



Weatherford[®]

**ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG**

COMPANY **SHAKESPEARE OIL COMPANY, INC.**
 WELL **ZERR TRUST #3-23**
 FIELD **WILDCAT**
 PROVINCE/COUNTY **GOVE**
 COUNTRY/STATE **U.S.A. / KANSAS**
 LOCATION **335' FSL & 1500' FWL
NW SW SE SW**

SEC 23	TWP 13S	RGE 31W	Other Services MPD/MDN
API Number 15-063-22016	MML	MSS	
Permit Number			
Permanent Datum G.L., Elevation 2864 feet			Elevations: KB 2874.00 DF 2872.00 GL 2864.00
Log Measured From KB			
Drilling Measured From K.B.			

Date	29-JUL-2012	
Run Number	ONE	
Depth Driller	4630.00	feet
Depth Logger	4632.00	feet
First Reading	4629.00	feet
Last Reading	251.00	feet
Casing Driller	251.00	feet
Casing Logger	251.00	feet
Bit Size	7.875	inches
Hole Fluid Type	CHEMICAL	
Density / Viscosity	9.40 g/c3	56.00 CP
PH / Fluid Loss	10.50	8.80 ml/30Min
Sample Source	FLOWLINE	
Rm @ Measured Temp	0.58 @ 93.0	ohm-m
Rmf @ Measured Temp	0.46 @ 93.0	ohm-m
Rmc @ Measured Temp	0.70 @ 93.0	ohm-m
Source Rmf / Rmc	CALC	CALC
Rm @ BHT	0.45 @121.0	ohm-m
Time Since Circulation	3 HOURS	
Max Recorded Temp	121.00	deg F
Equipment Name	COMPACT	
Equipment / Base	13057	LIB
Recorded By	L. SCOTT	
Witnessed By	TIM PRIEST	
S.O. / JOB #	3534564	LB12-193

BOREHOLE RECORD

Last Edited: 29-JUL-2012 11:10

Bit Size inches	Depth From feet	Depth To feet
7.875	251.00	4632.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	251.00	24.00

REMARKS

Tools Ran: MCG, MML, MDN, MPD, MFE, MSS, MAI.
 Hardware Used: MDN Dual Eccentralizer used. MPD 8 inch profile plate used. MFE, MSS and MAI 0.5 inch standoffs used.
 2.71 g/cc Limestone Density Matrix used to calculate porosity.
 Sonic porosity calculated using a Limestone scale (47.5 usec/ft).
 All intervals logged and scaled per customer's request.
 Tight pulls, washouts and borehole rugosity will affect data quality.
 Annular volume with 4.5 inch production casing= 258 cu. ft.
 Total hole volume from TD to Surface casing= 1900 cu. ft.
 Service order: #3534564
 Rig: HD Drilling #2
 Engineer: L. Scott
 Operator(s): K. Rinehart, J. LaPoint

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions in our price schedule.

2 INCH MAIN

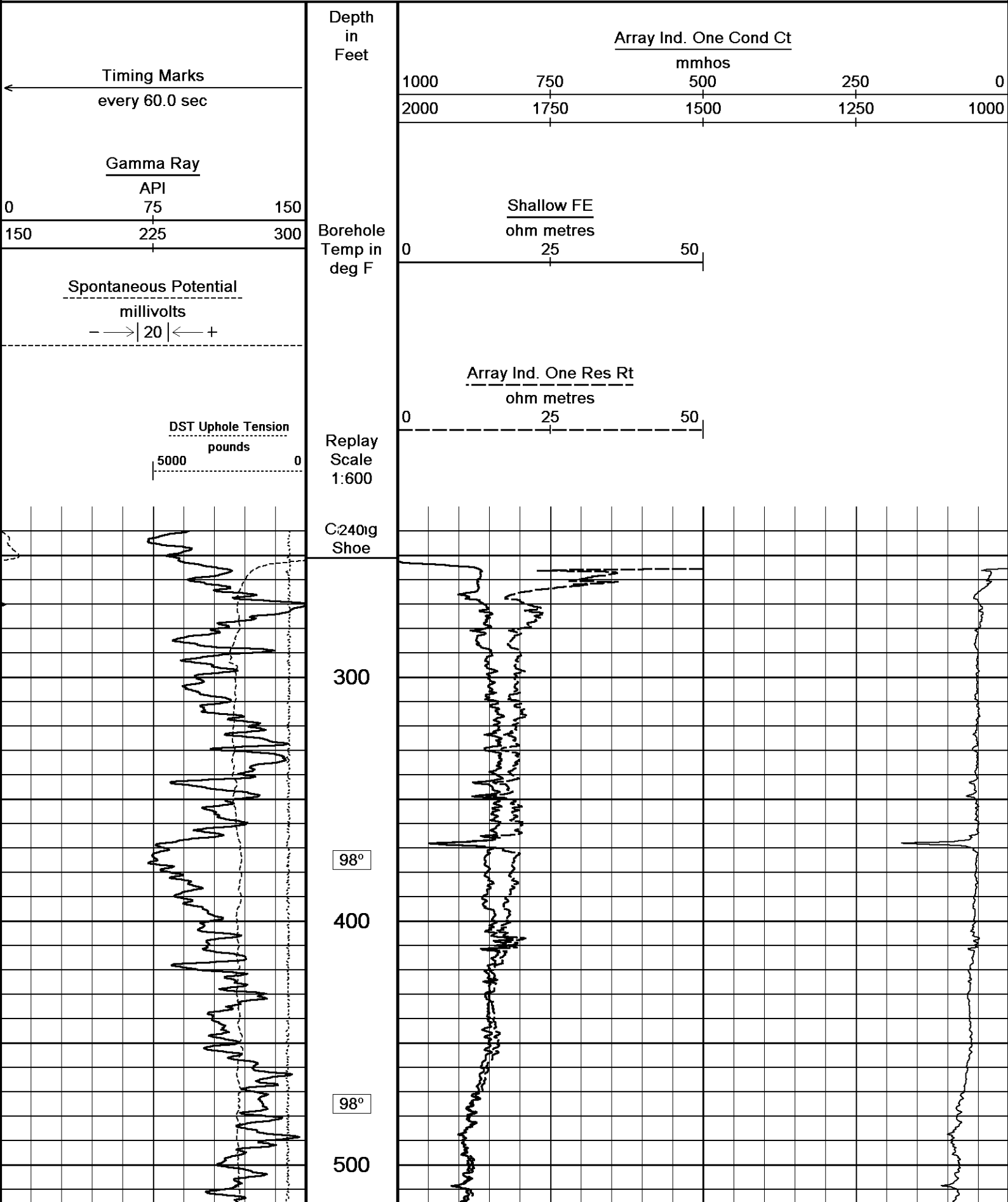
Depth Based Data - Maximum Sampling Increment 10.0cm

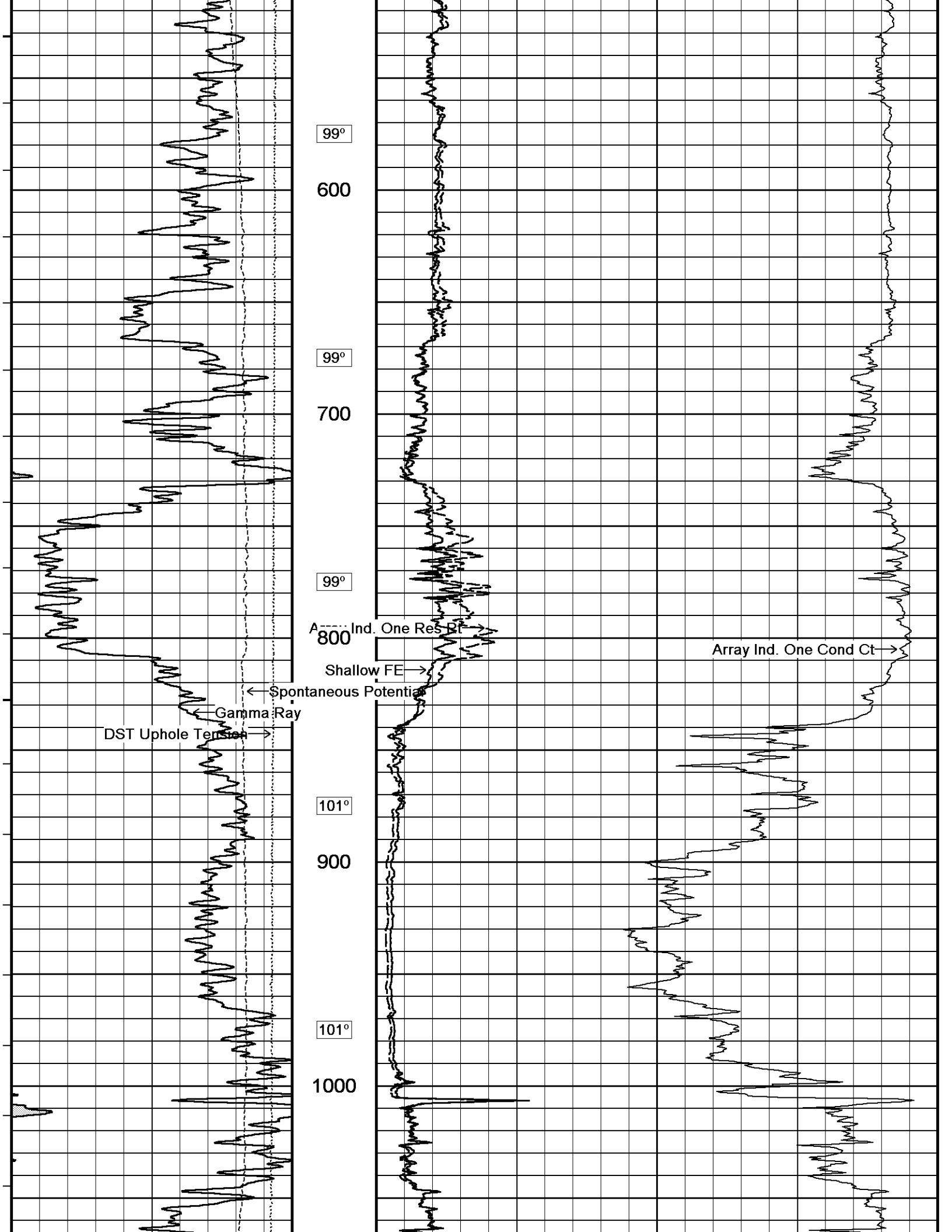
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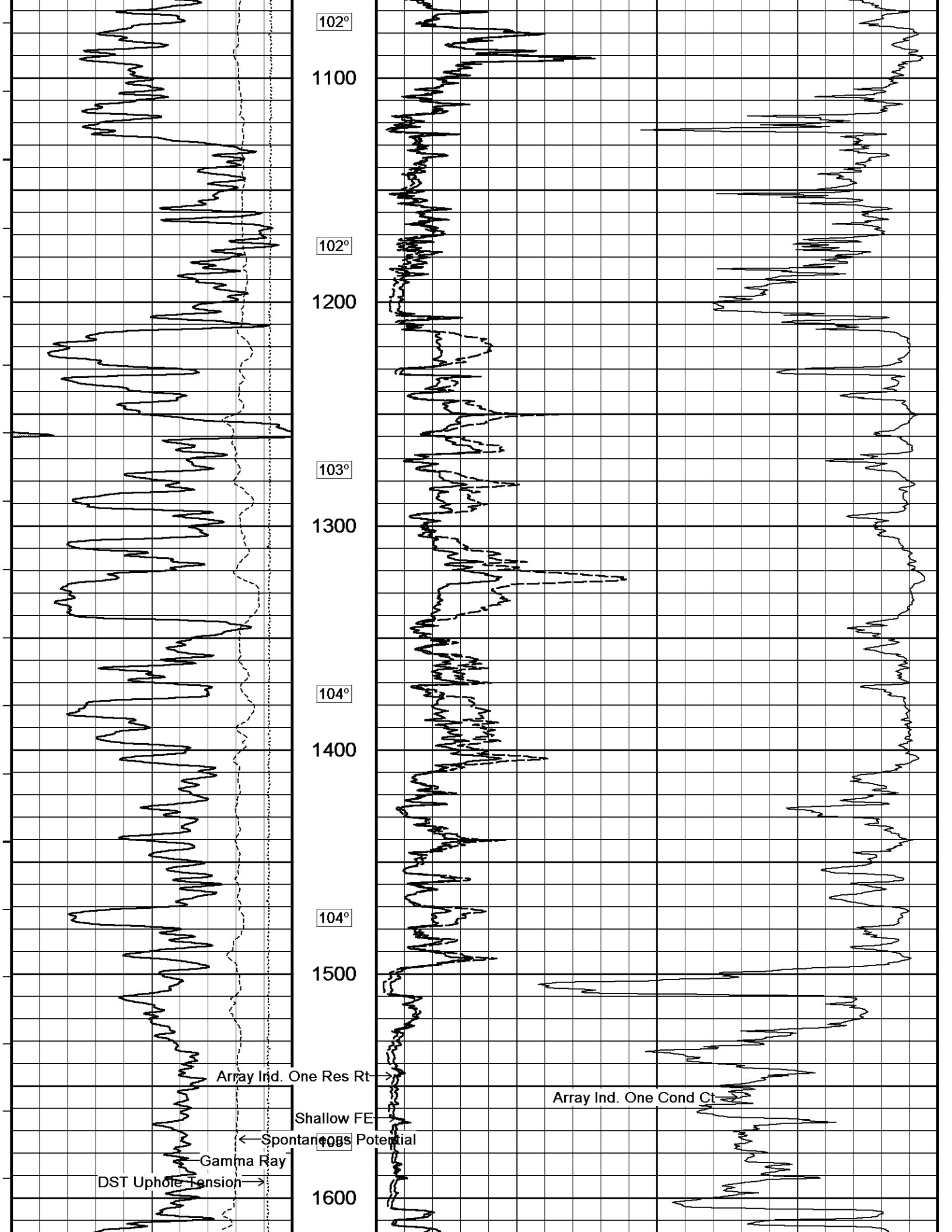
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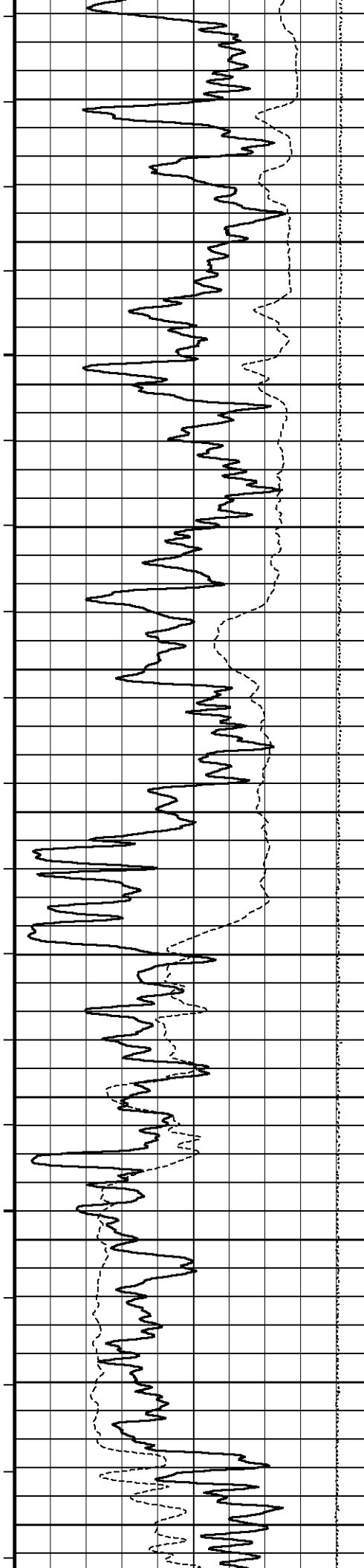
Recorded on 29-JUL-2012 09:36

System Versions: Logged with 13.02.6600 Plotted with 13.02.6600









106°

1700

107°

1800

108°

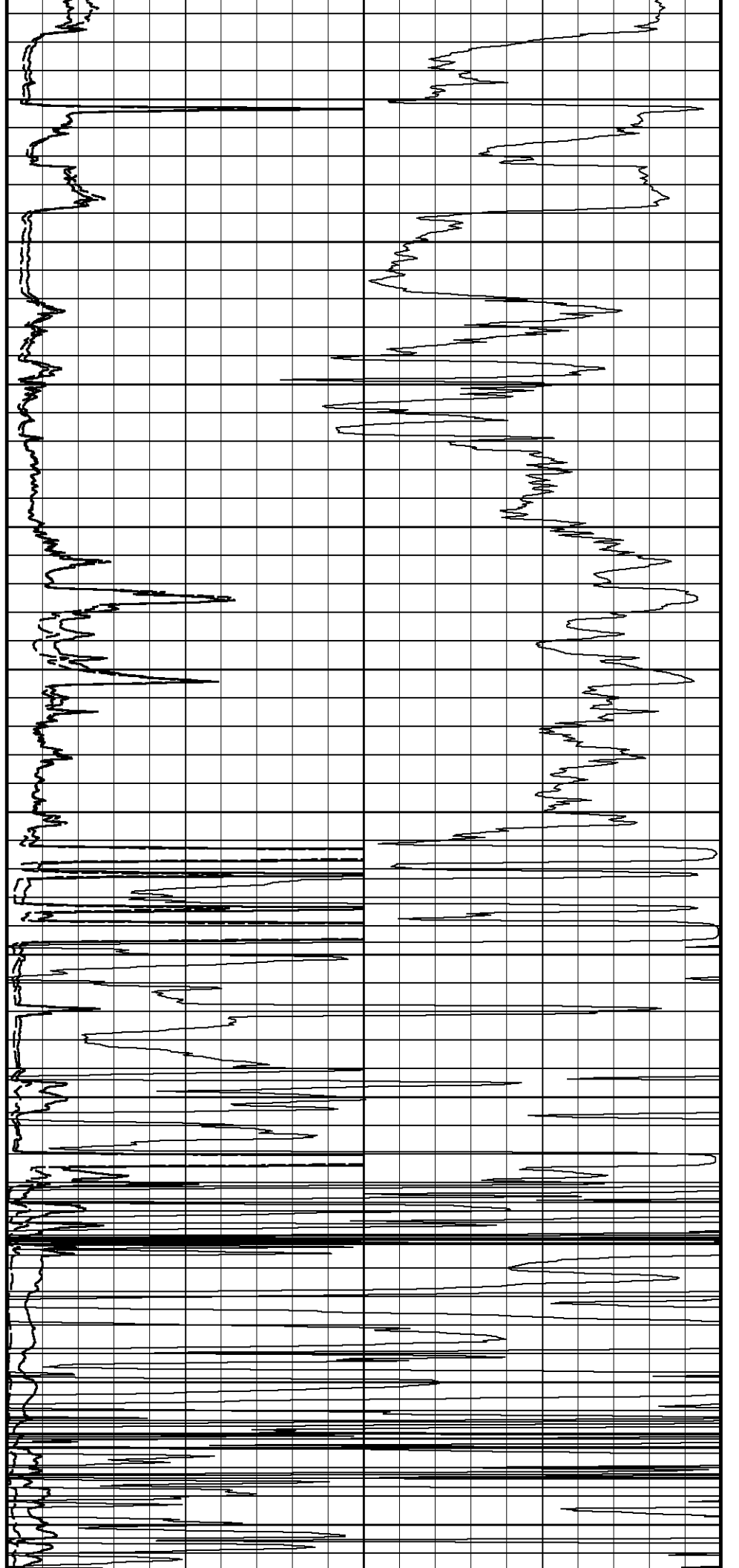
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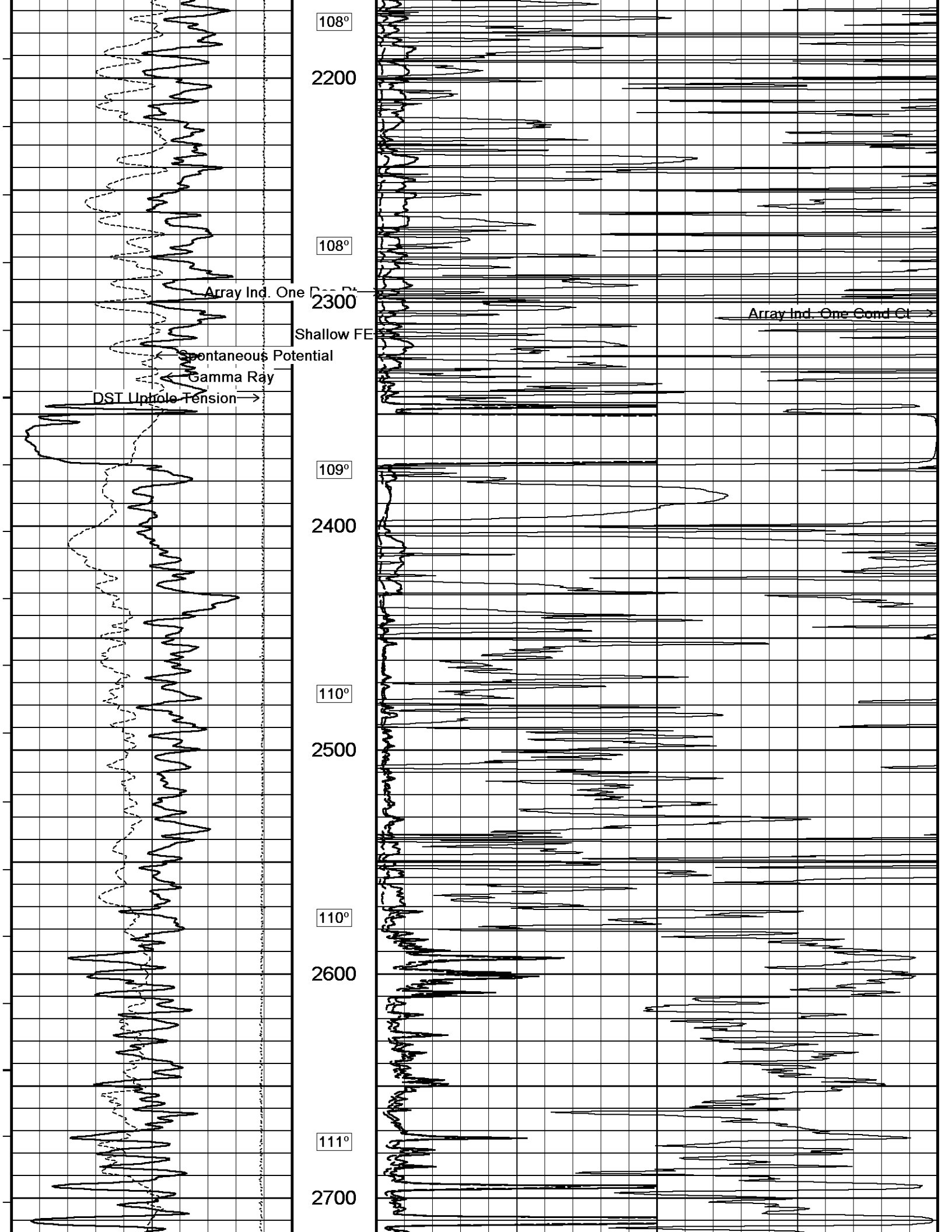
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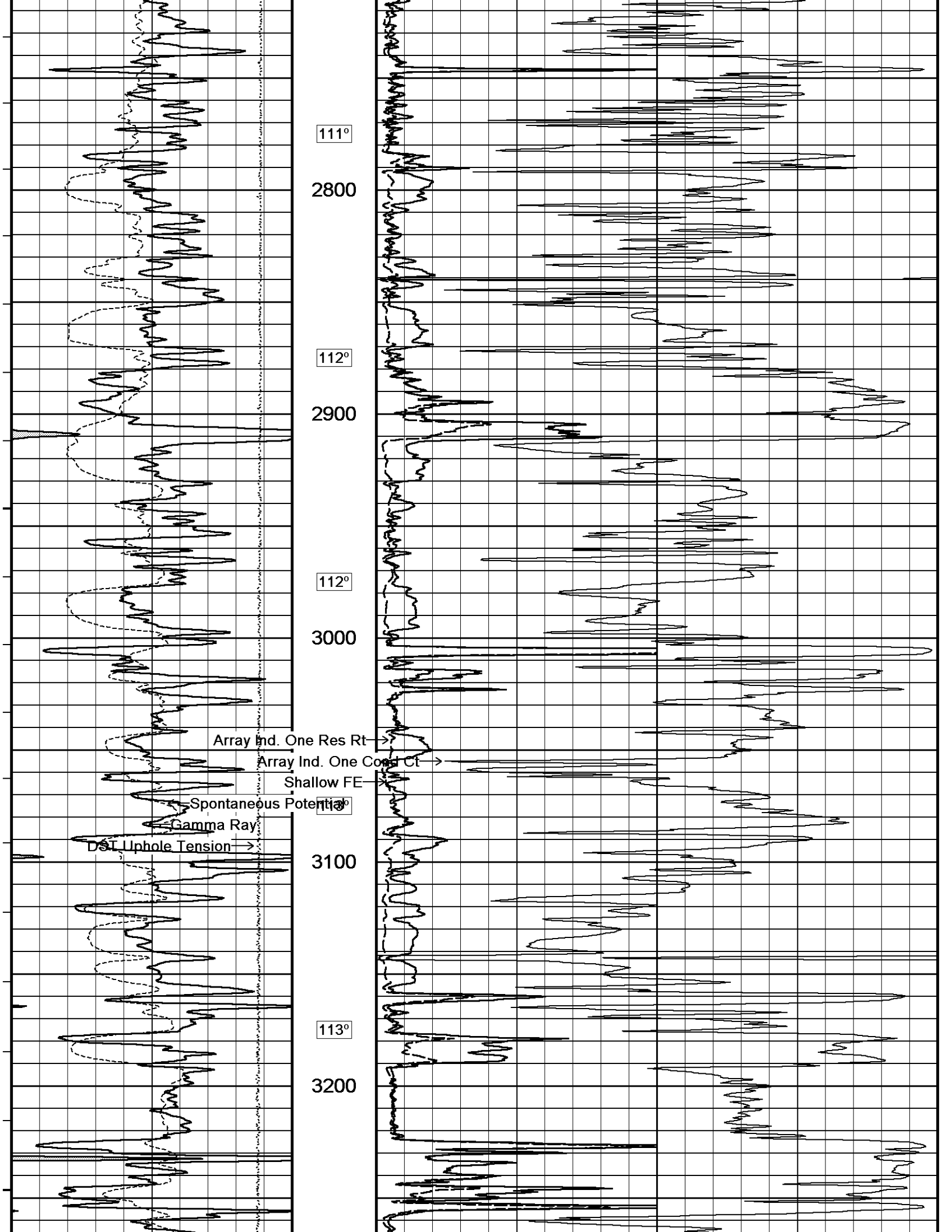
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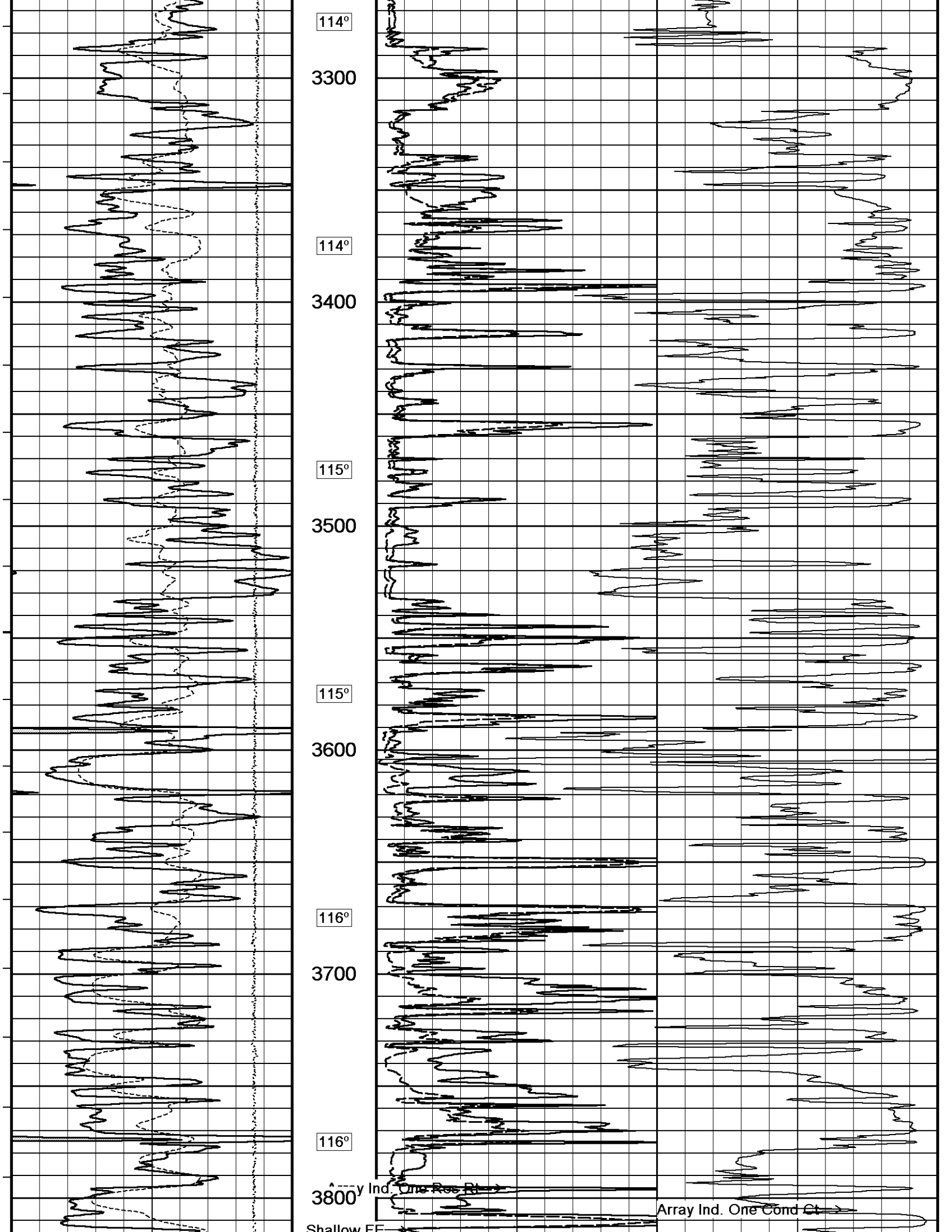
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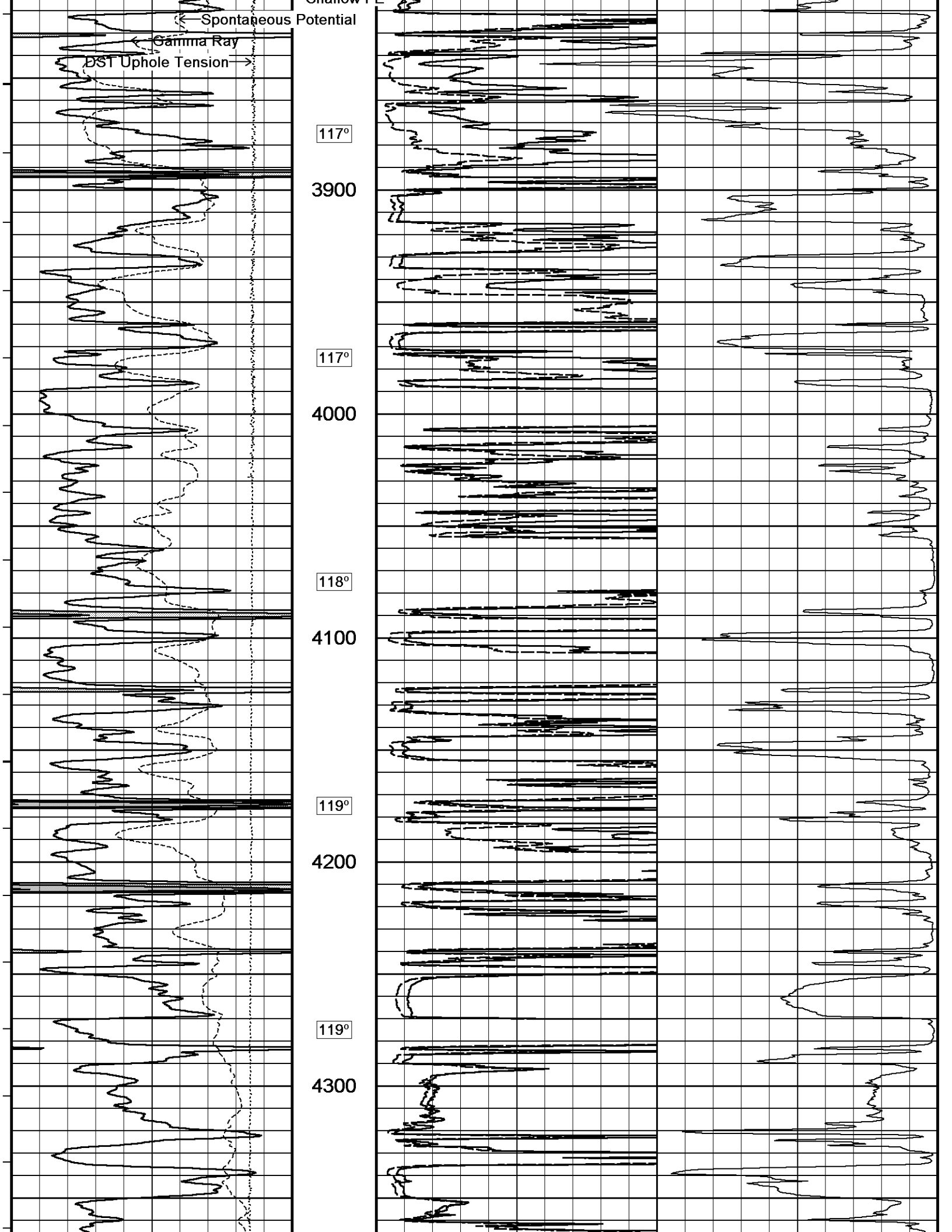
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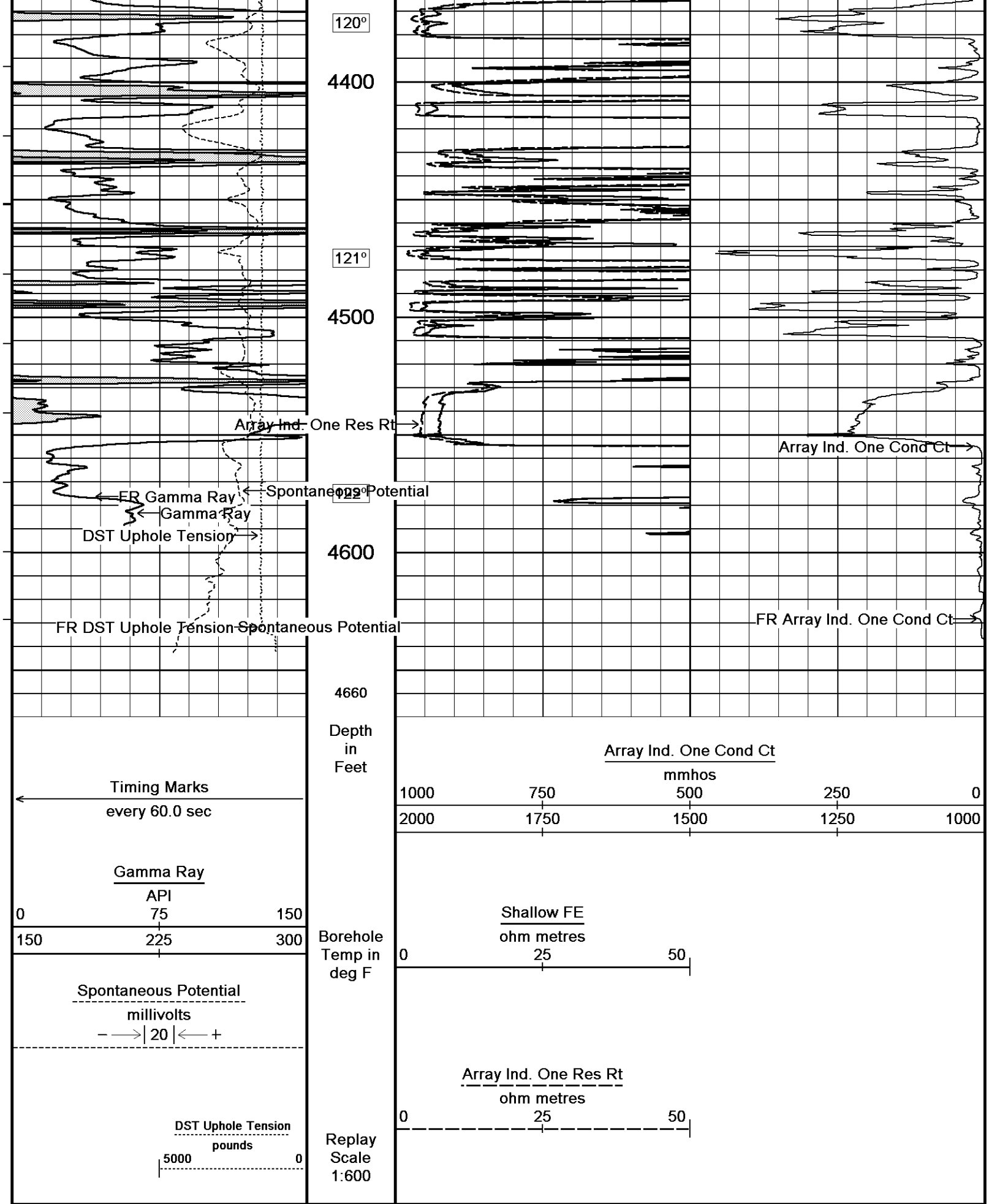












5 INCH MAIN

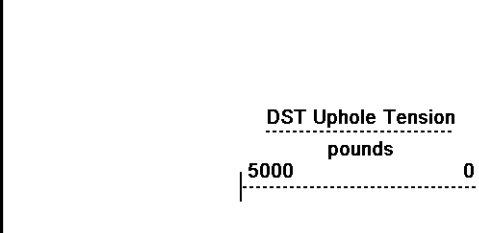
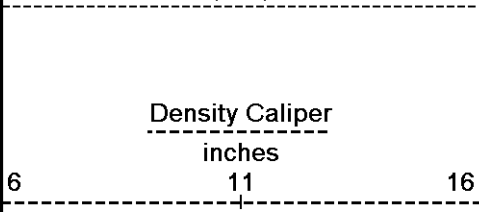
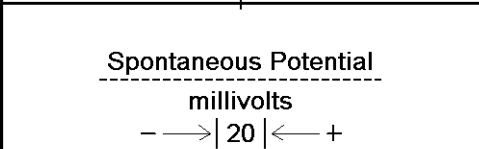
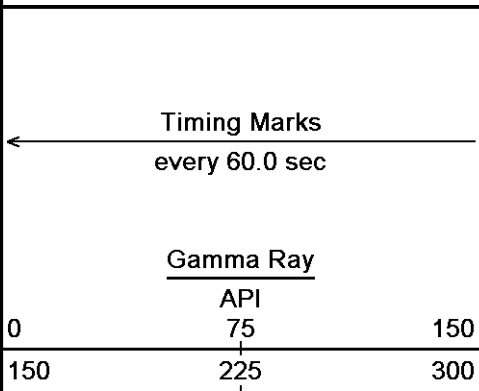
Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 29-JUL-2012 12:39

Filename: C:\Minimus 13.02.6600\Data\Shakespeare Zerr Tru...\Shakespeare Zerr Trust #3-23_002.dta

Recorded on 29-JUL-2012 09:36

System Versions: Logged with 13.02.6600 Plotted with 13.02.6600



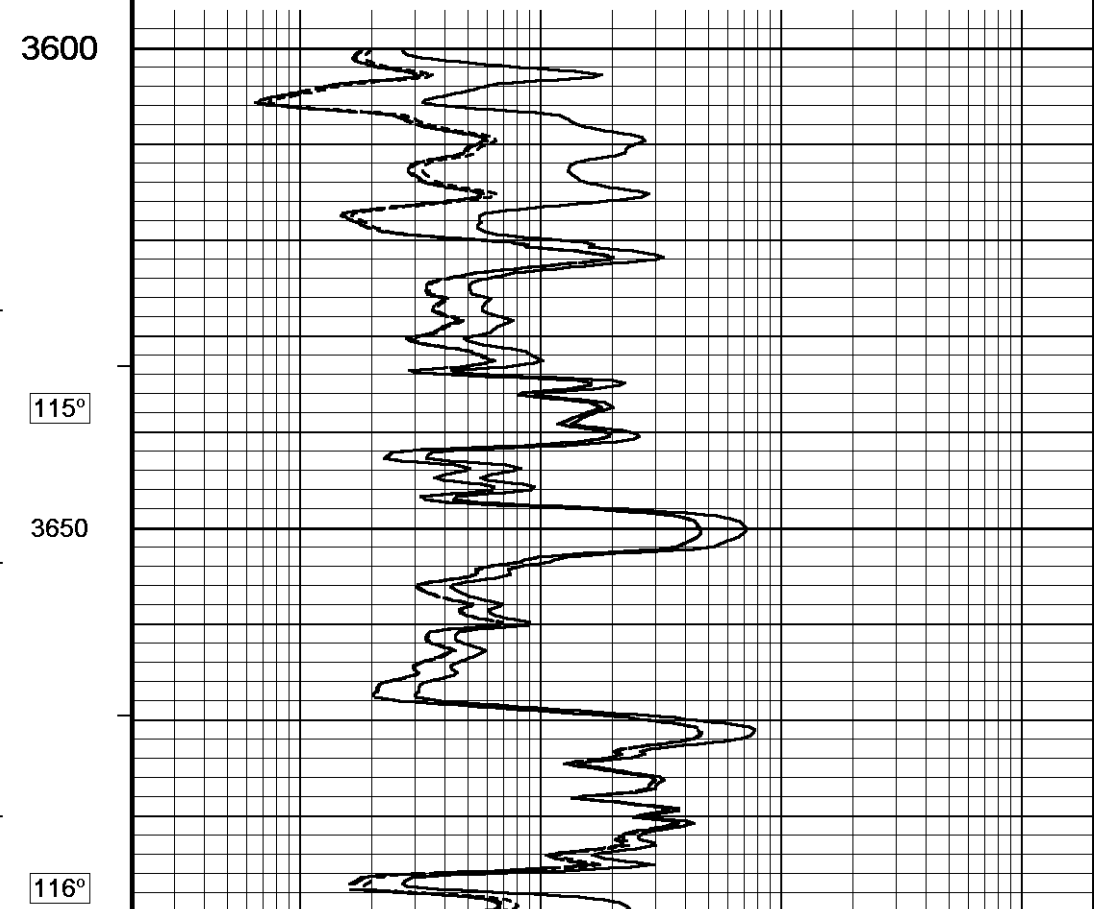
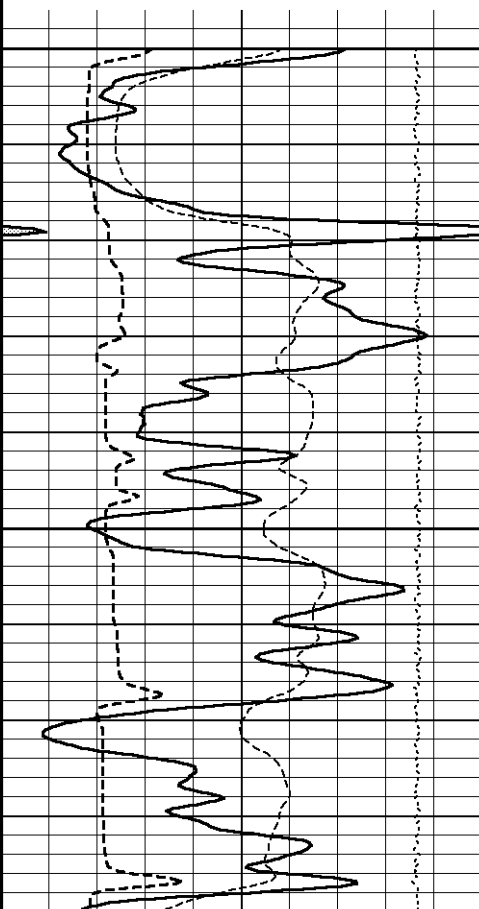
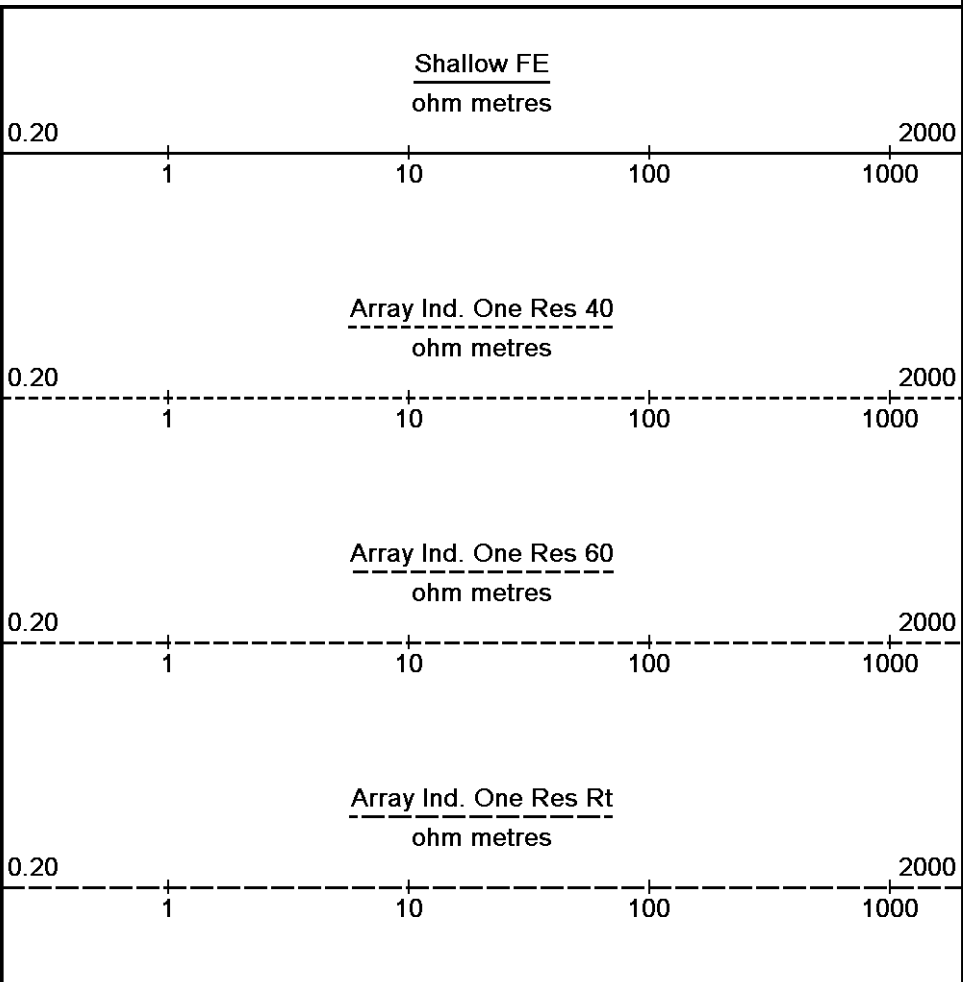
Depth in Feet

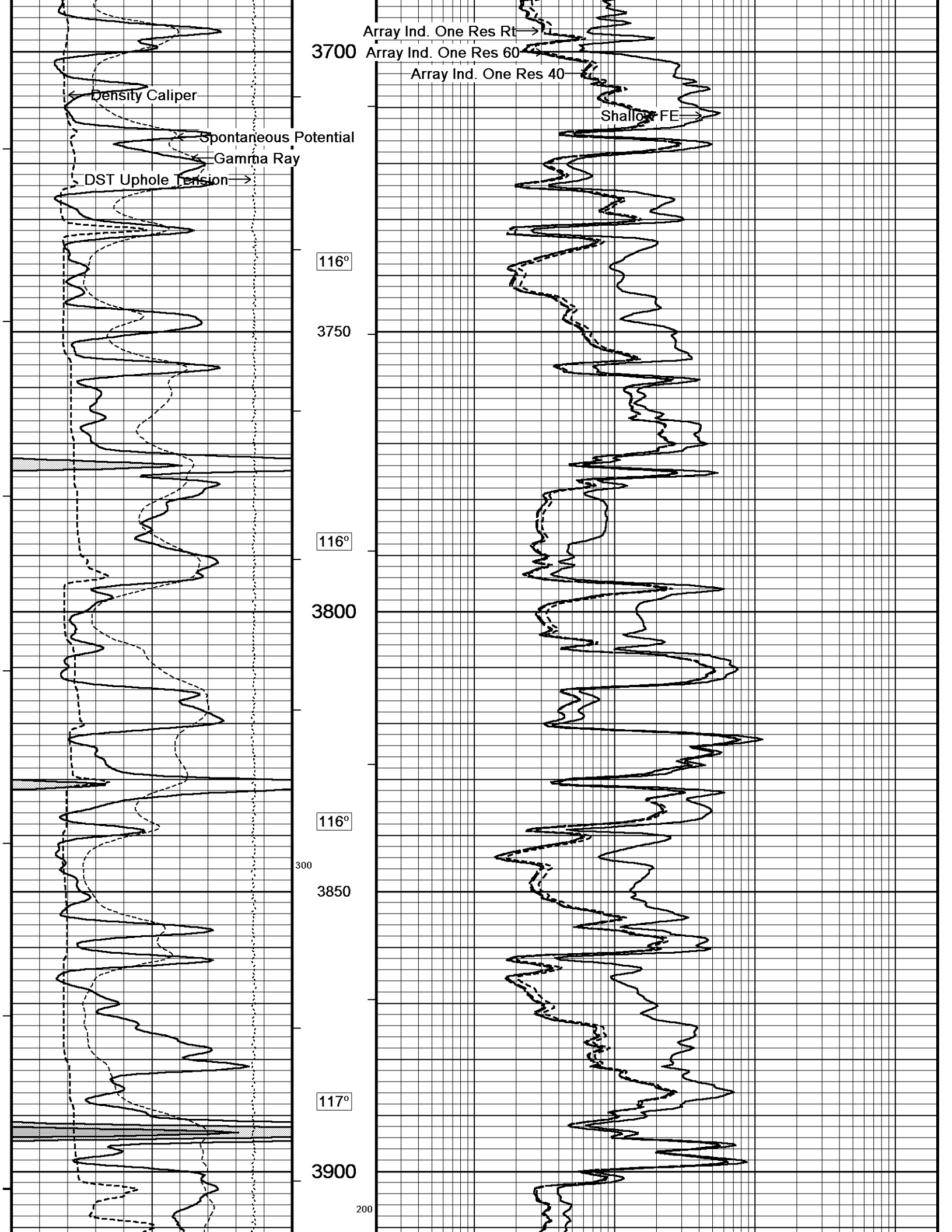
Borehole Temp in deg F

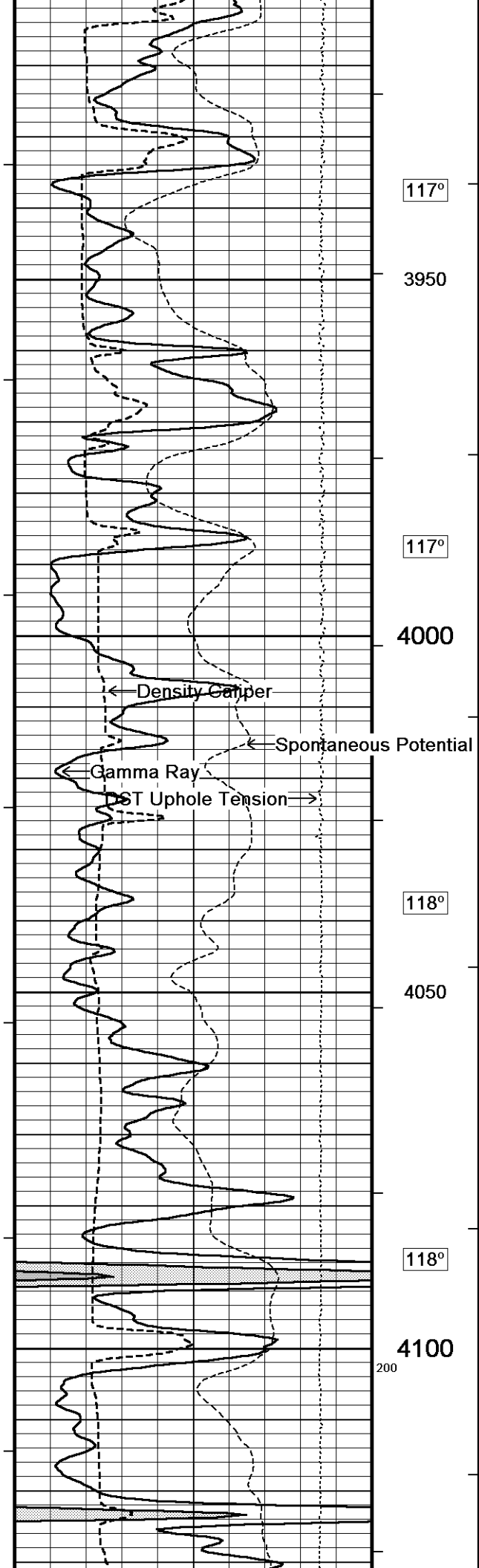
HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240







117°

3950

117°

4000

Density Gauge

Gamma Ray

Spontaneous Potential

ST Uphole Tension

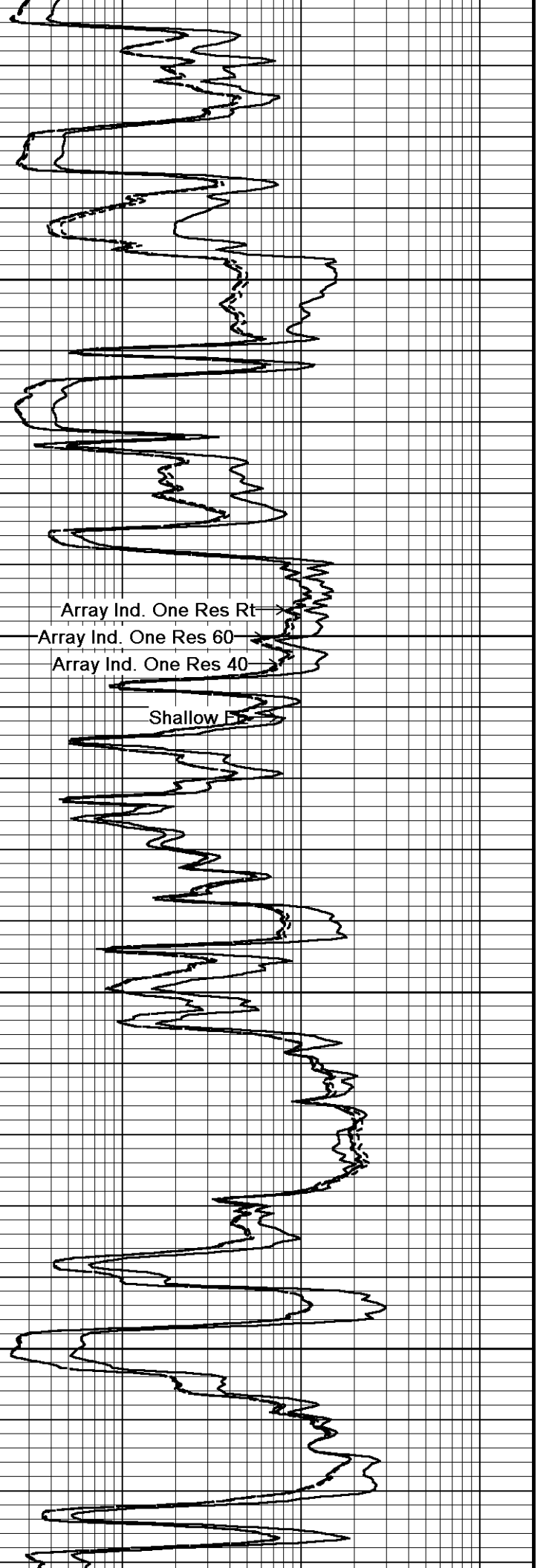
118°

4050

118°

4100

200

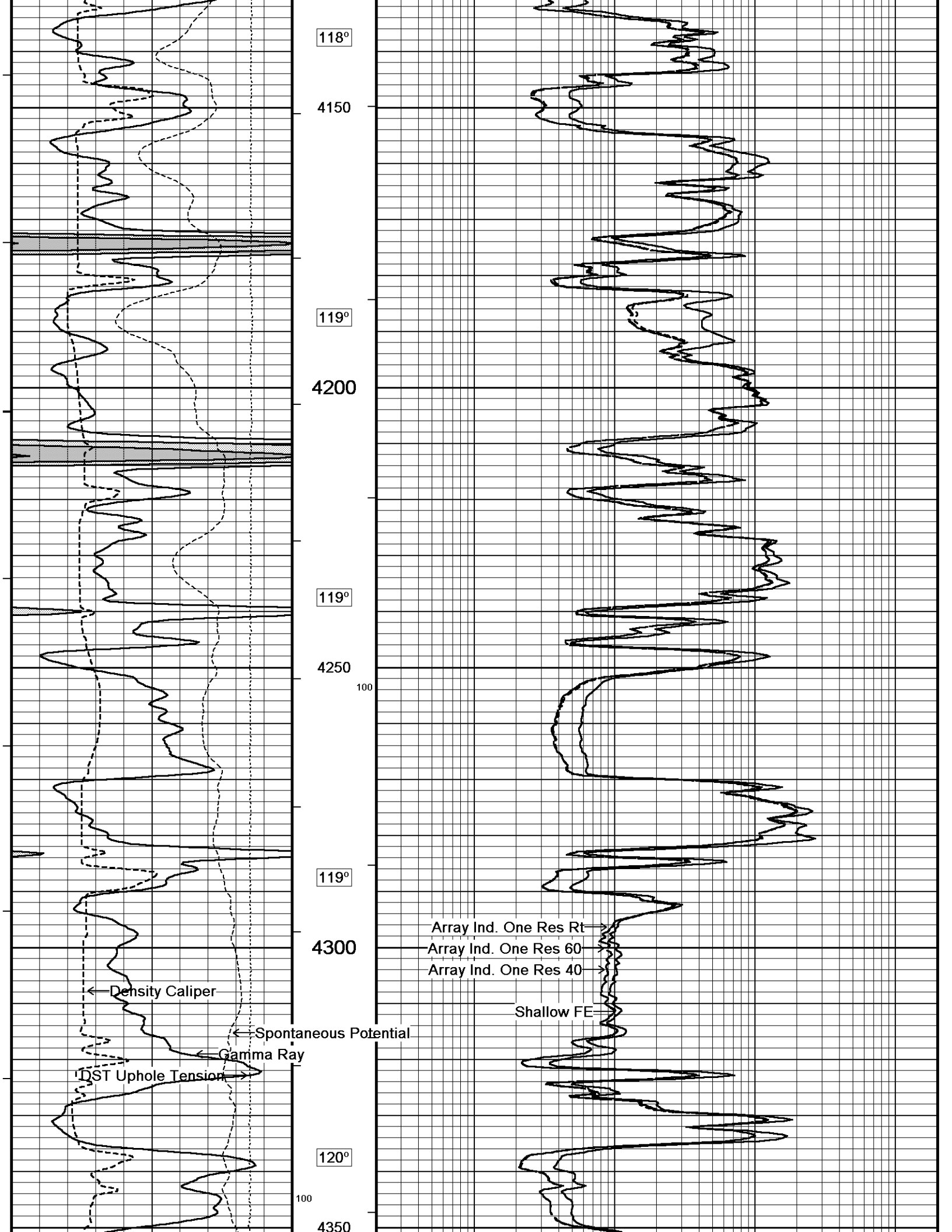


Array Ind. One Res Rt

Array Ind. One Res 60

Array Ind. One Res 40

Shallow Fm



118°

4150

119°

4200

119°

4250

100

119°

4300

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

Shallow FE

Density Caliper

Spontaneous Potential

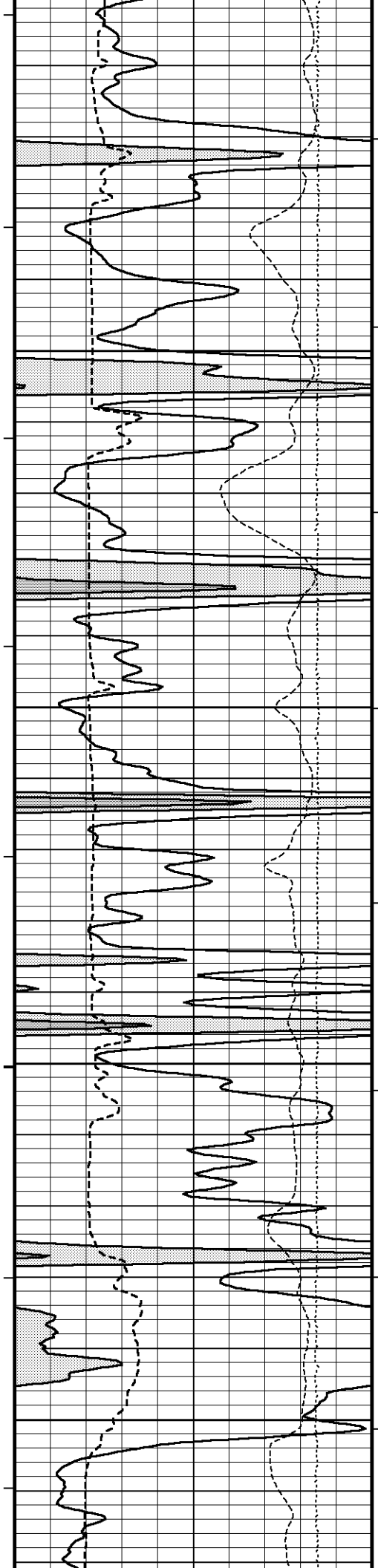
Gamma Ray

DST Uphole Tension

120°

100

4350



120°

4400

121°

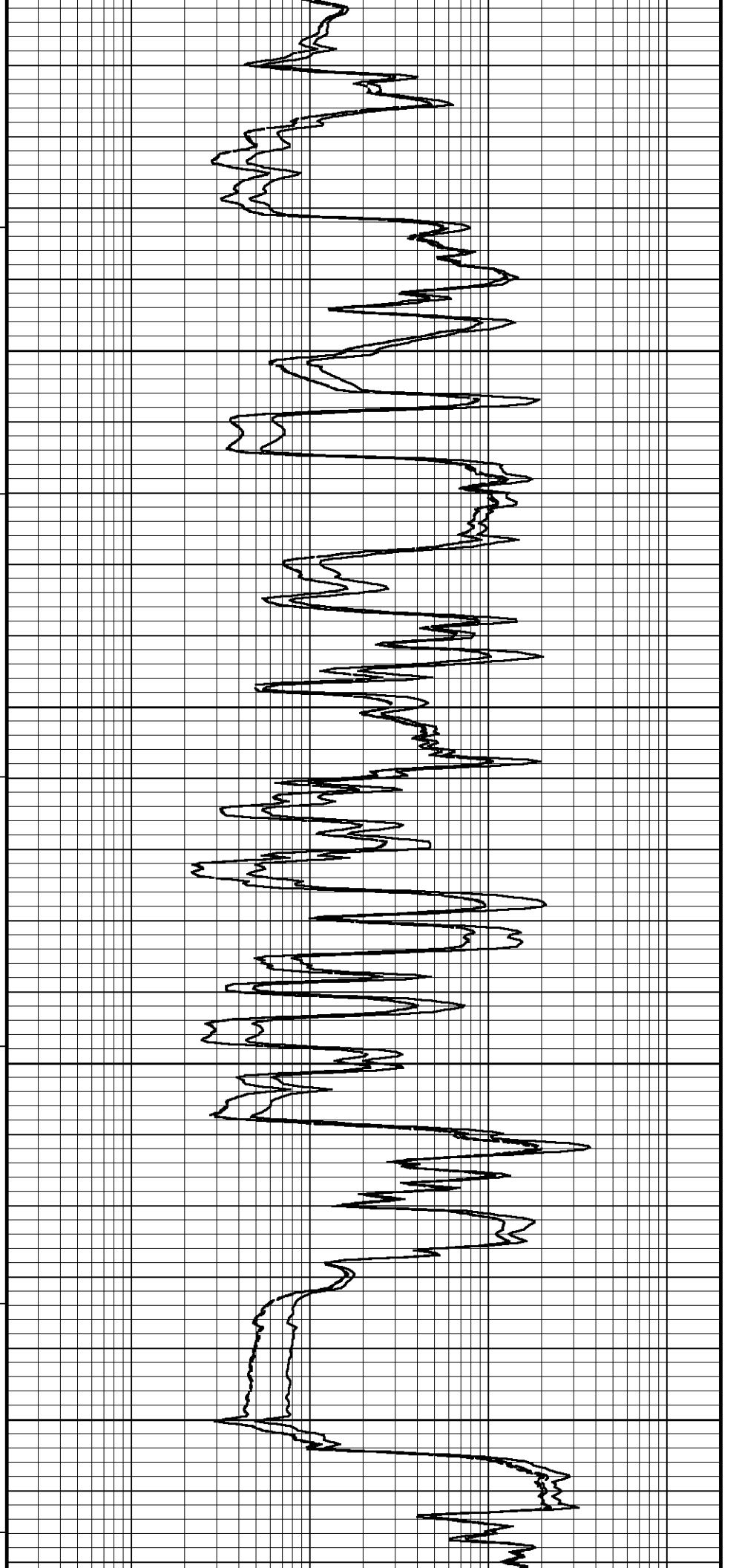
4450

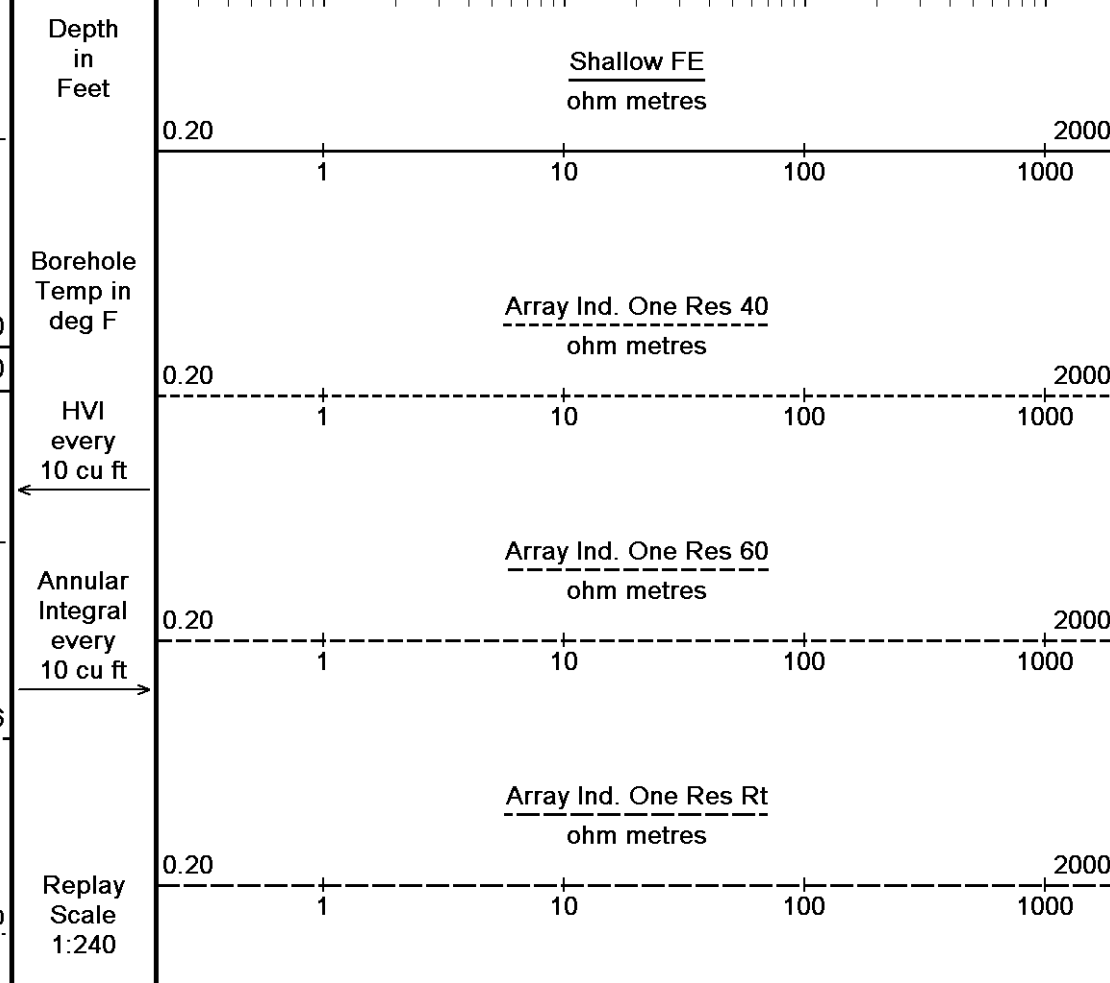
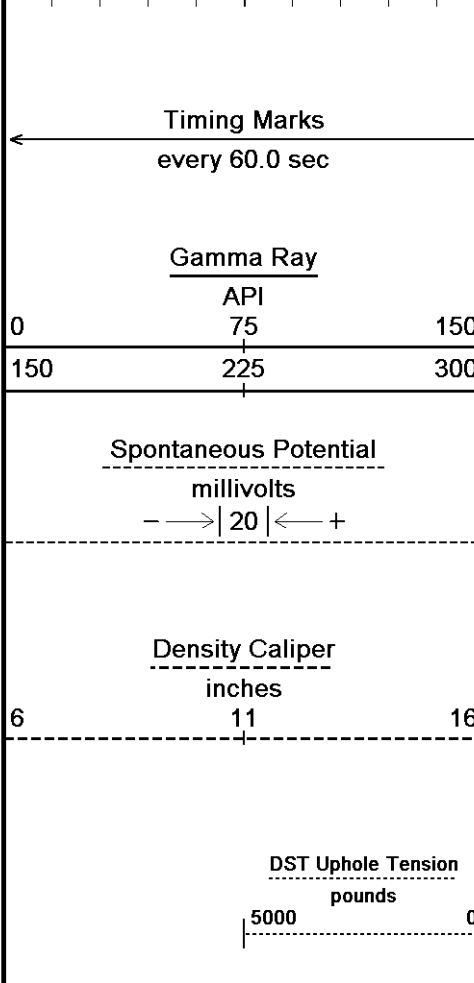
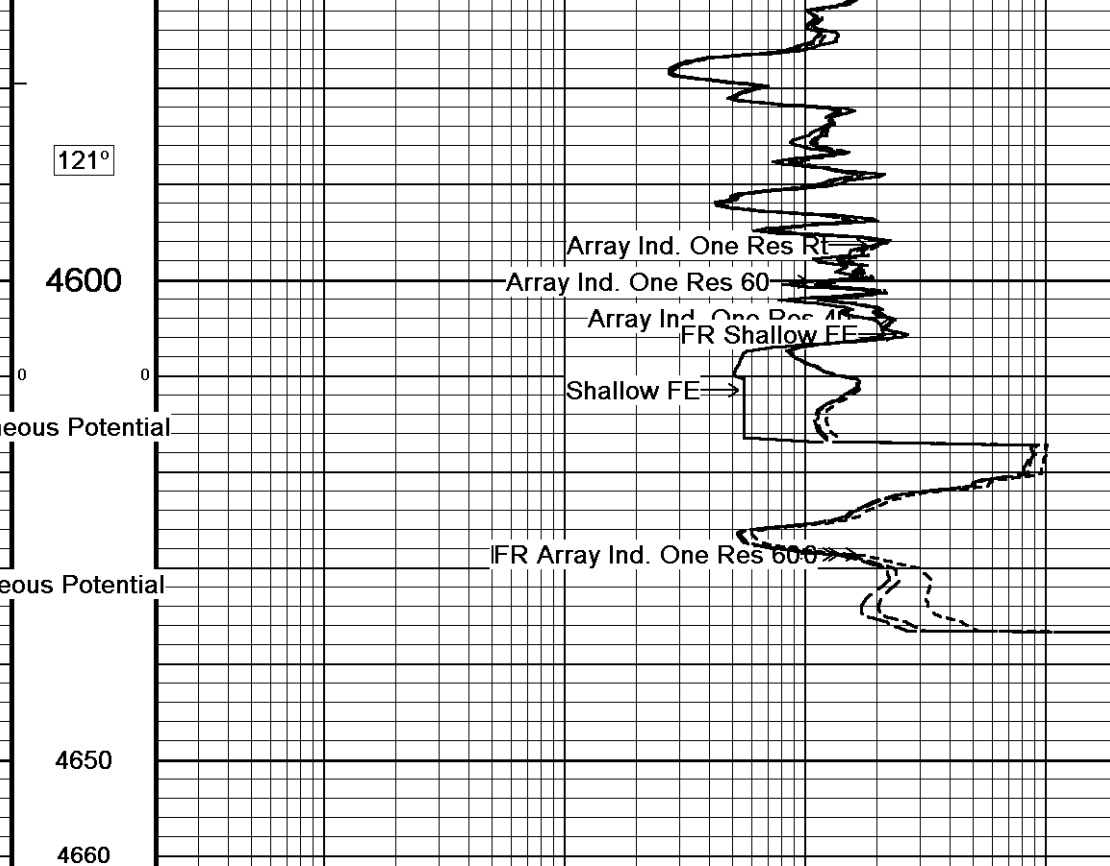
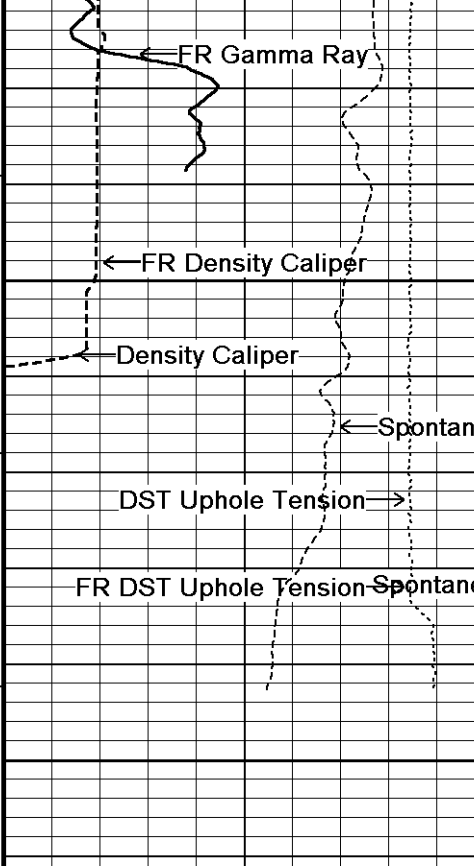
121°

4500

122°

4550

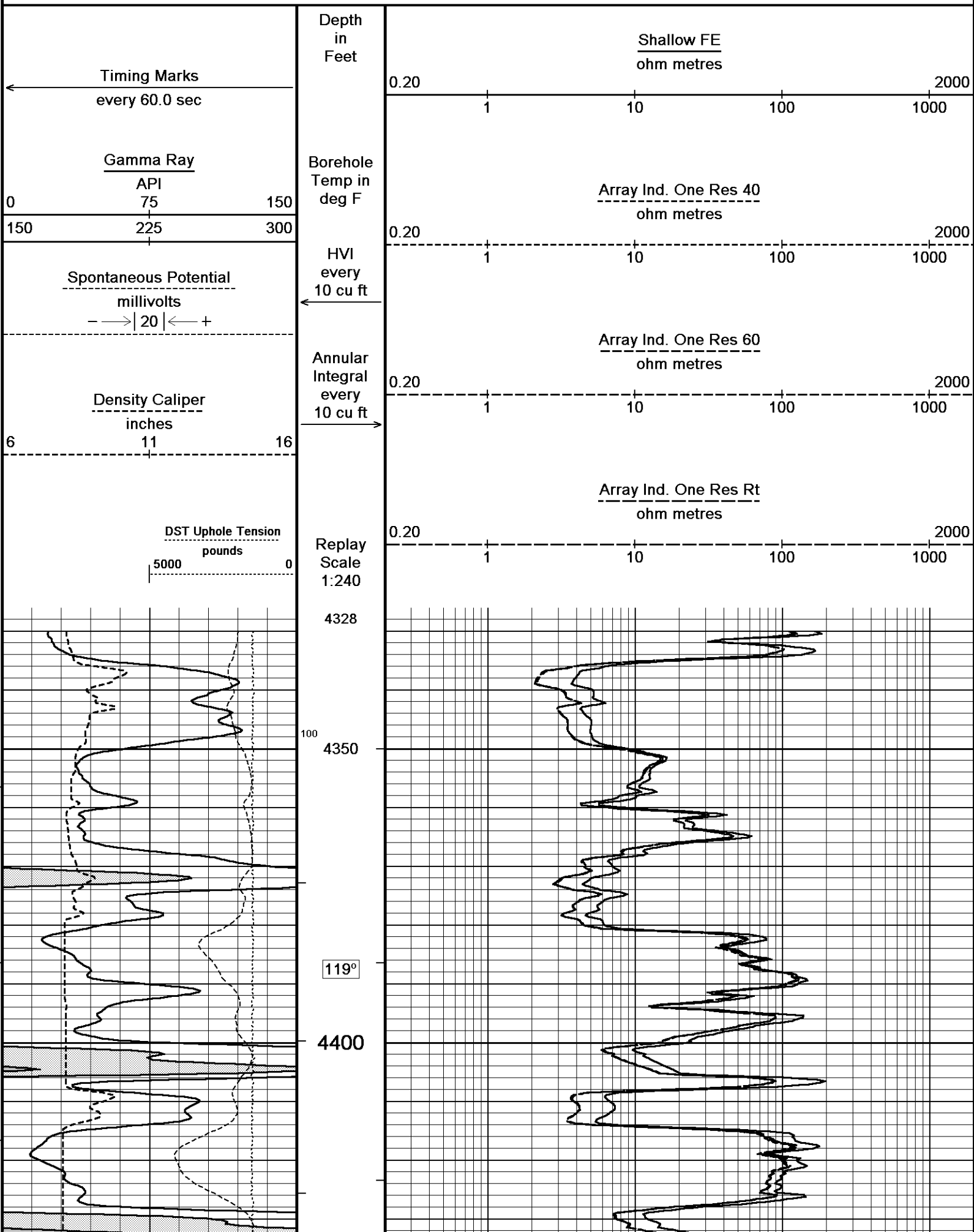


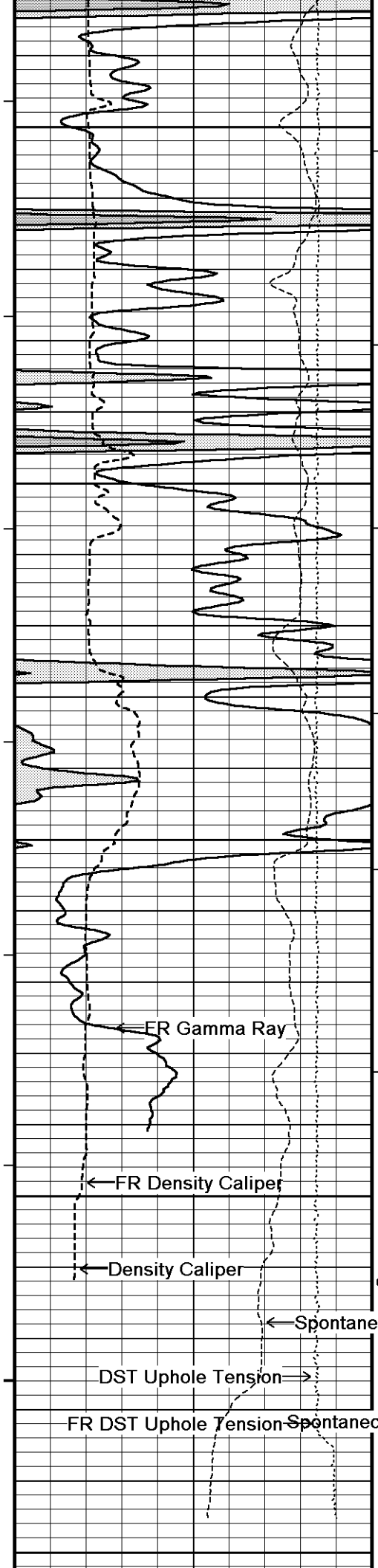


Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 29-JUL-2012 12:39
 Filename: C:\Minimus 13.02.6600\Data\Shakespeare Zerr Tru...\Shakespeare Zerr Trust #3-23_002.dta
 Recorded on 29-JUL-2012 09:36
 System Versions: Logged with 13.02.6600 Plotted with 13.02.6600

↑ 5 INCH MAIN ↑

↓ REPEAT SECTION ↓





120°

4450

120°

4500

120°

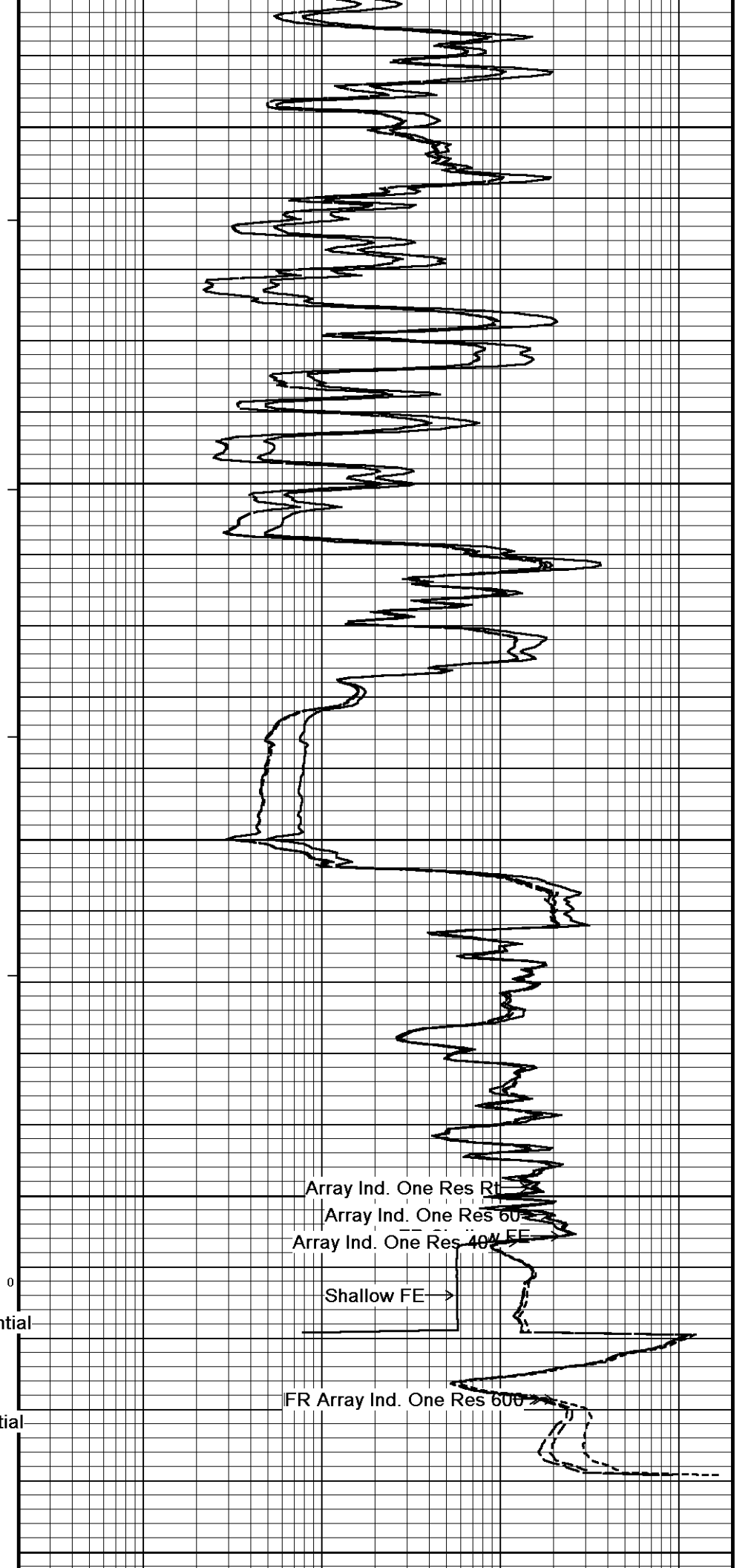
4550

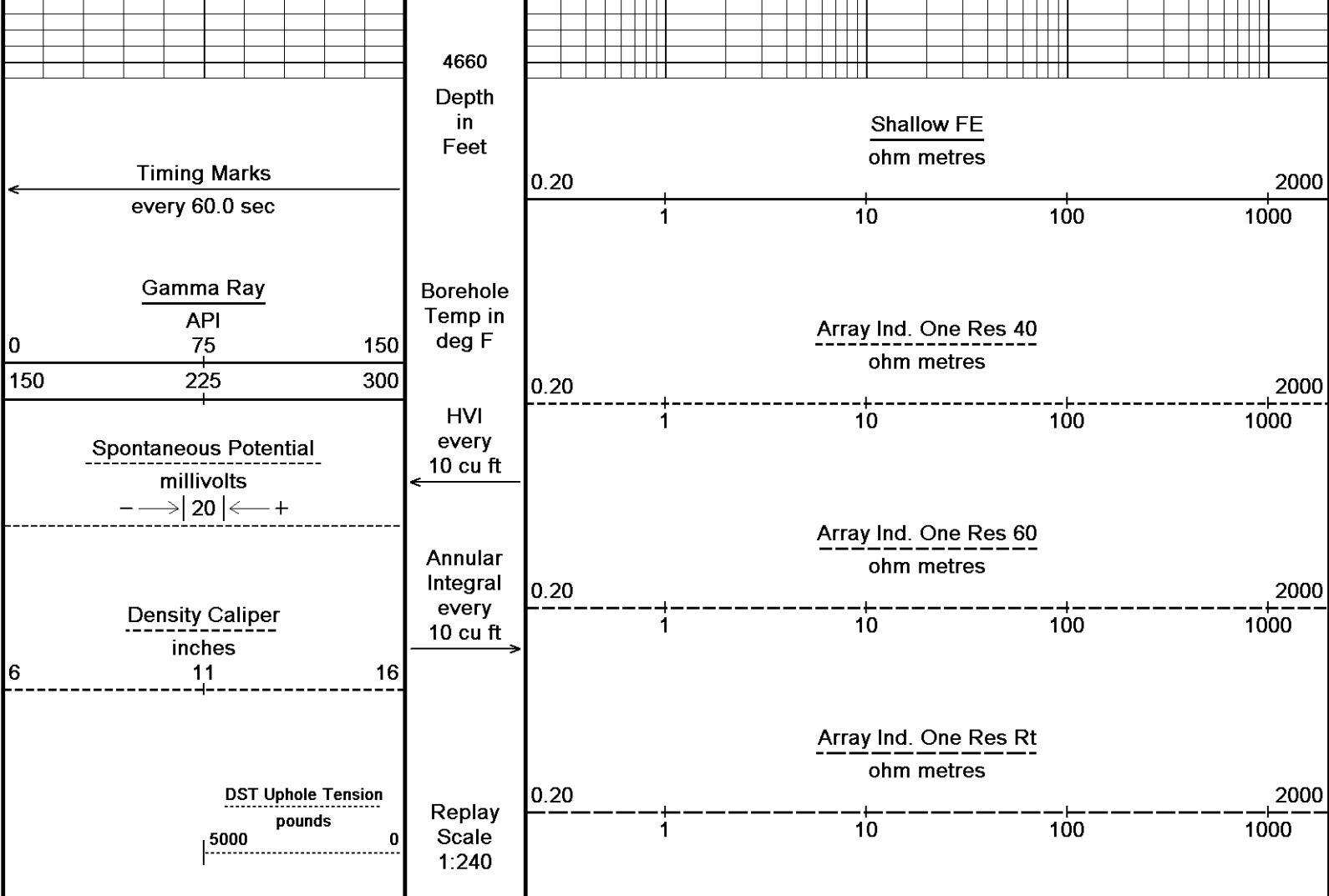
119°

4600

0

4650





Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 29-JUL-2012 12:39
 Filename: C:\Minimus 13.02.6600\Data\Shakespeare Zerr Tru...\Shakespeare Zerr Trust #3-23_001.dta
 Recorded on 29-JUL-2012 09:09
 System Versions: Logged with 13.02.6600 Plotted with 13.02.6600

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION
 C:\Minimus 13.02.6600\Data\Shakespeare Zerr Trust #3-23\Shakespeare Zerr Trust #3-23_001.dta

General Constants All 000 Last Edited on 29-JUL-2012,07:18

General Parameters		
Mud Resistivity	0.580	ohm-metres
Mud Resistivity Temperature	93.000	degrees F
Water Level	0.000	feet
Density/Neutron 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	Density Caliper	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. Four Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

Gamma Calibration MCG-C 84 Field Calibration on 29-JUL-2012 02:56

	Measured	Calibrated (API)
Background	71	48

Background	71	48
Calibrator (Gross)	1147	773
Calibrator (Net)	1075	725

Gamma Constants MCG-C 84			Last Edited on 29-JUL-2012,07:13
Gamma Calibrator Number	GR38		
Mud Density	1.13	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl	0.00	kppm	

SP Calibration MCG-C 84			Field Calibration on 24-JUL-2012,09:07
	Measured	Calibrated (mV)	
Reference 1	105.6	101.0	
Reference 2	-96.1	-101.0	

High Resolution Temperature Calibration MCG-C 84			Field Calibration on 23-JUL-2012,09:56
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	75.00	75.00	

High Resolution Temperature Constants MCG-C 84			Last Edited on 23-JUL-2012,09:56
Pre-filter Length	11		

Micro Normal and Micro Inverse Calibration MML-A 4			Base Calibration on 24-JUL-2012 08:59	Field Check on 26-JUL-2012 13:26
Base Calibration				
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.2	60.2	5.0	25.0
Micro Inverse	15.7	78.4	5.0	25.0
Channel	Base Check (ohm-m)		Field Check (ohm-m)	
Micro Normal	62.9		62.9	
Micro Inverse	48.2		48.2	

Micro Normal and Micro Inverse Constants MML-A 4			Last Edited on 29-JUL-2012,07:14
Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159		
Micro Normal K Factor	1.0000		
Micro Inverse K Factor	1.0000		
Standoff Offset	N/A	inches	

Caliper Calibration MML-A 4			Base Calibration on 24-JUL-2012 08:53	Field Calibration on 26-JUL-2012 13:29
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	15504	5.98		
2	18771	7.97		
3	22124	9.86		
4	25894	11.92		
5	0	0.00		
6	N/A	N/A		
Field Calibration				
	Measured Caliper (in)	Actual Caliper (in)		
	5.96	5.98		

Neutron Calibration MDN-A.B 65			Base Calibration on 26-JUL-2012 11:25	Field Check on 29-JUL-2012 03:01
Base Calibration				
	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	3179	99	3714	110
	32.263		33.764	
Field Calibrator at Base				
			Calibrated (cps)	
Ratio			1621	2347
			0.691	

Field Check

Calibrated (cps)

1622 2345

Ratio

0.692

Neutron Constants MDN-A.B 65

Last Edited on 29-JUL-2012,07:14

Neutron Source Id	PN-521	
Neutron Jig Number	5824NE	
Epithermal Neutron	No	
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	Constant Value	
Formation Pressure	0.00	kpsi
Temperature Source	Constant Value	
Temperature	68.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-A.A 55

Base Calibration on 24-JUL-2012 09:23

Field Check on 29-JUL-2012 02:44

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	968.0	126.8
Base Check		276.7
Field Check		276.7

FE Constants MFE-A.A 55

Last Edited on 29-JUL-2012,07:09

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

Sonic Constants MSS-A.A 126

Last Edited on 27-JUL-2012,20:15

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	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	0.00	micro-sec
MX3FT	1500.00	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft

Sonde Mode	Compensated
Hole Type	Open Hole

Sonde Parameters

	Measured	Calibrated
Offset	0.0000	0.0000
Free Pipe	0.0000	0.0000
Peak Amplitude Source		0

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

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)	Depth (ft)	
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	0.00	0.00	0.00	

Full Waveform Parameters

Use 3' Waveform to derive TR	No
Use 4' Waveform to derive TR	No
Use 5' Waveform to derive TR	No
Use 6' Waveform to derive TR	No
3' Waveform Discriminator Level	0.30 mV
4' Waveform Discriminator Level	0.30 mV
5' Waveform Discriminator Level	0.15 mV
6' Waveform Discriminator Level	0.15 mV
3' Waveform Filter	0
4' Waveform Filter	0
5' Waveform Filter	0
6' Waveform Filter	0
Semblance Level	0.50
Semblance Window Width	120.00 micro-sec
Sonic 1 Despiker	100.00 micro-sec/ft
Sonic 2 Despiker	100.00 micro-sec/ft

Induction Calibration MAI-A.A 45

Base Calibration on 26-JUL-2012,09:22
Field Check on 29-JUL-2012 02:43

Base Calibration

Test Loop Calibration Channel	Measured		Calibrated (mmho/m)	
	Low	High	Low	High
1	14.4	472.6	9.3	966.2
2	5.7	374.0	7.6	821.4
3	3.4	261.2	5.2	566.0
4	2.5	133.9	2.6	279.2

Array Temperature 78.4 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	20.1	3854.1
2	0.0	0.0	32.2	3630.6
3	0.0	0.0	28.9	3050.2
4	0.0	0.0	18.5	2079.4
Deep	0.0	0.0	16.3	1911.4
Medium	0.0	0.0	42.7	4061.6
Shallow	0.0	0.0	50.4	5485.5

Array Temperature 0.0 86.9 Deg F

Induction Constants MAI-A.A 45

Last Edited on 29-JUL-2012,07:09

Induction Model	RtAP-WBM
Caliper for Borehole Corr.	Density Caliper
Hole Size for Borehole Correction	N/A inches
Tool Centred	Yes
Stand-off Type	N/A
Stand-off	N/A inches
Number of Fins on Stand-off	N/A
Stand-off Fin Angle	N/A degrees
Stand-off Fin Width	N/A 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 45			Field Calibration on 26-JUL-2012,09:09
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	75.00	75.00	

High Resolution Temperature Constants MAI-A.A 45		Last Edited on
Pre-filter Length	11	

Caliper Calibration MPD-B 31			Base Calibration on 26-JUL-2012 09:16	Field Calibration on 29-JUL-2012 02:46
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	17567	3.99		
2	26416	5.98		
3	35056	7.97		
4	43488	9.86		
5	52816	11.92		
6	N/A	N/A		
Field Calibration				
	Measured Caliper (in)	Actual Caliper (in)		
	5.93	5.98		

Photo Density Calibration MPD-B 31				Base Calibration on 26-JUL-2012 10:02	Field Check on 29-JUL-2012 02:51
Density Calibration					
Base Calibration		Measured	Calibrated (sdu)		
	Near	Far	Near	Far	
Reference 1	48085	24200	59556	30836	
Reference 2	19674	1989	24941	2541	
Field Check at Base					
	692.2	849.9			
Field Check					
	690.8	849.9			

PE Calibration				
Base Calibration		Measured	Calibrated	
	WS	WH	Ratio	Ratio
Background	127	608		
Reference 1	19234	47953	0.404	0.371
Reference 2	5695	19580	0.293	0.272

Field Check at Base

Field Check at Base	126.7	608.3
Field Check	127.1	605.4

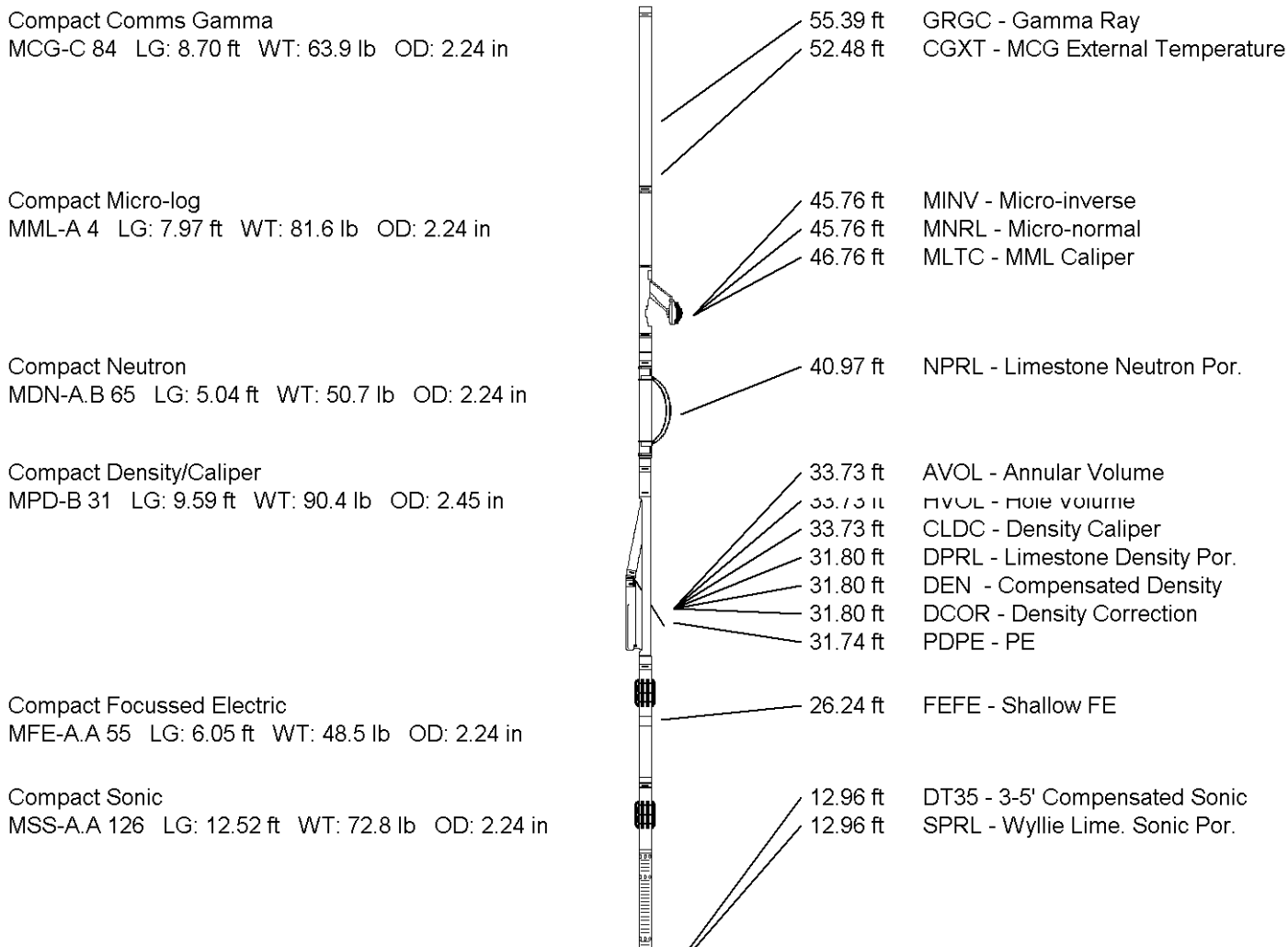
Density Constants MPD-B 31

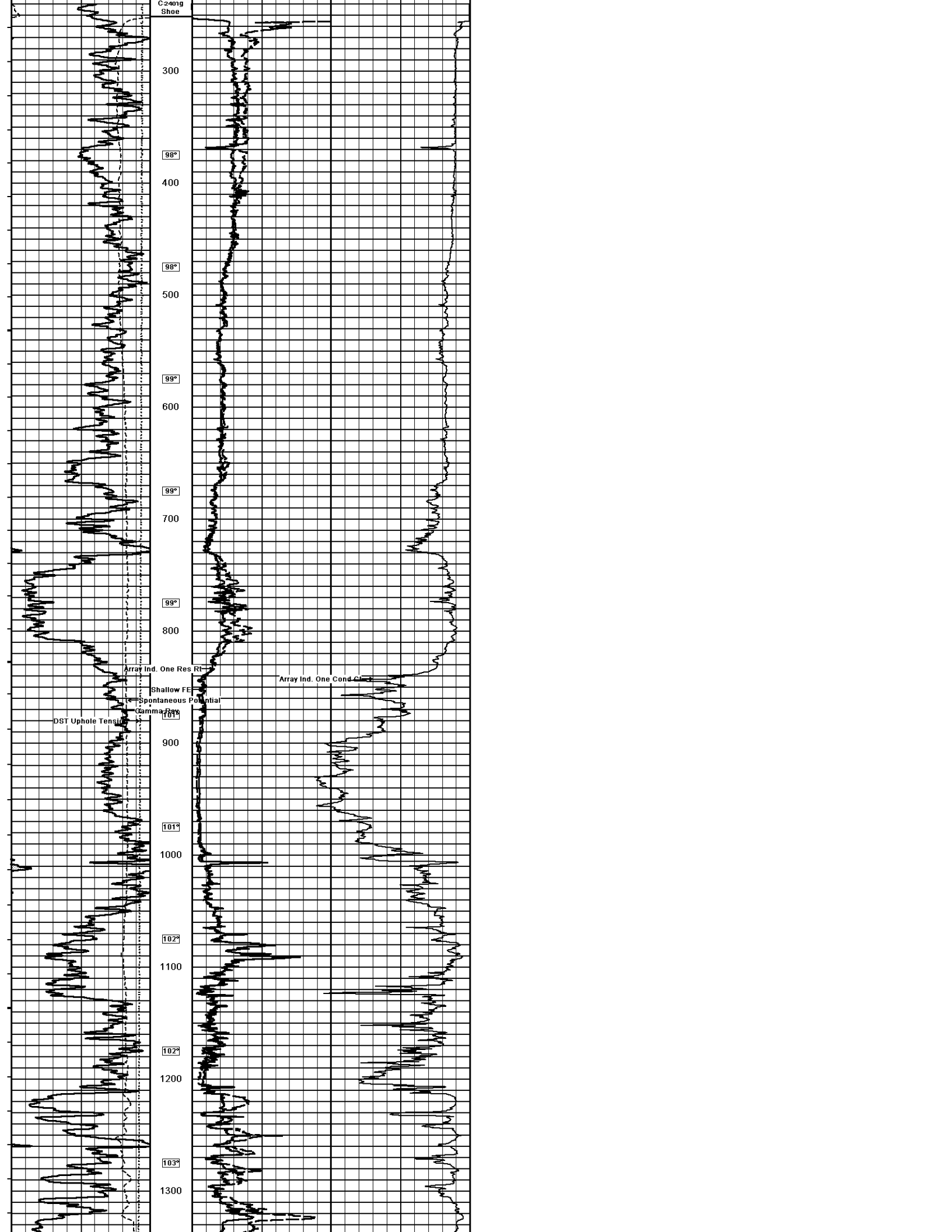
Last Edited on 29-JUL-2012,07:12

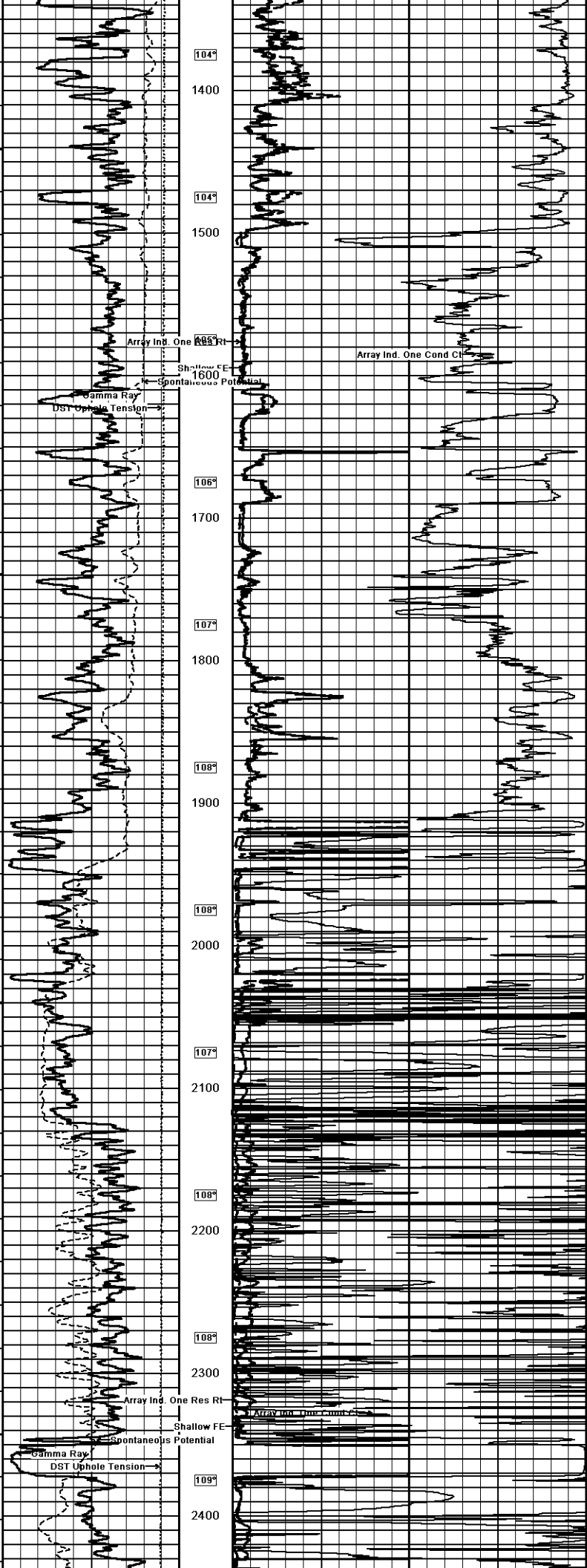
Density Source Id	254	
Nylon Calibrator Number	DNCE695	
Aluminium Calibrator Number	DACD698	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.30	gm/cc
Mud Density Z/A Multiplier	1.13	
Mud Filtrate Density	1.00	gm/cc
Dry Hole 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 (m)	
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	

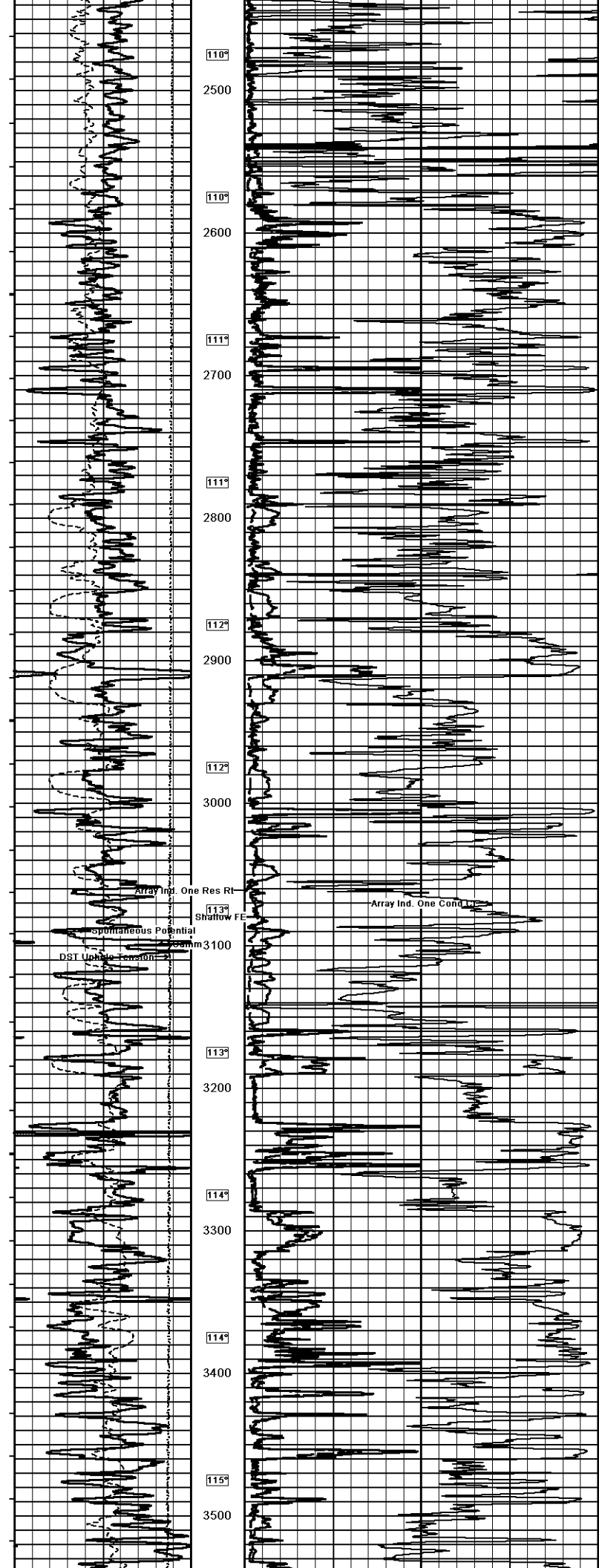
DOWNHOLE EQUIPMENT

C:\Minimus 13.02.6600\Data\Shakespeare Zerr Trust #3-23\Shakespeare Zerr Trust #3-23_001.dta









110°

2500

110°

2600

111°

2700

111°

2800

112°

2900

112°

3000

113°

3100

113°

3200

114°

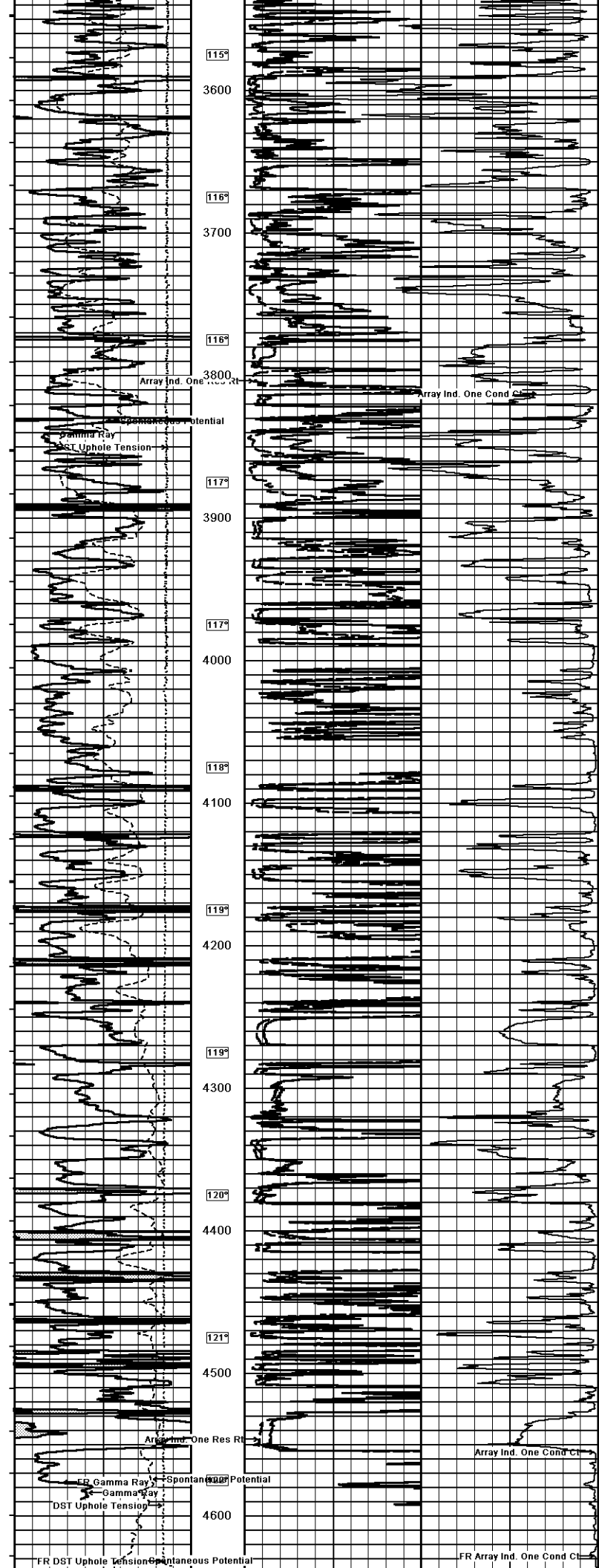
3300

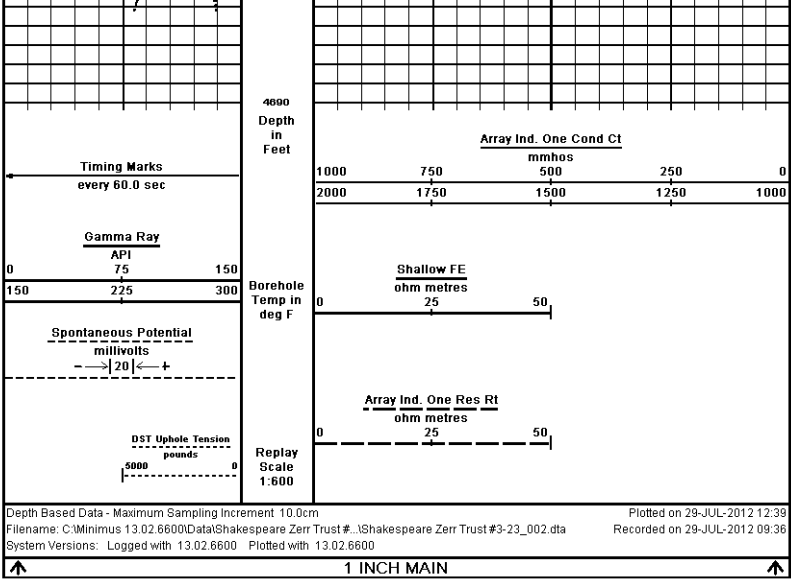
114°

3400


115°

3500





COMPANY	SHAKESPEARE OIL COMPANY, INC.				
WELL	ZERR TRUST #3-23				
FIELD	WILDCAT				
PROVINCE/COUNTY	GOVE				
COUNTRY/STATE	U.S.A. / KANSAS				
Elevation Kelly Bushing	2874.00	feet	First Reading	4629.00	feet
Elevation Drill Floor	2872.00	feet	Depth Driller	4630.00	feet
Elevation Ground Level	2864.00	feet	Depth Logger	4632.00	feet

 ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG