Weatherford®

ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

COMPANY	SHAKESPEARE OIL COMPANY
WELL	NIGHTINGALE #1-28
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	UNITED STATES / KANSAS
LOCATION	985' FNL & 335' FEL NW SE NE NE

SEC	TWP	RGE
28	16W	34

API Number 15-171-20930
Permit Number

Other Services
MPD/MDN
MML
MSS

Permanent Datum G.L., Elevation feet
Log Measured From KB
Drilling Measured From K.B. @ 10 FEET

Elevations:	feet
KB	3140.00
DF	3138.00
GL	3130.00

Date	30-MAR-2013			
Run Number	ONE			
Service Order	3539880			
Depth Driller	4875.00	feet		
Depth Logger	4873.00	feet		
First Reading	4870.00	feet		
Last Reading	263.00	feet		
Casing Driller	265.00	feet		
Casing Logger	263.00	inches		
Bit Size	7.880			
Hole Fluid Type	CHEMICAL	lb/USg		
Density / Viscosity	9.30 lb/USg	59.00 CP		
PH / Fluid Loss	10.00	10.00		
Sample Source	MUDPIT			
Rm @ Measured Temp	0.49 @ 72.0	ohm-m		
Rmf @ Measured Temp	0.39 @ 72.0	ohm-m		
Rmc @ Measured Temp	0.59 @ 72.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.32 @109.0	ohm-m		
Time Since Circulation	4 HOURS			
Max Recorded Temp	109.00	deg F		
Equipment / Base	13057	LIB		
Recorded By	W. STAMBAUGH		J. LAPOINT	
Witnessed By	TIM PRIEST			
JOB #	LB13-084			

BOREHOLE RECORD

Last Edited: 30-MAR-2013 10:38

Bit Size inches	Depth From feet	Depth To feet
7.875	263.00	4875.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	263.00	8.63

REMARKS

- SOFTWARE ISSUE: WLS 13.04.8492.
- MCG, MML, MDN, MPD, MFE, MSS, MAI RAN 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: 2420 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 2000 FEET: 290 CU. FT.

- SERVICE ORDER # 3539880.

- RIG: HD RIG #2

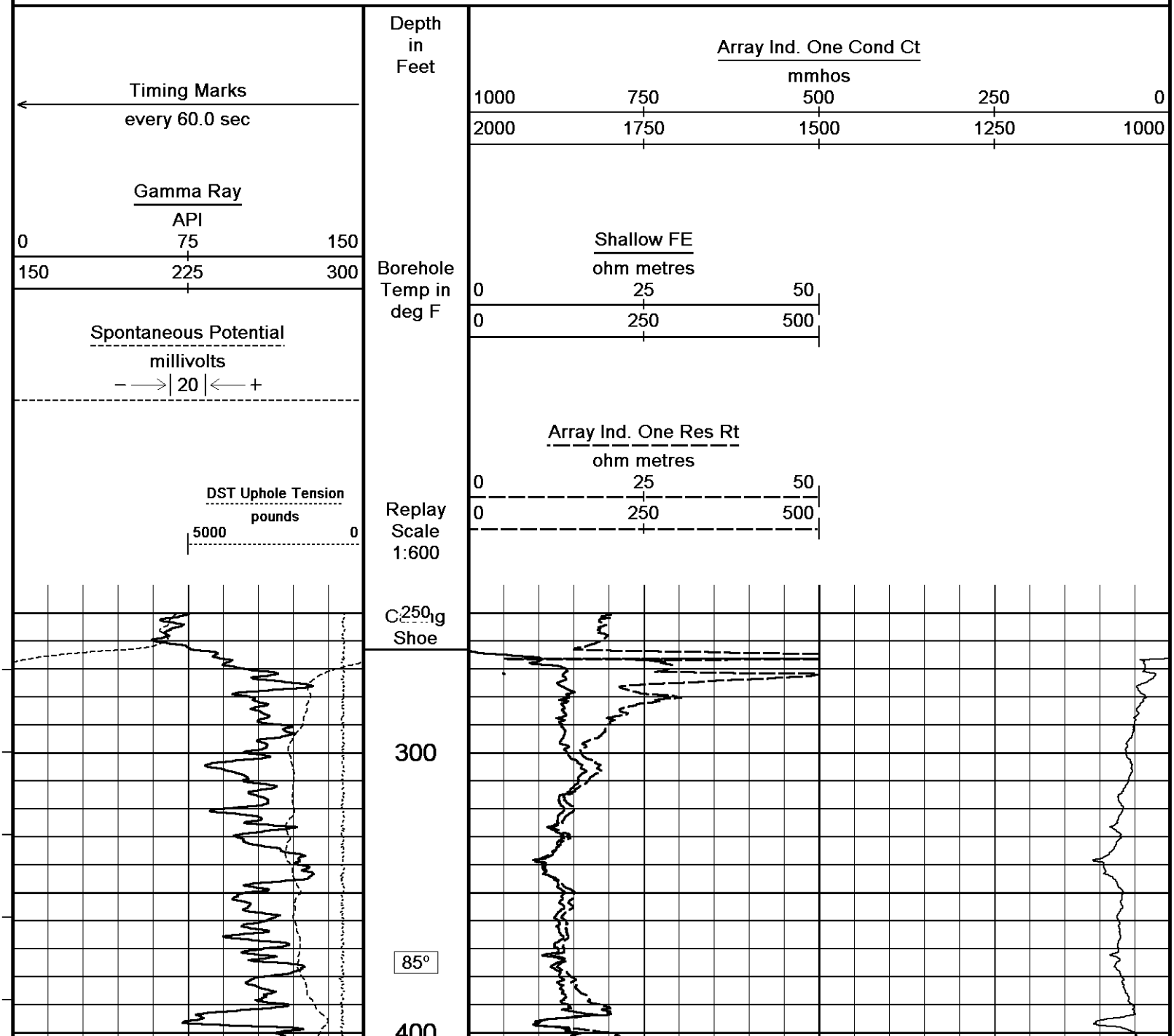
- ENGINEER: W. STAMBAUGH, J. LAPOINT

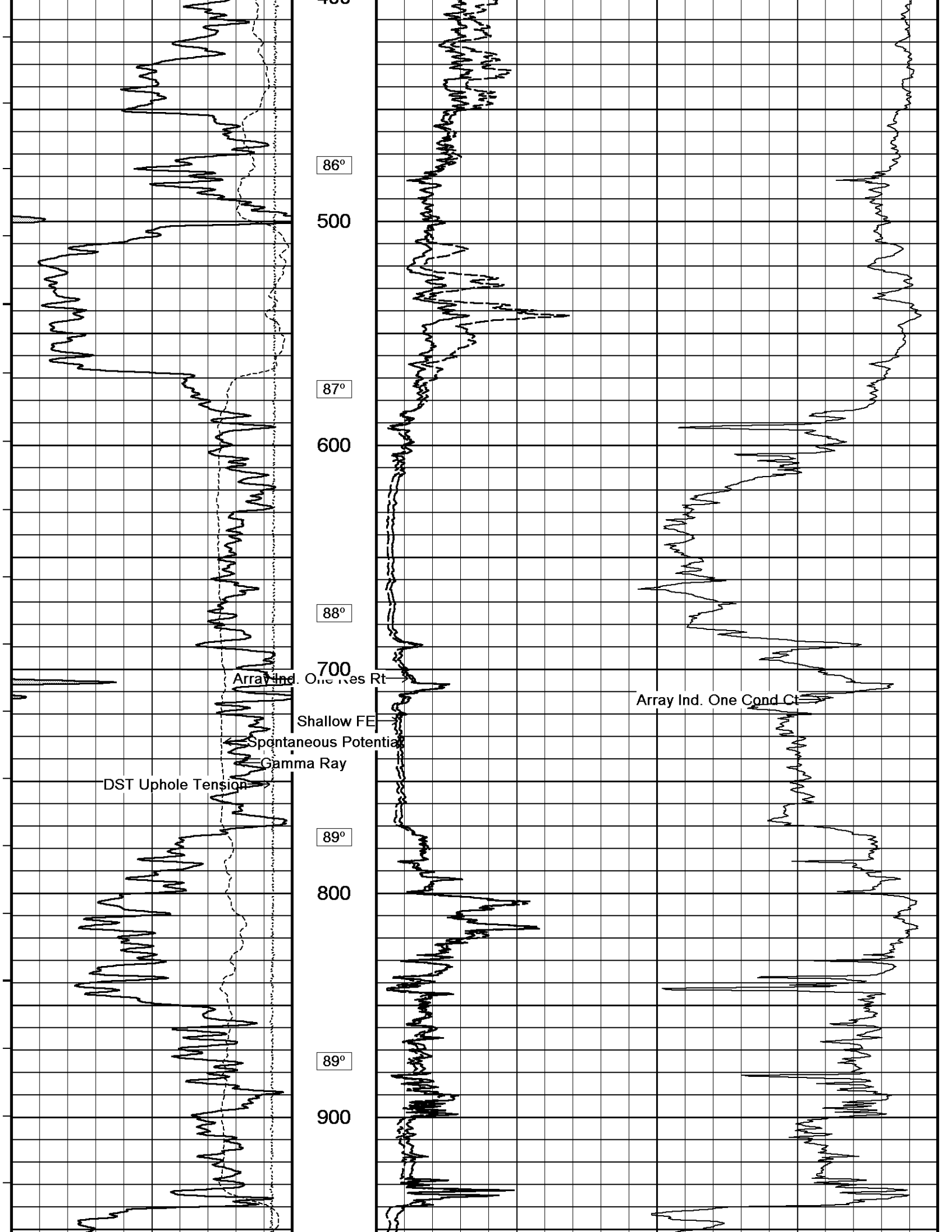
- OPERATOR(S): K. RINEHART.

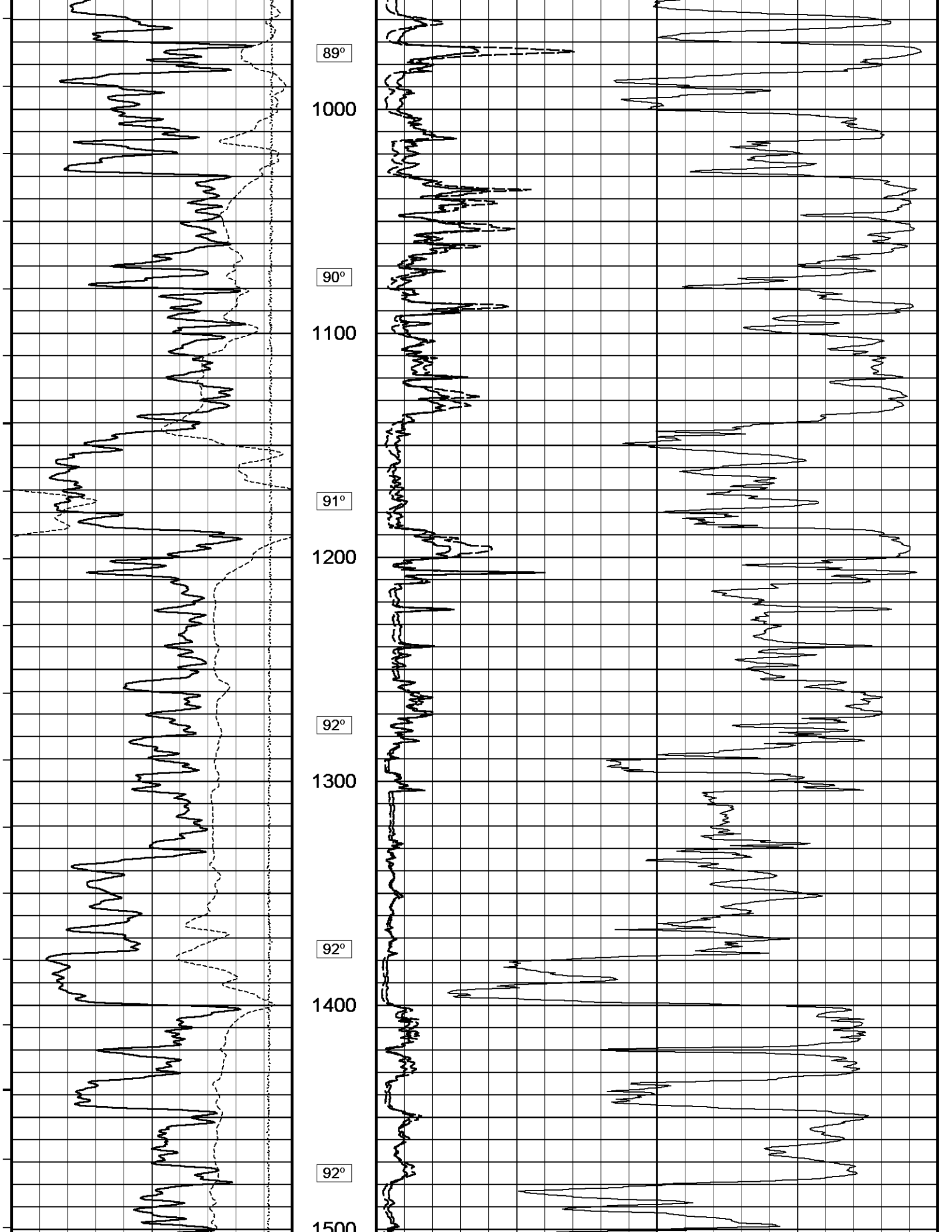
**** SOFTWARE ISSUE CHANGED FLUID LOSS TO MATCH PH. FLUID LOSS SHOULD BE 8.8 ML/30MIN. ****
****HIGH RESOLUTION INTERVAL FROM 4550 FEET TO 4400 FEET.****

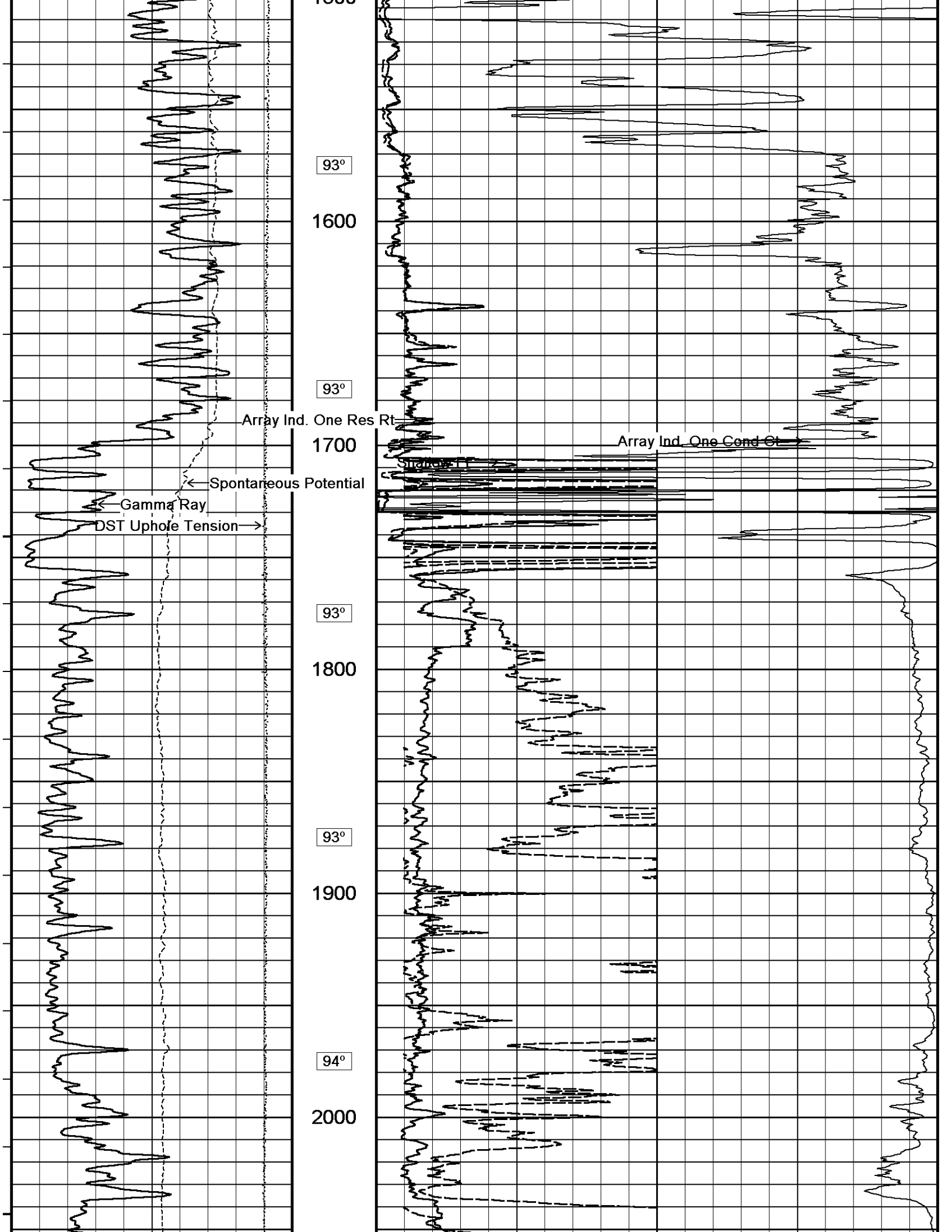
2 INCH MAIN

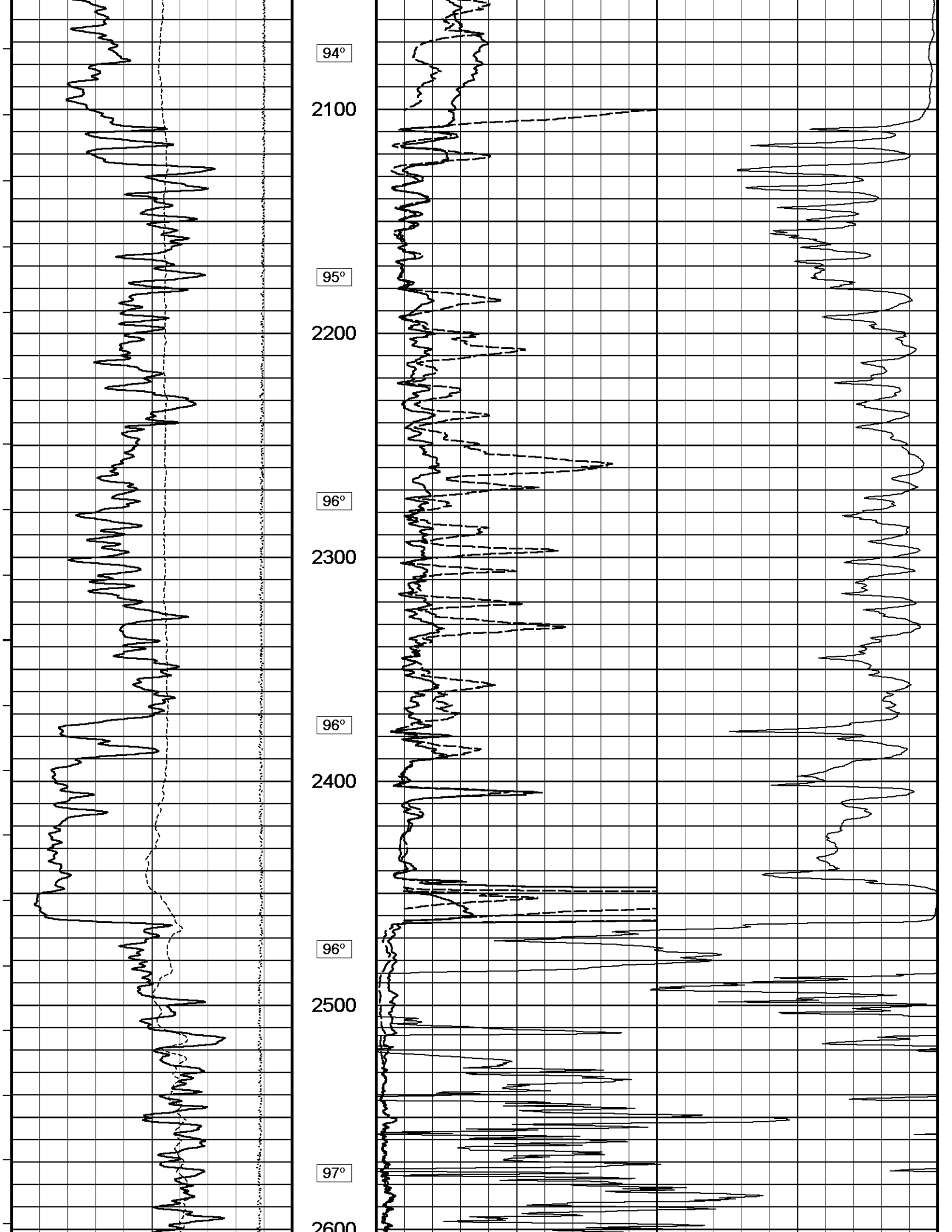
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-MAR-2013 15:08
Filename: C:\Minimus 13.04.8492\Data\Shakespeare Nighte...\Shakespeare Nightengale #1-28_003.dta — Recorded on 30-MAR-2013 12:03
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

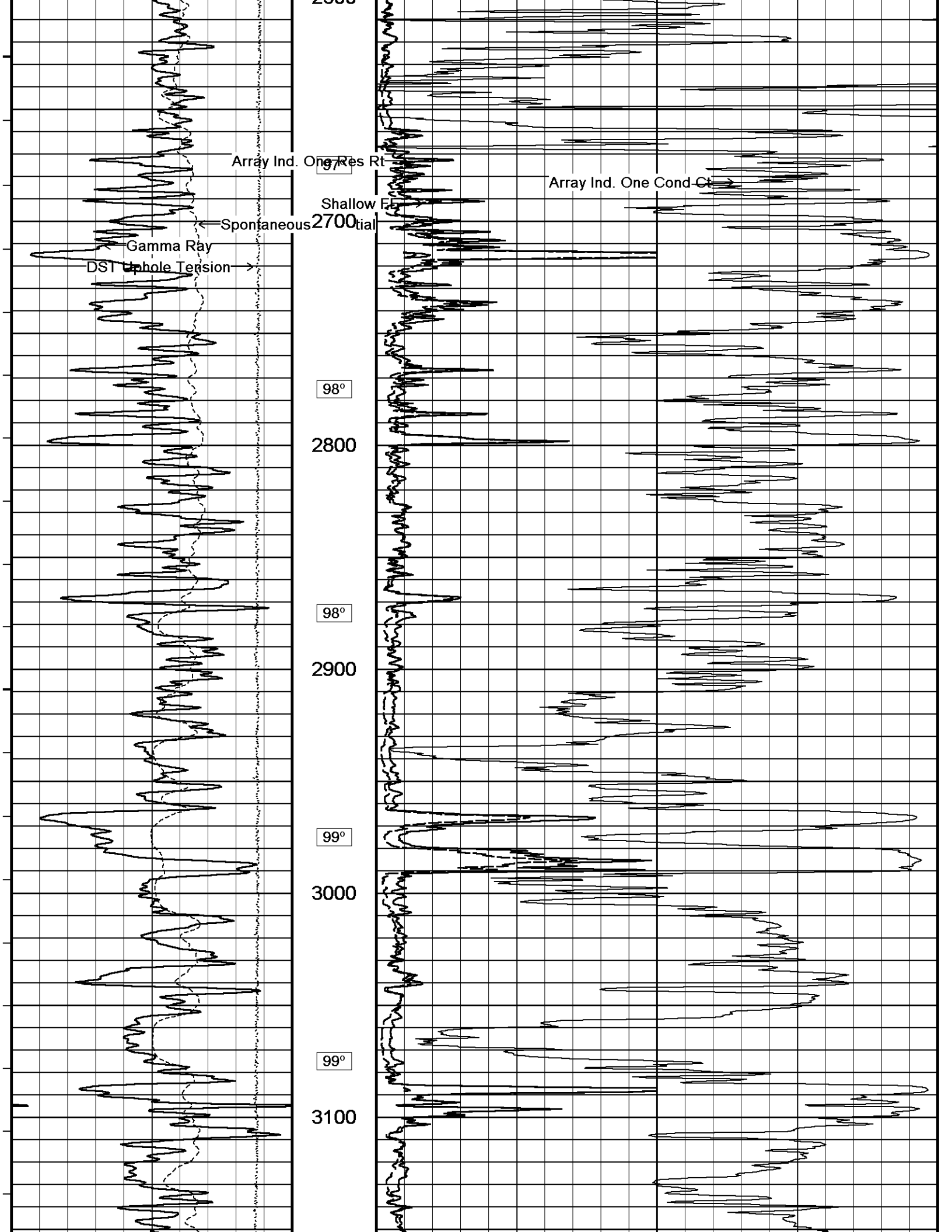


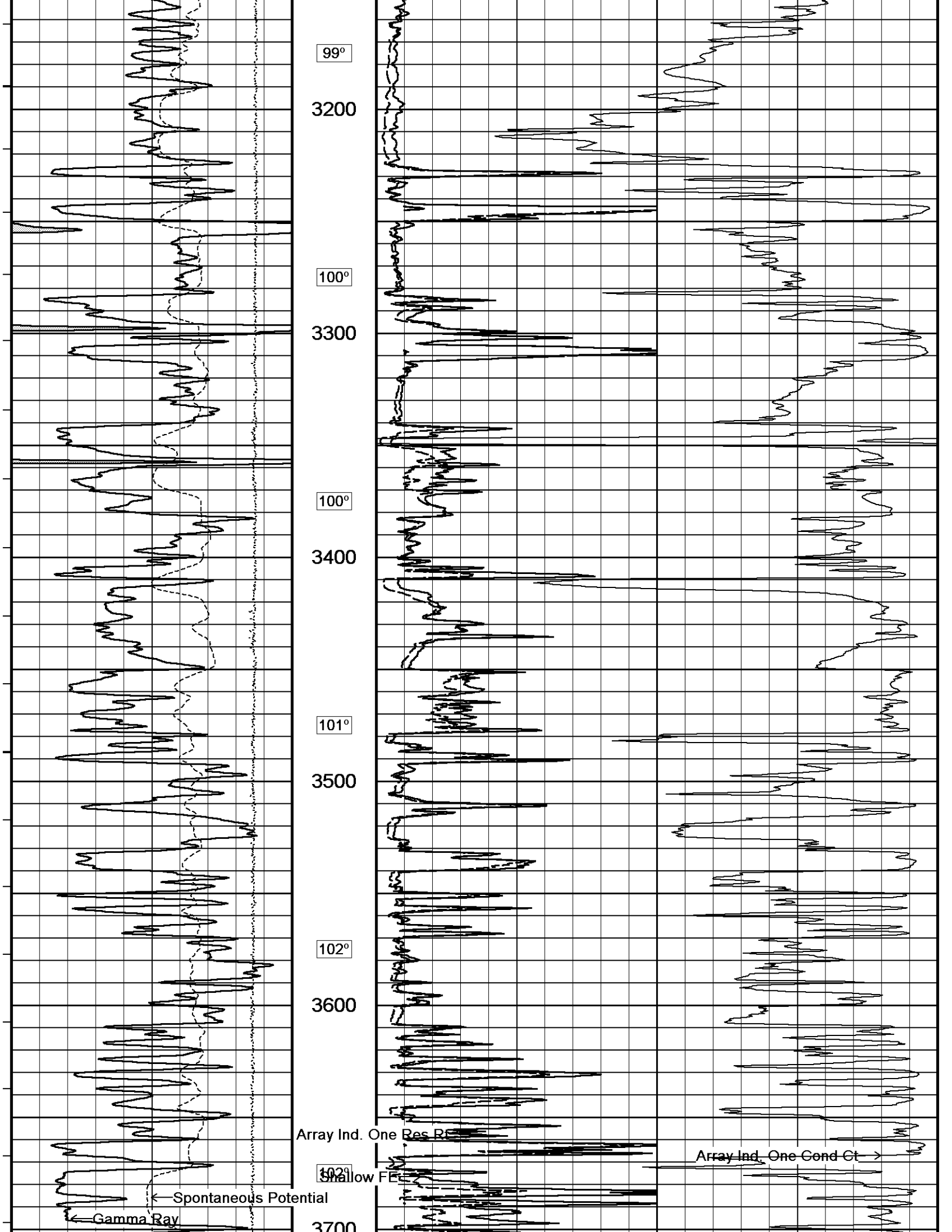

86°
500
87°
600
88°
700
Array Ind. One Res Rt
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
89°
800
89°
900
Array Ind. One Cond Ct

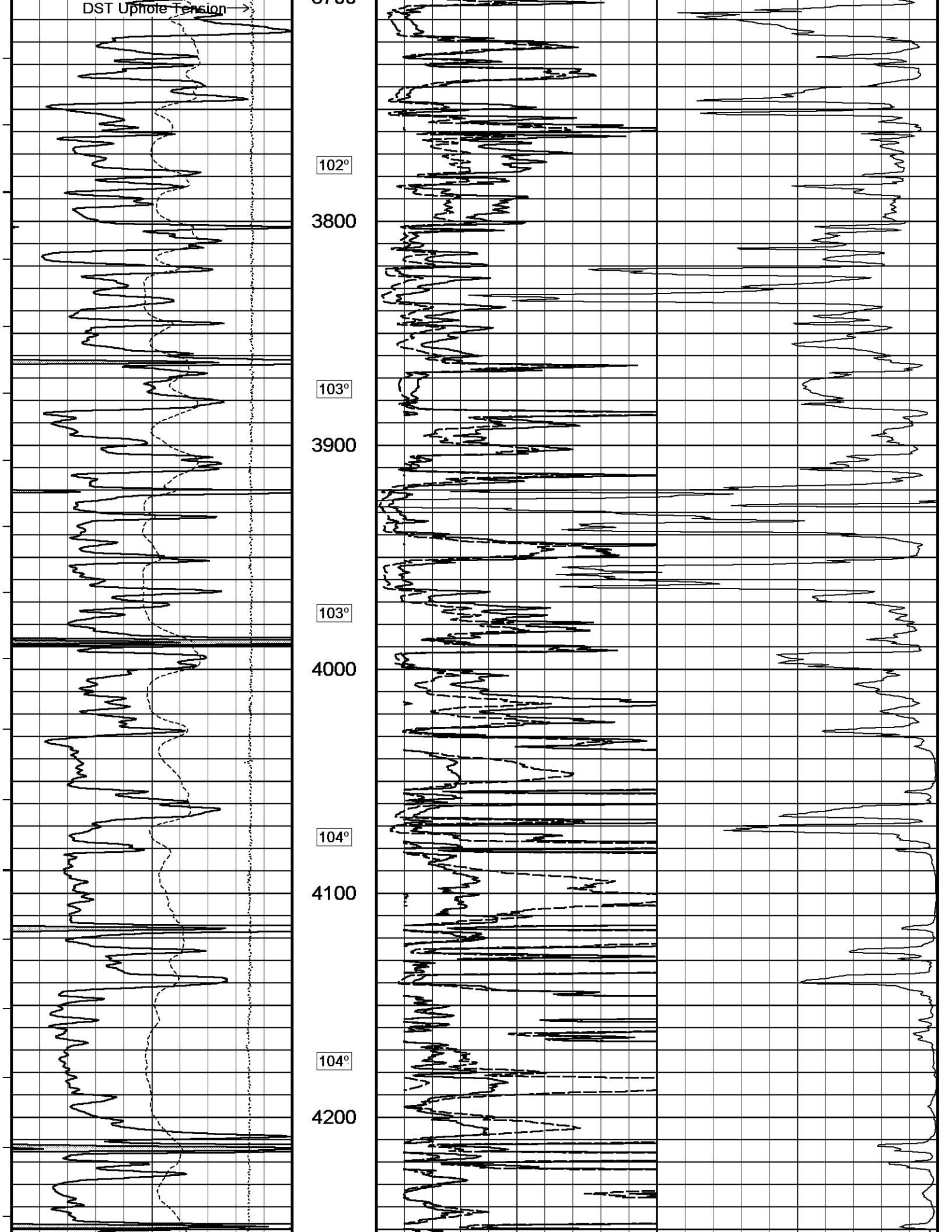

89°
1000
90°
1100
91°
1200
92°
1300
92°
1400
92°
1500

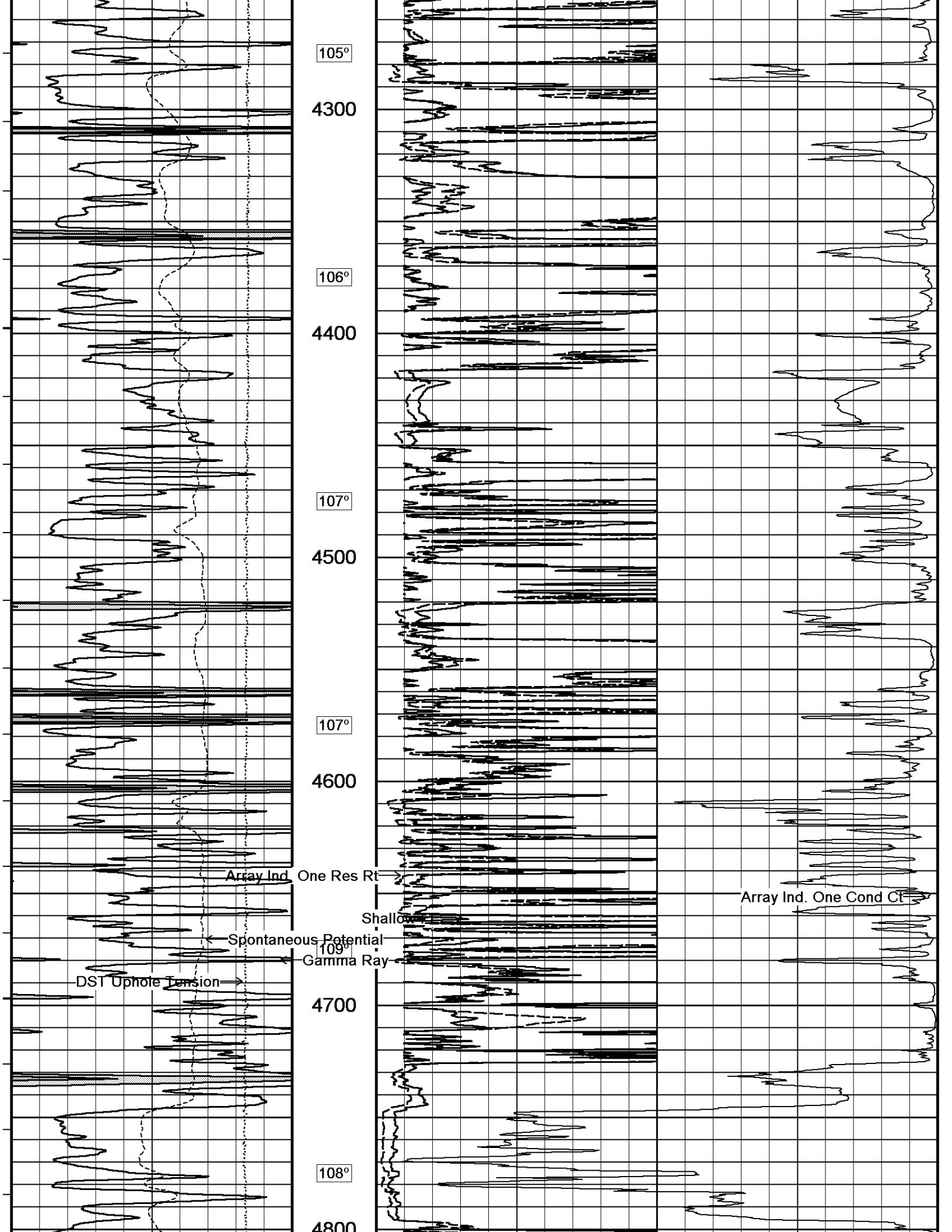

93°
1600
93°
Array Ind. One Res Rt
1700
Array Ind. One Cond Ct
Spontaneous Potential
Gamma Ray
DST Uphole Tension
93°
1800
93°
1900
94°
2000

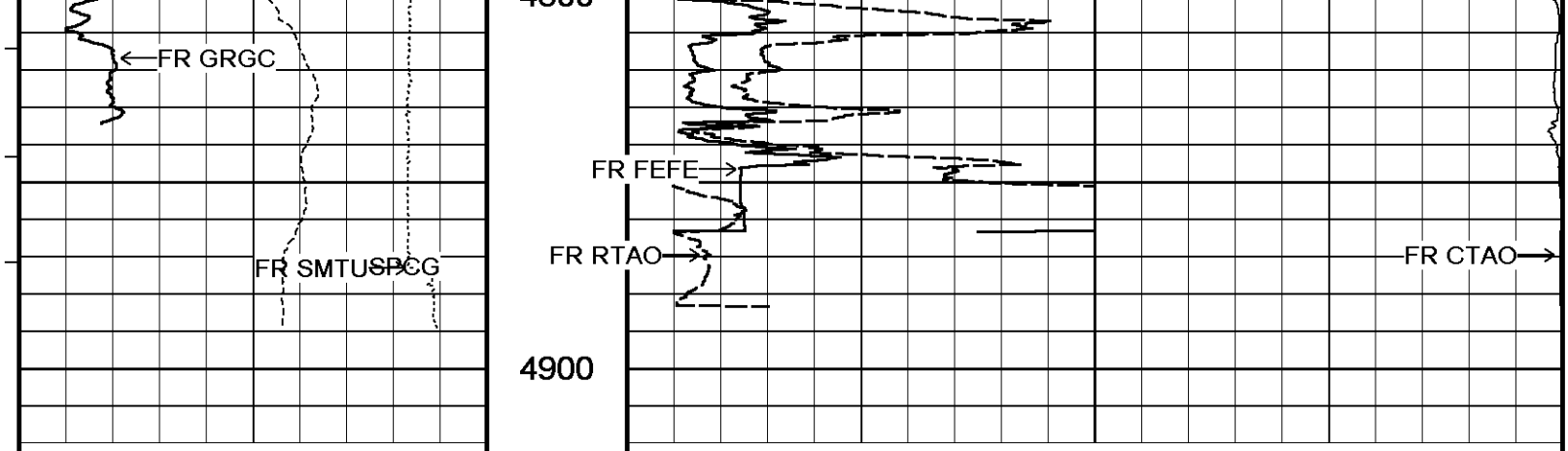

94°
2100
95°
2200
96°
2300
96°
2400
96°
2500
97°
2600


Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow Focused
Spontaneous
Gamma Ray
DST Uphole Tension
97°
98°
98°
99°
99°
2700
2800
2900
3000
3100


99°
3200
100°
3300
100°
3400
101°
3500
102°
3600
102°
3700
Array Ind. One Res RT
Shallow FE
Array Ind. One Cond Ct
Spontaneous Potential
Gamma Ray


DST Uphole Tension
102°
3800
103°
3900
103°
4000
104°
4100
104°
4200


105°
4300
106°
4400
107°
4500
107°
4600
Array Ind. One Res Rt
Shallow E
Spontaneous Potential
109°
Gamma Ray
DST Uphole Tension
4700
Array Ind. One Cond Ct
108°
4800



Depth in Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
− 20 +

DST Uphole Tension
pounds
5000 0

Borehole Temp in deg F

Array Ind. One Cond Ct
mmhos
1000 750 500 250 0
2000 1750 1500 1250 1000

Shallow FE
ohm metres
0 25 50
0 250 500

Array Ind. One Res Rt
ohm metres
0 25 50
0 250 500

Replay Scale 1:600

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-MAR-2013 15:08
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System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

2 INCH MAIN

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-MAR-2013 15:08
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System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

Depth in Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

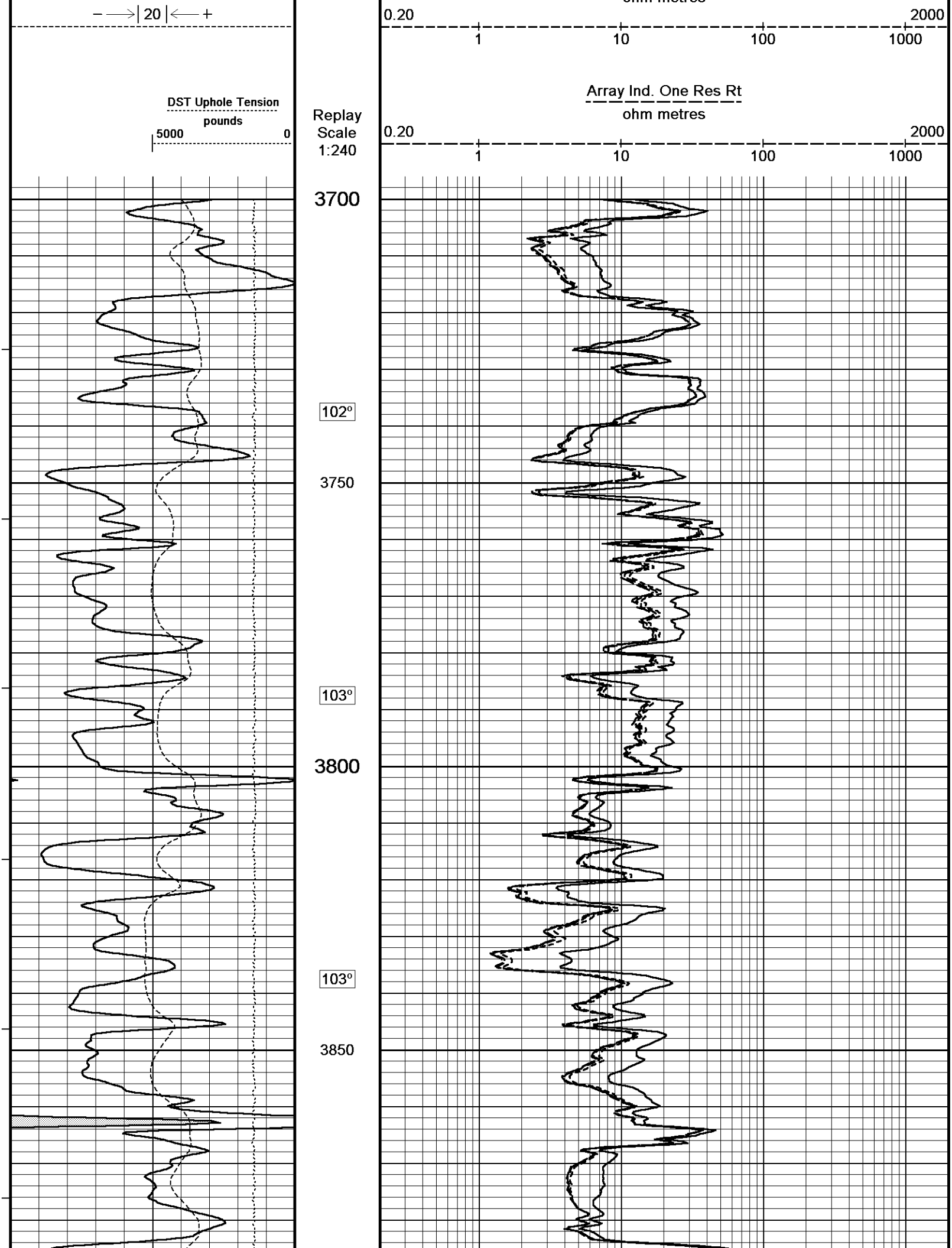
Spontaneous Potential
millivolts

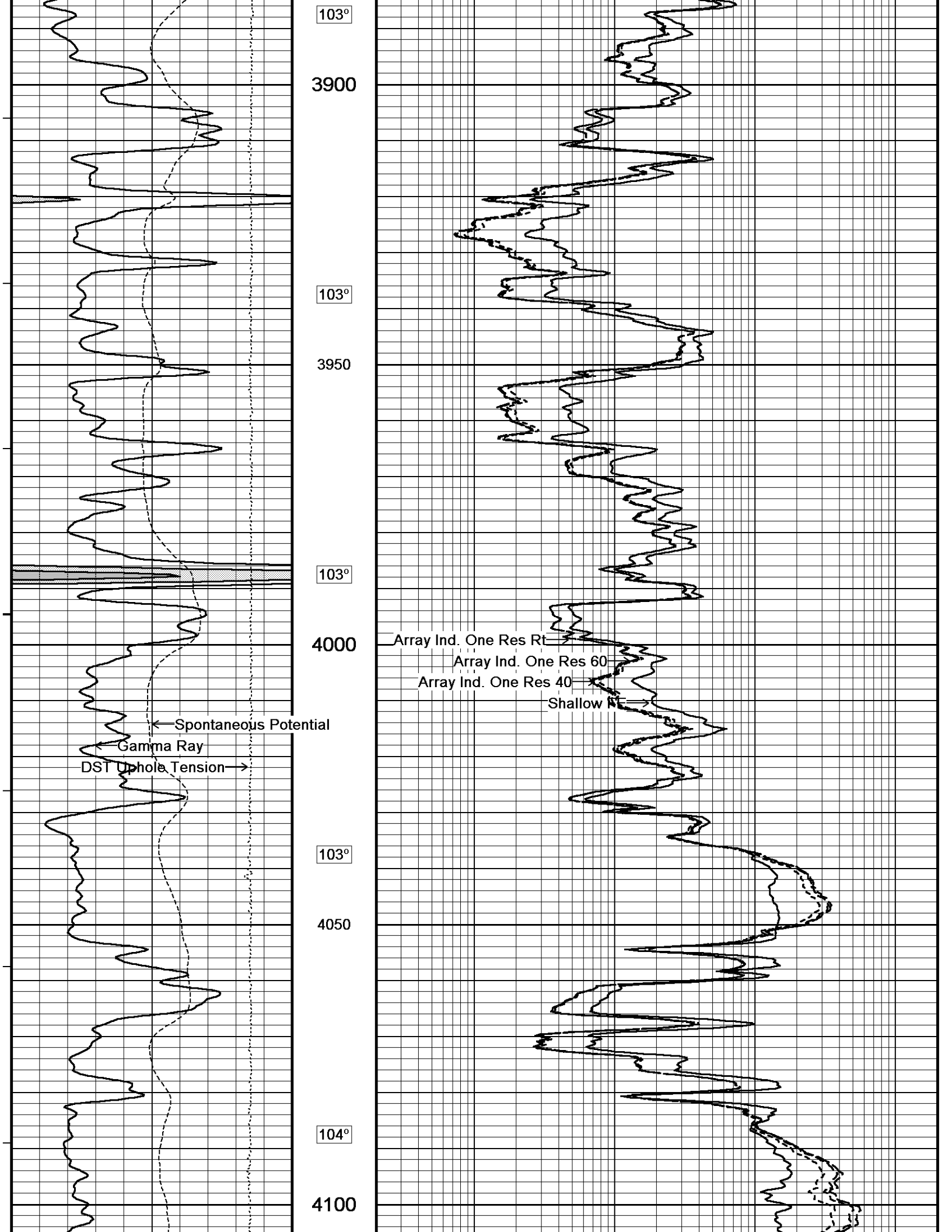
Borehole Temp in deg F

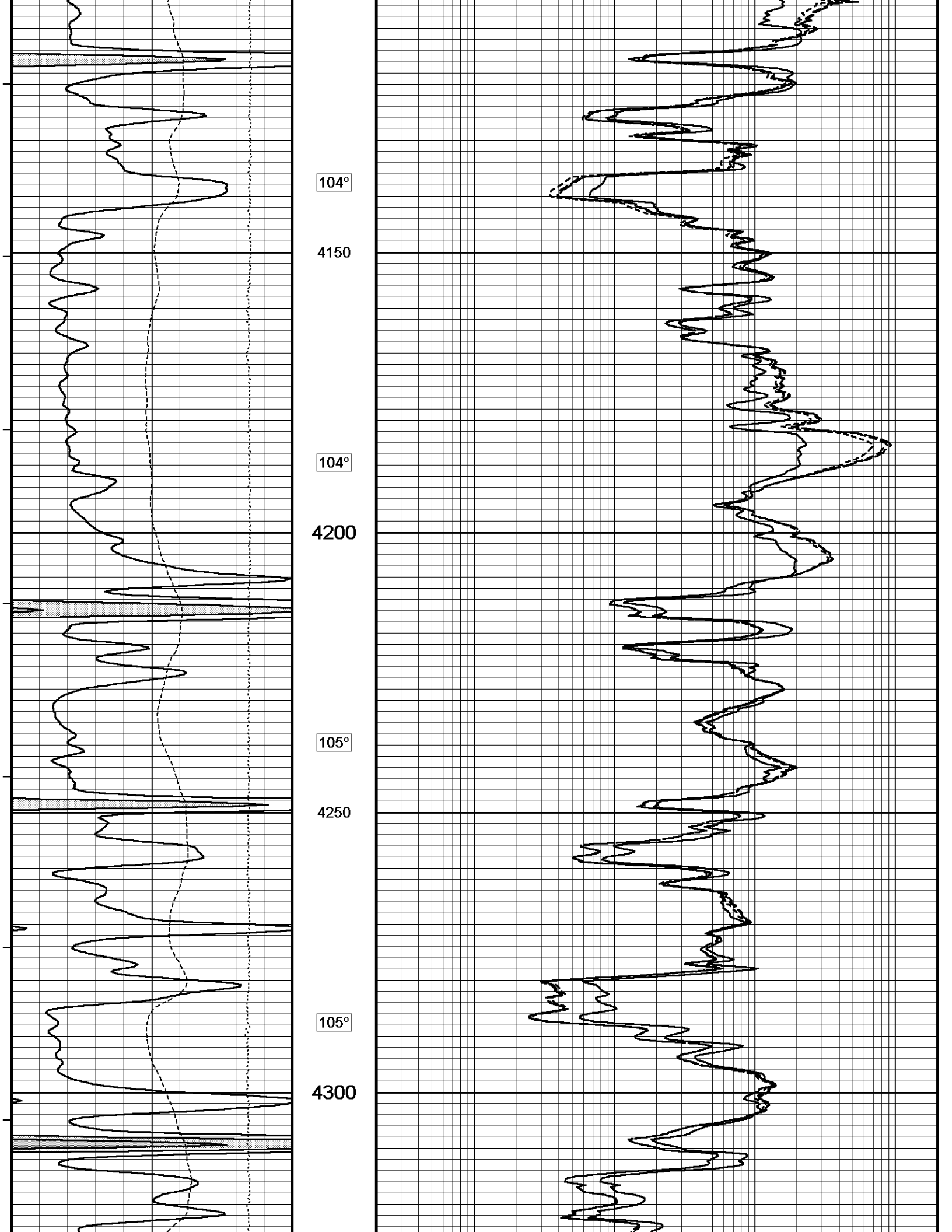
Shallow FE
ohm metres
0.20 2000
1 10 100 1000

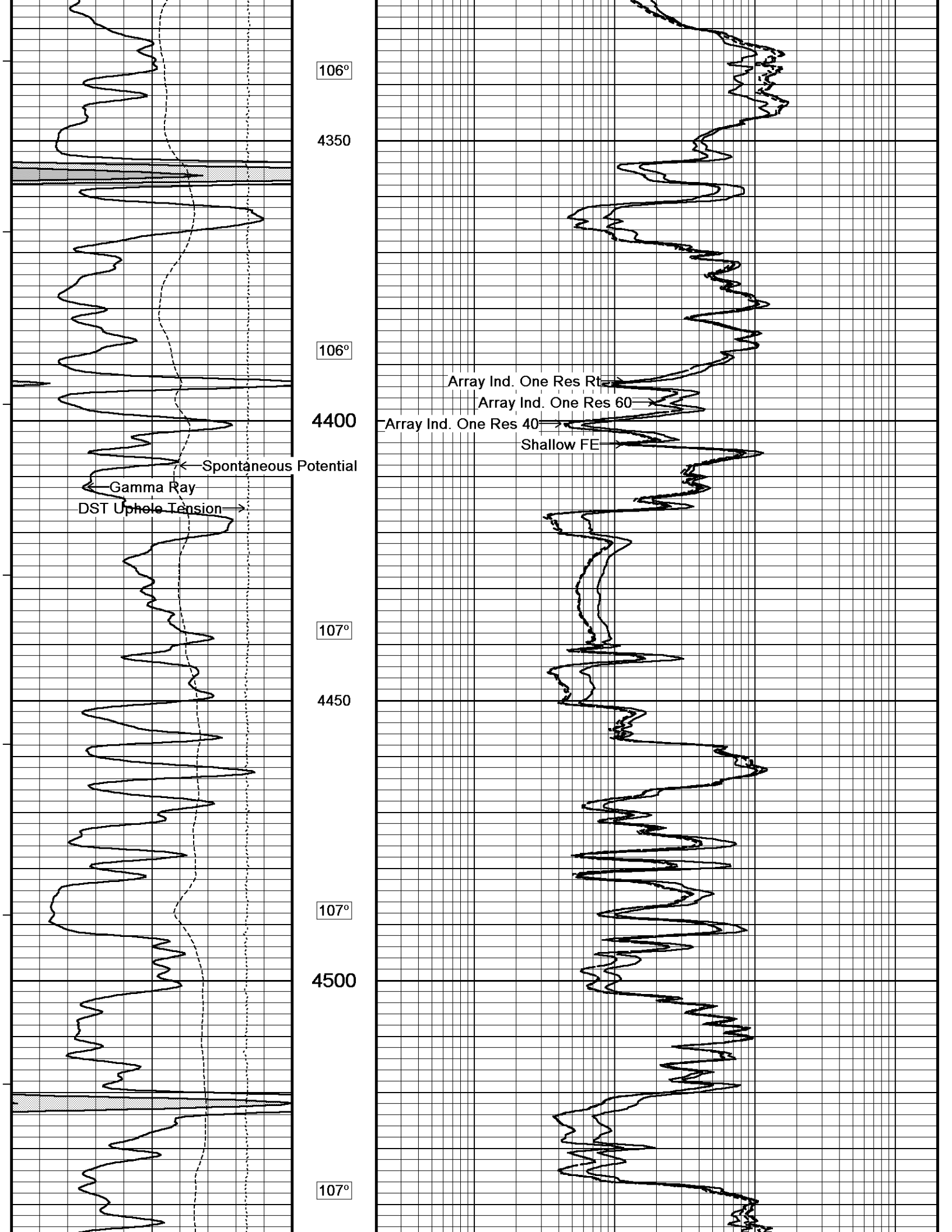
Array Ind. One Res 40
ohm metres
0.20 2000
1 10 100 1000

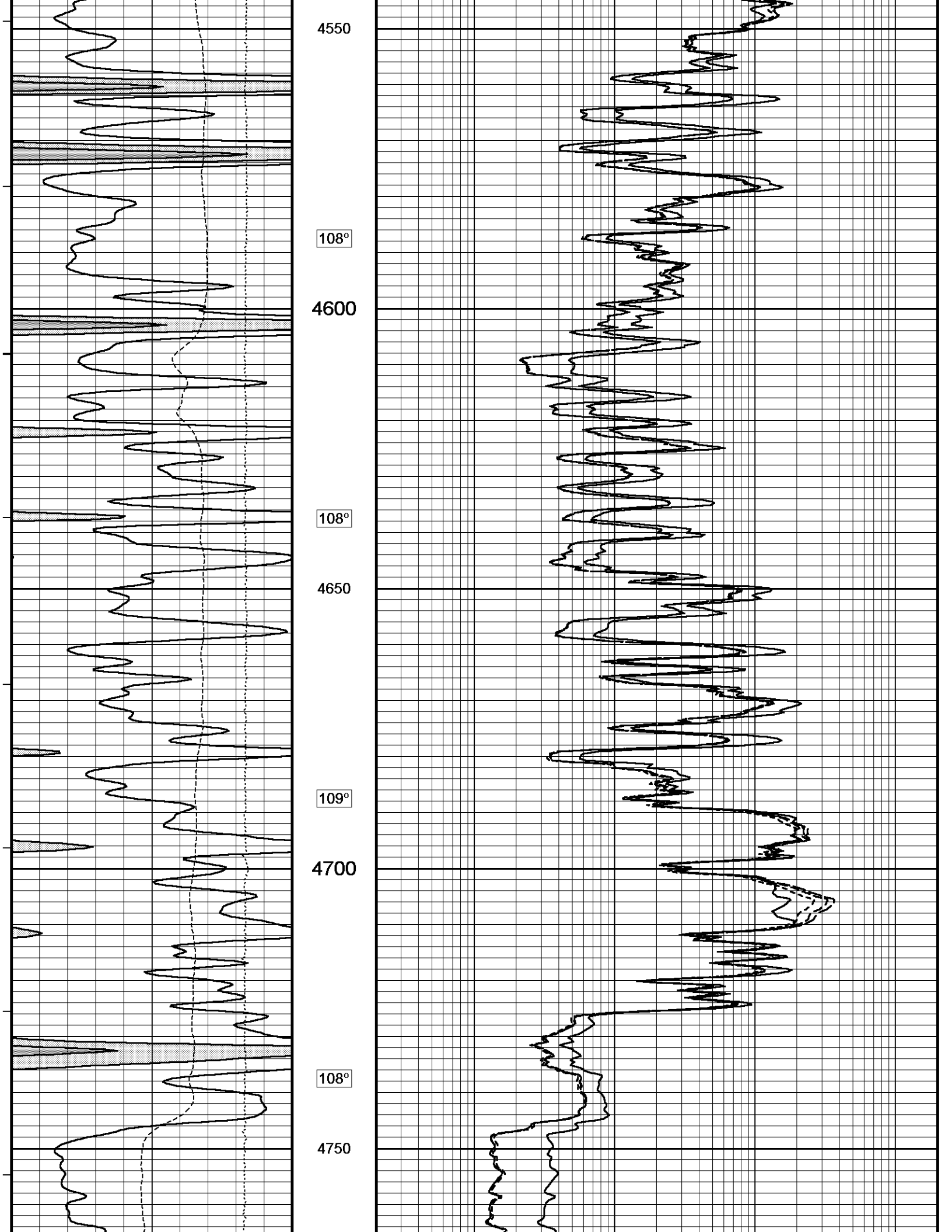
Array Ind. One Res 60
ohm metres

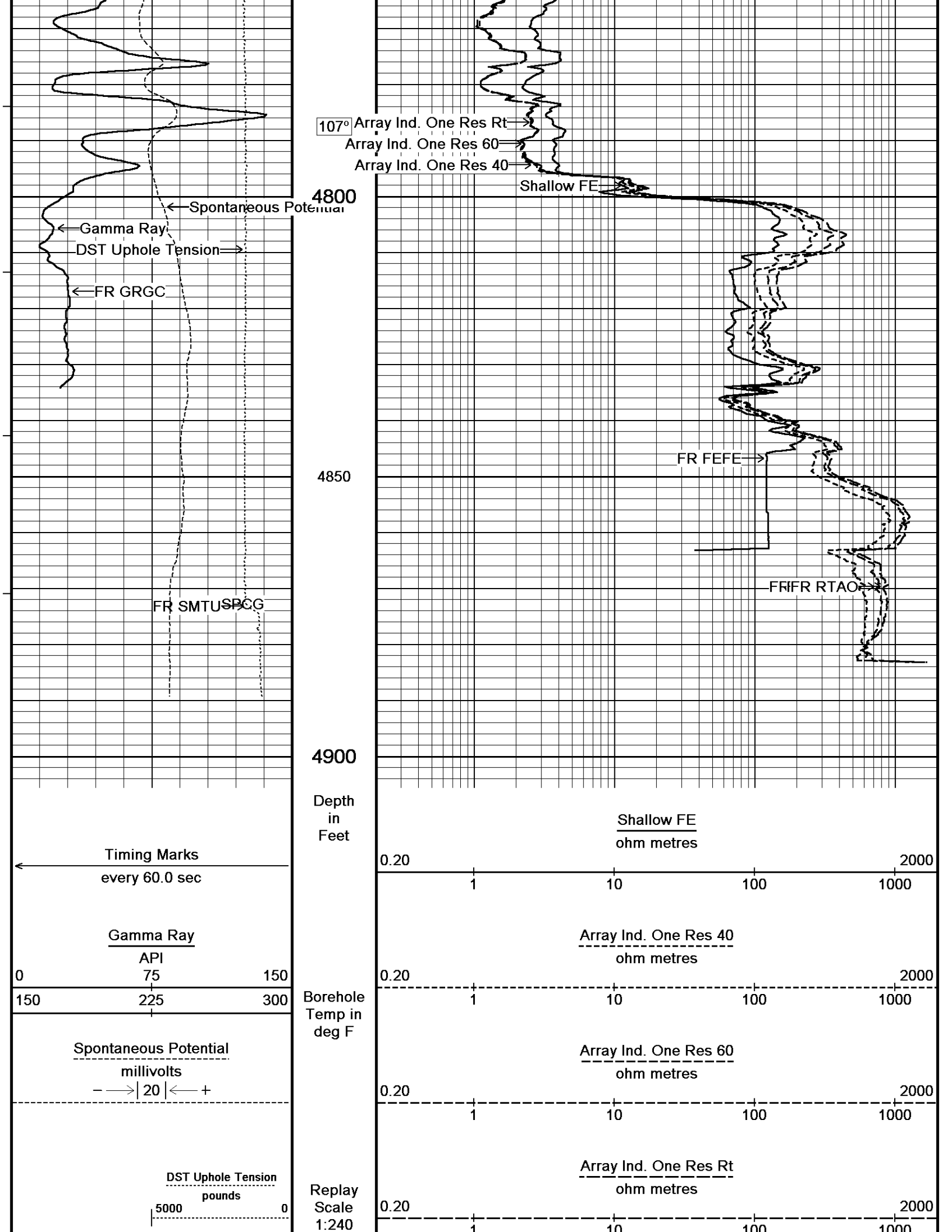

– → | 20 | ← +
DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
0.20
2000
1
10
100
1000
Array Ind. One Res Rt
ohm metres
0.20
2000
1
10
100
1000
3700
102°
3750
103°
3800
103°
3850


103°
3900
103°
3950
103°
4000
103°
4050
104°
4100
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow RT
Spontaneous Potential
Gamma Ray
DST Uphole Tension


104°
4150
104°
4200
105°
4250
105°
4300


106°
4350
106°
4400
Spontaneous Potential
Gamma Ray
DST Uphole Tension
107°
4450
107°
4500
107°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE


4550
108°
4600
108°
4650
109°
4700
108°
4750


107°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
4800
Spontaneous Potential
Gamma Ray
DST Uphole Tension
FR GRGC
FR FEFE
4850
FR SMTU
SPCG
FRIFR RTAO
4900
Depth in Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Spontaneous Potential
millivolts
− 20 +
DST Uphole Tension
pounds
5000
0
Borehole Temp in deg F
Replay Scale 1:240
Shallow FE
ohm metres
0.20
2000
1
10
100
1000
Array Ind. One Res 40
ohm metres
0.20
2000
1
10
100
1000
Array Ind. One Res 60
ohm metres
0.20
2000
1
10
100
1000
Array Ind. One Res Rt
ohm metres
0.20
2000
1
10
100
1000

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-MAR-2013 15:08
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System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-MAR-2013 15:08
Filename: C:\Minimus 13.04.8492\Data\Shakespeare Nighte...\Shakespeare Nightengale #1-28_002.dta — Recorded on 30-MAR-2013 11:03
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
− → | 20 | ← +

DST Uphole Tension
pounds
5000 0

Depth in Feet

Borehole Temp in deg F

Replay Scale 1:240

Shallow FE
ohm metres
0.20 1 10 100 2000

Array Ind. One Res 40
ohm metres
0.20 1 10 100 2000

Array Ind. One Res 60
ohm metres
0.20 1 10 100 2000

Array Ind. One Res Rt
ohm metres
0.20 1 10 100 2000

4400

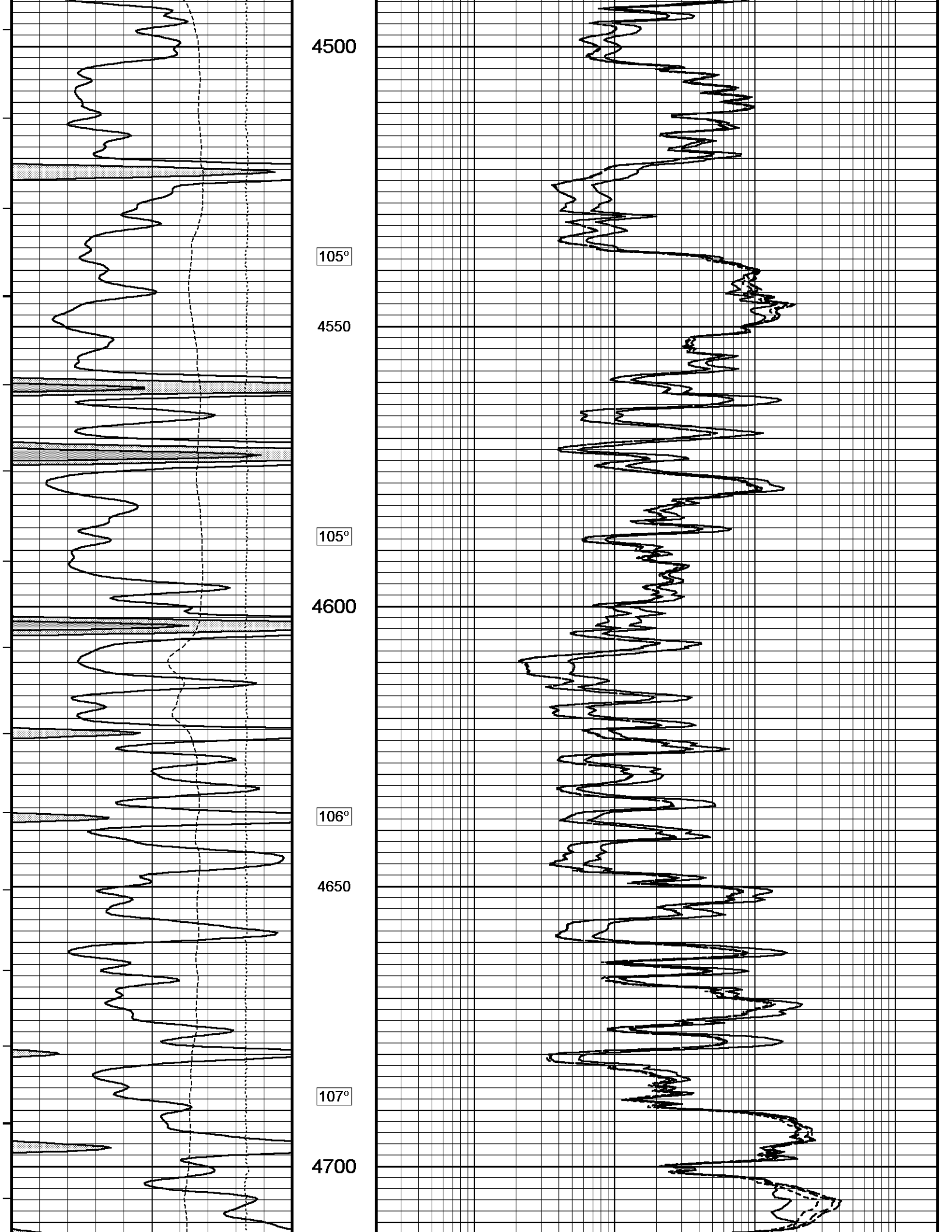
Spontaneous Potential
Gamma Ray
DST Uphole Tension

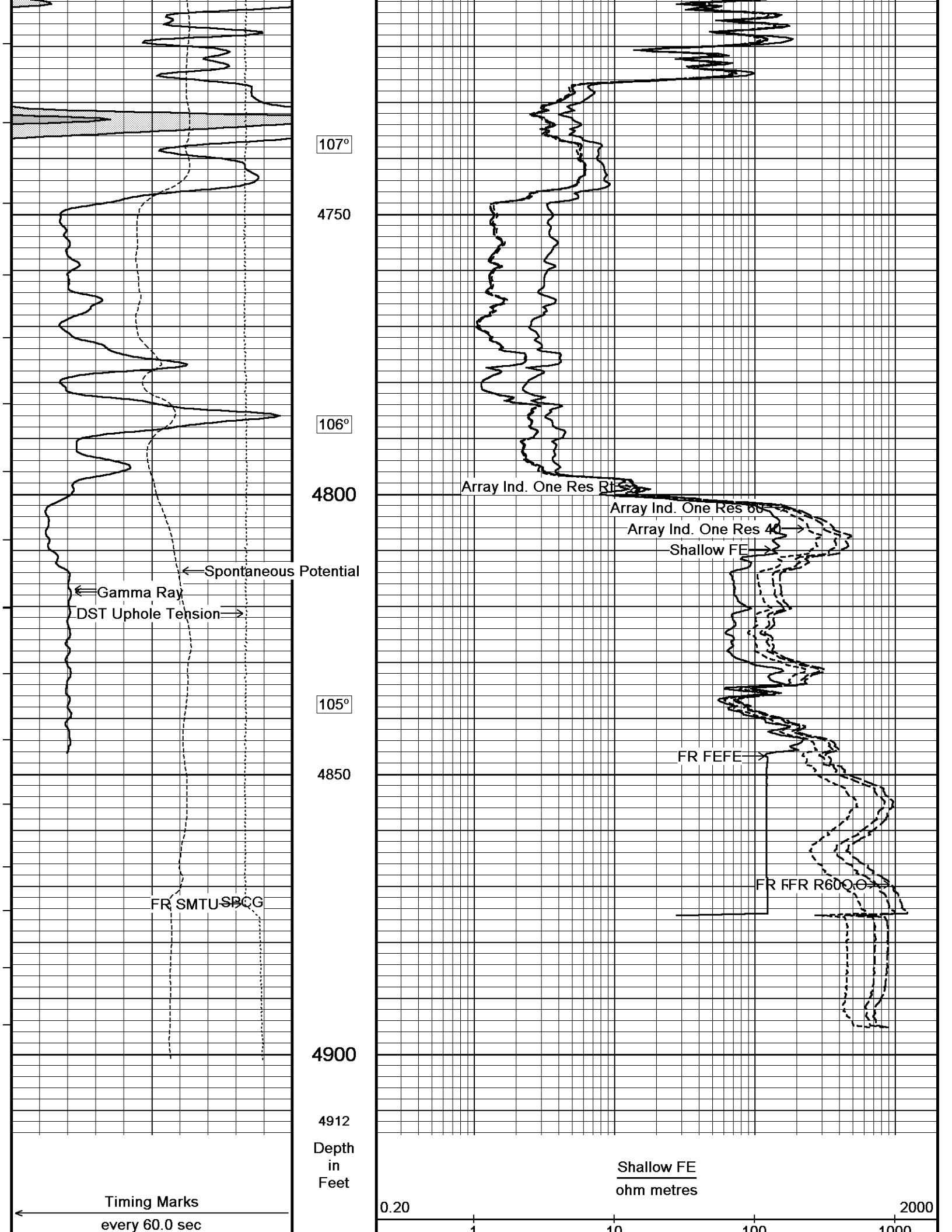
105°

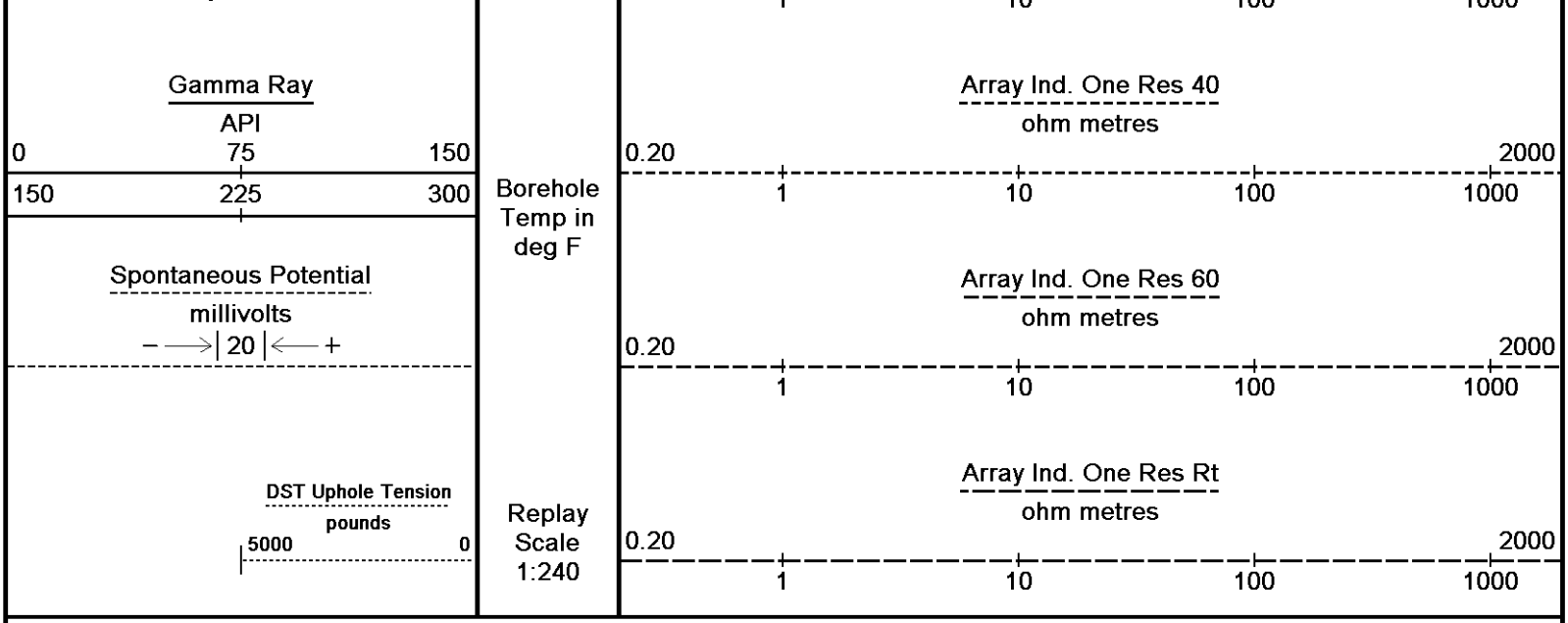
4450

105°

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


4500
105°
4550
105°
4600
106°
4650
107°
4700


107°
4750
106°
4800
105°
4850
4900
4912
Depth
in
Feet
Spontaneous Potential
Gamma Ray
DST Uphole Tension
FR SMTU
SPCG
Array Ind. One Res RT
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
FR FEFE
FR FFR R600.O
Timing Marks
every 60.0 sec
Shallow FE
ohm metres
0.20
2000
1
10
100
1000



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-MAR-2013 15:08

Filename: C:\Minimus 13.04.8492\Data\Shakespeare Nighte...\Shakespeare Nightengale #1-28_002.dta — Recorded on 30-MAR-2013 11:03

System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 13.04.8492\Data\Shakespeare Nightengale #1-28\Shakespeare Nightengale #1-28_002.dta

General Constants All 000

Last Edited on 30-MAR-2013,09:17

General Parameters		
Mud Resistivity	0.490	ohm-metres
Mud Resistivity Temperature	72.000	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. Six Res Rt	
RWA Constant A	1.000	
RWA Constant M	2.000	

Down-hole Tension Calibration SMS 0

Field Calibration on 29-MAR-2013 11:57

Reading No	Measured	Calibrated (lbs)
1	13764.62	0.00
2	14299.14	460.00

Gamma Calibration MCG-B 34

Field Calibration on 28-MAR-2013 11:13

	Measured	Calibrated (API)
Background	71	49
Calibrator (Gross)	1120	774
Calibrator (Net)	1049	725

Gamma Constants MCG-B 34

Last Edited on 30-MAR-2013,09:13

Gamma Calibrator Number	GR38	
Mud Density	1.11	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 28-MAR-2013 11:05

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-MAR-2013 17:30
Field Calibration on 28-MAR-2013 11:03

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13647	5.98
2	16765	7.97
3	19976	9.86
4	23885	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.02	5.98

Neutron Calibration MDN-A.B 65

Base Calibration on 13-MAR-2013 16:17
Field Check on 28-MAR-2013 11:17

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	0.688	

Neutron Constants MDN-A.B 65

Last Edited on 29-MAR-2013,11:23

Neutron Source Id	PN-521	
Neutron Jig Number	5824NE	
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	None	
Formation Pressure	0.00	kpsi
Temperature Source	None	
Temperature	20.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-B.J 352

Base Calibration on 16-JAN-2013 10:20
Field Check on 28-MAR-2013 11:02

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.3	126.8
Base Check		281.2
Field Check		281.5

FE Constants MFE-B.J 352

Last Edited on 29-MAR-2013,11:23

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-C.K 330

Last Edited on 29-MAR-2013,11:23

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
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

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 29-MAR-2013,12:59

Pre-filter Length 11

Induction Calibration MAI-A.A 45

Base Calibration on 26-JUL-2012,09:22
Field Check on 28-MAR-2013 11:01

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			18.3	3850.9

1	18.3	3850.9	
2	31.7	3628.9	
3	28.6	3048.9	
4	18.3	2078.8	
Deep	16.0	1910.7	
Medium	42.5	4060.0	
Shallow	49.5	5482.7	
Array Temperature		58.1	Deg F

Induction Constants MAI-A.A 45

Last Edited on 29-MAR-2013,12:59

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	2.500	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	

Caliper Calibration MPD-B 31

Base Calibration on 28-MAR-2013 13:43
Field Calibration on 28-MAR-2013 13:47

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)
6.02	5.98

Photo Density Calibration MPD-B 31

Base Calibration on 13-MAR-2013 15:17
Field Check on 28-MAR-2013 13:51

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

679.6	841.1

PE Calibration

Base Calibration

	WS	Measured WH	Ratio	Calibrated 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

125.6	602.3

Density Constants MPD-B 31

Last Edited on 30-MAR-2013,09:12

Density Source Id	254	
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	1.11	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	

DOWNHOLE EQUIPMENT

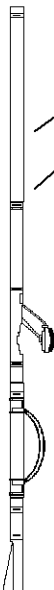
C:\Minimus 13.04.8492\Data\Shakespeare Nightengale #1-28\Shakespeare Nightengale #1-28_002.dta

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



56.02 ft GRGC - Gamma Ray
53.11 ft CGXT - MCG External Temperature

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

40.97 ft NPRL - Limestone Neutron Por.

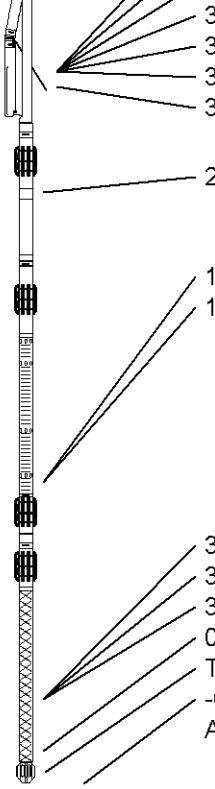
33.73 ft AVOL - Annular Volume
33.73 ft HVOL - Hole Volume
33.73 ft CLDC - Density Caliper

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

Compact Sonic
MSS-C.K 330 LG: 12.52 ft WT: 72.8 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: 61.30 ft Weight: 456.4 lb



31.80 ft	DPRL - Limestone Density Por.
31.80 ft	DEN - Compensated Density
31.80 ft	DCOR - Density Correction
31.74 ft	PDPE - PE
26.24 ft	FEFE - Shallow FE
12.96 ft	SPRL - Wyllie Lime. Sonic Por.
12.96 ft	DT35 - 3-5' Compensated Sonic
3.34 ft	R40O - Array Ind. One Res 40
3.34 ft	R60O - Array Ind. One Res 60
3.34 ft	RTAO - Array Ind. One Res Rt
0.23 ft	SPCG - Spontaneous Potential
Tool Zero	(0.13ft from bottom)
-0.13 ft	SMTU - DST Uphole Tension

All measurements relative to tool zero.

COMPANY	SHAKESPEARE OIL COMPANY
WELL	NIGHTINGALE #1-28
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	UNITED STATES / KANSAS

Elevation Kelly Bushing	3140.00	feet	First Reading	4870.00	feet
Elevation Drill Floor	3138.00	feet	Depth Driller	4875.00	feet
Elevation Ground Level	3130.00	feet	Depth Logger	4873.00	feet

Weatherford®

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

Weatherford

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG

COMPANY	SHAKESPEARE OIL COMPANY
WELL	NIGHTINGALE #1-28
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	UNITED STATES / KANSAS
LOCATION	985' FNL & 335' FEL
	NW SE NE NE

SEC	TWP	RGE	Other Services
28	16W	34	MAI/MFE

API Number 15-171-20930
Permanent Datum G.L. Elevation feet
Log Measured From KB
Drilling Measured From KB @ 10 FEET

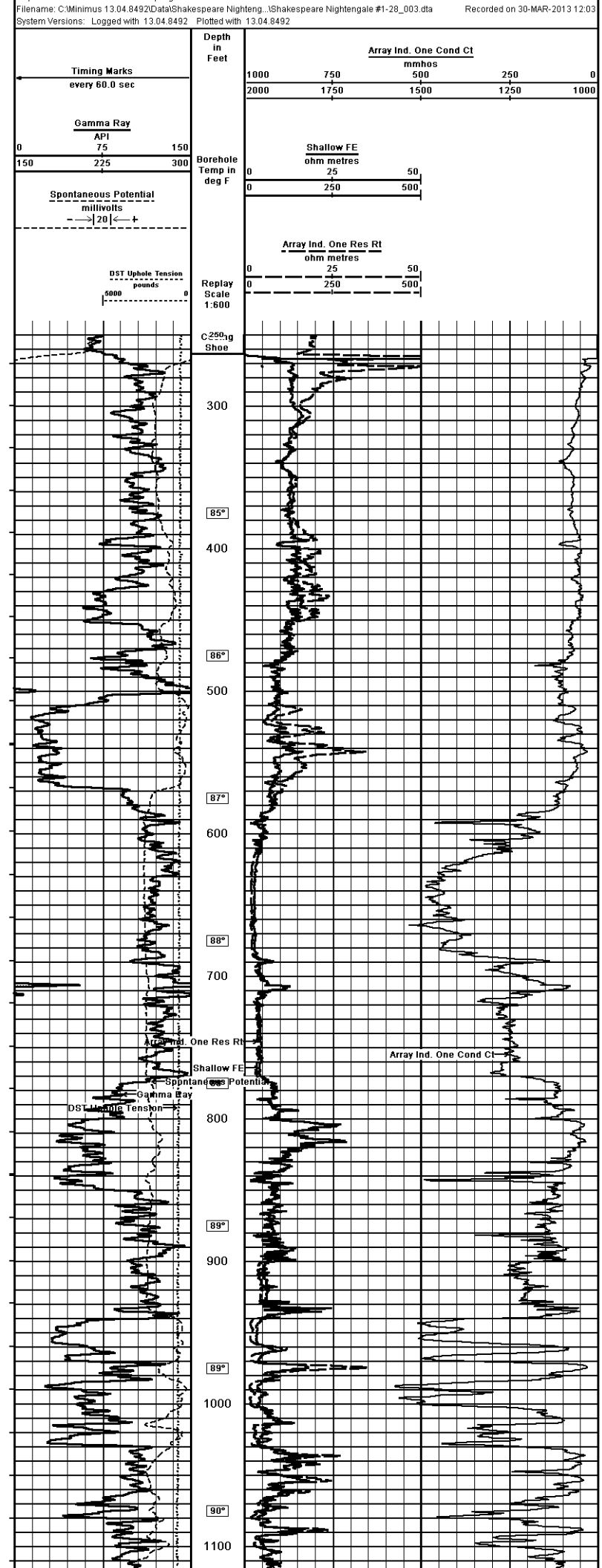
Elevations: feet
KB 3140.00
DF 3138.00
GL 3130.00

Date	30-MAR-2013				
Run Number	ONE				
Service Order	3539880				
Depth Driller	4875.00	feet			
Depth Logger	4873.00	feet			
First Reading	4841.00	feet			
Last Reading	3700.00	feet			
Casing Driller	265.00	feet			
Casing Logger	263.00	inches			
Bit Size	7.880				
Hole Fluid Type	CHEMICAL	lbs/USg			
Density / Viscosity	9.30	lbs/USg	59.00	CP	
PH / Fluid Loss	10.00	lbs/USg	10.00		
Sample Source	MUDPIT				
Rm @ Measured Temp	0.49 @ 72.0	ohm-m			
Rmf @ Measured Temp	0.39 @ 72.0	ohm-m			
Rmc @ Measured Temp	0.59 @ 72.0	ohm-m			
Source Rmf / Rmc	CALC	CALC			
Rm @ BHT	0.32 @ 108.0	ohm-m			
Time Since Circulation	4 HOURS				
Max Recorded Temp	109.00	deg F			
Equipment / Base	13057	LIB			
Recorded By	W. STAMBAUGH				
Witnessed By	TIM PRIEST				
JOB #	LB13-084		J. LAPOINT		

1 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 30-MAR-2013 15:08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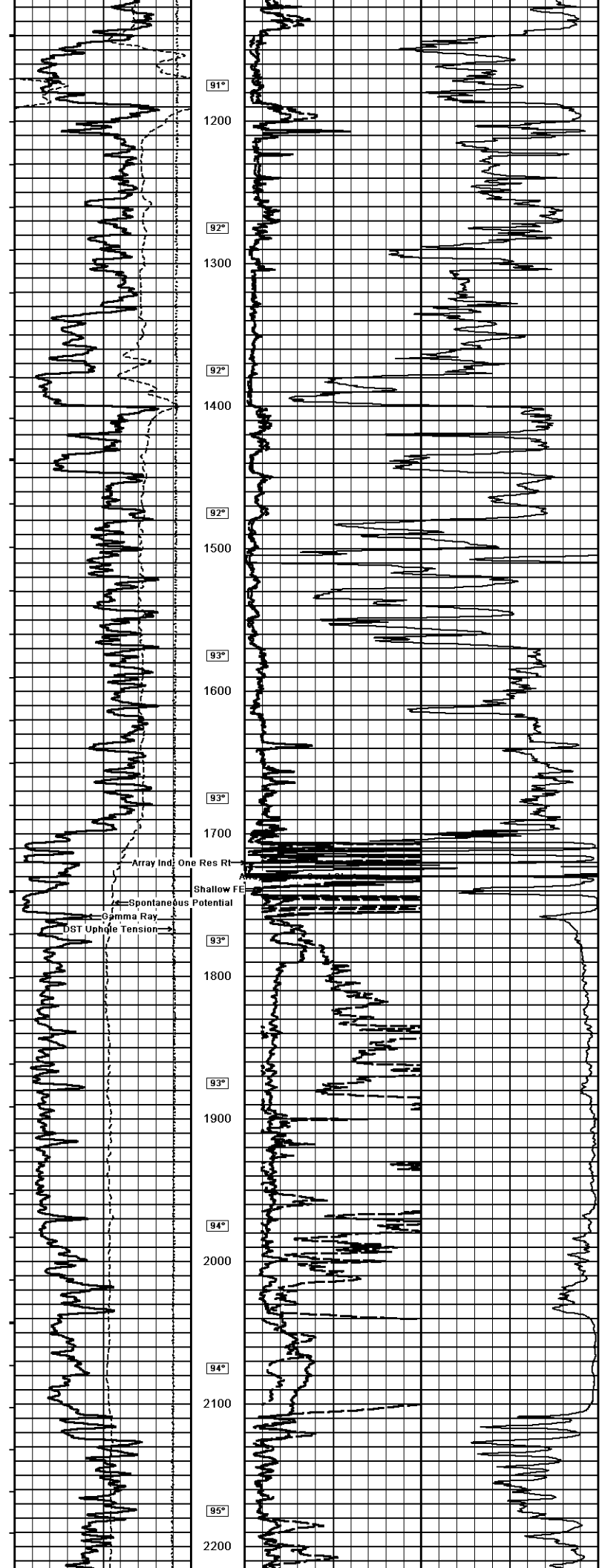
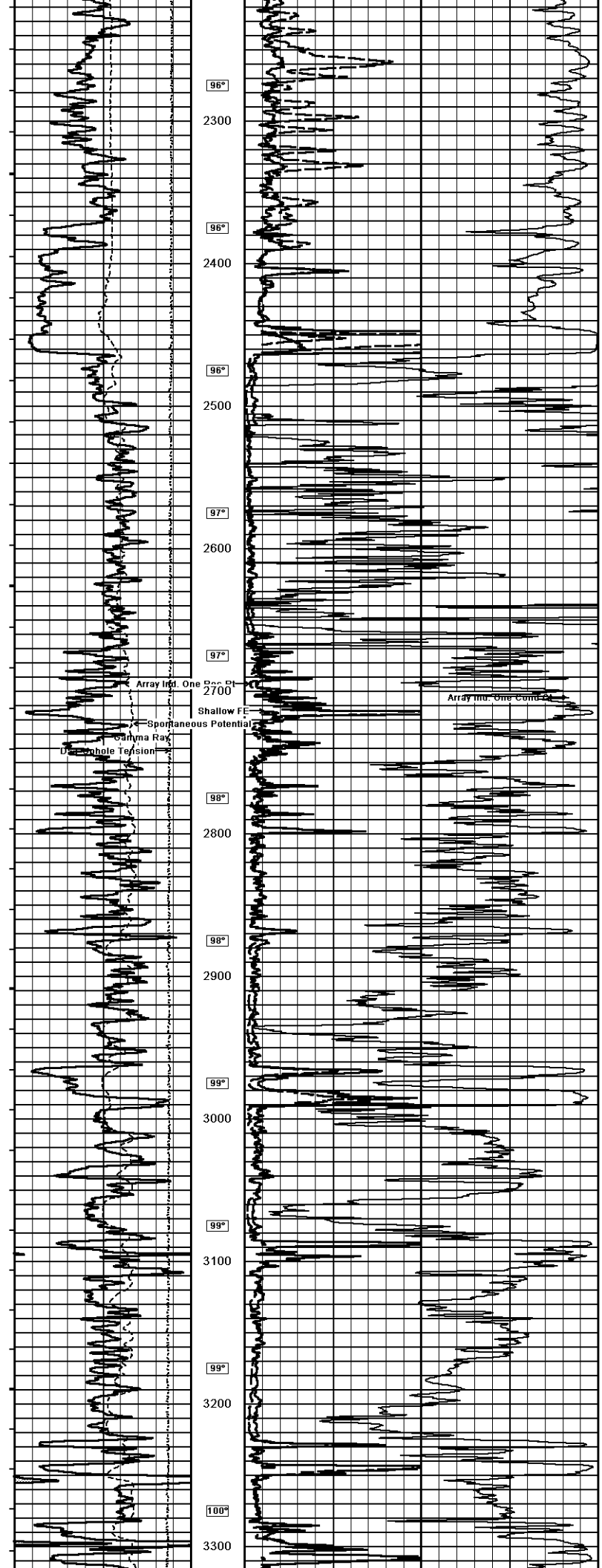
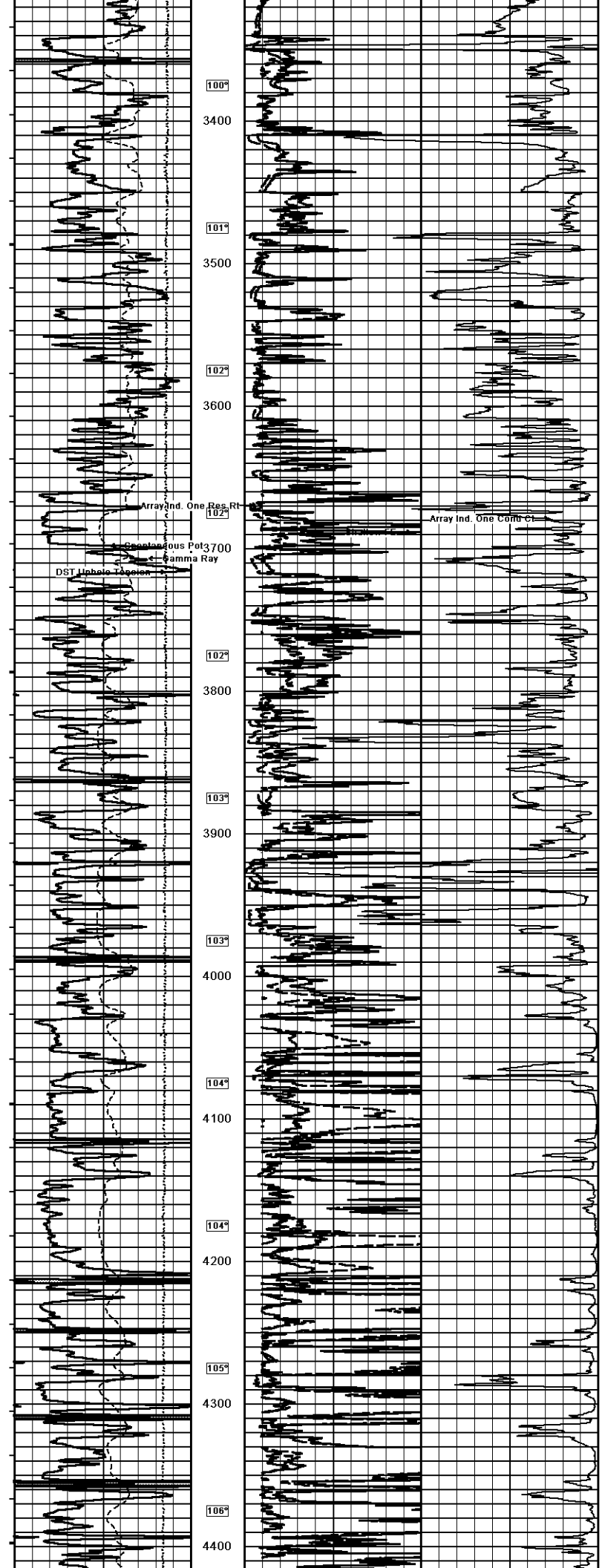
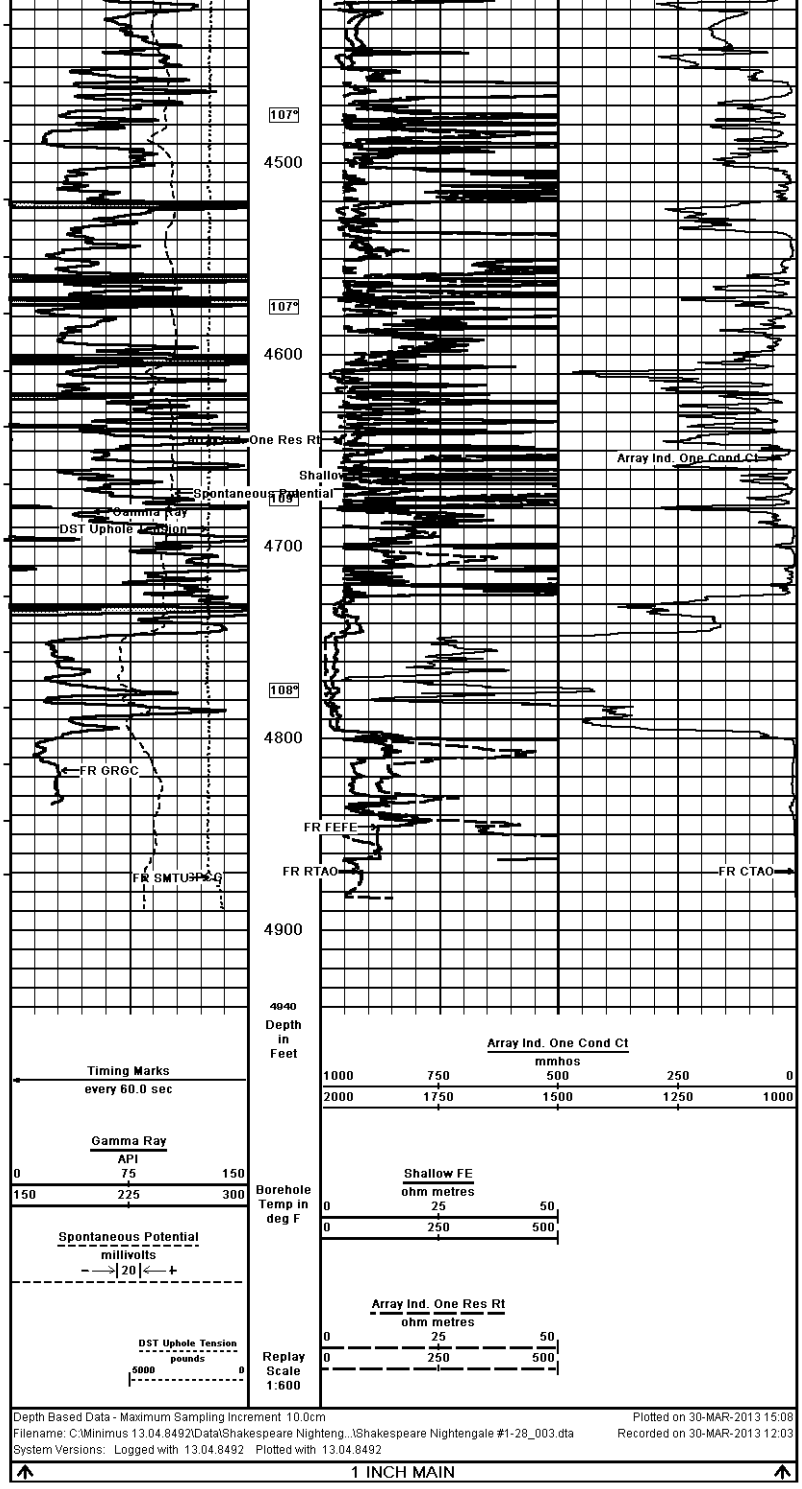
Recorded on 30-MAR-2013 12:03
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492
Depth in Feet
Timing Marks every 60.0 sec
Gamma Ray API 0 75 150 150 225 300
Spontaneous Potential millivolts 20
DST Uphole Tension pounds 5000 0
Borehole Temp in deg F
Replay Scale 1:600
Array Ind. One Cond Ct mmhos 1000 750 500 250 0 2000 1750 1500 1250 1000
Shallow FE ohm metres 0 25 50 0 250 500
Array Ind. One Res Rt ohm metres 0 25 50 0 250 500
Casing Shoe
300
85°
400
86°
500
87°
600
88°
700
Array Ind. One Res Rt
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
800
89°
900
89°
1000
90°
1100
Array Ind. One Cond Ct


91°
1200
92°
1300
92°
1400
92°
1500
93°
1600
93°
1700
Array Ind. One Res Rt
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
93°
1800
93°
1900
94°
2000
94°
2100
95°
2200


96°
2300
96°
2400
96°
2500
97°
2600
97°
Array Ind. One Rec Pt
2700
Shallow FE
Spontaneous Potential
Gamma Ray
Downhole Tension
Array Ind. One Cond Pt
98°
2800
98°
2900
99°
3000
99°
3100
99°
3200
100°
3300


100°
3400
101°
3500
102°
3600
Array Ind. One Res Rt
102°
Array Ind. One Cond Ct
Spontaneous Pot
Gamma Ray
3700
DST Uphole Tension
102°
3800
103°
3900
103°
4000
104°
4100
104°
4200
105°
4300
106°
4400



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-MAR-2013 15:08

Filename: C:\Minimus 13.04.8492\Data\Shakespeare Nighteng...\Shakespeare Nightengale #1-28_003.dta — Recorded on 30-MAR-2013 12:03

System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

1 INCH MAIN

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WELL	NIGHTINGALE #1-28
FIELD	WILDCAT
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