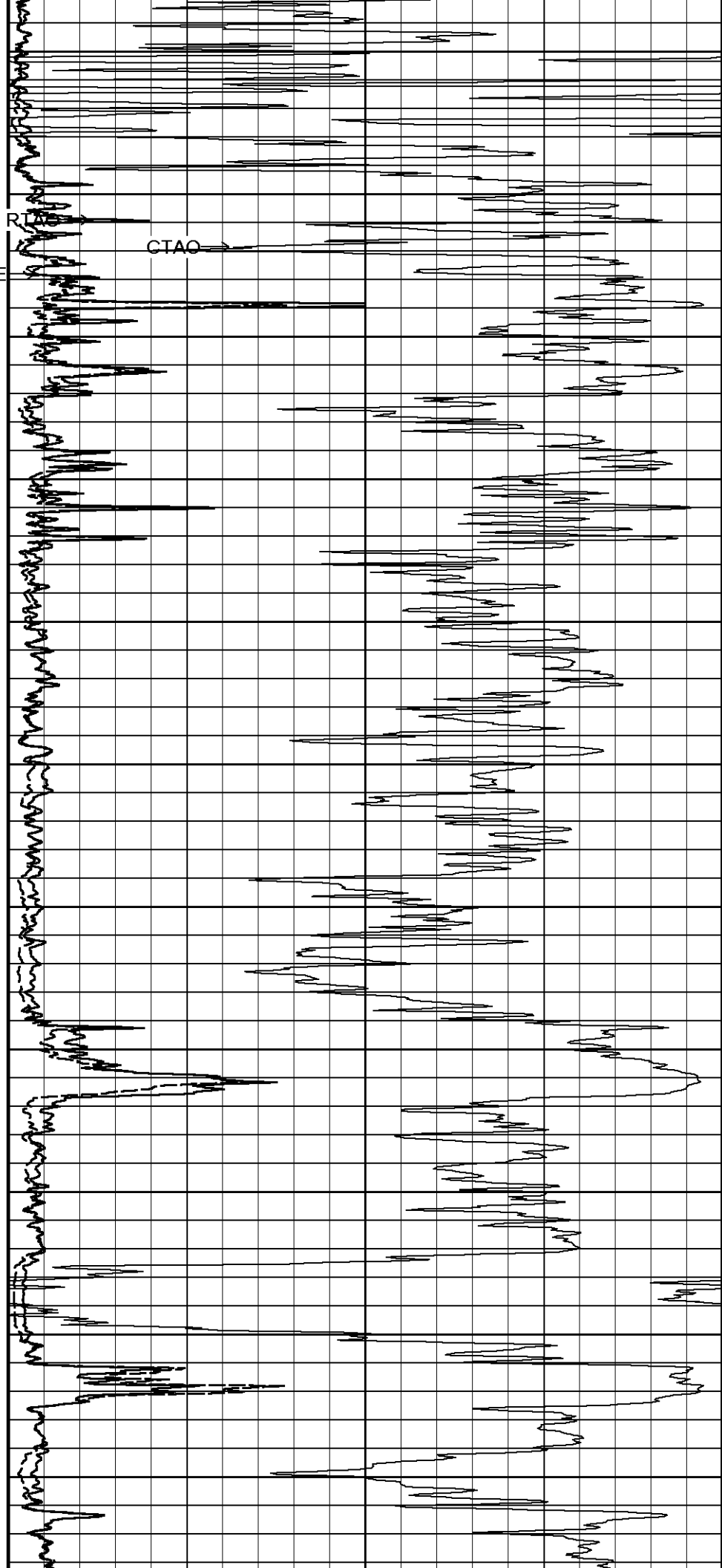
2900

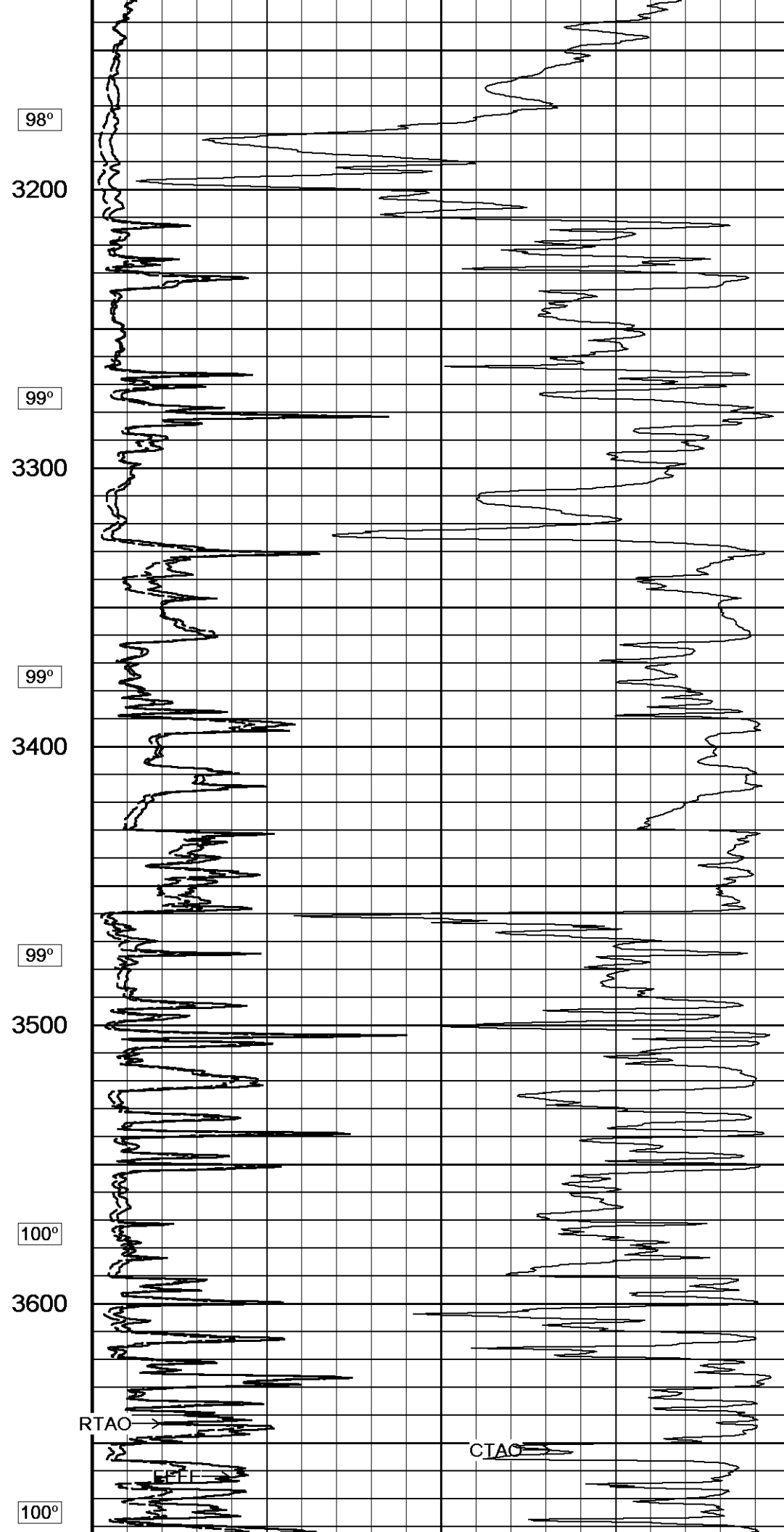
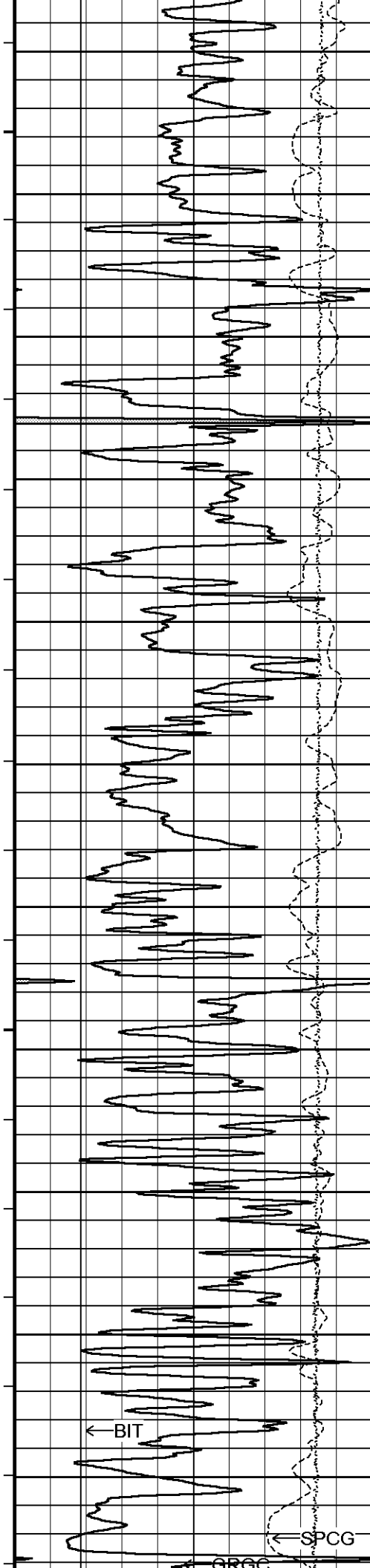
98°

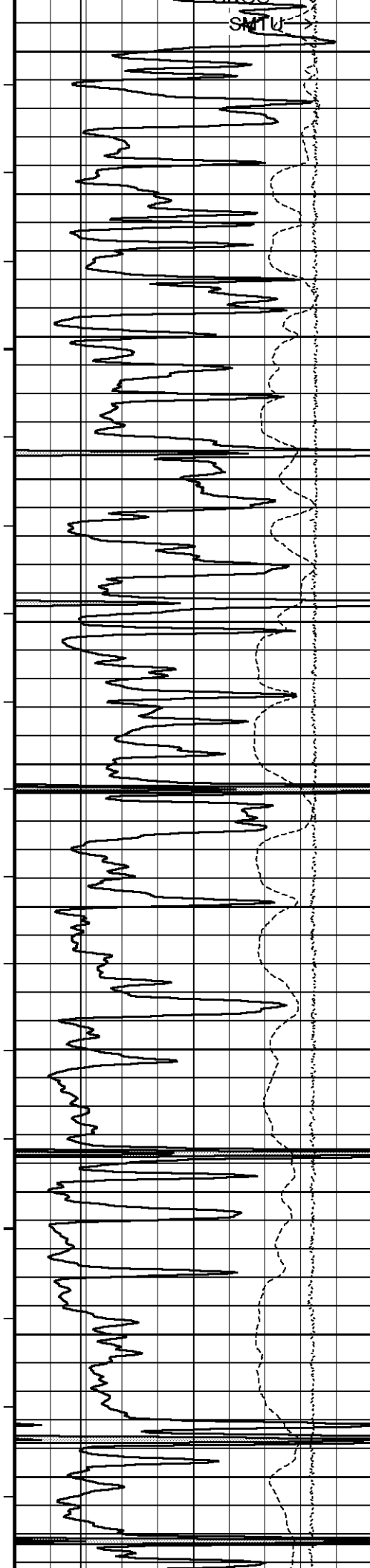
3000

98°

3100







3700

101°

3800

101°

3900

102°

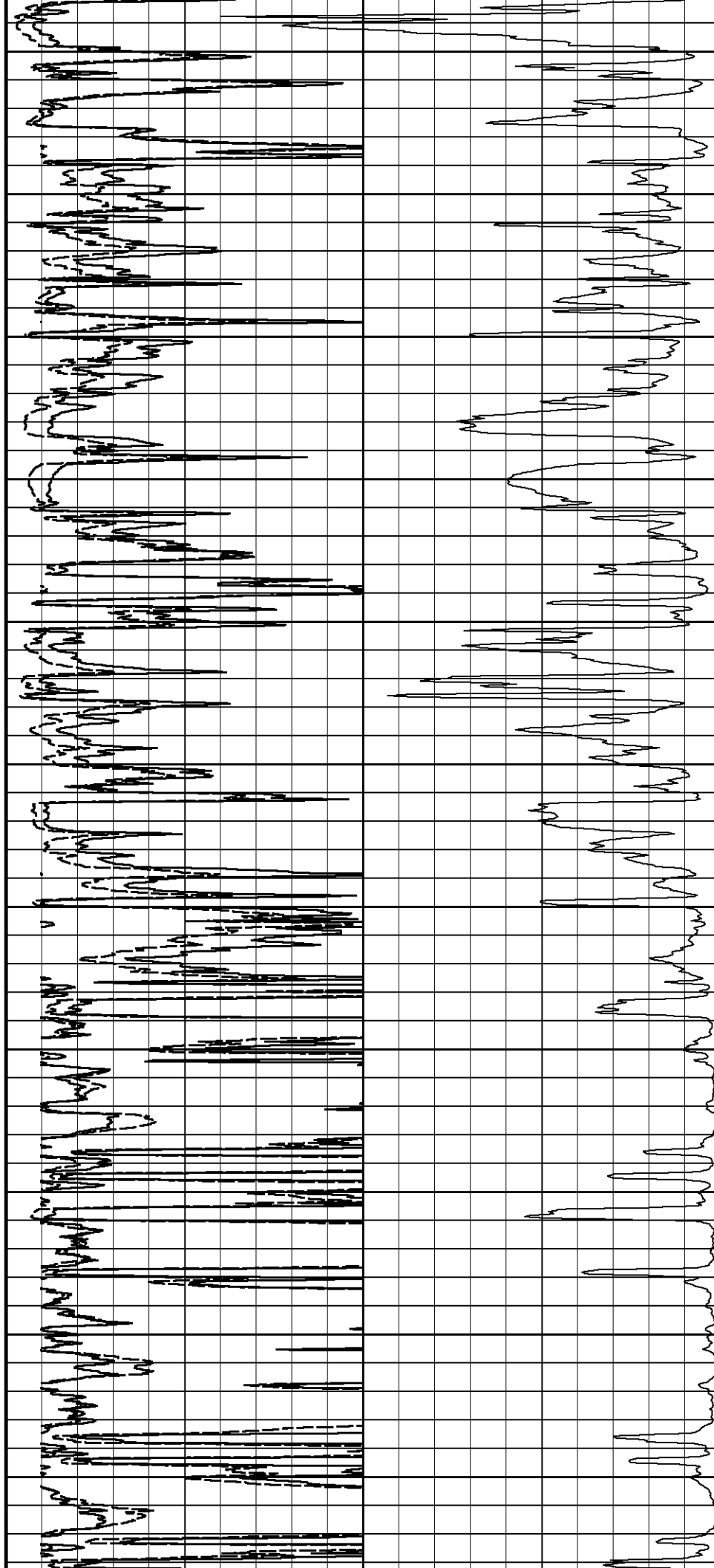
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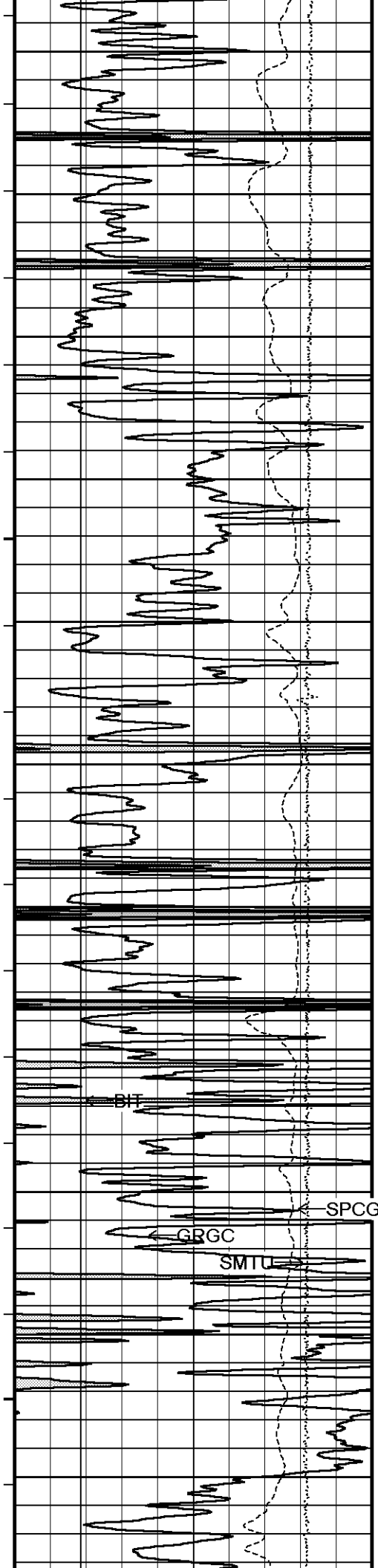
102°

4100

103°

4200





104°

4300

104°

4400

105°

4500

107°

4600

108°

4700

109°

BIT

SPCG

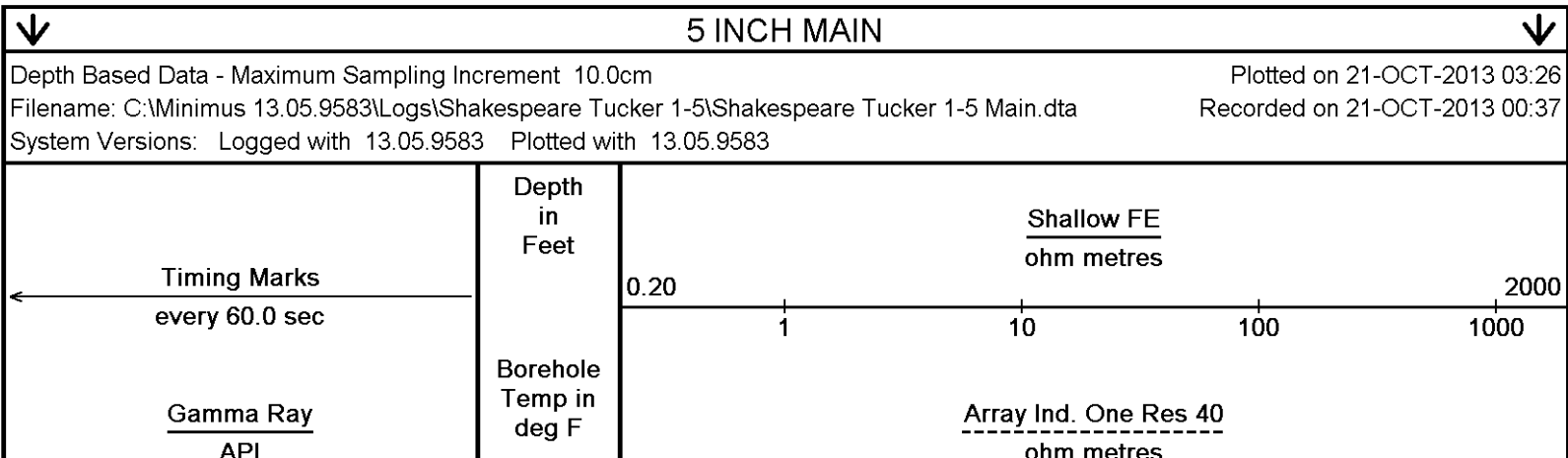
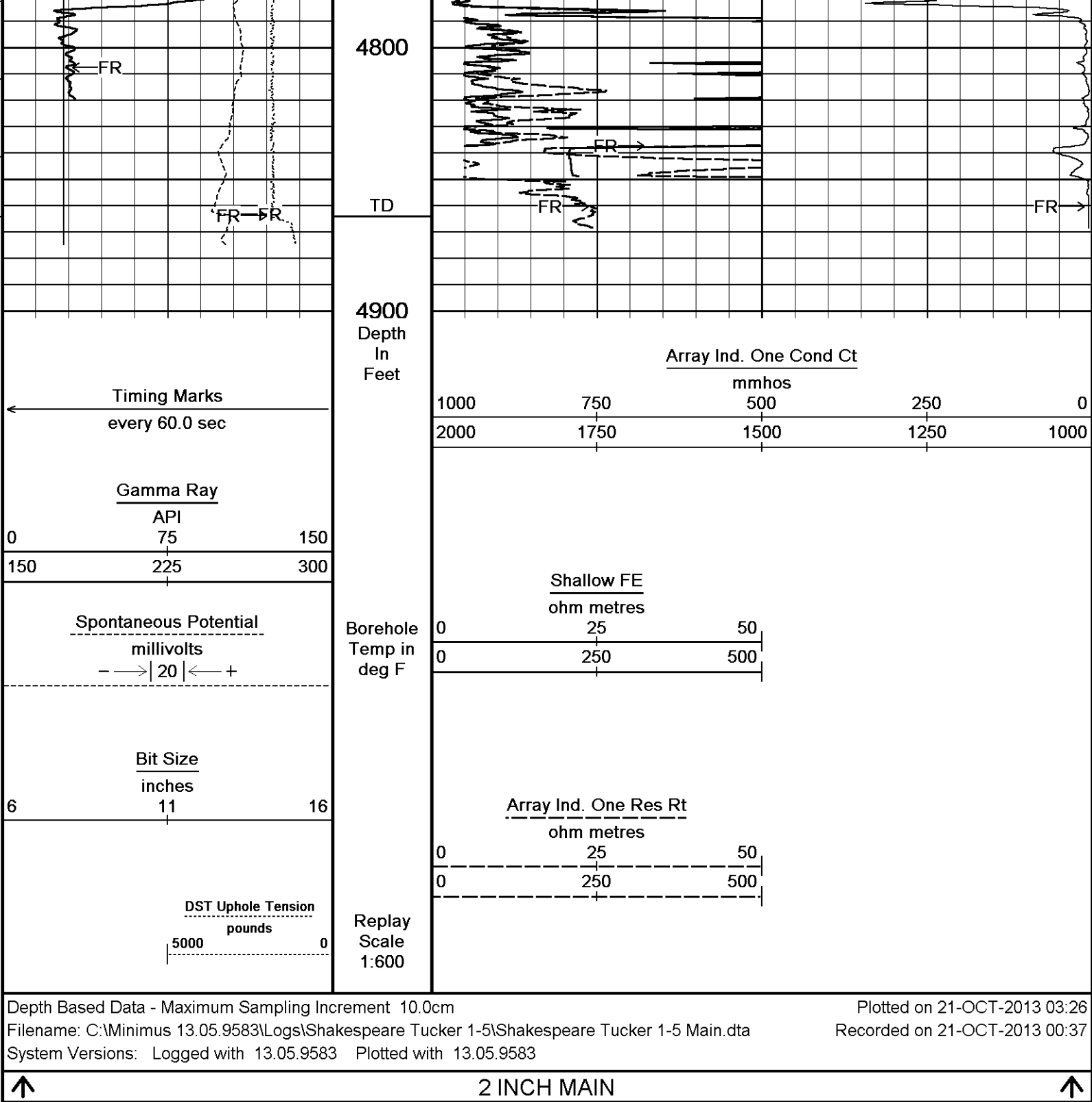
GRGC

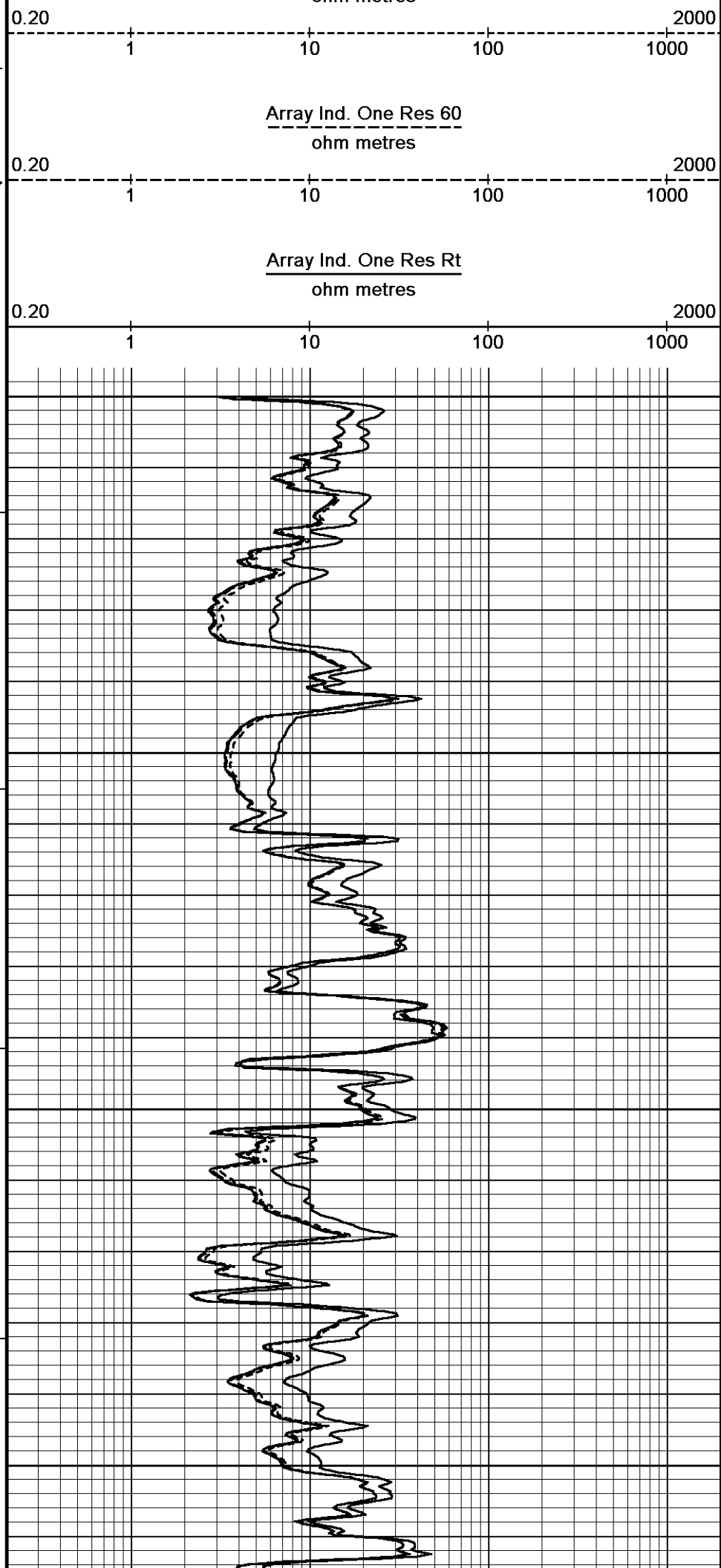
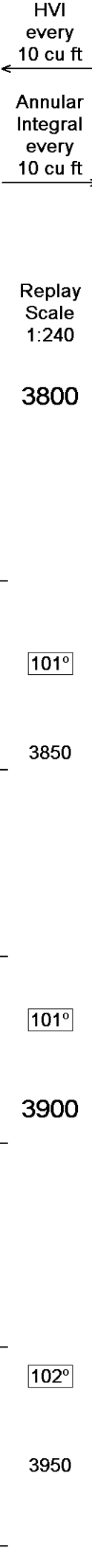
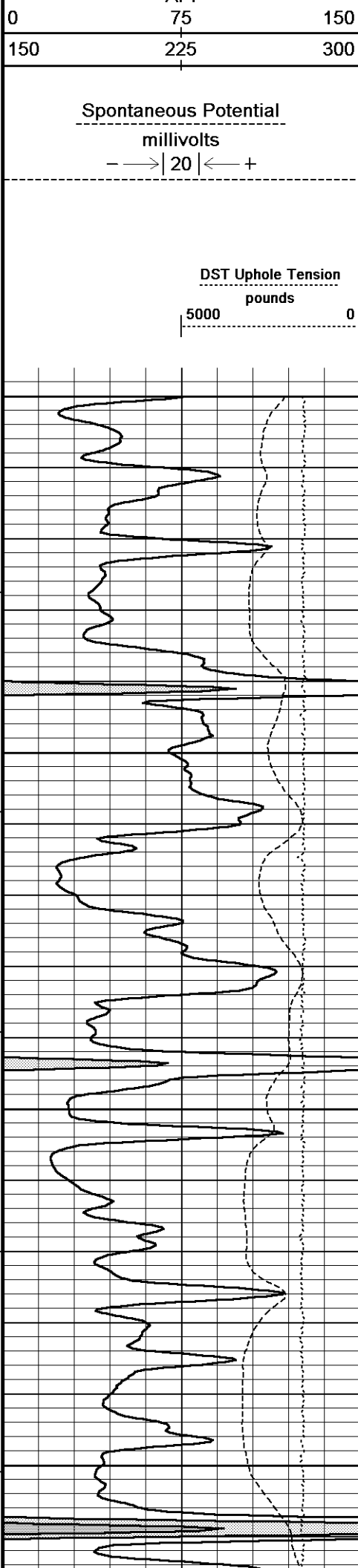
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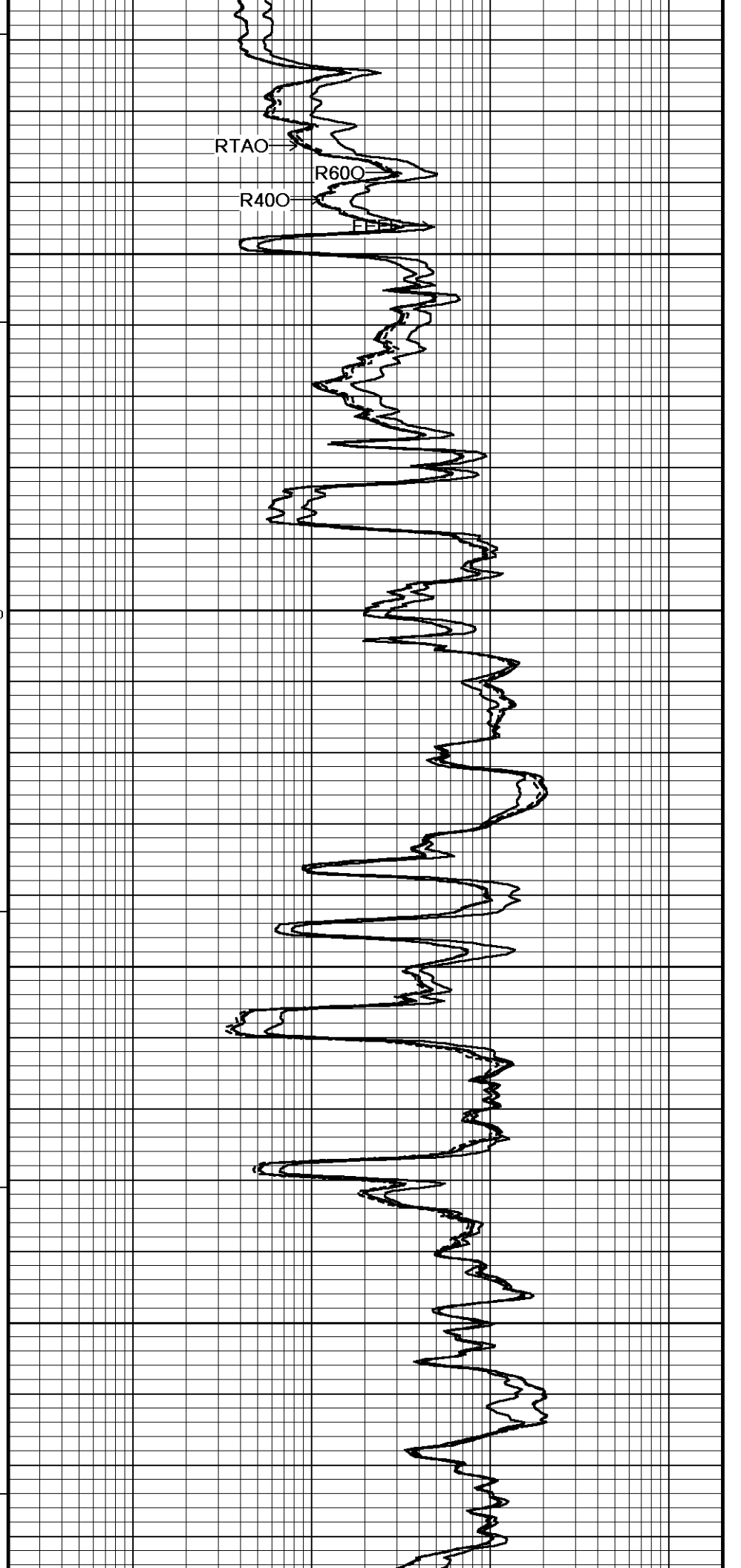
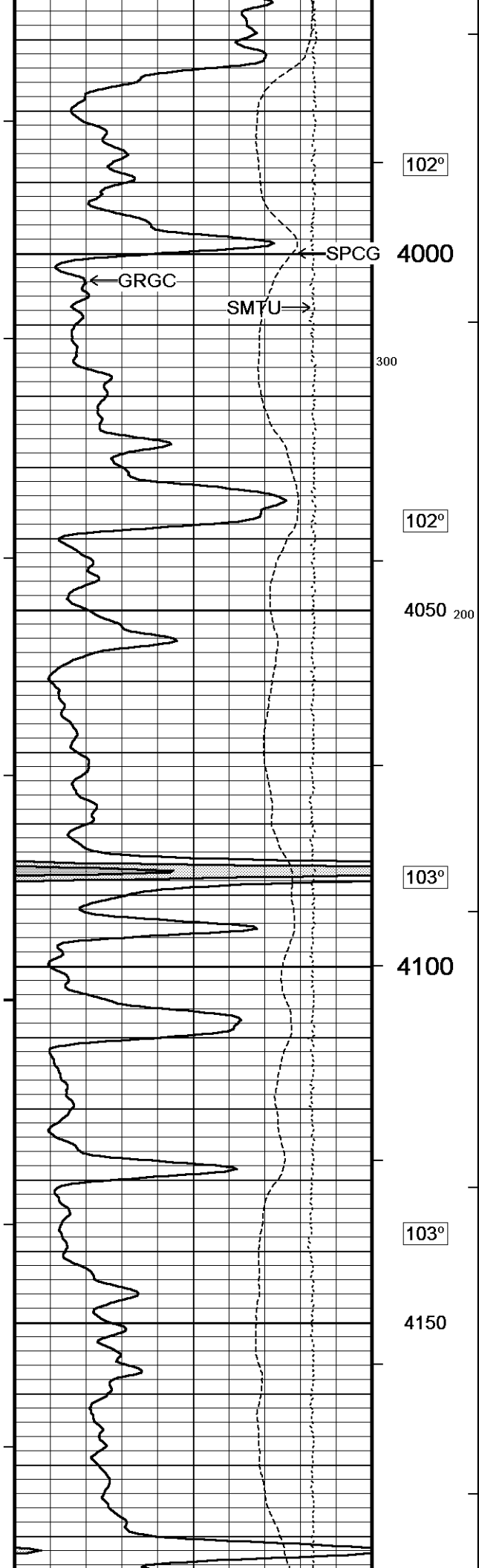
RTAO

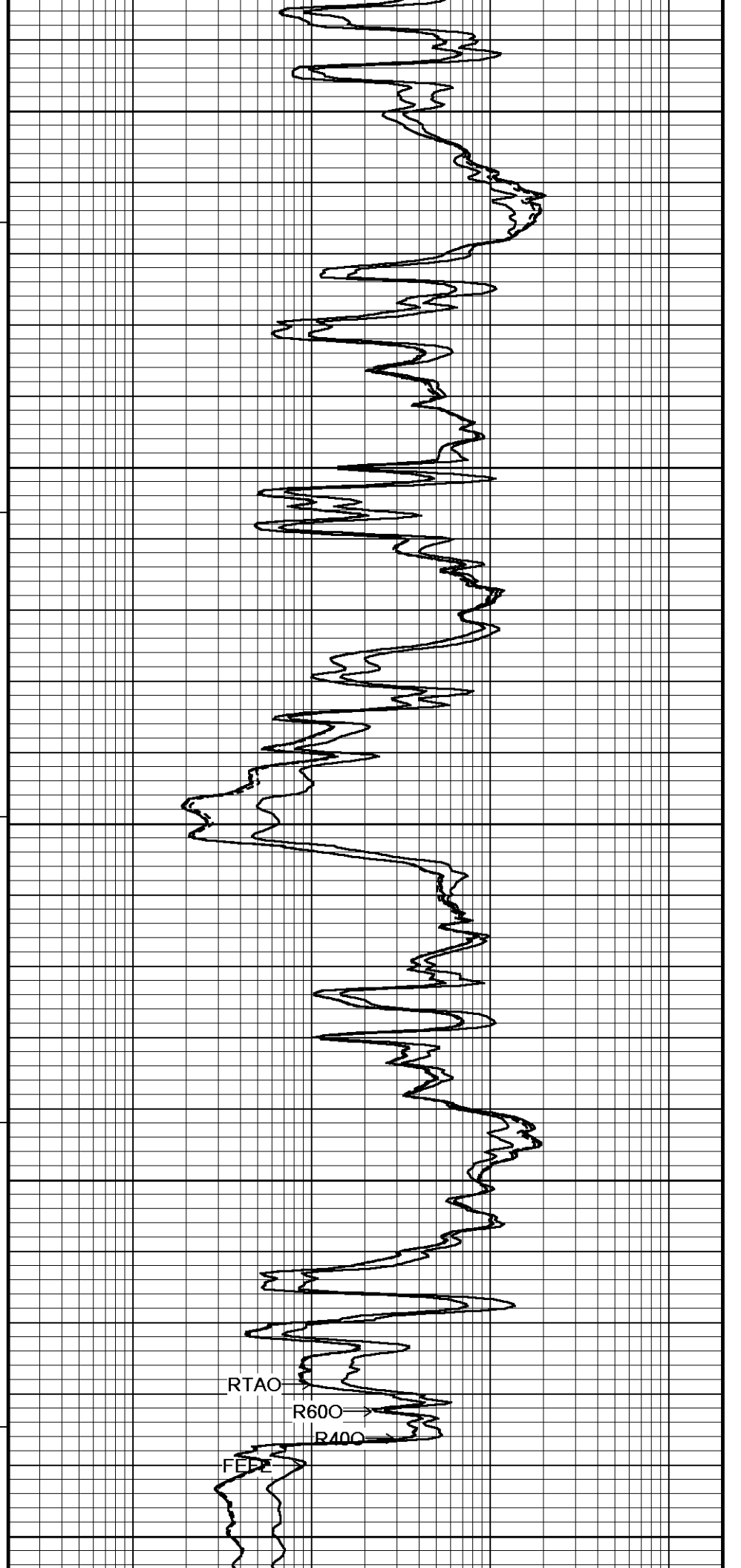
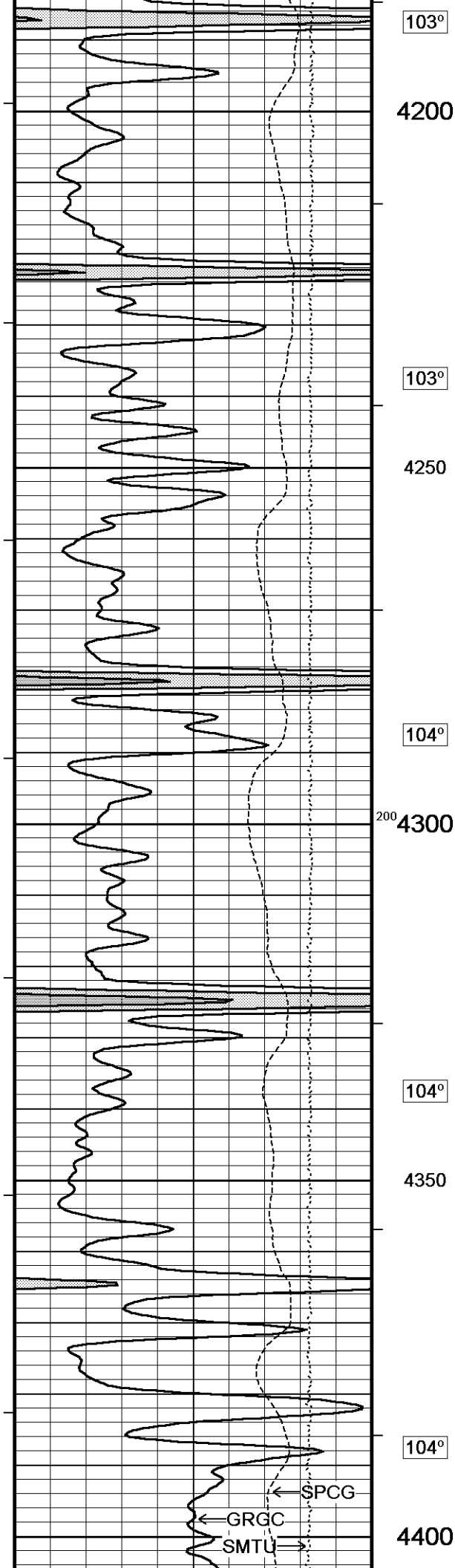
FEFE

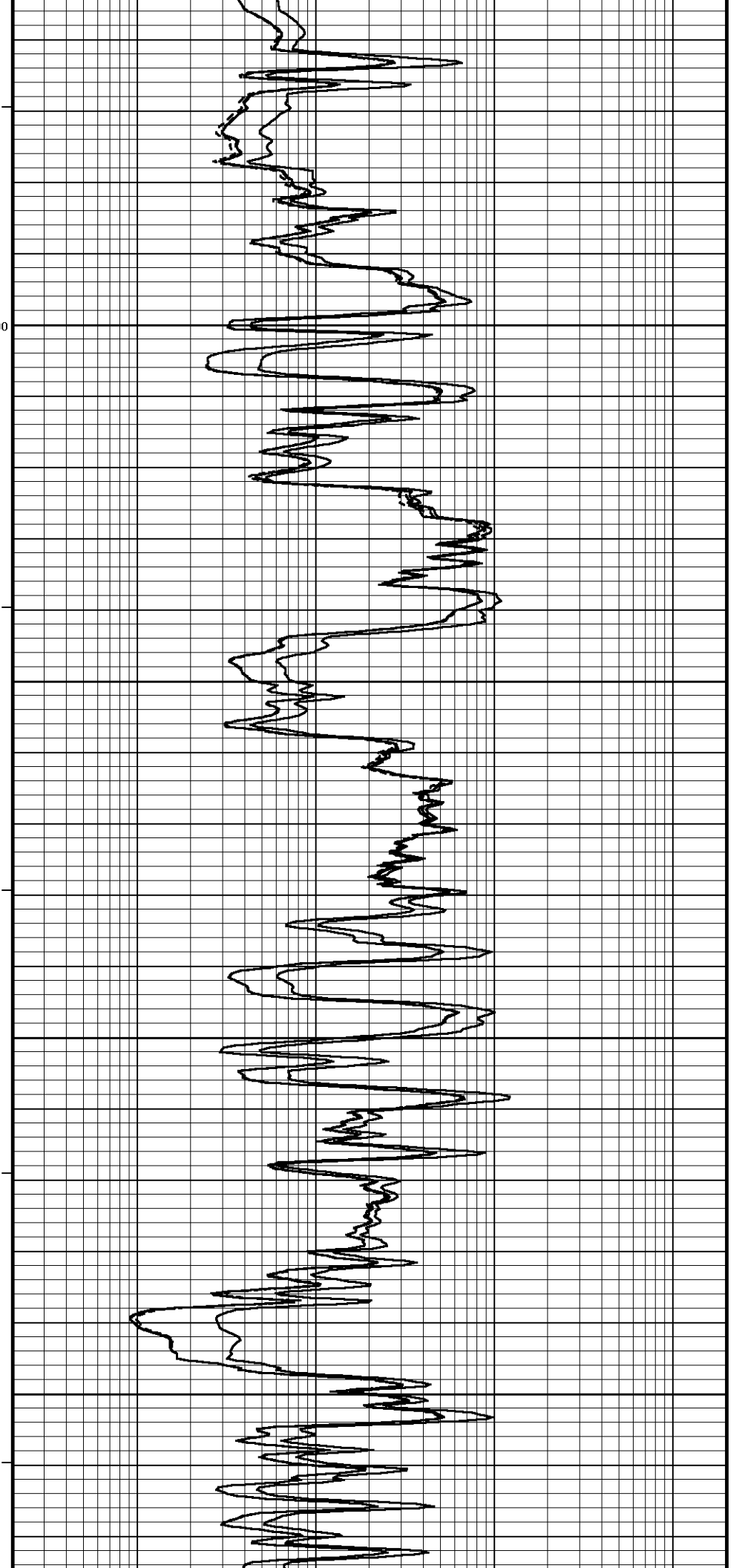
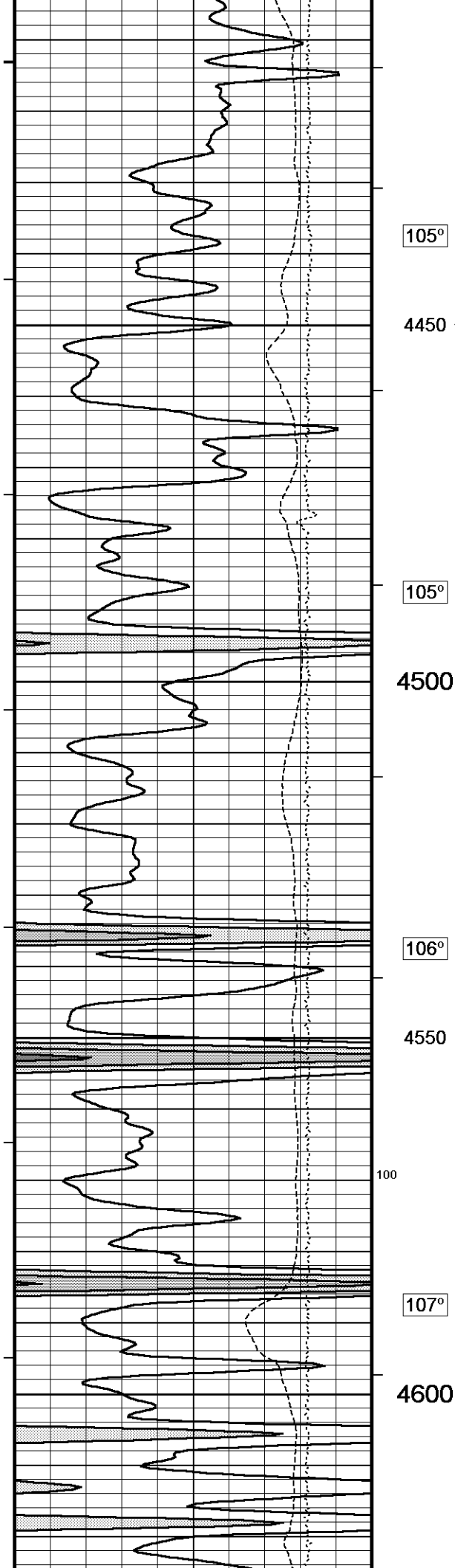
CTAO

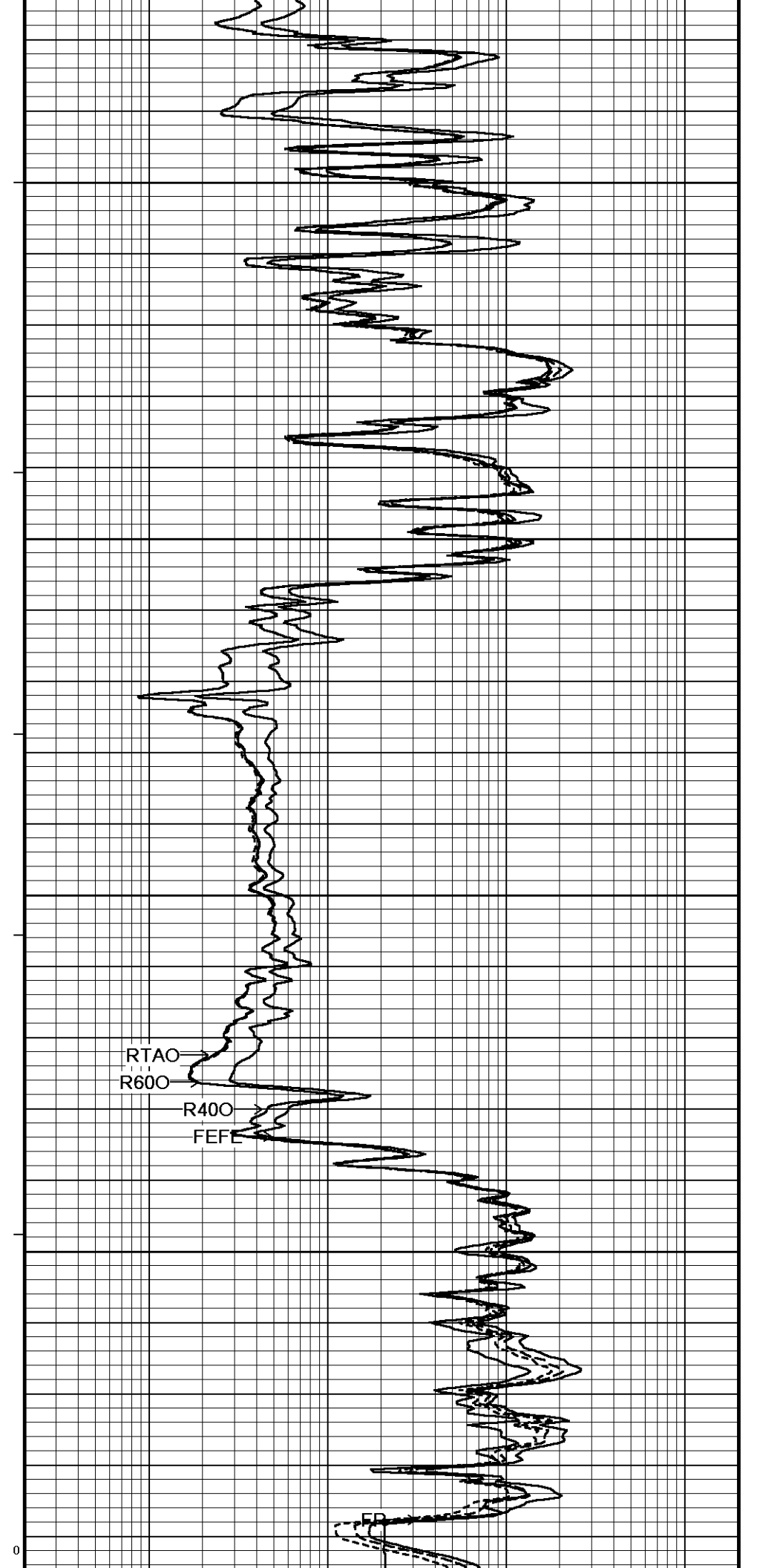
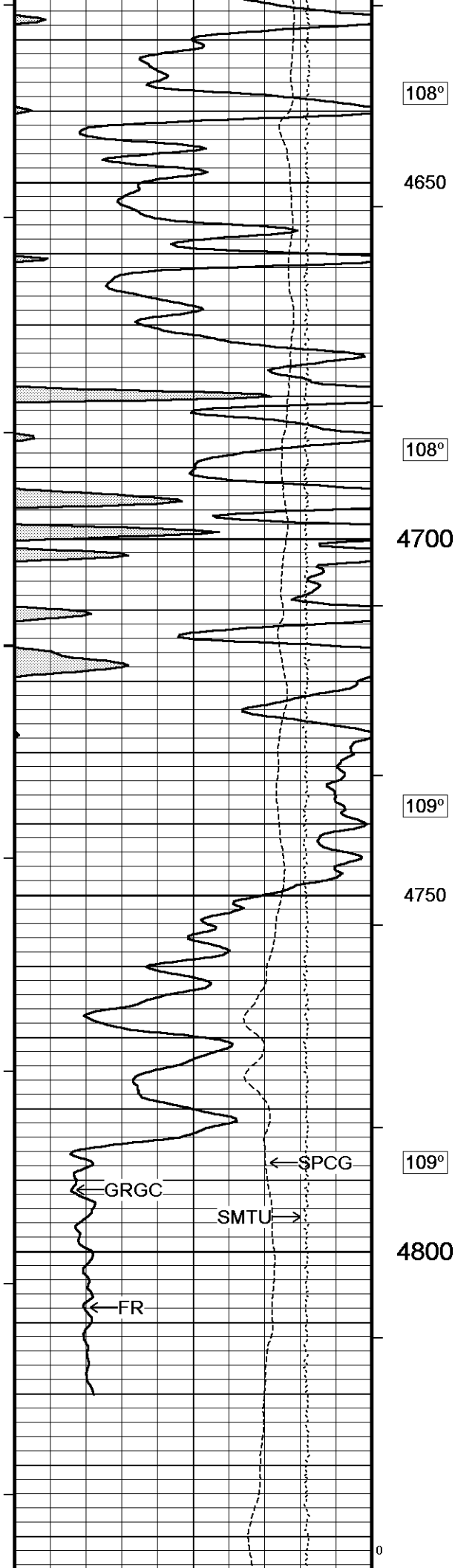


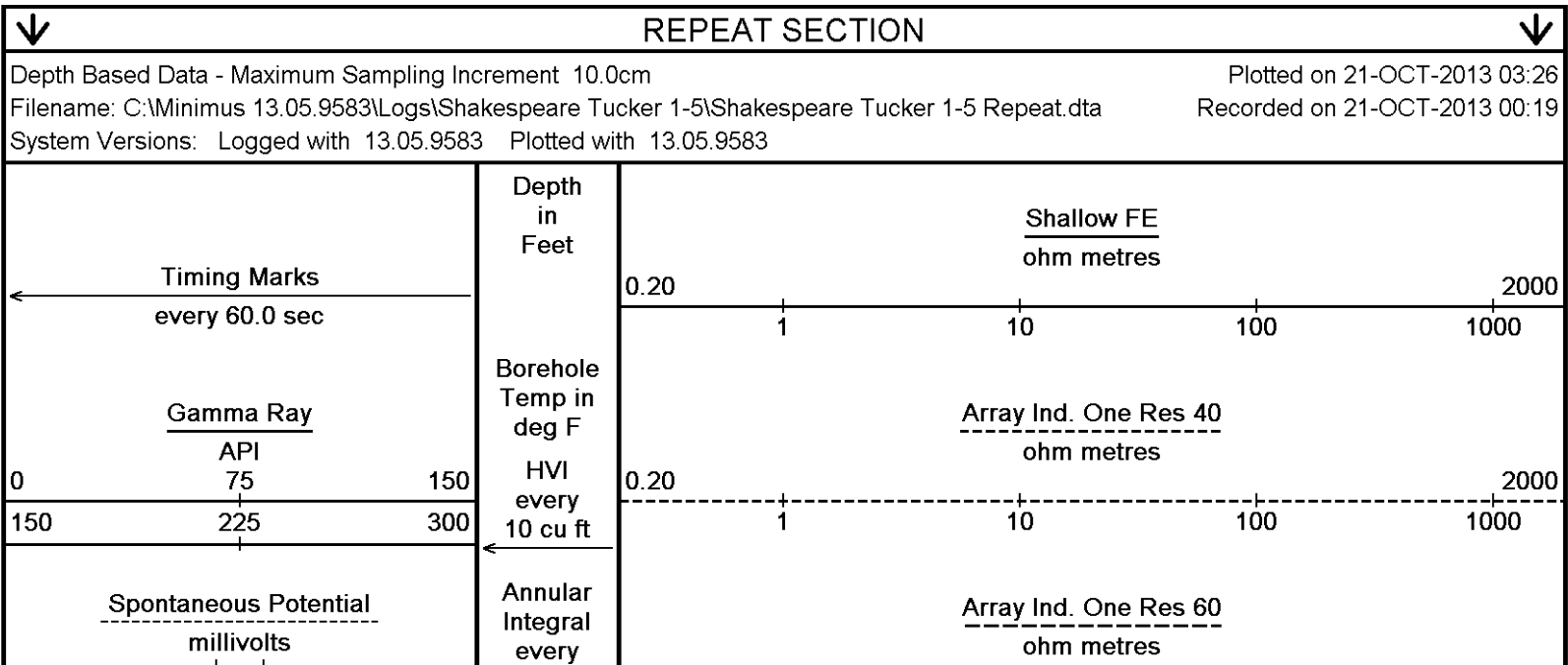
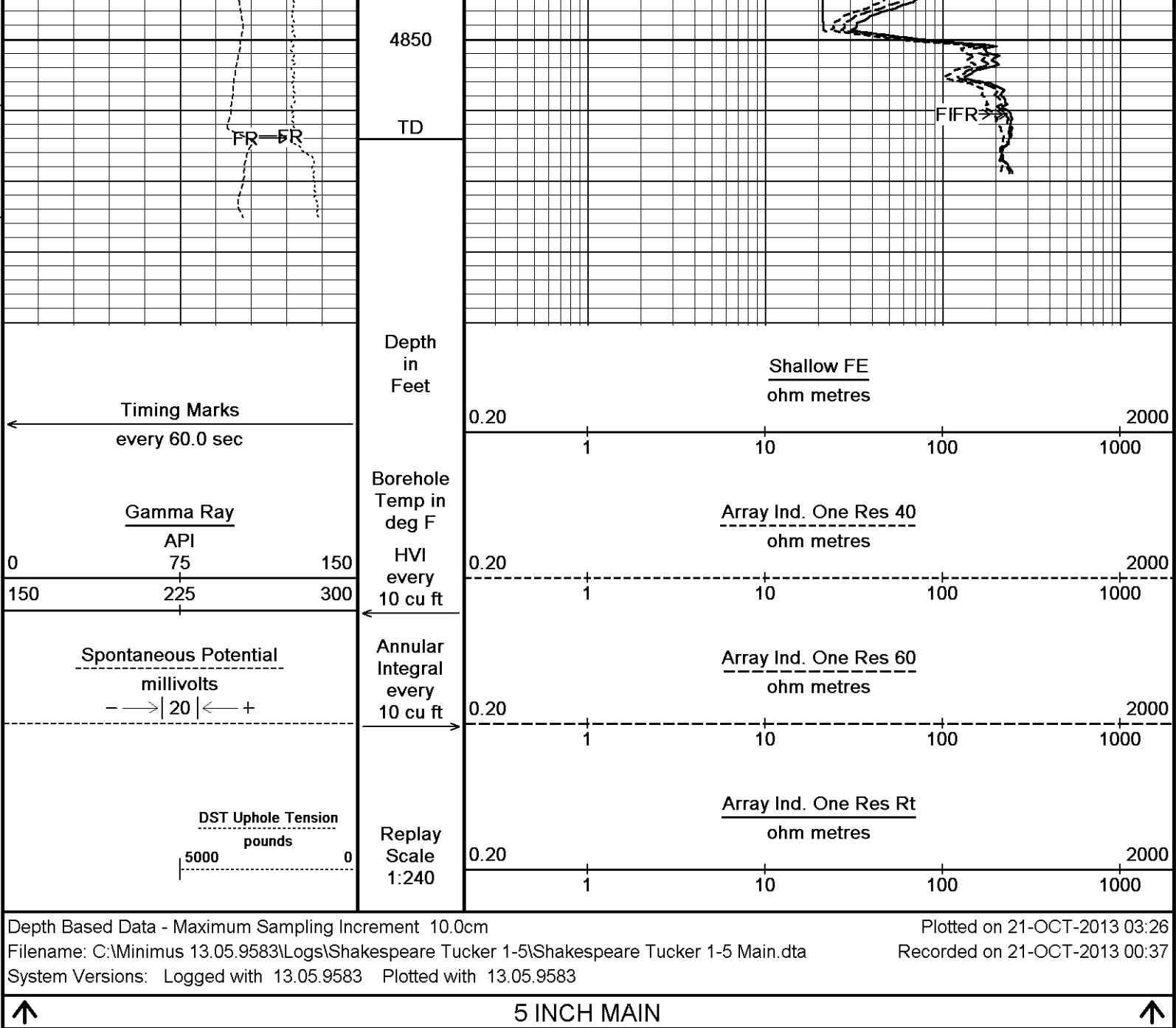


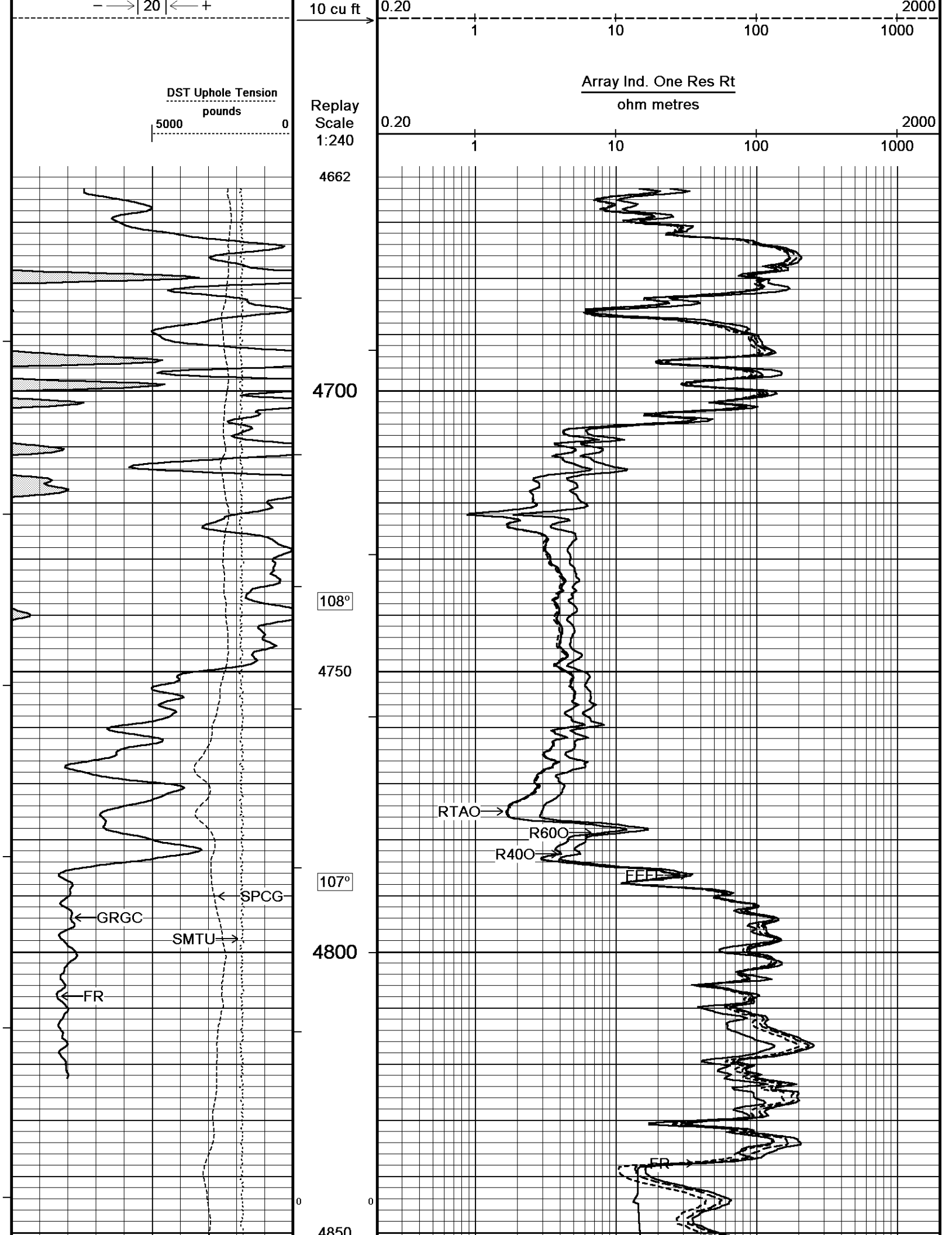


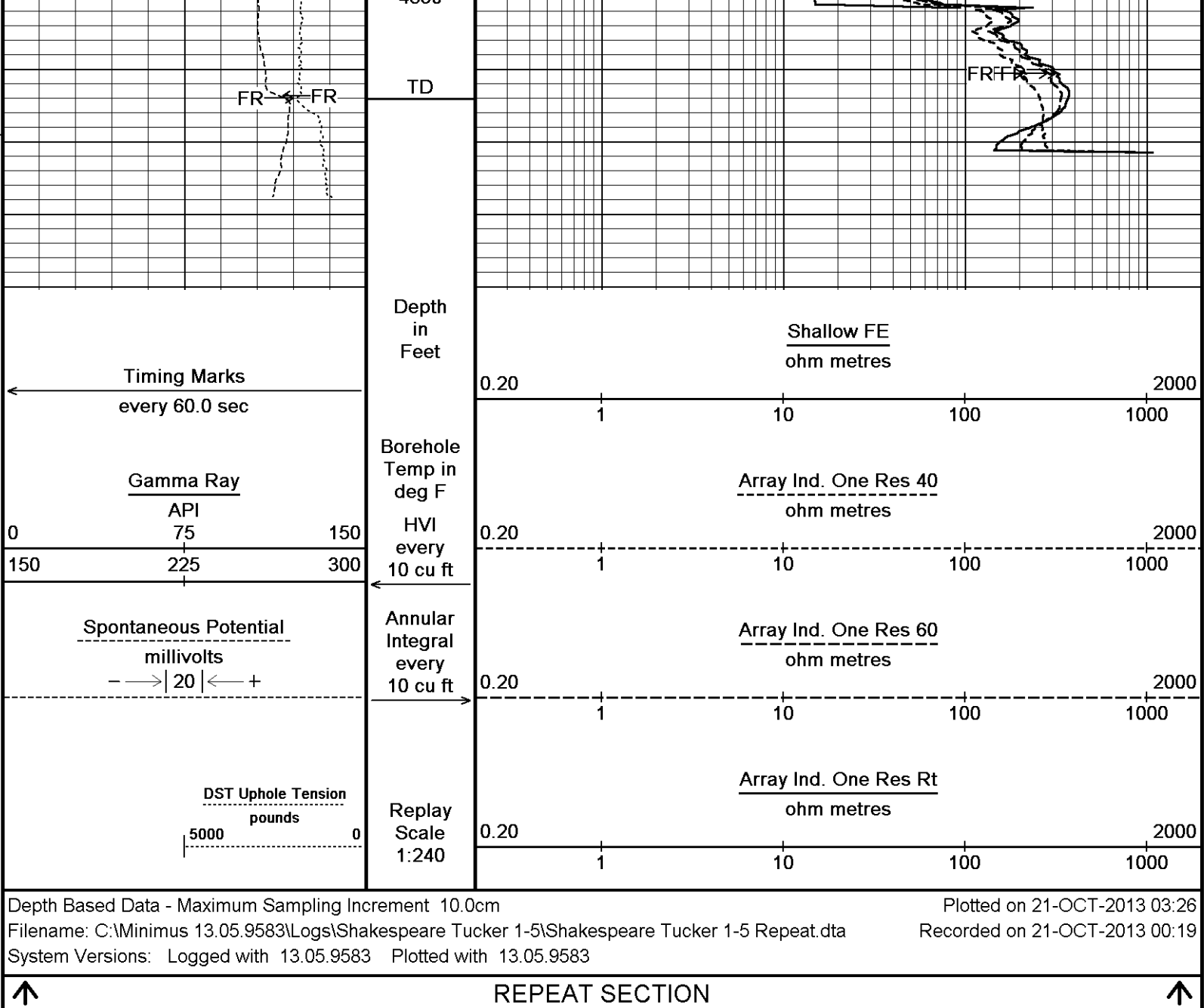












BEFORE SURVEY CALIBRATION			
C:\Minimus 13.05.9583\Logs\Shakespeare Tucker 1-5\Shakespeare Tucker 1-5 Main Detail.dta			
General Constants All 000		Last Edited on 20-OCT-2013,21:58	
General Parameters			
Mud Resistivity	0.460	ohm-metres	
Mud Resistivity Temperature	62.000	degrees F	
Water Level	0.000	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	4.500	inches	
Caliper for Differential Caliper	MMR Caliper		
Rwa Parameters			
Porosity used	Crossplot Porosity		
Resistivity used	Array Ind. One Res Rt		
RWA Constant A	1.000		
RWA Constant M	2.000		
SW/APOR Tool Source	0.000		

Down-hole Tension Calibration SMS 0			Field Calibration on 20-OCT-2013 23:23	
Reading No	Measured	Calibrated (lbs)		
1	15564.19	1.00		
2	17369.66	575.00		
SP Calibration MCG-D.K 442			Field Calibration on 20-OCT-2013 18:26	
	Measured	Calibrated (mV)		
Reference 1	101.8	100.9		
Reference 2	-99.5	-100.5		
High Resolution Temperature Calibration MCG-D.K 442			Field Calibration on 20-OCT-2013,18:27	
	Measured	Calibrated(Deg F)		
Lower	50.00	50.00		
Upper	75.00	75.00		
High Resolution Temperature Constants MCG-D.K 442			Last Edited on 20-OCT-2013,18:27	
Pre-filter Length	11			
Gamma Calibration MCG-D.K 442			Field Calibration on 20-OCT-2013 18:30	
	Measured	Calibrated (API)		
Background	69	47		
Calibrator (Gross)	1135	772		
Calibrator (Net)	1067	725		
Gamma Constants MCG-D.K 442			Last Edited on 20-OCT-2013,21:58	
Gamma Calibrator Number	GRC38			
Mud Density	1.06	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 01-OCT-2013 09:07 Field Calibration on 20-OCT-2013 18:23	
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	14311	5.98		
2	17410	7.97		
3	20706	9.86		
4	24667	11.92		
5	0	0.00		

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.91	5.98

Micro Normal and Micro Inverse Calibration MMR-A 11

Base Calibration on 11-OCT-2013 11:00
Field Check on 20-OCT-2013 18:22

Base Calibration

Channel	Resistor 1	Measured	Calibrated (ohm-m)	
		Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.1	59.0	5.0	25.0
Micro Inverse	15.5	76.7	5.0	25.0

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	77.5	77.5
Micro Inverse	59.4	59.4

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 11-OCT-2013 14:23
Field Check on 20-OCT-2013 18:34

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3088	96	3714	110
Ratio	32.181		33.764	

Field Calibrator at Base

	Calibrated (cps)
	1674 2387
Ratio	0.701

Field Check

	Calibrated (cps)
	1677 2401
Ratio	0.695

Neutron Constants MDN-A.B 65

Last Edited on 20-OCT-2013,21:57

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 11-OCT-2013 11:23
Field Check on 20-OCT-2013 18:09

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	965.0	126.8

Base Check	281.1
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Field Check	281.1
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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 20-OCT-2013,21:57

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

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

	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 20-OCT-2013,18:08
Pre-filter Length	11

Induction Calibration MAI-A.A 45				Base Calibration on 21-MAY-2013,16:47	
				Field Check on 20-OCT-2013 18:08	
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)		Field Check (mmho/m)		
	Low	High	Low	High	
1			18.8	3850.9	
2			31.8	3628.8	
3			28.7	3048.9	
4			18.4	2078.8	
Deep			16.1	1910.9	
Medium			42.6	4059.9	
Shallow			49.8	5482.3	
Array Temperature				66.3	Deg F

Induction Constants MAI-A.A 45	Last Edited on 20-OCT-2013,21:57
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

Density Calibration

Base Calibration

Measured

Calibrated (sdu)

Near

Far

Near

Far

Reference 1

44679

22866

59556

30836

Reference 2

18345

1888

24941

2541

Field Check at Base

669.8

824.9

Field Check

668.7

823.6

PE Calibration

Base Calibration

Measured

Calibrated

WS

WH

Ratio

Ratio

Background

125

594

Reference 1

18704

44569

0.422

0.371

Reference 2

5436

18261

0.301

0.272

Field Check at Base

124.9

594.3

Field Check

124.5

593.5

Density Constants MPD-B 31

Last Edited on 20-OCT-2013,21:57

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

1.06

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 11-OCT-2013 13:50

Field Calibration on 20-OCT-2013 18:15

Base Calibration

Reading No

Measured

Calibrator Size (in)

1

18160

3.99

2

27038

5.98

3

35584

7.97

4

43976

9.86

5

53328

11.92

6

N/A

N/A

Field Calibration

Measured Caliper (in)

Actual Caliper (in)

7.95

7.97

DOWNHOLE EQUIPMENT

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-D.K 442 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

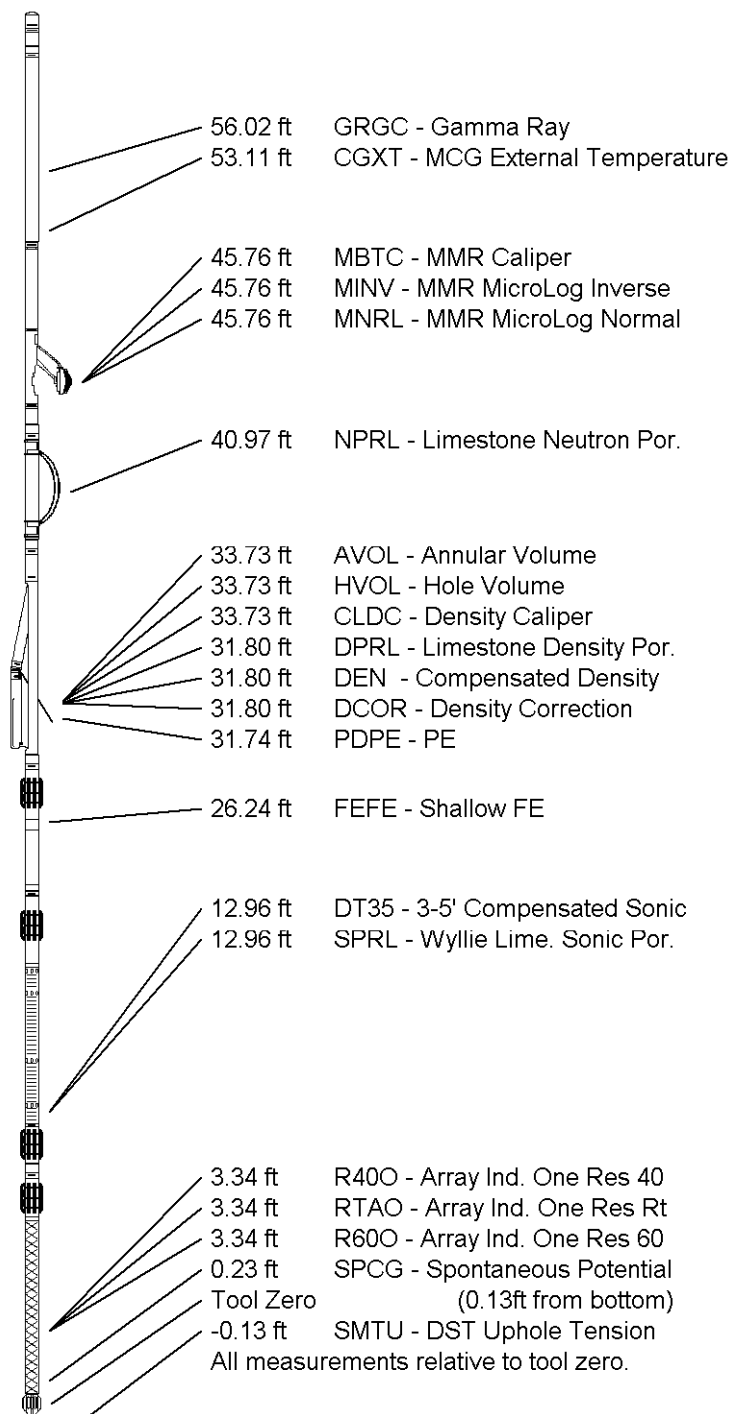
Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focused 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



COMPANY	SHAKESPEARE OIL CO, INC.
WELL	TUCKER 1-5
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	3112.00	feet	First Reading	4860.66	feet
Elevation Drill Floor	3110.00	feet	Depth Driller	4865.00	feet
Elevation Ground Level	3102.00	feet	Depth Logger	4864.00	feet



ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

Weatherford®

Weatherford		ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG	
COMPANY SHAKESPEARE OIL CO., INC.			
WELL TUCKER 1-5			
FIELD WILDCAT			
PROVINCE/COUNTY SCOTT			
COUNTRY/STATE U.S.A. / KANSAS			
LOCATION 2305 FSL & 2310 th EEL			
SEC 16		TWP 34N	
RANGE 15-17-20N		MERCATOR MMS	
SPRINT Number 15-17-20N		SPRINT Number MMS	
Permanent Datum G.L. Elevation 3102 feet		Elevations: KB 3112.00 DF 3110.00 GL 3102.00	
Log Measured From KB			
Drilling Measured From KB			
Date 20-OCT-2013			
Run Number ONE			
Service Order 3539909			
Depth Driller 4885.00		feet	
Depth Logger 4884.00		feet	
First Reading 4880.86		feet	
Last Reading 262.00		feet	
Casing Driller 262.00		feet	
Casing Logger 262.00		feet	
Bit Size 7.875		inches	
Hole Fluid Type CHEM			
Density/Viscosity 8.80		lb/ft ³	
PVT/Fluid Loss 10.50		inches	
Sample Source MLDPT			
Run @ Measured Temp 0.46 @ 52.0		ohm-m	
Run @ Measured Temp 0.37 @ 52.0		ohm-m	
Run @ Measured Temp 0.55 @ 52.0		ohm-m	
Source Rmt Rmt CALC		ohm-m	
Run @ BHT 0.77 @ 09.0		ohm-m	
Time Since Circulation 4 HRS			
Max Recorded Temp 109.00		deg F	
Equipment Base 13057		deg F	
Recorded By TIM PRIEST			
Witnessed By DEREK CARTER			
JOB # LE 3-297			

