

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

COMPANY				GRAND MESA OPERATING COMPANY			
WELL				GLENNIS 4-27			
FIELD				WILDCAT			
PROVINCE/COUNTY				GOVE			
COUNTRY/STATE				U.S.A. / KANSAS			
LOCATION				757' FNL & 2013' FEL			
SEC	TWP	RGE	Other Services		MML		
27	13S	31W	MPD/MDN				
API Number		15-063-22054		MSS			
Permit Number							
Permanent Datum GL, Elevation 2860 feet							
Log Measured From KB							
Drilling Measured From KB							
Date	12-NOV-2012						
Run Number	ONE						
Service Order	3538947						
Depth Driller	4630.00			feet			
Depth Logger	4630.00			feet			
First Reading	4627.00			feet			
Last Reading	219.00			feet			
Casing Driller	220.00			feet			
Casing Logger	219.00			inches			
Bit Size	7.875						
Hole Fluid Type	CHEMICAL			lb/USg			
Density / Viscosity	9.30 lb/USg			54.00 CP			
PH / Fluid Loss	10.00			10.00			
Sample Source	FLOWLINE						
Rm @ Measured Temp	1.29 @ 64.0			ohm-m			
Rmf @ Measured Temp	1.03 @ 64.0			ohm-m			
Rmc @ Measured Temp	1.55 @ 64.0			ohm-m			
Source Rmf / Rmc	CALC		CALC				
Rm @ BHT	0.72 @120.0			ohm-m			
Time Since Circulation	6 HOURS						
Max Recorded Temp	120.00			deg F			
Equipment / Base	13057			LIB			
Recorded By	ADAM SILL						
Witnessed By	KENT MATSON						
JOB #	LB12-296						

BOREHOLE RECORD

Last Edited: 12-NOV-2012 01:36

Bit Size inches	Depth From feet	Depth To feet
7.875	211.00	4630.00

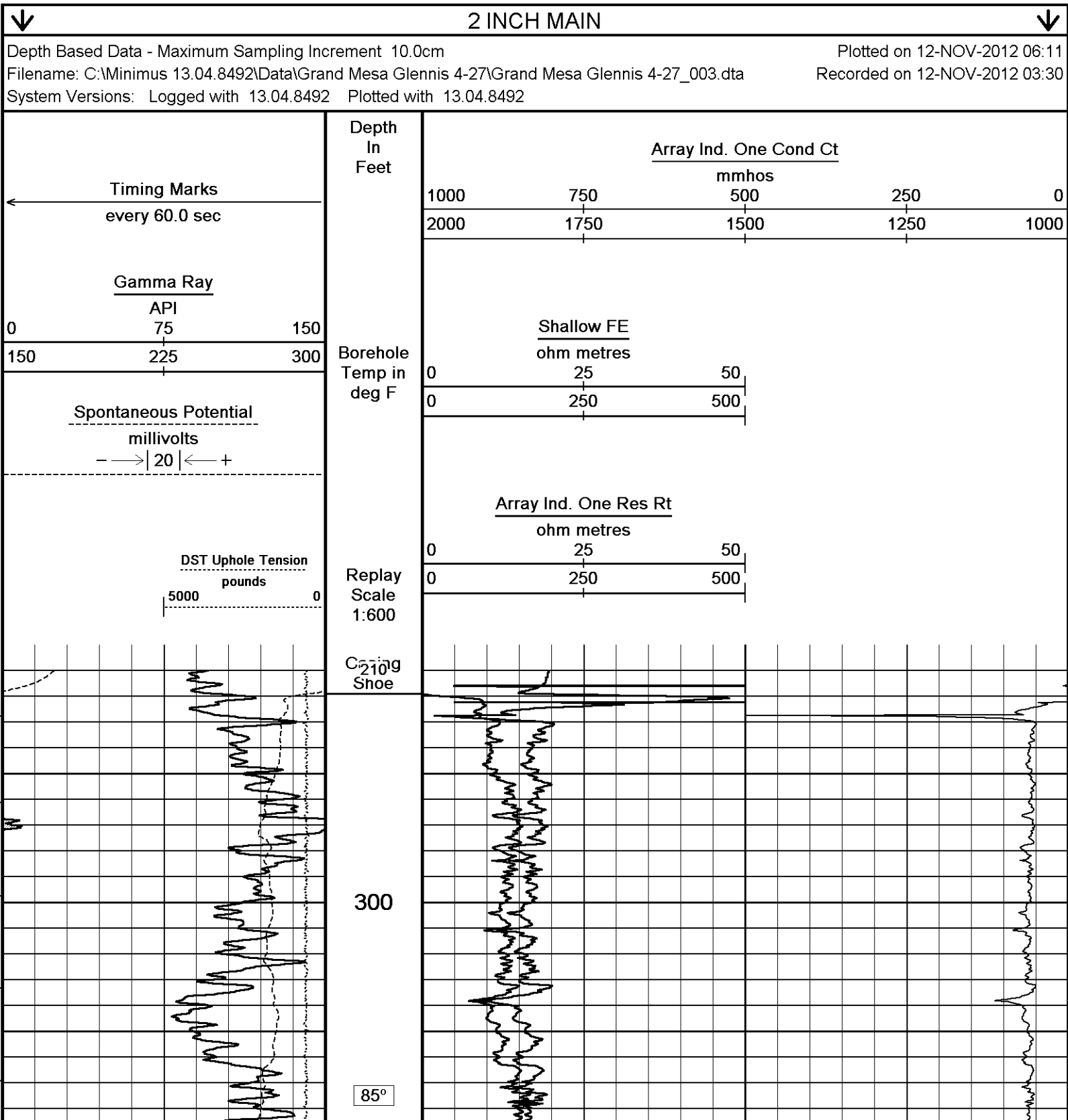
CASING RECORD

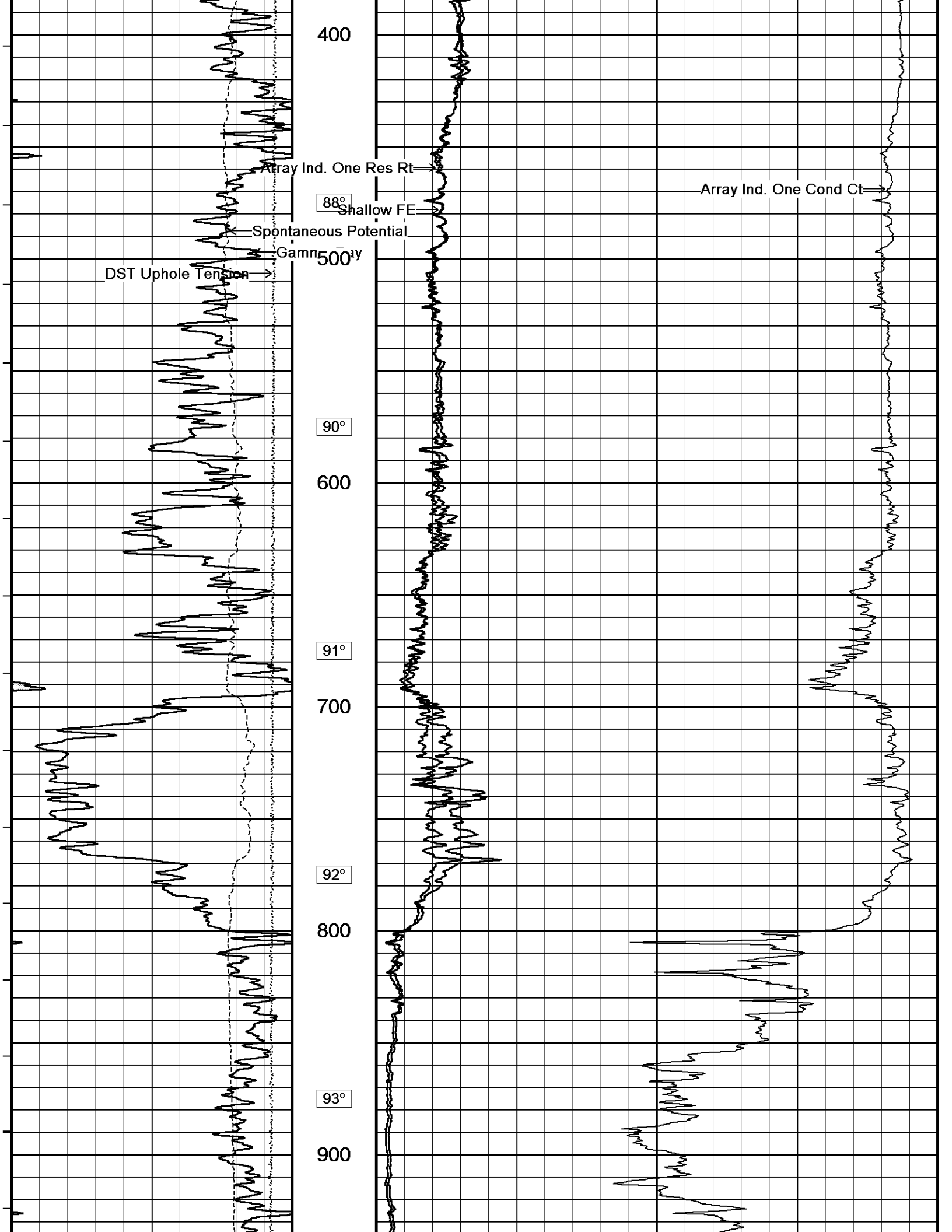
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	211.00	24.00

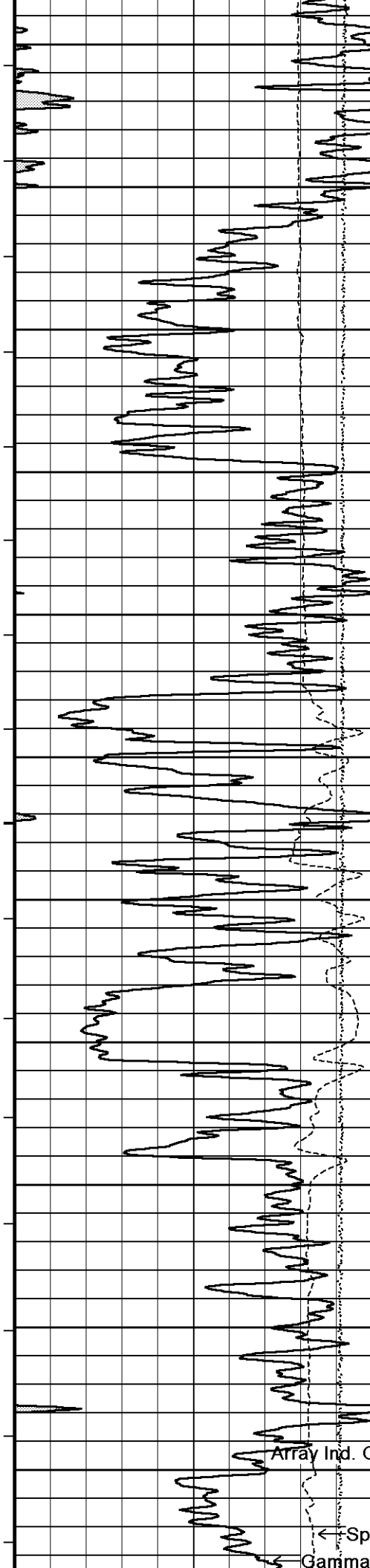
REMARKS

- SOFTWARE ISSUE: WLS 13.04.8492.
- MCG, MML, MDN, MPD, MFE, MSS, MAI RAN IN COMBINATION.
 - HARDWARE: DUAL BOWSPRING 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: 1893 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3630 FEET: 235 CU. FT.

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.







94°

1000

95°

1100

96°

1200

96°

1300

97°

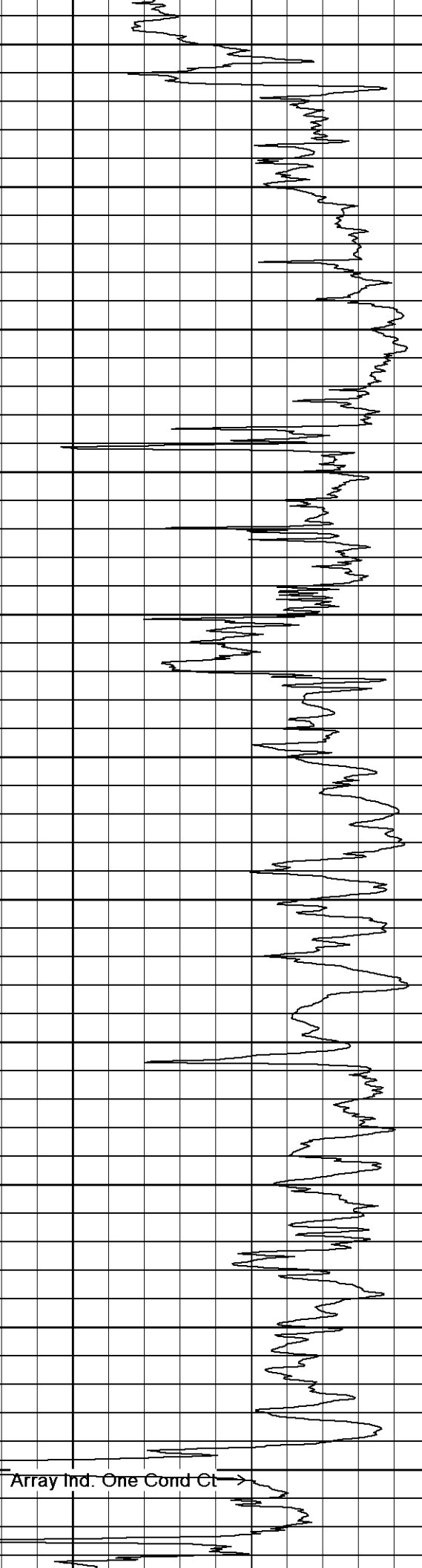
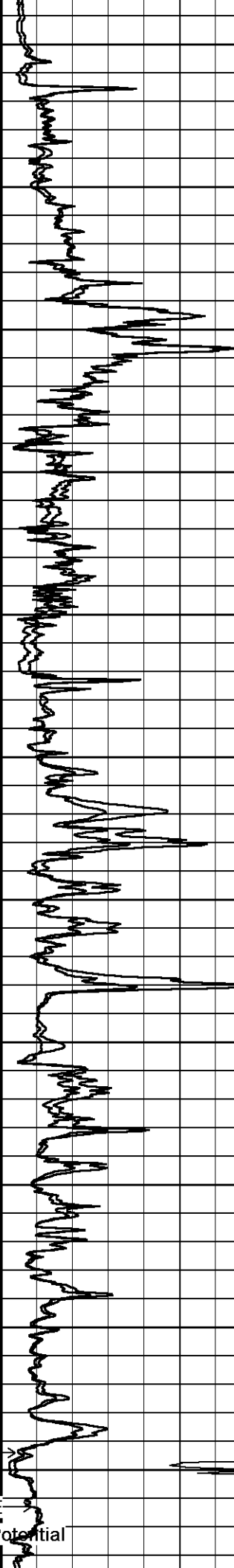
1400

Array Ind. One Res Rt →

Shallow FE

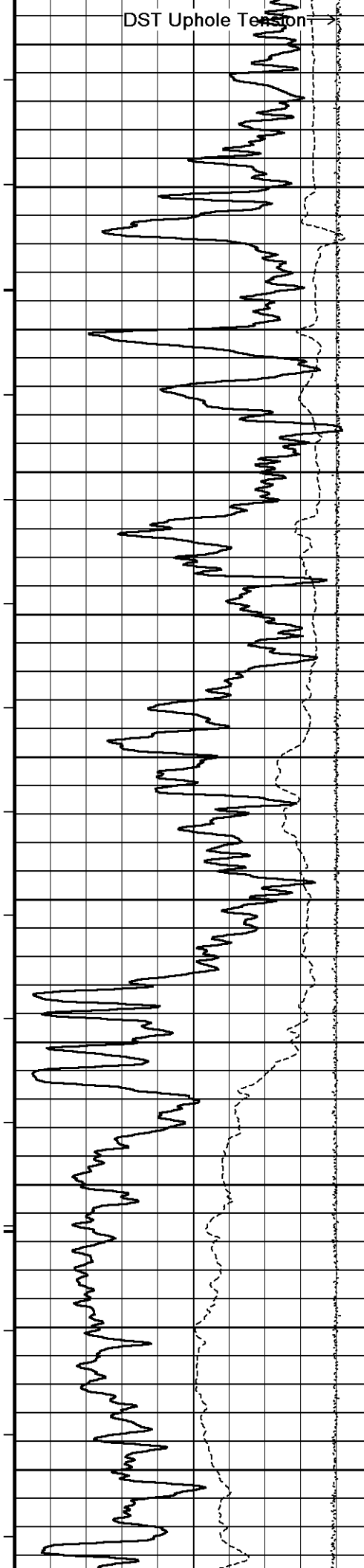
← Spontaneous Potential

Gamma Ray



Array Ind. One Cond Ct →

DST Uphole Tension



1500

99°

1600

100°

1700

101°

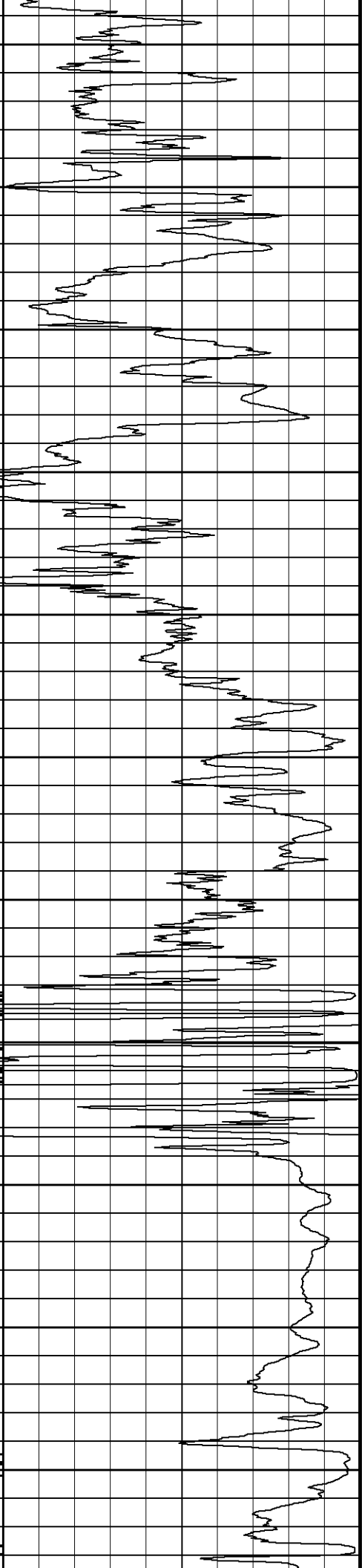
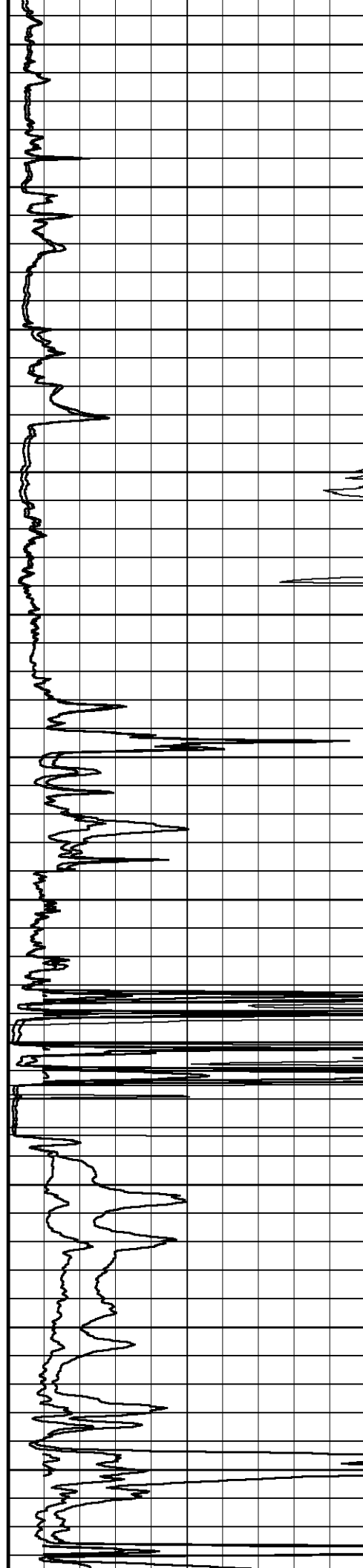
1800

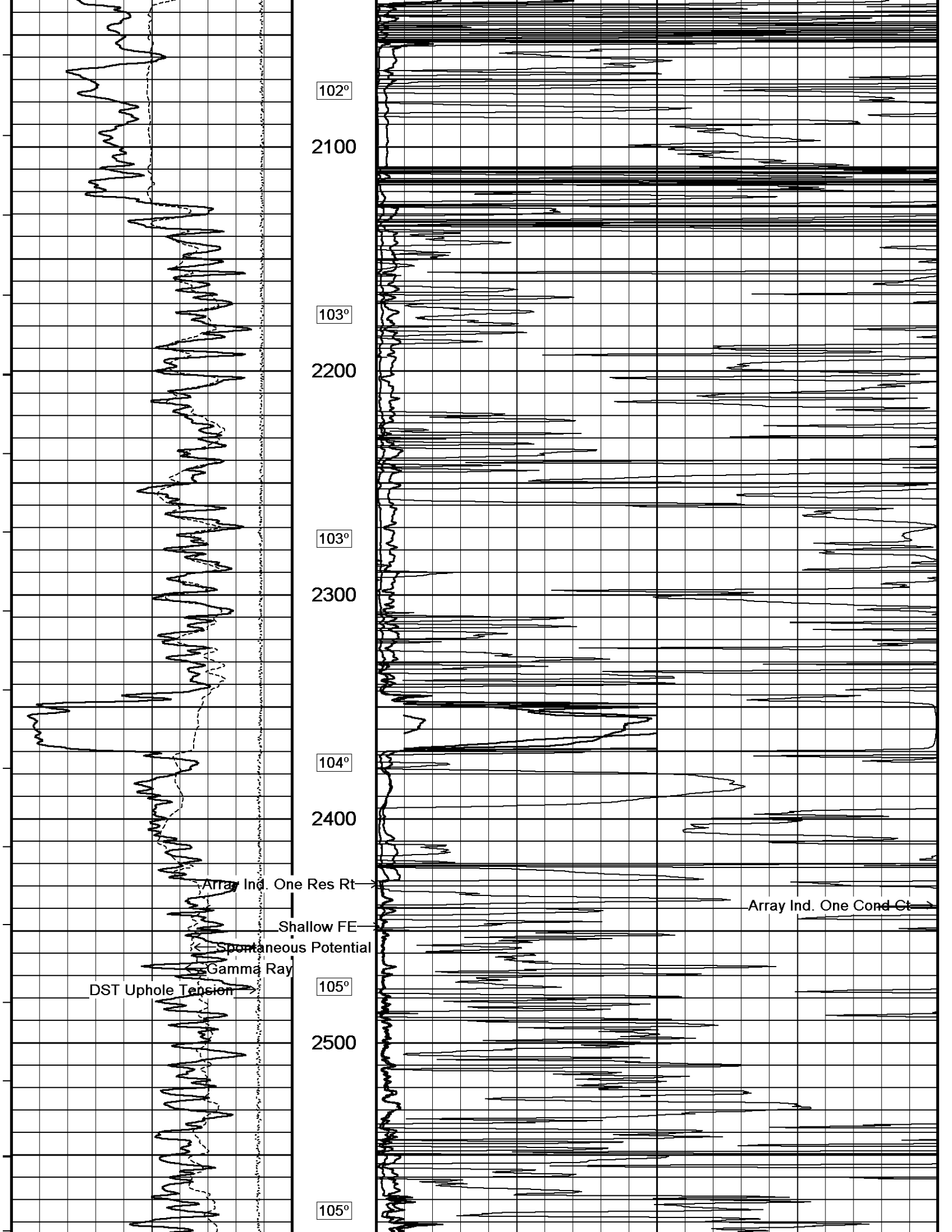
102°

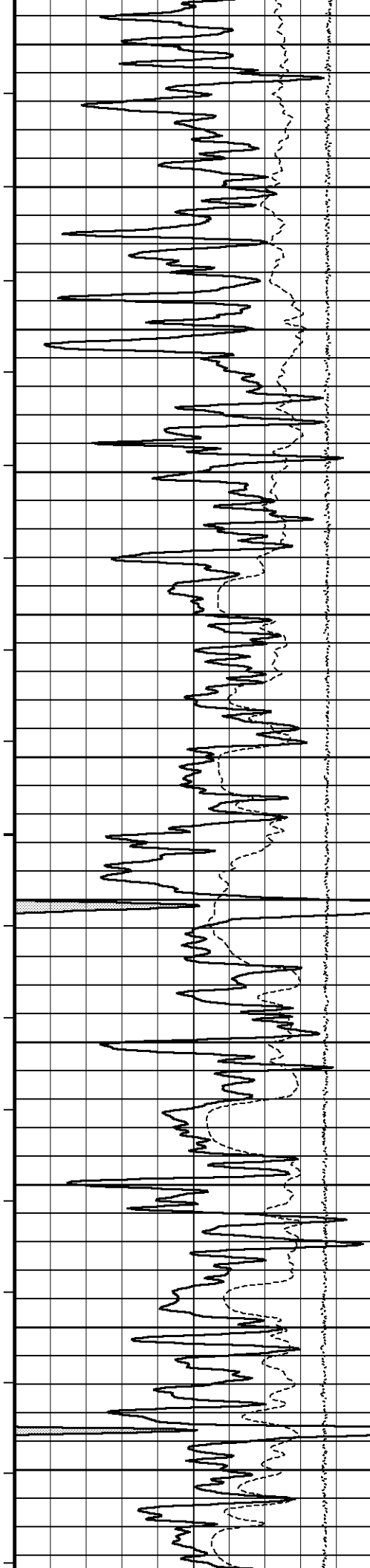
1900

102°

2000







2600

106°

2700

106°

2800

107°

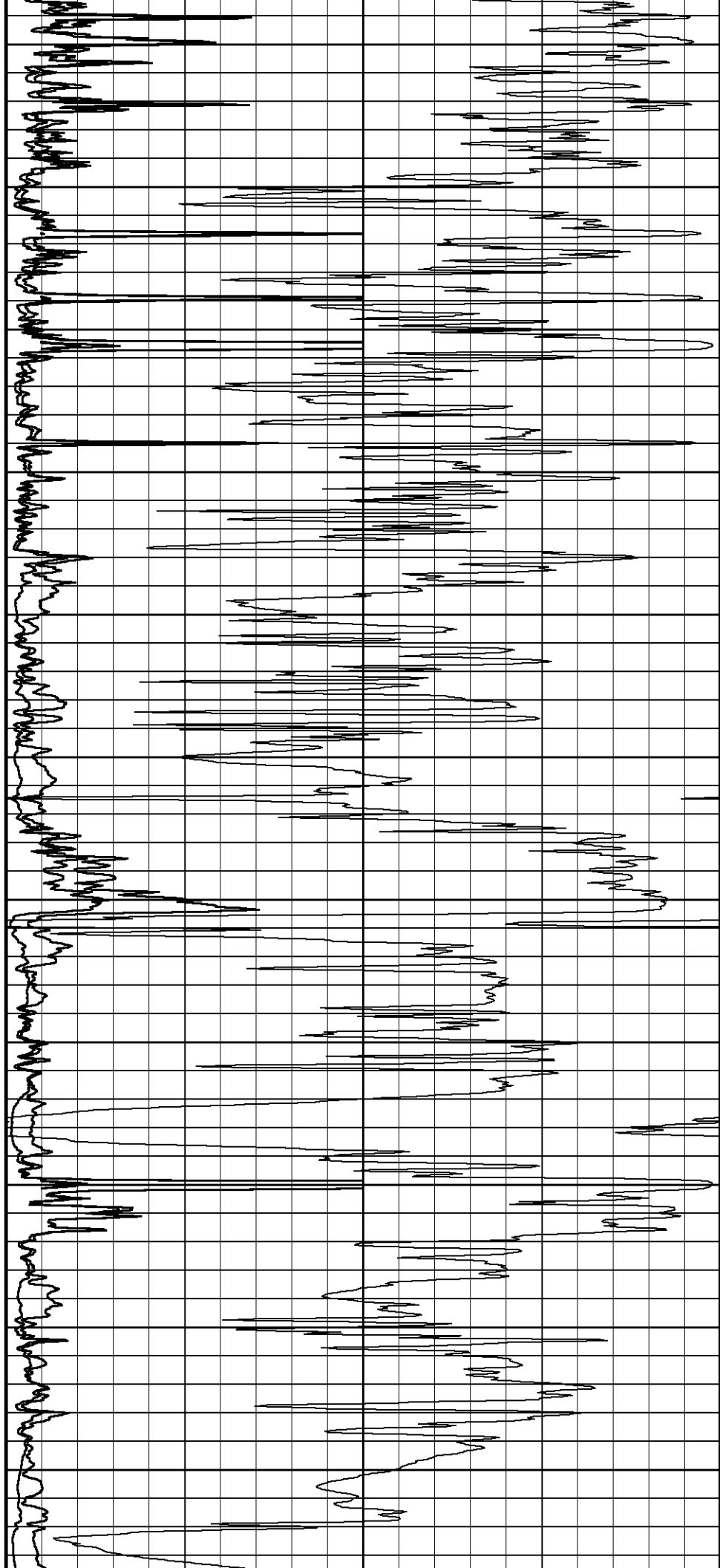
2900

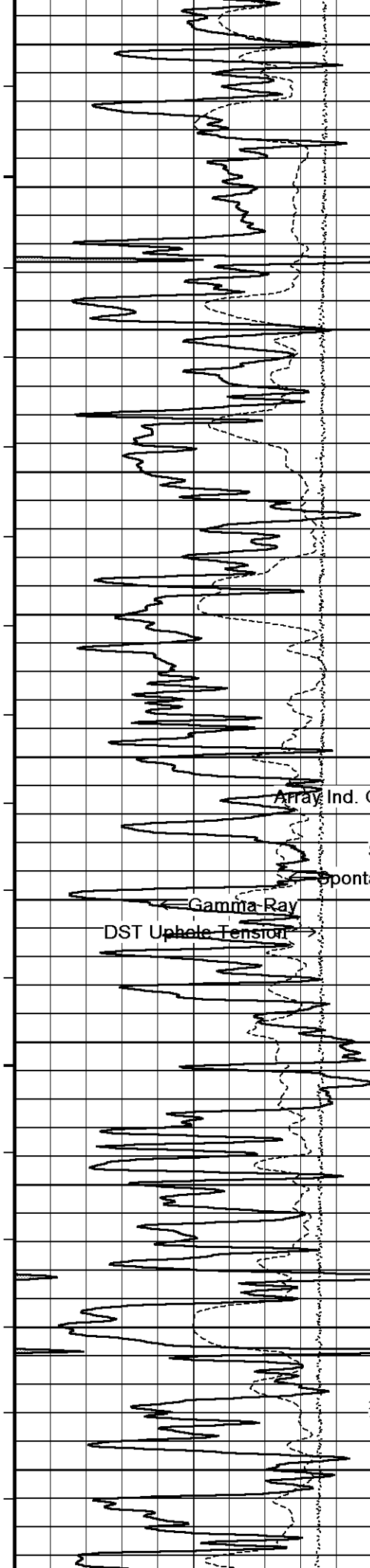
107°

3000

108°

3100





109°

3200

109°

3300

110°

3400

Array Ind. One Res Rt

Shallow FE

Spontaneous Potential

Gamma-Ray

DST Uphole Tension

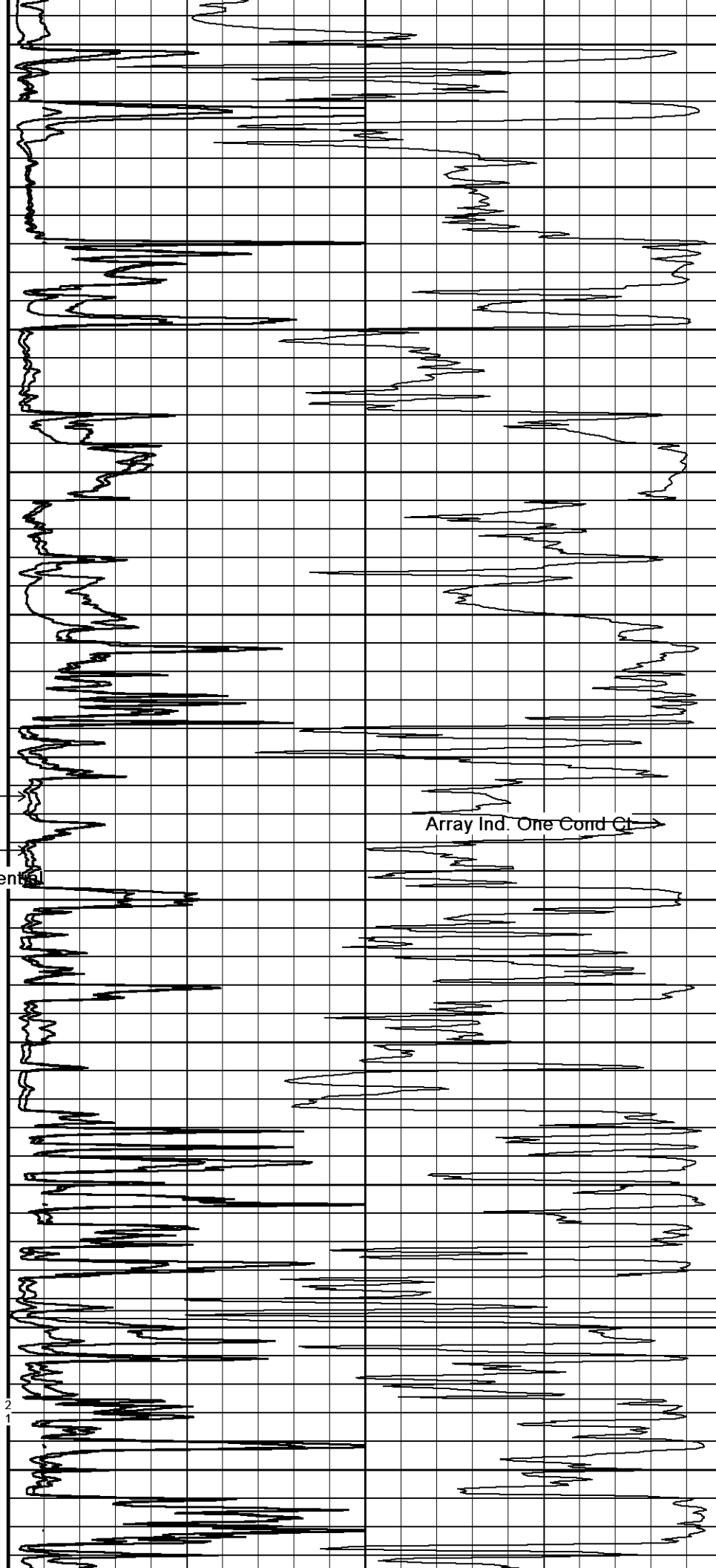
111°

3500

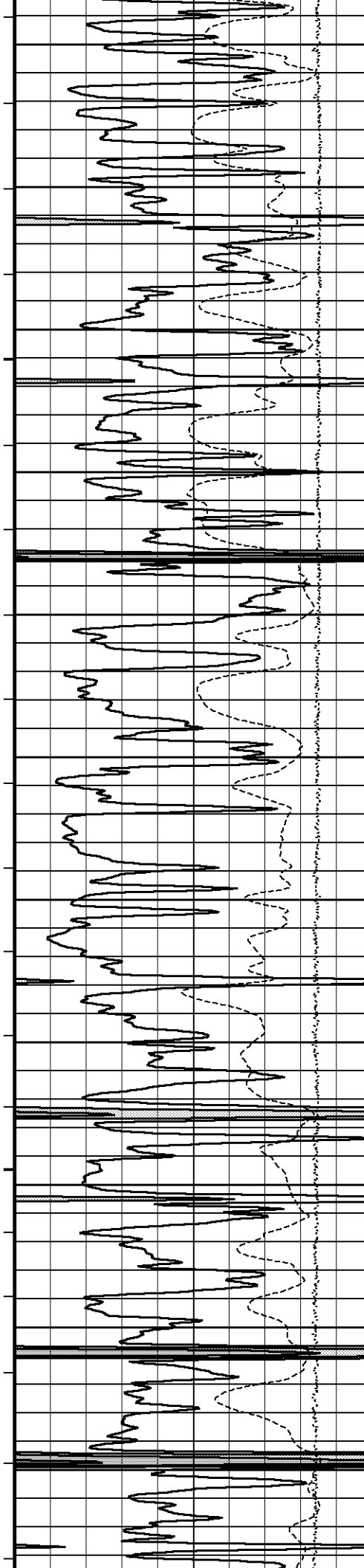
111°

3600

112°



Array Ind. One Cond Ct



3700

112°

3800

113°

3900

114°

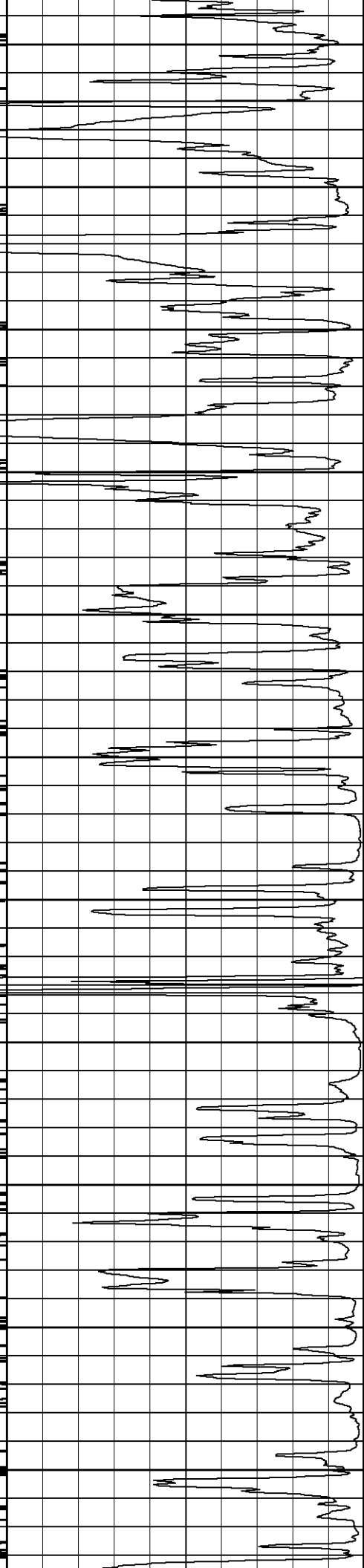
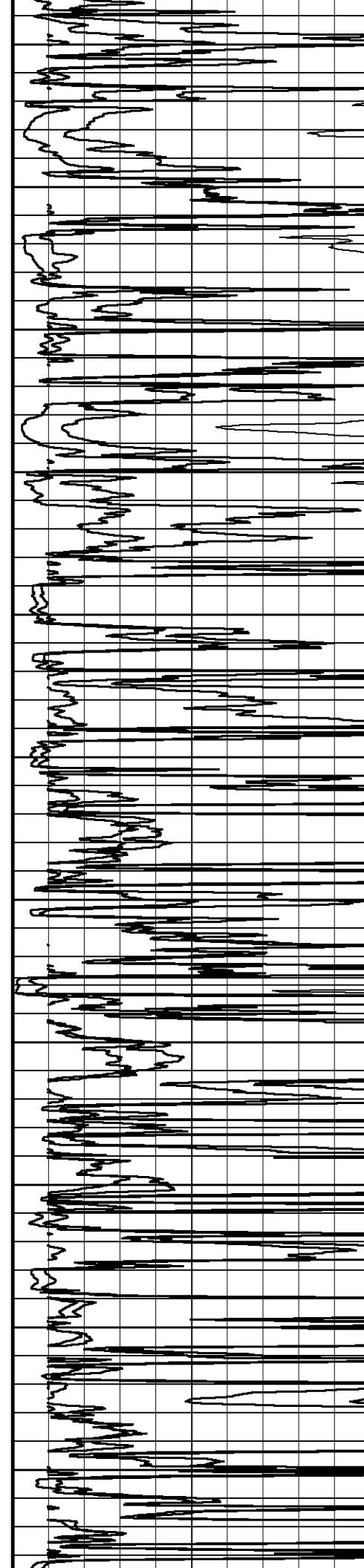
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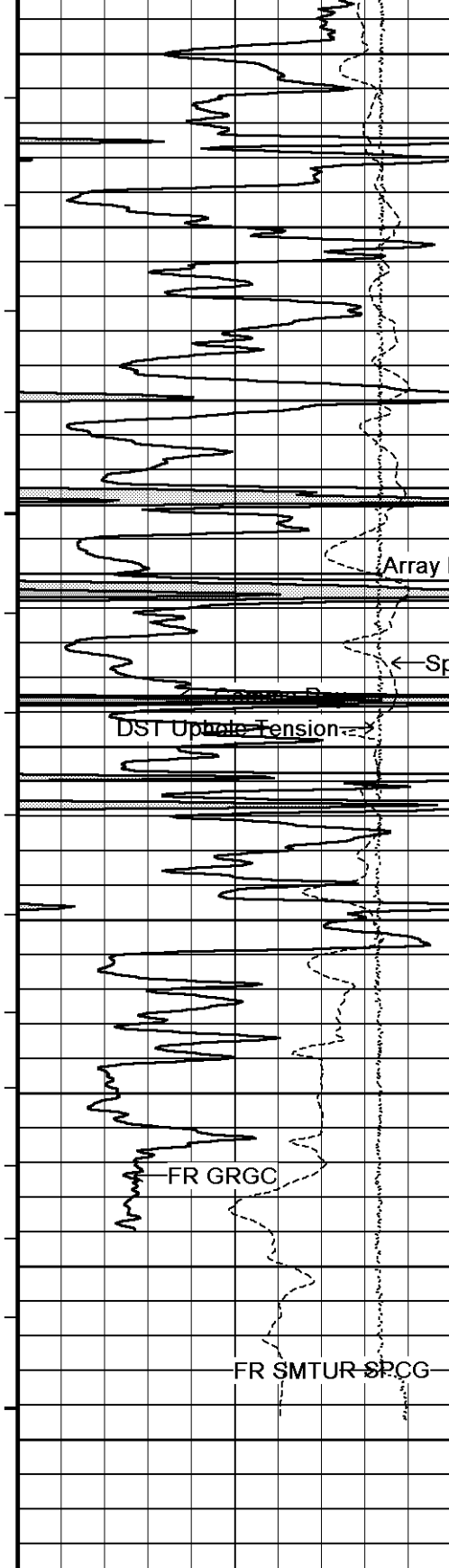
115°

4100

116°

4200





116°

4300

117°

4400

Res Rt

Spontaneous Potential

DST Uphole Tension

119°

4500

119°

4600

FR GRGC

FR SMTUR-SPCG

4680

Depth
In
Feet

Timing Marks
every 60.0 sec

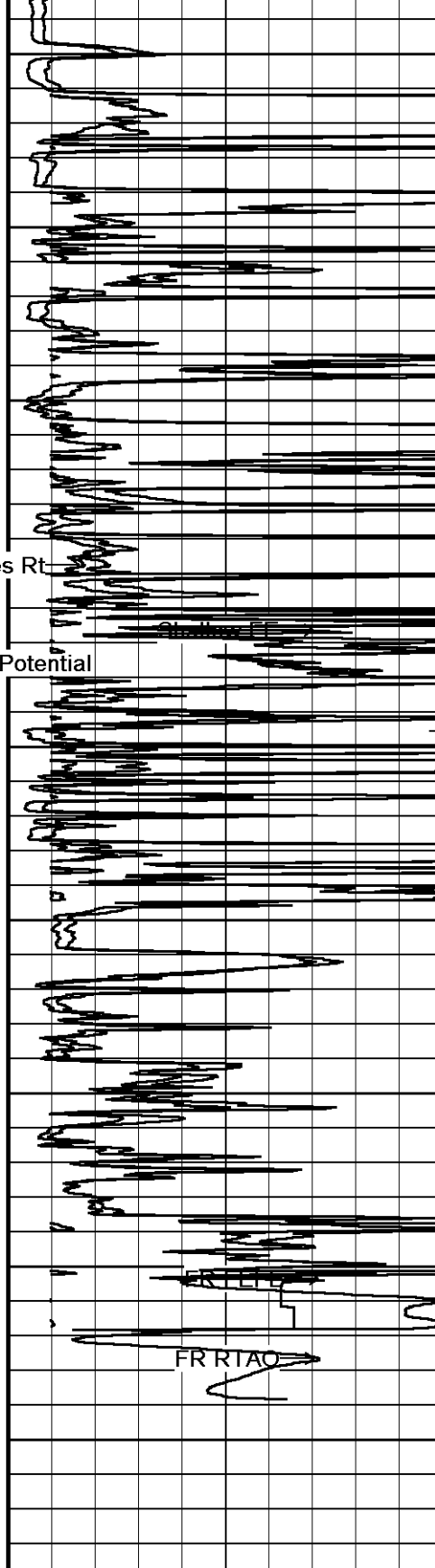
Gamma Ray

API

0 75 150

150 225 300

Borehole



Array Ind. One Cond Ct

Shallow FE

FR RTAO

FR CTAO

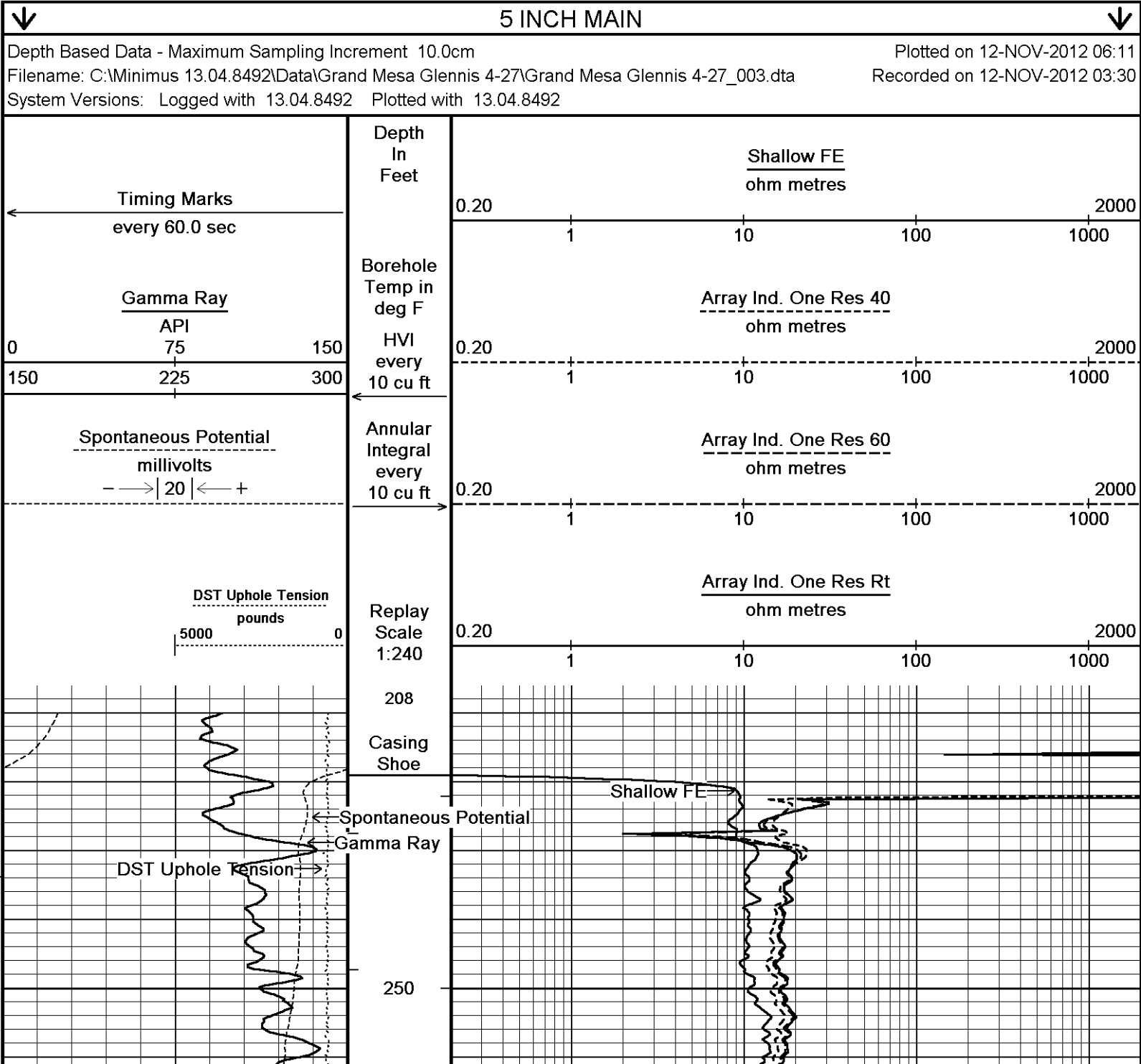
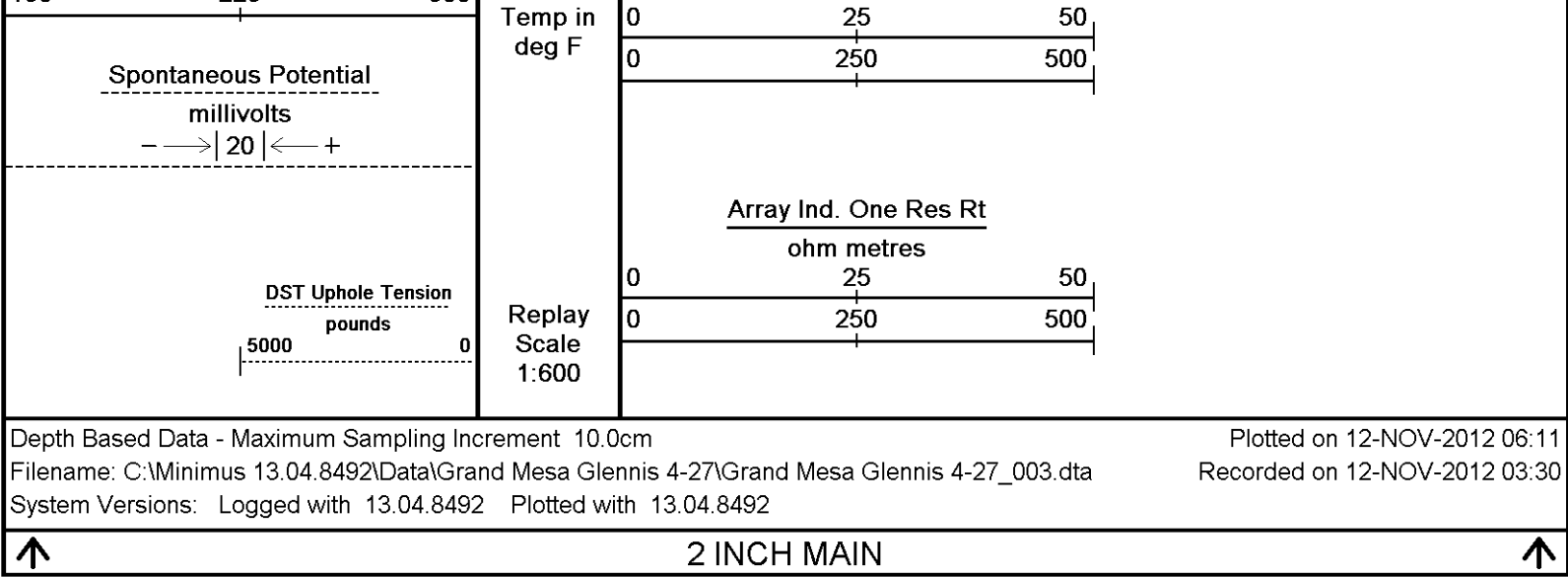
Array Ind. One Cond Ct

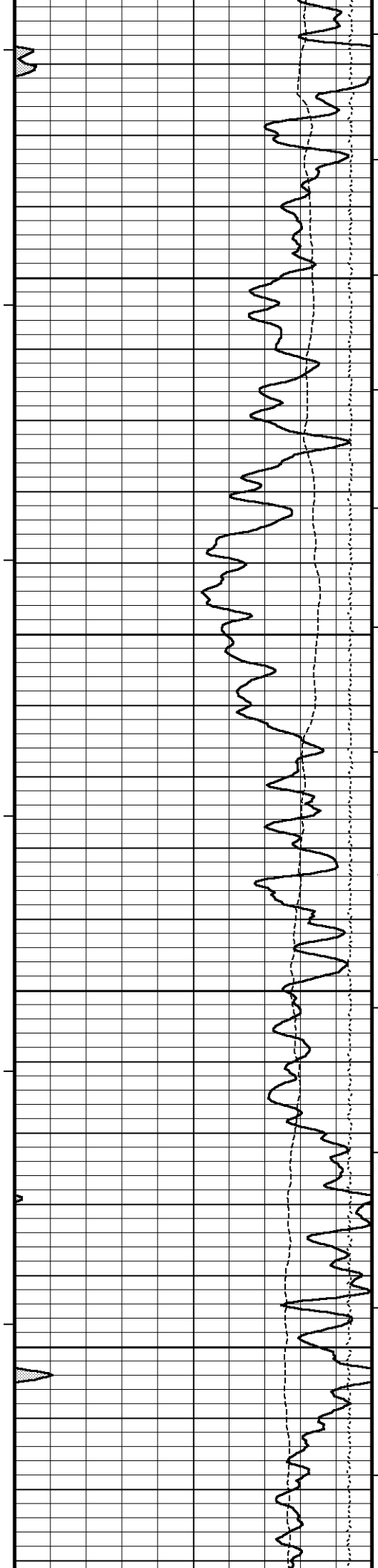
mmhos

1000 750 500 250 0
2000 1750 1500 1250 1000

Shallow FE

ohm metres





83°

300

84°

350

1800

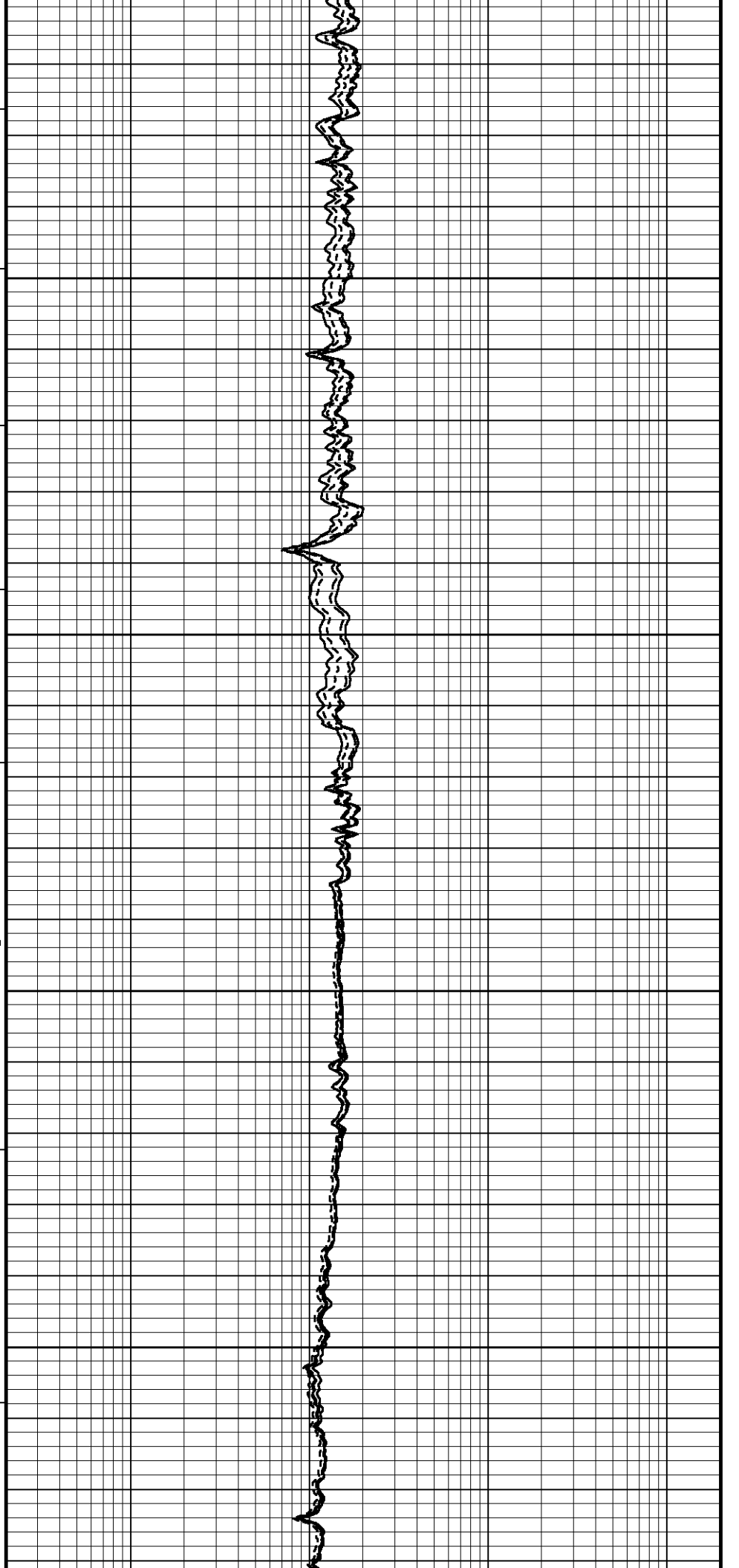
85°

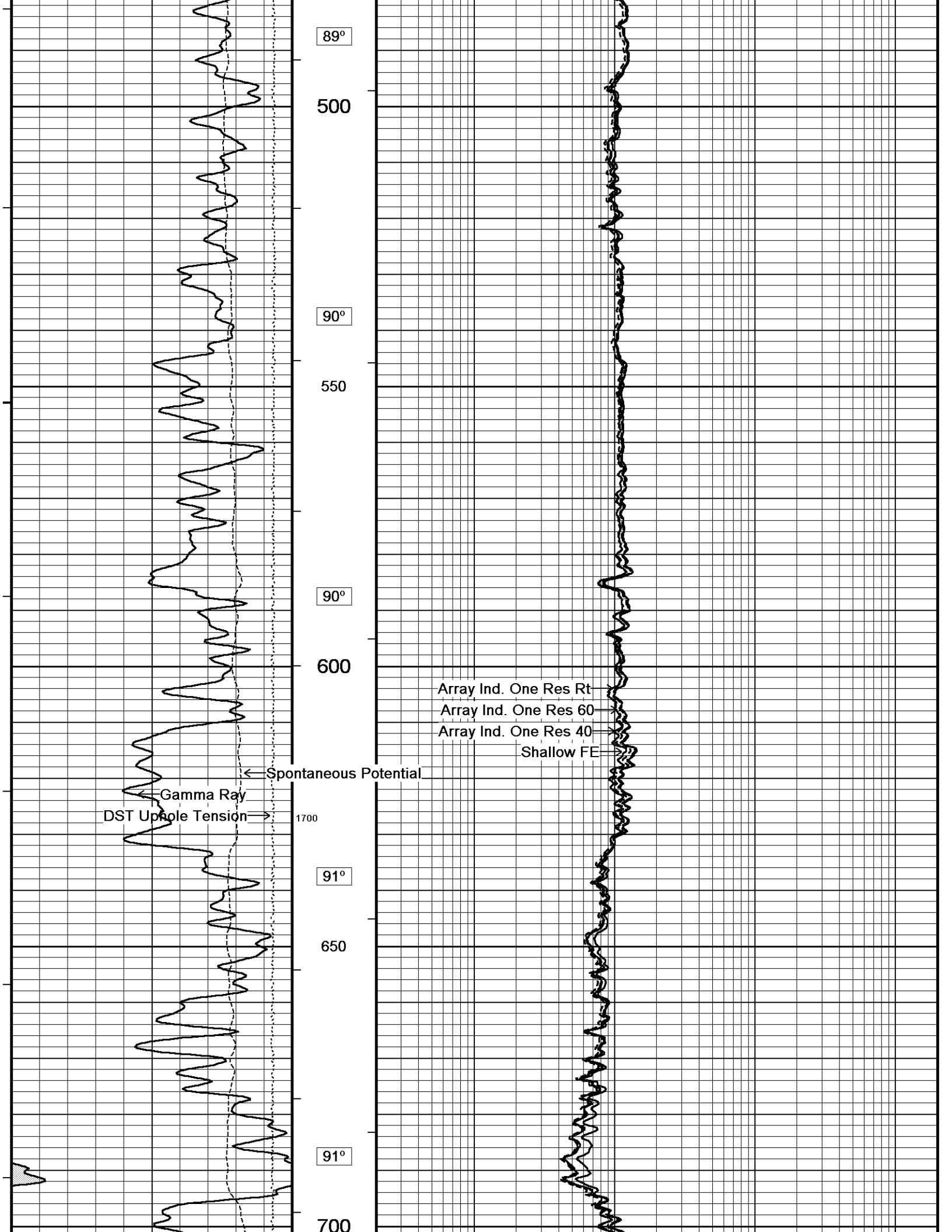
1100

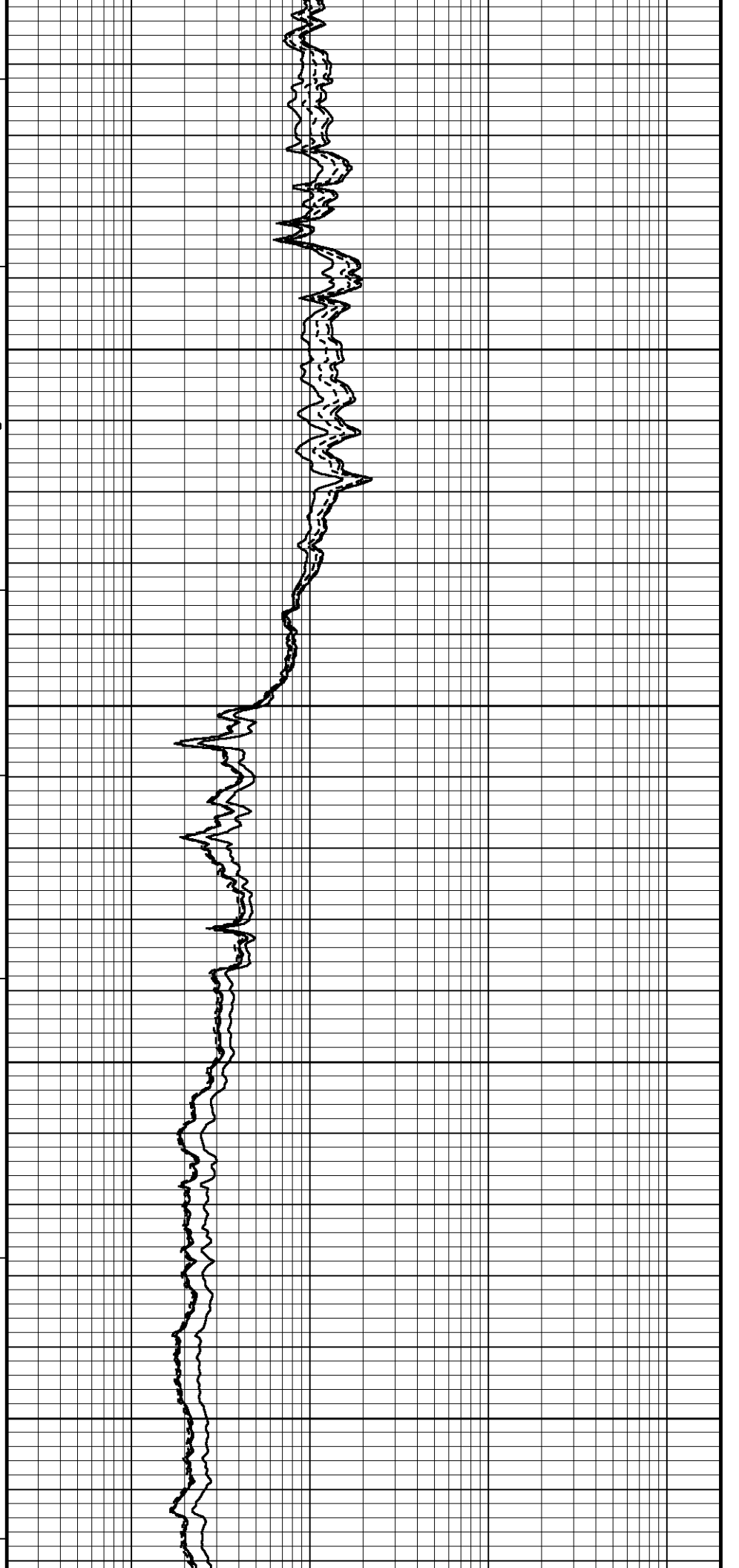
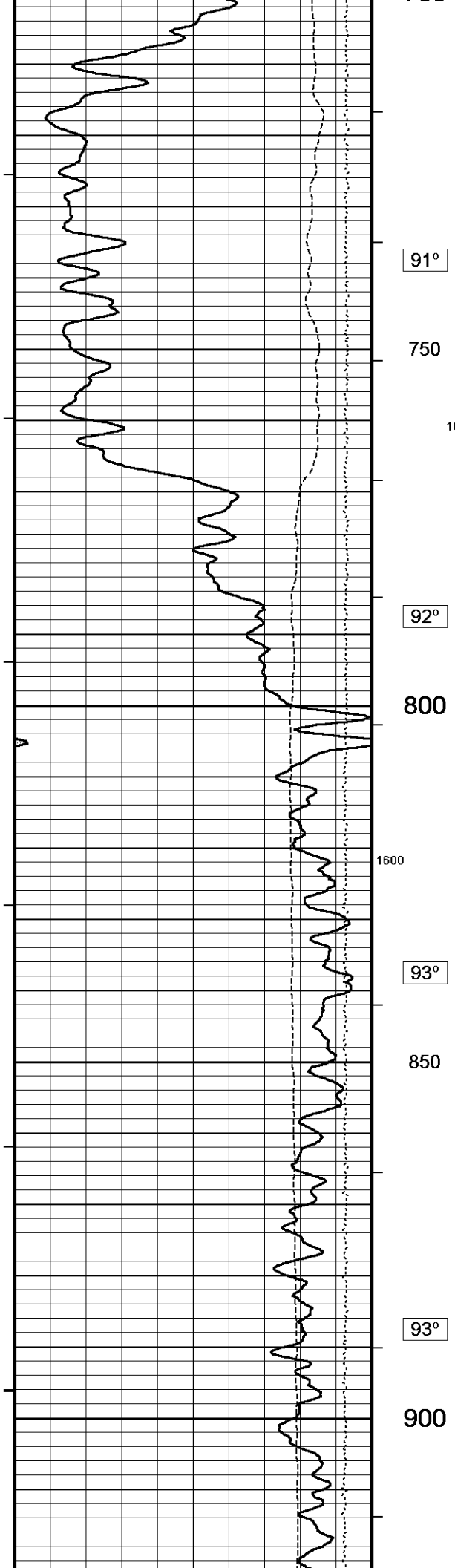
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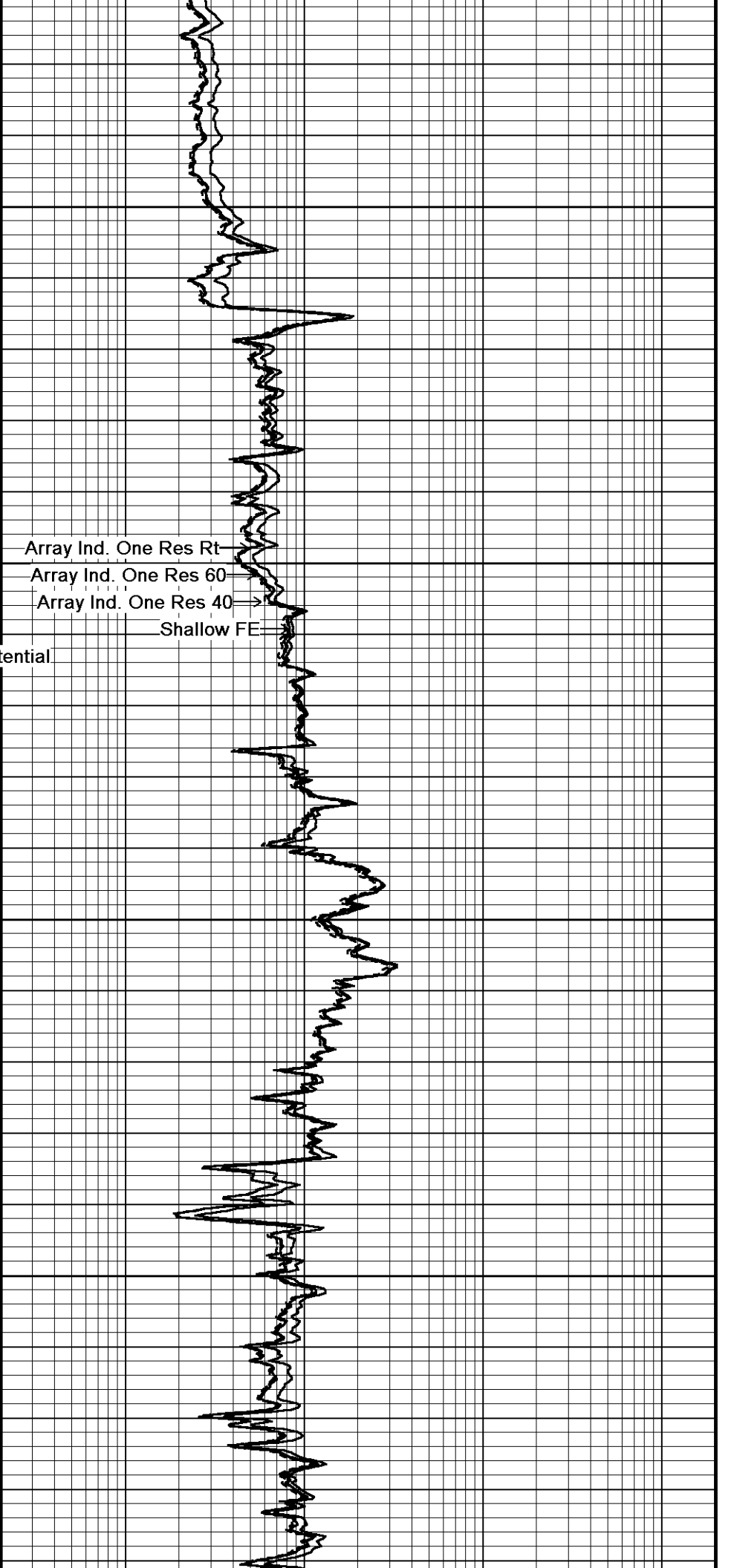
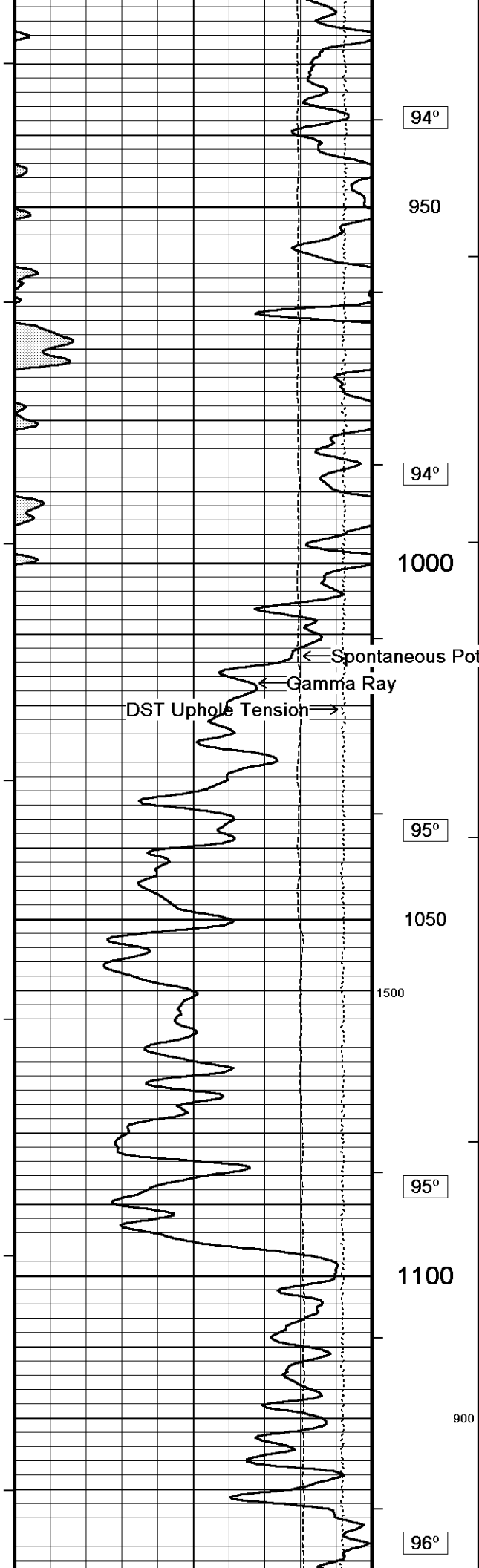
87°

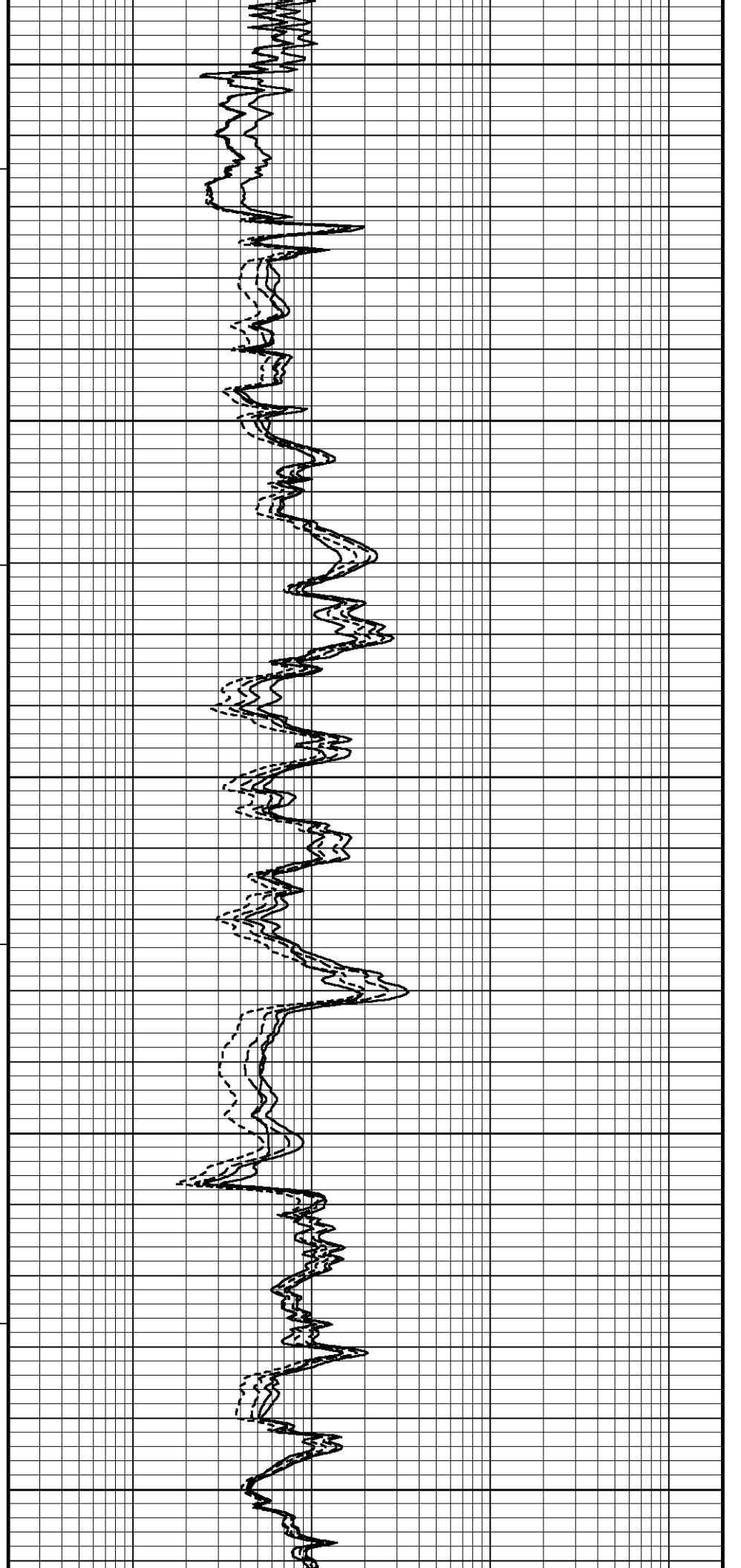
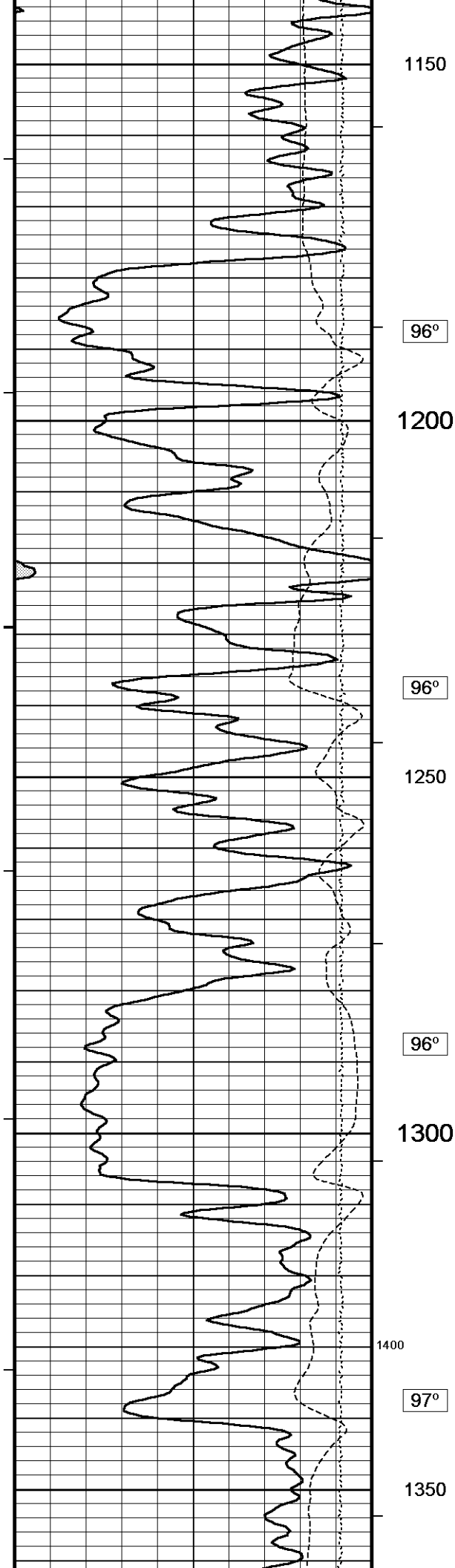
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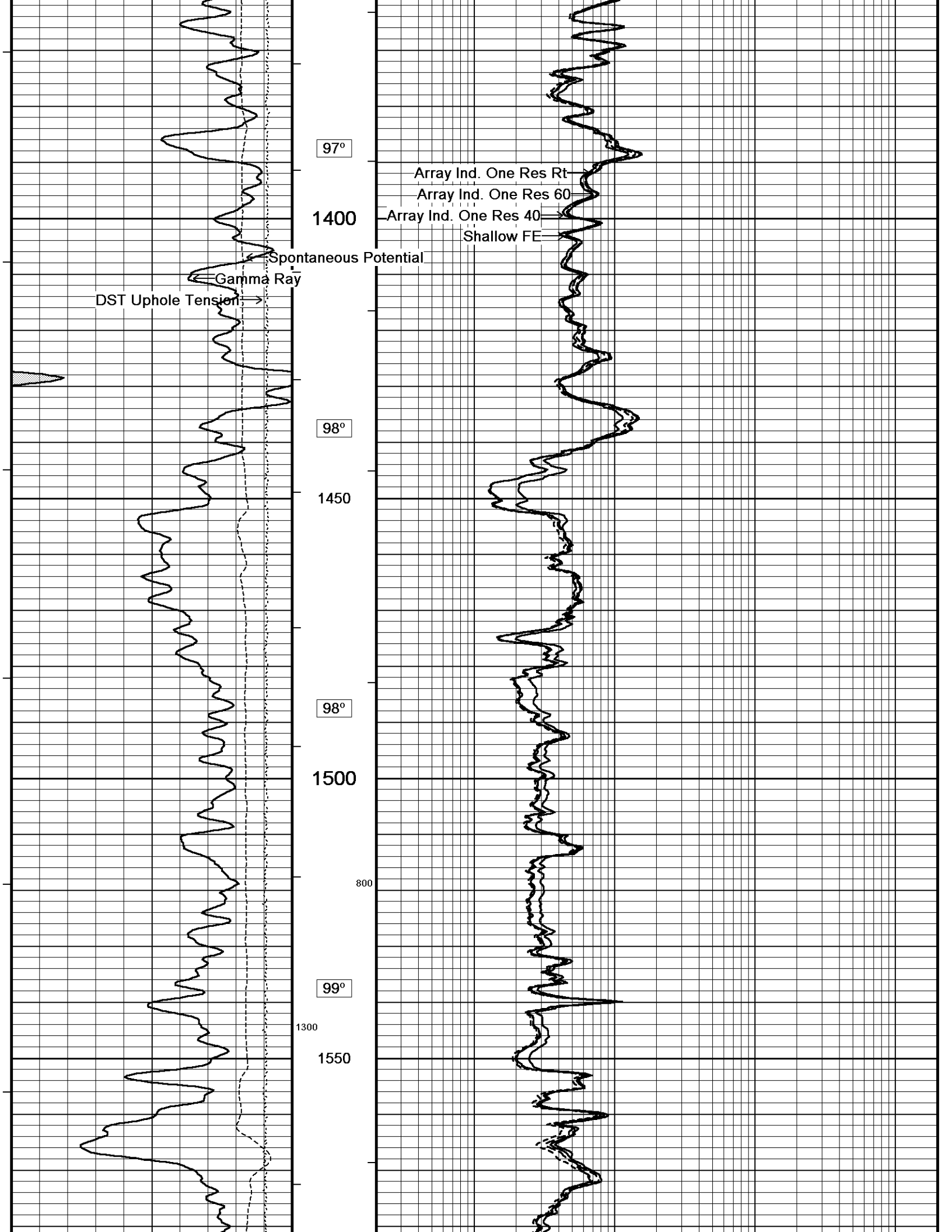


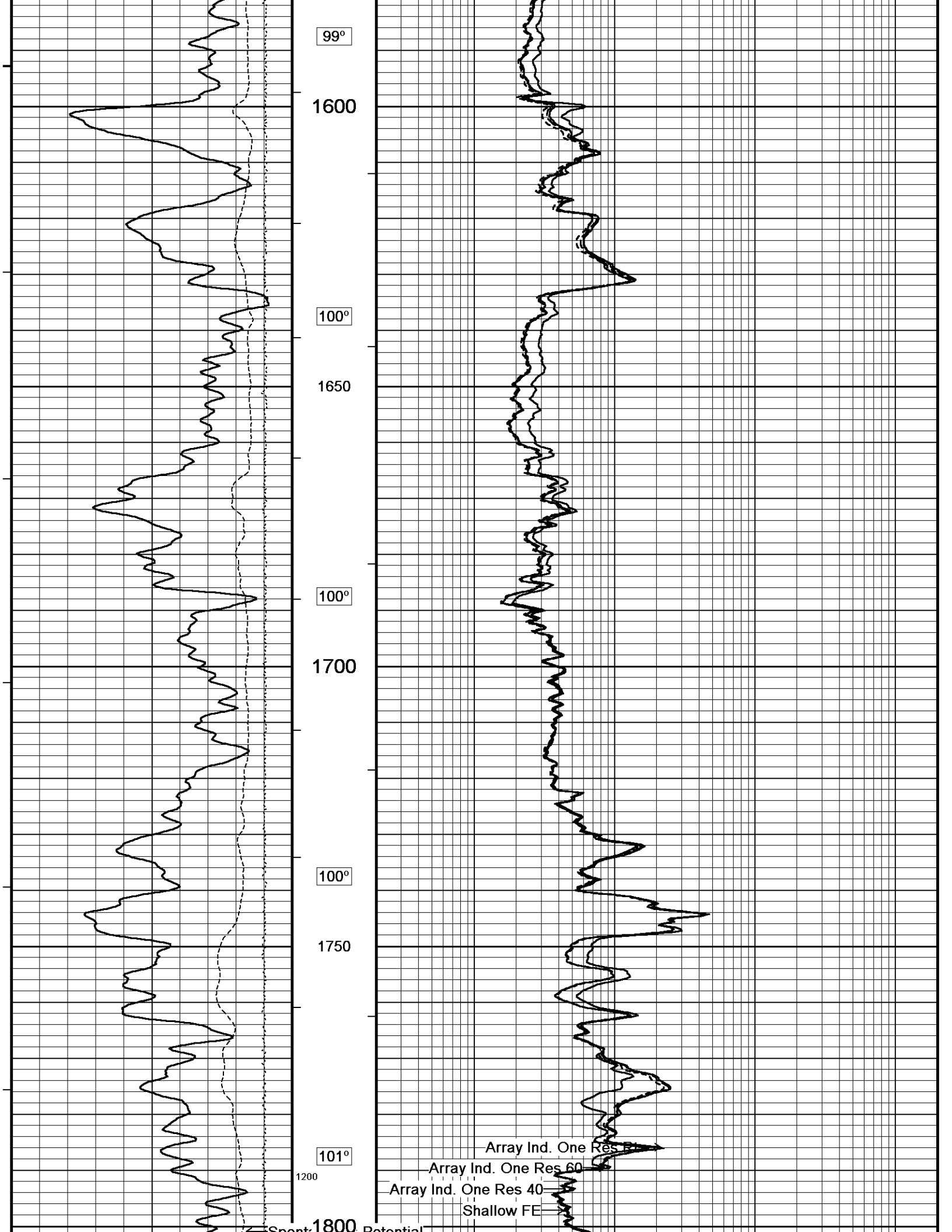


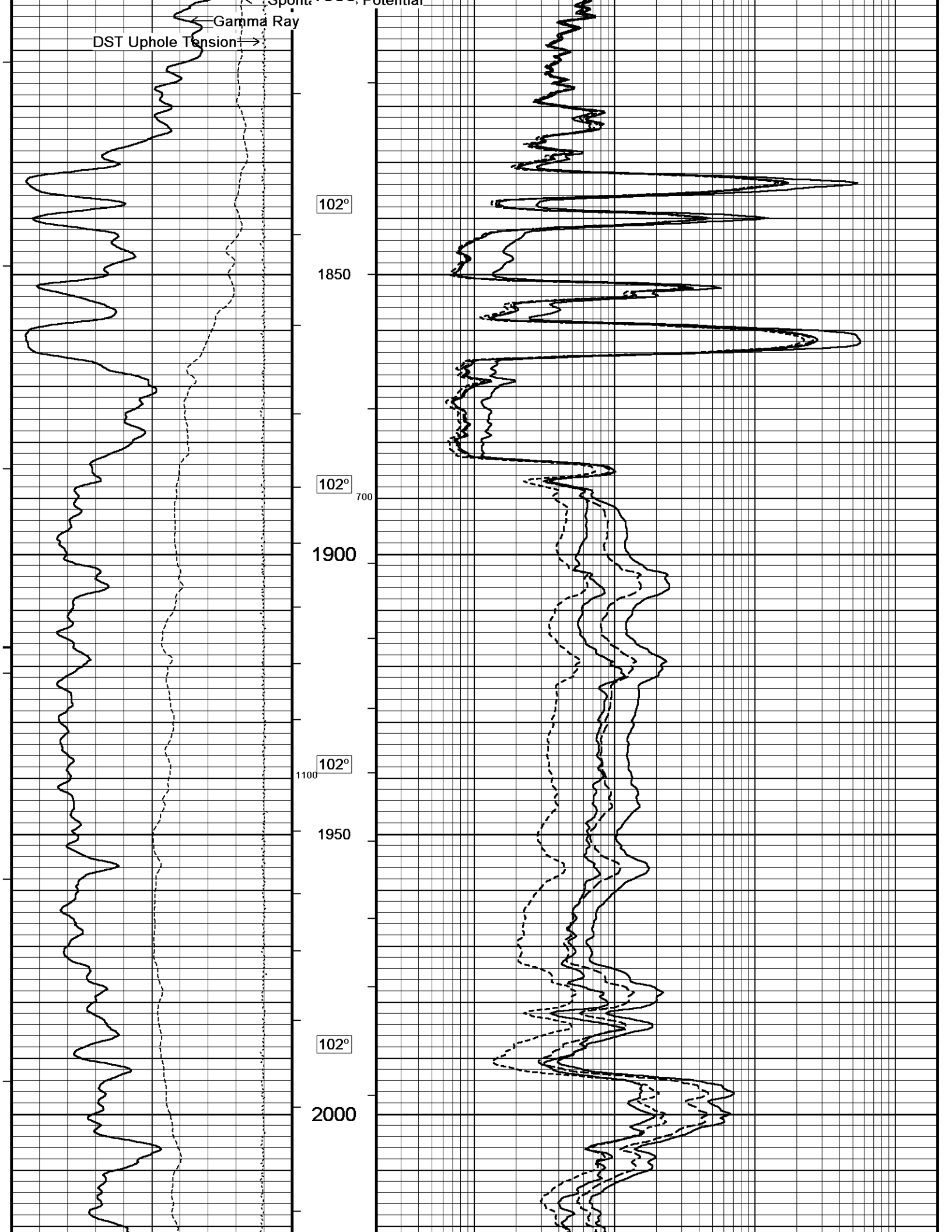


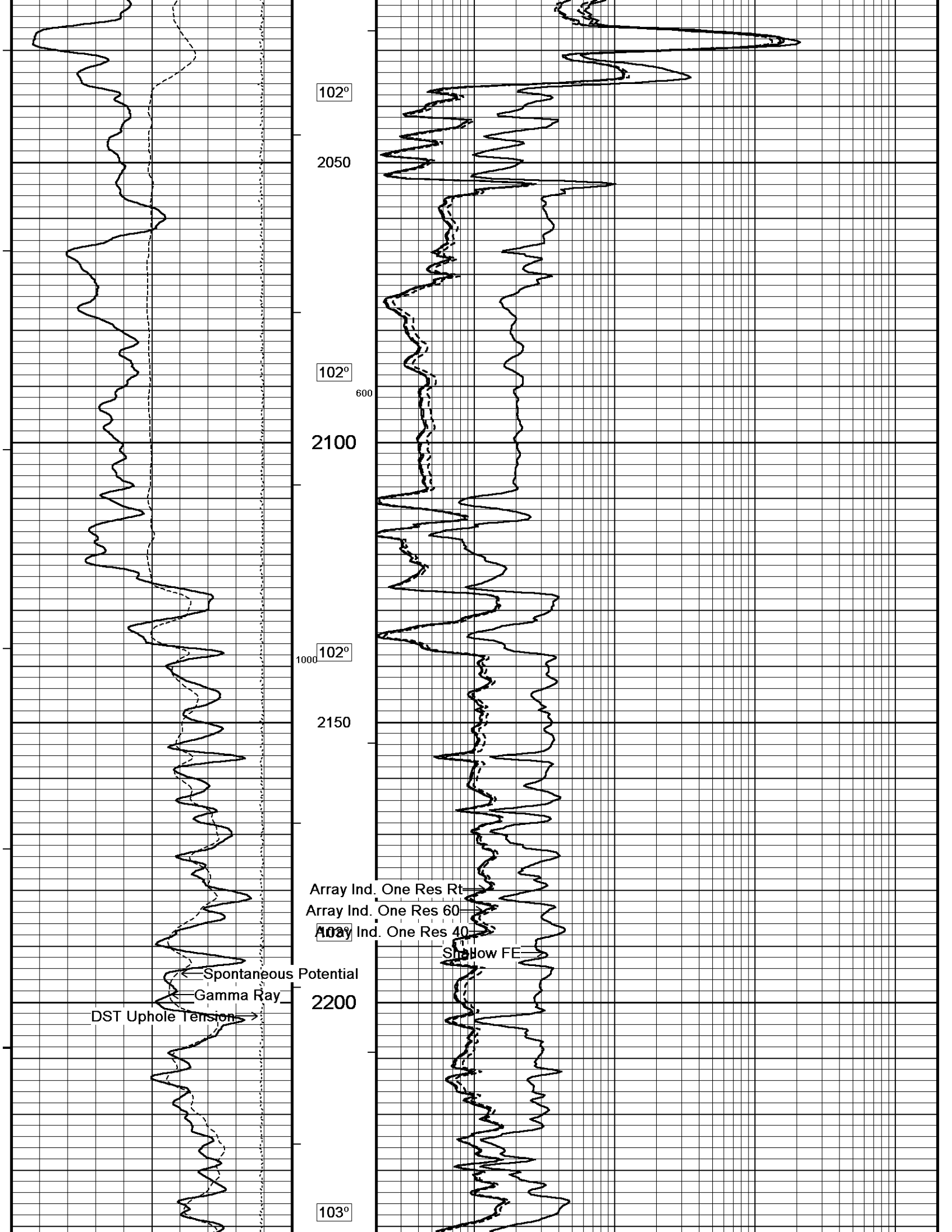


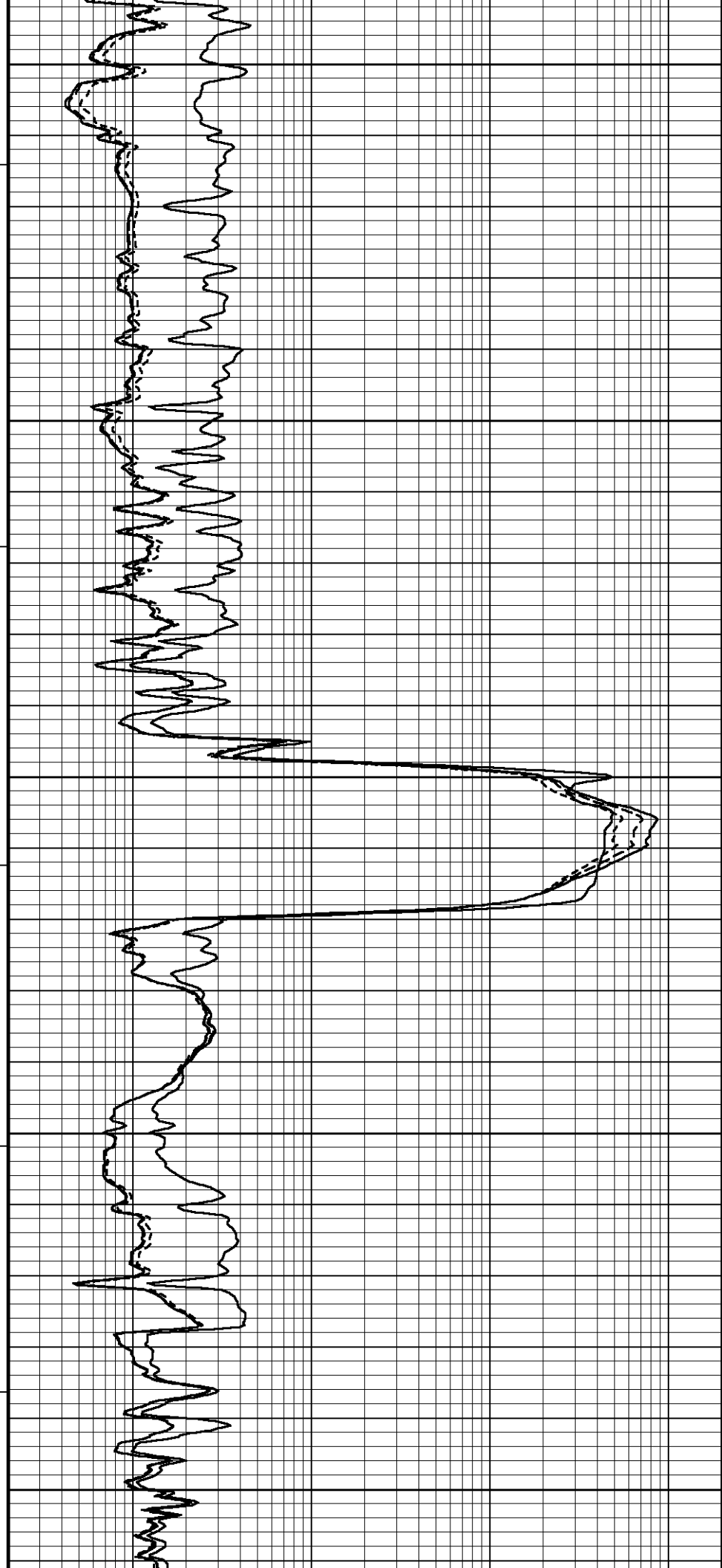
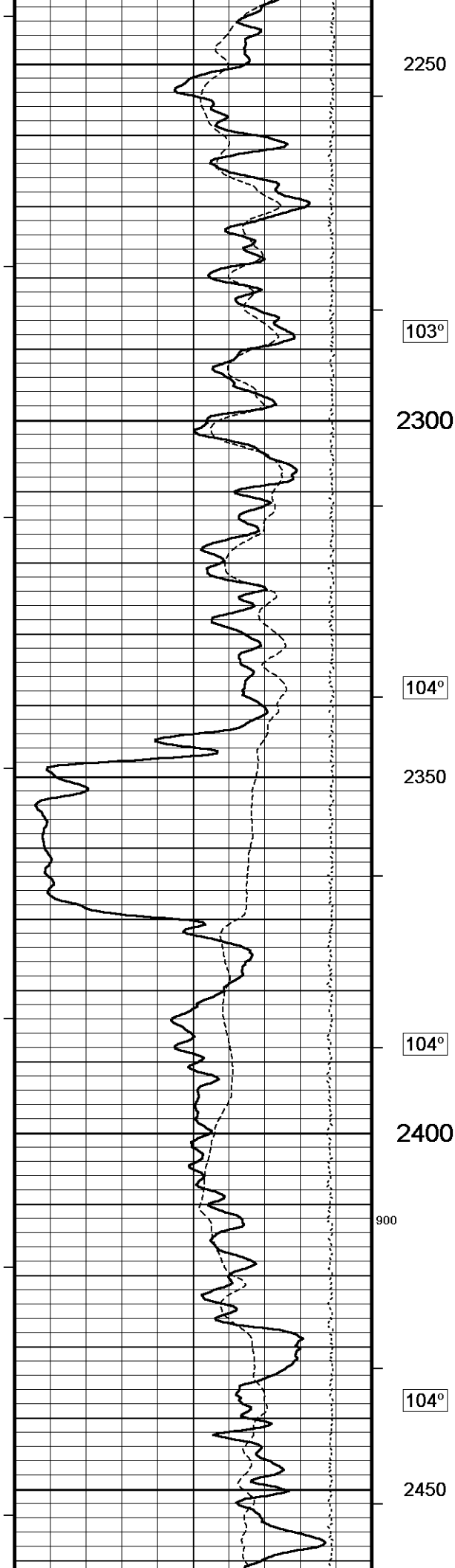


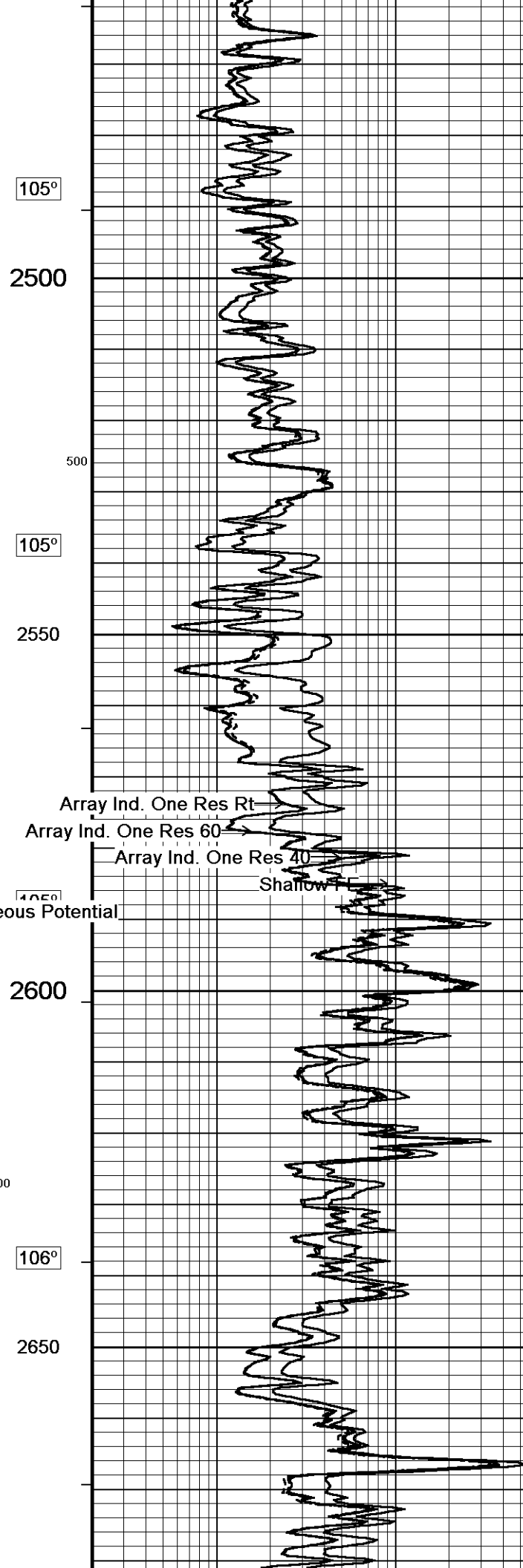
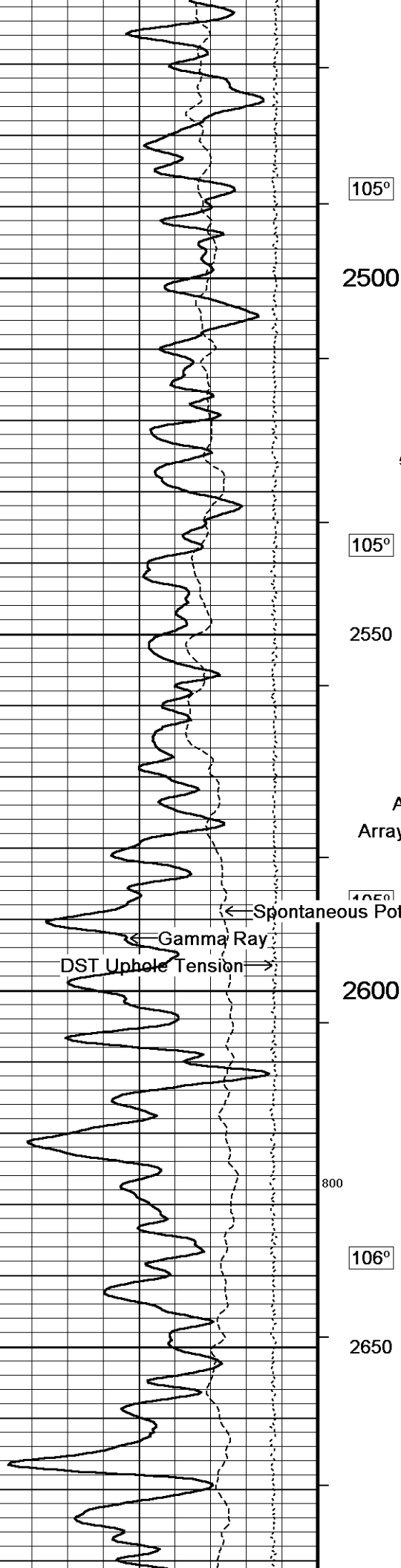


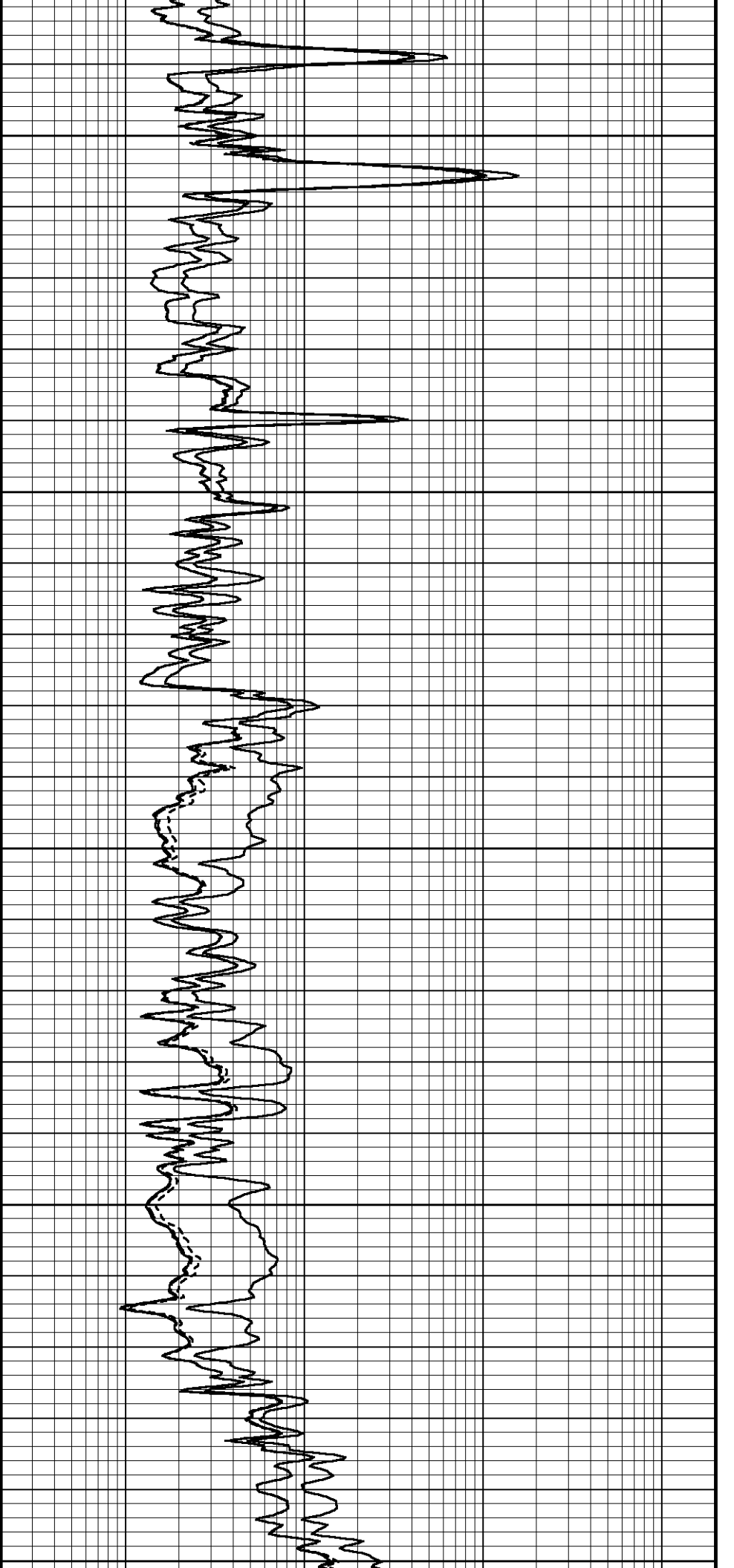
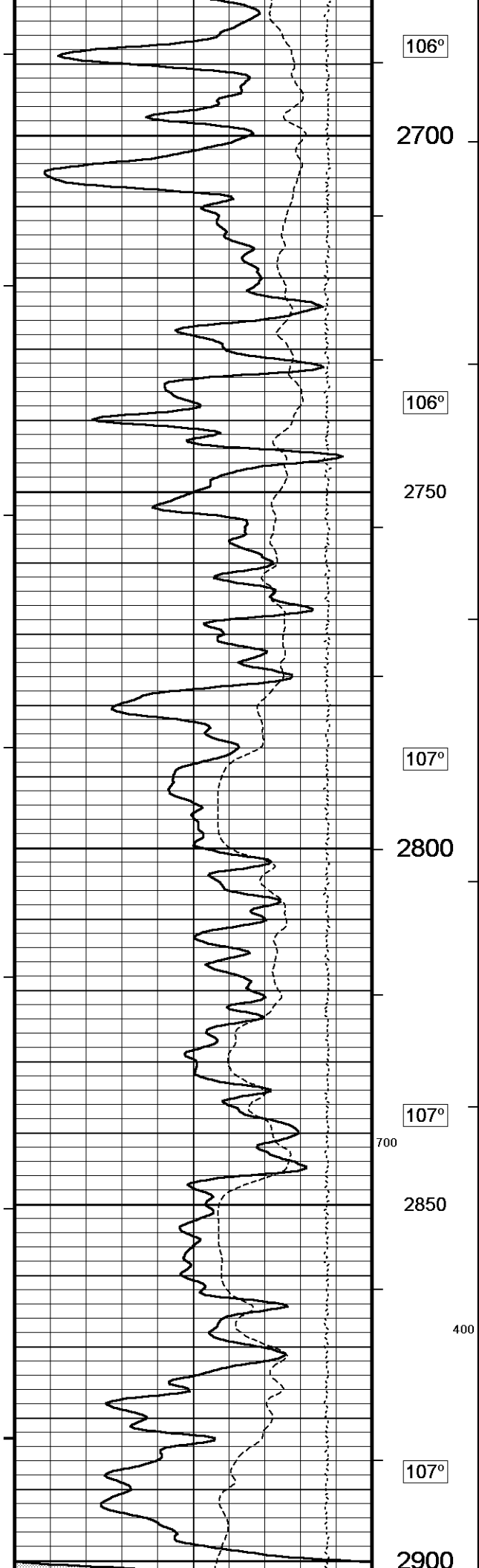


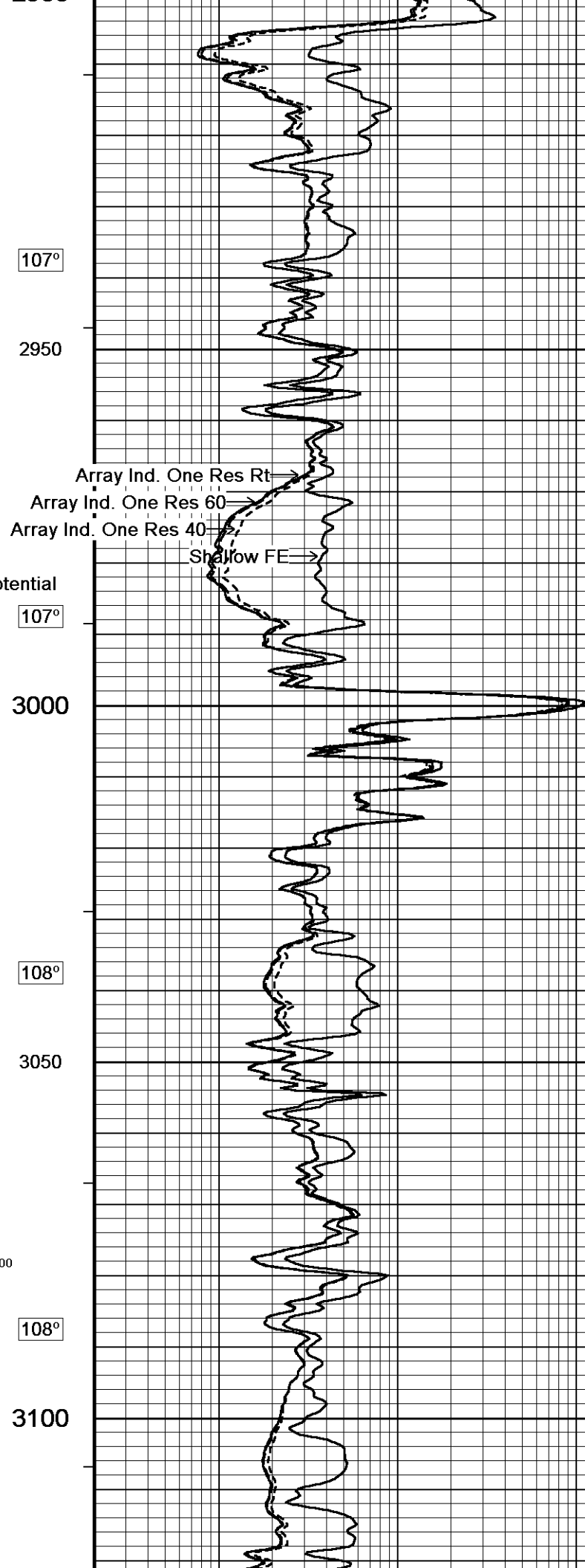
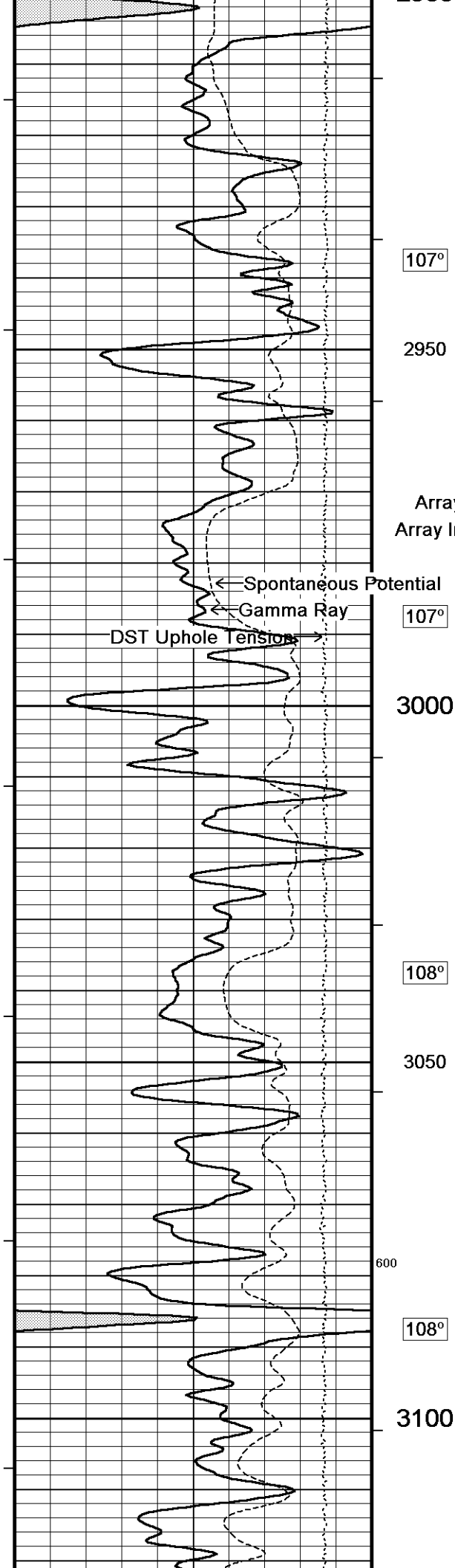


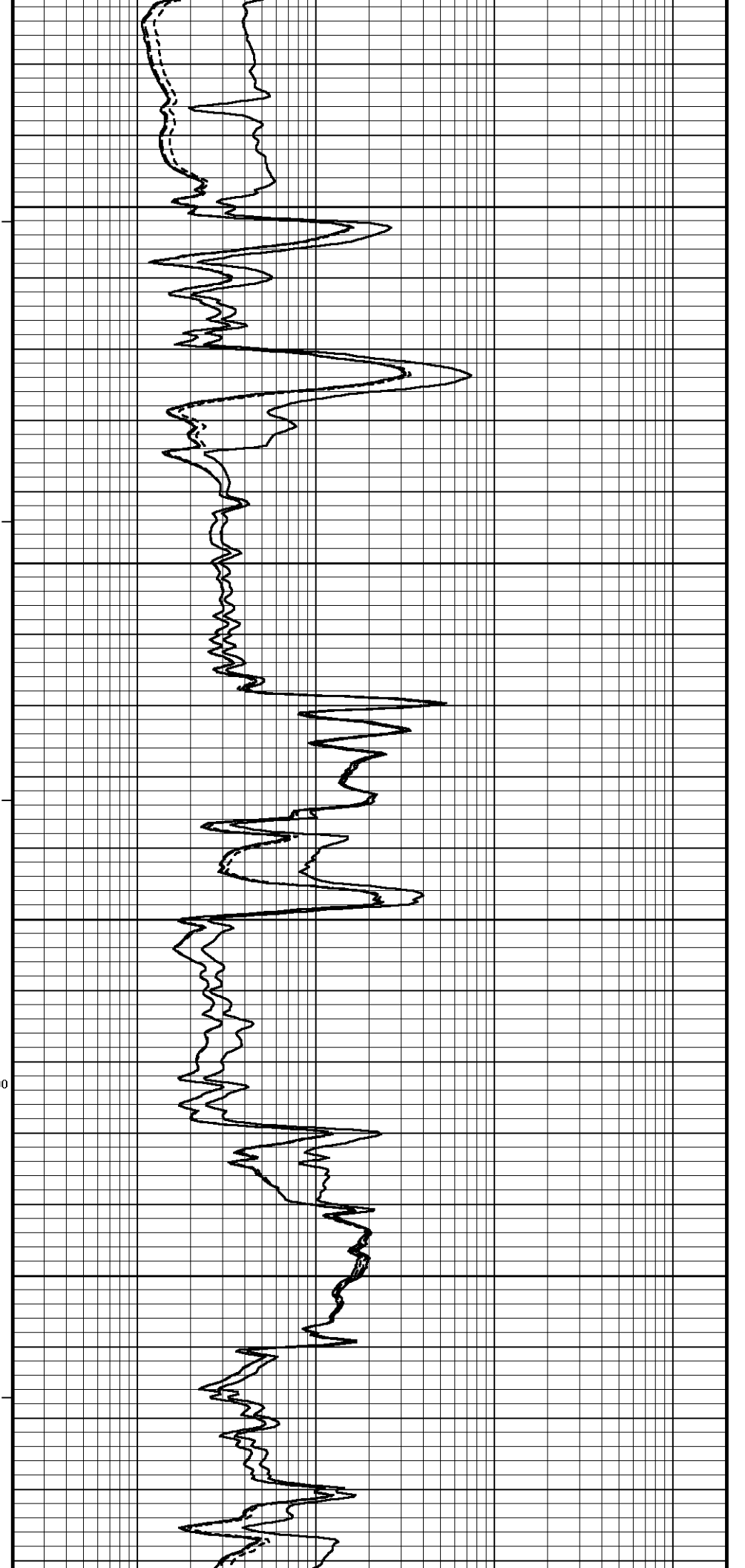
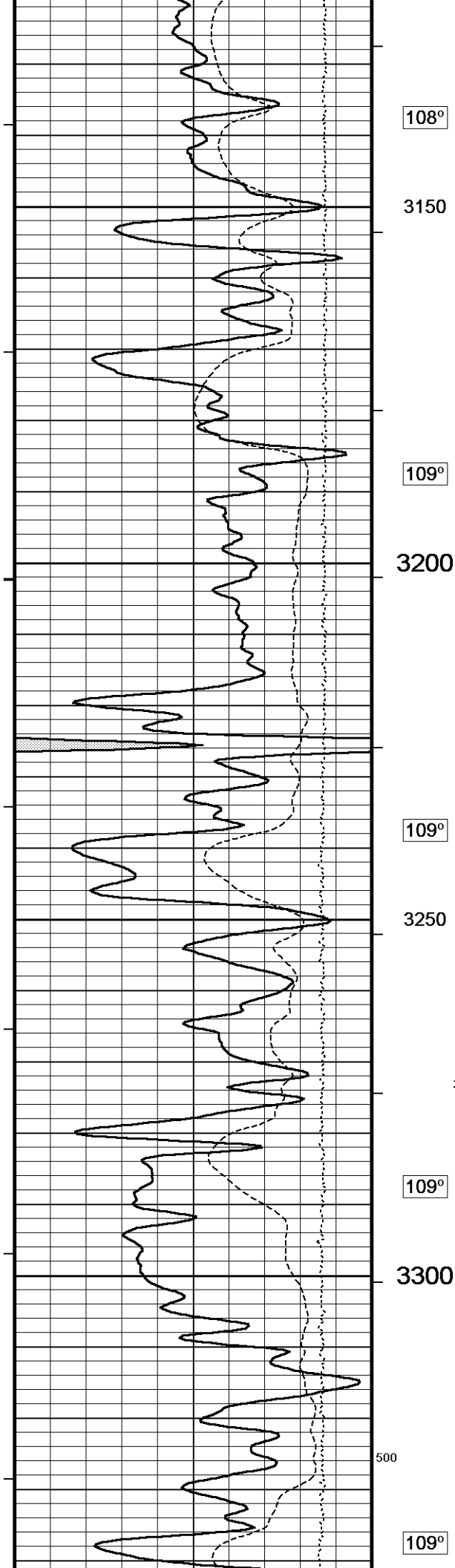


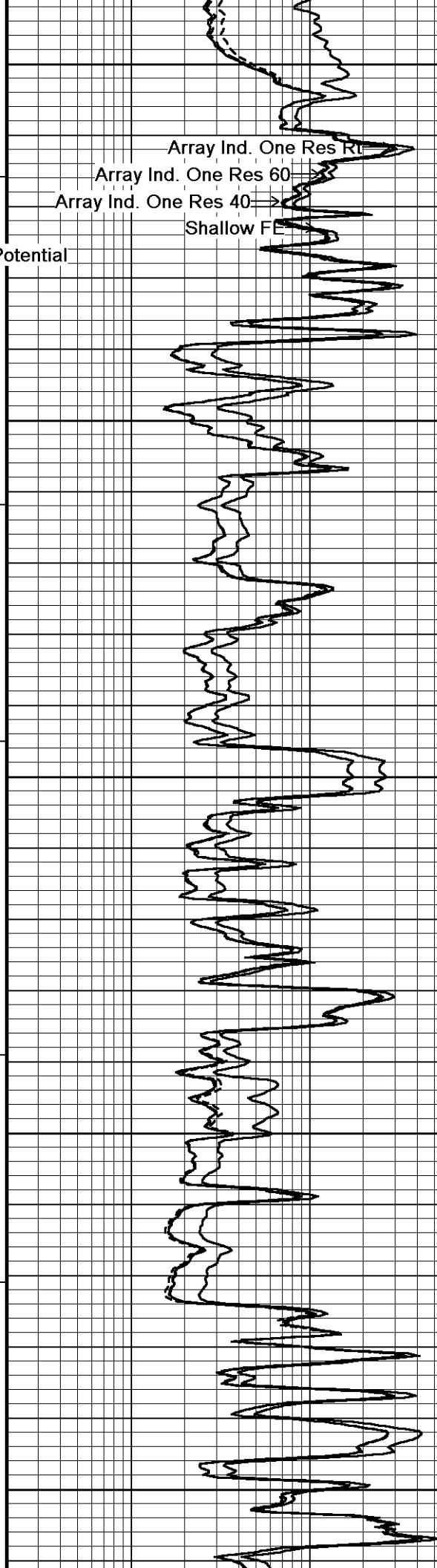
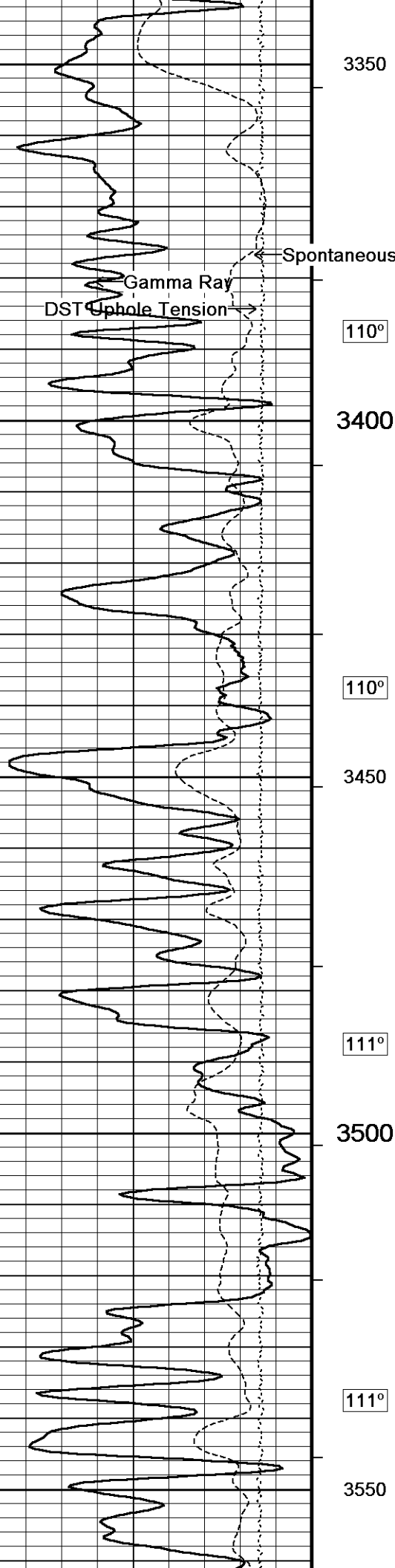












Spontaneous Potential

110°

3400

110°

3450

111°

3500

111°

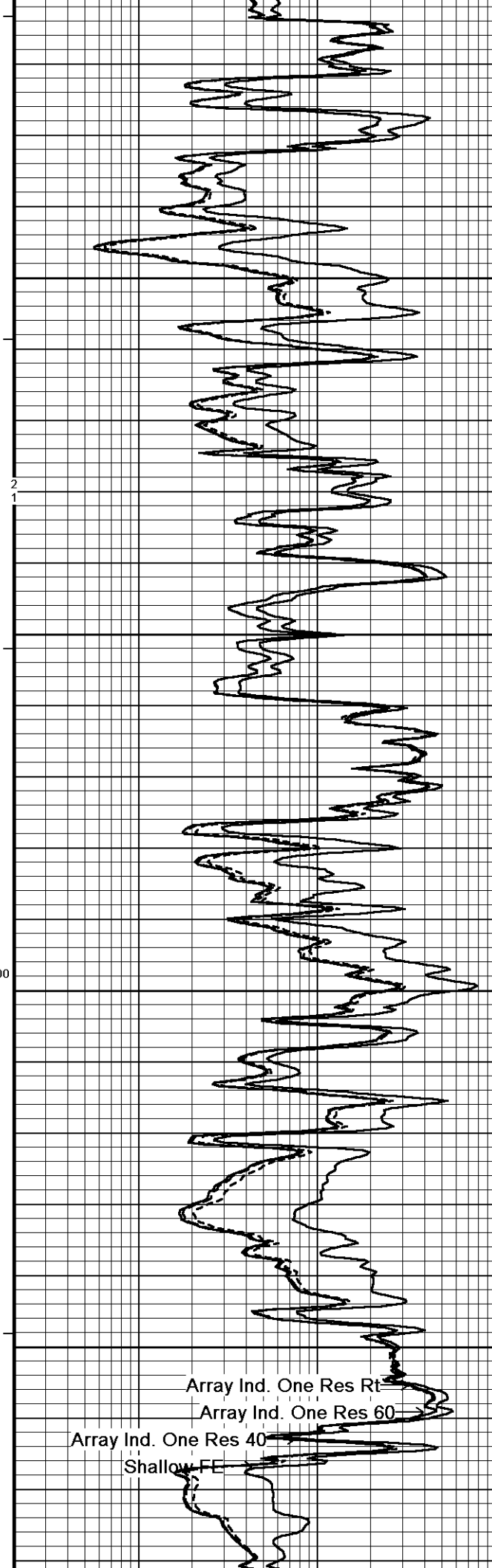
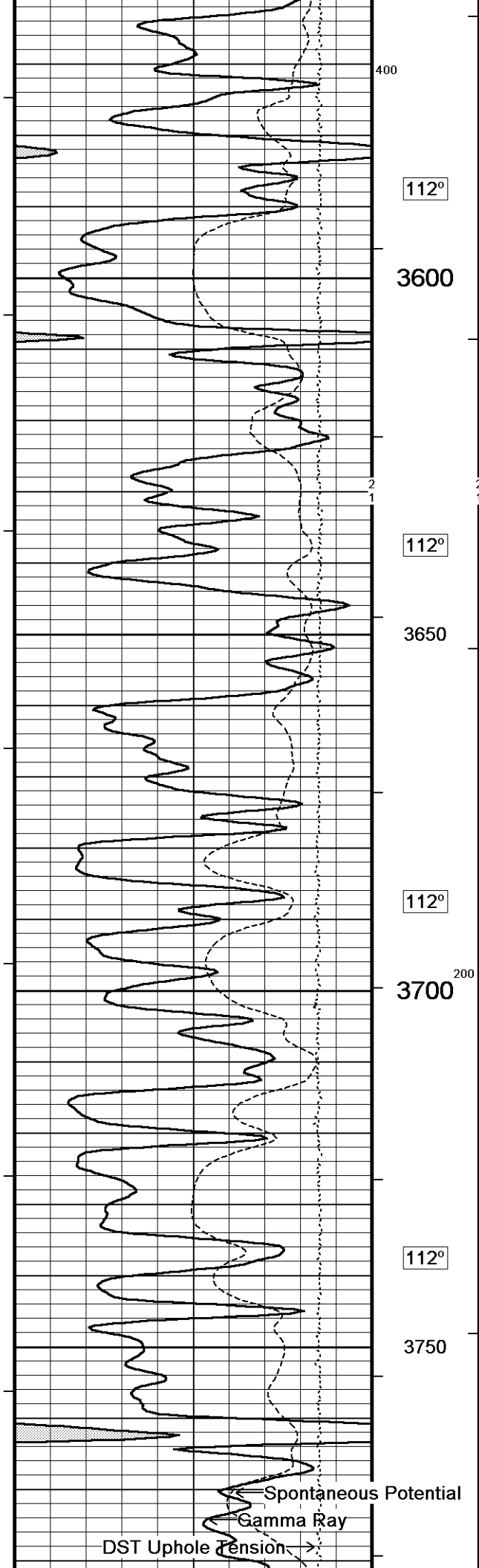
3550

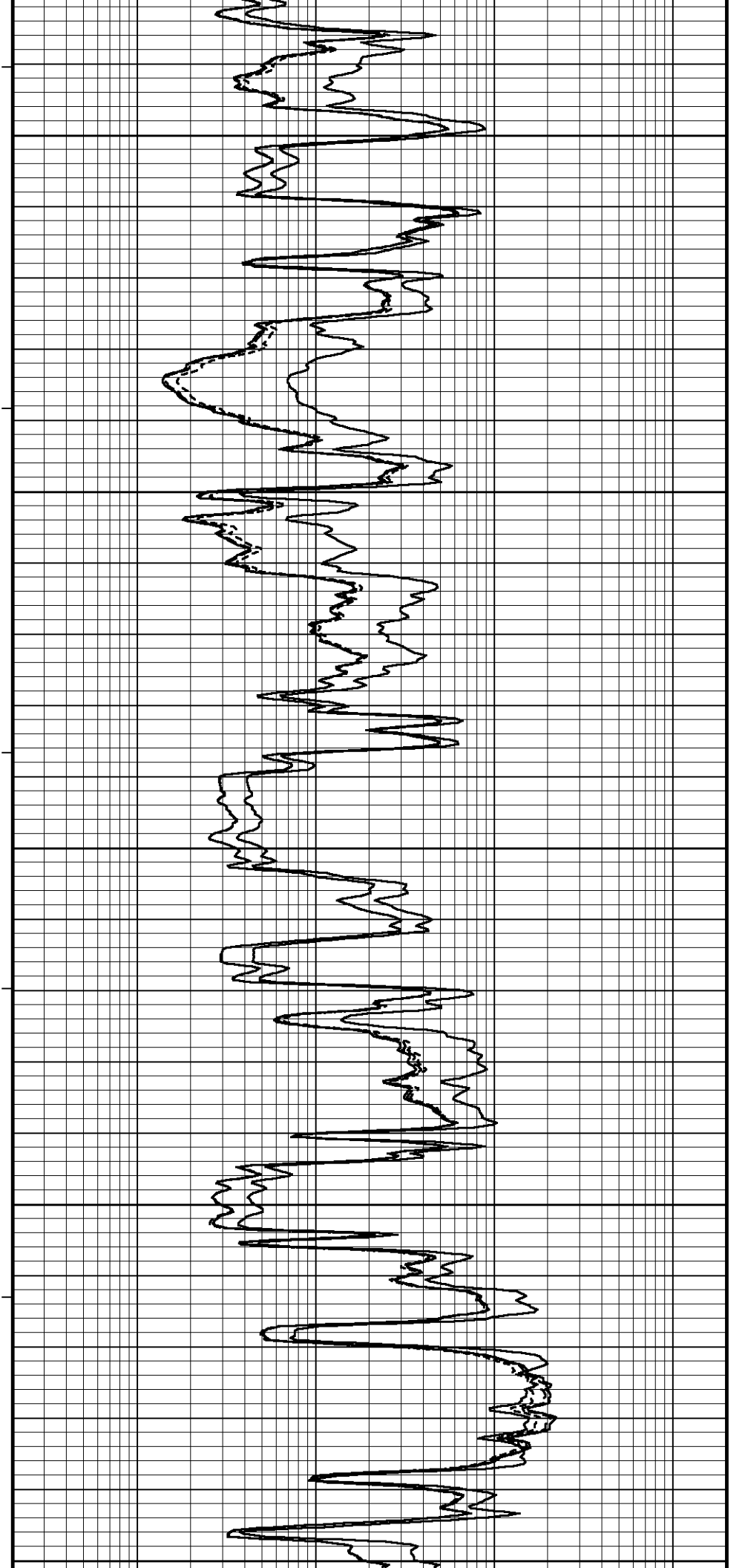
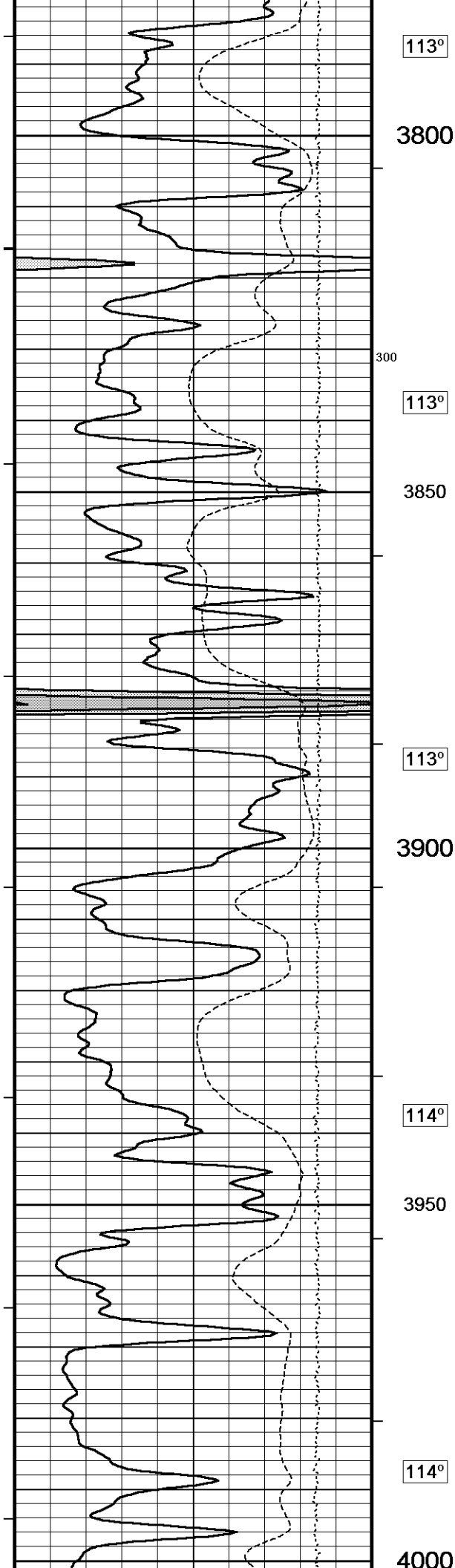
Array Ind. One Res Rt

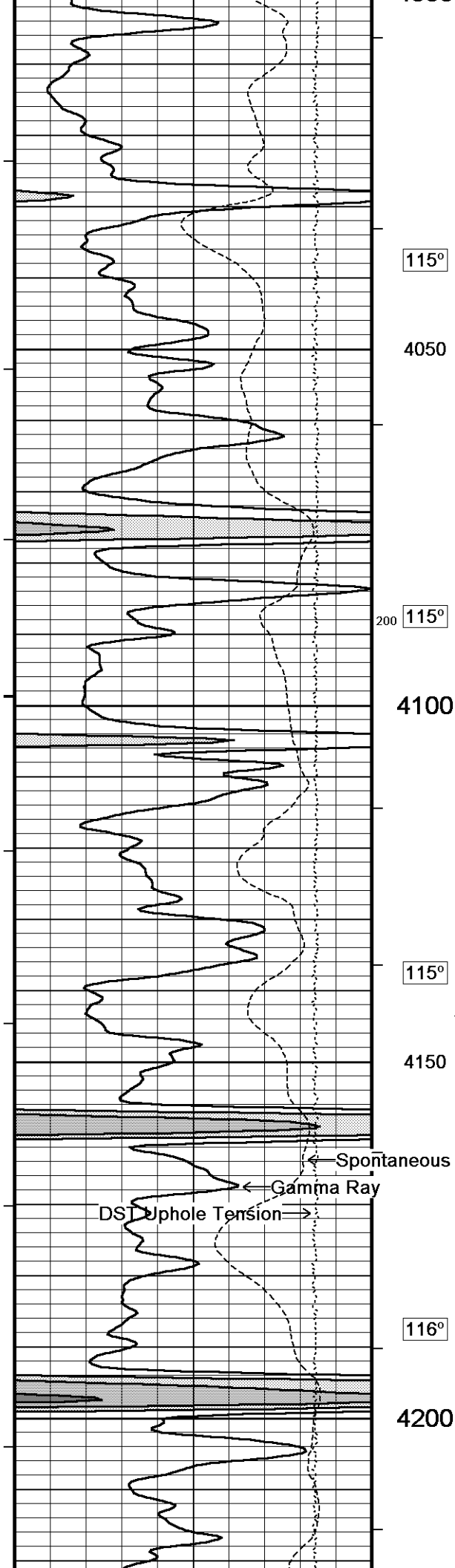
Array Ind. One Res 60

Array Ind. One Res 40

Shallow FE







115°

4050

115°

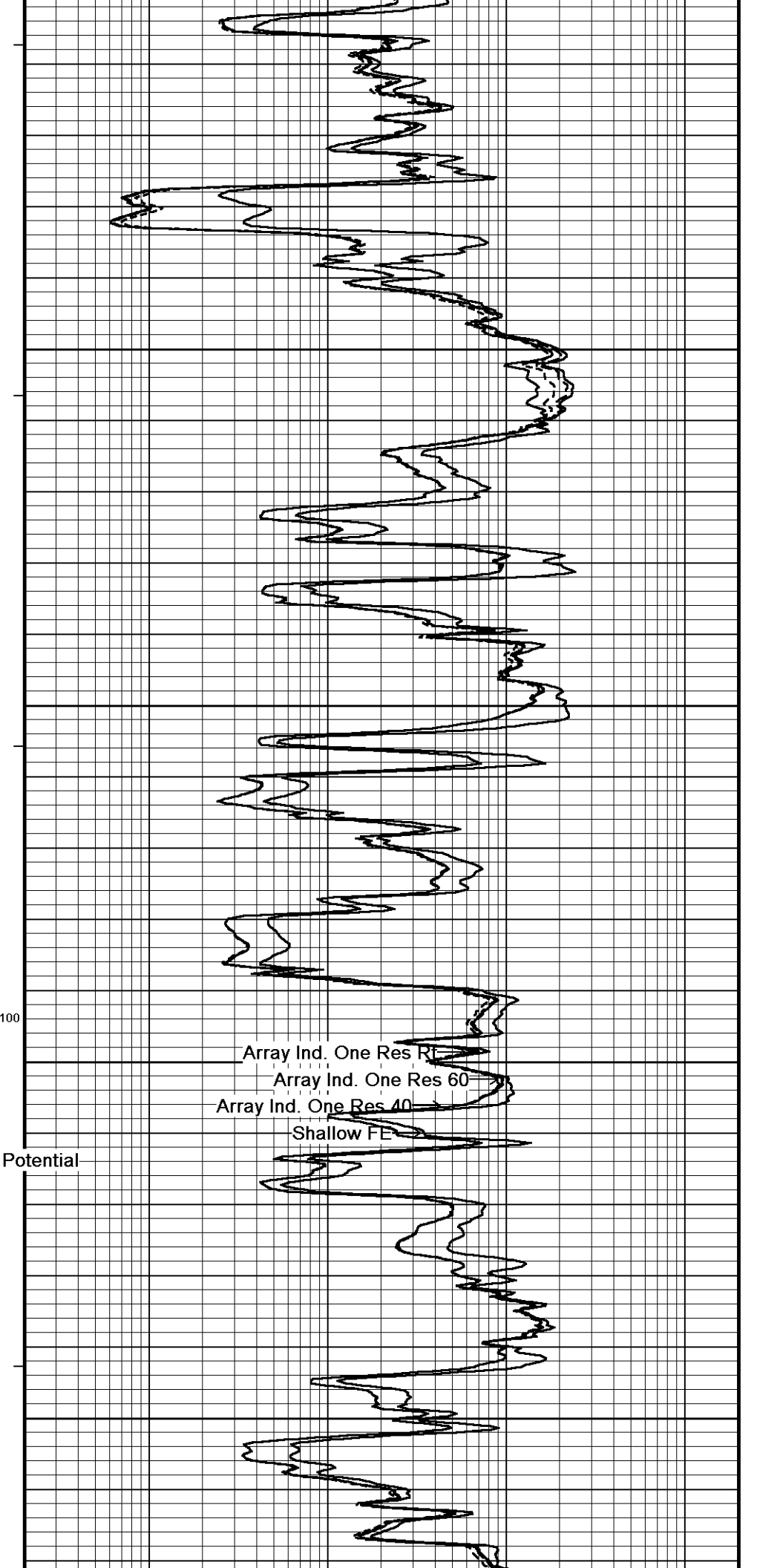
4100

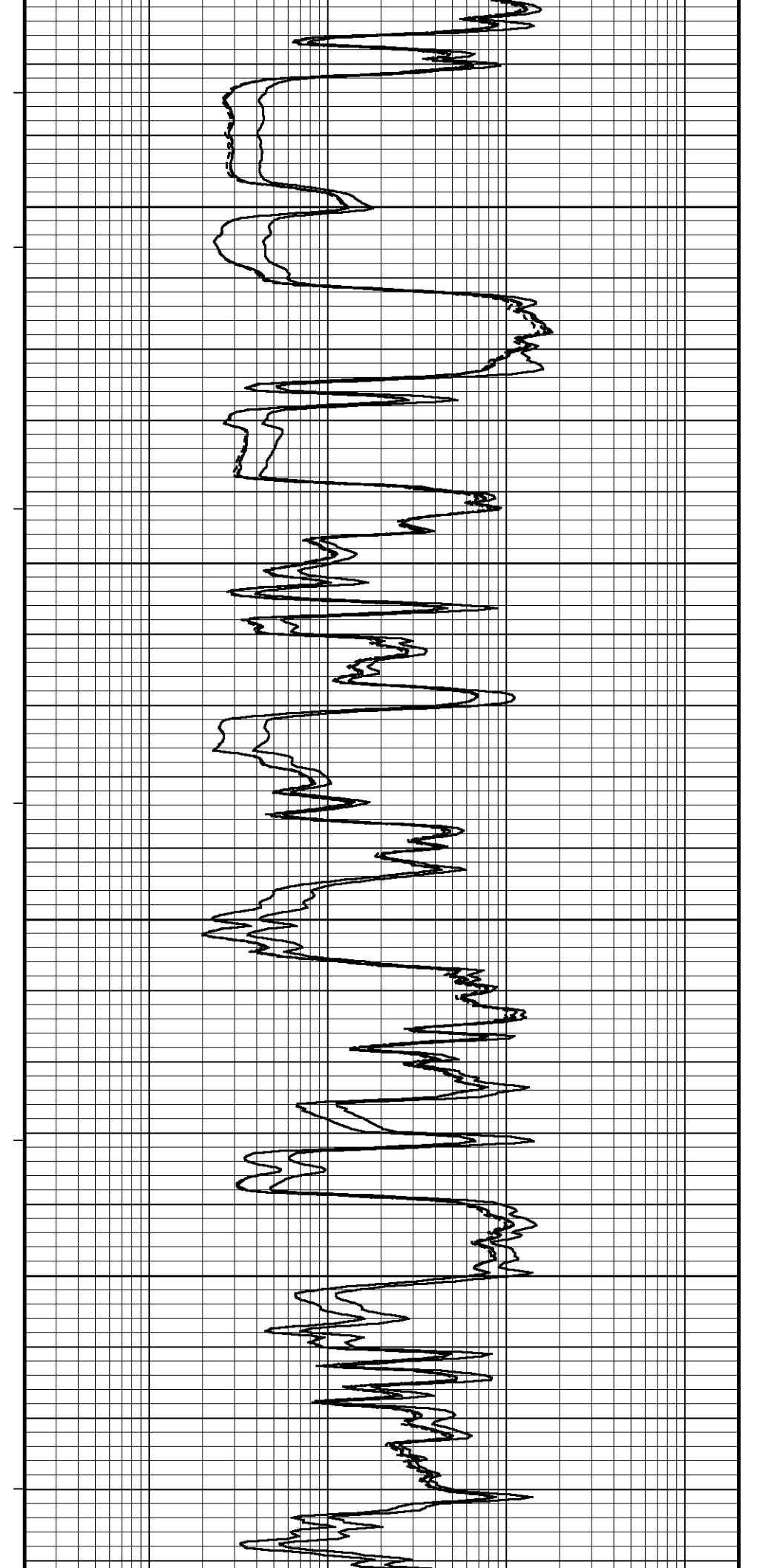
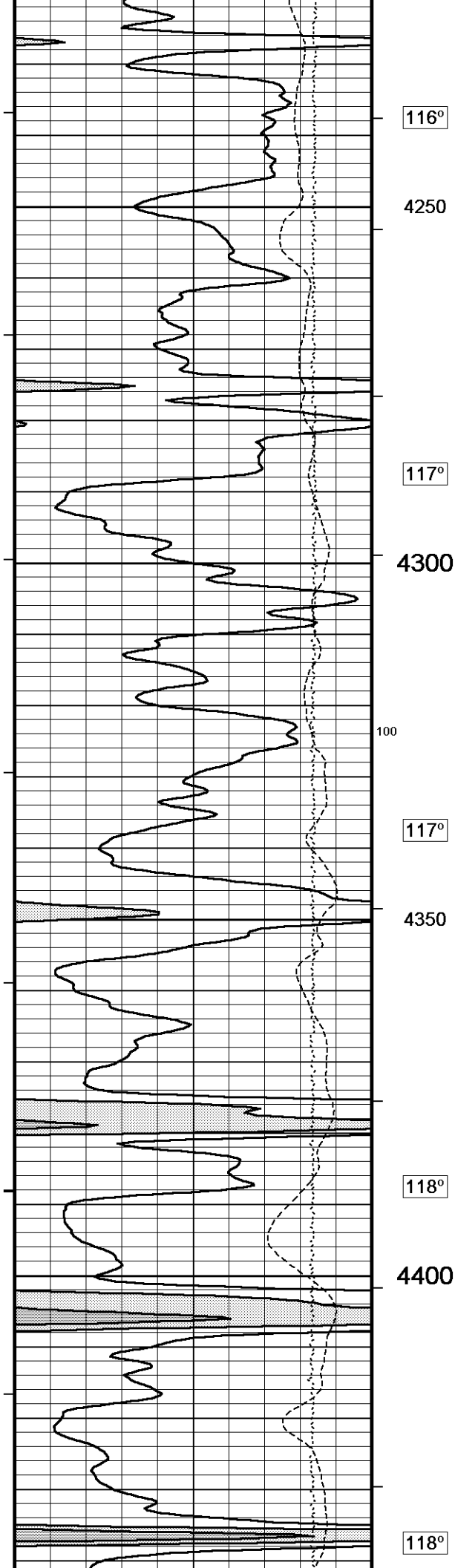
115°

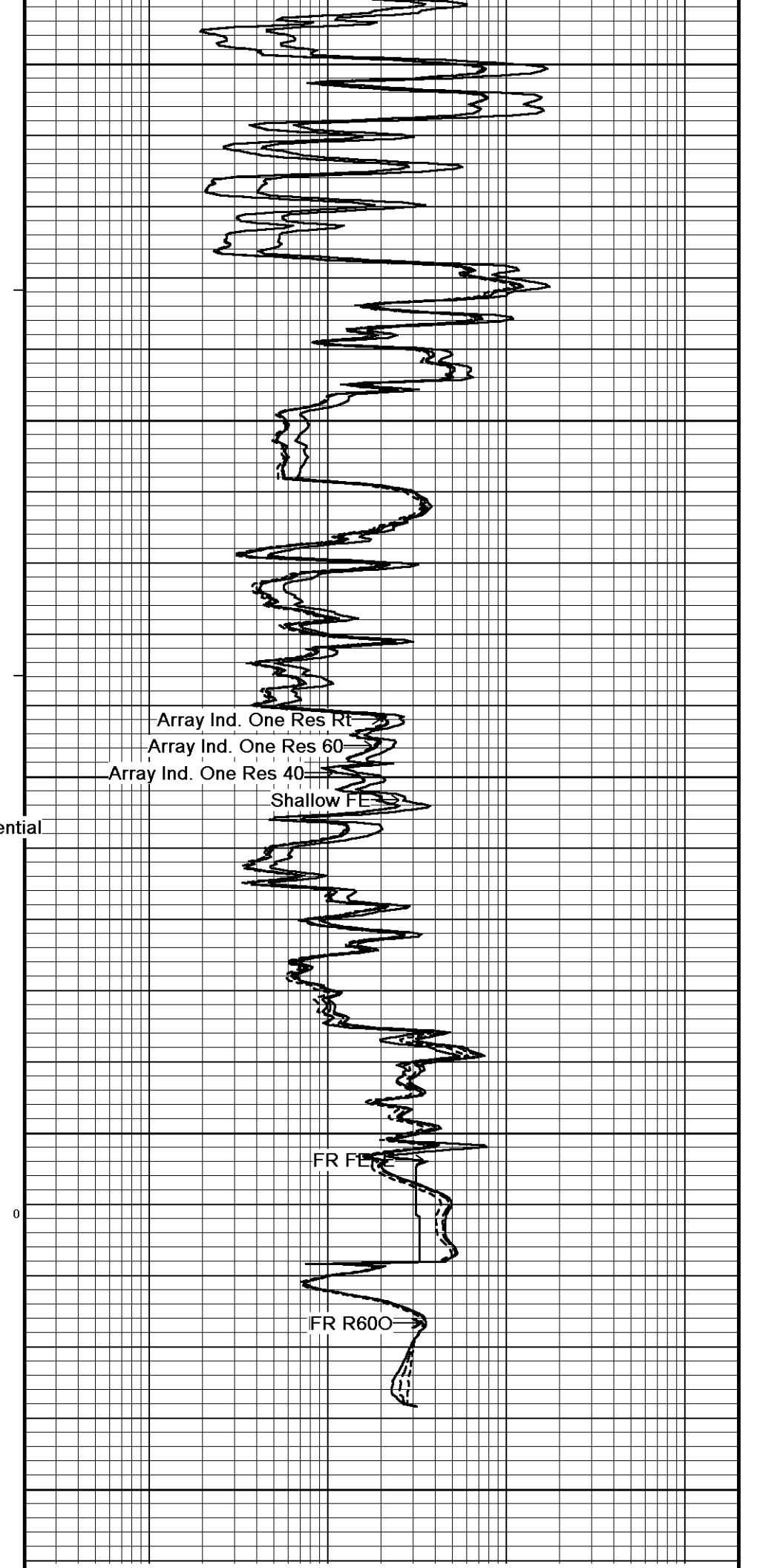
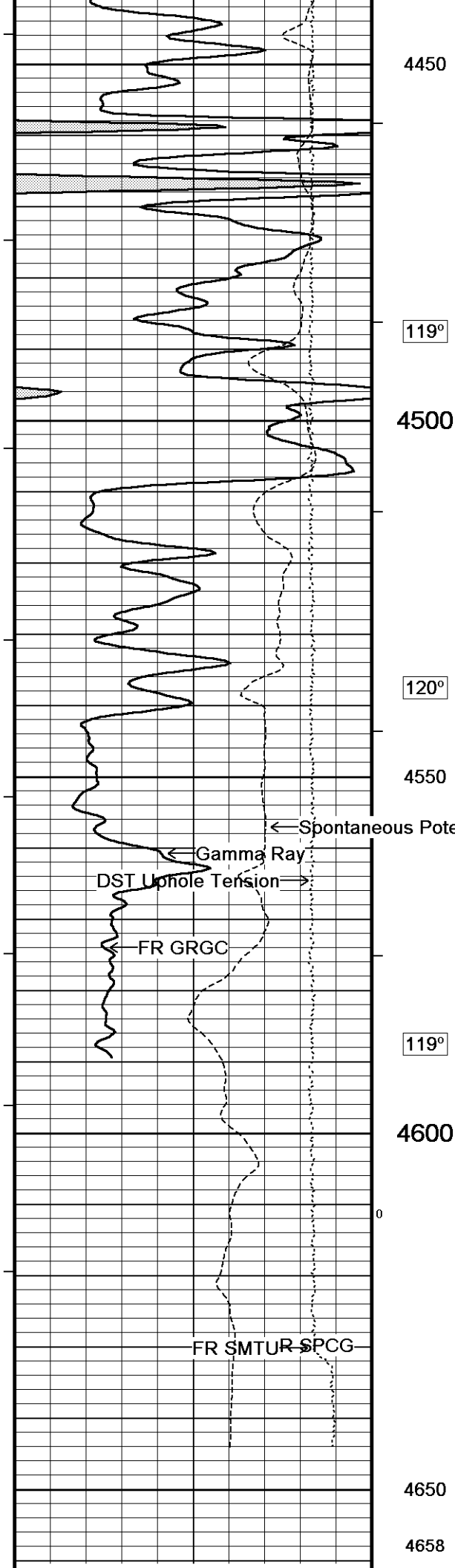
4150

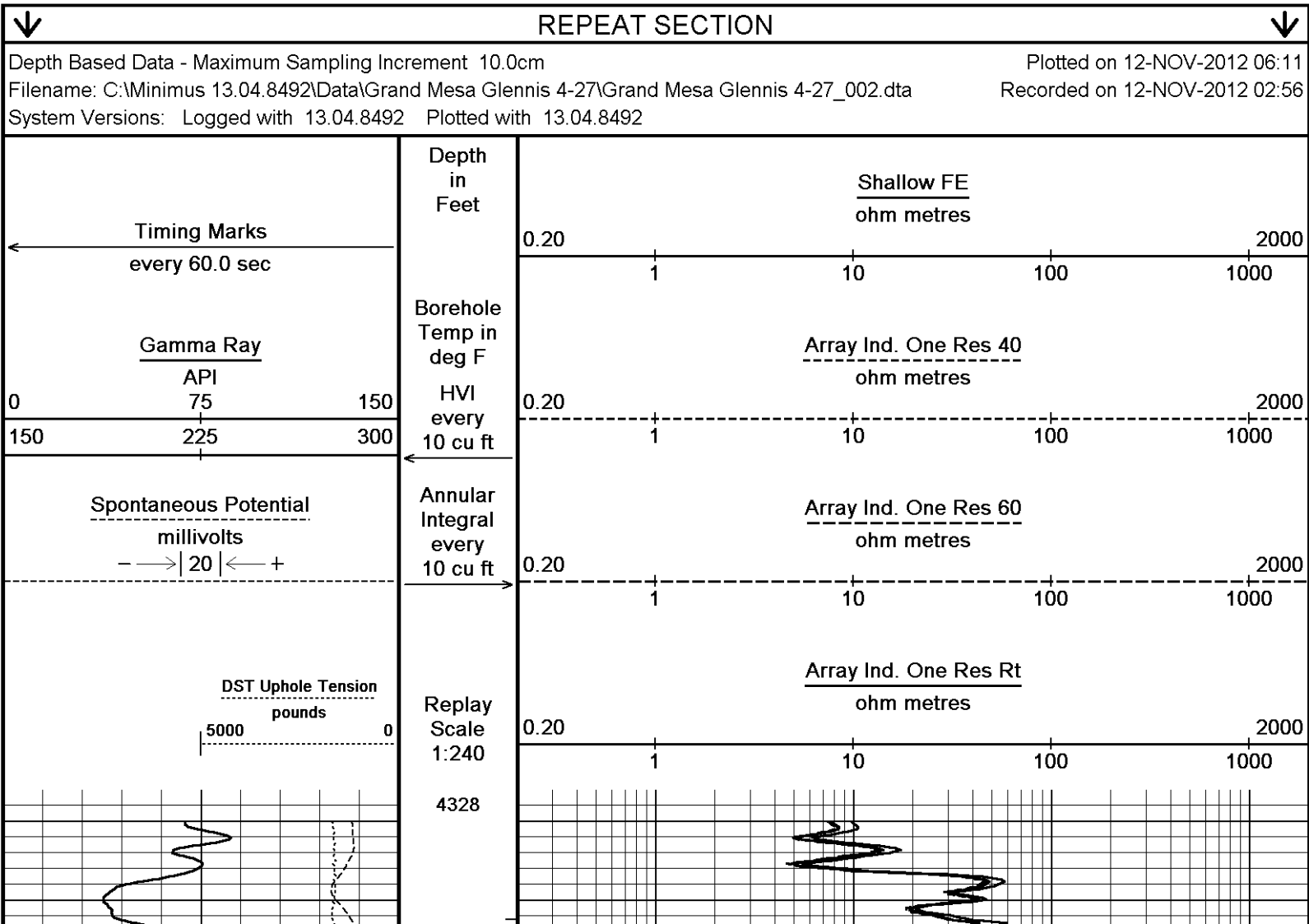
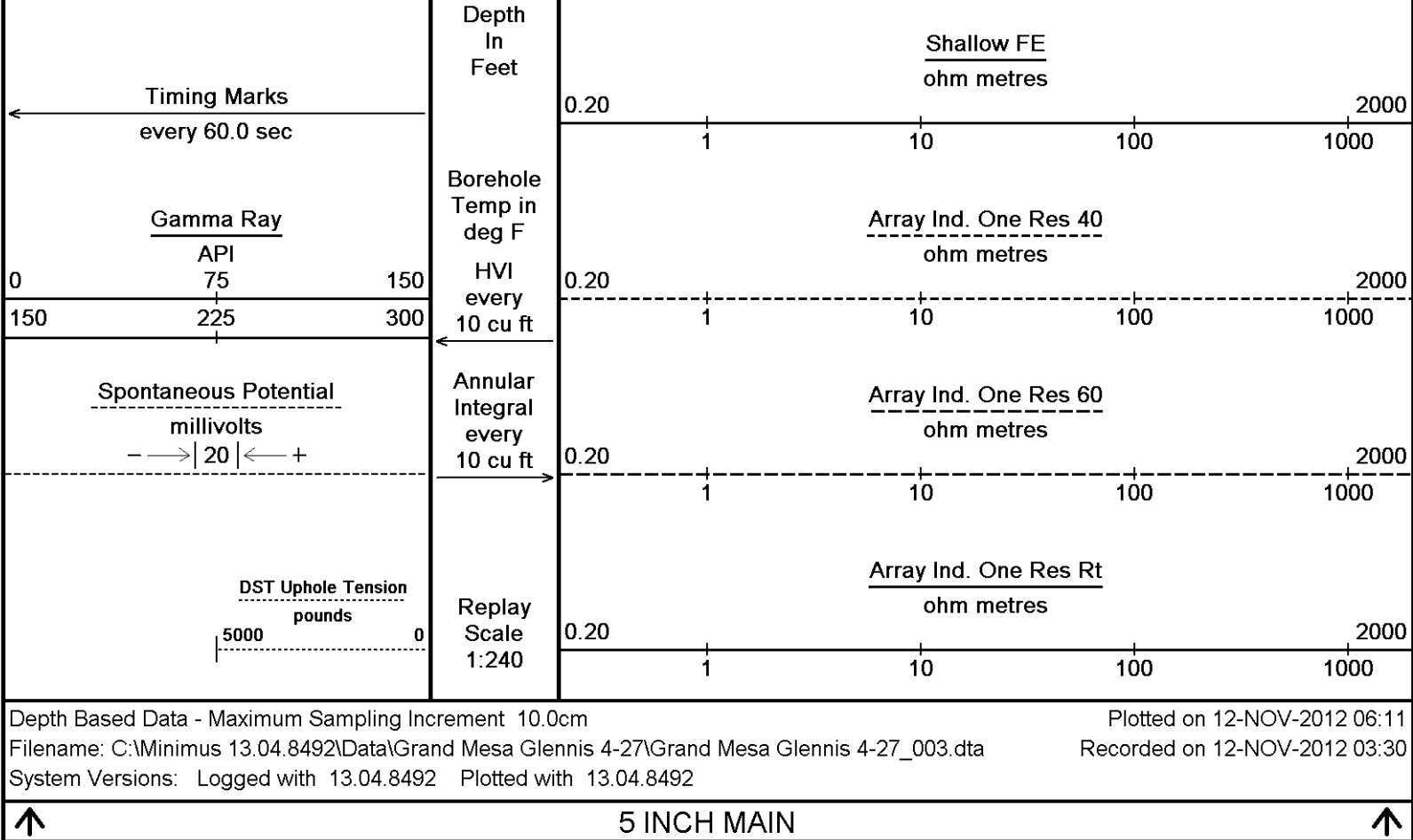
116°

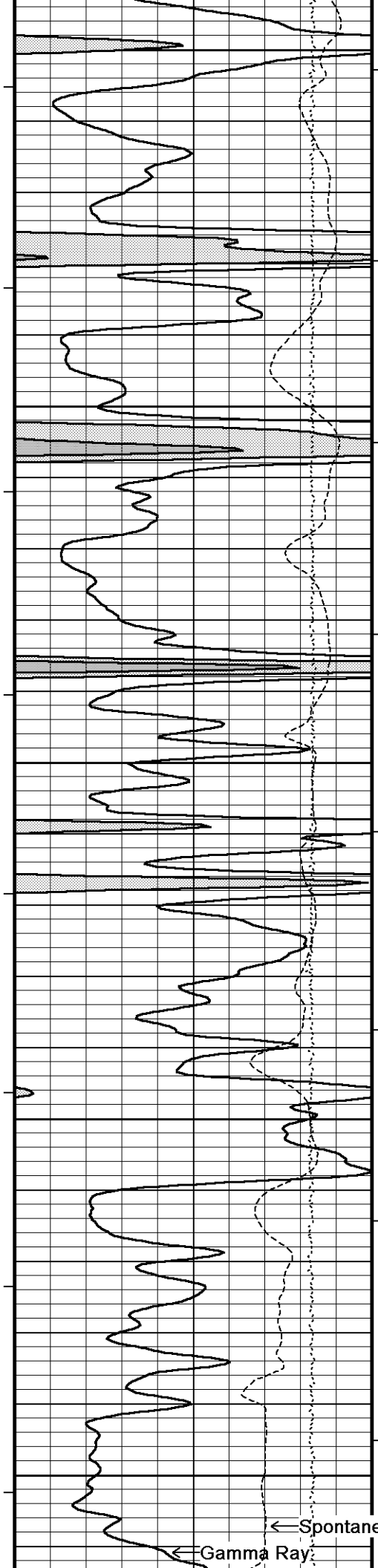
4200











4350

117°

4400

117°

4450

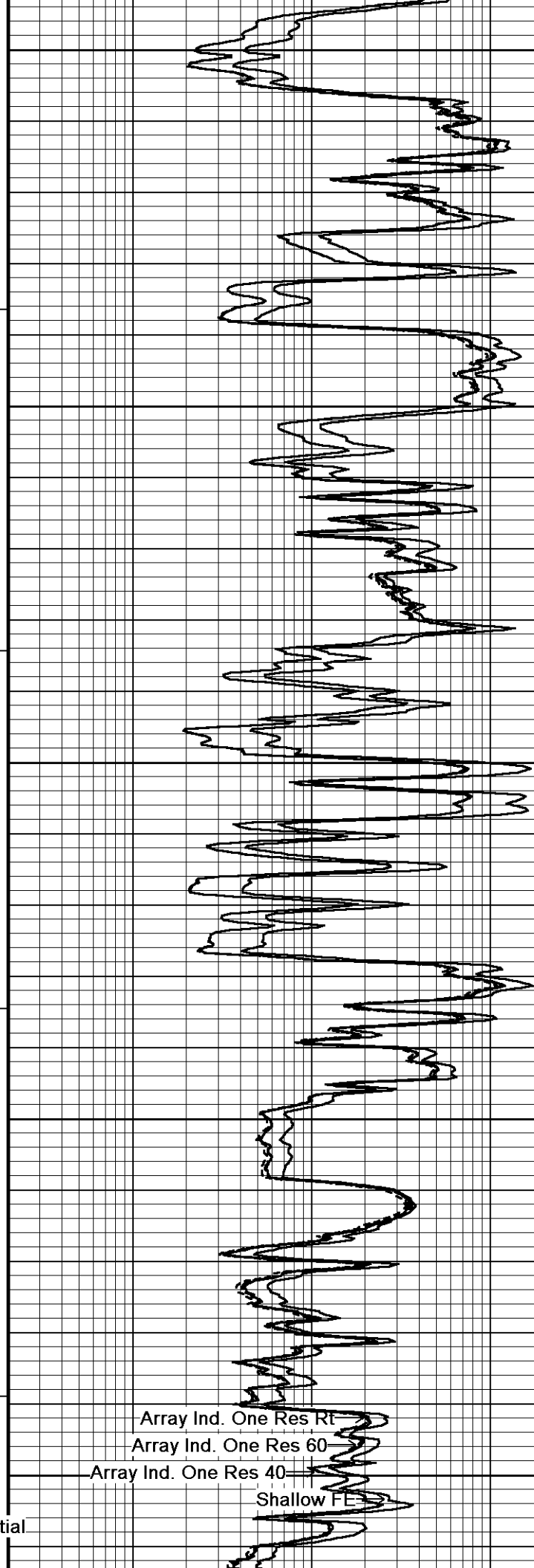
118°

4500

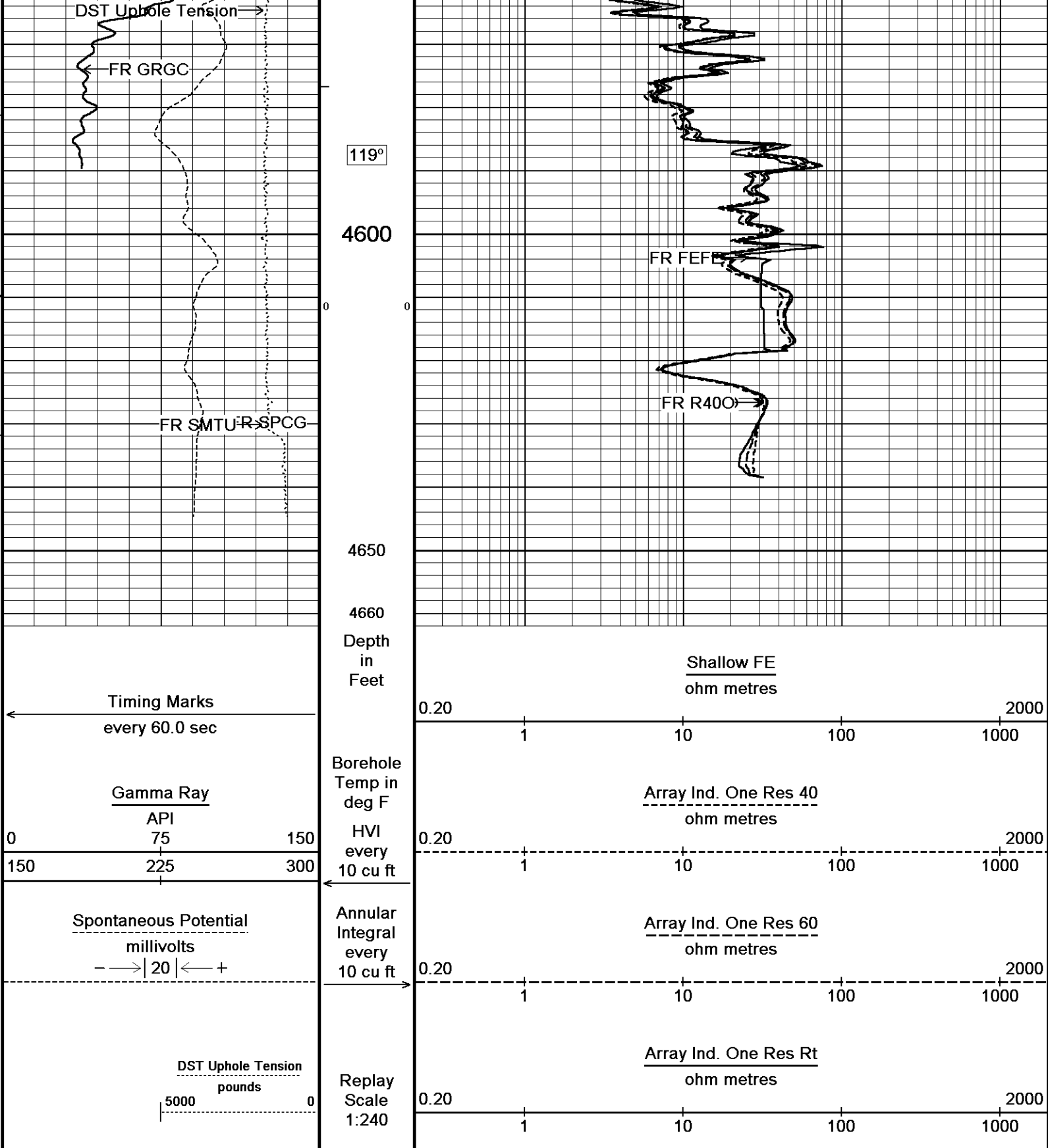
119°

4550

← Spontaneous Potential
← Gamma Ray



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



Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.04.8492\Data\Grand Mesa Glennis 4-27\Grand Mesa Glennis 4-27_002.dta
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492
Plotted on 12-NOV-2012 06:11
Recorded on 12-NOV-2012 02:56

↑ REPEAT SECTION ↑

General Parameters		
Mud Resistivity	1.290	ohm-metres
Mud Resistivity Temperature	64.000	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	Density Caliper	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. Four Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

Gamma Calibration MCG-C 208		Field Calibration on 07-NOV-2012 10:08
	Measured	Calibrated (API)
Background	75	55
Calibrator (Gross)	1067	780
Calibrator (Net)	992	725

Gamma Constants MCG-C 208		Last Edited on 08-NOV-2012,06:36
Gamma Calibrator Number	GR38	
Mud Density	1.12	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

High Resolution Temperature Calibration MCG-C 208		Field Calibration on 05-NOV-2012,14:26
	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MCG-C 208		Last Edited on 05-NOV-2012,14:25
Pre-filter Length	11	

FE Calibration MFE-B.J 352		Base Calibration on 05-NOV-2012 14:17
		Field Check on 07-NOV-2012 09:54
Base Calibration		
	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.3	126.8
Base Check		281.3
Field Check		281.3

FE Constants MFE-B.J 352		Last Edited on 12-NOV-2012,02:09
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

Induction Calibration MAI-A.A 45		Base Calibration on 05-NOV-2012,09:49
		Field Check on 07-NOV-2012 09:52
Base Calibration		
Test Loop Calibration		
Channel	Measured	Calibrated (mmho/m)
	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	78.4	Deg F		
Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			18.8	3850.7
2			31.9	3628.7
3			28.8	3048.9
4			18.4	2078.9
Deep			16.1	1911.0
Medium			42.7	4059.9
Shallow			49.9	5482.0
Array Temperature			62.5	Deg F
Induction Constants MAI-A.A 45			Last Edited on 12-NOV-2012,02:09	
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			
Caliper Calibration MPD-B 31			Base Calibration on 05-NOV-2012 10:35 Field Calibration on 07-NOV-2012 09:55	
Base Calibration				
Reading No	Measured		Calibrator Size (in)	
1	18880		3.99	
2	27744		5.98	
3	36416		7.97	
4	44768		9.86	
5	54080		11.92	
6	N/A		N/A	
Field Calibration				
	Measured Caliper (in)		Actual Caliper (in)	
	5.88		5.98	

DOWNHOLE EQUIPMENT

C:\Minimus 13.04.8492\Data\Grand Mesa Glennis 4-27\Grand Mesa Glennis 4-27_003.dta

Compact Comms Gamma
MCG-C 208 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

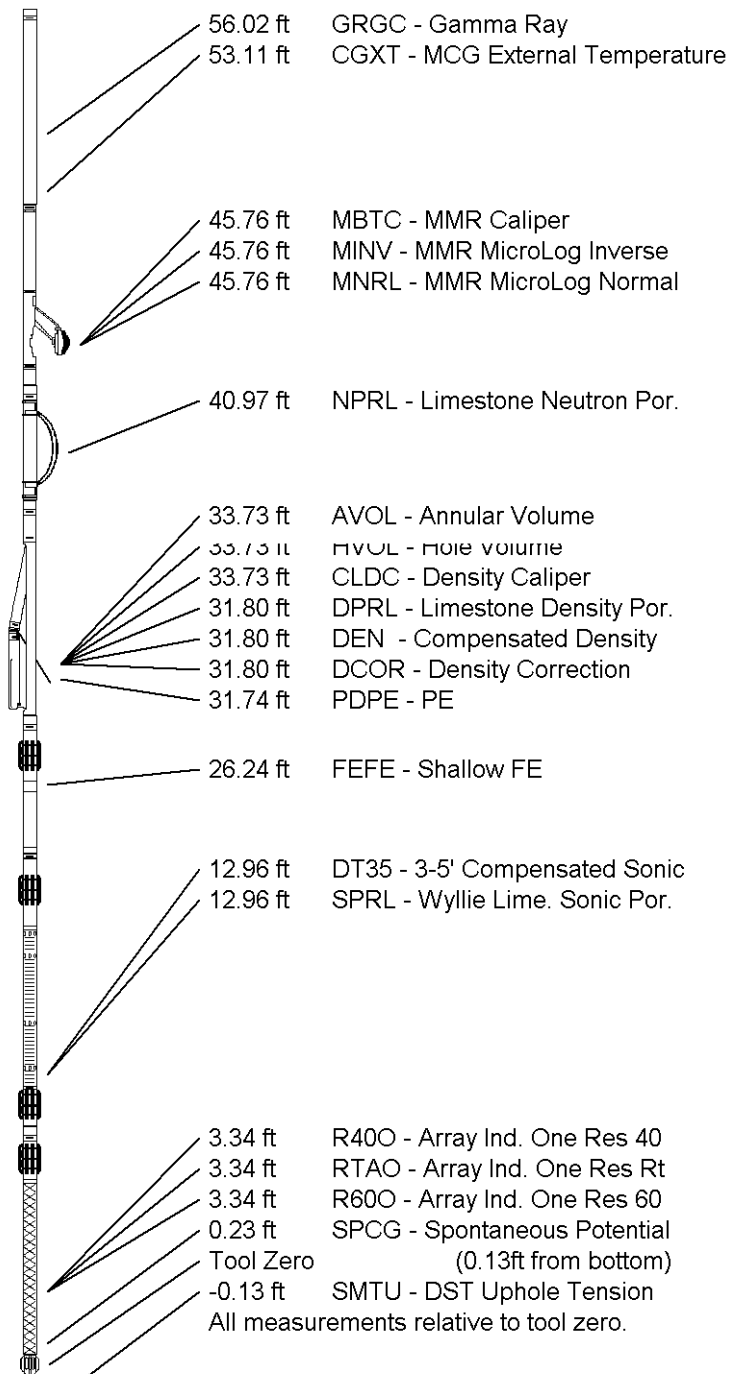
Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact 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: 61.30 ft Weight: 456.4 lb



COMPANY

GRAND MESA OPERATING COMPANY

WELL

GLENNIS 4-27

FIELD

WILDCAT

PROVINCE/COUNTY

GOVE

COUNTRY/STATE

U.S.A. / KANSAS

Elevation Kelly Bushing	2865.00	feet
Elevation Drill Floor	2863.00	feet
Elevation Ground Level	2860.00	feet

First Reading	4627.00	feet
Depth Driller	4630.00	feet
Depth Logger	4630.00	feet

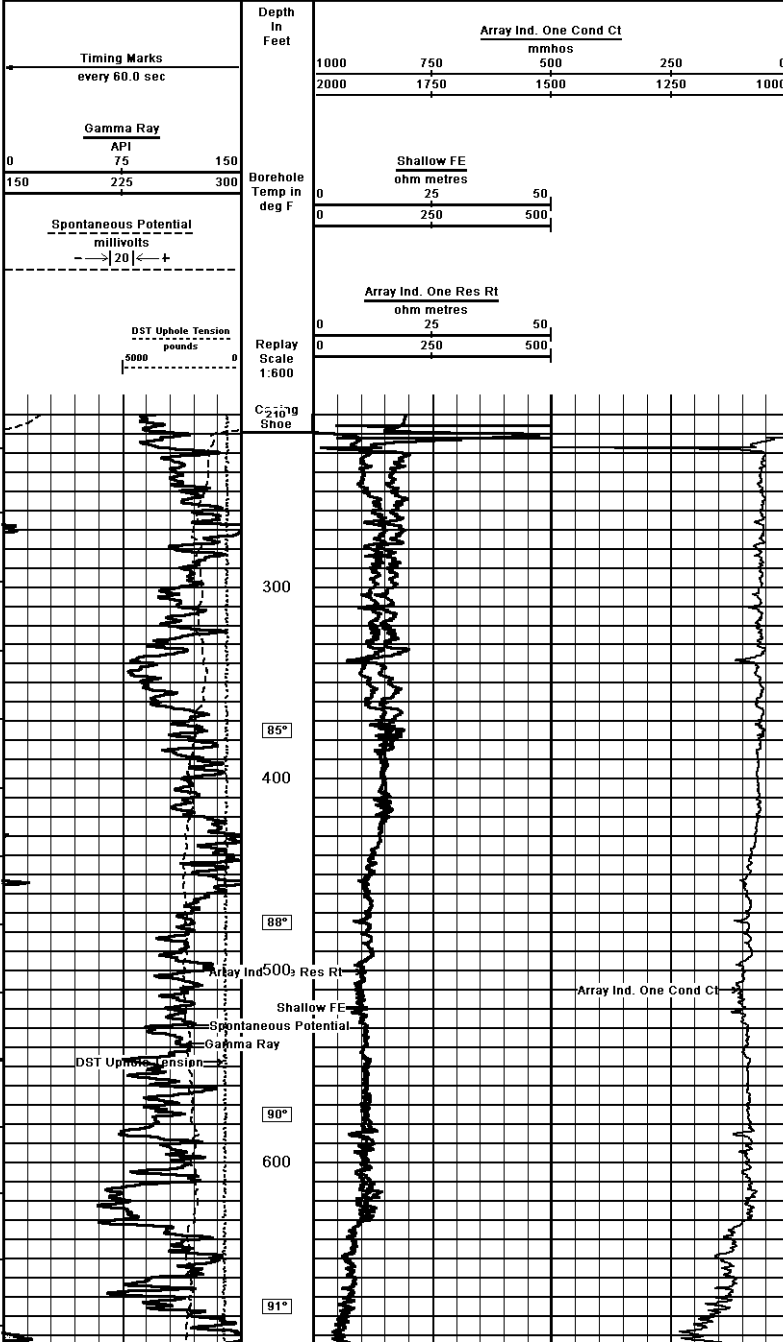


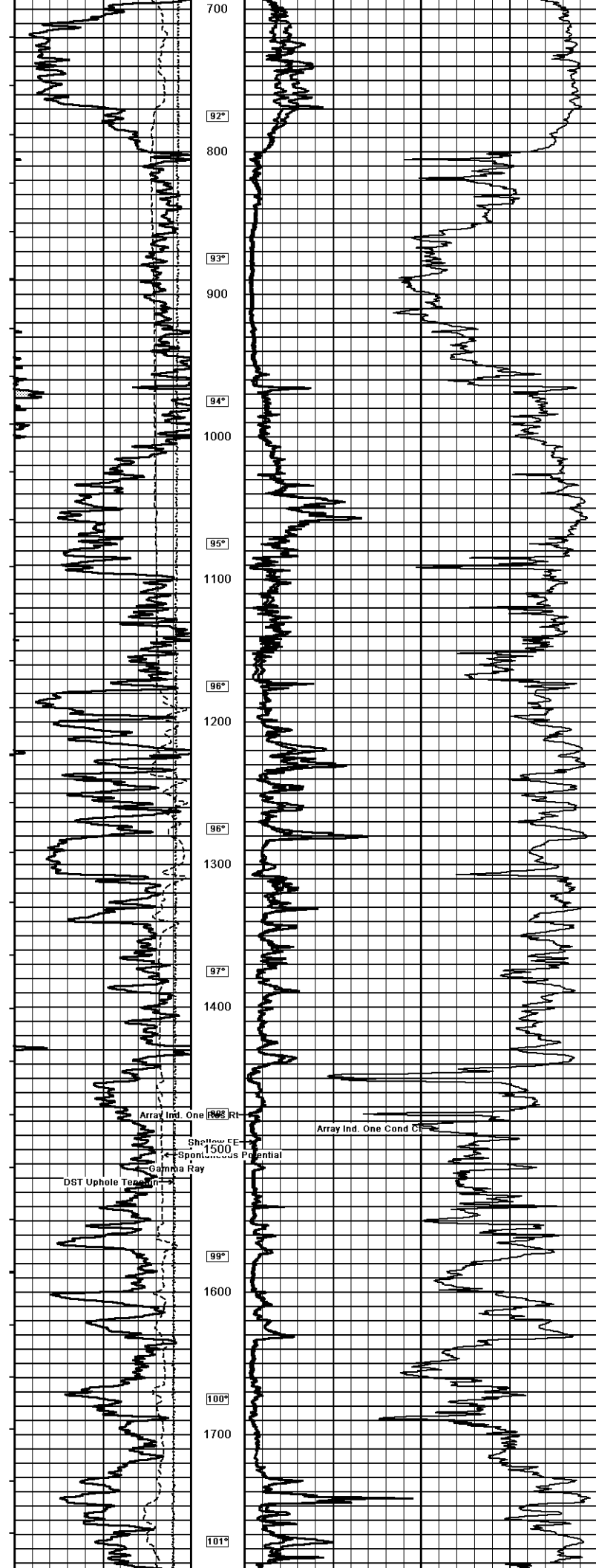
ARRAY INDUCTION
SHALLOW FOCUSED

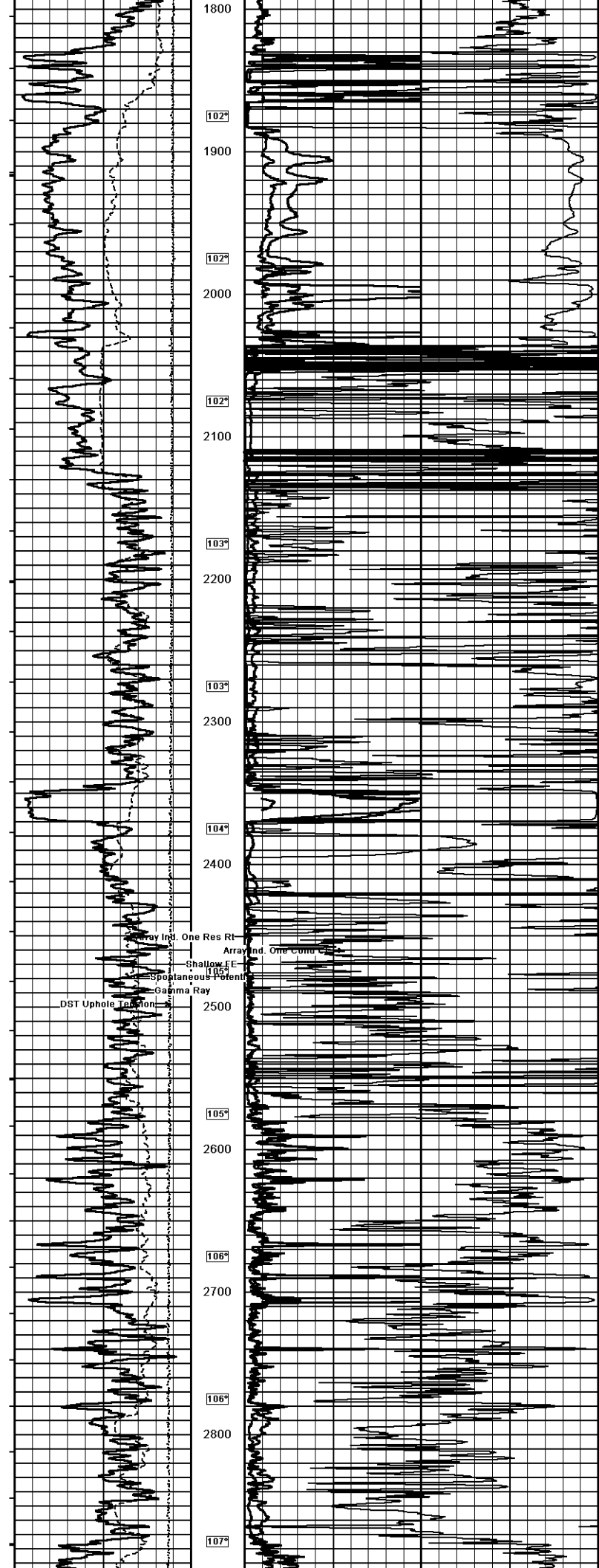
Weatherford		ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG	
COMPANY GLENNIS 4-27		GRAND MESA OPERATING COMPANY	
FIELD WILDCAT			
PROVINCE/COUNTY GOVE			
COUNTRY/STATE U.S.A. / KANSAS			
LOCATION 757' FML & 2013' FEL			
SEC 27	TRF 138	RTG 31W	Other Services MMS
Log Number 15-065-22054	MML		
Permanent Datum Q.L. Elevation 2860 feet			
Log Measured From KB		Elevations: H.B. 2865.00 P.F. 2863.00 Q.L. 2860.00	
Drilling Measured From KB			
Date 11-NOV-2012			
Run Number ONE			
Service Order 3538947			
Depth Driller 4430.00	feet		
Depth Logger 4430.00	feet		
First Reading 4427.00	feet		
Last Reading 219.00	feet		
Casing Driller 220.00	feet		
Casing Logger 219.00	feet		
Bit Size 7.875	inches		
Hole Fluid Type CHEMICAL	lb/USg		
Density/Viscosity 9.30 lb/USg	lb/USg		
RT/FLOWLINE 110.00	CP		
Sample Source FLOWLINE			
Rm @ Measured Temp 1.29 @ 64.0	ohm-m		
Rmt @ Measured Temp 1.03 @ 64.0	ohm-m		
Rmt @ Measured Temp 1.55 @ 64.0	ohm-m		
Source Rmt/Rmc CALC	CALC		
Rm @ BHT 0.72 @ 20.0	ohm-m		
Time Since Circulation 120.00	deg F		
Max Recorded Temp 130.67	deg F		
Equipment/Base RENT MATSON	LUB		
Witnessed By LEWIS-286			

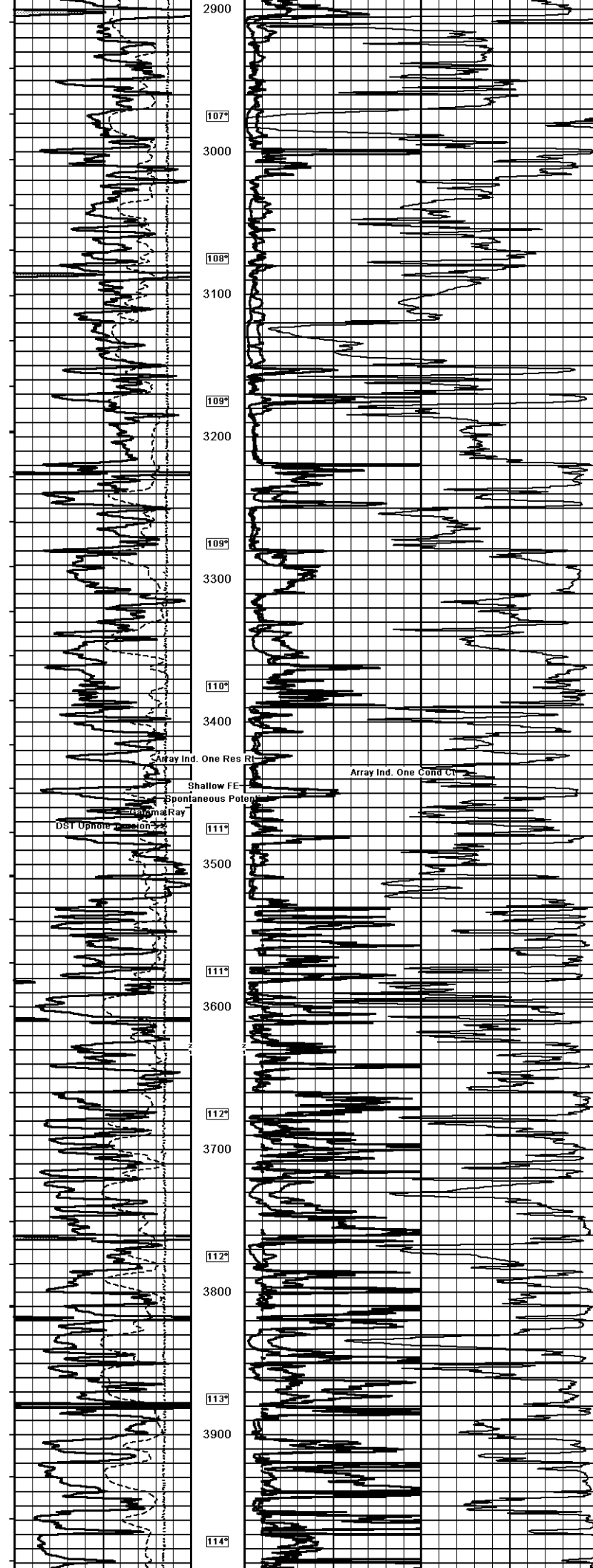
1 INCH MAIN

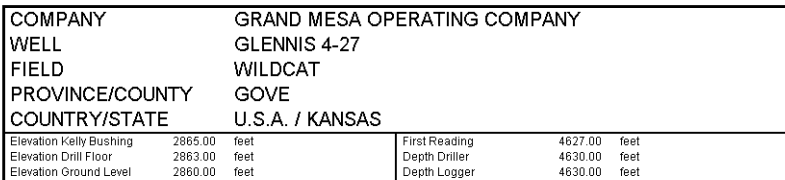
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 12-NOV-2012 06:11
Filename: C:\Minimus 13.04.8492\Data\Grand Mesa Glennis 4-27\Grand Mesa Glennis 4-27_003.dta Recorded on 12-NOV-2012 03:30
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492











ARRAY INDUCTION
SHALLOW FOCUSED

