Weatherford®

ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

COMPANY	PETROSANTANDER (USA) INC.
WELL	ODD WILLIAMS #6
FIELD	CHRISTABELLE
PROVINCE/COUNTY	KEARNY
COUNTRY/STATE	UNITED STATES / KANSAS
LOCATION	140' FSL & 1120' FWL SE SE SW SW

SEC	TWP	RGE
12	21S	35W

API Number 15-093-21897
Permit Number

Other Services
MPD/MDN SGS
MML
MSS

Permanent Datum G.L., Elevation 3092 feet
Log Measured From KB
Drilling Measured From K.B. @ 12 FEET

Elevations:	feet
KB	4004.00
DF	4002.00
GL	3092.00

Date	26-SEP-2013			
Run Number	ONE			
Service Order	3541089			
Depth Driller	5000.00	feet		
Depth Logger	5001.00	feet		
First Reading	4098.00	feet		
Last Reading	507.00	feet		
Casing Driller	504.00	feet		
Casing Logger	507.00	feet		
Bit Size	7.880	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	7.00 lb/USg	42.00 CP		
PH / Fluid Loss	42.00	10.60 ml/30Min		
Sample Source	MUDPIT			
Rm @ Measured Temp	1.24 @ 71.0	ohm-m		
Rmf @ Measured Temp	0.99 @ 71.0	ohm-m		
Rmc @ Measured Temp	1.49 @ 71.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.80 @110.0	ohm-m		
Time Since Circulation	5 HOURS			
Max Recorded Temp	110.00	deg F		
Equipment / Base	13096	LIB		
Recorded By	W. STAMBAUGH			
Witnessed By			JEFF QUIMBY	
JOB#	LB13-270			

BOREHOLE RECORD

Last Edited: 27-SEP-2013 00:50

Bit Size inches	Depth From feet	Depth To feet
7.880	507.00	5001.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	507.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 13.05.9583.
- MCG, MDN, MPD, MFE, MAI RUN 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: 1840 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH CASING FROM TD TO 504 FEET: 1100 CU. FT.
- RIG: TRINIDAD #216

- RIG: TRINIDAD #210.

- ENGINEER: W. STAMBAUGH

- OPERATOR(S): C. RAMIREZ, J. DUNLAP.

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.

2 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 27-SEP-2013 05:29

Filename: C:\Minimus\DATA\PetroSantander Odd William...\PetroSantander Odd Williams #6 MAIN.dta — Recorded on 26-SEP-2013 21:18

System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

Timing Marks
every 60.0 sec

Spontaneous Potential
millivolts
− → | 20 | ← +

SGS Gamma Ray
API
0 — 75 — 150
150 — 225 — 300

Uranium Stripped Gamma
API
0 — 75 — 150
150 — 225 — 300

Bit Size
inches
6 — 11 — 16

DST Uphole Tension
pounds
5000 — 0

Depth In Feet

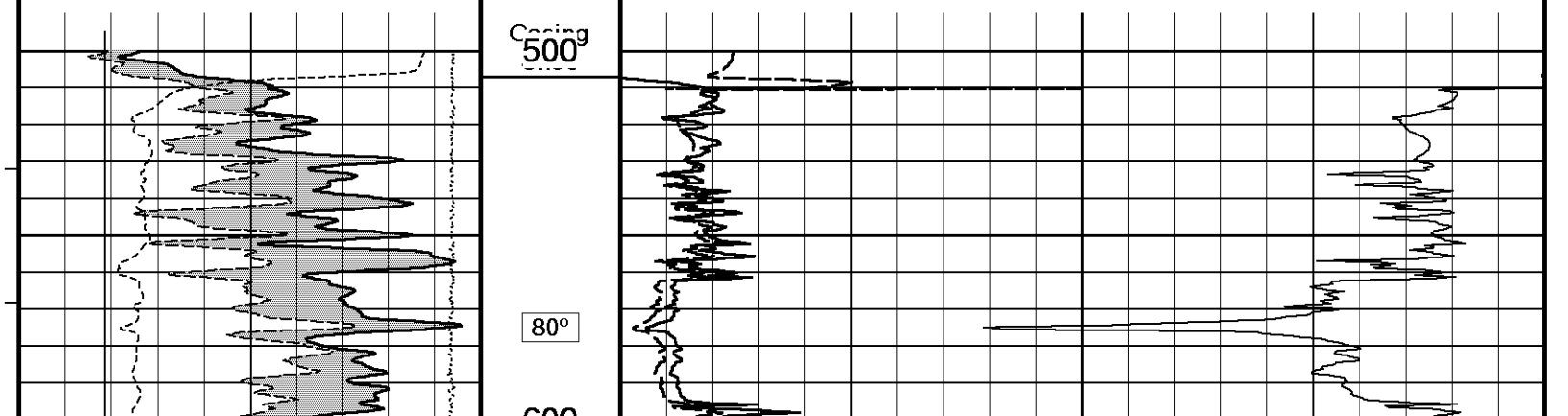
Borehole Temp in deg F

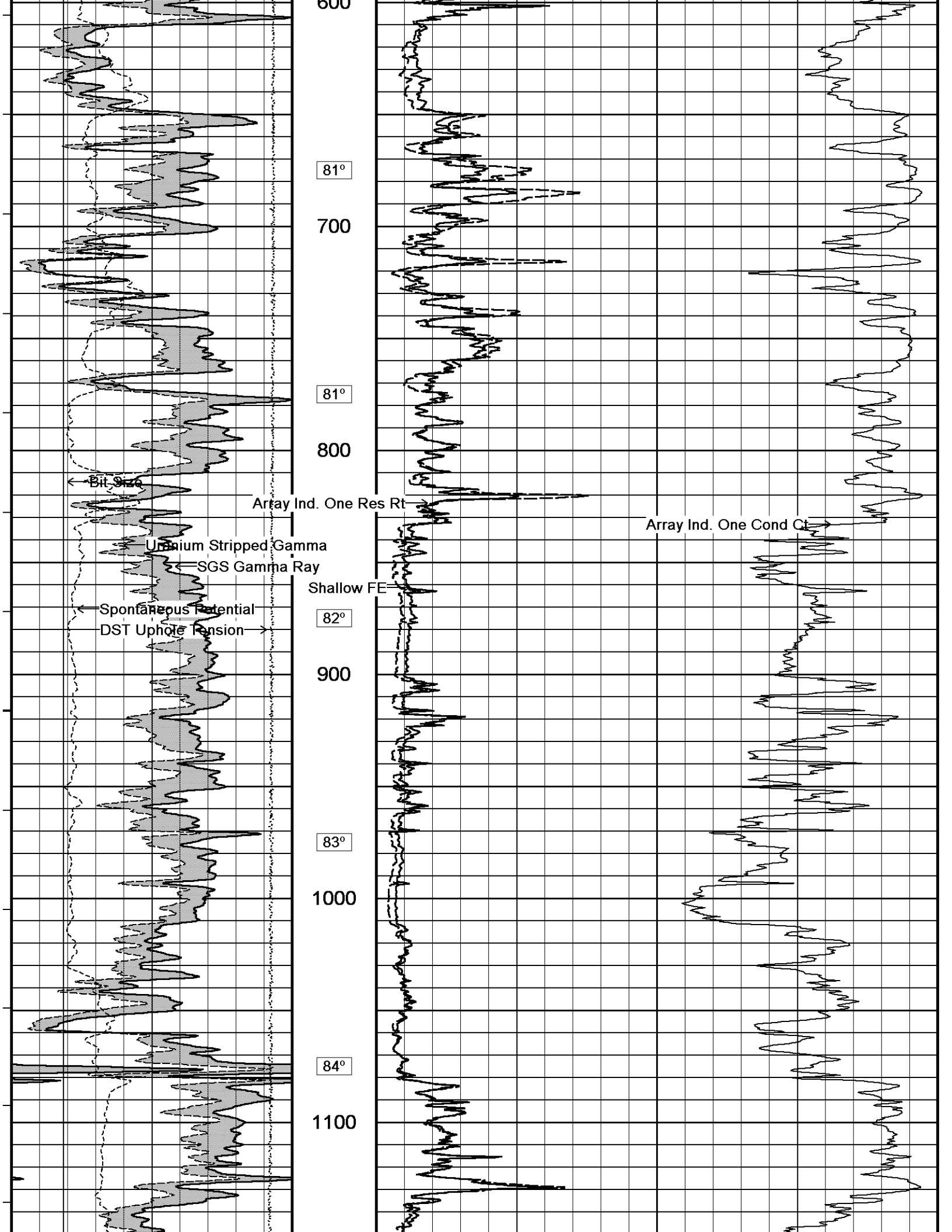
Replay Scale 1:600

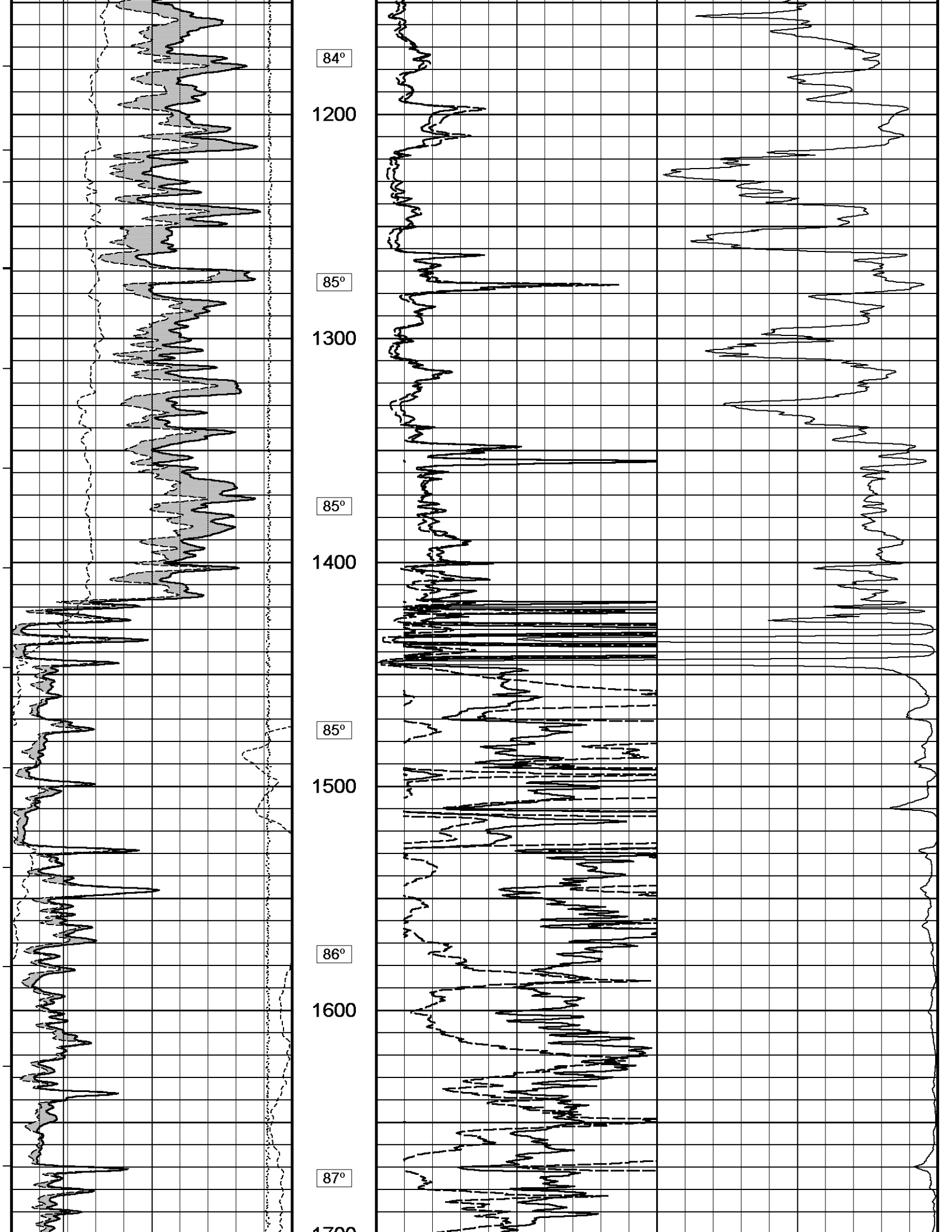
Array Ind. One Cond Ct
mmhos
1000 — 750 — 500 — 250 — 0
2000 — 1750 — 1500 — 1250 — 1000

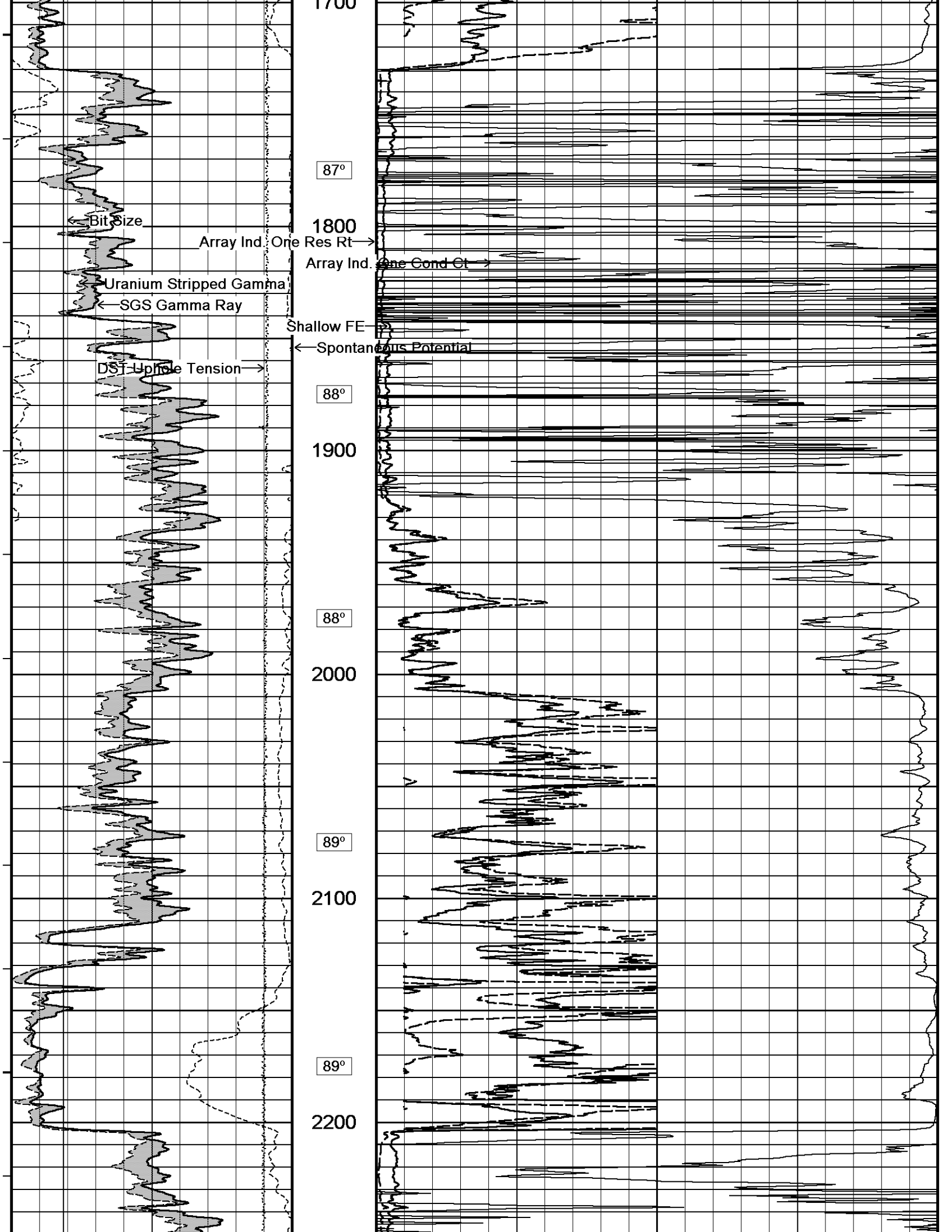
Shallow FE
ohm metres
0 — 25 — 50
0 — 250 — 500

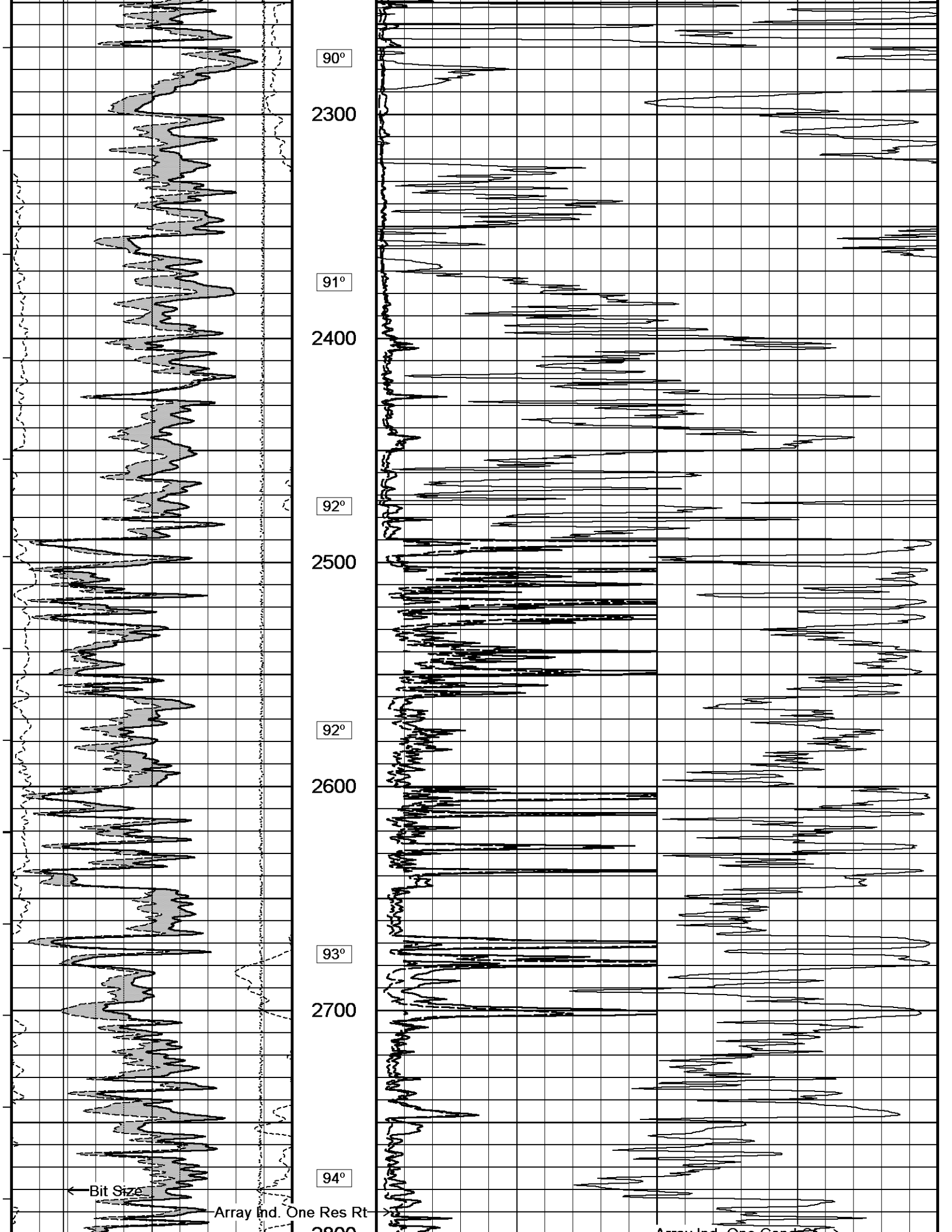
Array Ind. One Res Rt
ohm metres
0 — 25 — 50
0 — 250 — 500

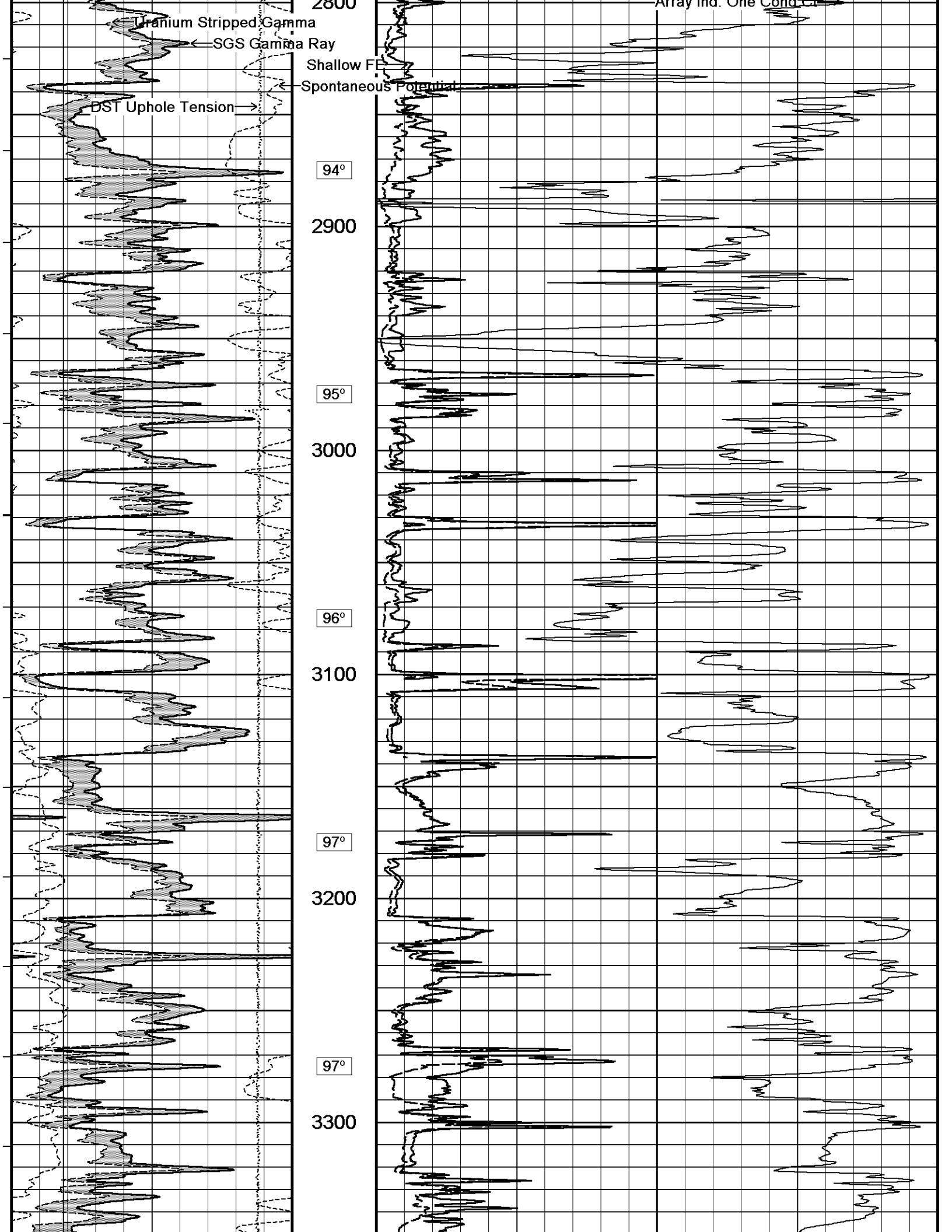


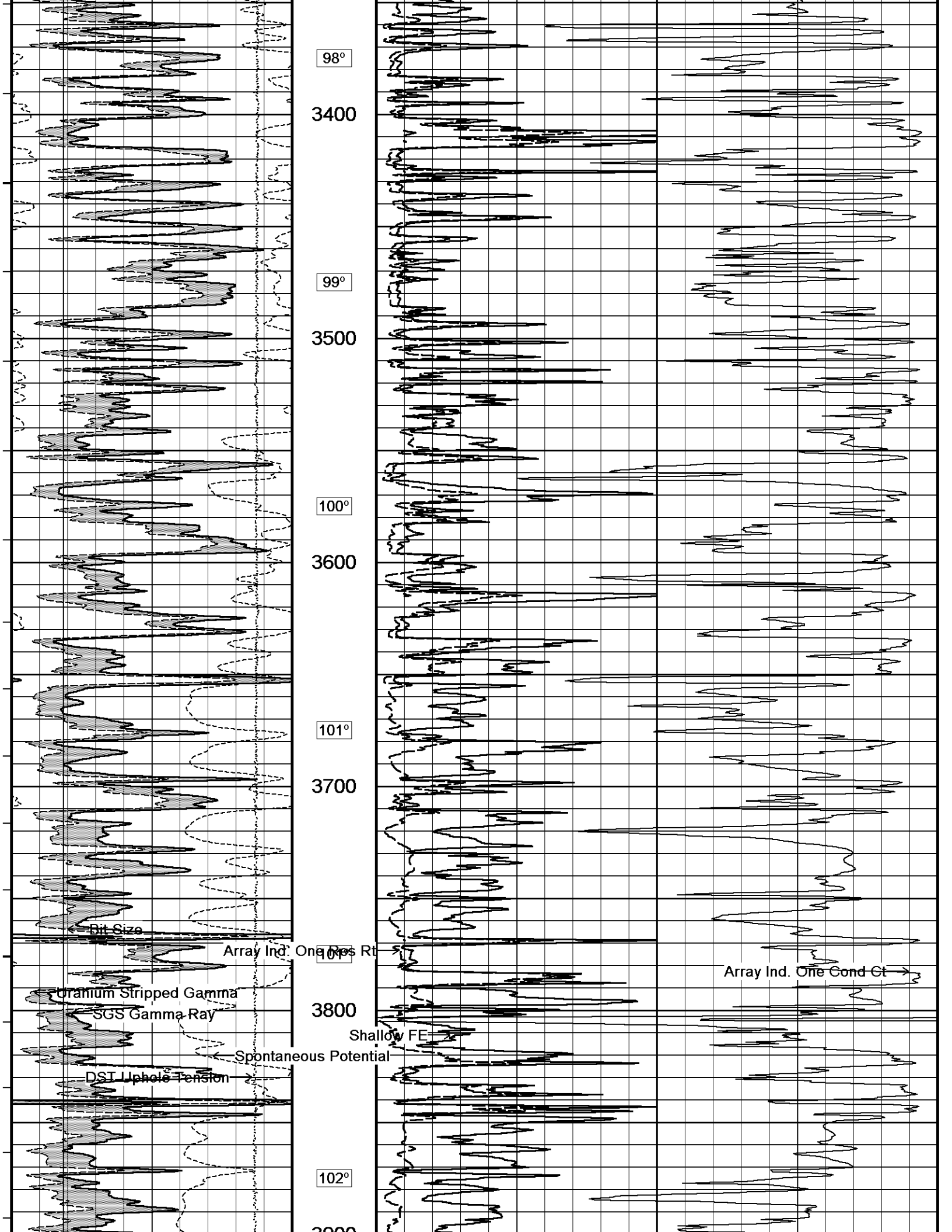

600
81°
700
81°
800
Bit Size
Array Ind. One Res Rt
Array Ind. One Cond Ct
Uranium Stripped Gamma
SGS Gamma Ray
Shallow FE
Spontaneous Potential
DST Uphole Tension
82°
900
83°
1000
84°
1100

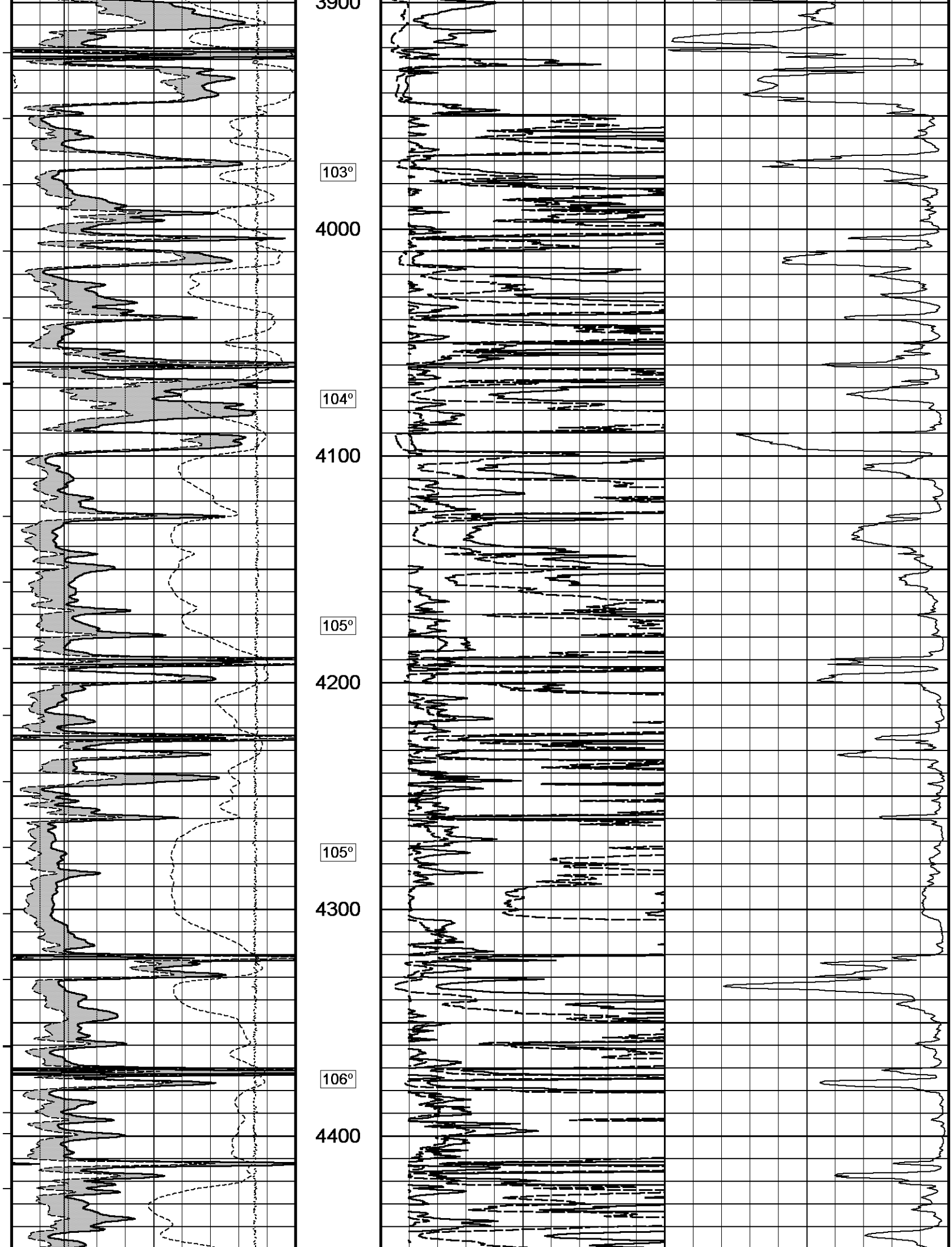

84°
1200
85°
1300
85°
1400
85°
1500
86°
1600
87°
1700

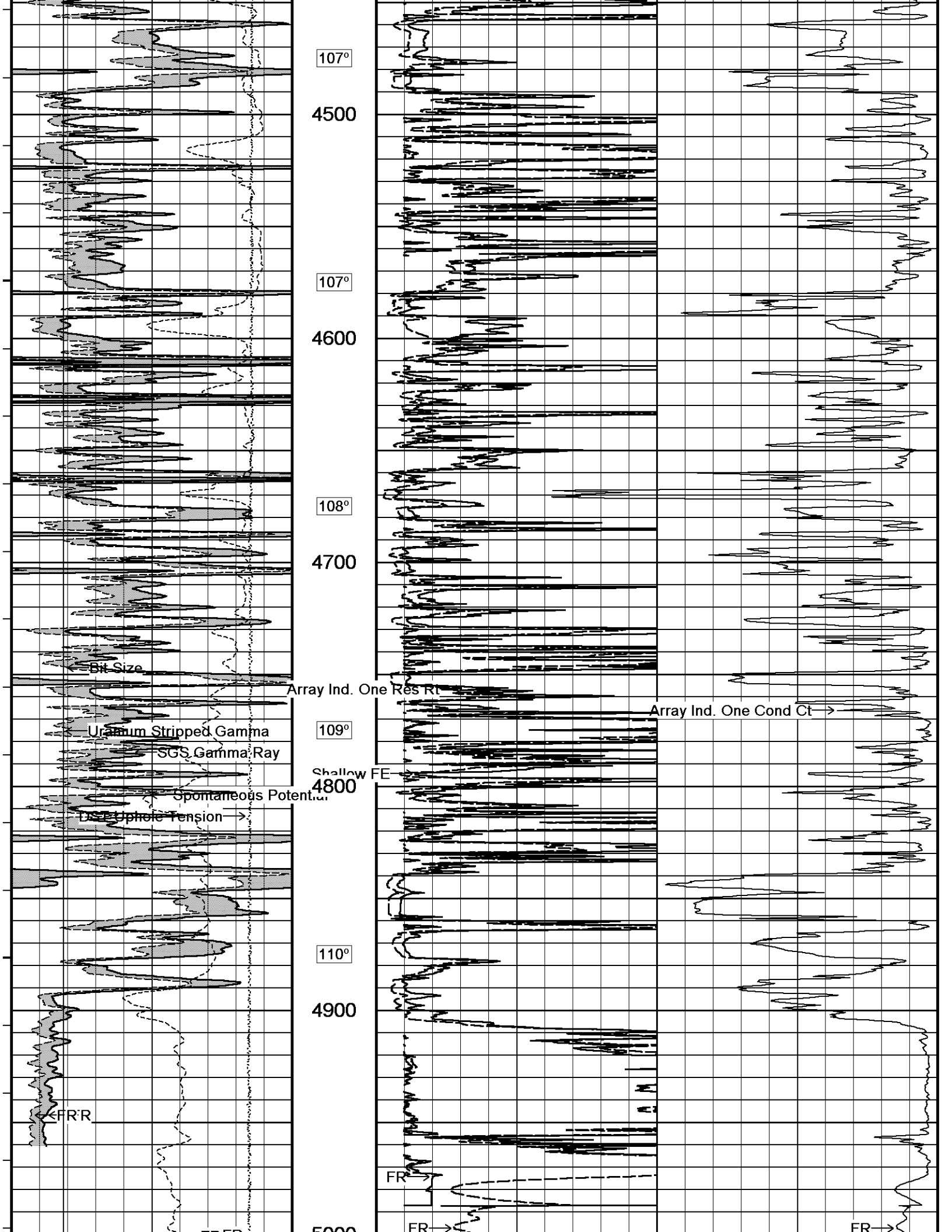

1700
87°
Bit Size
1800
Array Ind. One Res Rt
Array Ind. One Cond Ct
Uranium Stripped Gamma
SGS Gamma Ray
Shallow FE
Spontaneous Potential
DST Uphole Tension
88°
1900
88°
2000
89°
2100
89°
2200

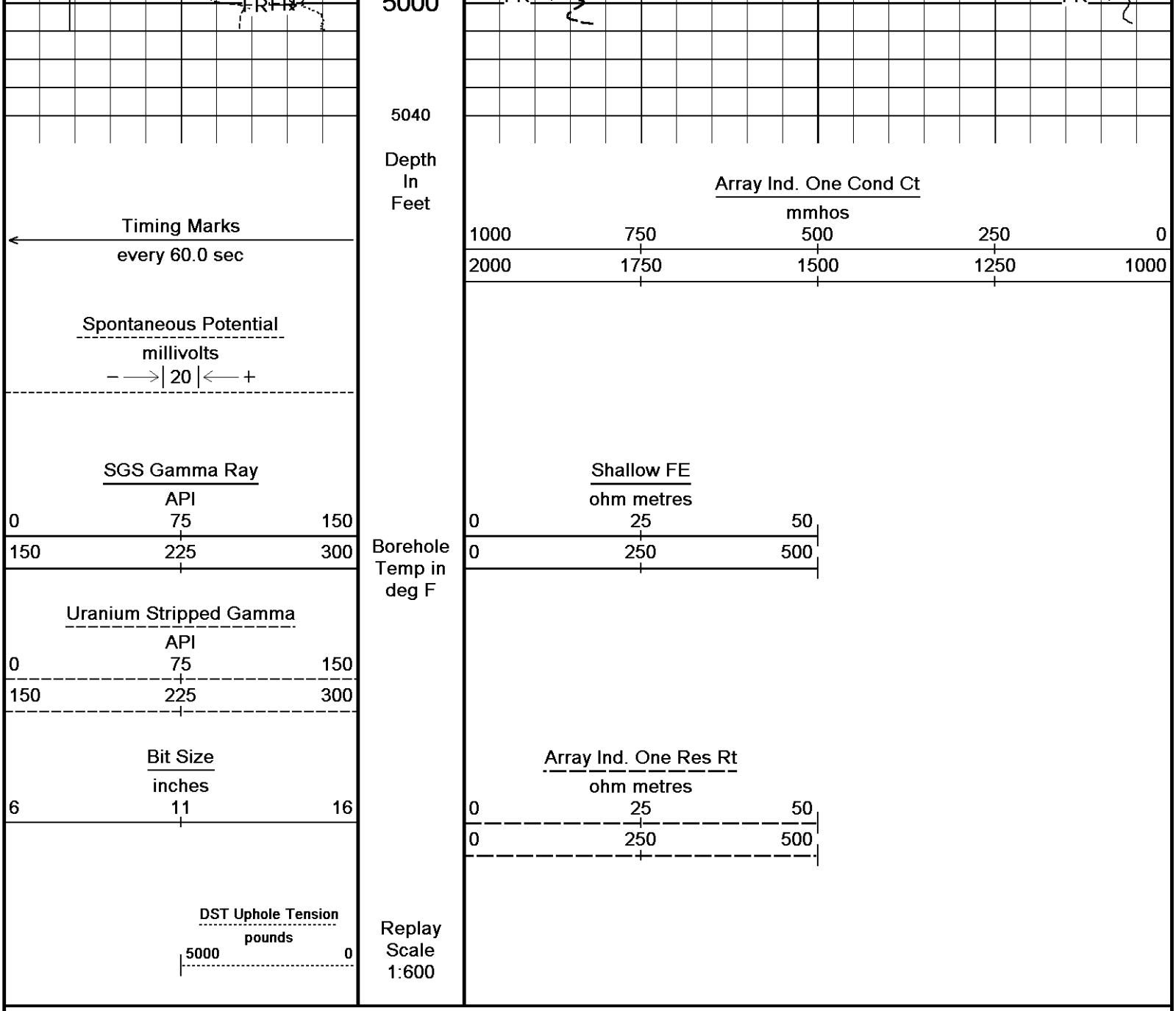

90°
2300
91°
2400
92°
2500
92°
2600
93°
2700
94°
Bit Size
Array Ind. One Res Rt


Uranium Stripped Gamma
SGS Gamma Ray
Shallow FE
Spontaneous Potential
DST Uphole Tension
Array Ind. One Cond Cl
2800
94°
2900
95°
3000
96°
3100
97°
3200
97°
3300


98°
3400
99°
3500
100°
3600
101°
3700
Bit Size
Array Ind. One Res Rt
101°
Array Ind. One Cond Ct
Uranium Stripped Gamma
SGS Gamma Ray
3800
Shallow FE
Spontaneous Potential
DST Uphole Tension
102°


3900
103°
4000
104°
4100
105°
4200
105°
4300
106°
4400


107°
4500
107°
4600
108°
4700
Bit Size
Array Ind. One Res Rt
Array Ind. One Cond Ct
Uranium Stripped Gamma
109°
SGS Gamma Ray
Shallow FE
4800
Spontaneous Potential
Uphole Tension
110°
4900
FR
FR
FR
5000

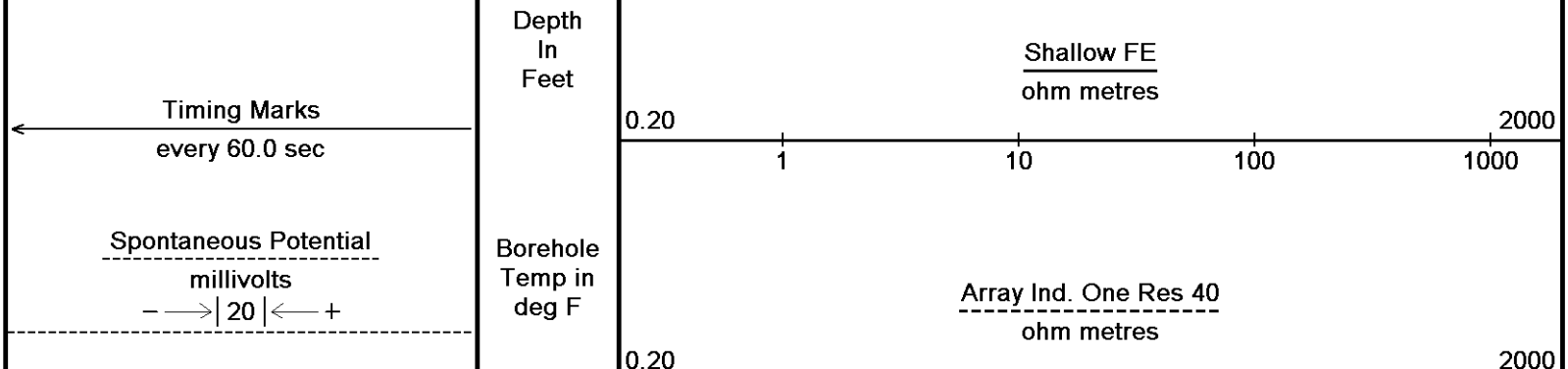


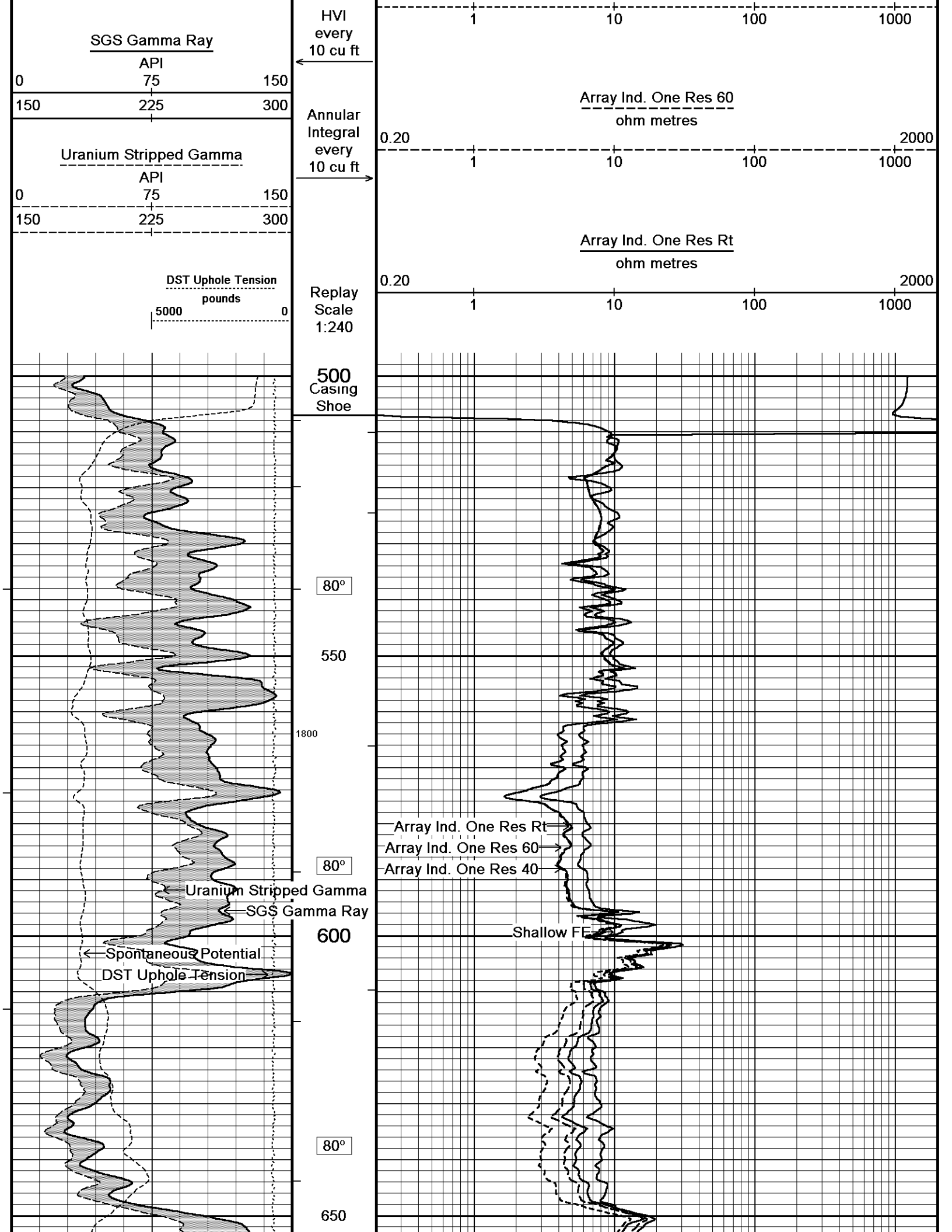
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 27-SEP-2013 05:29
Filename: C:\Minimus\DATA\PetroSantander Odd William...\PetroSantander Odd Williams #6 MAIN.dta — Recorded on 26-SEP-2013 21:18
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

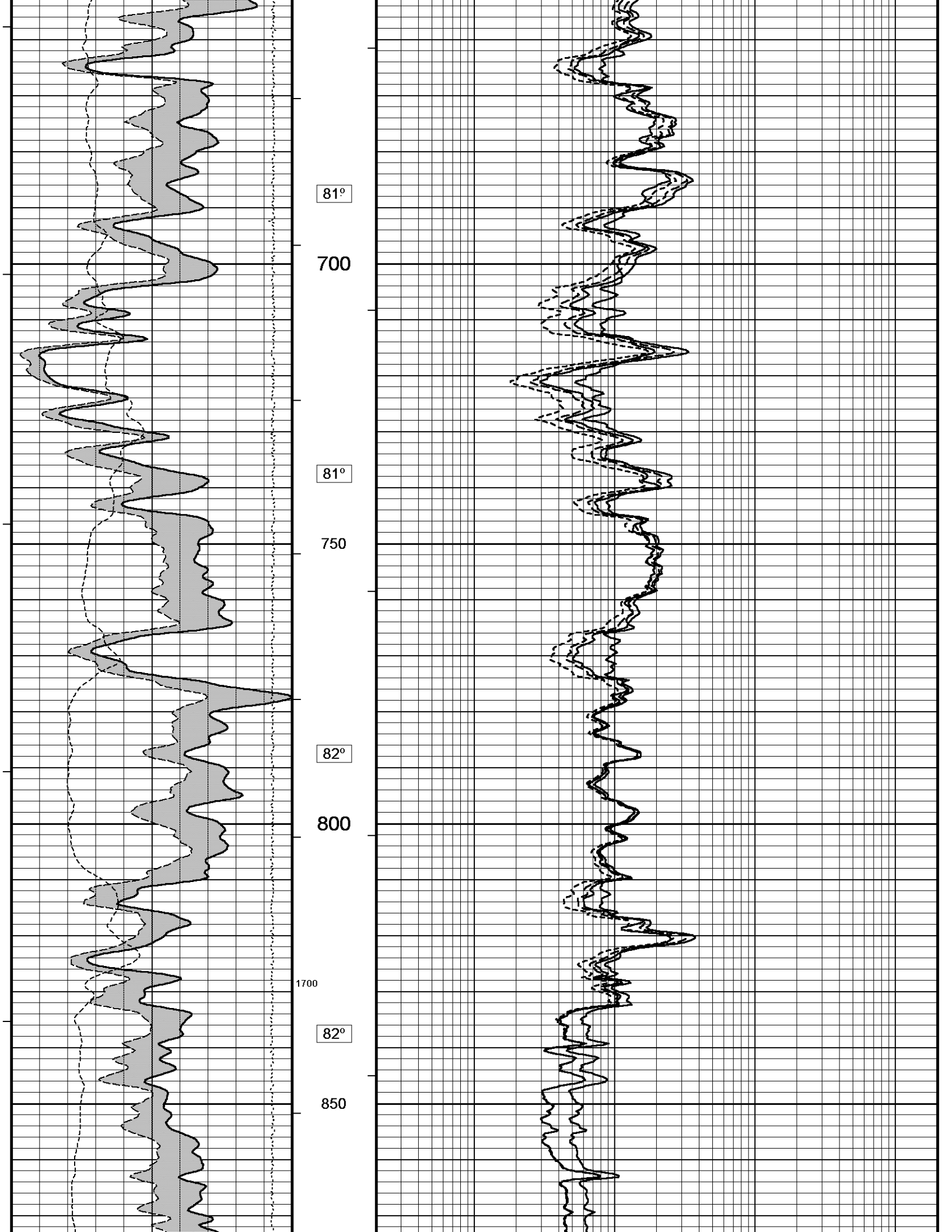
2 INCH MAIN

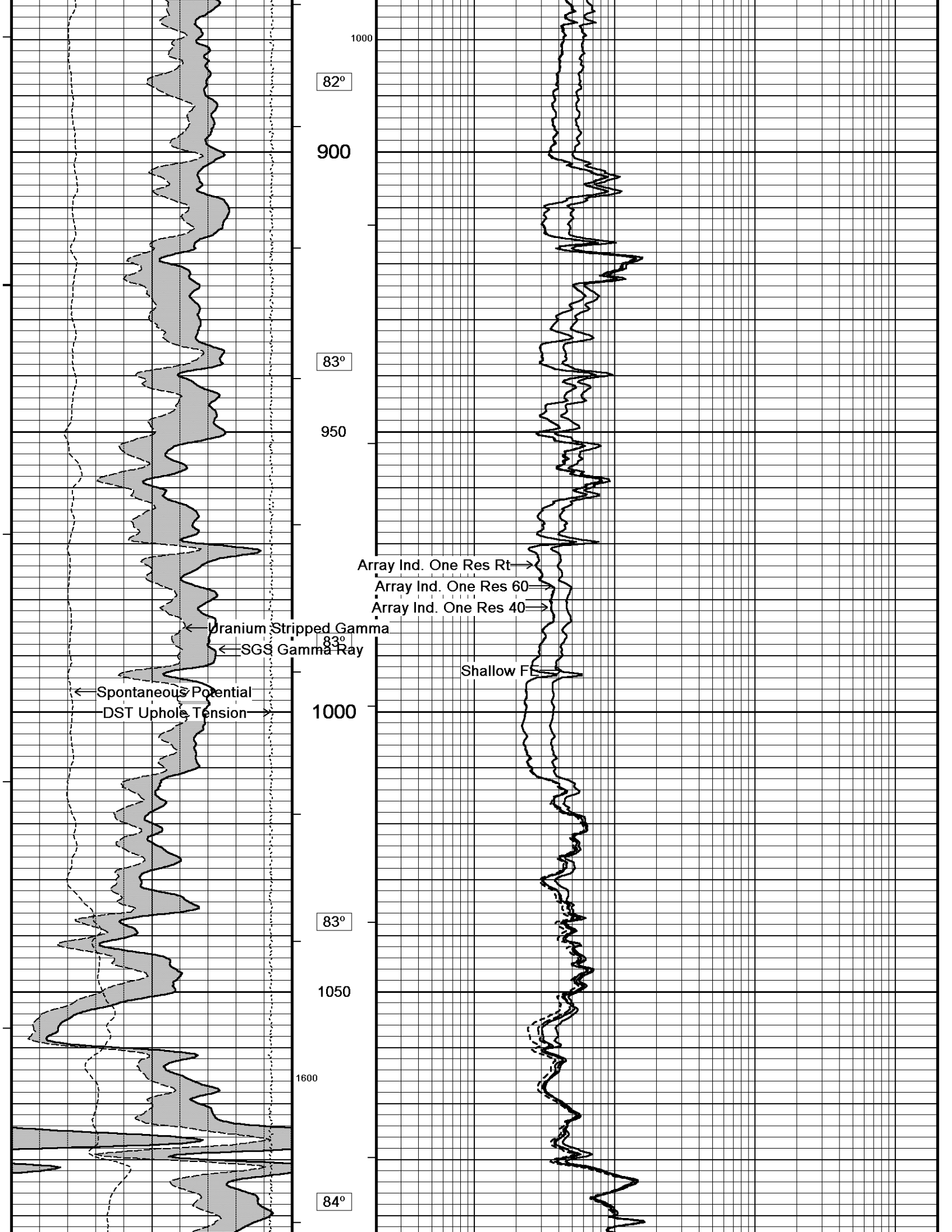
5 INCH MAIN

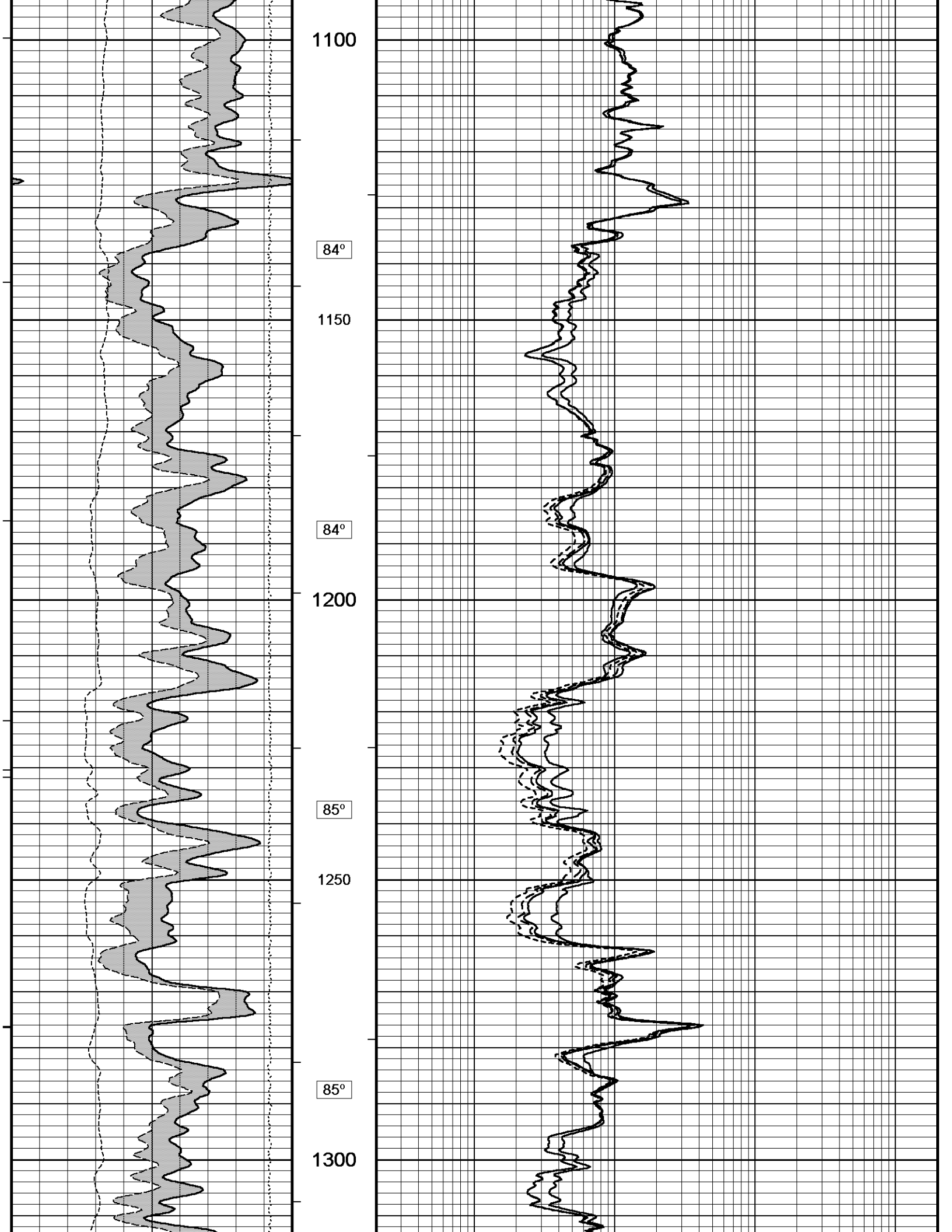
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 27-SEP-2013 05:29
Filename: C:\Minimus\DATA\PetroSantander Odd William...\PetroSantander Odd Williams #6 MAIN.dta — Recorded on 26-SEP-2013 21:18
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

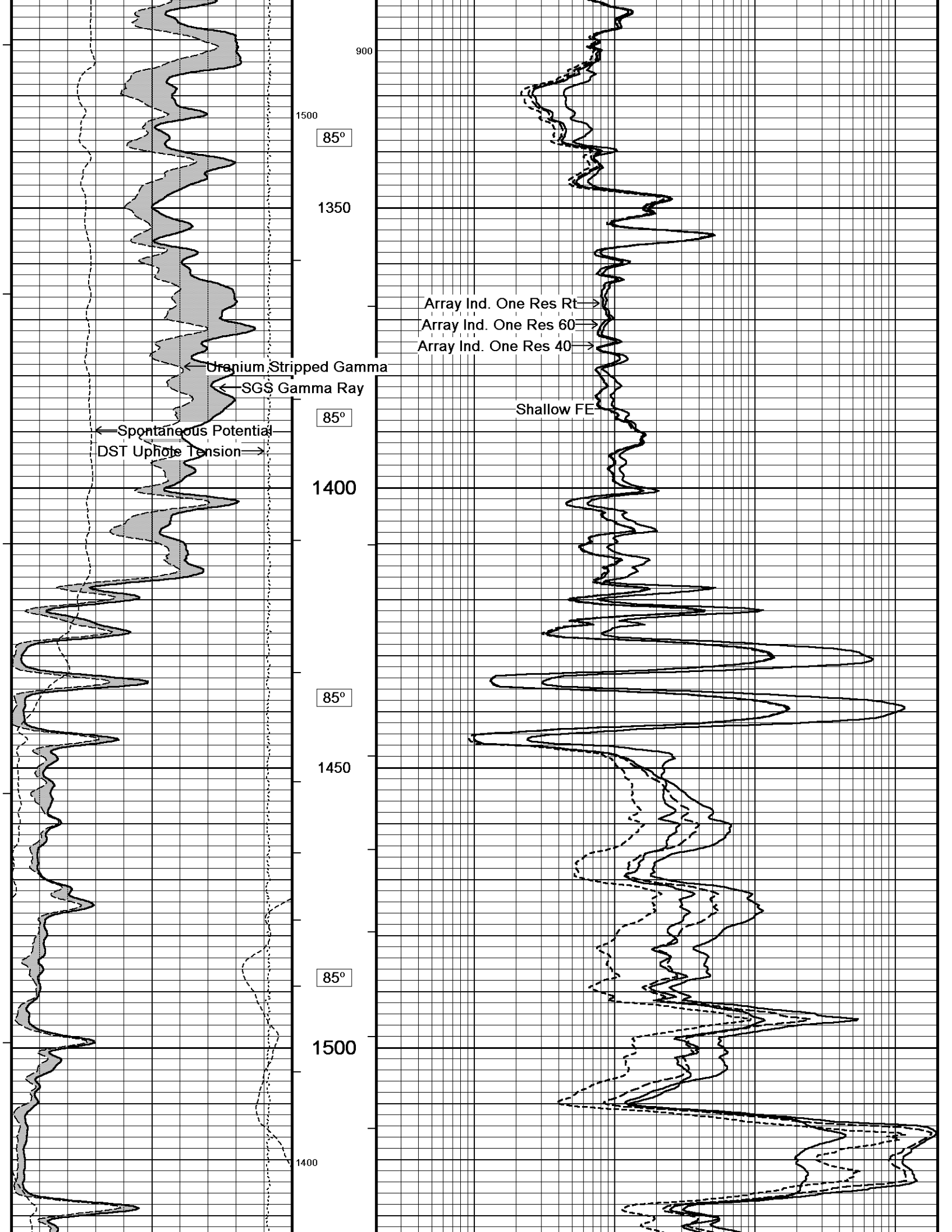


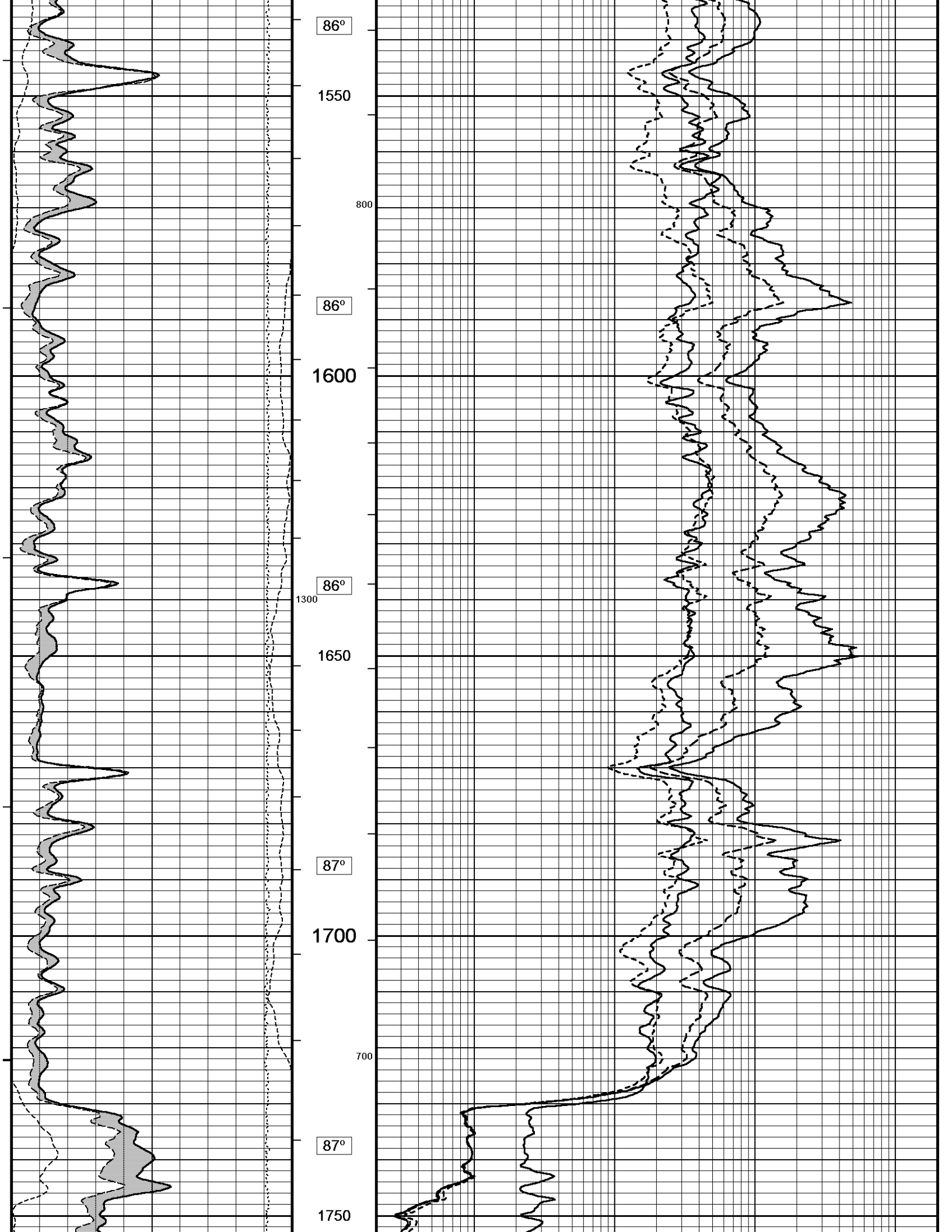

SGS Gamma Ray
API
0
75
150
150
225
300
Uranium Stripped Gamma
API
0
75
150
150
225
300
DST Uphole Tension
pounds
5000
0
HVI
every
10 cu ft
Annular
Integral
every
10 cu ft
Replay
Scale
1:240
1
10
100
1000
Array Ind. One Res 60
ohm metres
0.20
2000
Array Ind. One Res Rt
ohm metres
0.20
2000
500
Casing
Shoe
80°
550
1800
80°
600
80°
650
Uranium Stripped Gamma
SGS Gamma Ray
Spontaneous Potential
DST Uphole Tension
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE

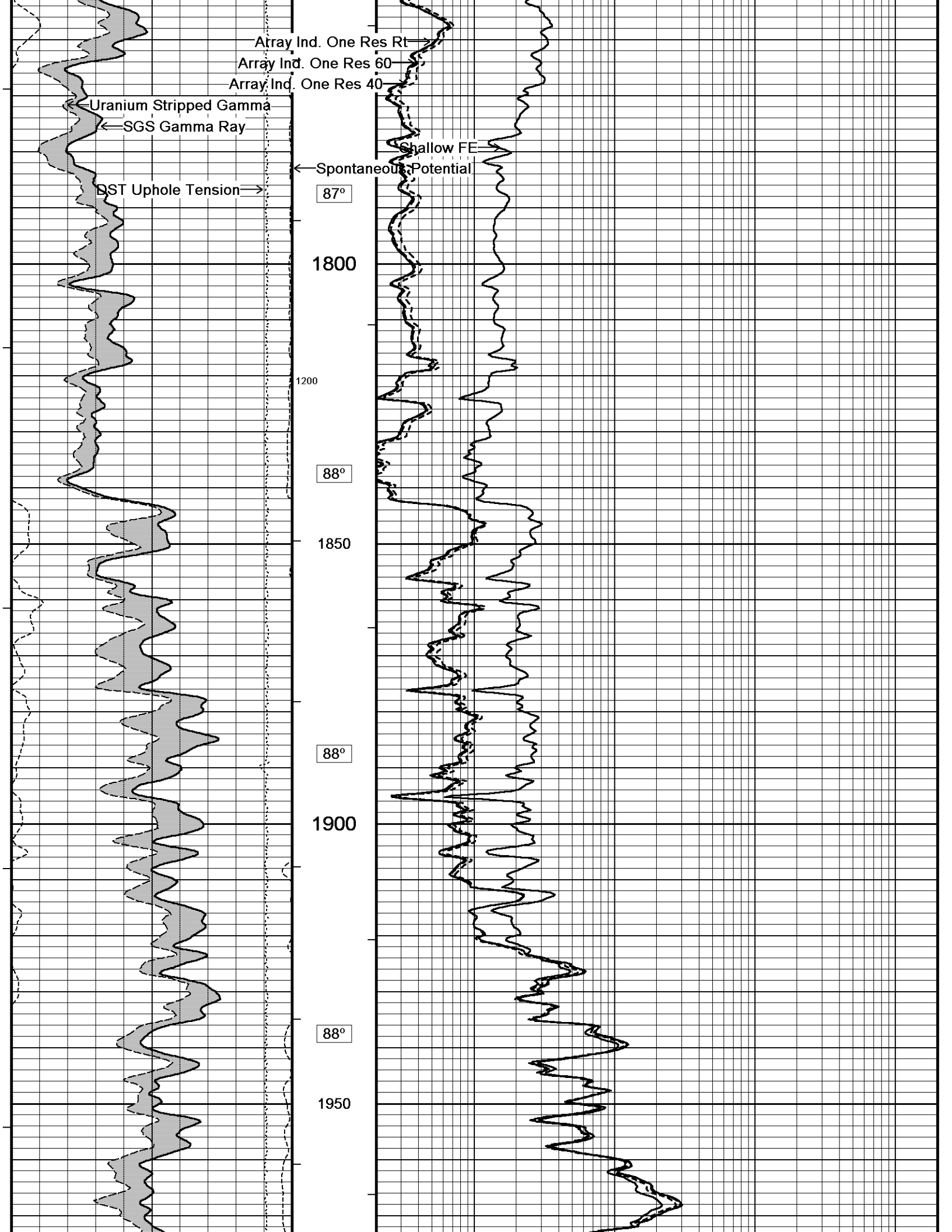

81°
700
81°
750
82°
800
1700
82°
850

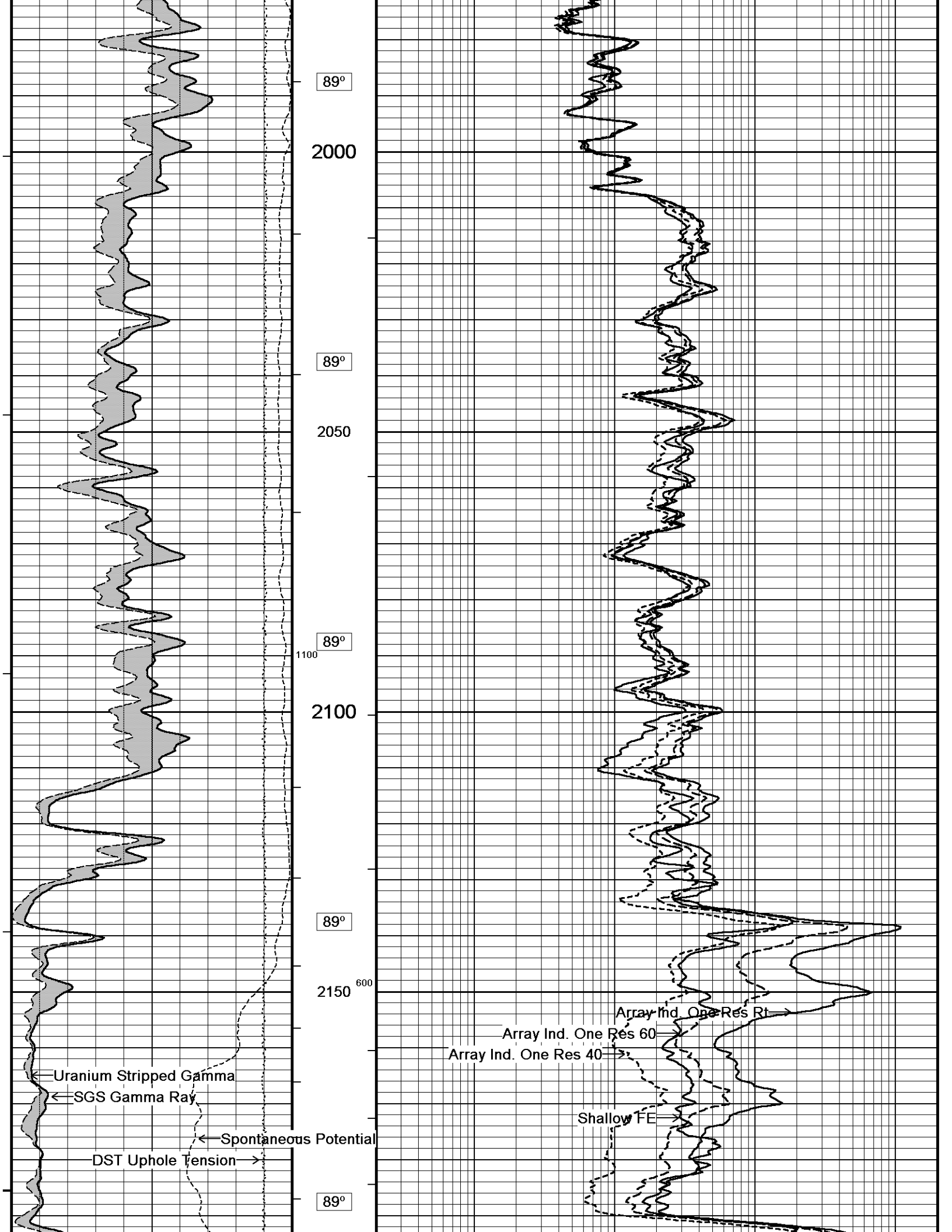

1000
82°
900
83°
950
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Uranium Stripped Gamma
SGS Gamma Ray
83°
Shallow Fl
Spontaneous Potential
DST Uphole Tension
1000
83°
1050
1600
84°

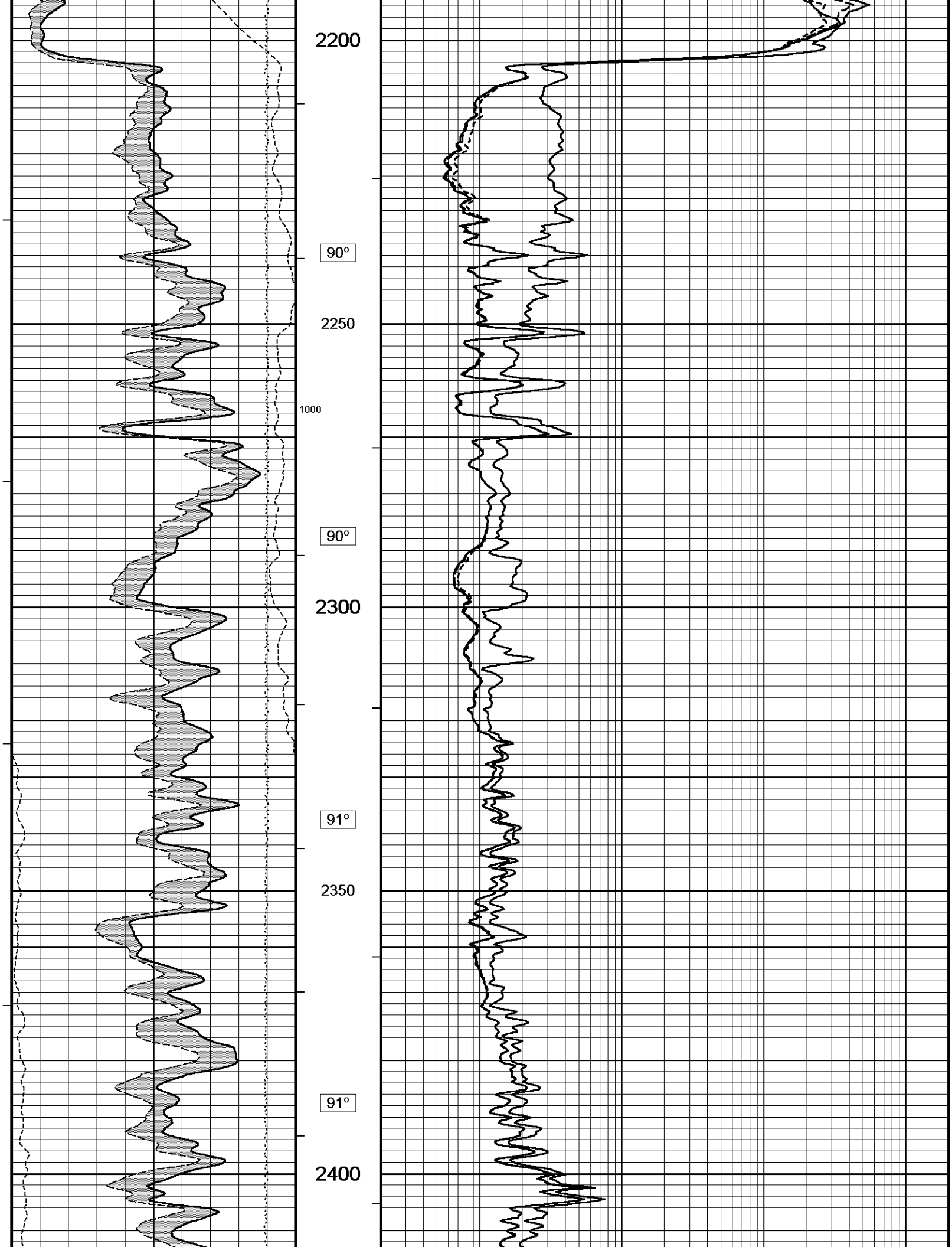

1100
84°
1150
84°
1200
85°
1250
85°
1300

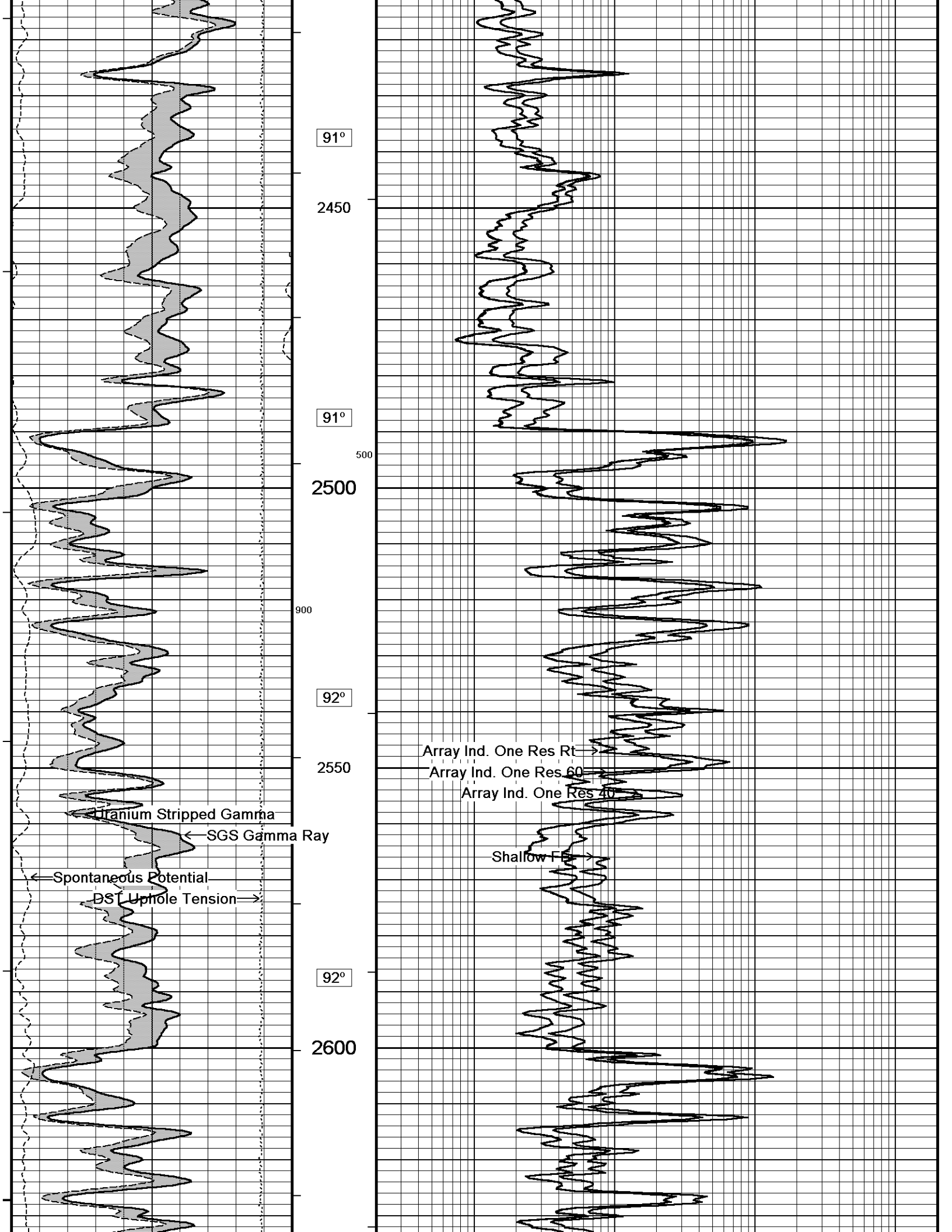

900
1500
85°
1350
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Uranium Stripped Gamma
SGS Gamma Ray
Shallow FE
85°
Spontaneous Potential
DST Uphole Tension
1400
85°
1450
85°
1500
1400

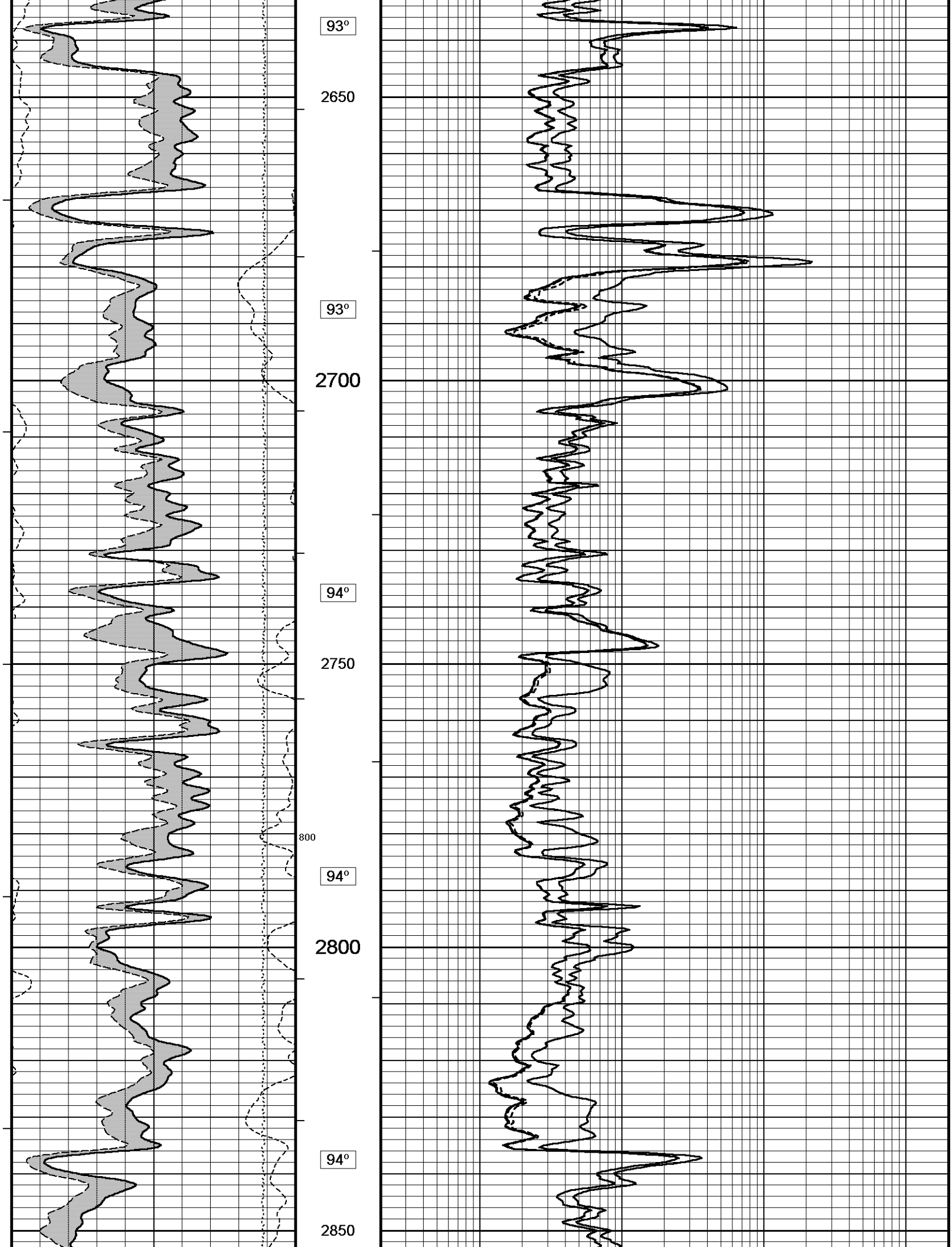

86°
1550
800
86°
1600
86°
1300
1650
87°
1700
700
87°
1750

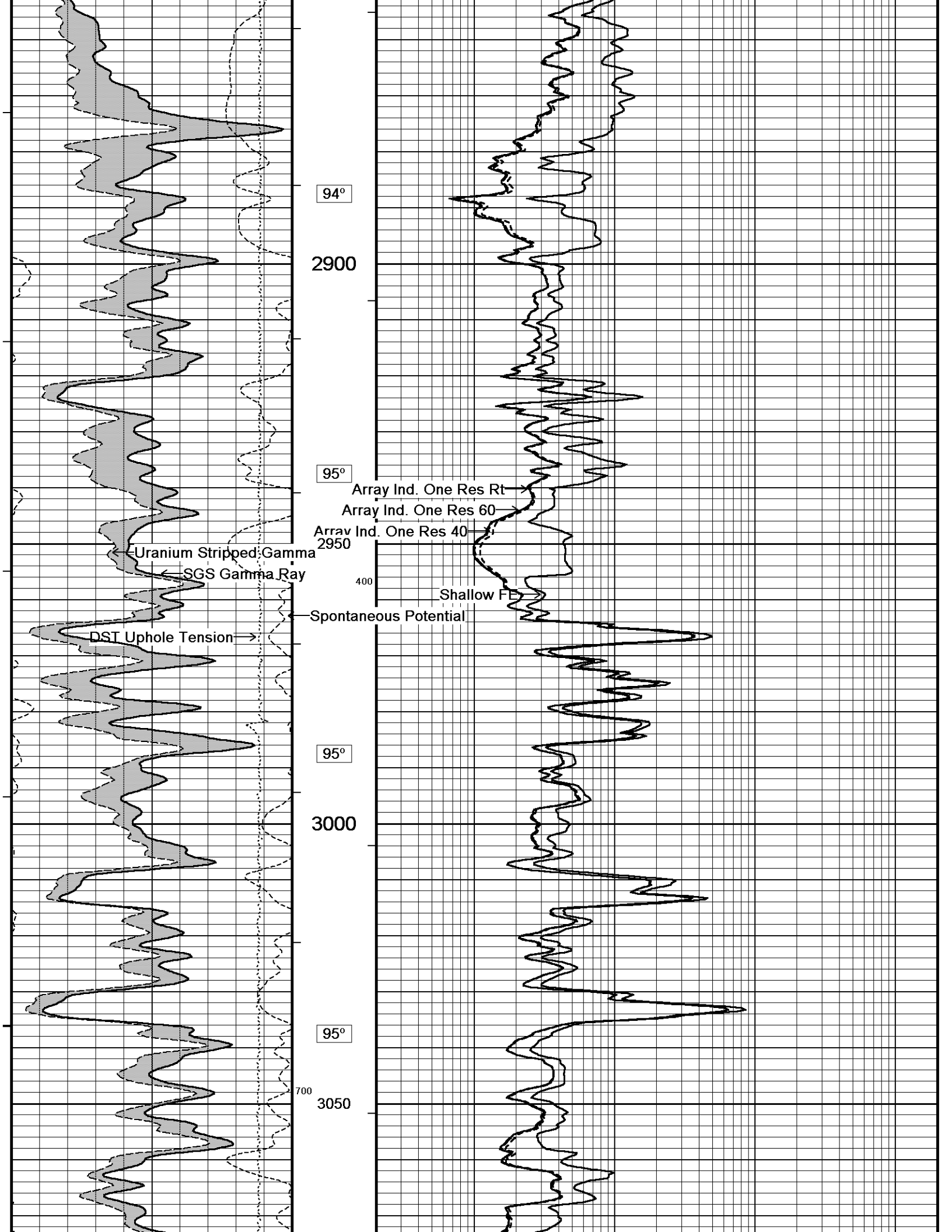

Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Uranium Stripped Gamma
SGS Gamma Ray
Shallow FE
Spontaneous Potential
DST Uphole Tension
87°
1800
1200
88°
1850
88°
1900
88°
1950

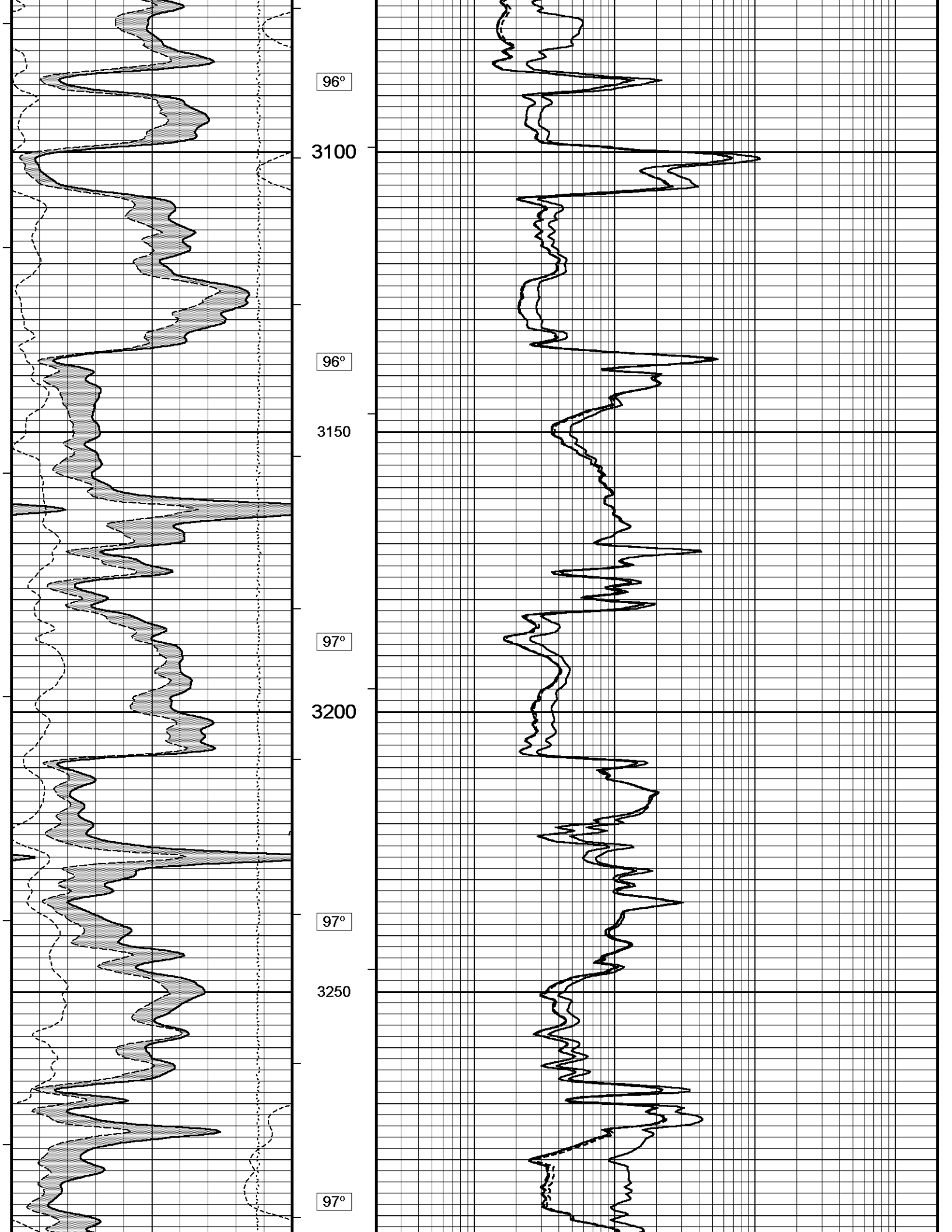

89°
2000
89°
2050
89°
1100
2100
89°
2150
600
Uranium Stripped Gamma
SGS Gamma Ray
Spontaneous Potential
DST Uphole Tension
89°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE

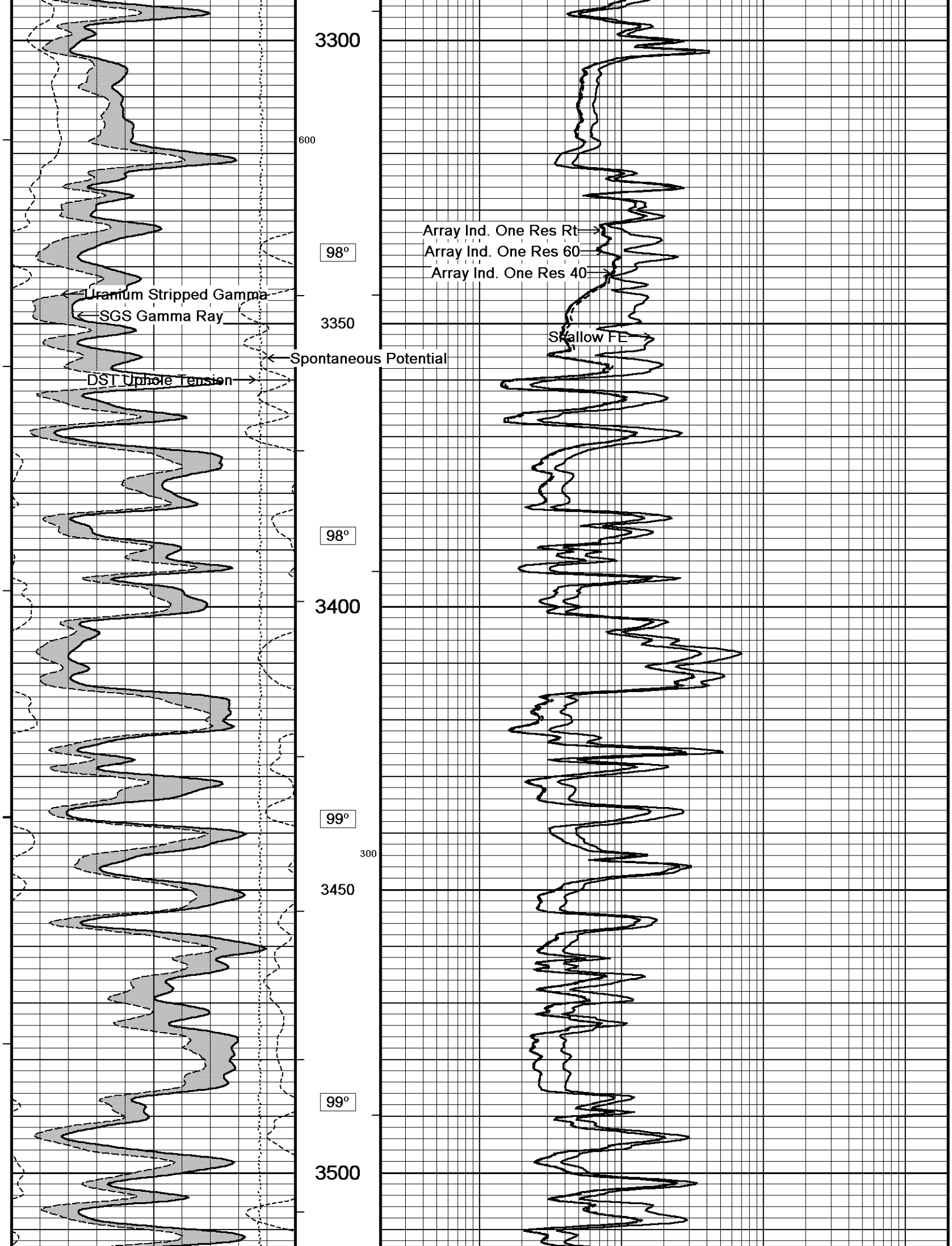

2200
90°
2250
1000
90°
2300
91°
2350
91°
2400

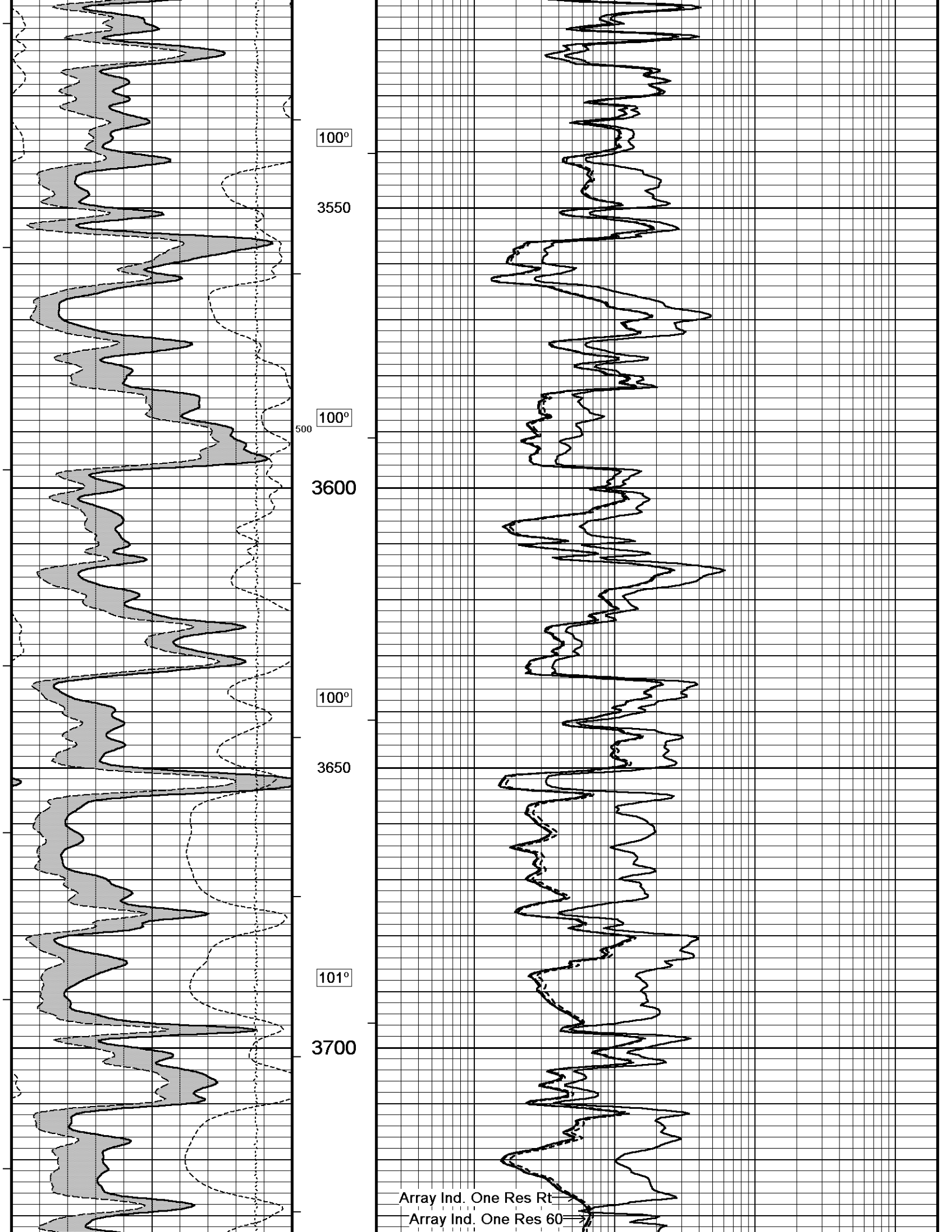

91°
2450
91°
500
2500
900
92°
2550
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Uranium Stripped Gamma
SGS Gamma Ray
Shallow FE
Spontaneous Potential
DST Uphole Tension
92°
2600

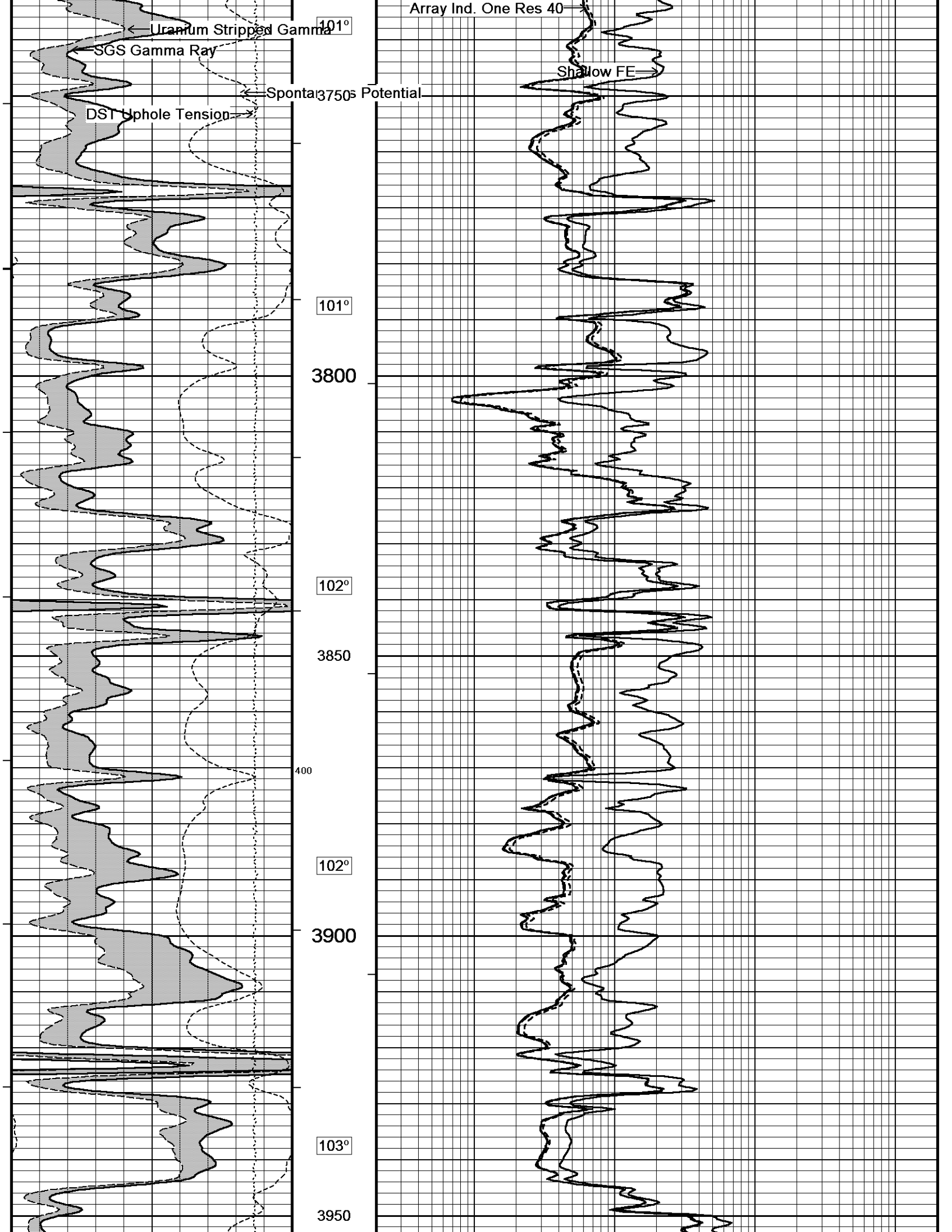

93°
2650
93°
2700
94°
2750
800
94°
2800
94°
2850

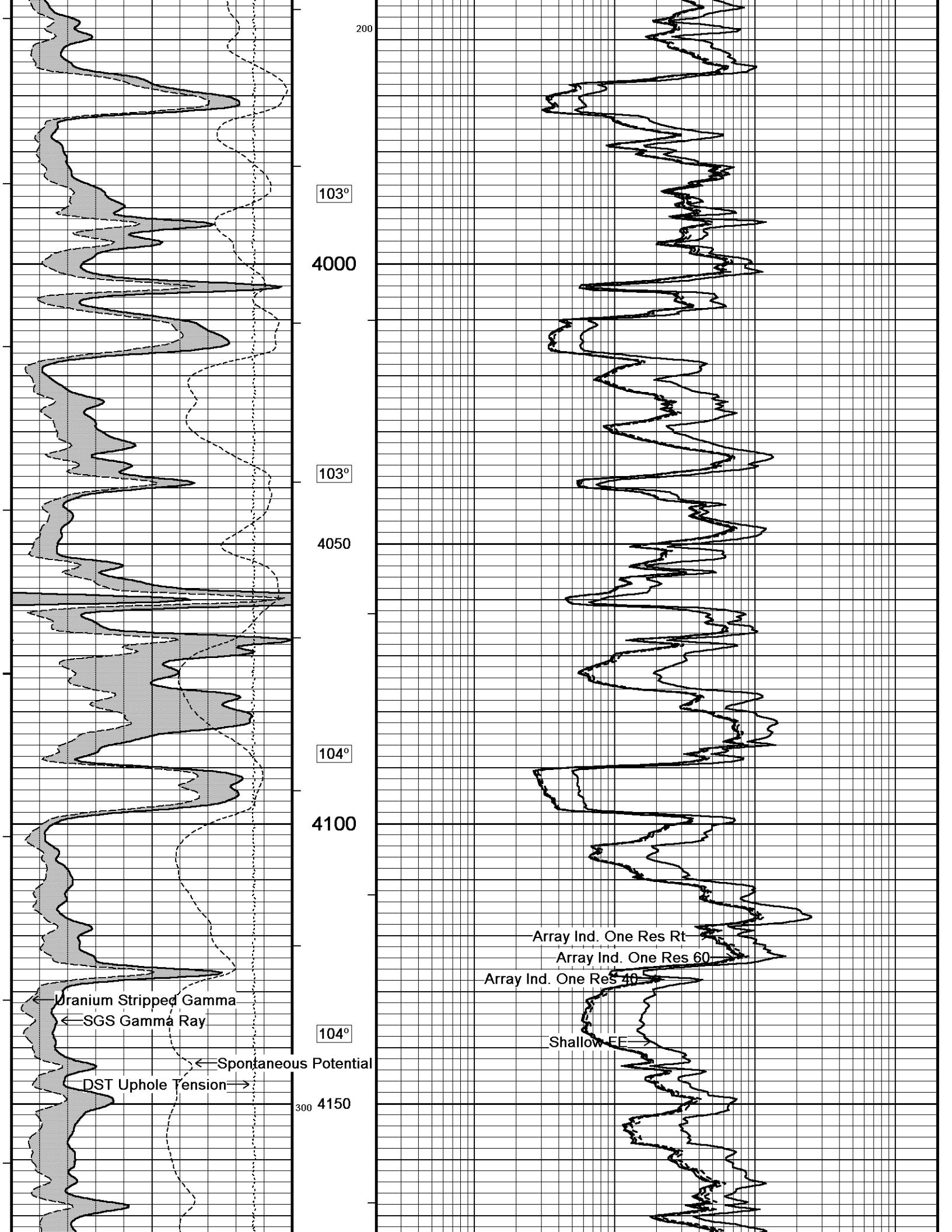

94°
2900
95°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
2950
Uranium Stripped Gamma
SGS Gamma Ray
400
Shallow FE
Spontaneous Potential
DST Uphole Tension
95°
3000
95°
700
3050

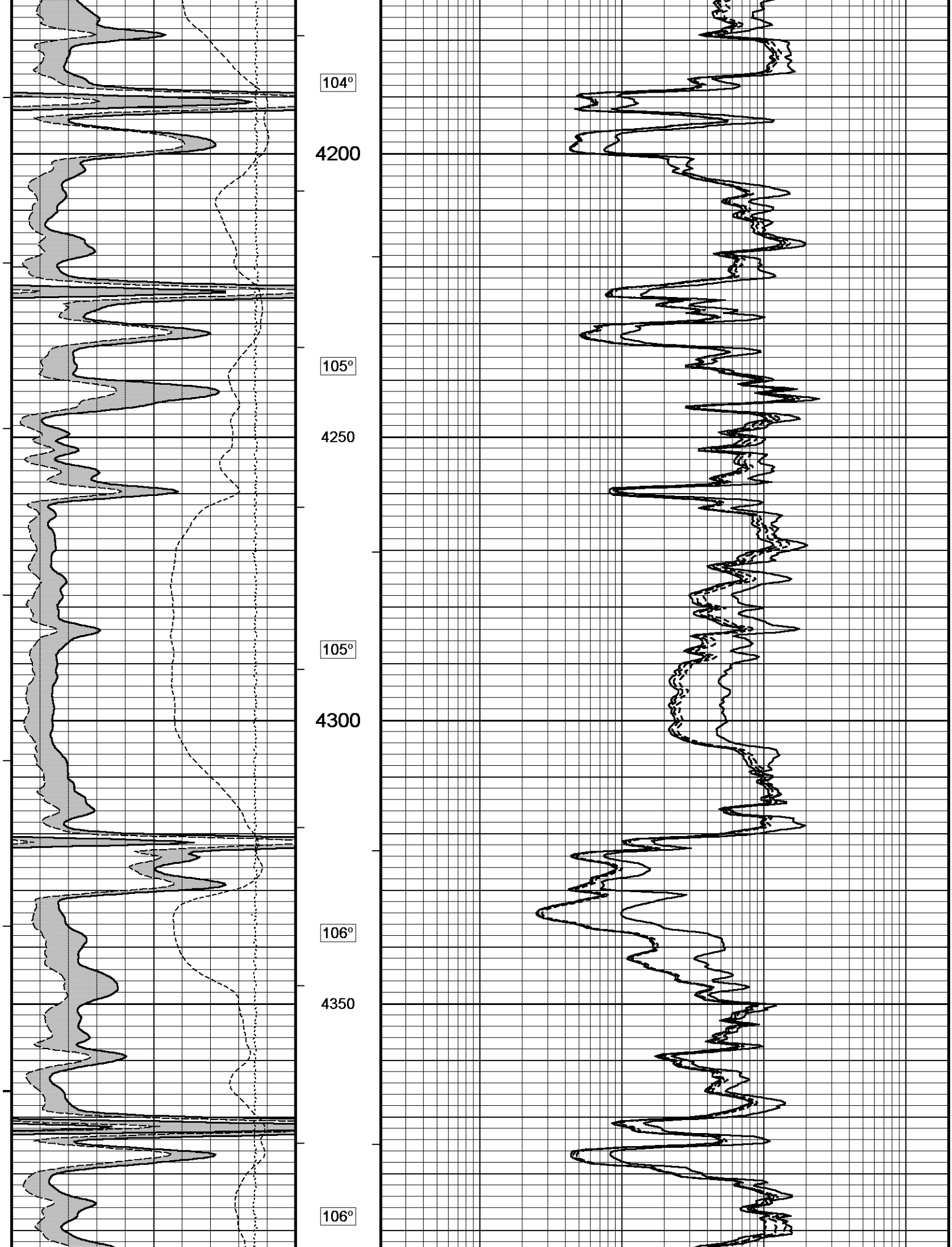

96°
3100
96°
3150
97°
3200
97°
3250
97°

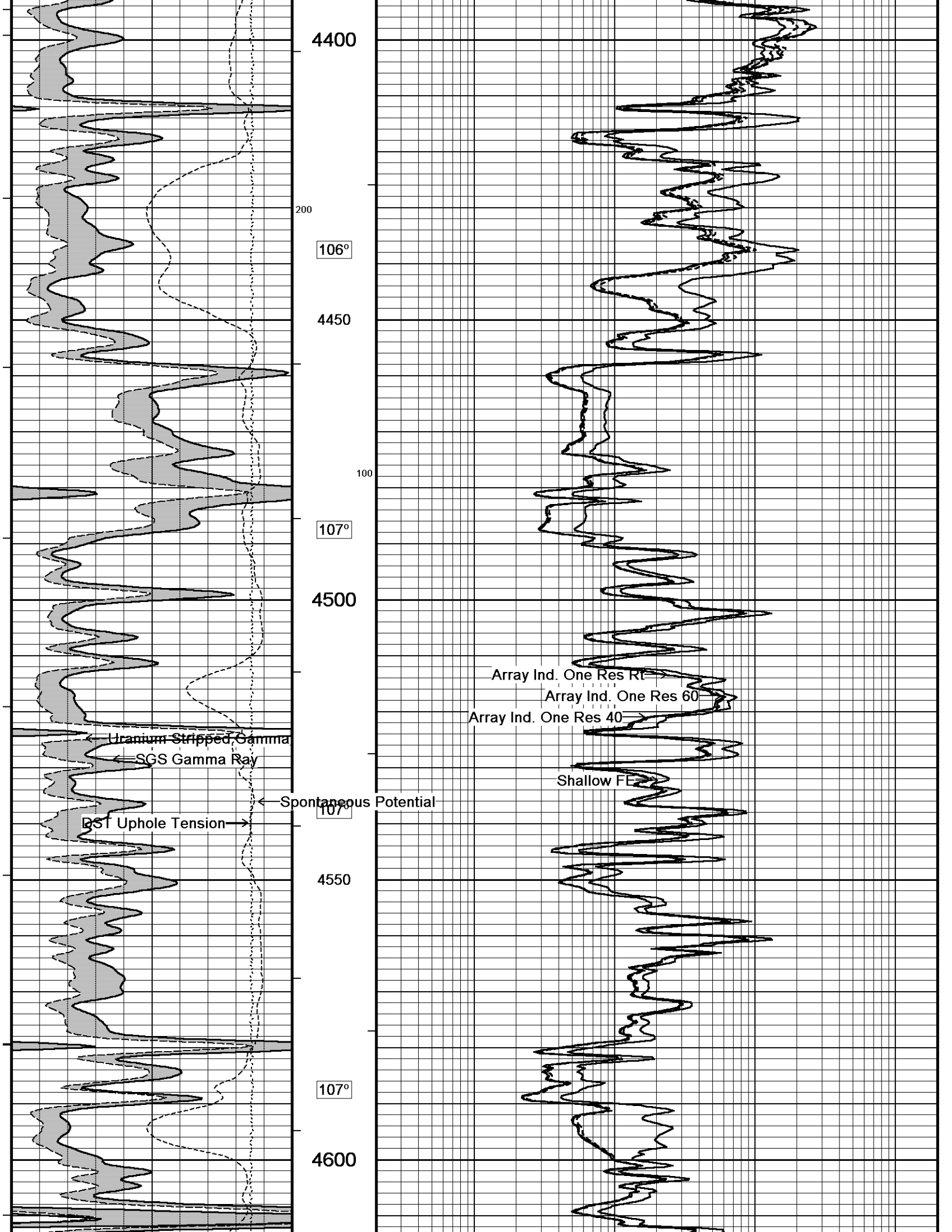

3300
600
98°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Uranium Stripped Gamma
SGS Gamma Ray
3350
Shallow FE
Spontaneous Potential
DST Uphole Tension
98°
3400
99°
300
3450
99°
3500

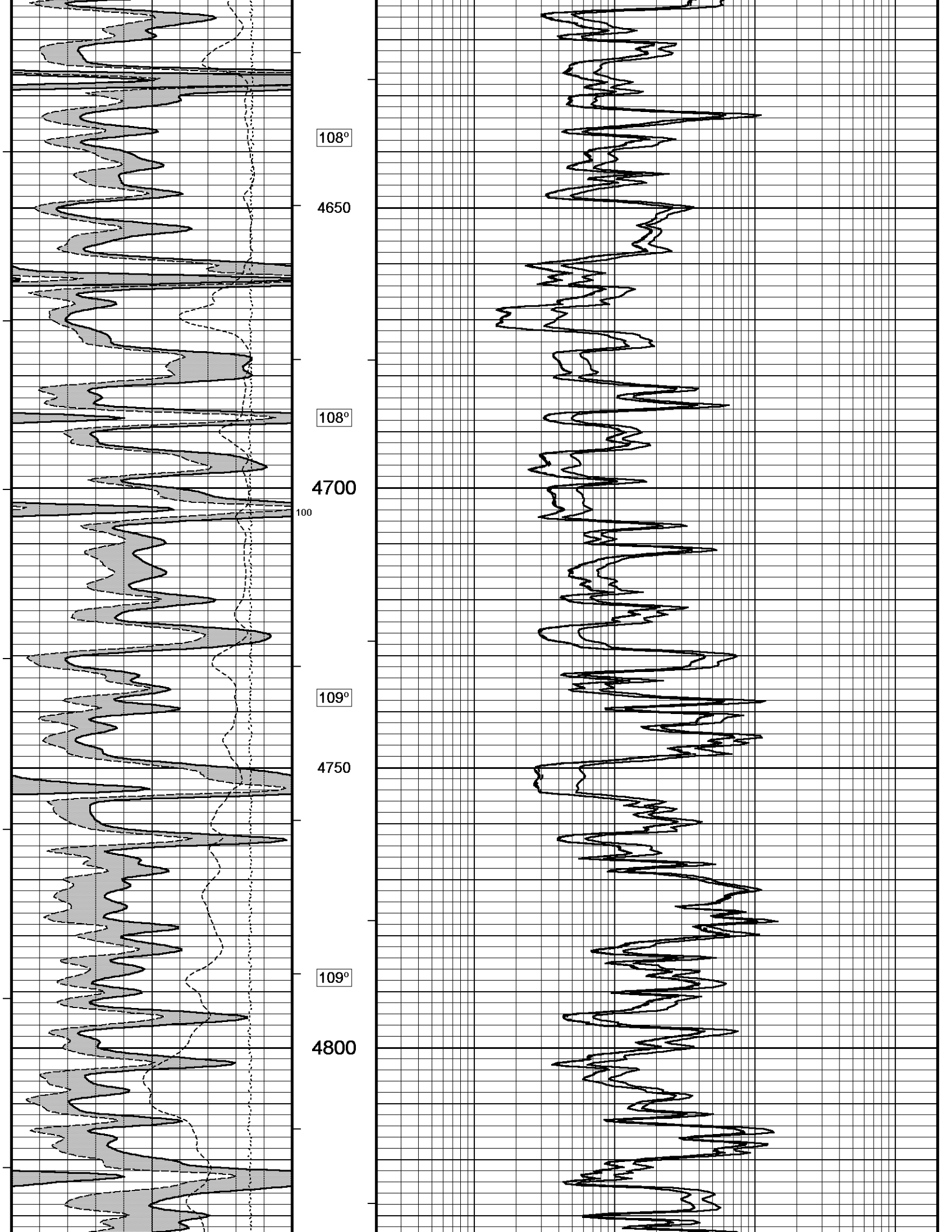

100°
3550
100°
500
3600
100°
3650
101°
3700
Array Ind. One Res Rt
Array Ind. One Res 60

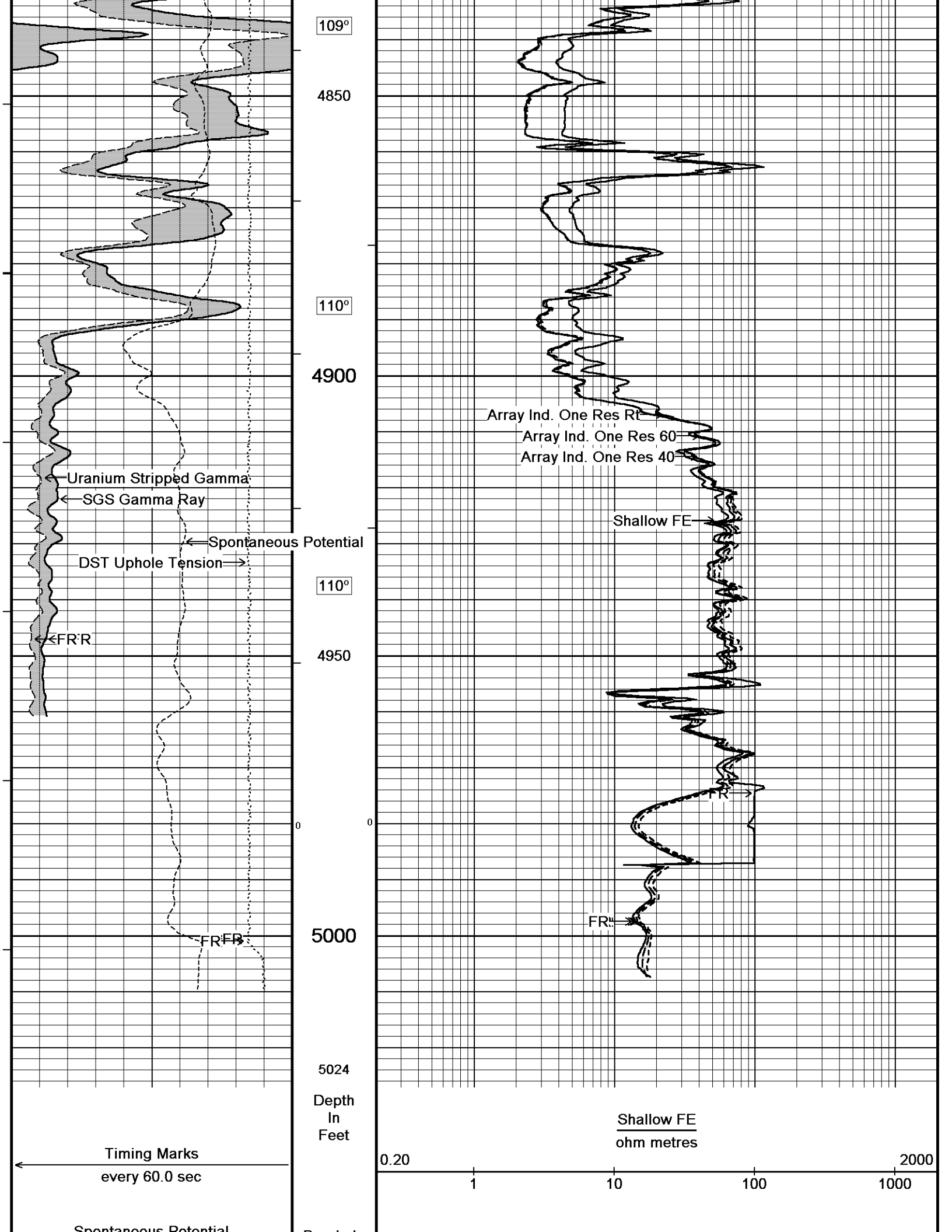

Uranium Stripped Gamma
SGS Gamma Ray
DST Uphole Tension
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
101°
3750
101°
3800
102°
3850
400
102°
3900
103°
3950

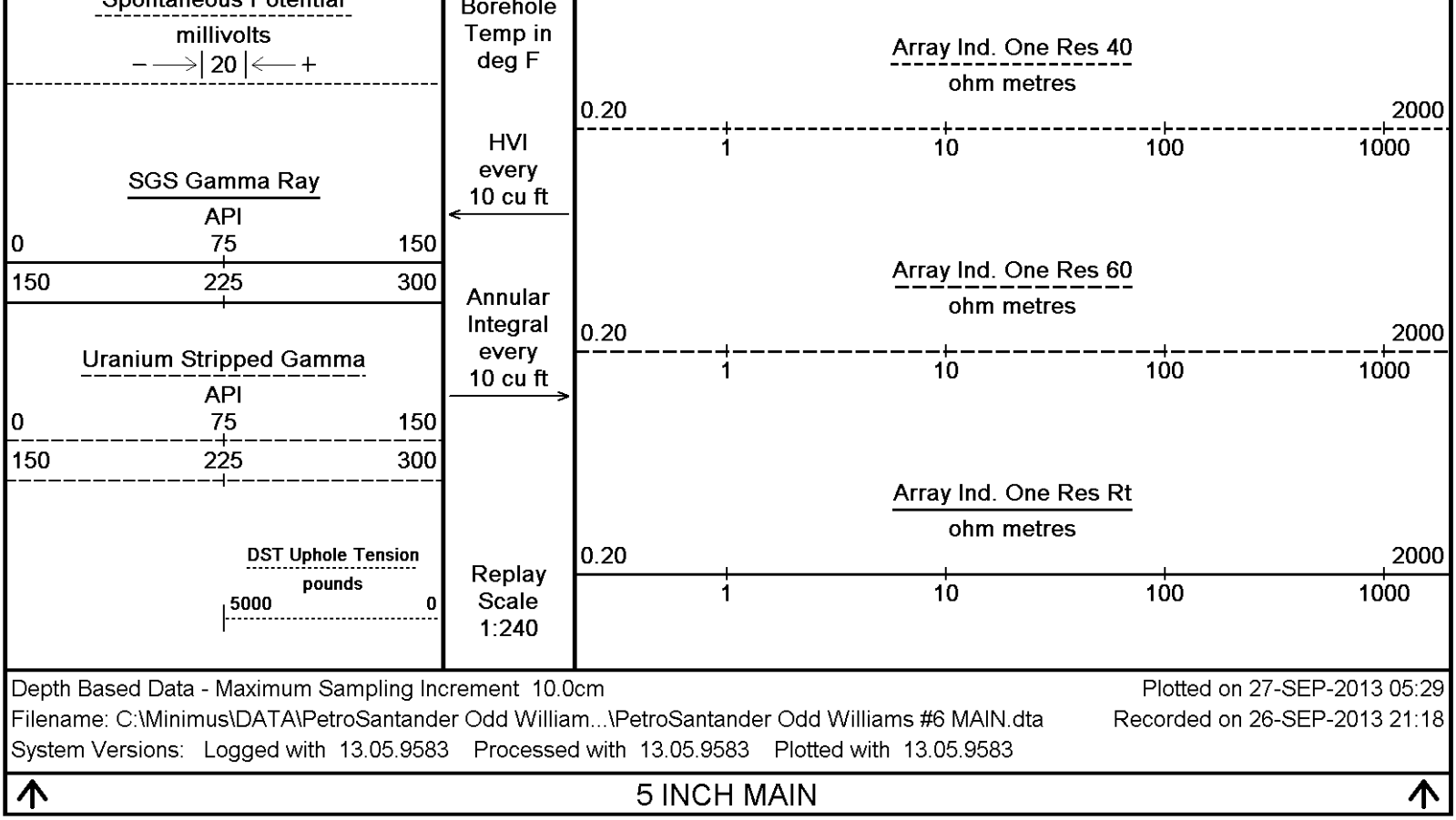

200
103°
4000
103°
4050
104°
4100
104°
300 4150
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Uranium Stripped Gamma
SGS Gamma Ray
Spontaneous Potential
DST Uphole Tension


104°
4200
105°
4250
105°
4300
106°
4350
106°


4400
200
106°
4450
100
107°
4500
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Uranium Stripped Gamma
SGS Gamma Ray
Shallow FE
Spontaneous Potential
107°
DST Uphole Tension
4550
107°
4600


108°
4650
108°
4700
100
109°
4750
109°
4800


109°
4850
110°
4900
110°
4950
0
0
5000
5024
Depth
In
Feet
Uranium Stripped Gamma
SGS Gamma Ray
Spontaneous Potential
DST Uphole Tension
FR
FR
FR
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
FR
FR
Timing Marks
every 60.0 sec
Spontaneous Potential
Shallow FE
ohm metres
0.20
1
10
100
1000
2000

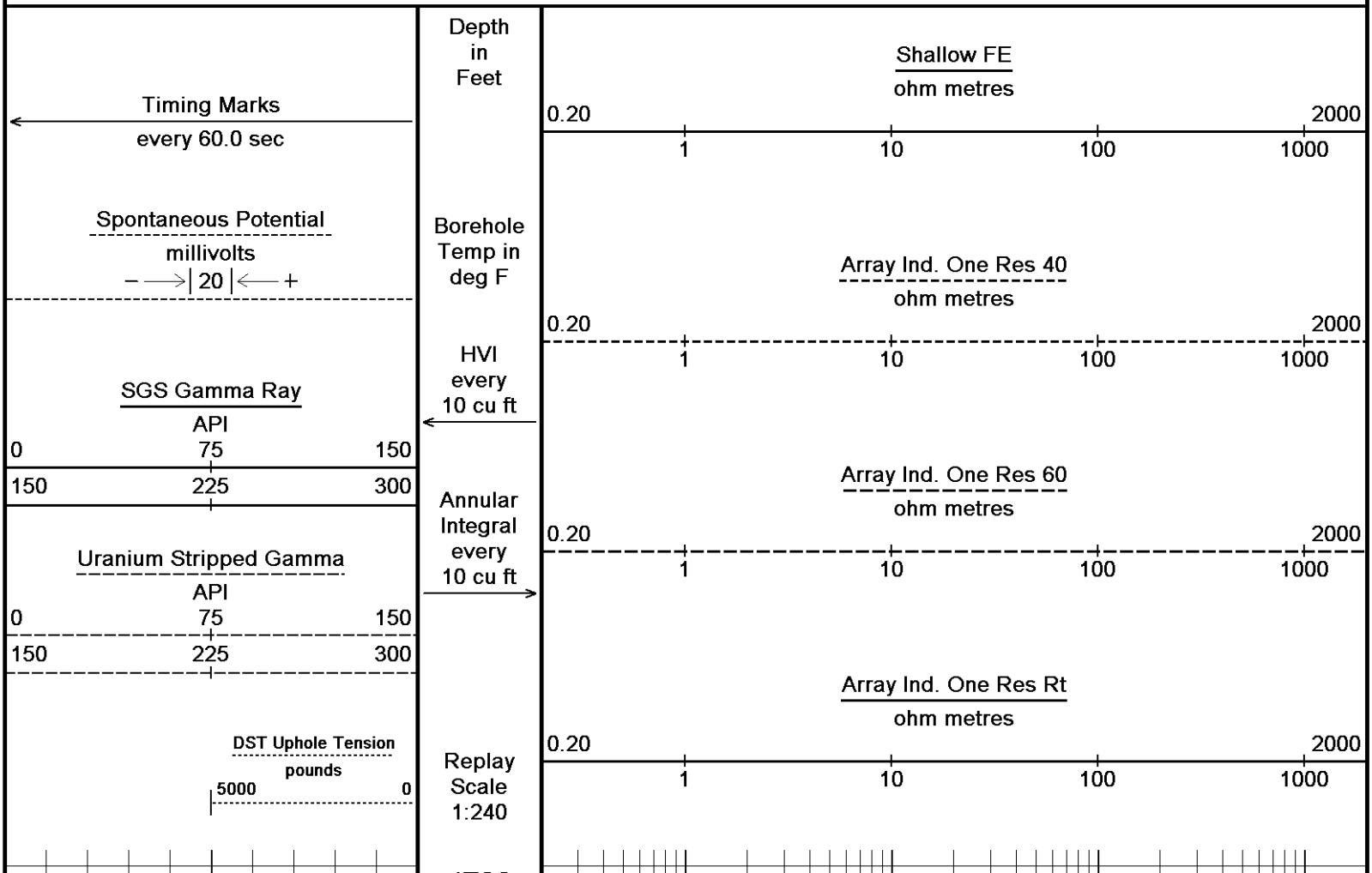


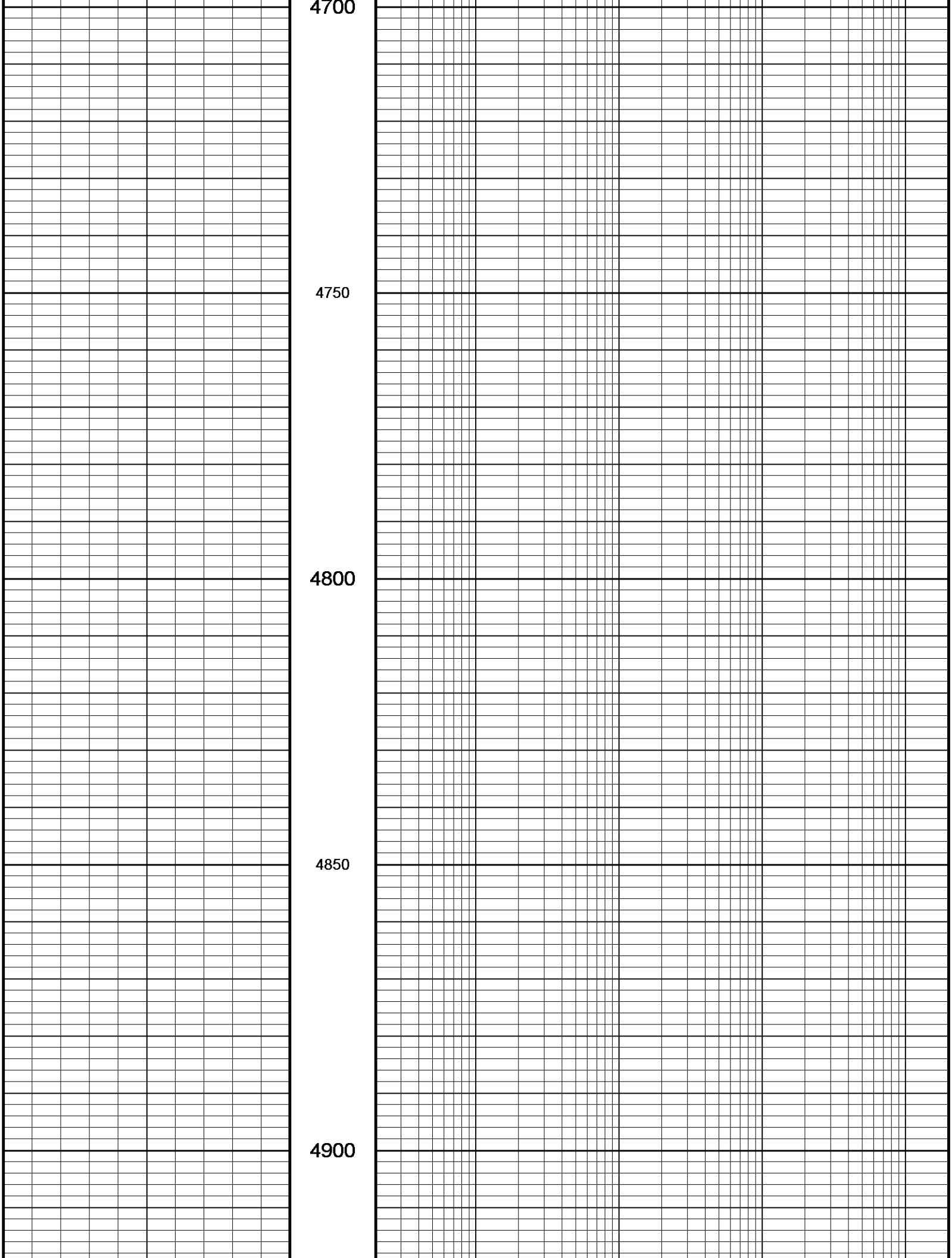
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 27-SEP-2013 05:29
Filename: C:\Minimus\DATA\PetroSantander Odd William...\PetroSantander Odd Williams #6 MAIN.dta — Recorded on 26-SEP-2013 21:18
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

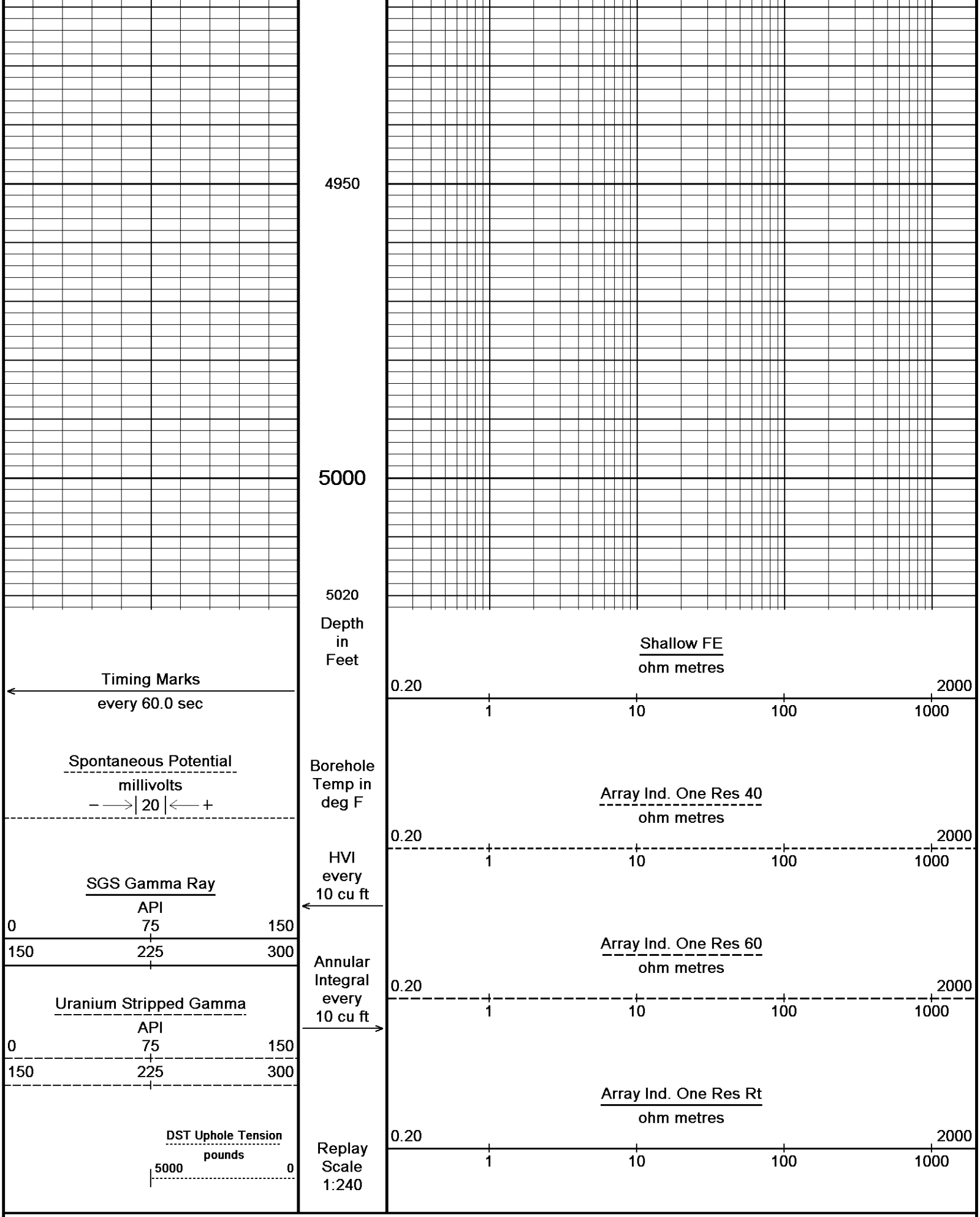
5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 27-SEP-2013 05:29
Filename: C:\Minimus\DATA\PetroSantander Odd Will...\PetroSantander Odd Williams #6 REPEAT.dta — Recorded on 26-SEP-2013 20:48
System Versions: Processed with 13.05.9583 Plotted with 13.05.9583




4700
4750
4800
4850
4900



Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 27-SEP-2013 05:29
Filename: C:\Minimus\DATA\PetroSantander Odd Will...\PetroSantander Odd Williams #6 REPEAT.dta
Recorded on 26-SEP-2013 20:48
System Versions: Processed with 13.05.9583 Plotted with 13.05.9583

REPEAT SECTION

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus\DATA\PetroSantander Odd Williams #6\PetroSantander Odd Williams #6 MAIN.dta

General Constants All 000

Last Edited on 26-SEP-2013,18:14

General Parameters		
Mud Resistivity	0.620	ohm-metres
Mud Resistivity Temperature	91.000	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	
SW/APOR Tool Source	0.000	

High Resolution Temperature Calibration MCG-D.K 469

Field Calibration on 18-AUG-2013,02:35

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	100.00	100.00

High Resolution Temperature Constants MCG-D.K 469

Last Edited on 18-AUG-2013,02:35

Pre-filter Length	11

FE Calibration MFE-B.J 353

Base Calibration on 15-AUG-2013 09:33
Field Check on 24-SEP-2013 02:28

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.1	126.8
Base Check		280.9
Field Check		281.0

FE Constants MFE-B.J 353

Last Edited on 24-SEP-2013,08:10

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 167

Base Calibration on 19-APR-2013,13:41
Field Check on 24-SEP-2013 02:26

Base Calibration

Test Loop Calibration	Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High
1	17.3	474.2	9.3	966.2
2	6.3	388.4	7.6	821.4
3	3.3	259.4	5.2	566.0
4	1.9	133.0	2.6	279.2

Array Temperature 76.8 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High

1	0.0	0.0	12.9	3838.7	
2	0.0	0.0	29.6	3476.4	
3	0.0	0.0	29.1	3052.5	
4	0.0	0.0	19.8	2081.2	
Deep			18.6	2048.5	
Medium			42.2	3990.7	
Shallow			42.9	5053.5	
Array Temperature		0.0		71.8	Deg F

Induction Constants MAI-A.A 167

Last Edited on 26-SEP-2013,21:05

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	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	0.0020	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 64

Base Calibration on 15-AUG-2013 14:54
Field Calibration on 24-SEP-2013 02:31

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16560	3.99
2	24992	5.98
3	32880	7.97
4	41184	9.86
5	50688	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.83	5.98

Spectral Gamma Calibration SGS-E.J 150

Base Calibration on 19-APR-2013,17:21
Field Calibration on 19-APR-2013,17:21

Base Calibration

Potassium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	79.9	23.1	2.2	0.8	1.4

Calibrator (Gross)	204.7	109.8	22.0	0.9	1.3
Calibrator (Net)	124.8	86.7	19.7	0.2	-0.1

	K %	U ppm	Th ppm
Concentrations	5.8	0.0	0.0

Uranium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	79.9	23.1	2.2	0.8	1.4
Calibrator (Gross)	480.7	164.8	14.5	7.2	4.1
Calibrator (Net)	400.8	141.7	12.3	6.5	2.7

	K %	U ppm	Th ppm
Concentrations	0.0	9.8	0.0

Thorium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	79.9	23.1	2.2	0.8	1.4
Calibrator (Gross)	397.7	137.8	11.3	6.3	15.0
Calibrator (Net)	317.8	114.7	9.0	5.6	13.6

	K %	U ppm	Th ppm
Concentrations	0.0	0.0	44.3

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	79.9	23.1	2.2	0.8	1.4
Calibrator (Gross)	914.0	361.7	43.2	12.9	17.8
Calibrator (Net)	834.0	338.5	41.0	12.1	16.4

Field Calibration

Gamma Ray

	Measured	Calibrated (API)
Background	112	23
Calibrator (Gross)	1354	273
Calibrator (Net)	1242	250

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	79.9	23.1	2.2	0.8	1.4
Calibrator (Gross)	914.0	361.7	43.2	12.9	17.8
Calibrator (Net)	834.0	338.5	41.0	12.1	16.4

Spectral Gamma Constants SGS-E.J 150

Last Edited on 03-SEP-2013,10:47

Background Calibrator Number	0	
Mixture Calibrator Number	147-1	
Potassium Calibrator Number	148-1	
Uranium Calibrator Number	150-1	
Thorium Calibrator Number	149-1	
Mud Density	1.09	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

DOWNHOLE EQUIPMENT

C:\Minimus\DATA\PetroSantander Odd Williams #6\PetroSantander Odd Williams #6 MAIN.dta

3/8" Triple Cone Cable Head (MCB C A)
MCB-C.A 5 LG: 1.58 ft WT: 15.4 lb OD: 2.24 in

Compact Comms Gamma
MCG-D.K 469 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

63.17 ft GRGC - Gamma Ray
60.26 ft CGXT - MCG External Temperature

Spectral Gamma Ray Sub
53.70 ft GCGR - Uranium Stripped Gamma

Spectral Gamma Ray Sub
SGS-E.J 150 LG: 7.78 ft WT: 105.8 lb OD: 3.54 in

53.70 ft GRSG - SGS Gamma Ray

Compact Micro-log
MML-A 3 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

45.76 ft MINV - Micro-inverse
45.76 ft MNRL - Micro-normal
46.76 ft MLTC - MML Caliper

Compact Neutron
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

40.97 ft NPRL - Limestone Neutron Por.

Compact Density/Caliper
MPD-B 64 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

33.73 ft AVOL - Annular Volume
33.73 ft HVOL - Hole Volume
33.73 ft CLDC - Density Caliper
31.80 ft DEN - Compensated Density
31.80 ft DCOR - Density Correction
31.80 ft DPRL - Limestone Density Por.
31.74 ft PDPE - PE

Compact Focussed Electric
MFE-B.J 353 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

26.24 ft FEFE - Shallow FE

Compact Sonic
MSS-C.K 330 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

12.96 ft DT35 - 3-5' Compensated Sonic
12.96 ft SPRL - Wyllie Lime. Sonic Por.

Compact Induction
MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

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.

Total Length: 70.03 ft Weight: 577.6 lb

COMPANY	PETROSANTANDER (USA) INC.
WELL	ODD WILLIAMS #6
FIELD	CHRISTABELLE
PROVINCE/COUNTY	KEARNY
COUNTRY/STATE	UNITED STATES / KANSAS

Elevation Kelly Bushing	4004.00	feet	First Reading	4098.00	feet
Elevation Drill Floor	4002.00	feet	Depth Driller	5000.00	feet
Elevation Ground Level	3092.00	feet	Depth Logger	5001.00	feet

Weatherford®

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

COMPANY	
WELL	
FIELD	
PROVINCE/C	
COUNTRY/ST	
LOCATION	
SEC	
12	
API Number	
Permit Number	
Permanent Da	
Log Measured	
Drilling Measu	
Date	
Run Number	
Service Order	
Depth Driller	
Depth Logger	
First Reading	
Last Reading	
Casing Driller	
Casing Logge	
Bit Size	
Hole Fluid Typ	
Density/Visco	
PH / Fluid Loss	
Sample Sourc	
Rm @ Measur	
Rmf @ Measu	
Rmc @ Measu	
Source Rmf / F	
Rm @ BHT	
Time Since Cir	
Max Recorded	
Equipment / Bi	
Recorded By	
Witnessed By	
JOB#	

...therford

ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

PETROSANTANDER (USA) INC.
ODD WILLIAMS #6
CHRISTABELLE
COUNTY: KEARNY
STATE: UNITED STATES / KANSAS
140' FSL & 1120' FWL
SE SE SW SW

15-093-21897	RGE 35W	Other Services: MPD/MDN, MML, MSS, SGS

Elevations: KB 4004.00 feet, DF 4002.00, GL 3092.00

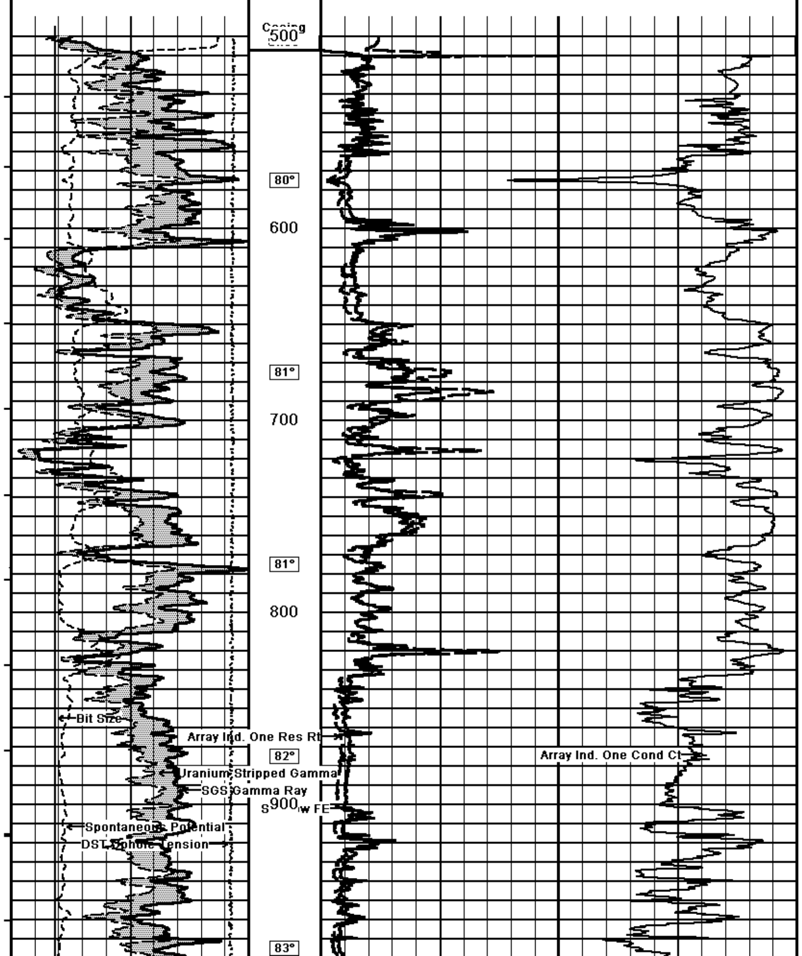
Datum G.L., Elevation 3092 feet
From KB
Measured From K.B @ 12 FEET

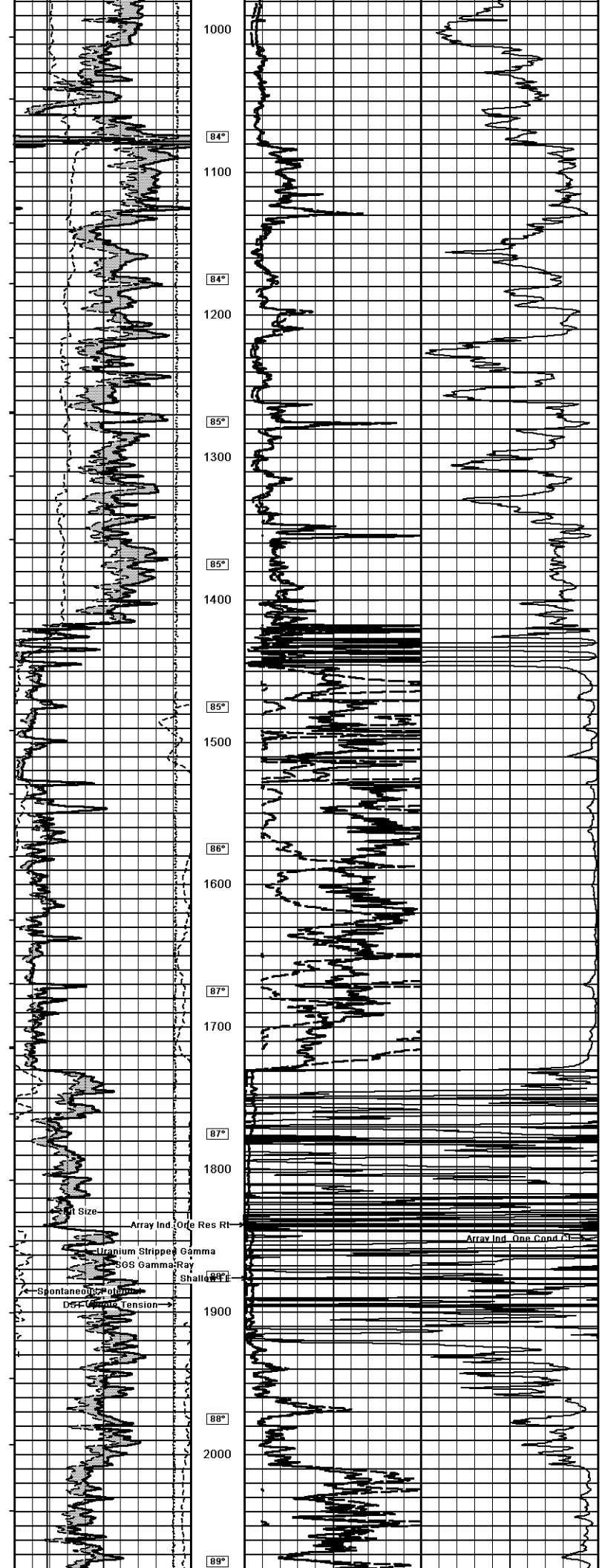
26-SEP-2013		
ONE		
3541089		
5000.00	feet	
5001.00	feet	
4098.00	feet	
507.00	feet	
504.00	feet	
507.00	feet	
7.880	inches	
CHEMICAL		
7.00 lb/USg	42.00 CP	
42.00	10.60 ml/30Min	
MUDPIT		
1.24 @ 71.0	ohm-m	
0.99 @ 71.0	ohm-m	
1.49 @ 71.0	ohm-m	
CALC	CALC	
0.80 @ 110.0	ohm-m	
5 HOURS		
110.00	deg F	
13096	LIB	
W. STAMBAUGH		JEFF QUIMBY
LB13-270		

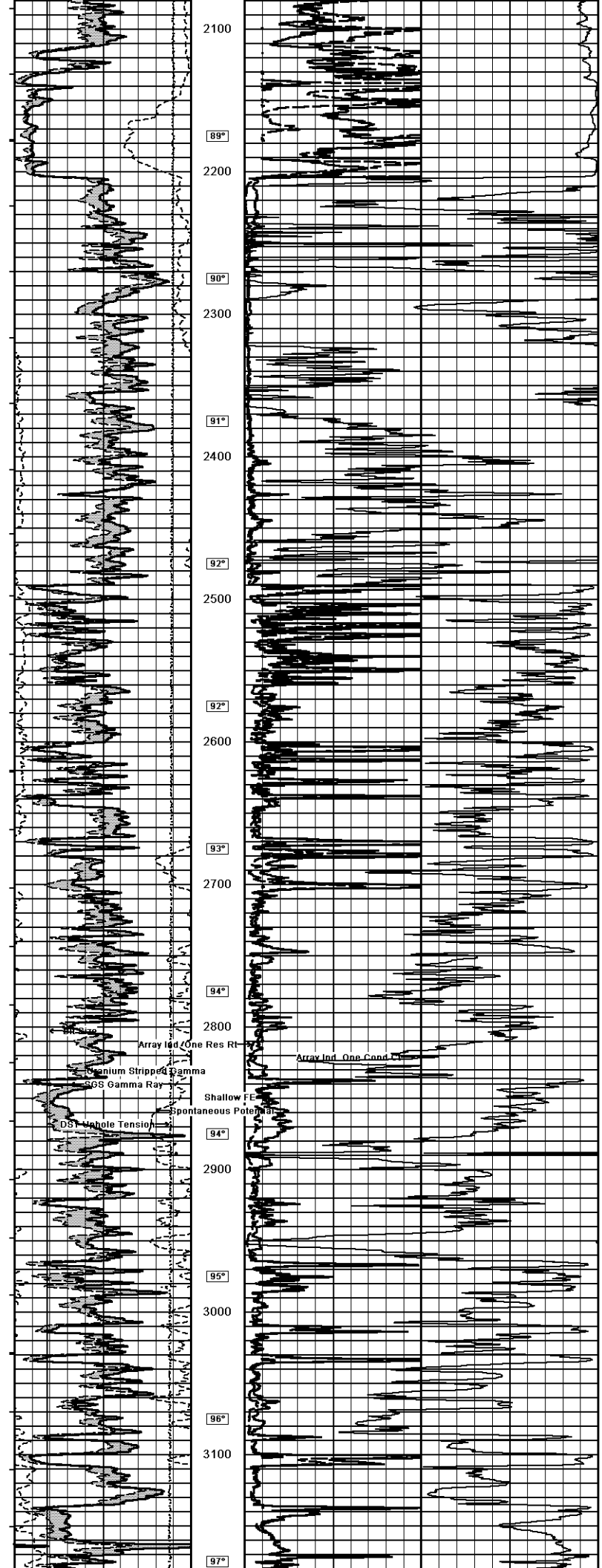
1 INCH MAIN

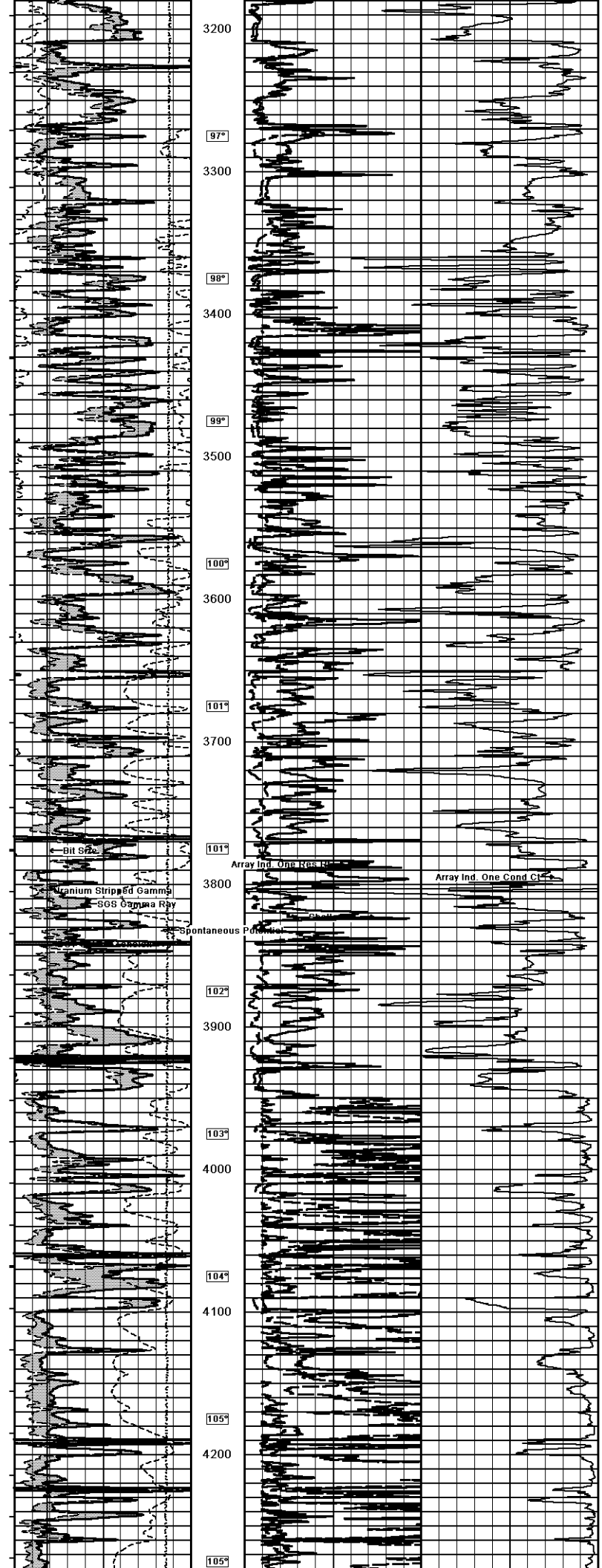
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 27-SEP-2013 05:29
Filename: C:\Minimus\DATA\PetroSantander Odd Williams #6\PetroSantander Odd Williams #6 MAIN.dta — Recorded on 26-SEP-2013 21:18
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

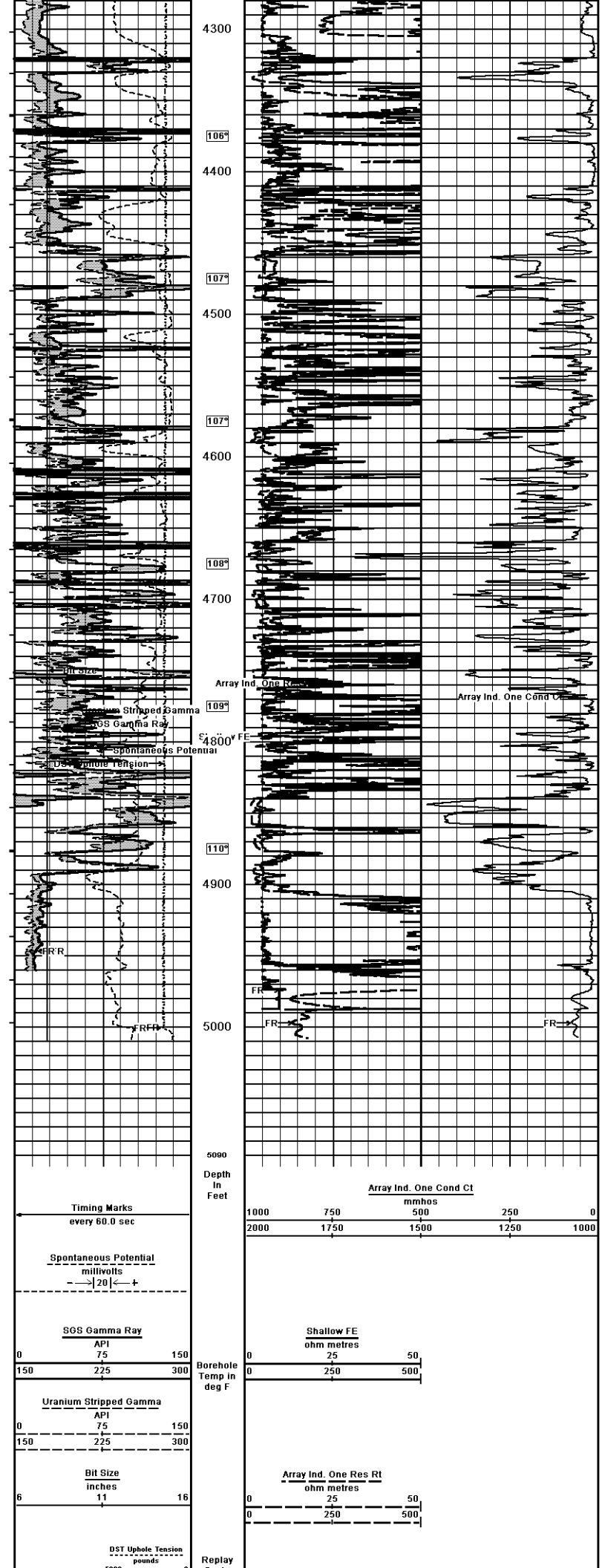
Timing Marks: every 60.0 sec
Depth In Feet
Array Ind. One Cond Ct (mmhos): 1000 – 750 – 500 – 250 – 0; 2000 – 1750 – 1500 – 1250 – 1000
Spontaneous Potential (millivolts): − 20 +
SGS Gamma Ray (API): 0 – 75 – 150; 150 – 225 – 300
Shallow FE (ohm metres): 0 – 25 – 50; 0 – 250 – 500
Borehole Temp in deg F
Uranium Stripped Gamma (API): 0 – 75 – 150; 150 – 225 – 300
Bit Size (inches): 6 – 11 – 16
Array Ind. One Res Rt (ohm metres): 0 – 25 – 50; 0 – 250 – 500
DST Uphole Tension (pounds): 5000 – 0
Replay Scale 1:600




1000
84°
1100
84°
1200
85°
1300
85°
1400
85°
1500
86°
1600
87°
1700
87°
1800
Cal Size
Array Ind Orig Res Rt
Uranium Stripped Gamma
SGS Gamma Ray
Shallow Cond
Spontaneous Potential
DSI Cable Tension
1900
88°
2000
89°
Array Ind One Cond Rt


2100
89°
2200
90°
2300
91°
2400
92°
2500
92°
2600
93°
2700
94°
2800
Array Ind /One Res Rt
Array Ind One Cond
Uranium Stripped Gamma
SGS Gamma Ray
Shallow FE
Spontaneous Potential
DST Whole Tension
94°
2900
95°
3000
96°
3100
97°


3200
97°
3300
98°
3400
99°
3500
100°
3600
101°
3700
101°
Bit Size
Array Ind. One Res RT
Array Ind. One Cond Ct
3800
Uranium Stripped Gamma
SGS Gamma Ray
Spontaneous Potential
102°
3900
103°
4000
104°
4100
105°
4200
105°


4300
106"
4400
107"
4500
107"
4600
108"
4700
Bit Size
Array Ind. One R
Array Ind. One Cond Ct
109"
Uranium Stripped Gamma
SGS Gamma Ray
4800
Spontaneous Potential
DST Uphole Tension
110"
4900
FR
FR
FR
FR
FR
5000
5090
Depth In Feet
Timing Marks every 60.0 sec
Spontaneous Potential millivolts
SGS Gamma Ray API
Uranium Stripped Gamma API
Bit Size inches
DST Uphole Tension pounds
Replay
Array Ind. One Cond Ct mmhos
Shallow FE ohm metres
Borehole Temp in deg F
Array Ind. One Res Rt ohm metres

Scale
1:600

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ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG