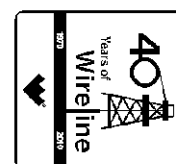


**Weatherford****ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG****FUTURE PETROLEUM COMPANY LLC****WMU 5****WEST MADDIX UNIT****COWLEY****U.S.A/KANSAS****929' FNL & 685' FEL**

COMPANY

WELL

FIELD

PROVINCE/COUNTY

COUNTRY/STATE

LOCATION

SEC

TWP

RGE

33S

5E

Other Services

MDN/MPD

MML

API Number

15-035-24423

Permit Number

Permanent Datum G.L., Elevation 1305 feet

Log Measured From K.B. 10 FEET above Permanent Datum

Drilling Measured From K.B.

Elevations:
KB 1315.00
DF 1313.00
GL 1305.00

Date 16-JUL-2011

Run Number

Depth Driller

Depth Logger

First Reading

Last Reading

Casing Driller

Casing Logger

Bit Size

Hole Fluid Type

Density / Viscosity

PH / Fluid Loss

Sample Source

Rm @ Measured Temp

Rmf @ Measured Temp

Rmc @ Measured Temp

Source Rmf / Rmc

Rm @ BHT

Time Since Circulation

Max Recorded Temp

Equipment Name

Equipment / Base

Recorded By

Witnessed By

COMPACT

13145

OKC

MIKE GARRISON

RAYMOND DOROTHY

BOREHOLE RECORD

Last Edited: 16-JUL-2011 18:47

Bit Size
inchesDepth From
feetDepth To
feet

7.875

219.00

3204.00

CASING RECORD

Type

Size
inchesDepth From
feetShoe Depth
feetWeight
pounds/ft

SURFACE

8.625

0.00

214.00

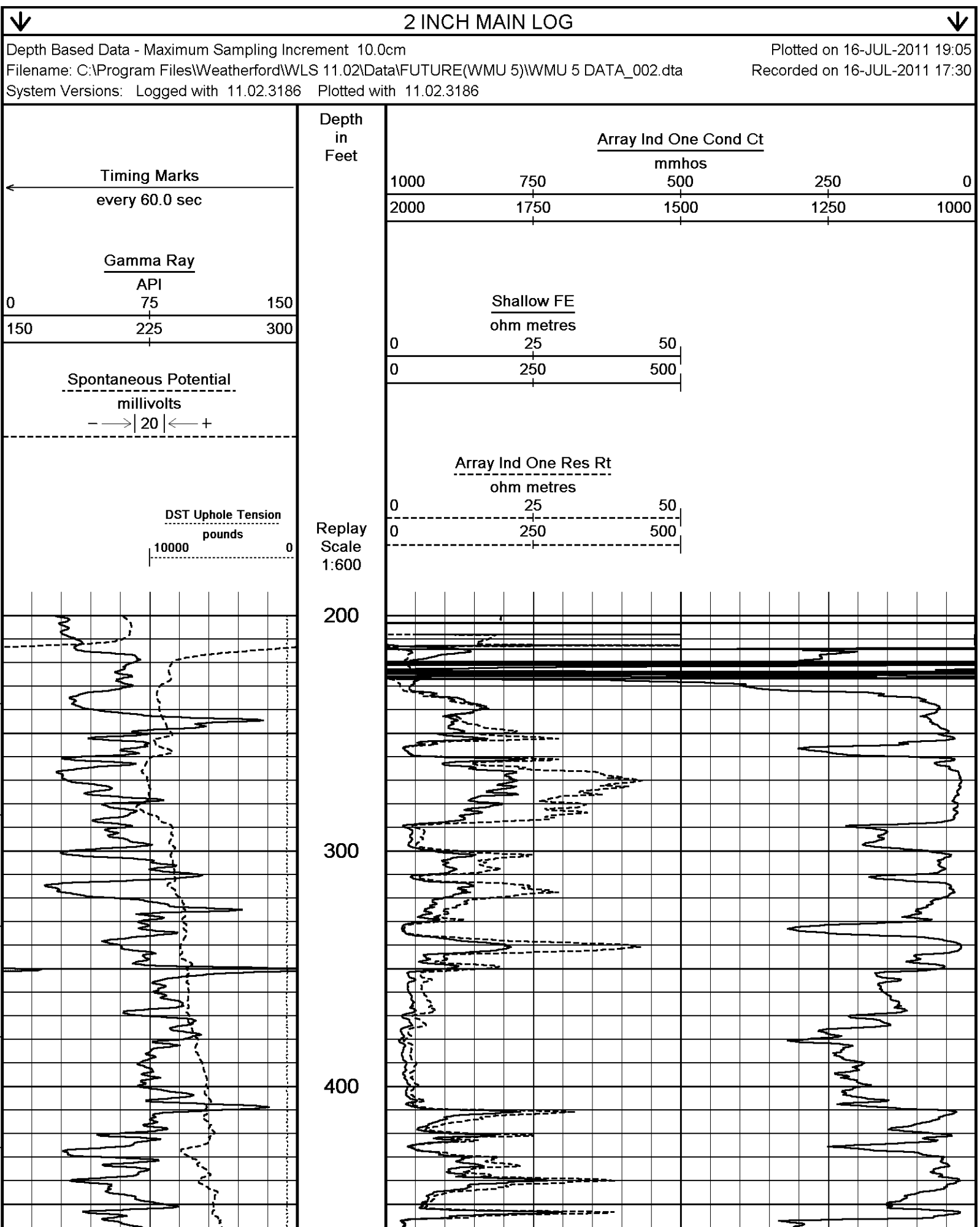
23.00

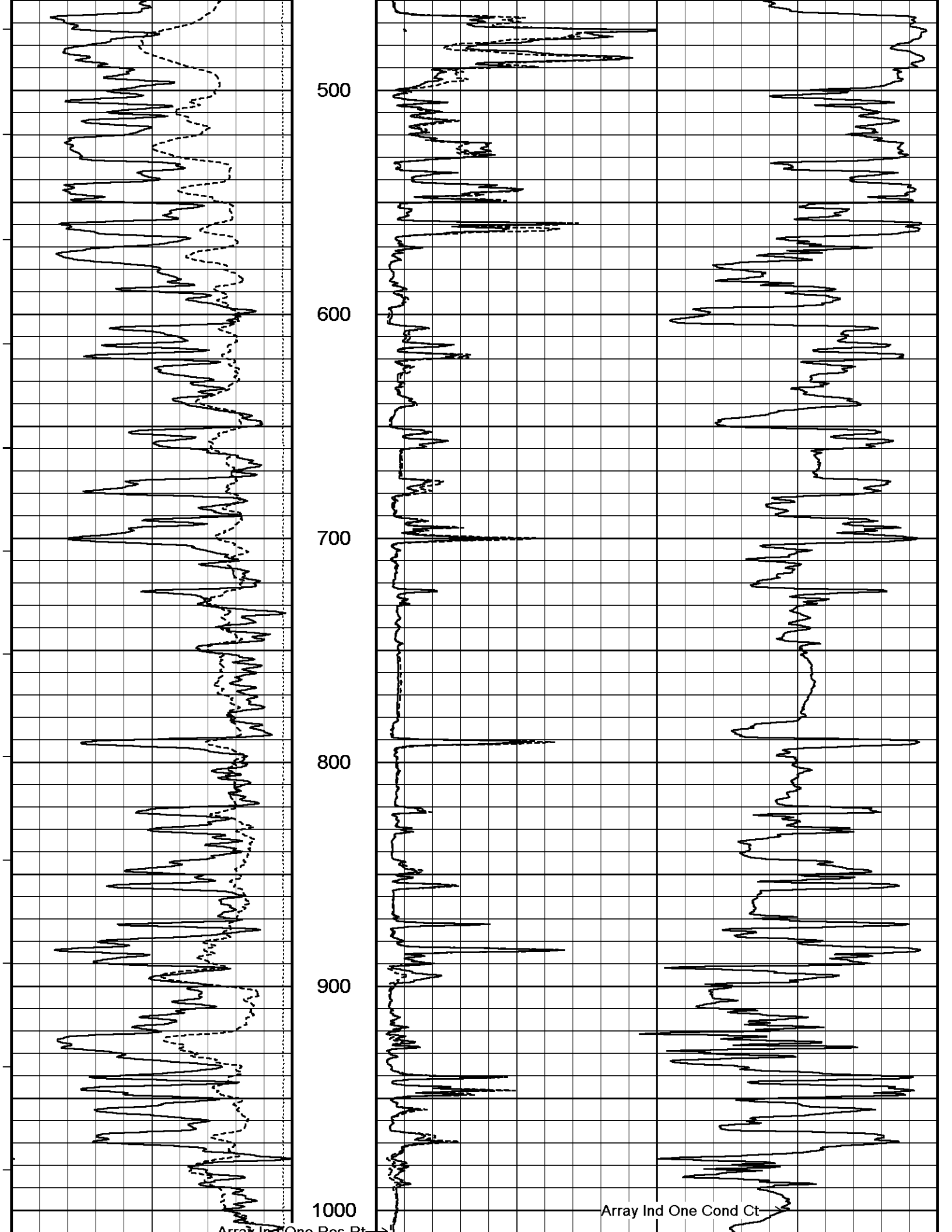
REMARKS

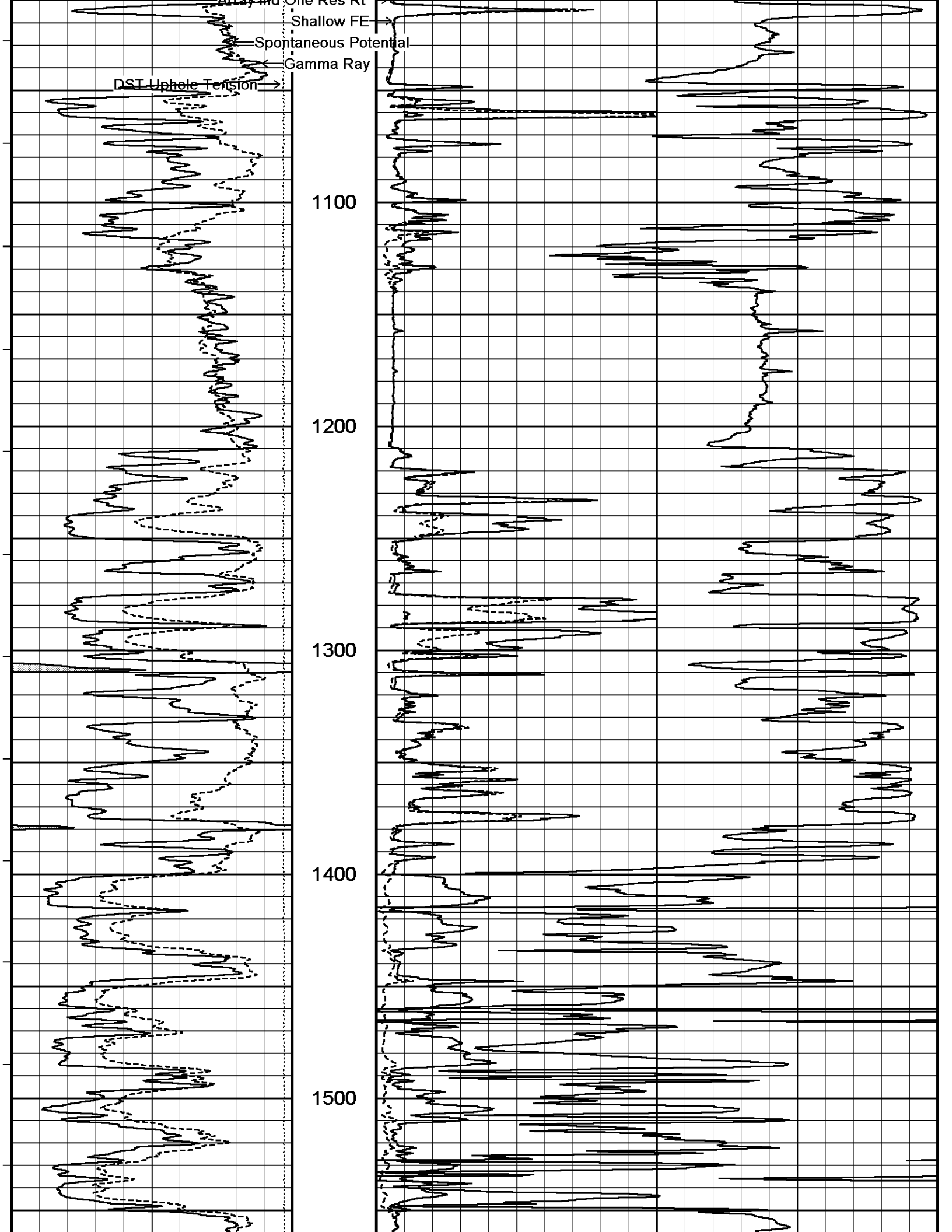
- 1) TOOLS RUN: SHA - 208, MCG - 10, MML-002, MDN - 11, MPD - 10, MFE-175, MAI - 102 RAN IN COMBINATION
- 2) HARDWARE: MAI: TWO .5" STANDOFFS USED, HOLE FINDER SUB USED
MFE: ONE 0.5" STANDOFF USED
MPD: 8 INCH PROFILE USED.
- 3) 2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY
- 4) ALL INTERVALS LOGGED AND SCALED PER CUSTOMERS REQUEST.
- 5) TOTAL HOLE VOLUME = 1470 CU.FT. 3204 TO 200FEET
- 6) ANNULAR VOLUME WITH 4.5 INCH PRODUCTION CASING = 1160 CU.FT 3204 TO 200FEET
- 7) SERVICE ORDER # 3531599
- 8) RIG: VAL #3
- 9) ENGINEER: M. GARRISON
- 10) OPERATOR(S): R.ROLLANS

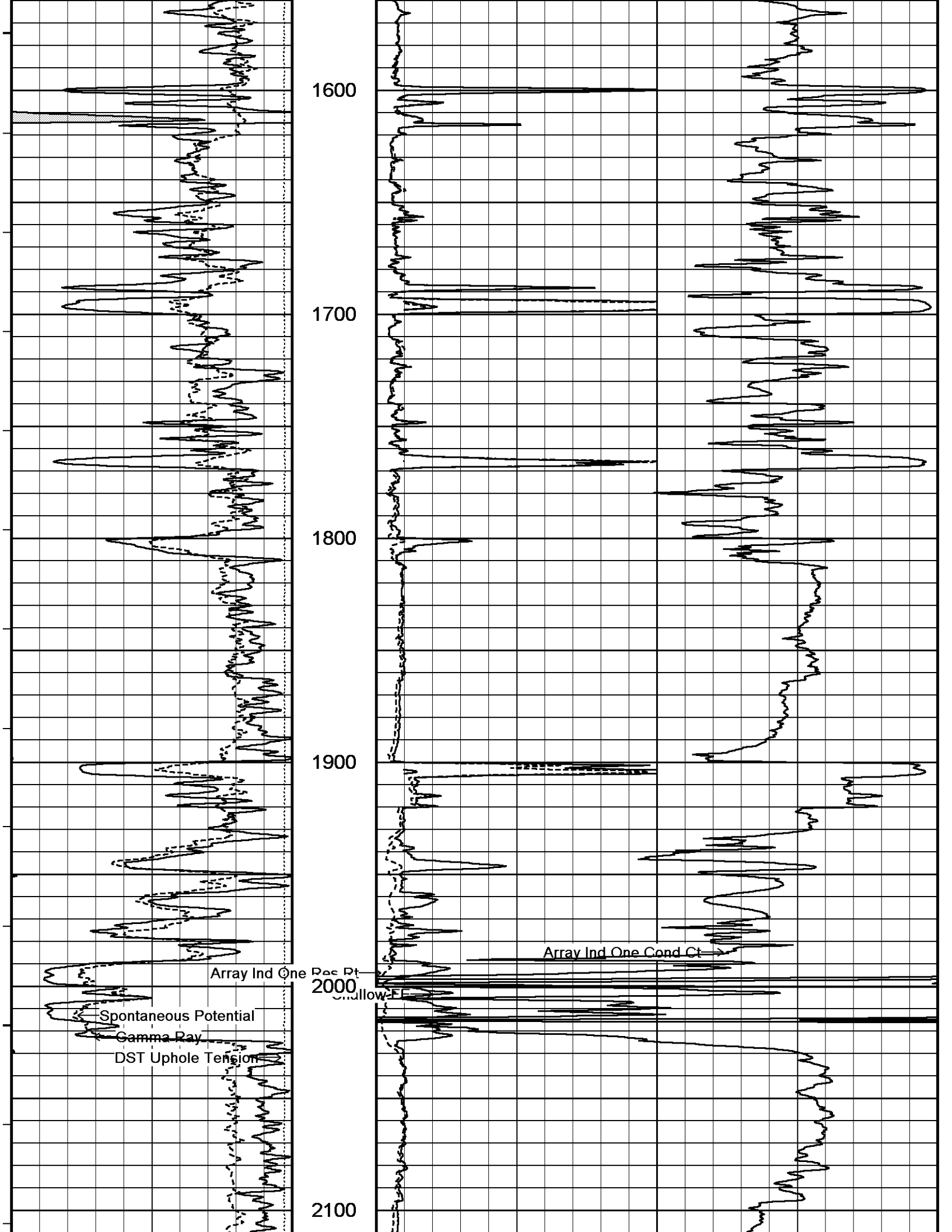
LCM = ZERO

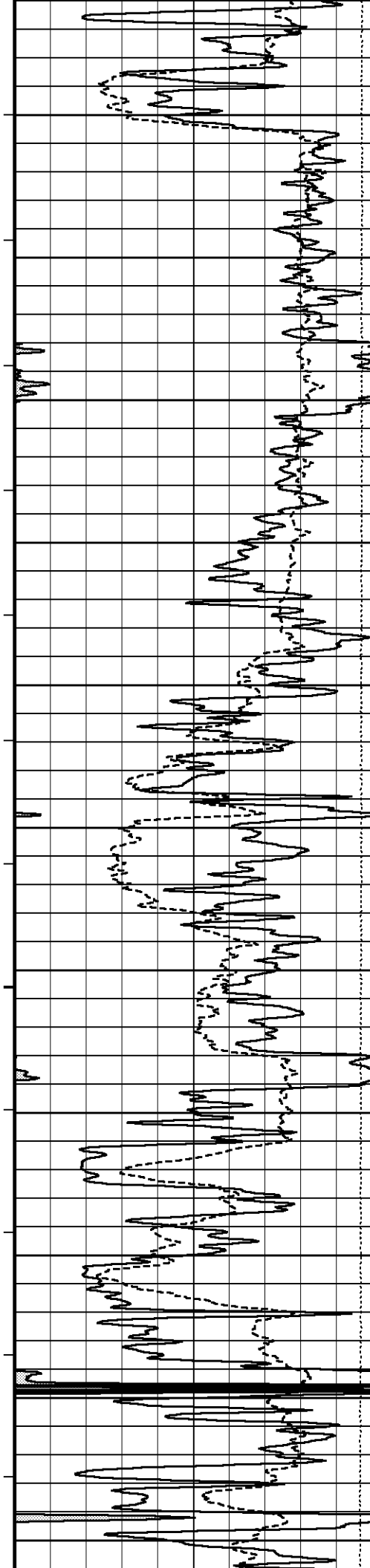
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for











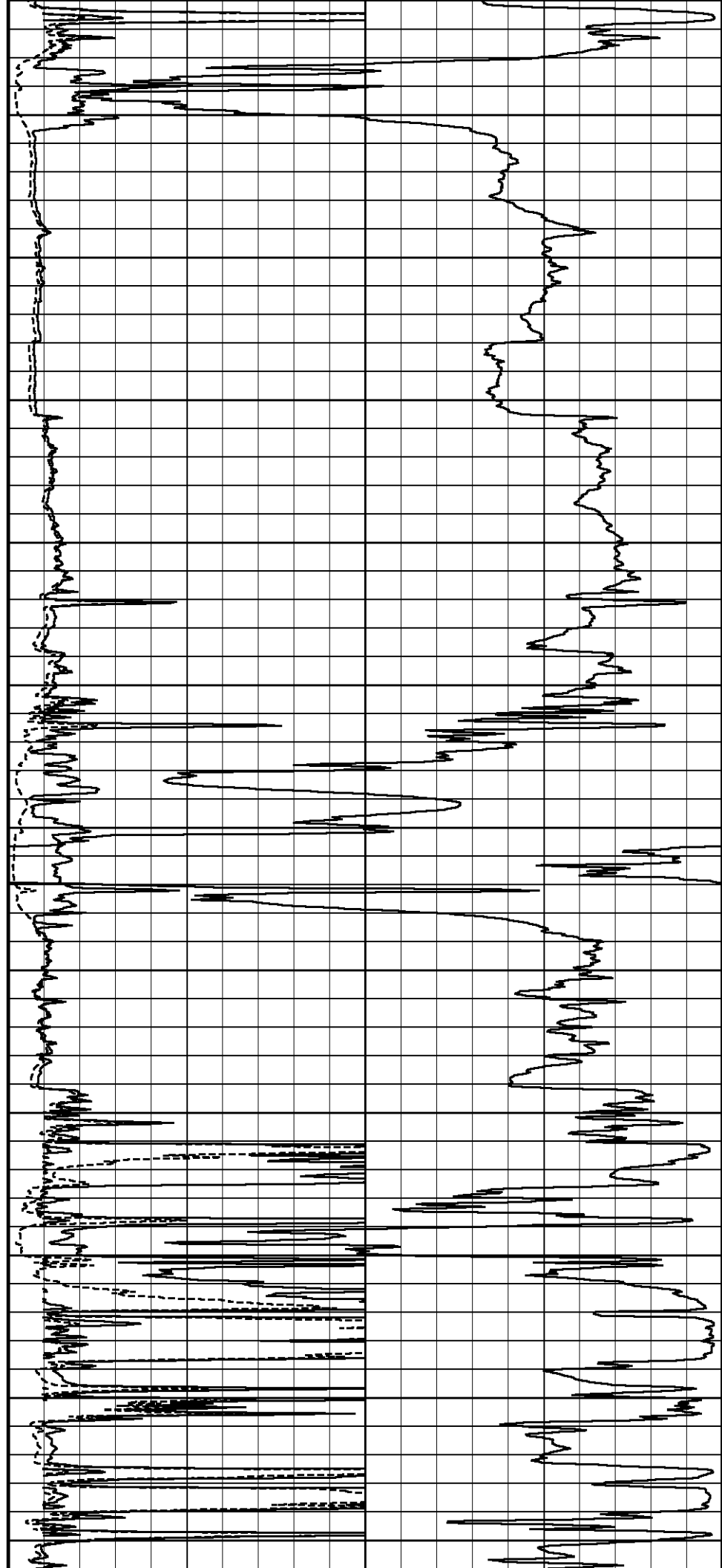
2200

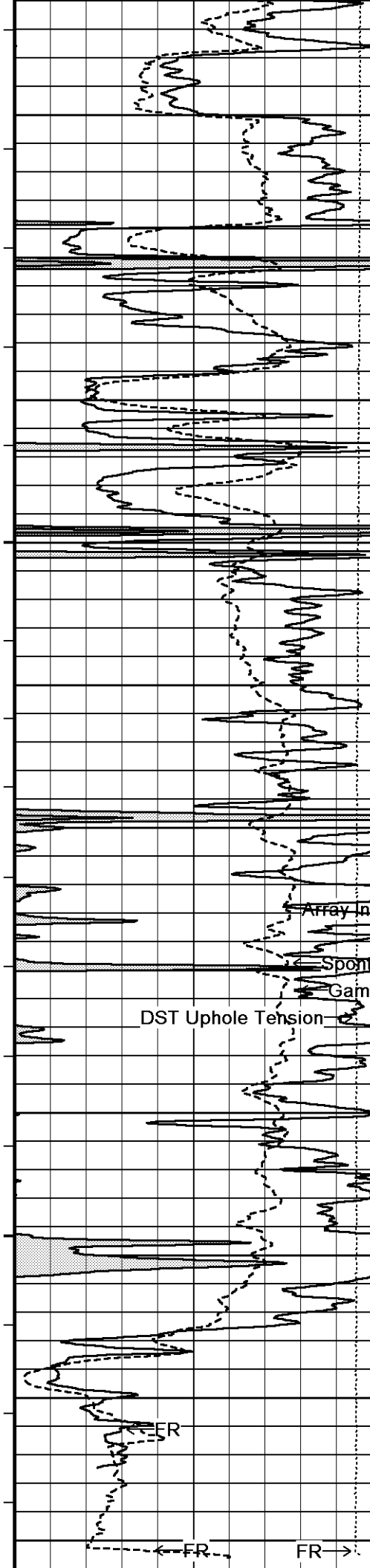
2300

2400

2500

2600





2700

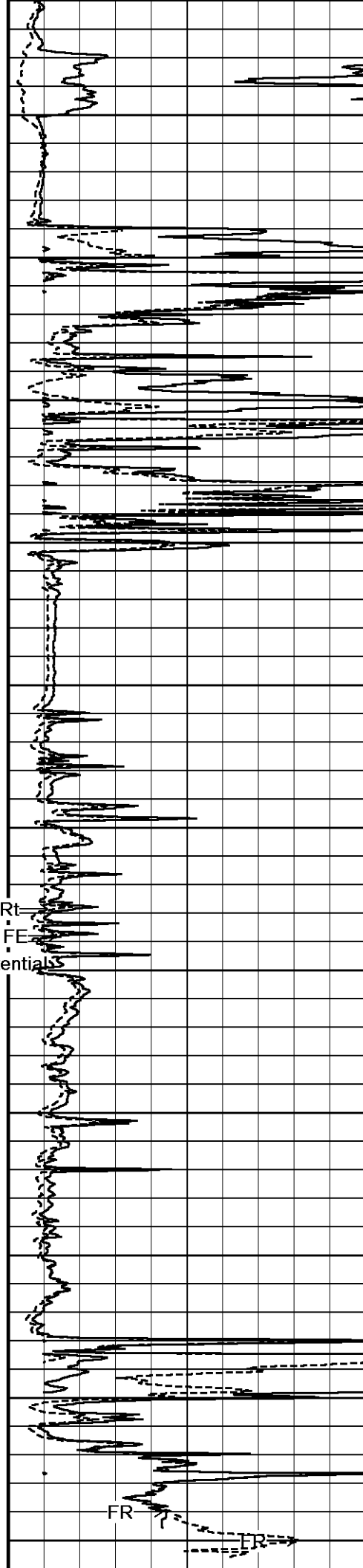
2800

2900

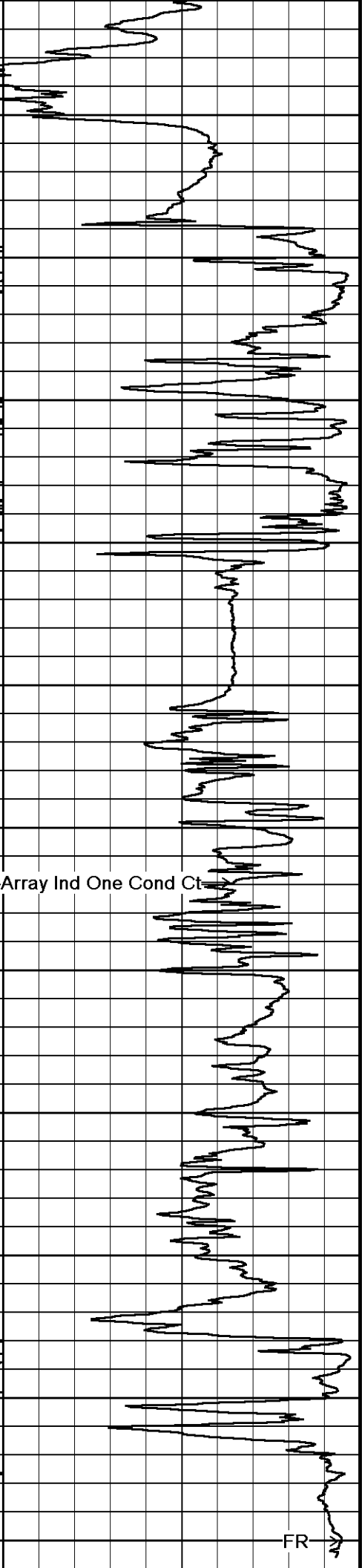
3000

3100

3200



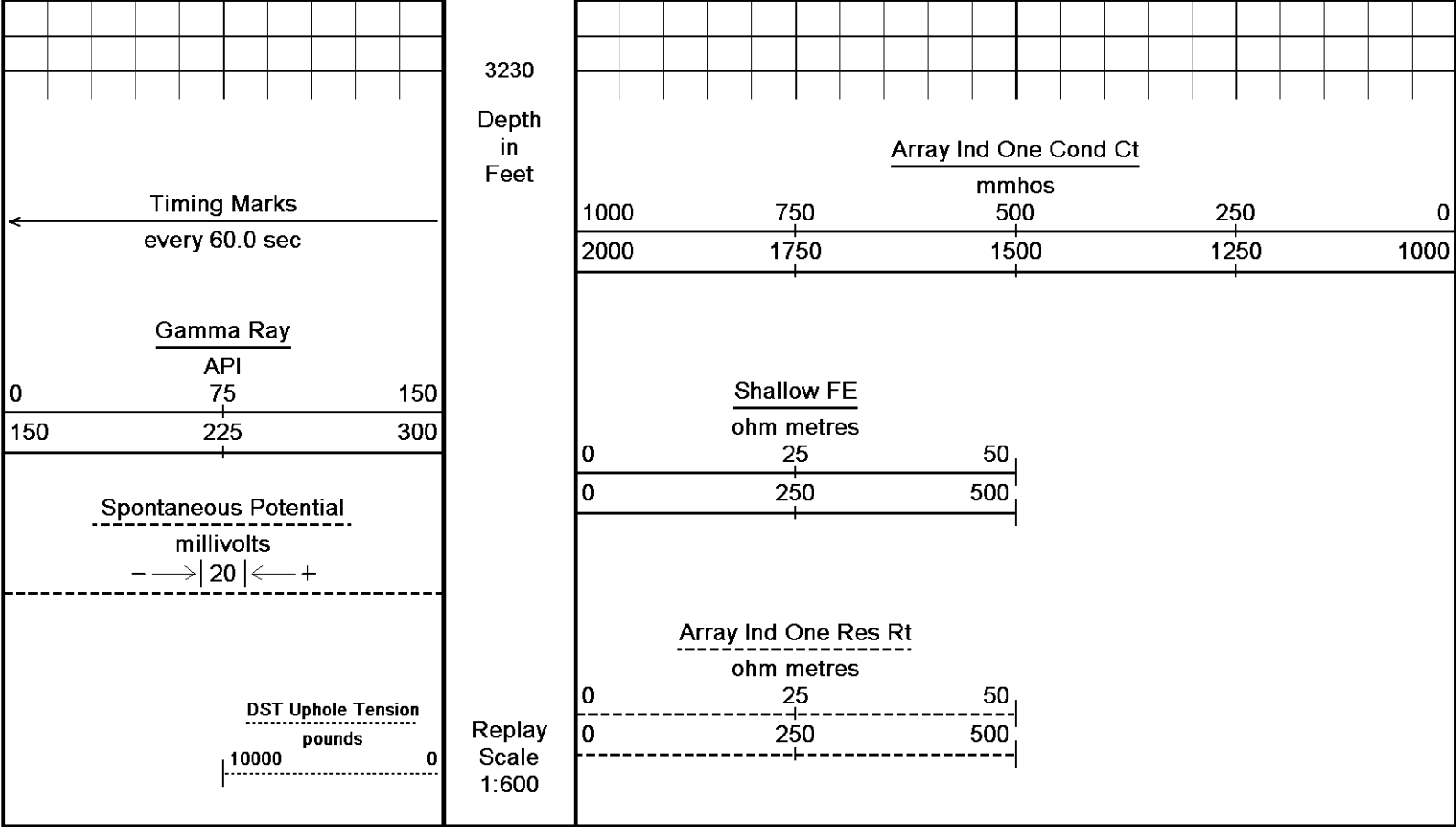
Array Ind One Cond Ct



FR

FR

FR



Depth Based Data - Maximum Sampling Increment 10.0cm

Filename: C:\Program Files\Weatherford\WLS 11.02\Data\FUTURE(WMU 5)\WMU 5 DATA_002.dta

System Versions: Logged with 11.02.3186 Plotted with 11.02.3186

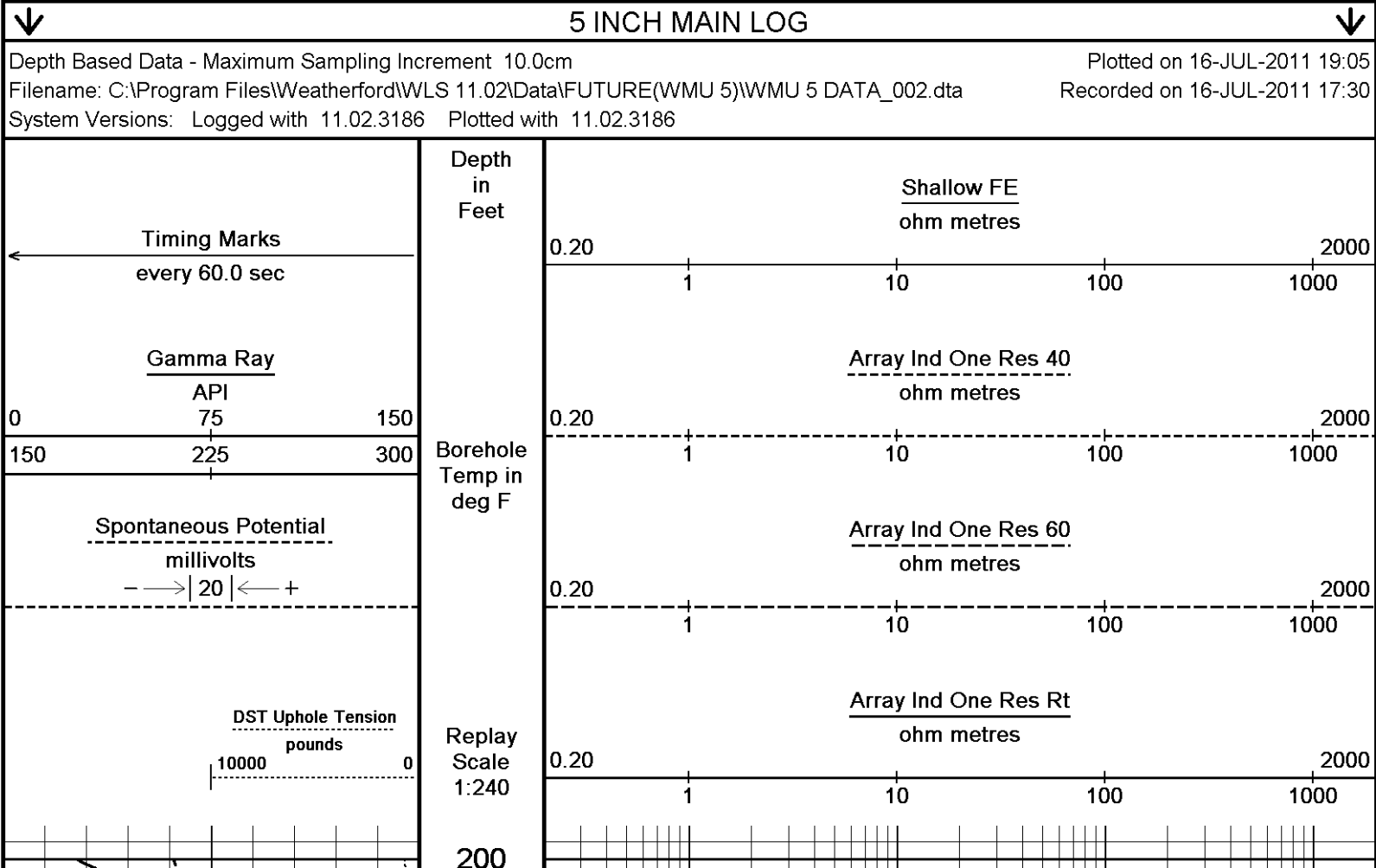
Plotted on 16-JUL-2011 19:05

Recorded on 16-JUL-2011 17:30

↑

2 INCH MAIN LOG

↑



↓

5 INCH MAIN LOG

↓

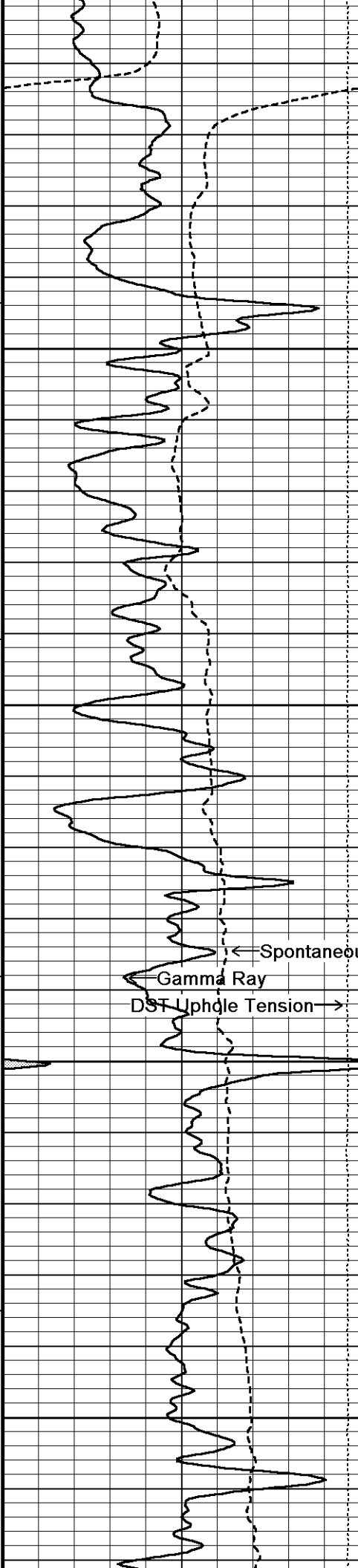
Depth Based Data - Maximum Sampling Increment 10.0cm

Filename: C:\Program Files\Weatherford\WLS 11.02\Data\FUTURE(WMU 5)\WMU 5 DATA_002.dta

System Versions: Logged with 11.02.3186 Plotted with 11.02.3186

Plotted on 16-JUL-2011 19:05

Recorded on 16-JUL-2011 17:30



94°

250

94°

300

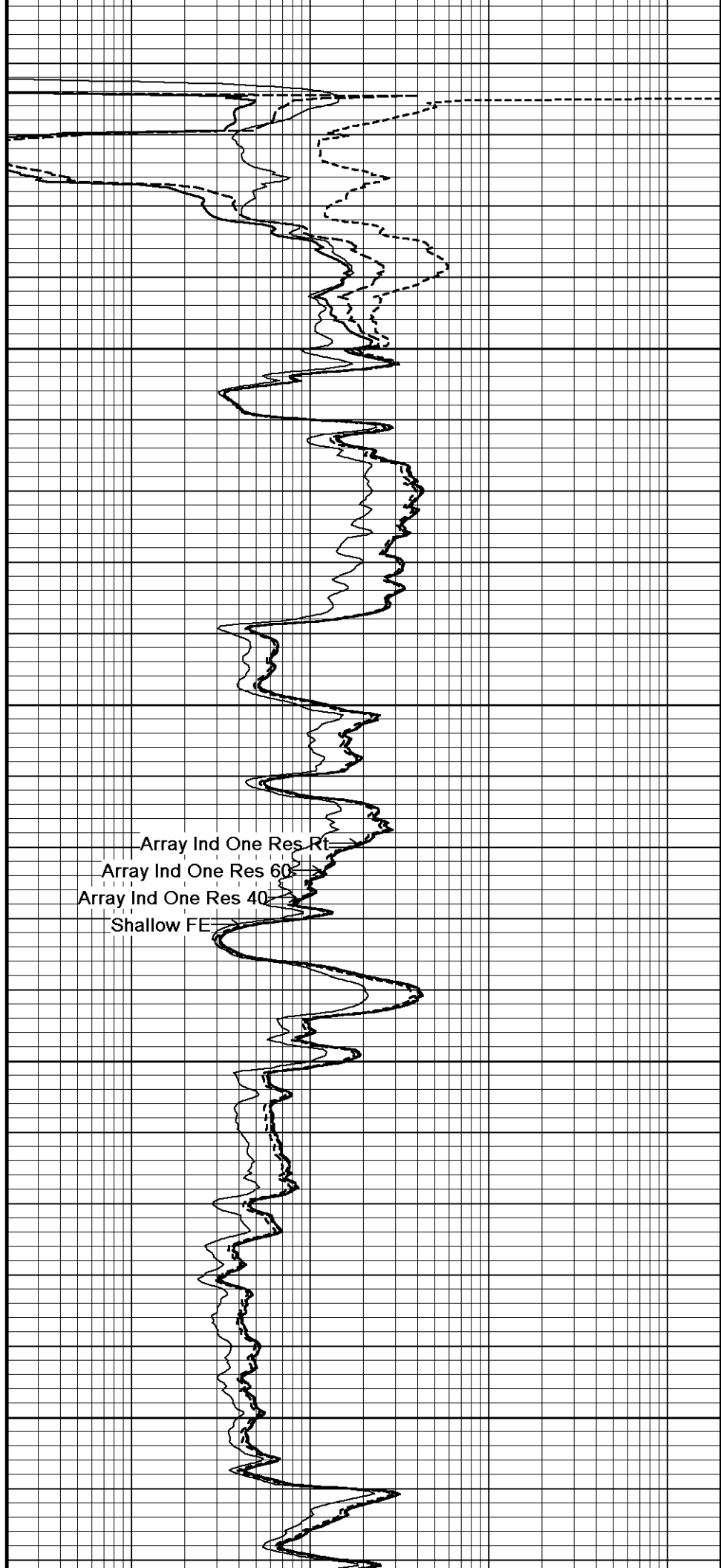
← Spontaneous Potential
Gamma Ray
DST Uphole Tension →

94°

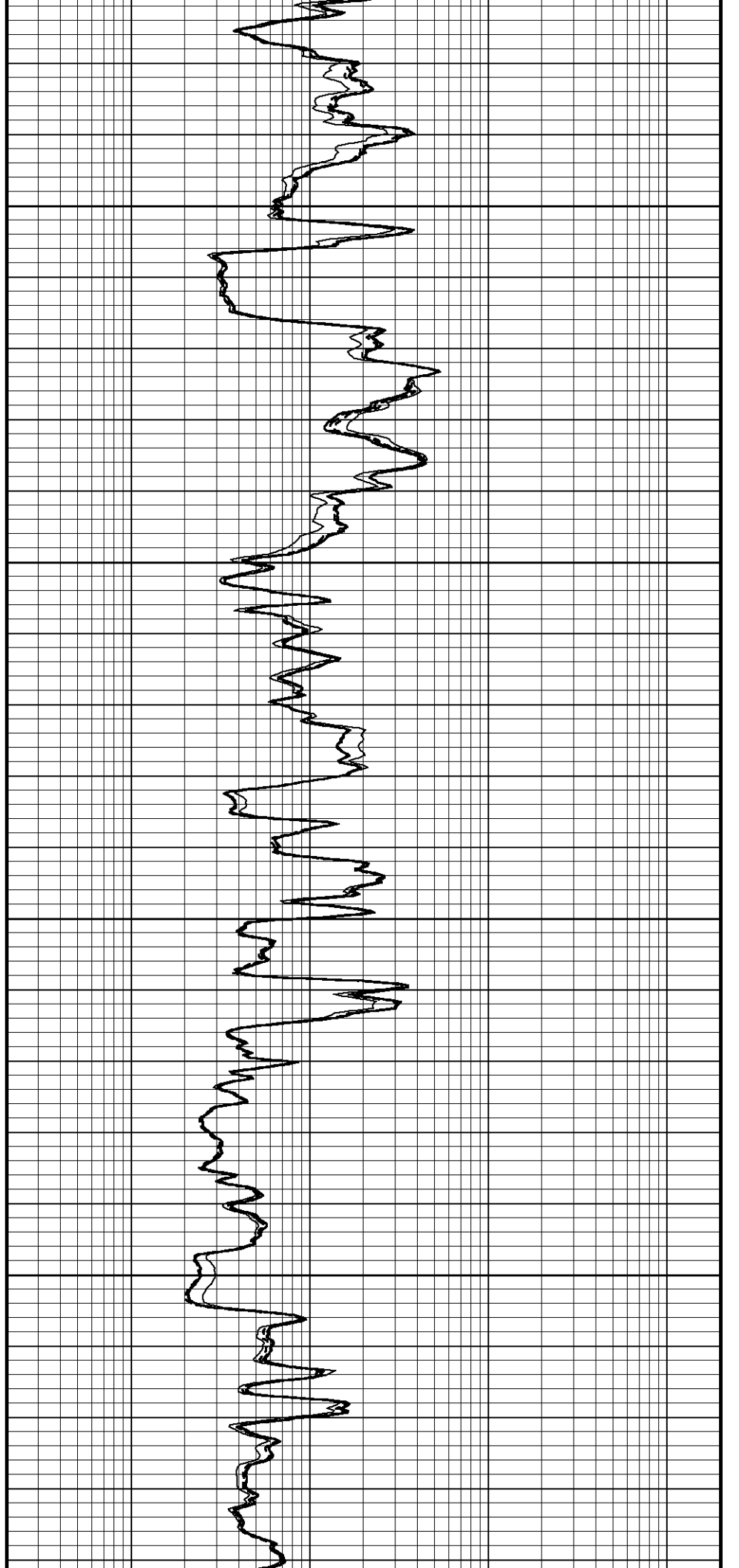
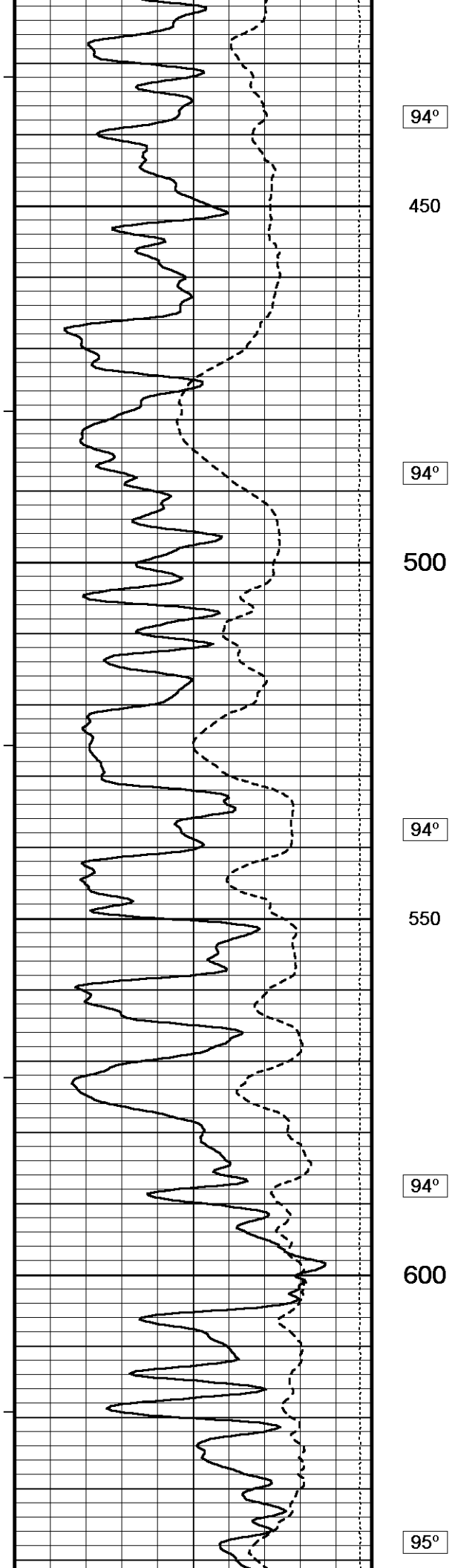
350

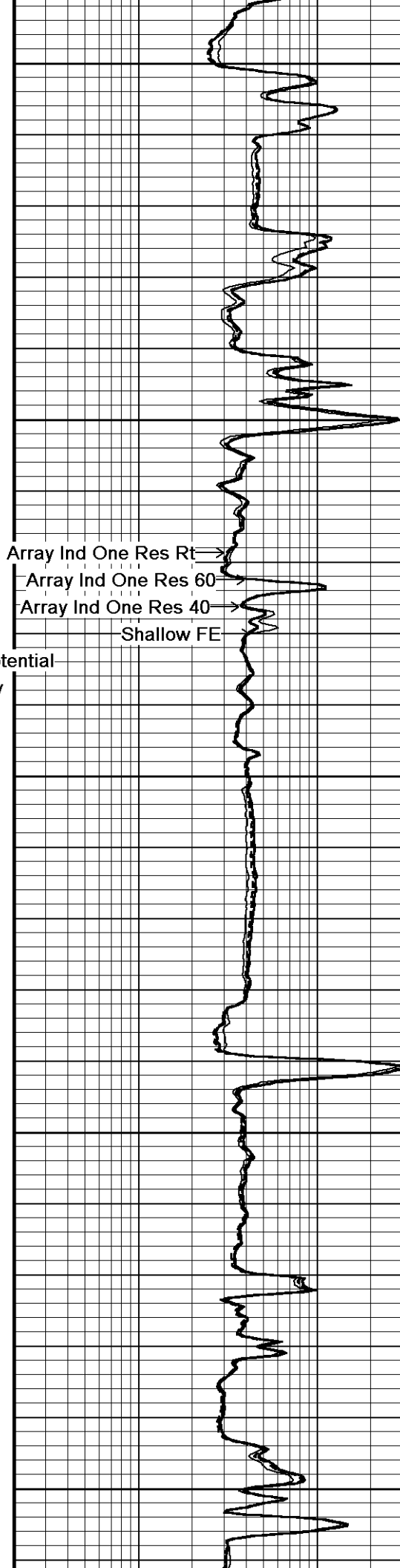
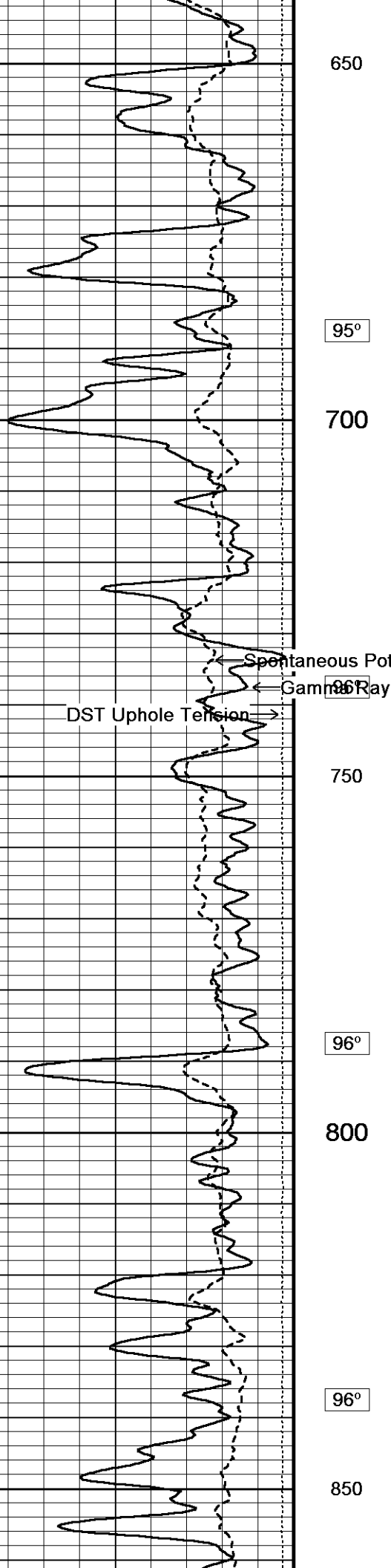
94°

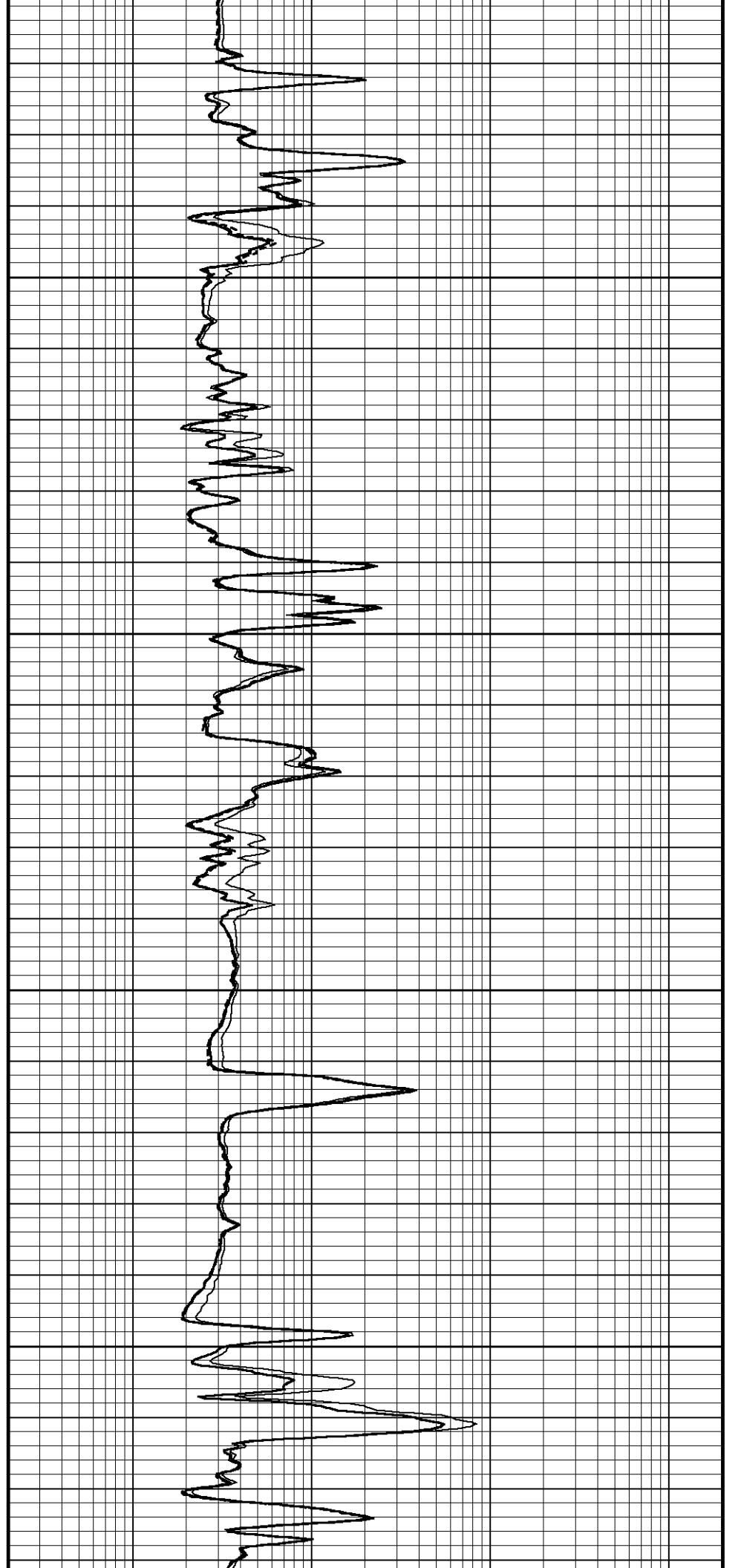
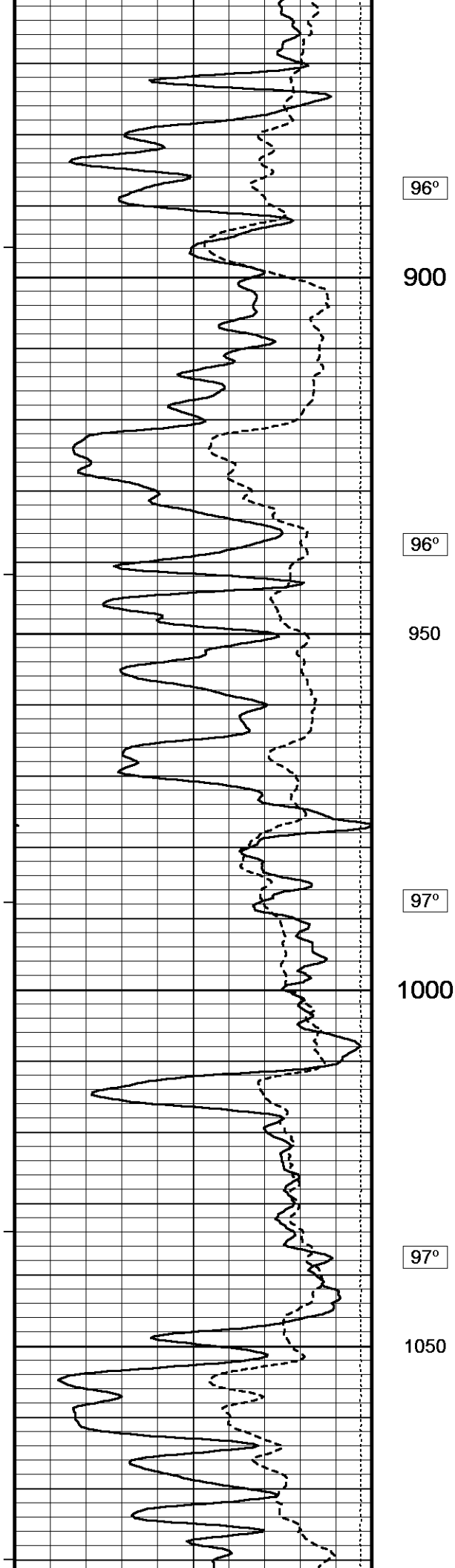
400

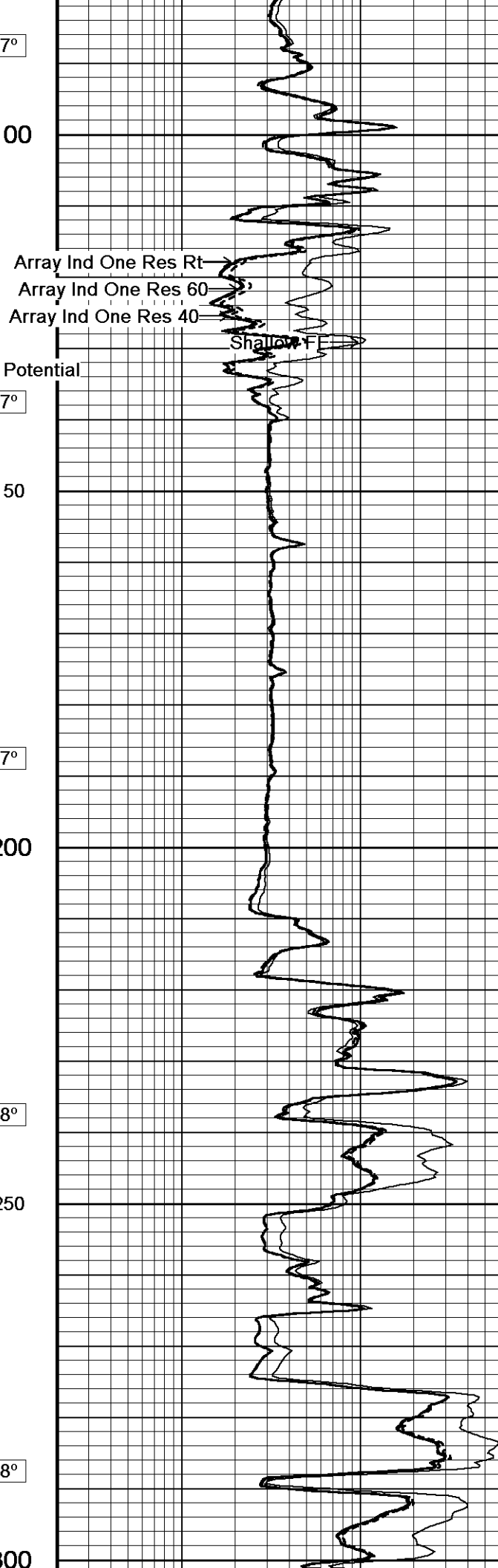
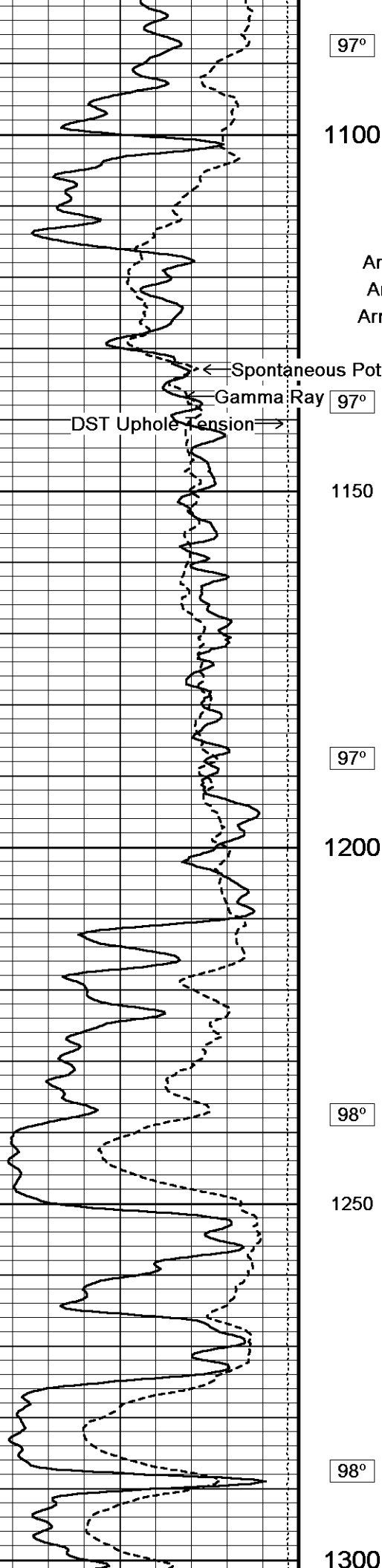


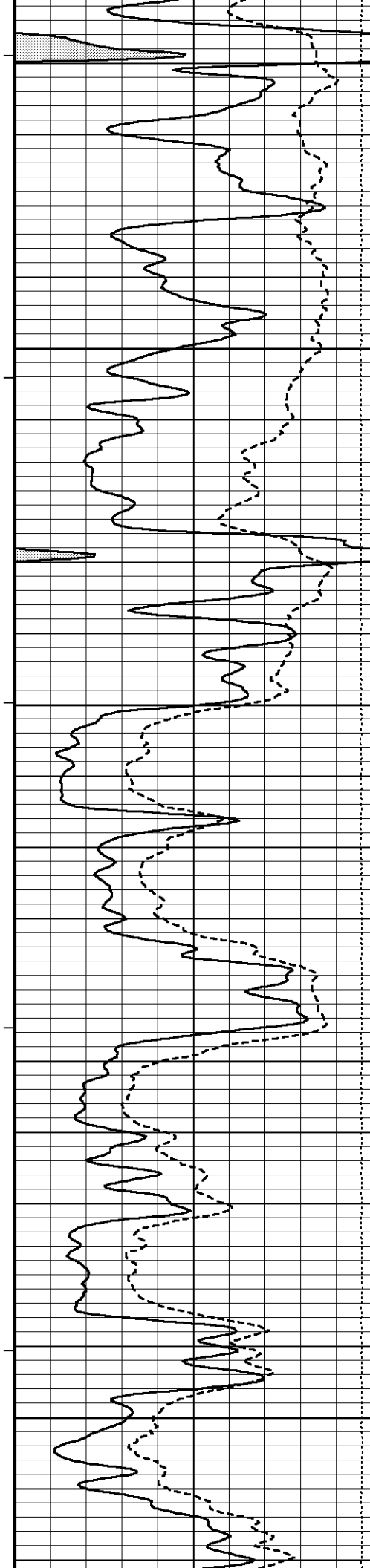
Array Ind One Res Rt
Array Ind One Res 60
Array Ind One Res 40
Shallow FE











98°

1350

98°

1400

98°

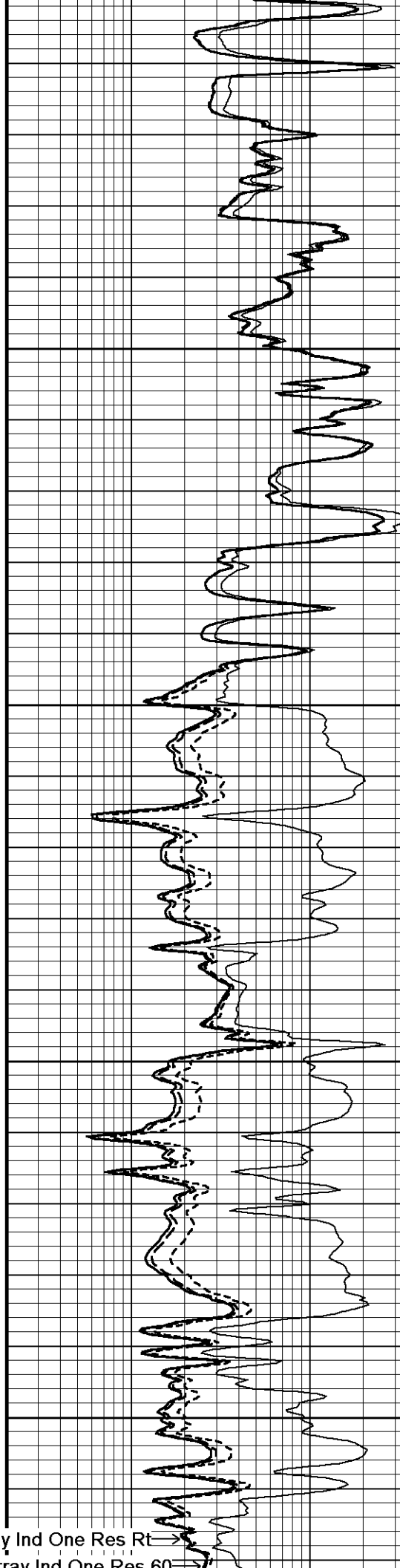
1450

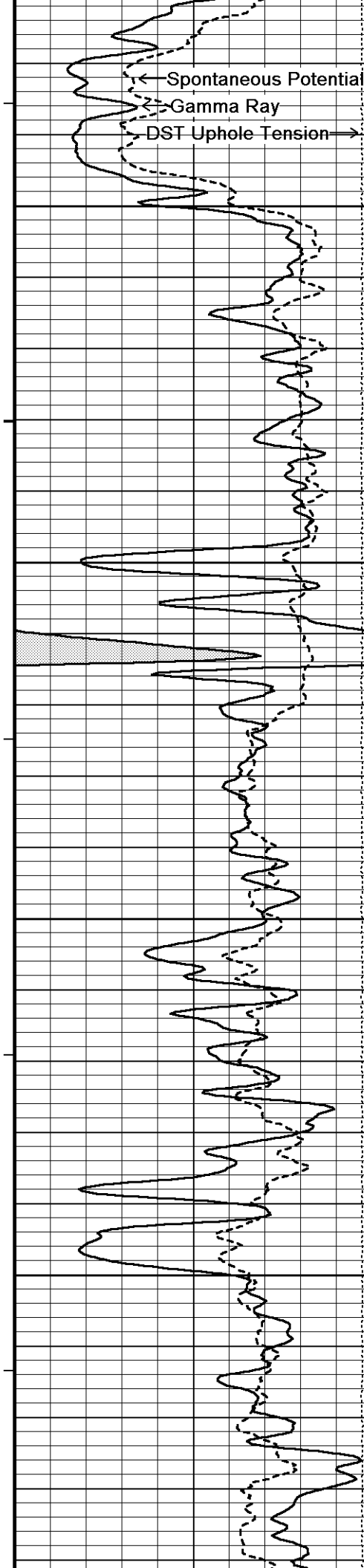
99°

1500

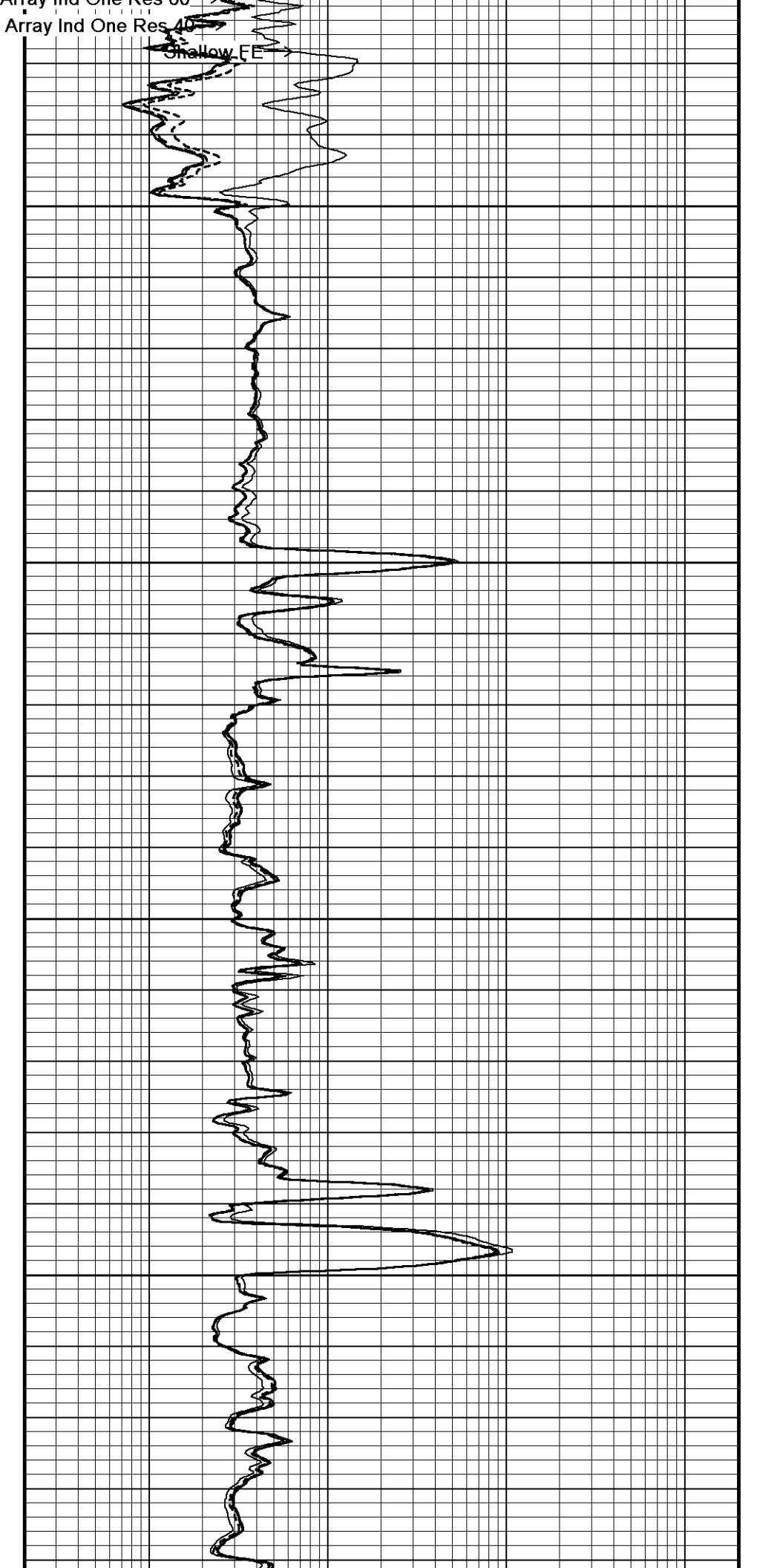
Array Ind One Res Rt

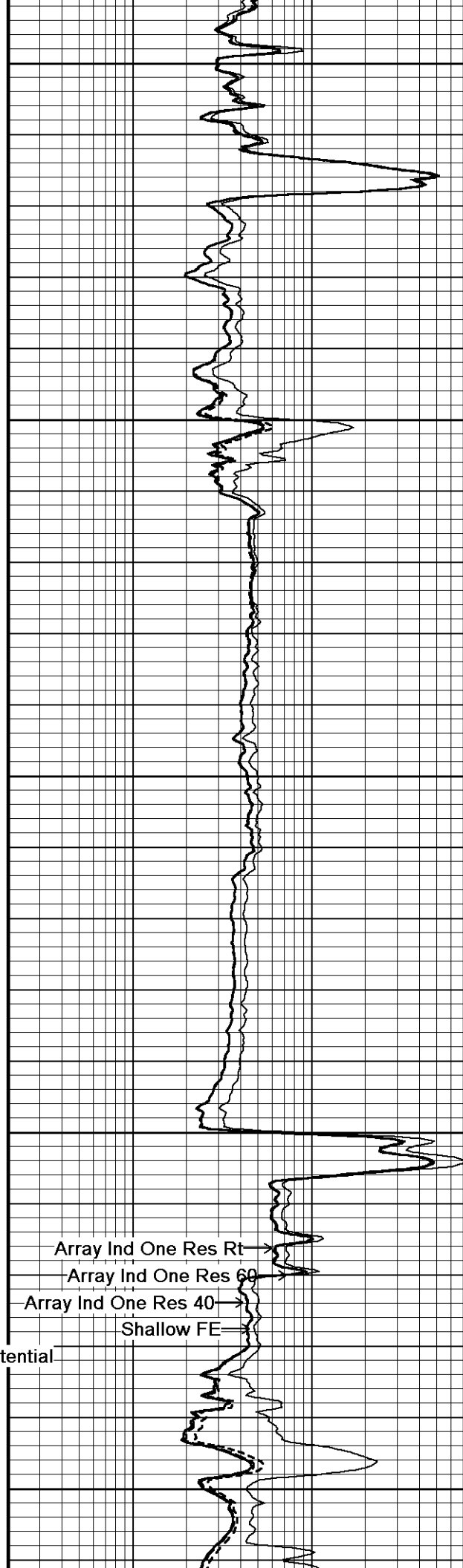
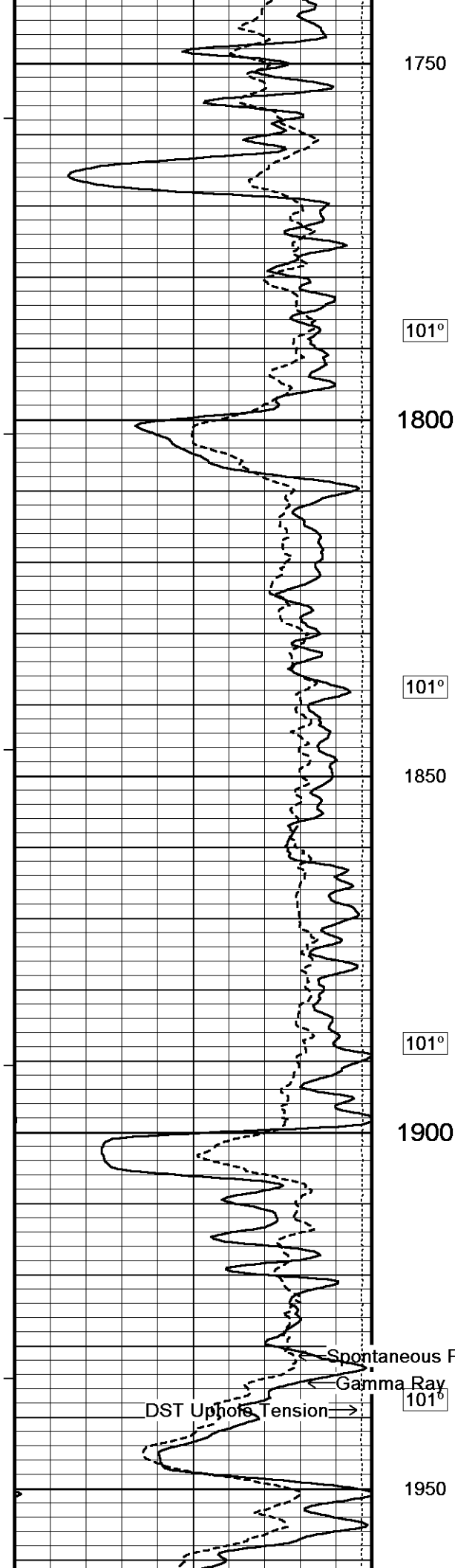
Array Ind One Res 60

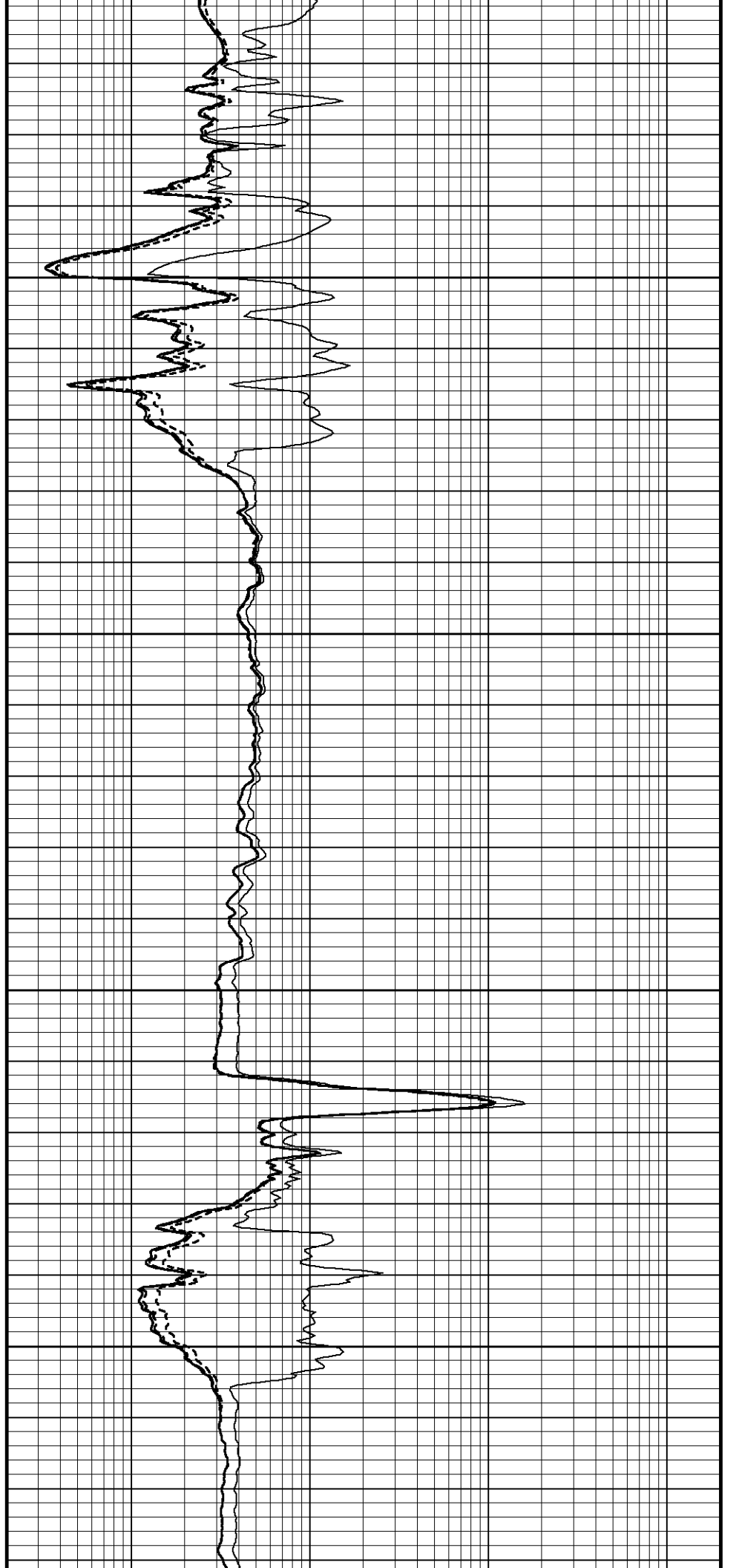
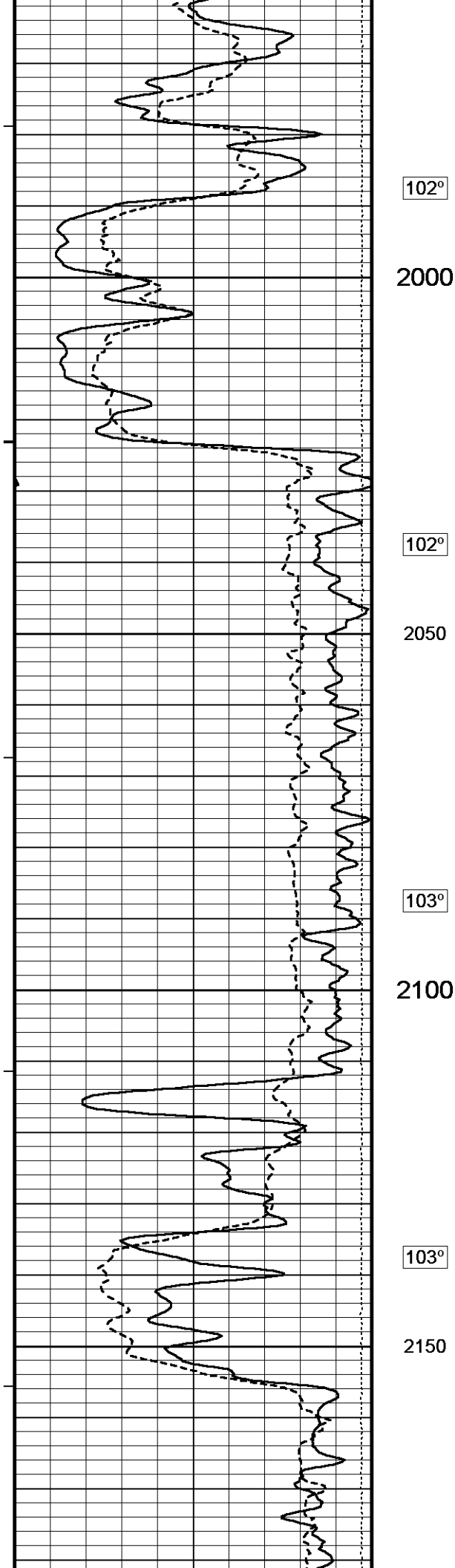


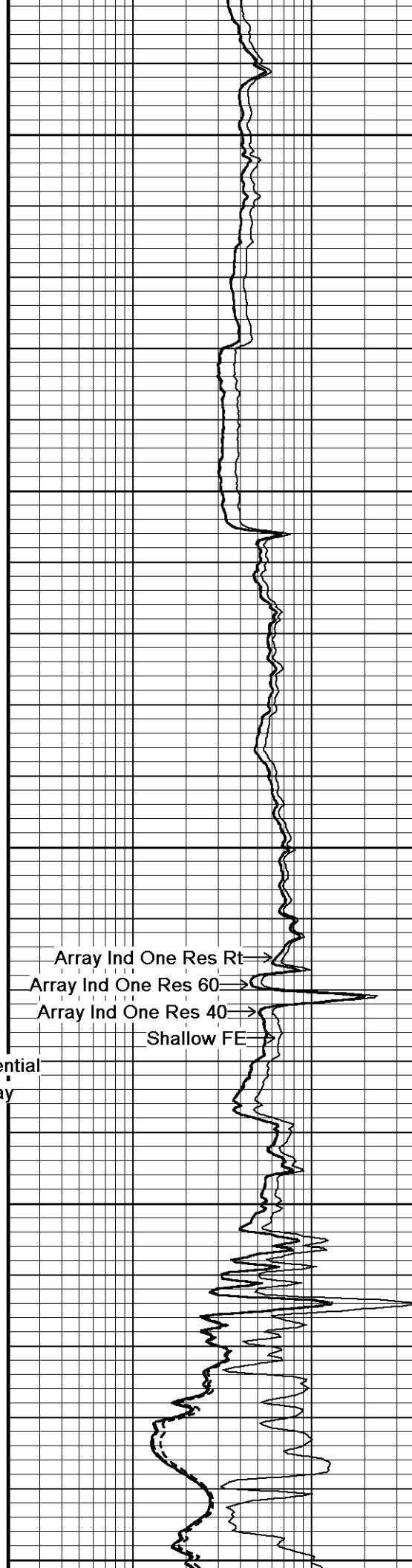
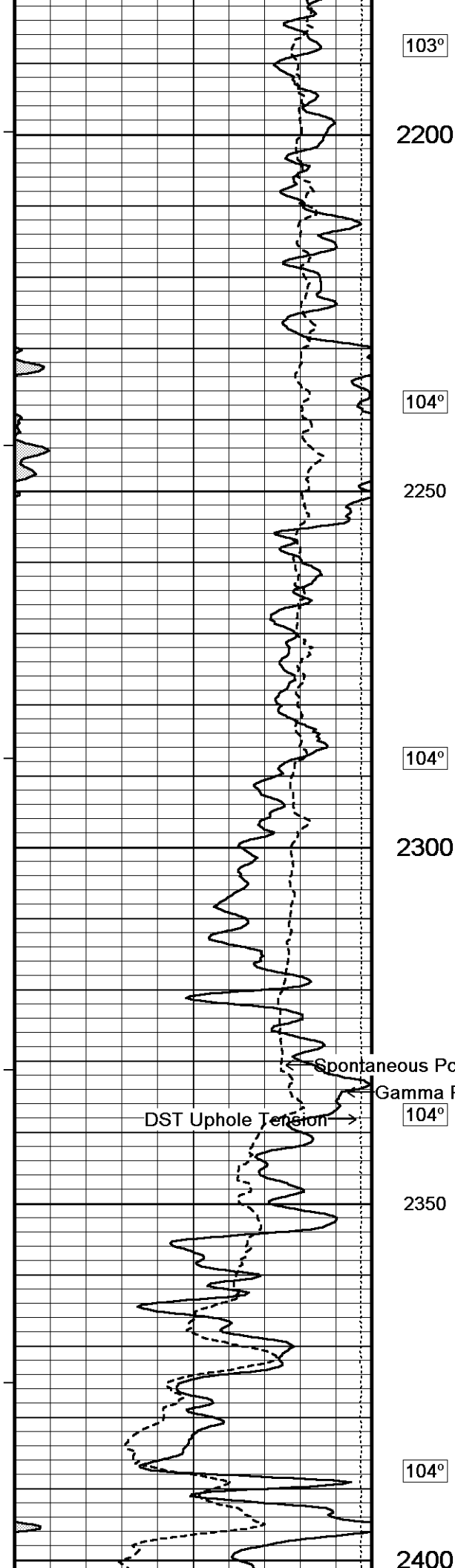


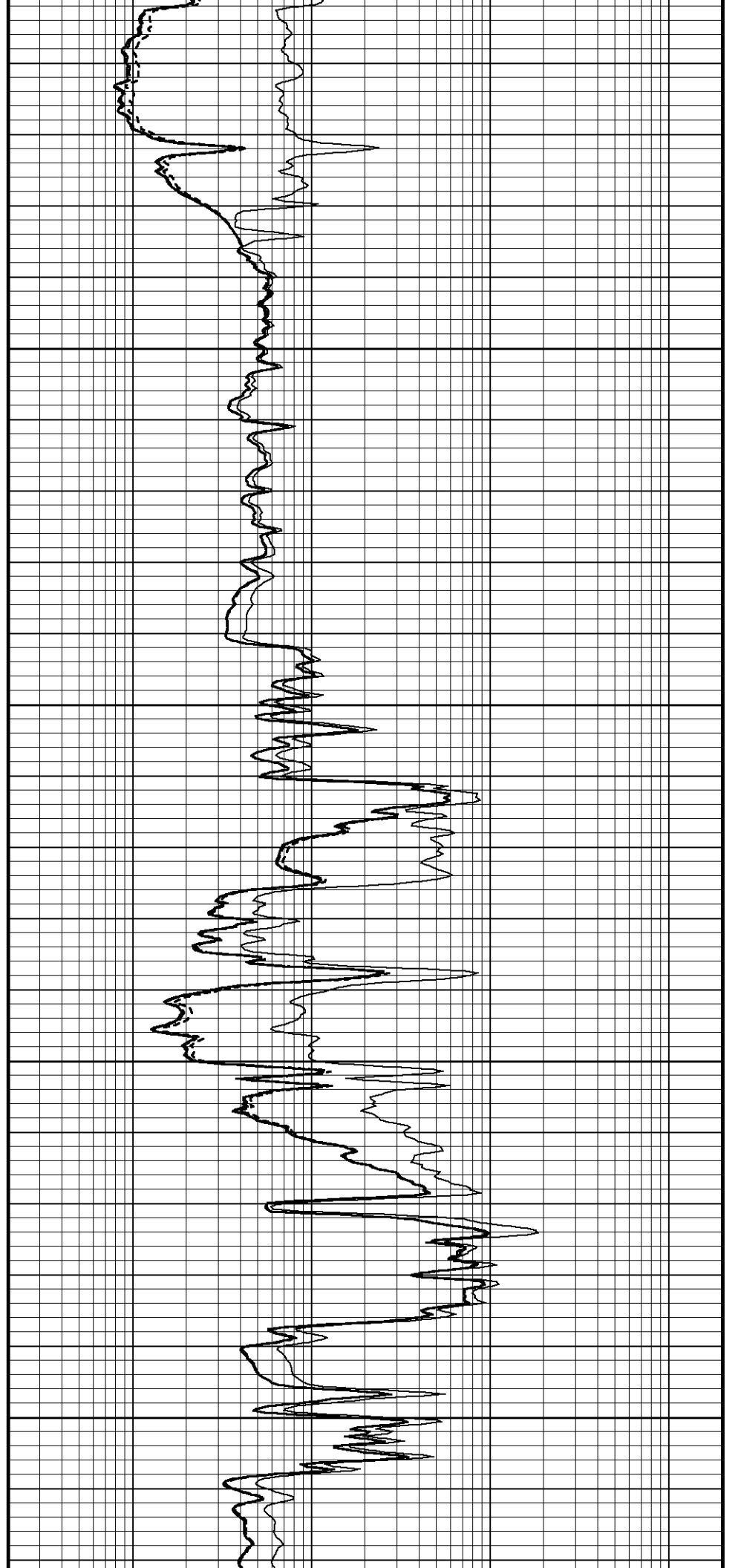
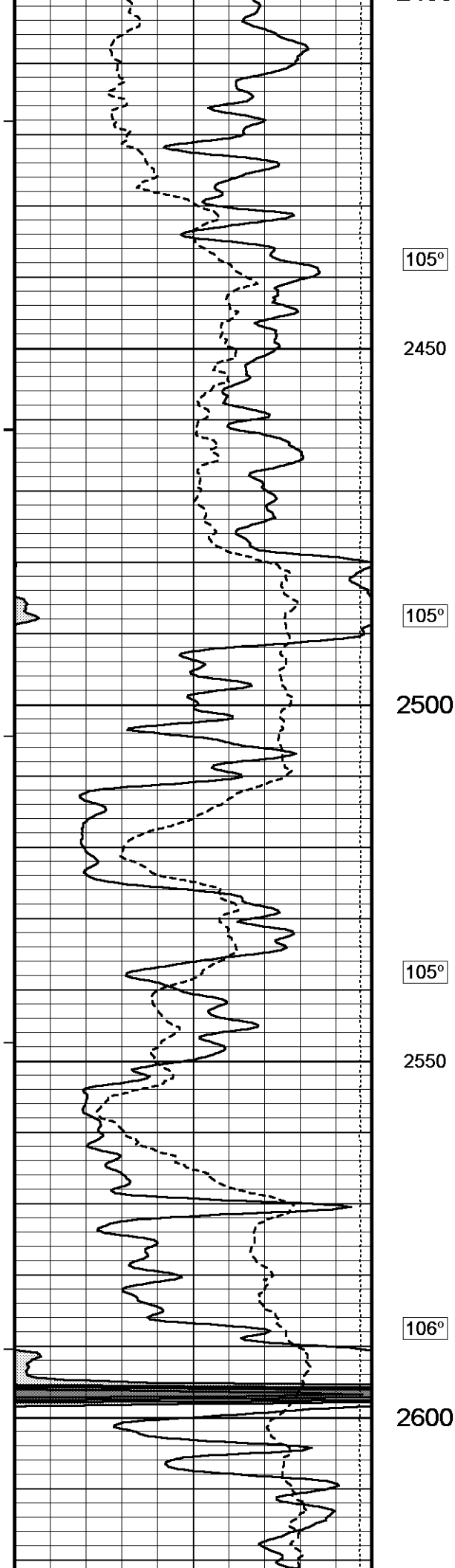
99°
1550
99°
1600
100°
1650
100°
1700
100°

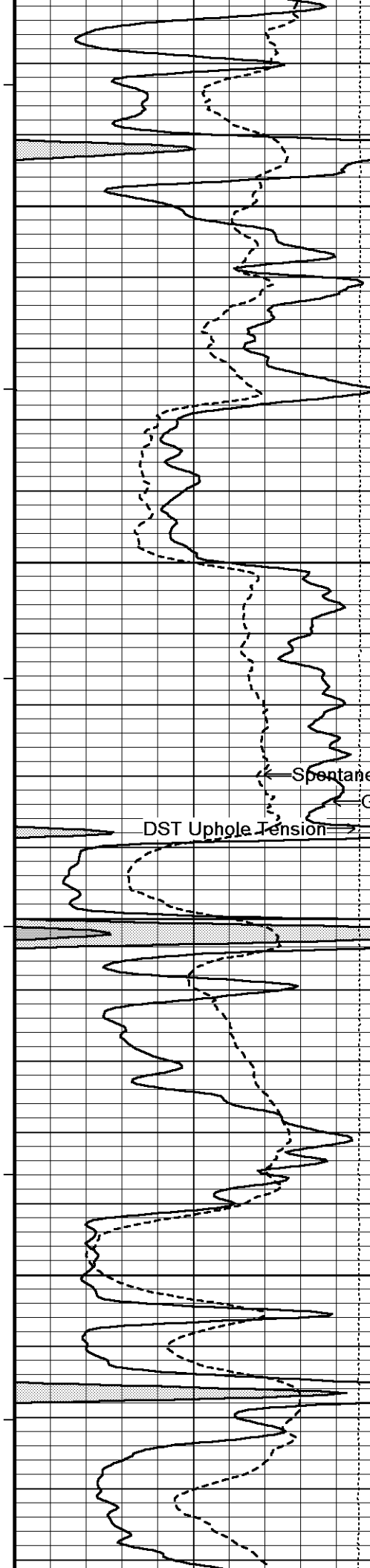












106°

2650

106°

2700

Spontaneous Potential

Gamma Ray

DST Uphole Tension

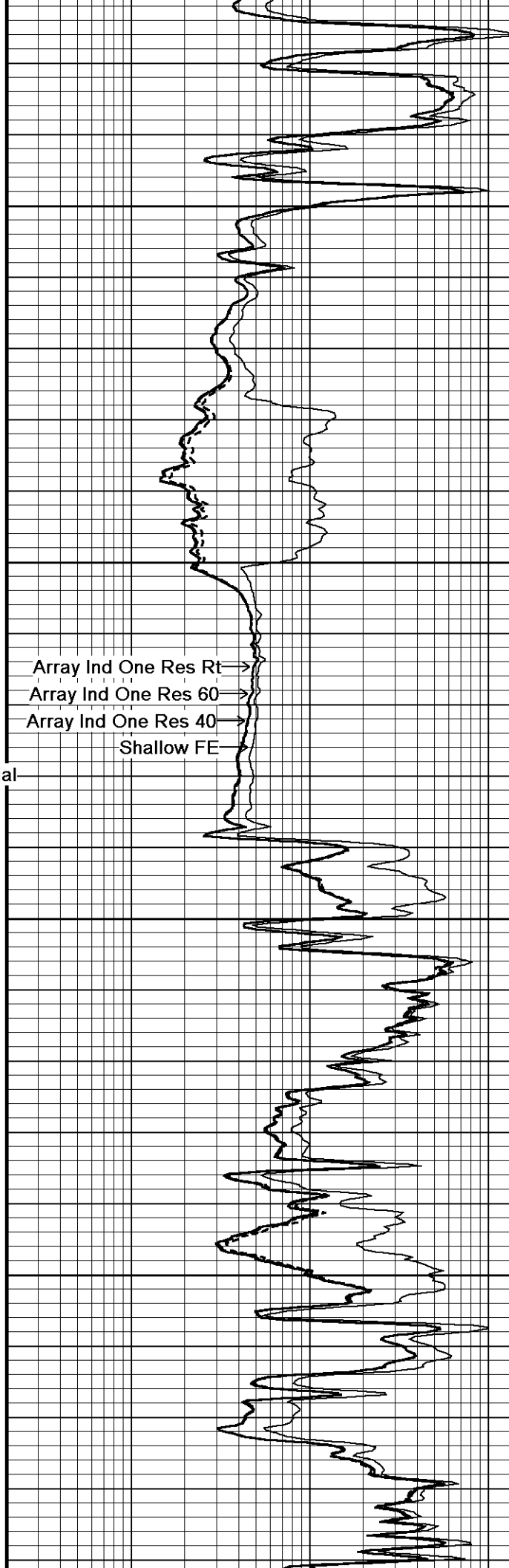
106°

2750

107°

2800

107°

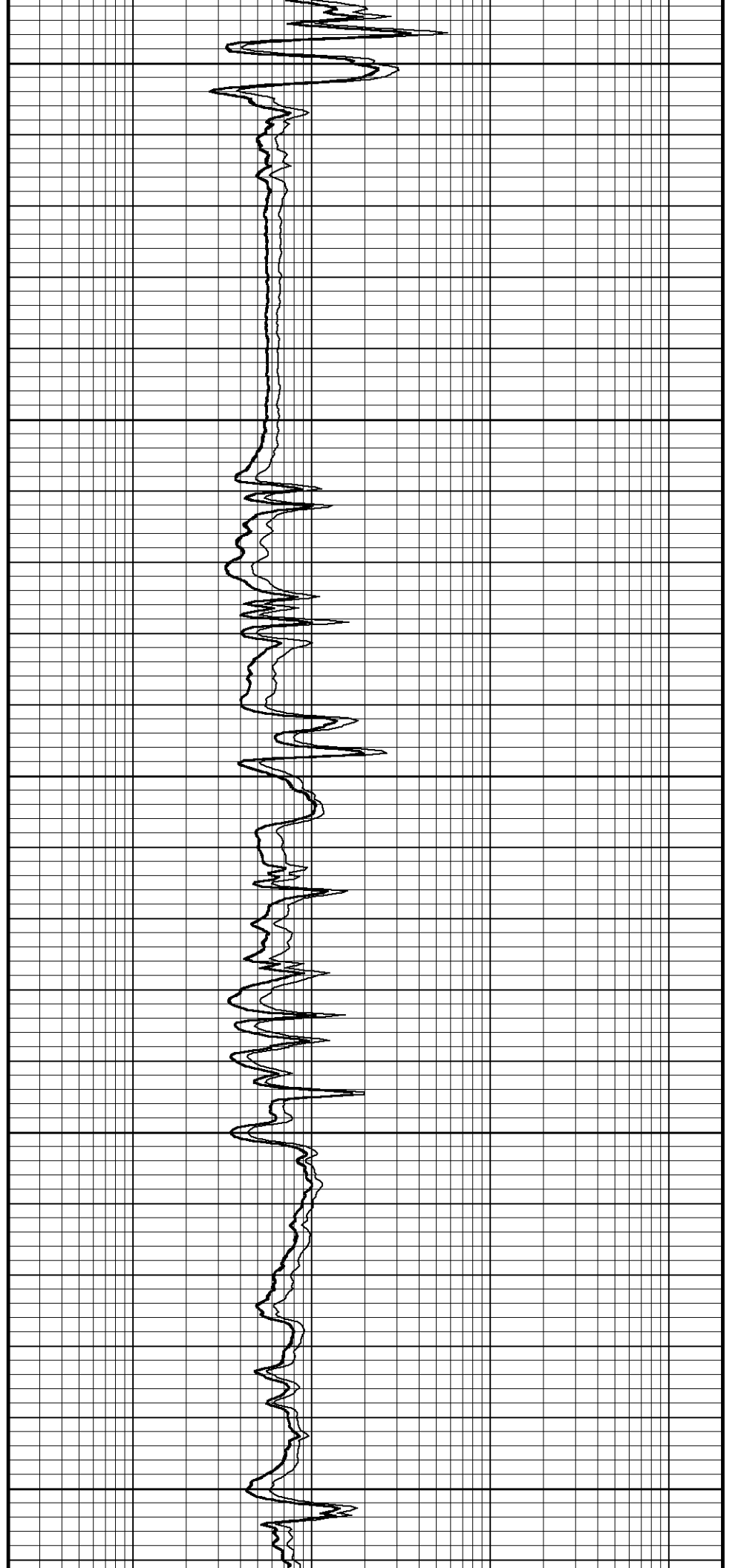
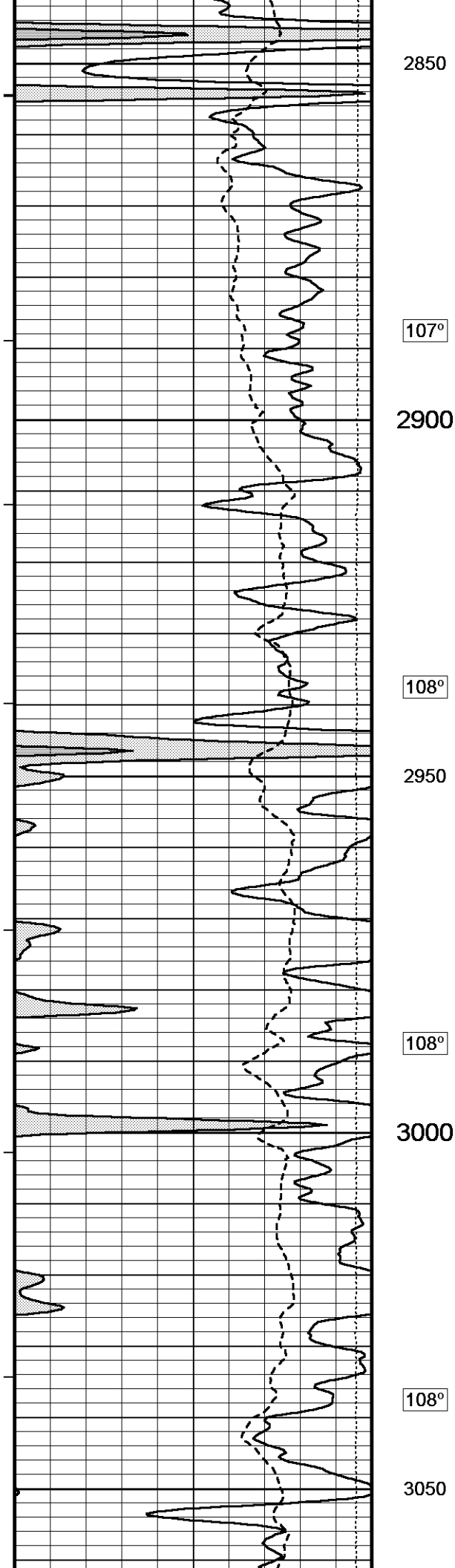


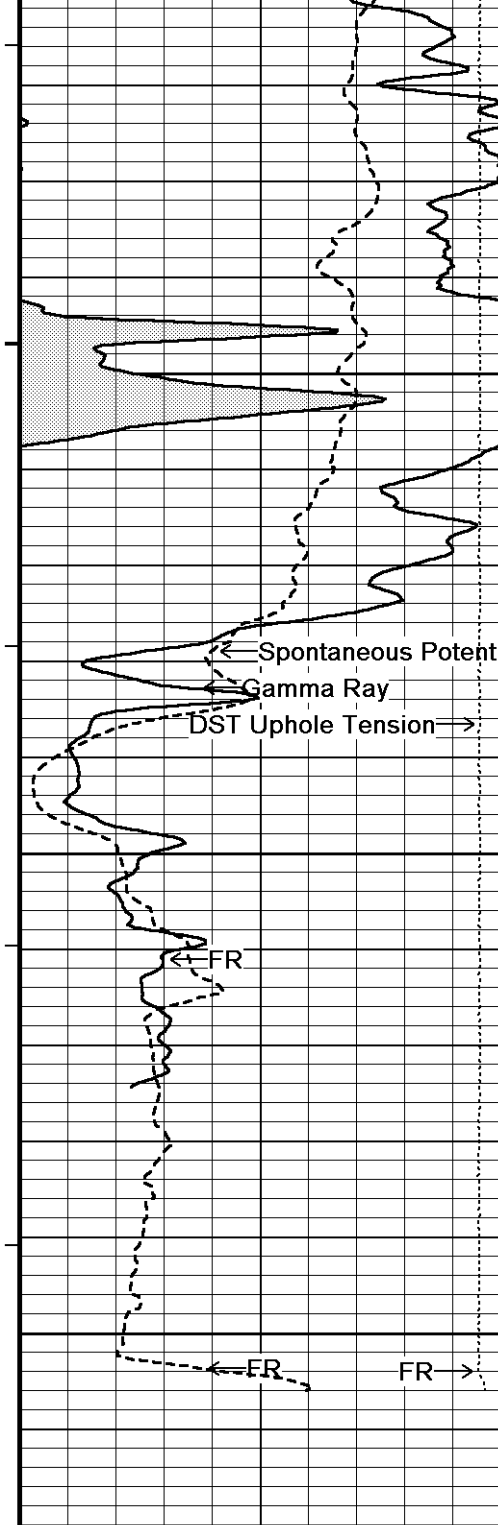
Array Ind One Res Rt

Array Ind One Res 60

Array Ind One Res 40

Shallow FE





109°

3100

108°

3150

3200

3218
Depth
in
Feet

Timing Marks
every 60.0 sec

Gamma Ray

API

75

0

150

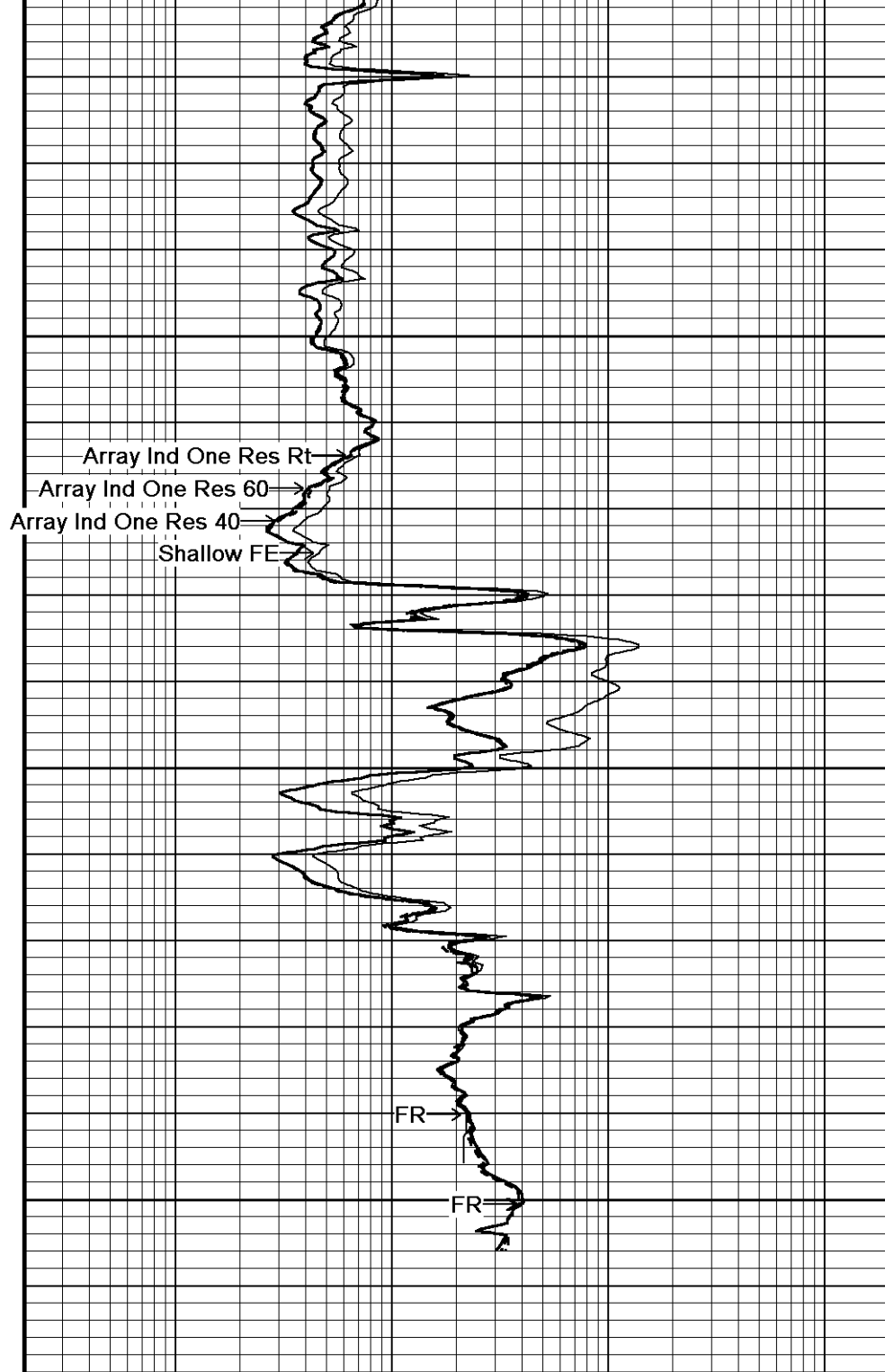
225

300

Borehole
Temp in
deg F

Spontaneous Potential
millivolts

- - - - - 20 - - - - - +



Array Ind One Res Rt
Array Ind One Res 60
Array Ind One Res 40
Shallow FE

Shallow FE
ohm metres

0.20

1

Array Ind One Res 40
ohm metres

0.20

1

Array Ind One Res 60
ohm metres

0.20

1

2000

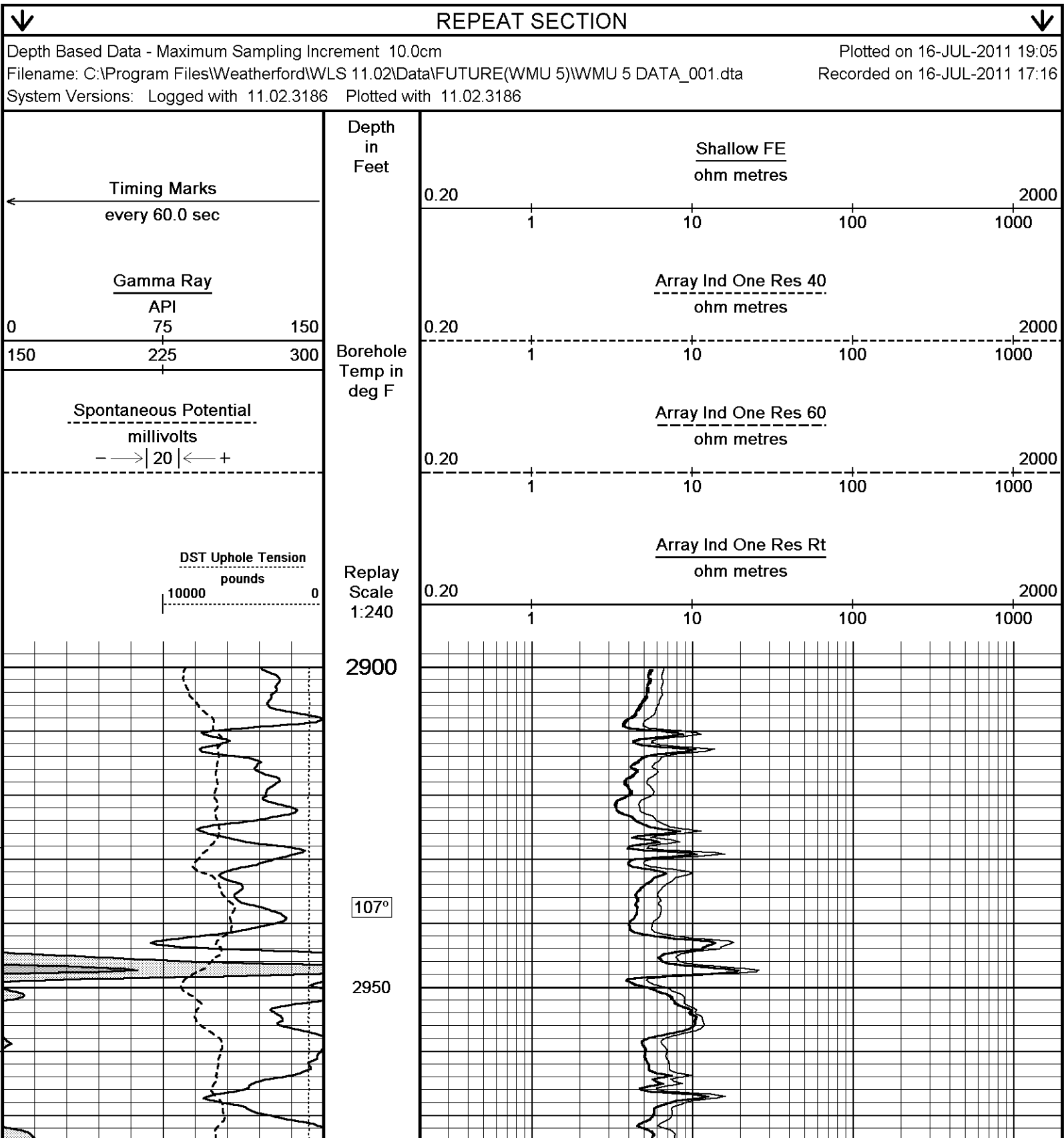
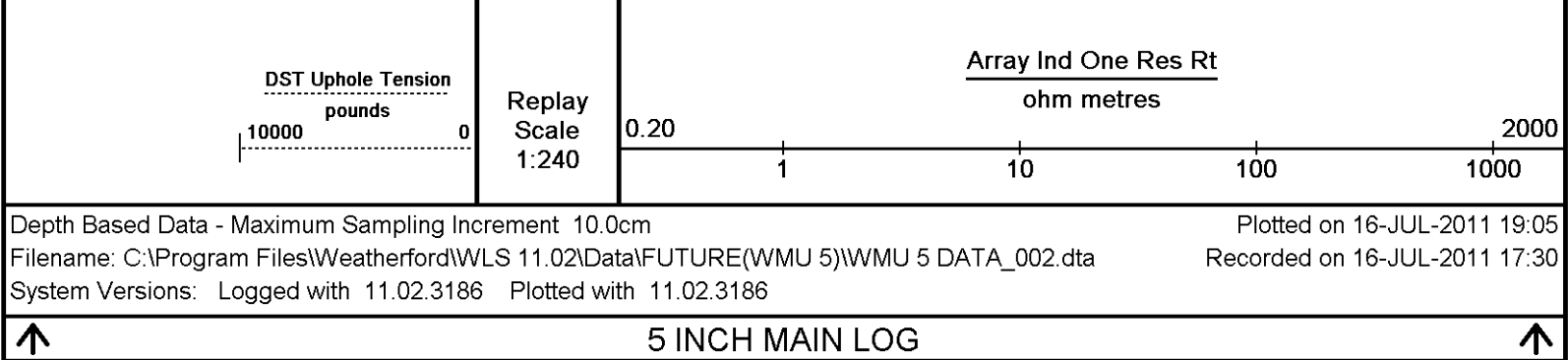
1000

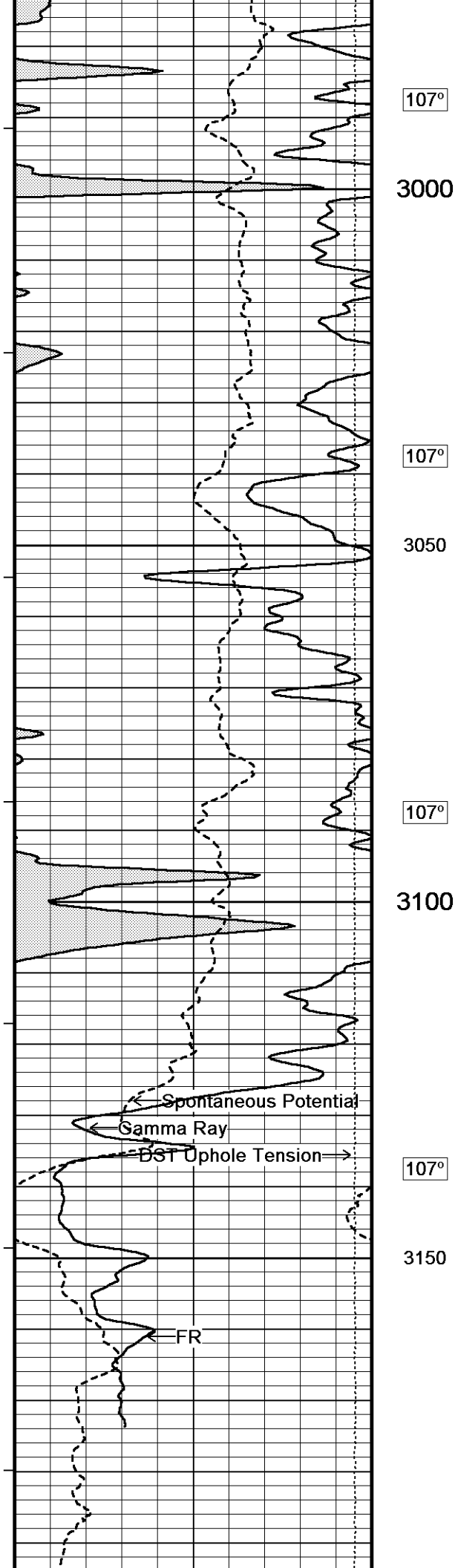
2000

1000

2000

1000





107°

3000

107°

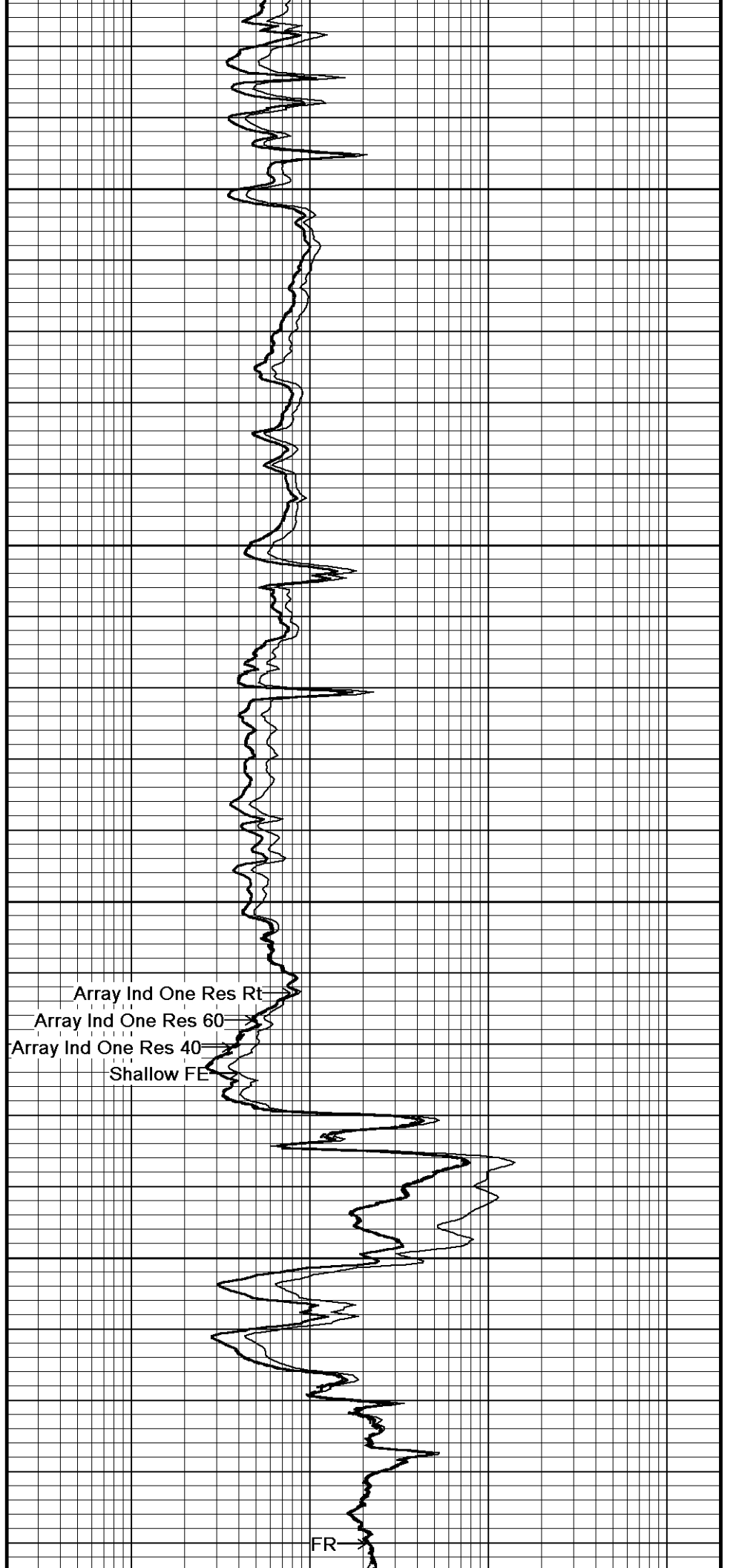
3050

107°

3100

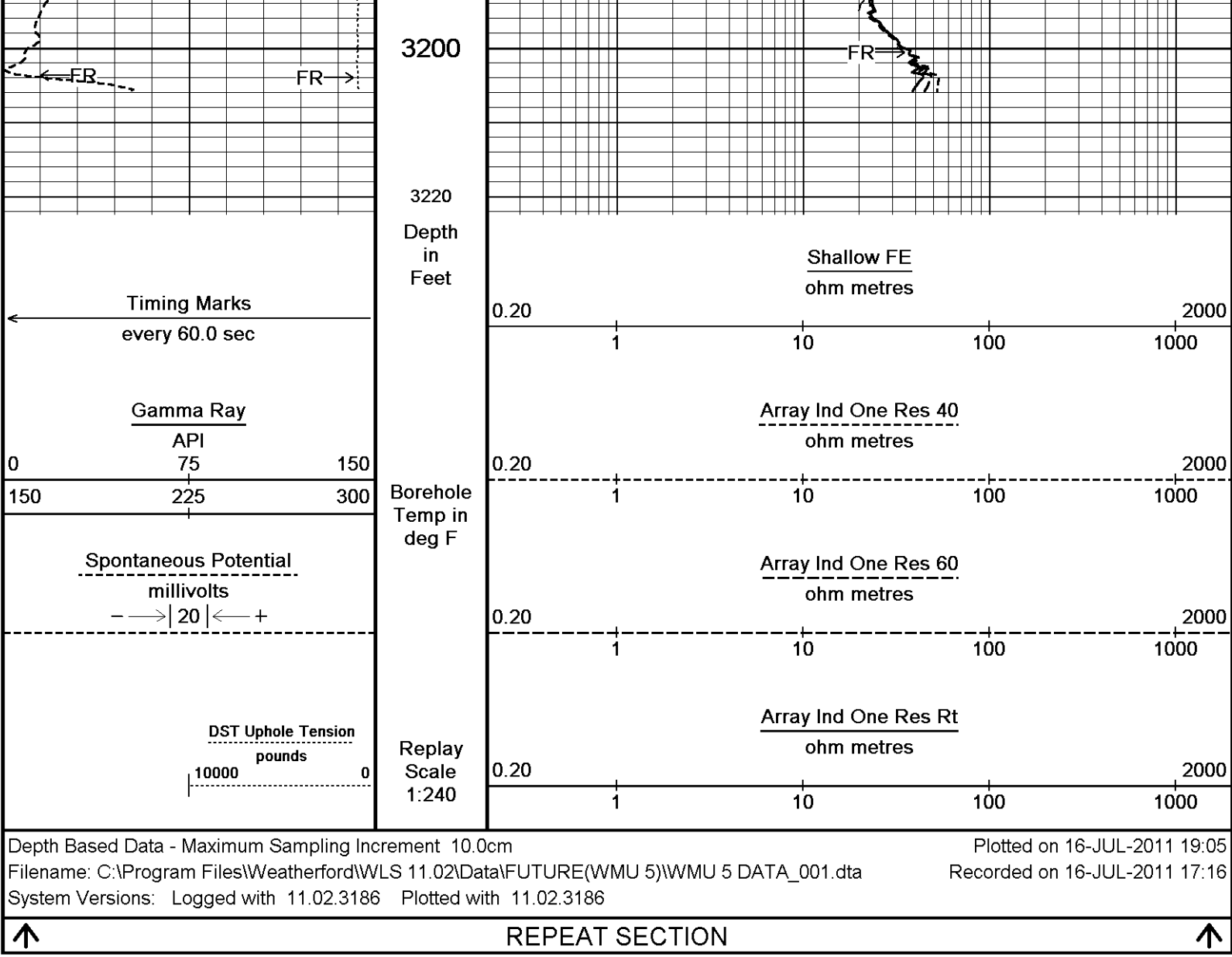
107°

3150



Array Ind One Res Rt
Array Ind One Res 60
Array Ind One Res 40
Shallow FE

FR



BEFORE SURVEY CALIBRATION		
C:\Program Files\Weatherford\WLS 11.02\Data\FUTURE(WMU 5)\WMU 5 DATA.dta		
General Constants All 000		Last Edited on 16-JUL-2011,16:22
General Parameters		
Mud Resistivity	1.500	ohm-metres
Mud Resistivity Temperature	94.000	degrees F
Water Level	0.000	feet
Density/Neutron 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	None	
Rwa Parameters		
Porosity used	Limestone Density Por.	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

Down-hole Tension Calibration SMS 0		
Field Calibration on 14-JUN-2011 09:28		
Reading No	Measured	Calibrated (lbs)
1	12756.67	0.00

2		12700.07	13310.58	500.00	
High Resolution Temperature Calibration MCG-B 10					Field Calibration on 16-JUL-2011,16:24
		Measured	Calibrated(Deg F)		
Lower		50.00	50.00		
Upper		75.00	75.00		
High Resolution Temperature Constants MCG-B 10					Last Edited on 23-APR-2008,00:43
Pre-filter Length		11			
SP Calibration MCG-B 10					Field Calibration on 16-JUL-2011,16:24
		Measured	Calibrated (mV)		
Reference 1		100.0	100.0		
Reference 2		-100.0	-100.0		
Gamma Calibration MCG-B 10					Field Calibration on 16-JUL-2011,16:23
		Measured	Calibrated (API)		
Background		45	30		
Calibrator (Gross)		1323	887		
Calibrator (Net)		1278	857		
Gamma Constants MCG-B 10					Last Edited on 16-JUL-2011,16:23
Gamma Calibrator Number		857			
Mud Density		1.09	gm/cc		
Caliper Source for Processing		Bit Size			
Tool Position		Eccentred			
Concentration of KCl		0.00	kppm		
Caliper Calibration MML-A 2					Base Calibration on 23-JUN-2011 10:36 Field Calibration on 16-JUL-2011,16:24
Base Calibration					
Reading No		Measured	Calibrator Size (in)		
1		15515	5.06		
2		18950	7.98		
3		22359	9.94		
4		26207	11.91		
5		0	0.00		
6		N/A	N/A		
Field Calibration					
		Measured Caliper (in)	Actual Caliper (in)		
		8.16	8.10		
Micro Normal and Micro Inverse Calibration MML-A 2					Base Calibration on 23-JUN-2011 10:12 Field Check on 16-JUL-2011,16:24
Base Calibration					
		Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2	
Micro Normal	11.8	59.8	2.6	12.8	
Micro Inverse	15.6	77.8	1.7	8.4	
Channel	Base Check (ohm-m)		Field Check (ohm-m)		
Micro Normal	32.2		32.2		
Micro Inverse	16.4		16.4		
Micro Normal and Micro Inverse Constants MML-A 2					Last Edited on 16-JUL-2011,16:24
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			N/A	inches	
Neutron Calibration MDN-A.A 11					Base Calibration on 06-JUL-2011,09:32 Field Check on 16-JUL-2011,16:25
Base Calibration					
		Measured		Calibrated (cps)	
	Near	Far	Near	Far	
	3051	95	3714	110	
Ratio	32.234		33.764		

Field Calibrator at Base	Calibrated (cps)	
	2415	3571
Ratio	0.676	
Field Check	Calibrated (cps)	
	2415	3571
Ratio	0.676	

Neutron Constants MDN-A.A 11			Last Edited on 16-JUL-2011,16:25		
Neutron Source Id					
Neutron Jig Number					
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			None		
Temperature			N/A		degrees F
Mud Salinity			0.00		kppm
Formation Fluid Salinity Source			Constant Value		
Formation Fluid Salinity			0.00		kppm
Barite Mud Correction			Not Applied		

FE Calibration MFE-B.A 175		Base Calibration on 06-JUL-2011 10:04 Field Check on 16-JUL-2011,16:26	
Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	964.4	126.8	
Base Check		281.5	
Field Check		281.5	

FE Constants MFE-B.A 175		Last Edited on 16-JUL-2011,16:26	
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	

High Resolution Temperature Calibration MAI-A.A 102		Field Calibration on 16-JUL-2011,16:27	
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	100.00	100.00	

High Resolution Temperature Constants MAI-A.A 102		Last Edited on
Pre-filter Length	11	

Induction Calibration MAI-A.A 102				Base Calibration on 01-JUL-2011,00:10 Field Check on 16-JUL-2011,16:27	
Base Calibration					
Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High	
1	17.3	481.3	9.3	966.2	
2	5.4	377.6	7.6	821.4	
3	2.4	255.3	5.2	566.0	
4	1.5	133.4	2.6	279.2	
Array Temperature		78.4	Deg F		
Channel	Base Check (mmho/m)		Field Check (mmho/m)		

	Low	High	Low	High
1	0.0	0.0	14.4	3806.7
2	0.0	0.0	32.7	3602.7
3	0.0	0.0	31.7	3121.8
4	0.0	0.0	20.6	2084.6
Deep	0.0	0.0	19.1	1998.2
Medium	0.0	0.0	47.0	4176.5
Shallow	0.0	0.0	49.1	5368.5
Array Temperature		0.0	96.5	Deg F

Induction Constants MAI-A.A 102

Last Edited on 16-JUL-2011,16:27

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		6.0000	
Stand-off Fin Angle		60.00	degrees
Stand-off Fin Width		0.0000	inches
Borehole Corr. Rm Source		Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature		
Squasher Start		0.0060	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-A.A 10

Base Calibration on 23-JUN-2011,11:00

Field Check on 16-JUL-2011,16:25

Density Calibration				
Base Calibration		Measured	Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	47395	25559	59869	31110
Reference 2	20245	2638	24557	2522
Field Check at Base				
	1050.2	1400.8		
Field Check				
	1140.2	1594.4		
PE Calibration				
Base Calibration		Measured	Calibrated	
	WS	WH	Ratio	Ratio
Background	193	923		
Reference 1	17280	47225	0.369	0.369
Reference 2	5312	20118	0.267	0.271

Field Check at Base
192.9 923.4

Field Check
209.9 1017.8

Density Constants MPD-A.A 10

Last Edited on 16-JUL-2011,16:25

Density Source Id	263	
Nylon Calibrator Number	DNC - E- 633	
Aluminium Calibrator Number	DAC D633	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.09	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	
0.00	0.00	

Caliper Calibration MPD-A.A 10

Base Calibration on 23-JUN-2011,11:10
Field Calibration on 16-JUL-2011,16:26

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	20722	4.01
2	30045	5.06
3	40128	7.98
4	50355	9.94
5	60914	11.91
6	N/A	N/A

Field Calibration		
Measured Caliper (in)	Actual Caliper (in)	
7.63	7.60	

DOWNHOLE EQUIPMENT

C:\Program Files\Weatherford\WLS 11.02\Data\FUTURE(WMU 5)\WMU 5 DATA.tda

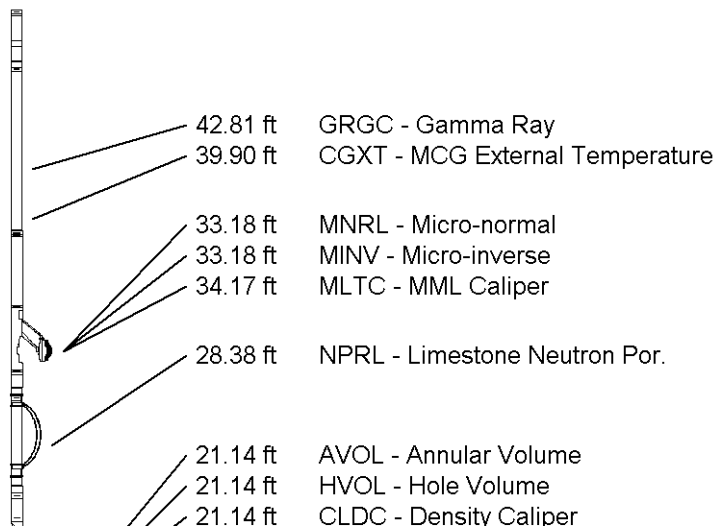
SHA-J.A Compact Swivel Head Adaptor
SHA-J.A 208 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

Compact Comms Gamma
MCG-B 10 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log
MML-A 2 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Neutron
MDN-A.A 11 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

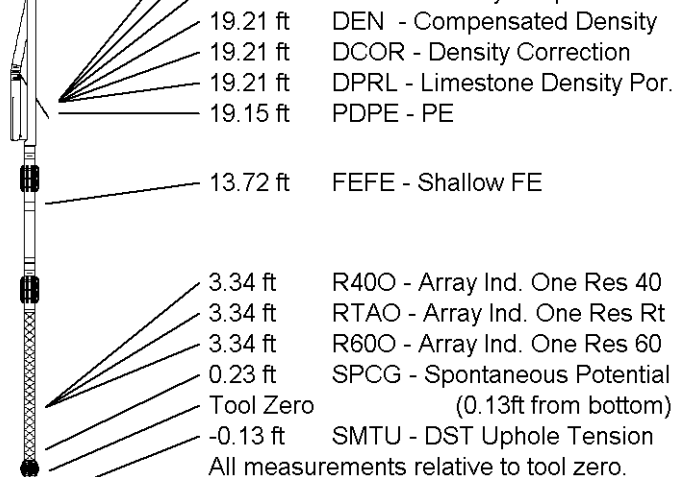
Compact Density/Caliper
MPD-A.A 10 LG: 9.53 ft WT: 90.4 lb OD: 2.45 in



Compact Focussed Electric
MFE-B.A 175 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Induction
MAI-A.A 102 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 50.39 ft Weight: 405.7 lb

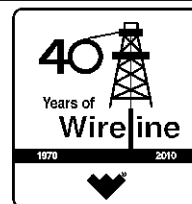


COMPANY FUTURE PETROLEUM COMPANY LLC
WELL WMU 5
FIELD WEST MADDIX UNIT
PROVINCE/COUNTY COWLEY
COUNTRY/STATE U.S.A/KANSAS

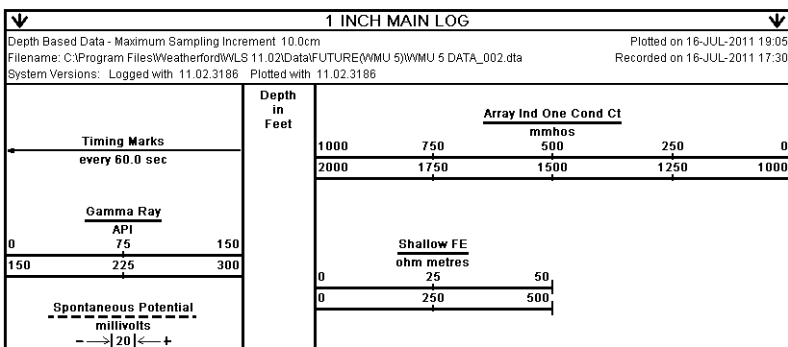
Elevation Kelly Bushing	1315.00	feet	First Reading	3201.00	feet
Elevation Drill Floor	1313.00	feet	Depth Driller	3206.00	feet
Elevation Ground Level	1305.00	feet	Depth Logger	3204.00	feet

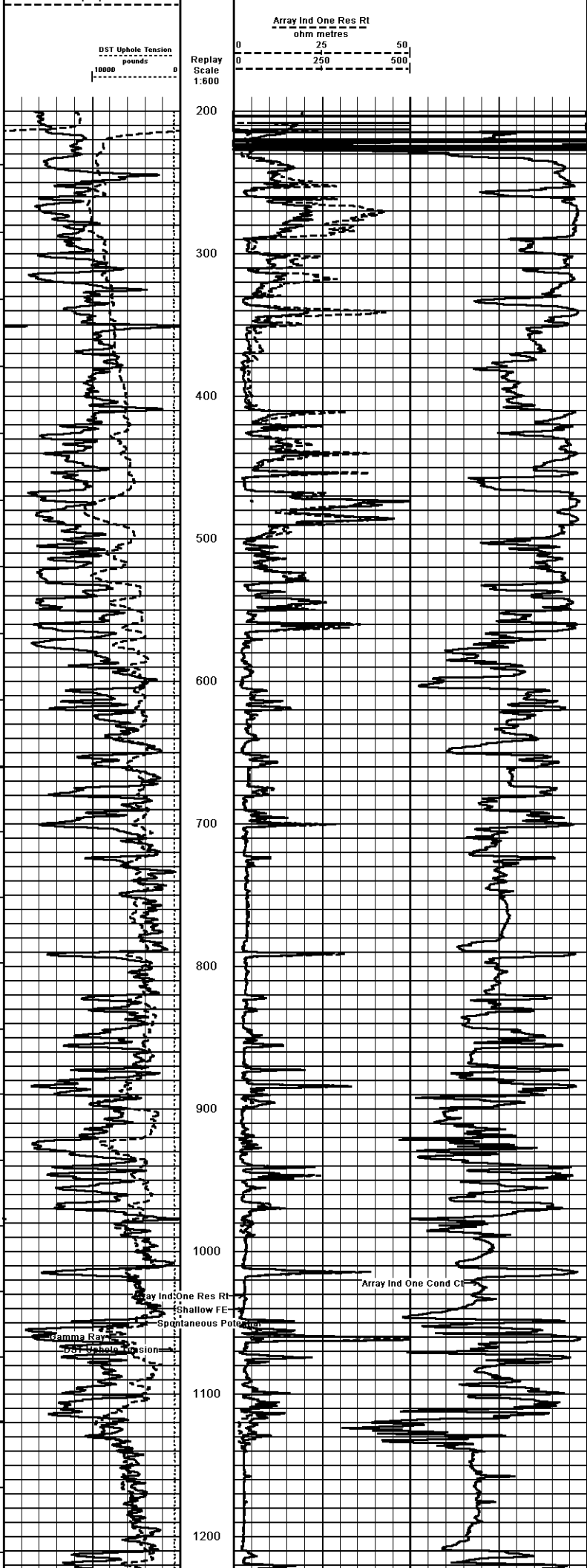


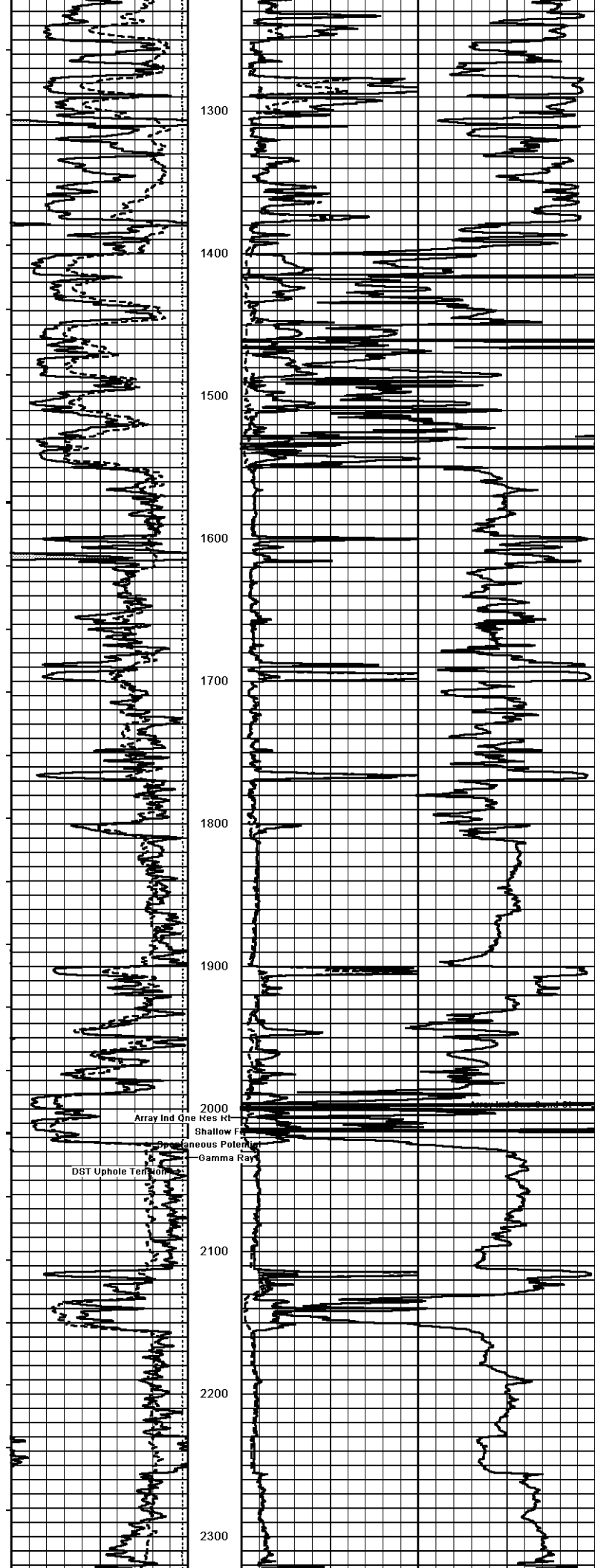
ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

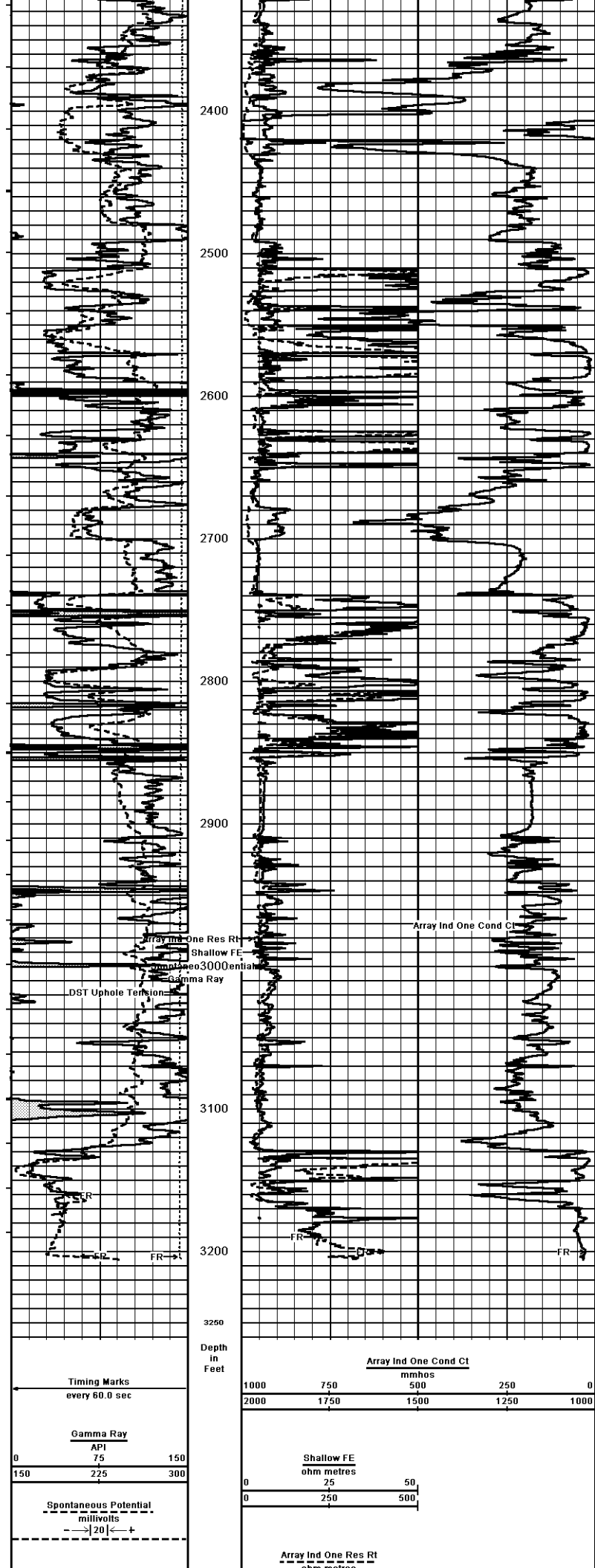


Weatherford		ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG	
COMPANY	FUTURE PETROLEUM COMPANY LLC	WELL	WMU 5
FIELD	WEST MADDIX UNIT	PROVINCE/COUNTY	COWLEY
COUNTRY/STATE	U.S. KANSAS	LOCATION	929' FNL & 685' FEL
SEC	TYPE	RCE	Other Services
3	335	SE	MDN/MPD
Serial Number	15-035-24423	MML	
Permanent Datum O.L. Elevation 1305 feet		Log Measured from K.B. 10 FEET above Permanent Datum	
Drilling Measured from K.B.			
Date	16-JUL-2011		
Run Number	ONE		
Depth Driller	3206.00	feet	
Depth Logger	3204.00	feet	
First Reading	3201.00	feet	
Last Reading	200.00	feet	
Casing Driller	218.00	feet	
Casing Logger	214.00	feet	
Bit Size	7.875	inches	
Hole Fluid Type	CHEMICAL		
Density/Viscosity	9.10 lb/USg	72.00 CP	
PH / Fluid Loss	9.50	mi/30min	
Sample Source	FLOWLINE		
Run @ Measured Temp	1.50 @ 94.0	ohm-m	
Run @ Measured Temp	1.20 @ 94.0	ohm-m	
Run @ Measured Temp	1.80 @ 94.0	ohm-m	
Source Rmt / Rmt	CALC		
Run @ BHT	1.30 @ 108.0	ohm-m	
Time Since Circulation	4.5 HOURS	deg F	
Max Recorded Temp	108.00		
Equipment Name	COMPACT		
Equipment / Base	13145	JOIC	
Recorded By	MIKE GARRISON		
Witnessed By	RAYMOND DOROTHY		









Timing Marks		
every 60.0 sec		
Gamma Ray		
API	75	150
0	225	300
Spontaneous Potential		
millivolts		
- - - - -		
- - - - -		

<u>Array Ind One Cond Ct</u>				
1000	750	500	250	0
2000	1750	1500	1250	1000
<u>Shallow FE</u>				
ohm metres				
0	25	50		
0	250	500		

DST Uphole Tension pounds 100000	Replay Scale 1:500	02550 0250500
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Depth Based Data - Maximum Sampling Increment: 10.0cm

Plotted on 16-JUL-2011 19:05

Filename: C:\Program Files\Weatherford\WLS 11.02\Data\FUTURE\WMU 5\WMU 5 DATA_002.dta

Recorded on 16-JUL-2011 17:30

System Versions: Logged with 11.02.3186 Plotted with 11.02.3186

1 INCH MAIN LOG

COMPANY	FUTURE PETROLEUM COMPANY LLC			
WELL	WMU 5			
FIELD	WEST MADDIX UNIT			
PROVINCE/COUNTY	COWLEY			
COUNTRY/STATE	U.S.A/KANSAS			
Elevation Kelly Bushing	1315.00	feet	First Reading	3201.00 feet
Elevation Drill Floor	1313.00	feet	Depth Driller	3206.00 feet
Elevation Ground Level	1305.00	feet	Depth Logger	3204.00 feet

Weatherford

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

40

Wireline