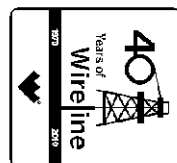




Weatherford
180

**ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG**

COMPANY SANDRIDGE EXPL. & PRODUCTION LLC.
WELL LUKE SWD #1-10
FIELD SIX MOONS FIELD AREA
PROVINCE/COUNTY COMANCHE
COUNTRY/STATE U.S.A. / KANSAS
LOCATION 1600' FSL & 203' FWL SW/4



SEC	TWP	RGE	Other Services	MML	Elevations:
10	31S	20W	MPD/MDN		KB 2038.00 DF 2036.00 GL 2026.00
API Number	15-033-21609	MSS			
Permit Number					
Permanent Datum G.L., Elevation 2026 feet					
Log Measured From KB					
Drilling Measured From K.B.					
Date	24-JAN-2012				
Run Number	ONE				
Depth Driller	6160.00	feet			
Depth Logger	6149.00	feet			
First Reading	6146.00	feet			
Last Reading	901.00	feet			
Casing Driller	906.00	feet			
Casing Logger	901.00	feet			
Bit Size	9.875	inches			
Hole Fluid Type	CHEMICAL				
Density / Viscosity	8.90 lb/USg	52.00 CP			
PH / Fluid Loss	10.00	6.00 ml/30Min			
Sample Source	FLOWLINE				
Rm @ Measured Temp	0.62 @ 78.0	ohm-m			
Rmf @ Measured Temp	0.50 @ 78.0	ohm-m			
Rmc @ Measured Temp	0.74 @ 78.0	ohm-m			
Source Rmf / Rmc	CALC	CALC			
Rm @ BHT	0.38 @127.0	ohm-m			
Time Since Circulation	6 HOURS				
Max Recorded Temp	127.00	deg F			
Equipment Name	COMPACT				
Equipment / Base	13057	LIB			
Recorded By	L. SCOTT				
Witnessed By	KATHY GENTRY				
S.O.# / JOB#	3534598				LB12-014

BOREHOLE RECORD

Last Edited: 24-JAN-2012 08:26

Bit Size inches	Depth From feet	Depth To feet
9.875	901.00	6149.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	10.750	0.00	901.00	32.75

REMARKS

Tools Ran: MCG, MML, MDN, MPD, SKJ, MFE, MSS, MAI.
Hardware Used: MDN Dual Eccentralizer used. MPD 8 inch profile plate used. MFE, MSS and MAI 0.5 inch standoffs used.
2.71 g/cc Limestone Density Matrix used to calculate porosity.
Sonic porosity calculated using a Limestone scale (47.5 usec/ft).
All intervals logged and scaled per customer's request.
Annular volume with 7.625 inch production casing = 1587 cu. ft.
Total hole volume from TD to Surface Casing=3247 cu. ft.
Service order: #3534598
Rig: Tomcat #3
Engineer: L. Scott
Operator(s): K. Rinehart

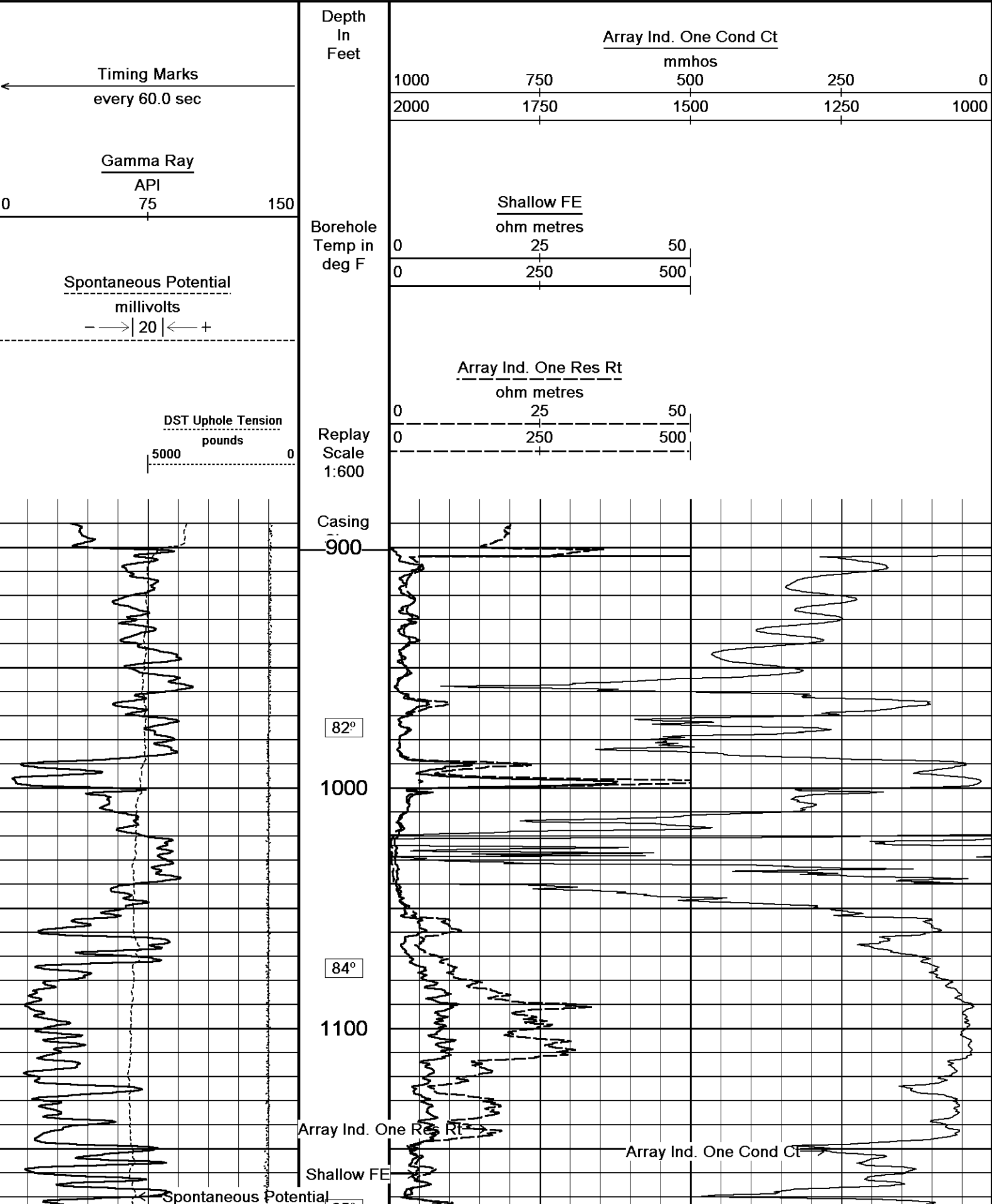
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions in our price schedule.

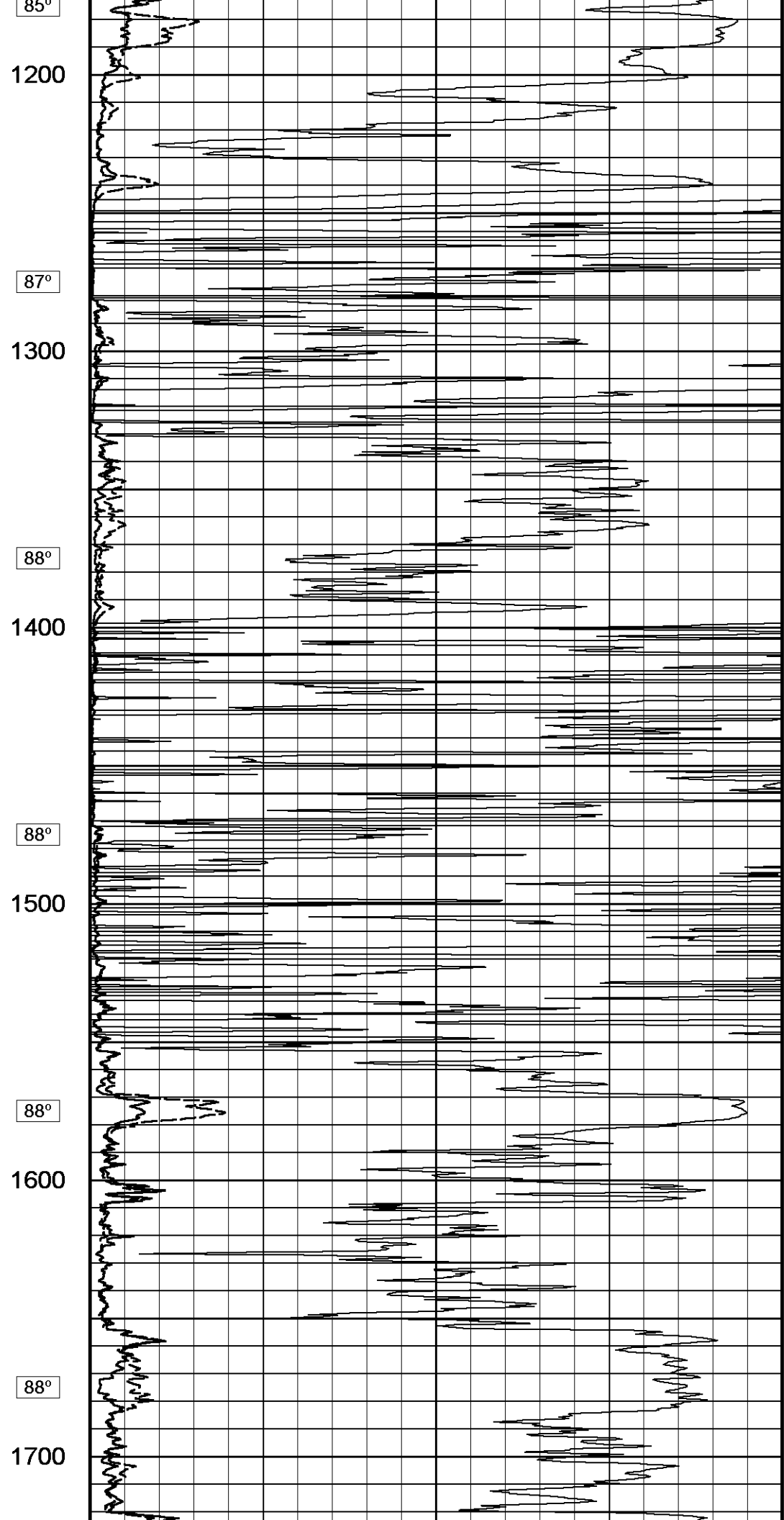
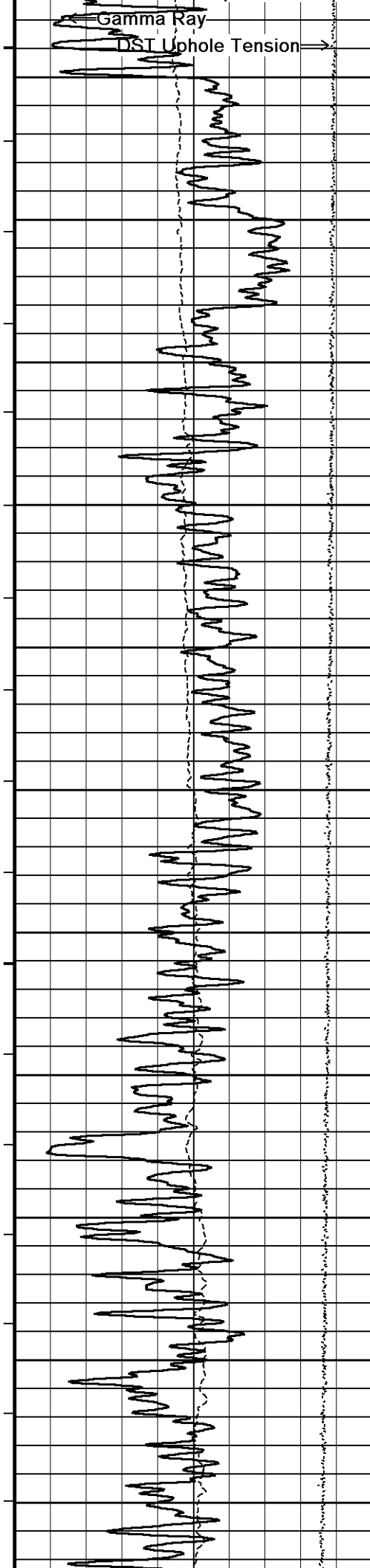


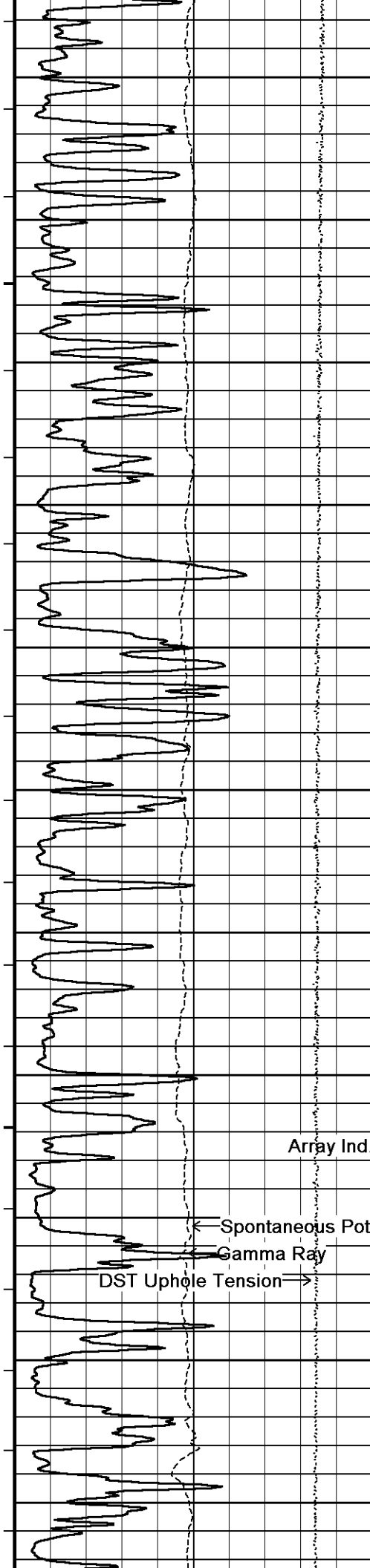
2 INCH MAIN PASS



Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 24-JAN-2012 11:54
Filename: C:\Minimus 11.03.4044\Data\Sandridge Luke SWD 1-10\Sandridge Luke SWD 1-10_002.dta
Recorded on 24-JAN-2012 08:07
System Versions: Logged with 11.03.4044 Plotted with 11.03.4044







88°

1800

88°

1900

89°

2000

89°

2100

Array Ind. One Res Rt →

Shallow FE

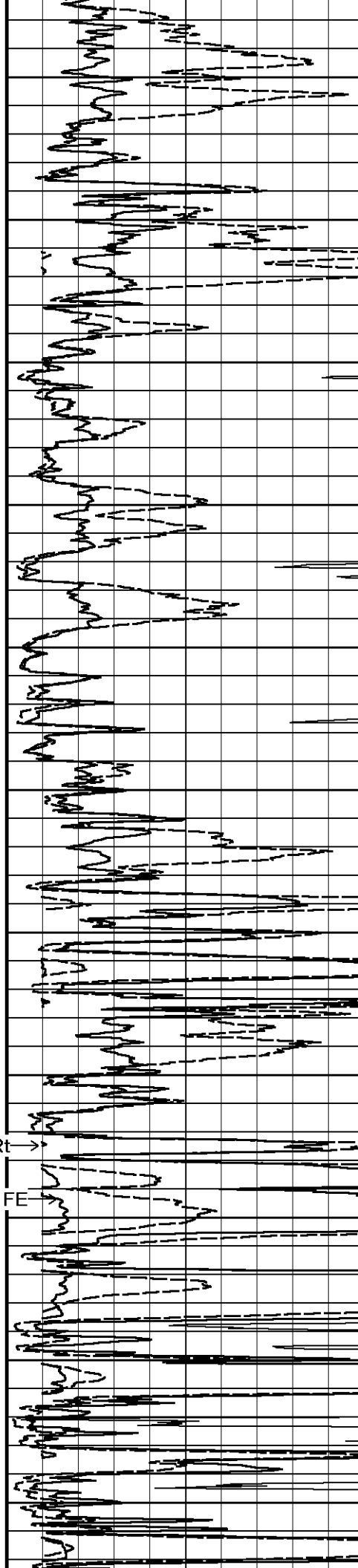
90°

2200

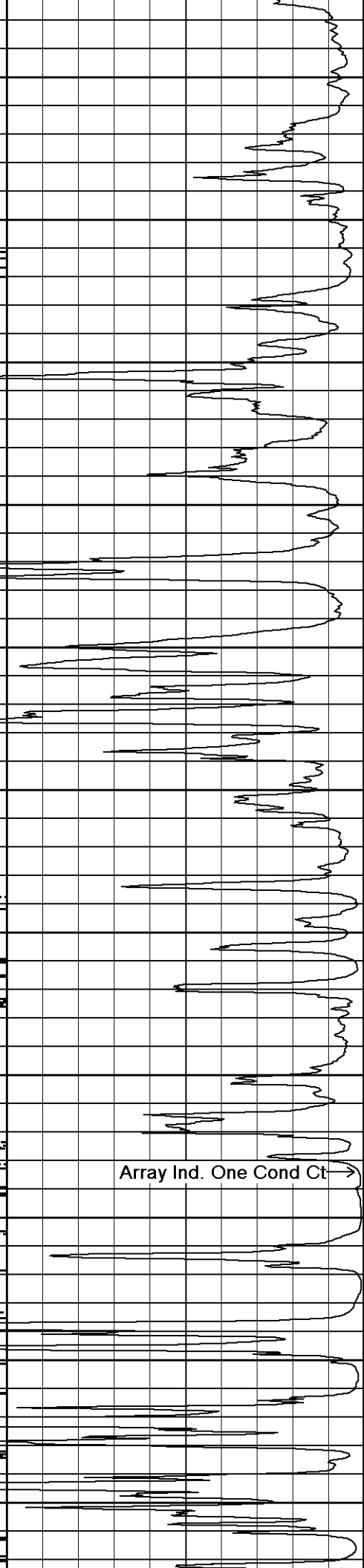
← Spontaneous Potential

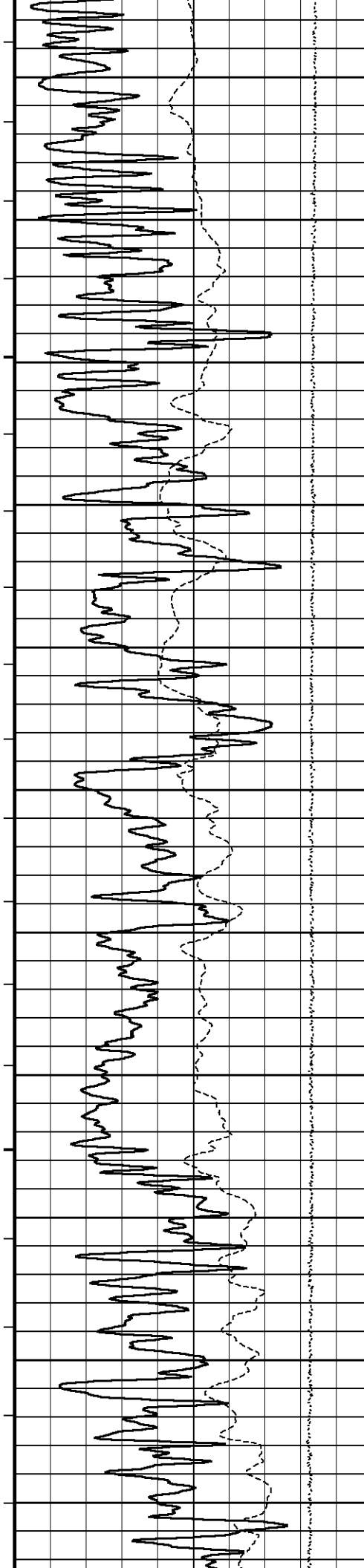
← Gamma Ray

DST Uphole Tension →



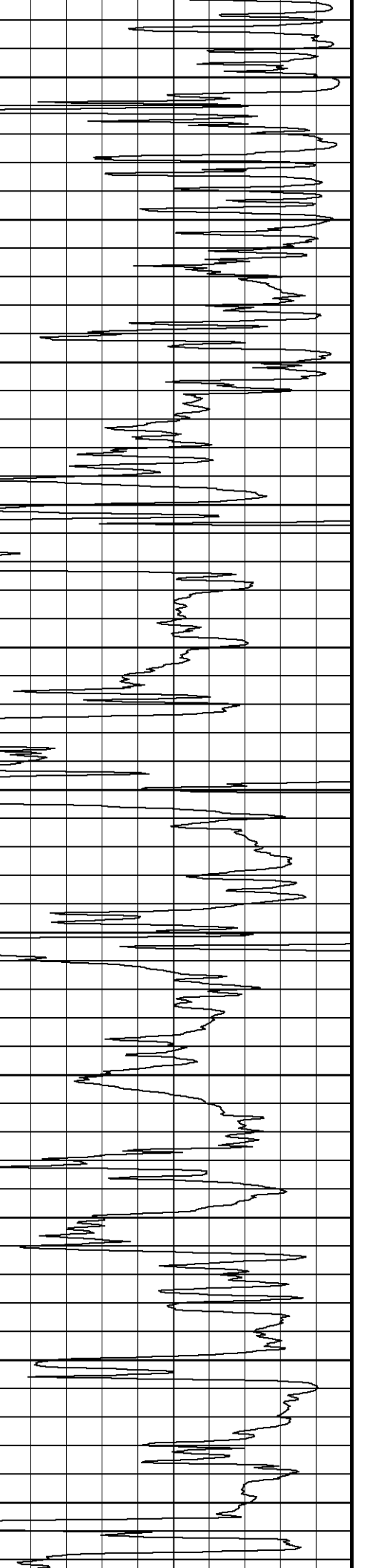
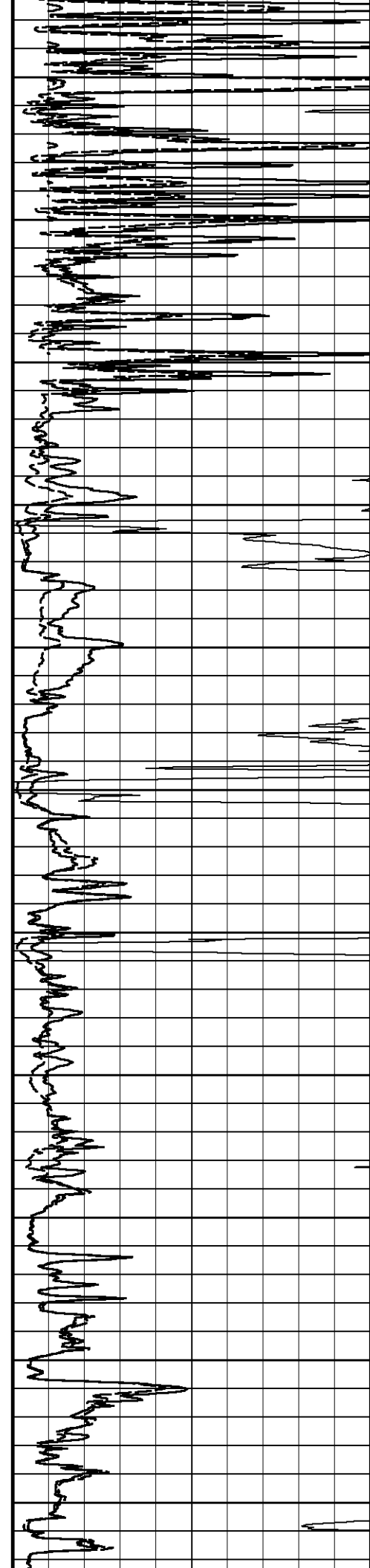
Array Ind. One Cond Ct →

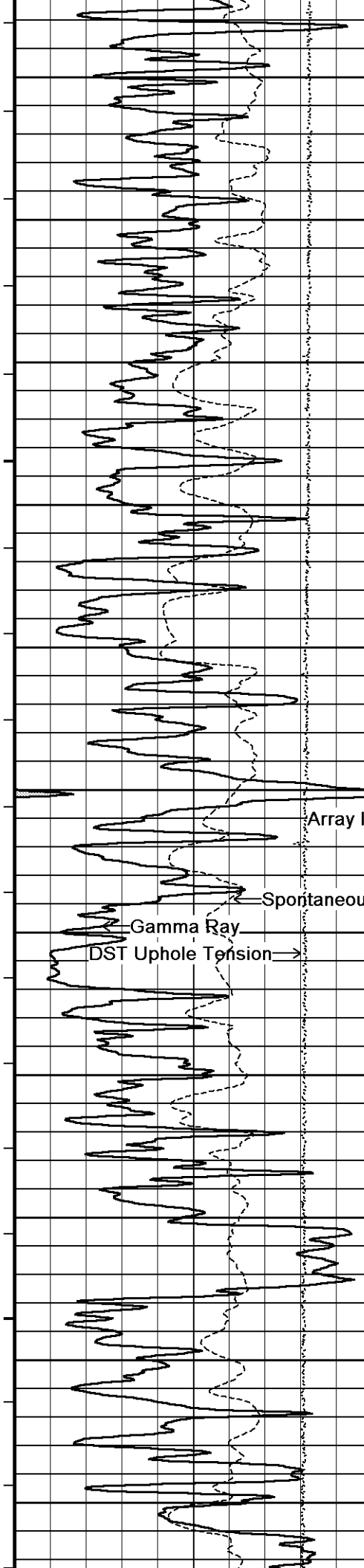




2300
2400
2500
2600
2700
2800

91°
92°
93°
94°
96°
97°





97°

2900

98°

3000

99°

3100

Array Ind. One Res Rt

Shallow

Spontaneous Potential

Gamma Ray

DST Uphole Tension

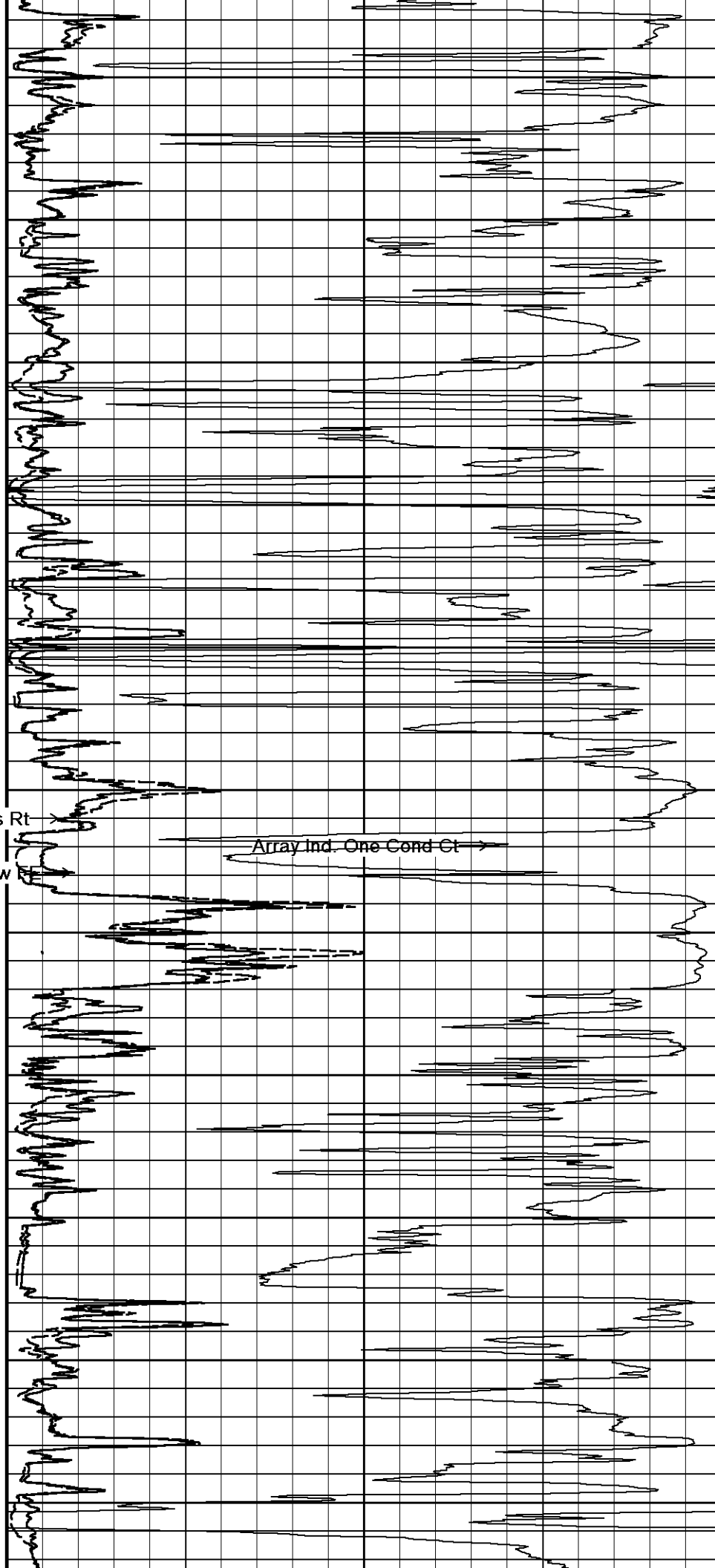
99°

3200

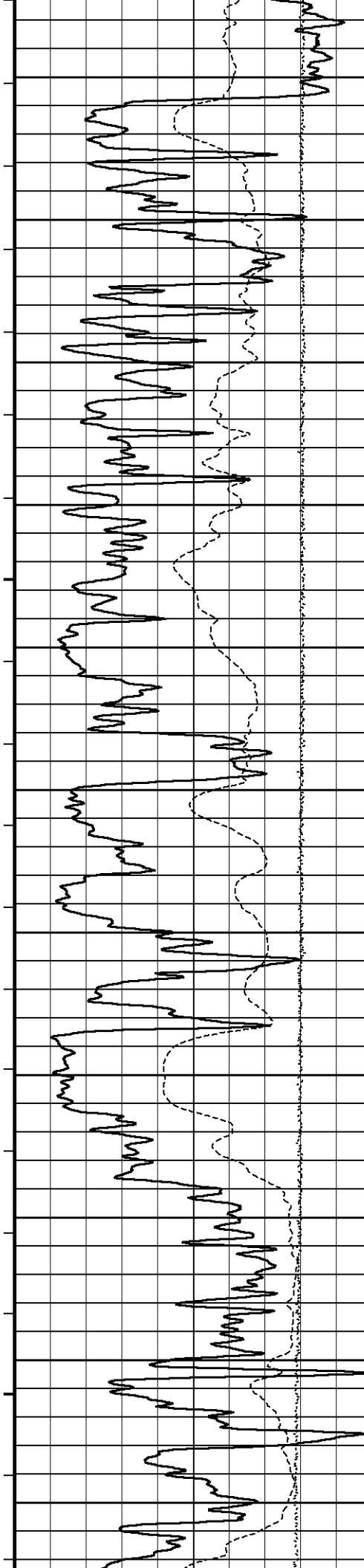
100°

3300

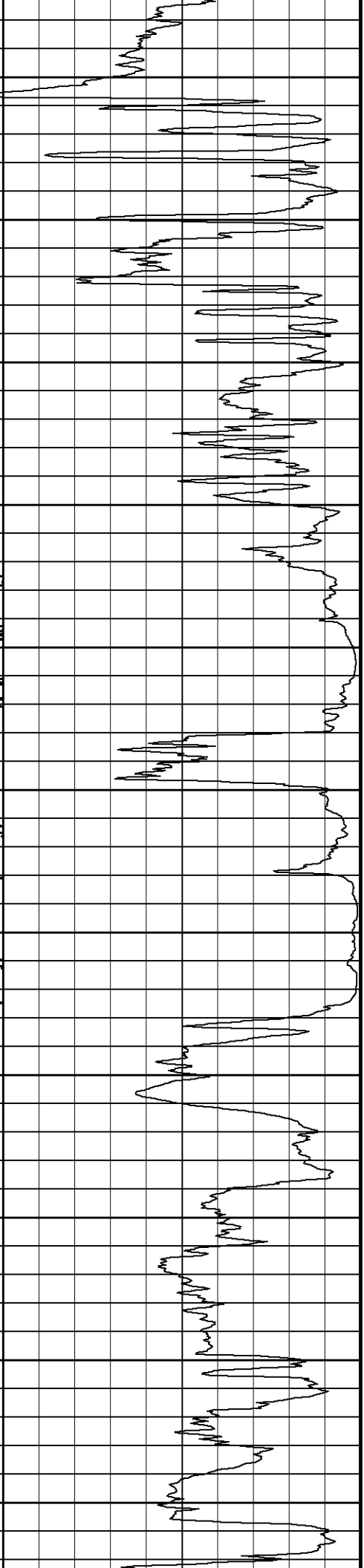
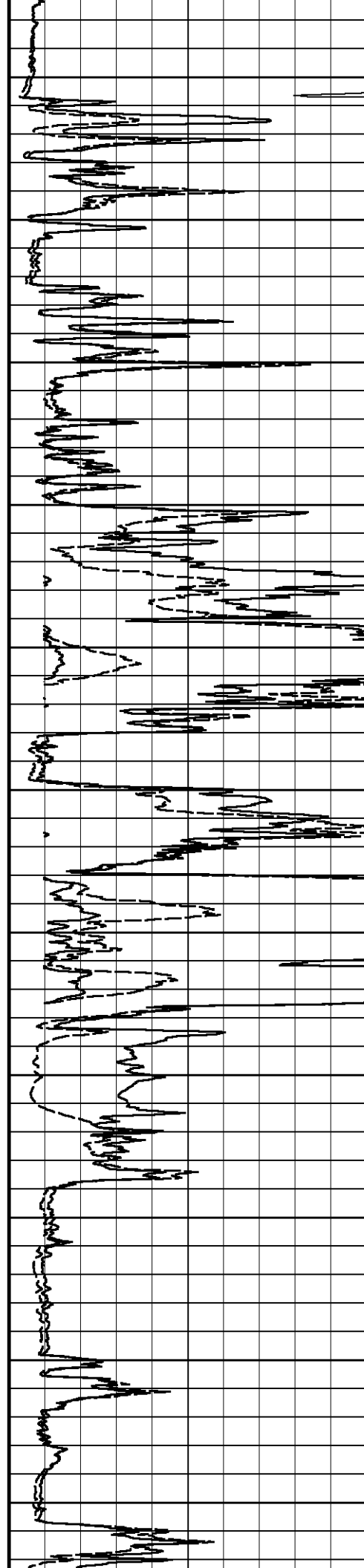
101°

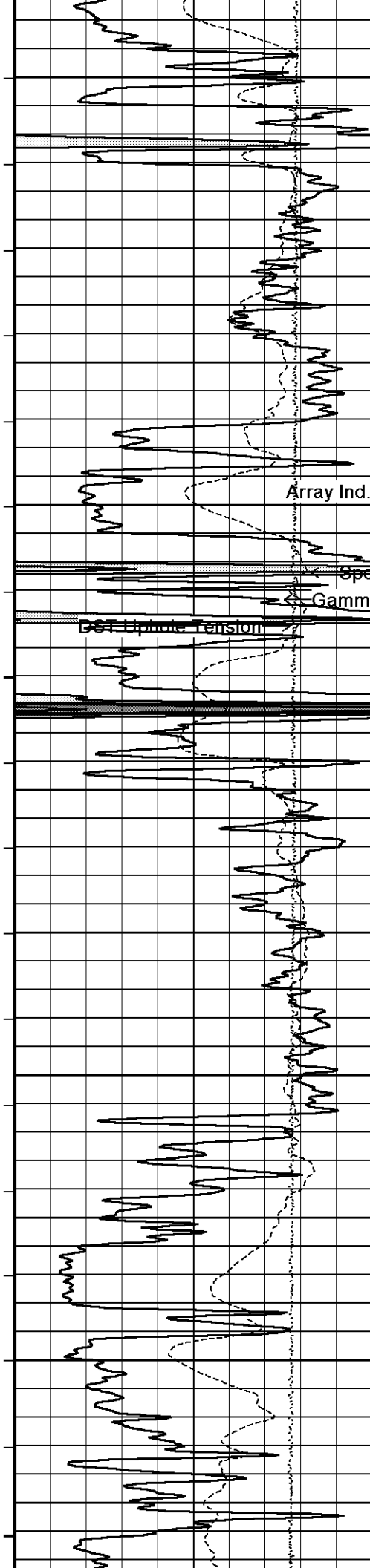


Array Ind. One Cond Ct



101°
3400
102°
3500
103°
3600
104°
3700
105°
3800
106°
3900





107°

4000

108°

Array Ind. One Cond Rt

4100

Shallow FE

Spontaneous Potential

Gamma Ray

DST Uphole Tension

109°

4200

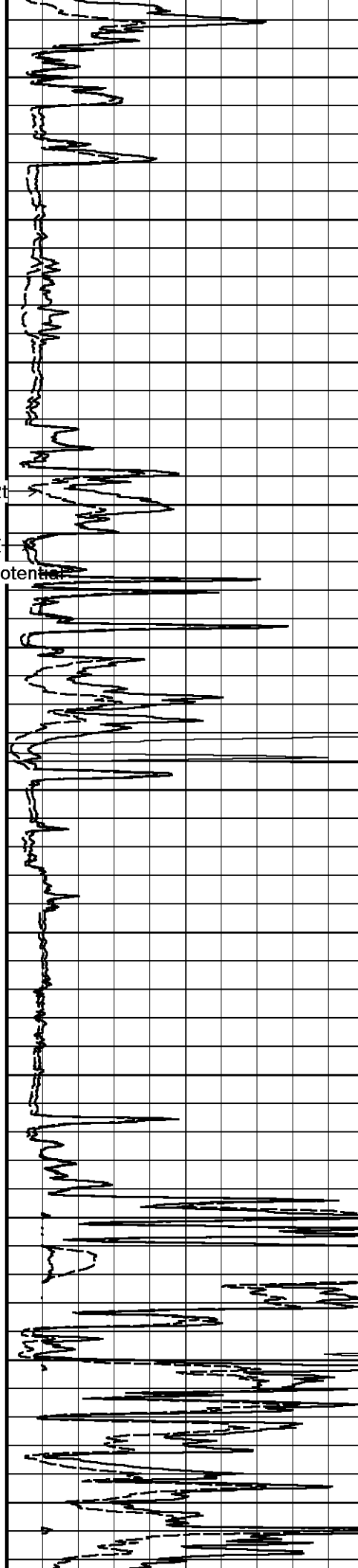
110°

4300

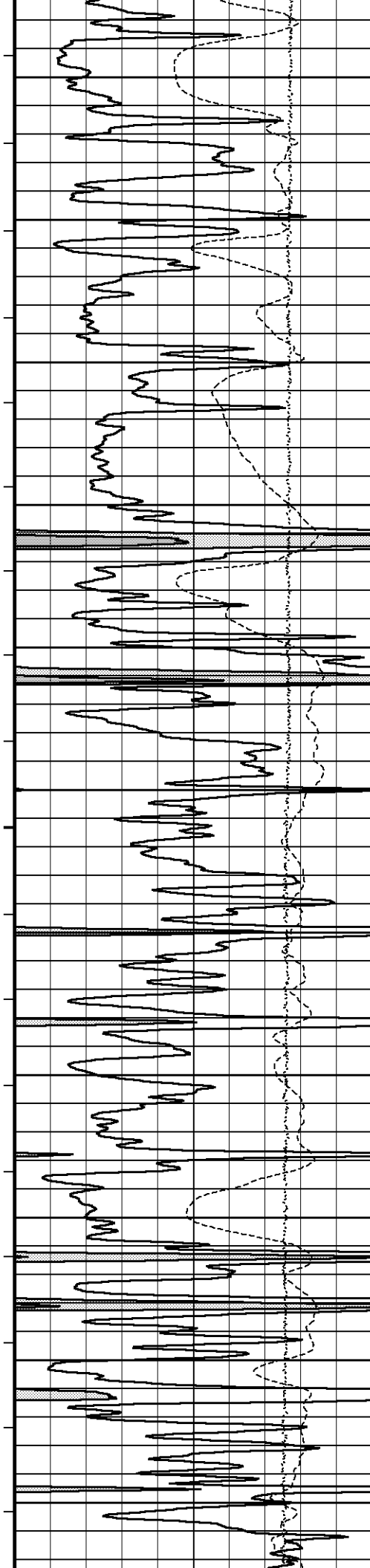
111°

4400

112°



Array Ind. One Cond Ct



112°

4500

112°

4600

113°

4700

114°

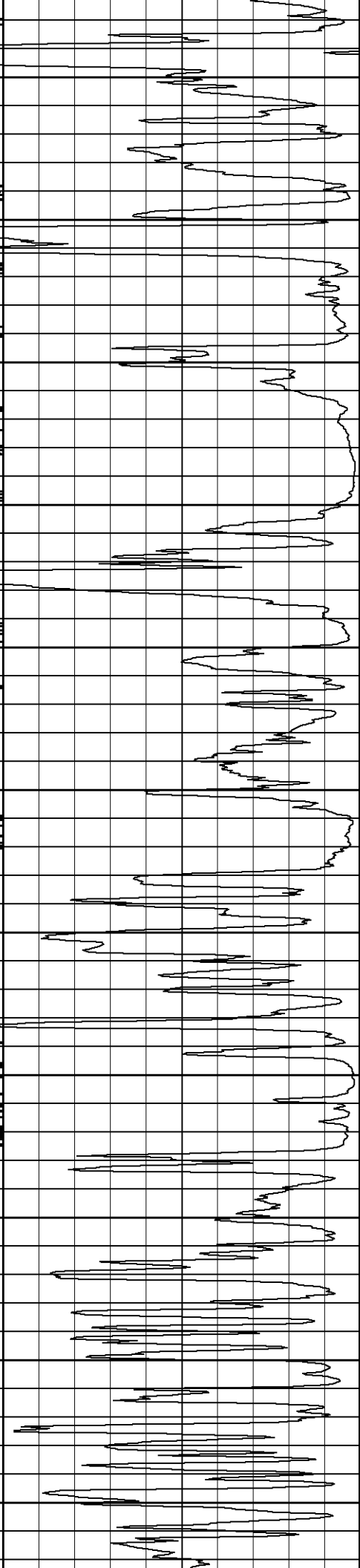
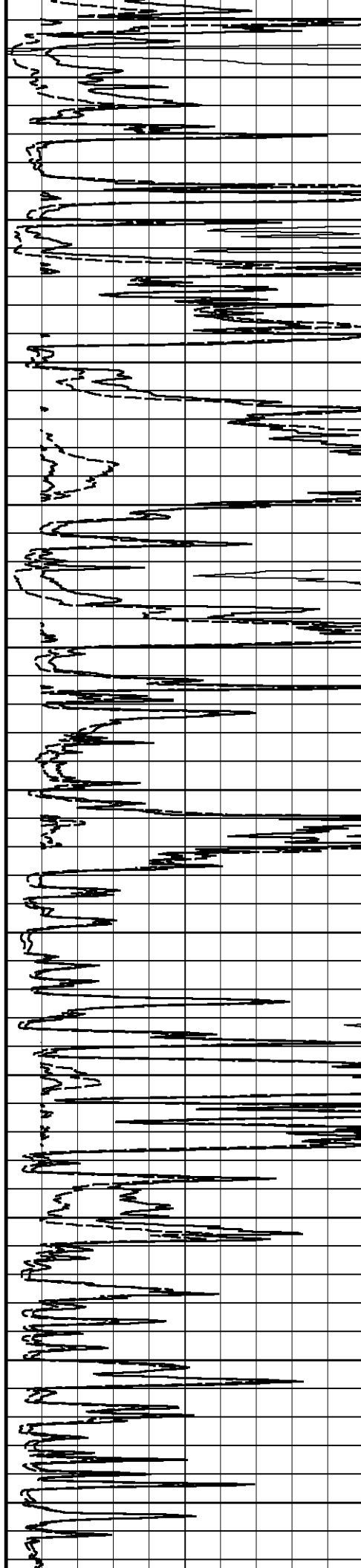
4800

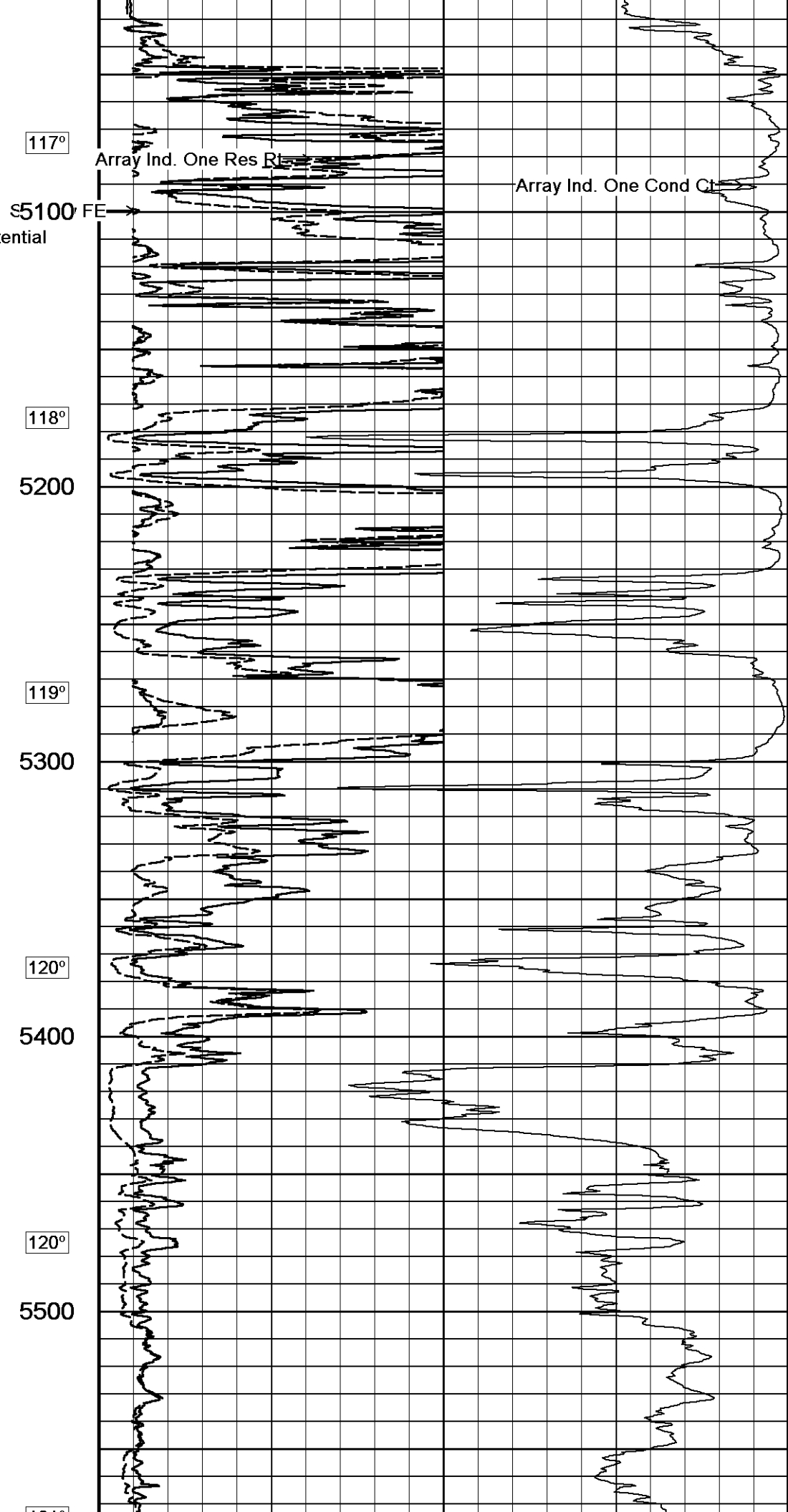
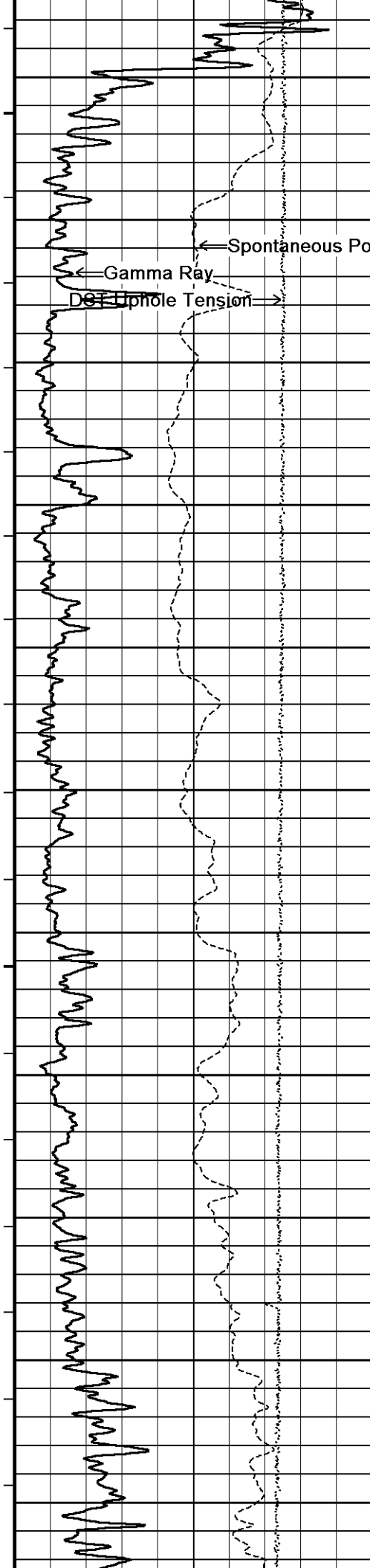
115°

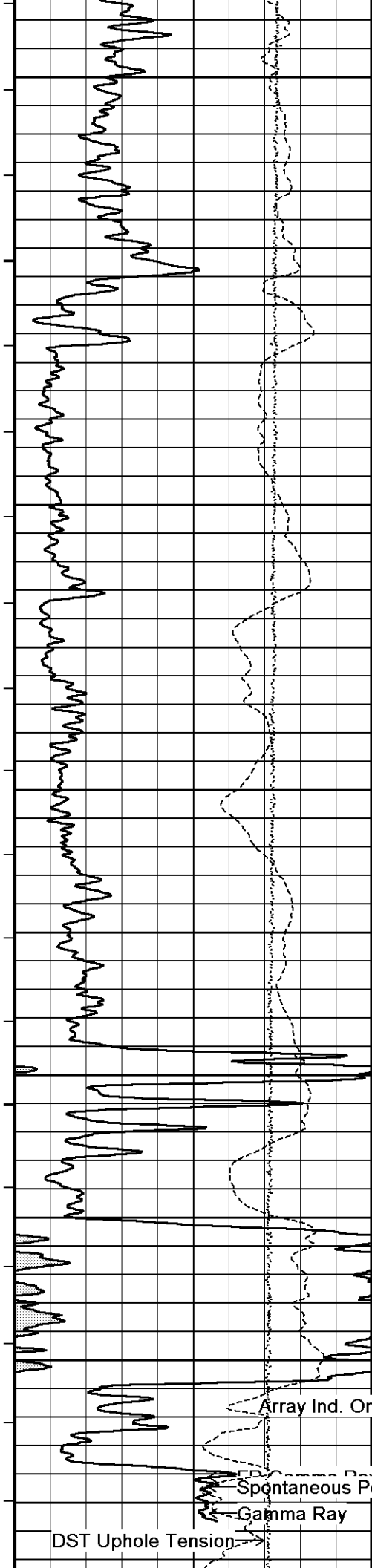
4900

116°

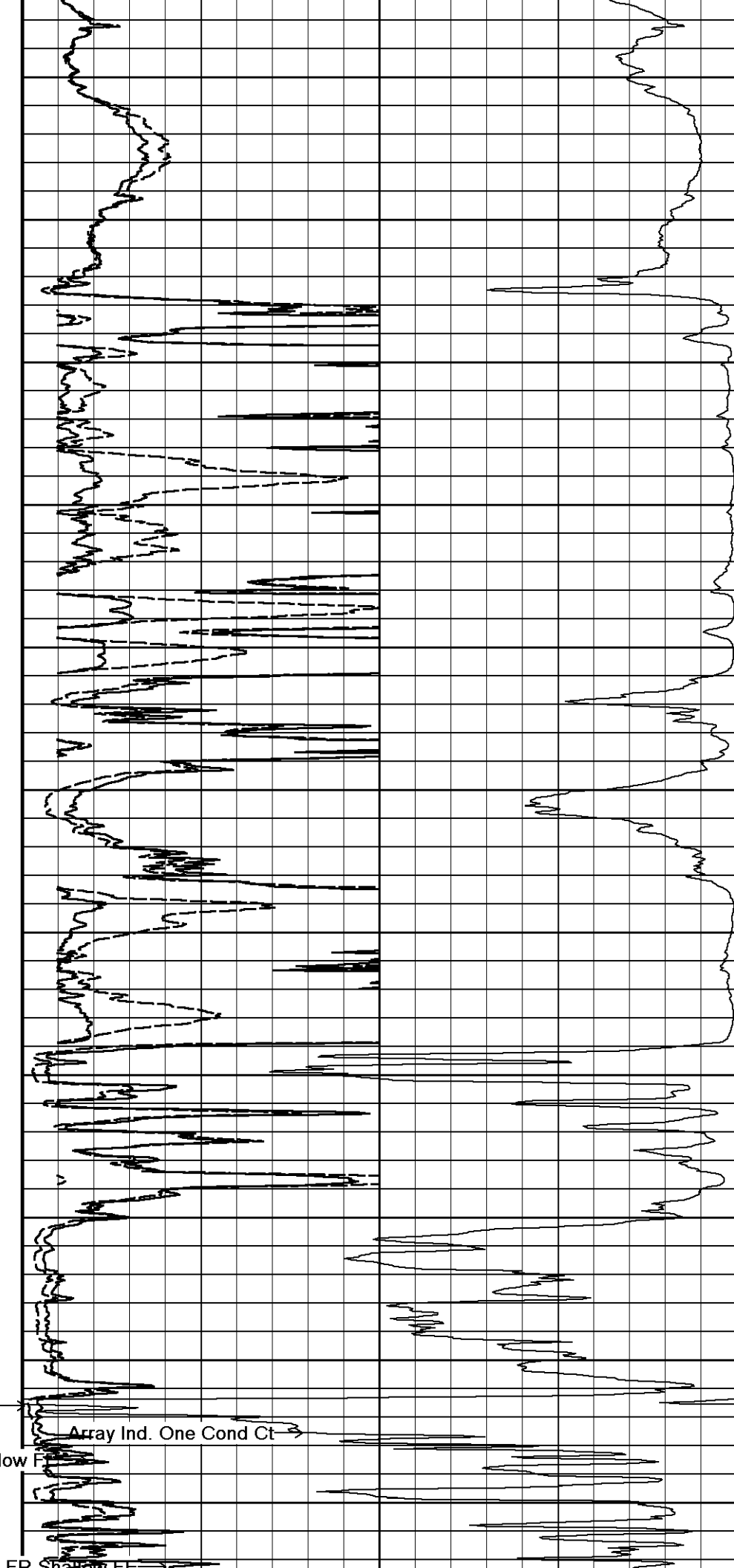
5000







121°
5600
122°
5700
123°
5800
124°
5900
125°
6000
127°
6100



Array Ind. One Res Rt

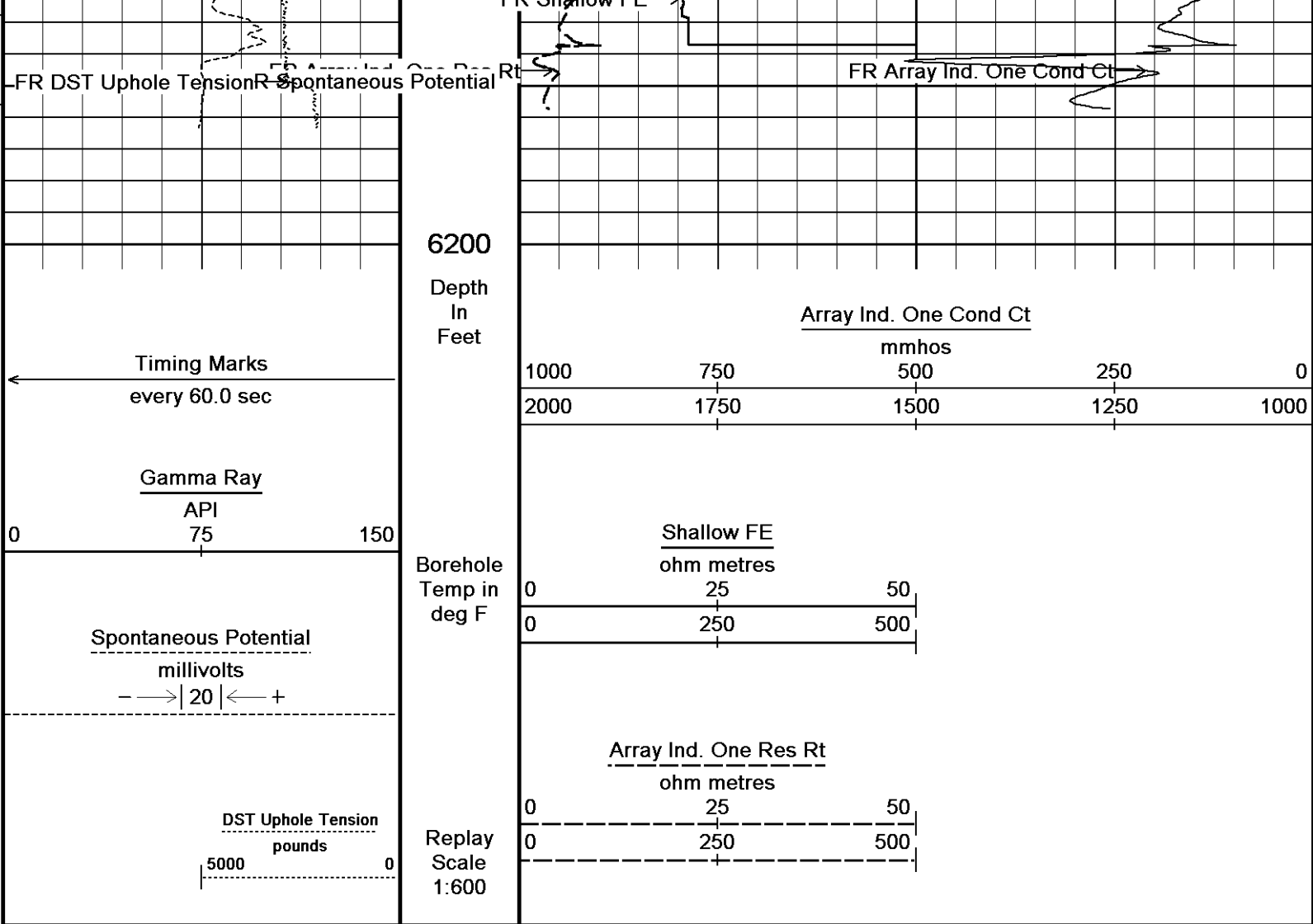
Array Ind. One Cond Ct

Shallow Fm

Spontaneous Potential

Gamma Ray

DST Uphole Tension

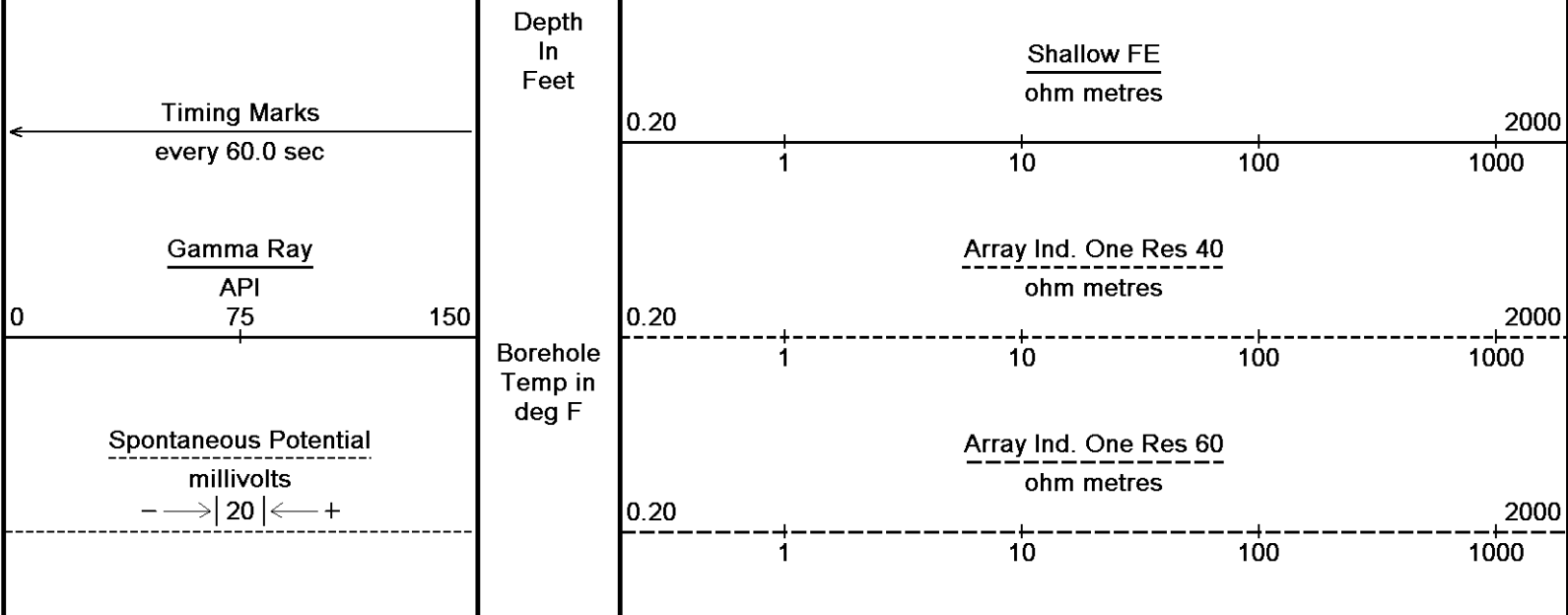


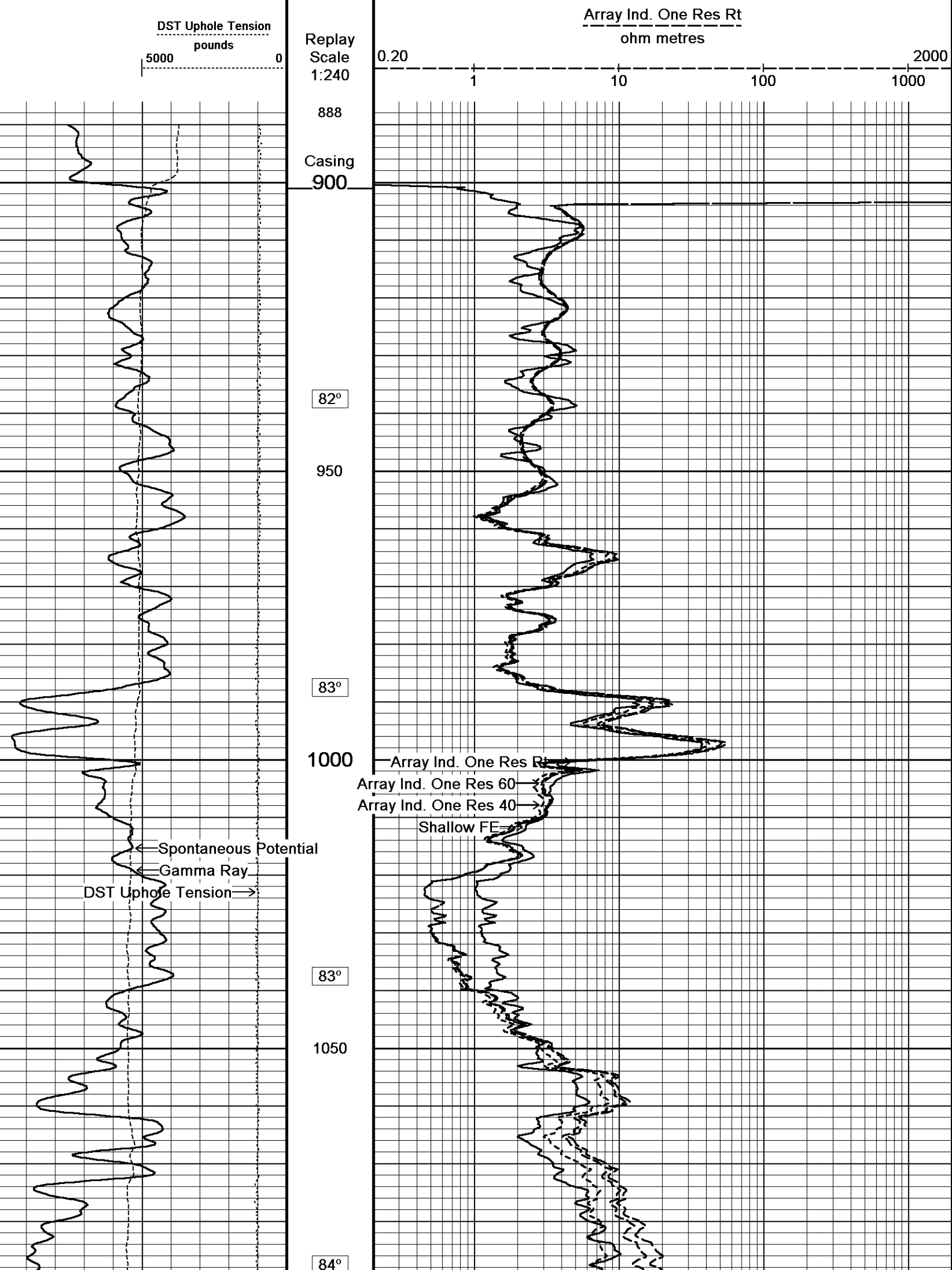
Depth Based Data - Maximum Sampling Increment 10.0cm
 Filename: C:\Minimus 11.03.4044\Data\Sandridge Luke SWD 1-10\Sandridge Luke SWD 1-10_002.dta
 System Versions: Logged with 11.03.4044 Plotted with 11.03.4044

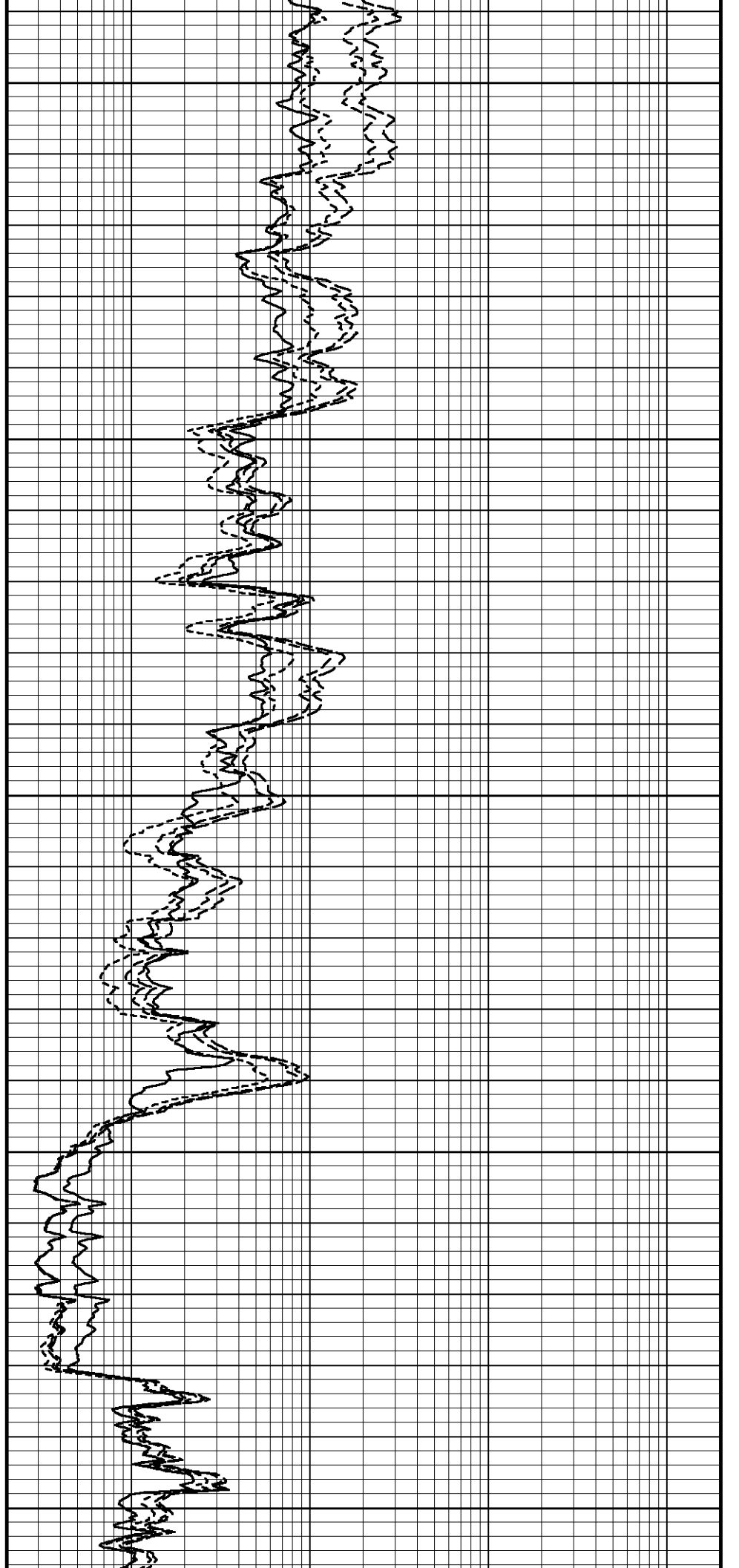
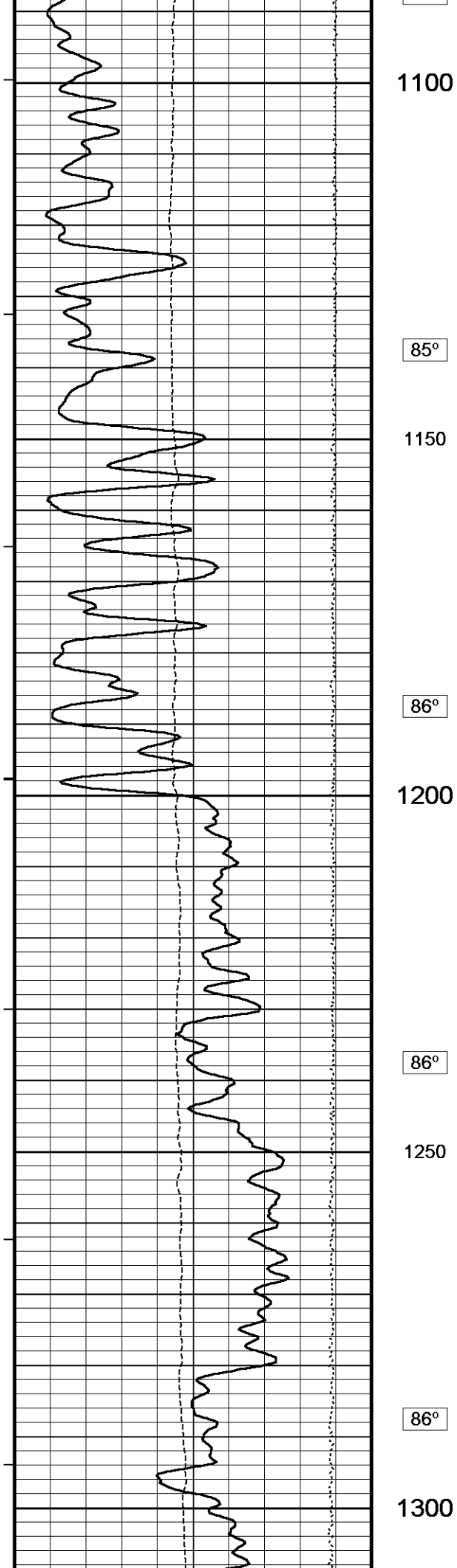
↑ **2 INCH MAIN PASS** ↑

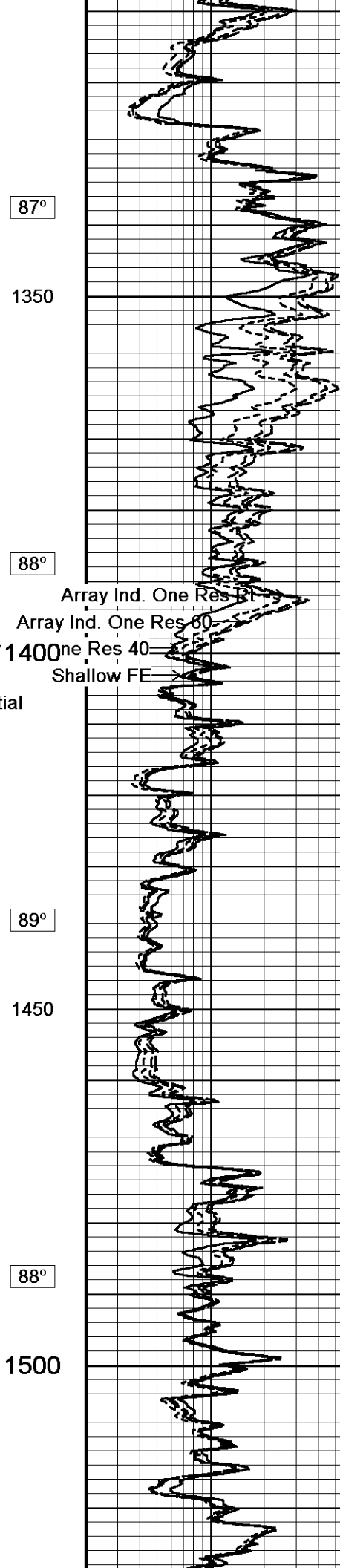
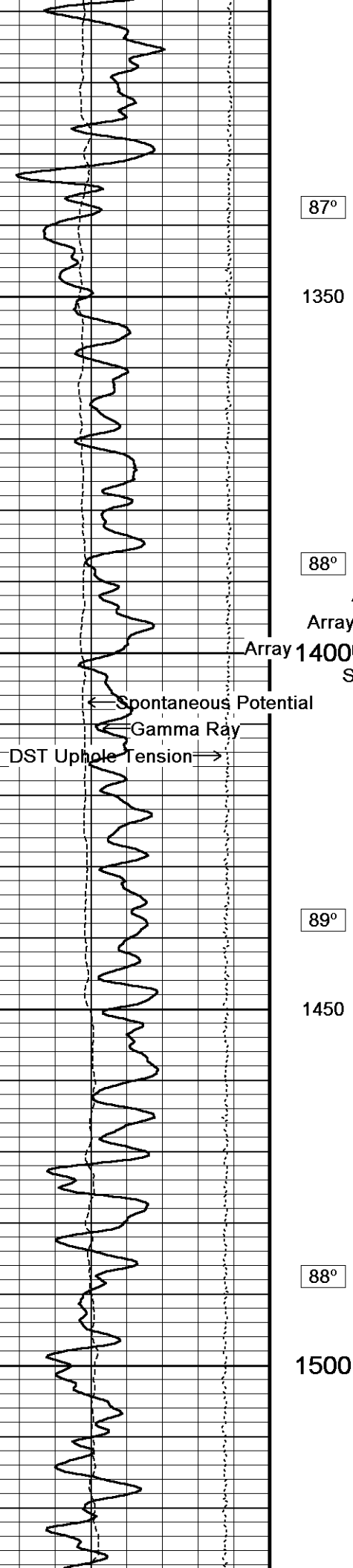
↓ **5 INCH MAIN PASS** ↓

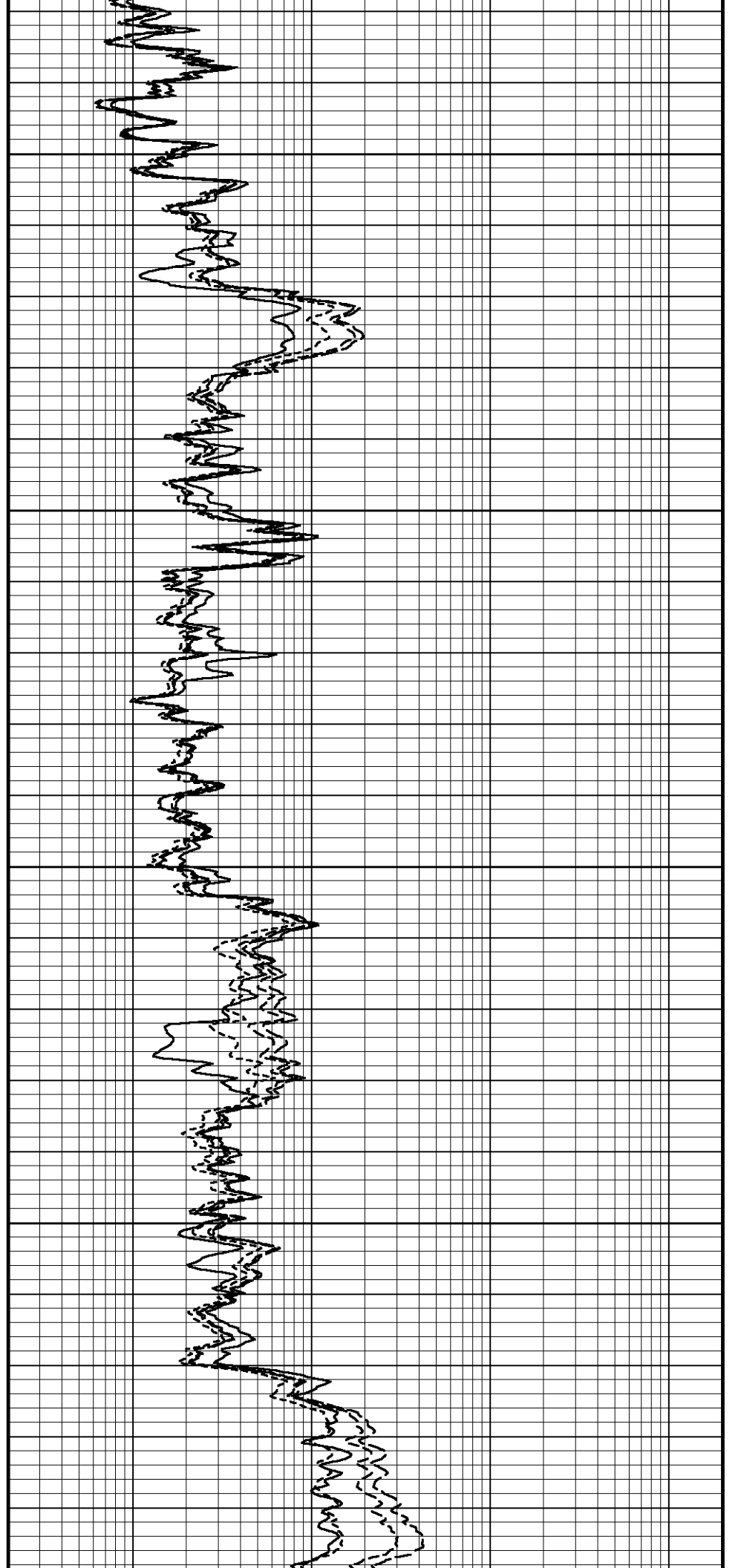
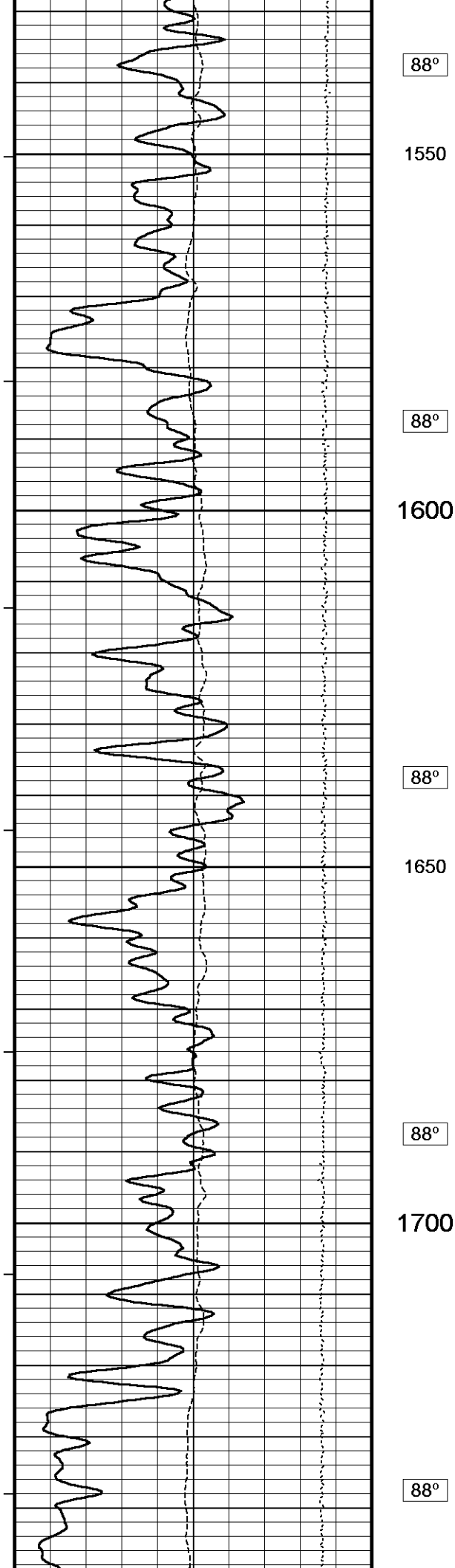
Depth Based Data - Maximum Sampling Increment 10.0cm
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 System Versions: Logged with 11.03.4044 Plotted with 11.03.4044

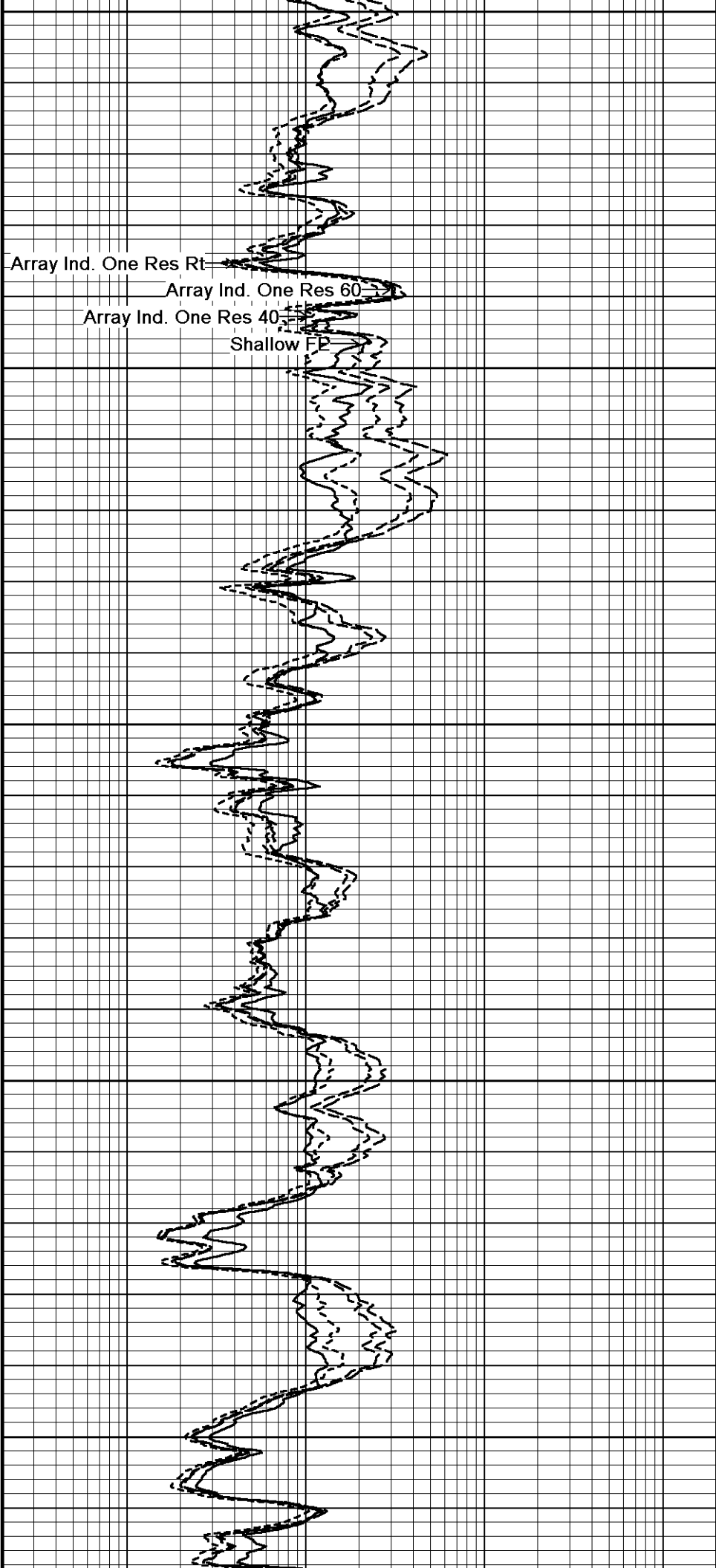
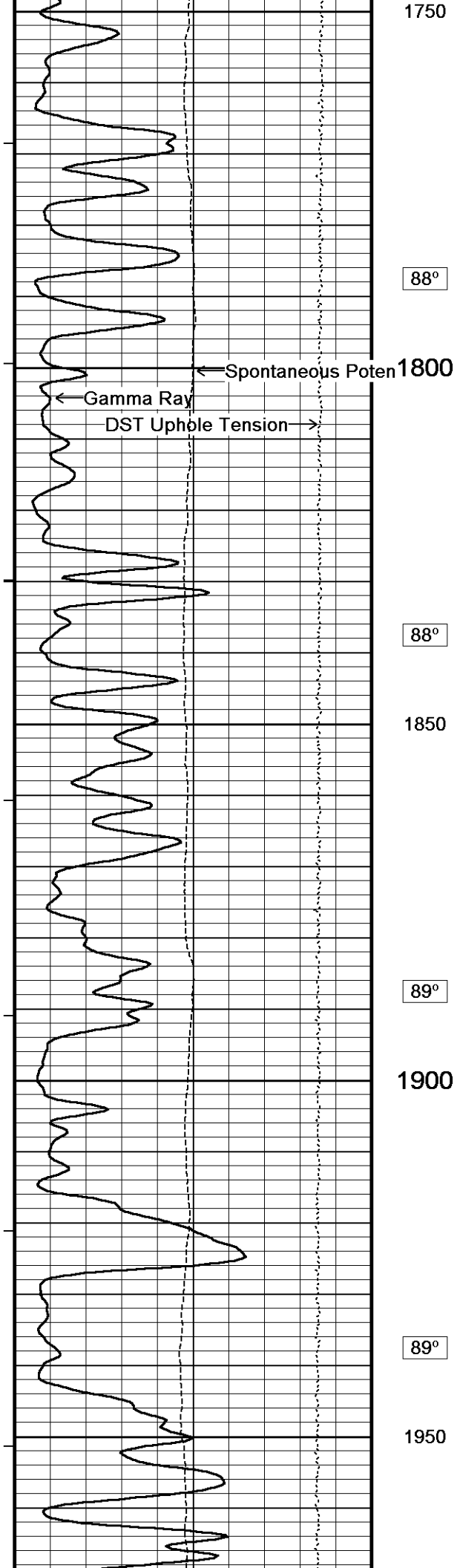


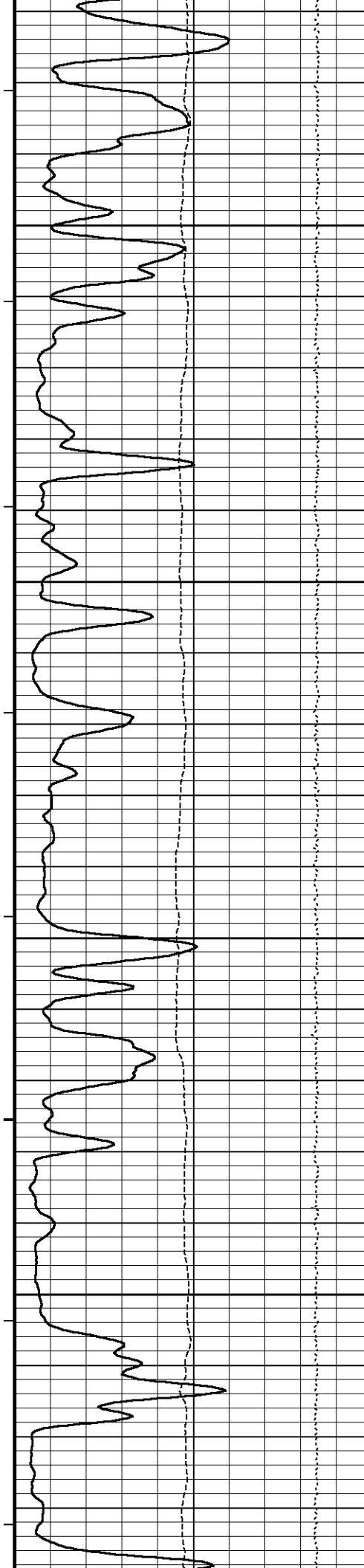












89°

2000

89°

2050

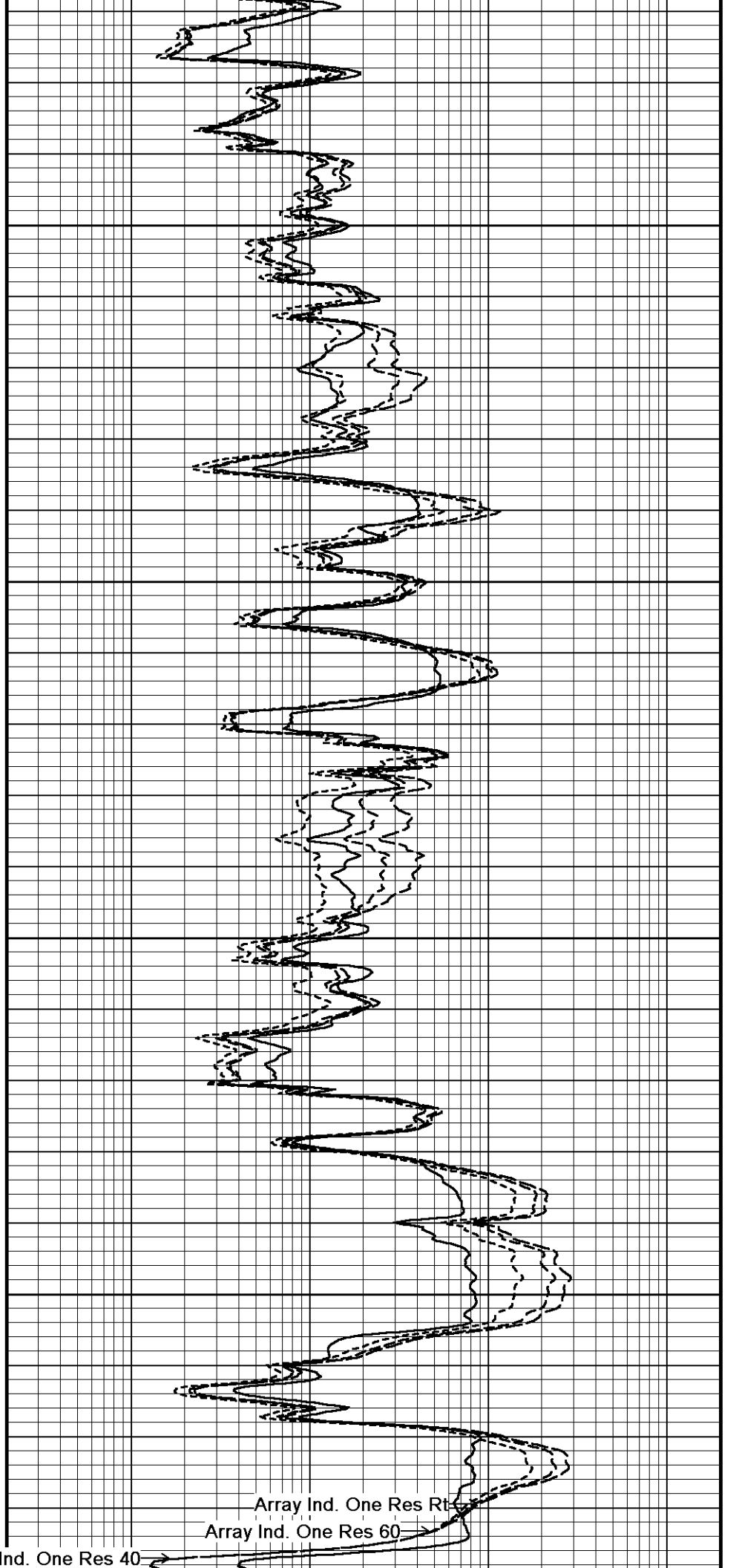
90°

2100

90°

2150

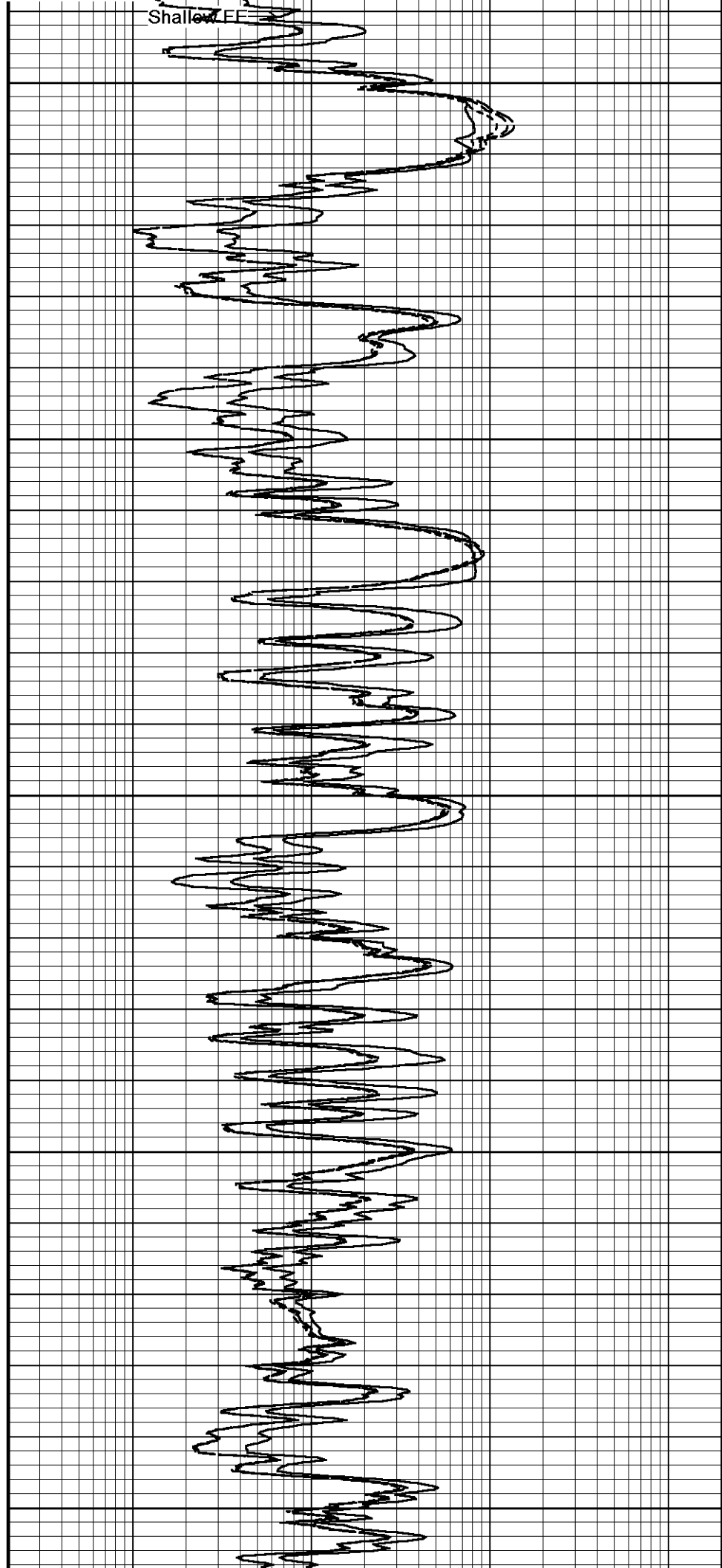
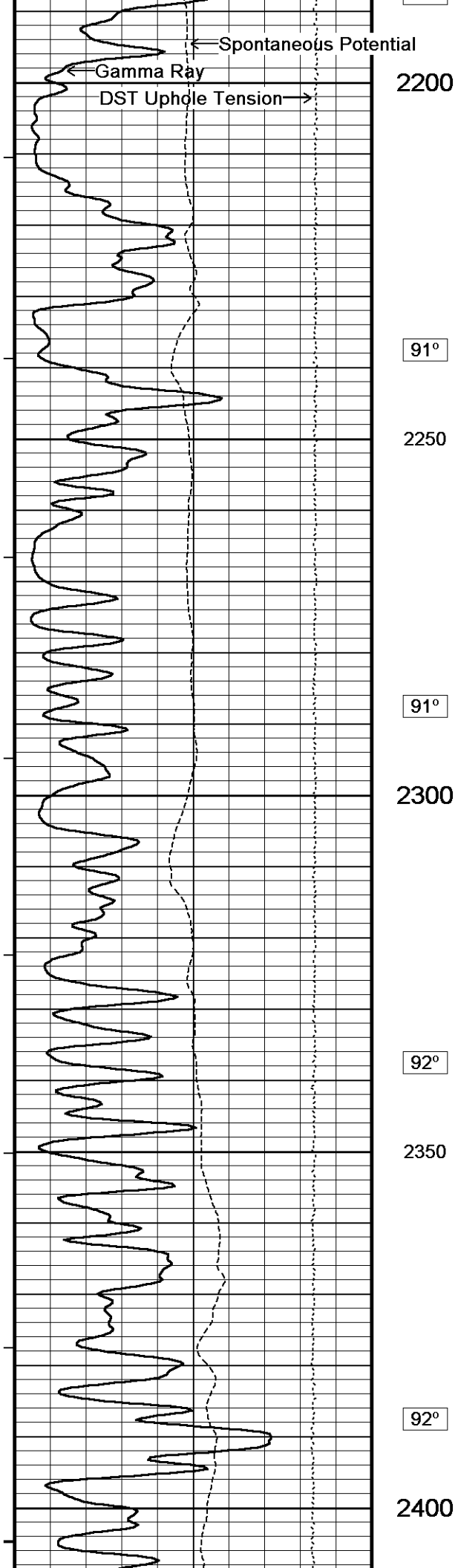
Array Ind. One Res 40

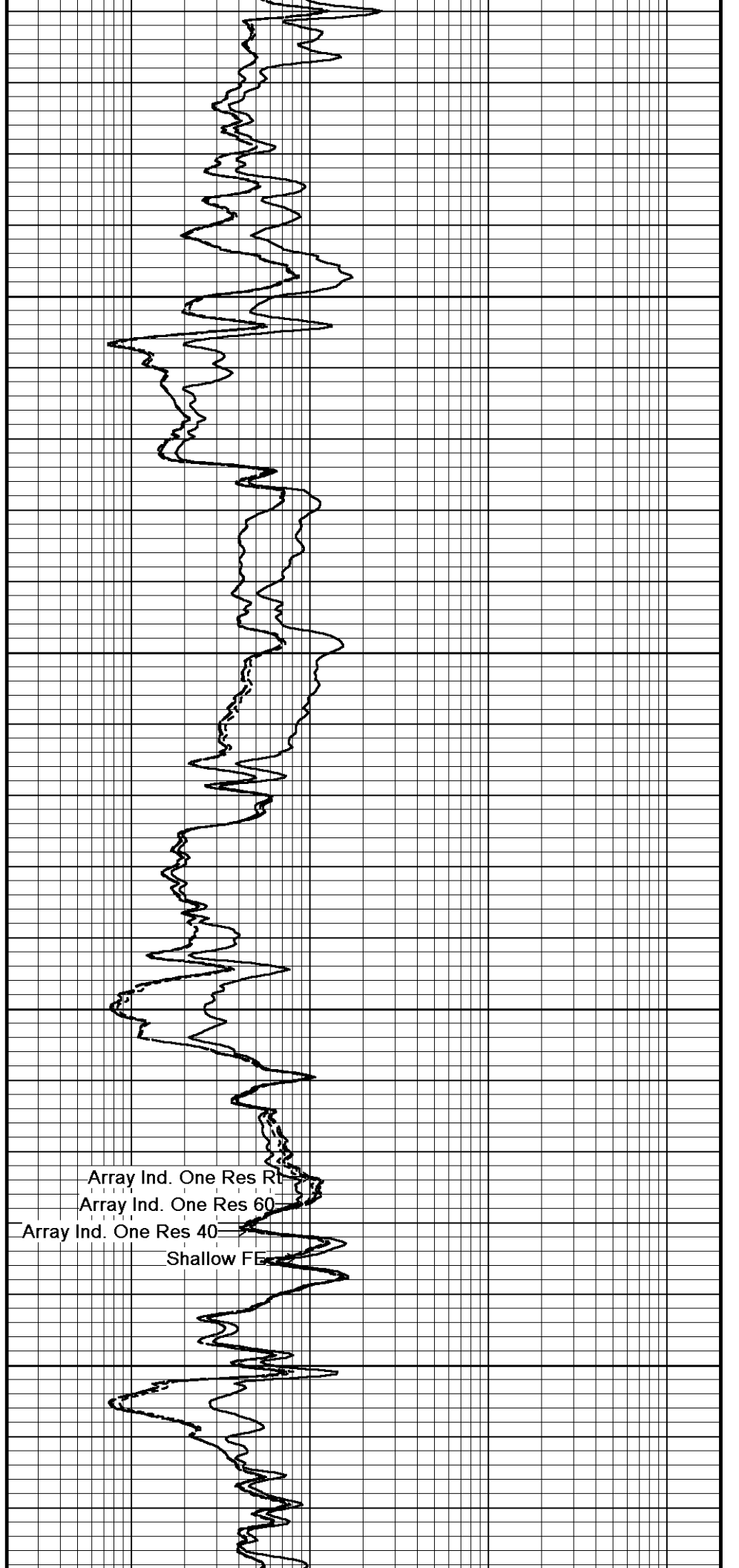
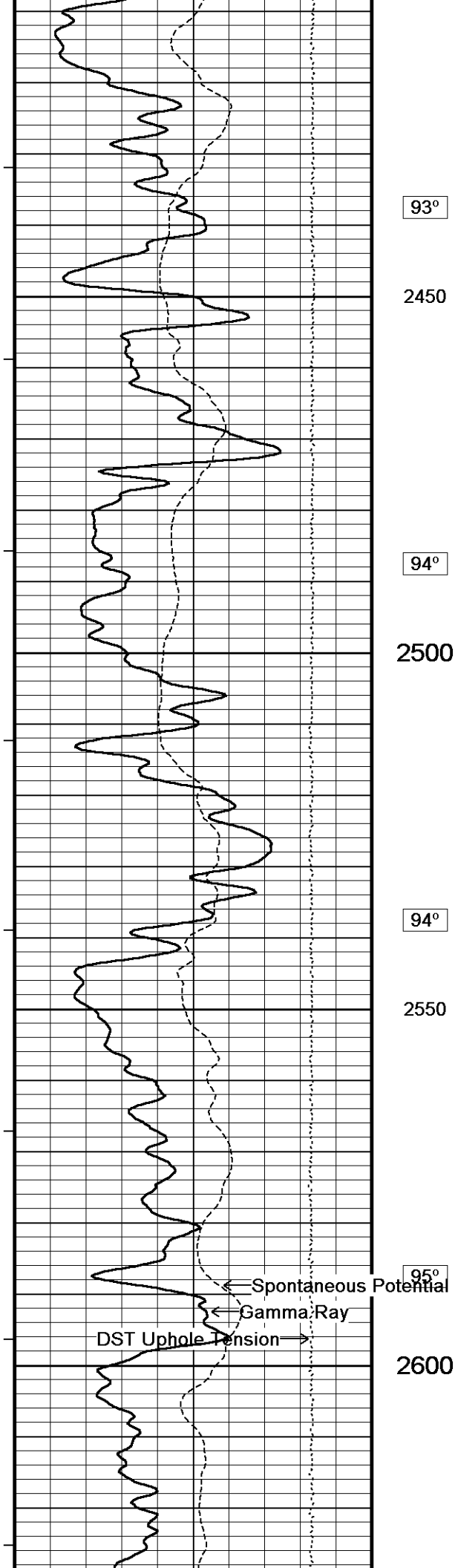


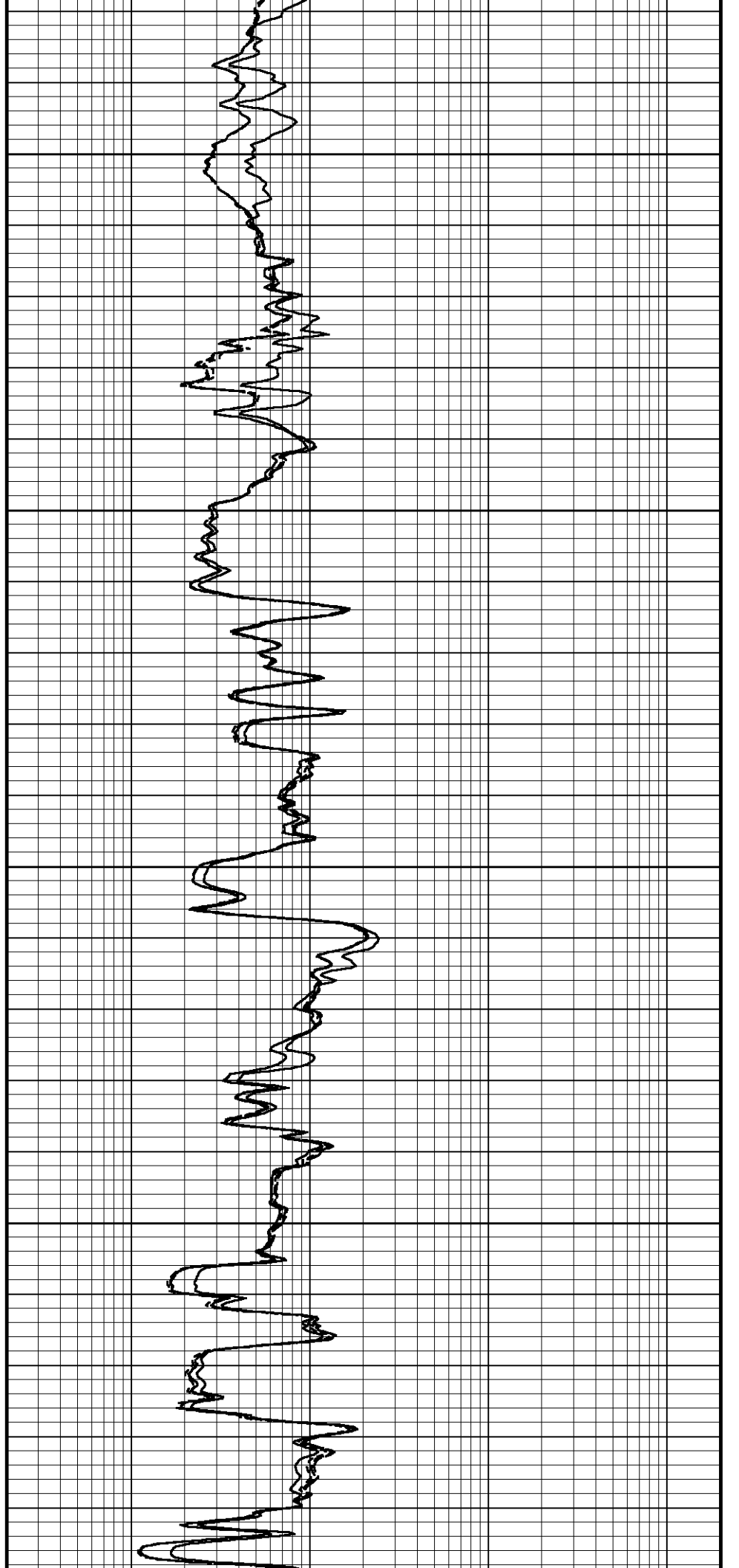
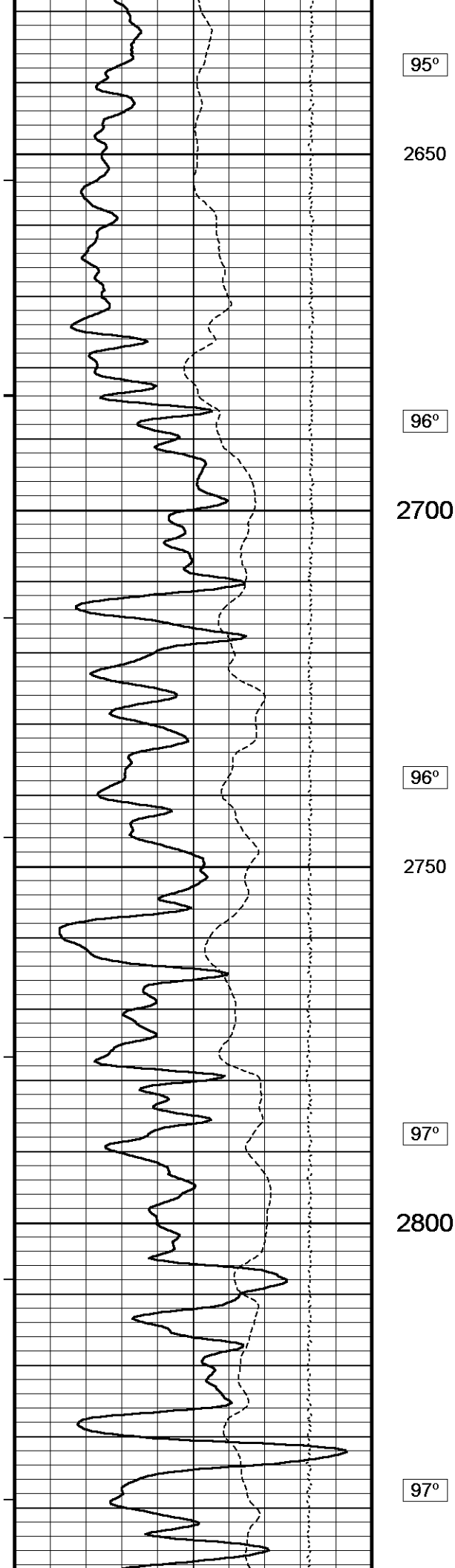
Array Ind. One Res R1

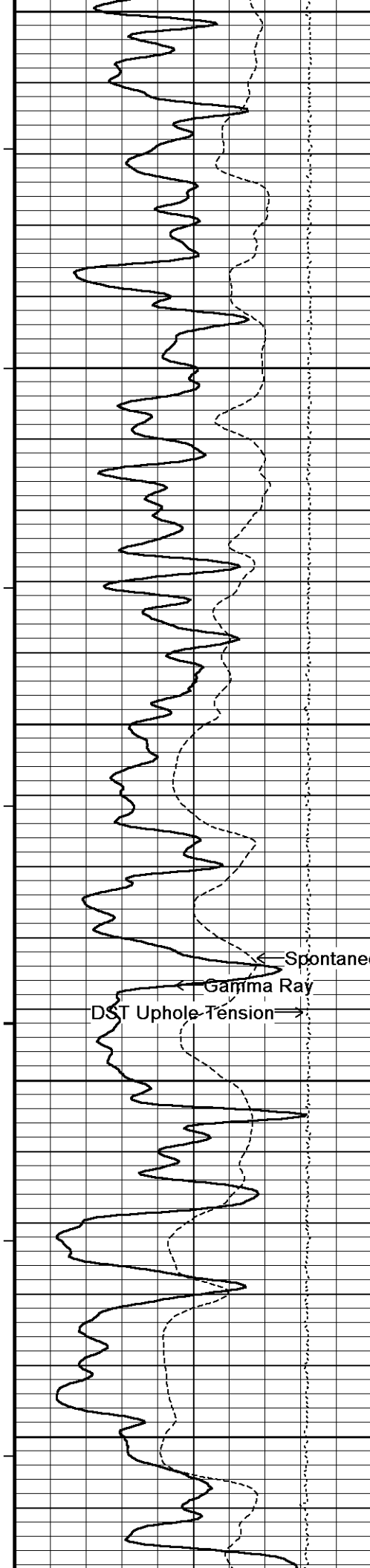
Array Ind. One Res 60

Array Ind. One Res 40









2850

97°

2900

97°

2950

Array Ind. One Res Rt

Array Ind. One Res 60

Array Ind. One Res 40

Shallow FE

Spontaneous Potential

Gamma Ray

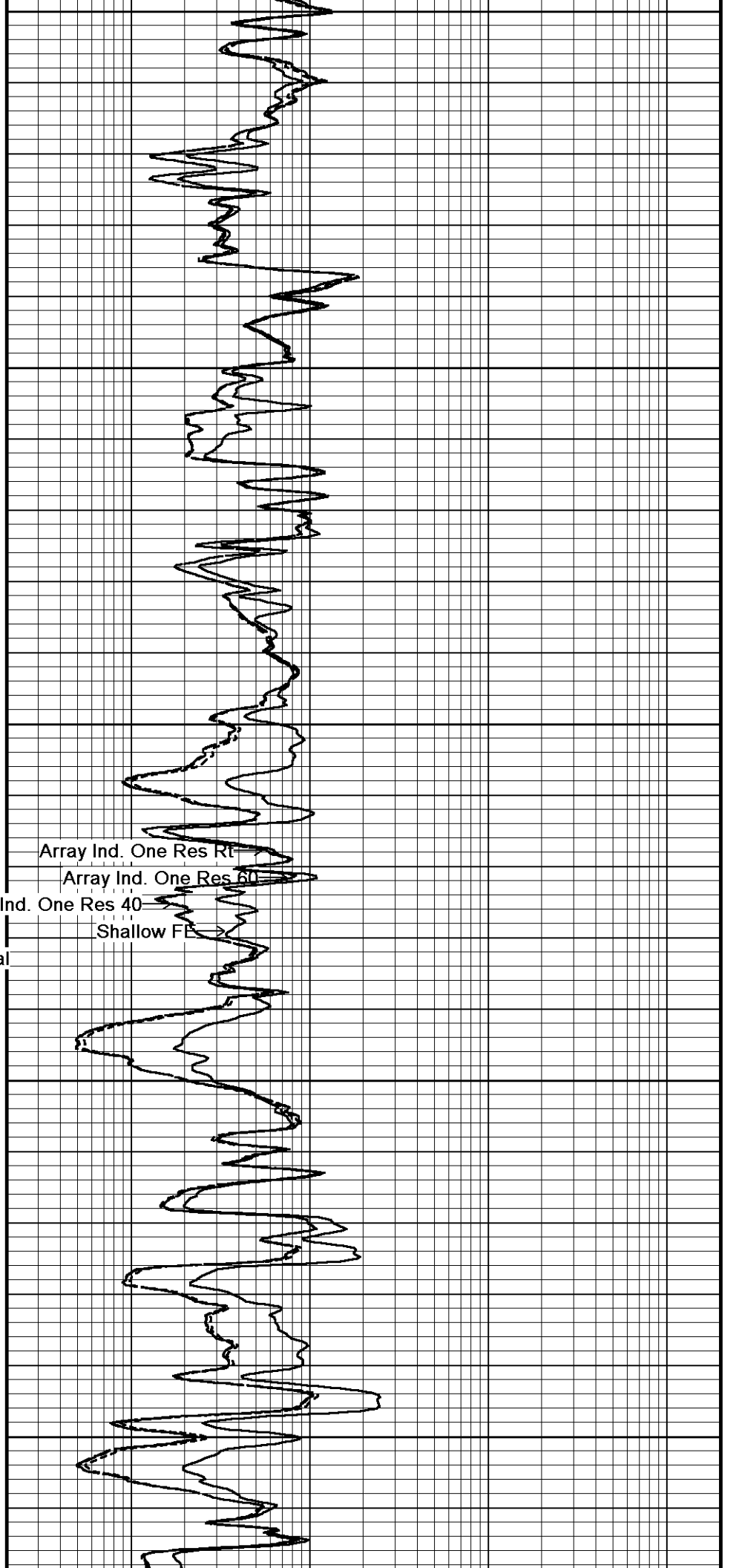
DST Uphole Tension

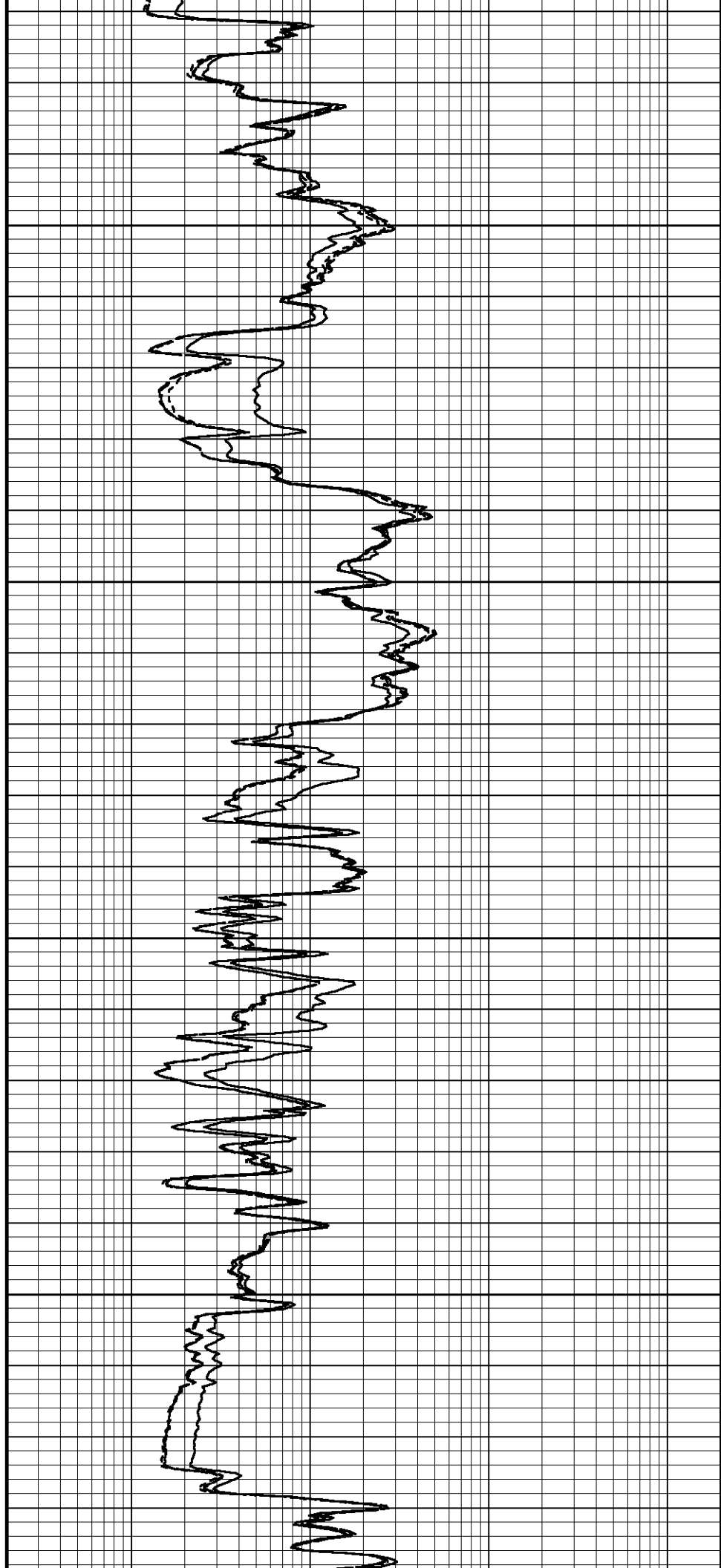
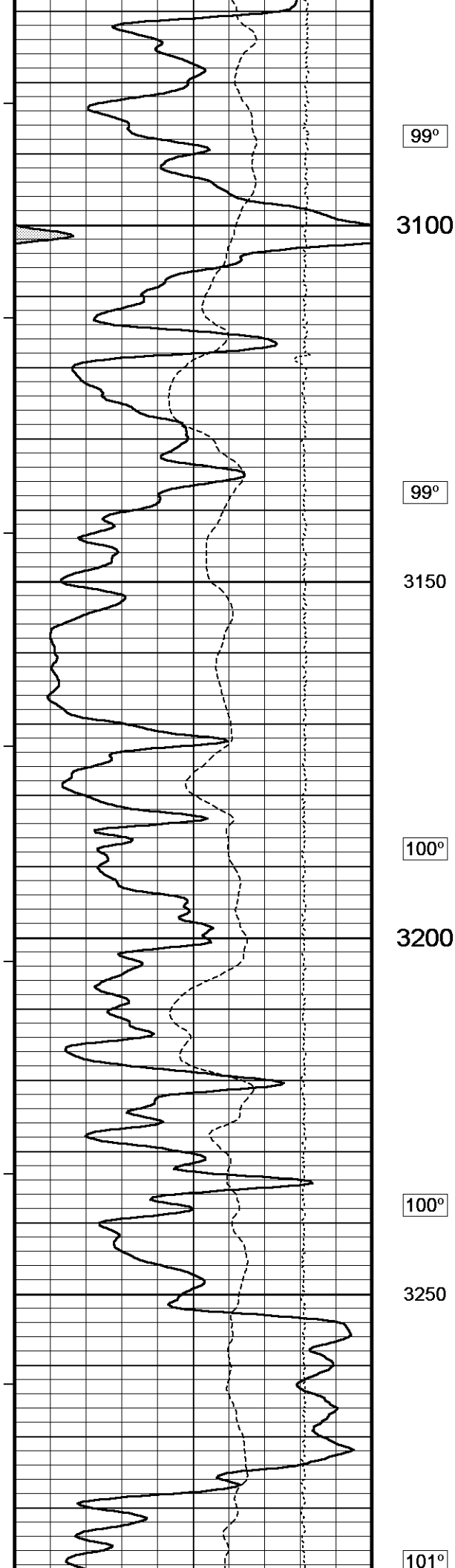
98°

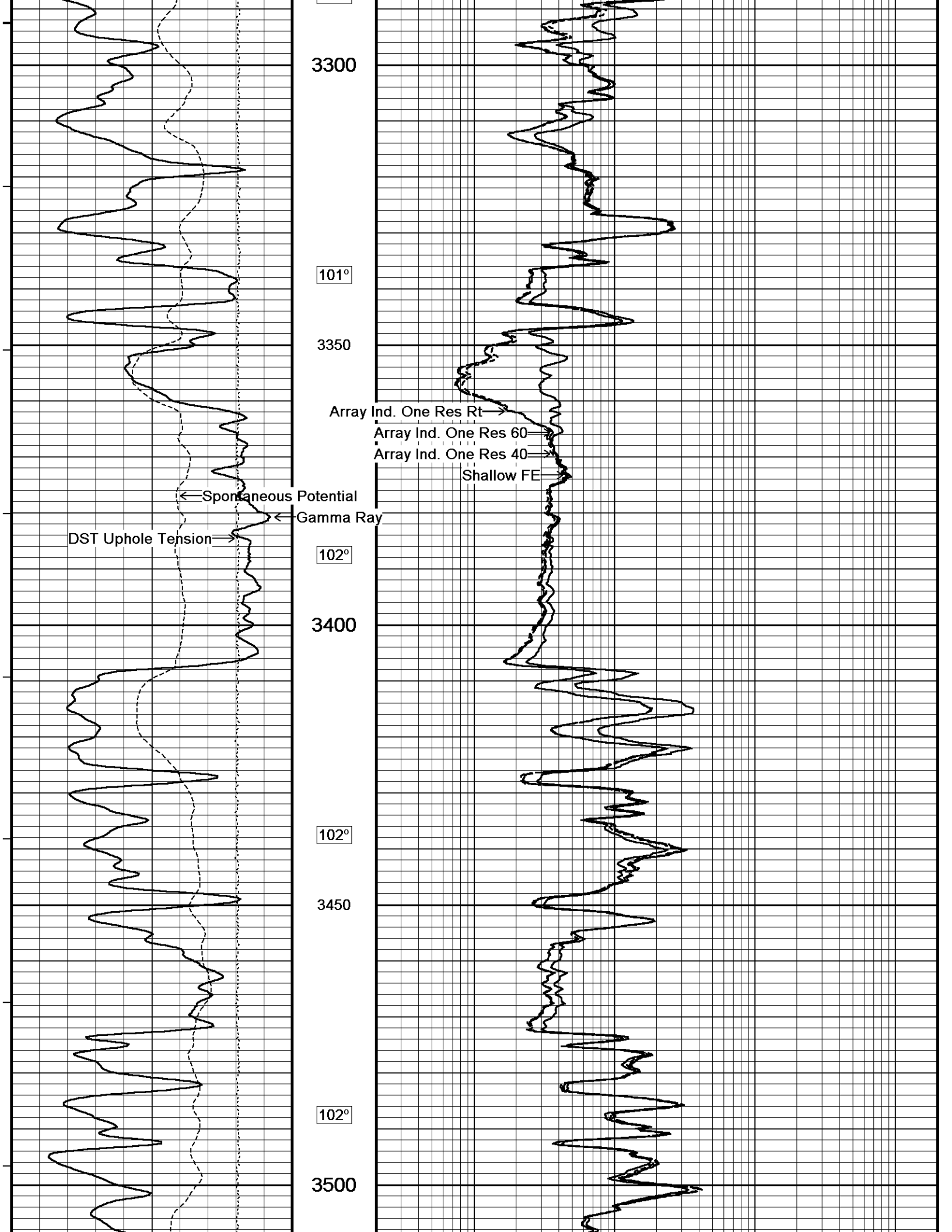
3000

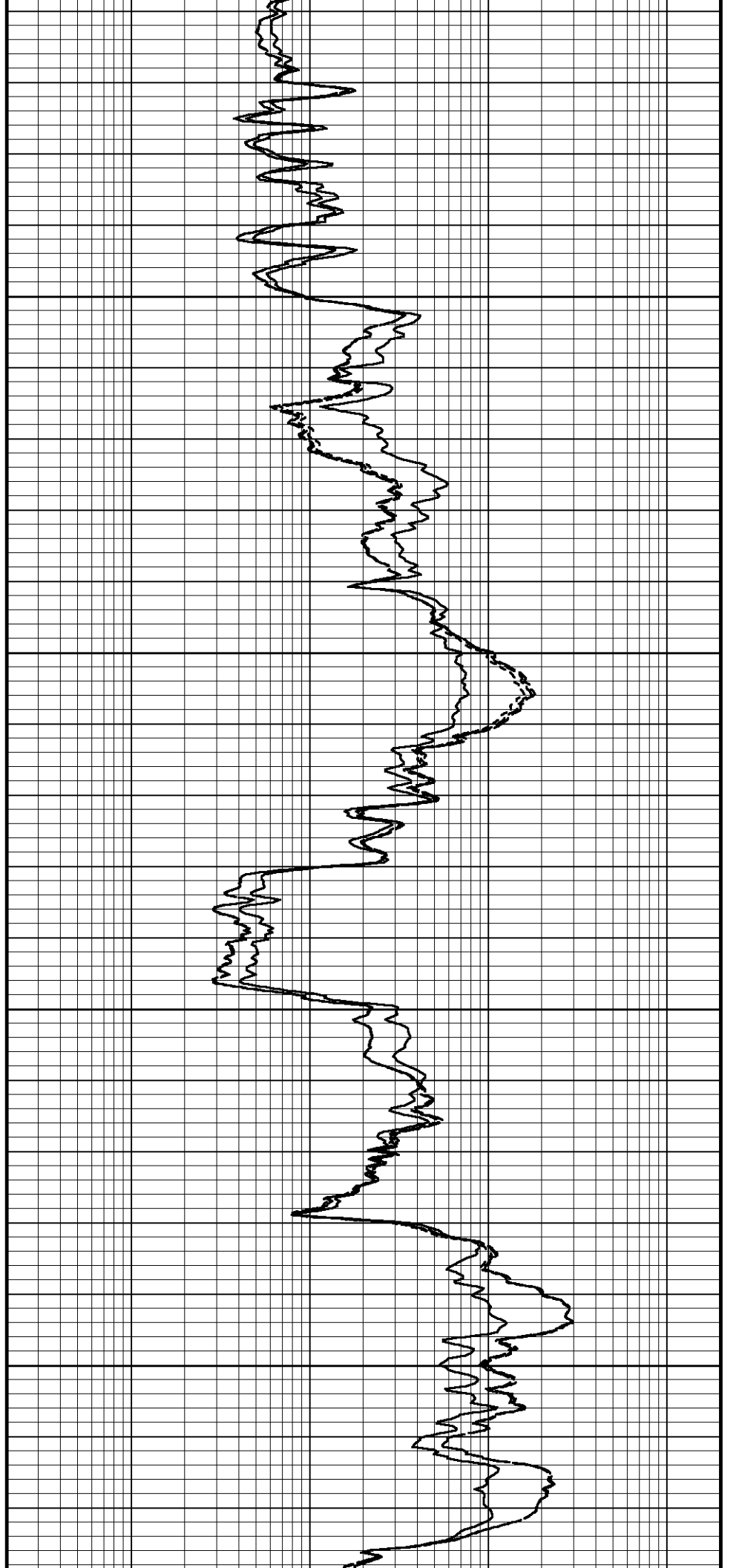
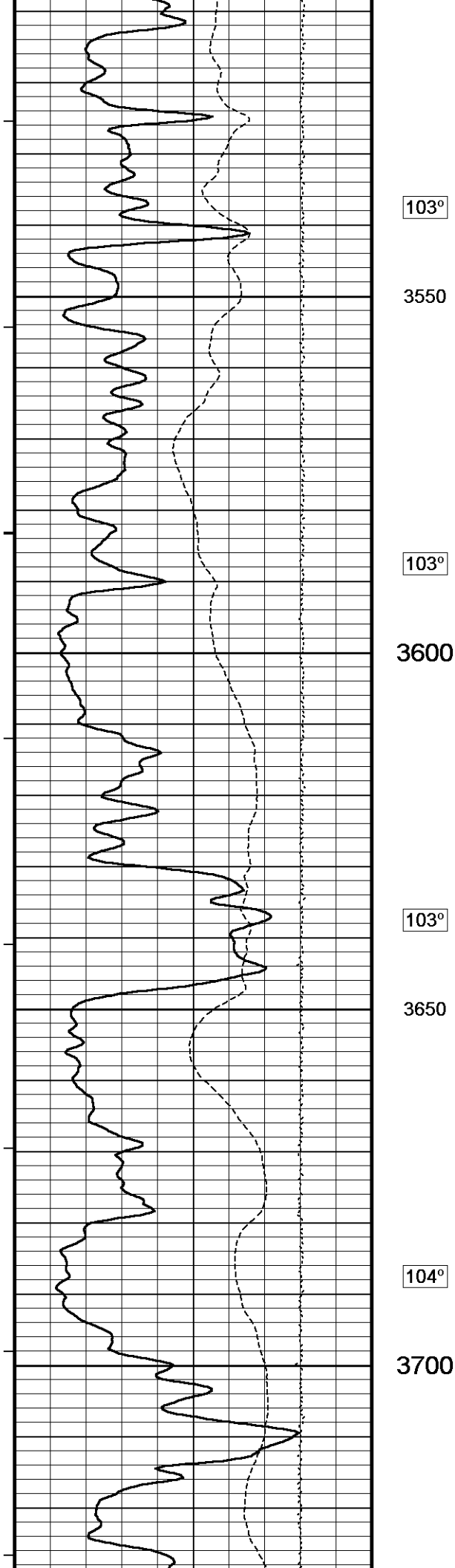
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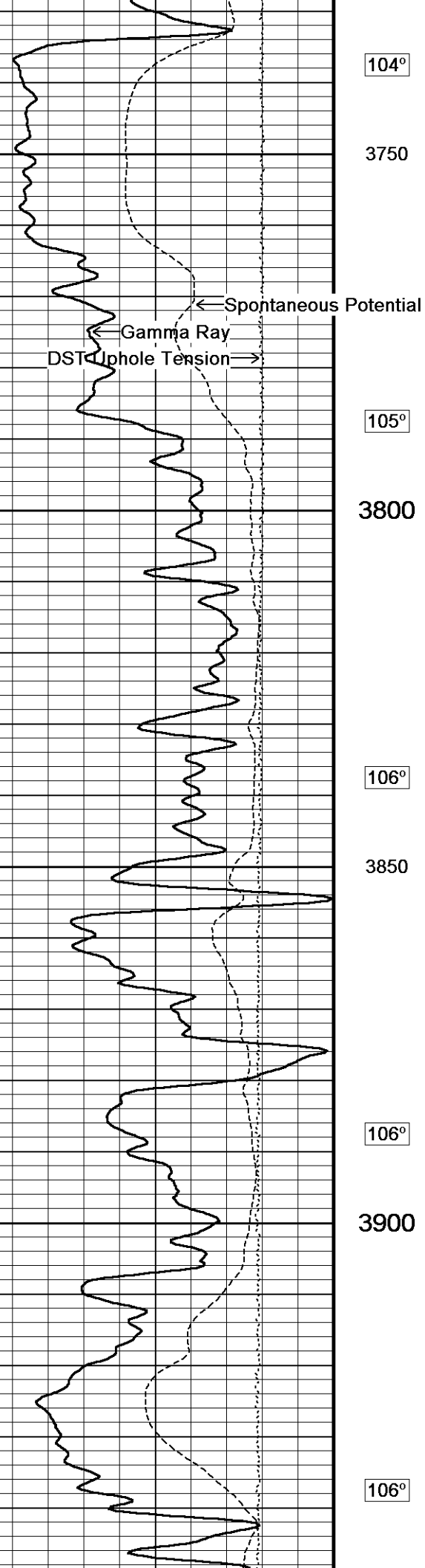
3050











104°

3750

Array Ind. One Res Rt

Array Ind. One Res 60

Array Ind. One Res 40

Shallow FE

105°

3800

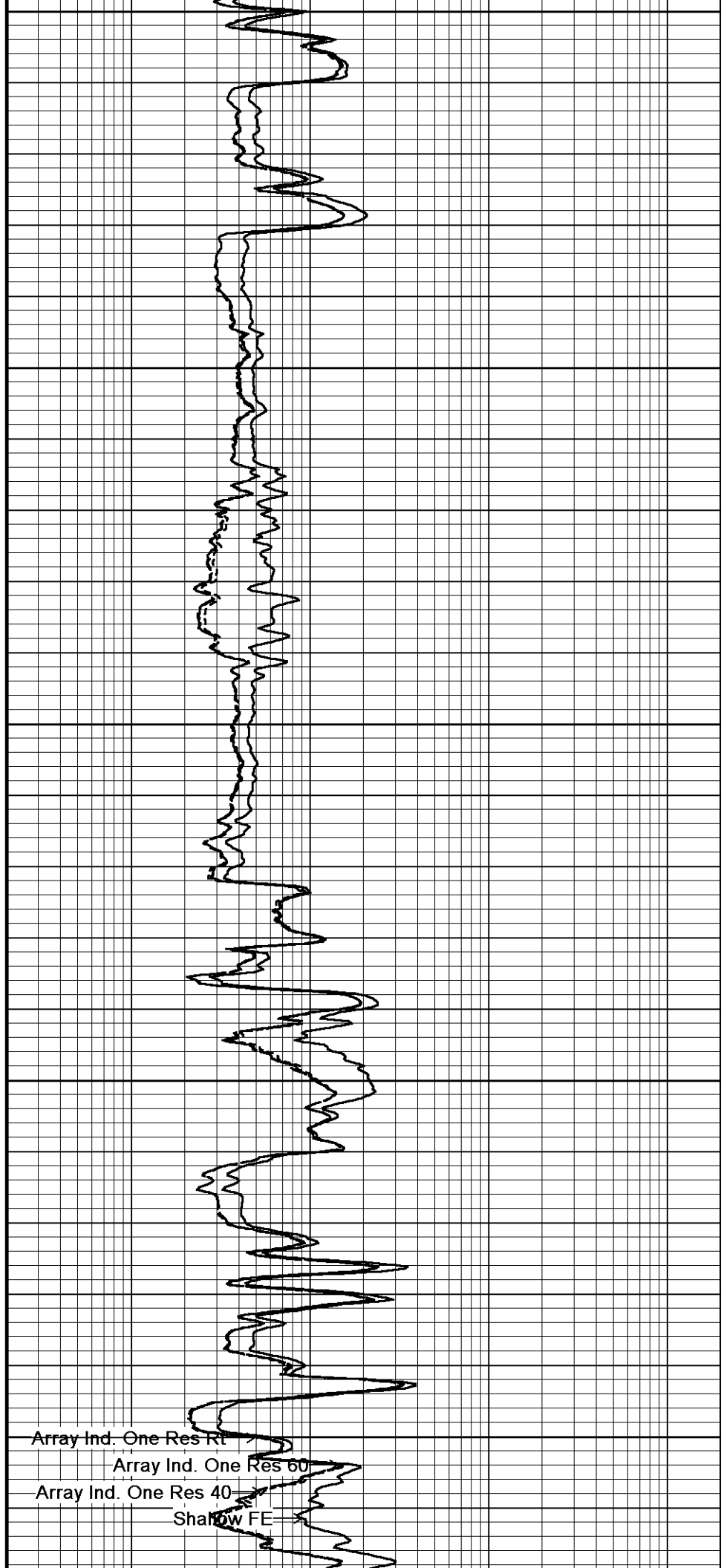
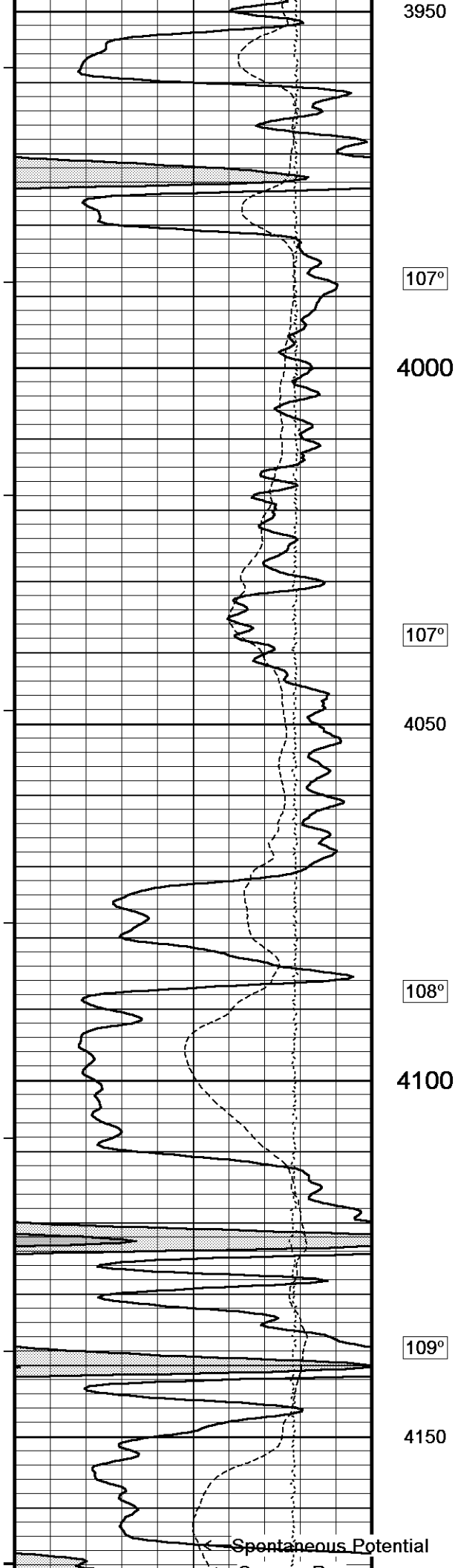
106°

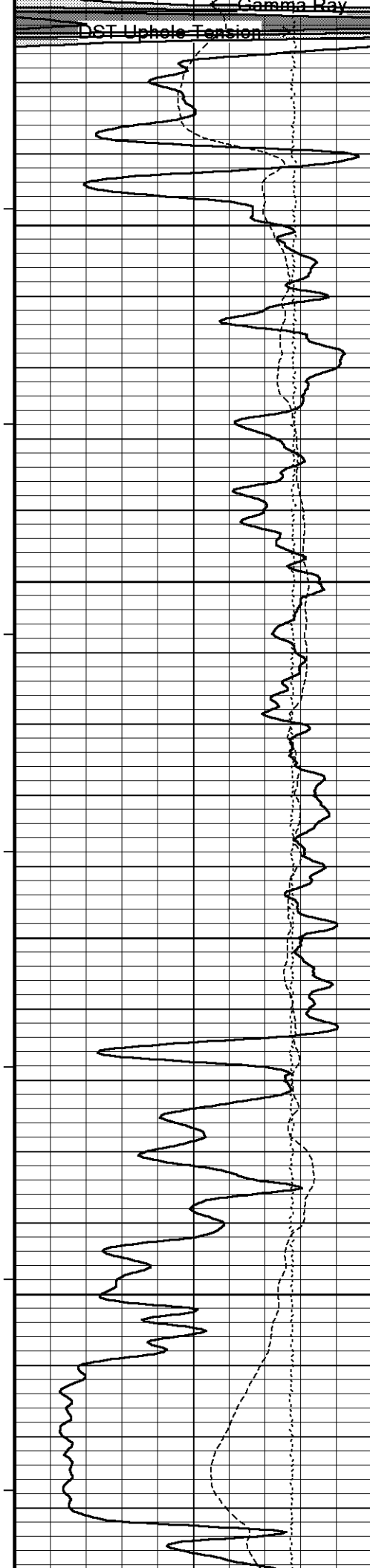
3850

106°

3900

106°





109°

4200

109°

4250

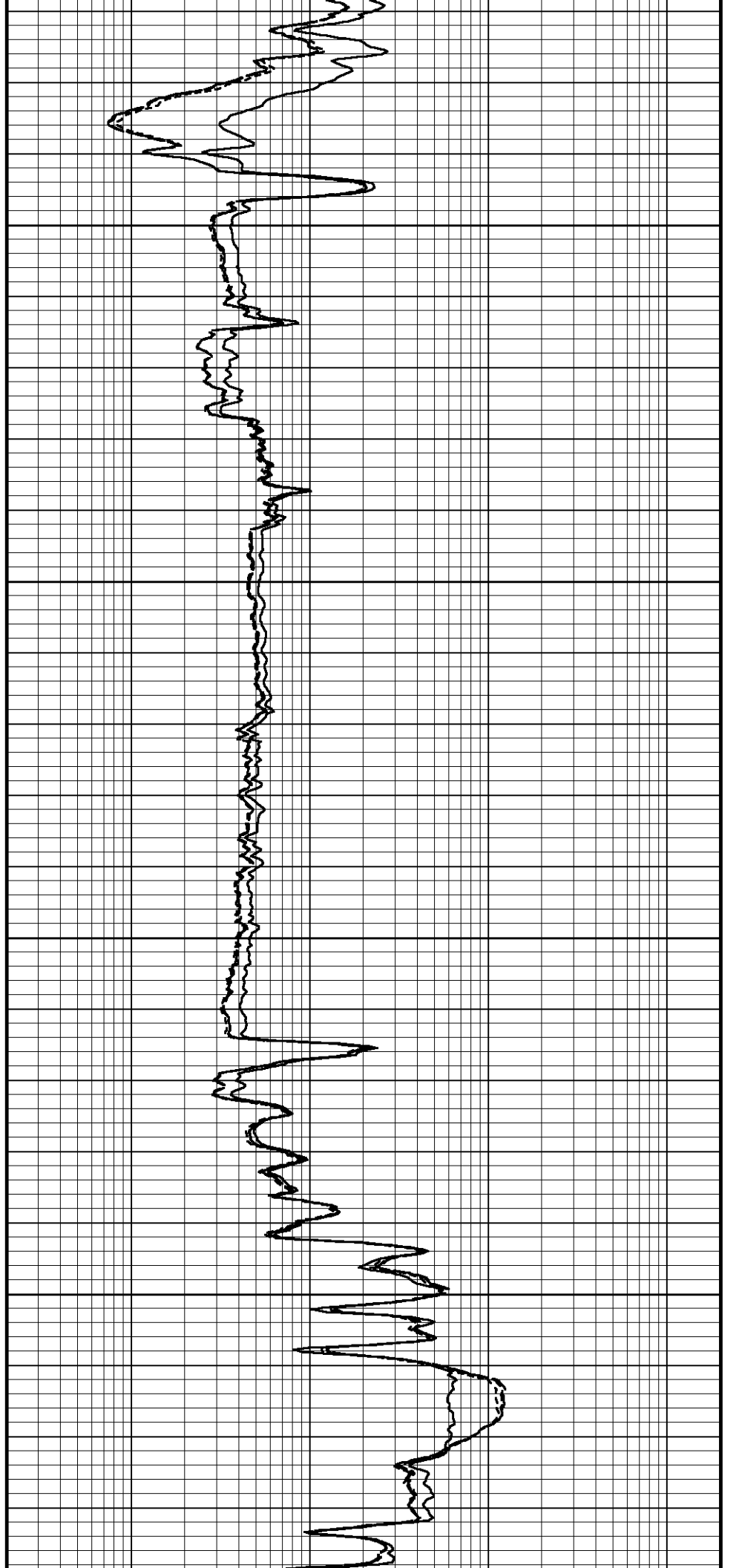
110°

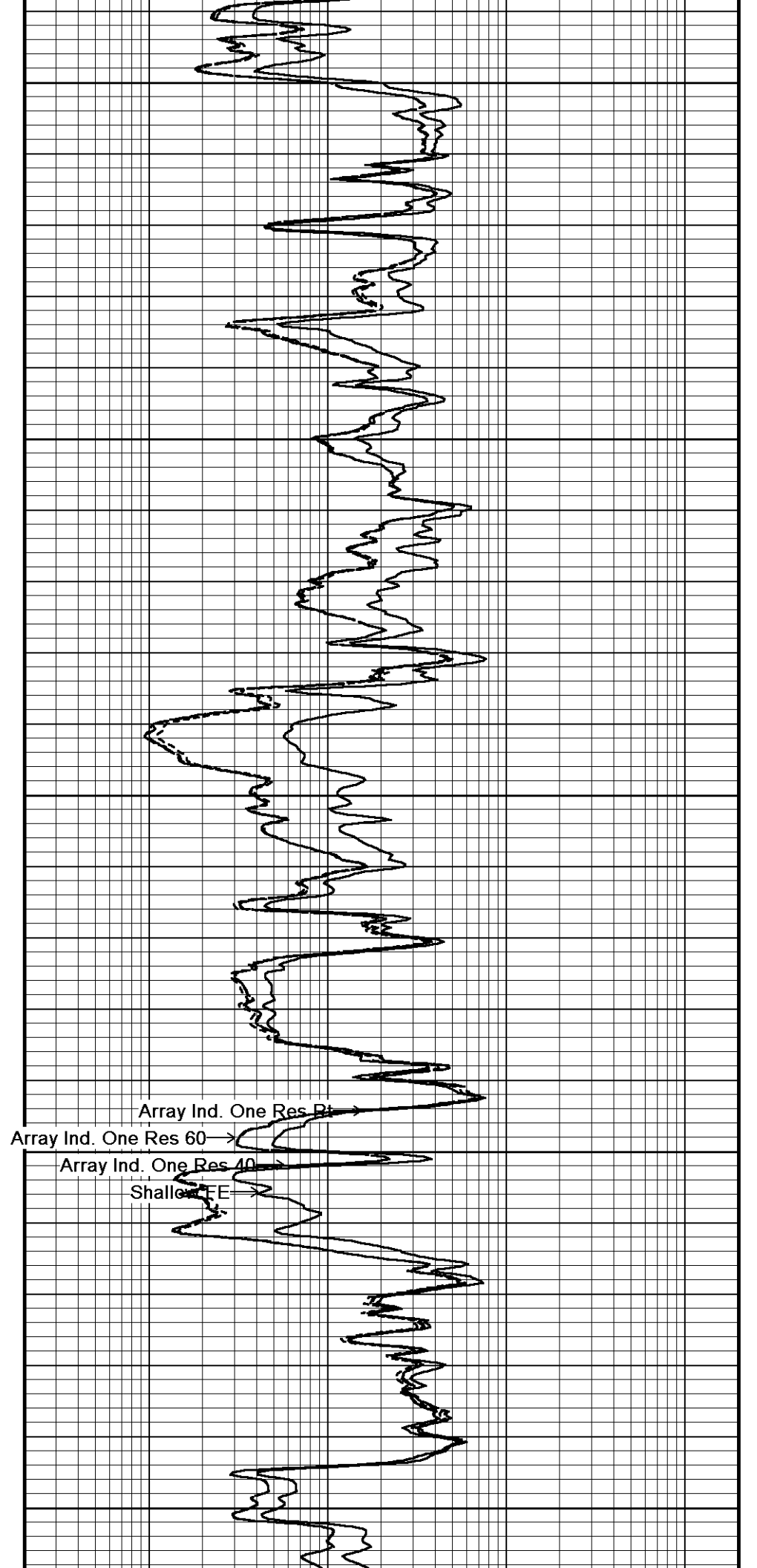
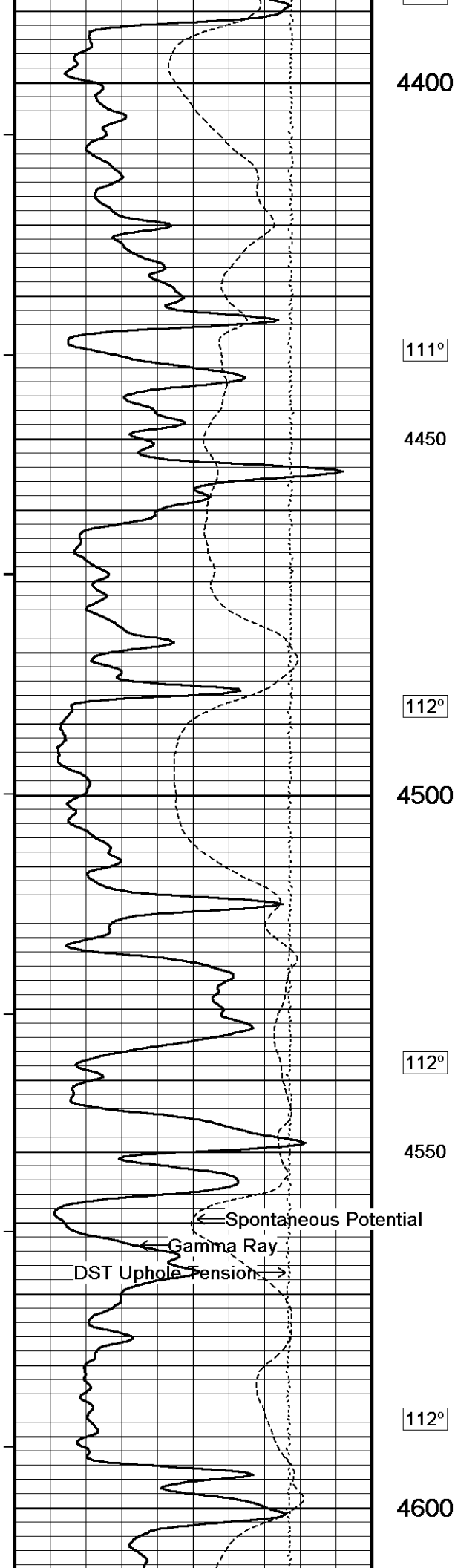
4300

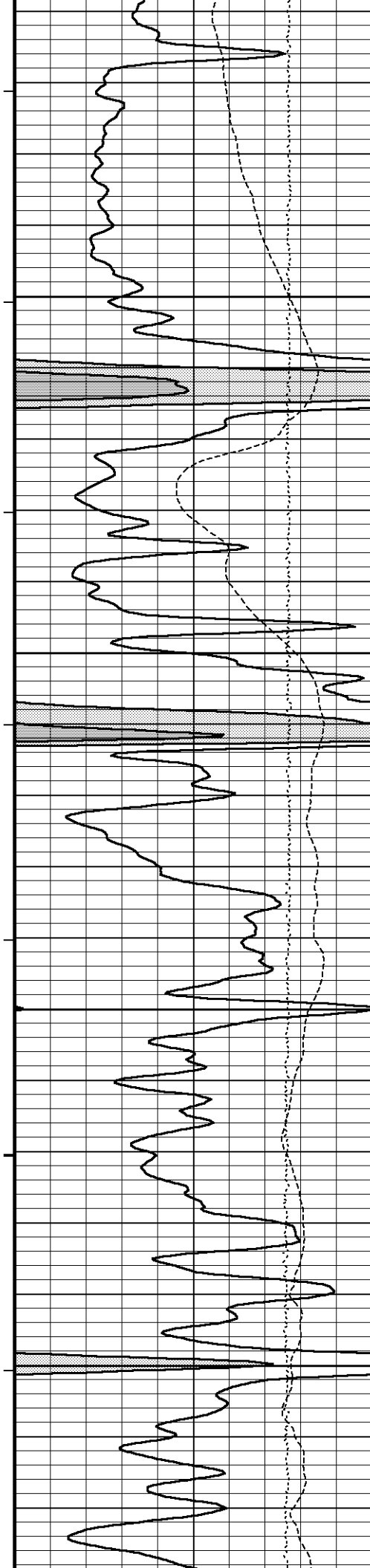
110°

4350

111°







113°

4650

113°

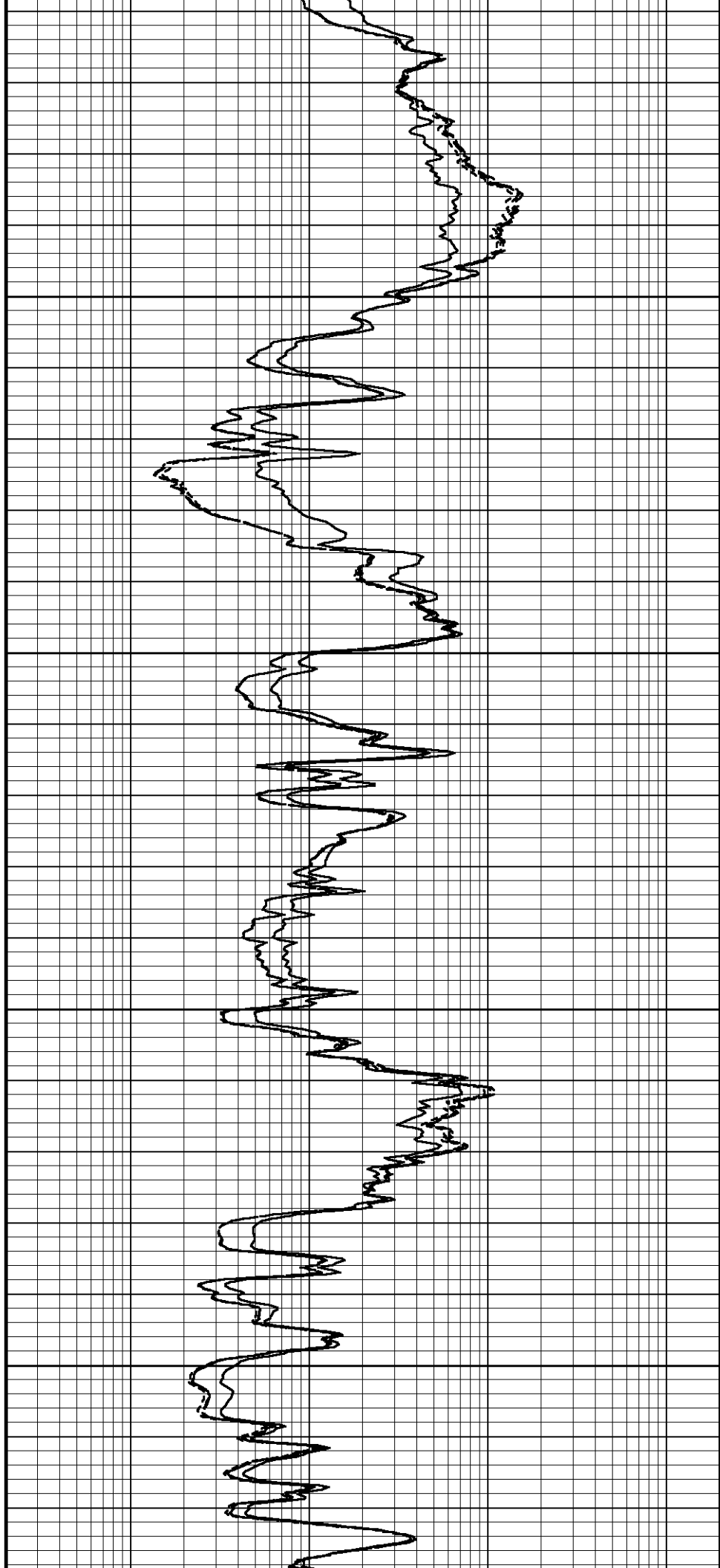
4700

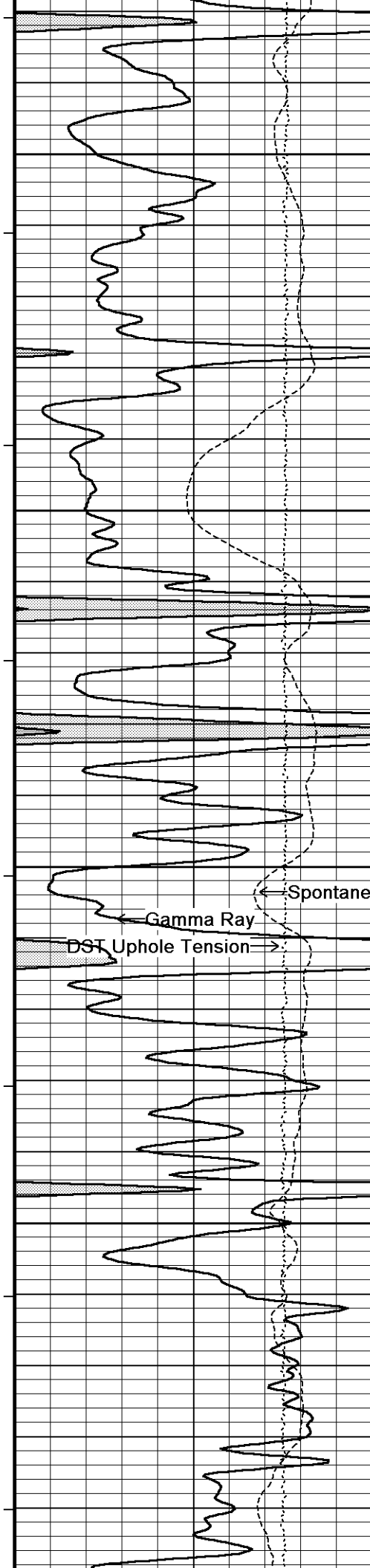
114°

4750

114°

4800





115°

4850

115°

4900

115°

Array Ind. One Res Rt →

Array Ind. One Res 60 →

Array Ind. One Res 40 →

4950

Shallow FE →

← Spontaneous Potential

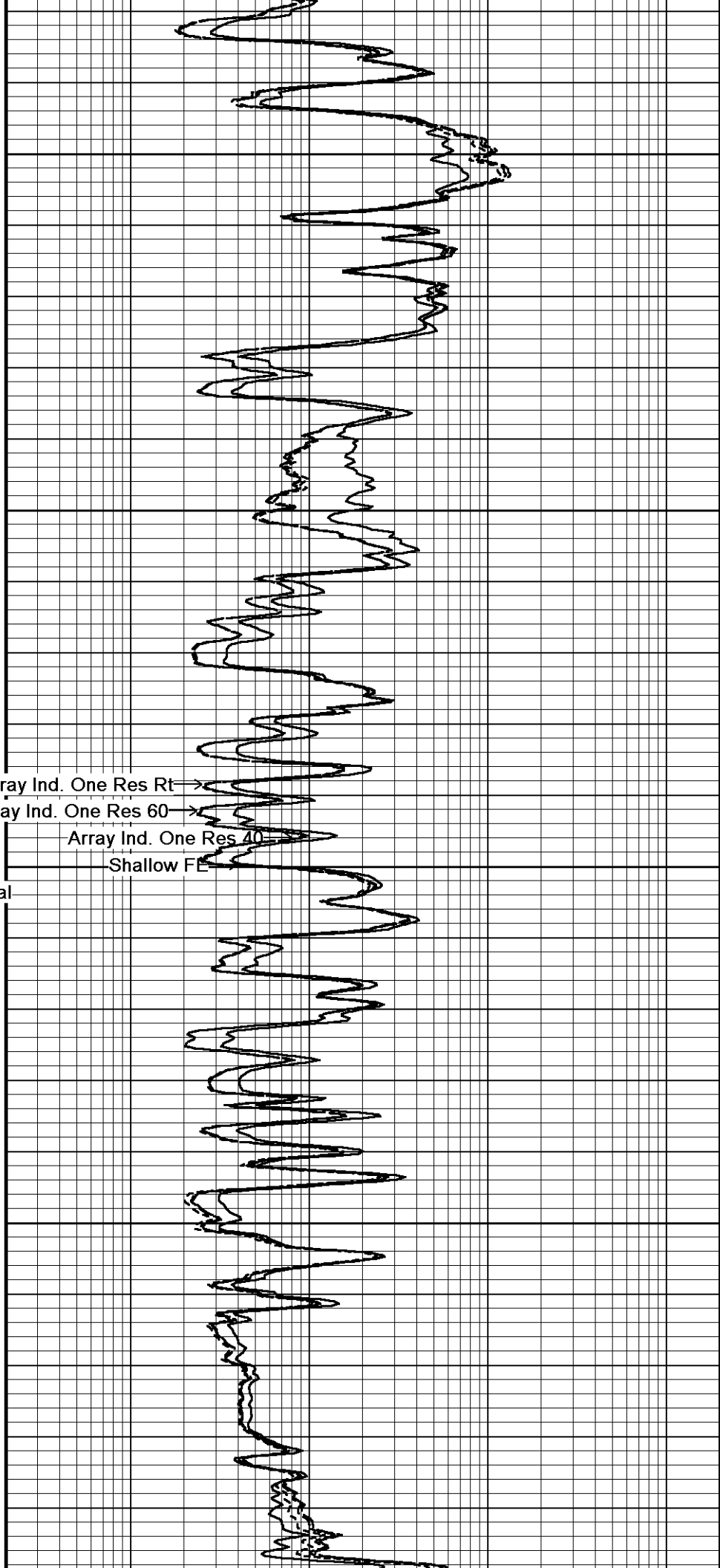
← Gamma Ray

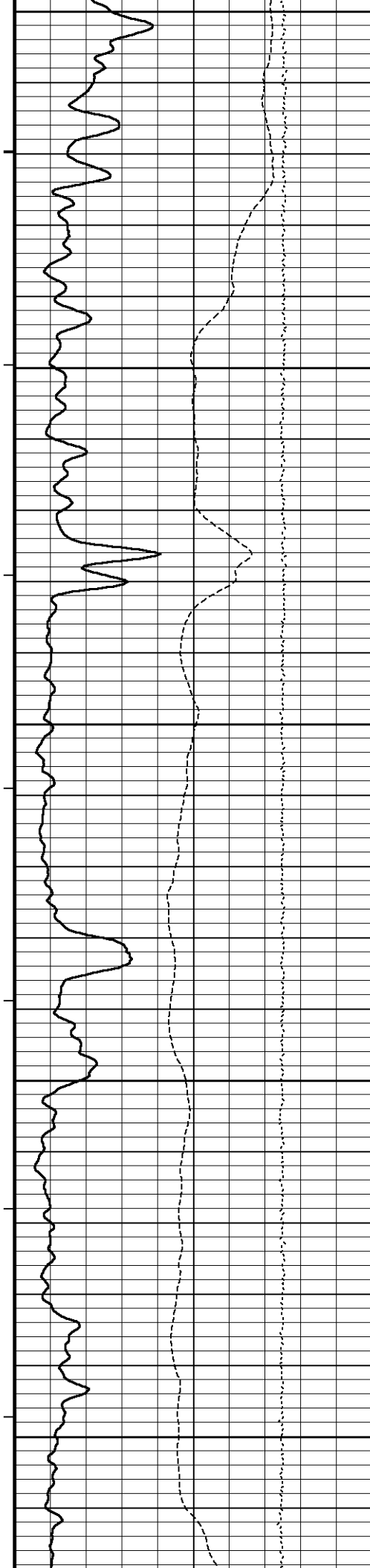
DST Uphole Tension →

116°

5000

117°





5050

117°

5100

118°

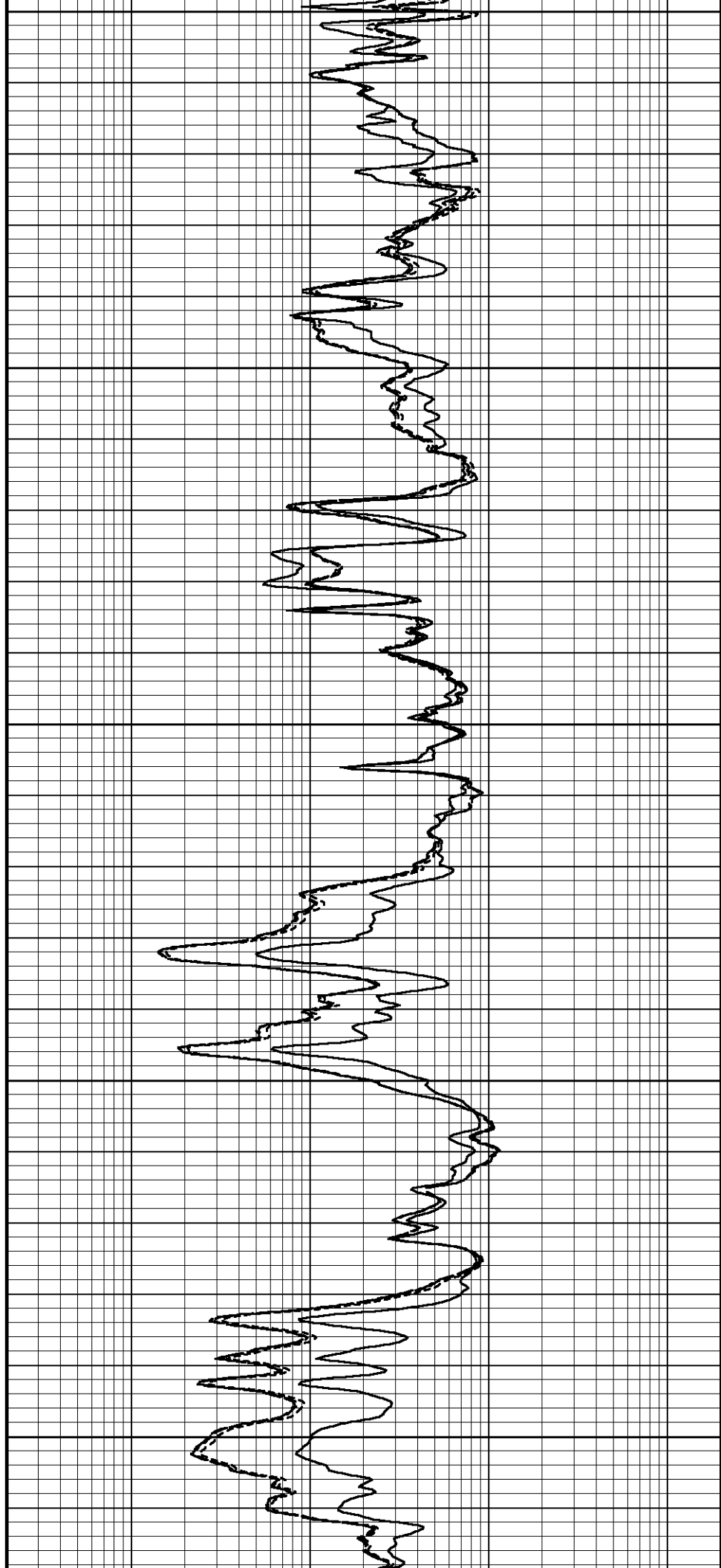
5150

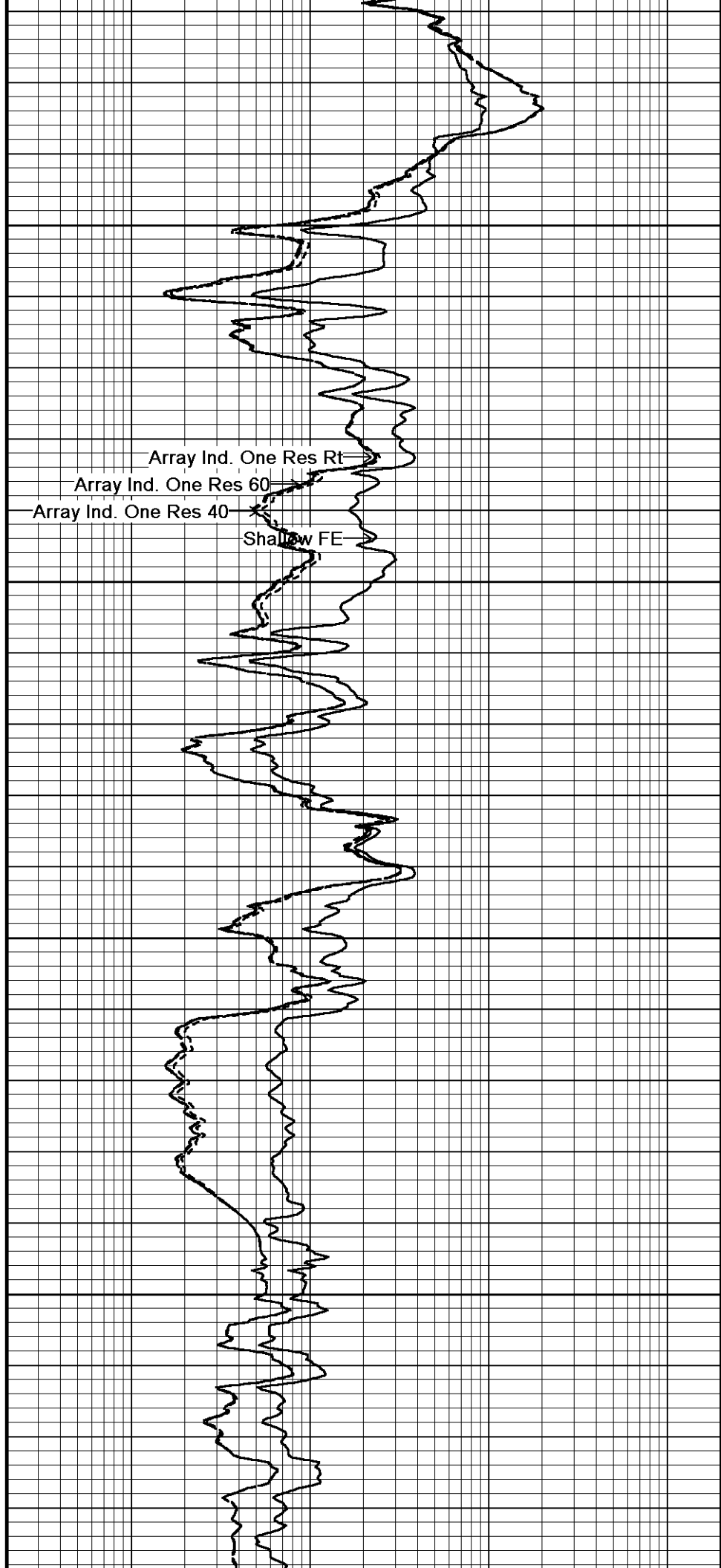
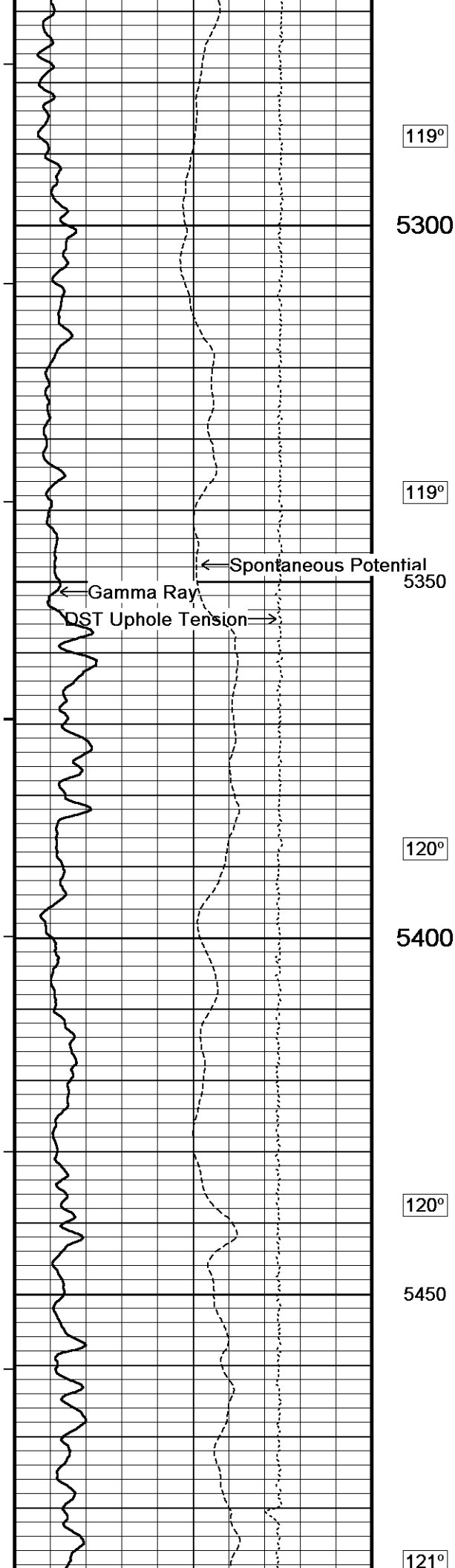
118°

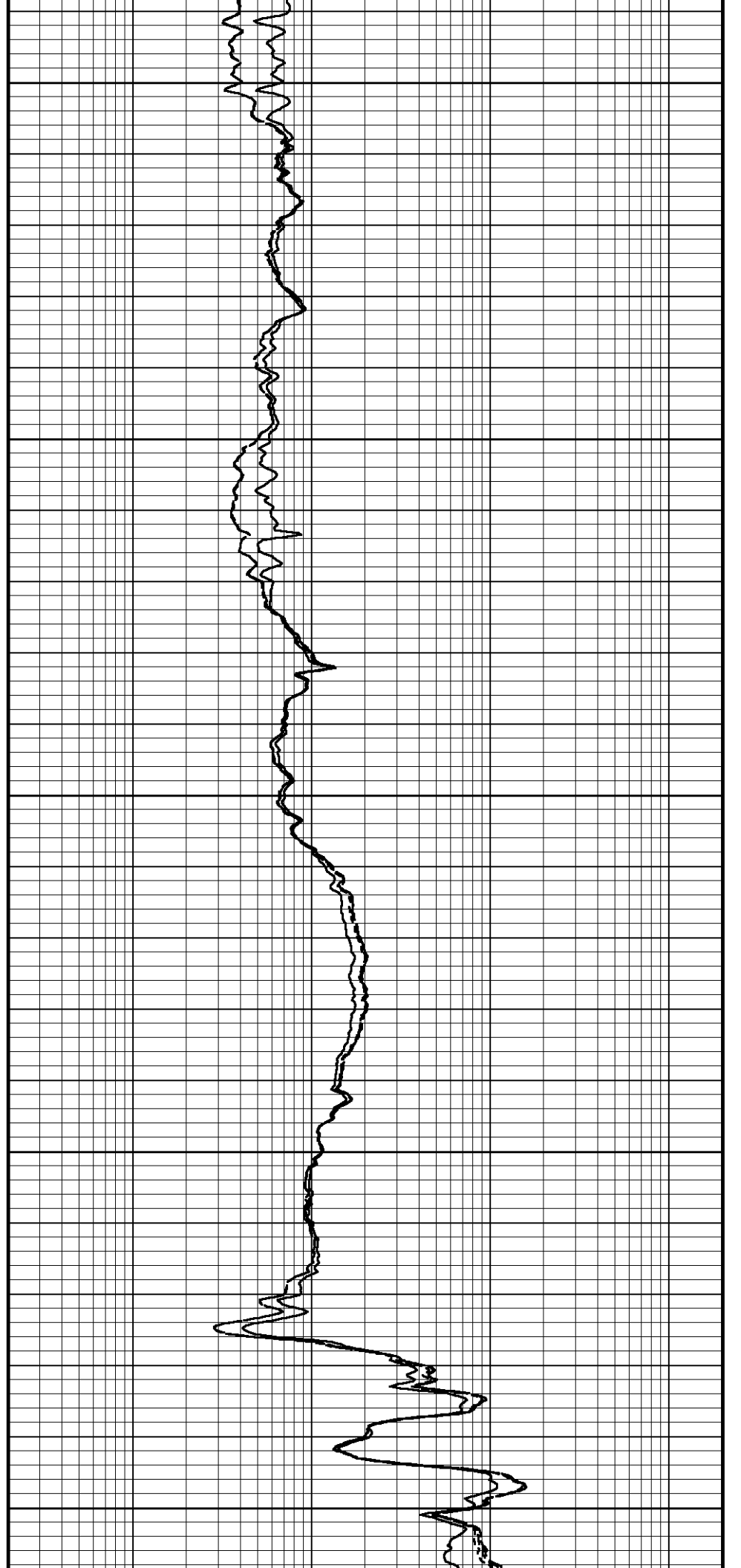
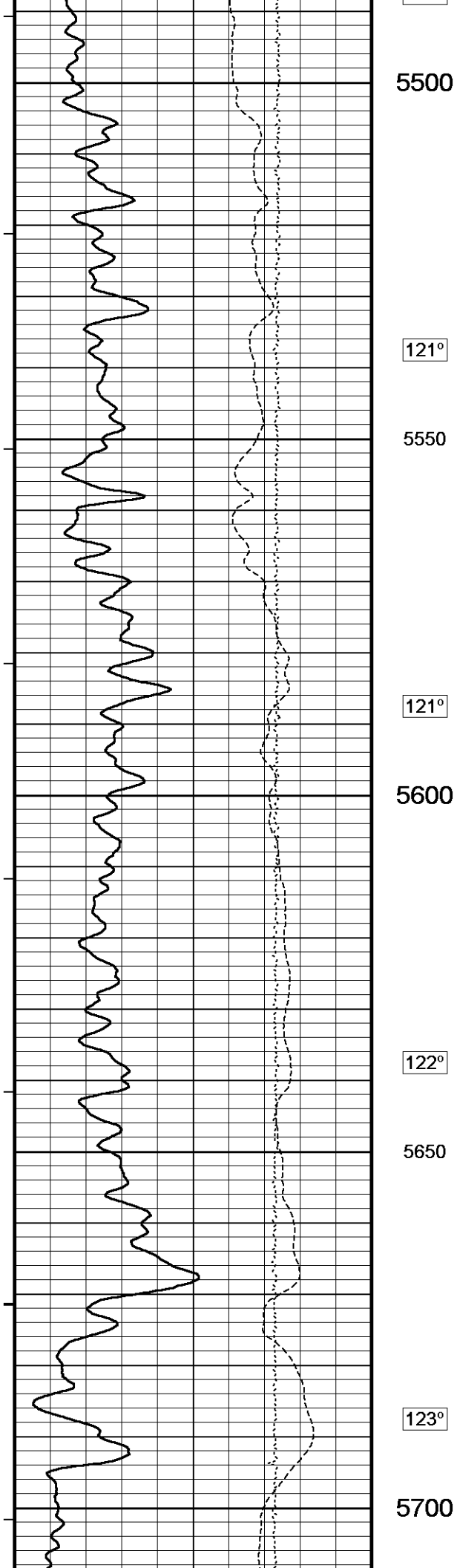
5200

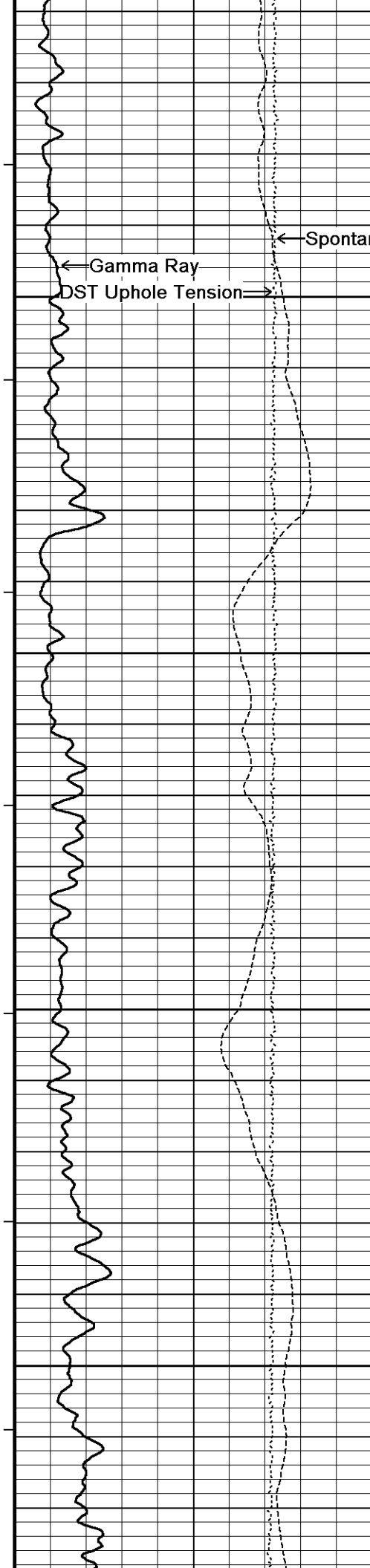
119°

5250









123°

← Spontaneous Potential

5750

123°

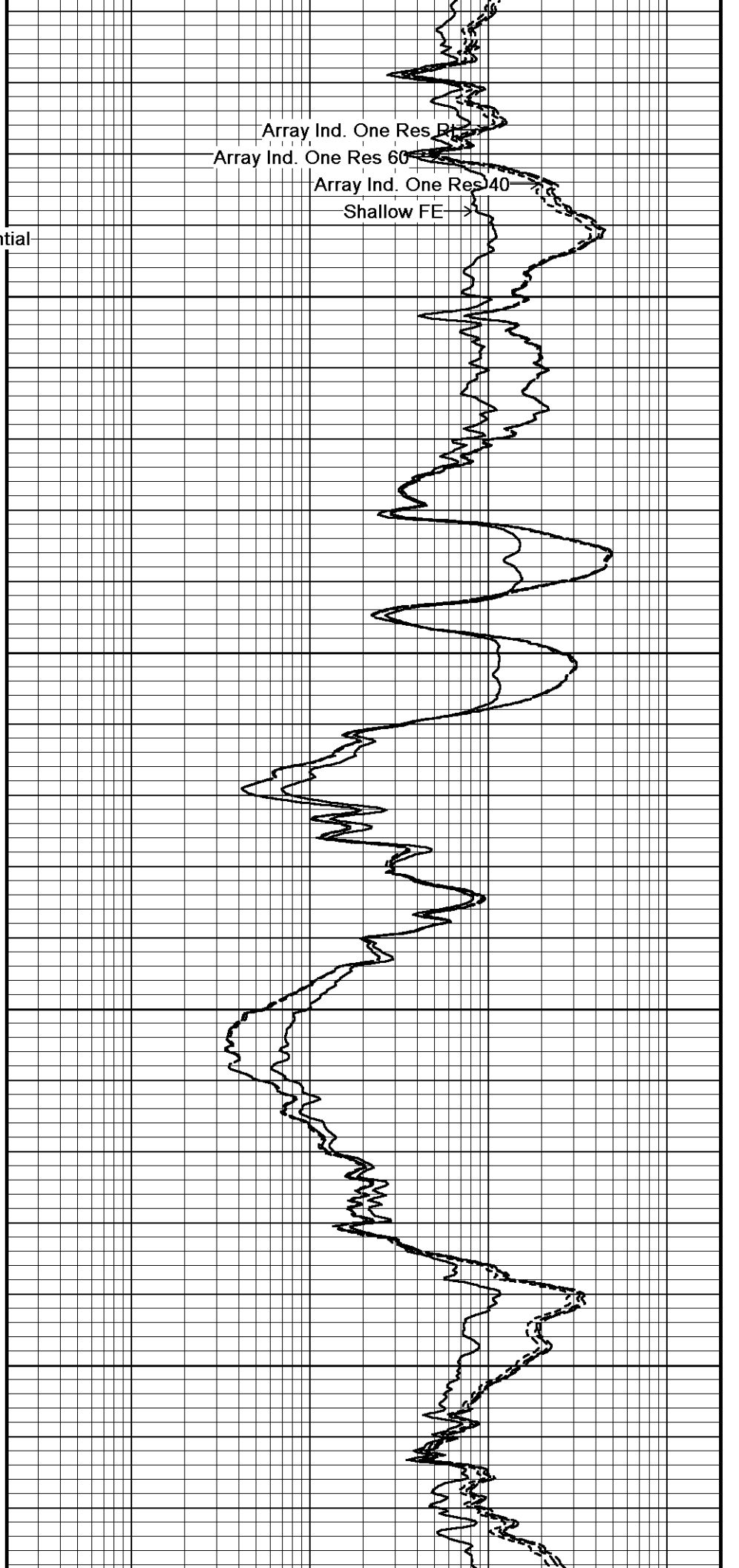
5800

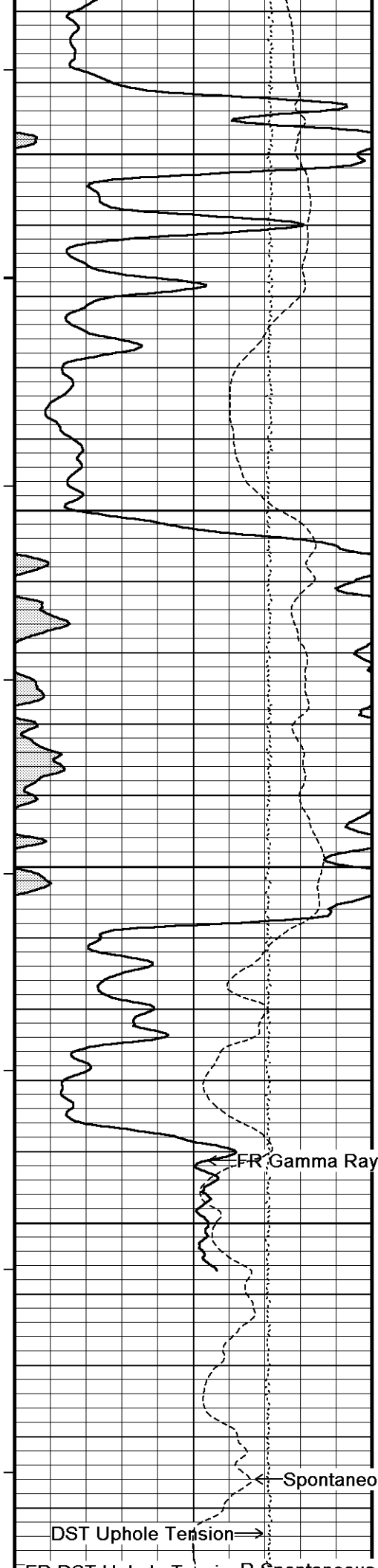
124°

5850

124°

5900





125°

5950

126°

6000

127°

6050

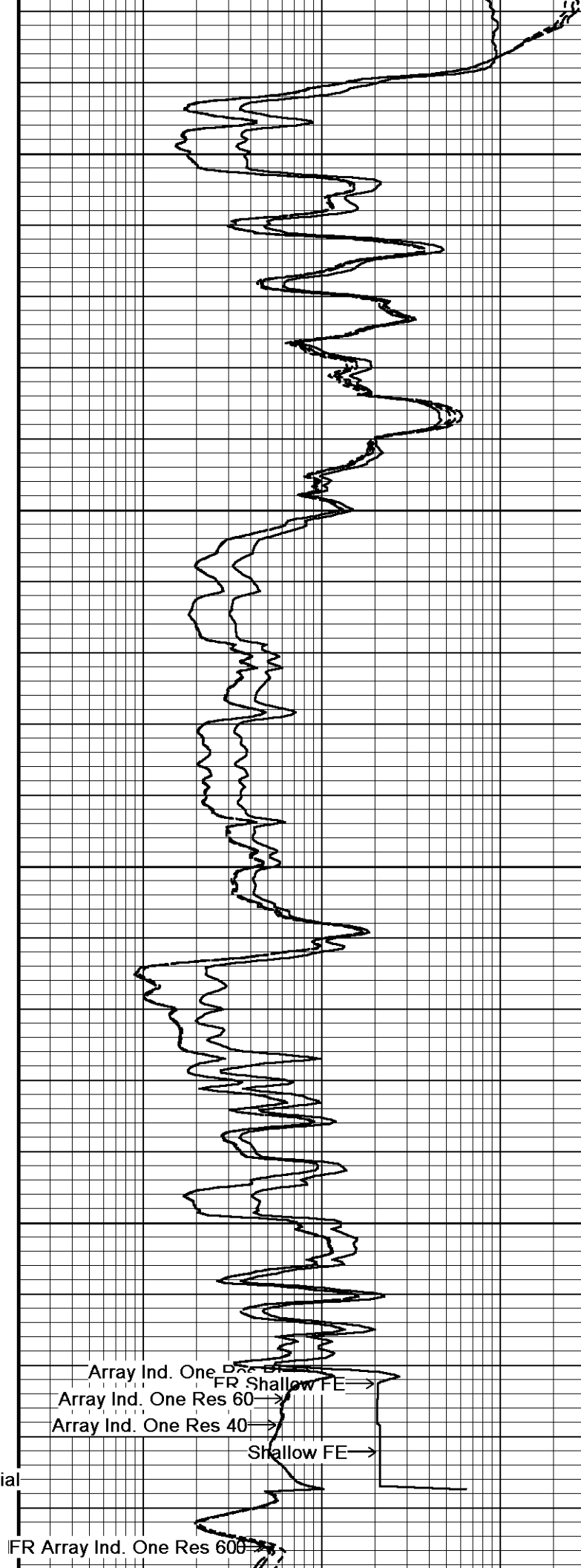
127°

6100

FR Gamma Ray

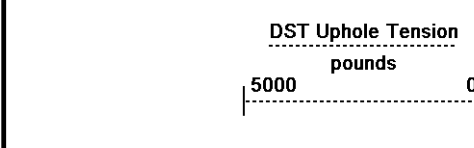
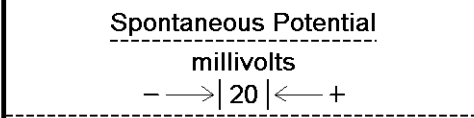
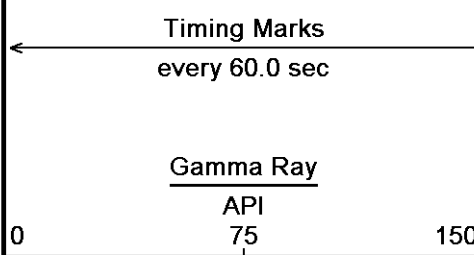
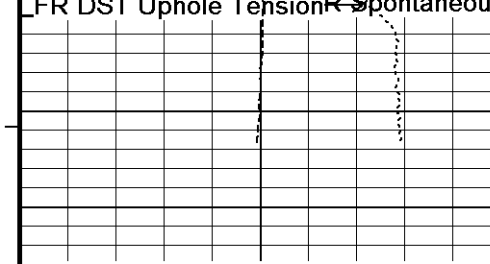
Spontaneous Potential

DST Uphole Tension



Array Ind. One Res 600
Array Ind. One Res 40
Array Ind. One Res 60
FR Shallow FE
Shallow FE

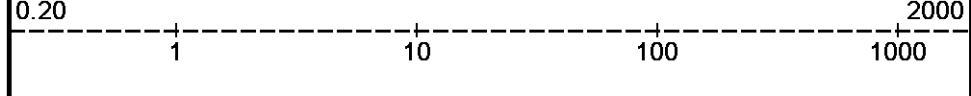
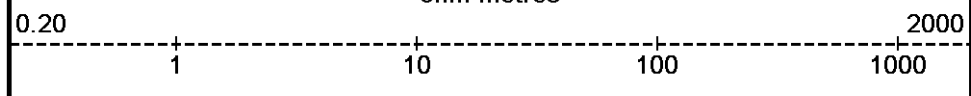
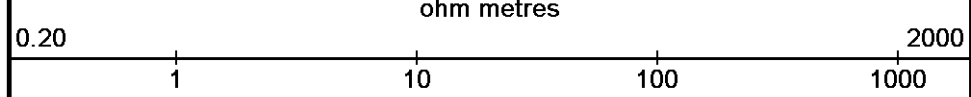
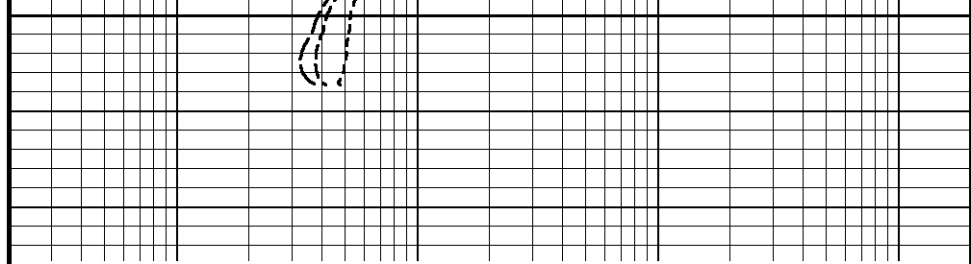
FR Array Ind. One Res 600



6174
Depth
In
Feet

Borehole
Temp in
deg F

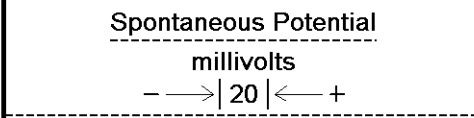
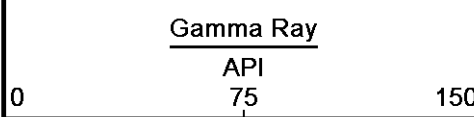
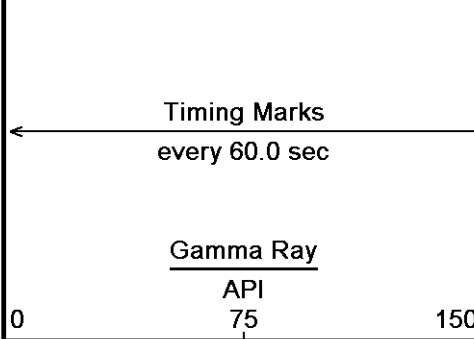
Replay
Scale
1:240



Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 11.03.4044\Data\Sandridge Luke SWD 1-10\Sandridge Luke SWD 1-10_002.dta
System Versions: Logged with 11.03.4044 Plotted with 11.03.4044
Plotted on 24-JAN-2012 11:55
Recorded on 24-JAN-2012 08:07

5 INCH MAIN PASS

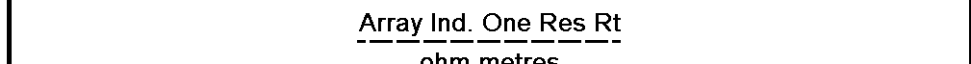
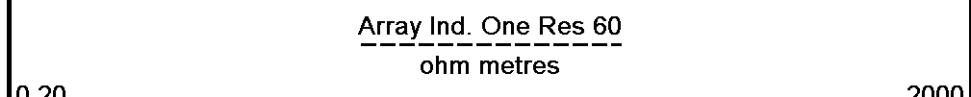
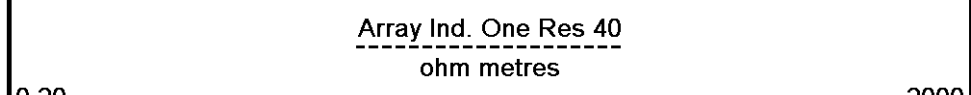
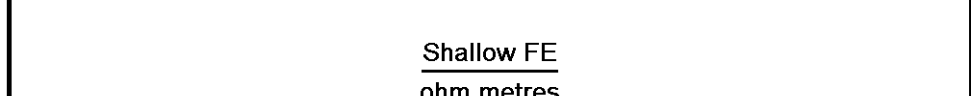
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 11.03.4044\Data\Sandridge Luke SWD 1-10\Sandridge Luke SWD 1-10_001.dta
System Versions: Logged with 11.03.4044 Plotted with 11.03.4044
Plotted on 24-JAN-2012 11:55
Recorded on 24-JAN-2012 07:46

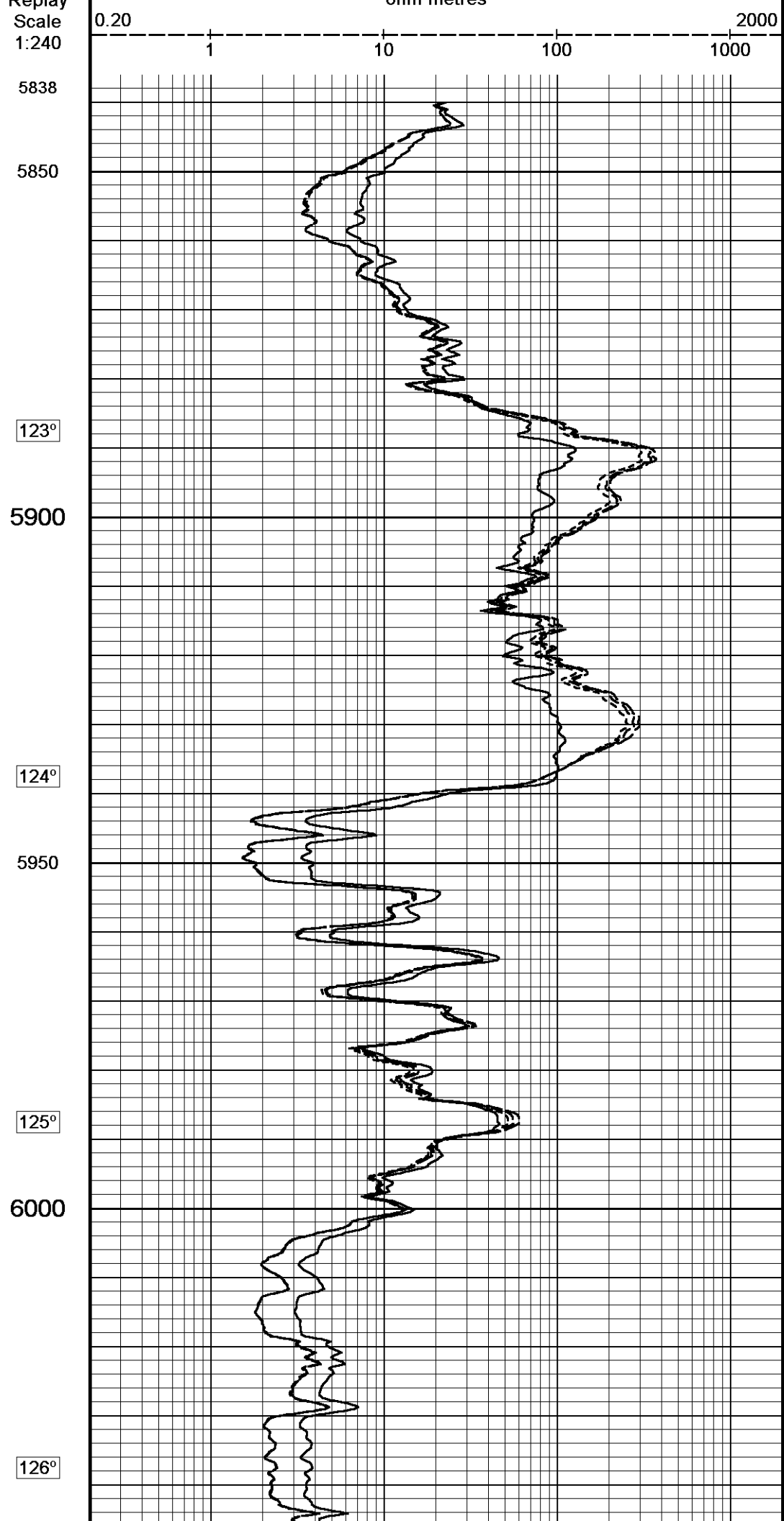
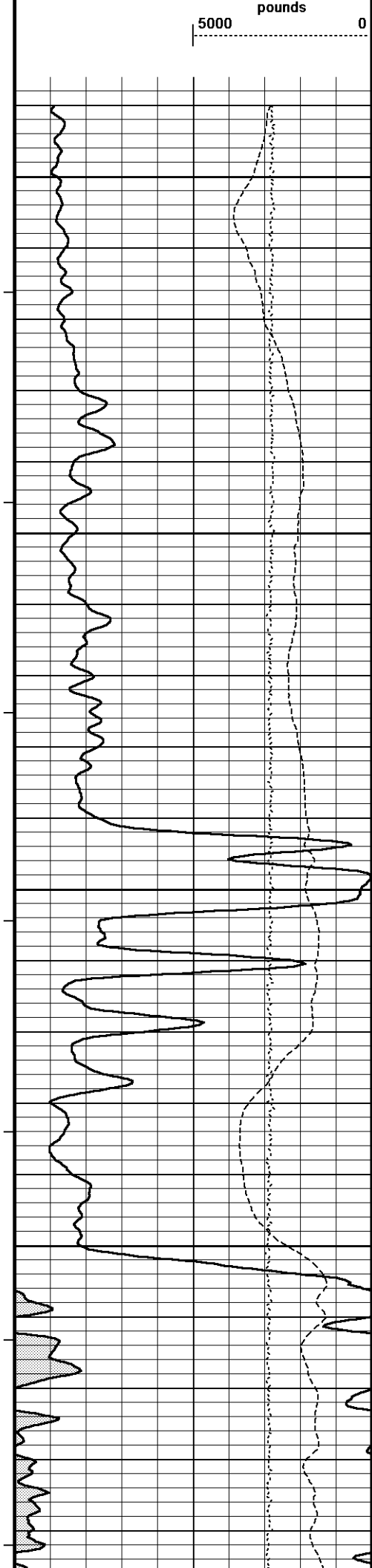


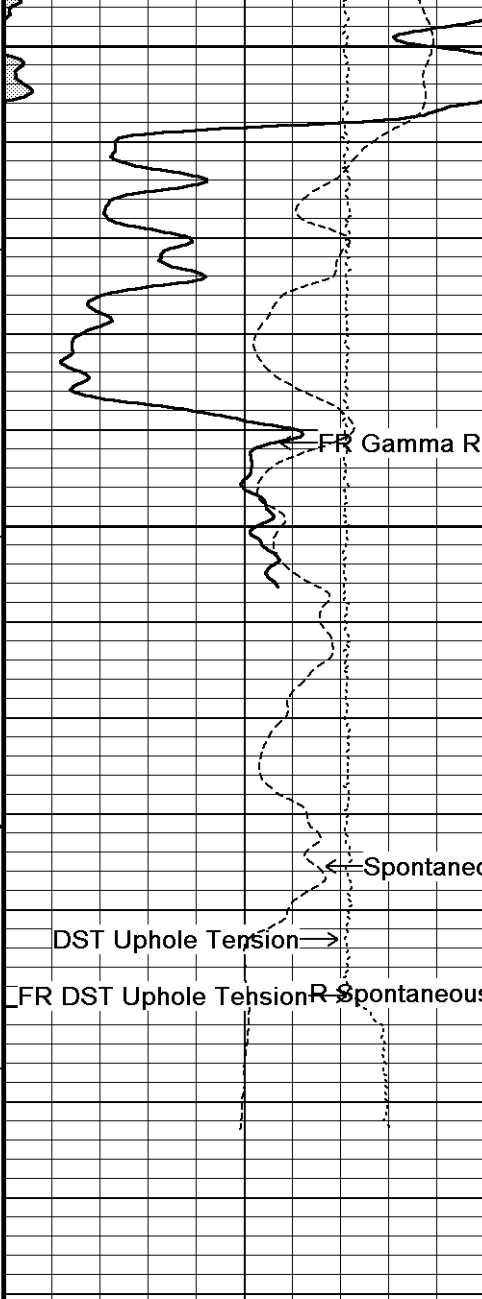
Depth
in
Feet

Borehole
Temp in
deg F

Replay







6050

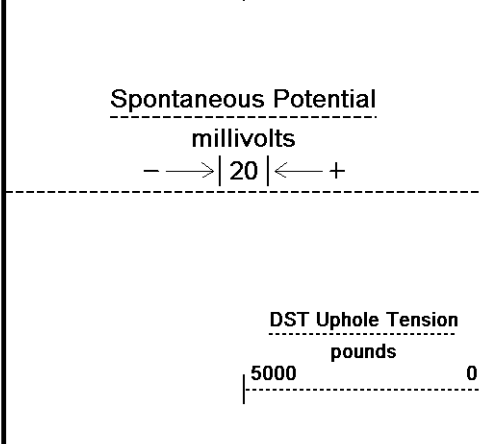
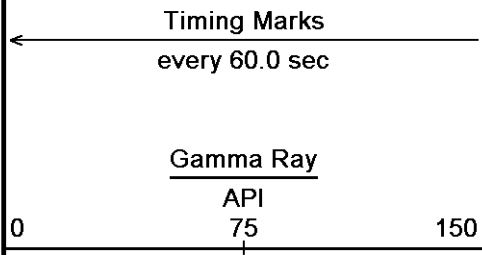
126°

6100

6150

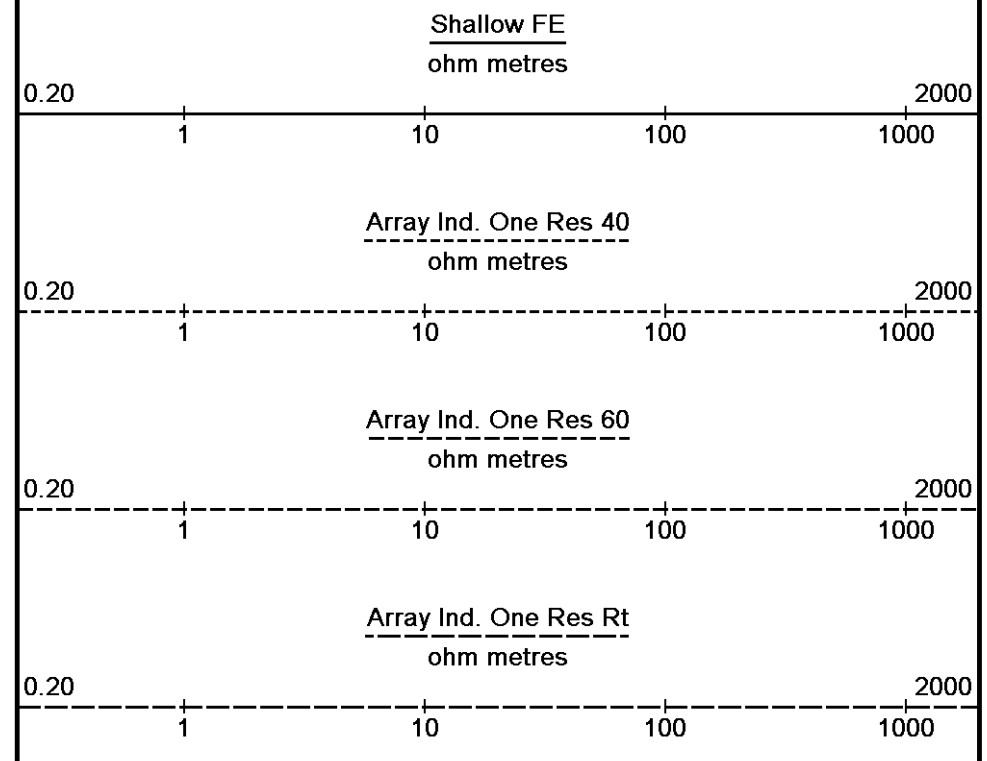
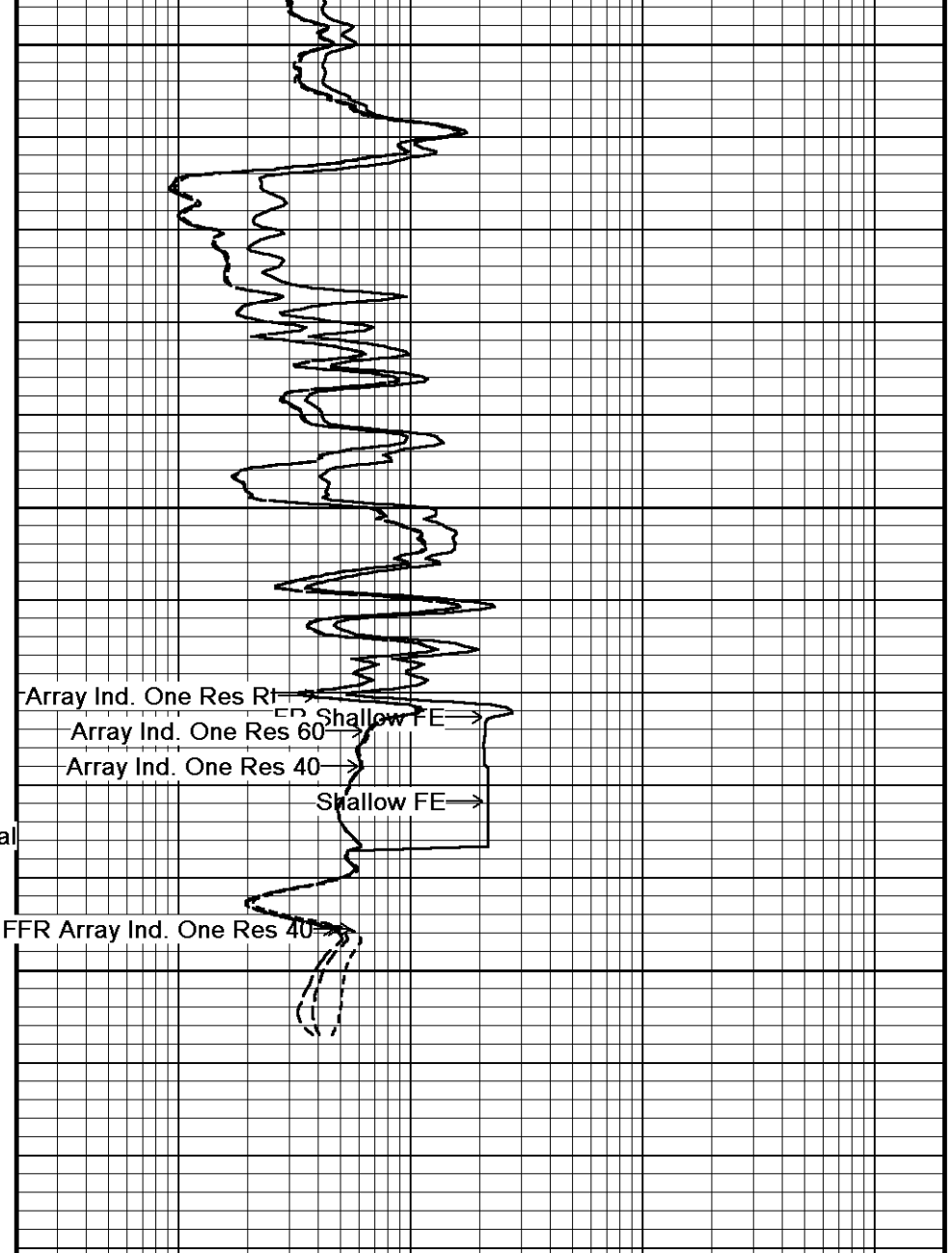
6180

Depth
in
Feet



Borehole
Temp in
deg F

Replay
Scale
1:240





5 INCH REPEAT PASS



BEFORE SURVEY CALIBRATION

C:\Minimus 11.03.4044\Data\Sandridge Luke SWD 1-10\Sandridge Luke SWD 1-10.dta

General Constants All 000

Last Edited on 23-JAN-2012,23:30

General Parameters

Mud Resistivity	0.620	ohm-metres
Mud Resistivity Temperature	78.000	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	7.625	inches
Caliper for Differential Caliper	Density 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

Down-hole Tension Calibration SMS 0

Field Calibration on 24-DEC-2011 19:14

Reading No	Measured	Calibrated (lbs)
1	13180.10	0.00
2	14049.87	408.00

Gamma Calibration MCG-D.K 442

Field Calibration on 23-JAN-2012 09:39

	Measured	Calibrated (API)
Background	74	50
Calibrator (Gross)	1145	775
Calibrator (Net)	1071	725

Gamma Constants MCG-D.K 442

Last Edited on 23-JAN-2012,23:14

Gamma Calibrator Number	grc38	
Mud Density	1.07	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

SP Calibration MCG-D.K 442

Field Calibration on 23-SEP-2011 14:10

	Measured	Calibrated (mV)
Reference 1	100.3	100.0
Reference 2	-98.9	-100.0

High Resolution Temperature Calibration MCG-D.K 442

Field Calibration on 02-DEC-2011,12:34

	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 25-SEP-2011,21:25

Pre-filter Length	11
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Caliper Calibration MML-A 4

Base Calibration on 13-JAN-2012 10:16

Field Calibration on 23-JAN-2012 09:35

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	15074	5.96

2	18576	7.98
3	22042	9.95
4	25863	11.91
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.00	5.98

Micro Normal and Micro Inverse Calibration MML-A 4

Base Calibration on 13-JAN-2012 10:09
Field Check on 23-JAN-2012 09:33

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.2	60.2	2.6	12.8
Micro Inverse	15.7	78.4	1.7	8.4
Channel	Base Check (ohm-m)		Field Check (ohm-m)	
Micro Normal	32.1		32.1	
Micro Inverse	16.3		16.3	

Micro Normal and Micro Inverse Constants MML-A 4

Last Edited on 23-JAN-2012,09:33

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.B 65

Base Calibration on 13-JAN-2012 14:05
Field Check on 23-JAN-2012 09:44

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	3037	95	3714	110
	31.990		33.764	
Field Calibrator at Base			Calibrated (cps)	
			1687	2411
Ratio			0.700	
Field Check			Calibrated (cps)	
			1680	2424
Ratio			0.693	

Neutron Constants MDN-A.B 65

Last Edited on 23-JAN-2012,23:15

Neutron Source Id	14035B	
Neutron Jig Number	5824NE	
Epithermal Neutron	No	
Caliper Source for Processing	Bit Size	
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	Constant Value	
Formation Pressure	0.00	kpsi
Temperature Source	Constant Value	
Temperature	68.00	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-A.A 55

Base Calibration on 13-JAN-2012 10:22
Field Check on 23-JAN-2012 09:25

Base Calibration

Reference	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	954.5	126.8
Base Check		280.7

Field Check

280.7

FE Constants MFE-A.A 55

Last Edited on 23-JAN-2012,23:15

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-C.K 330

Last Edited on 23-JAN-2012,23:15

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
Sonic 2 Despiker	N/A

High Resolution Temperature Calibration MAI-A.A 45

Field Calibration on 12-JAN-2012,13:36

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	100.00	100.00

High Resolution Temperature Constants MAI-A.A 45

Last Edited on 12-JAN-2012,11:13

Pre-filter Length 11

Induction Calibration MAI-A.A 45

Base Calibration on 12-JAN-2012,13:34

Field Check on 23-JAN-2012 09:24

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 79.4 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High

1	0.0	0.0	18.4	3850.7
2	0.0	0.0	31.7	3628.7
3	0.0	0.0	28.7	3048.9
4	0.0	0.0	18.3	2078.8

Deep 0.0 0.0 16.1 1910.9

Medium 0.0 0.0 42.5 4059.9

Shallow 0.0 0.0 49.6 5482.1

Array Temperature 0.0 65.4 Deg F

Induction Constants MAI-A.A 45

Last Edited on 23-JAN-2012,23:15

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

DOWNHOLE EQUIPMENT

C:\Minimus 11.03.4044\Data\Sandridge Luke SWD 1-10\Sandridge Luke SWD 1-10.dta

Compact Comms Gamma
MCG-D.K 442 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log
MML-A 4 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

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

Compact Density/Caliper
MPD-B 64 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

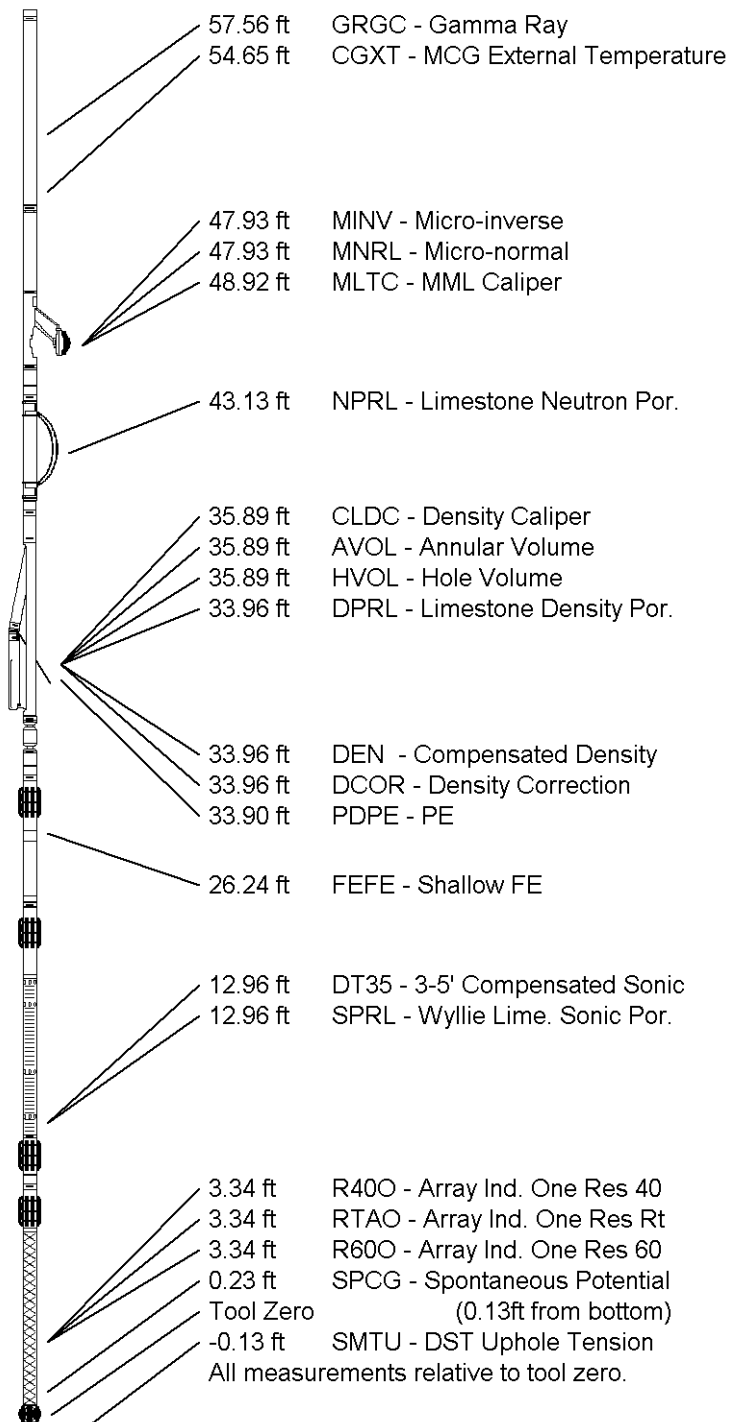
SKJ-D.A Compact Knuckle Joint
SKJ-D.A 37 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-C.K 330 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: 62.84 ft Weight: 480.6 lb



COMPANY

SANDRIDGE EXPL. & PRODUCTION LLC.

WELL

LUKE SWD #1-10

FIELD

SIX MOONS FIELD AREA

PROVINCE/COUNTY

COMANCHE

COUNTRY/STATE

U.S.A. / KANSAS

Elevation Kelly Bushing	2038.00	feet
Elevation Drill Floor	2036.00	feet
Elevation Ground Level	2026.00	feet

First Reading	6146.00	feet
Depth Driller	6160.00	feet
Depth Logger	6149.00	feet

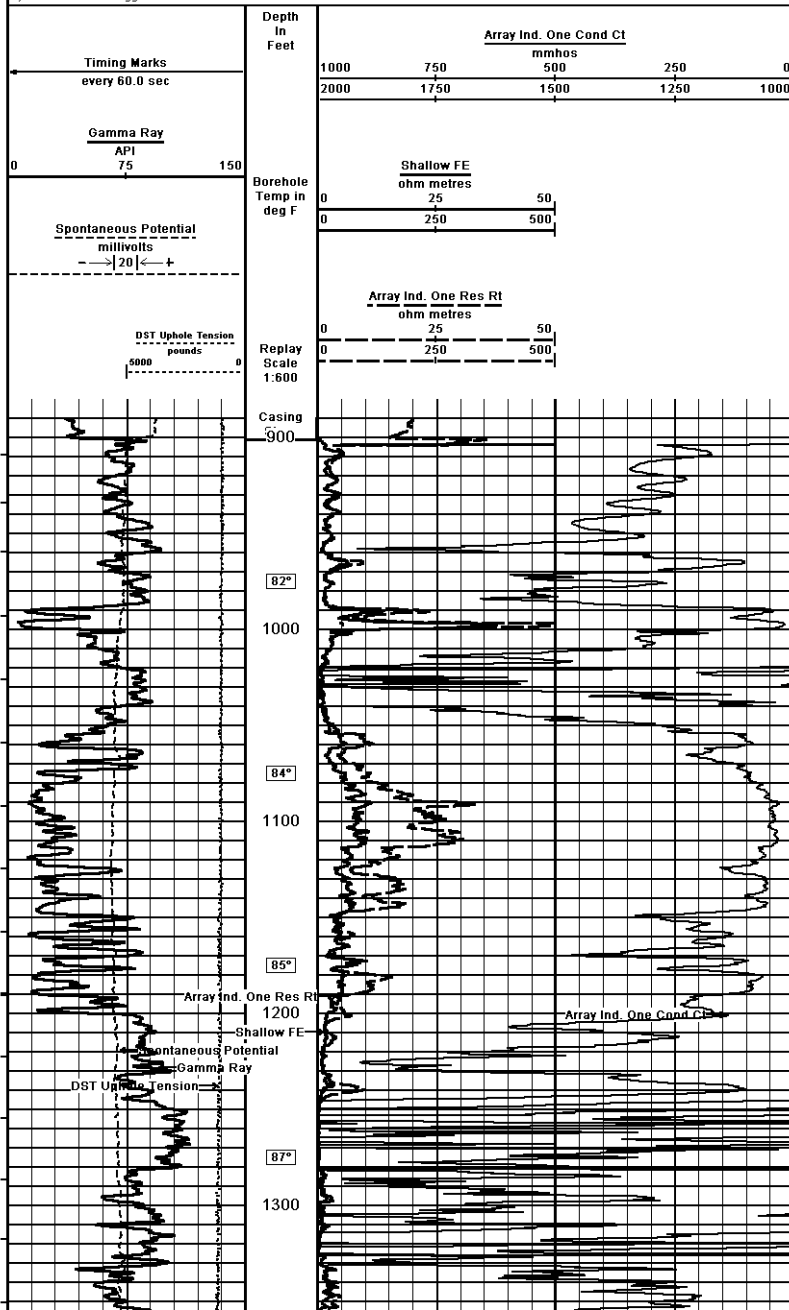


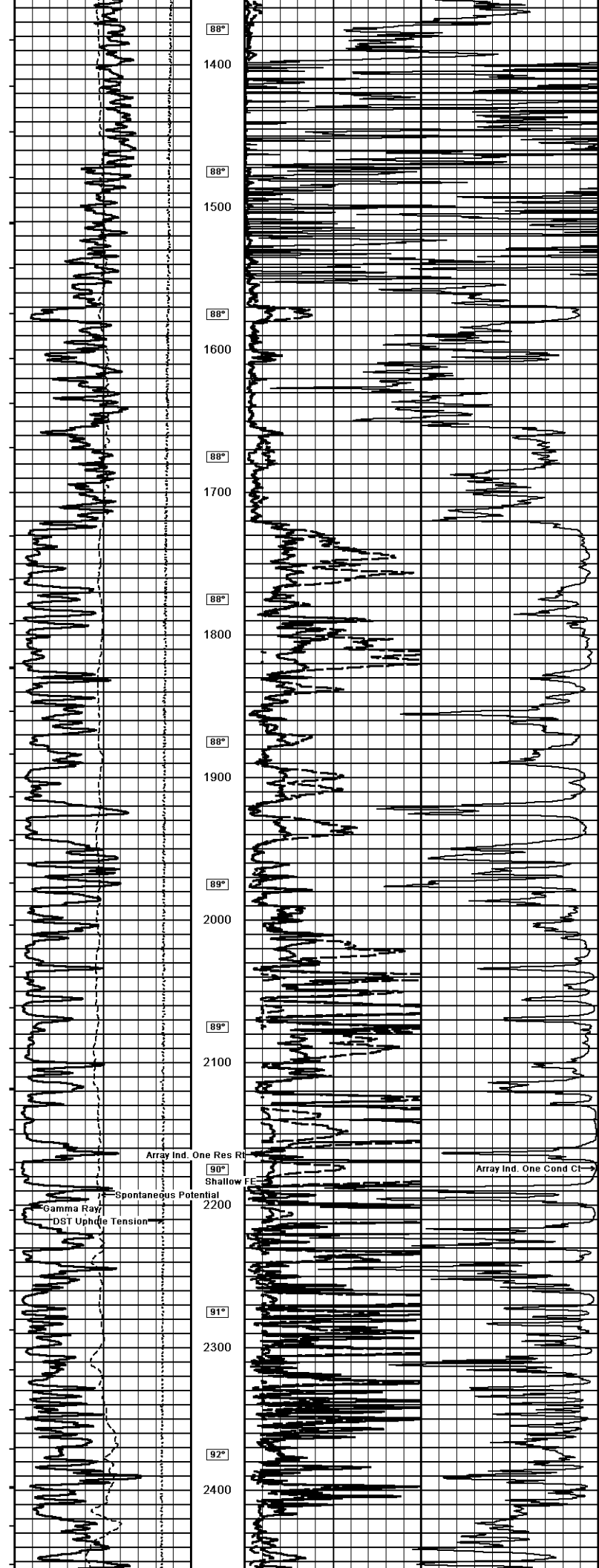
ARRAY INDUCTION

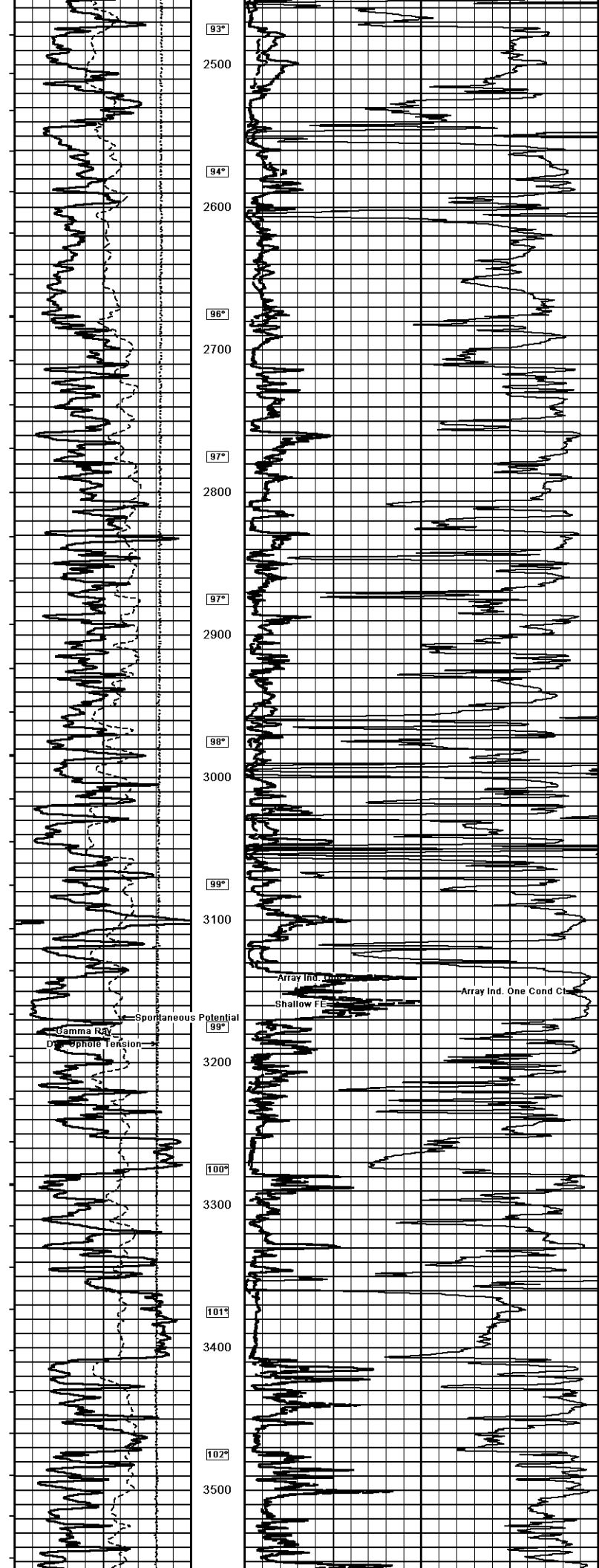
SHALLOW FOCUSED

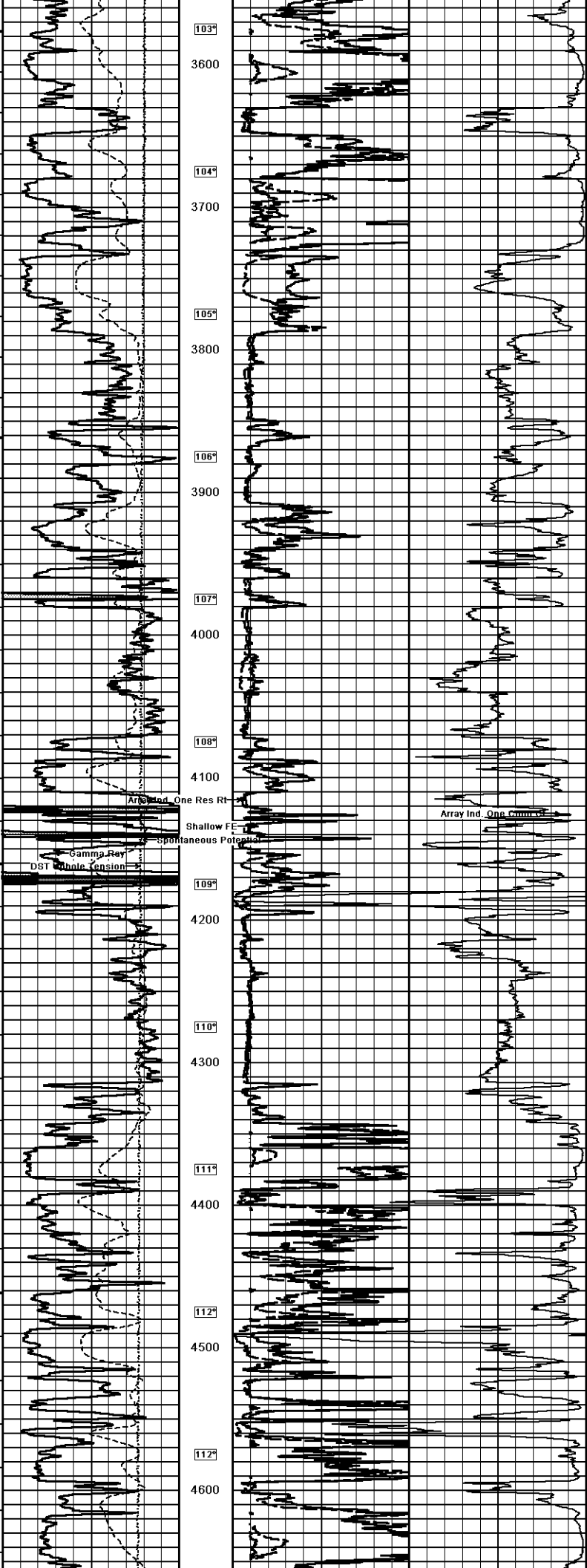


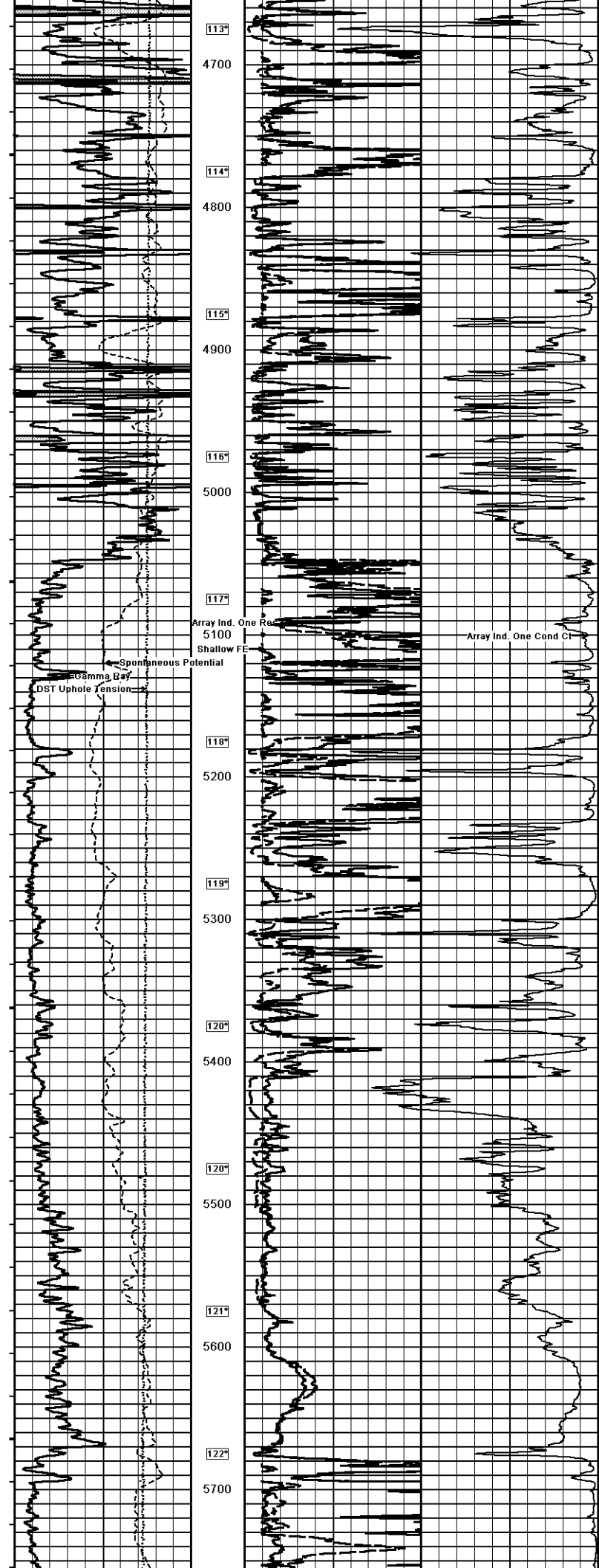
1 INCH MAIN PASS	
Depth Based Data - Maximum Sampling Increment 10.0cm	Plotted on 24-JAN-2012 11:55
Filename: C:\Minus 11.03.404\data\Sandridge Luke SWD 1-10\Sandridge Luke SWD 1-10_002.dta	Recorded on 24-JAN-2012 08:07
System Versions: Logged with 11.03.4044 Plotted with 11.03.4044	

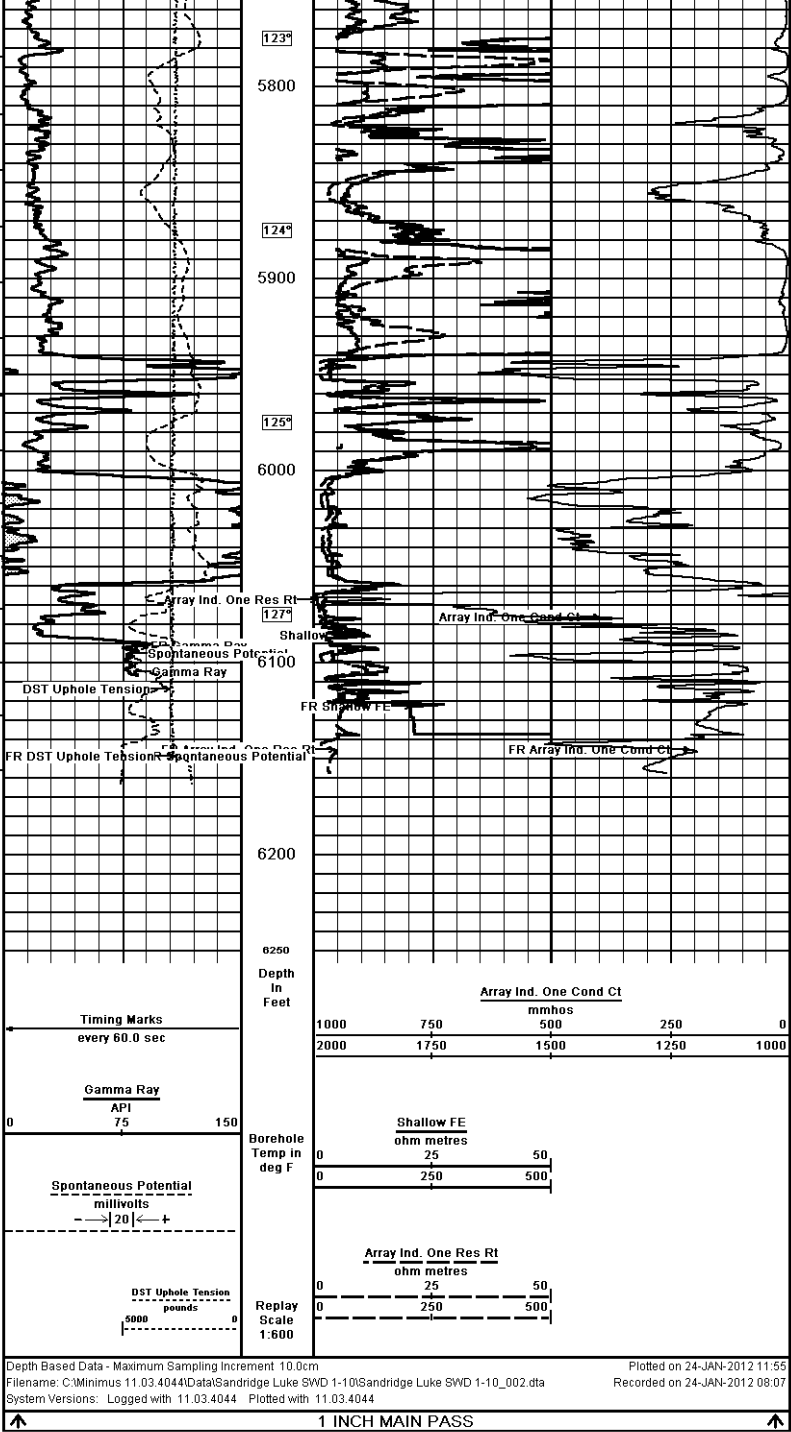












COMPANY		SANDRIDGE EXPL. & PRODUCTION LLC.			
WELL		LUKE SWD #1-10			
FIELD		SIX MOONS FIELD AREA			
PROVINCE/COUNTY		COMANCHE			
COUNTRY/STATE		U.S.A. / KANSAS			
Elevation Kelly Bushing	2038.00	feet	First Reading	6146.00	feet
Elevation Drill Floor	2036.00	feet	Depth Driller	6160.00	feet
Elevation Ground Level	2026.00	feet	Depth Logger	6149.00	feet
 Weatherford			ARRAY INDUCTION		
			SHALLOW FOCUSED		
			ELECTRIC LOG		
					