

**Weatherford****ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG**

COMPANY

O'BRIEN ENERGY RESOURCES CORP.

WELL

ARDREY #2-2

FIELD

ARDREY

PROVINCE/COUNTY

CLARK

COUNTRY/STATE

U.S.A. / KANSAS

LOCATION

1485' FNL & 2310' FEL

N2 NW SW NE

SEC

TWP

31S

24W

Other Services
MPD/MDN
MML

2

API Number

15-025-21559

Permit Number

Permanent Datum G.L., Elevation 2541 feet

Log Measured From KB

Drilling Measured From K.B. @ 12 FEET

Date

12-APR-2013

Run Number

ONE

Service Order

3539884

Depth Driller

5750.00 feet

Depth Logger

5748.00 feet

First Reading

5745.00 feet

Last Reading

728.00 feet

Casing Driller

730.00 feet

Casing Logger

728.00 inches

Bit Size

7.875

Hole Fluid Type

CHEMICAL

lb/USg

Density / Viscosity

9.25 lb/USg 45.00 CP

PH / Fluid Loss

9.00 9.00

Sample Source

FLOWLINE

Rm @ Measured Temp

0.34 @ 77.0 ohm-m

Rmf @ Measured Temp

0.27 @ 77.0 ohm-m

Rmc @ Measured Temp

0.41 @ 77.0 ohm-m

Source Rmf / Rmc

CALC CALC

Rm @ BHT

0.23 @ 115.0 ohm-m

Time Since Circulation

4 HOURS

Max Recorded Temp

115.00 deg F

Equipment / Base

13057 LIB

Recorded By

W. STAMBAUGH

Witnessed By

ROGER PEARSON

J. LAPOINT

PETER DEBENHAM

LB13-097

BOREHOLE RECORD

Last Edited: 12-APR-2013 16:11

Bit Size
inches

7.875

Depth From
feet

728.00

Depth To
feet

5748.00

CASING RECORD

Type

Size
inches

8.625

Depth From
feet

5748.00

Shoe Depth
feet

728.00

Weight
pounds/ft

24.00

REMARKS

Tools Ran: MCG, MML, MDN, MPD, MFE, MAI ran in combination.

Hardware Used: MDN Dual bowspring used. MPD 8 inch profile plate used. MAI and MFE 0.5 Inch standoffs used.

2.71 g/cc Limestone Density Matrix used to calculate porosity.

All intervals logged and scaled per customer's request.

Tight pulls, washouts and borehole rugosity will affect data quality.

Total hole volume from TD to Surface Casing= 2500 cu. ft.

Annular volume with 4.5 inch production casing from TD to 4000 ft.= 418 cu. ft.

Service order: #3539884

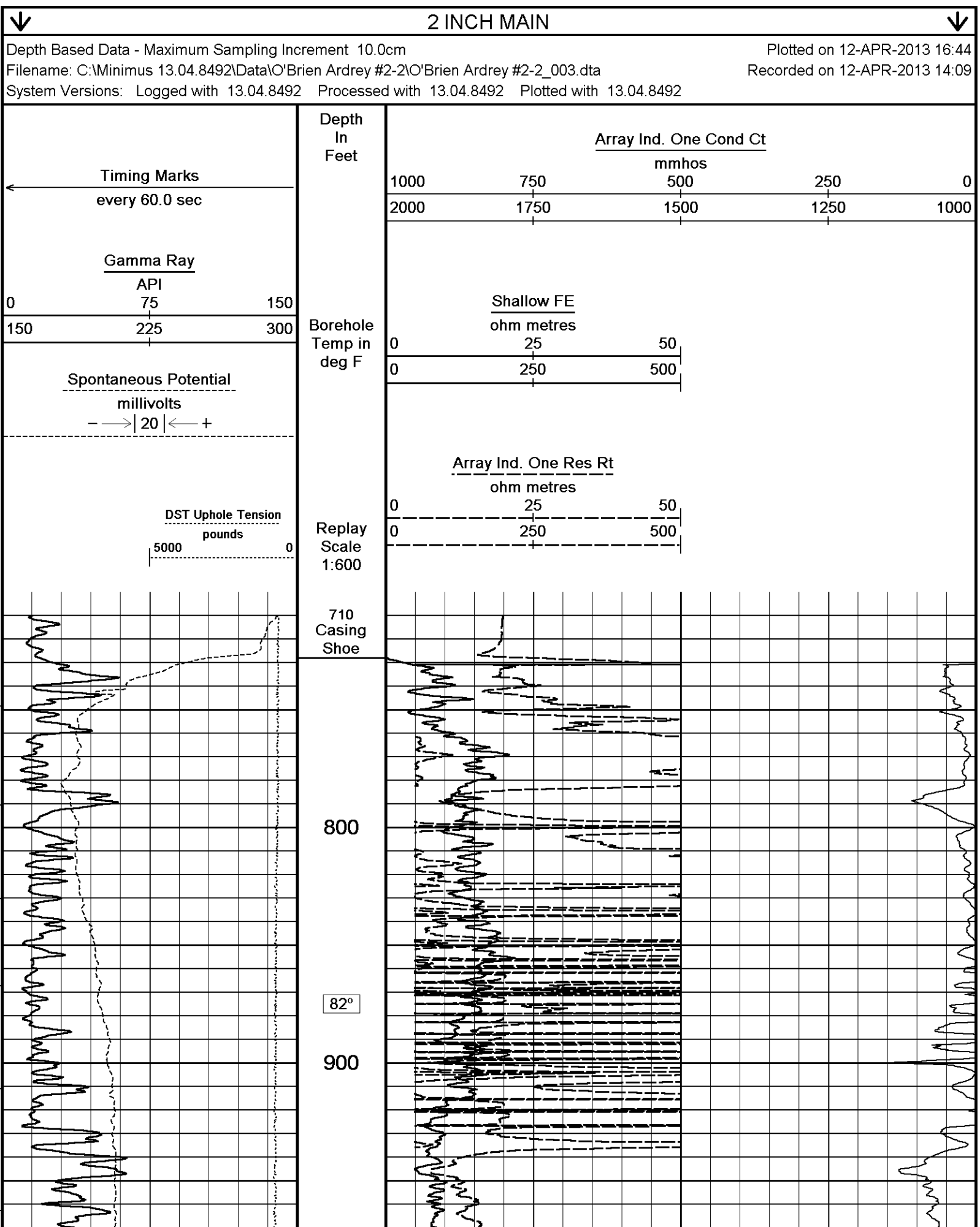
Rig: Duke #6

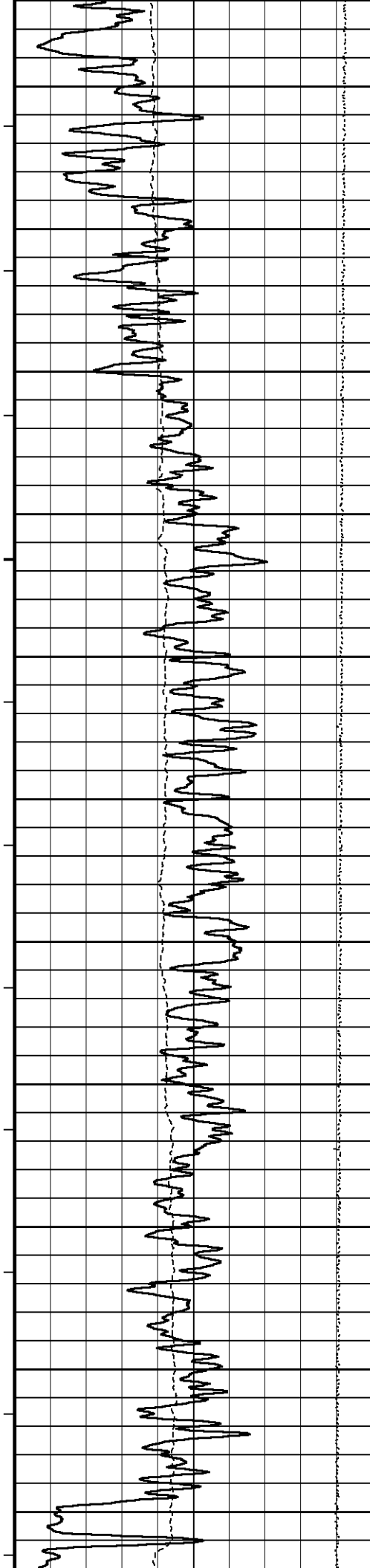
Engineer: W. Stambaugh, J. LaPoint

Operator(s): R. Venegas

****Software issue changed fluid loss to match Ph fluid loss should be 11.6 ml/30min.****

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





83°

1000

84°

1100

85°

1200

85°

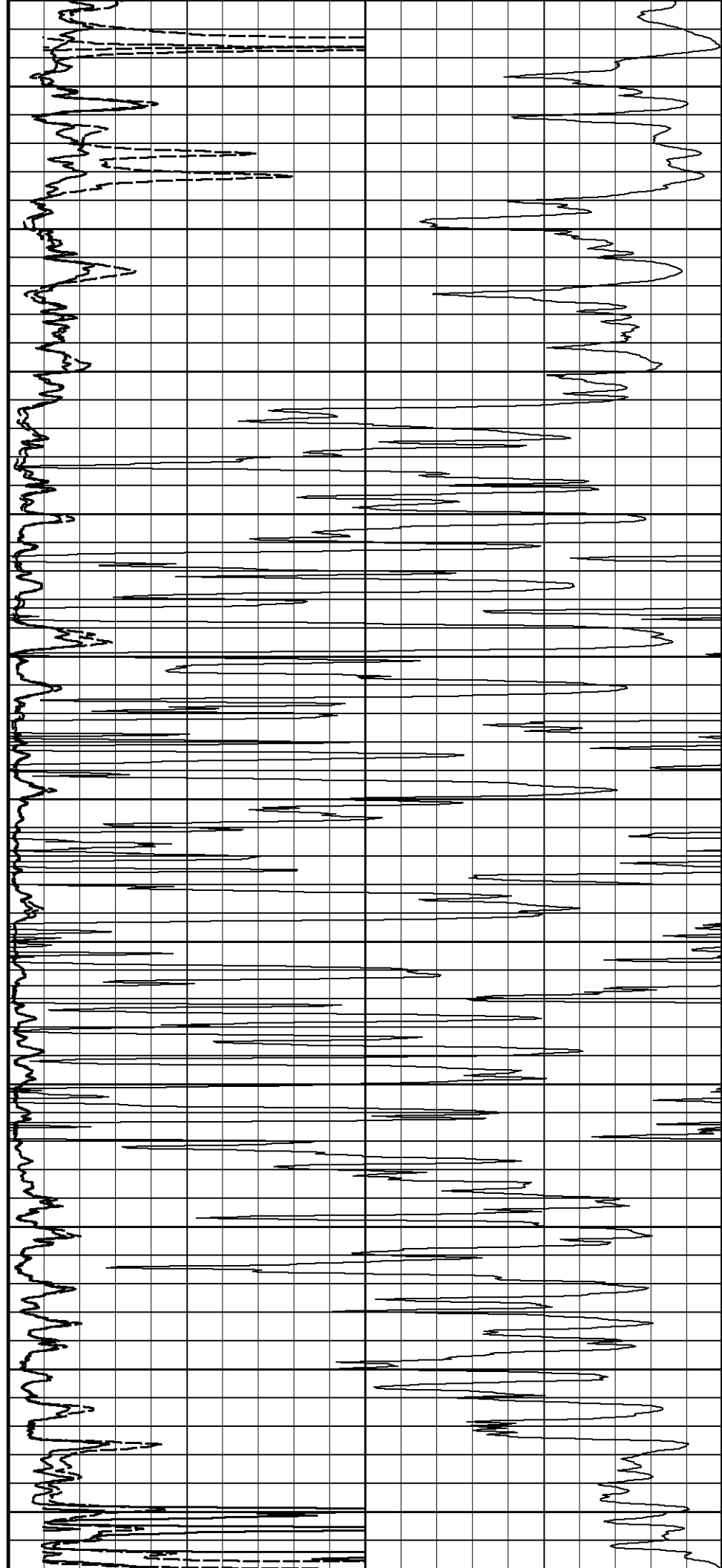
1300

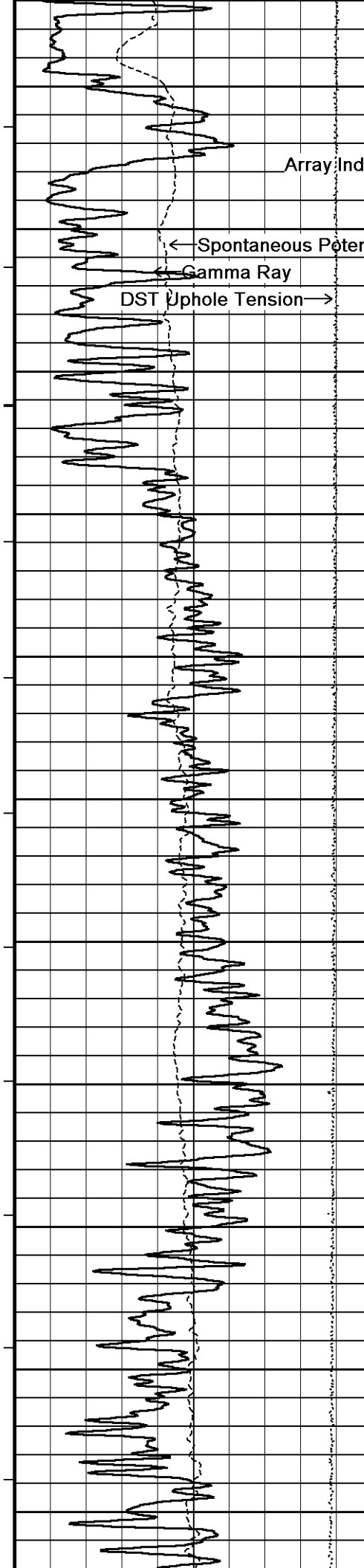
86°

1400

87°

1500





Array Ind. One Res Rt

89°

1600^{low FE}

90°

1700

90°

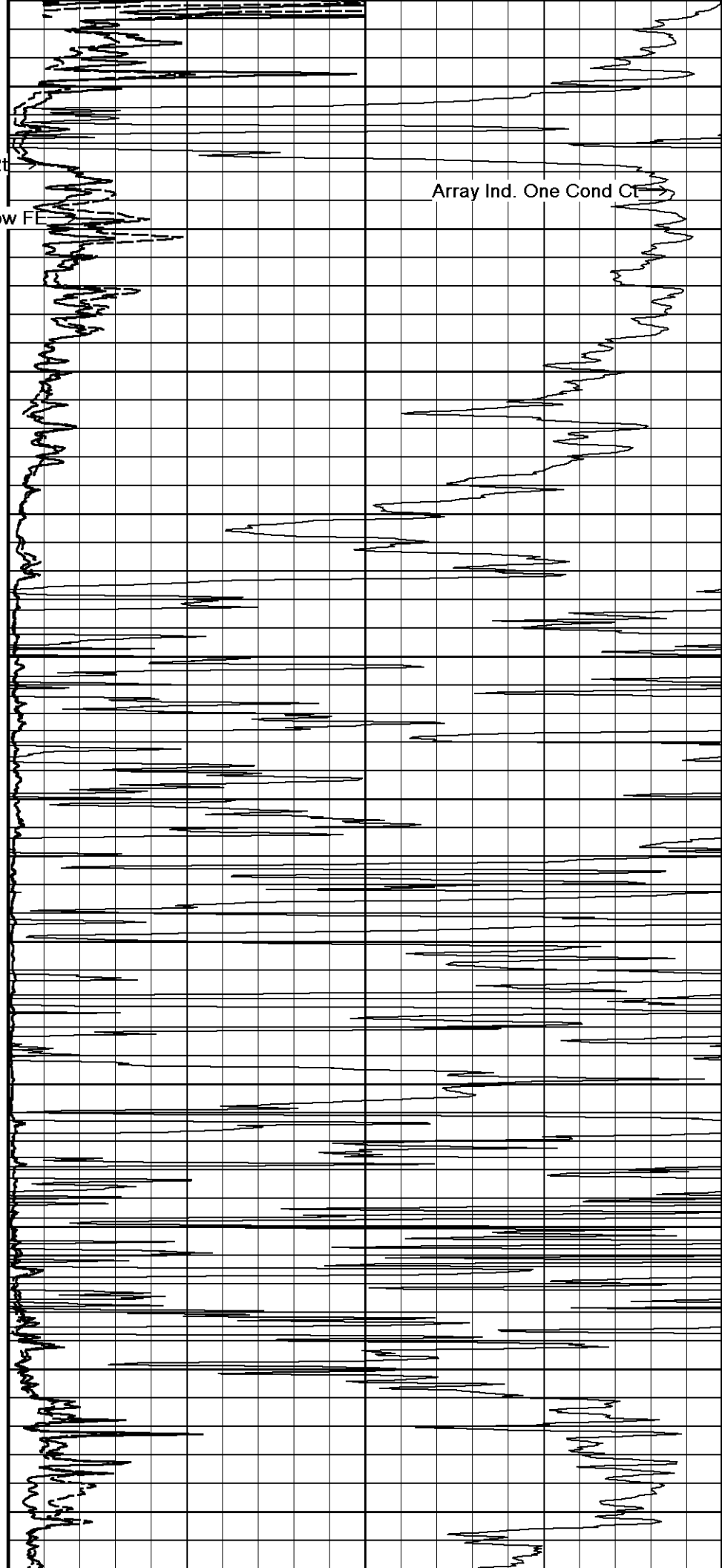
1800

90°

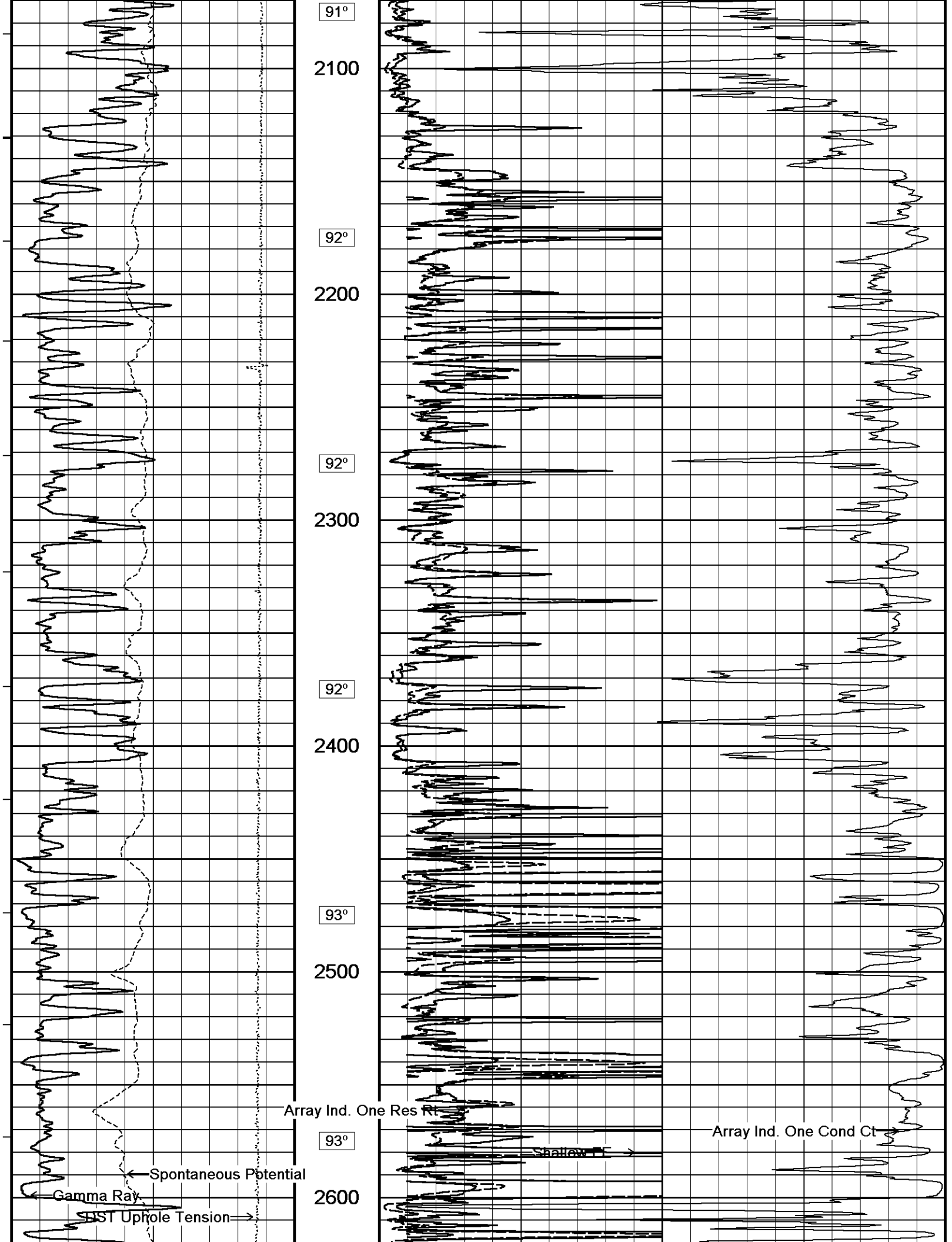
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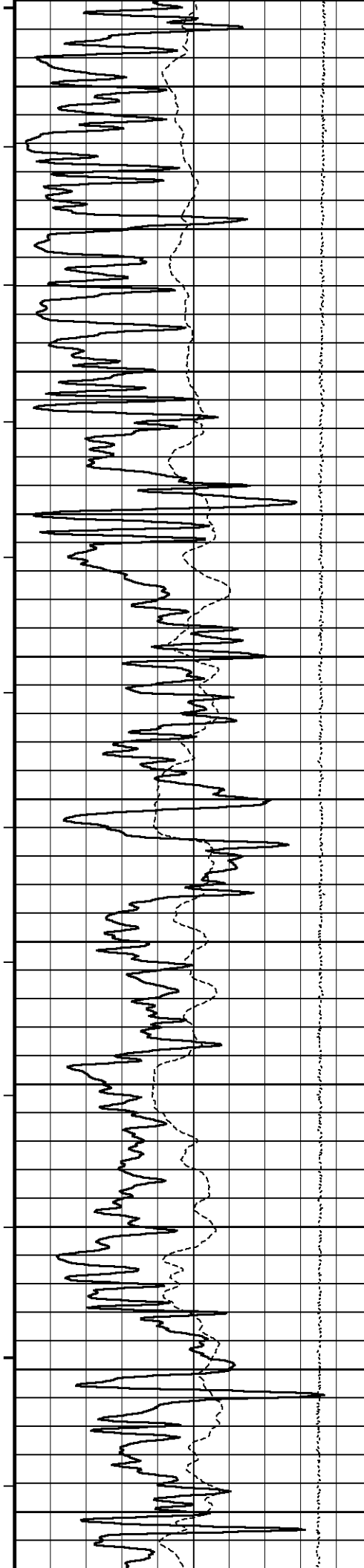
90°

2000



Array Ind. One Cond Ct





93°

2700

93°

2800

94°

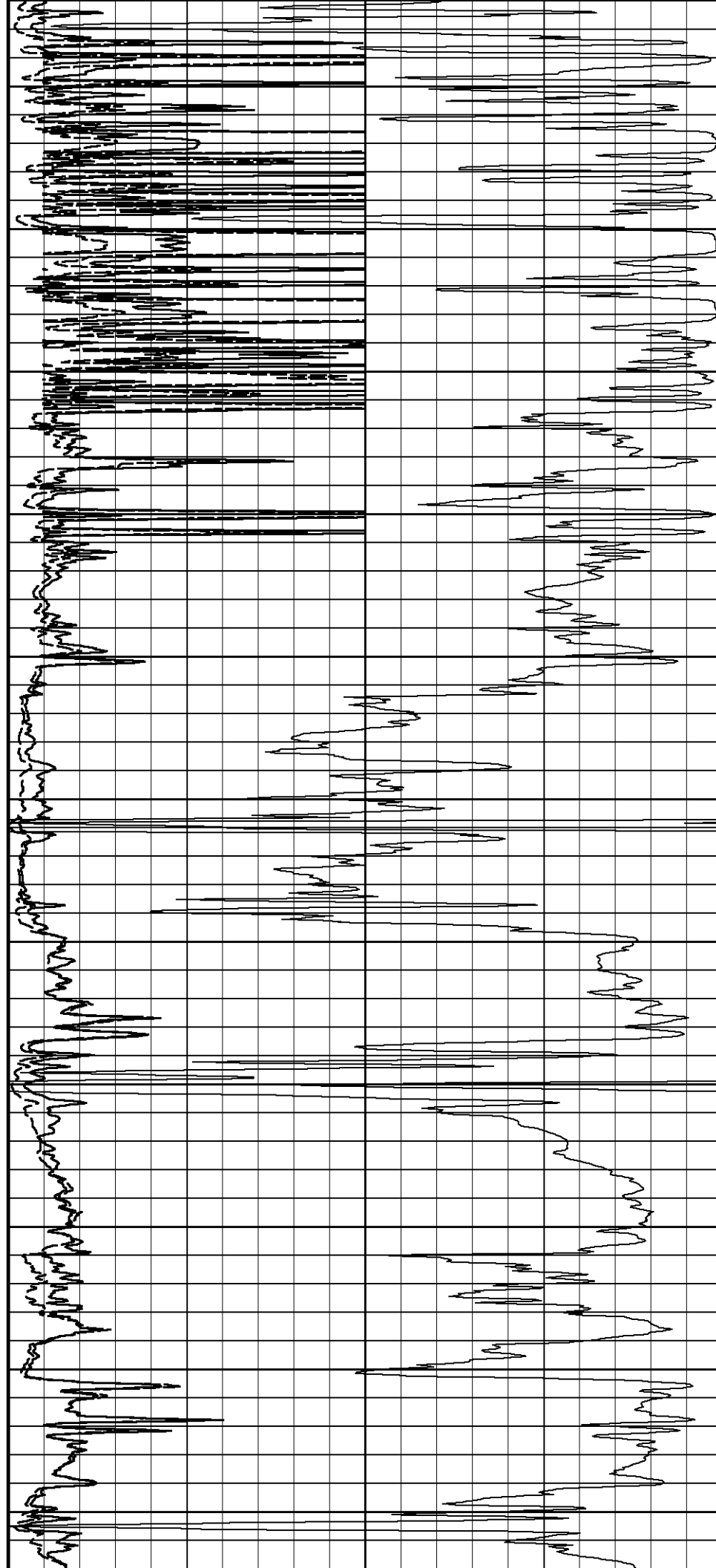
2900

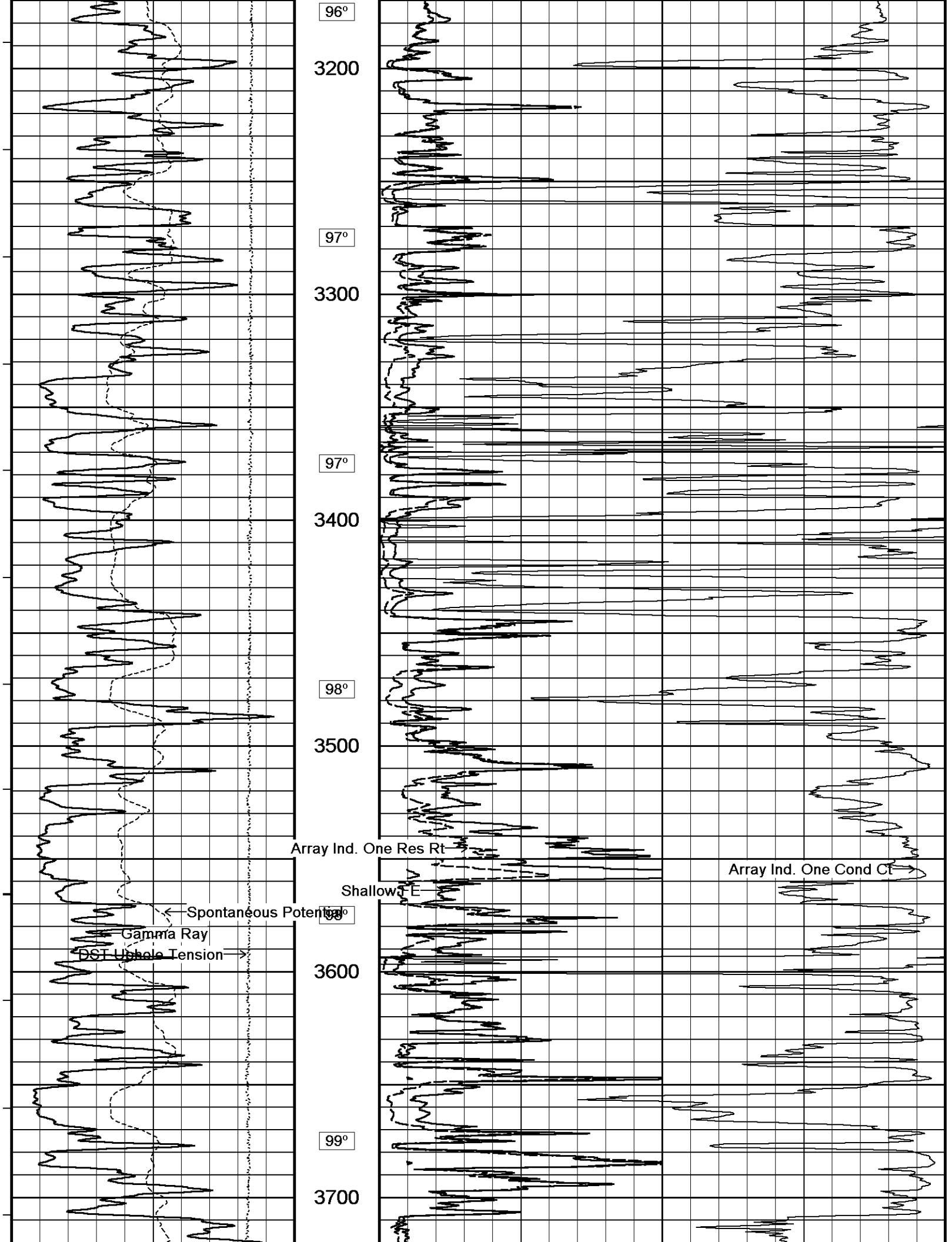
95°

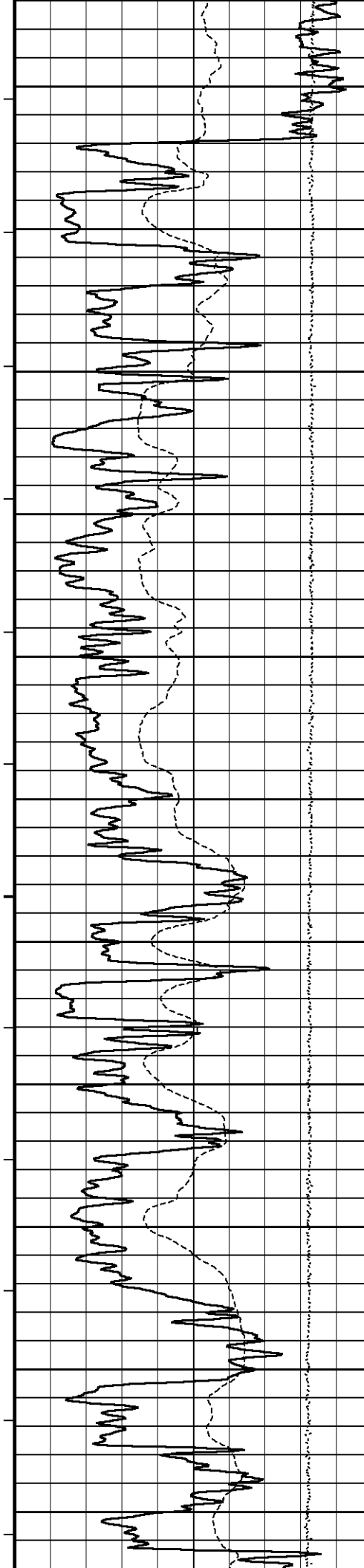
3000

95°

3100







100°

3800

100°

3900

101°

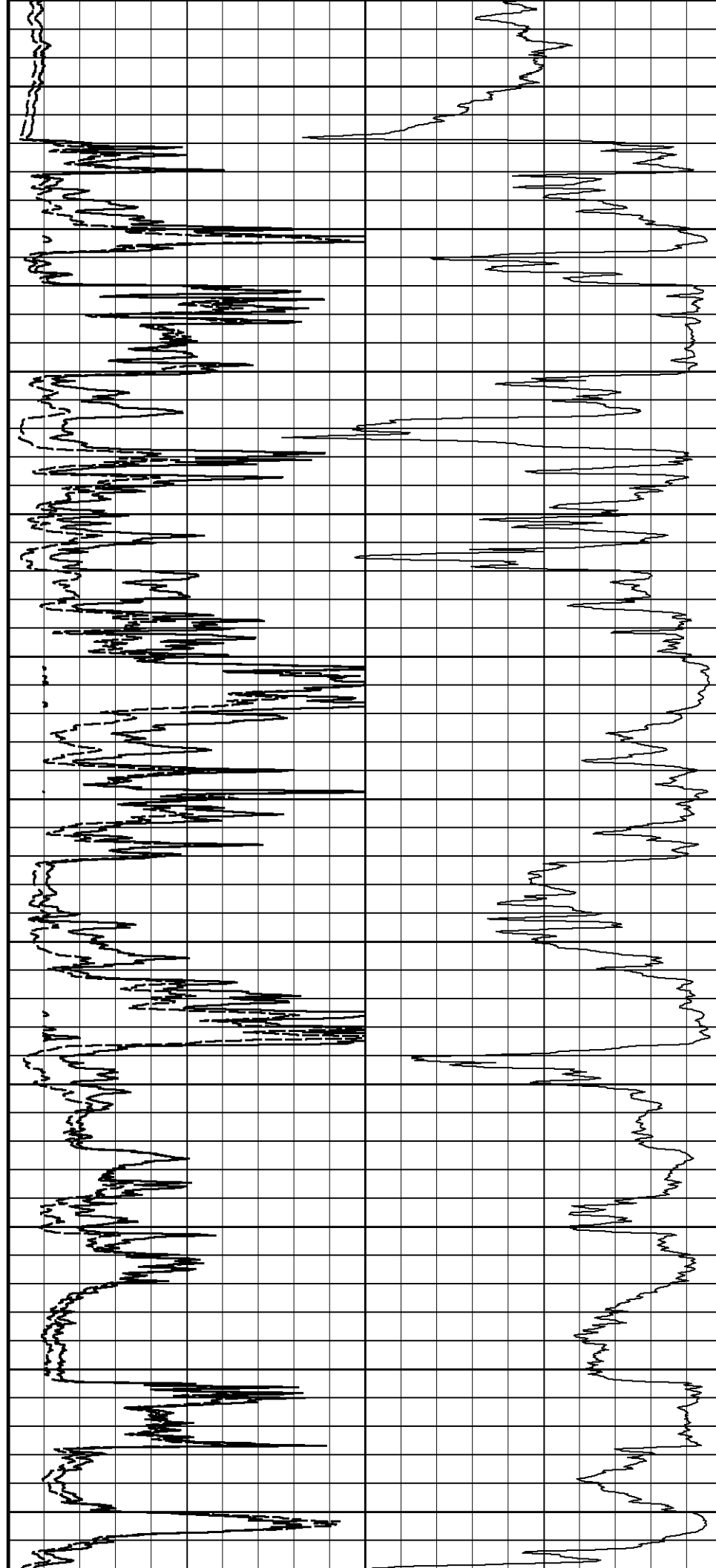
4000

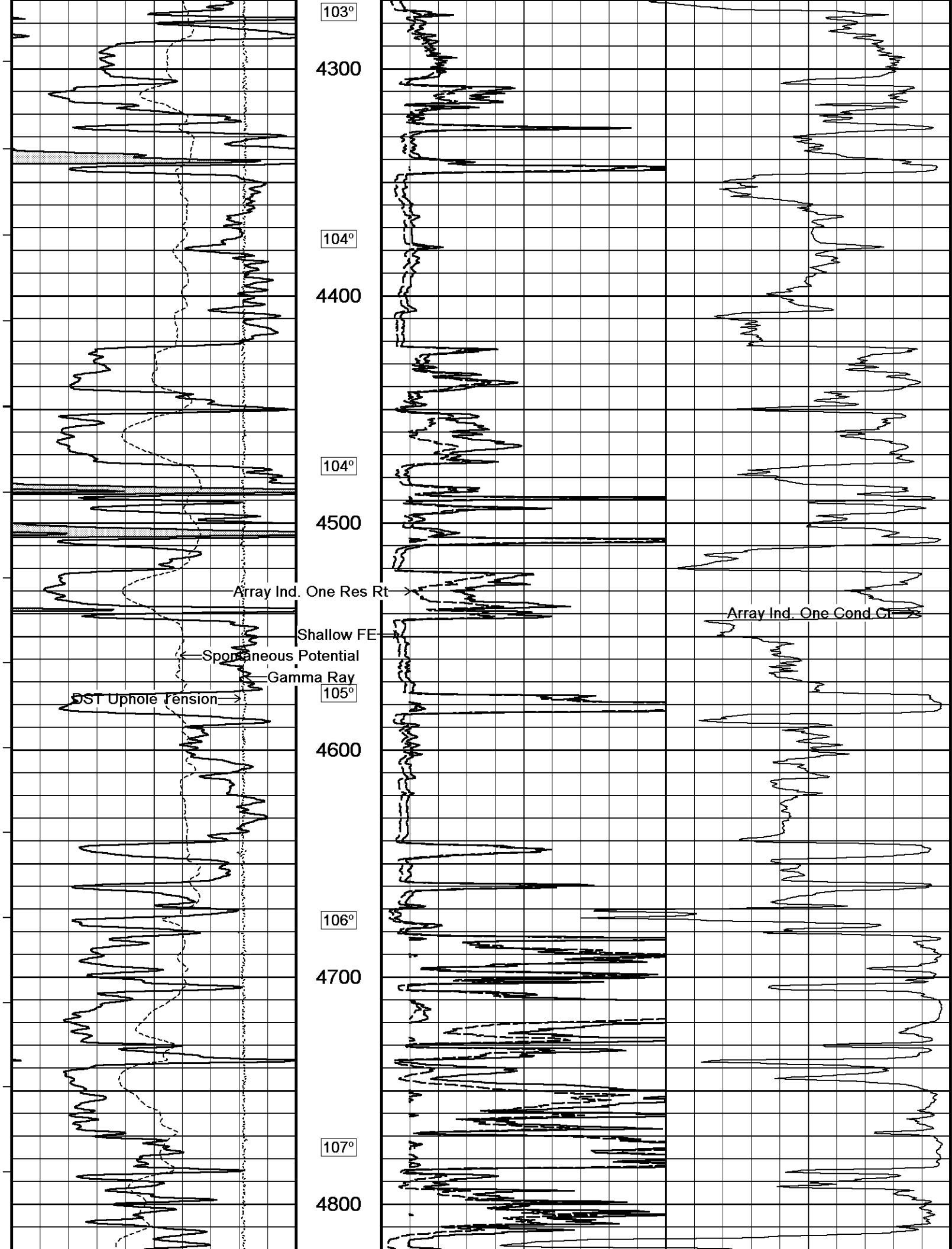
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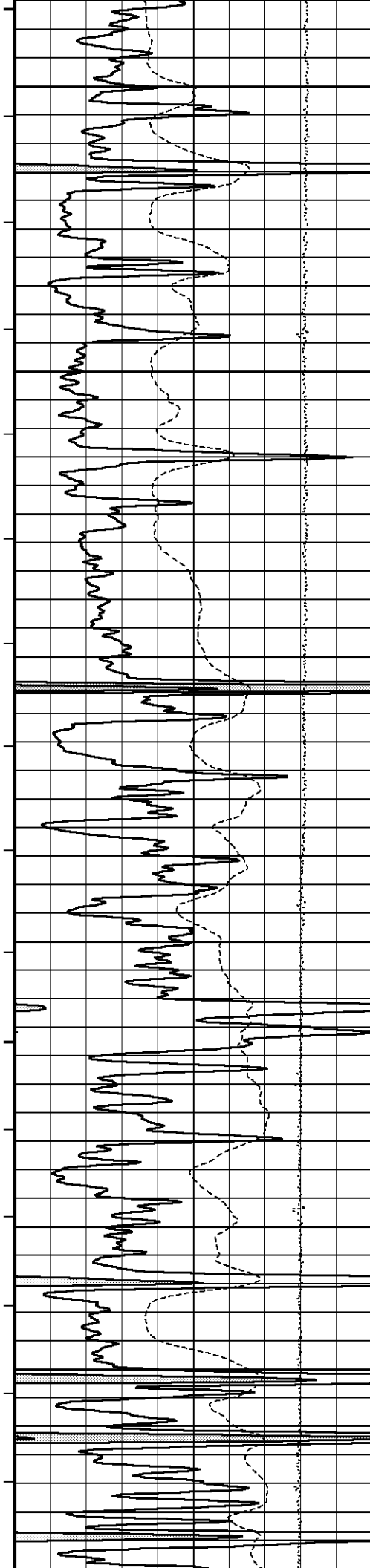
4100

102°

4200







107°

4900

108°

5000

108°

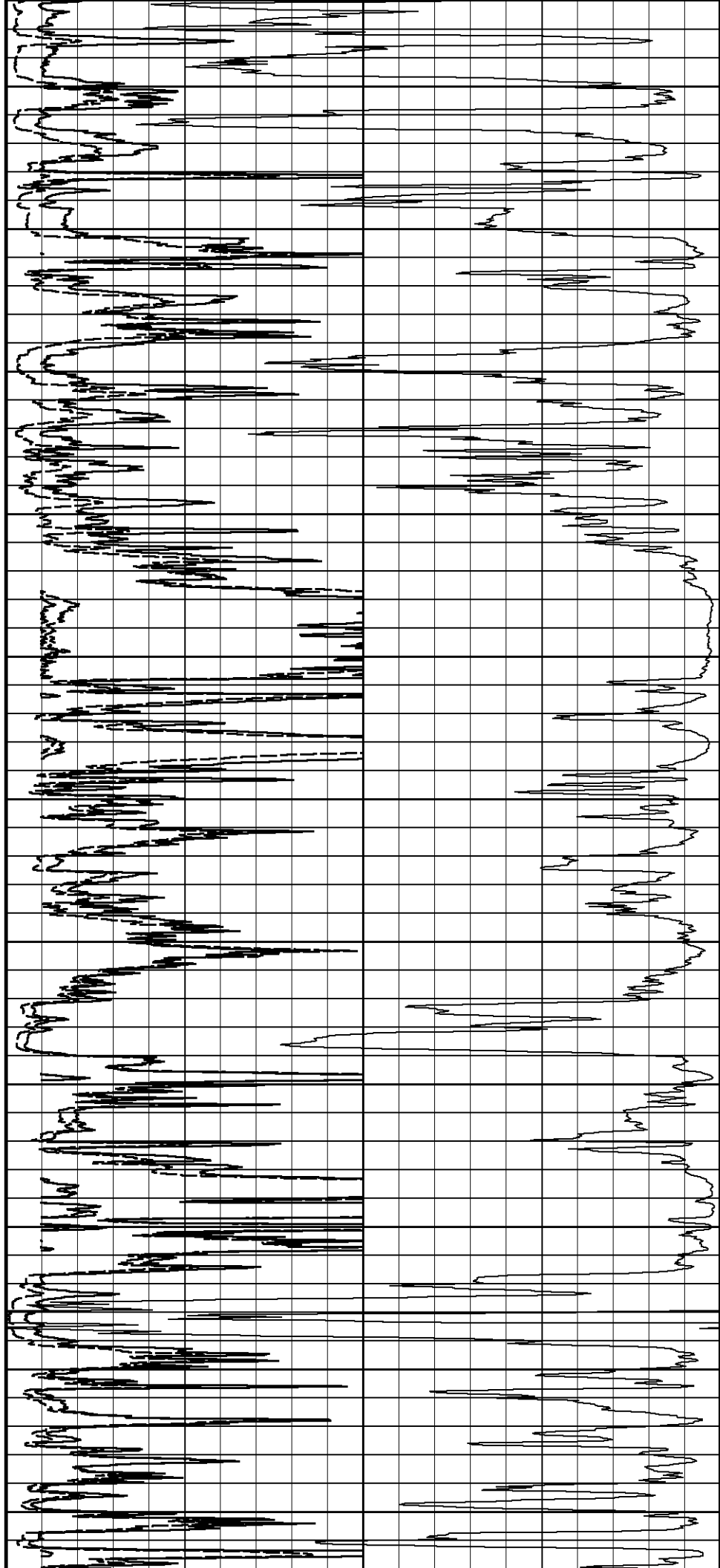
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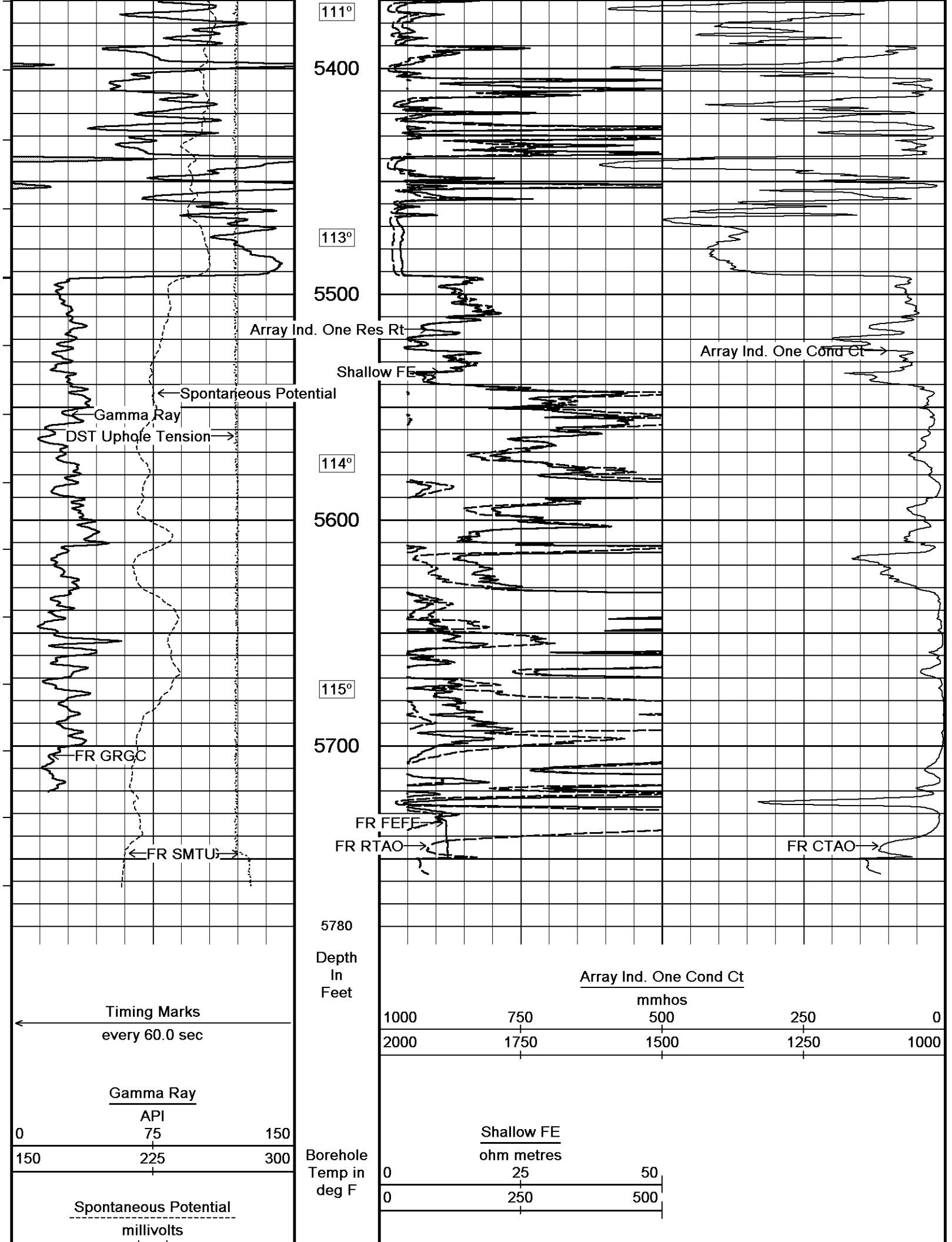
110°

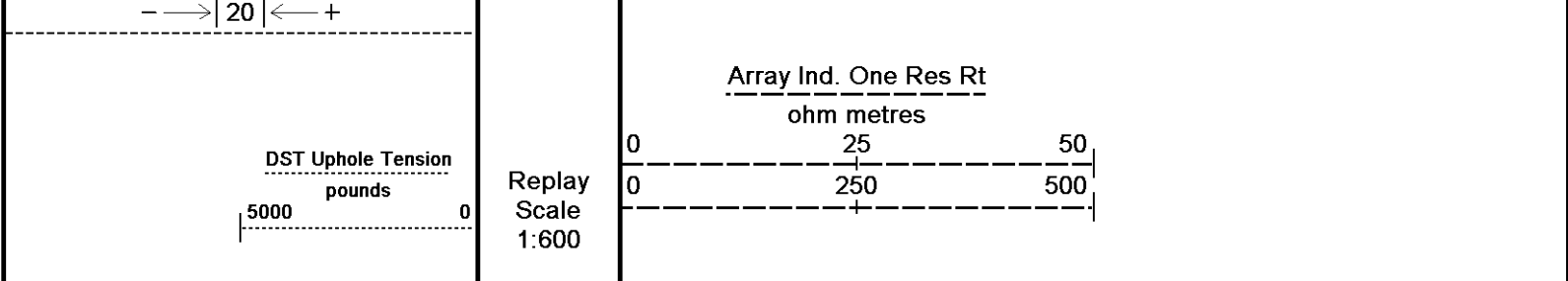
5200

110°

5300





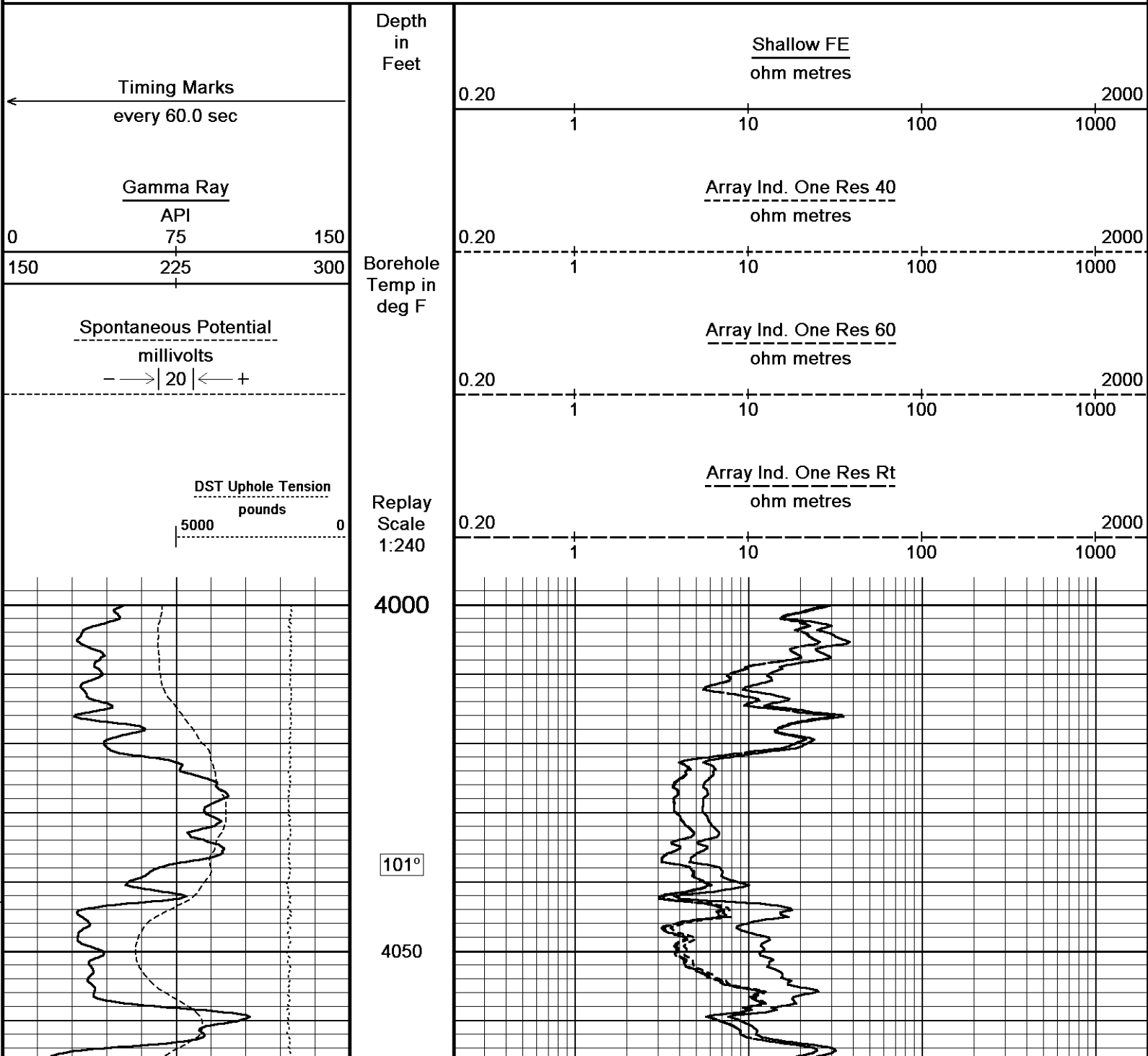


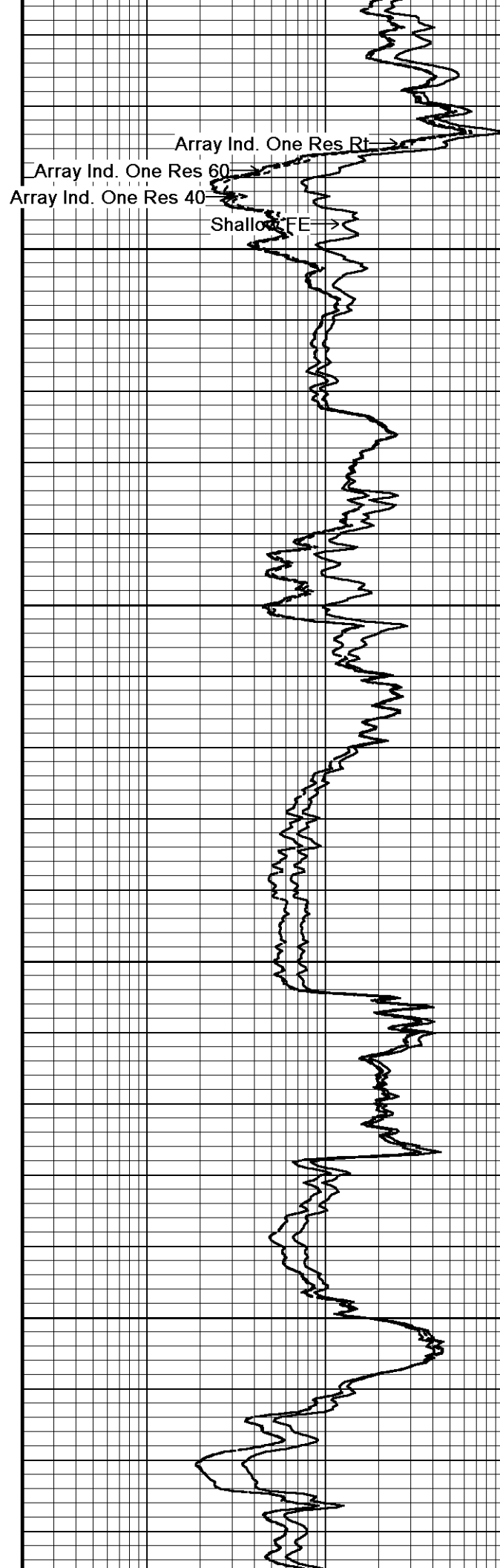
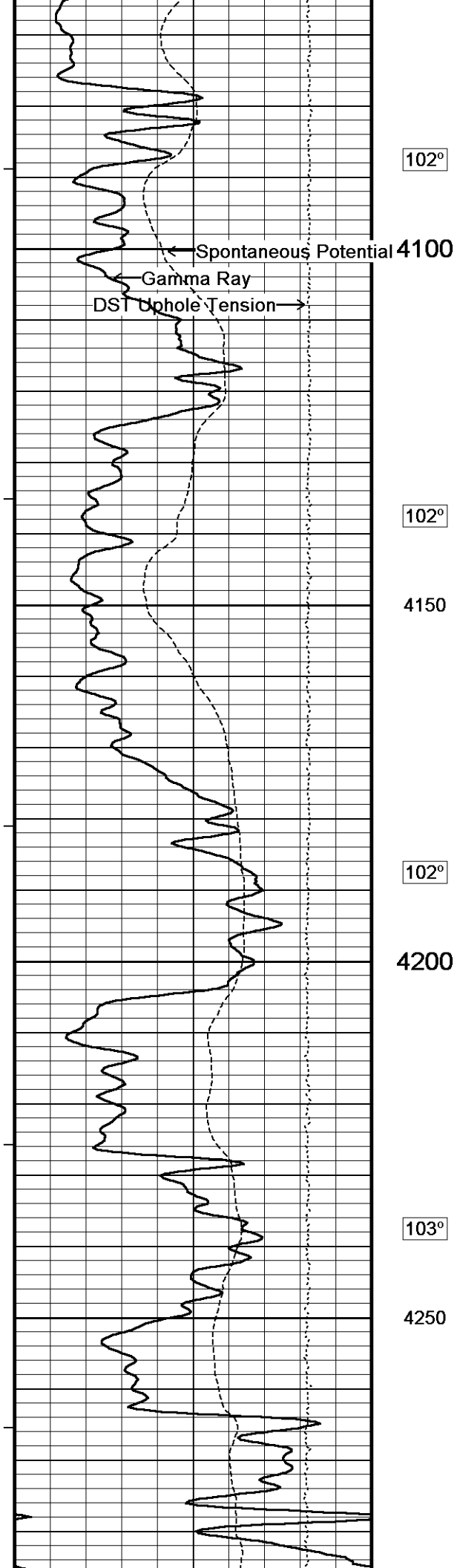
Depth Based Data - Maximum Sampling Increment 10.0cm	Plotted on 12-APR-2013 16:44
Filename: C:\Minimus 13.04.8492\Data\O'Brien Ardrey #2-2\O'Brien Ardrey #2-2_003.dta	Recorded on 12-APR-2013 14:09
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492	

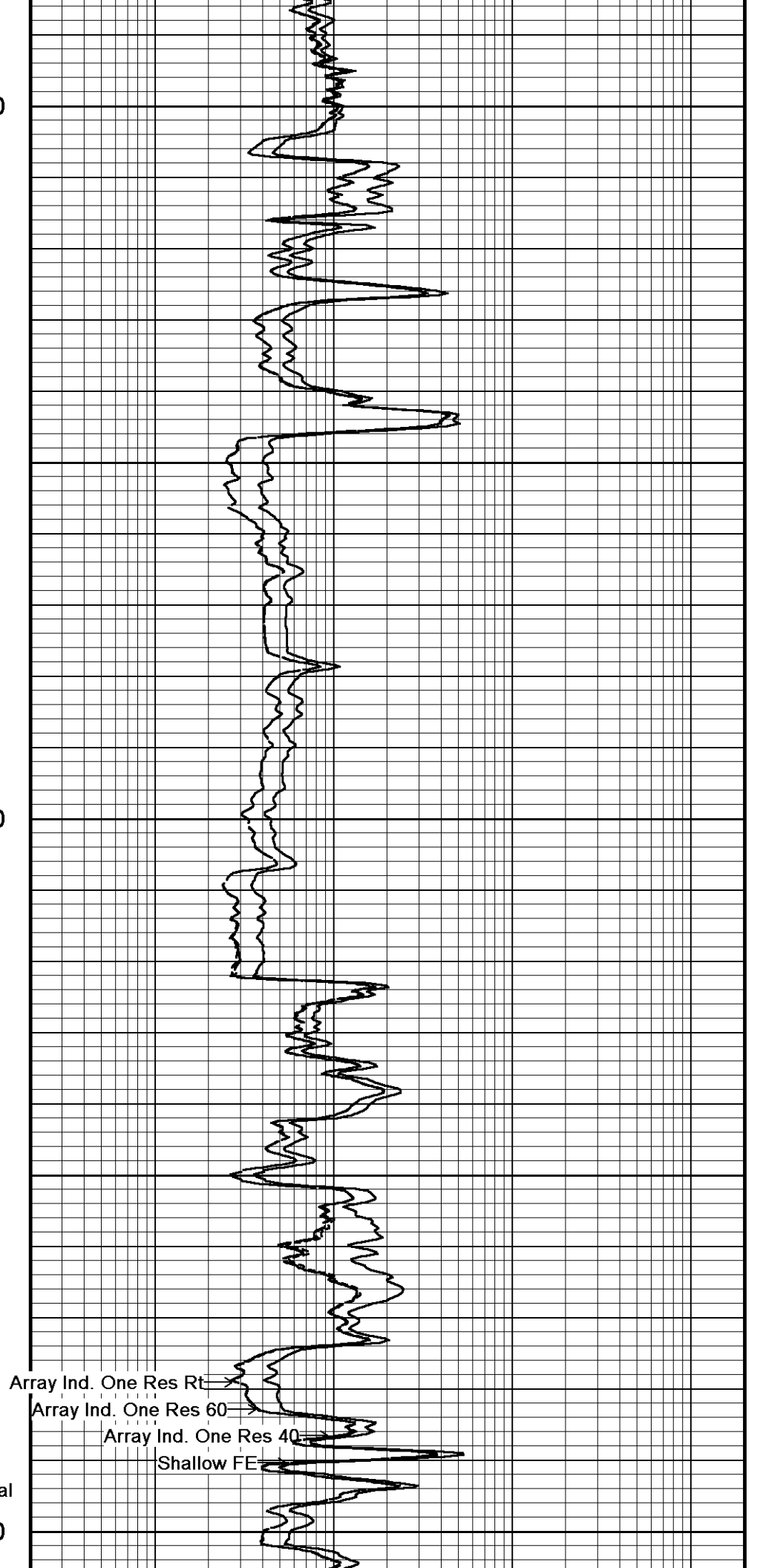
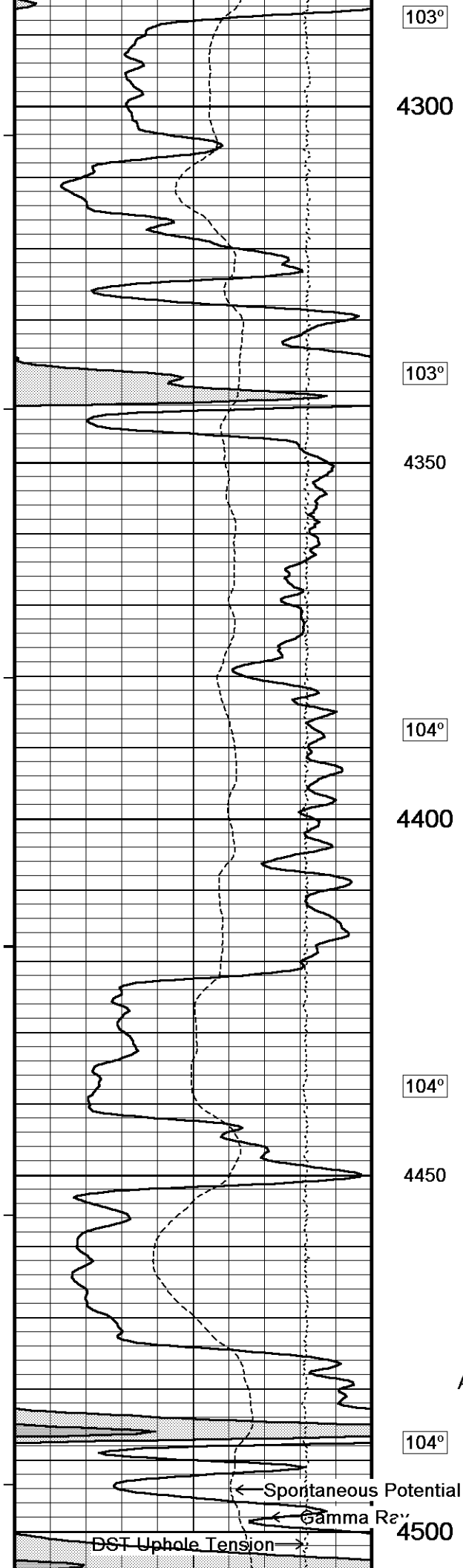
↑	2 INCH MAIN	↑
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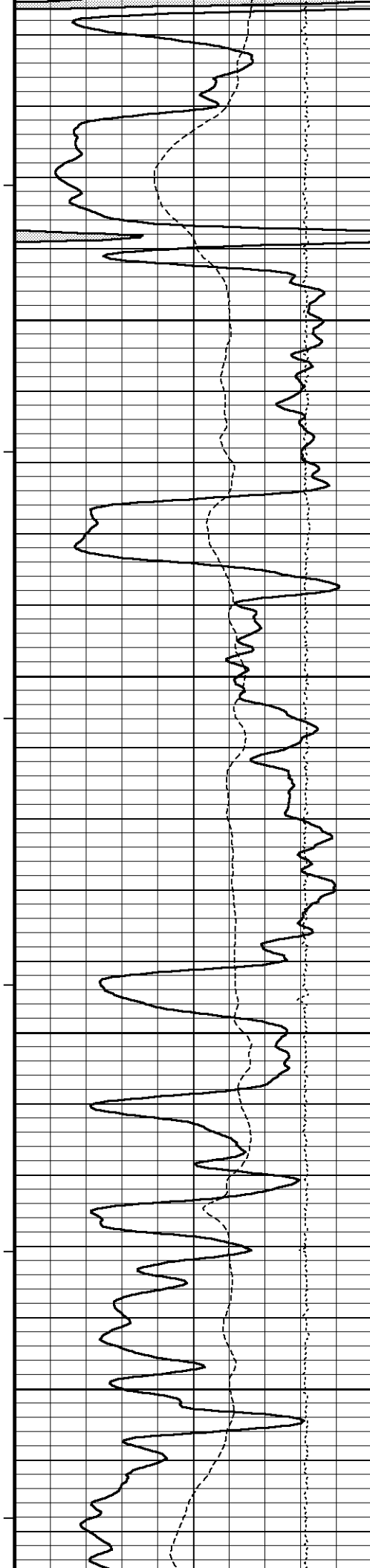
↓	5 INCH MAIN	↓
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Depth Based Data - Maximum Sampling Increment 10.0cm	Plotted on 12-APR-2013 16:44
Filename: C:\Minimus 13.04.8492\Data\O'Brien Ardrey #2-2\O'Brien Ardrey #2-2_003.dta	Recorded on 12-APR-2013 14:09
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492	









105°

4550

105°

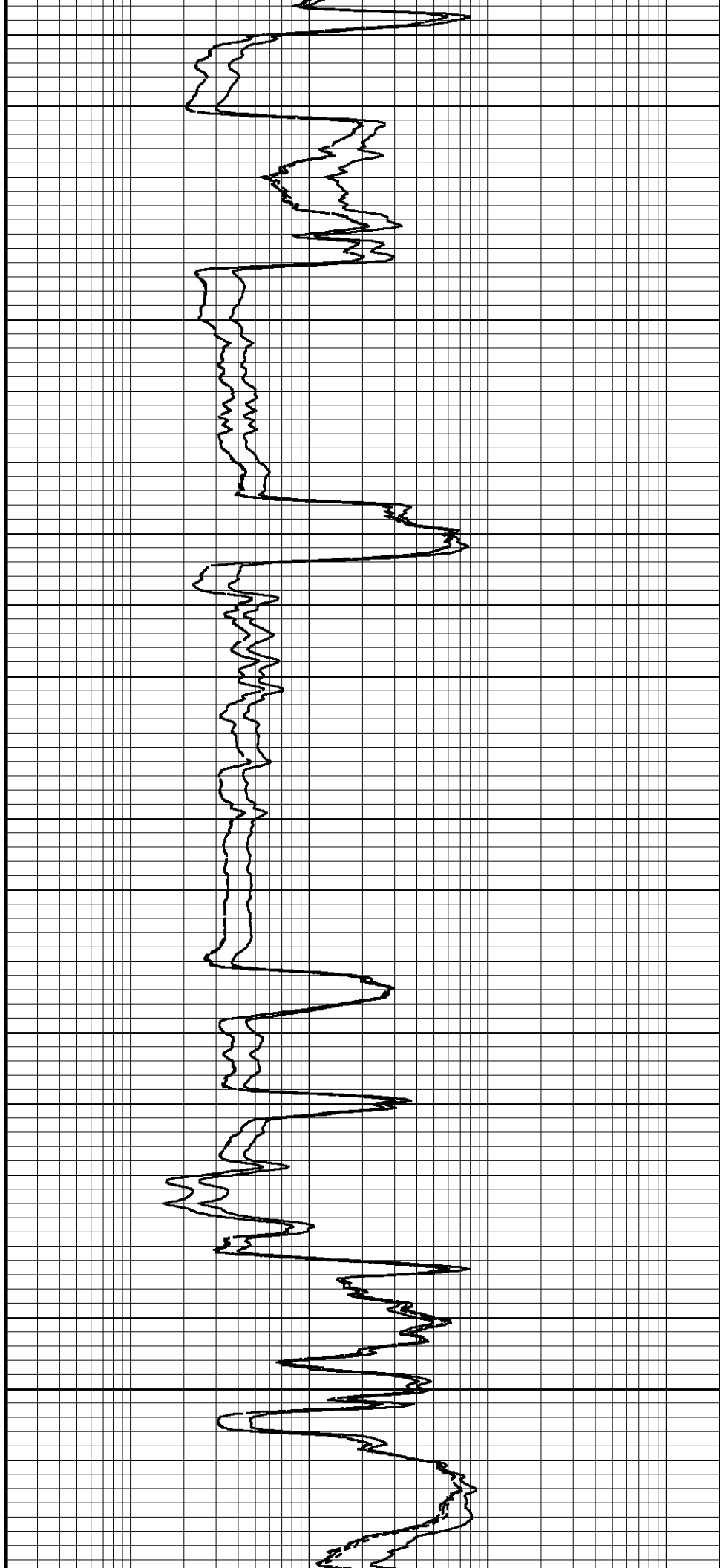
4600

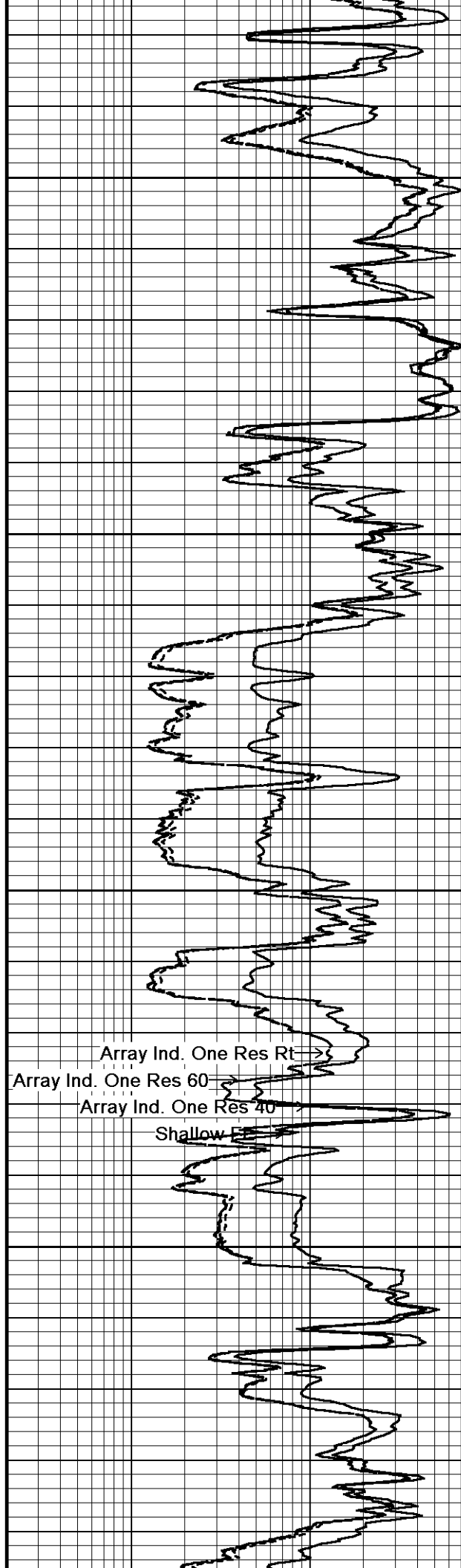
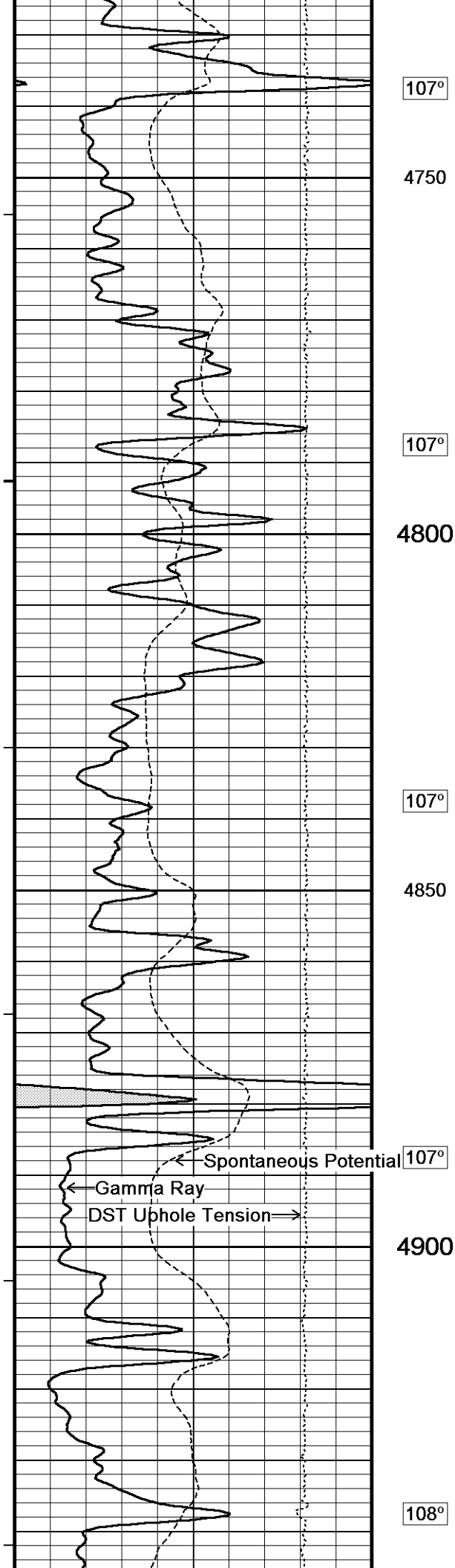
106°

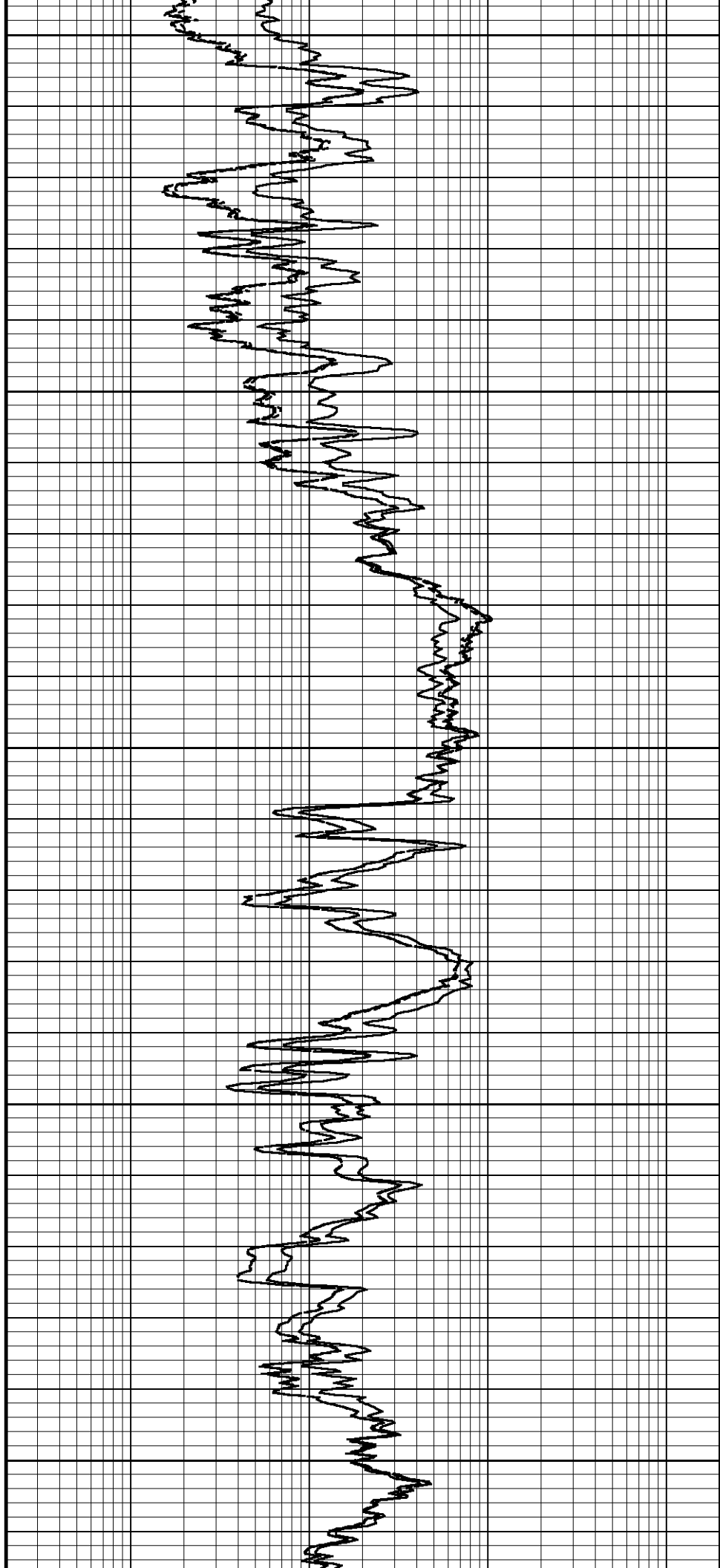
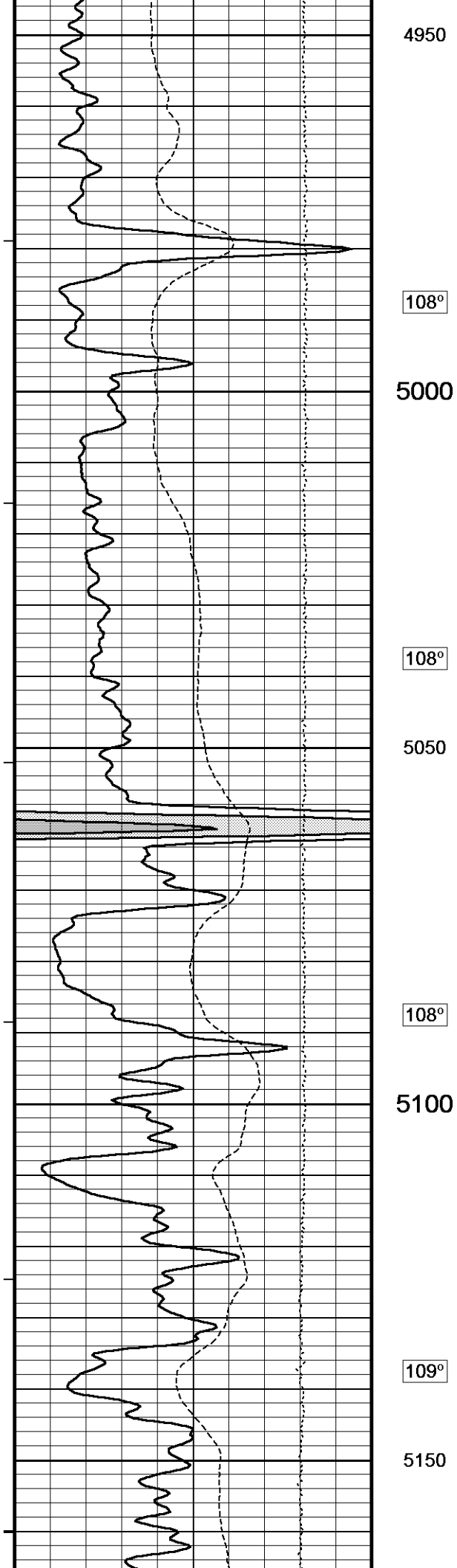
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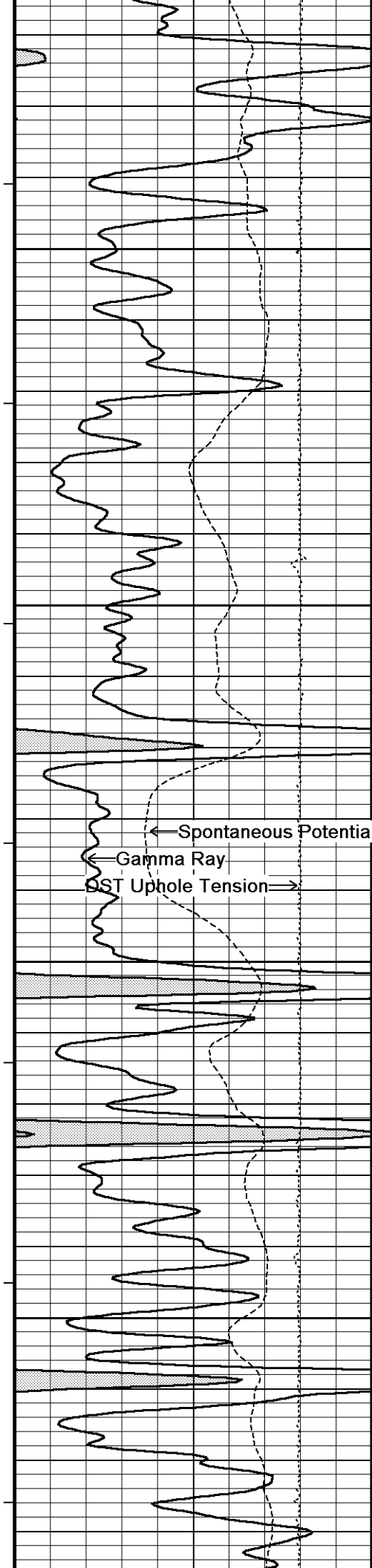
106°

4700









110°

5200

110°

5250

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

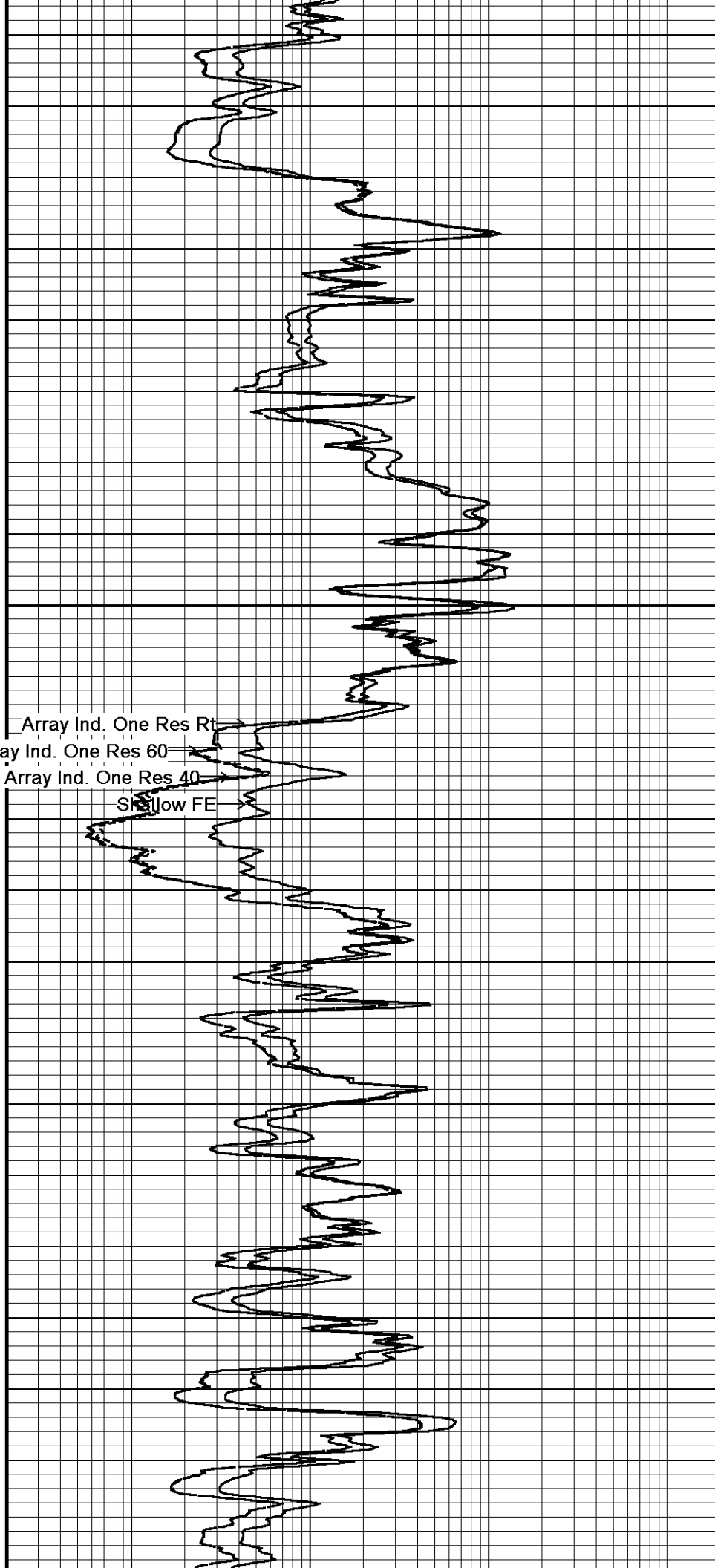
Shallow FE

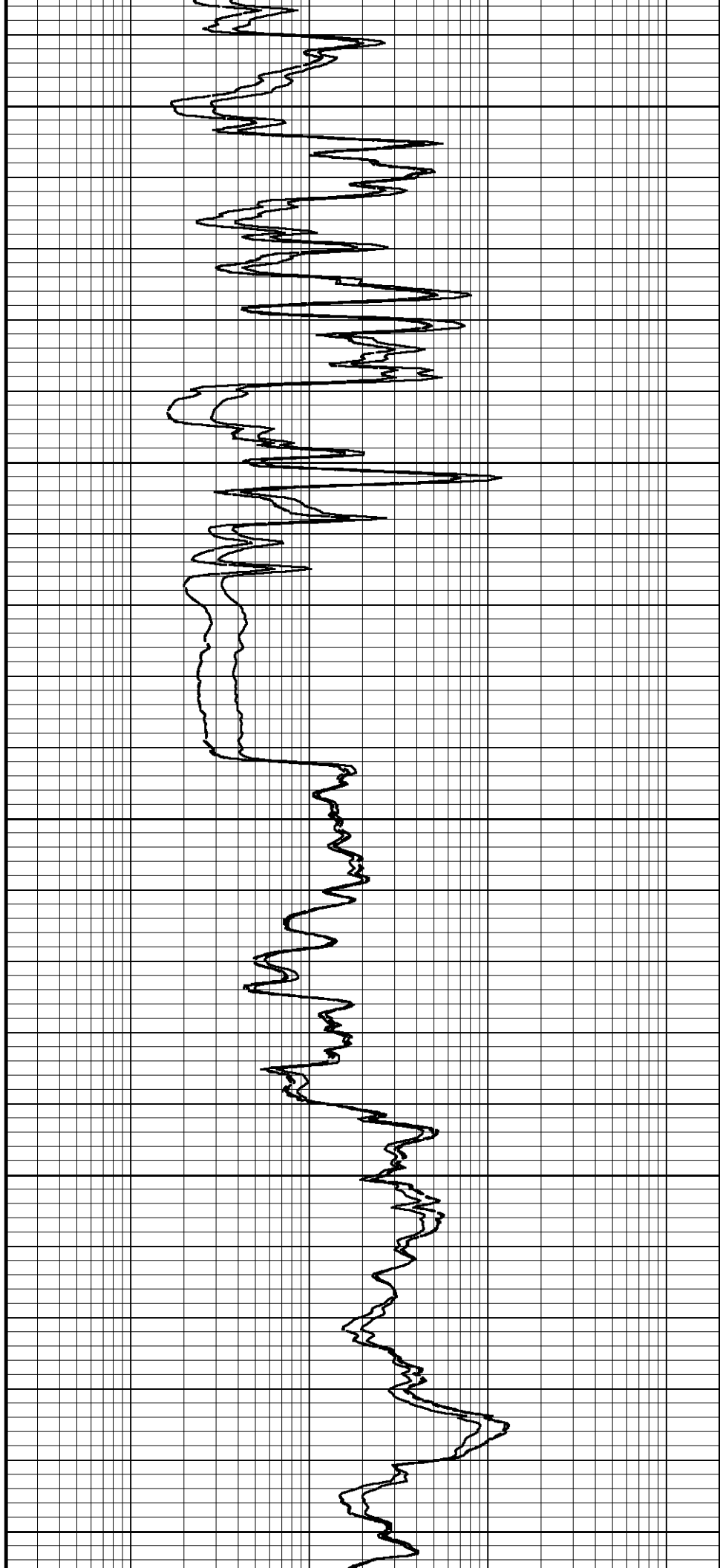
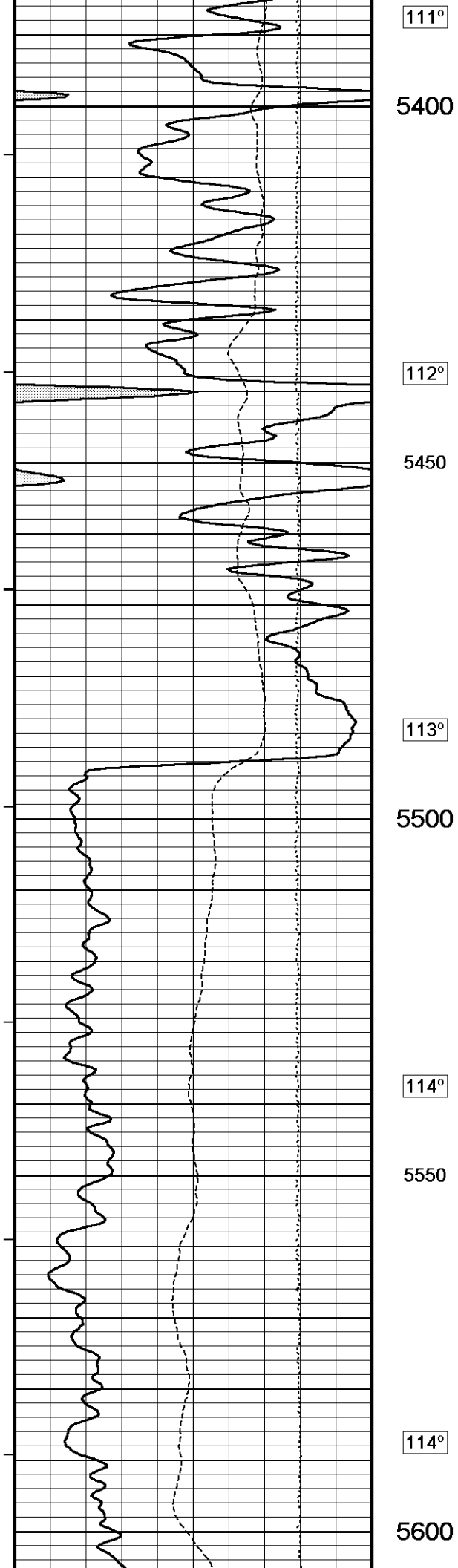
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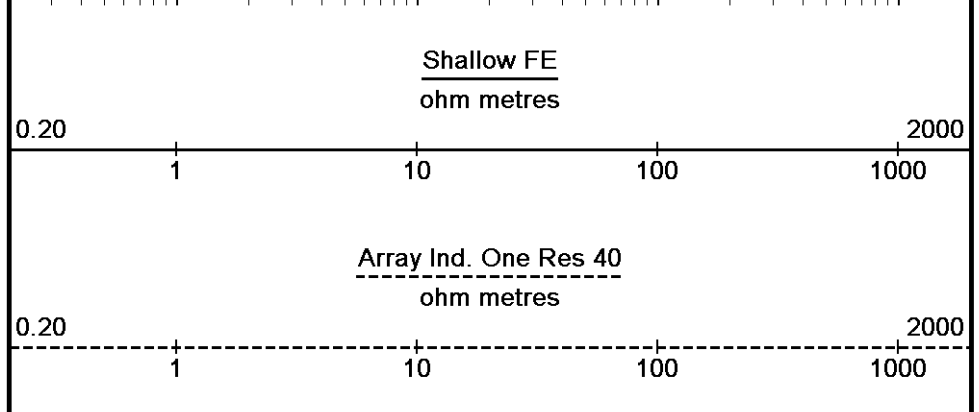
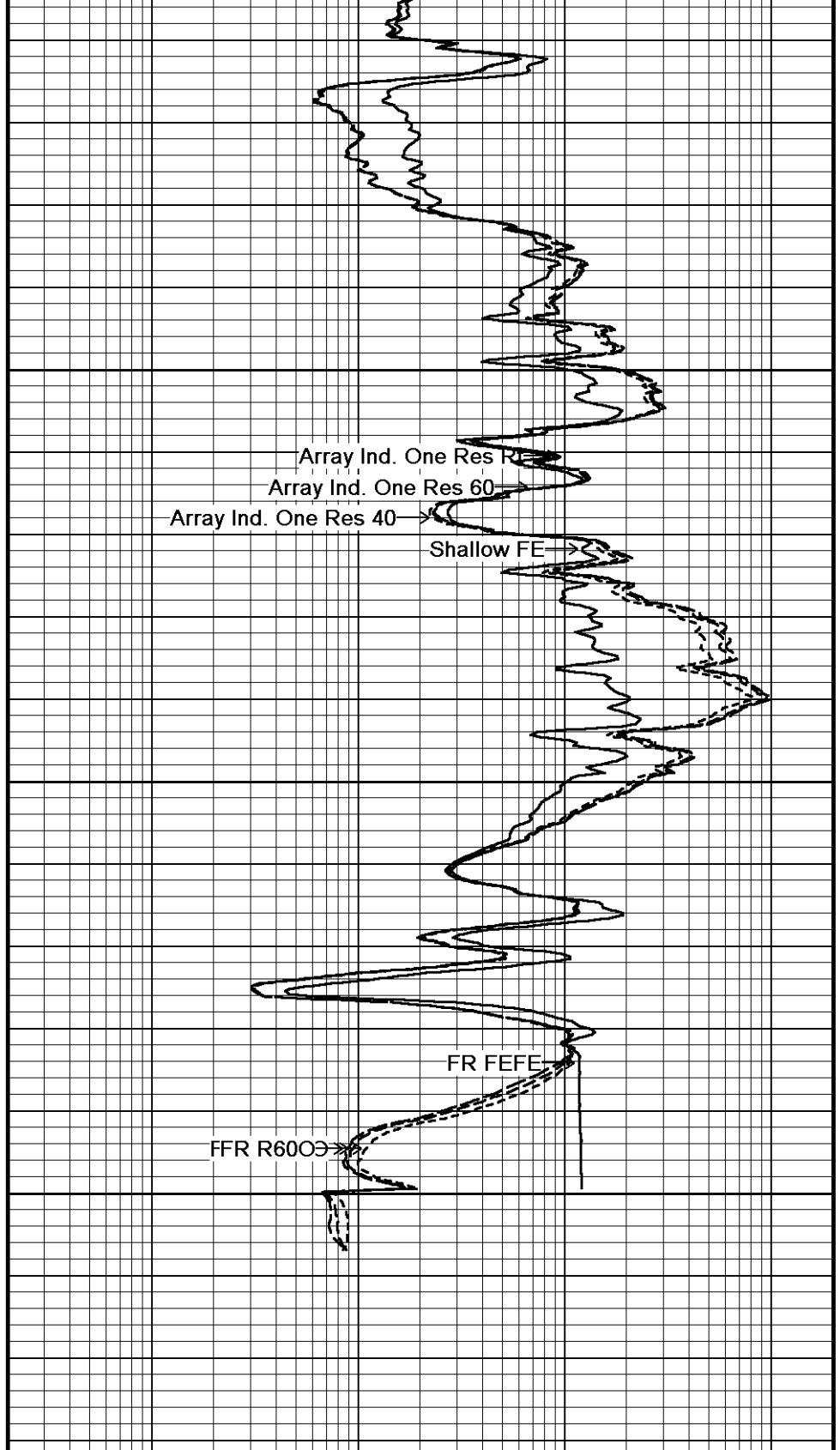
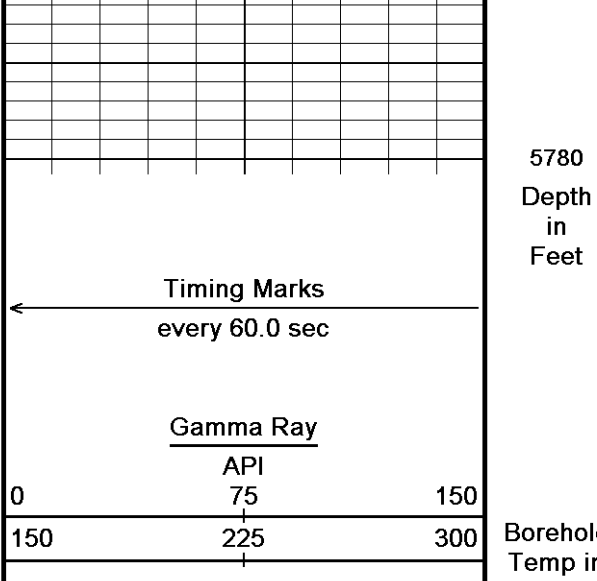
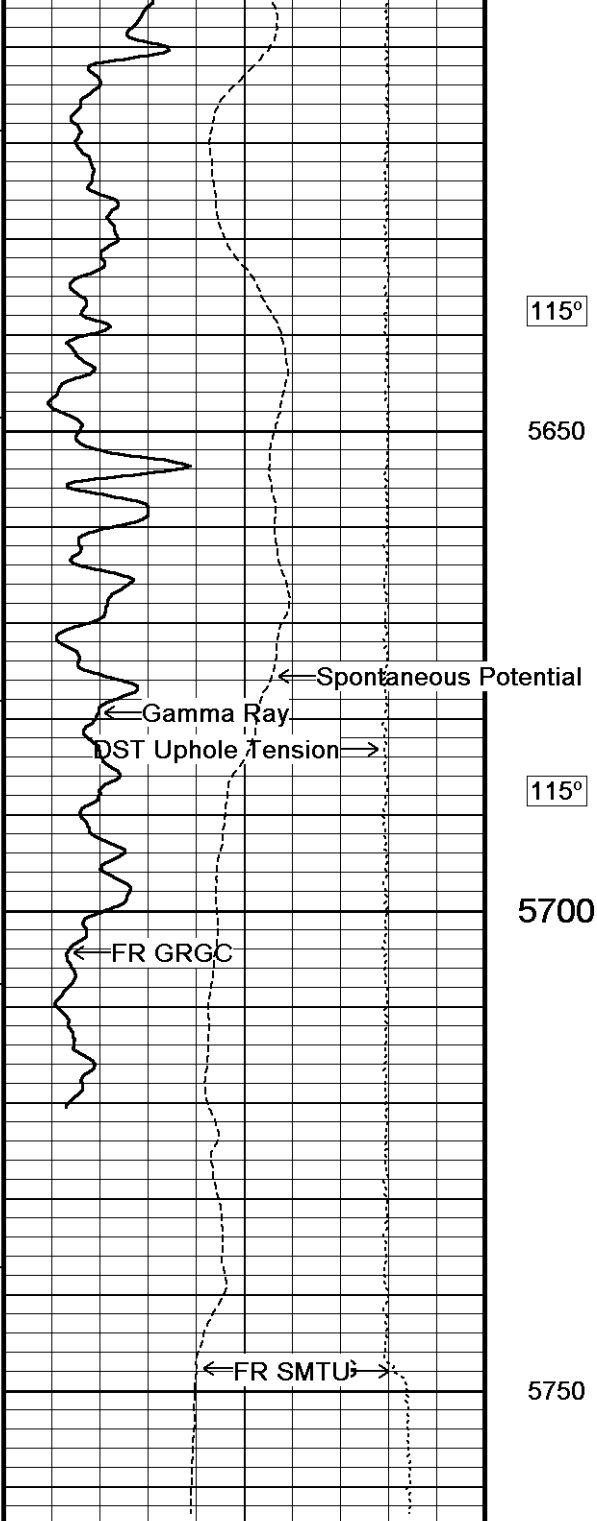
5300

110°

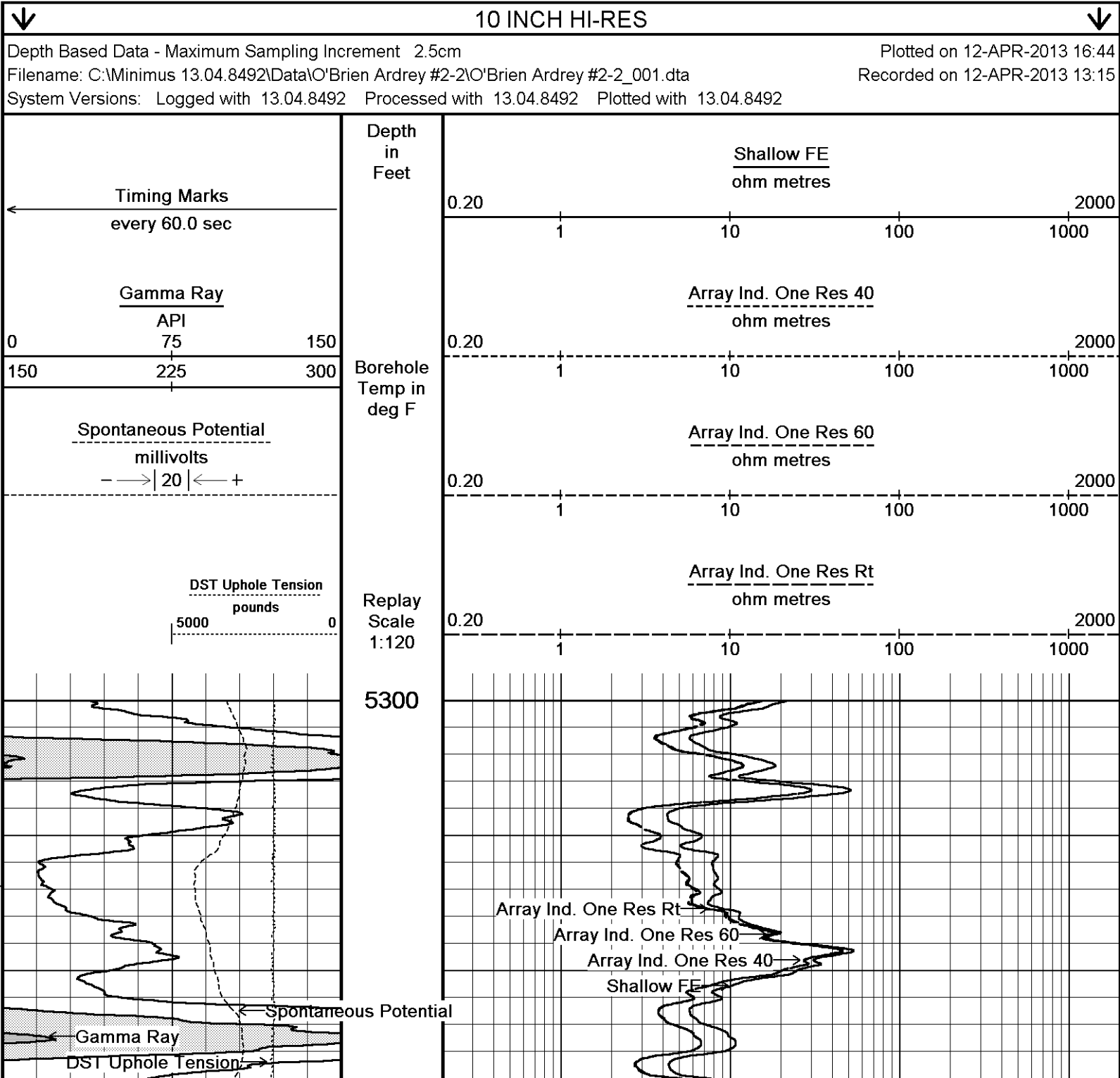
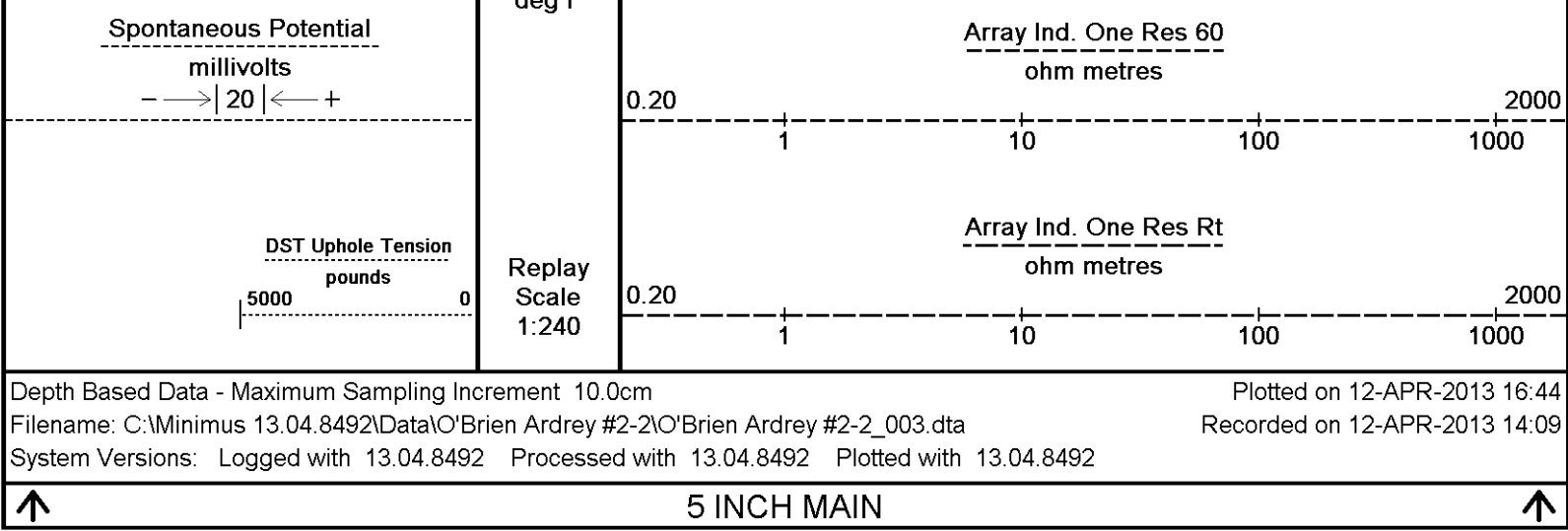
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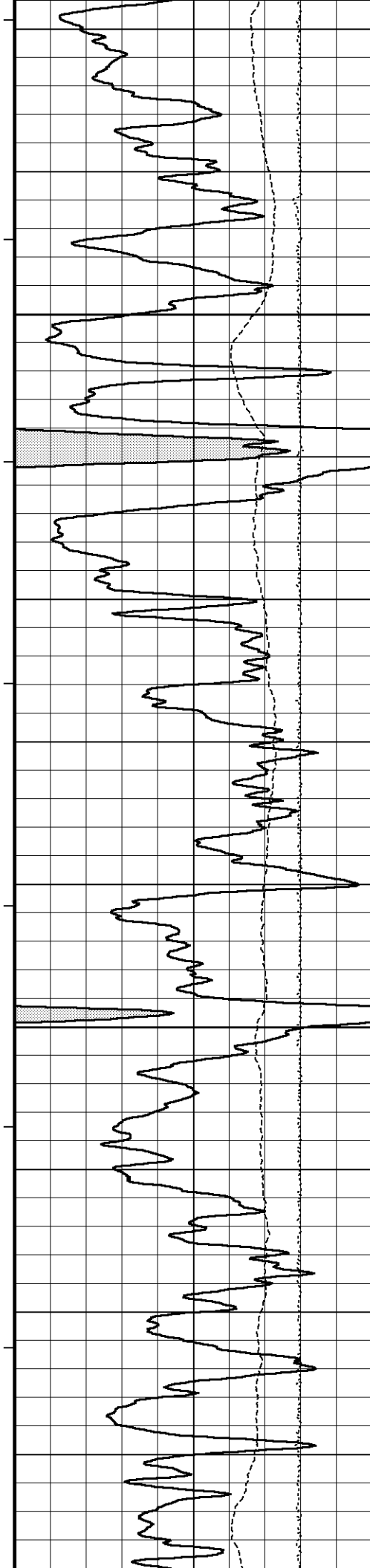






Borehole
Temp in
deg F





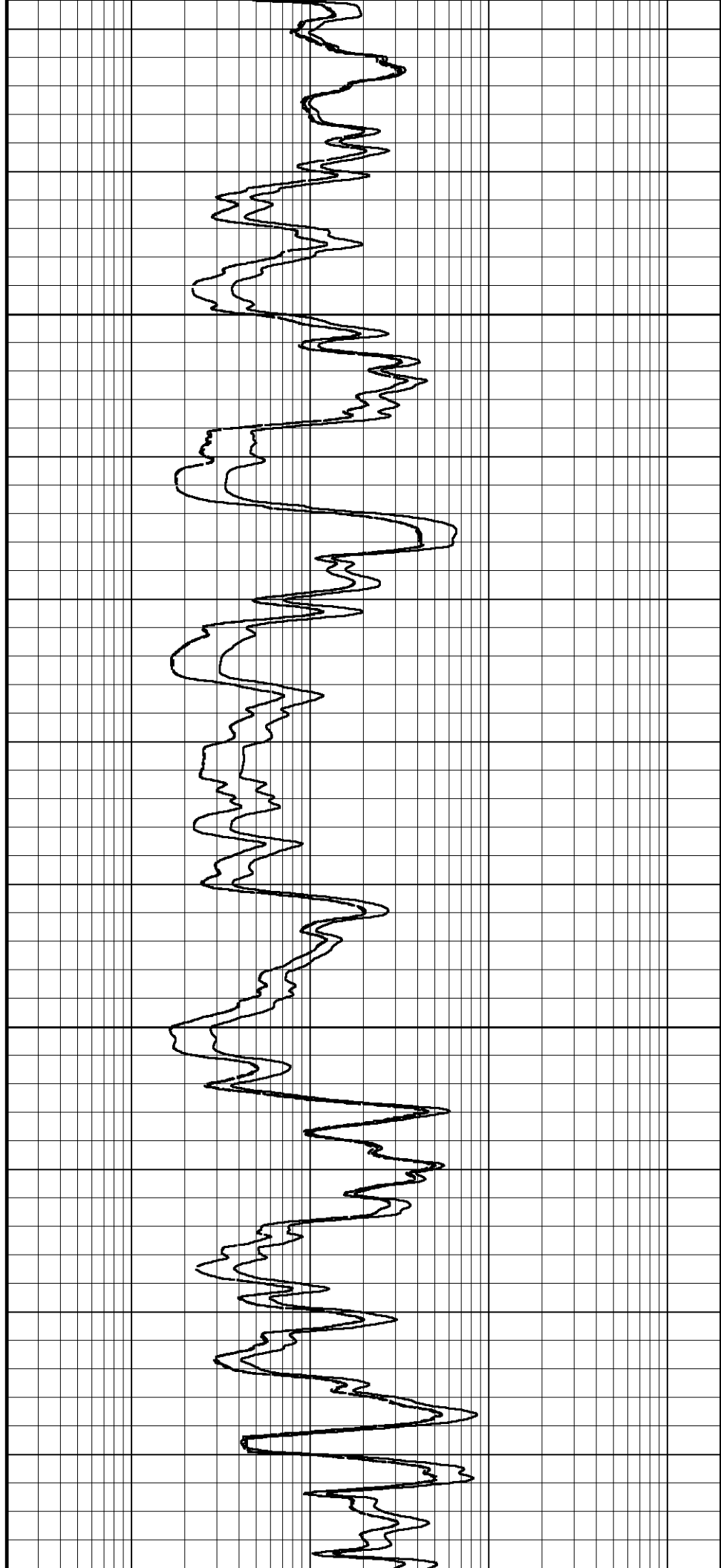
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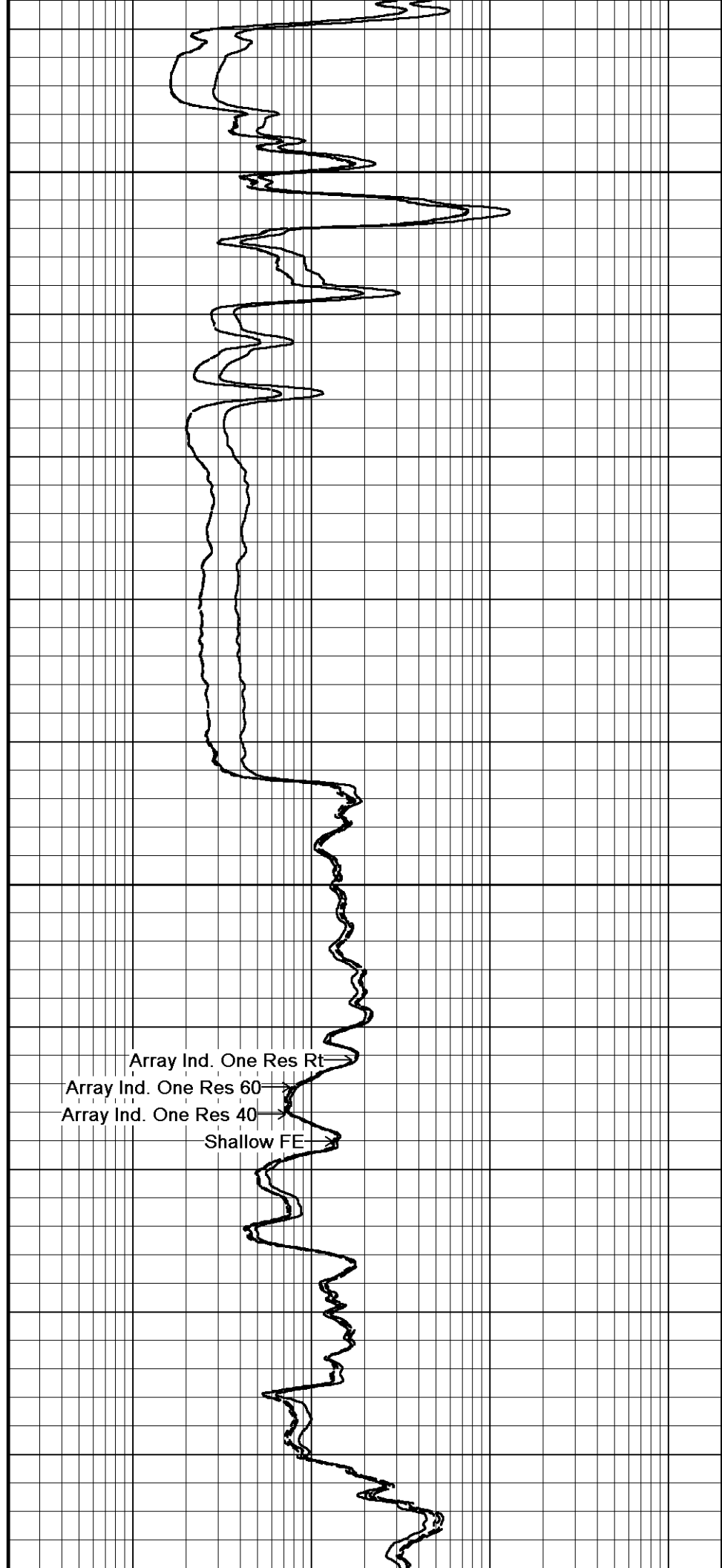
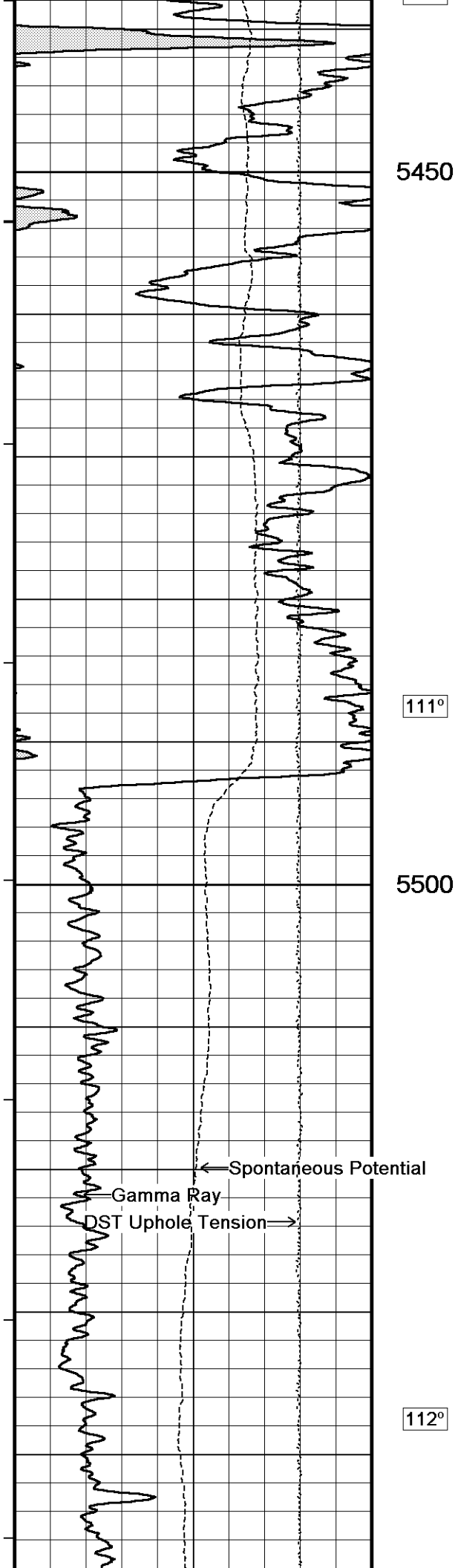
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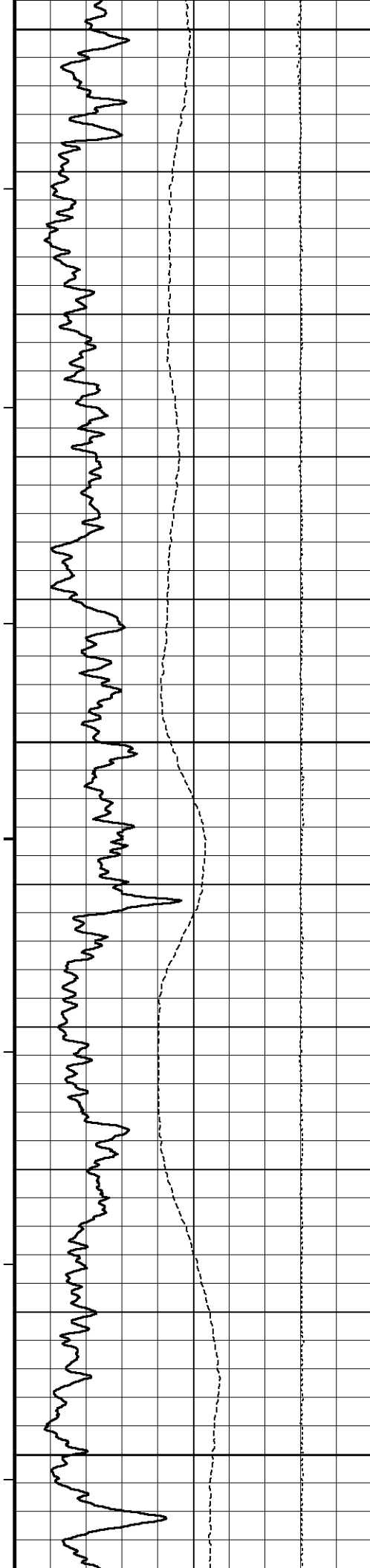
109°

5400

110°







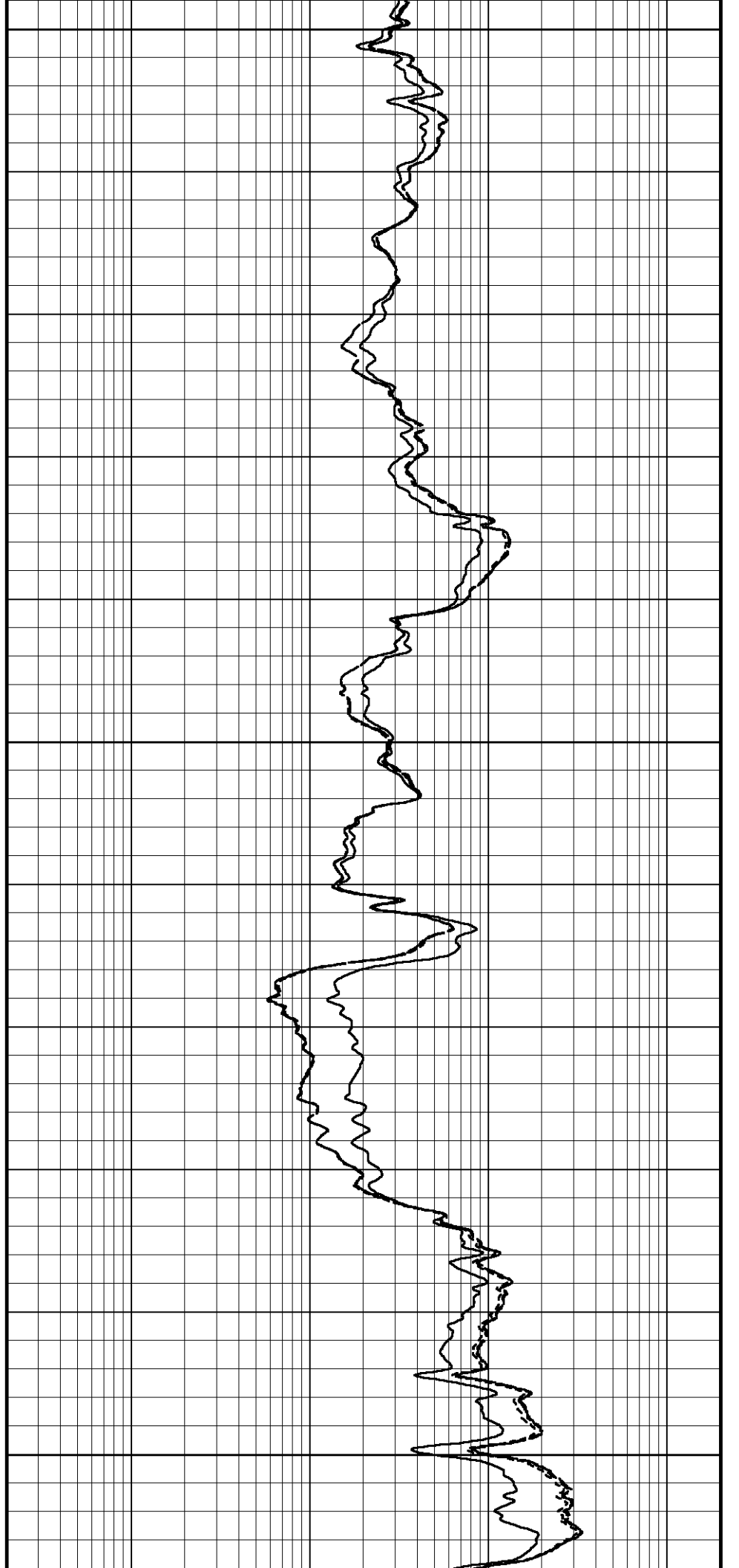
5550

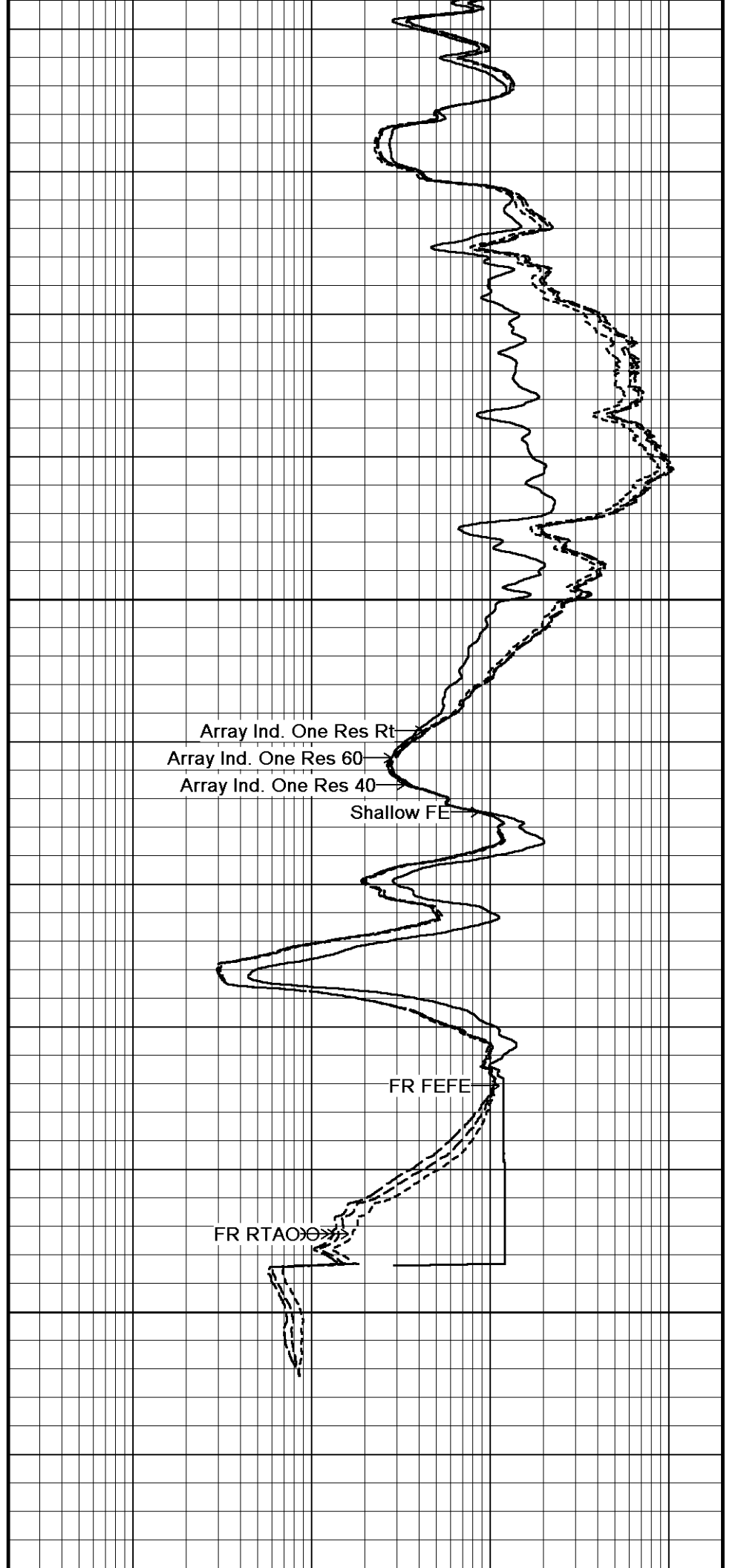
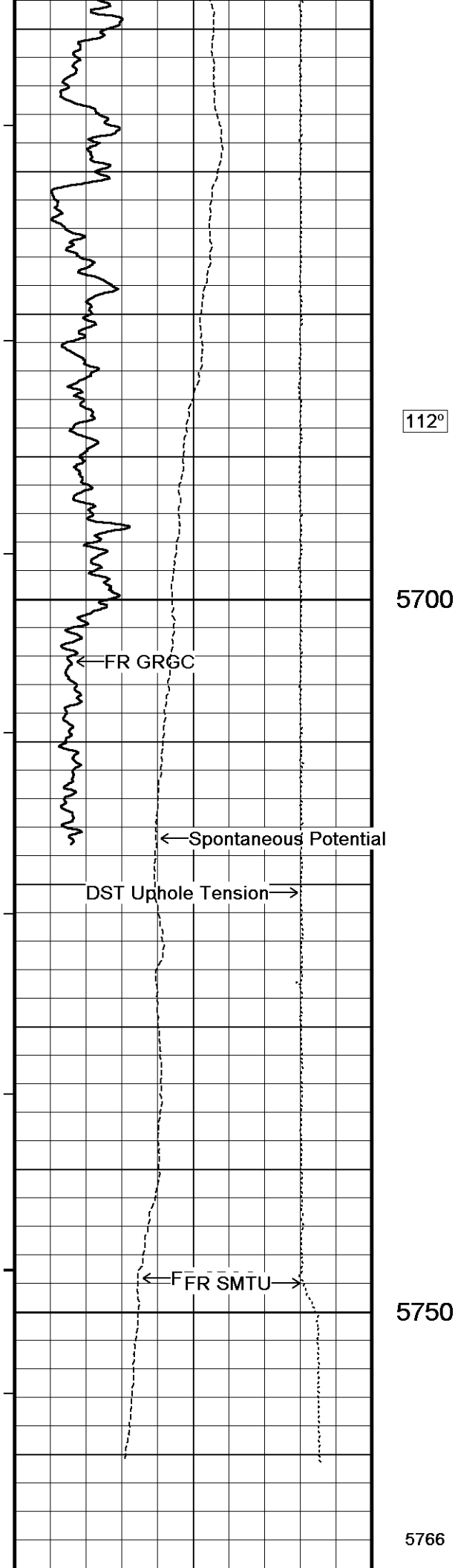
112°

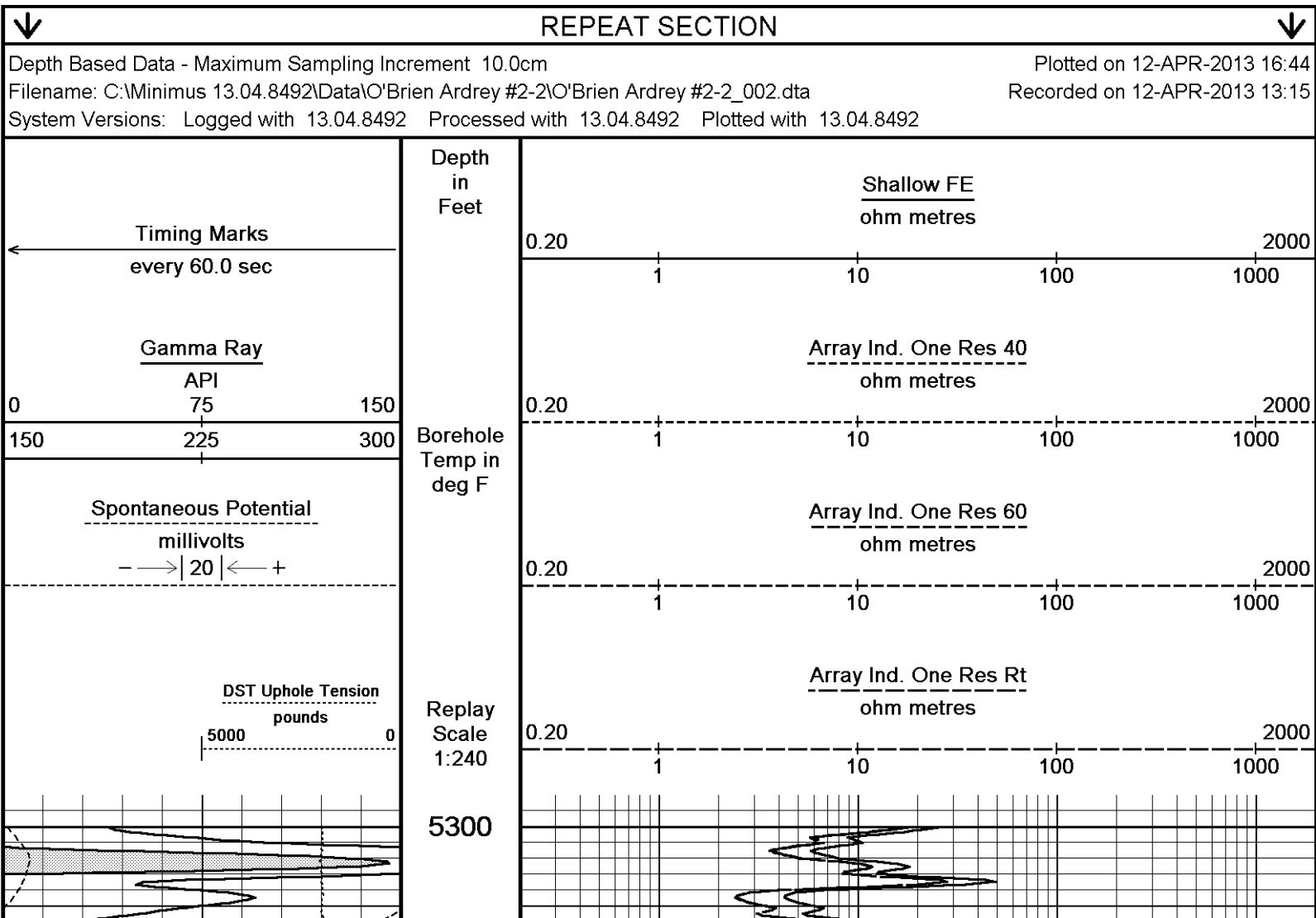
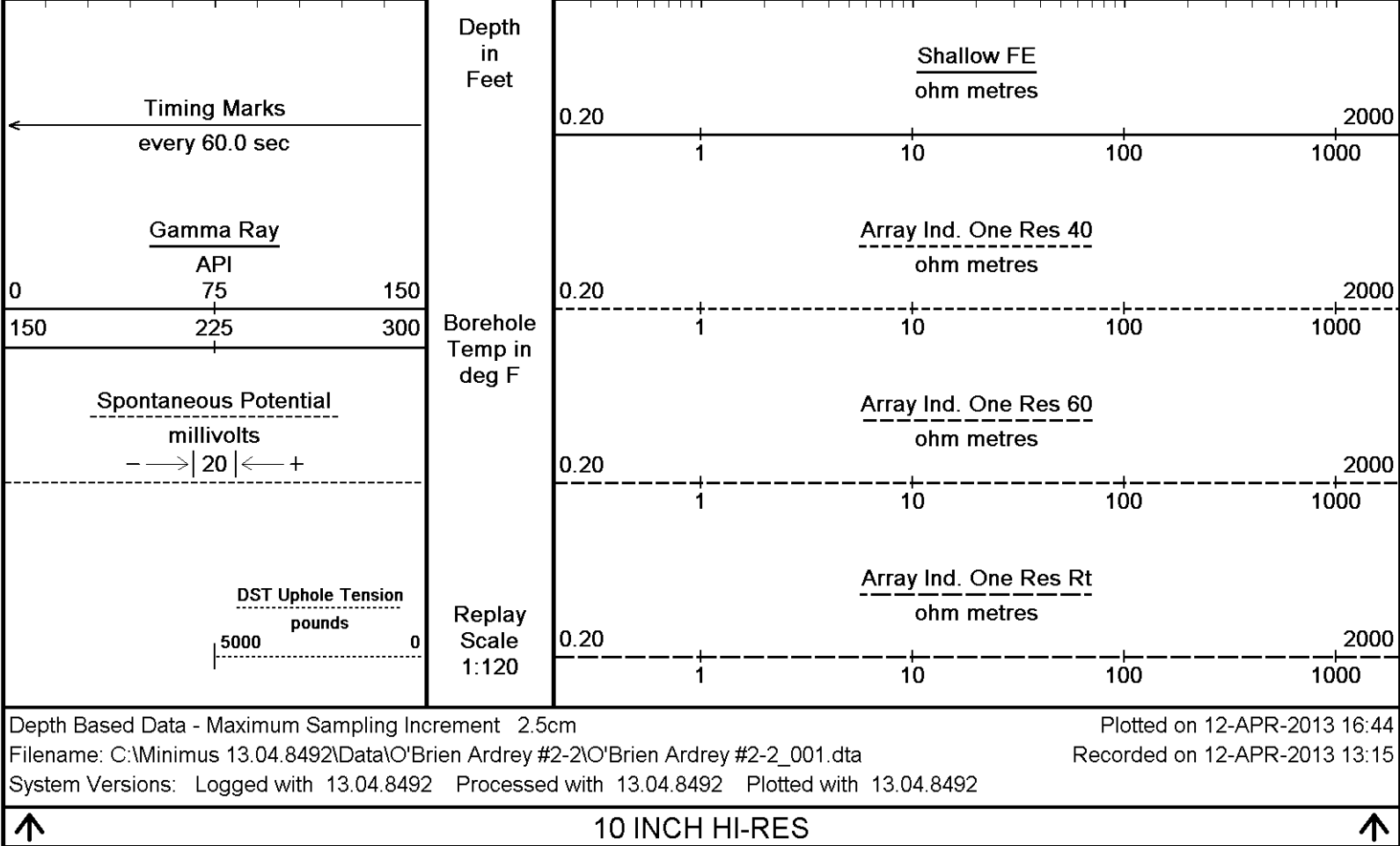
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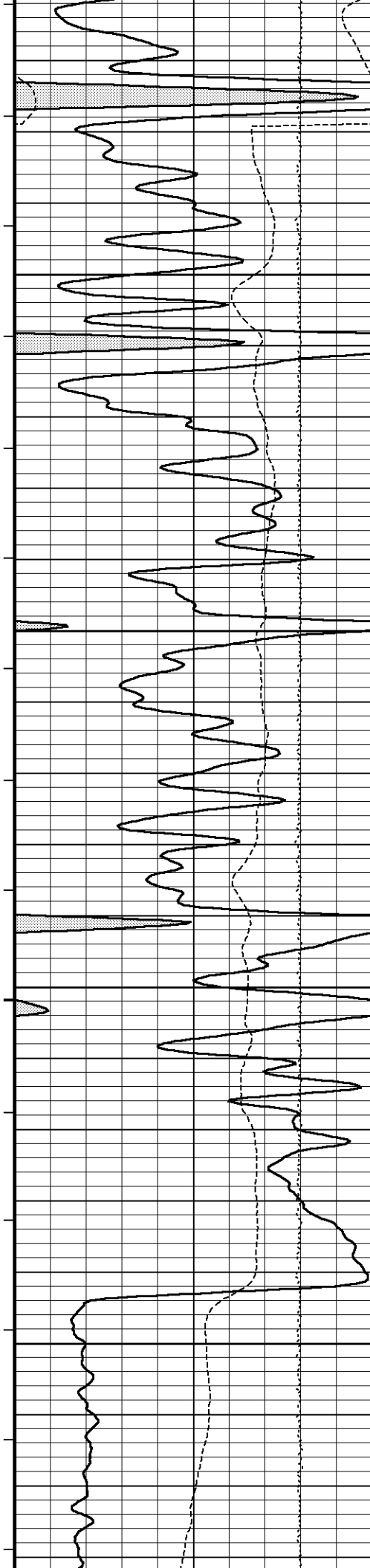
112°

5650









109°

5350

109°

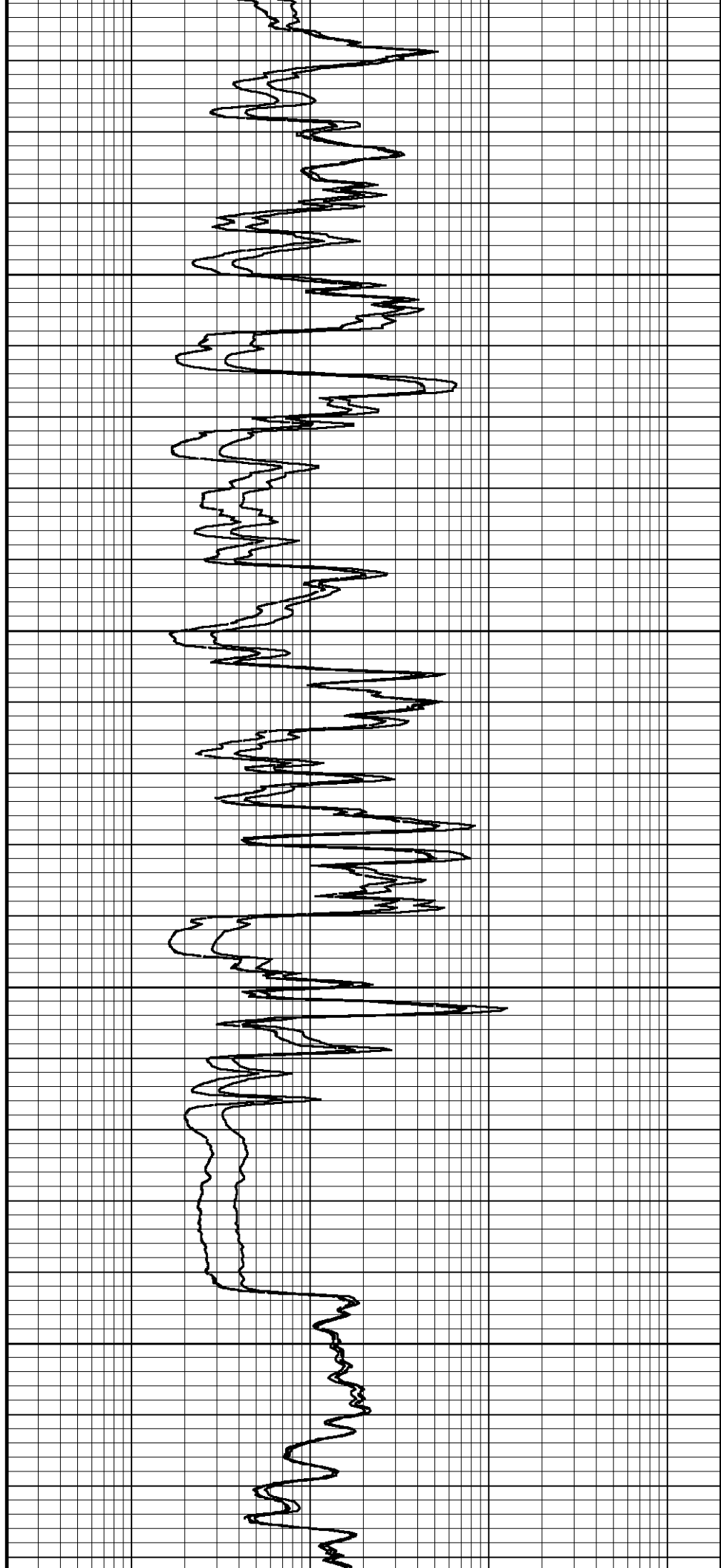
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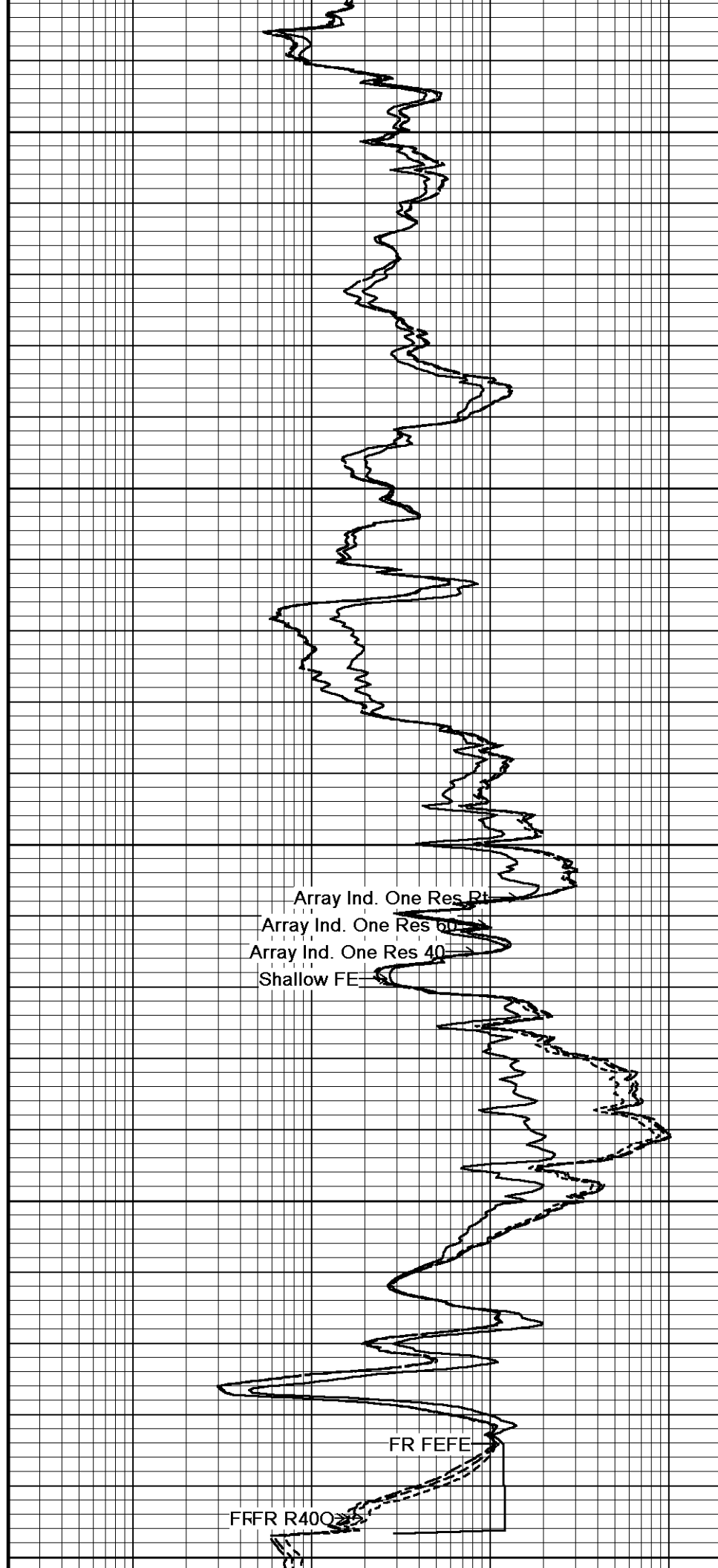
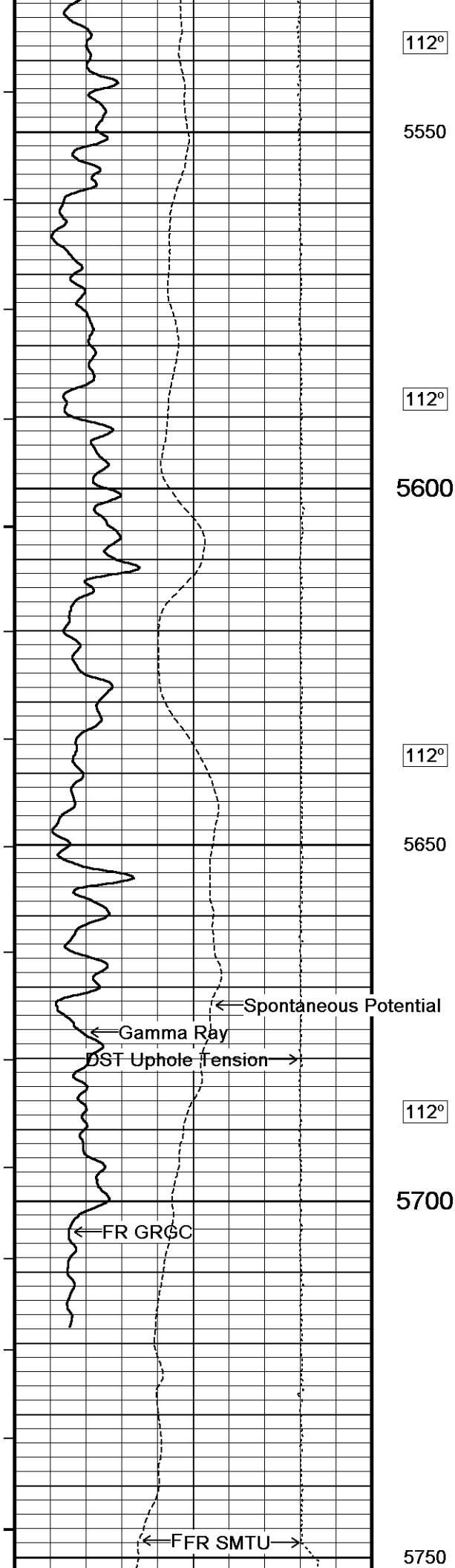
110°

5450

111°

5500





Gamma Calibration MCG-B 34			Field Calibration on 10-APR-2013 10:25	
	Measured	Calibrated (API)		
Background	60	40		
Calibrator (Gross)	1154	765		
Calibrator (Net)	1095	725		
Gamma Constants MCG-B 34			Last Edited on 12-APR-2013,11:37	
Gamma Calibrator Number	GR38			
Mud Density	1.12	gm/cc		
Caliper Source for Processing	Density Caliper			
Tool Position	Eccentred			
Concentration of KCl	0.00	kppm		
SP Calibration MCG-B 34			Field Calibration on 29-MAR-2013,12:58	
	Measured	Calibrated (mV)		
Reference 1	101.0	100.0		
Reference 2	-99.0	-100.0		
High Resolution Temperature Calibration MCG-B 34			Field Calibration on 29-MAR-2013,12:58	
	Measured	Calibrated(Deg F)		
Lower	50.00	50.00		
Upper	75.00	75.00		
High Resolution Temperature Constants MCG-B 34			Last Edited on 29-MAR-2013,12:58	
Pre-filter Length	11			
Micro Laterolog Calibration MMR-A 11			Base Calibration on 31-DEC-1999 00:00 Field Check on 31-DEC-1999 00:00	
Base Calibration				
	Measured		Calibrated (ohm-m)	
	Ref 1	Ref 2	Ref 1	Ref 2
	0.0	0.0	0.0	0.0
	Base Check (ohm-m)		Field Check (ohm-m)	
	0.0		0.0	
Micro Laterolog Constants MMR-A 11			Last Edited on	
Pad Type	6 in Solid Nylon B23059			
Micro Laterolog K Factor	0.0128			
Standoff Offset	0.0000	inches		
Mudcake Thickness Correction Constants				
Mud Cake Source	Constant Value			
Mud Cake Thickness	0.4000	inches		
Mud Cake Thickness Caliper				
Mud Cake Resistivity	0.1500	ohm-m		
Mud Cake Resistivity Temp.	20.00	Degrees C		
Mud Cake Resistivity Source	Constant Value			
Temp. Source Rmc Correc.	MCG External Temperature			
Micro Normal and Micro Inverse Calibration MMR-A 11			Base Calibration on 08-MAR-2013 17:36 Field Check on 10-APR-2013 10:27	
Base Calibration				
	Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.4	60.0	5.0	25.0
Micro Inverse	15.5	77.5	5.0	25.0
Channel	Base Check (ohm-m)		Field Check (ohm-m)	
Micro Normal	76.3		76.3	
Micro Inverse	58.7		58.7	
Micro Normal and Micro Inverse Constants MMR-A 11			Last Edited on 05-NOV-2012,13:54	
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

0.0000

inches

Caliper Calibration MMR-A 11

Base Calibration on 08-APR-2013 09:09

Field Calibration on 10-APR-2013 10:30

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13932	5.98
2	17063	7.97
3	20236	9.86
4	24170	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.93	5.98

Neutron Calibration MDN-A.B 65

Base Calibration on 13-MAR-2013 16:17

Field Check on 10-APR-2013 10:41

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2980	92	3714	110
Ratio	32.499		33.764	

Field Calibrator at Base

Calibrated (cps)
1736 2464
Ratio 0.705

Field Check

Calibrated (cps)
1736 2470
Ratio 0.680

Neutron Constants MDN-A.B 65

Last Edited on 12-APR-2013,11:36

Neutron Source Id	PN-521	
Neutron Jig Number	5824NE	
Epithermal Neutron	No	
Caliper Source for Processing	Bit Size	
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	None	
Temperature	N/A	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-B.J 352

Base Calibration on 16-JAN-2013 10:20

Field Check on 10-APR-2013 10:50

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.3	126.8

Base Check 281.2

Field Check 281.3

FE Constants MFE-B.J 352

Last Edited on 12-APR-2013,11:35

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	MGC External Temperature	

Temp. for Rm Corr.	MCG External Temperature	0.5	inches	
Stand-off				
High Resolution Temperature Calibration MAI-A.A 45			Field Calibration on 13-DEC-2012,10:54	
	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 10-APR-2013,10:31	
Pre-filter Length	11			
Induction Calibration MAI-A.A 45			Base Calibration on 26-JUL-2012,09:22 Field Check on 10-APR-2013 10:52	
Base Calibration				
Test Loop Calibration		Measured	Calibrated (mmho/m)	
Channel	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			18.4	3850.4
2			31.7	3628.8
3			28.7	3049.3
4			18.3	2079.1
Deep			16.1	1911.4
Medium			42.5	4060.4
Shallow			49.5	5481.9
Array Temperature			60.4	Deg F
Induction Constants MAI-A.A 45			Last Edited on 12-APR-2013,11:35	
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	

Caliper Calibration MPD-B 31			Base Calibration on 28-MAR-2013 13:43
			Field Calibration on 08-APR-2013 08:48
Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	16832	3.99	
2	24690	5.98	
3	33328	7.97	
4	41600	9.86	
5	50976	11.92	
6	N/A	N/A	
Field Calibration			
	Measured Caliper (in)	Actual Caliper (in)	
	6.00	5.98	

Photo Density Calibration MPD-B 31				Base Calibration on 13-MAR-2013 15:17 Field Check on 10-APR-2013 10:49	
Density Calibration					
Base Calibration			Measured	Calibrated (sdu)	
		Near	Far	Near	Far
	Reference 1	46119	23502	59556	30836
	Reference 2	19149	1933	24941	2541
Field Check at Base					
		681.1	838.4		
Field Check					
		679.5	834.9		
PE Calibration					
Base Calibration			Measured	Calibrated	
	WS	WH	Ratio	Ratio	
	Background	125	604		
	Reference 1	19219	46004	0.421	0.371
	Reference 2	5674	19062	0.301	0.272
Field Check at Base					
		125.1	603.7		
Field Check					
		124.6	603.1		

[illegible]

DOWNHOLE EQUIPMENT

C:\Minimus 13.04.8492\Data\O'Brien Ardrey #2-2\O'Brien Ardrey #2-2_003.dta

Compact Comms Gamma
MCG-B 34 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-Resistivity
MMR-A 11 LG: 8.59 ft WT: 81.6 lb OD: 4.88 in

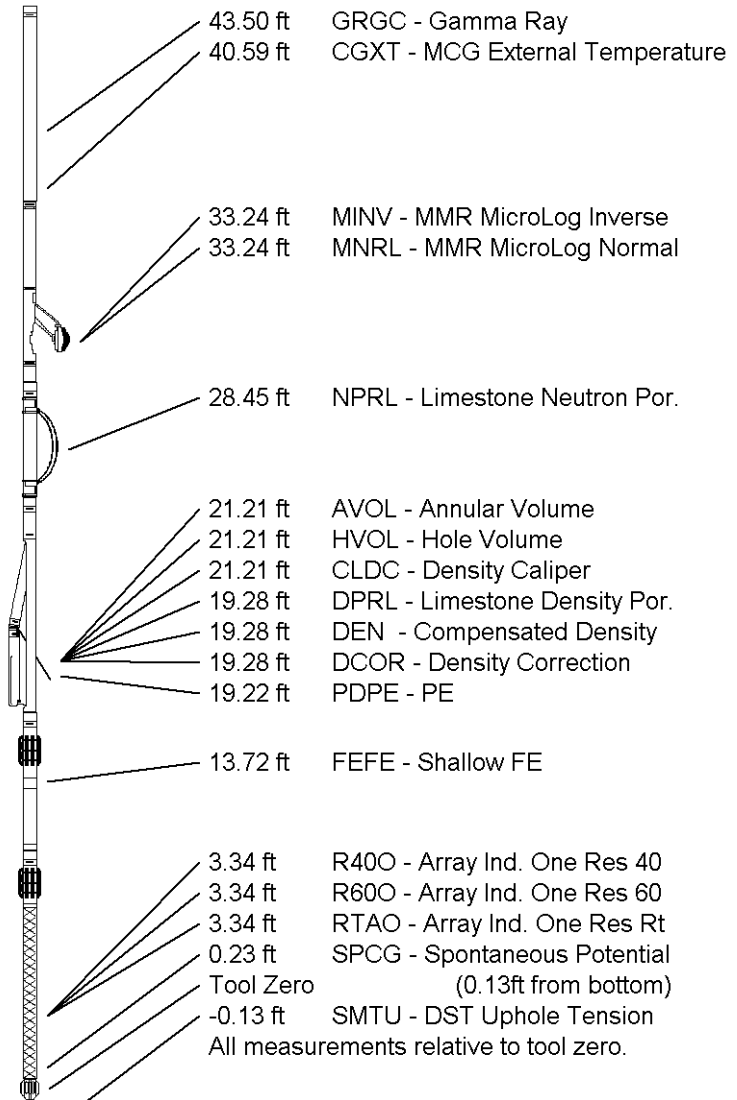
Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Induction
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 48.78 ft Weight: 383.6 lb



COMPANY O'BRIEN ENERY RESOUCES CORP.
WELL ARDREY #2-2
FIELD ARDREY
PROVINCE/COUNTY CLARK
COUNTRY/STATE U.S.A. / KANSAS

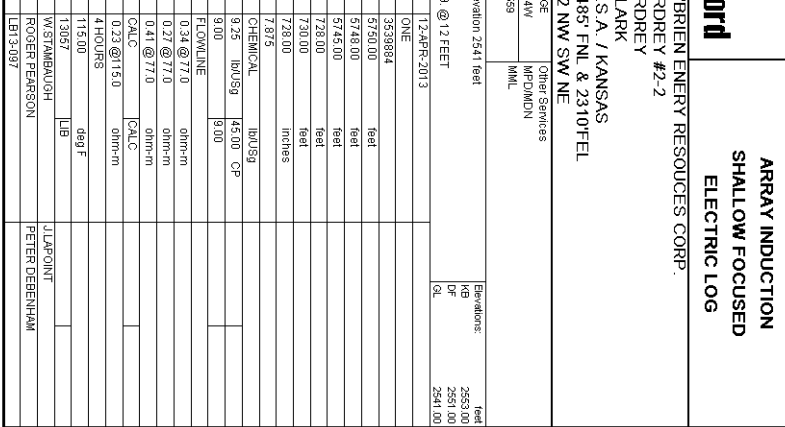
Elevation Kelly Bushing	2553.00	feet	First Reading	5745.00	feet
Elevation Drill Floor	2551.00	feet	Depth Driller	5750.00	feet
Elevation Ground Level	2541.00	feet	Depth Logger	5748.00	feet

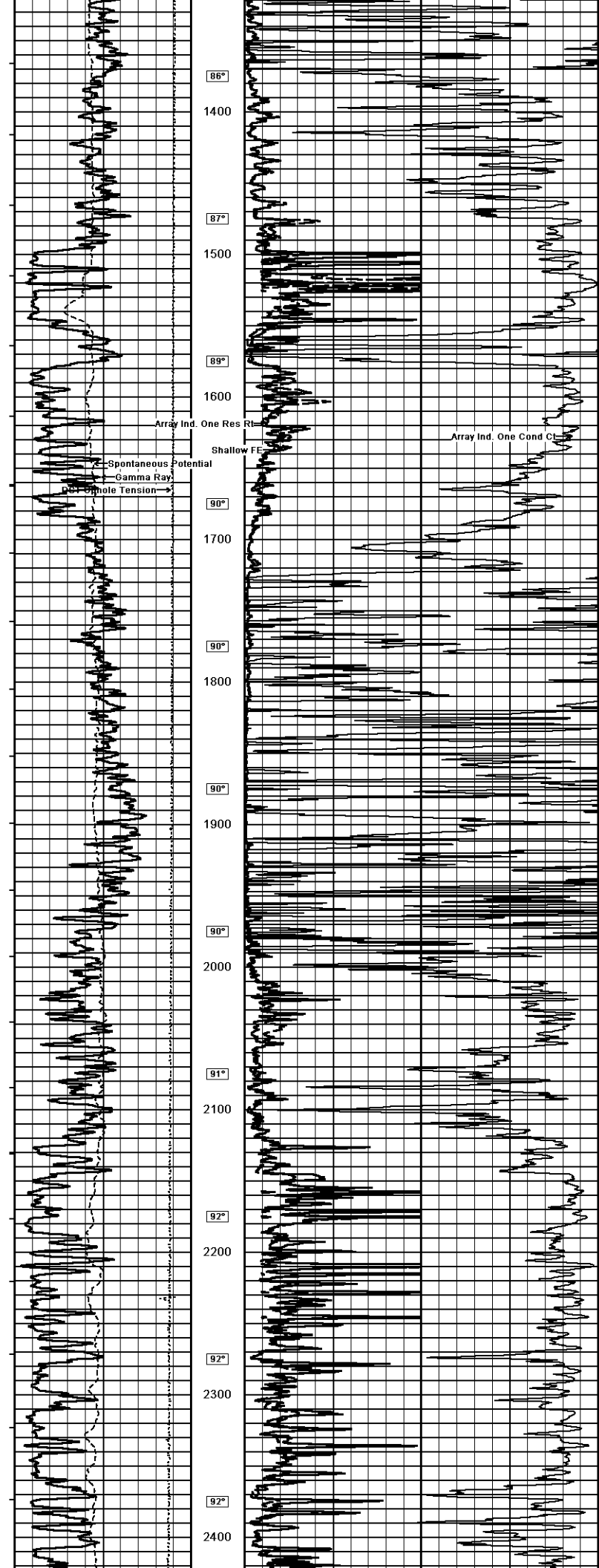


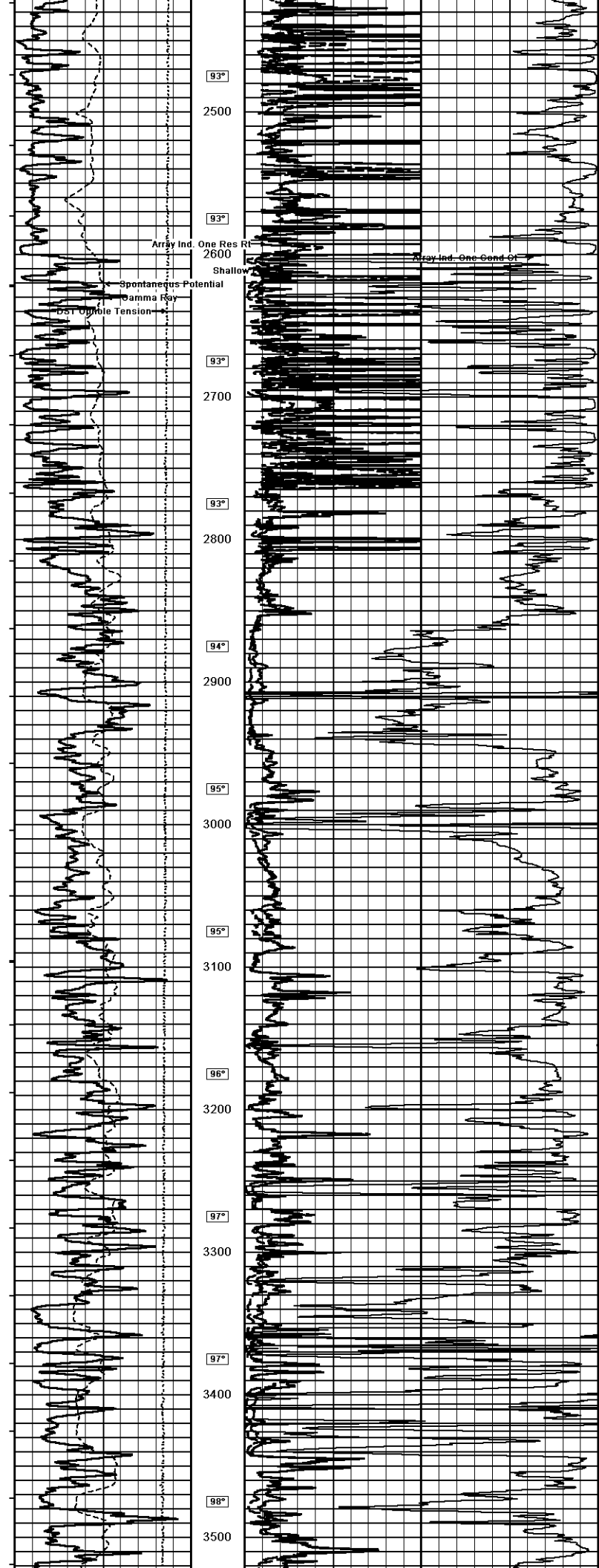
ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

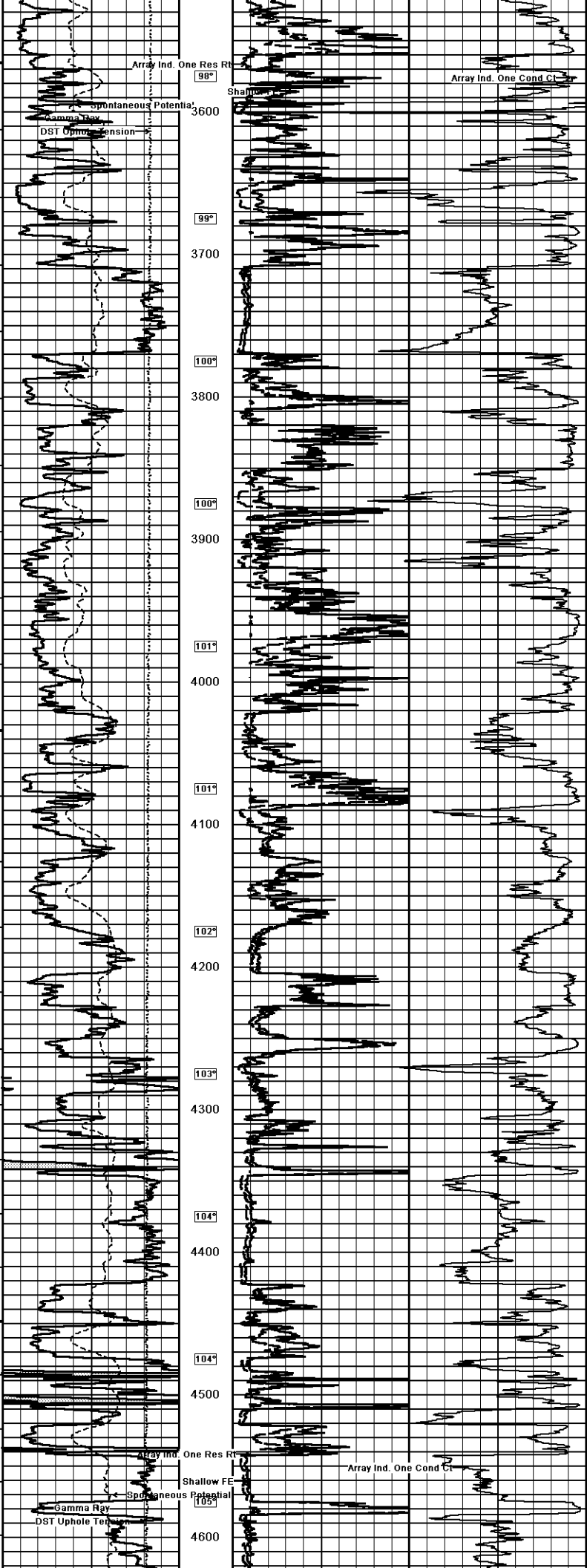
Weatherford®

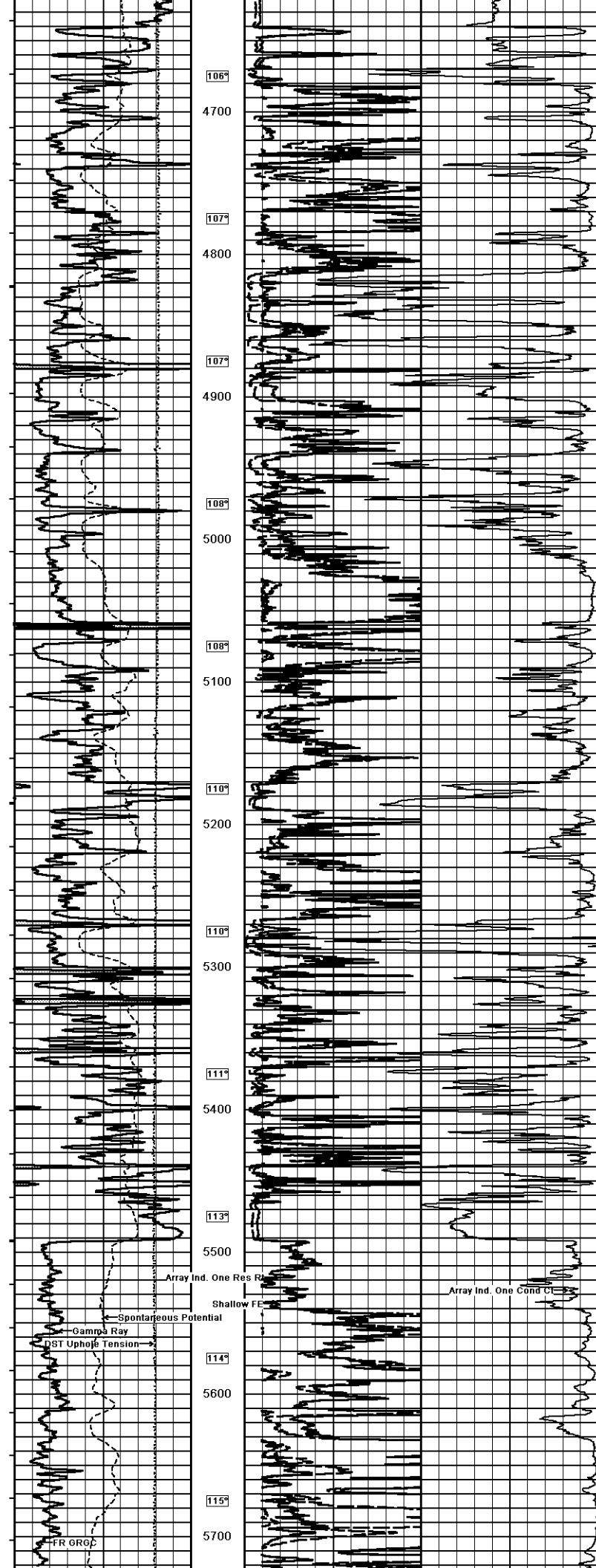
Weatherford		COMPANY	O'Brien
		WELL	ARDREY #2-2
		FIELD	ARDREY
		PROVINCE/COUNTY	CLARK
		COUNTRY/STATE	U.S.A. / KANSAS
		LOCATION	
LOG NUMBER	15-025-215	DATE	12/12/15
PERMIT NUMBER		TIME	12:00
PERMANENT DATUM G.L., ELE		TYPE	12
LOG MEASURED FROM KB			
DILLING MEASURED FROM KB			
DATE			
RUN NUMBER			
SERVICE ORDER			
DEPTH DRILLER			
DEPTH LOGGER			
FIRST READING			
LAST READING			
CASING LOGGER			
BIT SIZE			
HOLE FLUID TYPE			
DENSITY / VISCOSITY			
PH / FLUID LOSS			
SAMPLE SOURCE			
RPM @ MEASURED TEMP			
RPM @ MEASURED TEMP			
RPM @ MEASURED TEMP			
SOURCE PWT / PWC			
RPM @ BHT			
TIME SINCE CIRCULATION			
MAX RECORDED TEMP			
EQUIPMENT BASE			
RECORDED BY			
WITNESSED BY			
LOG#			

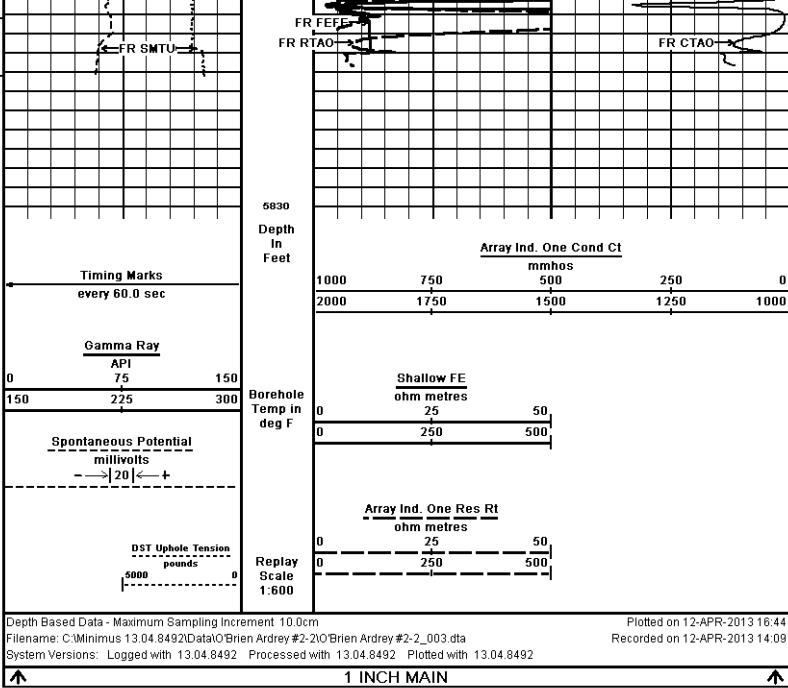












COMPANY		O'BRIEN ENERY RESOURCES CORP.			
WELL		ARDREY #2-2			
FIELD		ARDREY			
PROVINCE/COUNTY		CLARK			
COUNTRY/STATE		U.S.A. / KANSAS			
Elevation Kelly Bushing	2553.00	feet	First Reading	5745.00	feet
Elevation Drill Floor	2551.00	feet	Depth Driller	5750.00	feet
Elevation Ground Level	2541.00	feet	Depth Logger	5748.00	feet



ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG