



Weatherford

ARRAY INDUCTION

COMPANY			SHAKESPEARE OIL CO., INC.		
WELL			CARSON 3-25		
FIELD			PENCE EAST		
PROVINCE/COUNTY			SCOTT		
COUNTRY/STATE			U.S.A. / KANSAS		
LOCATION			1000' FSL & 1600' FWL		
SEC 25	TWP 16S	RGE 34W	Other Services		MML
Latitude			MPD/MDN		
Longitude			MSS		
API Number	15-171-21064				
Permanent Datum GL, Elevation 3102 feet					
Log Measured From KB					
Drilling Measured From KB					
Date	08-JUN-2014		Elevations: feet		
Run Number	ONE		KB 3114.00		
Service Order	4558-89434029		DF 3112.00		
Depth Driller	4870.00		GL 3102.00		
Depth Logger	4869.00				
First Reading	4866.00				
Last Reading	267.00				
Casing Driller	266.00				
Casing Logger	267.00				
Bit Size	7.875		inches		
Hole Fluid Type	CHEMICAL				
Density / Viscosity	9.30 lb/USg		50.00 CP		
PH / Fluid Loss	10.50		9.60 ml/30Min		
Sample Source	MUDPIT				
Rm @ Measured Temp	0.57 @ 70.0		ohm-m		
Rmf @ Measured Temp	0.46 @ 70.0		ohm-m		
Rmc @ Measured Temp	0.68 @ 70.0		ohm-m		
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	0.35 @115.0		ohm-m		
Time Since Circulation	4 HOURS				
Max Recorded Temp	115.00		deg F		
Equipment / Base	13244		LIB		
Recorded By	ADAM SILL				
Witnessed By	WES HANSON				
JOB #	LB14-174				

BOREHOLE RECORD					Last Edited: 08-JUN-2014 15:40
Bit Size inches		Depth From feet		Depth To feet	
7.875		265.00		4870.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	265.00	24.00	

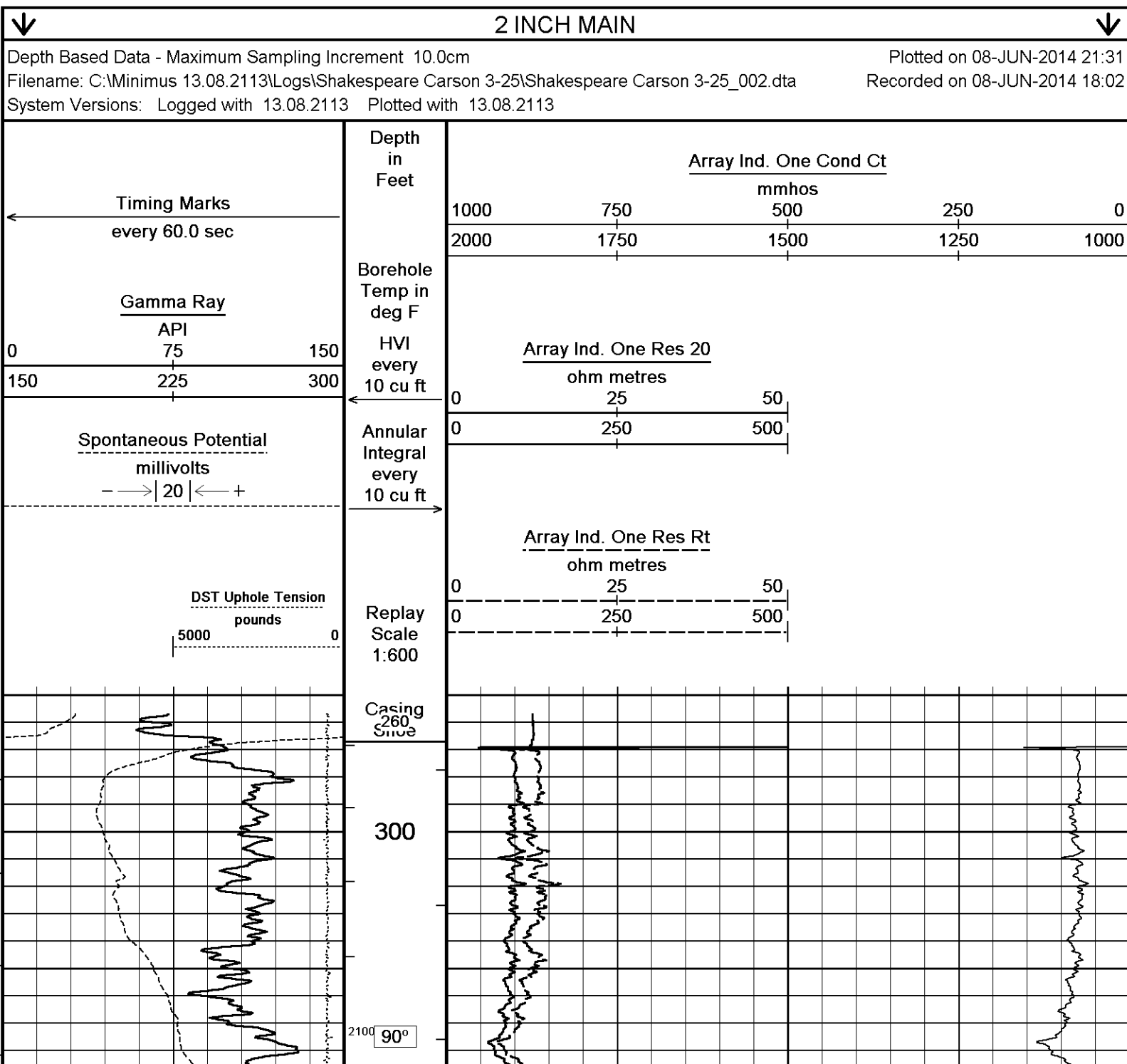
REMARKS
- SOFTWARE ISSUE: WLS 13.08.2113.
- RUN ONE: MCG, MML, MDN, MPD, MSS, MAI RUN IN COMBINATION. - HARDWARE: DUAL BOWSPRING USED ON MDN. TWO 0.5 INCH STANDOFFS USED ON MSS. 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 2141 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3750 FEET: 198 CU.FT.
- RIG: SOUTHWIND #70

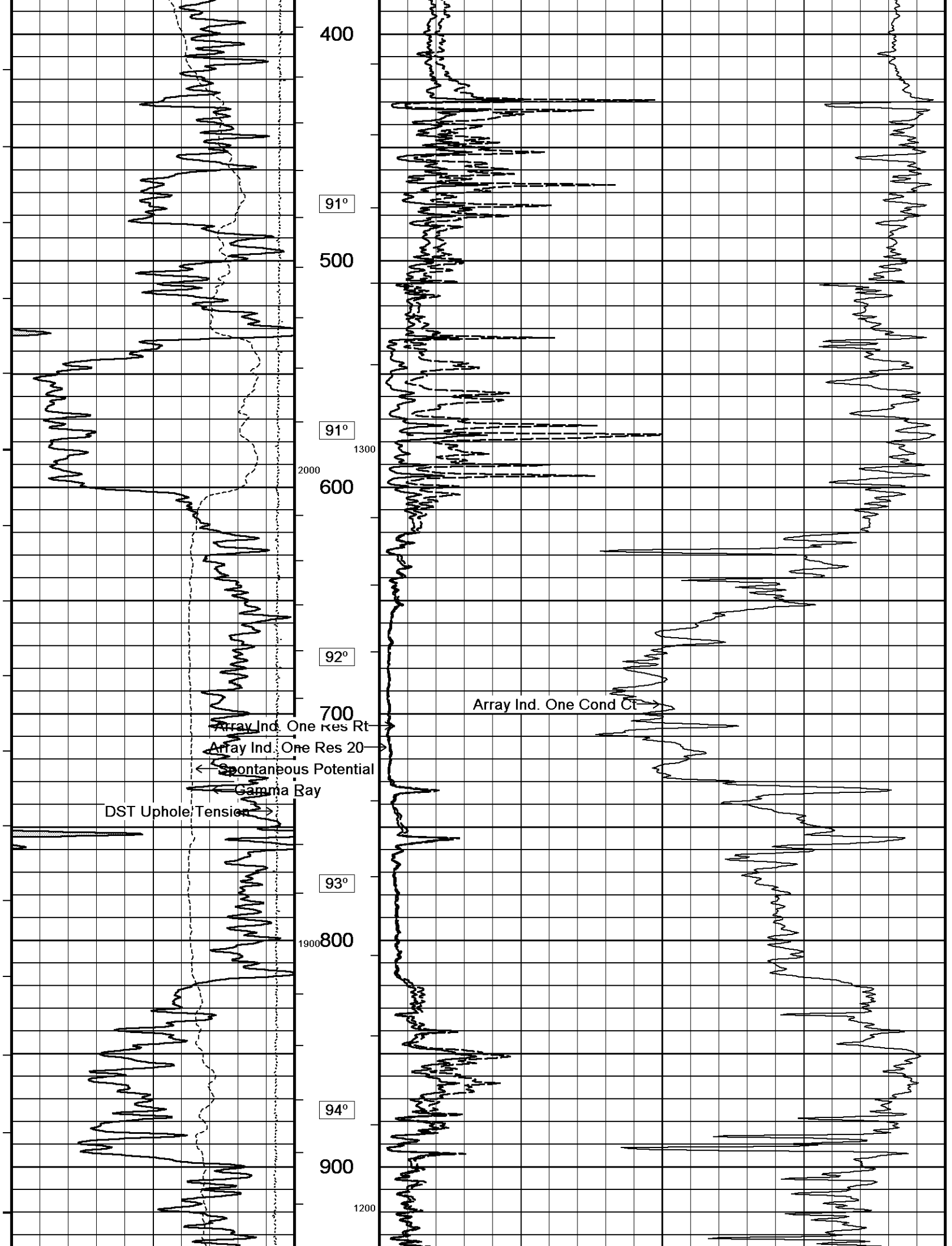
RIS: 0001 WIND #70.

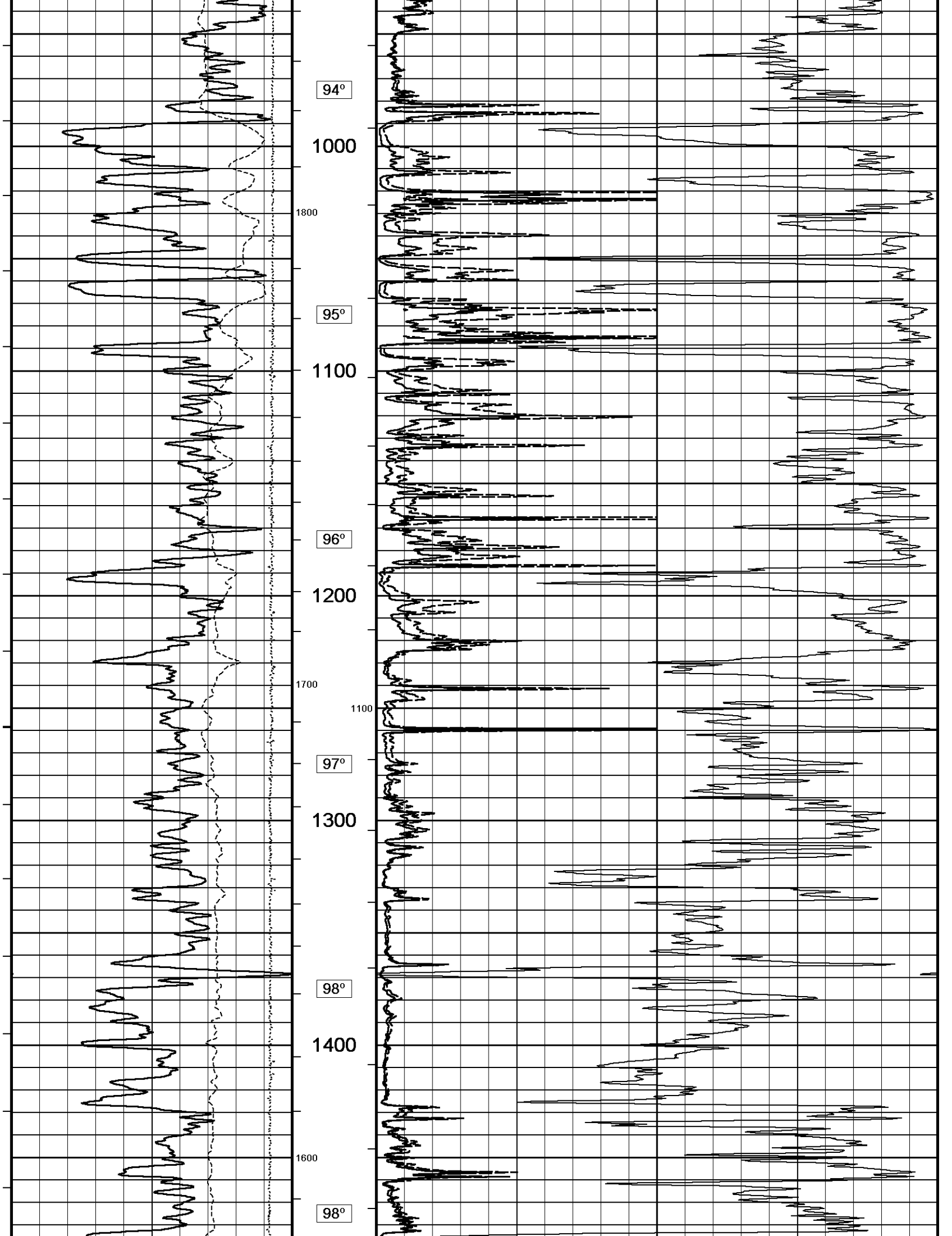
- ENGINEER: A. SILL.

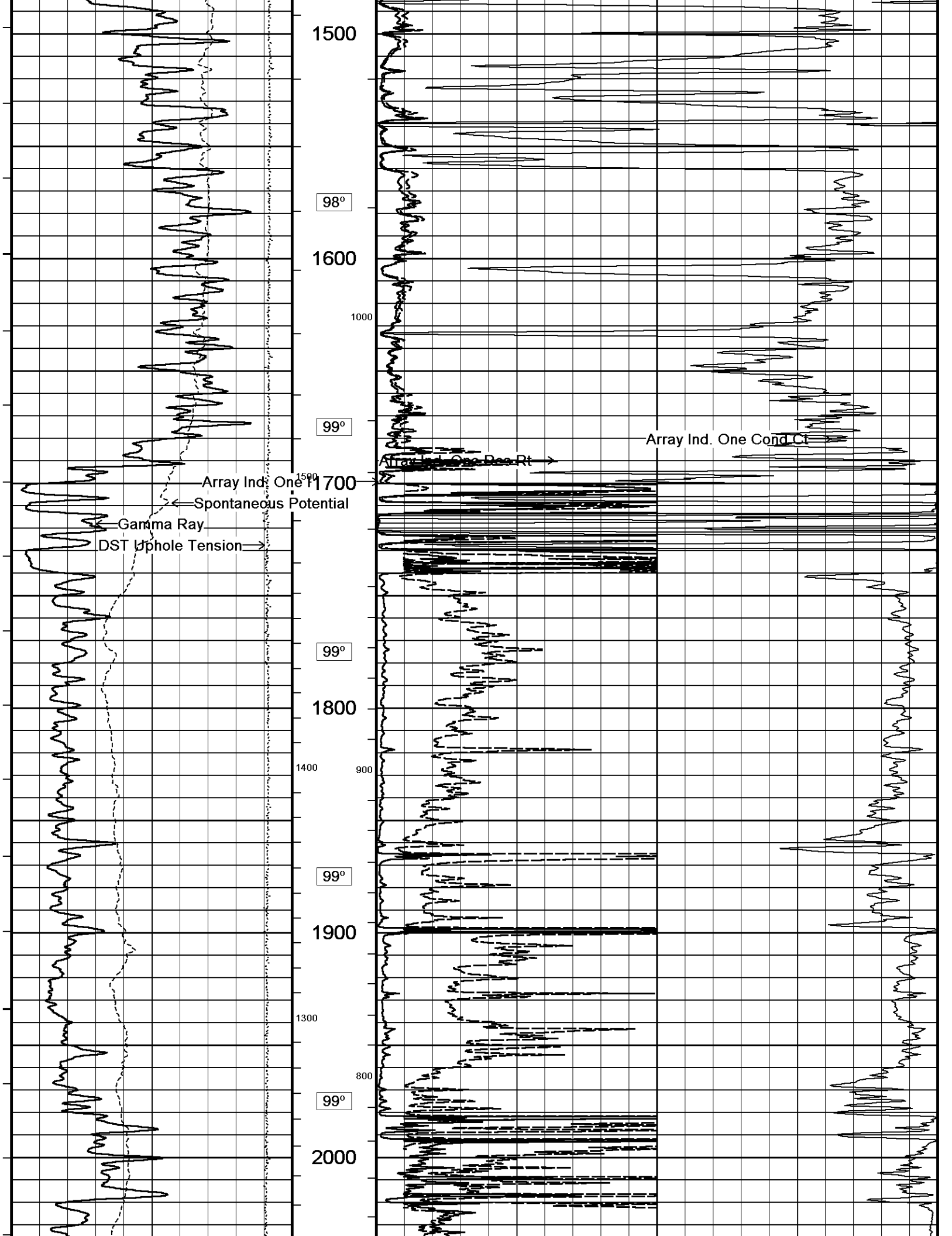
- OPERATOR: K. RINEHART.

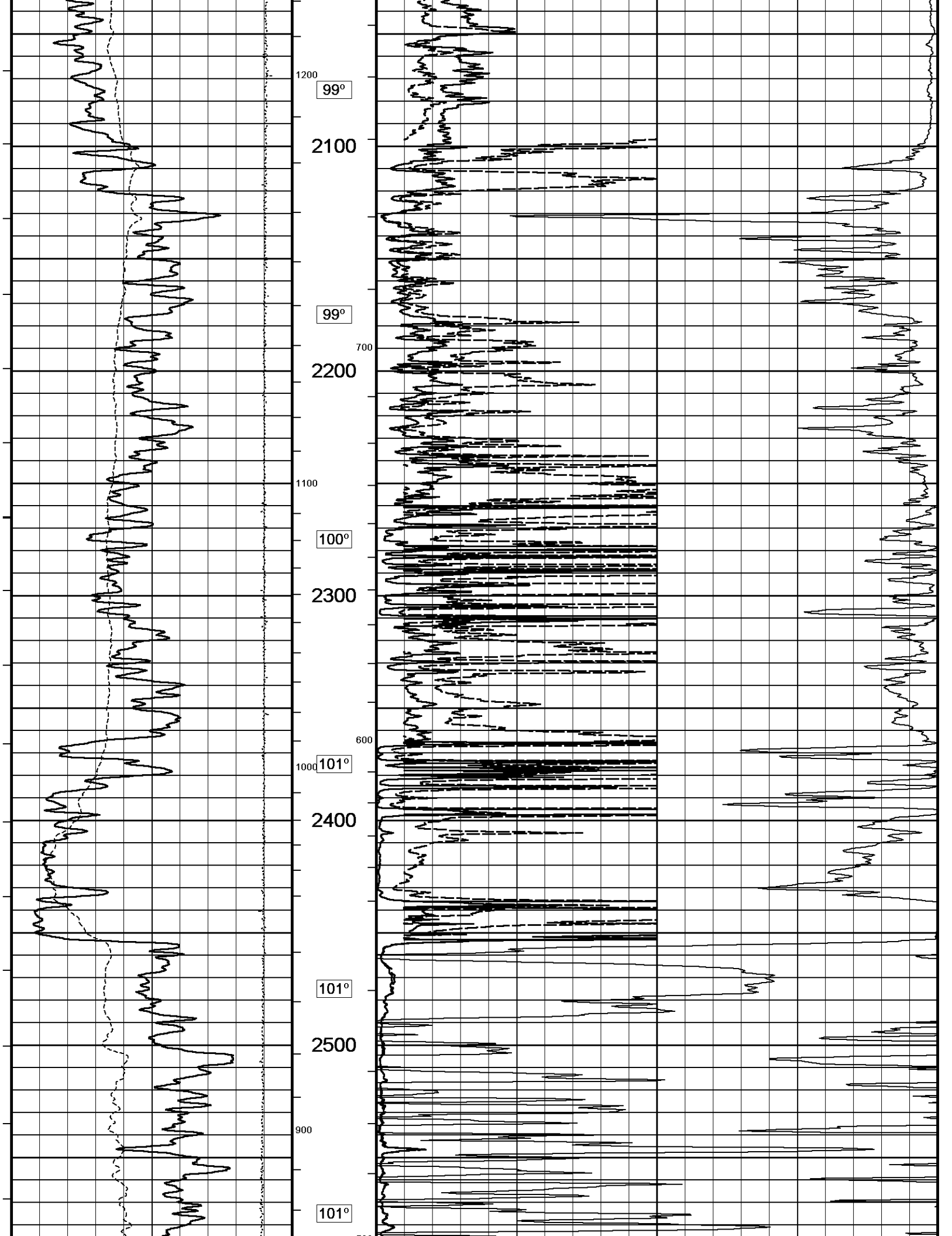
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will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

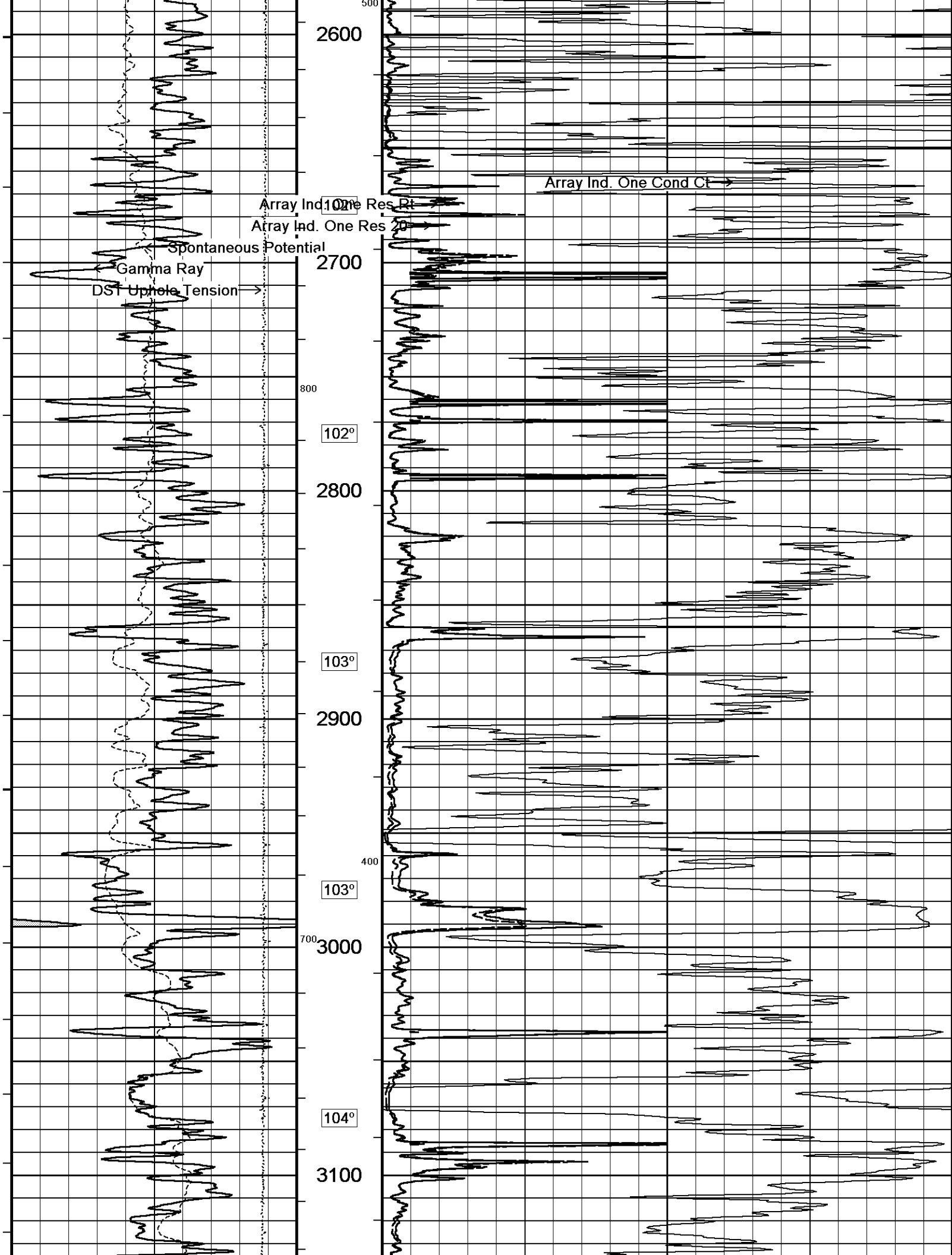


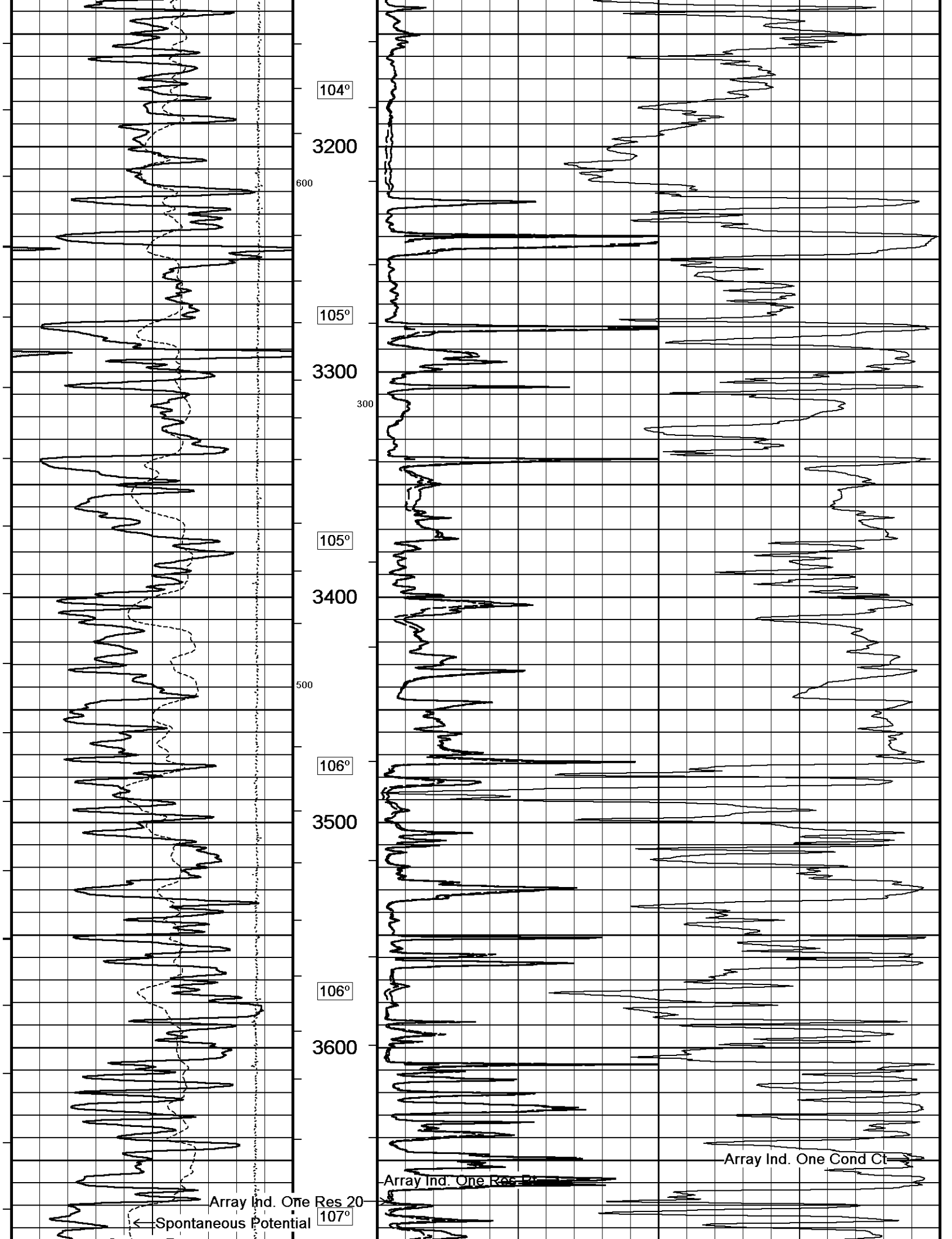


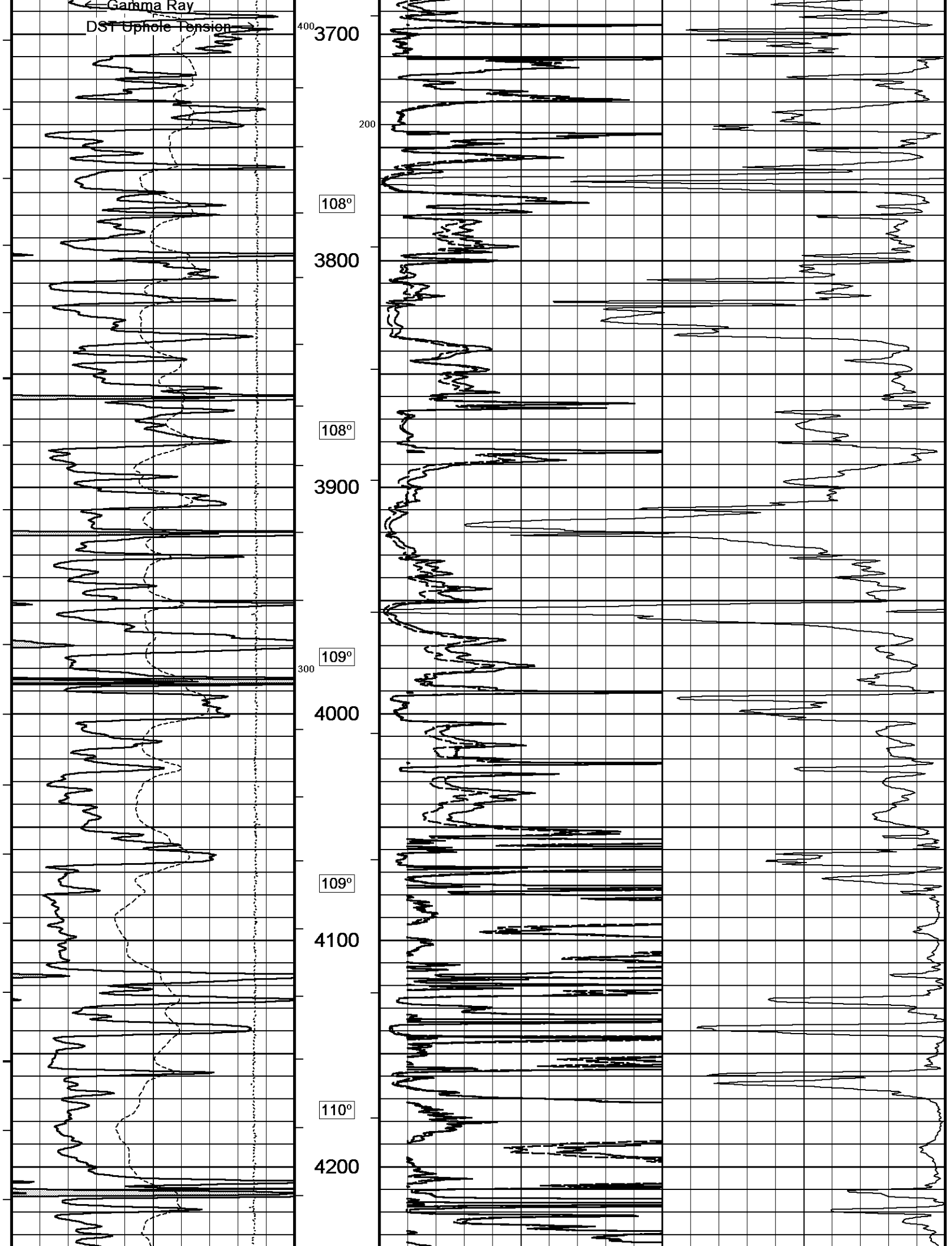


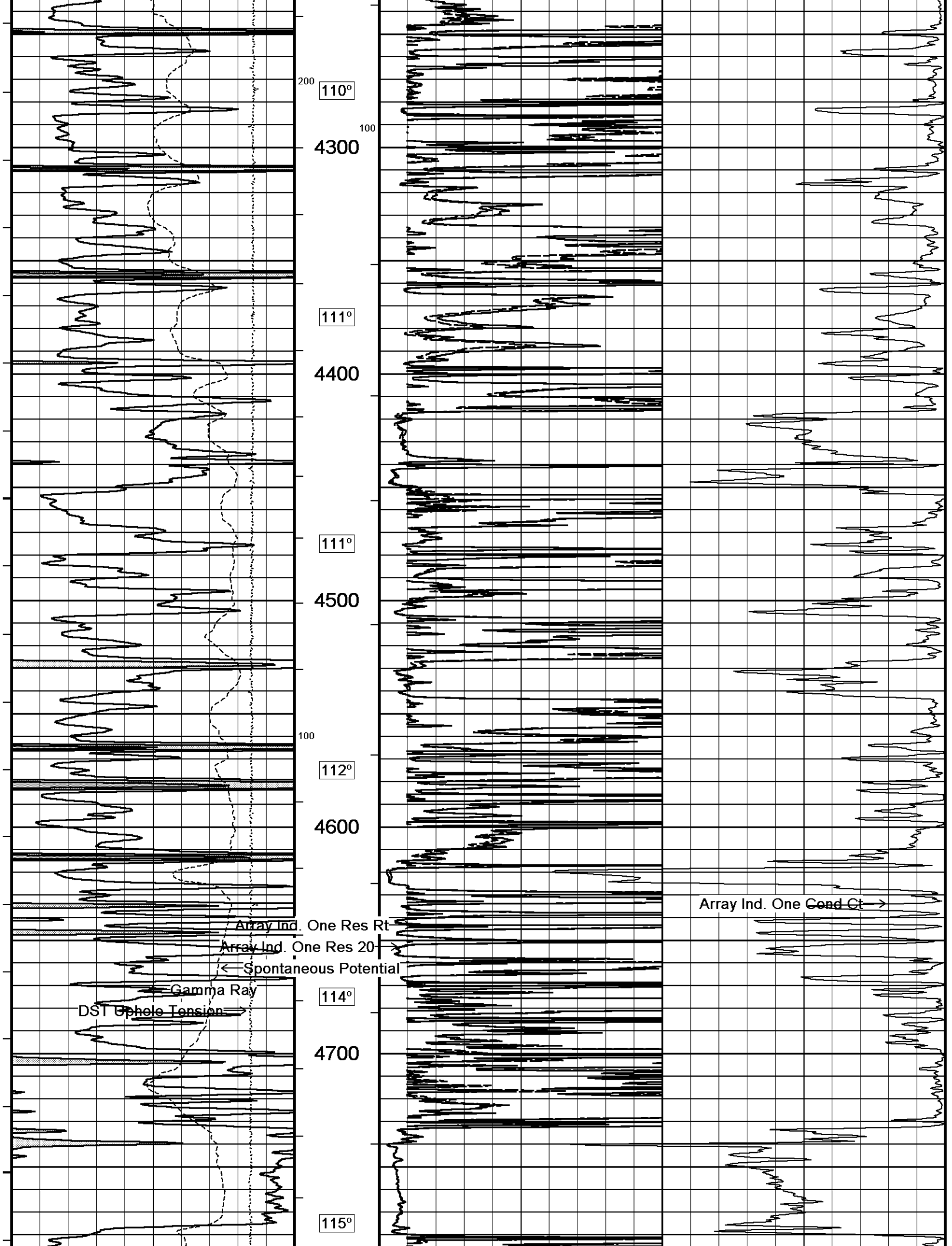


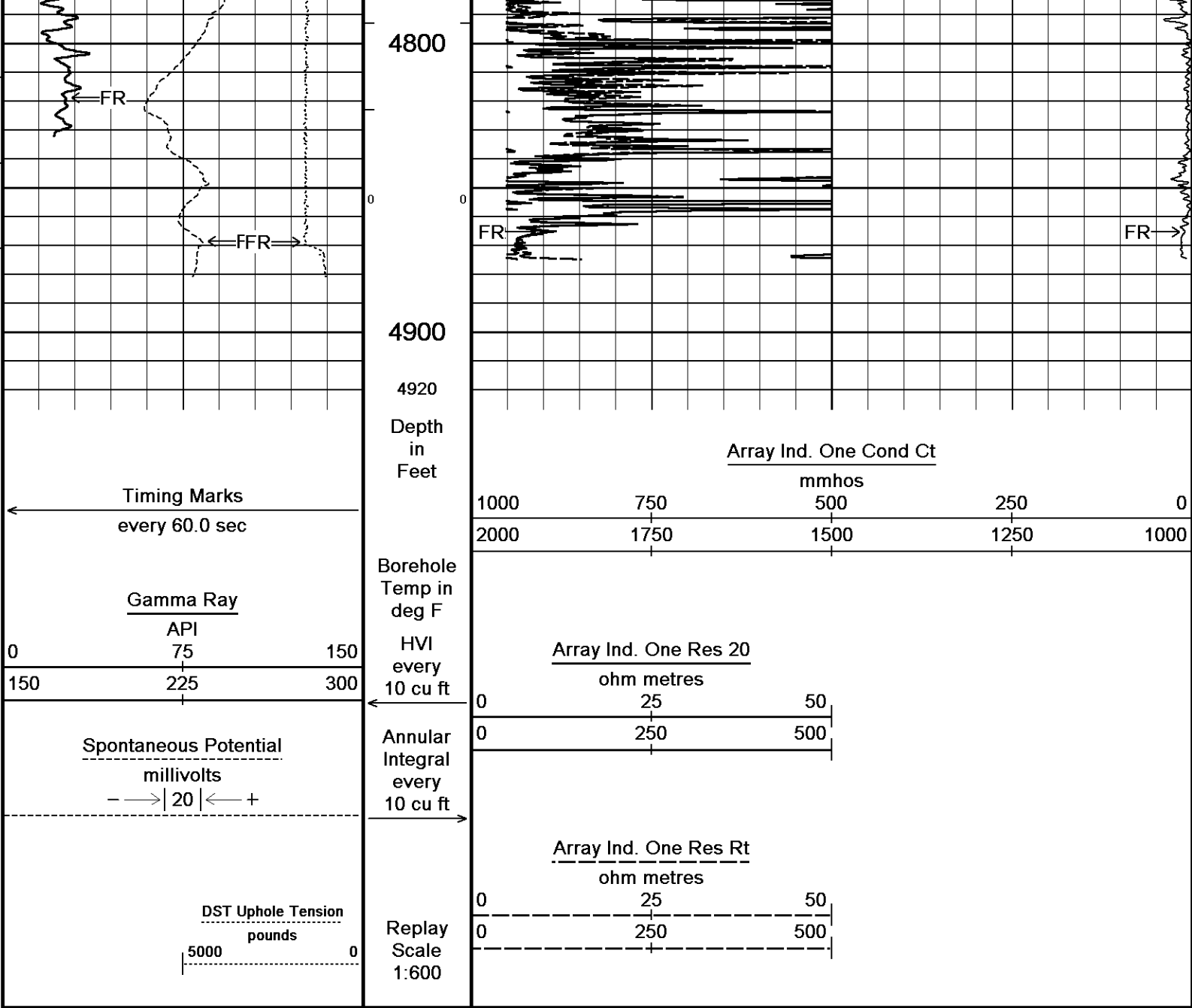










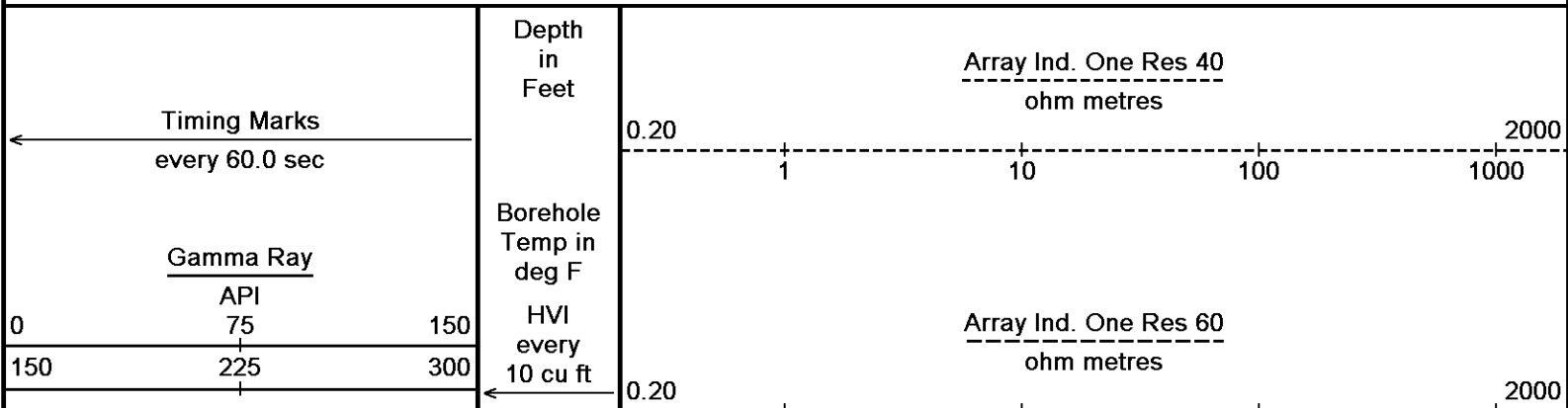


Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 08-JUN-2014 21:31
Filename: C:\Minimus 13.08.2113\Logs\Shakespeare Carson 3-25\Shakespeare Carson 3-25_002.dta Recorded on 08-JUN-2014 18:02
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

2 INCH MAIN

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 08-JUN-2014 21:31
Filename: C:\Minimus 13.08.2113\Logs\Shakespeare Carson 3-25\Shakespeare Carson 3-25_002.dta Recorded on 08-JUN-2014 18:02
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113



Spontaneous Potential
millivolts

—→| 20 |←—+

Annular
Integral
every
10 cu ft

DST Uphole Tension
pounds

5000

0

Replay
Scale
1:240

Array Ind. One Res Rt
ohm metres

0.20

2000

3750

108°

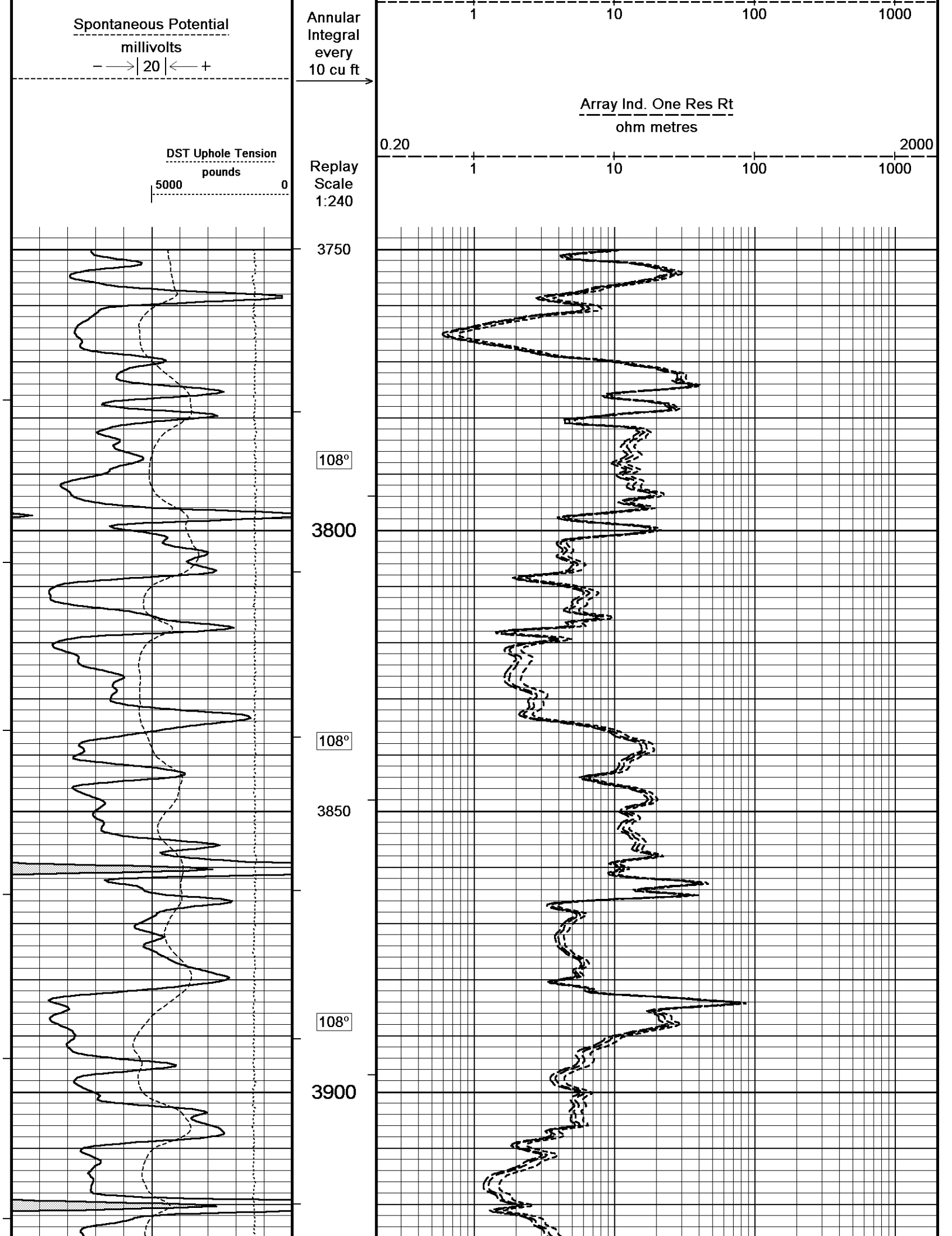
3800

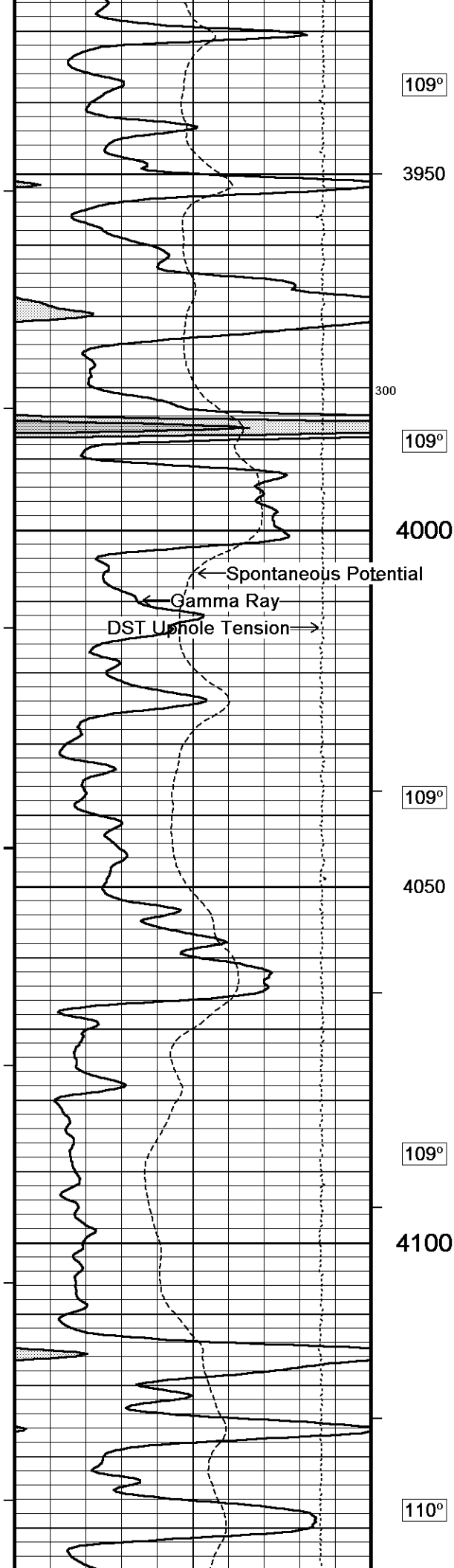
108°

3850

108°

3900





109°

3950

300

109°

4000

← Spontaneous Potential

← Gamma Ray

DST Uphole Tension →

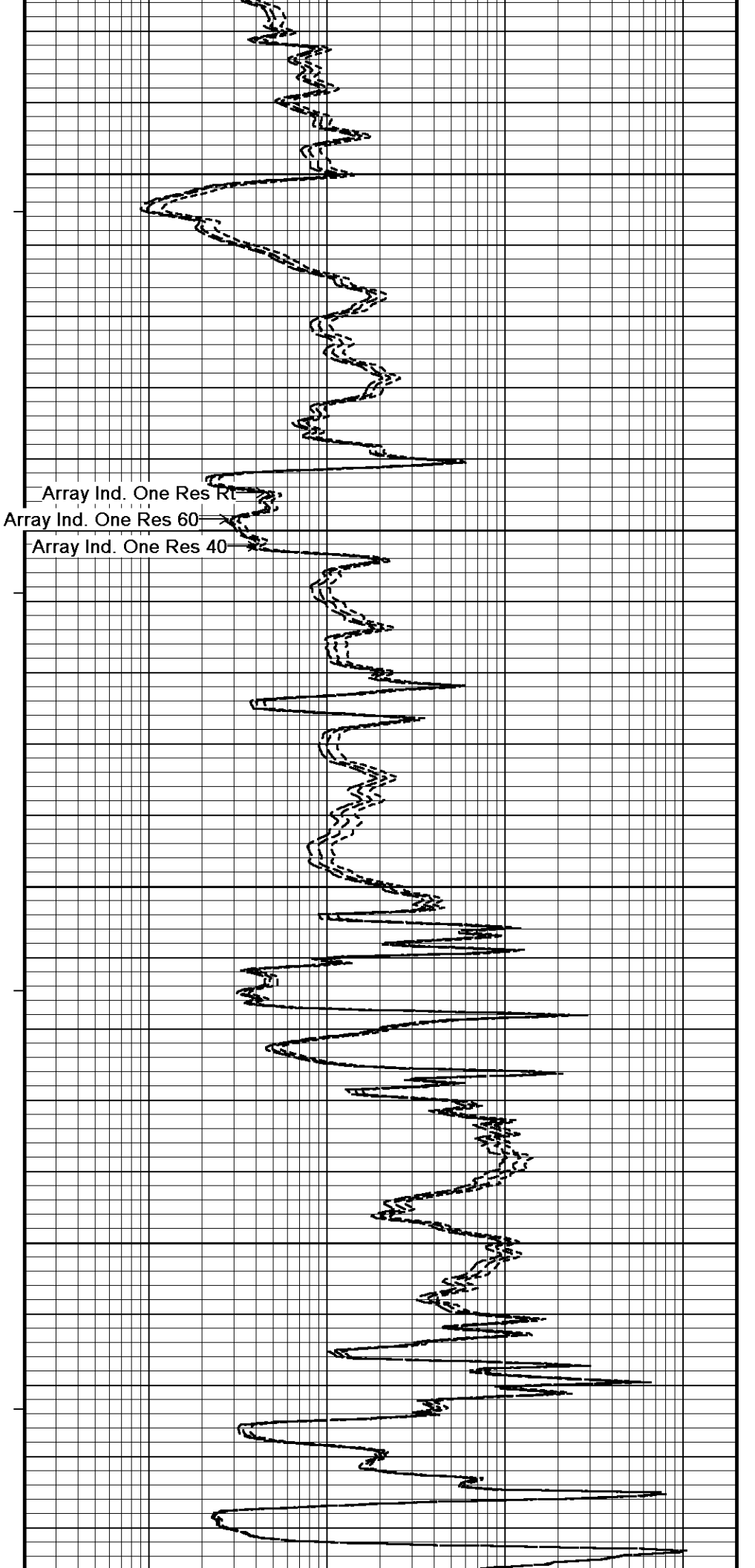
109°

4050

109°

4100

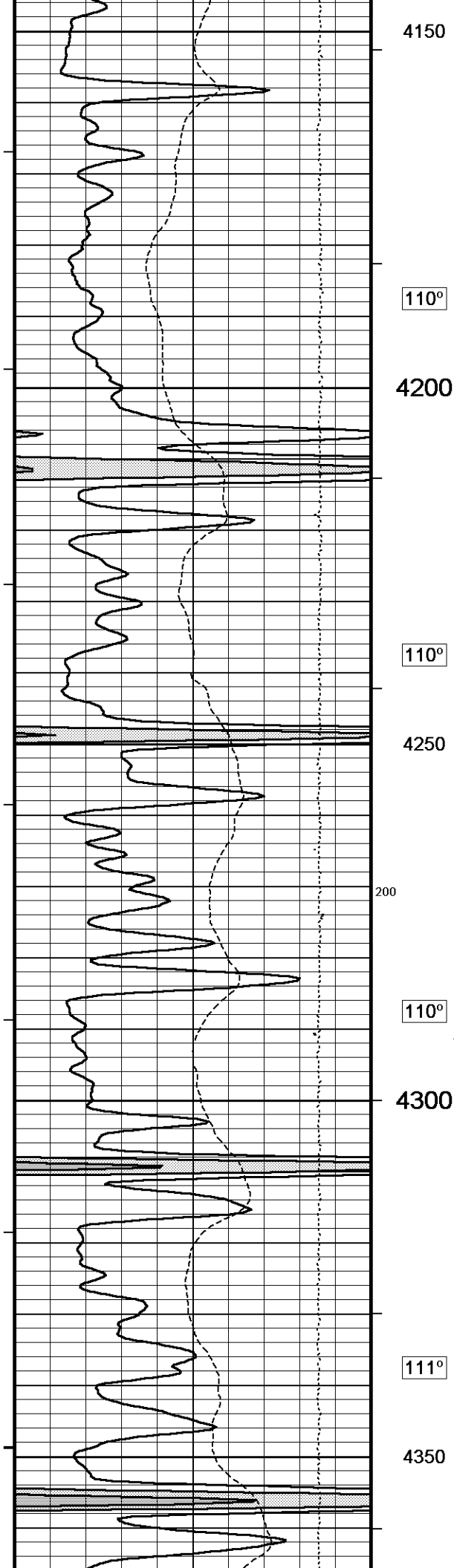
110°



Array Ind. One Res RT

Array Ind. One Res 60

Array Ind. One Res 40



4150

110°

4200

110°

4250

200

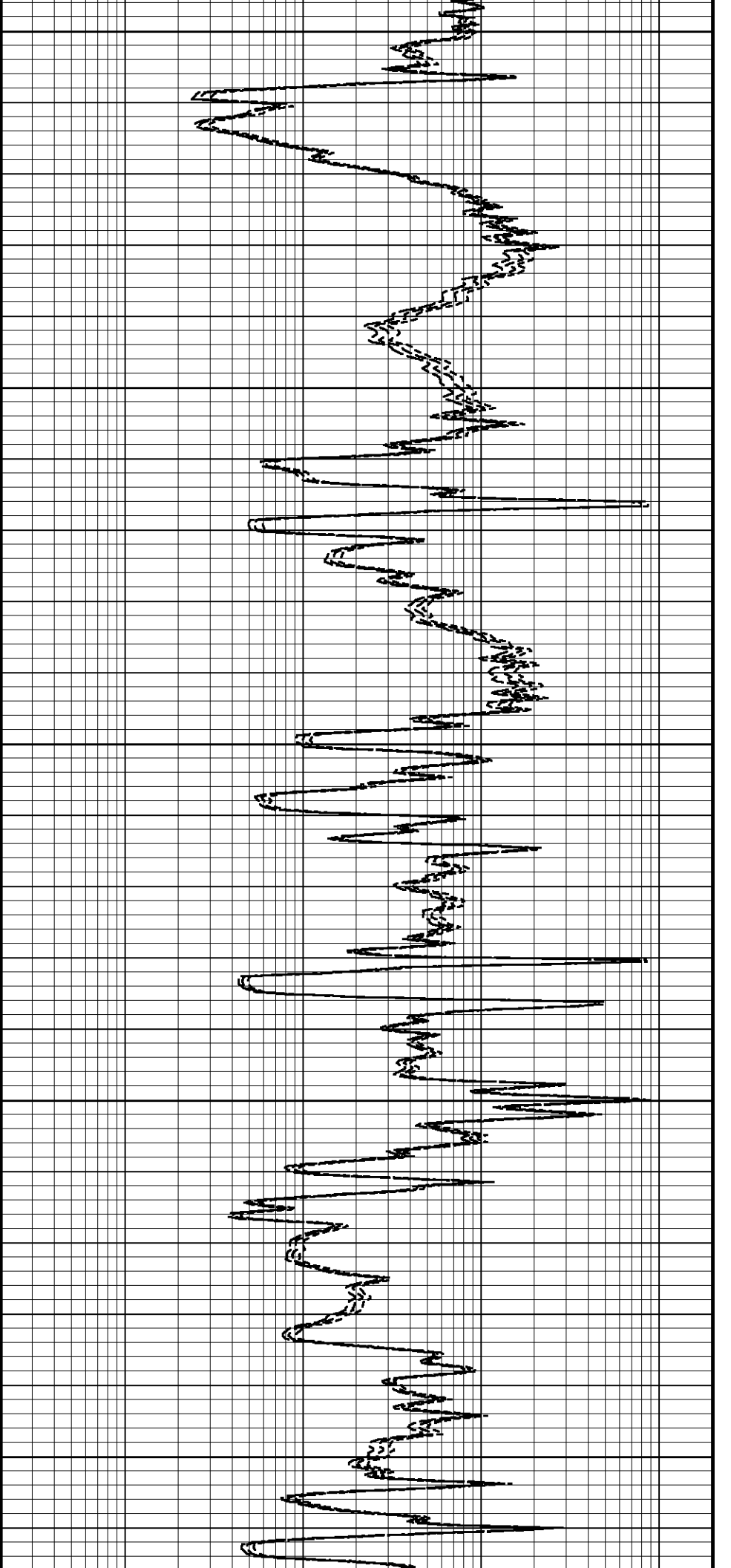
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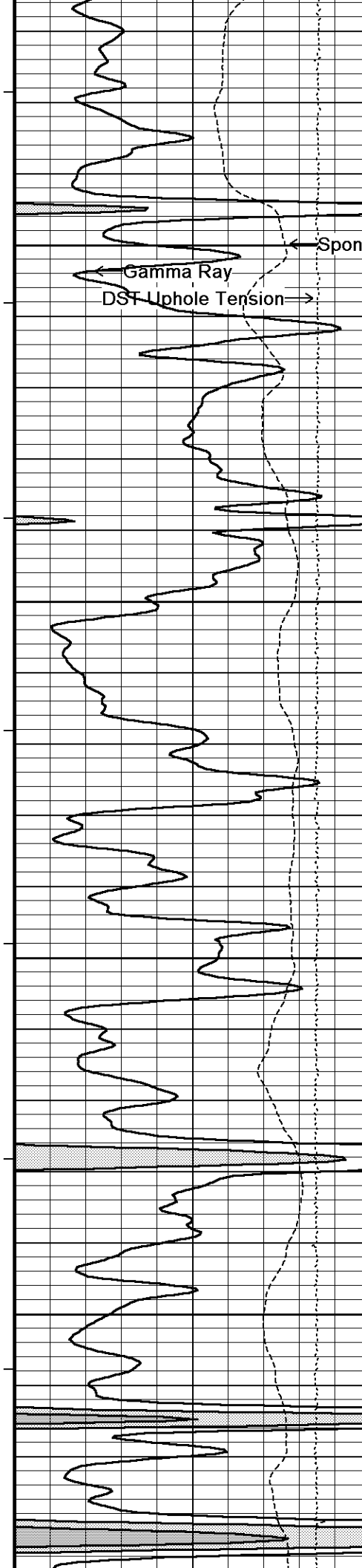
100

4300

111°

4350





111°

111°

111°

112°

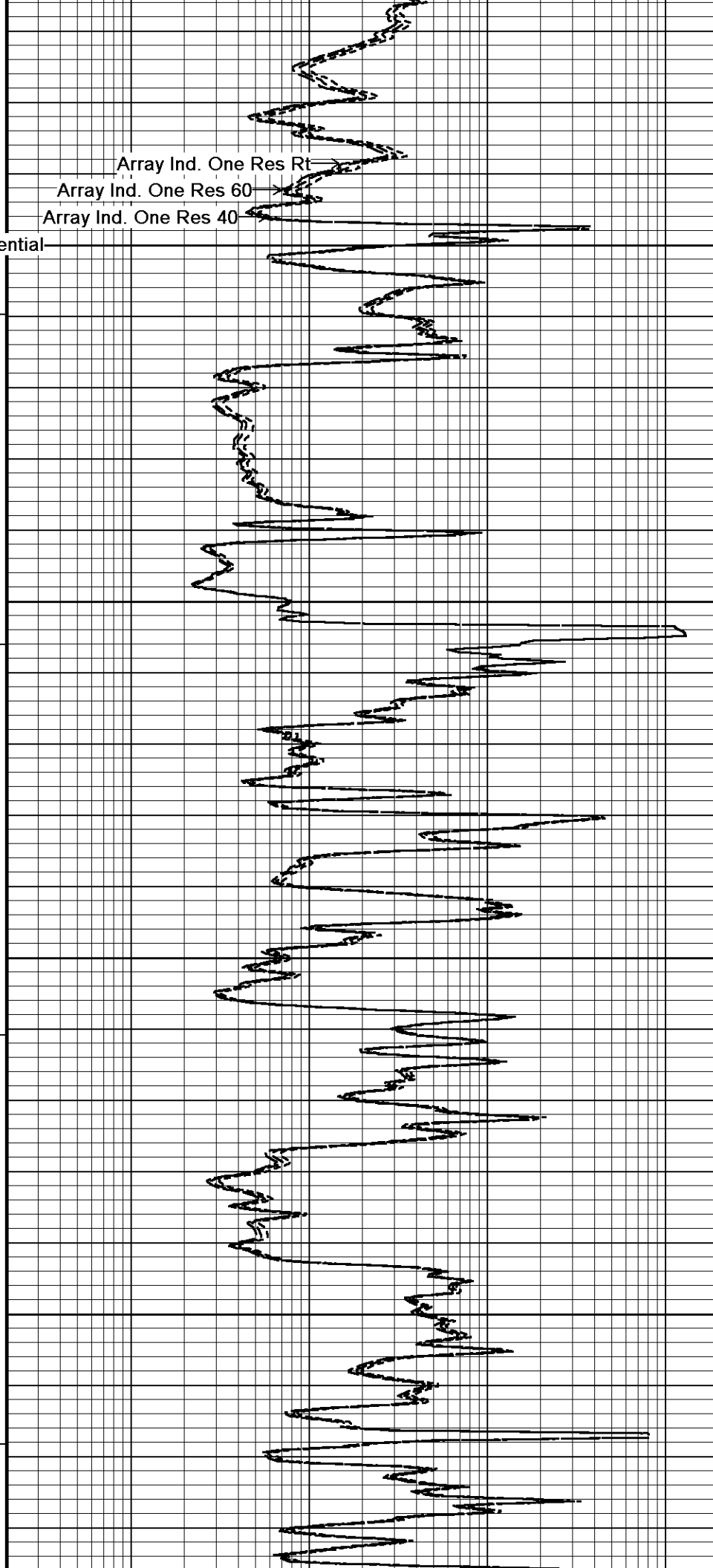
100

Spontaneous Potential

4450

4500

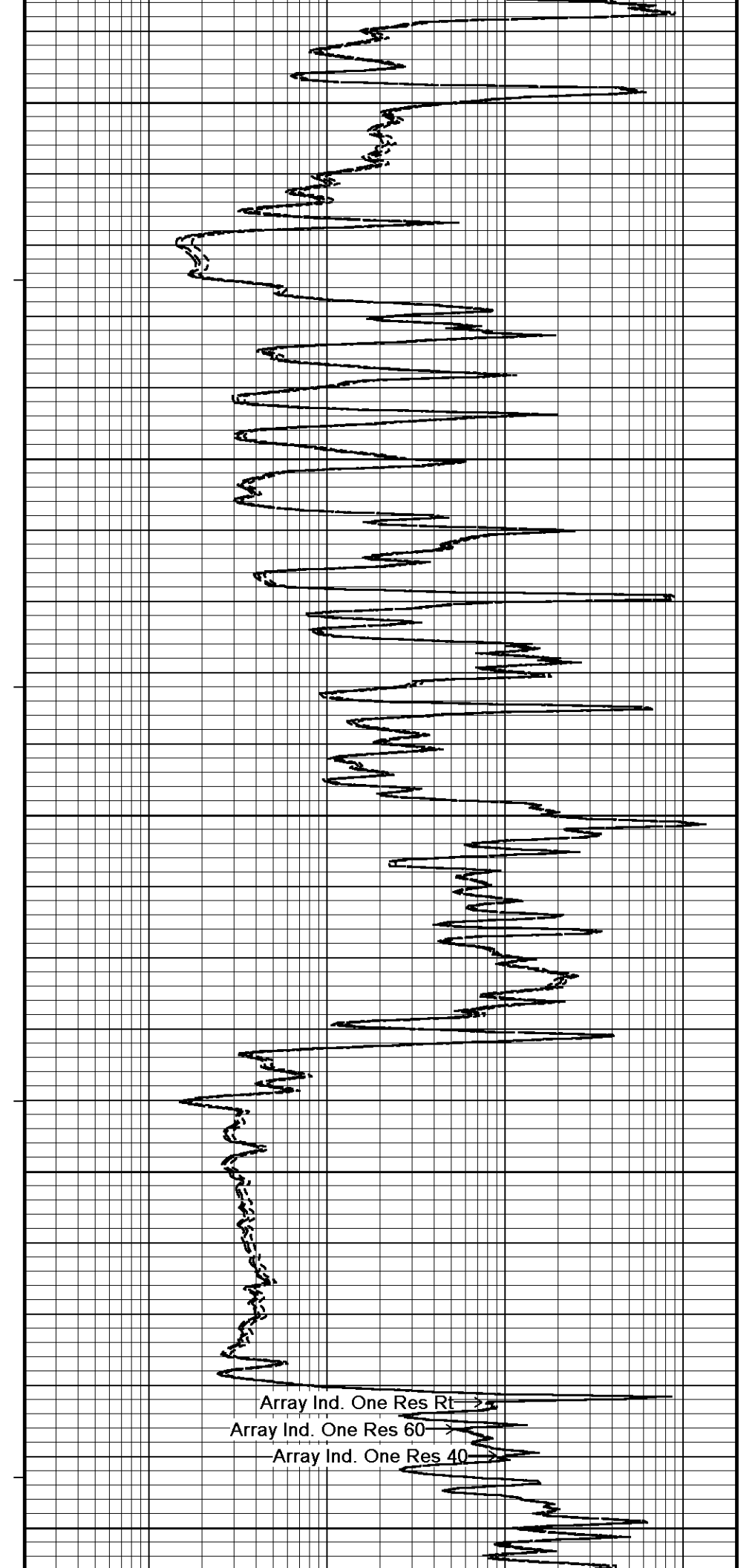
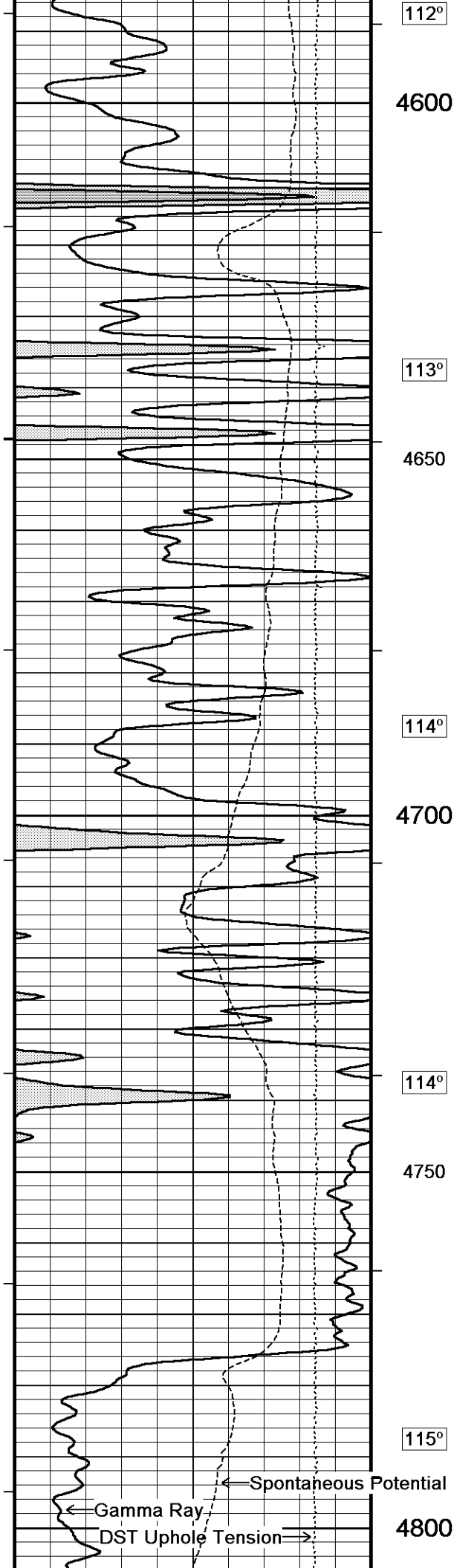
4550

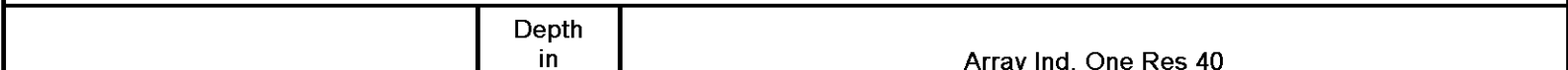
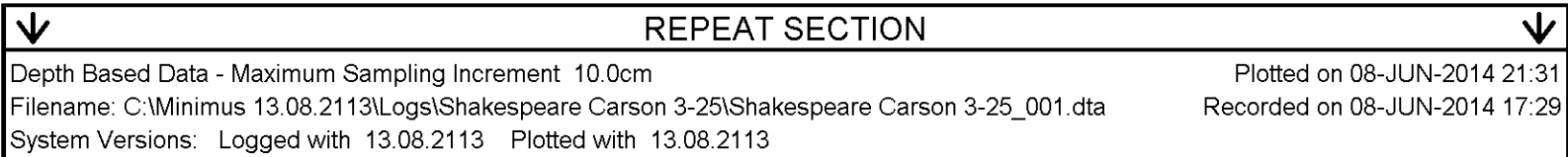
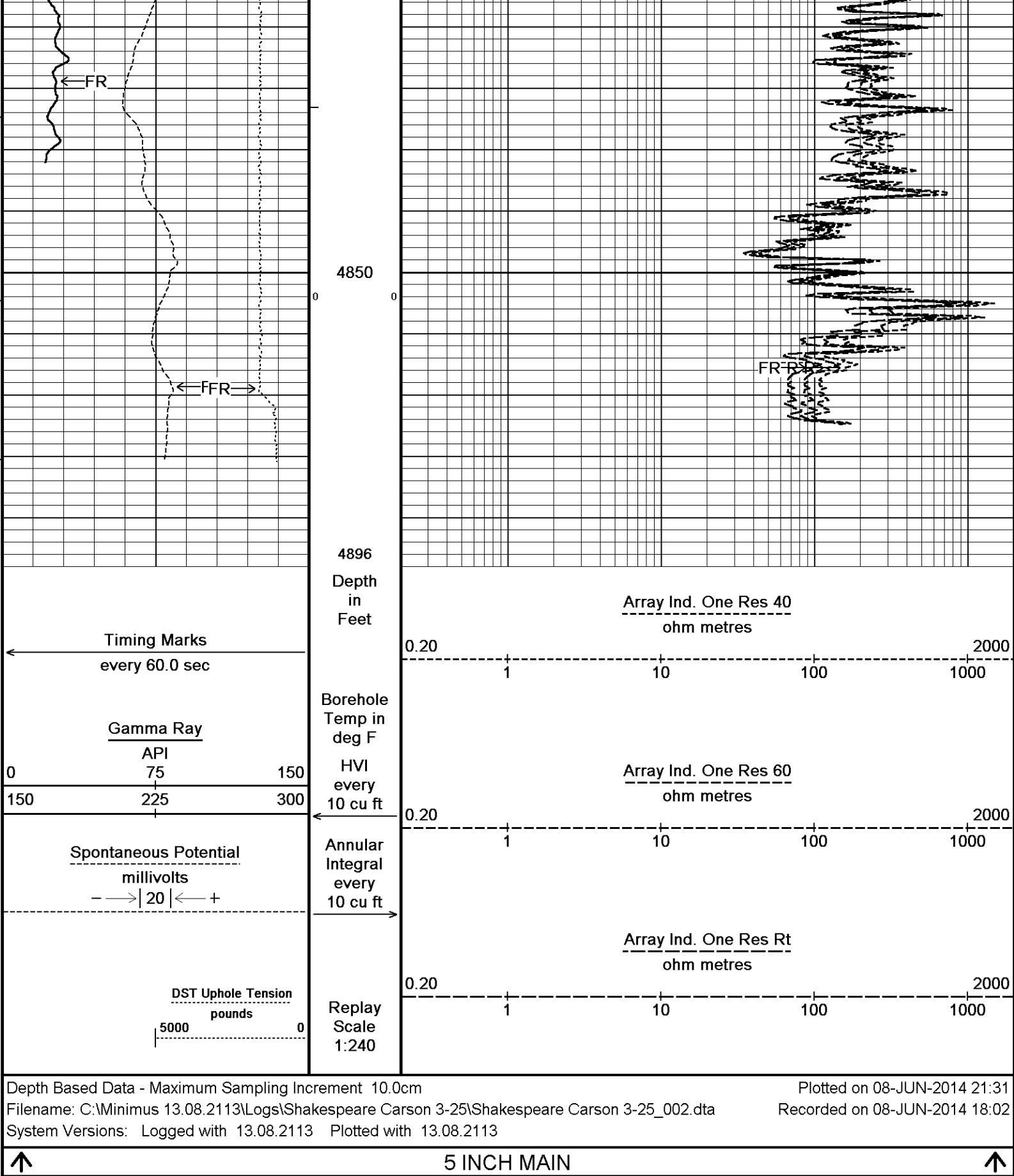


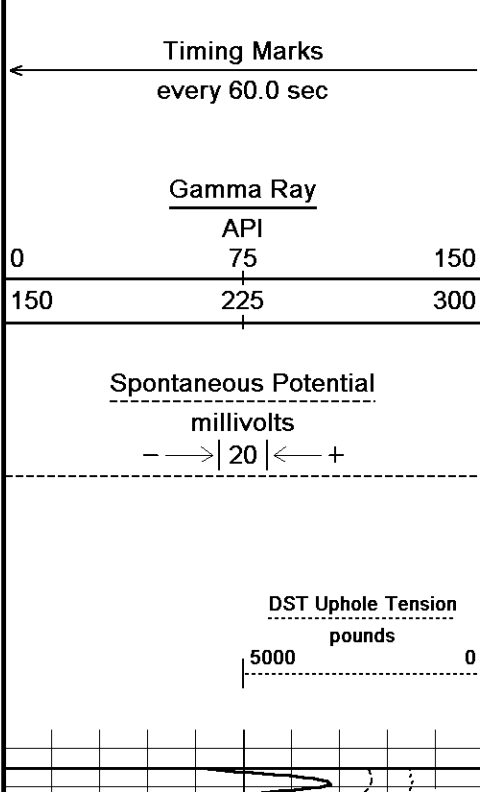
Array Ind. One Res Rt

Array Ind. One Res 60

Array Ind. One Res 40







Feet

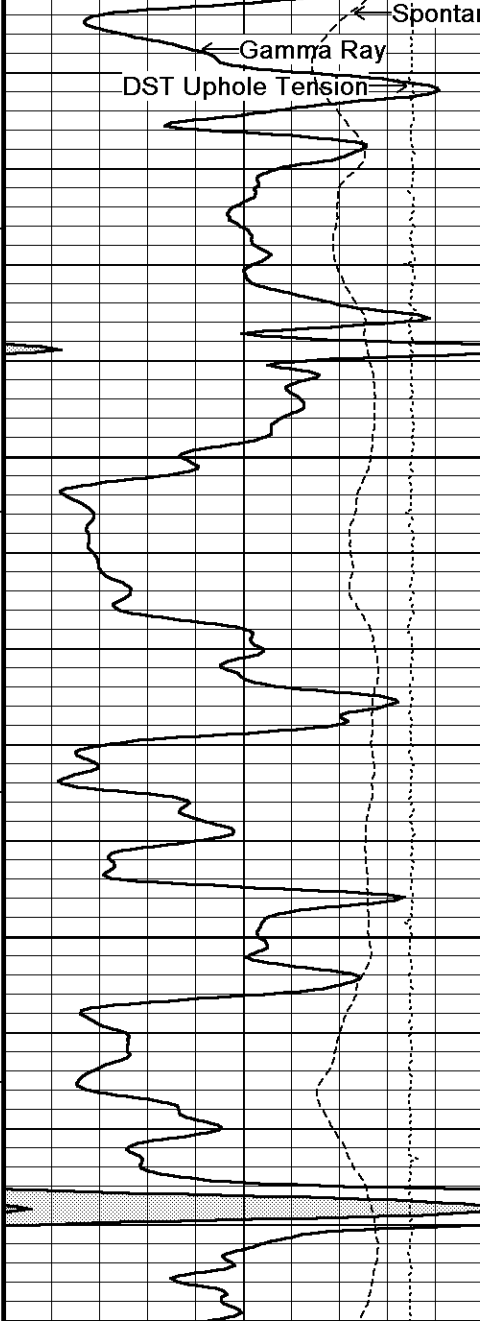
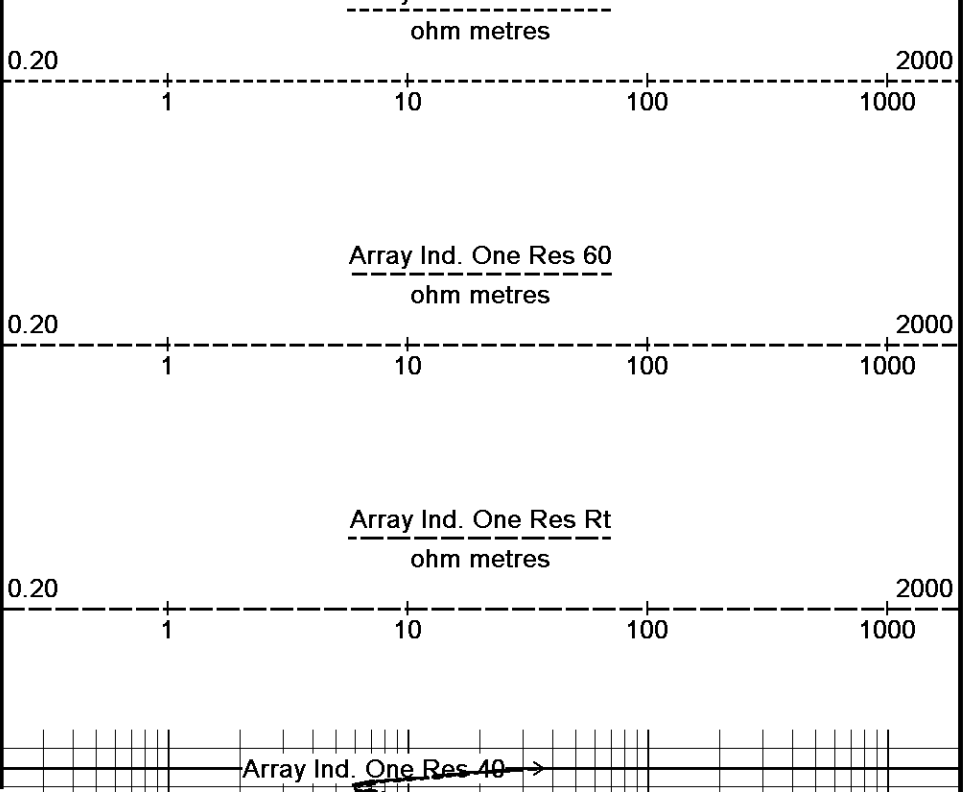
Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft

Replay
Scale
1:240

4400



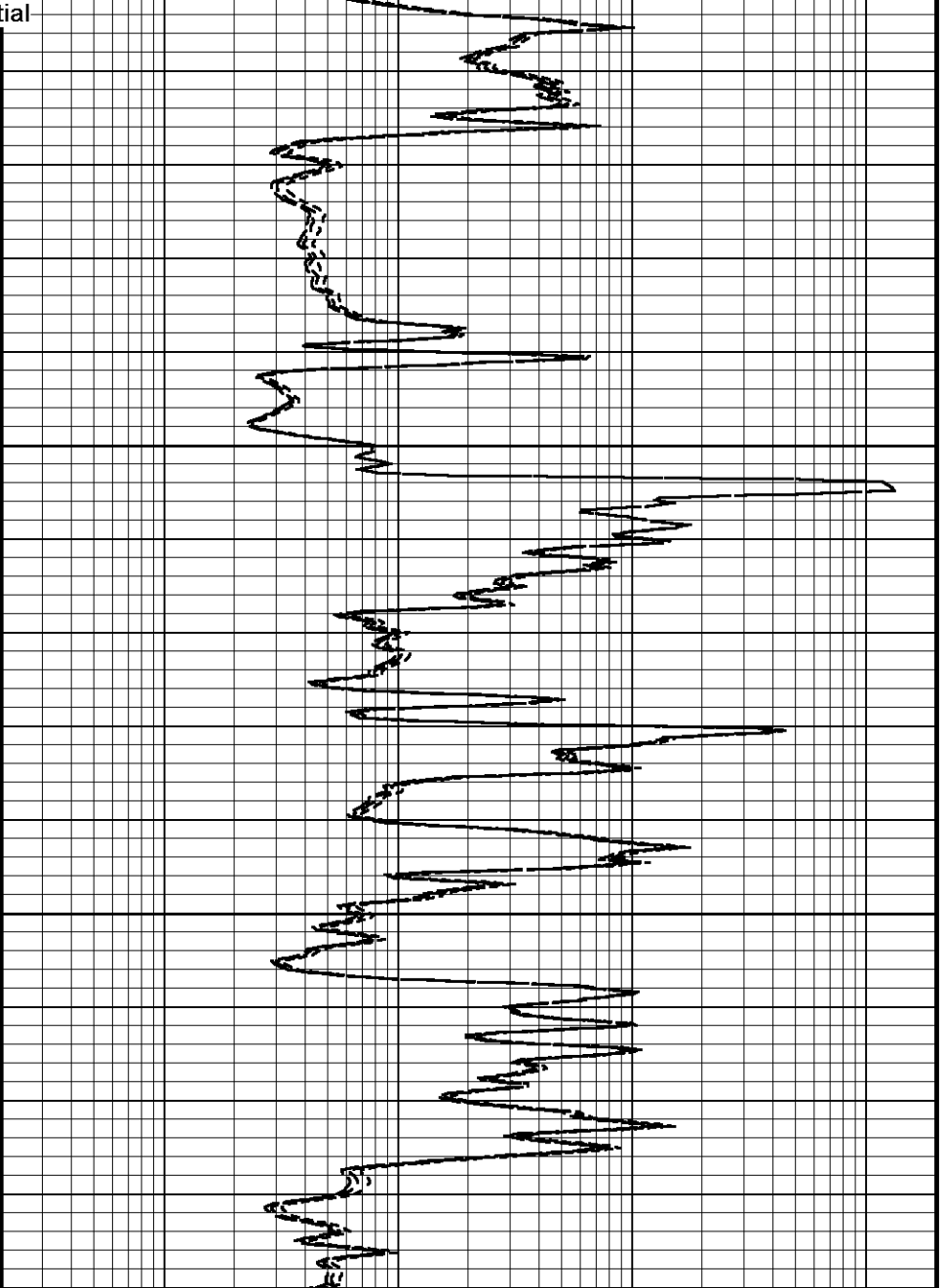
110°

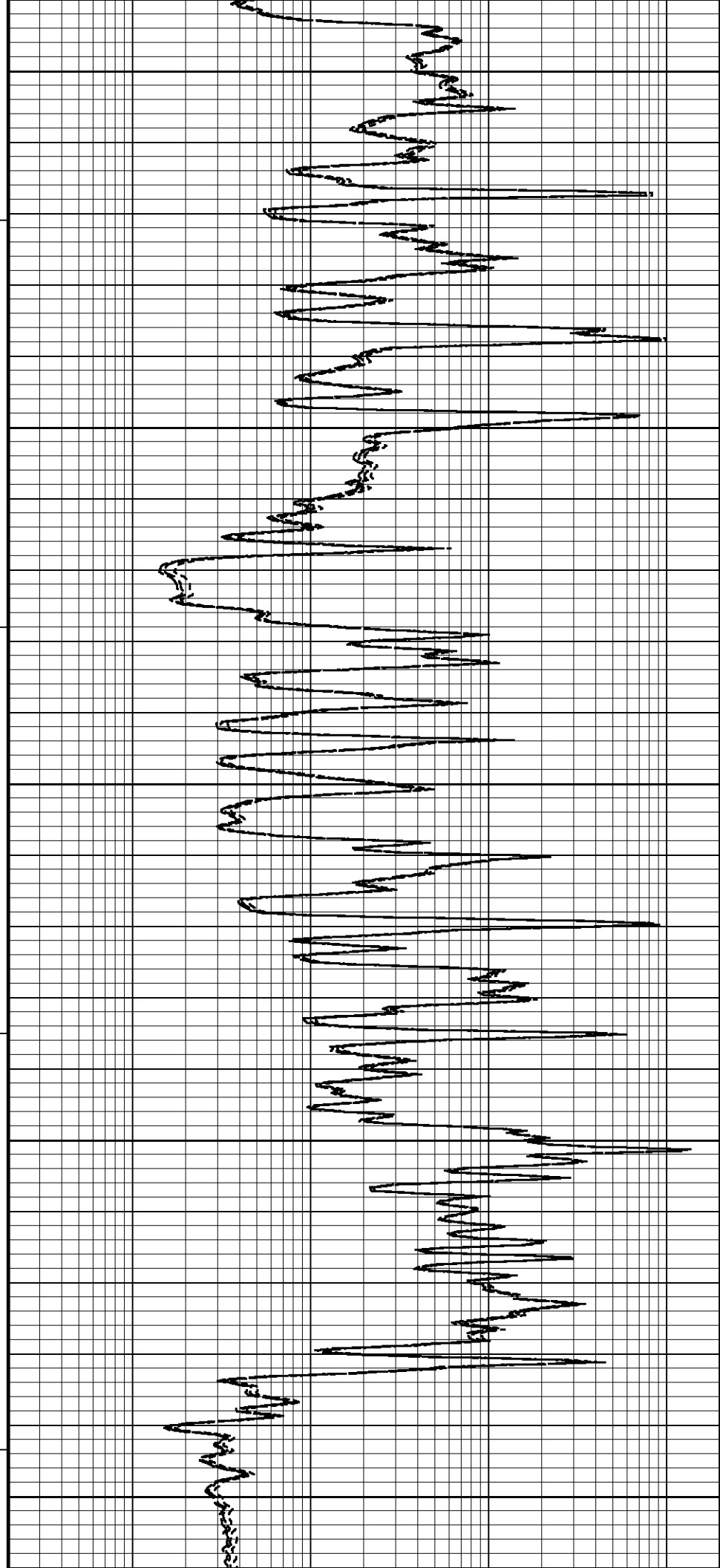
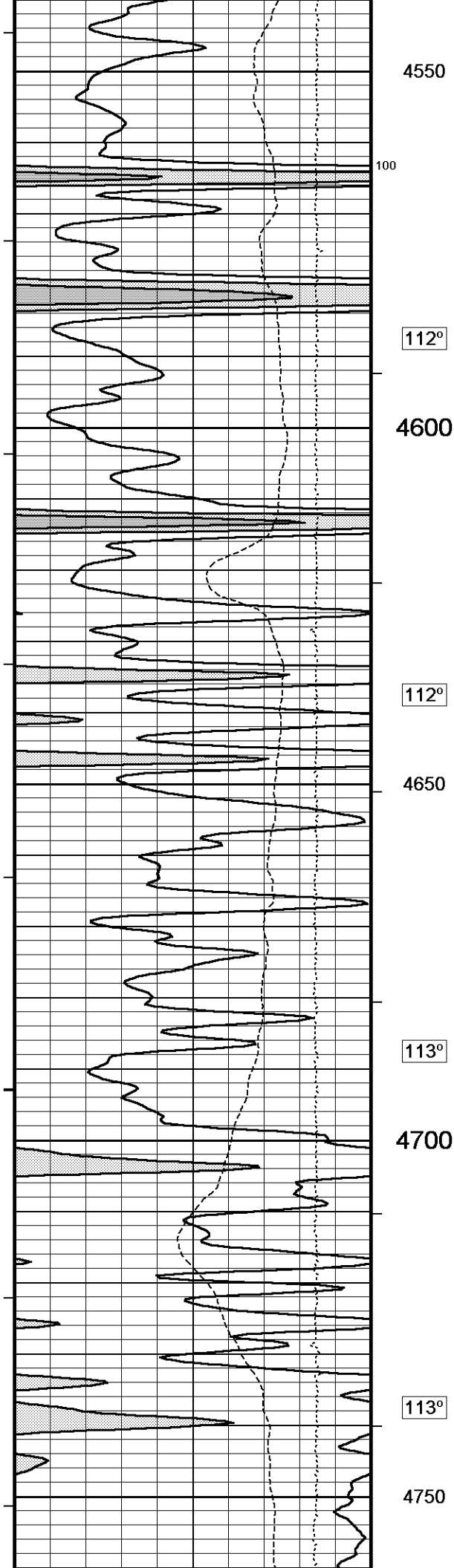
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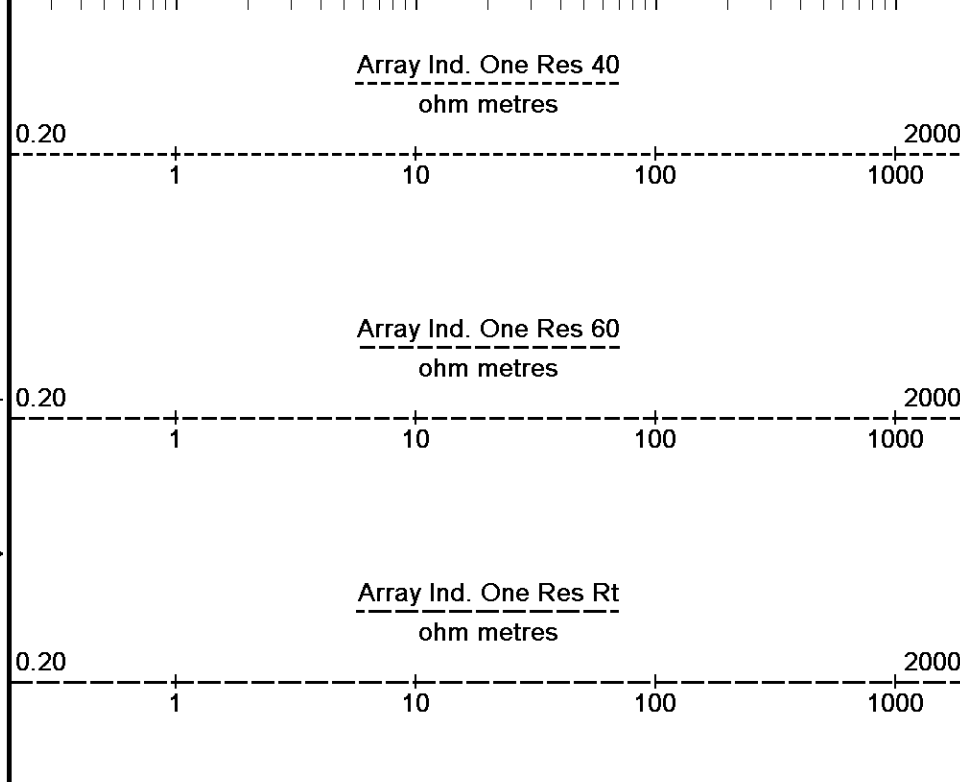
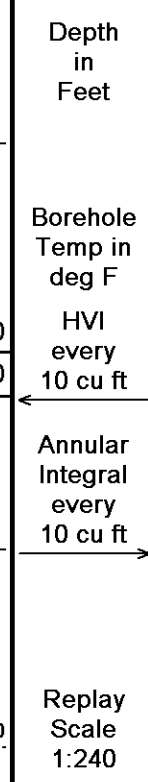
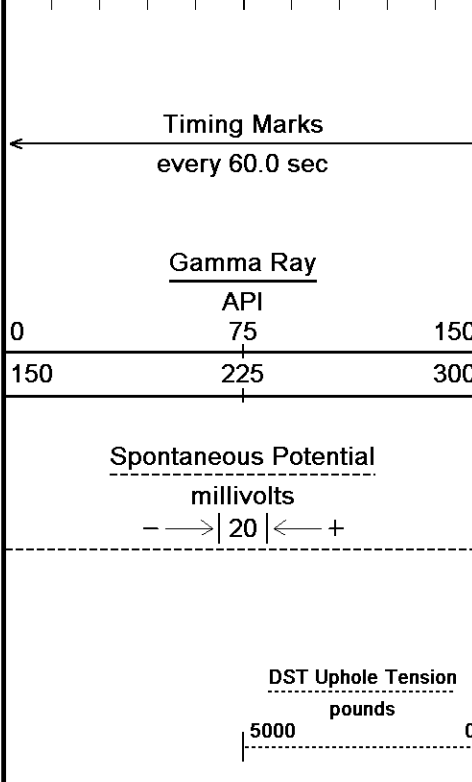
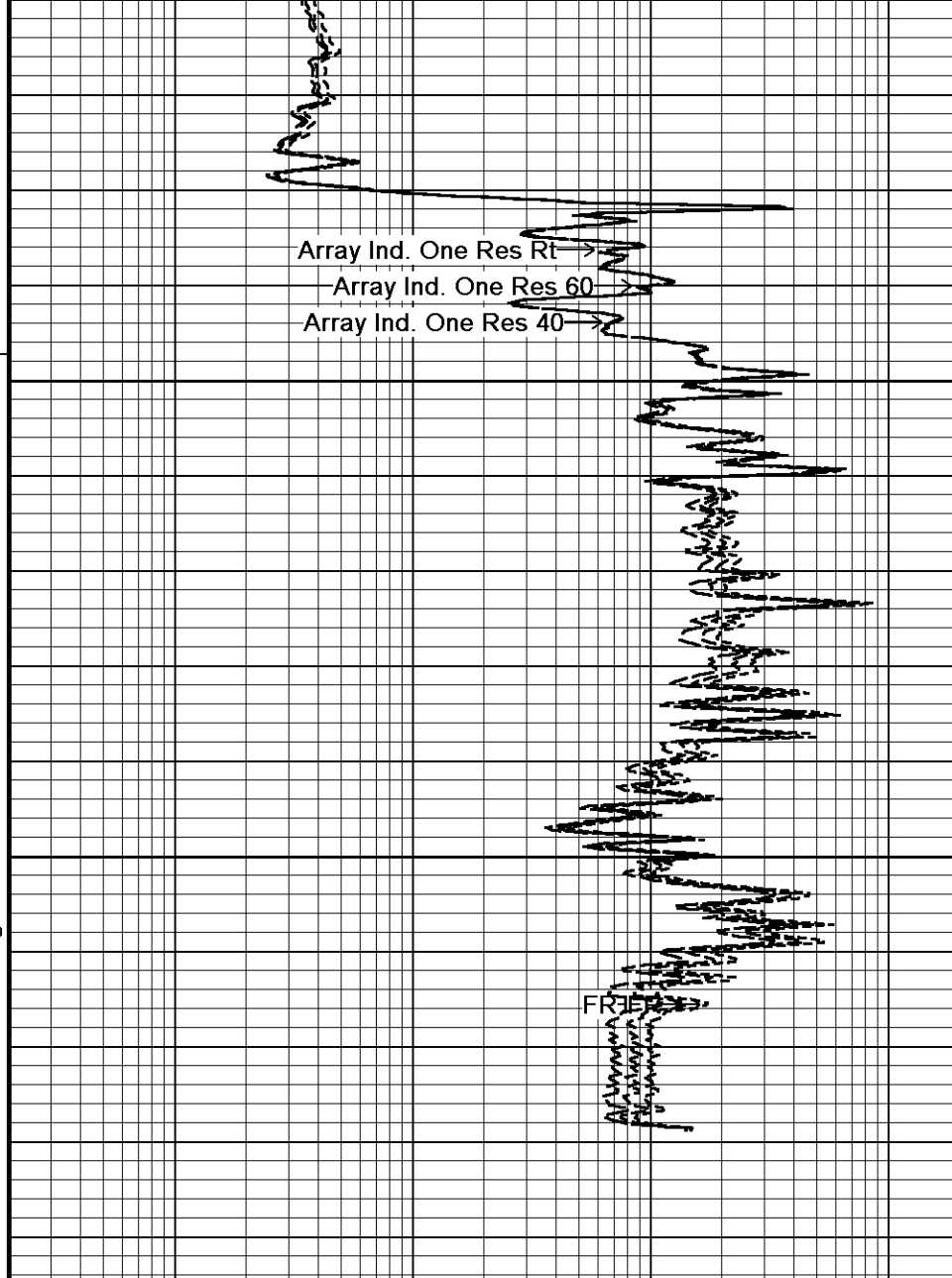
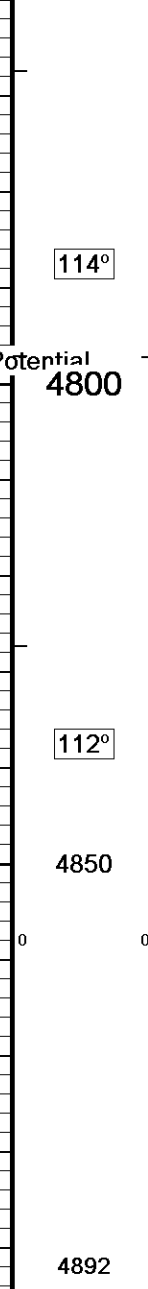
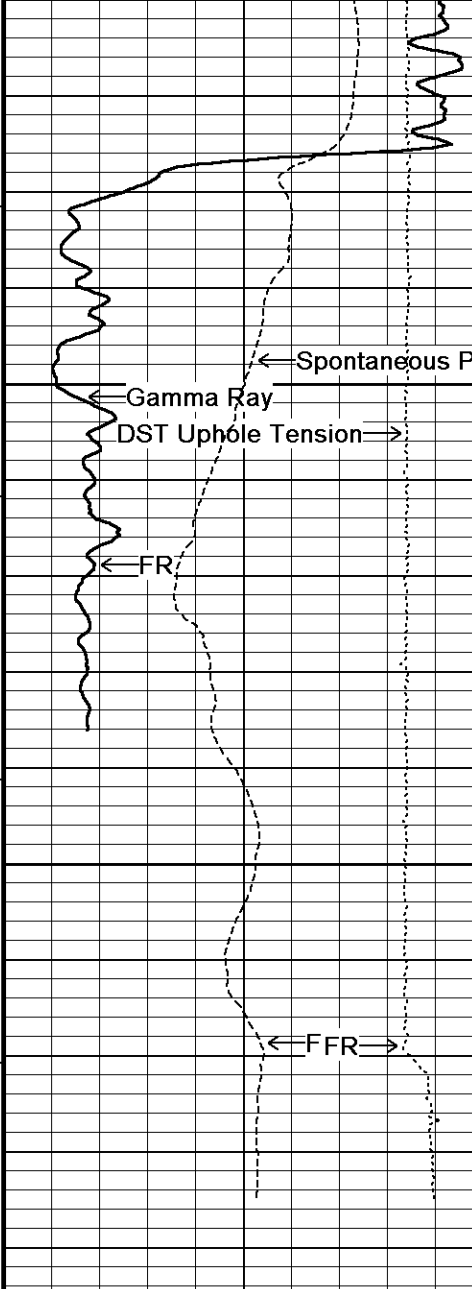
111°

4500

111°







↑

REPEAT SECTION

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BEFORE SURVEY CALIBRATION			
C:\Minimus 13.08.2113\Logs\Shakespeare Carson 3-25\Shakespeare Carson 3-25_001.dta			
General Constants All 000		Last Edited on 08-JUN-2014,16:12	
General Parameters			
Mud Resistivity	0.570	ohm-metres	
Mud Resistivity Temperature	70.000	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	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		
Down-hole Tension Calibration SMS 0		Field Calibration on 06-JUN-2014 13:04	
Reading No	Measured	Calibrated (lbs)	
1	15091.74	0.00	
2	15786.19	408.00	
SP Calibration MCG-C 208		Field Calibration on 04-JUN-2014 10:39	
	Measured	Calibrated (mV)	
Reference 1	99.6	99.0	
Reference 2	-98.1	-98.8	
High Resolution Temperature Calibration MCG-C 208		Field Calibration on 23-JAN-2014,17:11	
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	75.00	75.00	
High Resolution Temperature Constants MCG-C 208		Last Edited on 23-JAN-2014,17:11	
Pre-filter Length	11		
Gamma Calibration MCG-C 208		Field Calibration on 04-JUN-2014 10:53	
	Measured	Calibrated (API)	
Background	68	46	
Calibrator (Gross)	1134	771	
Calibrator (Net)	1067	725	
Gamma Constants MCG-C 208		Last Edited on 08-JUN-2014,15:53	
Gamma Calibrator Number	GRC038		
Mud Density	1.12	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl		kppm	
K Mud Type	Chloride		
K Mud Concentration	0.00	%	
Caliper Calibration MMR-C.A 248		Base Calibration on 10-MAY-2014 09:28 Field Calibration on 04-JUN-2014 10:29	

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	13446	5.98
2	16585	7.97
3	19782	9.86
4	23693	11.92
5	0	0.00
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	8.02	7.97

Micro Normal and Micro Inverse Calibration MMR-C.A 248					Base Calibration on 10-MAY-2014 09:40	
					Field Check on 04-JUN-2014 10:27	
Base Calibration						
		Measured		Calibrated (ohm-m)		
Channel	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 08-MAY-2014 14:03	
				Field Check on 04-JUN-2014 10:59	
Base Calibration					
	Measured		Calibrated (cps)		
	Near	Far	Near	Far	
	2970	91	3714	110	
Ratio	32.668		33.764		
Field Calibrator at Base			Calibrated (cps)		
Ratio			1688	2486	
			0.679		
Field Check			Calibrated (cps)		
Ratio			1689	2475	
			0.683		

Neutron Constants MDN-B.J 387			Last Edited on 08-JUN-2014,15:53		
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				

Sonic Constants MSS-A.A 73			Last Edited on 08-JUN-2014,15:53		
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

Induction Calibration MAI-A.A 5

Base Calibration on 21-JAN-2014,09:50
Field Check on 04-JUN-2014 10:24

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
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Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			15.3	3863.0
2			31.7	3590.9

3		29.7	2971.5	
4		20.7	2126.3	
Deep		18.4	1912.3	
Medium		42.9	3861.3	
Shallow		47.2	5372.6	
Array Temperature			79.2	Deg F
Induction Constants MAI-A.A 5				Last Edited on 08-JUN-2014,16:02
Induction Model		RtAP-NC		
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 09-MAY-2014,12:22
Pre-filter Length		11		
Caliper Calibration MPD-D.A 480				Base Calibration on 08-MAY-2014 14:36 Field Calibration on 04-JUN-2014 10:32
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	17491	3.99		
2	27463	5.98		
3	37484	7.97		
4	47415	9.86		
5	58518	11.92		
6	N/A	N/A		
Field Calibration				
	Measured Caliper (in)	Actual Caliper (in)		
	7.98	7.97		

Density Calibration

Base Calibration

	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	1275	1464		
Reference 1	55908	26147	59556	30836
Reference 2	22982	2651	24941	2541

Field Check at Base

1274.5 1464.0

Field Check

1273.2 1468.7

PE Calibration

Base Calibration

	WS	Measured		Calibrated
		WH	Ratio	Ratio
Background	241	1140		
Reference 1	23265	55701	0.422	0.371
Reference 2	6806	22836	0.303	0.272

Field Check at Base

240.7 1139.6

Field Check

237.3 1137.1

Density Constants MPD-D.A 480

Last Edited on 08-JUN-2014,15:53

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	1.12 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 (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

DOWNHOLE EQUIPMENT

C:\Minimus 13.08.2113\Logs\Shakespeare Carson 3-25\Shakespeare Carson 3-25_001.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 208 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

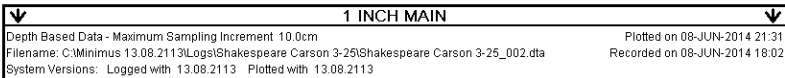
Compact Micro-Resistivity
 MMR-C.A 248 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

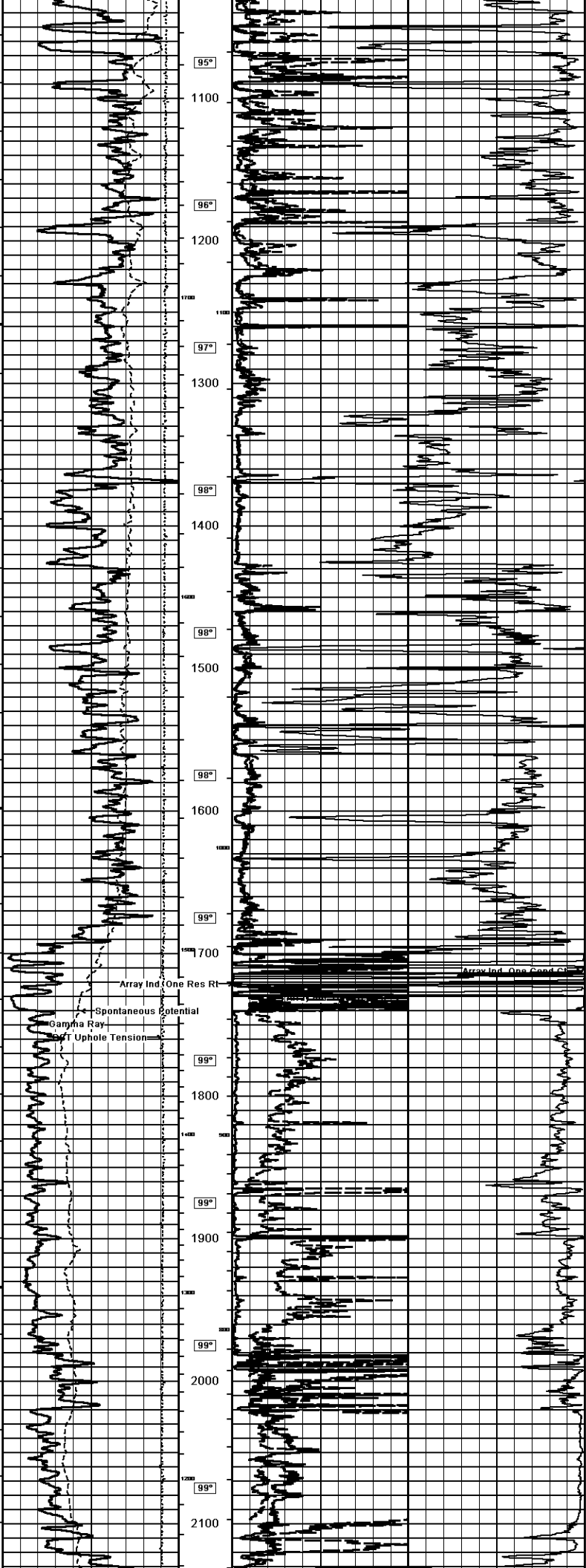


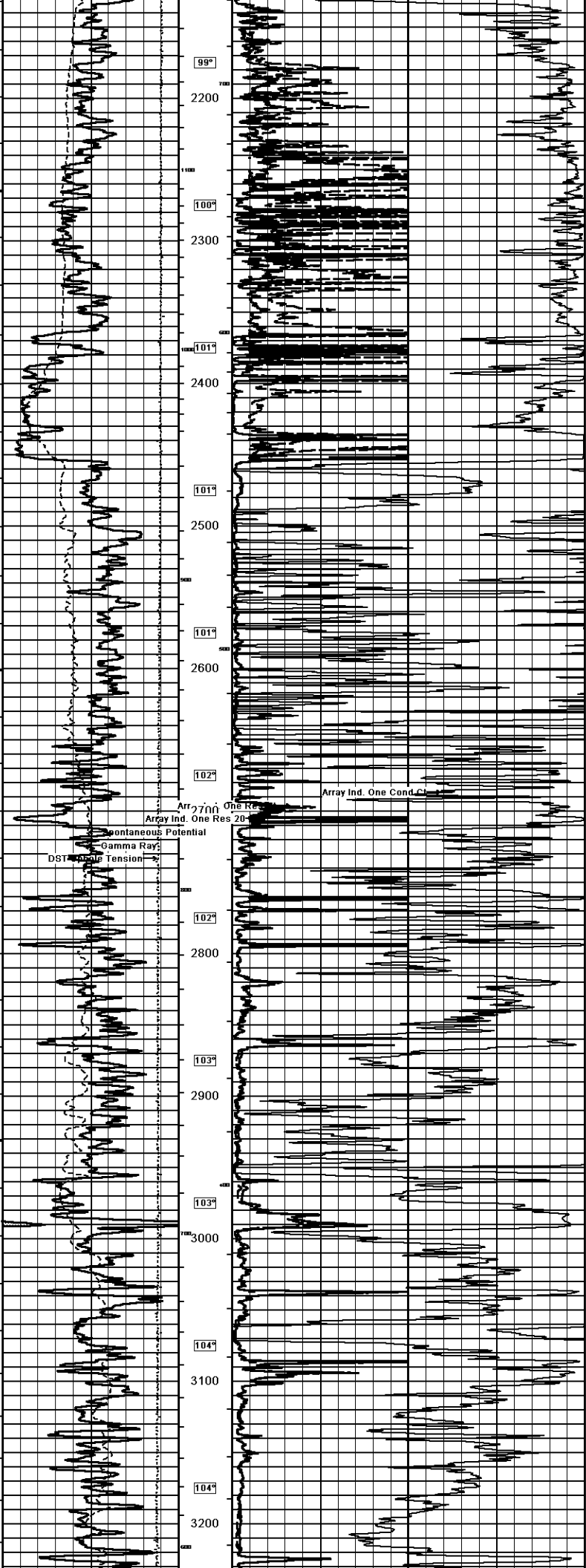
49.96 ft GRGC - Gamma Ray
 47.06 ft CGXT - MCG External Temperature

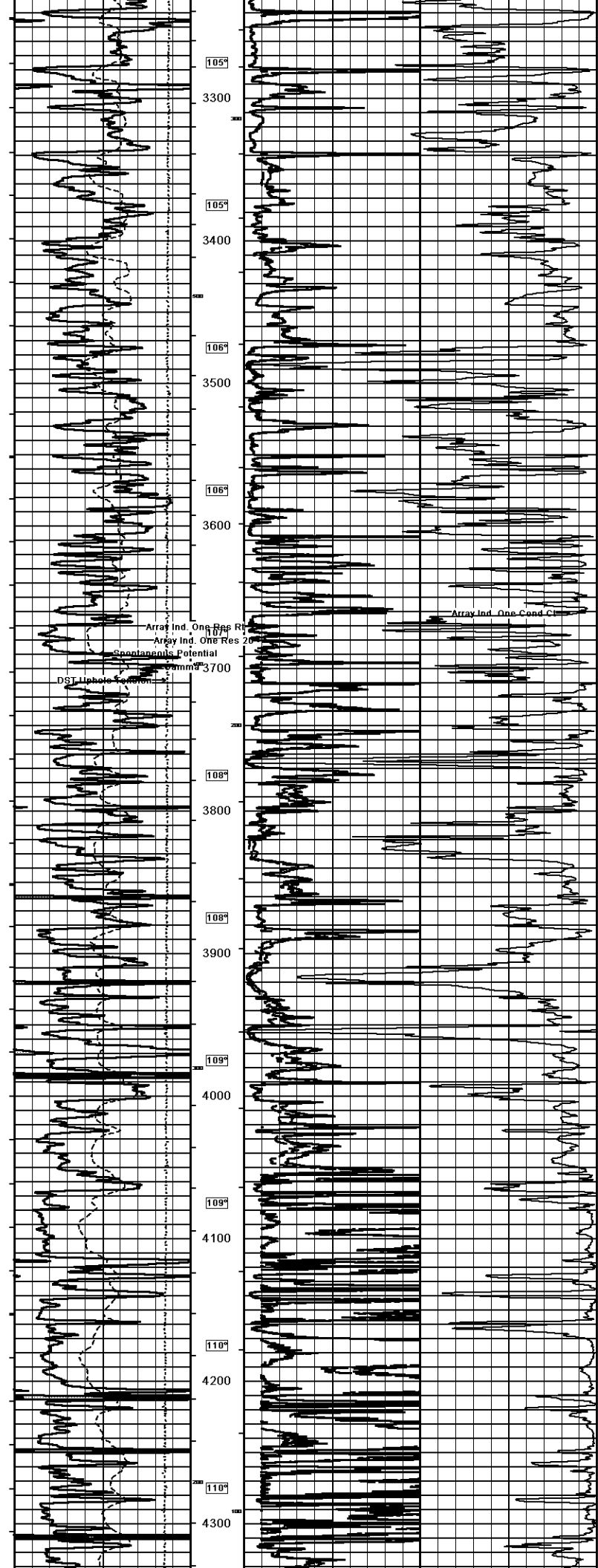
39.71 ft MINV - MMR MicroLog Inverse
 39.71 ft MNRL - MMR MicroLog Normal

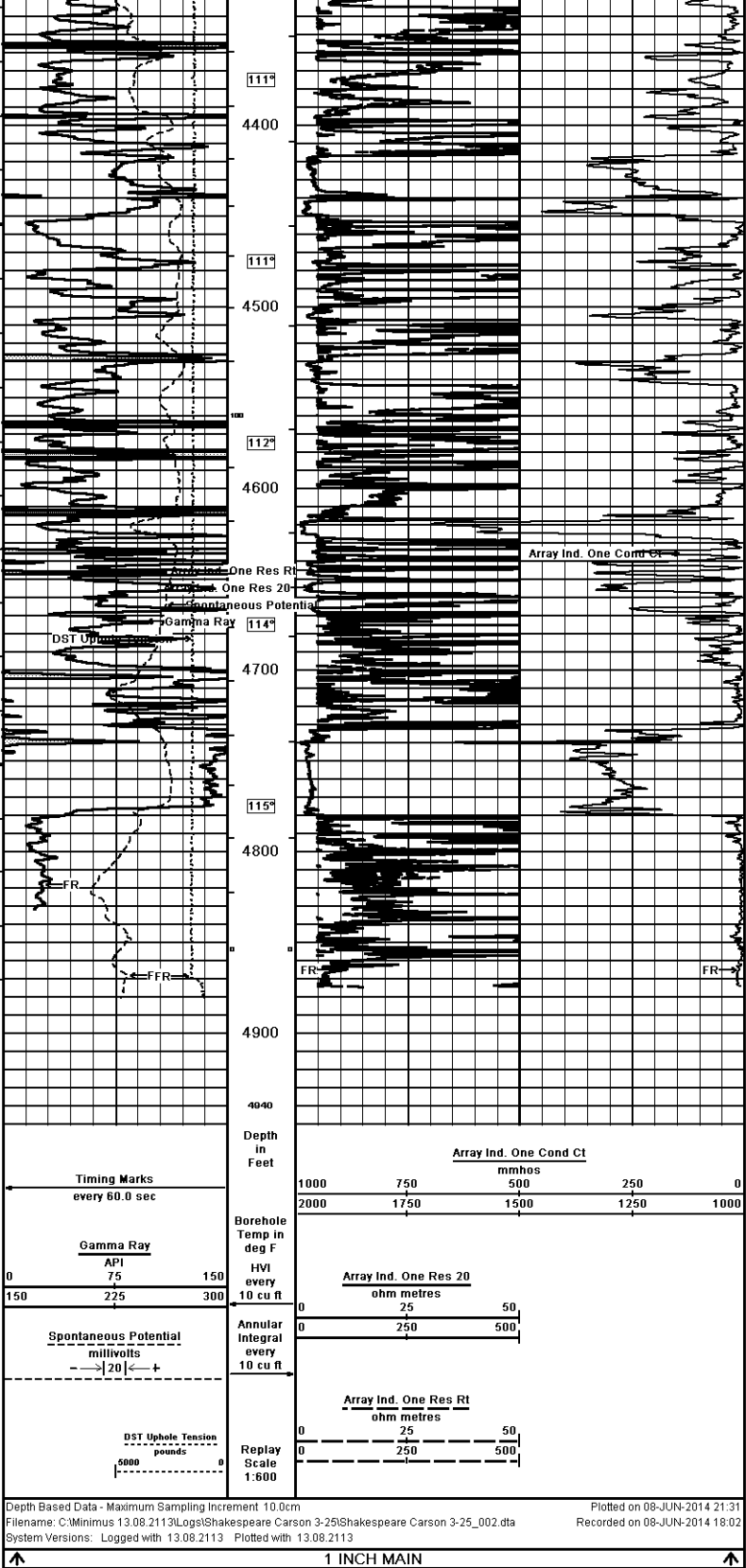
COMPANY	SHAKESPEARE OIL CO., INC.
WELL	CARSON 3-25
FIELD	PENCE EAST
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS











COMPANY	SHAKESPEARE OIL CO., INC.			
WELL	CARSON 3-25			
FIELD	PENCE EAST			
PROVINCE/COUNTY	SCOTT			
COUNTRY/STATE	U.S.A. / KANSAS			
Elevation Kelly Bushing	3114.00	feet	First Reading	4866.00 feet
Elevation Drill Floor	3112.00	feet	Depth Driller	4870.00 feet
Elevation Ground Level	3102.00	feet	Depth Logger	4869.00 feet



ARRAY INDUCTION

