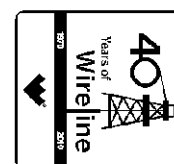


**Weatherford****ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG****COMANCHE RESOURCES CO., LLC****MASSEY 5-1****WILDCAT****COWLEY****U.S.A. / KANSAS****2490' FNL & 1670' FWL****SE SW SE NW**

COMPANY

WELL

FIELD

PROVINCE/COUNTY

COUNTRY/STATE

LOCATION

SEC

TWP

RGE

Other Services

MDN/MPD

MML

MSS

API Number

15-035-24471

Permit Number

Permanent Datum GL, Elevation 1046 feet

Log Measured From KB

Drilling Measured From KB

Date

16-APR-2012

Run Number

ONE

Depth Driller

3050.00

Depth Logger

3050.00

First Reading

3047.00

Last Reading

490.00

Casing Driller

489.00

Casing Logger

490.00

Elevations:
KB 1056.00
DF 1054.00
GL 1046.00

Bit Size

7.875

Hole Fluid Type

GEL

Density / Viscosity

9.20 lb/USg

PH / Fluid Loss

9.00

Sample Source

MUD PIT

Rm @ Measured Temp

2.20 @ 65.0

Rmf @ Measured Temp

1.60 @ 65.0

Rmc @ Measured Temp

2.64 @ 65.0

Source Rmf / Rmc

CALC

1.29 @ 111.0

Rm @ BHT

4 HOURS

Time Since Circulation

111.00

Max Recorded Temp

deg F

Equipment Name

COMPACT

Equipment / Base

13226

Recorded By

B. ALLEN

Witnessed By

J. SPELLMAN

BOREHOLE RECORD

Last Edited: 16-APR-2012 04:23

Bit Size
inches

7.875

Depth From
feet

489.00

Depth To
feet

3050.00

CASING RECORD

Type

Size
inches

8.625

Depth From
feet

0.00

Shoe Depth
feet

489.00

Weight
pounds/ft

36.00

REMARKS

TOOLS RAN: MCG, MML, MDN, MPD, MFE, MSS, MAI RAN IN COMBINATION

HARDWARE: MAI: TWO 0.5 INCH STANDOFFS USED.

MDN: DUAL NEUTRON BOW SPRINGS USED.

MPD: 8 INCH PROFILE PLATE USED.

MFE: ONE 0.5 INCH STANDOFF USED.

MSS: THREE 0.5 INCH STANDOFF USED.

2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

TOTAL HOLE VOLUME FROM TD TO SURFACE CASING = 1110CU.FT.

ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING = 690CU.FT.

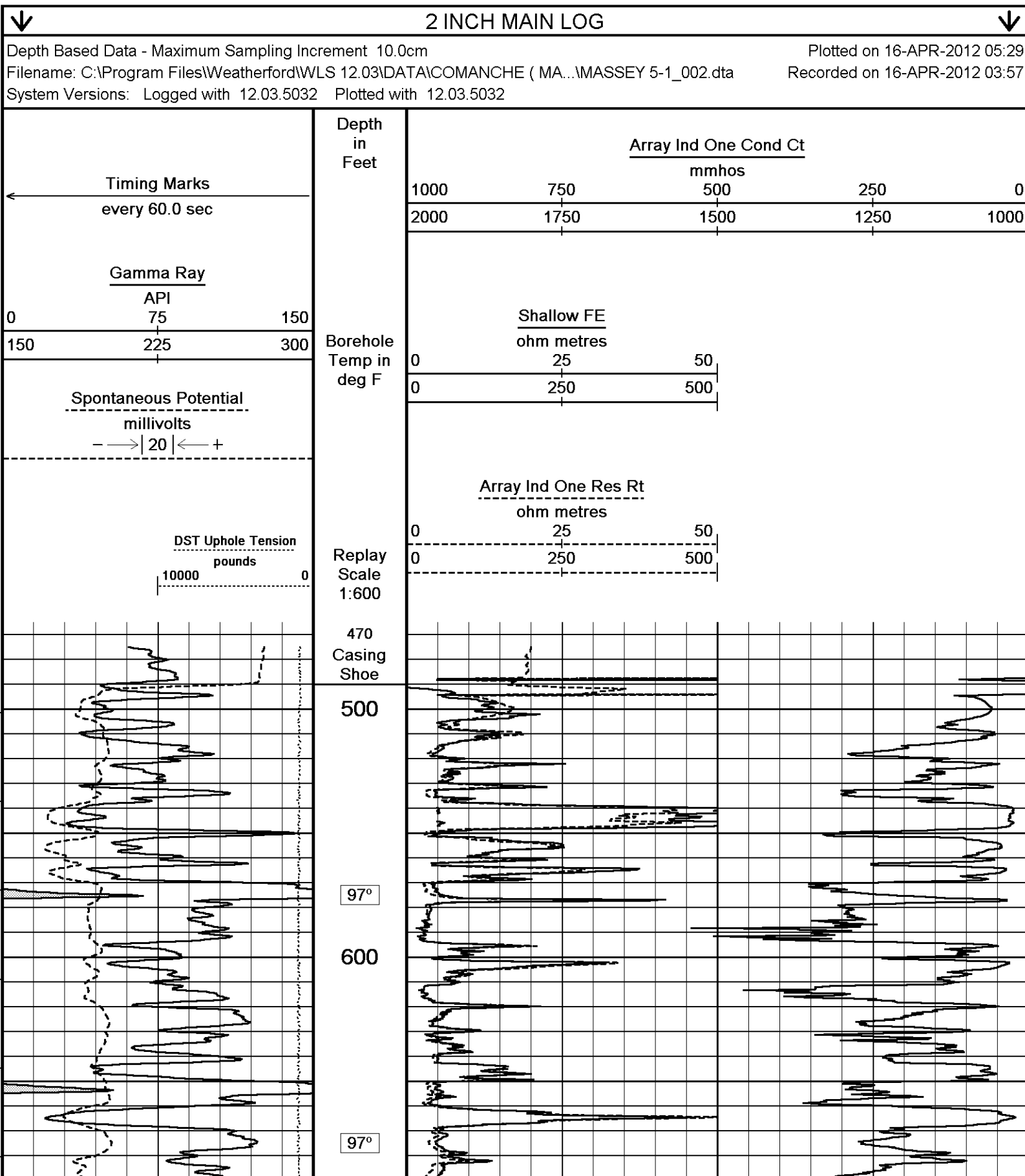
SERVICE ORDER # 3535125

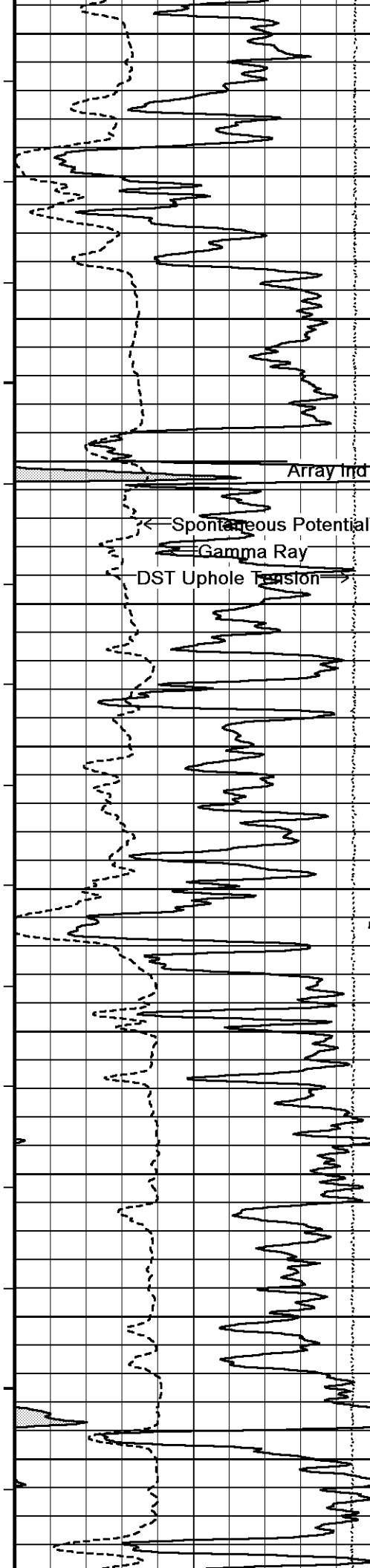
RIG: C_G #2

OPERATOR: S. WORLEY

HOLE RUGOSITY MAY AFFECT LOG QUALITY.

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.





700

97°

800

Array Ind One Res Rt

Shallow FE

98°

900

98°

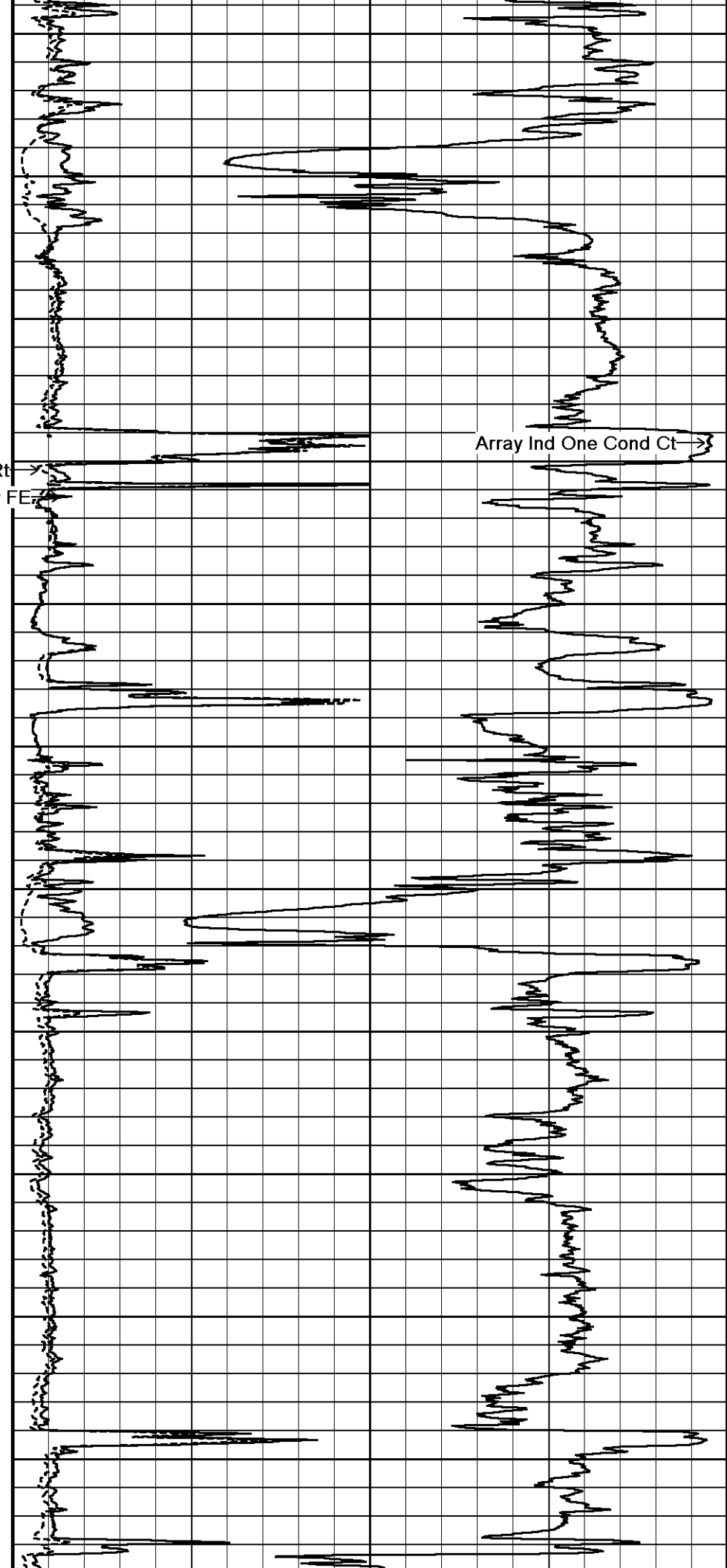
1000

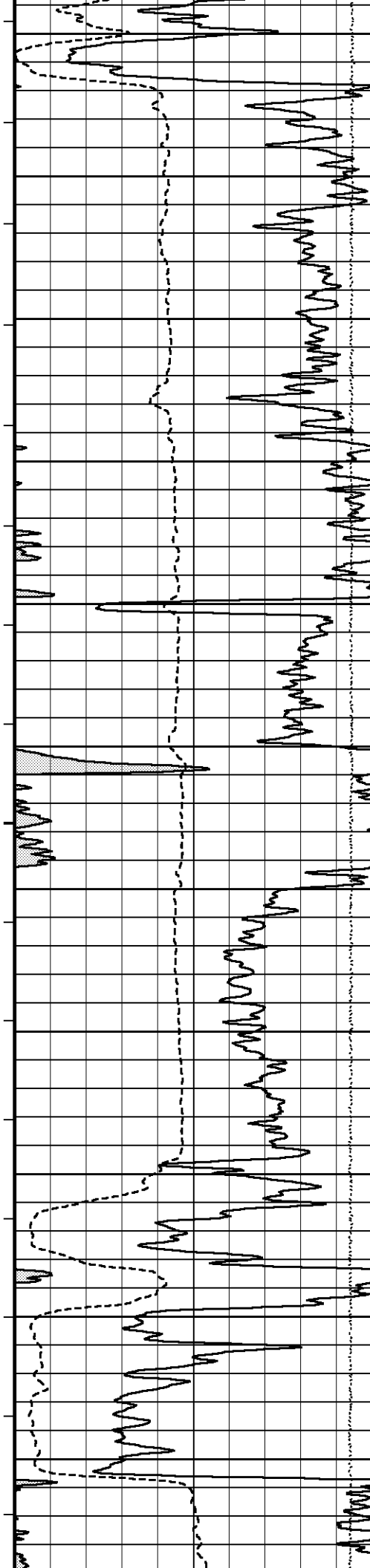
98°

1100

99°

1200





100°

1300

100°

1400

101°

1500

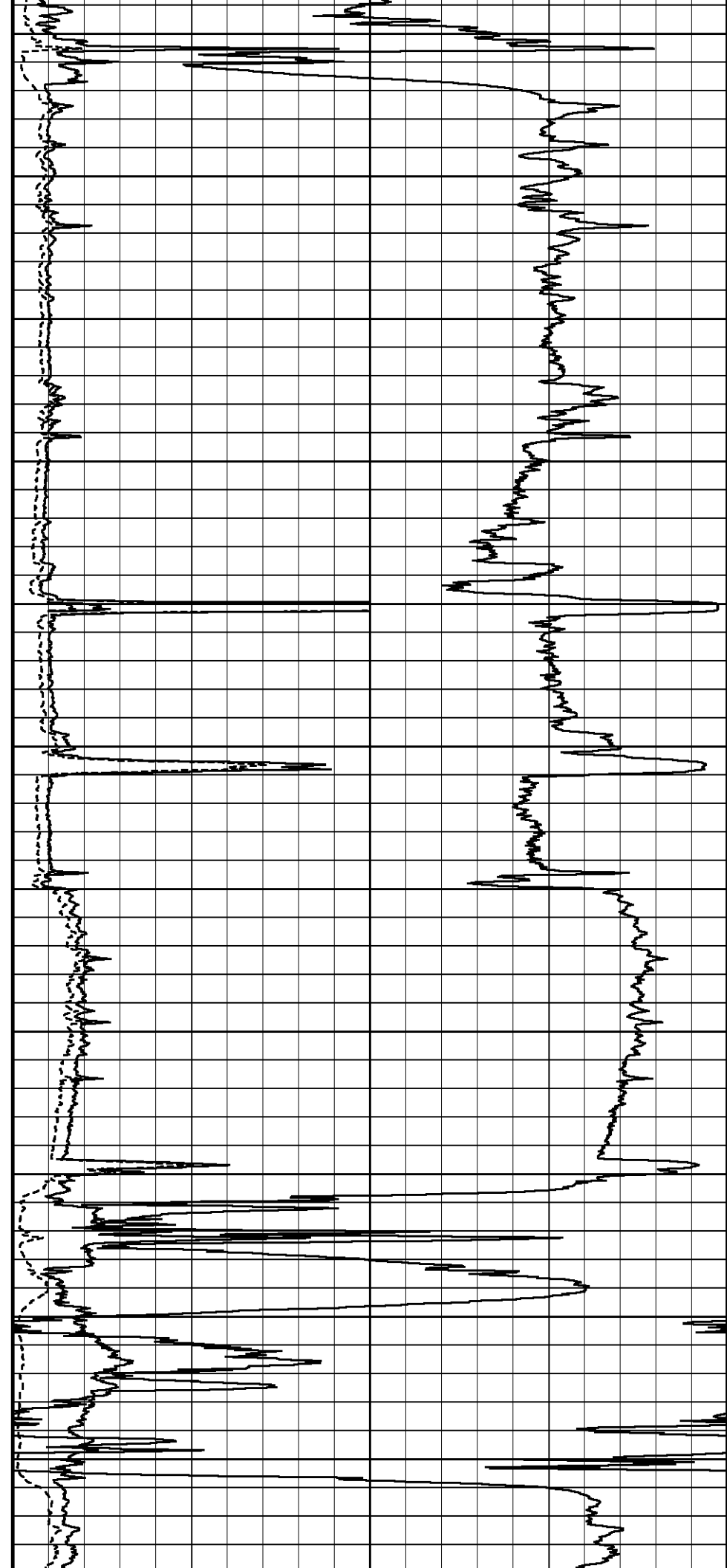
102°

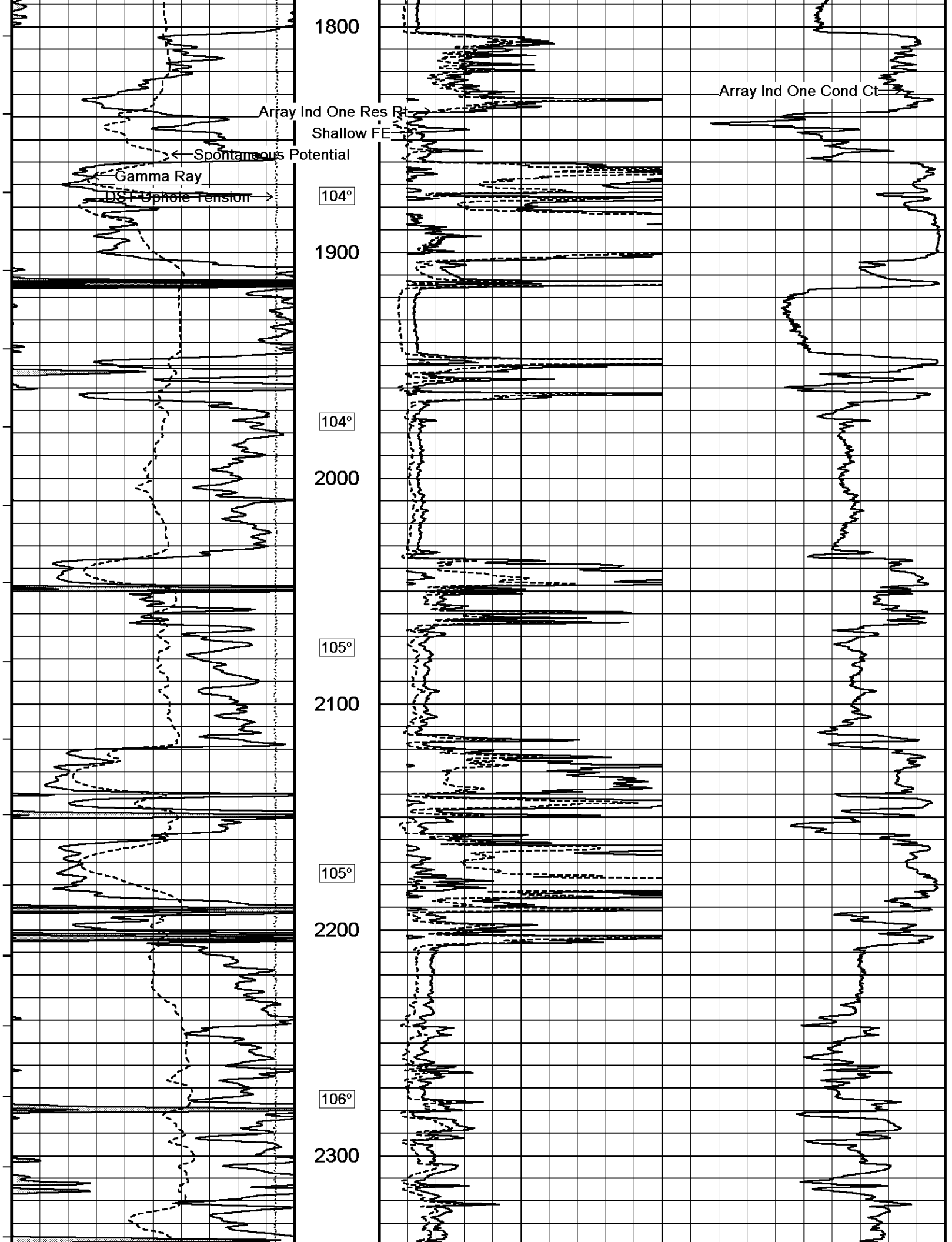
1600

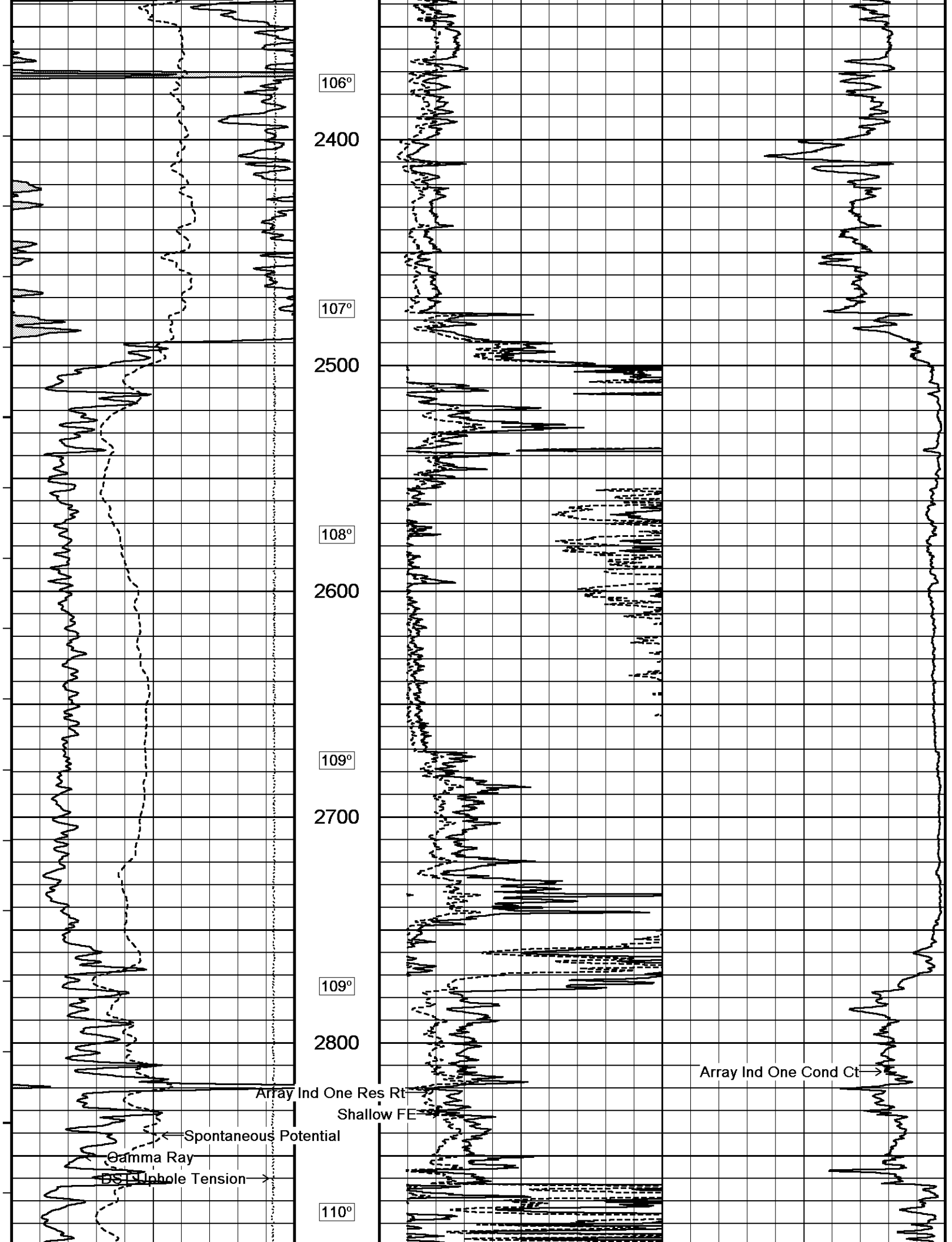
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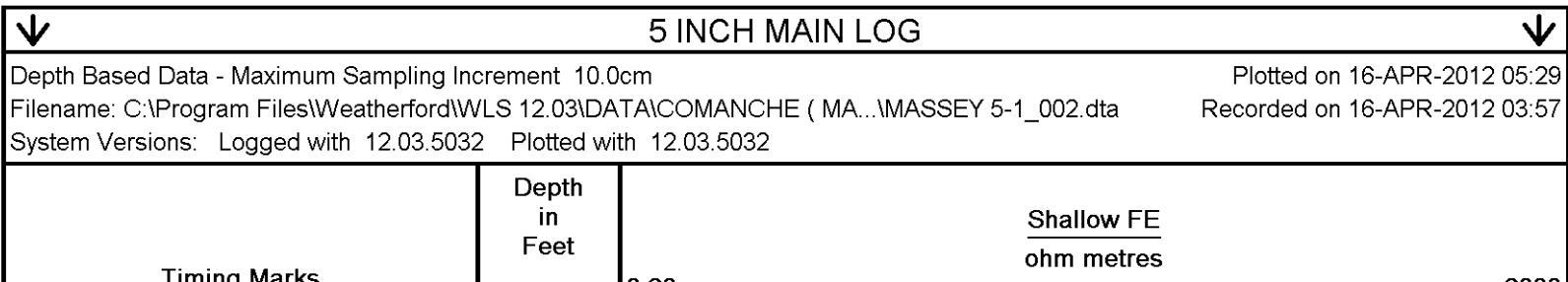
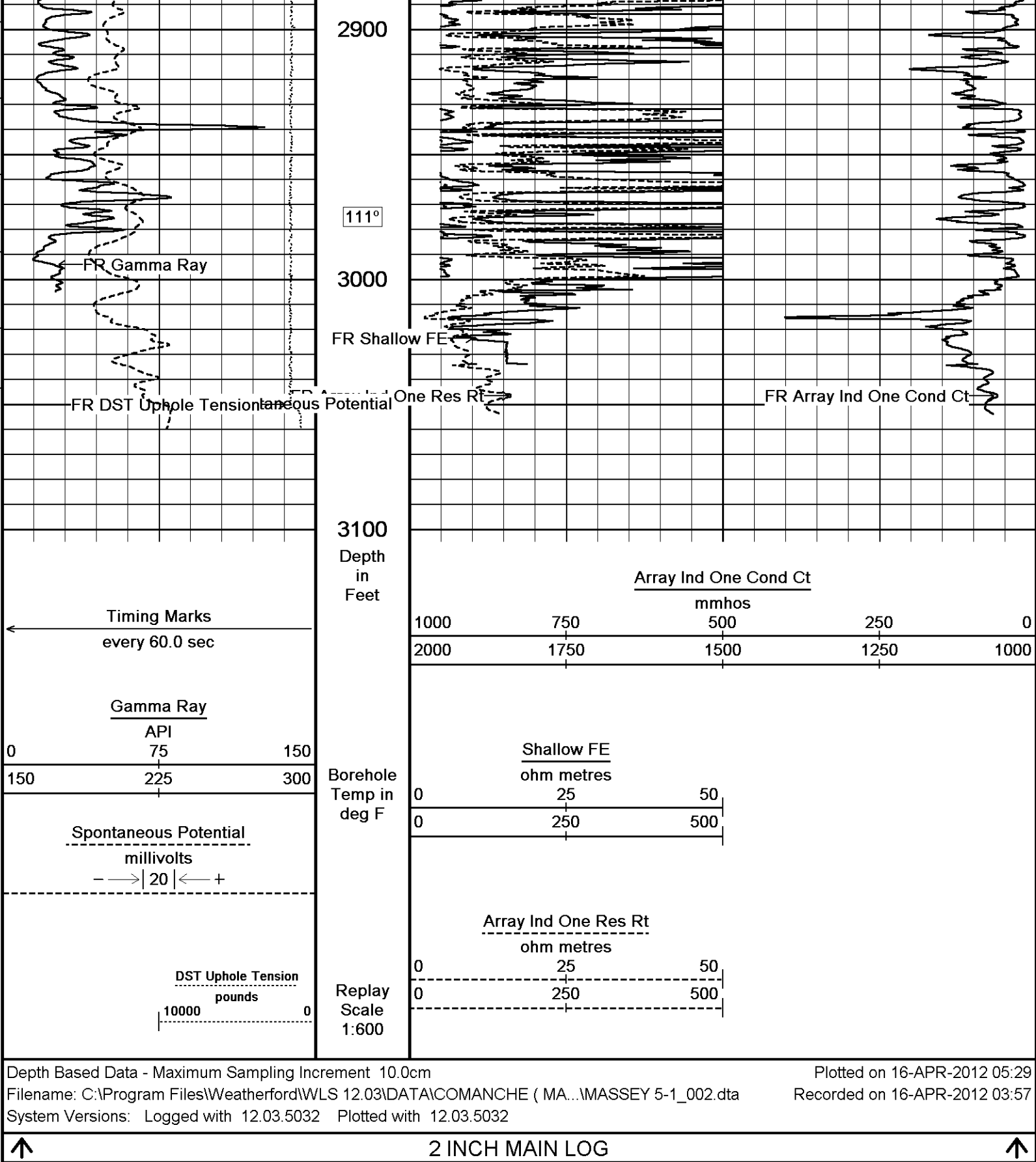
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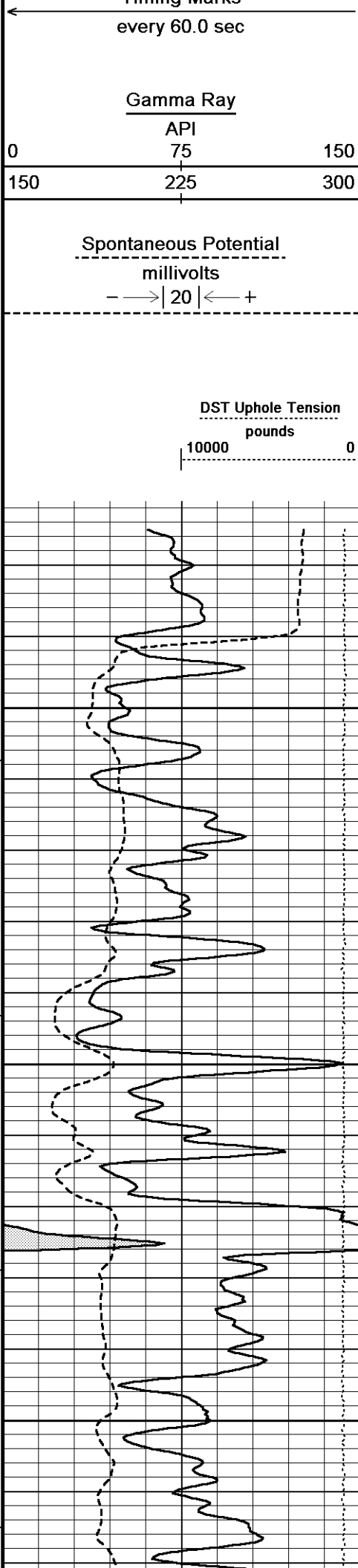
103°











Borehole
Temp in
deg F

Replay
Scale
1:240

Casing
Shoe

474

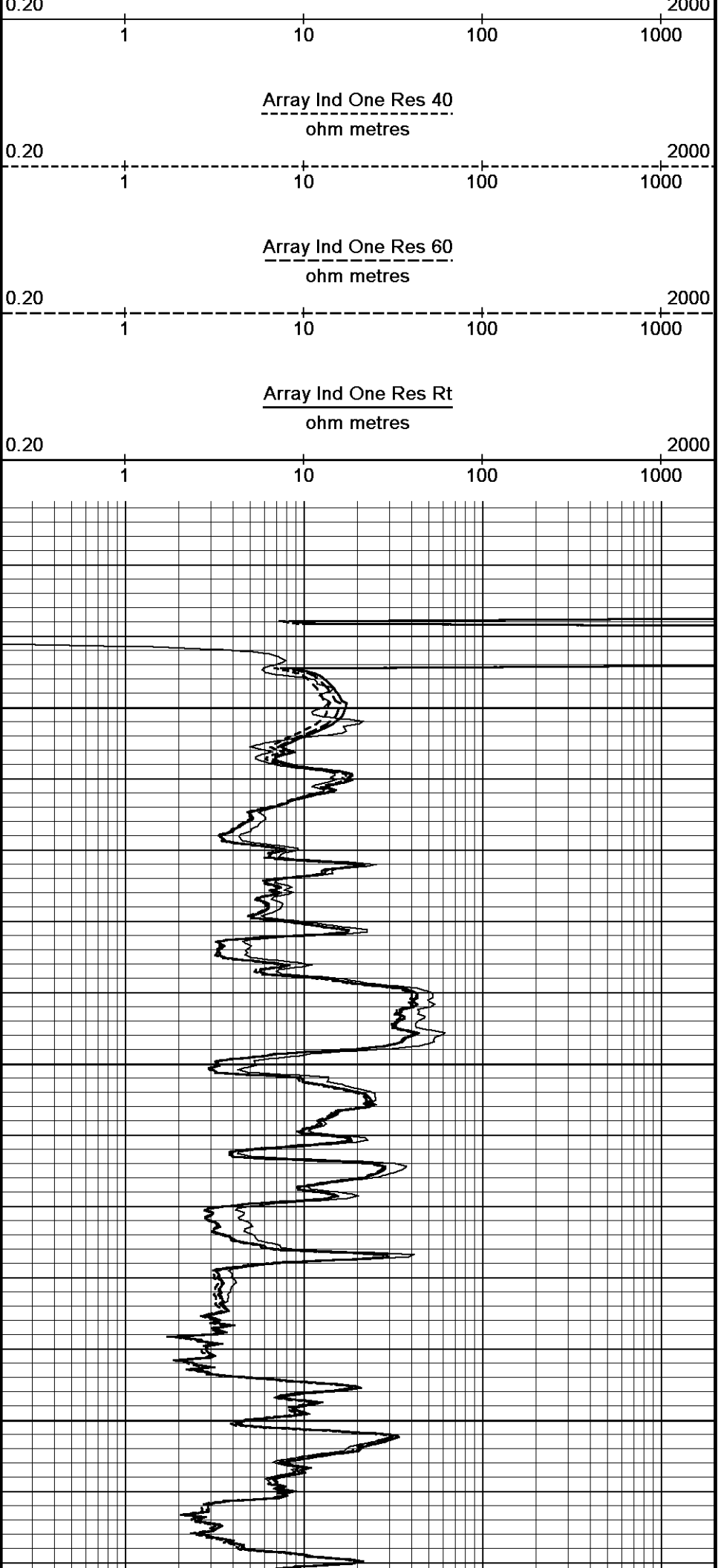
500

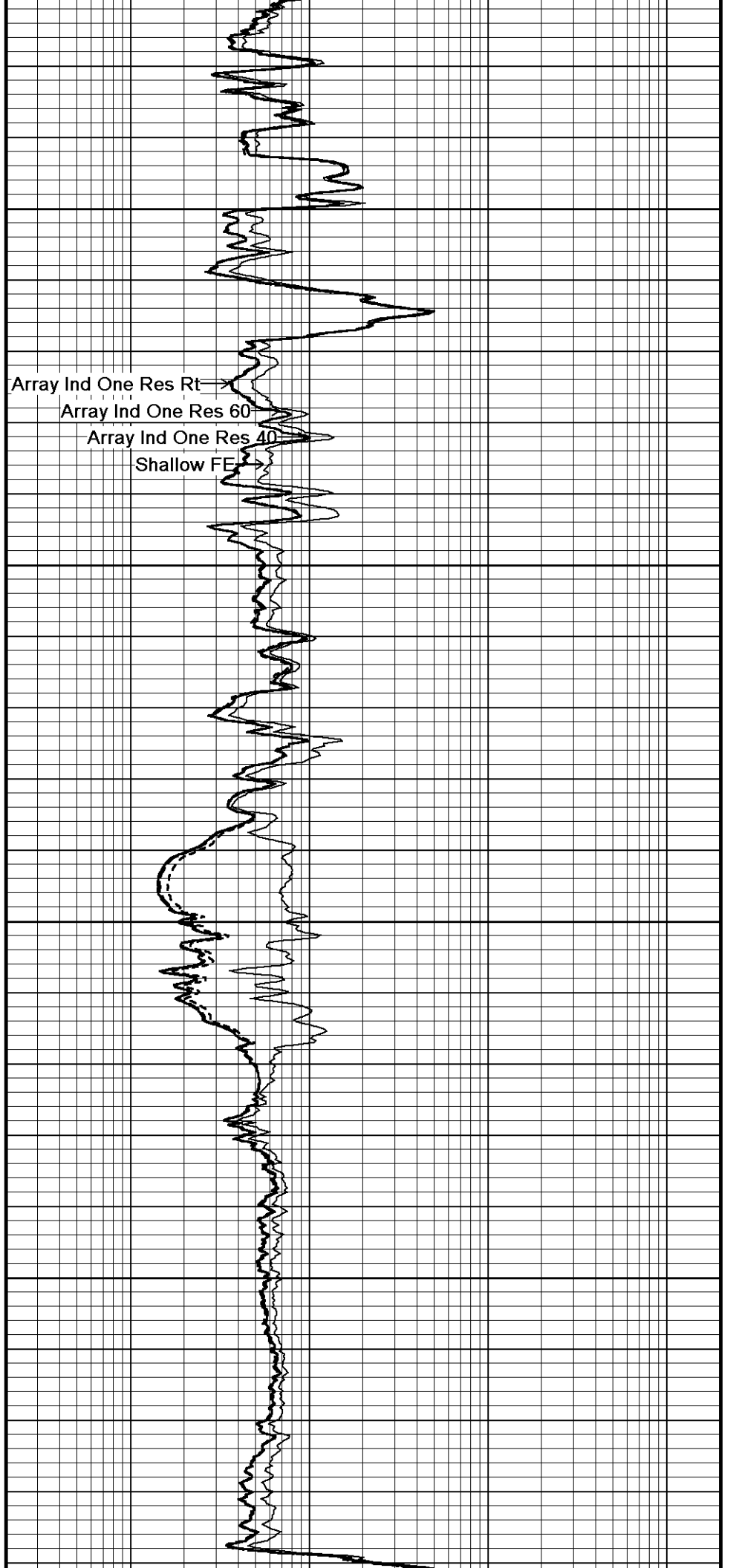
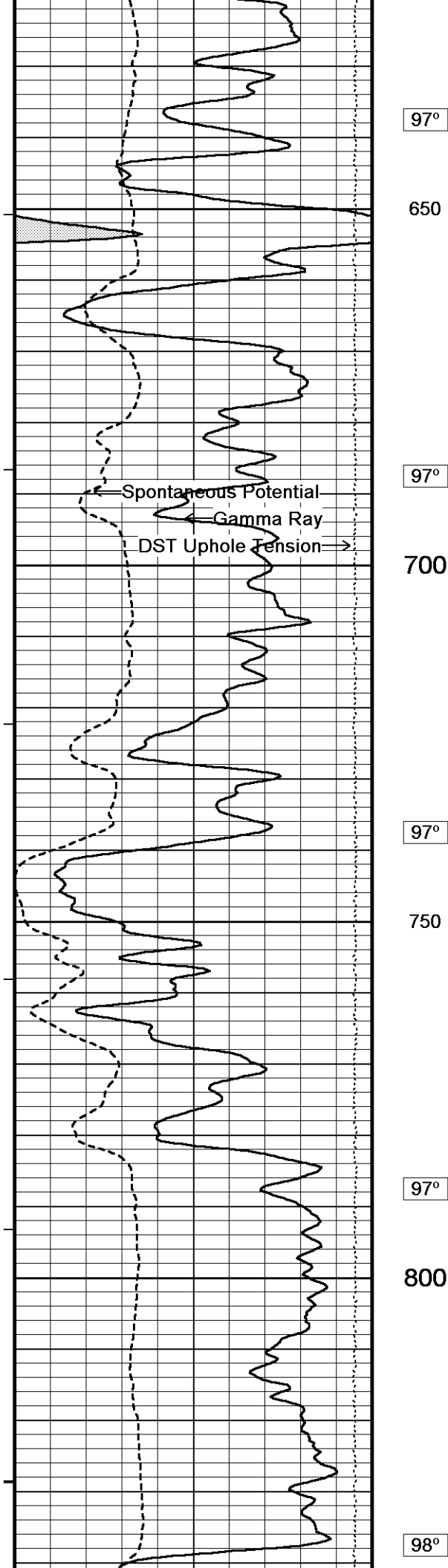
96°

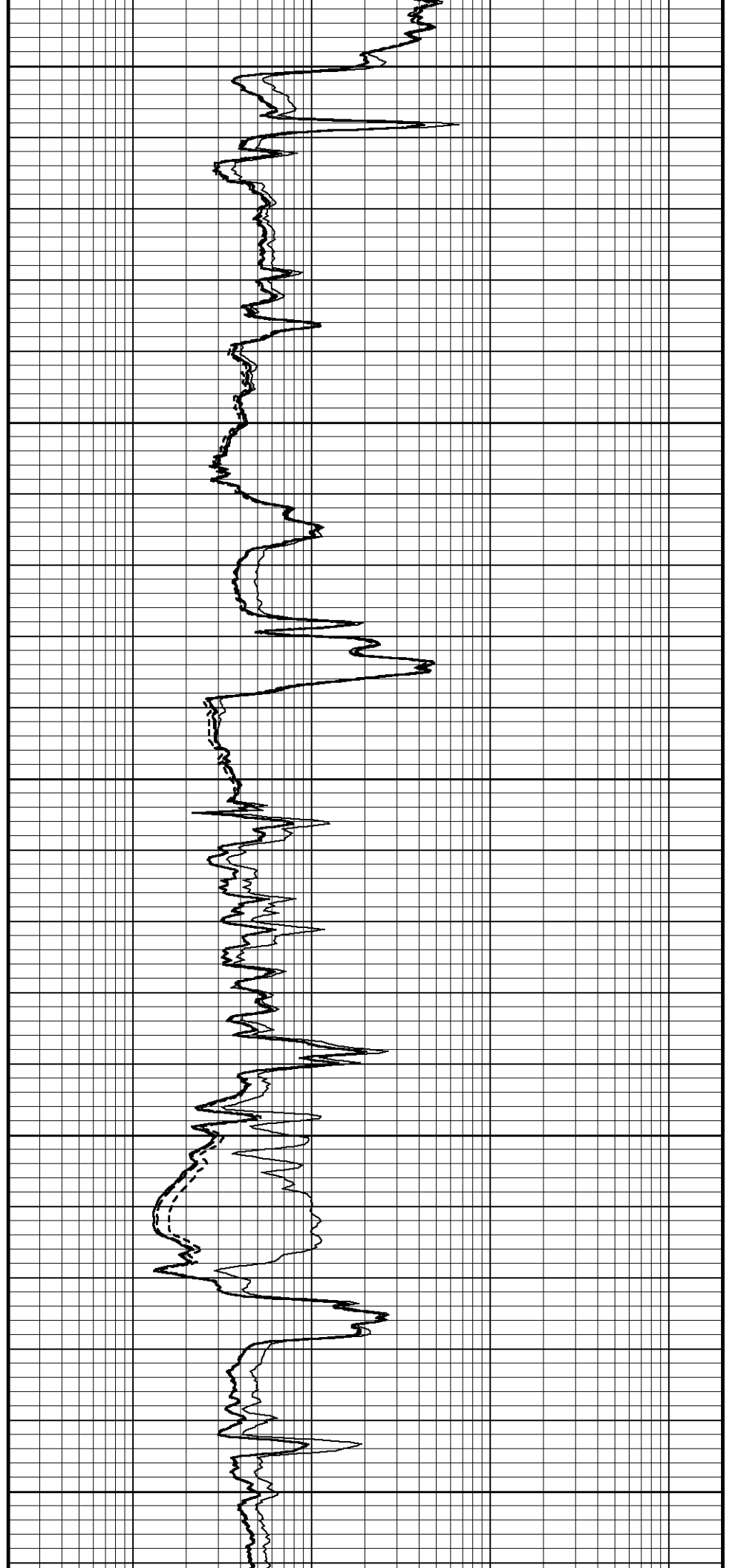
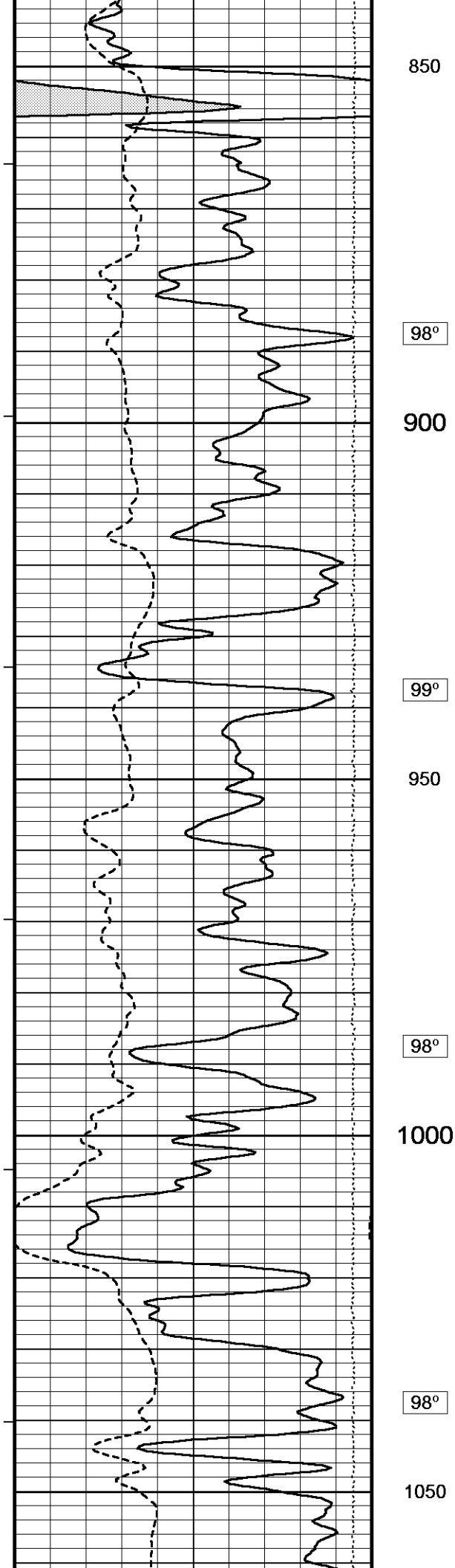
550

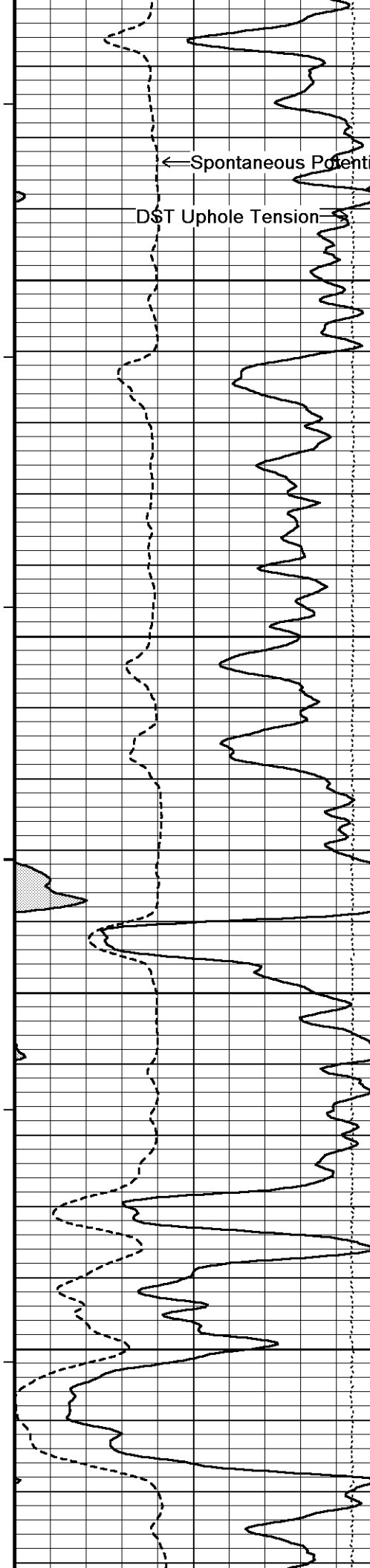
97°

600









Spontaneous Potential
D&T Uphole Tension
Gamma Ray

1100

99°

1150

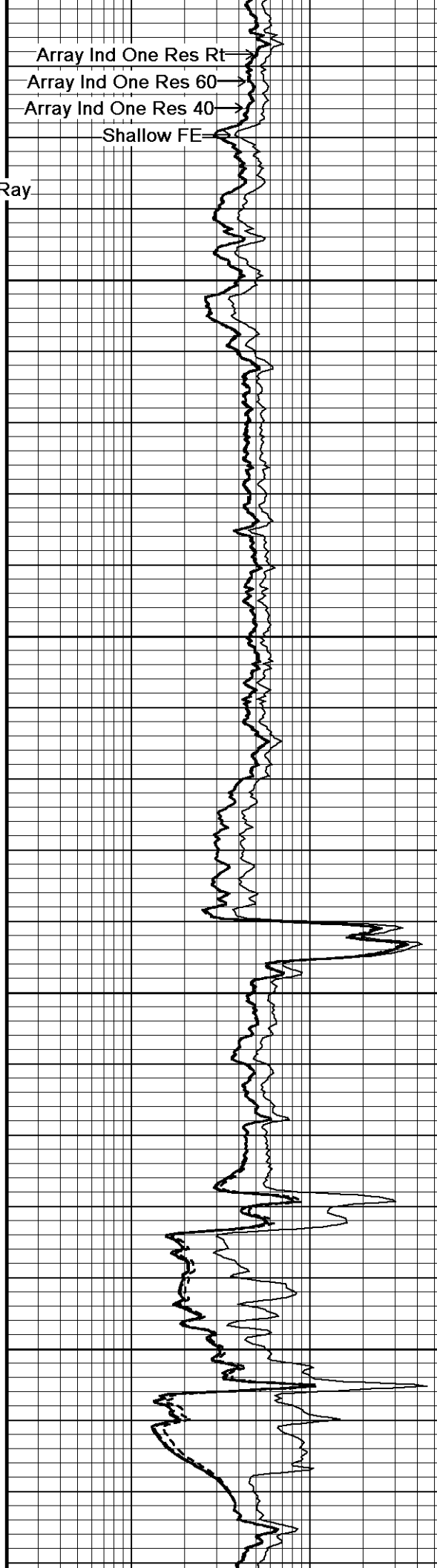
99°

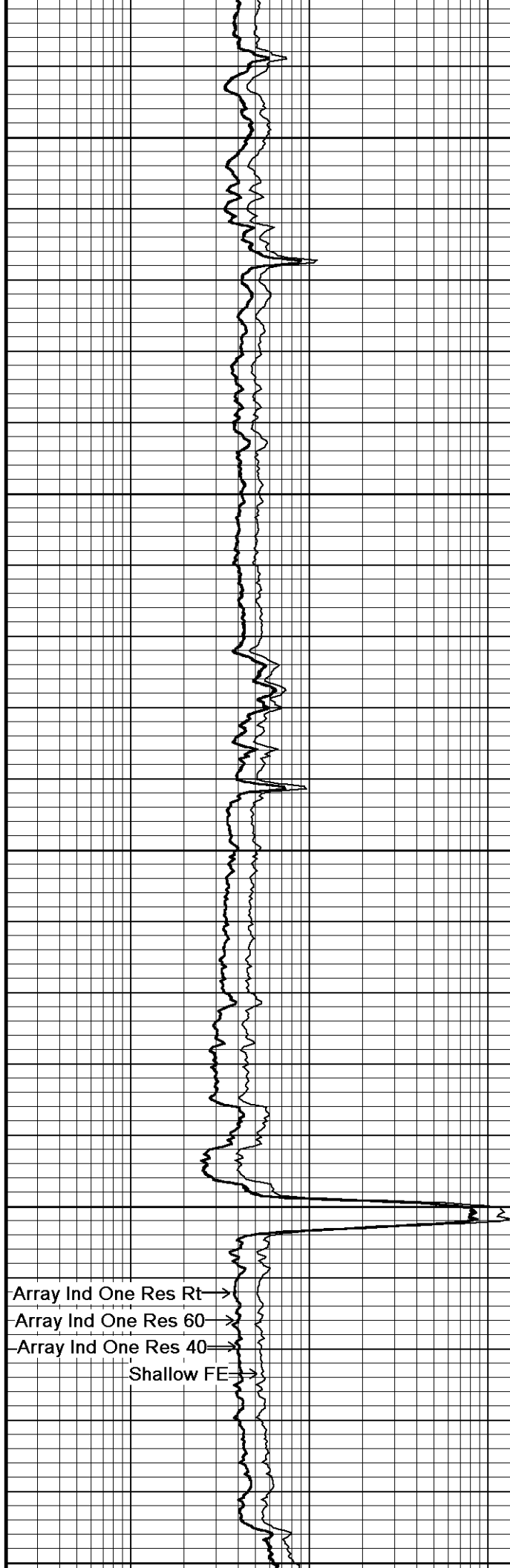
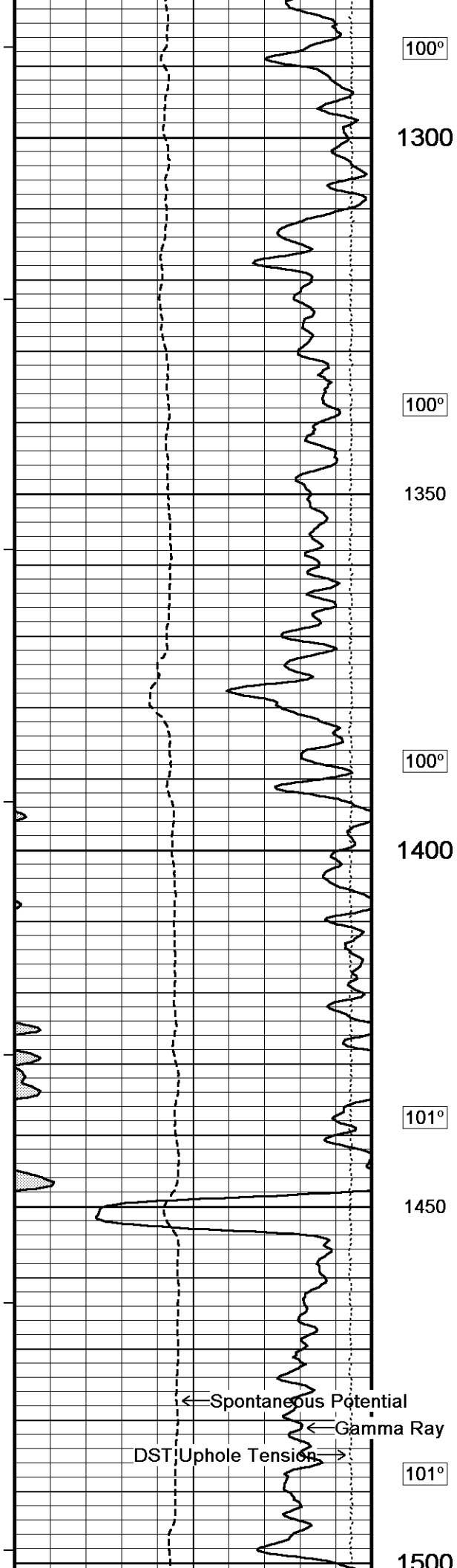
1200

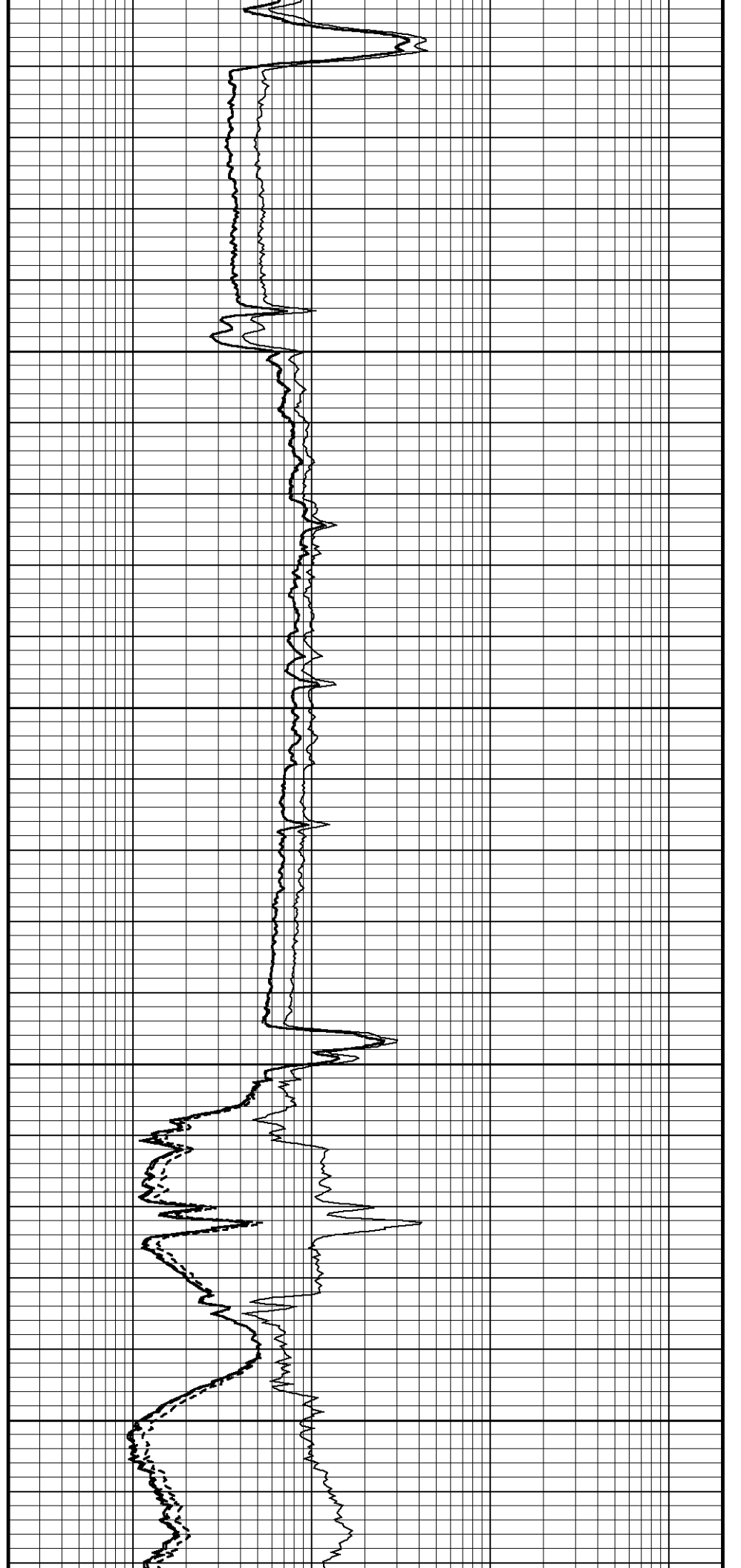
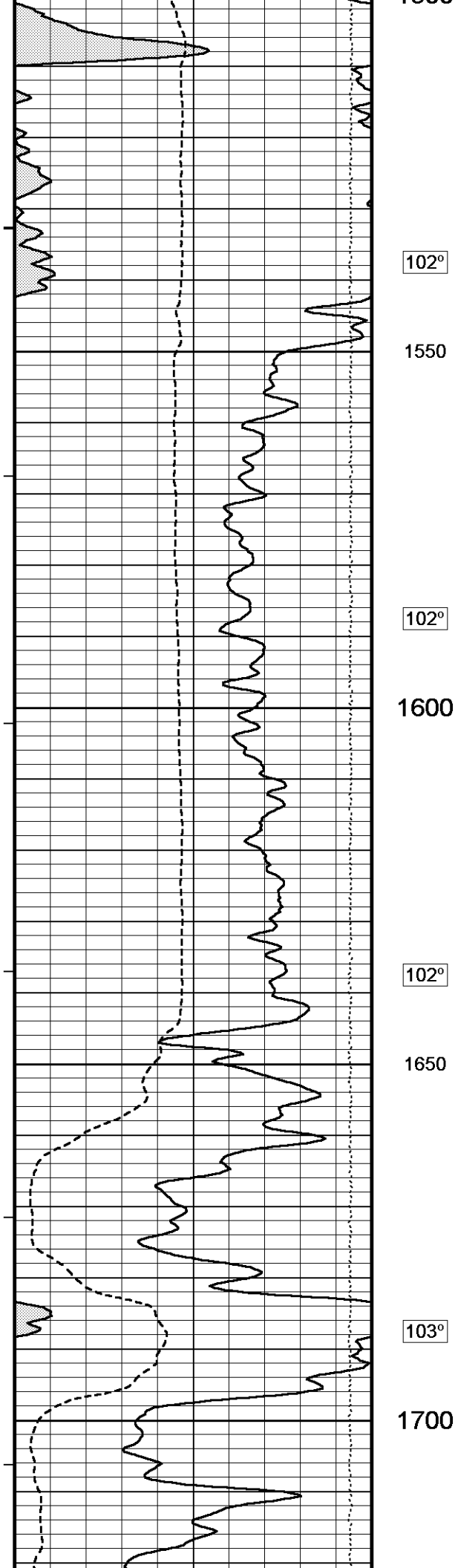
99°

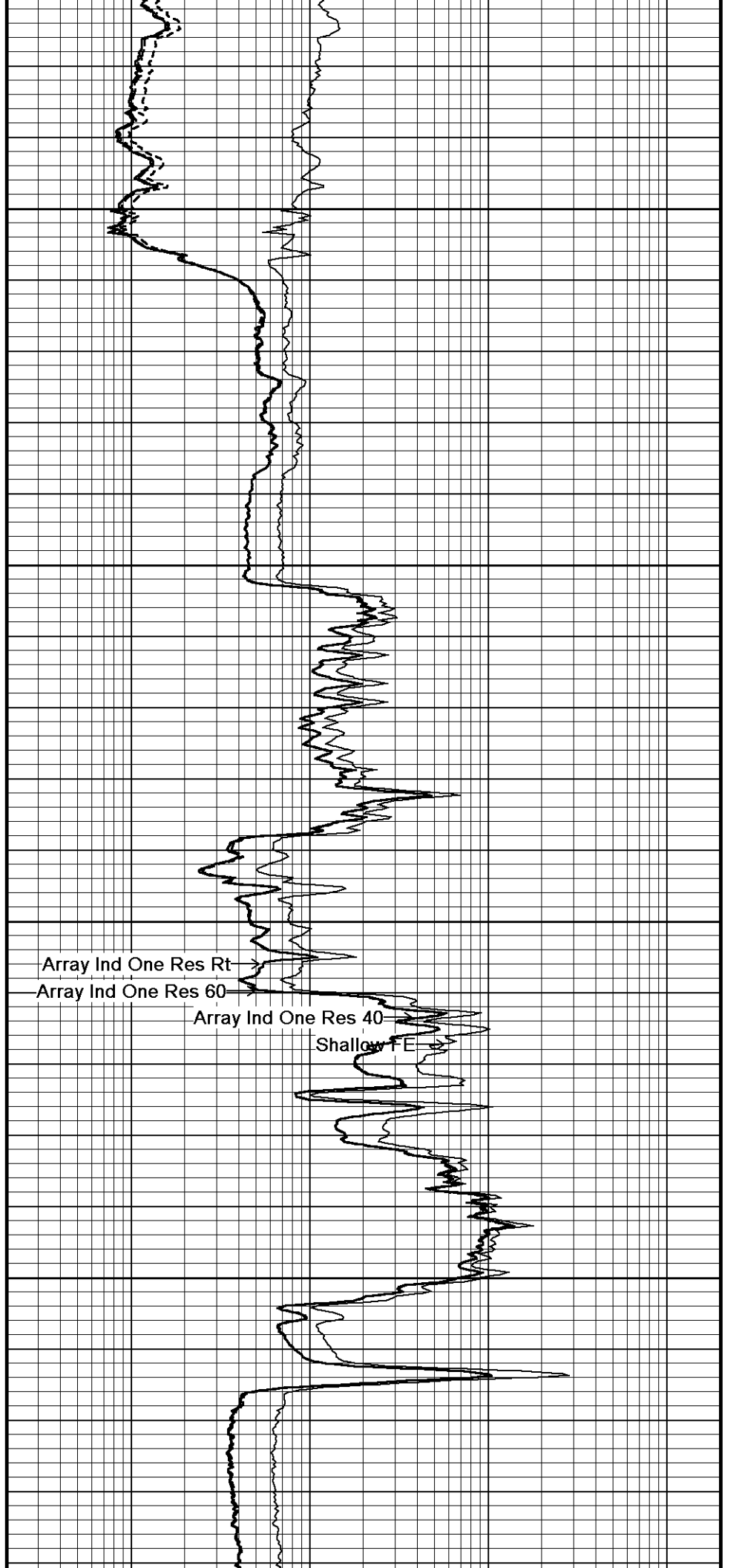
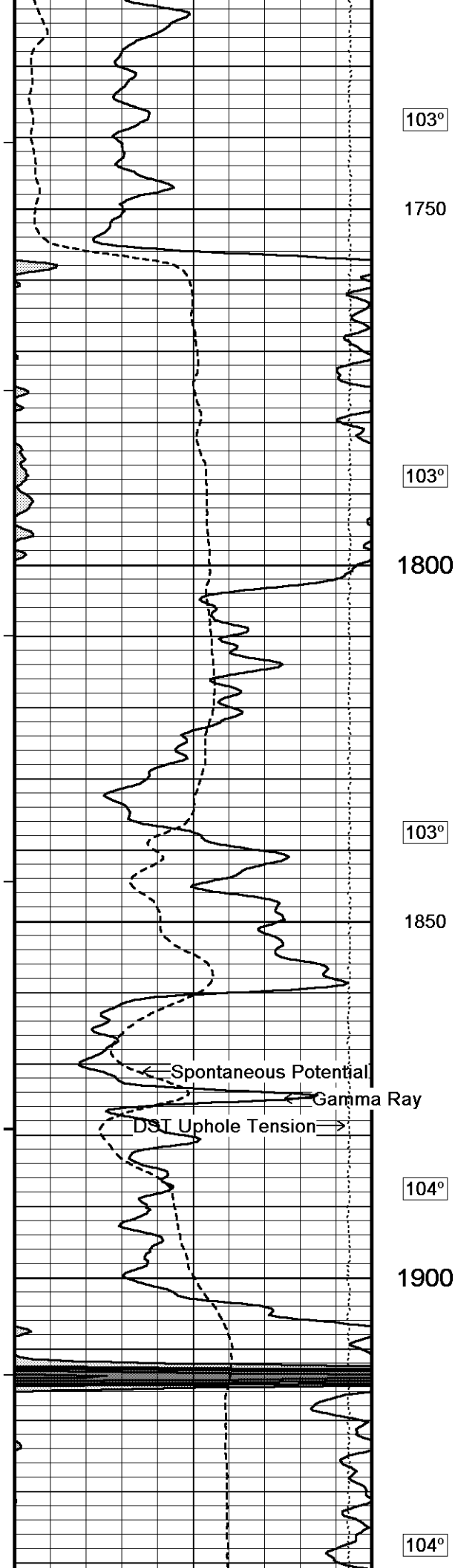
1250

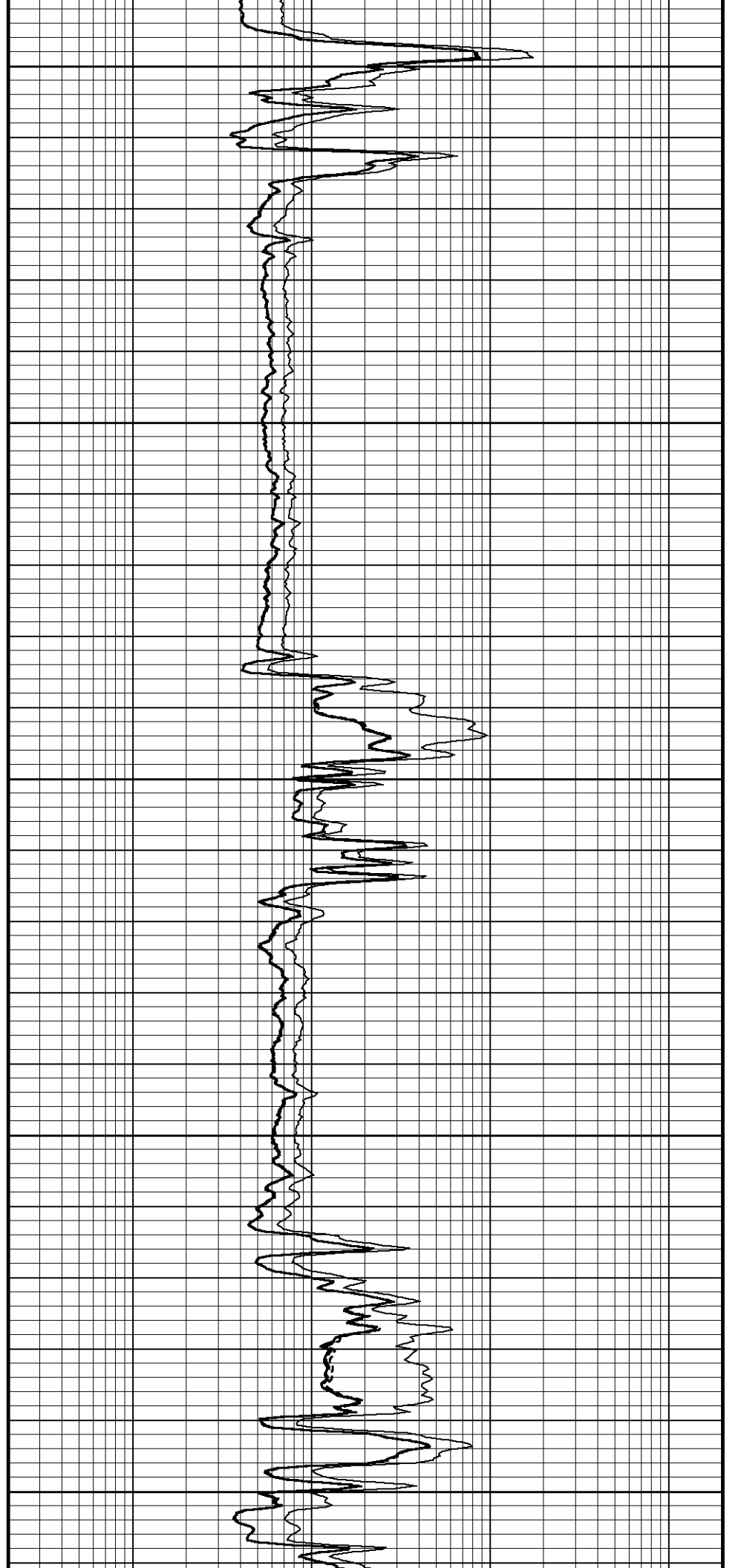
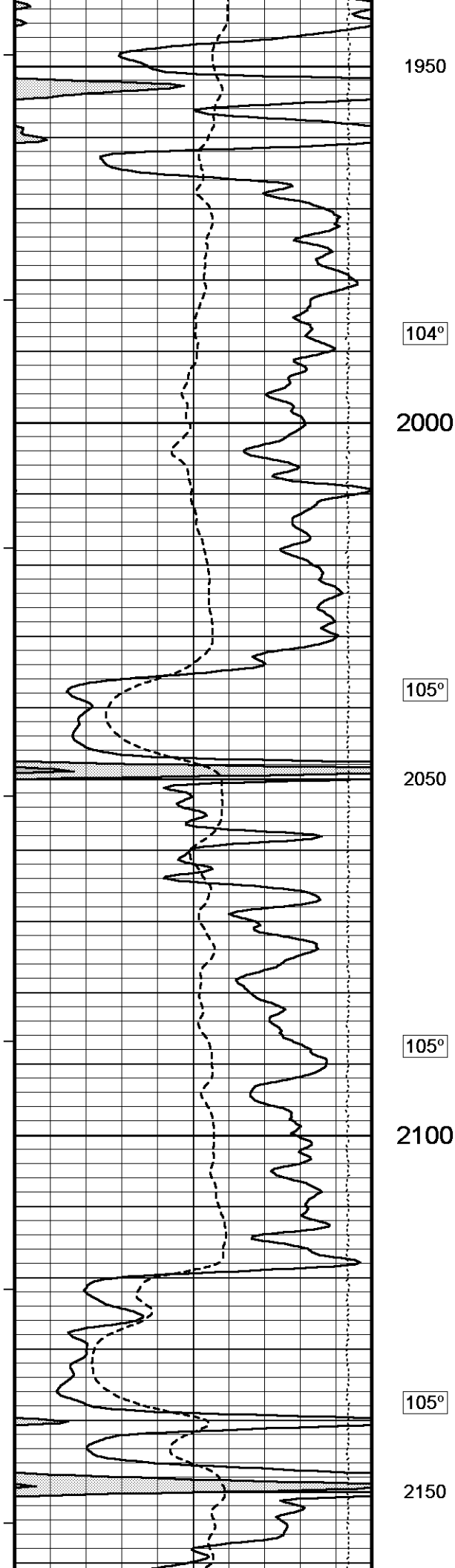
Array Ind One Res Rt
Array Ind One Res 60
Array Ind One Res 40
Shallow FE

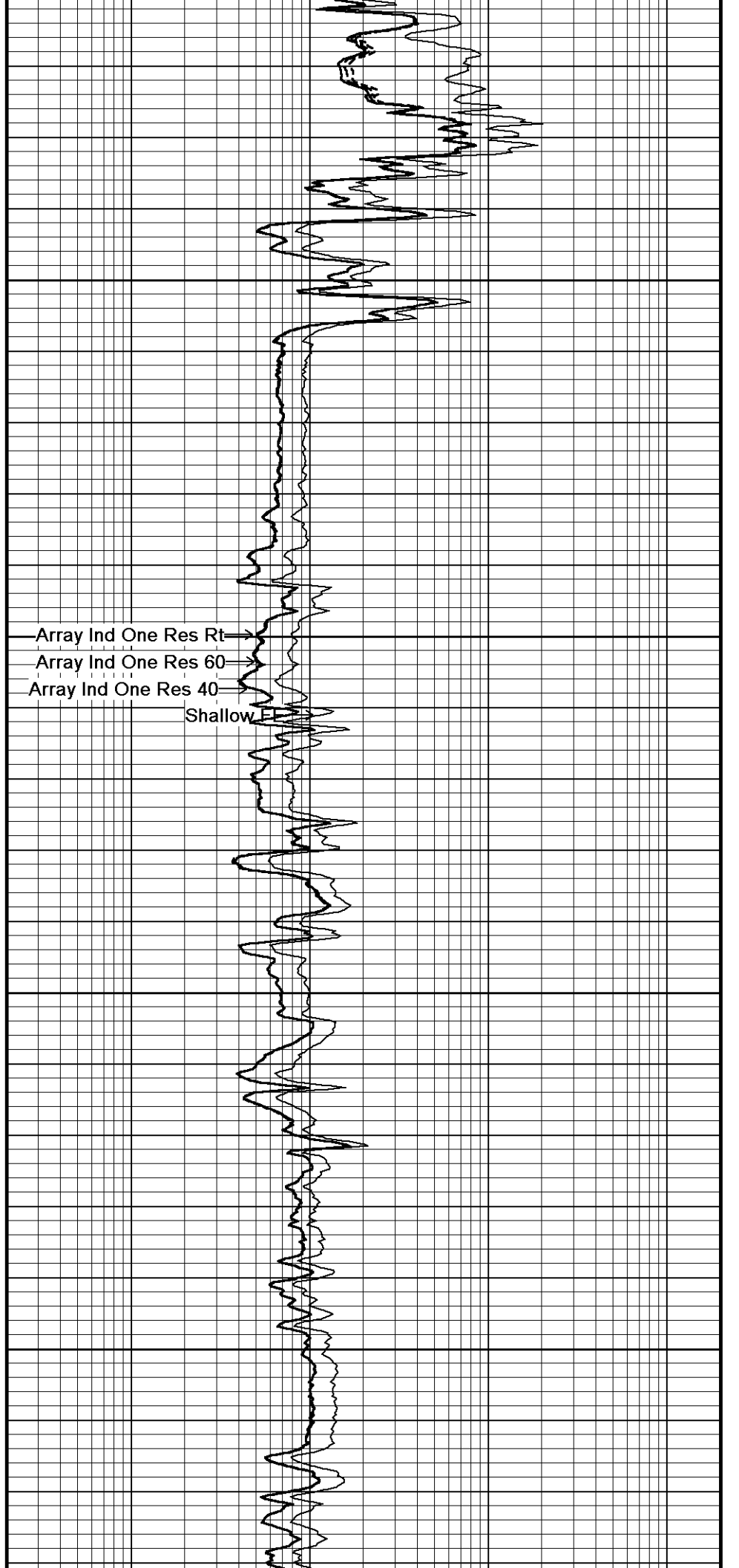
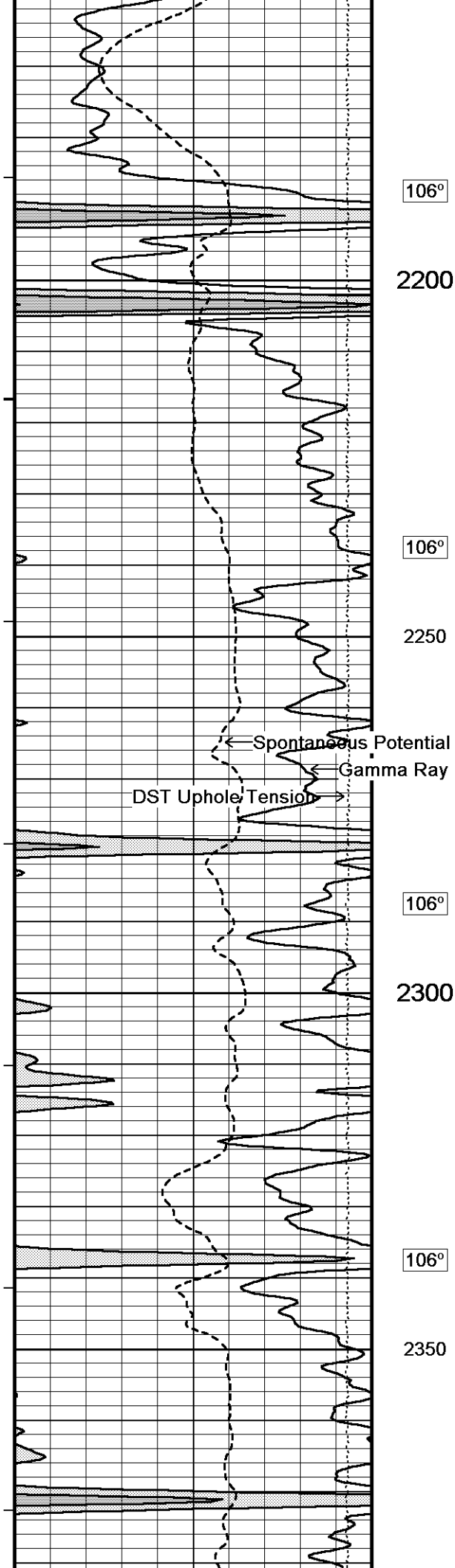


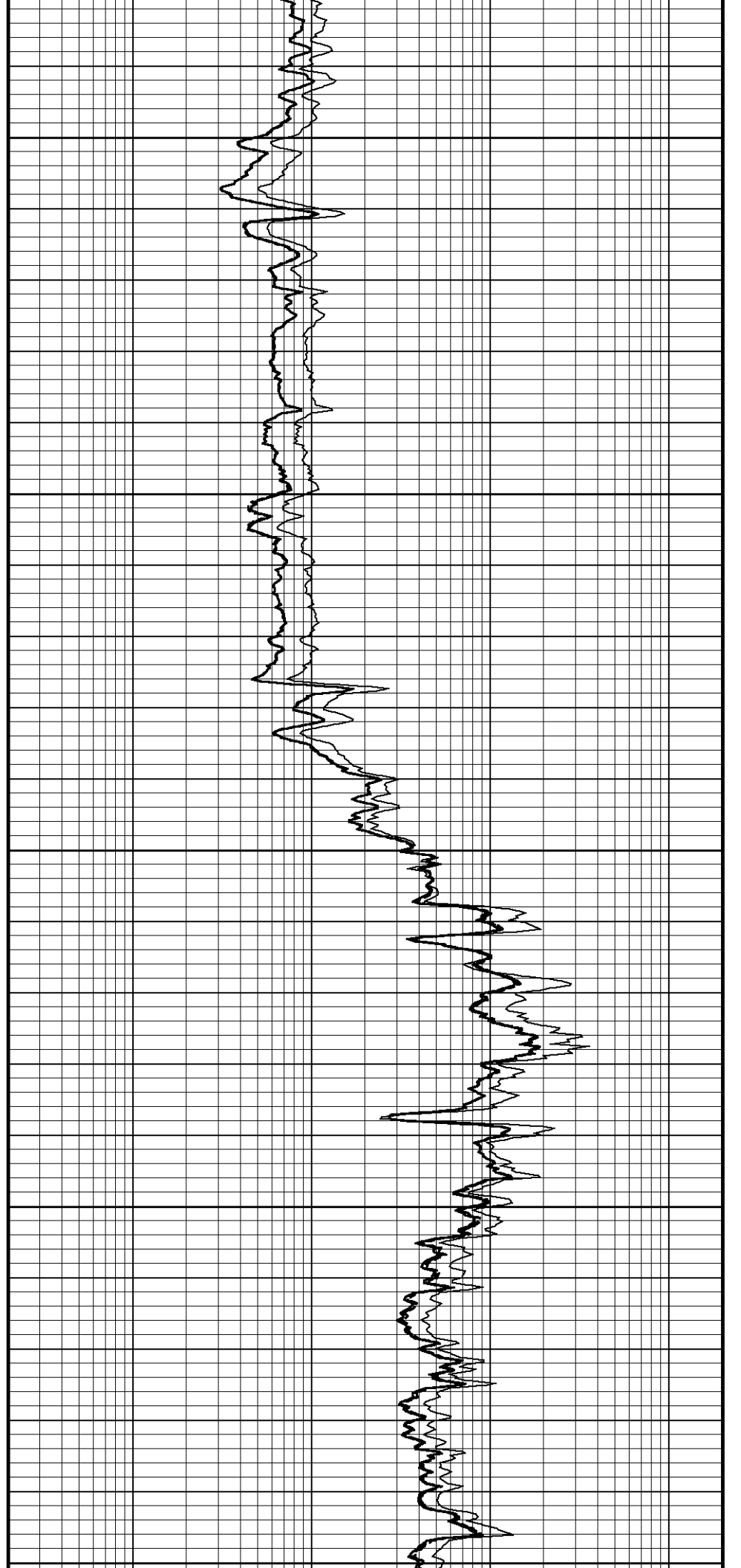
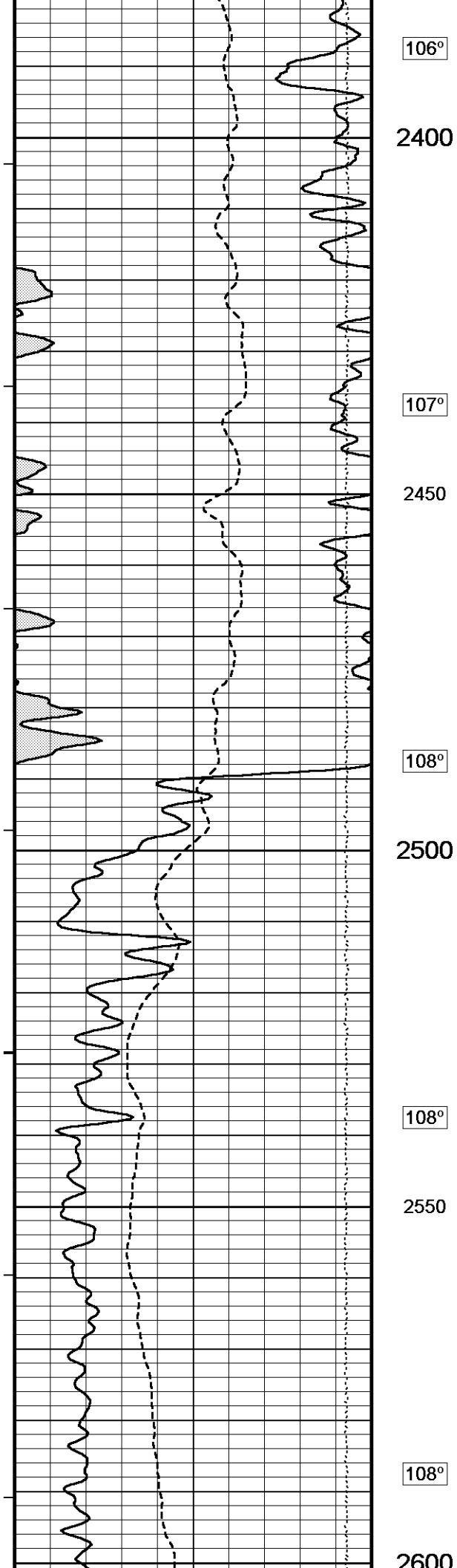


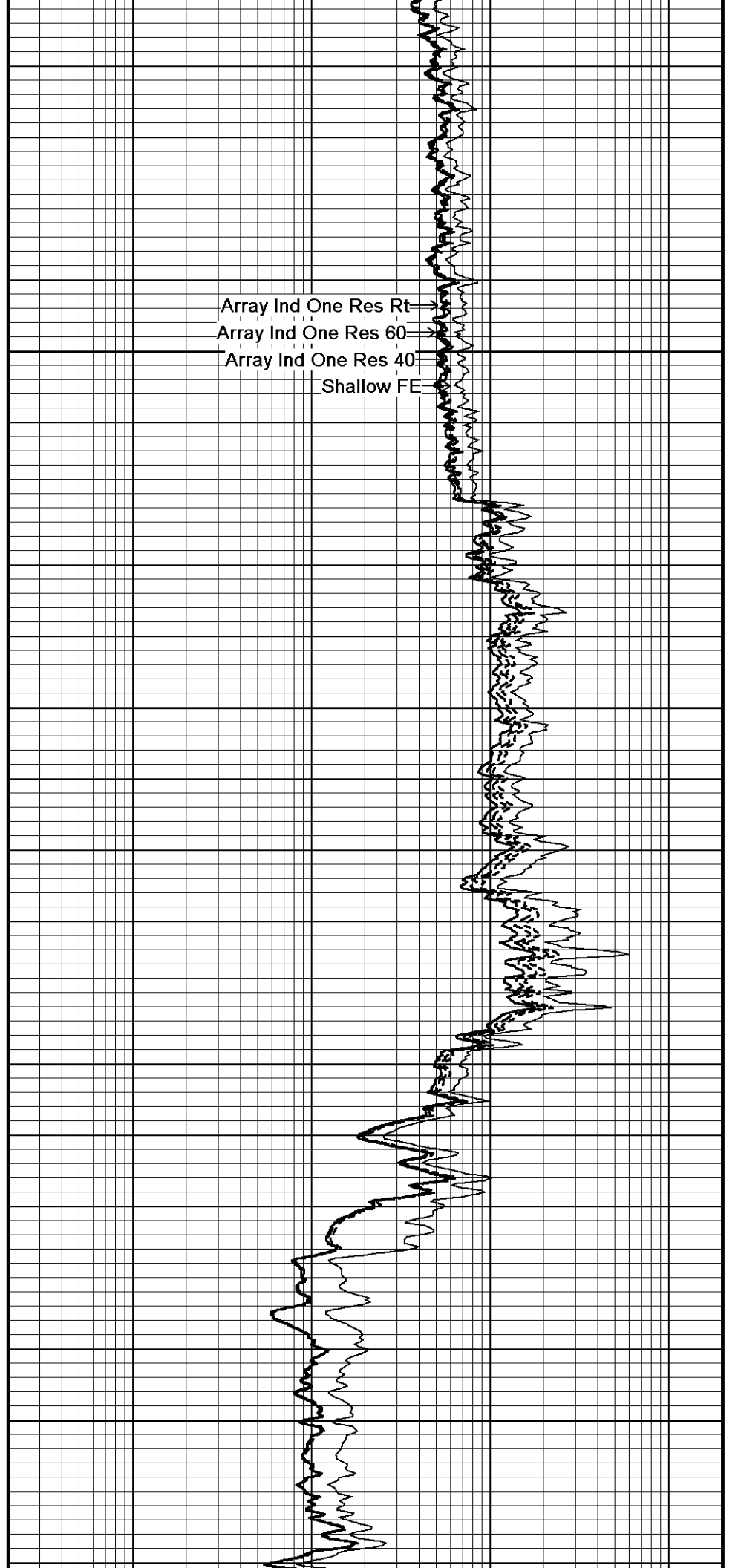
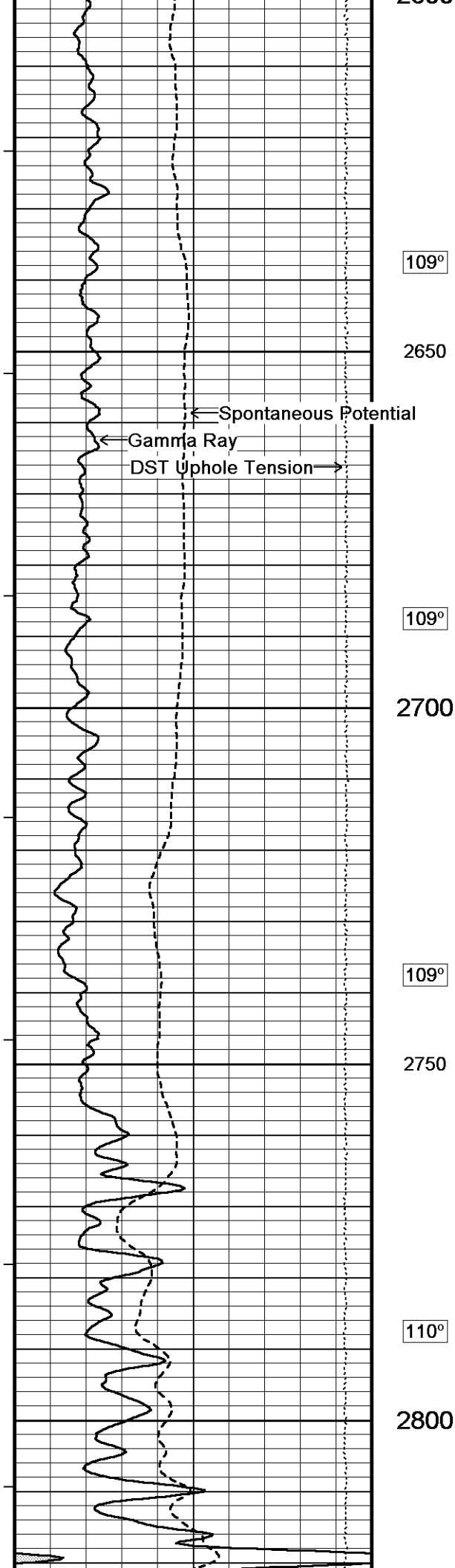


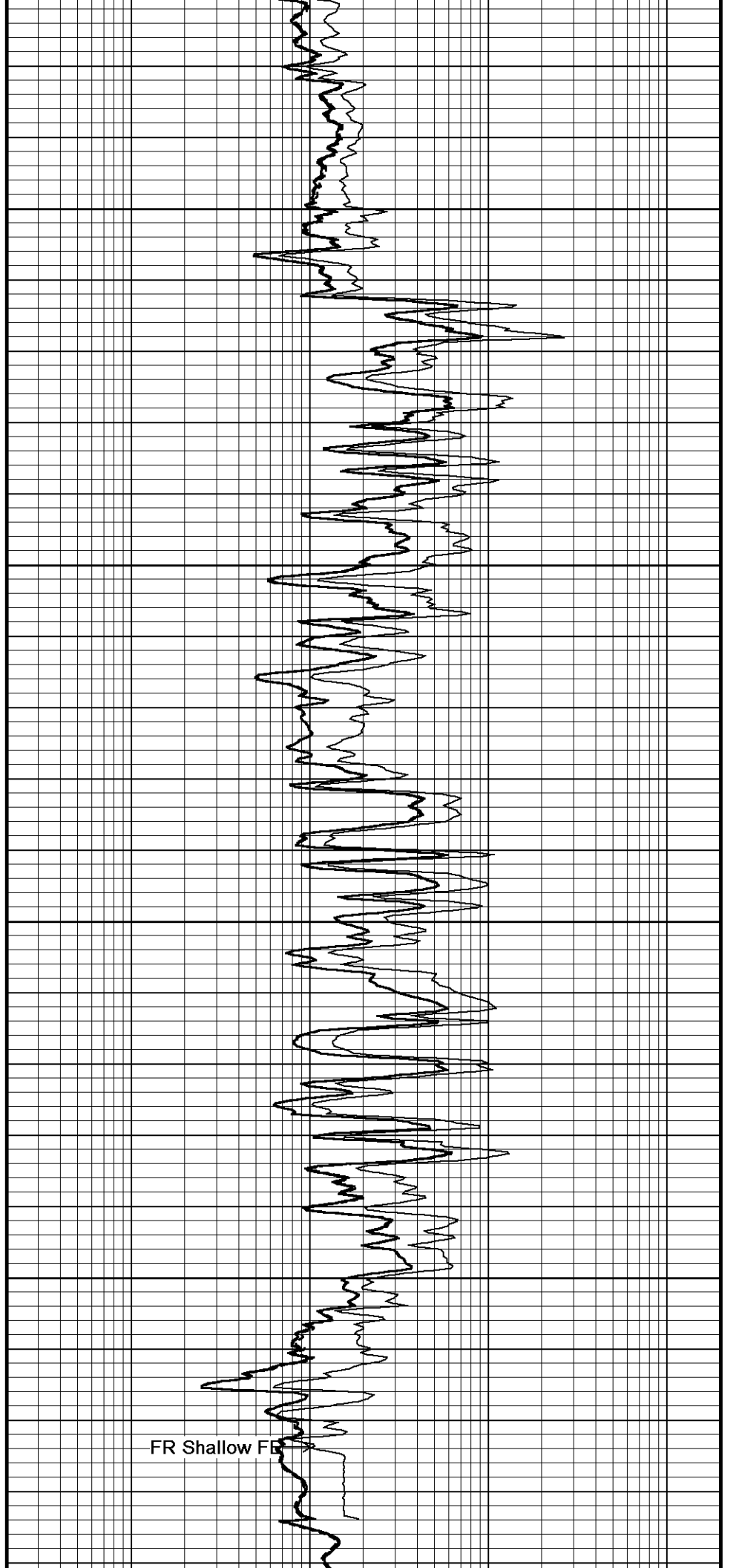
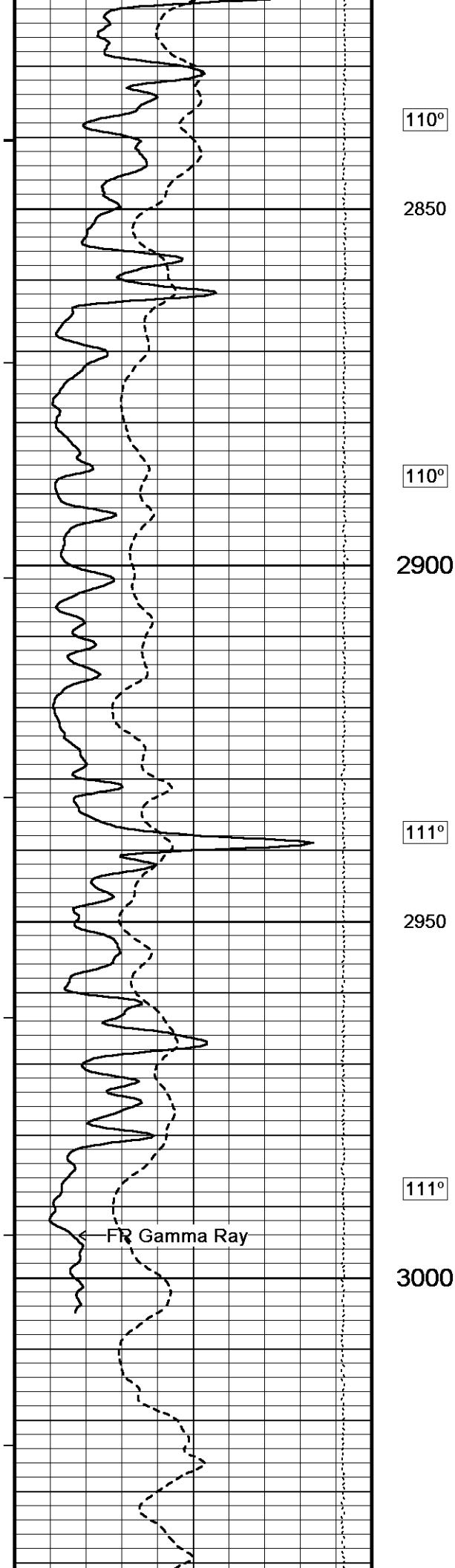


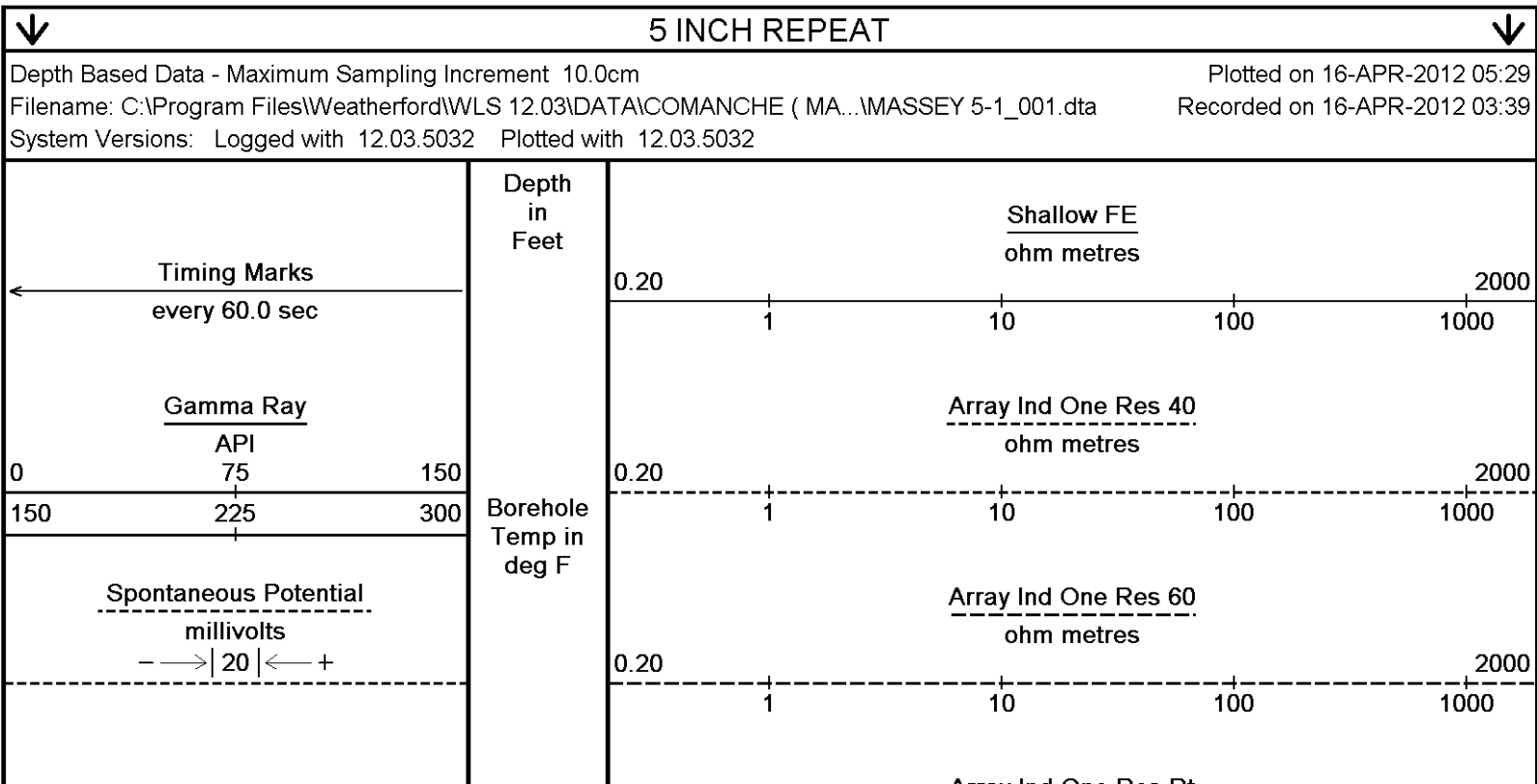
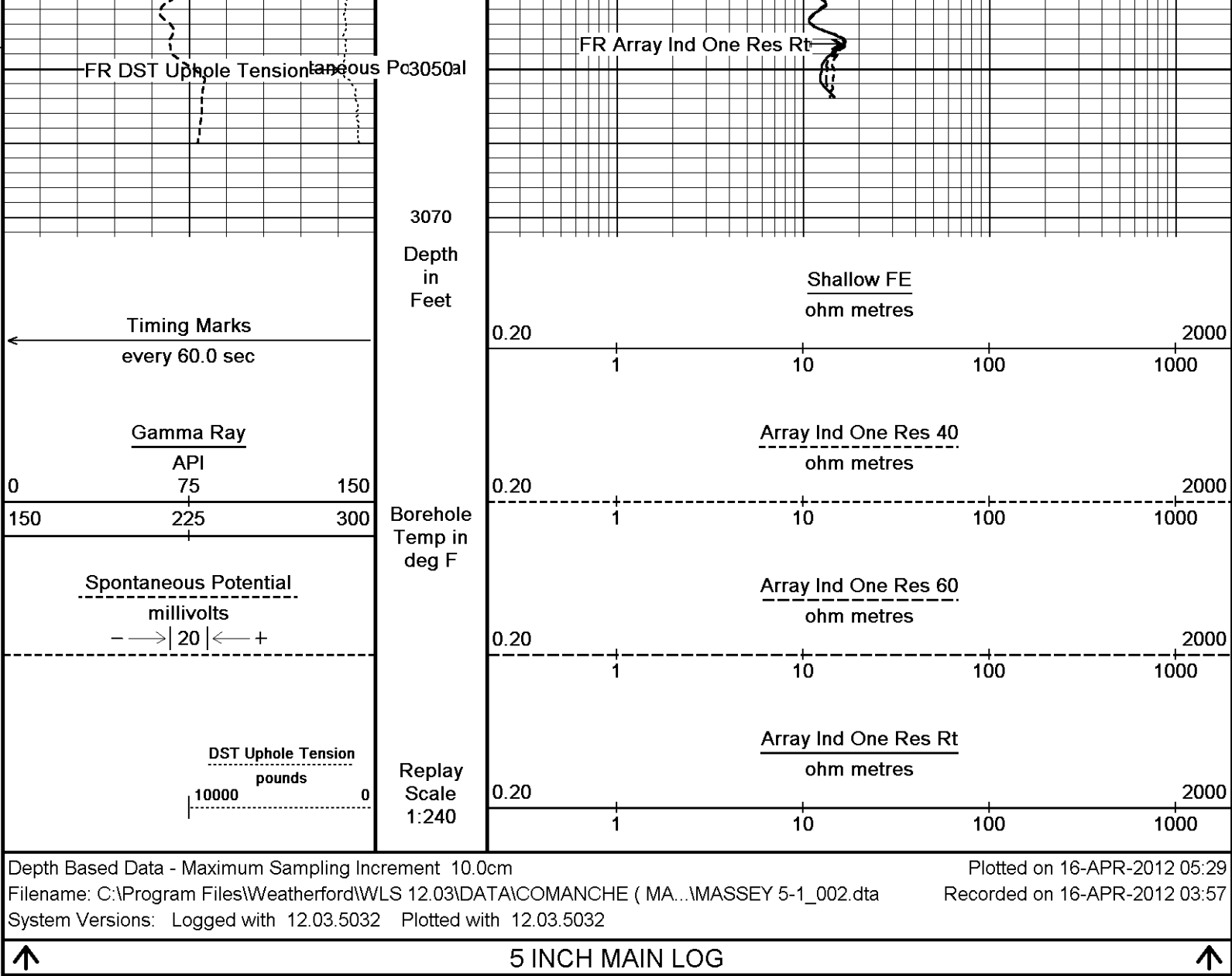












DST Uphole Tension
pounds

10000 0

Replay
Scale
1:240

2800

109°

2850

109°

2900

110°

2950

109°

3000

Array Ind One Res Rt
ohm metres

0.20

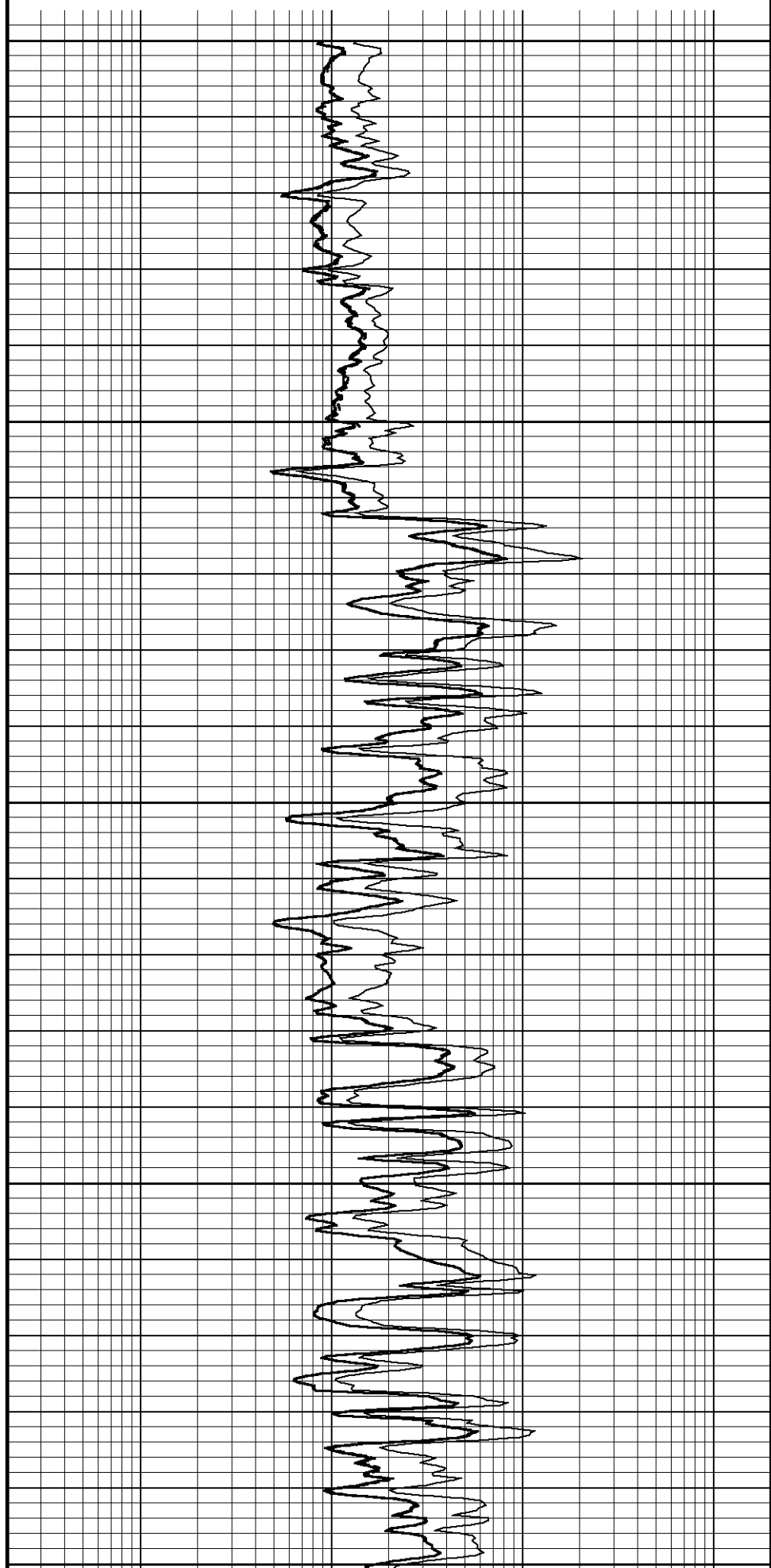
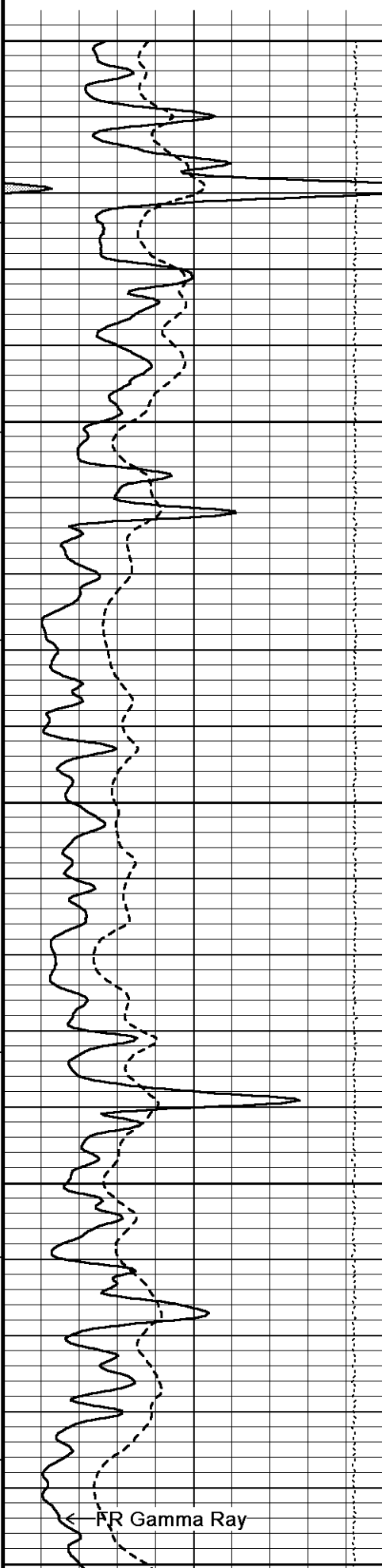
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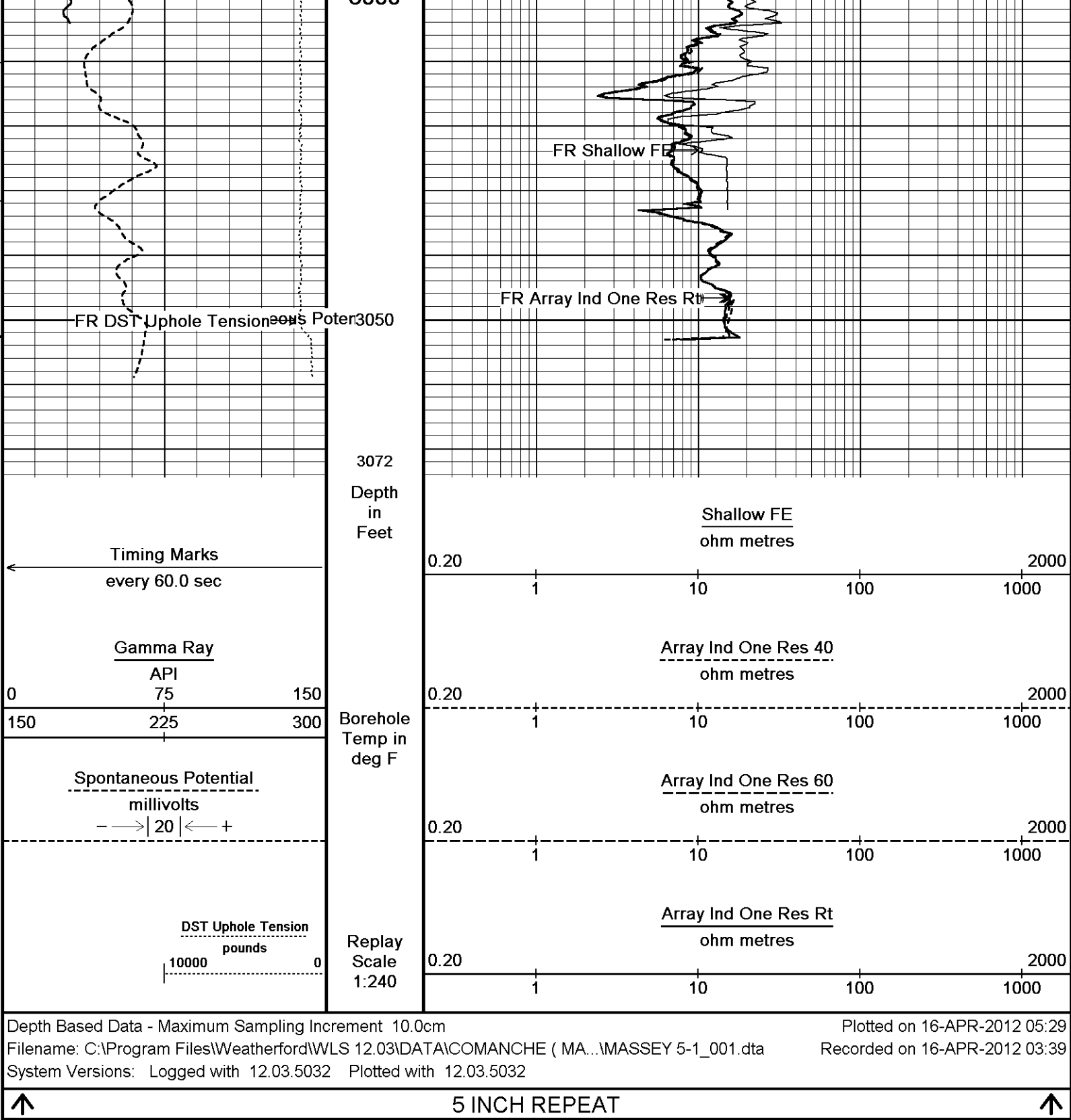
10

100

1000

2000





BEFORE SURVEY CALIBRATION		
C:\Program Files\Weatherford\WLS 12.03\DATA\COMANCHE (MASSEY 5-1)\MASSEY 5-1.dta		
General Constants All 000		Last Edited on 16-APR-2012,01:47
General Parameters		
Mud Resistivity	2.200	ohm-metres
Mud Resistivity Temperature	65.000	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	5.500	inches
Caliper for Differential Caliper	Density Caliper	
Rwa Parameters		
Porosity used	Limestone Density Por.	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

Down-hole Tension Calibration SMS 0			Field Calibration on 26-FEB-2012 16:15
Reading No	Measured	Calibrated (lbs)	
1	14469.65	0.00	
2	16626.62	750.00	

Gamma Calibration MCG-C 86			Field Calibration on 16-APR-2012,01:48
	Measured	Calibrated (API)	
Background	39	28	
Calibrator (Gross)	1770	1289	
Calibrator (Net)	1731	1261	

Gamma Constants MCG-C 86			Last Edited on 16-APR-2012,01:48
Gamma Calibrator Number	1		
Mud Density	1.10	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl	0.00	kppm	

SP Calibration MCG-C 86			Field Calibration on 16-APR-2012,01:48
	Measured	Calibrated (mV)	
Reference 1	100.0	100.0	
Reference 2	-100.0	-100.0	

High Resolution Temperature Calibration MCG-C 86			Field Calibration on 16-APR-2012,01:48
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	100.00	100.00	

High Resolution Temperature Constants MCG-C 86			Last Edited on
Pre-filter Length	11		

Micro Laterolog Calibration MMR-A.A 6				Base Calibration on 15-SEP-2008,10:36	
				Field Check on 15-SEP-2008,10:53	
Base Calibration					
		Measured		Calibrated (ohm-m)	
Ref 1		Ref 2		Ref 1	
0.0		9889.3		0.0	
				1.0	
Base Check (ohm-m)			Field Check (ohm-m)		
4.0			3.2		

Micro Laterolog Constants MMR-A.A 6			Last Edited on 15-SEP-2008,14:57
Pad Type	6 in 2.25 in OD Solid Rubber B32069		
Micro Laterolog K Factor	0.0100		
Standoff Offset	0.0000	inches	
Mudcake Thickness Correction Constants			
Mud Cake Source	Differential Caliper		
Mud Cake Thickness	N/A		
Mud Cake Thickness Caliper	MMR Caliper		
Mud Cake Resistivity	0.1500		
Mud Cake Resistivity Temp.	68.00		
Mud Cake Resistivity Source	Constant Value		
Temp. Source Rmc Correc.	N/A		

Micro Normal and Micro Inverse Calibration MMR-A.A 6			Base Calibration on 07-MAR-2012 12:48
--	--	--	---------------------------------------

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.0	59.0	2.6	12.8
Micro Inverse	15.5	77.0	1.7	8.4
Channel	Base Check (ohm-m)		Field Check (ohm-m)	
Micro Normal	39.5		39.5	
Micro Inverse	20.0		20.0	

Micro Normal and Micro Inverse Constants MMR-A.A 6

Last Edited on 29-OCT-2011,09:57

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	

Caliper Calibration MMR-A.A 6

Base Calibration on 07-MAR-2012 13:10

Field Calibration on 16-APR-2012,01:48

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	13736	5.96
2	17158	7.98
3	20563	9.94
4	24464	11.91
5	0	0.00
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	7.84	7.99

Neutron Calibration MDN-A.A 10

Base Calibration on 16-FEB-2012,21:39

Field Check on 16-APR-2012,01:48

Base Calibration					
Ratio	Measured		Calibrated (cps)		Ratio
	Near	Far	Near	Far	
	3130	98	3714	110	
	31.818		33.764		
Field Calibrator at Base					
Ratio			Calibrated (cps)		Ratio
			1248	1792	
			0.696		
Field Check					
Ratio			Calibrated (cps)		Ratio
			1218	1776	
			0.686		

Neutron Constants MDN-A.A 10

Last Edited on 16-APR-2012,01:49

Neutron Source Id	P14033B	
Neutron Jig Number	13226	
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	None	
Temperature	N/A	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 65

Base Calibration on 27-MAR-2012 13:32

Field Check on 16-APR-2012,01:49

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	9.7	1.3
Reference 2	956.7	126.8
Base Check		282.0
Field Check		282.0

FE Constants MFE-A.A 65

Last Edited on 16-APR-2012,01:49

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 101

Last Edited on 03-MAR-2012,09:57

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
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	

Waveform Filter				
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		
High Resolution Temperature Calibration MAI-A.A 102			Field Calibration on 16-APR-2012,01:51	
	Measured	Calibrated(Deg F)		
Lower	50.00	50.00		
Upper	100.00	100.00		
High Resolution Temperature Constants MAI-A.A 102			Last Edited on	
Pre-filter Length	11			
Induction Calibration MAI-A.A 102			Base Calibration on 16-FEB-2012,21:42 Field Check on 16-APR-2012,01:50	
Base Calibration				
Test Loop Calibration		Measured	Calibrated (mmho/m)	
Channel	Low	High	Low	High
1	17.3	481.3	9.3	966.2
2	5.4	377.6	7.6	821.4
3	2.4	255.3	5.2	566.0
4	1.5	133.4	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	12.6	3809.9
2	0.0	0.0	32.6	3607.6
3	0.0	0.0	31.7	3125.9
4	0.0	0.0	20.7	2087.6
Deep	0.0	0.0	19.0	2000.5
Medium	0.0	0.0	47.3	4182.1
Shallow	0.0	0.0	48.9	5376.2
Array Temperature	0.0		59.3	Deg F
Induction Constants MAI-A.A 102			Last Edited on 16-APR-2012,01:51	
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		6.0000		
Stand-off Fin Angle		60.00	degrees	
Stand-off Fin Width		0.5000	inches	
Borehole Corr. Rm Source		Temperature Corr		
Temp. for Rm Corr.		MCG External Temperature		
Squasher Start		0.0060	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	

Caliper Calibration MPD-A 3

Base Calibration on 20-FEB-2012,10:19
Field Calibration on 16-APR-2012,01:49

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	20208	3.98
2	28784	5.95
3	37424	7.97
4	45392	9.84
5	54503	11.91
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.92	7.99

Photo Density Calibration MPD-A 3

Base Calibration on 27-MAR-2012 10:10
Field Check on 16-APR-2012,01:49

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	46850	24590	59869	31110
Reference 2	20054	2765	24557	2522

Field Check at Base

1284.8 1616.3

Field Check

1284.6 1617.1

PE Calibration

Base Calibration	WS	Measured		Calibrated
		WH	Ratio	Ratio
Background	235	1148		
Reference 1	18748	46659	0.407	0.369
Reference 2	5542	19909	0.283	0.271

Field Check at Base

234.9 1147.9

Field Check

233.2 1146.0

Density Constants MPD-A 3

Last Edited on 16-APR-2012,01:49

Density Source Id	260	
Nylon Calibrator Number	633	
Aluminium Calibrator Number	633	
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 (ft)

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

DOWNHOLE EQUIPMENT

C:\Program Files\Weatherford\WLS 12.03\DATA\COMANCHE (MASSEY 5-1)\MASSEY 5-1.dta

Compact Comms Gamma
MCG-C 86 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-Resistivity
MMR-A.A 6 LG: 8.59 ft WT: 81.6 lb OD: 4.88 in

Compact Neutron
MDN-A.A 10 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

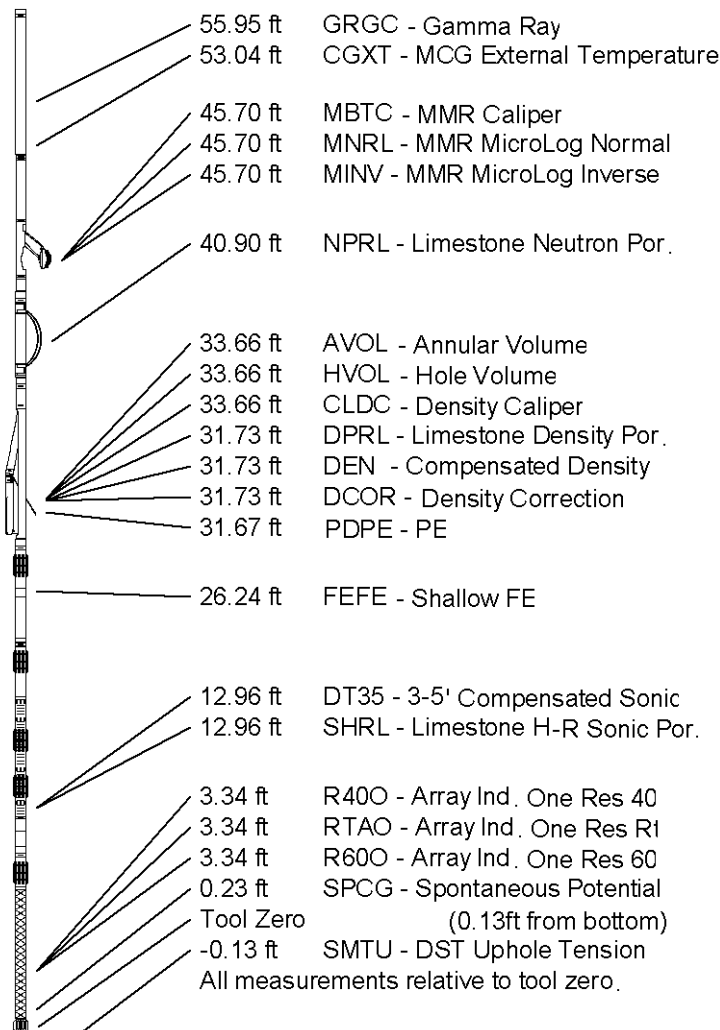
Compact Density/Caliper
MPD-A 3 LG: 9.53 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric
MFE-A.A 65 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-A.A 101 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Induction
MAI-A.A 102 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 61.24 ft Weight: 456.4 lb



COMPANY

COMANCHE RESOURCES CO., LLC

WELL

MASSEY 5-1

FIELD

WILDCAT

PROVINCE/COUNTY

COWLEY

COUNTRY/STATE

U.S.A. / KANSAS

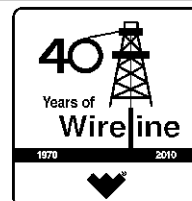
Elevation Kelly Bushing	1056.00	feet
Elevation Drill Floor	1054.00	feet
Elevation Ground Level	1046.00	feet

First Reading	3047.00	feet
Depth Driller	3050.00	feet
Depth Logger	3050.00	feet

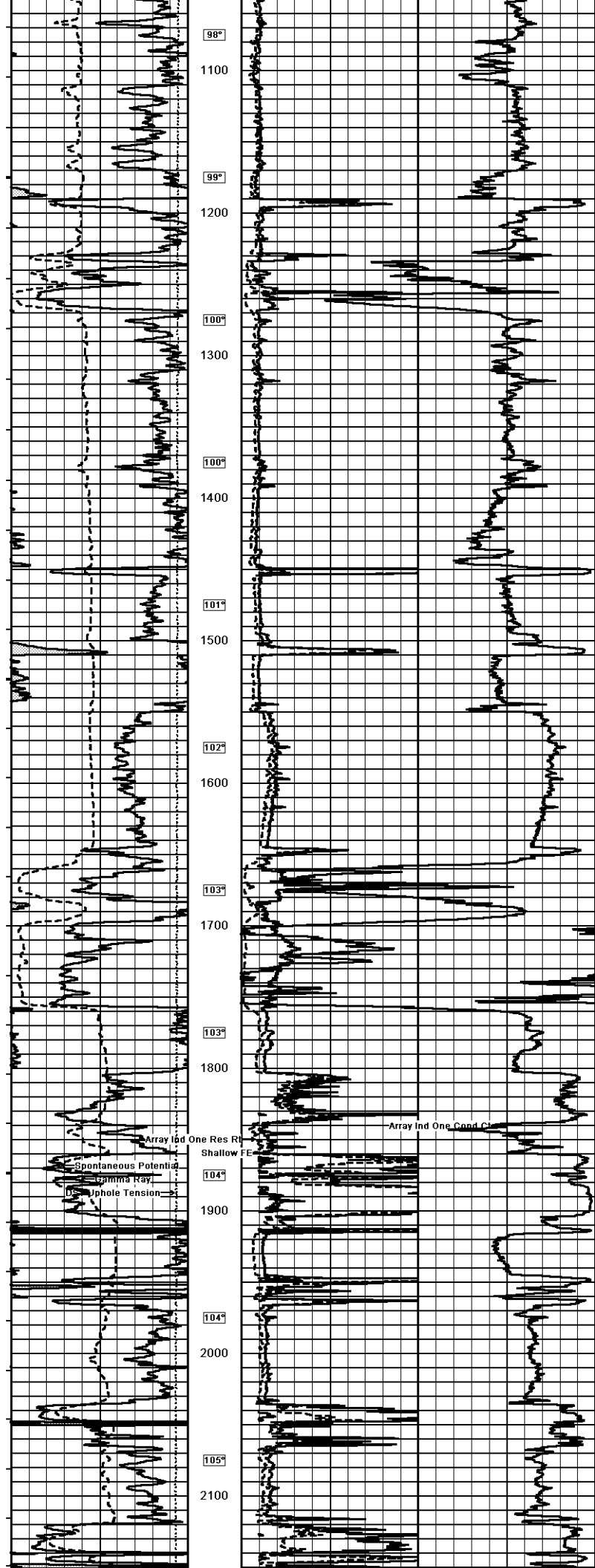


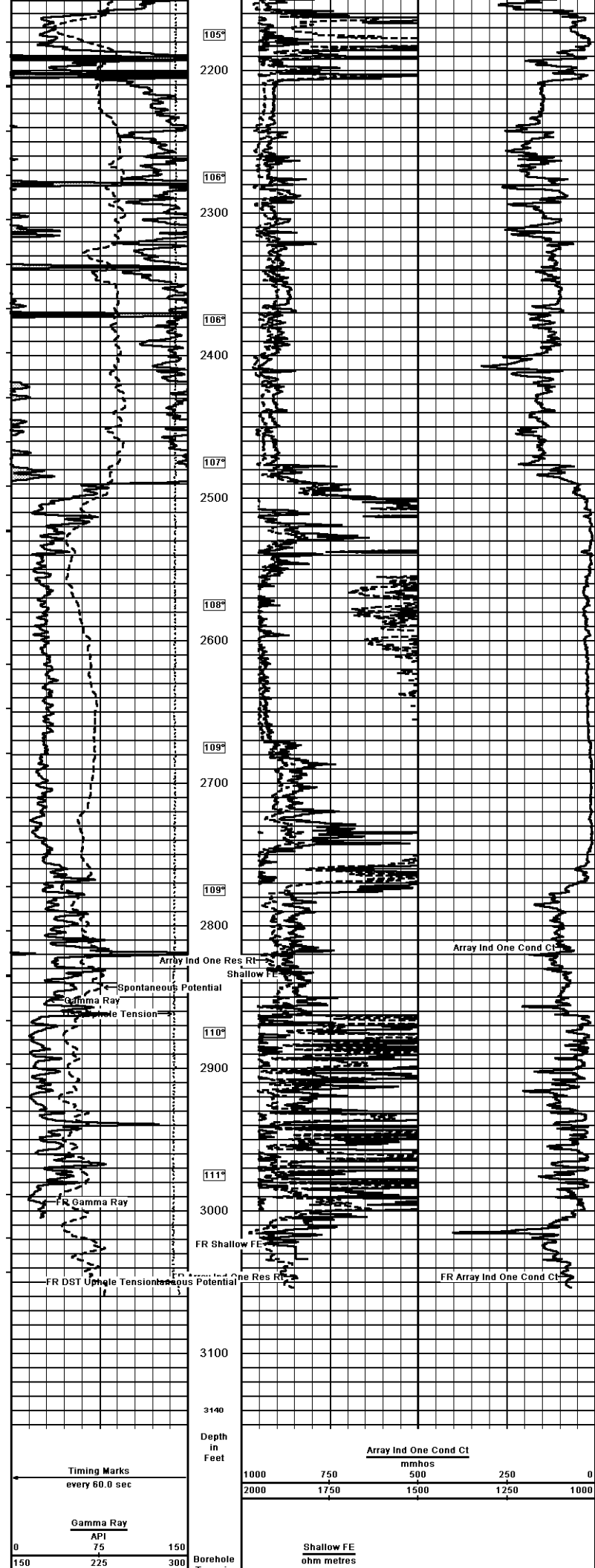
Weatherford®

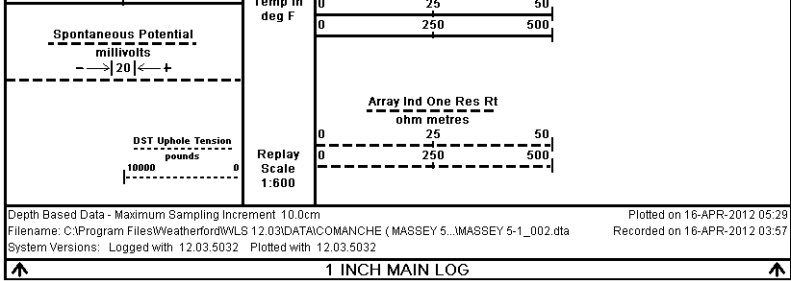
ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG



SEC	5	7	3
Run Number			
Drilling Number			
Log Number			
Log Measure			
Drilling Measure			
Date			
Run Number			
Depth Driller			
Depth Logger			
First Reading			
Last Reading			
Casing Depth			
Casing Log			
Bit Size			
Flow Fluid Type			
Density / Visc			
PH / Fluid Loss			
Sample Source			
Run @ Measu			
Run @ Measu			
Run @ Measu			
Source Run/1			
Run @ BHT			
Time Since CI			
Max Record			
Equipment NE			
Equipment RB			
Recorded By			
Witnessed By			







COMPANY	COMANCHE RESOURCES CO., LLC
WELL	MASSEY 5-1
FIELD	WILDCAT
PROVINCE/COUNTY	COWLEY
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1056.00	feet	First Reading	3047.00	feet
Elevation Drill Floor	1054.00	feet	Depth Driller	3050.00	feet
Elevation Ground Level	1046.00	feet	Depth Logger	3050.00	feet

Weatherford

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

40

Wireline