



Weatherford[®]

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

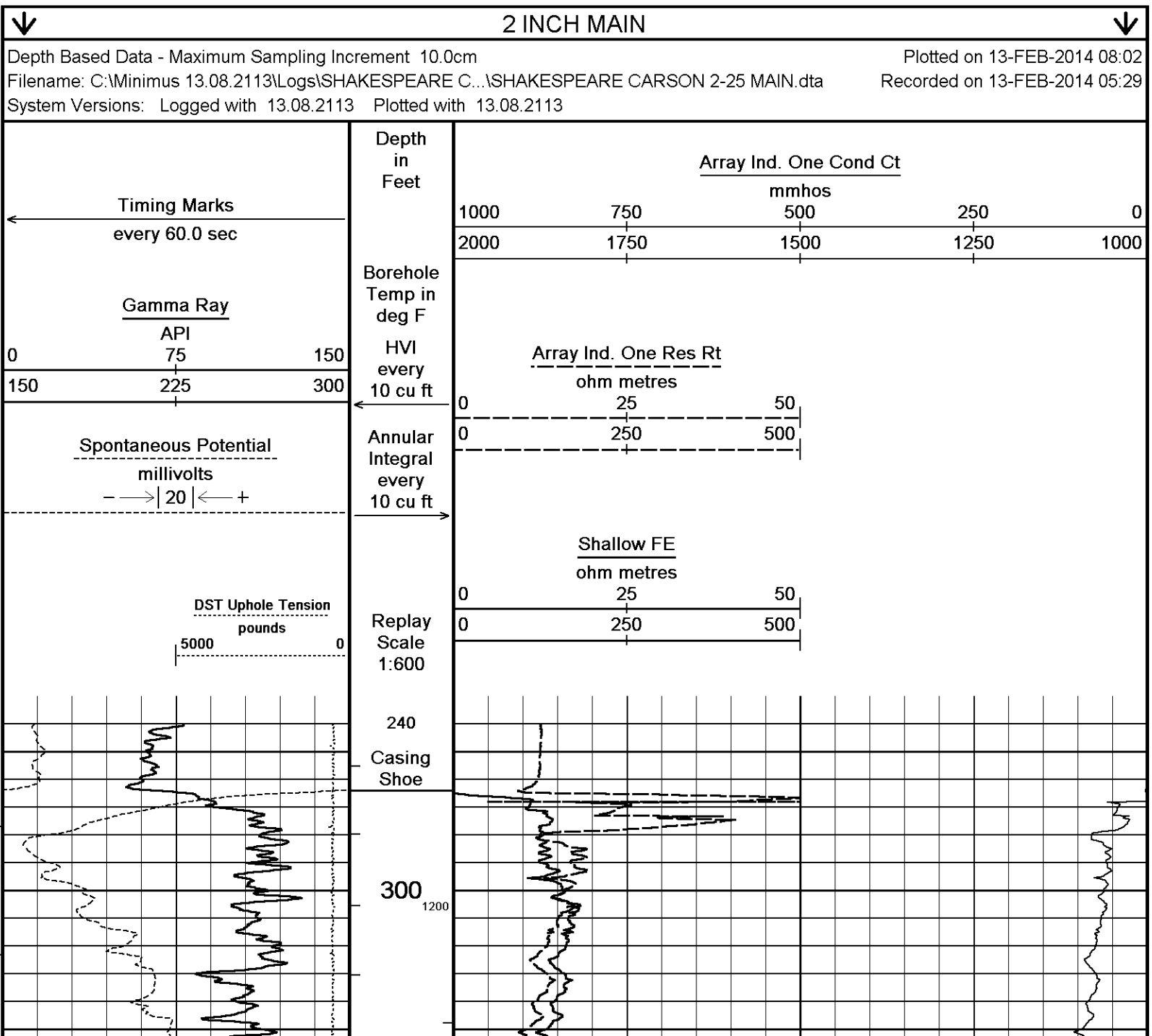
COMPANY			SHAKESPEARE OIL CO., INC.		
WELL			CARSON 2-25		
FIELD			PENCE EAST		
PROVINCE/COUNTY			SCOTT		
COUNTRY/STATE			U.S.A. / KANSAS		
LOCATION			1230' FSL & 435' FWL / NE NW SW SW		
SEC 25	TWP 16S	RGE 34W	Other Services		
Latitude			MPD/MDN		
Longitude			MML		
API Number	15-171-21022				
Permanent Datum GL, Elevation 3100 feet					
Log Measured From KB					
Drilling Measured From KB @ 12 FEET					
Date	13-FEB-2014		Elevations: feet		
Run Number	ONE		KB 3112.00		
Service Order	5872-79443934		DF 3110.00		
Depth Driller	4860.00		GL 3100.00		
Depth Logger	4862.00				
First Reading	4859.00				
Last Reading	240.00				
Casing Driller	263.00				
Casing Logger	264.00				
Bit Size	7.875		inches		
Hole Fluid Type	CHEMICAL				
Density / Viscosity	9.60 lb/USg		53.00 CP		
PH / Fluid Loss	10.00		8.80 ml/30Min		
Sample Source	FLOWLINE				
Rm @ Measured Temp	1.05 @ 63.0		ohm-m		
Rmf @ Measured Temp	0.84 @ 63.0		ohm-m		
Rmc @ Measured Temp	1.26 @ 63.0		ohm-m		
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	0.59 @ 112.0		ohm-m		
Time Since Circulation	5 HRS				
Max Recorded Temp	112.00		deg F		
Equipment / Base	13244		LIB		
Recorded By	JOHN LAPPOINT		DUANE COLE		
Witnessed By	MARK HERNDON				
JOB #	LB 14-46				

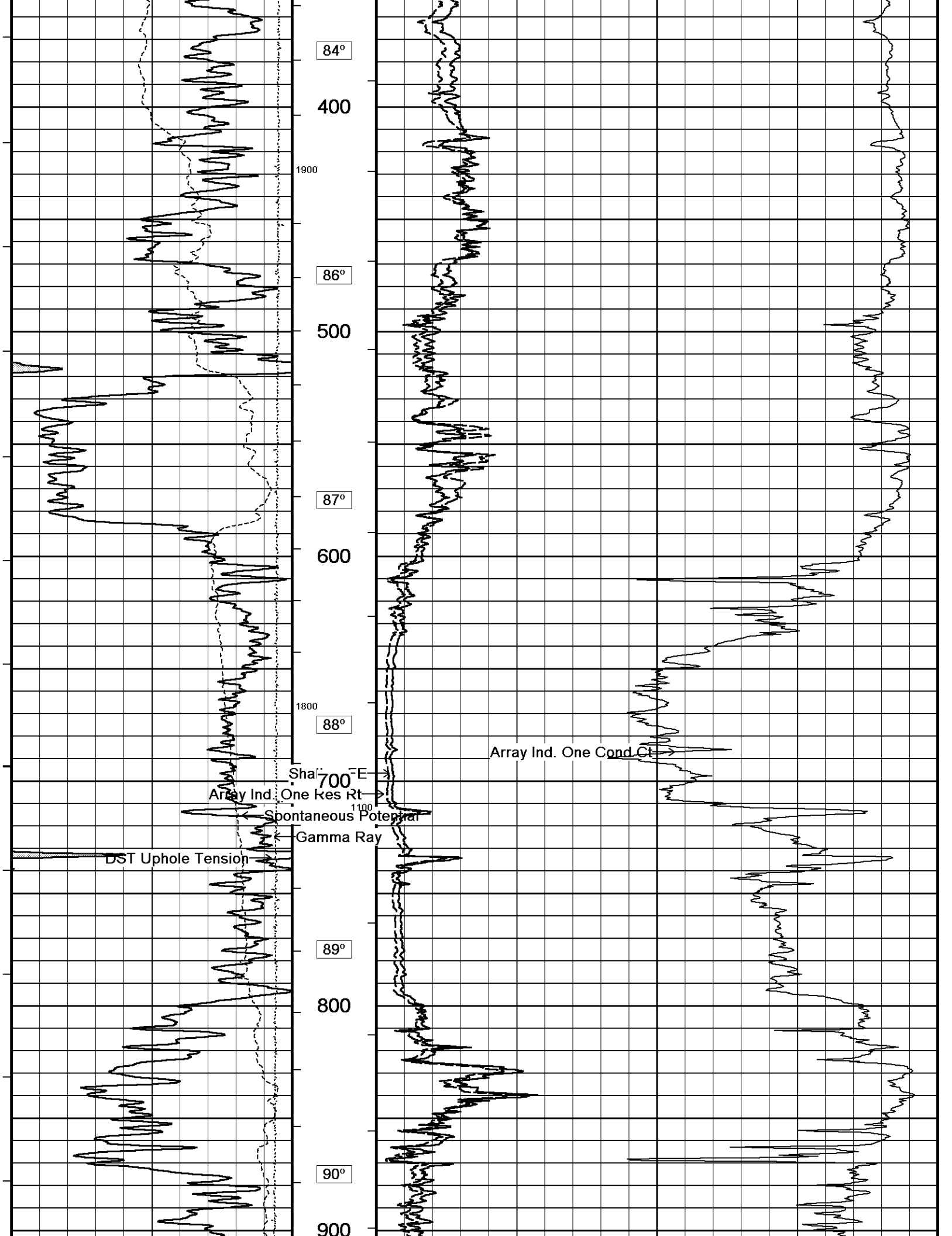
BOREHOLE RECORD					Last Edited: 13-FEB-2014 05:25
Bit Size inches		Depth From feet		Depth To feet	
7.875		264.00		4862.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
CASING	8.625	0.00	264.00	24.00	

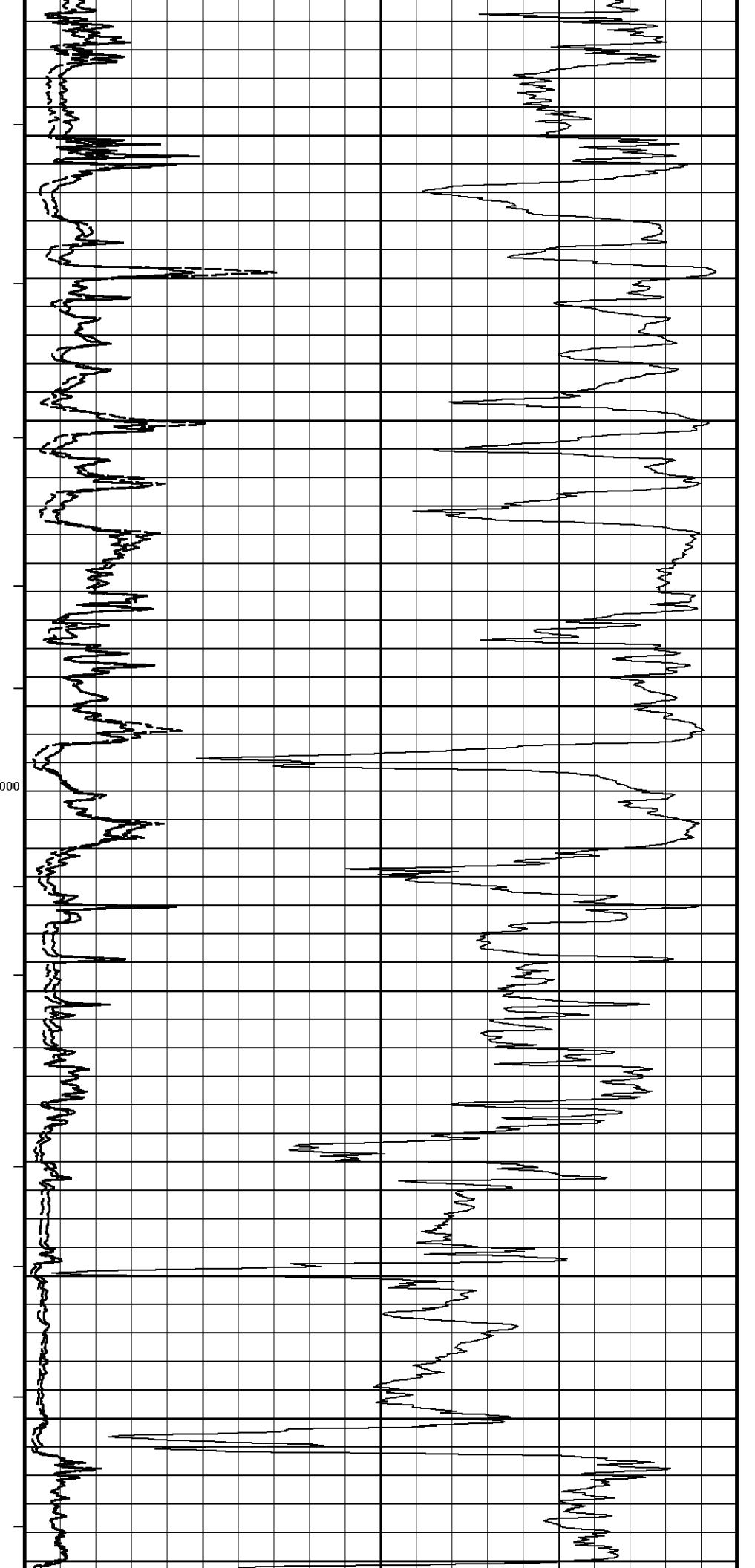
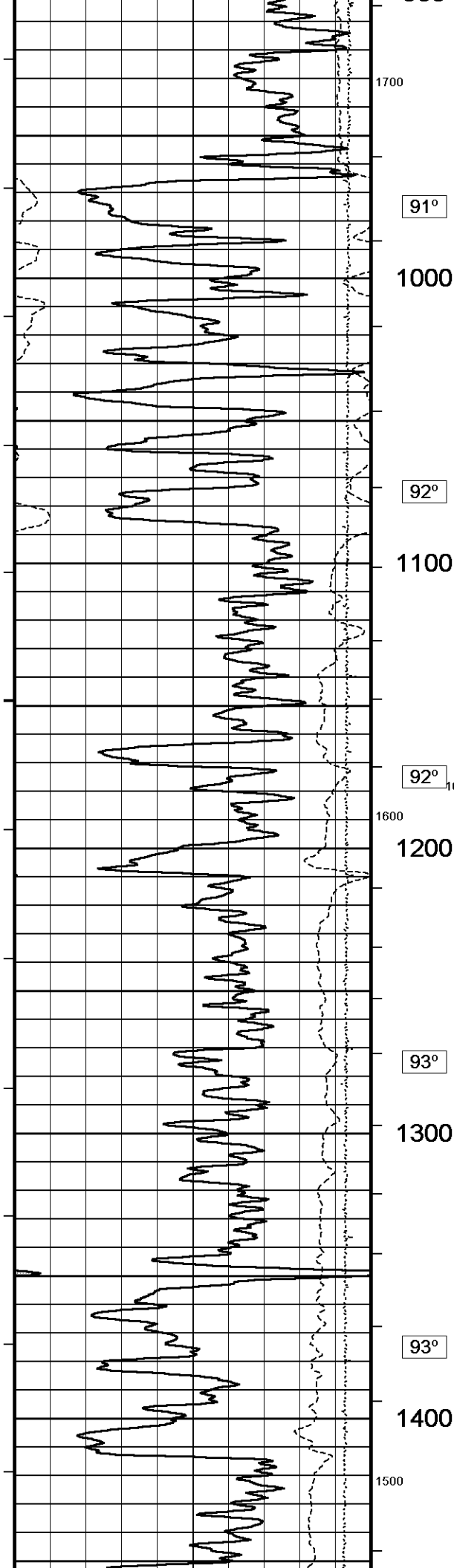
REMARKS
- SOFTWARE ISSUE: WLS 13.08.2113.
- RUN ONE: MCG, MML, MDN, MPD, MFE AND MAI RUN IN COMBINATION. - HARDWARE: DUAL BOWSPRING USED ON MDN. 0.5 INCH STANDOFF USED ON MFE. 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
- TOTAL HOLE VOLUME FROM TD TO 3862 FEET: 302 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3862 FEET: 150 CU.FT.
- RIG: SOUTHWIND DRILLING #70

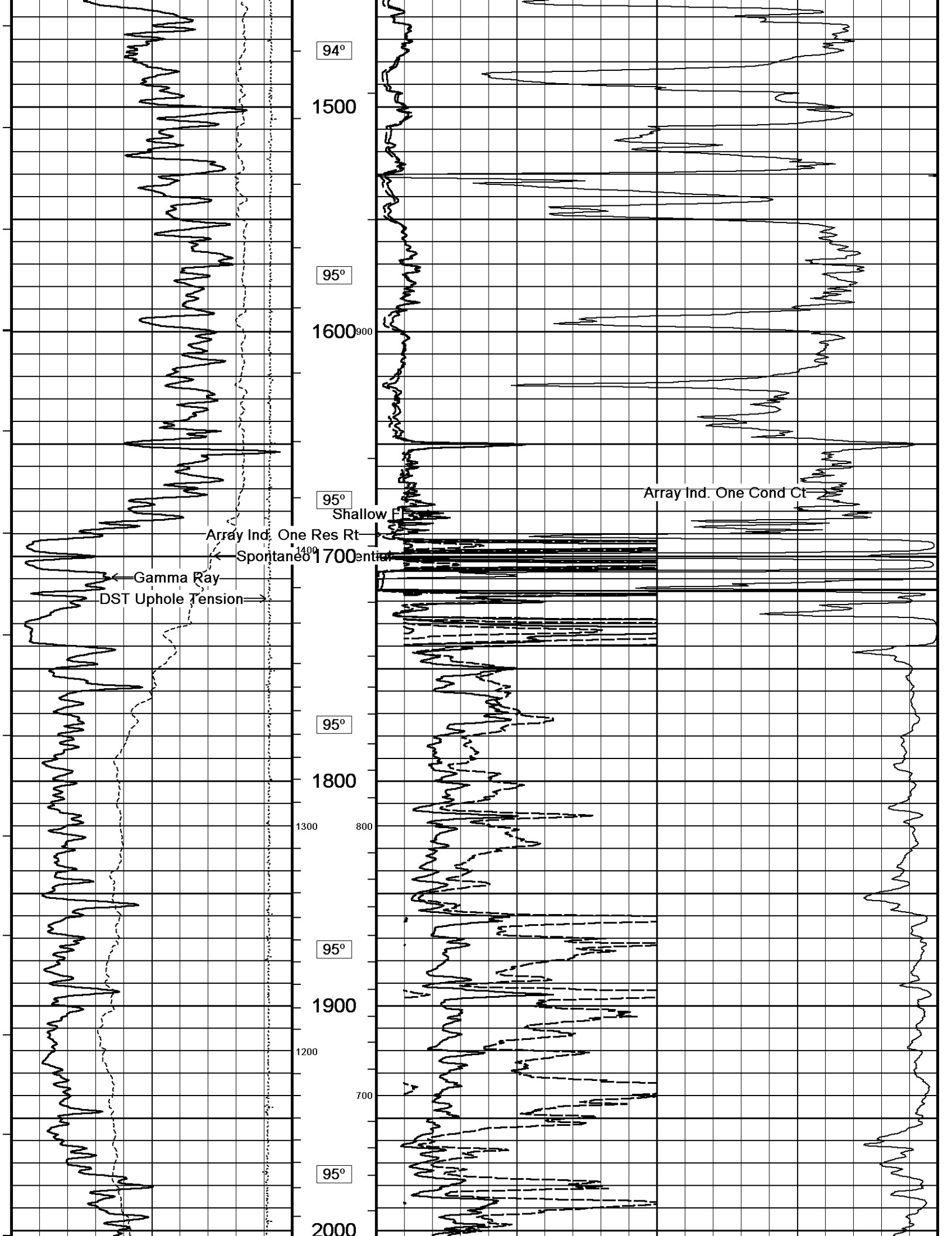
- ENGINEER: D. COLE.
- JUNIOR FIELD ENGINEER: J. LAPOINT.
- OPERATORS: C. RAMIREZ AND K. PHILLIPS

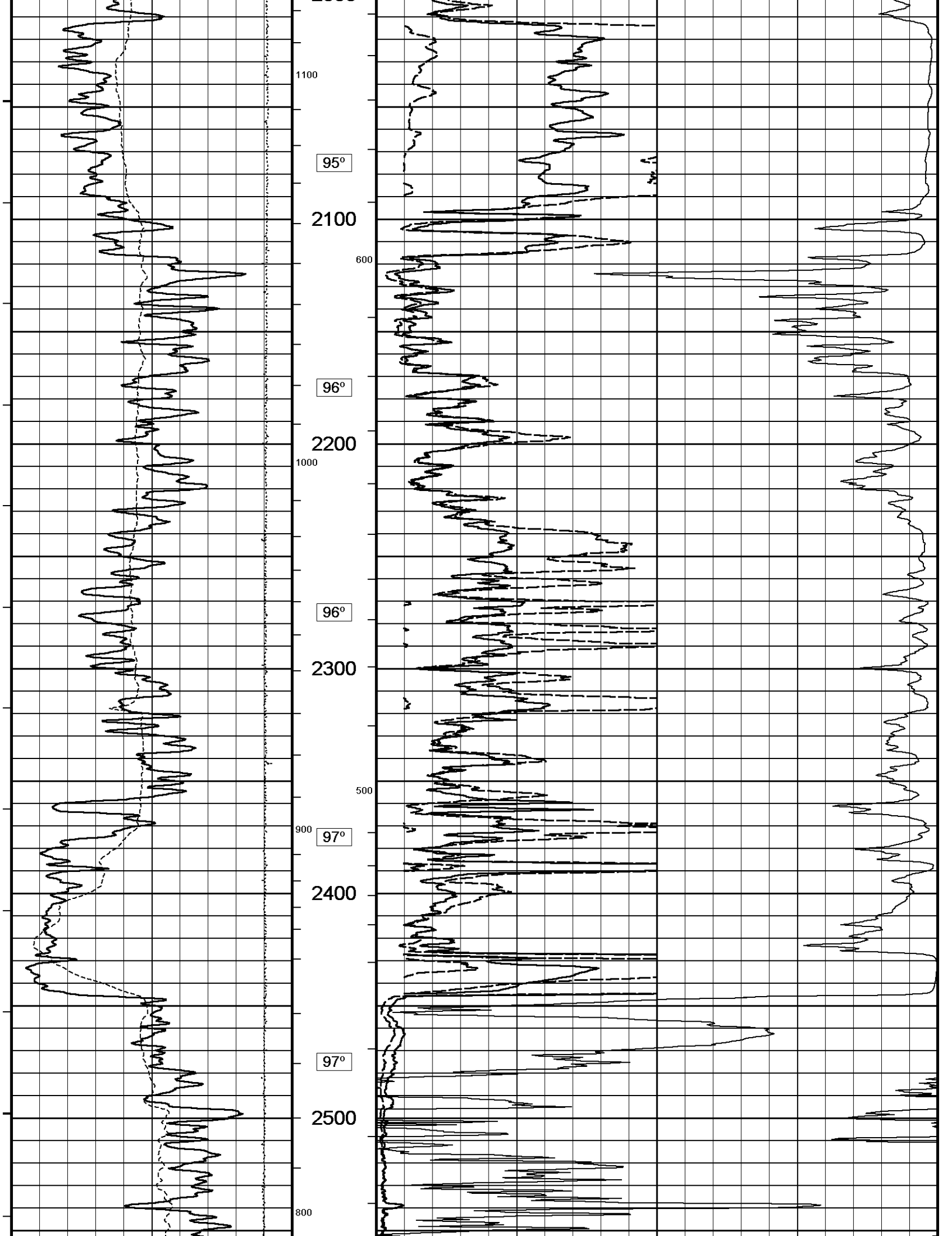
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will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

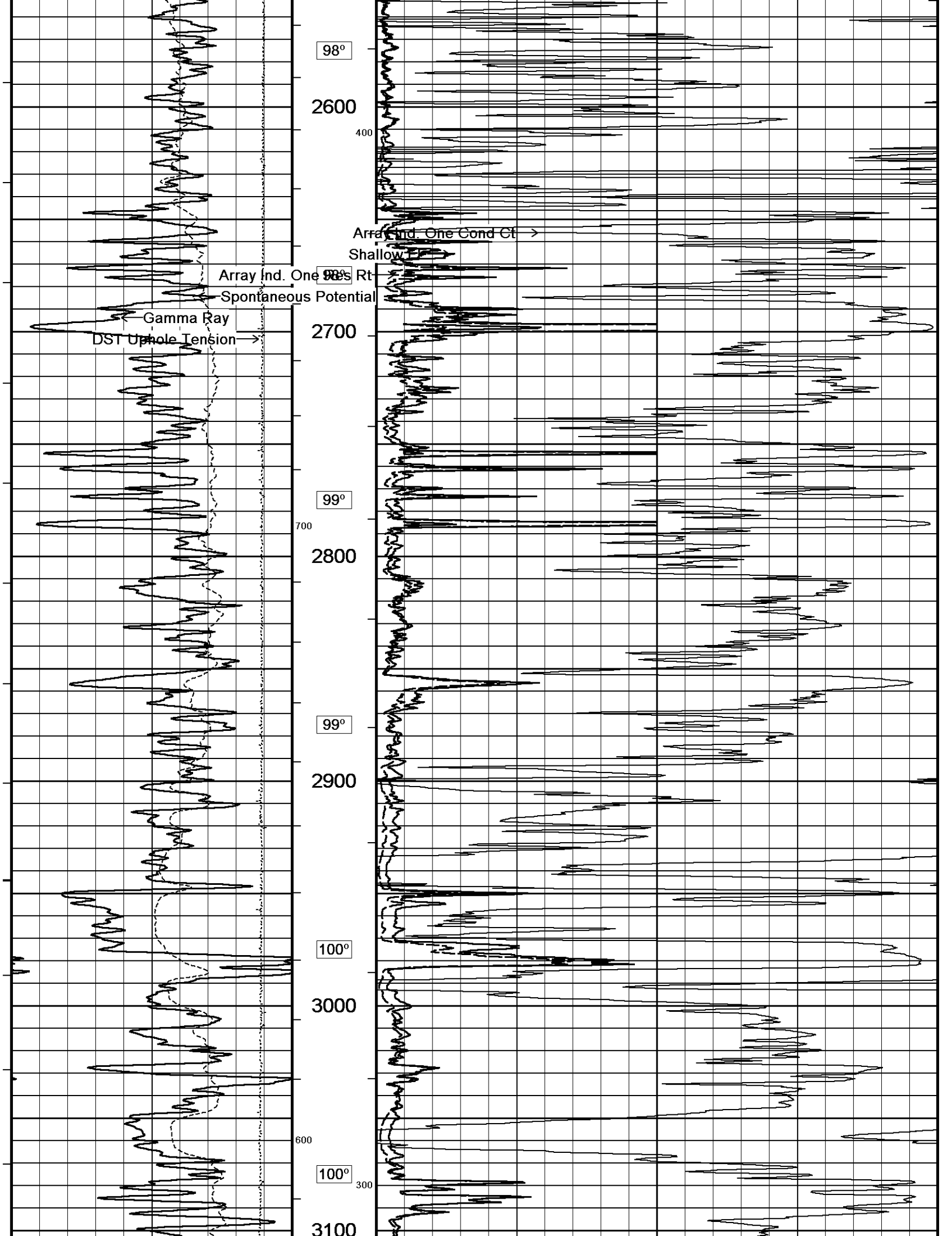


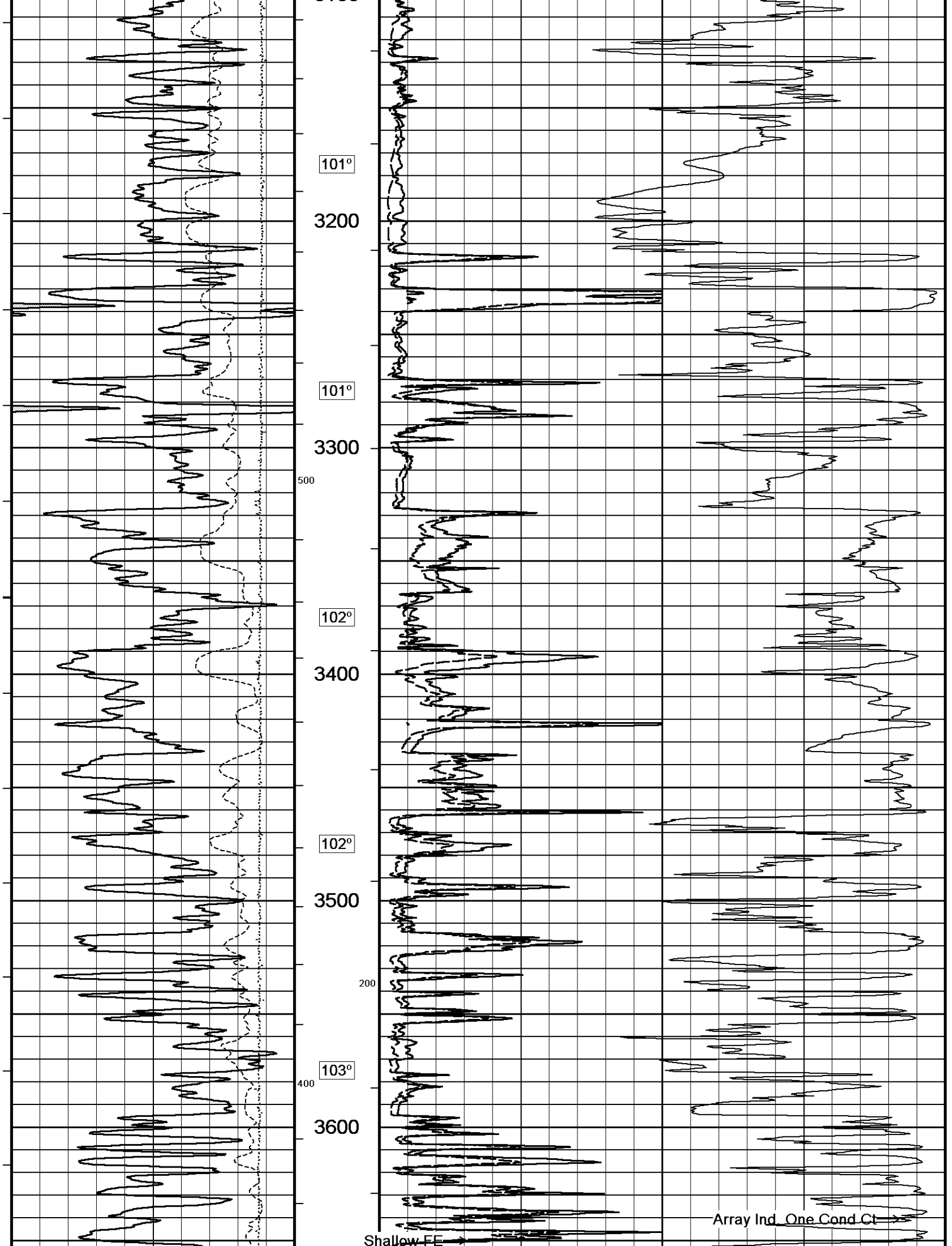


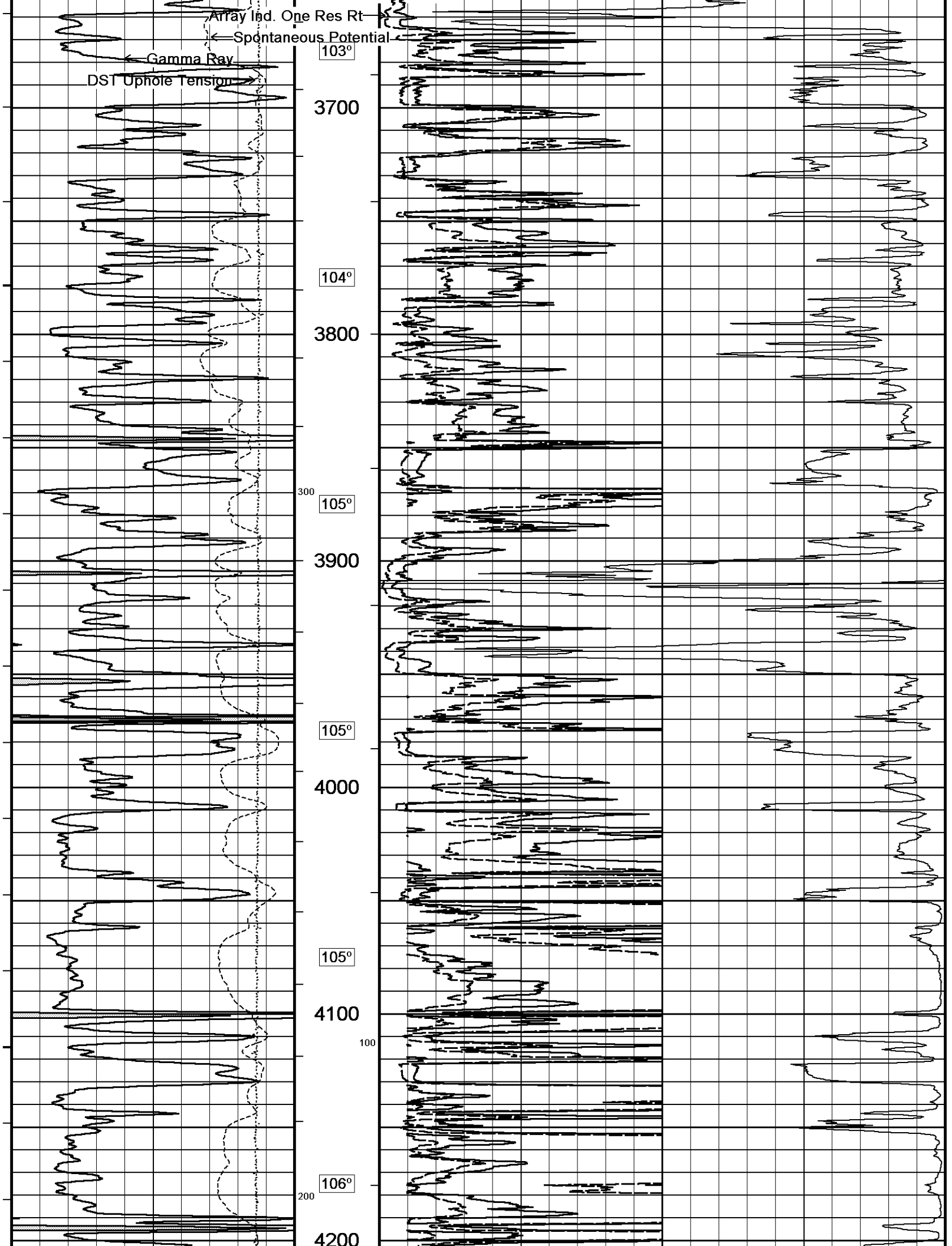


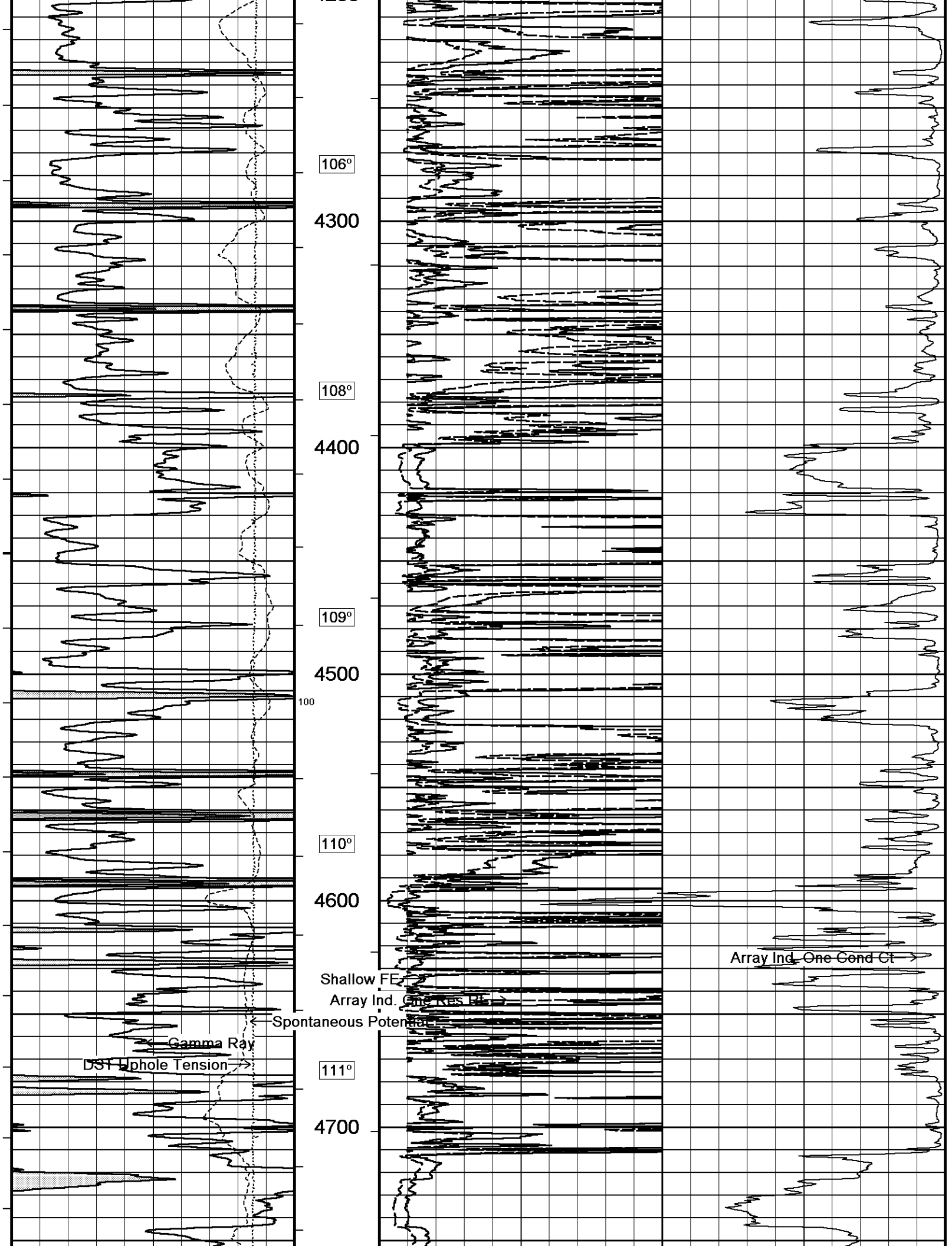


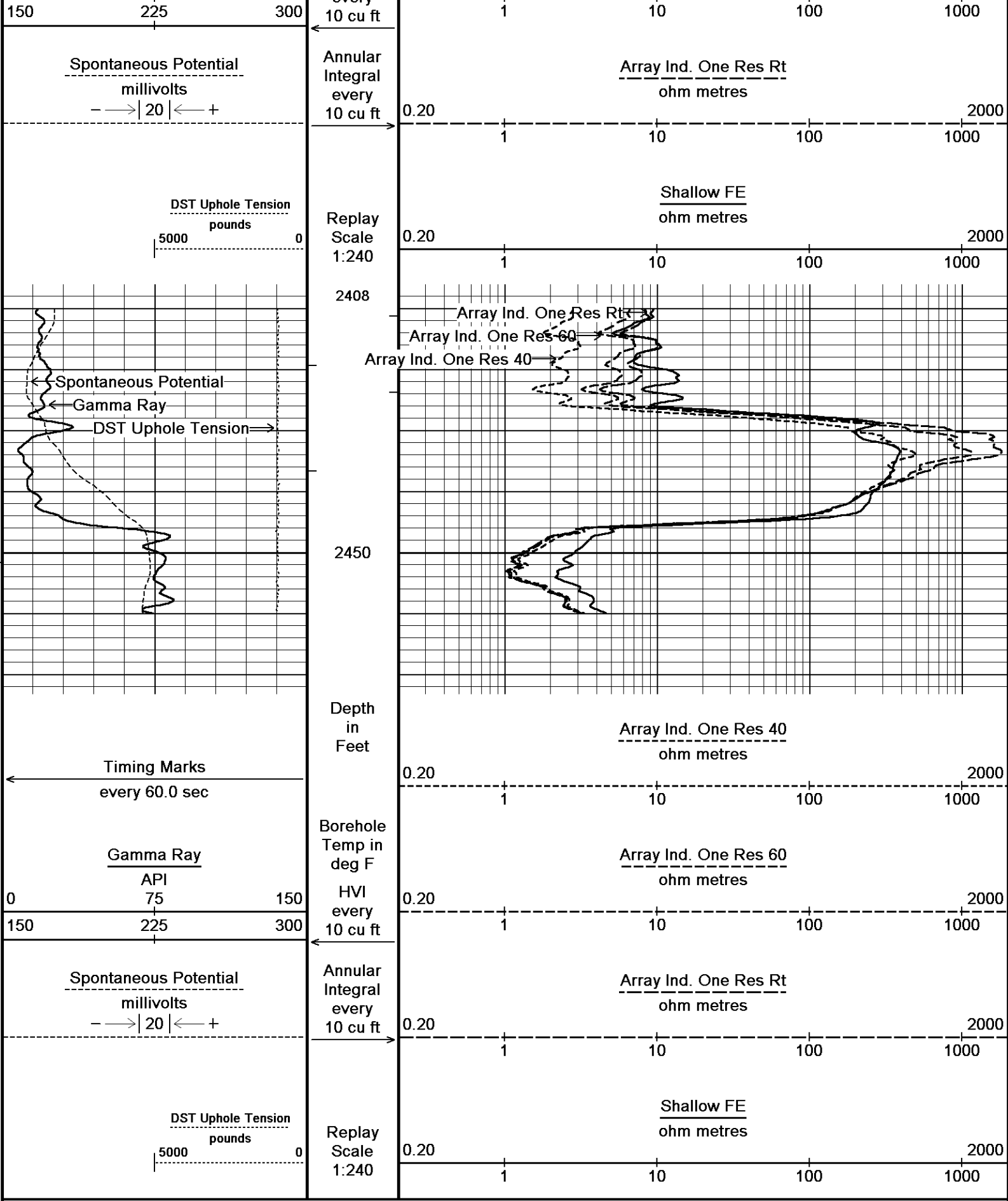






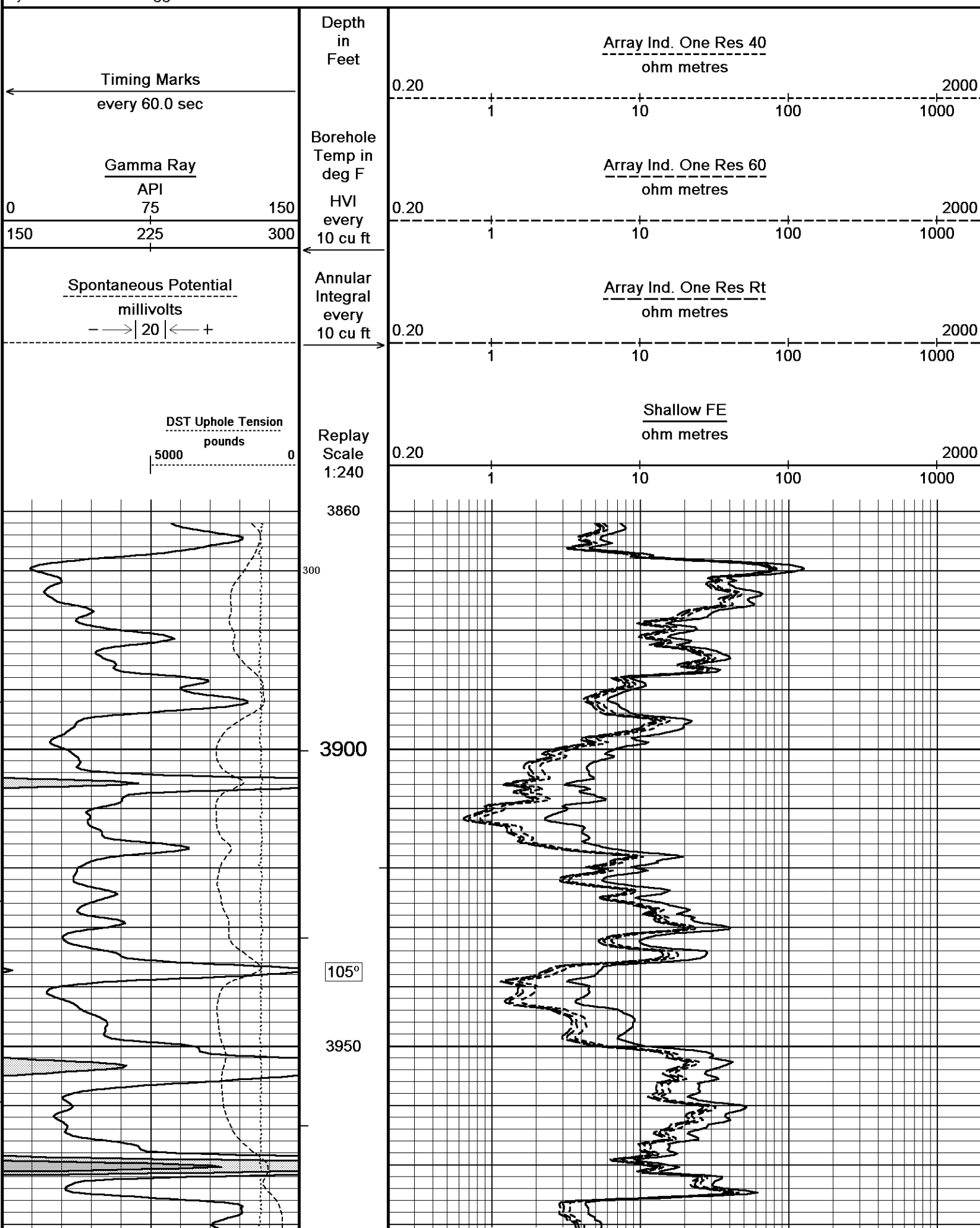


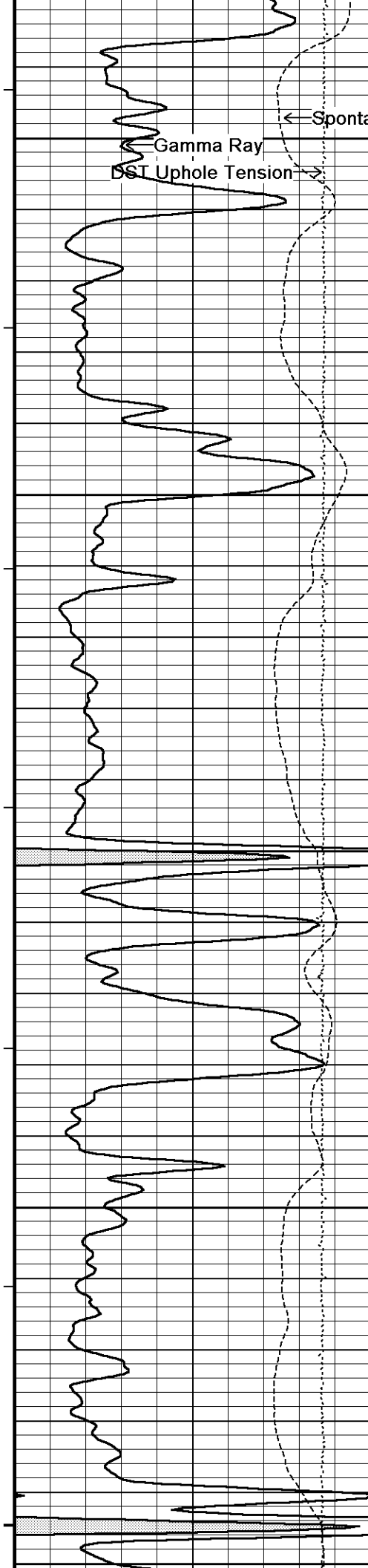




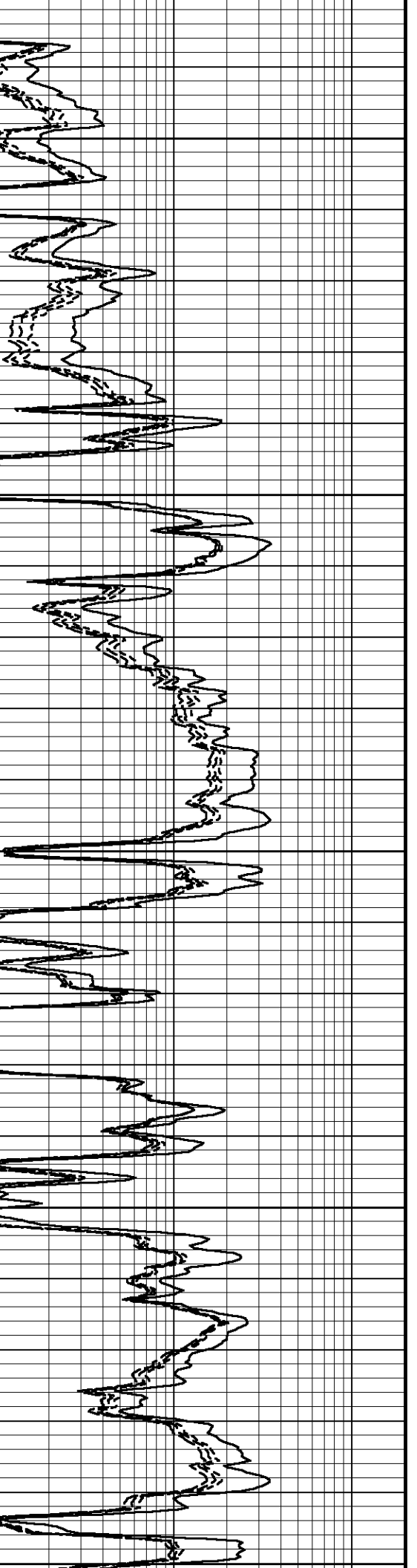
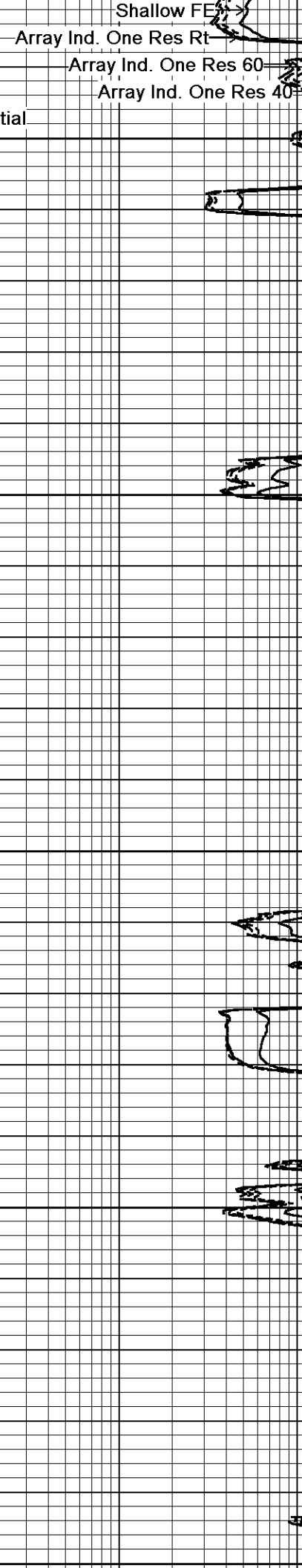
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.08.2113\Logs\SHAKESPEARE C...\SHAKESPEARE CARSON 2-25 MAIN.dta
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113
Plotted on 13-FEB-2014 08:02
Recorded on 13-FEB-2014 05:29

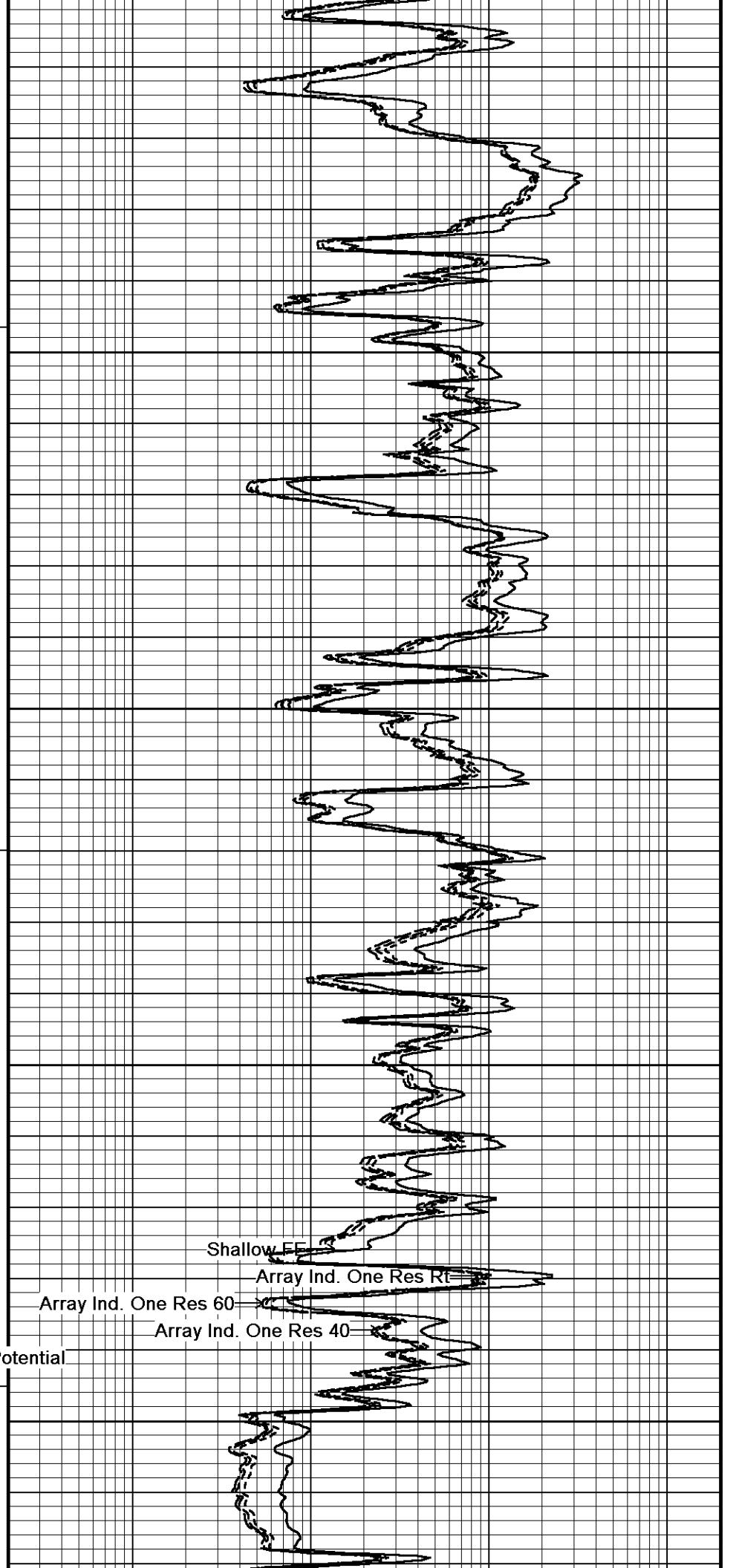
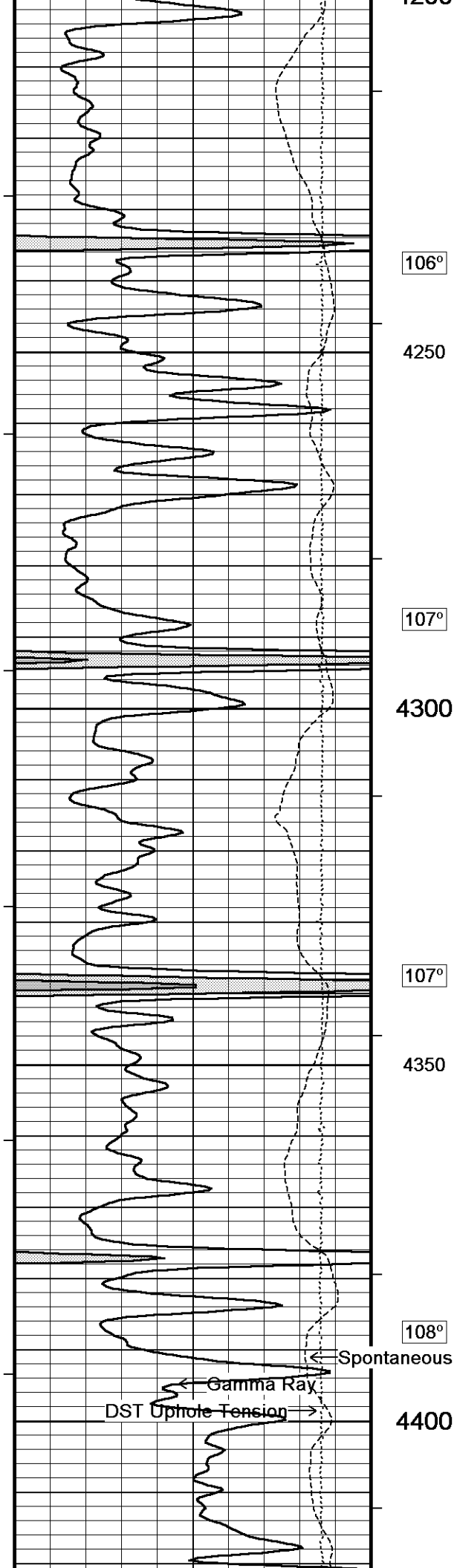
↑ ANHYDRITE SECTION ↑

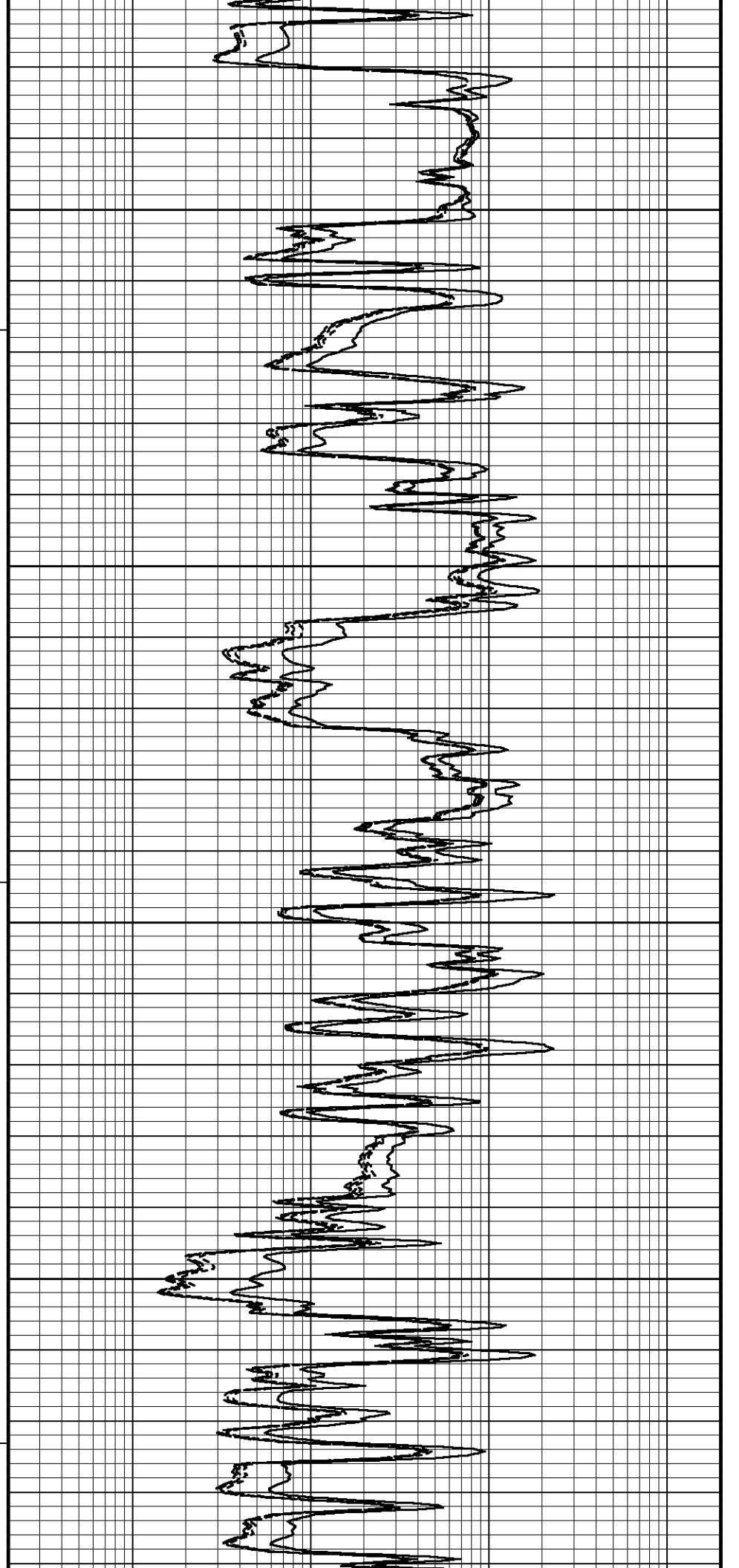
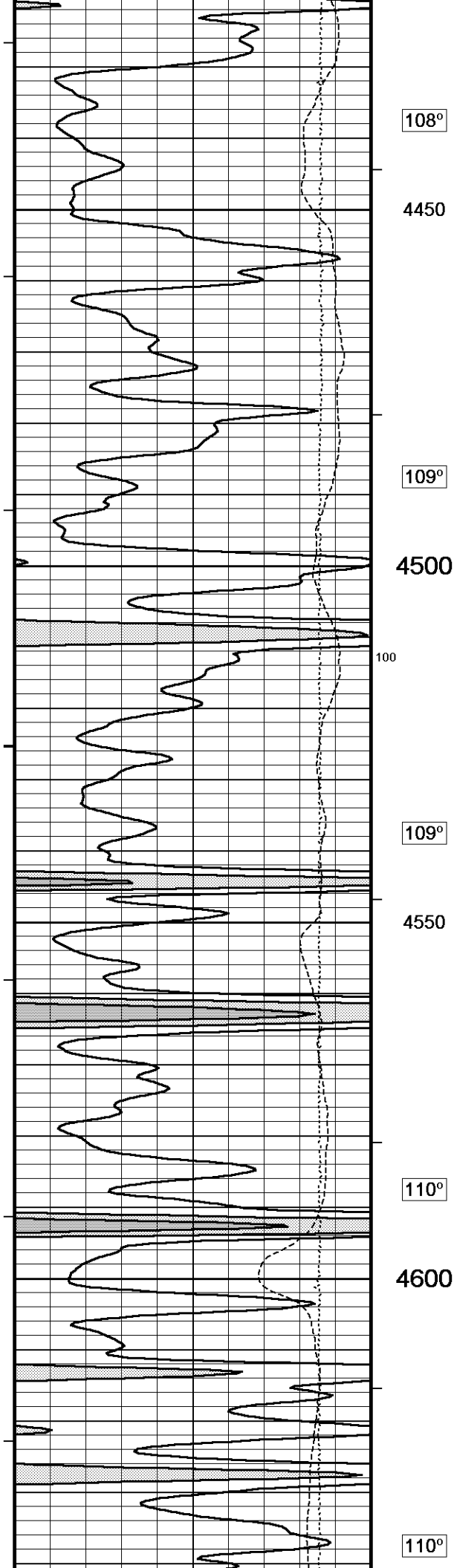


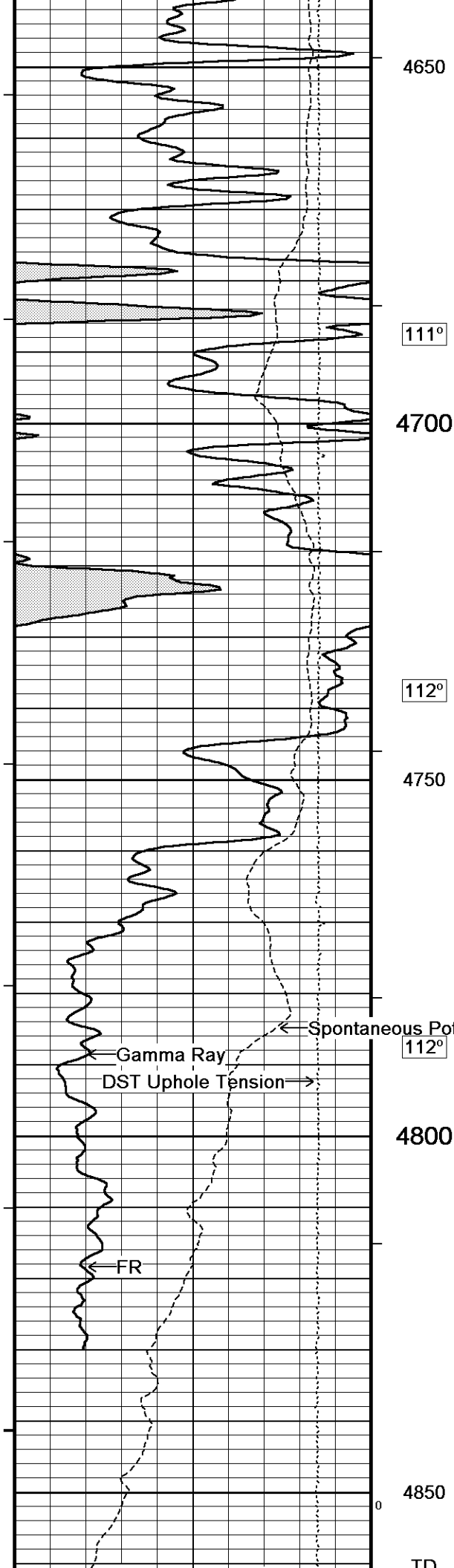


105°
4000
105°
4050
105°
4100
100
106°
4150
200
106°
4200









4650

111°

4700

112°

4750

← Spontaneous Potential

112°

Gamma Ray

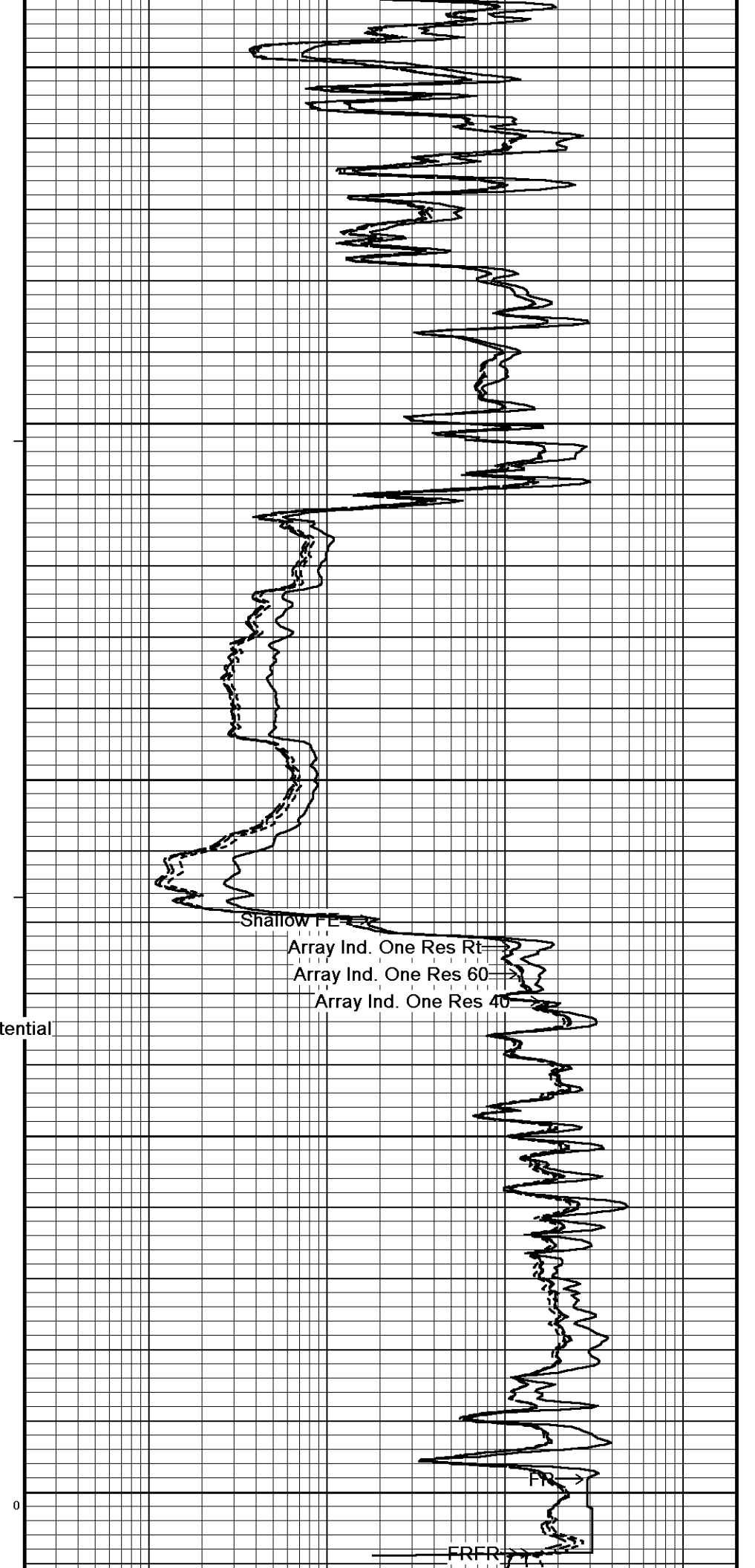
DST Uphole Tension →

4800

FR

4850

TD



Shallow FE

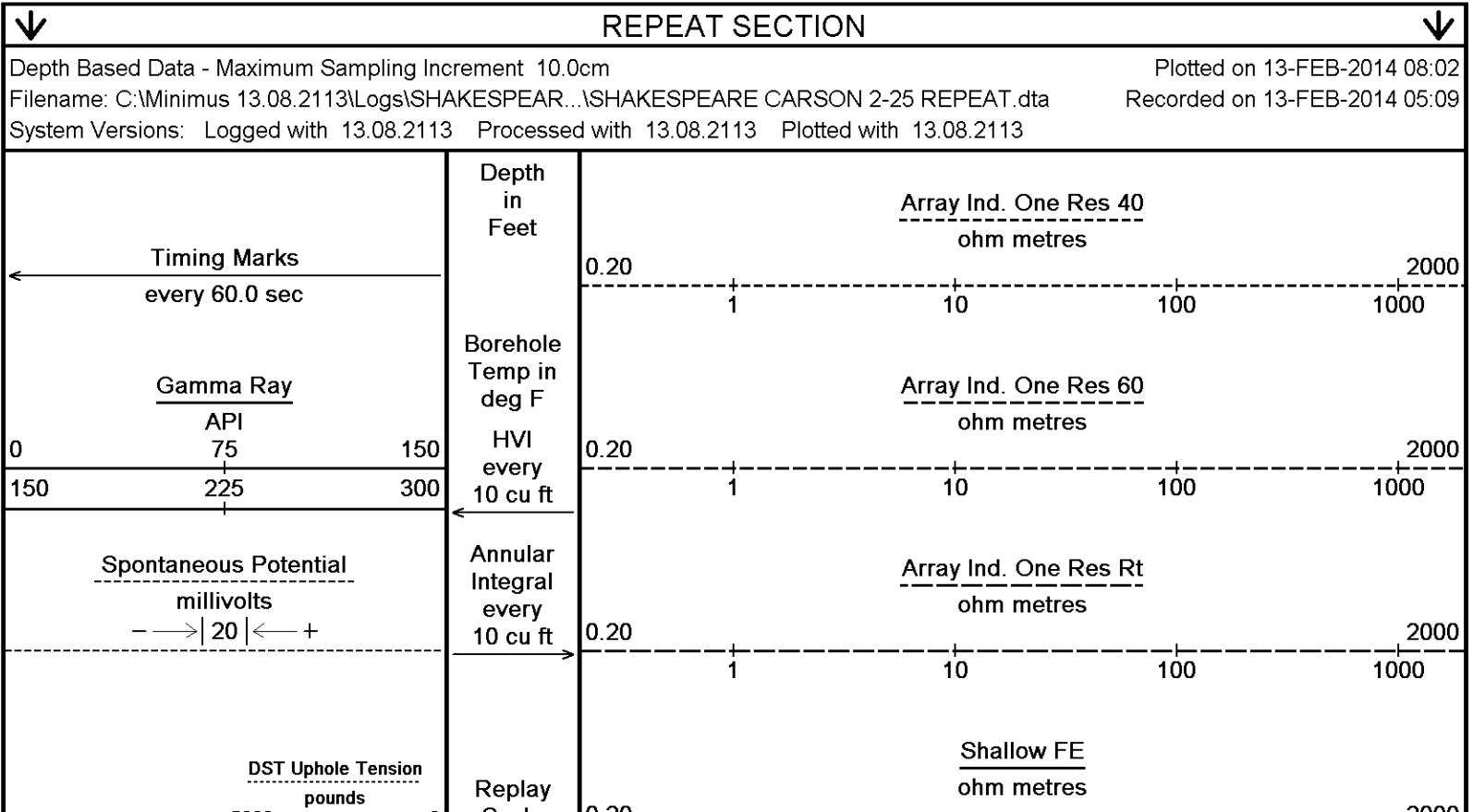
Array Ind. One Res Rt

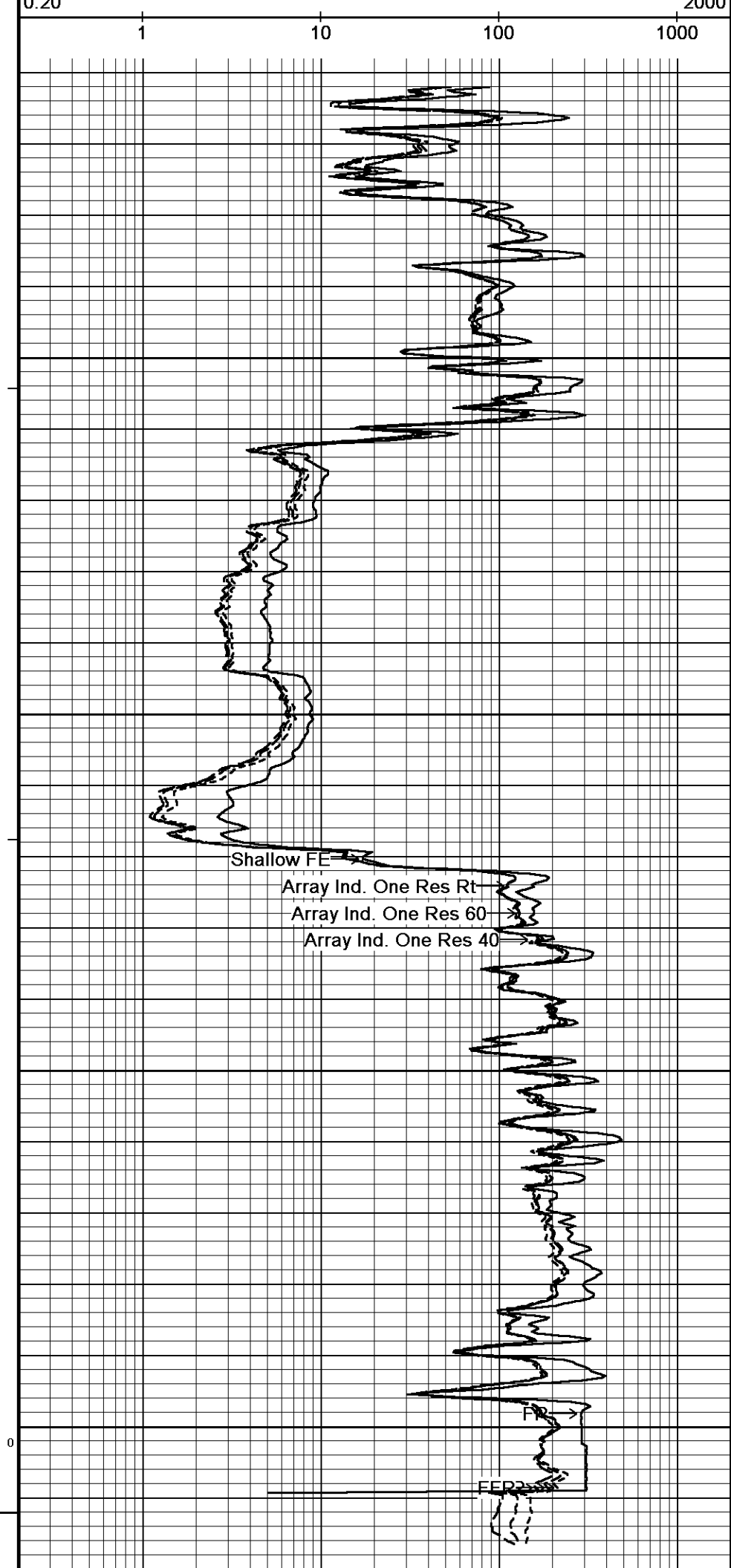
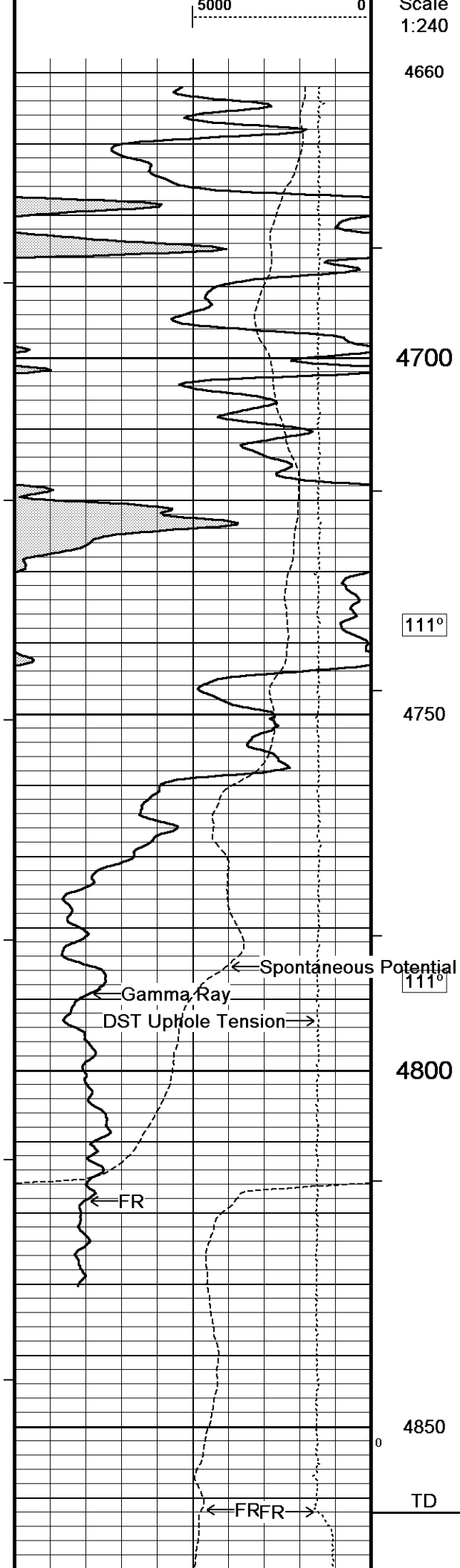
Array Ind. One Res 60

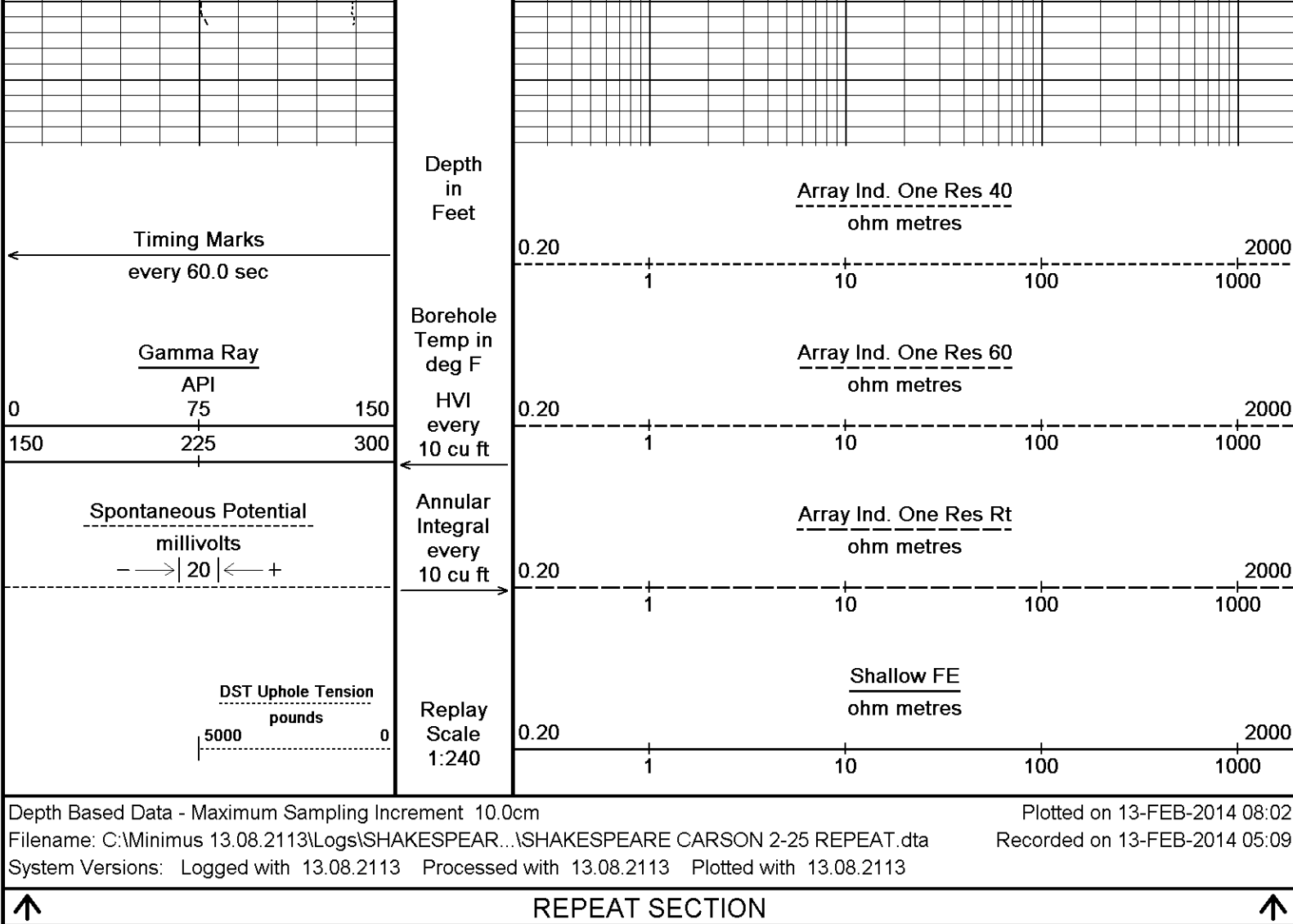
Array Ind. One Res 40

FRFR

TD







BEFORE SURVEY CALIBRATION		
C:\Minimus 13.08.2113\Logs\SHAKESPEARE CARSON 2-25\SHAKESPEARE CARSON 2-25 REPEAT.dta		
General Constants All 000		Last Edited on 13-FEB-2014,03:17
General Parameters		
Mud Resistivity	0.800	ohm-metres
Mud Resistivity Temperature	60.000	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	MMR Caliper	
Rwa Parameters		
Porosity used	Base Density 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 13-FEB-2014 04:26
Reading No	Measured	Calibrated (lbs)
1	14763.00	0.00
2	15190.54	407.90

Gamma Calibration MCG-D.K 443			Field Calibration on 01-FEB-2014 16:05	
	Measured	Calibrated (API)		
Background	72	48		
Calibrator (Gross)	1170	773		
Calibrator (Net)	1098	725		
Gamma Constants MCG-D.K 443			Last Edited on 12-FEB-2014,16:29	
Gamma Calibrator Number	GRC038			
Mud Density	1.14	gm/cc		
Caliper Source for Processing	Density Caliper			
Tool Position	Centred			
Concentration of KCl		kppm		
K Mud Type	Chloride			
K Mud Concentration	0.00	%		
SP Calibration MCG-D.K 443			Field Calibration on 21-JAN-2014 16:12	
	Measured	Calibrated (mV)		
Reference 1	100.2	98.8		
Reference 2	-97.4	-99.0		
High Resolution Temperature Calibration MCG-D.K 443			Field Calibration on 21-JAN-2014,16:09	
	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 23-JAN-2014,17:11	
Pre-filter Length	11			
Caliper Calibration MMR-C.A 248			Base Calibration on 23-JAN-2014 16:52 Field Calibration on 01-FEB-2014 15:48	
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	13431	5.98		
2	16626	7.97		
3	19813	9.86		
4	23733	11.92		
5	0	0.00		
6	N/A	N/A		
Field Calibration				
	Measured Caliper (in)	Actual Caliper (in)		
	7.97	7.97		
Micro Normal and Micro Inverse Calibration MMR-C.A 248			Base Calibration on 23-JAN-2014 17:07 Field Check on 01-FEB-2014 15:50	
Base Calibration				
		Measured	Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	10.2	49.9	5.1	25.6
Micro Inverse	9.9	49.5	3.4	16.9
Channel	Base Check (ohm-m)		Field Check (ohm-m)	
Micro Normal	93.6		93.6	
Micro Inverse	62.2		62.2	
Micro Normal and Micro Inverse Constants MMR-C.A 248			Last Edited on 23-JAN-2014,17:04	
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	0.0000 inches			
Neutron Calibration MDN-B.J 387			Base Calibration on 21-JAN-2014 13:56 Field Check on 01-FEB-2014 16:09	
Base Calibration				
		Measured	Calibrated (cps)	
	Near	Far	Near	Far
	2848	86	3714	110
Ratio	32.942		33.764	

Field Calibrator at Base	Calibrated (cps)
	1737 2564
Ratio	0.677
Field Check	Calibrated (cps)
	1749 2569
Ratio	0.678

Neutron Constants MDN-B.J 387

Last Edited on 12-FEB-2014,16:28

Neutron Source Id	P58125B
Neutron Jig Number	5824NE
Epithermal Neutron	
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-A.A 55

Base Calibration on 21-JAN-2014 15:20
Field Check on 01-FEB-2014 15:36

Base Calibration	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	951.8	126.8
Base Check		281.4
Field Check		281.4

FE Constants MFE-A.A 55

Last Edited on 12-FEB-2014,16:26

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 5

Base Calibration on 21-JAN-2014,09:50
Field Check on 01-FEB-2014 15:35

Base Calibration				
Test Loop Calibration	Measured	Calibrated (mmho/m)		
Channel	Low High	Low High		
1	16.3 470.8	9.3 966.2		
2	5.6 376.1	7.6 821.4		
3	2.6 266.1	5.2 566.0		
4	1.6 130.0	2.6 279.2		
Array Temperature	71.1	Deg F		
Channel	Base Check (mmho/m)	Field Check (mmho/m)		
	Low High	Low High		
1		14.3 3863.2		
2		31.7 3591.9		
3		29.8 2972.7		
4		20.8 2127.2		
Deep		18.4 1913.3		
Medium		43.1 3862.9		
Shallow		47.1 5373.9		

Induction Constants MAI-A.A 5

Last Edited on 12-FEB-2014,16:25

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 Calibration MAI-A.A 5

Field Calibration on 21-JAN-2014,15:43

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

High Resolution Temperature Constants MAI-A.A 5

Last Edited on 21-JAN-2014,15:42

Pre-filter Length	11
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Photo Density Calibration MPD-B 64

Base Calibration on 21-JAN-2014 13:19

Field Check on 01-FEB-2014 15:45

Density Calibration				
Base Calibration		Measured	Calibrated (sdu)	
	Near	Far	Near	Far
Background	1151	1332		
Reference 1	54413	28212	59556	30836
Reference 2	21794	2569	24941	2541
Field Check at Base				
	1151.0	1331.7		
Field Check				
	1154.9	1339.2		

PE Calibration

Base Calibration		Measured		Calibrated
	WS	WH	Ratio	Ratio
Background	207	1021		

Reference 1	20693	54218	0.385	0.371
Reference 2	5952	21660	0.278	0.272

Field Check at Base

206.5	1020.6
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Field Check

207.6	1025.5
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Density Constants MPD-B 64

Last Edited on 12-FEB-2014,16:27

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	1.14 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

Caliper Calibration MPD-B 64

Base Calibration on 21-JAN-2014 12:58

Field Calibration on 13-FEB-2014,07:47

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	16591	3.99
2	25434	5.98
3	34292	7.97
4	42640	9.86
5	51901	11.92
6	N/A	N/A

Field Calibration

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

DOWNHOLE EQUIPMENT

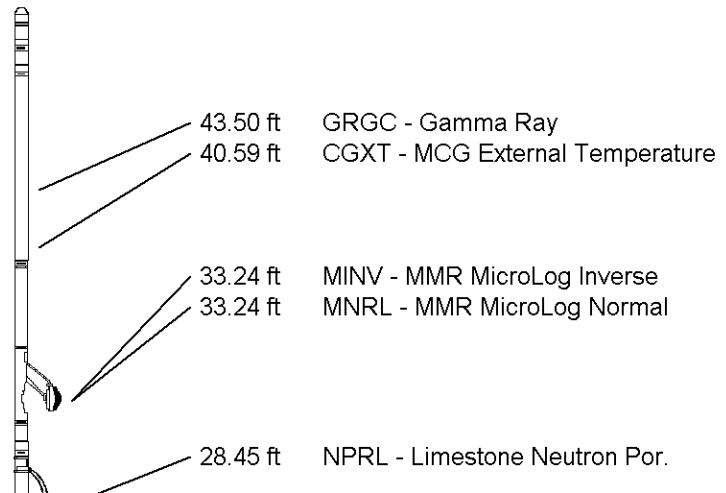
C:\Minimus 13.08.2113\Logs\SHAKESPEARE CARSON 2-25\SHAKESPEARE CARSON 2-25 REPEAT.dta

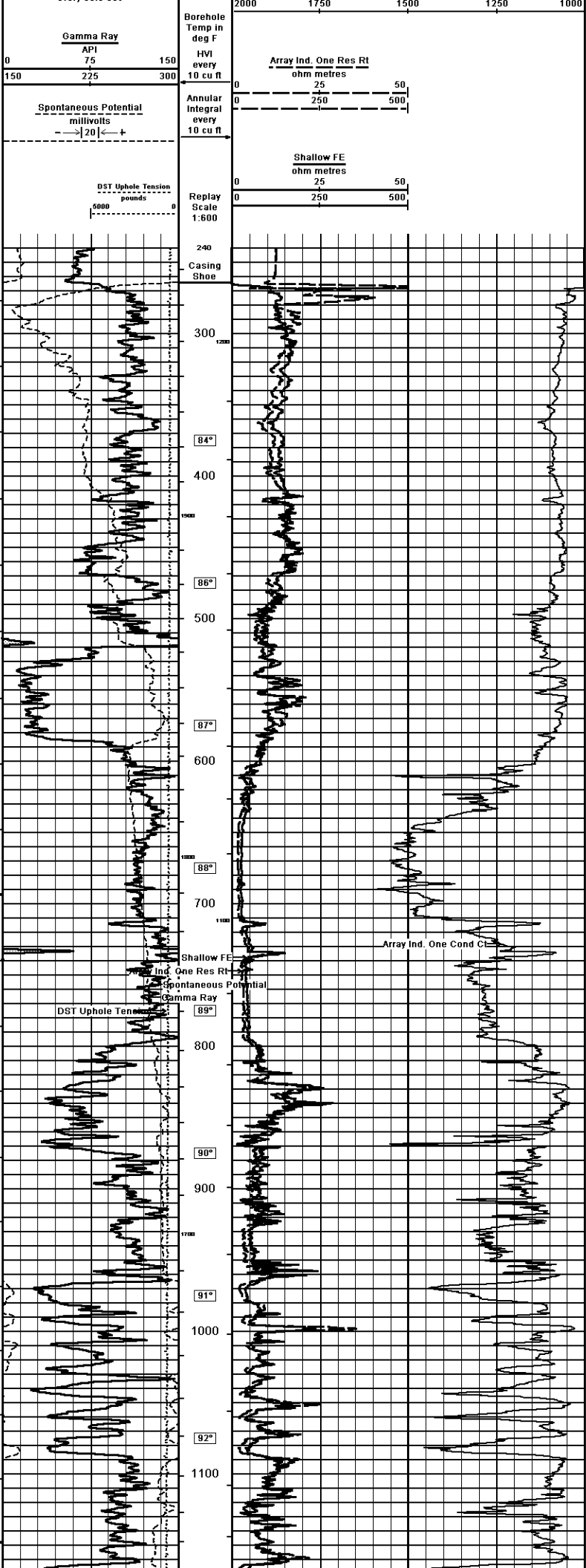
CBH-C, Cablehead, 11 pin
CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

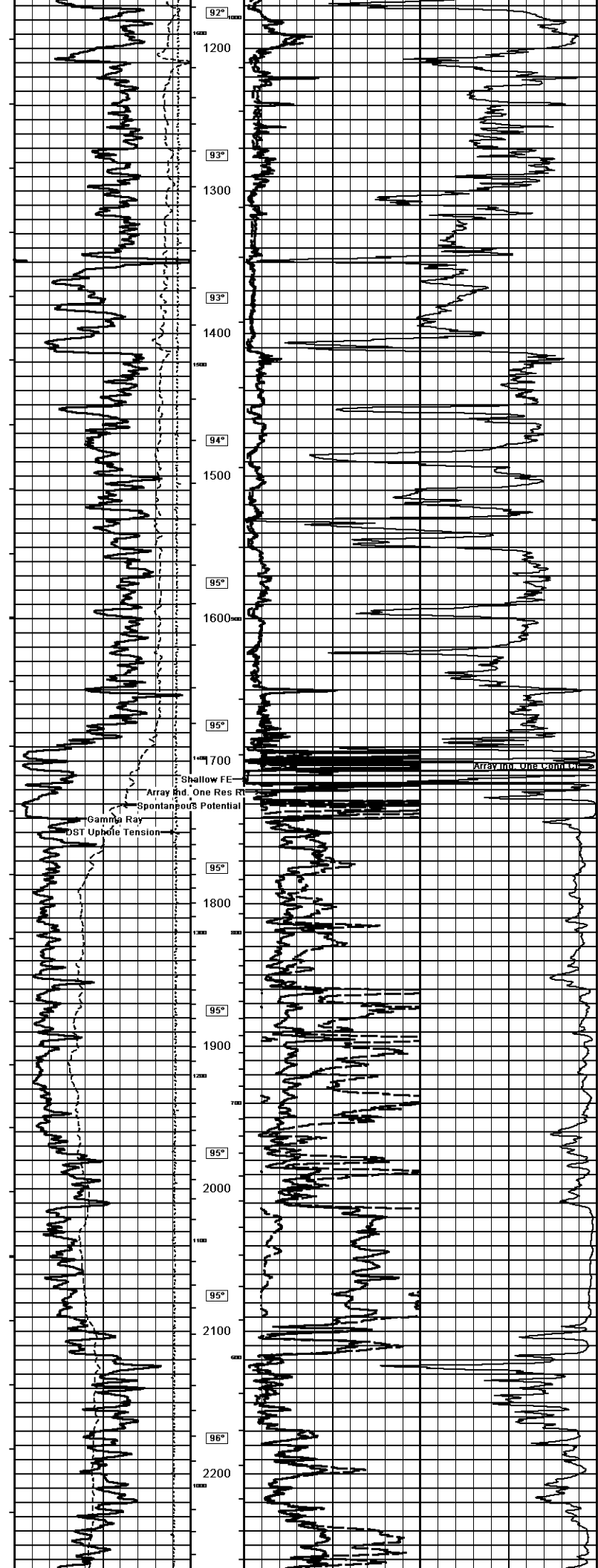
Compact Comms Gamma
MCG-D.K 443 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

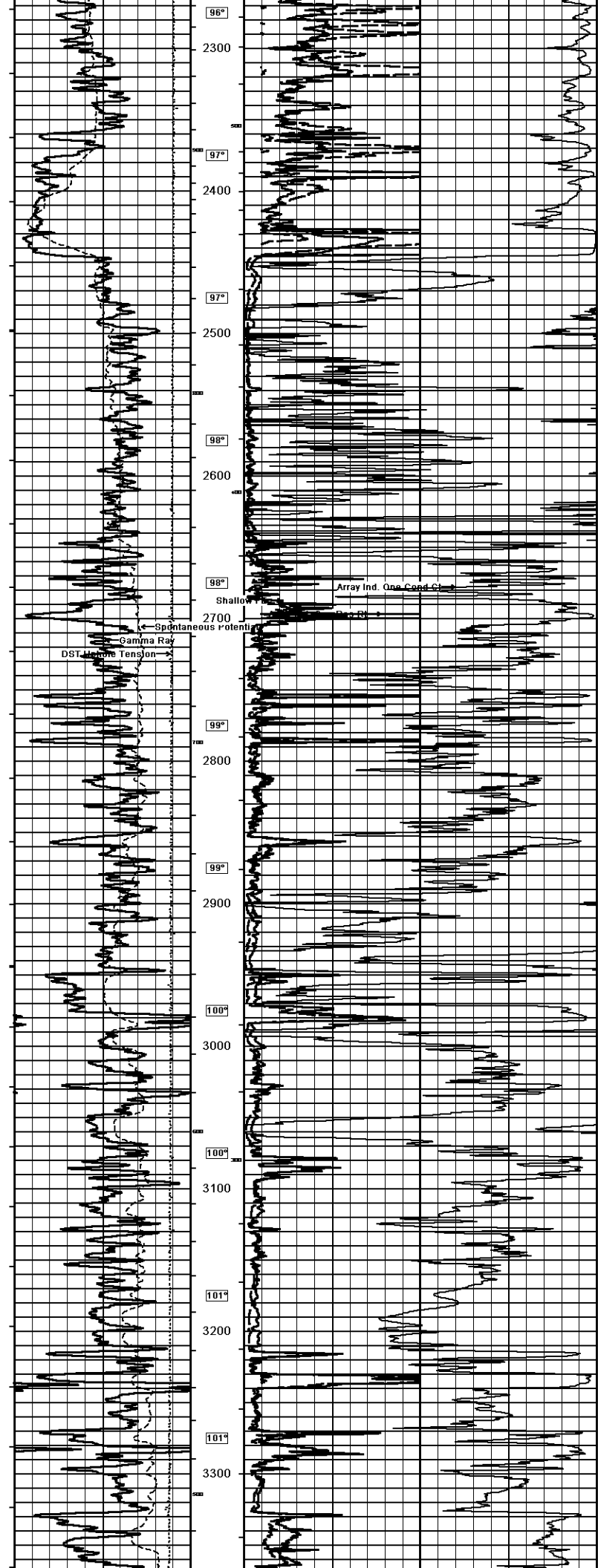
Compact Micro-Resistivity
MMR-C.A 248 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

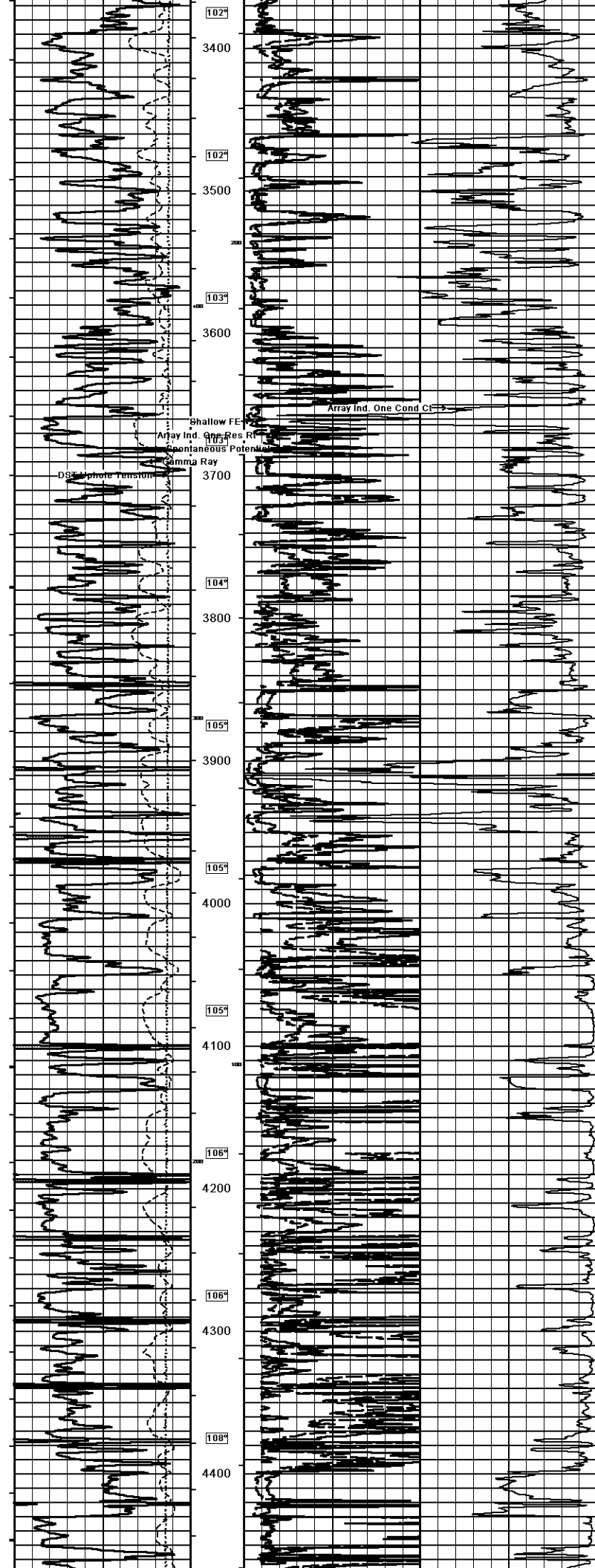
Compact Neutron
MDN-B.J 387 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

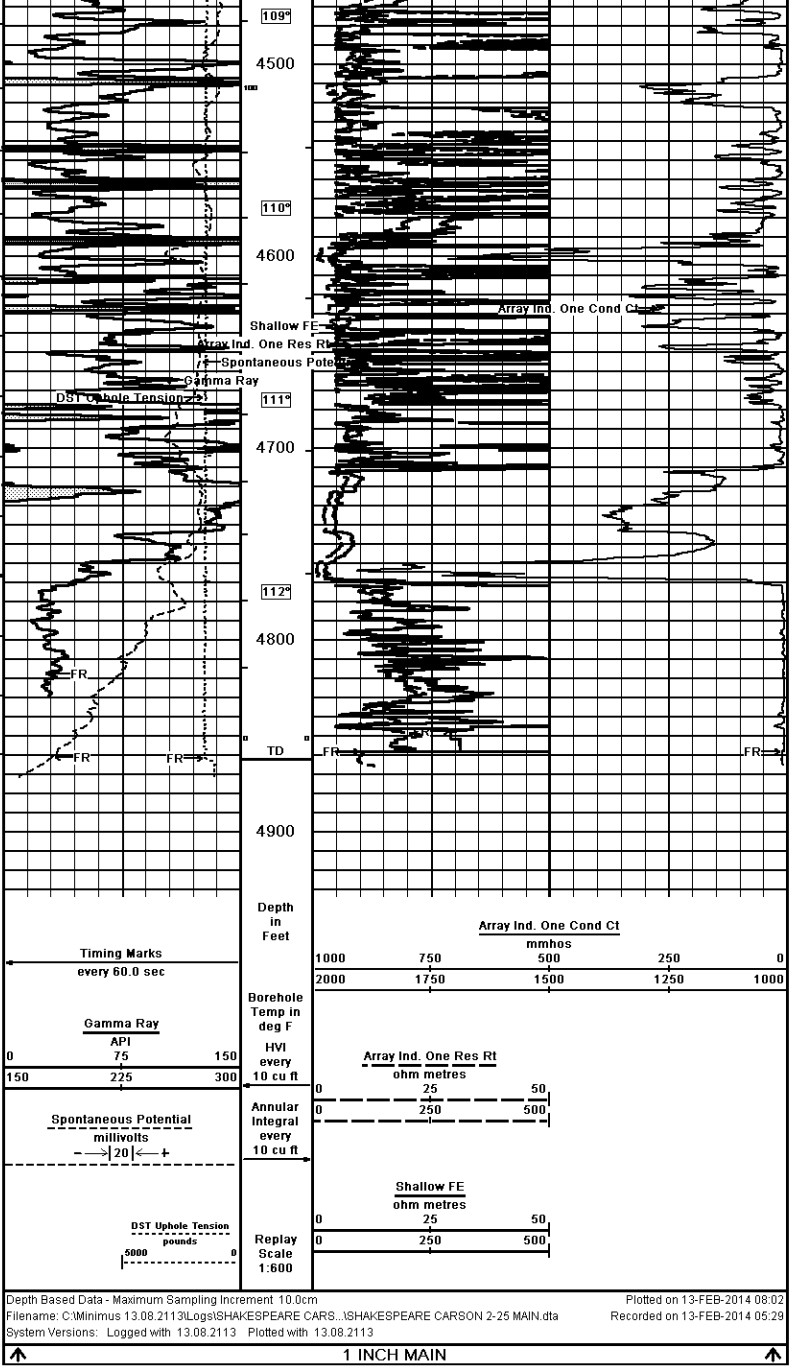












COMPANY	SHAKESPEARE OIL CO., INC.			
WELL	CARSON 2-25			
FIELD	PENCE EAST			
PROVINCE/COUNTY	SCOTT			
COUNTRY/STATE	U.S.A. / KANSAS			
Elevation Kelly Bushing	3112.00	feet	First Reading	4859.00 feet
Elevation Drill Floor	3110.00	feet	Depth Driller	4860.00 feet
Elevation Ground Level	3100.00	feet	Depth Logger	4862.00 feet
ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG				