Weatherford

SHALLOW FOCUSED ARRAY INDUCTION ELECTRIC LOG

COMPANY	CMX, INC.
WELL	BARTENDER #3
FIELD	STRANATHAN
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	660' FNL & 2310' FEL

SEC 18	TWP 35S	RGE 11W
Latitude		
Longitude		
API Number	15-007-24211	

Other Services
MPD/MDN MML
MSS

Permanent Datum GL, Elevation 1374 feet
Log Measured From KB
Drilling Measured From KB @ 13 FEET

Elevations:	feet
KB	1387.00
DF	1385.00
GL	1374.00

Date	12-SEP-2014		
Run Number	ONE		
Service Order	7606-97671138		
Depth Driller	5275.00 feet		
Depth Logger	5272.00 feet		
First Reading	5268.66 feet		
Last Reading	1028.00 feet		
Casing Driller	1028.00 feet		
Casing Logger	1028.00 feet		
Bit Size	7.875 inches		
Hole Fluid Type	CHEMICAL		
Density / Viscosity	9.20 lb/USg	61.00 CP	
PH / Fluid Loss	10.80	7.20 ml/30Min	
Sample Source	MUD PIT		
Rm @ Measured Temp	0.84 @ 75.0 ohm-m		
Rmf @ Measured Temp	0.67 @ 75.0 ohm-m		
Rmc @ Measured Temp	1.0 @ 75.0 ohm-m		
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.53 @121.0 ohm-m		
Time Since Circulation	3 HOURS		
Max Recorded Temp	121.00 deg F		
Equipment / Base	13057	LIB	
Recorded By	BEN WELDIN		
Witnessed By	LEAH KASTEN		
JOB #	LB14-272		

BOREHOLE RECORD

Last Edited: 12-SEP-2014 00:02

Bit Size inches	Depth From feet	Depth To feet
12.250	0.00	1028.00
7.875	1028.00	5275.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	1028.00	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.
  TWO 0.5 INCH STANDOFF 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: 1860 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING: 1160 CU.FT.

- ANNULAR HOLE VOLUME WITH 9.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING: 1100 CU.FT.

- RIG: DUKE DRILLING RIG #7

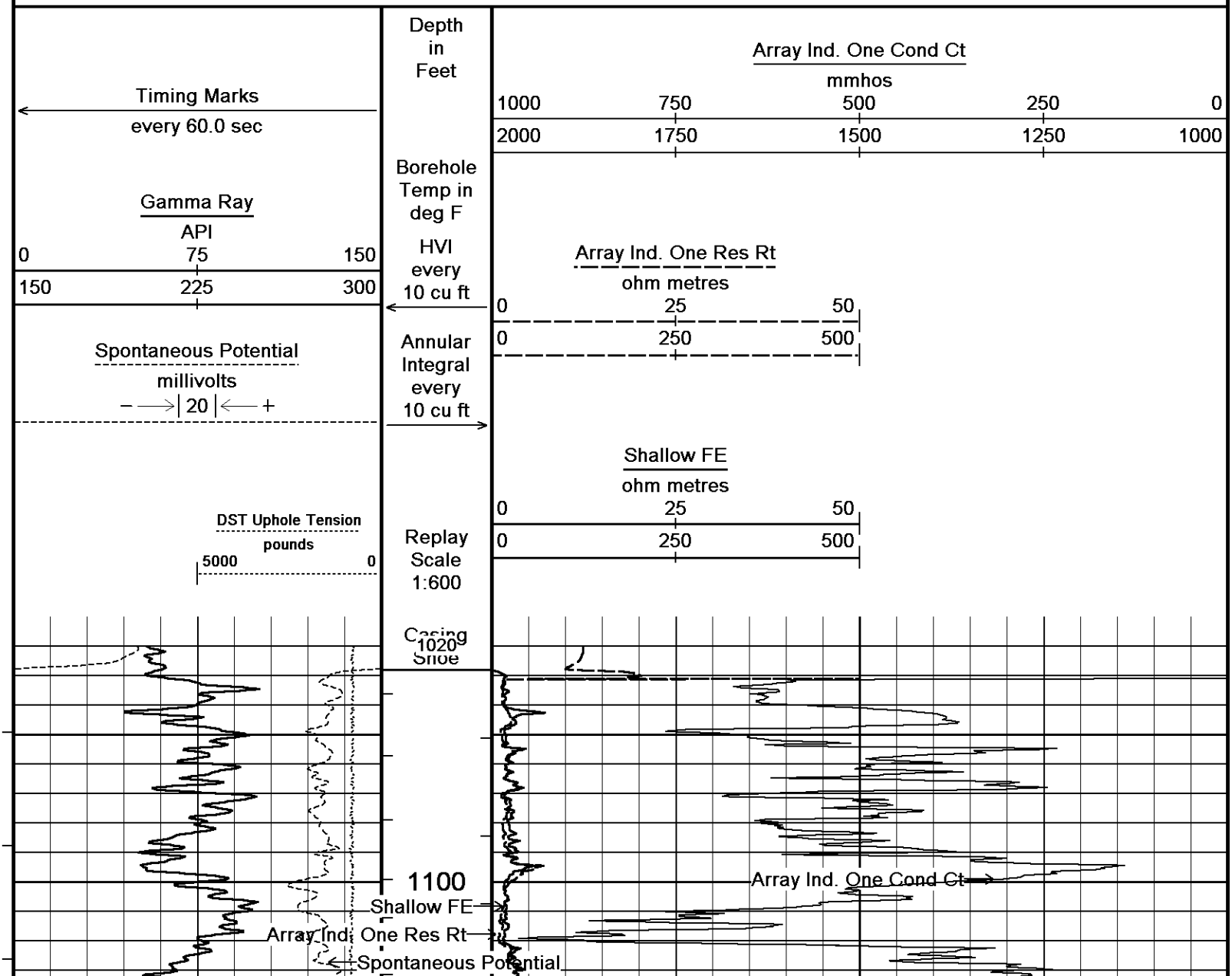
- ENGINEER: BEN WELDIN

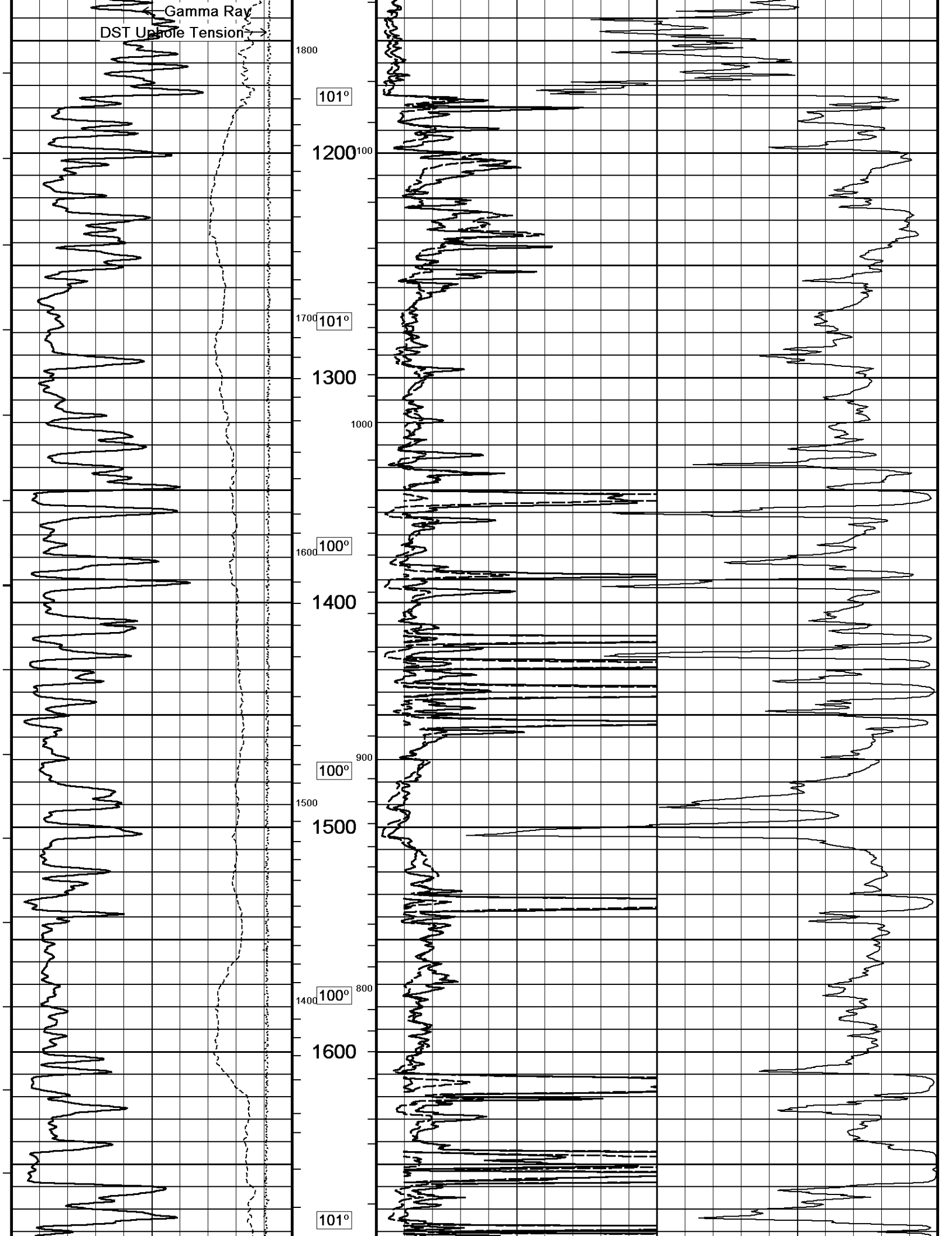
- OPERATOR: KEN RINEHART

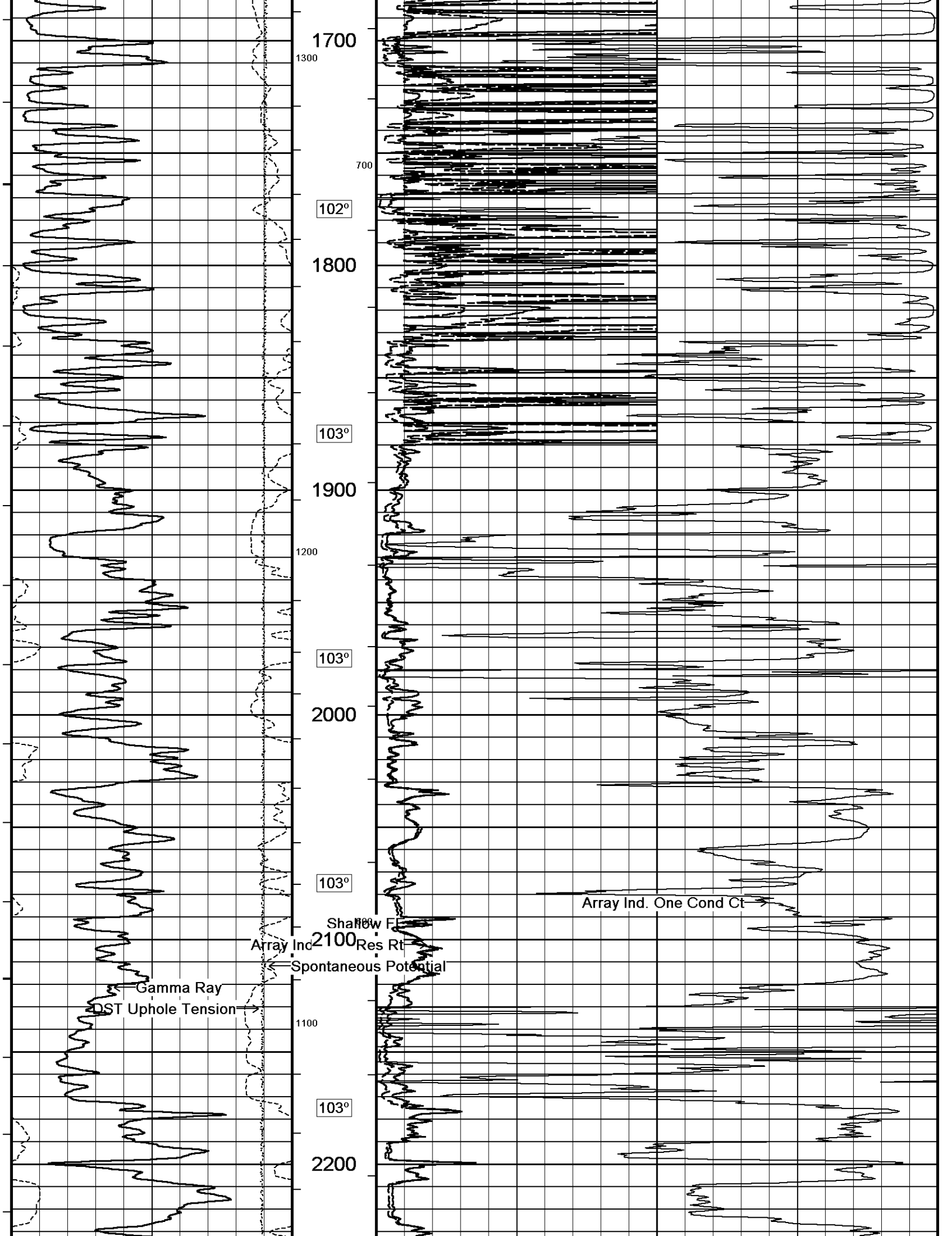
2 INCH MAIN

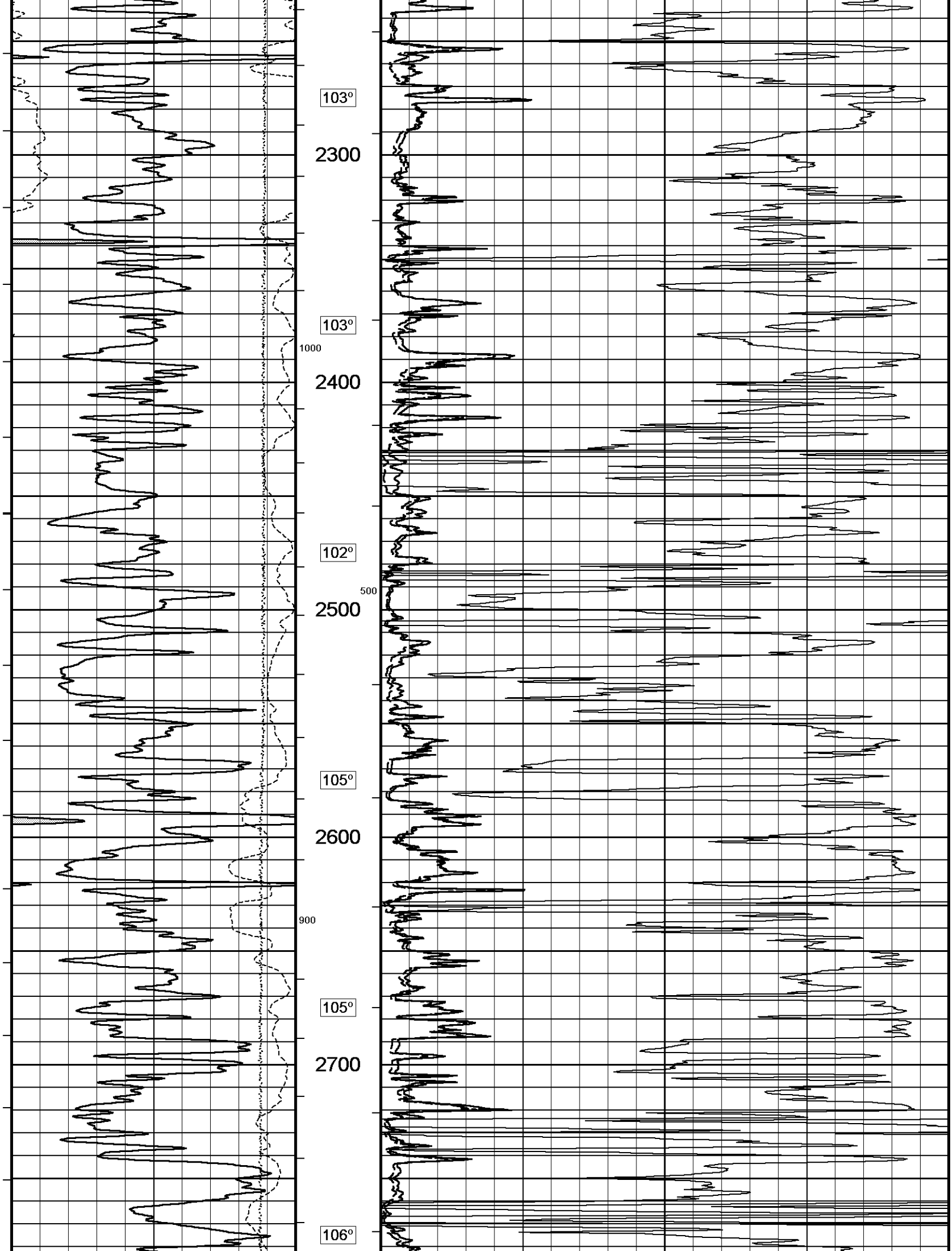
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.08\Data\CMX Bartender #3\CMX Bartender #3 Main.dta
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

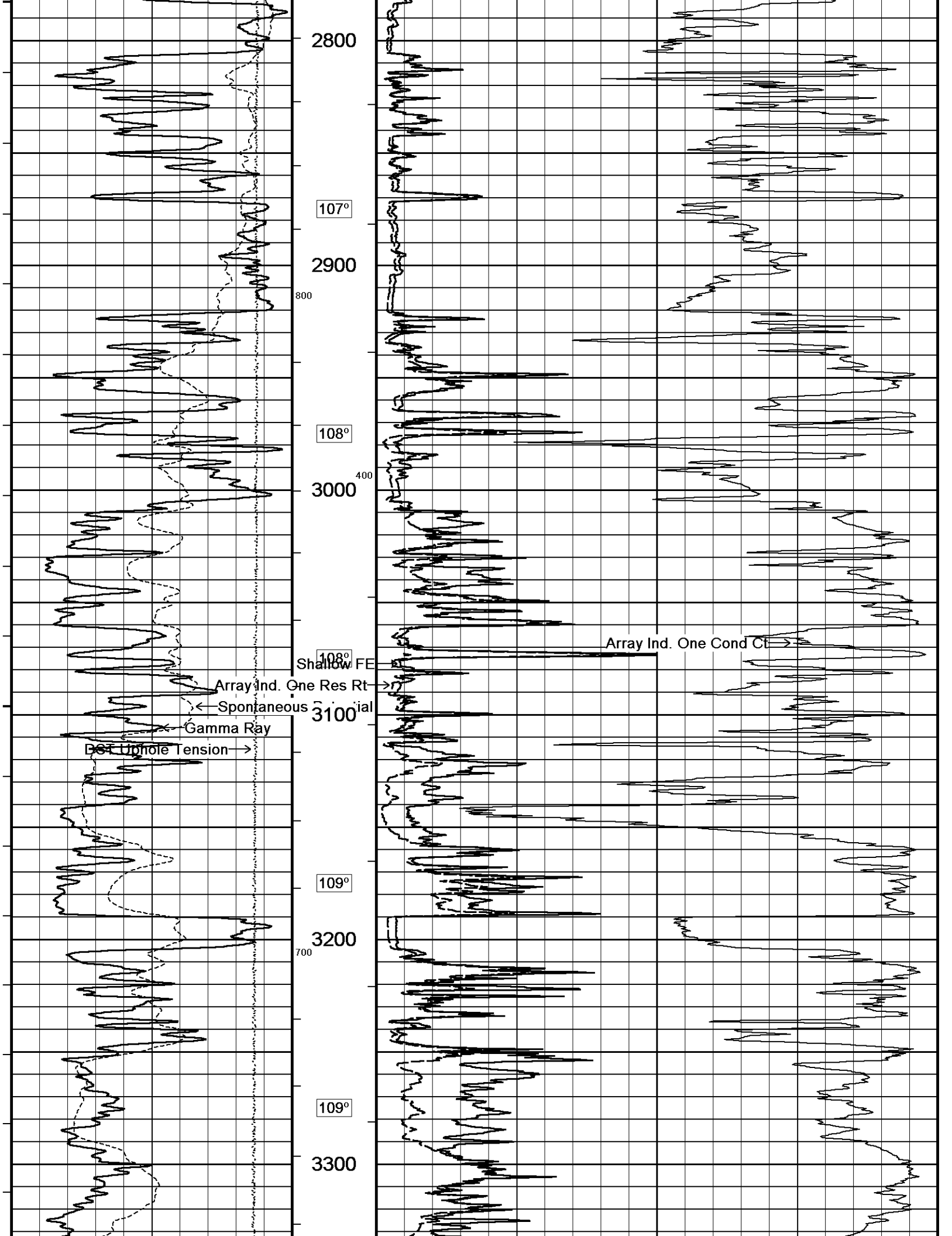
Plotted on 12-SEP-2014 05:14
Recorded on 12-SEP-2014 02:41

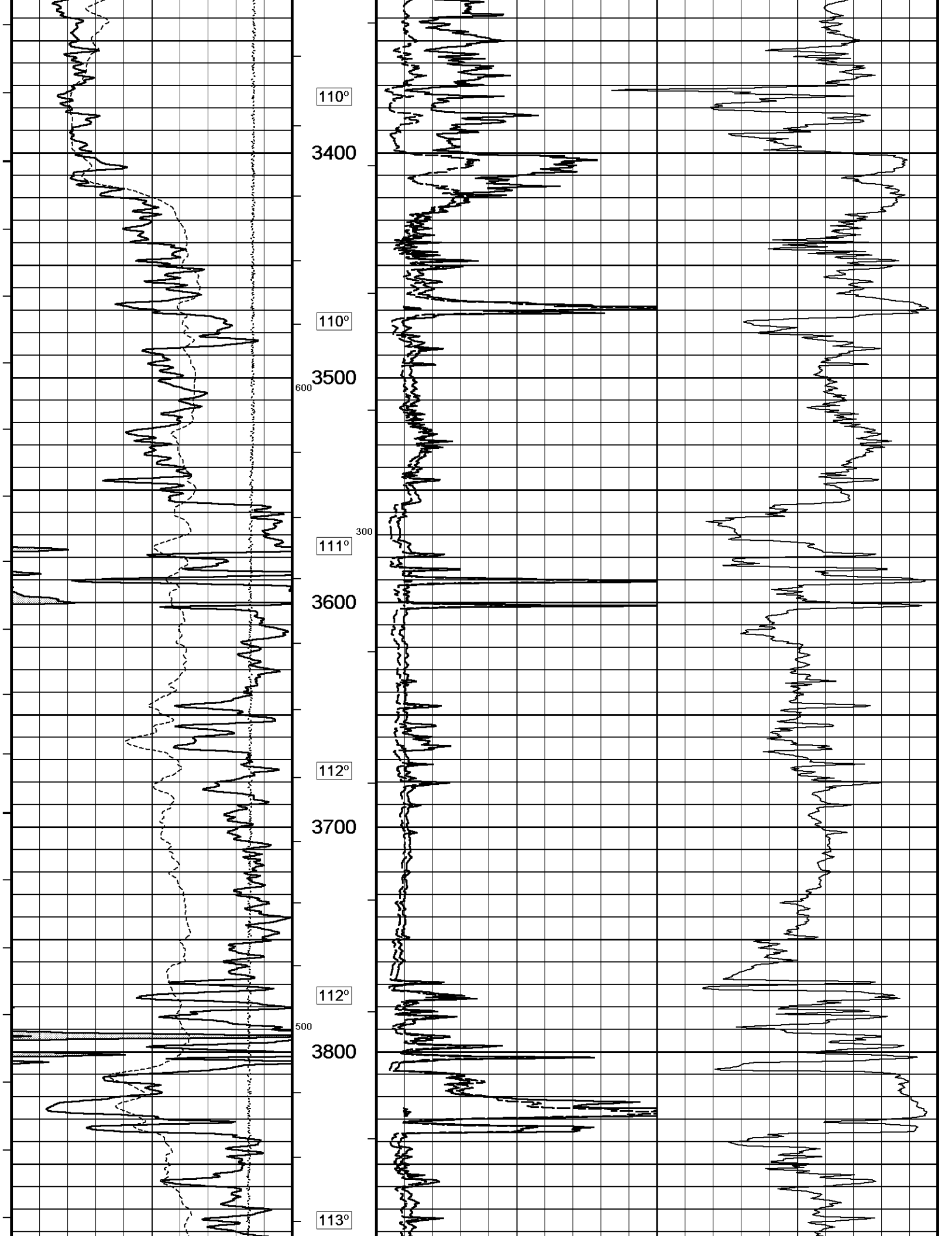


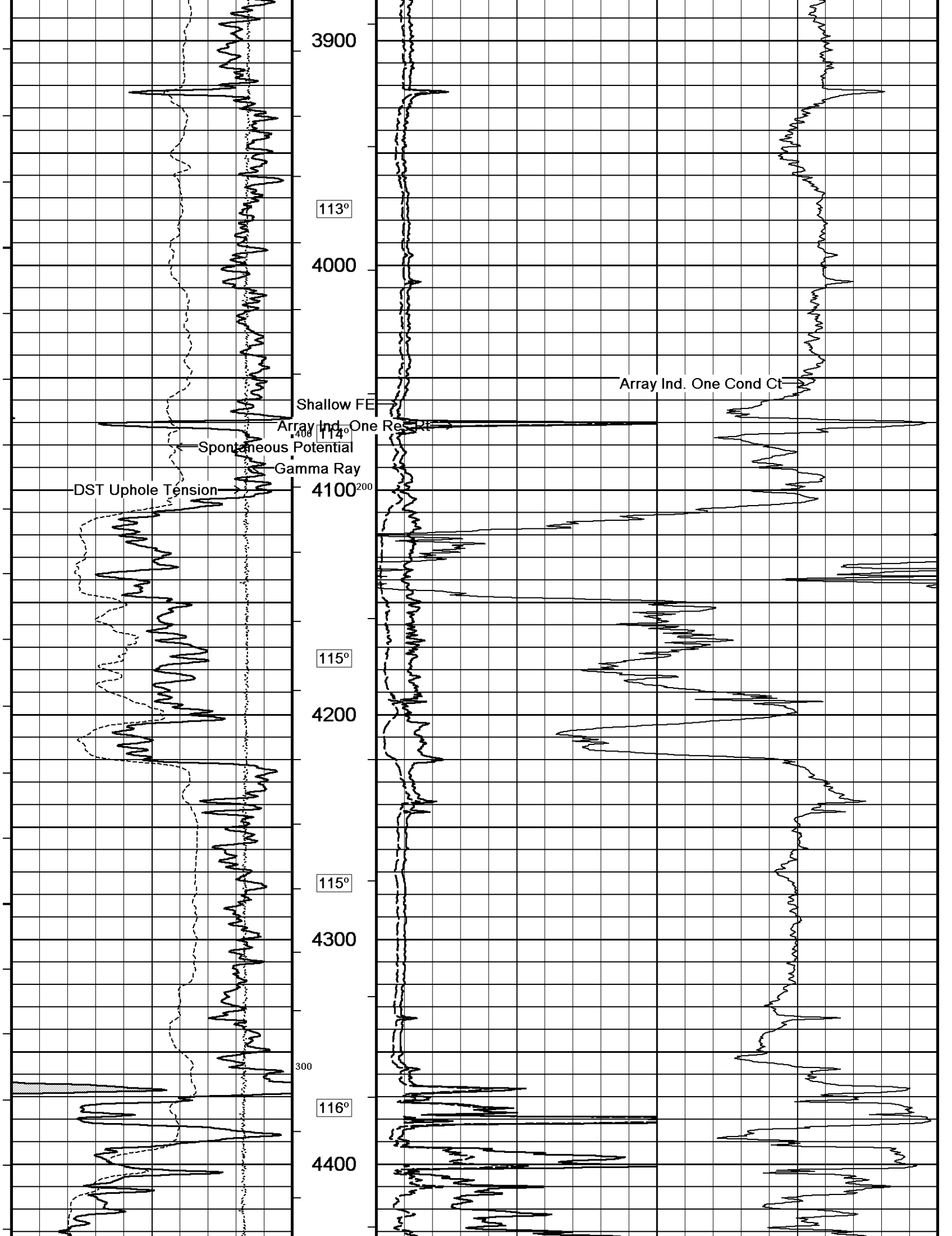

Gamma Ray
DST Uphole Tension
1800
101°
1200
100
1700
101°
1300
1000
1600
100°
1400
900
100°
1500
1500
1400
100°
800
1600
101°

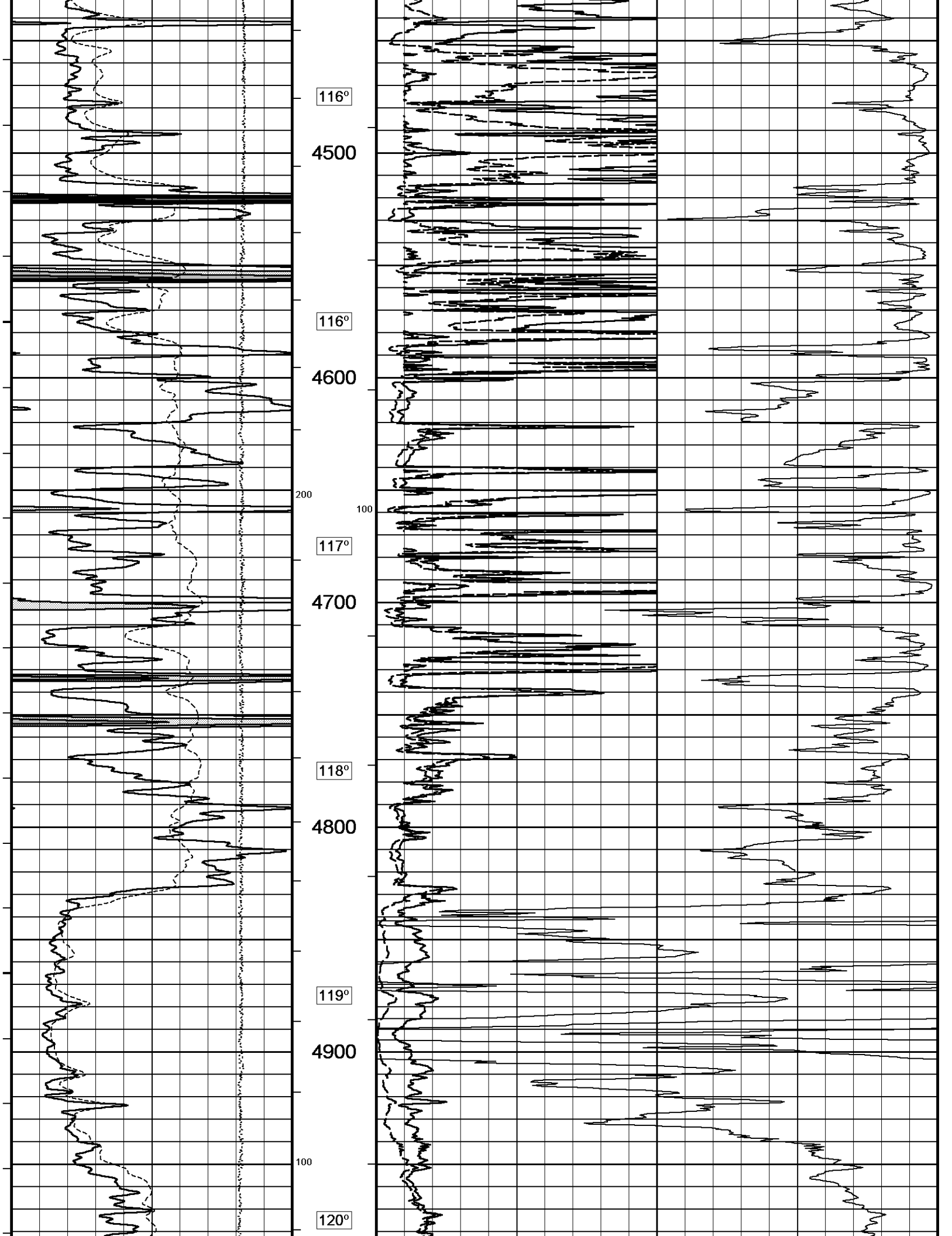

1700
1300
700
102°
1800
103°
1900
1200
103°
2000
103°
Shallow FE
2100
Res Rt
Array Inc
Spontaneous Potential
Gamma Ray
DST Uphole Tension
1100
103°
2200
Array Ind. One Cond Ct

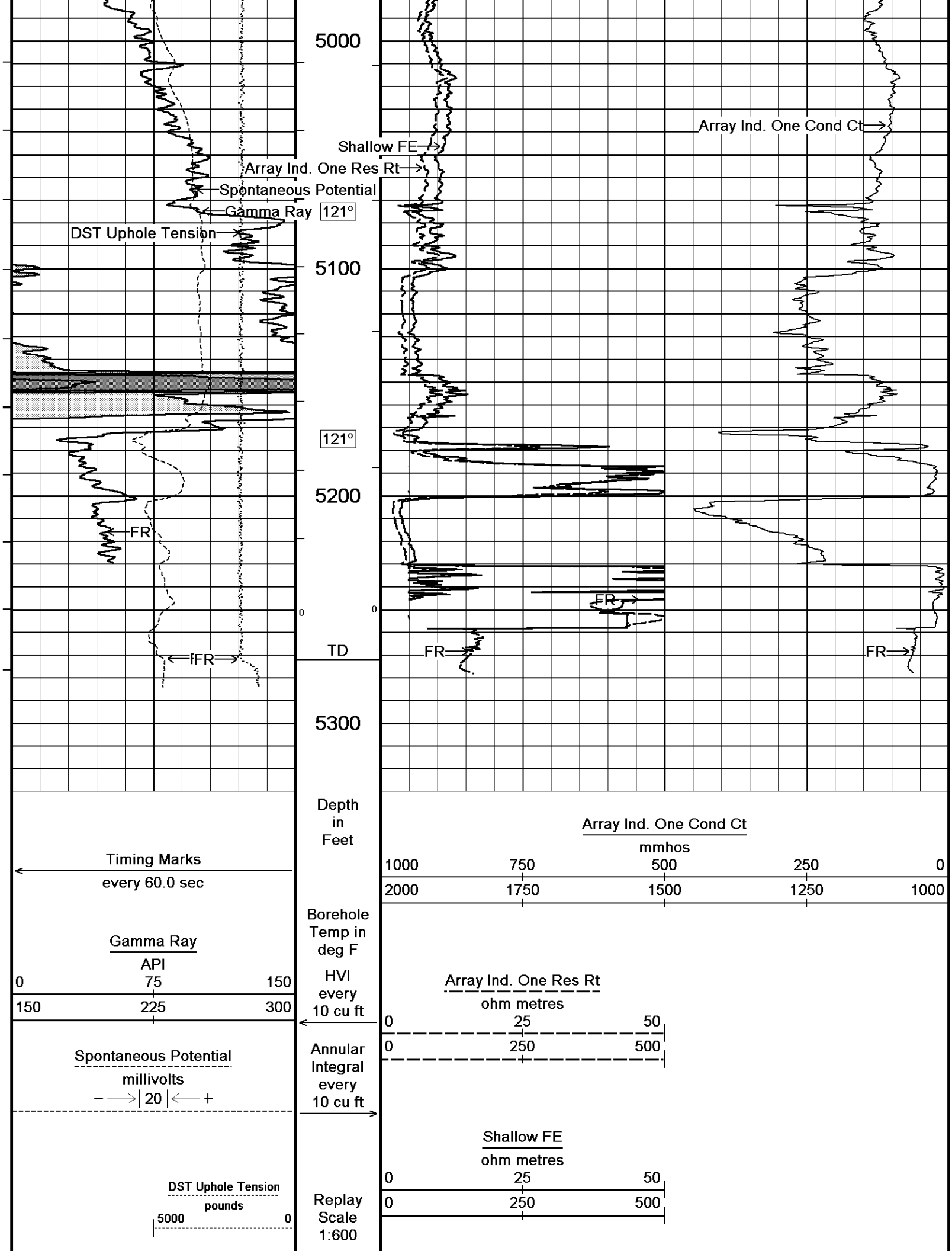

103°
2300
103°
1000
2400
102°
500
2500
105°
2600
900
105°
2700
106°


2800
107°
2900
800
108°
400
3000
108°
Shallow FE
Array Ind. One Cond Ct
Array Ind. One Res Rt
Spontaneous
ial
3100
Gamma Ray
DST Uphole Tension
109°
3200
700
109°
3300


110°
3400
110°
600
3500
300
111°
3600
112°
3700
112°
500
3800
113°


3900
113°
4000
Array Ind. One Cond Ct
Shallow FE
Array Ind. One Res Rt
400
114°
Spontaneous Potential
Gamma Ray
DST Uphole Tension
4100
200
115°
4200
115°
4300
300
116°
4400


116°
4500
116°
4600
200
100
117°
4700
118°
4800
119°
4900
100
120°


5000
Shallow FE
Array Ind. One Res Rt
Spontaneous Potential
Gamma Ray
121°
DST Uphole Tension
5100
Array Ind. One Cond Ct
121°
5200
FR
0
0
TD
IFR
FR
FR
FR
5300
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
Borehole
Temp in
deg F
Gamma Ray
API
0
75
150
150
225
300
HVI
every
10 cu ft
Array Ind. One Res Rt
ohm metres
0
25
50
0
250
500
Spontaneous Potential
millivolts
− 20 +
Annular
Integral
every
10 cu ft
Shallow FE
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
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2 INCH MAIN

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
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Plotted on 12-SEP-2014 05:14
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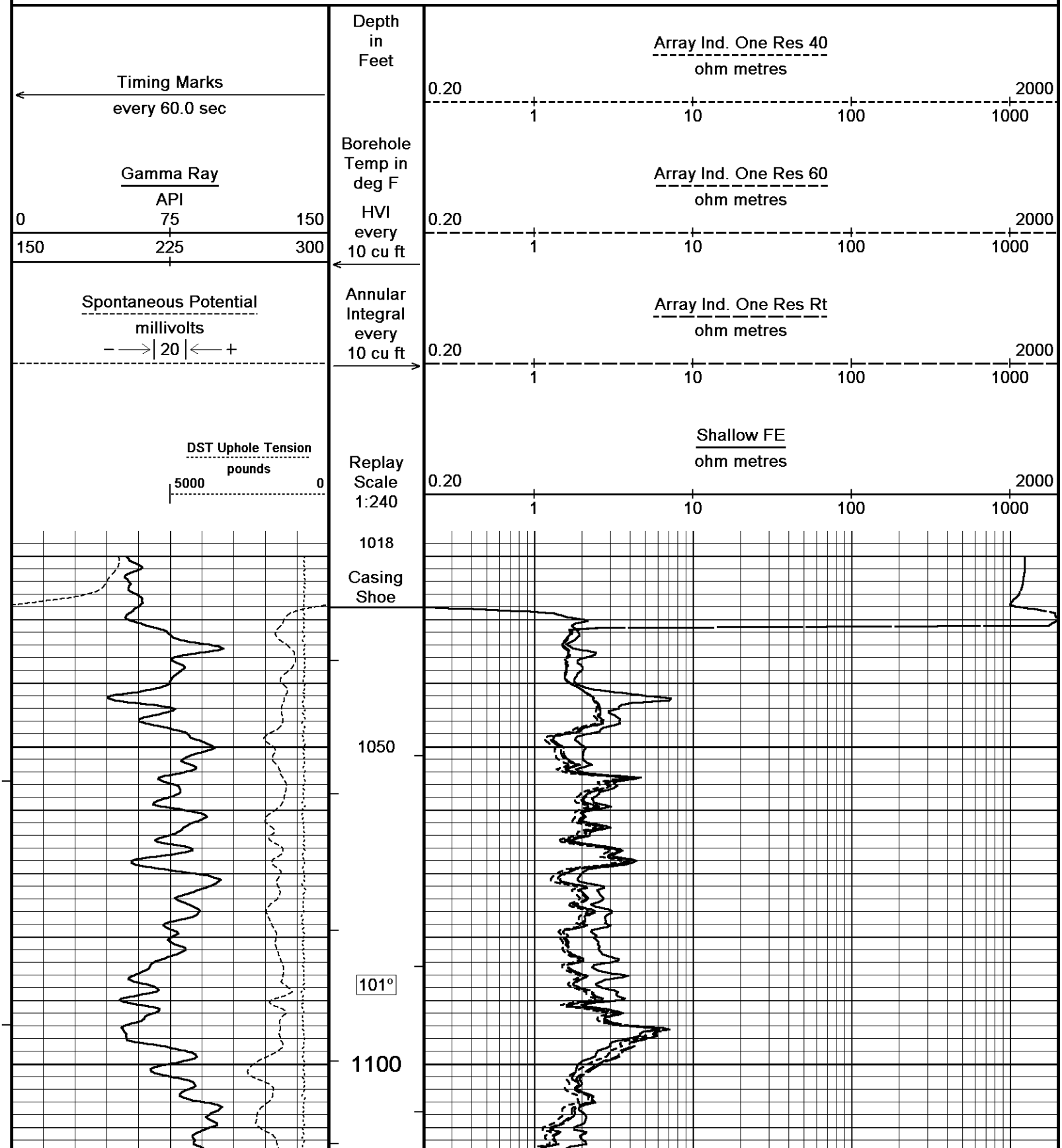
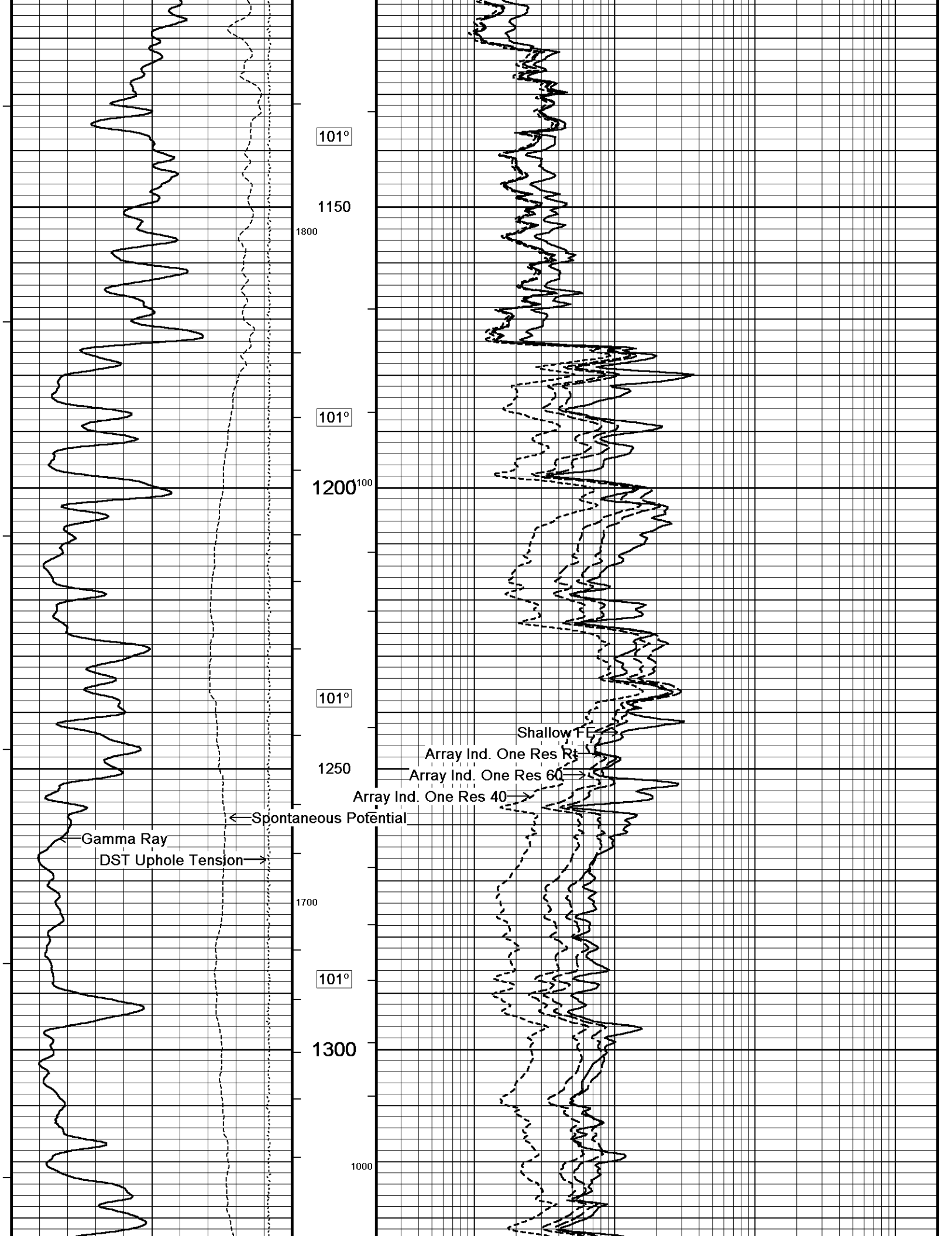
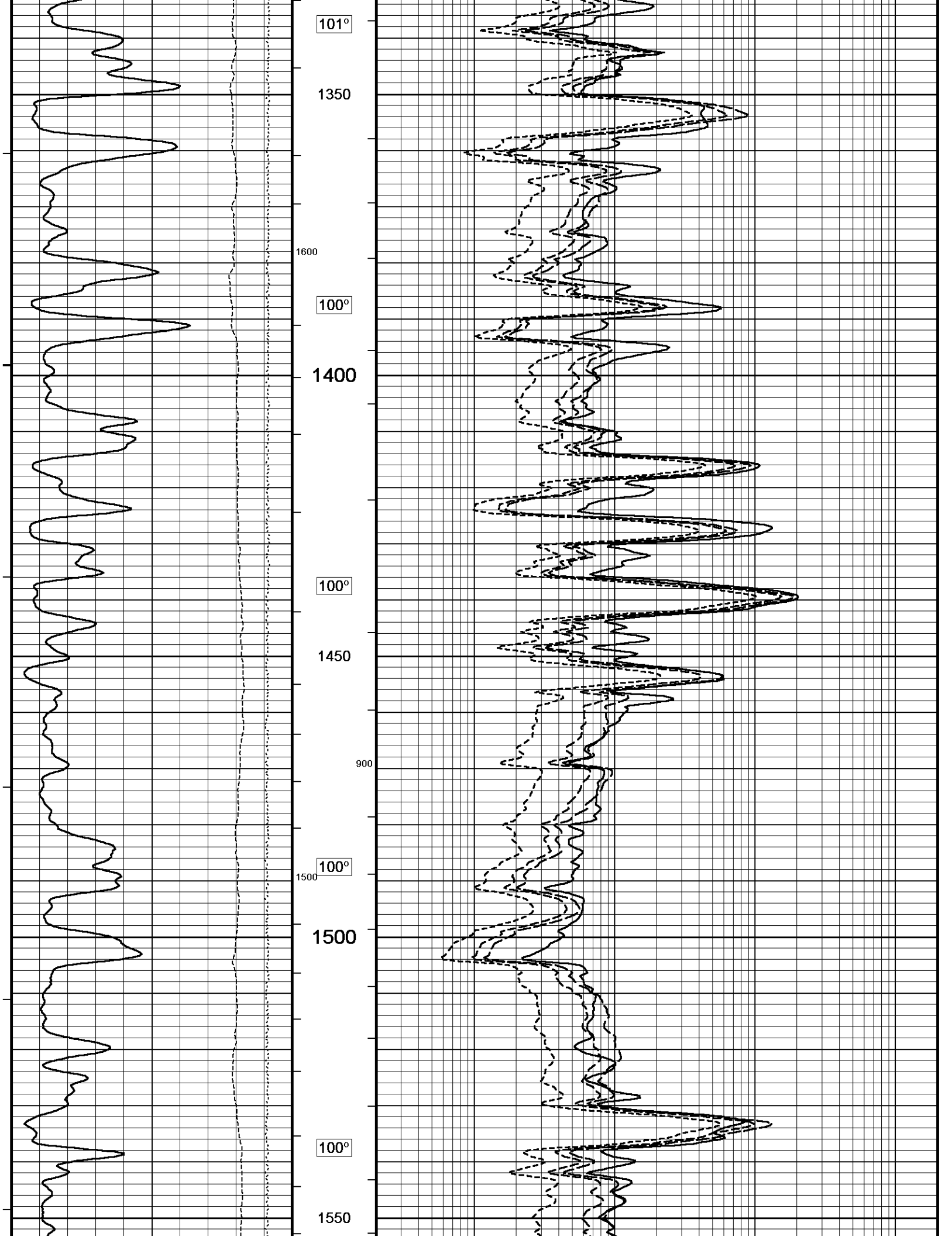
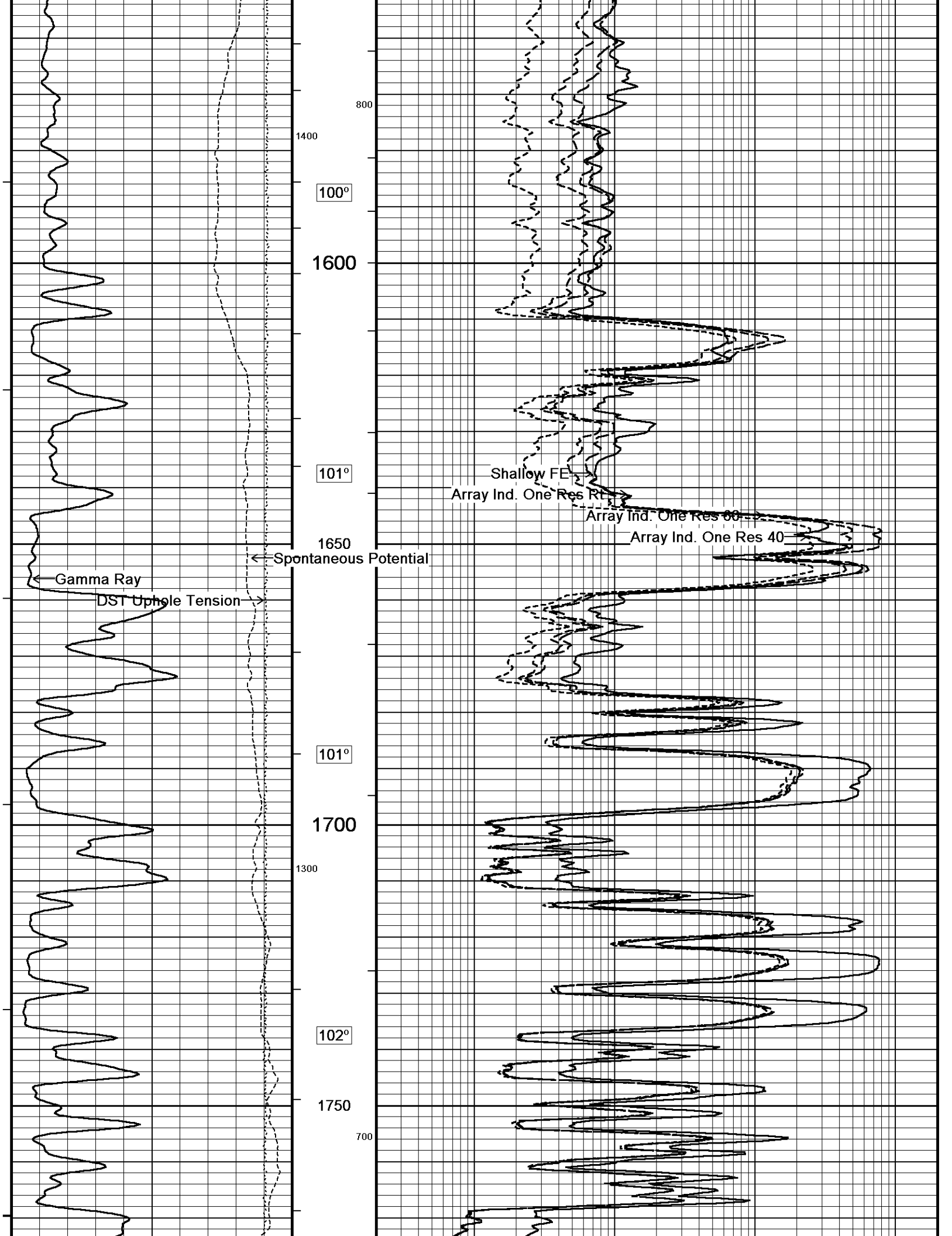
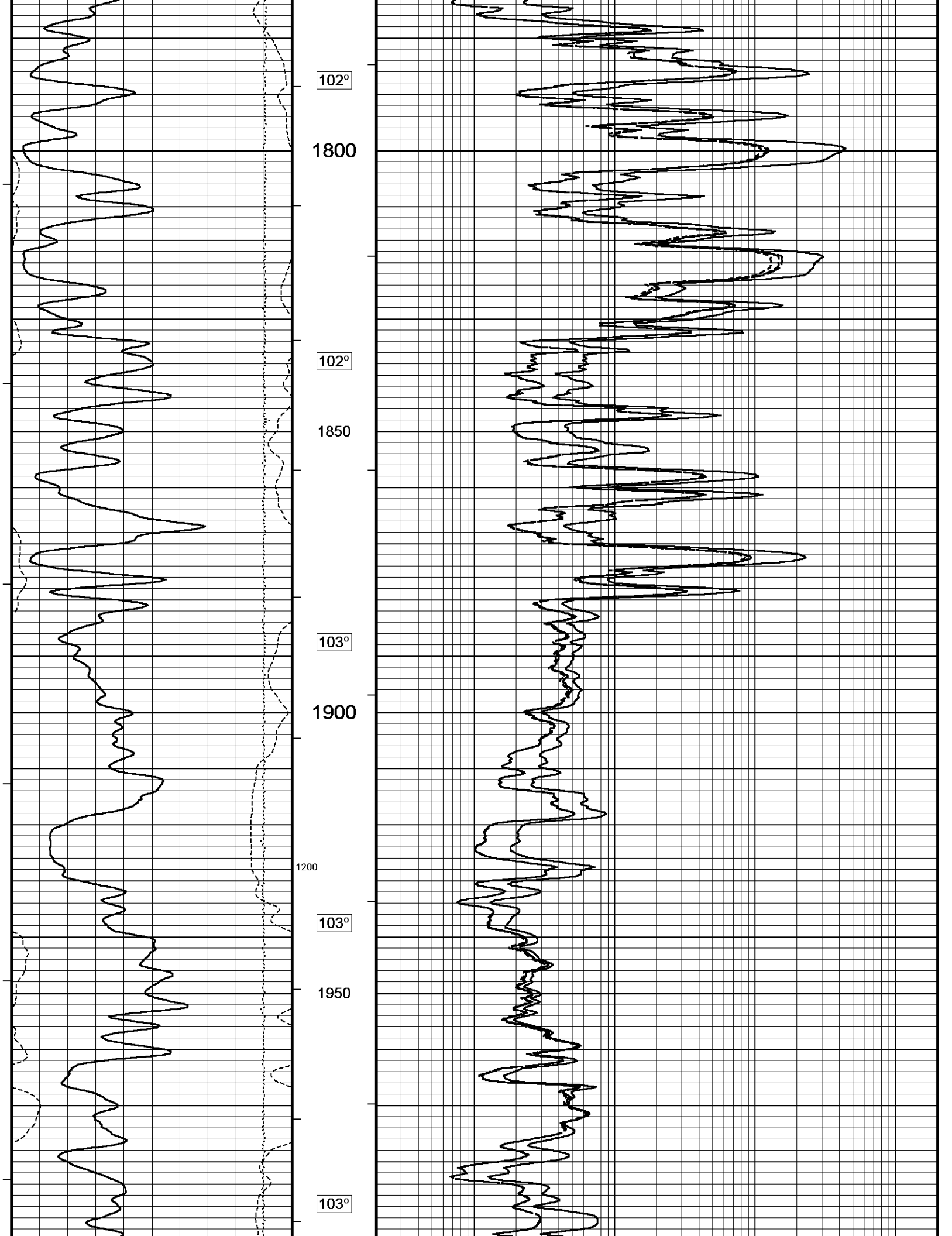
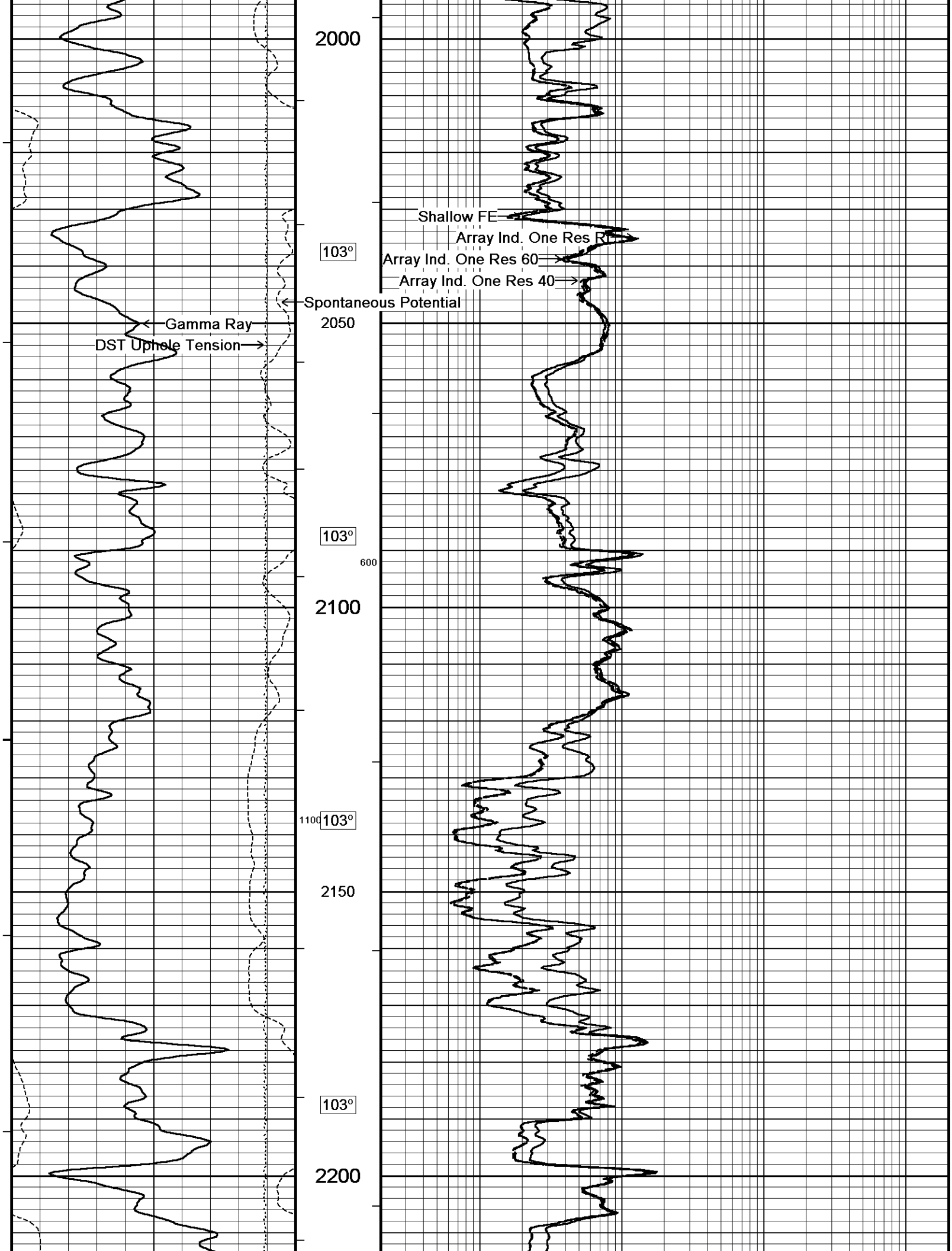


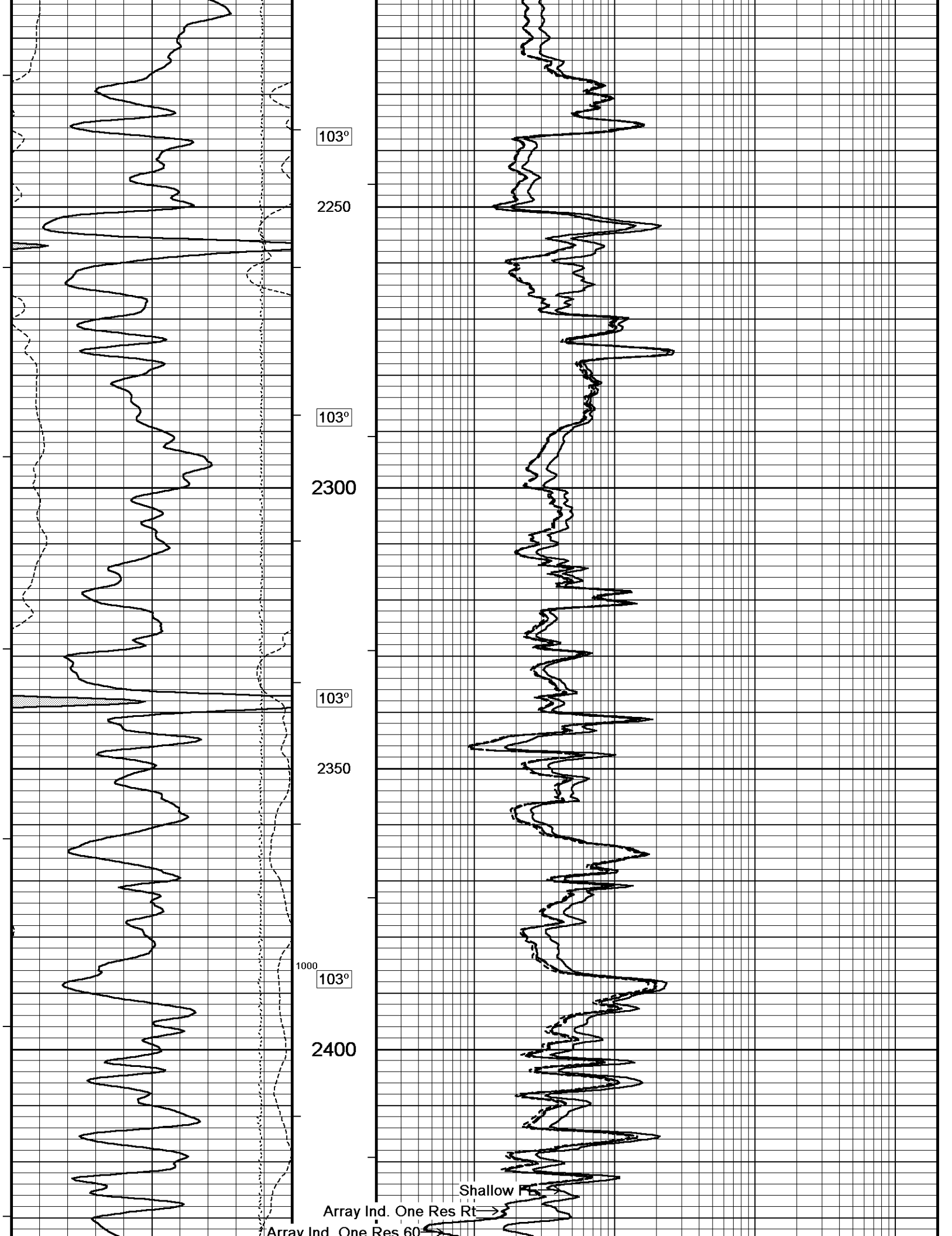

101°
1150
1800
101°
1200
100
101°
Shallow FE
Array Ind. One Res Rt
Array Ind. One Res 60
1250
Array Ind. One Res 40
Spontaneous Potential
Gamma Ray
DST Uphole Tension
1700
101°
1300
1000

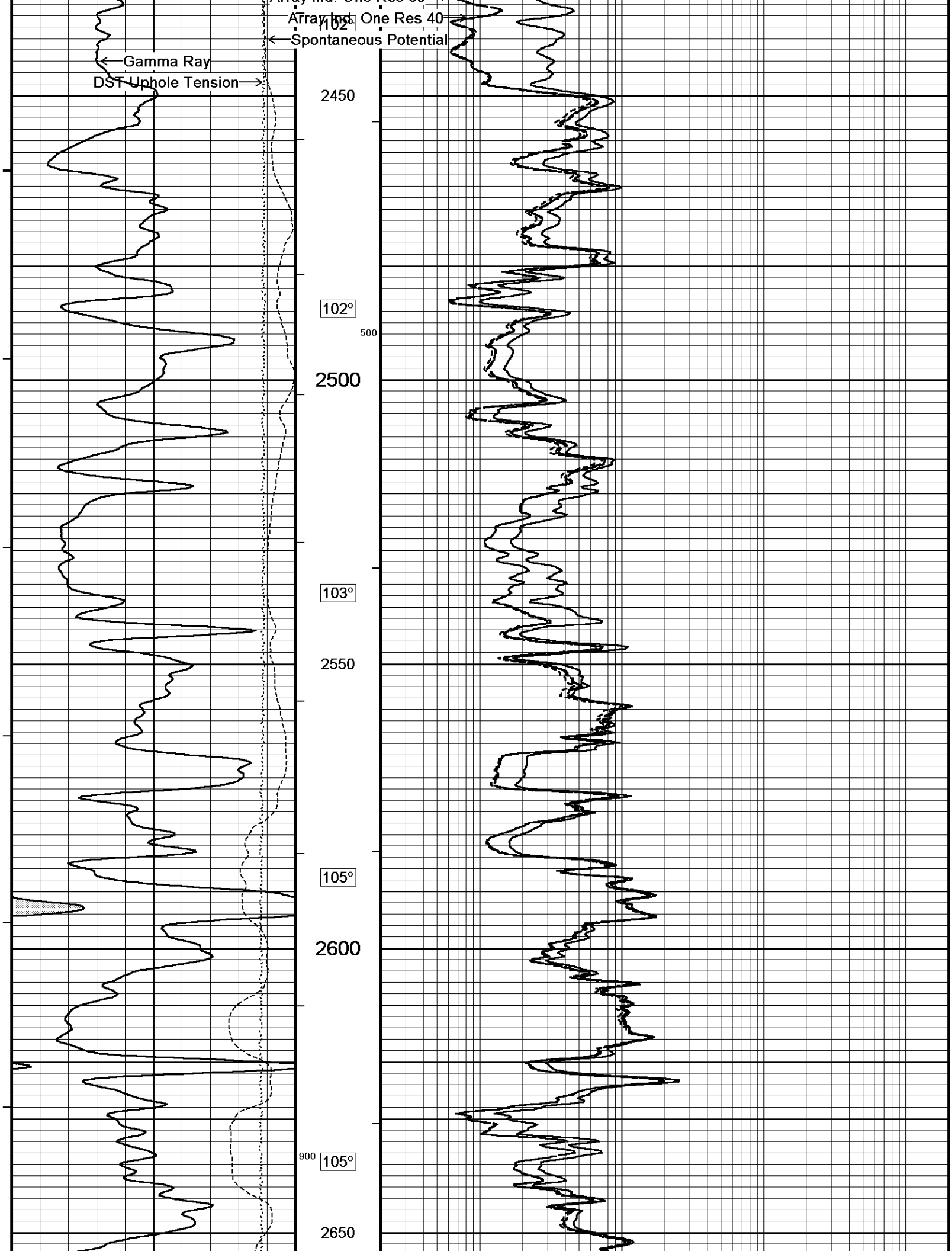

101°
1350
1600
100°
1400
100°
1450
900
100°
1500
1500
100°
1550

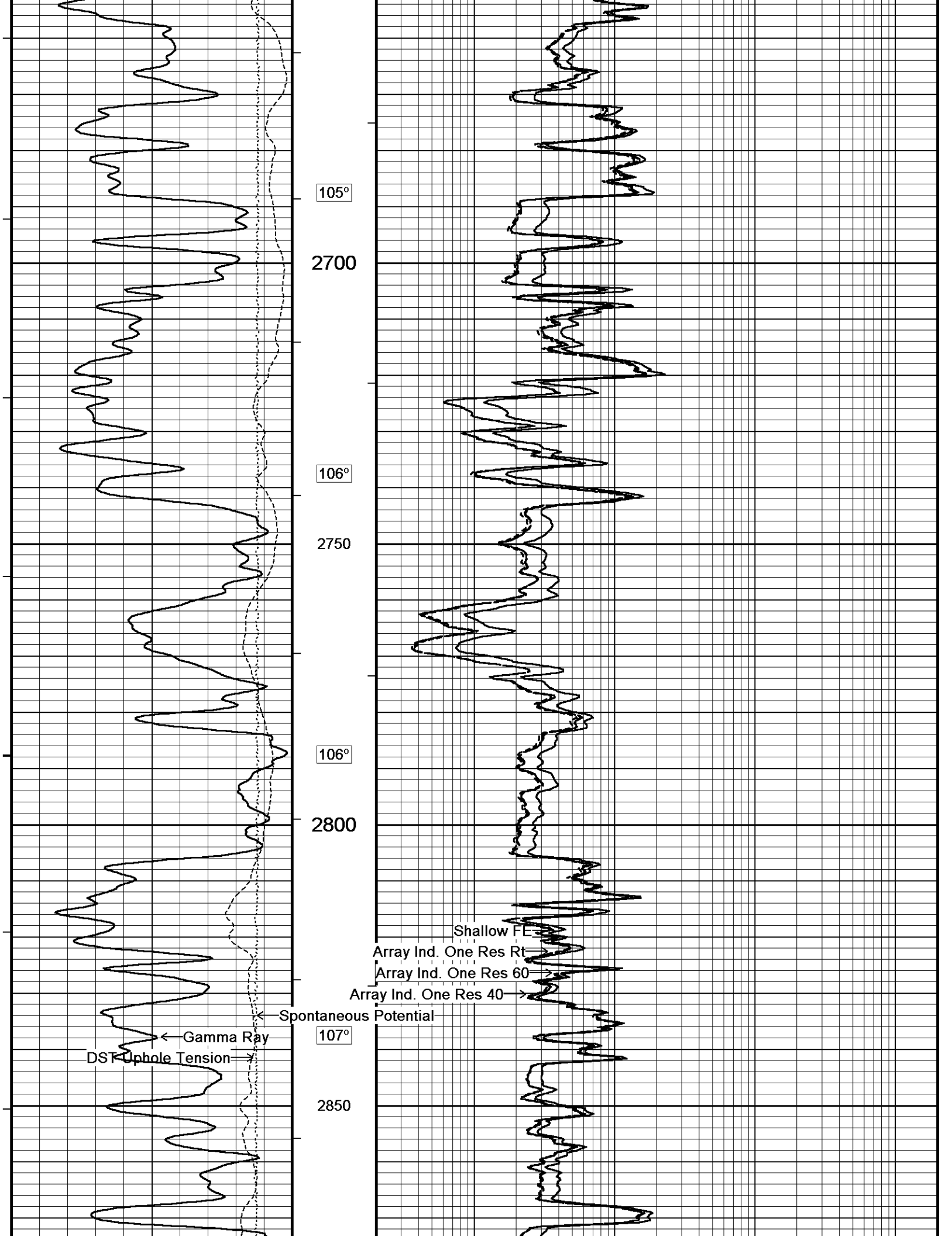

800
1400
100°
1600
101°
Shallow FE
Array Ind. One Res RT
Array Ind. One Res 60
Array Ind. One Res 40
1650
Spontaneous Potential
Gamma Ray
DST Uphole Tension
101°
1700
1300
102°
1750
700

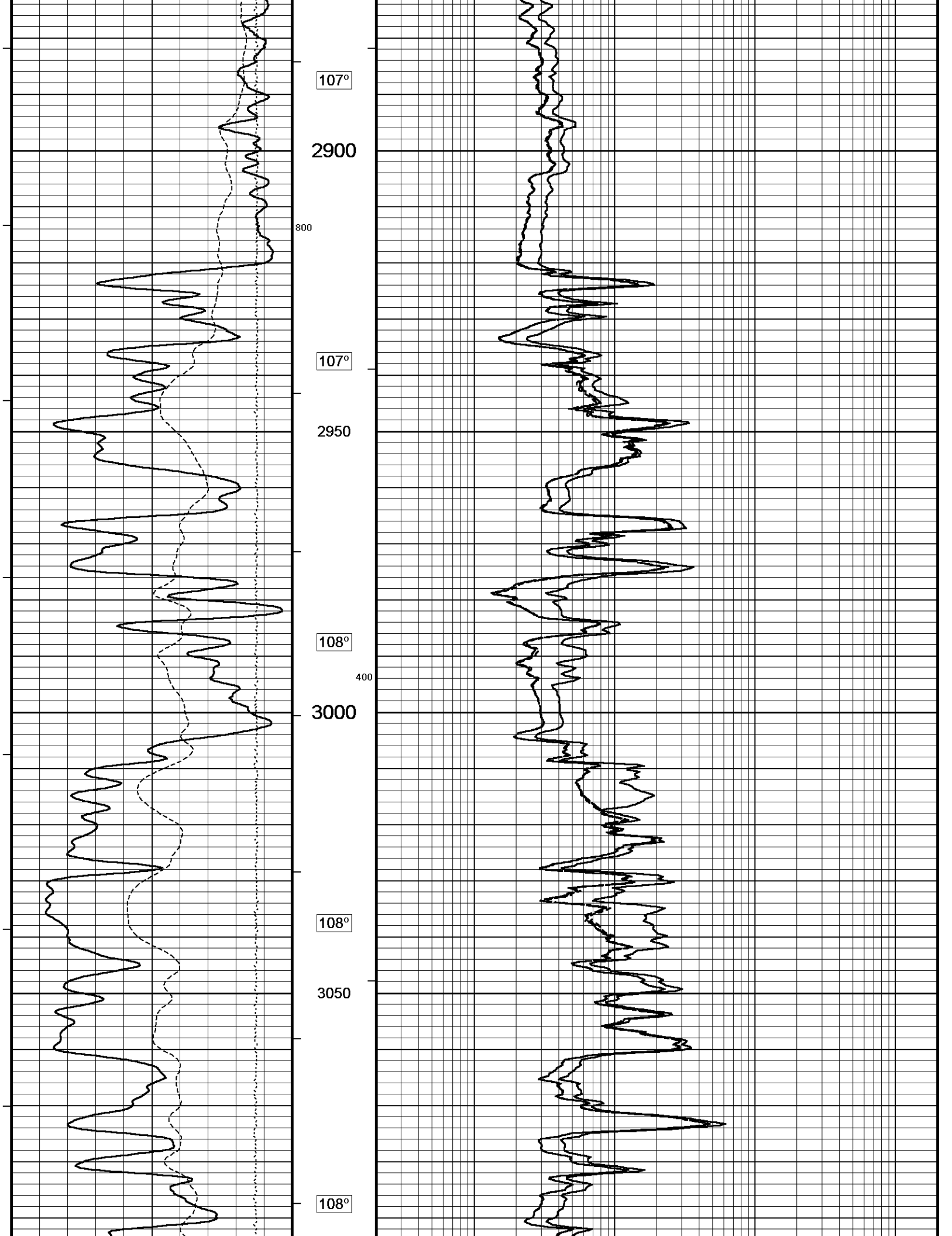

102°
1800
102°
1850
103°
1900
1200
103°
1950
103°

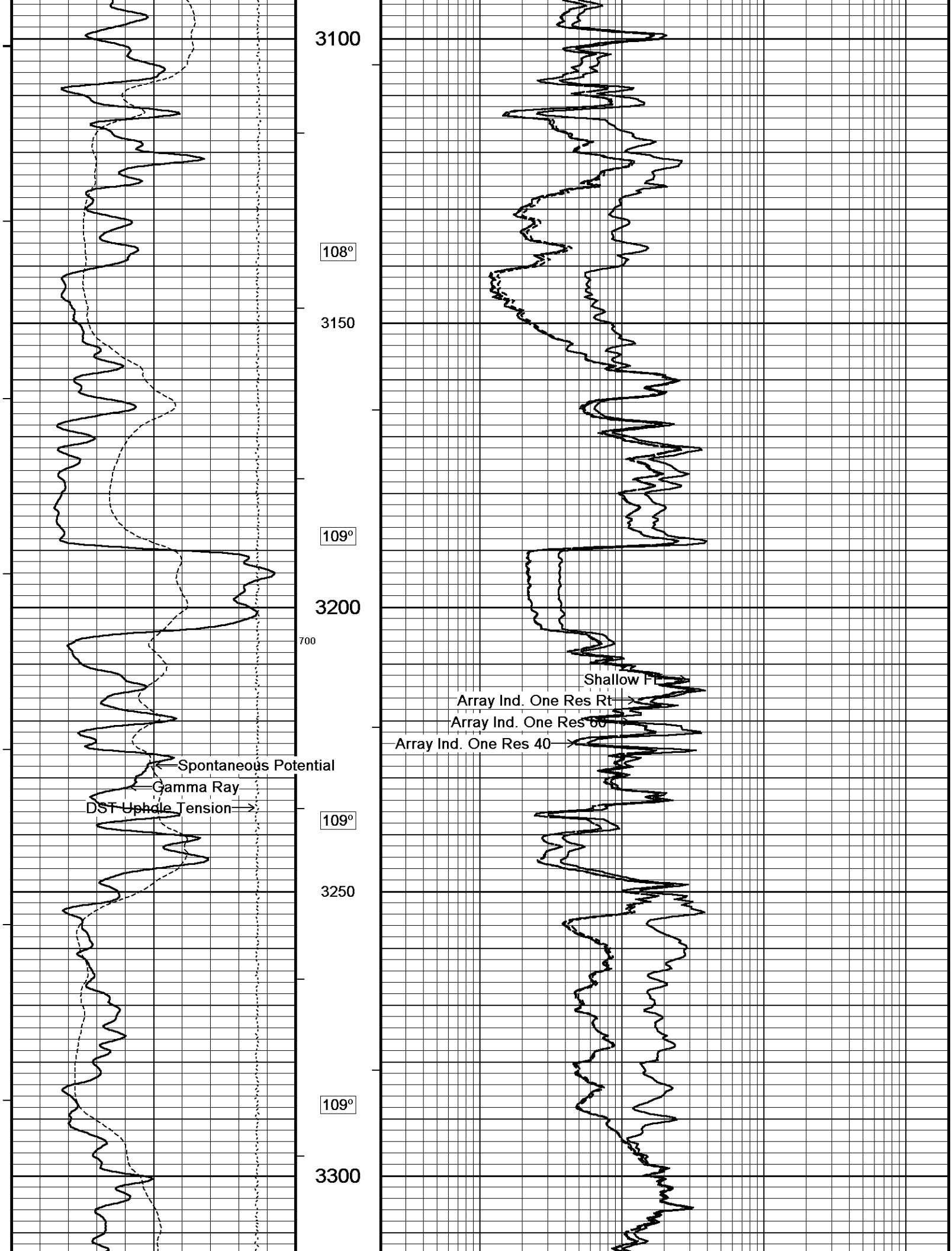

2000
Shallow FE
Array Ind. One Res RT
103°
Array Ind. One Res 60
Array Ind. One Res 40
Spontaneous Potential
Gamma Ray
2050
DST Uphole Tension
103°
600
2100
1100
103°
2150
103°
2200

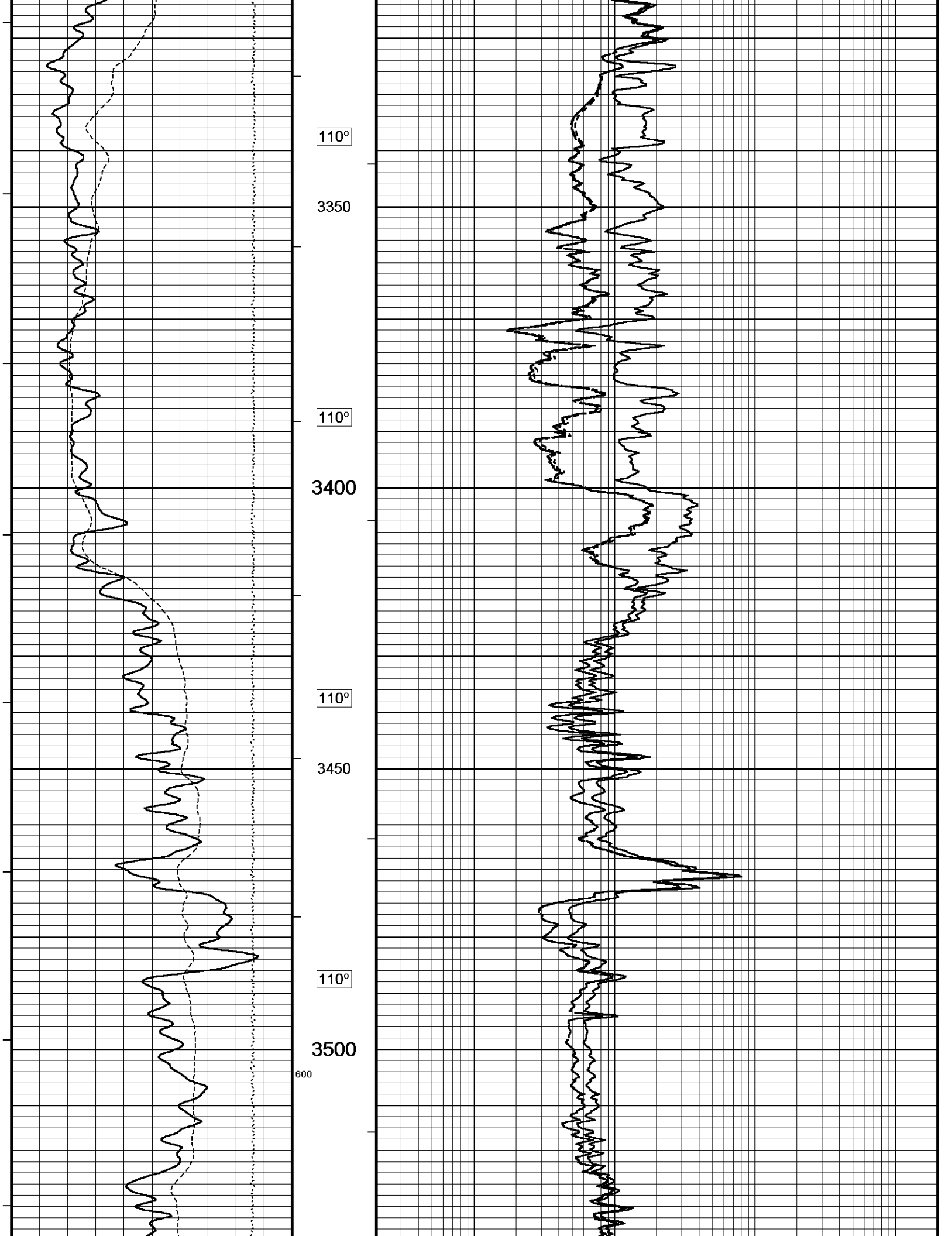

103°
2250
103°
2300
103°
2350
1000
103°
2400
Shallow FE
Array Ind. One Res Rt
Array Ind. One Res 60

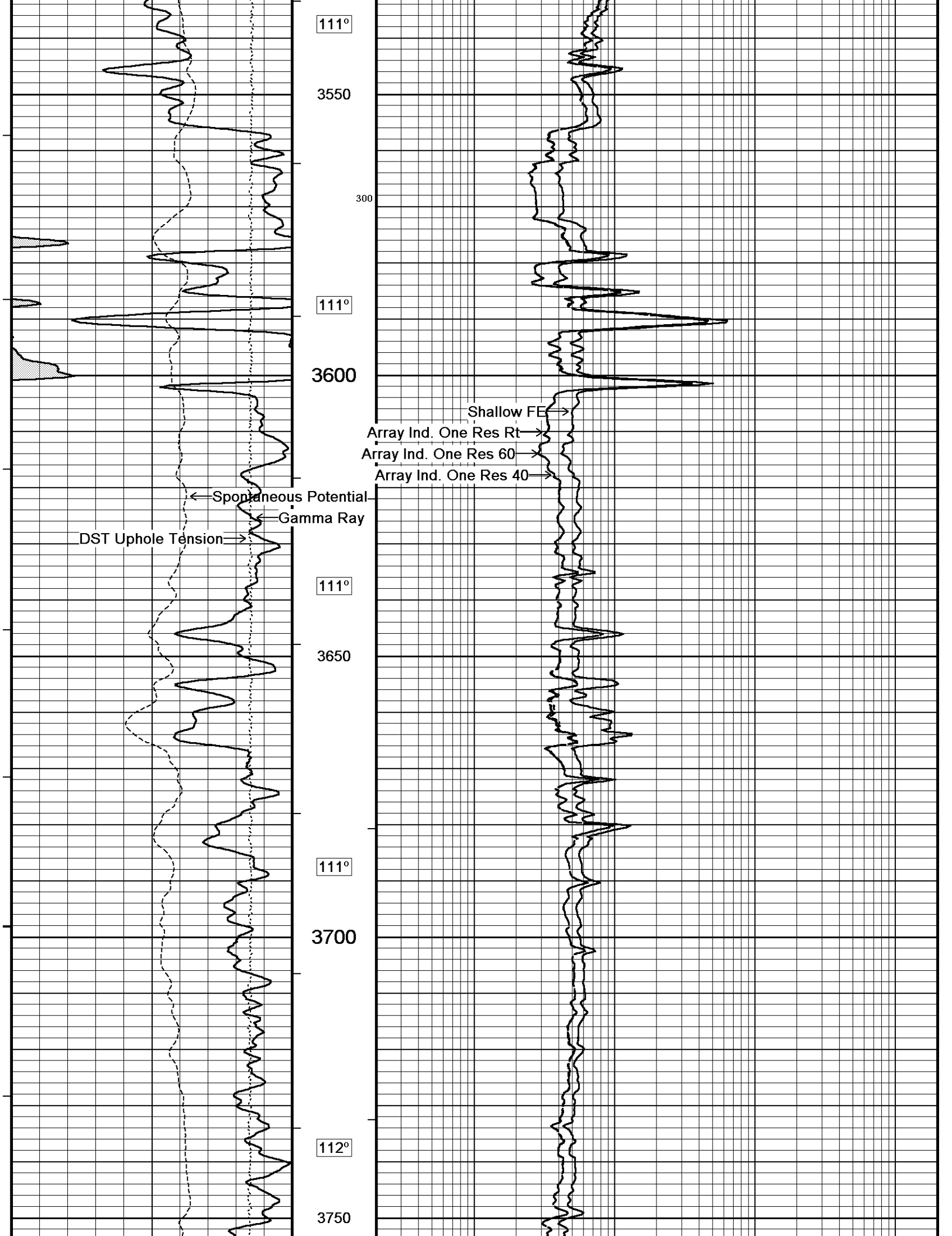

Array Ind. One Res 40
Spontaneous Potential
Gamma Ray
DST Uphole Tension
102
2450
102°
500
2500
103°
2550
105°
2600
900
105°
2650

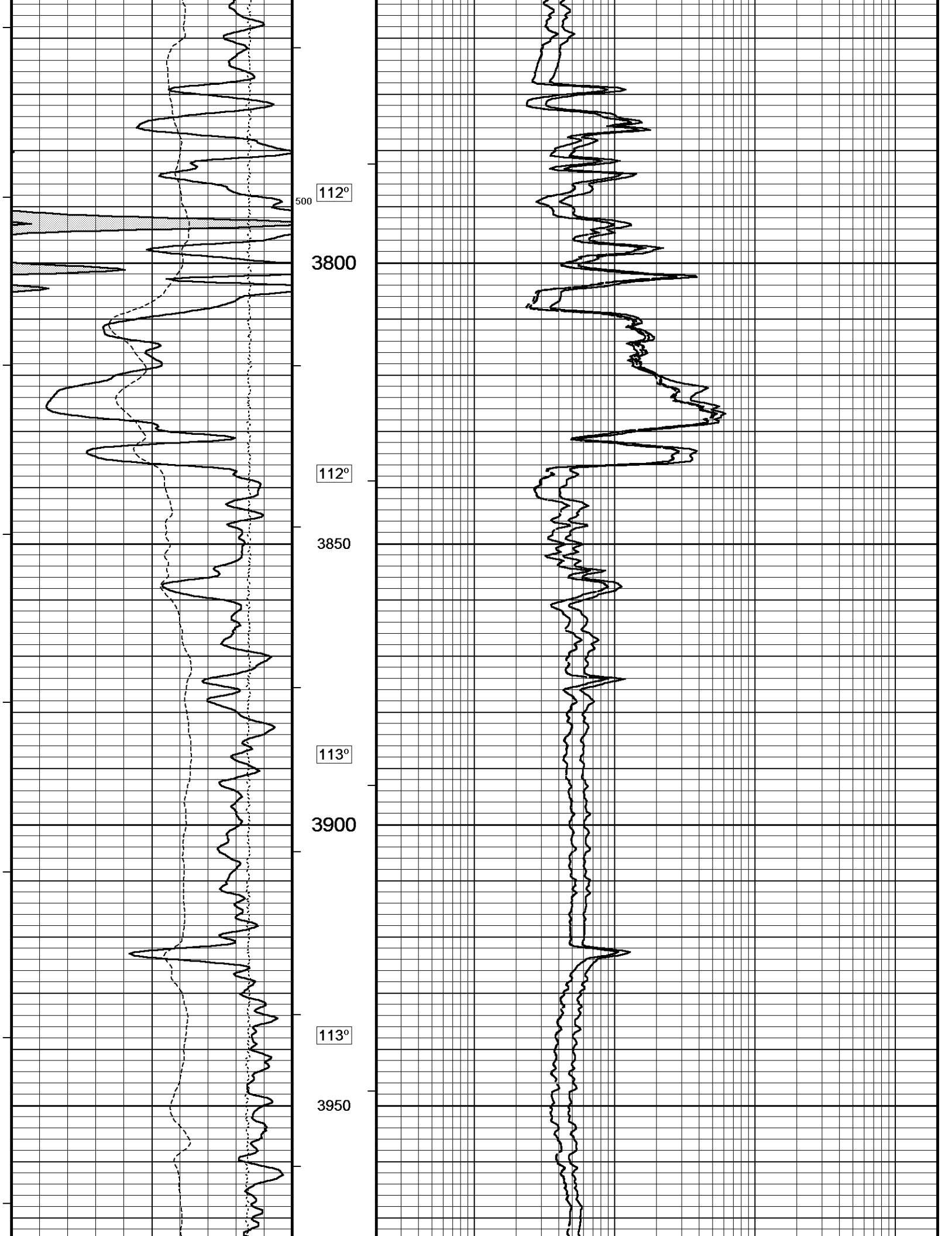

105°
2700
106°
2750
106°
2800
Shallow FE
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Spontaneous Potential
107°
Gamma Ray
DST Uphole Tension
2850

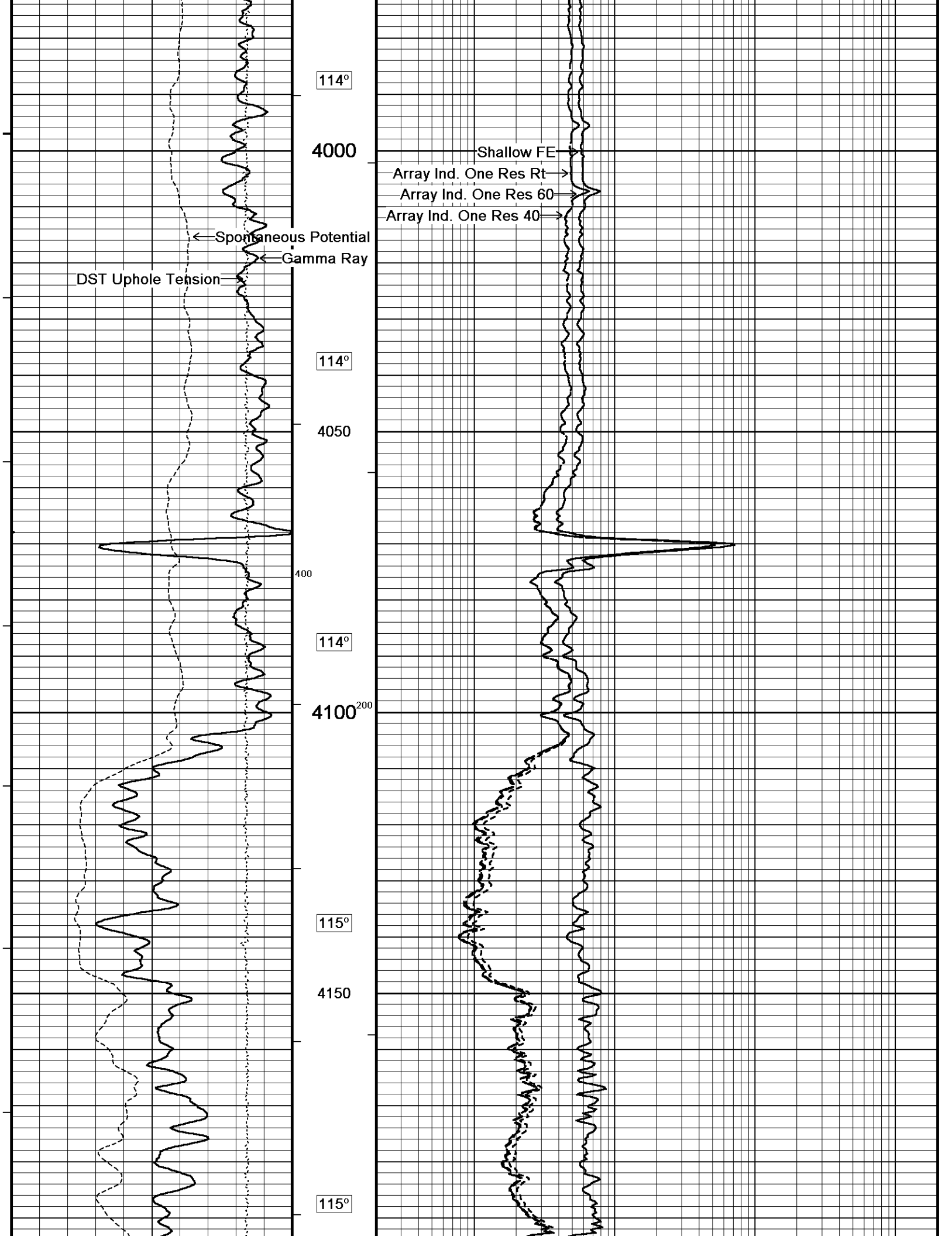

107°
2900
800
107°
2950
108°
400
3000
108°
3050
108°

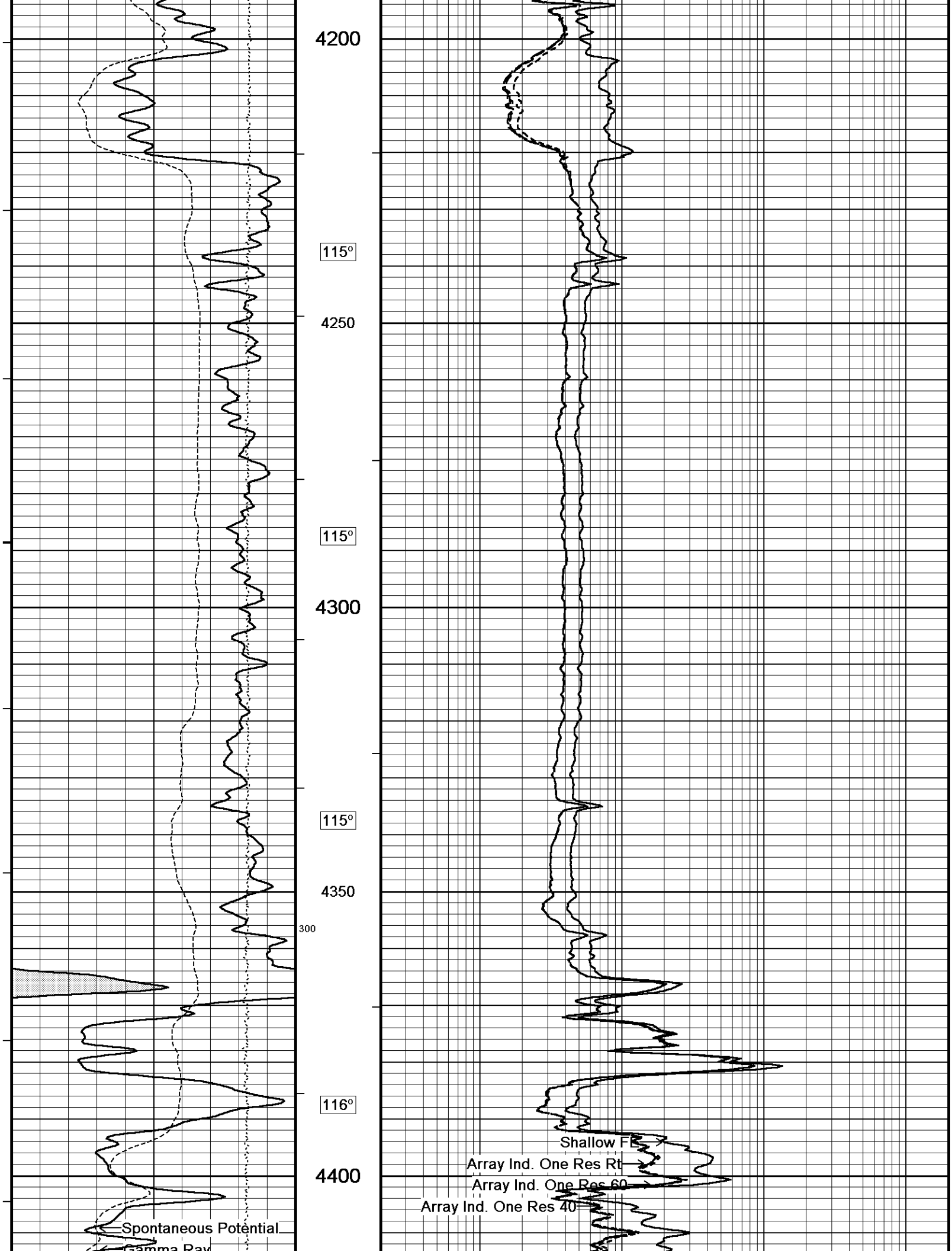

3100
108°
3150
109°
3200
700
Shallow Ft
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Spontaneous Potential
Gamma Ray
DST Uphole Tension
109°
3250
109°
3300

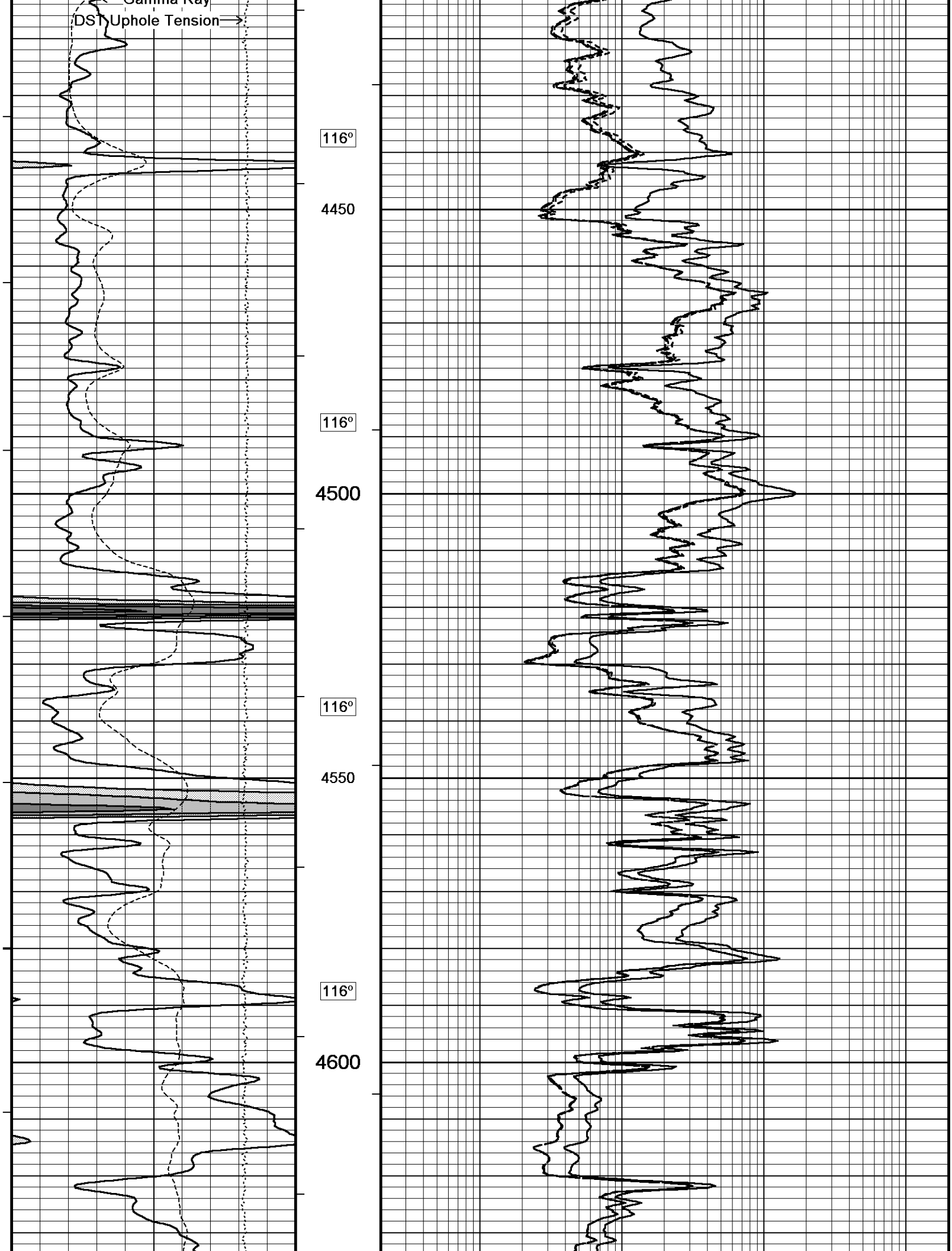

110°
3350
110°
3400
110°
3450
110°
3500
600

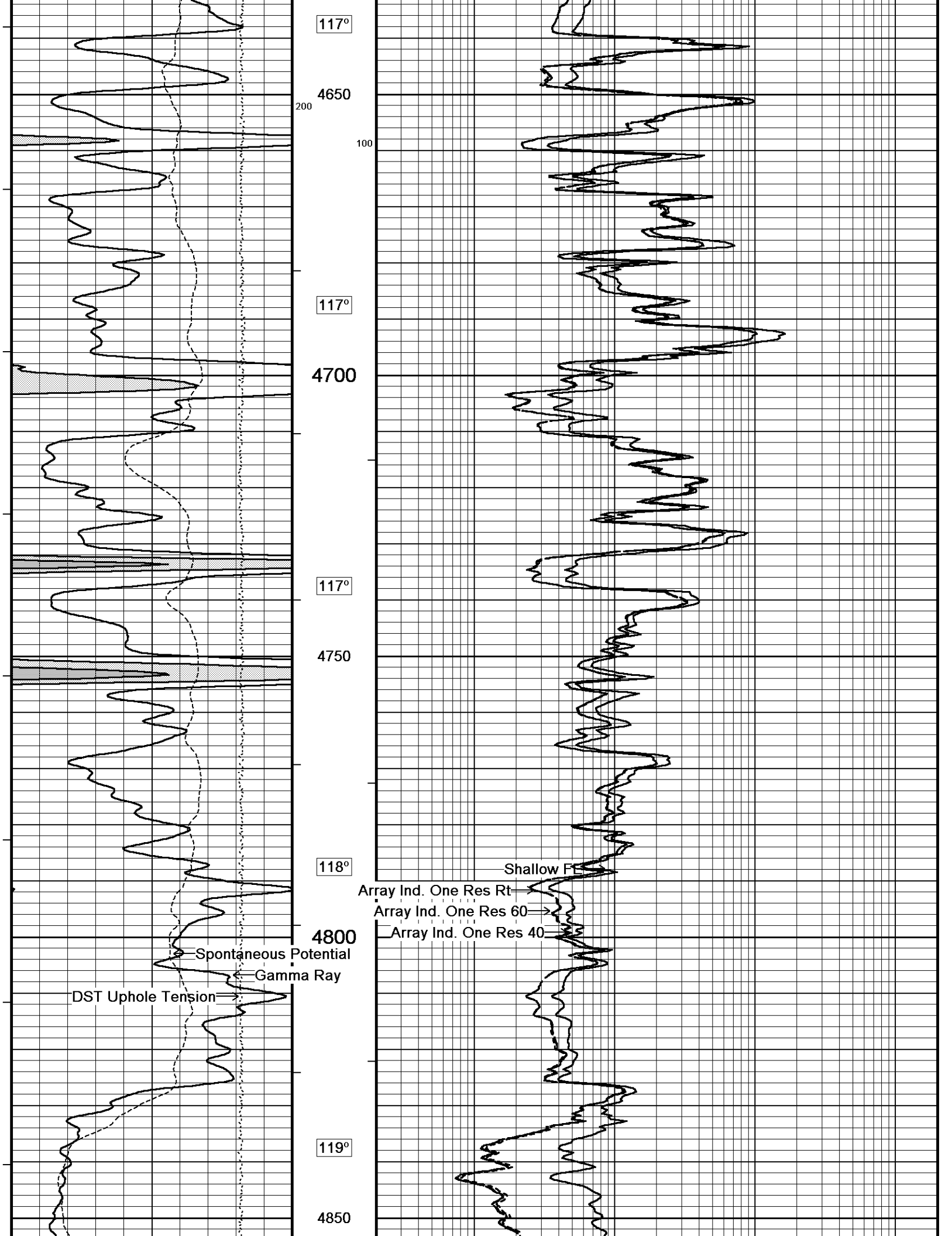

111°
3550
300
111°
3600
Shallow FE
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Spontaneous Potential
Gamma Ray
DST Uphole Tension
111°
3650
111°
3700
112°
3750

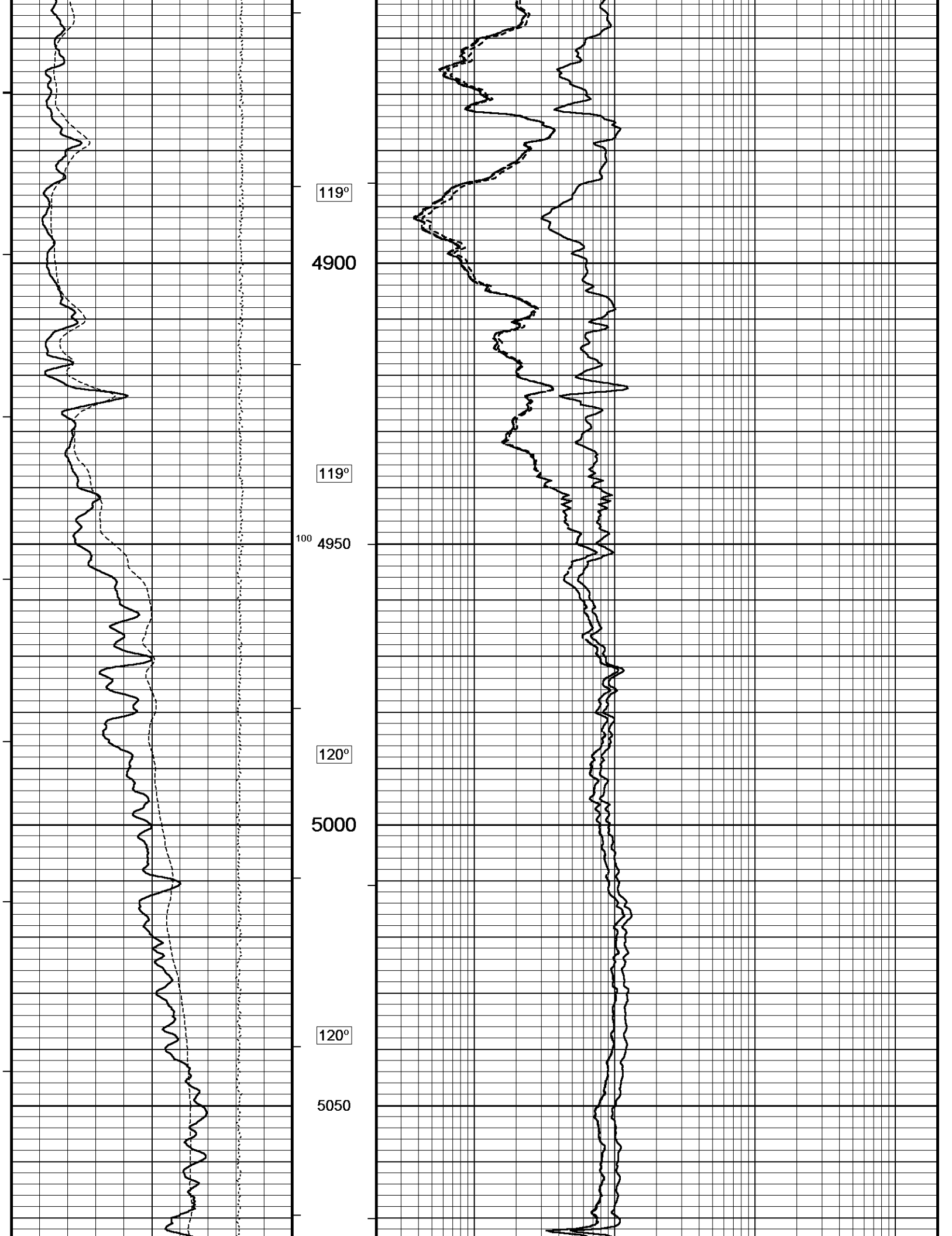

500
112°
3800
112°
3850
113°
3900
113°
3950

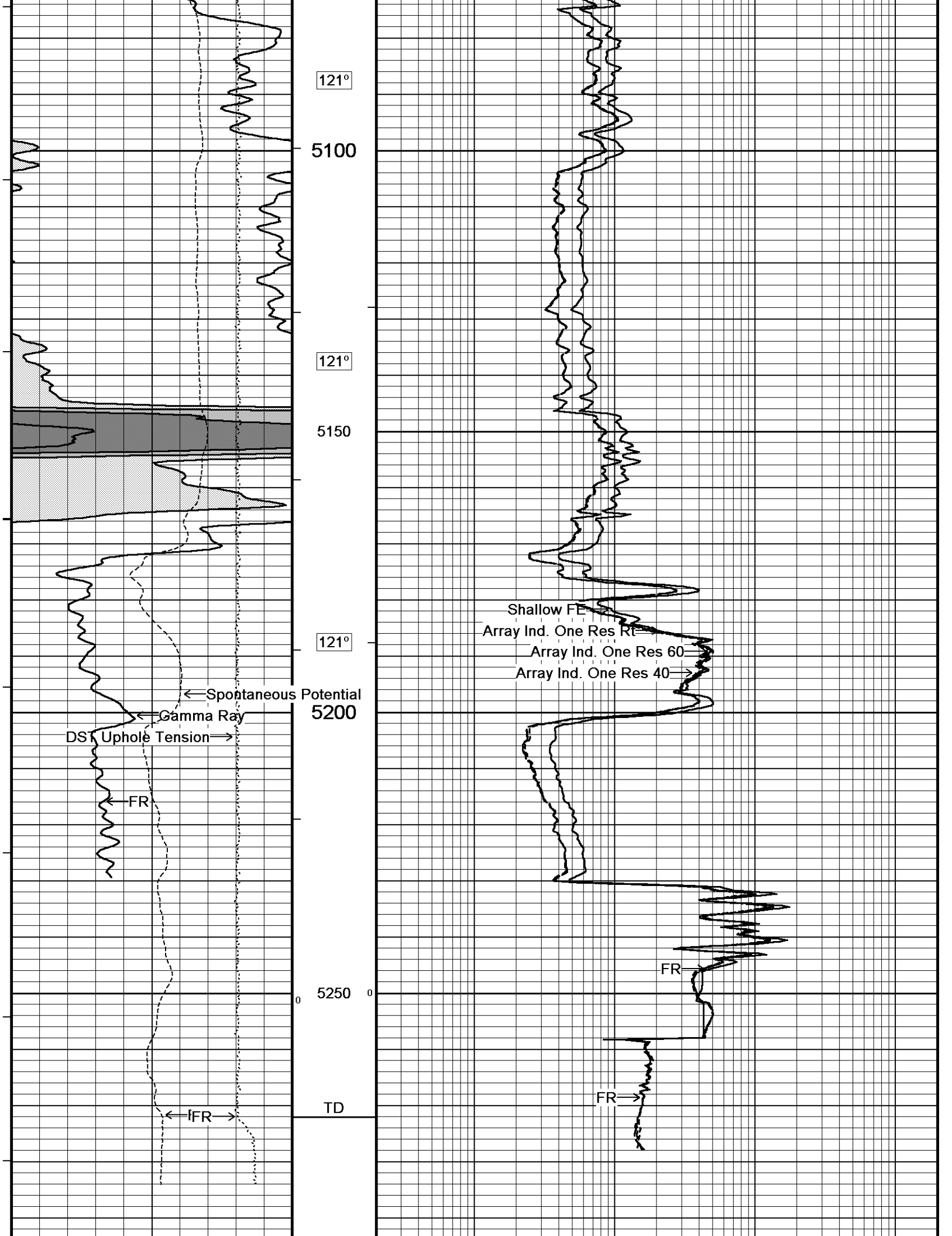

114°
4000
Shallow FE
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Spontaneous Potential
Gamma Ray
DST Uphole Tension
114°
4050
400
114°
4100
200
115°
4150
115°

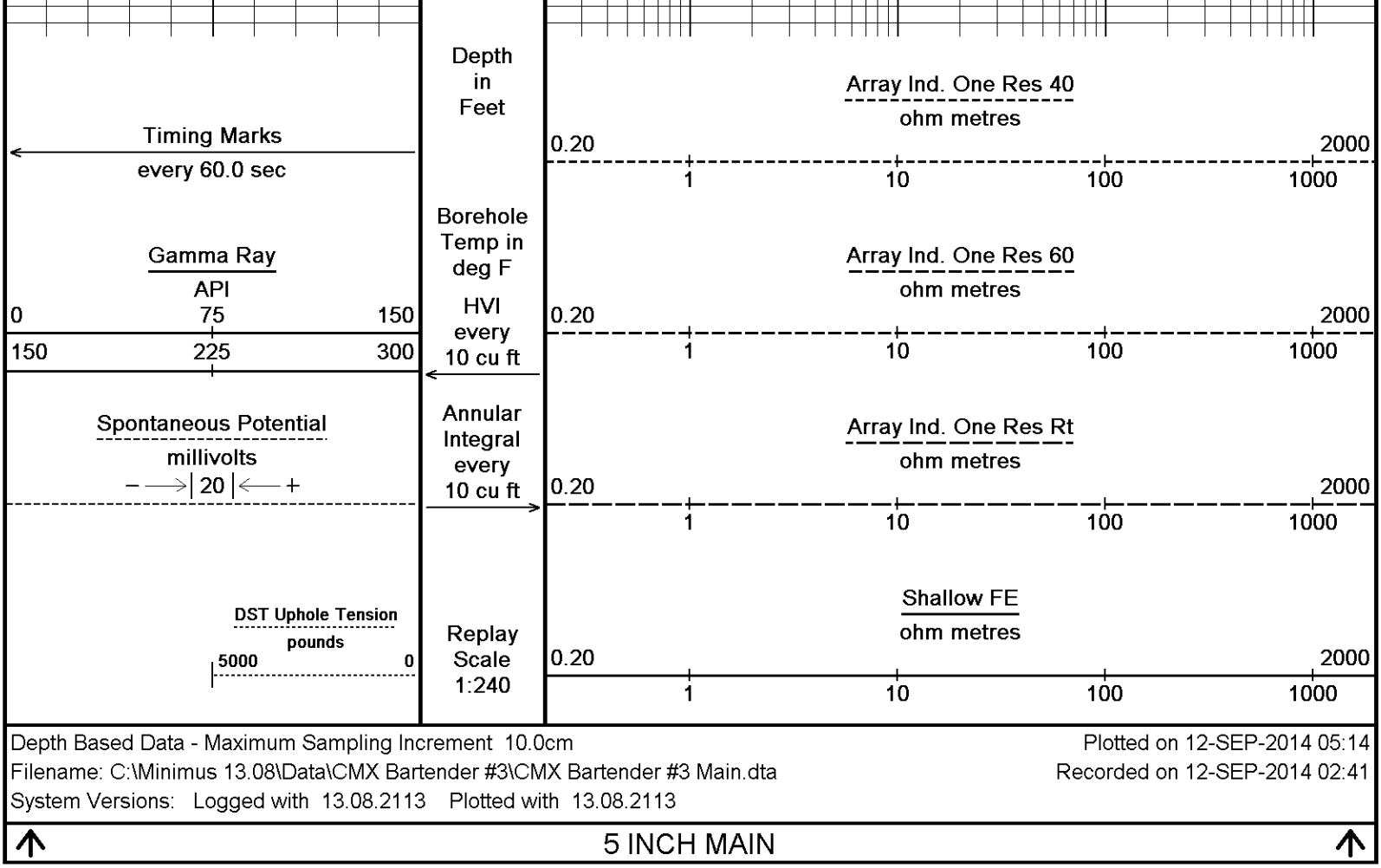

4200
115°
4250
115°
4300
115°
4350
300
116°
4400
Shallow FE
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Spontaneous Potential
Gamma Ray


Gamma Ray
DST Uphole Tension
116°
4450
116°
4500
116°
4550
116°
4600


117°
4650
200
100
117°
4700
117°
4750
118°
4800
119°
4850
Spontaneous Potential
Gamma Ray
DST Uphole Tension
Shallow Ft
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40


119°
4900
119°
100
4950
120°
5000
120°
5050


121°
5100
121°
5150
121°
Spontaneous Potential
5200
Gamma Ray
DST Uphole Tension
FR
0
5250
0
IFR
TD
Shallow FE
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
FR
FR

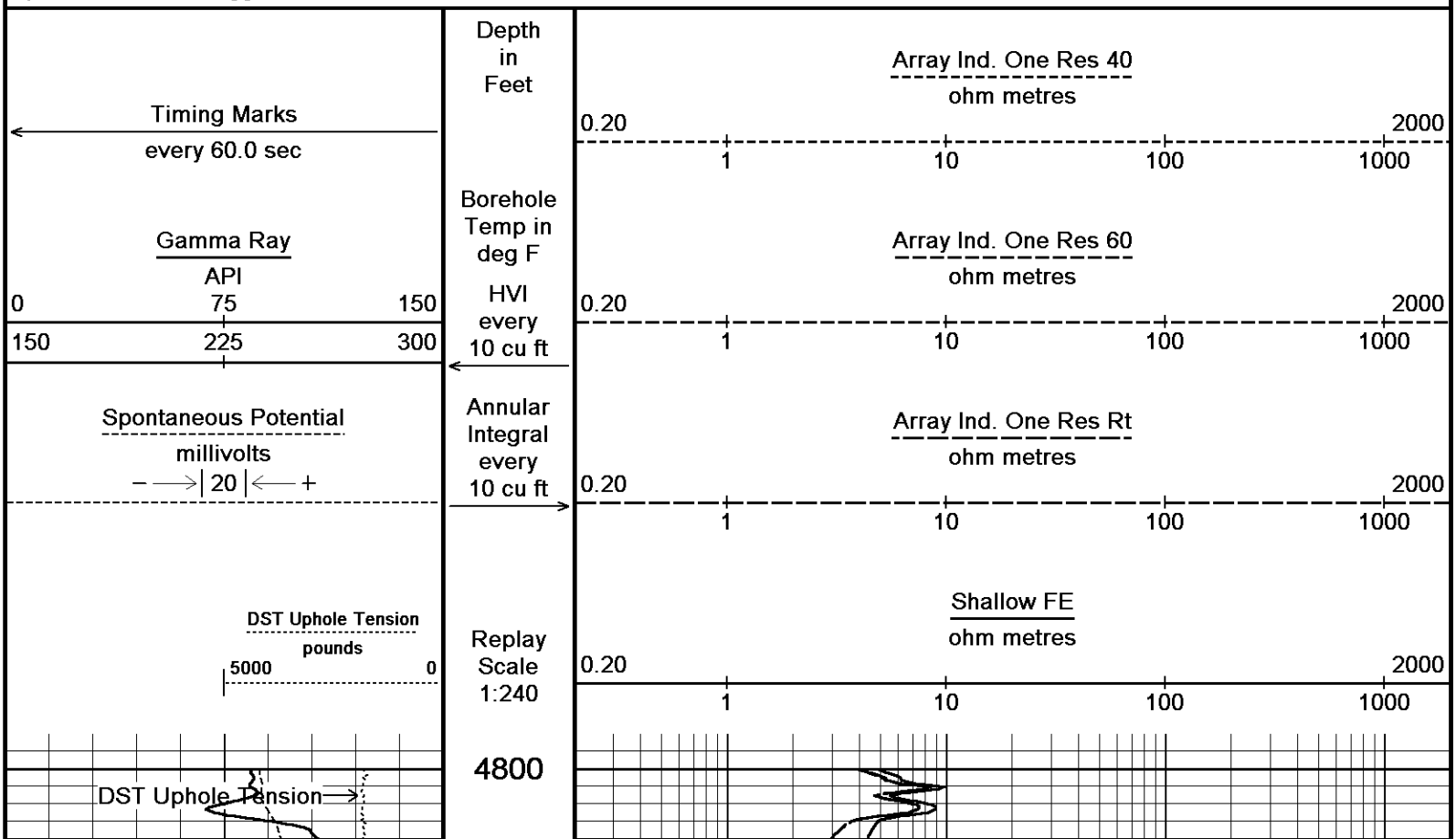


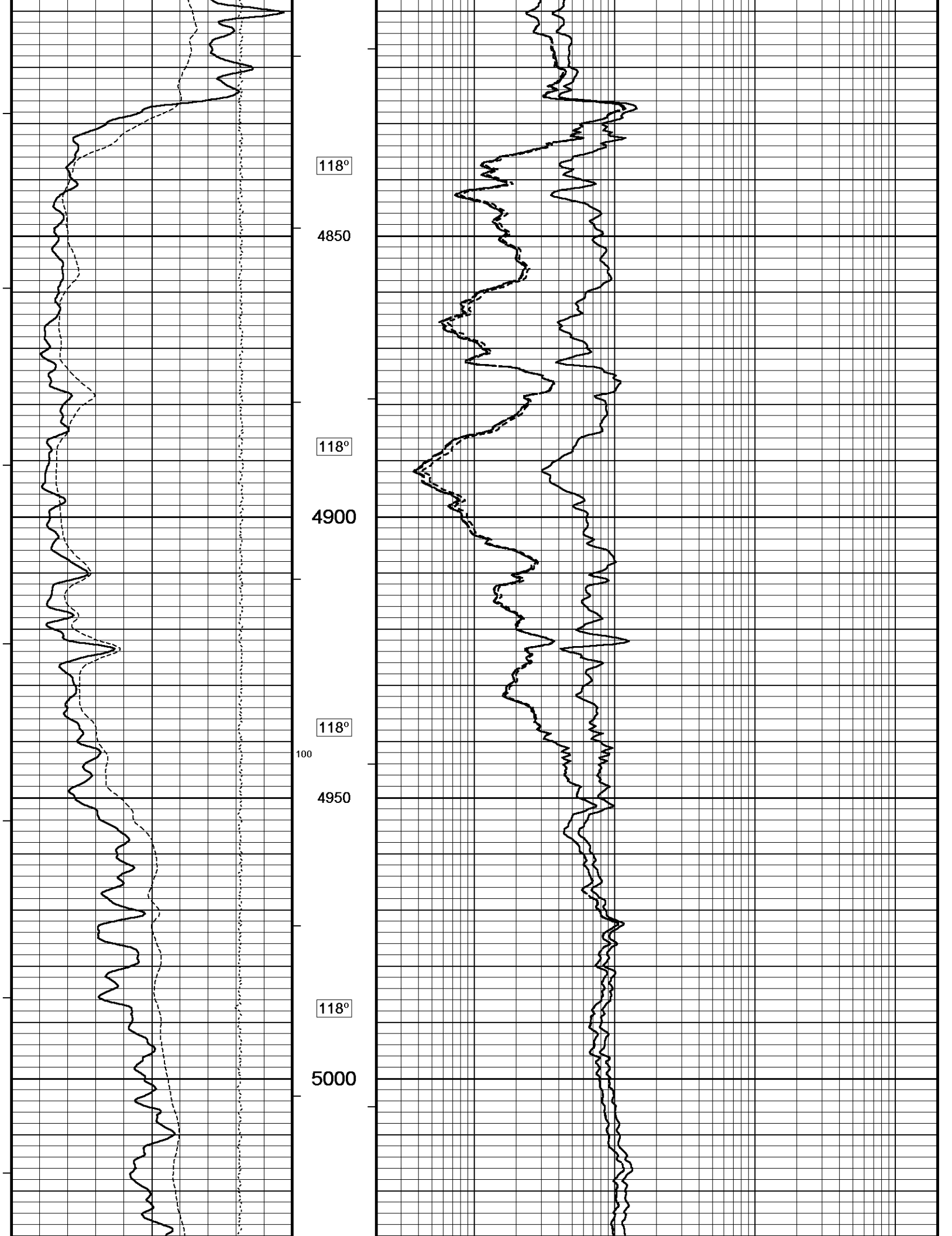
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 12-SEP-2014 05:14
Filename: C:\Minimus 13.08\Data\CMX Bartender #3\CMX Bartender #3 Main.dta
Recorded on 12-SEP-2014 02:41
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

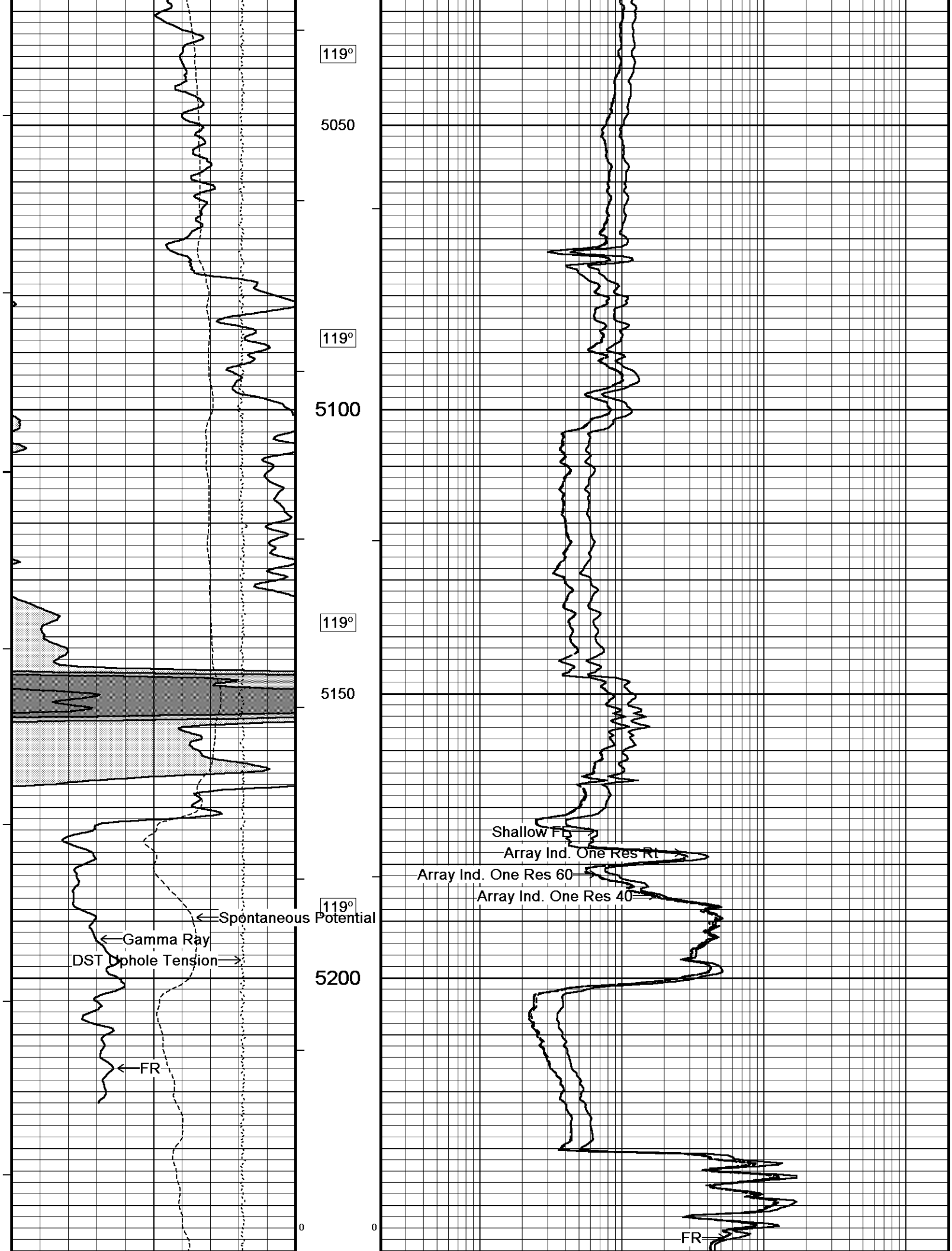
5 INCH MAIN

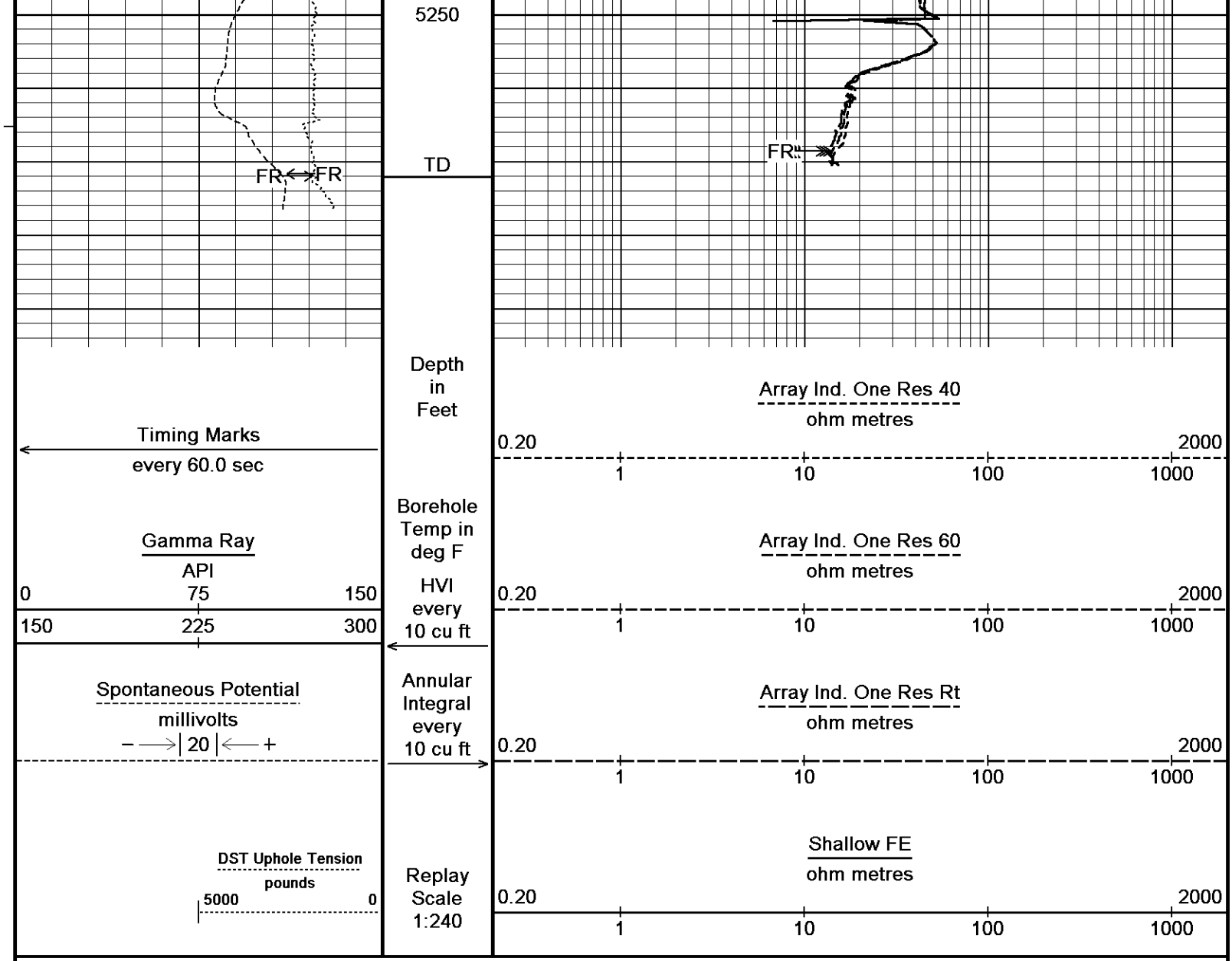
REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 12-SEP-2014 05:14
Filename: C:\Minimus 13.08\Data\CMX Bartender #3\CMX Bartender #3 Repeat.dta
Recorded on 12-SEP-2014 02:17
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113




118°
4850
118°
4900
118°
100
4950
118°
5000


119°
5050
119°
5100
119°
5150
119°
5200
Spontaneous Potential
Gamma Ray
DST Uphole Tension
FR
Shallow FD
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
FR
0
0



Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 12-SEP-2014 05:14
Filename: C:\Minimus 13.08\Data\CMX Bartender #3\CMX Bartender #3 Repeat.dta
Recorded on 12-SEP-2014 02:17
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 13.08\Data\CMX Bartender #3\CMX Bartender #3 Main.dta

General Constants All 000

Last Edited on 12-SEP-2014,01:56

General Parameters		
Mud Resistivity	0.840	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	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 12-SEP-2014 01:35

Reading No	Measured	Calibrated (lbs)
1	15613.96	0.00
2	16231.98	445.00

High Resolution Temperature Calibration MCG-D.K 443

Field Calibration on 05-MAR-2014,20:50

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MCG-D.K 443

Last Edited on 22-JUL-2014,11:40

Pre-filter Length	11

SP Calibration MCG-D.K 443

Field Calibration on 25-AUG-2014 09:05

	Measured	Calibrated (mV)
Reference 1	101.9	100.8
Reference 2	-99.4	-100.9

Gamma Calibration MCG-D.K 443

Field Calibration on 30-AUG-2014 17:02

	Measured	Calibrated (API)
Background	73	48
Calibrator (Gross)	1170	773
Calibrator (Net)	1097	725

Gamma Constants MCG-D.K 443

Last Edited on 12-SEP-2014,00:00

Gamma Calibrator Number	GRC38	
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	%

Caliper Calibration MMR-A 11

Base Calibration on 02-SEP-2014 13:09
Field Calibration on 10-SEP-2014 04:19

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13952	5.98
2	17258	7.97
3	20482	9.86
4	24471	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.99	7.97

Micro Normal and Micro Inverse Calibration MMR-A 11

Base Calibration on 02-SEP-2014 13:17
Field Check on 10-SEP-2014 04:18

Base Calibration

	Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	10.1	49.3	5.1	25.6
Micro Inverse	9.8	48.9	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	94.8	94.8
Micro Inverse	63.0	63.0

Micro Normal and Micro Inverse Constants MMR-A 11

Last Edited on 10-JUL-2014,16:35

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159
Micro Normal K Factor	0.5110
Micro Inverse K Factor	0.3380

Micro Inverse K Factor	0.5380	
Standoff Offset	0.0000	inches

Neutron Calibration MDN-A.B 65

Base Calibration on 07-AUG-2014 14:53
Field Check on 11-SEP-2014 14:59

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3171	98	3714	110
Ratio	32.202		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	1639	2378
Ratio	0.689	

Field Check

	Calibrated (cps)	
	1632	2350
Ratio	0.695	

Neutron Constants MDN-A.B 65

Last Edited on 11-SEP-2014,23:58

Neutron Source Id	PN-521	
Neutron Jig Number	5824NE	
Epithermal Neutron		
Caliper Source for Processing	Bit Size	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	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-B.J 352

Base Calibration on 02-SEP-2014 14:11
Field Check on 10-SEP-2014 04:17

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	963.0	126.8
Base Check		281.7
Field Check		281.7

FE Constants MFE-B.J 352

Last Edited on 11-SEP-2014,23:57

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Caliper Source for FE correction	Density Caliper	
Caliper Value for FE correction	N/A	inches
Rm Source for FE correction	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
Stand-off	0.5	inches

Sonic Constants MSS-A.A 73

Last Edited on 11-SEP-2014,23:57

Maximum Boundary Contrast	100.00	micro-sec/ft
Fluid Transit Time	189.00	micro-sec/ft
Limestone Transit Time	47.50	micro-sec/ft
Sandstone Transit Time	55.50	micro-sec/ft
Dolomite Transit Time	43.50	micro-sec/ft
Sonic used for Porosities	3-5' Compensated Sonic	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	N/A	micro-sec
MX3FT	N/A	micro-sec

Hunt-Raymer Constant	83.13	micro-sec/ft

Sonde Mode	Compensated
Hole Type	Open Hole

Sonde Parameters

	Measured	Calibrated
Offset	N/A	0.0000
Free Pipe	N/A	N/A

Peak Amplitude Source N/A

Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	N/A	N/A	N/A	N/A	N/A
4'	N/A	N/A	N/A	N/A	N/A
5'	N/A	N/A	N/A	N/A	N/A
6'	N/A	N/A	N/A	N/A	N/A

Processed Fixed Gate Parameters

Waveform Used For Processing N/A

Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)	N/A
N/A	N/A	N/A	
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	

Full Waveform Parameters

Use 3' Waveform to derive TR	N/A	
Use 4' Waveform to derive TR	N/A	
Use 5' Waveform to derive TR	N/A	
Use 6' Waveform to derive TR	N/A	
3' Waveform Discriminator Level	N/A	mV
4' Waveform Discriminator Level	N/A	mV
5' Waveform Discriminator Level	N/A	mV
6' Waveform Discriminator Level	N/A	mV
3' Waveform Filter	N/A	
4' Waveform Filter	N/A	
5' Waveform Filter	N/A	
6' Waveform Filter	N/A	
Semblance Level	N/A	
Semblance Window Width	N/A	micro-sec
Sonic 1 Despiker	N/A	N/A
Sonic 2 Despiker	N/A	N/A

Induction Calibration MAI-A.A 45

Base Calibration on 10-JUL-2014,11:31
Field Check on 11-SEP-2014 14:37

Base Calibration

Test Loop Calibration

Channel	Measured Low	Measured High	Calibrated (mmho/m) Low	Calibrated (mmho/m) High
1	14.5	473.5	9.3	966.2
2	5.2	373.4	7.6	821.4
3	2.8	260.6	5.2	566.0
4	1.6	132.2	2.6	279.2

Array Temperature 86.2 Deg F

Channel	Base Check (mmho/m) Low	Base Check (mmho/m) High	Field Check (mmho/m) Low	Field Check (mmho/m) High
1			18.6	3843.3
2			32.9	3630.2
3			30.0	3049.3
4			20.5	2093.3
Deep			17.9	1920.2
Medium			43.3	4049.5
Shallow			50.0	5472.9

Array Temperature 68.0 Deg F

Induction Constants MAI-A.A 45 Last Edited on 11-SEP-2014 23:57

Induction Constants MAI-A.A 45

Last Edited on 11-SEP-2014,23:57

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 Constants MAI-A.A 45

Last Edited on

Pre-filter Length	11

Caliper Calibration MPD-B 104

Base Calibration on 12-AUG-2014 21:09
Field Calibration on 11-SEP-2014 14:38

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	12248	3.99
2	21021	5.98
3	29619	7.97
4	37847	9.86
5	46921	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.96	7.97

Photo Density Calibration MPD-B 104

Base Calibration on 12-AUG-2014 21:27
Field Check on 11-SEP-2014 14:42

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	1200	1392		
Reference 1	43233	21553	59556	30836
Reference 2	17877	2370	24941	2541

Field Check at Base

1200.4	1392.3

Field Check

	1193.8	1387.1

PE Calibration

Base Calibration	WS	Measured WH	Ratio	Calibrated Ratio
Background	220	1078		
Reference 1	18382	43065	0.433	0.371
Reference 2	5186	17746	0.298	0.272

Field Check at Base		
	219.8	1078.1

Field Check		
	219.3	1072.4

Density Constants MPD-B 104

Last Edited on 11-SEP-2014,23:57

Density Source Id	254	
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\Data\CMX Bartender #3\CMX Bartender #3 Main.dta

3/8" Triple Cone Cable Head (MCB C A)
MCB-C.A 5 LG: 1.58 ft WT: 15.4 lb OD: 2.244 in

Compact Comms Gamma
MCG-D.K 443 LG: 8.70 ft WT: 63.9 lb OD: 2.240 in

- 56.02 ft GRGC - Gamma Ray
- 53.11 ft CGXT - MCG External Temperature

Compact Micro-Resistivity
MMR-A 11 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

- 45.76 ft MBTC - MMR Caliper
- 45.76 ft MINV - MMR MicroLog Inverse
- 45.76 ft MNRL - MMR MicroLog Normal

Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.240 in

- 40.97 ft NPRL - Limestone Neutron Por.

Compact Density/Caliper
MPD-B 104 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

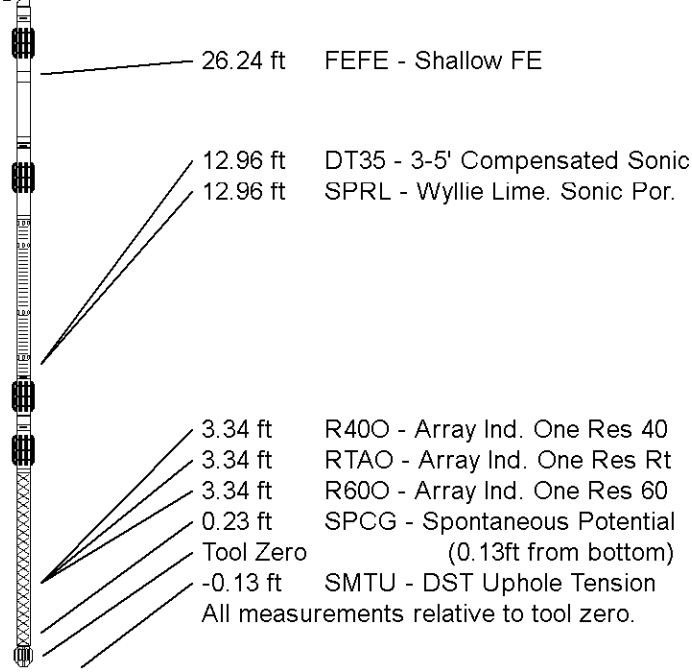
- 33.73 ft CLDC - Density Caliper
- 33.73 ft AVOL - Annular Volume
- 33.73 ft HVOL - Hole Volume
- 31.80 ft DPRL - Limestone Density Por.
- 31.80 ft DEN - Compensated Density
- 31.80 ft DCOR - Density Correction
- 31.74 ft PDPE - PE

Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.240 in

Compact Sonic
MSS-A.A 73 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

Compact Induction
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.240 in

Total Length: 62.88 ft Weight: 471.8 lb



COMPANY	CMX, INC.
WELL	BARTENDER #3
FIELD	STRANATHAN
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1387.00	feet	First Reading	5268.66	feet
Elevation Drill Floor	1385.00	feet	Depth Driller	5275.00	feet
Elevation Ground Level	1374.00	feet	Depth Logger	5272.00	feet

Weatherford®

SHALLOW FOCUSED ARRAY INDUCTION ELECTRIC LOG

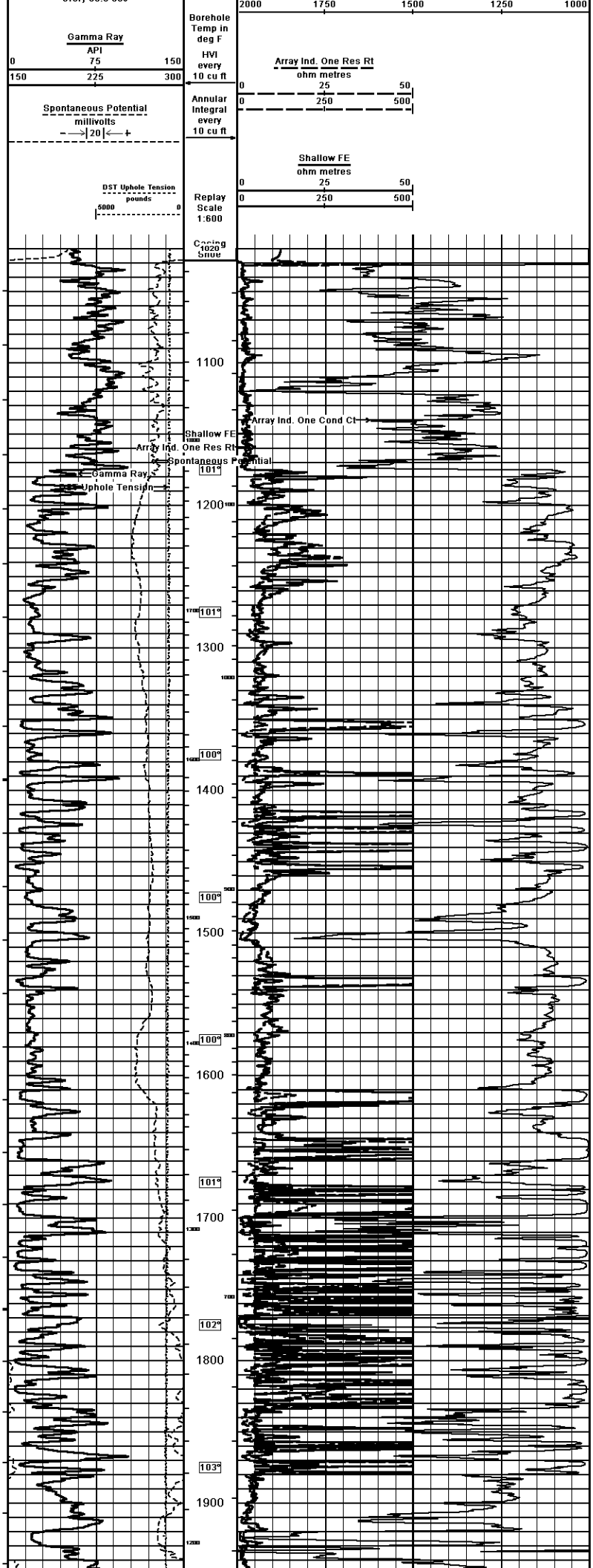
COMPANY	CMX, INC.
WELL	BARTENDER #3
FIELD	STRANATHAN
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	660' FNL & 2310' FEL
SEC 19 TWP 35S RGE 11W	Other Services: MPD/MDN MSS
Latitude	
Longitude	
API Number	15-007-24211
Permanent Datum GL Elevation 1374 feet	MML
Log Measured From KB	Elevations: KB 1387.00 feet
Drilling Measured From KB @ 13 FEET	DF 1385.00
	GL 1374.00
Date	12-SEP-2014
Run Number	ONE
Service Order	7606-97671138
Depth Driller	5275.00 feet
Depth Logger	5272.00 feet
First Reading	5268.66 feet
Last Reading	5028.00 feet
Casing Driller	1028.00 feet
Casing Logger	1028.00 feet
Bit Size	7.875 inches
Hole Fluid Type	CHEMICAL
Density / Viscosity	9.20 lbi/USg 61.00 CP
PH / Fluid Loss	10.80 7.20 ml/30Min
Sample Source	MUD PIT
Rm @ Measured Temp	0.84 @ 75.0 ohm-m
Rmf @ Measured Temp	0.67 @ 75.0 ohm-m
Rmc @ Measured Temp	1.0 @ 75.0 ohm-m
Source Rmf / Rmc	CALC CALC
Rm @ BHT	0.53 @121.0 ohm-m
Time Since Circulation	3 HOURS
Max Recorded Temp	121.00 deg F
Equipment / Base	13057 LIB
Recorded By	BEN WELDIN
Witnessed By	LEAH KASTEN
UOB #	LB14-272

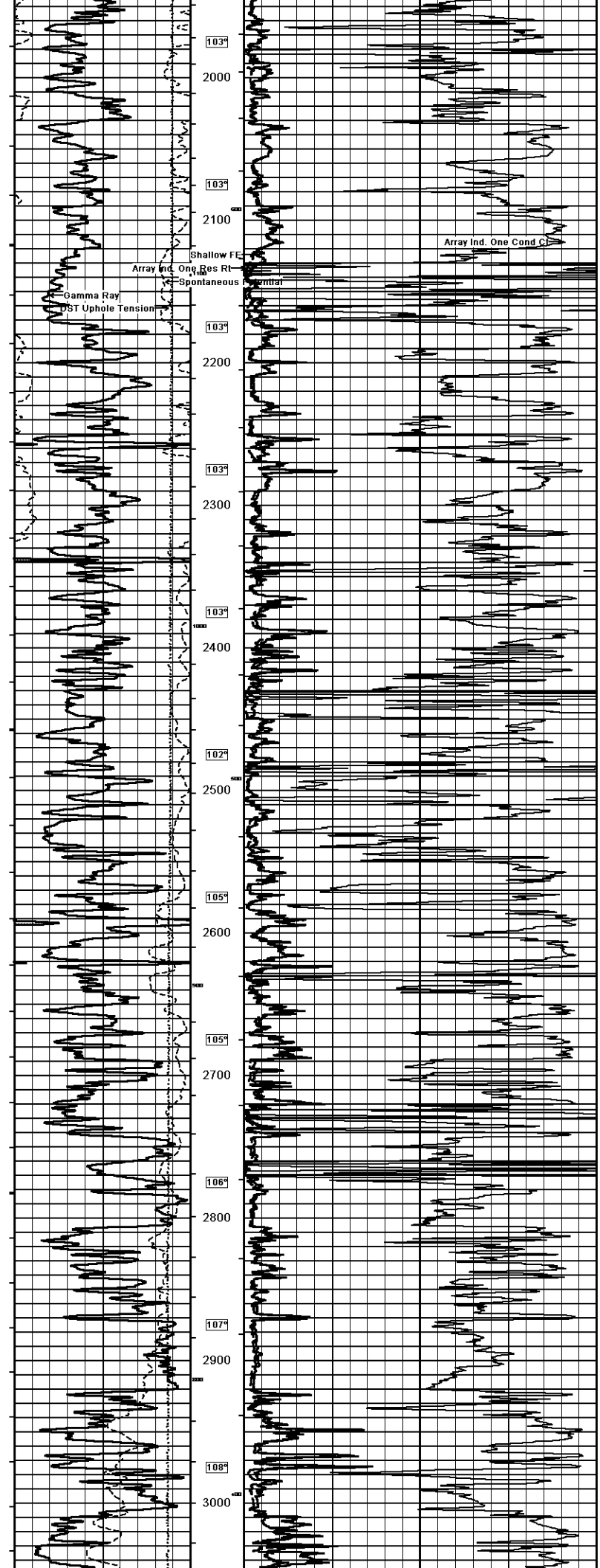
SHALLOW FOCUSED ARRAY INDUCTION ELECTRIC LOG

1 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 12-SEP-2014 05:14
Filename: C:\Minimus 13.08\Data\CMX Bartender #3\CMX Bartender #3 Main.dta
Recorded on 12-SEP-2014 02:41
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

Timing Marks every 60.0 sec	Depth in Feet	Array Ind. One Cond Ct mmhos 1000 750 500 250 0


Gamma Ray
API
0
75
150
150
225
300
Spontaneous Potential
millivolts
20
DST Uphole Tension
pounds
5000
0
Borehole Temp in deg F
HVI every 10 cu ft
Annular Integral every 10 cu ft
Replay Scale 1:600
2000
1750
1500
1250
1000
Array Ind. One Res Rt
ohm metres
0
25
50
0
250
500
Shallow FE
ohm metres
0
25
50
0
250
500
Casing
1020
Shoe
Array Ind. One Cond Ct
Shallow FE
Array Ind. One Res Rt
Spontaneous Potential
Gamma Ray
Uphole Tension
1100
1200
1300
1400
1500
1600
1700
1800
1900
101°
101°
100°
100°
100°
101°
102°
103°


103°
2000
103°
2100
Array Ind. One Cond C
Shallow FE
Array Ind. One Res Rt
Spontaneous Potential
Gamma Ray
GST Uphole Tension
103°
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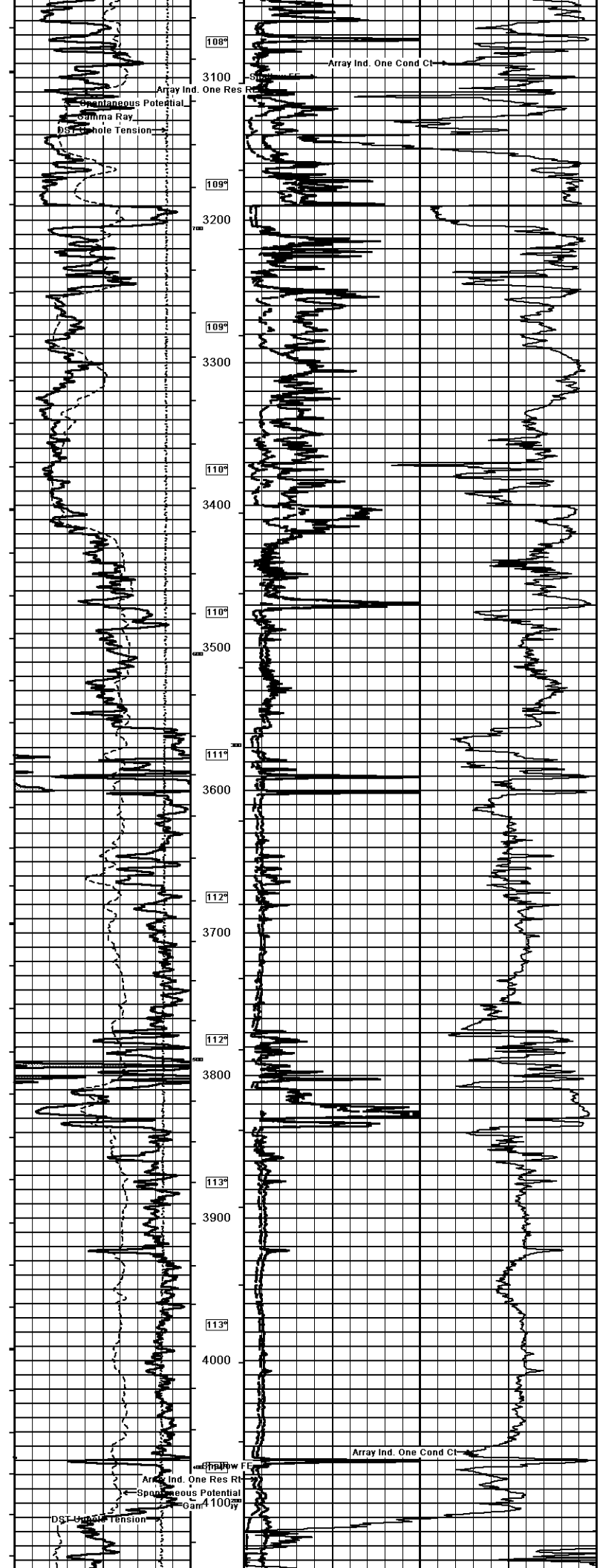
105°
2700
106°
2800
107°
2900
108°
3000


Array Ind. One Cond Ct
Array Ind. One Res Rt
Spontaneous Potential
Gamma Ray
DST Borehole Tension
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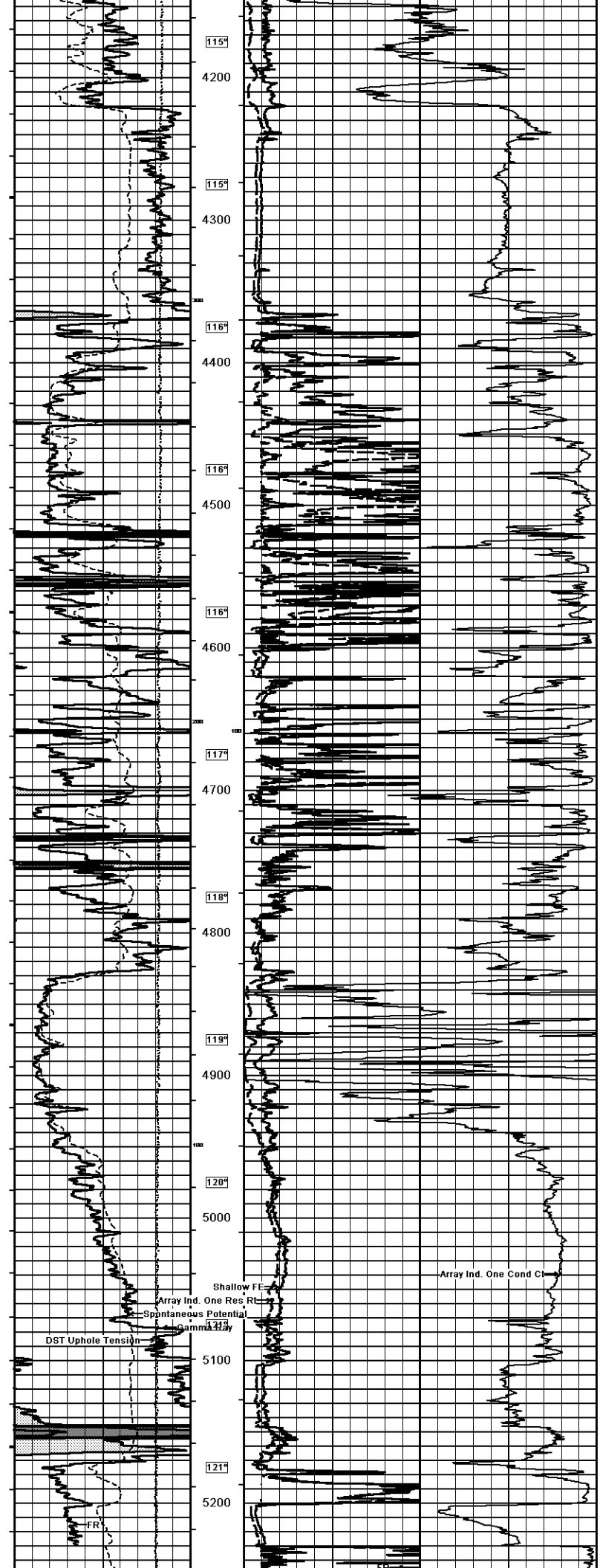
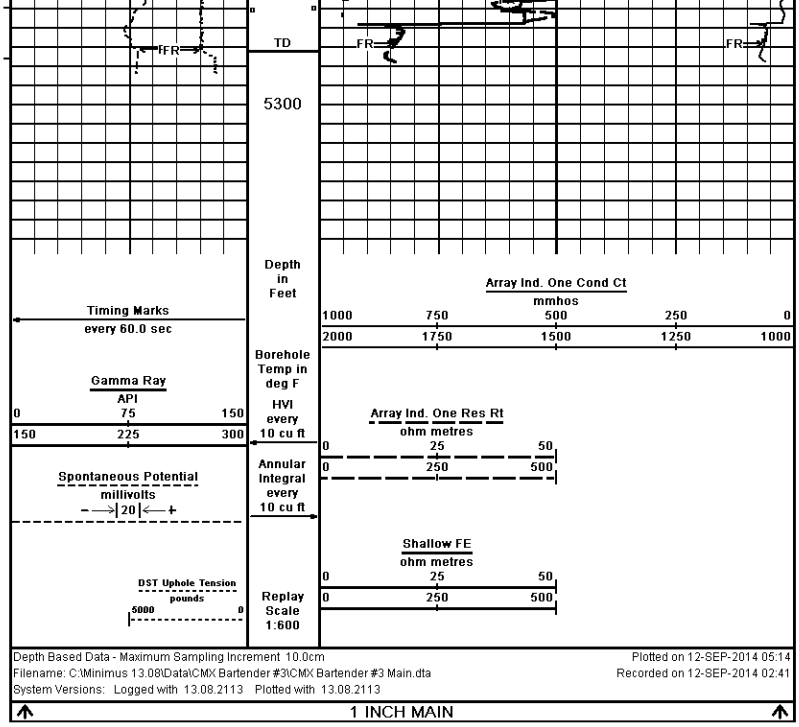
3200
3300
3400
3500
3600
3700
3800
3900
4000
4100
Array Ind. One Cond Ct
Array Ind. One Res Rt
Spontaneous Potential
DST Borehole Tension


115°
4200
115°
4300
116°
4400
116°
4500
116°
4600
117°
4700
118°
4800
119°
4900
120°
5000
Shallow FE
Array Ind. One Res RT
Spontaneous Potential
Gamma Ray
DST Uphole Tension
Array Ind. One Cond Ct
121°
5100
5200
FR



Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 12-SEP-2014 05:14
Filename: C:\Minimus 13.08\Data\CMX Bartender #3\CMX Bartender #3 Main.dta
Recorded on 12-SEP-2014 02:41
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

1 INCH MAIN

COMPANY	CMX, INC.
WELL	BARTENDER #3
FIELD	STRANATHAN
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1387.00	feet	First Reading	5268.66	feet
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Weatherford

SHALLOW FOCUSED
ARRAY INDUCTION
ELECTRIC LOG