



**Weatherford**

**ARRAY INDUCTION  
SHALLOW FOCUSED  
ELECTRIC LOG**

COMPANY

SHAKESPEARE OIL CO., INC.

WELL

GOERING #1-5

FIELD

WILDCAT

PROVINCE/COUNTY LANE

COUNTRY/STATE

U.S.A. / KANSAS

LOCATION

1580' FNL & 360' FEL

SEC 5

TWP 20S RGE 30W

Other Services  
MPD/MDN  
MSS

Latitude

Longitude

MML

API Number

15-101-22596

Permanent Datum GL, Elevation 2940 feet

Log Measured From KB, 11.00 feet above Permanent Datum

Drilling Measured From KB

Date

21-JUL-2017

Run Number

ONE

Service Order

4558-187851123

Depth Driller

4800.00 feet

Depth Logger

4802.00 feet

First Reading

4799.00 feet

Last Reading

266.00 feet

Casing Driller

265.00 feet

Casing Logger

266.00 feet

Bit Size

7.875 inches

Hole Fluid Type

CHEMICAL

Density / Viscosity

9.10 lb/USg 49.00 CP

PH / Fluid Loss

10.50 7.20 ml/30Min

Sample Source

FLOWLINE

Rm @ Measured Temp

0.96 @ 75.0 ohm-m

Rmf @ Measured Temp

0.77 @ 75.0 ohm-m

Rmc @ Measured Temp

1.15 @ 75.0 ohm-m

Source Rmf / Rmc

CALC CALC

Rm @ BHT

0.57 @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

TIM PRIEST

Elevations:  
KB 2951.00 feet  
DF 2949.00 feet  
GL 2940.00 feet

**BOREHOLE RECORD**

Last Edited: 21-JUL-2017 20:12

Bit Size inches	Depth From feet	Depth To feet
7.875	265.00	4800.00

**CASING RECORD**

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	265.00	24.00

**REMARKS**

- SOFTWARE ISSUE: WLS 17.01.7206.
- 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: 1722 CU.FT.
- ANNULAR HOLE VOLUME WITH 4.5 INCH PRODUCTION CASING FROM TD TO 3800 FEET: 222 CU.FT.

- RIG: DUKE #5.

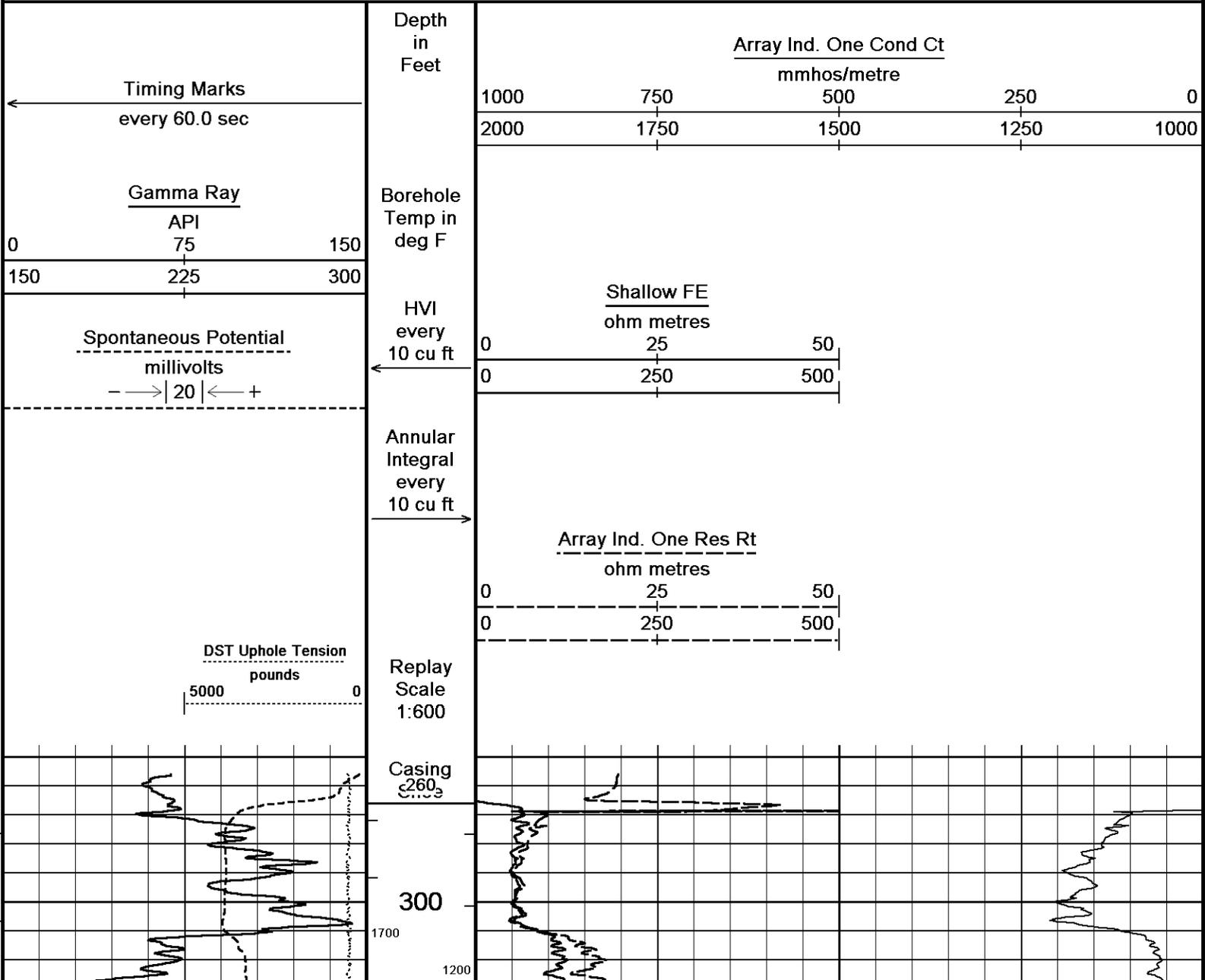
- ENGINEER: A. SILL.

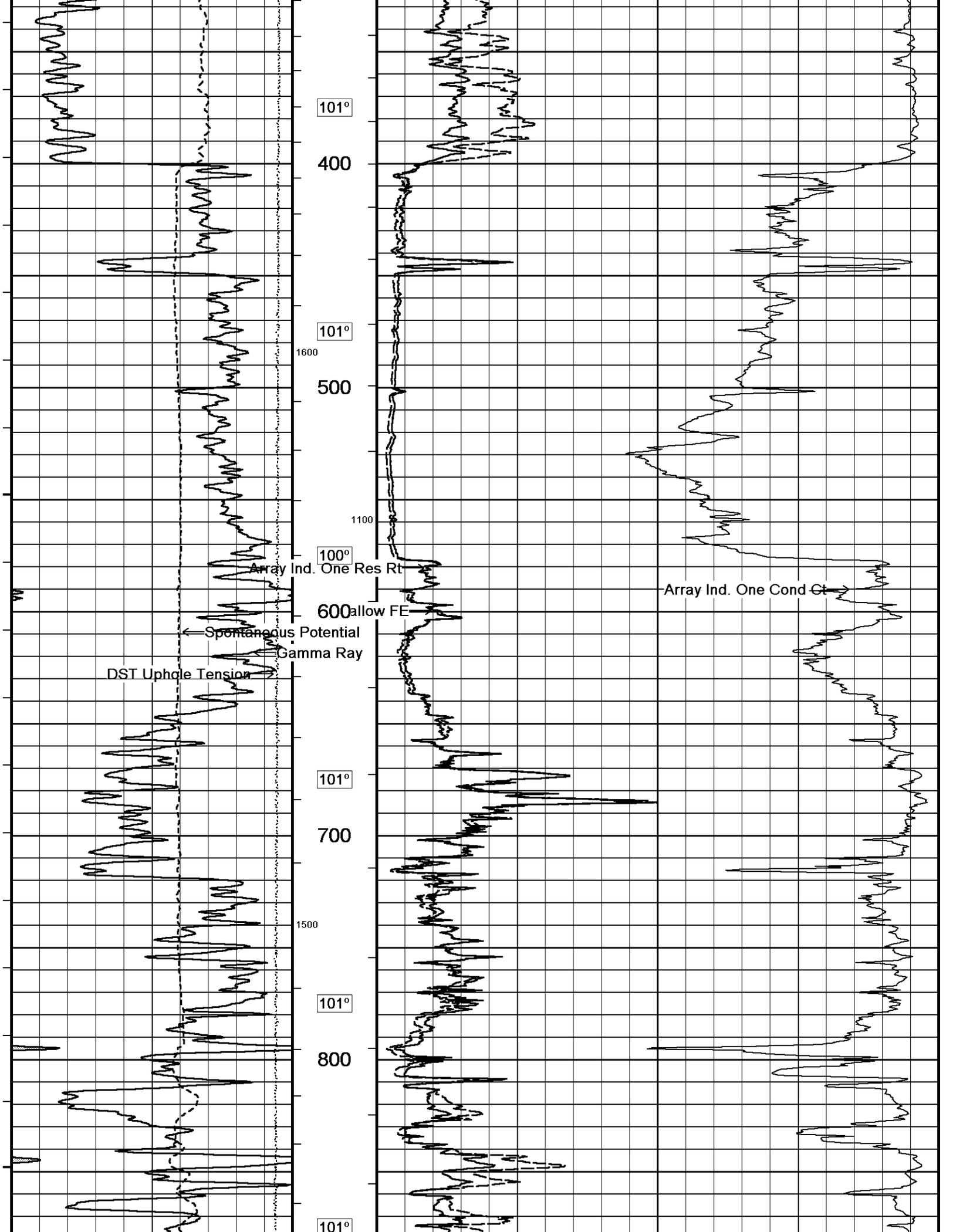
- OPERATOR: B. TOVAR.

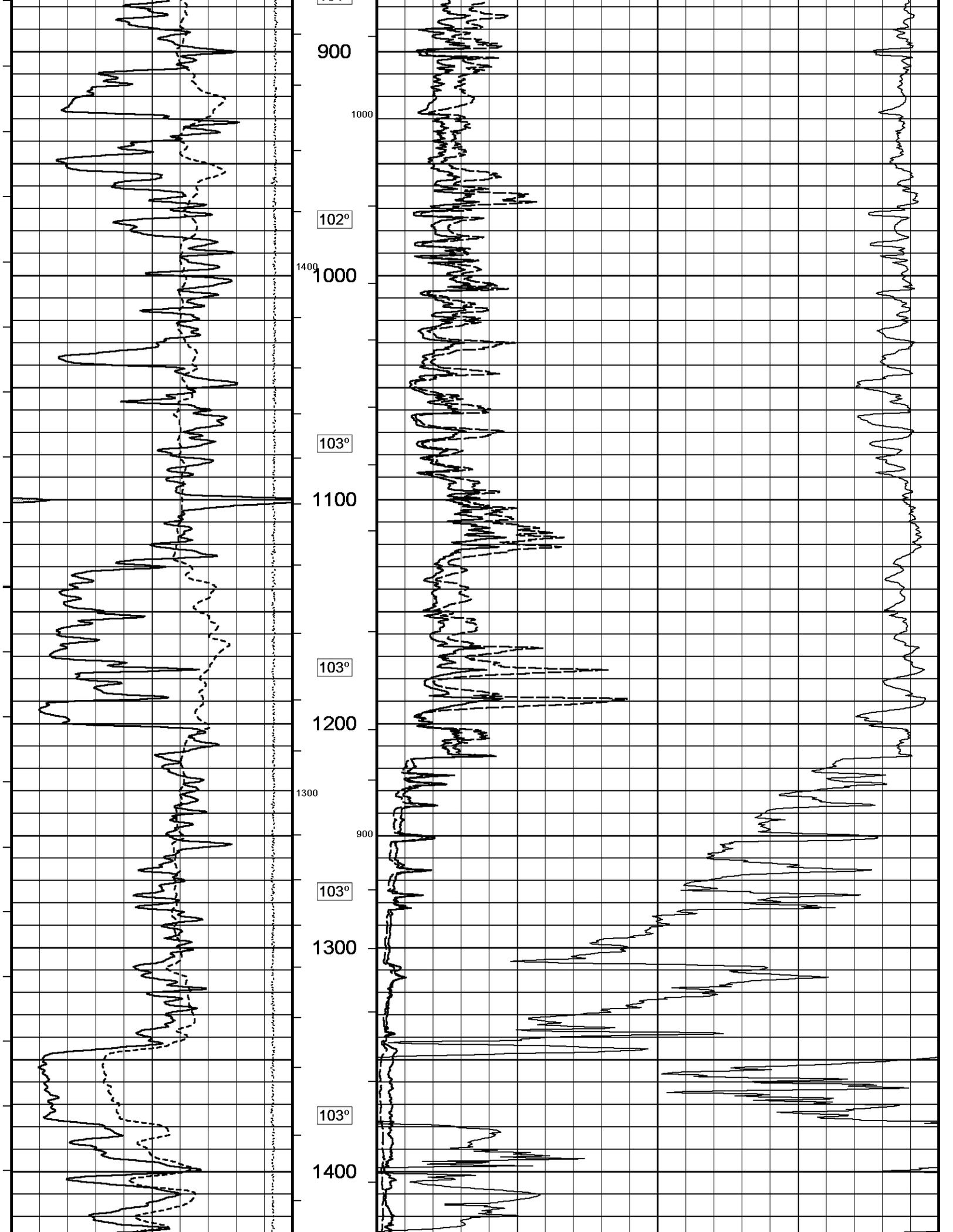
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will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

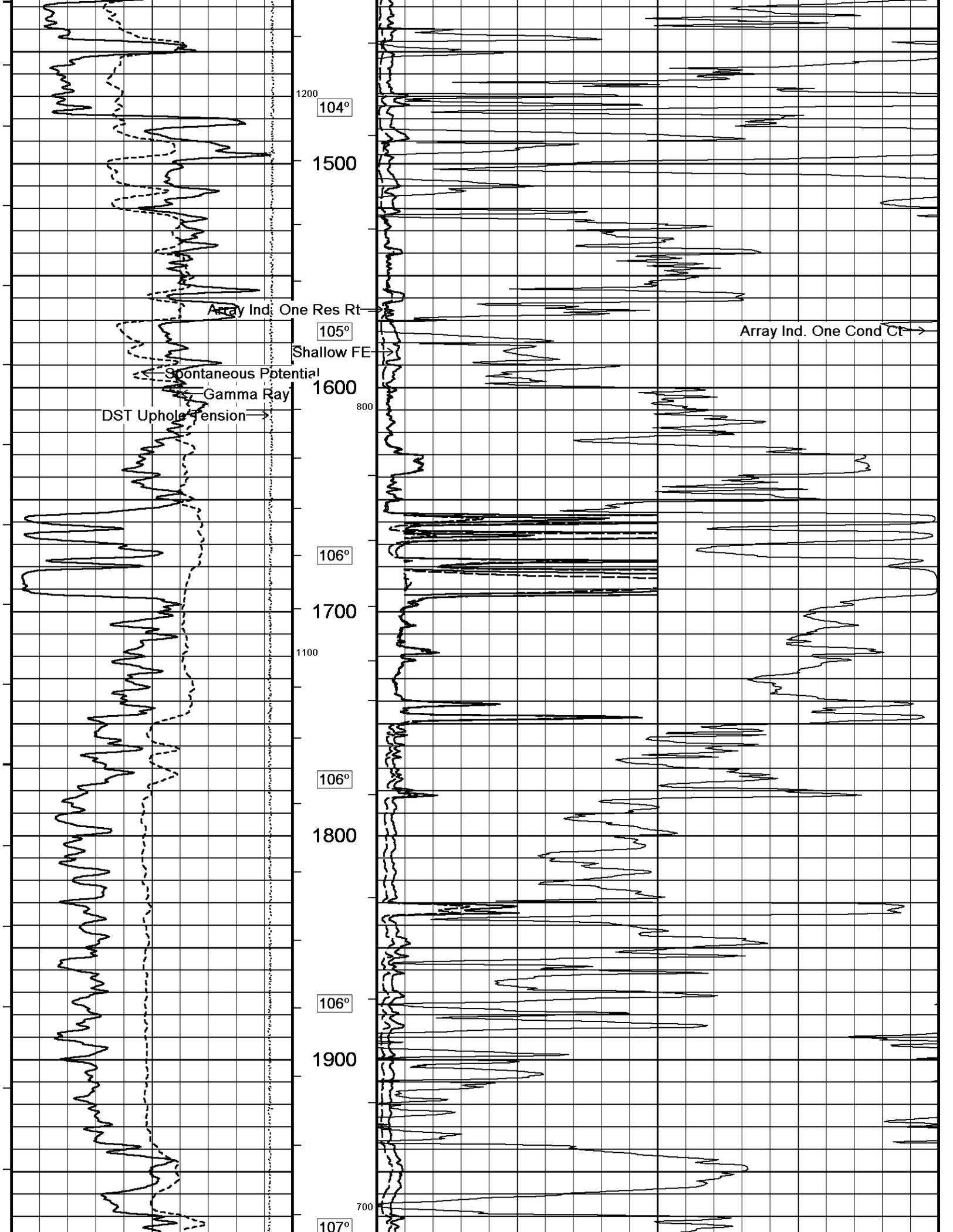
**2 INCH MAIN**

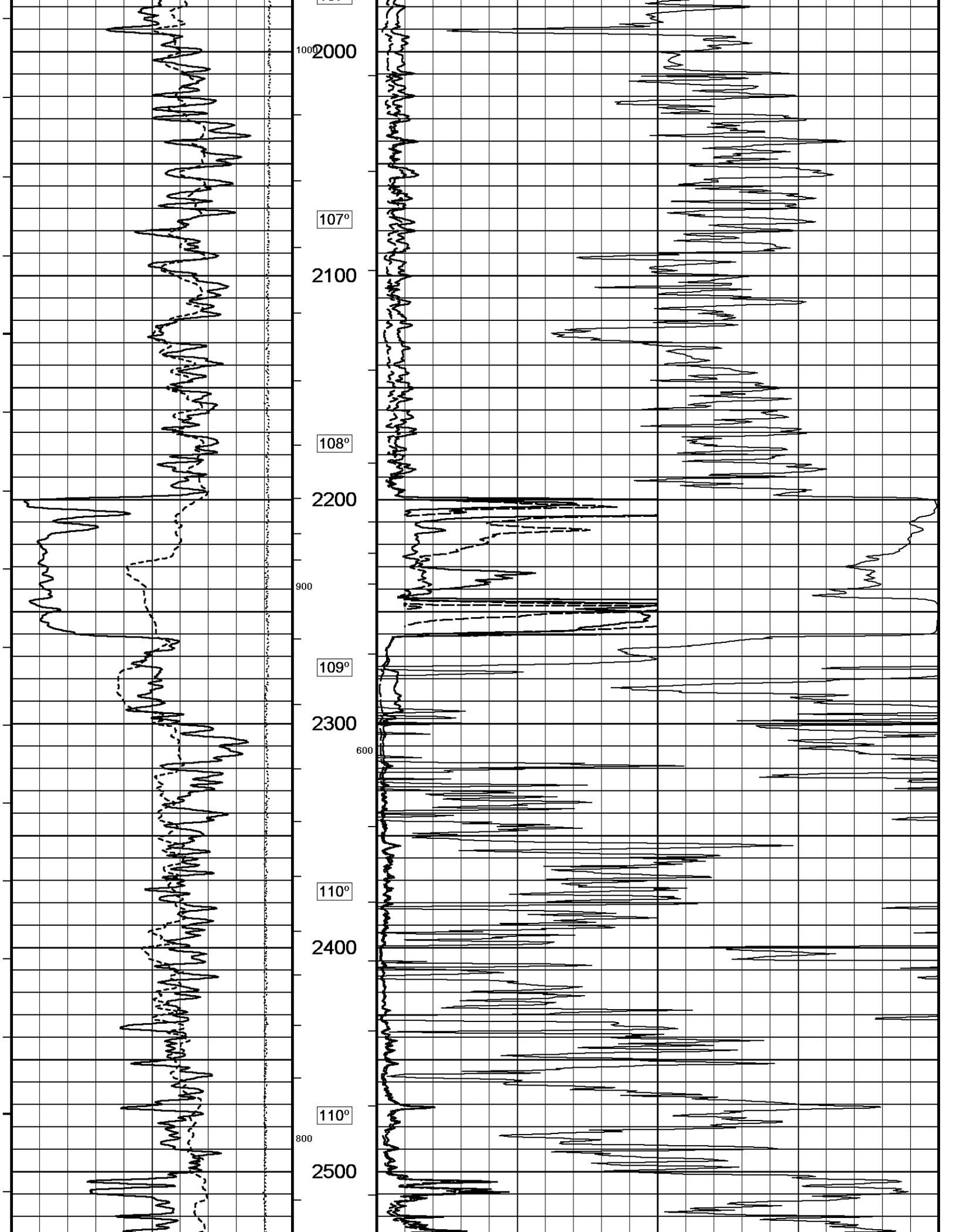
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 22-JUL-2017 02:32  
 Filename: C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5\_002.dta Recorded on 21-JUL-2017 23:39  
 System Versions: Logged with 17.01.7206 Plotted with 17.01.7206

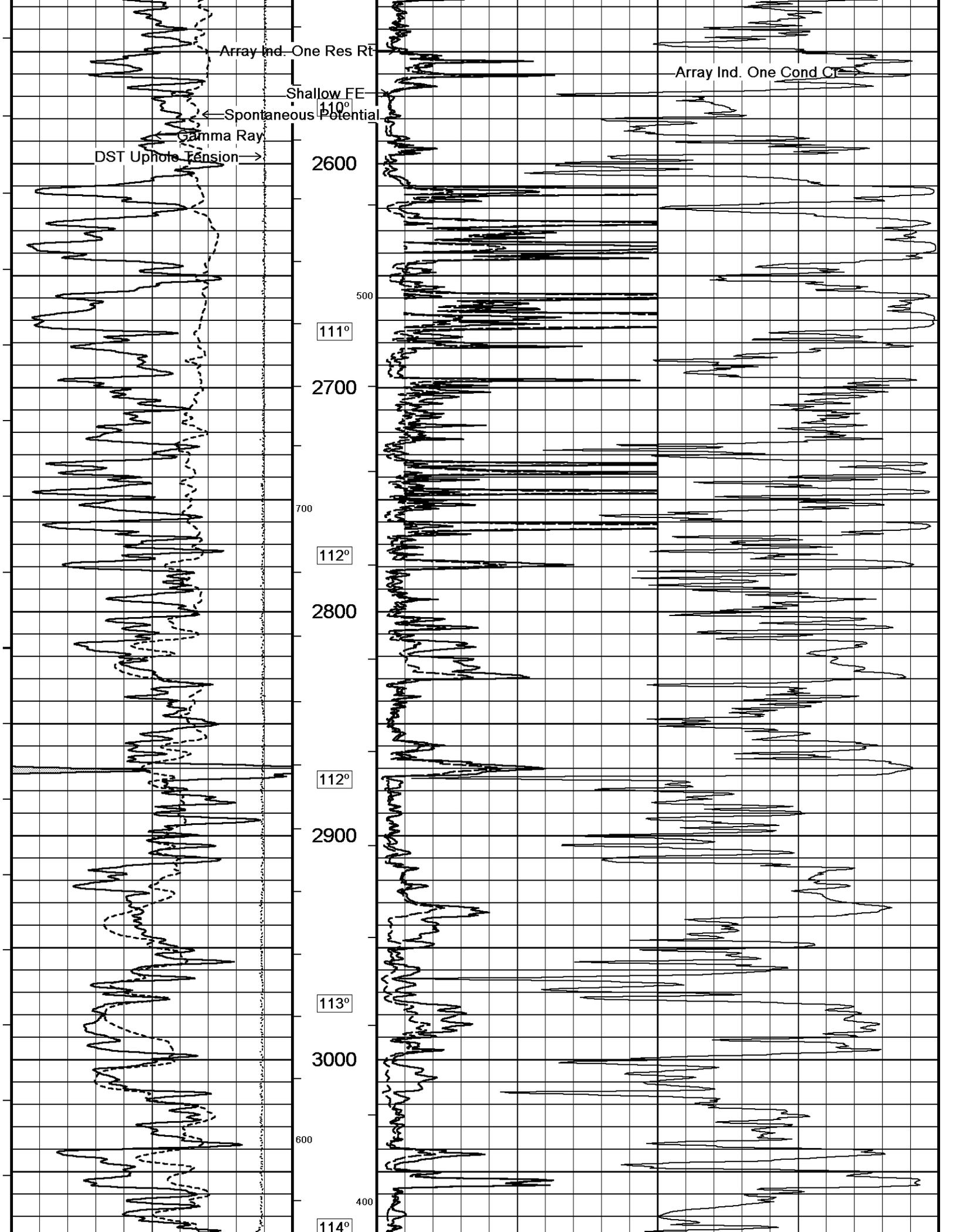


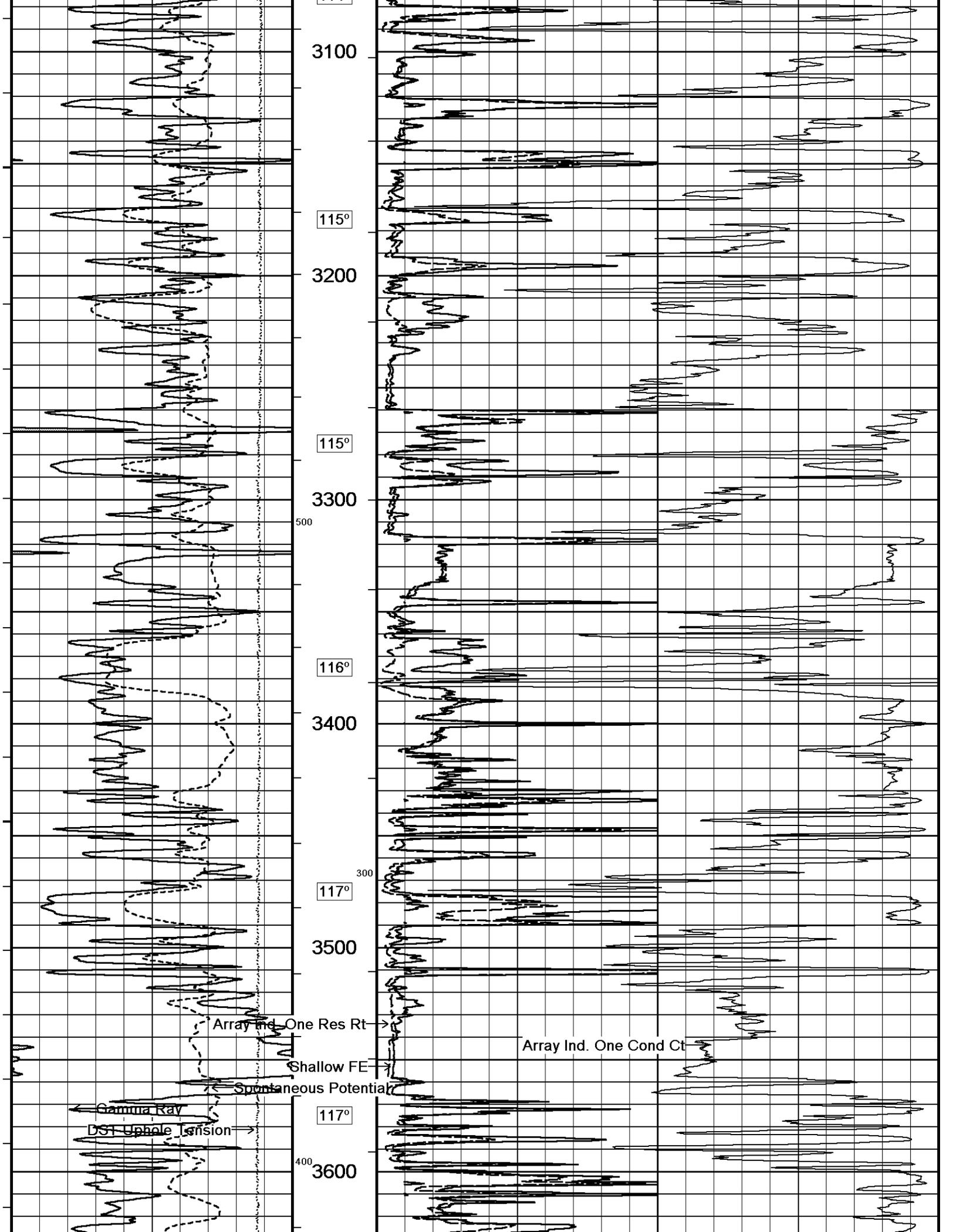


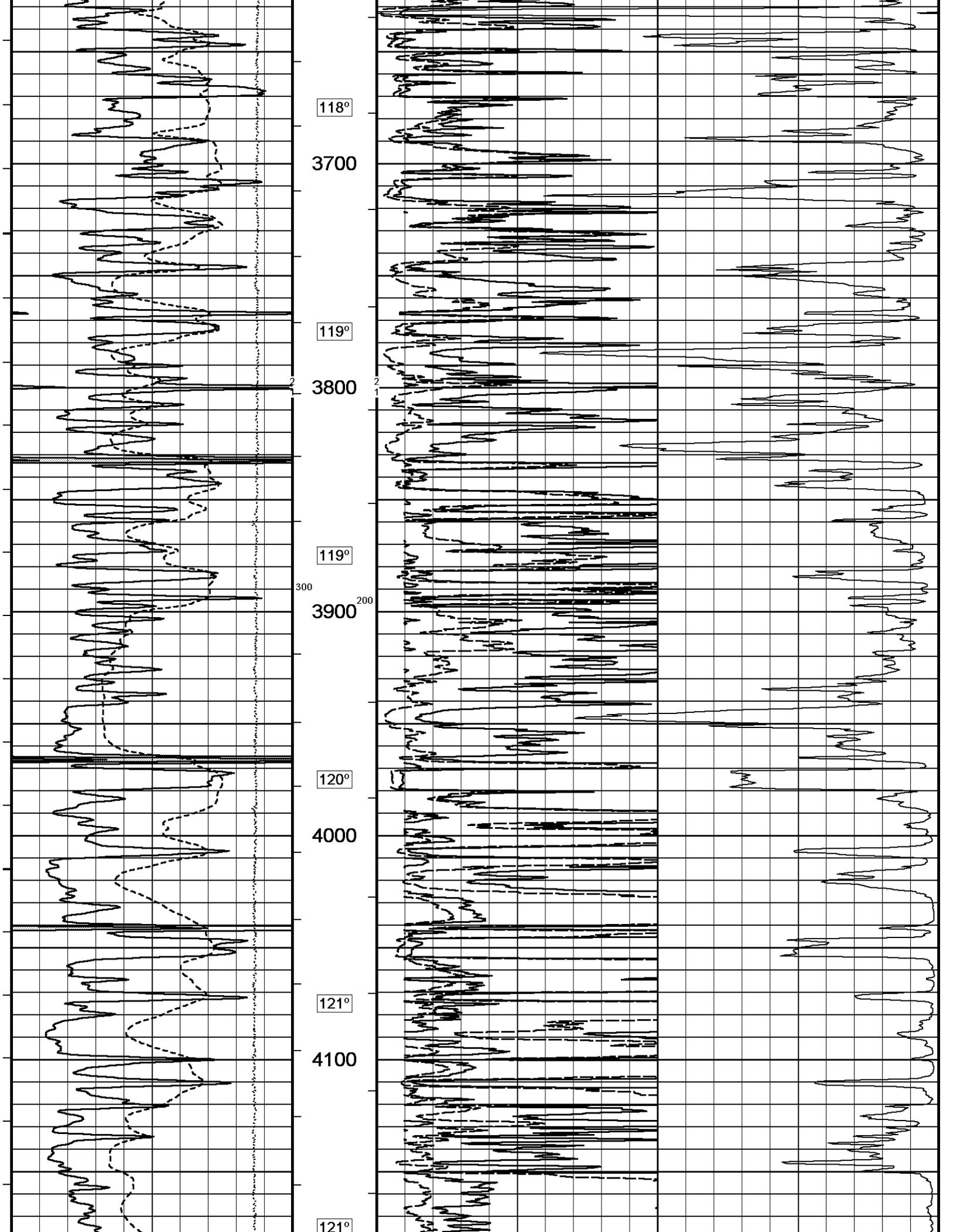


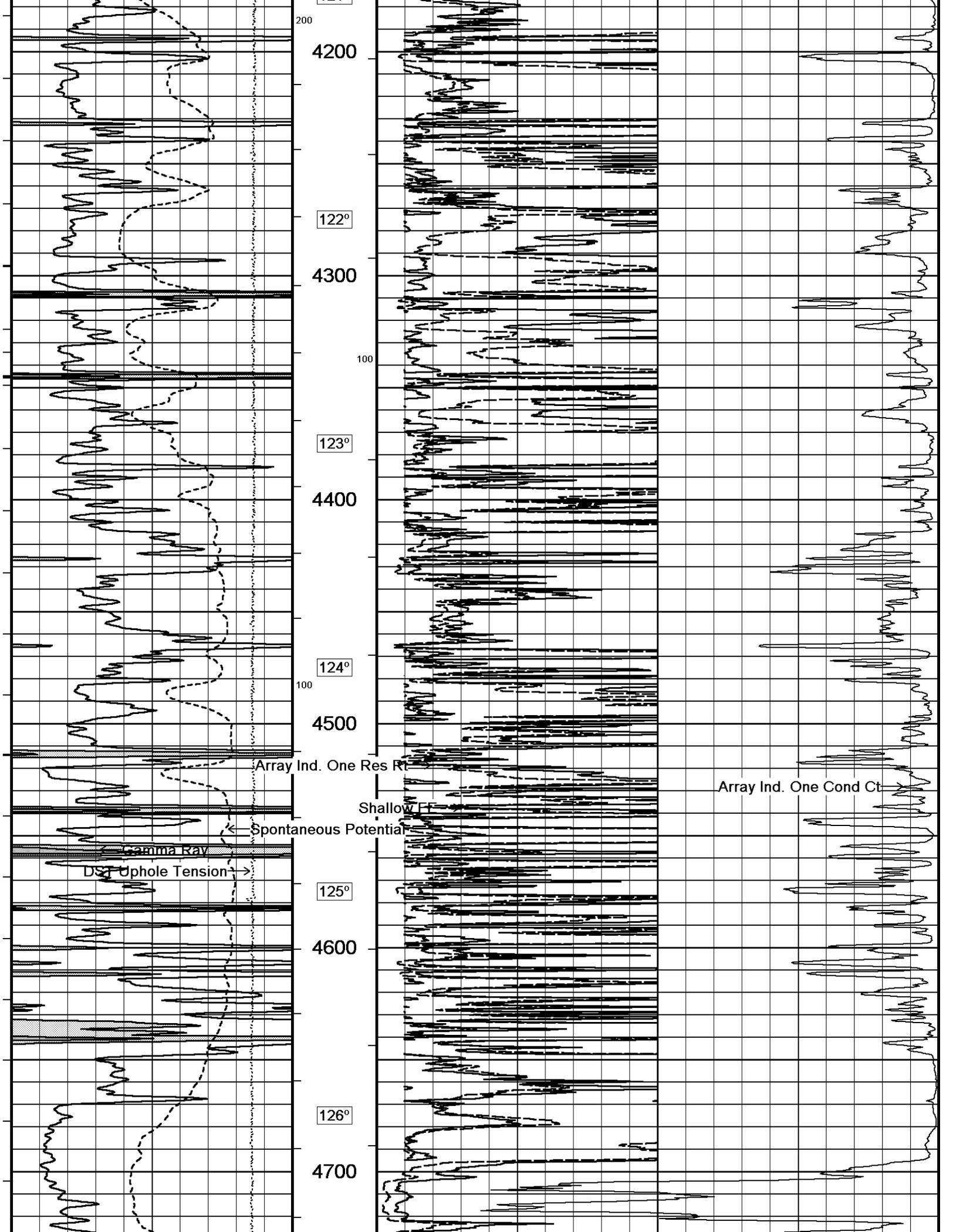


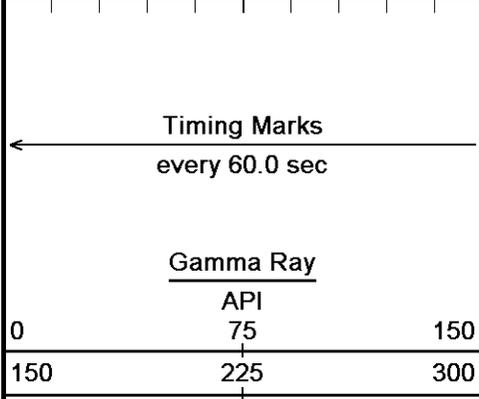
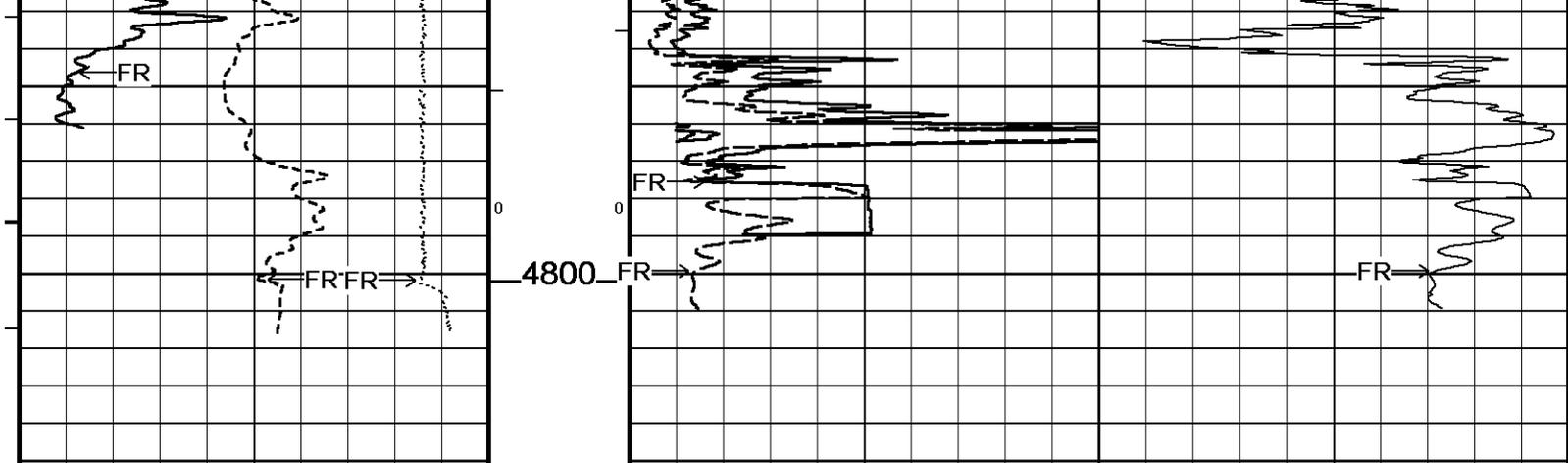






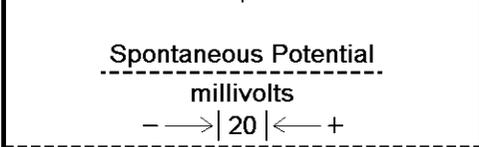
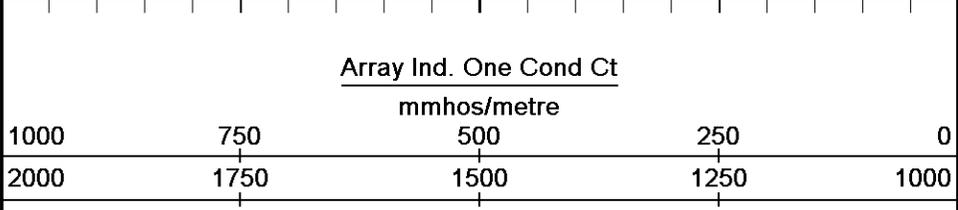




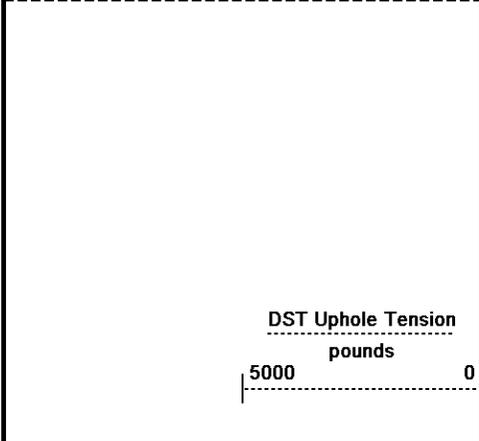
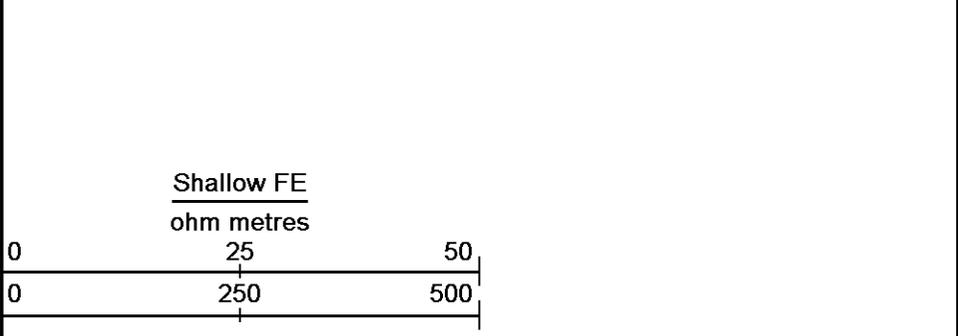


Depth in Feet

Borehole Temp in deg F

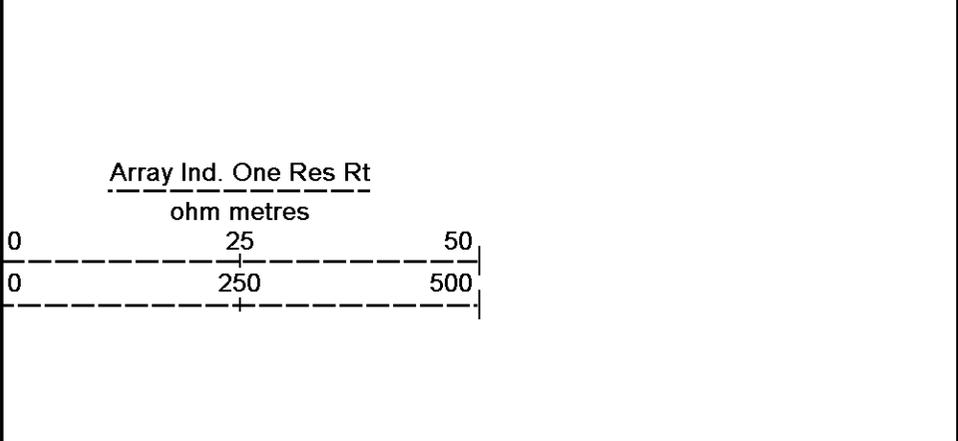


HVI every 10 cu ft



Annular Integral every 10 cu ft

Replay Scale 1:600

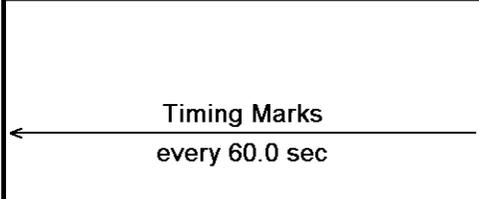


Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 22-JUL-2017 02:32  
 Filename: C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5\_002.dta Recorded on 21-JUL-2017 23:39  
 System Versions: Logged with 17.01.7206 Plotted with 17.01.7206

↑ 2 INCH MAIN ↑

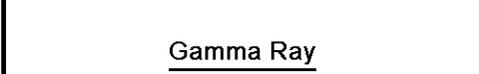
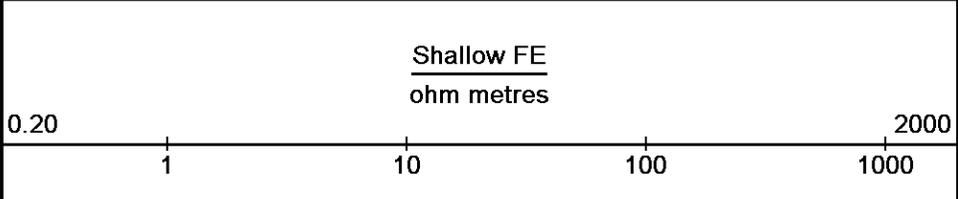
↓ 5 INCH MAIN ↓

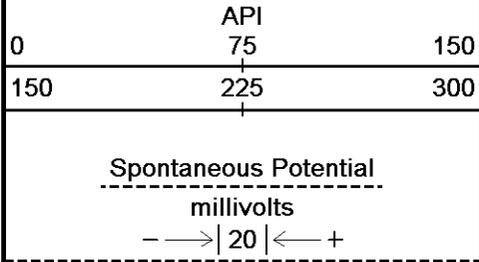
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 22-JUL-2017 02:32  
 Filename: C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5\_002.dta Recorded on 21-JUL-2017 23:39  
 System Versions: Logged with 17.01.7206 Plotted with 17.01.7206



Depth in Feet

Borehole





Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240

254 Casing Shoe

300

1700

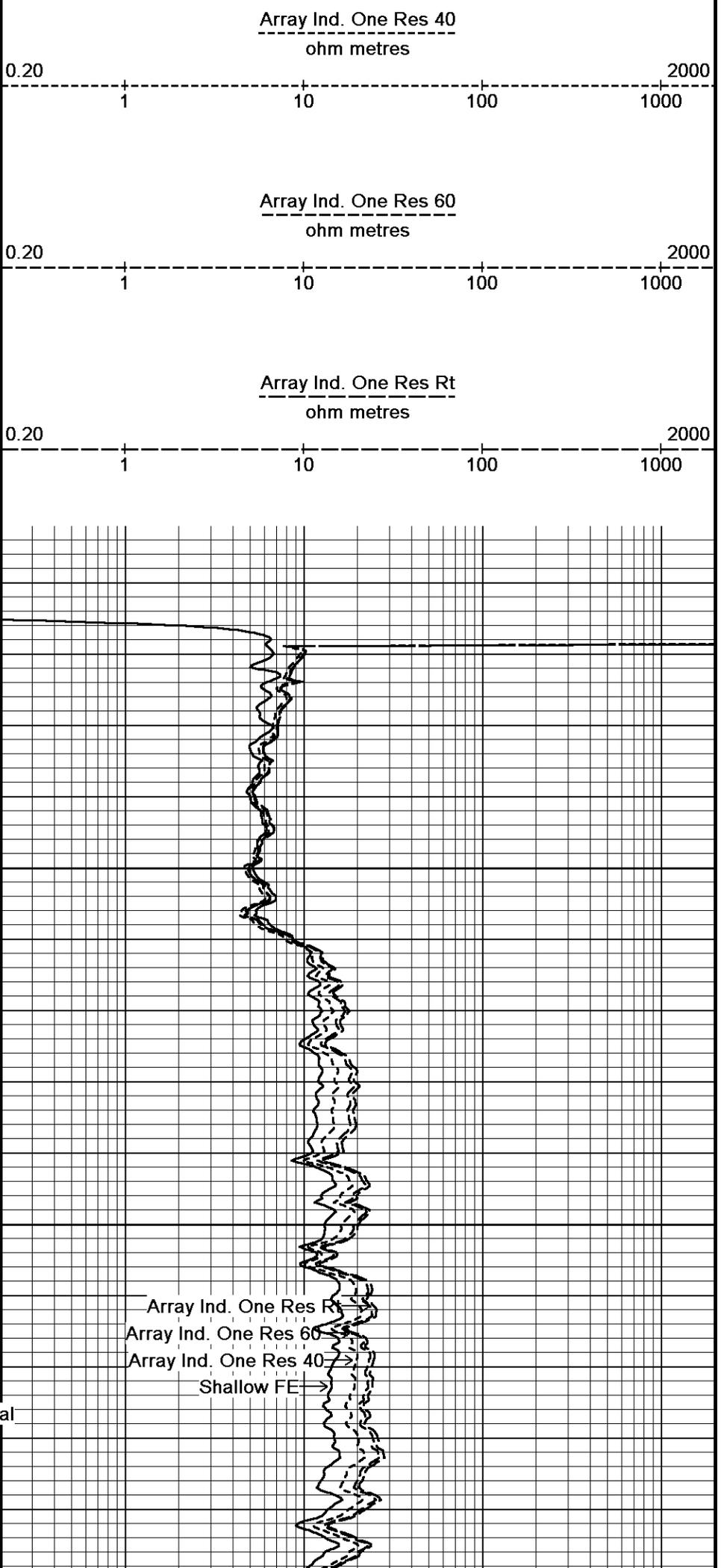
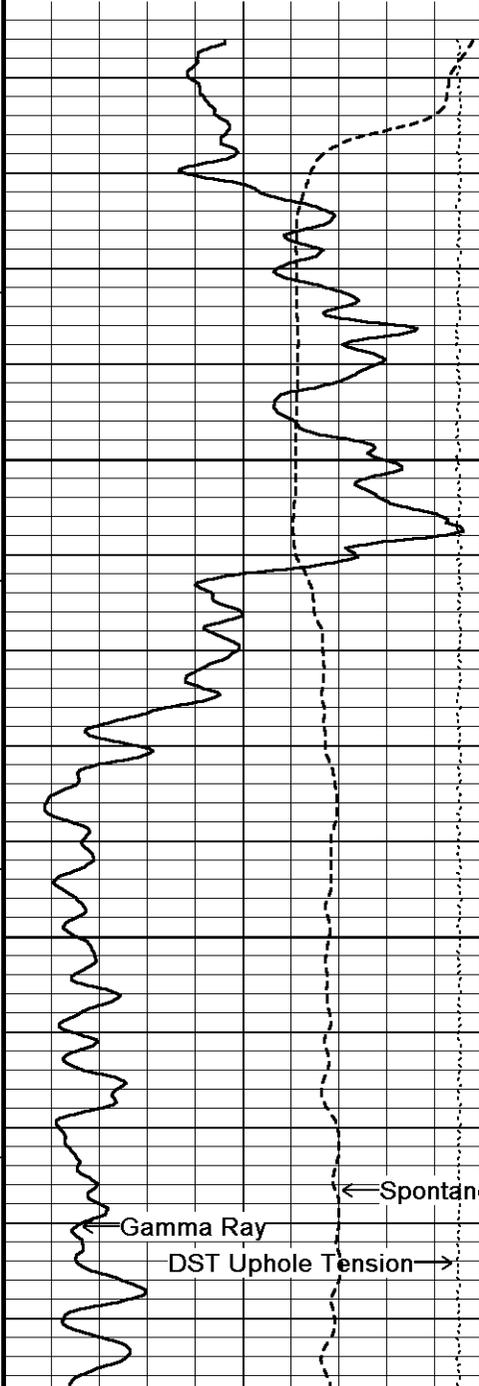
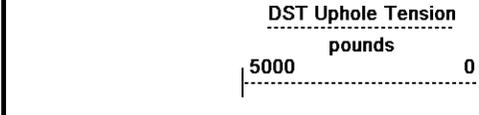
1200

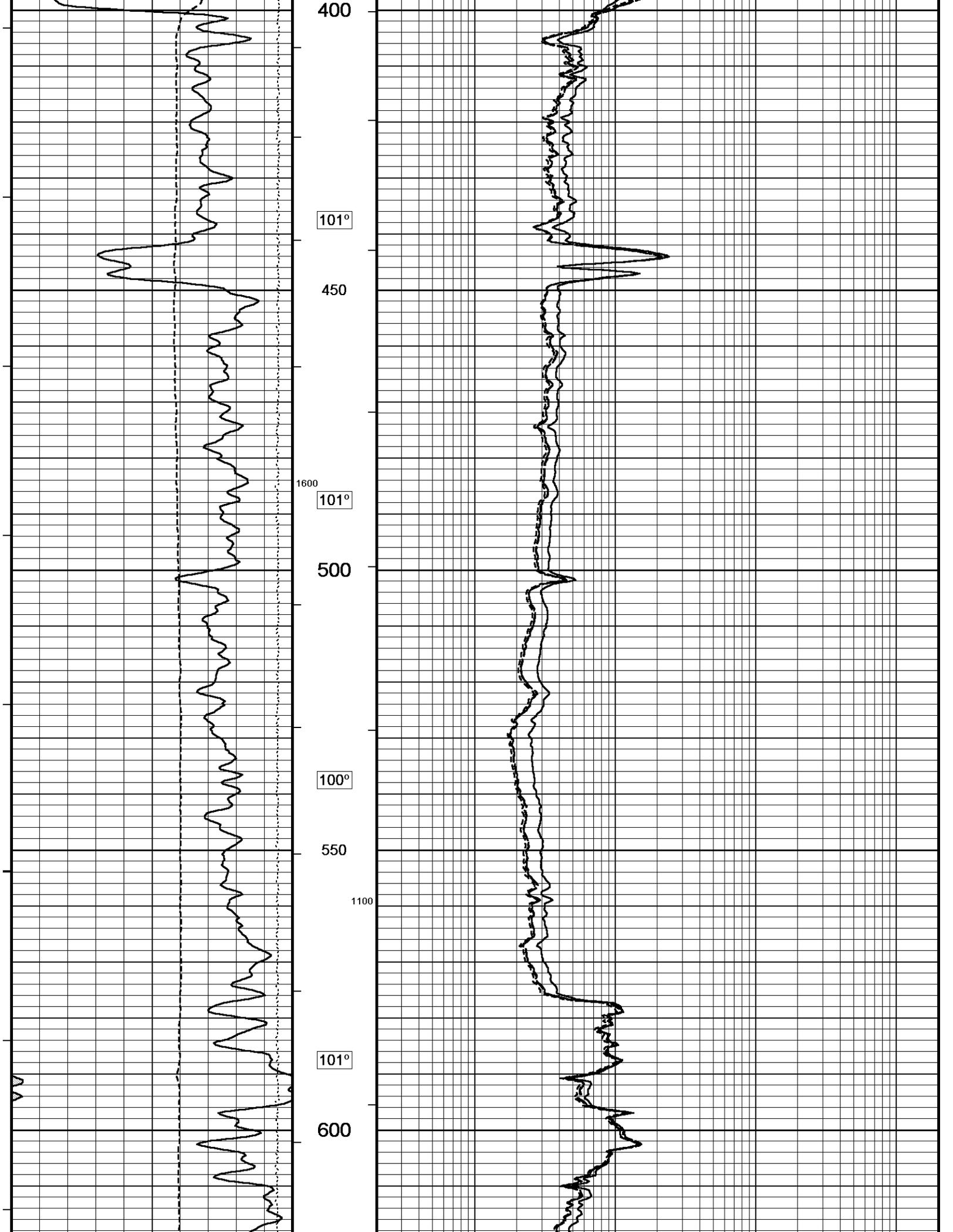
101°

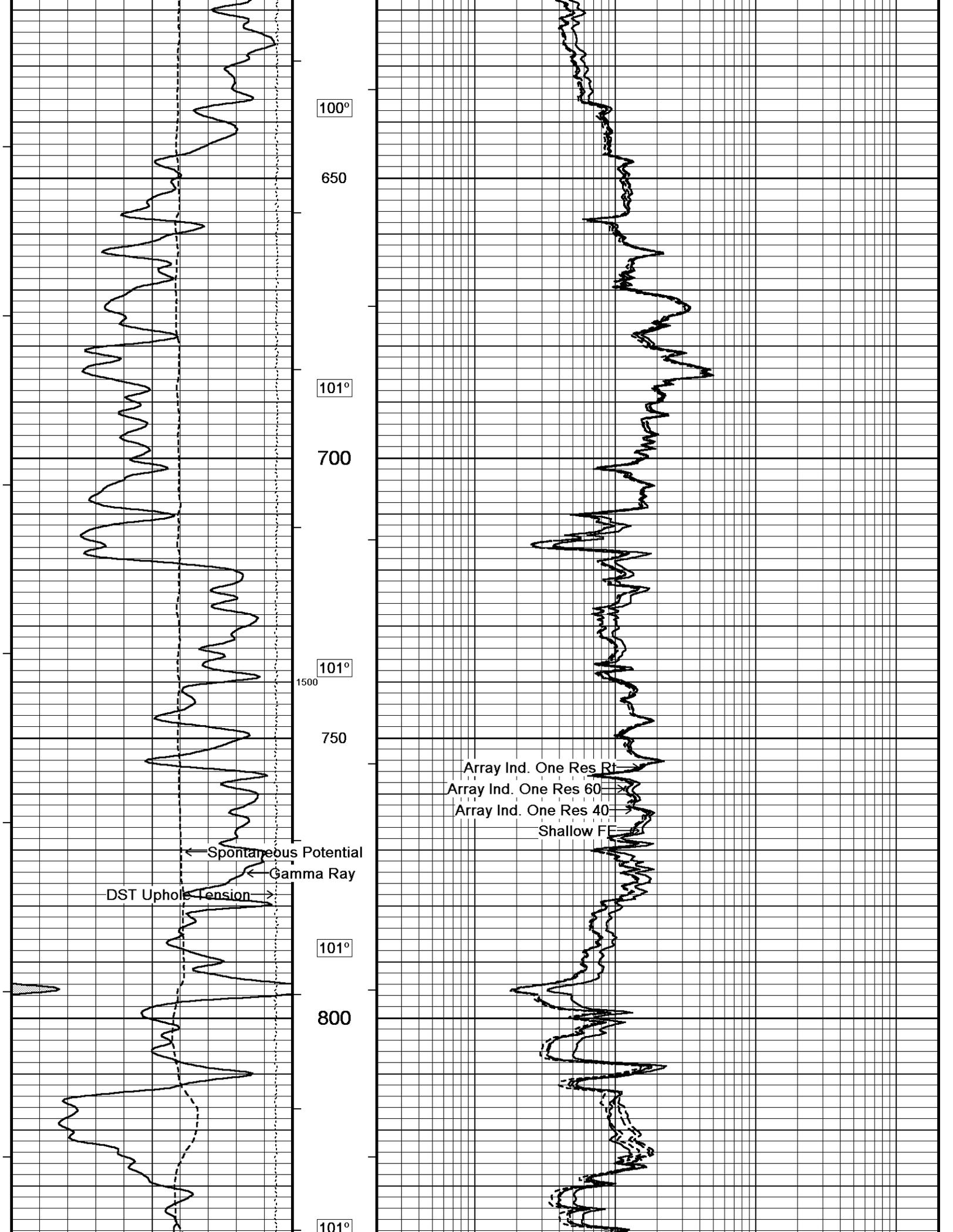
350

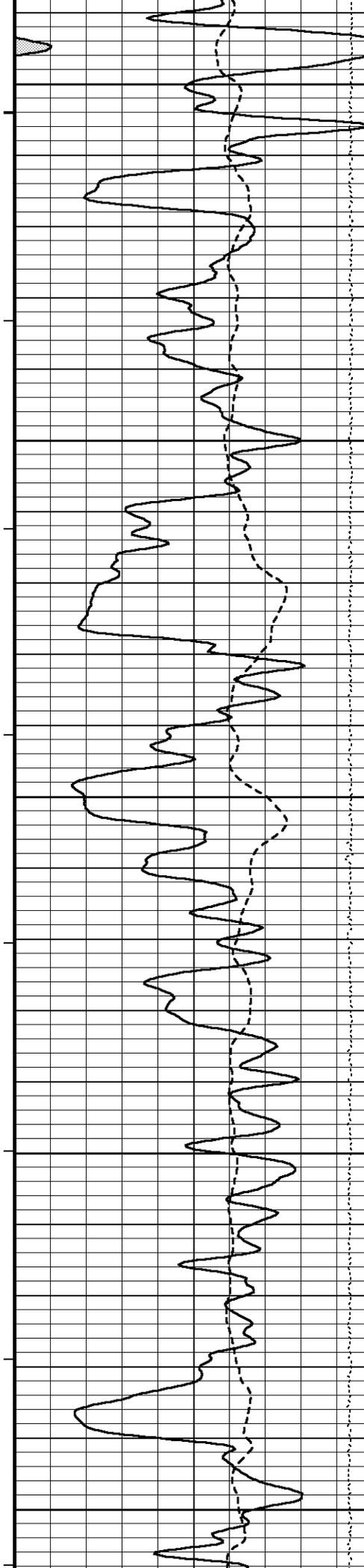
Spontaneous Potential

101°

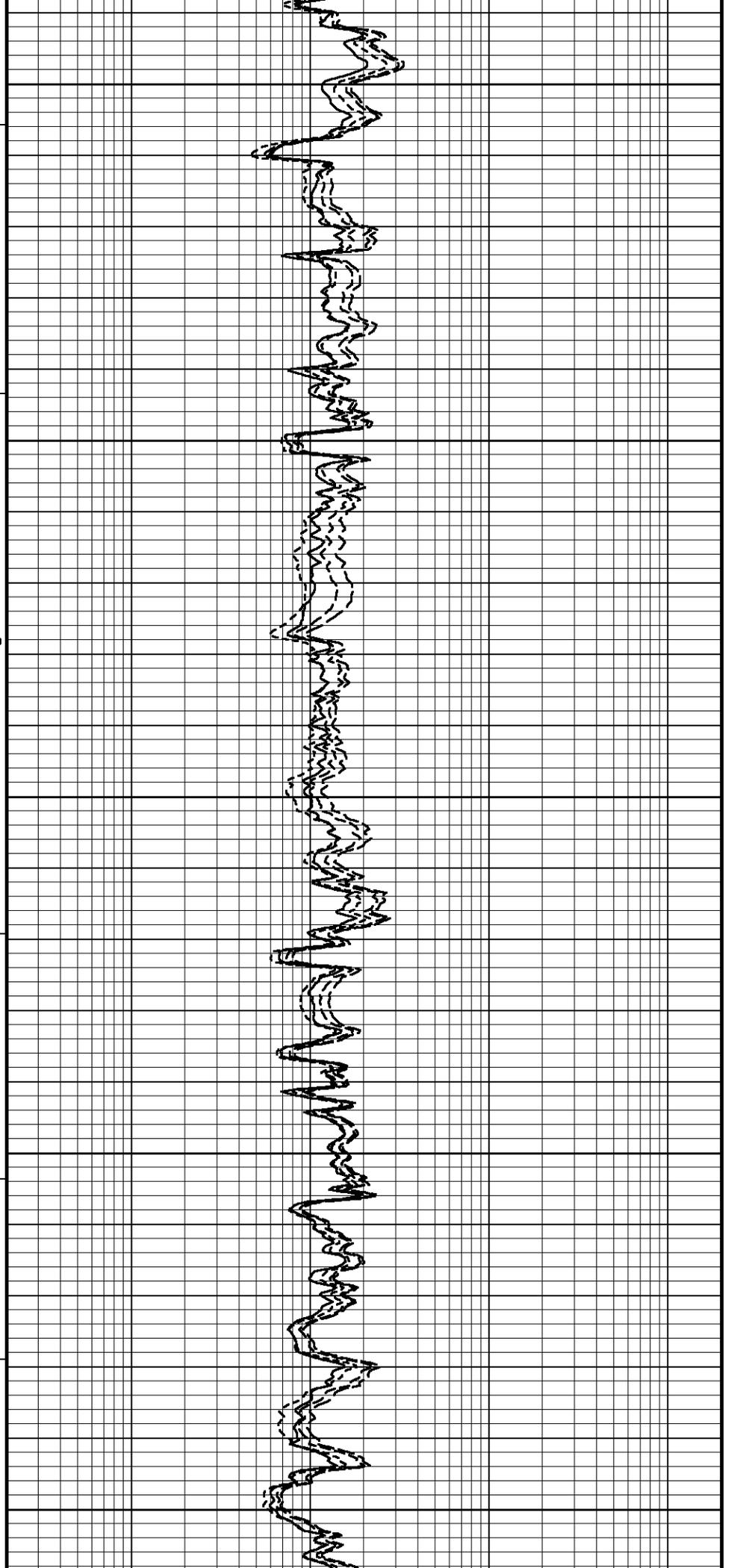


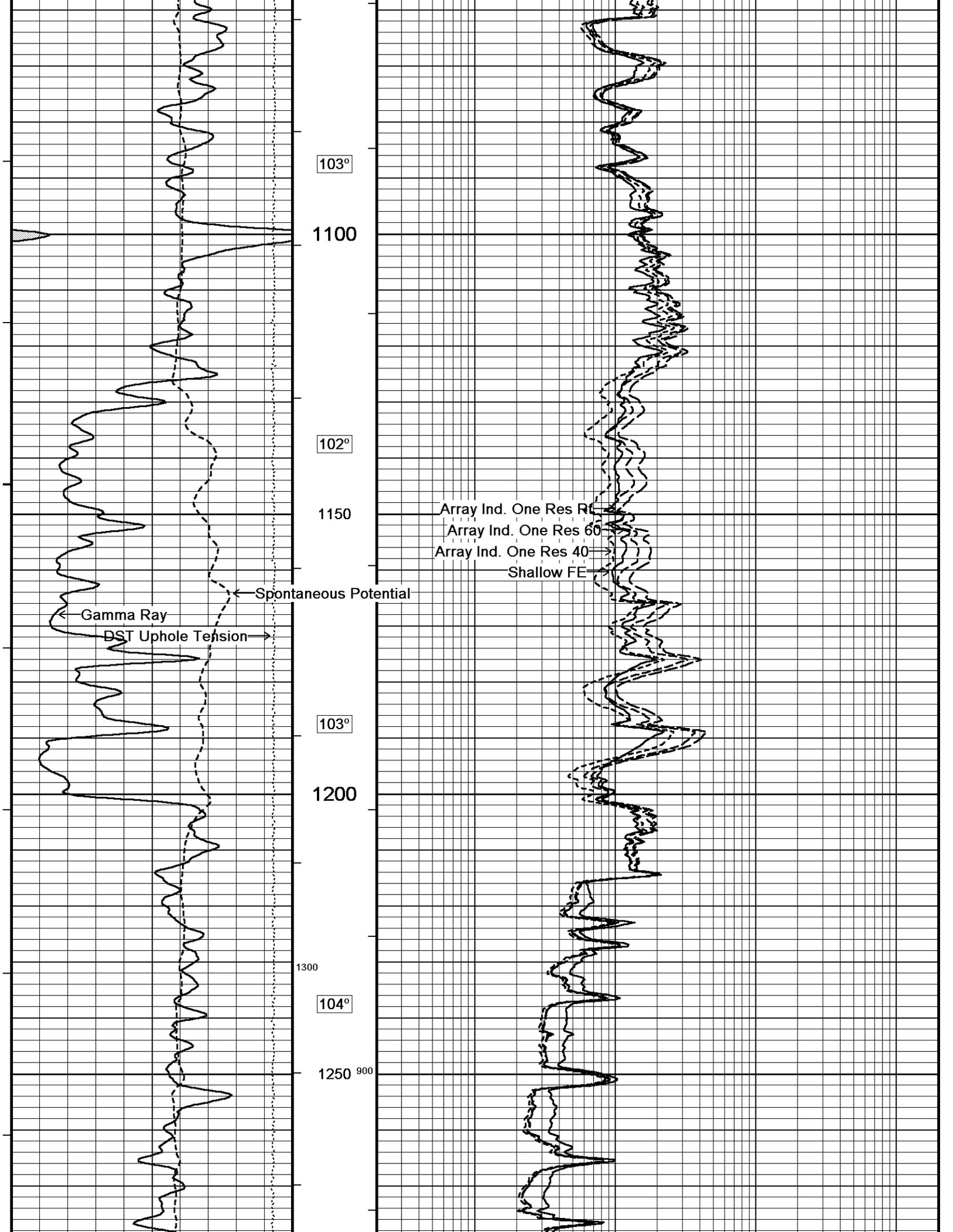


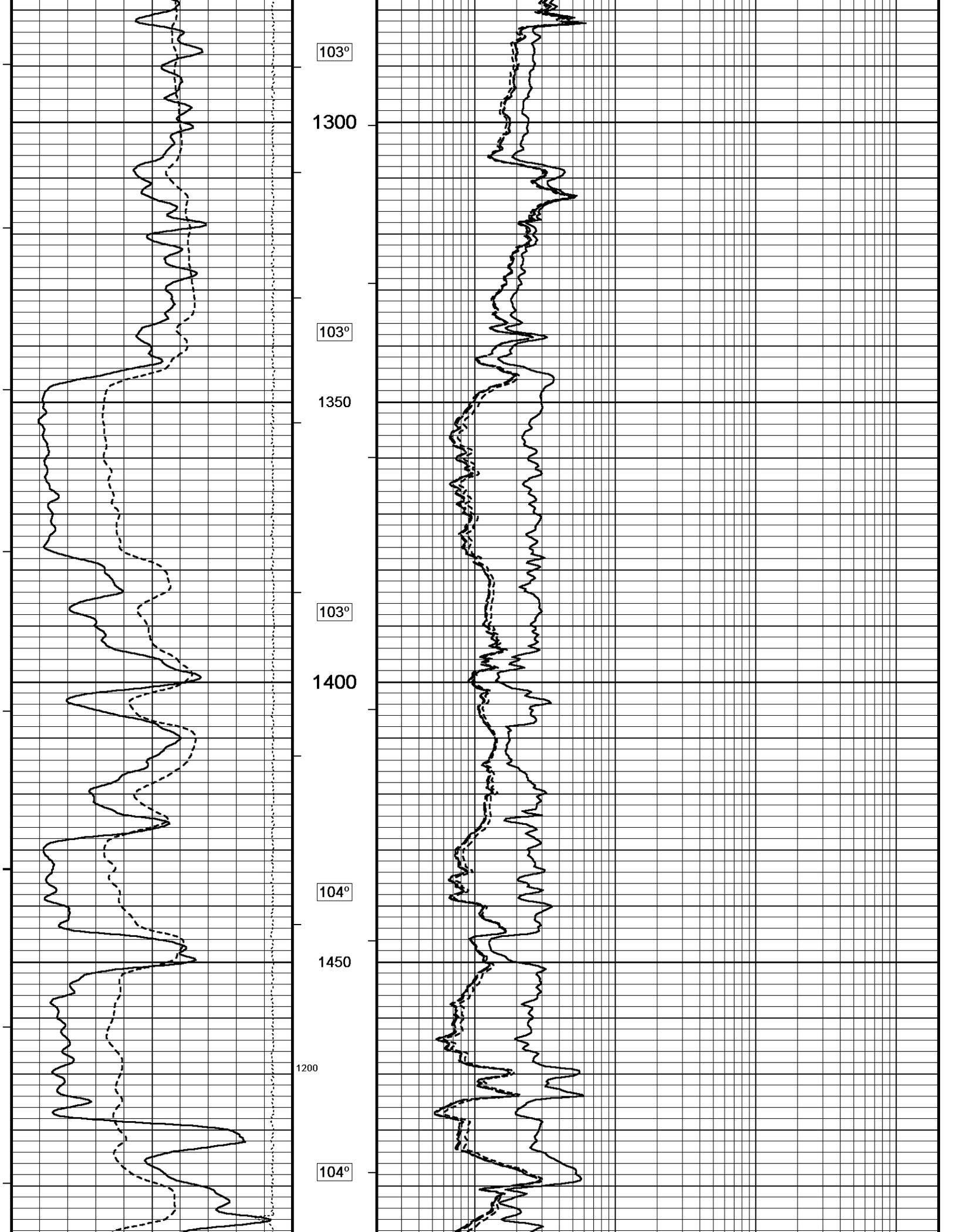


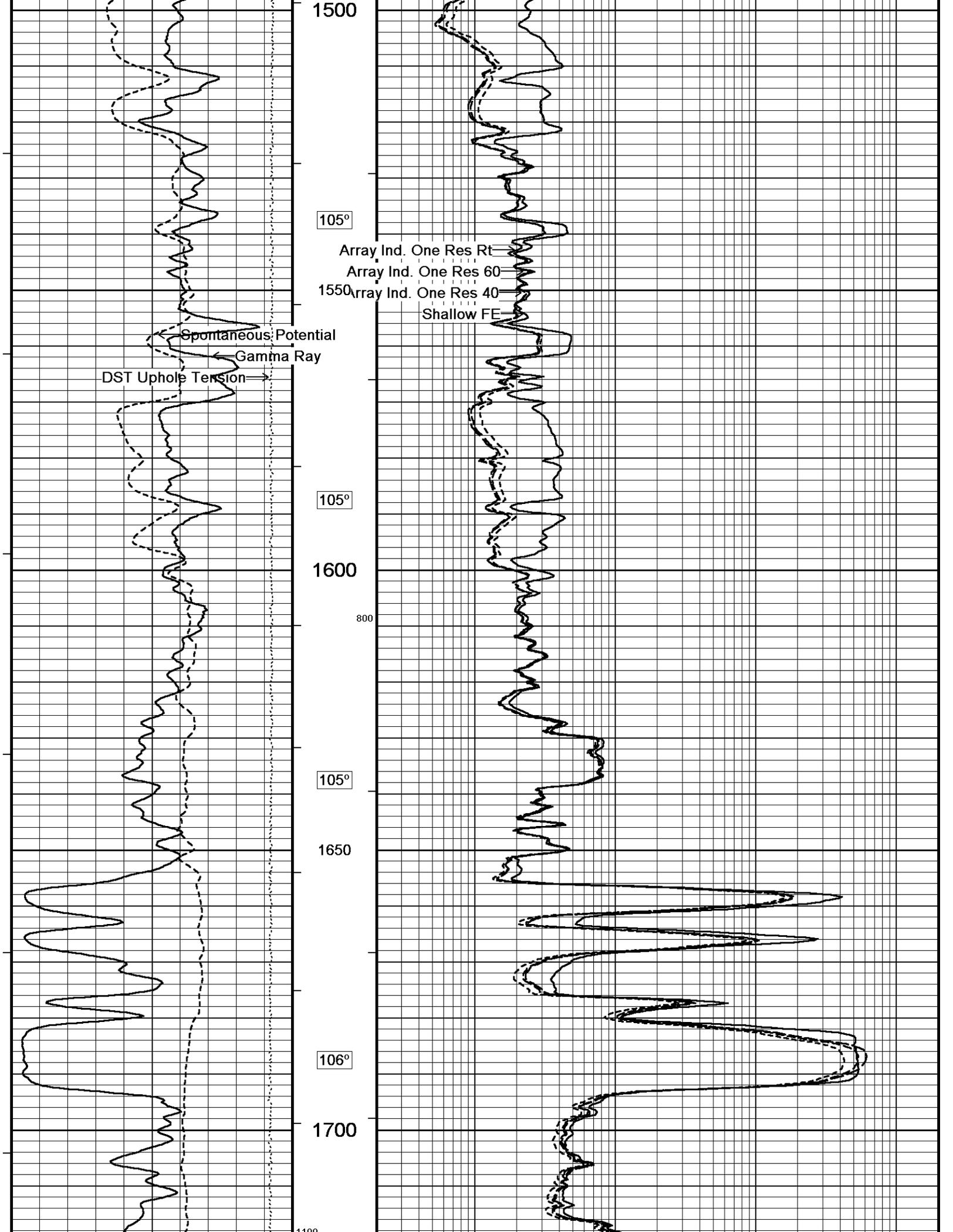


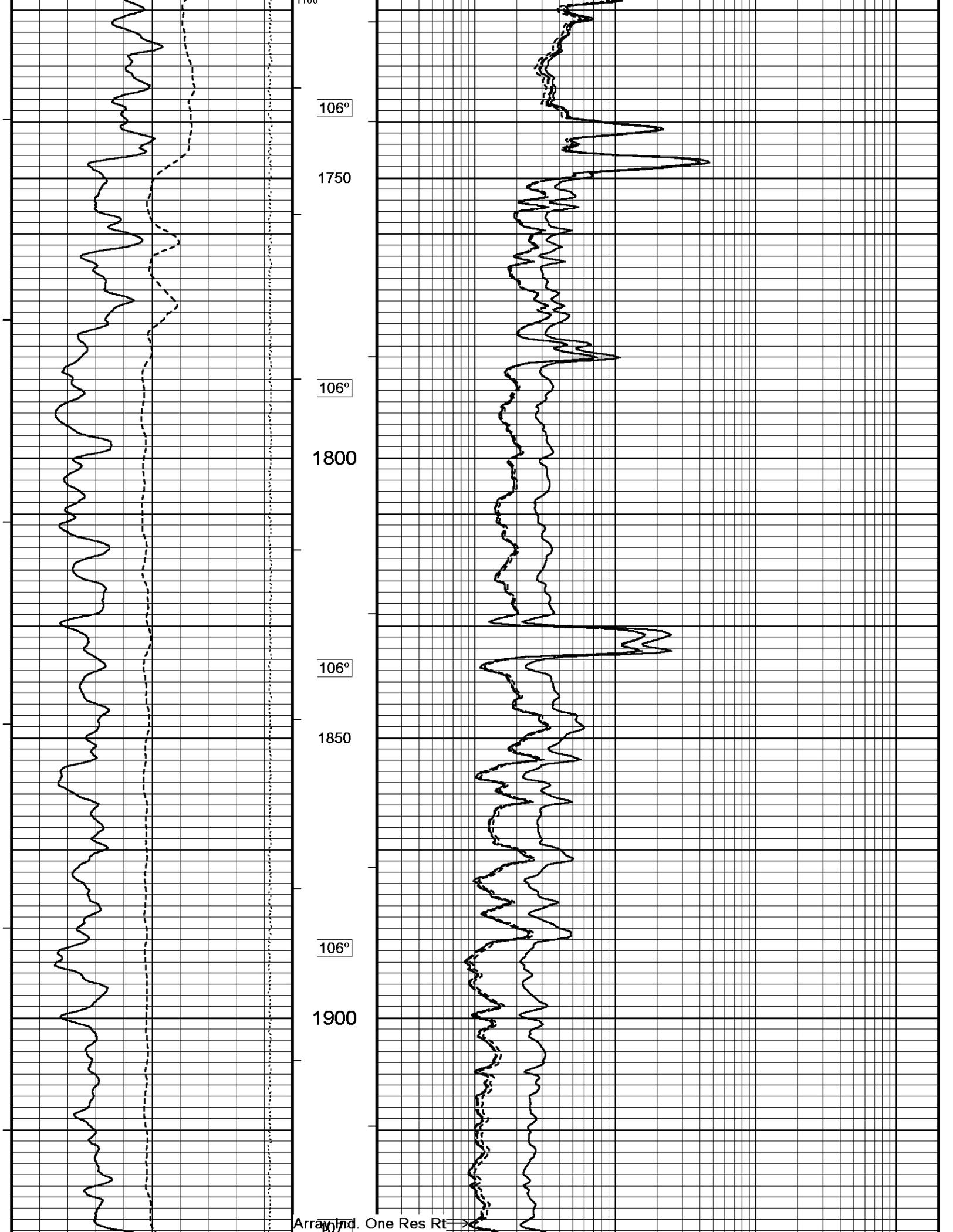
850  
101°  
900  
1000  
101°  
950  
102°  
1400  
1000  
103°  
1050

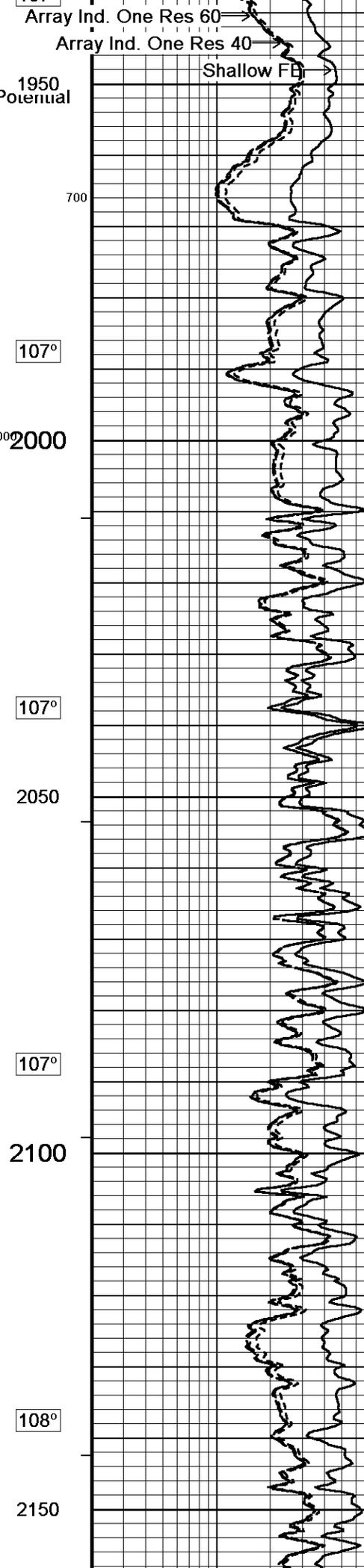
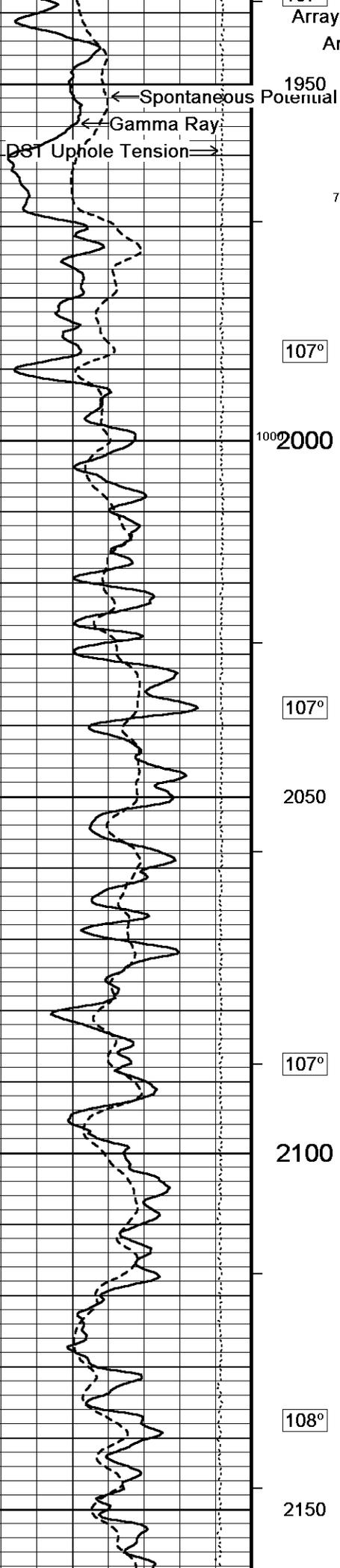






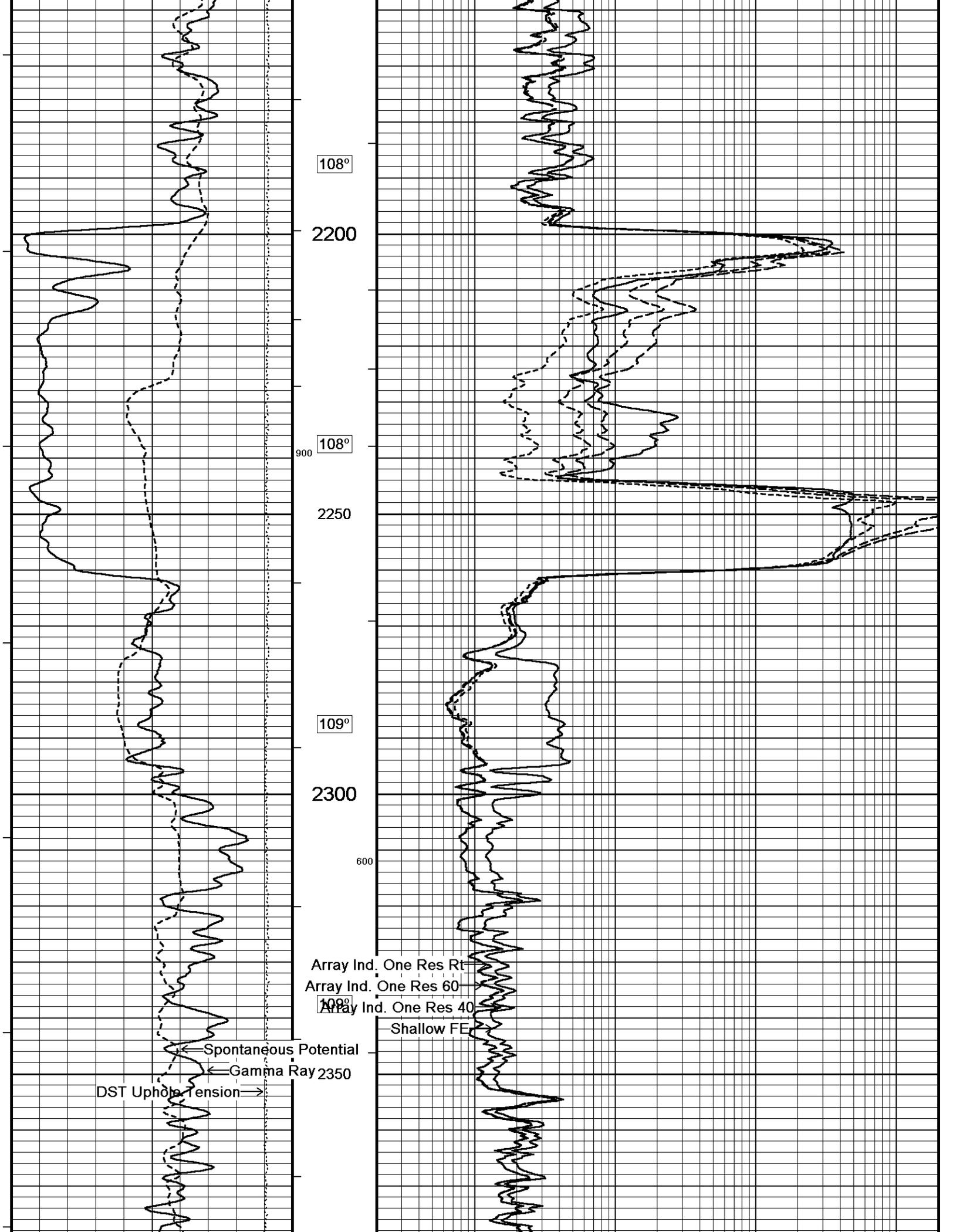


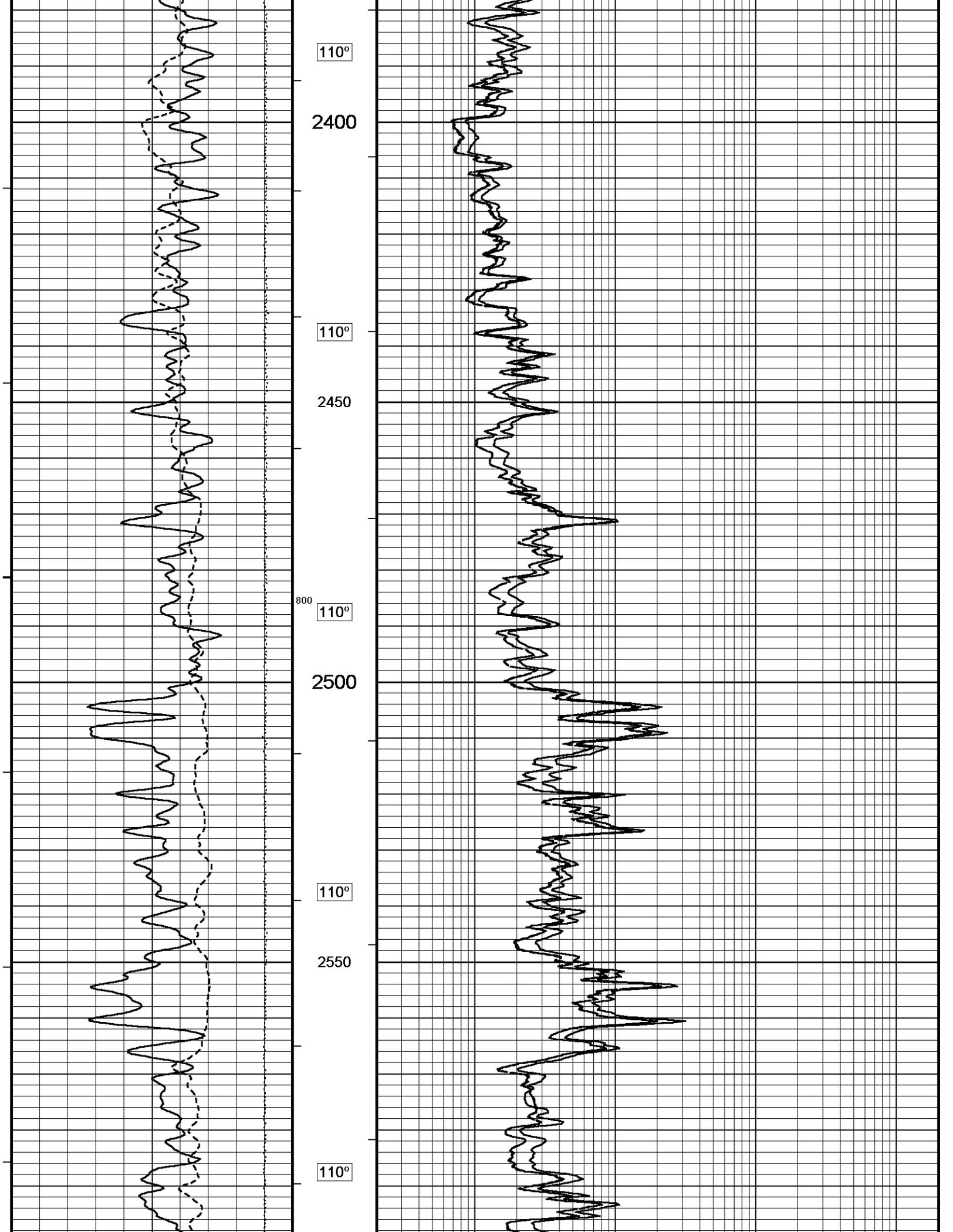


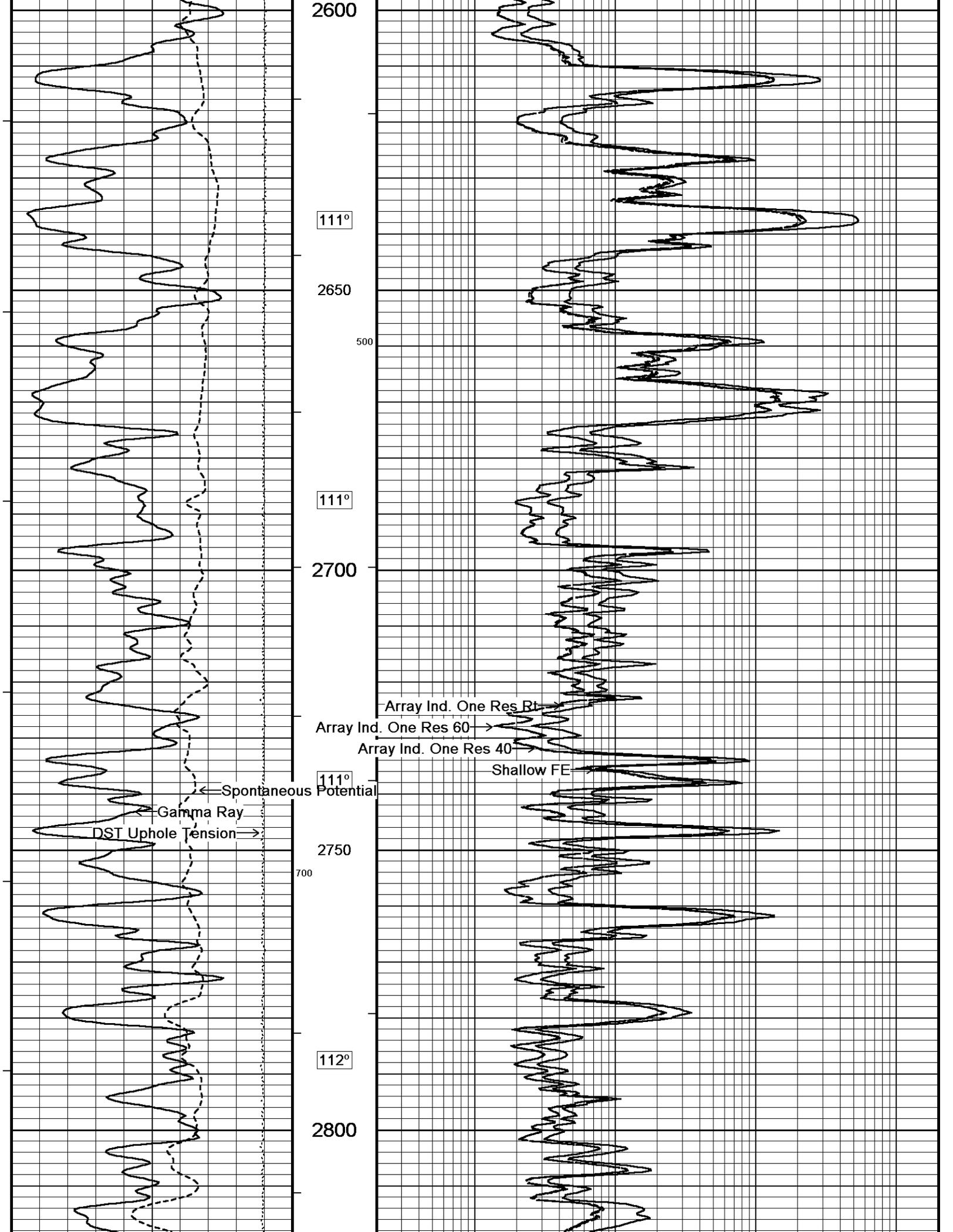


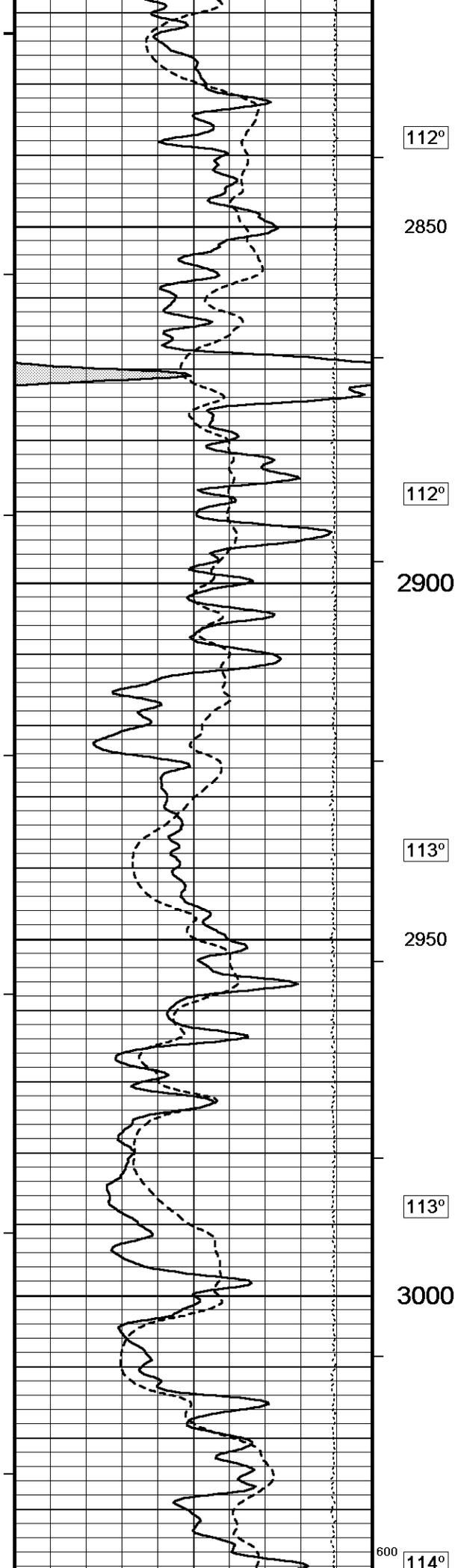
1950  
700  
1000  
2000  
2050  
2100  
2150

107°  
107°  
107°  
108°









112°

2850

112°

2900

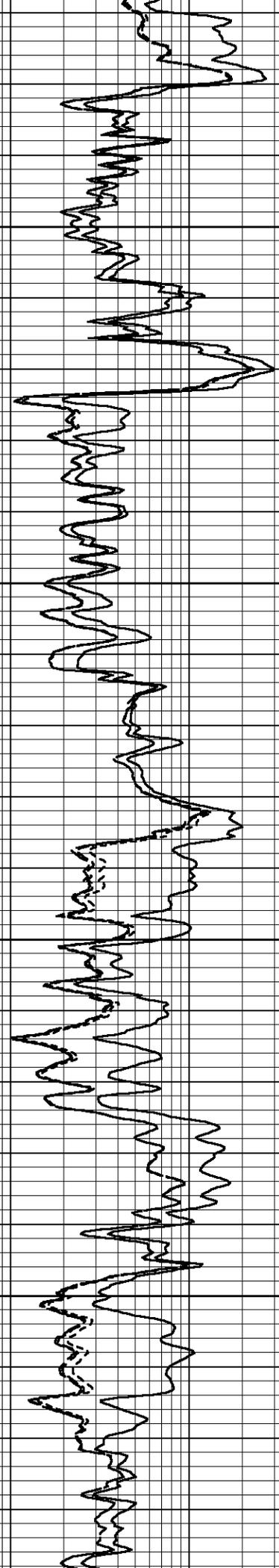
113°

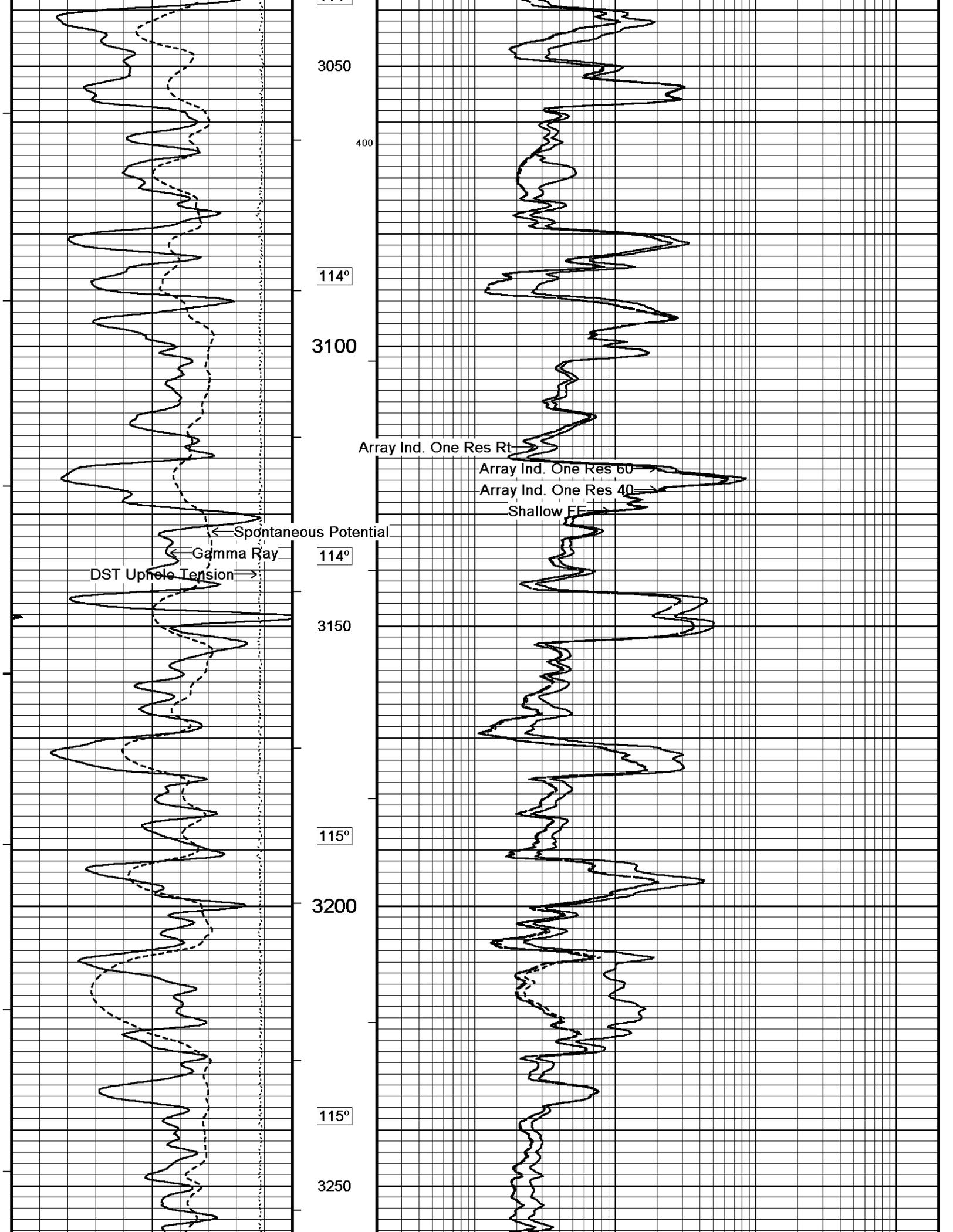
2950

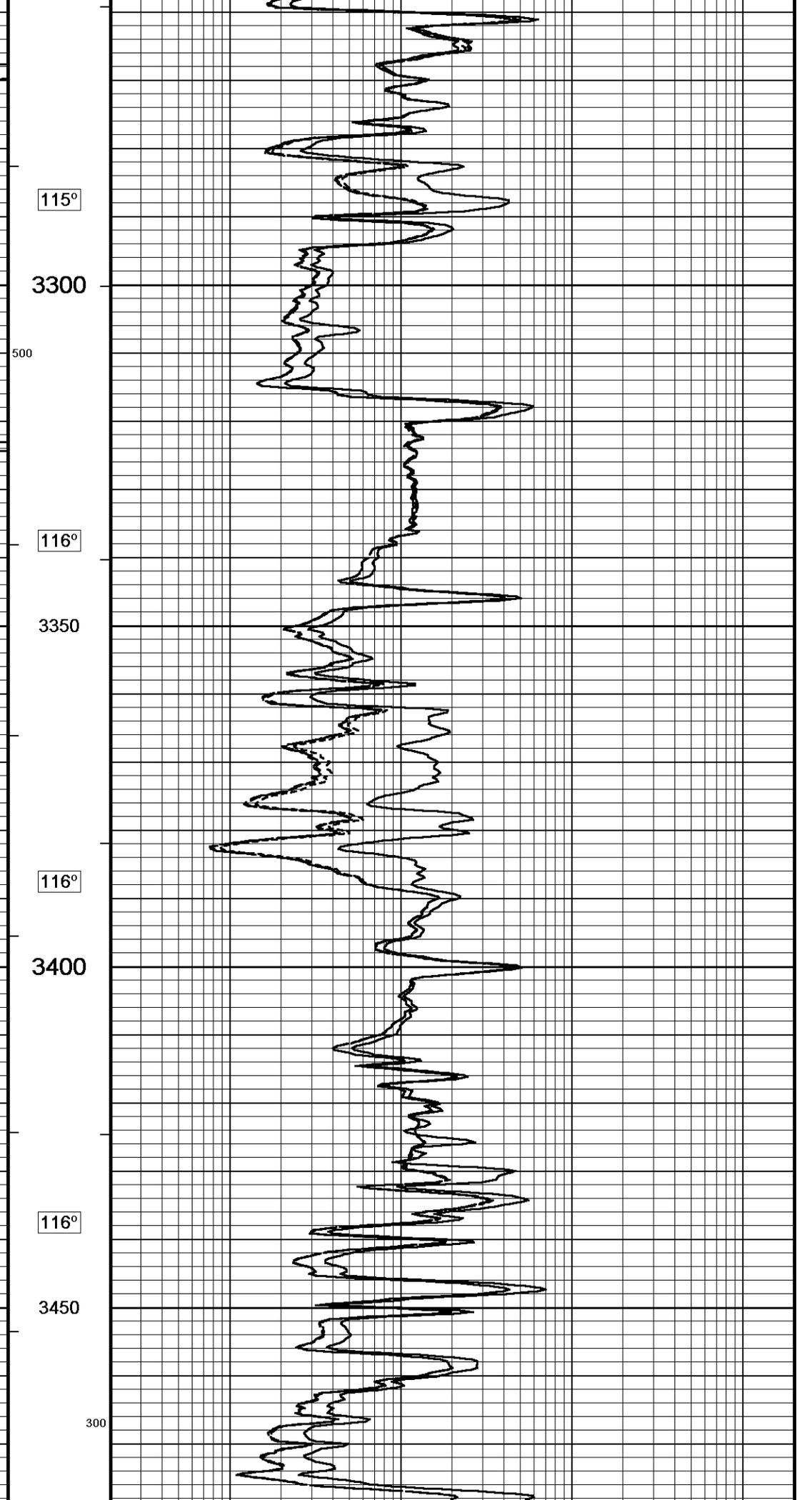
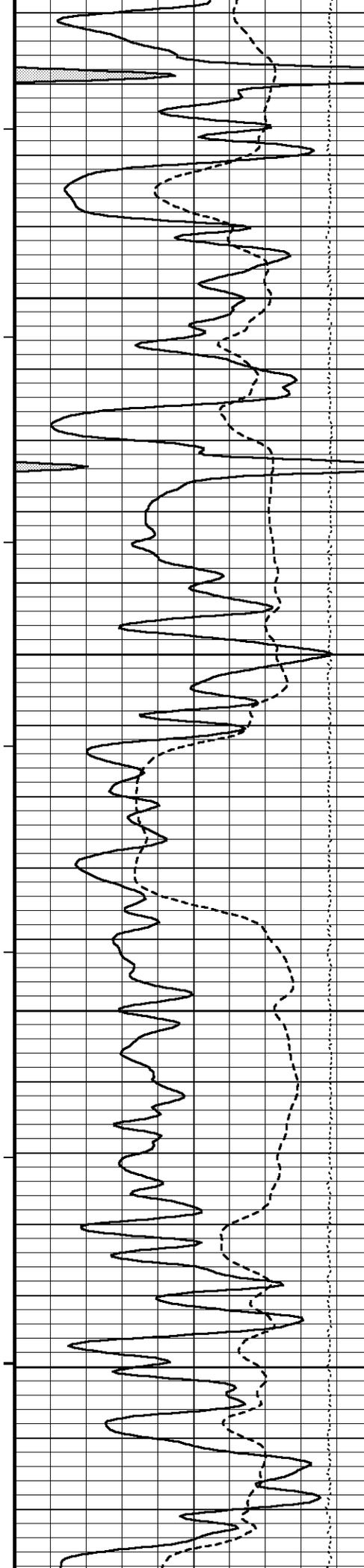
113°

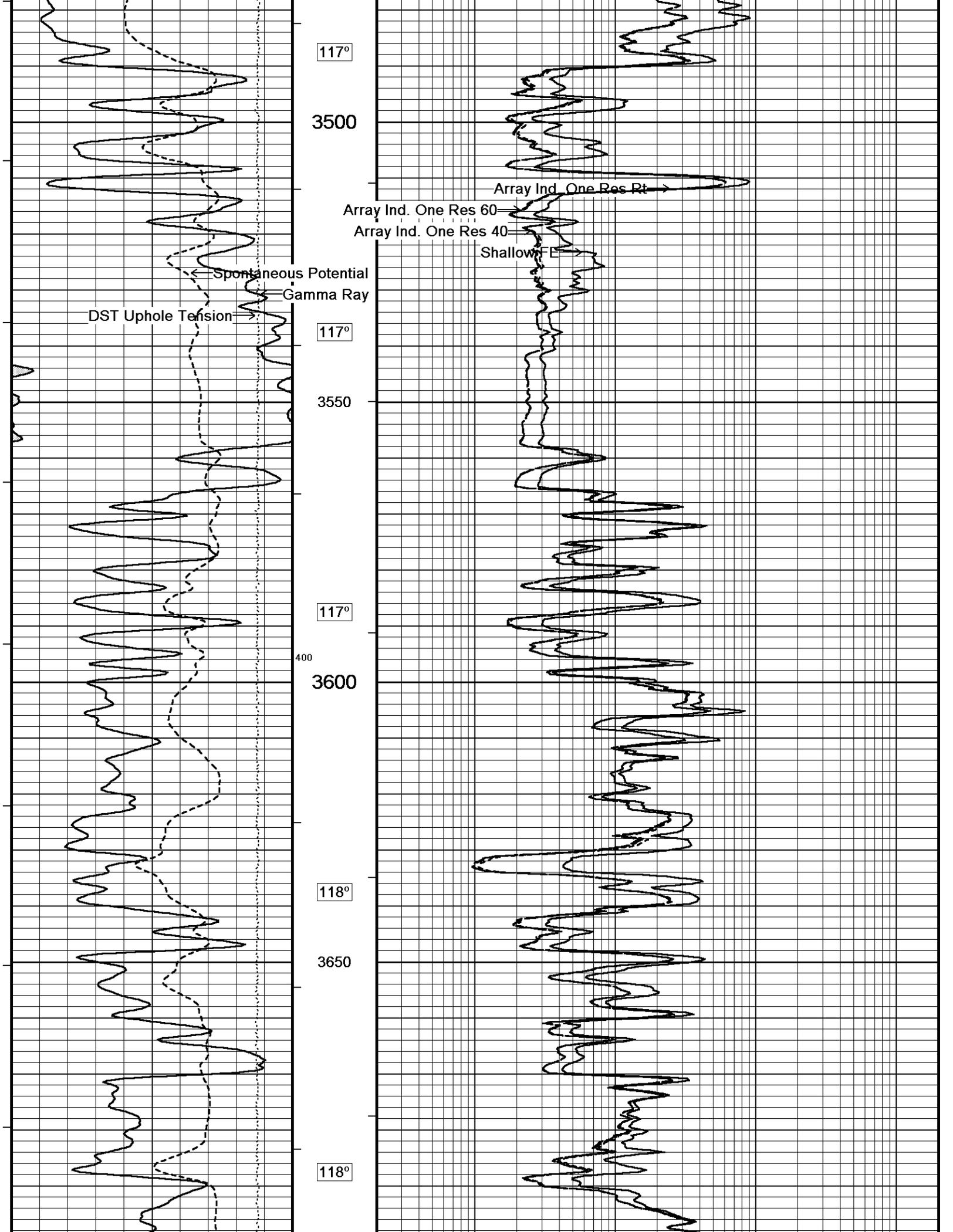
3000

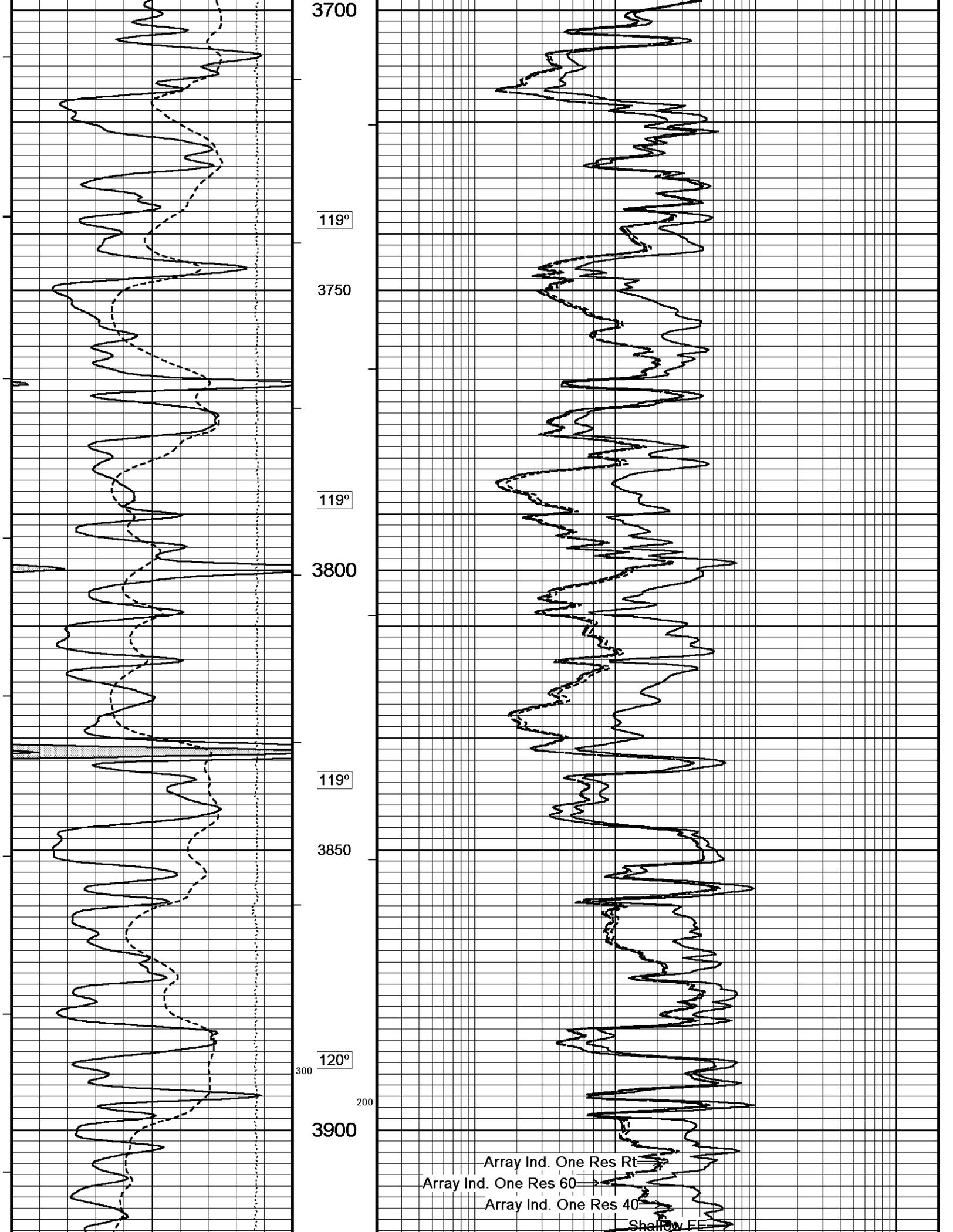
600 114°











3700

119°

3750

119°

3800

119°

3850

120°

300

200

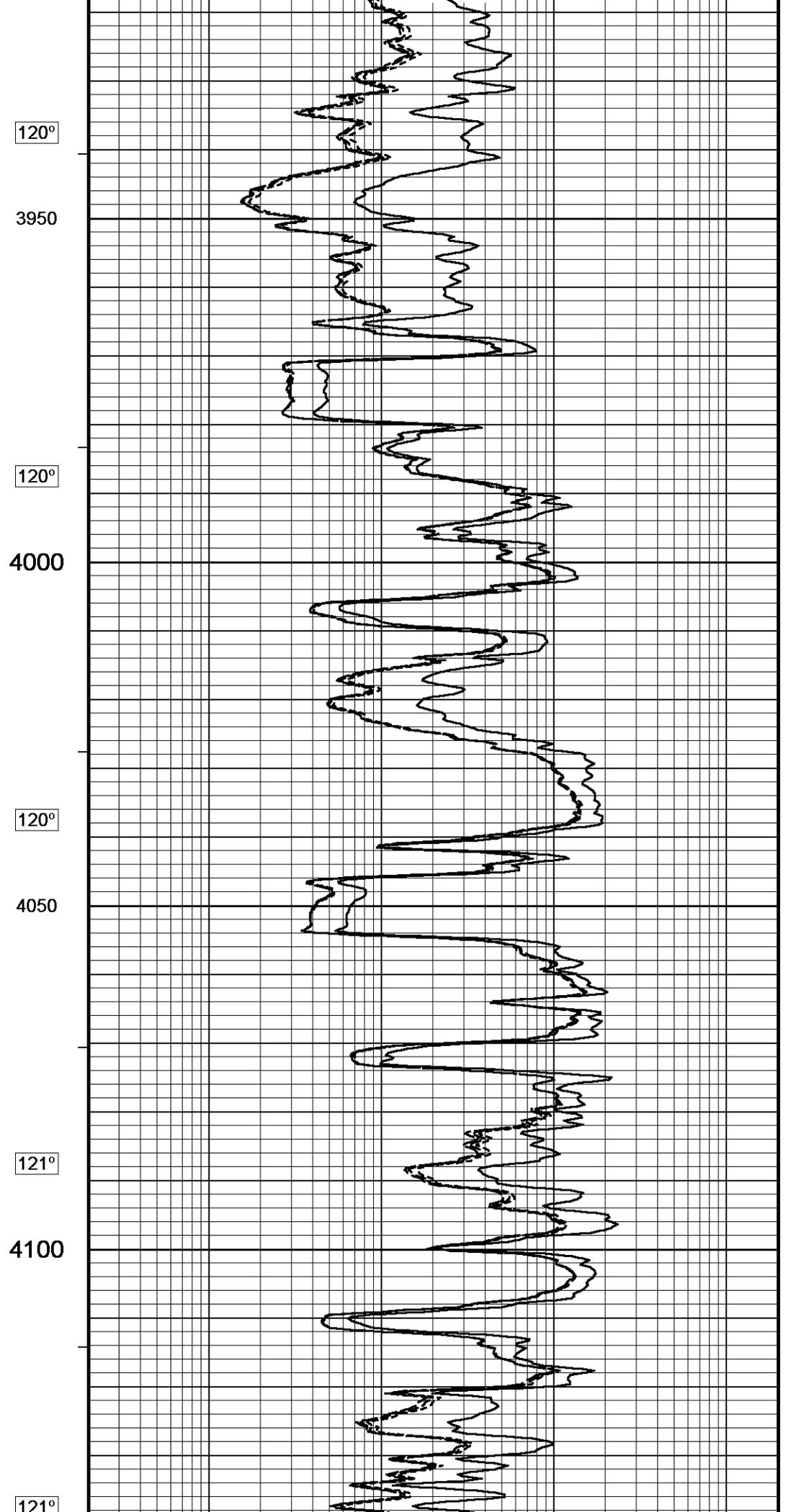
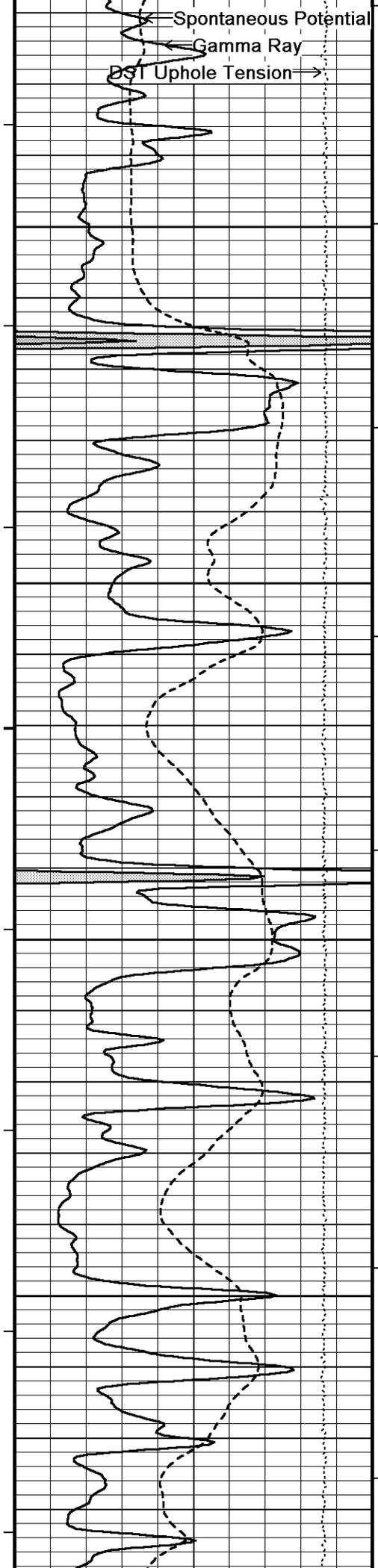
3900

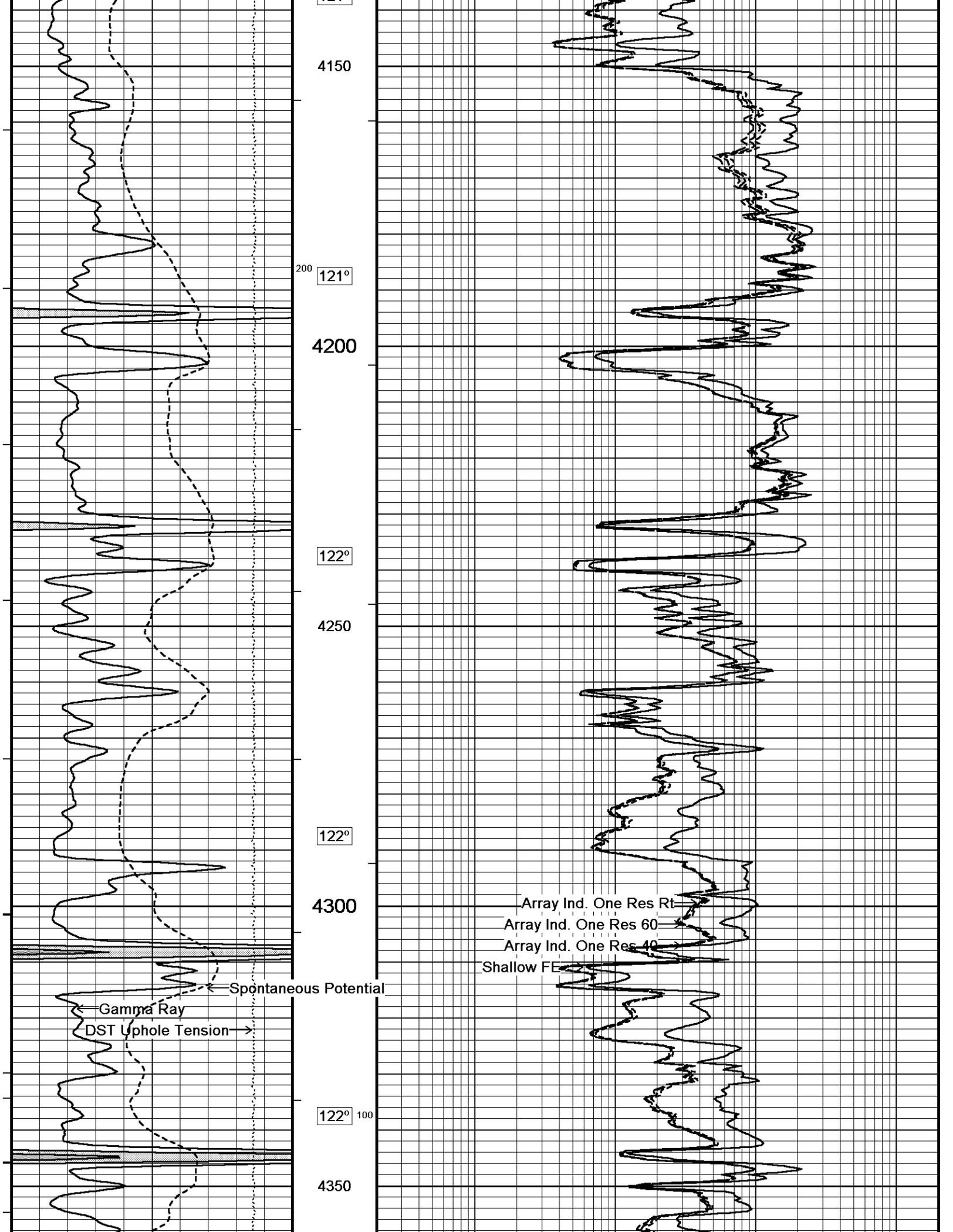
Array Ind. One Res Rt

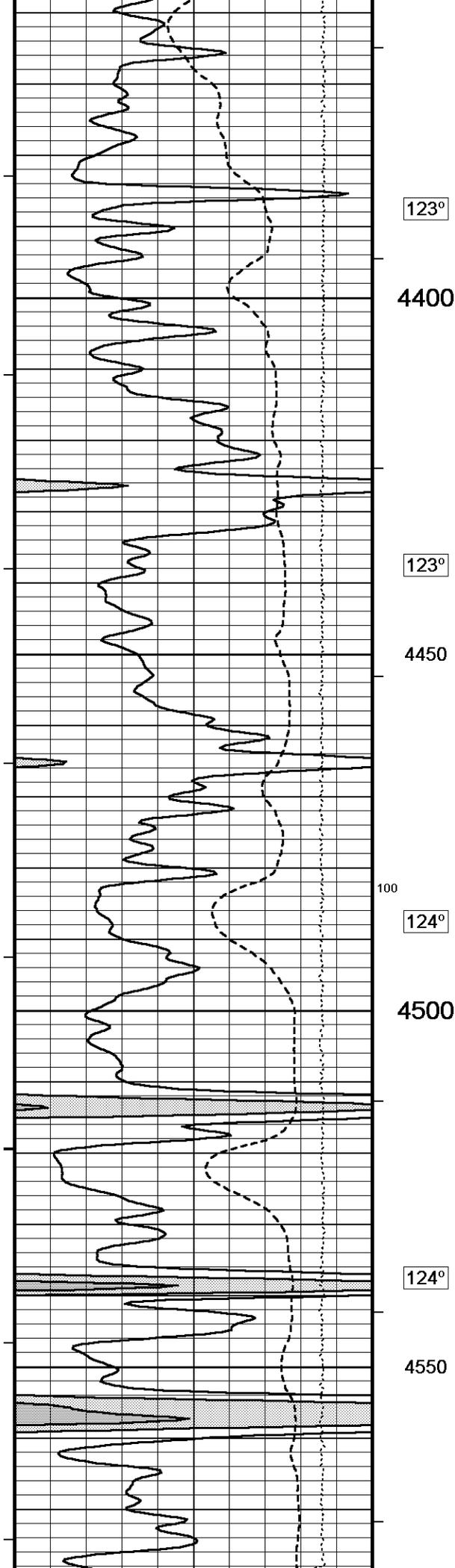
Array Ind. One Res 60

Array Ind. One Res 40

Shallow FF







123°

4400

123°

4450

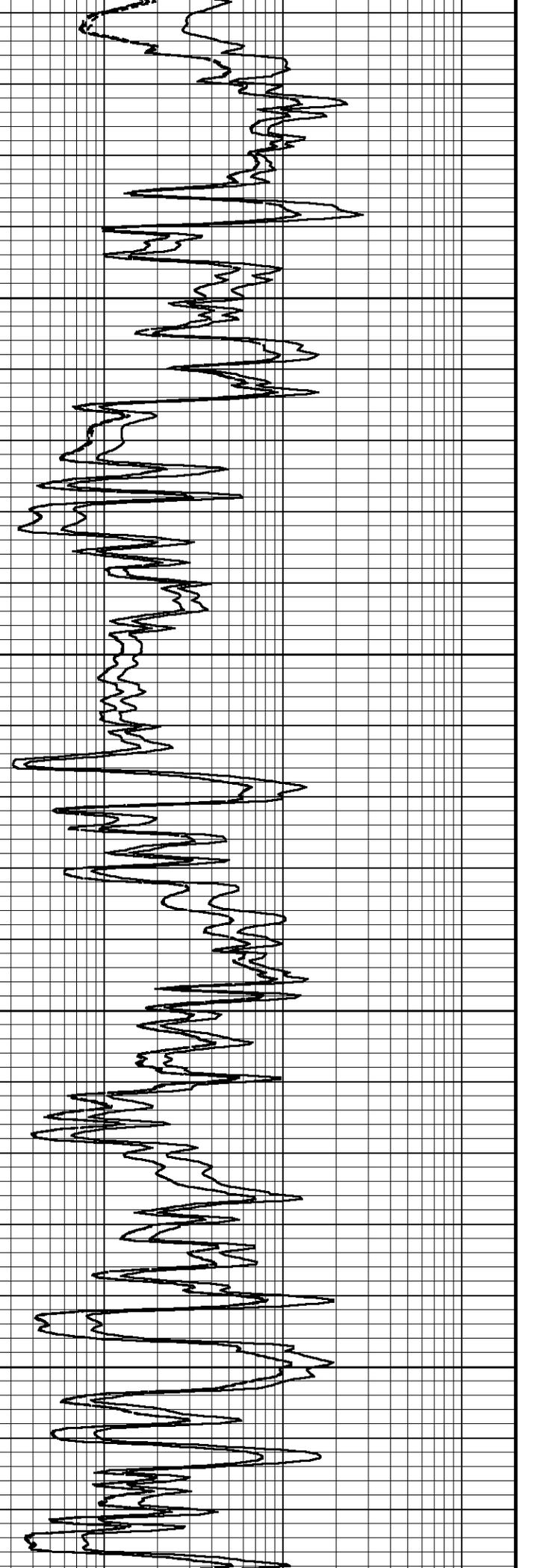
100

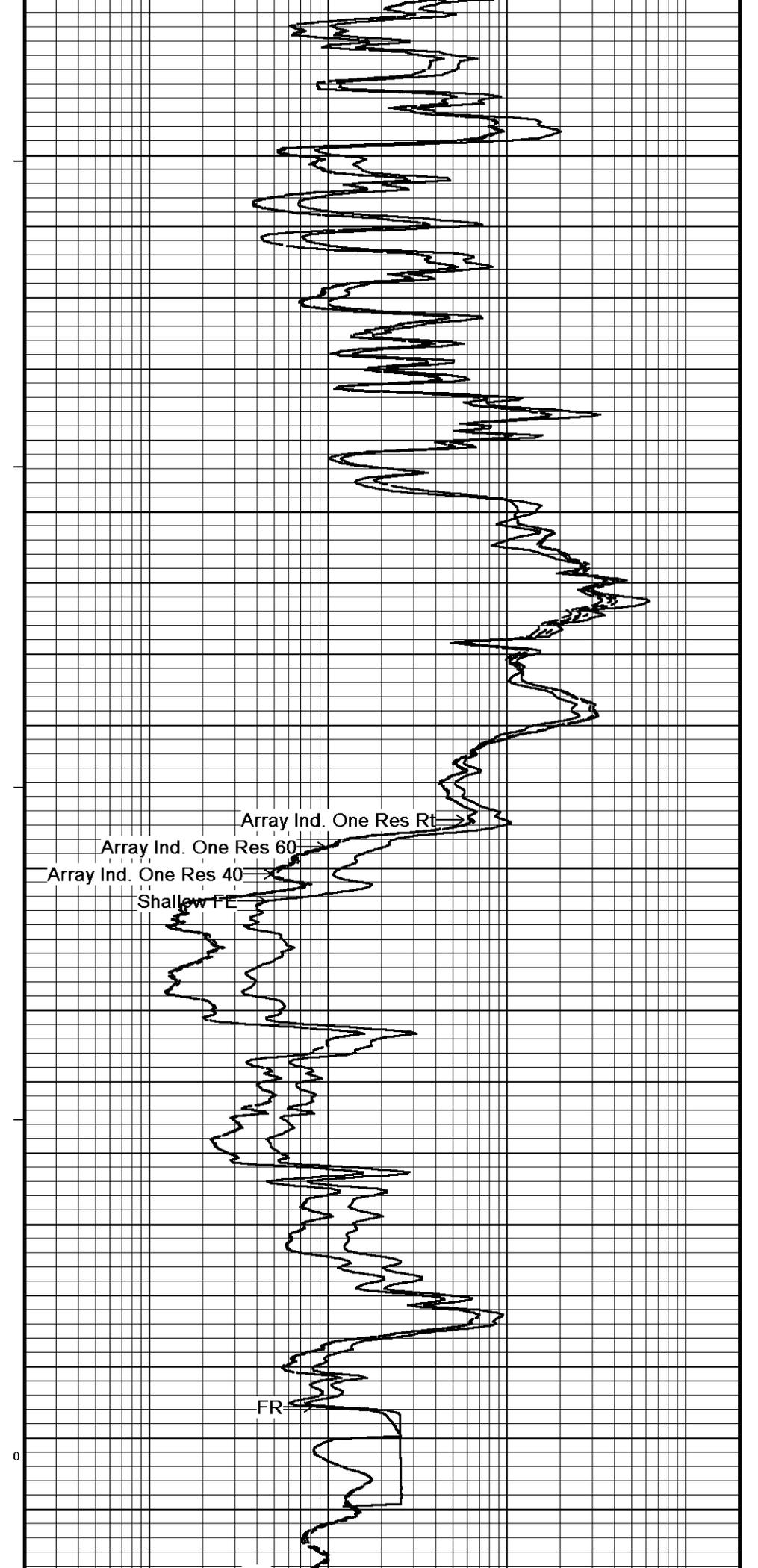
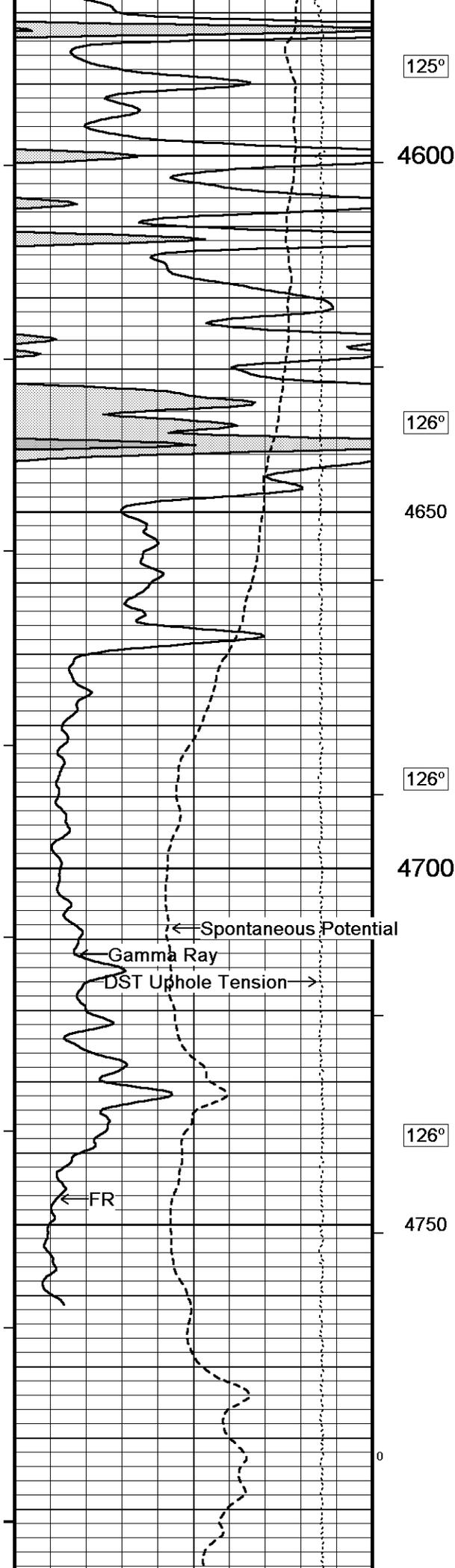
124°

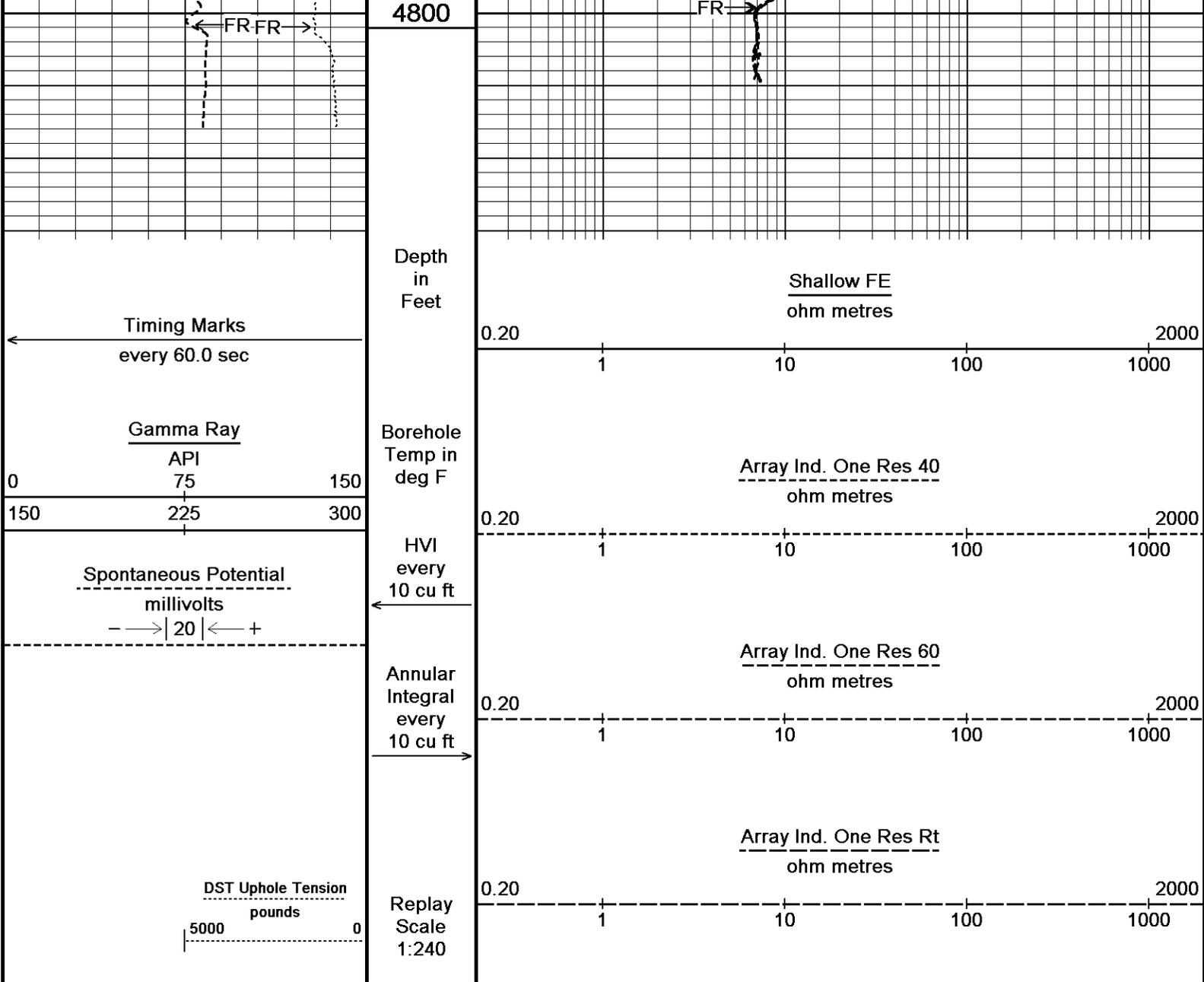
4500

124°

4550





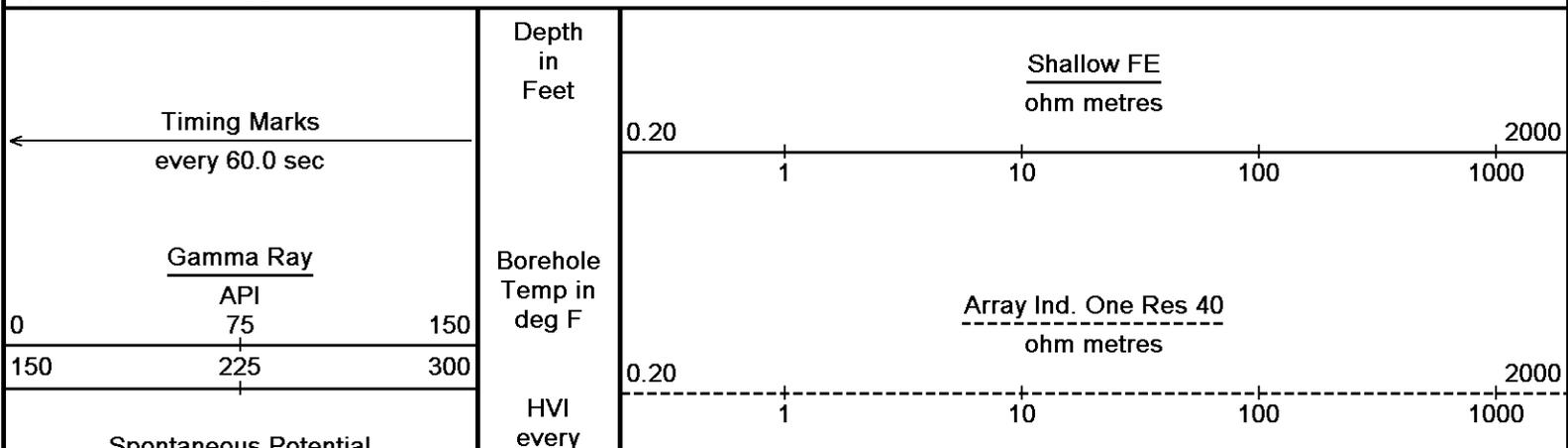


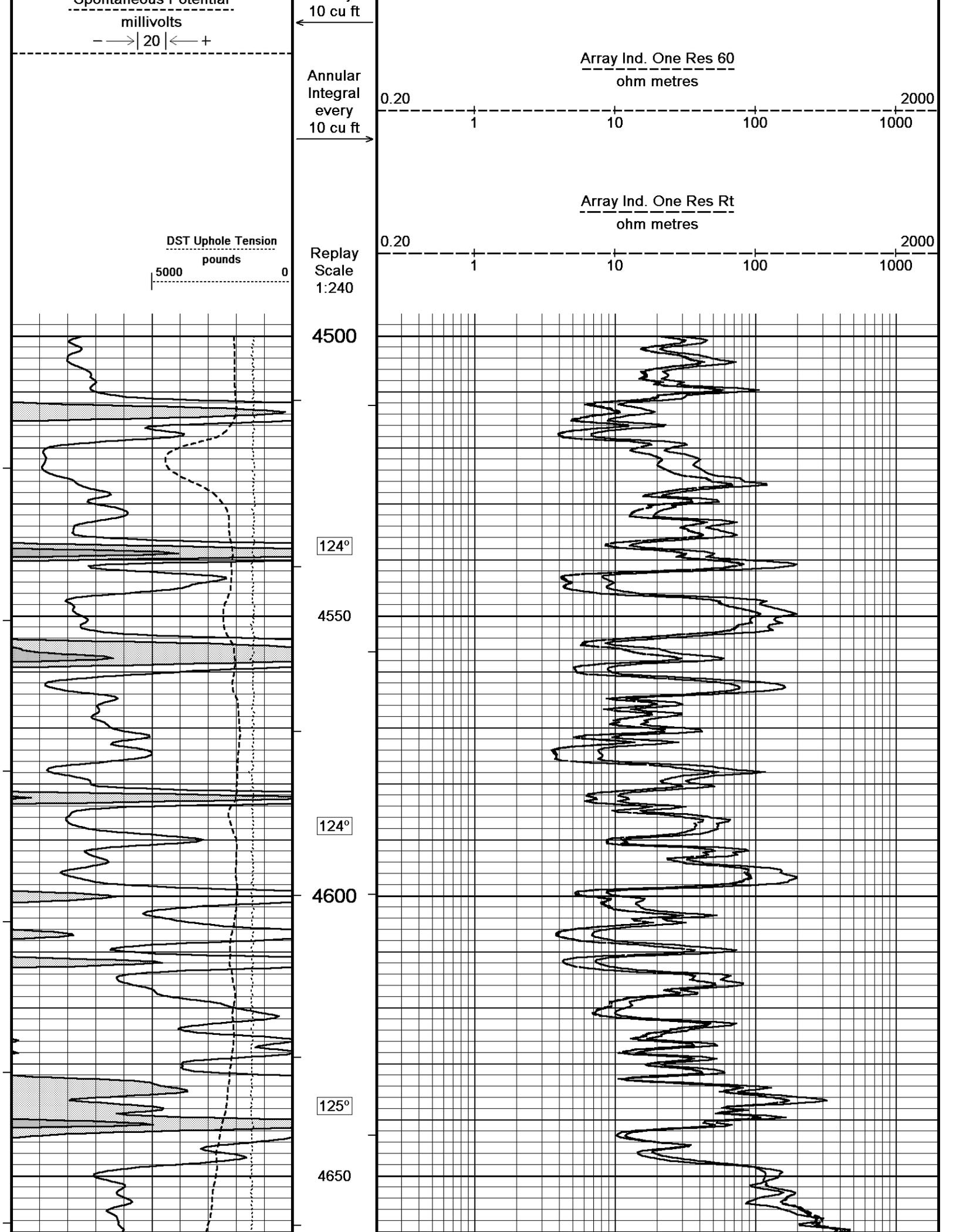
Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 22-JUL-2017 02:32  
 Filename: C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5\_002.dta  
 Recorded on 21-JUL-2017 23:39  
 System Versions: Logged with 17.01.7206 Plotted with 17.01.7206

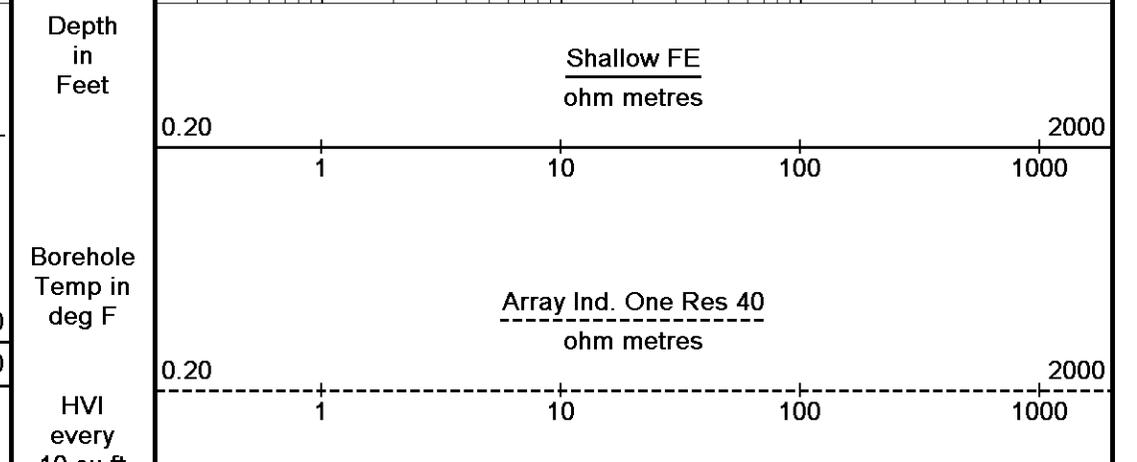
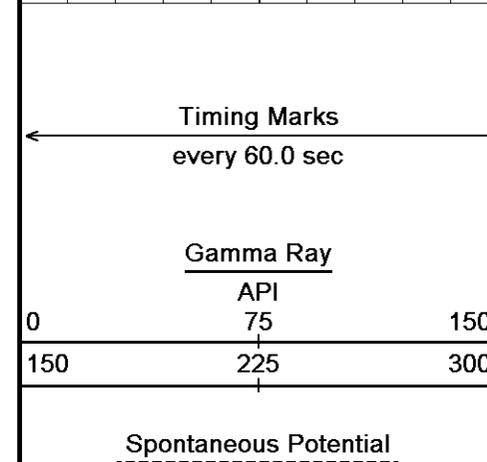
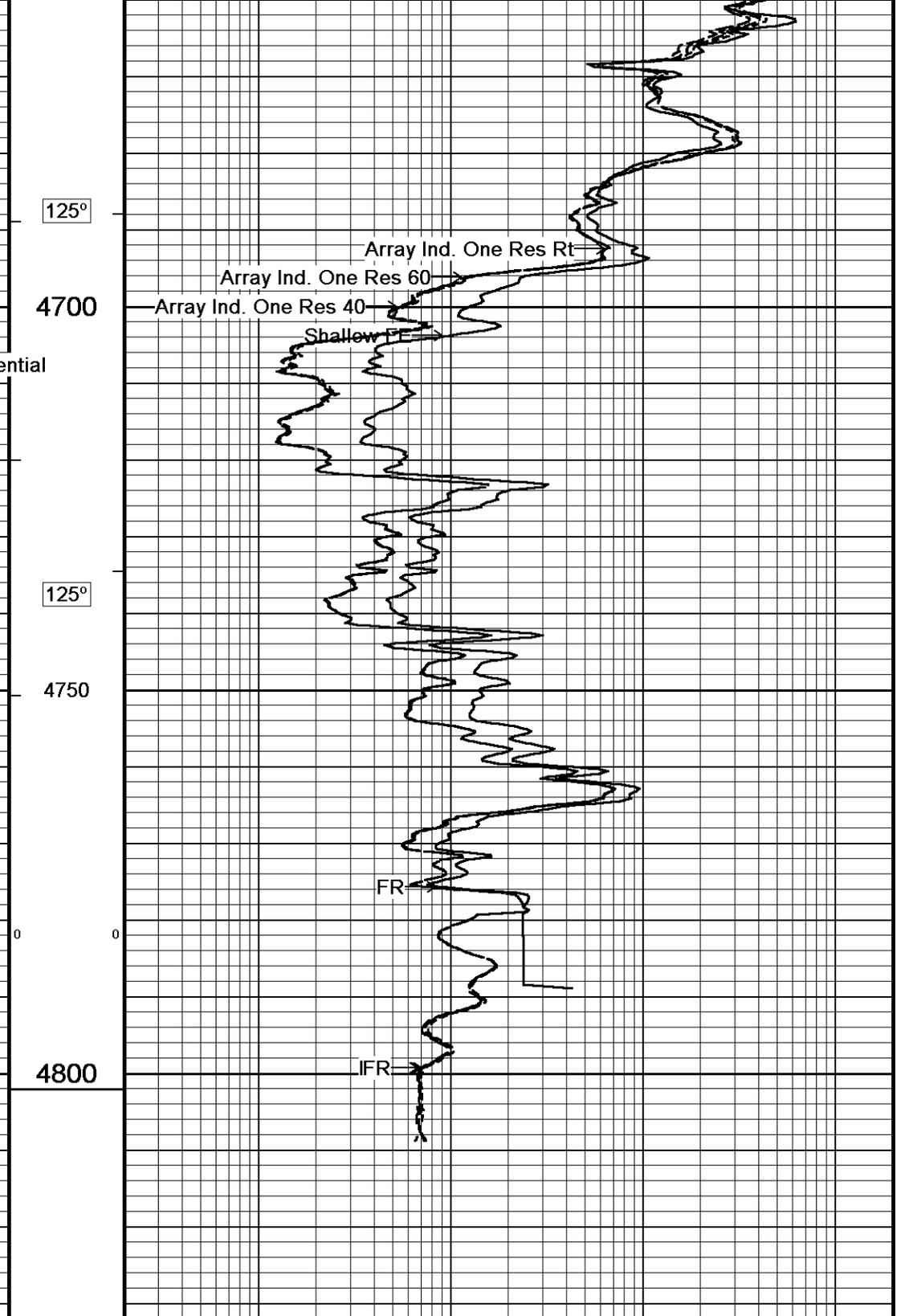
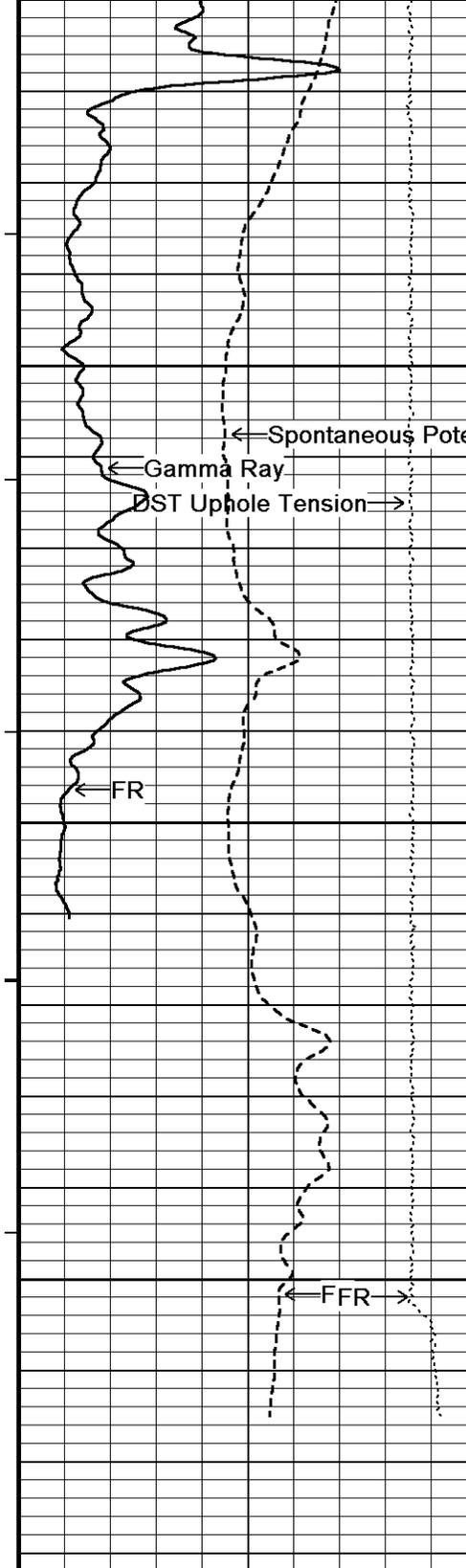
5 INCH MAIN

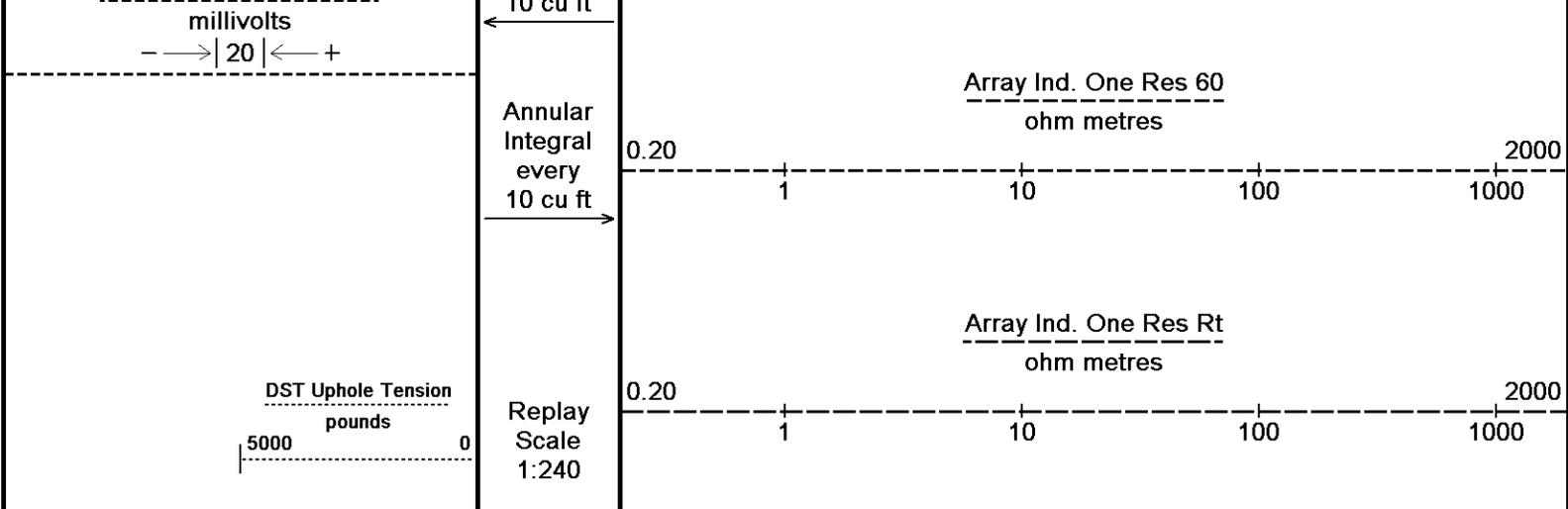
REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 22-JUL-2017 02:32  
 Filename: C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5\_001.dta  
 Recorded on 21-JUL-2017 23:12  
 System Versions: Logged with 17.01.7206 Plotted with 17.01.7206









Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 22-JUL-2017 02:32  
 Filename: C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5\_001.dta Recorded on 21-JUL-2017 23:12  
 System Versions: Logged with 17.01.7206 Plotted with 17.01.7206

↑ REPEAT SECTION ↑

**BEFORE SURVEY CALIBRATION**  
 C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5\_001.dta

General Constants All 000 Last Edited on 21-JUL-2017,22:39

General Parameters		
Mud Resistivity	0.960	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	4.500	inches
Caliper for Differential Caliper	None	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.620	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

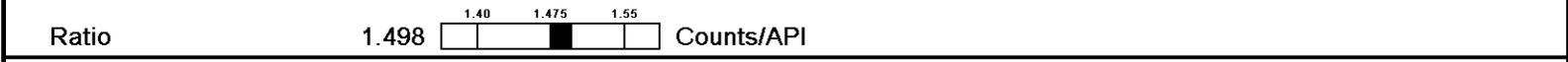
Down-hole Tension Calibration SMS 0 Field Calibration on 21-JUL-2017 22:14

Reading No	Measured	Calibrated (lbs)
1	14039.09	0.00
2	14869.52	481.00

Gamma Calibration MCG-C 84 Field Calibration on 21-JUL-2017 17:00

	Measured	Calibrated (API)
Background	142	95
Calibrator (Gross)	825	551
Calibrator (Net)	683	456

Gamma Calibration Tolerances MCG-C 84



Gamma Constants MCG-C 84 Last Edited on 21-JUL-2017,20:15

Gamma Calibrator Number	MCGGRCC141
GRC-M Calibrator Jig in Use?	NO
Inactive Background Jig in Use?	NO

Mud Density	1.09	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

SP Calibration MCG-C 84			Field Calibration on 03-JUL-2017,10:23
	Measured	Calibrated (mV)	
Reference 1	104.4	100.1	
Reference 2	-95.8	-100.1	

High Resolution Temperature Calibration MCG-C 84			Field Calibration on 03-JUL-2017,10:23
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	75.00	75.00	

High Resolution Temperature Constants MCG-C 84		Last Edited on 09-SEP-2014,02:23
Pre-filter Length	11	

Micro Normal and Micro Inverse Calibration MML-A 7					Base Calibration on 21-JUL-2017,09:26	Field Check on 21-JUL-2017 16:43
Base Calibration						
		Measured		Calibrated (ohm-m)		
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2		
Micro Normal	10.0	49.7	5.1	25.6		
Micro Inverse	10.0	50.1	3.4	16.9		
Channel	Base Check (ohm-m)		Field Check (ohm-m)			
Micro Normal	77.9		77.9			
Micro Inverse	51.0		51.0			

Micro Normal & Micro Inverse Calibration Tolerance MML-A 7							
Micro Normal Res. 1	10.0		ohm	Micro Normal Res. 2	49.7		ohm
Micro Inverse Res. 1	10.0		ohm	Micro Inverse Res. 2	50.1		ohm
Micro Normal Base Check	77.9		ohm-m				
Micro Inverse Base Check	51.0		ohm-m				
Micro Normal Field Check	77.9		ohm-m				
Micro Inverse Field Check	51.0		ohm-m				

Micro Normal and Micro Inverse Constants MML-A 7			Last Edited on 21-JUL-2017,20:15
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	N/A		inches

Caliper Calibration MML-A 7			Base Calibration on 21-JUL-2017,09:17	Field Calibration on 21-JUL-2017 16:41
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	13752	5.98		
2	16863	7.97		
3	19899	9.86		
4	23808	11.92		
5	0	0.00		
6	N/A	N/A		
Field Calibration				
	Measured Caliper (in)	Actual Caliper (in)		
	8.04	7.97		

Caliper Calibration Tolerances MML-A 7			
Short Arm Field Cal.	8.04		in

Neutron Calibration MDN-A.B 114

Base Calibration on 21-JUL-2017,14:44  
Field Check on 21-JUL-2017 17:05

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	3156	98	3714	110
	32.298		33.764	

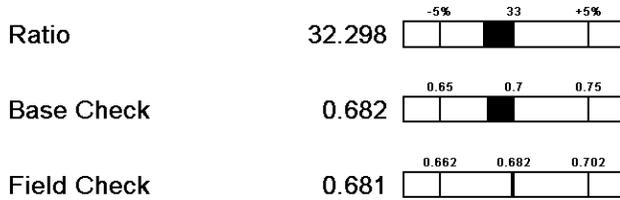
Field Calibrator at Base

	Calibrated (cps)
Ratio	0.682

Field Check

	Calibrated (cps)
Ratio	0.681

Neutron Calibration Tolerances MDN-A.B 114



Neutron Constants MDN-A.B 114

Last Edited on 21-JUL-2017,20:15

Neutron Source Id	P0204NN	
Neutron Jig Number	NJ5736	
Air Hole Processing	Legacy	
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-B.J 352

Base Calibration on 21-JUL-2017,09:08  
Field Check on 21-JUL-2017 16:32

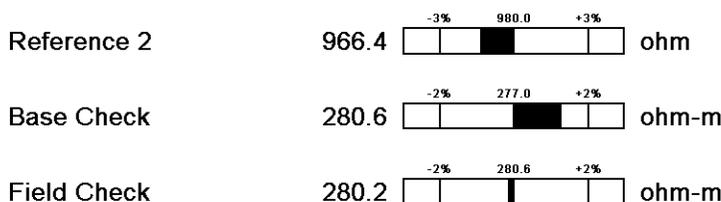
Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	966.4	126.8

Base Check 280.6

Field Check 280.2

FE Calibration Tolerances MFE-B.J 352



FE Constants MFE-B.J 352

Last Edited on 21-JUL-2017,20:15

Running Mode	No Sleeve
MFE K Factor	0.1268

Borehole Correction Constants	0.5	inches
Sonde Position		
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	

Sonic Constants MSS-A.A 55

Last Edited on 21-JUL-2017,20:14

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

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
Waveform Discriminator Filter	N/A
Semblance Window Width	N/A micro-sec
Sonic Despiker	N/A

High Resolution Temperature Calibration MAI-A.A 111

Field Calibration on 03-JUL-2017,10:17

	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
-------------------	----

Induction Calibration MAI-A.A 111

Base Calibration on 21-JUL-2017,10:20

Base Calibration

Test Loop Calibration

Channel	Measured		Calibrated (mmho/m)	
	Low	High	Low	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

Test Loop Calibration Verified

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	13.7	3869.0	14.0	3870.2
2	30.1	3523.0	30.4	3523.7
3	29.2	3017.0	29.4	3017.1
4	19.2	2055.4	19.3	2055.2
Deep	17.8	1959.3	18.0	1959.0
Medium	43.1	3970.5	43.4	3971.0
Shallow	44.9	5225.2	45.3	5226.9

Array Temperature 95.2 94.1 Deg F

Induction Calibration Tolerances MAI-A.A 111

Low Conductivity 1	17.6		mmho/m	High Conductivity 1	473.6		mmho/m
Low Conductivity 2	6.4		mmho/m	High Conductivity 2	385.9		mmho/m
Low Conductivity 3	3.2		mmho/m	High Conductivity 3	264.0		mmho/m
Low Conductivity 4	2.1		mmho/m	High Conductivity 4	135.5		mmho/m
Background Vx 1	0.0		mmho/m	Phase Check Loop 1	0.0		%
Background Vx 2	0.0		mmho/m	Phase Check Loop 2	0.0		%
Background Vx 3	0.0		mmho/m	Phase Check Loop 3	0.0		%
Background Vx 4	0.0		mmho/m	Phase Check Loop 4	0.0		%

Induction Constants MAI-A.A 111

Last Edited on 21-JUL-2017,20:15

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		
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	

Photo Density Calibration MPD-C.A 216

Base Calibration on 21-JUL-2017,11:29  
Field Check on 21-JUL-2017 16:39

Density Calibration				
Base Calibration		Measured	Calibrated (sdu)	
	Near	Far	Near	Far
Background	1034	1215		
Reference 1	51875	24845	59556	30836
Reference 2	20527	2316	24941	2541

Field Check at Base  
1033.8 1215.4

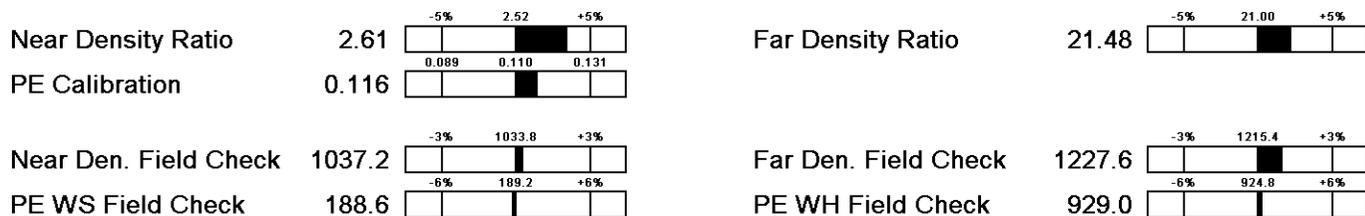
Field Check  
1037.2 1227.6

PE Calibration				
Base Calibration		Measured	Calibrated	
	WS	WH	Ratio	Ratio
Background	189	925		
Reference 1	21486	51702	0.419	0.371
Reference 2	5928	20410	0.295	0.272

Field Check at Base  
189.2 924.8

Field Check  
188.6 929.0

Photo Density Calibration Tolerances MPD-C.A 216



Density Constants MPD-C.A 216

Last Edited on 21-JUL-2017,20:14

Density Source Id	P50557B	
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	1.09	gm/cc
Mud Density Type		
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	
Precision Enhanced Density Processing	Not Applied	

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
0.00	0.00

**Caliper Calibration MPD-C.A 216**

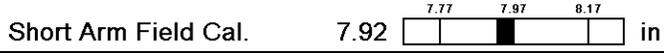
Base Calibration on 21-JUL-2017,11:21  
Field Calibration on 21-JUL-2017 16:35

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	18416	3.99
2	28544	5.98
3	38624	7.97
4	48448	9.86
5	59555	11.92
6	N/A	N/A

Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	7.92	7.97

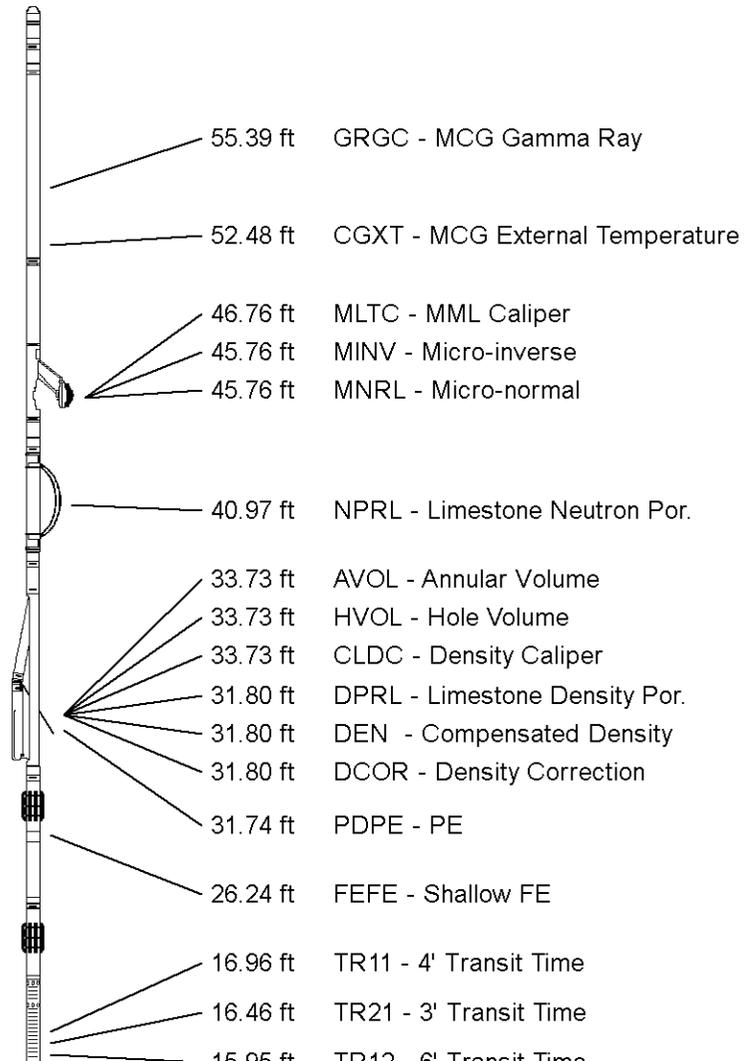
**Caliper Calibration Tolerances MPD-C.A 216**



**DOWNHOLE EQUIPMENT**

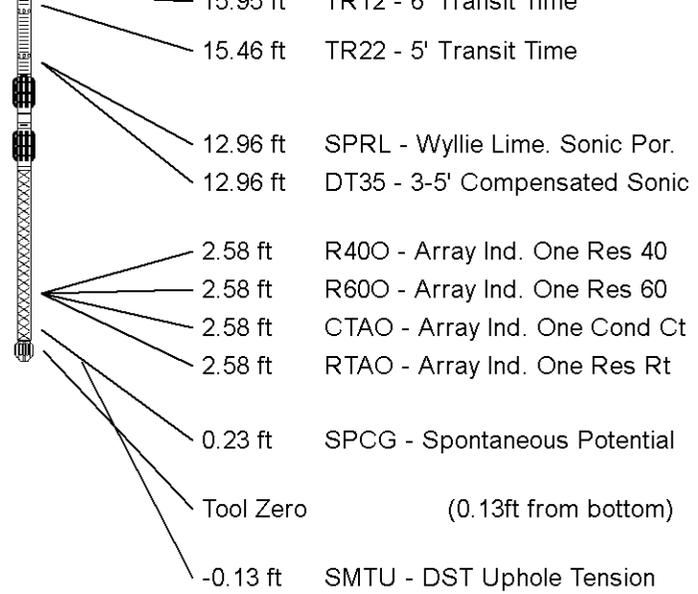
C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5\_001.dta

- Cablehead, 11 pin  
CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in
- Compact Comms Gamma  
MCG-C 84 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in
- Compact Micro-log  
MML-A 7 LG: 7.97 ft WT: 81.6 lb OD: 2.244 in
- Compact Neutron  
MDN-A.B 114 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: 2.449 in
- Compact Focussed Electric  
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in
- Compact Sonic  
MSS-A.A 55 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: 63.07 ft Weight: 480.6 lb



All measurements relative to tool zero.

COMPANY SHAKESPEARE OIL CO., INC.  
 WELL GOERING #1-5  
 FIELD WILDCAT  
 PROVINCE/COUNTY LANE  
 COUNTRY/STATE U.S.A. / KANSAS

Elevation Kelly Bushing	2951	feet	First Reading	4799.00	feet
Elevation Drill Floor	2949	feet	Depth Driller	4800.00	feet
Elevation Ground Level	2940	feet	Depth Logger	4802.00	feet

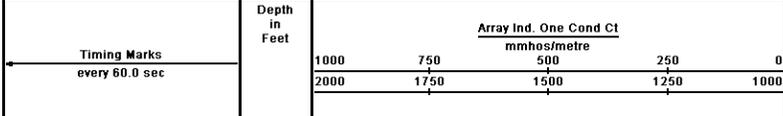


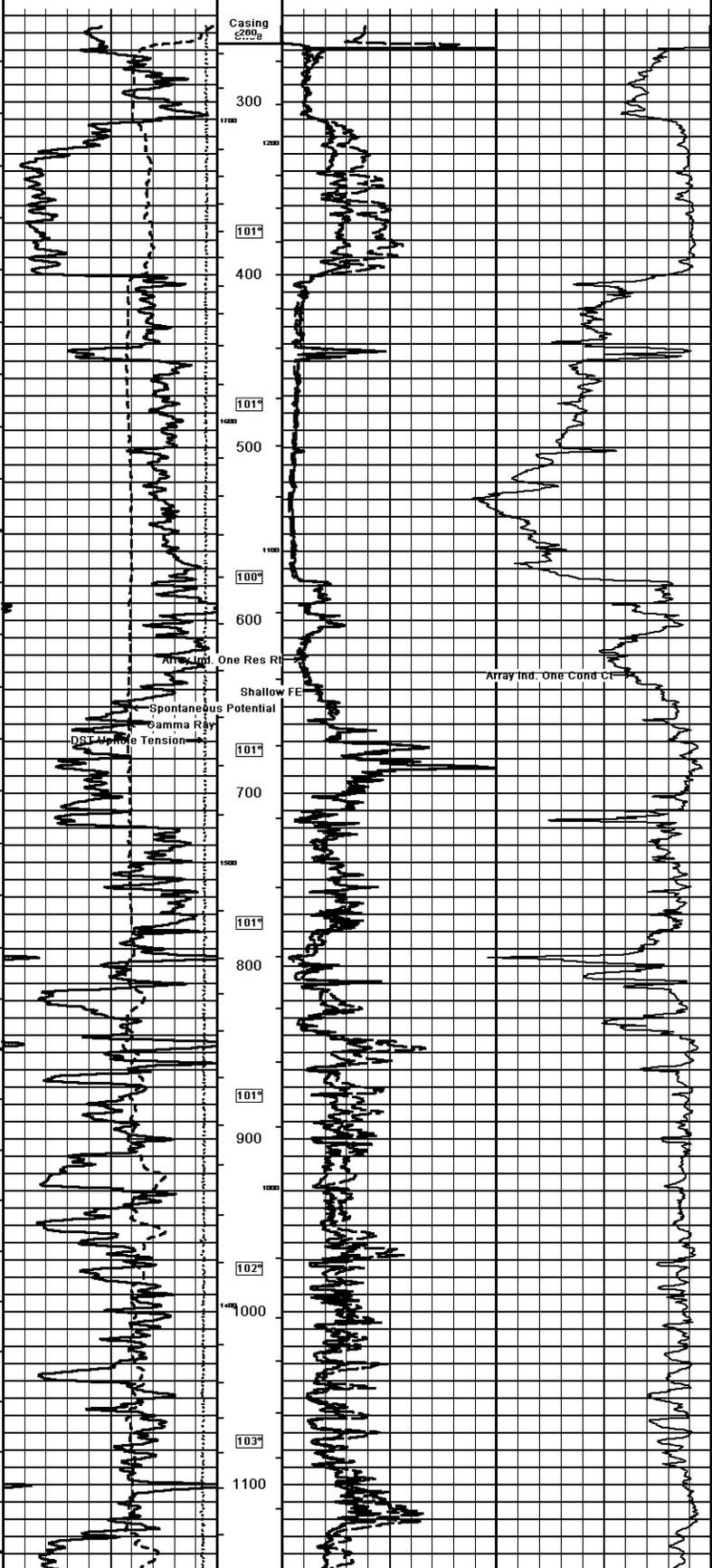
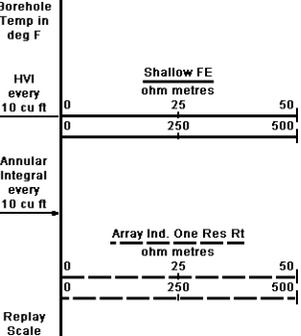
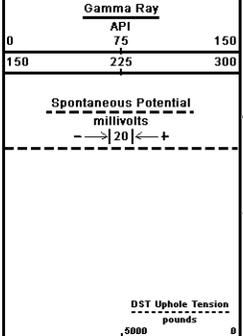
ARRAY INDUCTION  
 SHALLOW FOCUSED  
 ELECTRIC LOG

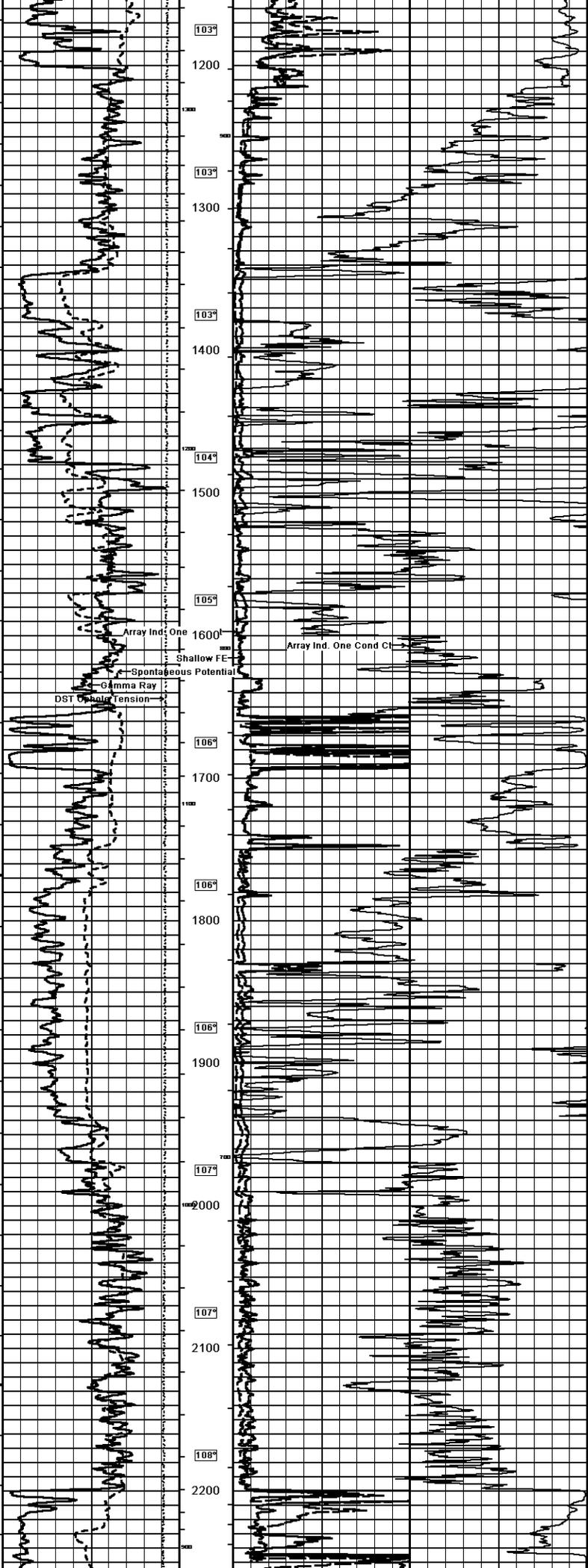
**Weatherford**<sup>®</sup>

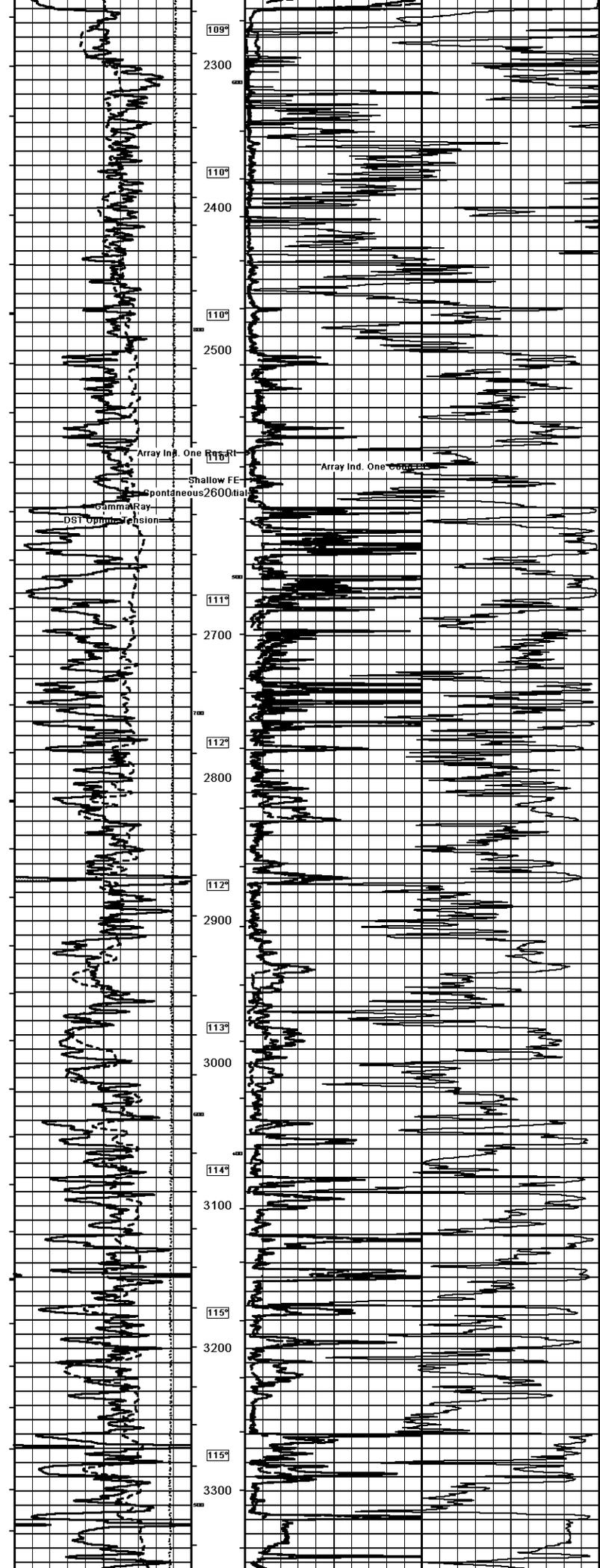
<b>Weatherford</b>		<b>ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG</b>	
COMPANY	SHAKESPEARE OIL CO., INC.	WELL	GOERING #1-5
FIELD	WILDCAT	PROVINCE/COUNTY	LANE
COUNTRY/STATE	U.S.A. / KANSAS	LOCATION	1580' ENL & 380' EEL
SEC 5	TWP 20S	R3E 30W	ONE SERVICE
LOGDATE	15-10-2298	MEASUREMENT	MML
Permanent Datum OL, Elevation 2940 feet		Log Measured From KB, 11.00 feet above Permanent Datum	
Drilling Measured From KB			
Date	21-JUL-2017	Run Number	ONE
Service Order	4558-187651123	Depth Driller	4800.00 feet
Depth Logger	4802.00 feet	First Reading	4799.00 feet
Last Reading	266.00 feet	Casing Driller	266.00 feet
Casing Logger	266.00 feet	Bit Size	7.875 inches
HOLE FLUID TYPE	CHEMICAL	DENSITY / VISCOSITY	9.10 lb/USG 49.00 CP
PH / FLUID LOSS	10.50	PH / FLUID LOSS	7.20 ml/30min
SAMPLE SOURCE	FLOWLINE	RM @ Measured Temp	0.96 @ 75.0 ohm-m
RM @ Measured Temp	0.77 @ 75.0 ohm-m	RM @ Measured Temp	1.15 @ 75.0 ohm-m
SOURCE RMT / RMC	CALC	RM @ BHT	0.57 @ 78.0 ohm-m
TIME SINCE CIRCULATION	5 HOURS	MAX RECORDED TEMP	178.00 deg F
EQUIPMENT / BASE	113066	RECORDED BY	ADAM SULL
APPRECIATION		APPRECIATION	
MESSAGED BY	TIM PREST		

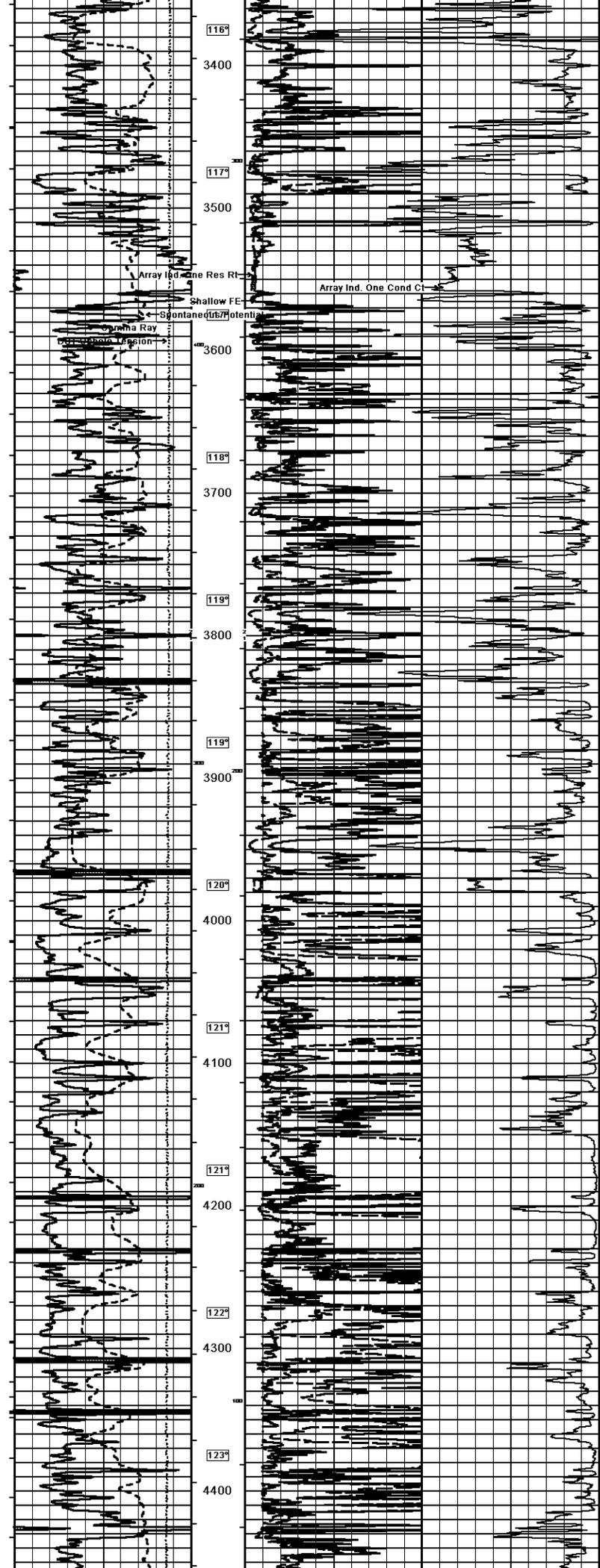
1 INCH MAIN  
 Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 22-JUL-2017 02:32  
 Filename: C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5\_002.dta  
 Recorded on 21-JUL-2017 23:39  
 System Versions: Logged with 17.01.7206 Plotted with 17.01.7206

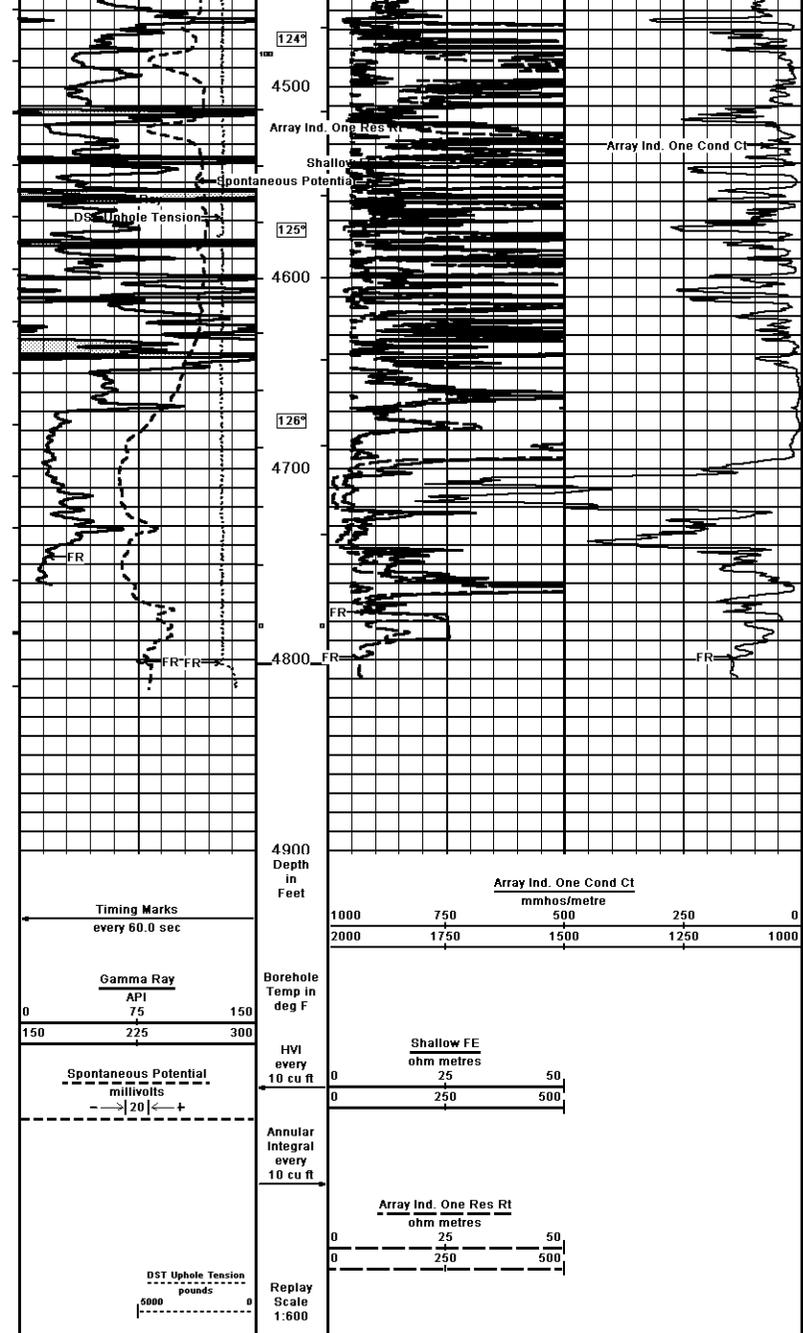












Timing Marks  
every 60.0 sec

Gamma Ray  
API  
0 75 150  
150 225 300

Spontaneous Potential  
millivolts  
- -> 20 | <- +

DST Uphole Tension  
pounds  
5000 0

Depth in Feet

Array Ind. One Cond Ct  
mmhos/metre  
1000 750 500 250 0  
2000 1750 1500 1250 1000

Borehole Temp in deg F

HVI every 10 cu ft  
Shallow FE ohm metres  
0 25 50  
0 250 500

Annular Integral every 10 cu ft

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

Replay Scale 1:600

Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 22-JUL-2017 02:32  
 Filename: C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5\_002.dta  
 Recorded on 21-JUL-2017 23:39  
 System Versions: Logged with 17.01.7206 Plotted with 17.01.7206

1 INCH MAIN

COMPANY	SHAKESPEARE OIL CO., INC.				
WELL	GOERING #1-5				
FIELD	WILDCAT				
PROVINCE/COUNTY	LANE				
COUNTRY/STATE	U.S.A. / KANSAS				
Elevation Kelly Bushing	2951	feet	First Reading	4799.00	feet
Elevation Drill Floor	2949	feet	Depth Driller	4800.00	feet
Elevation Ground Level	2940	feet	Depth Logger	4802.00	feet



ARRAY INDUCTION  
SHALLOW FOCUSED  
ELECTRIC LOG