

 Weatherford [®]				ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG			
COMPANY WELL FIELD PROVINCE/COUNTY COUNTRY/STATE LOCATION				GRAND MESA OPERATING BEAZLEY-CHAMBERS #2-13 WILDCAT GOVE U.S.A. / KANSAS 330' FSL & 2389' FEL			
SEC	TWP	RGE	Other Services				
13	13S	31W	MPD/MDN				
API Number		15-063-22020		MML			
Permit Number							
Permanent Datum G.L., Elevation 2861 feet				Elevations: feet			
Log Measured From KB				KB		2866.00	
Drilling Measured From K.B. @ 5 FEET				DF		2864.00	
				GL		2861.00	
Date	19-JUL-2012						
Run Number	ONE						
Depth Driller	4650.00			feet			
Depth Logger	4649.00			feet			
First Reading	4646.00			feet			
Last Reading	208.00			feet			
Casing Driller	210.00			feet			
Casing Logger	208.00			feet			
Bit Size	7.875			inches			
Hole Fluid Type	CHEMICAL						
Density / Viscosity	1.12 g/cc		64.00 CP				
PH / Fluid Loss	10.00		8.00 ml/30Min				
Sample Source	FLOWLINE						
Rm @ Measured Temp	1.24 @106.0			ohm-m			
Rmf @ Measured Temp	0.99 @106.0			ohm-m			
Rmc @ Measured Temp	1.49 @106.0			ohm-m			
Source Rmf / Rmc	CALC		CALC				
Rm @ BHT	1.05 @125.0		ohm-m				
Time Since Circulation	3 HOURS						
Max Recorded Temp	125.00		deg F				
Equipment Name	COMPACT						
Equipment / Base	13096		LIB				
Recorded By	R.HOFFMAN						
Witnessed By	JOHN GOLDSMITH						
S.O. # / JOB #	3534501			LB12-187			

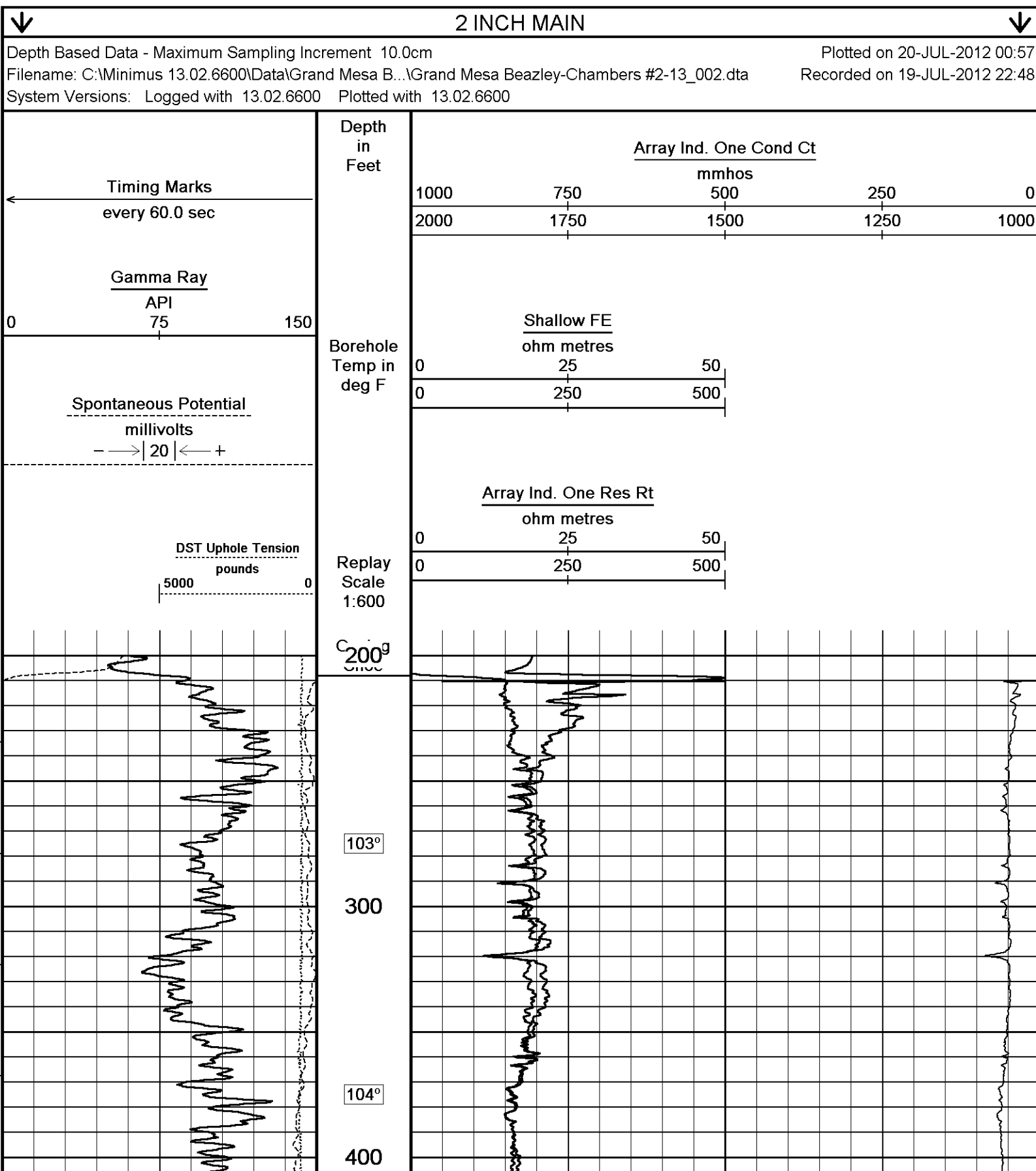
BOREHOLE RECORD					Last Edited: 20-JUL-2012 00:33
Bit Size inches		Depth From feet		Depth To feet	
7.875		208.00		4649.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	208.00	24.00	

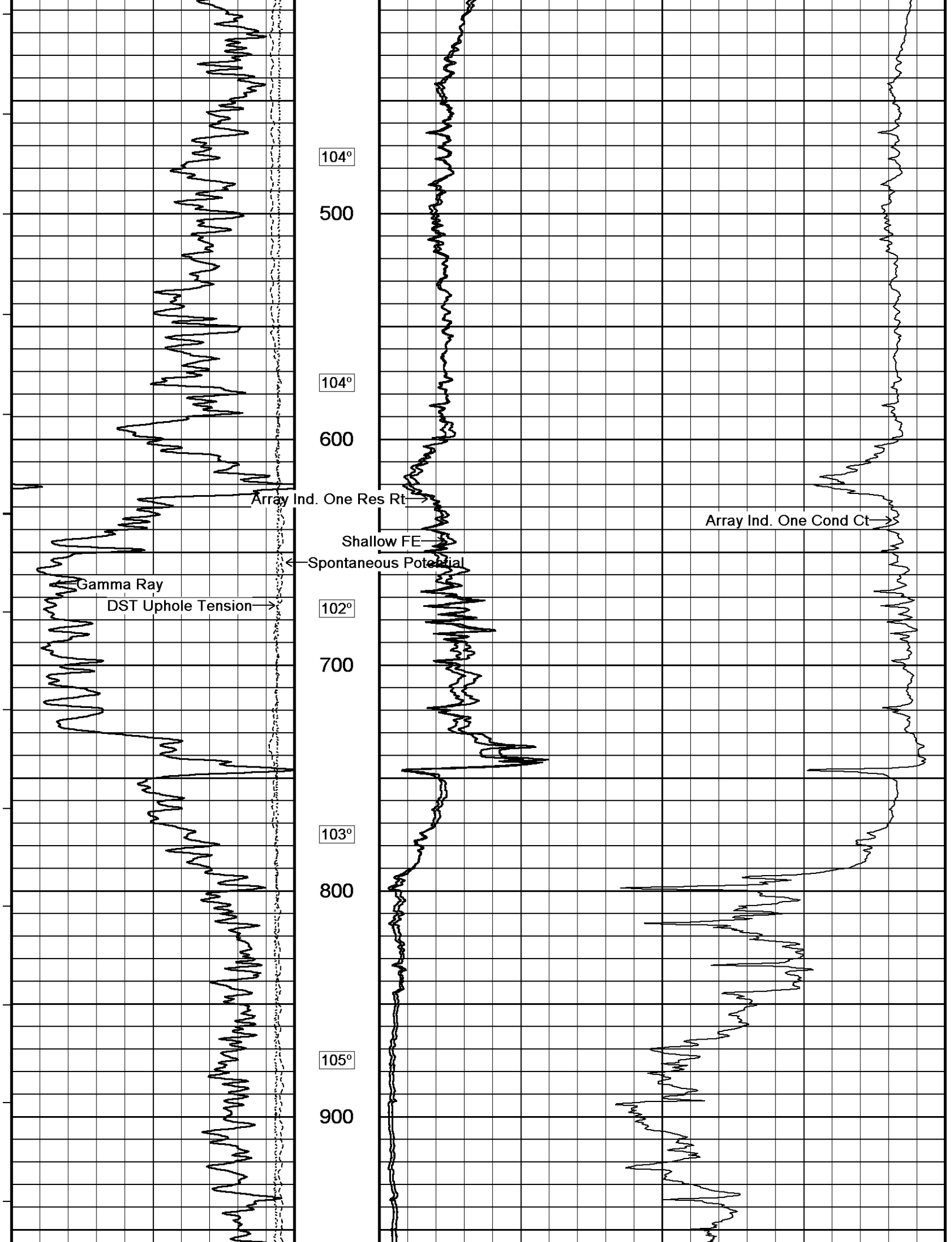
REMARKS
- SOFTWARE ISSUE: WLS 13.02.6600.
- MCG, MML, MDN, MPD, MFE, MAI RAN IN COMBINATION.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
- TOTAL HOLE VOLUME FROM TD TO BOTTOM OF DRILL PIPE: 1979 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH CASING: 228 CU. FT.
- SERVICE ORDER # 3534501
- RIG: MURPHIN #24

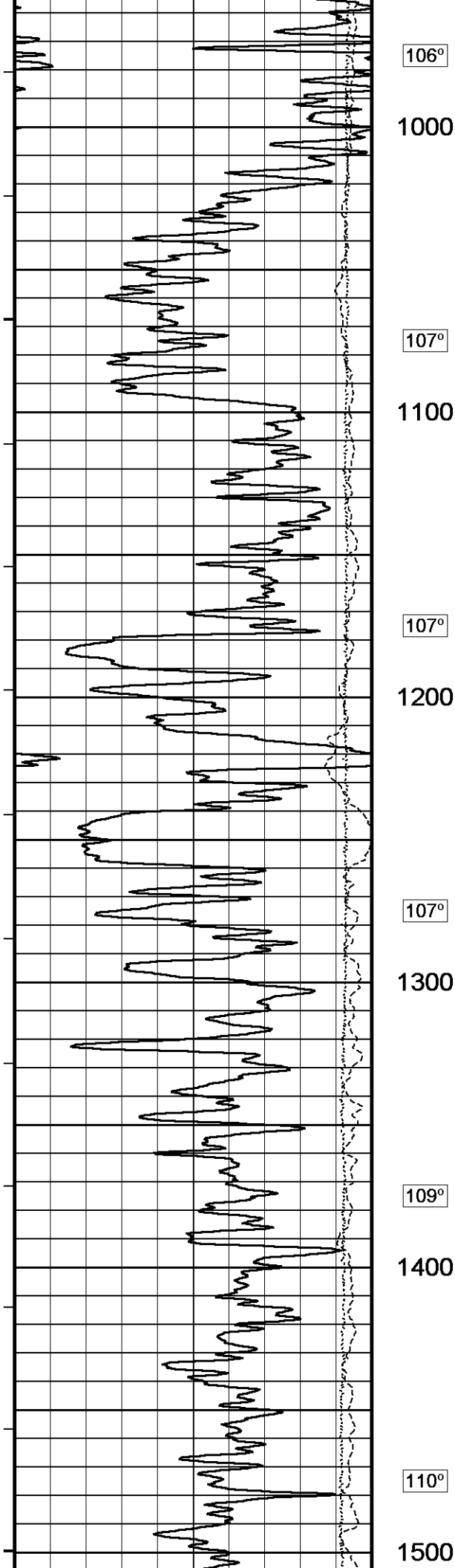
- ENGINEER: R. HOFFMAN

- OPERATOR(S): B. REEVES

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.







106°

1000

107°

1100

107°

1200

107°

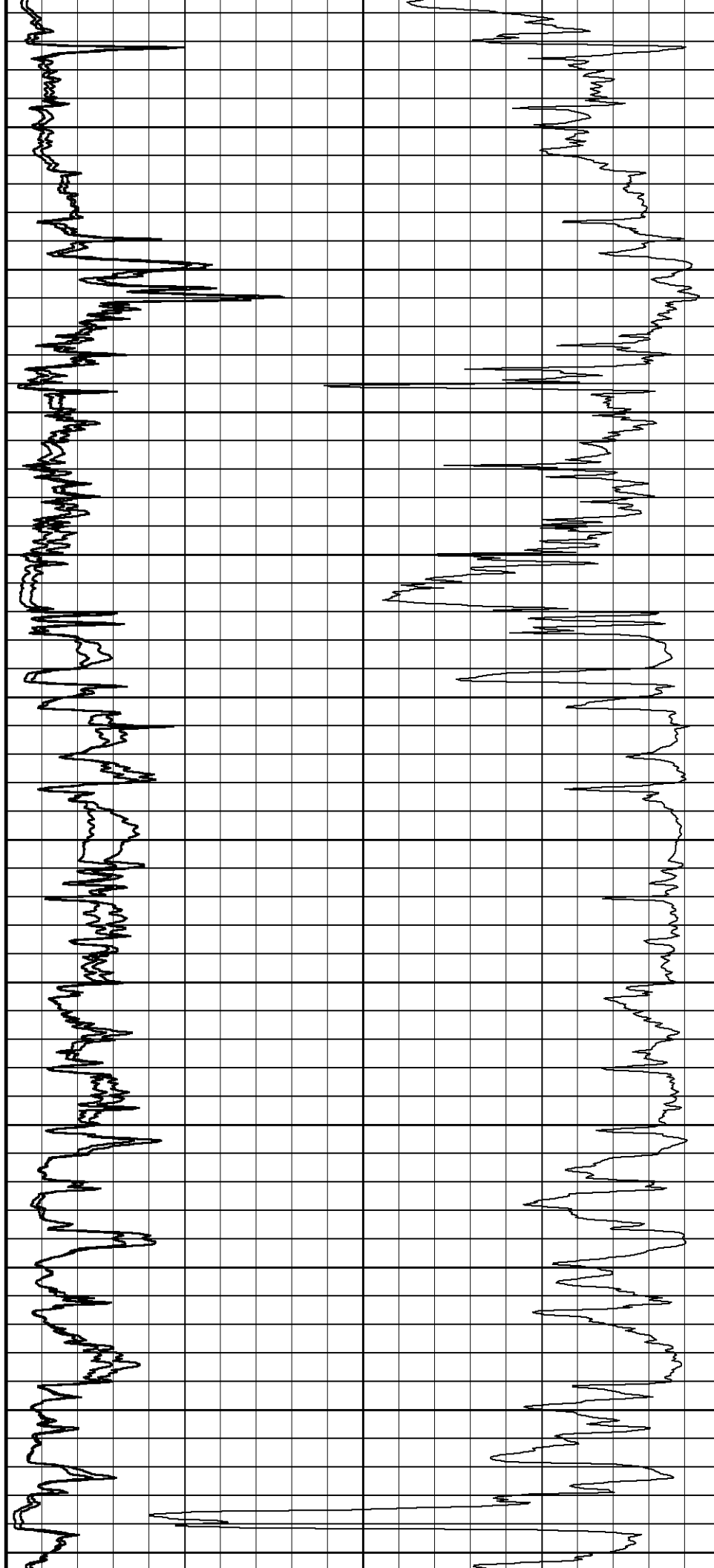
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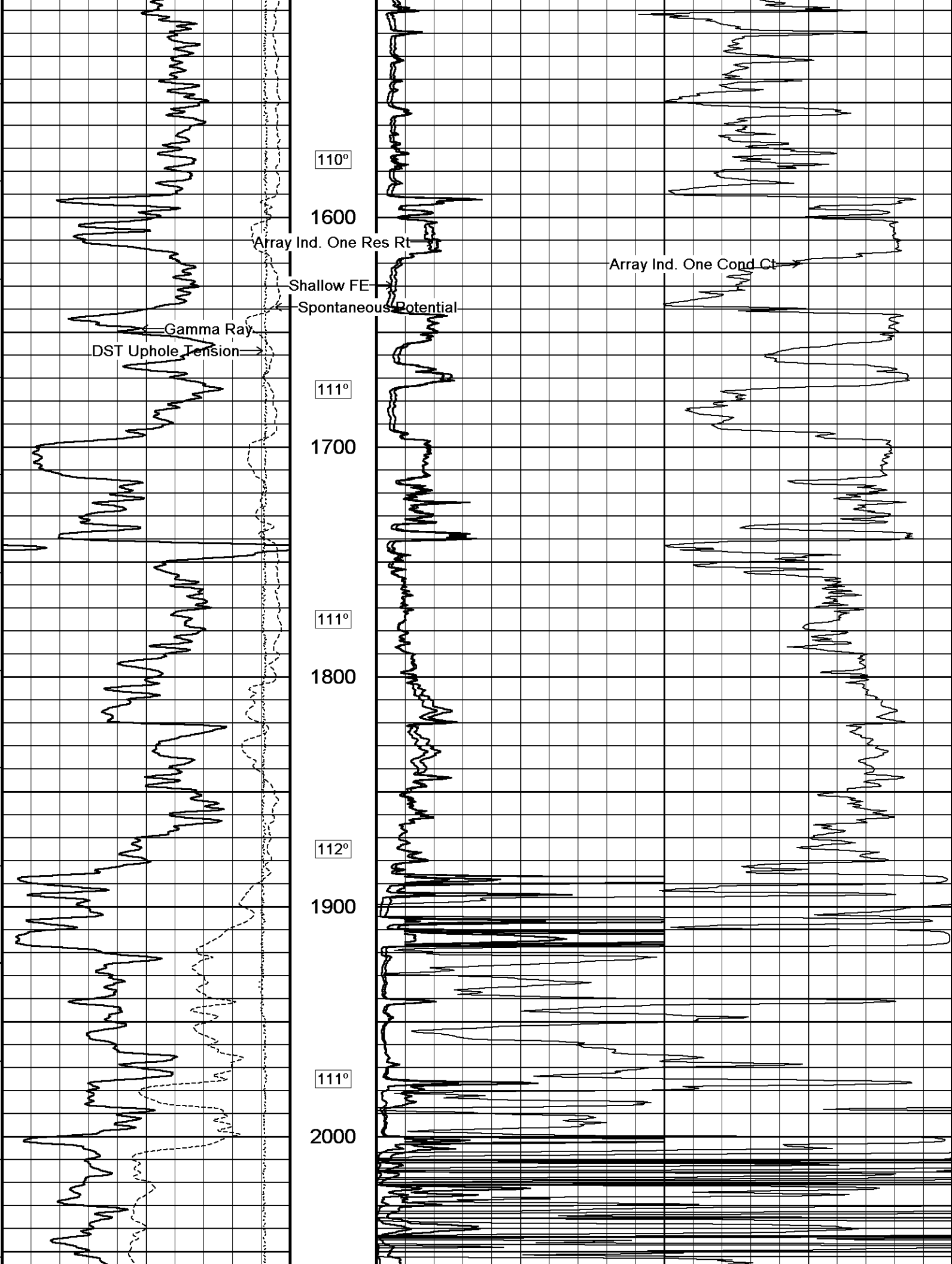
109°

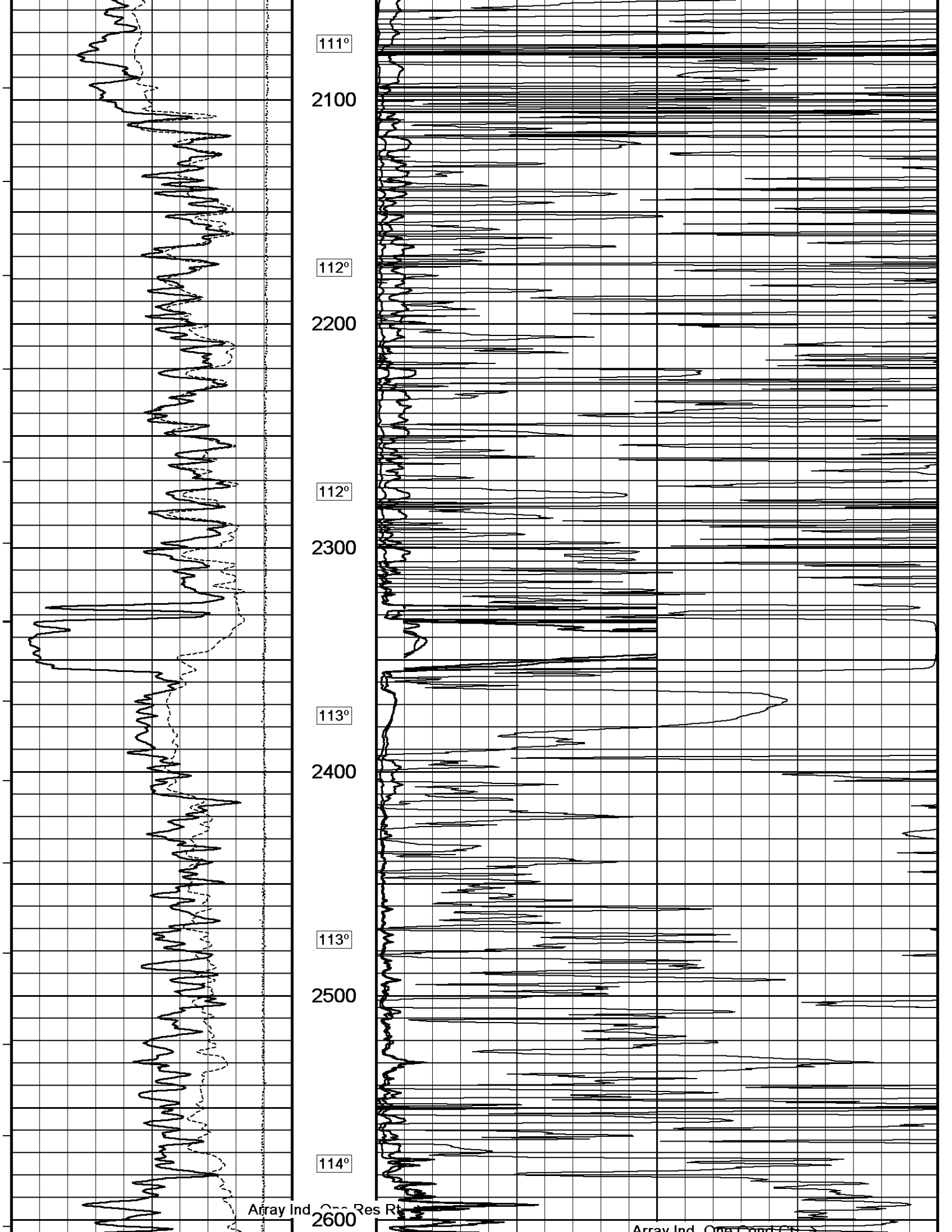
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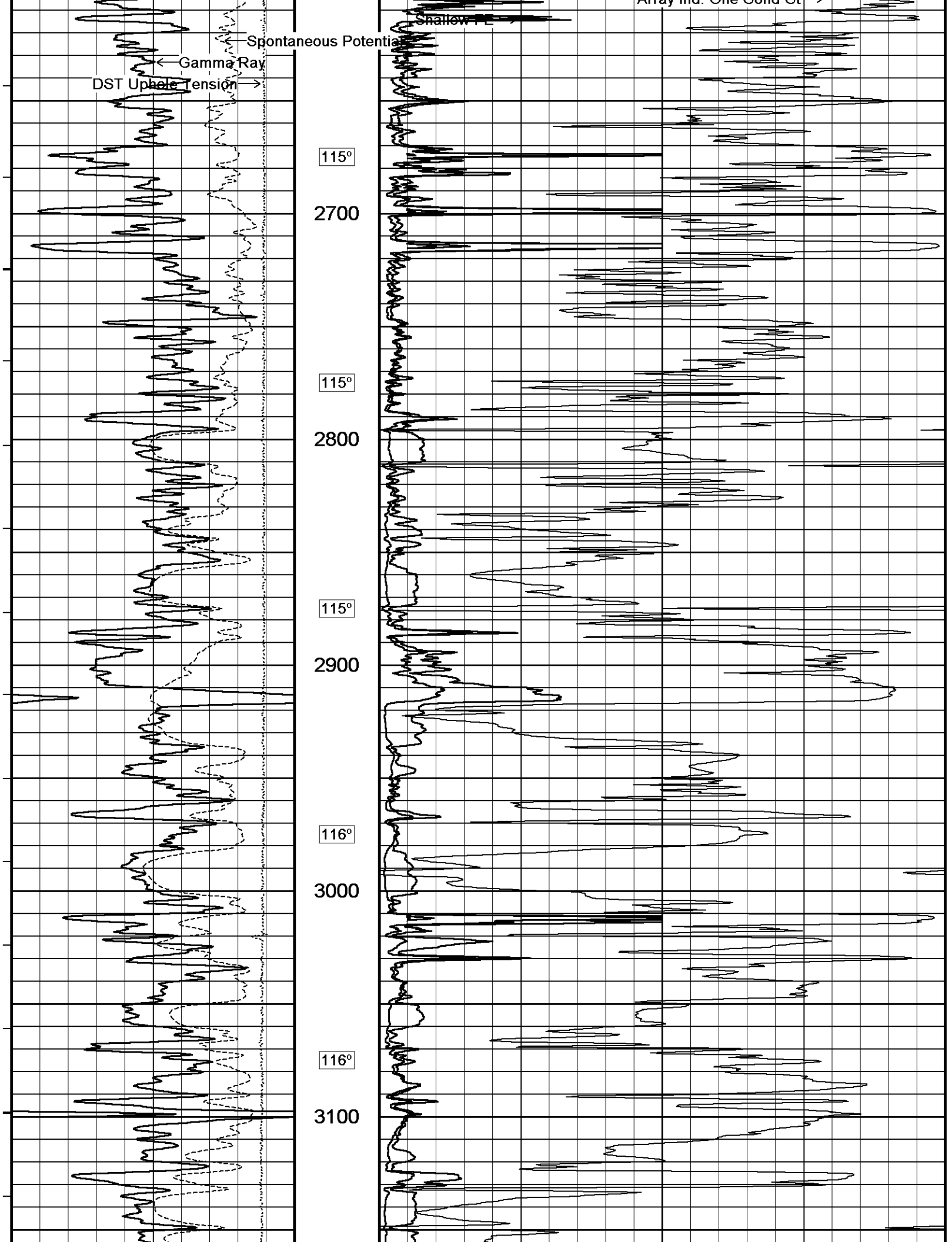
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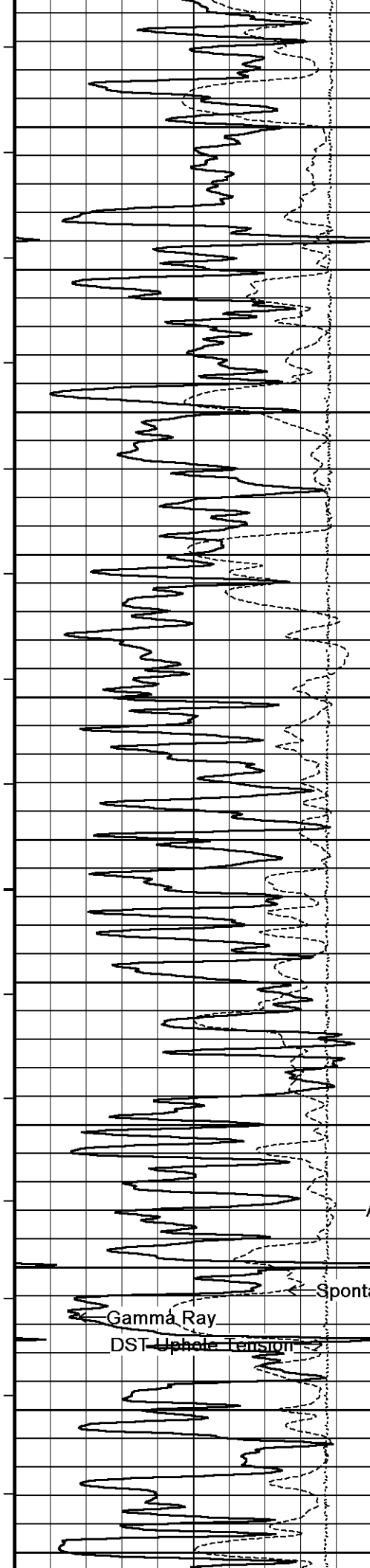
1500











117°

3200

117°

3300

118°

3400

118°

3500

119°

Array Ind. One Res Rt

3600 FE

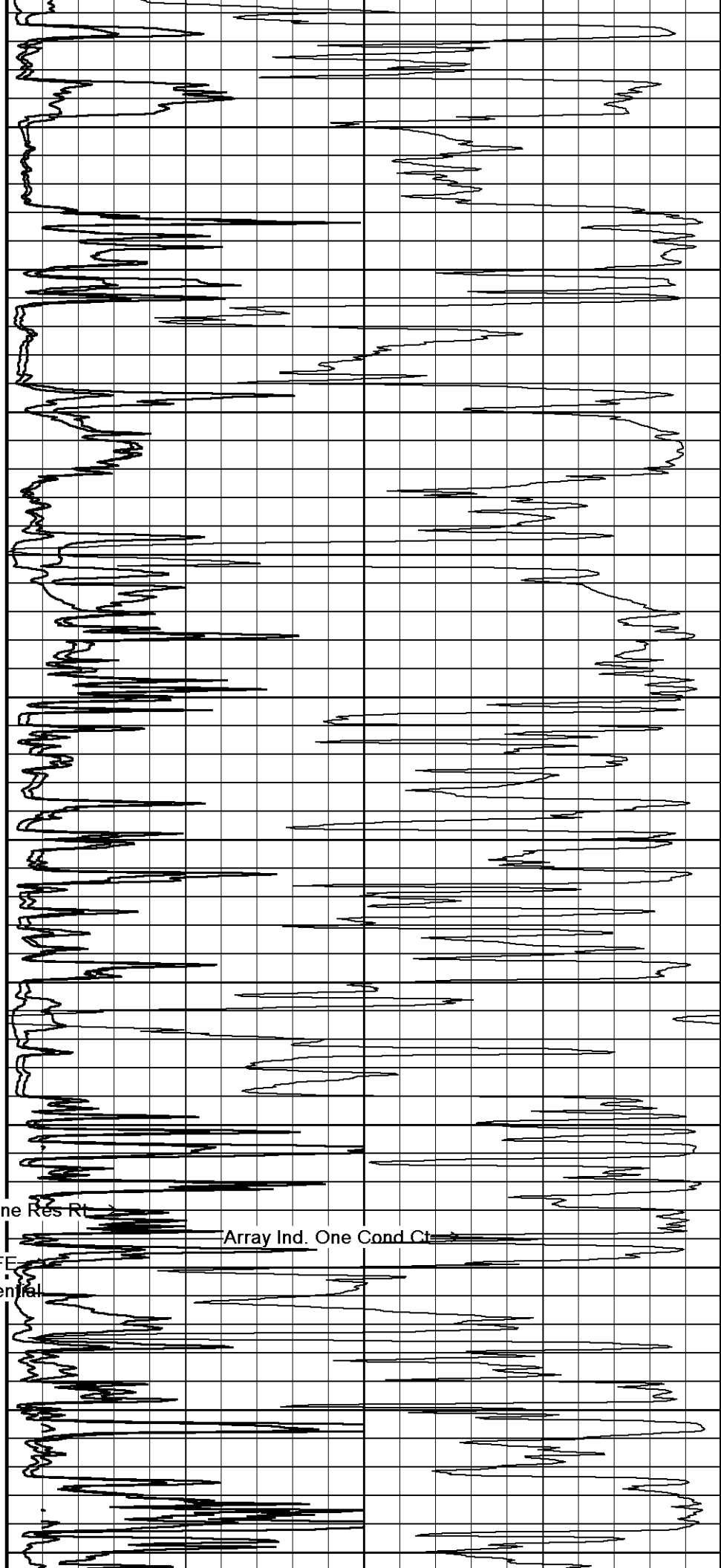
Spontaneous Potential

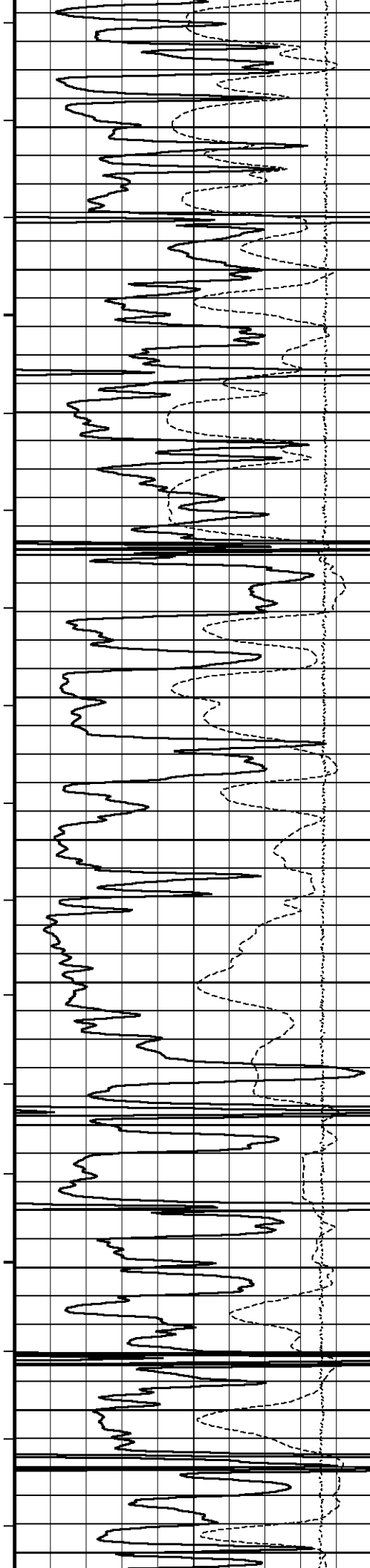
Gamma Ray

DST-Uphole Tension

119°

3700





119°

3800

120°

3900

120°

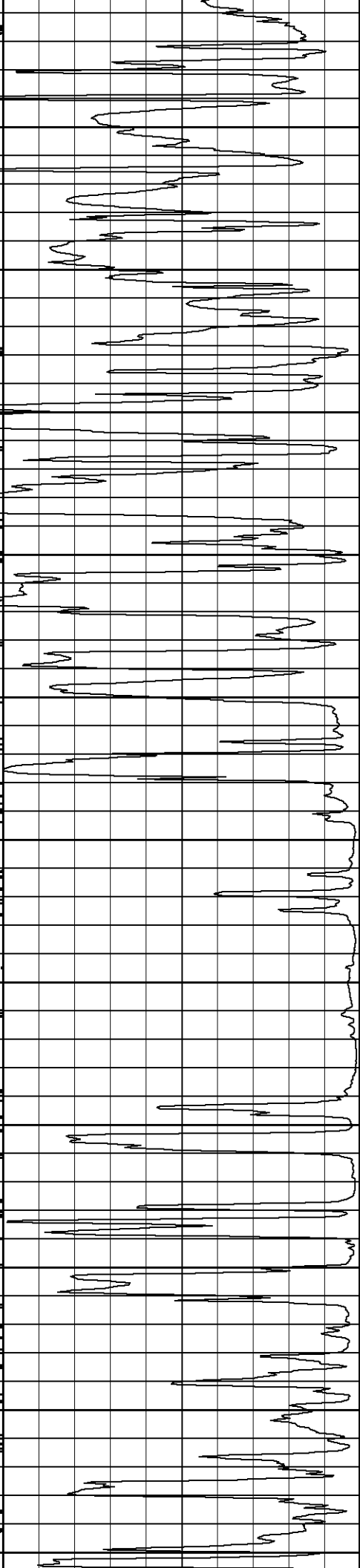
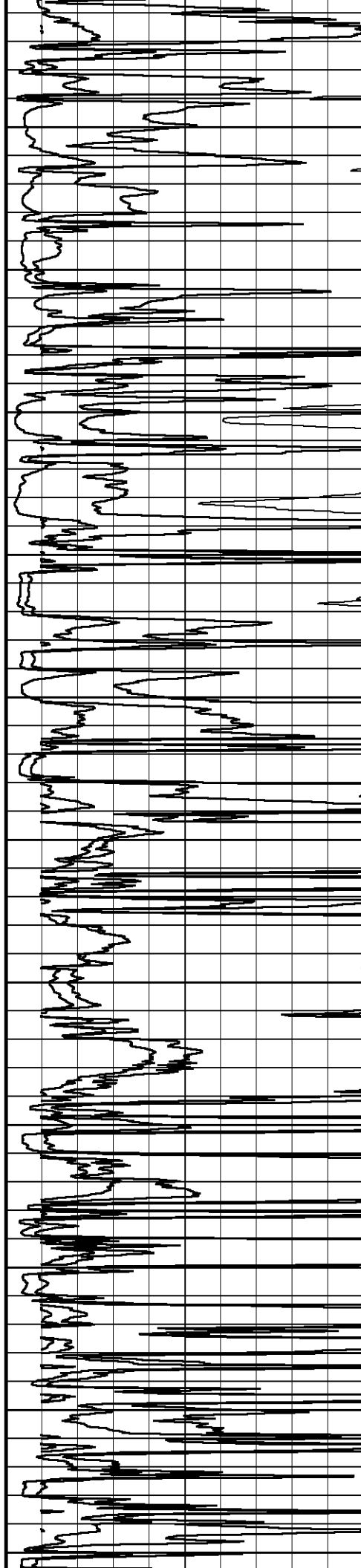
4000

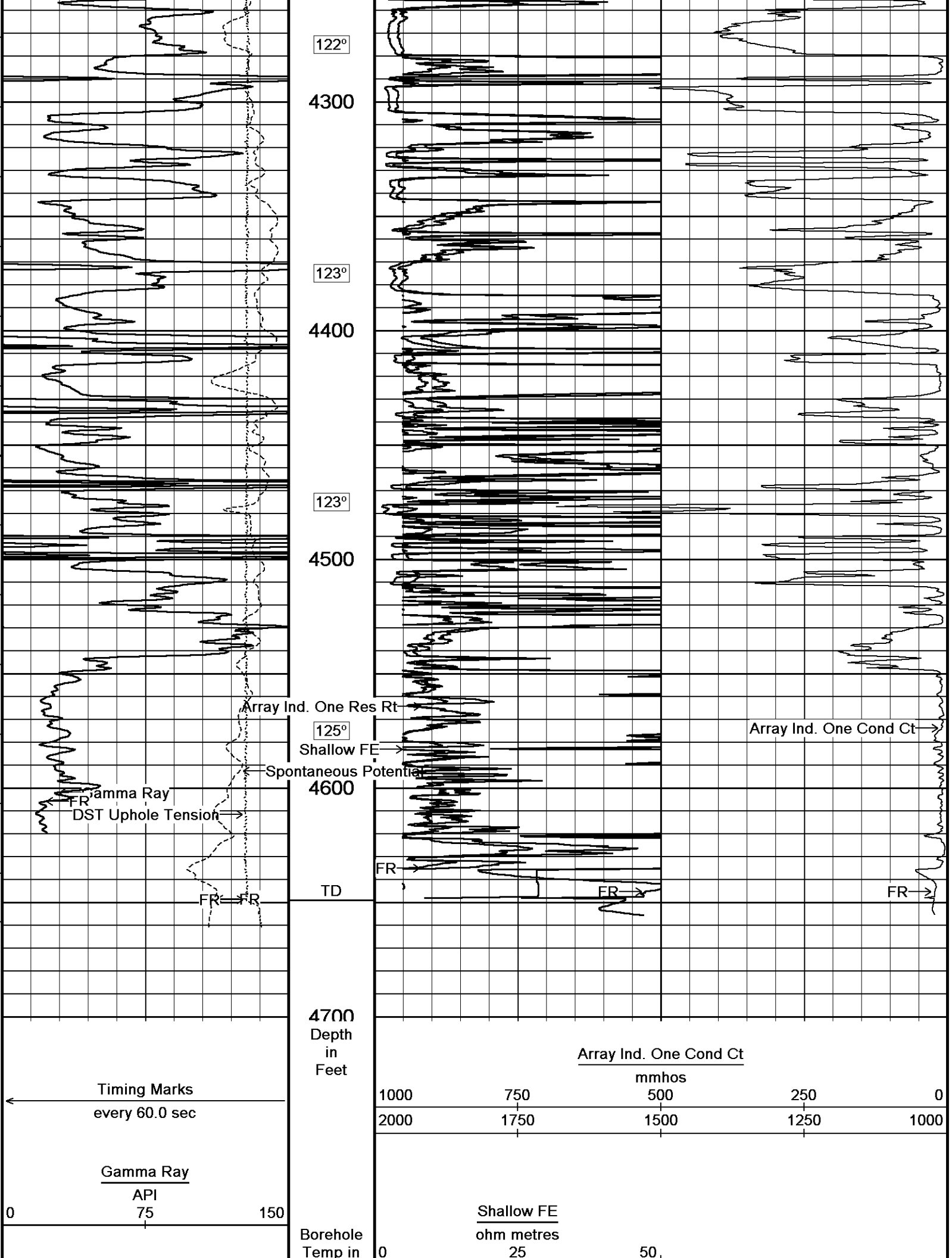
121°

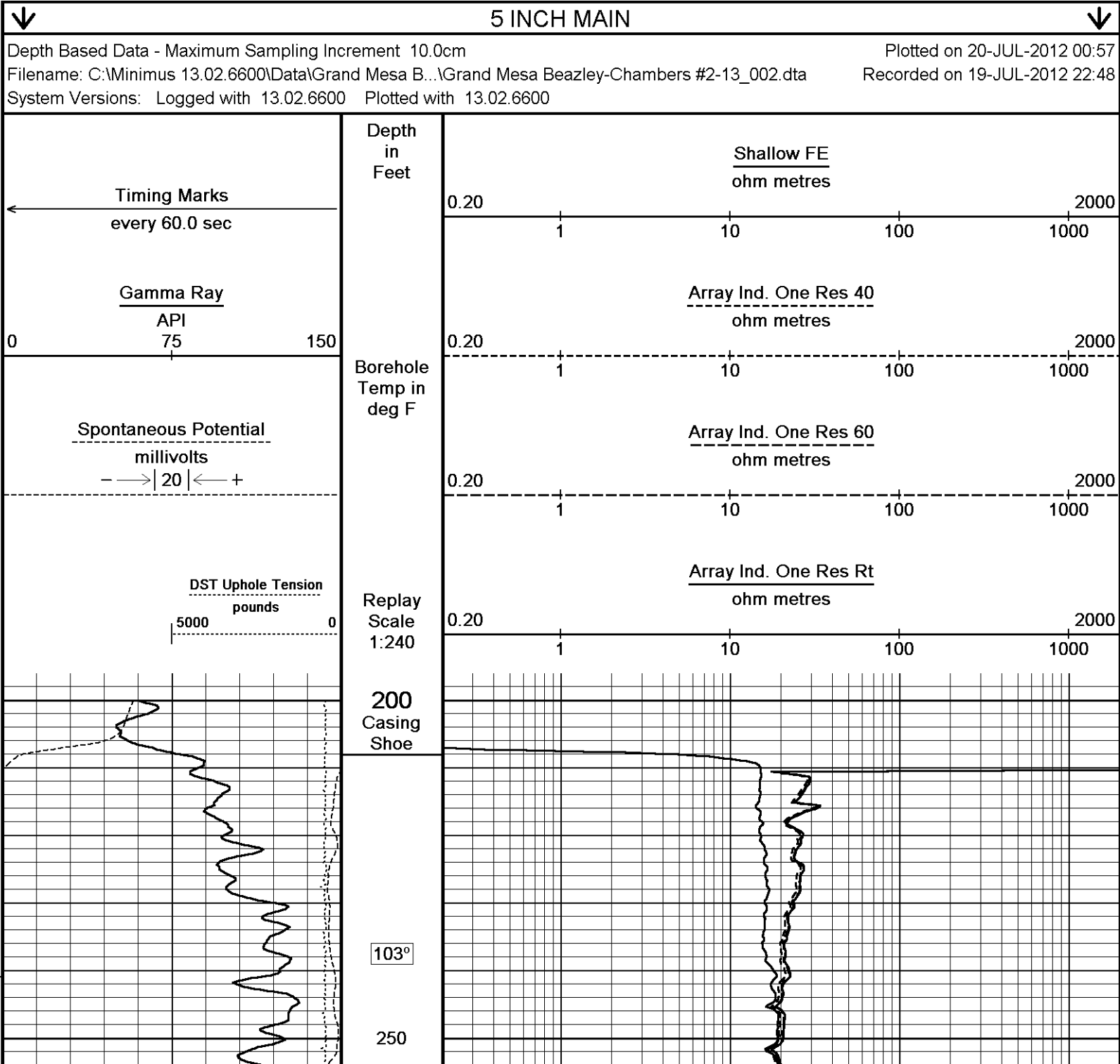
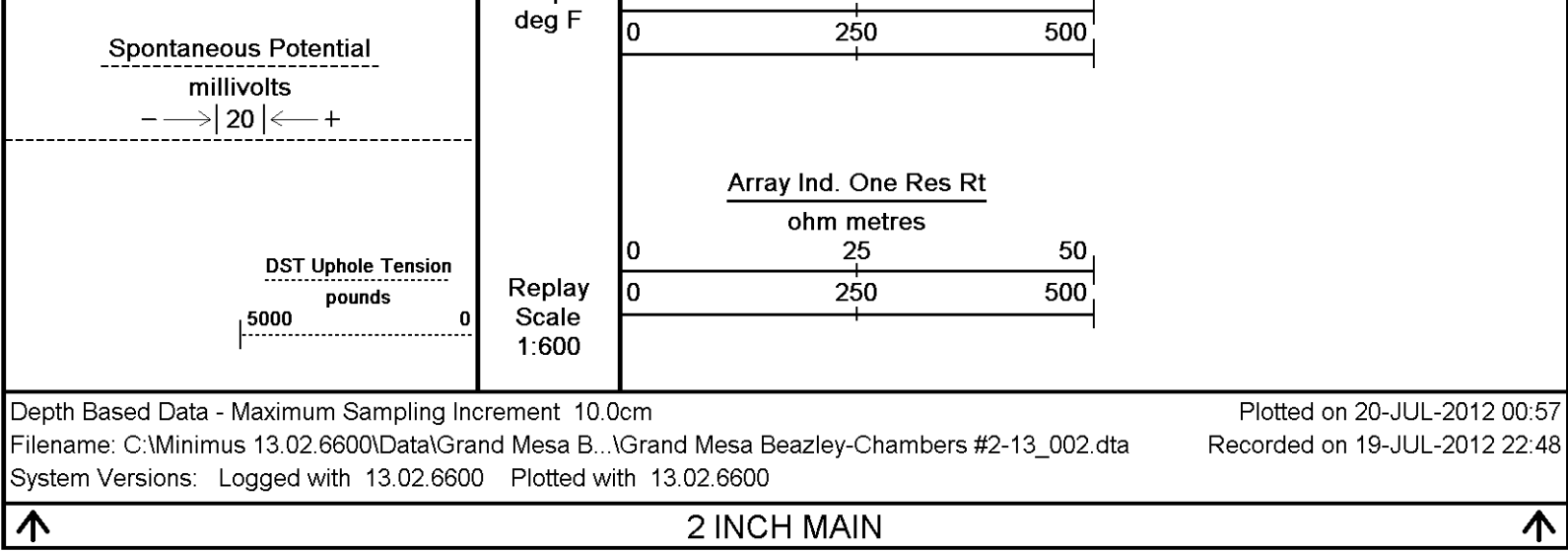
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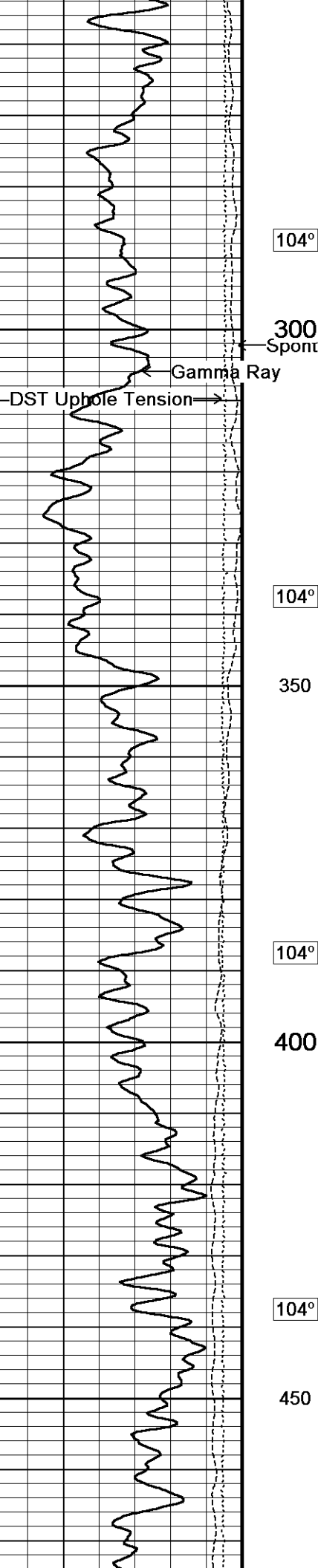
121°

4200









104°

300

104°

350

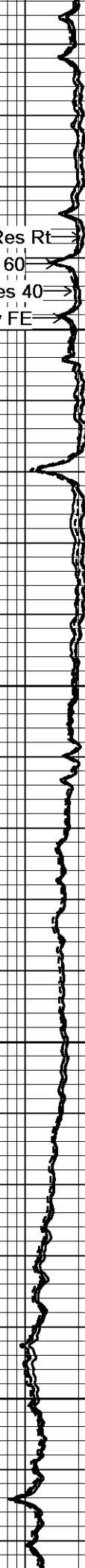
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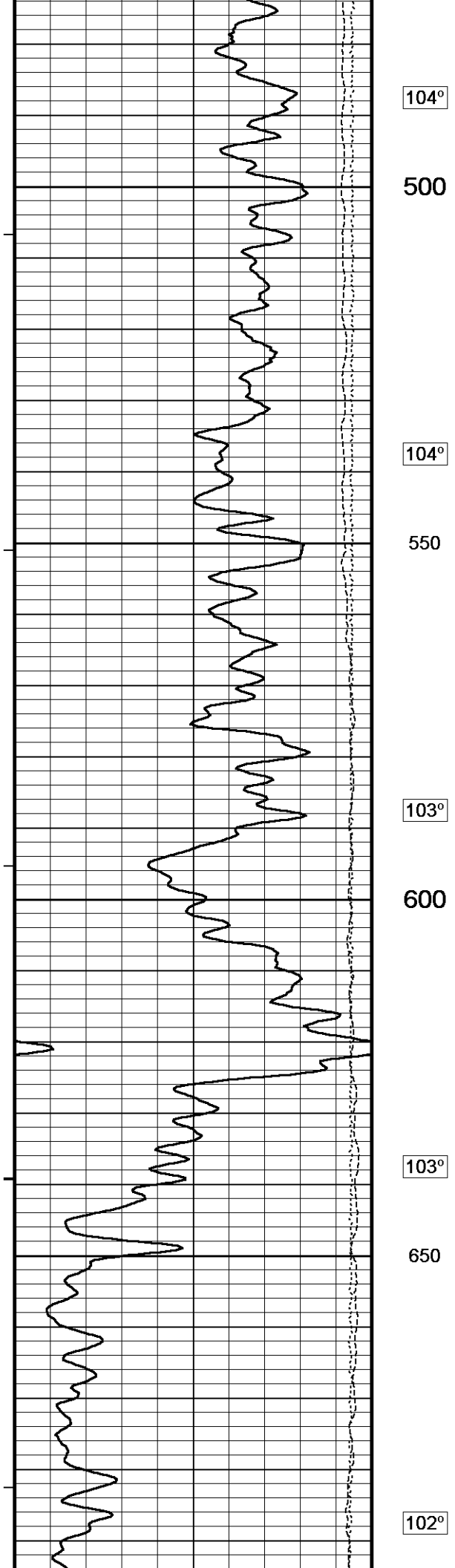
400

104°

450

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





104°

500

104°

550

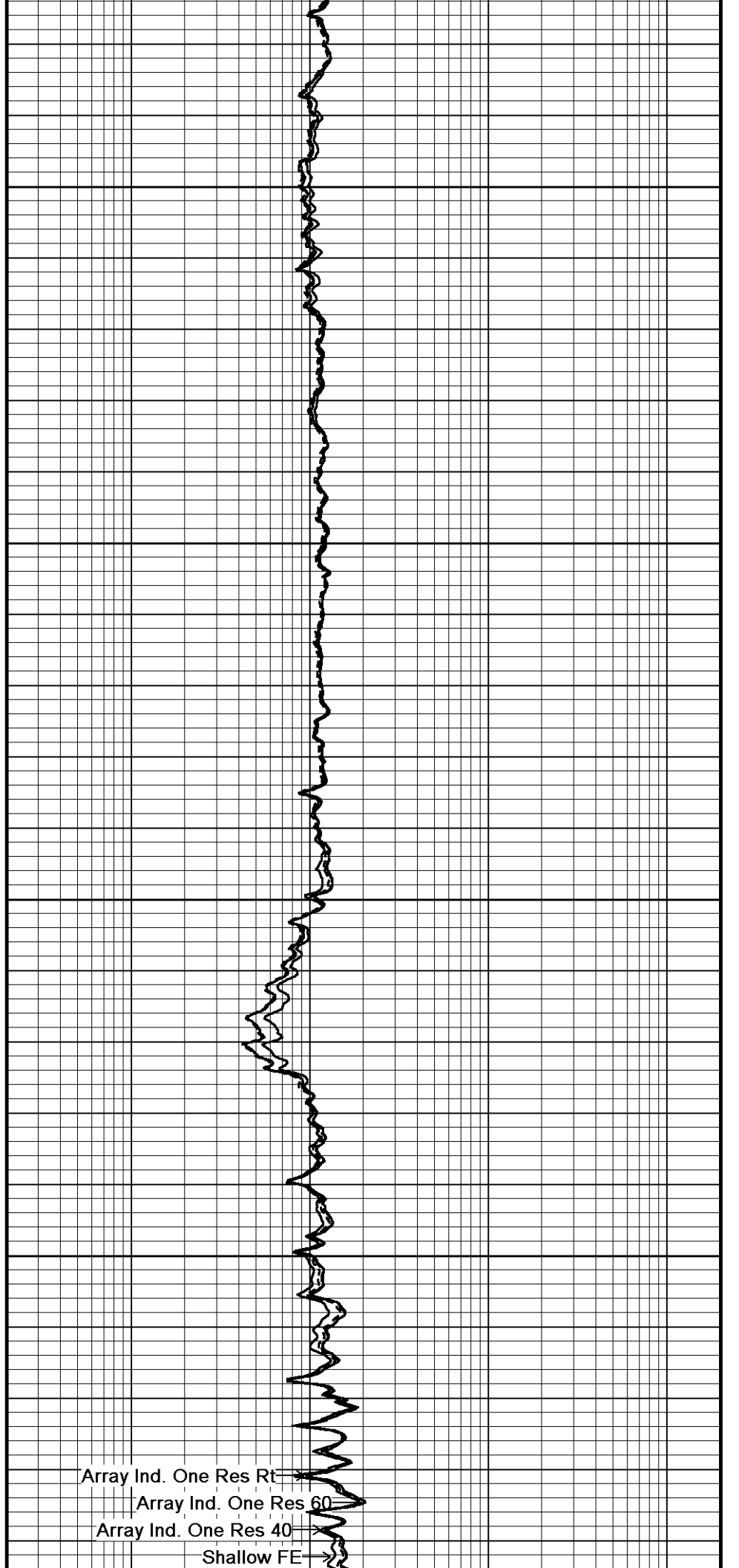
103°

600

103°

650

102°

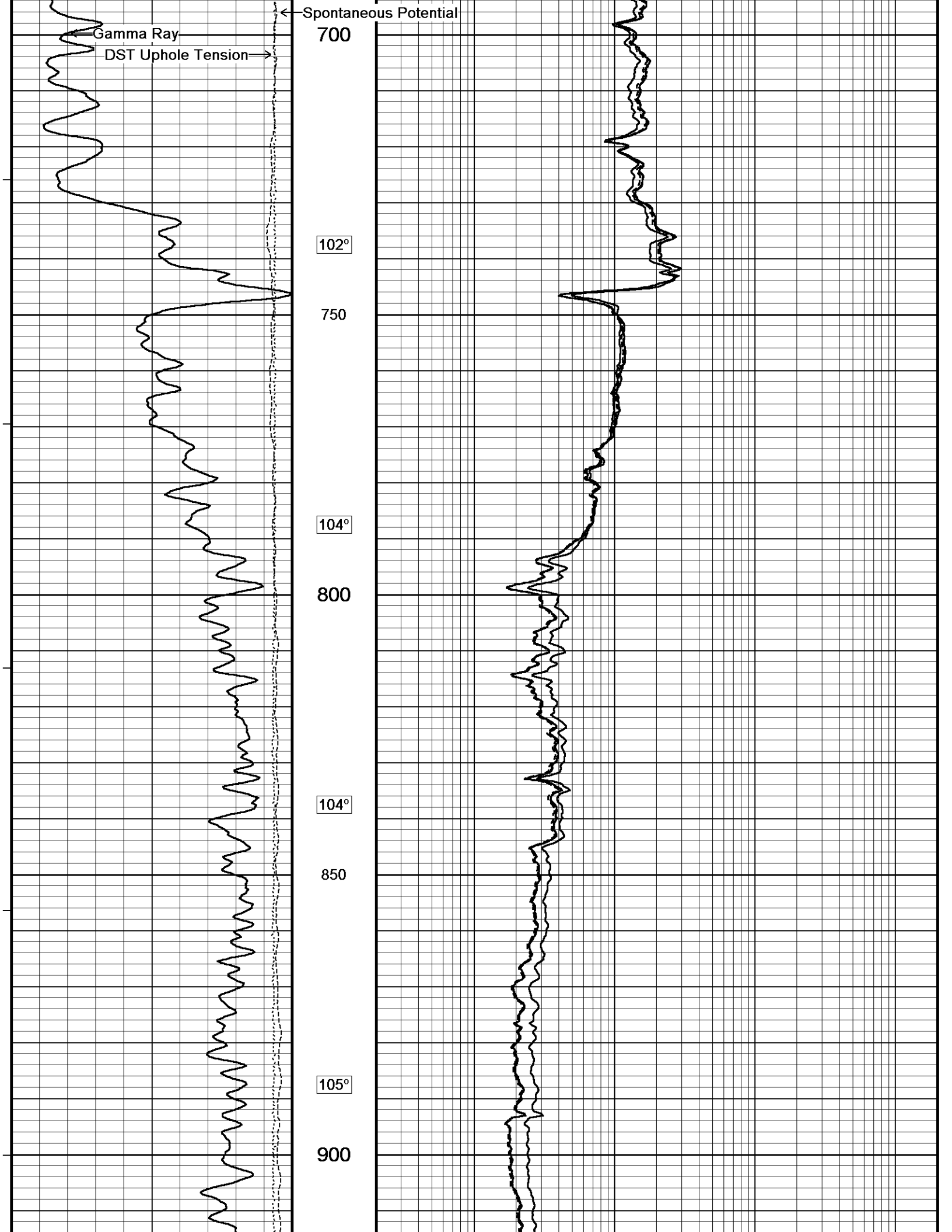


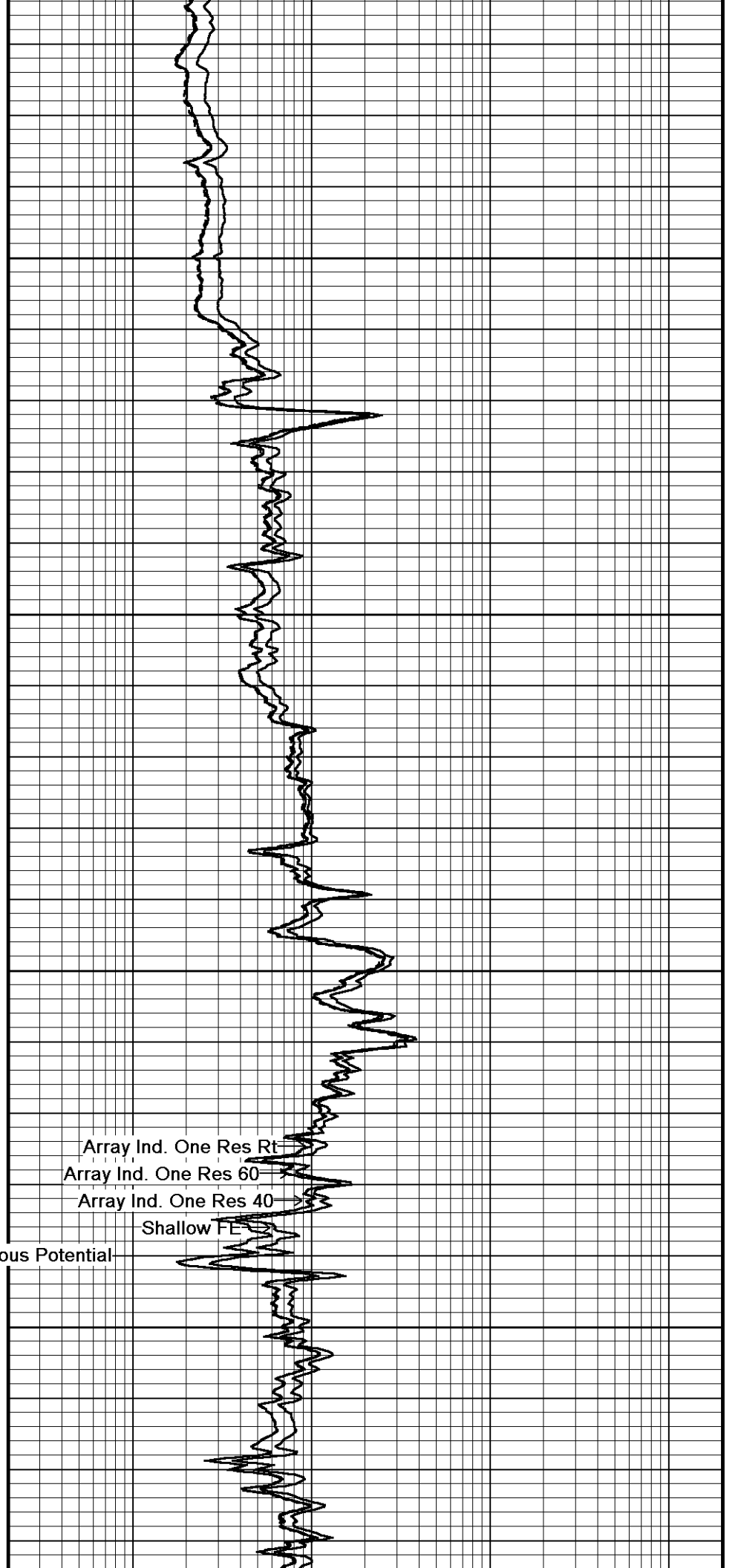
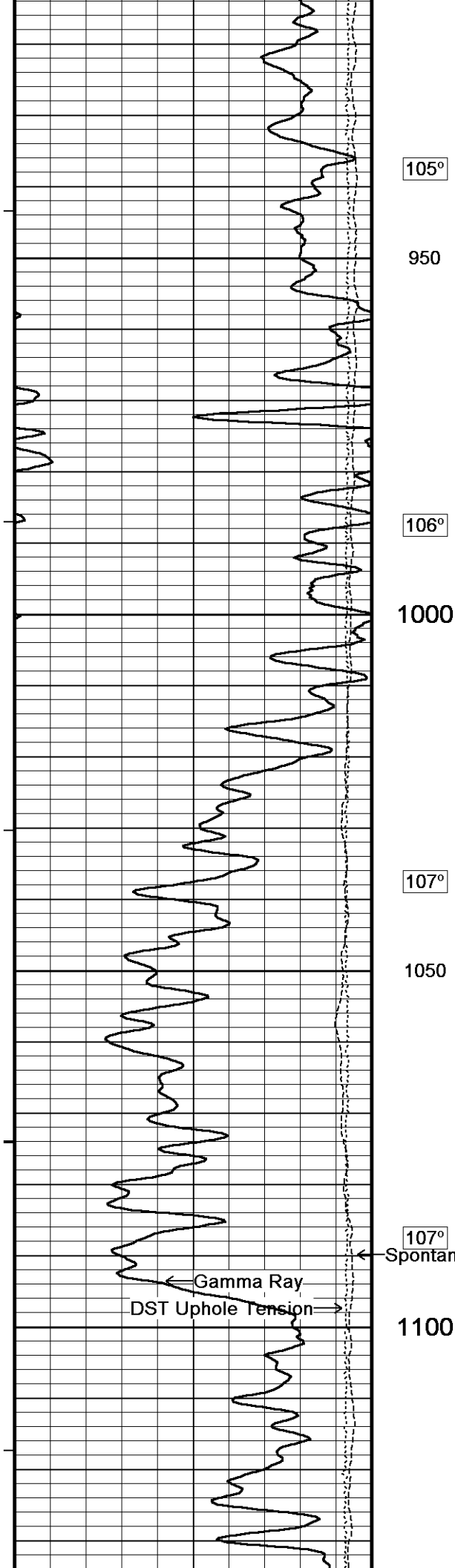
Array Ind. One Res Rt

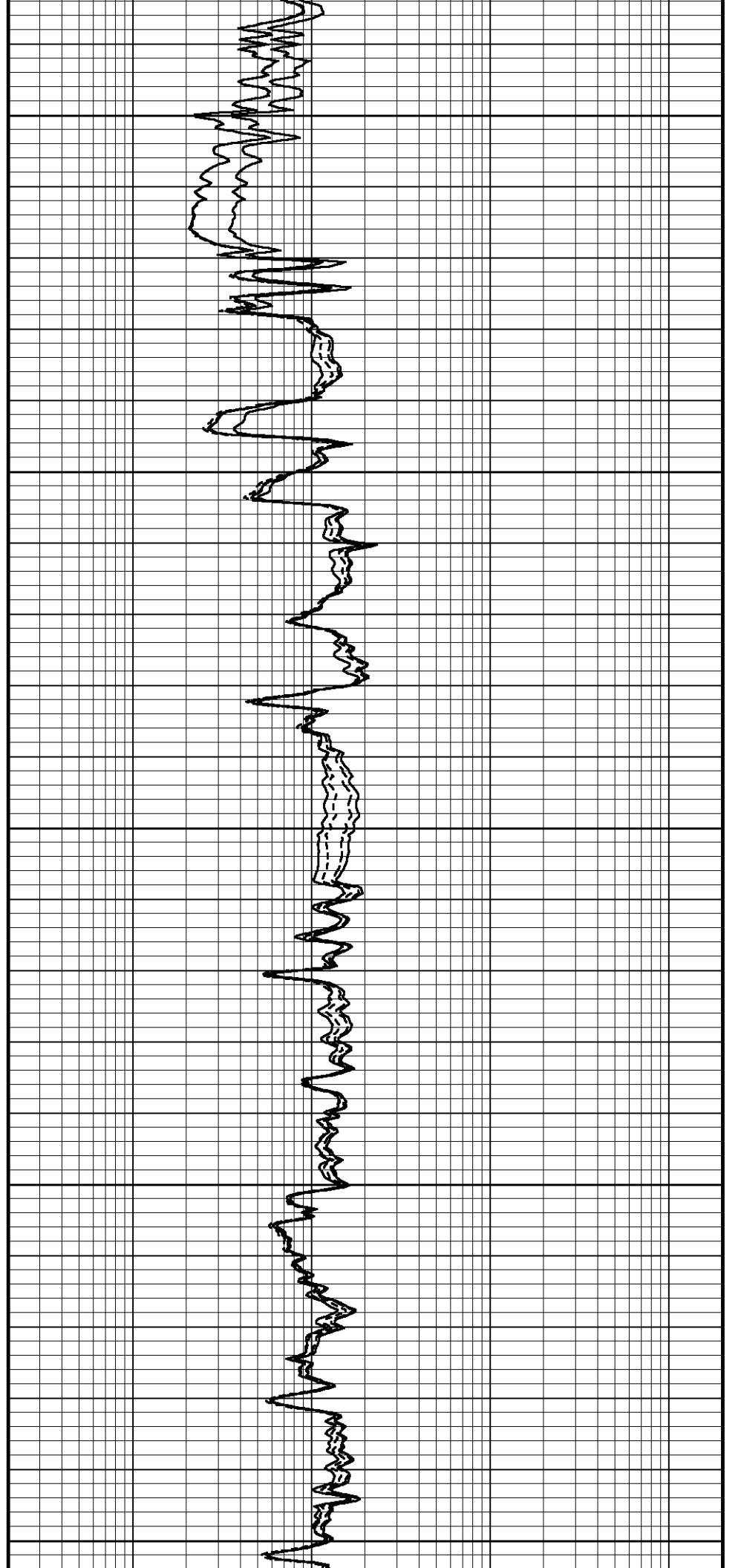
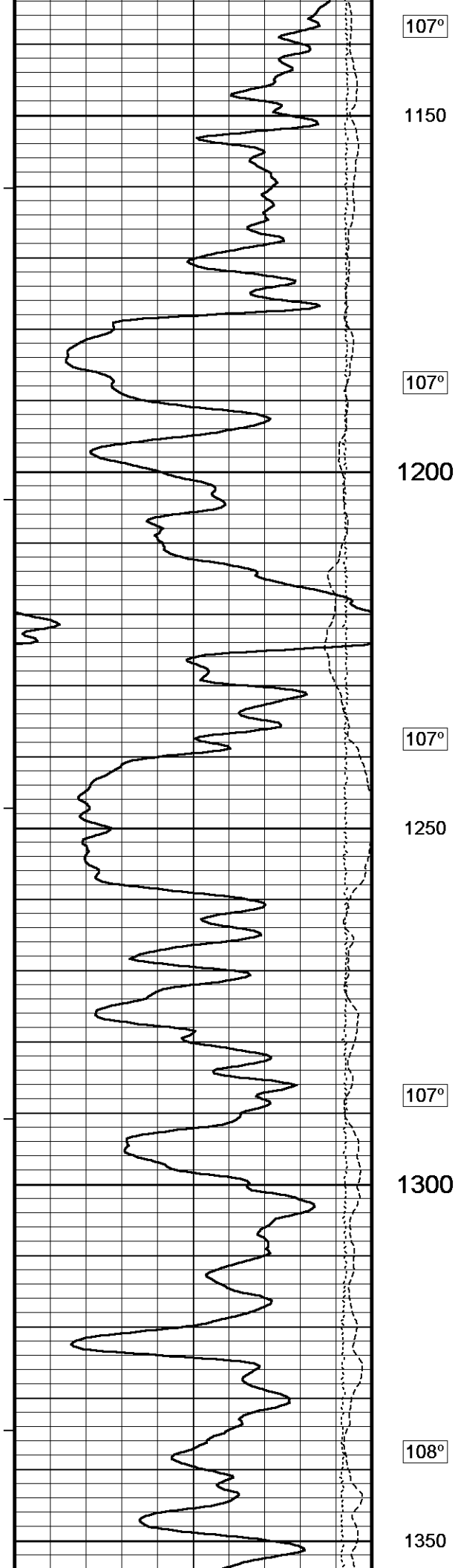
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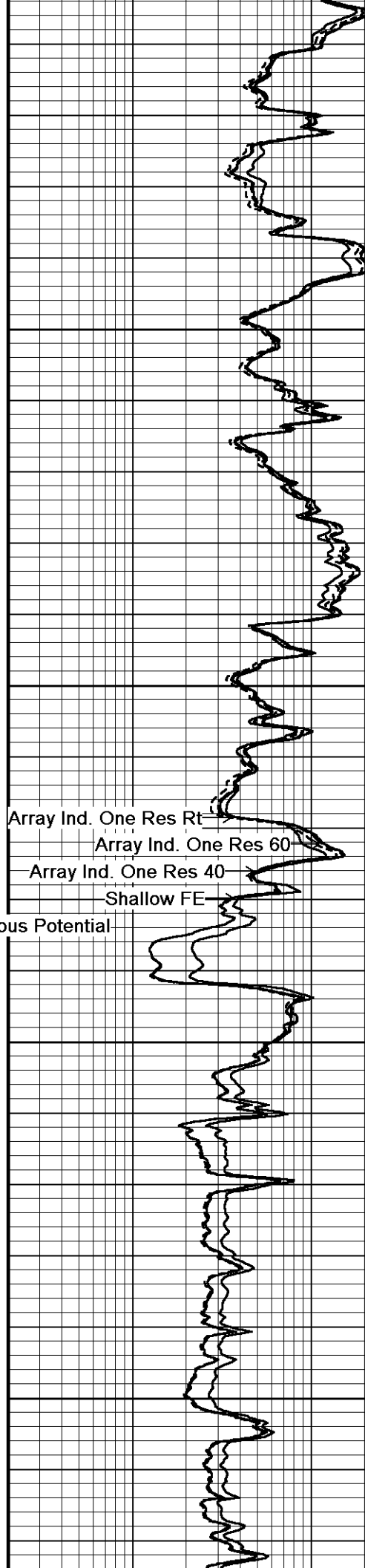
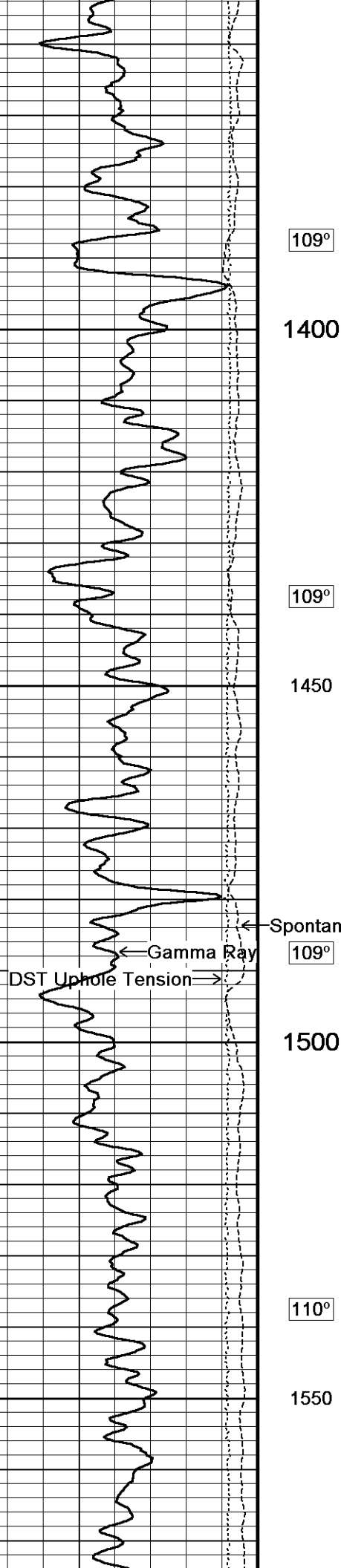
Array Ind. One Res 40

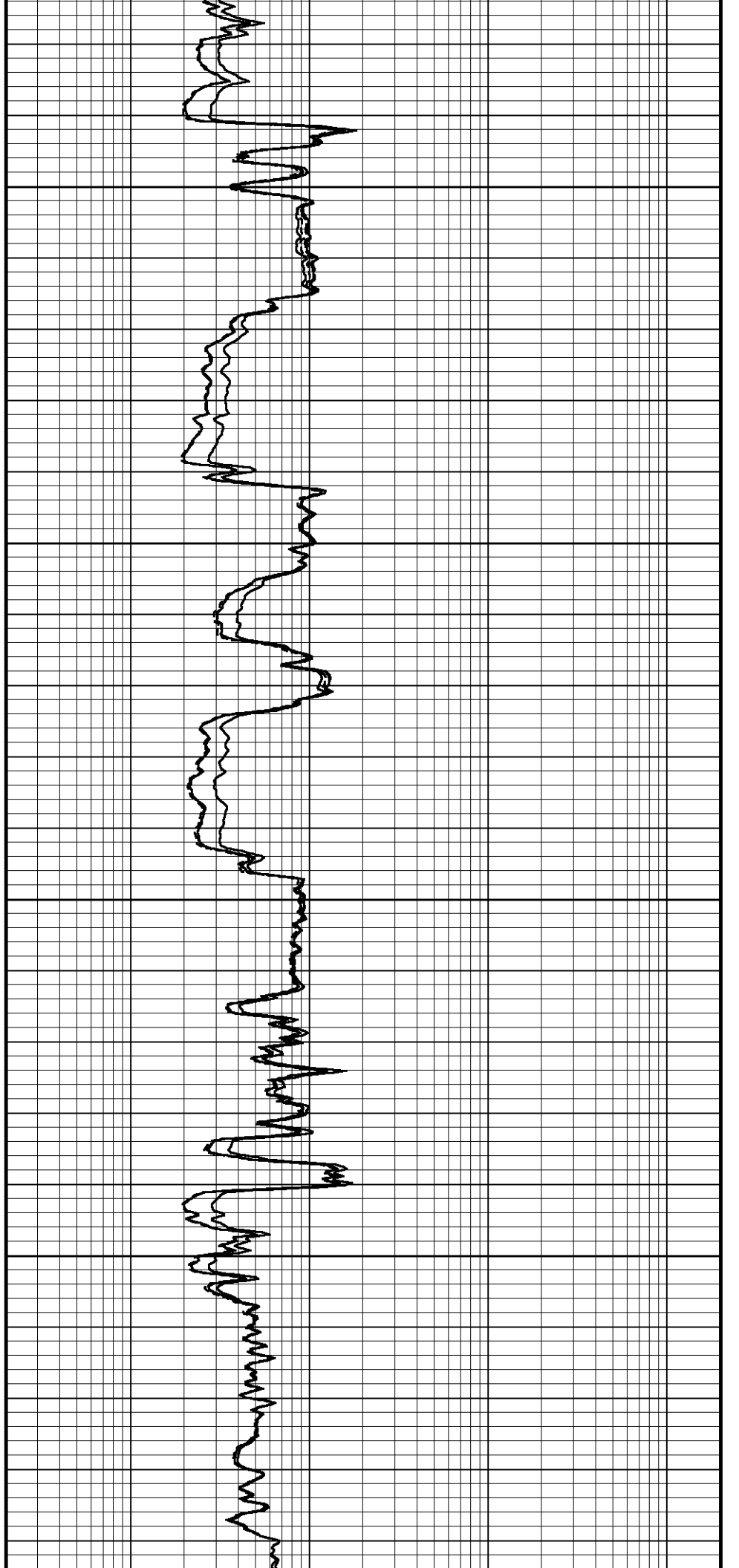
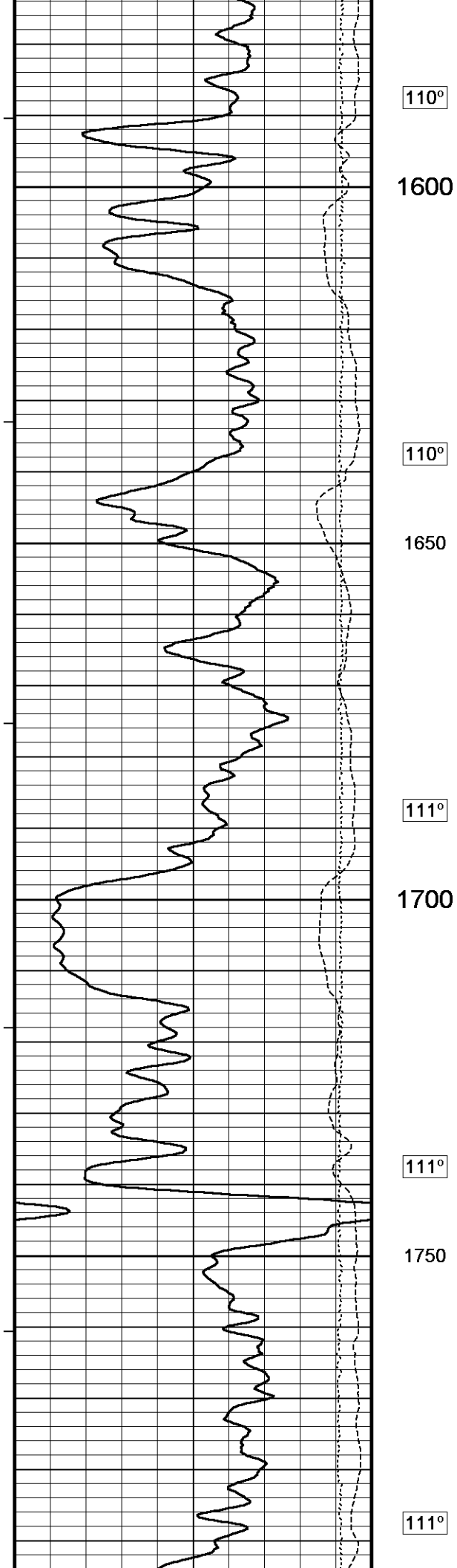
Shallow FE

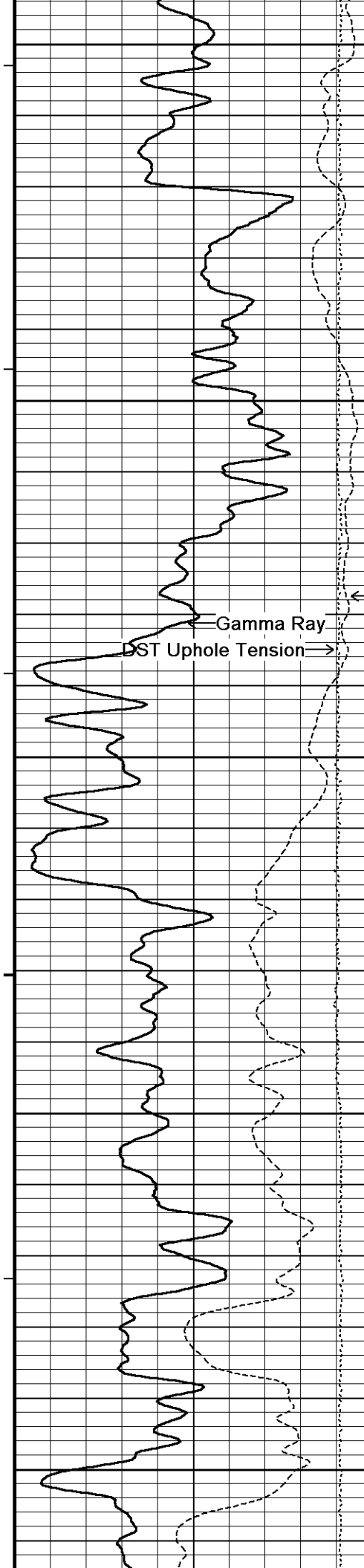




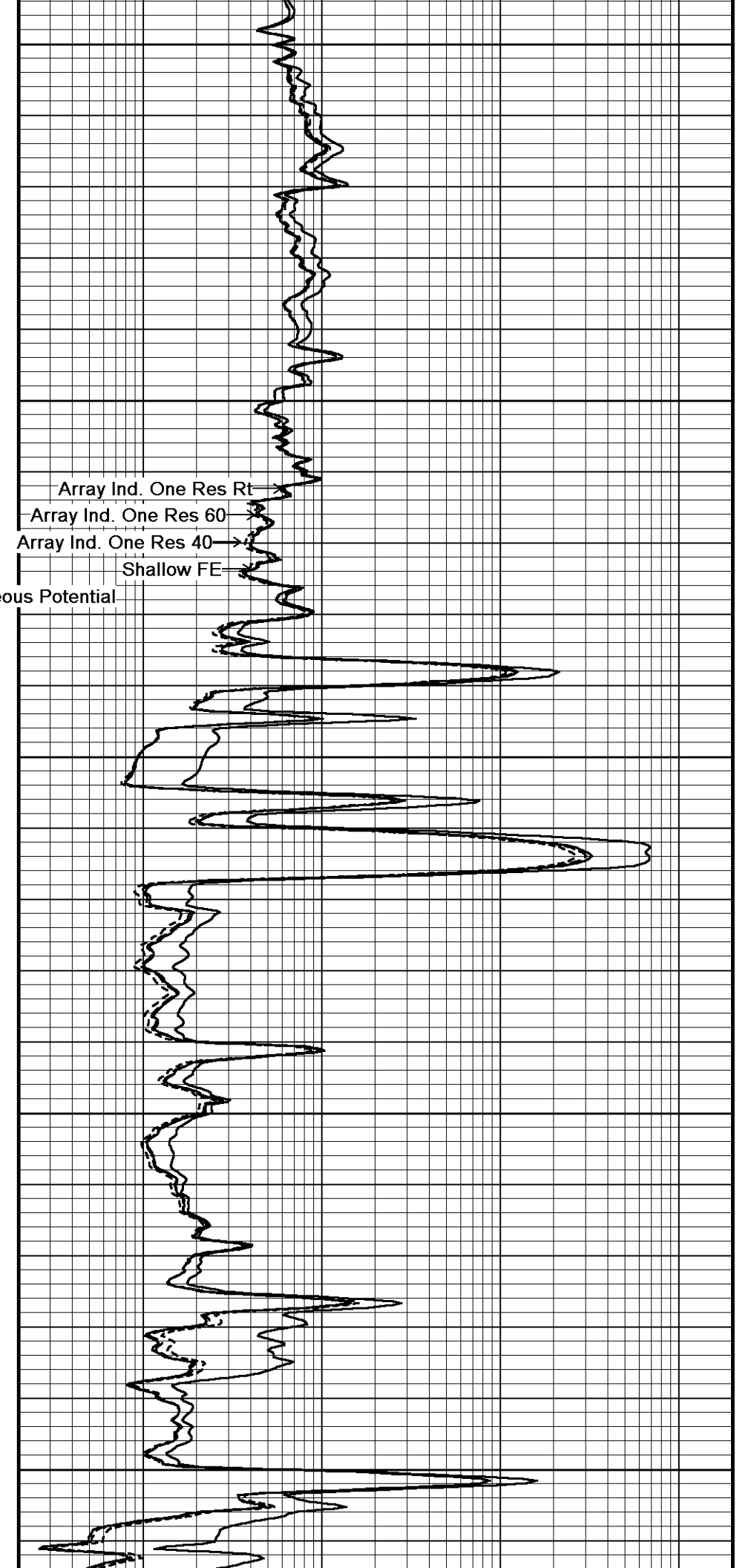








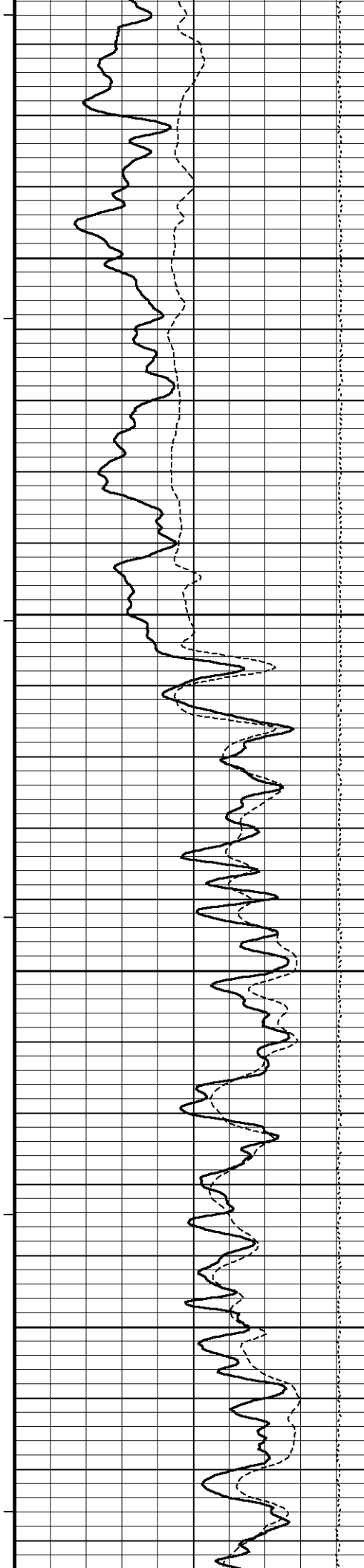
1800
111°
1850
112°
1900
111°
1950
111°
2000



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

Spontaneous Potential

Gamma Ray
DST Uphole Tension



111°

2050

111°

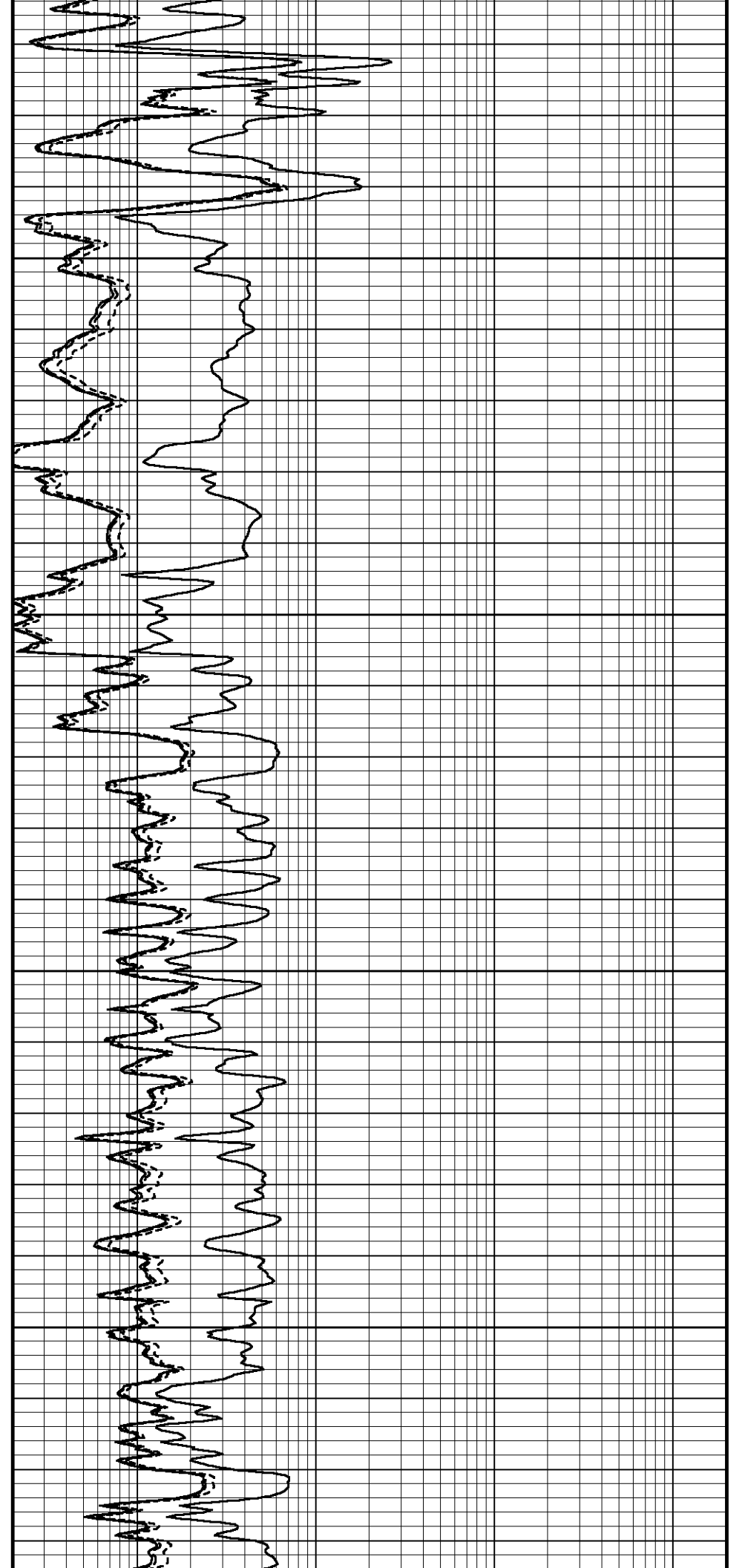
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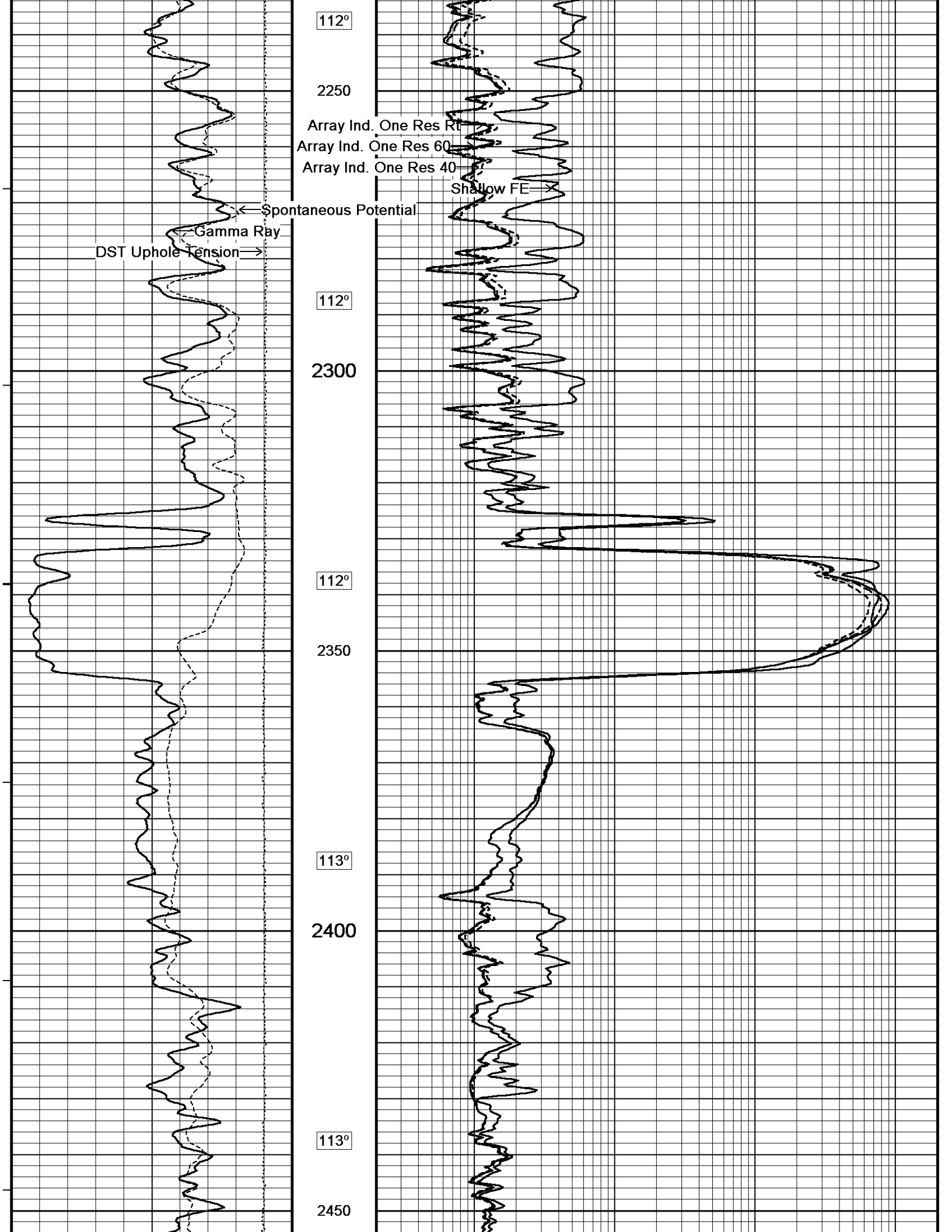
112°

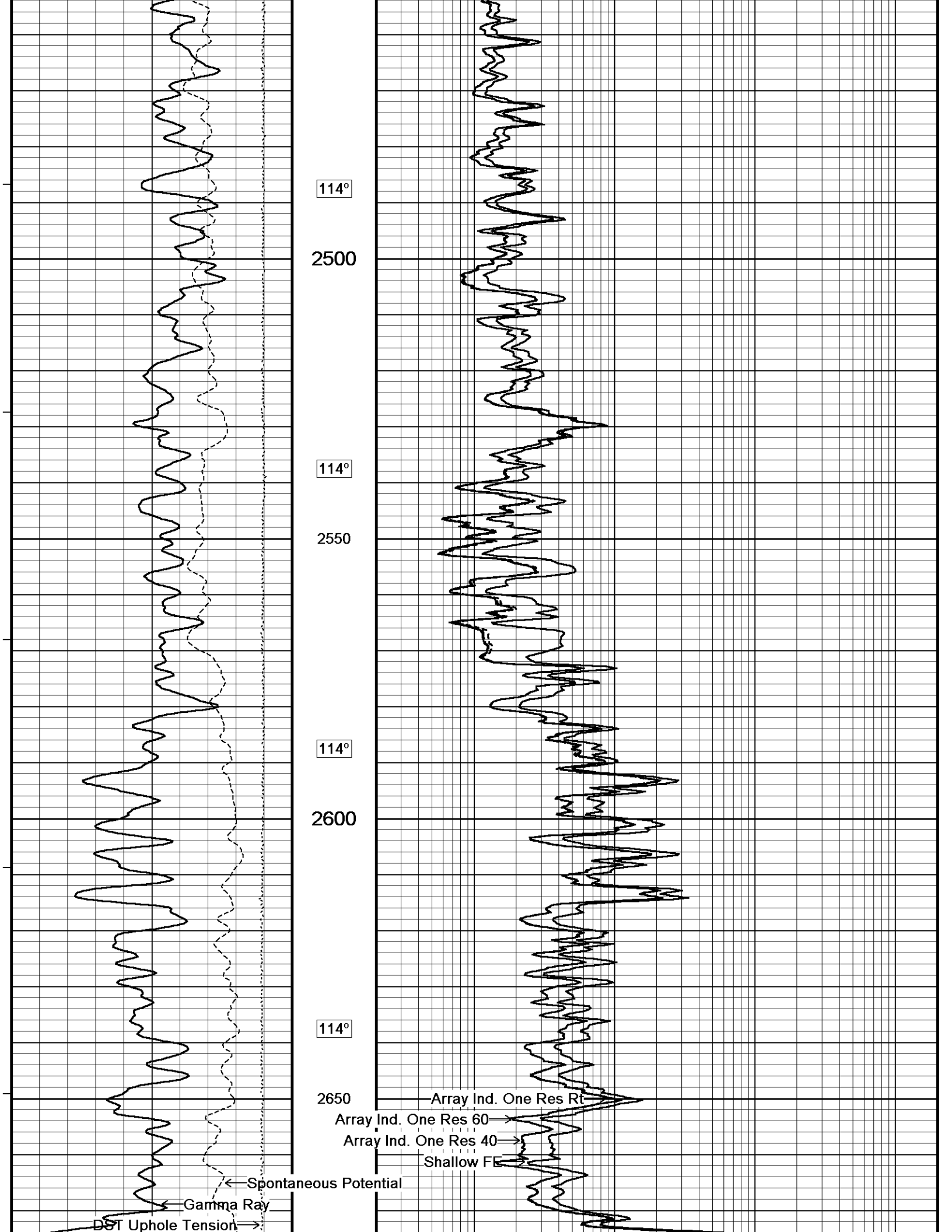
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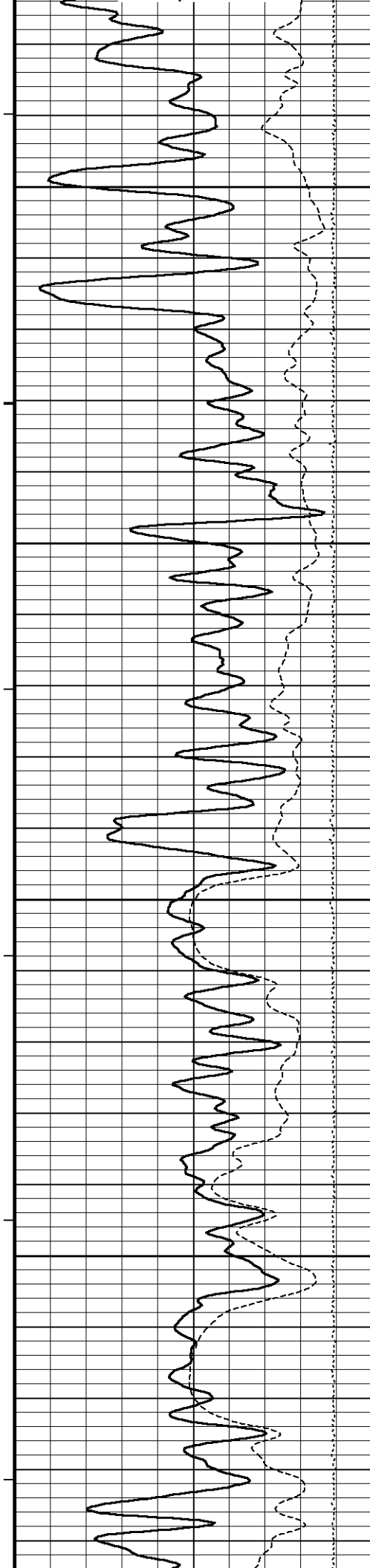
112°

2200









115°

2700

115°

2750

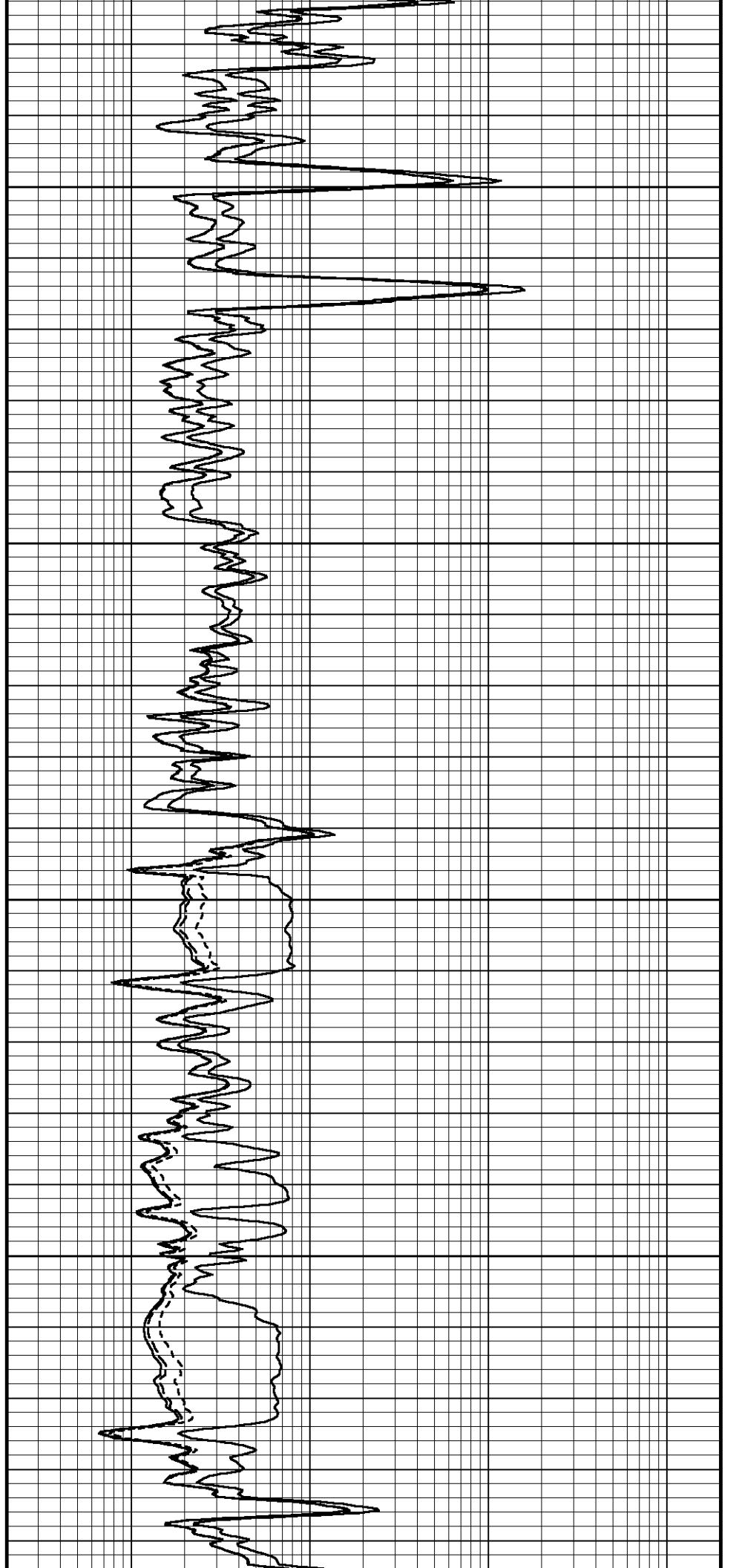
115°

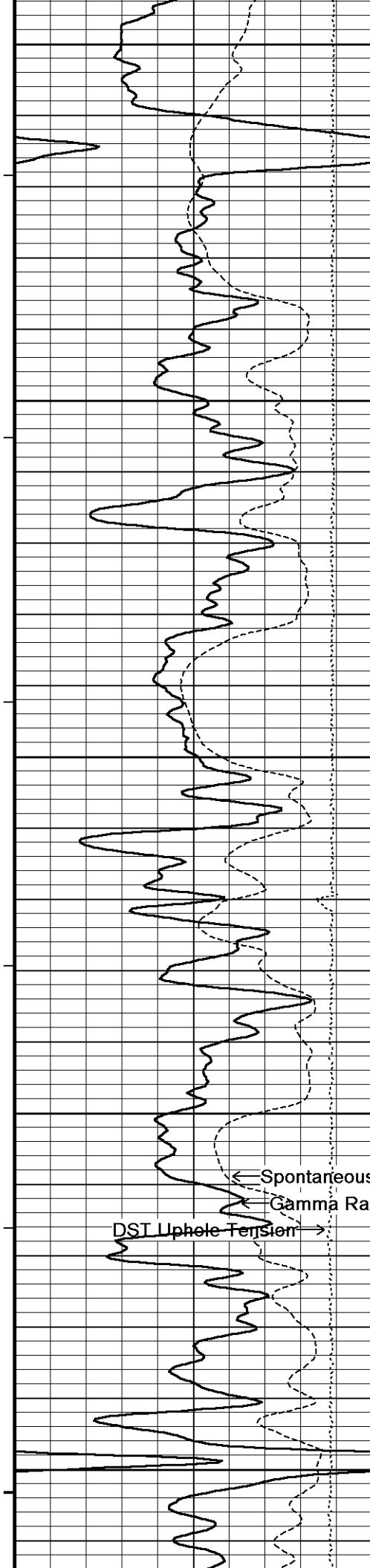
2800

115°

2850

115°





2900

116°

2950

116°

3000

116°

3050

116°

3100

Array Ind. One Res Rt

Array Ind. One Res 60

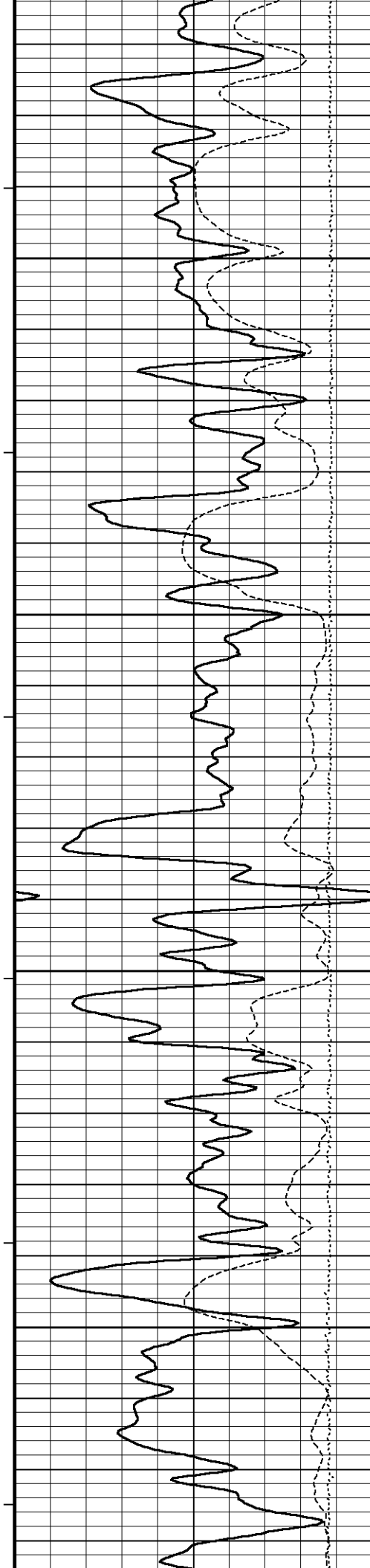
Array Ind. One Res 40

Shallow FE

Spontaneous Potential

Gamma Ray

DST Uphole Tension



117°

3150

117°

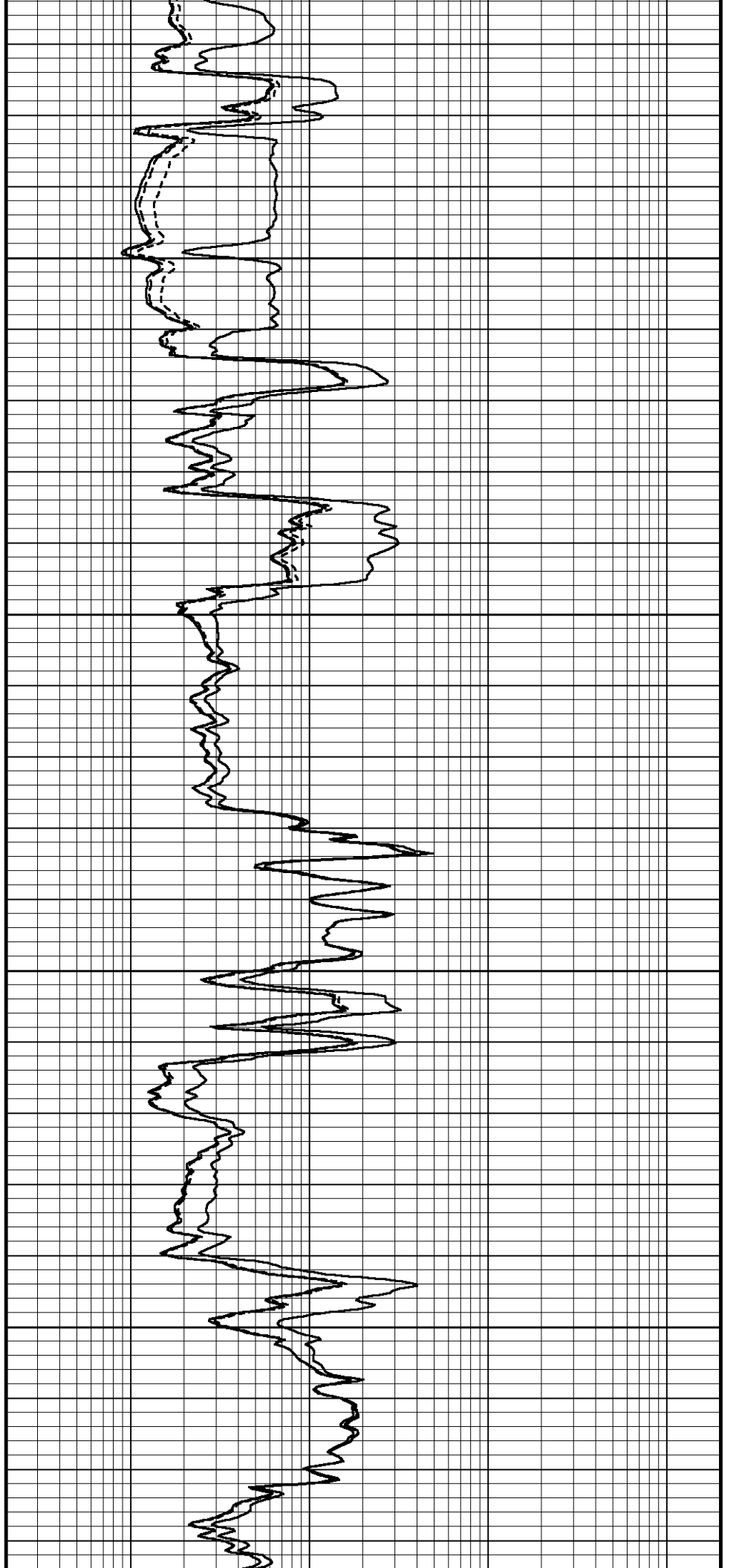
3200

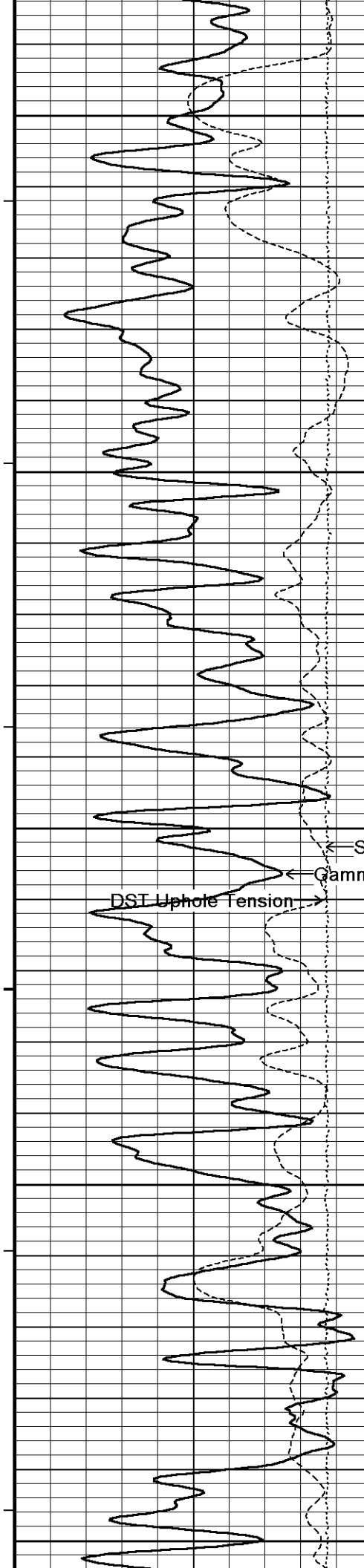
117°

3250

117°

3300





117°

3350

117°

3400

118°

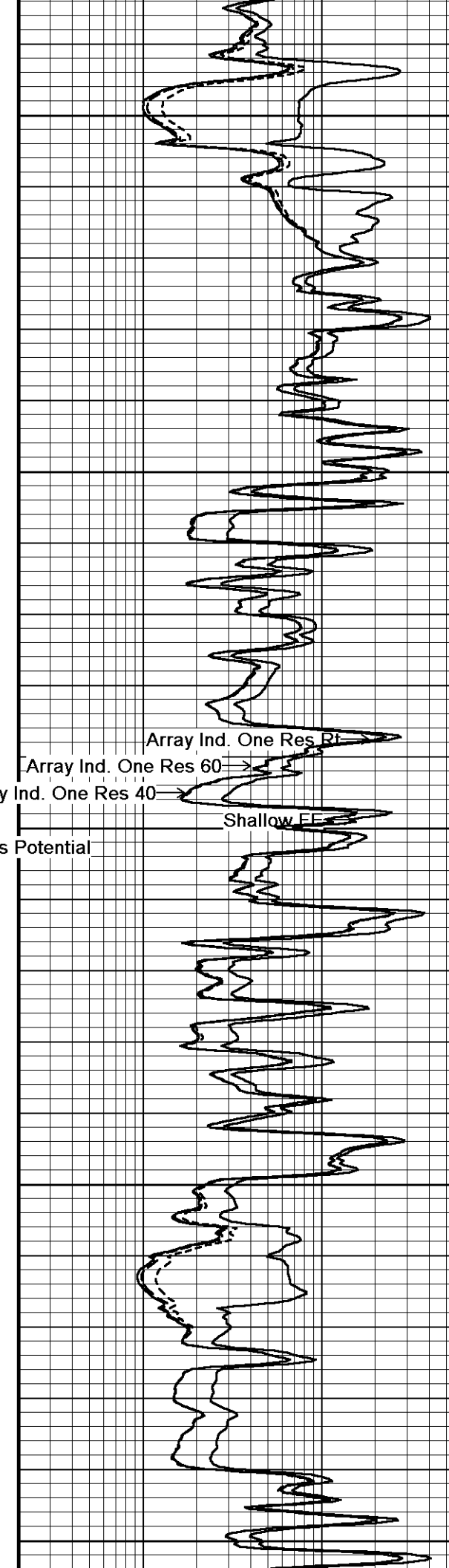
3450

118°

3500

118°

3550

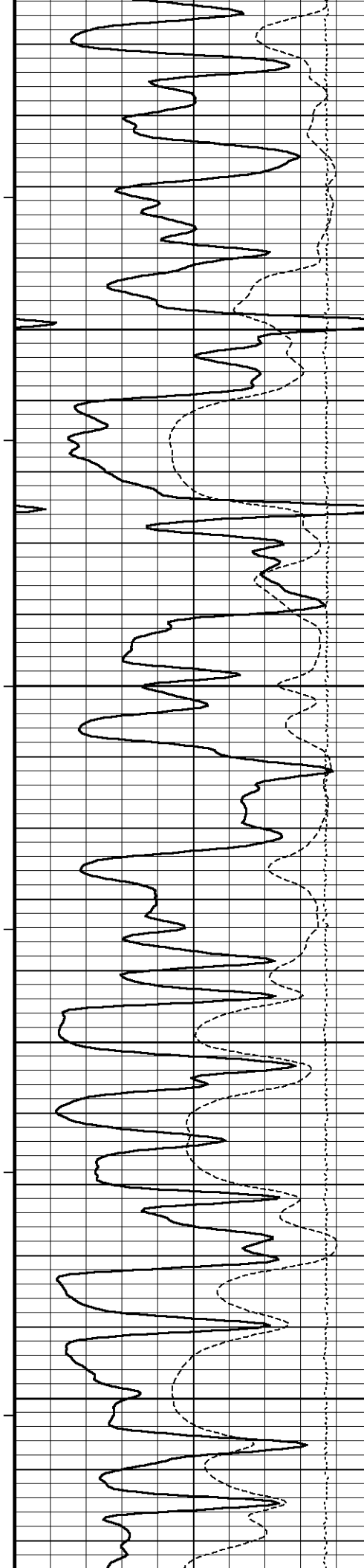


Array Ind. One Res Pt

Array Ind. One Res 60

Array Ind. One Res 40

Shallow EE



119°

3600

119°

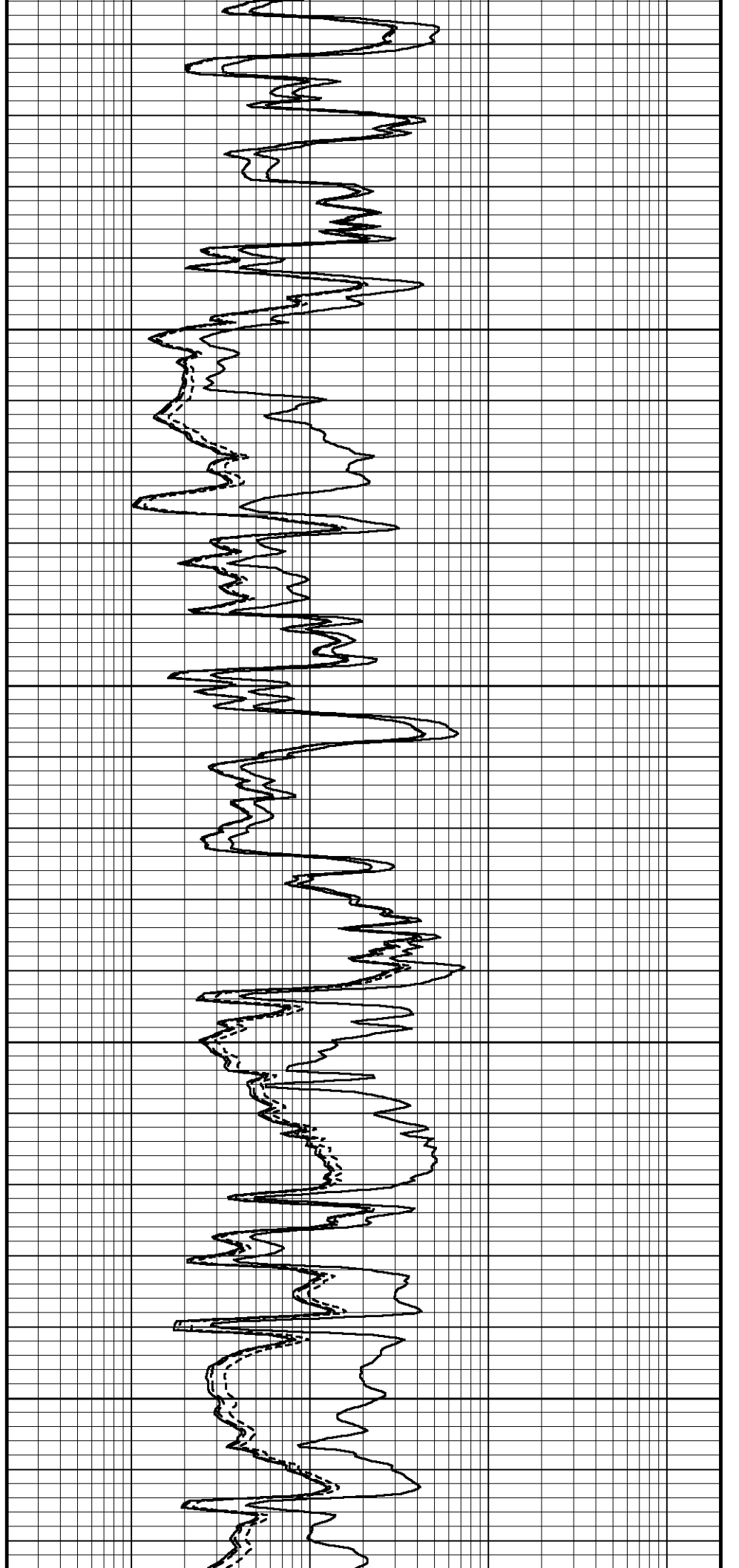
3650

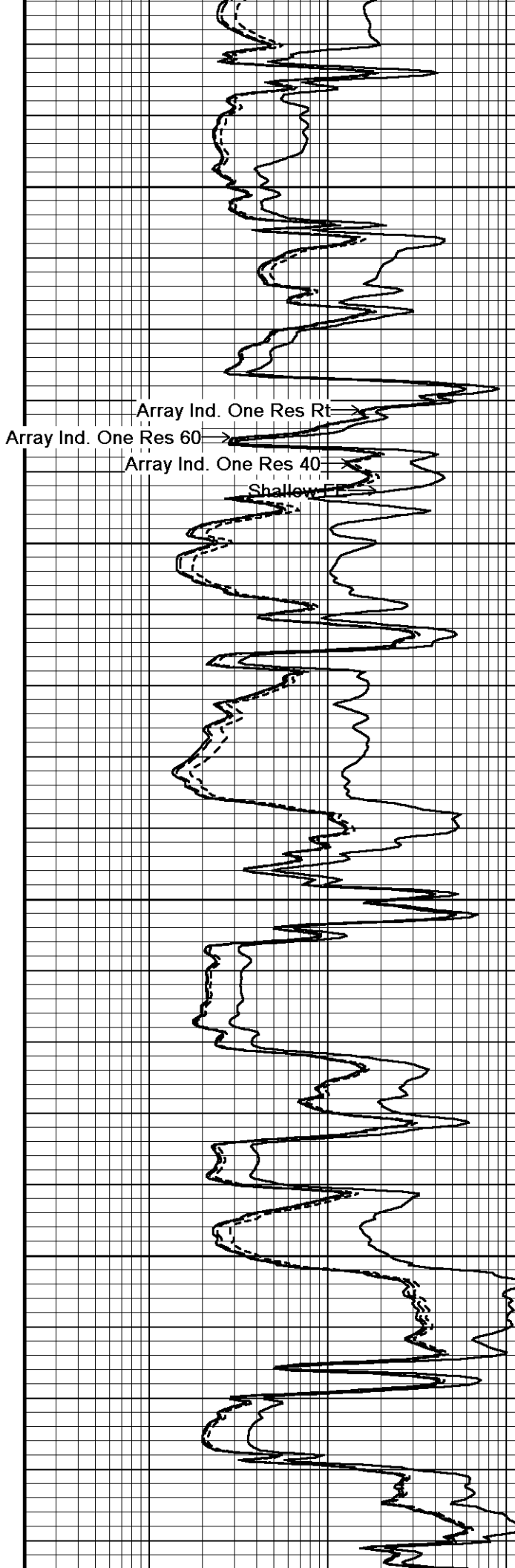
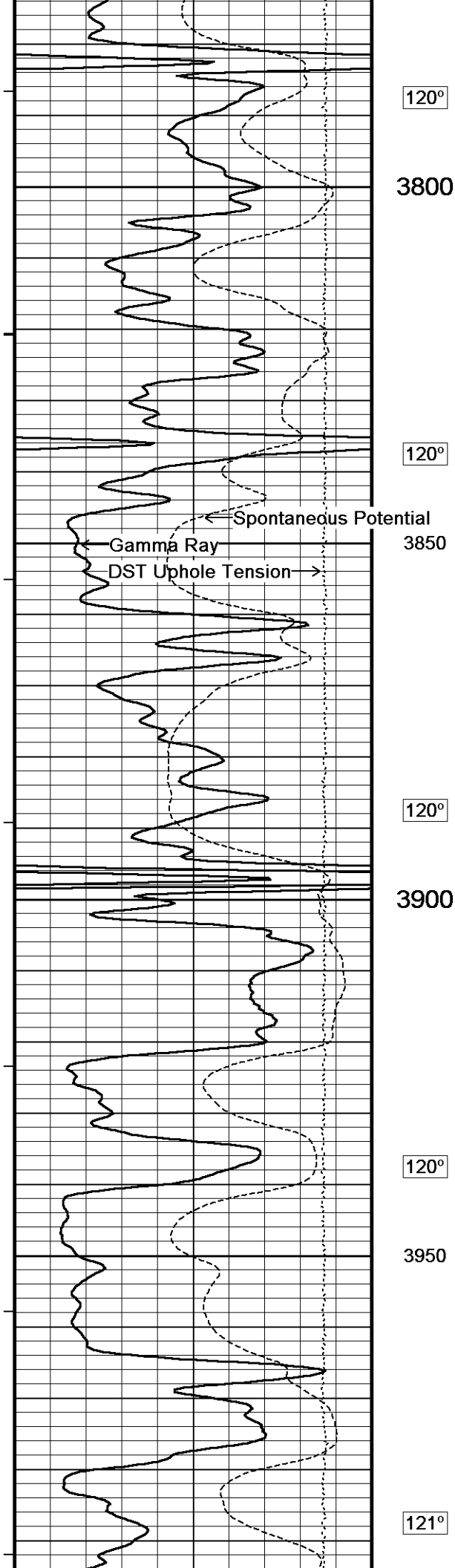
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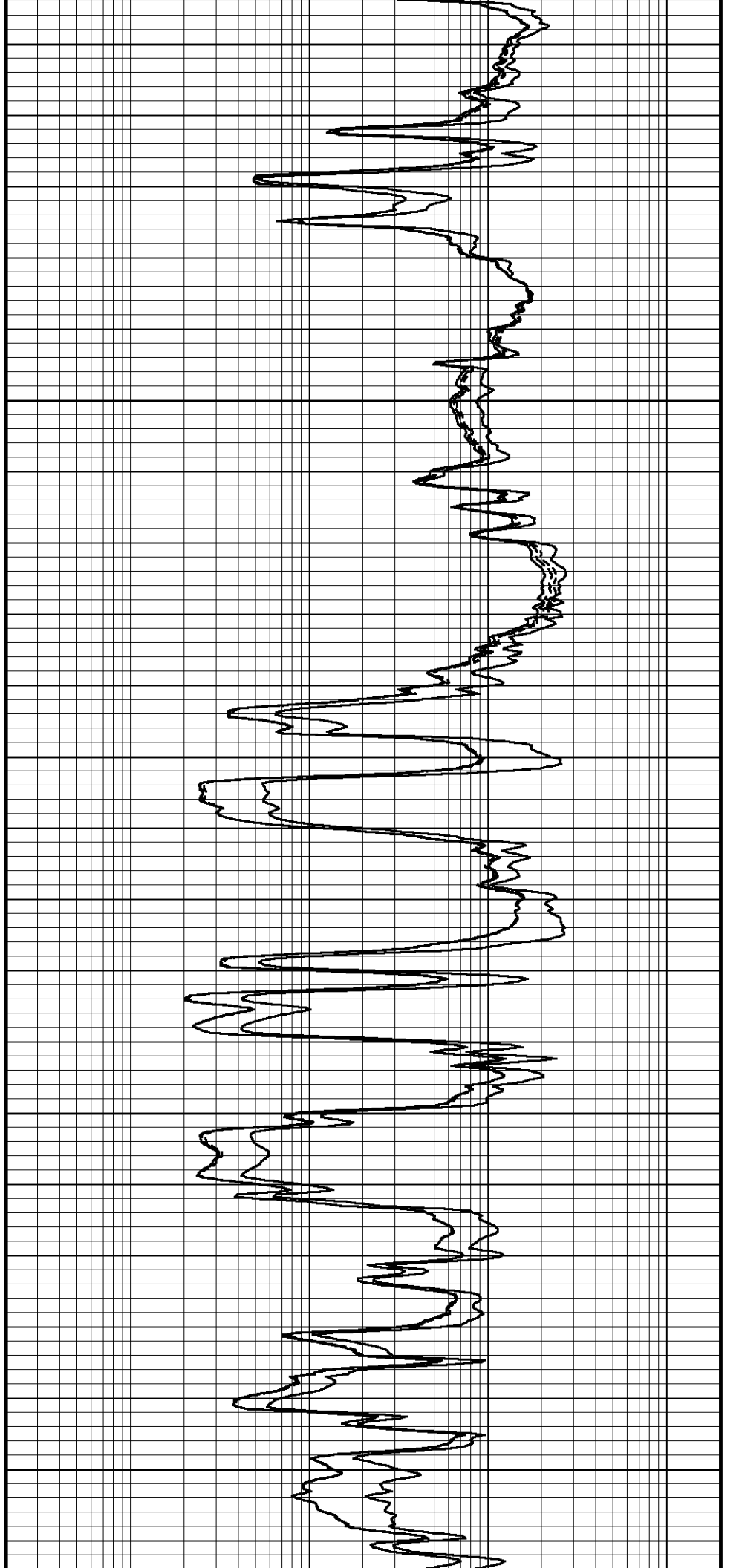
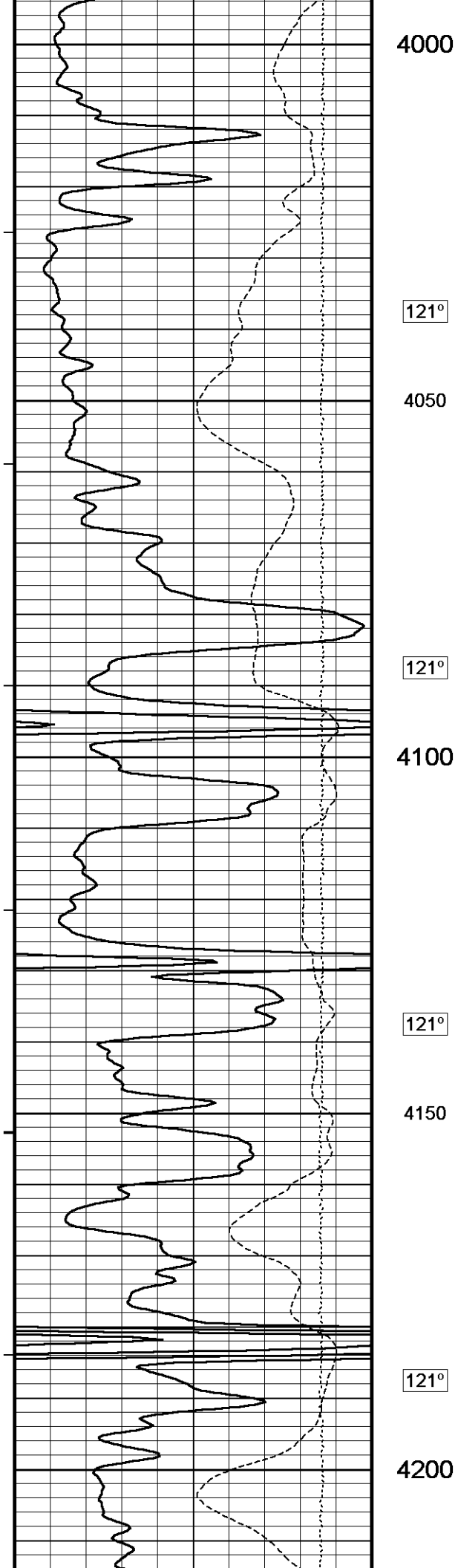
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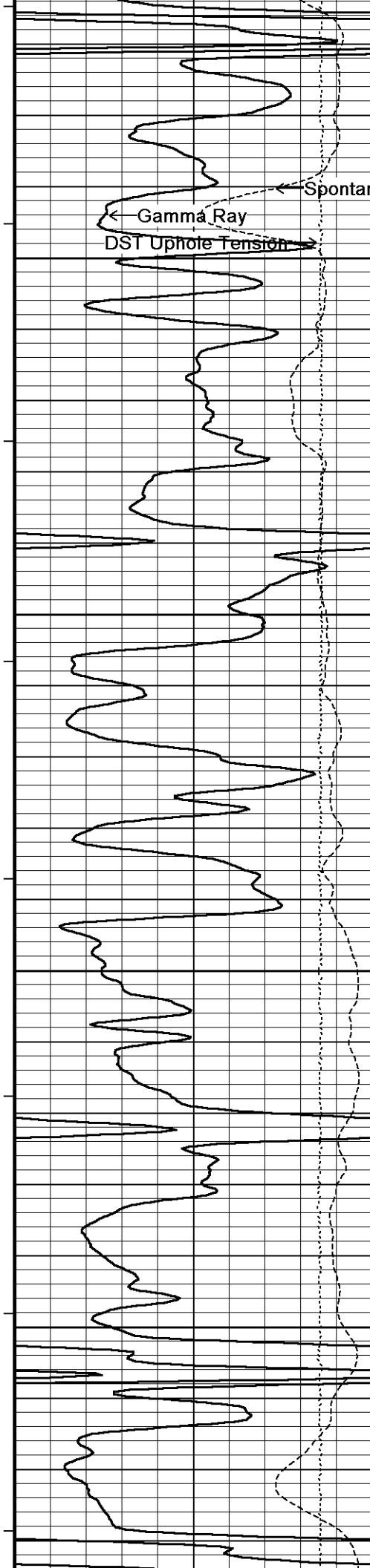
119°

3750









121°

Spontaneous Potential

4250

122°

4300

122°

4350

123°

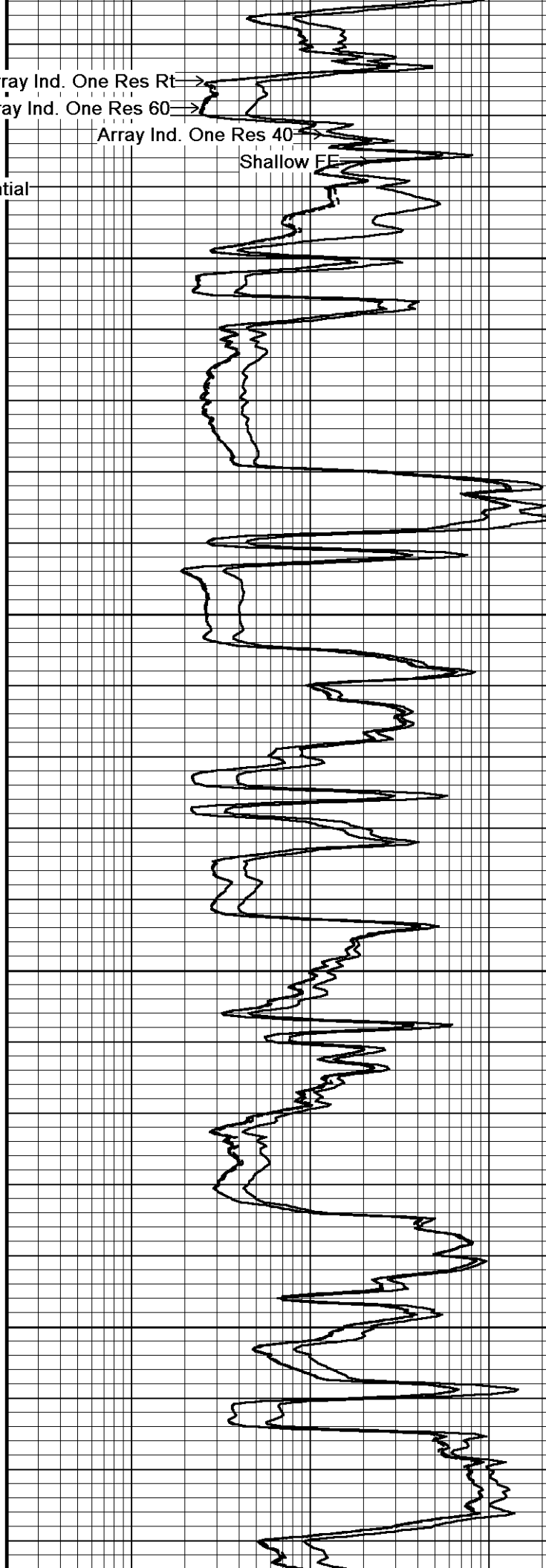
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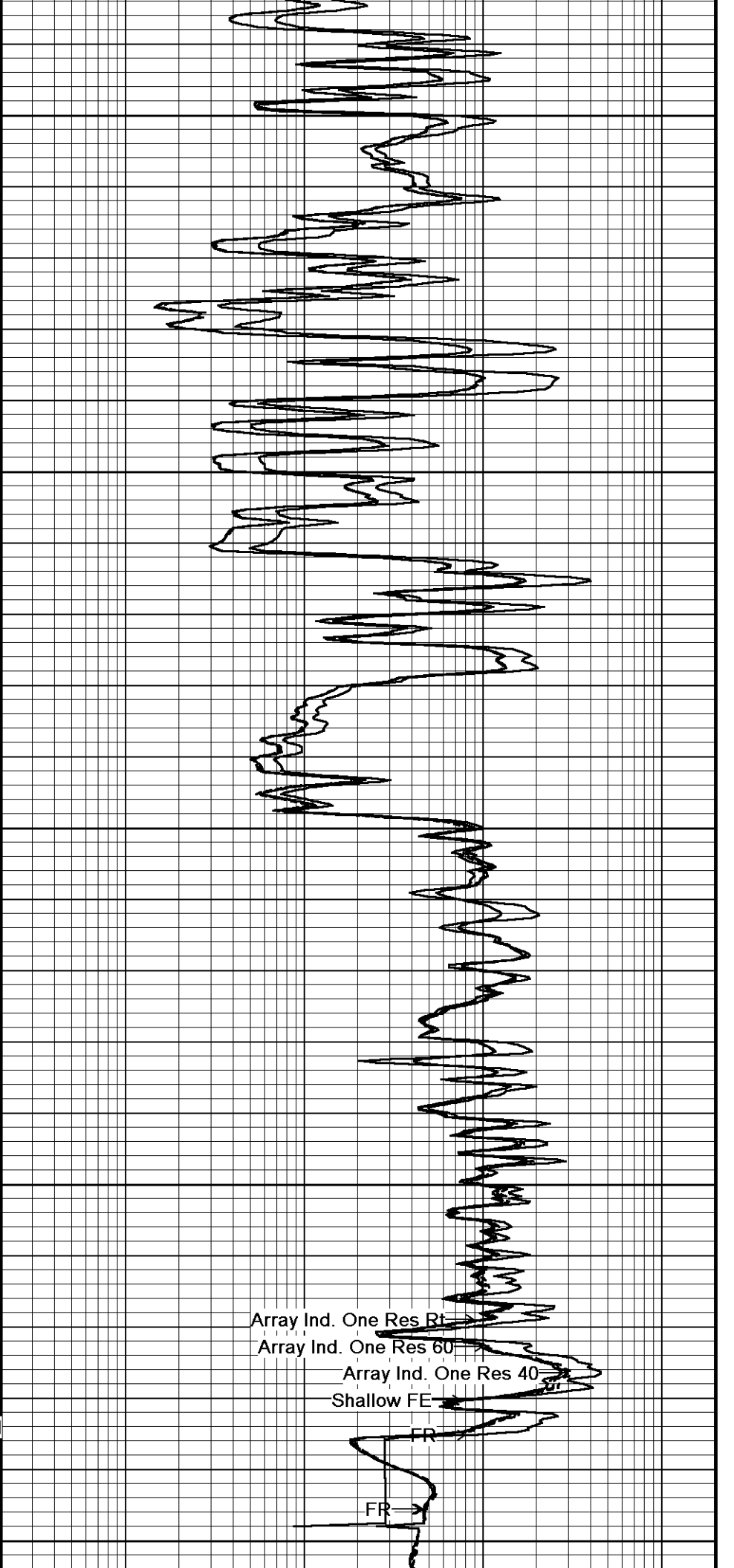
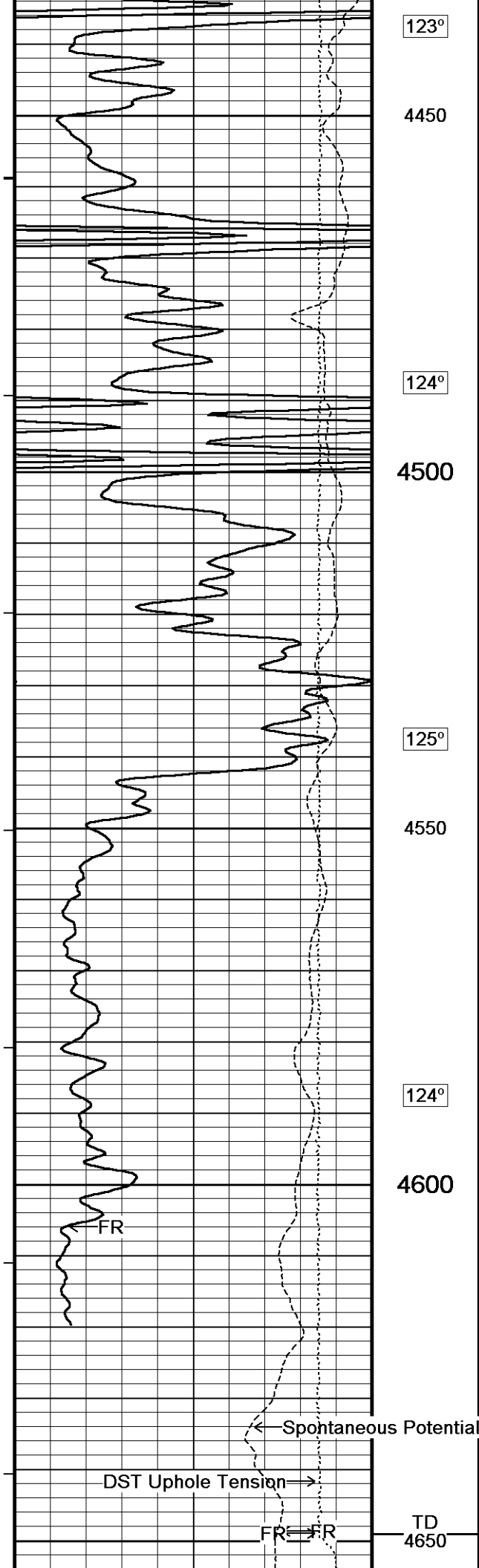
Array Ind. One Res Rt

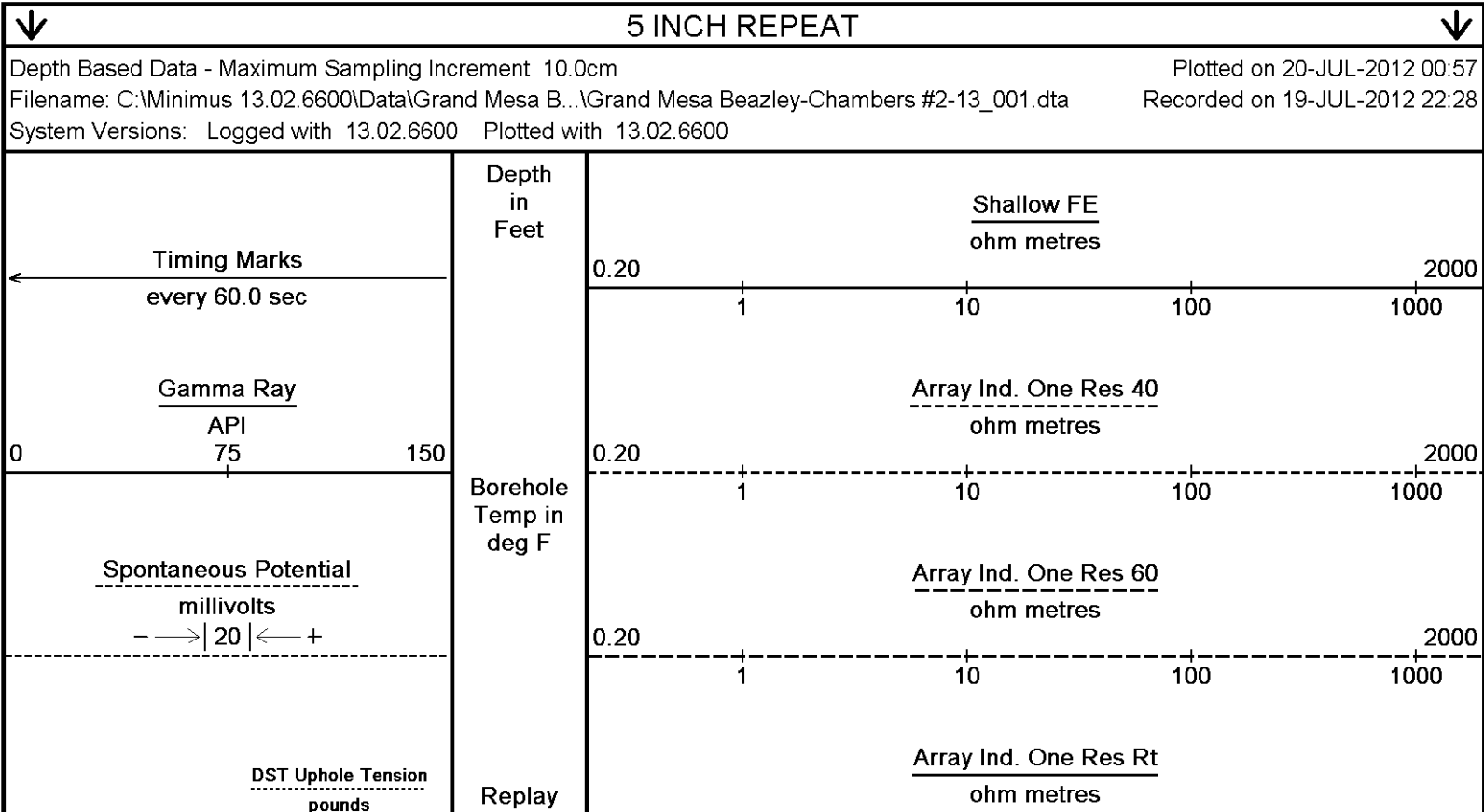
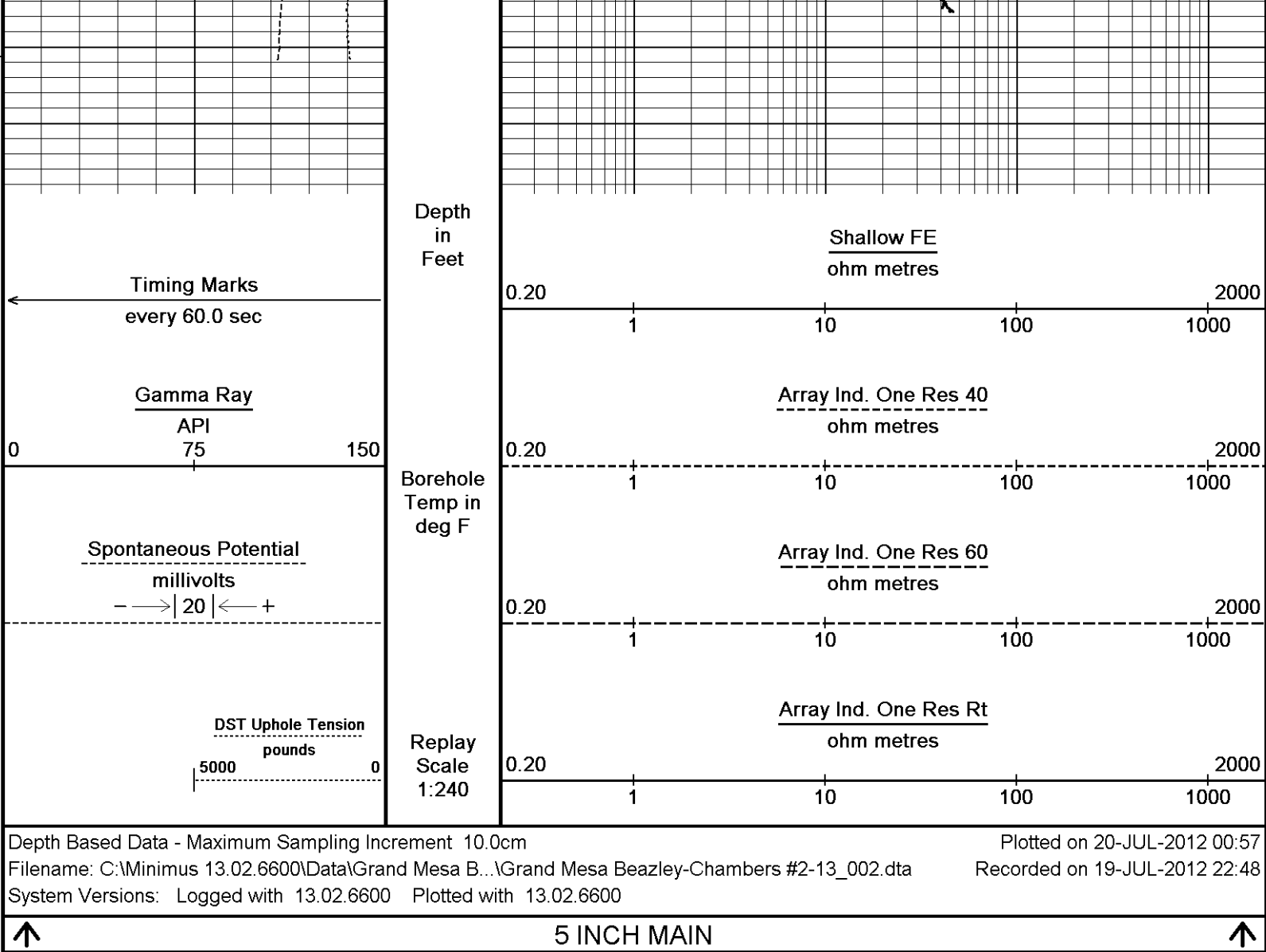
Array Ind. One Res 60

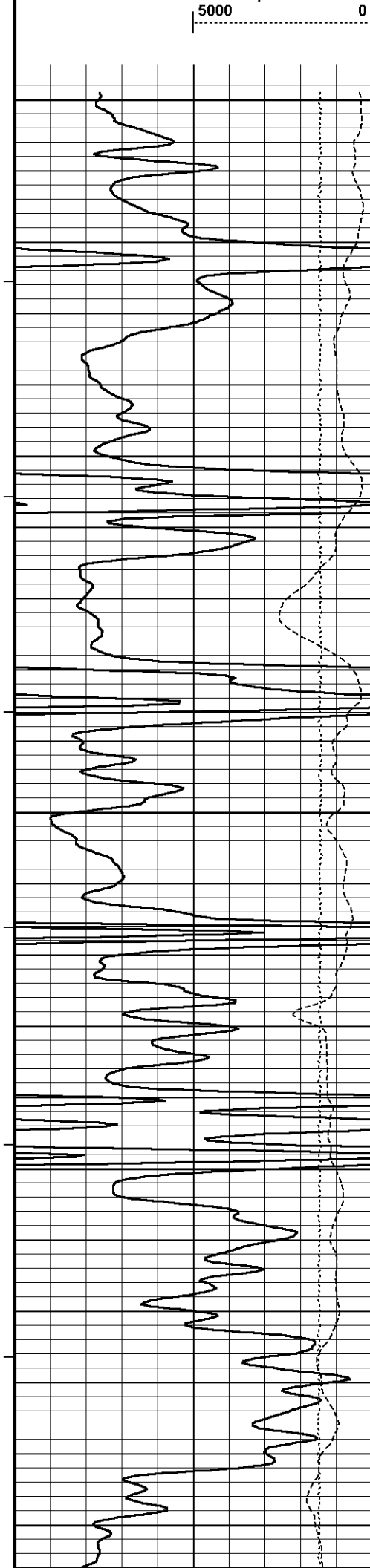
Array Ind. One Res 40

Shallow FF









Scale
1:240

4350

122°

4400

123°

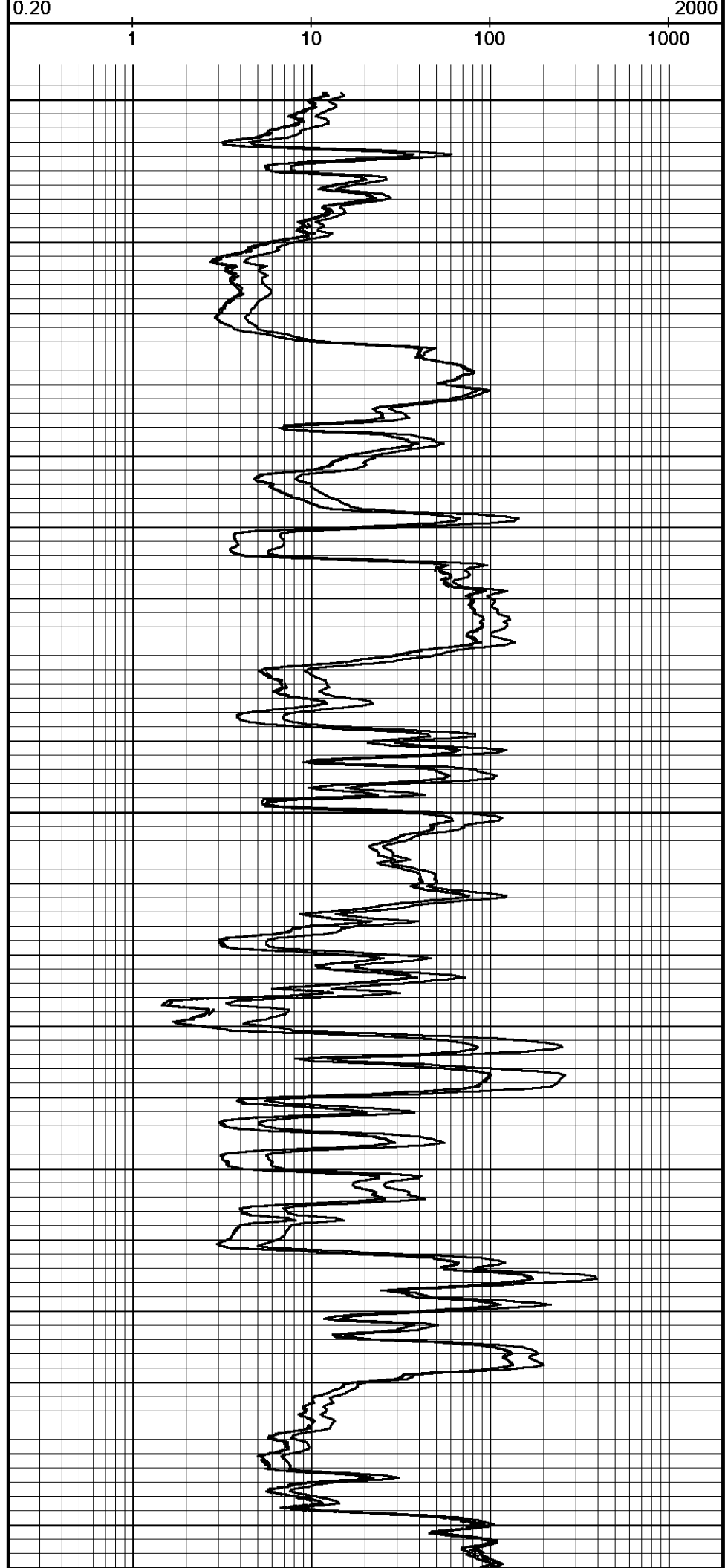
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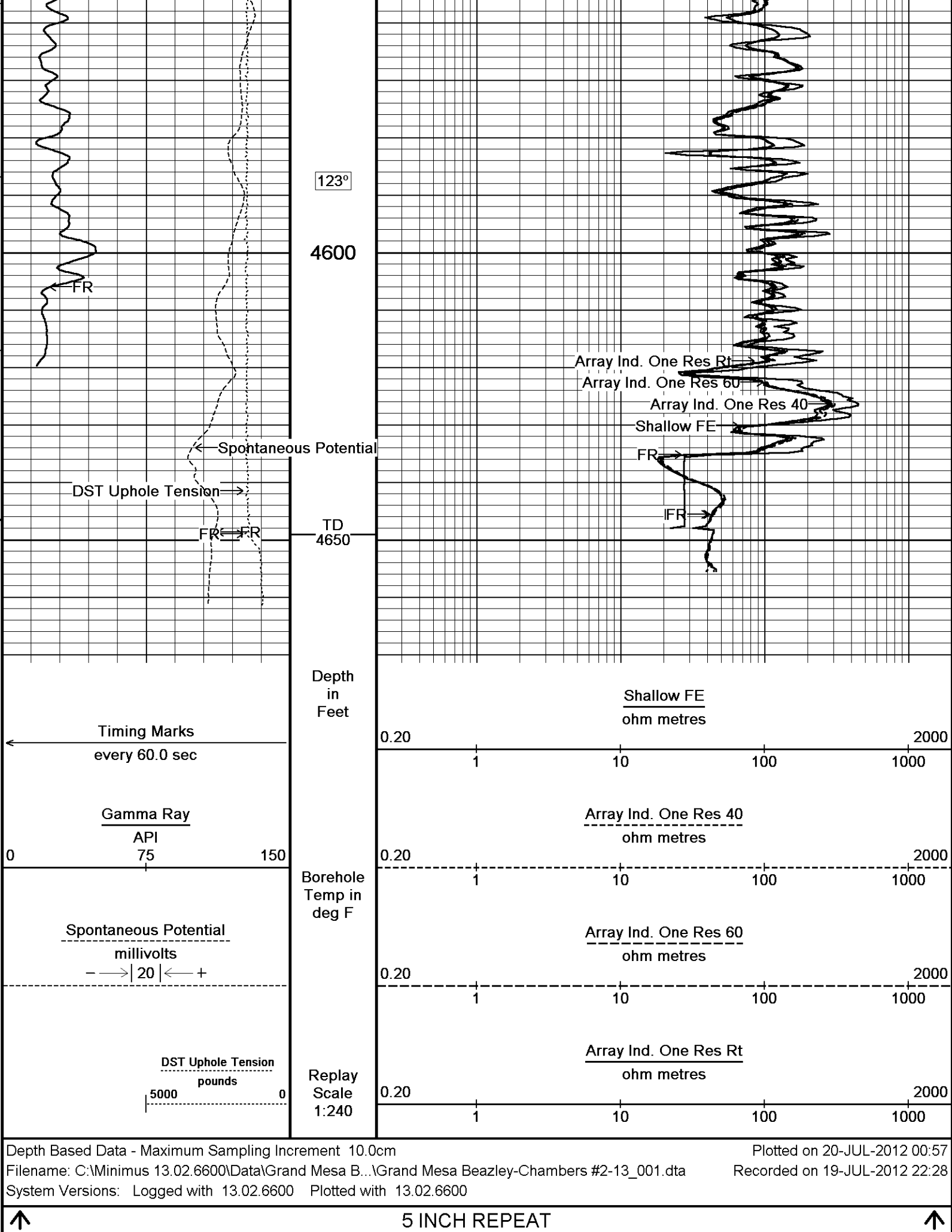
123°

4500

124°

4550





BEFORE SURVEY CALIBRATION

C:\Minimus 13.02.6600\Data\Grand Mesa Beazley-Chambers #2-13\Grand Mesa Beazley-Chambers #2-13_002.dta

General Constants All 000

Last Edited on 19-JUL-2012,19:24

General Parameters

Mud Resistivity	1.240	ohm-metres
Mud Resistivity Temperature	106.000	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	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-D.K 442

Field Calibration on 19-JUL-2012 15:01

	Measured	Calibrated (API)
Background	67	44
Calibrator (Gross)	1156	769
Calibrator (Net)	1089	725

Gamma Constants MCG-D.K 442

Last Edited on 19-JUL-2012,19:23

Gamma Calibrator Number	GRC38	
Mud Density	1.12	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 17-JUL-2012 16:34

	Measured	Calibrated (mV)
Reference 1	100.2	100.0
Reference 2	-99.9	-100.0

High Resolution Temperature Calibration MCG-D.K 442

Field Calibration on 17-JUL-2012,16:35

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

High Resolution Temperature Constants MCG-D.K 442

Last Edited on

Pre-filter Length	11
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Caliper Calibration MML-A 16

Base Calibration on 17-JUL-2012 16:12

Field Calibration on 17-JUL-2012 16:13

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14596	5.98
2	17798	7.97
3	21110	9.86
4	25111	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.95	5.98

Micro Normal and Micro Inverse Calibration MML-A 16

Base Calibration on 17-JUL-2012 16:16

Field Check on 17-JUL-2012 16:18

Base Calibration

	Measured	Calibrated (ohm-m)
Channel	Resistor 1	Resistor 2
Micro Normal	12.2	60.2
Micro Inverse	15.6	78.3
		5.0
		25.0
Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	62.9	62.9
Micro Inverse	48.2	48.2

Micro Normal and Micro Inverse Constants MML-A 16

Last Edited on 19-JUL-2012,19:23

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 N/A inches

Neutron Calibration MDN-A.B 66

Base Calibration on 17-JUL-2012 10:54

Field Check on 19-JUL-2012 15:06

Base Calibration

	Measured	Calibrated (cps)
	Near Far	Near Far
	3220 101	3714 110
Ratio	31.859	33.764

Field Calibrator at Base

	Calibrated (cps)
	1595 2289
Ratio	0.696

Field Check

	Calibrated (cps)
	1604 2293
Ratio	0.699

Neutron Constants MDN-A.B 66

Last Edited on 19-JUL-2012,19:22

Neutron Source Id P0204NN
 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 Constant Value
 Formation Pressure 0.00 kpsi
 Temperature Source Constant Value
 Temperature 68.00 degrees F
 Mud Salinity 0.00 kppm
 Salinity Correction Not Applied
 Formation Fluid Salinity Source Constant Value
 Formation Fluid Salinity 0.00 kppm
 Barite Mud Correction Not Applied

FE Calibration MFE-B.J 353

Base Calibration on 17-JUL-2012 15:58

Field Check on 19-JUL-2012 14:48

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.8	126.8
Base Check		280.6
Field Check		280.8

FE Constants MFE-B.J 353

Last Edited on 19-JUL-2012,19:23

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 167		
	Measured	Calibrated(Deg F)
Lower	1.00	33.80
Upper	11.00	51.80
High Resolution Temperature Constants MAI-A.A 167		
Pre-filter Length	11	
Induction Calibration MAI-A.A 167		
Base Calibration		Base Calibration on 17-JUL-2012,13:55 Field Check on 19-JUL-2012 14:47
Test Loop Calibration	Measured	Calibrated (mmho/m)
Channel	Low High	Low High
1	17.3 474.2	9.3 966.2
2	6.3 388.4	7.6 821.4
3	3.3 259.4	5.2 566.0
4	1.9 133.0	2.6 279.2
Array Temperature	76.8	Deg F
Channel	Base Check (mmho/m)	Field Check (mmho/m)
	Low High	Low High
1	0.0 0.0	13.9 3837.4
2	0.0 0.0	29.8 3474.3
3	0.0 0.0	29.2 3050.4
4	0.0 0.0	19.8 2079.9
Deep	0.0 0.0	18.7 2047.1
Medium	0.0 0.0	42.2 3987.7
Shallow	0.0 0.0	43.2 5050.6
Array Temperature	0.0	89.8 Deg F
Induction Constants MAI-A.A 167		
Last Edited on 19-JUL-2012,19:22		
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

Resistivity of Mud Filtrate for SW	0.00	ohm-m
Source for Rt	0.00	
Source for Rxo	0.00	

Caliper Calibration MPD-B 64

Base Calibration on 17-JUL-2012 14:43
Field Calibration on 19-JUL-2012 14:54

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13949	3.99
2	22435	5.98
3	31057	7.97
4	39360	9.86
5	48766	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.99	5.98

Photo Density Calibration MPD-B 64

Base Calibration on 17-JUL-2012 15:04
Field Check on 19-JUL-2012 14:53

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	59921	33969	59556	30836
Reference 2	25388	2962	24941	2541

Field Check at Base

1193.4	1388.8
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Field Check

1193.0	1385.0
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PE Calibration

Base Calibration	WS	Measured		Calibrated
		WH	Ratio	Ratio
Background	214	1064		
Reference 1	22602	59722	0.382	0.371
Reference 2	6872	25249	0.275	0.272

Field Check at Base

214.1	1063.8
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Field Check

216.1	1066.2
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Density Constants MPD-B 64

Last Edited on 19-JUL-2012,19:19

Density Source Id	18235B
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	1.12 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

Down hole Tension Calibration SMS 0

Reading No

Measured

Calibrated (lbs)

1

16149.30

0.00

2

16750.19

410.00

DOWNHOLE EQUIPMENT

C:\Minimus 13.02.6600\Data\Grand Mesa Beazley-Chambers #2-13\Grand Mesa Beazley-Chambers #2-13_002.dta

3/8" Triple Cone Cable Head (MCB C A)

MCB-C.A 5 LG: 1.58 ft WT: 15.4 lb OD: 2.24 in

Compact Comms Gamma

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

Compact Micro-log

MML-A 16 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Neutron

MDN-A.B 66 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



42.87 ft

GRGC - Gamma Ray

39.96 ft

CGXT - MCG External Temperature

33.24 ft

MNRL - Micro-normal

33.24 ft

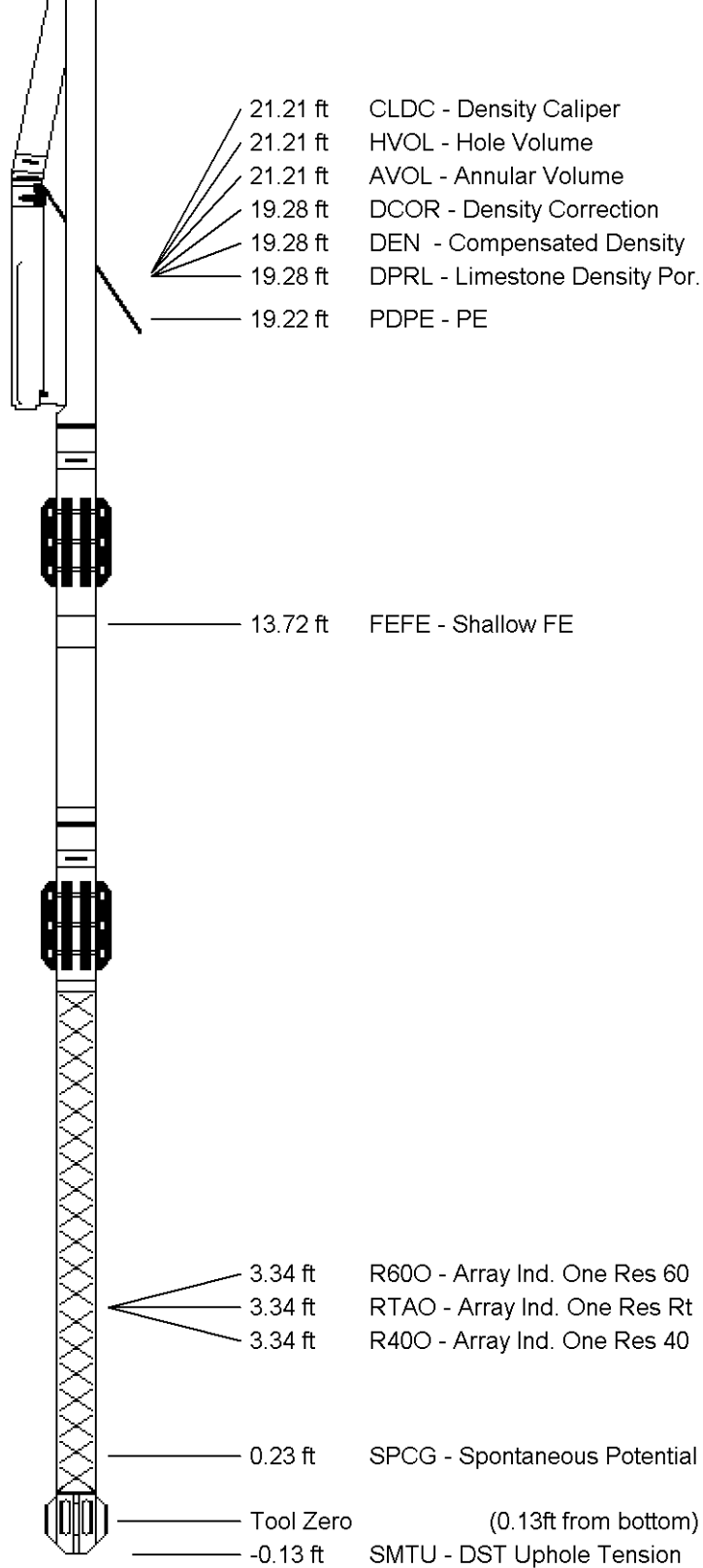
MINV - Micro-inverse

34.24 ft

MLTC - MML Caliper

28.45 ft

NPRL - Limestone Neutron Por.



Compact Focussed Electric
MFE-B.J 353 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Induction
MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 49.73 ft Weight: 399.0 lb

All measurements relative to tool zero.

COMPANY GRAND MESA OPERATING
WELL BEAZLEY-CHAMBERS #2-13
FIELD WILDCAT
PROVINCE/COUNTY GOVE
COUNTRY/STATE U.S.A. / KANSAS

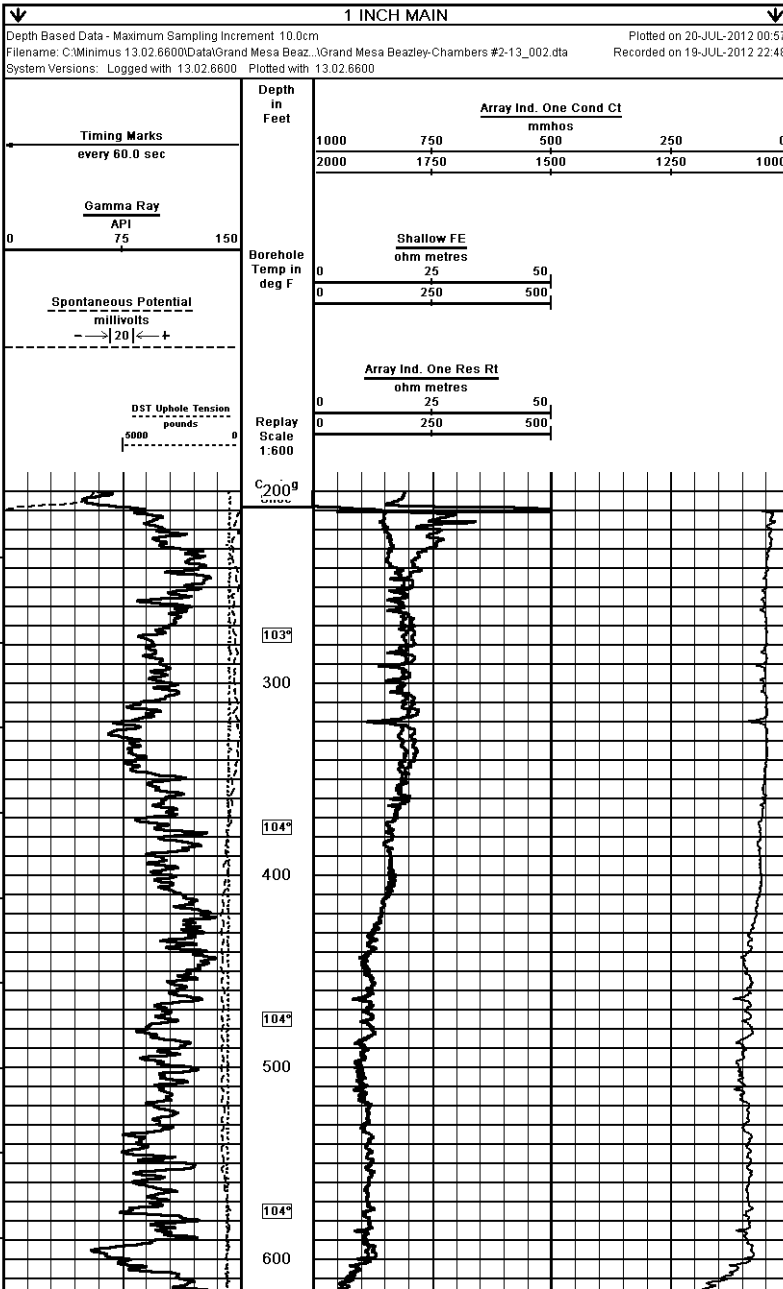
Elevation Kelly Bushing	2866.00	feet	First Reading	4646.00	feet
Elevation Drill Floor	2864.00	feet	Depth Driller	4650.00	feet
Elevation Ground Level	2861.00	feet	Depth Logger	4649.00	feet

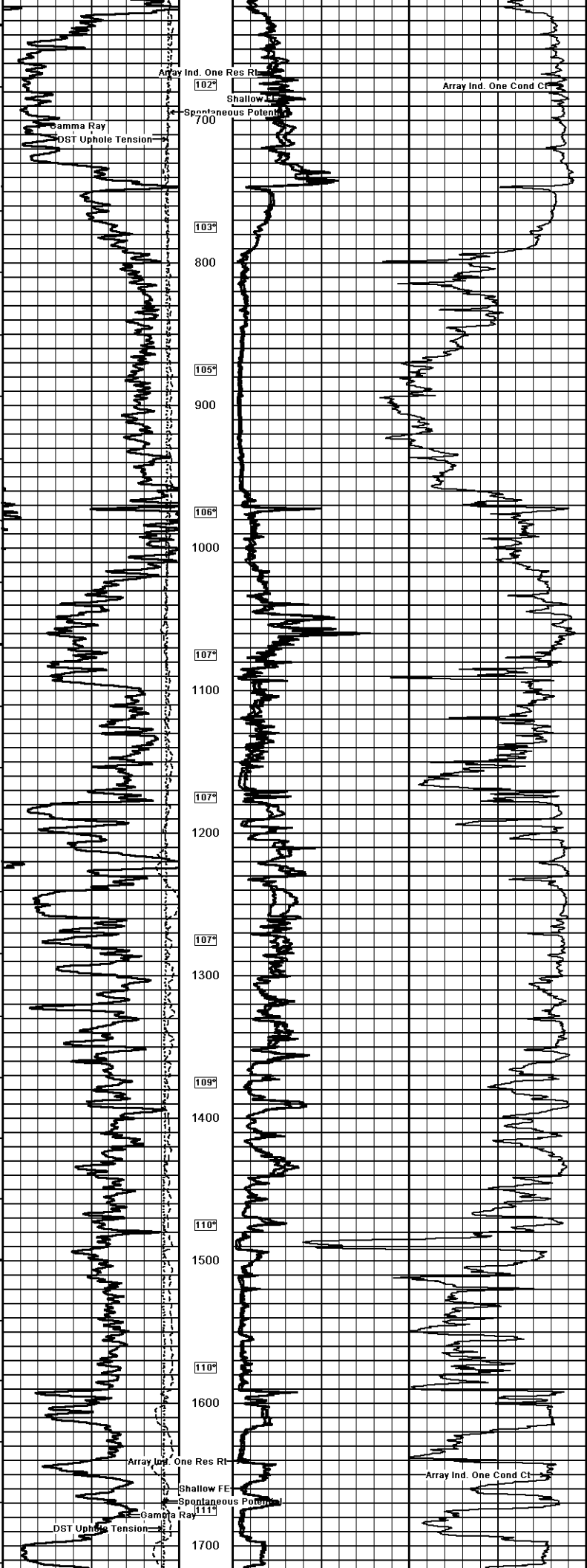


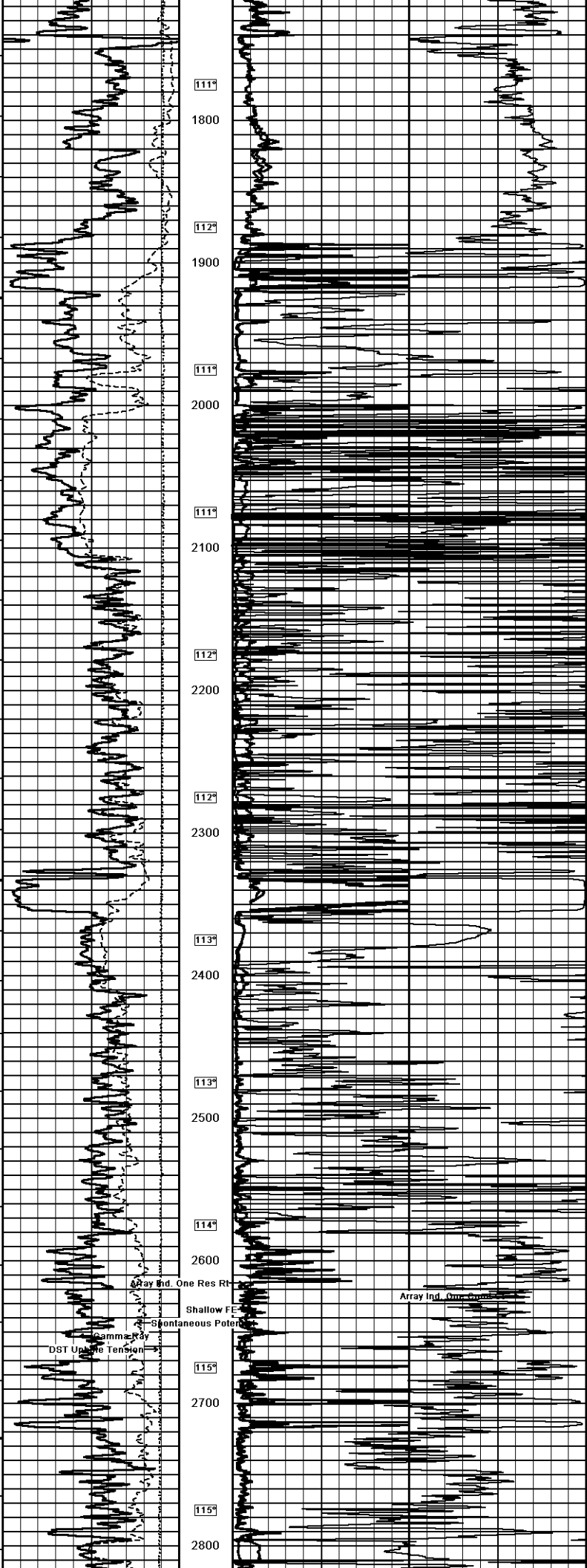
Weatherford®

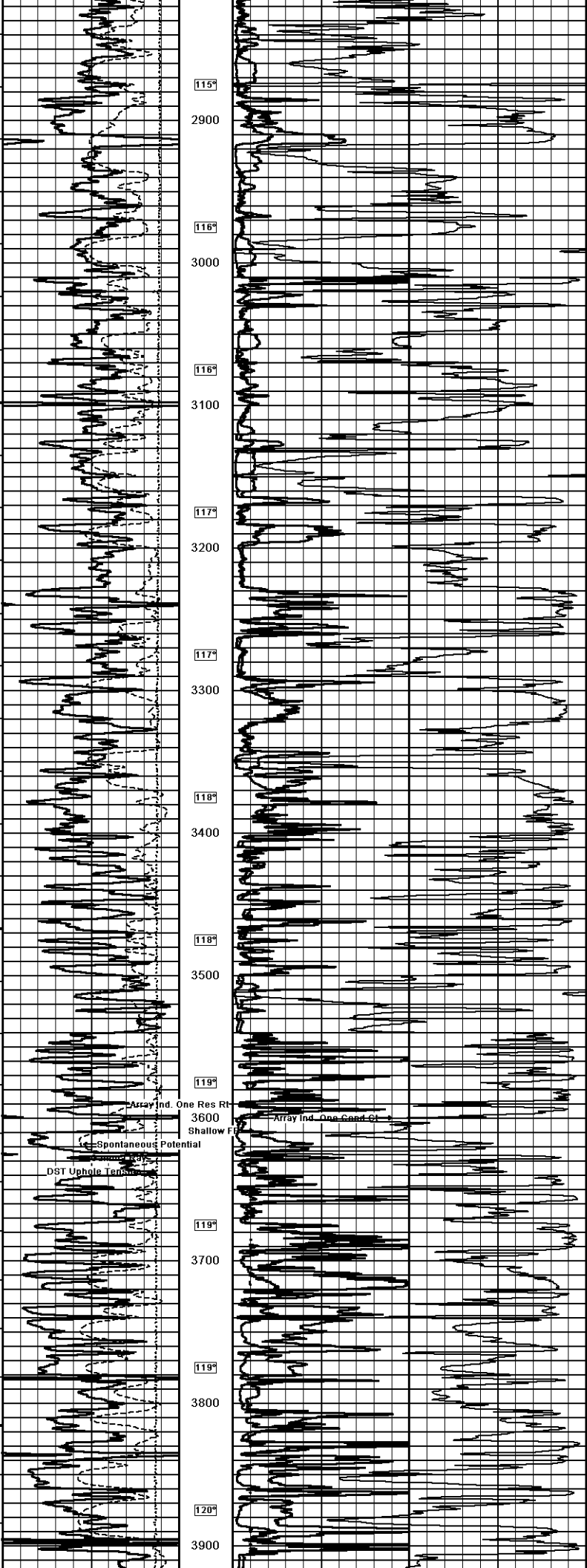
ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

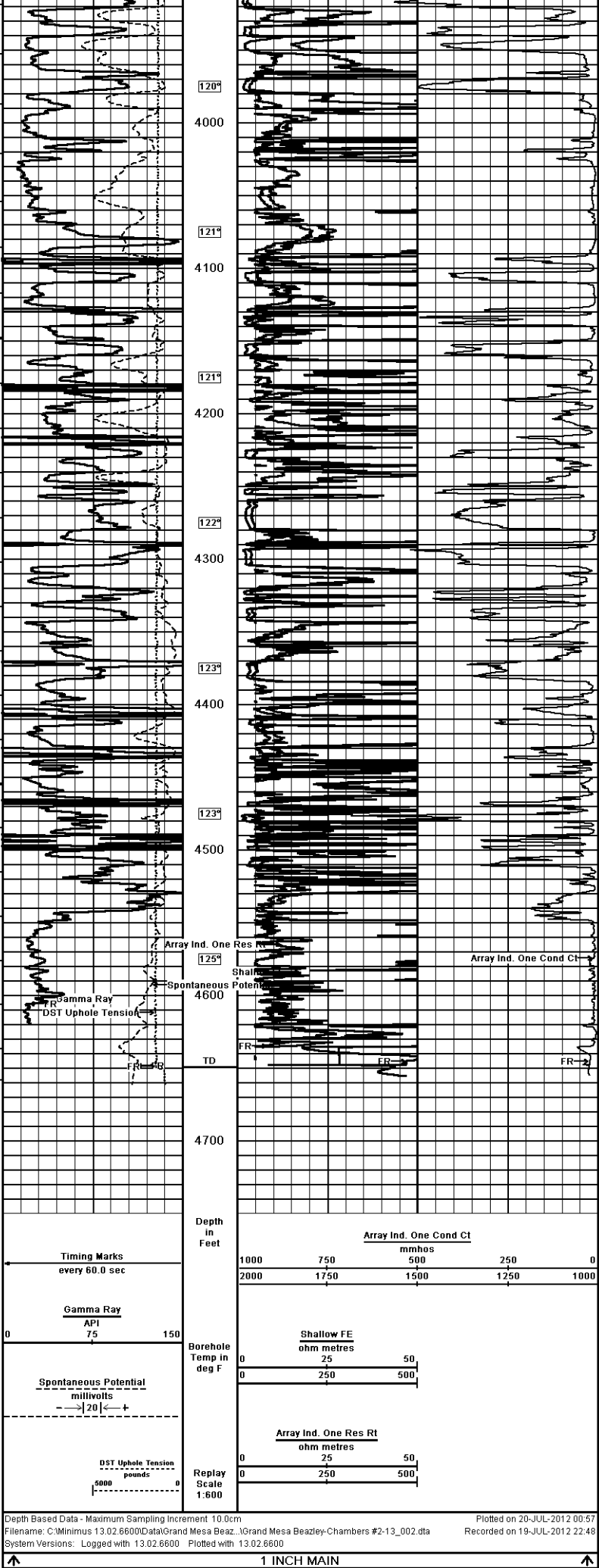
Weatherford		ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG	
COMPANY WELL FIELD PROVINCE/COUNTY COUNTRY/STATE LOCATION		GRAND MESA OPERATING BEAZLEY-CHAMBERS #2-13 WILDCAT GOVE U.S.A. / KANSAS 330' FSL & 2389' FEL	
SEC 13	TIME 13S	ROE 31W	Other Services MPC/MON
Log Number 15-065-2020	Permit Number 15-065-2020		
Permanent Datum O.L. Elevation 2861 feet Log Measured From KB @ 5 FEET Drilling Measured From K.B. @ 5 FEET			
Date 19-JUL-2012	Run Number ONE		
Depth Driller 4650.00	feet	Depth Logger 4645.00	
First Reading 208.00	feet	Last Reading 210.00	
Casing Driller 208.00	feet	Casing Logger 208.00	
Bit Size 7.875	inches	Hole Fluid Type CHEMICAL	
Density/Viscosity 1.12 g/cc	64.00 CP	PH/Fluid Loss 10.00	
Sample Source FLOWLINE	1.24 @ 106.0	ohm-m	ohm-m
Rm @ Measured Temp 0.99 @ 106.0	ohm-m	Rm @ Measured Temp 1.49 @ 106.0	
Source Rm/Rmc CALC	CALC	ohm-m	ohm-m
Rm @ BHT 1.05 @ 25.0	ohm-m	Time Since Circulation 3 HOURS	
Max Recorded Temp 125.00	deg F	Equipment Name COMPACT	
Equipment Base 13096	LIB	Recorded By R. HOFFMAN	
Witnessed By JOHN GOLOSINITH	S.O. #1 JOB # 3534501		
LIB 7-187			











WELL	BEAZLEY-CHAMBERS #2-13				
FIELD	WILDCAT				
PROVINCE/COUNTY	GOVE				
COUNTRY/STATE	U.S.A. / KANSAS				
Elevation Kelly Bushing	2886.00	feet	First Reading	4646.00	feet
Elevation Drill Floor	2884.00	feet	Depth Driller	4650.00	feet
Elevation Ground Level	2861.00	feet	Depth Logger	4649.00	feet
			ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG		