ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

COMPANY	SHAKESPEARE OIL COMPANY
WELL	OTTLEY #2-15
FIELD	
PROVINCE/COUNTY	LOGAN
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	2590' FSL & 980' FWL

SEC	TWP	RGE	Other Services
15	14S	32W	MSS
API Number 15-109-20838			MPD/MDN
Permit Number			MML

Permanent Datum G.L., Elevation 2738 feet
Log Measured From K.B. @ 9 FEET above Permanent Datum
Drilling Measured From K.B.

Elevations:	feet
KB	2747.00
DF	2746.00
GL	2738.00

Date	22-JUN-2009					
Run Number	ONE					
Depth Driller	4480.00	feet				
Depth Logger	4476.00	feet				
First Reading	4473.00	feet				
Last Reading	222.00	feet				
Casing Driller	228.00	feet				
Casing Logger	222.00	feet				
Bit Size	7.875	inches				
Hole Fluid Type	CHEMICAL					
Density / Viscosity	9.30	lb/USg	46.00	CP		
PH / Fluid Loss	10.00		8.40	ml/30Min		
Sample Source	FLOWLINE					
Rm @ Measured Temp	0.62 @ 80.0	ohm-m				
Rmf @ Measured Temp	0.50 @ 80.0	ohm-m				
Rmc @ Measured Temp	0.74 @ 80.0	ohm-m				
Source Rmf / Rmc	CALC		CALC			
Rm @ BHT	0.44 @113.0	ohm-m				
Time Since Circulation	4 HOURS					
Max Recorded Temp	113.00	deg F				
Equipment Name	COMPACT					
Equipment / Base	13057		LIB			
Recorded By	STEVEN TOTTEY					
Witnessed By	STEVE DAVIS					
S.O. # / JOB #	3518082				LB09-079	

BOREHOLE RECORD

Last Edited: 22-JUN-2009 19:24

Bit Size inches	Depth From feet	Depth To feet
7.875	222.00	4476.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	222.00	24.00

REMARKS

TOOLS RUN: MCG, MML, MDN, MPD, MFE,MSS, MAI

HARDWARE: MAI: TWO 0.5 INCH STANDOFFS USED.
MDN: DUAL NEUTRON BOWSPRING USED.
MPD: 8 INCH PROFILE PLATE USED.

MATRIX: 2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY.

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER REQUEST.

TOTAL HOLE VOLUME FROM TD TO TOP OF DETAIL SECTION =

ANNULAR VOLUME WITH 5.5 INCH PRODUCTION CASING =

SERVICE ORDER # 3518082

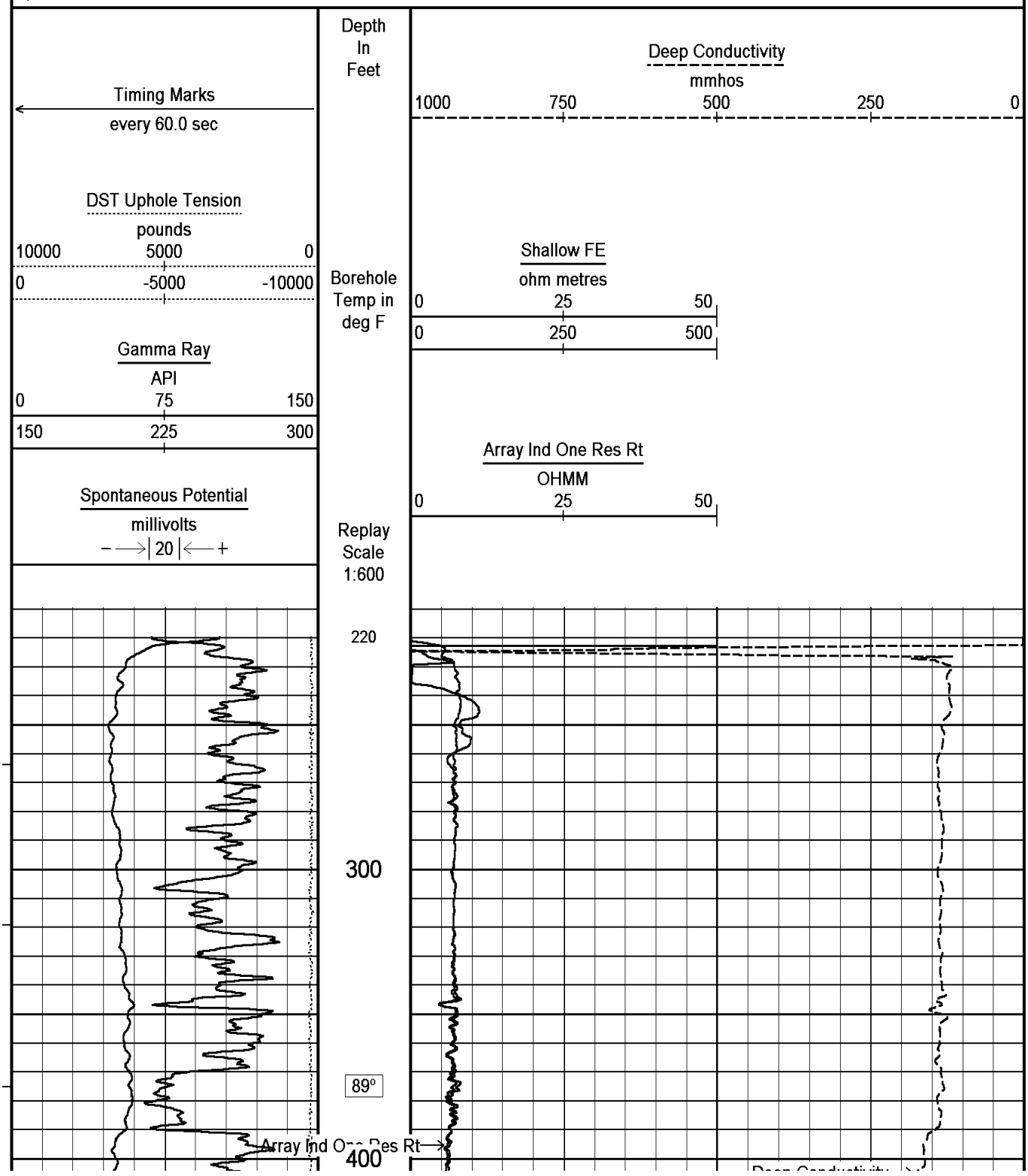
RIG: H D DRILLING # 2

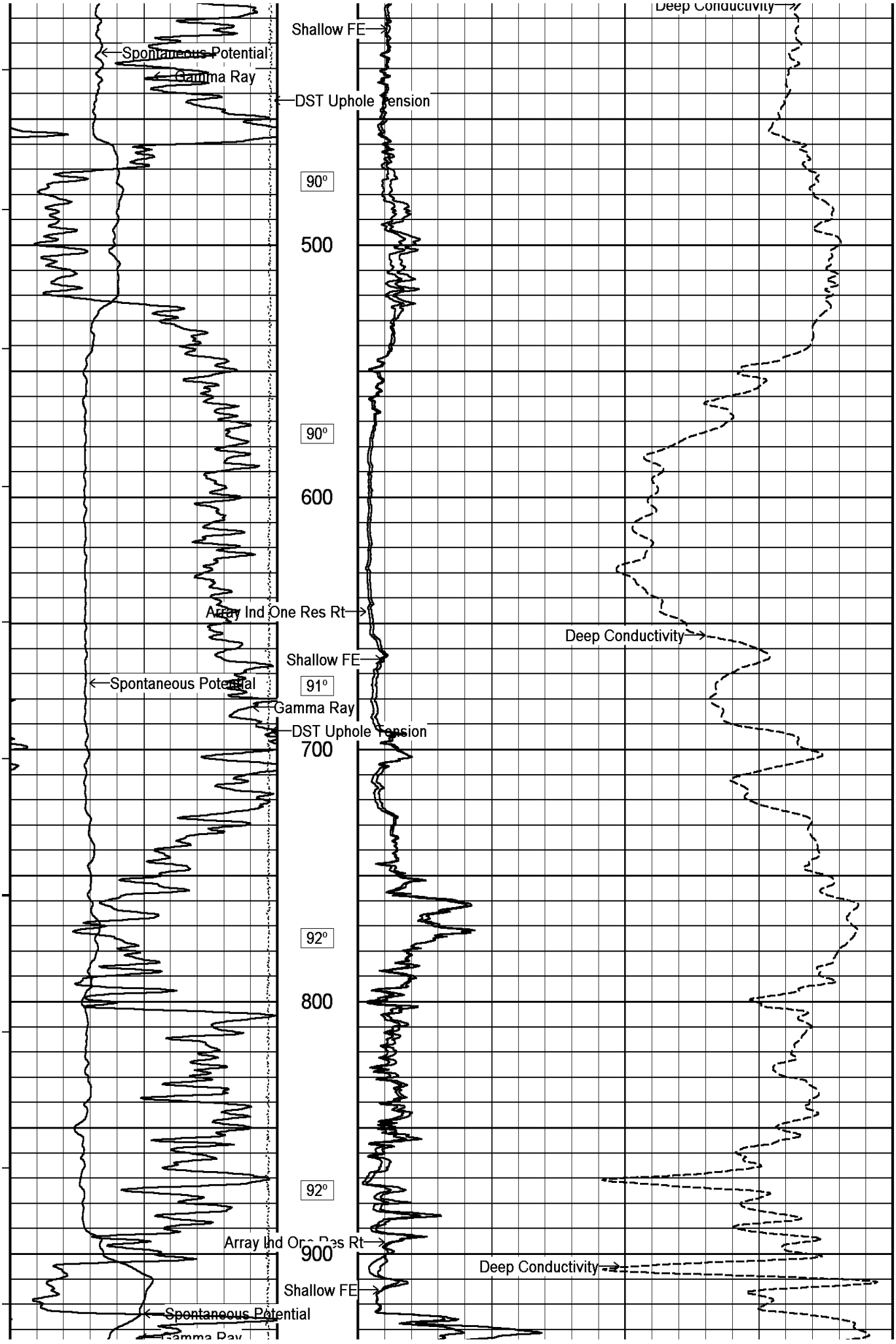
ENGINEER: STEVEN TOTTEY

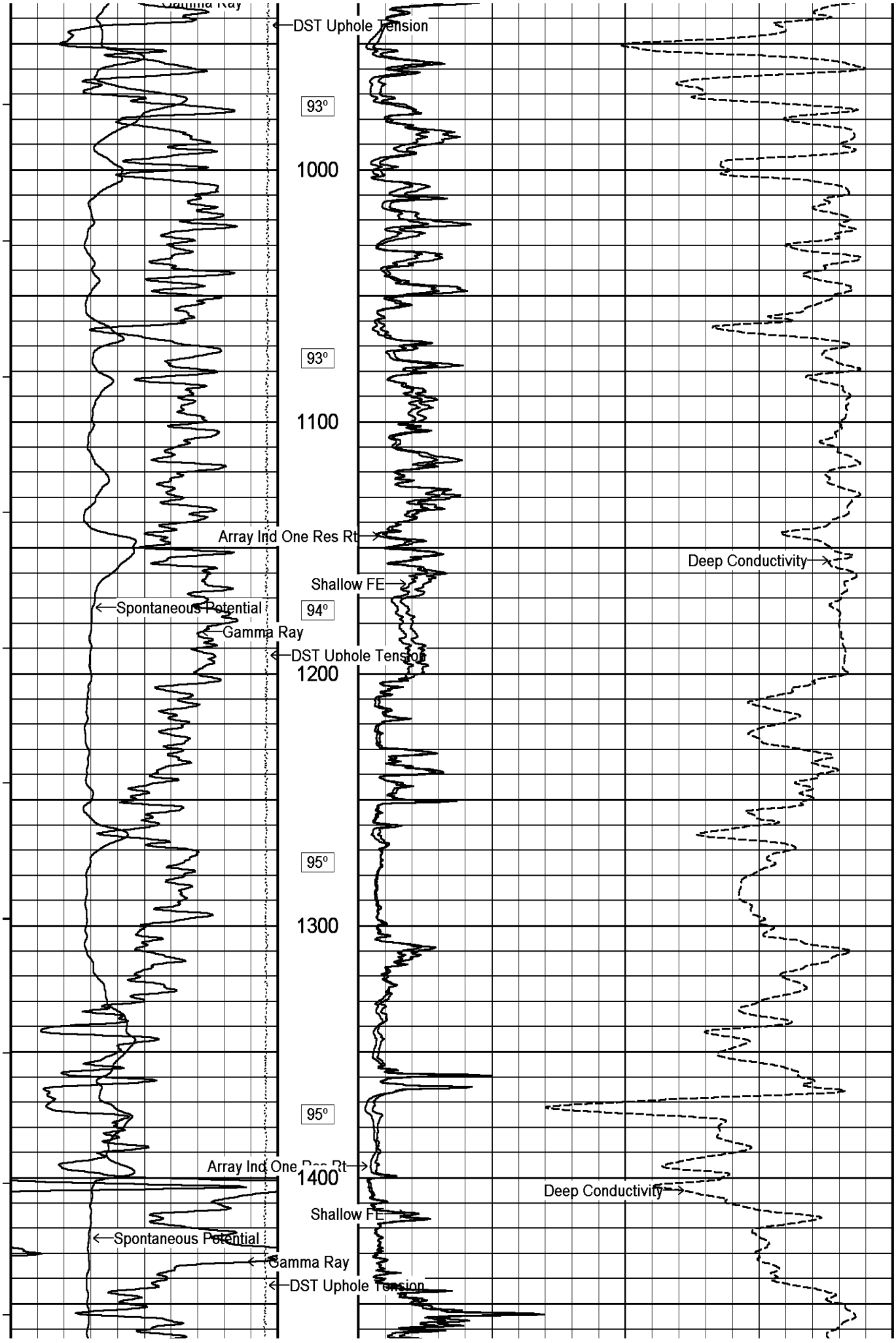
OPERATOR(S): KENNY RINEHART

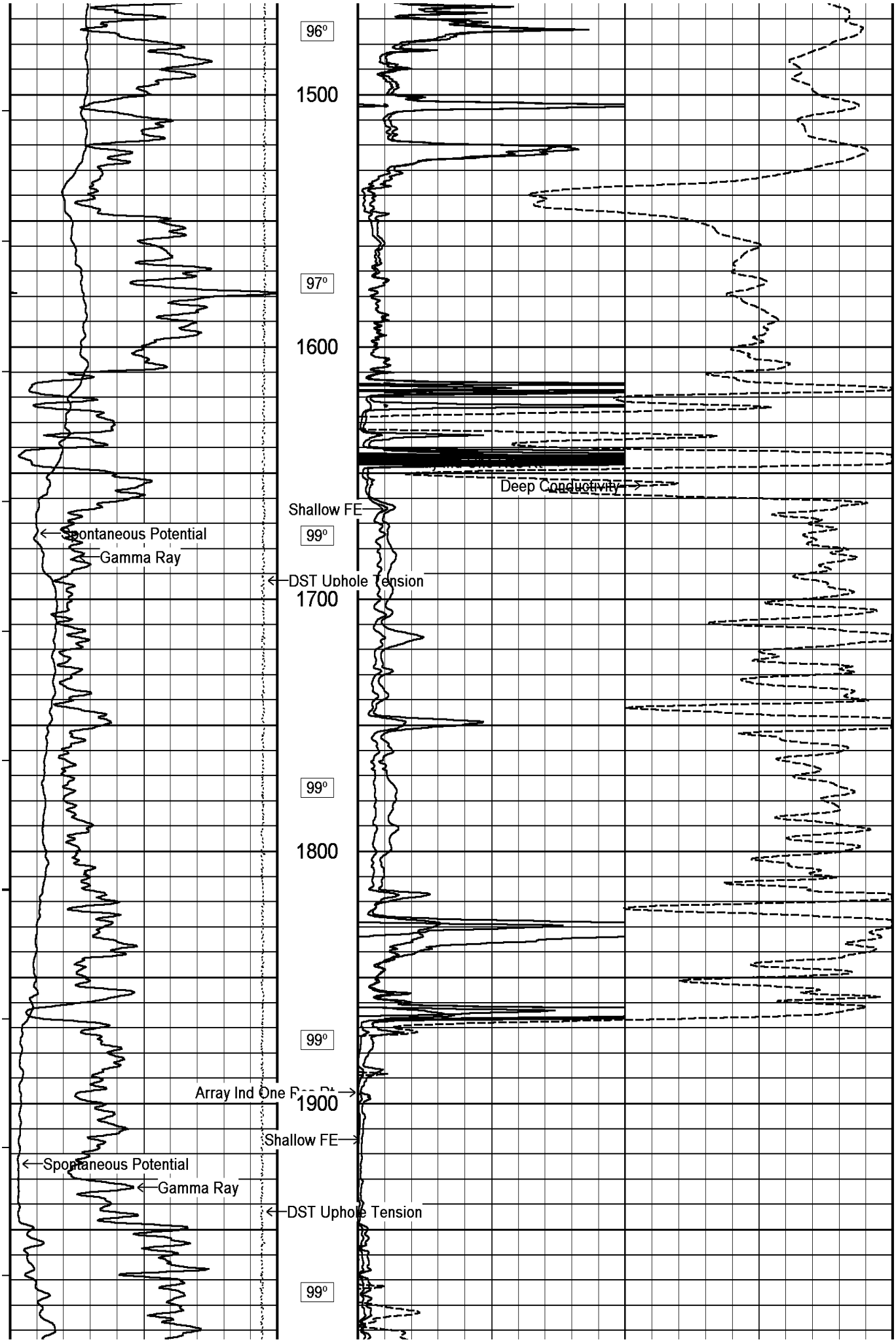
2 INCH MAIN LOG

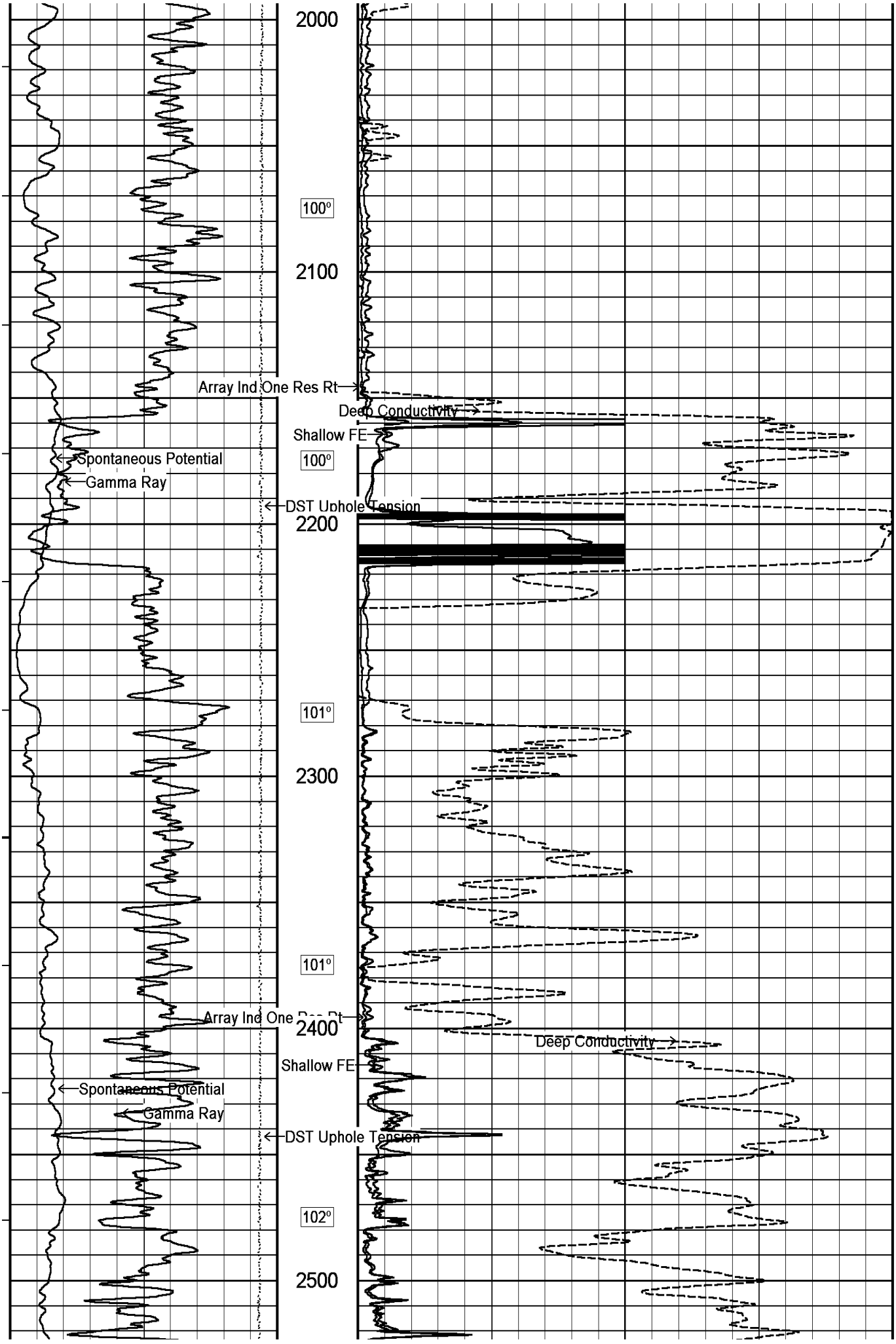
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-JUN-2009 22:23
Filename: C:\MINIMUS 13057\Plot Presentations\INDUCTION\rtap 5 inch main.dta
Recorded on 22-JUN-2009 19:52
System Versions: Plotted with 8.06.0241

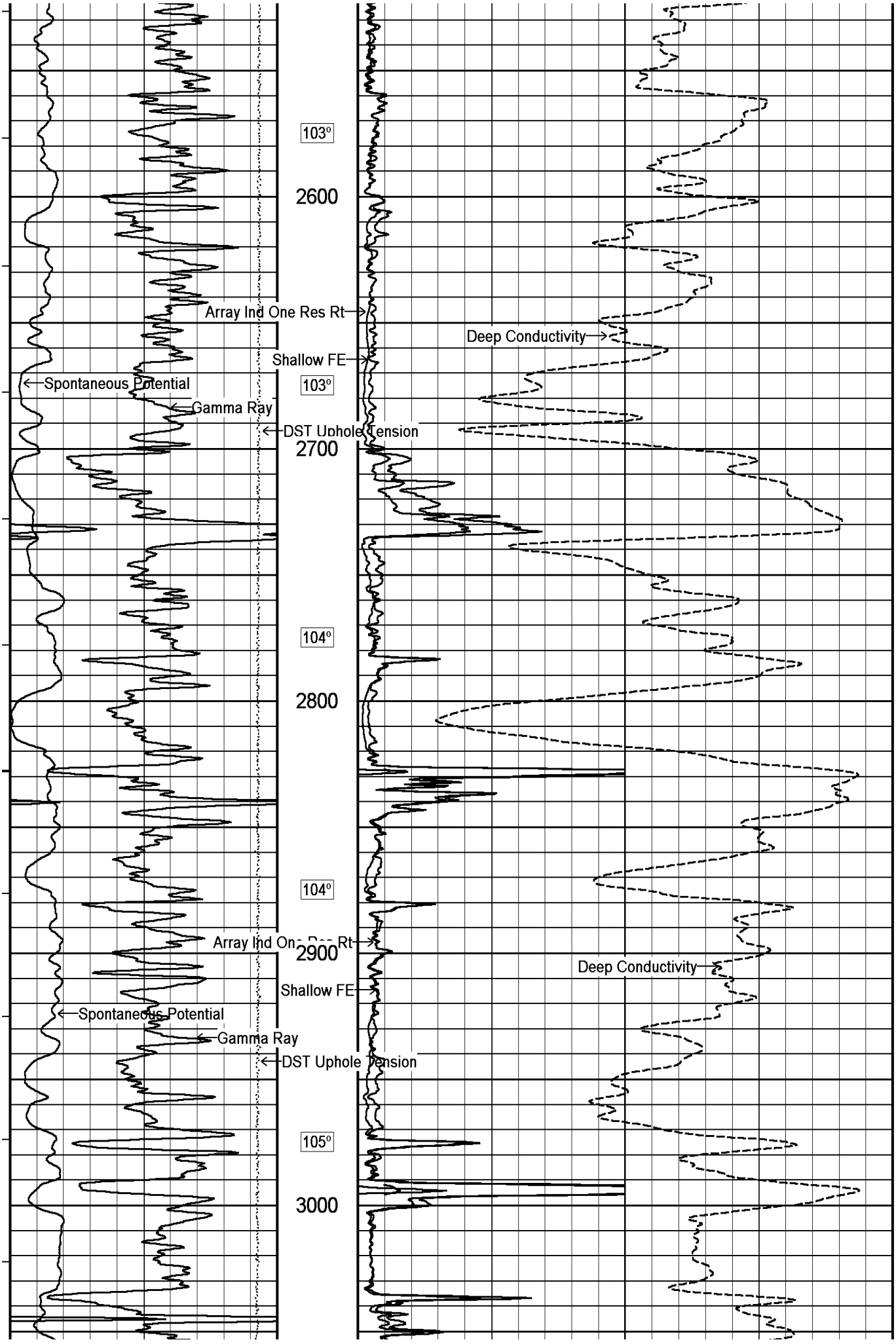


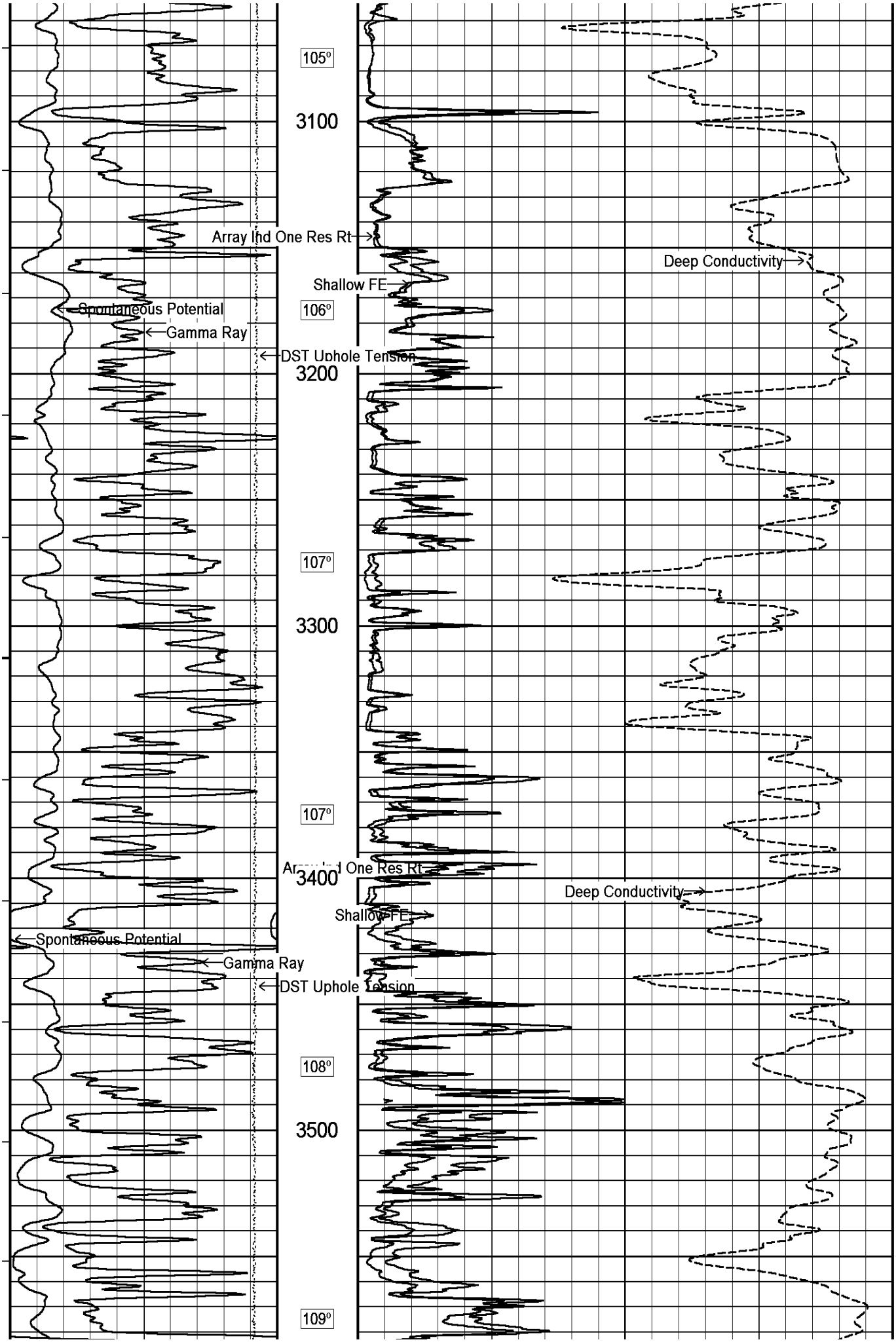

Deep Conductivity
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
90°
500
90°
600
Array Ind One Res Rt
Deep Conductivity
Shallow FE
Spontaneous Potential
91°
Gamma Ray
DST Uphole Tension
700
92°
800
92°
Array Ind One Res Rt
900
Deep Conductivity
Shallow FE
Spontaneous Potential
Gamma Ray

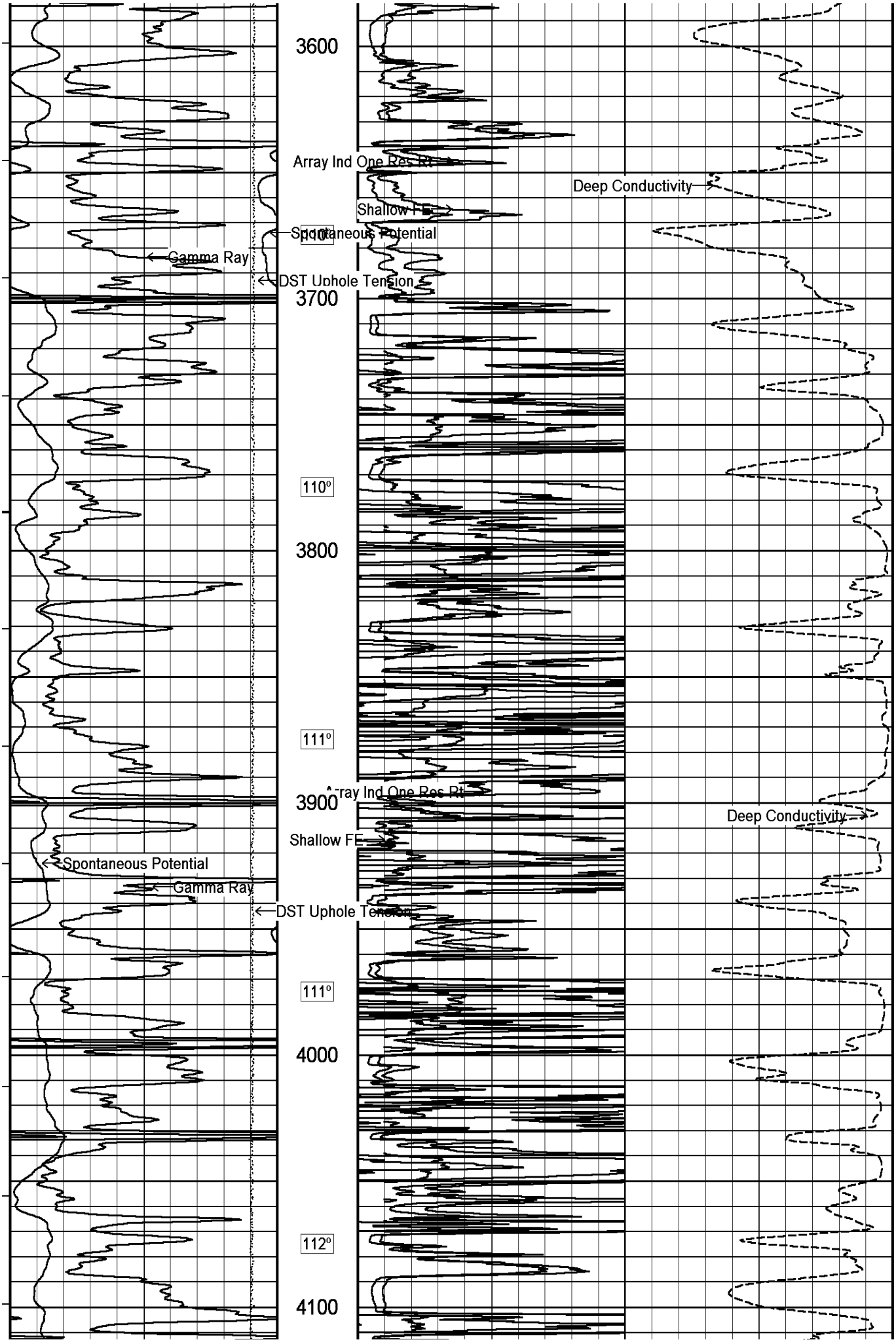

DST Uphole Tension
93°
1000
93°
1100
Array Ind One Res Rt
Deep Conductivity
Shallow FE
Spontaneous Potential
94°
Gamma Ray
DST Uphole Tension
1200
95°
1300
95°
Array Ind One Res Rt
1400
Deep Conductivity
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension

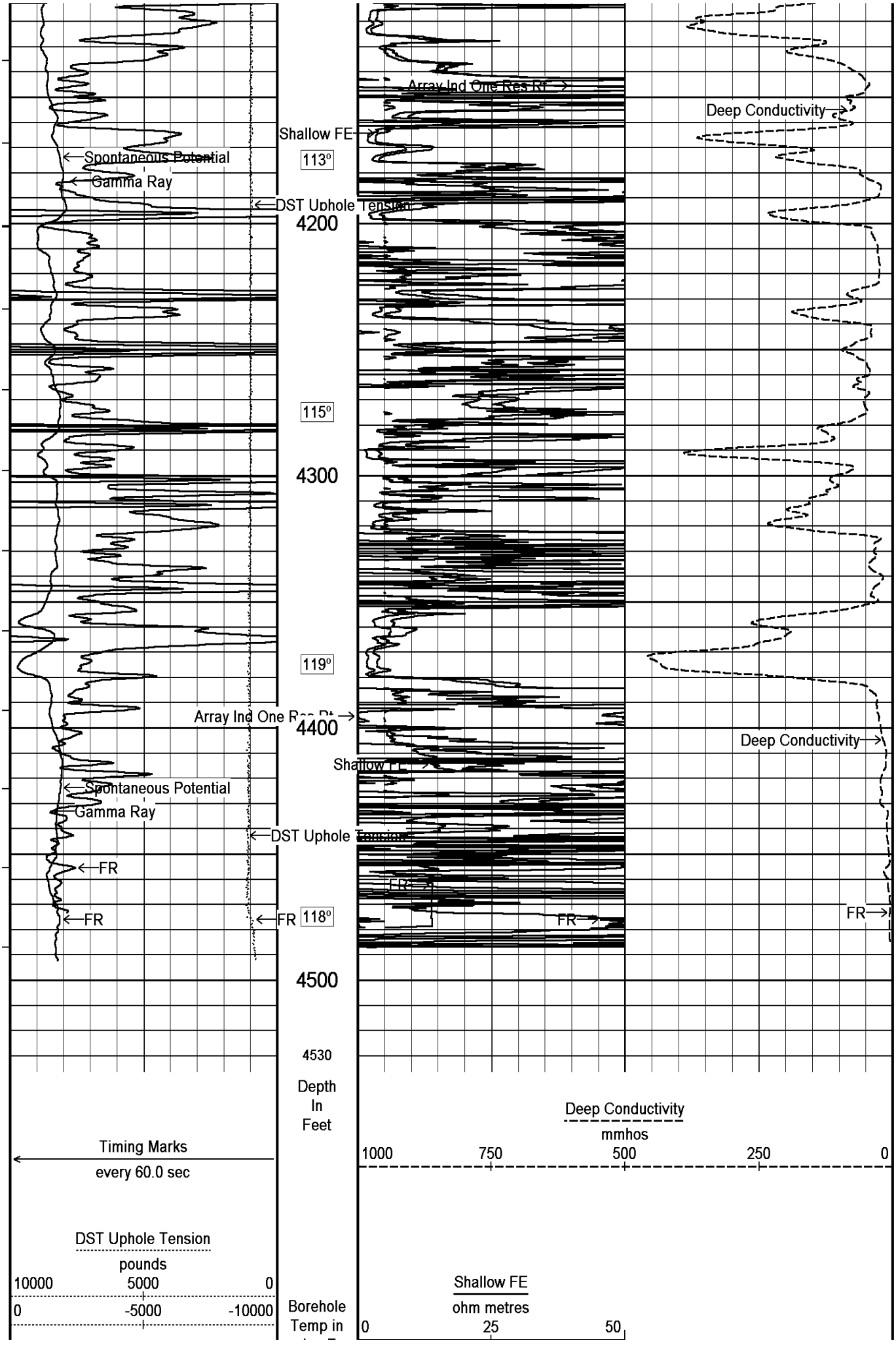

96°
1500
97°
1600
Deep Conductivity
Shallow FE
Spontaneous Potential
99°
Gamma Ray
DST Uphole Tension
1700
99°
1800
99°
Array Ind One
1900
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
99°


2000
100°
2100
Array Ind One Res Rt
Deep Conductivity
Shallow FE
Spontaneous Potential
100°
Gamma Ray
DST Uphole Tension
2200
101°
2300
101°
Array Ind One Res Rt
2400
Deep Conductivity
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
102°
2500


103°
2600
Array Ind One Res Rt
Deep Conductivity
Shallow FE
Spontaneous Potential
103°
Gamma Ray
DST Uphole Tension
2700
104°
2800
104°
Array Ind One Res Rt
2900
Deep Conductivity
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
105°
3000


105°
3100
Array Ind One Res Rt
Deep Conductivity
Shallow FE
Spontaneous Potential
106°
Gamma Ray
DST Uphole Tension
3200
107°
3300
107°
Array Ind One Res Rt
3400
Deep Conductivity
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
108°
3500
109°


3600
Array Ind One Res Rt
Deep Conductivity
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
3700
110°
3800
111°
Array Ind One Res Rt
3900
Deep Conductivity
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
111°
4000
112°
4100


Array Ind One Res Rf
Deep Conductivity
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
113°
4200
115°
4300
119°
Array Ind One Res Rt
4400
Deep Conductivity
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
FR
FR
FR
FR
FR
118°
4500
4530
Depth
In
Feet
Timing Marks
every 60.0 sec
DST Uphole Tension
pounds
10000
5000
0
0
-5000
-10000
Borehole
Temp in
Deep Conductivity
mmhos
1000
750
500
250
0
Shallow FE
ohm metres
0
25
50

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
– —> | 20 | <— +

deg F
0 250 500

Array Ind One Res Rt
OHMM
0 25 50

Replay
Scale
1:600

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\MINIMUS 13057\Plot Presentations\INDUCTION\rtap 5 inch main.dta
System Versions: Plotted with 8.06.0241

Plotted on 22-JUN-2009 22:24
Recorded on 22-JUN-2009 19:52

2 INCH MAIN LOG

5 INCH MAIN LOG

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\MINIMUS 13057\Plot Presentations\INDUCTION\rtap 5 inch main.dta
System Versions: Plotted with 8.06.0241

Plotted on 22-JUN-2009 22:24
Recorded on 22-JUN-2009 19:52

Timing Marks
every 60.0 sec

DST Uphole Tension
pounds
10000 5000 0
0 -5000 -10000

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
– —> | 20 | <— +

Depth
in
Feet

Borehole
Temp in
deg F

Replay
Scale
1:240

3500

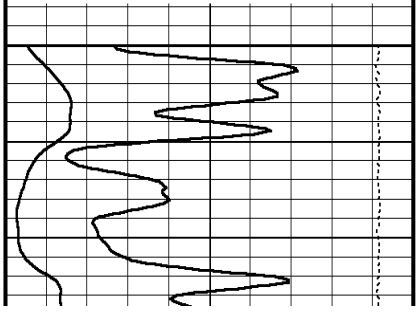
Shallow FE
ohm metres
0.20 1 10 100 1000 2000

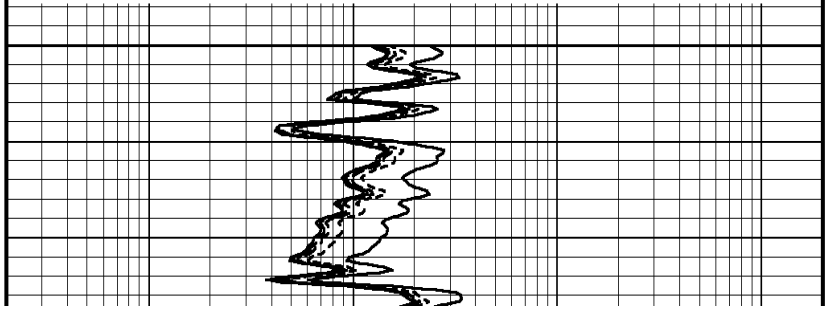
Array Ind One Res 40
OHMM
0.20 1 10 100 1000 2000

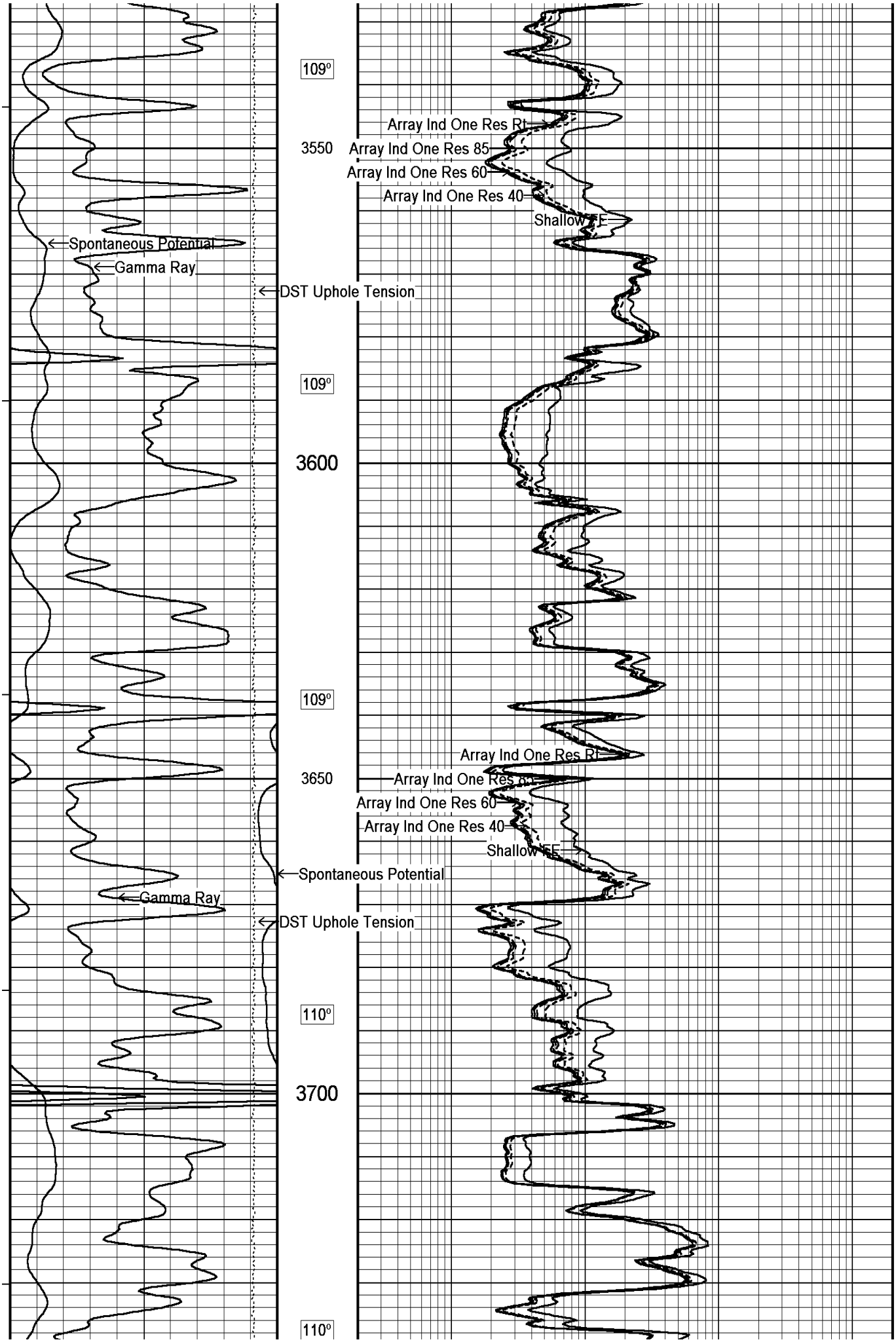
Array Ind One Res 60
OHMM
0.20 1 10 100 1000 2000

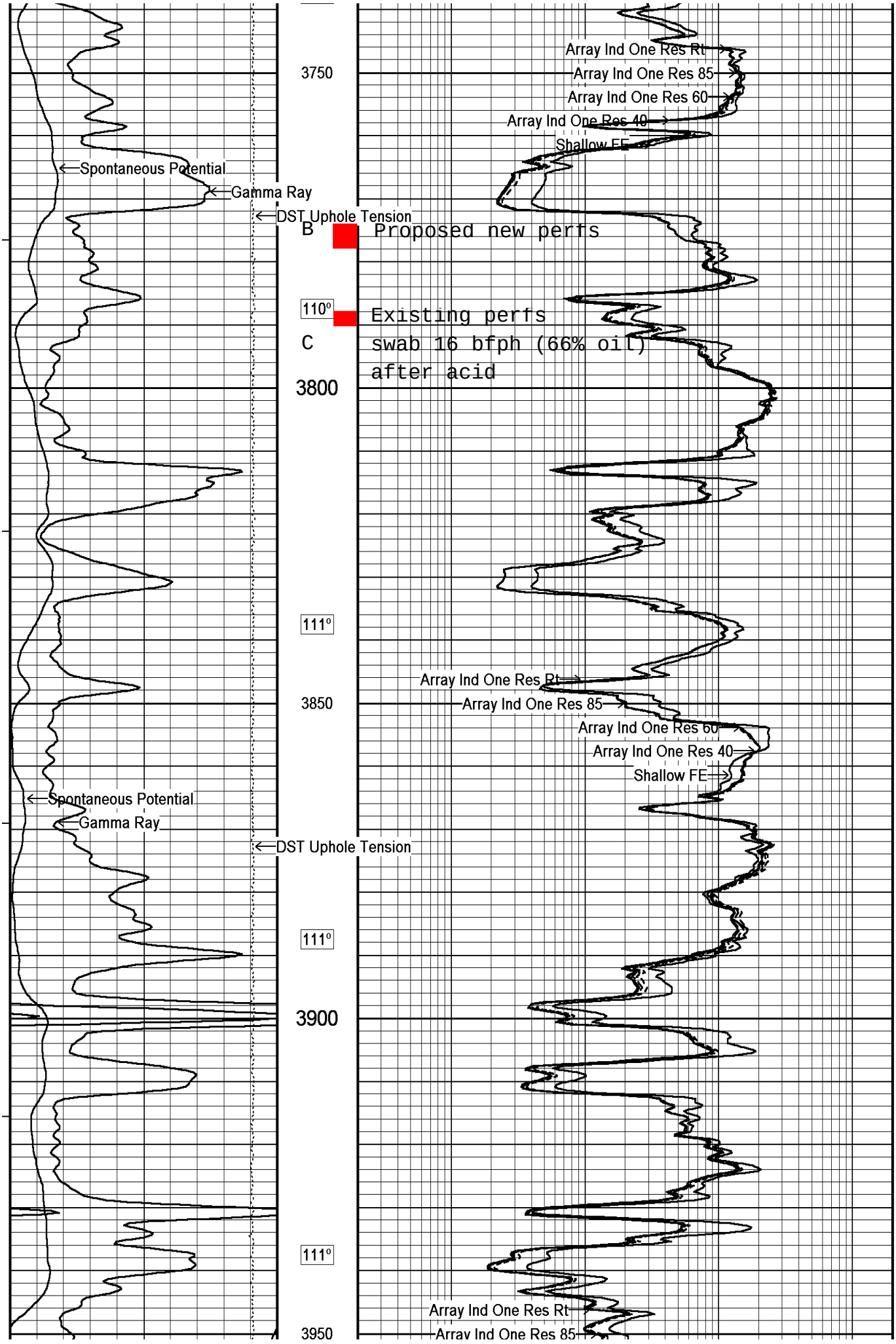
Array Ind One Res 85
OHMM
0.20 1 10 100 1000 2000

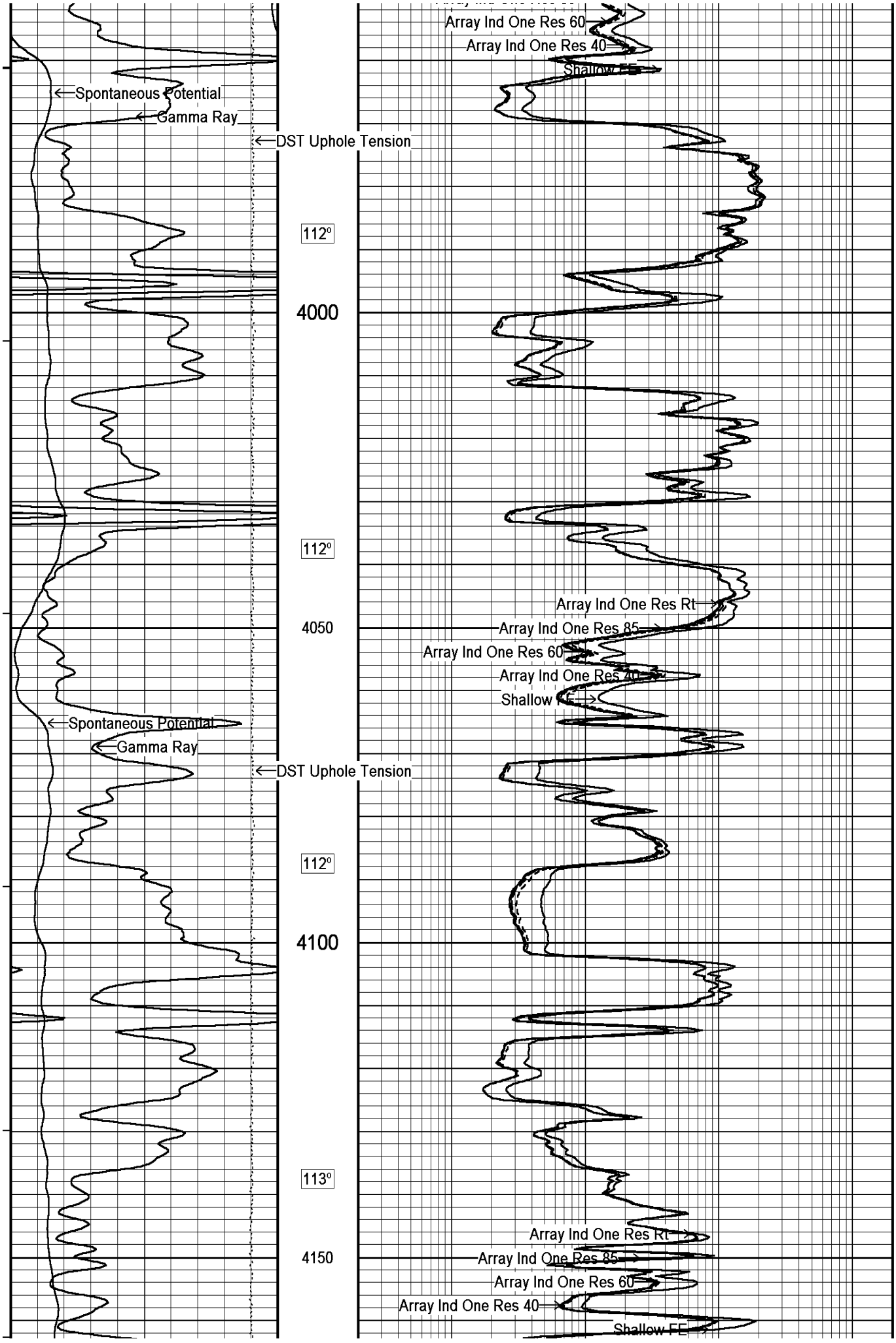
Array Ind One Res Rt
OHMM
0.20 1 10 100 1000 2000

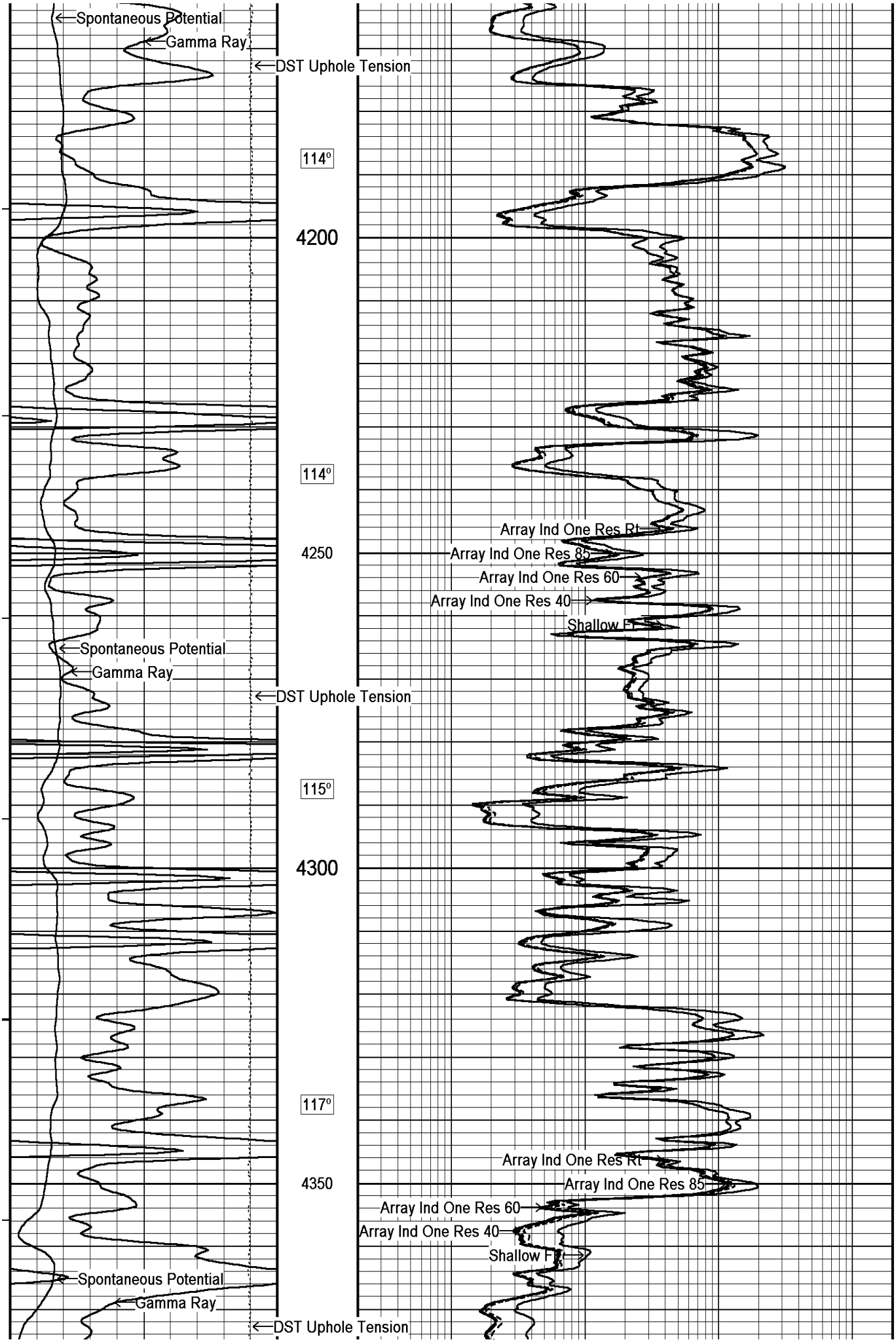


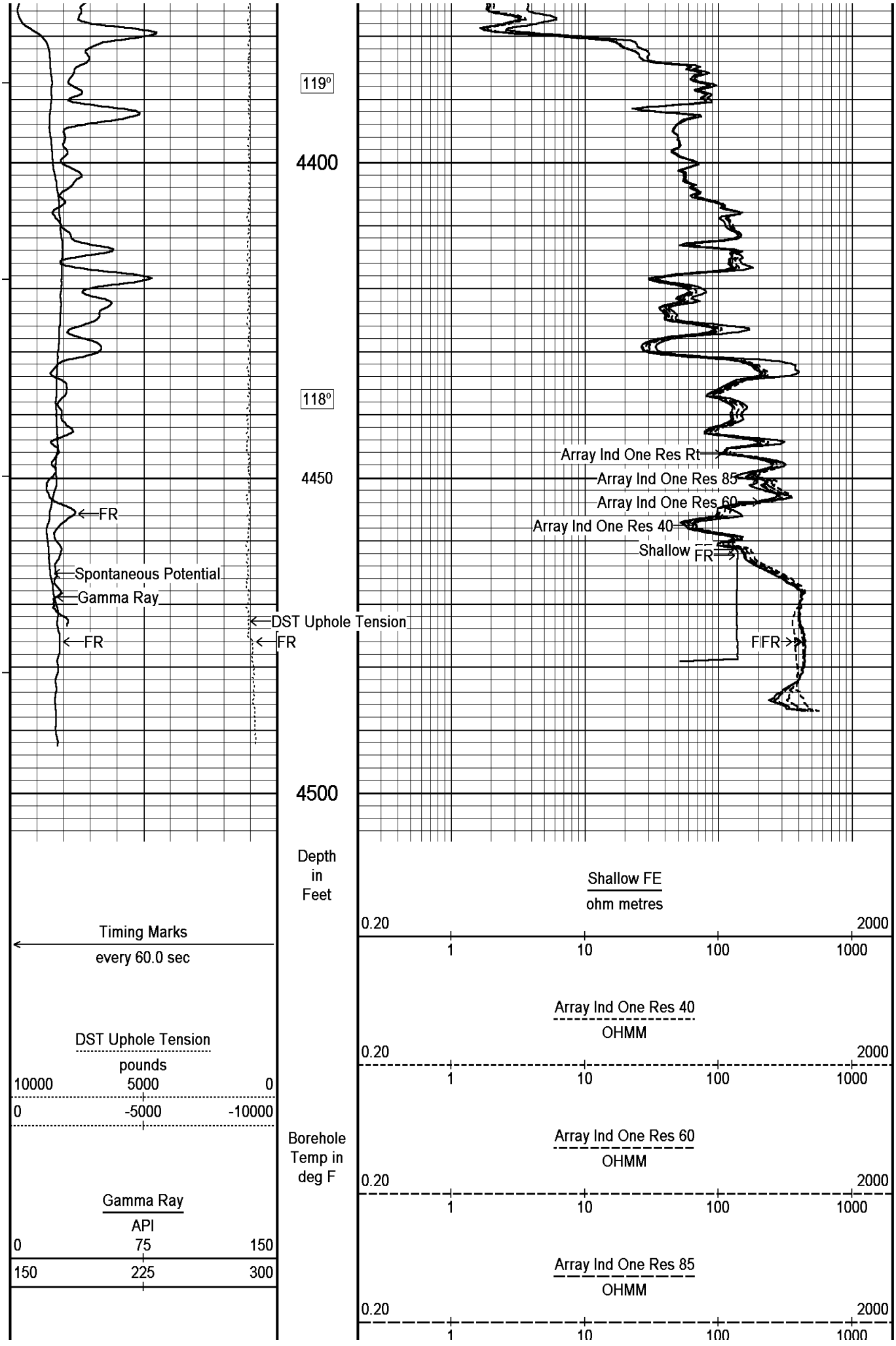



109°
Array Ind One Res Rt
3550
Array Ind One Res 85
Array Ind One Res 60
Array Ind One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
109°
3600
109°
Array Ind One Res Rt
3650
Array Ind One Res 85
Array Ind One Res 60
Array Ind One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
110°
3700
110°


Array Ind One Res Rt
Array Ind One Res 85
Array Ind One Res 60
Array Ind One Res 40
Shallow FE
3750
Spontaneous Potential
Gamma Ray
DST Uphole Tension
B
Proposed new perfs
110°
Existing perfs
C
swab 16 bfph (66% oil)
after acid
3800
111°
Array Ind One Res Rt
Array Ind One Res 85
3850
Array Ind One Res 60
Array Ind One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
111°
3900
111°
Array Ind One Res Rt
3950
Array Ind One Res 85


Array Ind One Res 60
Array Ind One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
112°
4000
112°
Array Ind One Res Rt
4050
Array Ind One Res 85
Array Ind One Res 60
Array Ind One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
112°
4100
113°
Array Ind One Res Rt
4150
Array Ind One Res 85
Array Ind One Res 60
Array Ind One Res 40
Shallow FE


Spontaneous Potential
Gamma Ray
DST Uphole Tension
114°
4200
114°
Array Ind One Res Rt
4250
Array Ind One Res 85
Array Ind One Res 60
Array Ind One Res 40
Shallow Ft
Spontaneous Potential
Gamma Ray
DST Uphole Tension
115°
4300
117°
Array Ind One Res Rt
4350
Array Ind One Res 85
Array Ind One Res 60
Array Ind One Res 40
Shallow Ft
Spontaneous Potential
Gamma Ray
DST Uphole Tension


119°
4400
118°
4450
4500
FR
Spontaneous Potential
Gamma Ray
FR
DST Uphole Tension
FR
Array Ind One Res Rt
Array Ind One Res 85
Array Ind One Res 60
Array Ind One Res 40
Shallow FR
FFR
Depth in Feet
Timing Marks
every 60.0 sec
DST Uphole Tension
pounds
10000 5000 0
0 -5000 -10000
Gamma Ray
API
0 75 150
150 225 300
Borehole Temp in deg F
Shallow FE
ohm metres
0.20 2000
1 10 100 1000
Array Ind One Res 40
OHMM
0.20 2000
1 10 100 1000
Array Ind One Res 60
OHMM
0.20 2000
1 10 100 1000
Array Ind One Res 85
OHMM
0.20 2000
1 10 100 1000

Spontaneous Potential
millivolts
− → | 20 | ← +

Replay
Scale
1:240

Array Ind One Res Rt
OHMM
0.20 1 10 100 2000

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 22-JUN-2009 22:24
Filename: C:\MINIMUS 13057\Plot Presentations\INDUCTION\rtap 5 inch main.dta — Recorded on 22-JUN-2009 19:52
System Versions: Plotted with 8.06.0241

5 INCH MAIN LOG

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 22-JUN-2009 22:24
Filename: C:\MINIMUS 13057\Plot Presentations\INDUCTION\rtap repeat.dta — Recorded on 22-JUN-2009 19:37
System Versions: Plotted with 8.06.0241

Depth
in
Feet

Timing Marks
every 60.0 sec

DST Uphole Tension
pounds
10000 5000 0
0 -5000 -10000

Borehole
Temp in
deg F

Gamma Ray
API
0 75 150
150 225 300

Shallow FE
ohm metres
0.20 1 10 100 2000

Array Ind One Res 40
OHMM
0.20 1 10 100 2000

Array Ind One Res 60
OHMM
0.20 1 10 100 2000

Array Ind One Res 85
OHMM
0.20 1 10 100 2000

Spontaneous Potential
millivolts
− → | 20 | ← +

Array Ind One Res Rt
OHMM
0.20 1 10 100 2000

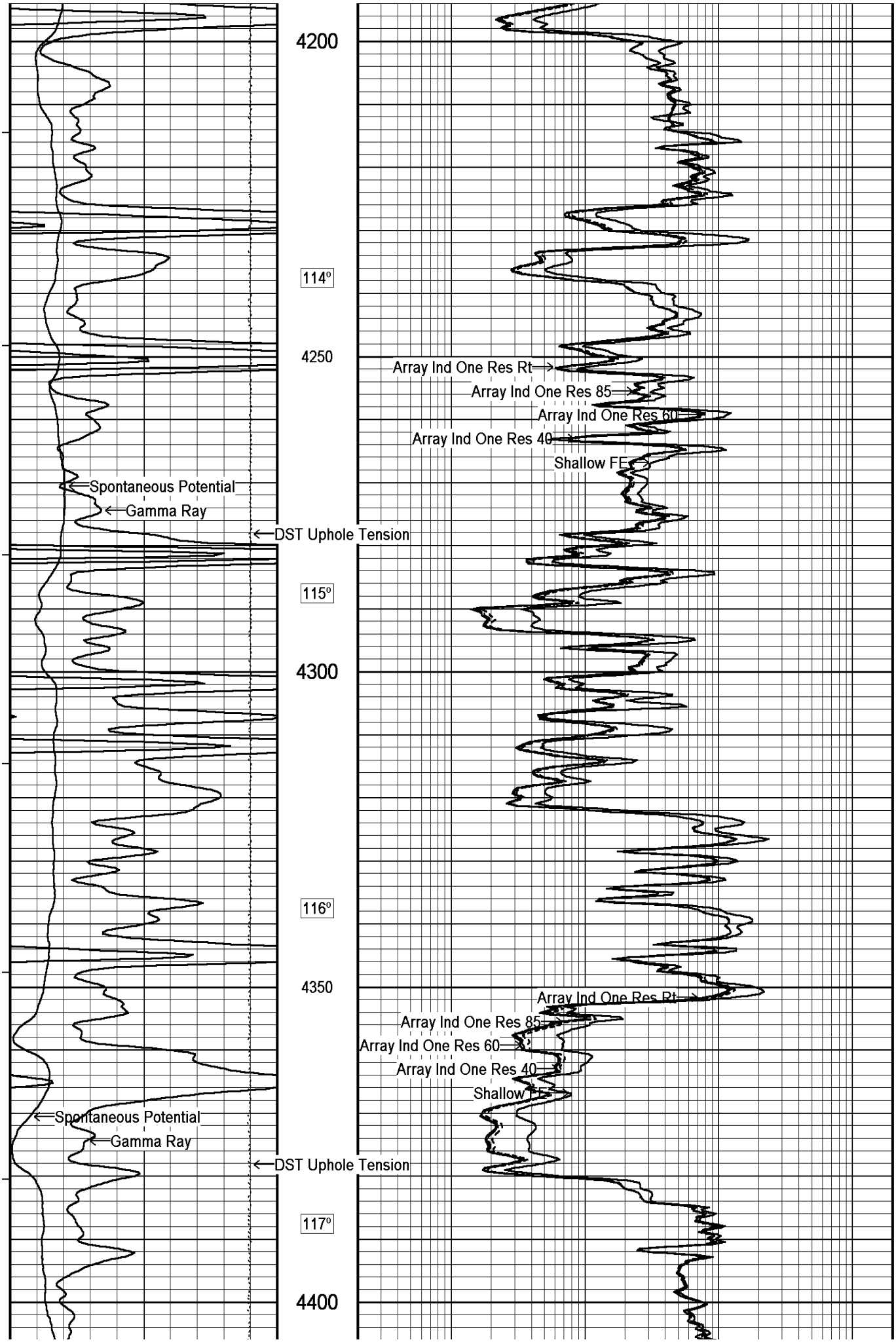
Replay
Scale
1:240

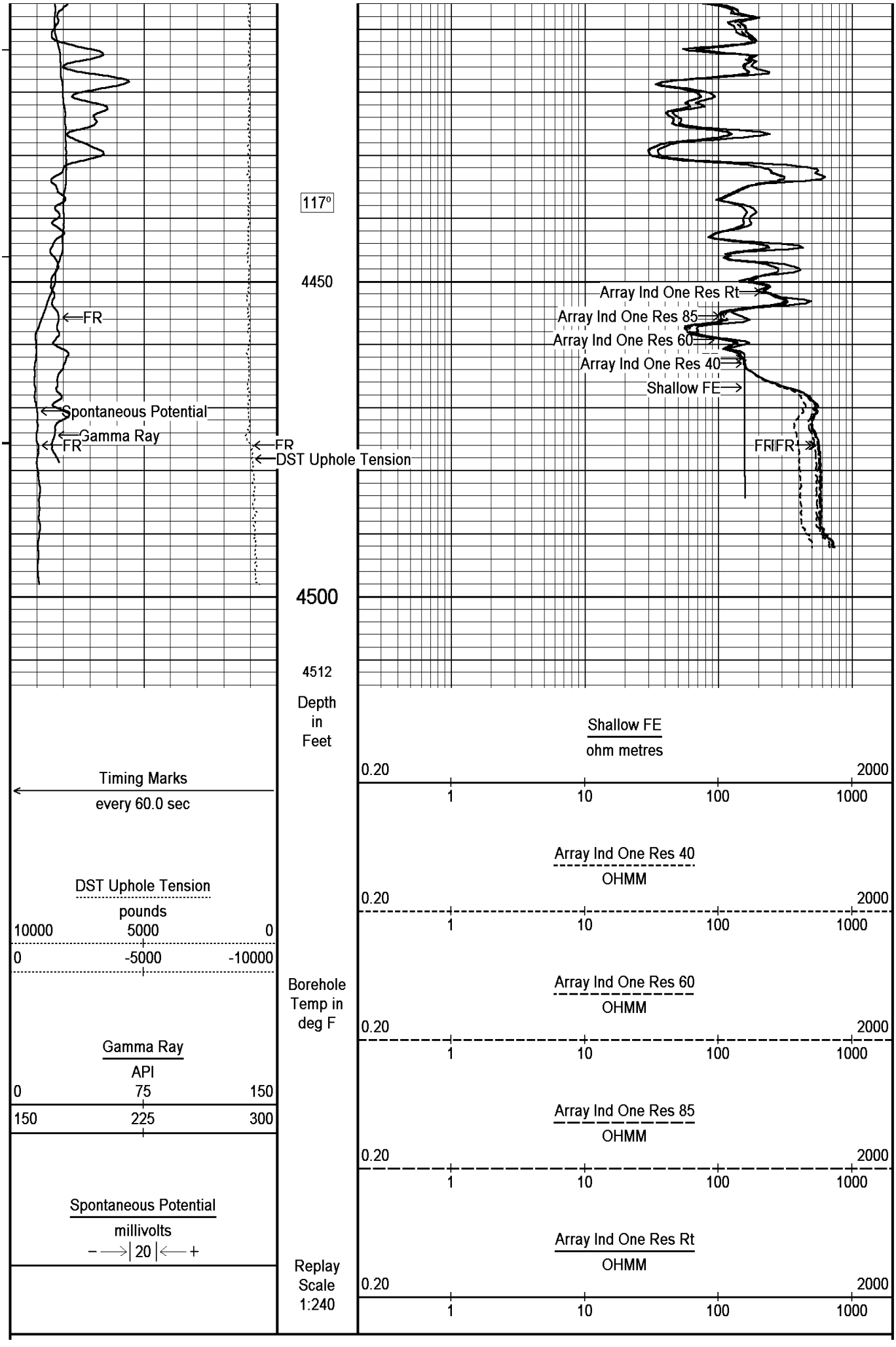
4150

Array Ind One Res Rt
Array Ind One Res 85
Array Ind One Res 60
Array Ind One Res 40
Shallow FE

Spontaneous Potential
Gamma Ray
DST Uphole Tension

113°


4200
114°
4250
Array Ind One Res Rt
Array Ind One Res 85
Array Ind One Res 60
Array Ind One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
115°
4300
116°
4350
Array Ind One Res Rt
Array Ind One Res 85
Array Ind One Res 60
Array Ind One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
117°
4400


117°
4450
4500
4512
FR
Spontaneous Potential
Gamma Ray
FR
FR
DST Uphole Tension
Array Ind One Res Rt
Array Ind One Res 85
Array Ind One Res 60
Array Ind One Res 40
Shallow FE
FR
FR
Depth in Feet
Timing Marks
every 60.0 sec
DST Uphole Tension
pounds
10000 5000 0
0 -5000 -10000
Gamma Ray
API
0 75 150
150 225 300
Spontaneous Potential
millivolts
20
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
OHMM
0.20 2000
1 10 100 1000
Array Ind One Res 60
OHMM
0.20 2000
1 10 100 1000
Array Ind One Res 85
OHMM
0.20 2000
1 10 100 1000
Array Ind One Res Rt
OHMM
0.20 2000
1 10 100 1000

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\MINIMUS 13057\Plot Presentations\INDUCTION\rtap repeat.dta
System Versions: Plotted with 8.06.0241

Plotted on 22-JUN-2009 22:24
Recorded on 22-JUN-2009 19:37

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\MINIMUS 13057\Plot Presentations\INDUCTION\OTTLEY_003.dta

General Constants All 000

Last Edited on 22-JUN-2009,13:48

General Parameters		
Mud Resistivity	0.620	ohm-metres
Mud Resistivity Temperature	80.000	degrees F
Water Level	0.000	feet
Density/Neutron Processing	Wet Hole	
Hole/Annular Volume and Differential Caliper Parameters		
HVOL Caliper 1	Density Caliper	
HVOL Caliper 2	Density Caliper	
Annular Volume Diameter	5.500	inches
Caliper for Differential Caliper	Density Caliper	
Rwa Parameters		
Porosity used	Limestone Density Por.	
Resistivity used	Deep Induction	
RWA Constant A	0.610	
RWA Constant M	2.150	

Down-hole Tension Calibration SMS 000

Field Calibration on 07-MAR-2009 13:28

Reading No	Measured	Calibrated (lbs)
1	15455.17	0.00
2	17548.46	6210.00

High Resolution Temperature Calibration MCG 034

Field Calibration on 4-JUN-2009,10:09

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MCG 034

Pre-filter Length	11

SP Calibration MCG 034

Field Calibration on 4-JUN-2009,10:09

	Measured	Calibrated (mV)
Reference 1	100.0	100.0
Reference 2	-100.0	-100.0

Gamma Calibration MCG 034

Field Calibration on 10-JUN-2009,03:22

	Measured	Calibrated (API)
Background	65	45
Calibrator (Gross)	1119	770
Calibrator (Net)	1055	725

Gamma Constants MCG 034

Last Edited on 22-JUN-2009,13:46

Gamma Calibrator Number	GRC38	
Mud Density	1.12	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

Caliper Calibration MML 016

Base Calibration on 15-JUN-2009 08:58
Field Calibration on 15-JUN-2009 08:59

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13489	5.98
2	16538	7.97
3	19732	9.86
4	23601	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.99	5.98

Micro Normal and Micro Inverse Calibration MML 016

Base Calibration on 15-JUN-2009 09:04
Field Check on 15-JUN-2009 09:07

Base Calibration

	Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.1	60.0	2.6	12.8
Micro Inverse	15.6	78.2	1.7	8.4

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	32.3	32.3
Micro Inverse	16.3	16.3

Micro Normal and Micro Inverse Constants MML 016

Last Edited on 15-JUN-2009,09:01

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	N/A	inches

Neutron Calibration MDN 065

Base Calibration on 5-MAY-2009 13:45
Field Check on 19-MAY-2009,11:36

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3145	98	3714	110
Ratio	31.952		33.764	

Field Calibrator at Base	Calibrated (cps)	
	1637	2337
Ratio	0.701	

Field Check	Calibrated (cps)	
	1613	2339
Ratio	0.689	

Neutron Constants MDN 065

Last Edited on 10-JUN-2009,03:11

Neutron Source Id	757	
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
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE 135

Base Calibration on 4-JUN-2009 09:50
Field Check on 4-JUN-2009 09:54

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	963.6	126.8
Base Check		281.3
Field Check		281.3

FE Constants MFE 135

Last Edited on 22-JUN-2009,13:45

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Caliper Source for FE correction	Bit Size	
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 126

Last Edited on 22-JUN-2009,13:44

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

Fixed Gate Parameters

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	

Down Hole Fixed Gate Parameters

Peak Window Start	N/A	micro-sec
Peak Window Width	N/A	micro-sec
Pre Gain Settings	0	
Start Gain Settings	0	
Initial Discriminator Level	0.0000	mVolts

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 077

Field Calibration on 4-JUN-2009,10:41

	Measured	Calibrated(Deg F)
Lower	50.00	50.00

Lower	[illegible]	[illegible]
Upper	100.00	100.00

High Resolution Temperature Constants MAI 077

Pre-filter Length	11

Induction Calibration MAI 077

Base Calibration on 4-JUN-2009,10:25
Field Check on 4-JUN-2009 10:45

Base Calibration

Test Loop Calibration	Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High
1	15.7	471.1	9.3	966.2
2	5.2	374.2	7.6	821.4
3	2.6	250.7	5.2	566.0
4	1.1	129.3	2.6	279.2
Array Temperature		61.2	Deg F	

Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1	16.3	3844.8	16.4	3845.3	
2	32.8	3596.2	32.8	3596.0	
3	31.2	3143.3	31.2	3143.2	
4	21.9	2127.3	21.9	2127.3	
Deep	19.9	2064.0	20.0	2064.1	
Medium	44.5	4159.6	44.5	4159.1	
Shallow	47.9	5287.0	47.9	5286.4	
Array Temperature		71.3		72.4	Deg F

Induction Constants MAI 077

Last Edited on 22-JUN-2009,13:44

Induction Model	VECTAR	
Caliper for Borehole Corr.	Bit Size	
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

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

Caliper Calibration MPD 035

Base Calibration on 4-JUN-2009 11:07
Field Calibration on 4-JUN-2009 11:08

Base Calibration

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	18091	3.99
2	28112	5.98
3	38521	7.97
4	48128	9.86
5	59190	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.99	5.98

Photo Density Calibration MPD 035

Base Calibration on 4-JUN-2009 11:43
Field Check on 4-JUN-2009 11:49

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	50592	24683	59556	30836
Reference 2	20962	2554	24941	2541
Field Check at Base	1221.6	1459.5		
Field Check	1221.4	1454.0		

PE Calibration

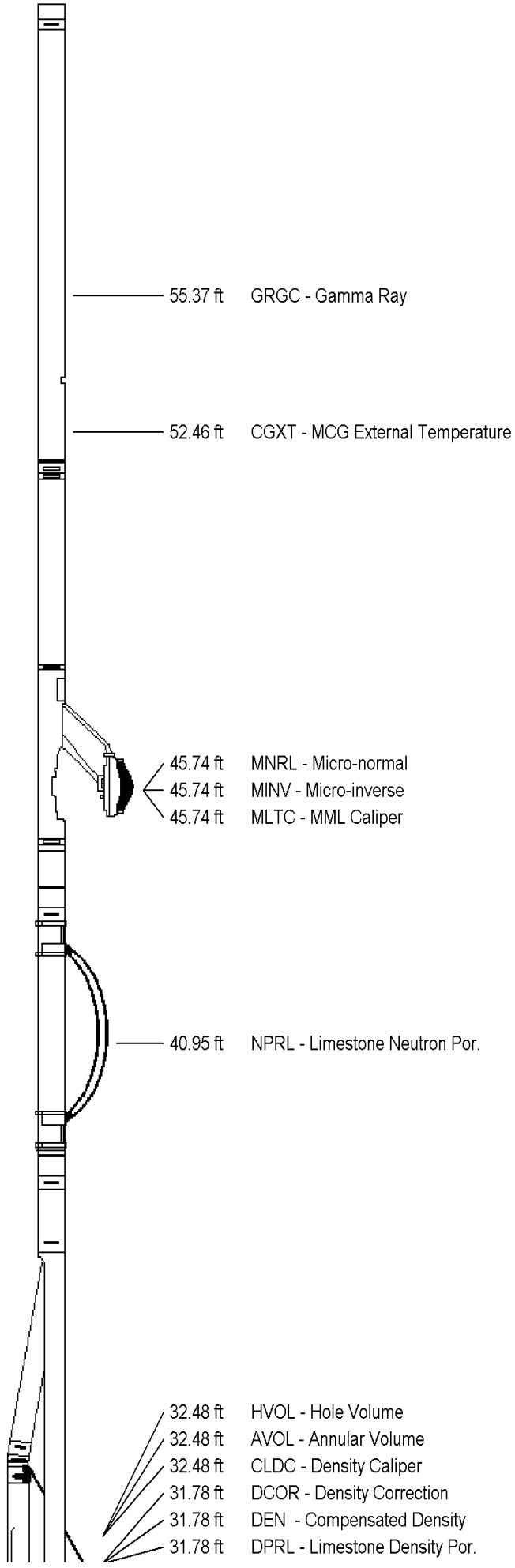
Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	219	1084		
Reference 1	18820	50398	0.377	0.371
Reference 2	5578	20818	0.272	0.272
Field Check at Base	219.3	1083.7		
Field Check	221.9	1081.7		

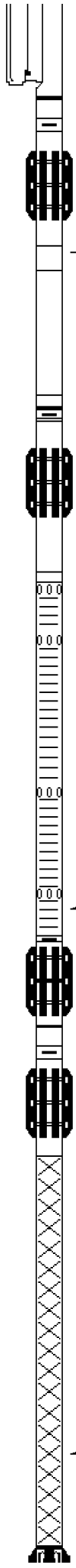
Density Constants MPD 035

Last Edited on 22-JUN-2009,13:45

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	1.12	gm/cc
Mud Density Z/A Correction	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	Advanced	

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	


Compact Gamma
MCG 34 Length: 8.70 ft Weight: 63.9 lb
55.37 ft GRGC - Gamma Ray
52.46 ft CGXT - MCG External Temperature
Compact Micro-log
MML 16 Length: 7.97 ft Weight: 81.6 lb
45.74 ft MNRL - Micro-normal
45.74 ft MINV - Micro-inverse
45.74 ft MLTC - MML Caliper
Compact Neutron
MDN 65 Length: 5.04 ft Weight: 50.7 lb
40.95 ft NPRL - Limestone Neutron Por.
Compact Density/Caliper
MPD 35 Length: 9.59 ft Weight: 90.4 lb
32.48 ft HVOL - Hole Volume
32.48 ft AVOL - Annular Volume
32.48 ft CLDC - Density Caliper
31.78 ft DCOR - Density Correction
31.78 ft DEN - Compensated Density
31.78 ft DPRL - Limestone Density Por.


31.72 ft PDPE - PE
Compact Focussed Electric
MFE 135 Length: 6.03 ft Weight: 48.5 lb
26.22 ft FEFE - Shallow FE
Compact Sonic
MSS 126 Length: 12.52 ft Weight: 72.8 lb
12.96 ft DT35 - 3-5' Compensated Sonic
12.96 ft SPRL - Wyllie Lime. Sonic Por.
Compact Induction
MAI 77 Length: 10.81 ft Weight: 48.5 lb
2.58 ft RILM - Medium Induction
2.58 ft RILD - Deep Induction
Tool Zero (0.13ft from bottom)

Total Length: 60.66 ft Weight: 456.4 lb All measurements relative to tool zero.

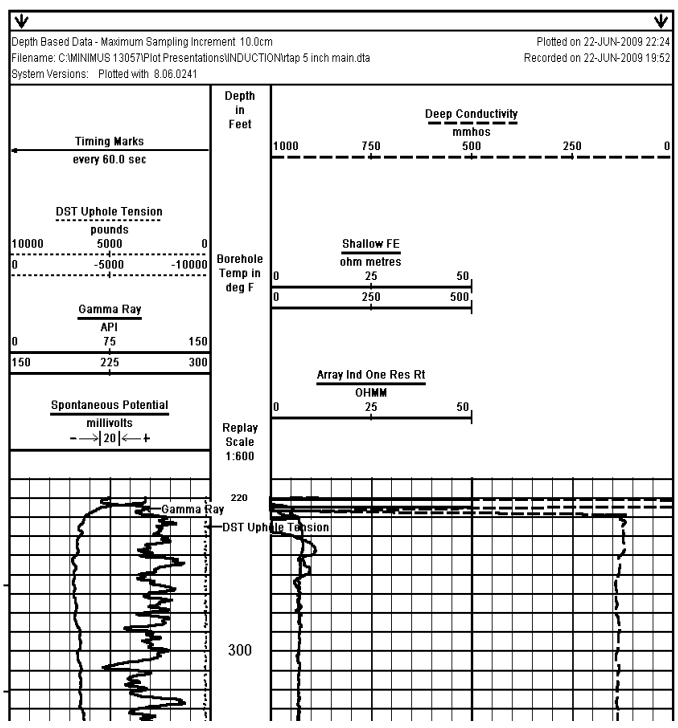
COMPANY	SHAKESPEARE OIL COMPANY
WELL	OTTLEY #2-15
FIELD	
PROVINCE/COUNTY	LOGAN
COUNTRY/STATE	U.S.A. / KANSAS

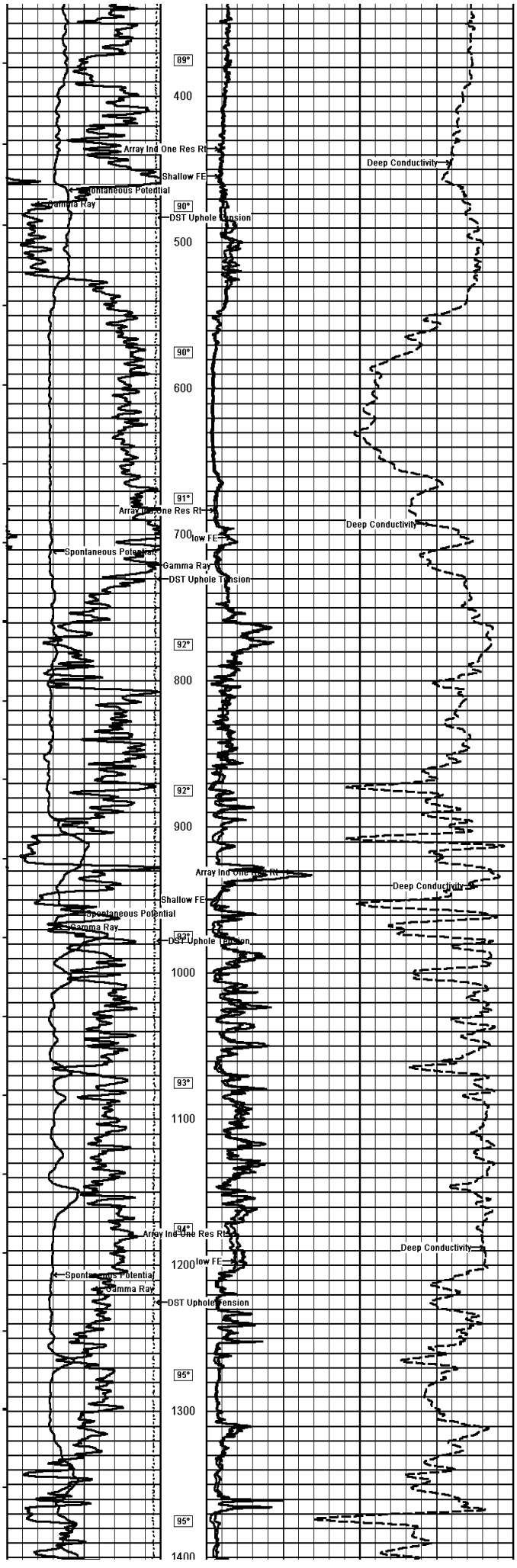
Elevation Kelly Bushing	2747.00	feet	First Reading	4473.00	feet
Elevation Drill Floor	2746.00	feet	Depth Driller	4480.00	feet
Elevation Ground Level	2738.00	feet	Depth Logger	4476.00	feet

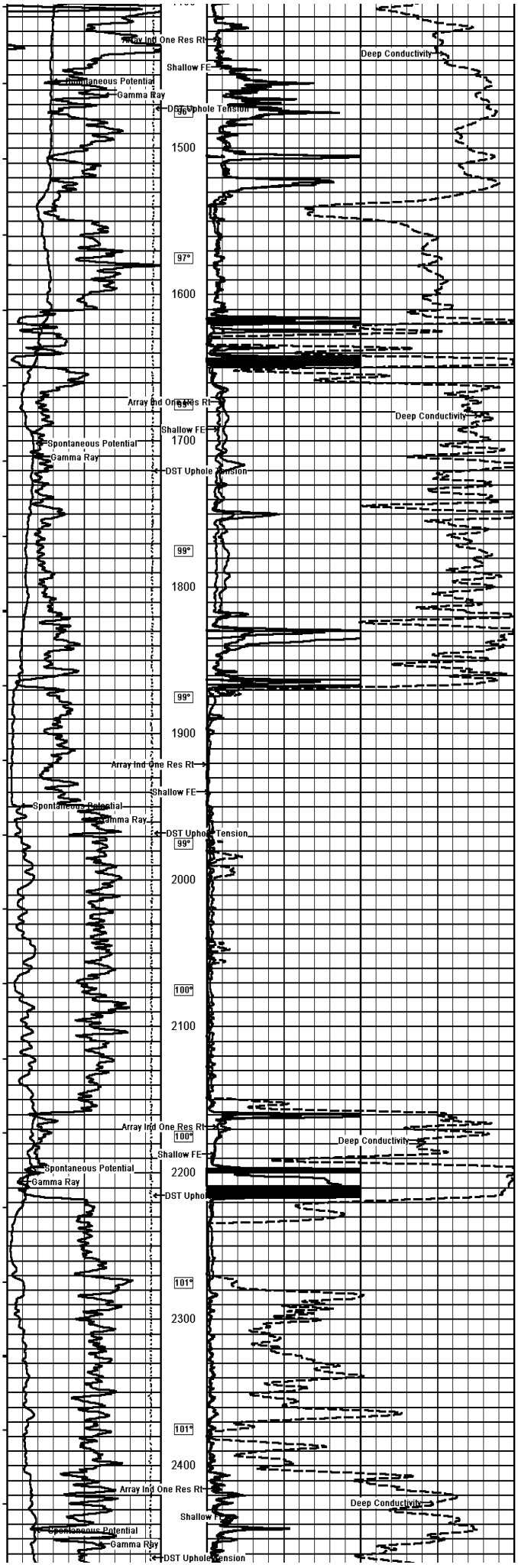
Weatherford®

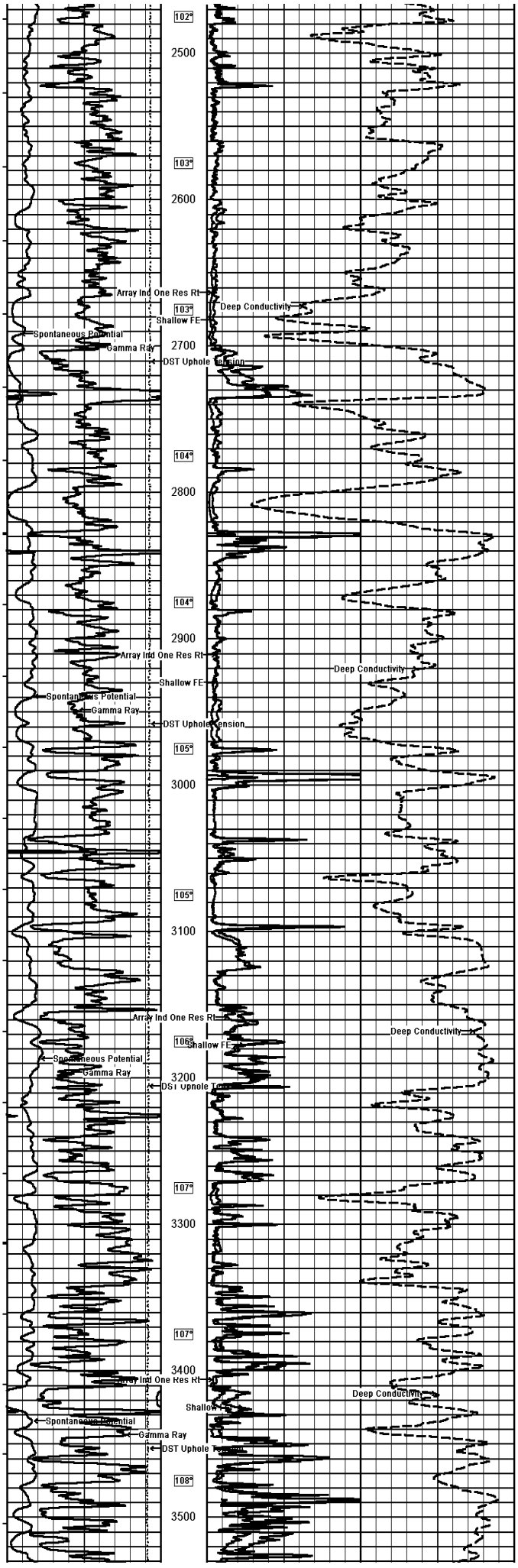
ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

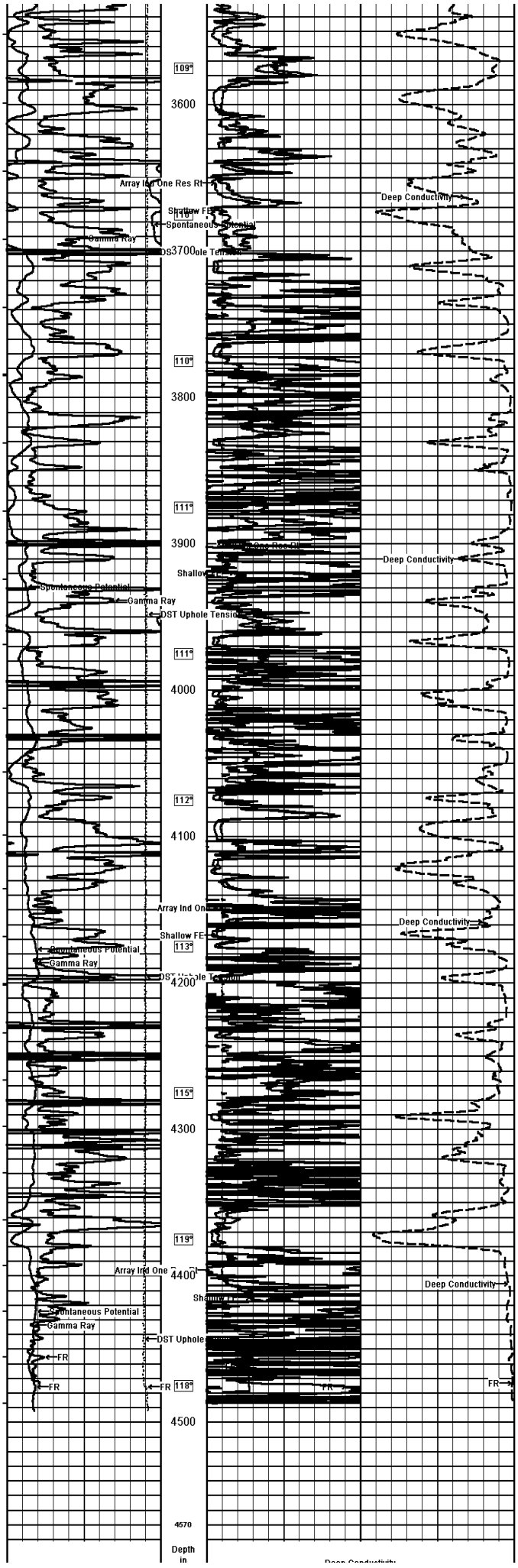
COMPANY	SHAKESPEARE OIL COMPANY
WELL	OTTLEY #2-15
FIELD	
PROVINCE/COUNTY	LOGAN
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	2590' FSL & 980' FWL
SEC 15 TWP 14S RGE 32W	Other Services
API Number 15-109-20936	
Permit Number	
Permanent Datum G.L., Elevation 2738 feet	
Log Measured From K.B. @ 9 FEET above Permanent Datum	Elevations: KB 2747.00 feet
Drilling Measured From K.B.	DF 2746.00
	GL 2738.00
Date	22-JUN-2009
Run Number	ONE
Depth Driller	4480.00 feet
Depth Logger	4476.00 feet
First Reading	
Last Reading	
Casing Driller	228.00 feet
Casing Logger	
Bit Size	7.875 inches
Hole Fluid Type	CHEMICAL
Density / Viscosity	9.30 lb/USg 46.00 CP
PH / Fluid Loss	10.00 lb/USg 8.40 ml/30Min
Sample Source	FLOWLINE
Rm @ Measured Temp	0.62 @ 80.0 ohm-m
Rmf @ Measured Temp	0.50 @ 80.0 ohm-m
Rmc @ Measured Temp	0.74 @ 80.0 ohm-m
Source Rmf / Rmc	CALC CALC
Rm @ BHT	
Time Since Circulation	4 HOURS
Max Recorded Temp	
Equipment Name	COMPACT
Equipment / Base	13057 LIB
Recorded By	STEVEN TOTTEY
Witnessed By	STEVE DAVIS
S.O. # / JOB #	3618082 LB09-079

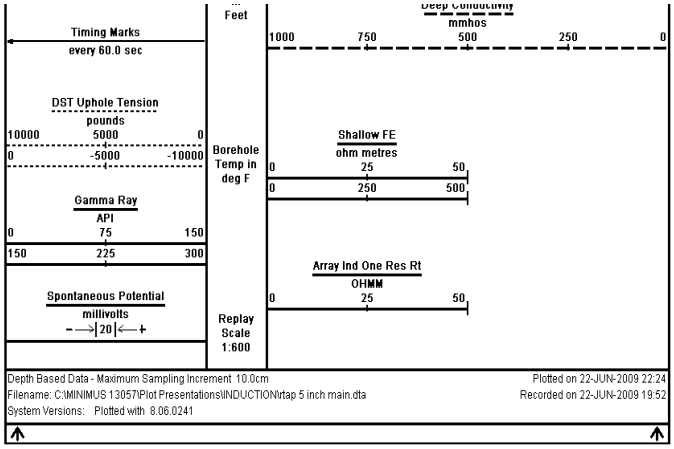



89°
400
Array Ind One Res Rt
Shallow FE
Spontaneous Potential
Gamma Ray
90°
DST Uphole Tension
500
90°
600
91°
Array Ind One Res Rt
700
low FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
92°
800
92°
900
Array Ind One Res Rt
Shallow FE
Spontaneous Potential
Gamma Ray
93°
DST Uphole Tension
1000
93°
1100
94°
Array Ind One Res Rt
1200
low FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
95°
1300
95°
1400
Deep Conductivity
Deep Conductivity
Deep Conductivity
Deep Conductivity


Array Ind One Res Rt
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
Deep Conductivity
96°
1500
97°
1600
1700
99°
1800
1900
2000
100°
2100
2200
101°
2300
2400


102°
2500
103°
2600
Array Ind One Res Rt
103°
Deep Conductivity
Shallow FE
Spontaneous Potential
Gamma Ray
2700
DST Uphole Tension
104°
2800
104°
2900
Array Ind One Res Rt
Deep Conductivity
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
105°
3000
105°
3100
Array Ind One Res Rt
Deep Conductivity
106°
Shallow FE
Spontaneous Potential
Gamma Ray
3200
DST Uphole Tension
107°
3300
107°
3400
Array Ind One Res Rt
Deep Conductivity
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
108°
3500


109"
3600
Deep Conductivity
Gamma Ray
3700
110"
3800
111"
3900
Deep Conductivity
Gamma Ray
111"
4000
112"
4100
Deep Conductivity
113"
Gamma Ray
4200
115"
4300
119"
4400
Deep Conductivity
Gamma Ray
FR
FR
118"
FR
4500
4570
Depth
in



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 22-JUN-2009 22:24
Filename: C:\MINIMUS 13057\Plot Presentations\INDUCTION\rtap 5 inch main.dta — Recorded on 22-JUN-2009 19:52
System Versions: Plotted with 8.06.0241

COMPANY	SHAKESPEARE OIL COMPANY
WELL	OTTLEY #2-15
FIELD	
PROVINCE/COUNTY	LOGAN
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2747.00	feet	First Reading	4473.00	feet
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