



Weatherford

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

COMPANY		SHAKESPEARE OIL CO., INC			
WELL		JANZEN #3-36			
FIELD		CAPSTONE EAST			
PROVINCE/COUNTY		SCOTT			
COUNTRY/STATE		U.S.A / KANSAS			
LOCATION		915' FSL & 1880' FWL			
SEC 36	TWP 16S	RGE 34W	Other Services		MML
Latitude	38.615082		MPD/MDN		
Longitude	101.029757				
API Number	15-171-21026				
Permanent Datum GL, Elevation 3102 feet					Elevations:
Log Measured From KB					KB 3114.00
Drilling Measured From KB @ 12 FEET					DF 3112.00
					GL 3102.00
Date	28-FEB-2014				
Run Number	ONE				
Service Order	7036-80773435				
Depth Driller	4880.00		feet		
Depth Logger	4874.00		feet		
First Reading	487.00		feet		
Last Reading	265.00		feet		
Casing Driller	264.00		feet		
Casing Logger	265.00		feet		
Bit Size	7.875		inches		
Hole Fluid Type	CHEMICAL				
Density / Viscosity	9.10	lb/USg	48.00	CP	
PH / Fluid Loss	10.00		8.80	ml/30Min	
Sample Source	MUDPIT				
Rm @ Measured Temp	0.38 @ 75.0		ohm-m		
Rmf @ Measured Temp	0.31 @ 75.0		ohm-m		
Rmc @ Measured Temp	0.46 @ 75.0		ohm-m		
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	0.26 @ 111.0		ohm-m		
Time Since Circulation	4 HOURS				
Max Recorded Temp	112.00		deg F		
Equipment / Base	13096		LIB		
Recorded By	DEREK CARTER		BEN WELDIN		
Witnessed By	MARK HERNDON				
JOB #	LB14-057				

BOREHOLE RECORD					Last Edited: 28-FEB-2014 10:34
Bit Size inches		Depth From feet		Depth To feet	
7.875		264.00		4880.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	264.00	24.00	

REMARKS
- SOFTWARE ISSUE: WLS 13.08.2113
- TOOL STRING: MCG, MML, MDN, MPD, MFE, MAI RUN IN COMBINATION
- HARDWARE: MDN: DUAL BOWSPRING ECCENTRALIZER MFE: 1 X 0.5 INCH STANDOFF MAI: 2 X 0.5 INCH STANDOFF
- 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: 2020 CU. FT.
- ANNUILLAR HOLE VOLUME WITH 5.5 INCH CASING FROM TD TO SURFACE CASING: 180 CU. FT.

- SERVICE ORDER # 7036-80773435

- RIG: SOUTHWIND #70

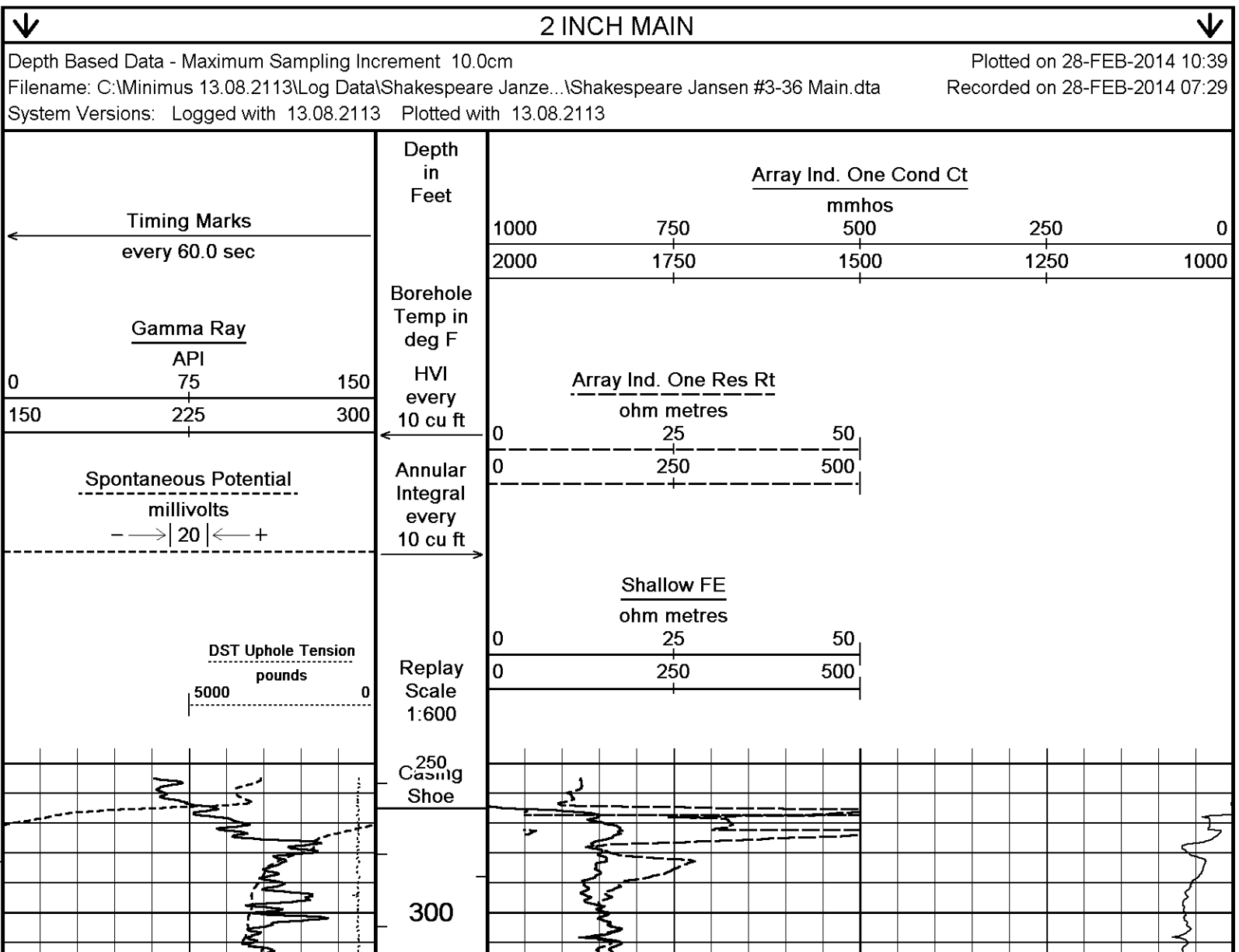
- ENGINEER: DEREK CARTER

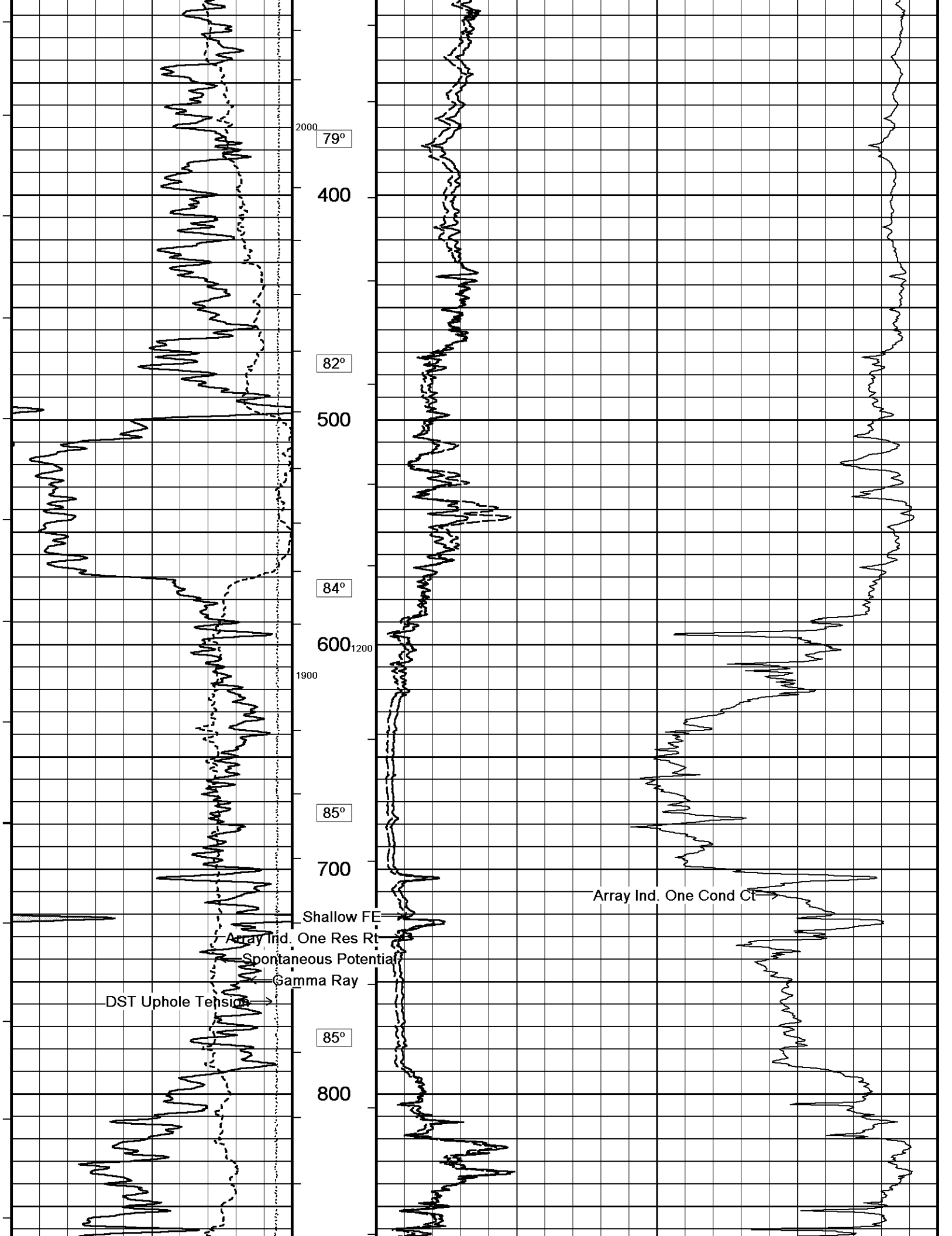
- JUNIOR FIELD ENGINEER: BEN WELDIN

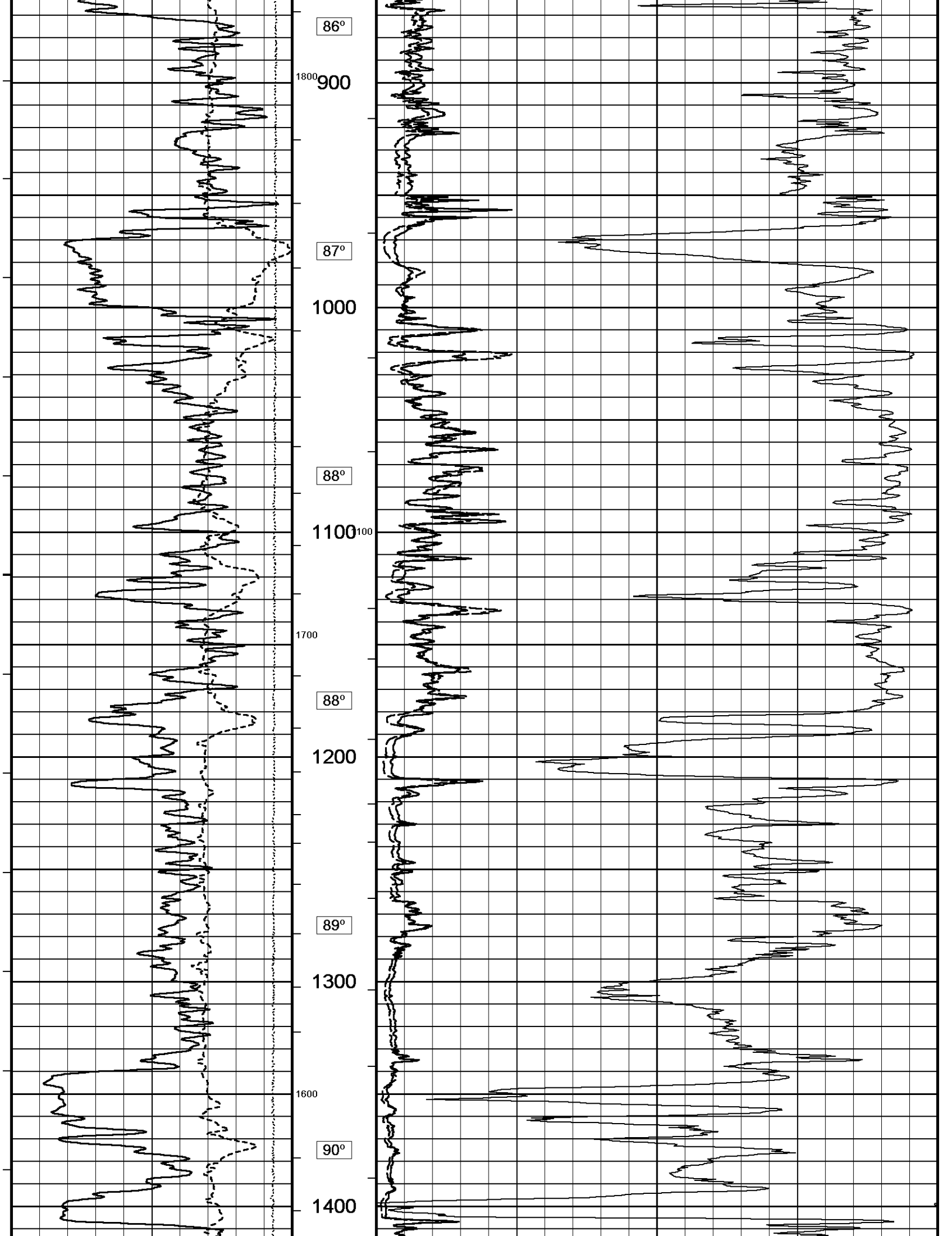
- OPERATORS: KEN RINEHART

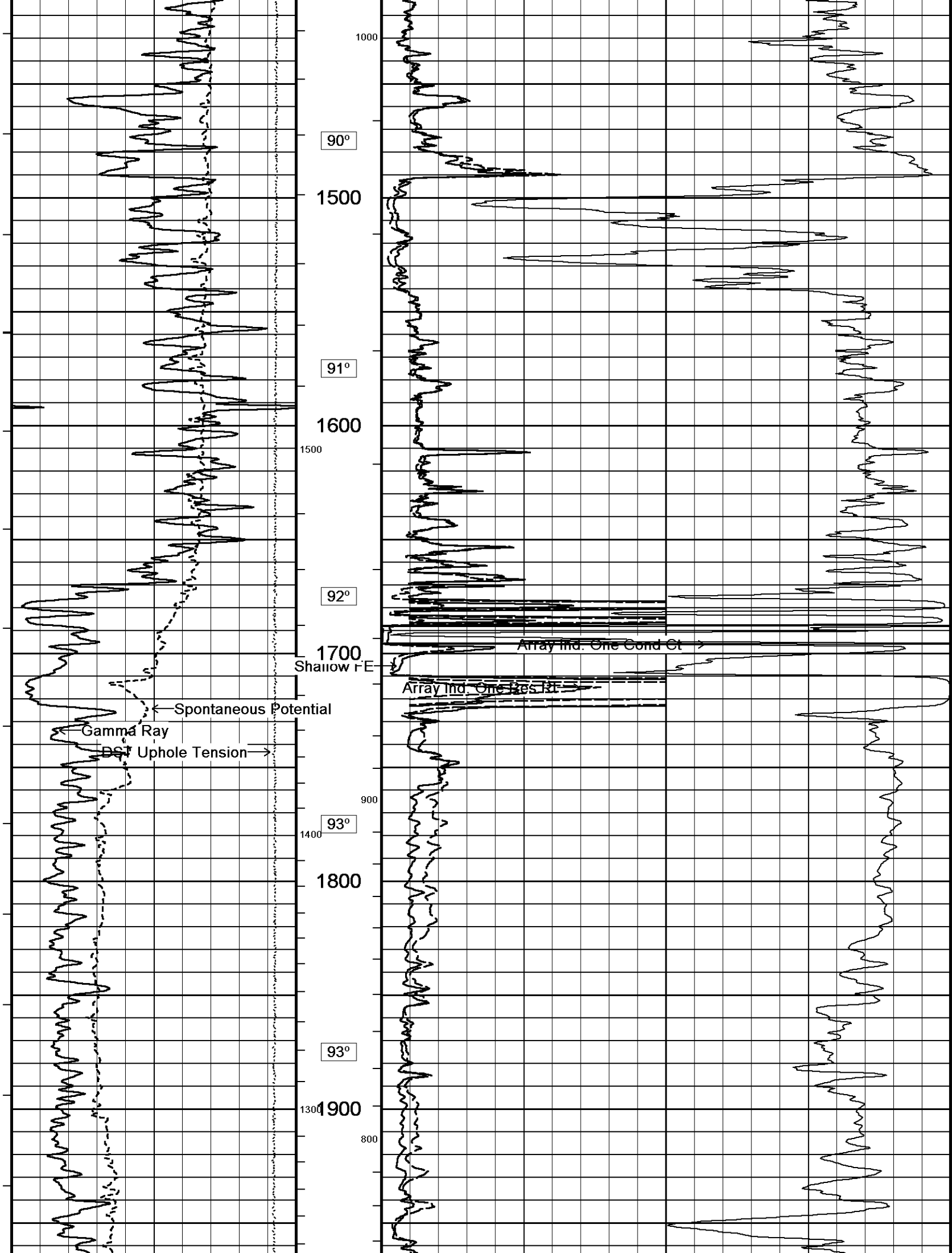
- WELL SITE GEOLOGIST AND DRILLER STATED THAT THEY WERE HAVING PROBLEMS WITH THEIR GEOLOGRAPH AND THAT THE LOGGERS TD OF 4874 FT. WAS ACCEPTABLE; DRILLERS TD WAS 4880 FT.

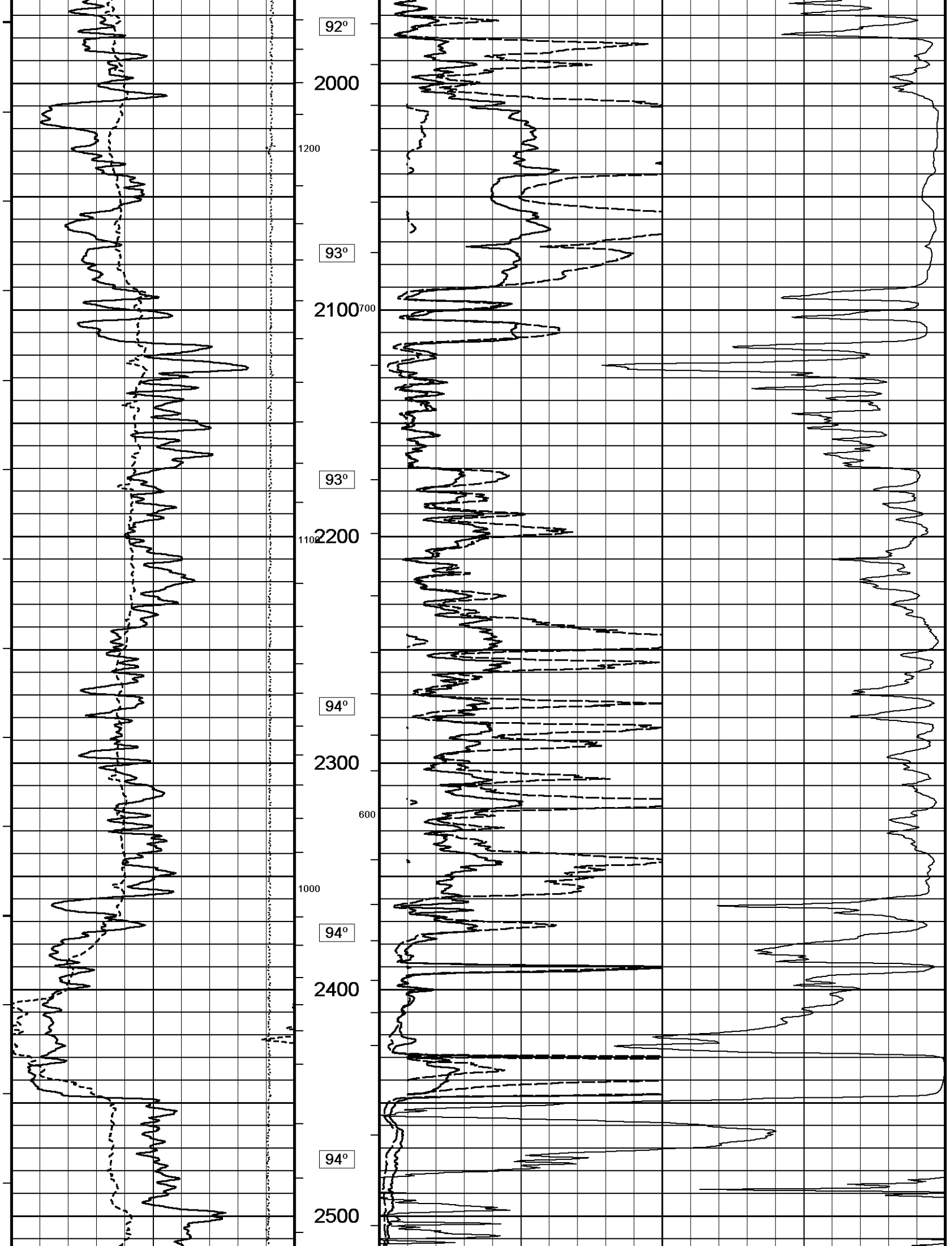
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will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

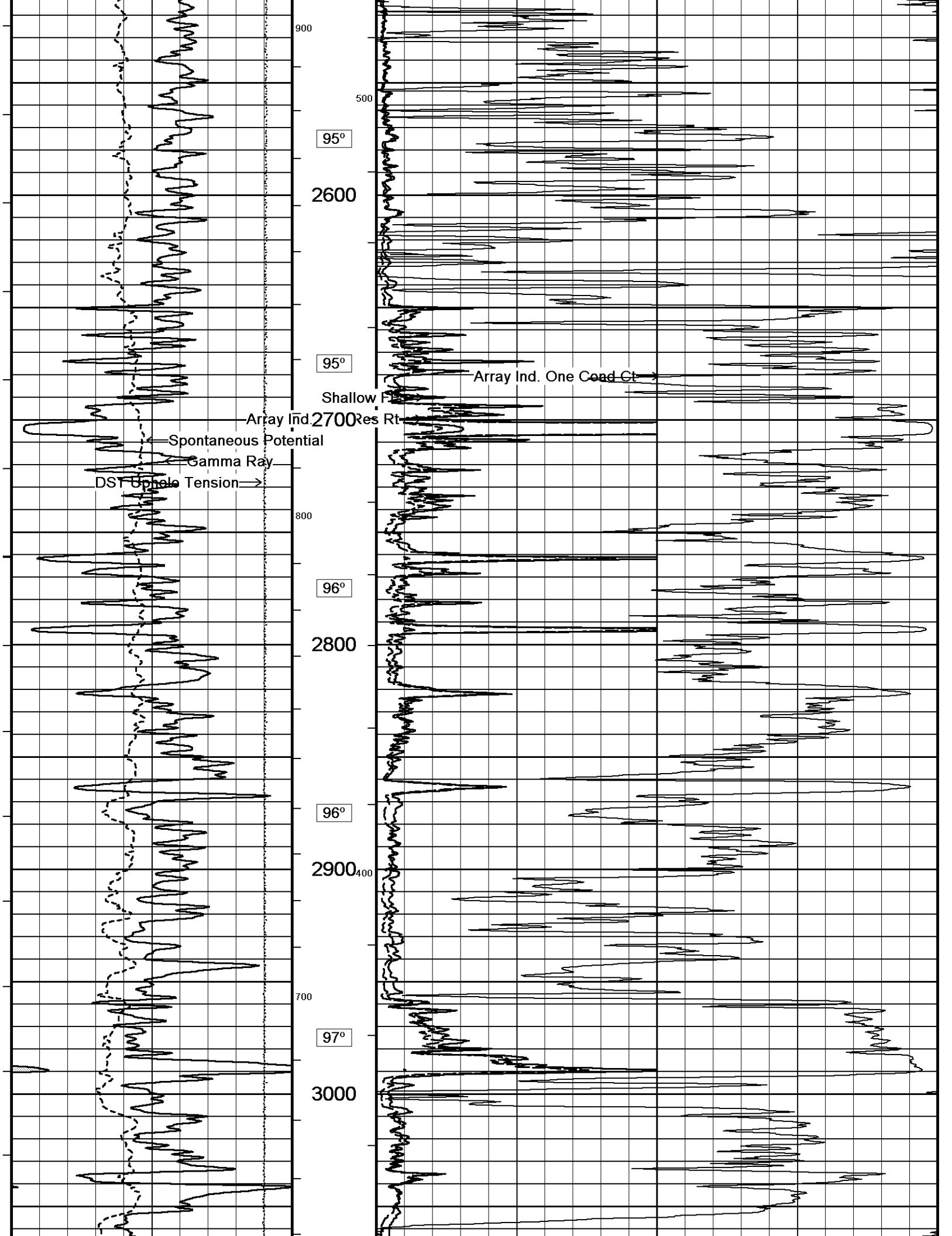


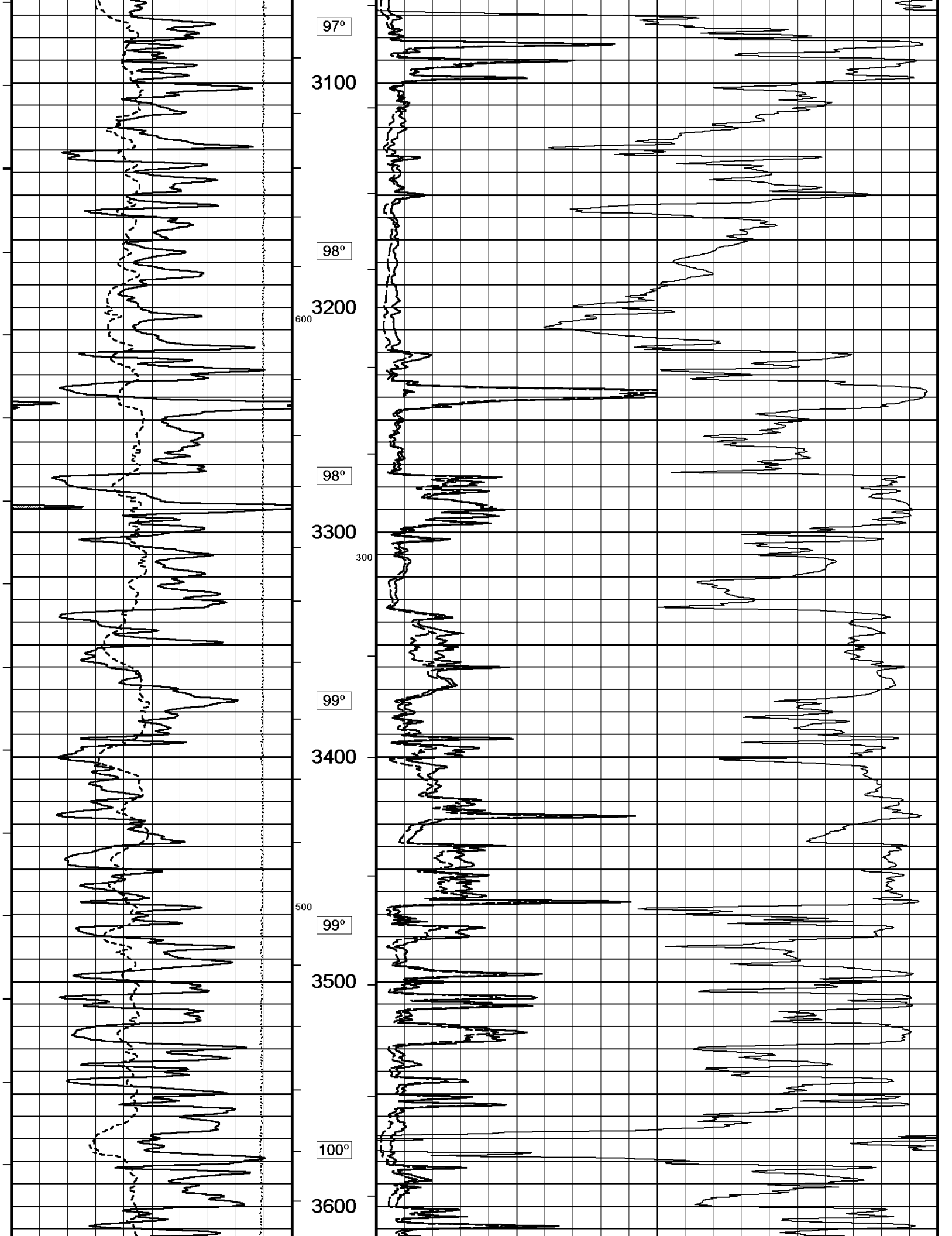


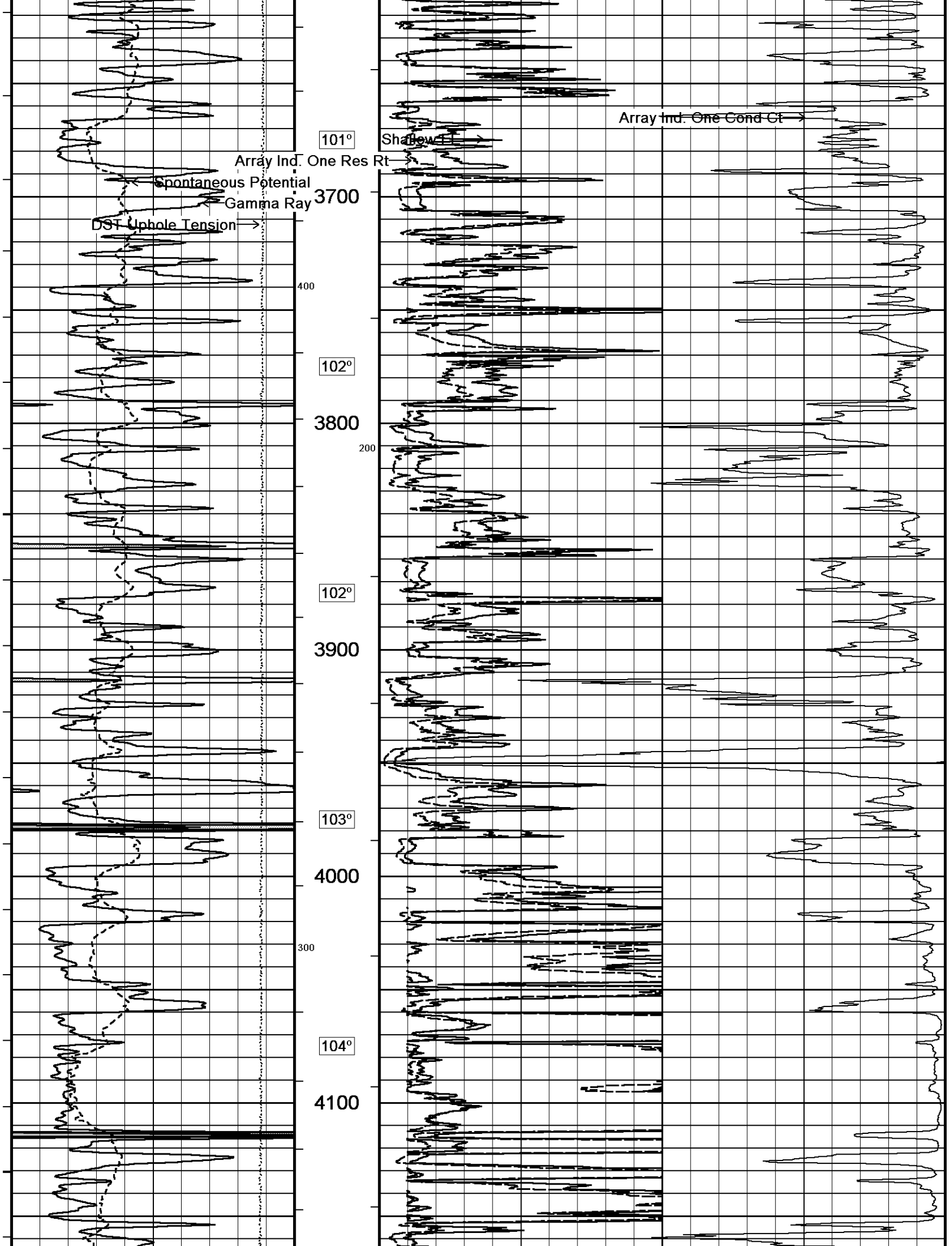


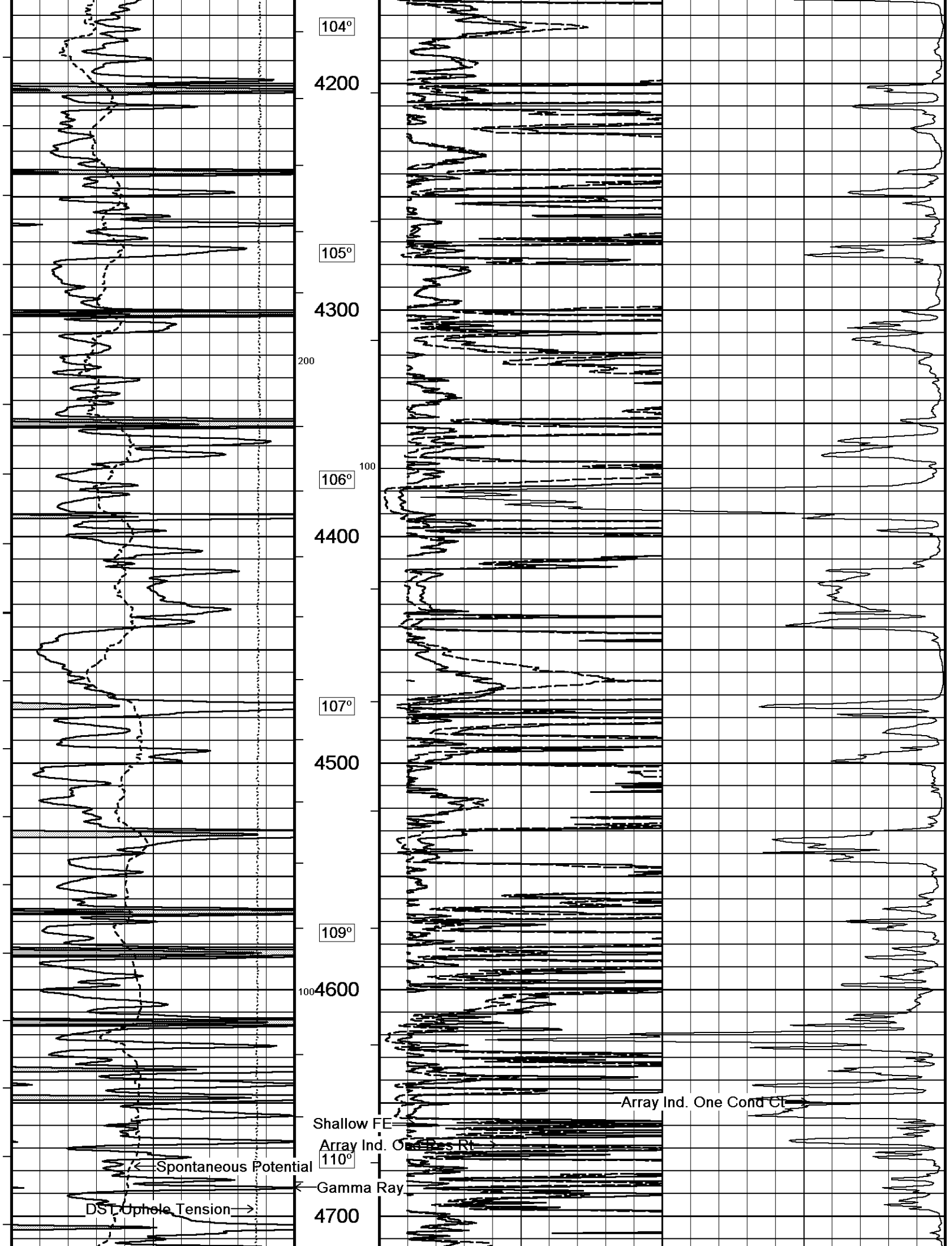


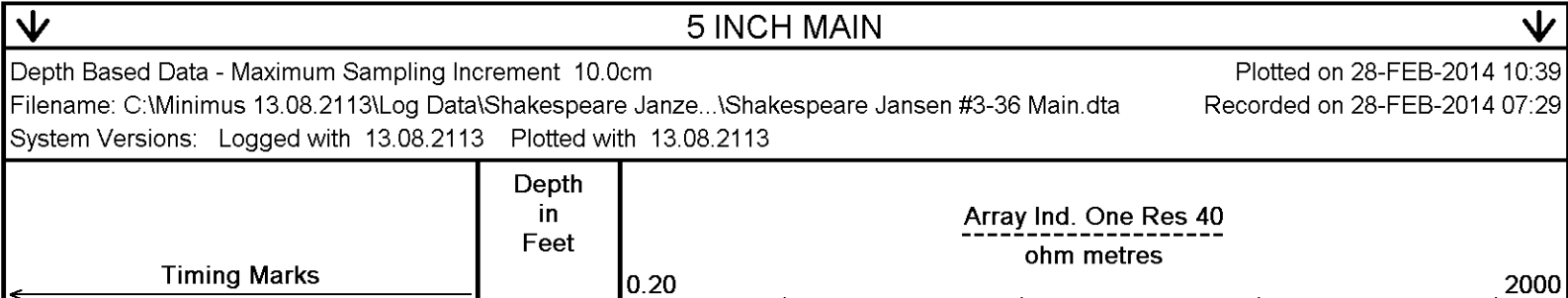
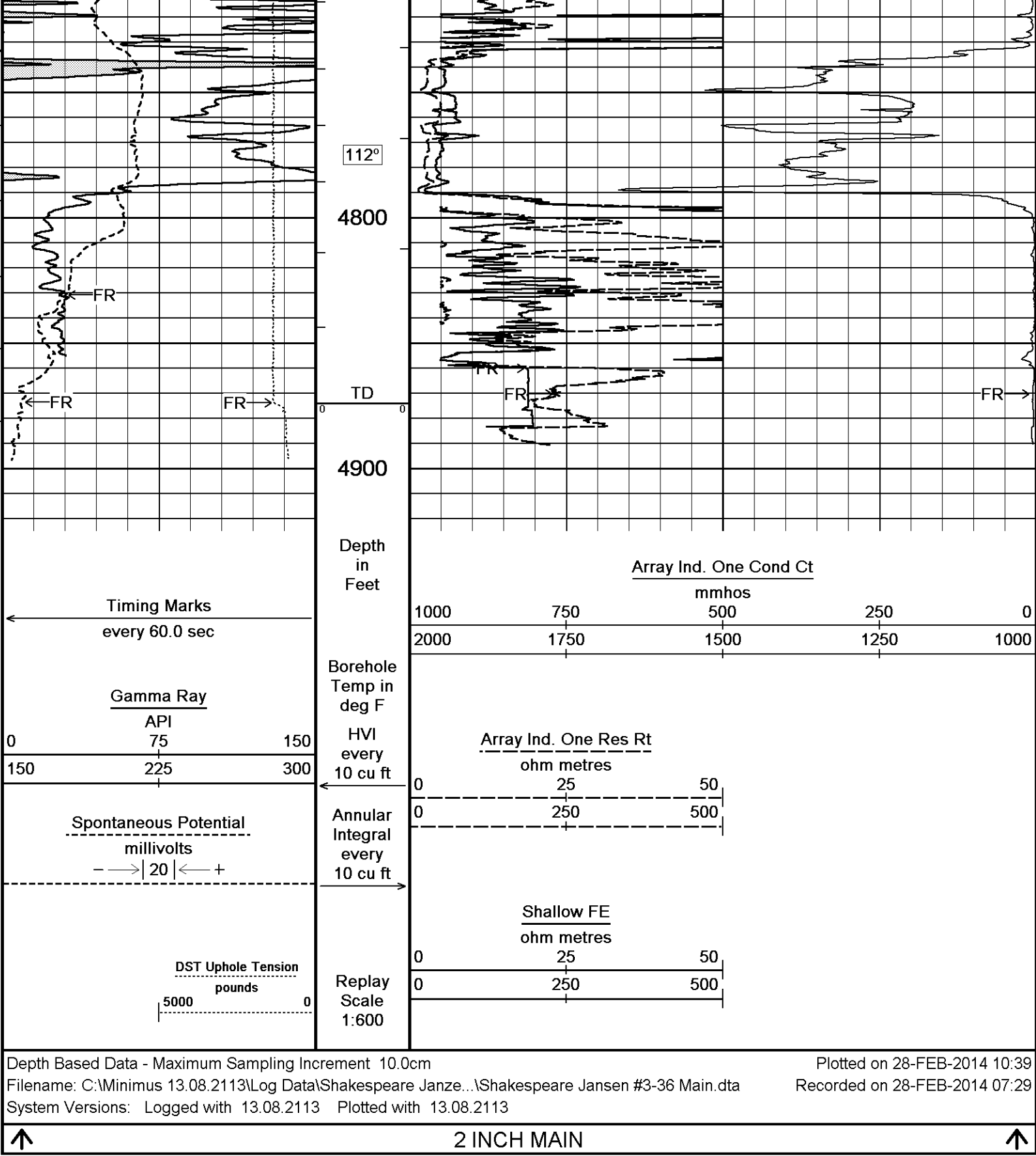




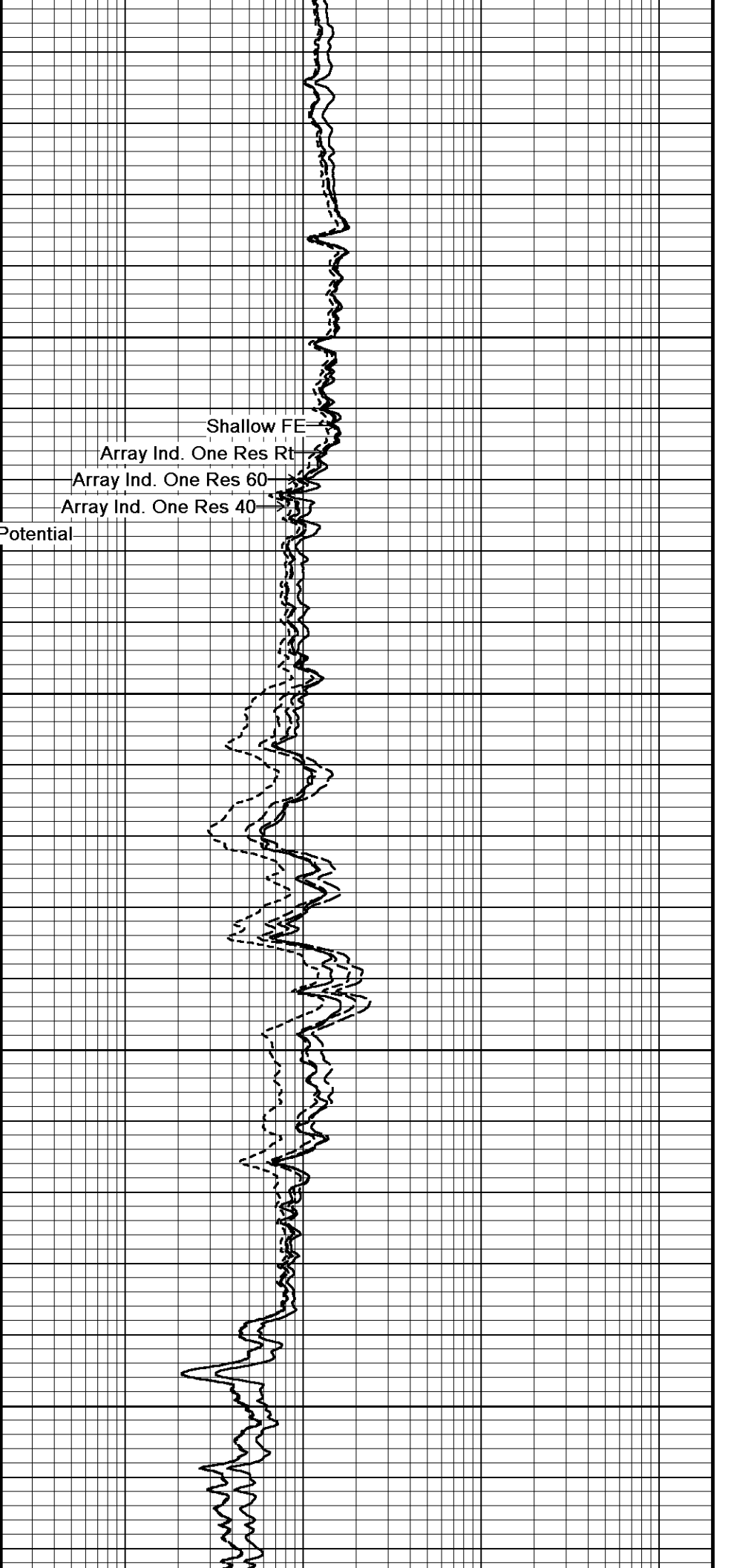
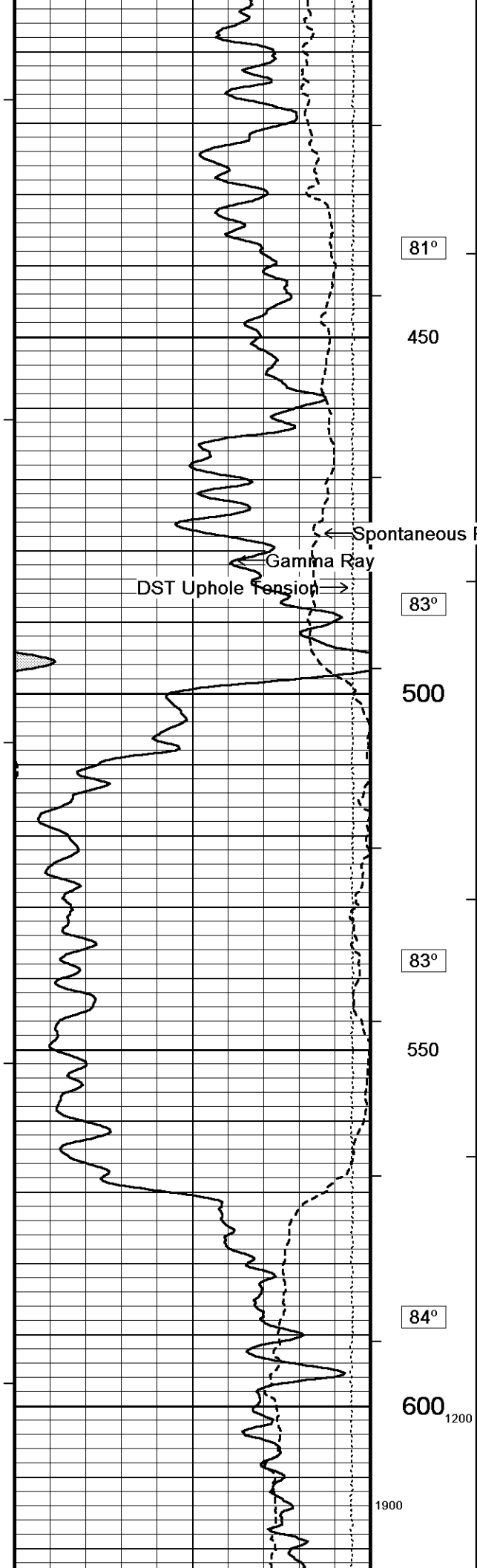


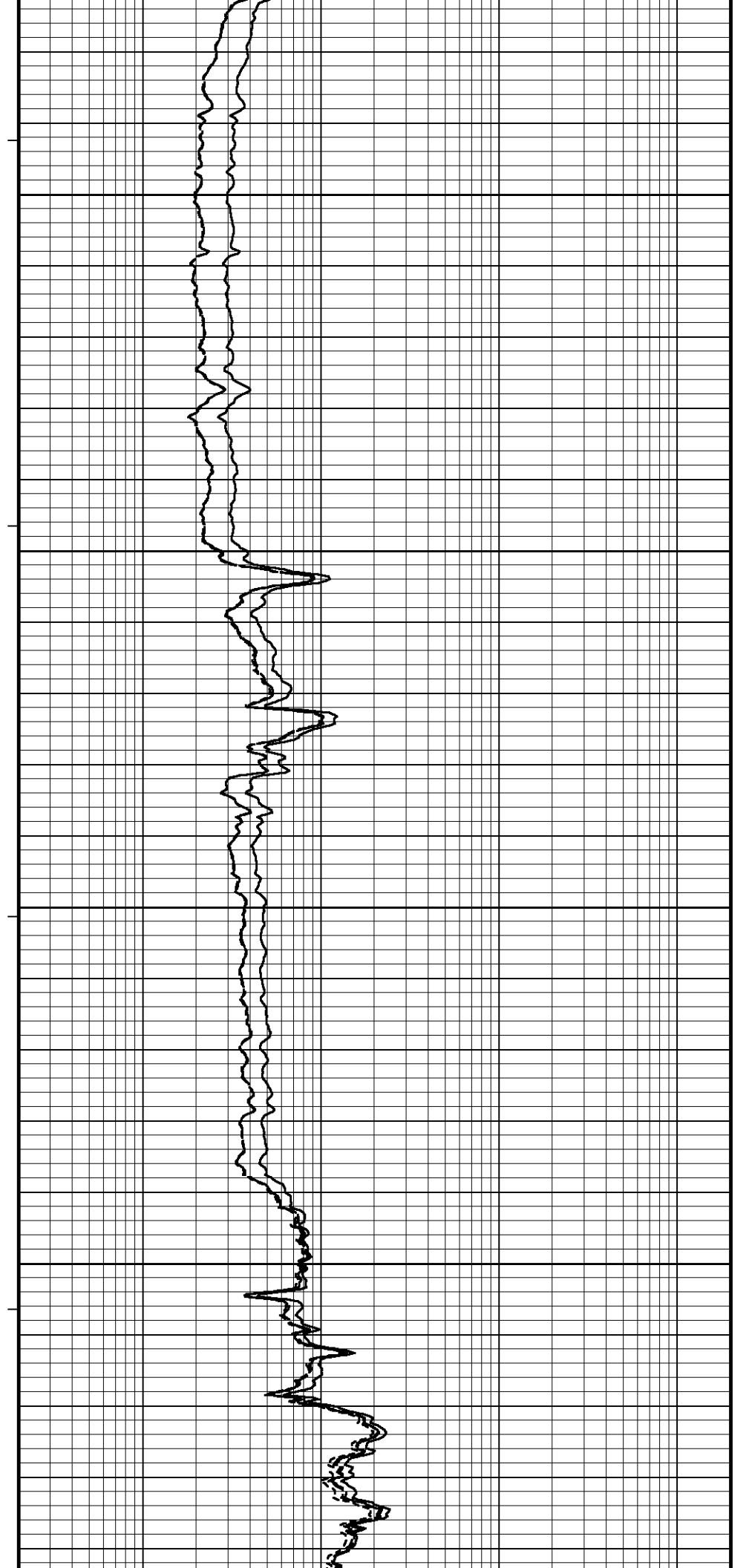
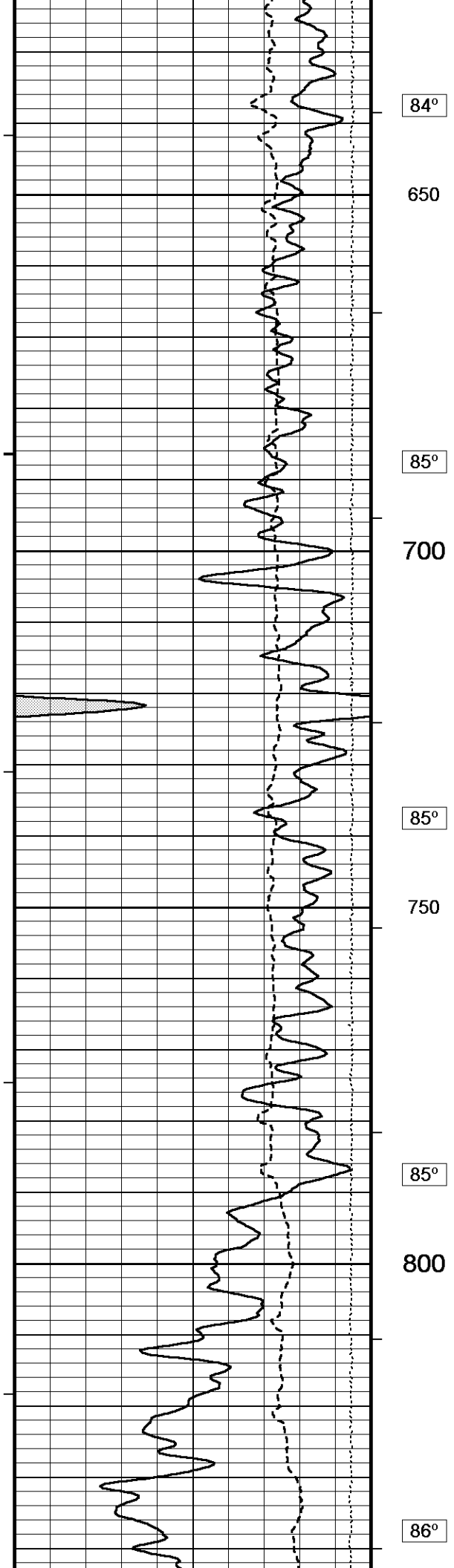


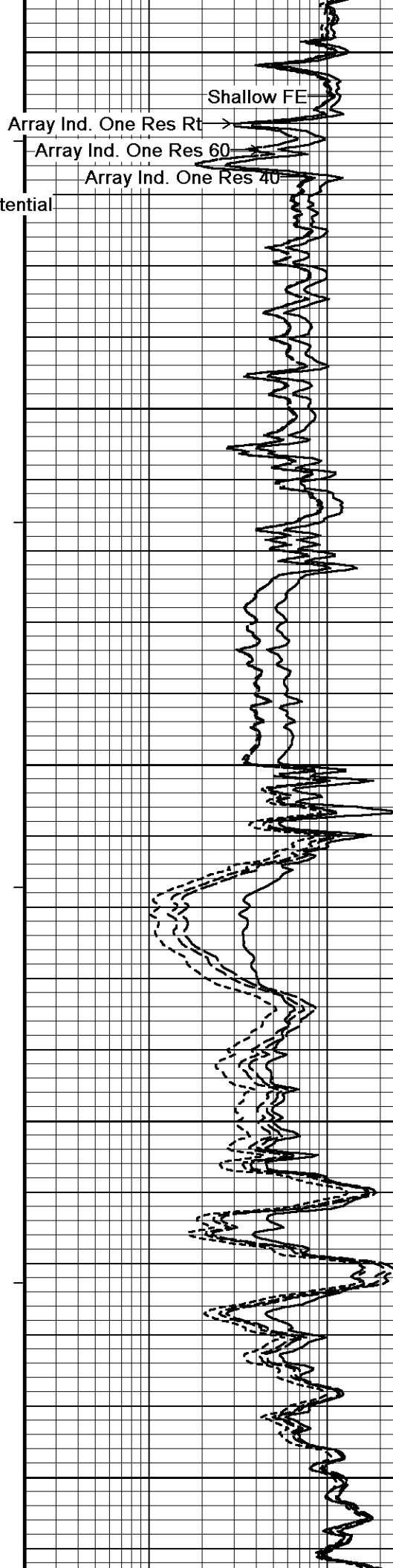
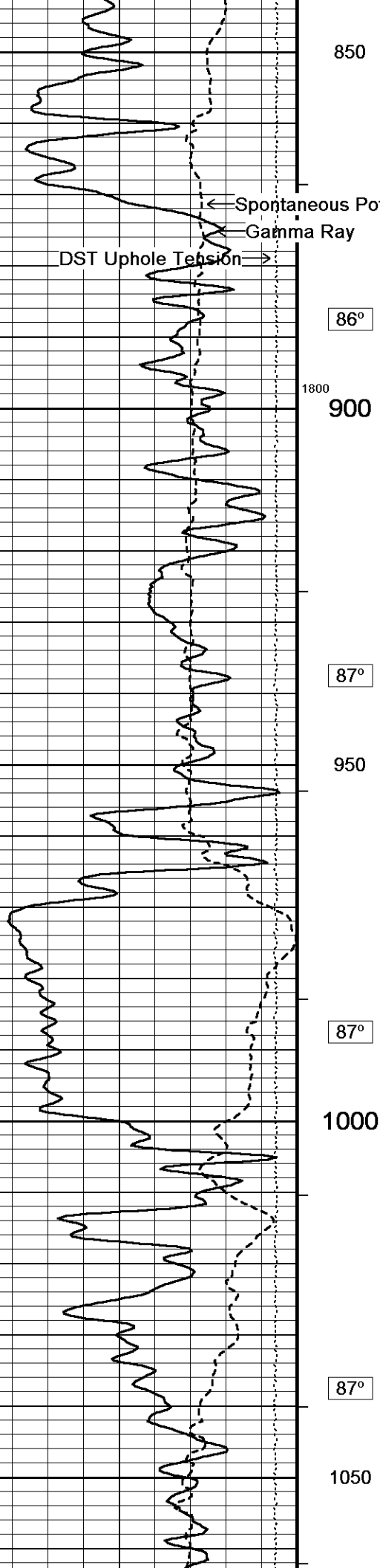


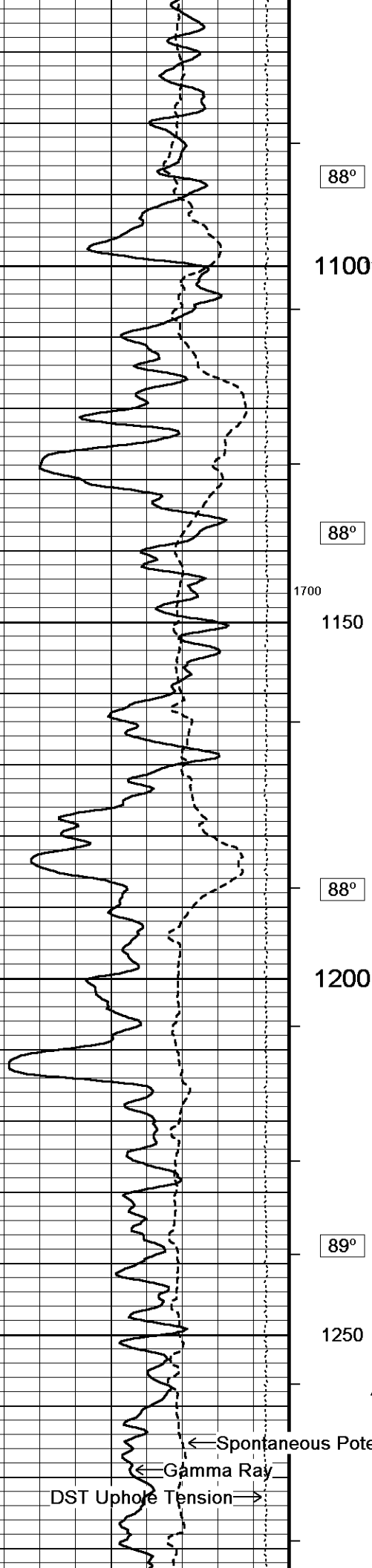


[illegible]









88°

1100¹⁰⁰

88°

1700

1150

88°

1200

89°

1250

Shallow FE

Array Ind. One Res Rt

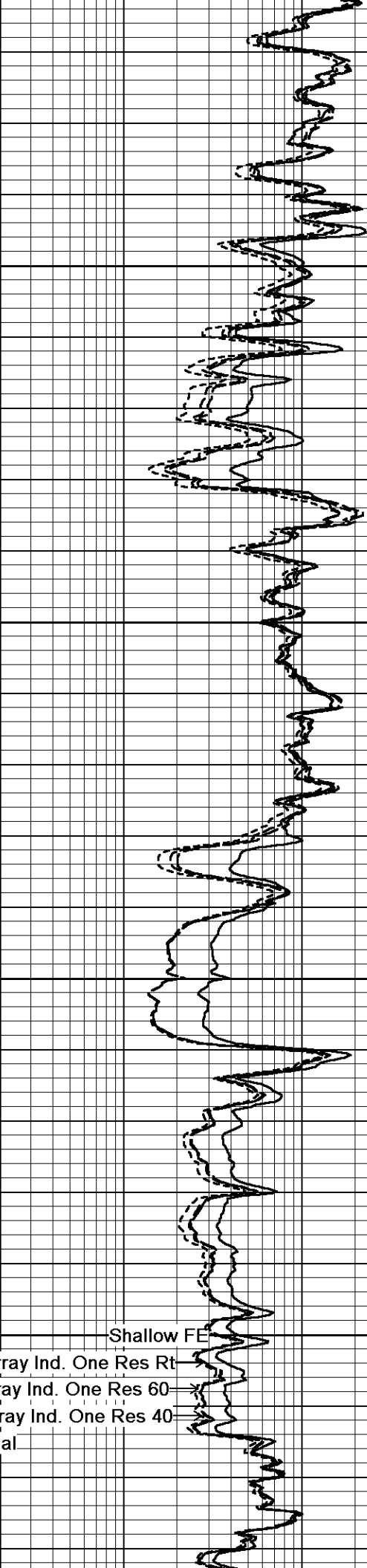
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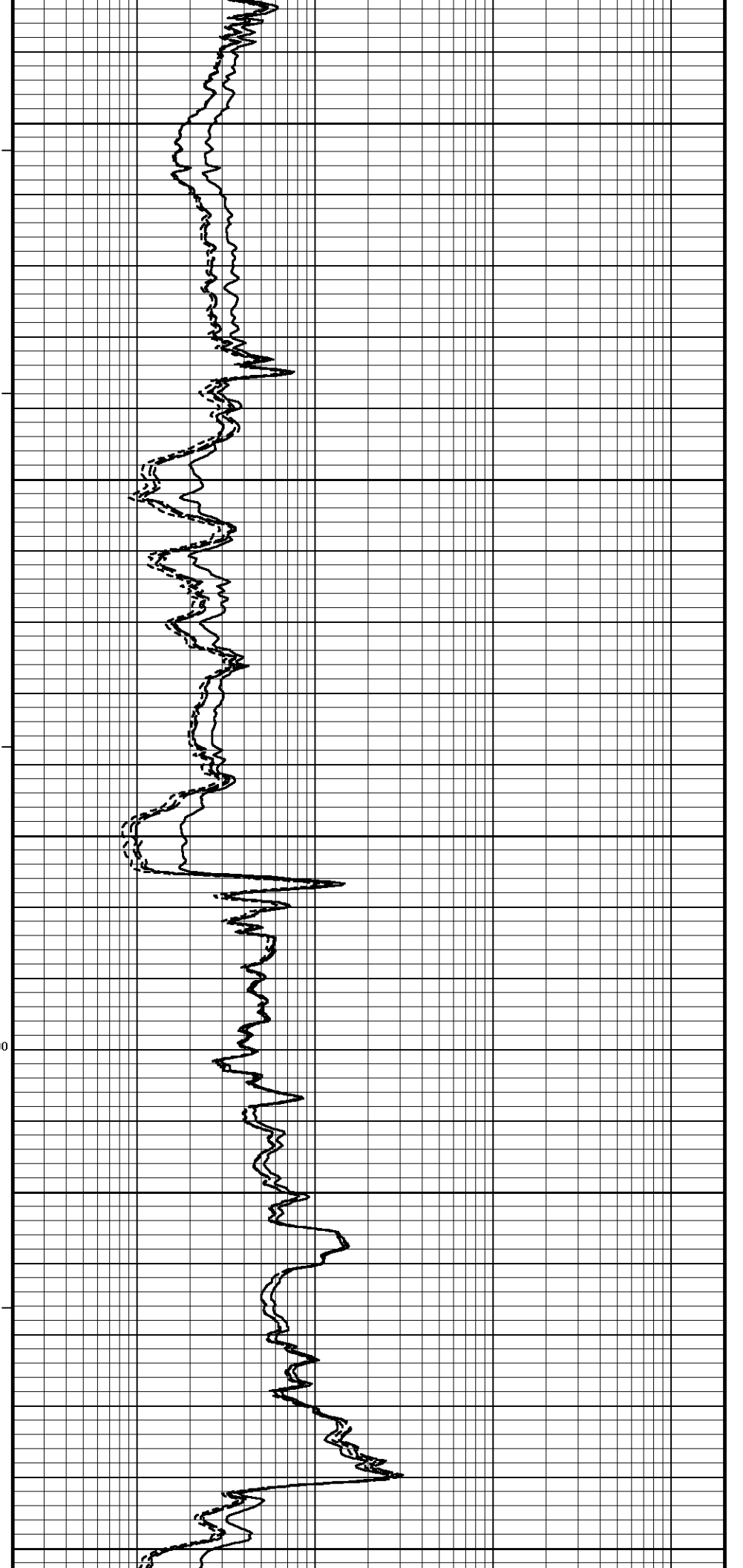
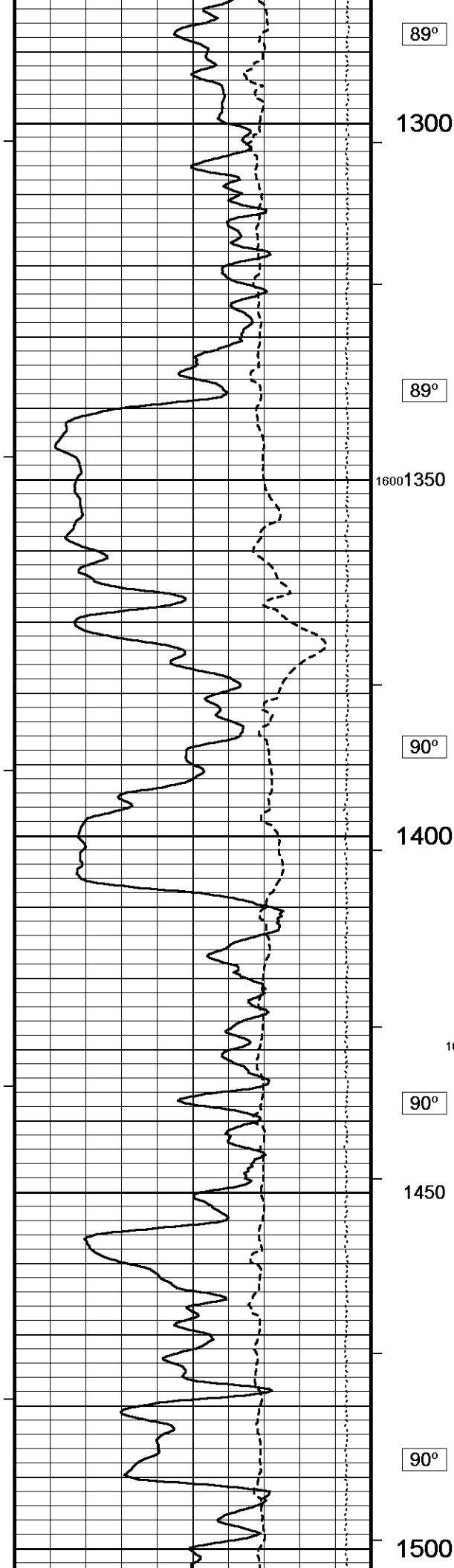
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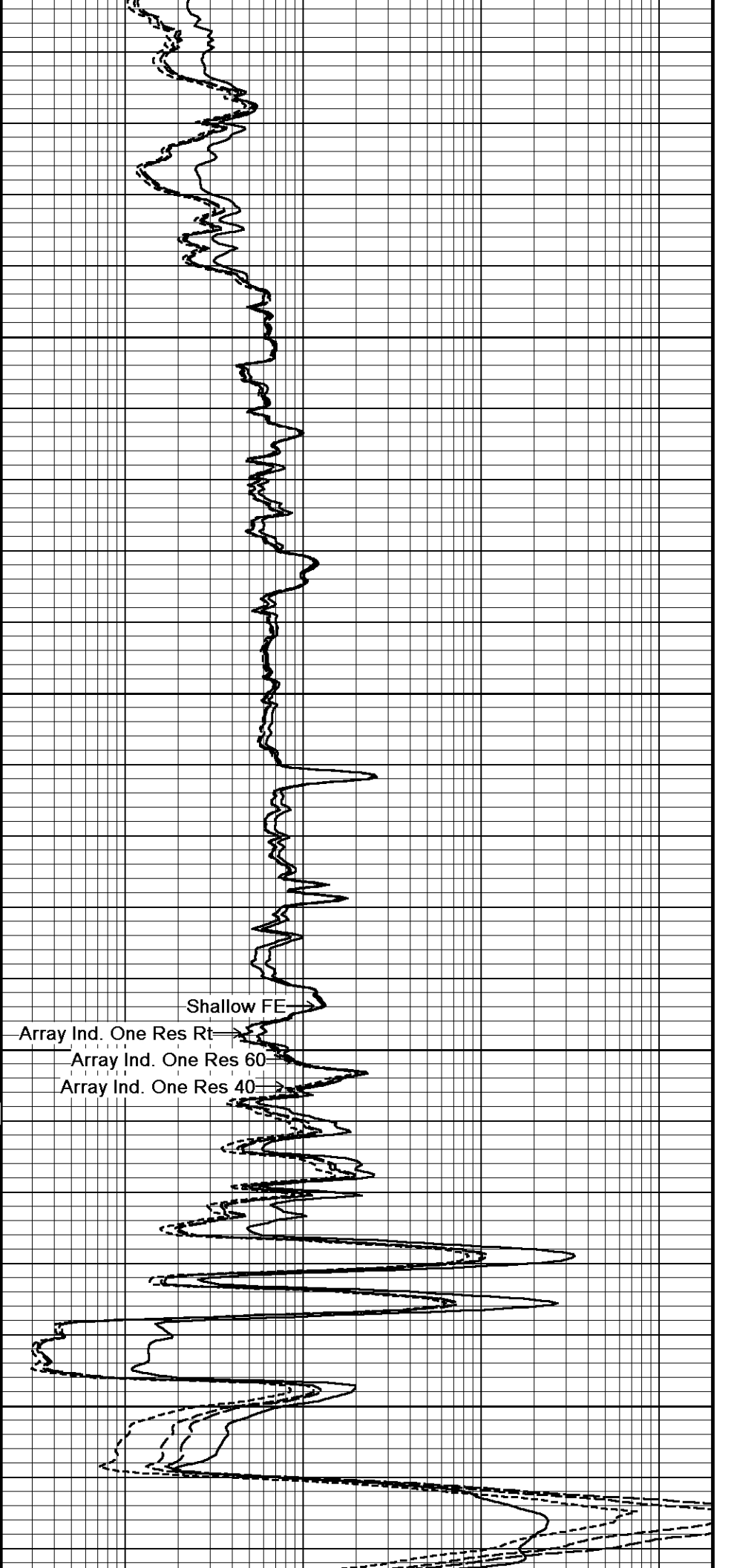
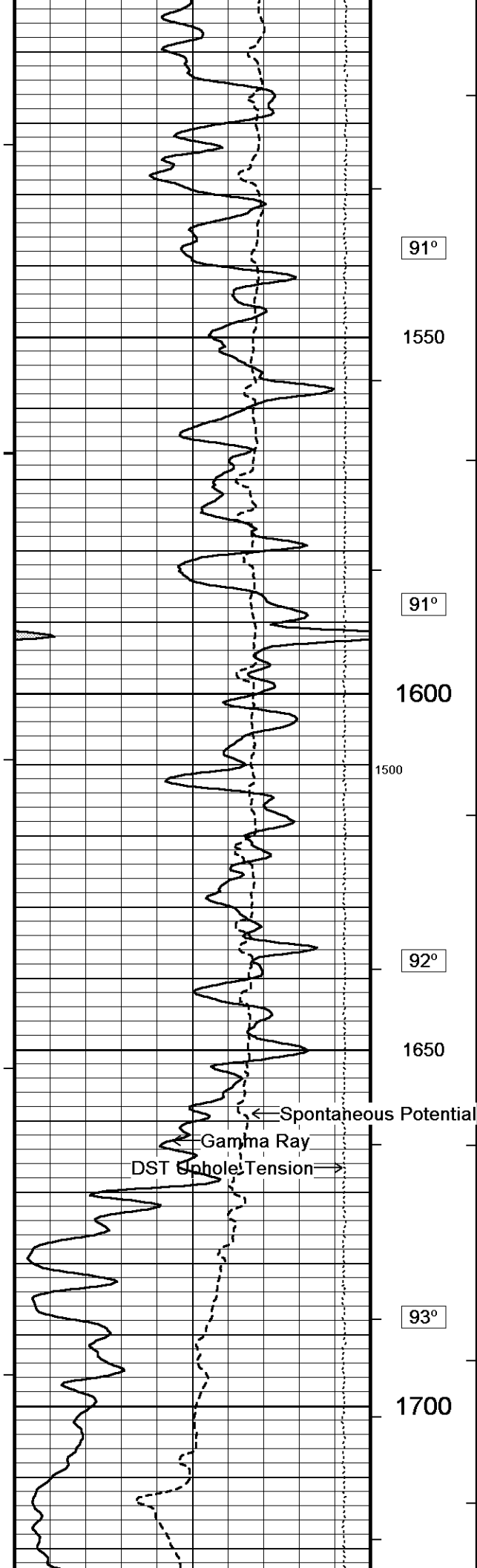
← Spontaneous Potential

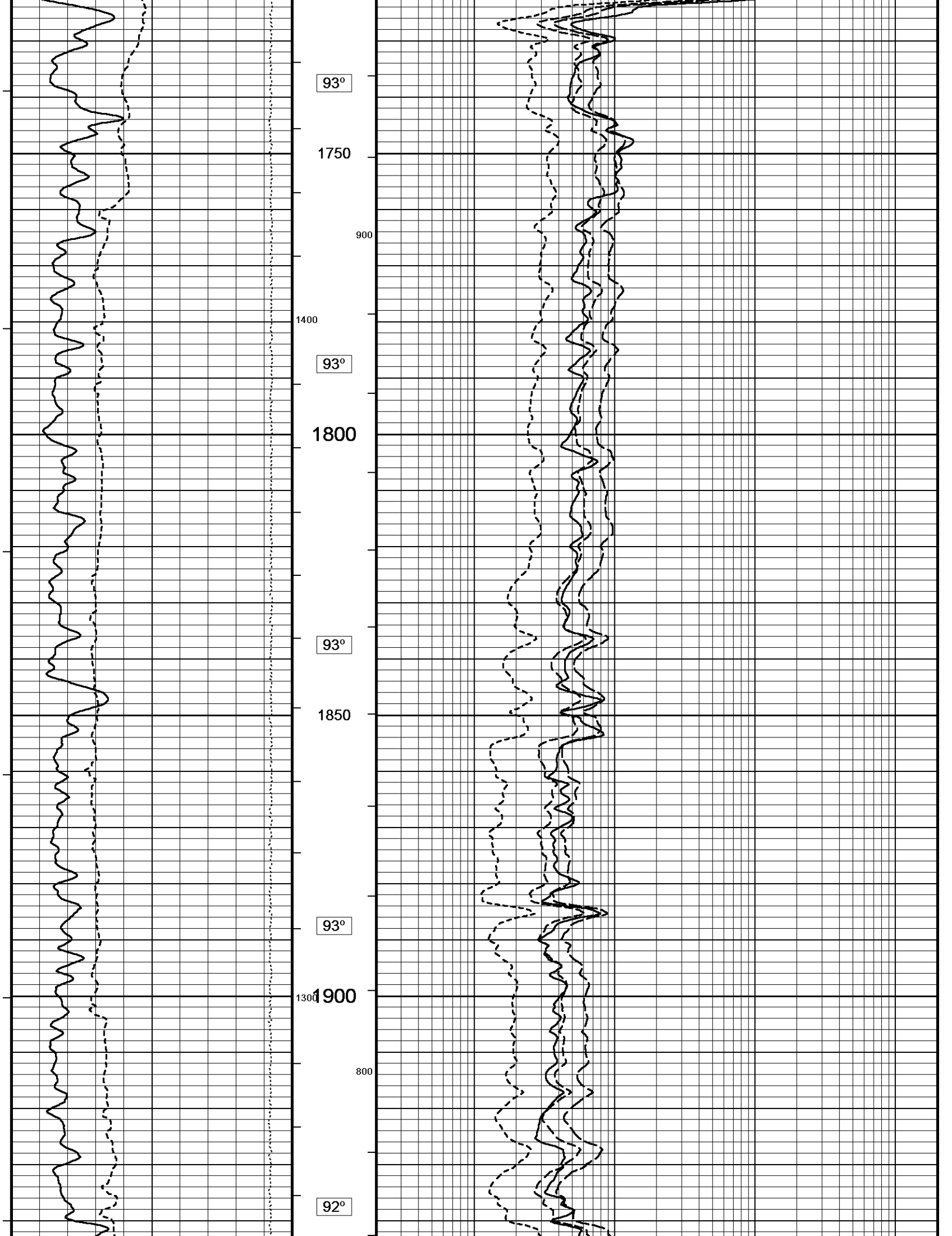
← Gamma Ray

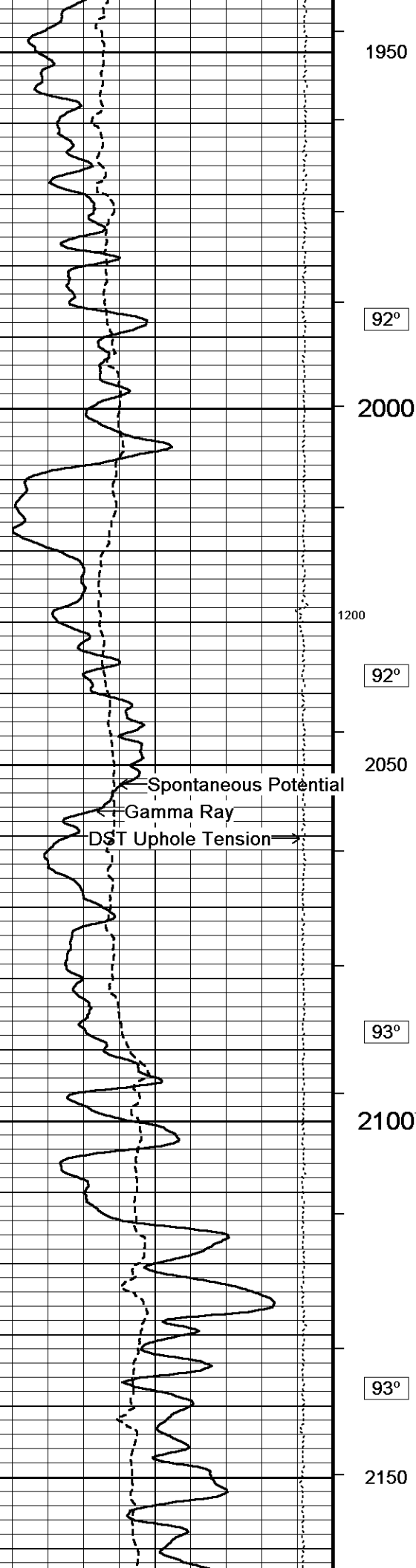
DST Uphole Tension →











1950

92°

2000

1200

92°

2050

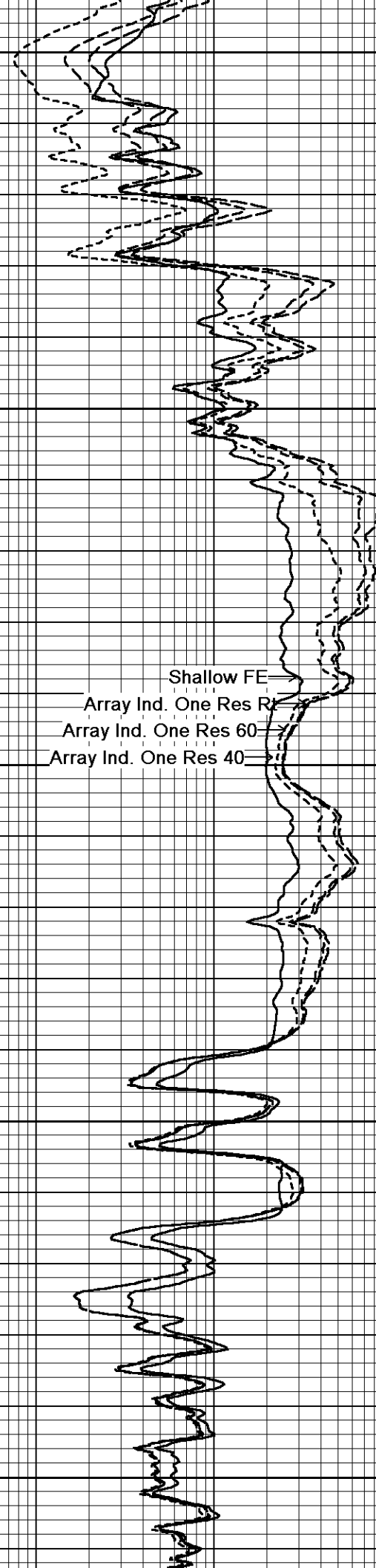
Spontaneous Potential
Gamma Ray
DST Uphole Tension

93°

2100⁷⁰⁰

93°

2150

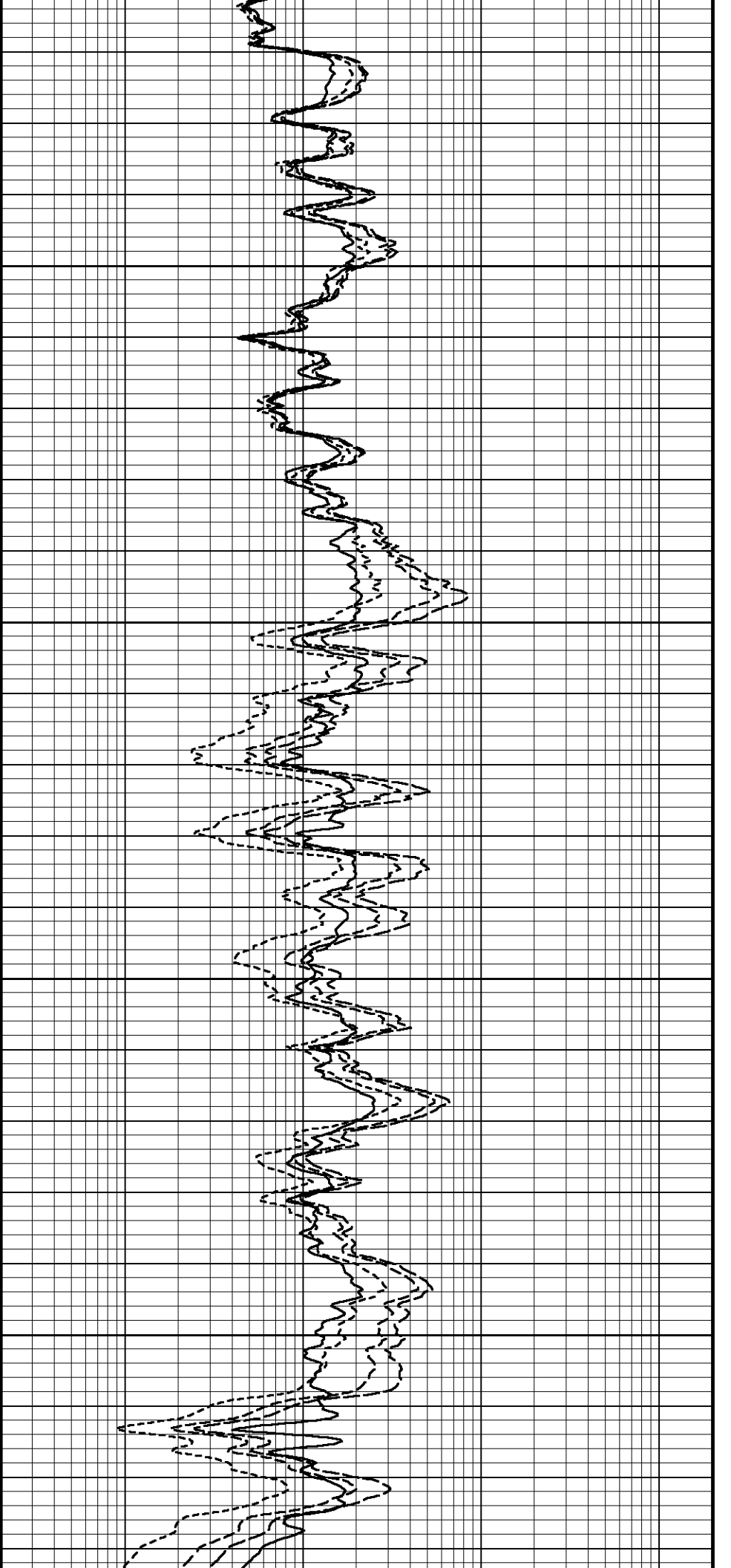
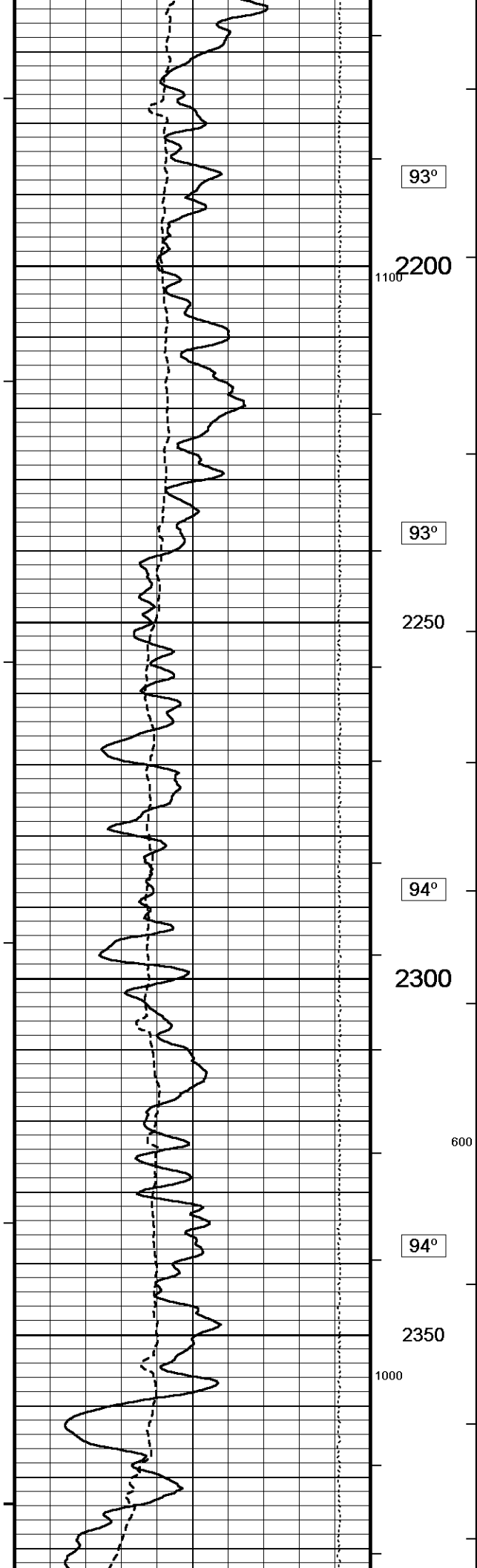


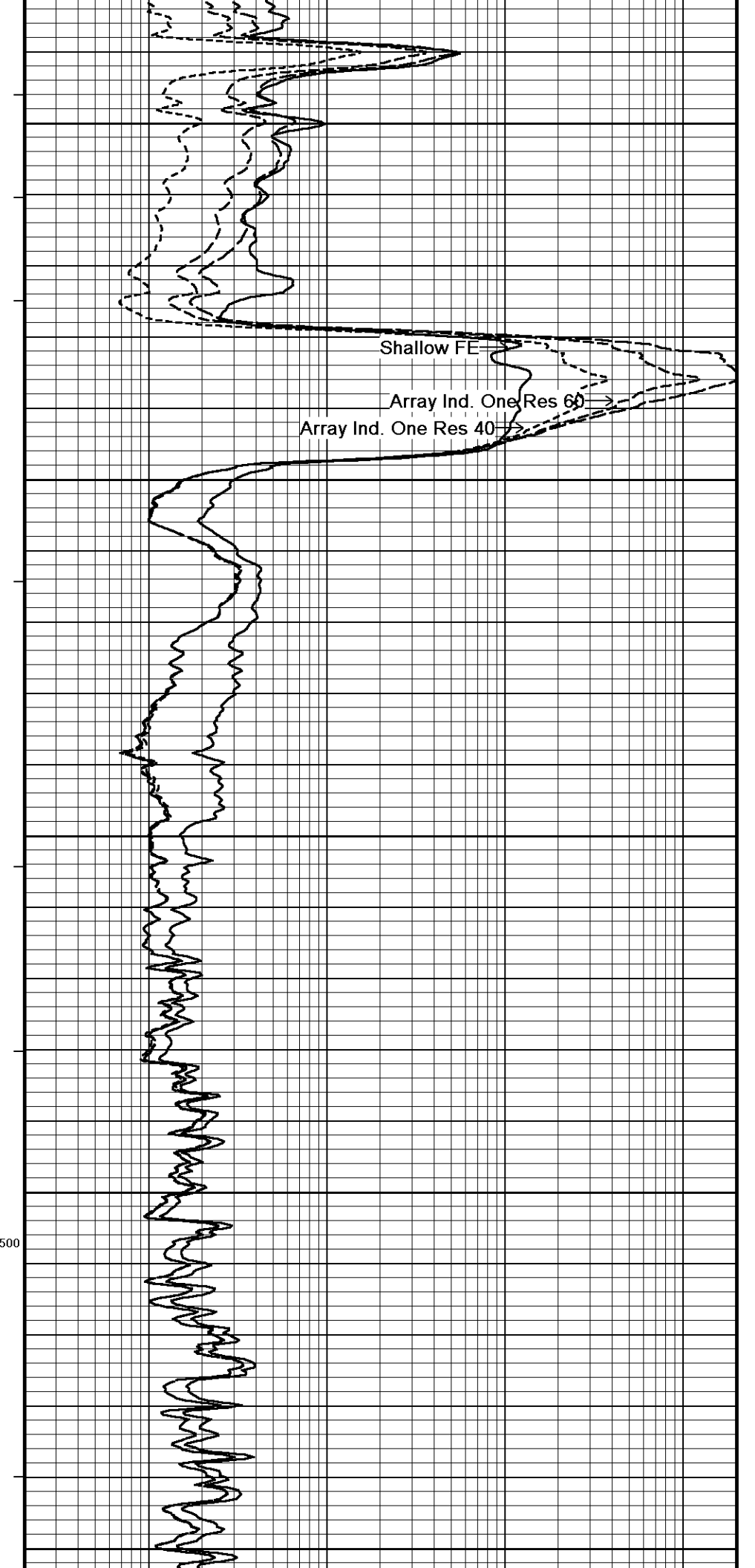
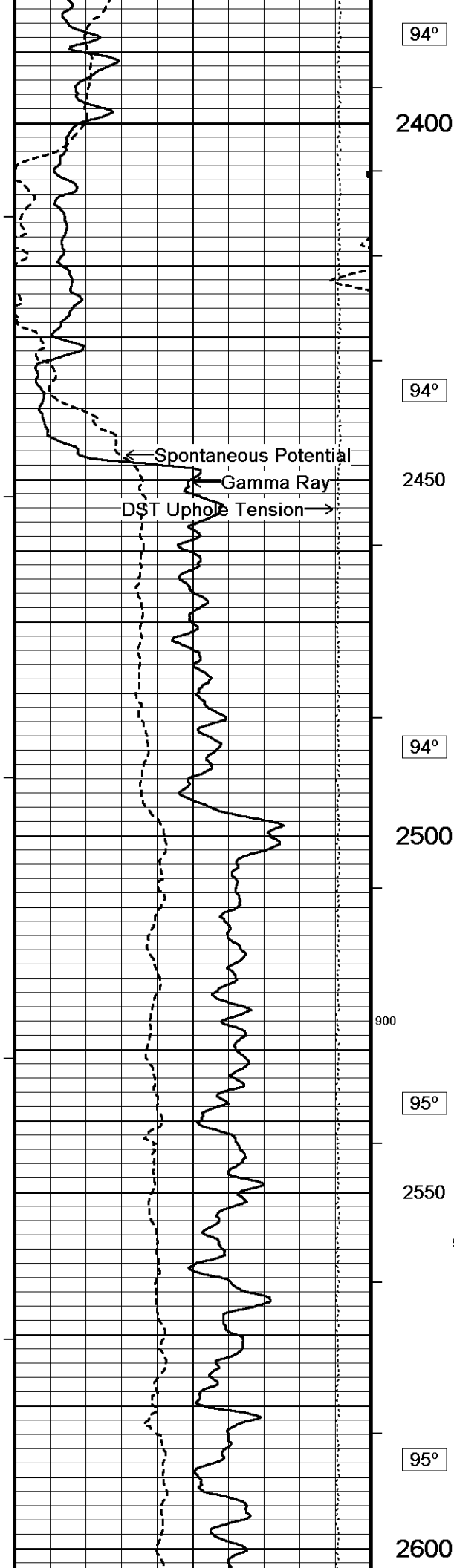
Shallow FE

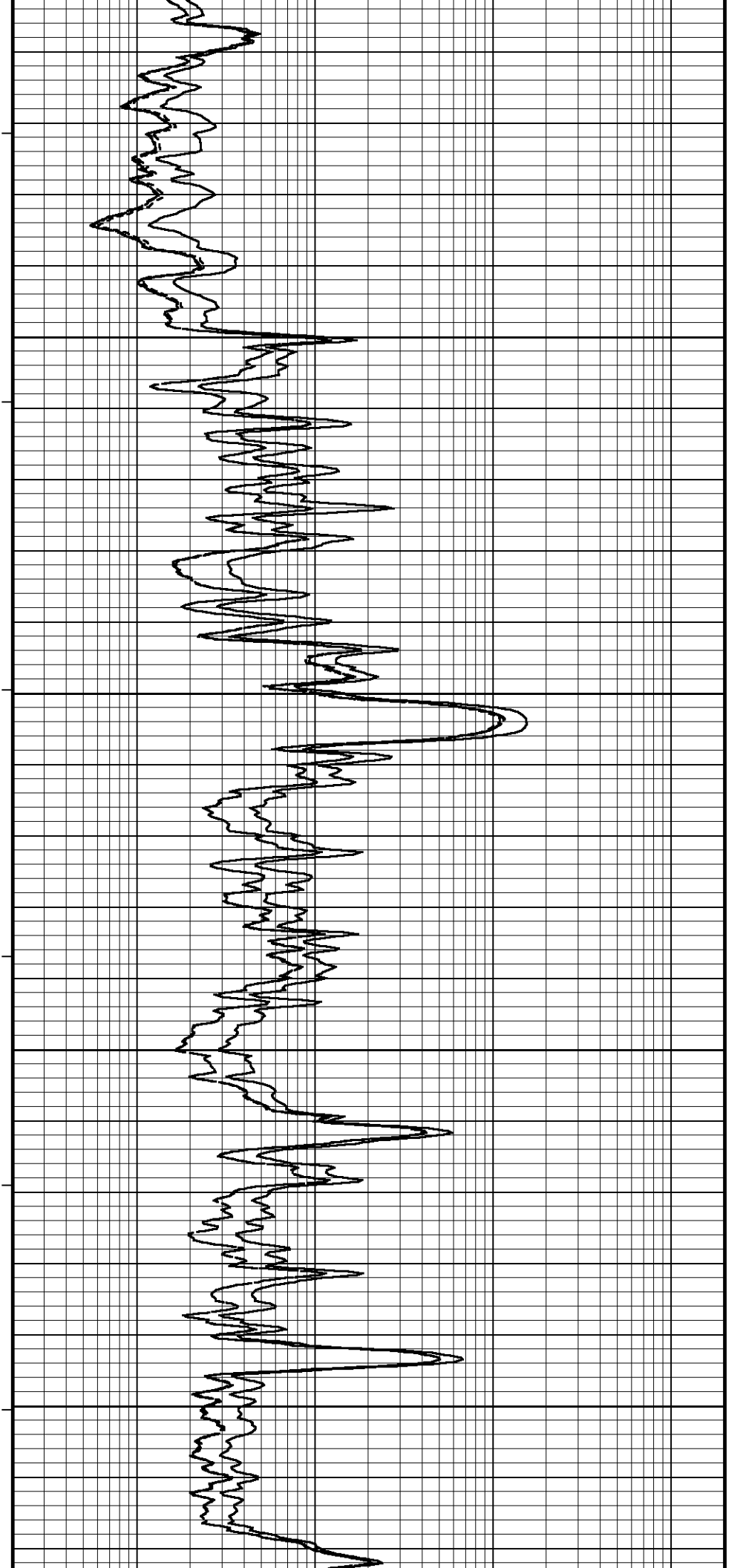
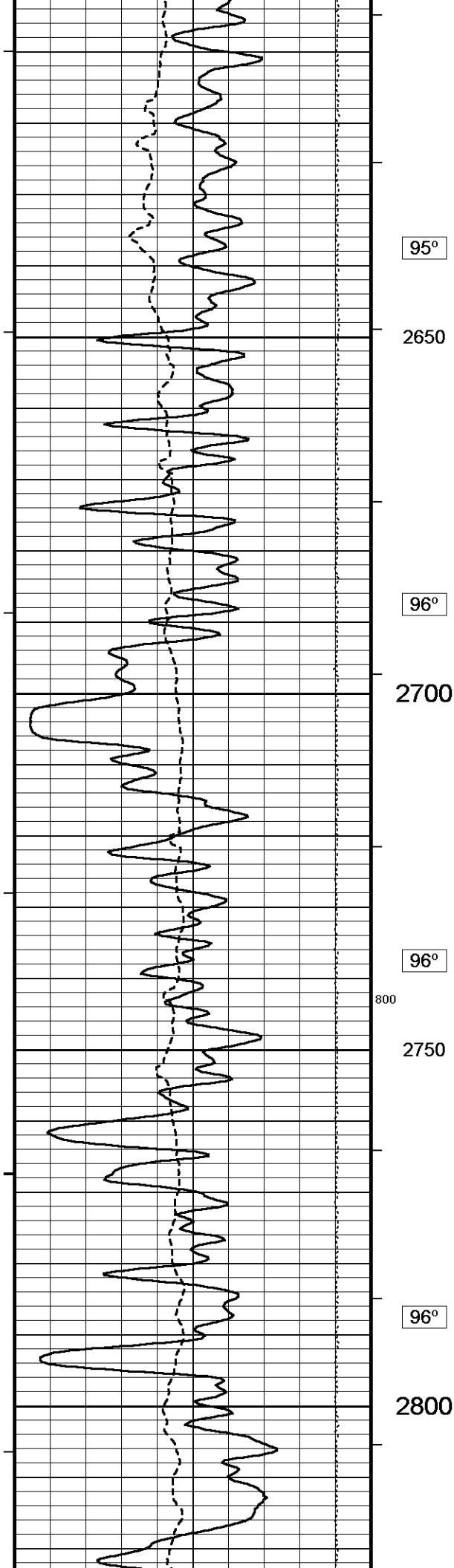
Array Ind. One Res R

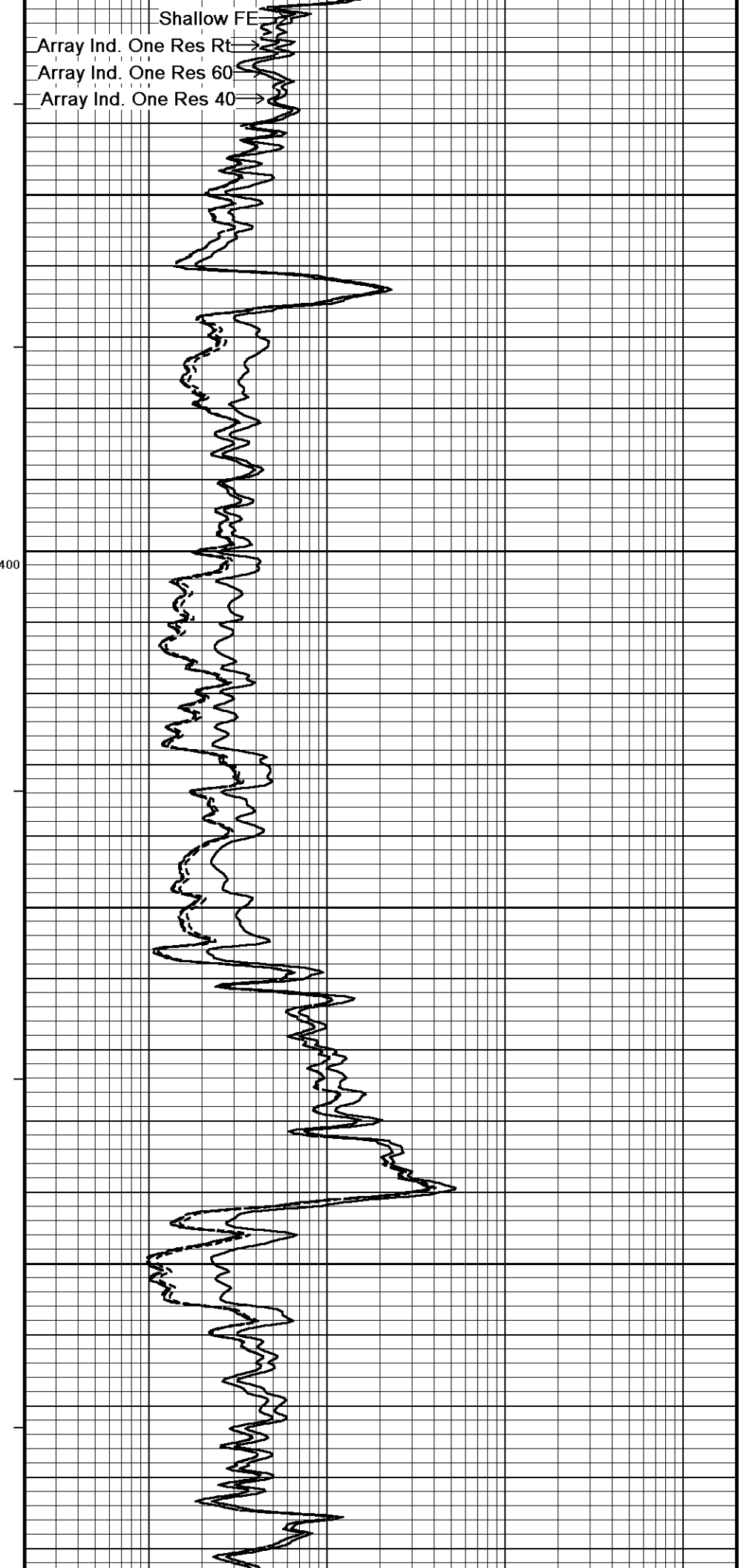
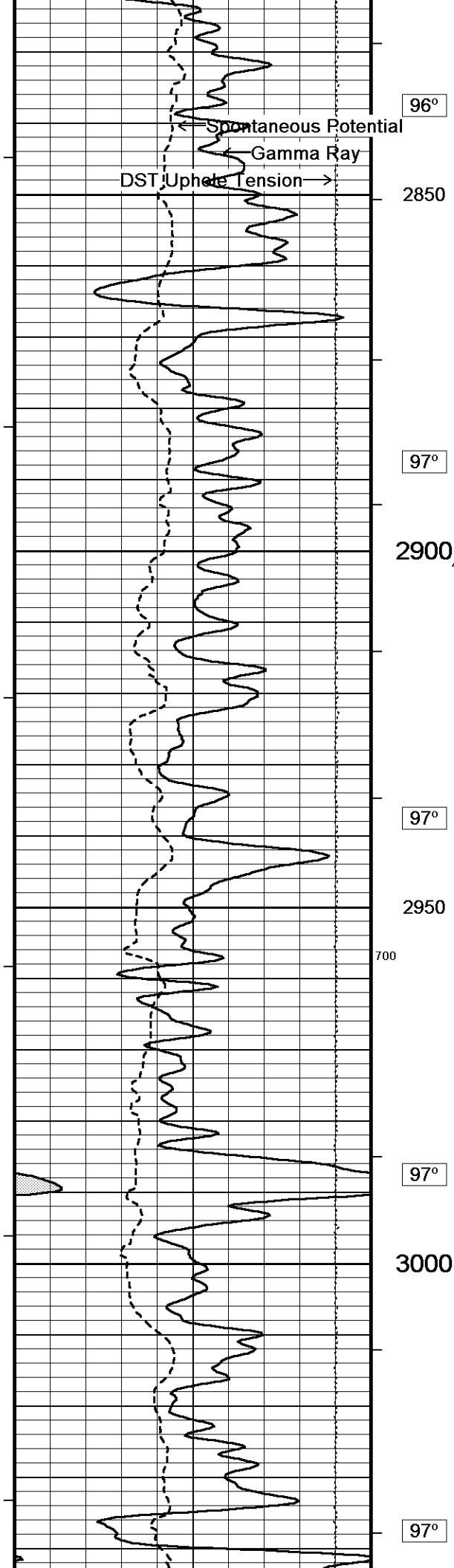
Array Ind. One Res 60

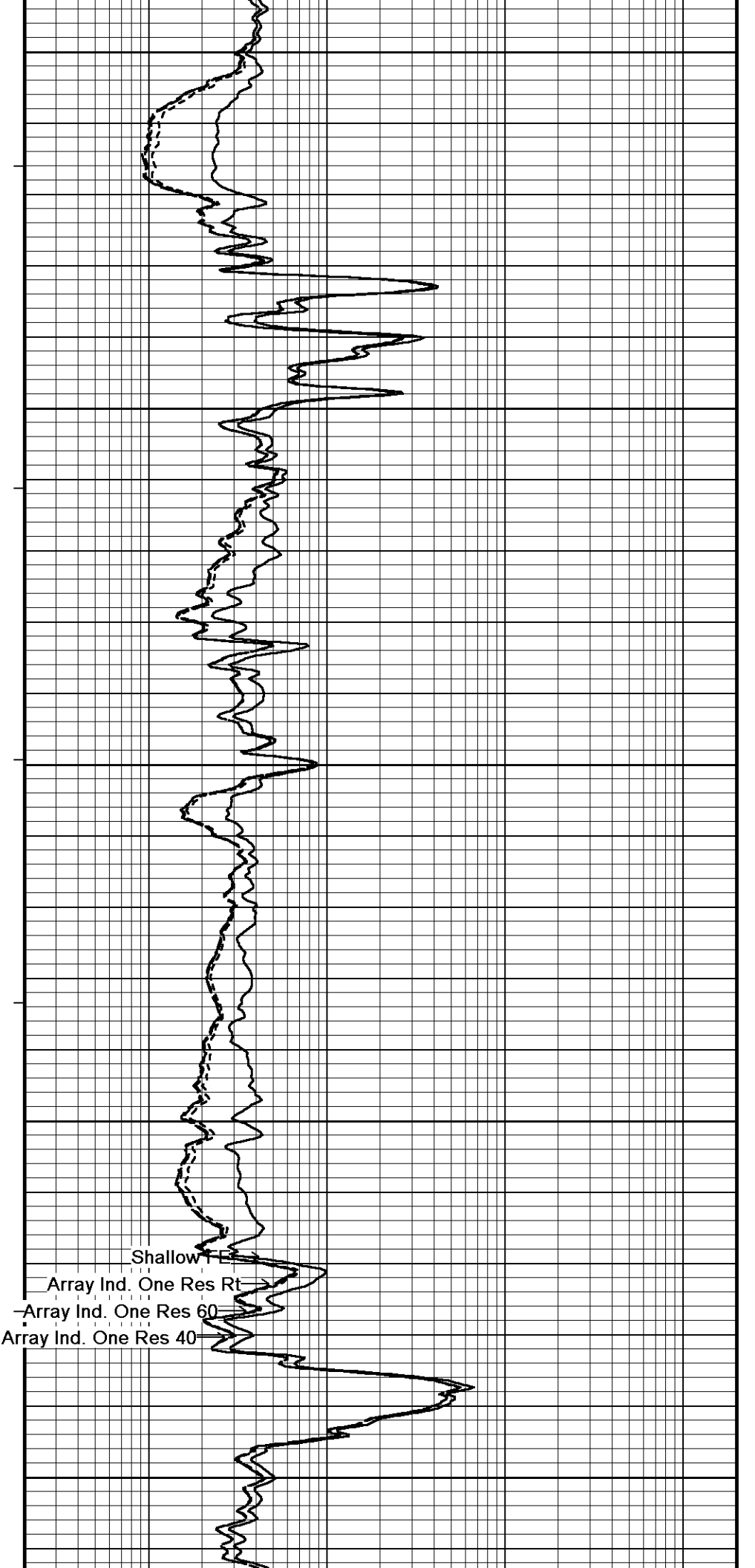
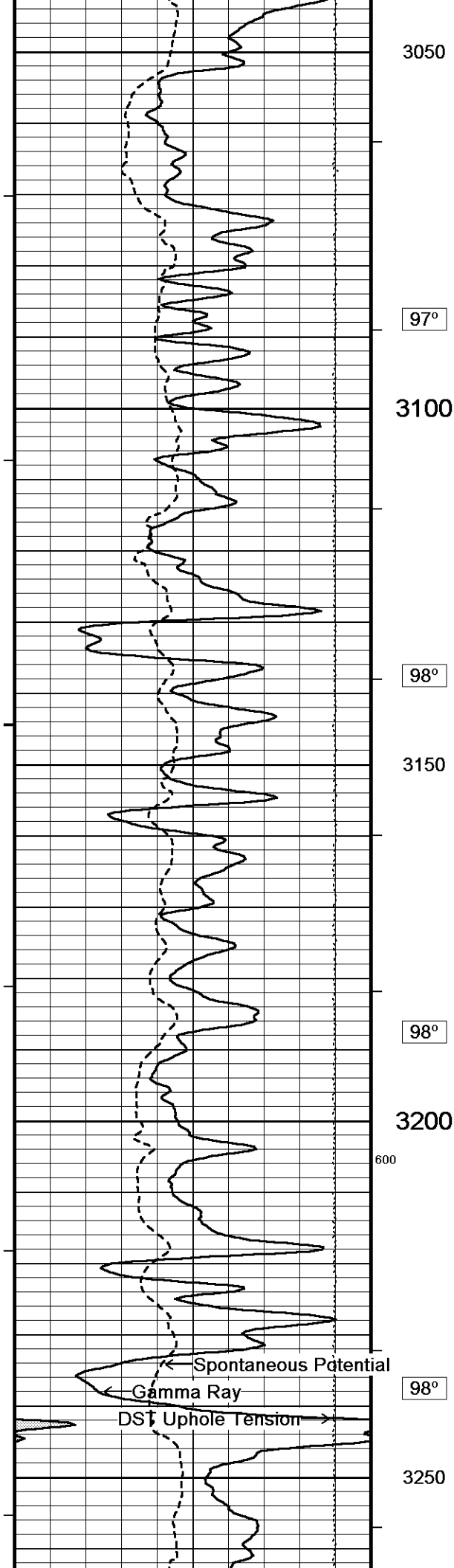
Array Ind. One Res 40

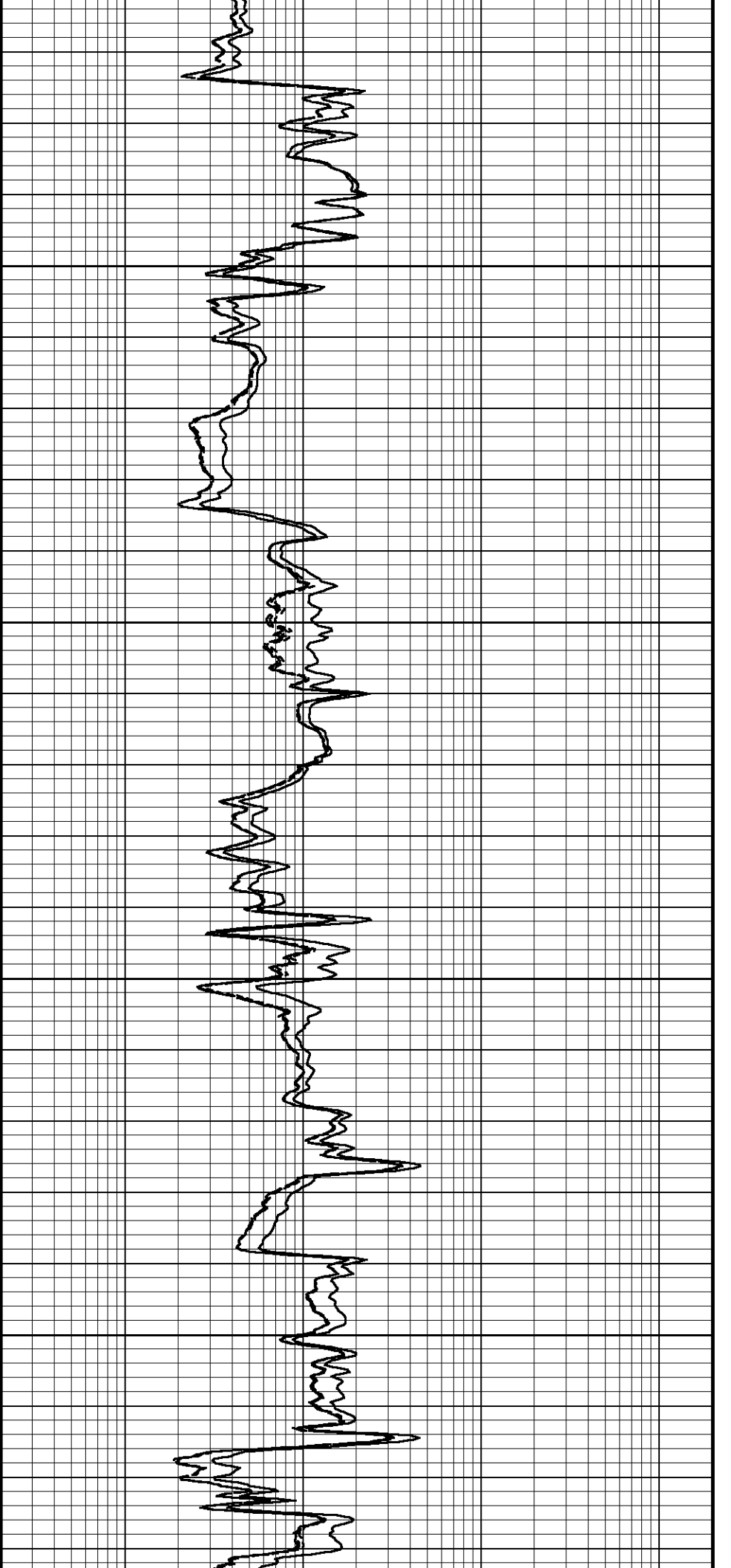
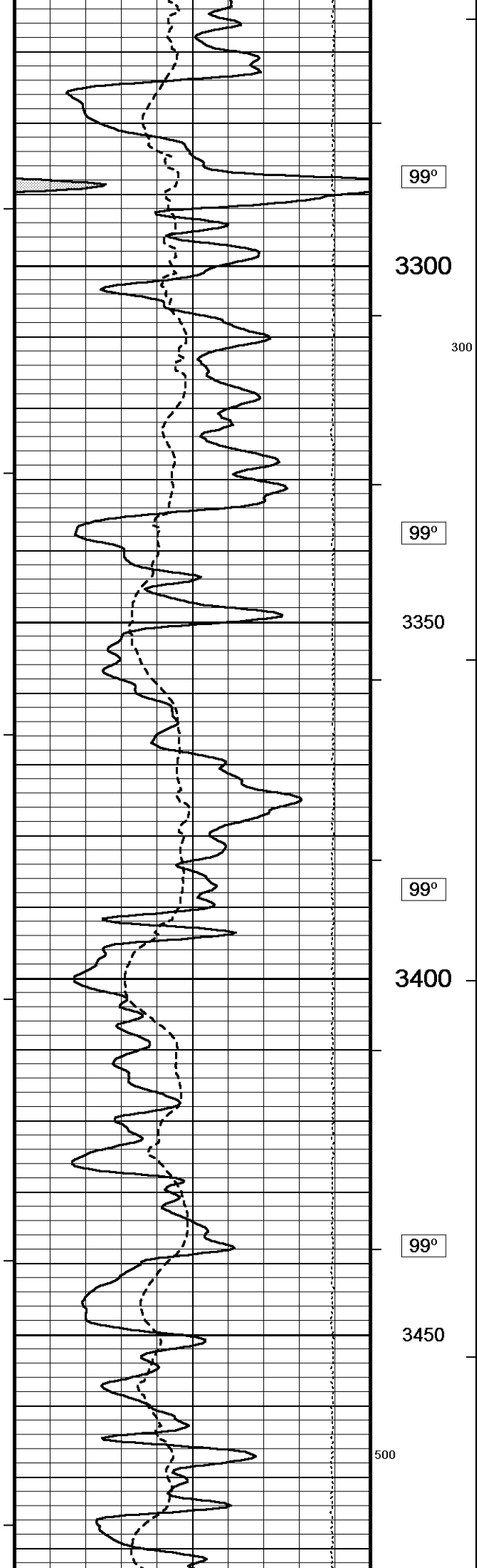


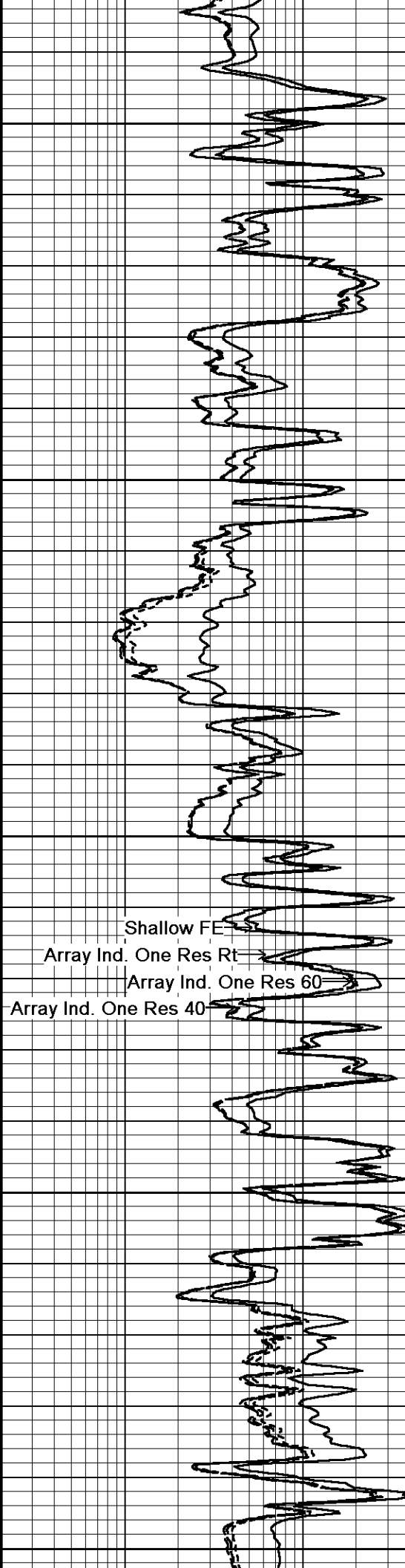
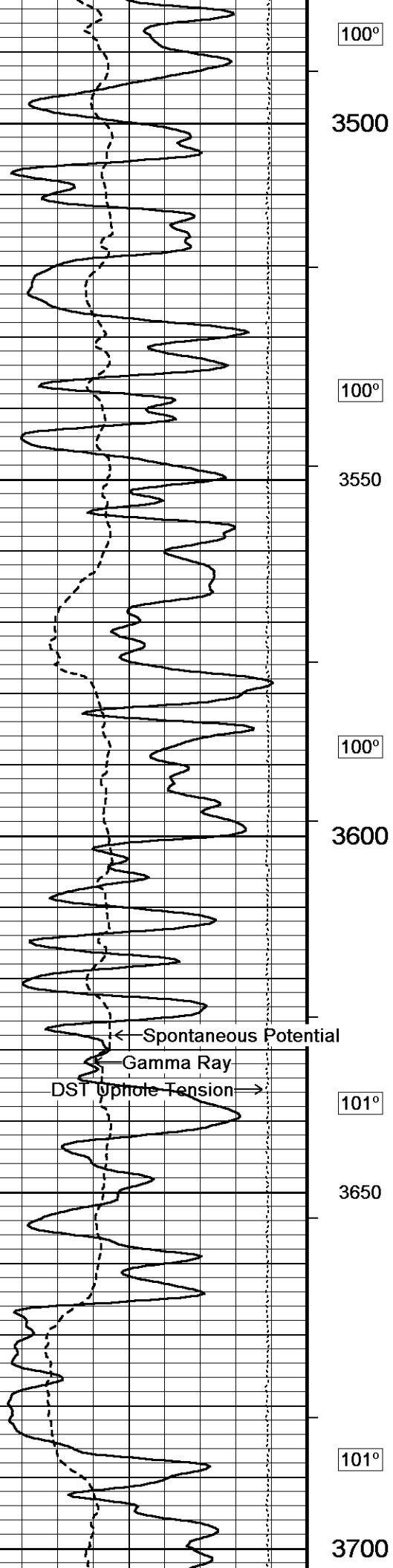


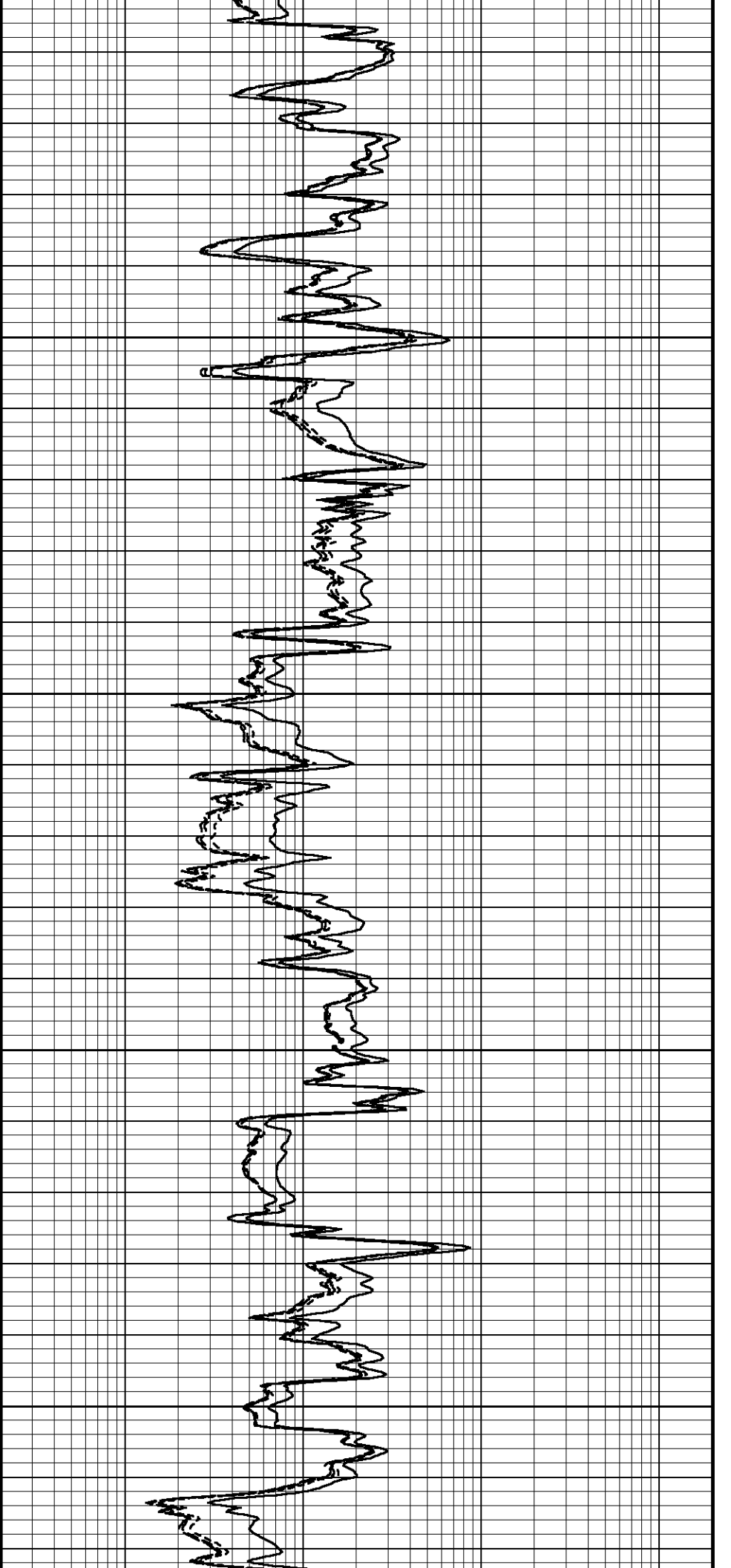
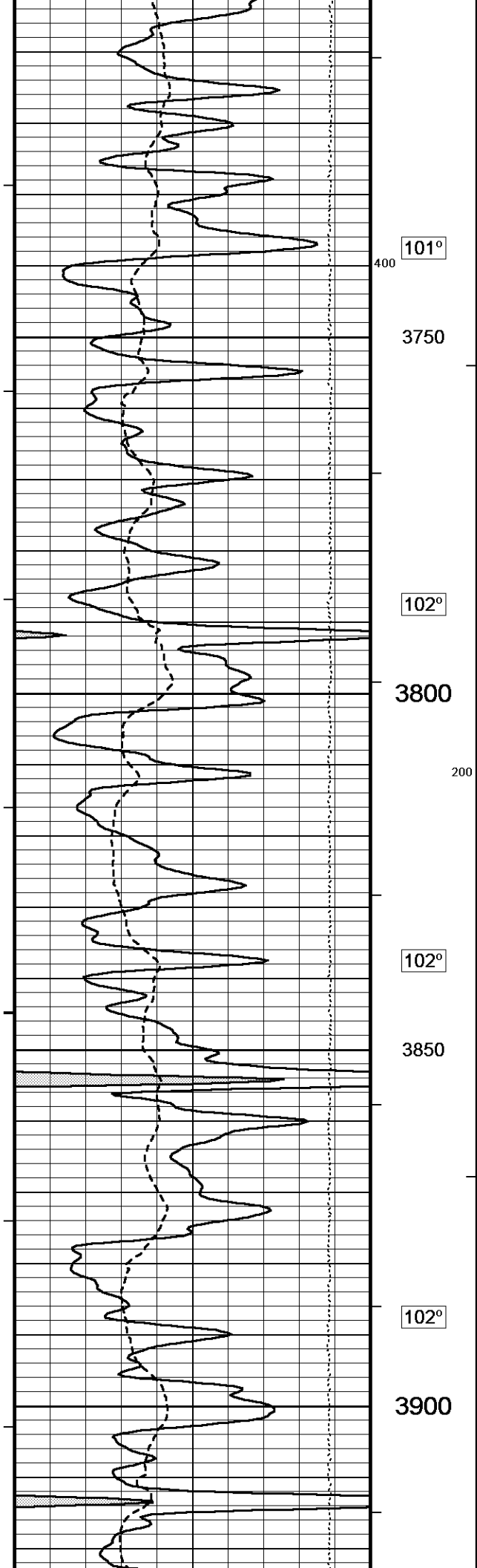


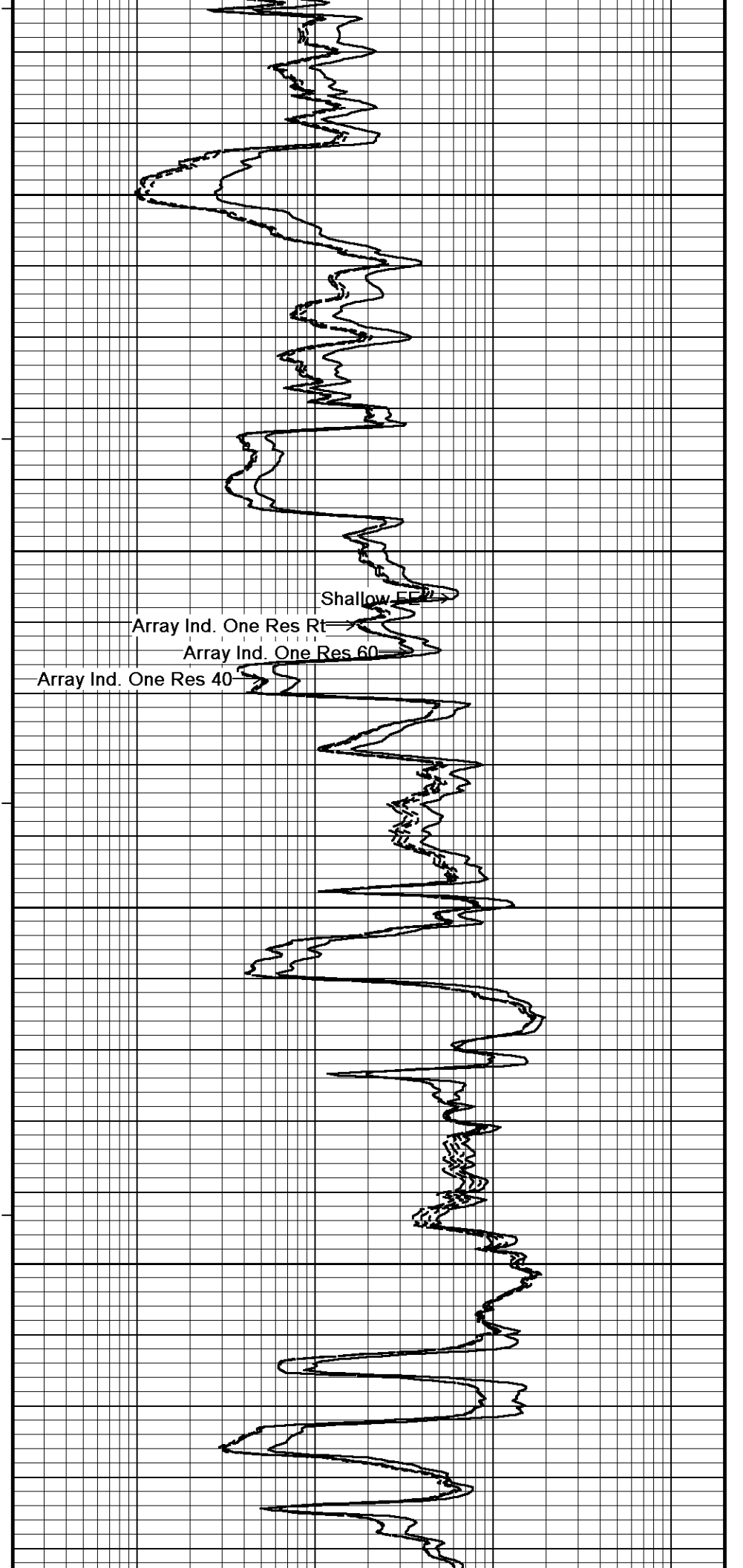
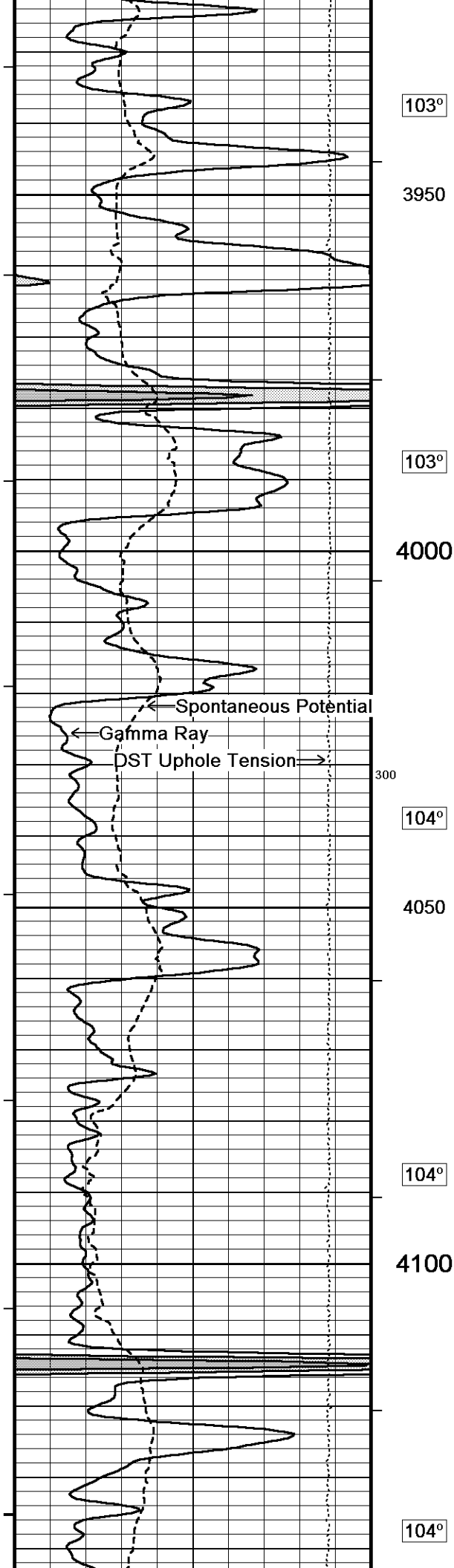


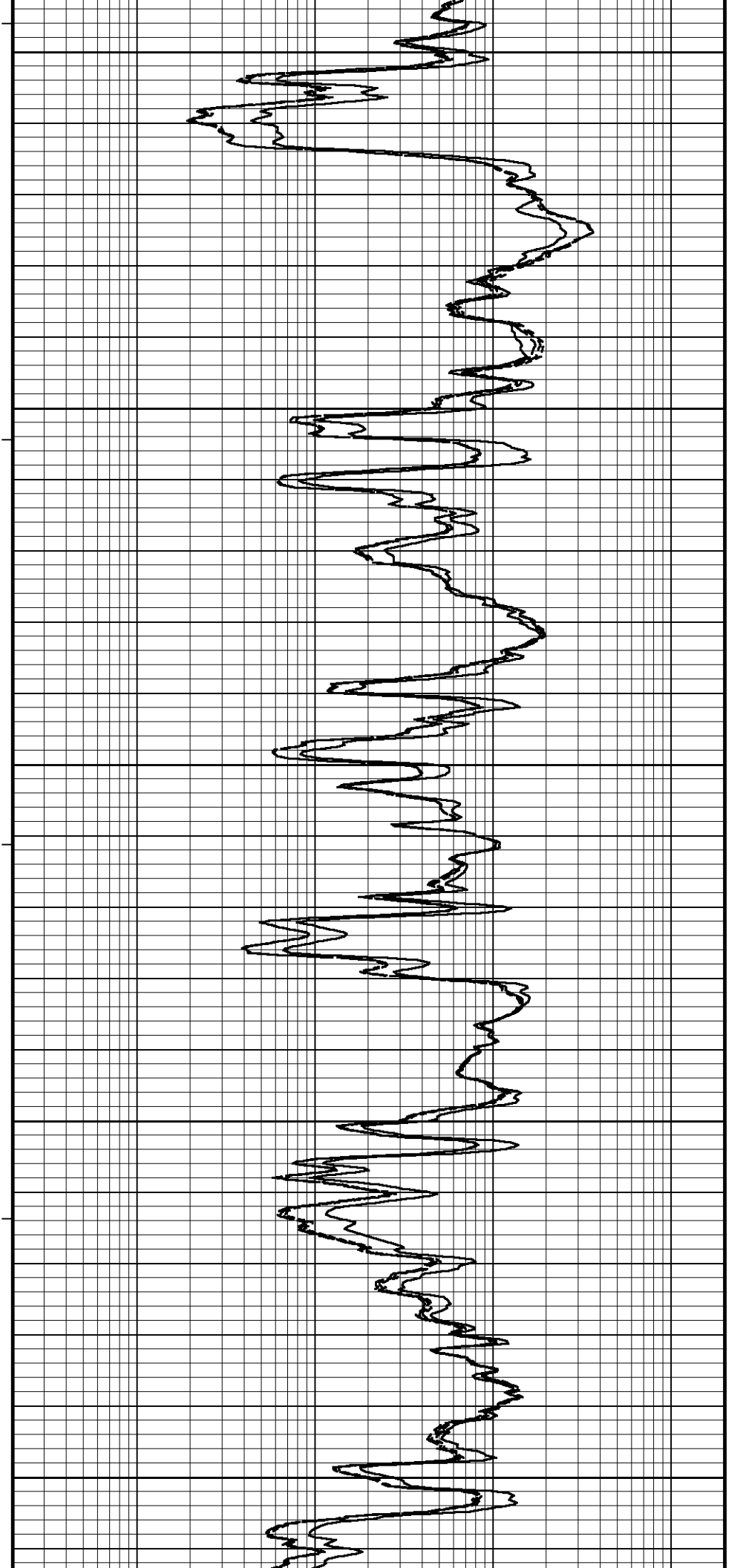
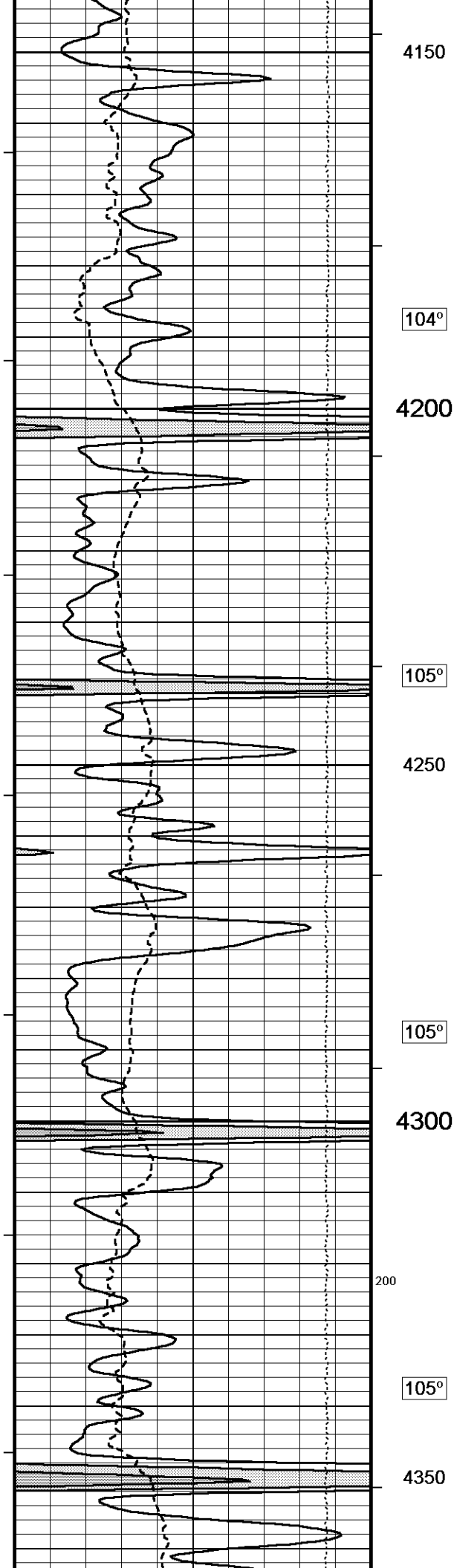


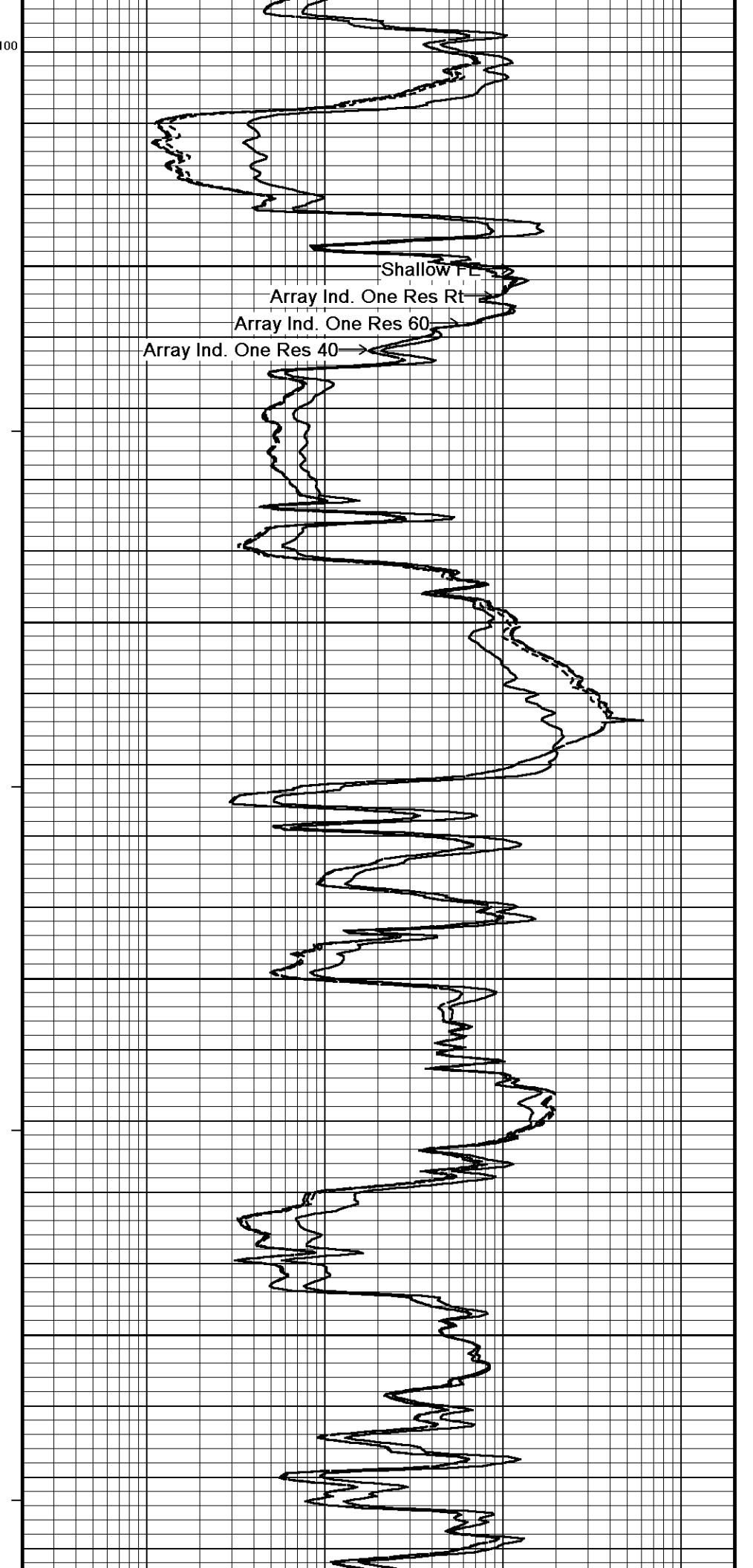
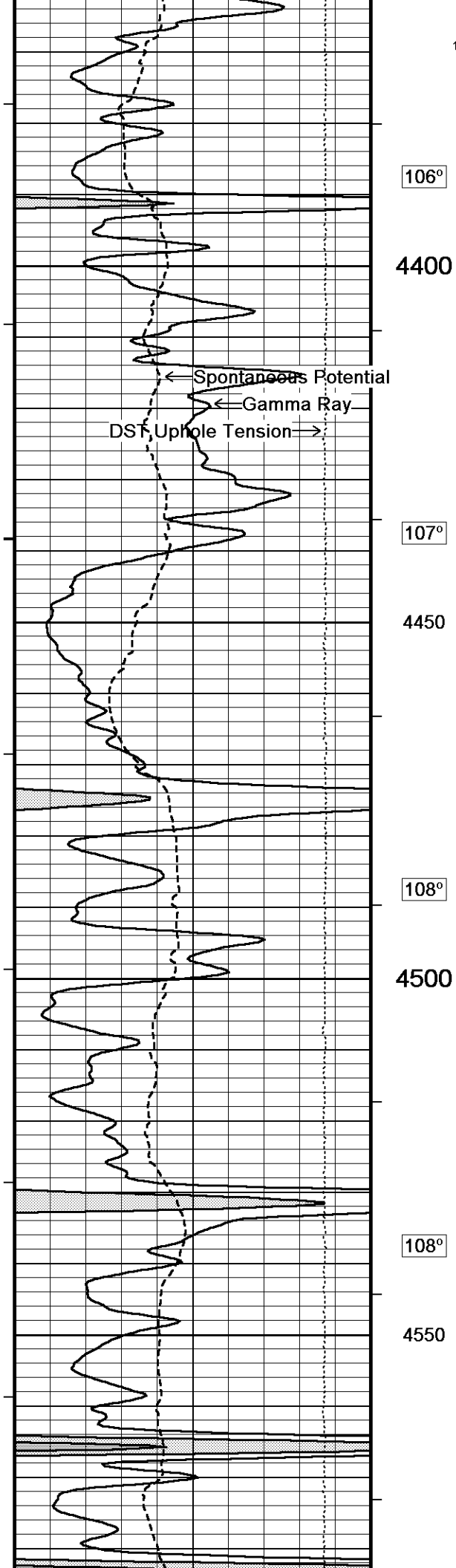


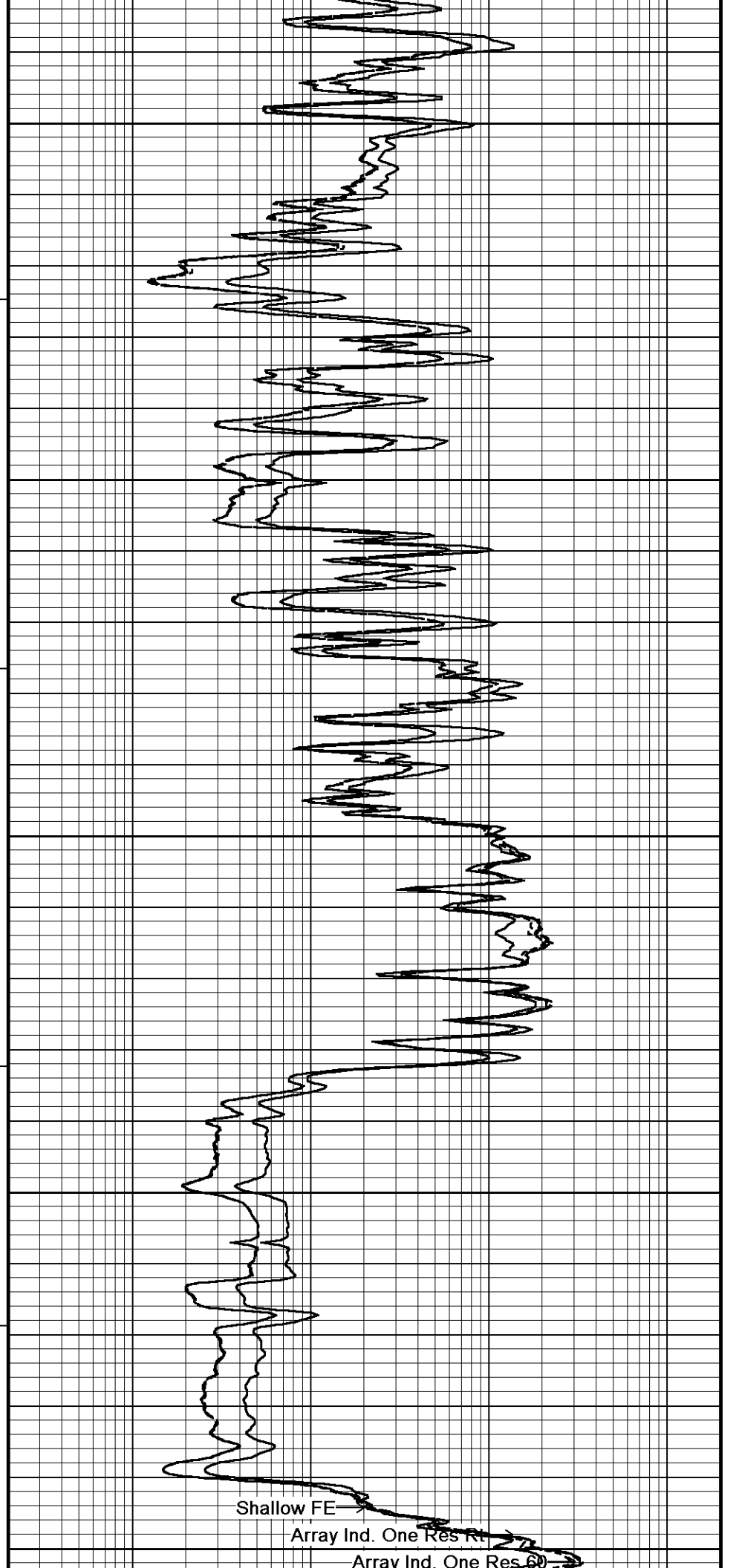
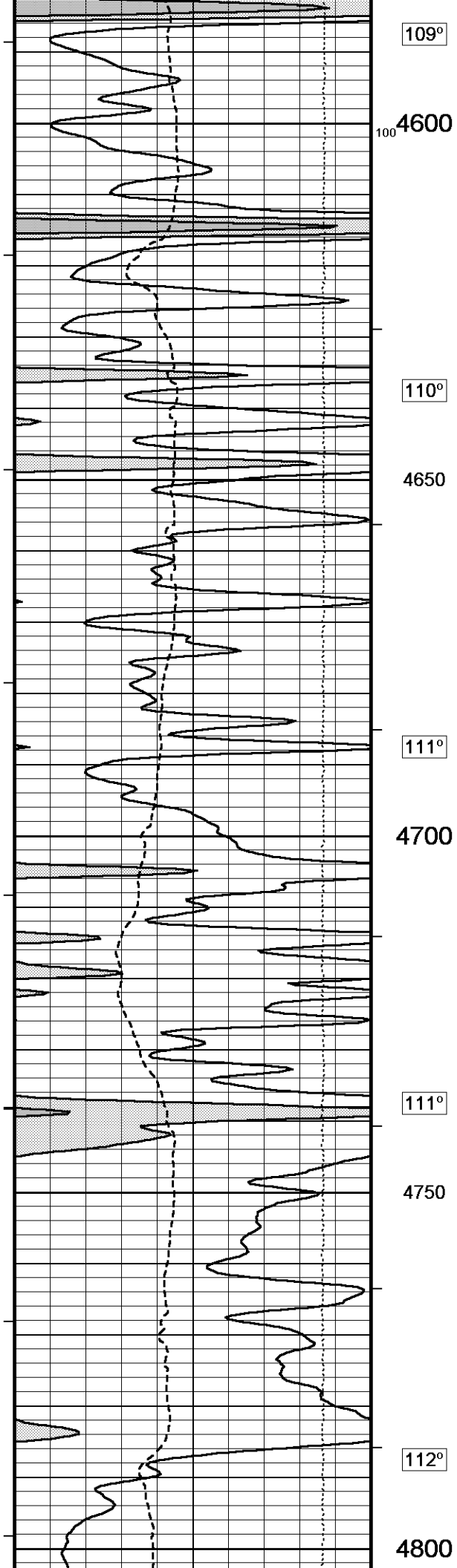


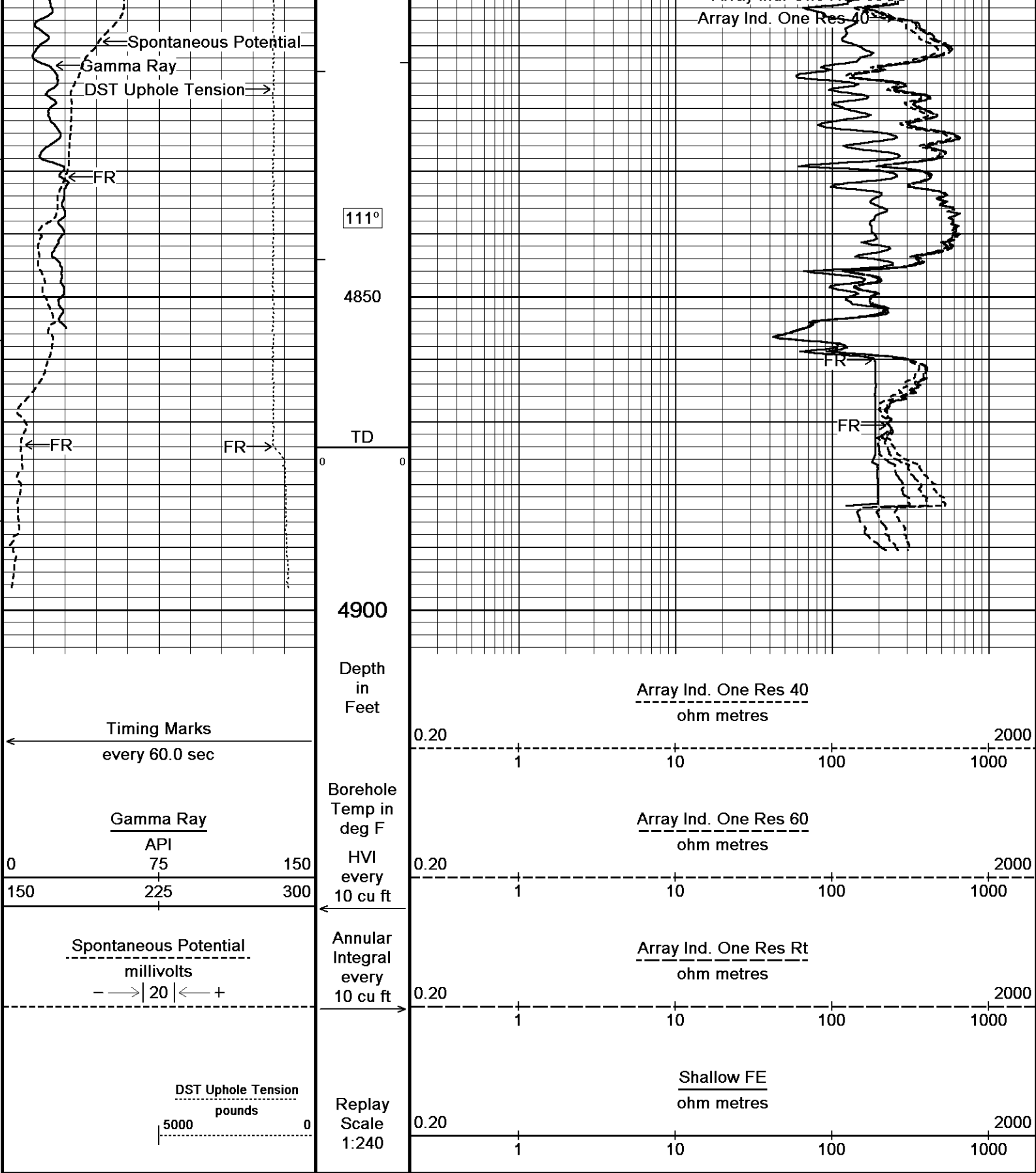










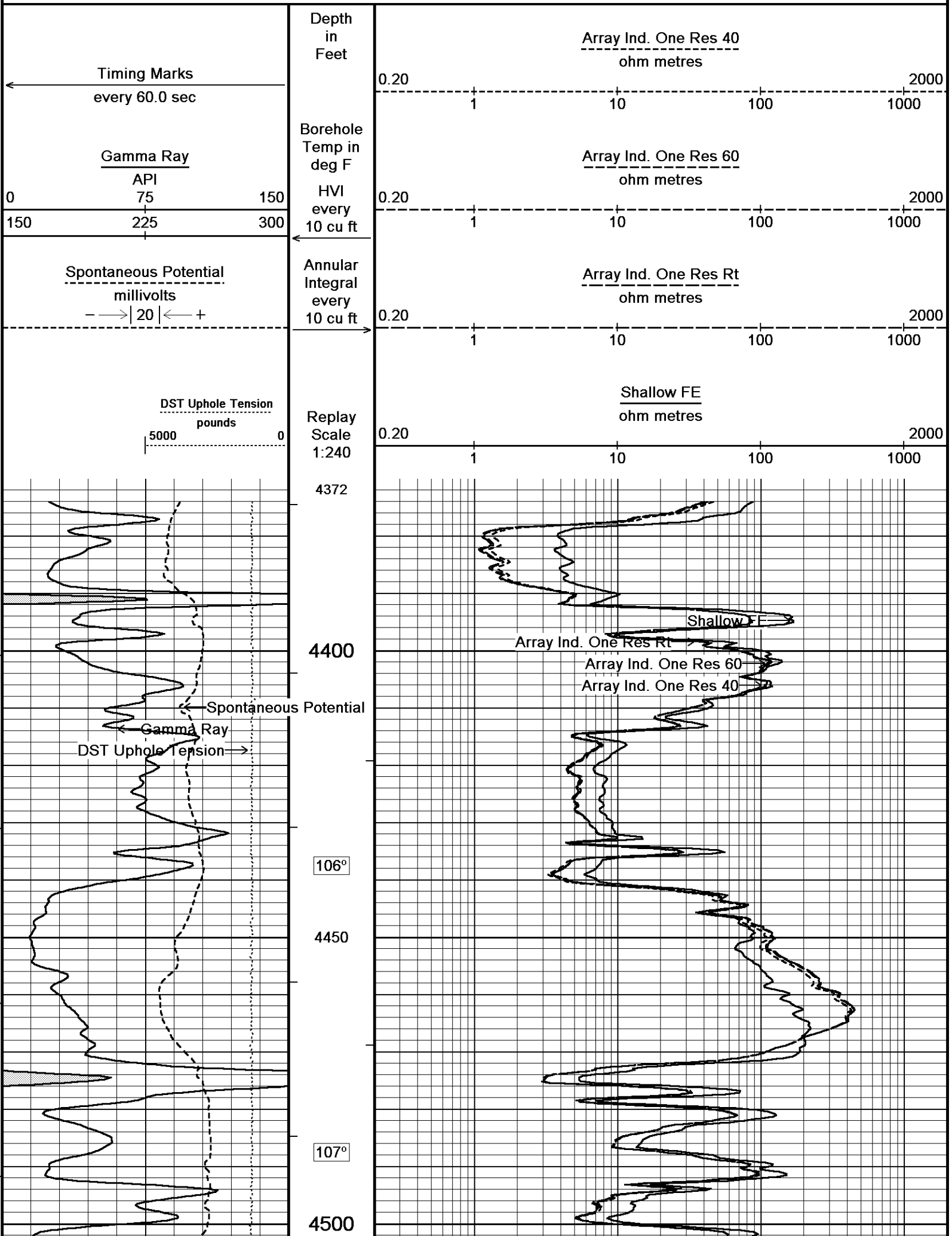


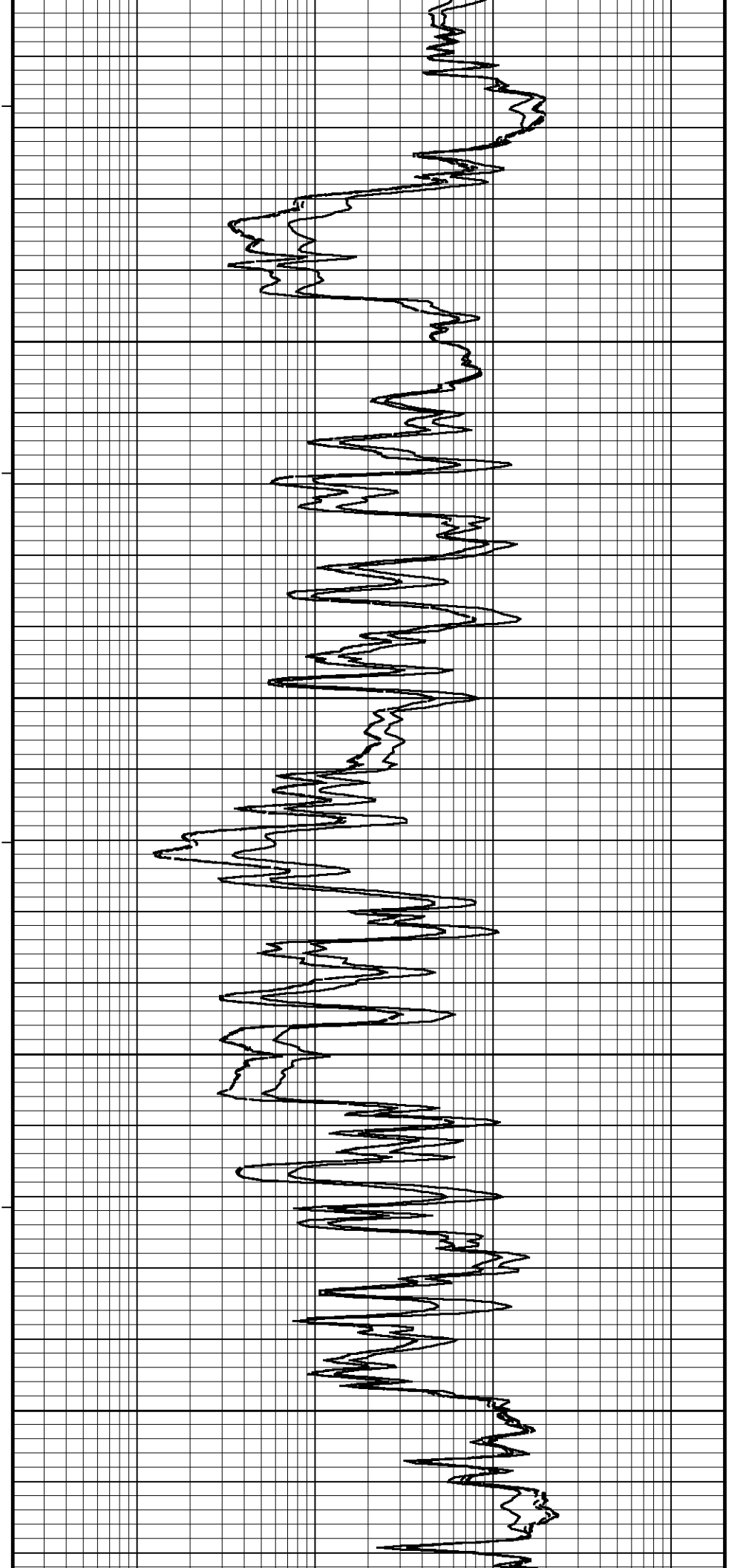
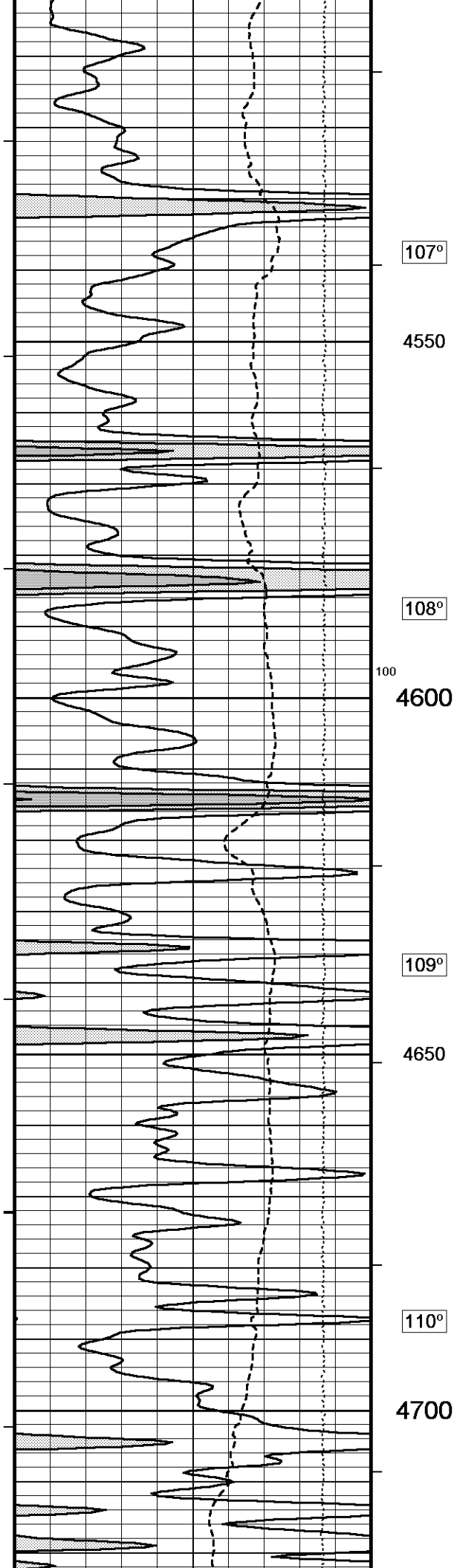
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 28-FEB-2014 10:39
Filename: C:\Minimus 13.08.2113\Log Data\Shakespeare Janze...\Shakespeare Jansen #3-36 Main.dta
Recorded on 28-FEB-2014 07:29
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

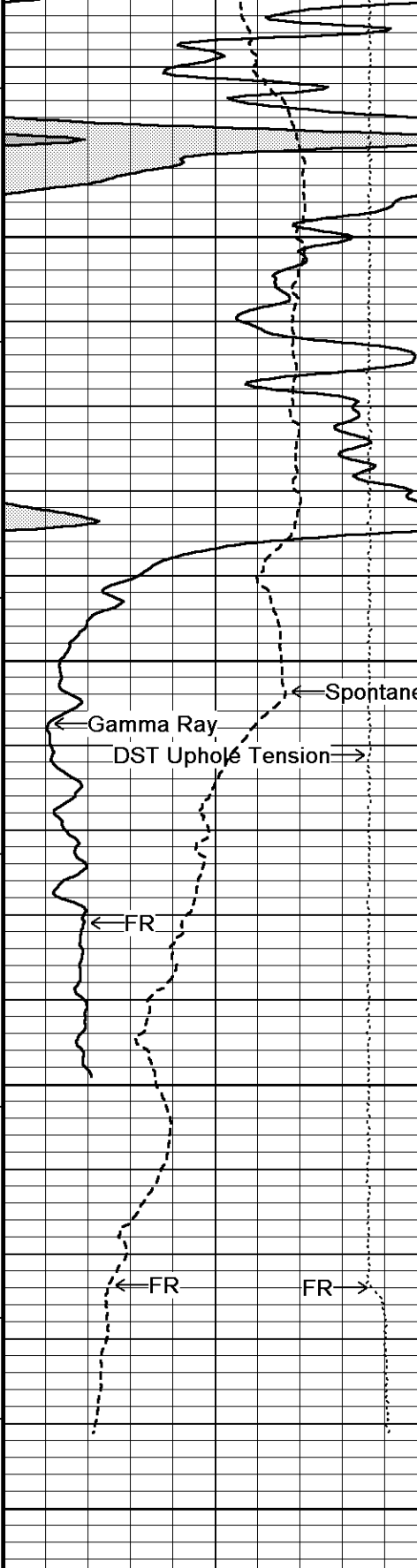
5 INCH MAIN

REPEAT SECTION

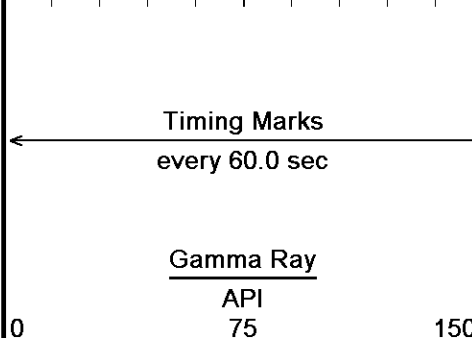
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 28-FEB-2014 10:39
Filename: C:\Minimus 13.08.2113\Log Data\Shakespeare Janze...\Shakespeare Jansen #3-36 Repeat.dta
Recorded on 28-FEB-2014 06:42





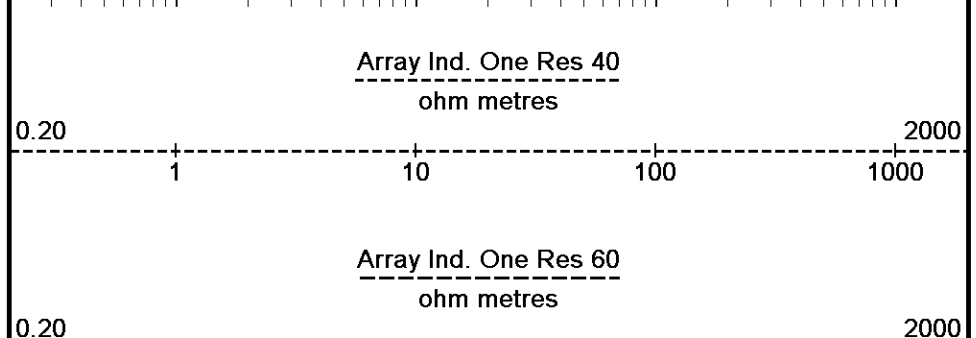
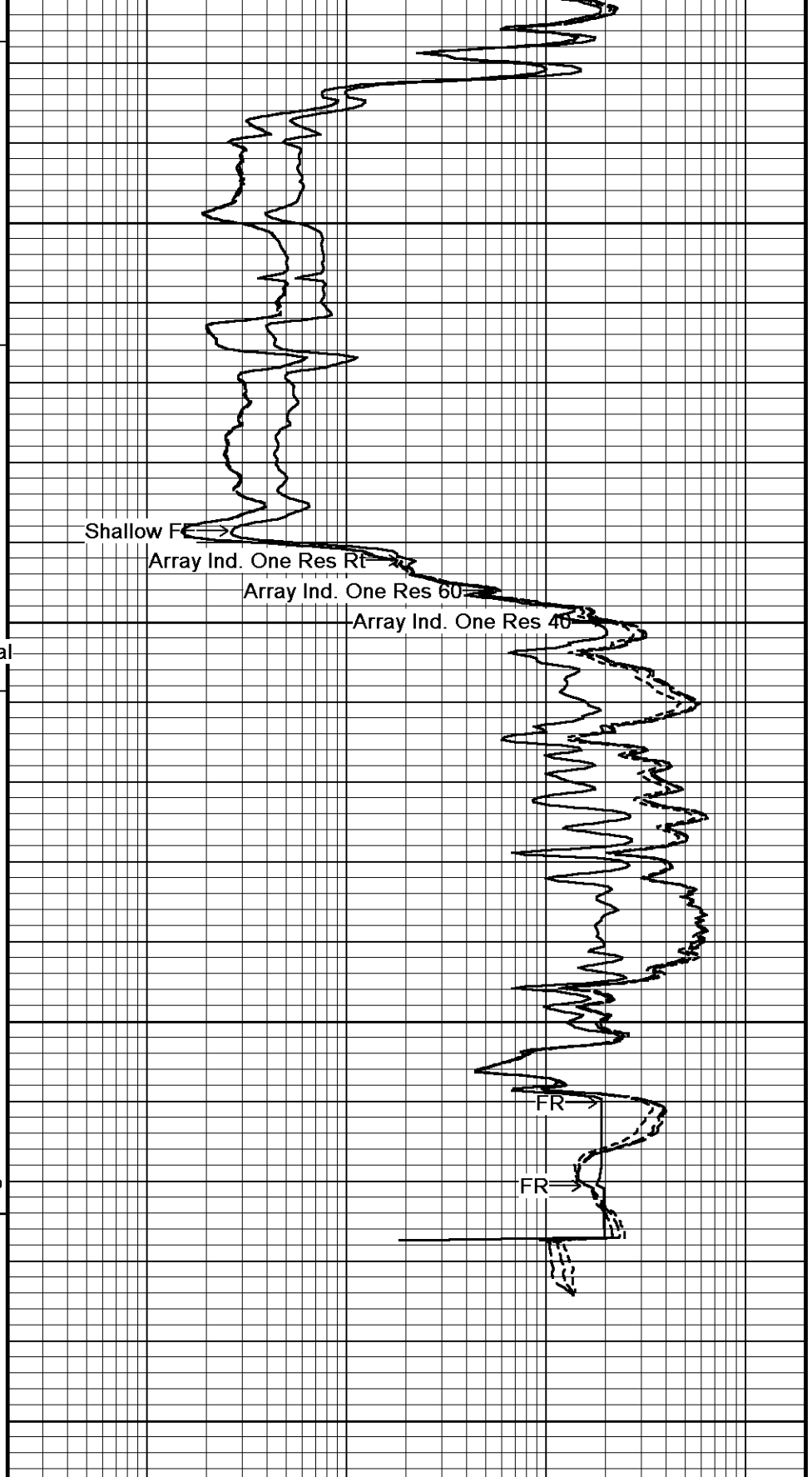


110°
4750
110°
4800
109°
4850
0 TD 0
4900
Depth in Feet
Borehole Temp in deg F
HVI



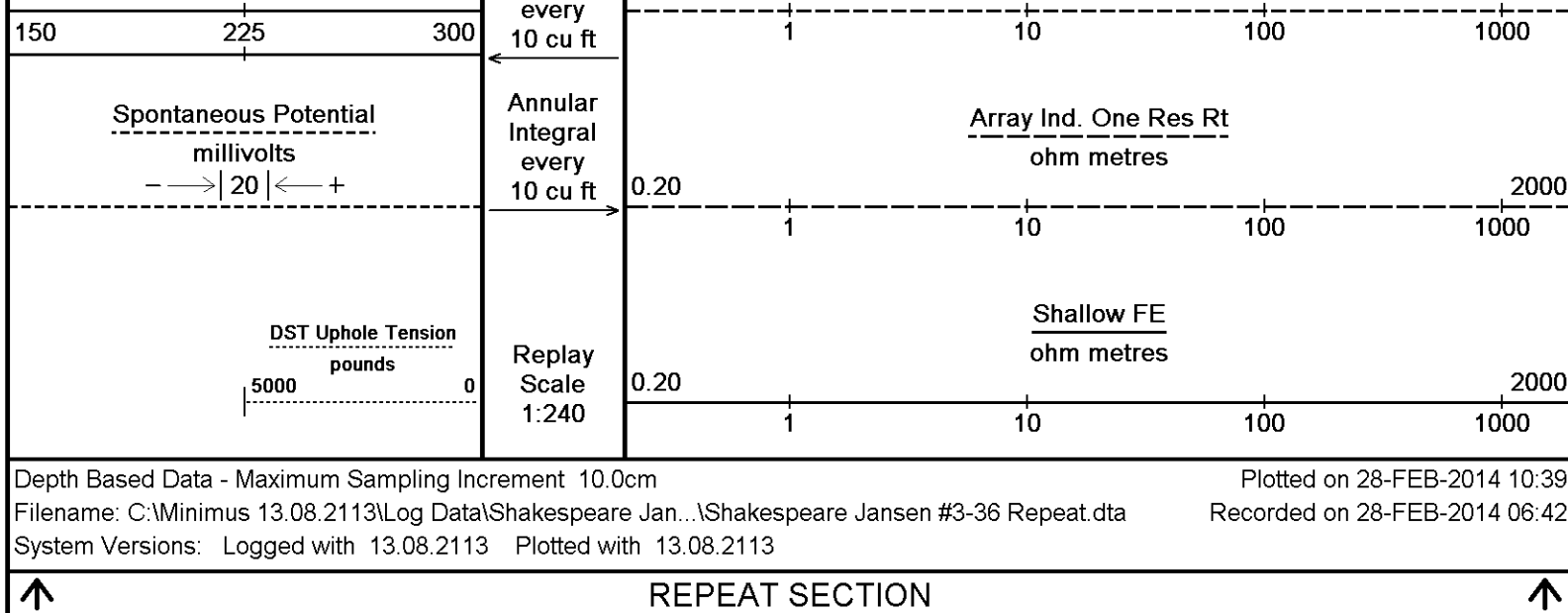
Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150



0.20 1 10 100 1000 2000

Array Ind. One Res 40
ohm metres
Array Ind. One Res 60
ohm metres
0.20 2000



BEFORE SURVEY CALIBRATION			
C:\Minimus 13.08.2113\Log Data\Shakespeare Janzen #3-36\Shakespeare Jansen #3-36 Main.dta			
General Constants All 000		Last Edited on 28-FEB-2014,05:53	
General Parameters			
Mud Resistivity	0.381	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	None		
Rwa Parameters			
Porosity used	Crossplot Porosity		
Resistivity used	Array Ind. One Res Rt		
RWA Constant A	1.000		
RWA Constant M	2.000		
SW/APOR Tool Source	0.000		
Gamma Calibration MCG-D.K 442		Field Calibration on 28-FEB-2014 00:52	
	Measured	Calibrated (API)	
Background	68	45	
Calibrator (Gross)	1157	770	
Calibrator (Net)	1089	725	
Gamma Constants MCG-D.K 442		Last Edited on 28-FEB-2014,04:18	
Gamma Calibrator Number	GRC038		
Mud Density	1.09	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl		kppm	
K Mud Type	Chloride		
K Mud Concentration	0.00	%	
High Resolution Temperature Constants MCG-D.K 442		Last Edited on	
Pre-filter Length	11		
FE Calibration MFE-A.A 135		Base Calibration on 22-FEB-2014 12:33	
Base Calibration		Field Check on 28-FEB-2014 00:22	

Reference 1	Measured	0.0	Calibrated (ohm-m)	0.0
Reference 2		963.4		126.8
Base Check				281.3
Field Check				281.4
FE Constants MFE-A.A 135				Last Edited on 28-FEB-2014,04:21
Running Mode	No Sleeve			
MFE K Factor	0.1268			
Caliper Source for FE correction	Density Caliper			
Caliper Value for FE correction	N/A		inches	
Rm Source for FE correction	Temperature Corr			
Temp. for Rm Corr.	MCG External Temperature			
Stand-off	0.5		inches	
Induction Calibration MAI-A.A 167				Base Calibration on 22-FEB-2014,14:07 Field Check on 28-FEB-2014 00:20
Base Calibration				
Test Loop Calibration		Measured		Calibrated (mmho/m)
Channel	Low	High	Low	High
1	17.3	474.2	9.3	967.1
2	6.3	388.4	7.6	822.1
3	3.3	259.4	5.2	566.5
4	1.9	133.0	2.6	279.5
Array Temperature	76.8		Deg F	
Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			12.6	3840.6
2			29.5	3480.0
3			29.1	3056.7
4			19.8	2084.3
Deep			18.6	2051.9
Medium			42.2	3996.2
Shallow			42.8	5057.7
Array Temperature			66.3	Deg F
Induction Constants MAI-A.A 167				Last Edited on 28-FEB-2014,04:21
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	

Caliper Calibration MPD-C.A 216

Base Calibration on 22-FEB-2014,15:53
Field Calibration on 28-FEB-2014 00:33

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16592	3.99
2	26576	5.98
3	36592	7.97
4	46339	9.86
5	57568	11.92
6	N/A	N/A

Field Calibration

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

DOWNHOLE EQUIPMENT

C:\Minimus 13.08.2113\Log Data\Shakespeare Janzen #3-36\Shakespeare Jansen #3-36 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 442 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-log

MML-A 3 LG: 7.97 ft WT: 81.6 lb OD: 2.240 in

Compact Neutron

MDN-A.B 66 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

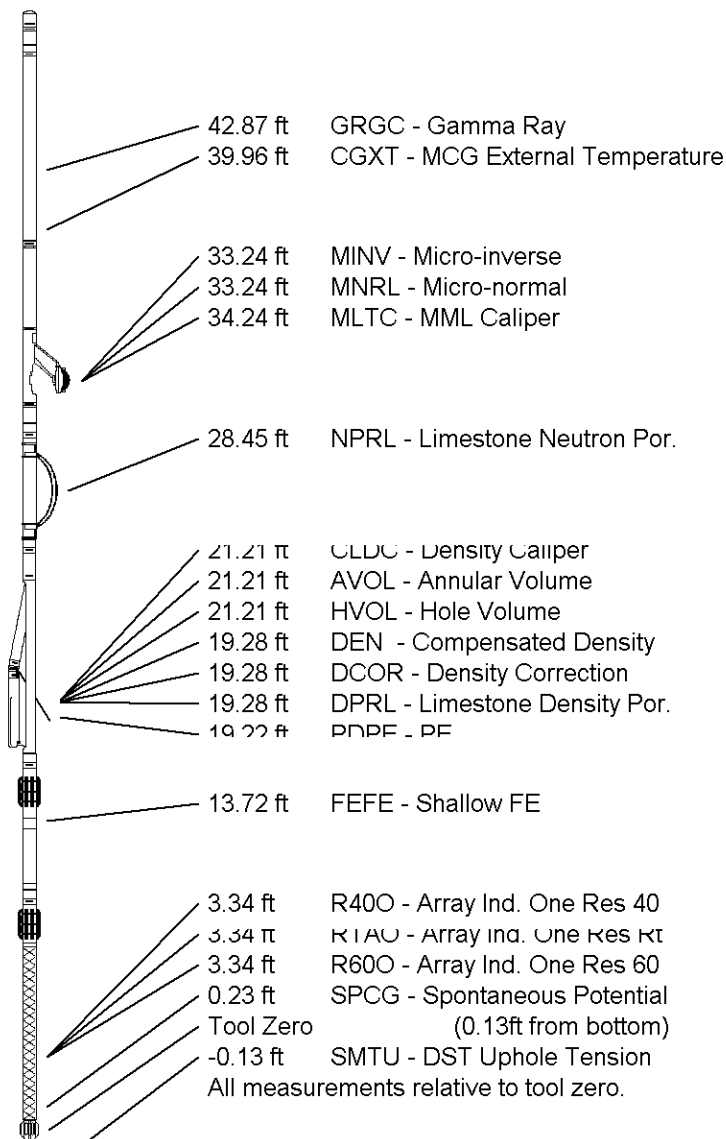
Compact Focussed Electric

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

Compact Induction

MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 49.73 ft Weight: 399.0 lb



COMPANY SHAKESPEARE OIL CO., INC
WELL JANZEN #3-36
FIELD CAPSTONE EAST
PROVINCE/COUNTY SCOTT
COUNTRY/STATE U.S.A / KANSAS

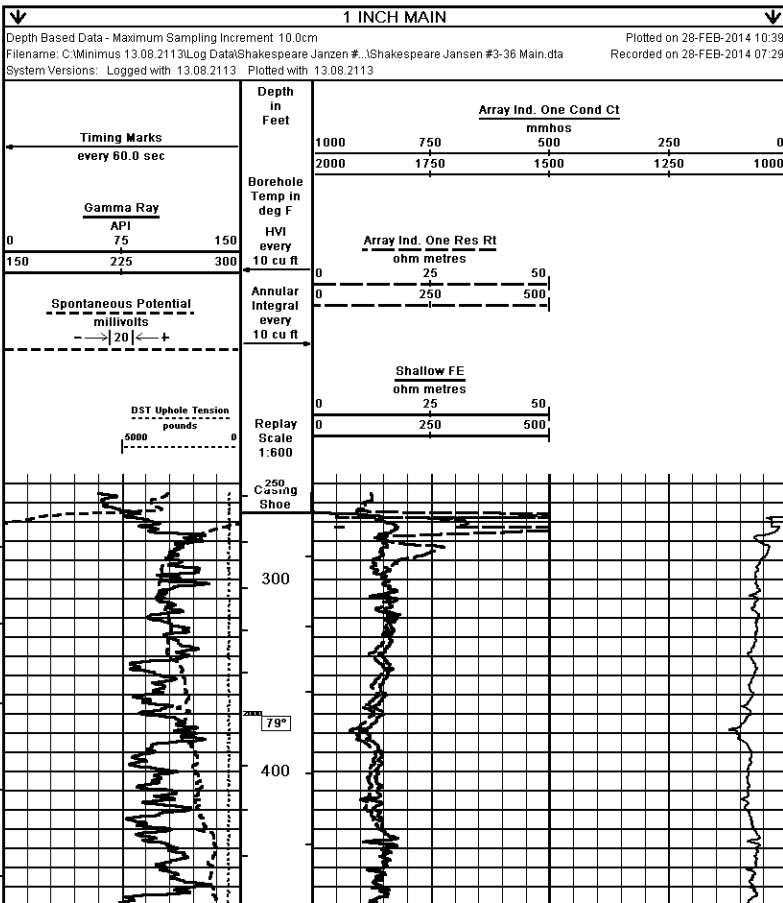
Elevation Kelly Bushing	3114.00	feet	First Reading	487.00	feet
Elevation Drill Floor	3112.00	feet	Depth Driller	4880.00	feet
Elevation Ground Level	3102.00	feet	Depth Logger	4874.00	feet

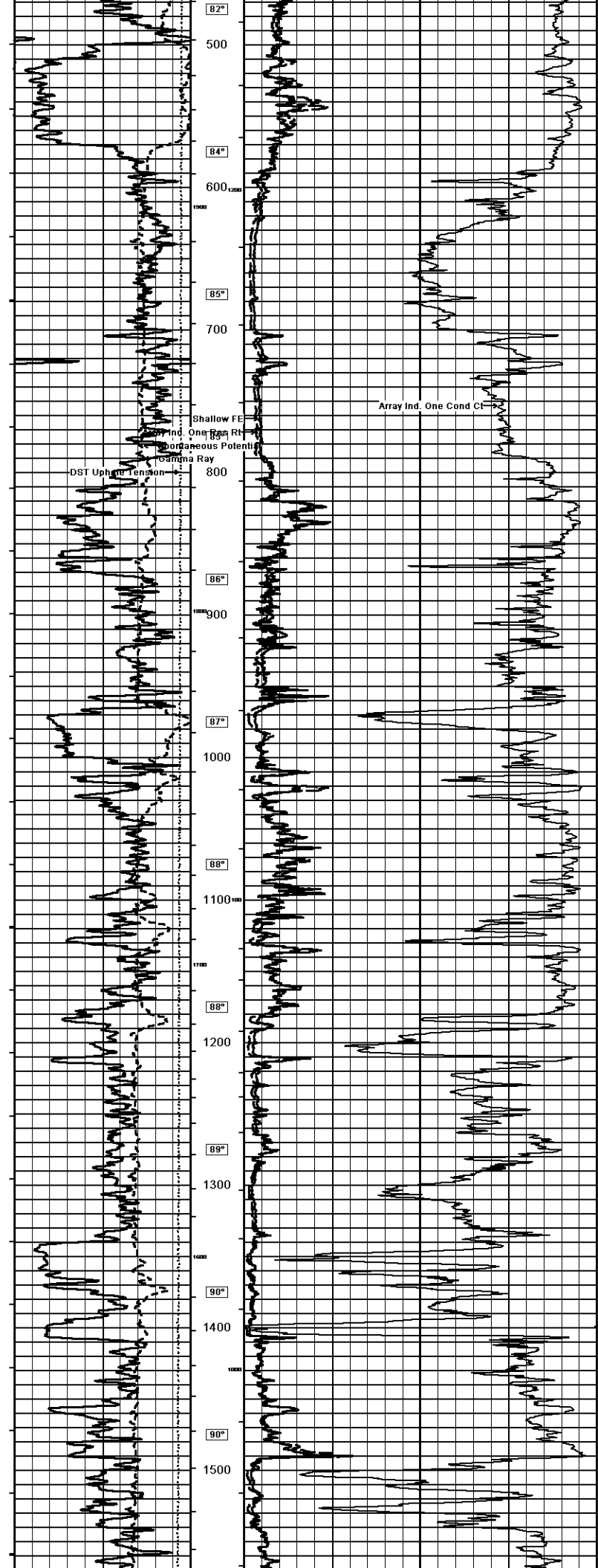


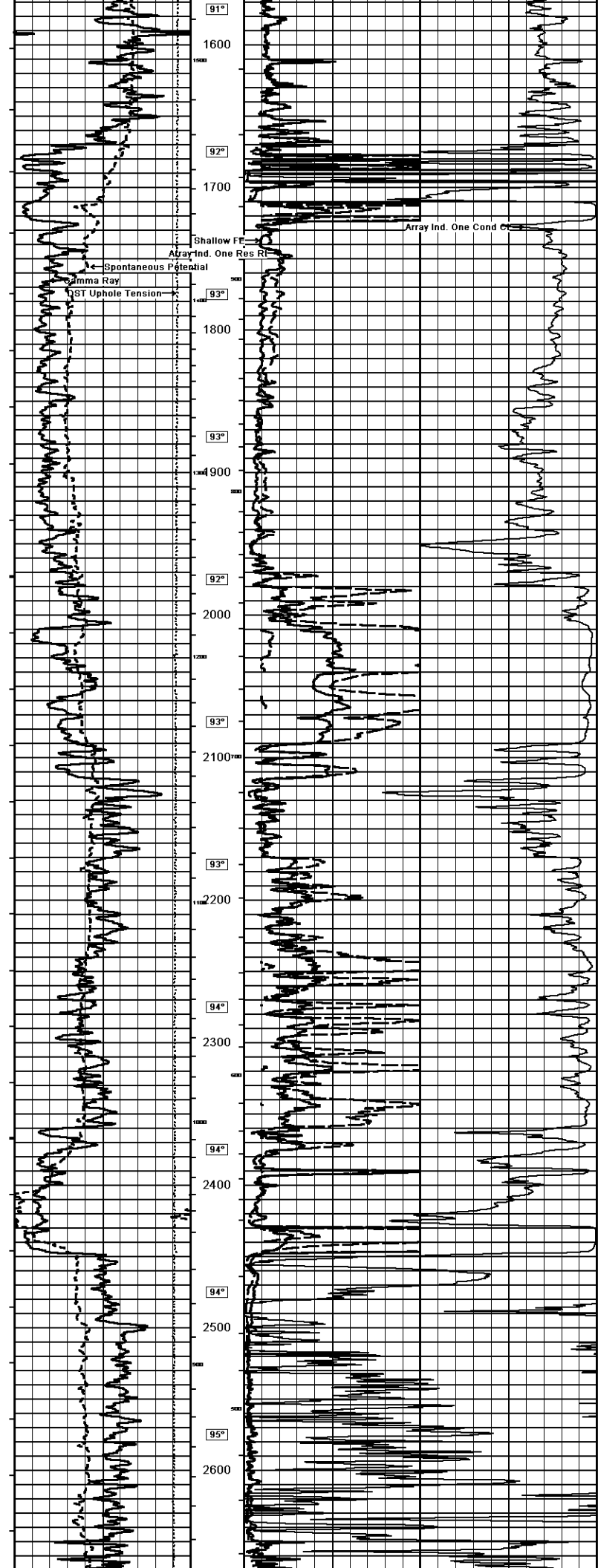
ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

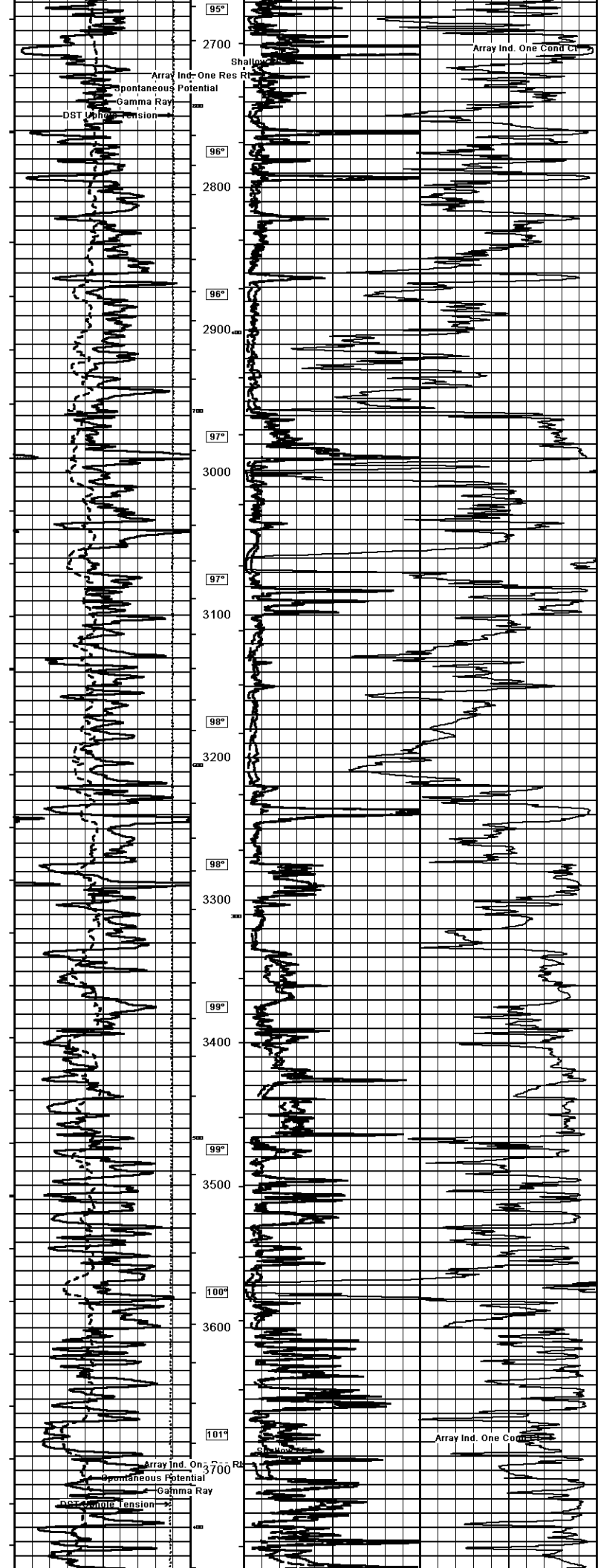
Weatherford®

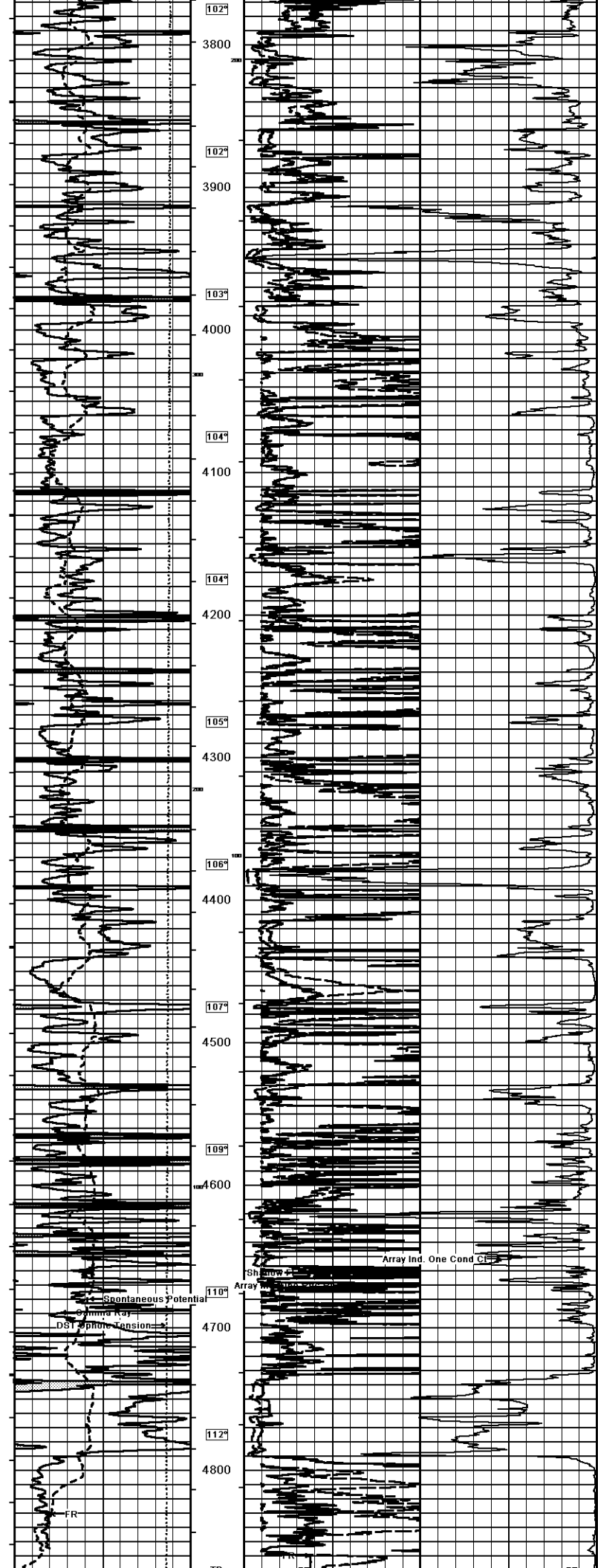
Weatherford		ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG	
COMPANY SHAKESPEARE OIL CO., INC			
WELL JANZEN #3-36			
FIELD CAPSTONE EAST			
PROVINCE/COUNTY SCOTT			
COUNTRY/STATE U.S.A / KANSAS			
LOCATION 9151 FSL & 18801 FWL			
SEC 36 TWP 16S R6E 34W			
Log Date 28-FEB-2014			
Run Number ONE			
Service Order 7026-8072935			
Depth Driller 4880.00 feet			
Depth Logger 4874.00 feet			
First Reading 487.00 feet			
Last Reading 265.00 feet			
Casing Driller 264.00 feet			
Casing Logger 265.00 feet			
Bit Size 7 875 inches			
Hole Fluid Type CHEMICAL			
Density/Viscosity 9.10 lb/USg 48.00 CP			
PH/Fluid Loss 10.00 8.80 m3/min			
Sample Source MUDPIT			
Rm @ Measured Temp 0.38 @ 75.0 ohm-m			
Rm @ Measured Temp 0.31 @ 75.0 ohm-m			
Rm @ Measured Temp 0.46 @ 75.0 ohm-m			
Source Rm/Rm CALC			
Rm @ BHT 0.26 @ 111.0 ohm-m			
Time Since Circulation 4 HOURS			
Max Recorded Temp 117.00 deg F			
Equipment/Base 13086 LIB			
Recorded By DESEK CARTER			
Witnessed By MARK HERNDON			
LOG # LB14-051			
Elevations: KB 3114.00 DF 3112.00 GL 3102.00			

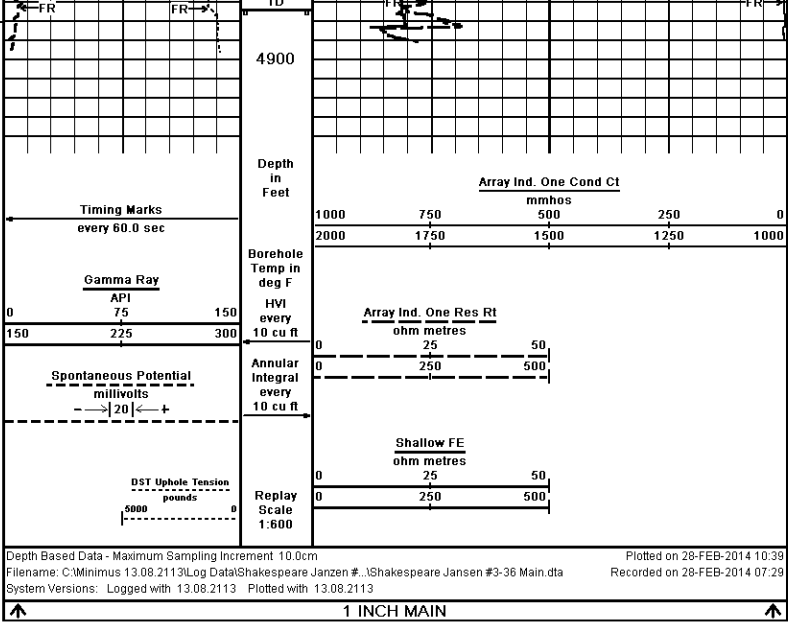












COMPANY		SHAKESPEARE OIL CO., INC			
WELL		JANZEN #3-36			
FIELD		CAPSTONE EAST			
PROVINCE/COUNTY		SCOTT			
COUNTRY/STATE		U.S.A / KANSAS			
Elevation Kelly Bushing	3114.00	feet	First Reading	487.00	feet
Elevation Drill Floor	3112.00	feet	Depth Driller	4880.00	feet
Elevation Ground Level	3102.00	feet	Depth Logger	4874.00	feet
 Weatherford		ARRAY INDUCTION			
		SHALLOW FOCUSED			
		ELECTRIC LOG			