



Weatherford[®]

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

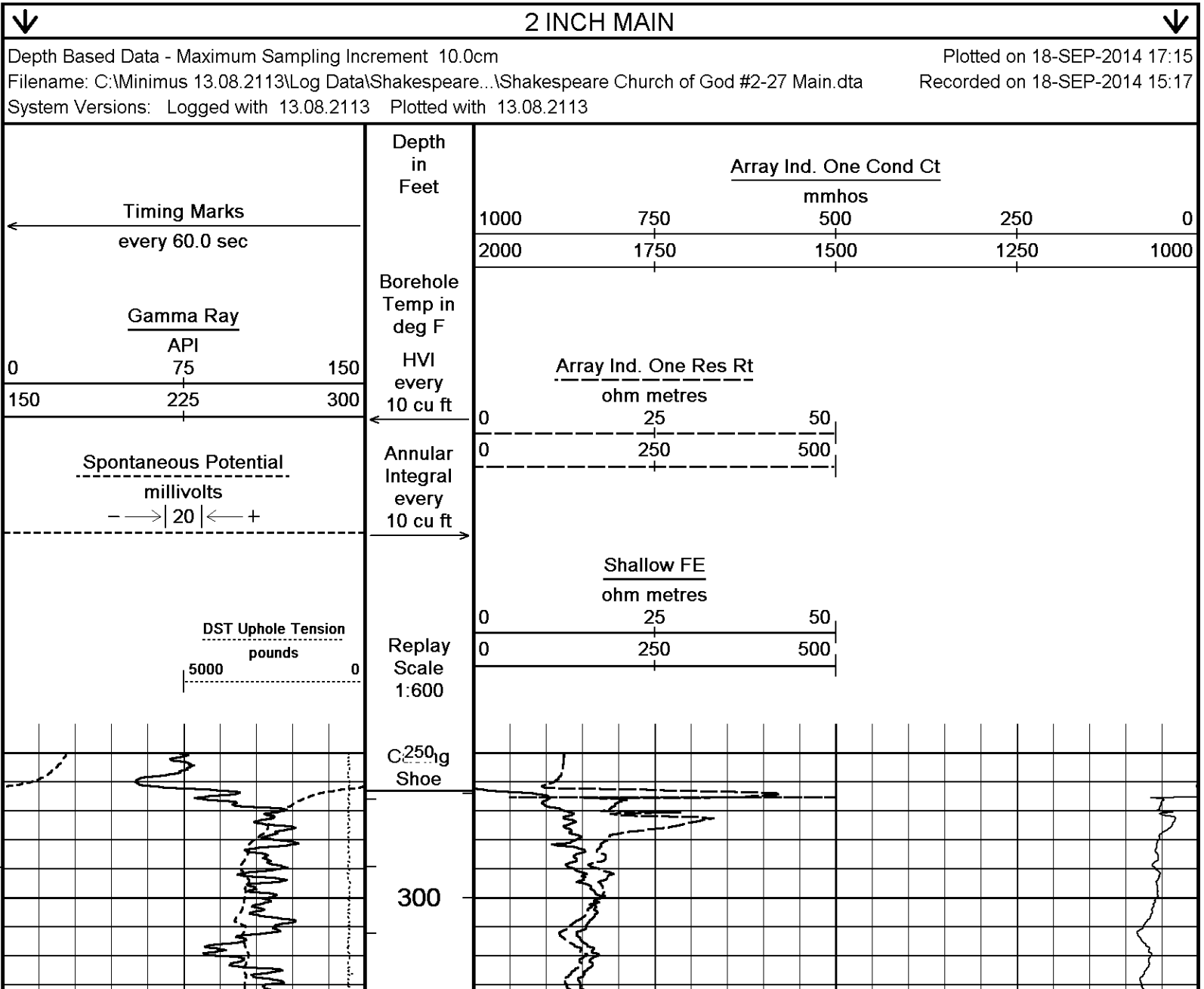
COMPANY										SHAKESPEARE OIL CO., INC.									
WELL										CHURCH OF GOD #2-27									
FIELD										PENCE									
PROVINCE/COUNTY										SCOTT									
COUNTRY/STATE										U.S.A. / KANSAS									
LOCATION										2305' FNL & 50' FEL									
PERMIT NUMBER										NE SE SE NE									
SEC 27		TWP 16S		RGE 34W		Other Services				MML									
Latitude		38.635216355				MPD/MDN													
Longitude		101.054556971																	
API Number		15-171-21086																	
Permanent Datum GL, Elevation 3119 feet																			
Log Measured From KB																			
Drilling Measured From KB @ 10 FEET																			
Date		18-SEP-2014																	
Run Number		ONE																	
Service Order		7960-98252230																	
Depth Driller		4890.00				feet													
Depth Logger		4883.00				feet													
First Reading		263.00				feet													
Last Reading		4879.66				feet													
Casing Driller		268.00				feet													
Casing Logger		263.00				feet													
Bit Size		7.875				inches													
Hole Fluid Type		WBM																	
Density / Viscosity		9.20		lb/USg		54.00		CP											
PH / Fluid Loss		11.00		8.80		ml/30Min													
Sample Source		MUDPIT																	
Rm @ Measured Temp		0.60 @ 75.0				ohm-m													
Rmf @ Measured Temp		0.48 @ 75.0				ohm-m													
Rmc @ Measured Temp		0.72 @ 75.0				ohm-m													
Source Rmf / Rmc		CALC		CALC															
Rm @ BHT		0.41 @ 111.0				ohm-m													
Time Since Circulation		4 HOURS																	
Max Recorded Temp		112.00				deg F													
Equipment / Base		13096				LIB													
Recorded By		DEREK CARTER				JAKE HINES													
Witnessed By		TIM PRIEST																	
IOB #		LB14-282																	

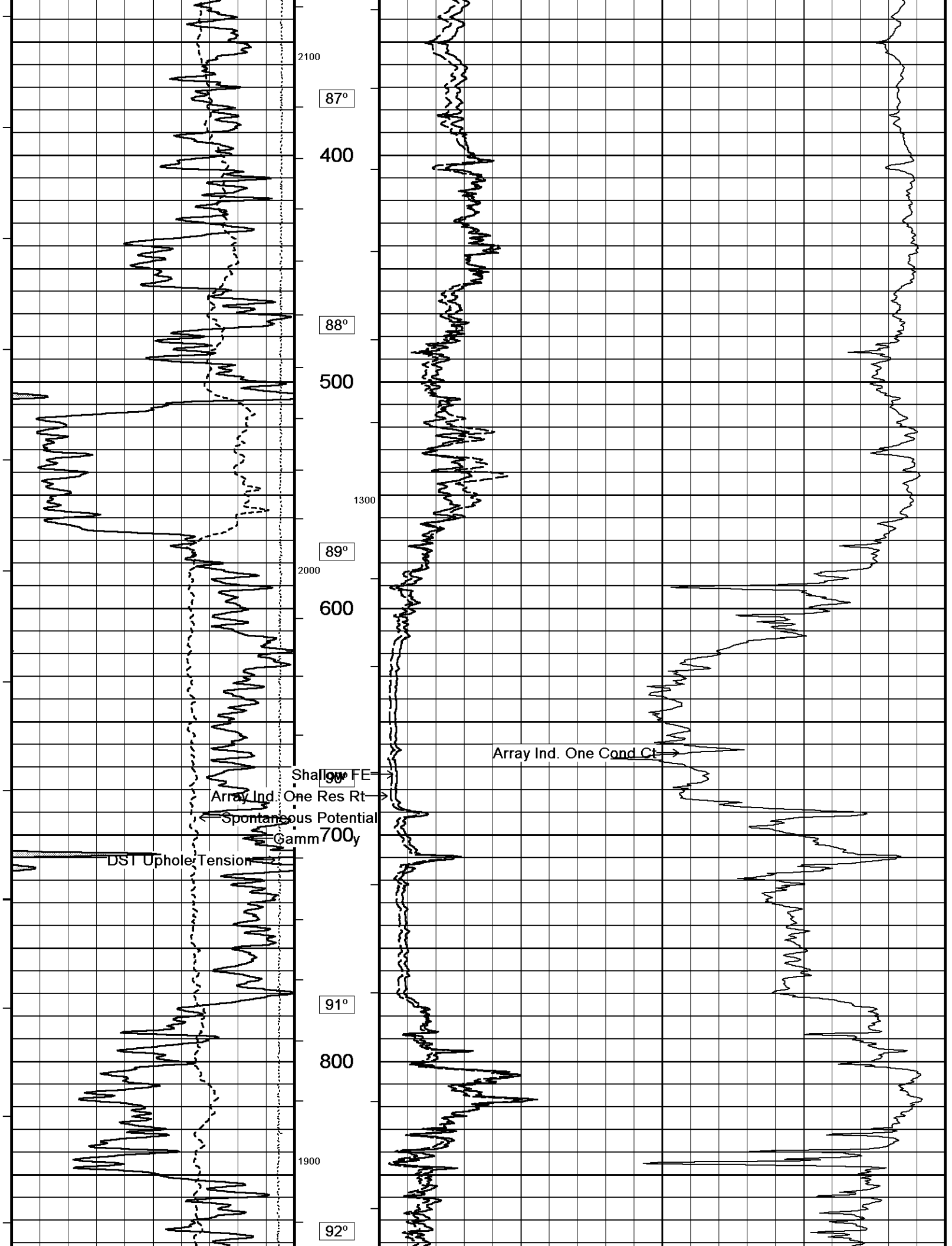
BOREHOLE RECORD					Last Edited: 18-SEP-2014 13:24
Bit Size inches		Depth From feet		Depth To feet	
7.875		268.00		4890.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	268.00	24.00	

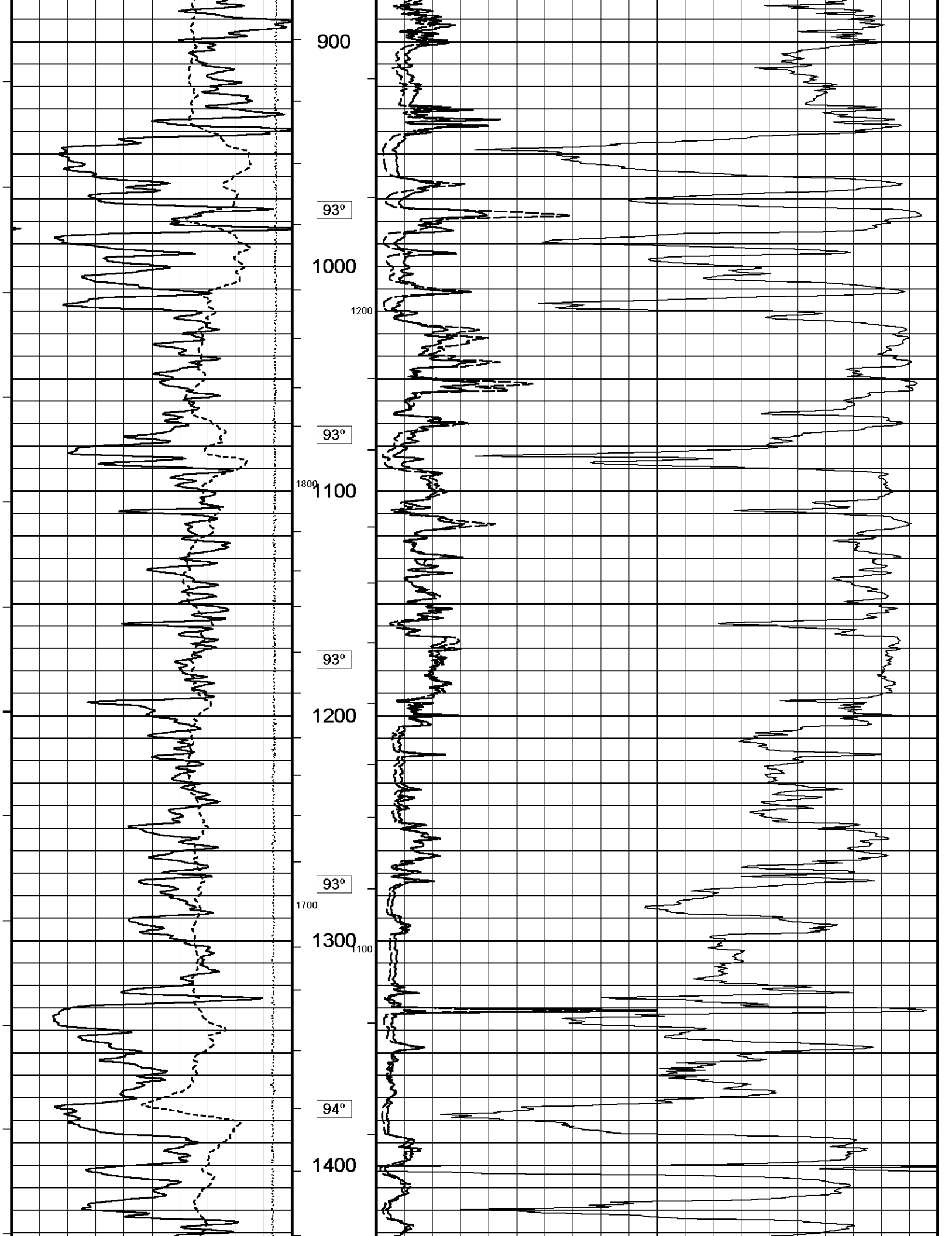
REMARKS
- SOFTWARE ISSUE: WLS 13.08.2113
- TOOL STRING: MCG, MML, MDN, MPD, MFE, MAI RUN IN COMBINATION
- HARDWARE: MDN: DUAL BOWSPRING ECCENTRALIZER MFE: 1 X 0.5 INCH STANDOFF MAI: 2 X 0.5 INCH STANDOFF
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 2140 CU. FT.
- ANNUAL HOLE VOLUME WITH 5.5 INCH CASING FROM TD TO 3800 FT: 200 CU. FT.

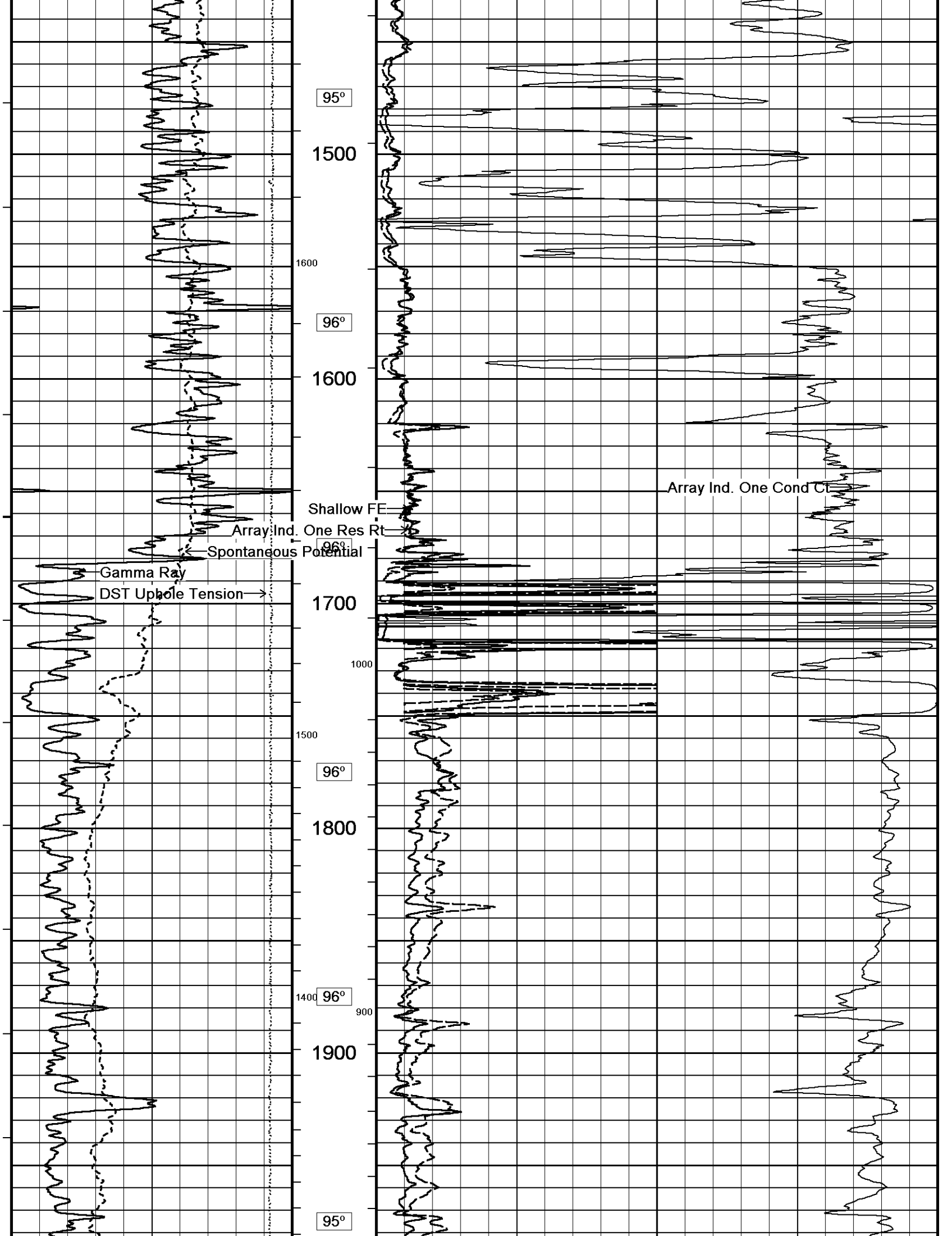
- SERVICE ORDER # 7960-98252230
- RIG: H.D. DRILLING #2
- ENGINEER: DEREK CARTER
- JUNIOR FIELD ENGINEER: JAKE HINES
- OPERATORS: CARLOS RAMIREZ

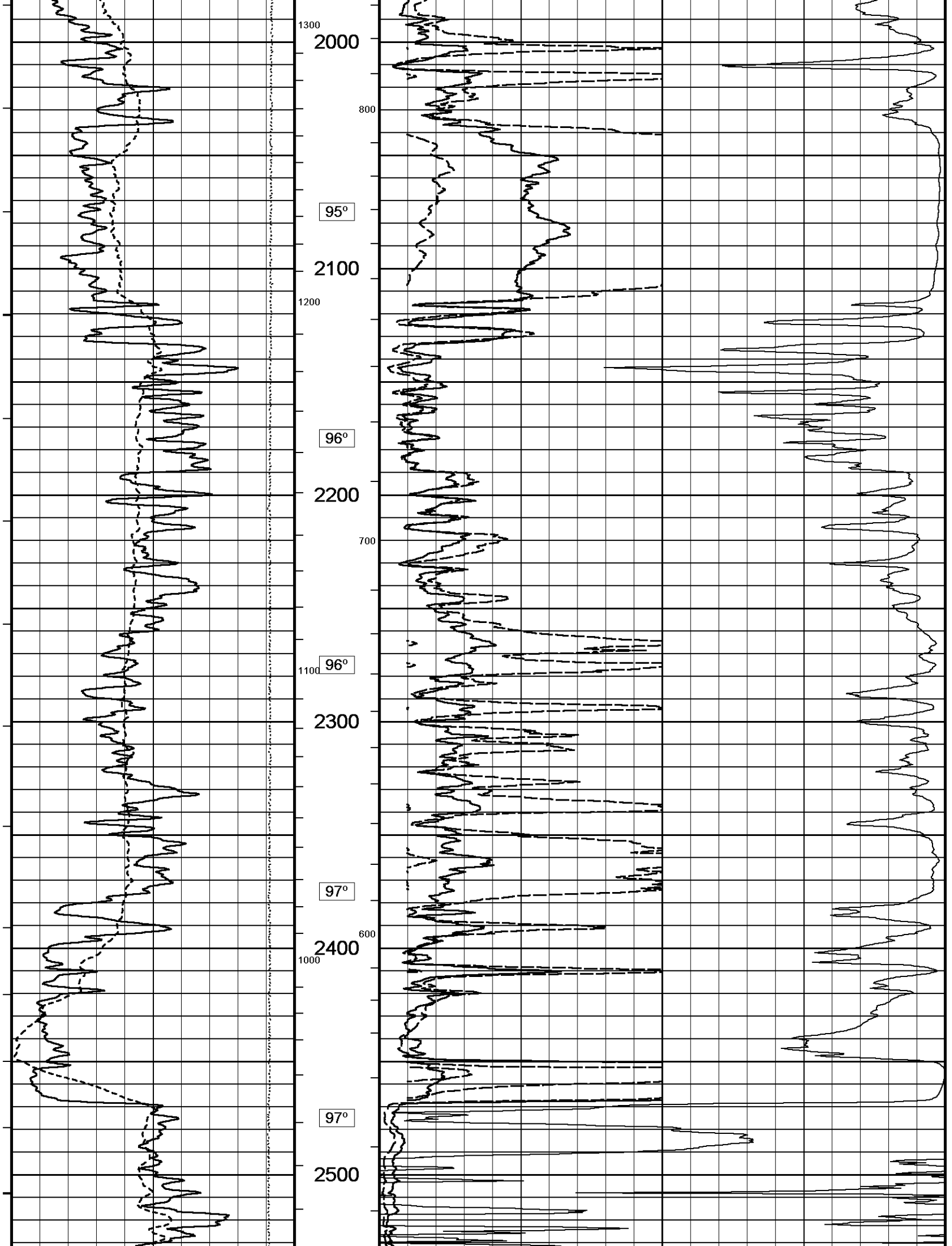
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will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

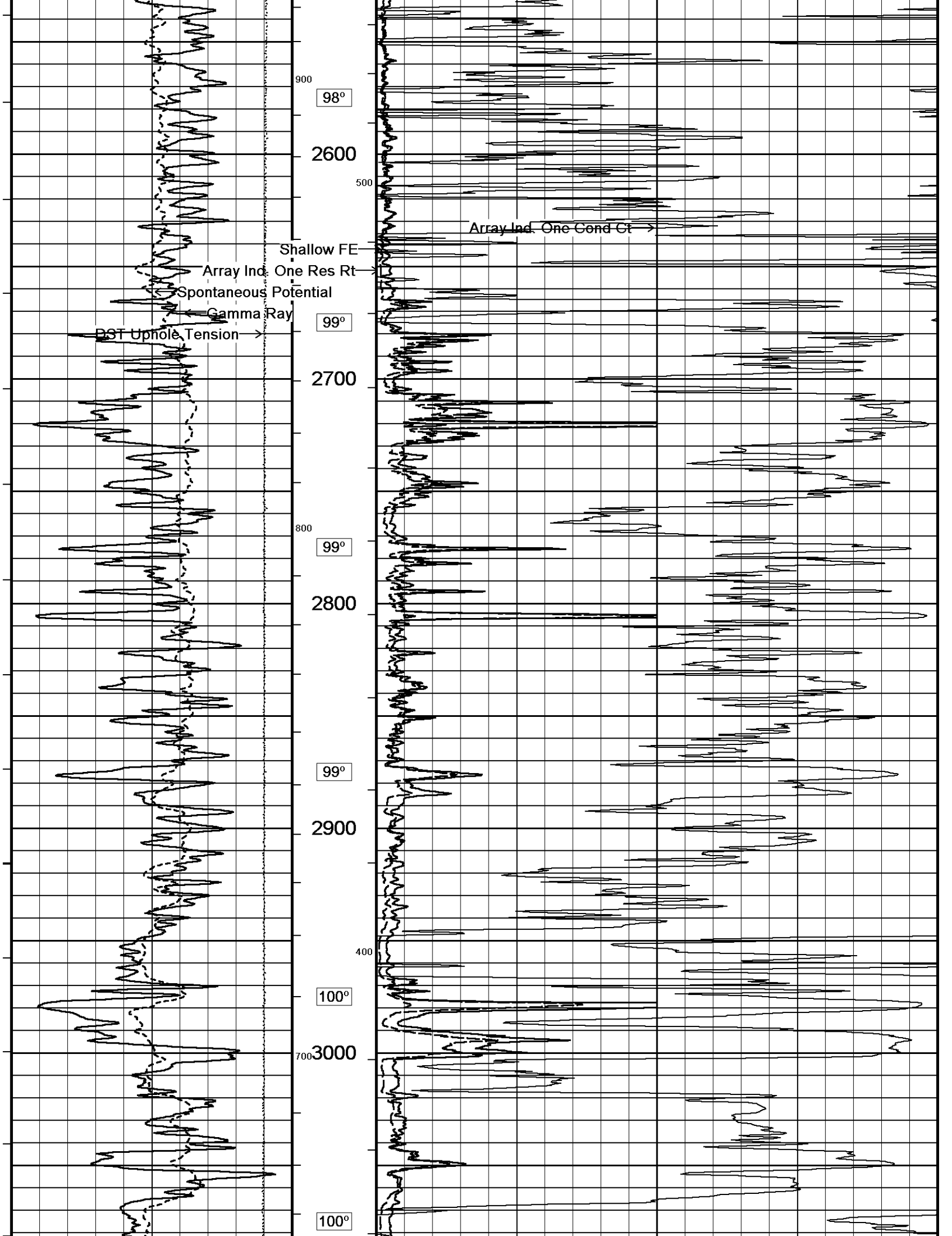


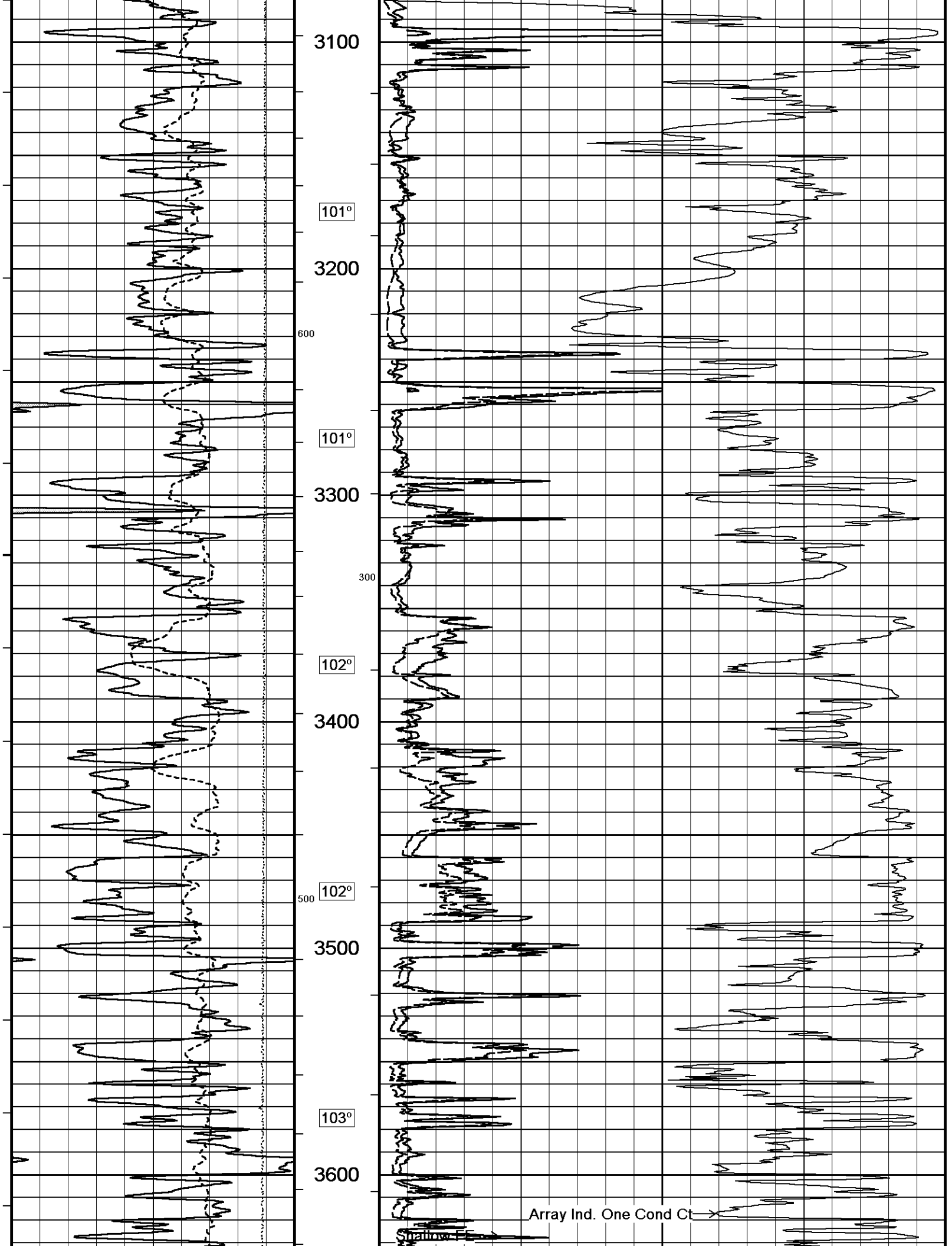


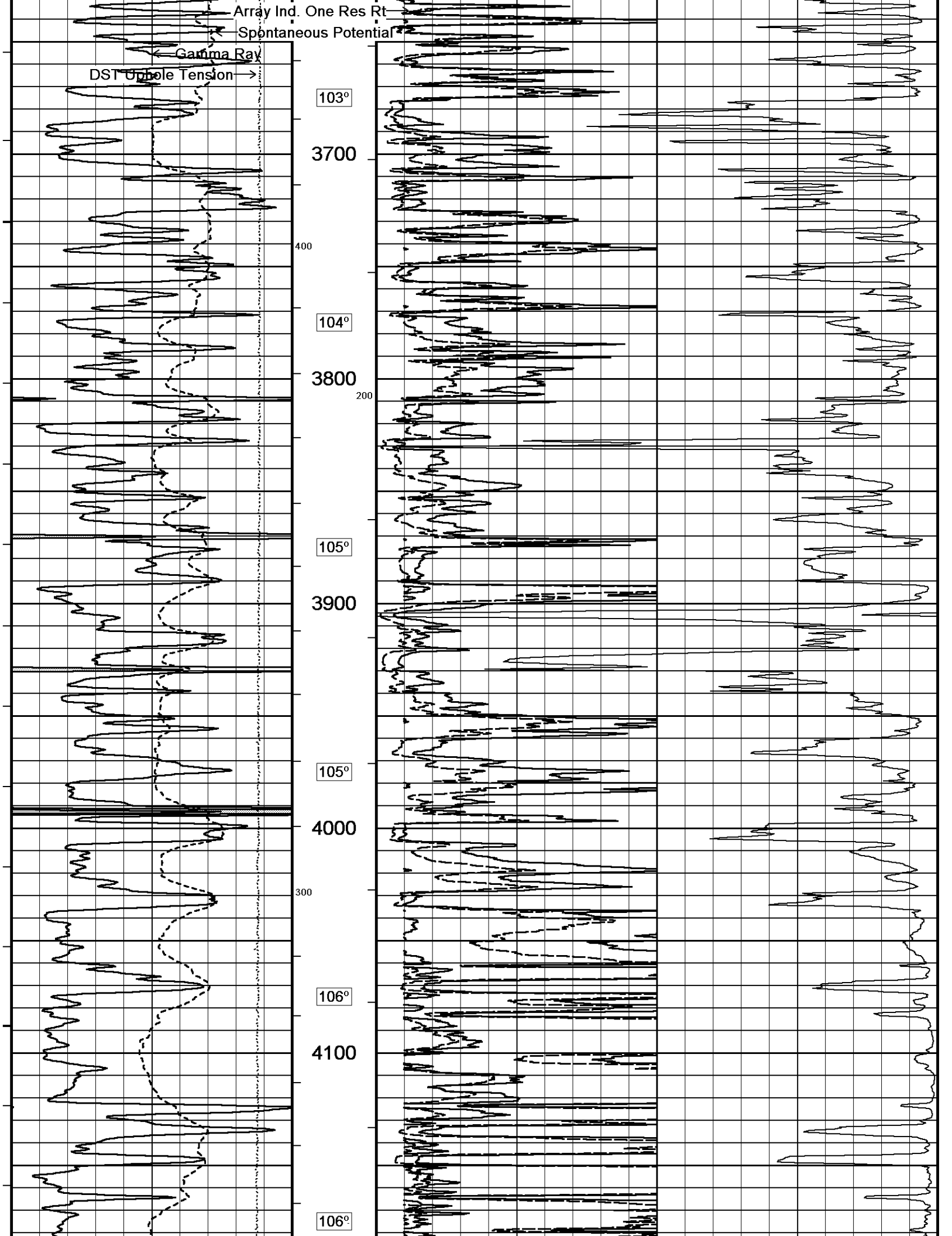


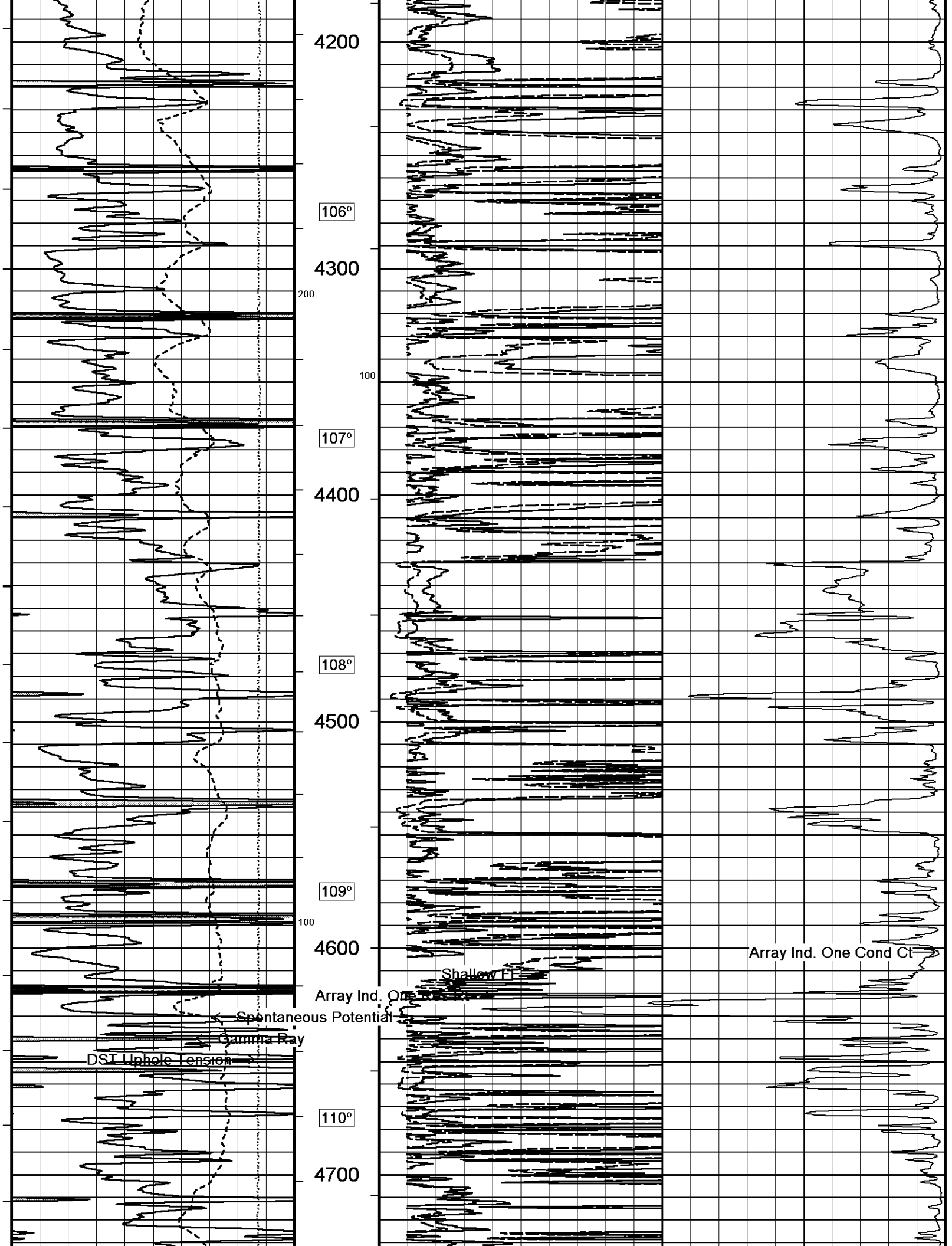


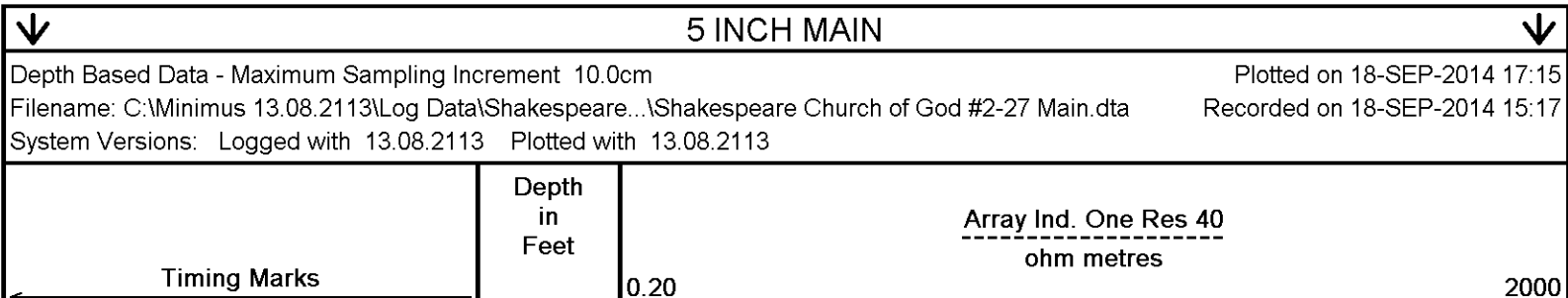
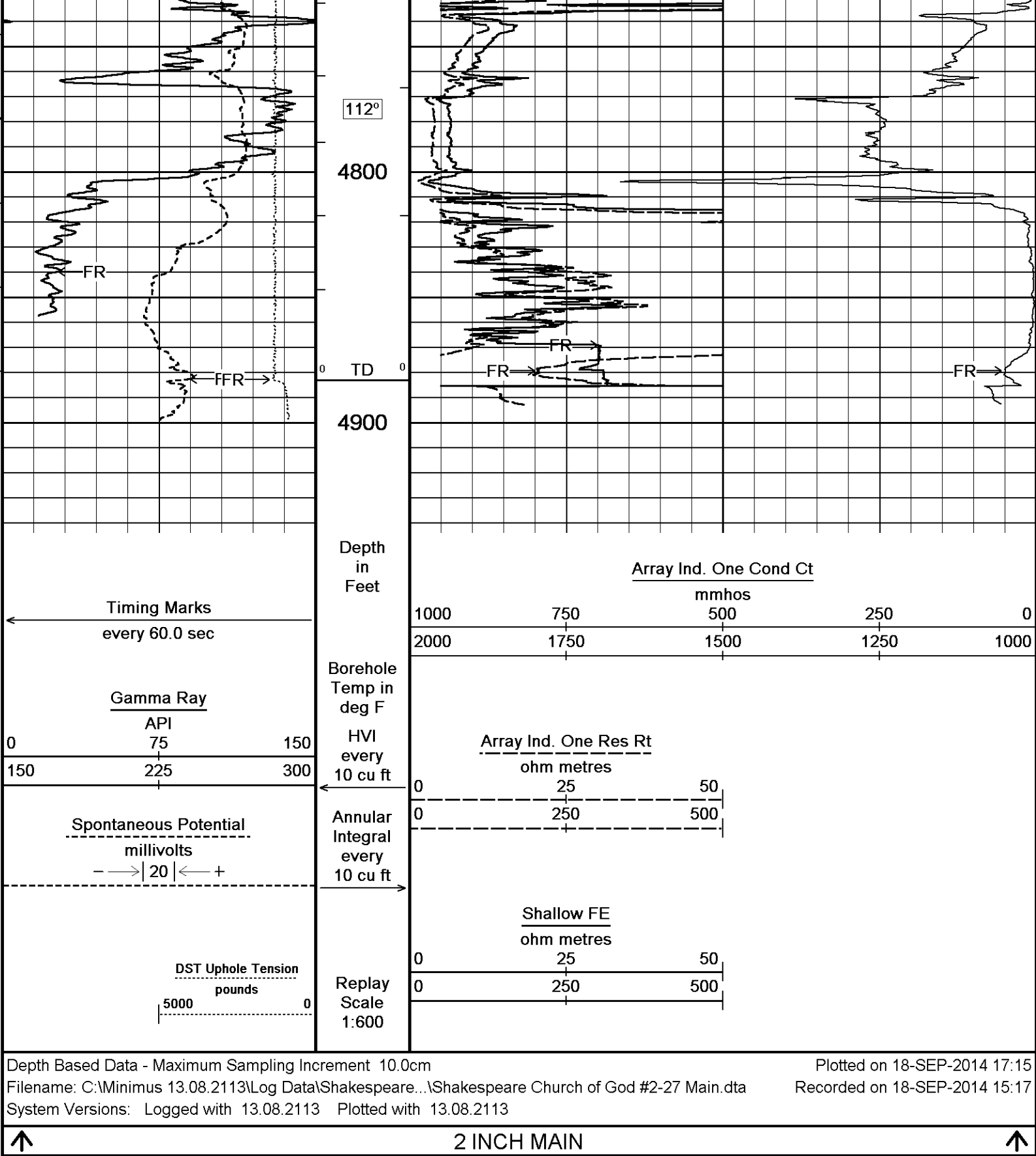












every 60.0 sec

Gamma Ray

API

75

225

300

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft

Replay
Scale
1:240

250

Casing
Shoe

87°

300

87°

350

2100

87°

Array Ind. One Res 60

ohm metres

Array Ind. One Res Rt

ohm metres

Shallow FE

ohm metres

0 150

0.20 1 10 100 1000 2000

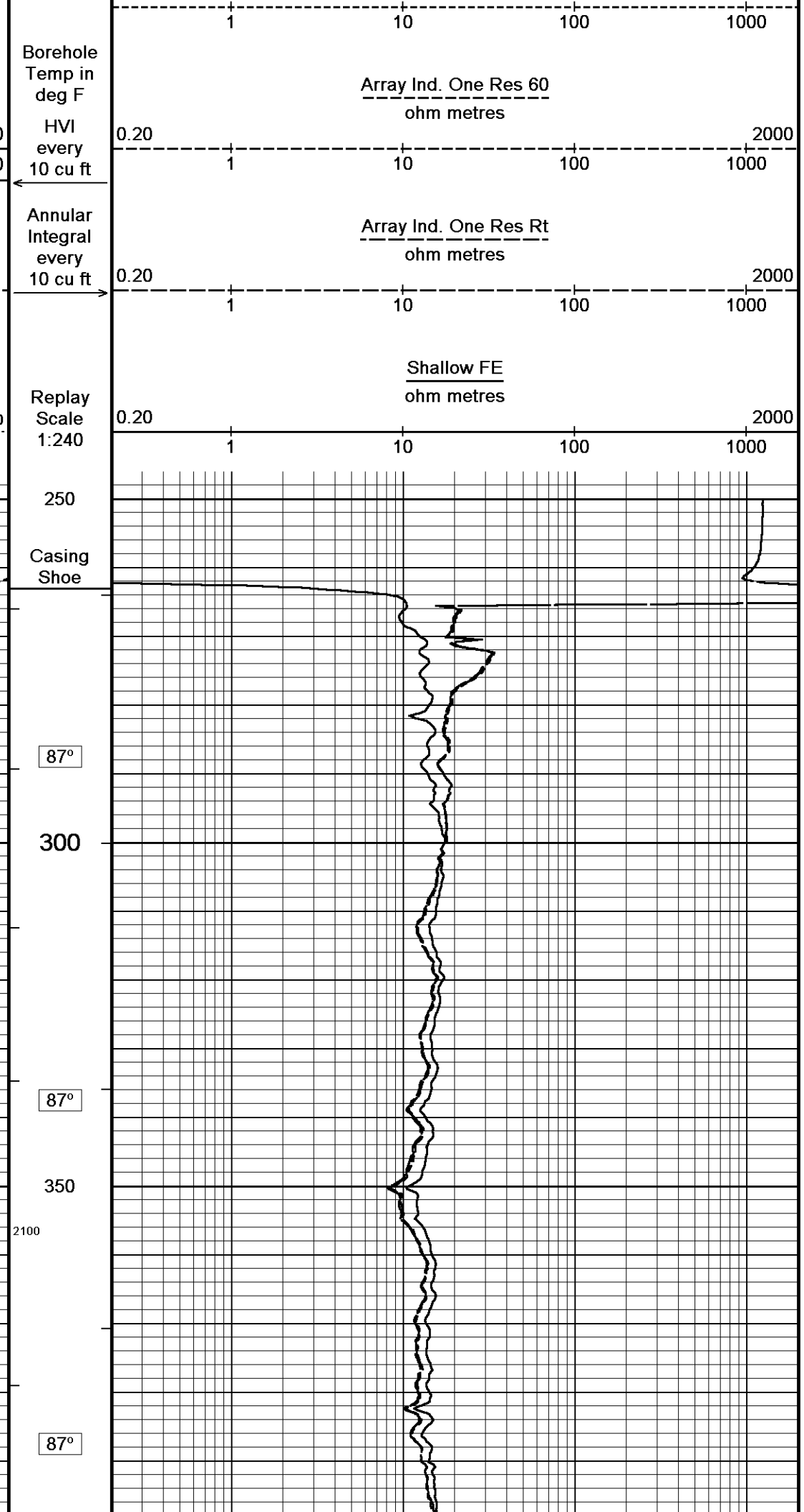
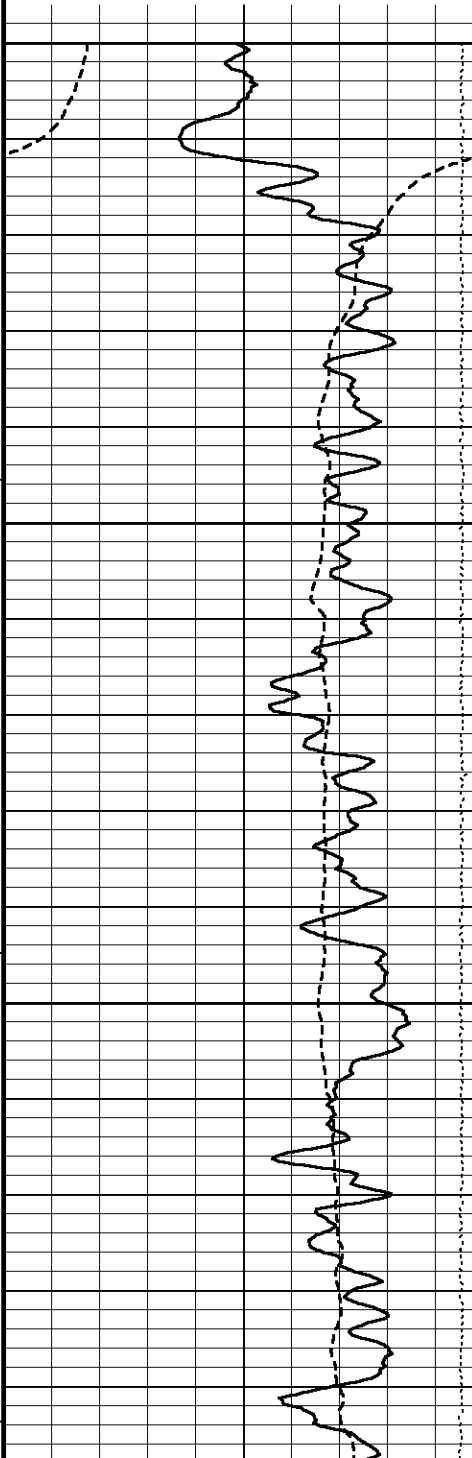
Spontaneous Potential
millivolts
- -> | 20 | <- +

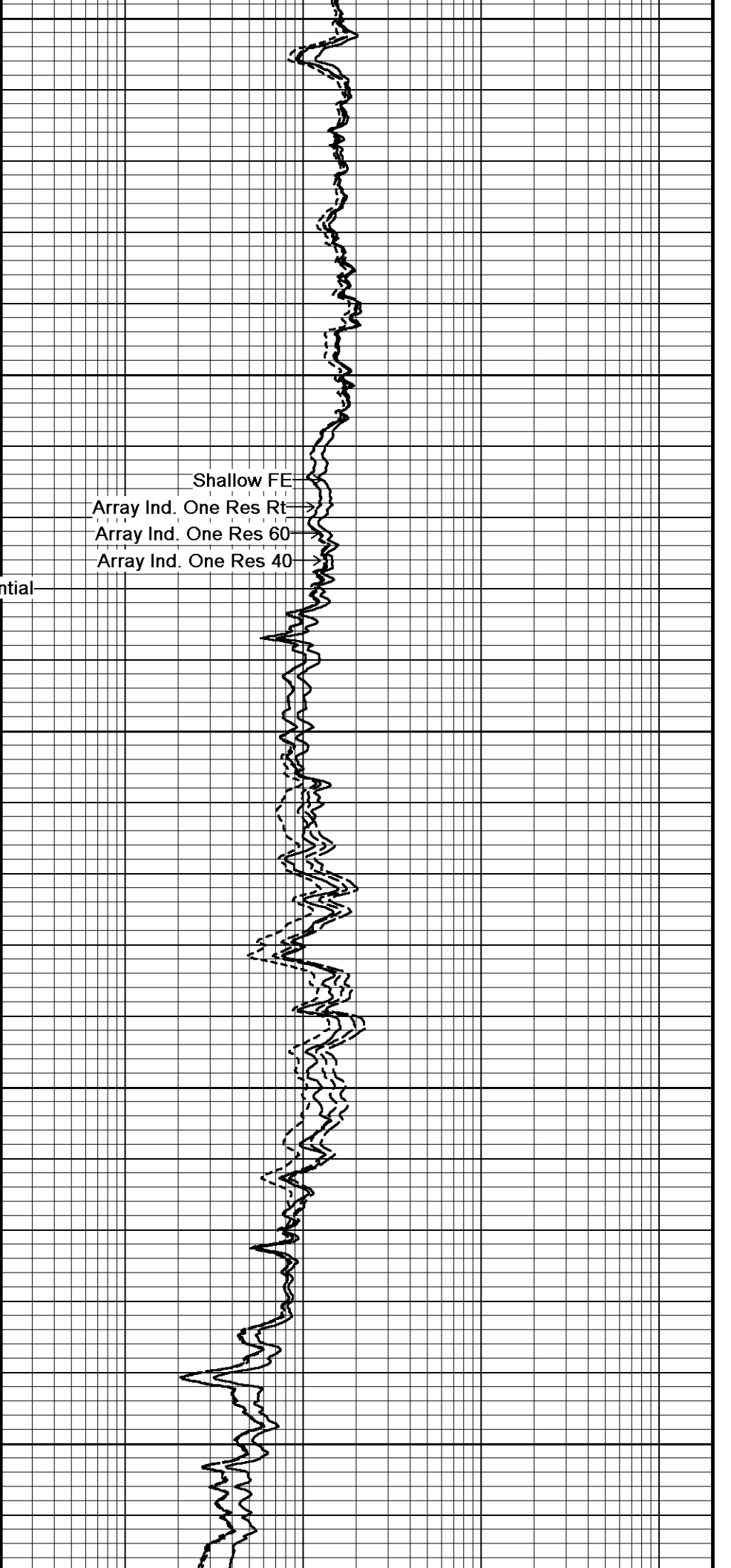
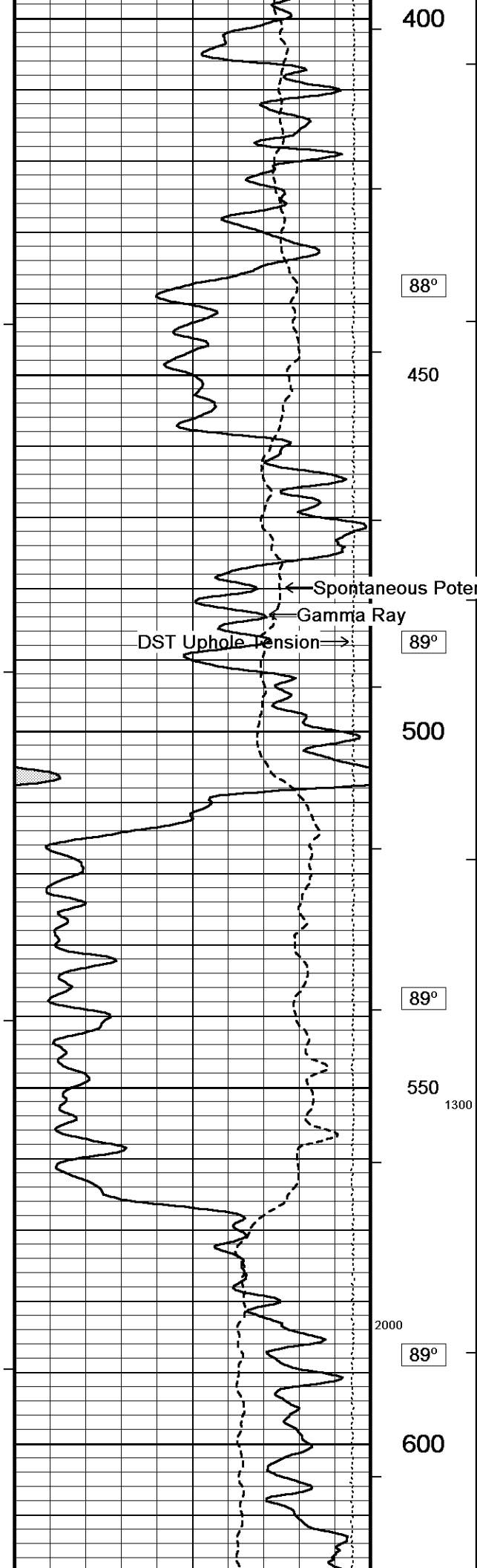
0.20 1 10 100 1000 2000

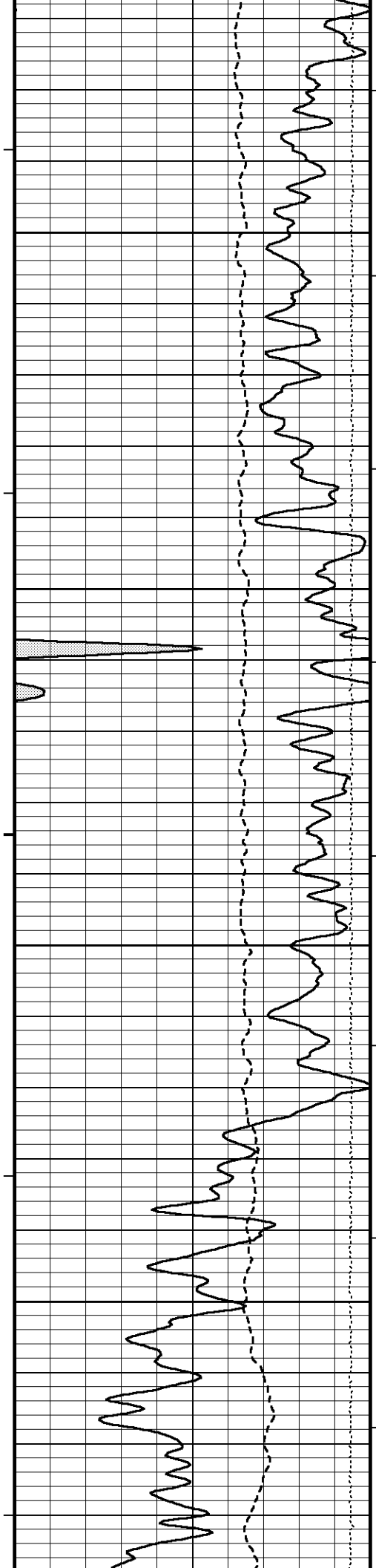
DST Uphole Tension
pounds

5000 0

0.20 1 10 100 1000 2000







90°

650

90°

700

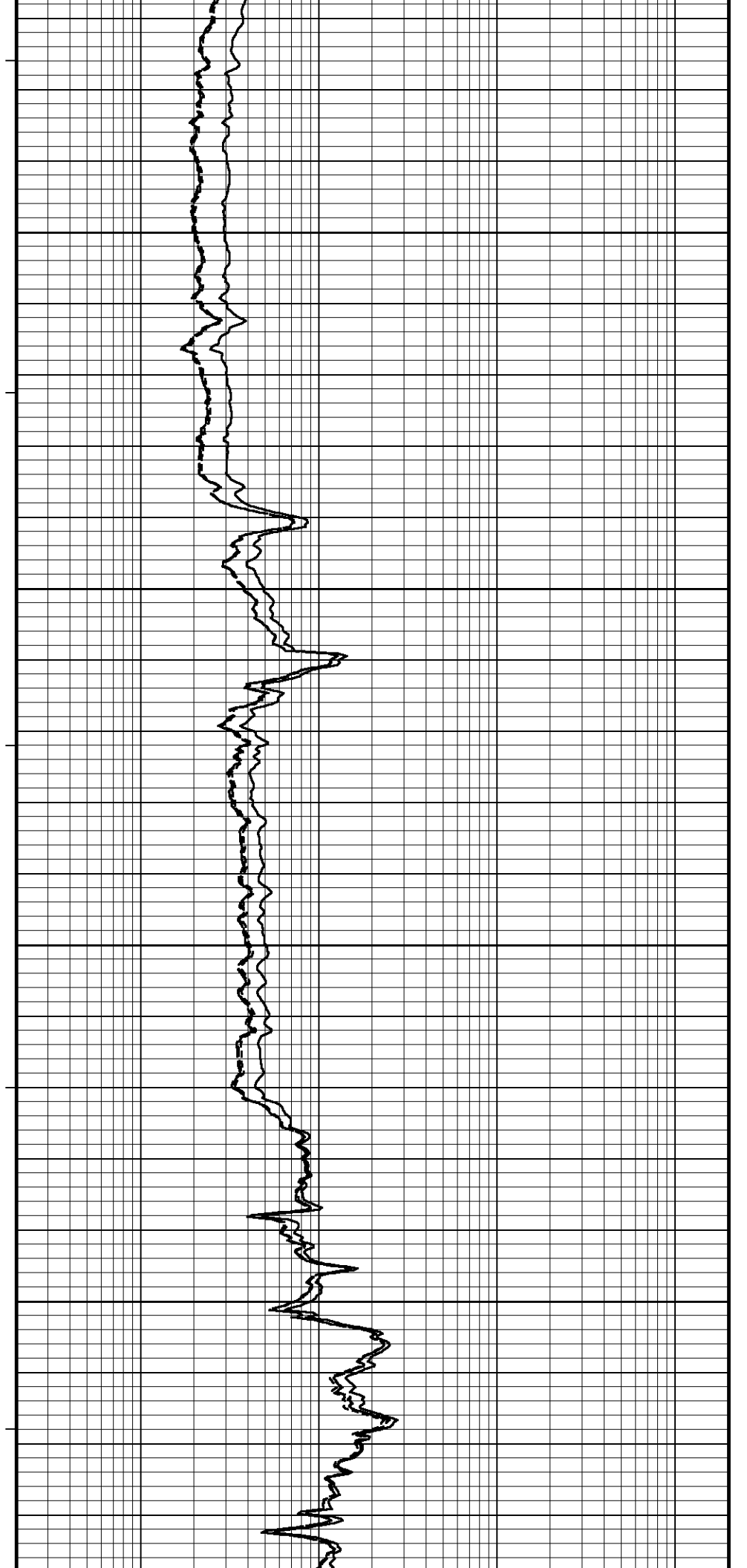
91°

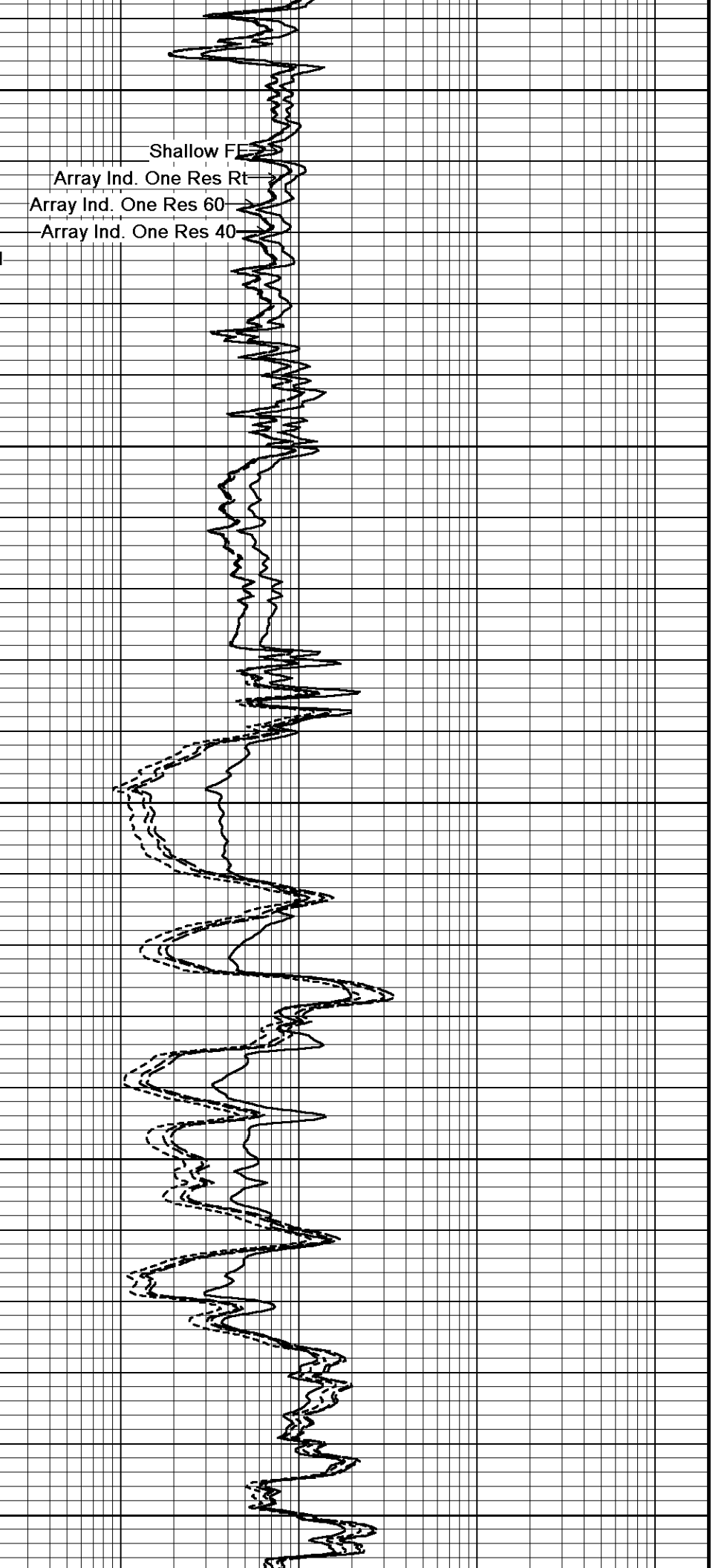
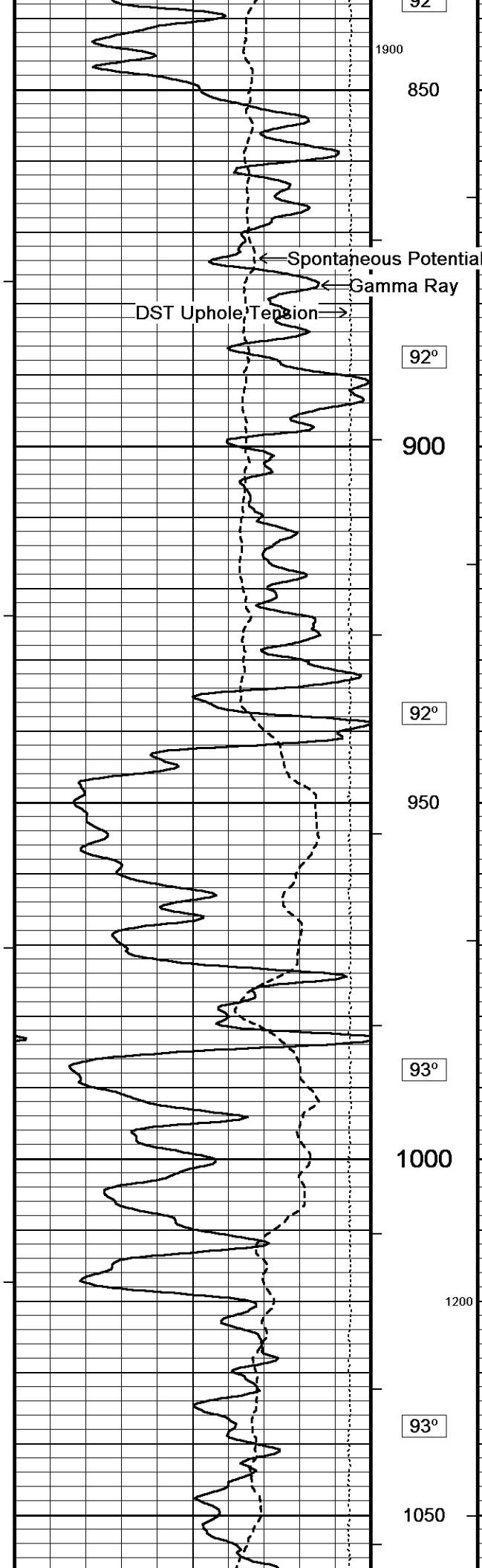
750

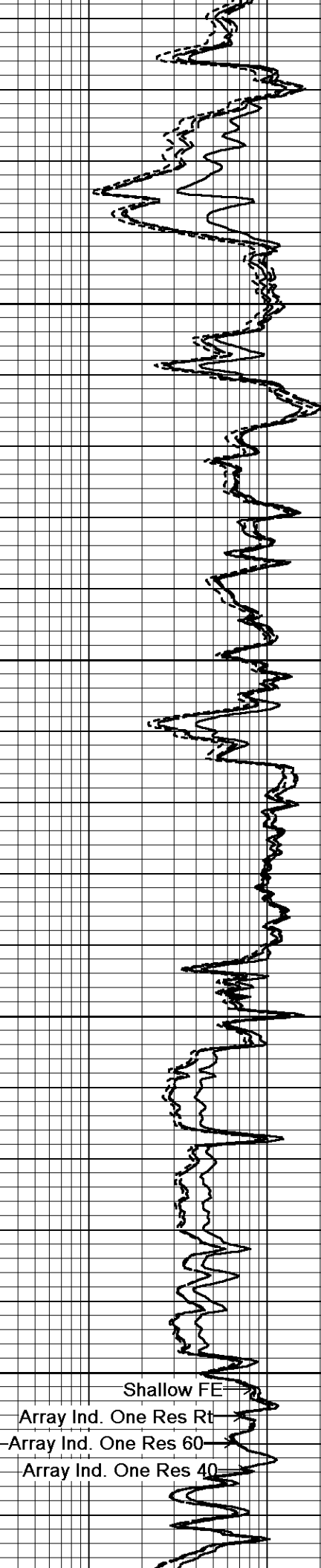
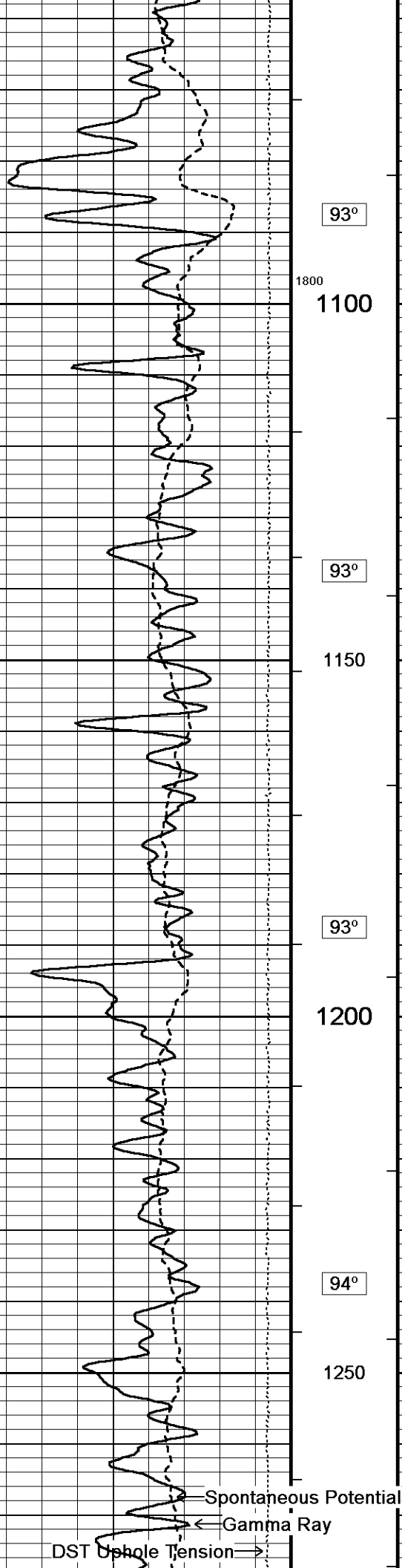
91°

800

92°

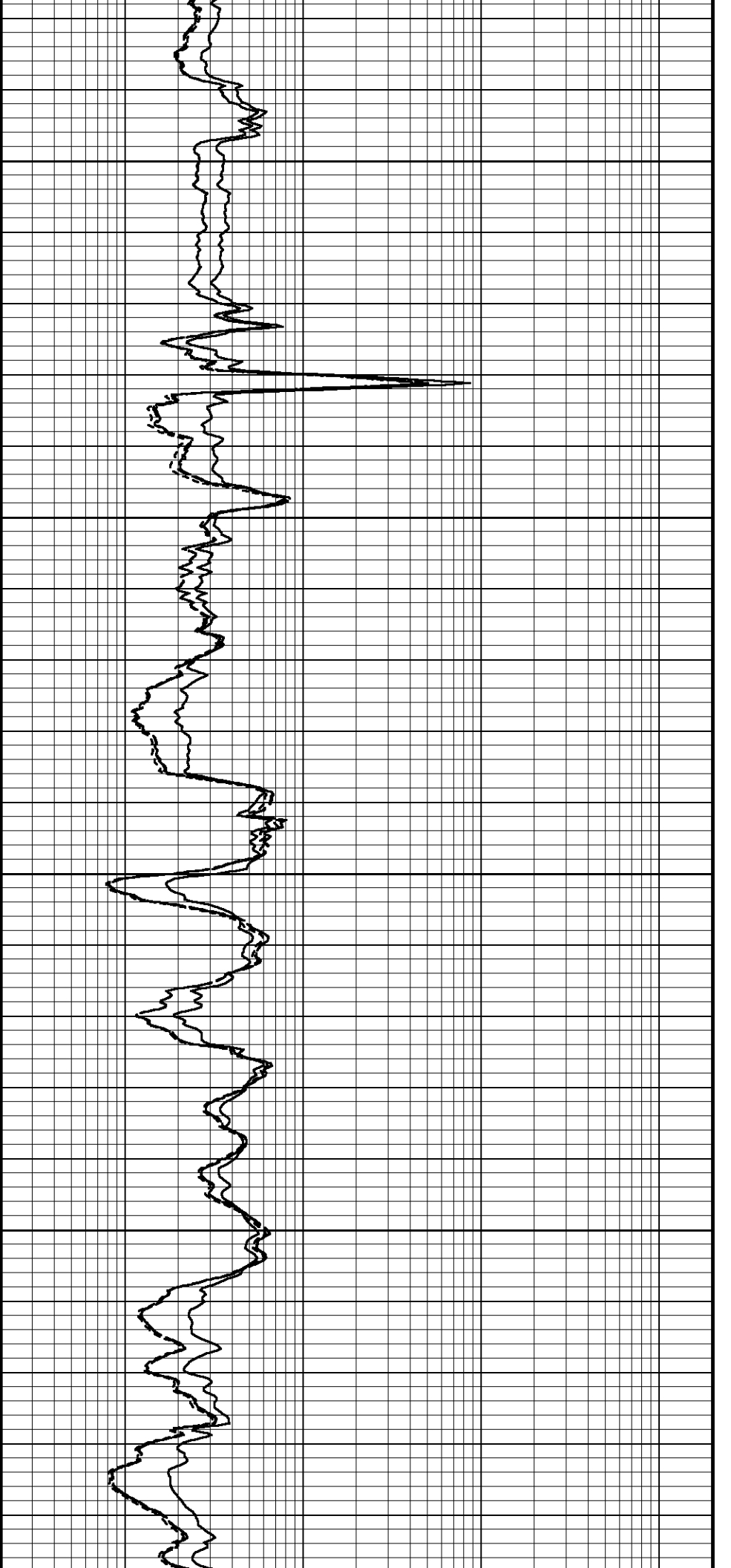
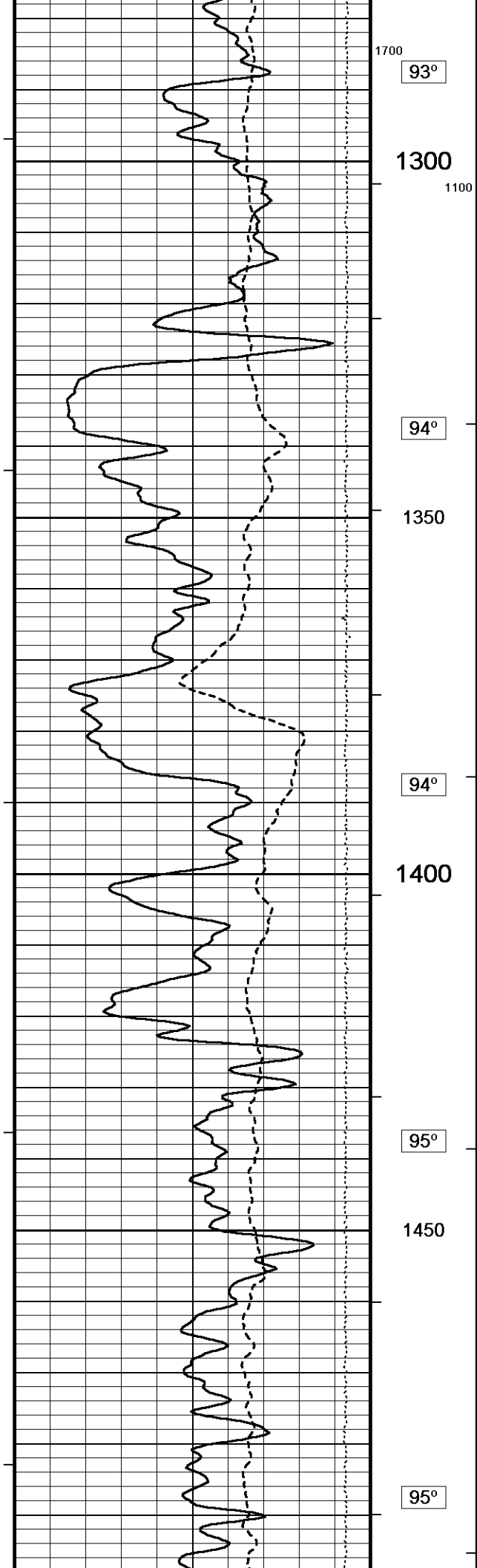


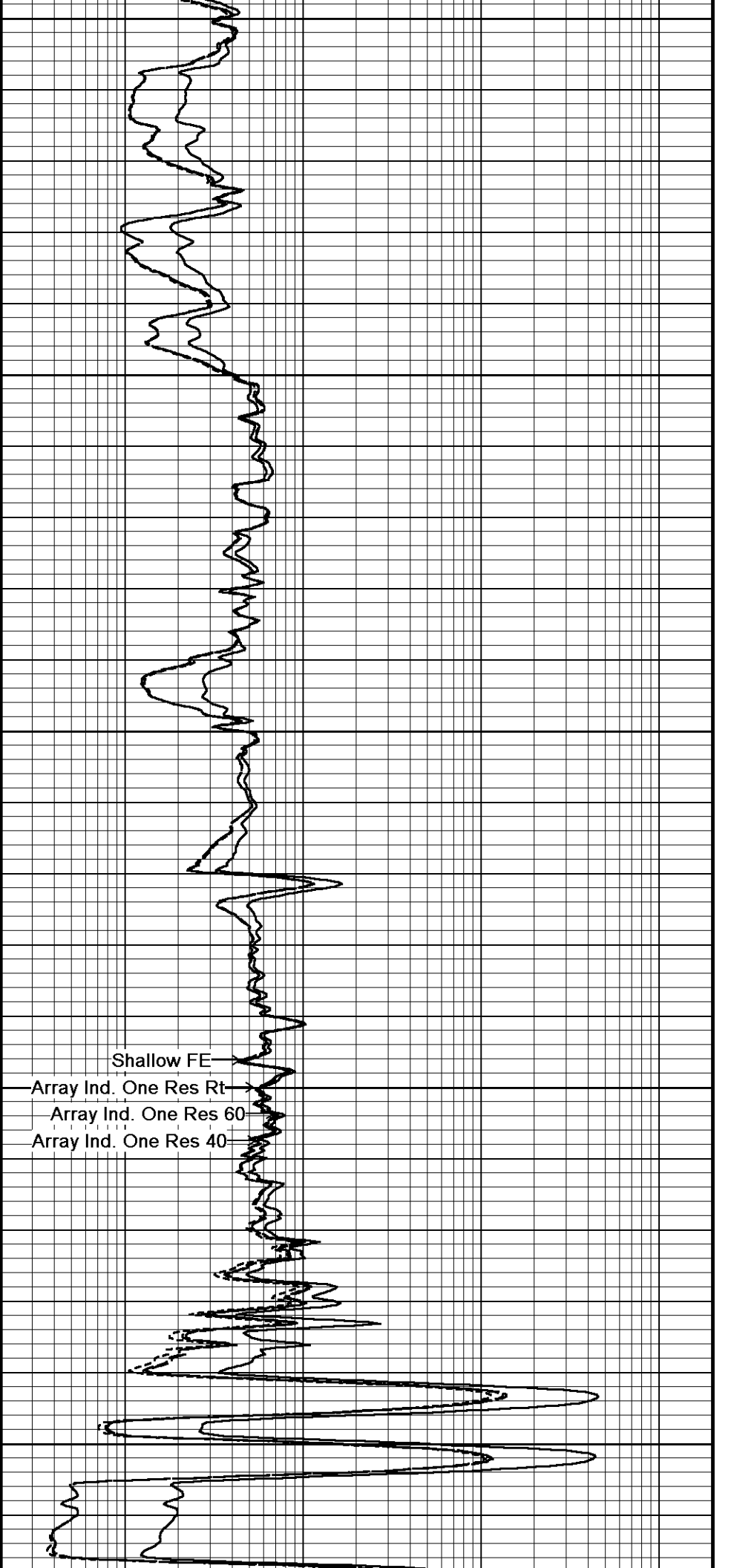
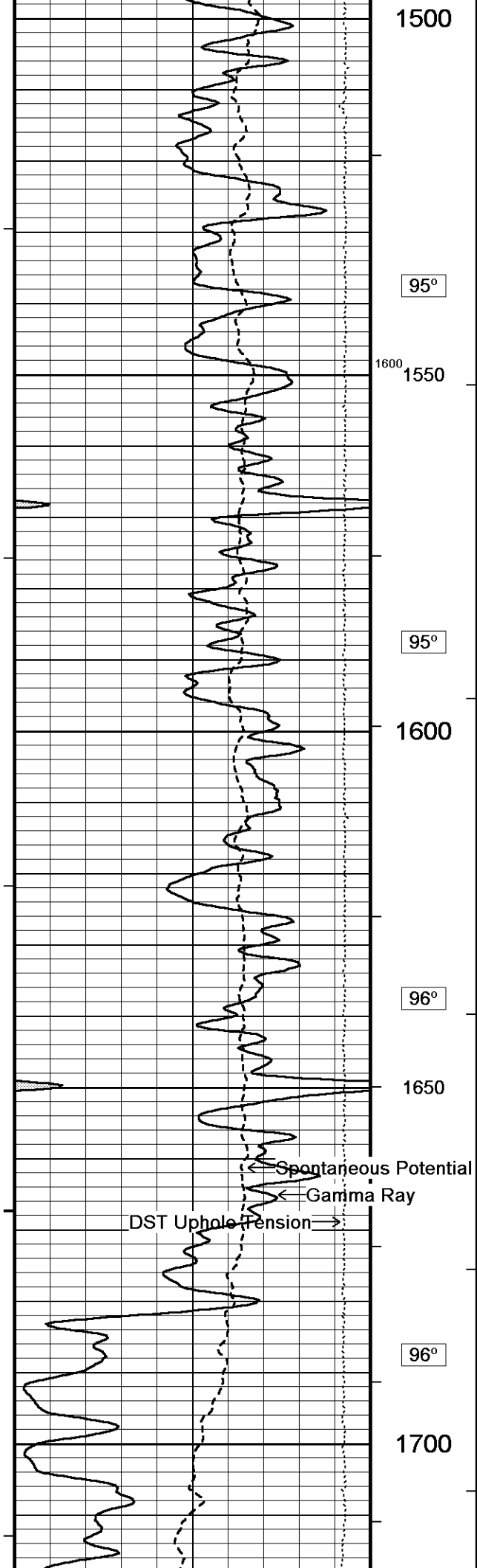


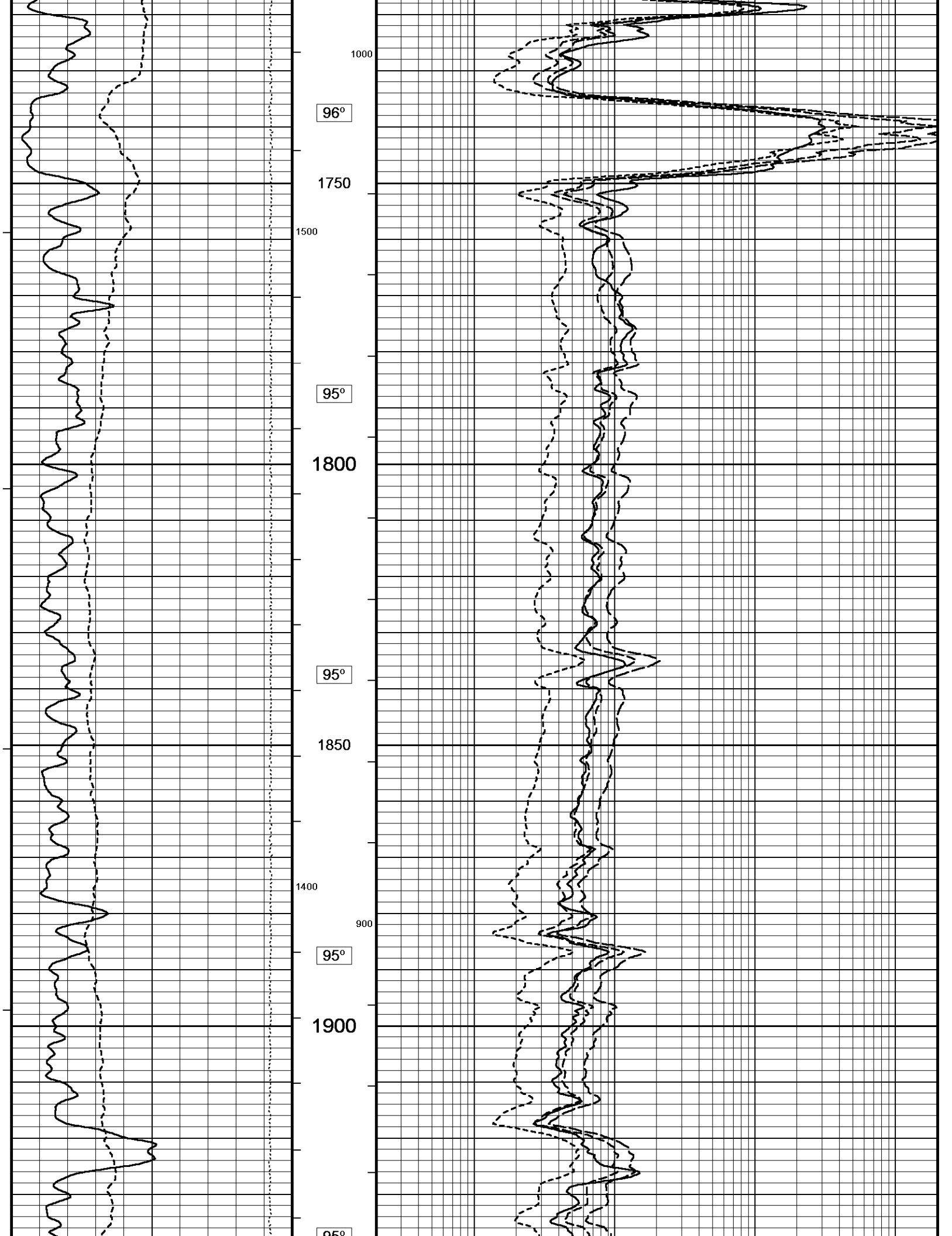


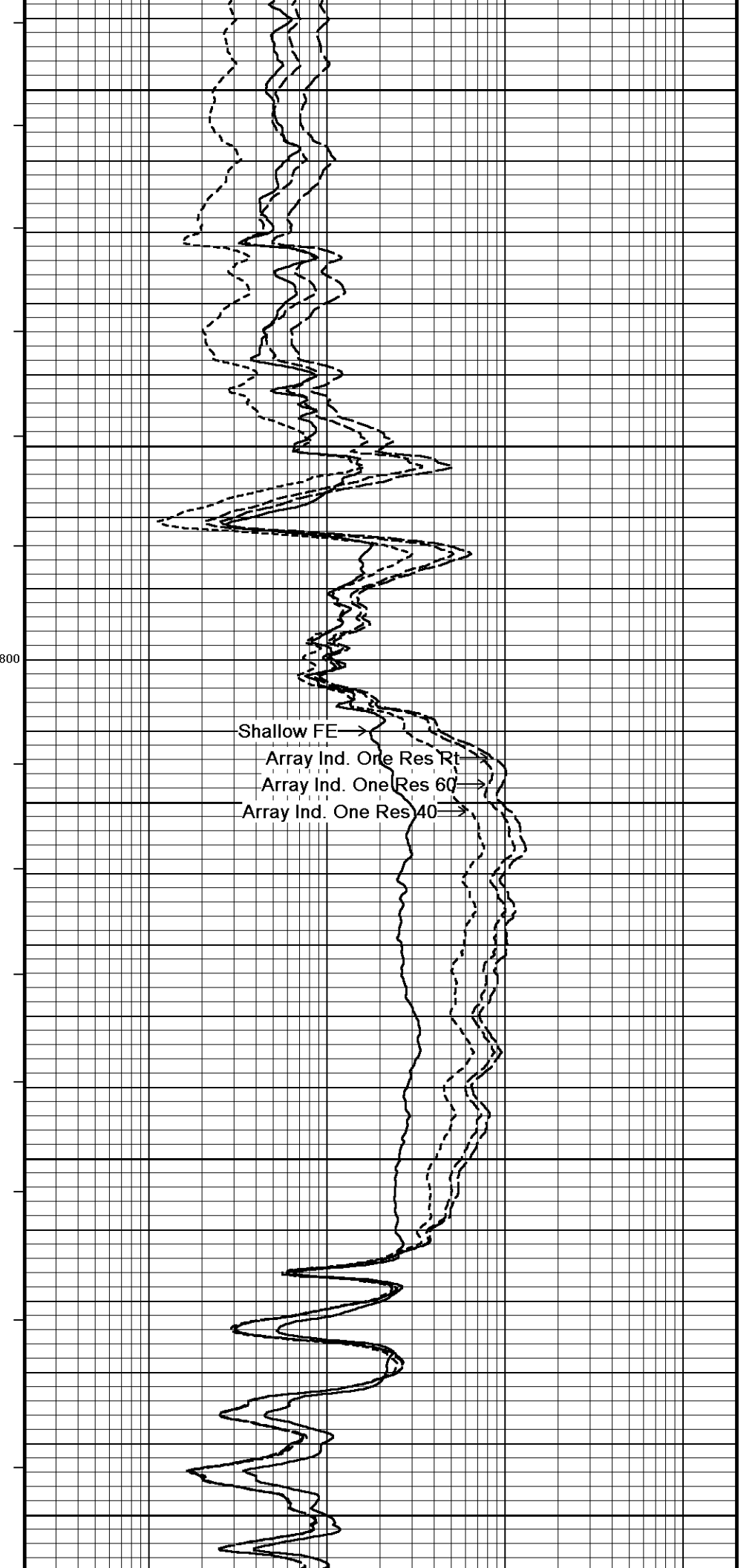
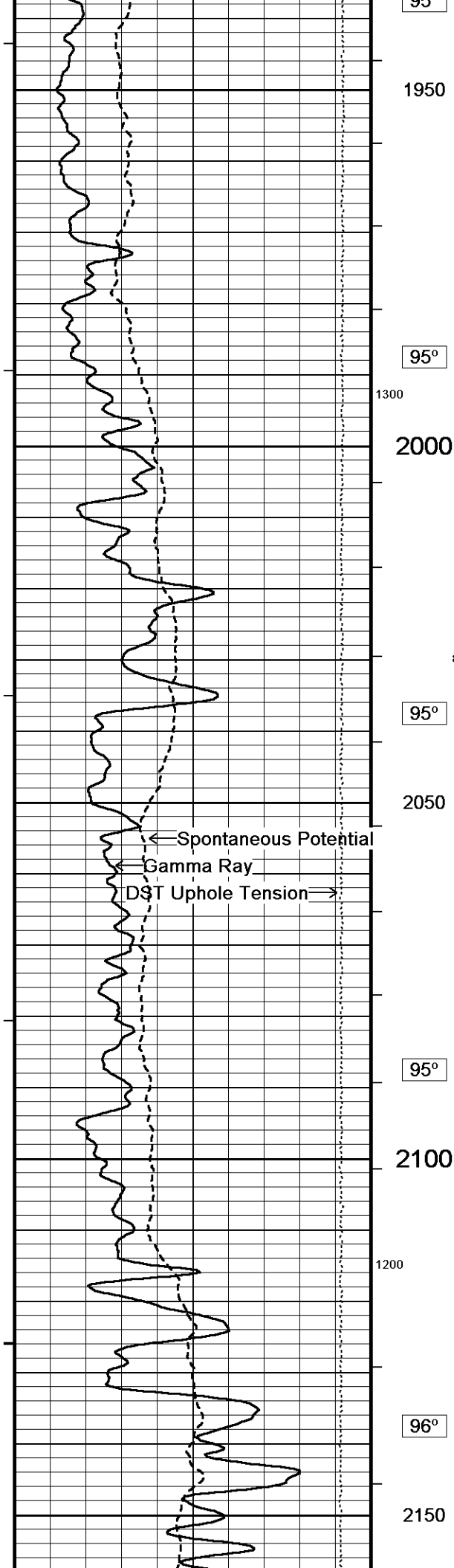
Spontaneous Potential
← Gamma Ray
DST Up-hole Tension →

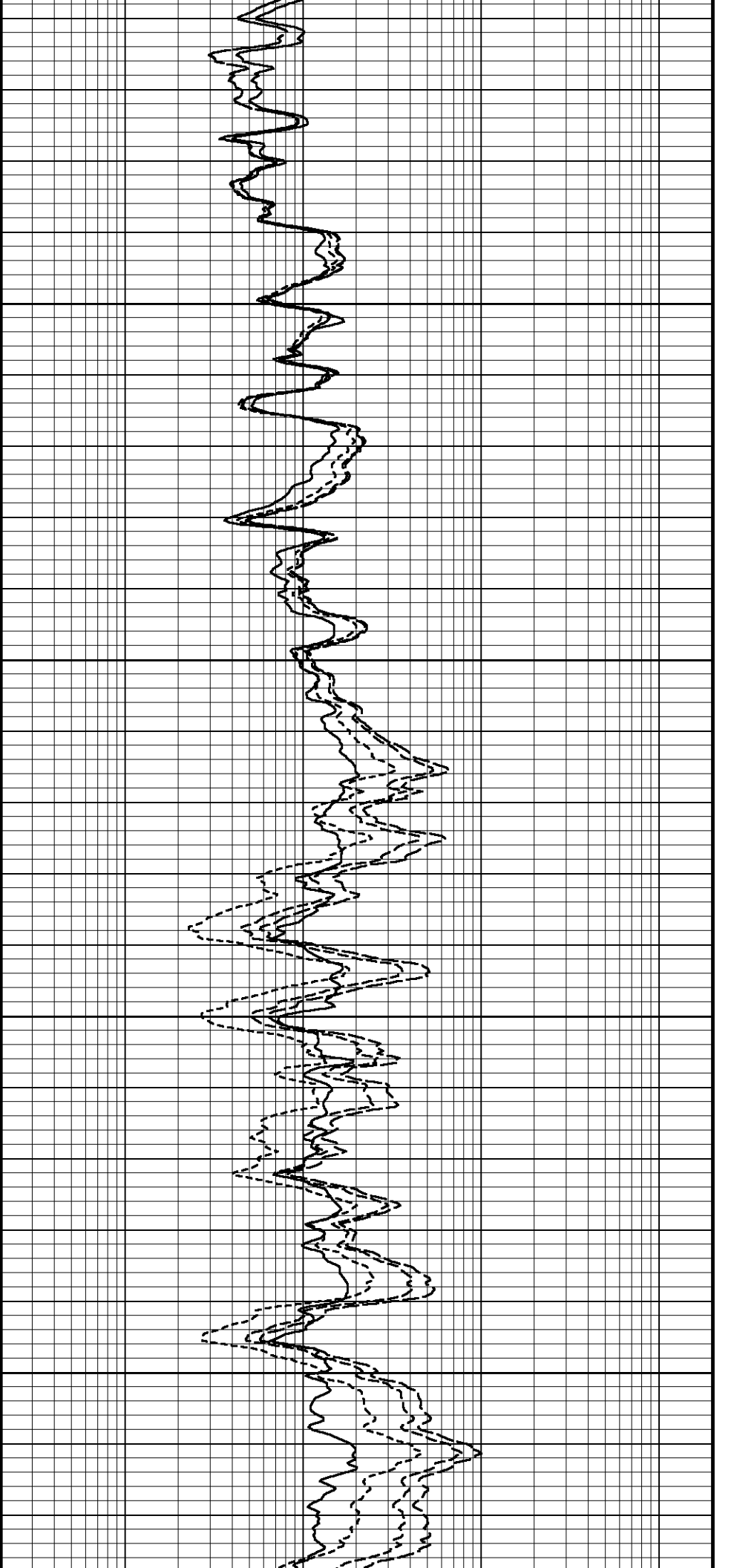
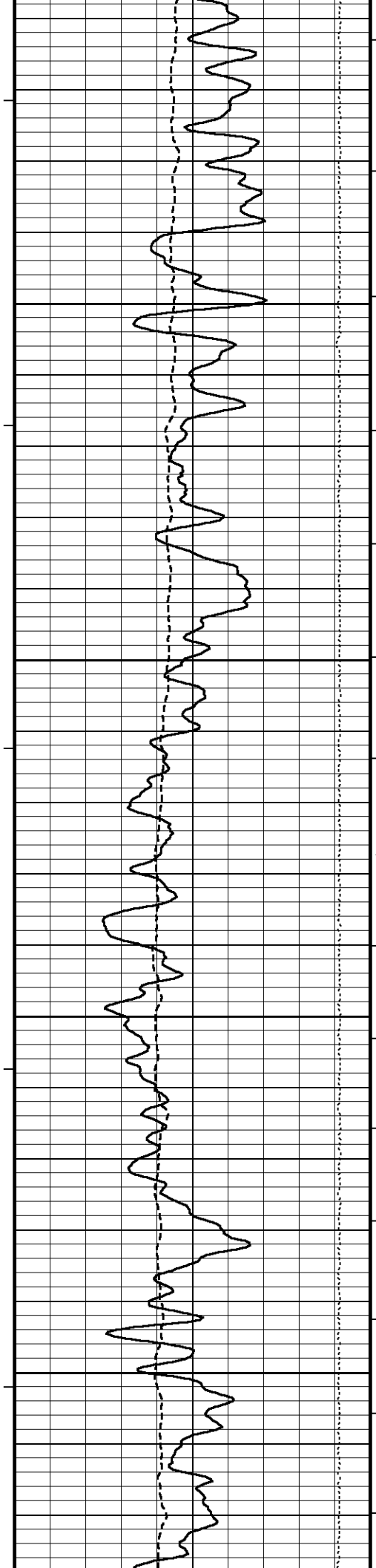
Shallow FE →
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40

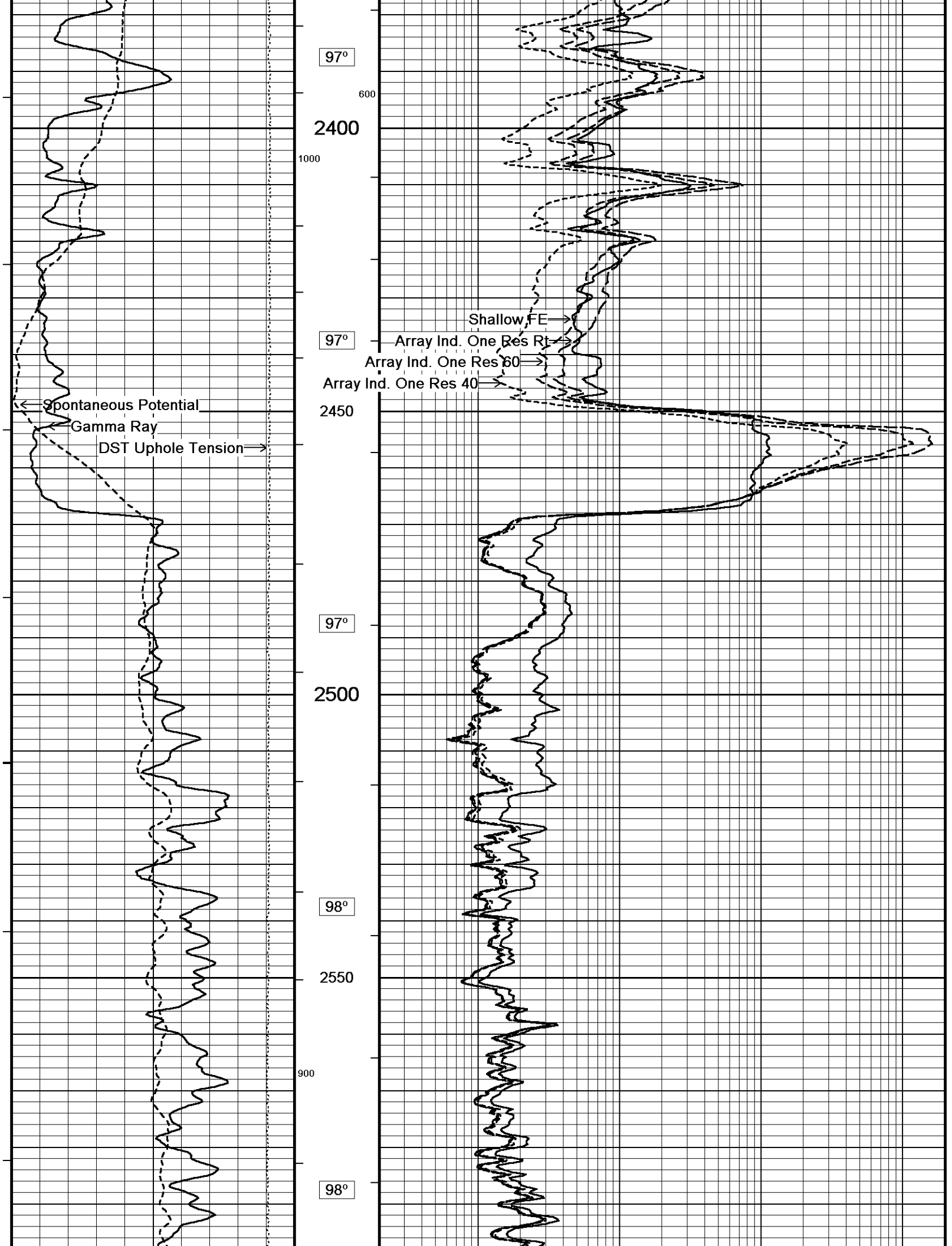


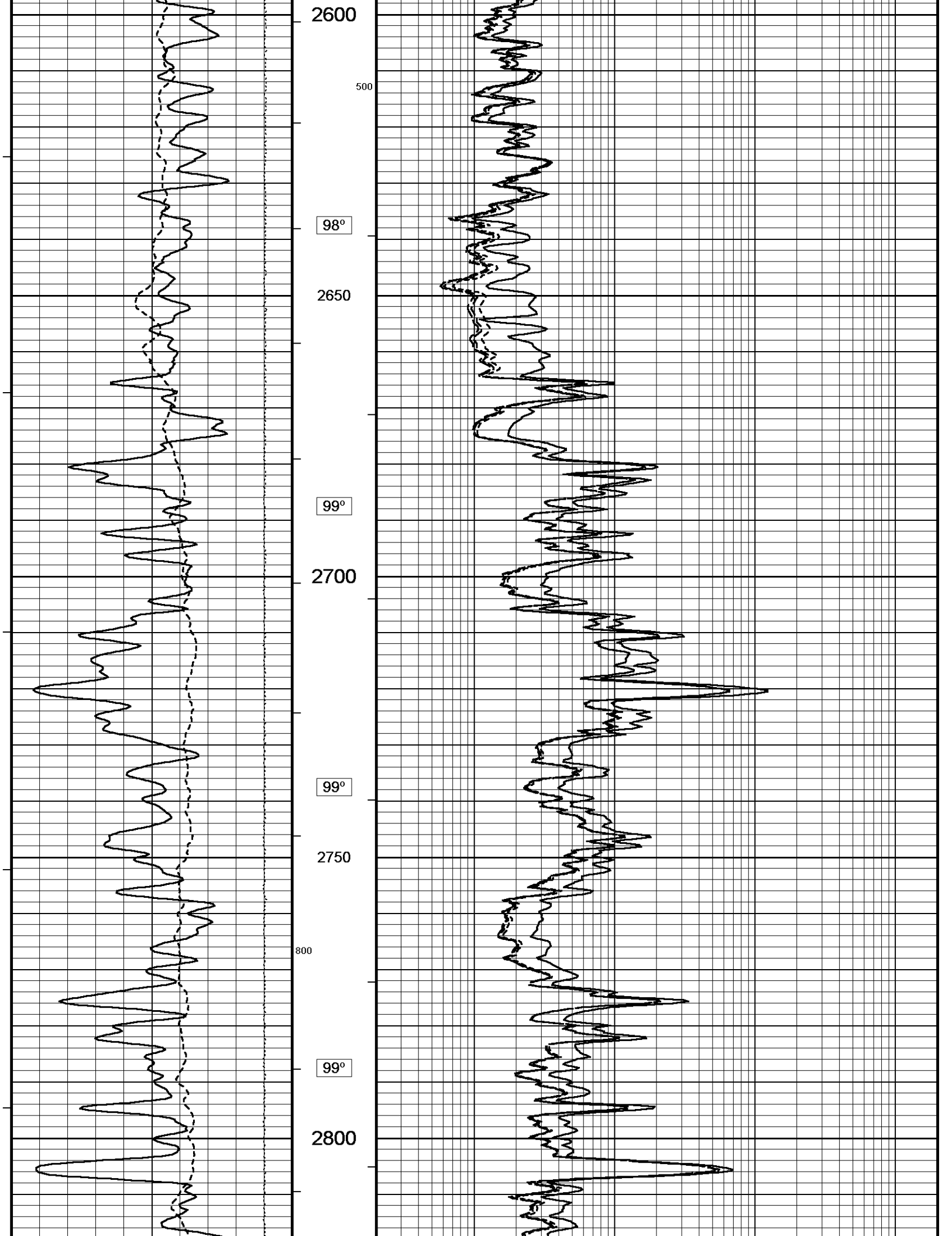


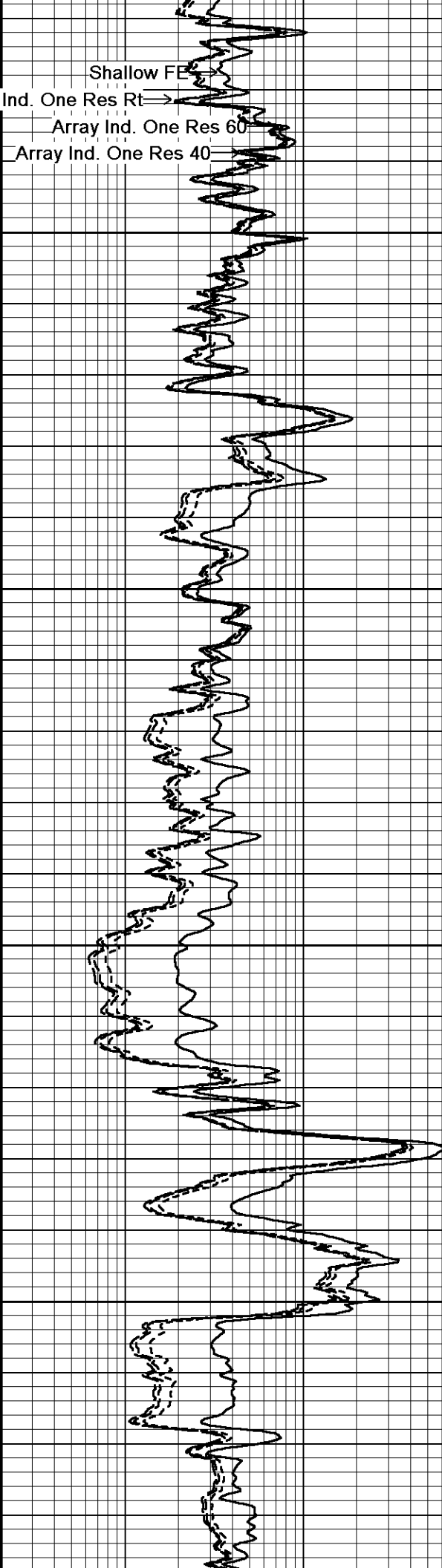
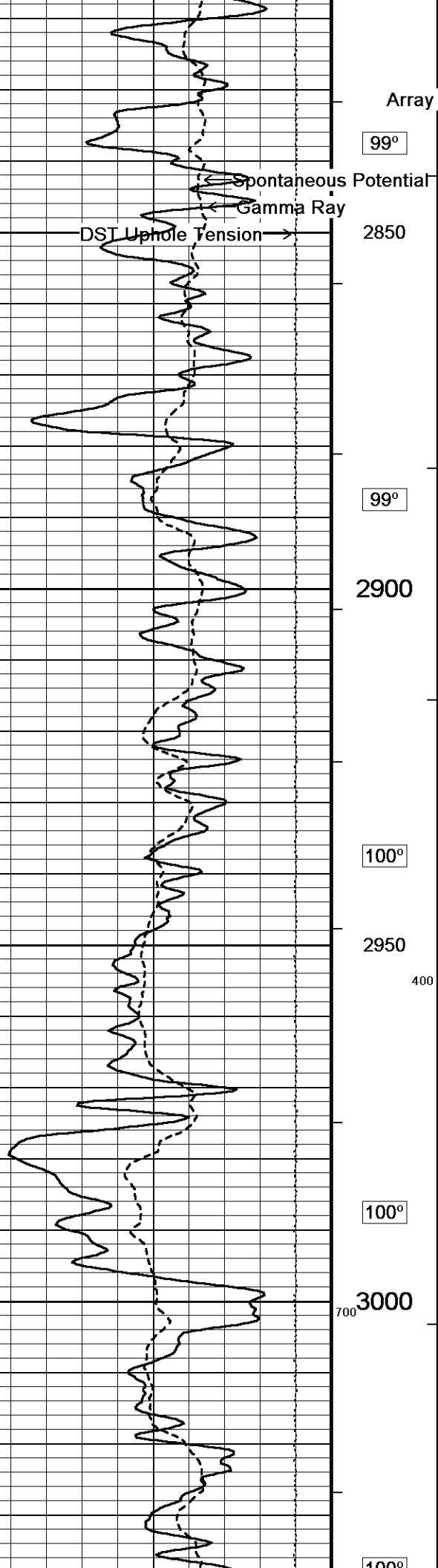


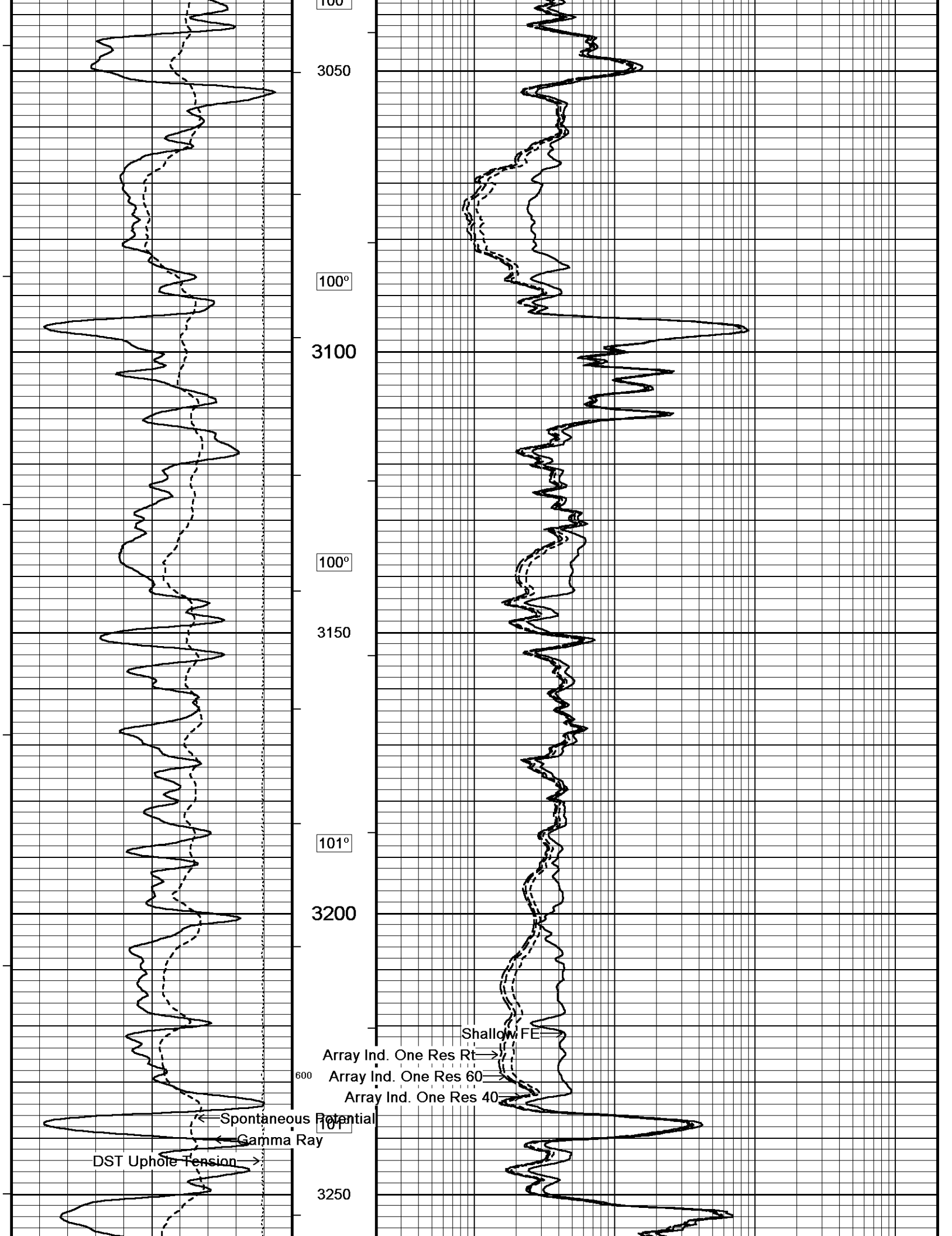


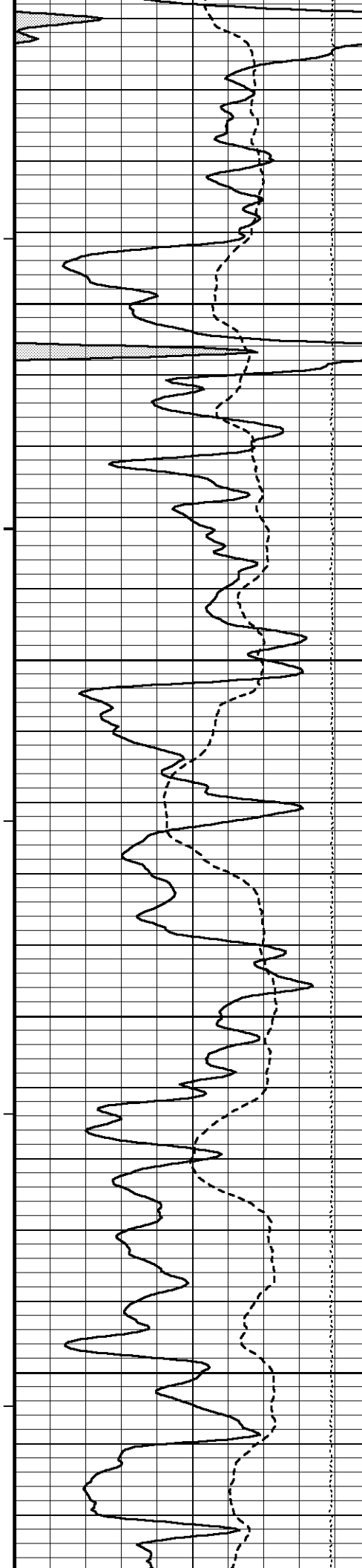












101°

3300

101°³⁰⁰

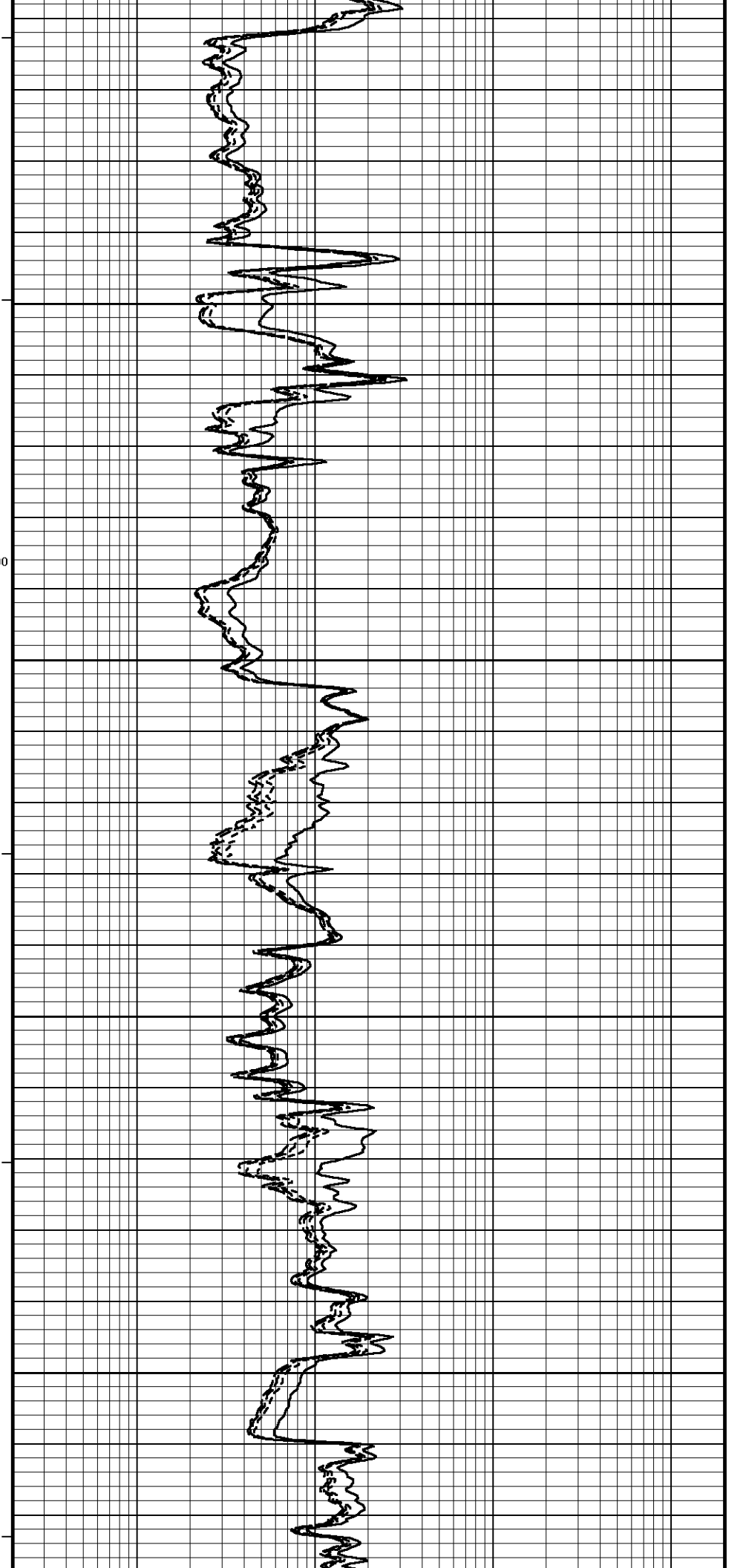
3350

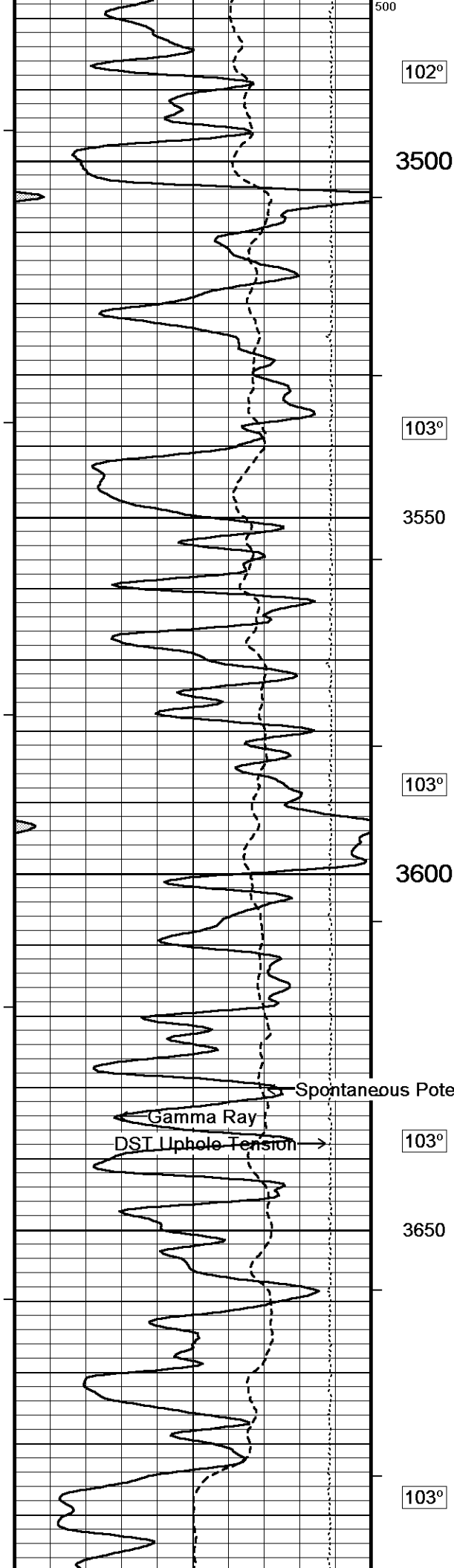
102°

3400

102°

3450





102°

3500

103°

3550

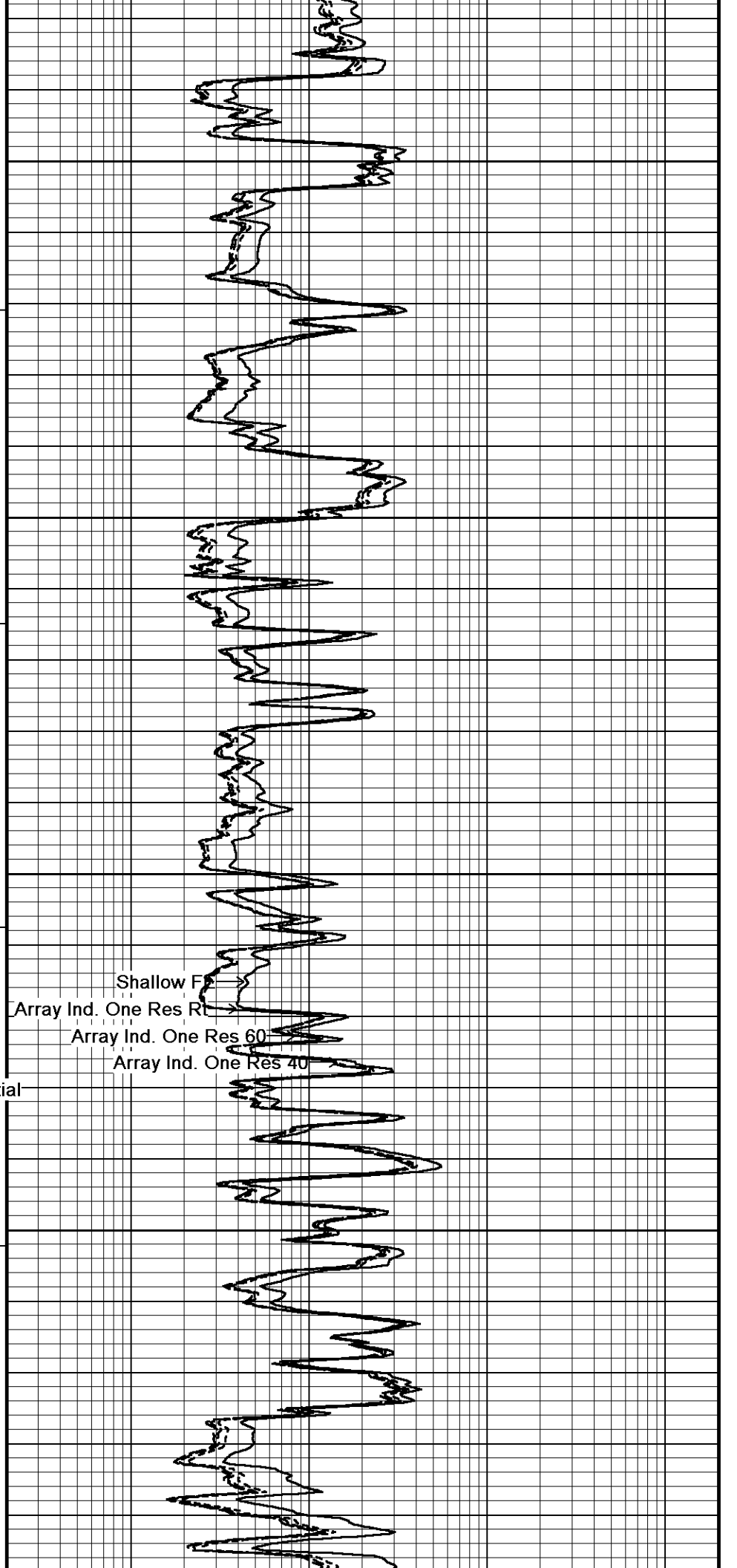
103°

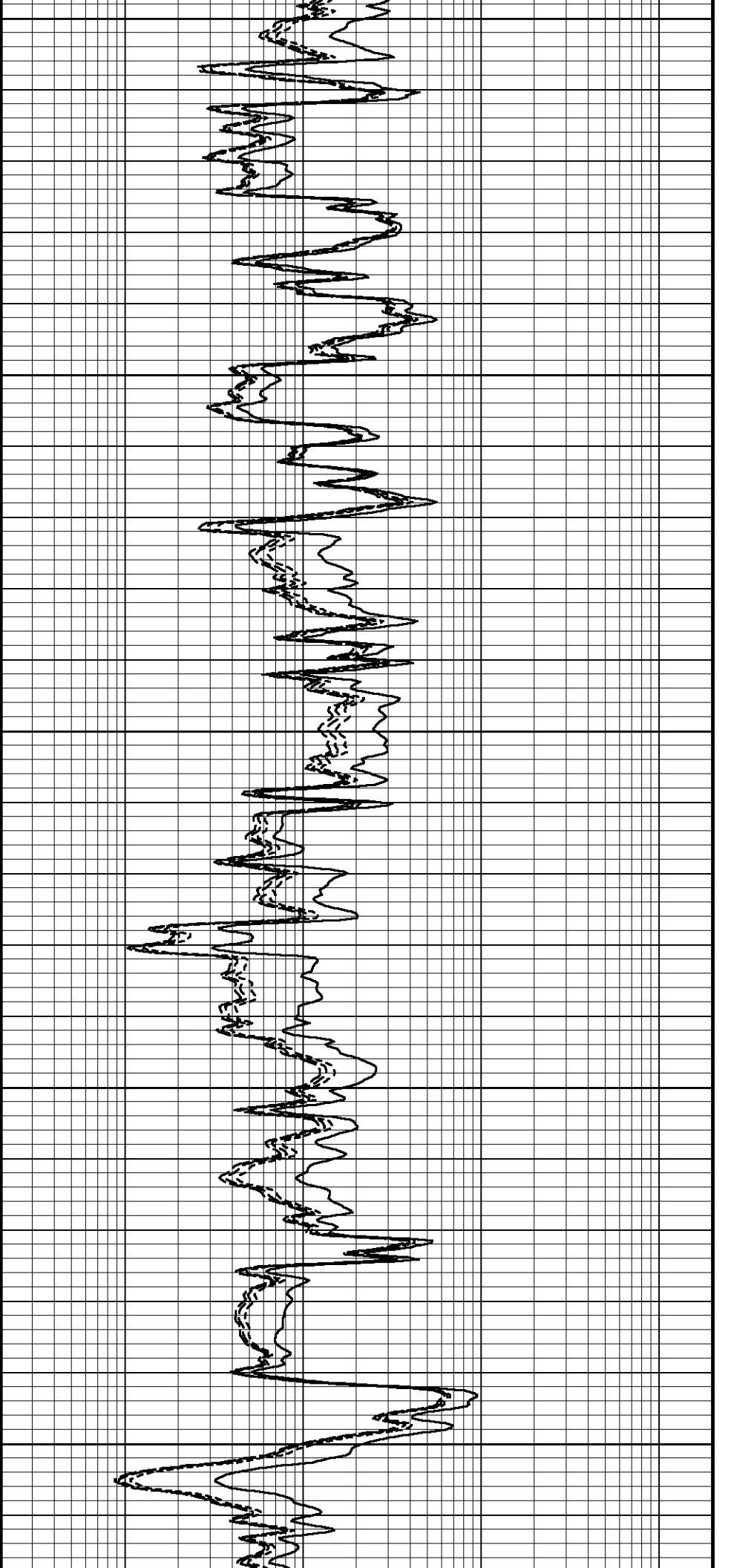
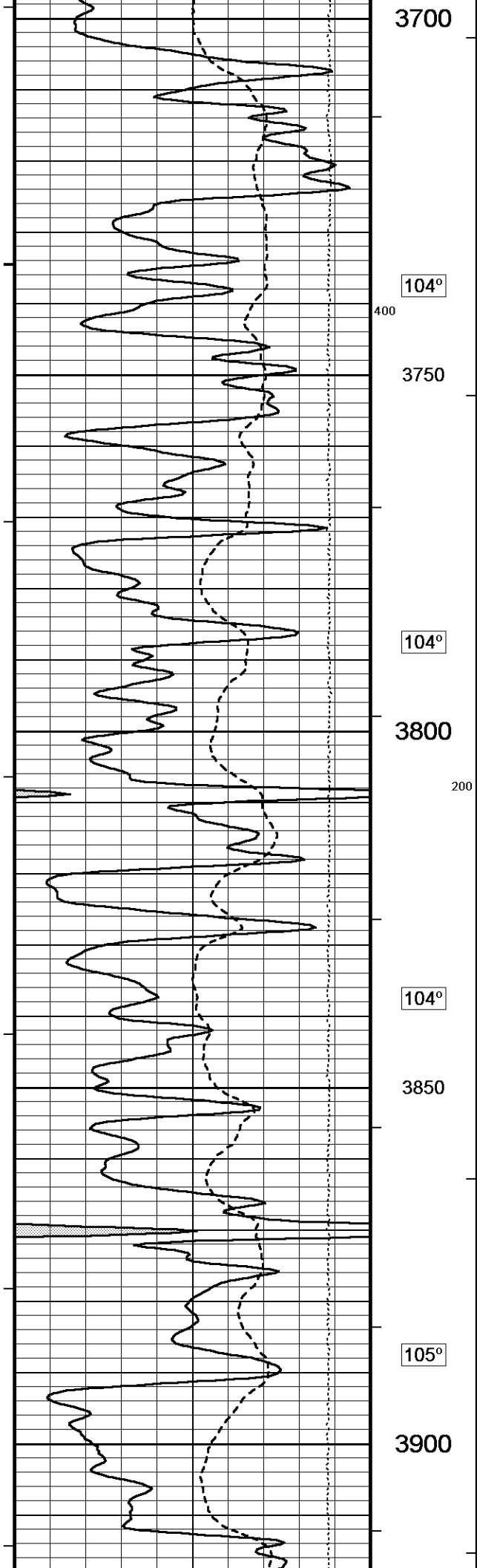
3600

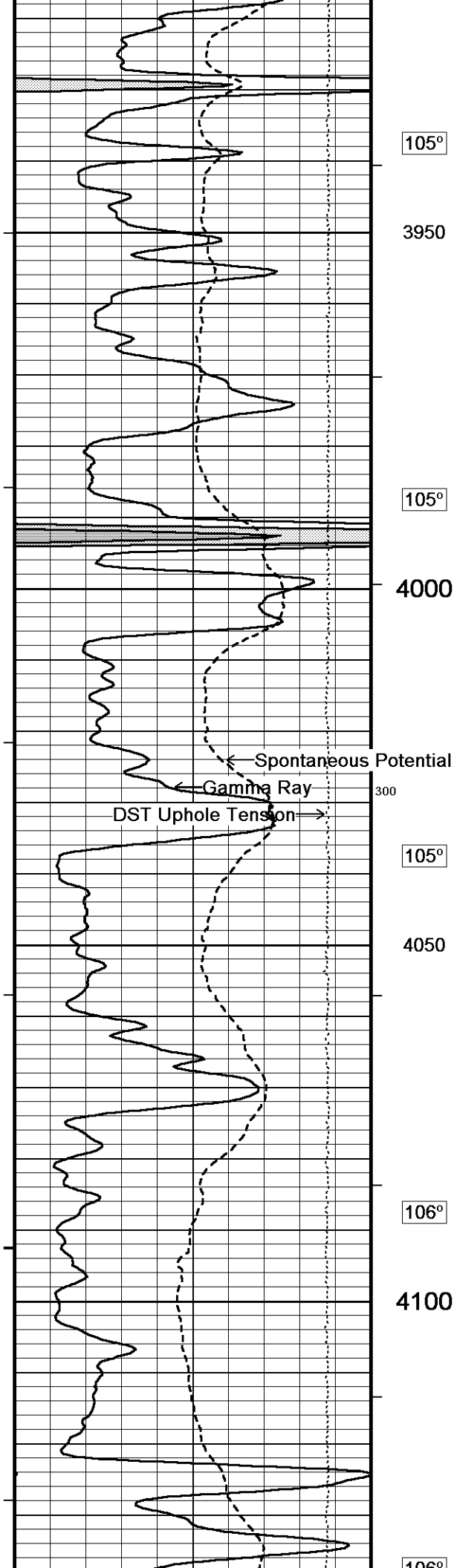
103°

3650

103°







105°

3950

105°

4000

300

105°

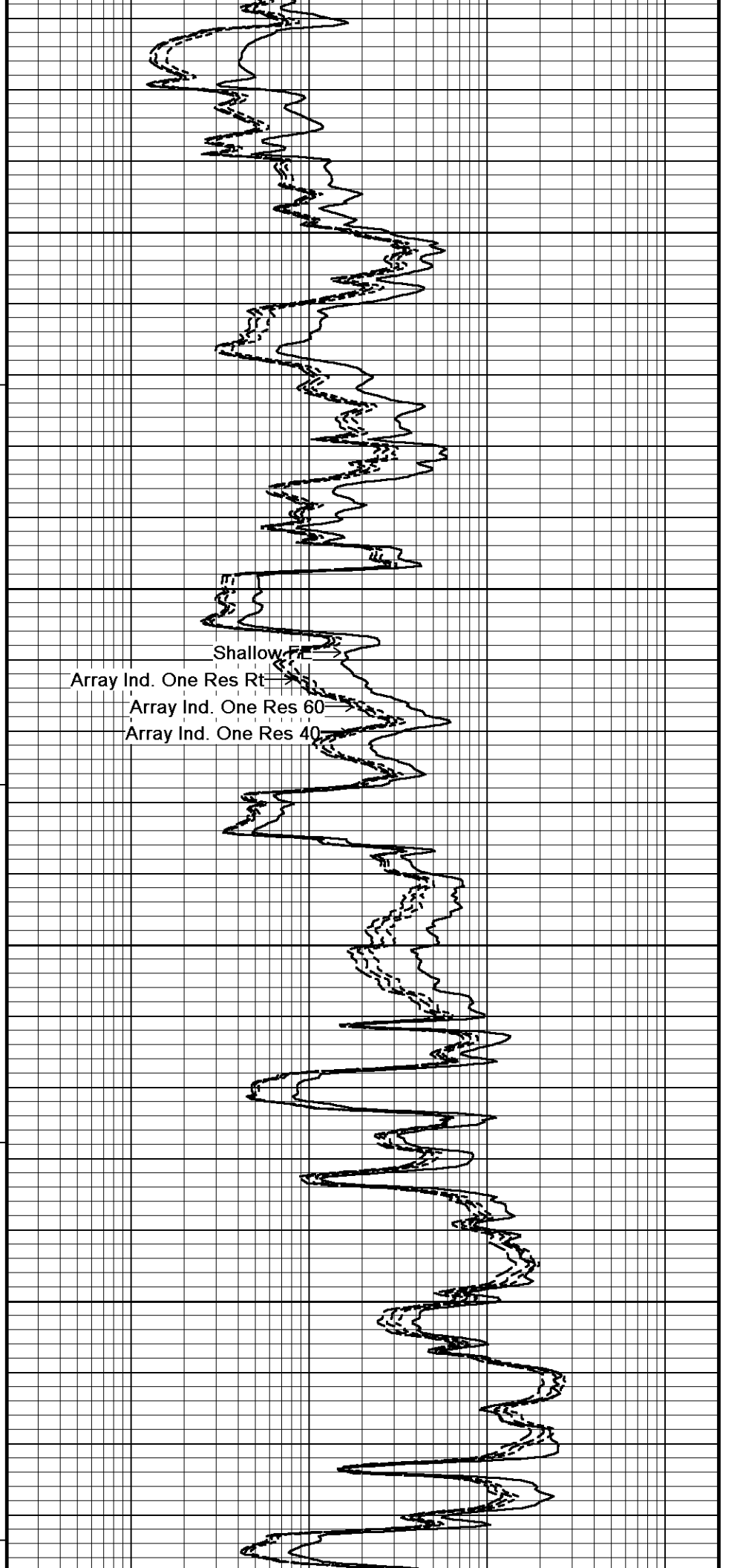
4050

106°

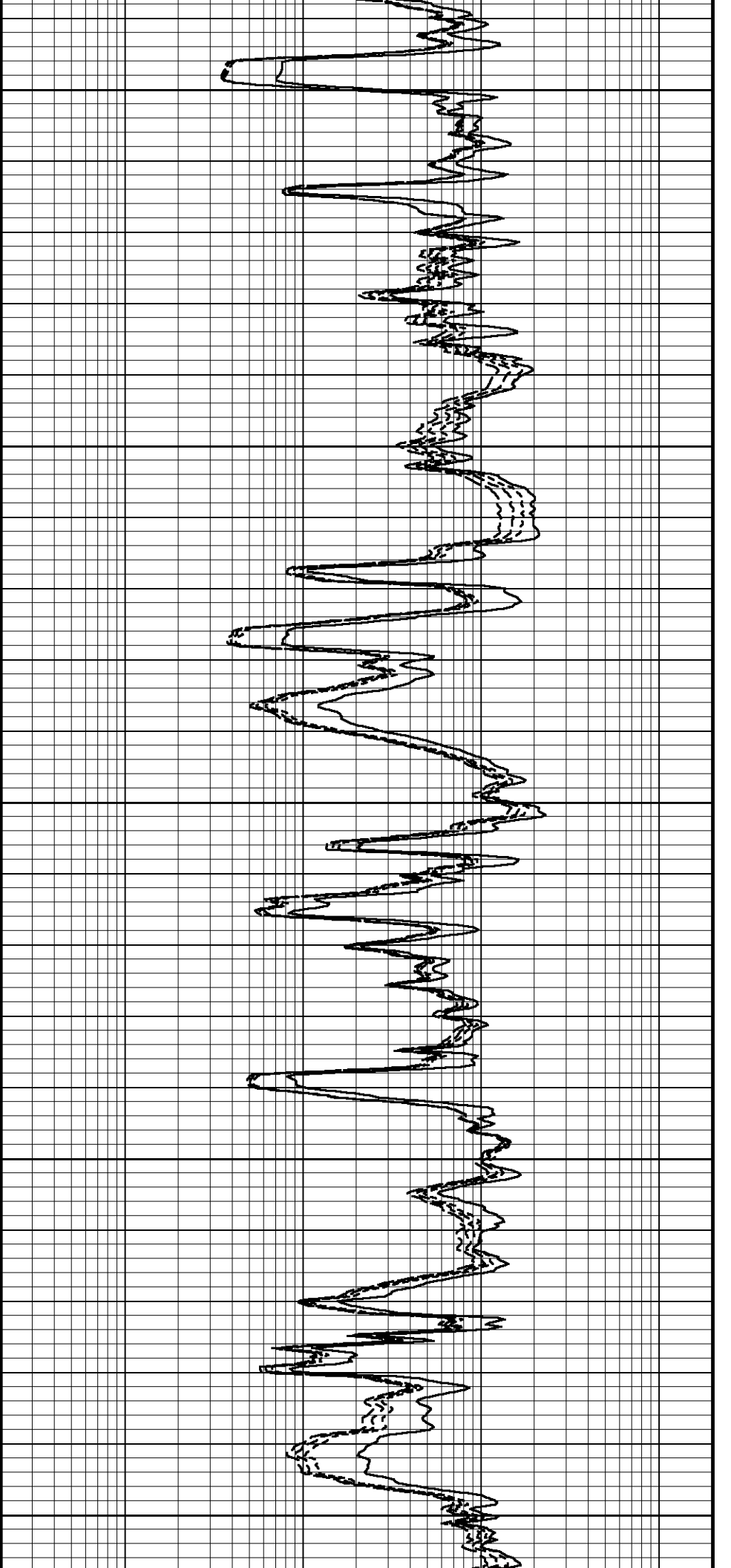
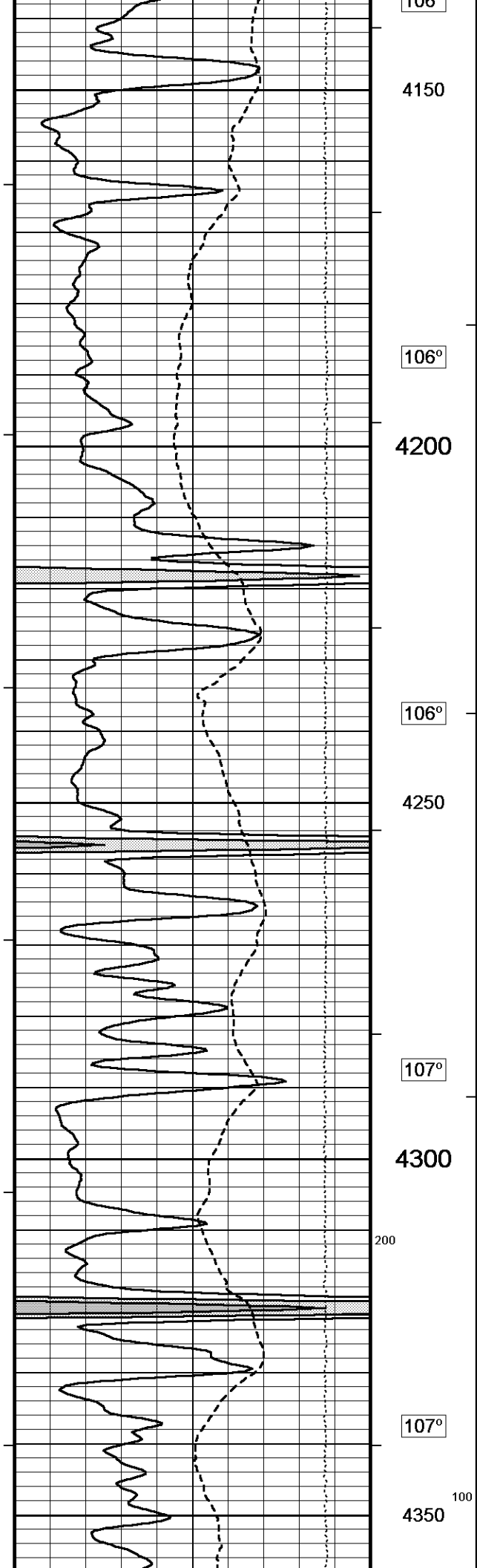
4100

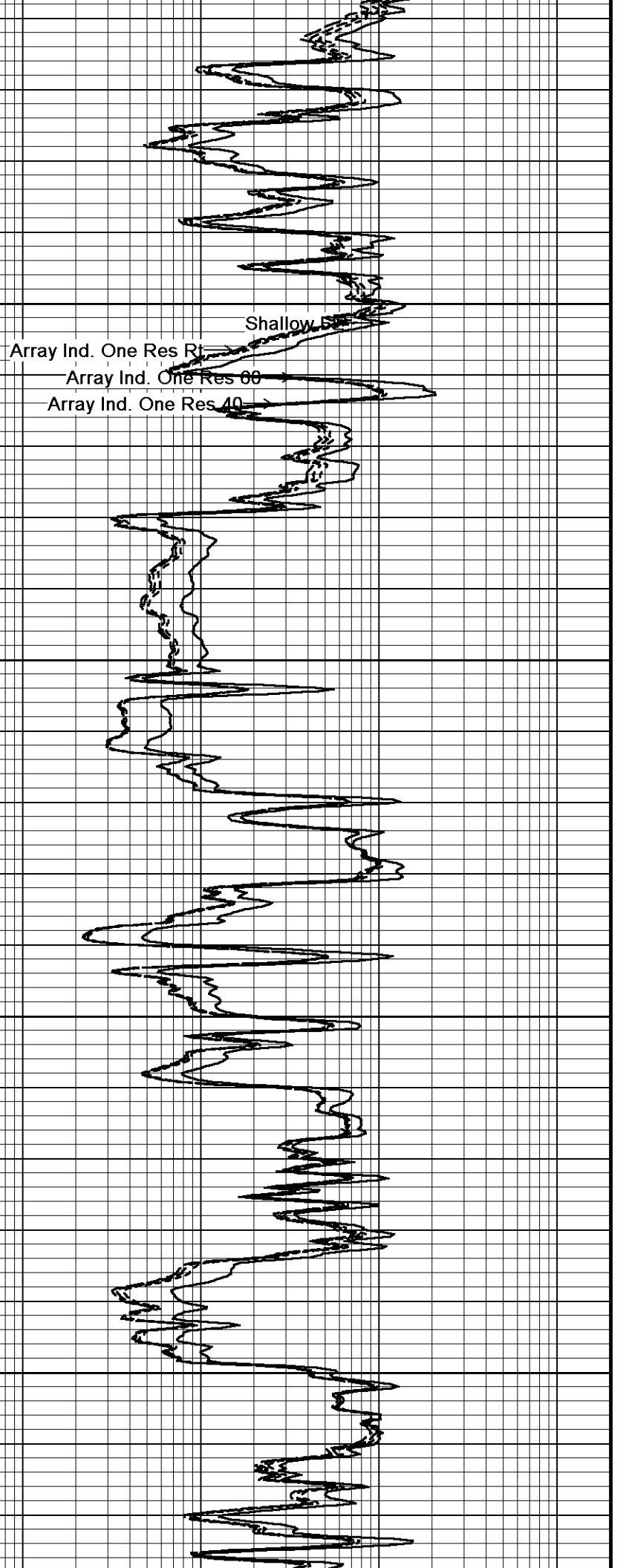
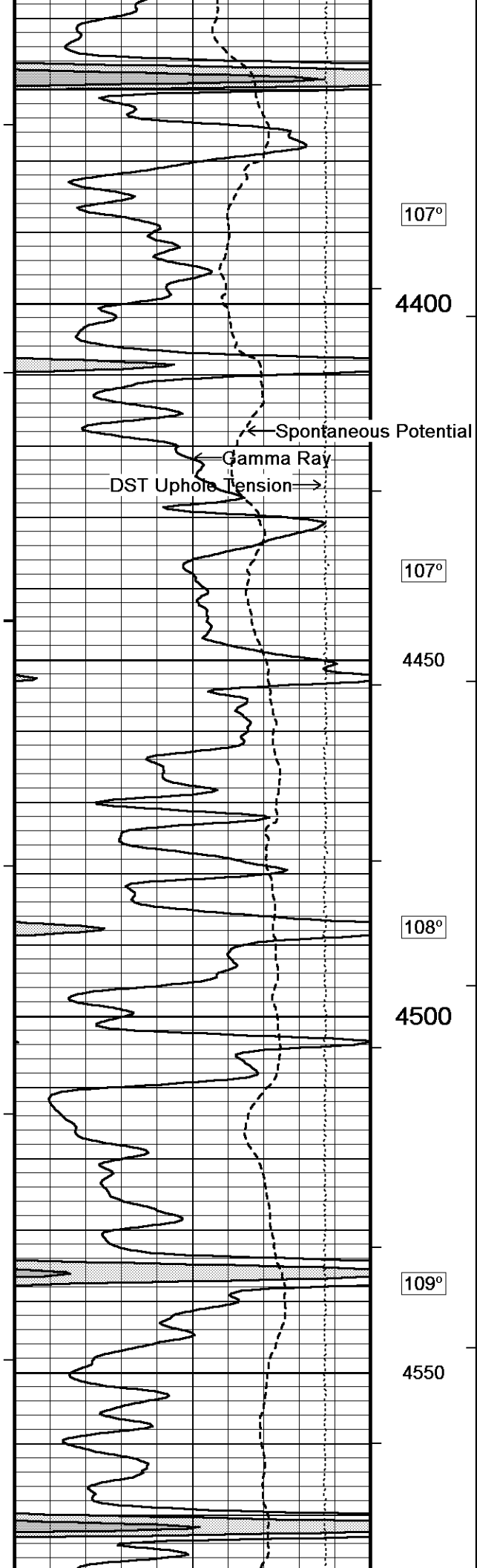
106°

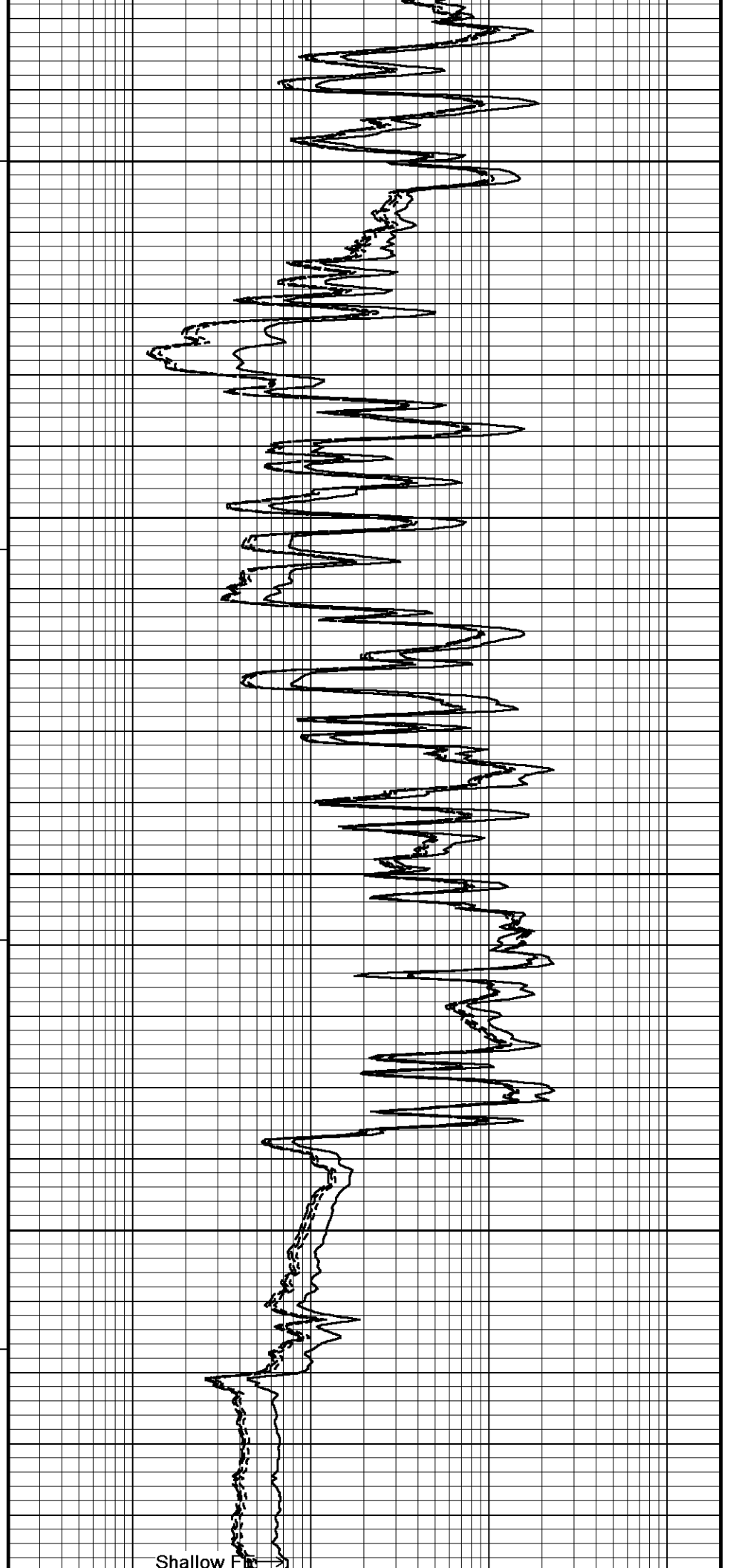
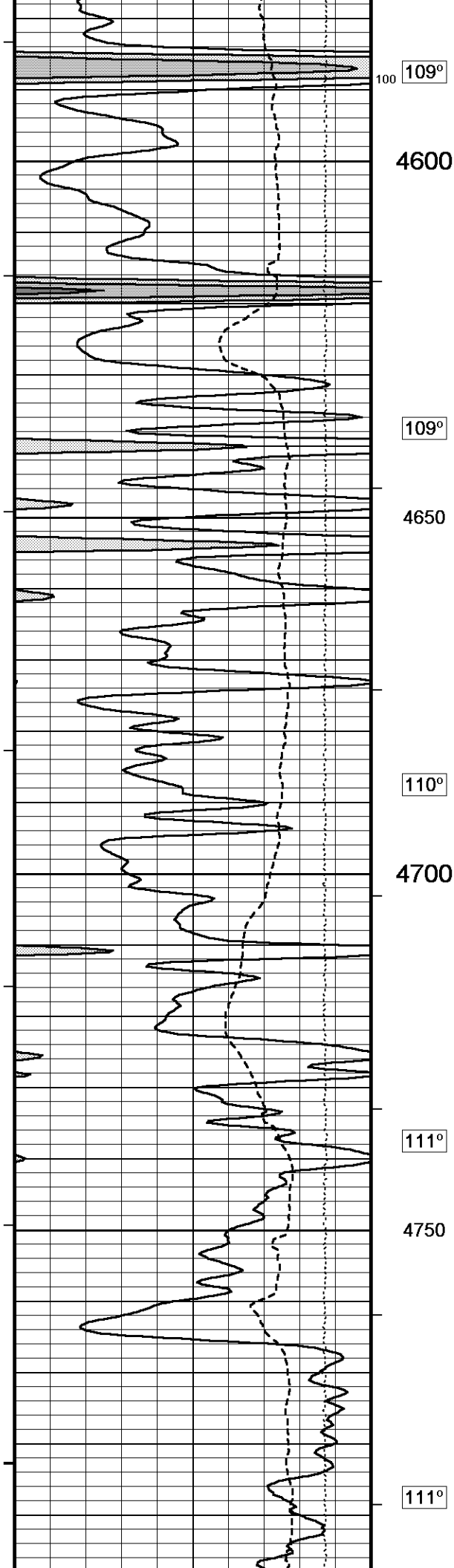
← Spontaneous Potential
← Gamma Ray
DST Uphole Tension →

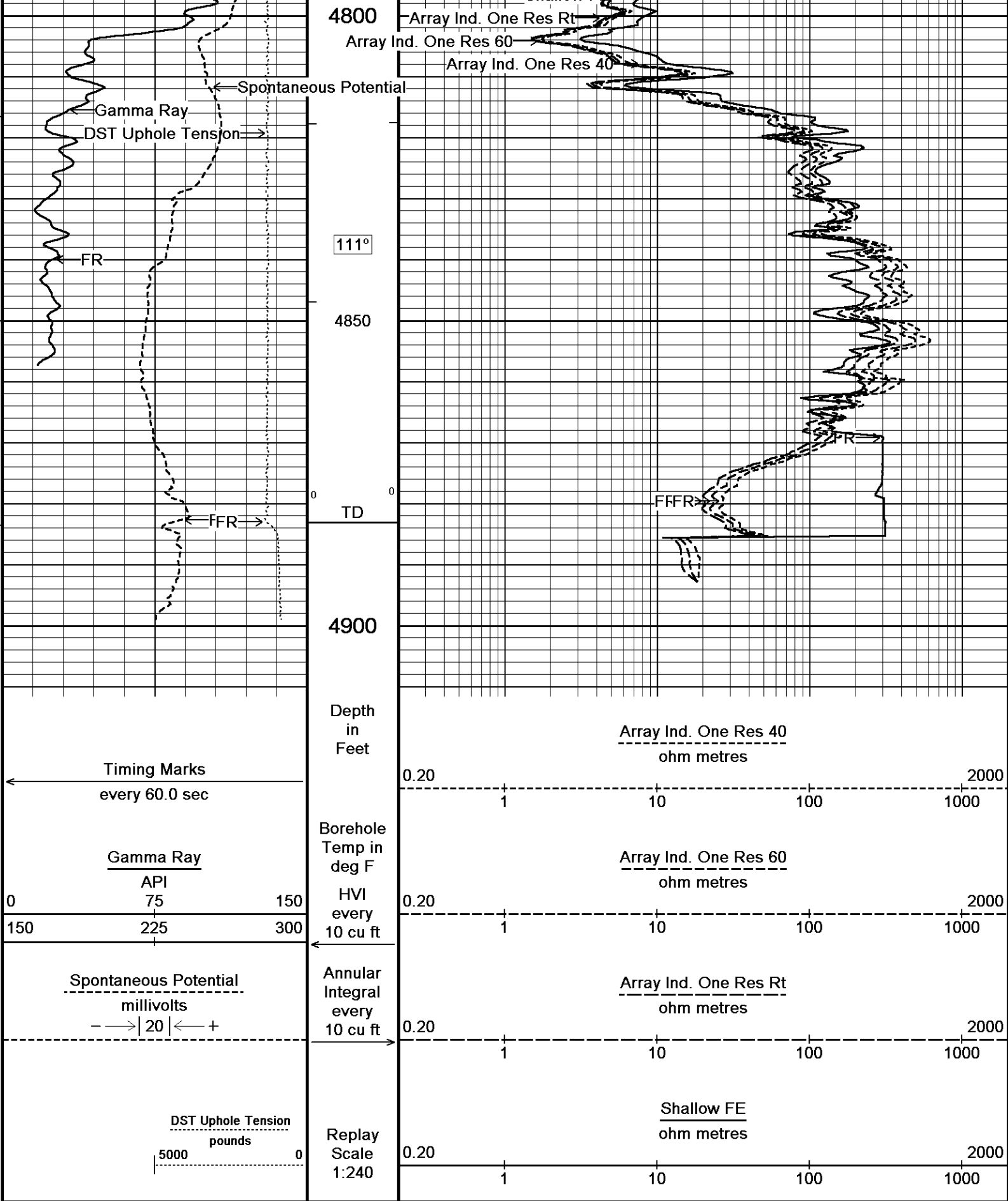


Shallow
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40

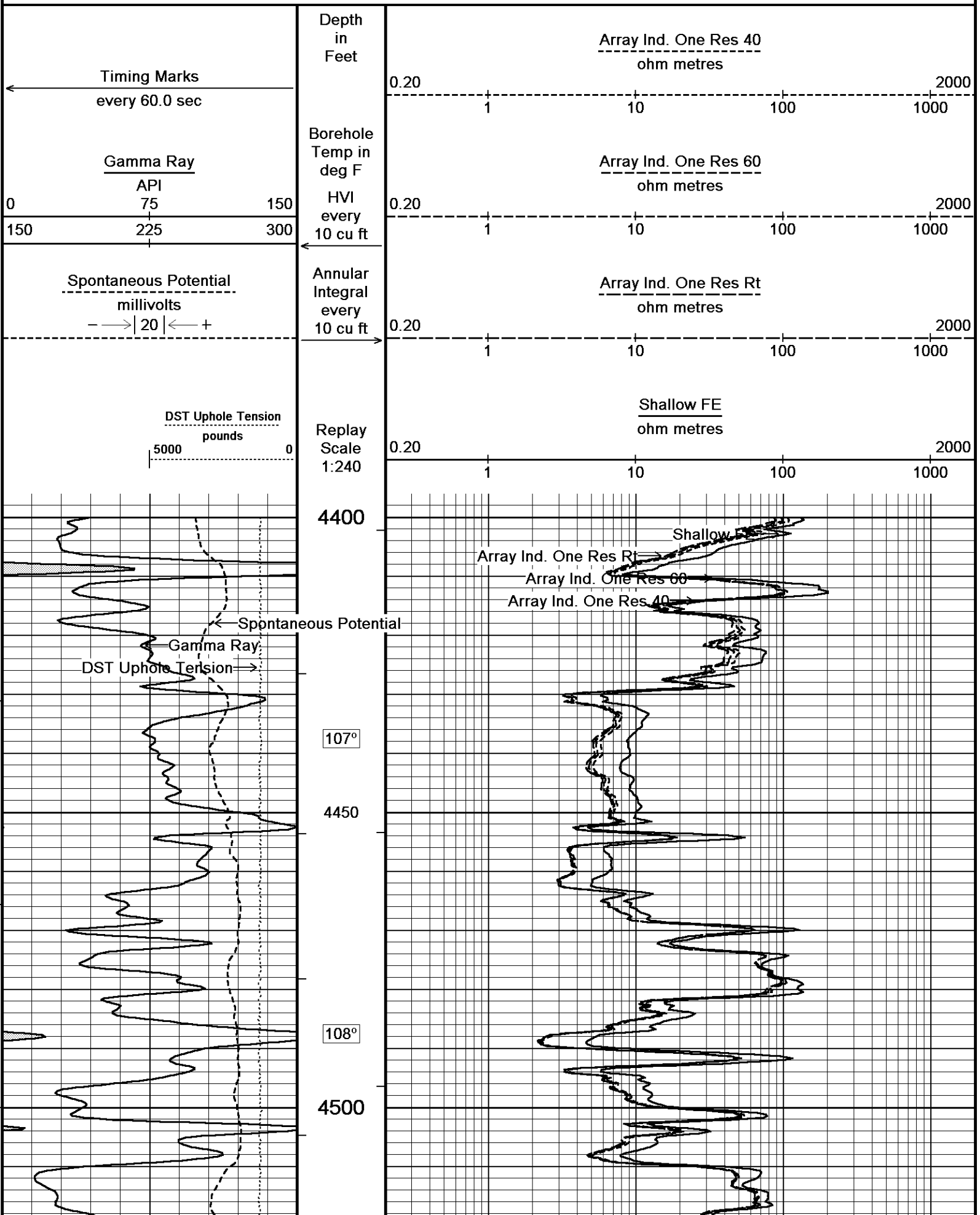


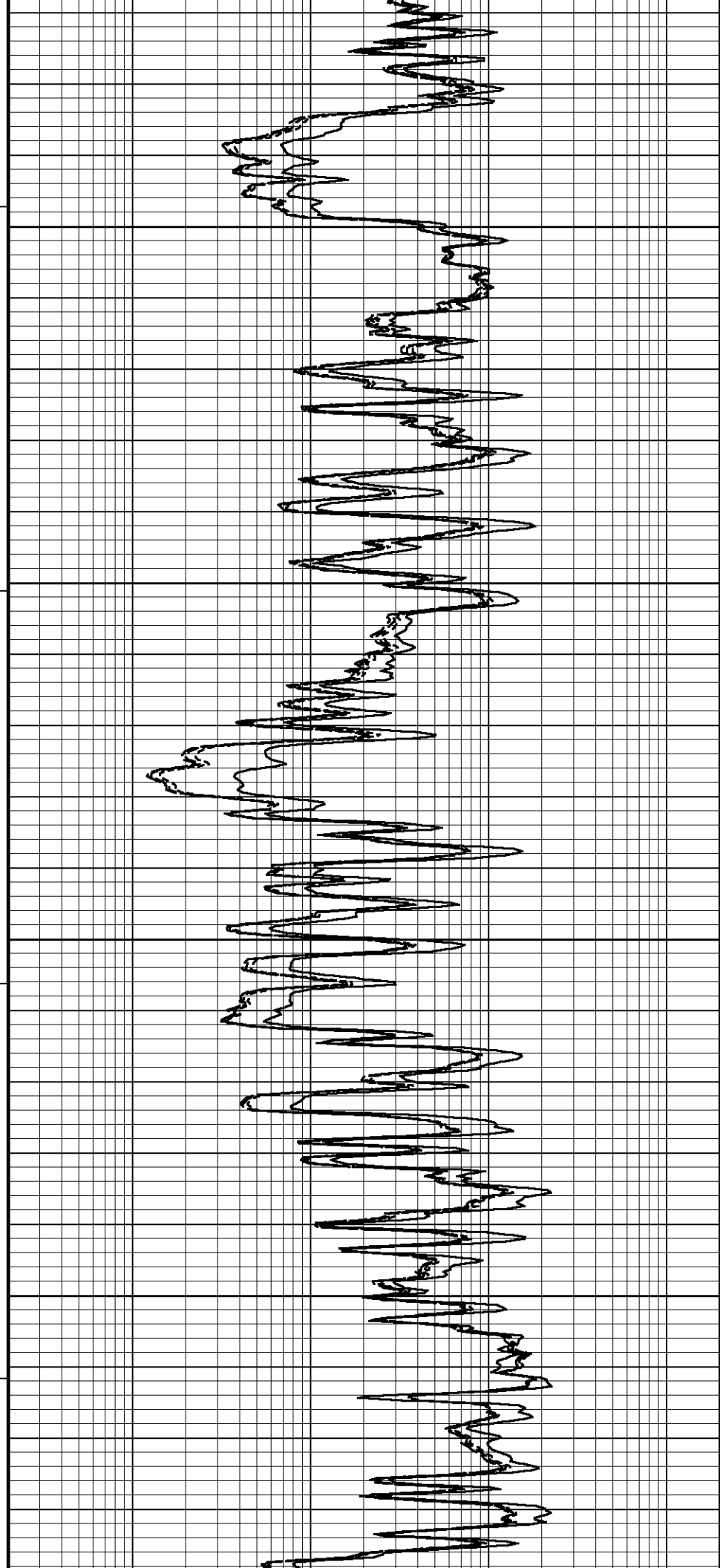
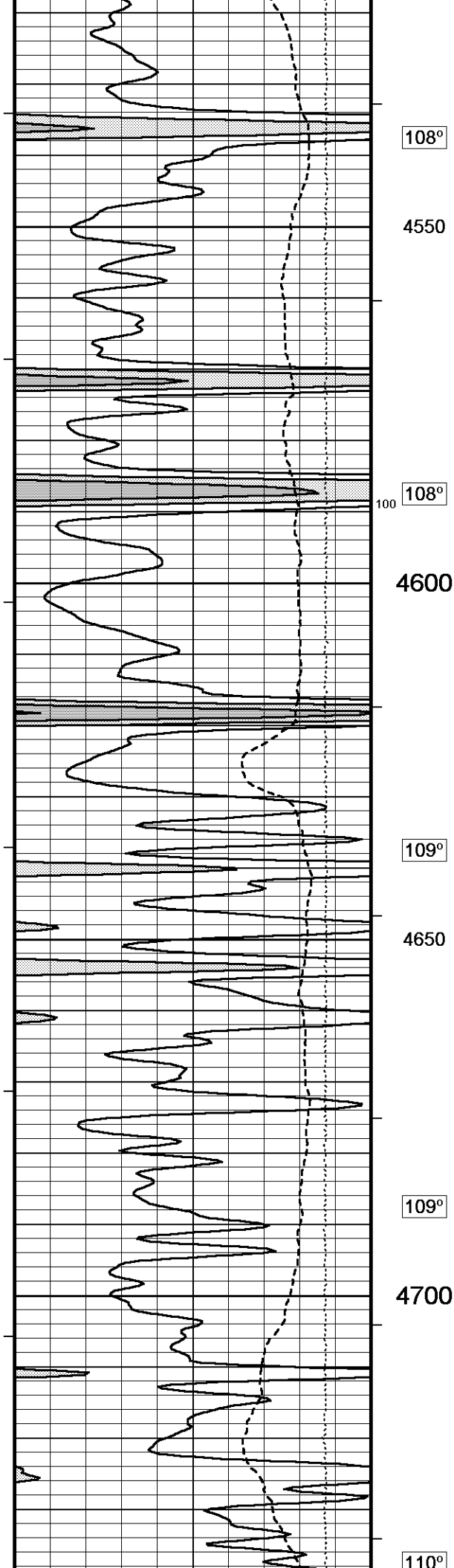


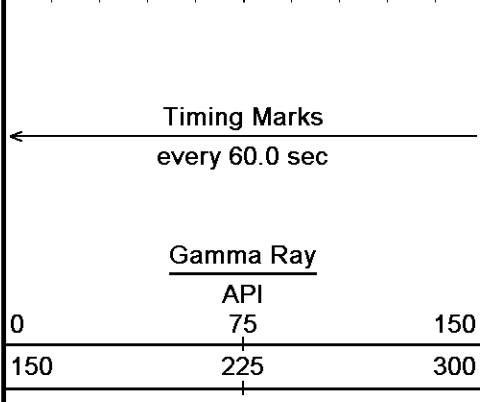
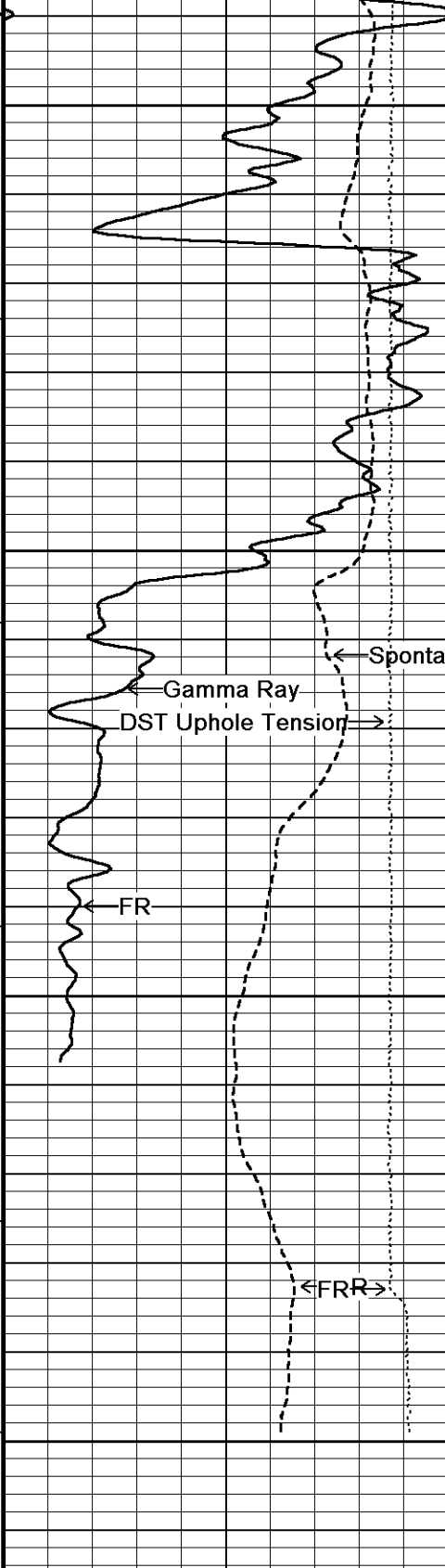




Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 18-SEP-2014 17:15
Filename: C:\Minimus 13.08.2113\Log Data\Shakespeare...\Shakespeare Church of God #2-27 Main.dta
Recorded on 18-SEP-2014 15:17
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113







4750

111°

4800

110°

4850

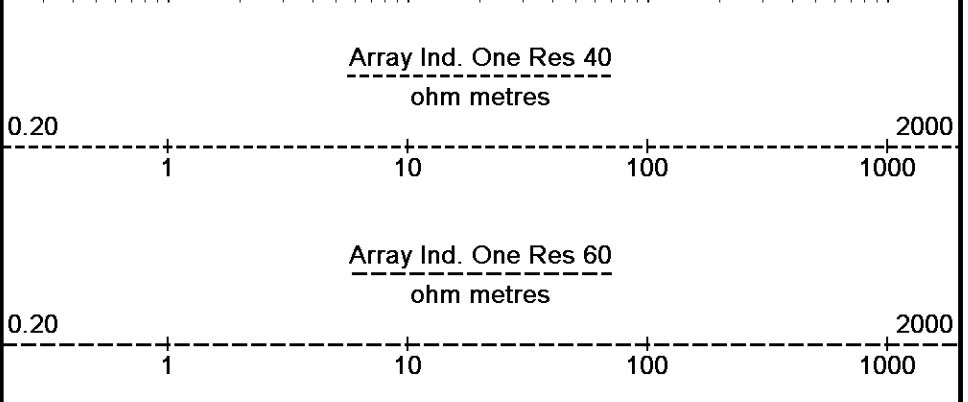
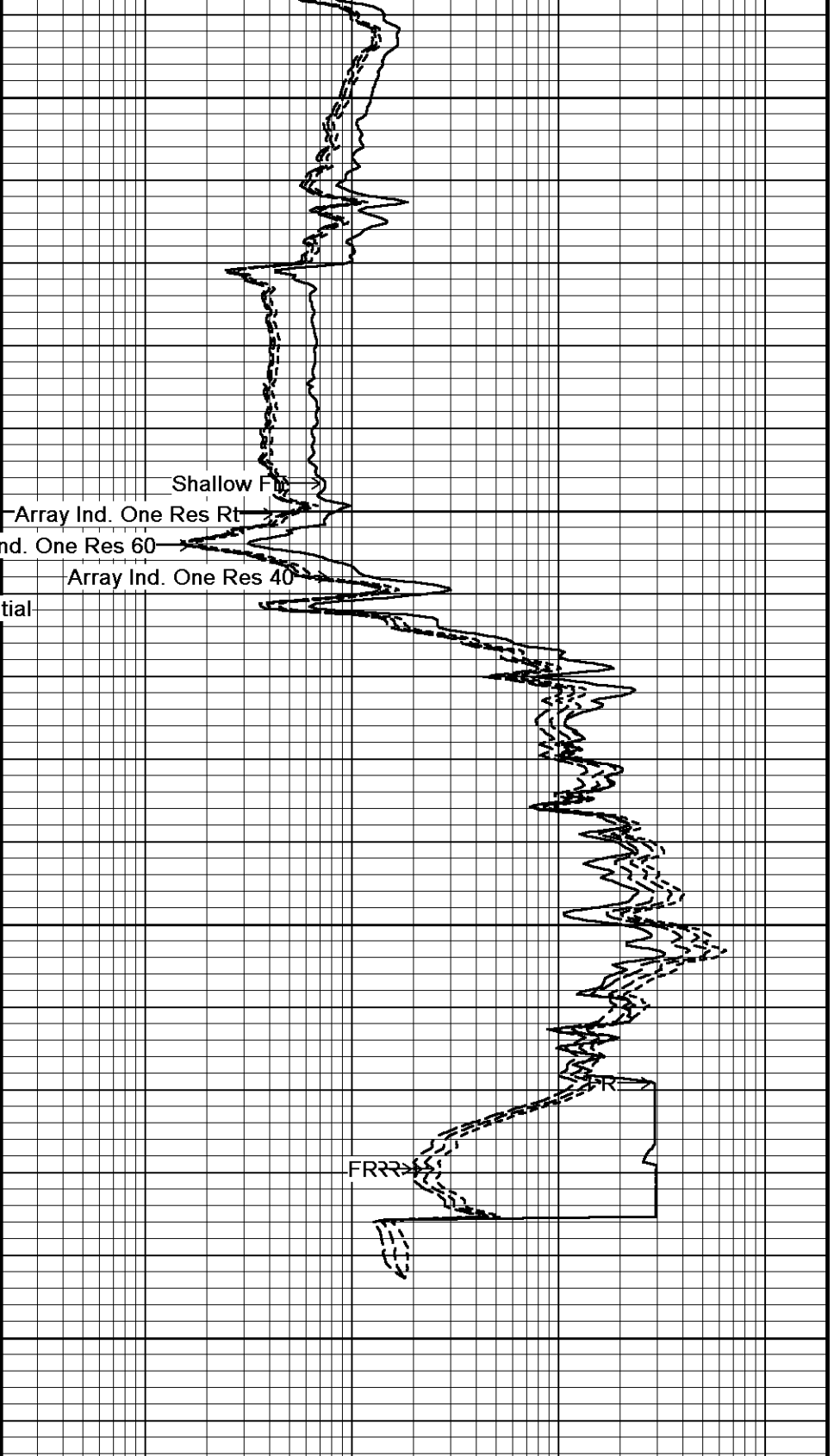
0 TD

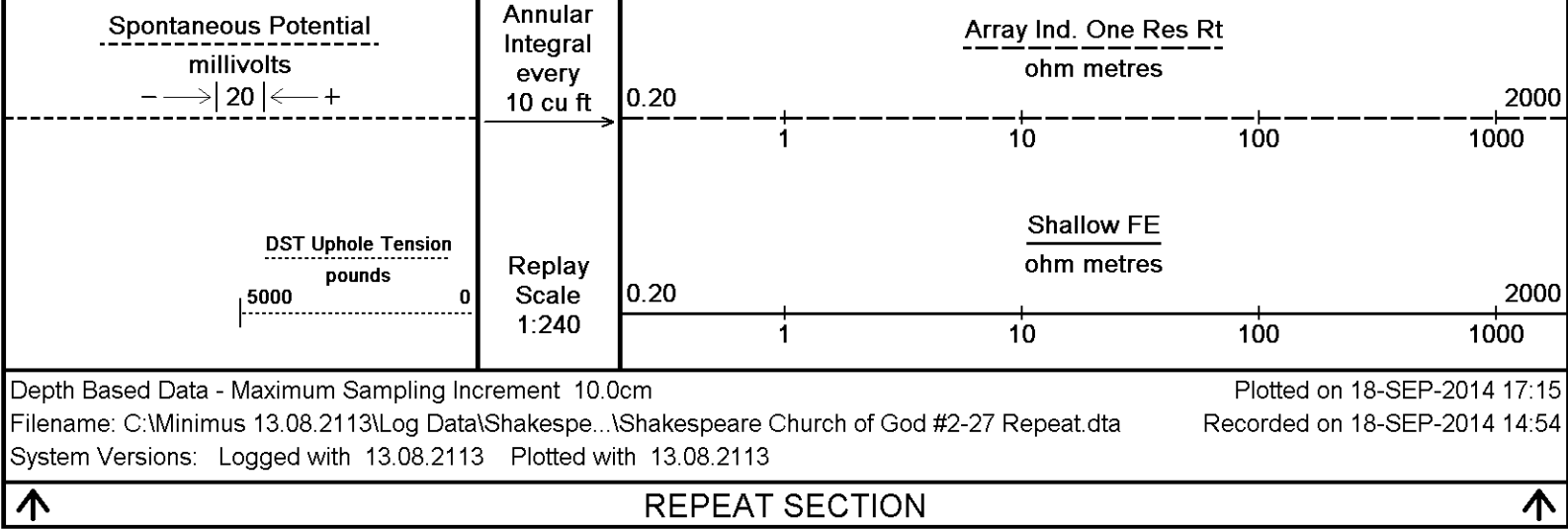
4900

Depth in Feet

Borehole Temp in deg F

HVI every 10 cu ft





BEFORE SURVEY CALIBRATION				
C:\Minimus 13.08.2113\Log Data\Shakespeare Church of God #2-27\Shakespeare Church of God #2-27 Main.dta				
General Constants All 000			Last Edited on 18-SEP-2014,13:21	
General Parameters				
Mud Resistivity	0.600	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	0.610			
RWA Constant M	2.150			
SW/APOR Tool Source	0.000			
FE Calibration MFE-B.J 353			Base Calibration on 16-SEP-2014 15:43	
			Field Check on 16-SEP-2014 15:48	
Base Calibration				
	Measured	Calibrated (ohm-m)		
Reference 1	0.0	0.0		
Reference 2	963.8	126.8		
Base Check		281.1		
Field Check		281.1		
FE Constants MFE-B.J 353			Last Edited on 18-SEP-2014,13:20	
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 178			Base Calibration on 04-SEP-2014,14:15	
			Field Check on 11-SEP-2014 11:11	
Base Calibration				
Test Loop Calibration				
Channel	Low	High	Low	High
1	17.6	484.7	9.3	966.2

2	6.2	391.4	7.6	821.4
3	4.0	264.5	5.2	566.0
4	2.3	135.1	2.6	279.2
Array Temperature		77.0	Deg F	
Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	12.0	3762.9
2	0.0	0.0	29.6	3467.2
3	0.0	0.0	27.2	3014.4
4	0.0	0.0	18.8	2064.8
Deep			15.8	1995.4
Medium			40.3	3955.7
Shallow			45.5	5082.2
Array Temperature		0.0	67.6	Deg F

Induction Constants MAI-A.A 178			Last Edited on 18-SEP-2014,13:20	
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		

Gamma Calibration MCG-D.K 469			Field Calibration on 19-AUG-2014 08:47
	Measured	Calibrated (API)	
Background	68	46	
Calibrator (Gross)	1127	771	
Calibrator (Net)	1059	725	

Gamma Constants MCG-D.K 469			Last Edited on 17-SEP-2014,20:44		
Gamma Calibrator Number	GRC038				
Mud Density	1.10	gm/cc			
Caliper Source for Processing	Density Caliper				
Tool Position	Eccentred				
Concentration of KCl		knpm			

Concentration of KCl	Chloride	kppm
K Mud Type	0.00	%
K Mud Concentration		

High Resolution Temperature Calibration MCG-D.K 469

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

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

High Resolution Temperature Constants MCG-D.K 469

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

Pre-filter Length 11

SP Calibration MCG-D.K 469

Field Calibration on 12-AUG-2014 12:46

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

Caliper Calibration MPD-C.A 216

Base Calibration on 04-SEP-2014 11:25

Field Calibration on 11-SEP-2014 11:15

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	17824	3.99
2	27984	5.98
3	38032	7.97
4	47728	9.86
5	58896	11.92
6	N/A	N/A

Field Calibration

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

DOWNHOLE EQUIPMENT

C:\Minimus 13.08.2113\Log Data\Shakespeare Church of God #2-27\Shakespeare Church of God #2-27 Main.dta

3/8" Triple Cone Cable Head (MCB C A)
MCB-C.A 234 LG: 1.58 ft WT: 15.4 lb OD: 2.240 in

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

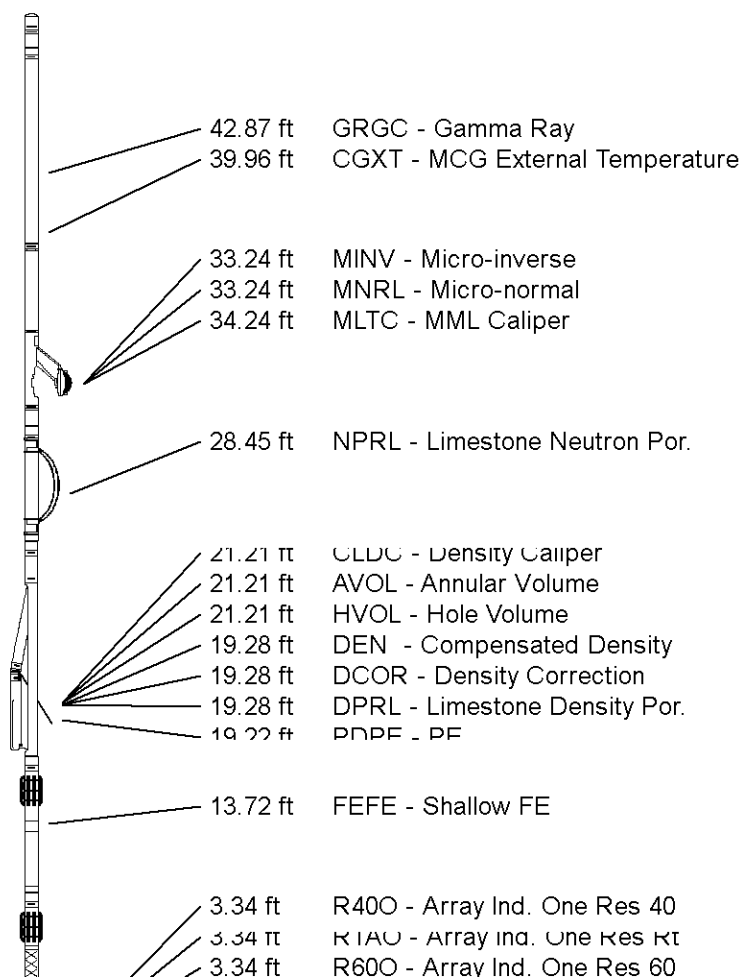
Compact Micro-log
MML-A 3 LG: 7.97 ft WT: 81.6 lb OD: 2.240 in

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-B.J 353 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Induction
MAI-A.A 178 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in



Total Length: 49.73 ft Weight: 399.0 lb

0.23 ft SPCG - Spontaneous Potential
Tool Zero (0.13ft from bottom)
-0.13 ft SMTU - DST Uphole Tension
All measurements relative to tool zero.

COMPANY SHAKESPEARE OIL CO., INC.
WELL CHURCH OF GOD #2-27
FIELD PENCE
PROVINCE/COUNTY SCOTT
COUNTRY/STATE U.S.A. / KANSAS

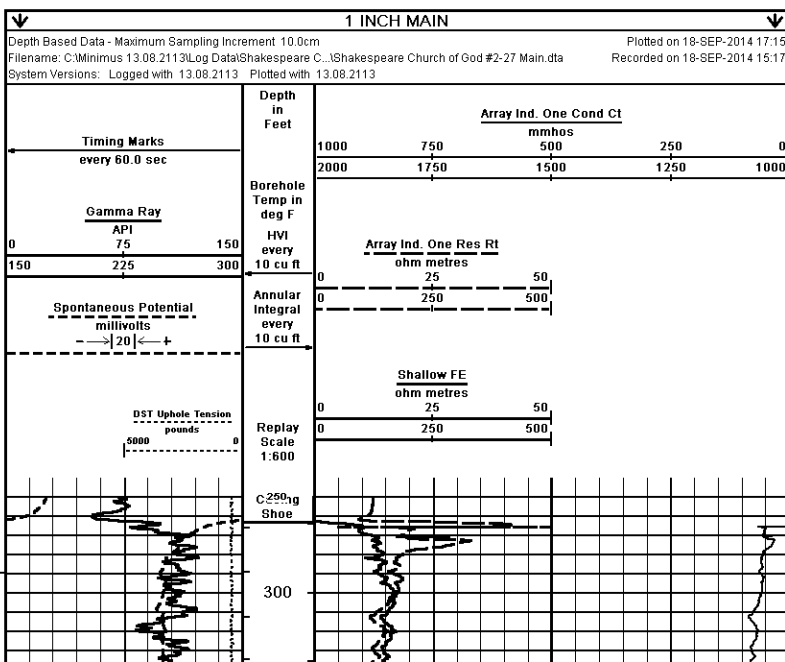
Elevation Kelly Bushing	3129.00	feet	First Reading	263.00	feet
Elevation Drill Floor	3127.00	feet	Depth Driller	4890.00	feet
Elevation Ground Level	3119.00	feet	Depth Logger	4883.00	feet

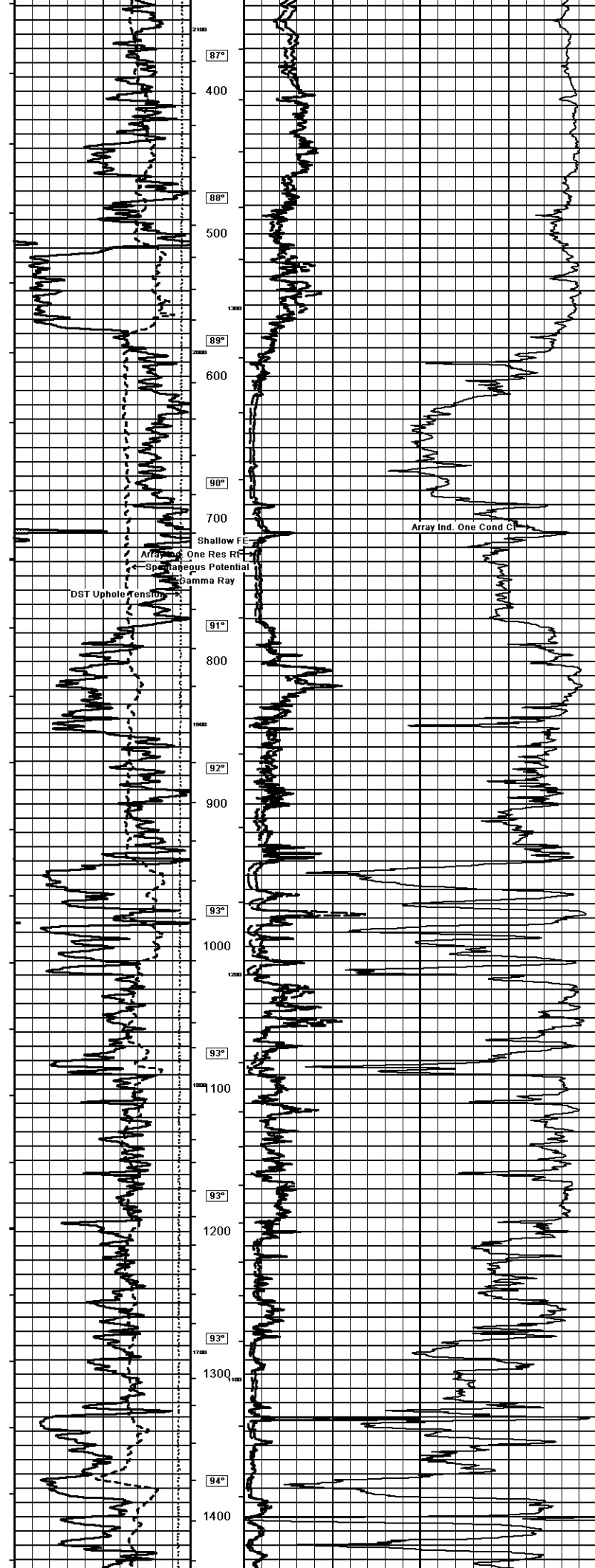


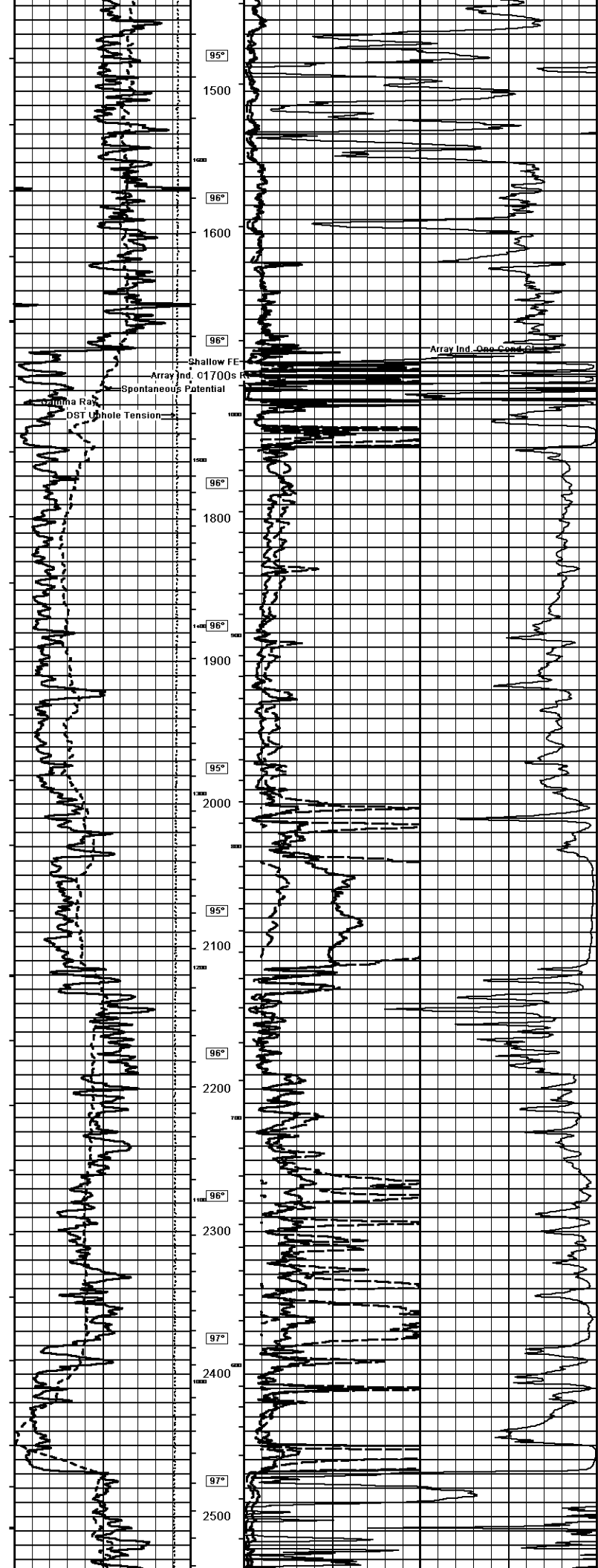
ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

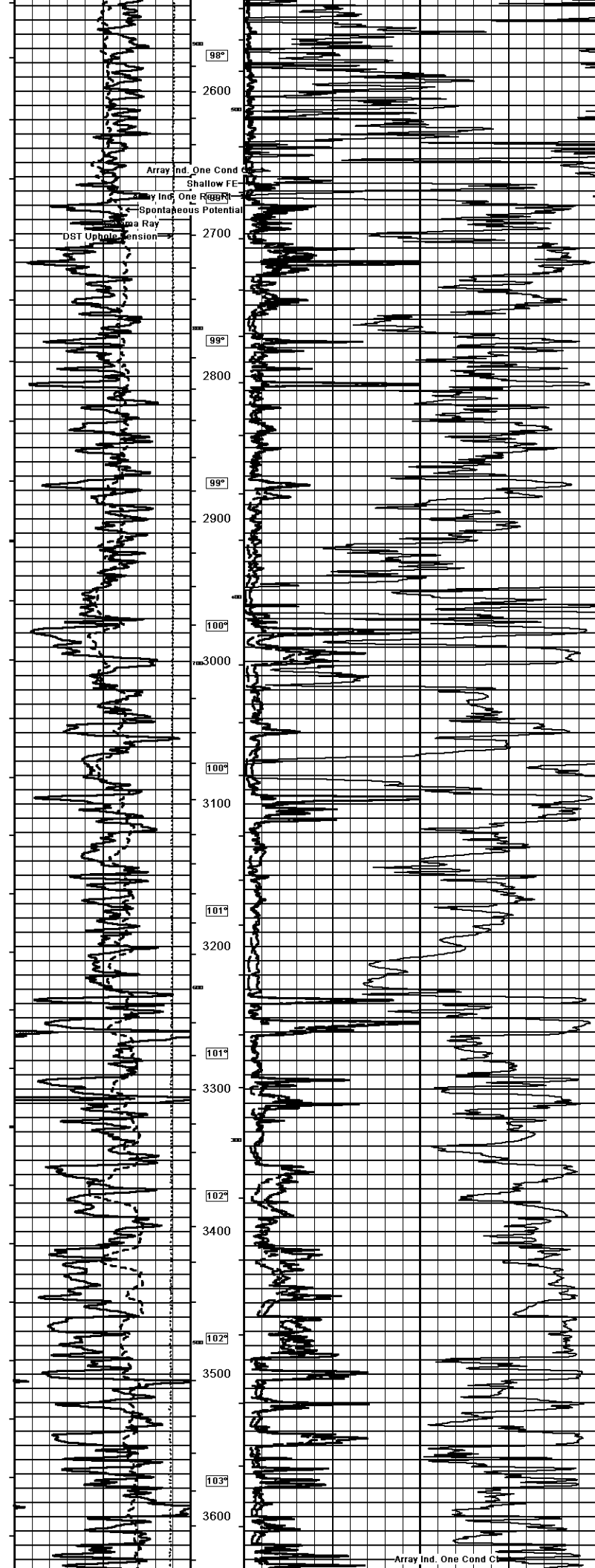
Weatherford®

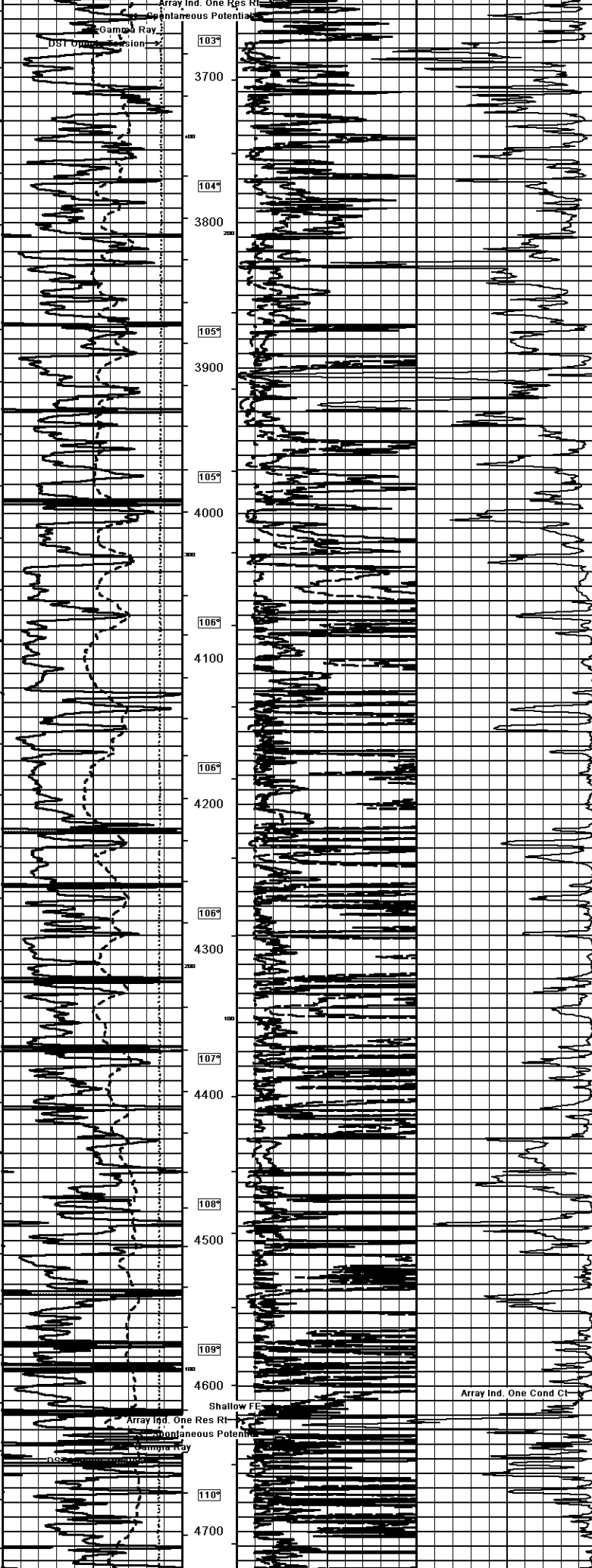
Weatherford		ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG	
COMPANY	SHAKESPEARE OIL CO., INC.		
WELL	CHURCH OF GOD #2-27		
FIELD	PENCE		
PROVINCE/COUNTY	SCOTT		
COUNTRY/STATE	U.S.A. / KANSAS		
LOCATION	2305' FWL & 50' FEL		
PERMIT NUMBER	NE SE SE NE		
SEC. 27	T1P1 16S 34W		
Latitude	36.65276355	WFO	DMON
Longitude	101.05458897		
Log Number	15-171-2108		
Permanent Datum G.L. Elevation	3119 feet		
Log Measured From	KH @ 10 FEET		
Drilling Measured From	KH @ 10 FEET		
Date	18-SEP-2014		
Run Number	ONE		
Service Order	7960-9826230		
Depth Driller	4890.00	feet	
Depth Logger	4883.00	feet	
First Reading	763.00	feet	
Last Reading	4879.68	feet	
Casing Driller	263.00	feet	
Casing Logger	263.00	feet	
Bit Size	7 9/16	inches	
Hole Fluid Type	WBM		
Density/Viscosity	9.20 lb/lb-gal	54.00 CP	
PH / Fluid Loss	11.00	8.80 ml/30min	
Sample Source	MUD/PIT		
Run @ Measured Temp	0.80 @ 75.0	ohm-m	
Run @ Measured Temp	0.48 @ 75.0	ohm-m	
Run @ Measured Temp	0.72 @ 75.0	ohm-m	
Source Rmt / Rmc	CALC		
Run @ BHT	0.41 @ 111.0	ohm-m	
Time Since Circulation	4 HOURS		
Max Recorded Temp	112.00	deg F	
Equipment Base	13008	LIB	
Recorded by	DEREK CARTER		
Witnessed by	TIM FINEST		
Job #	LE 14-287		

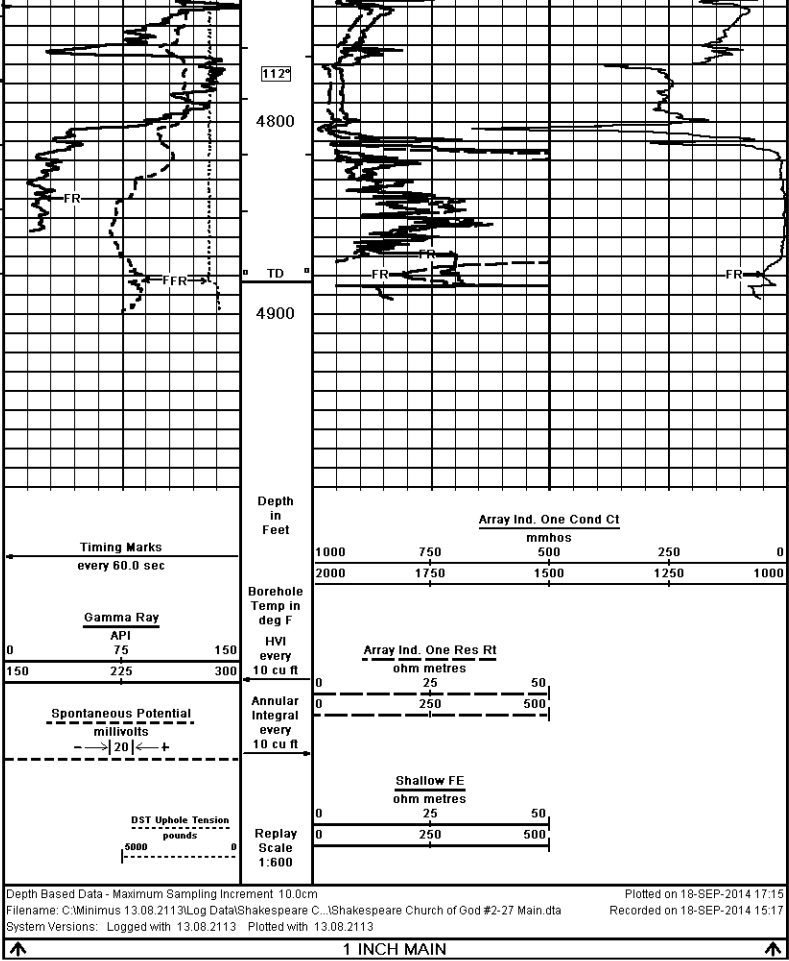












COMPANY		SHAKESPEARE OIL CO., INC.			
WELL		CHURCH OF GOD #2-27			
FIELD		PENCE			
PROVINCE/COUNTY		SCOTT			
COUNTRY/STATE		U.S.A. / KANSAS			
Elevation Kelly Bushing	3129.00	feet	First Reading	263.00	feet
Elevation Drill Floor	3127.00	feet	Depth Driller	4890.00	feet
Elevation Ground Level	3119.00	feet	Depth Logger	4883.00	feet
 Weatherford		ARRAY INDUCTION			
		SHALLOW FOCUSED			
		ELECTRIC LOG			