Weatherford

ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

COMPANY	GRAND MESA OPERATING COMPANY
WELL	RINGER #1-24
FIELD	WILDCAT
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	1792' FNL & 1266' FEL

SEC 24	TWP 30S	RGE 12W
Latitude		
Longitude		
API Number	15-007-24329	

Other Services
MPD/MDN MML
MSS

Permanent Datum GL, Elevation 1791 feet
Log Measured From KB, 5.00 feet above Permanent Datum
Drilling Measured From KB

Elevations:	feet
KB	1796.00
DF	1794.00
GL	1791.00

Date	24-JUN-2018			
Run Number	ONE			
Service Order	4558-217017166			
Depth Driller	4920.00	feet		
Depth Logger	4914.00	feet		
First Reading	4911.00	feet		
Last Reading	218.00	feet		
Casing Driller	217.00	feet		
Casing Logger	218.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.40 lb/USg		45.00 CP	
PH / Fluid Loss	9.00		11.00 ml/30Min	
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.42 @ 75.0	ohm-m		
Rmf @ Measured Temp	0.34 @ 75.0	ohm-m		
Rmc @ Measured Temp	0.50 @ 75.0	ohm-m		
Source Rmf / Rmc	CALC		CALC	
Rm @ BHT	0.25 @126.0	ohm-m		
Time Since Circulation	5 HOURS			
Max Recorded Temp	126.00	deg F		
Equipment / Base	13096		LIB	
Recorded By	ADAM SILL			
Witnessed By	DAVE BARKER			

BOREHOLE RECORD

Last Edited: 24-JUN-2018 08:52

Bit Size inches	Depth From feet	Depth To feet
7.875	217.00	4920.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	217.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 18.01.6830.

- RUN ONE: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN 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: 2550 CU.FT.

- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 2500 FEET: 625 CU.FT.

- RIG: WW DRILLING #4.

- ENGINEER: A. SILL.

- OPERATOR: J. KLINE.

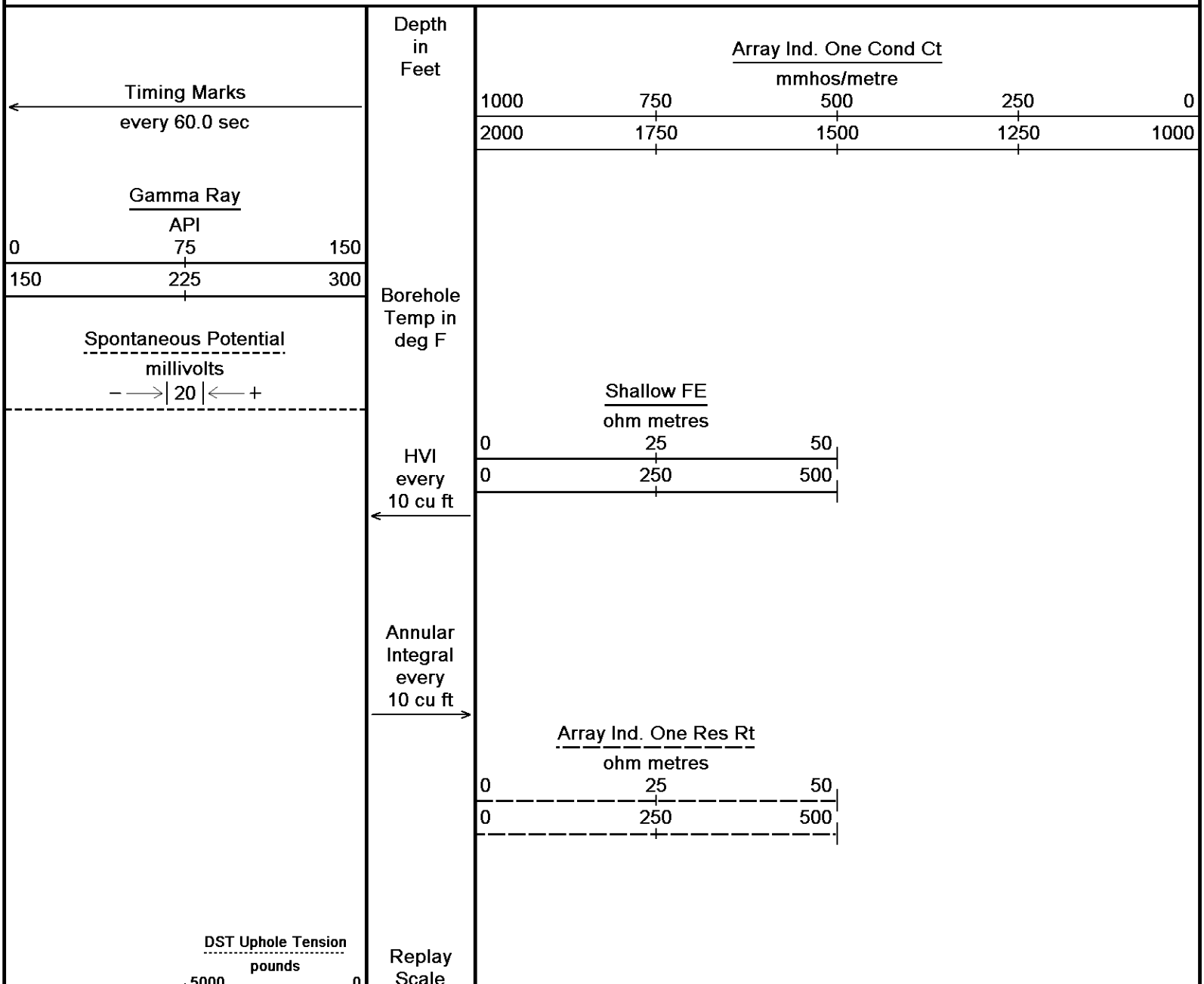
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will 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.

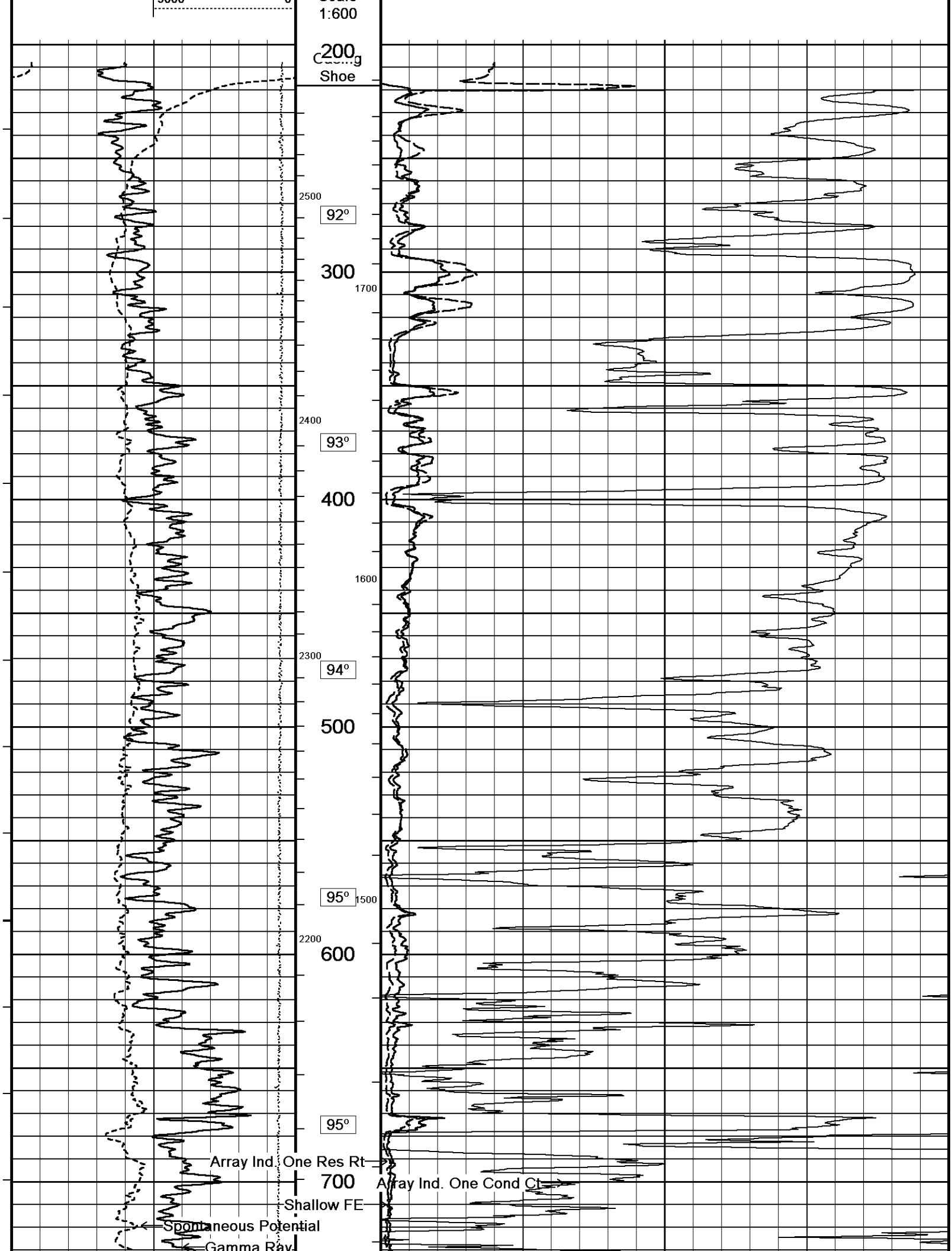
2 INCH MAIN

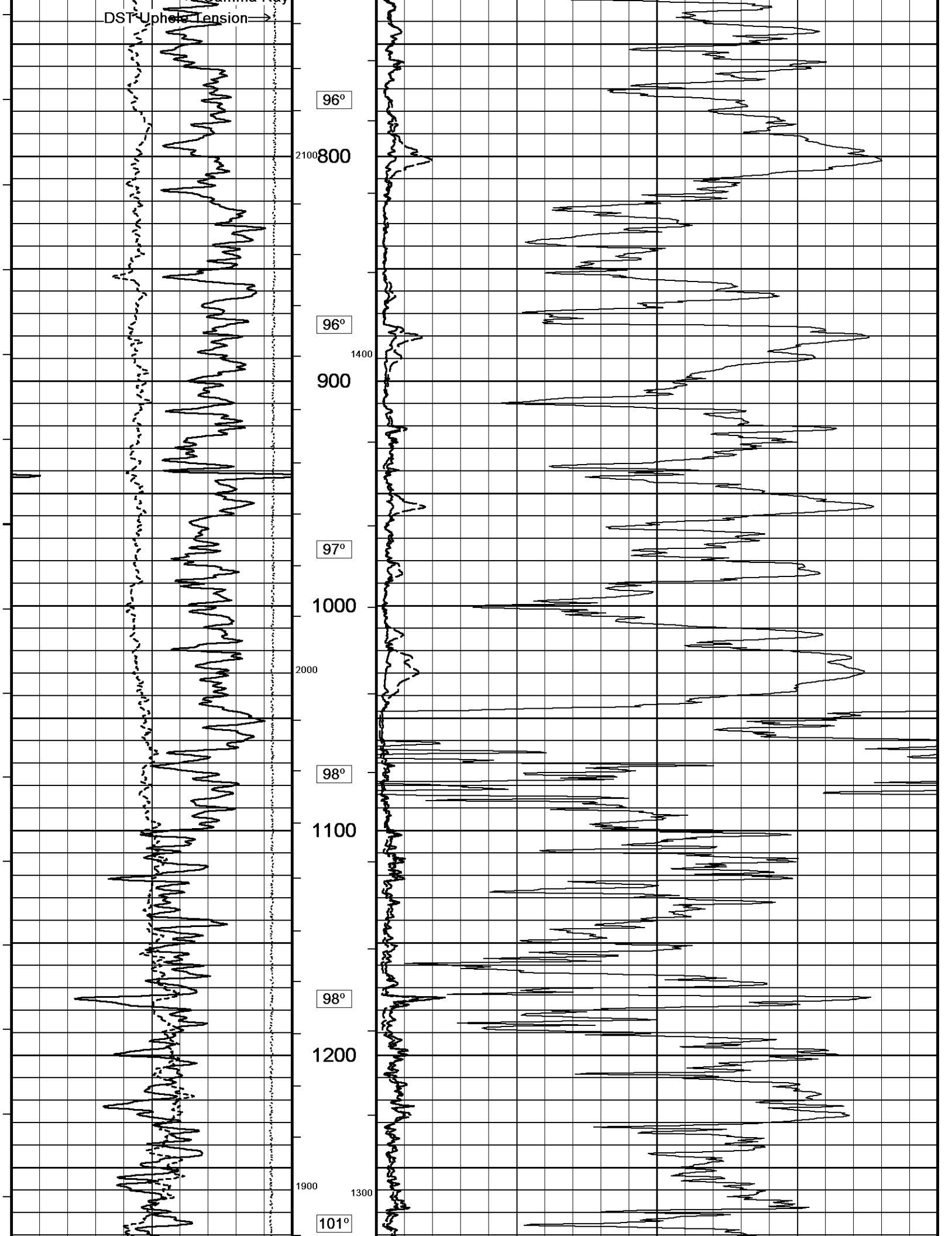
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 24-JUN-2018 16:33

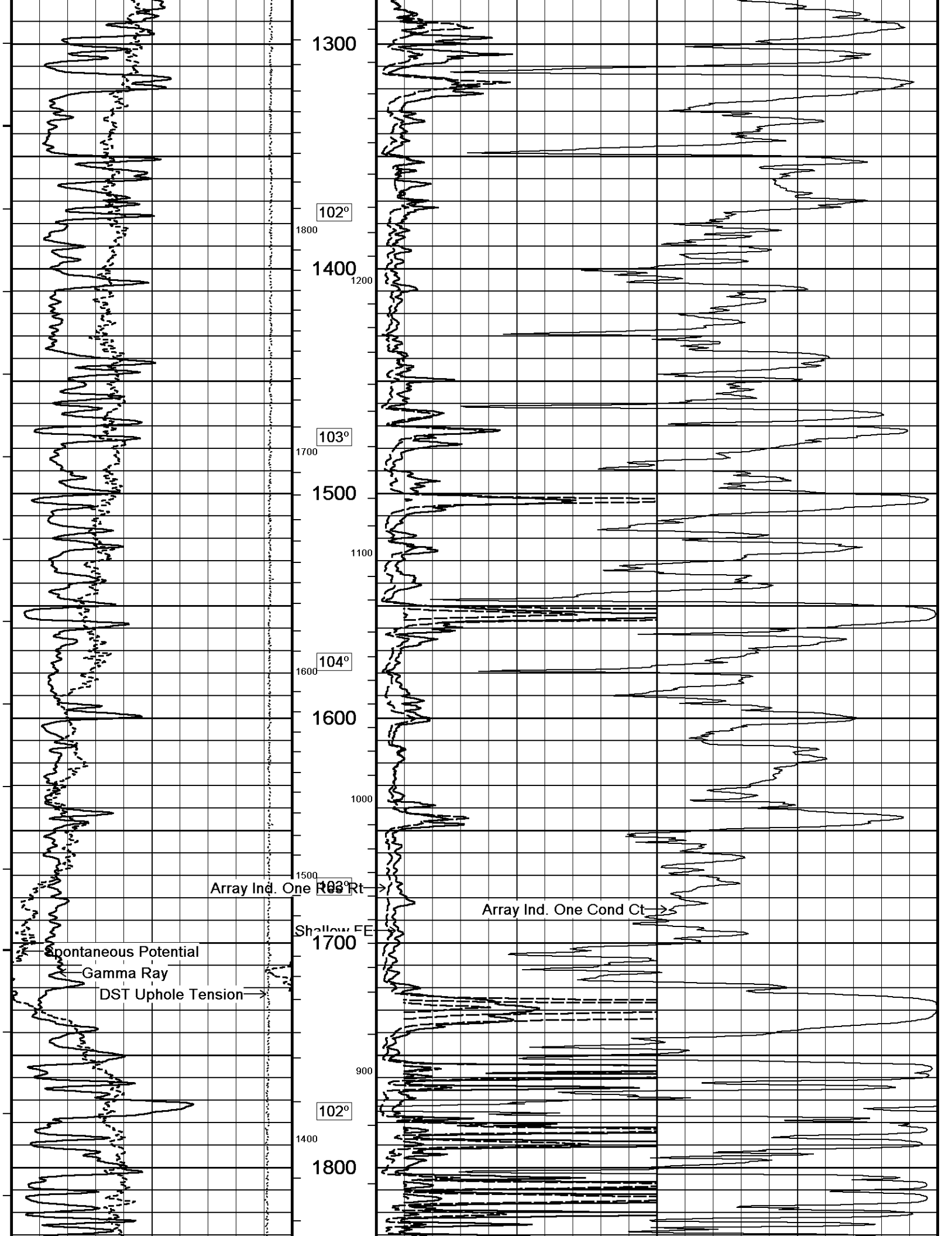
Filename: C:\Minimus 18.01.6830\Data\Grand Mesa Ringer #1-24\Grand Mesa Ringer #1-24_003.dta — Recorded on 24-JUN-2018 13:00

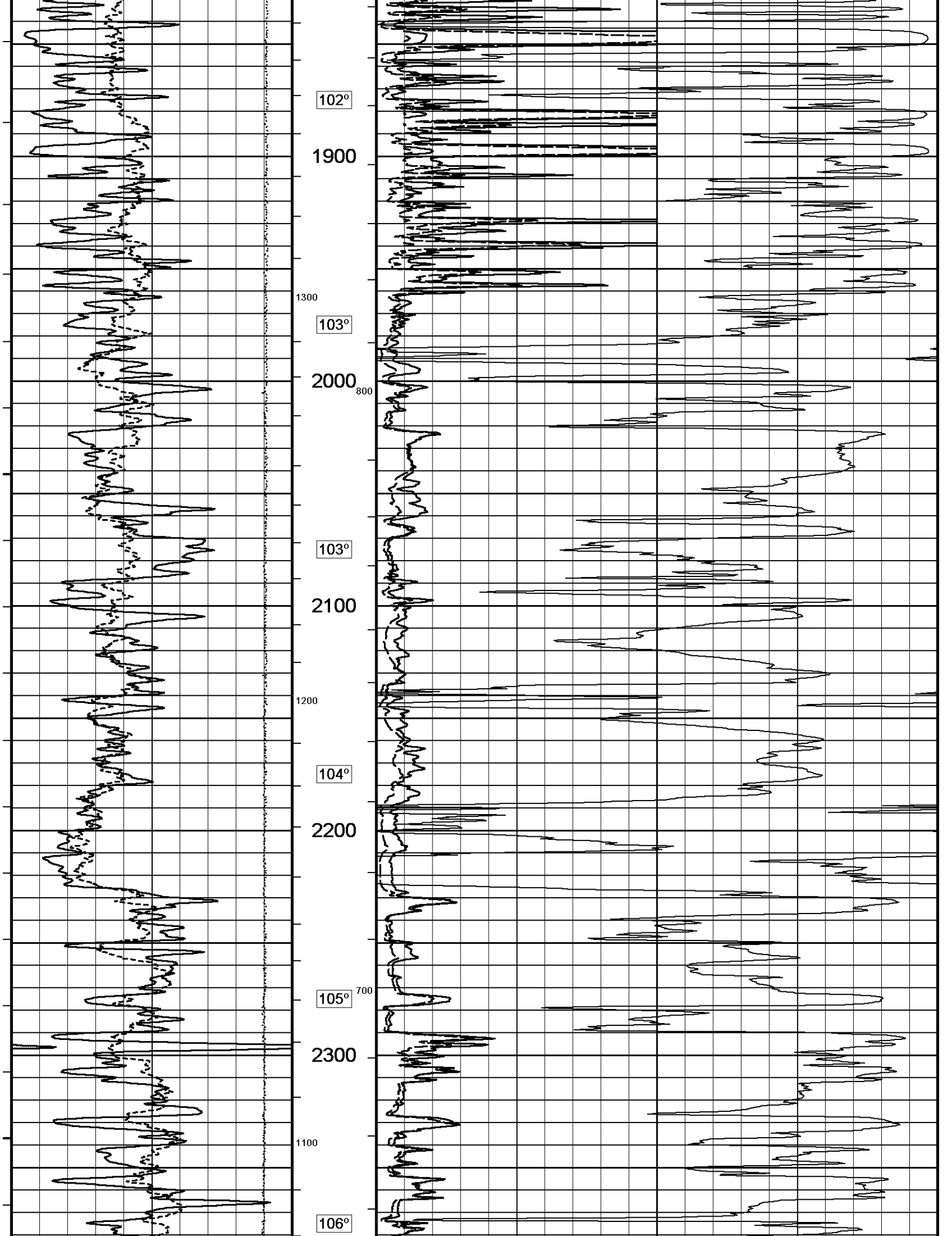
System Versions: Logged with 18.01.6830 Plotted with 18.01.6830




1:600
200
Shoe
2500
92°
300
1700
2400
93°
400
1600
2300
94°
500
95°
1500
2200
600
95°
Array Ind. One Res Rt
700
Array Ind. One Cond Ct
Shallow FE
Spontaneous Potential
Gamma Ray


DST Uphole Tension
96°
2100
800
96°
1400
900
97°
1000
2000
98°
1100
98°
1200
1900
1300
101°


1300
102°
1800
1400
1200
103°
1700
1500
1100
104°
1600
1600
1000
1500
103°
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow FE
1700
Spontaneous Potential
Gamma Ray
DST Uphole Tension
900
102°
1400
1800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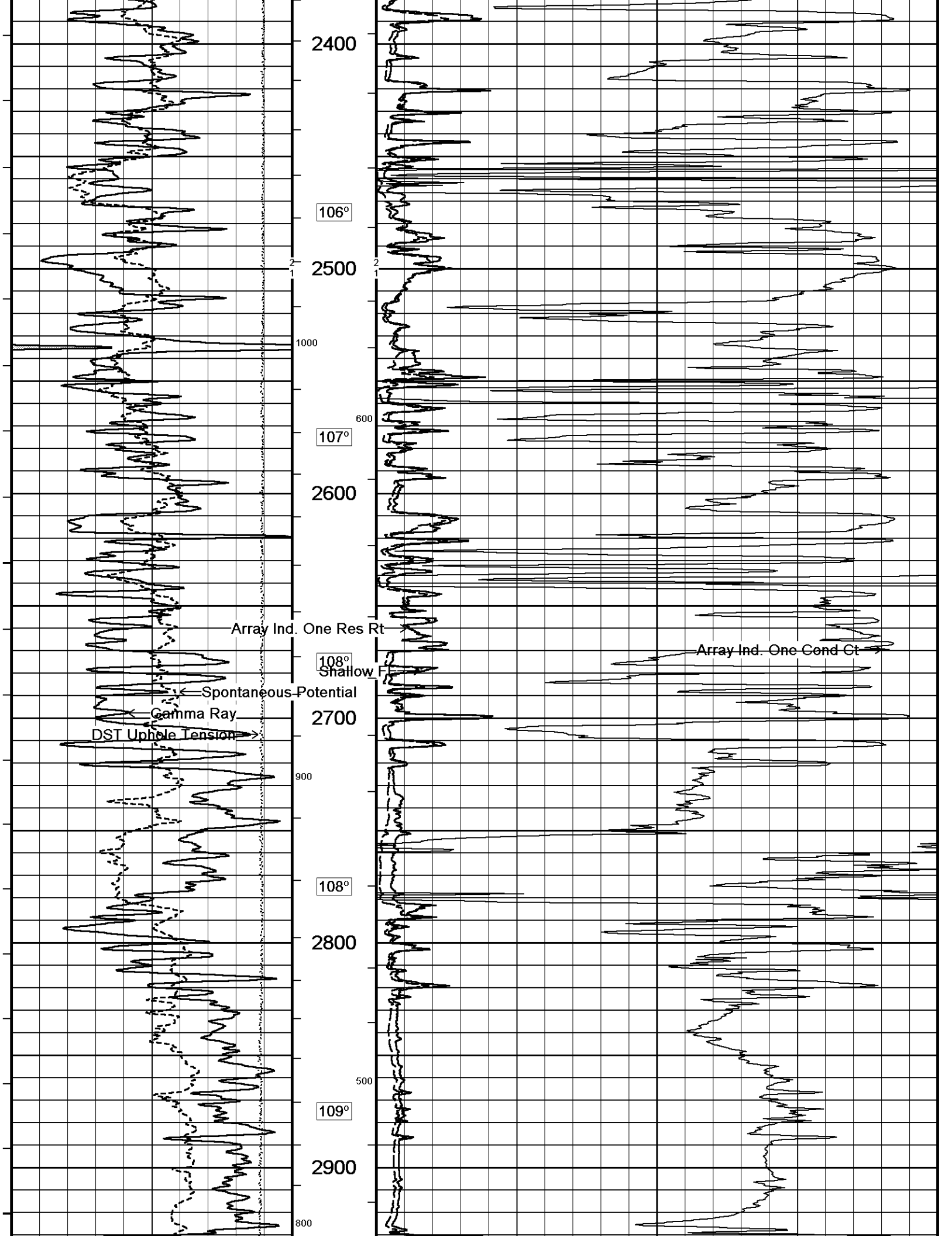
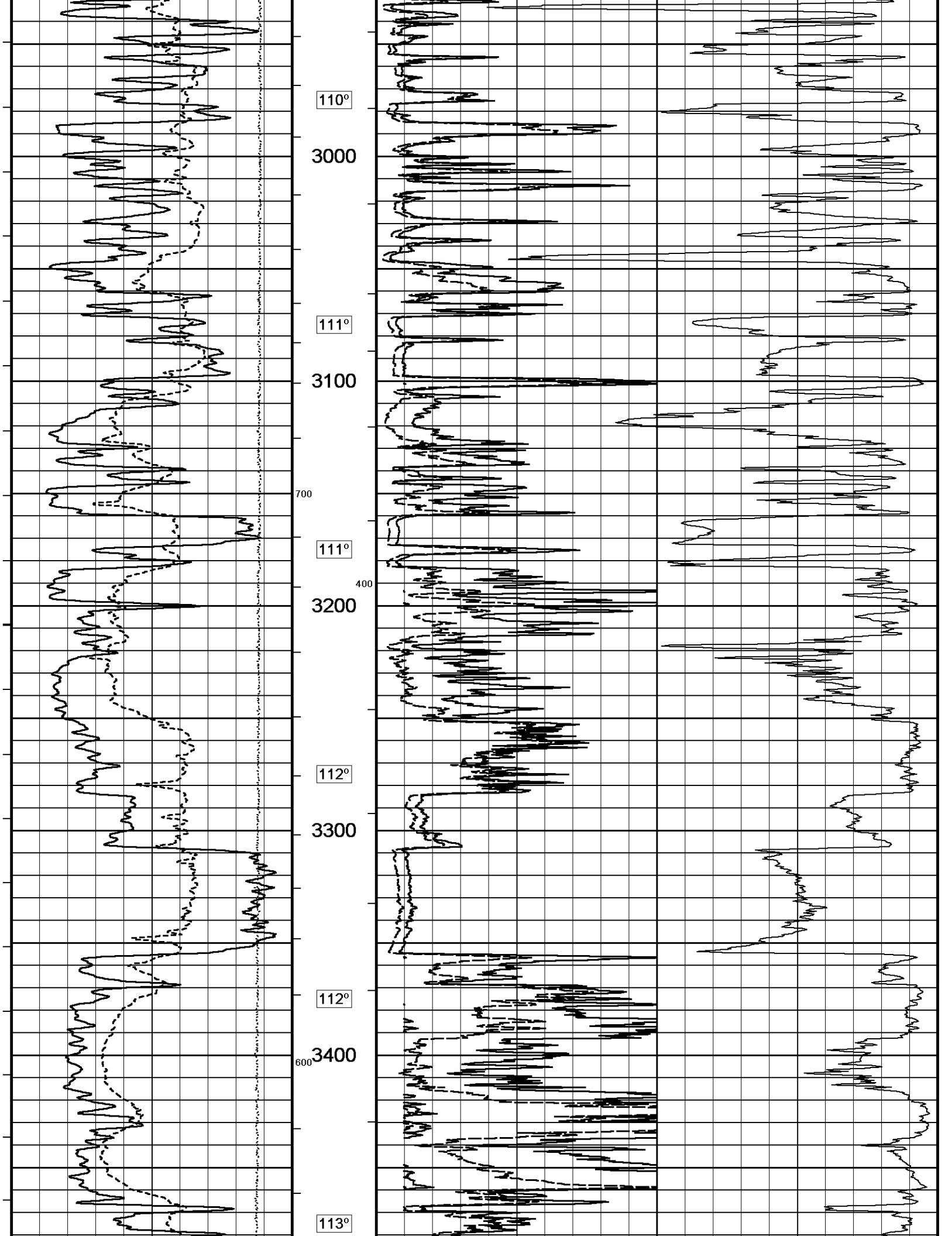
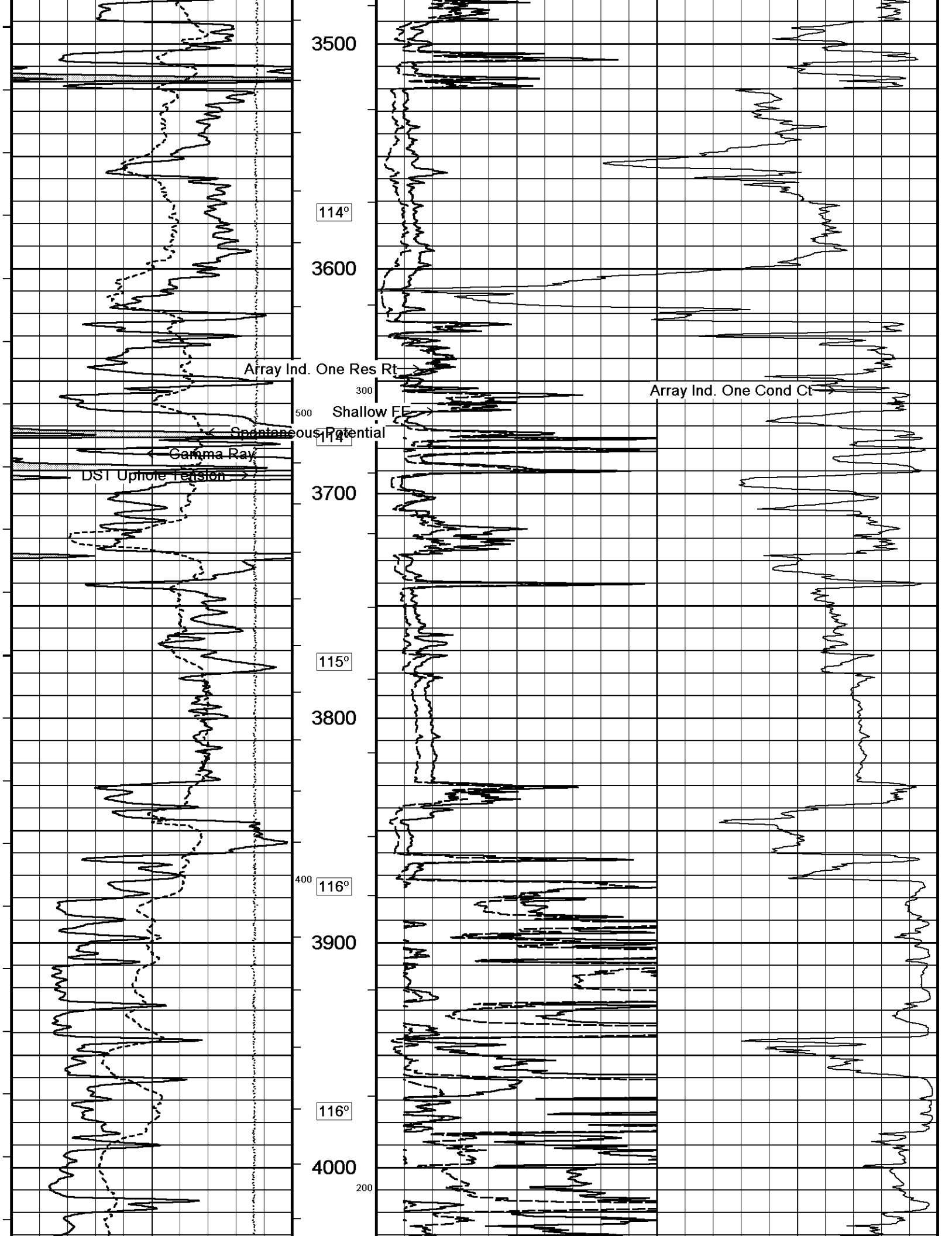
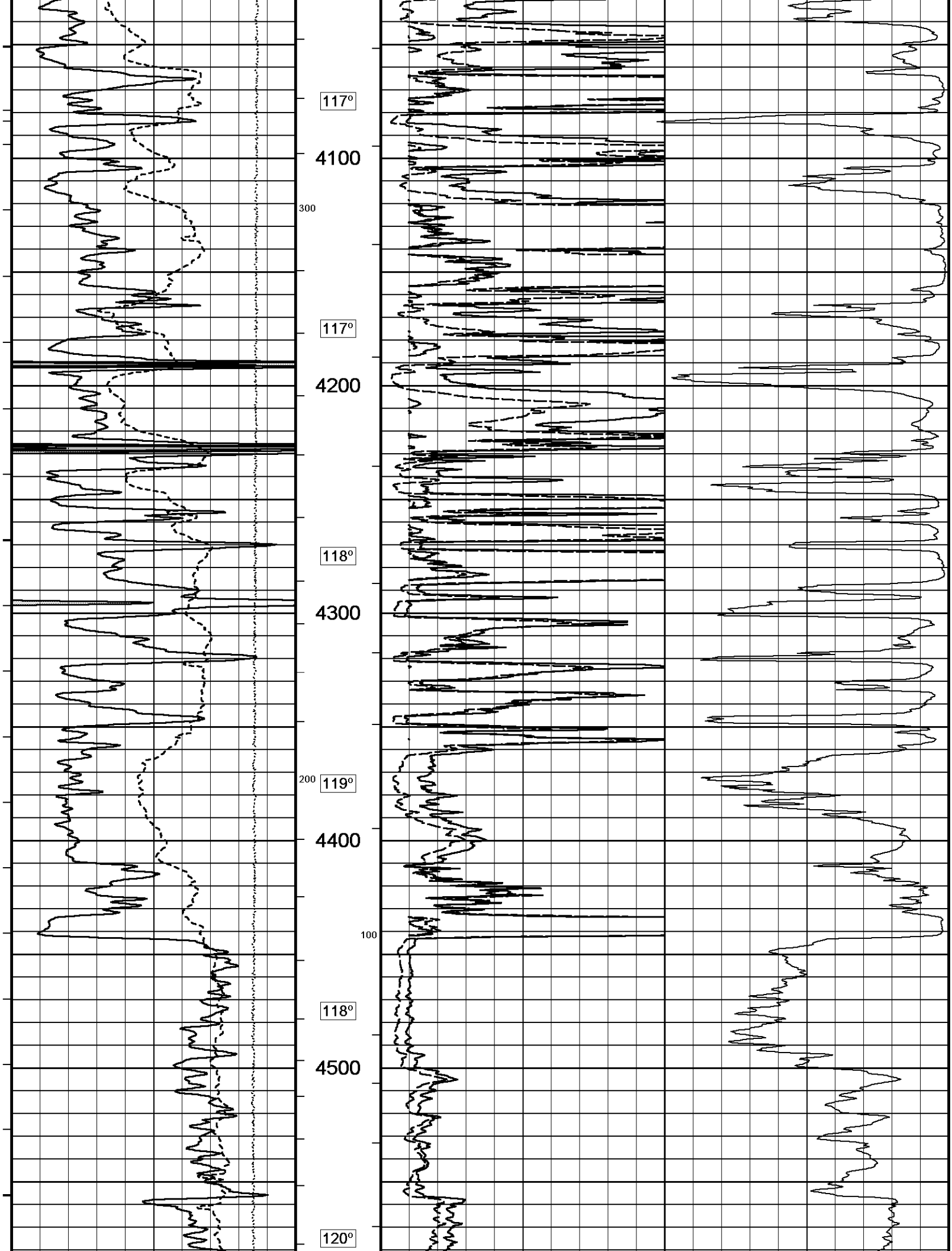
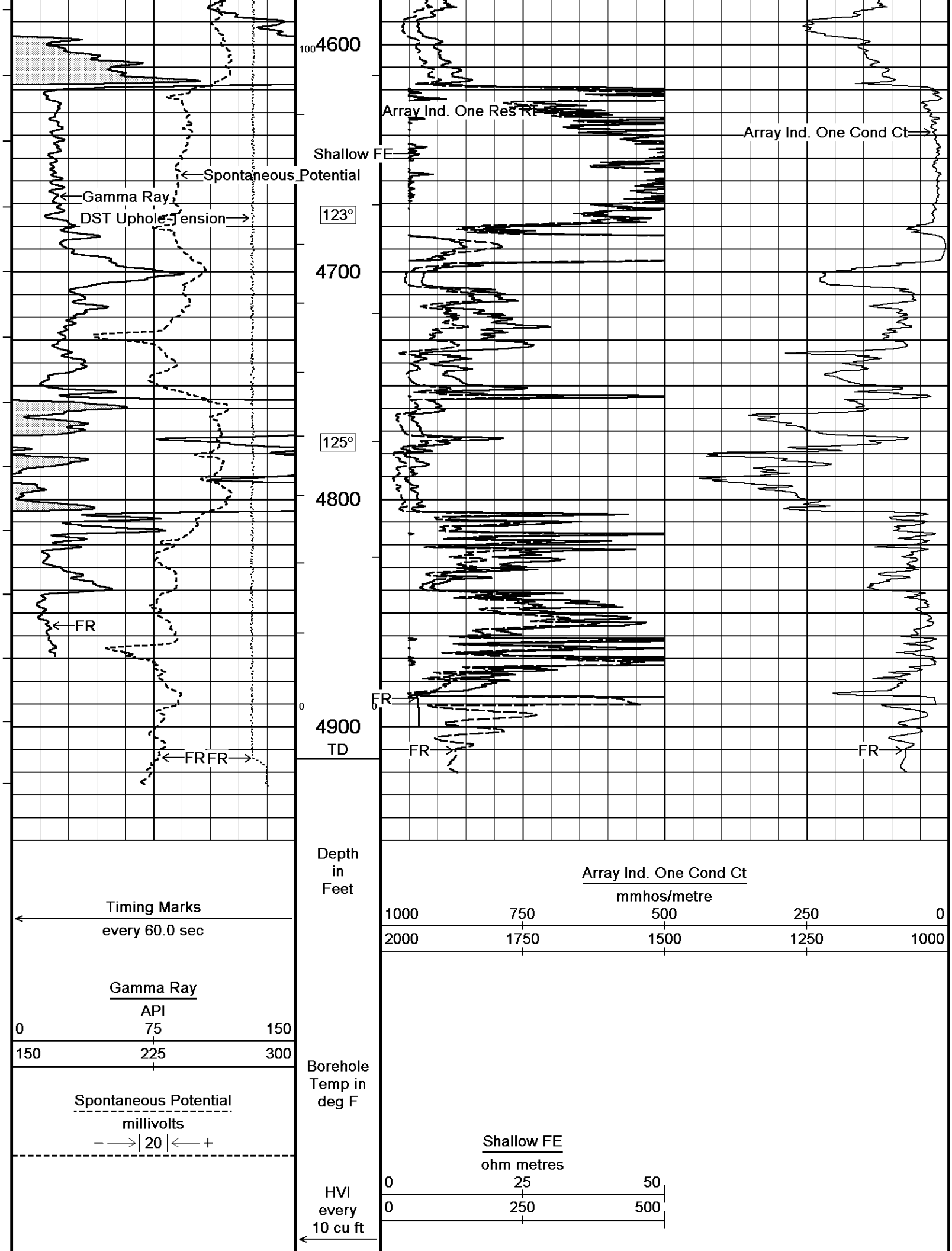
1900
1300
103°
2000
800
103°
2100
1200
104°
2200
105°
700
2300
1100
106°


2400
106°
2500
1000
600
107°
2600
Array Ind. One Res Rt
108°
Shallow Ft
Spontaneous Potential
Gamma Ray
DST Uphole Tension
2700
900
108°
2800
500
109°
2900
800
Array Ind. One Cond Ct


110°
3000
111°
3100
700
111°
400
3200
112°
3300
112°
600
3400
113°


3500
114°
3600
Array Ind. One Res Rt
300
Array Ind. One Cond Ct
500
Shallow FE
Spontaneous Potential
114°
Gamma Ray
DST Uphole Tension
3700
115°
3800
400
116°
3900
116°
4000
200


117°
4100
300
117°
4200
118°
4300
200
119°
4400
100
118°
4500
120°


100
4600
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Array Ind. One Cond Ct
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
123°
4700
125°
4800
FR
0
FR
0
4900
TD
FR
FR
FR FR
Depth in Feet
Array Ind. One Cond Ct
mmhos/metre
1000 750 500 250 0
2000 1750 1500 1250 1000
Timing Marks
every 60.0 sec
Gamma Ray
API
0 75 150
150 225 300
Spontaneous Potential
millivolts
– 20 +
Borehole Temp in deg F
Shallow FE
ohm metres
0 25 50
0 250 500
HVI every 10 cu ft

Annular Integral every 10 cu ft

Array Ind. One Res Rt
ohm metres
0 25 50
0 250 500

DST Uphole Tension
pounds
5000 0

Replay Scale 1:600

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 24-JUN-2018 16:33
Filename: C:\Minimus 18.01.6830\Data\Grand Mesa Ringer #1-24\Grand Mesa Ringer #1-24_003.dta — Recorded on 24-JUN-2018 13:00
System Versions: Logged with 18.01.6830 Plotted with 18.01.6830

2 INCH MAIN

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 24-JUN-2018 16:33
Filename: C:\Minimus 18.01.6830\Data\Grand Mesa Ringer #1-24\Grand Mesa Ringer #1-24_003.dta — Recorded on 24-JUN-2018 13:00
System Versions: Logged with 18.01.6830 Plotted with 18.01.6830

Depth in Feet

Timing Marks
every 60.0 sec

Shallow FE
ohm metres
0.20 2000
1 10 100 1000

Gamma Ray
API
0 75 150
150 225 300

Borehole Temp in deg F

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

HVI every 10 cu ft

Spontaneous Potential
millivolts
− 20 +

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

Annular Integral every 10 cu ft

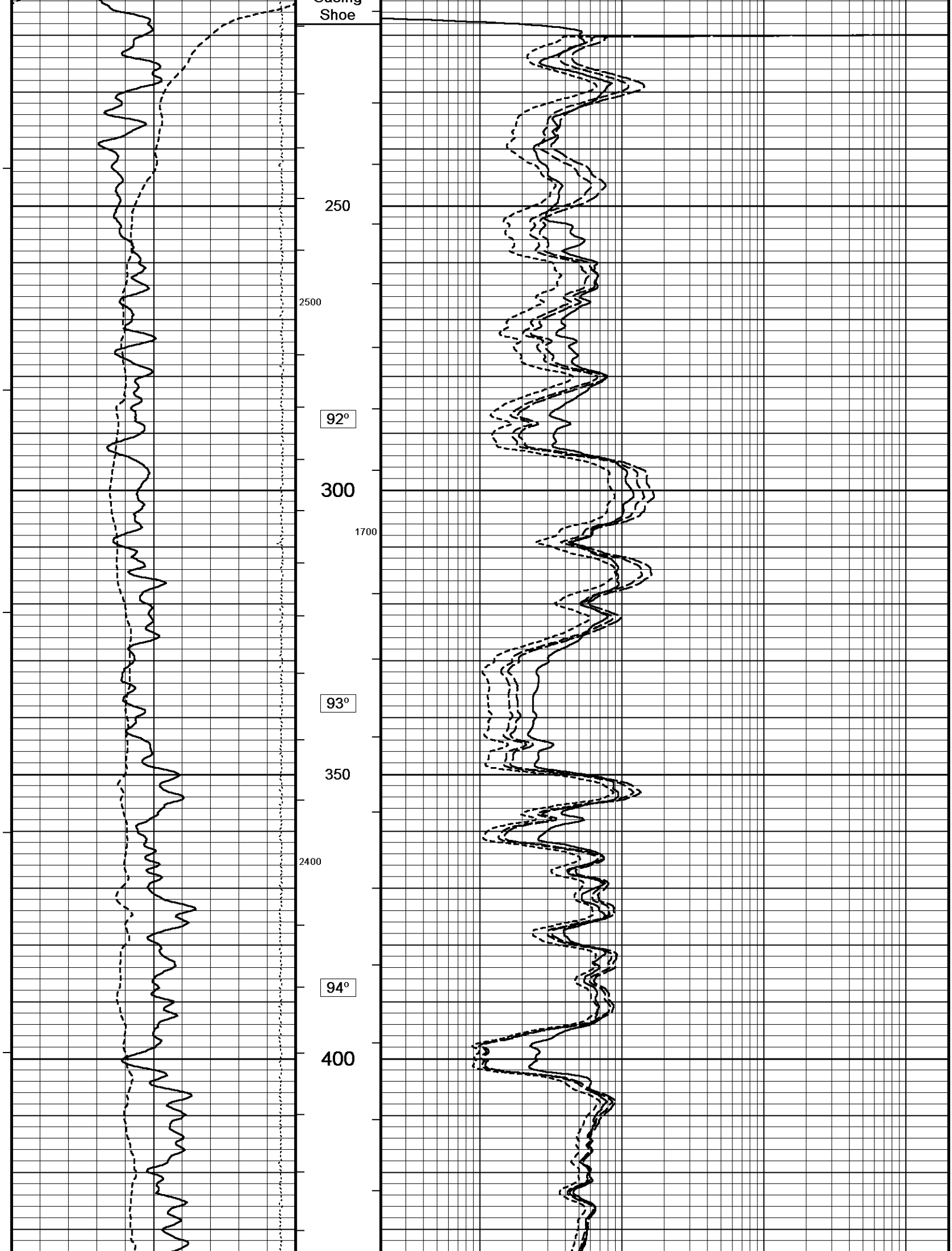
Array Ind. One Res Rt
ohm metres
0.20 2000
1 10 100 1000

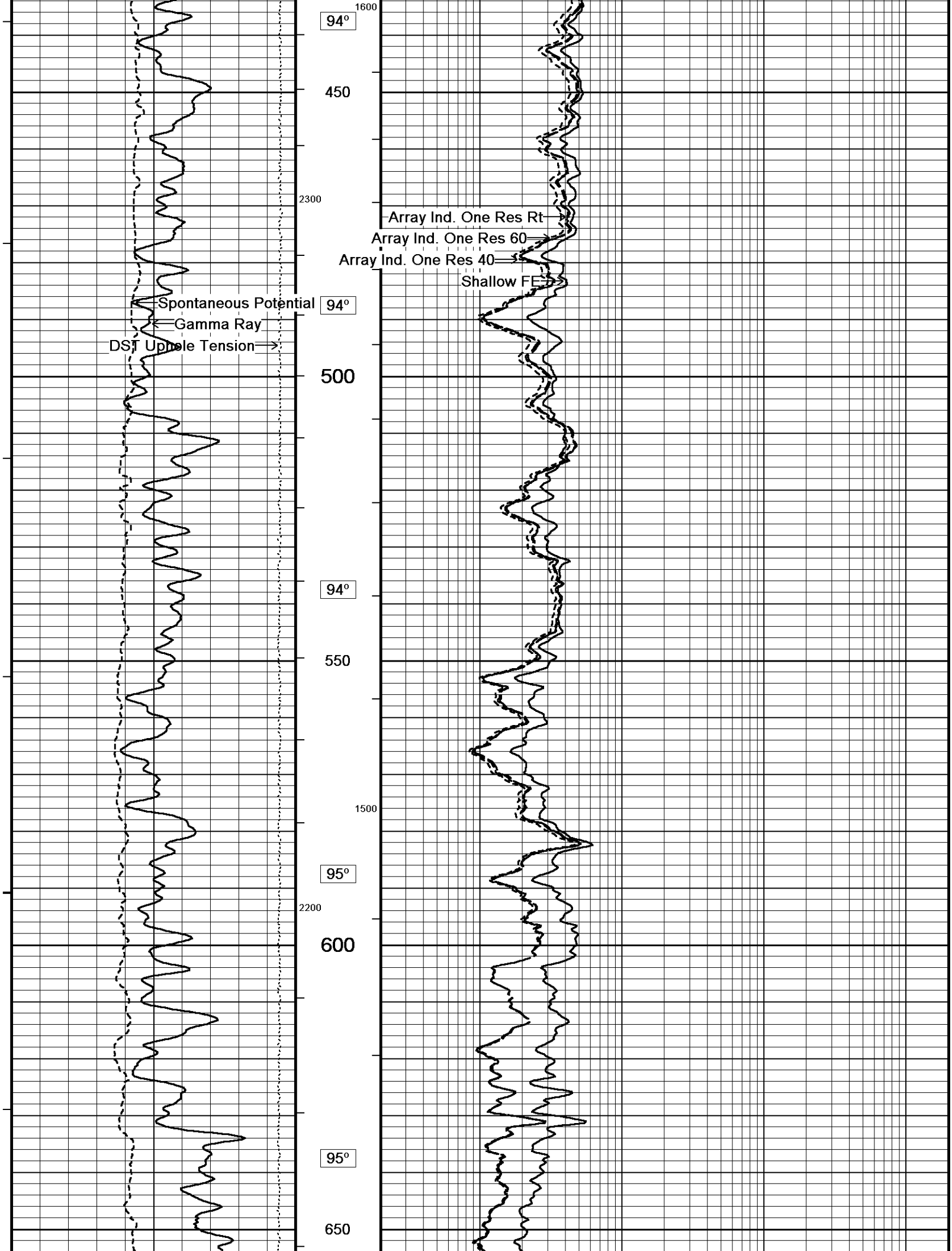
DST Uphole Tension
pounds
5000 0

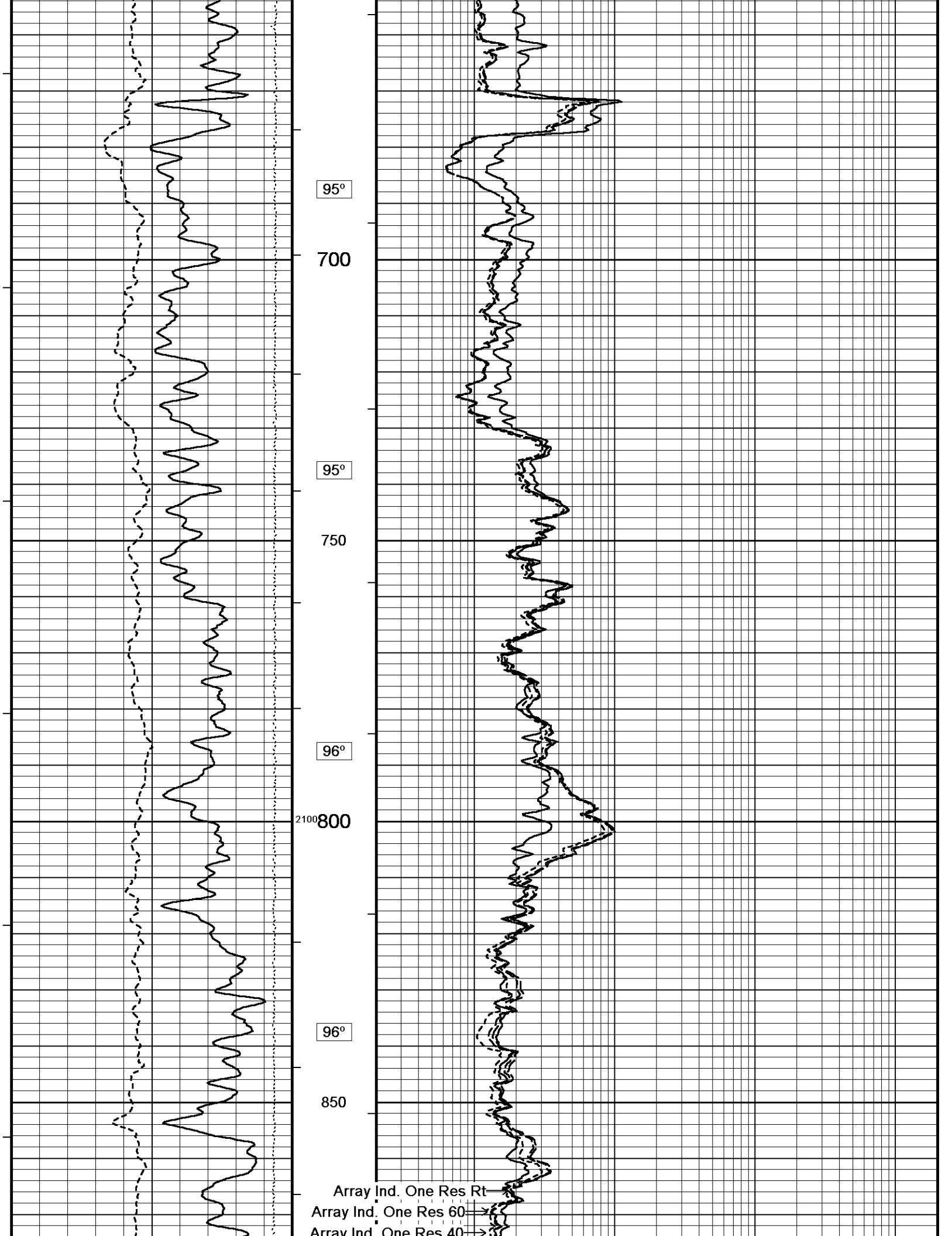
Replay Scale 1:240

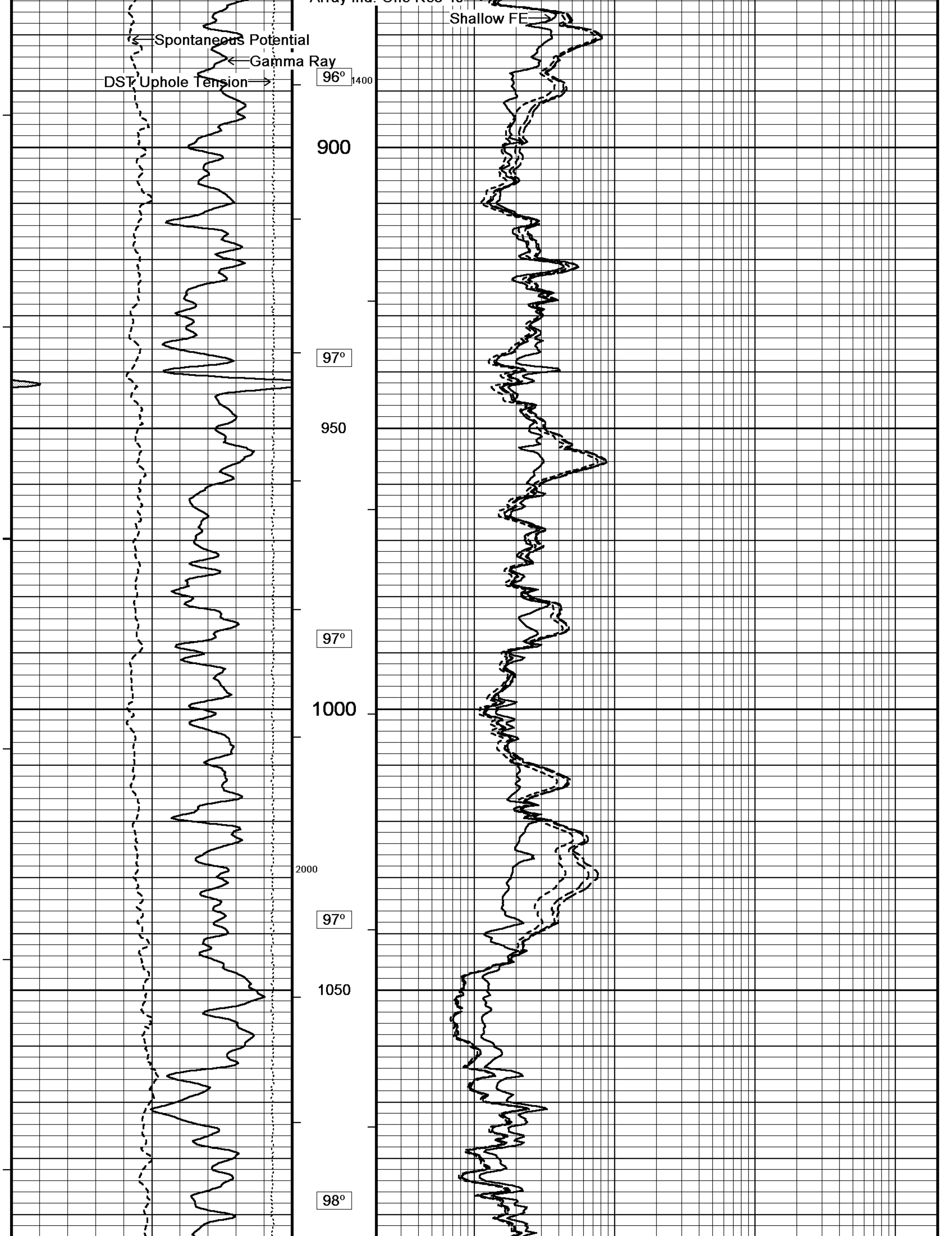
206

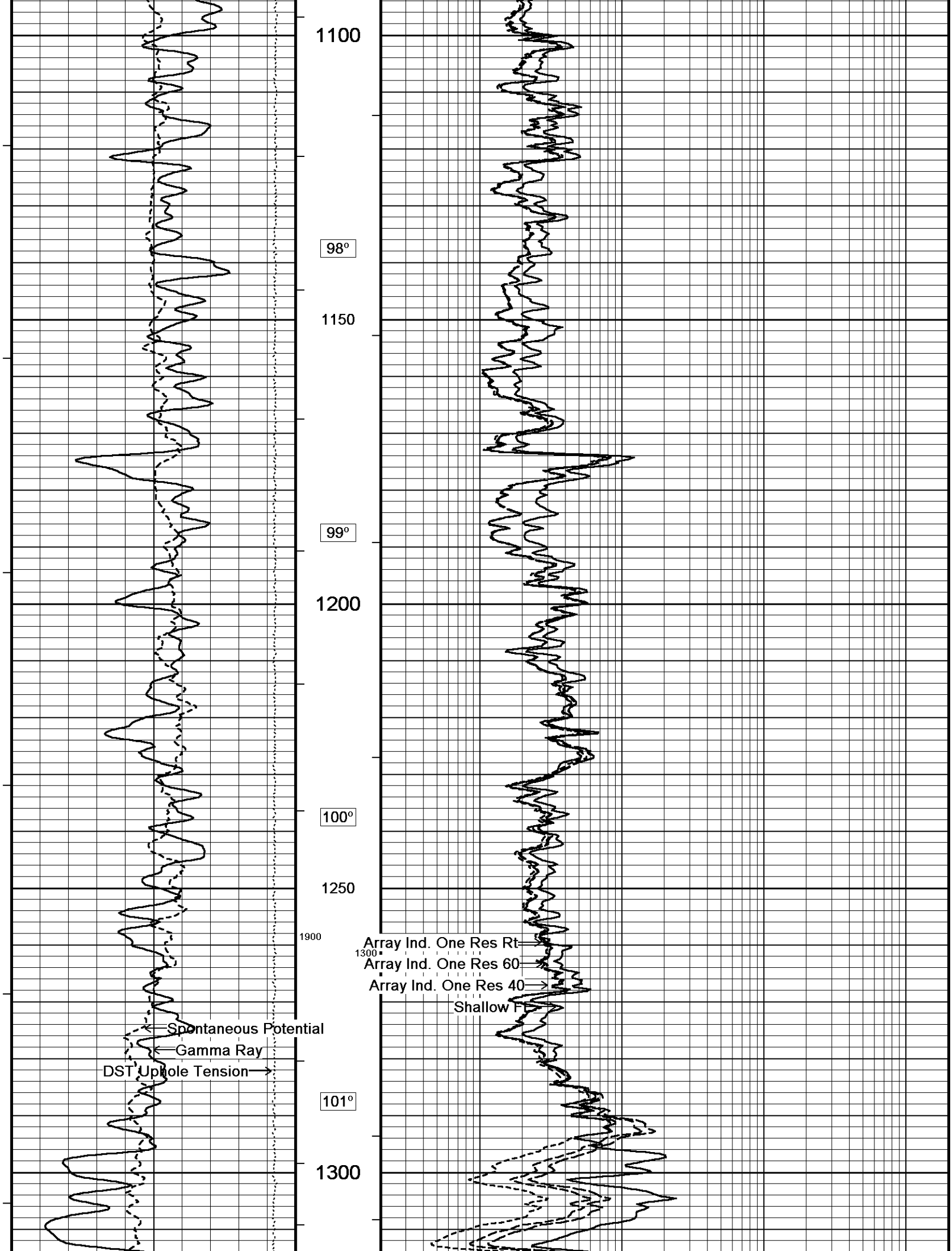
Casing

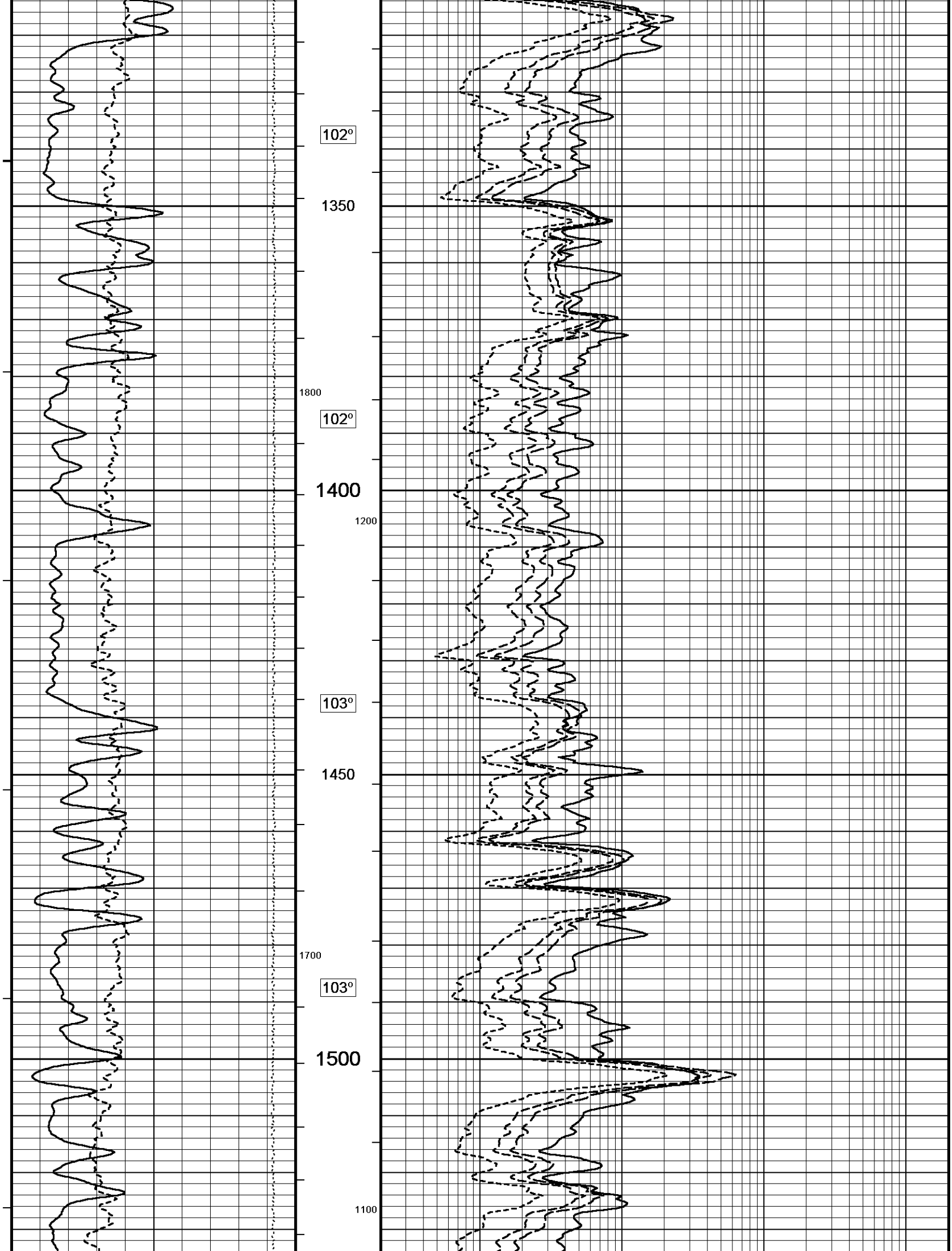

Casing
Shoe
250
2500
92°
300
1700
93°
350
2400
94°
400

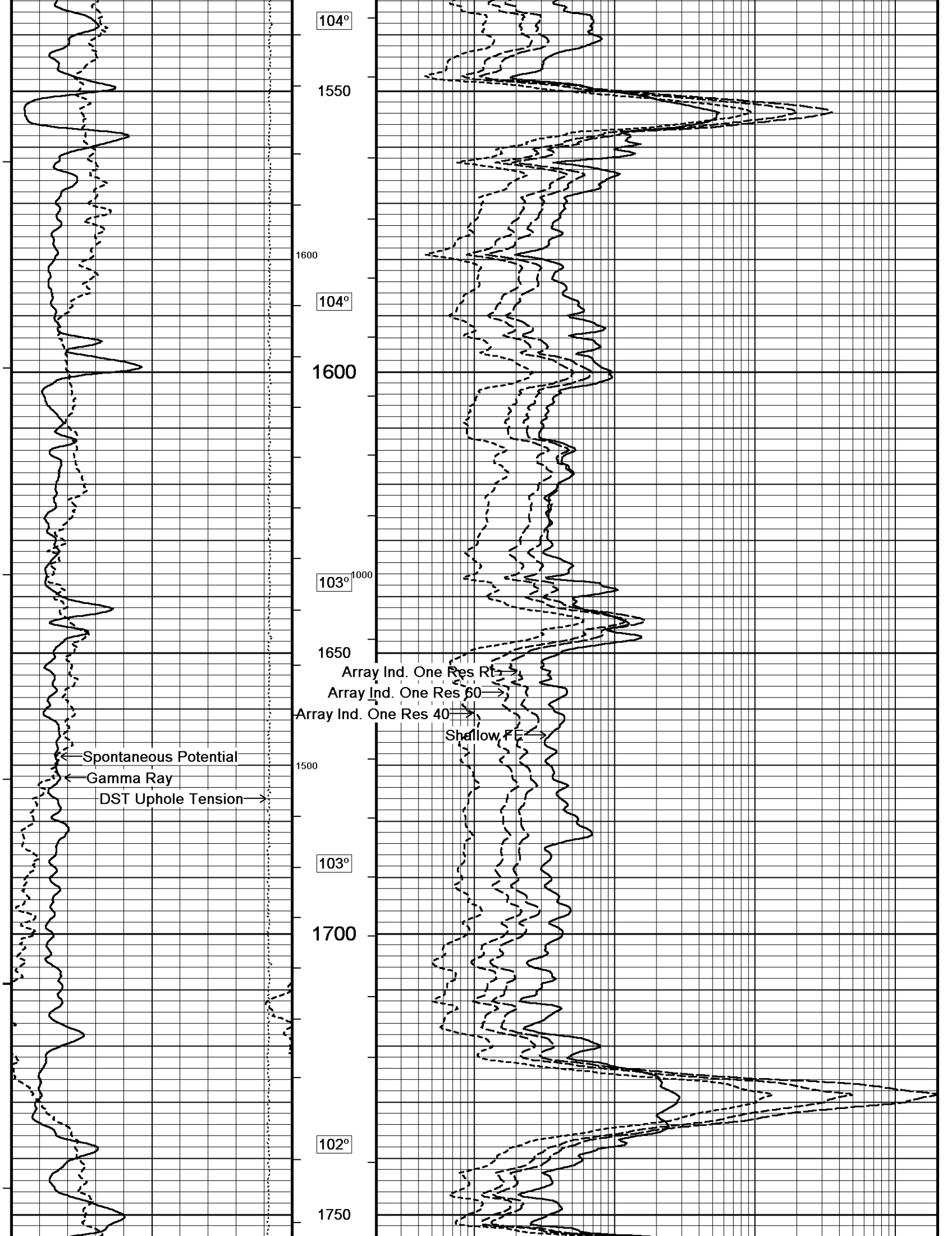

1600
94°
450
2300
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
94°
Gamma Ray
DST Uphole Tension
500
94°
550
1500
95°
2200
600
95°
650

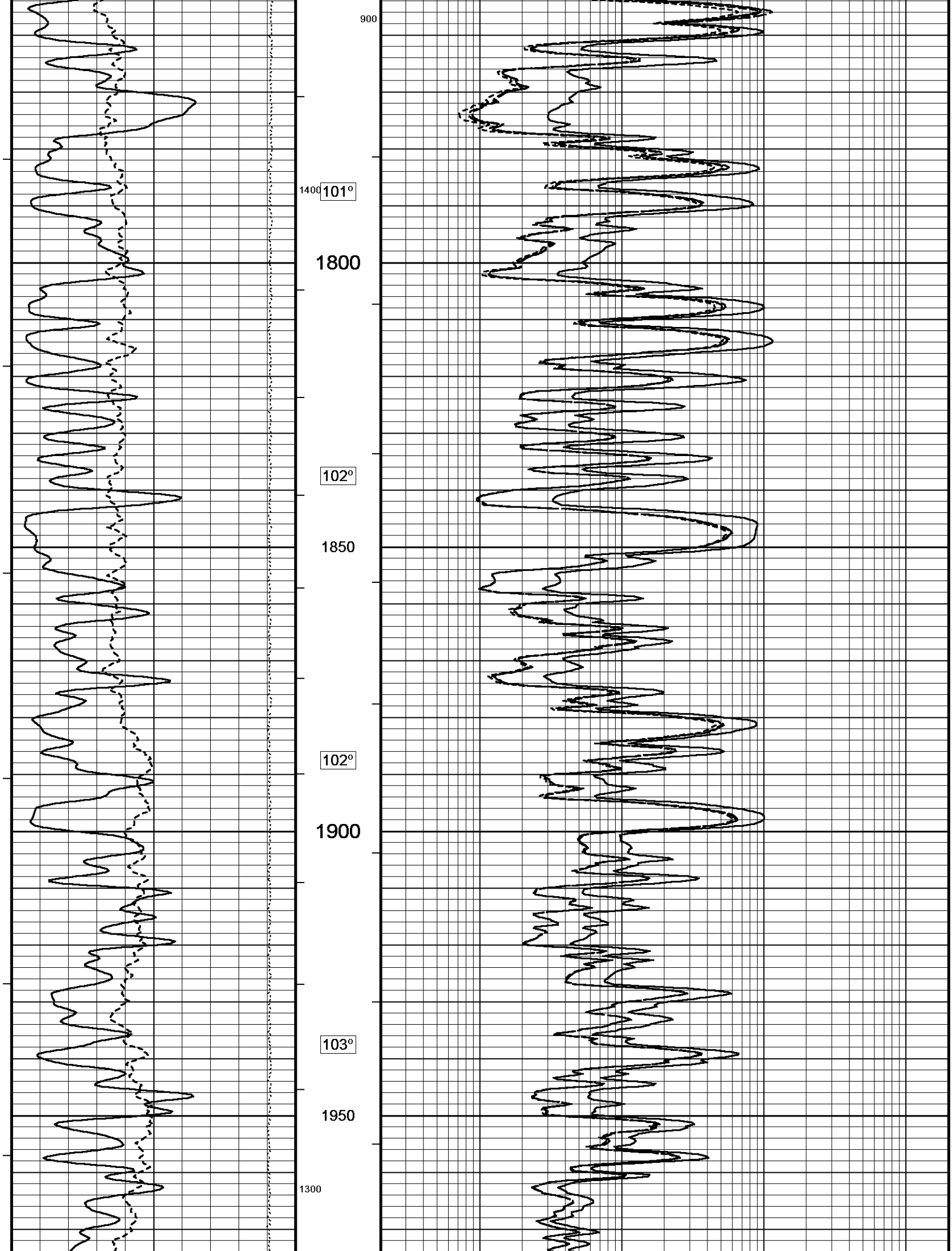

95°
700
95°
750
96°
2100
800
96°
850
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40

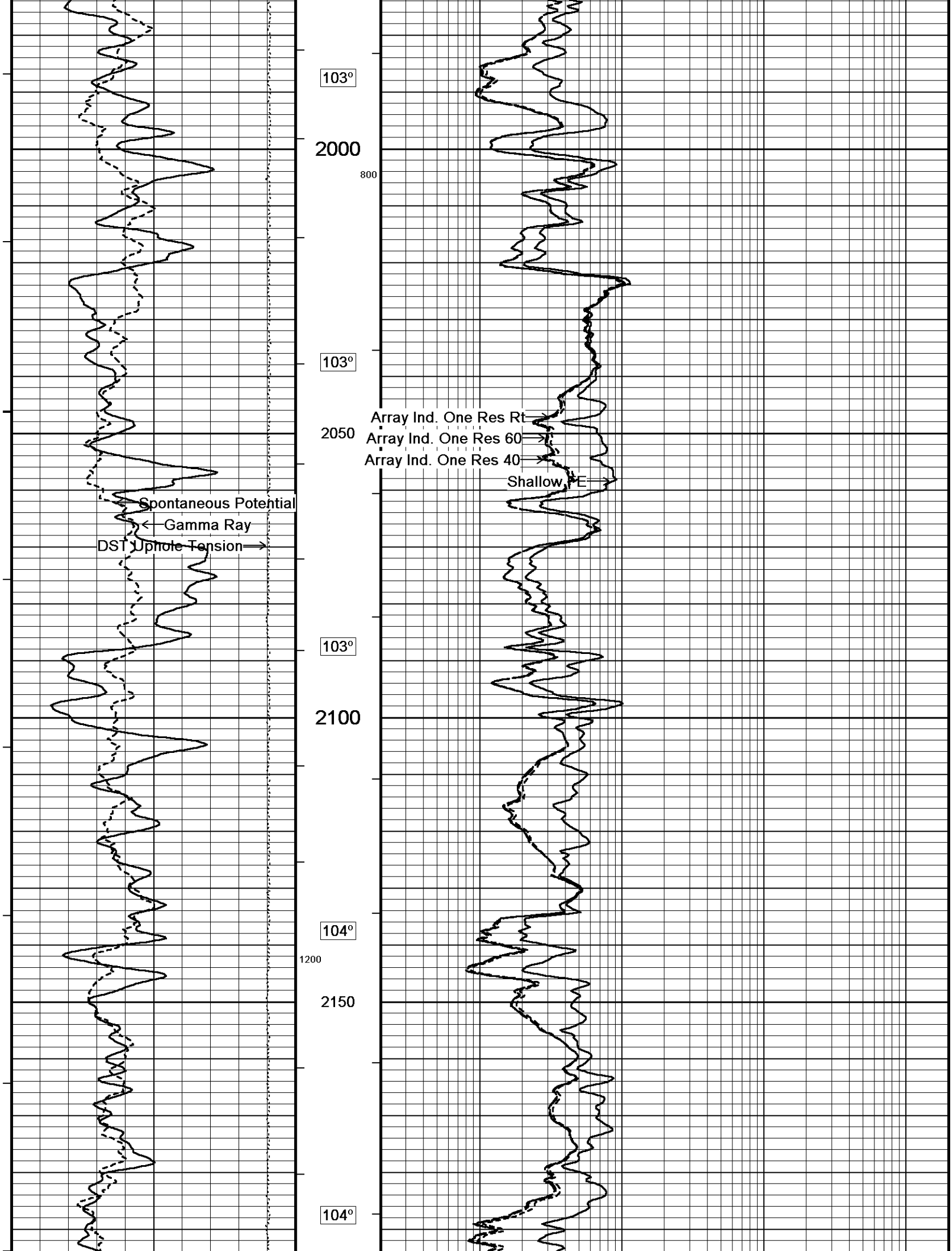

Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
96°
1400
900
97°
950
97°
1000
2000
97°
1050
98°

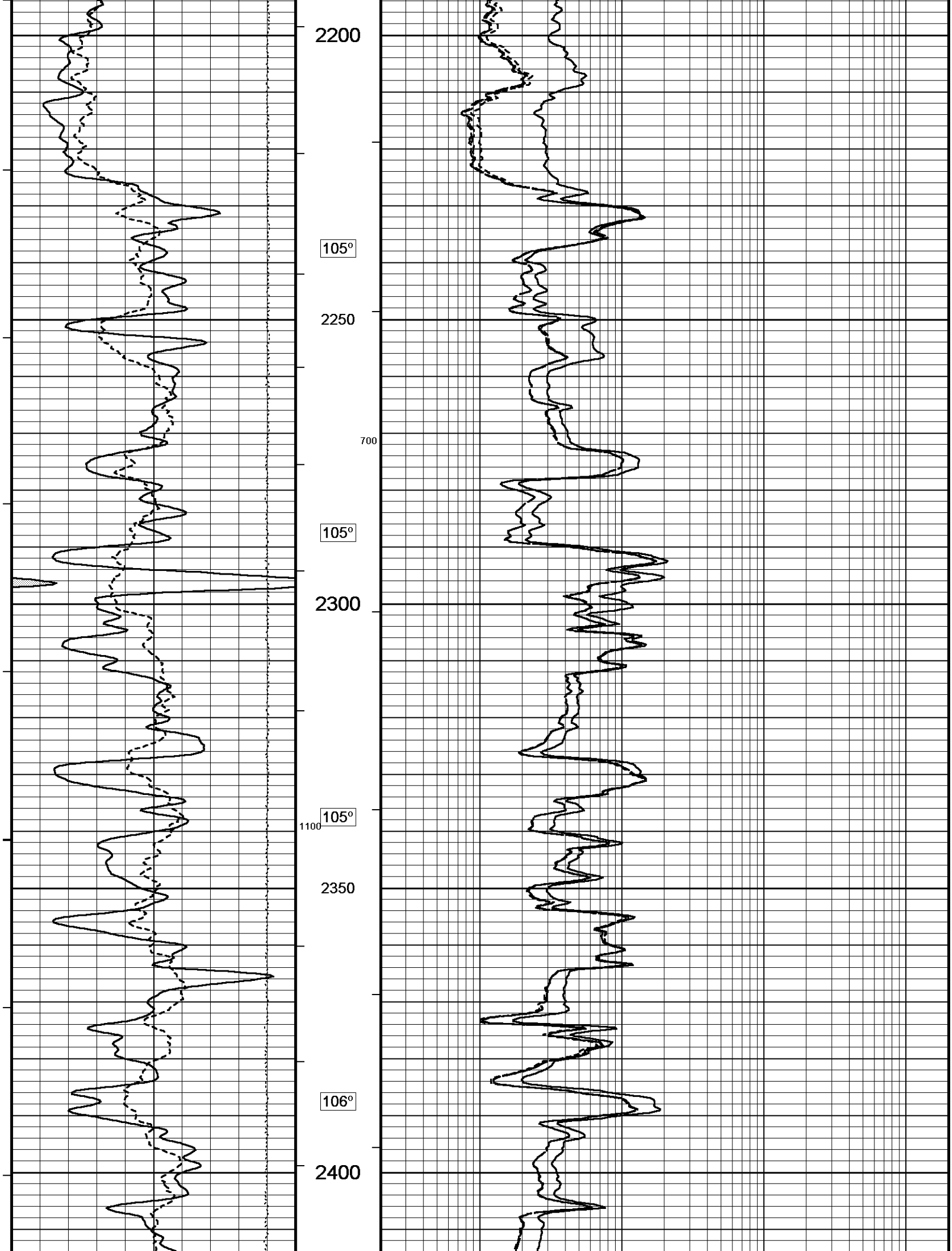

1100
98°
1150
99°
1200
100°
1250
1900
1300
101°
1300
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow Ft
Spontaneous Potential
Gamma Ray
DST Uphole Tension

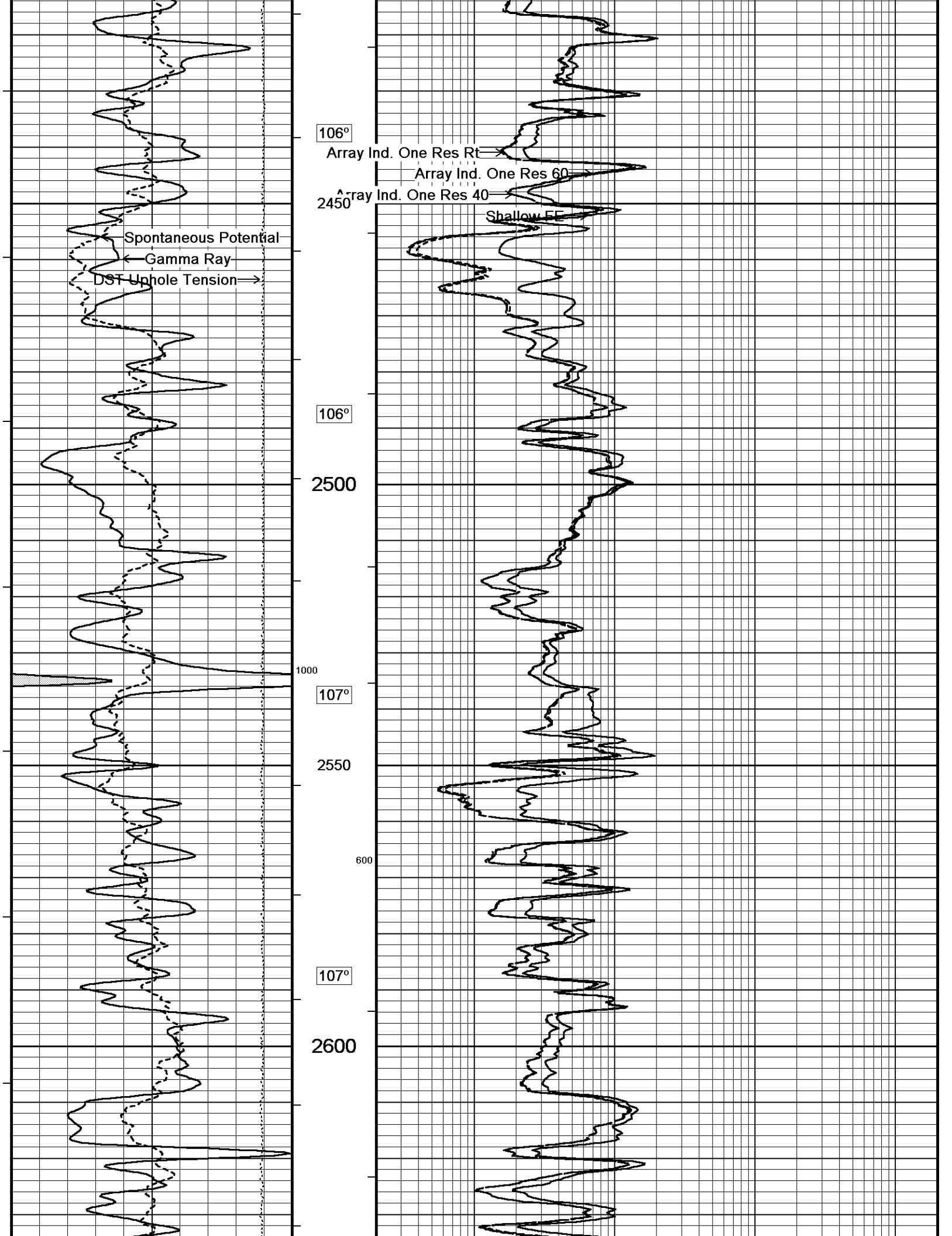

102°
1350
1800
102°
1400
1200
103°
1450
1700
103°
1500
1100

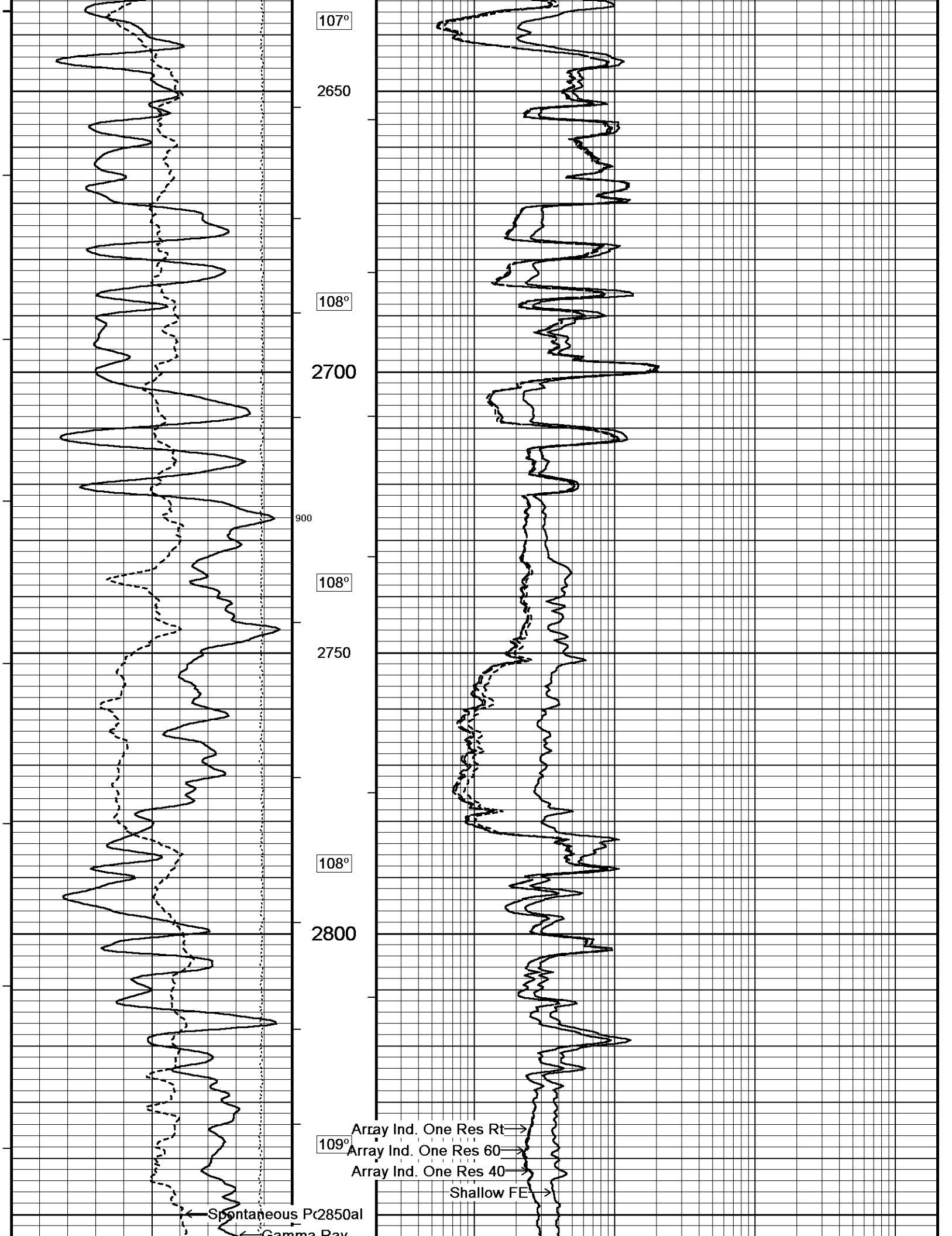

104°
1550
1600
104°
1600
103°
1000
1650
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
1500
103°
1700
102°
1750

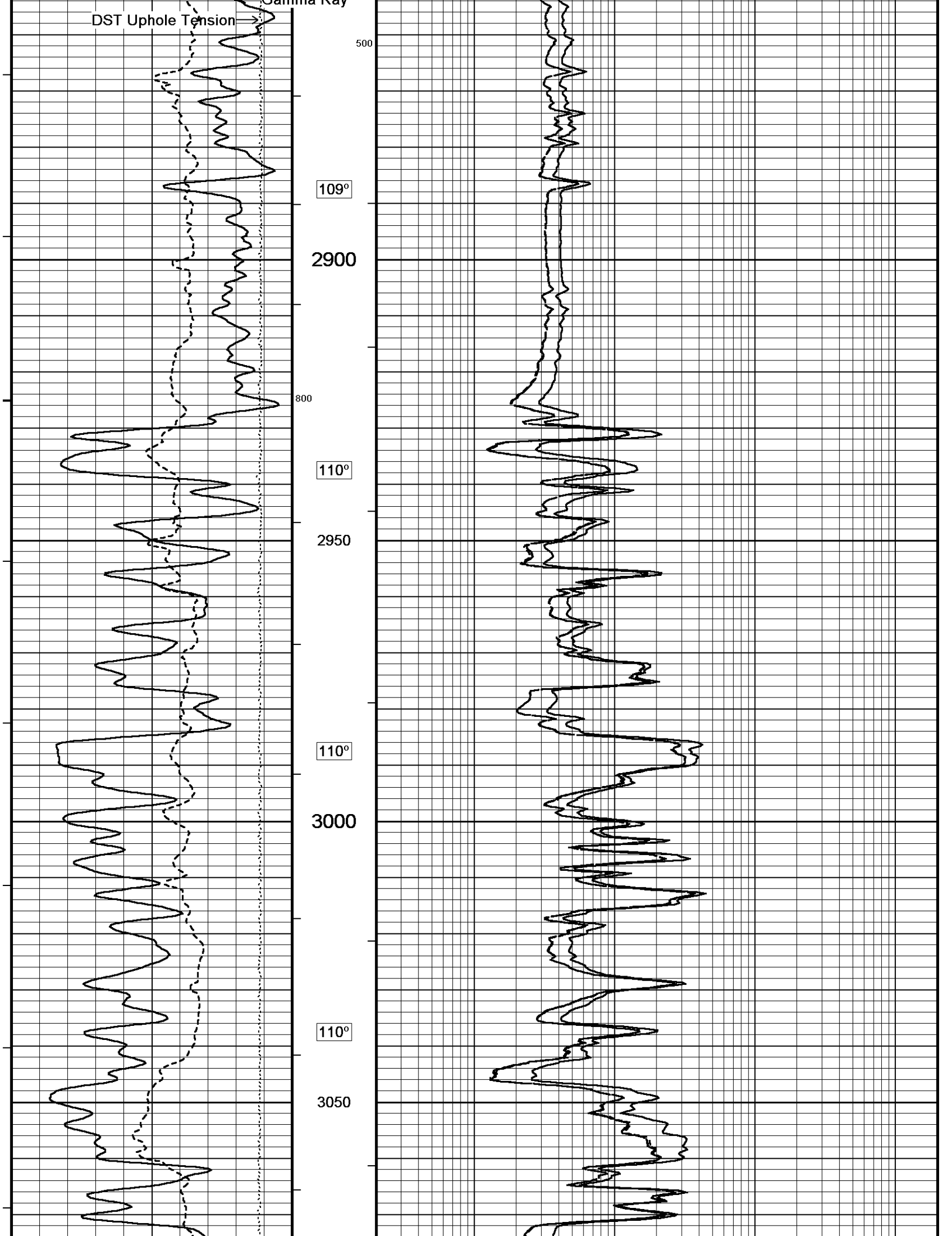

900
1400
101°
1800
102°
1850
102°
1900
103°
1950
1300

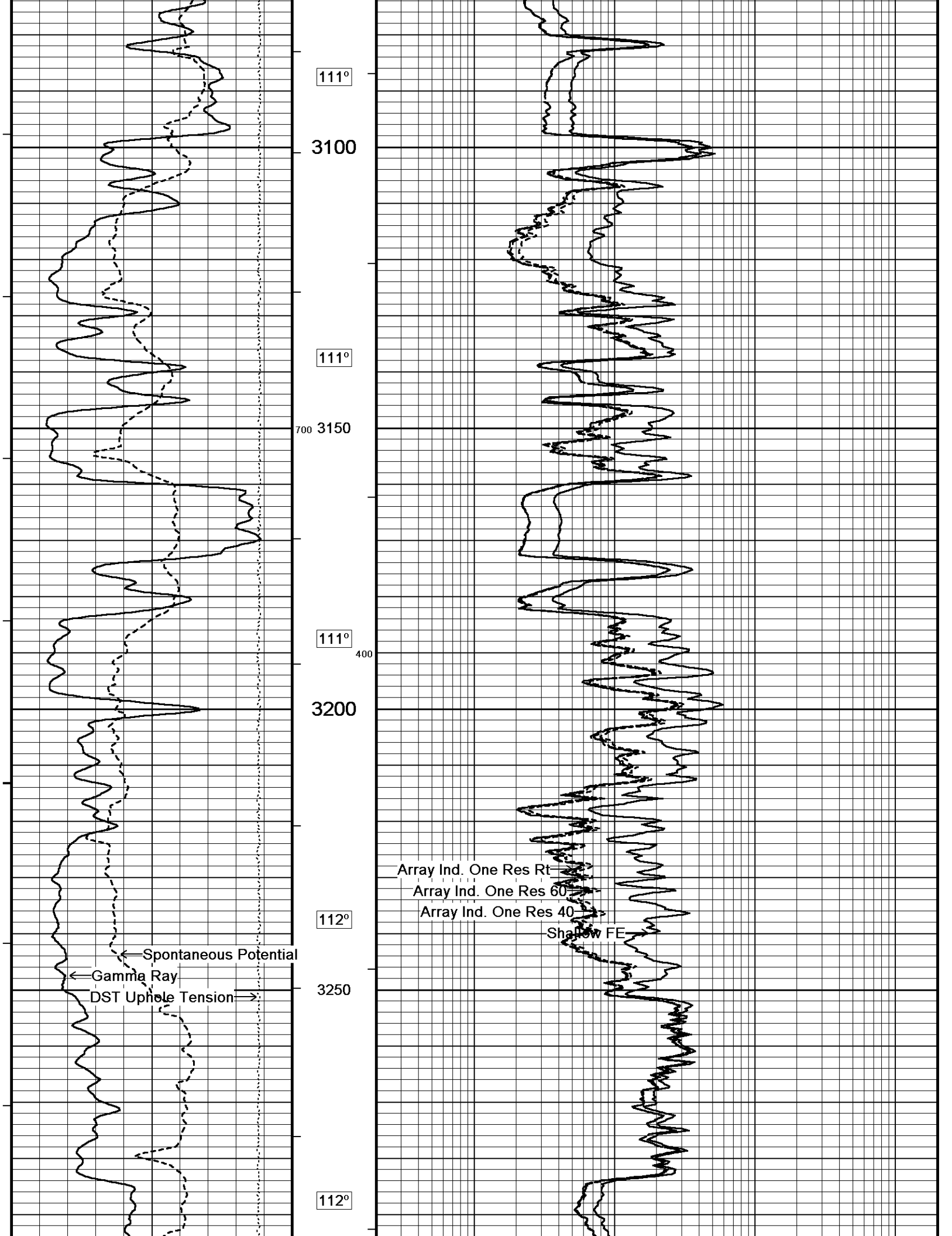

103°
2000
800
103°
Array Ind. One Res Rt
2050
Array Ind. One Res 60
Array Ind. One Res 40
Shallow PE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
103°
2100
104°
1200
2150
104°

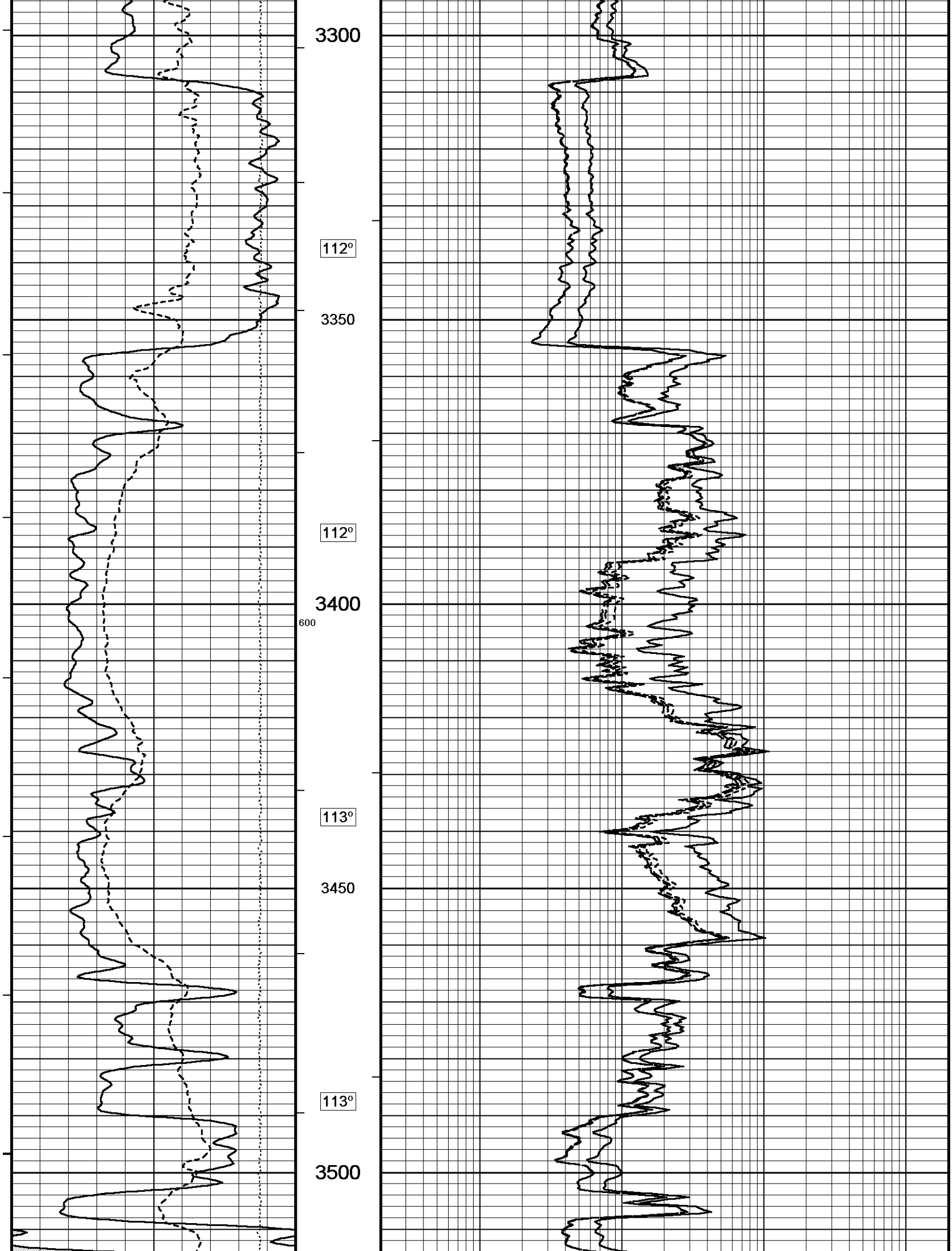

2200
105°
2250
700
105°
2300
1100
105°
2350
106°
2400

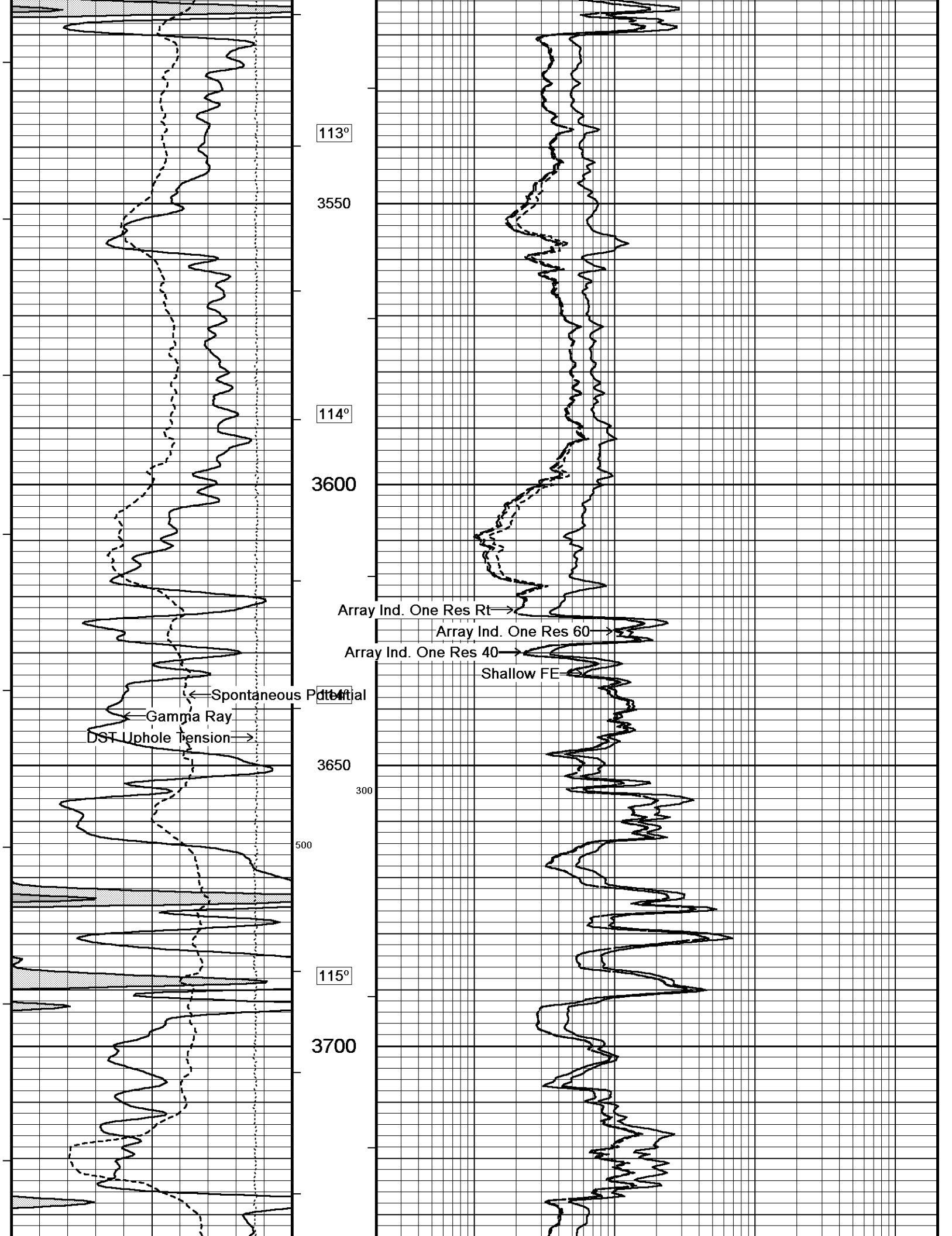

106°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
2450
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
106°
2500
1000
107°
2550
600
107°
2600

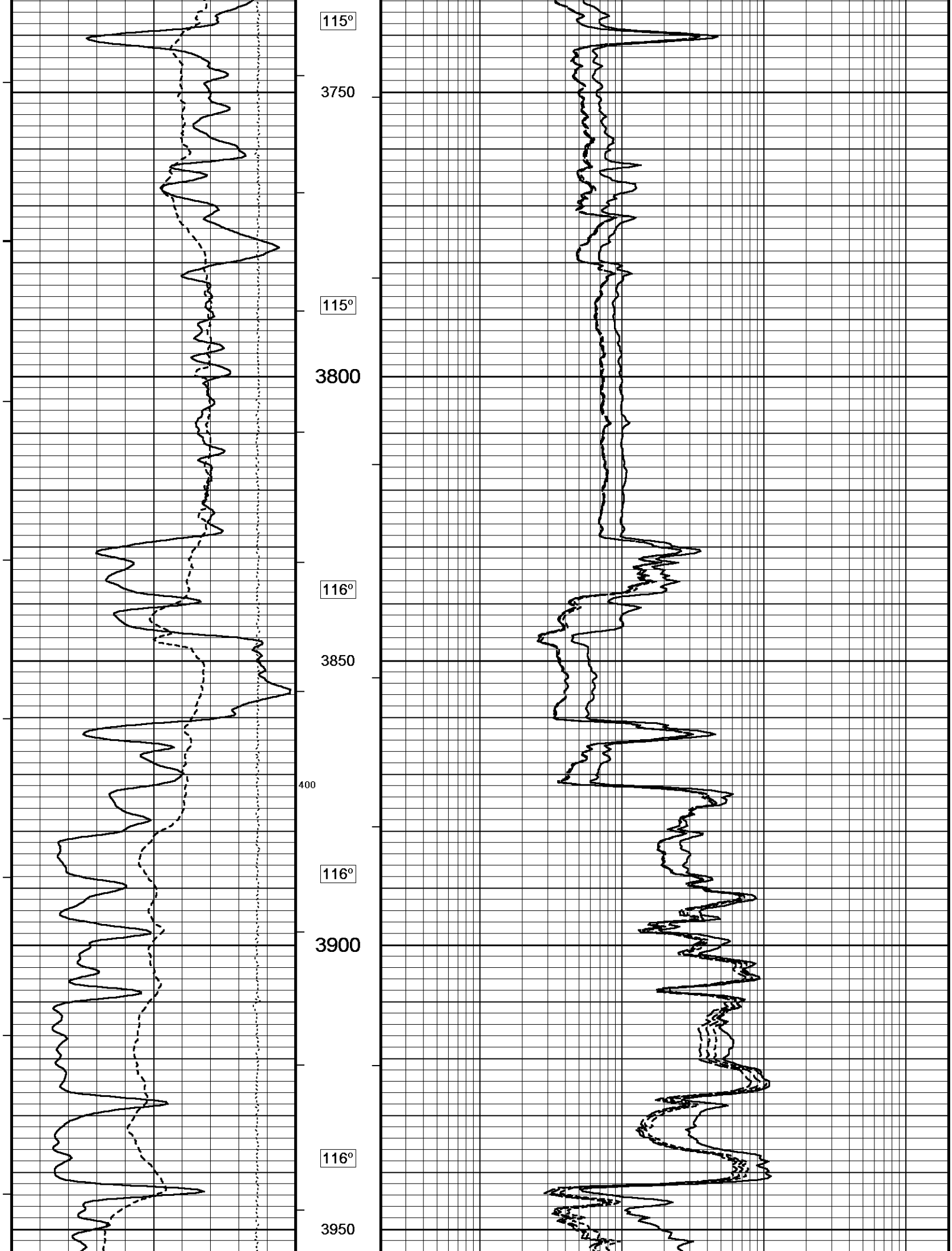

107°
2650
108°
2700
900
108°
2750
108°
2800
109°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Pc2850al
Gamma Ray


Gamma Ray
DST Uphole Tension
500
109°
2900
800
110°
2950
110°
3000
110°
3050


111°
3100
111°
700
3150
111°
400
3200
112°
3250
112°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension


3300
112°
3350
112°
3400
600
113°
3450
113°
3500


113°
3550
114°
3600
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
3650
300
500
115°
3700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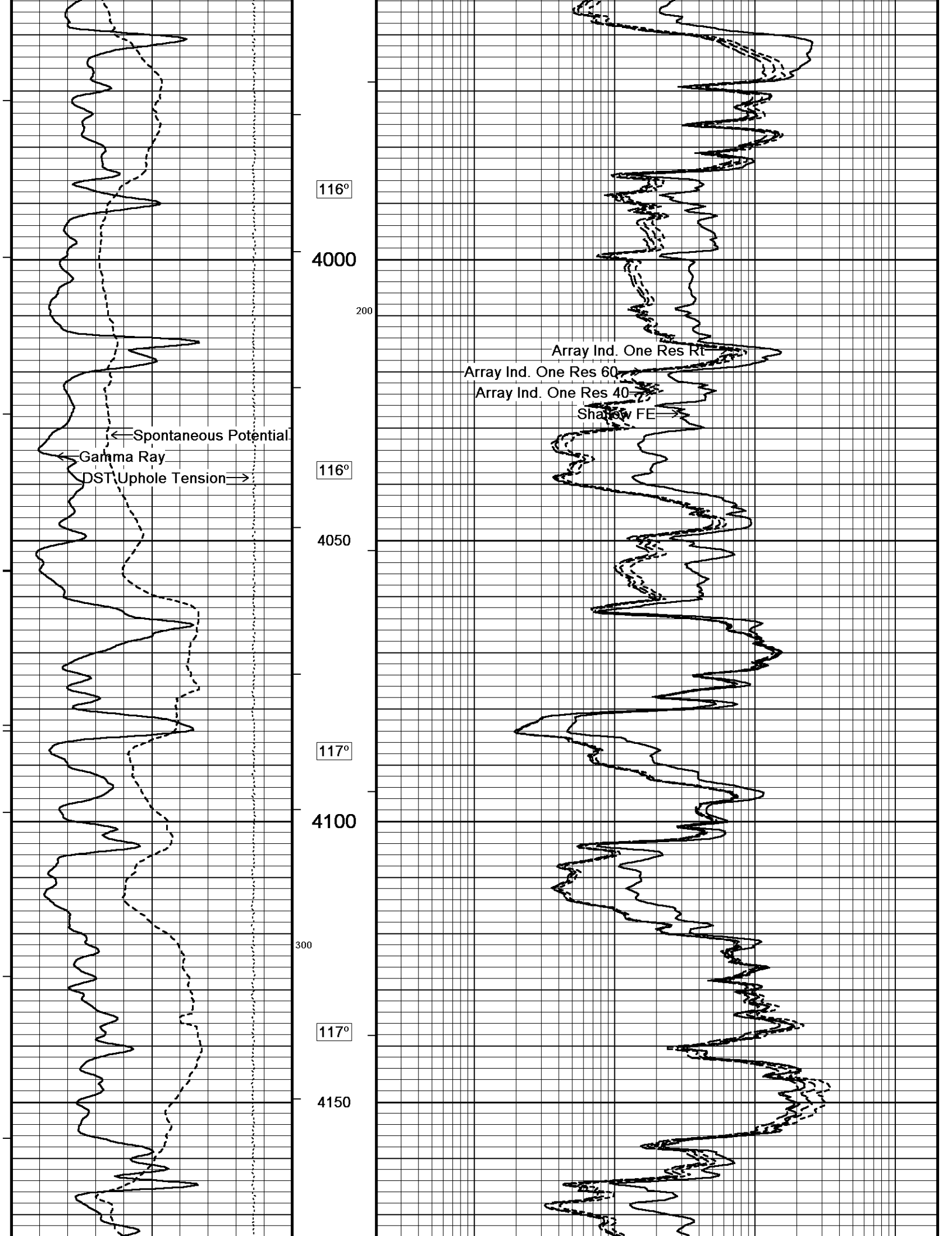
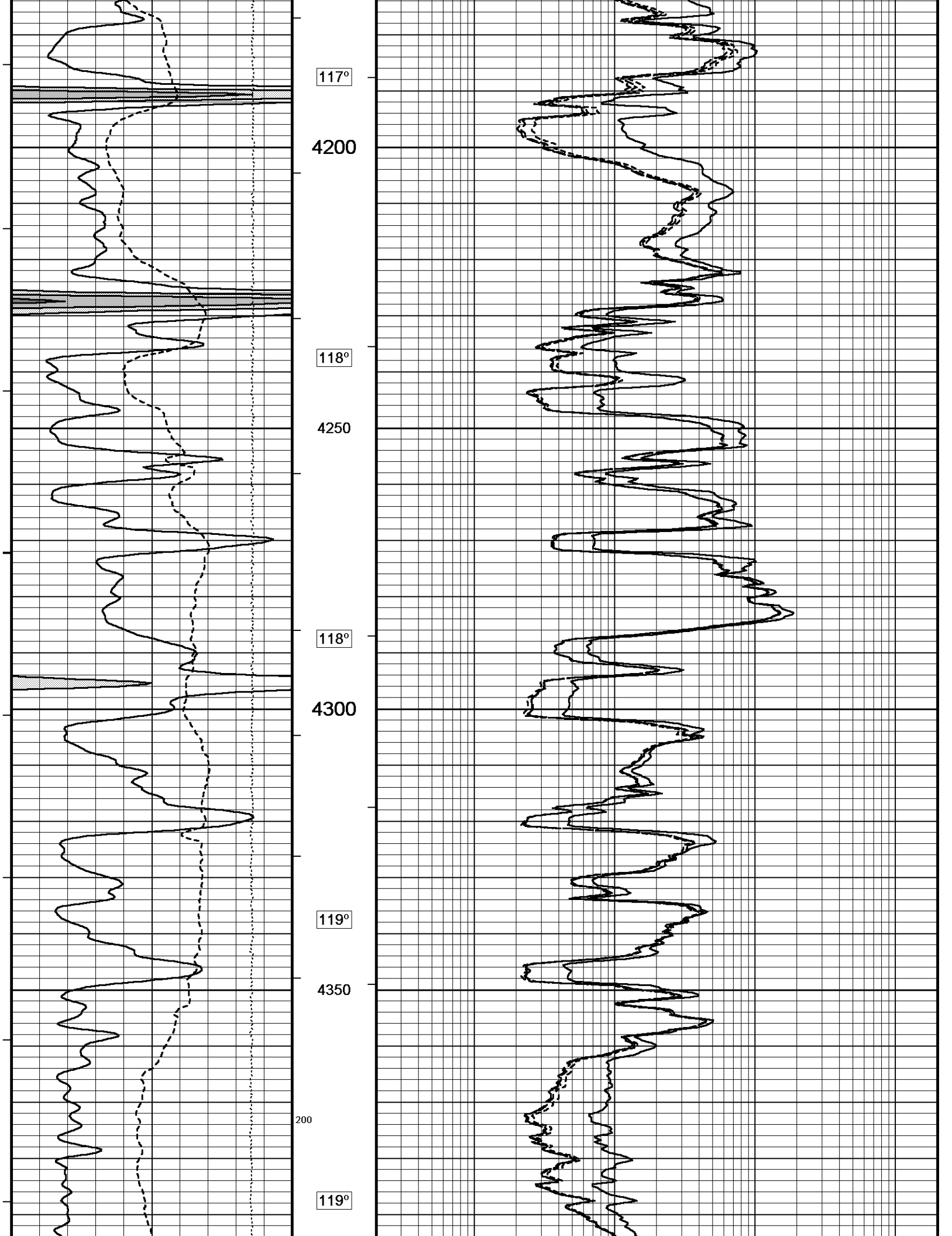
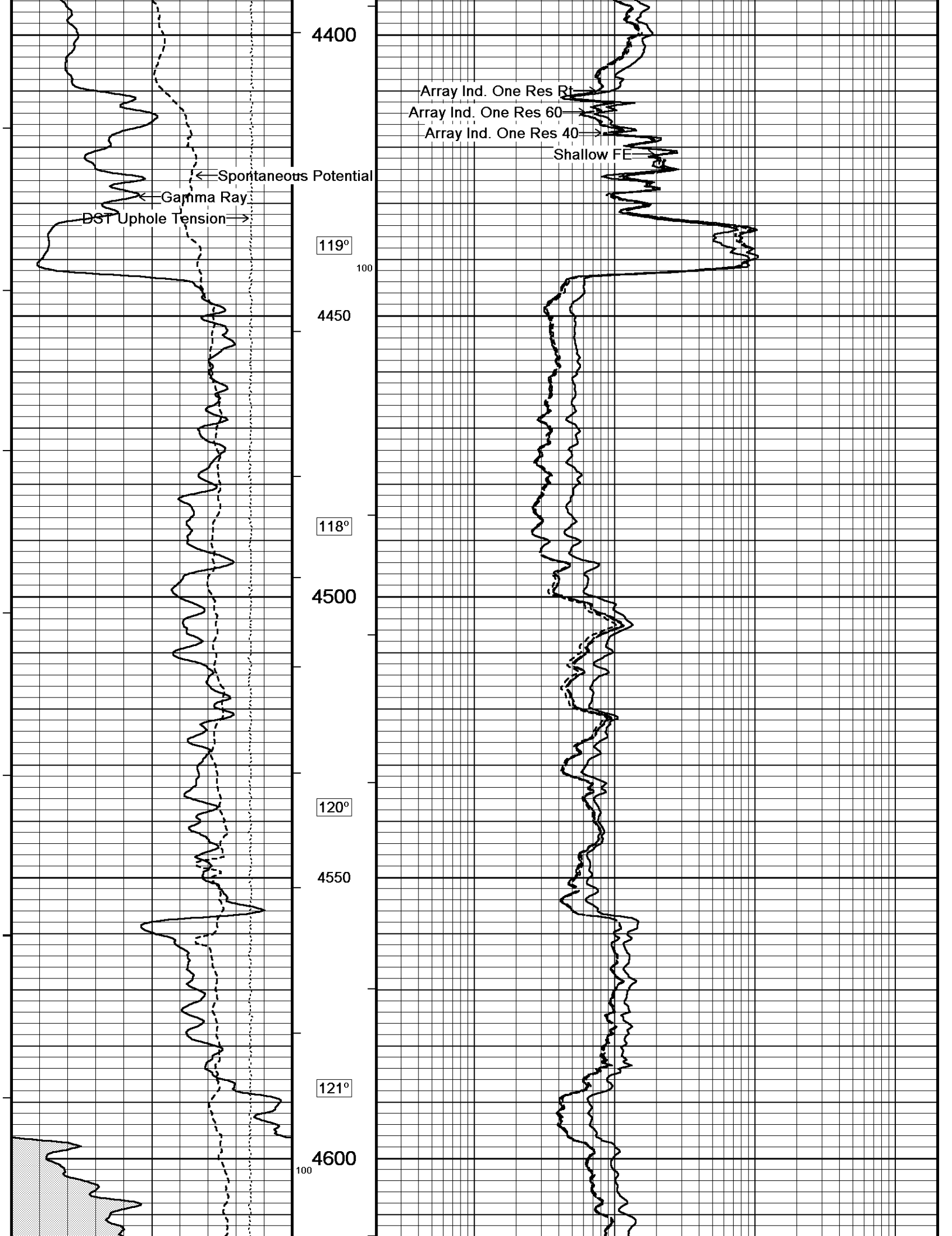
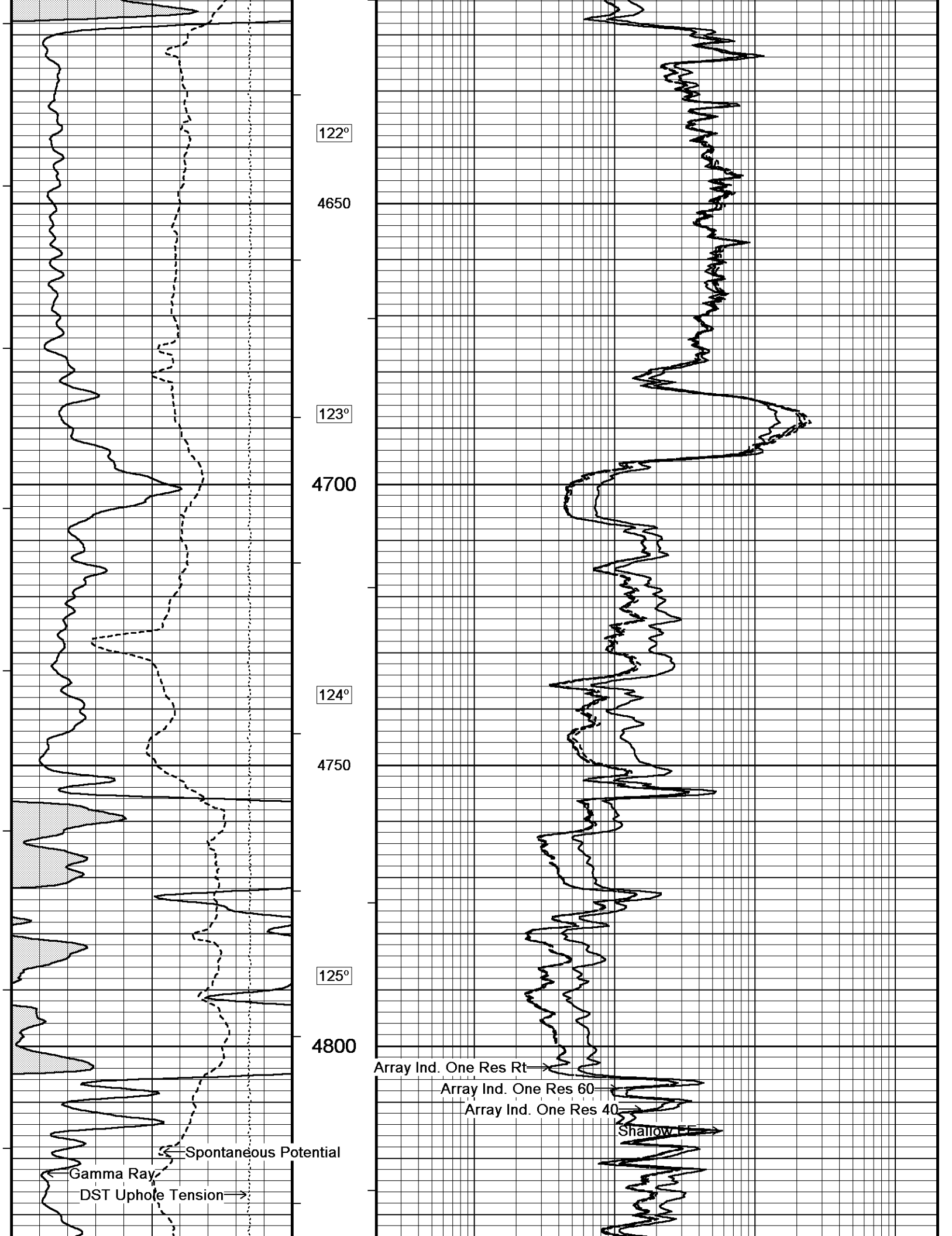
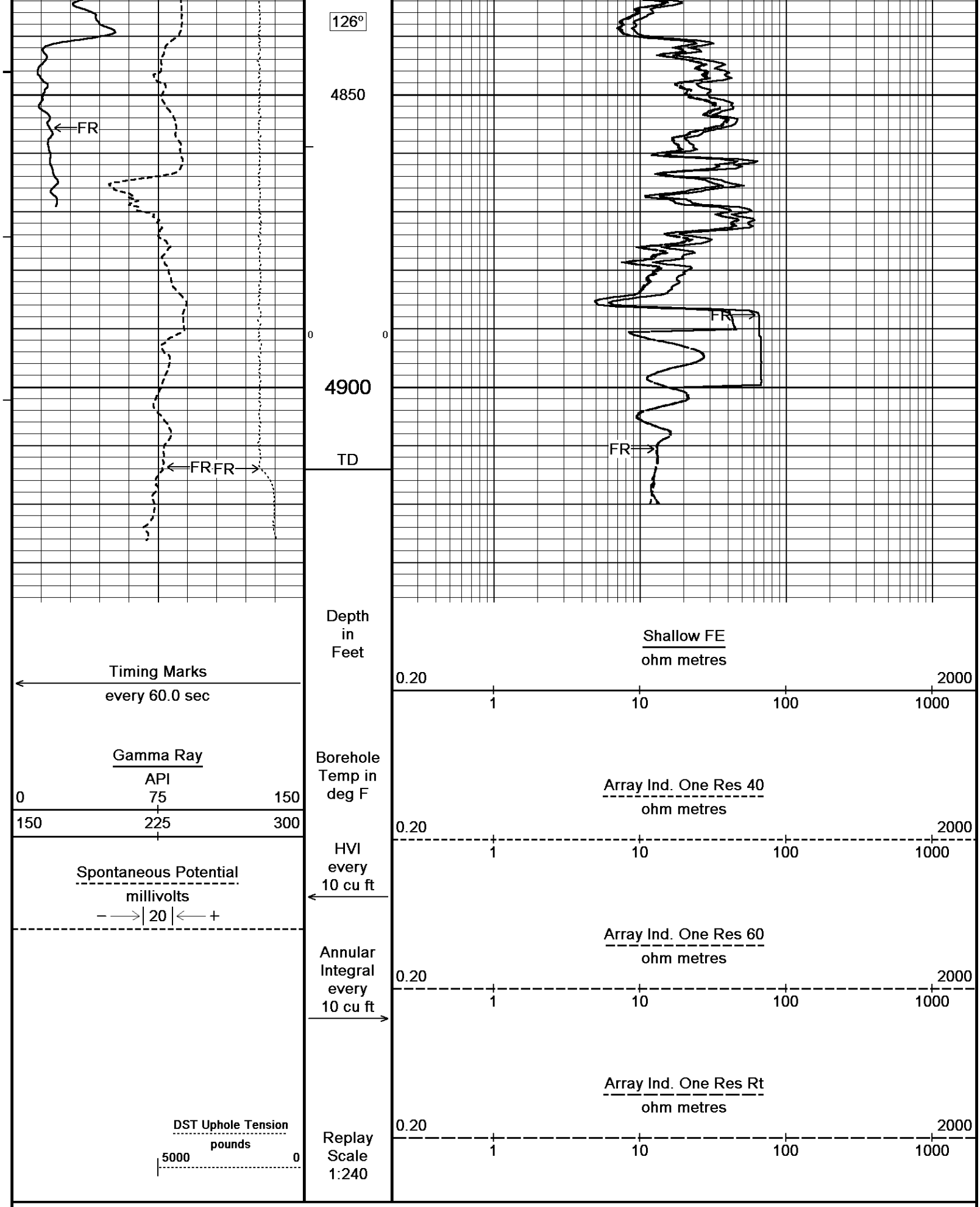
3750
115°
3800
116°
3850
400
116°
3900
116°
3950


116°
4000
200
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
116°
4050
117°
4100
300
117°
4150


117°
4200
118°
4250
118°
4300
119°
4350
200
119°


4400
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
119°
100
4450
118°
4500
120°
4550
121°
4600
100


122°
4650
123°
4700
124°
4750
125°
4800
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension



Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 24-JUN-2018 16:33
Filename: C:\Minimus 18.01.6830\Data\Grand Mesa Ringer #1-24\Grand Mesa Ringer #1-24_003.dta
Recorded on 24-JUN-2018 13:00
System Versions: Logged with 18.01.6830 Plotted with 18.01.6830

5 INCH MAIN

5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 24-JUN-2018 16:33
Filename: C:\Minimus 18.01.6830\Data\Grand Mesa Ringer #1-24\Grand Mesa Ringer #1-24_002.dta
Recorded on 24-JUN-2018 12:12
System Versions: Logged with 18.01.6830 Plotted with 18.01.6830

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
– → | 20 | ← +

DST Uphole Tension
pounds
5000 0

Depth
in
Feet

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft

Replay
Scale
1:240

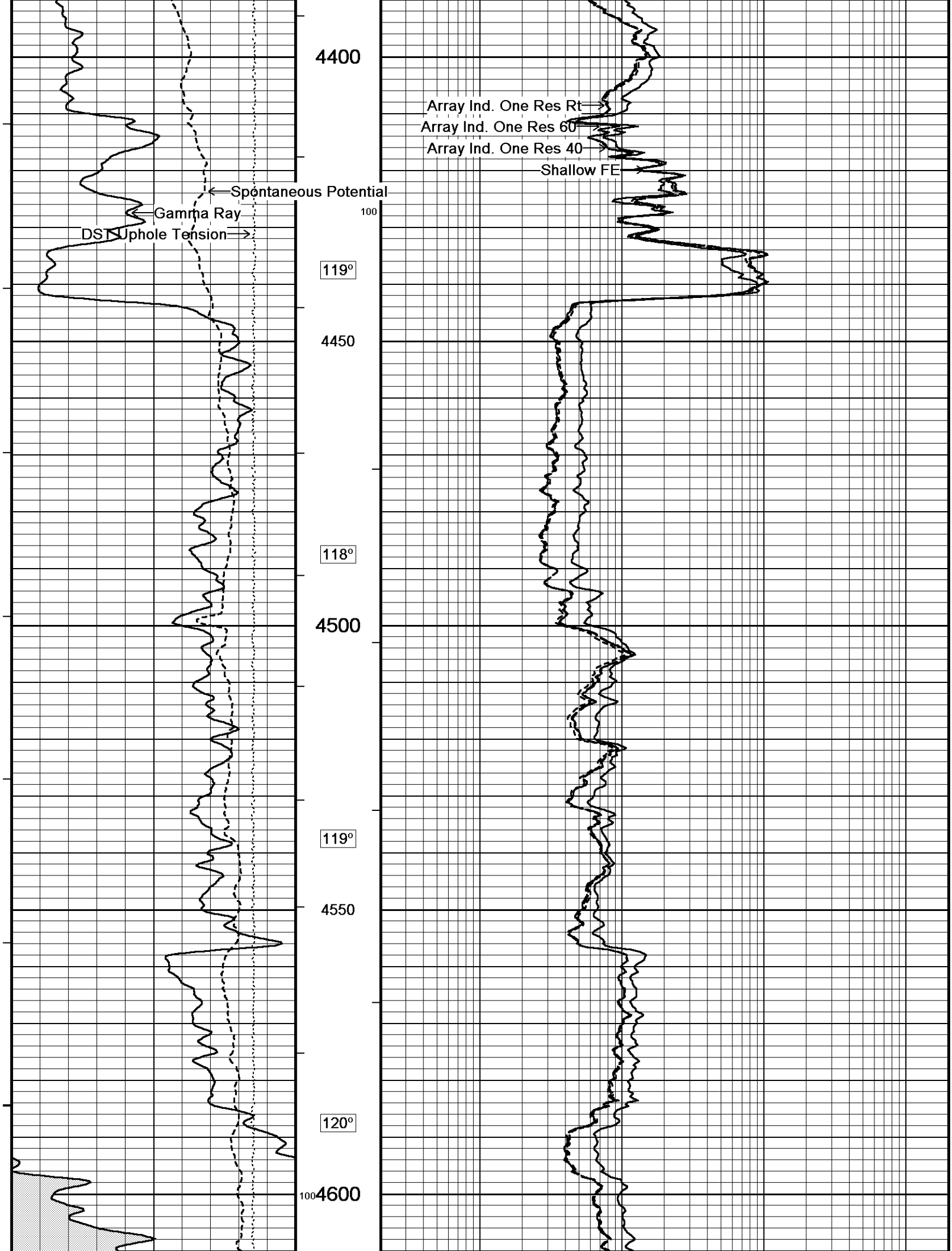
Shallow FE
ohm metres
0.20 1 10 100 1000 2000

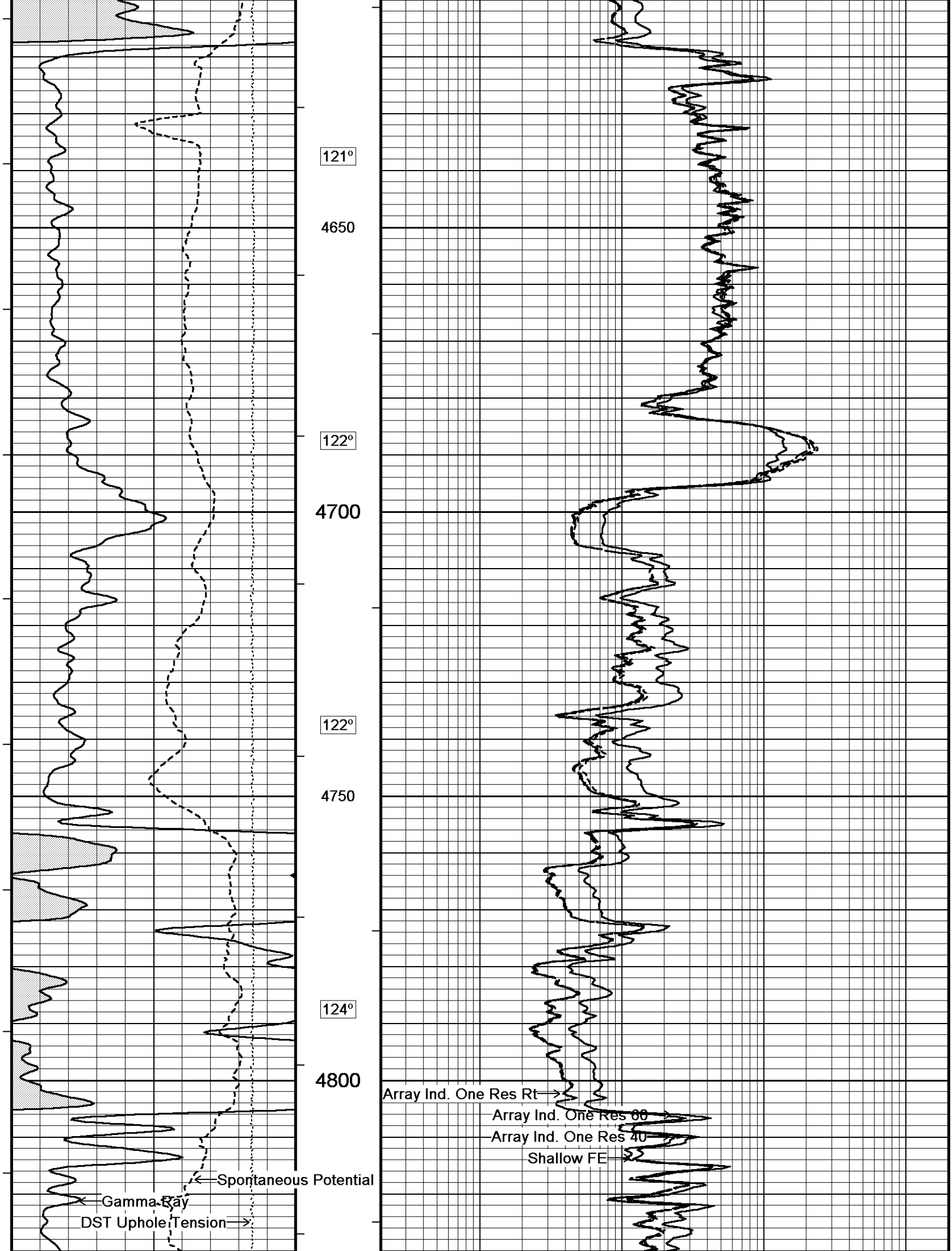
Array Ind. One Res 40
ohm metres
0.20 1 10 100 1000 2000

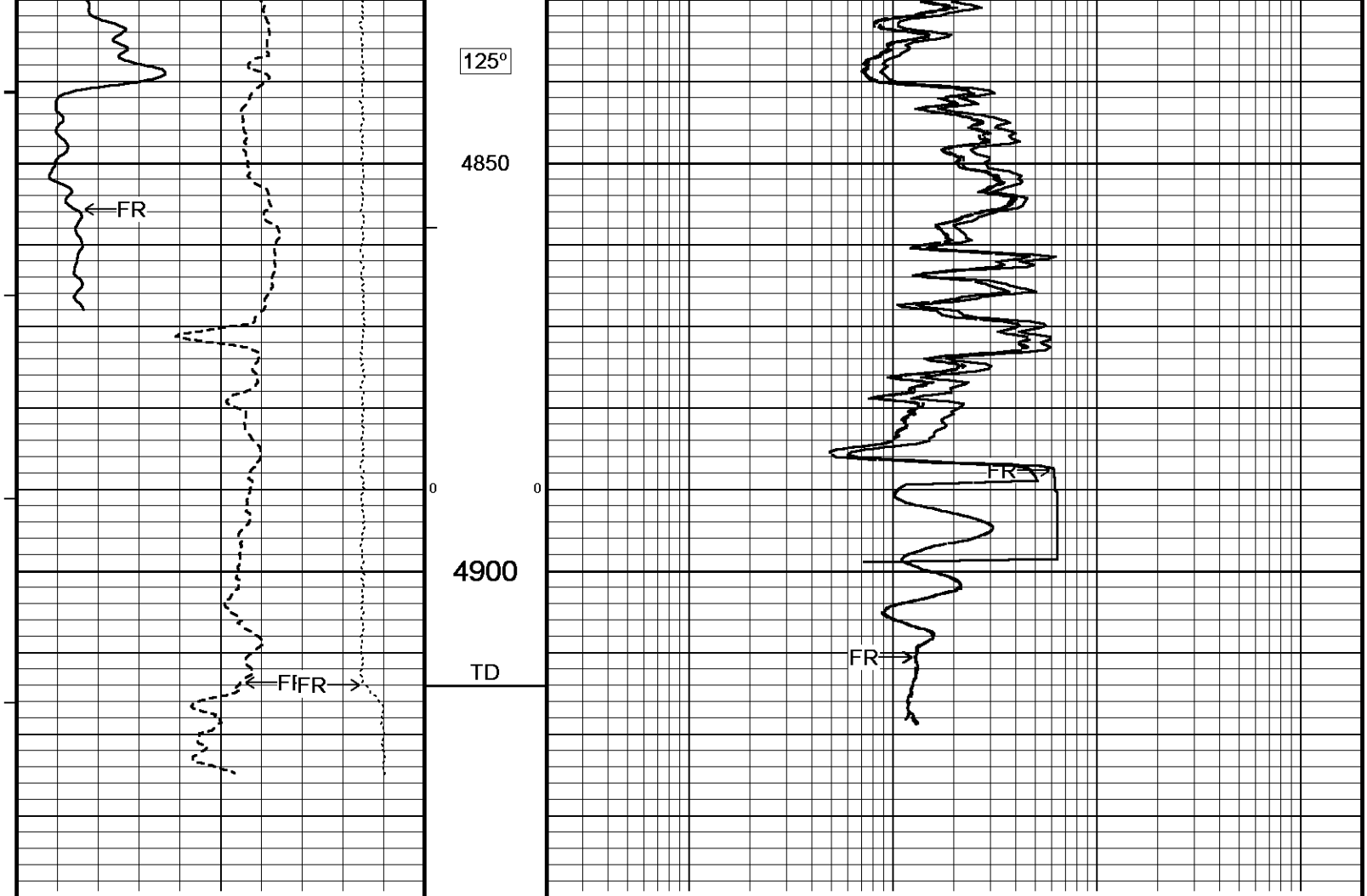
Array Ind. One Res 60
ohm metres
0.20 1 10 100 1000 2000

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

4300
119°
4350
200
119°


4400
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
100
119°
4450
118°
4500
119°
4550
120°
100
4600


121°
4650
122°
4700
122°
4750
124°
4800
Spontaneous Potential
Gamma Ray
DST Uphole Tension
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE



Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
− 20 +

DST Uphole Tension
pounds
5000 0

Depth
in
Feet

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft

Replay
Scale
1:240

Shallow FE
ohm metres
0.20 1 10 100 2000

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

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

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

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 24-JUN-2018 16:33
Filename: C:\Minimus 18.01.6830\Data\Grand Mesa Ringer #1-24\Grand Mesa Ringer #1-24_002.dta
Recorded on 24-JUN-2018 12:12

System Versions: Logged with 18.01.6830 Plotted with 18.01.6830

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 18.01.6830\Data\Grand Mesa Ringer #1-24\Grand Mesa Ringer #1-24_002.dta

General Constants All 000

Last Edited on 24-JUN-2018,11:52

General Parameters		
Mud Resistivity	0.420	ohm-metres
Mud Resistivity Temperature	75.000	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	Crossplot Porosity	
Resistivity used	Deep Induction	
RWA Constant A	0.620	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

Gamma Calibration MCG-D.A 246

Field Calibration on 24-JUN-2018,09:00

	Measured	Calibrated (API)
Background	57	39
Calibrator (Gross)	734	495
Calibrator (Net)	676	456

Gamma Calibration Tolerances MCG-D.A 246

Ratio	1.483	1.40	1.475	1.55	Counts/API

Gamma Constants MCG-D.A 246

Last Edited on 24-JUN-2018,09:01

Gamma Calibrator Number	MCGGRCC141	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.13	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

High Resolution Temperature Calibration MCG-D.A 246

Field Calibration on 22-JUN-2018,16:25

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	212.00	212.00

High Resolution Temperature Constants MCG-D.A 246

Last Edited on 07-JUN-2018,10:42

Pre-filter Length	11

FE Calibration MFE-A.A 135

Base Calibration on 07-JUN-2018 13:53
Field Check on 24-JUN-2018,08:58

	Resistor 1 (ohm)	Resistor 2 (ohm)
	0.0	1000.0
Base Calibration		
	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	962.0	126.8
Base Check		281.3

Field Check	281.3

FE Calibration Tolerances MFE-A.A 135

Reference 2	962.0	-3% 980.0 +3%	ohm
Base Check	281.3	-2% 277.0 +2%	ohm-m
Field Check	281.3	-2% 281.3 +2%	ohm-m

FE Constants MFE-A.A 135

Last Edited on 24-JUN-2018,08:58

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Borehole Correction Constants		
Sonde Position	0.5	inches
Hole Size Source	Density Caliper	
Hole Size Constant Value	N/A	inches
Rm Source	Global Value: Temperature Corrected	
Temp. for Rm Corr.	MCG External Temperature	

Induction Calibration MAI-A.A 111

Factory Loop Calibration 07-JUN-2018 14:52
Field Check on 24-JUN-2018,08:57

Factory Loop Calibration

High Conductivity Reference Resistor	3.3	ohm
Low Conductivity Reference Resistor	333.3	ohm

	Measured Signal (unitless)		Reference Conductivity (mmho/m)		Calibration	
Array	Low	High	Low	High	Gain	Offset
1 (near)	17.6	473.6	9.3	966.2	0.000	0.0
2	6.4	385.9	7.6	821.4	0.000	0.0
3	3.2	264.0	5.2	566.0	0.000	0.0
4 (far)	2.1	135.5	2.6	279.2	0.000	0.0
Array Temperature		23.0	Deg F			

Tool Checks

	Factory Reference (mmho/m)		Before Survey (mmho/m)		
Array	Low	High	Low	High	
1 (near)	11.4	3841.4	11.5	3842.1	
2	29.4	3499.6	29.4	3499.9	
3	28.8	2996.9	28.8	2997.1	
4 (far)	18.9	2041.5	18.9	2041.6	
Array Temperature		83.6	84.7		Deg F

Induction Check Tolerances MAI-A.A 111

Low Array 1	11.5	9.9 11.4 12.9	mmho/m	High Array 1	3842.1	-0.5% 3841.4 +0.5%	mmho/m
Low Array 2	29.4	27.9 29.4 30.9	mmho/m	High Array 2	3499.9	-0.5% 3499.6 +0.5%	mmho/m
Low Array 3	28.8	27.3 28.8 30.3	mmho/m	High Array 3	2997.1	-0.5% 2996.9 +0.5%	mmho/m
Low Array 4	18.9	17.4 18.9 20.4	mmho/m	High Array 4	2041.6	-0.5% 2041.5 +0.5%	mmho/m

Induction Constants MAI-A.A 111

Last Edited on 24-JUN-2018,08:57

Induction Model	RtAP-WBM	
Borehole Correction Constants		
Tool Centred	No	
Hole Size Source	Density Caliper	
Hole Size Constant Value	N/A	inches
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
Rm Source	Global Value: Temperature Corrected	
Temp. for Rm Corr.	MCG External Temperature	

Borehole Correction Method		Default	
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

Symmetrised Receiver Gains

Receiver 1	1.00
Receiver 2	1.00
Receiver 3	1.00
Receiver 4	1.00

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-C.A 216

Base Calibration on 07-JUN-2018 14:09
Field Calibration on 24-JUN-2018,08:58

Base Calibration

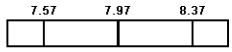
Reading No	Measured	Calibrator Size (in)
1	14245	3.99
2	22960	5.98
3	31650	7.97
4	39952	9.86
5	49231	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.98	7.97

Caliper Calibration Tolerances MPD-C.A 216

Long Arm Field Cal. 7.98 in



DOWNHOLE EQUIPMENT

C:\Minimus 18.01.6830\Data\Grand Mesa Ringer #1-24\Grand Mesa Ringer #1-24_002.dta

Cablehead, 11 pin
CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Swivel Head Adaptor
SHA-J.B 724 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

Compact Comms Gamma
MCG-D.A 246 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity

58.18 ft GRGC - MCG Gamma Ray

55.28 ft CGXT - MCG External Temperature

MMR-B.A 91 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron
MDN-B.A 292 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-C.A 216 LG: 9.59 ft WT: 90.4 lb OD: 2.913 in

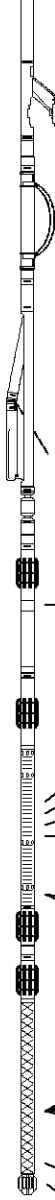
Compact Knuckle Joint
SKJ-D.A 167 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

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

Compact Sonic
MSS-C.K 319 LG: 12.52 ft WT: 72.8 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: 68.16 ft Weight: 526.9 lb



48.92 ft	MBTC - MMR Caliper
47.93 ft	MINV - Micro-inverse
47.93 ft	MNRL - Micro-normal
43.13 ft	NPRL - Limestone Neutron Por.
35.89 ft	AVOL - Annular Volume
35.89 ft	HVOL - Hole Volume
35.89 ft	CLDC - Density Caliper
33.96 ft	DPRL - Limestone Density Por.
33.96 ft	DEN - Compensated Density
33.96 ft	DCOR - Density Correction
33.90 ft	PDPE - PE
26.24 ft	FEFE - Shallow FE
16.96 ft	TR11 - 4' Transit Time
16.46 ft	TR21 - 3' Transit Time
15.95 ft	TR12 - 6' Transit Time
15.46 ft	TR22 - 5' Transit Time
12.96 ft	SPRL - Wyllie Lime. Sonic Por.
12.96 ft	DT35 - 3-5' Compensated Sonic
3.34 ft	R40O - Array Ind. One Res 40
3.34 ft	R60O - Array Ind. One Res 60
3.34 ft	CTAO - Array Ind. One Cond Ct
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	GRAND MESA OPERATING COMPANY
WELL	RINGER #1-24
FIELD	WILDCAT
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1796	feet	First Reading	4911.00	feet
Elevation Drill Floor	1794	feet	Depth Driller	4920.00	feet
Elevation Ground Level	1791	feet	Depth Logger	4914.00	feet

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ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

Weatherford

ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

COMPANY	GRAND MESA OPERATING COMPANY
WELL	RINGER #1-24
FIELD	WILDCAT
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	1792' FNL & 1266' FEL

SEC 24 | TWP 30S | RGE 12W

Other Services: MPD/MDN, MSS, MML

Latitude
Longitude
API Number 15-007-24329

Permanent Datum GL, Elevation 1791 feet
Log Measured From KB, 5.00 feet above Permanent Datum
Drilling Measured From KB

Elevations:	feet
KB	1796.00
DF	1794.00
GL	1791.00

Date	24-JUN-2018		
Run Number	ONE		
Service Order	4558-217017166		
Depth Driller	4920.00 feet		
Depth Logger	4914.00 feet		
First Reading	4911.00 feet		
Last Reading	218.00 feet		
Casing Driller	217.00 feet		
Casing Logger	218.00 feet		
Bit Size	7.875 inches		
Hole Fluid Type	CHEMICAL		
Density / Viscosity	9.40 lb/USg	45.00 CP	
PH / Fluid Loss	9.00	11.00 ml/30Min	
Sample Source	FLOWLINE		
Rm @ Measured Temp	0.42 @ 75.0 ohm-m		
Rmf @ Measured Temp	0.34 @ 75.0 ohm-m		
Rmc @ Measured Temp	0.50 @ 75.0 ohm-m		
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.25 @126.0 ohm-m		
Time Since Circulation	5 HOURS		
Max Recorded Temp	126.00 deg F		
Equipment / Base	13096	LIB	
Recorded By	ADAM SILL		
Witnessed By	DAVE BARKER		

1 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
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Plotted on 24-JUN-2018 16:33
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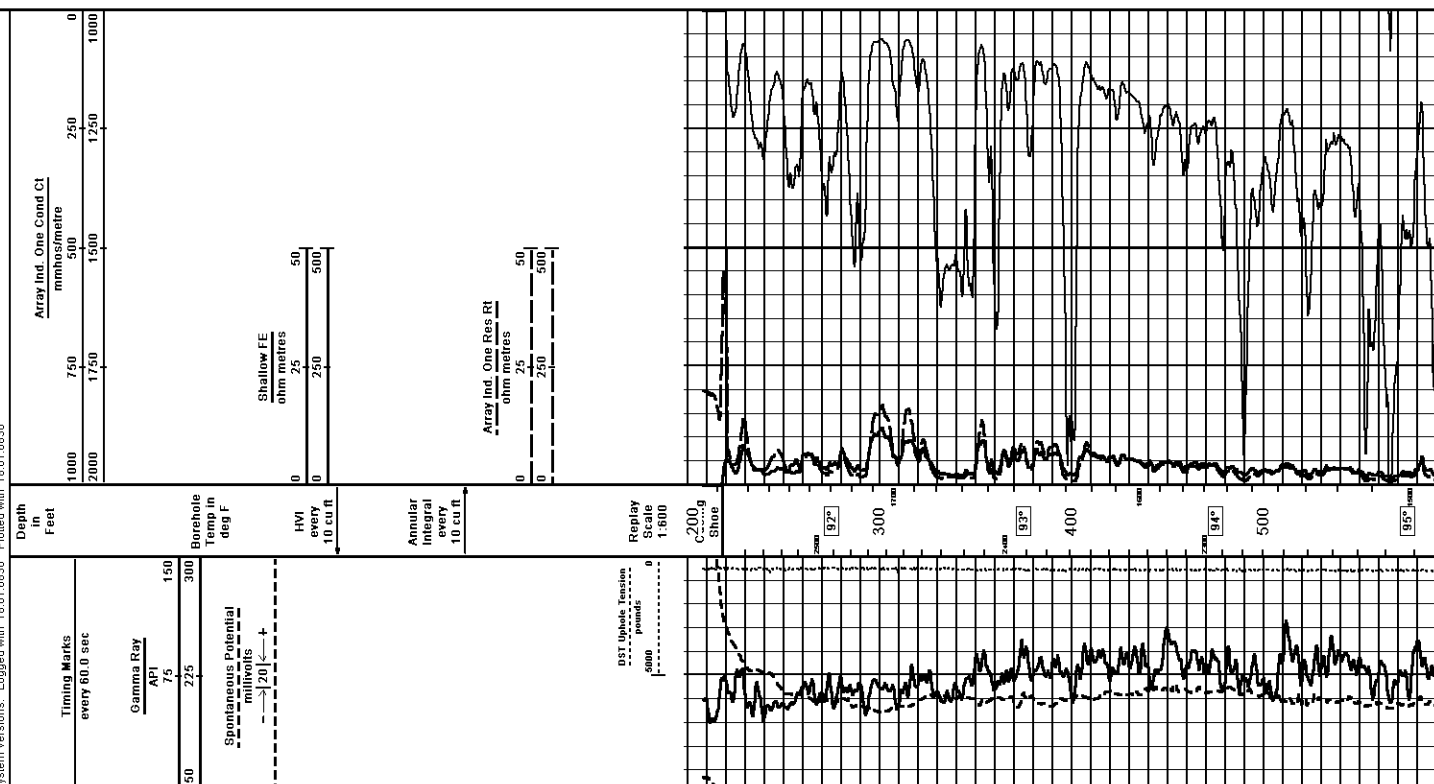
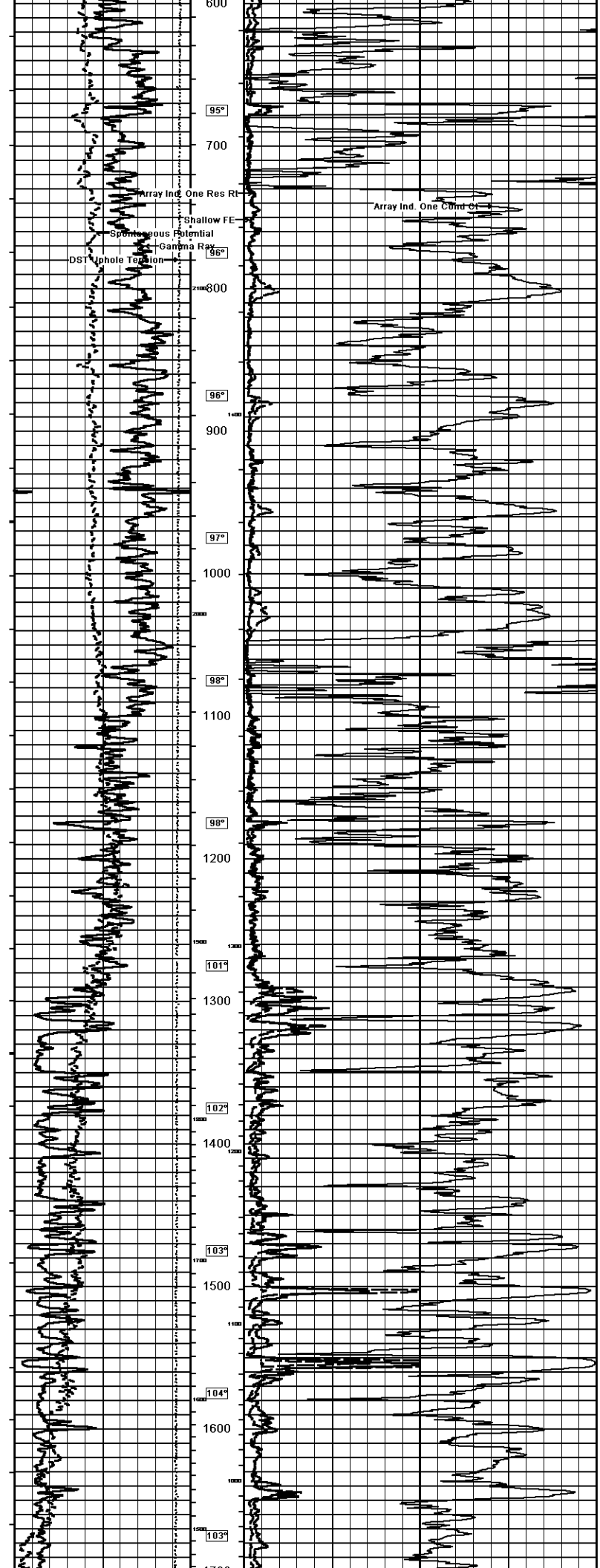
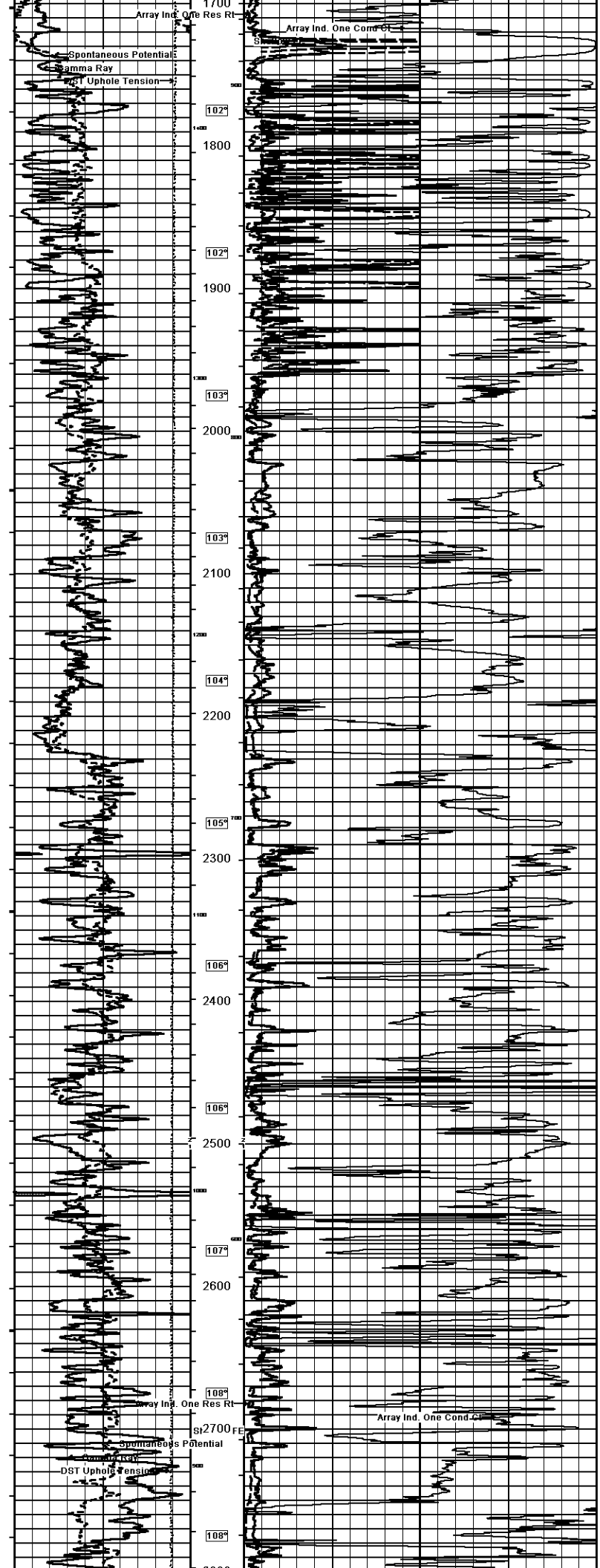
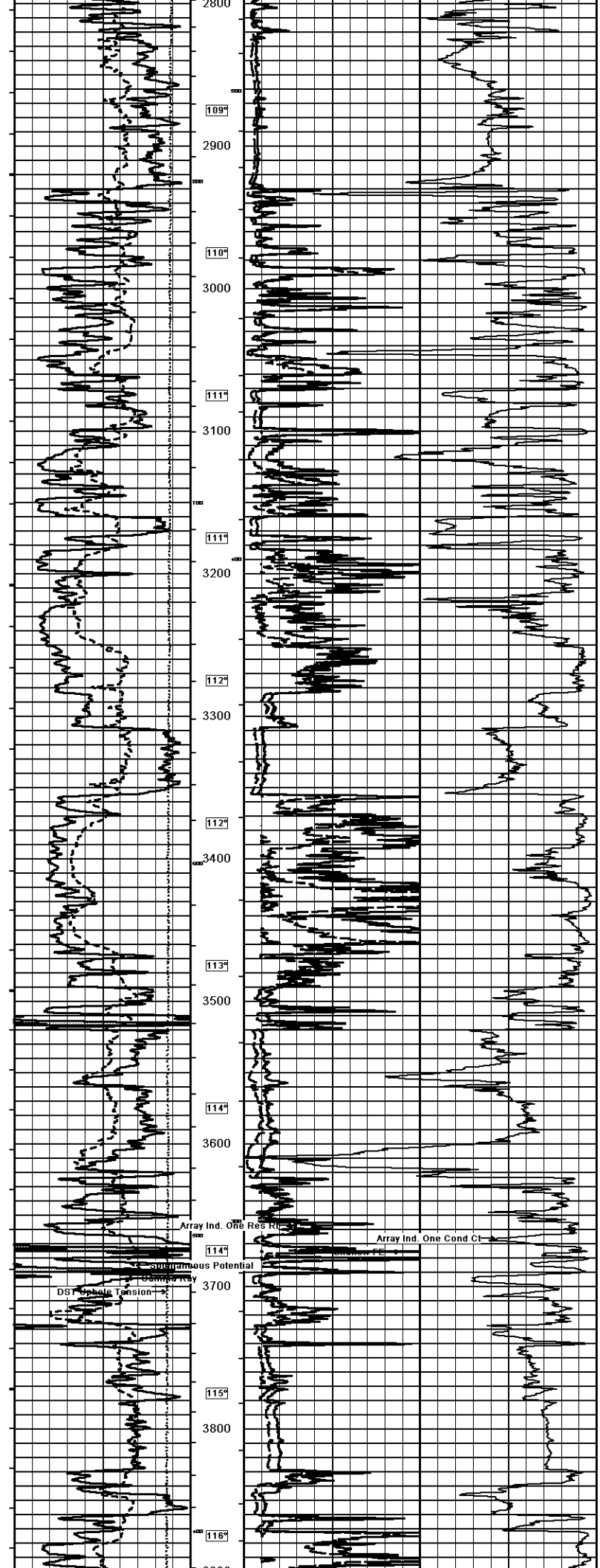
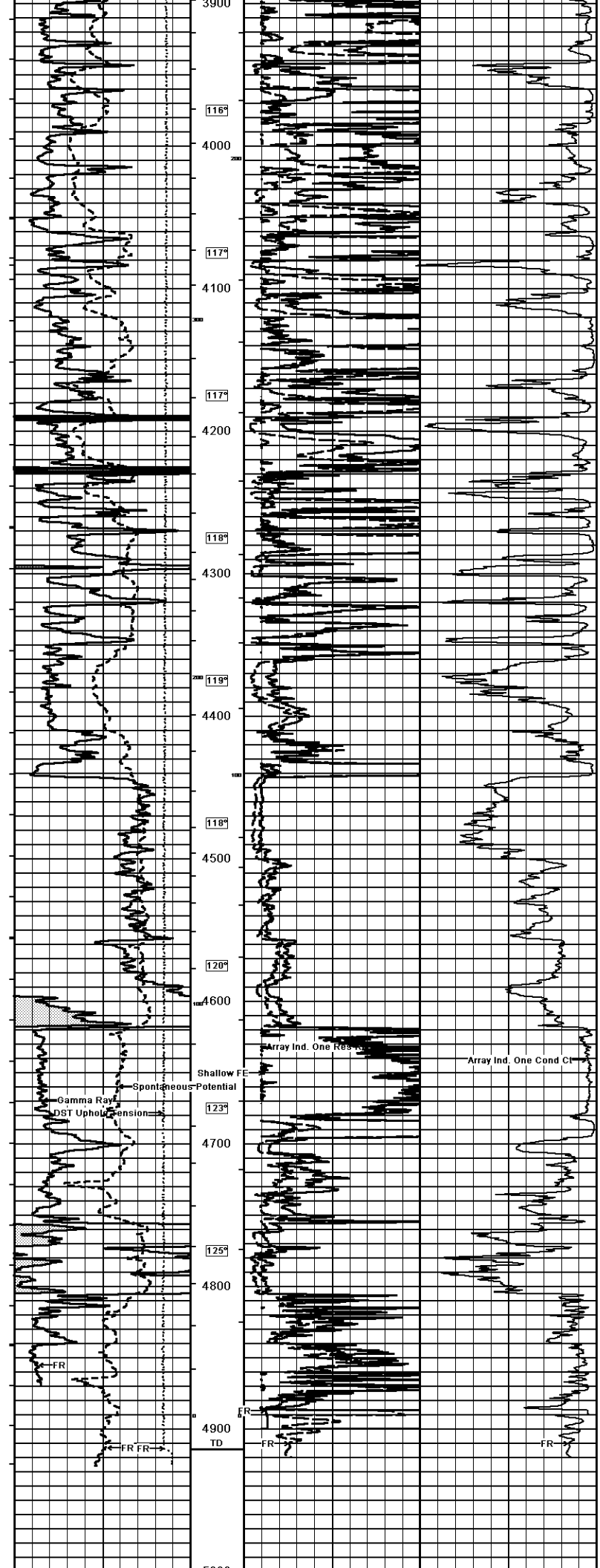
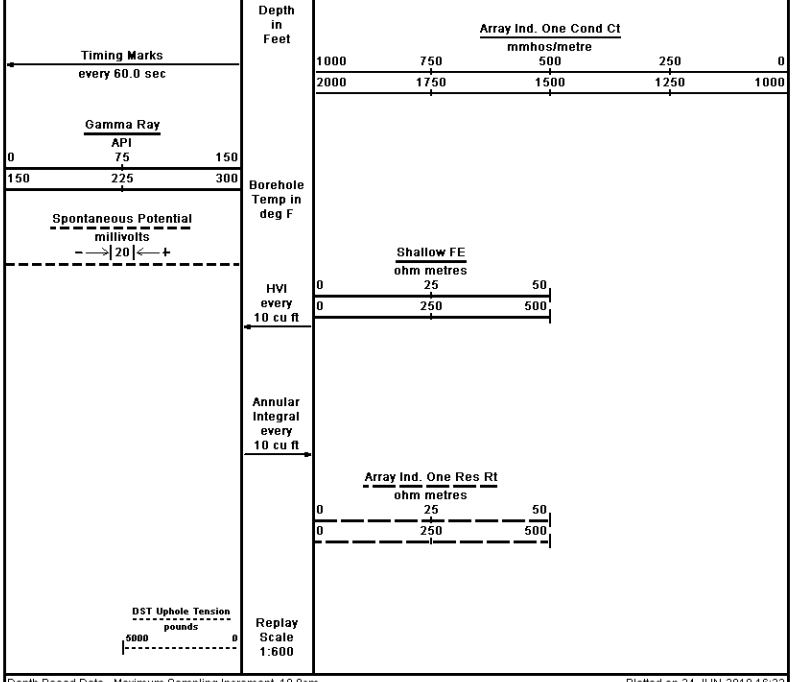



Array Ind. One Res Rt
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
Array Ind. One Cond Ct
600
95°
700
96°
800
96°
900
97°
1000
98°
1100
98°
1200
101°
1300
102°
1400
103°
1500
104°
1600
103°


Array Ind. One Res Rt
Array Ind. One Cond Ct
Spontaneous Potential
Gamma Ray
DST Uphole Tension
1700
102°
1800
102°
1900
103°
2000
103°
2100
104°
2200
105°
2300
106°
2400
106°
2500
107°
2600
108°
Array Ind. One Res Rt
Array Ind. One Cond Ct
SI 2700 FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
108°


2800
109°
2900
110°
3000
111°
3100
111°
3200
112°
3300
112°
3400
113°
3500
114°
3600
114°
3700
115°
3800
116°
Array Ind. One Res R
Array Ind. One Cond Ci
Simultaneous Potential
Gamma Ray
DST Cable Tension


3900
116°
4000
117°
4100
117°
4200
118°
4300
119°
4400
118°
4500
120°
4600
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
123°
4700
125°
4800
FR
4900
TD
FR FR
Array Ind. One Res
Array Ind. One Cond Ct
FR
FR
FR



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1 INCH MAIN

COMPANY	GRAND MESA OPERATING COMPANY
WELL	RINGER #1-24
FIELD	WILDCAT
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1796	feet	First Reading	4911.00	feet
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