



Weatherford[®]

**ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG**

COMPANY										SHAKESPEARE OIL CO., INC.									
WELL										JANZEN #5-36									
FIELD										CAPSTONE EAST									
PROVINCE/COUNTY										SCOTT									
COUNTRY/STATE										U.S.A. / KANSAS									
LOCATION										400' FSL & 650' FWL									
SEC 36		TWP 16S		RGE 34W		Other Services				MSS									
Latitude						MPD/MDN													
Longitude						MML													
API Number		15-171-21042																	
Permanent Datum GL, Elevation 3104 feet																			
Log Measured From KB																			
Drilling Measured From KB																			
Date		05-APR-2014								Elevations:		feet							
Run Number		ONE								KB		3114.00							
Service Order		3487-83878012								DF		3112.00							
Depth Driller		4866.00				feet				GL		3104.00							
Depth Logger		4865.00				feet													
First Reading		4862.00				feet													
Last Reading		264.00				feet													
Casing Driller		268.00				feet													
Casing Logger		264.00				feet													
Bit Size		7.875				inches													
Hole Fluid Type		CHEMICAL																	
Density / Viscosity		9.20		lb/USg		50.00		CP											
PH / Fluid Loss		10.00				8.80		ml/30Min											
Sample Source		FLOWLINE																	
Rm @ Measured Temp		0.38 @ 81.0				ohm-m													
Rmf @ Measured Temp		0.30 @ 81.0				ohm-m													
Rmc @ Measured Temp		0.46 @ 81.0				ohm-m													
Source Rmf / Rmc		CALC				CALC													
Rm @ BHT		0.28 @110.0				ohm-m													
Time Since Circulation		5 HOURS																	
Max Recorded Temp		110.00				deg F													
Equipment / Base		13244		LIB															
Recorded By		ADAM SILL																	
Witnessed By		TIM PRIEST																	
JOB #		LB14-101																	

BOREHOLE RECORD

Last Edited: 05-APR-2014 03:46

Bit Size inches	Depth From feet	Depth To feet
7.875	268.00	4866.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	268.00	24.00

REMARKS

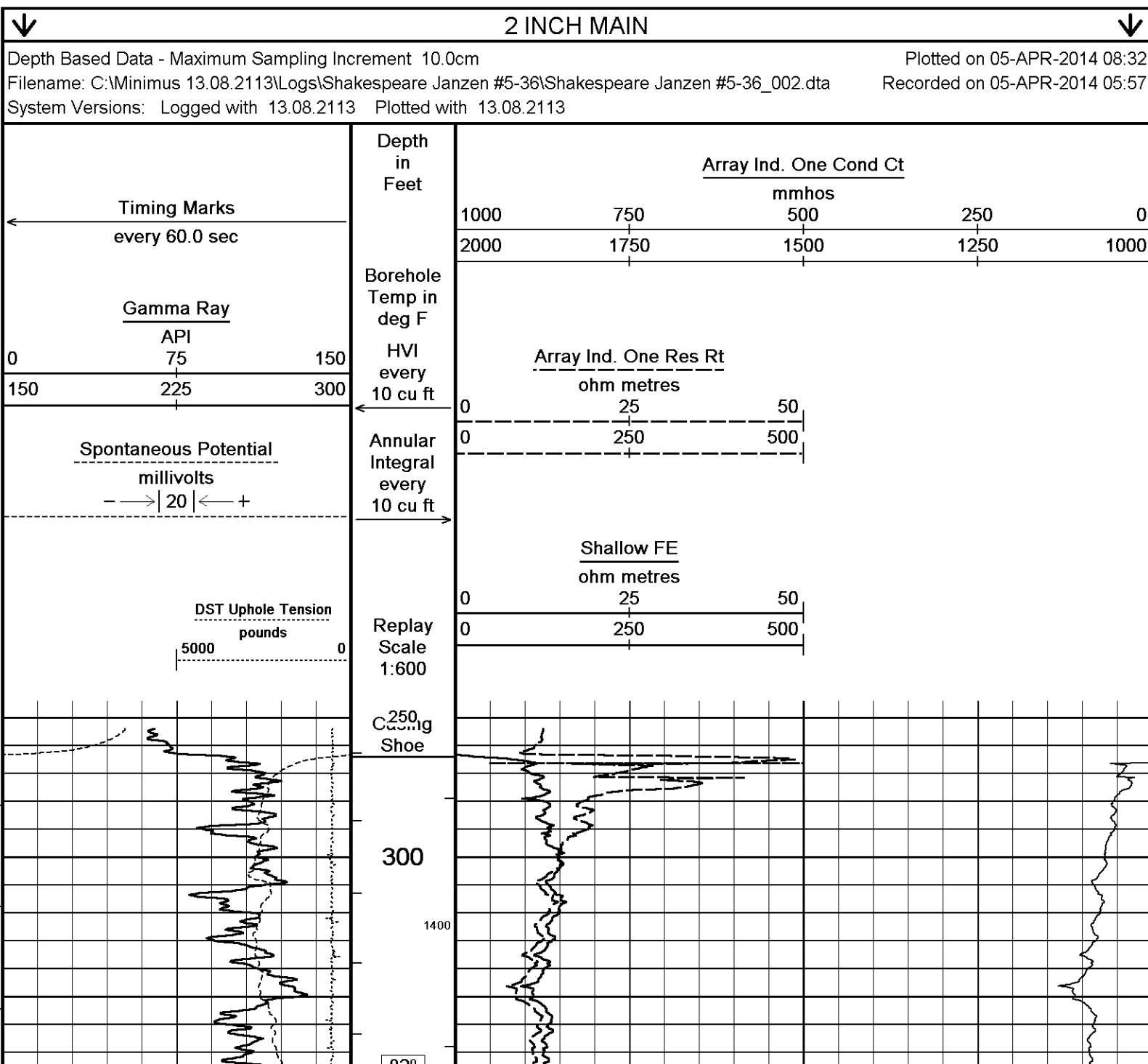
- SOFTWARE ISSUE: WLS 13.08.2113.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION.
 - HARDWARE: DUAL BOWSPRING USED ON MDN.
 - 0.5 INCH STANDOFF USED ON MFE.
 - TWO 0.5 INCH STANDOFFS USED ON MSS.
 - 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE 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: 2169 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3800 FEET: 193 CU.FT.

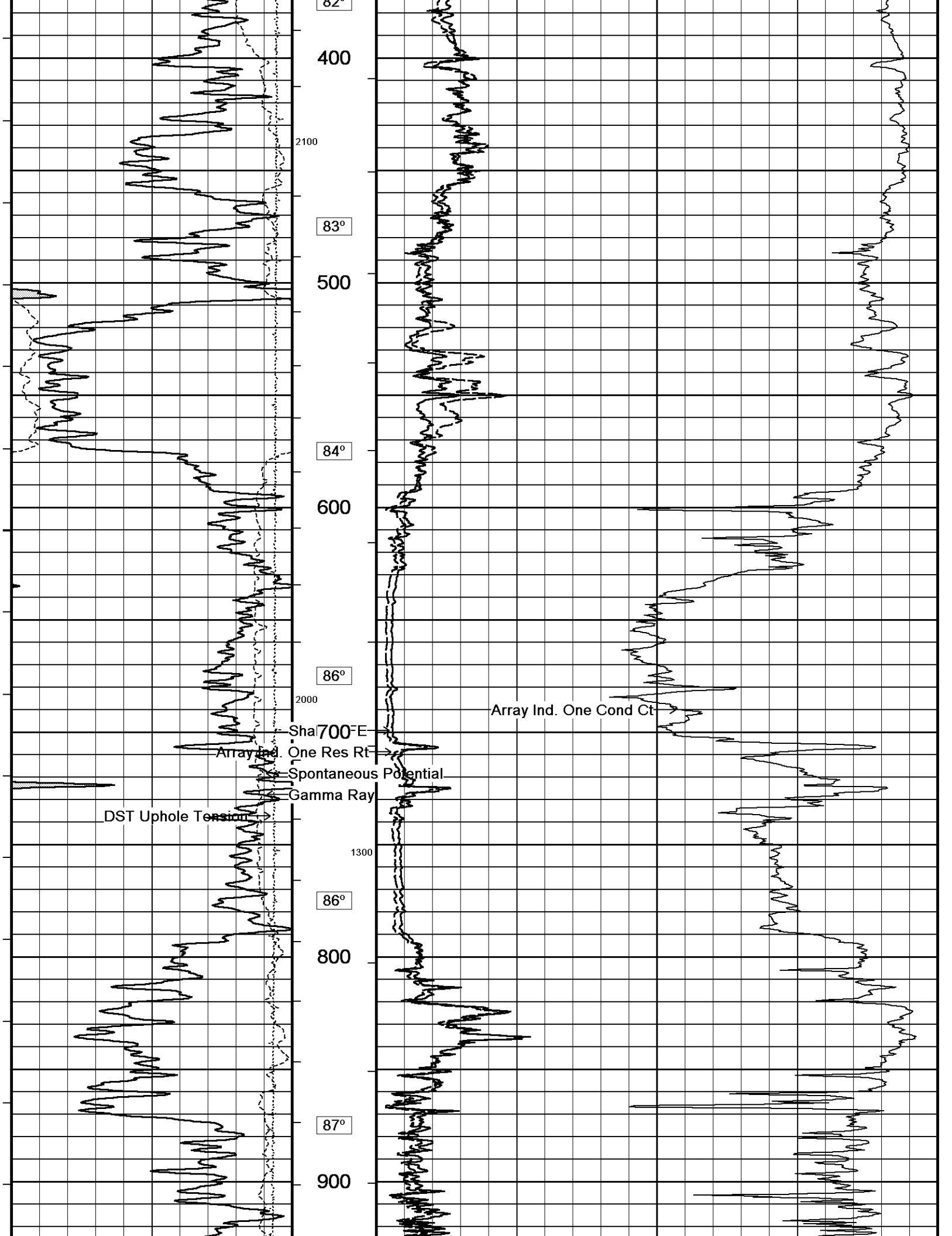
- RIG: H-D DRILLING #2.

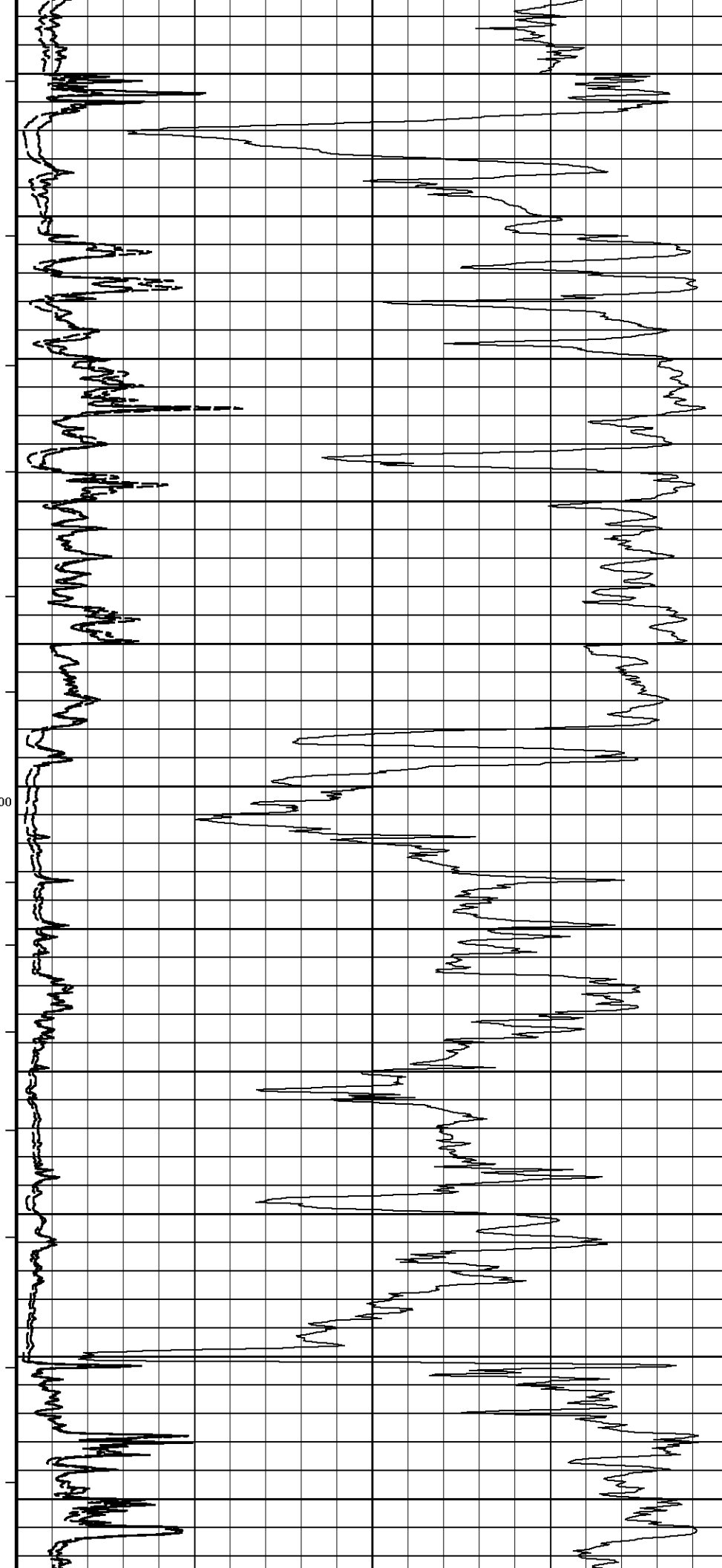
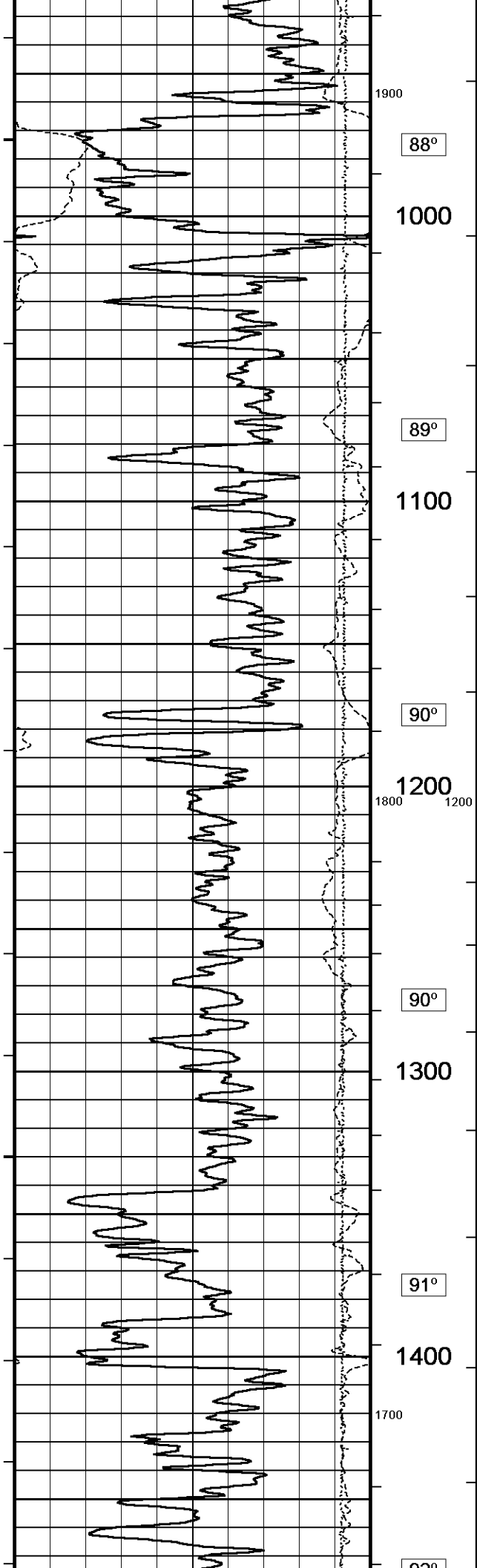
- ENGINEER: A. SILL.

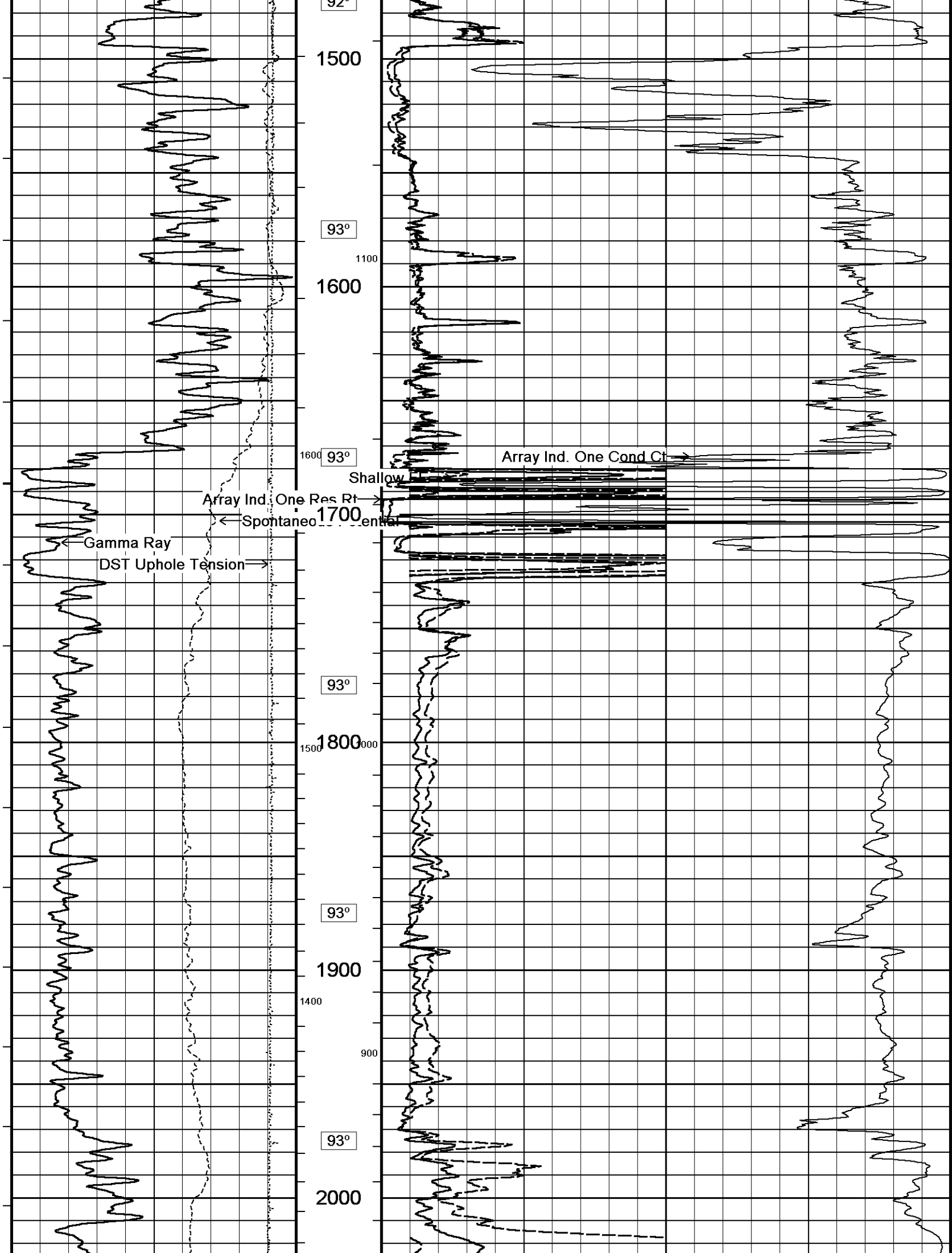
- OPERATOR: J. LaPOINT.

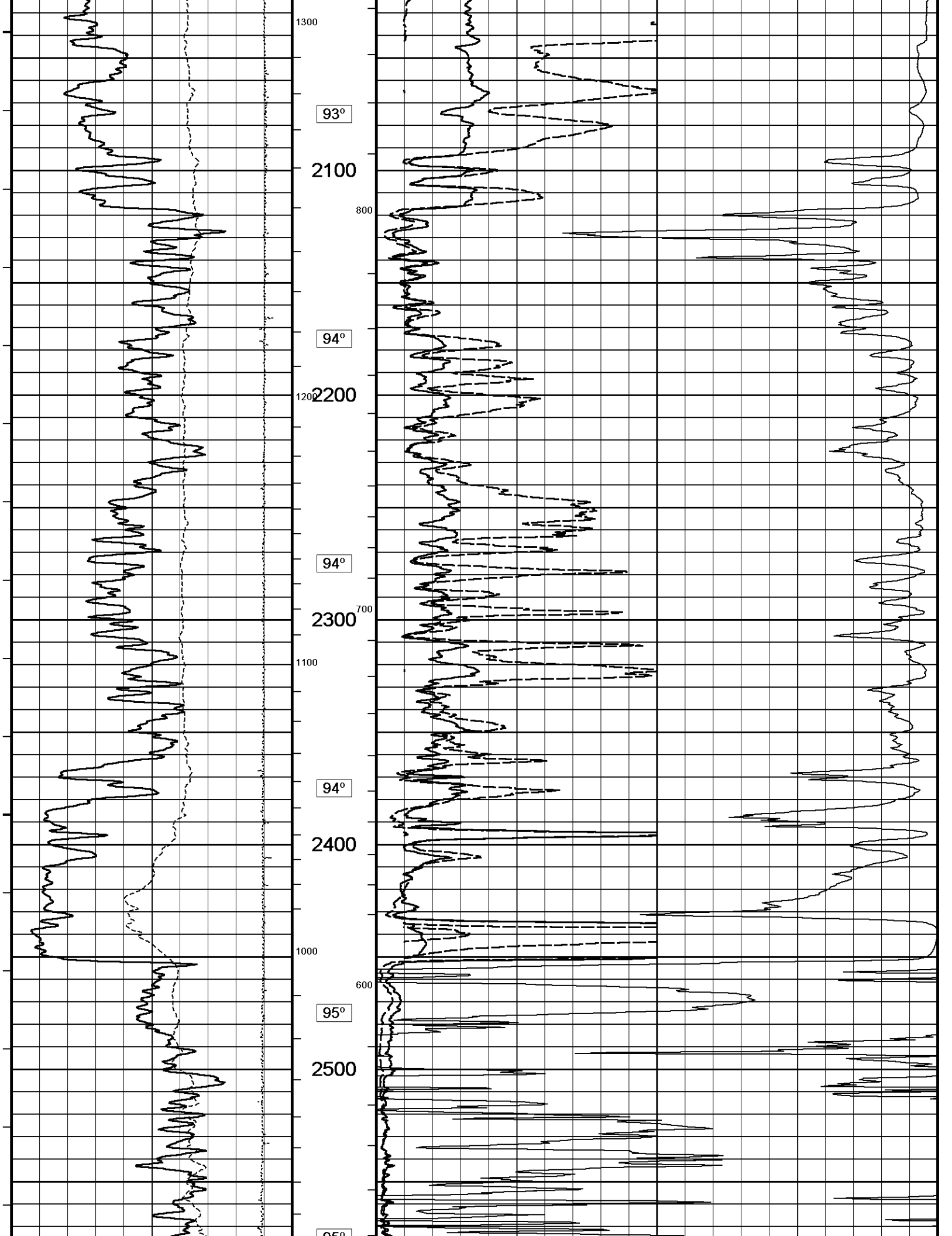
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will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

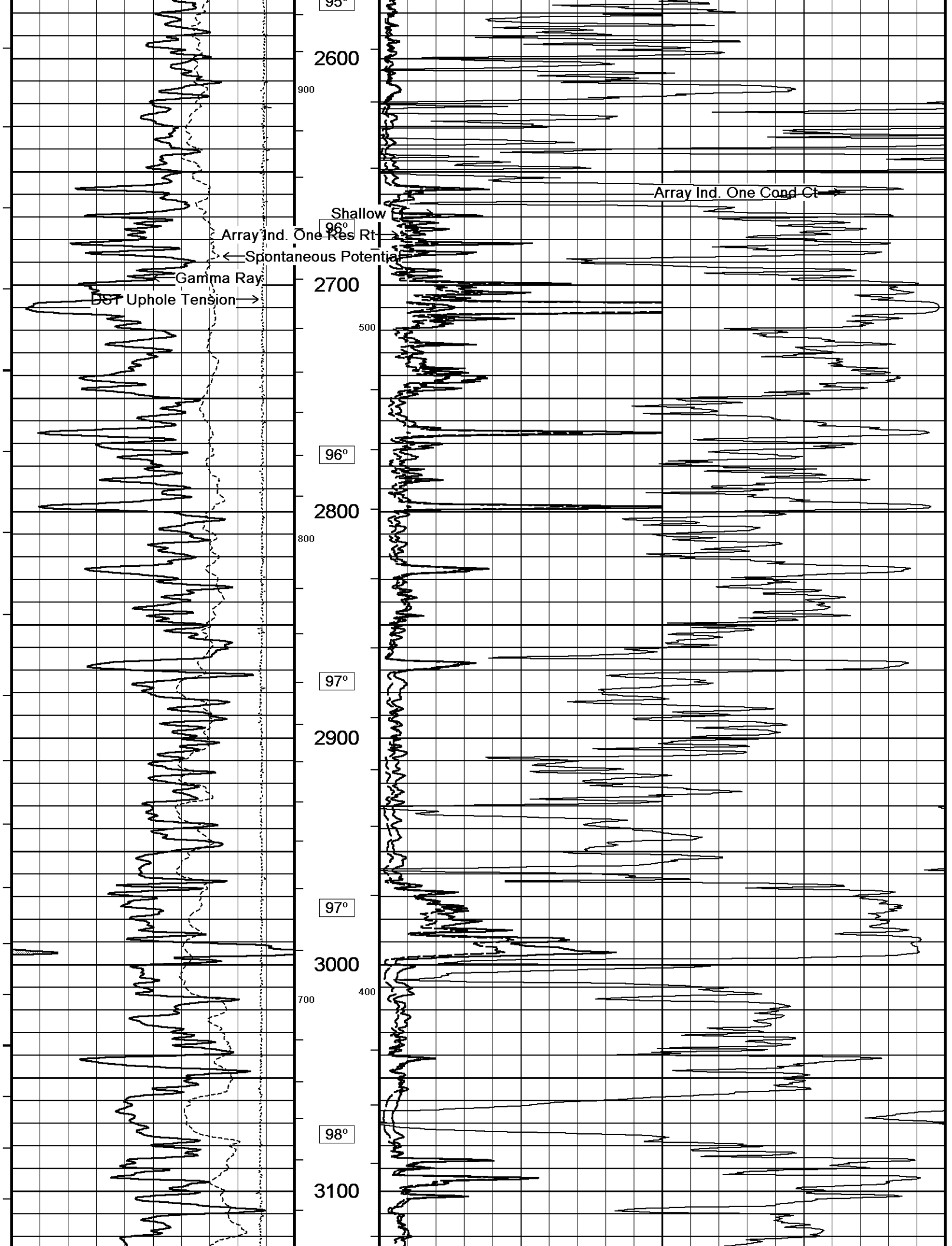


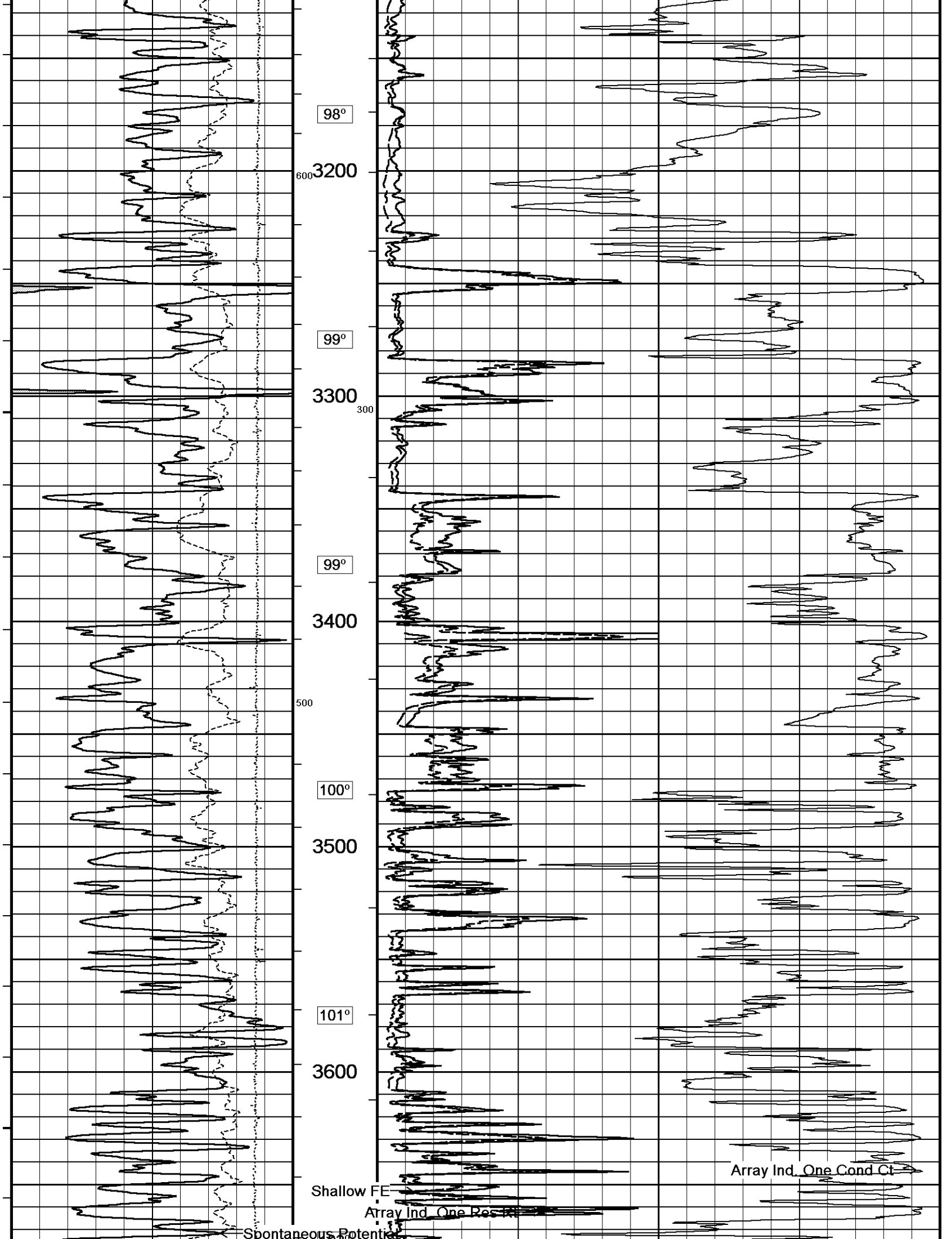


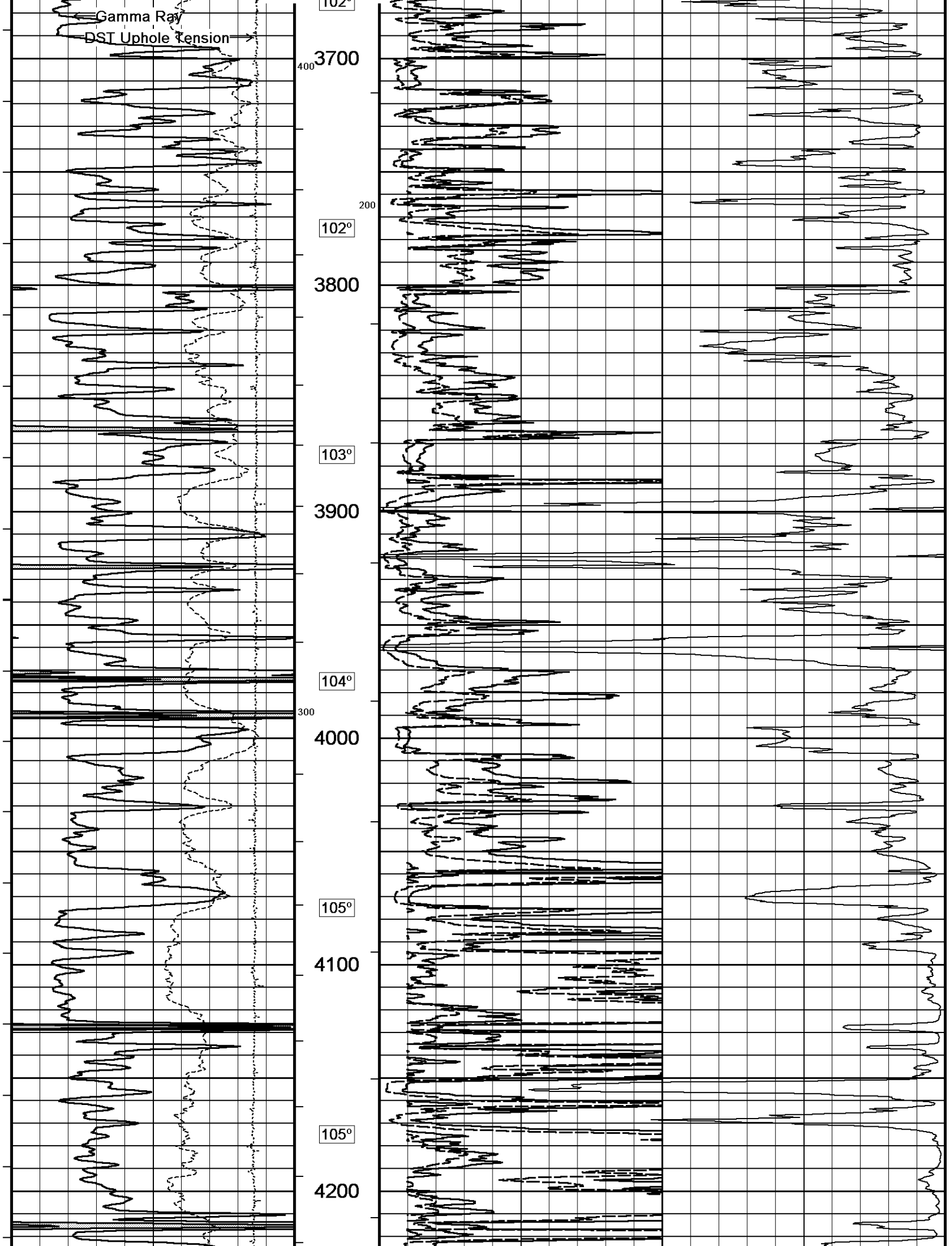


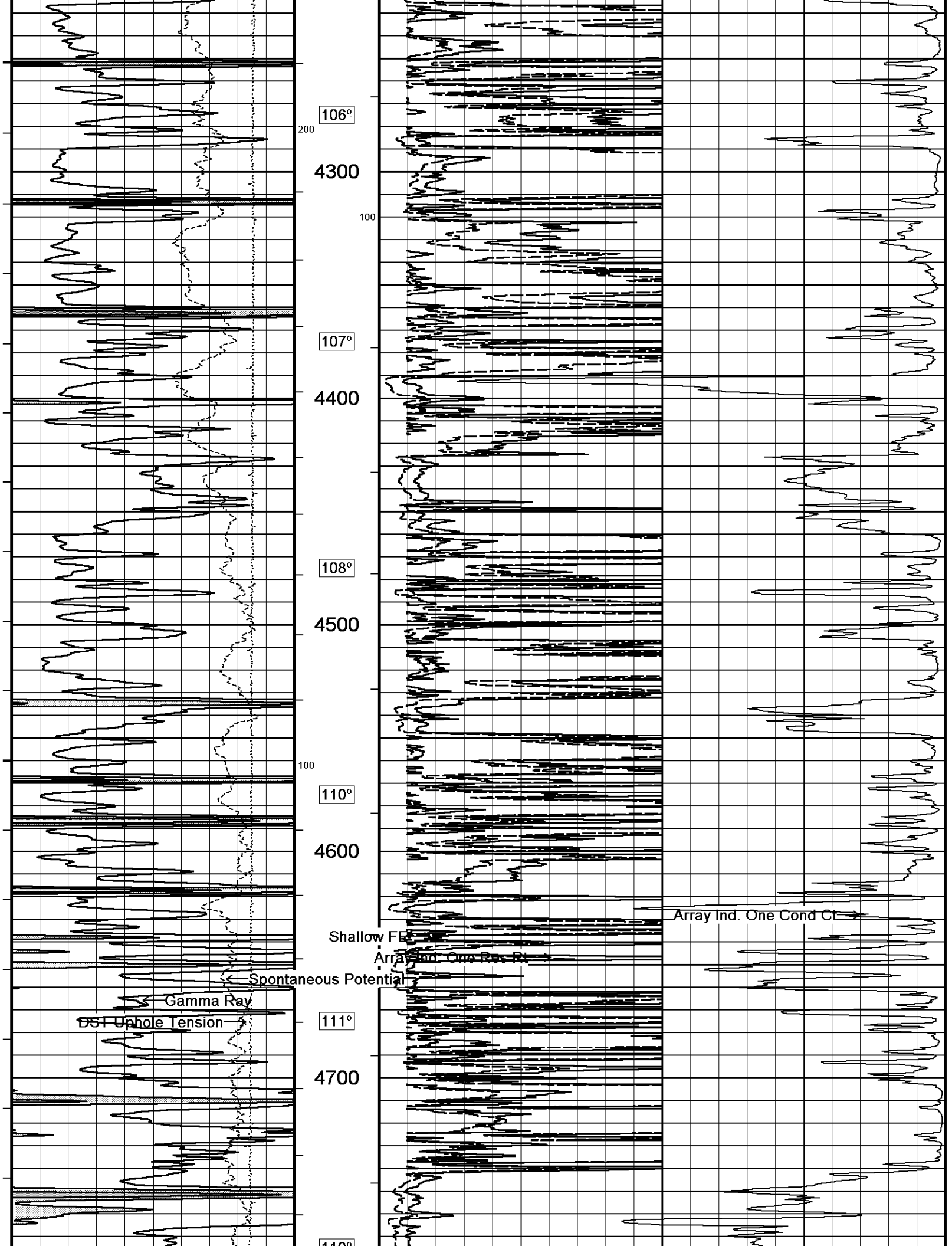


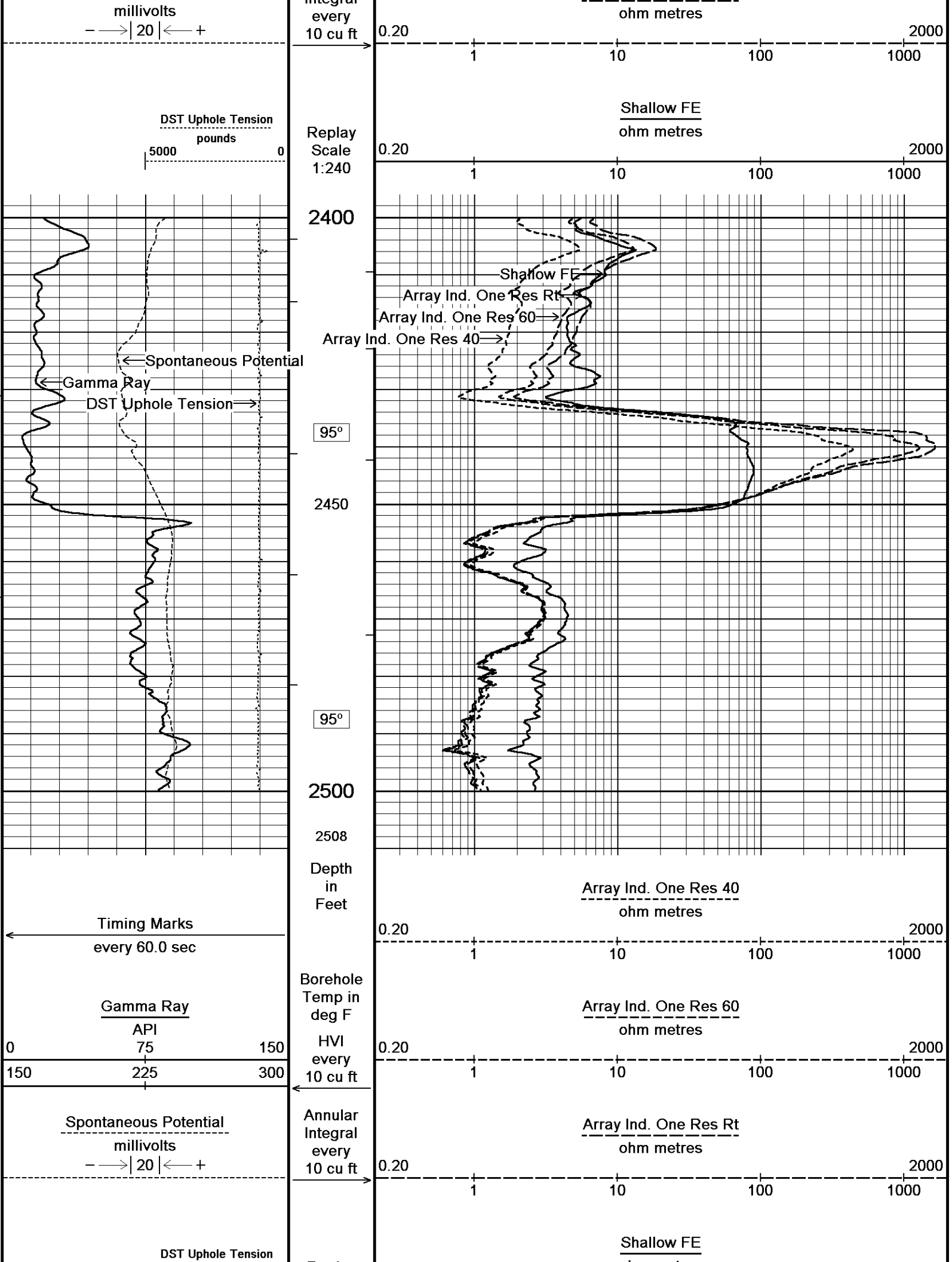


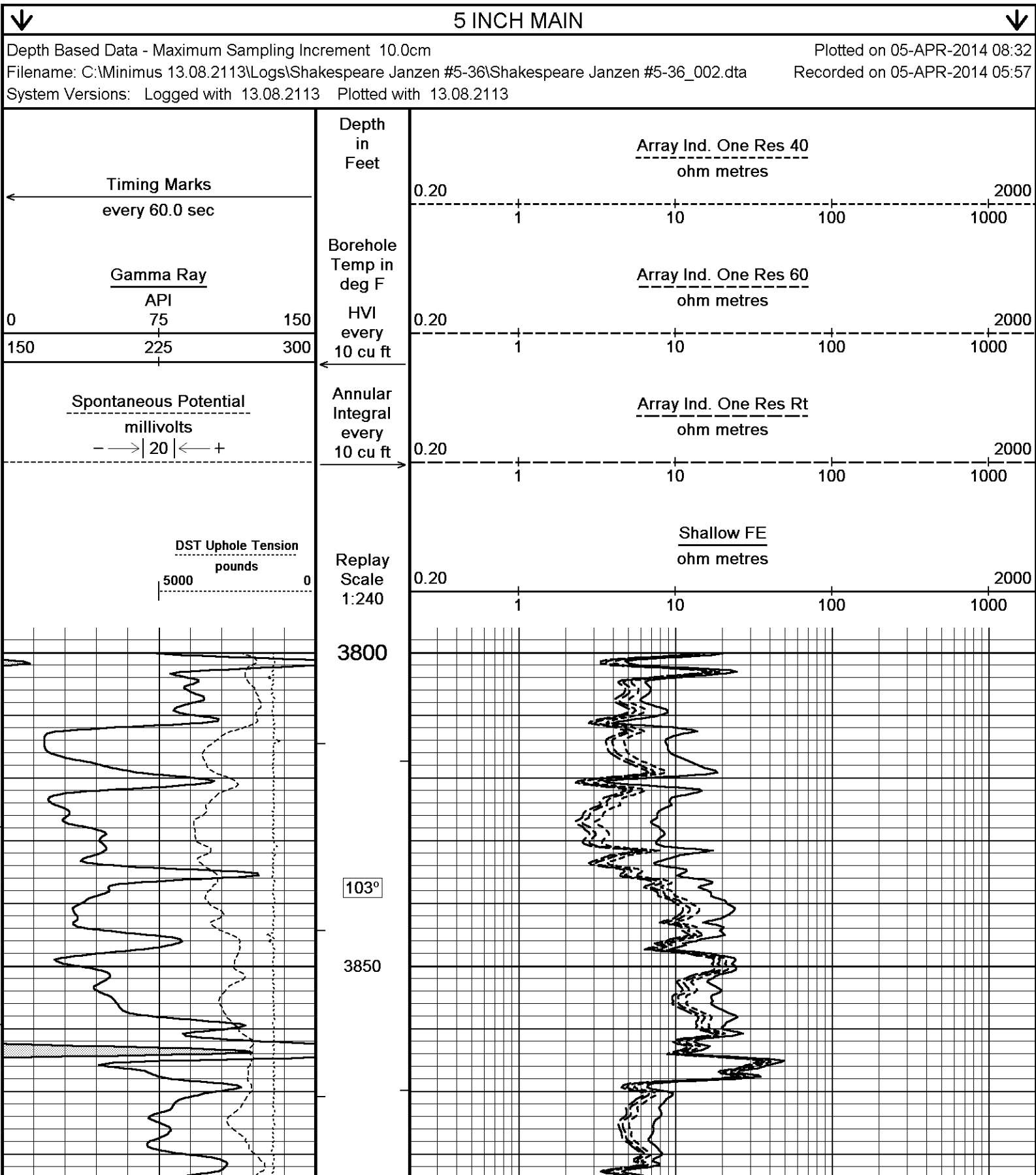
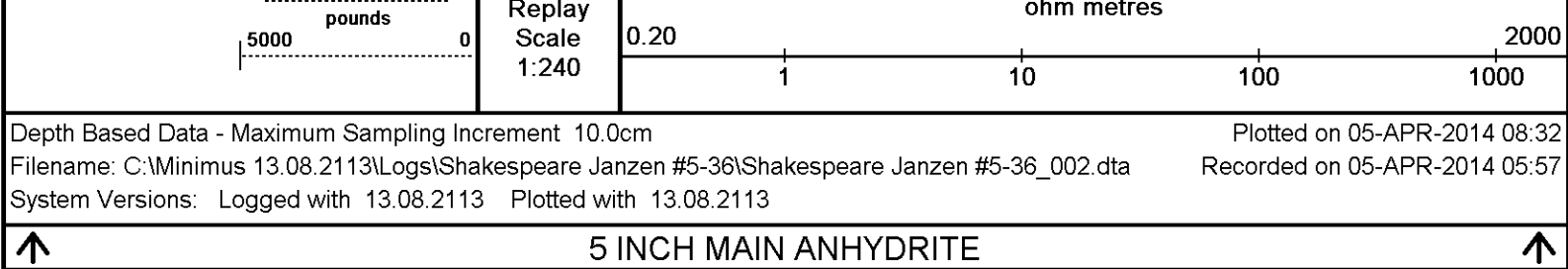


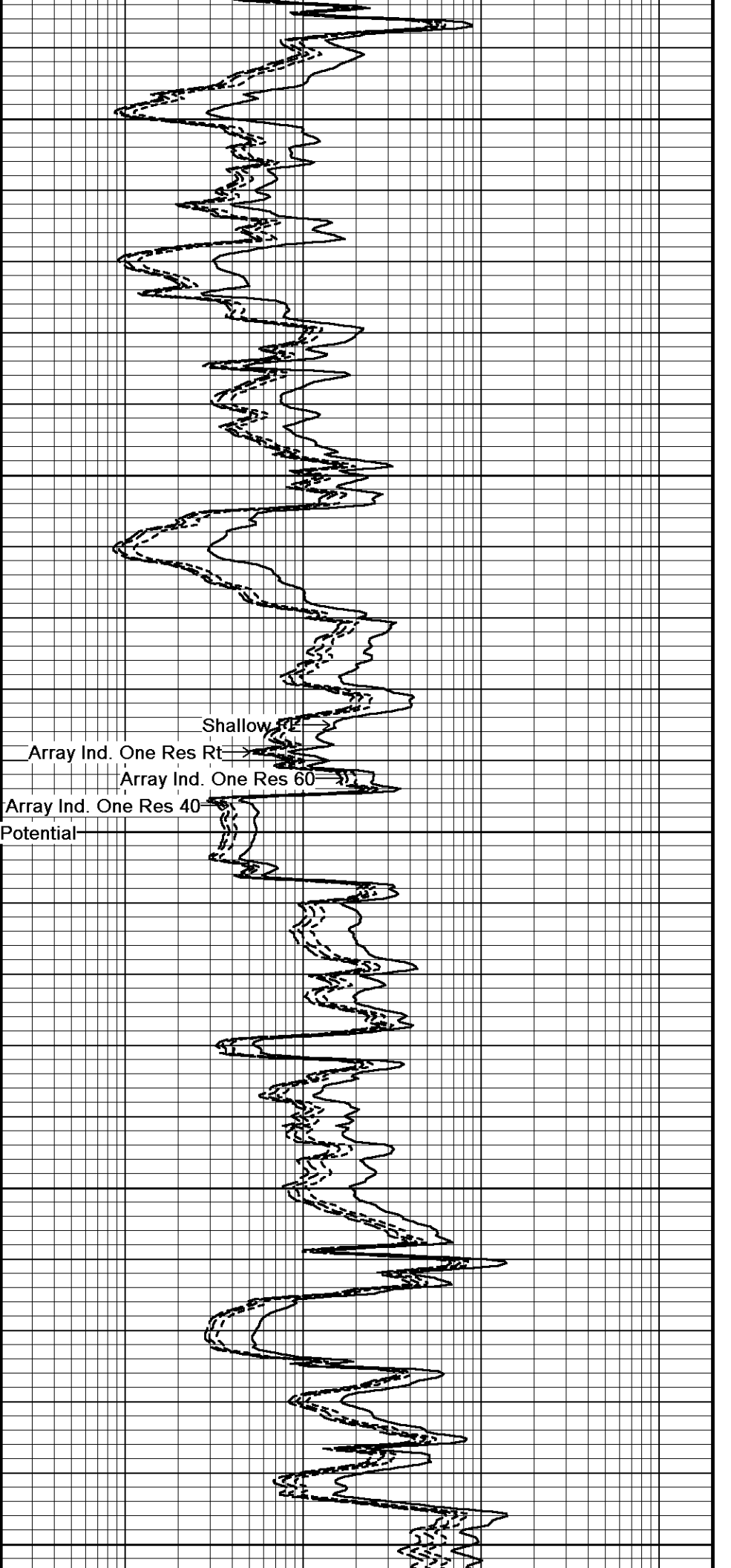
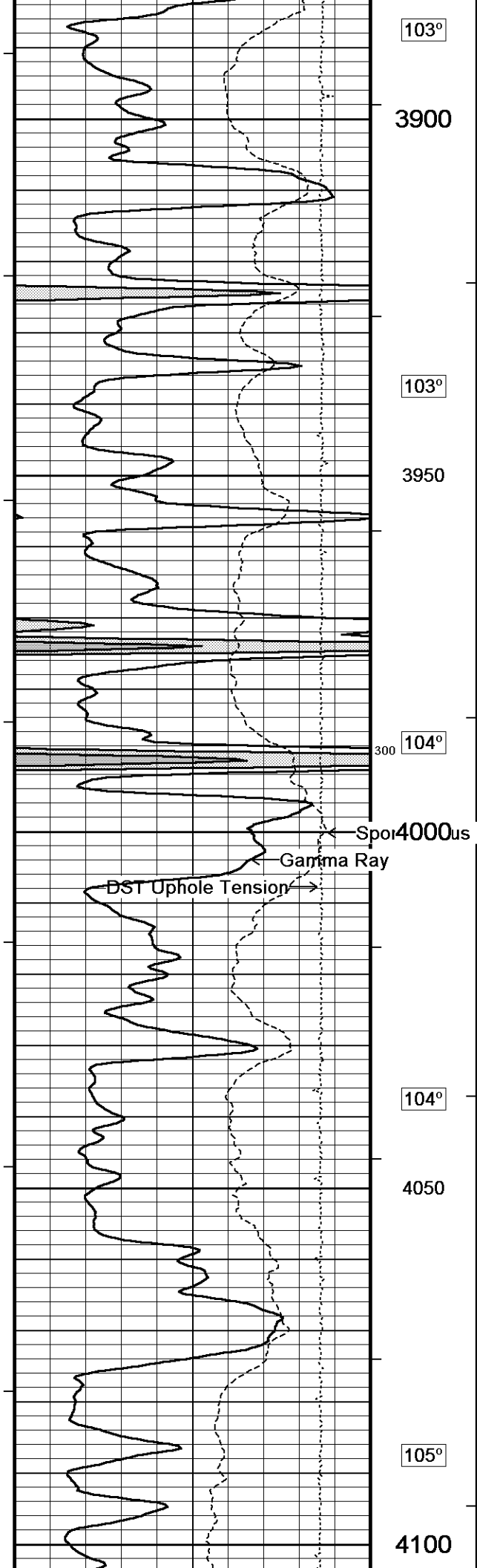


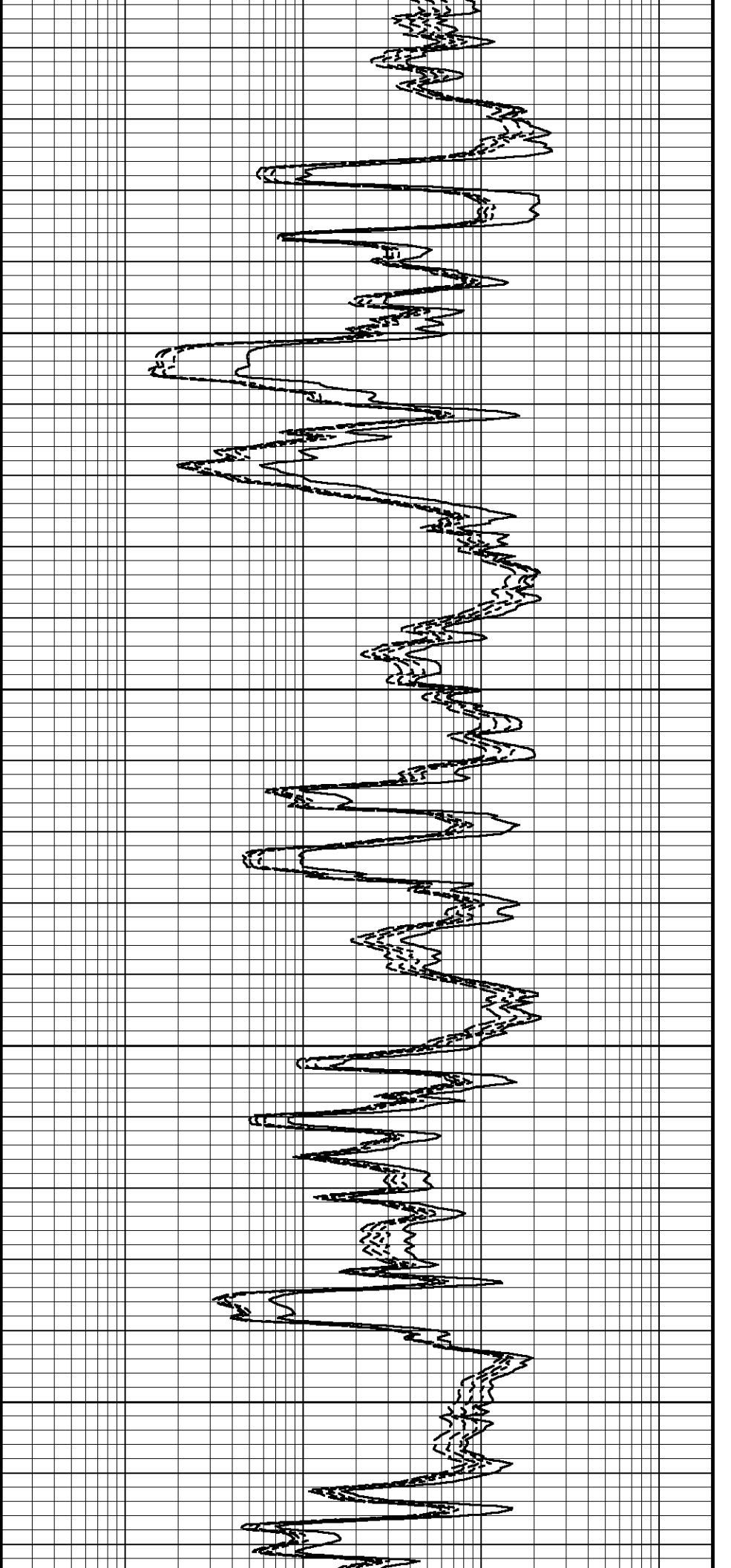
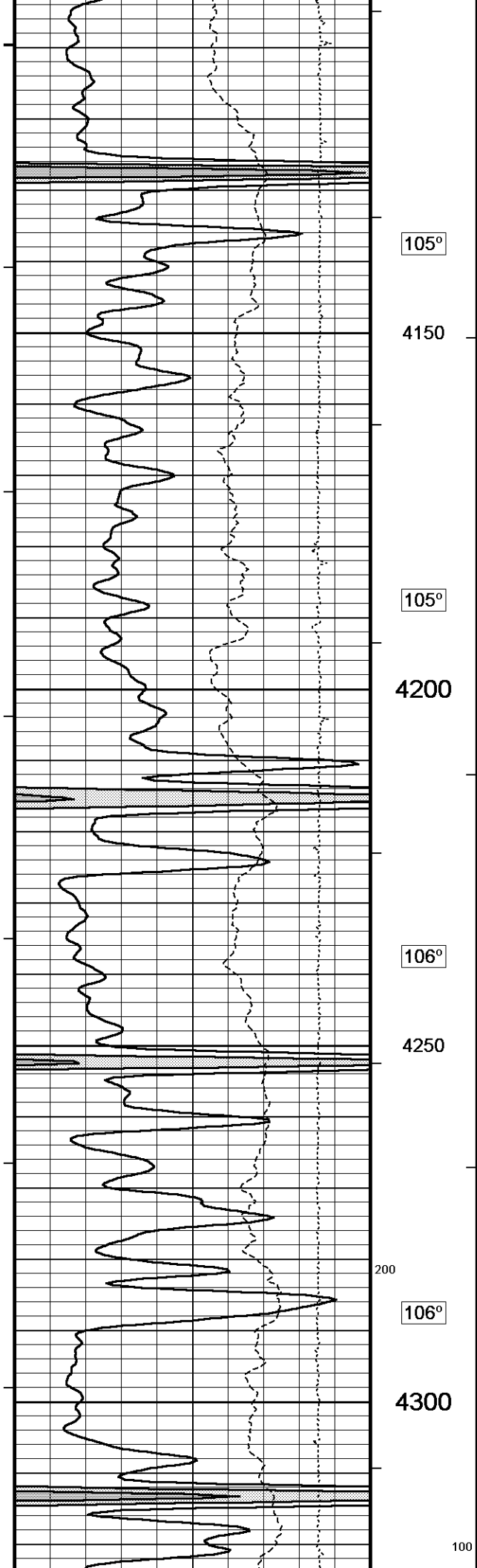


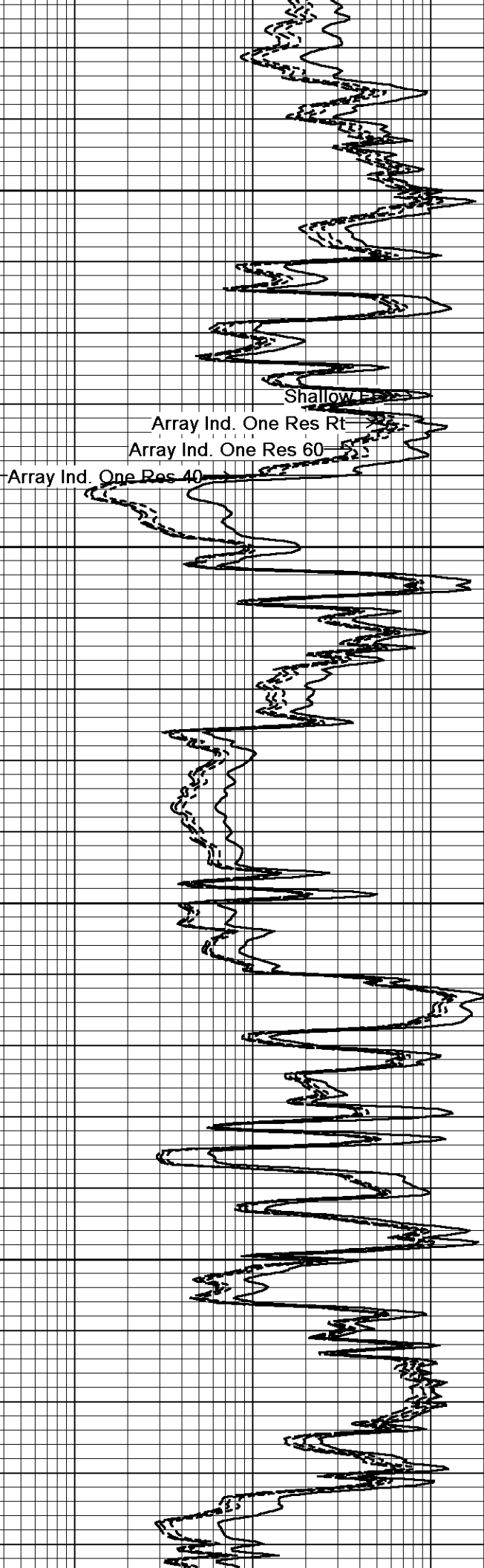
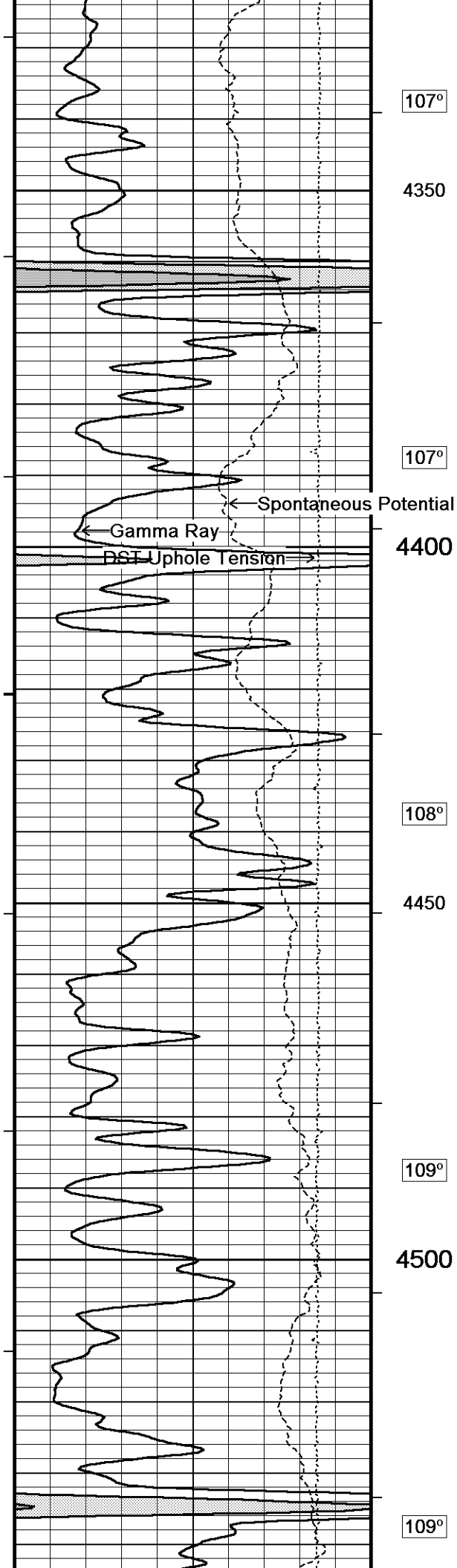


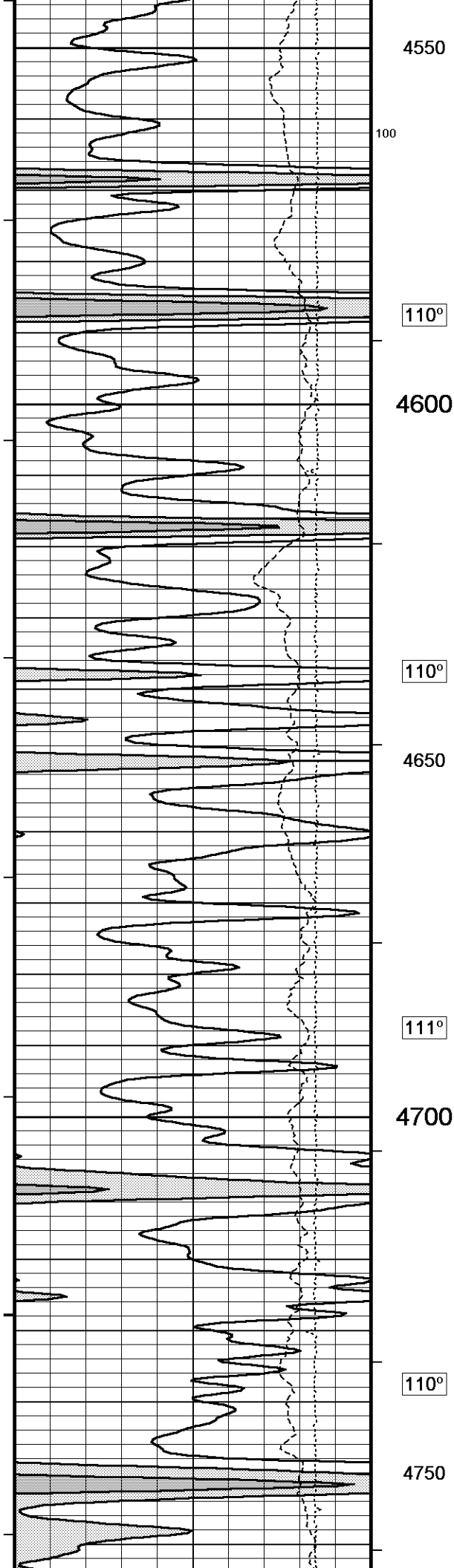












4550

100

110°

4600

110°

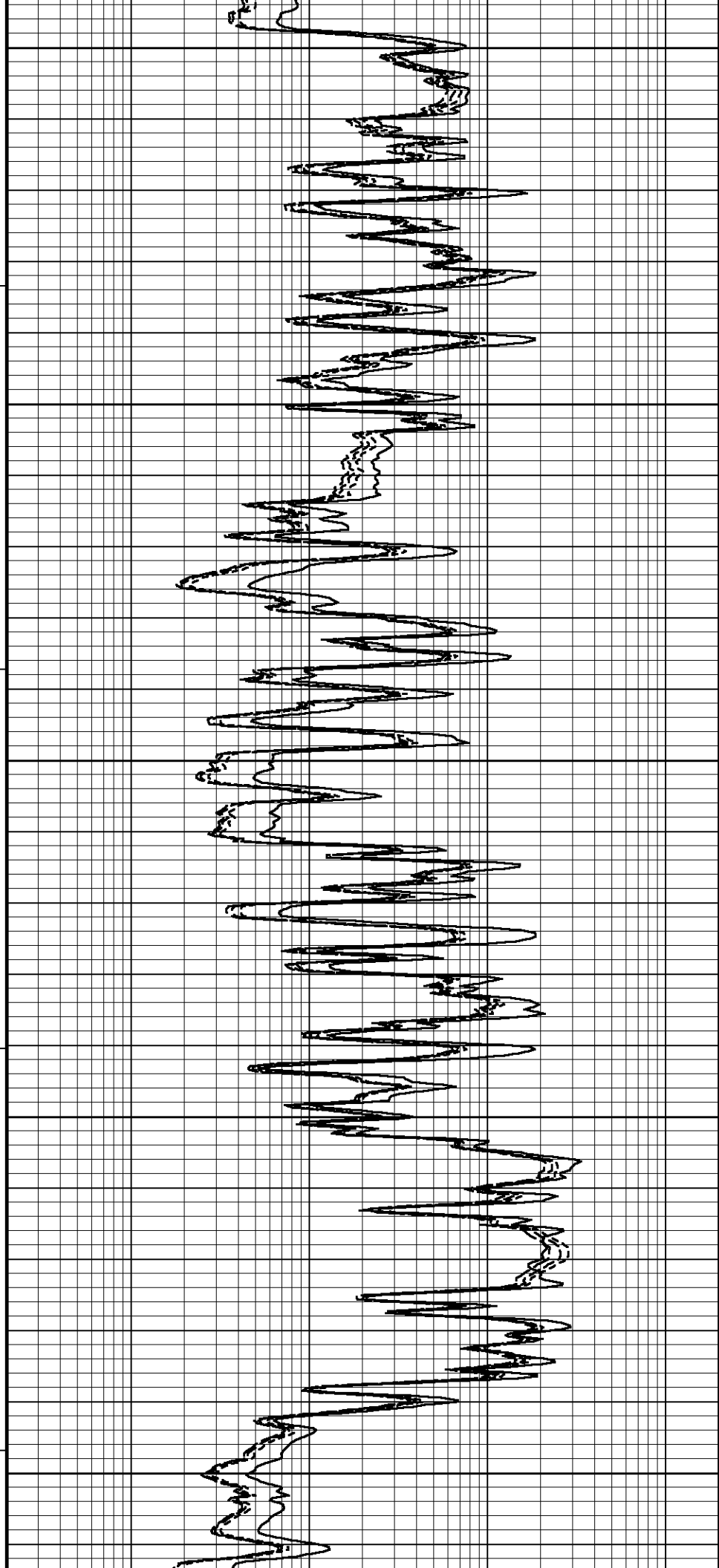
4650

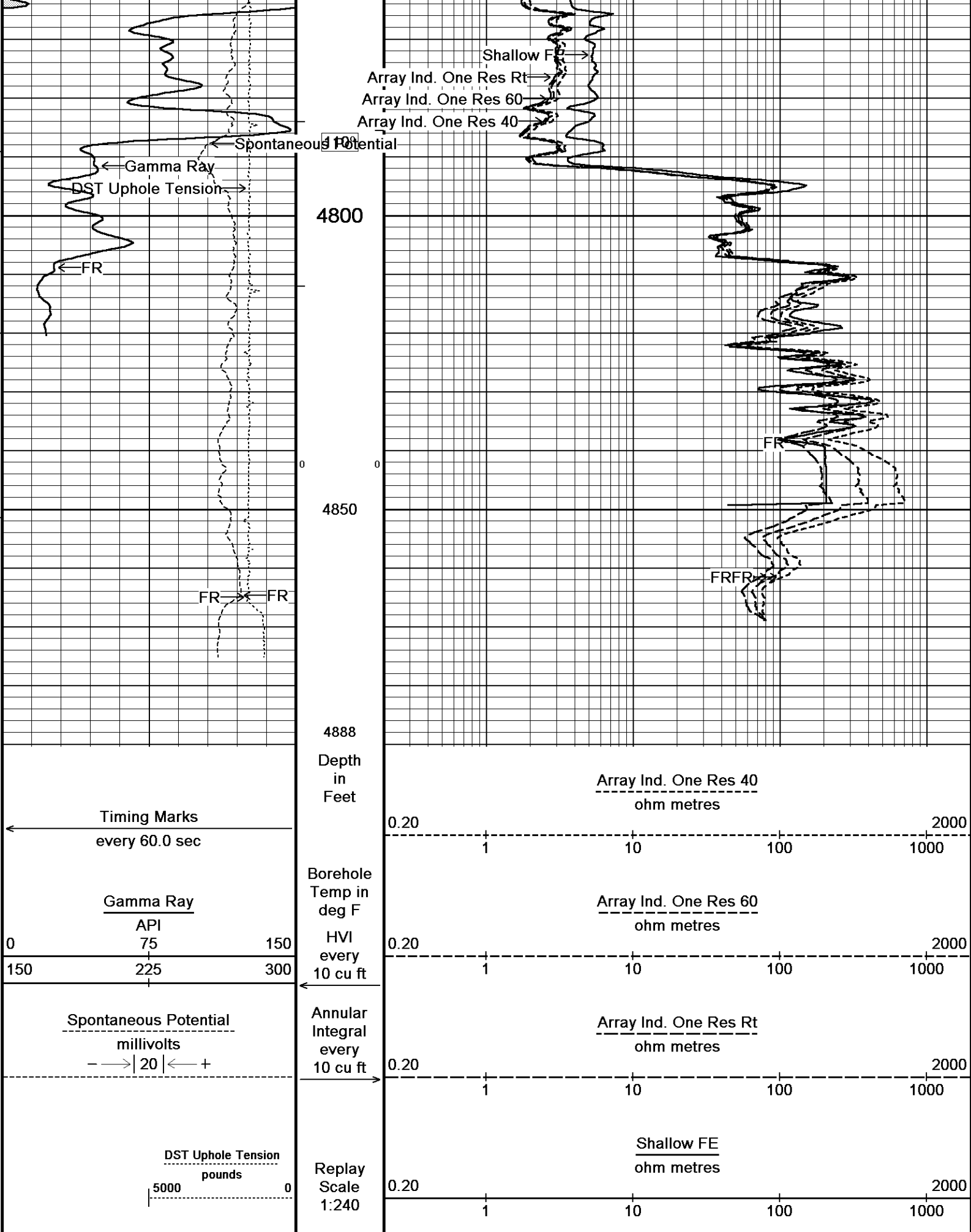
111°

4700

110°

4750





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REPEAT SECTION

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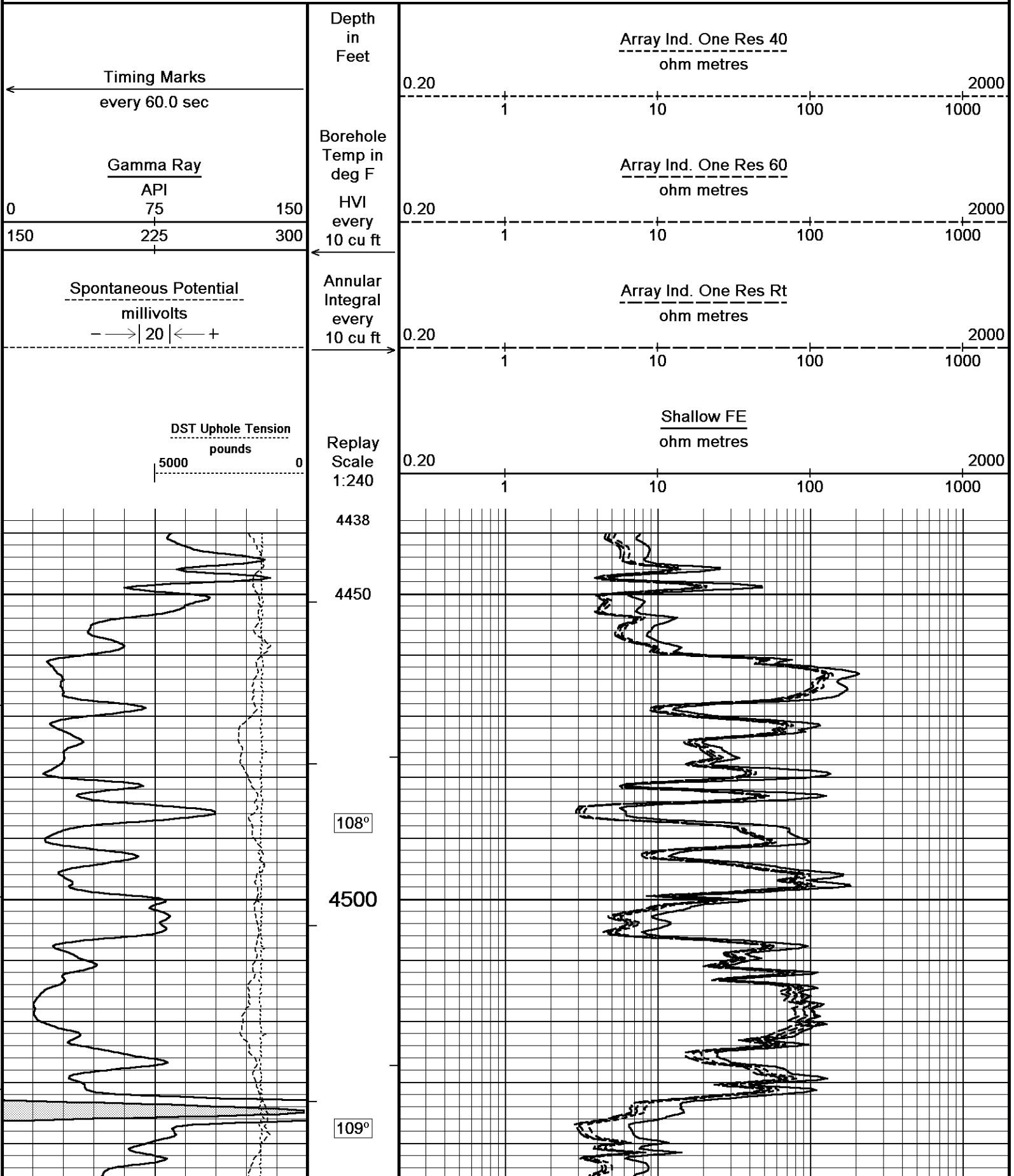
Depth Based Data - Maximum Sampling Increment 10.0cm

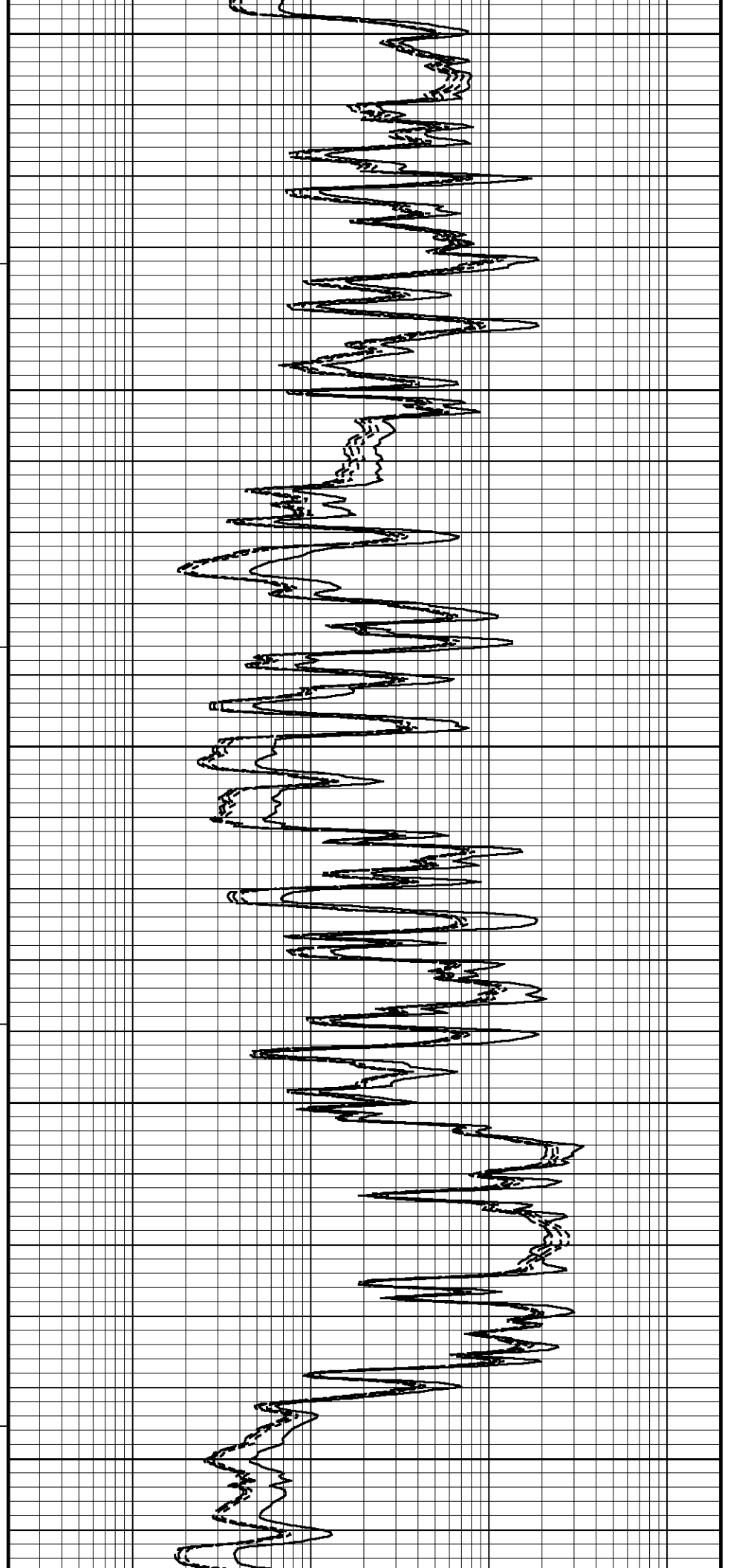
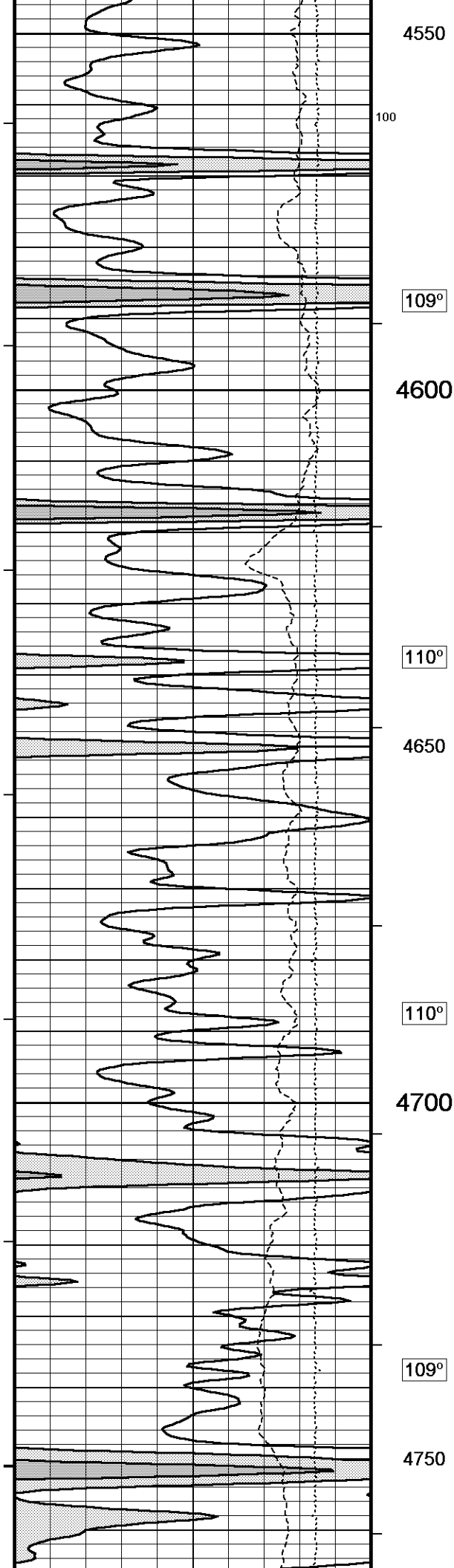
Plotted on 05-APR-2014 08:32

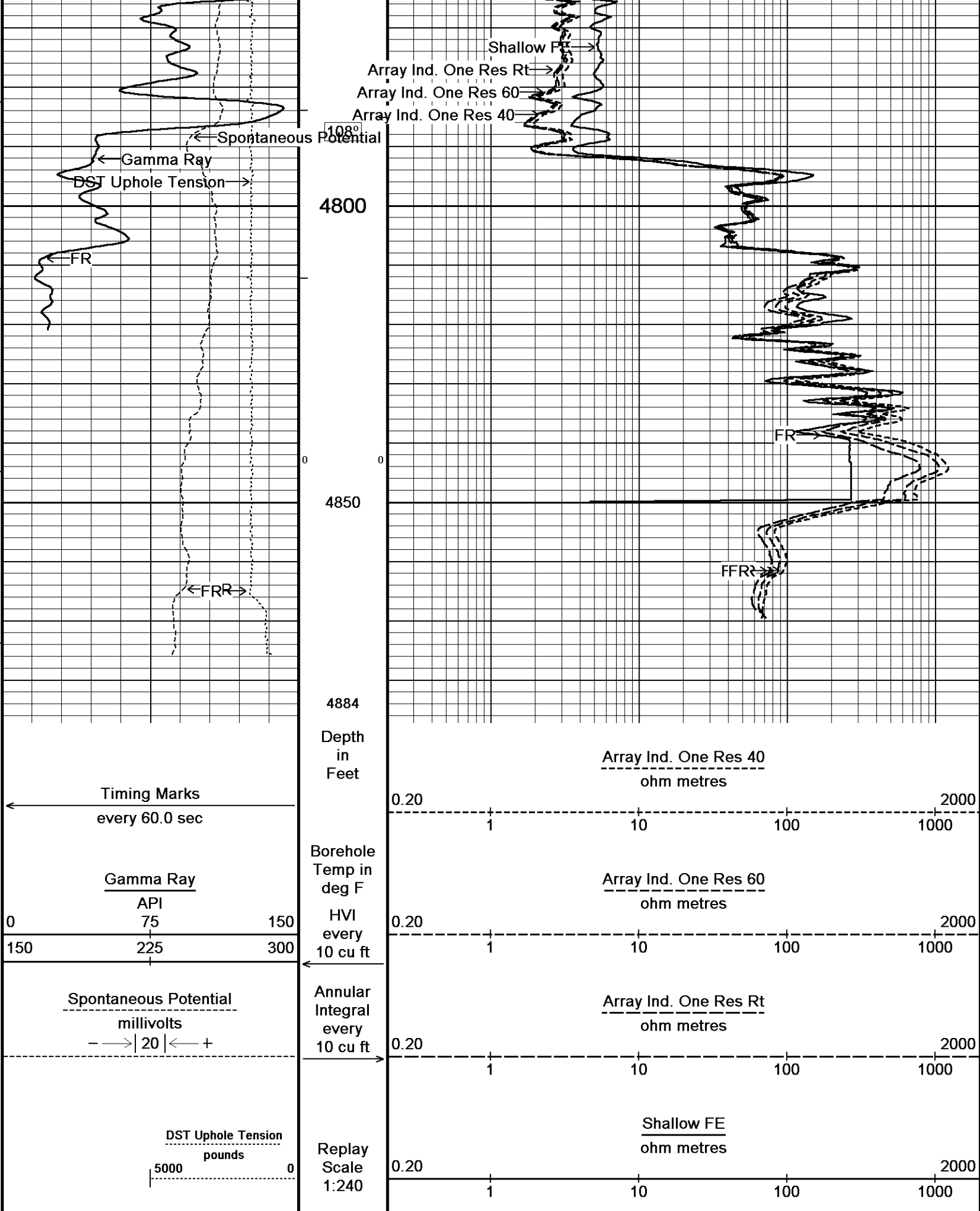
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Recorded on 05-APR-2014 05:33

System Versions: Logged with 13.08.2113 Plotted with 13.08.2113







BEFORE SURVEY CALIBRATION

C:\Minimus 13.08.2113\Logs\Shakespeare Janzen #5-36\Shakespeare Janzen #5-36_002.dta

General Constants All 000

Last Edited on 05-APR-2014,05:06

General Parameters

Mud Resistivity	0.380	ohm-metres
Mud Resistivity Temperature	81.000	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	Density 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 18-MAR-2014 09:04

Reading No	Measured	Calibrated (lbs)
1	15374.81	0.00
2	15847.36	399.00

Gamma Calibration MCG-C 150

Field Calibration on 04-APR-2014 11:36

	Measured	Calibrated (API)
Background	70	48
Calibrator (Gross)	1142	773
Calibrator (Net)	1071	725

Gamma Constants MCG-C 150

Last Edited on 05-APR-2014,03:48

Gamma Calibrator Number	GRC038	
Mud Density	1.10	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

SP Calibration MCG-C 150

Field Calibration on 10-MAR-2014 13:42

	Measured	Calibrated (mV)
Reference 1	99.9	99.0
Reference 2	-97.7	-98.8

High Resolution Temperature Calibration MCG-C 150

Field Calibration on 08-MAR-2014,10:59

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

High Resolution Temperature Constants MCG-C 150

Last Edited on 04-APR-2014,15:47

Pre-filter Length	11
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Caliper Calibration MMR-C.A 248

Base Calibration on 24-MAR-2014 11:12

Field Calibration on 01-APR-2014 09:23

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13253	5.96
2	16528	7.97
3	19726	9.95

4	23473	11.91
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.00	7.97

Micro Normal and Micro Inverse Calibration MMR-C.A 248

Base Calibration on 24-MAR-2014 11:03
Field Check on 01-APR-2014 09:24

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	10.1	49.8	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 04-APR-2014 11:42

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)
	1718 2552
Ratio	0.674

Neutron Constants MDN-B.J 387

Last Edited on 05-APR-2014,03:48

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 24-MAR-2014 10:21
Field Check on 04-APR-2014 11:19

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	951.2	126.8

Base Check	281.7
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FE Constants MFE-A.A 55

Last Edited on 05-APR-2014,03:48

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 73

Last Edited on 05-APR-2014,03:47

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

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
3' Waveform Filter	N/A
4' Waveform Filter	N/A
5' Waveform Filter	N/A
6' Waveform Filter	N/A

Semblance Level	N/A
Semblance Window Width	N/A micro-sec
Sonic 1 Despiker	N/A N/A
Sonic 2 Despiker	N/A N/A

Base Calibration

Test Loop Calibration

Channel	Measured		Calibrated (mmho/m)	
	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	13.7	3863.6	13.6	3863.5
2	31.5	3592.9	31.4	3592.8
3	29.7	2973.4	29.7	2973.5
4	20.8	2127.8	20.8	2127.8
Deep	18.3	1913.7	18.4	1913.7
Medium	43.0	3863.9	43.0	3864.1
Shallow	46.8	5375.4	46.7	5375.3

Array Temperature 47.7 47.5 Deg F

Induction Constants MAI-A.A 5

Last Edited on 05-APR-2014,03:47

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 04-APR-2014,15:47

DOWNHOLE EQUIPMENT

C:\Minimus 13.08.2113\Logs\Shakespeare Janzen #5-36\Shakespeare Janzen #5-36_002.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-C 150 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

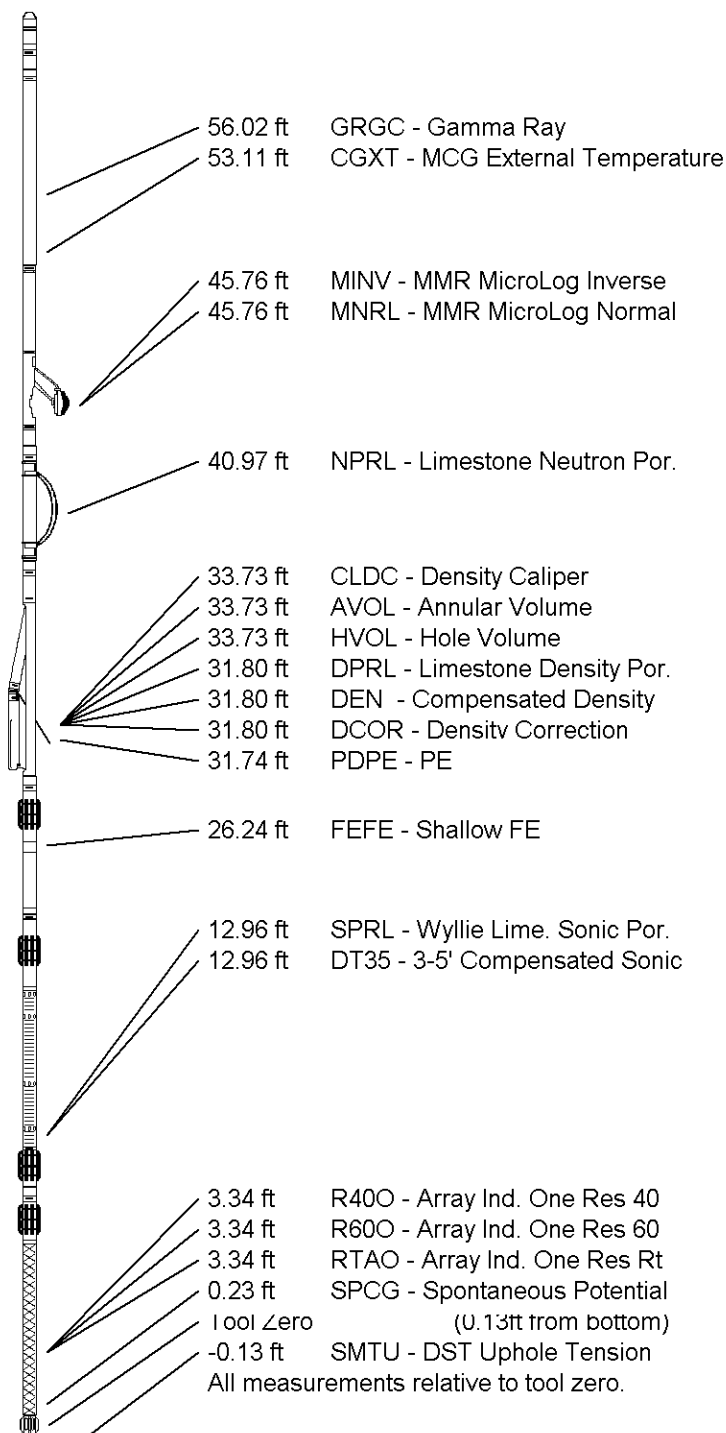
Compact Density/Caliper
MPD-D.A 480 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

Compact Focussed Electric
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Sonic
MSS-A.A 73 LG: 12.52 ft WT: 72.8 lb OD: 2.240 in

Compact Induction
MAI-A.A 5 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 63.70 ft Weight: 480.6 lb



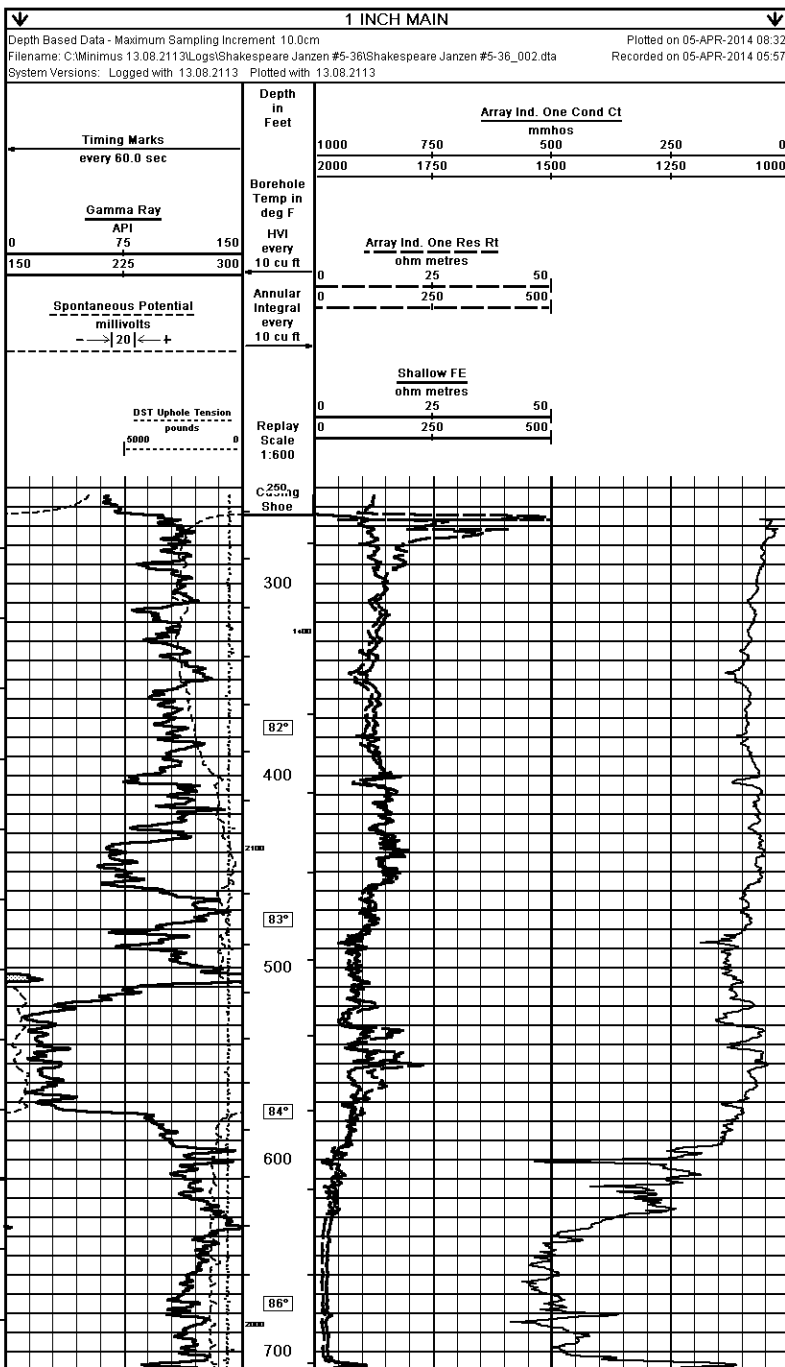
COMPANY	SHAKESPEARE OIL CO., INC.
WELL	JANZEN #5-36
FIELD	CAPSTONE EAST
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

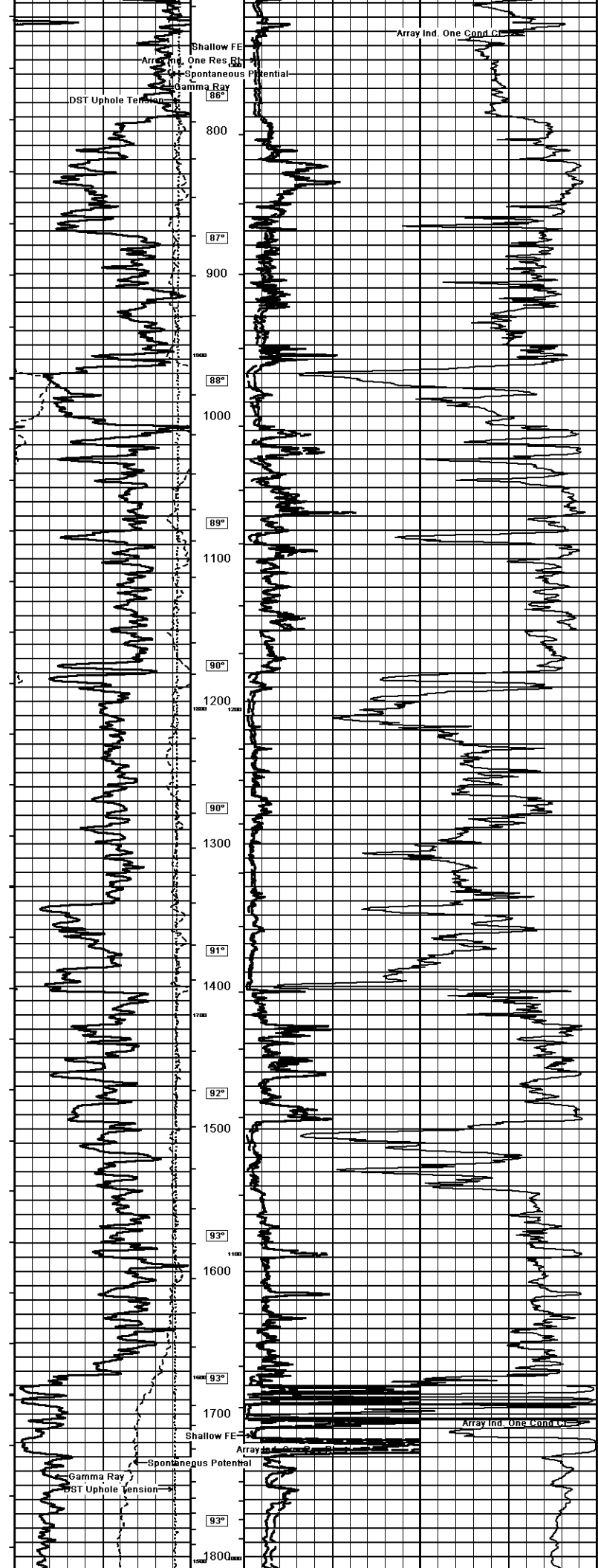
Elevation Kelly Bushing	3114.00	feet	First Reading	4862.00	feet
Elevation Drill Floor	3112.00	feet	Depth Driller	4866.00	feet
Elevation Ground Level	3104.00	feet	Depth Logger	4865.00	feet

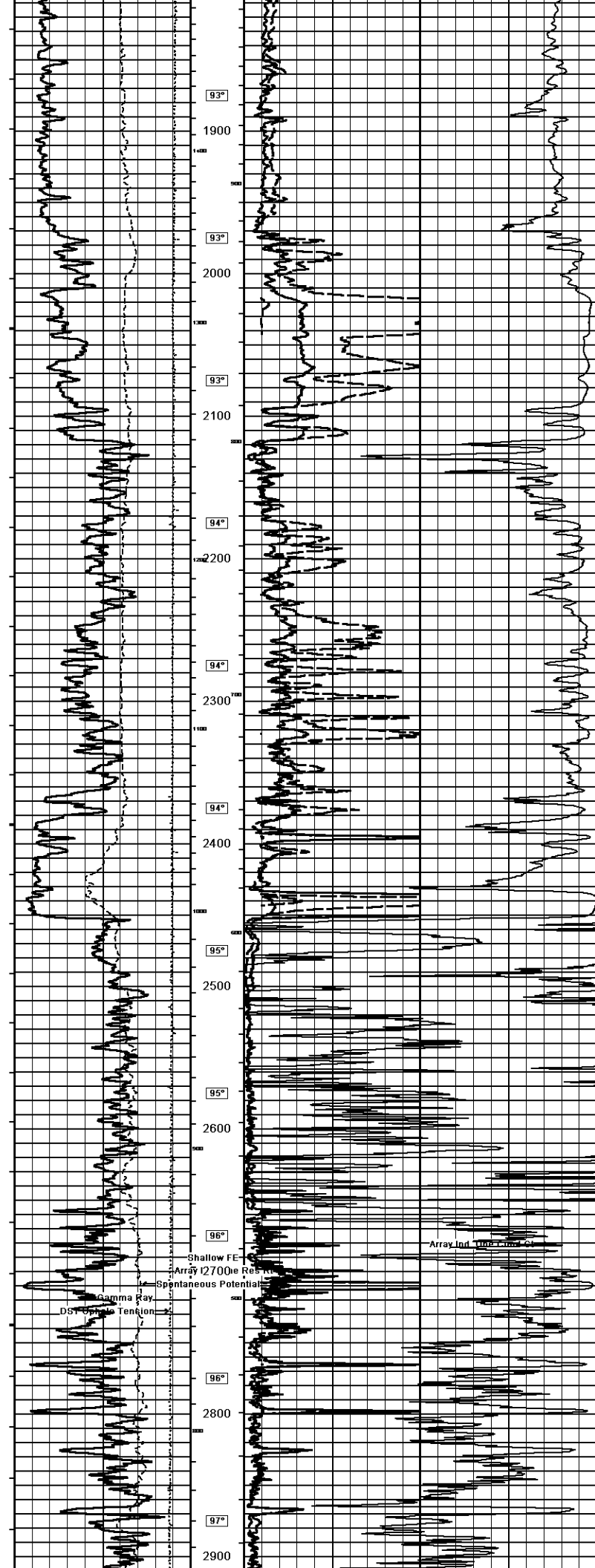


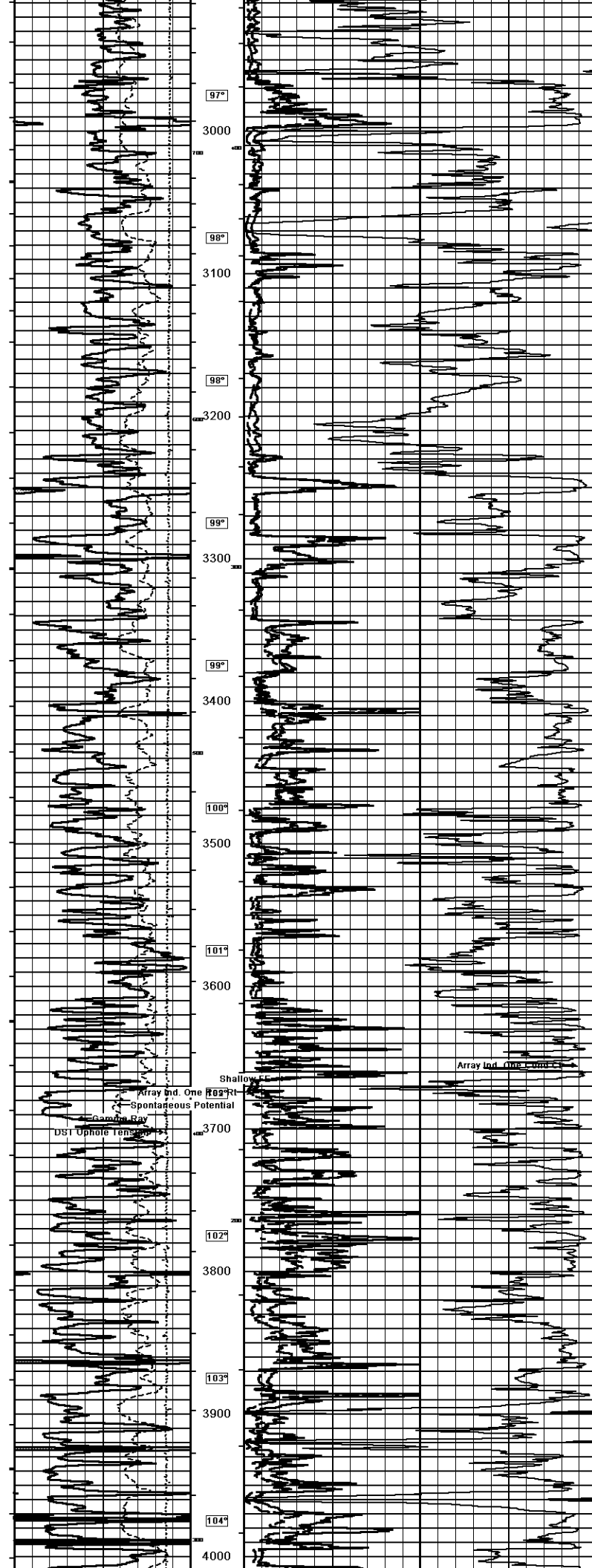
ARRAY INDUCTION

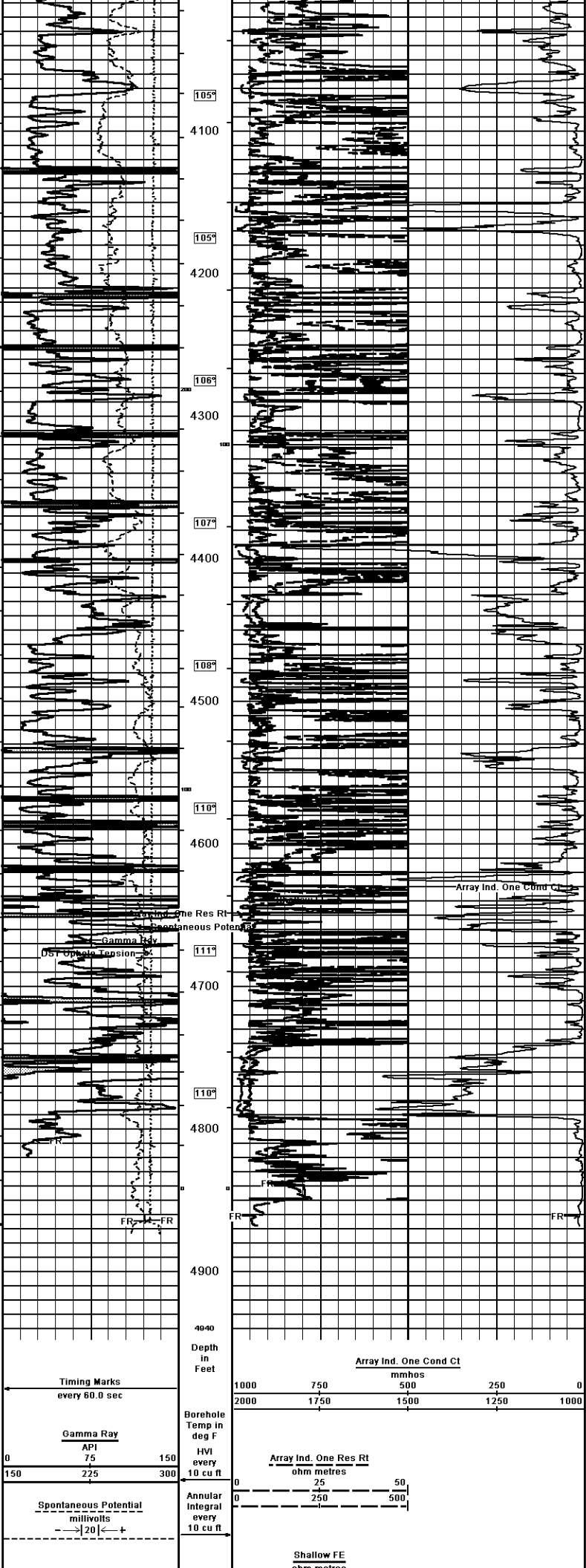
Weatherford		ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG	
COMPANY SHAKESPEARE OIL CO., INC.			
WELL JANZEN #5-36			
FIELD CAPSTONE EAST			
PROVINCE/COUNTY SCOTT			
COUNTRY/STATE U.S.A. / KANSAS			
LOCATION 400' ESL & 650' FML			
SEC 36 TWP 16S R3E 34W			
MSS			
Latitude 37.1721042			
Longitude -94.0000000			
Permanent Datum G.L. Elevation 3104 feet			
Log Measured From RB			
Drilling Measured From RB			
Date 05-APR-2014			
Run Number ONE			
Service Order 3467-32878012			
Depth Driller 4866.00 feet			
Depth Logger 4866.00 feet			
First Reading 4862.00 feet			
Last Reading 264.00 feet			
Casing Driller 264.00 feet			
Casing Logger 264.00 feet			
Bit Size 7 8/5 inches			
Hole Fluid Type CHEMICAL			
Density/Viscosity 9.20 lb/cu ft 50.00 cP			
PVT Fluid Loss 10.00 8.00 ml/30min			
Sample Source FLOWLINE			
Rm @ Measured Temp 0.28 @ 81.0 ohm-m			
Rm @ Measured Temp 0.30 @ 91.0 ohm-m			
Rm @ Measured Temp 0.46 @ 91.0 ohm-m			
Source Rm1 Rm2 CALC			
Rm @ BHT 0.28 @ 10.0 ohm-m			
Time Since Circulation 5 HOURS			
Max Recorded Temp 110.00 deg F			
Equipment Base 13244 LUB			
Recorded By TMM PREST			
Witnessed By			
LOG# 1414101			











DST Uphole Tension
pounds

5000

Replay
Scale
1:600

02550

0250500

Depth Based Data - Maximum Sampling Increment 10.0cmPlotted on 05-APR-2014 08:32
Filename: C:\Minimus 13.08.2113\Logs\Shakespeare Janzen #5-36\Shakespeare Janzen #5-36_002.dtaRecorded on 05-APR-2014 05:57
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

1 INCH MAIN

COMPANY

WELL

FIELD

PROVINCE/COUNTY

COUNTRY/STATE

SHAKESPEARE OIL CO., INC.

JANZEN #5-36

CAPSTONE EAST

SCOTT

U.S.A. / KANSAS

Elevation Kelly Bushing

3114.00

feet

First Reading

4862.00

feet

Elevation Drill Floor

3112.00

feet

Depth Driller

4866.00

feet

Elevation Ground Level

3104.00

feet

Depth Logger

4865.00

feet

Weatherford

ARRAY INDUCTION

SHALLOW FOCUSED

ELECTRIC LOG