Weatherford®

ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

COMPANY	O'BRIEN RESOURCES, LLC
WELL	HARPER 35 #1
FIELD	WILDCAT
PROVINCE/COUNTY	LANE
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	1185' FNL & 875' FEL
PERMIT NUMBER	SE SW NE NE

SEC 35	TWP 16S	RGE 30W	Other Services
Latitude			MPD/MDN MML
Longitude			
API Number	15-101-22516		

Permanent Datum GL, Elevation 2846 feet
Log Measured From KB
Drilling Measured From KB @ 8 FEET

Elevations:	feet
KB	2854.00
DF	2852.00
GL	2846.00

Date	18-AUG-2014			
Run Number	ONE			
Service Order	4558-95560163			
Depth Driller	4675.00	feet		
Depth Logger	4678.00	feet		
First Reading	4675.00	feet		
Last Reading	3700.00	feet		
Casing Driller	258.00	feet		
Casing Logger	263.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.20 lb/USg		39.00 CP	
PH / Fluid Loss	11.00		8.00 ml/30Min	
Sample Source	FLOWLINE			
Rm @ Measured Temp	1.24 @ 90.0	ohm-m		
Rmf @ Measured Temp	0.99 @ 90.0	ohm-m		
Rmc @ Measured Temp	1.49 @ 90.0	ohm-m		
Source Rmf / Rmc	CALC		CALC	
Rm @ BHT	0.97 @115.0	ohm-m		
Time Since Circulation	4 HOURS			
Max Recorded Temp	115.00	deg F		
Equipment / Base	13096		LIB	
Recorded By	ADAM SILL			
Witnessed By	KURT TALBOTT			
JOB #	LB14-240			

BOREHOLE RECORD

Last Edited: 18-AUG-2014 08:43

Bit Size inches	Depth From feet	Depth To feet
7.875	258.00	4675.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	258.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 13.08.2113.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MAI RUN IN COMBINATION.
  - HARDWARE: DUAL BOWSPRING USED ON MDN.
  0.5 INCH STANDOFF USED ON MFE.
  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: 1991 CU.FT.
- ANNULAR HOLE VOLUME WITH 4.5 INCH PRODUCTION CASING FROM TD TO 3700 FEET: 268 CU.FT.
- RIG: LANDMARK #5

- RIG: LANDMARK #3.

- ENGINEER: A. SILL.

- OPERATOR: J. DUNLAP.

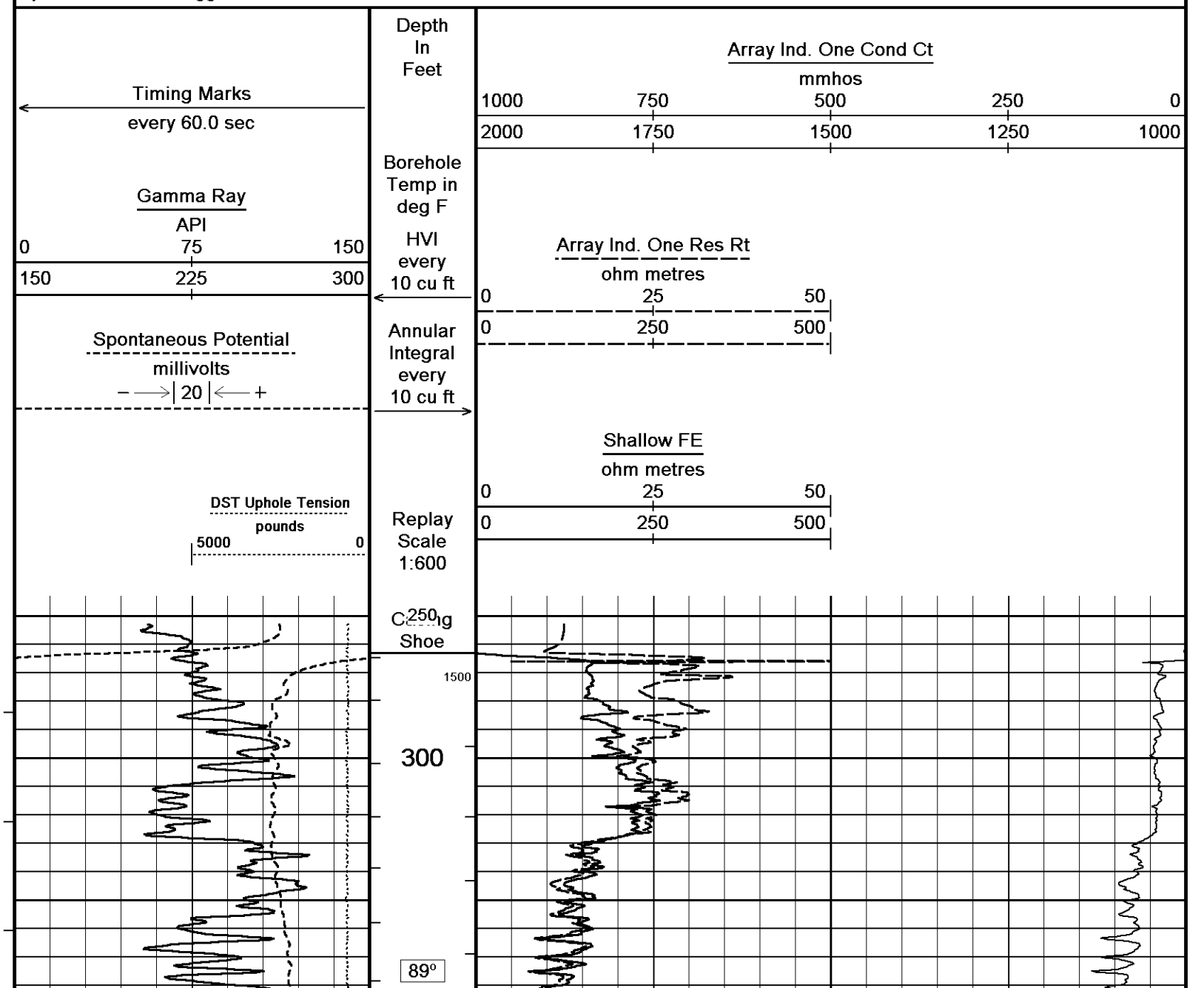
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.

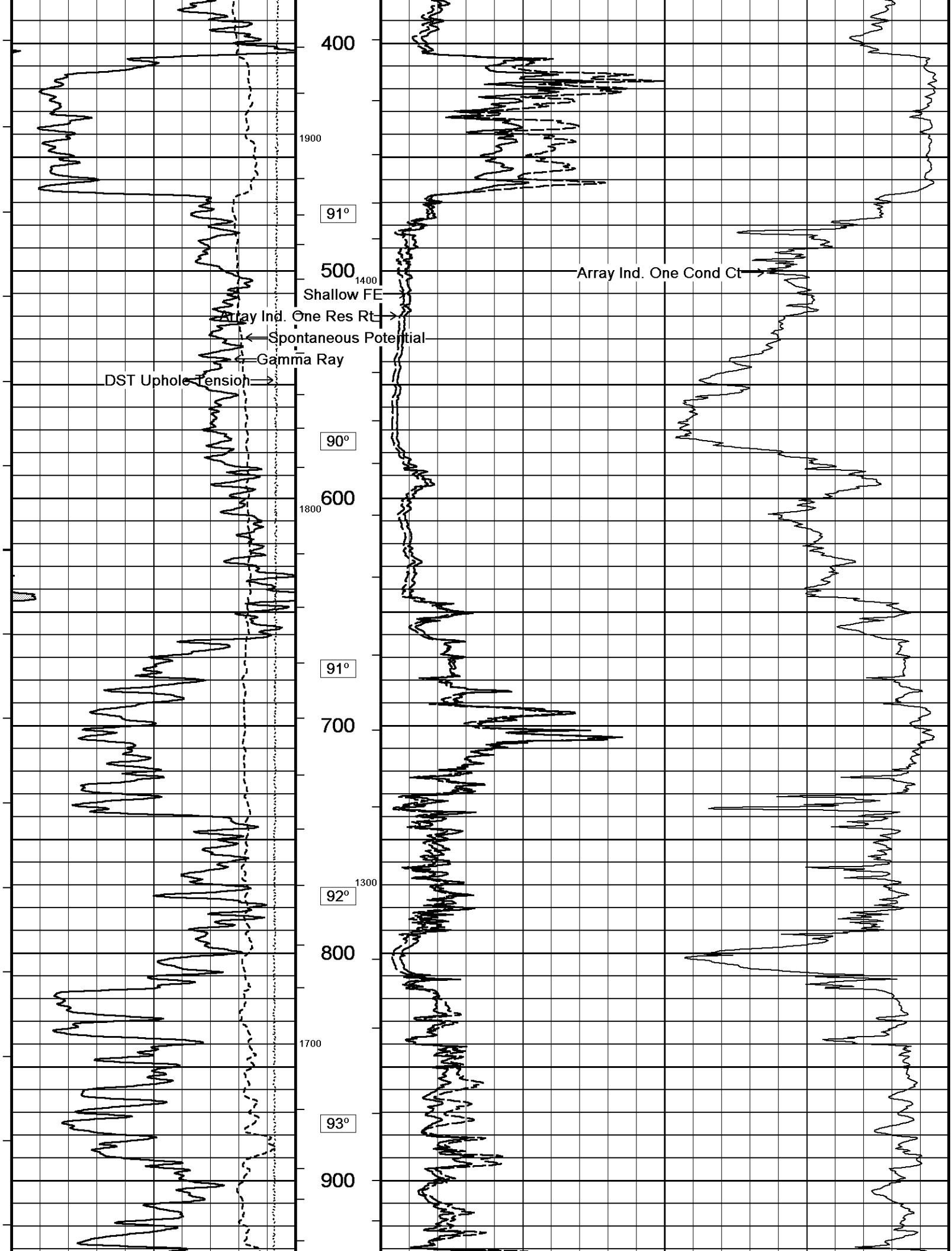
2 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 18-AUG-2014 14:52

Filename: C:\Minimus 13.08.2113\Log Data\O'Brien (LA) Harper 3...\O'Brien (LA) Harper 35 #1_002.dta — Recorded on 18-AUG-2014 12:24

System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

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1900
91°
500
1400
Shallow FE
Array Ind. One Res Rt
Spontaneous Potential
Gamma Ray
DST Uphole Tension
Array Ind. One Cond Ct
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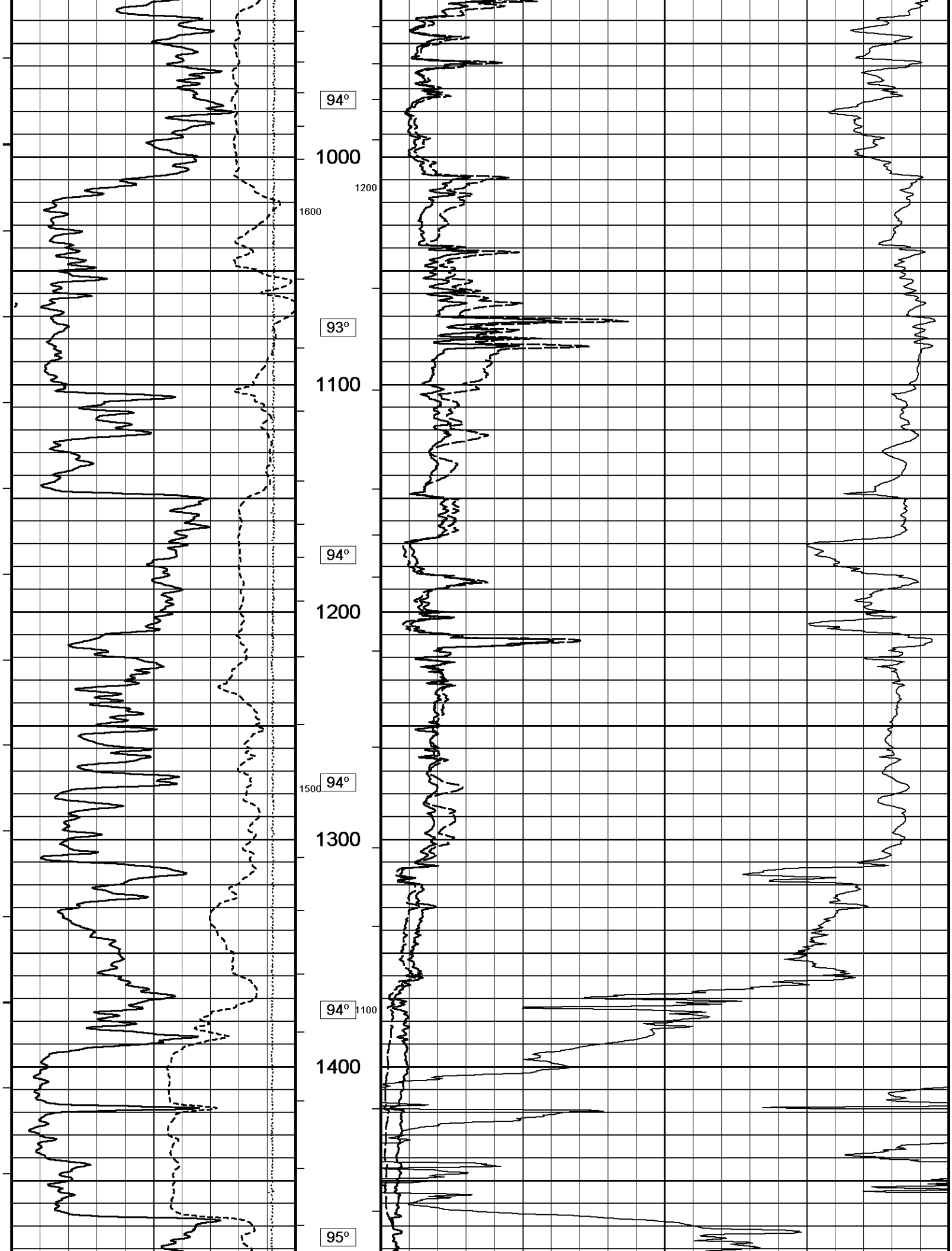
600
1800
91°
700
1300
92°
800
1700
93°
900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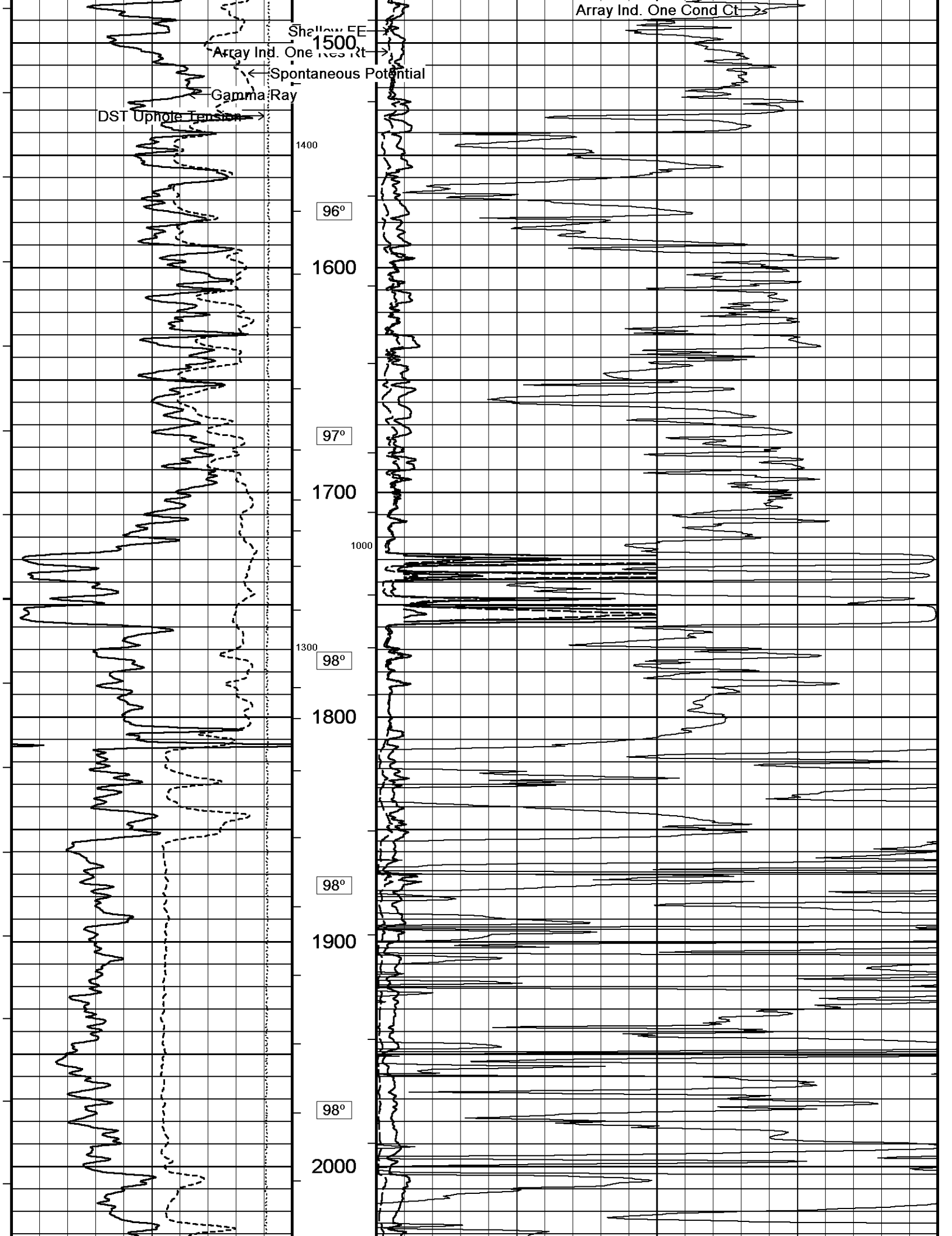
1200
1600
93°
1100
94°
1200
94°
1500
1300
94°
1100
1400
95°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Shallow FE
Array Ind. One Res Rt
Spontaneous Potential
Gamma Ray
DST Uphole Tension
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1400
96°
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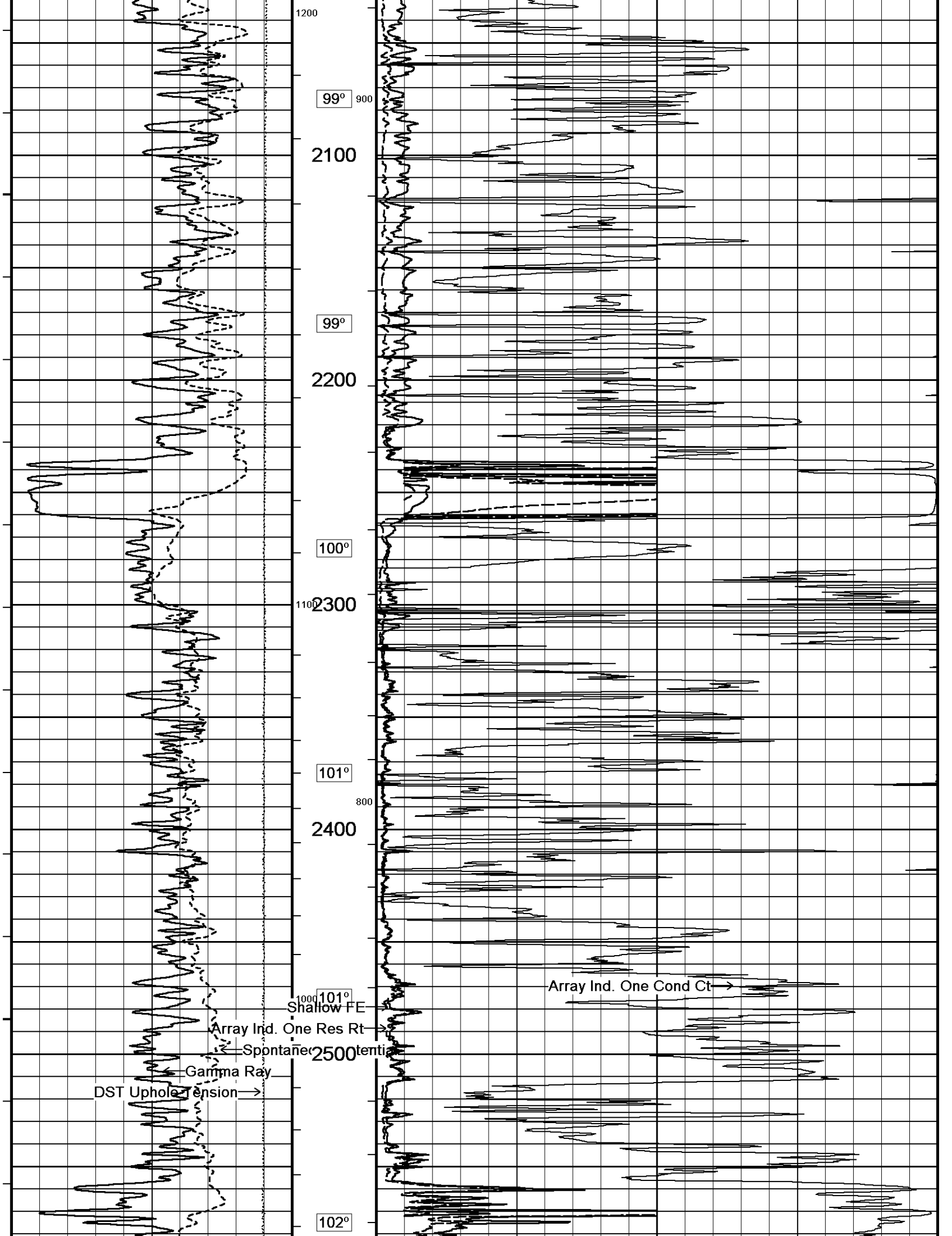
1700
1000
1300
98°
1800
98°
1900
98°
2000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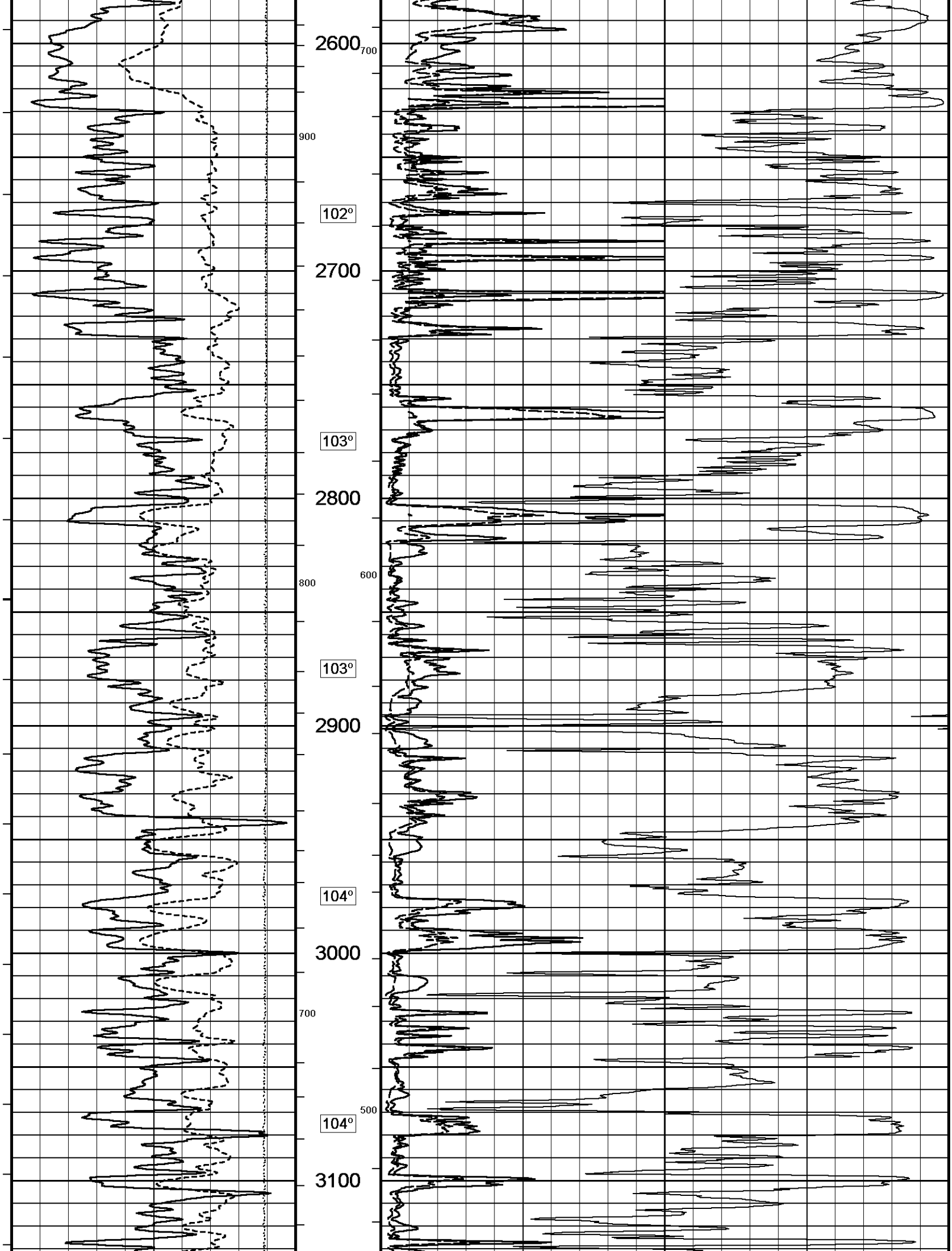
99°
900
2100
99°
2200
100°
1100
2300
101°
800
2400
101°
1000
2500
102°
Array Ind. One Cond Ct
Shallow FE
Array Ind. One Res Rt
Spontaneous Potential
Gamma Ray
DST Uphole Tension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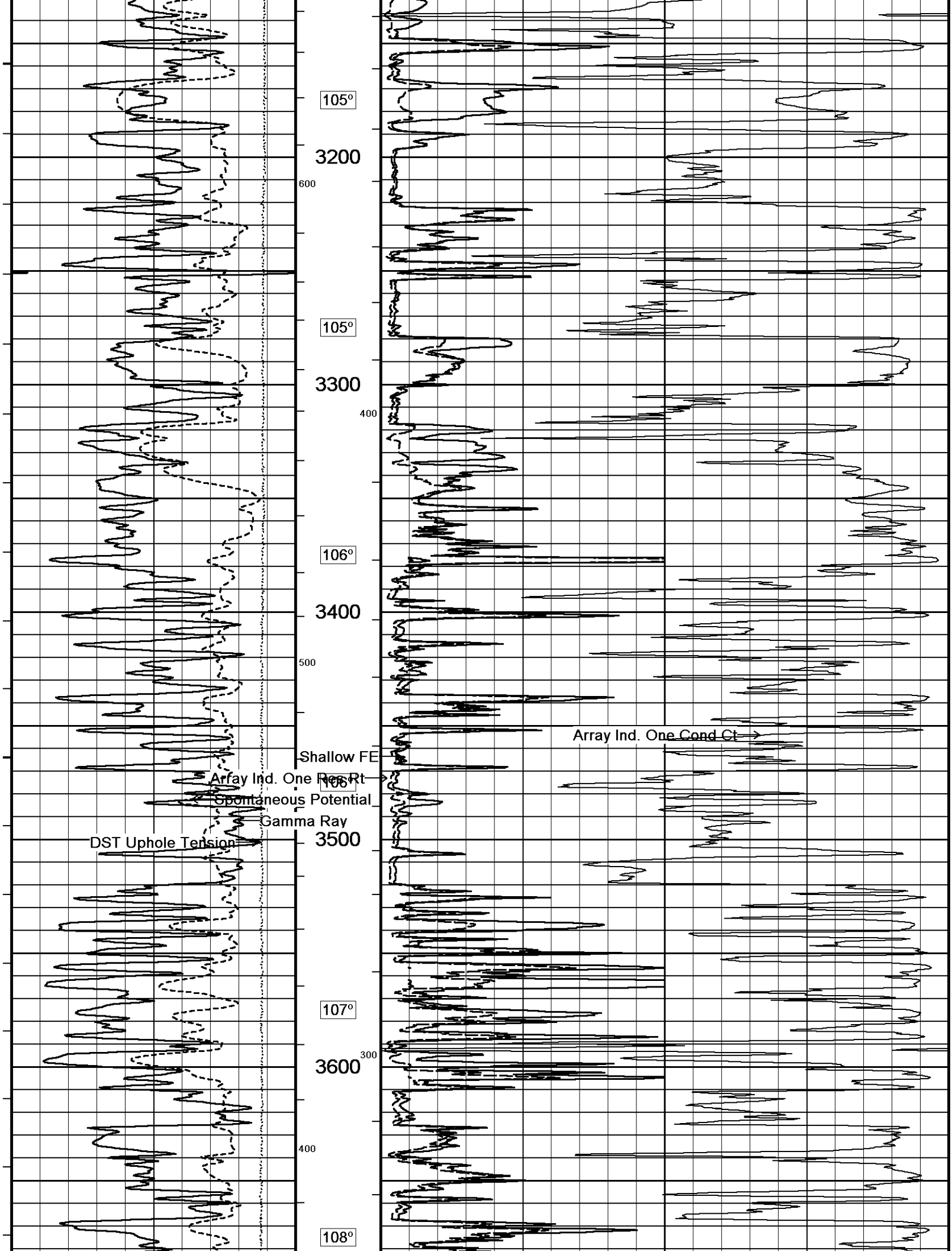
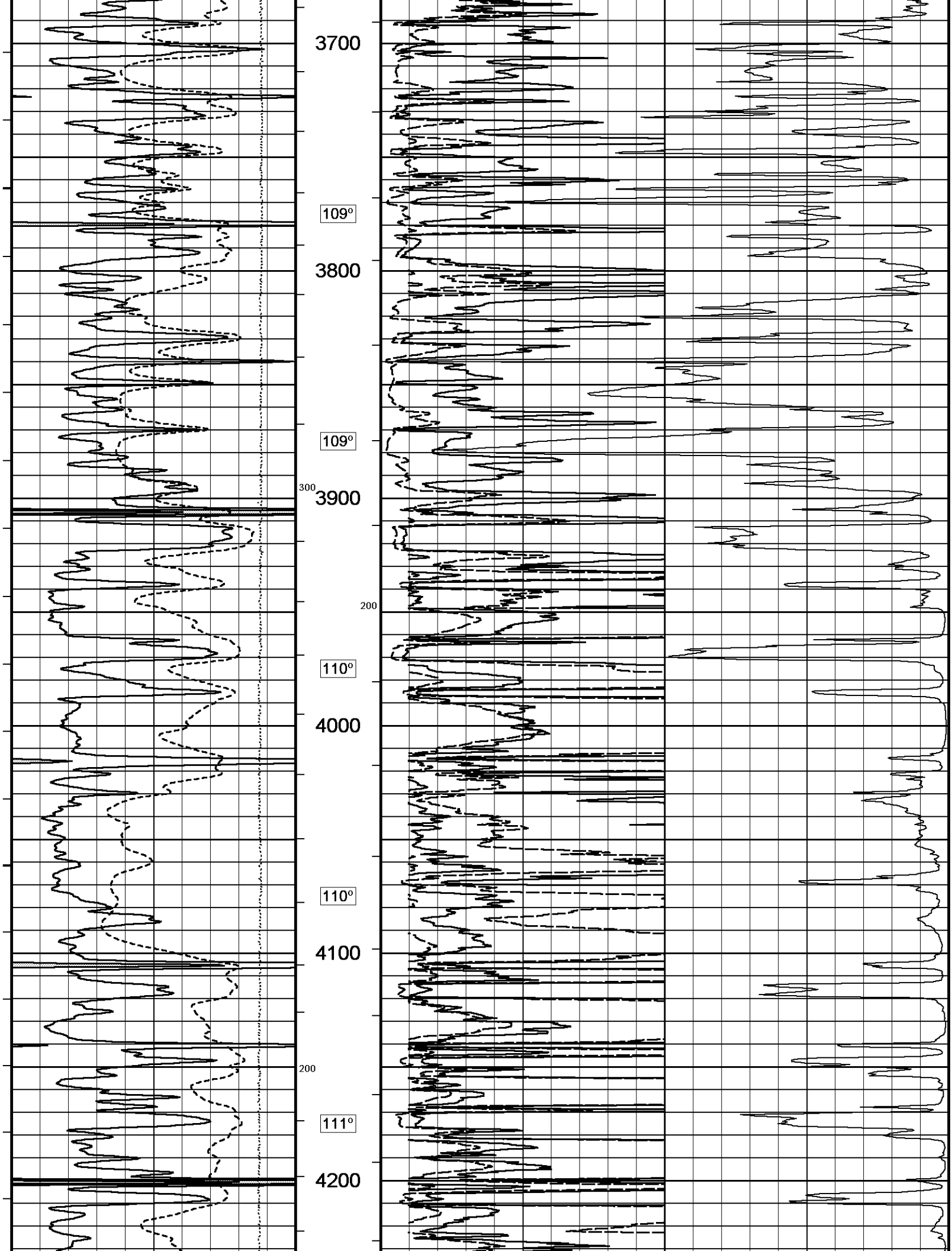
800
600
103°
2900
104°
3000
700
500
104°
3100


105°
3200
600
105°
3300
400
106°
3400
500
Array Ind. One Cond Ct
Shallow FE
Array Ind. One Res Rt
106
Spontaneous Potential
Gamma Ray
DST Uphole Tension
3500
107°
3600
300
400
108°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109°
3800
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300
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200
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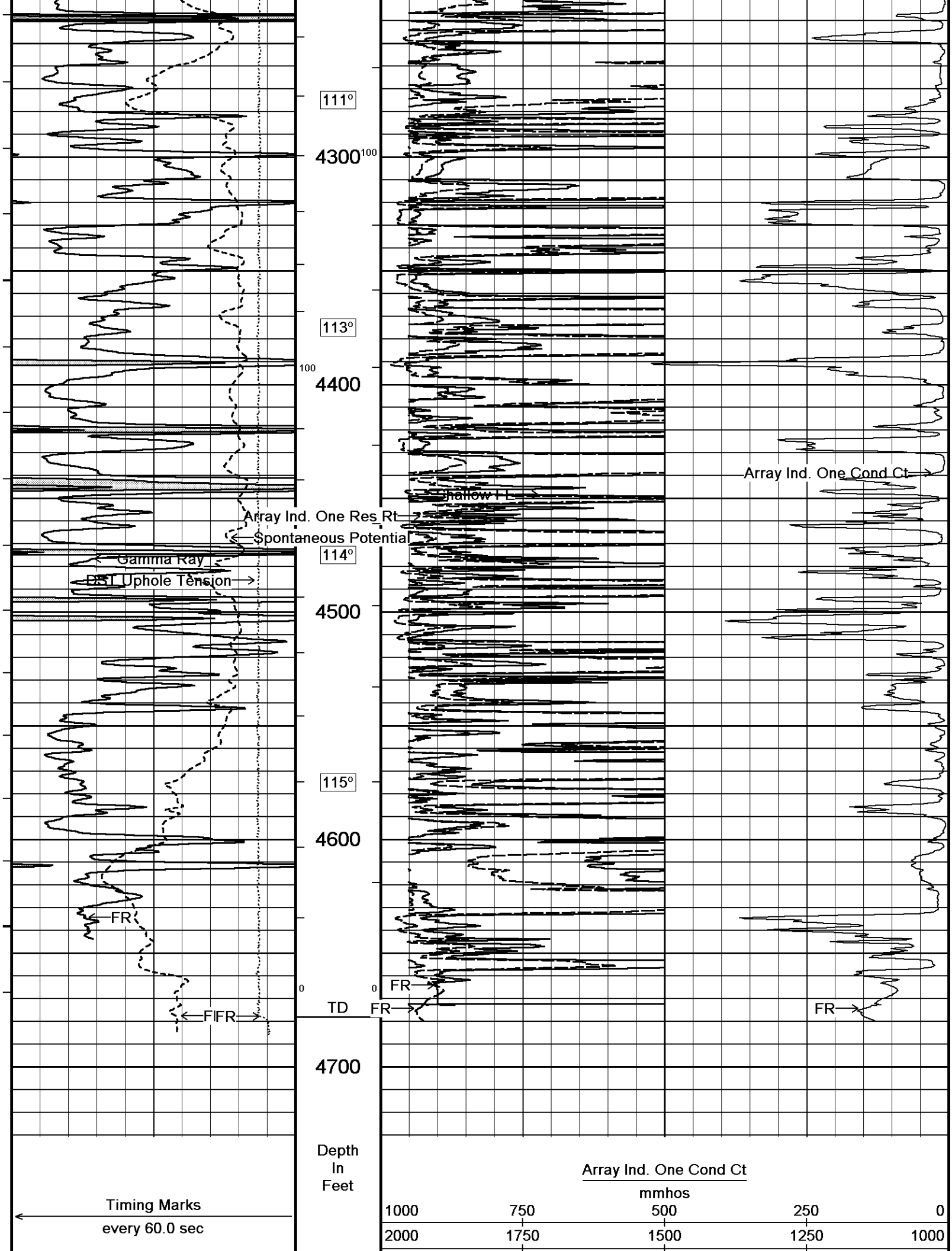
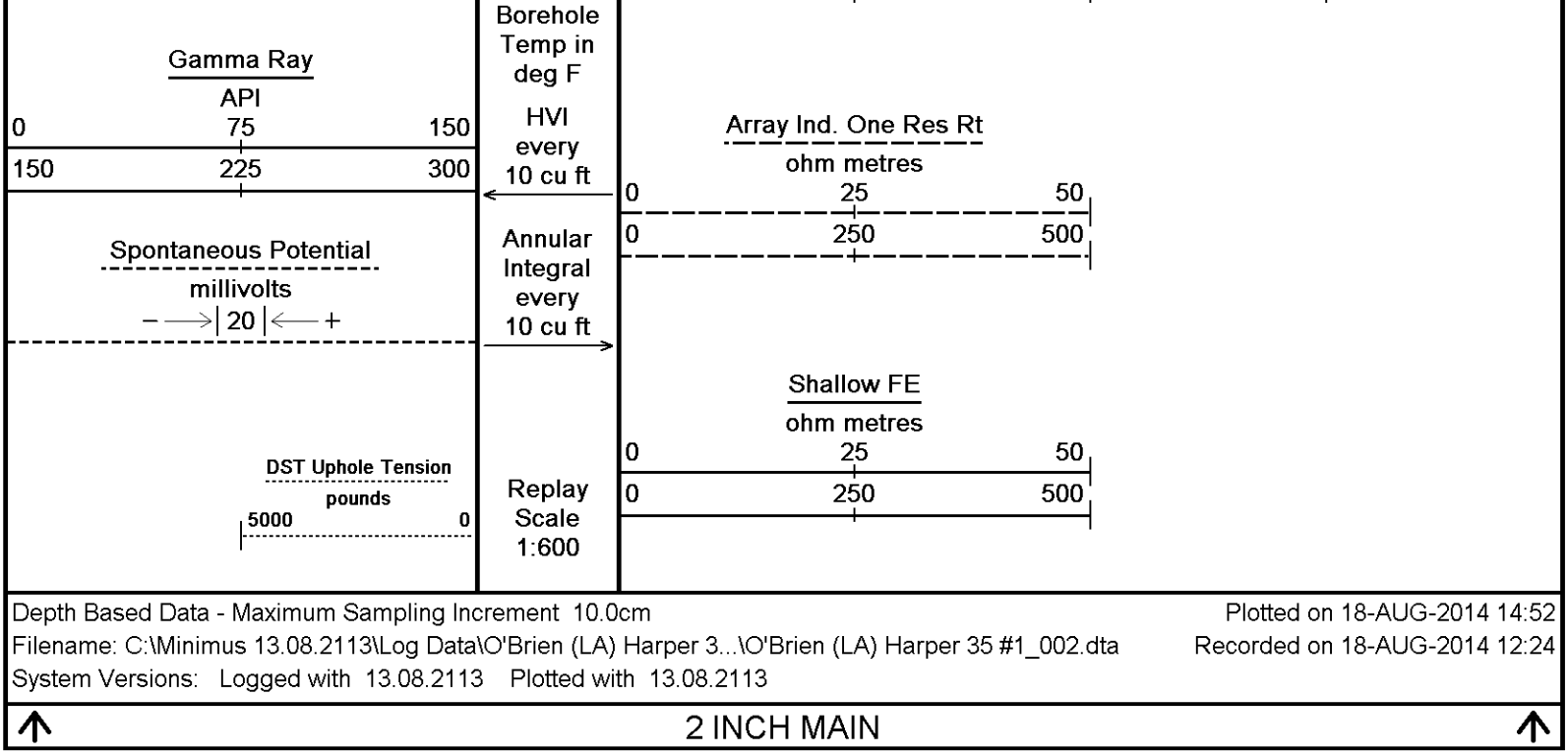
4000
110°
4100
200
111°
4200


111°
4300
100
113°
100
4400
Array Ind. One Cond Ct
Shallow FL
Array Ind. One Res Rt
Spontaneous Potential
114°
Gamma Ray
DST Uphole Tension
4500
115°
4600
FR
0
0
FR
TD
FR
FR
FR
4700
Depth
In
Feet
Timing Marks
every 60.0 sec
Array Ind. One Cond Ct
mmhos
1000
750
500
250
0
2000
1750
1500
1250
1000



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 18-AUG-2014 14:52
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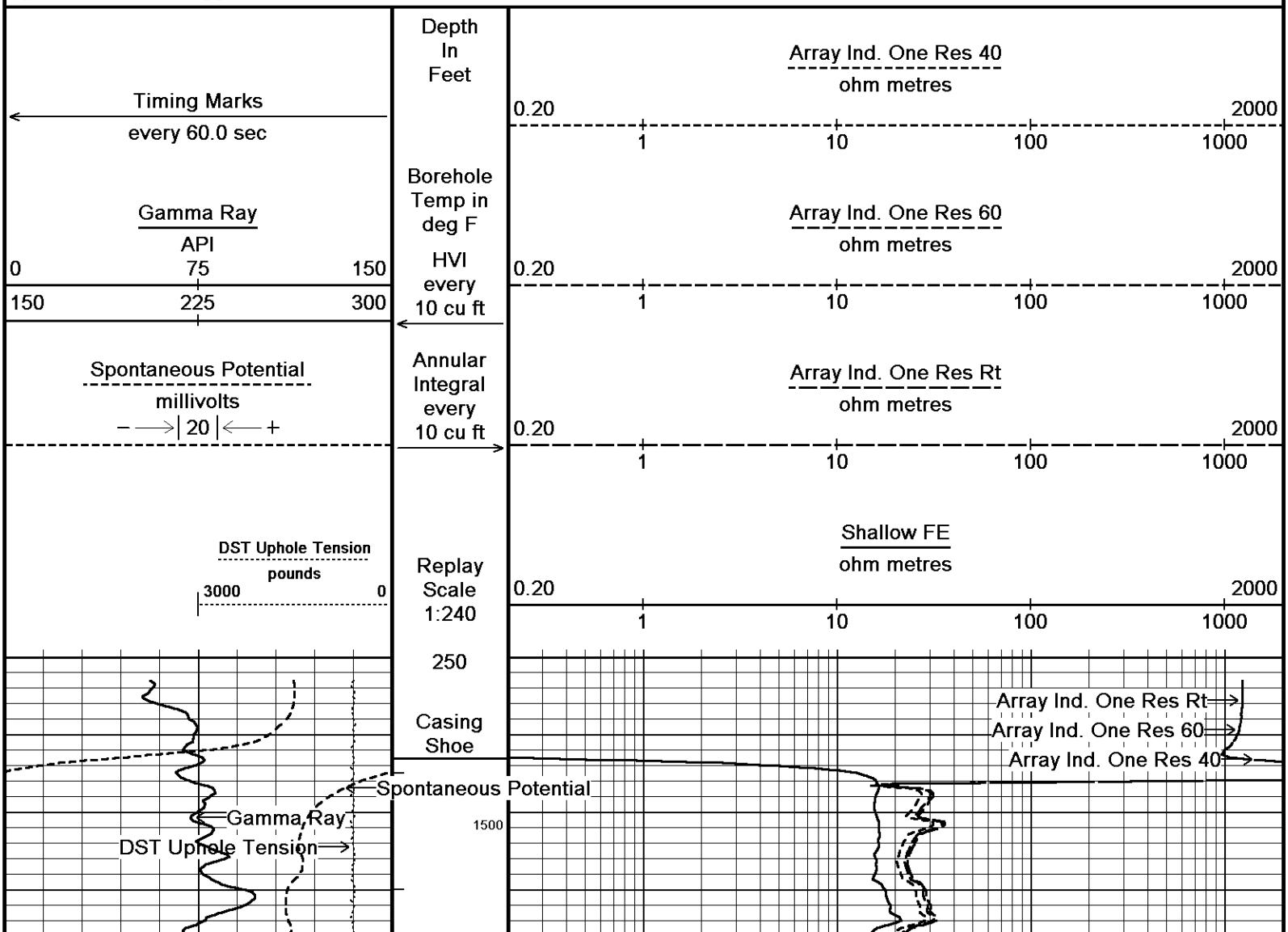
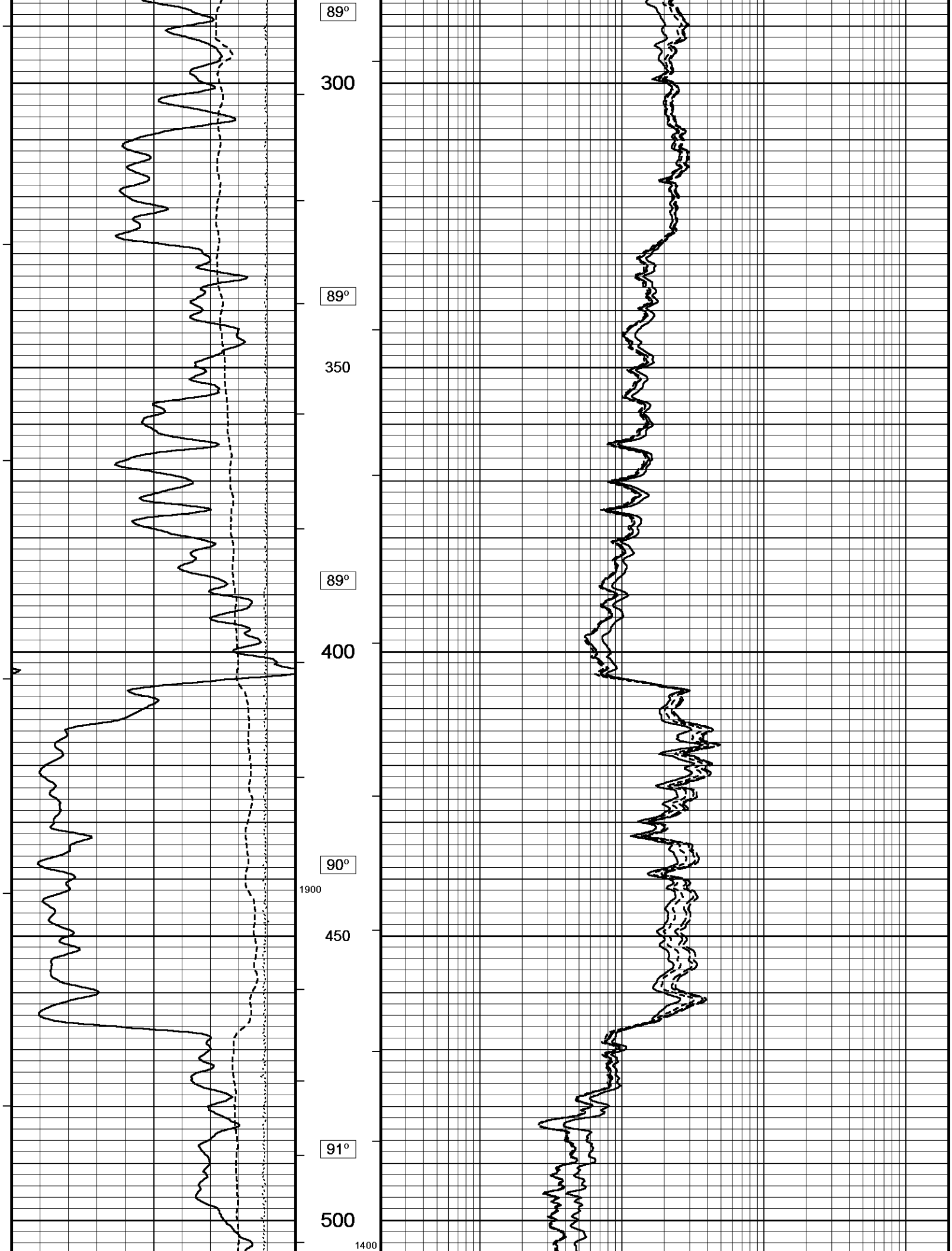
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

2 INCH MAIN

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 18-AUG-2014 14:52
Filename: C:\Minimus 13.08.2113\Log Data\O'Brien (LA) Harper 3...\O'Brien (LA) Harper 35 #1_002.dta — Recorded on 18-AUG-2014 12:24
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

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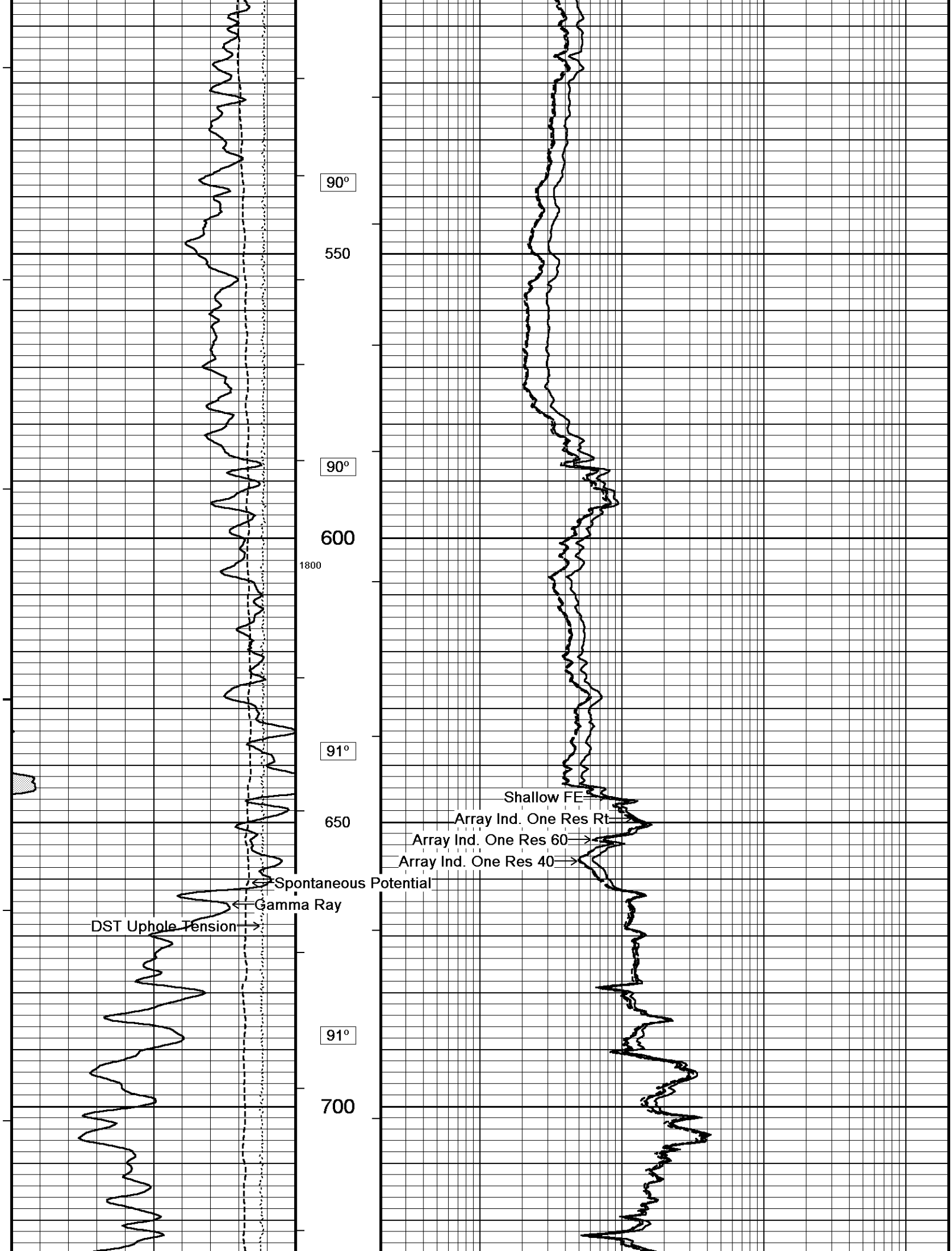
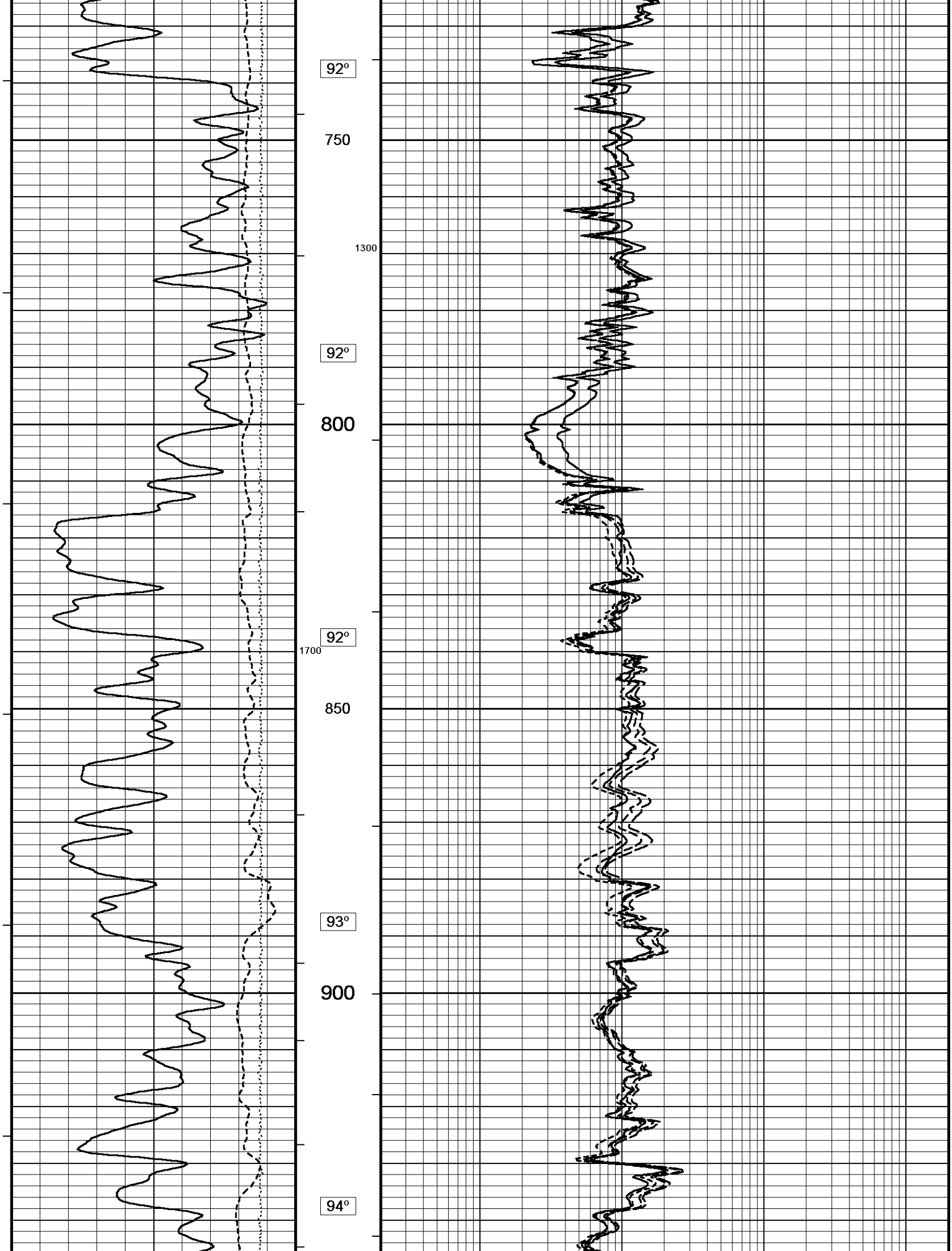
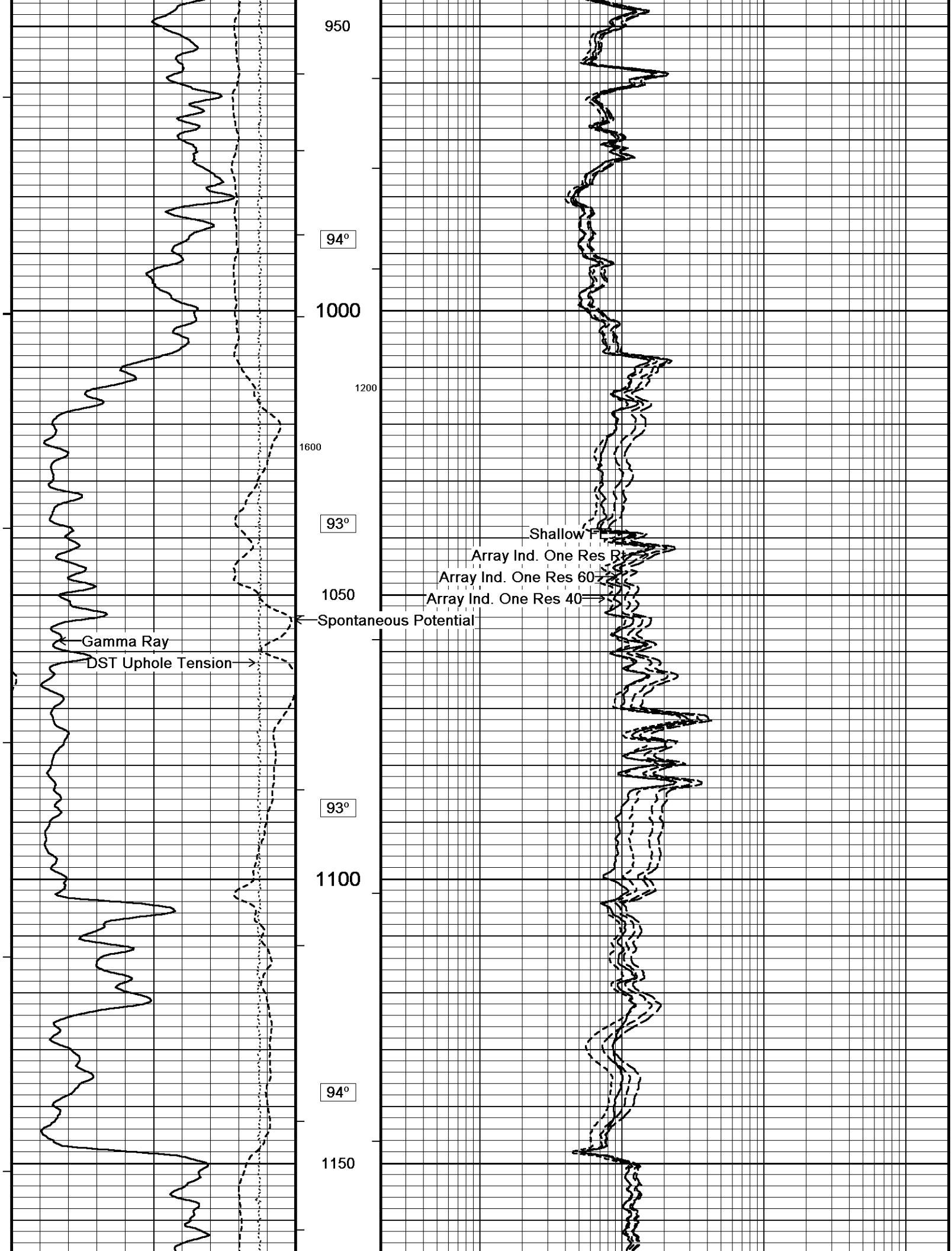
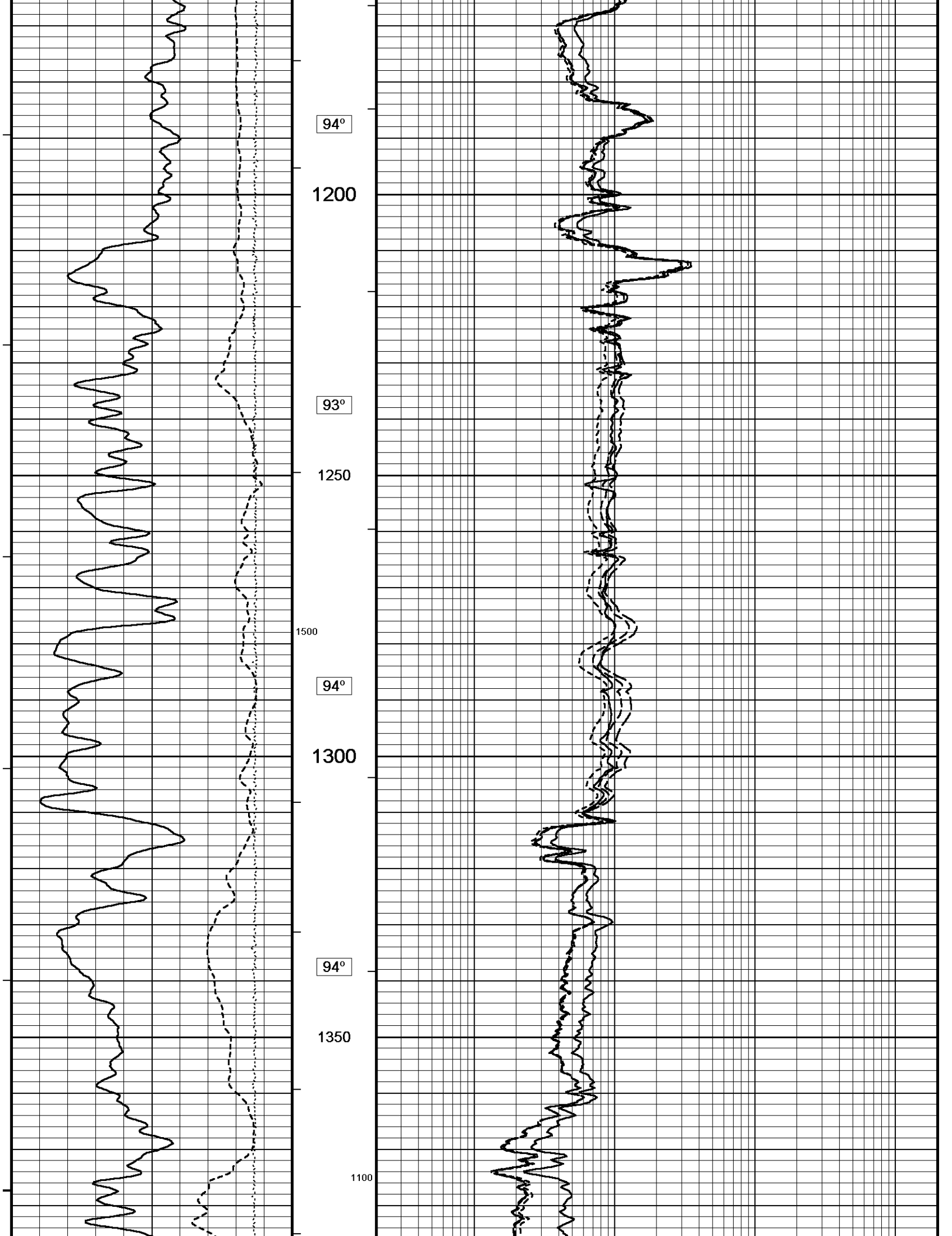
89°
400
90°
1900
450
91°
500
1400


90°
550
90°
600
1800
91°
650
91°
700
Shallow FE
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Spontaneous Potential
Gamma Ray
DST Uphole Tension


92°
750
1300
92°
800
92°
1700
850
93°
900
94°


950
94°
1000
1200
1600
93°
Shallow
Array Ind. One Res R
Array Ind. One Res 60
1050
Array Ind. One Res 40
Spontaneous Potential
Gamma Ray
DST Uphole Tension
93°
1100
94°
1150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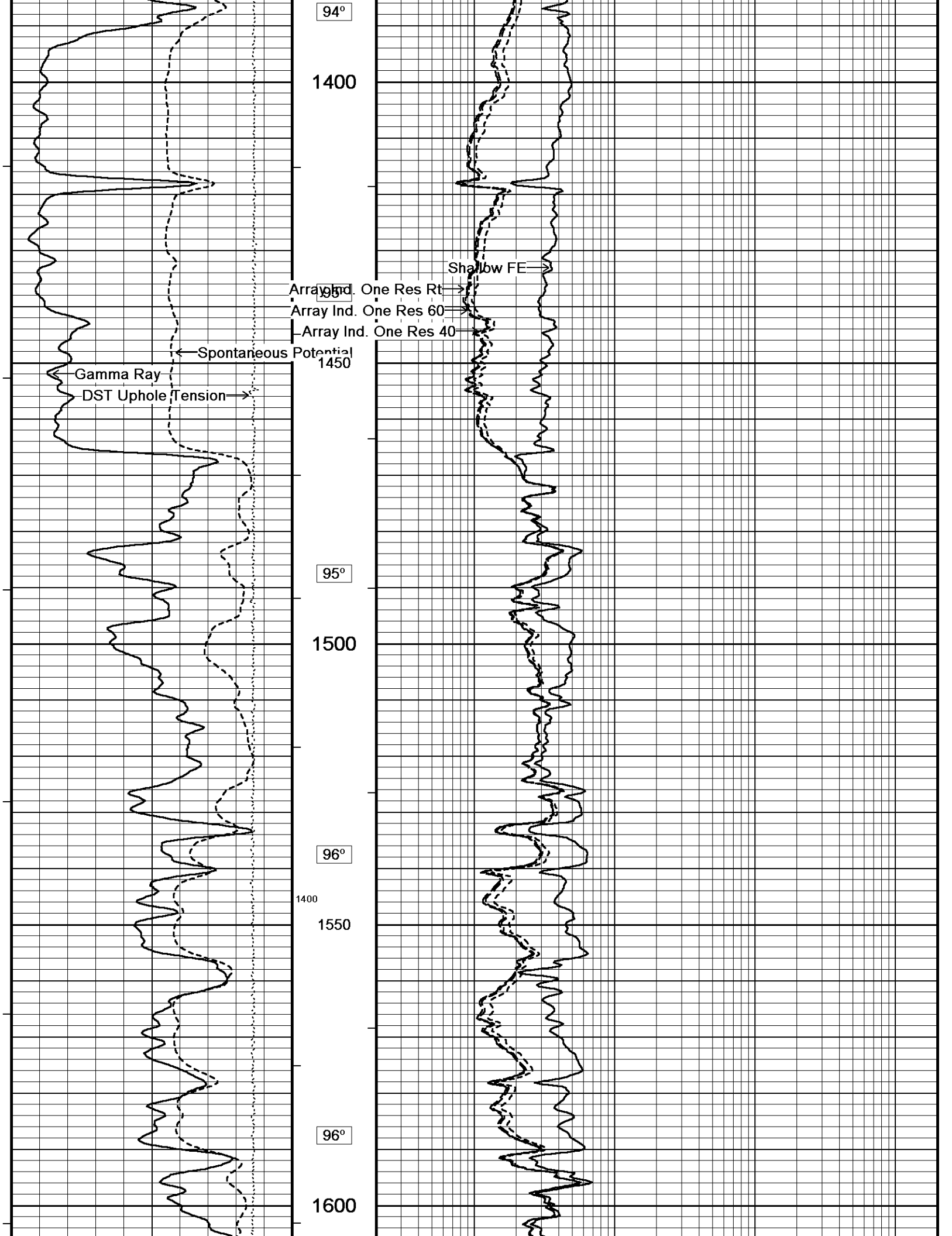
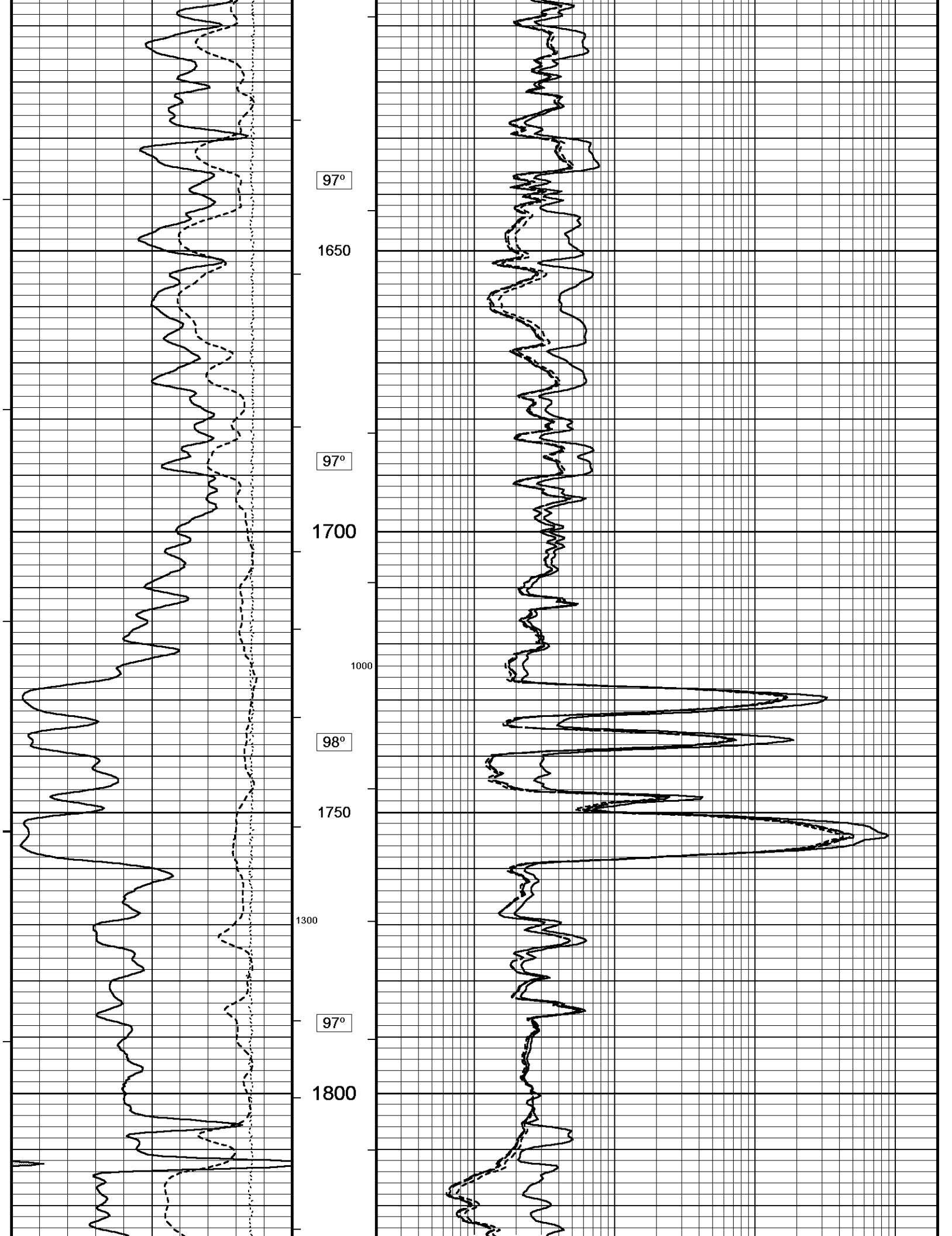
1200
93°
1250
1500
94°
1300
94°
1350
1100


94°
1400
Shallow FE
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Spontaneous Potential
1450
Gamma Ray
DST Uphole Tension
95°
1500
96°
1400
1550
96°
1600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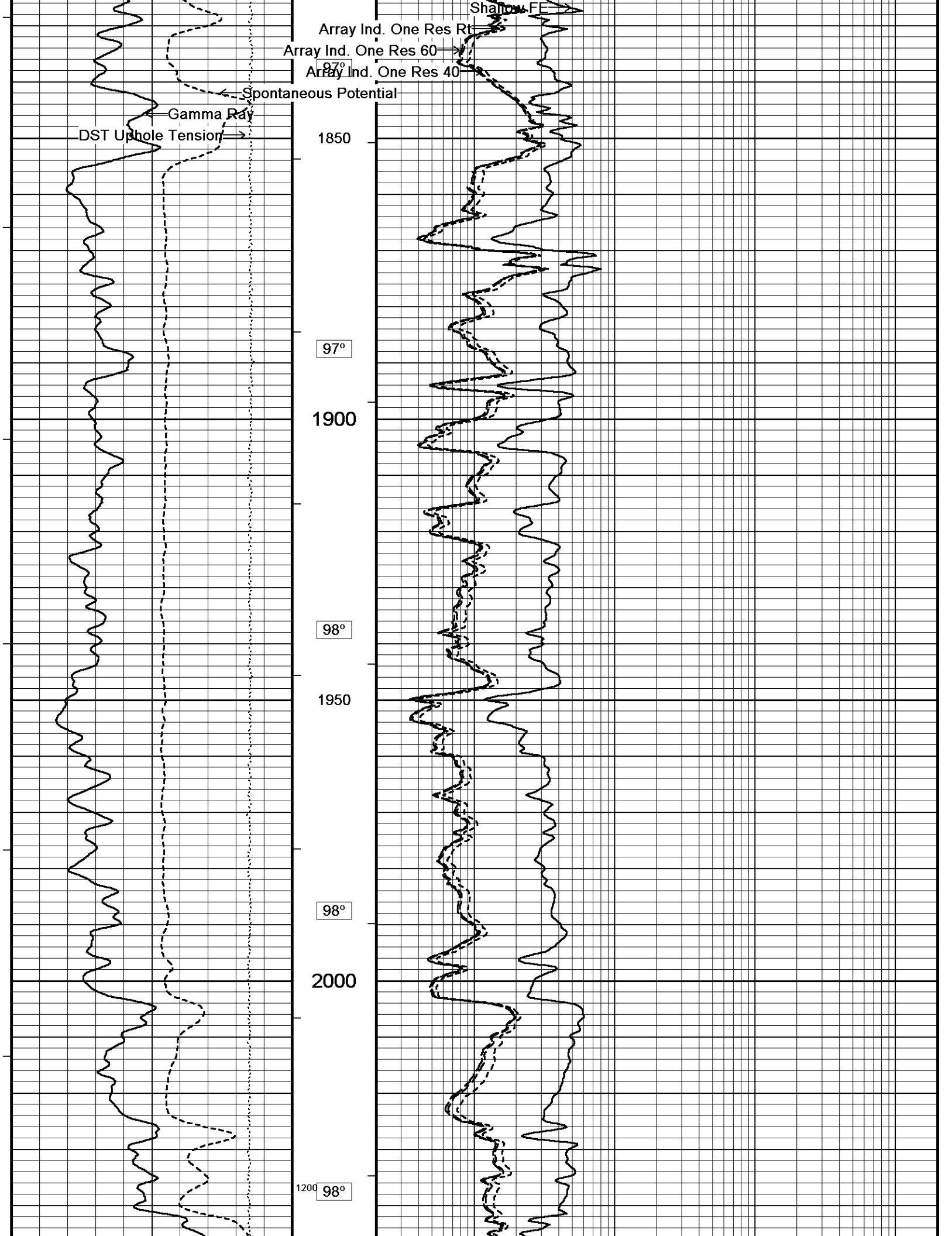
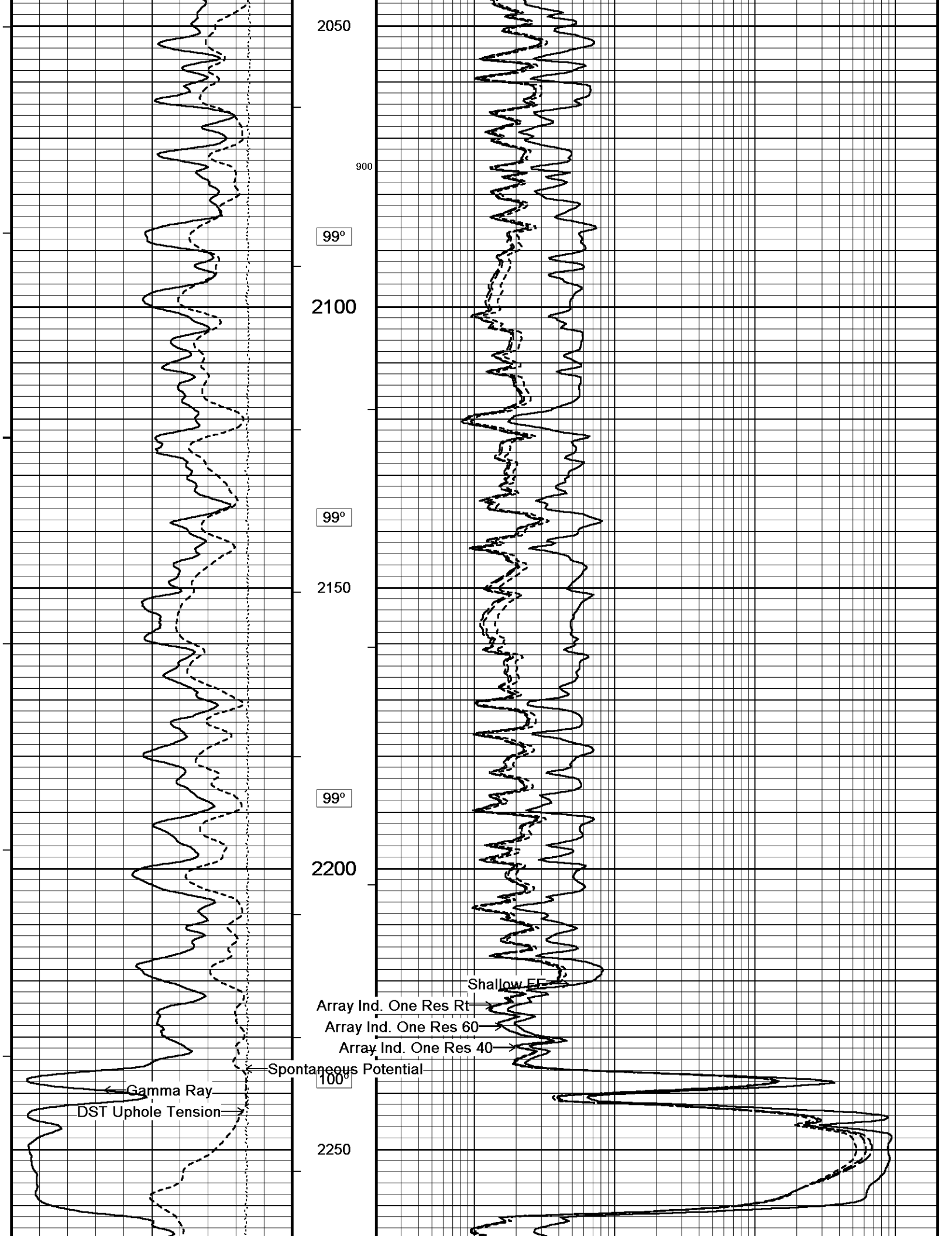
1700
1000
98°
1750
1300
97°
1800


Shallow FE
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
97°
Spontaneous Potential
Gamma Ray
DST Uphole Tension
1850
97°
1900
98°
1950
98°
2000
1200
98°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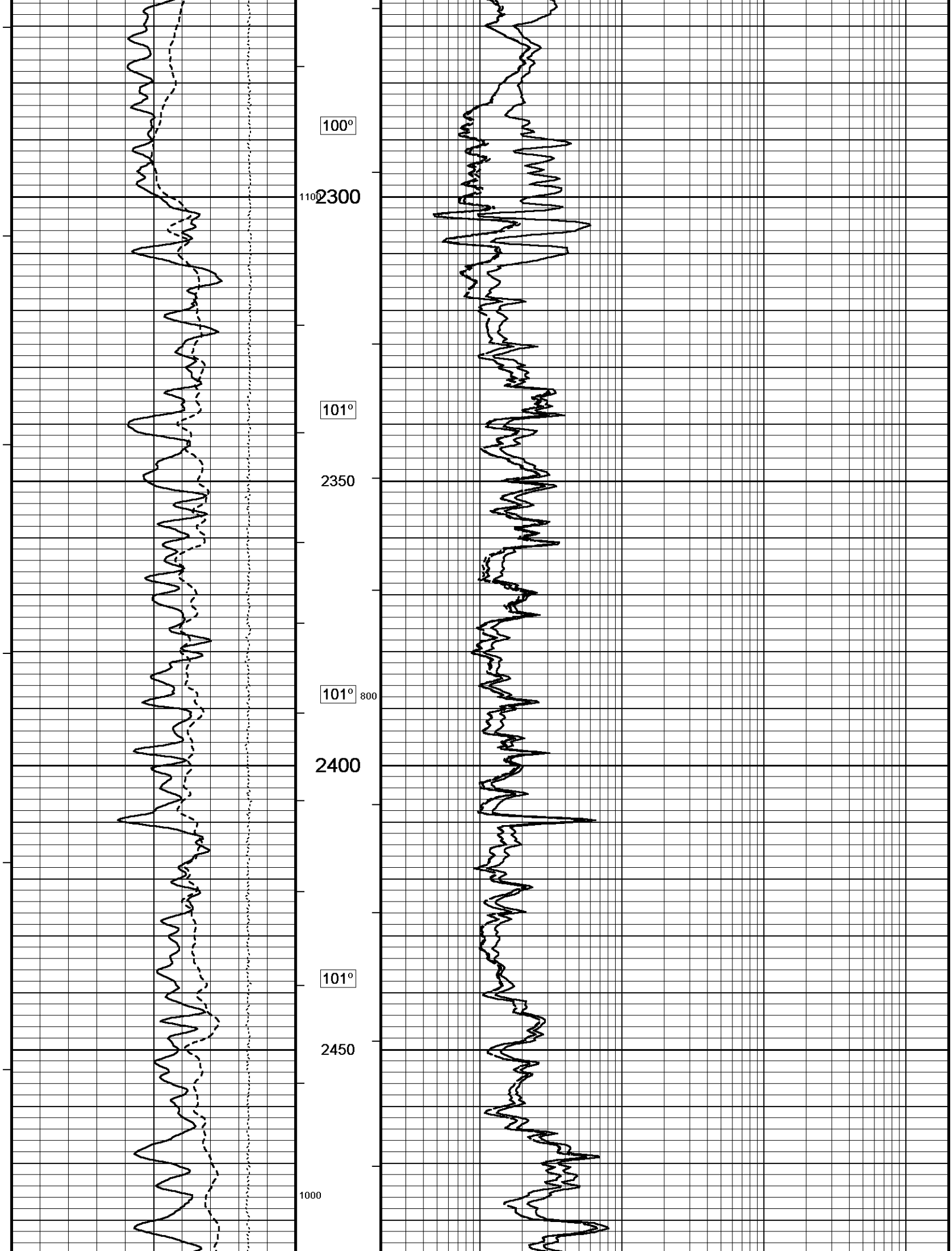
900
99°
2100
99°
2150
99°
2200
100°
2250
Shallow FF
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Spontaneous Potential
Gamma Ray
DST Uphole Tension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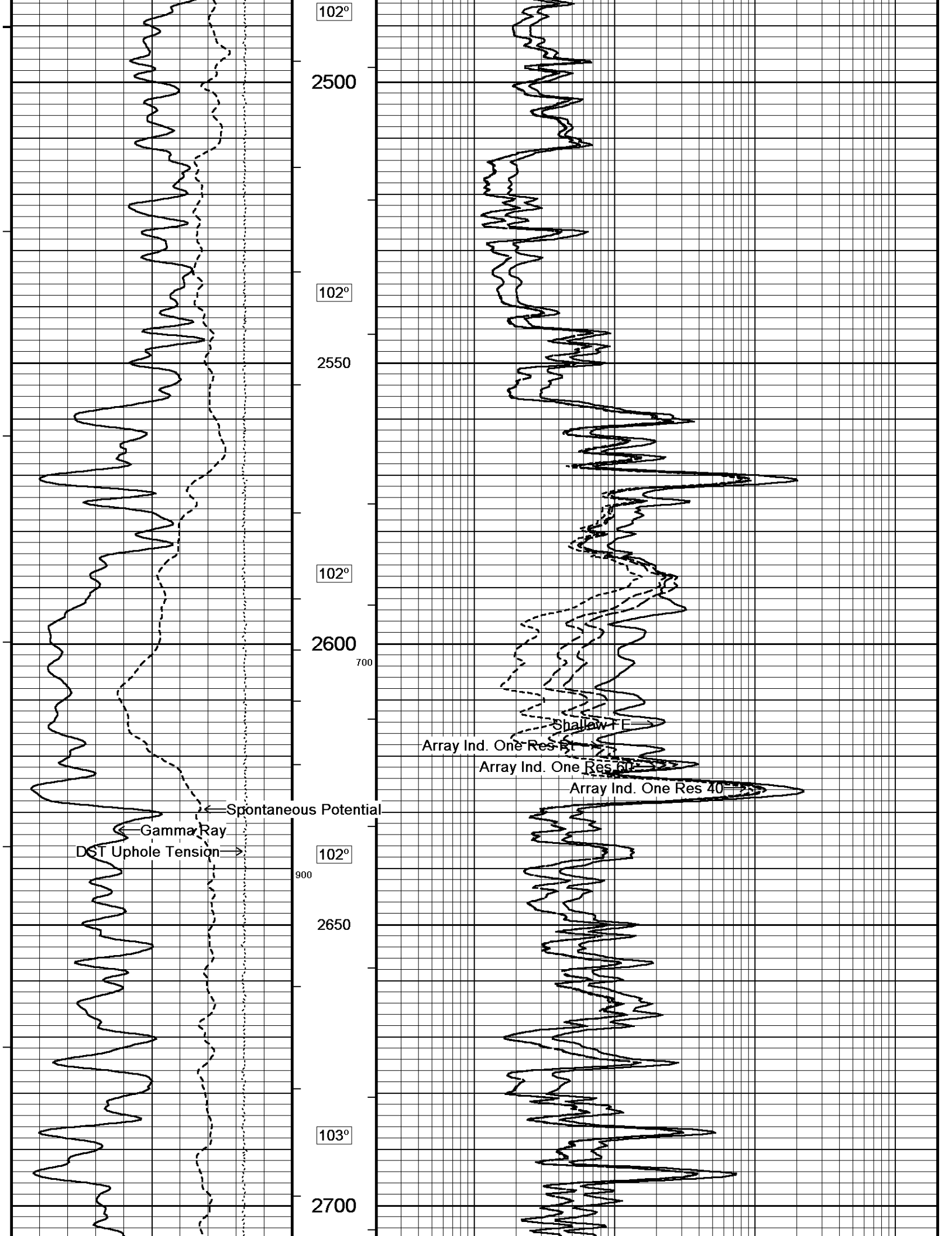
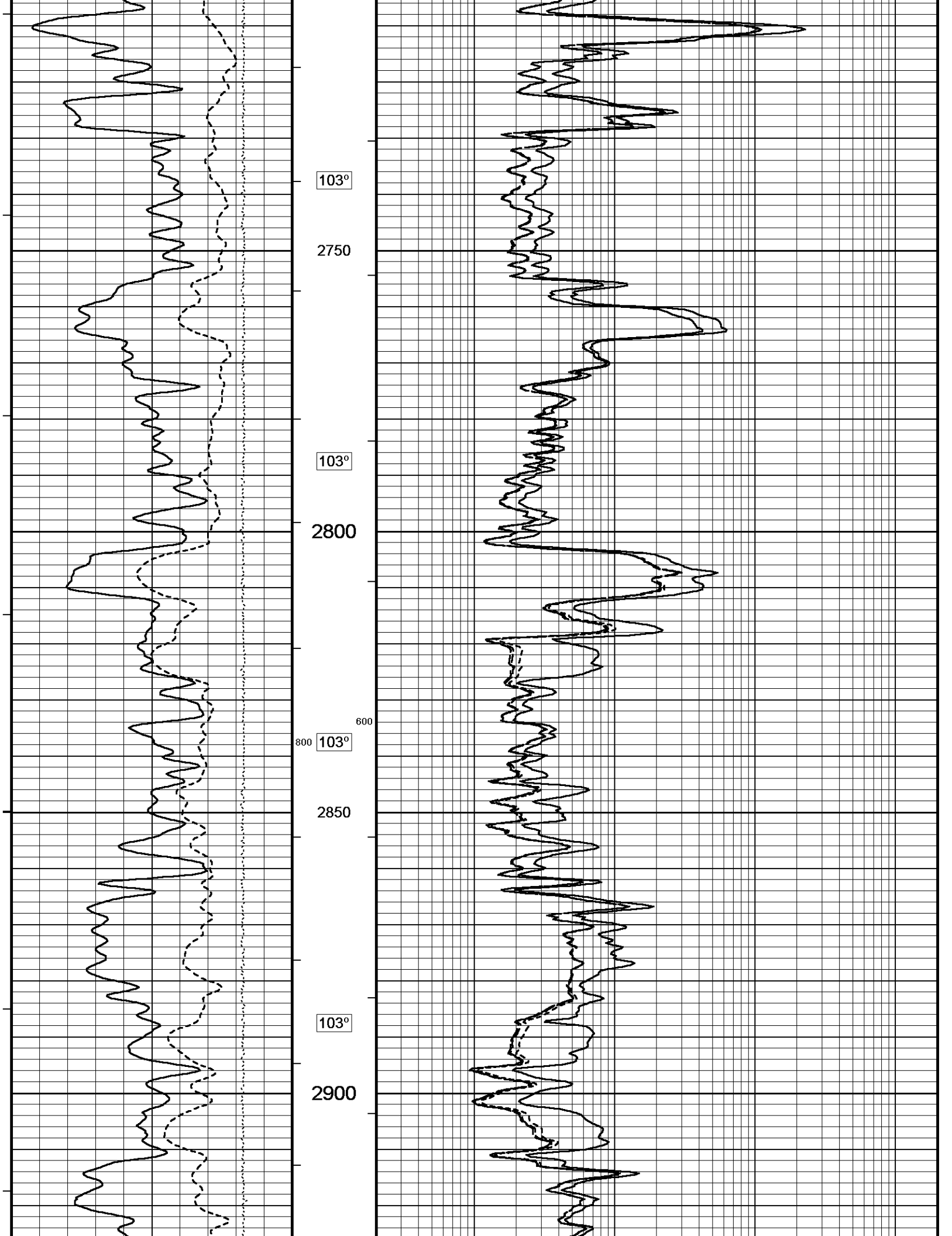
1100
2300
101°
2350
101°
800
2400
101°
2450
1000


102°
2500
102°
2550
102°
2600
700
Shallow FE
Array Ind. One Res 5ft
Array Ind. One Res 60
Array Ind. One Res 40
Spontaneous Potential
Gamma Ray
DST Uphole Tension
102°
900
2650
103°
2700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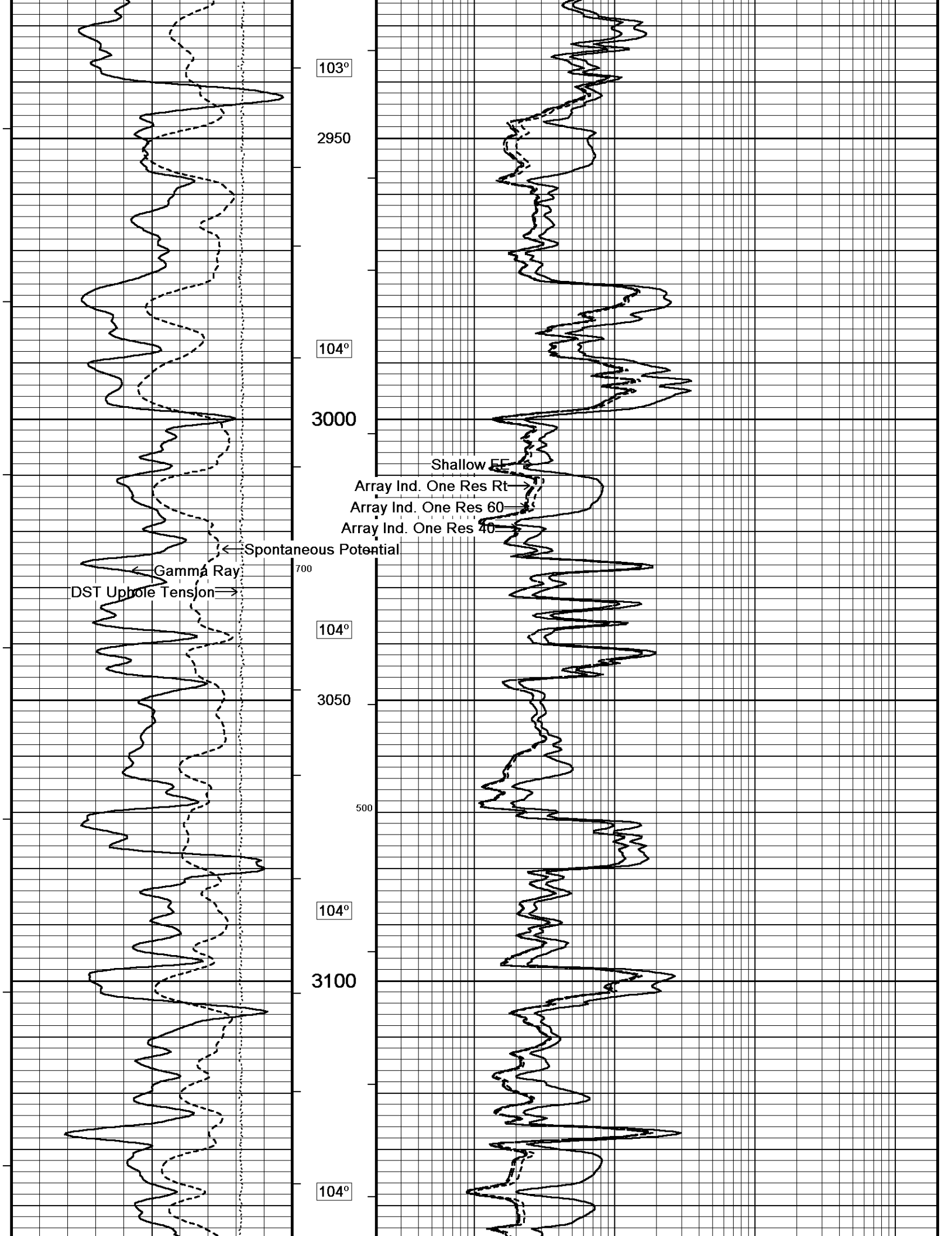
2750
103°
2800
800
600
103°
2850
103°
2900


103°
2950
104°
3000
Shallow FE
Array Ind. One Res Rt
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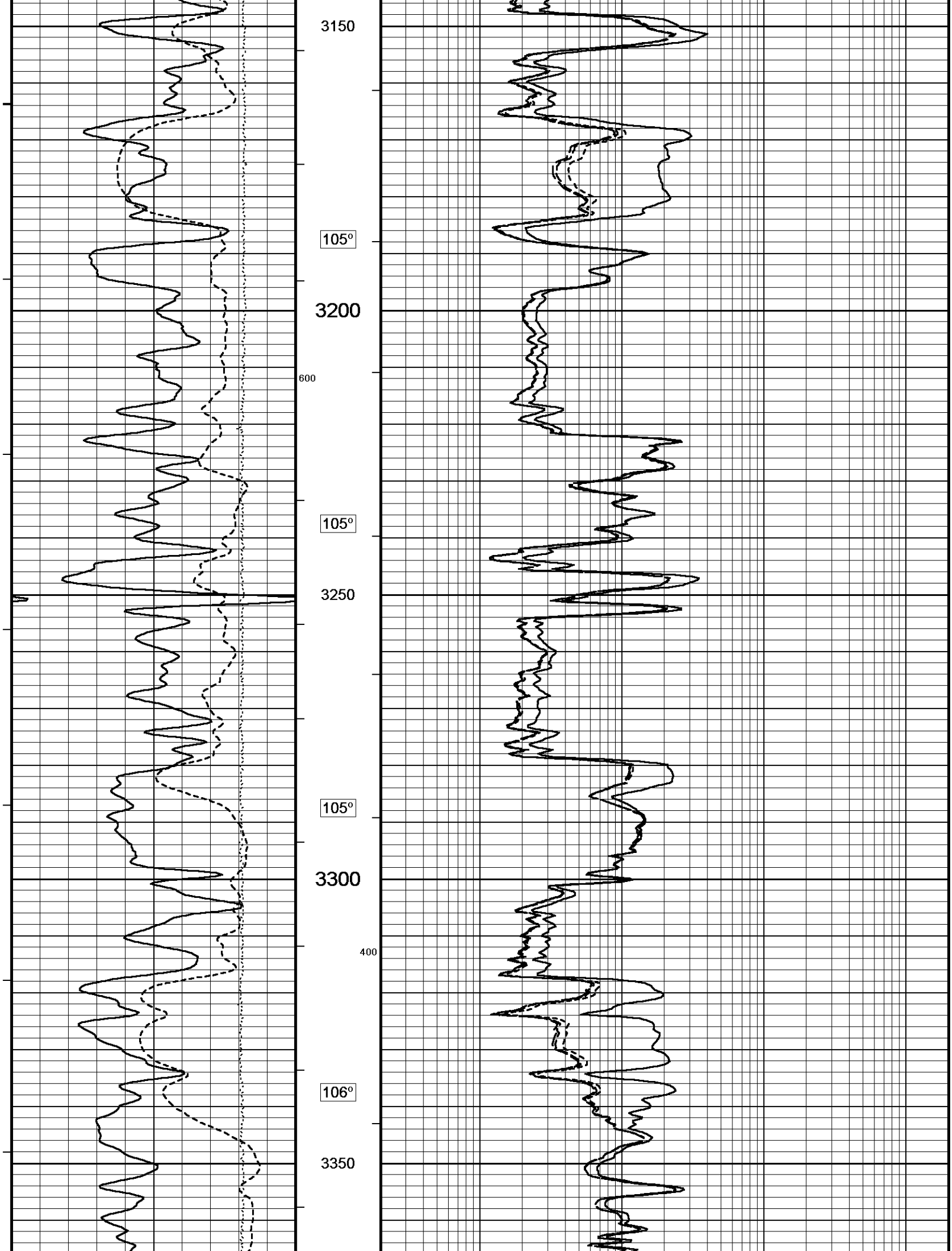
Spontaneous Potential
Gamma Ray
700
DST Uphole Tension
104°
3050
500
104°
3100
104°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3200
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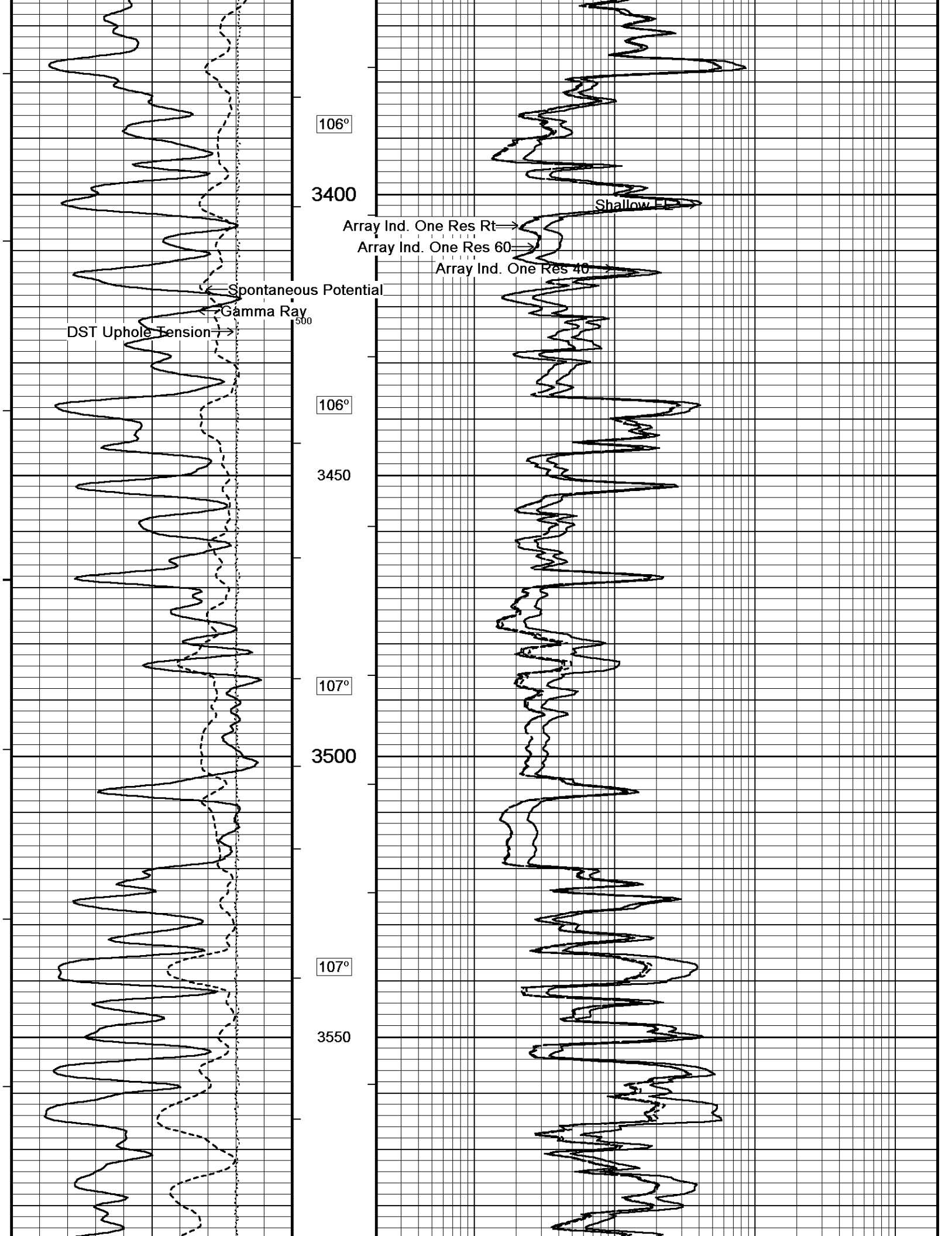
105°
3250
105°
3300
400
106°
3350


106°
3400
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Spontaneous Potential
Gamma Ray
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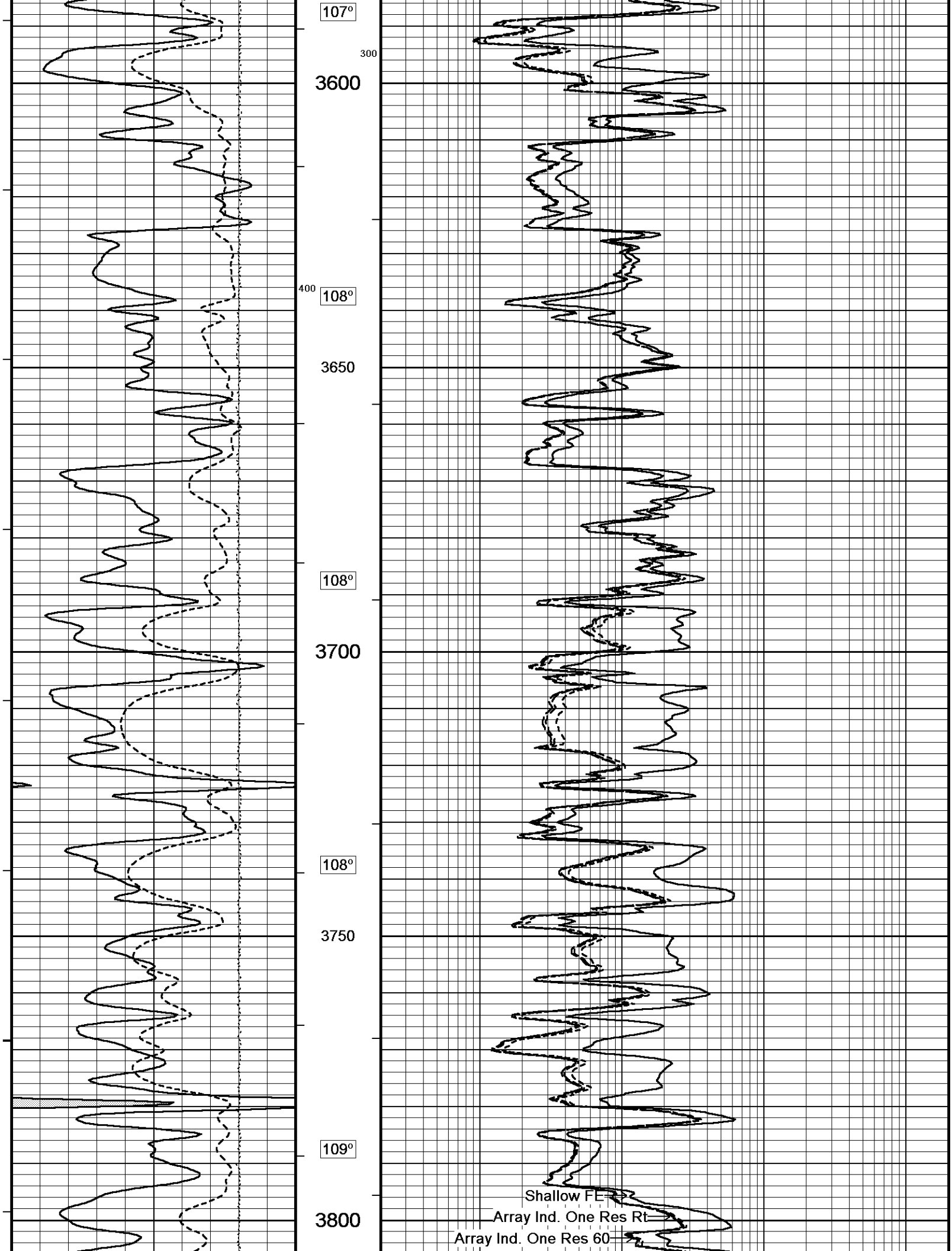
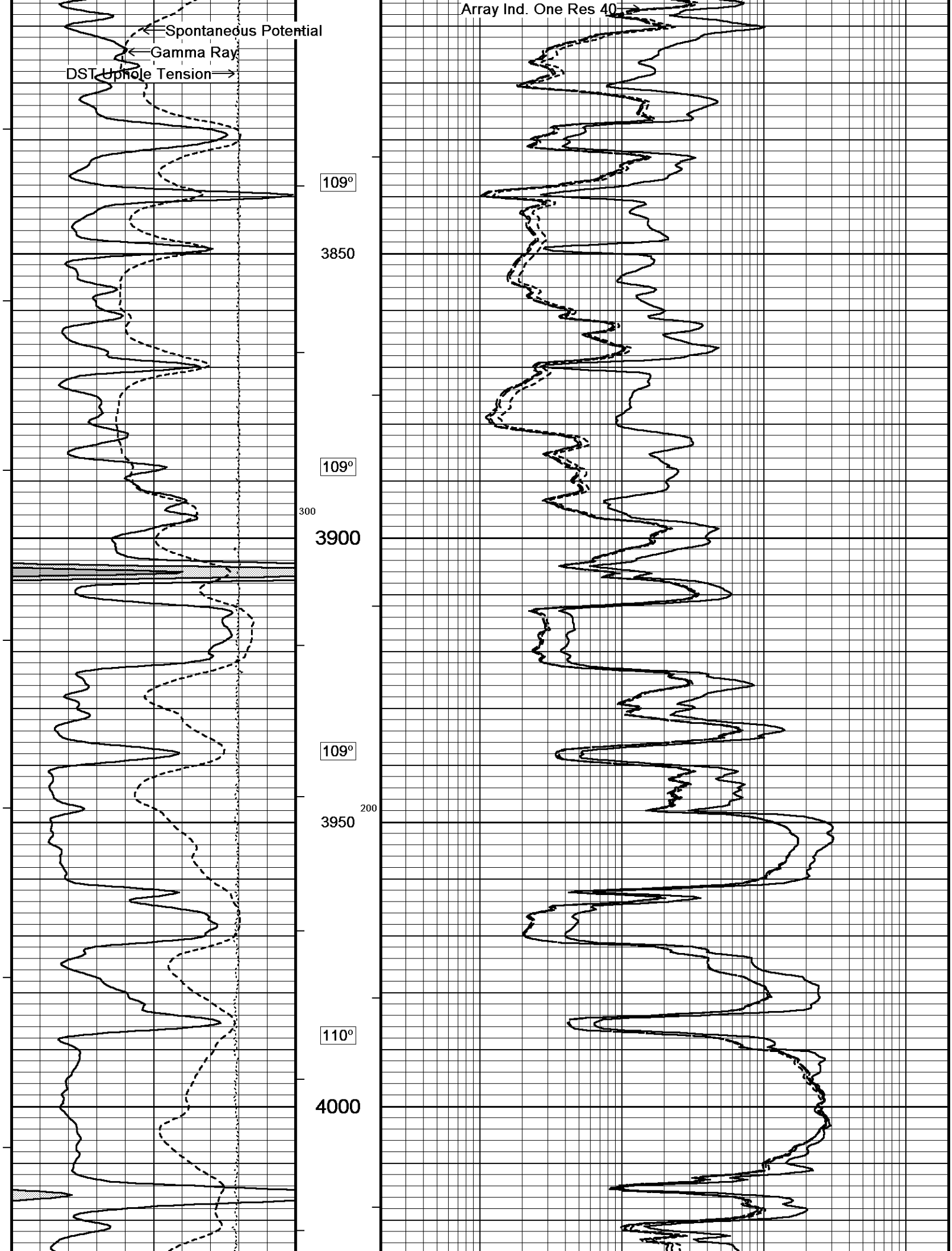
DST Uphole Tension
106°
3450
107°
3500
107°
3550


107°
300
3600
400
108°
3650
108°
3700
108°
3750
109°
3800
Shallow FE
Array Ind. One Res Rt
Array Ind. One Res 60


Spontaneous Potential
Gamma Ray
DST Uphole Tension
Array Ind. One Res 40
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3850
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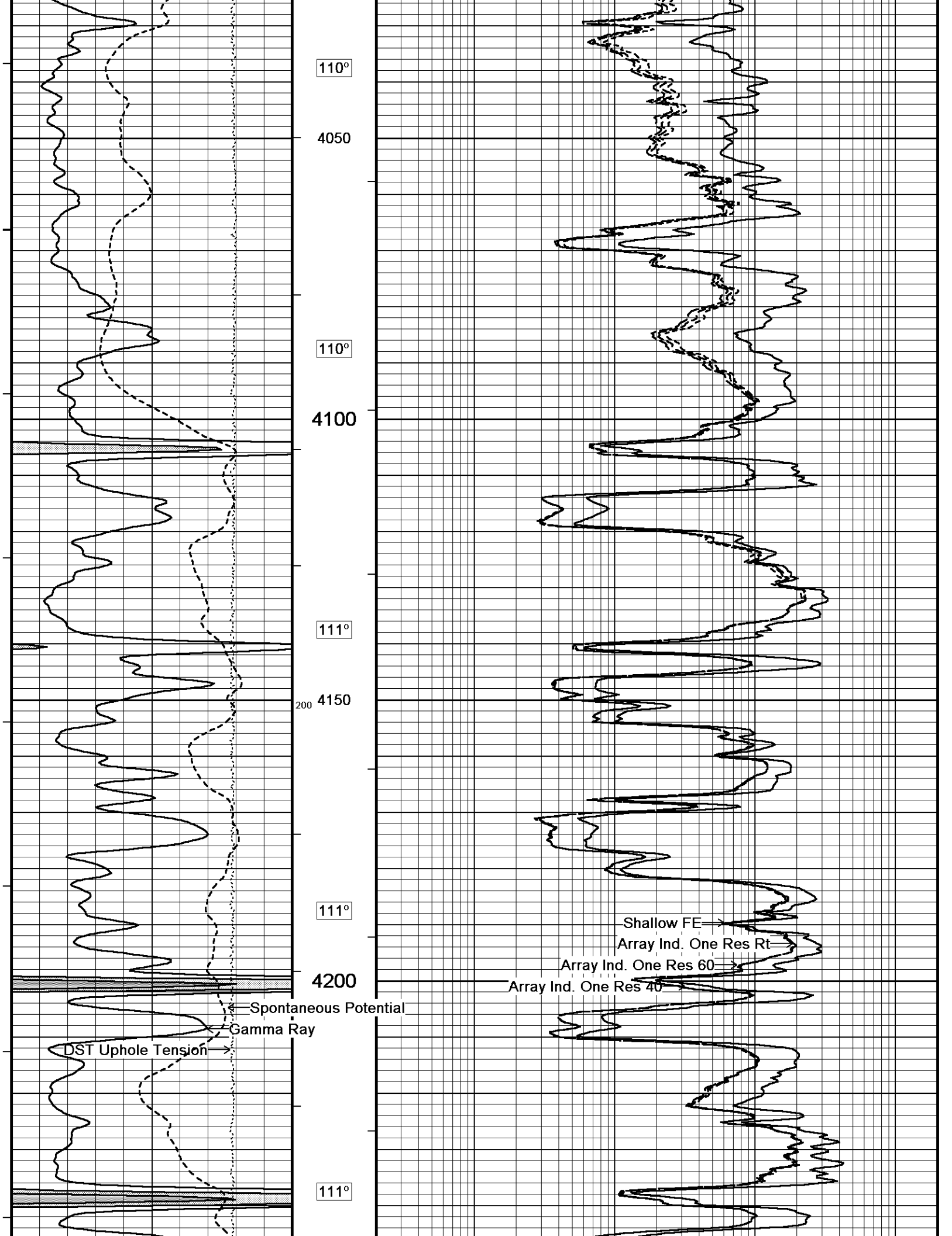
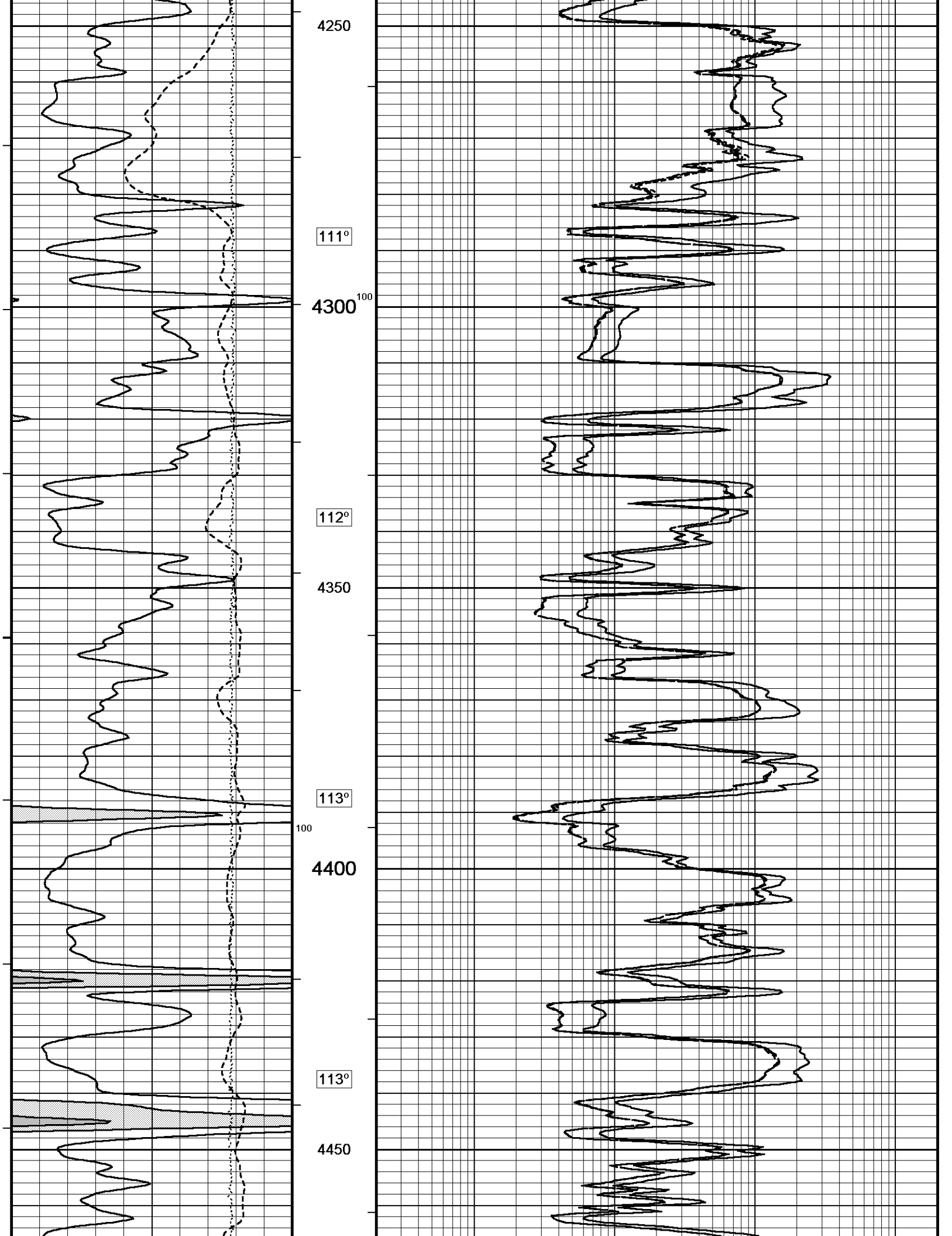
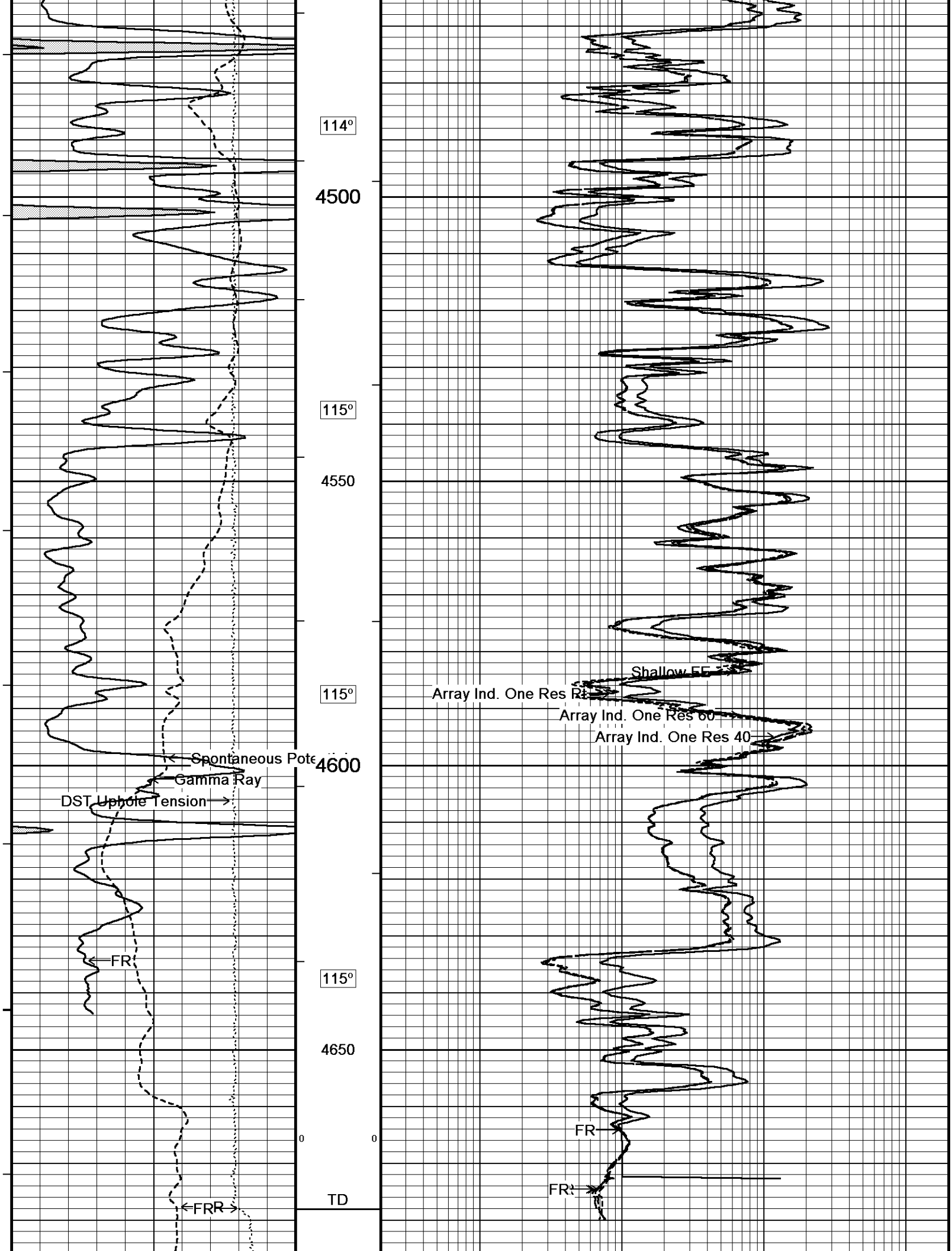
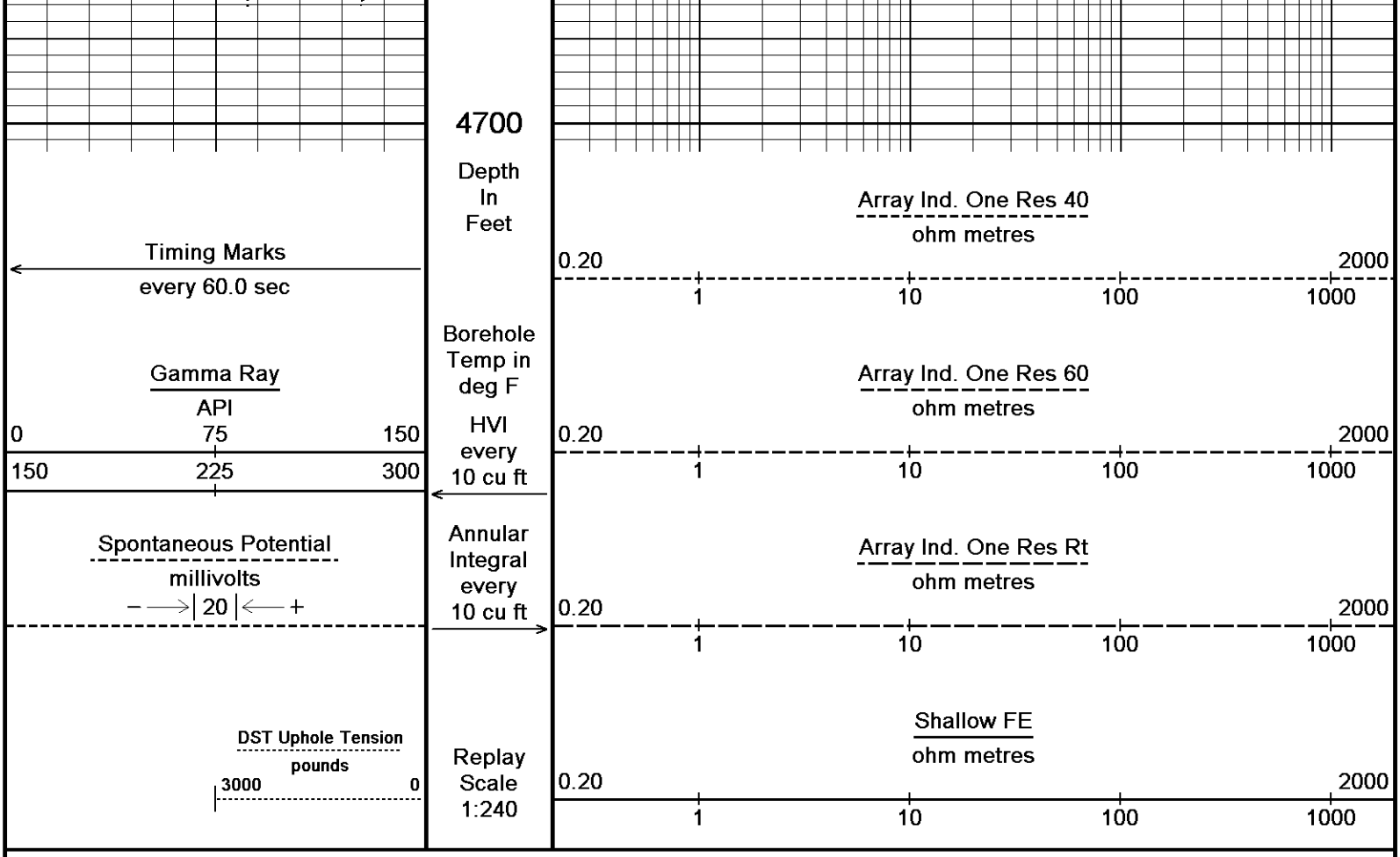
300
3900
109°
200
3950
110°
4000


110°
4050
110°
4100
111°
200
4150
111°
4200
111°
Spontaneous Potential
Gamma Ray
DST Uphole Tension
Shallow FE
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40


4250
111°
4300
100
112°
4350
113°
100
4400
113°
4450


114°
4500
115°
4550
115°
4600
115°
4650
TD
Spontaneous Pote
Gamma Ray
DST Uphole Tension
FR
FRR
Shallow FE
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
FR
FR



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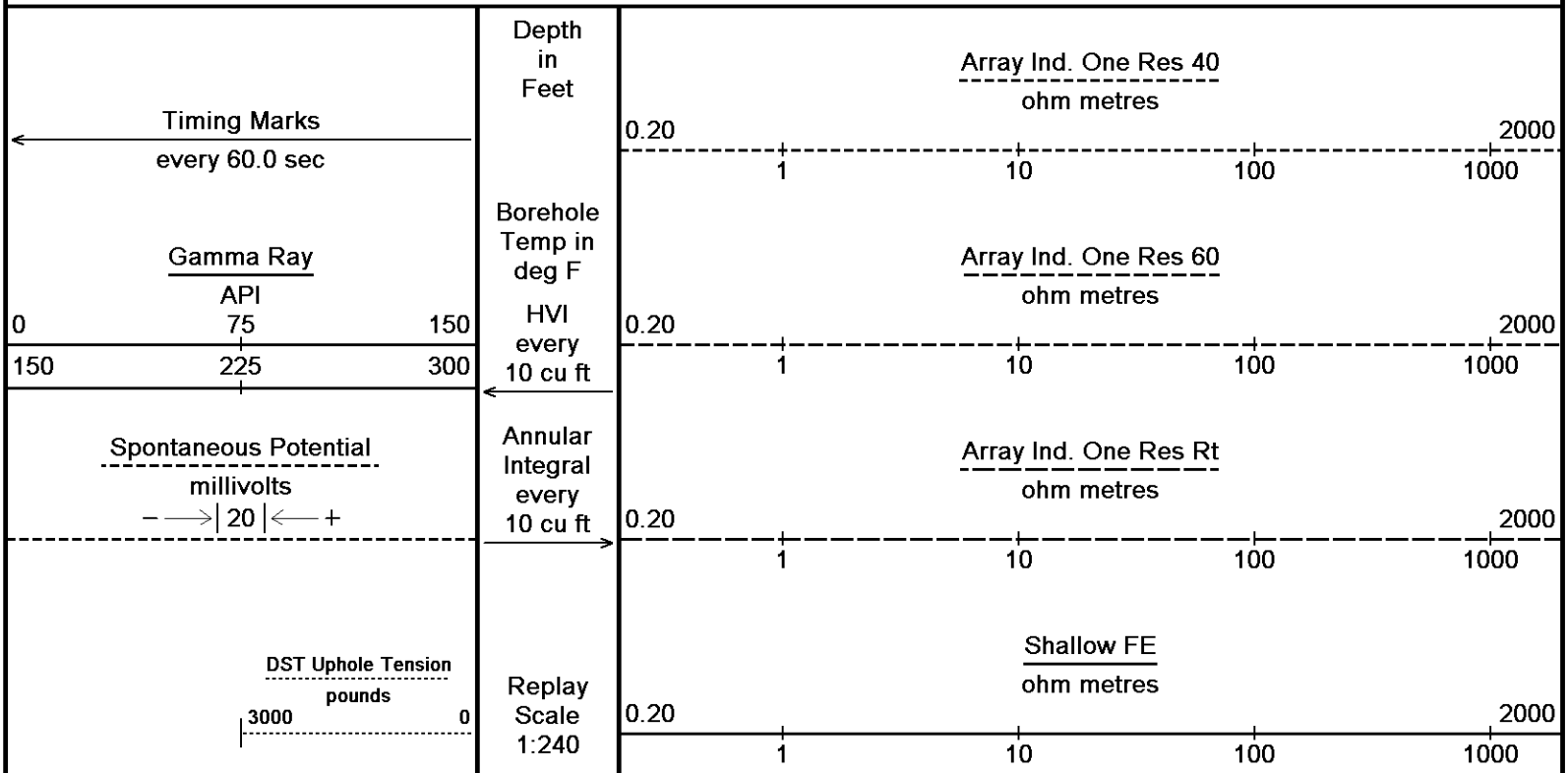
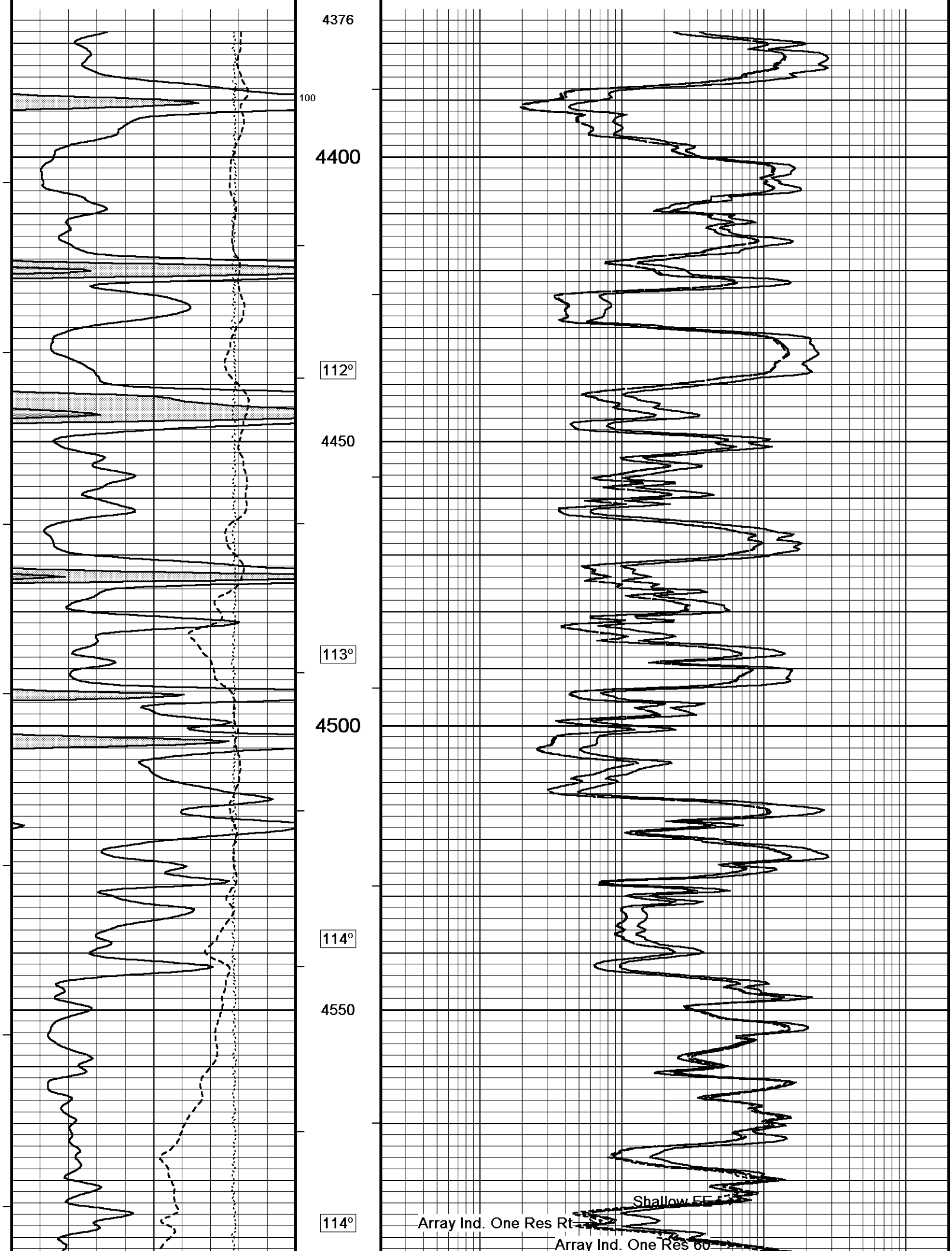
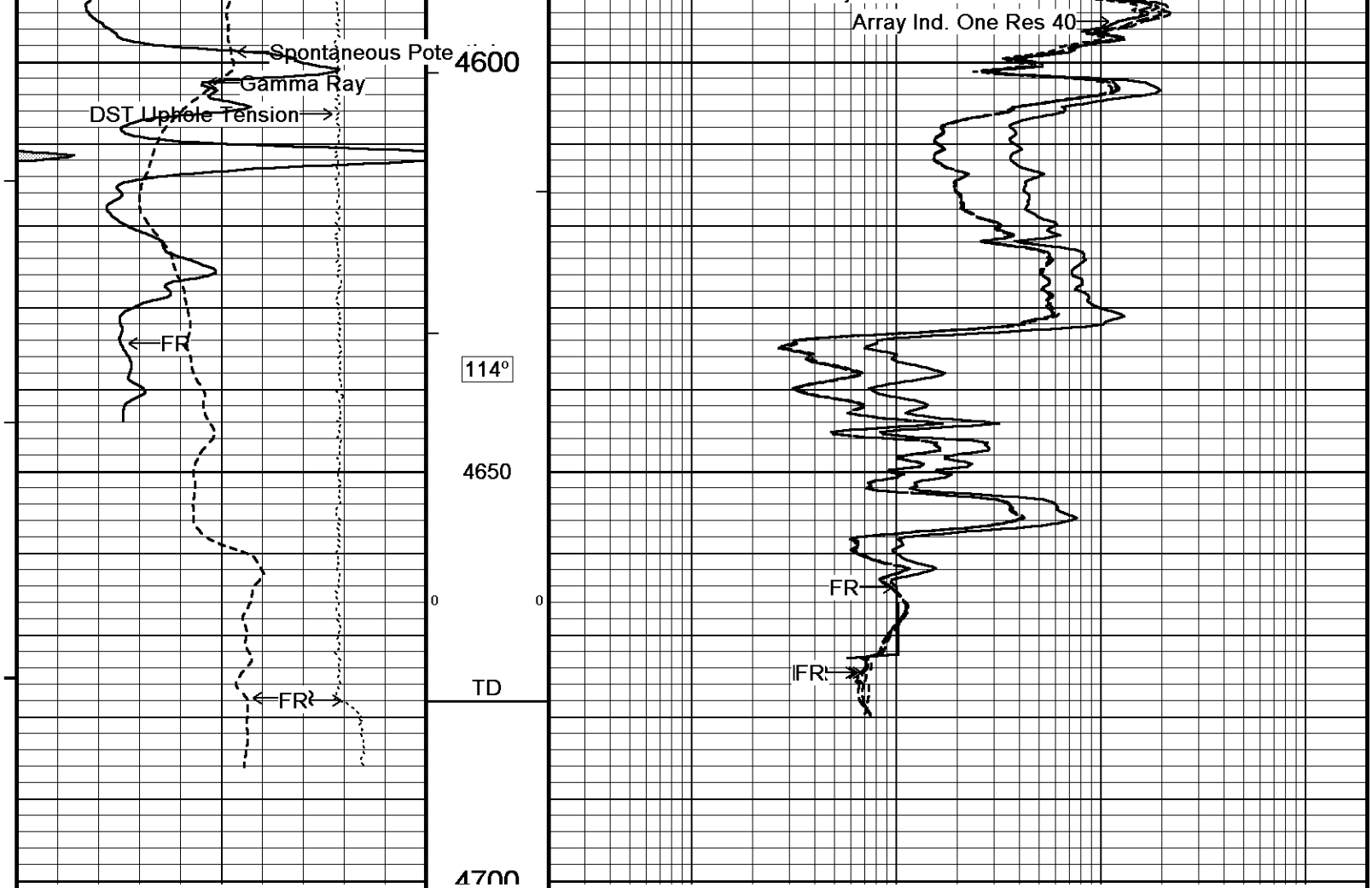
5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 18-AUG-2014 14:52
Filename: C:\Minimus 13.08.2113\Log Data\O'Brien (LA) Harper 3...\O'Brien (LA) Harper 35 #1_001.dta — Recorded on 18-AUG-2014 12:04
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113




4376
100
4400
112°
4450
113°
4500
114°
4550
114°
Array Ind. One Res Rt
Array Ind. One Res 60



Depth in Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
− 20 +

DST Uphole Tension
pounds
3000 0

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240

Array Ind. One Res 40
ohm metres
0.20 1 10 100 1000 2000

Array Ind. One Res 60
ohm metres
0.20 1 10 100 1000 2000

Array Ind. One Res Rt
ohm metres
0.20 1 10 100 1000 2000

Shallow FE
ohm metres
0.20 1 10 100 1000 2000

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 18-AUG-2014 14:52
Filename: C:\Minimus 13.08.2113\Log Data\O'Brien (LA) Harper 3...\O'Brien (LA) Harper 35 #1_001.dta
Recorded on 18-AUG-2014 12:04
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 13.08.2113\Log Data\O'Brien (LA) Harper 35 #1\O'Brien (LA) Harper 35 #1_001.dta

General Constants All 000

Last Edited on 18-AUG-2014,10:15

General Parameters		
Mud Resistivity	1.240	ohm-metres
Mud Resistivity Temperature	90.000	degrees F
Water Level	0.000	feet
Borehole Fluid Processing	Wet Hole	
Hole/Annular Volume and Differential Caliper Parameters		
HVOL Method	Single Caliper	
HVOL Caliper 1	Density Caliper	
HVOL Caliper 2	N/A	
Annular Volume Diameter	4.500	inches
Caliper for Differential Caliper	None	
Rwa Parameters		
Porosity used	Crossplot Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

Down-hole Tension Calibration SMS 0

Field Calibration on 13-AUG-2014 23:32

Reading No	Measured	Calibrated (lbs)
1	15257.38	0.00
2	16219.48	580.00

Gamma Calibration MCG-D.K 469

Field Calibration on 13-AUG-2014 17:12

	Measured	Calibrated (API)
Background	68	45
Calibrator (Gross)	1159	770
Calibrator (Net)	1091	725

Gamma Constants MCG-D.K 469

Last Edited on 17-AUG-2014,14:12

Gamma Calibrator Number	GRC038	
Mud Density	1.10	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

High Resolution Temperature Calibration MCG-D.K 469

Field Calibration on 12-MAY-2014,02:16

	Measured	Calibrated(Deg F)
Lower	10.00	10.00
Upper	100.00	100.00

High Resolution Temperature Constants MCG-D.K 469

Last Edited on 13-JUL-2014,14:53

Pre-filter Length	11

SP Calibration MCG-D.K 469

Field Calibration on 12-AUG-2014 12:46

	Measured	Calibrated (mV)
Reference 1	98.8	100.0
Reference 2	-100.9	-100.1

Caliper Calibration MMR-B.A 98

Base Calibration on 05-AUG-2014 14:44
Field Calibration on 12-AUG-2014 12:43

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13622	5.96
2	17090	7.98
3	20281	9.85
4	24282	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.97	7.97

Micro Normal and Micro Inverse Calibration MMR-B.A 98

Base Calibration on 05-AUG-2014 14:56
Field Check on 12-AUG-2014 12:41

Base Calibration

Channel	Measured Resistor 1	Measured Resistor 2	Calibrated (ohm-m) Resistor 1	Calibrated (ohm-m) Resistor 2
Micro Normal	10.2	49.8	5.1	25.6
Micro Inverse	9.9	49.4	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	93.8	93.8
Micro Inverse	62.3	62.3

Micro Normal and Micro Inverse Constants MMR-B.A 98

Last Edited on 05-AUG-2014,14:47

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	0.0000	inches

Neutron Calibration MDN-A.B 66

Base Calibration on 04-AUG-2014 14:27
Field Check on 13-AUG-2014 17:16

Base Calibration

	Measured Near	Measured Far	Calibrated (cps) Near	Calibrated (cps) Far
	3244	101	3714	110
Ratio	32.136		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	1595	2291
Ratio	0.696	

Field Check

	Calibrated (cps)	
	1606	2301
Ratio	0.698	

Neutron Constants MDN-A.B 66

Last Edited on 18-AUG-2014,08:56

Neutron Source Id	P0204NN	
Neutron Jig Number	5824NE	
Epithermal Neutron		
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	None	
Formation Pressure	N/A	kpsi
Temperature Source	Constant Value	
Temperature	68.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	N/A	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-A.A 135

Base Calibration on 05-AUG-2014 14:10
Field Check on 13-AUG-2014 16:34

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	962.8	126.8
Base Check		281.1
Field Check		281.3

FE Constants MFE-A.A 135

Last Edited on 18-AUG-2014,08:44

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 111

Base Calibration on 26-MAY-2010,08:56
Field Check on 13-AUG-2014 16:30

Base Calibration

Test Loop Calibration

Channel	Measured Low	Measured High	Calibrated (mmho/m) Low	Calibrated (mmho/m) High
1	17.6	473.6	9.3	966.2
2	6.4	385.9	7.6	821.4
3	3.2	264.0	5.2	566.0
4	2.1	135.5	2.6	279.2

Array Temperature	23.0	Deg F

Channel	Base Check (mmho/m) Low	Base Check (mmho/m) High	Field Check (mmho/m) Low	Field Check (mmho/m) High
1	0.0	0.0	14.2	3871.7
2	0.0	0.0	30.2	3525.1
3	0.0	0.0	29.2	3018.5
4	0.0	0.0	19.1	2056.4
Deep			17.9	1960.2
Medium			43.0	3972.4
Shallow			45.0	5228.4
Array Temperature	0.0		94.4	Deg F

Induction Constants MAI-A.A 111

Last Edited on 18-AUG-2014,08:44

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	

High Resolution Temperature Calibration MAI-A.A 111

Field Calibration on 20-JUN-2014,09:22

	Measured	Calibrated(Deg F)
Lower	10.00	10.00
Upper	100.00	100.00

High Resolution Temperature Constants MAI-A.A 111

Last Edited on 26-JUN-2014,15:06

Pre-filter Length	11

Caliper Calibration MPD-B 103

Base Calibration on 05-AUG-2014 11:04
Field Calibration on 13-AUG-2014 16:57

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13922	3.99
2	22576	5.96
3	31328	7.98
4	39552	9.85
5	48880	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.94	7.97

Photo Density Calibration MPD-B 103

Base Calibration on 05-AUG-2014 13:34
Field Check on 13-AUG-2014 16:49

Density Calibration

Base Calibration	Measured Near	Measured Far	Calibrated (sdu) Near	Calibrated (sdu) Far
Background	1057	1213		
Reference 1	58408	29979	59556	30836
Reference 2	24379	2613	24941	2541
Field Check at Base	1056.8	1212.9		
Field Check	1054.5	1207.8		

PE Calibration

Base Calibration	Measured WS	Measured WH	Measured Ratio	Calibrated Ratio
Background	190	946		
Reference 1	23042	58225	0.399	0.371
Reference 2	6677	24258	0.278	0.272
Field Check at Base	189.6	945.6		
Field Check	190.9	944.4		

Density Constants MPD-B 103

Last Edited on 17-AUG-2014,14:11

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	1.10	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

DOWNHOLE EQUIPMENT

C:\Minimus 13.08.2113\Log Data\O'Brien (LA) Harper 35 #1\O'Brien (LA) Harper 35 #1_001.dta

CBH-C, Cablehead, 11 pin
CBH-CA 170 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma
MCG-D.K 469 LG: 8.70 ft WT: 63.9 lb OD: 2.240 in

Compact Micro-Resistivity
MMR-B.A 98 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

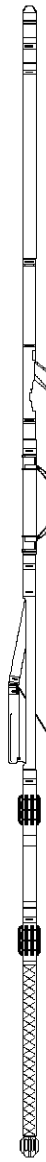
Compact Neutron
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-B 103 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

Compact Focussed Electric
MFE-A.A 135 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Induction
MAI-A.A 111 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 51.18 ft Weight: 407.9 lb



43.50 ft	GRGC - Gamma Ray
40.59 ft	CGXT - MCG External Temperature
33.24 ft	MINV - MMR MicroLog Inverse
33.24 ft	MNRL - MMR MicroLog Normal
28.45 ft	NPRL - Limestone Neutron Por.
21.21 ft	CLDC - Density Caliper
21.21 ft	AVOL - Annular Volume
21.21 ft	HVOL - Hole Volume
19.28 ft	DPRL - Limestone Density Por.
19.28 ft	DEN - Compensated Density
19.28 ft	DCOR - Density Correction
19.22 ft	PDPE - PE
13.72 ft	FEFE - Shallow FE
3.34 ft	R40O - Array Ind. One Res 40
3.34 ft	R60O - Array Ind. One Res 60
3.34 ft	RTAO - Array Ind. One Res Rt
0.23 ft	SPCG - Spontaneous Potential
Tool Zero	(0.13ft from bottom)
-0.13 ft	SMTU - DST Uphole Tension

All measurements relative to tool zero.

COMPANY	O'BRIEN RESOURCES, LLC
WELL	HARPER 35 #1
FIELD	WILDCAT
PROVINCE/COUNTY	LANE
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2854.00	feet	First Reading	4675.00	feet
Elevation Drill Floor	2852.00	feet	Depth Driller	4675.00	feet
Elevation Ground Level	2846.00	feet	Depth Logger	4678.00	feet

ARRAY INDUCTION
SHALLOW FOCUSED

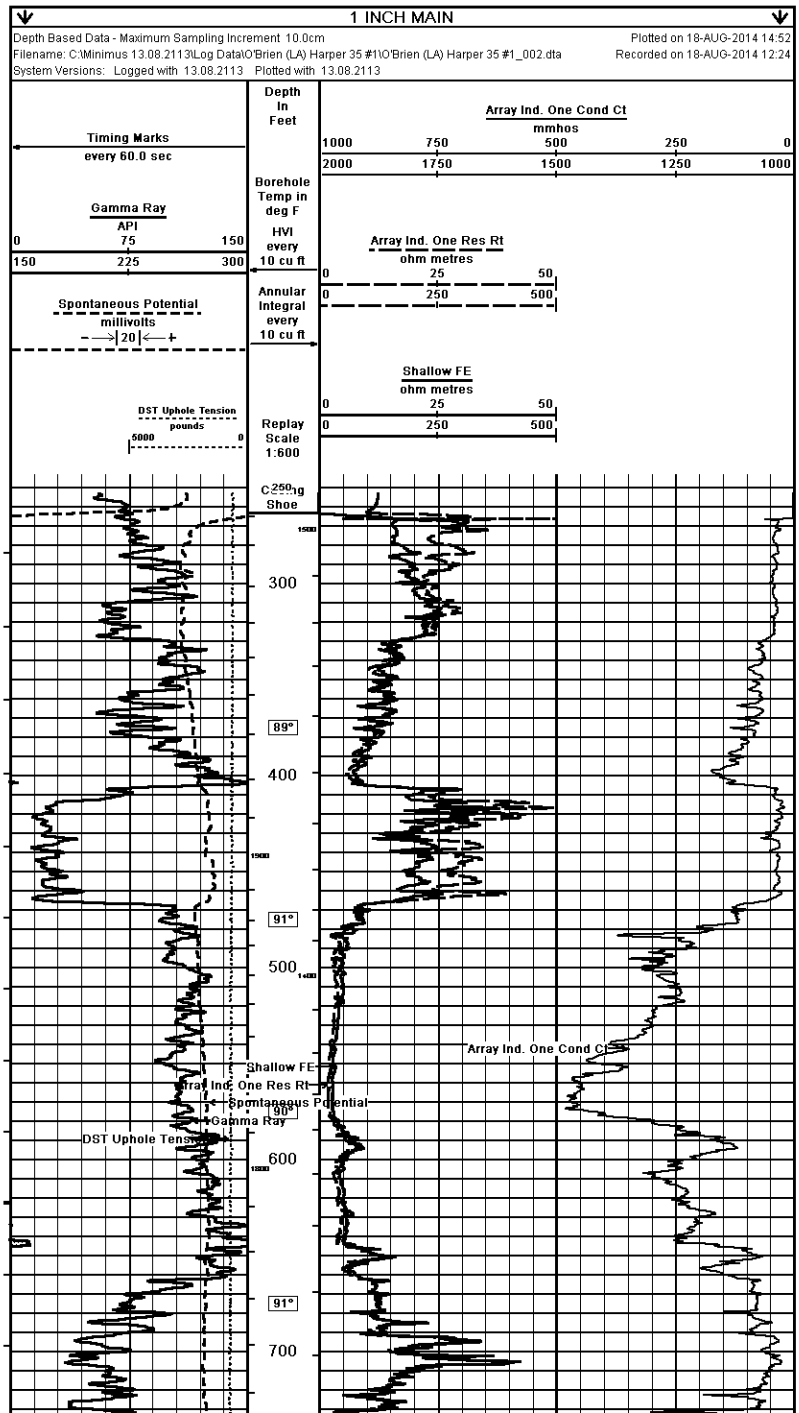
Weatherford®

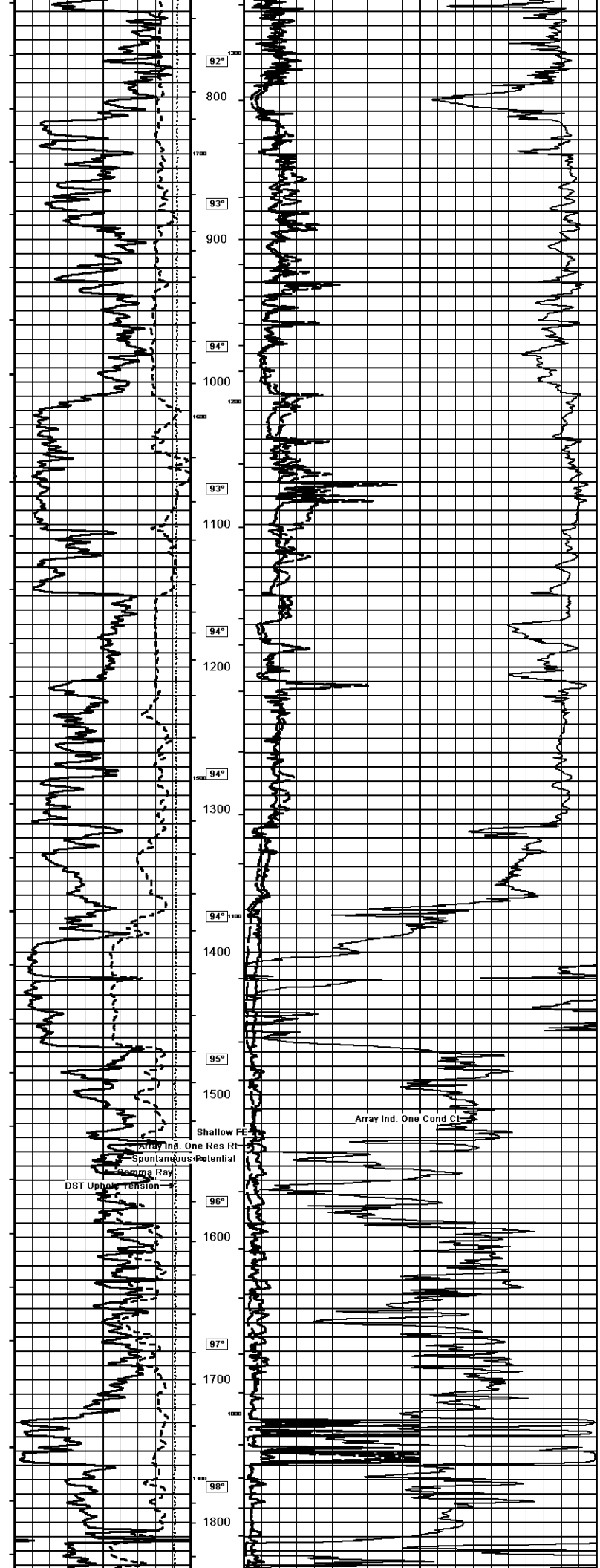
ELECTRIC LOG

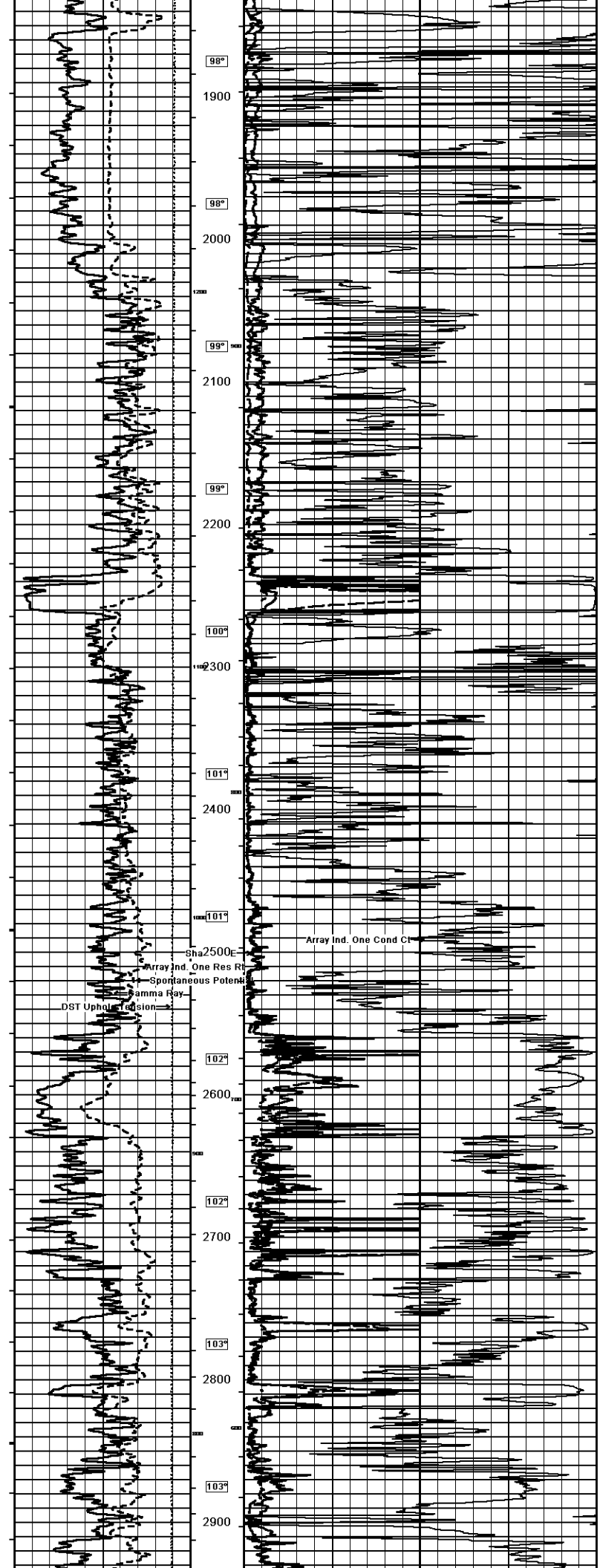
COMPANY	O'BRIEN RESOURCES, LLC
WELL	HARPER 35 #1
FIELD	WILDCAT
PROVINCE/COUNTY	LANE
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	1185' FNL & 875' FEL
	SE SW NE NE
PERMIT NUMBER	

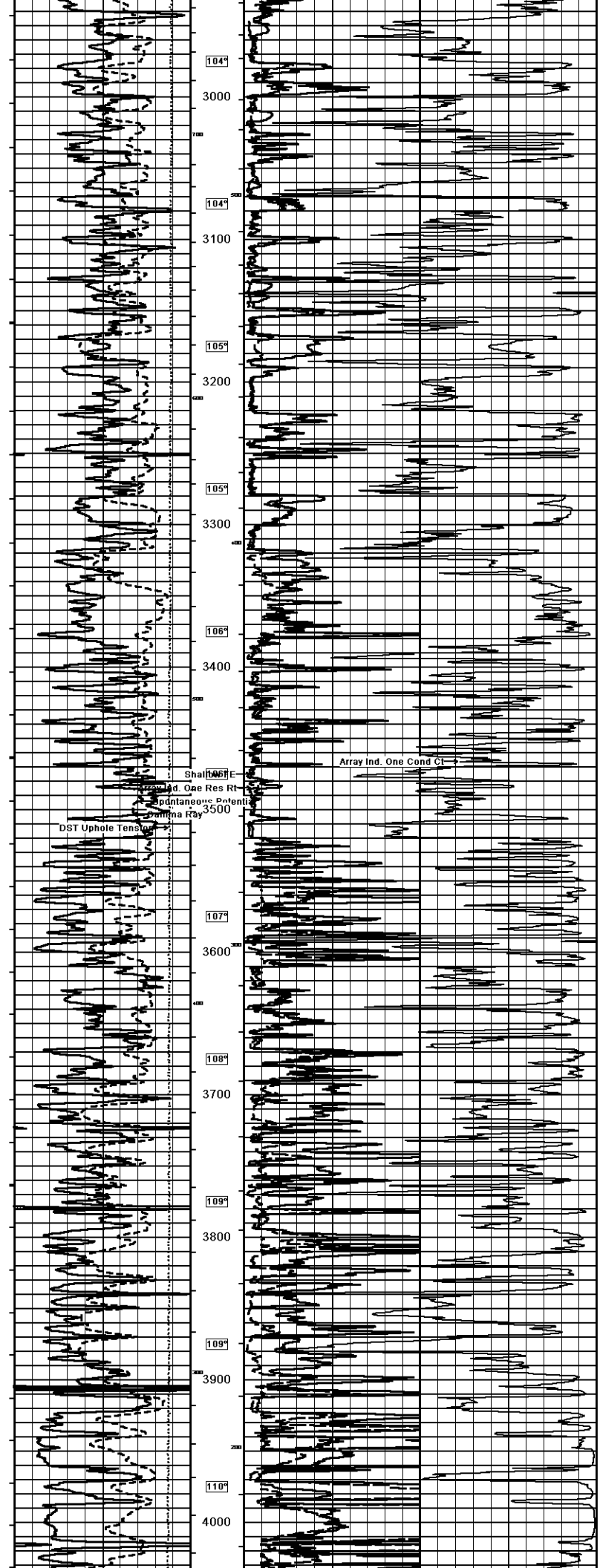
ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

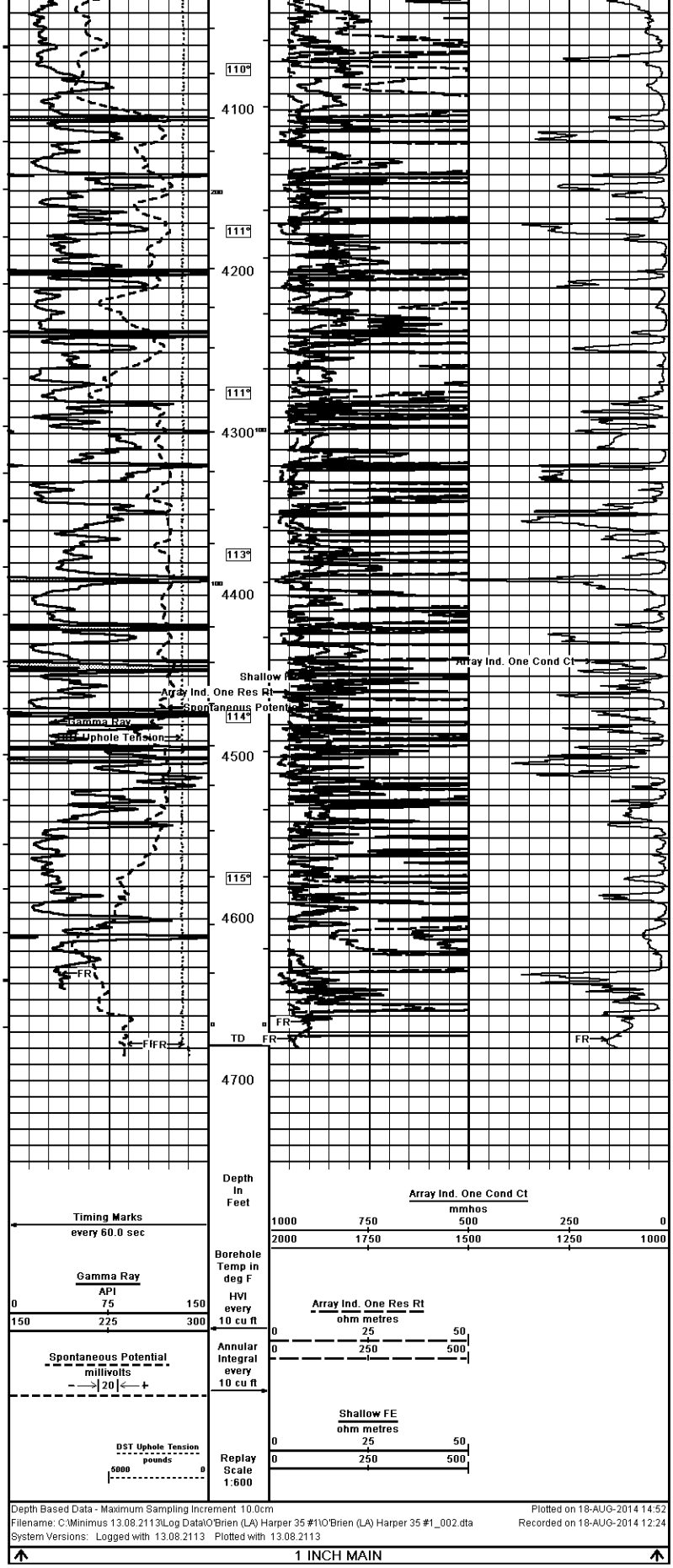
SEC	35	TWP	16S	RGE	30W	Other Services	
Latitude						MPD/MDN	
Longitude							
API Number			15-101-22516				MML
Permanent Datum: GL, Elevation 2846 feet						Elevations:	feet
Log Measured From KB						KB	2854.00
Drilling Measured From KB @ 8 FEET						DF	2852.00
						GL	2846.00
Date			18-AUG-2014				
Run Number			ONE				
Service Order			4558-95560163				
Depth Driller			4675.00		feet		
Depth Logger			4678.00		feet		
First Reading			4675.00		feet		
Last Reading			3700.00		feet		
Casing Driller			258.00		feet		
Casing Logger			263.00		feet		
Bit Size			7.875		inches		
Hole Fluid Type			CHEMICAL				
Density / Viscosity			9.20	lbm/Sg	39.00	CP	
PH / Fluid Loss			11.00		8.00	ml/30Min	
Sample Source			FLOWLINE				
Rm @ Measured Temp			1.24 @ 90.0	ohm-m			
Rmf @ Measured Temp			0.99 @ 90.0	ohm-m			
Rmc @ Measured Temp			1.49 @ 90.0	ohm-m			
Source Rmf / Rmc			CALC	CALC			
Rm @ BHT			0.97 @115.0	ohm-m			
Time Since Circulation			4 HOURS				
Max Recorded Temp			115.00	deg F			
Equipment / Base			13096	LIB			
Recorded By			ADAM SILL				
Witnessed By			KURT TALBOTT				
JOB #			LB14-240				




92°
800
93°
900
94°
1000
93°
1100
94°
1200
94°
1300
94°
1400
95°
1500
Array Ind. One Cond Ct
Shallow FE
Array Ind. One Res Rt
Spontaneous Potential
Gamma Ray
DST Uphole Tension
96°
1600
97°
1700
98°
1800


98°
1900
98°
2000
99°
2100
99°
2200
100°
2300
101°
2400
101°
Array Ind. One Cond Ct
Sha2500E
Array Ind. One Res Rt
Spontaneous Potential
Gamma Ray
DST Uphole Tension
102°
2600
102°
2700
103°
2800
103°
2900


104°
3000
104°
3100
105°
3200
105°
3300
106°
3400
Array Ind. One Cond Cl
Shallow E
Array Ind. One Res Rt
Spontaneous Potenti
Gamma Ray
3500
DST Uphole Tensio
107°
3600
108°
3700
109°
3800
109°
3900
110°
4000



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 18-AUG-2014 14:52

Filename: C:\Minimus 13.08.2113\Log Data\O'Brien (LA) Harper 35 #1\O'Brien (LA) Harper 35 #1_002.dta — Recorded on 18-AUG-2014 12:24

System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

1 INCH MAIN

COMPANY	O'BRIEN RESOURCES, LLC
WELL	HARPER 35 #1
FIELD	WILDCAT
PROVINCE/COUNTY	LANE
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2854.00	feet	First Reading	4675.00	feet
Elevation Drill Floor	2852.00	feet	Depth Driller	4675.00	feet
Elevation Ground Level	2846.00	feet	Depth Logger	4678.00	feet

ARRAY INDUCTION

SHALLOW FOCUSED

Weatherford

ELECTRIC LOG