ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

Weatherford®

COMPANY	MCCOY PETROLEUM CORPORATION
WELL	HILL 'A' #2-23
FIELD	ALFORD
PROVINCE/COUNTY	KIOWA
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	990' FSL & 1980' FWL
	SW/4

SEC	TWP	RGE	Other Services
23	30S	19W	MPD/MDN MML

API Number 15-097-21735
Permit Number

Permanent Datum GL, Elevation 2237 feet
Log Measured From KB
Drilling Measured From KB

Elevations:	feet
KB	2248.00
DF	2247.00
GL	2237.00

Date	15-MAR-2013	
Run Number	ONE	
Service Order	3539875	
Depth Driller	5240.00	feet
Depth Logger	5241.00	feet
First Reading	5238.00	feet
Last Reading	626.00	feet
Casing Driller	625.00	feet
Casing Logger	626.00	inches
Bit Size	7.875	
Hole Fluid Type	CHEMICAL	lb/USg
Density / Viscosity	9.40 lb/USg	50.00 CP
PH / Fluid Loss	9.00	9.00
Sample Source	FLOWLINE	
Rm @ Measured Temp	0.46 @ 81.0	ohm-m
Rmf @ Measured Temp	0.37 @ 81.0	ohm-m
Rmc @ Measured Temp	0.55 @ 81.0	ohm-m
Source Rmf / Rmc	CALC	CALC
Rm @ BHT	0.36 @108.0	ohm-m
Time Since Circulation	5 HOURS	
Max Recorded Temp	108.00	deg F
Equipment / Base	13057	LIB
Recorded By	ADAM SILL	
Witnessed By	EVAN STONE	
JOB #	LB13-069	

BOREHOLE RECORD

Last Edited: 15-MAR-2013 02:28

Bit Size inches	Depth From feet	Depth To feet
7.875	625.00	5240.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	625.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 13.04.8492.
- MCG, MML, MDN, MPD, MFE, MAI RAN IN COMBINATION.
  - HARDWARE: DUAL BOWSPRING USED ON MDN.
  0.5 INCH STANDOFF USED ON MFE.
  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: 2174 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3900 FEET: 253 CU. FT.
- SERVICE ORDER # 3539875

- RIG: STERLING #2.

- ENGINEER: A. SILL.

- OPERATOR(S): N. ADAME.

**** SOFTWARE ISSUE CHANGED FLUID LOSS TO MATCH PH. FLUID LOSS SHOULD BE 11.2 ML/30MIN. ****

2 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.04.8492\Data\McCoy Hill 'A' #2-23\McCoy Hill 'A' #2-23_002.dta
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

Plotted on 15-MAR-2013 06:50
Recorded on 15-MAR-2013 04:19

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 1:600

610 Casing Shoe

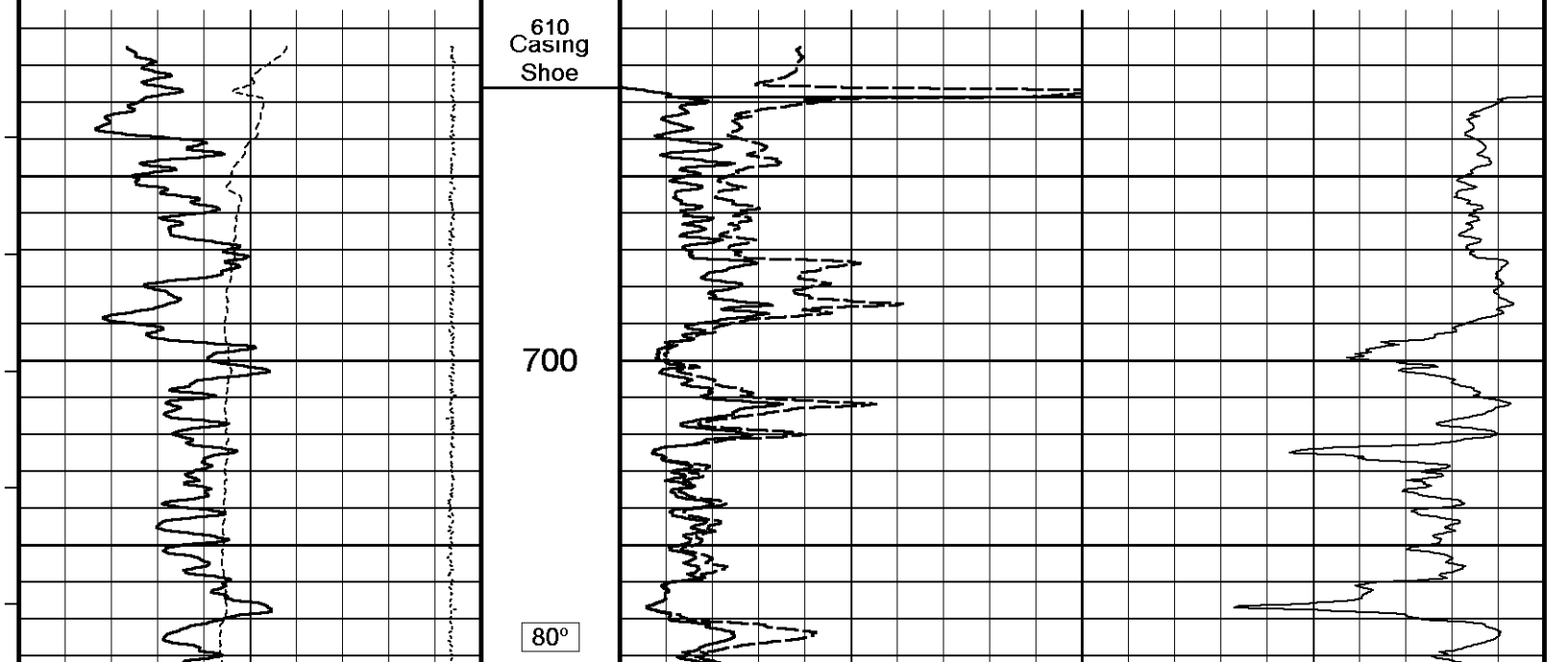
700

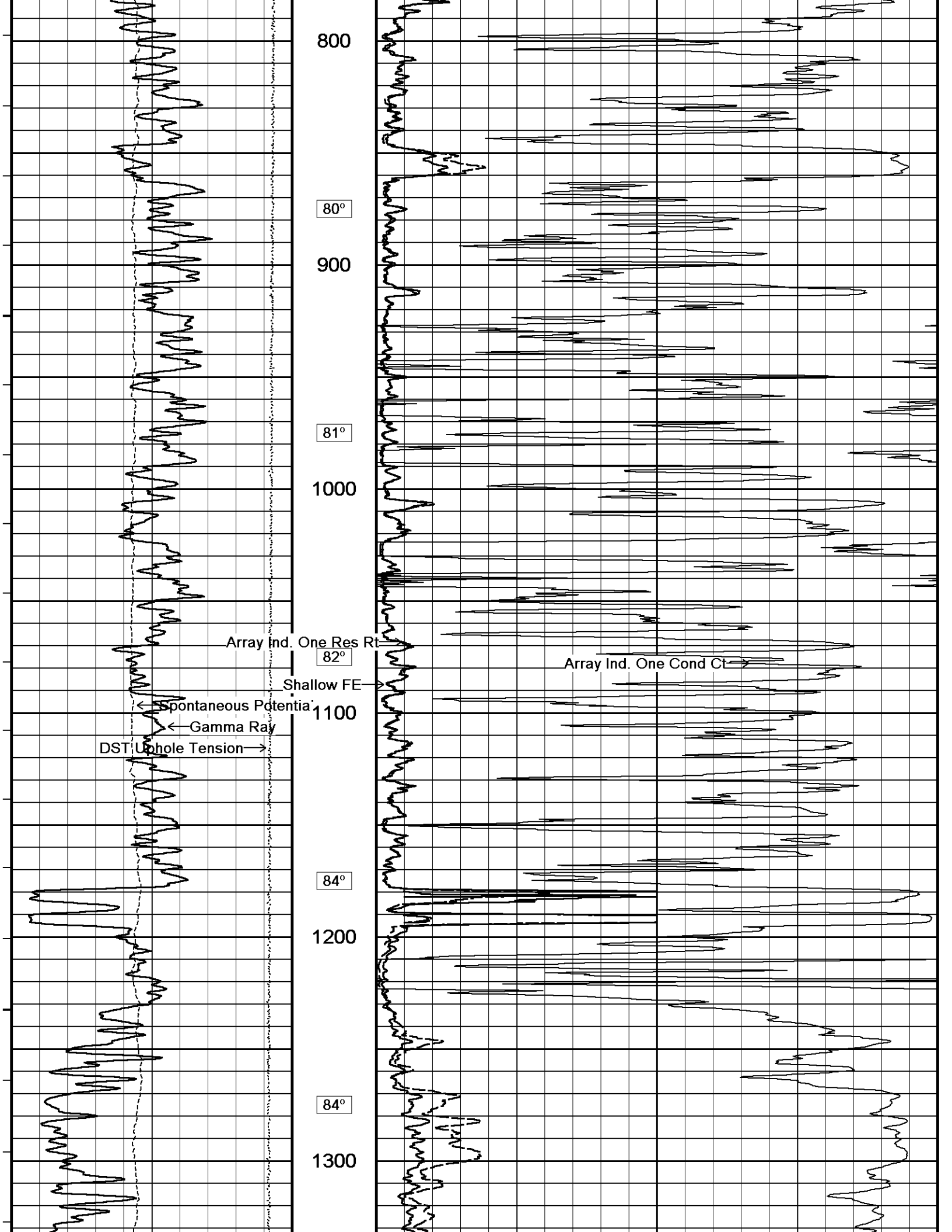
80°

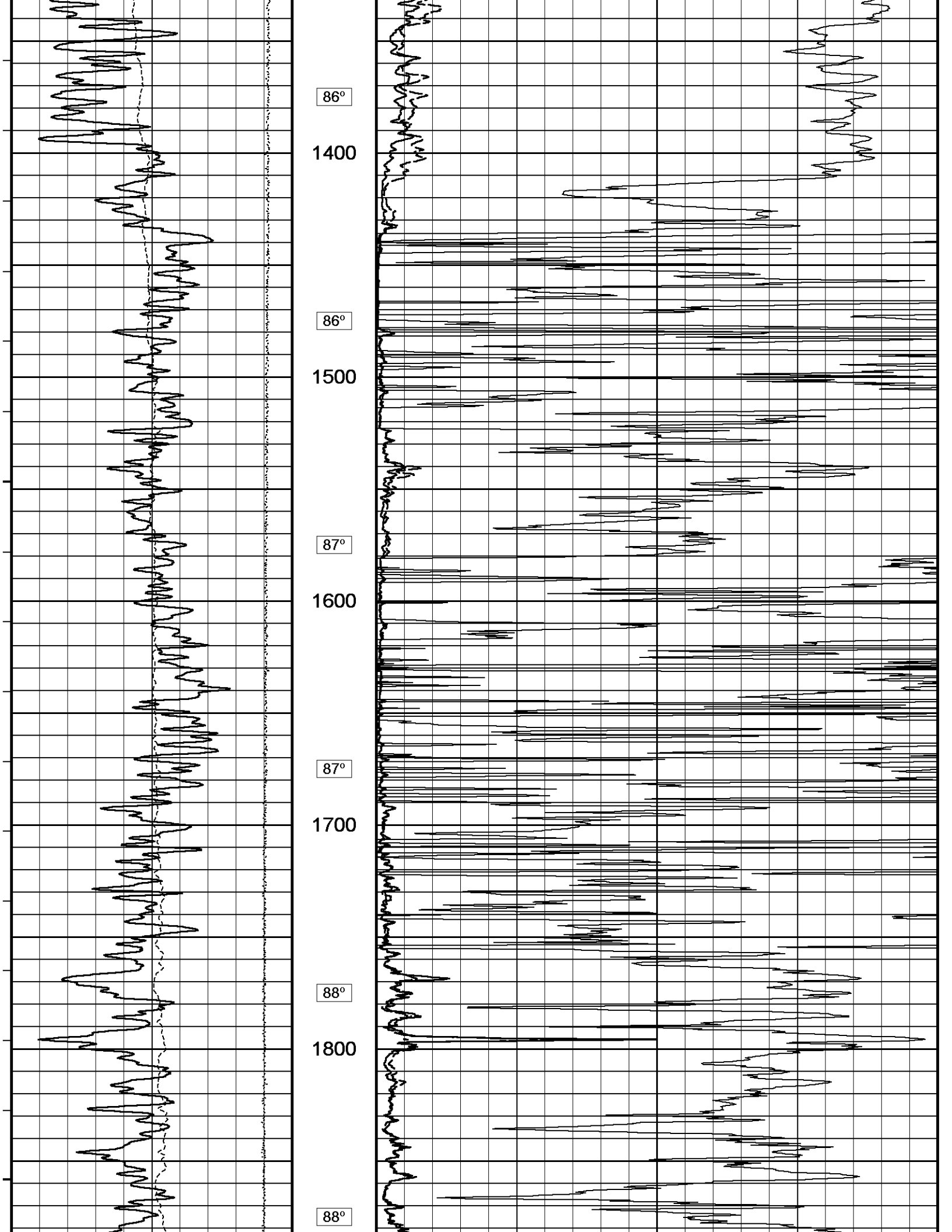
Array Ind. One Cond Ct
mmhos
1000 750 500 250 0
2000 1750 1500 1250 1000

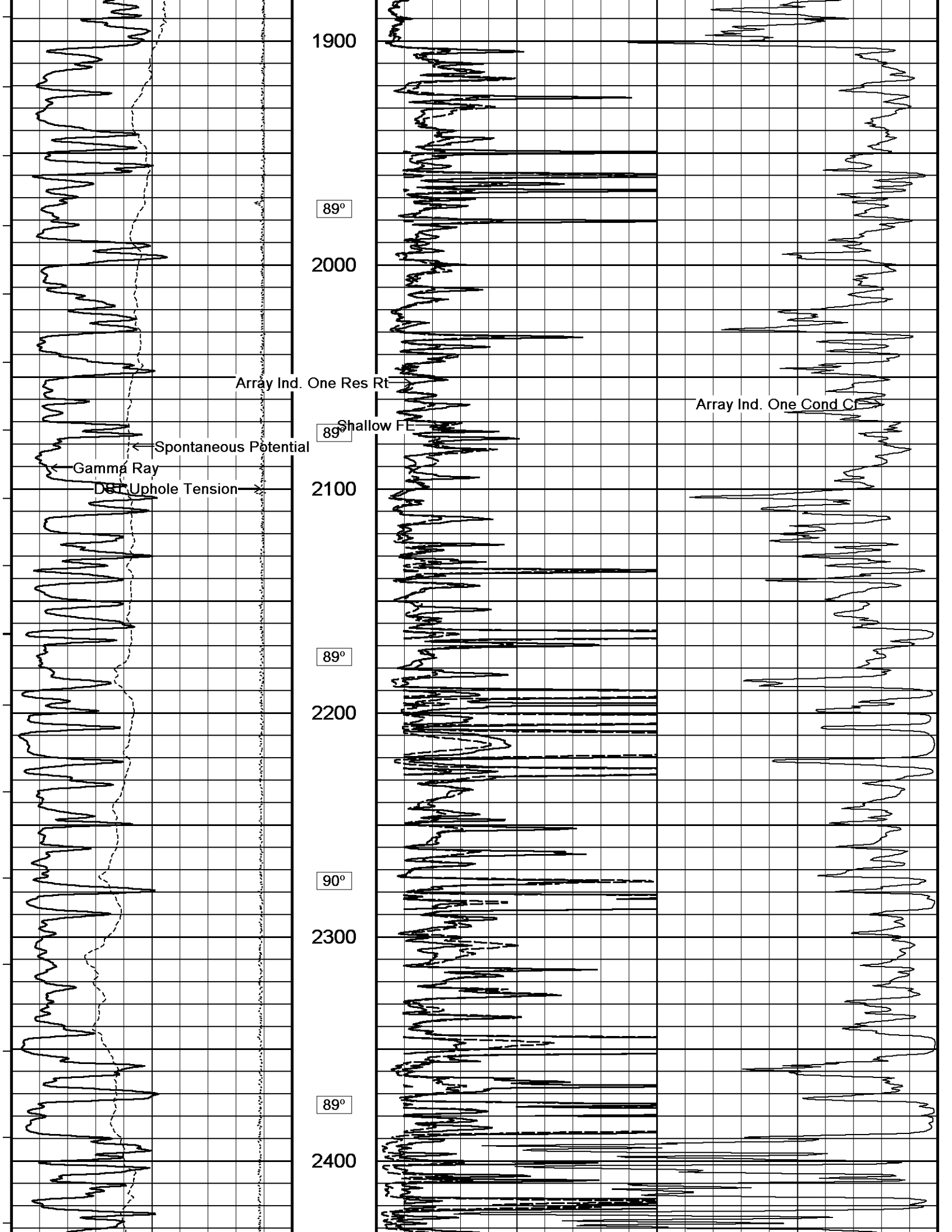
Shallow FE
ohm metres
0 25 50
0 250 500

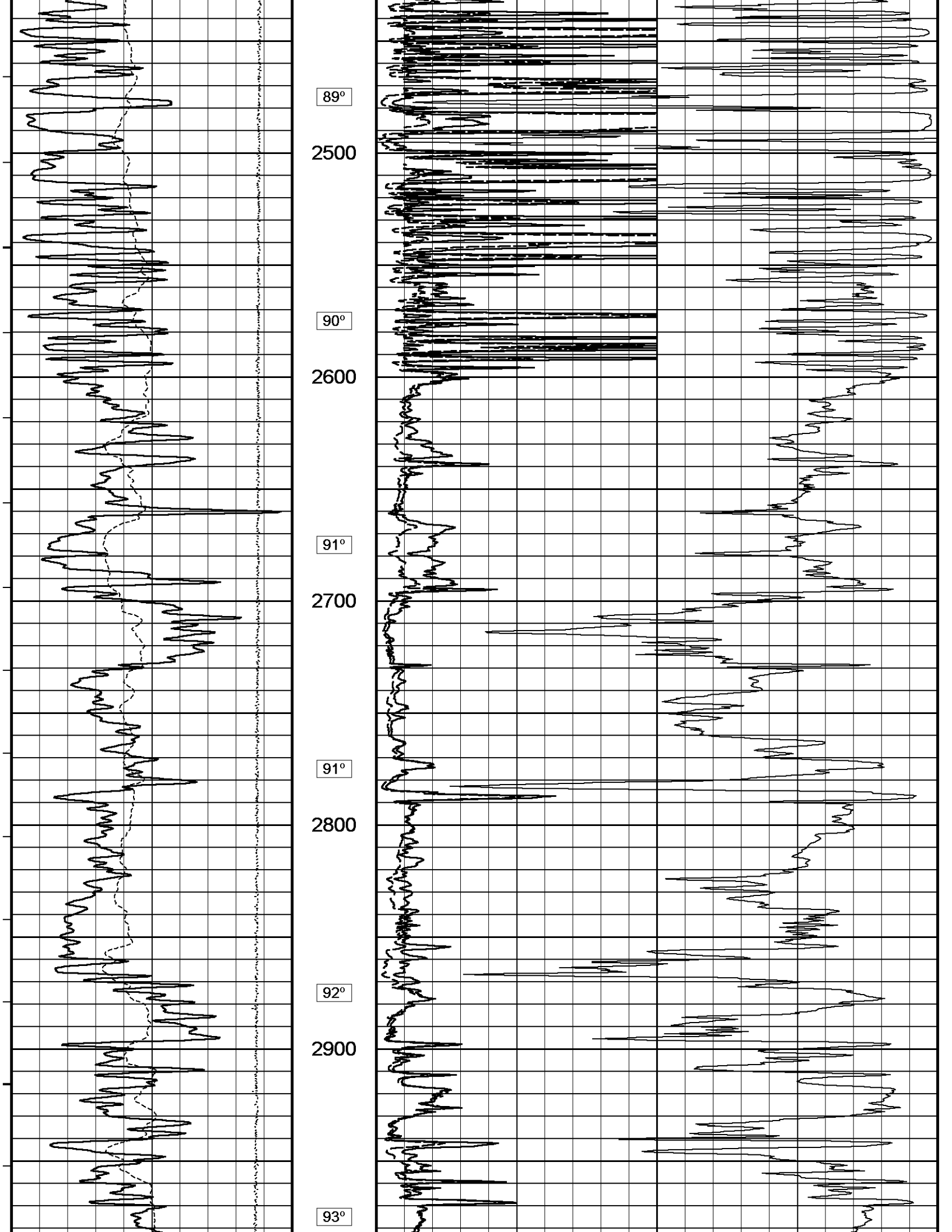
Array Ind. One Res Rt
ohm metres
0 25 50
0 250 500

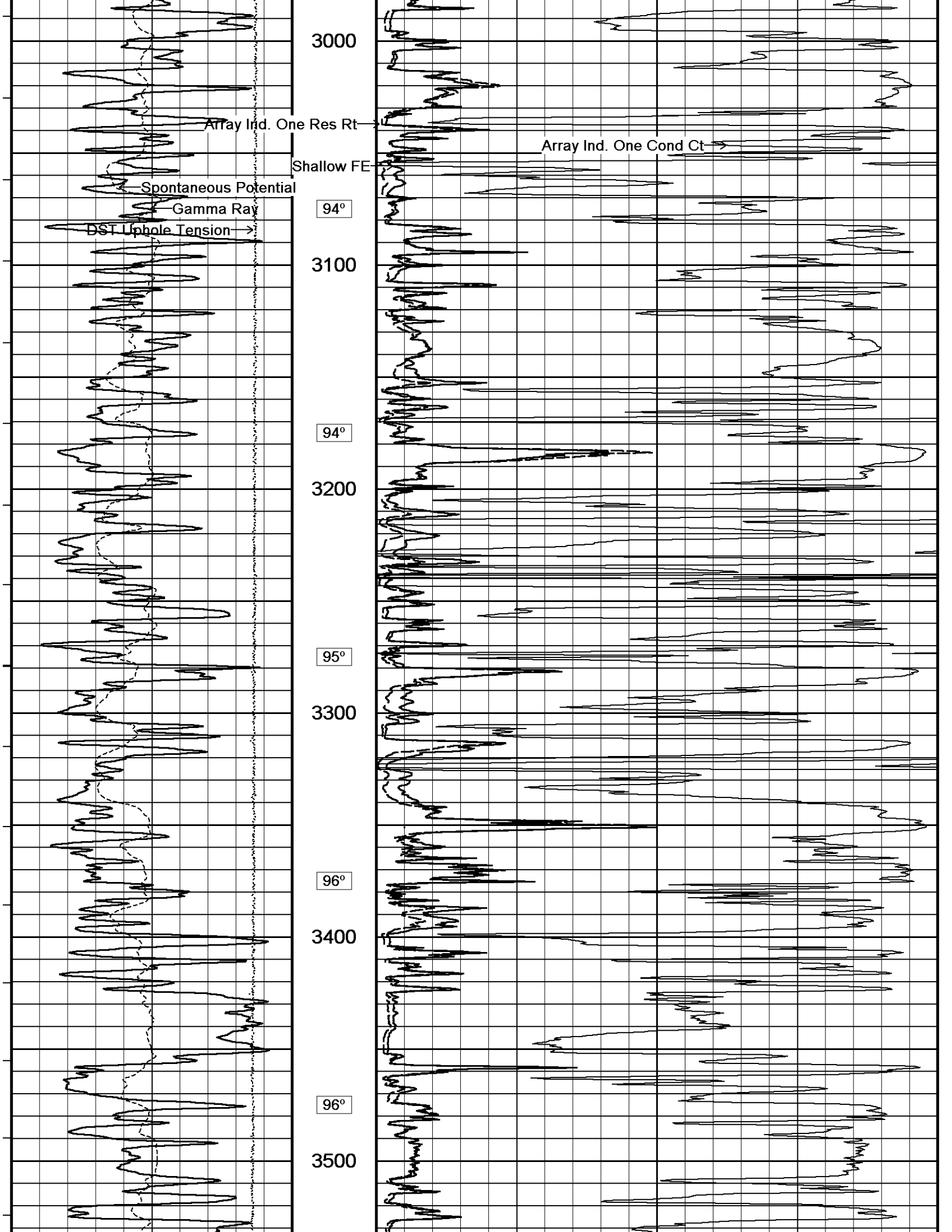


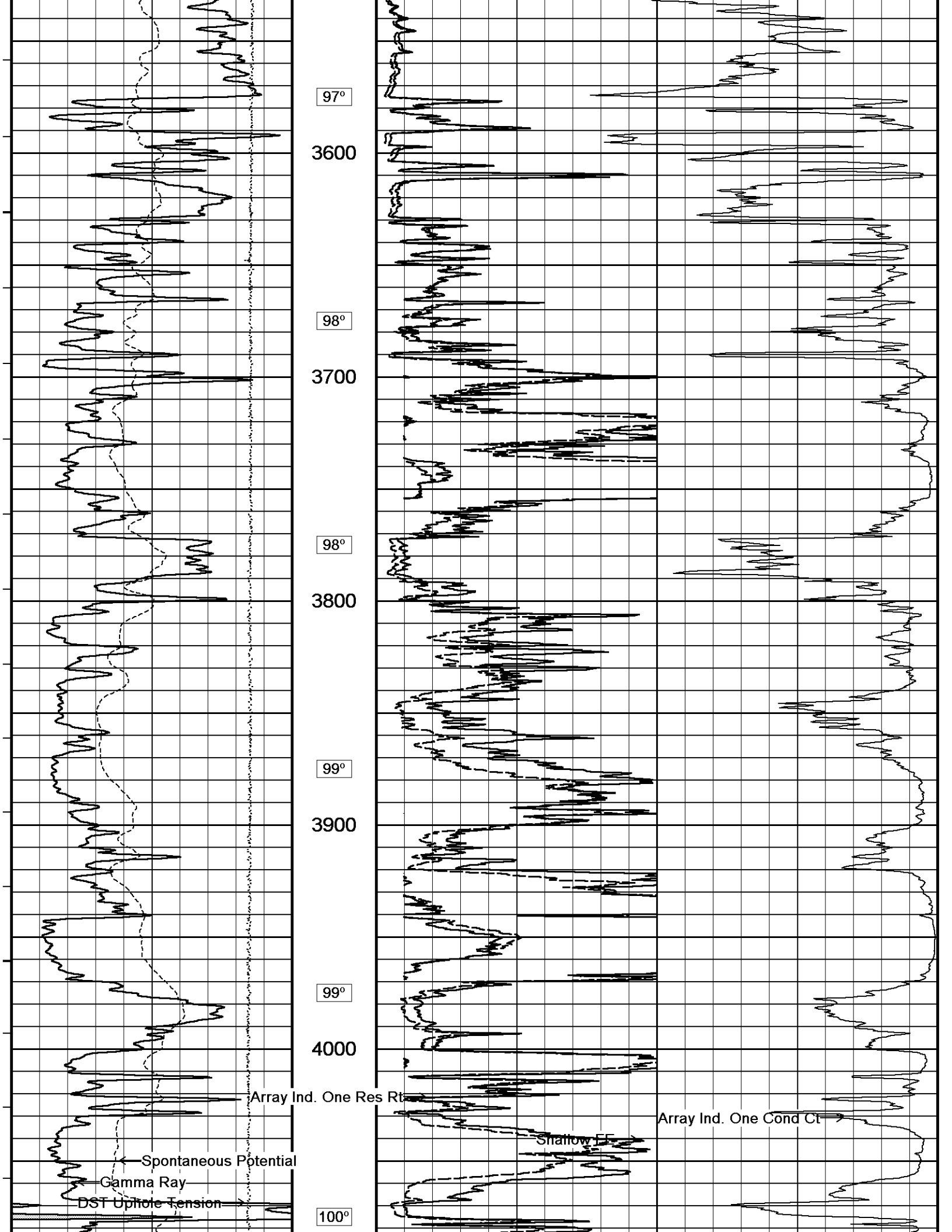

800
80°
900
81°
1000
Array Ind. One Res Rt
82°
Array Ind. One Cond Ct
Shallow FE
Spontaneous Potentia
1100
Gamma Ray
DST Uphole Tension
84°
1200
84°
1300

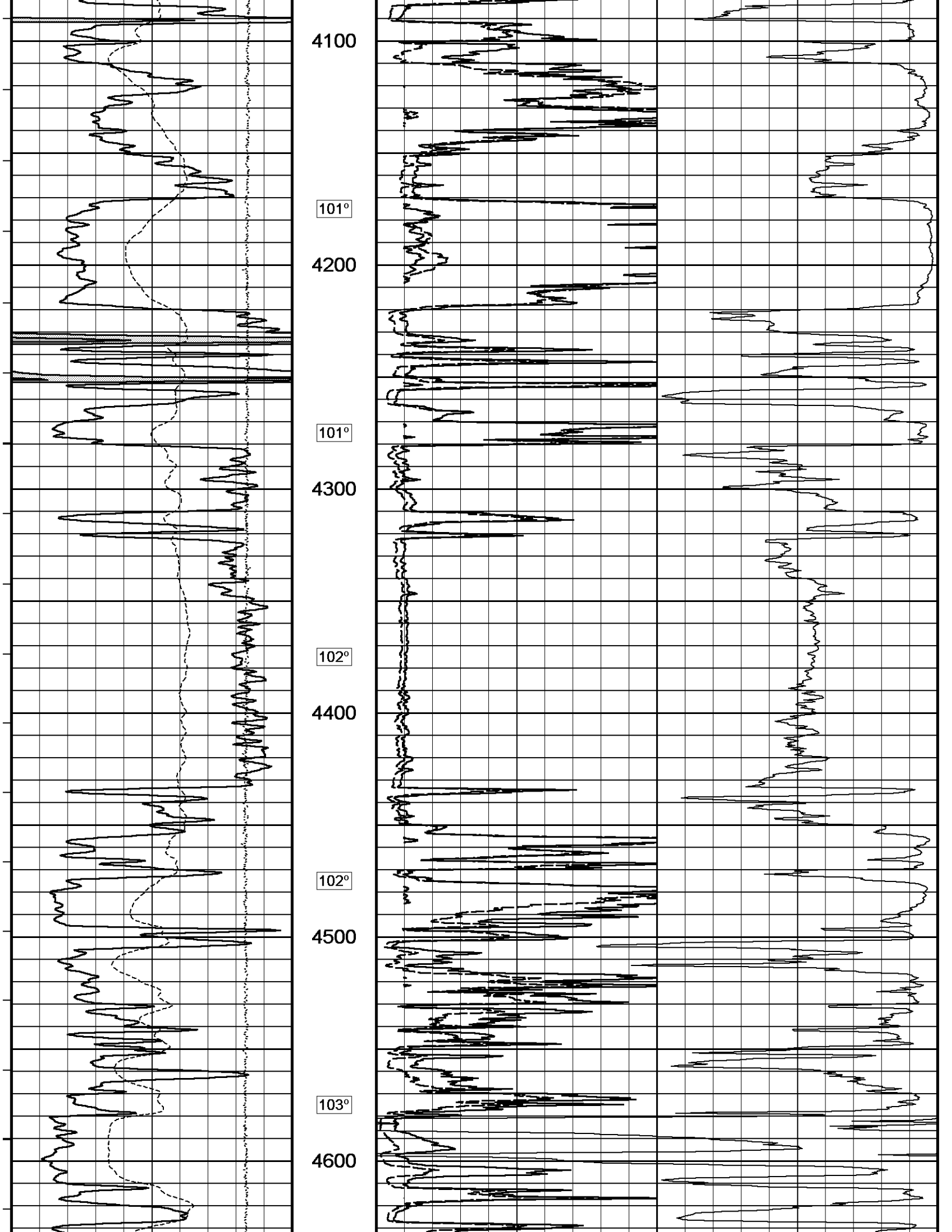

86°
1400
86°
1500
87°
1600
87°
1700
88°
1800
88°

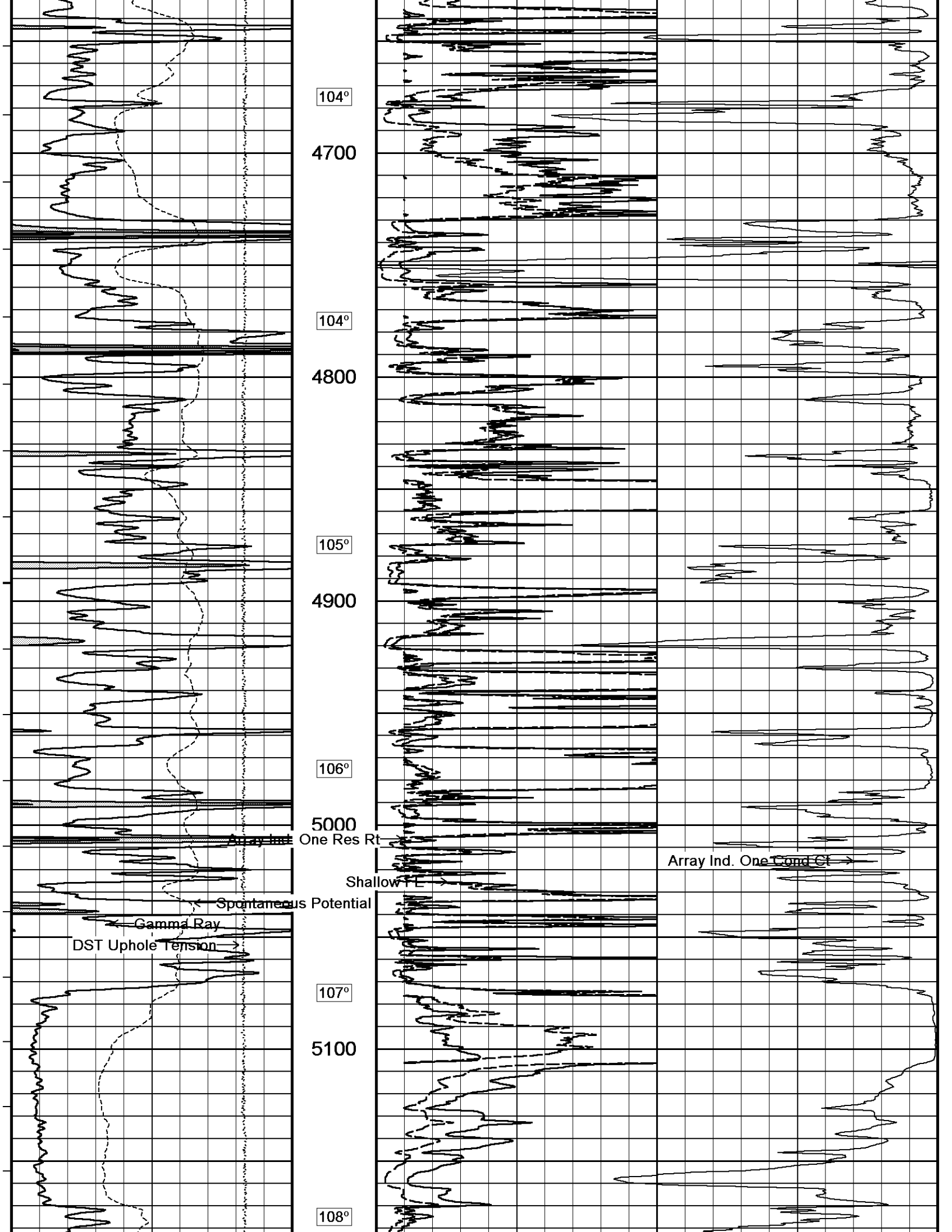

1900
89°
2000
Array Ind. One Res Rt
Array Ind. One Cond Cf
89°
Shallow FE
Spontaneous Potential
Gamma Ray
DBT Uphole Tension
2100
89°
2200
90°
2300
89°
2400

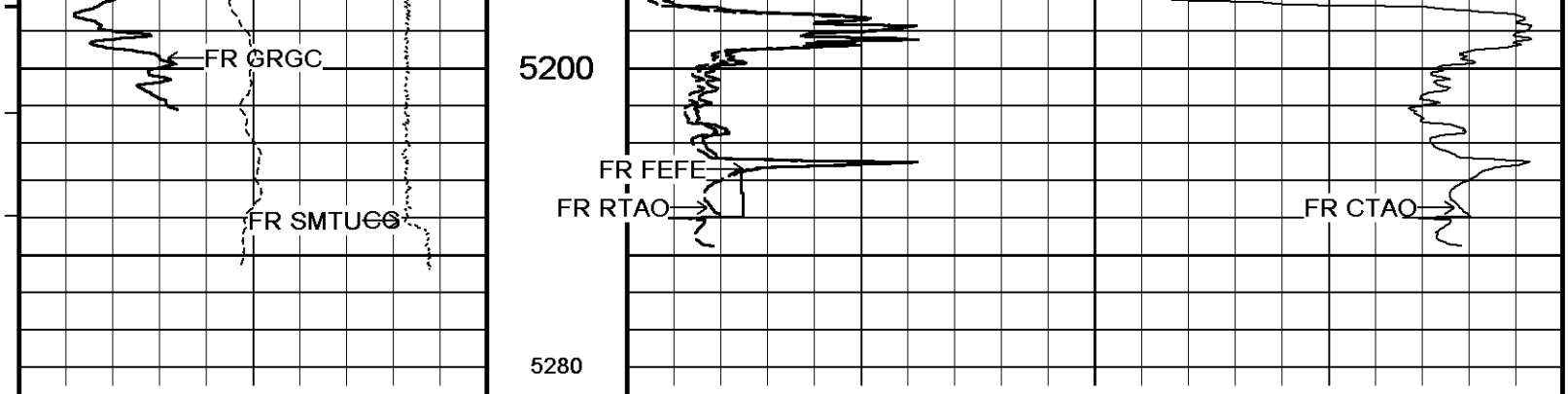

89°
2500
90°
2600
91°
2700
91°
2800
92°
2900
93°


3000
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow FE
Spontaneous Potential
Gamma Ray
94°
DST Uphole Tension
3100
94°
3200
95°
3300
96°
3400
96°
3500


97°
3600
98°
3700
98°
3800
99°
3900
99°
4000
100°
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow FF
Spontaneous Potential
Gamma Ray
DST Upliole Tension


4100
101°
4200
101°
4300
102°
4400
102°
4500
103°
4600


104°
4700
104°
4800
105°
4900
106°
5000
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow Res
Spontaneous Potential
Gamma Ray
DST Uphole Tension
107°
5100
108°



5280

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

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

Borehole Temp in deg F

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 15-MAR-2013 06:51
Filename: C:\Minimus 13.04.8492\Data\McCoy Hill 'A' #2-23\McCoy Hill 'A' #2-23_002.dta
Recorded on 15-MAR-2013 04:19
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 15-MAR-2013 06:51
Filename: C:\Minimus 13.04.8492\Data\McCoy Hill 'A' #2-23\McCoy Hill 'A' #2-23_002.dta
Recorded on 15-MAR-2013 04:19
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

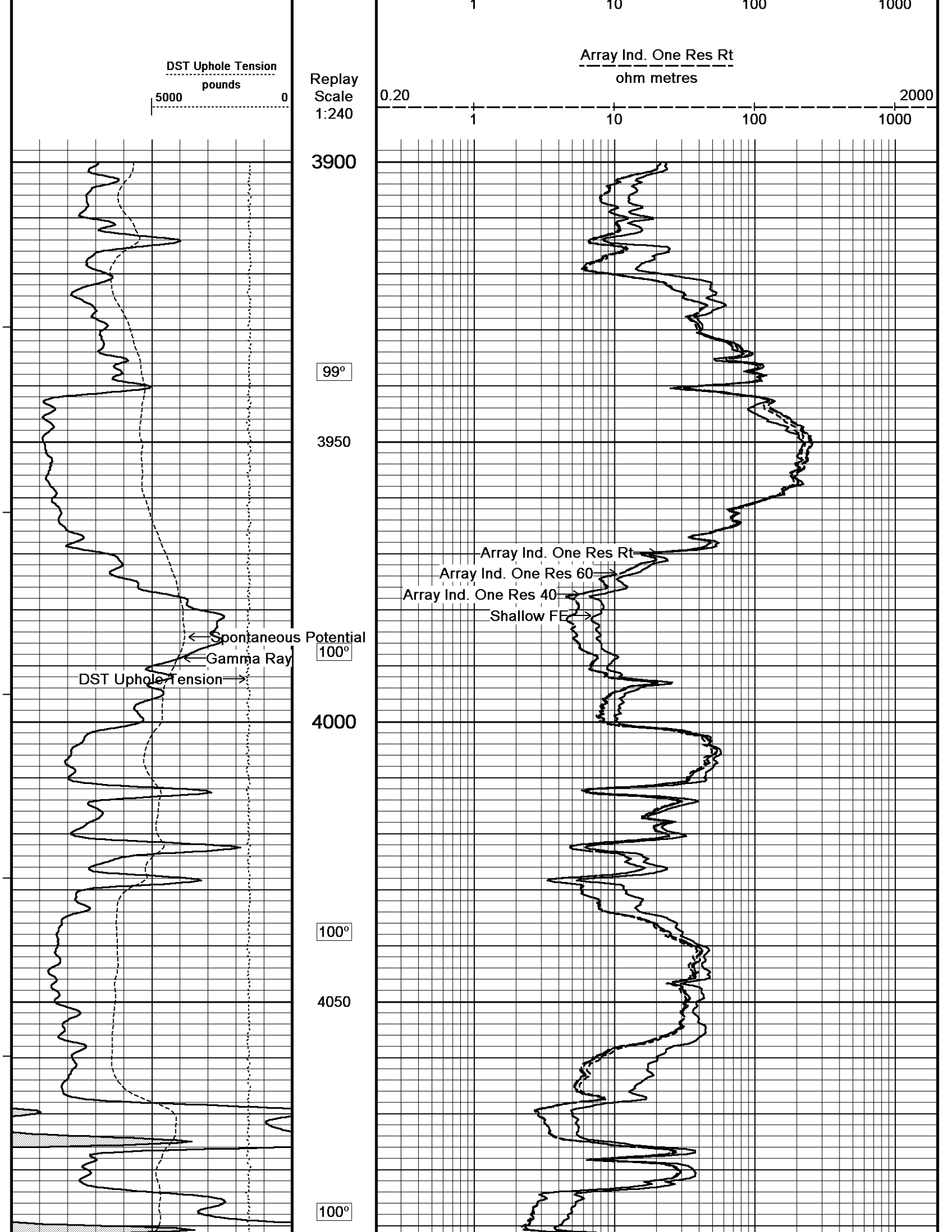
Spontaneous Potential
millivolts
− → | 20 | ← +

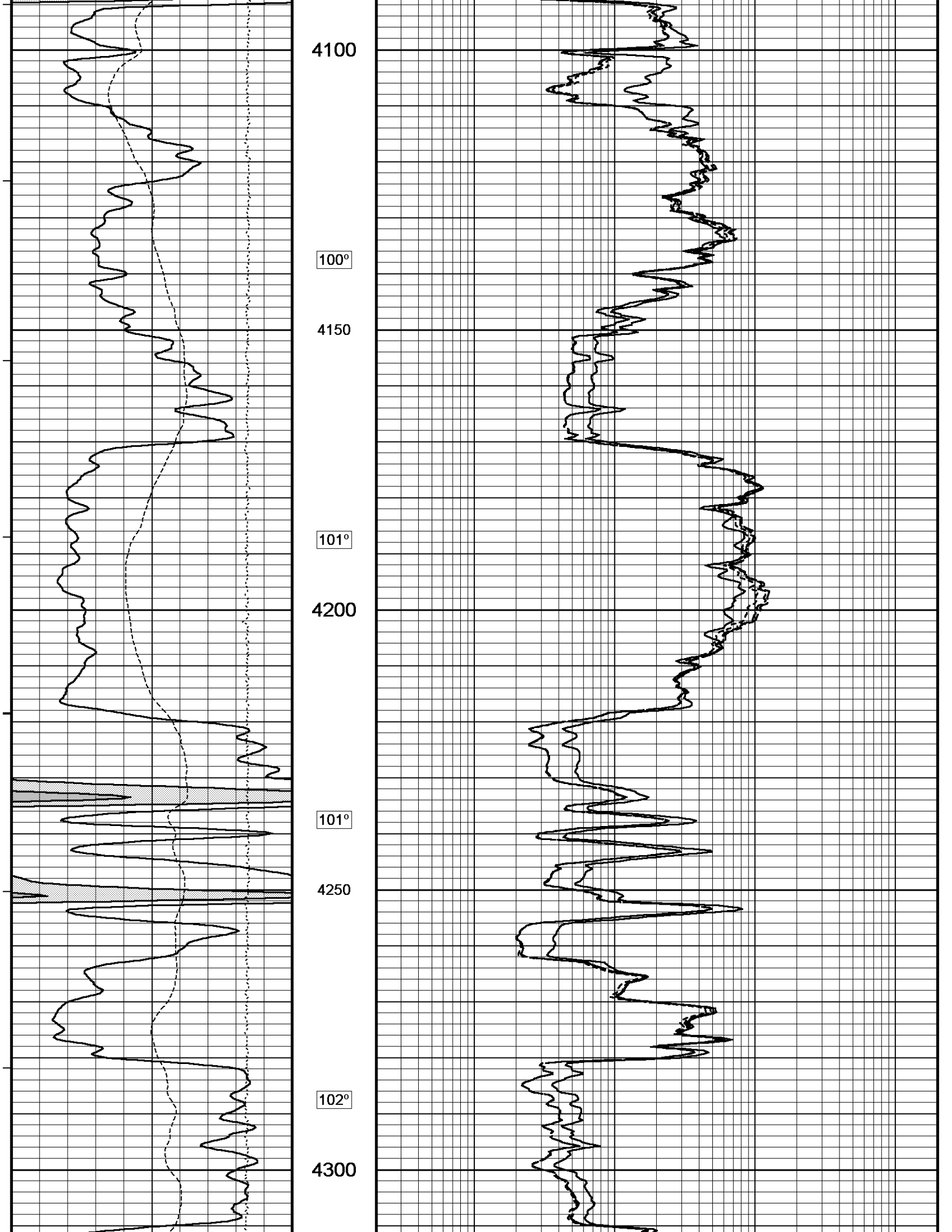
Shallow FE
ohm metres
0.20 2000
1 10 100 1000

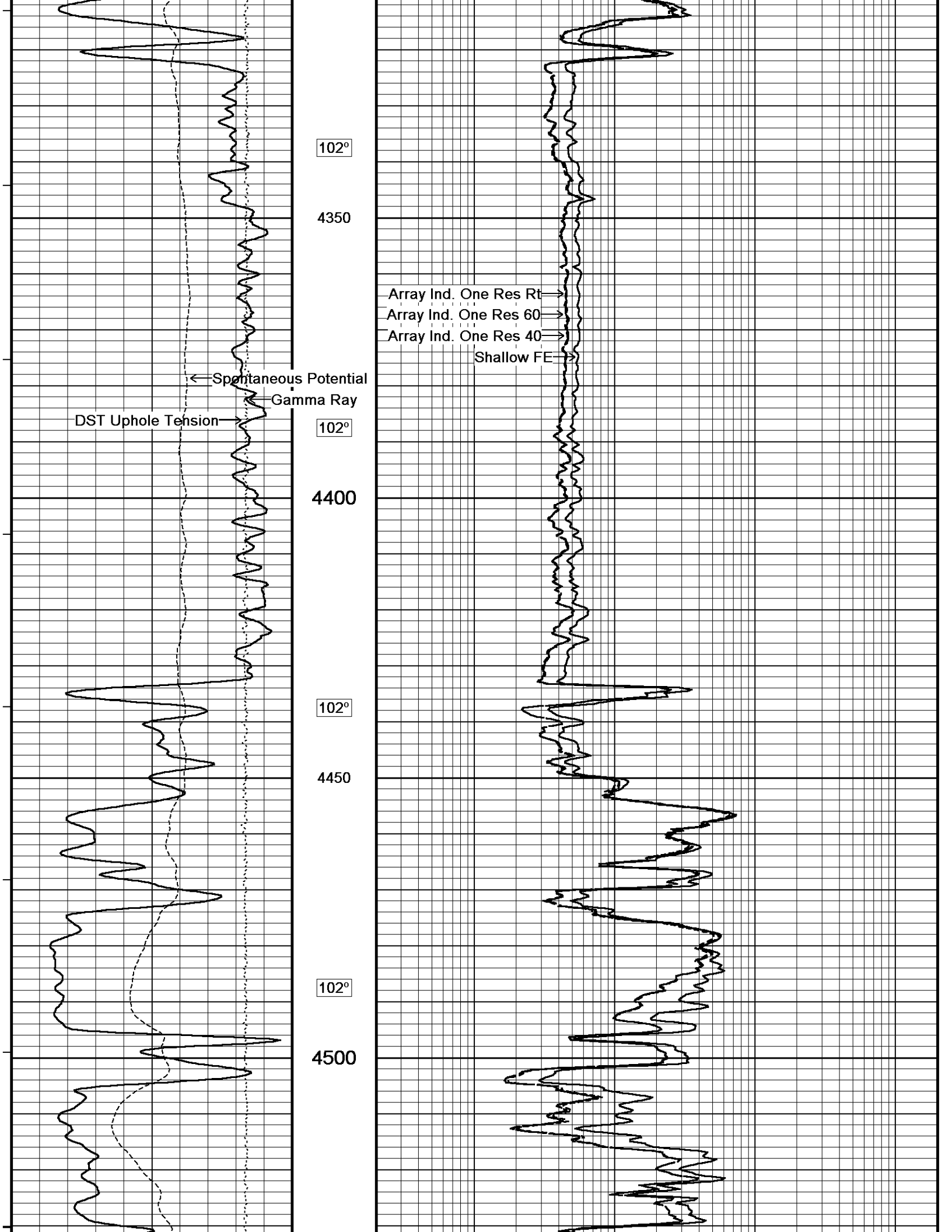
Array Ind. One Res 40
ohm metres
0.20 2000
1 10 100 1000

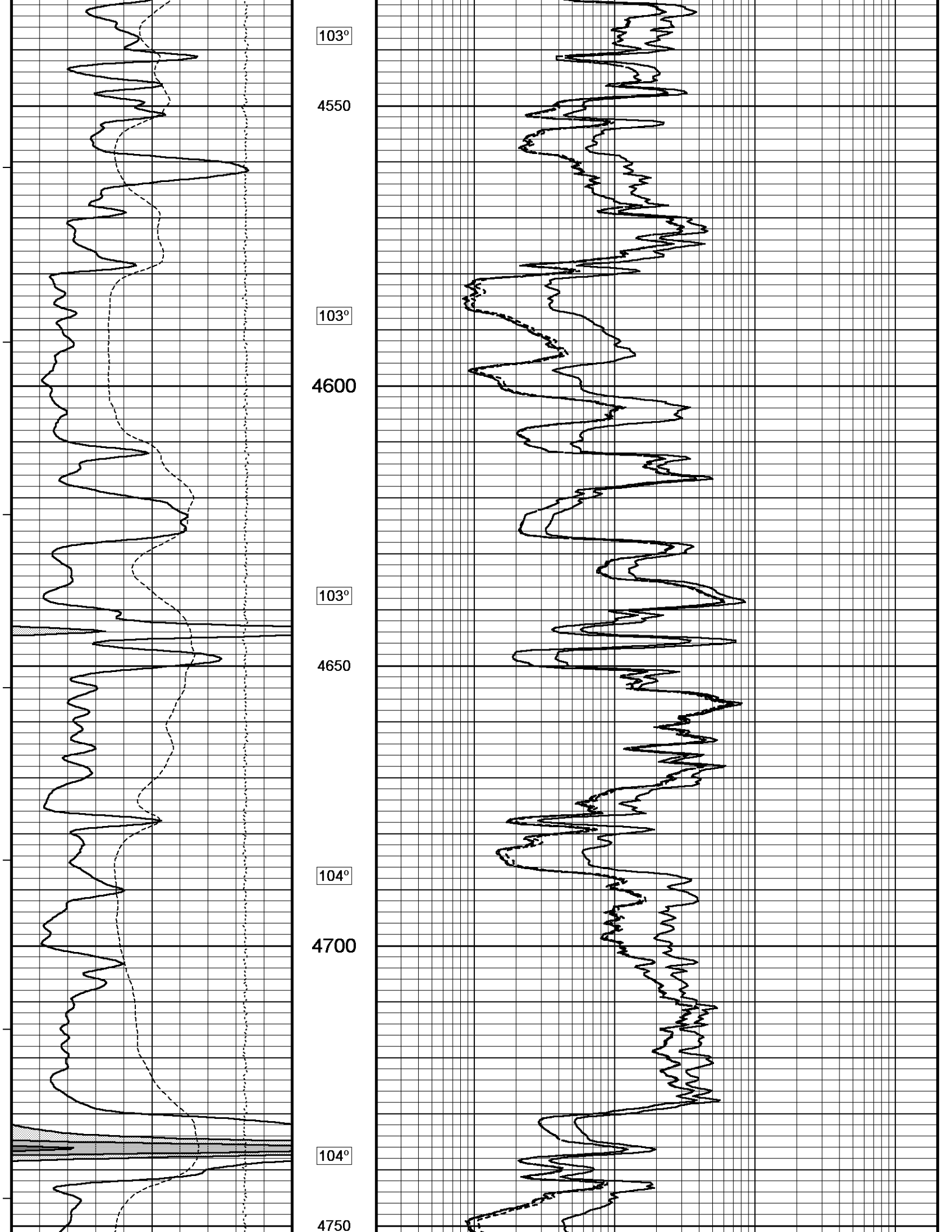
Borehole Temp in deg F

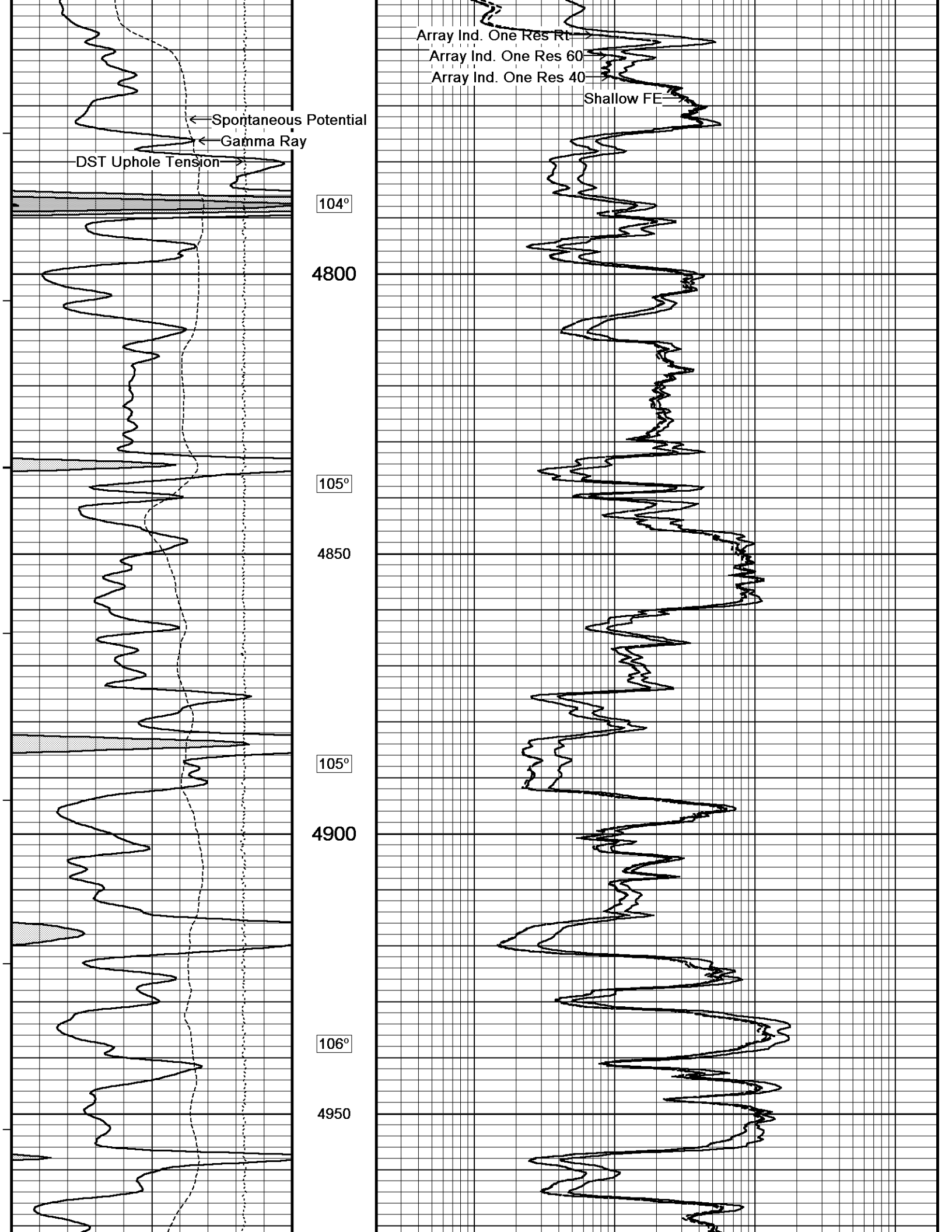
Array Ind. One Res 60
ohm metres
0.20 2000

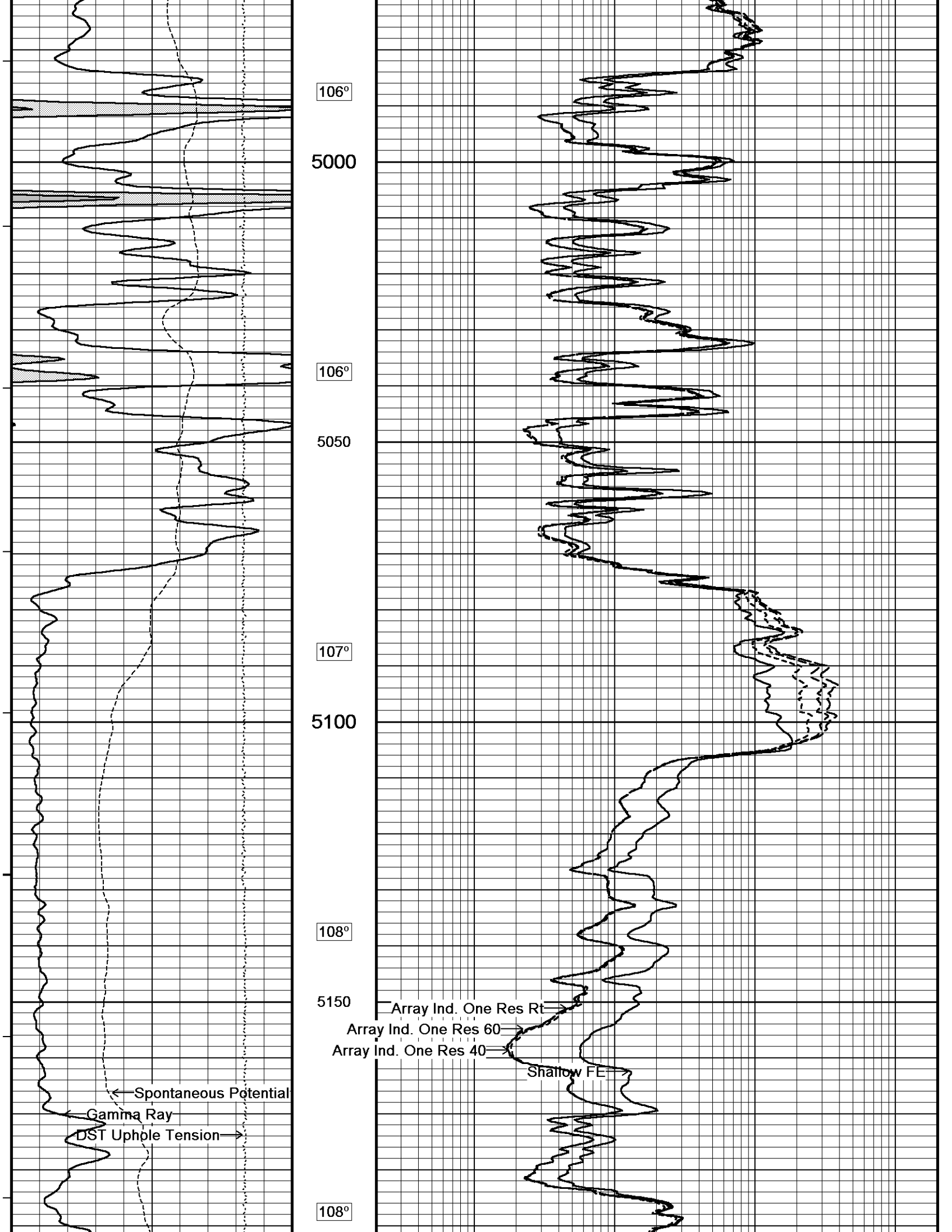

1
10
100
1000
DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
Array Ind. One Res Rt
ohm metres
0.20
2000
1
10
100
1000
3900
99°
3950
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
100°
4000
100°
4050
100°

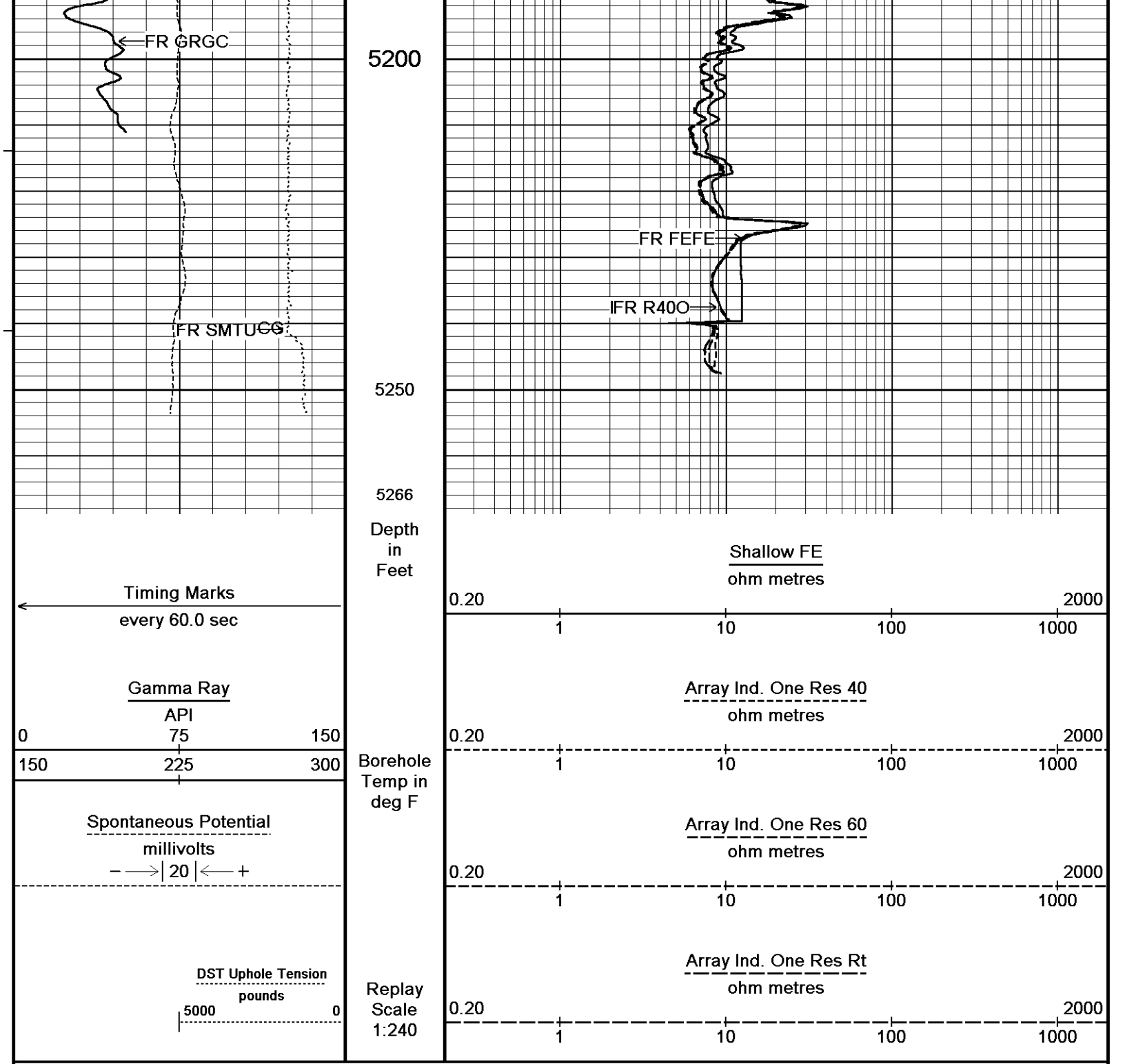

4100
100°
4150
101°
4200
101°
4250
102°
4300


102°
4350
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
102°
4400
102°
4450
102°
4500


103°
4550
103°
4600
103°
4650
104°
4700
104°
4750


Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
104°
4800
105°
4850
105°
4900
106°
4950


106°
5000
106°
5050
107°
5100
108°
5150
108°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension

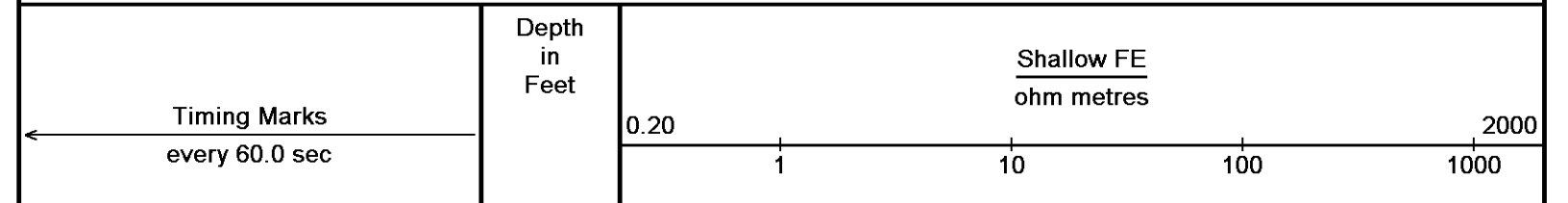


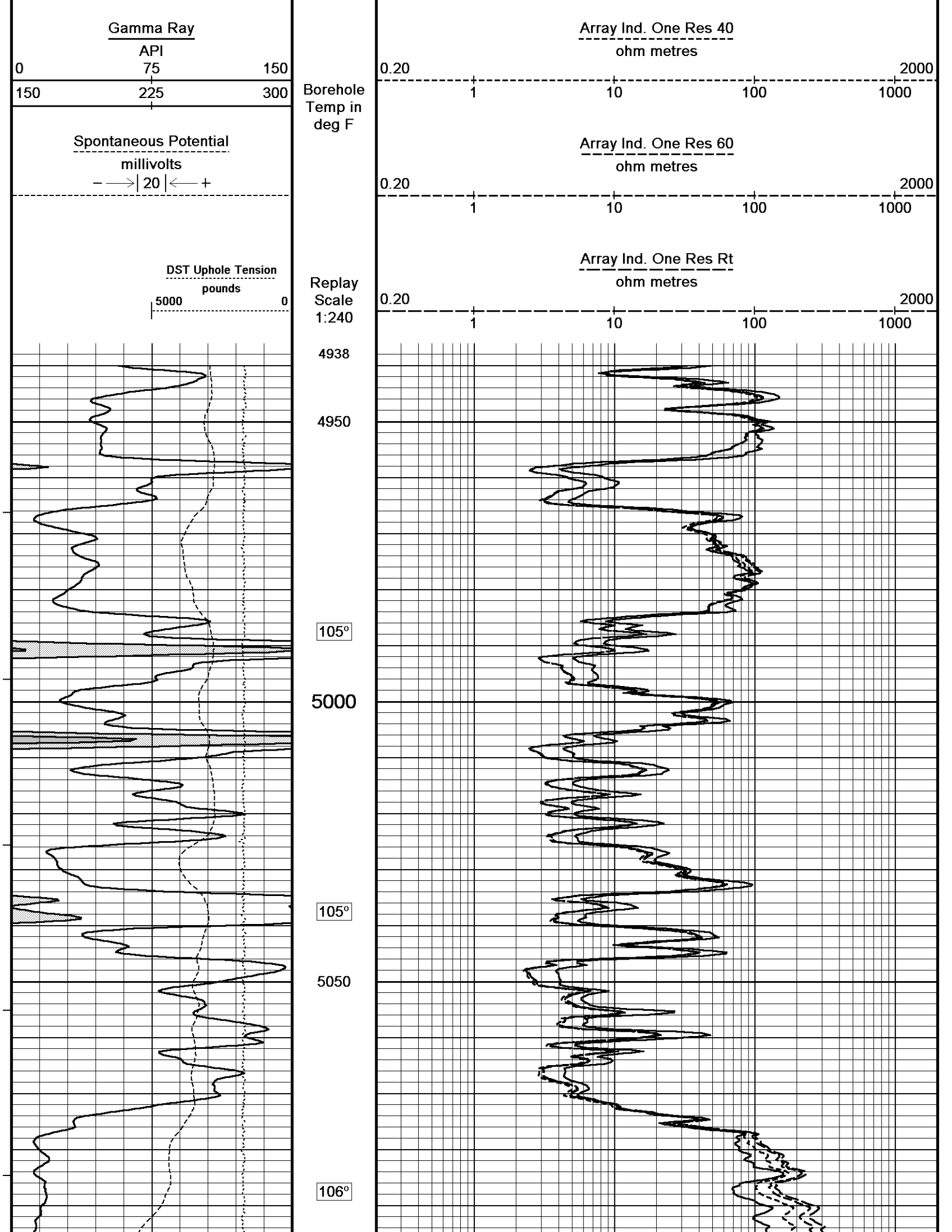
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 15-MAR-2013 06:51
Filename: C:\Minimus 13.04.8492\Data\McCoy Hill 'A' #2-23\McCoy Hill 'A' #2-23_002.dta
Recorded on 15-MAR-2013 04:19
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

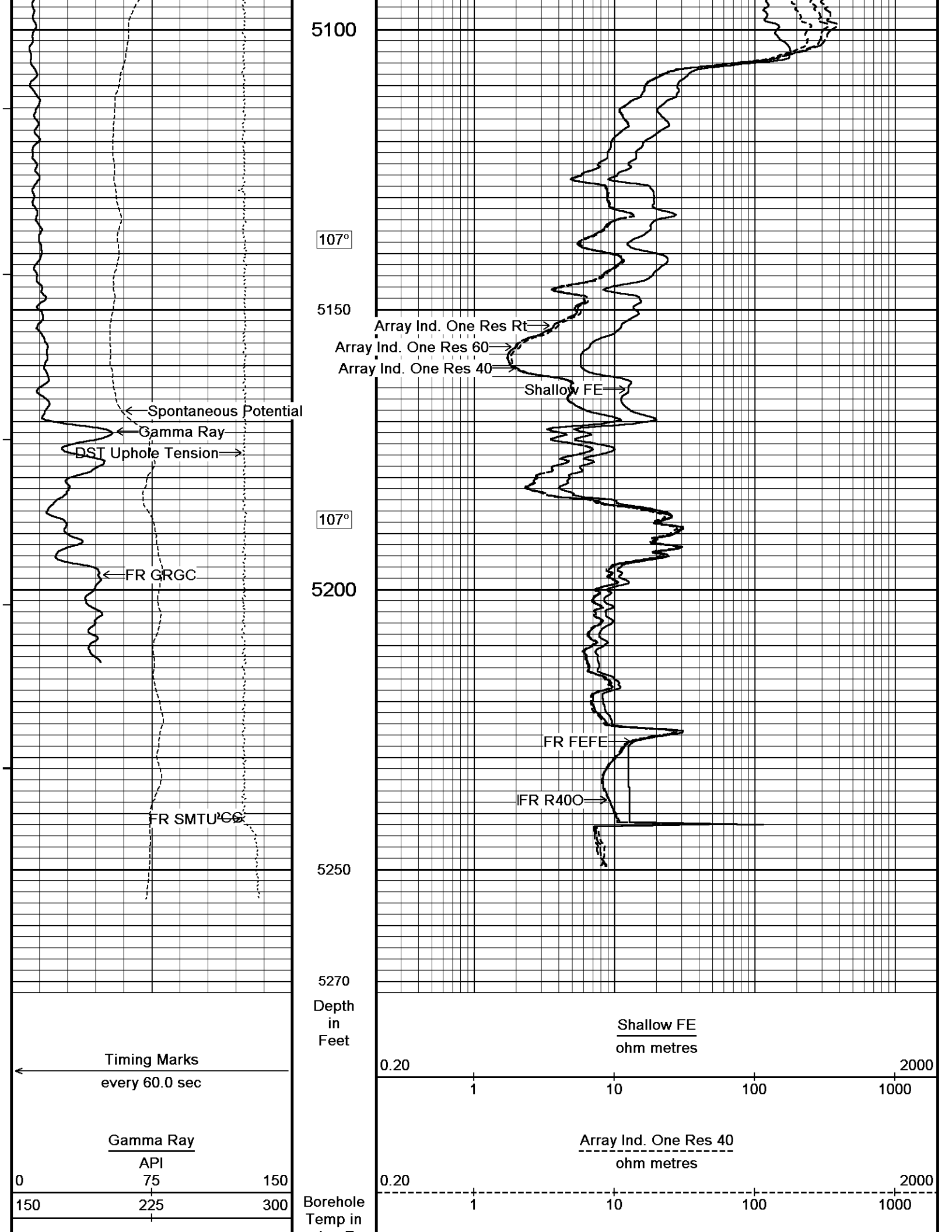
5 INCH MAIN

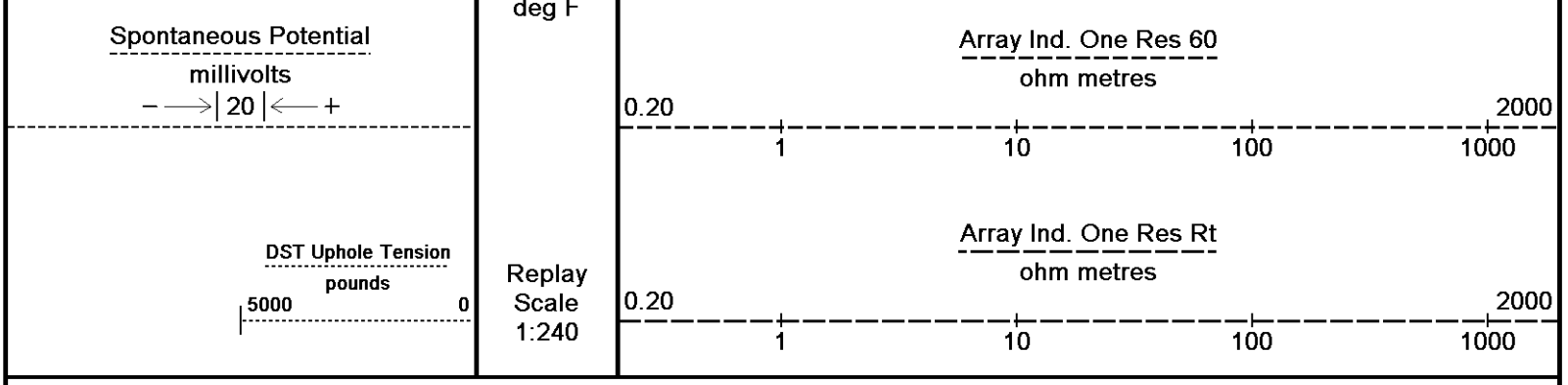
REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 15-MAR-2013 06:51
Filename: C:\Minimus 13.04.8492\Data\McCoy Hill 'A' #2-23\McCoy Hill 'A' #2-23_001.dta
Recorded on 15-MAR-2013 03:58
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492




Gamma Ray
API
0
75
150
150
225
300
Borehole Temp in deg F
Spontaneous Potential
millivolts
– 20 +
DST Uphole Tension
pounds
5000
0
Replay Scale 1:240
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
4938
4950
105°
5000
105°
5050
106°


5100
107°
5150
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
107°
FR GRGC
5200
FR FEFE
FR R40O
FR SMTU
5250
5270
Depth in Feet
Timing Marks
every 60.0 sec
Shallow FE
ohm metres
0.20
2000
1
10
100
1000
Gamma Ray
API
0
75
150
150
225
300
Array Ind. One Res 40
ohm metres
0.20
2000
1
10
100
1000
Borehole Temp in



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 15-MAR-2013 06:51
Filename: C:\Minimus 13.04.8492\Data\McCoy Hill 'A' #2-23\McCoy Hill 'A' #2-23_001.dta — Recorded on 15-MAR-2013 03:58
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 13.04.8492\Data\McCoy Hill 'A' #2-23\McCoy Hill 'A' #2-23_001.dta

General Constants All 000

Last Edited on 15-MAR-2013,02:31

General Parameters		
Mud Resistivity	0.460	ohm-metres
Mud Resistivity Temperature	81.000	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	0.610	
RWA Constant M	2.150	

Gamma Calibration MCG-D.K 469

Field Calibration on 08-MAR-2013 17:05

	Measured	Calibrated (API)
Background	74	49
Calibrator (Gross)	1167	774
Calibrator (Net)	1093	725

Gamma Constants MCG-D.K 469

Last Edited on 15-MAR-2013,02:30

Gamma Calibrator Number	GR38	
Mud Density	1.13	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

High Resolution Temperature Calibration MCG-D.K 469

Field Calibration on 07-NOV-2012,10:25

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

High Resolution Temperature Constants MCG-D.K 469

Last Edited on 16-FEB-2013,15:17

Pre-filter Length	11

FE Calibration MFE-B.J 352

Base Calibration on 16-JAN-2013 10:20
Field Check on 08-MAR-2013 16:46

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 15-MAR-2013,02:29

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

Induction Calibration MAI-A.A 45

Base Calibration on 26-JUL-2012,09:22
Field Check on 12-MAR-2013 18:30

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			18.5	3850.6
2			31.8	3628.9
3			28.7	3049.2
4			18.4	2079.1
Deep			16.1	1911.1
Medium			42.6	4060.3
Shallow			49.7	5482.3

Array Temperature 61.1 Deg F

Induction Constants MAI-A.A 45

Last Edited on 15-MAR-2013,02:29

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	N/A	inches
Tool Centred	No	
Stand-off Type	Fins	
Stand-off	0.50	inches
Number of Fins on Stand-off	8.0000	
Stand-off Fin Angle	45.00	degrees
Stand-off Fin Width	0.5000	inches
Borehole Corr. Rm Source	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
Squasher Start	0.0020	mhos/metre
Squasher Offset	N/A	mhos/metre

Borehole Normalisation

DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000

Calibration Site Corrections

Channel 1	0.00	mmhos/metre
Channel 2	0.00	mmhos/metre
Channel 3	0.00	mmhos/metre
Channel 4	0.00	mmhos/metre

Apparent Porosity and Water Saturation Constants		
Archie Constant (A)	1.00	
Cementation Exponent (M)	2.00	
Saturation Exponent (N)	2.00	
Saturation of Water for Apor	100.00	percent
Resistivity of Water for Apor and Sw	0.05	ohm-m
Resistivity of Mud Filtrate for Sw	0.00	ohm-m
Source for Rt	0.00	
Source for Rxo	0.00	

DOWNHOLE EQUIPMENT

C:\Minimus 13.04.8492\Data\McCoy Hill 'A' #2-23\McCoy Hill 'A' #2-23_001.dta

Compact Comms Gamma
MCG-D.K 469 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

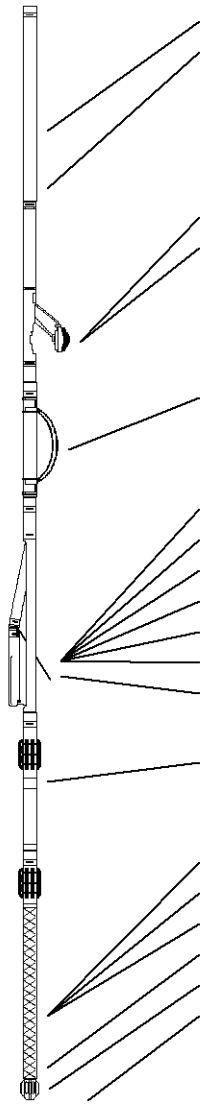
Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

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



43.50 ft	GRGC - Gamma Ray
40.59 ft	CGXT - MCG External Temperature
33.24 ft	MINV - MMR MicroLog Inverse
33.24 ft	MNRL - MMR MicroLog Normal
28.45 ft	NPRL - Limestone Neutron Por.
21.21 ft	AVOL - Annular Volume
21.21 ft	HVOL - Hole Volume
21.21 ft	CLDC - Density Caliper
19.28 ft	DPRL - Limestone Density Por.
19.28 ft	DEN - Compensated Density
19.28 ft	DCOR - Density Correction
19.22 ft	PDPE - PE
13.72 ft	FEFE - Shallow FE
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	MCCOY PETROLEUM CORPORATION
WELL	HILL 'A' #2-23
FIELD	ALFORD
PROVINCE/COUNTY	KIOWA
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2248.00	feet	First Reading	5238.00	feet
Elevation Drill Floor	2247.00	feet	Depth Driller	5240.00	feet
Elevation Ground Level	2237.00	feet	Depth Logger	5241.00	feet

ARRAY INDUCTION

Weatherford®

SHALLOW FOCUSED ELECTRIC LOG

Weatherford

ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

COMPANY	MCCOY PETROLEUM CORPORATION
WELL	HILL 'A' #2-23
FIELD	ALFORD
PROVINCE/COUNTY	KIOWA
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	990' FSL & 1980' FWL SW/4

SEC	TWP	RGE	Other Services	
23	30S	19W	MPD/MDN	MML

API Number 15-097-21735
Permit Number

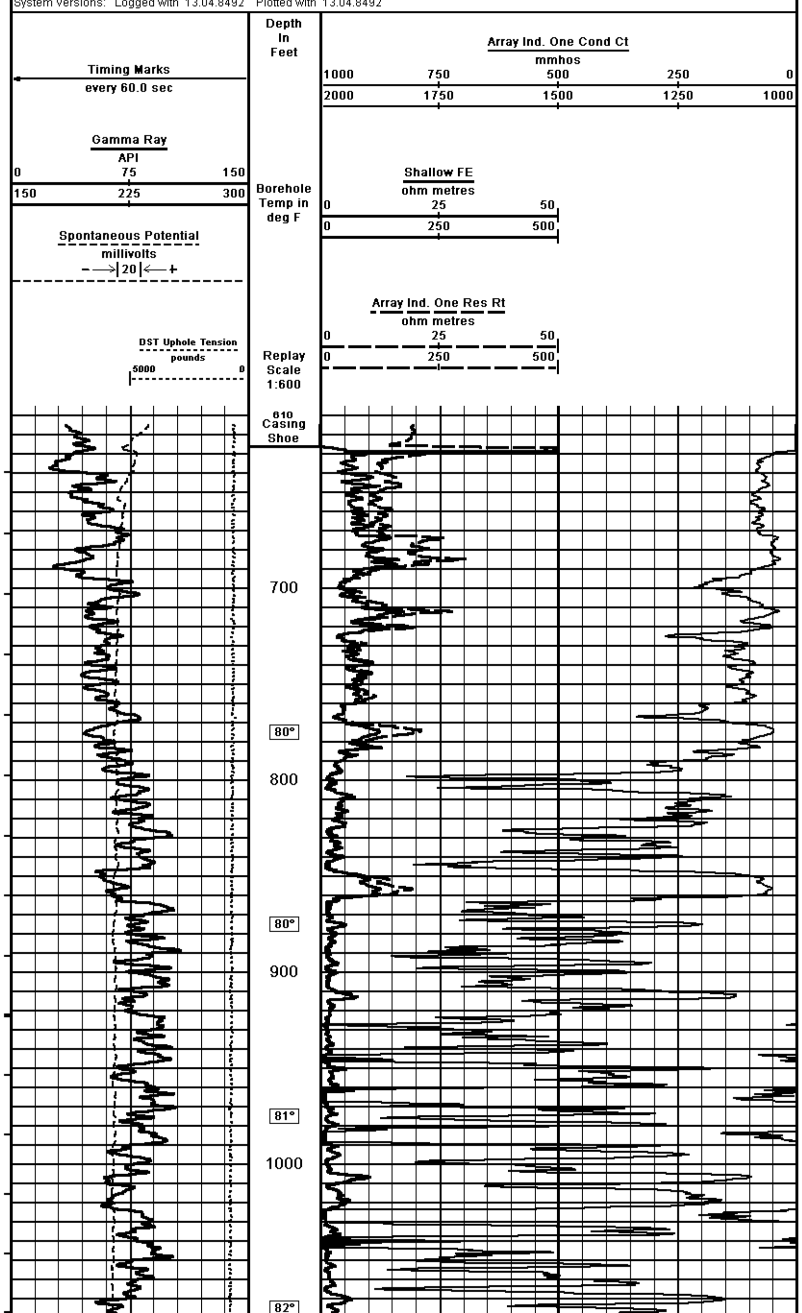
Permanent Datum GL, Elevation 2237 feet	Elevations:	feet
Log Measured From KB	KB	2248.00
Drilling Measured From KB	DF	2247.00
	GL	2237.00

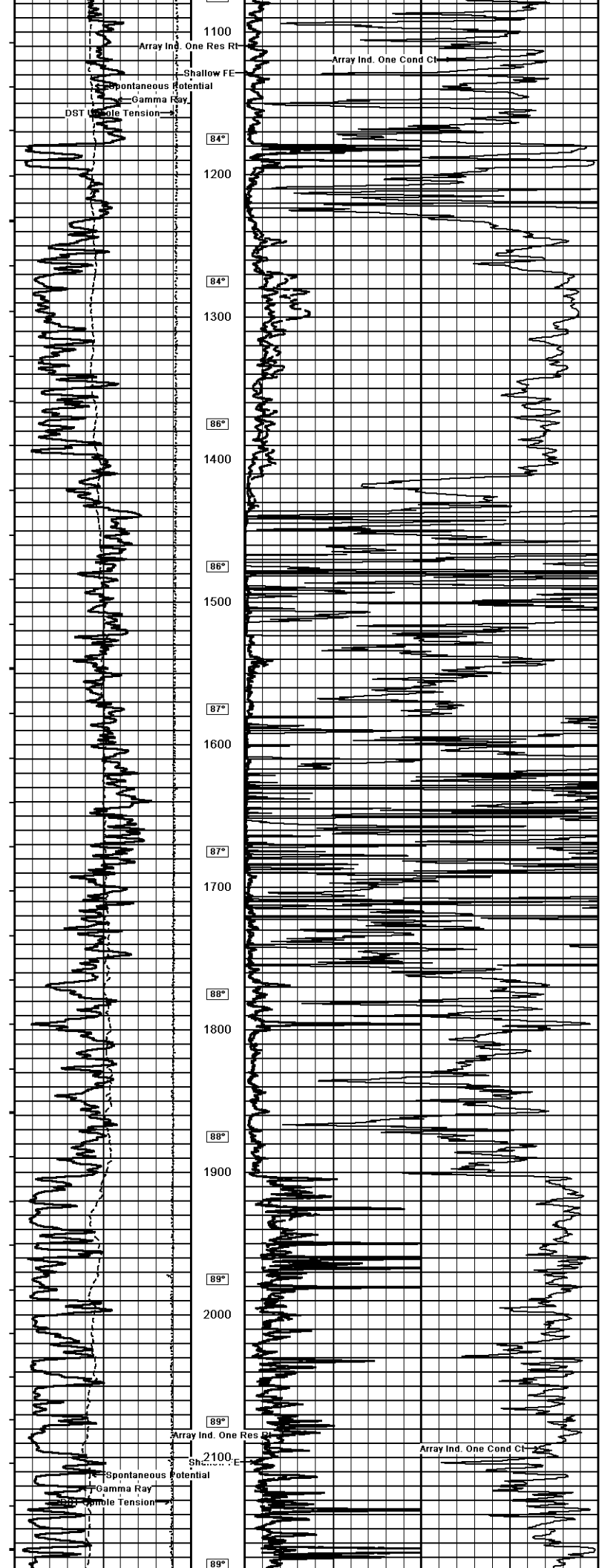
Date	15-MAR-2013			
Run Number	ONE			
Service Order	3539875			
Depth Driller	5240.00	feet		
Depth Logger	5241.00	feet		
First Reading	5238.00	feet		
Last Reading	626.00	feet		
Casing Driller	625.00	feet		
Casing Logger	626.00	inches		
Bit Size	7.875			
Hole Fluid Type	CHEMICAL	lb/USg		
Density / Viscosity	9.40 lb/USg	50.00 CP		
PH / Fluid Loss	9.00	9.00		
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.46 @ 81.0	ohm-m		
Rmf @ Measured Temp	0.37 @ 81.0	ohm-m		
Rmc @ Measured Temp	0.55 @ 81.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.36 @108.0	ohm-m		
Time Since Circulation	5 HOURS			
Max Recorded Temp	108.00	deg F		
Equipment / Base	13057	LIB		
Recorded By	ADAM SILL			
Witnessed By	EVAN STONE			
JOB #	LB13-069			

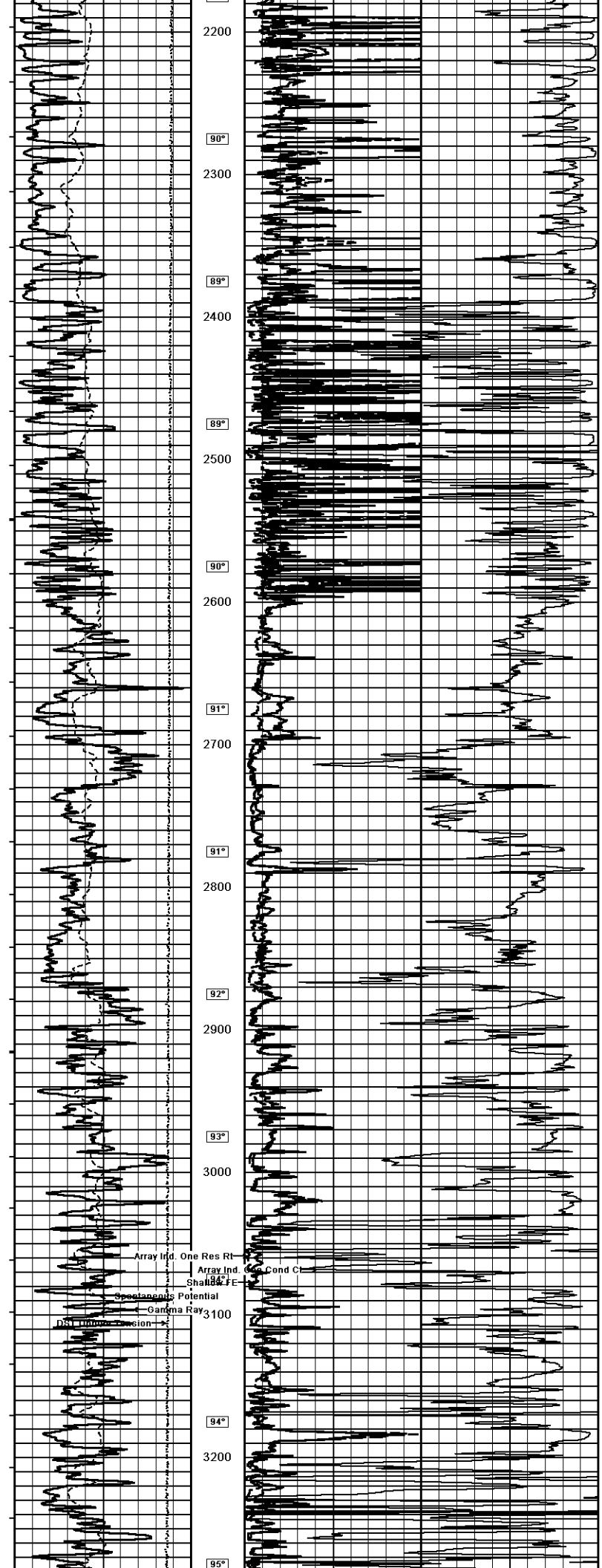
1 INCH MAIN

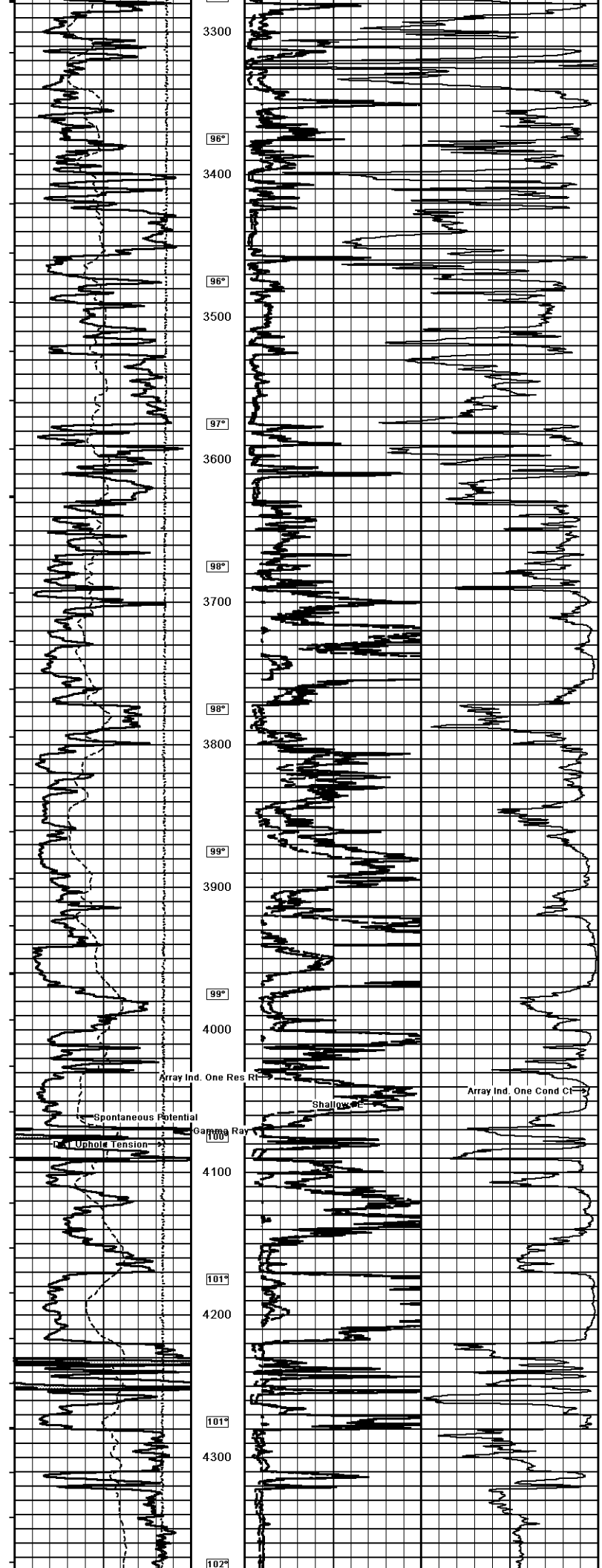
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.04.8492\Data\McCoy Hill 'A' #2-23\McCoy Hill 'A' #2-23_002.dta
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

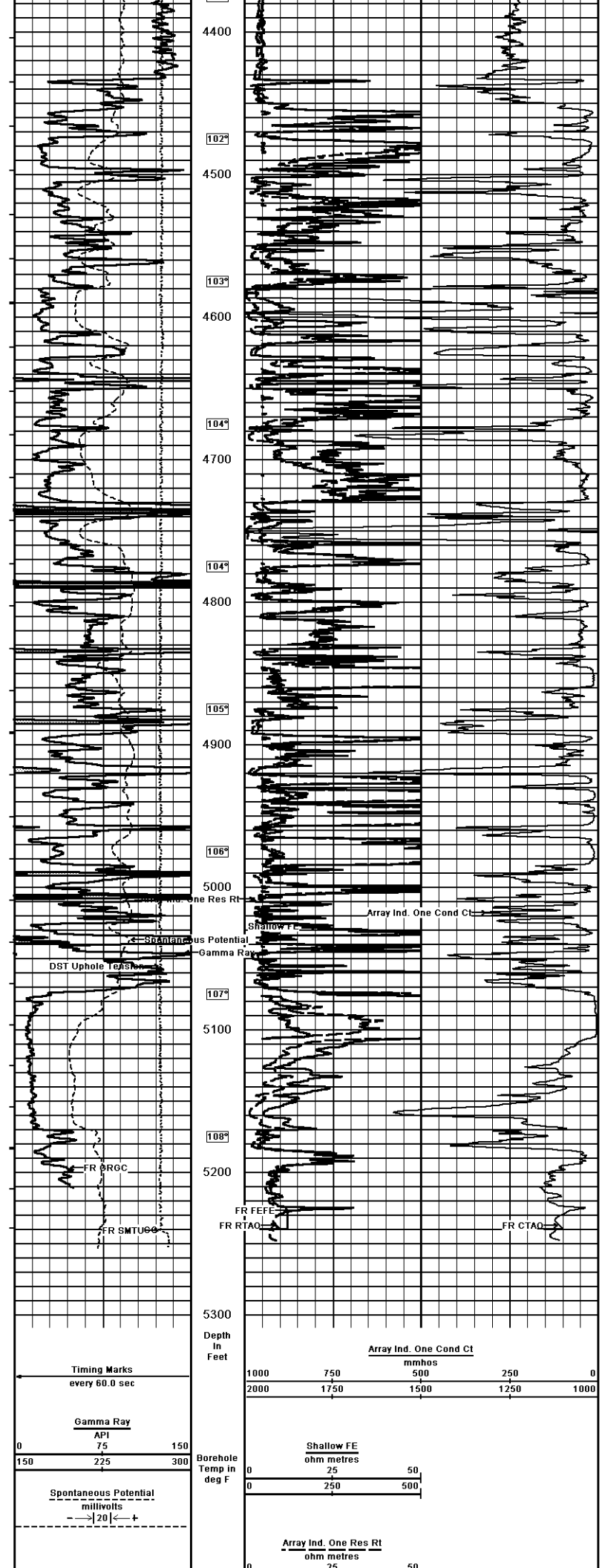
Plotted on 15-MAR-2013 06:51
Recorded on 15-MAR-2013 04:19

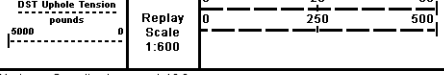



1100
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow FE
Spontaneous Potential
Gamma Ray
DST Cable Tension
84°
1200
84°
1300
86°
1400
86°
1500
87°
1600
87°
1700
88°
1800
88°
1900
89°
2000
89°
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow FE
2100
Spontaneous Potential
Gamma Ray
DST Cable Tension
89°


2200
90°
2300
89°
2400
89°
2500
90°
2600
91°
2700
91°
2800
92°
2900
93°
3000
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow FE
Spontaneous Potential
Gamma Ray
DSI Dipole Dispersion
3100
94°
3200
95°


3300
96°
3400
96°
3500
97°
3600
98°
3700
98°
3800
99°
3900
99°
4000
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow R
Spontaneous Potential
Gamma Ray
100°
Cal. Uphole Tension
4100
101°
4200
101°
4300
102°


4400
102"
4500
103"
4600
104"
4700
104"
4800
105"
4900
106"
5000
107"
5100
108"
5200
5300
Array Ind. One Res Rt
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tcash
Array Ind. One Cond Ct
FR ORGC
FR FEFE
FR RTAO
FR SMTUCC
FR CTAO
Depth In Feet
Timing Marks every 60.0 sec
Gamma Ray API 0 75 150 150 225 300
Spontaneous Potential millivolts 20
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



Replay Scale 1:600

0 250 500

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 15-MAR-2013 06:51

Filename: C:\Minimus 13.04.8492\Data\McCoy Hill 'A' #2-23\McCoy Hill 'A' #2-23_002.dta — Recorded on 15-MAR-2013 04:19

System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

1 INCH MAIN

COMPANY	MCCOY PETROLEUM CORPORATION
WELL	HILL 'A' #2-23
FIELD	ALFORD
PROVINCE/COUNTY	KIOWA
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2248.00	feet	First Reading	5238.00	feet
Elevation Drill Floor	2247.00	feet	Depth Driller	5240.00	feet
Elevation Ground Level	2237.00	feet	Depth Logger	5241.00	feet

Weatherford

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG