



Weatherford[®]

**ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG**

COMPANY		BEREXCO LLC.			
WELL		ELNORA #2-20			
FIELD		WILDCAT			
PROVINCE/COUNTY		FINNEY			
COUNTRY/STATE		U.S.A. / KANSAS			
LOCATION		940' FNL & 1655' FWL			
SEC 20	TWP 26S	RGE 33W	Other Services		MSS
Latitude			MPD/MDN		
Longitude			MML		
API Number	15-055-22288				
Permanent Datum GL, Elevation 2928 feet					
Log Measured From KB					
Drilling Measured From KB					
Date	04-APR-2014				
Run Number	ONE				
Service Order	3487-83817538				
Depth Driller	5400.00		feet		
Depth Logger	5393.00		feet		
First Reading	5390.00		feet		
Last Reading	1783.00		feet		
Casing Driller	1772.00		feet		
Casing Logger	1783.00		feet		
Bit Size	7.875		inches		
Hole Fluid Type	CHEMICAL				
Density / Viscosity	9.20 lb/USg		51.00 CP		
PH / Fluid Loss	9.50		7.60 ml/30Min		
Sample Source	FLOWLINE				
Rm @ Measured Temp	0.48 @ 84.0		ohm-m		
Rmf @ Measured Temp	0.38 @ 84.0		ohm-m		
Rmc @ Measured Temp	0.58 @ 84.0		ohm-m		
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	0.34 @120.0		ohm-m		
Time Since Circulation	5 HOURS				
Max Recorded Temp	120.00		deg F		
Equipment / Base	13244		LIB		
Recorded By	ADAM SILL				
Witnessed By	IAN BOSMEIJER				
JOB #	LB14-100				

BOREHOLE RECORD

Last Edited: 04-APR-2014 15:44

Bit Size inches	Depth From feet	Depth To feet
7.875	1772.00	5400.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	1772.00	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.
- RUN TWO: SHA, MCG, MIM, MIE RUN IN COMBINATION.
 - HARDWARE: CENTRALIZER BOWSPRING USED ON MIM.
 - 1.5 INCH STANDOFF USED ON MIE.
- 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: 1789 CU.FT.

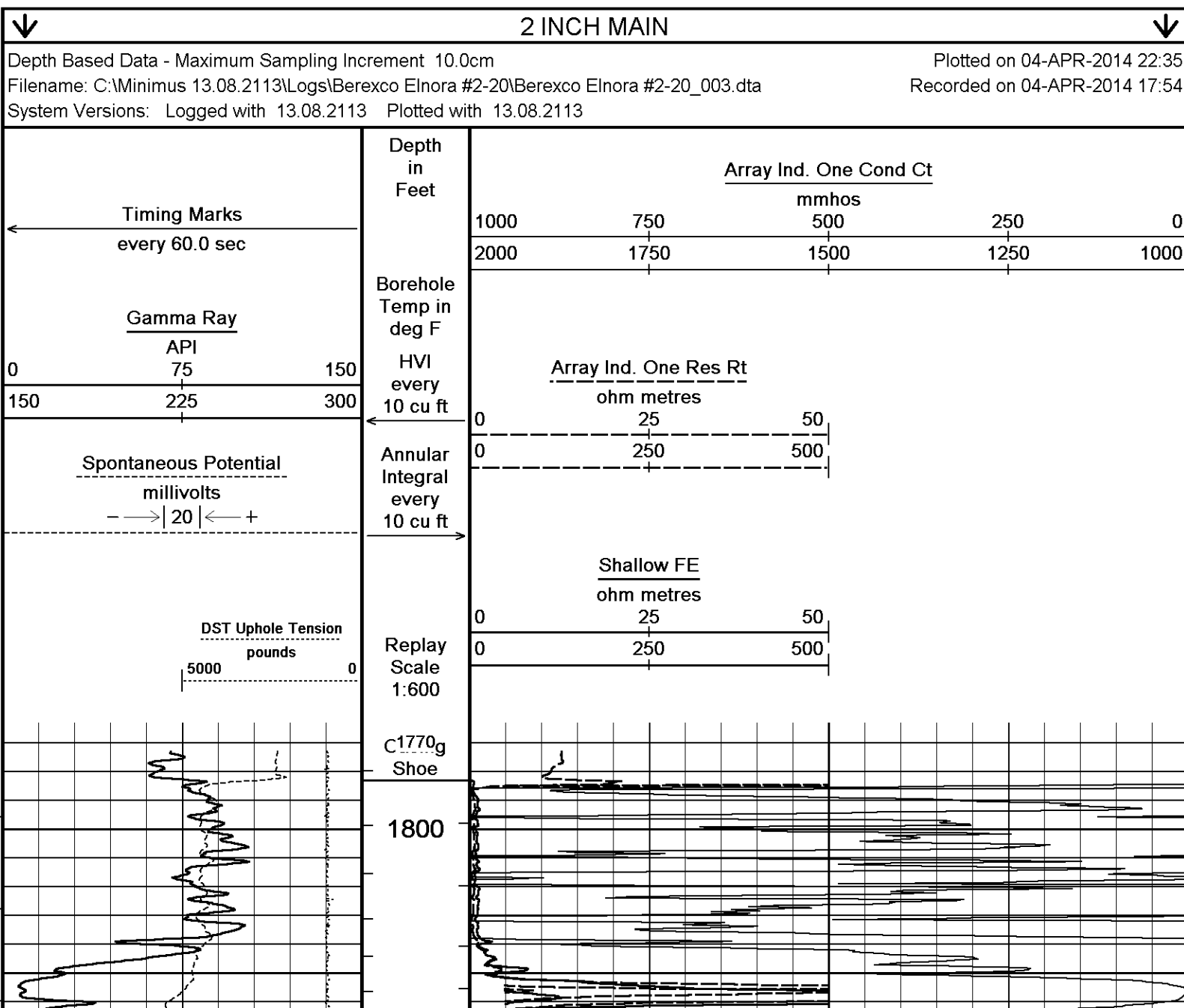
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3800 FEET: 353 CU.FT.

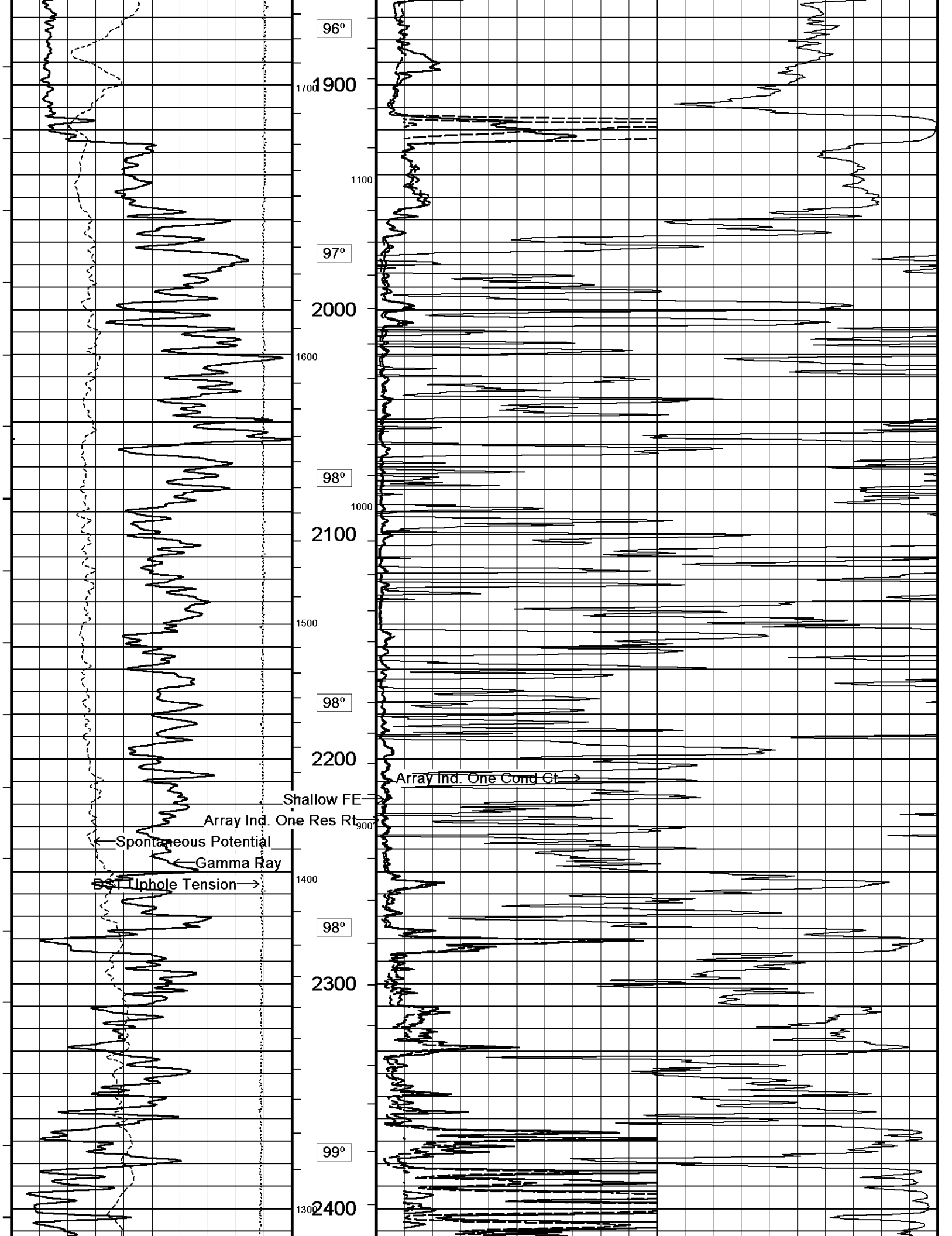
- RIG: BEREDCO #1.

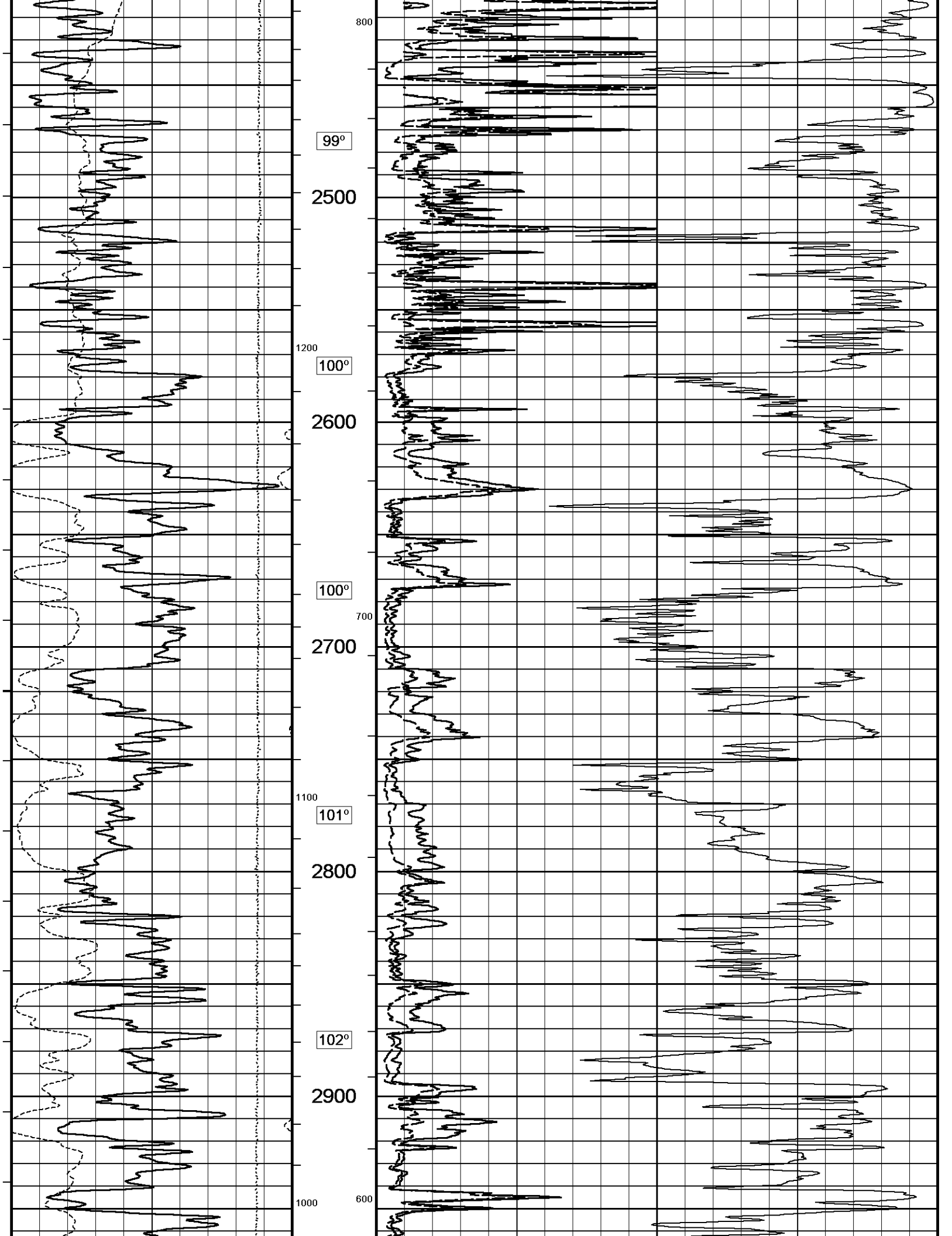
- ENGINEER: A. SILL.

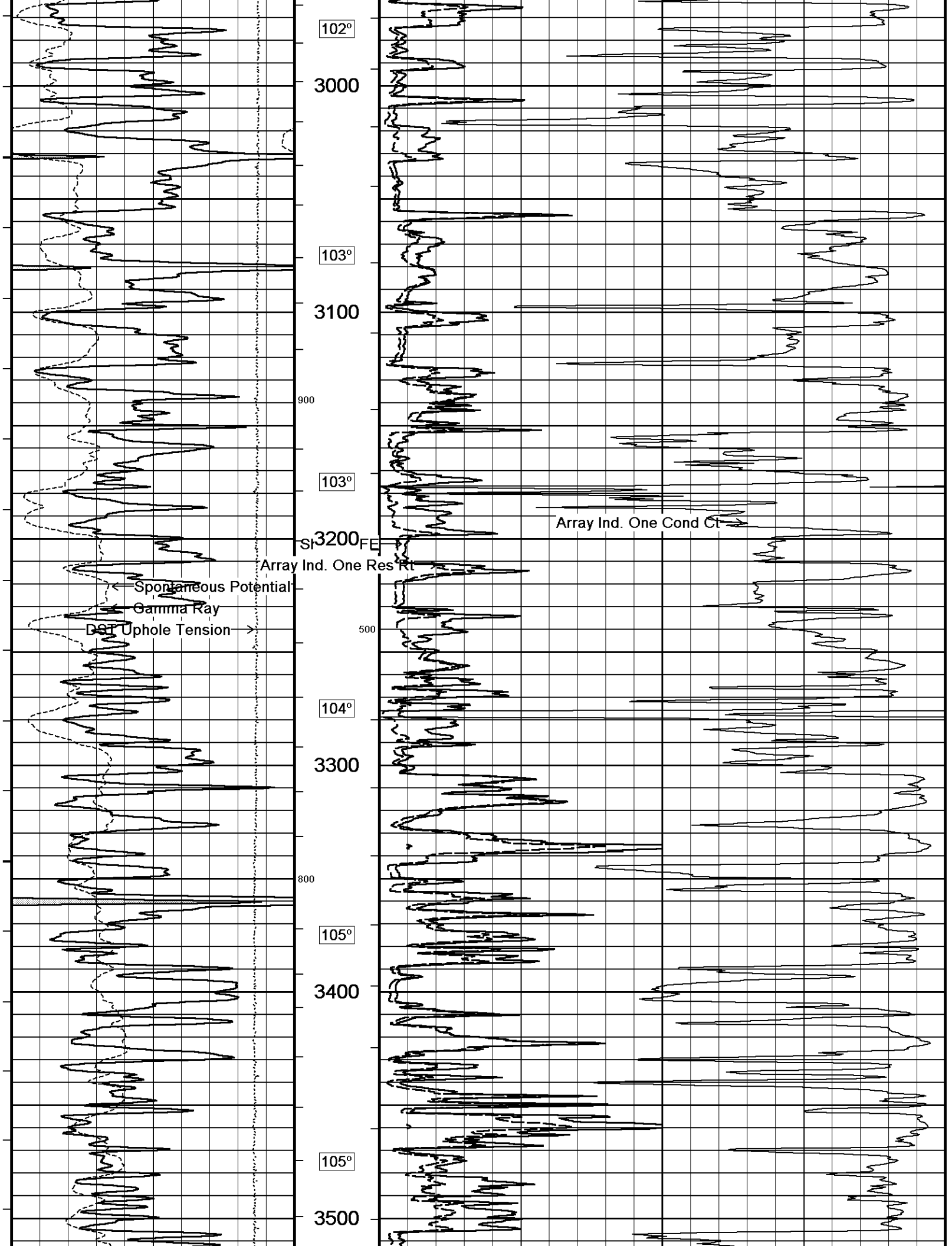
- OPERATOR: J. LaPOINT.

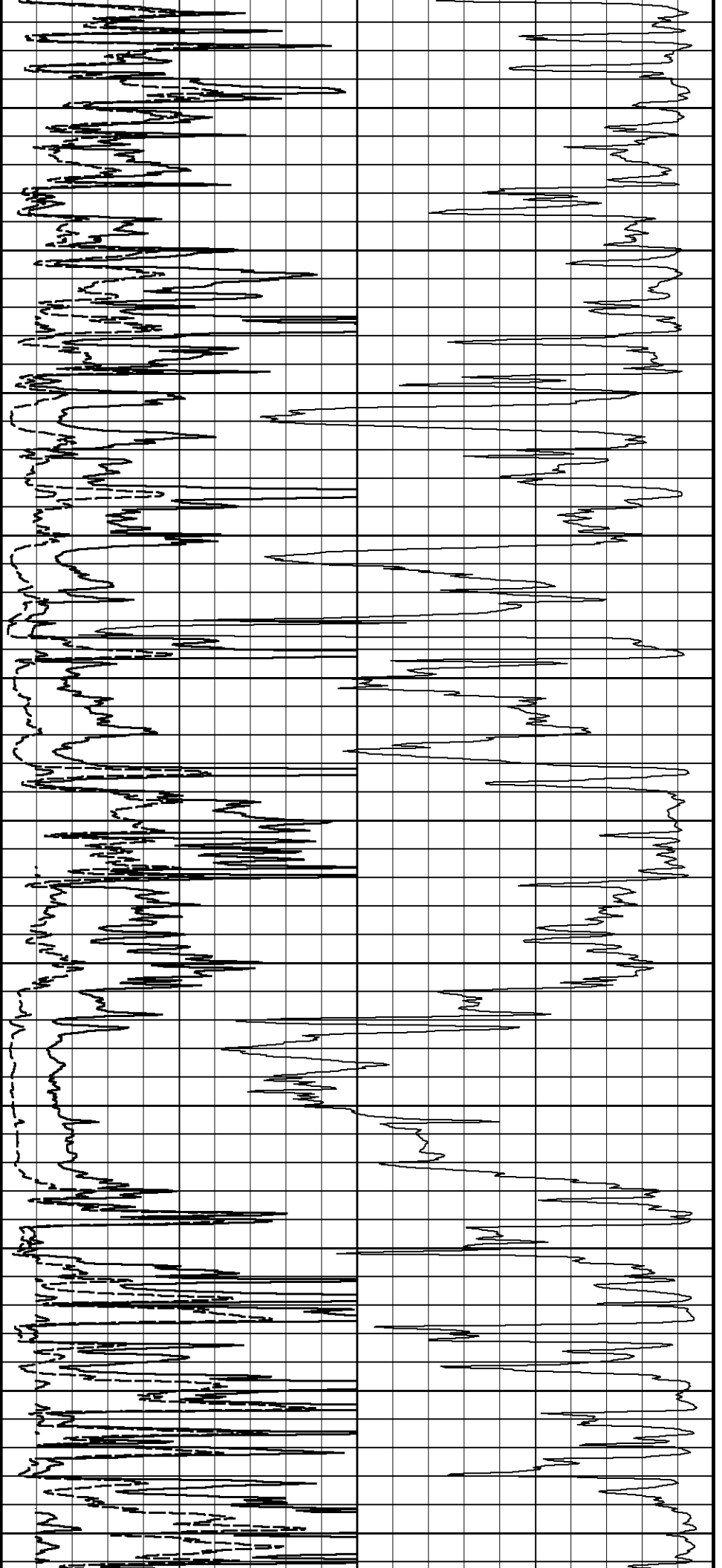
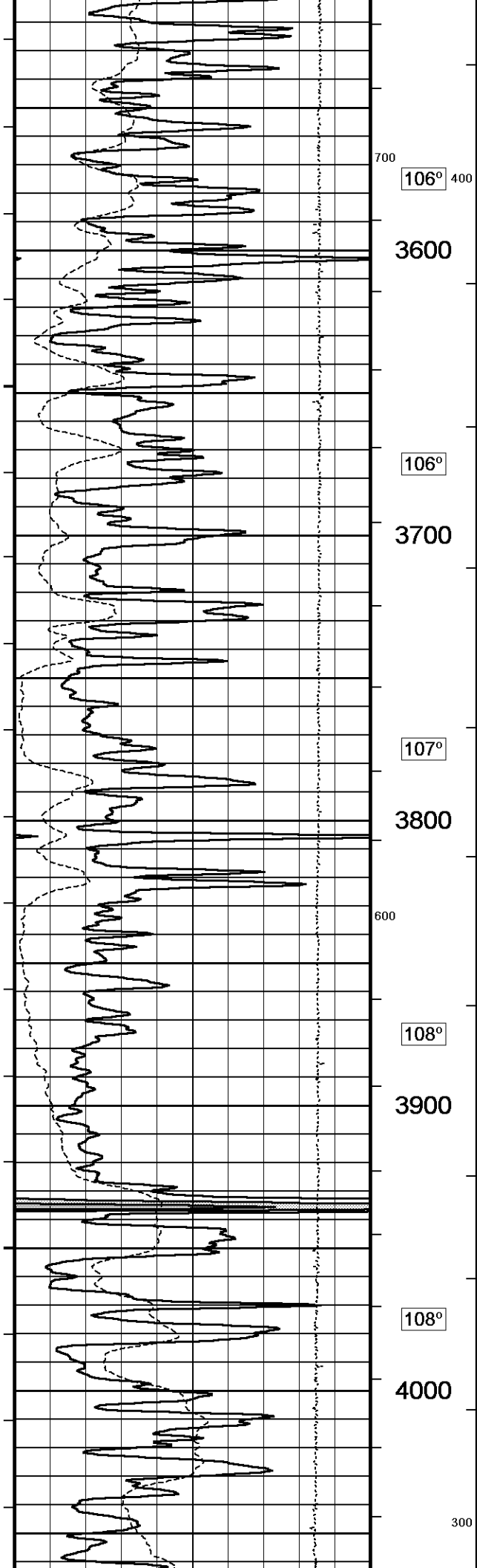
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will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

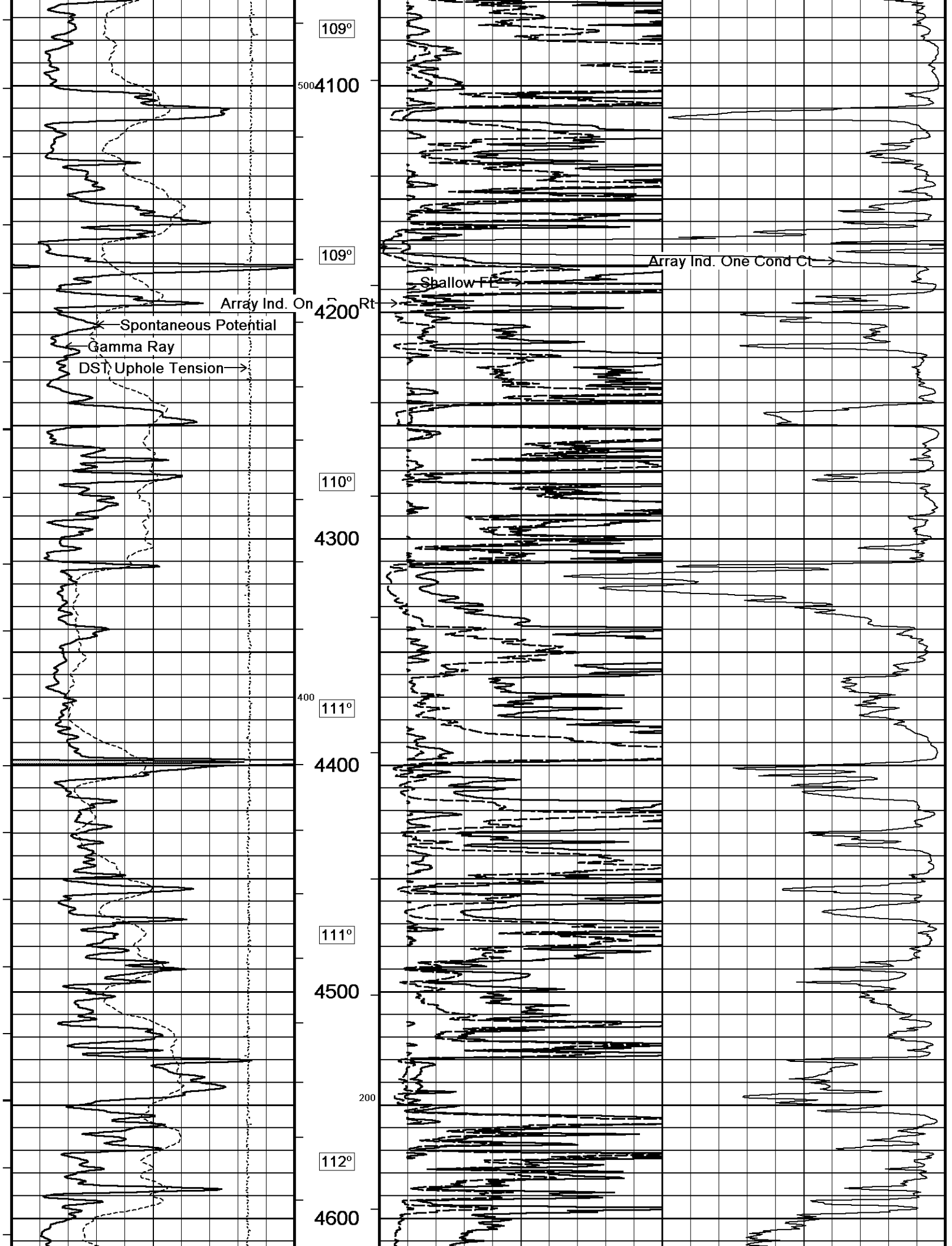


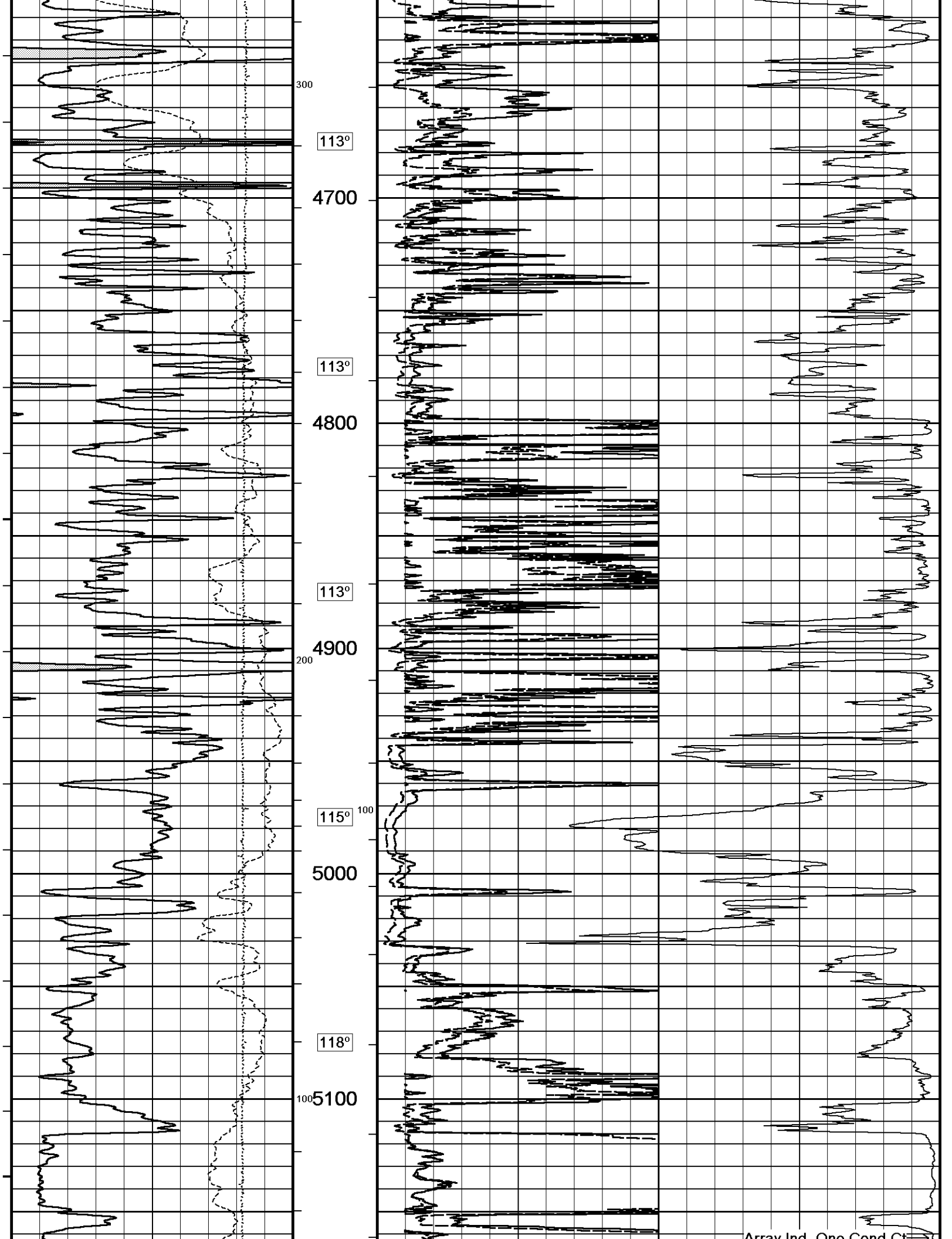


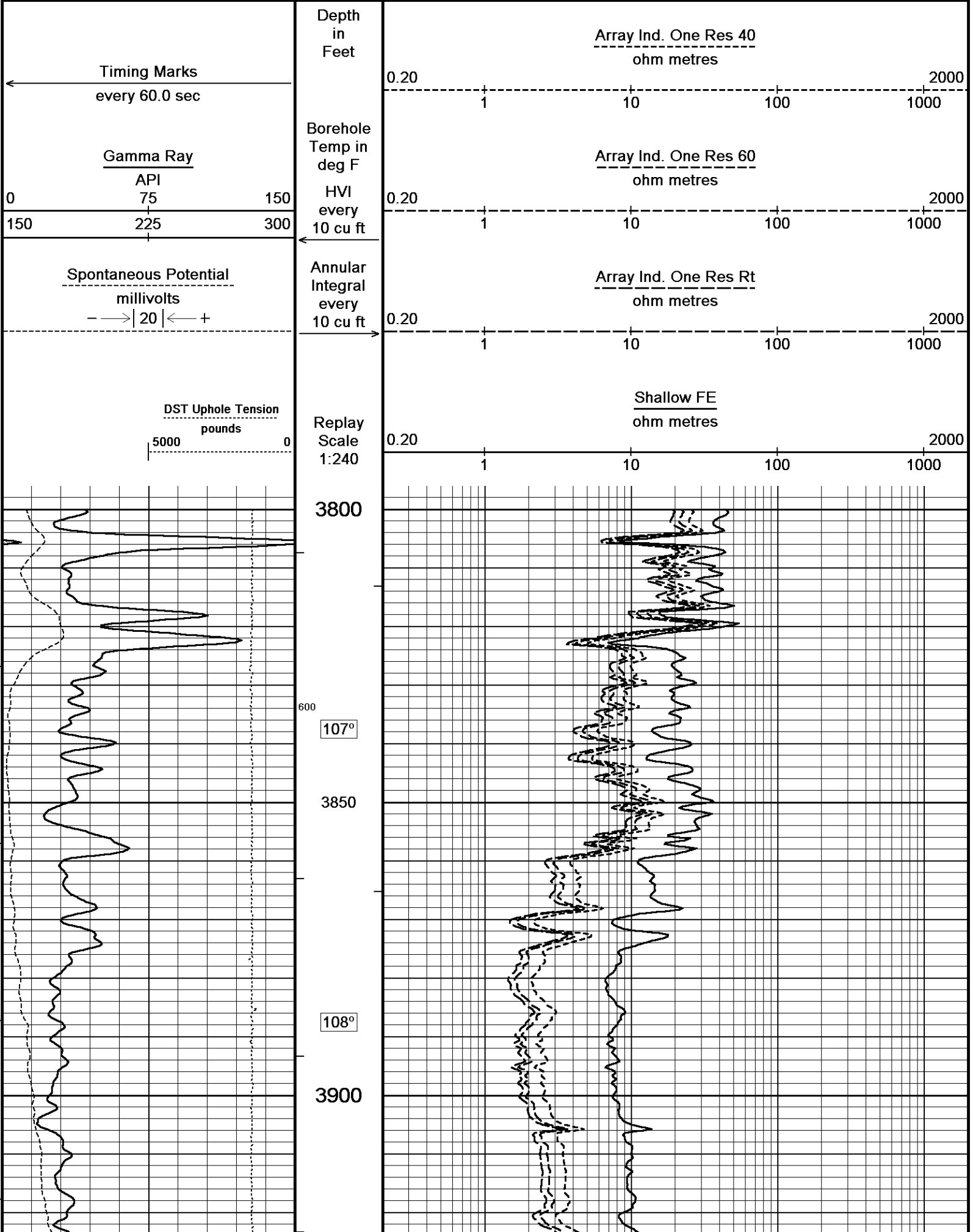


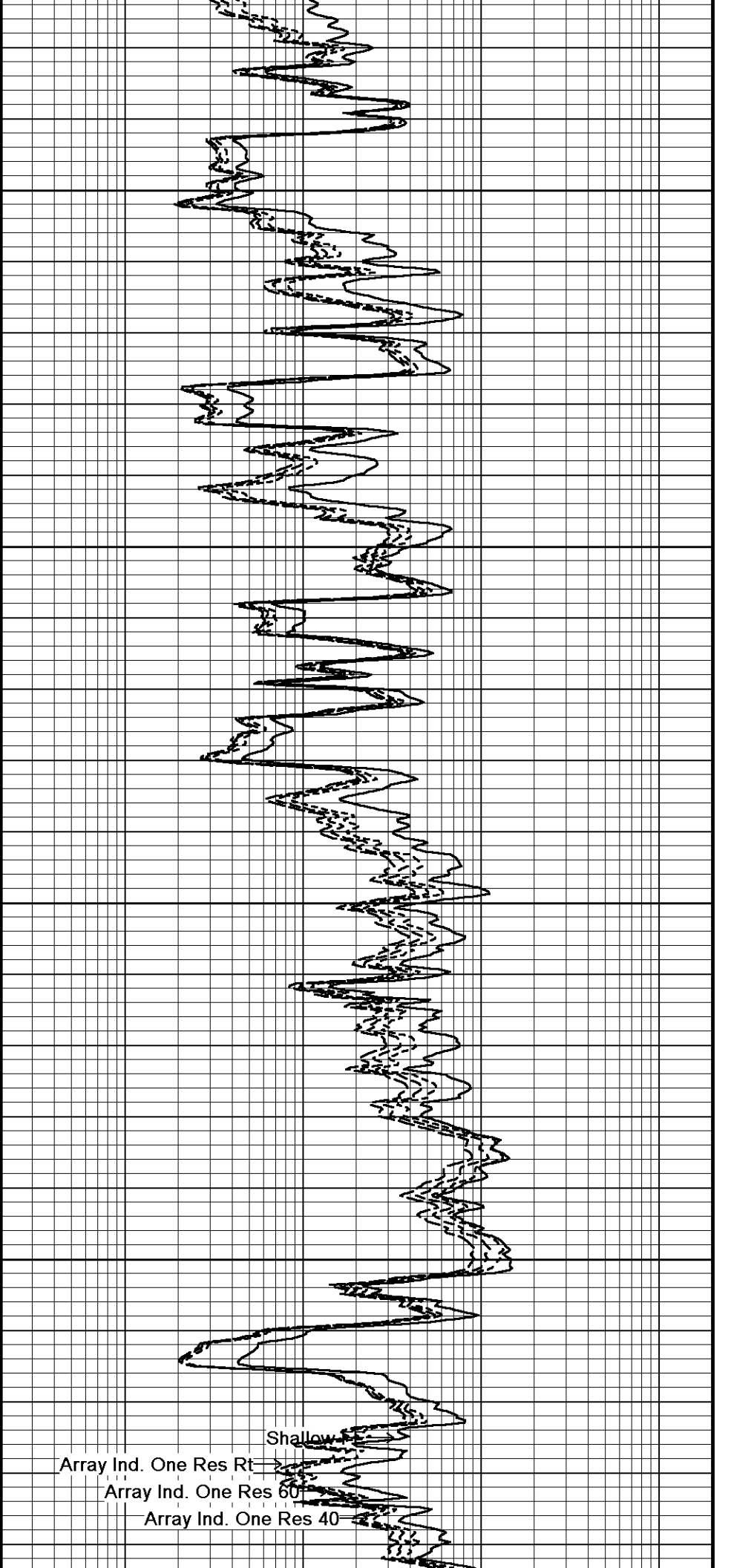
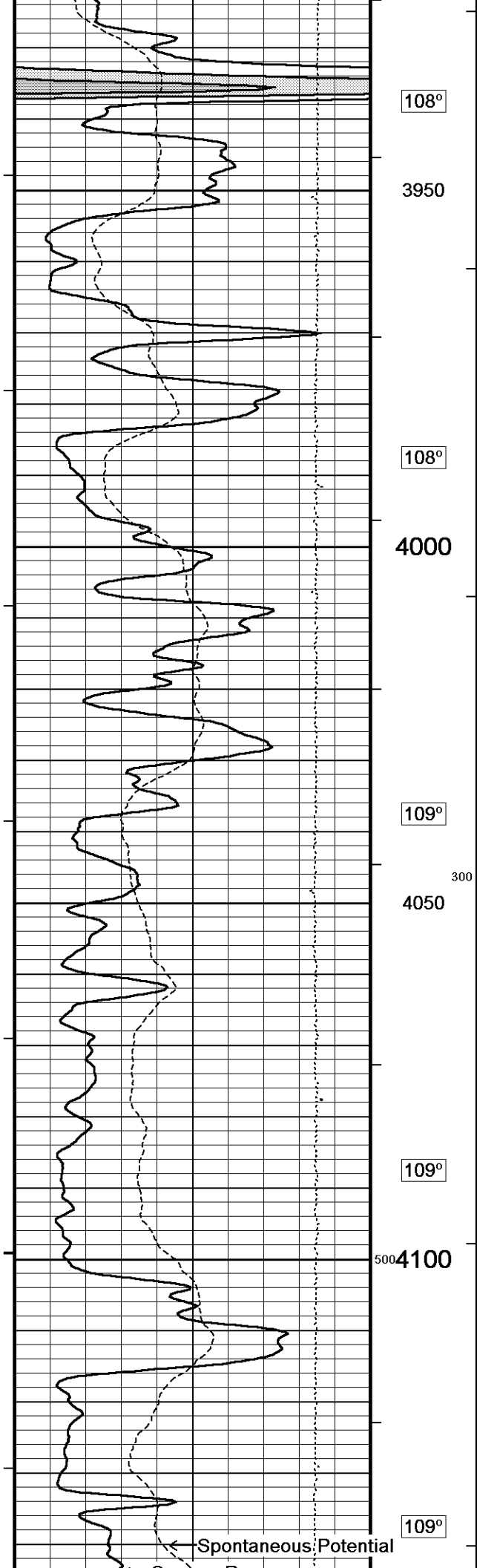


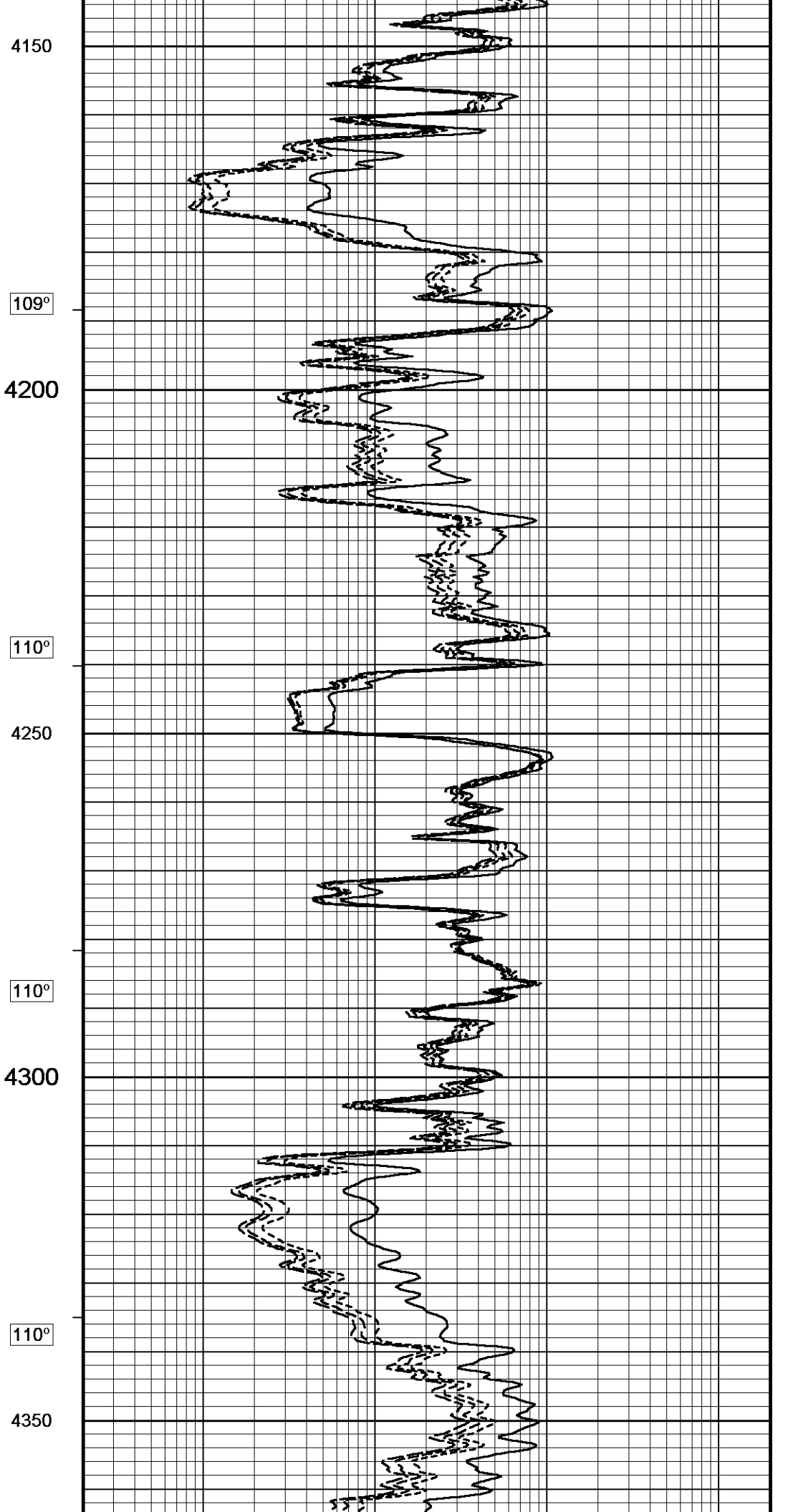
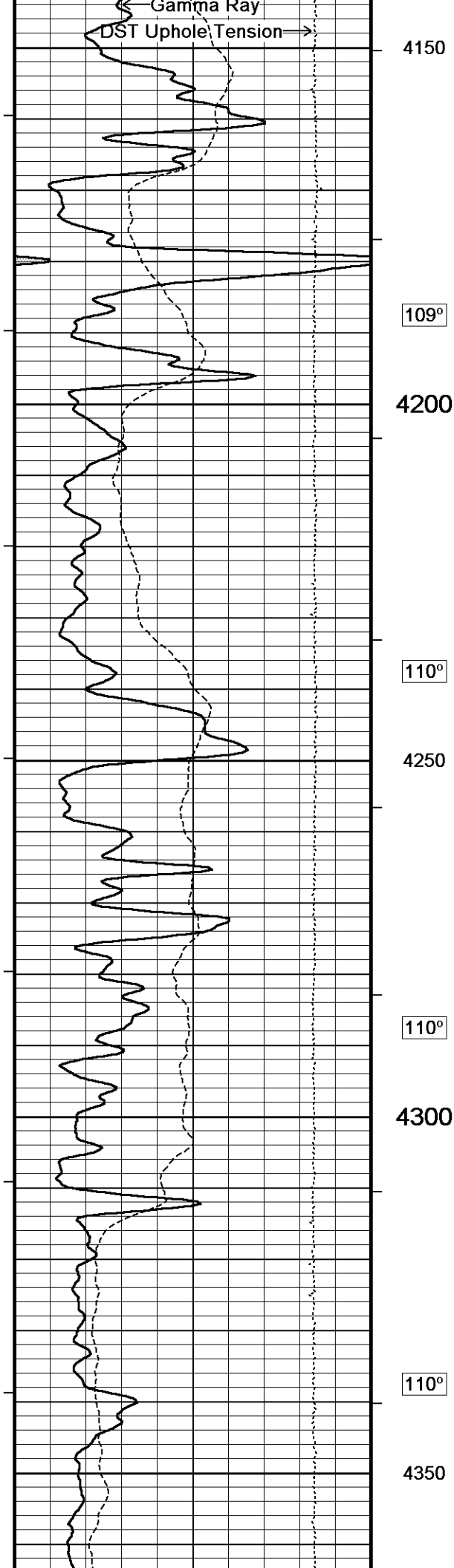


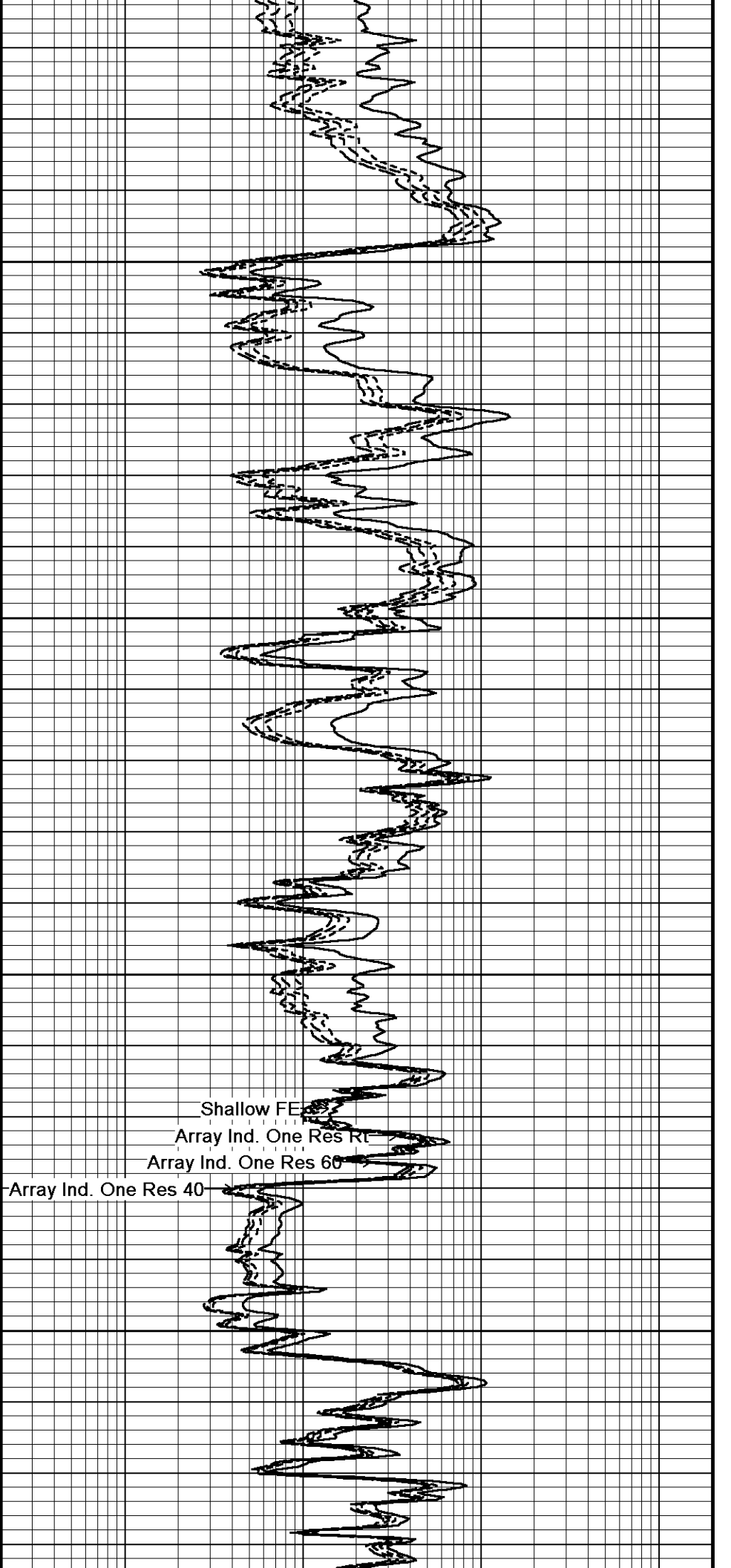
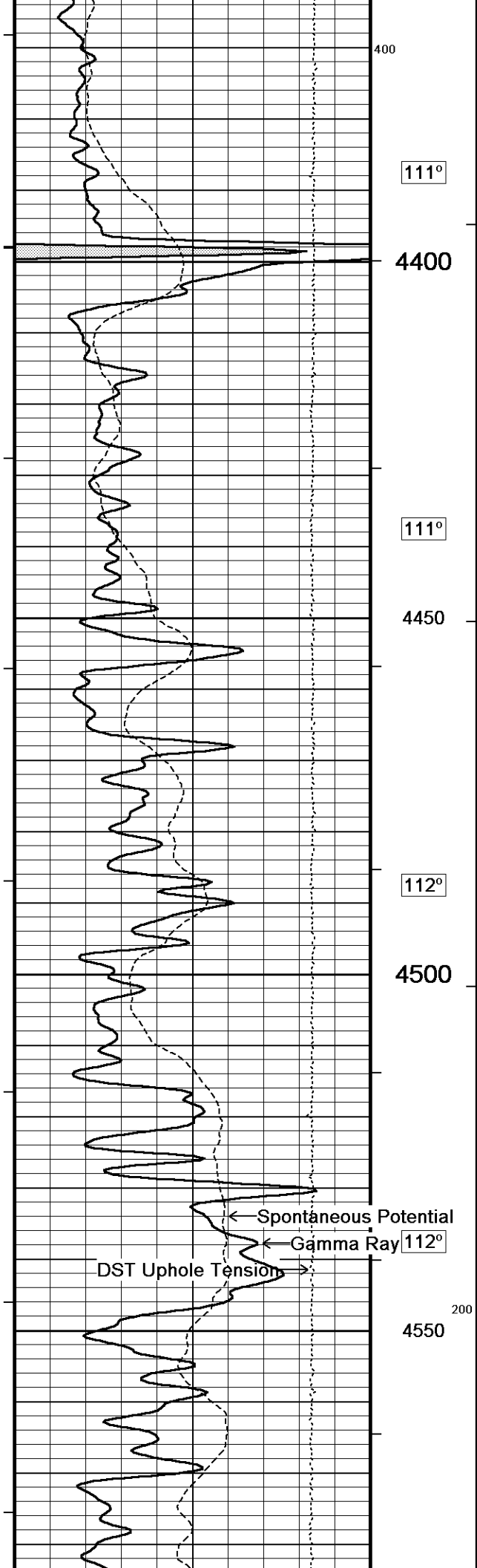


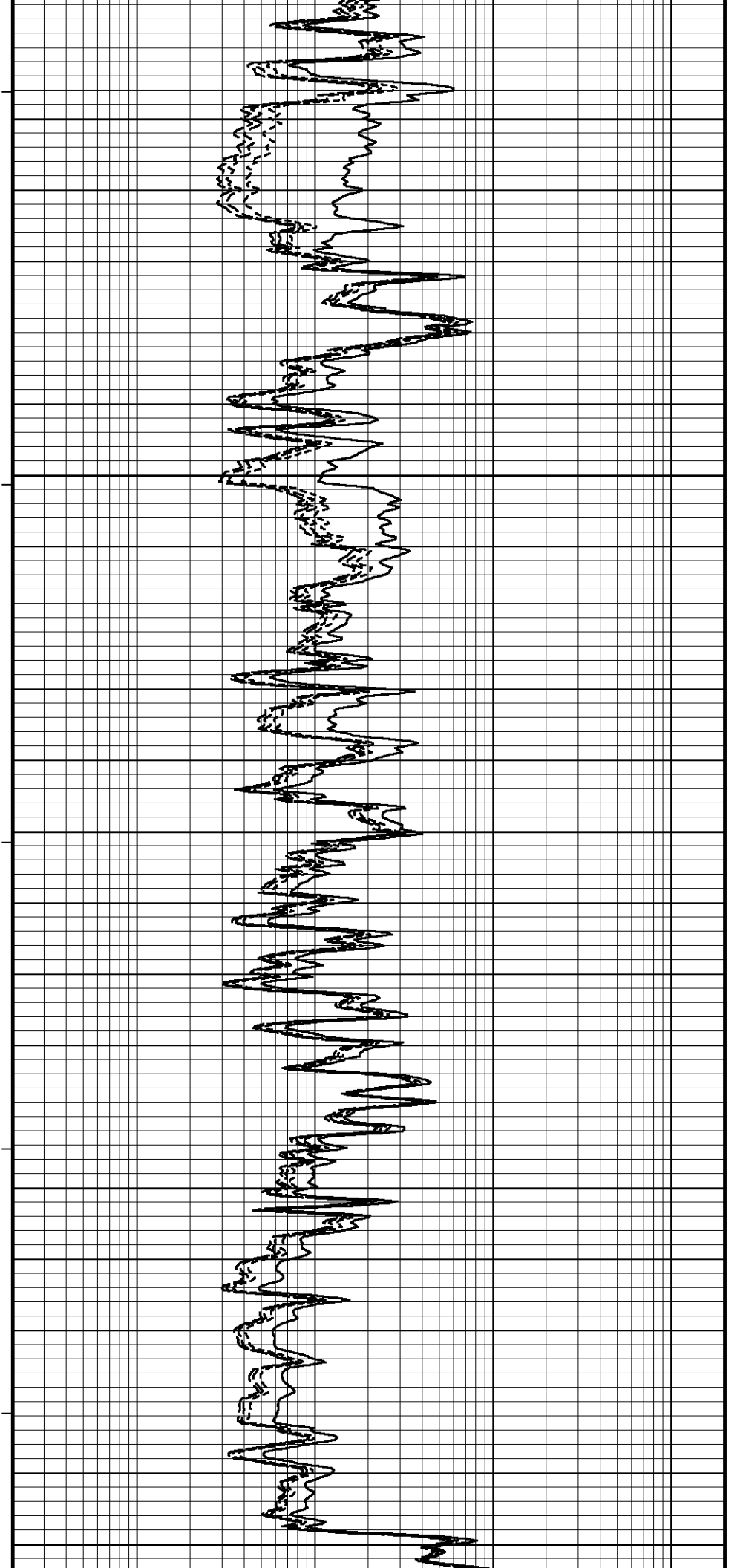
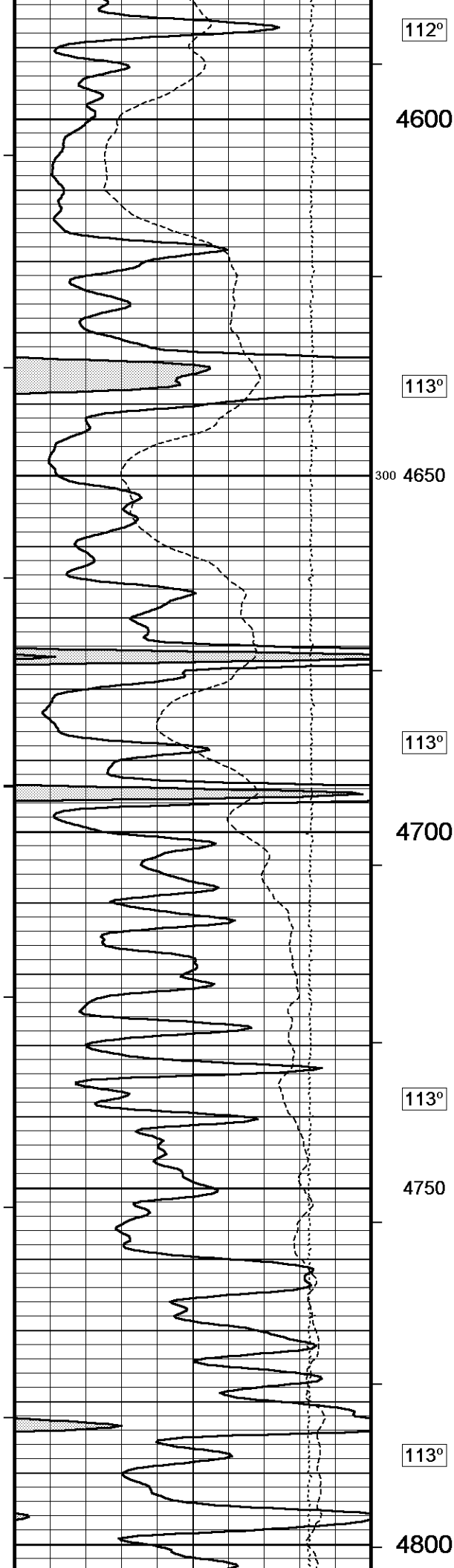


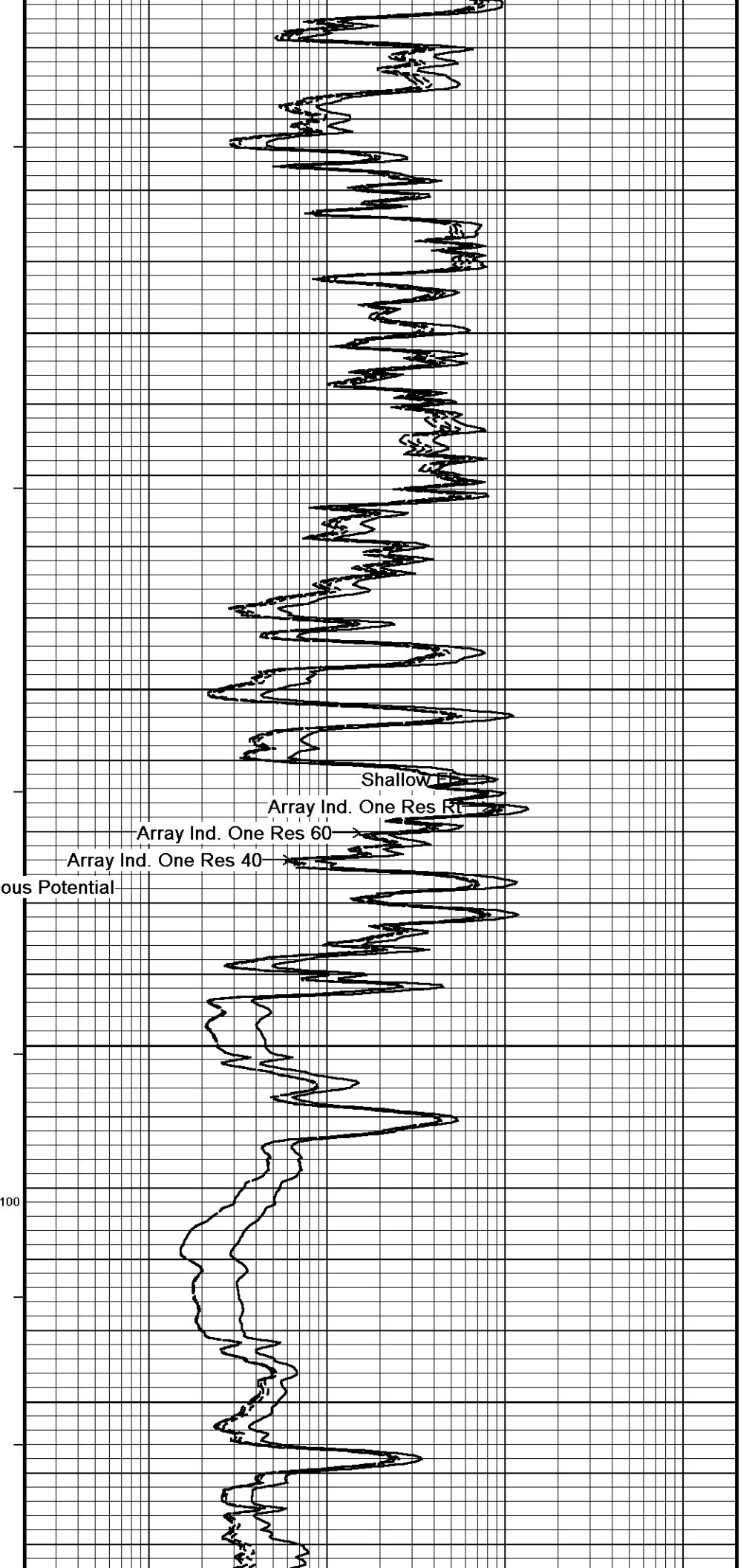
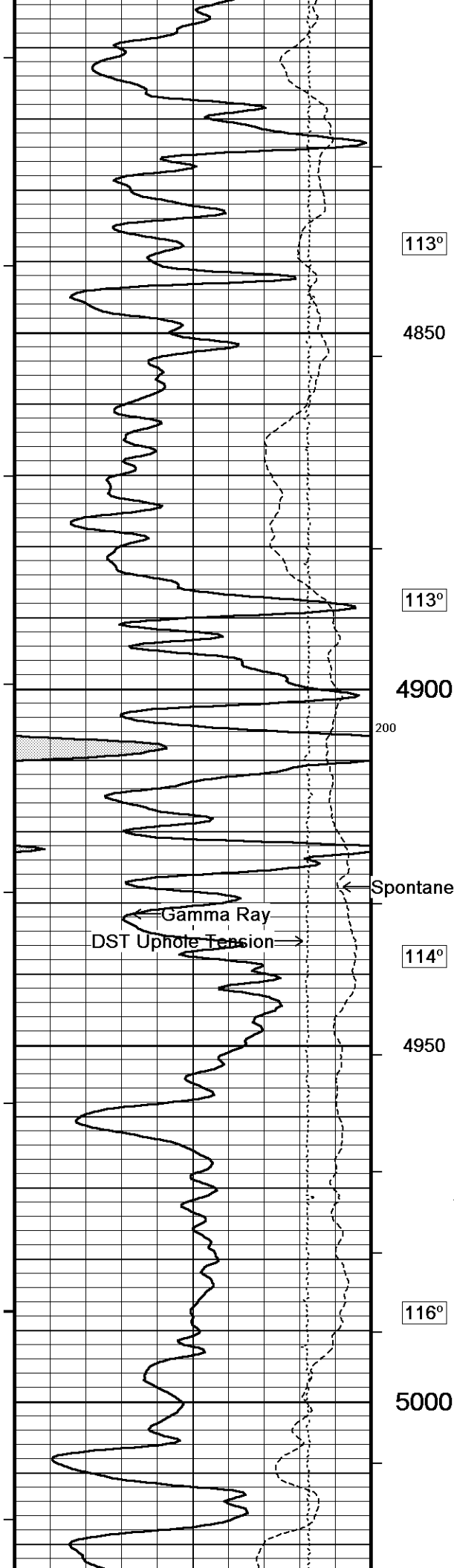


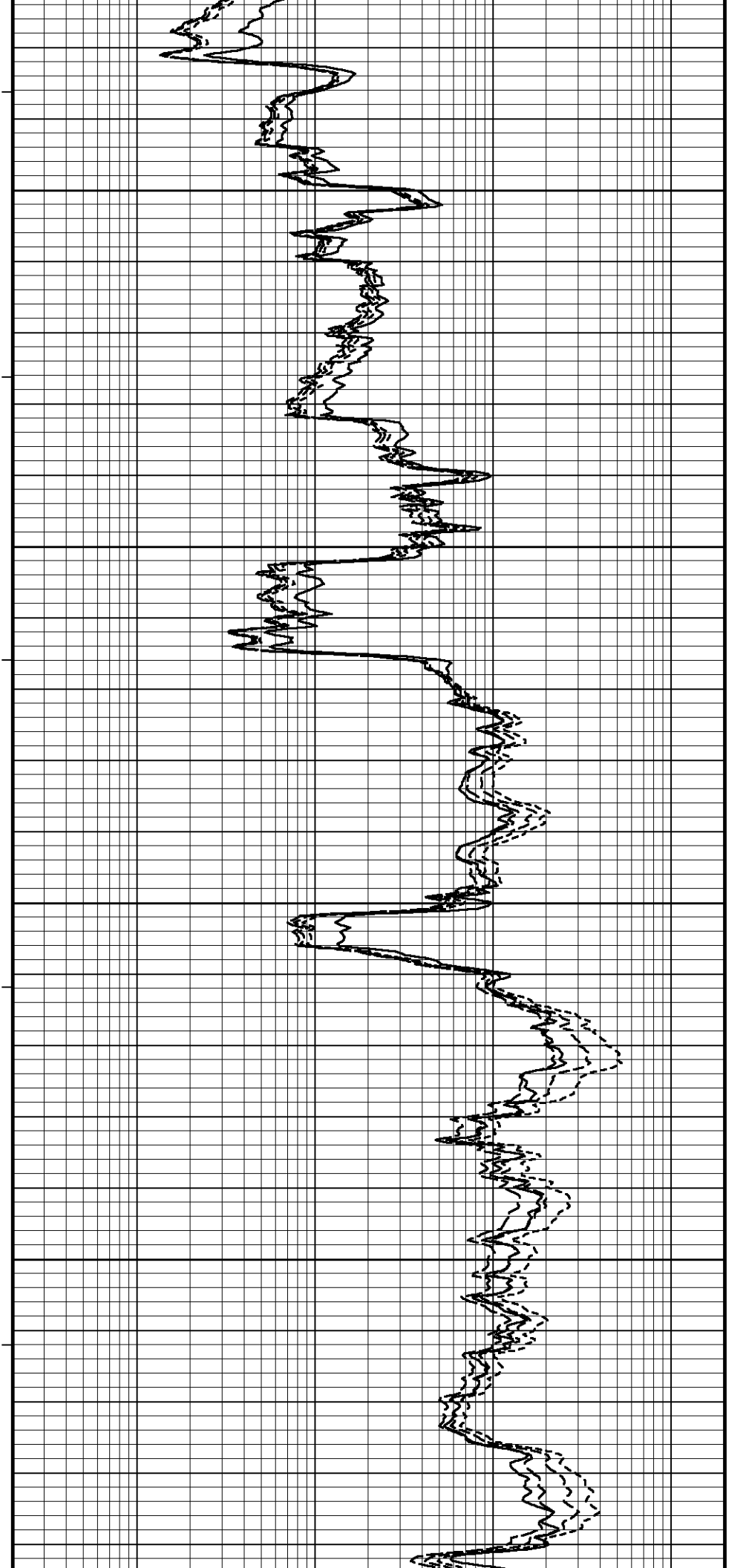
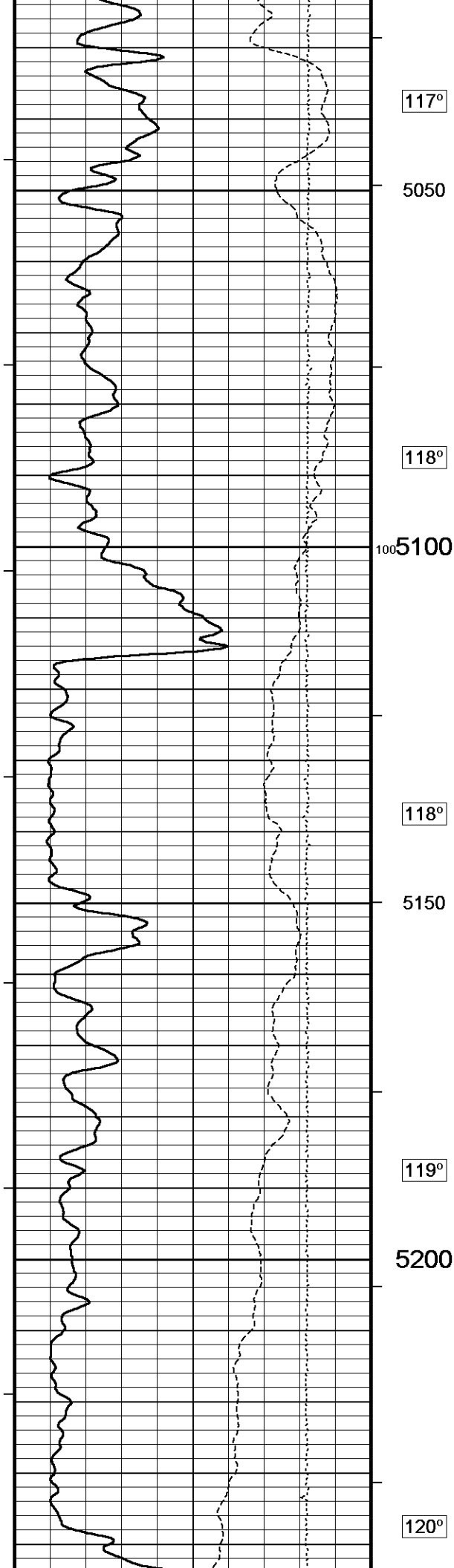


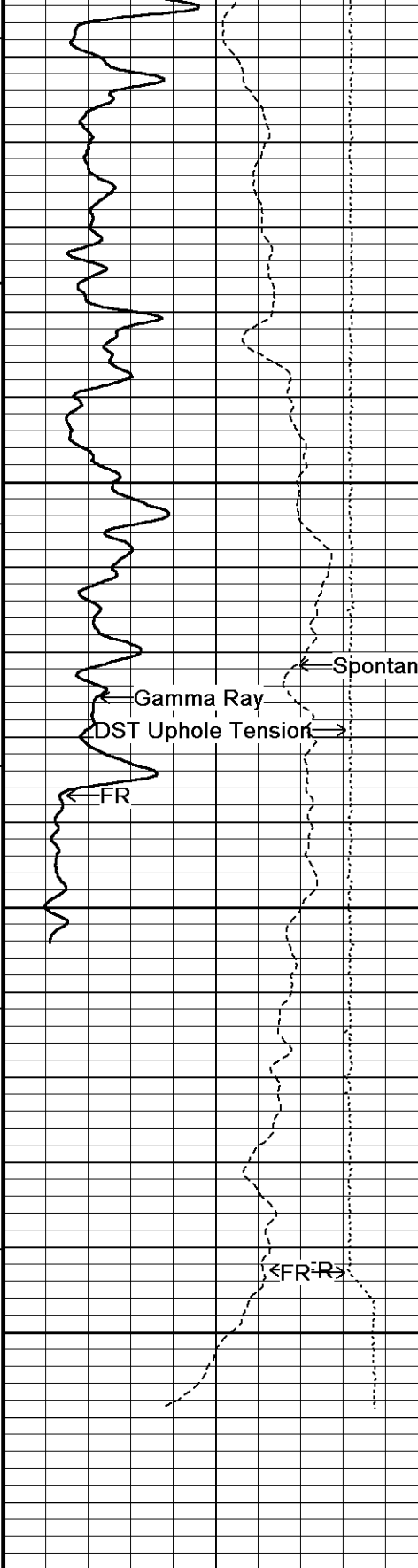












5250

119°

5300

117°

5350

0

5400

5426

Depth
in
Feet

Timing Marks
every 60.0 sec

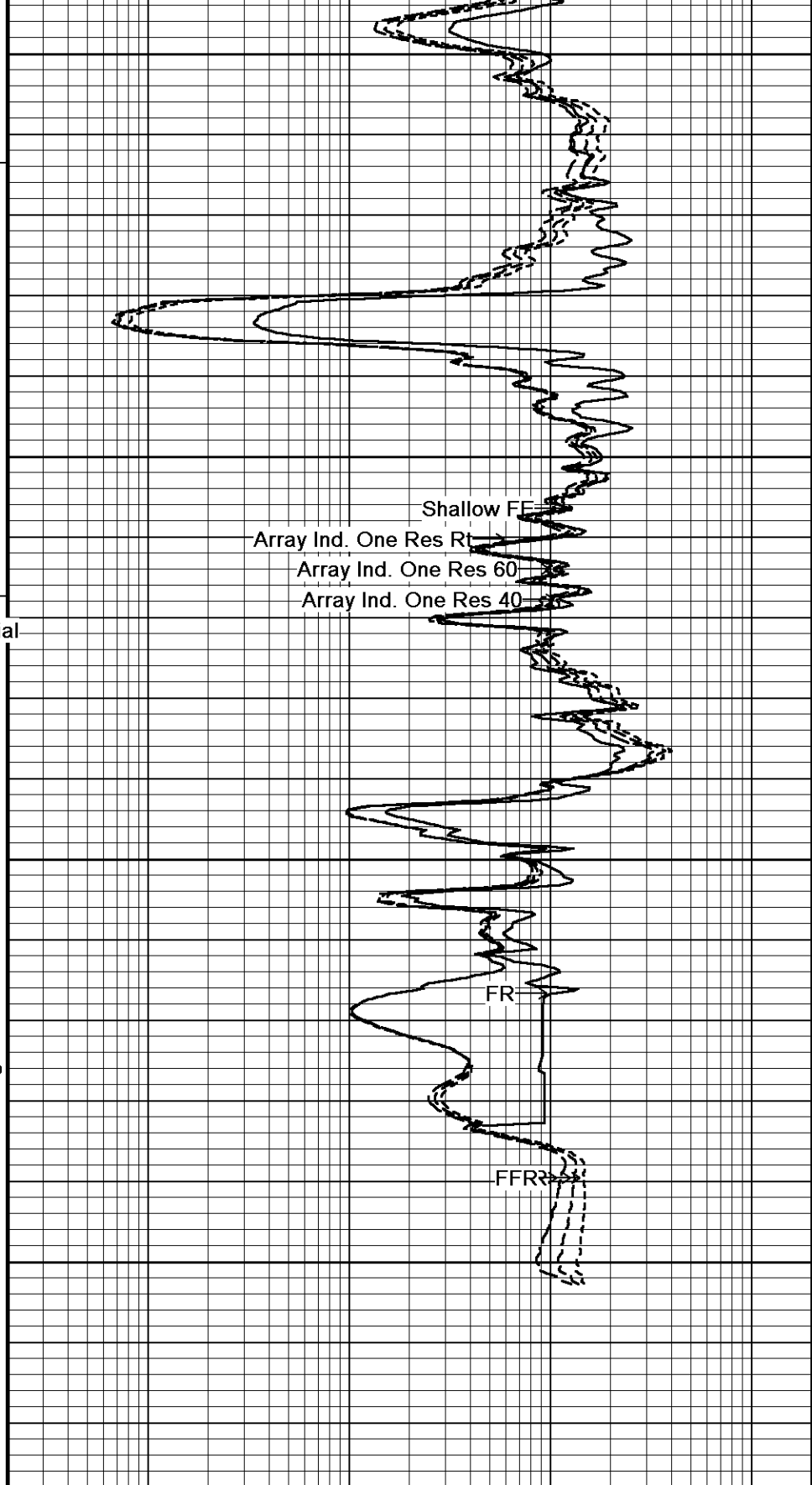
Gamma Ray

API
75

150

Borehole
Temp in
deg F

HVI
every



Shallow FF

Array Ind. One Res Rt

Array Ind. One Res 60

Array Ind. One Res 40

FR

FFR

Array Ind. One Res 40
ohm metres

0.20

2000

1

10

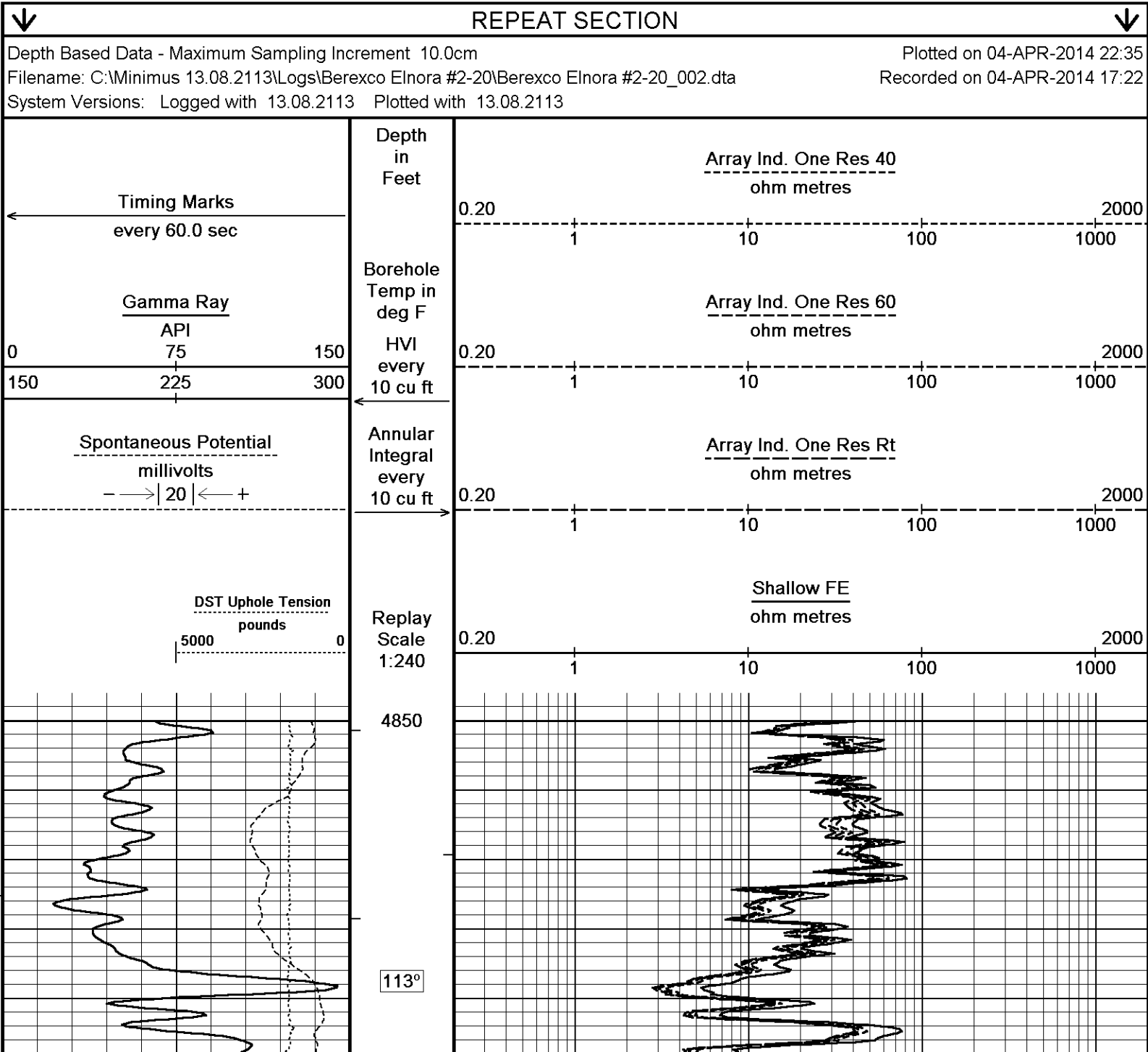
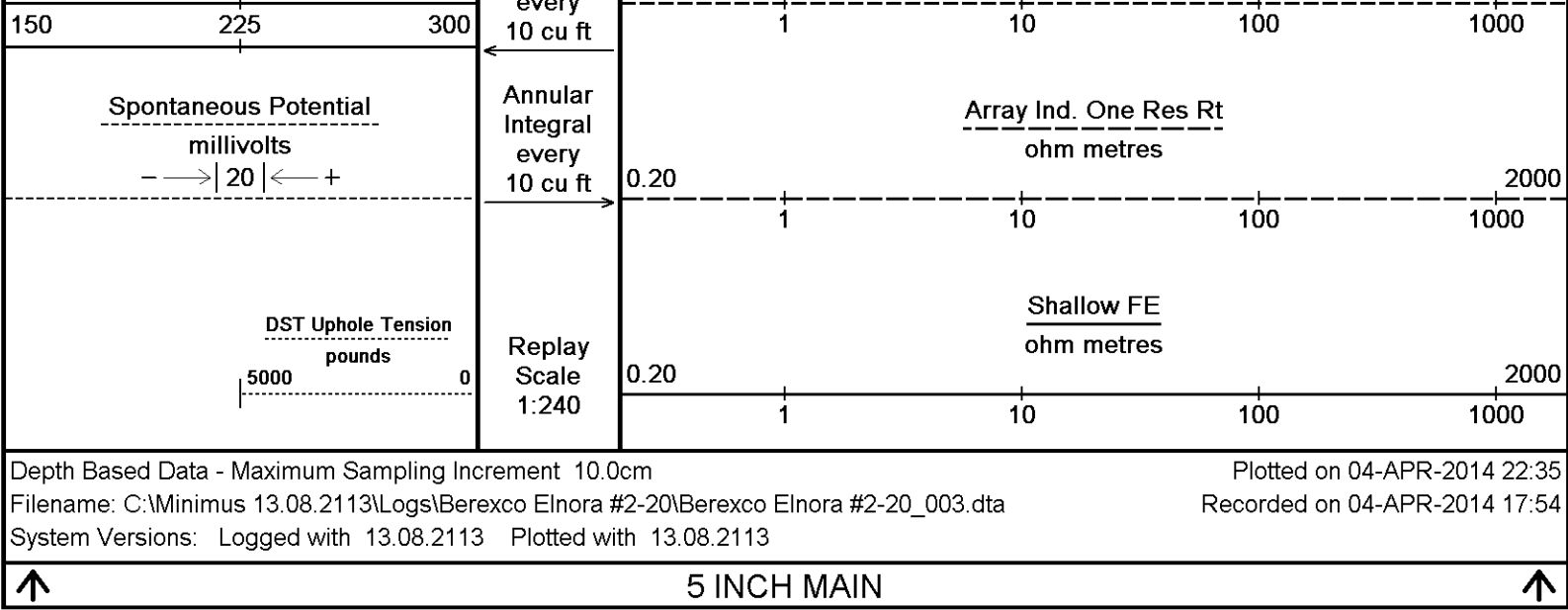
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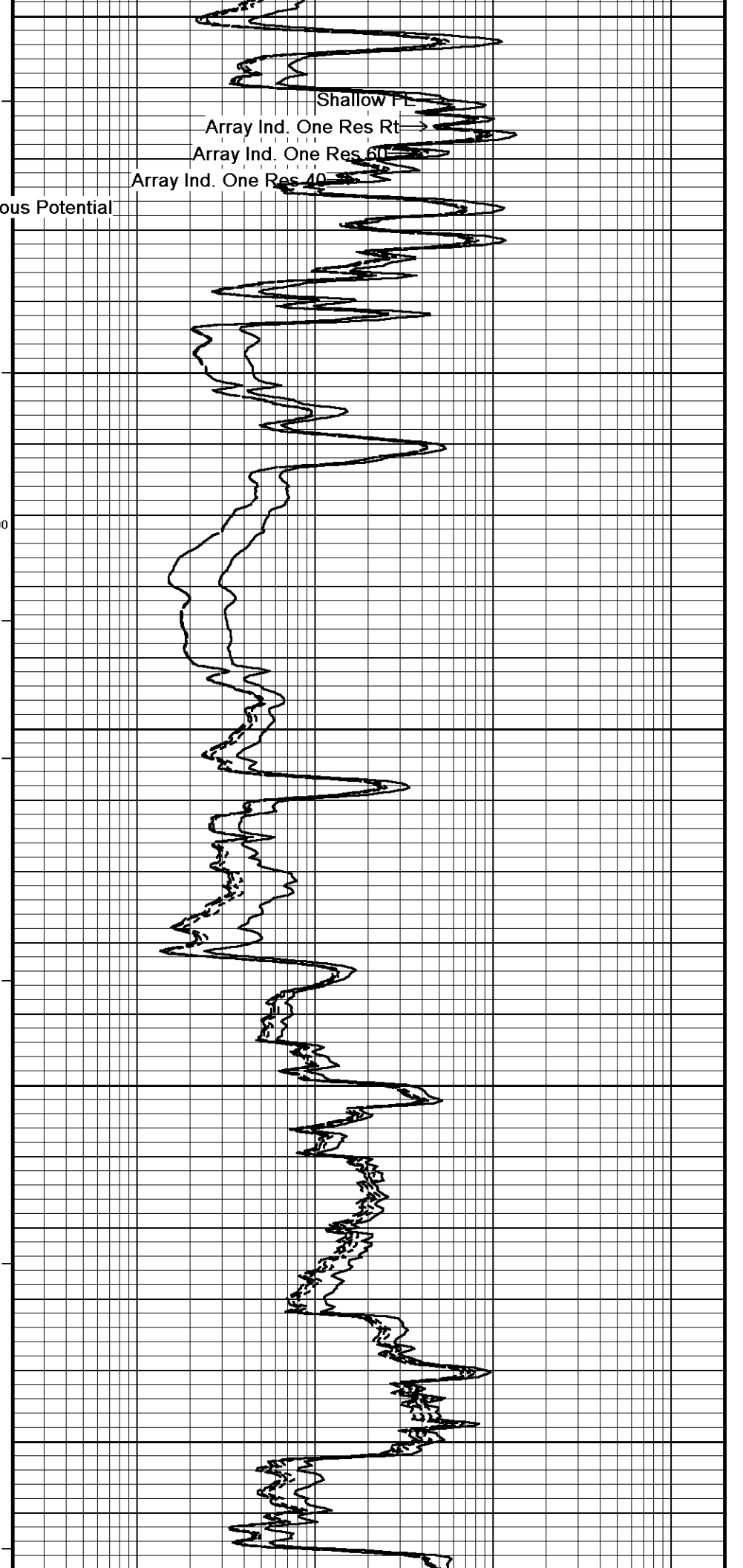
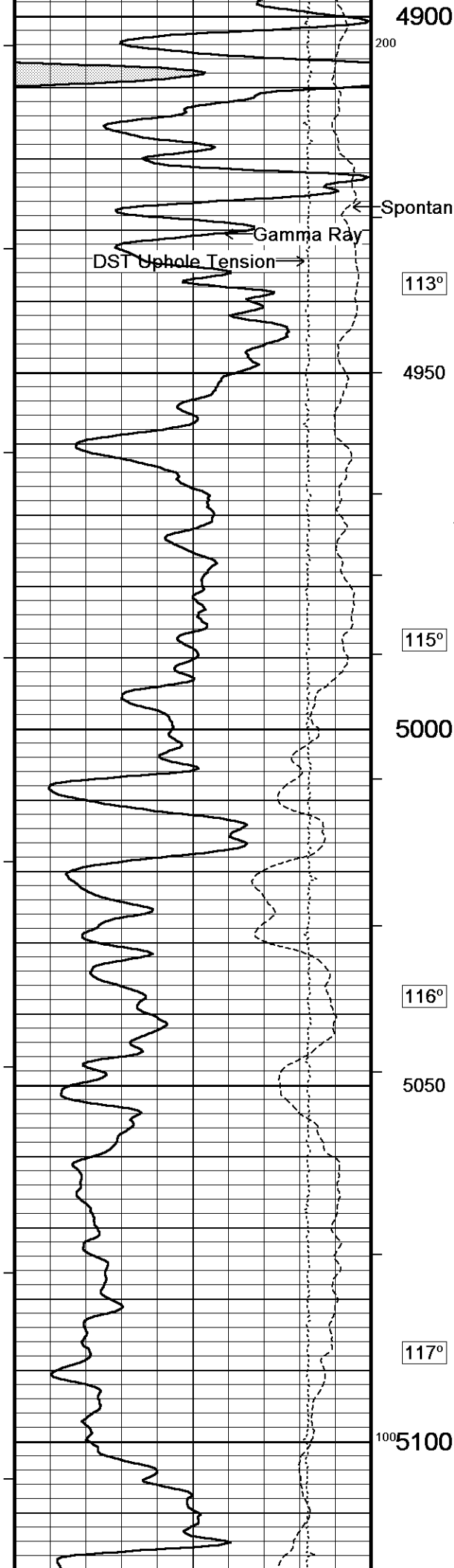
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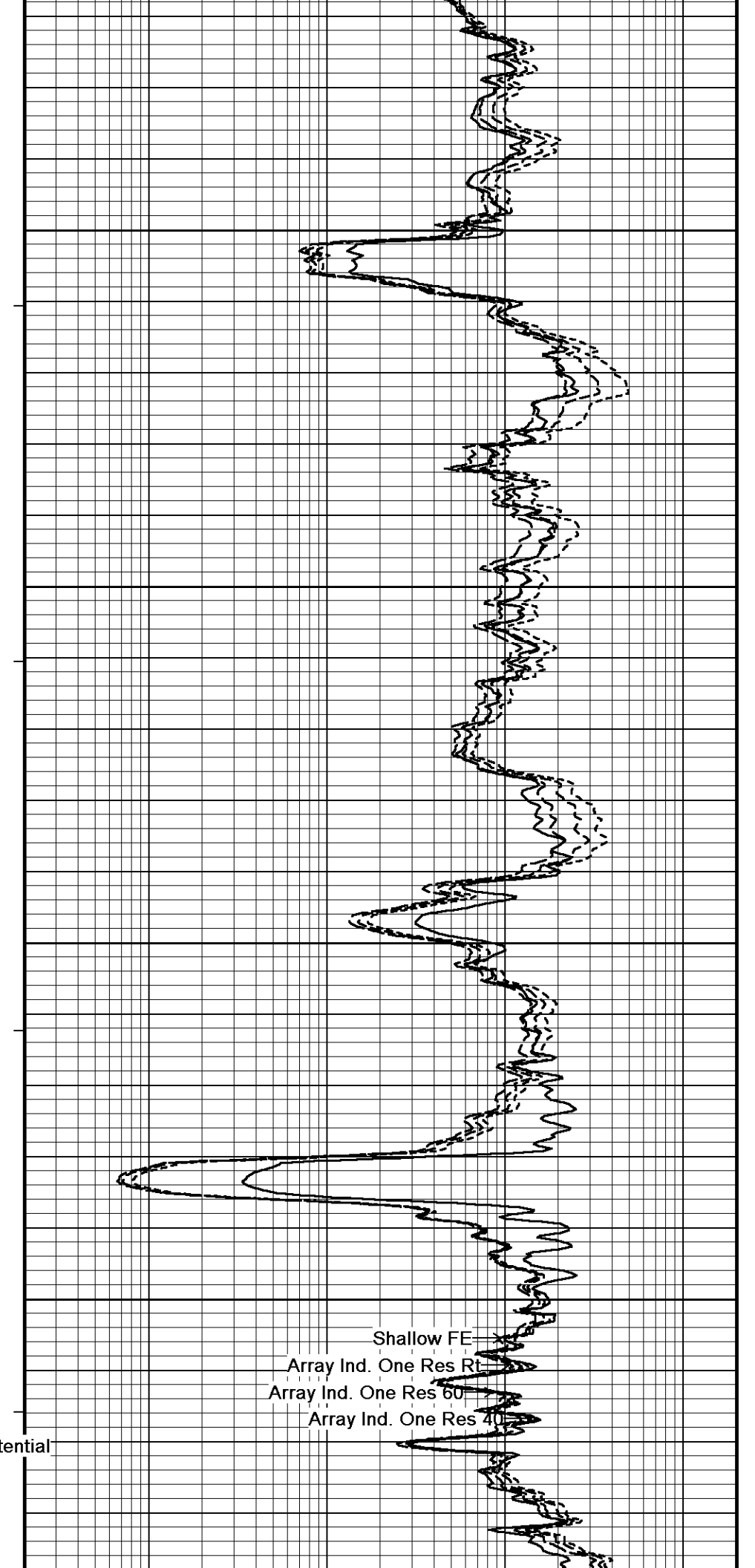
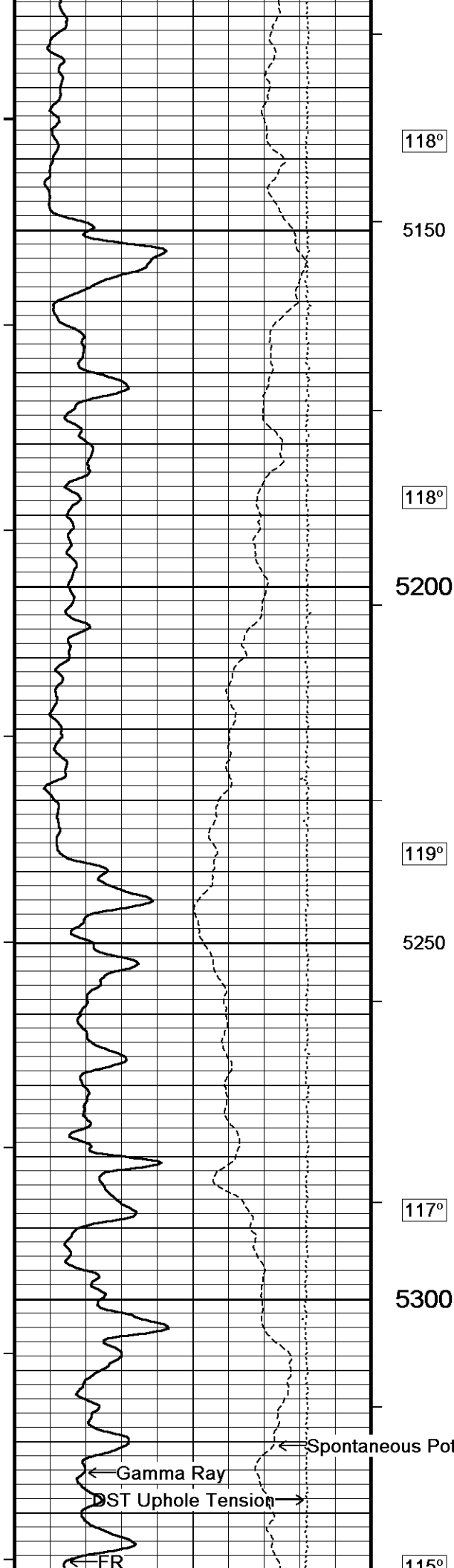
Array Ind. One Res 60
ohm metres

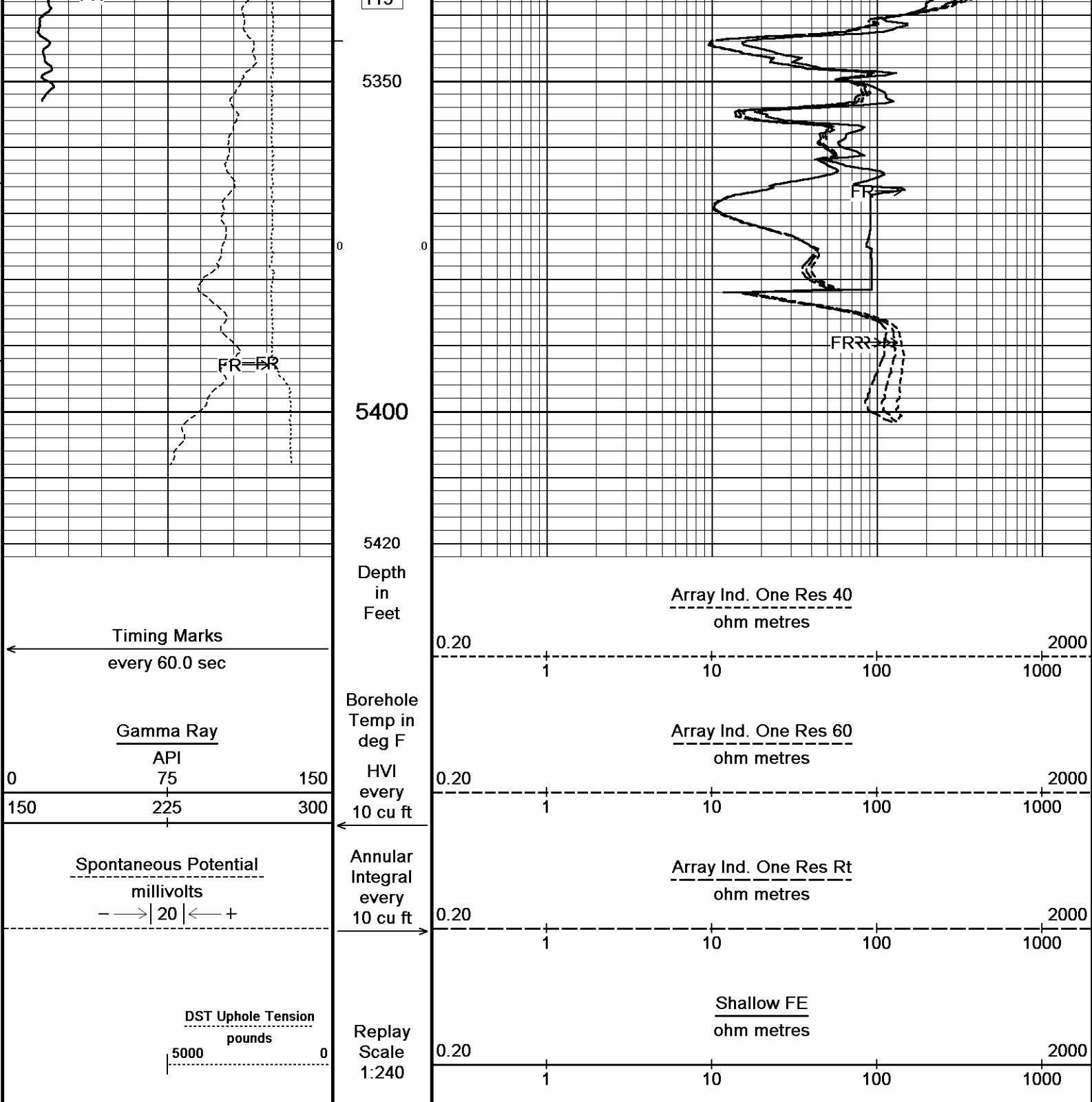
0.20

2000









Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 04-APR-2014 22:35

Filename: C:\Minimus 13.08.2113\Logs\Berexco Elnora #2-20\Berexco Elnora #2-20_002.dta

Recorded on 04-APR-2014 17:22

System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION

C:\Minimus 13.08.2113\Logs\Berexco Elnora #2-20\Berexco Elnora #2-20_003.dta

General Constants All 000

Last Edited on 04-APR-2014,16:49

General Parameters

Mud Resistivity 0.480 ohm-metres

Mud Resistivity Temperature 84.000 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 04-APR-2014,15:46

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		
	Measured	Calibrated (ohm-m)
Caliper	8.00	7.97

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 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 04-APR-2014,15:46
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	
Field Check			281.6	
FE Constants MFE-A.A 55				Last Edited on 04-APR-2014,15:45
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	

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 03-APR-2014 14:51

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	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 04-APR-2014,15:45	
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
Pre-filter Length	11	

Caliper Calibration MPD-D.A 480			Base Calibration on 02-APR-2014 14:28
			Field Calibration on 02-APR-2014 14:29
Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	17565	3.99	
2	27501	5.98	
3	37544	7.97	
4	47406	9.86	
5	58484	11.92	
6	N/A	N/A	

Field Calibration

Measured Caliper (in)
7.94Actual Caliper (in)
7.97

Photo Density Calibration MPD-D.A 480

Base Calibration on 02-APR-2014 14:48

Field Check on 02-APR-2014 14:55

Density Calibration

Base Calibration

	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	1280	1474		
Reference 1	56490	26296	59556	30836
Reference 2	23070	2655	24941	2541

Field Check at Base

1280.1 1473.9

Field Check

1276.2 1470.6

PE Calibration

Base Calibration

	WS	Measured		Calibrated Ratio
		WH	Ratio	
Background	244	1141		
Reference 1	23700	56281	0.425	0.371
Reference 2	6865	22924	0.304	0.272

Field Check at Base

243.9 1141.4

Field Check

239.9 1140.2

Density Constants MPD-D.A 480

Last Edited on 04-APR-2014,15:46

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 1.10 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\Berexco Elnora #2-20\Berexco Elnora #2-20_003.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



56.02 ft

53.11 ft

GRGC - Gamma Ray

CGXT - MCG External Temperature

	
COMPANY	BEREXX
WELL	ENORA
FIELD	WILDCAT
PROVINCE/COUNTY	FINNEY
COUNTY/STATE	U.S.A. / K
LOCATION	940. FNN
SEC. 20	TWP. 26S
	RGE. 33W
Latitude	39.25
Longitude	-105.055-22280
API Number	Permanent Datum QG, Elevation 2928
	Log Measured From XG
	Drilling Measured From KG
Date	04-APR
Run Number	ONE
Servise Order	3467-83-83
Depth Logger	5393.00
Depth Logger	5393.00
First Reading	5390.00
Last Reading	1783.00
Casing Logger	1772.00
Casing Logger	1783.00
Bit Size	7 8/15
How Fluid Type	CHEMICAL
Fluid Viscosity	9.20
PI / Fluid Loss	9.50
Sample Source	FLUID
Run @ Measured Temp	0.48 @
Run @ Measured Temp	0.38 @
Run @ Measured Temp	0.56 @
Source / Run / Fric	CALC
Run @ BHT	5.04 @
Time Since Circulation	0.30
Was Recorded Temp	130.00
Equipment Base	13274
Recorded By	ADAM S
Entered By	ADAM S
IOB #	1814-111

2-20 LLC.

KANSAS
& 1655' FWL

MPD/MIDN

Minimal

feet

-2014

817538

feet

feet
feet

feet

feet

inches

AL	E4 00
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150.00	7.60
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NE

84.0	ohm-m
84.0	ohm-m

84.0	ohm-m
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ohm-m	CALC
120.0	

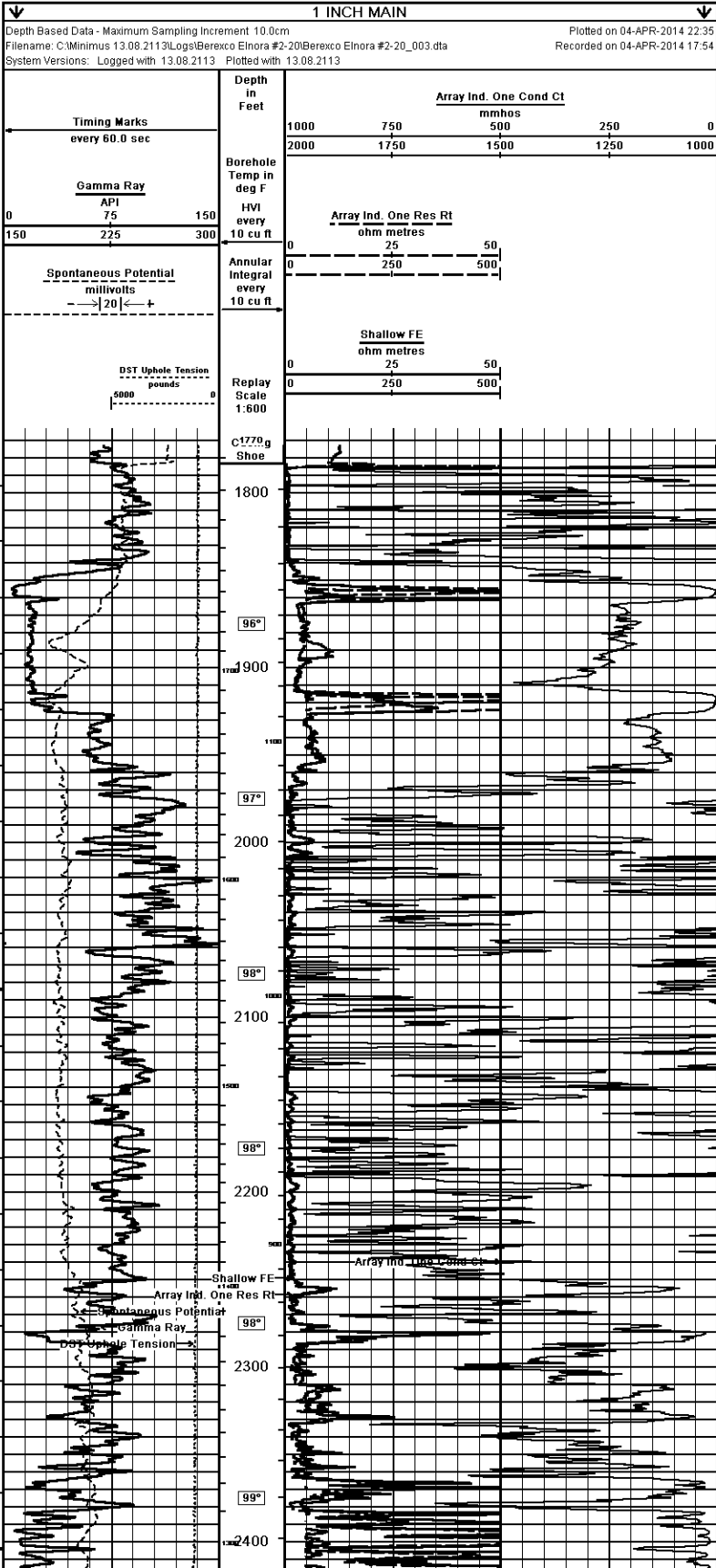
25

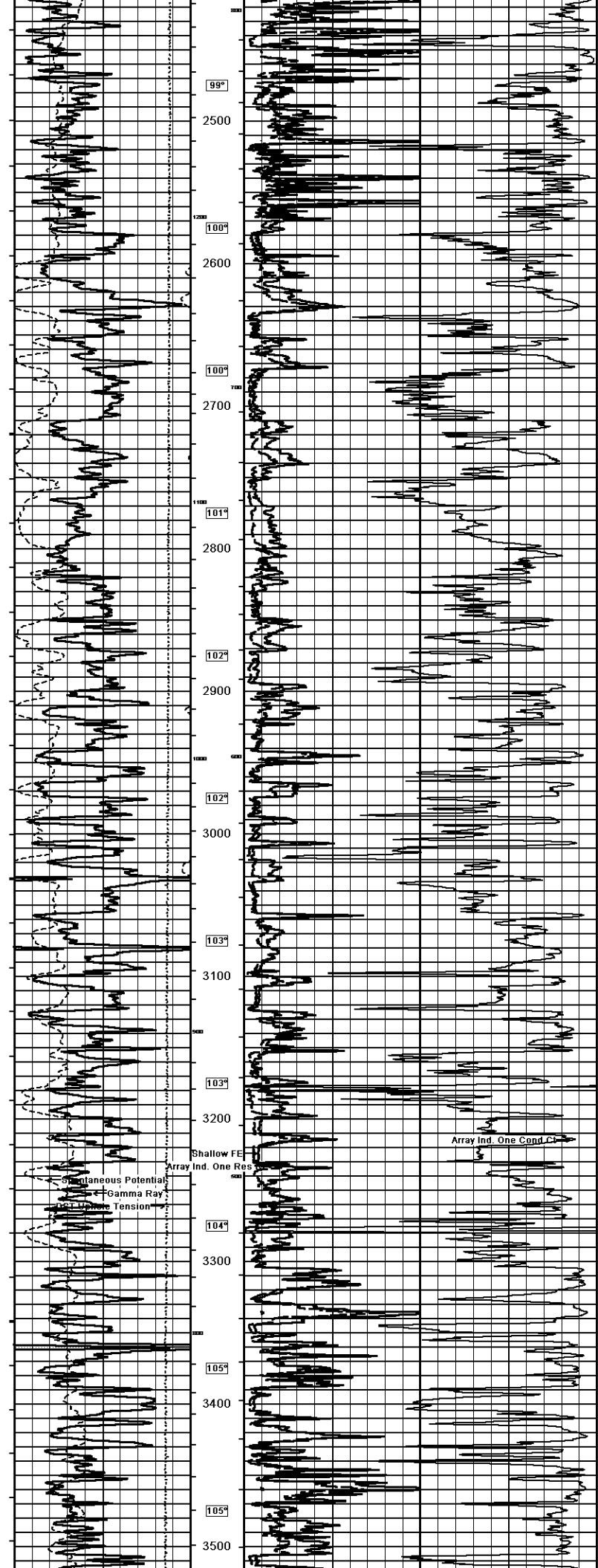
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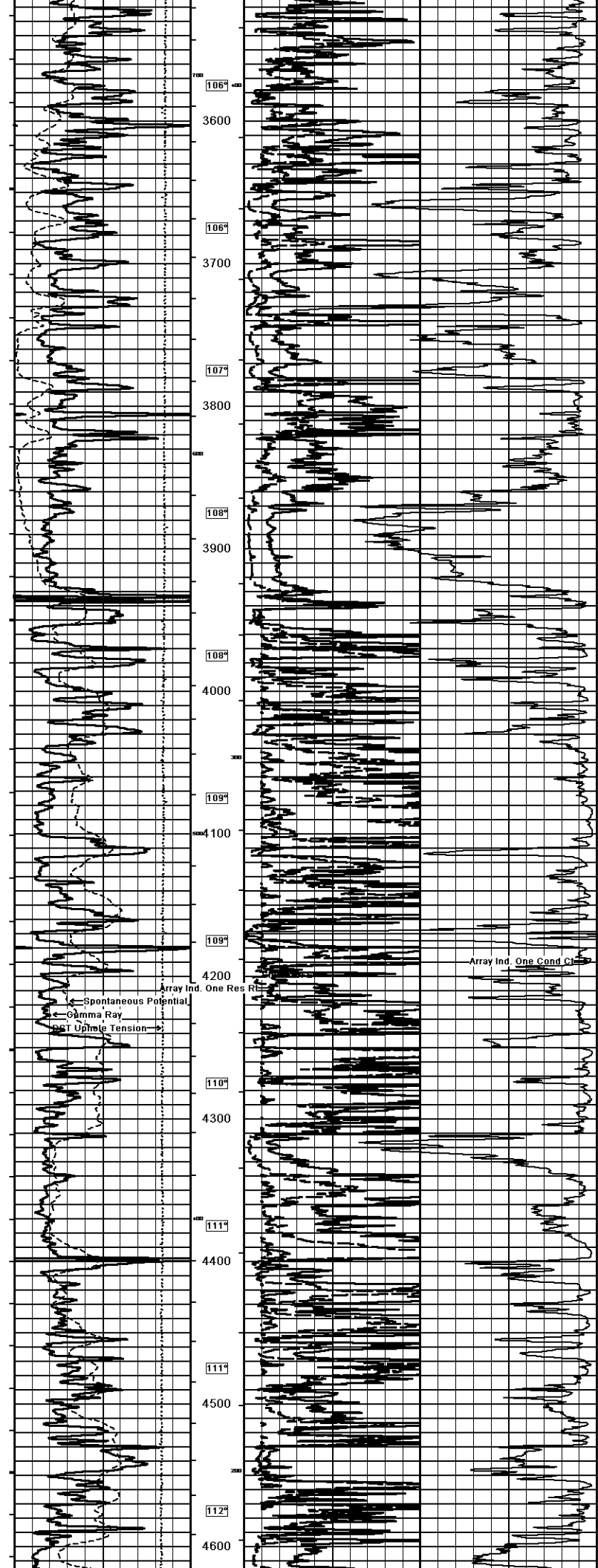
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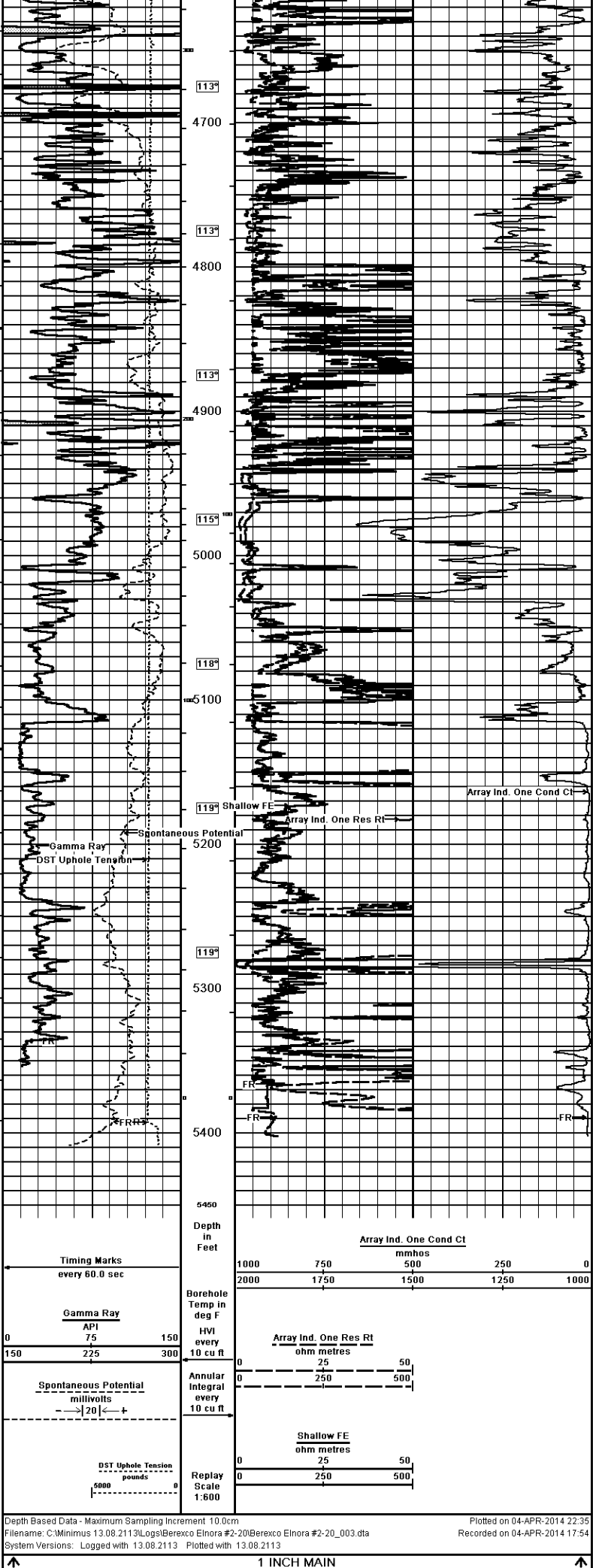
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COMPANY	BEREXCO LLC.				
WELL	ELNORA #2-20				
FIELD	WILDCAT				
PROVINCE/COUNTY	FINNEY				
COUNTRY/STATE	U.S.A. / KANSAS				
Elevation Kelly Bushing	2941.00	feet	First Reading	5390.00	feet
Elevation Drill Floor	2939.00	feet	Depth Driller	5400.00	feet
Elevation Ground Level	2928.00	feet	Depth Logger	5393.00	feet
			ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG		