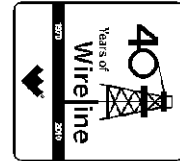




**Weatherford**<sup>®</sup>

**ARRAY INDUCTION  
SHALLOW FOCUSSED  
ELECTRIC LOG**

COMPANY **JO-ALLYN OIL CO., INC.**  
WELL **HOWELL # 1-10**  
FIELD **SNAKE CREEK WEST**  
PROVINCE/COUNTY **CLARK**  
COUNTRY/STATE **U.S.A. / KANSAS**  
LOCATION **SW SE SE**  
**330' FSL & 990' FEL**



SEC	TWP	RGE	Other Services
10	34S	22W	MPD/MDN
API Number	15-025-21535		MML
Permit Number			
Permanent Datum	G.L., Elevation 1852 feet		
Log Measured From	KB		
Drilling Measured From	K.B. @ 7 FEET		
Date	21-DEC-2011		

Run Number	ONE	Elevations:	feet
Depth Driller	5600.00	KB	1859.00
Depth Logger	5599.00	DF	1857.00
First Reading	5596.00	GL	1852.00
Last Reading	754.00		
Casing Driller	750.00		
Casing Logger	754.00		
Bit Size	7.875		

Hole Fluid Type	CHEMICAL	
Density / Viscosity	9.30 lb/USg	50.00 CP
PH / Fluid Loss	11.00	10.00 ml/30Min
Sample Source	FLOWLINE	
Rm @ Measured Temp	1.30 @ 65.0	ohm-m
Rmf @ Measured Temp	1.04 @ 65.0	ohm-m
Rmc @ Measured Temp	1.56 @ 65.0	ohm-m
Source Rmf / Rmc	CALC	CALC
Rm @ BHT	0.75 @ 115.0	ohm-m
Time Since Circulation	5 HOURS	
Max Recorded Temp	115.00	deg F
Equipment Name	COMPACT	
Equipment / Base	13057	LIB
Recorded By	A. GIAMBALVO	
Witnessed By	ALLEN BARBY	
S.O. / JOB #	3531240	LB11-321

**BOREHOLE RECORD**

Last Edited: 22-DEC-2011 04:40

Bit Size inches	Depth From feet	Depth To feet
7.875	754.00	5599.00

**CASING RECORD**

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	7.00	754.00	24.00

**REMARKS**

Tools Used: MPD, MCG, MDN, MAI, MFE, MML  
 Hardware: MPD: 8 inch profile plate used. MDN: Dual Bowspring used.  
 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.  
 Annular volume with inch production casing = 325 cu. ft.  
 Service order #3531240  
 Rig: Landmark # 2  
 Calipers stuck at surface casing and had to be closed to enter, company man requested we not repeat log section near the shoe.  
 Engineer: A. Giambalvo  
 Operator(s): B. Reeves

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 PASS

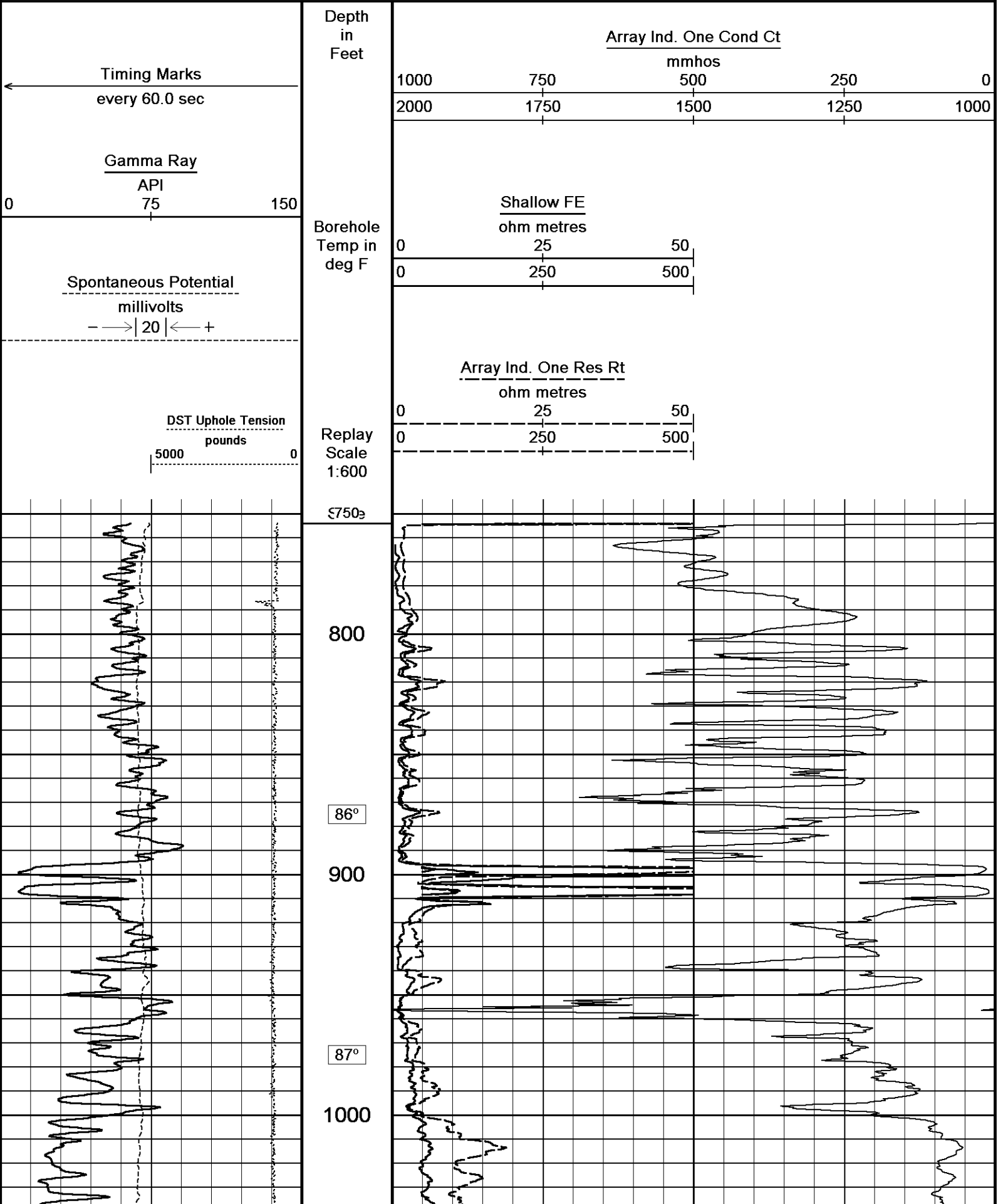
Depth Based Data - Maximum Sampling Increment 10.0cm

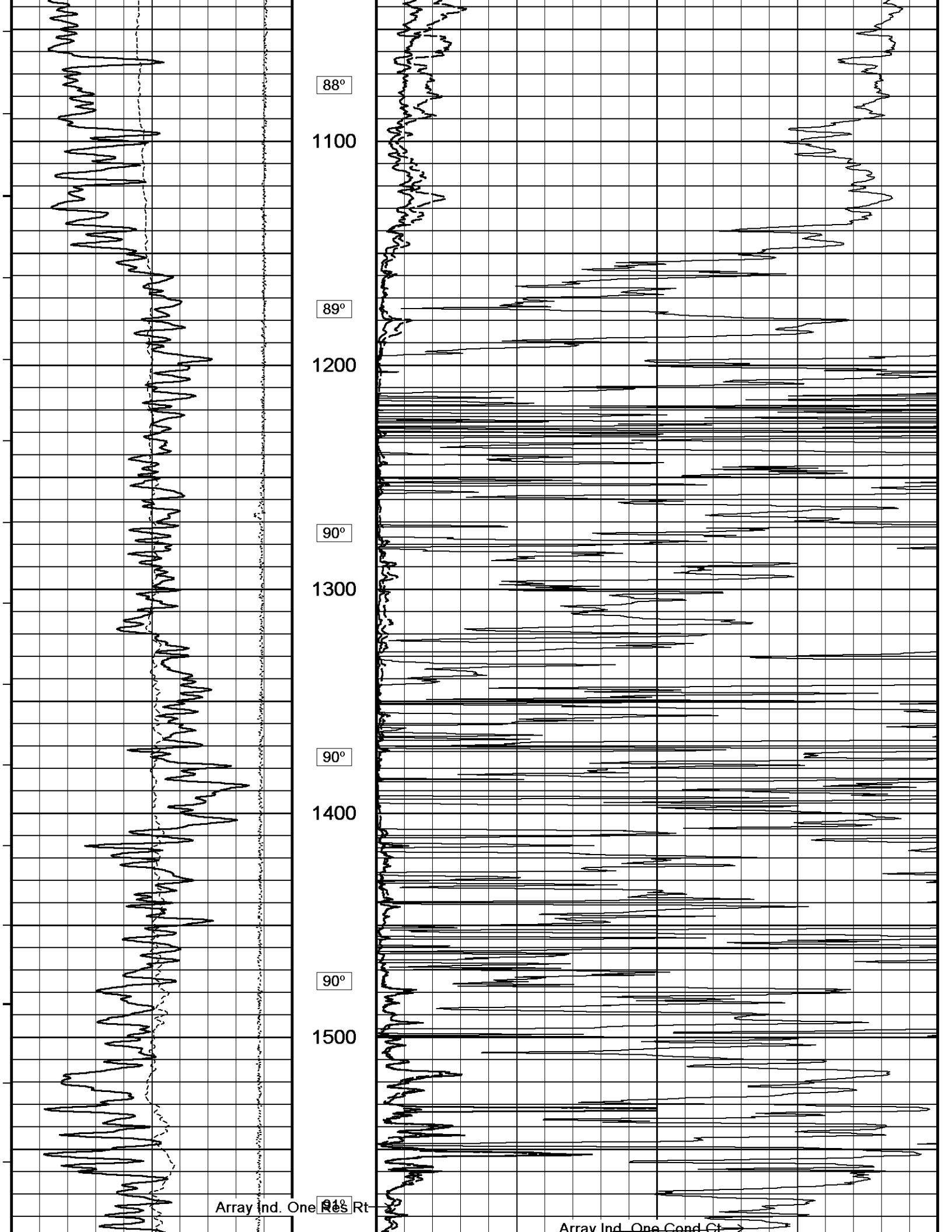
Plotted on 22-DEC-2011 04:42

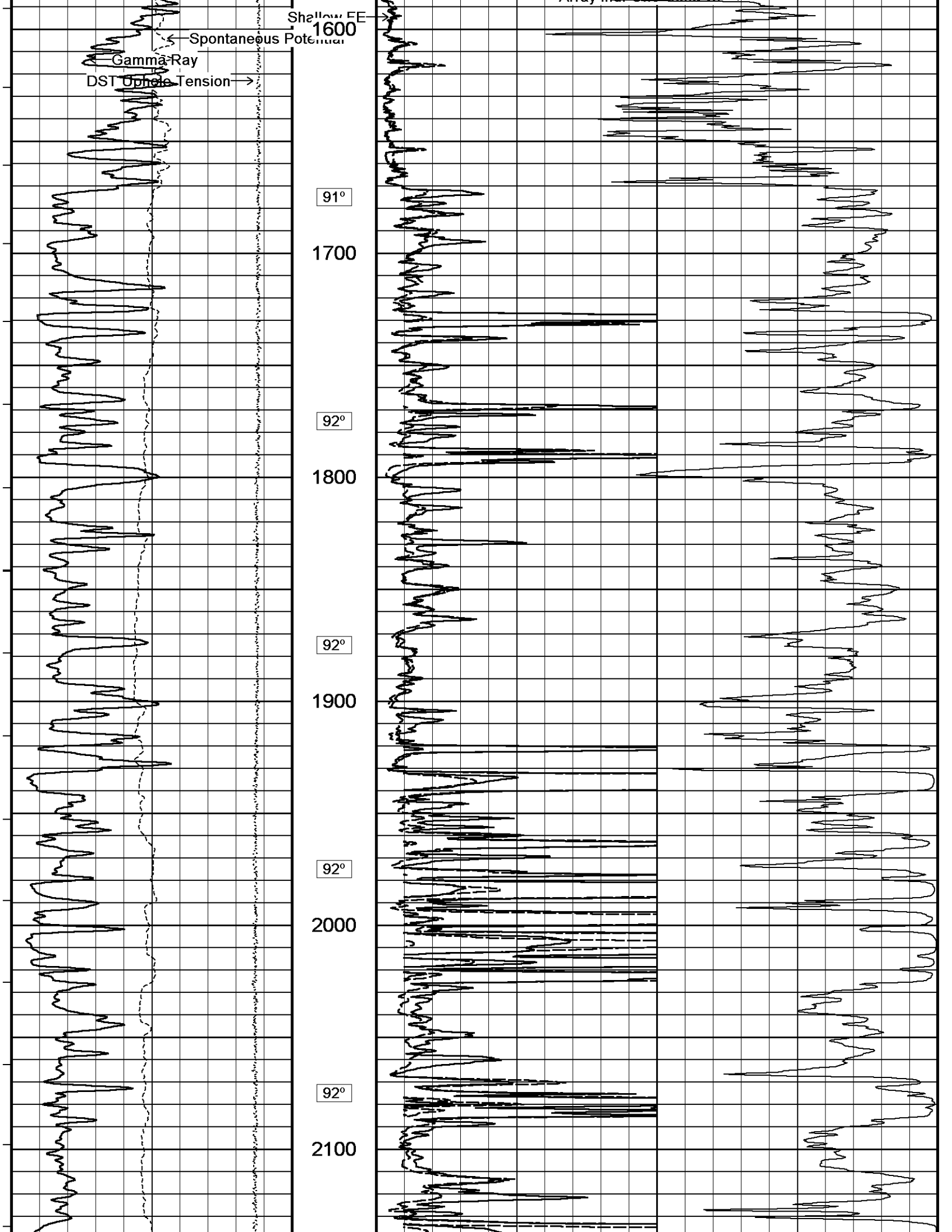
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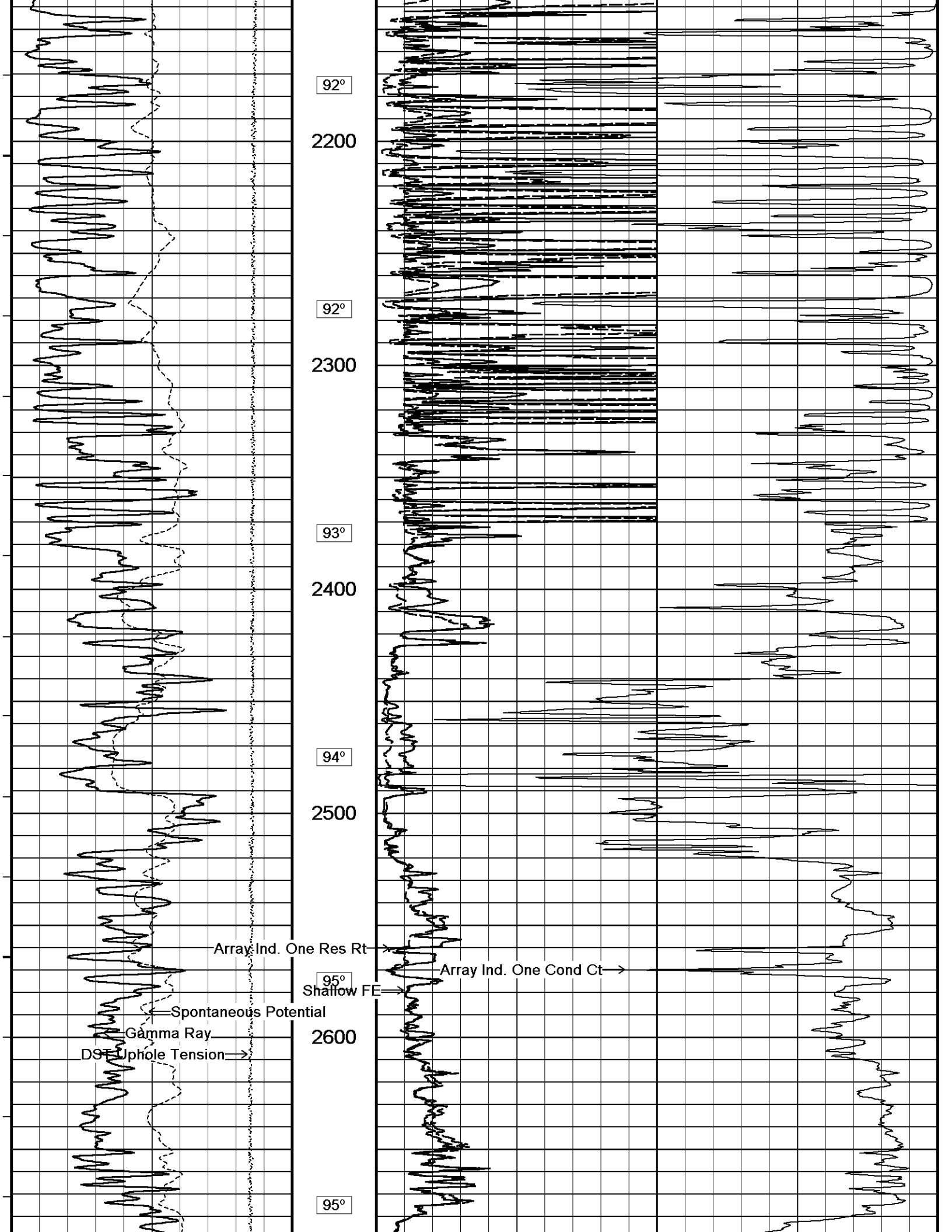
Recorded on 22-DEC-2011 01:56

System Versions: Logged with 11.03.4044 Plotted with 11.03.4044









92°

2200

92°

2300

93°

2400

94°

2500

Array Ind. One Res Rt

95°

Shallow FE

Spontaneous Potential

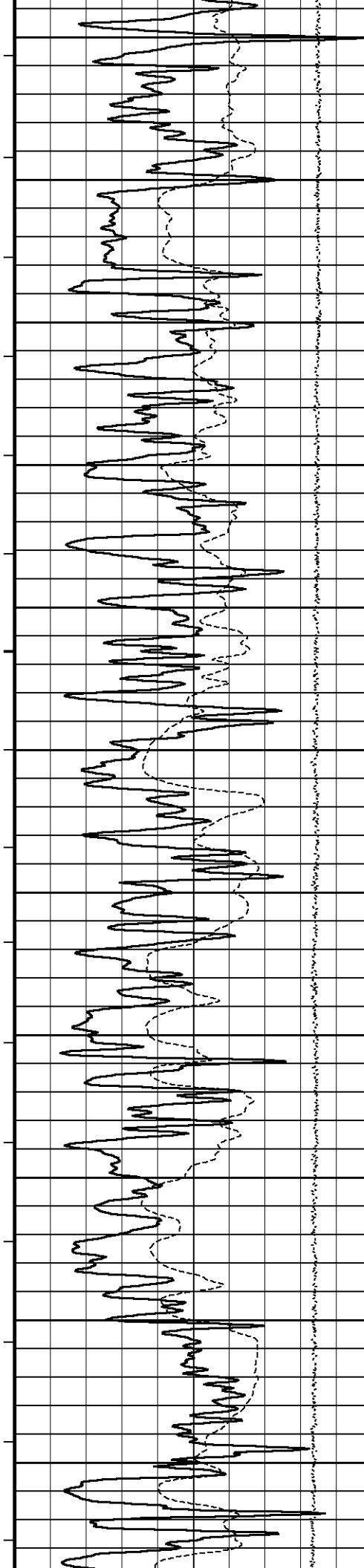
Gamma Ray

D91 Uphole Tension

2600

95°

Array Ind. One Cond Ct



2700

96°

2800

97°

2900

97°

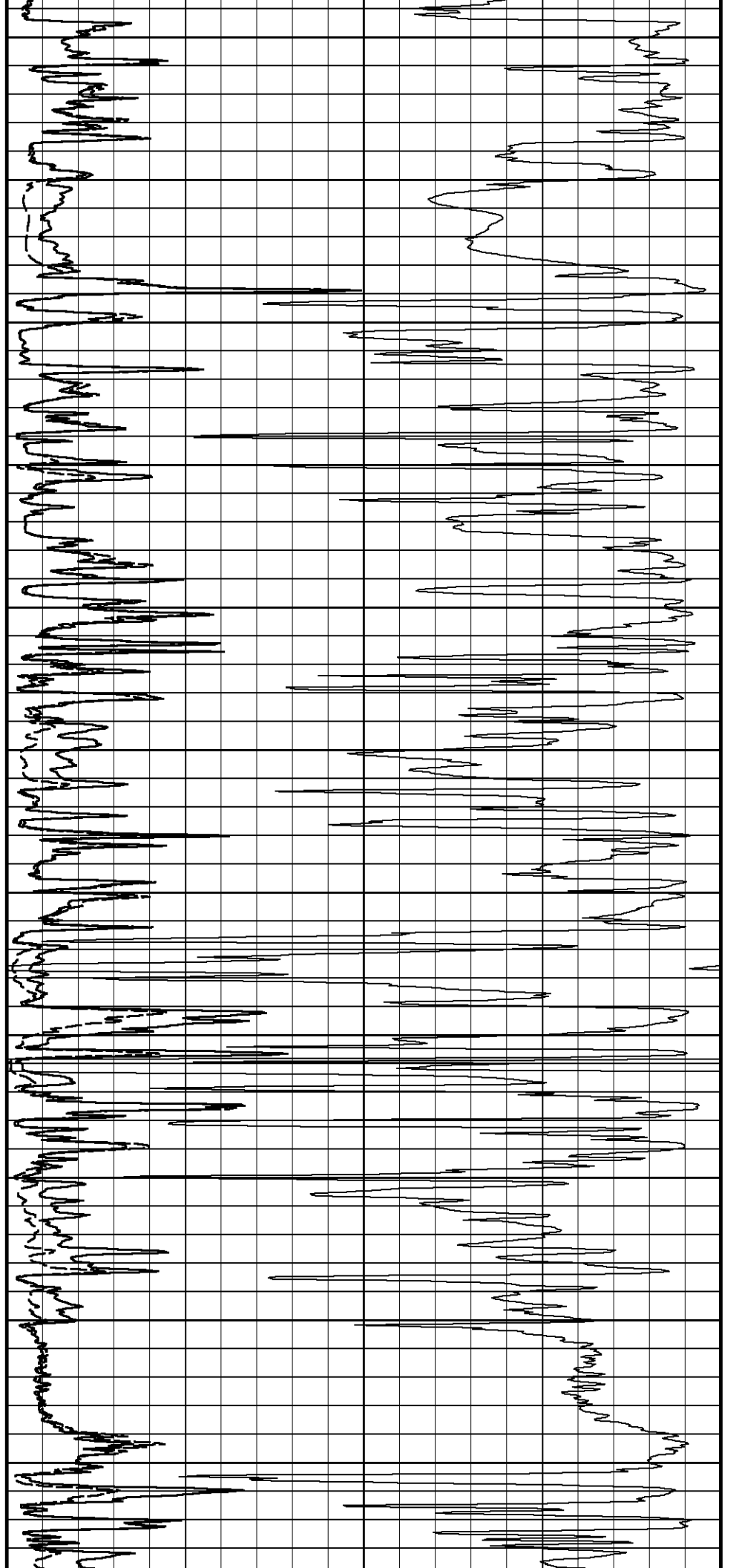
3000

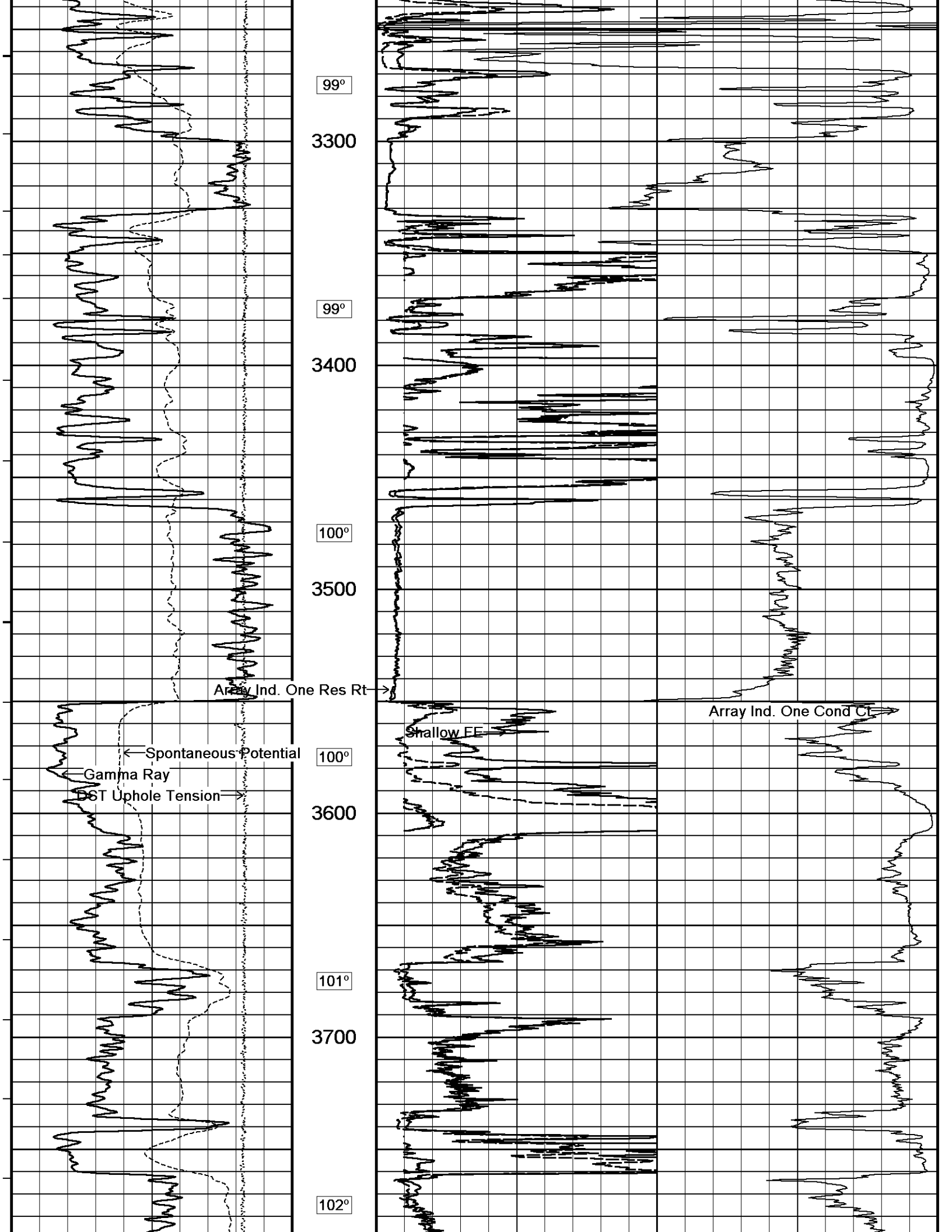
97°

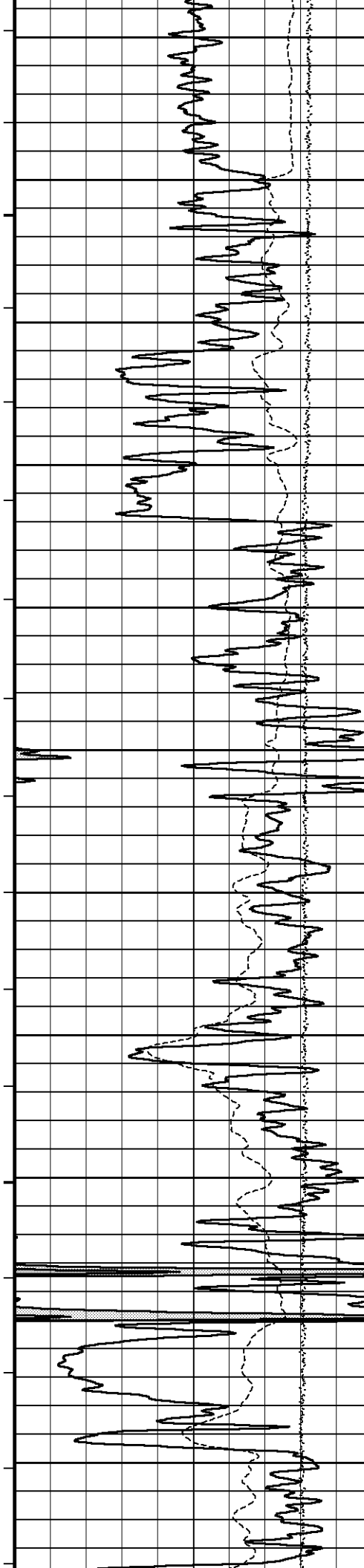
3100

98°

3200







3800

102°

3900

103°

4000

103°

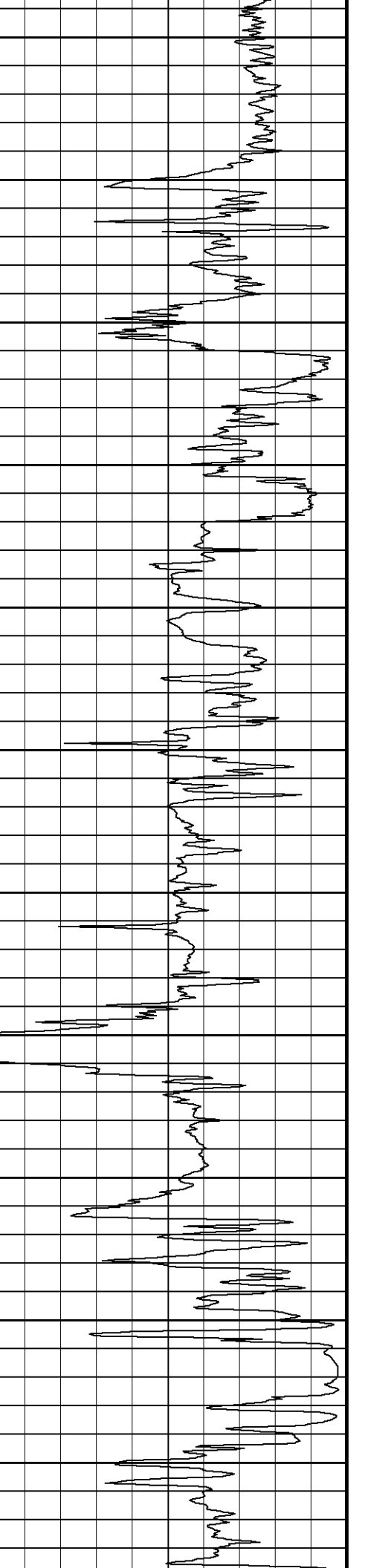
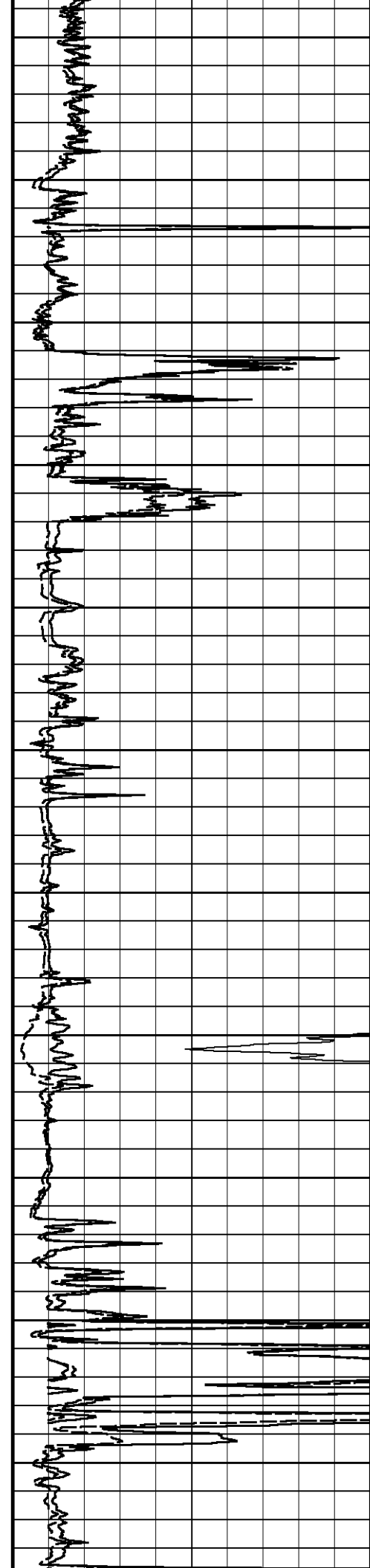
4100

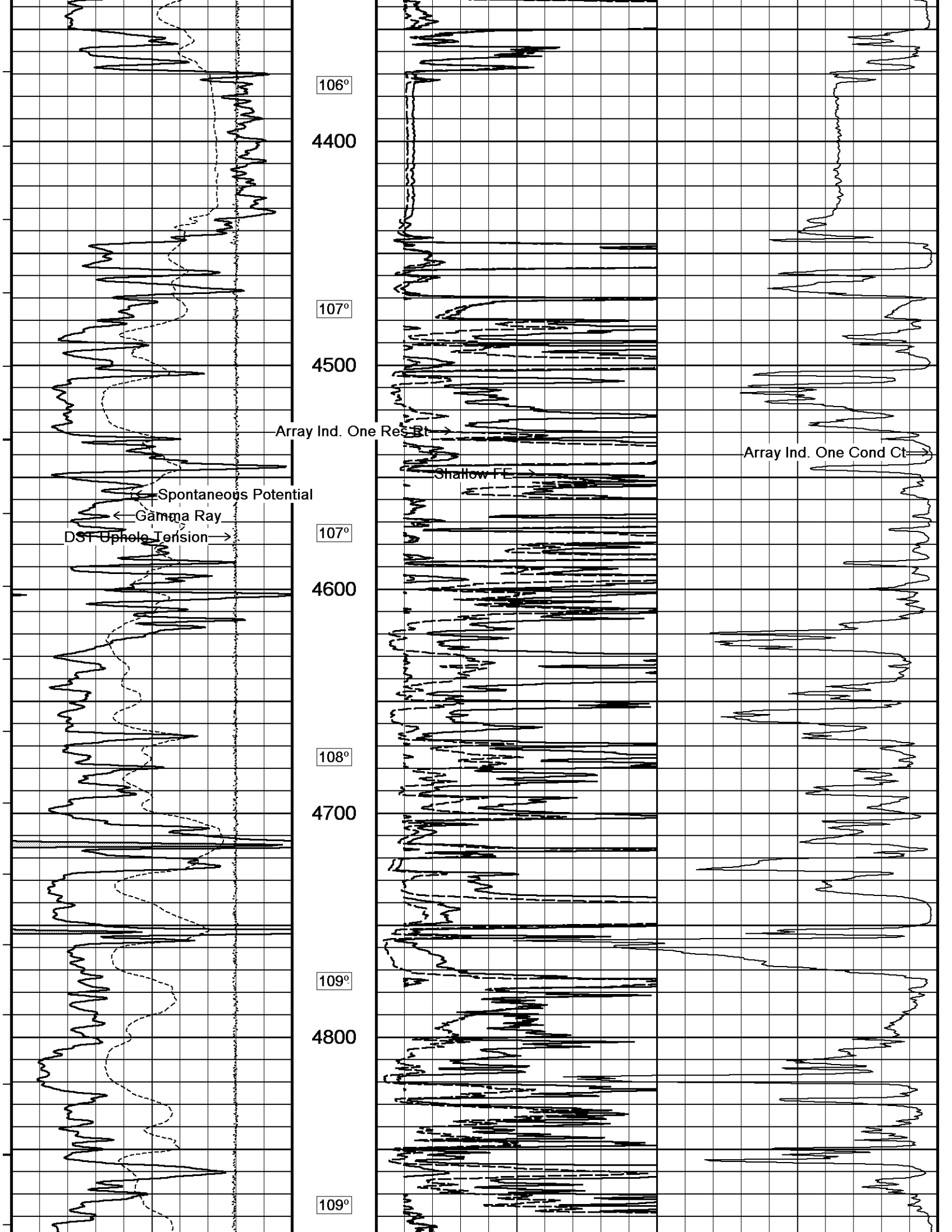
104°

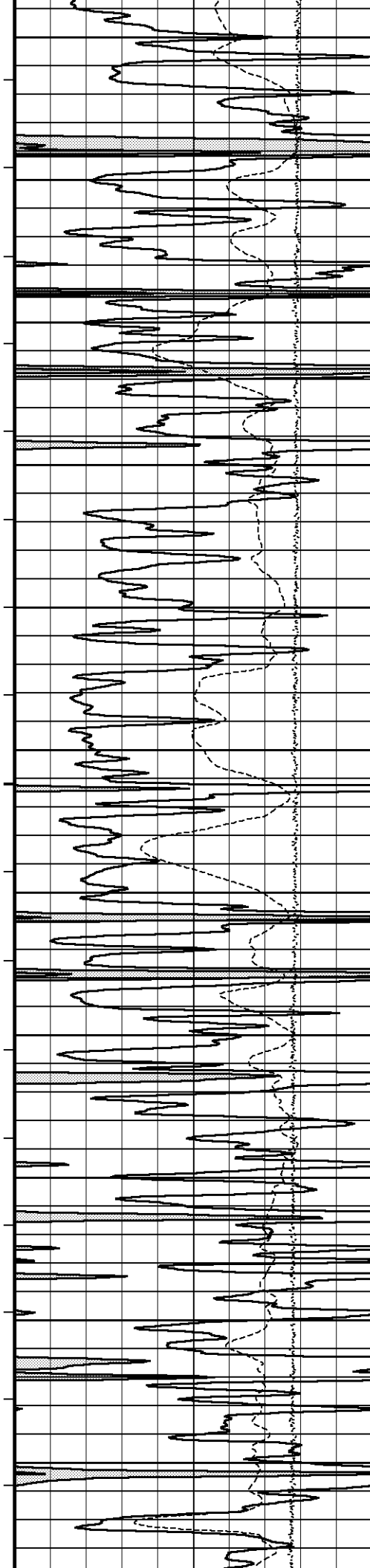
4200

105°

4300







4900

110°

5000

111°

5100

112°

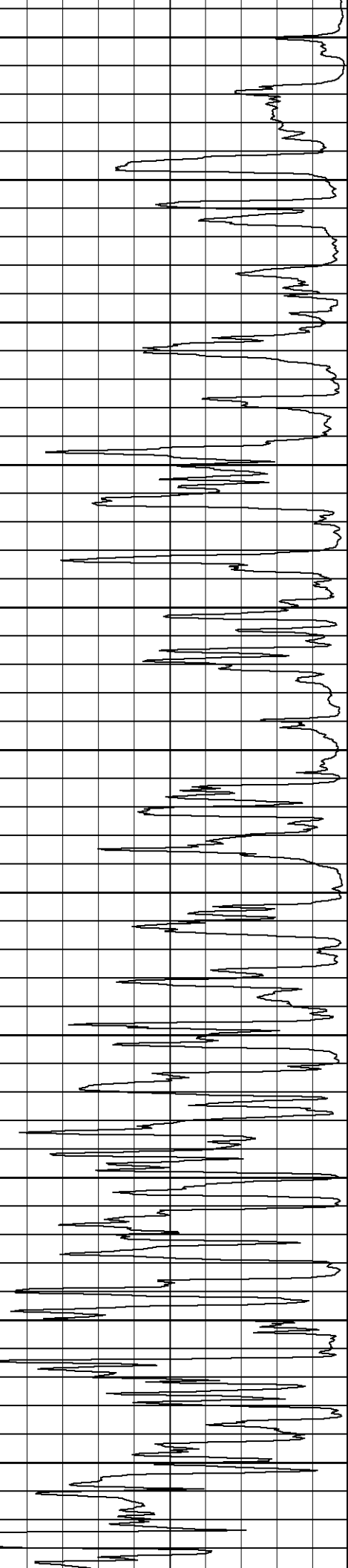
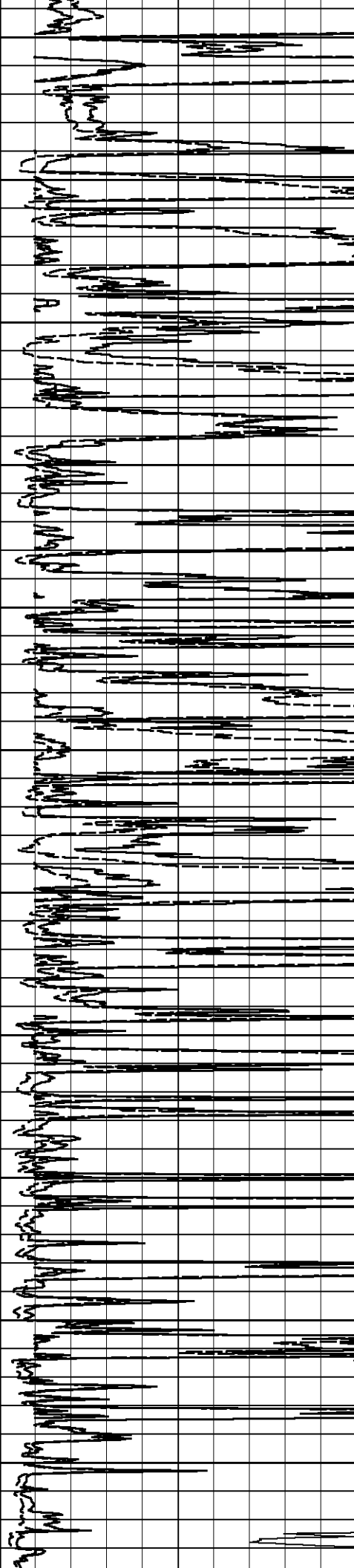
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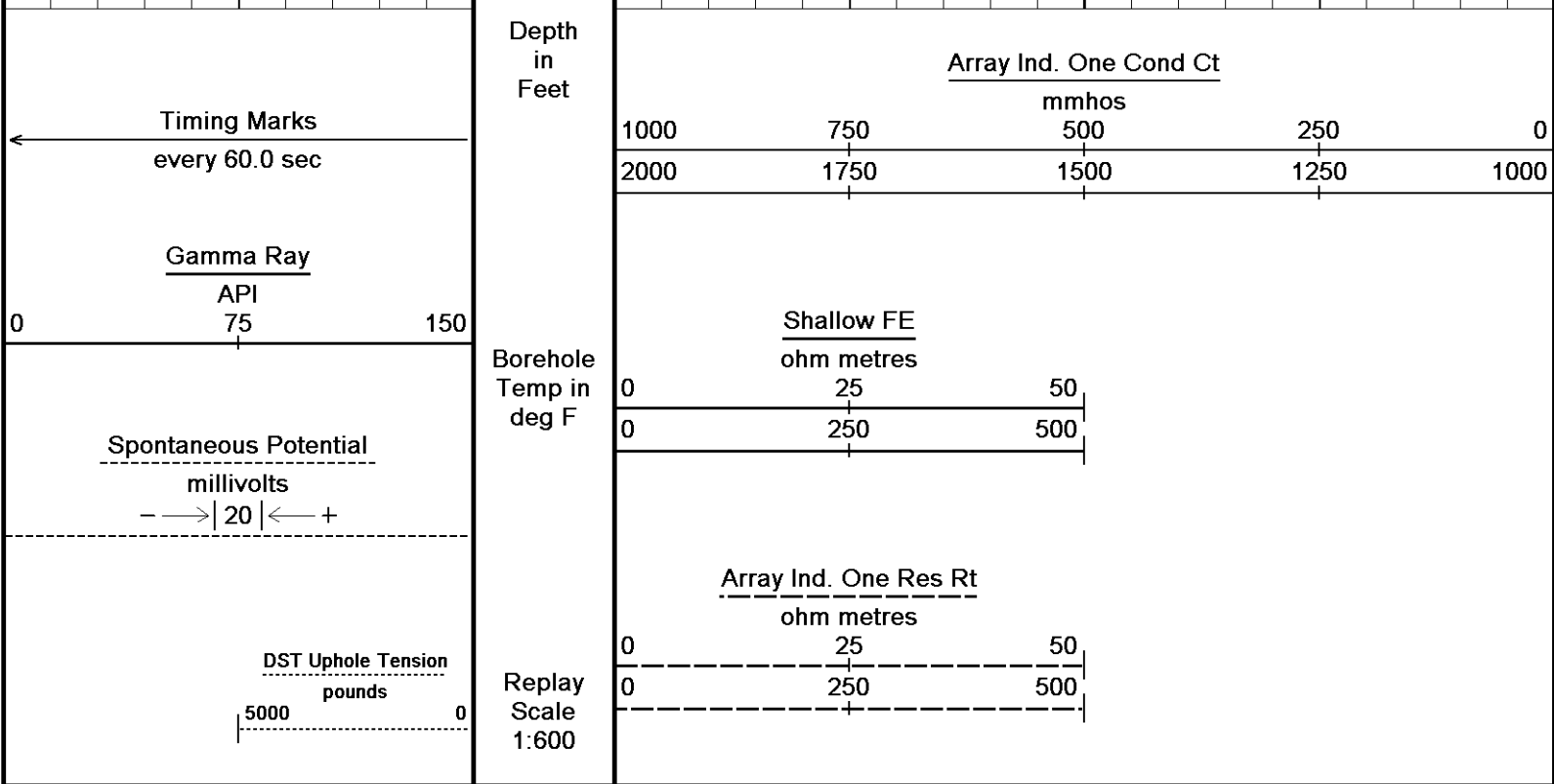
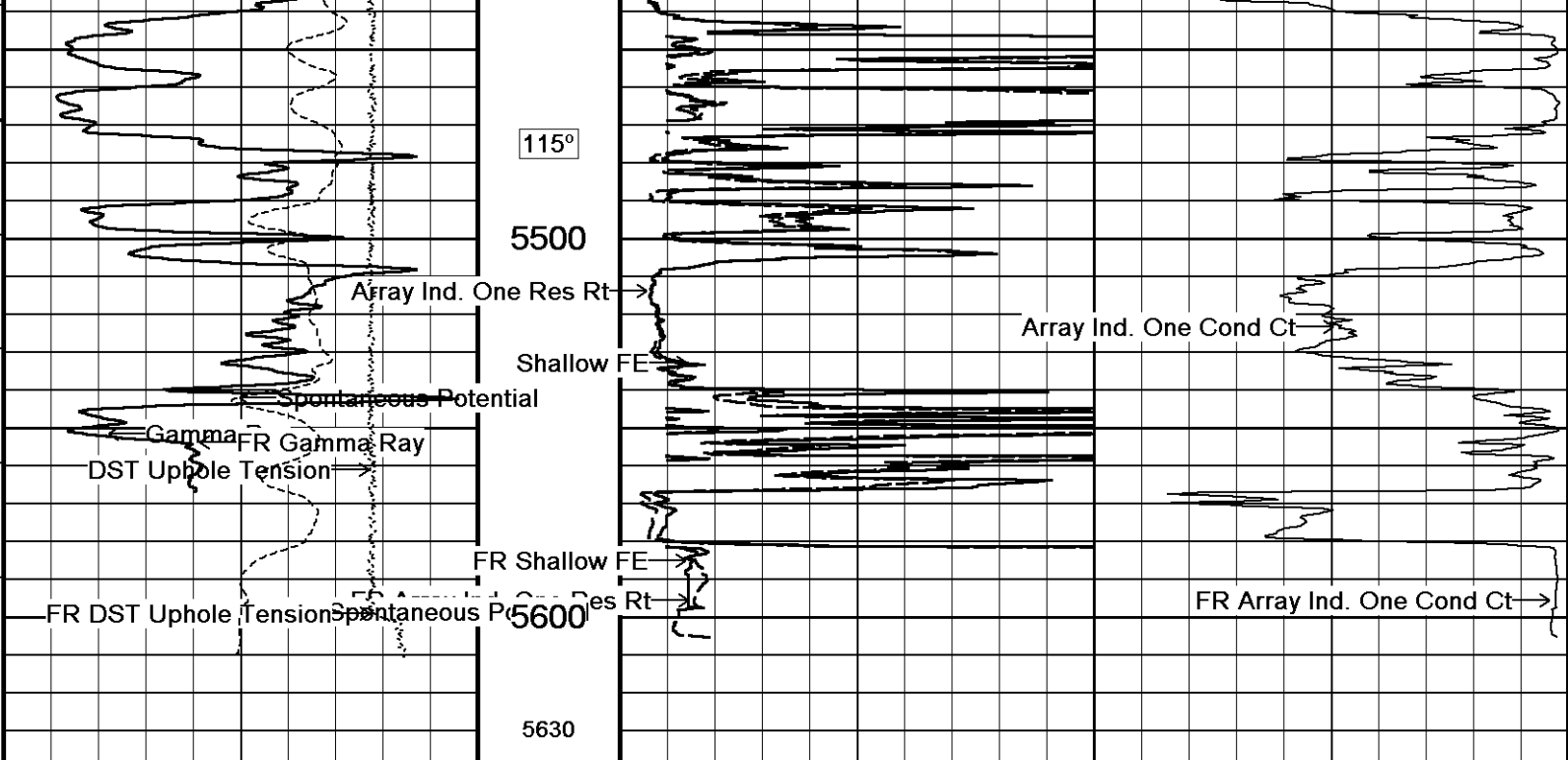
112°

5300

113°

5400





Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 22-DEC-2011 04:42

Filename: C:\Minimus 11.03.4044\Data\Jo-Allyn Howell # 1-10\Jo-Allyn Howell # 1-10\_003.dta

Recorded on 22-DEC-2011 01:56

System Versions: Logged with 11.03.4044 Plotted with 11.03.4044

↑ 2 INCH MAIN PASS ↑

↓ 5 INCH MAIN PASS ↓

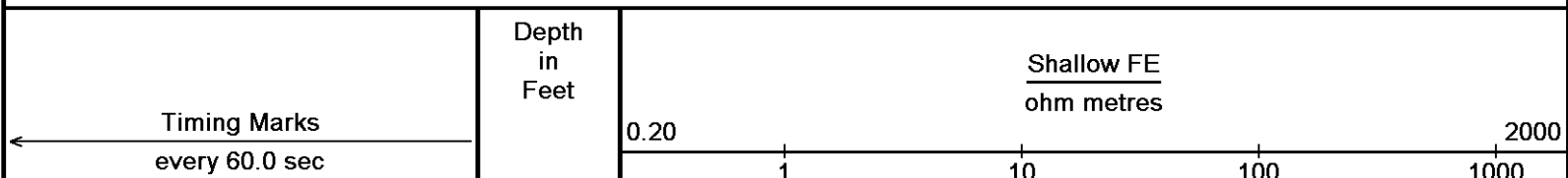
Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 22-DEC-2011 04:42

Filename: C:\Minimus 11.03.4044\Data\Jo-Allyn Howell # 1-10\Jo-Allyn Howell # 1-10\_003.dta

Recorded on 22-DEC-2011 01:56

System Versions: Logged with 11.03.4044 Plotted with 11.03.4044



Gamma Ray  
API  
0 75 150

Spontaneous Potential  
millivolts  
- - -> | 20 | <- - +

DST Uphole Tension  
pounds  
5000 0

Borehole  
Temp in  
deg F

Replay  
Scale  
1:240

752<sub>3</sub>

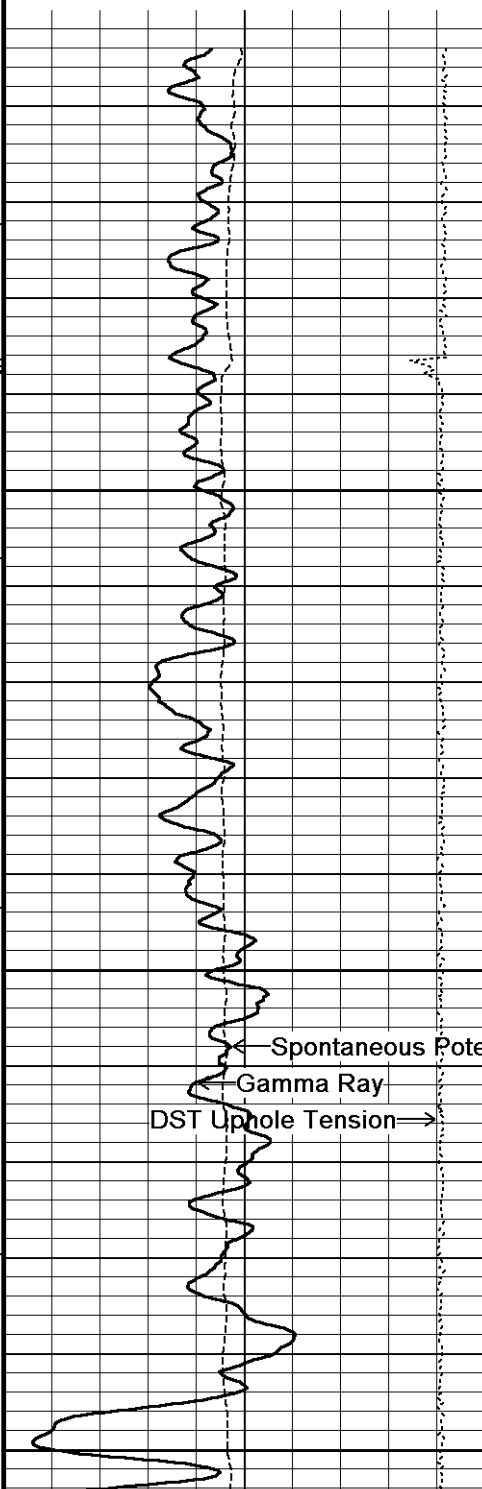
800

86°

850

86°

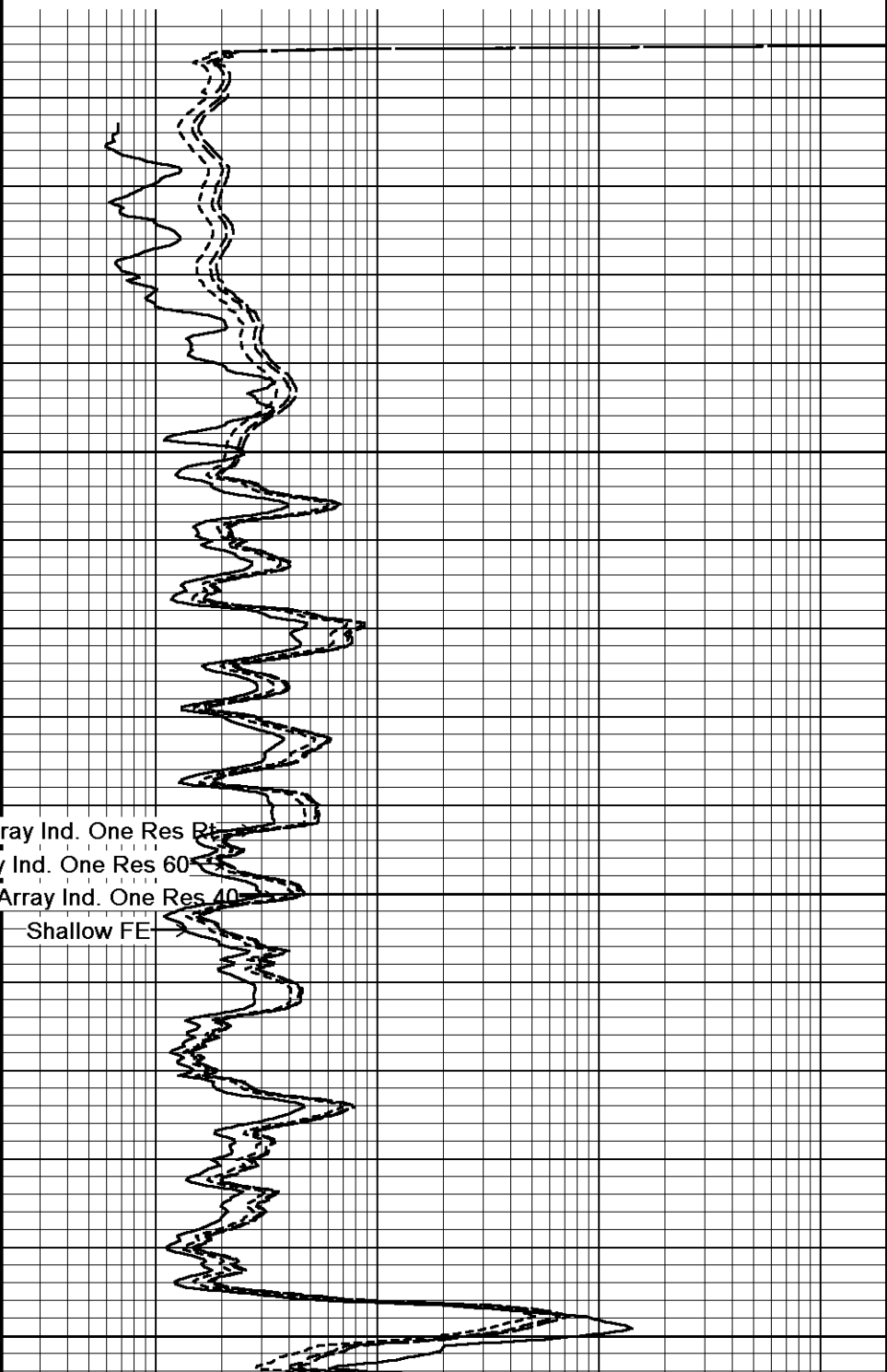
900



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

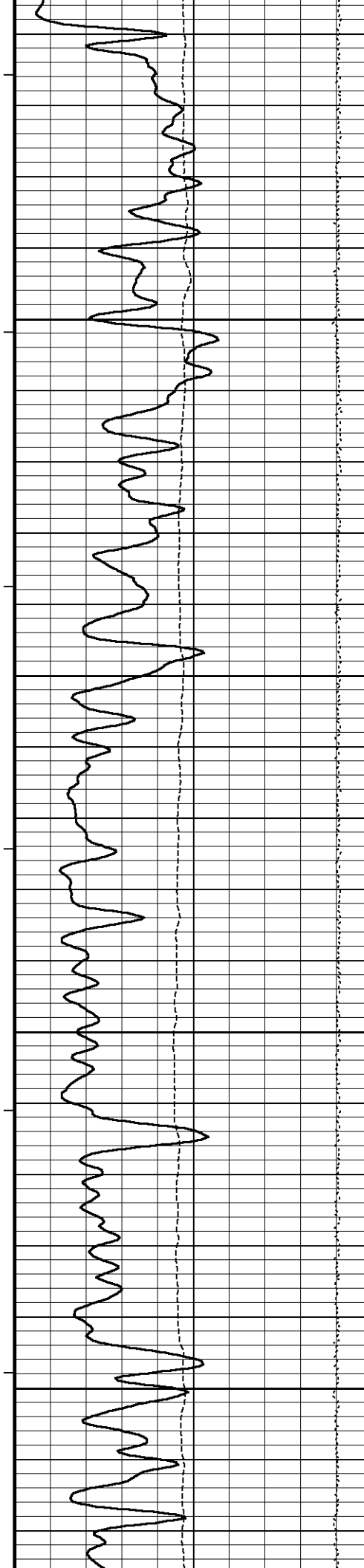
Array Ind. One Res 60  
ohm metres  
0.20 1 10 100 1000 2000

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



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

Spontaneous Potential  
Gamma Ray  
DST Uphole Tension



87°

950

87°

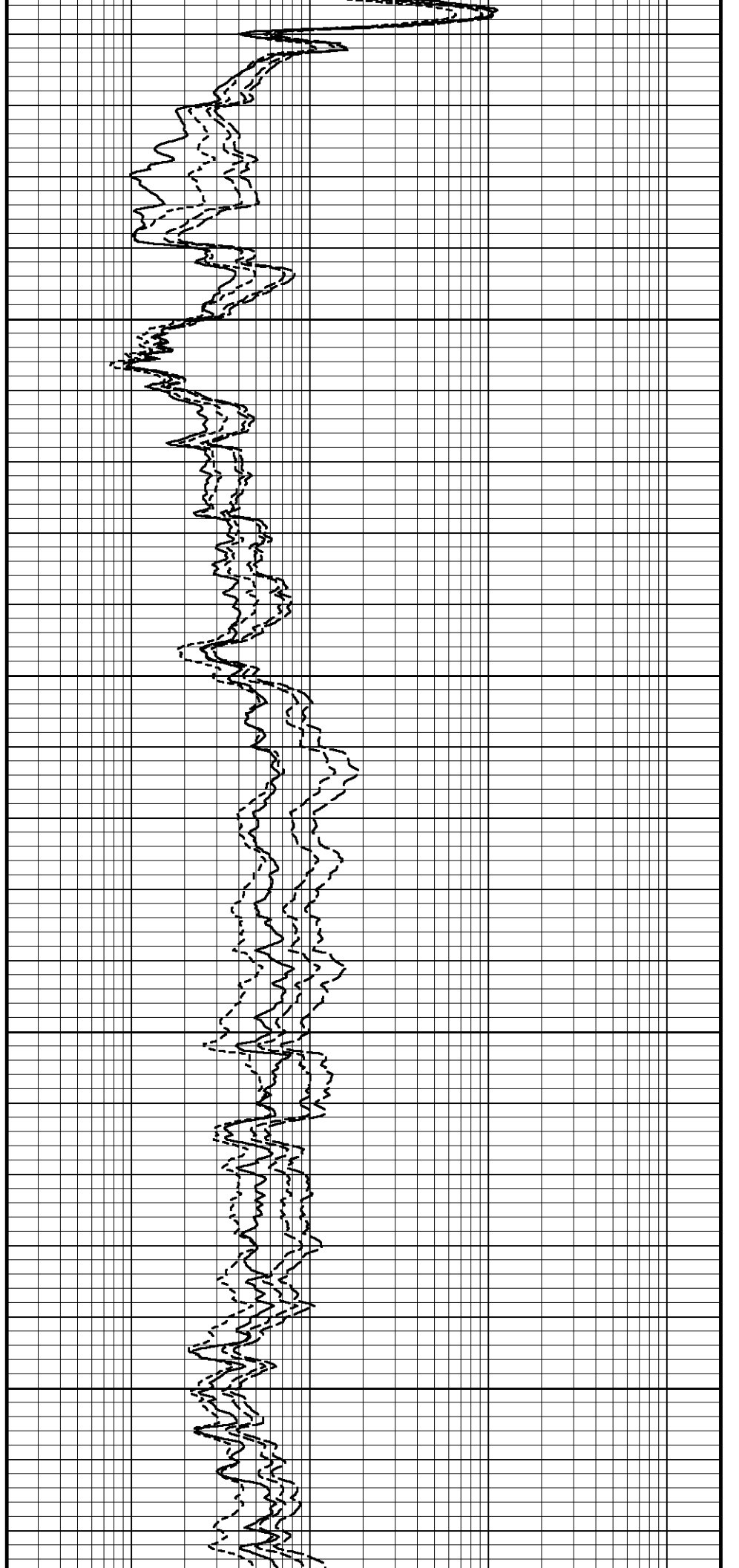
1000

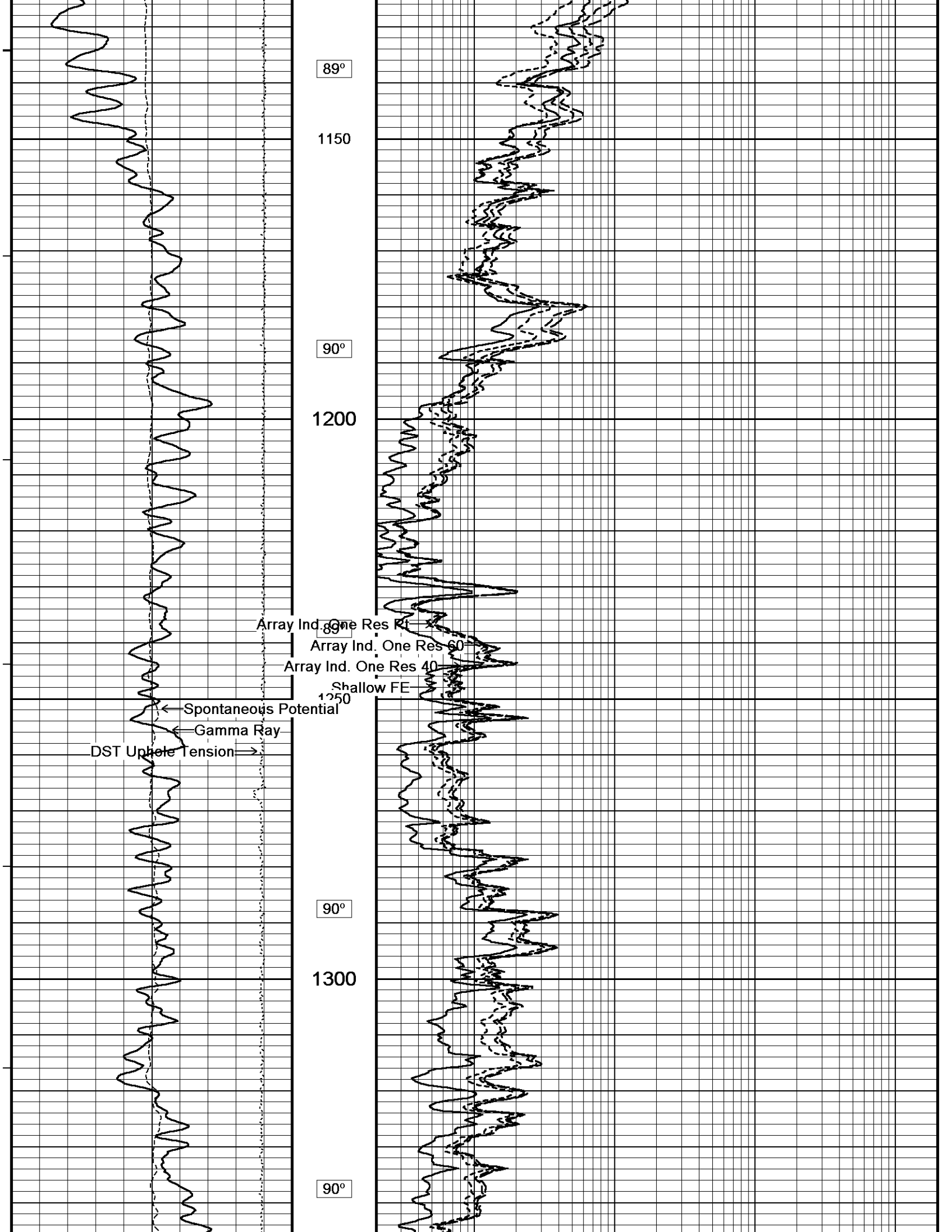
87°

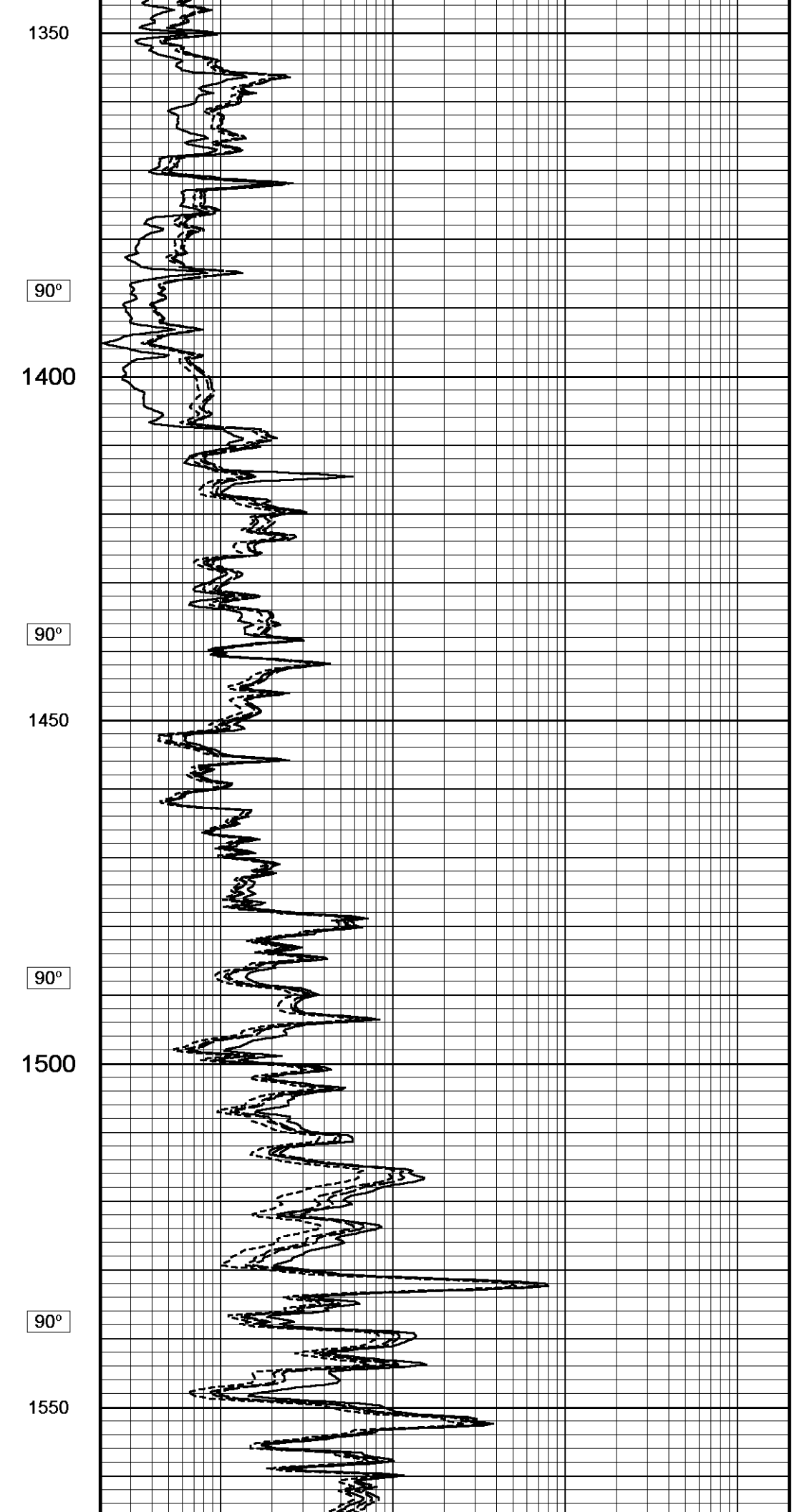
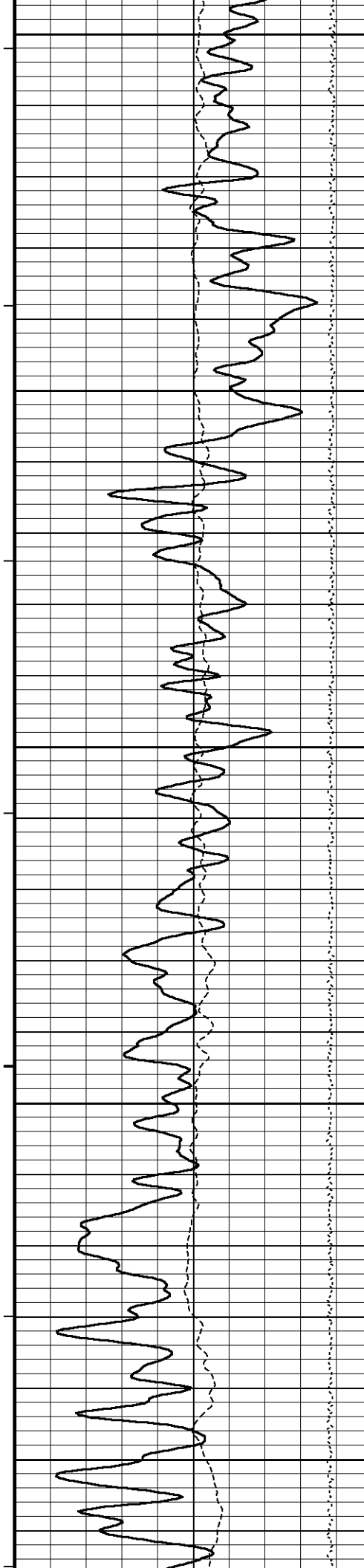
1050

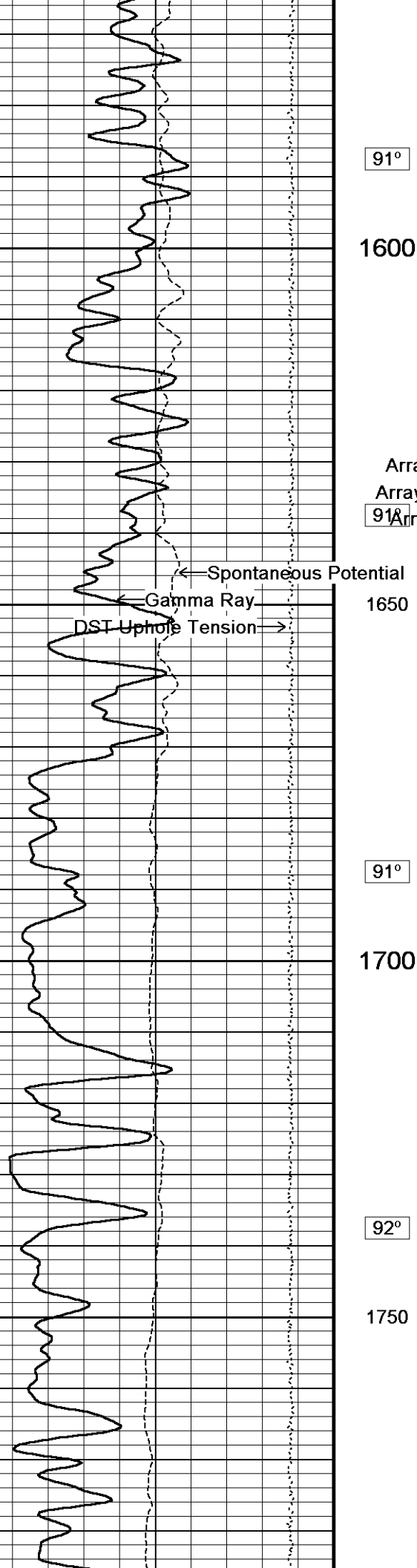
88°

1100









91°

1600

Array Ind. One Res Rt

Array Ind. One Res 60

91° Array Ind. One Res 40

Shallow FL

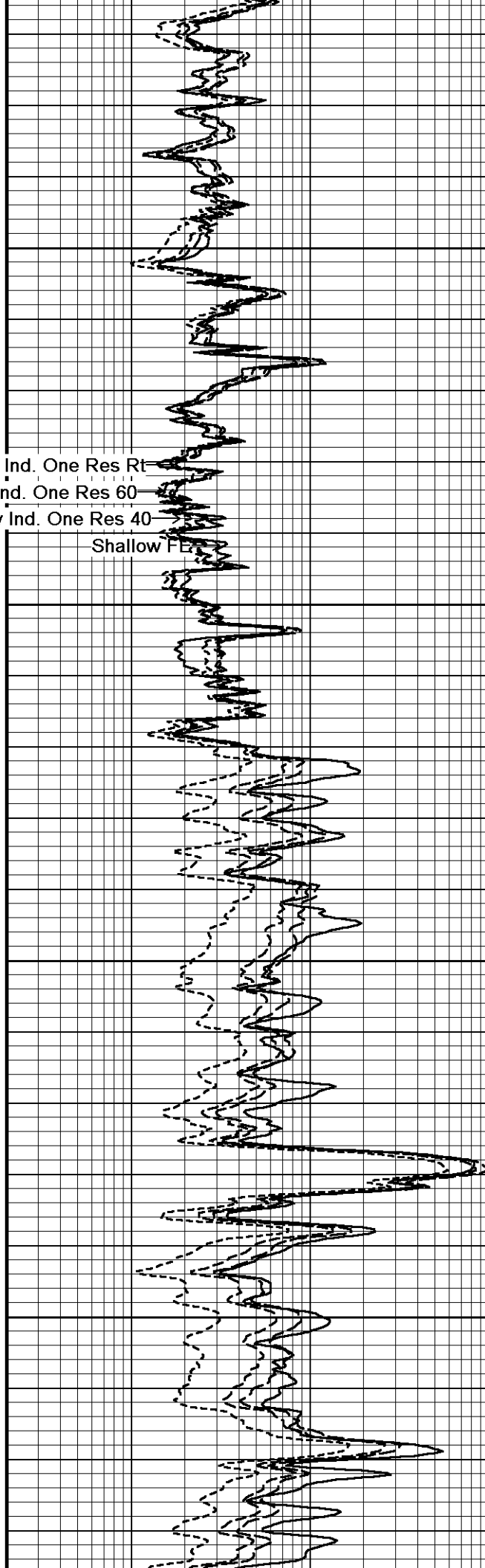
1650

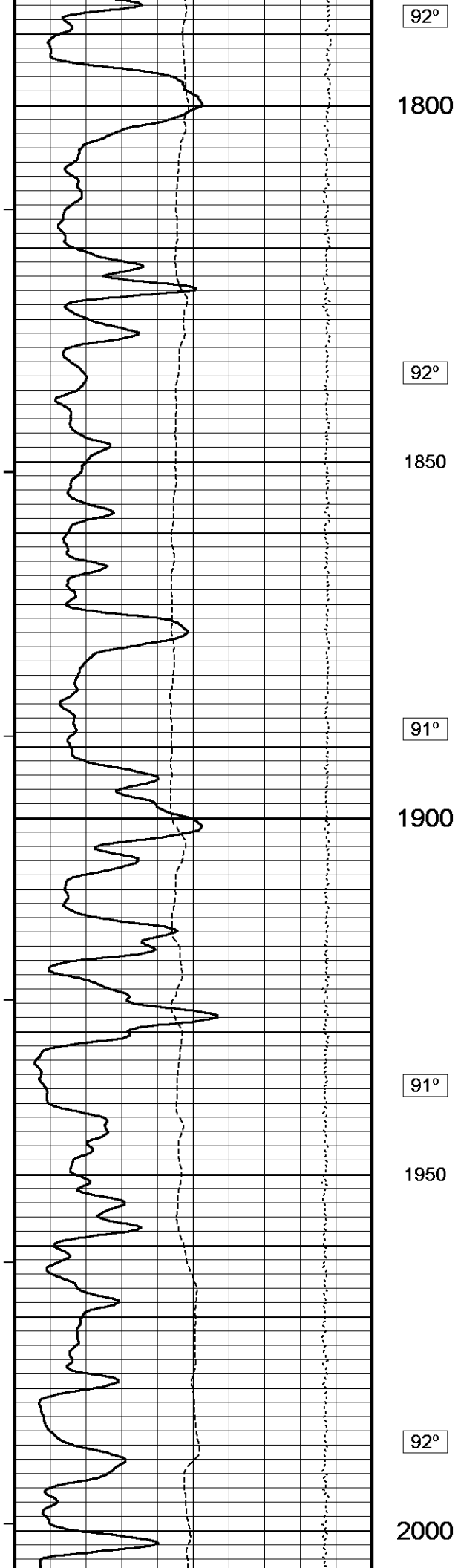
91°

1700

92°

1750





92°

1800

92°

1850

91°

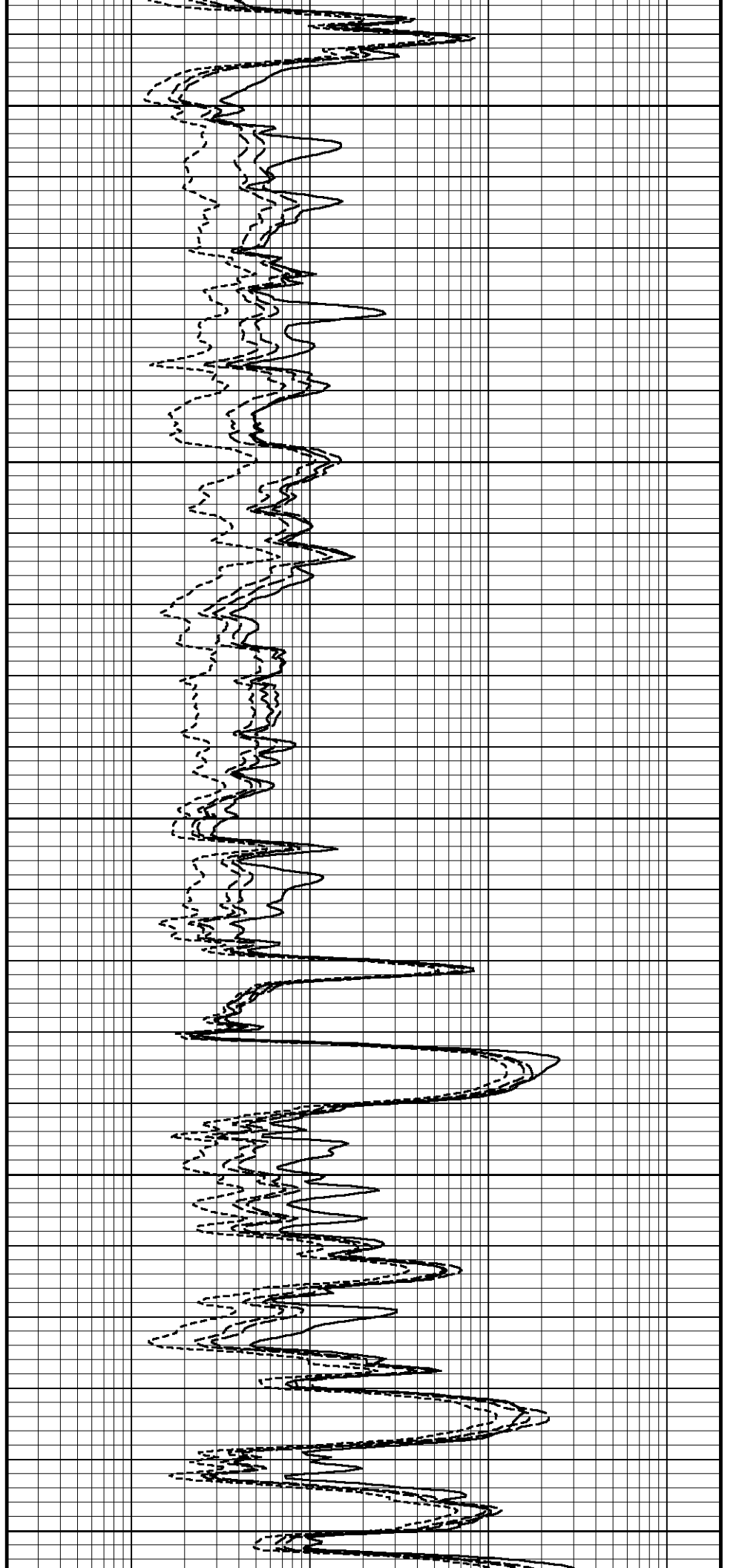
1900

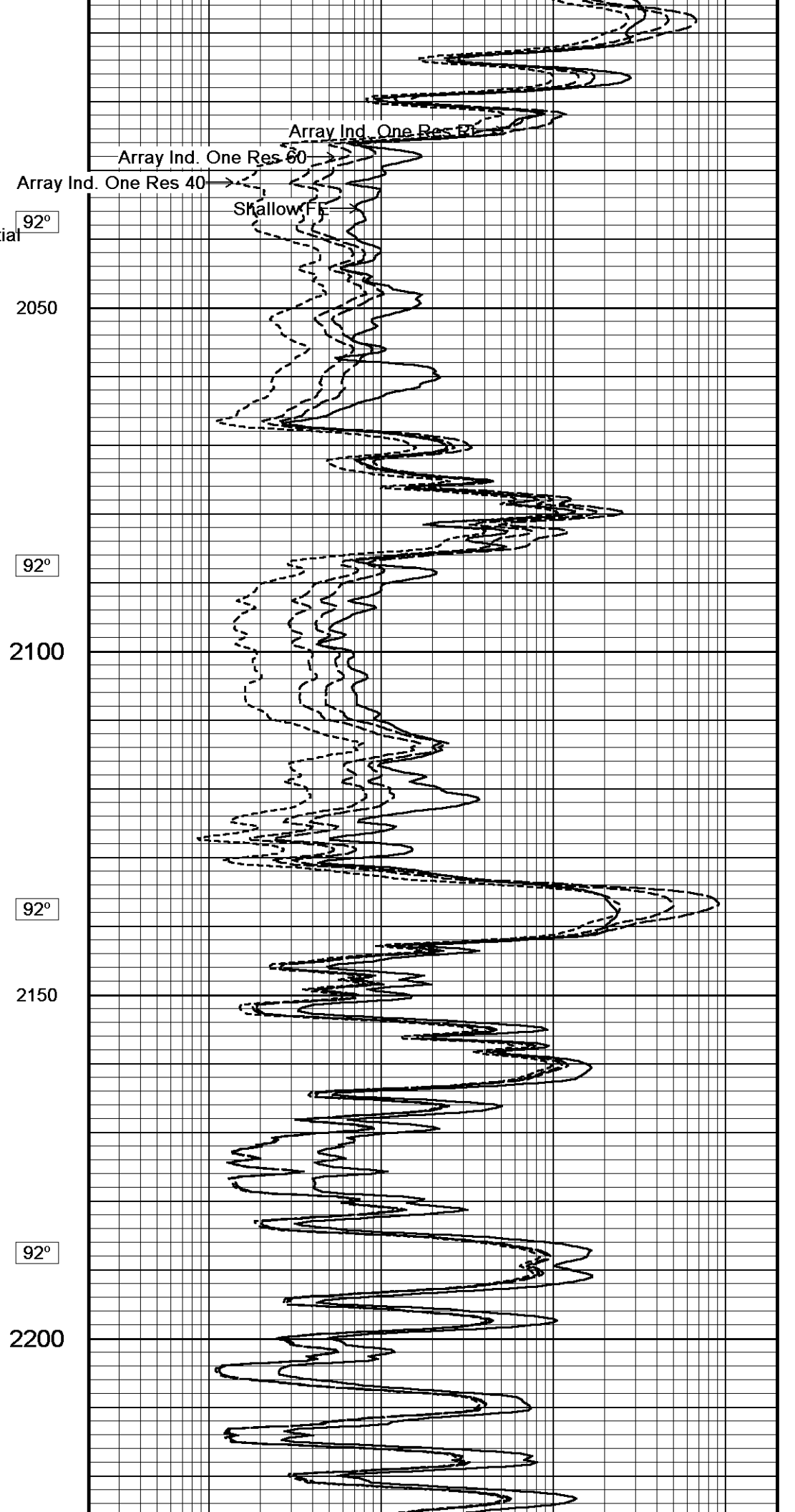
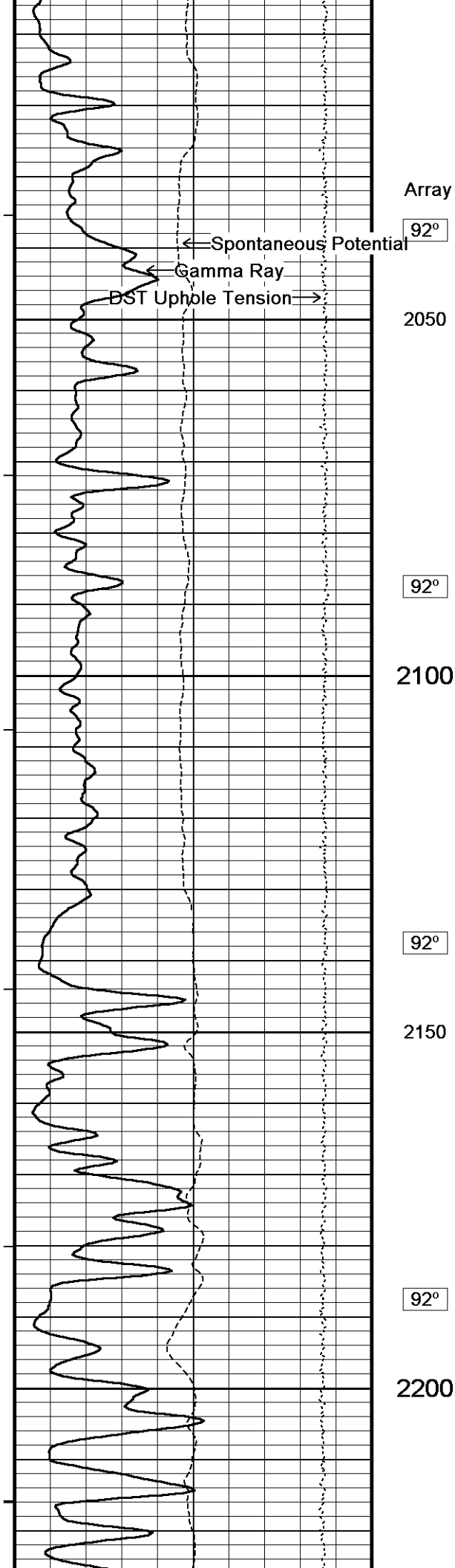
91°

1950

92°

2000





92°

2050

92°

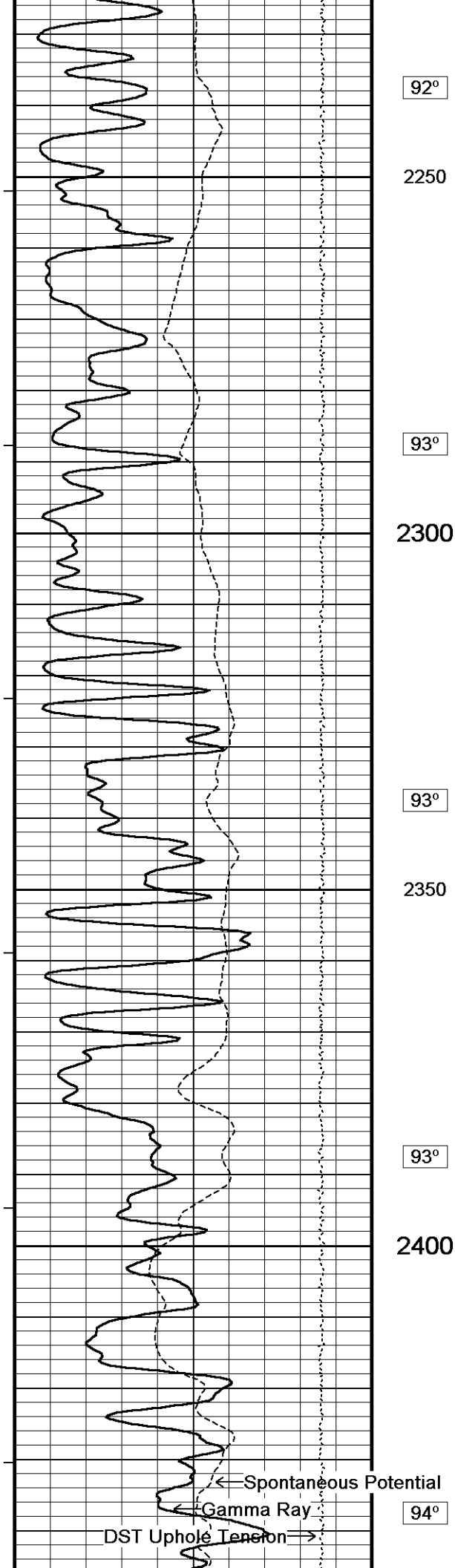
2100

92°

2150

92°

2200



92°

2250

93°

2300

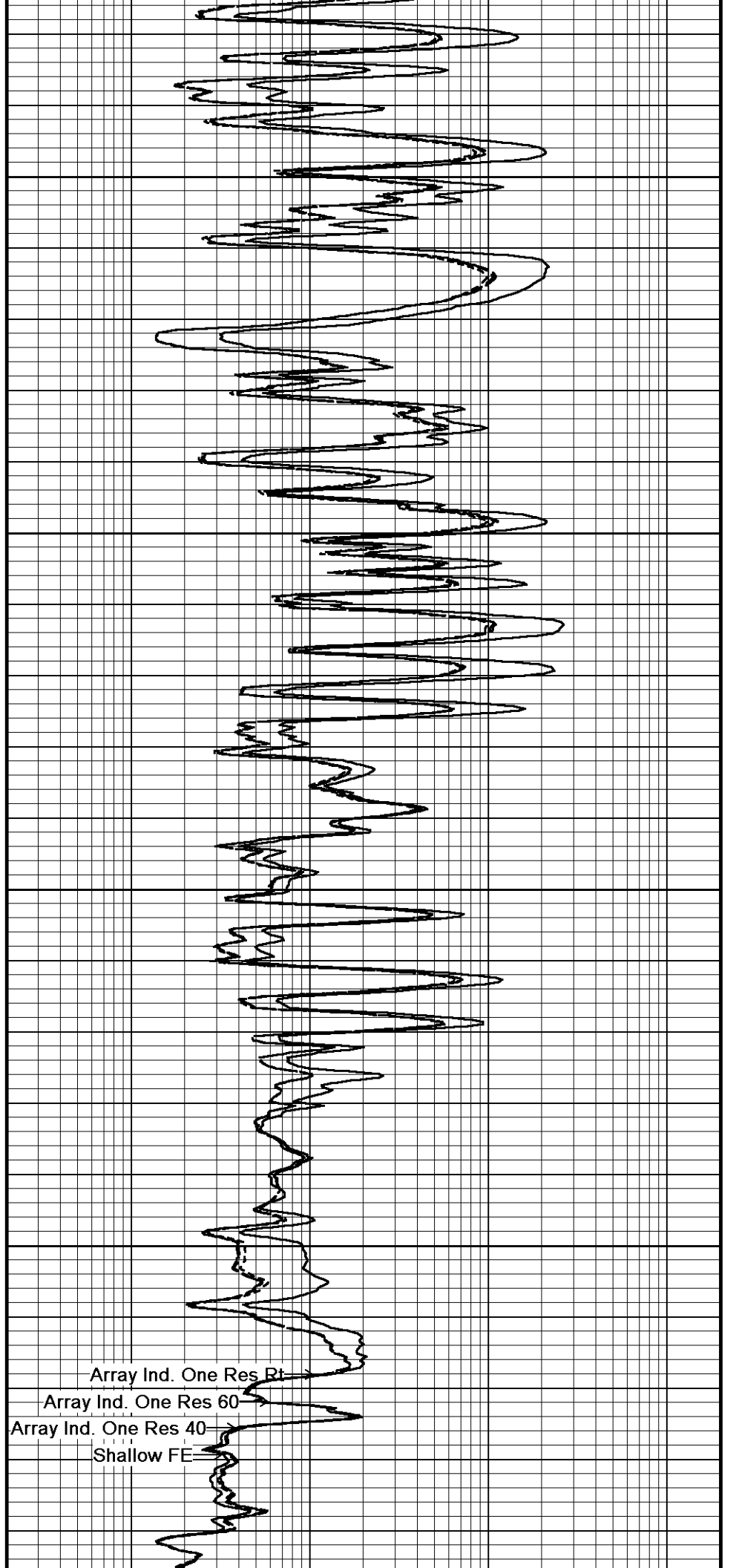
93°

2350

93°

2400

94°

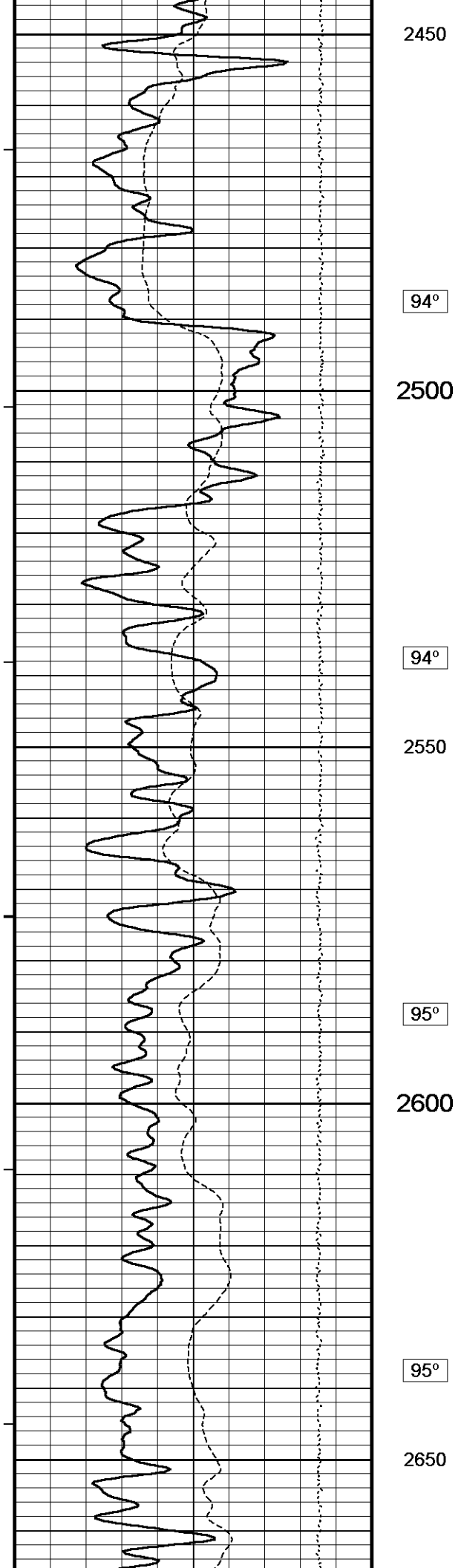


Array Ind. One Res Rt →

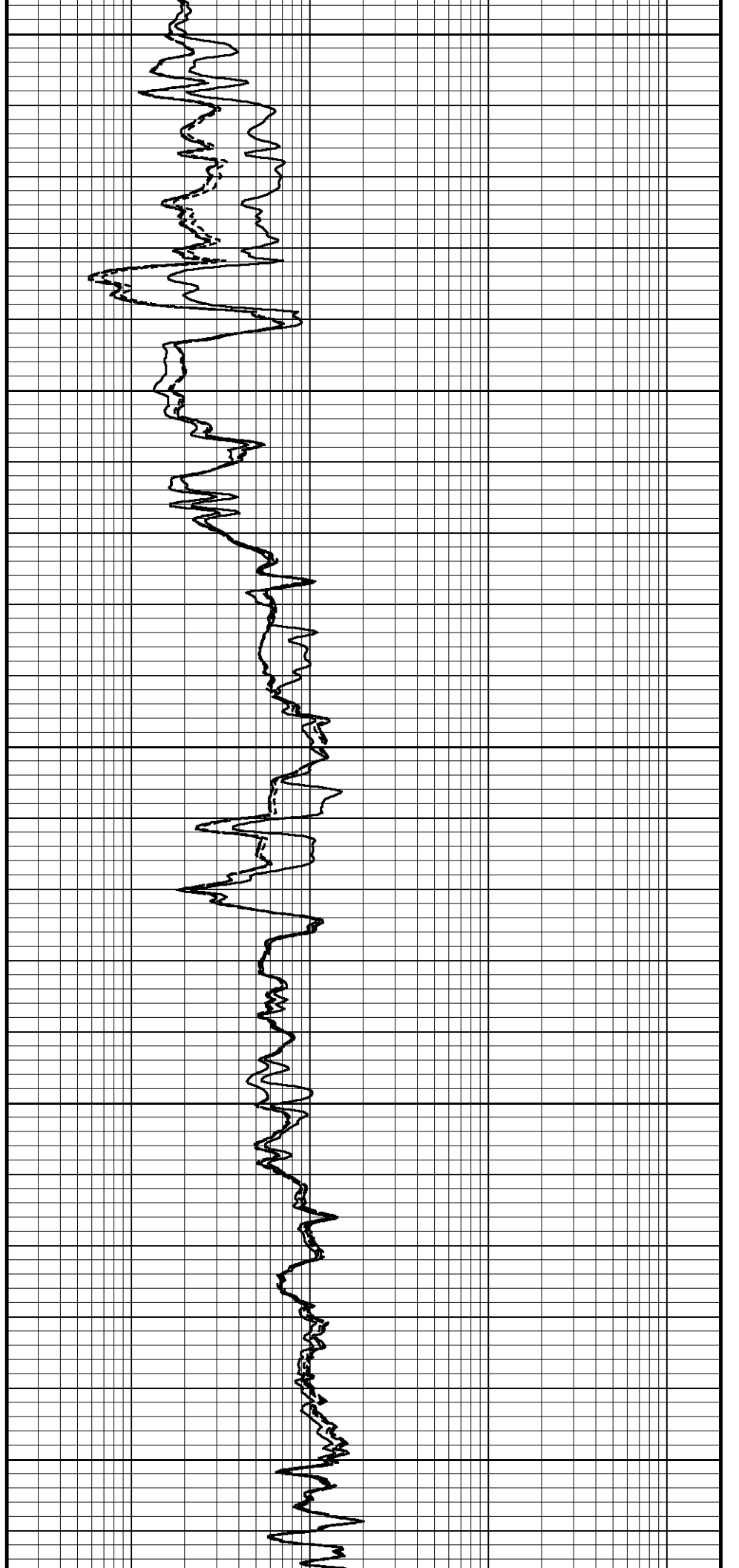
Array Ind. One Res 60 →

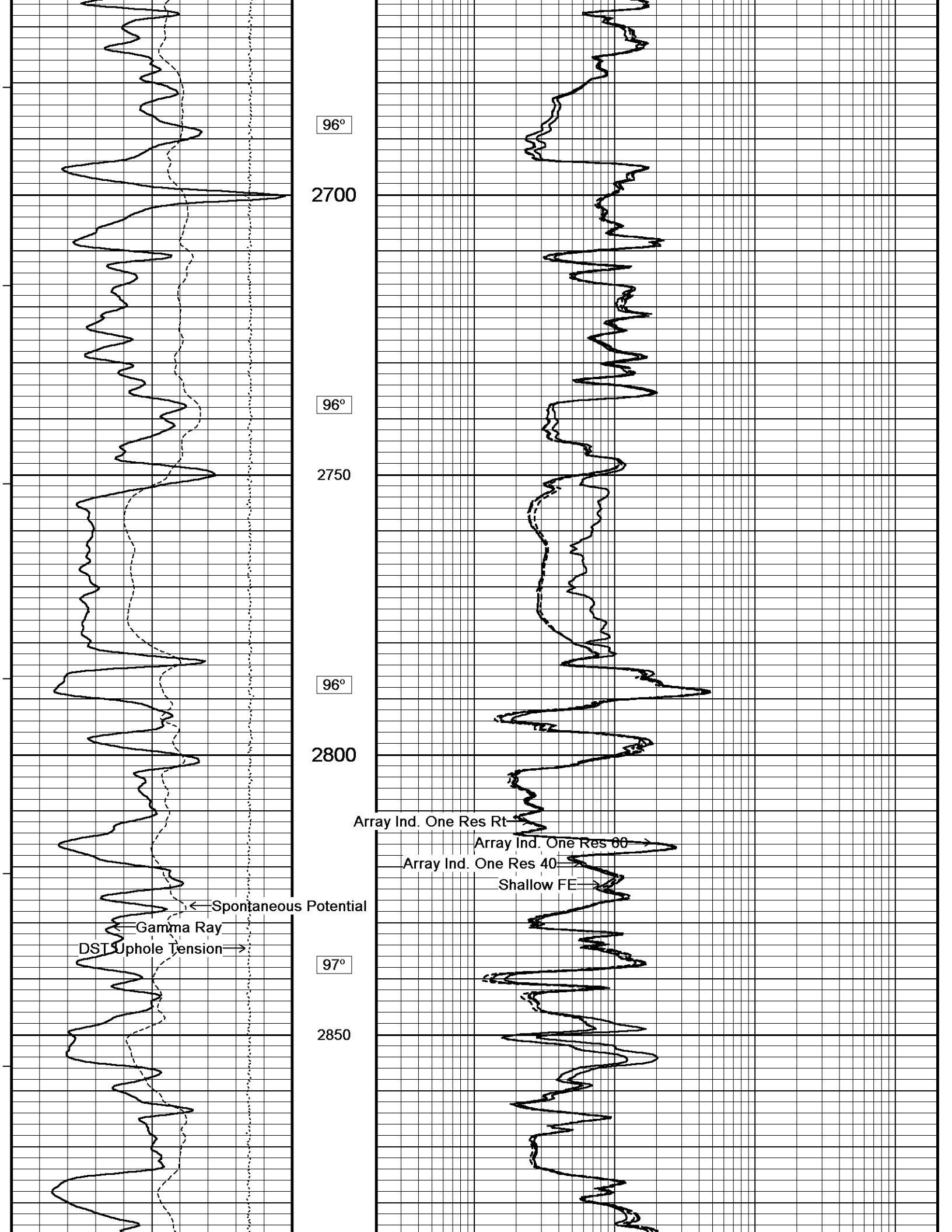
Array Ind. One Res 40 →

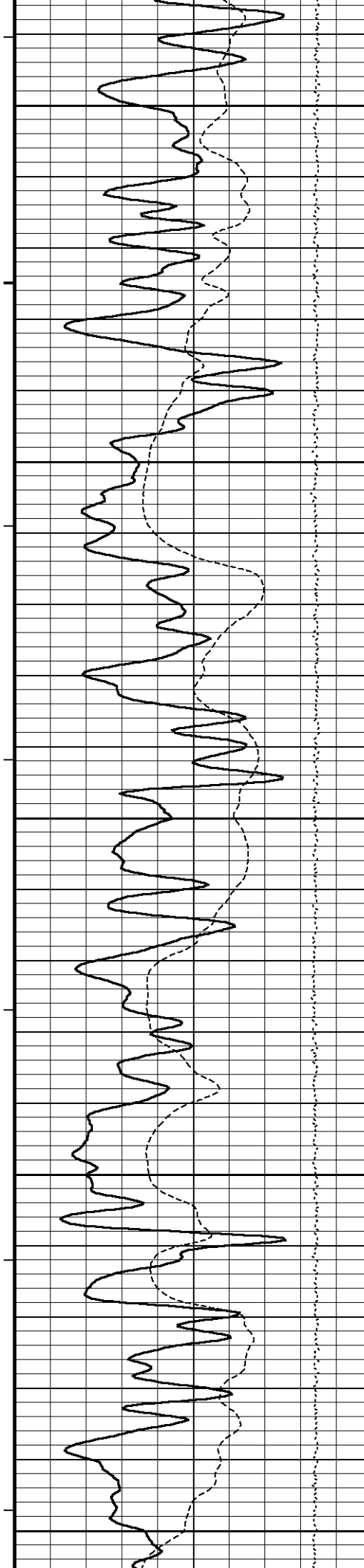
Shallow FE →



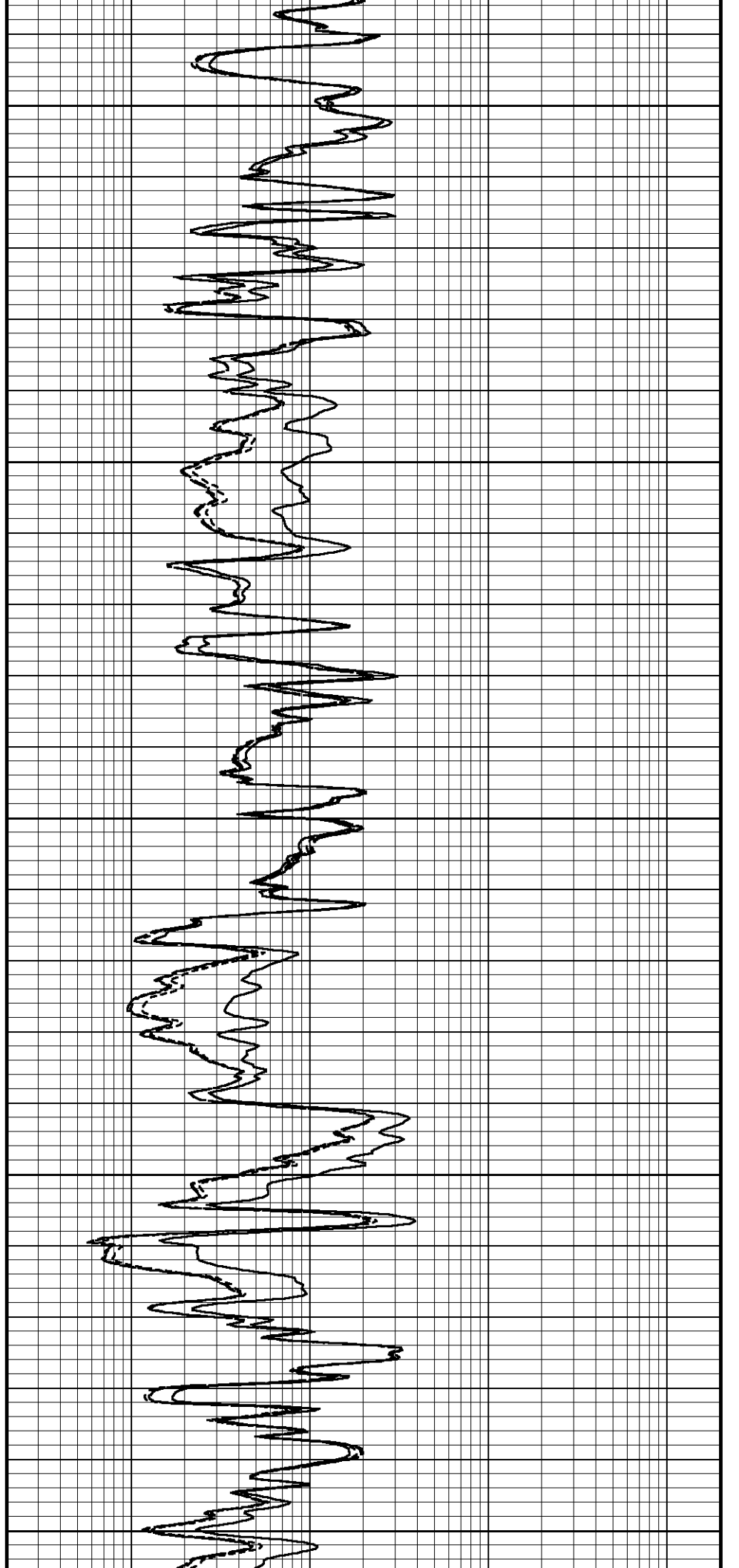
2450  
94°  
2500  
94°  
2550  
95°  
2600  
95°  
2650

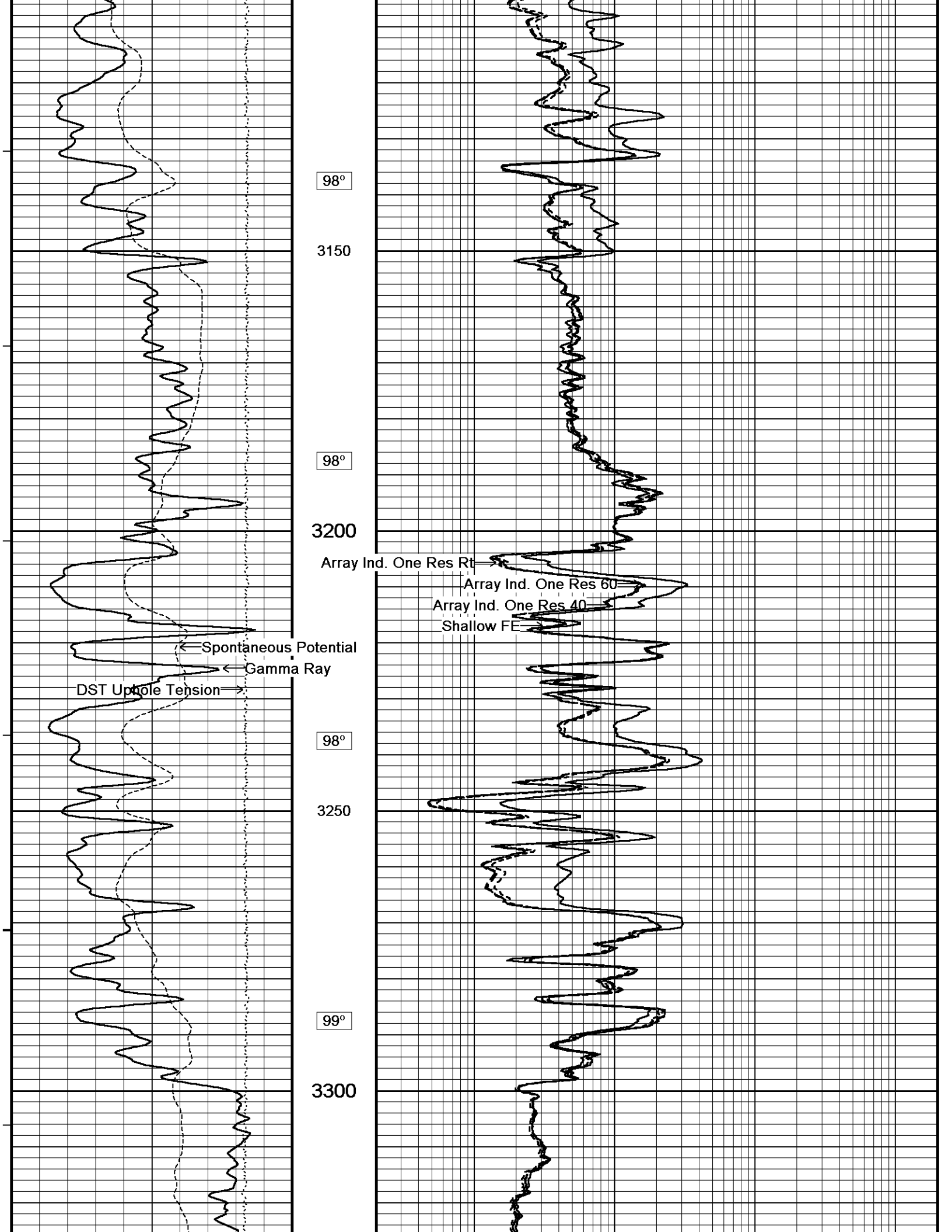


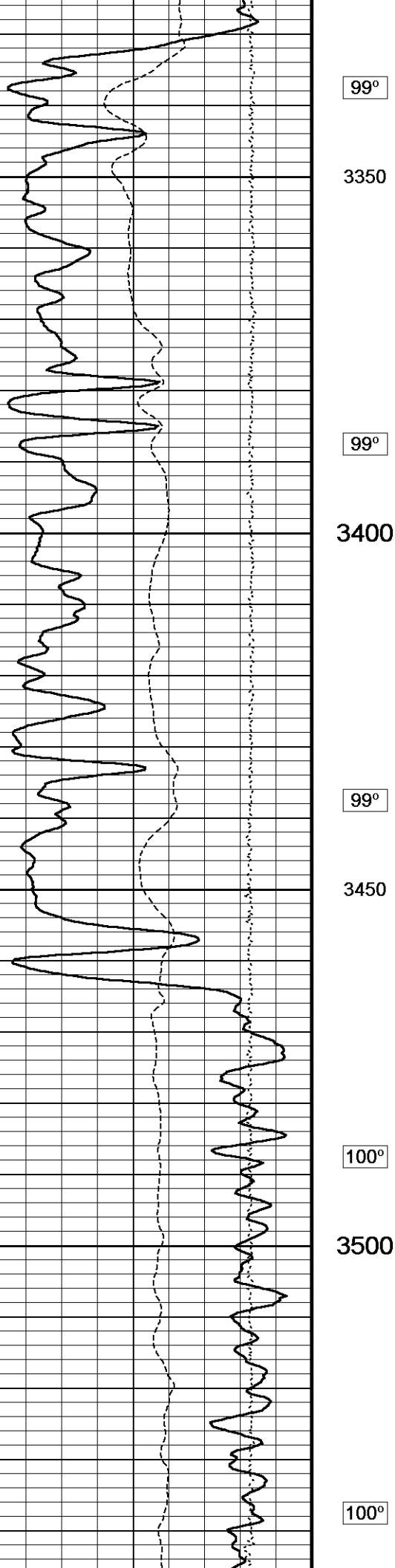




97°  
2900  
97°  
2950  
97°  
3000  
97°  
3050  
97°  
3100







99°

3350

99°

3400

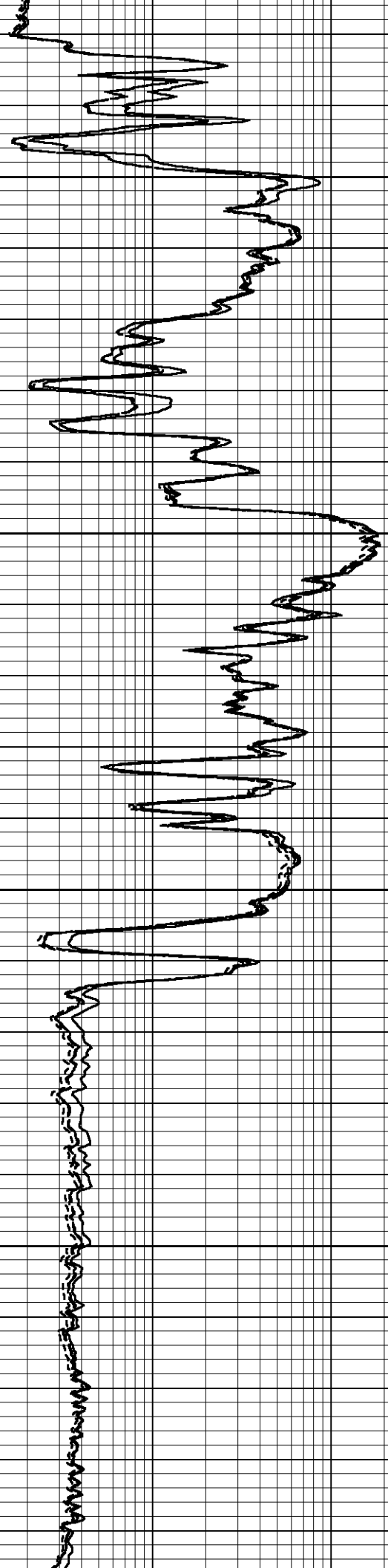
99°

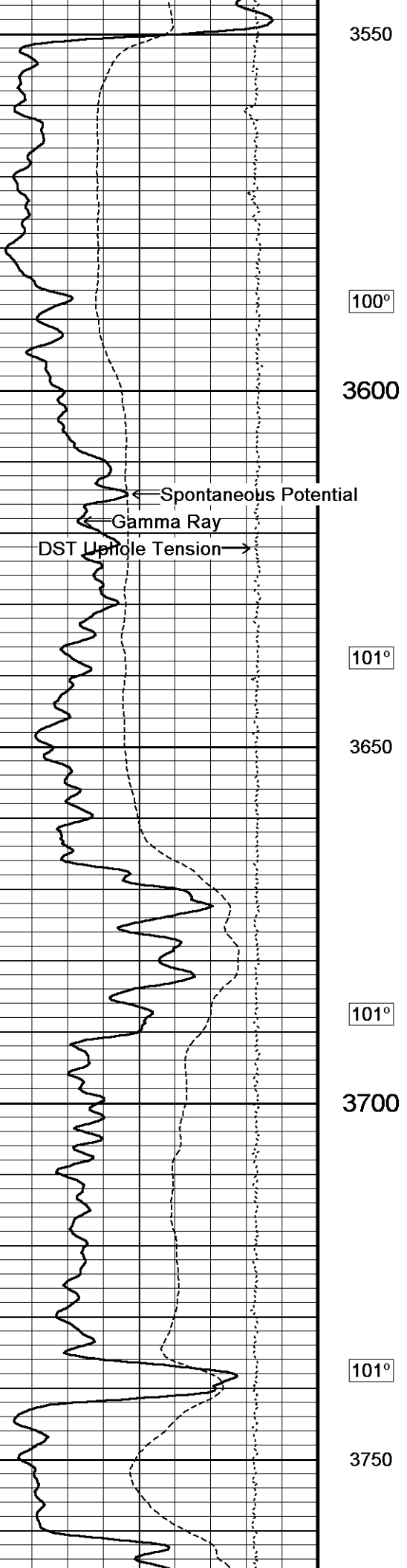
3450

100°

3500

100°





3550

100°

3600

← Spontaneous Potential

← Gamma Ray

DST Up Hole Tension →

101°

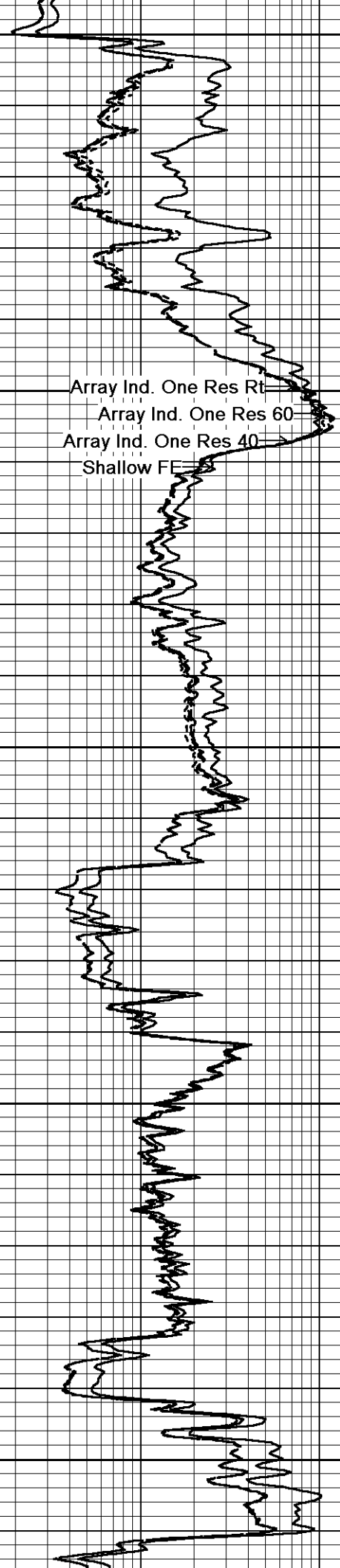
3650

101°

3700

101°

3750

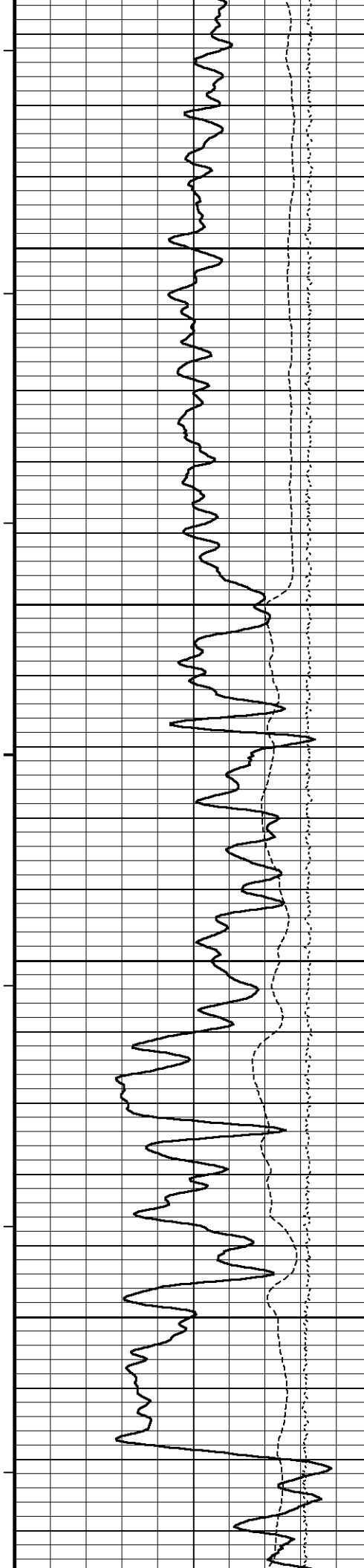


Array Ind. One Res Rt

Array Ind. One Res 60

Array Ind. One Res 40

Shallow FE



102°

3800

102°

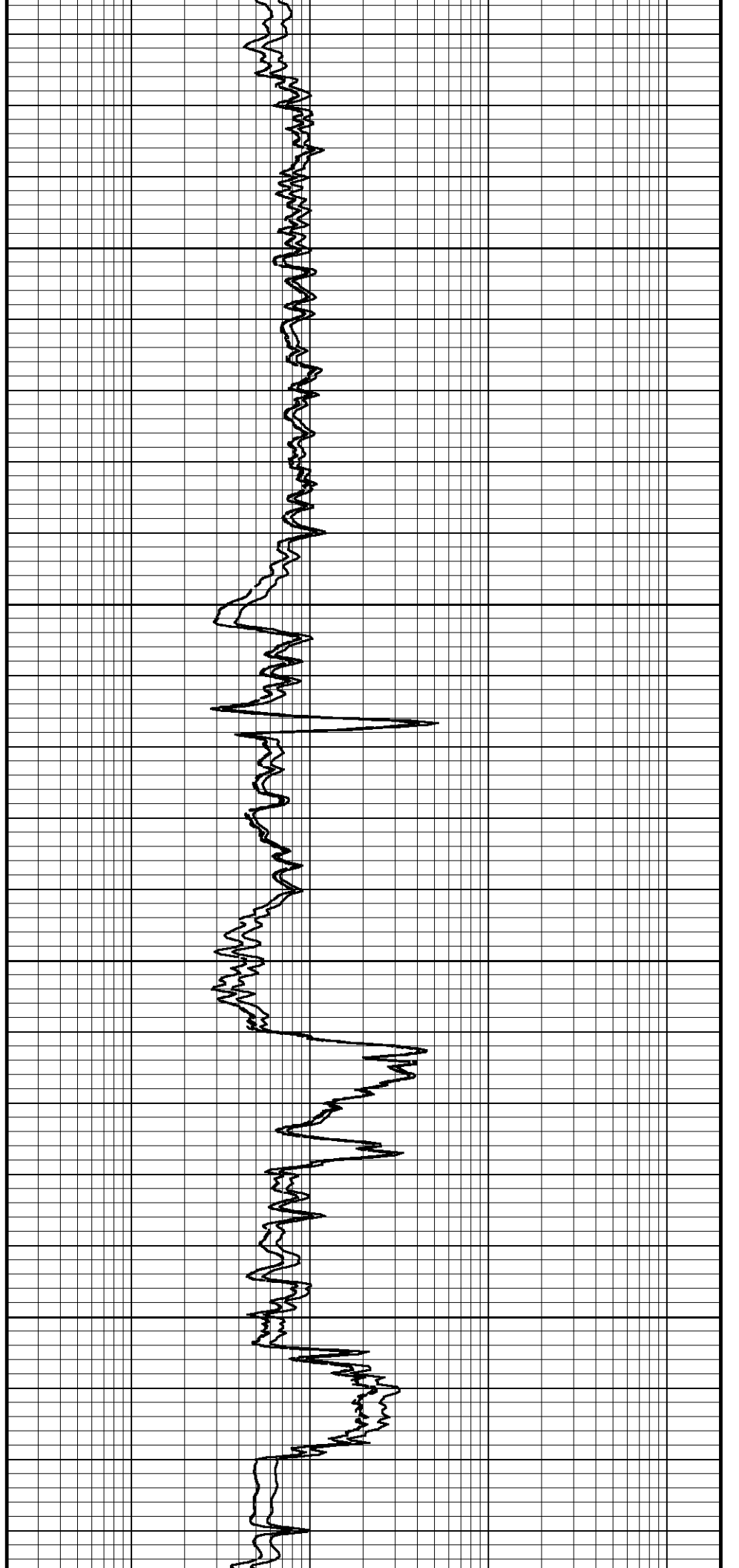
3850

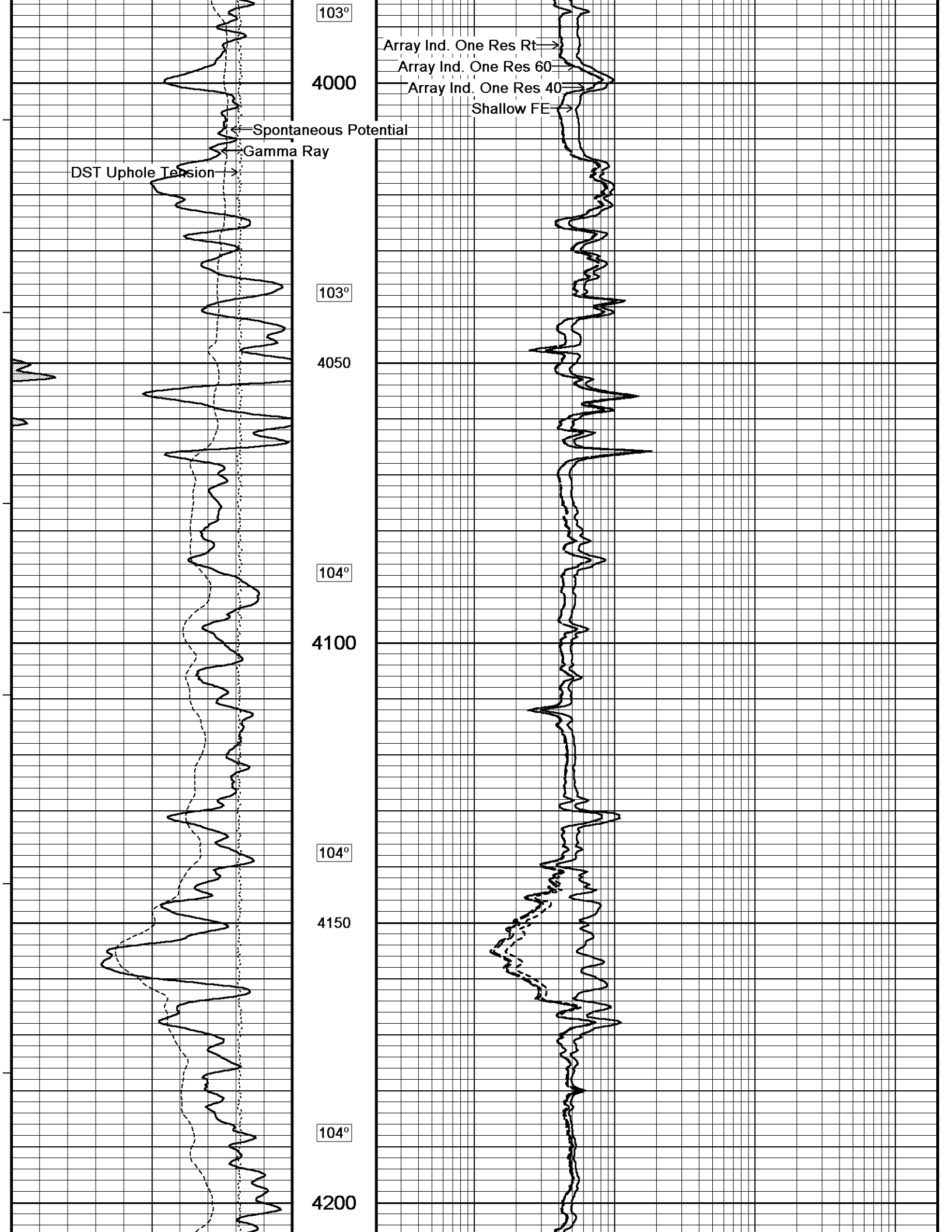
102°

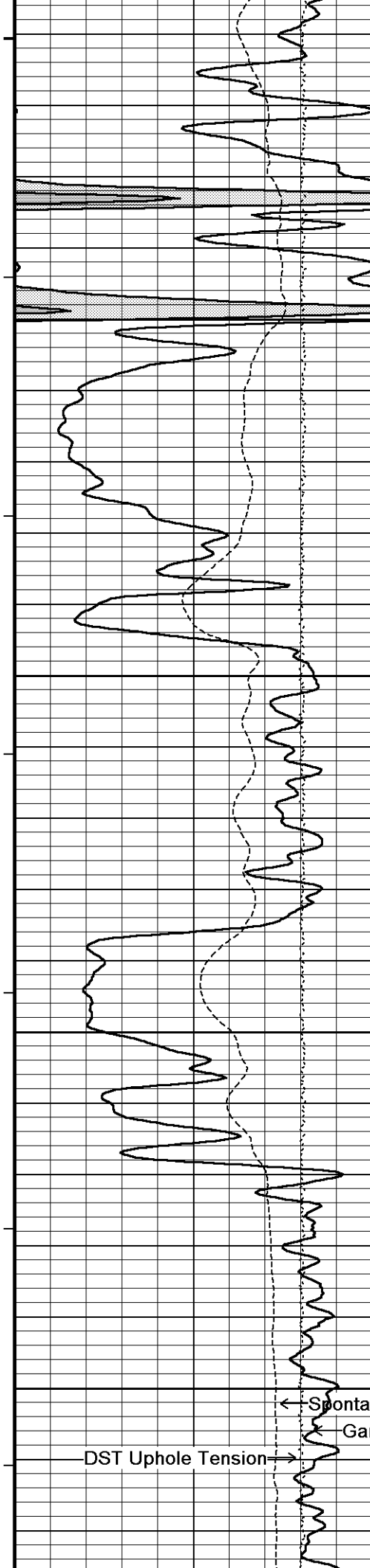
3900

103°

3950







105°

4250

105°

4300

106°

4350

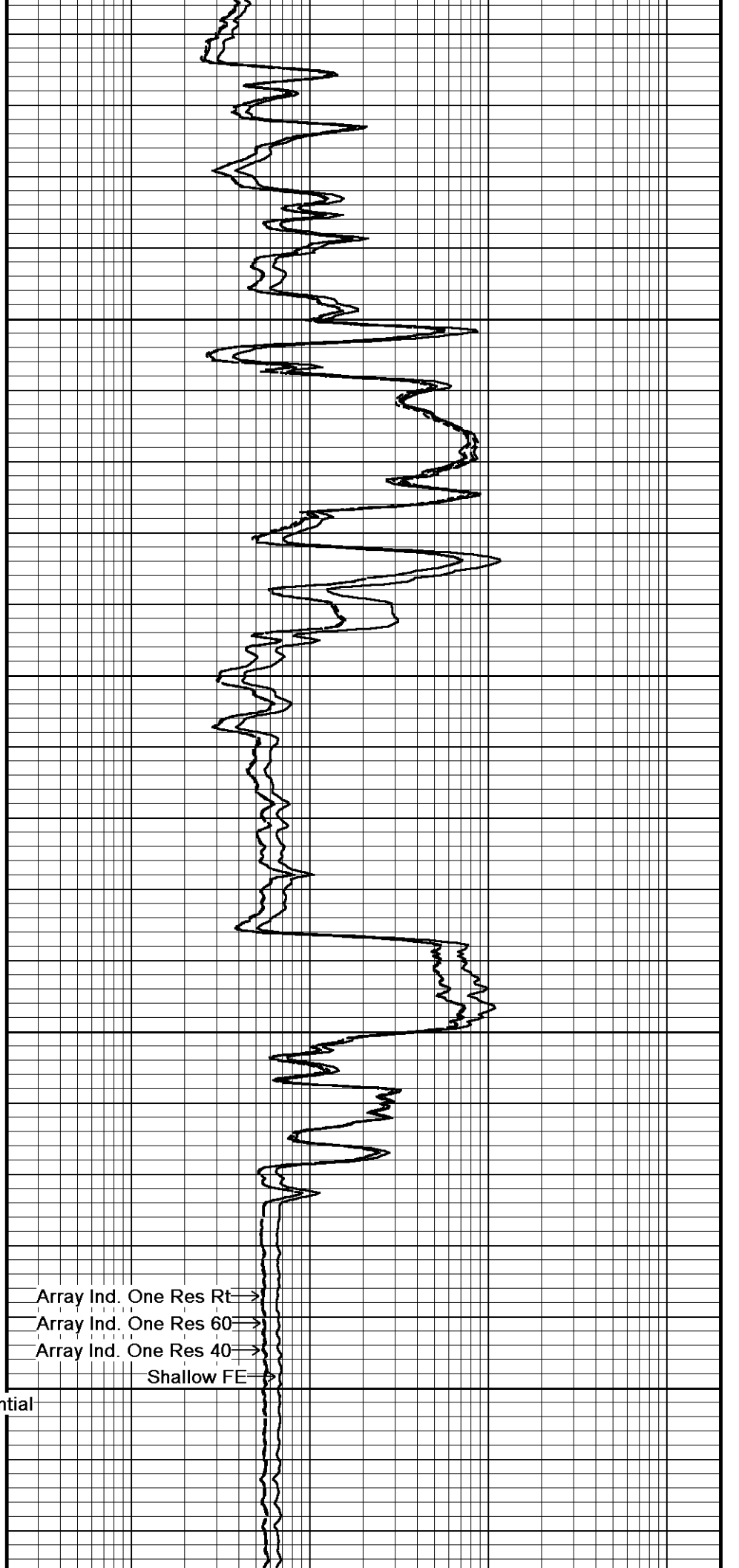
106°

4400

← Spontaneous Potential

← Gamma Ray

→ DST Uphole Tension

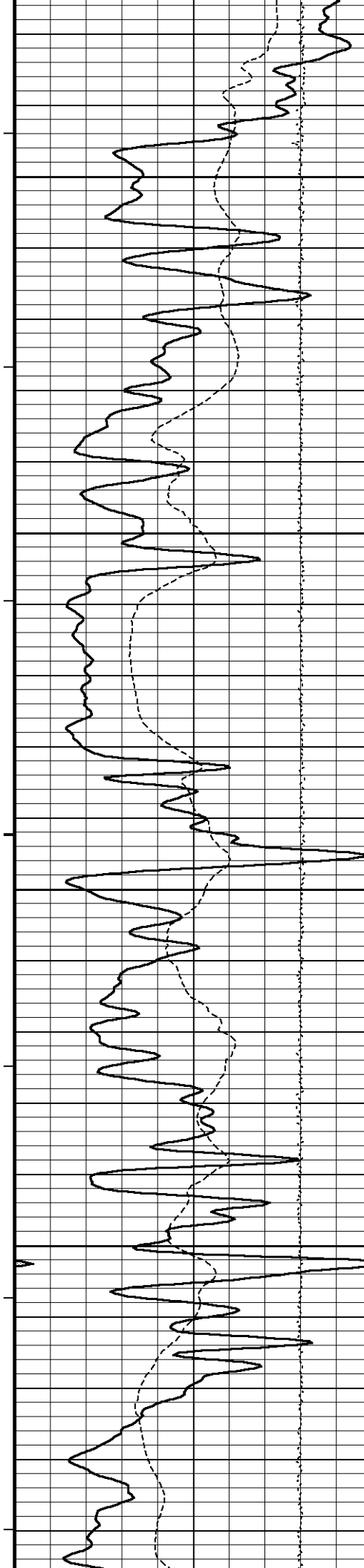


→ Array Ind. One Res Rt

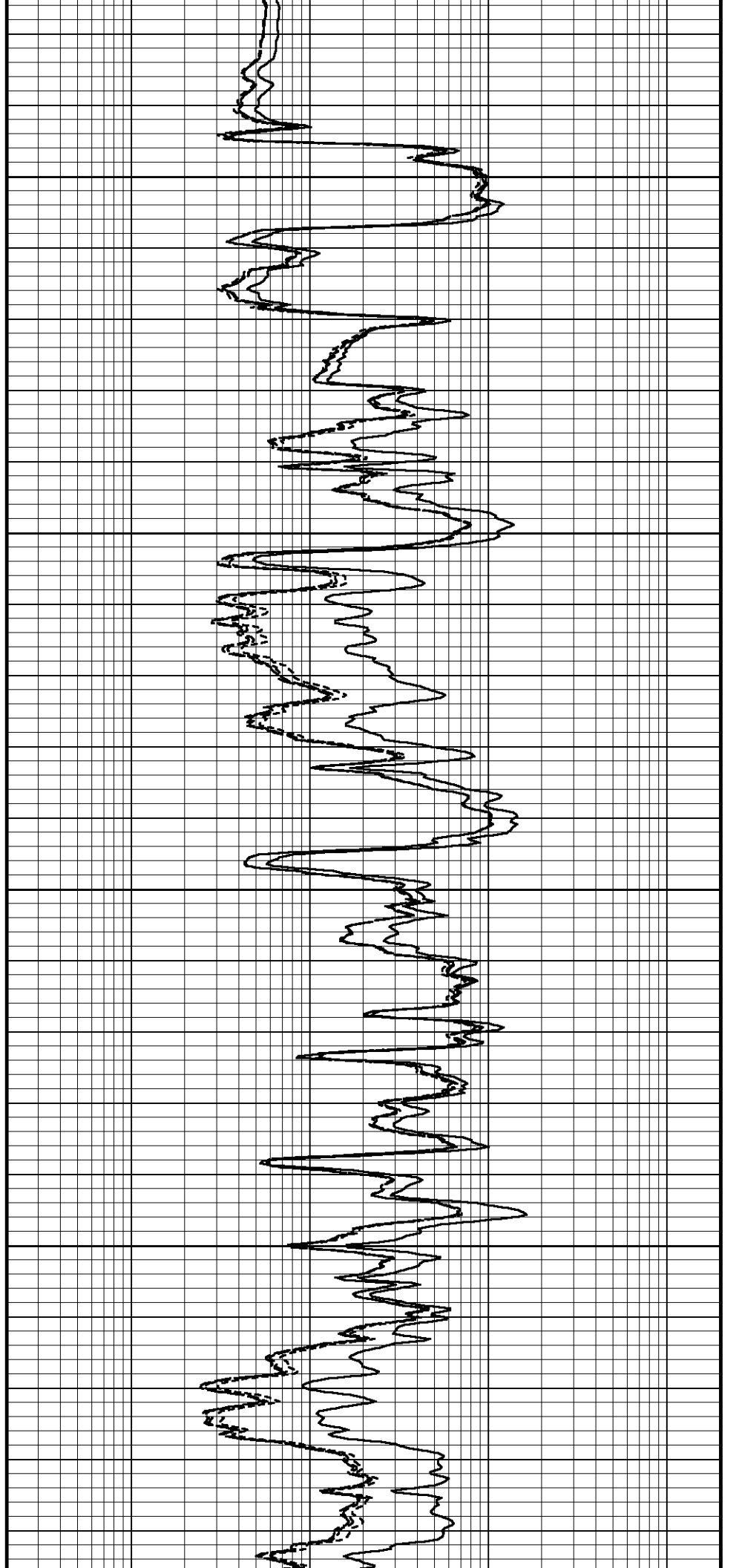
→ Array Ind. One Res 60

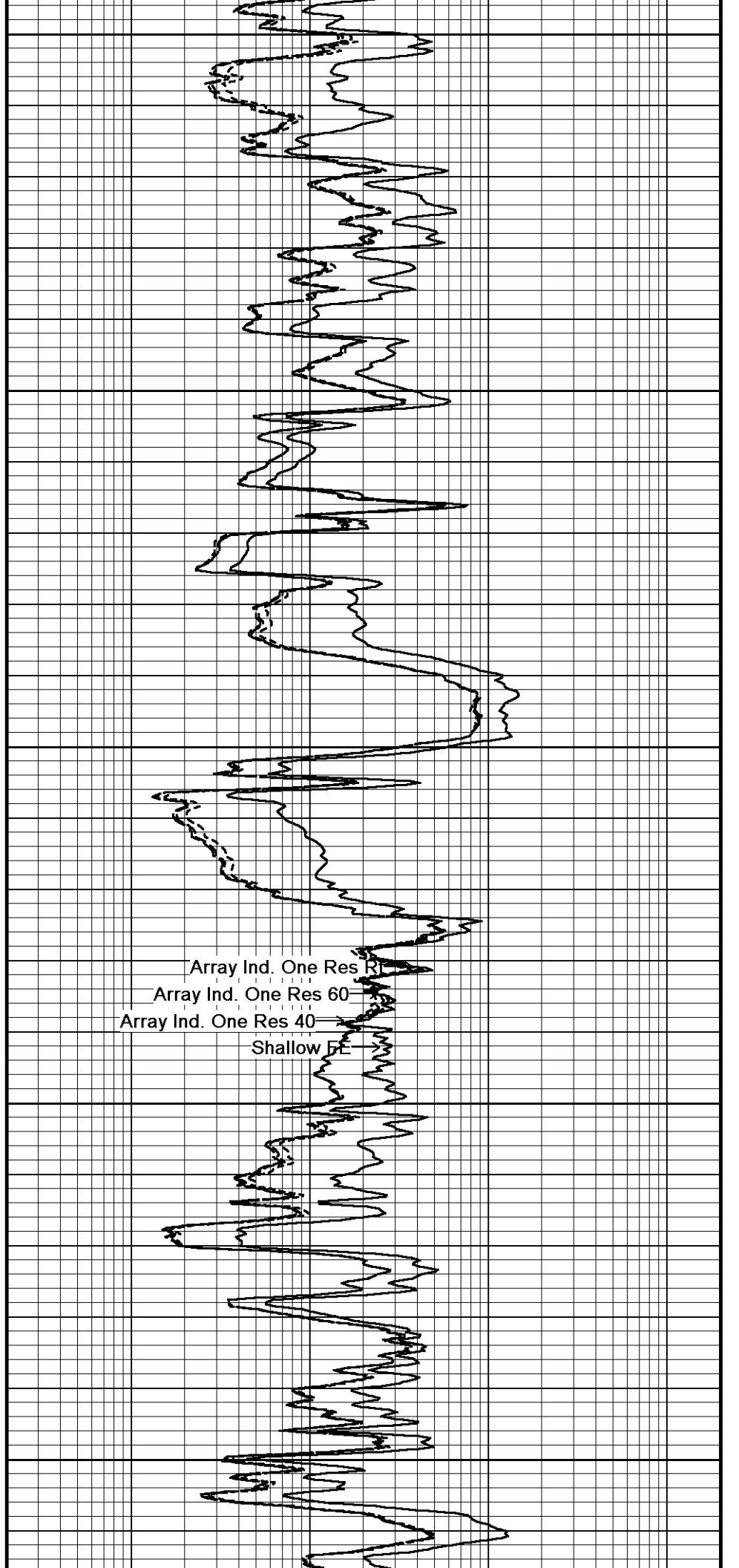
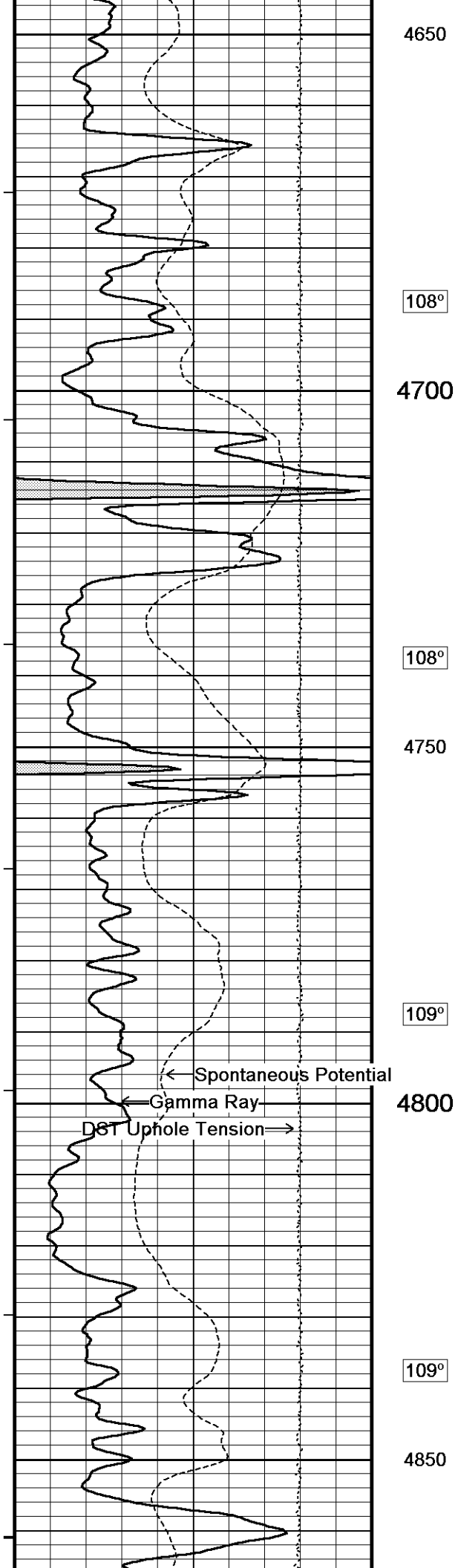
→ Array Ind. One Res 40

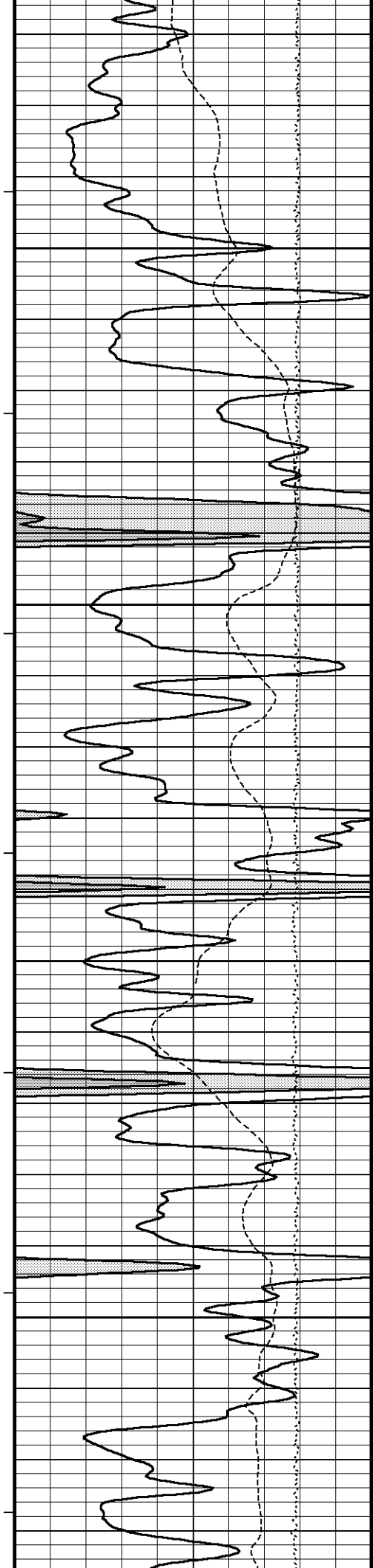
→ Shallow FE



106°  
4450  
107°  
4500  
107°  
4550  
107°  
4600  
107°







109°

4900

110°

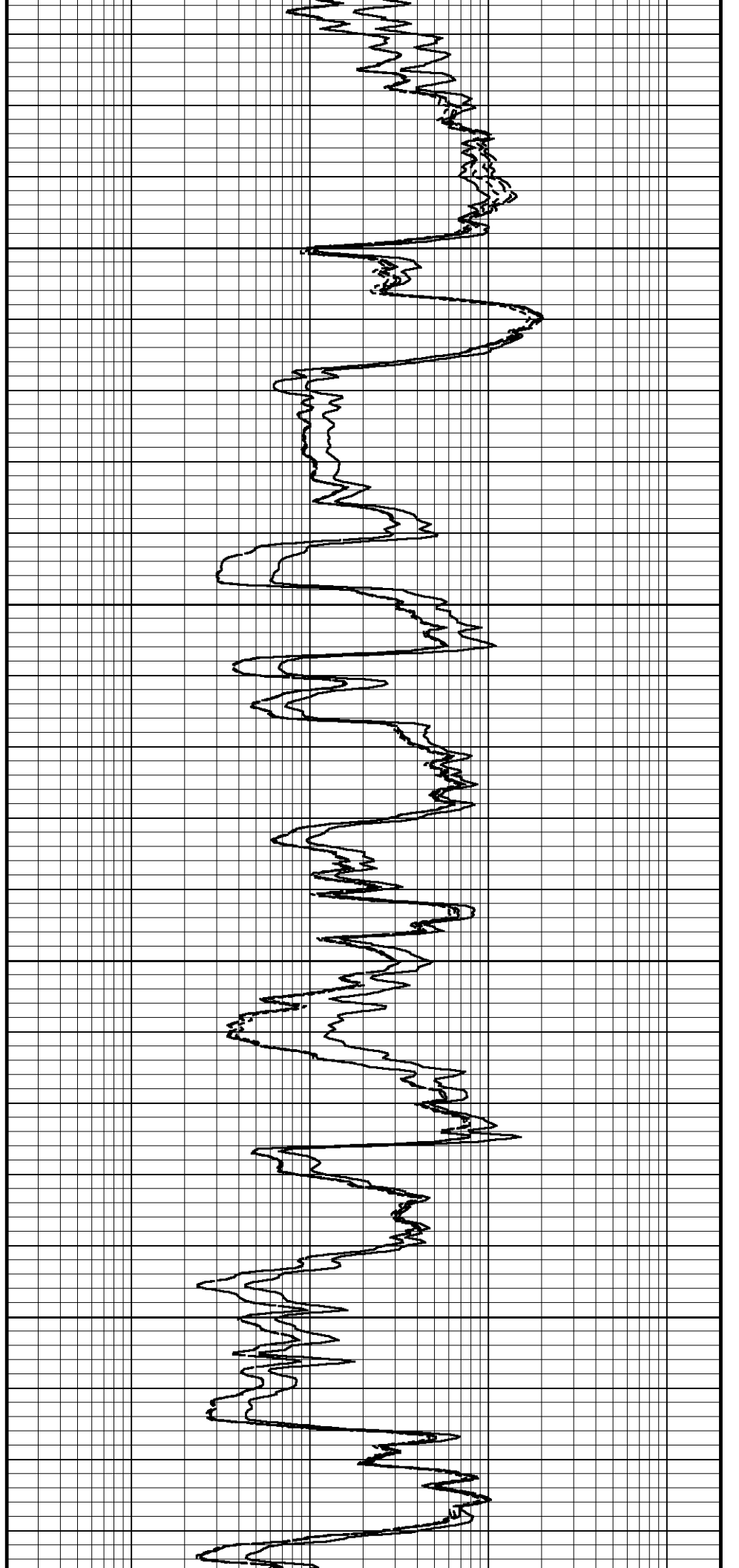
4950

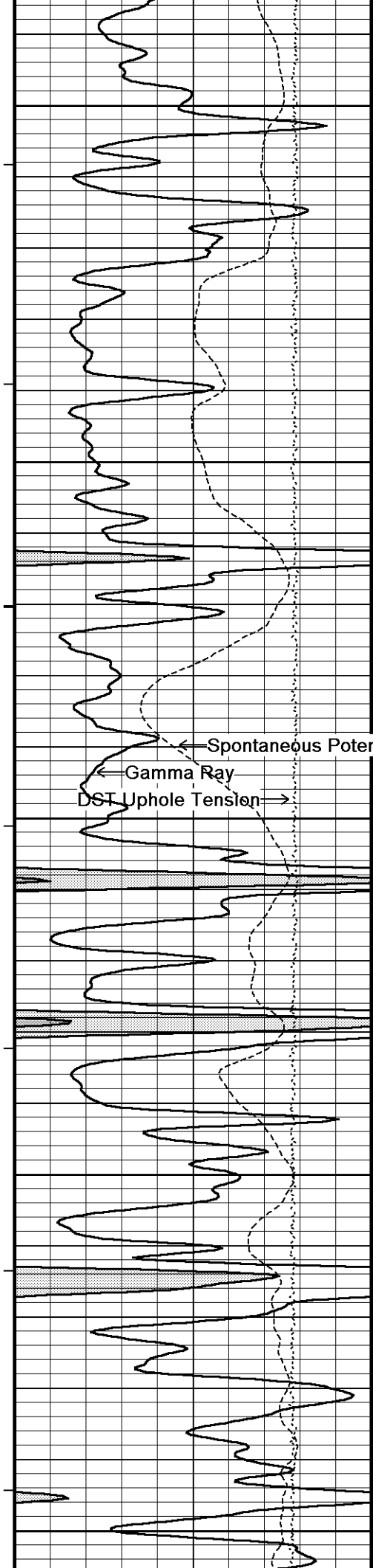
110°

5000

110°

5050





111°

5100

112°

5150

112°

5200

112°

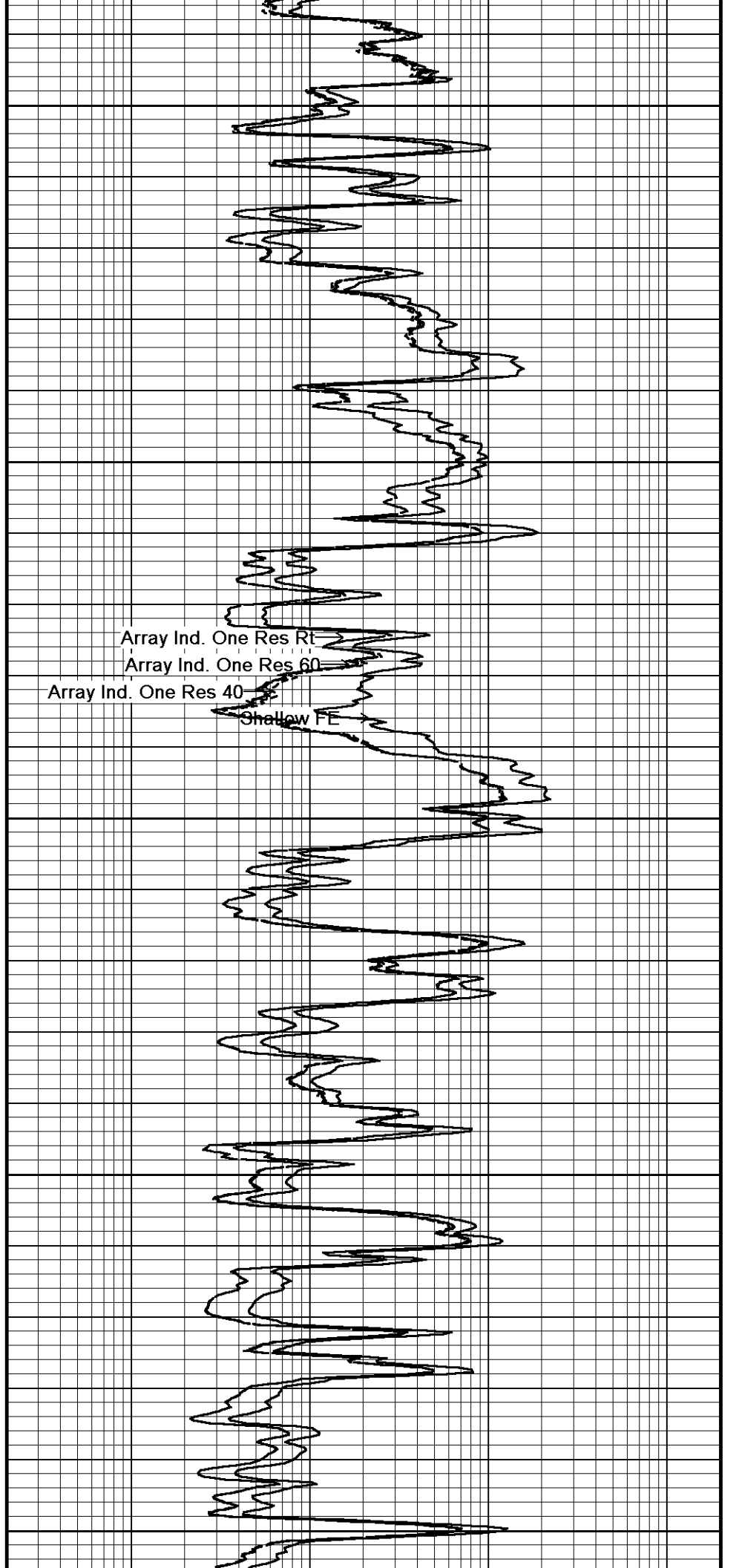
5250

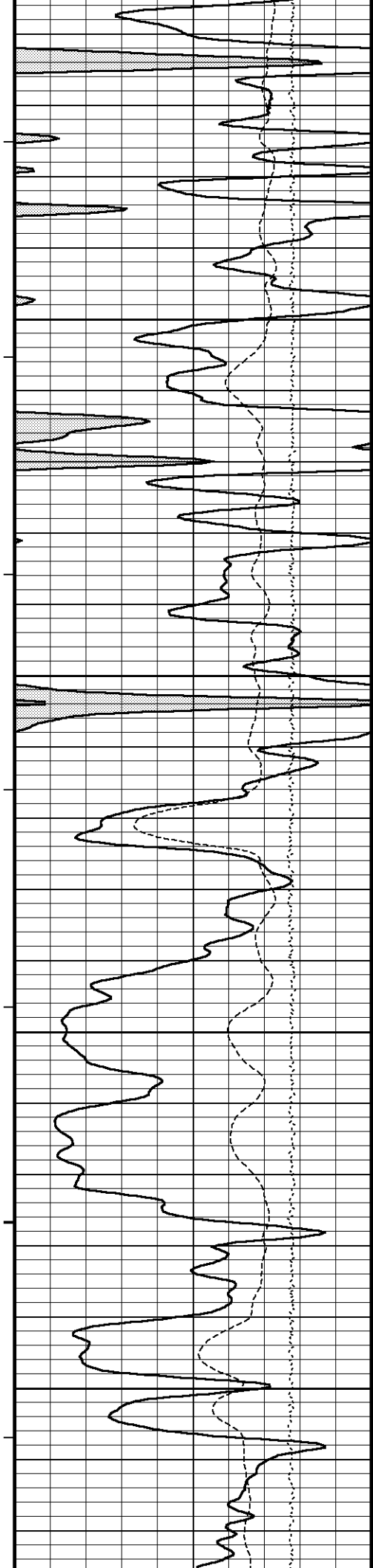
112°

5300

← Spontaneous Potential  
← Gamma Ray  
DST Uphole Tension →

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





113°

5350

114°

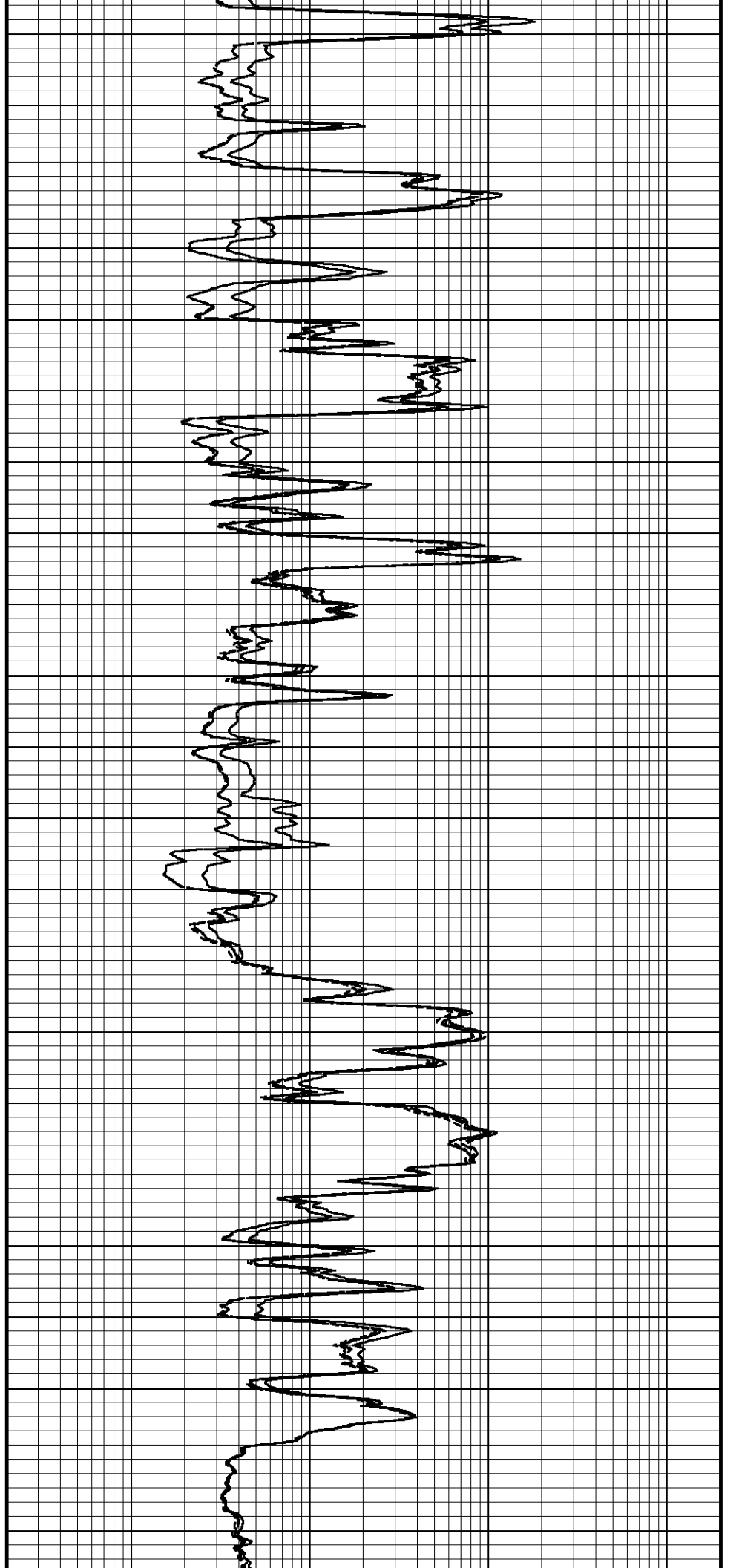
5400

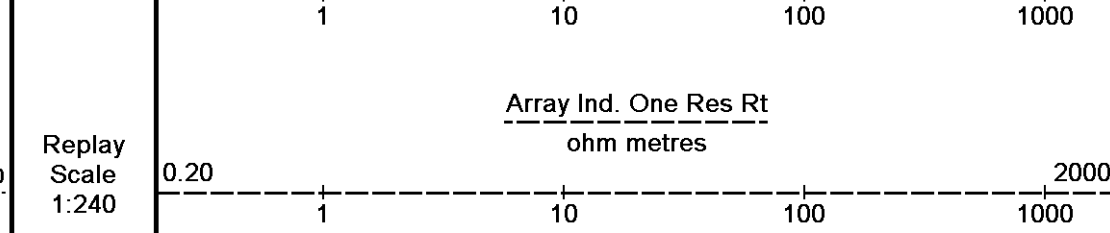
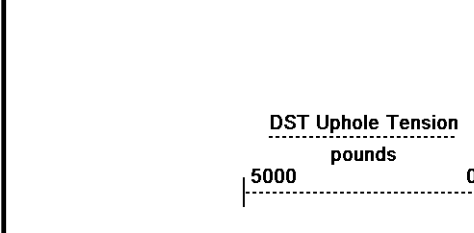
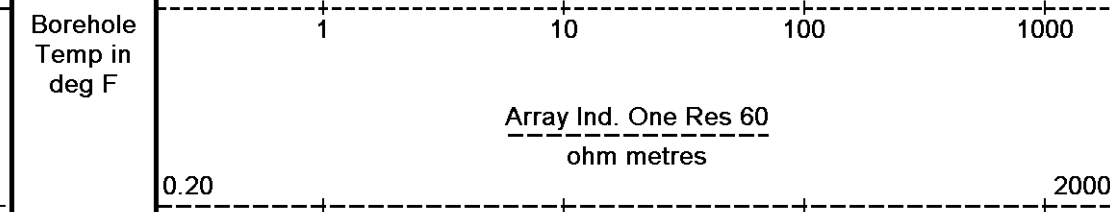
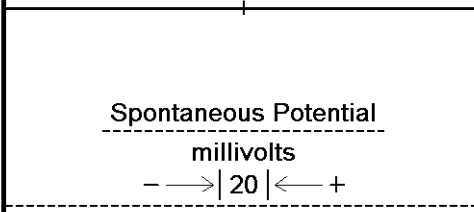
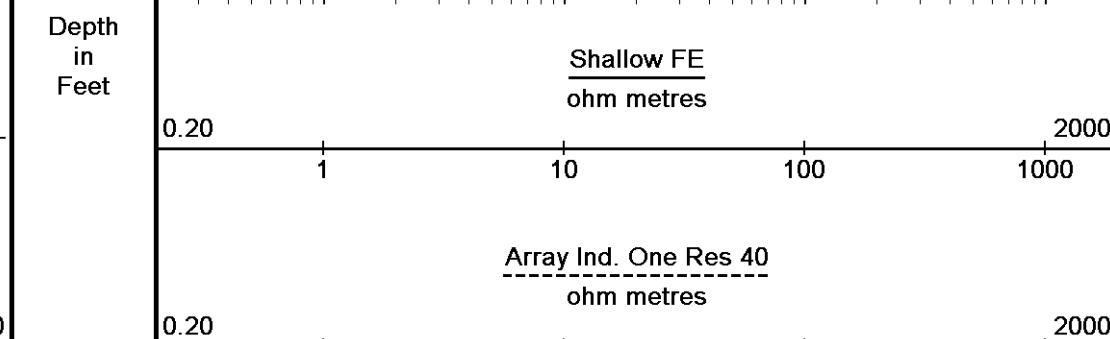
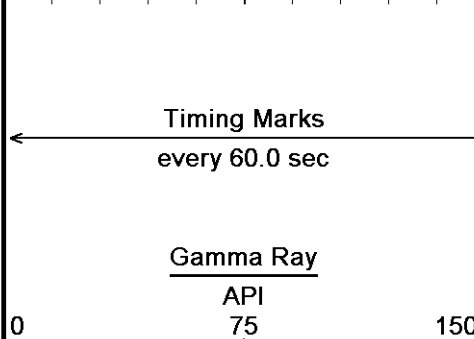
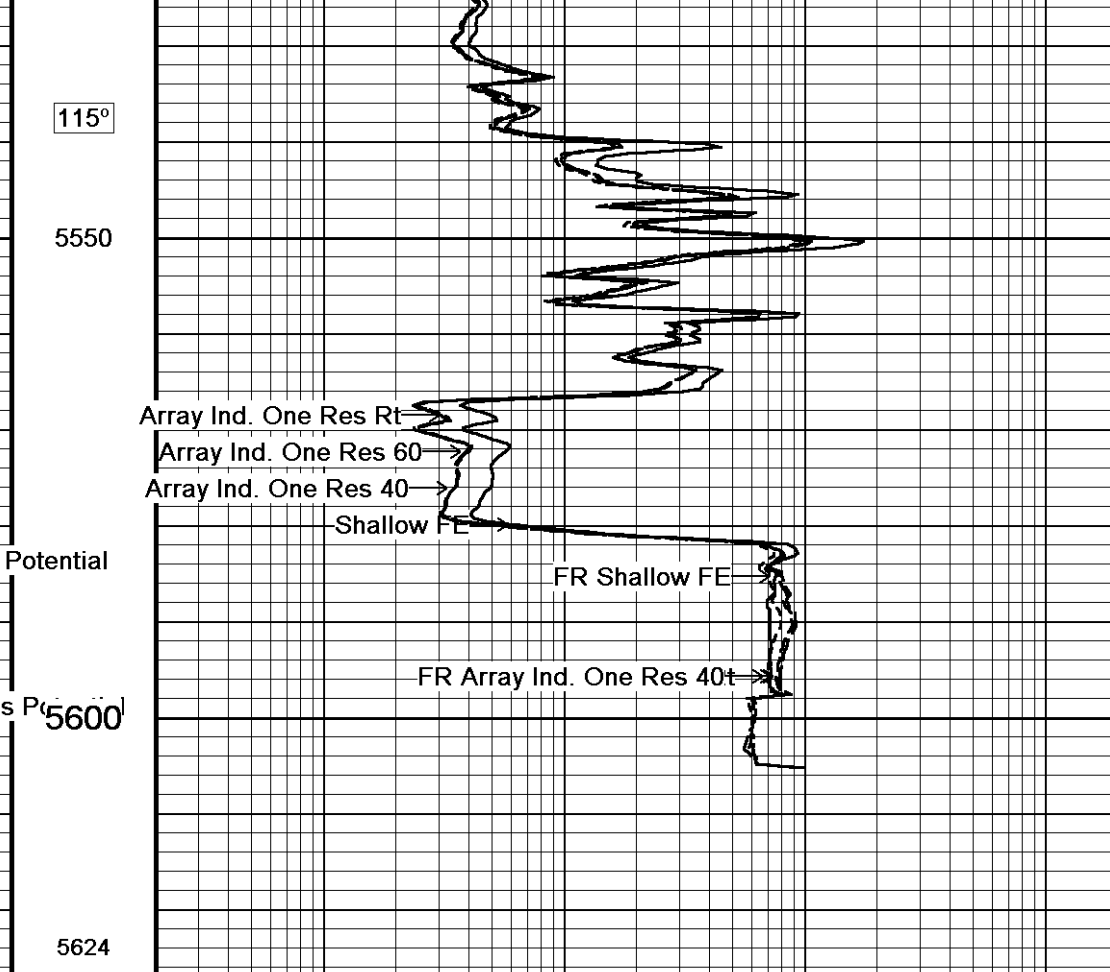
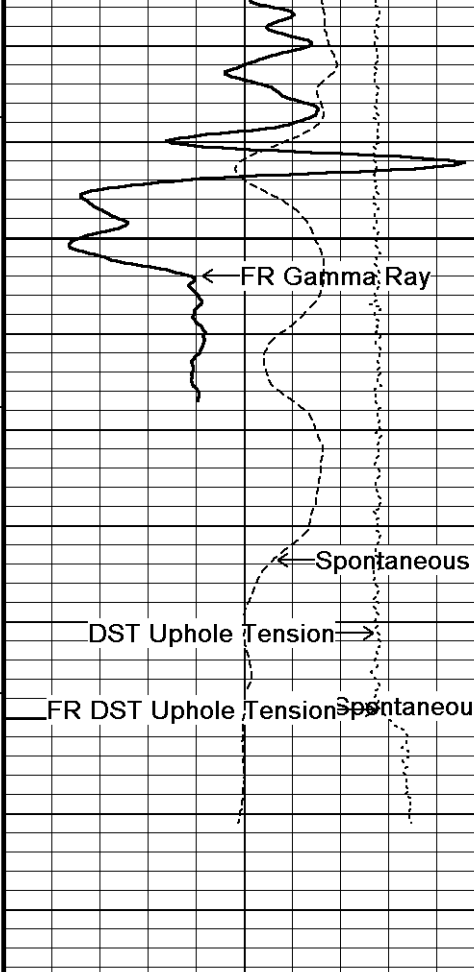
115°

5450

115°

5500



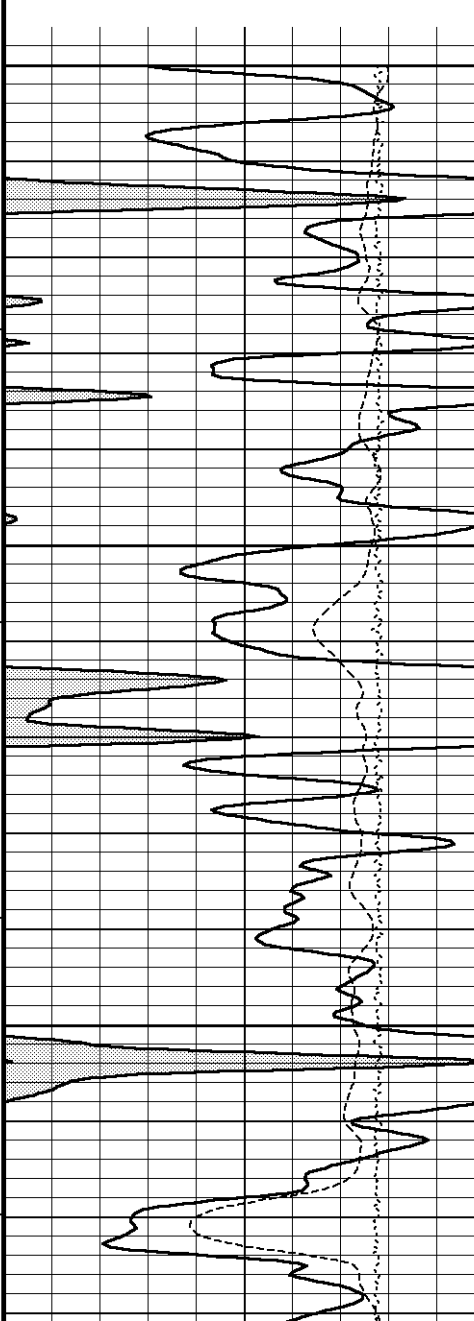
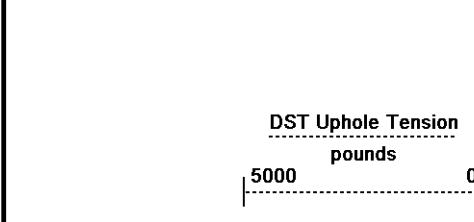
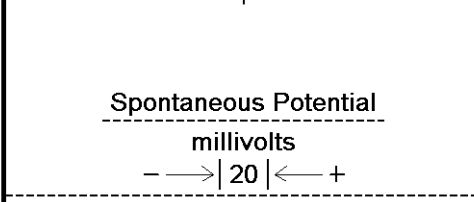
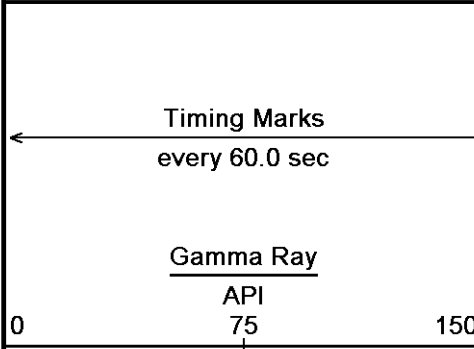


Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 22-DEC-2011 04:42  
 Filename: C:\Minimus 11.03.4044\Data\Jo-Allyn Howell # 1-10\Jo-Allyn Howell # 1-10\_003.dta  
 Recorded on 22-DEC-2011 01:56  
 System Versions: Logged with 11.03.4044 Plotted with 11.03.4044

↑ 5 INCH MAIN PASS ↑

↓ 5 INCH REPEAT PASS ↓

Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 22-DEC-2011 04:42  
 Filename: C:\Minimus 11.03.4044\Data\Jo-Allyn Howell # 1-10\Jo-Allyn Howell # 1-10\_002.dta  
 Recorded on 22-DEC-2011 01:33  
 System Versions: Logged with 11.03.4044 Plotted with 11.03.4044



Depth  
in  
Feet

Borehole  
Temp in  
deg F

Replay  
Scale  
1:240

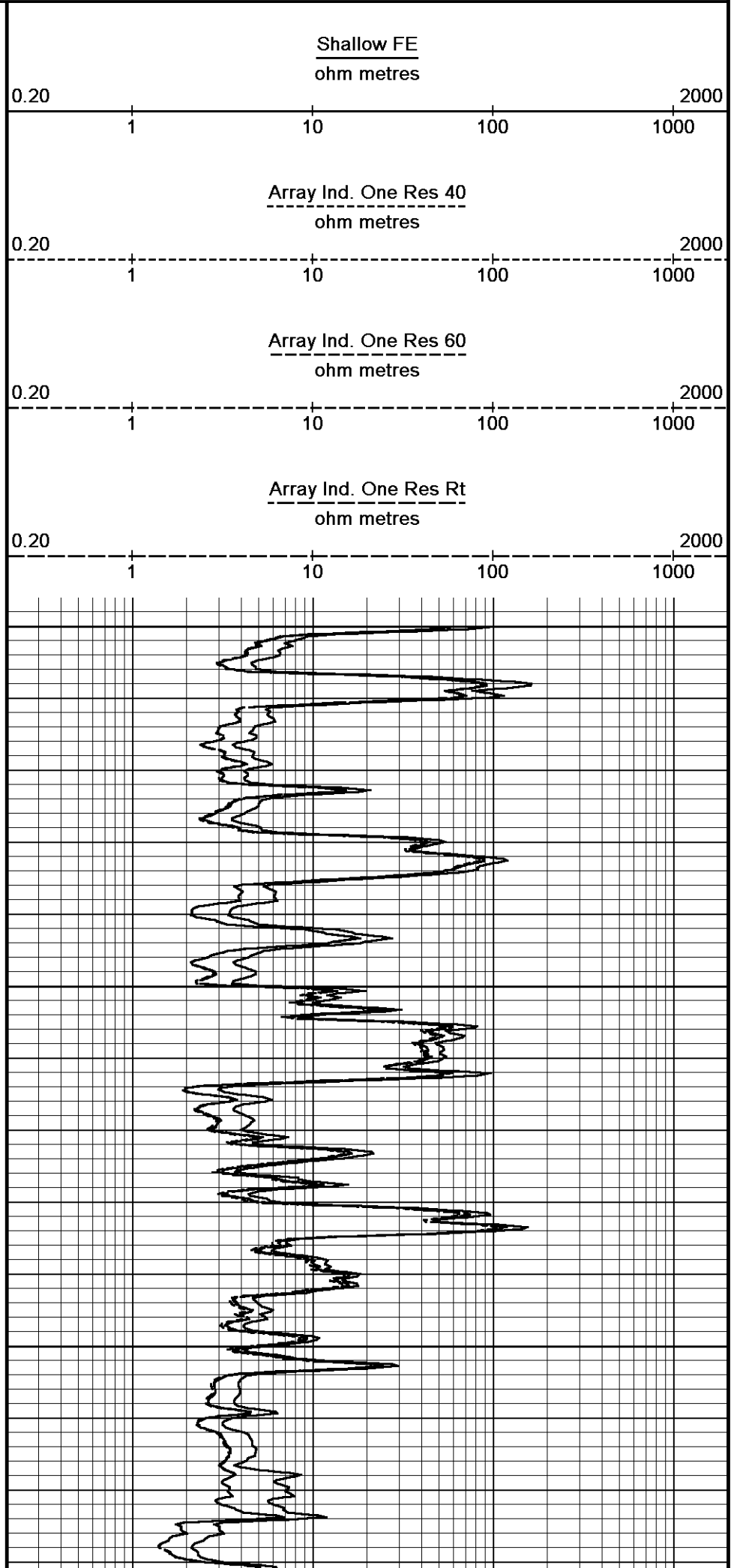
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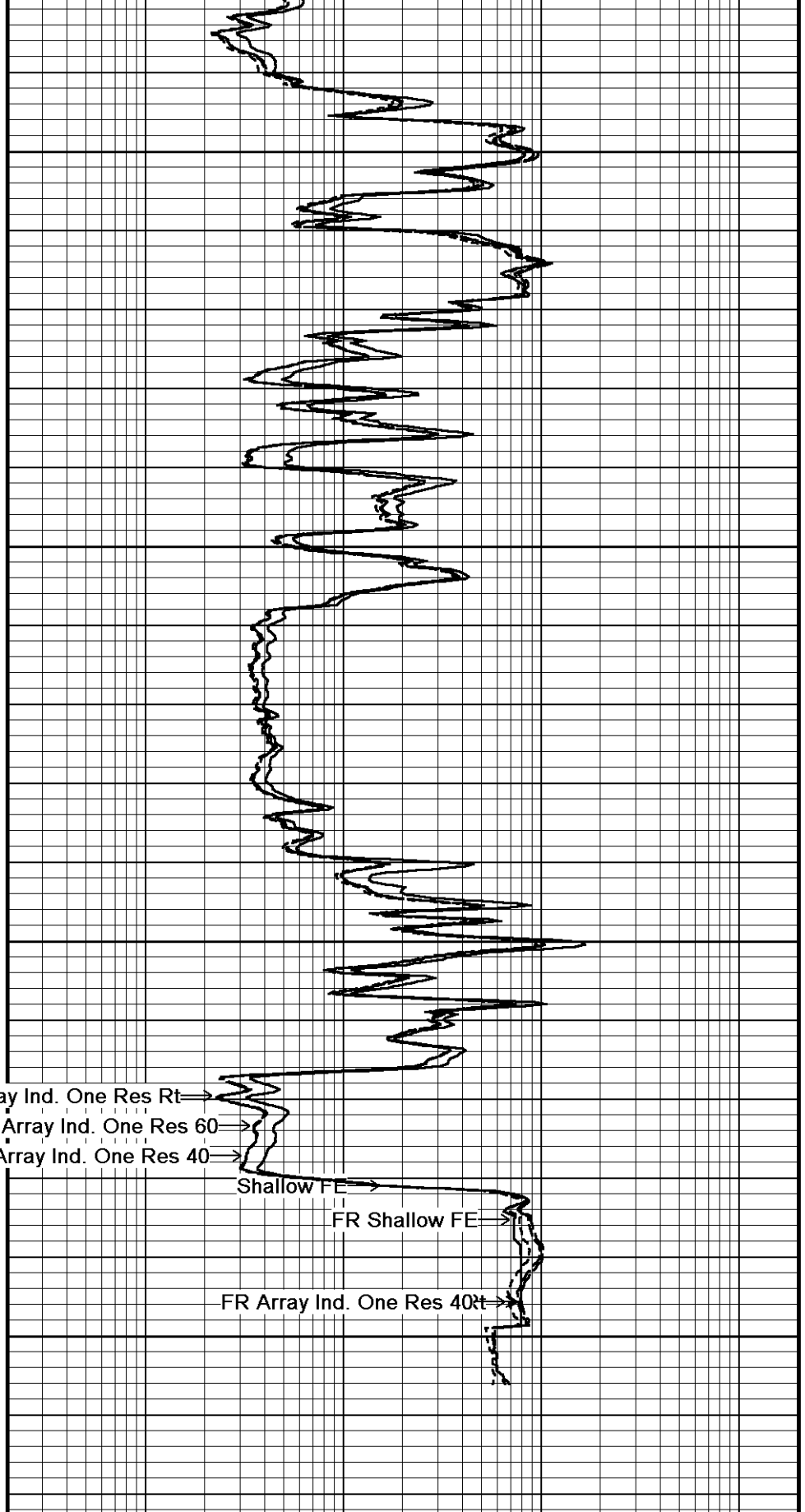
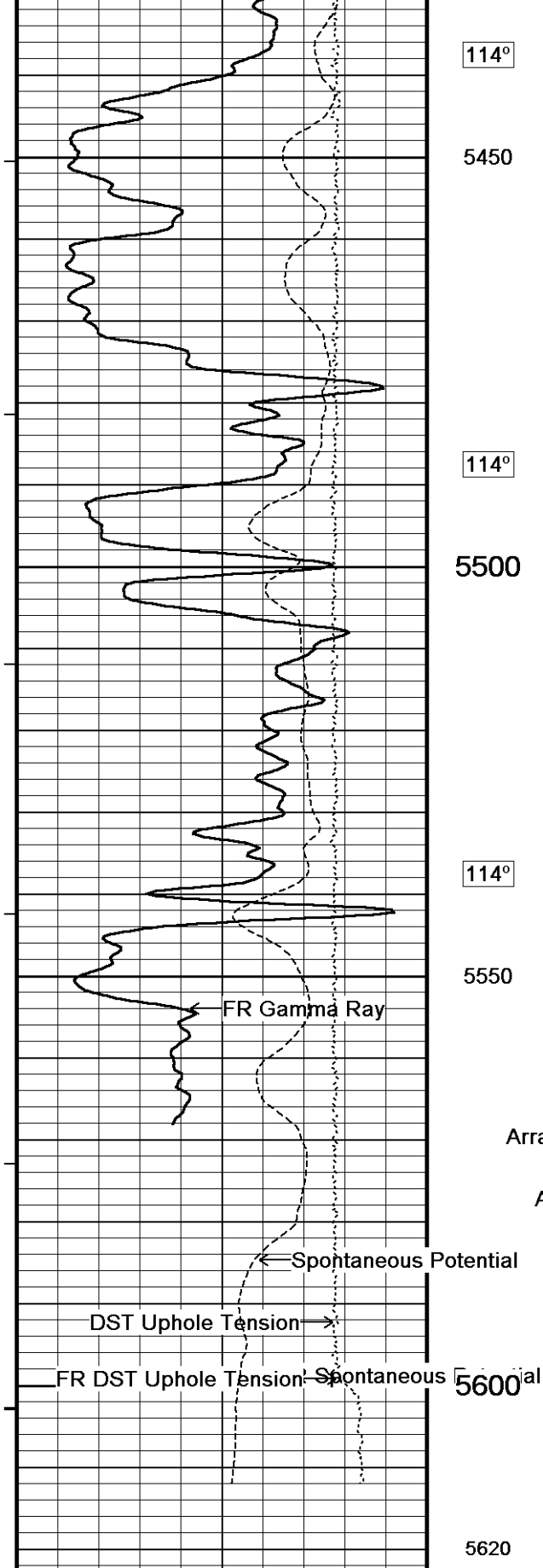
112°

5350

113°

5400





114°

5450

114°

5500

114°

5550

5600

5620

Depth in Feet

Timing Marks every 60.0 sec

Gamma Ray

0.20

1

10

100

1000

2000

Shallow FE  
ohm metres

Array Ind. One Res 40

FR Gamma Ray

Spontaneous Potential

DST Uphole Tension

FR DST Uphole Tension

Array Ind. One Res Rt

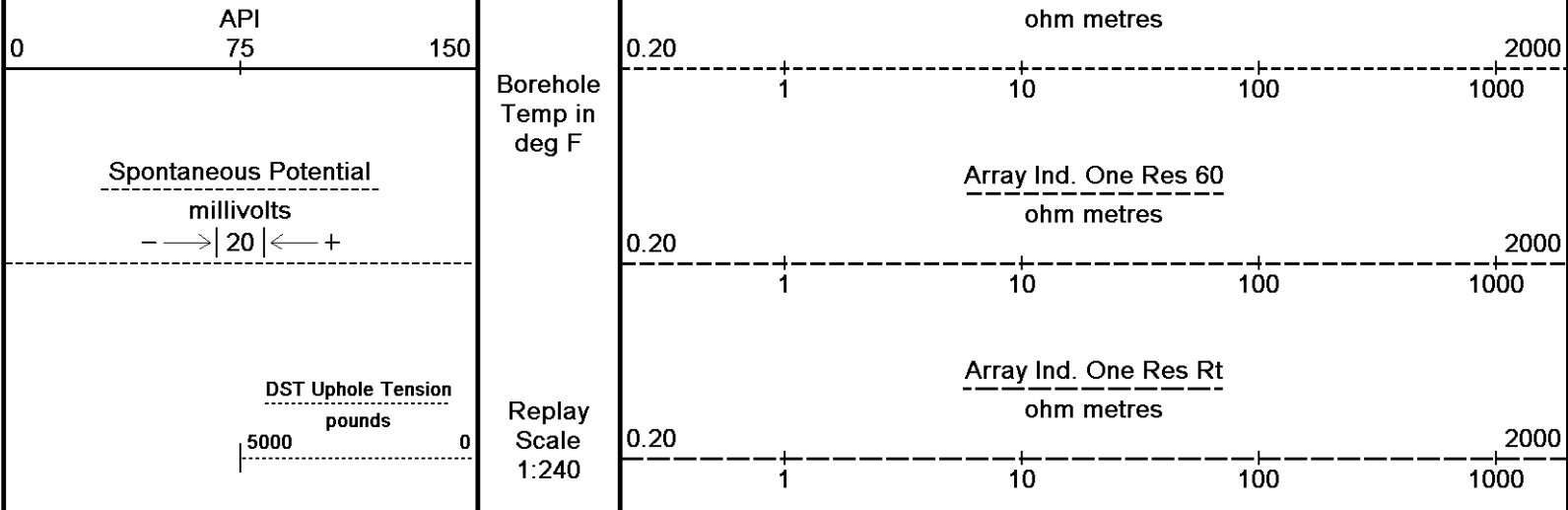
Array Ind. One Res 60

Array Ind. One Res 40

Shallow FE

FR Shallow FE

FR Array Ind. One Res 40



Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 22-DEC-2011 04:42  
 Filename: C:\Minimus 11.03.4044\Data\Jo-Allyn Howell # 1-10\Jo-Allyn Howell # 1-10\_002.dta  
 Recorded on 22-DEC-2011 01:33  
 System Versions: Logged with 11.03.4044 Plotted with 11.03.4044

↑ 5 INCH REPEAT PASS ↑

**BEFORE SURVEY CALIBRATION**  
 C:\Minimus 11.03.4044\Data\Jo-Allyn Howell # 1-10\Jo-Allyn Howell # 1-10\_003.dta

General Constants All 000 Last Edited on 21-DEC-2011,22:05

General Parameters		
Mud Resistivity	1.300	ohm-metres
Mud Resistivity Temperature	65.000	degrees F
Water Level	0.000	feet
Density/Neutron Processing	Wet Hole	
Hole/Annular Volume and Differential Caliper Parameters		
HVOL Method	Single Caliper	
HVOL Caliper 1	Density Caliper	
HVOL Caliper 2	N/A	
Annular Volume Diameter	5.500	inches
Caliper for Differential Caliper	Density Caliper	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	1.000	
RWA Constant M	2.000	

Down-hole Tension Calibration SMS 0 Field Calibration on 21-SEP-2011 17:41

Reading No	Measured	Calibrated (lbs)
1	10863.20	0.00
2	11533.19	480.60

High Resolution Temperature Calibration MCG-B 34 Field Calibration on 03-AUG-2011,22:33

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

High Resolution Temperature Constants MCG-B 34 Last Edited on

Pre-filter Length 11

SP Calibration MCG-B 34 Field Calibration on 03-AUG-2011,09:32

	Measured	Calibrated (mV)
Reference 1	103.5	100.0
Reference 2	-96.9	-100.0

Gamma Calibration MCG-B 34 Field Calibration on 21-DEC-2011 16:26

	Measured	Calibrated (API)
Background	82	57
Calibrator (Gross)	1136	782
Calibrator (Net)	1054	725

## Gamma Constants MCG-B 34

Last Edited on 21-DEC-2011,22:04

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-A 4

Base Calibration on 16-DEC-2011 15:54

Field Calibration on 21-DEC-2011 16:46

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	15222	5.98
2	18522	7.97
3	21798	9.86
4	25643	11.92
5	0	0.00
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	6.01	5.96

## Micro Normal and Micro Inverse Calibration MML-A 4

Base Calibration on 16-DEC-2011 16:01

Field Check on 21-DEC-2011 16:45

Base Calibration				
		Measured	Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.2	60.2	2.6	12.8
Micro Inverse	15.7	78.4	1.7	8.4
Channel	Base Check (ohm-m)		Field Check (ohm-m)	
Micro Normal	32.1		32.1	
Micro Inverse	16.3		16.3	

## Micro Normal and Micro Inverse Constants MML-A 4

Last Edited on 19-DEC-2011,06:49

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-A.B 65

Base Calibration on 16-DEC-2011 14:56

Field Check on 21-DEC-2011 16:44

Base Calibration				
		Measured	Calibrated (cps)	
	Near	Far	Near	Far
	3067	96	3714	110
Ratio	31.868		33.764	
Field Calibrator at Base			Calibrated (cps)	
			1645	2378
Ratio	0.692			
Field Check			Calibrated (cps)	
			1680	2382
Ratio	0.706			

## Neutron Constants MDN-A.B 65

Last Edited on 21-DEC-2011,22:04

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	

Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	Constant Value	
Formation Pressure	0.00	kpsi
Temperature Source	Constant Value	
Temperature	68.00	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-A.A 55 Base Calibration on 16-DEC-2011 15:40  
Field Check on 21-DEC-2011 16:30

Base Calibration		
	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	951.4	126.8
Base Check		281.6
Field Check		281.7

FE Constants MFE-A.A 55 Last Edited on 21-DEC-2011,22:05

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

High Resolution Temperature Calibration MAI-A.A 45 Field Calibration on 03-NOV-2011,09:08

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

High Resolution Temperature Constants MAI-A.A 45 Last Edited on

Pre-filter Length	11
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Induction Calibration MAI-A.A 45 Base Calibration on 13-OCT-2011 14:35  
Field Check on 21-DEC-2011 16:29

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		79.4	Deg F		
Channel		Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High	
1	0.0	0.0	18.6	3851.7	
2	0.0	0.0	31.8	3629.8	
3	0.0	0.0	28.8	3049.7	
4	0.0	0.0	18.4	2079.5	
Deep	0.0	0.0	16.1	1911.4	
Medium	0.0	0.0	42.7	4060.9	
Shallow	0.0	0.0	49.8	5483.7	
Array Temperature		0.0		61.0	Deg F

Induction Constants MAI-A.A 45 Last Edited on 21-DEC-2011,22:05

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	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		

Photo Density Calibration MPD-B 64

Base Calibration on 08-DEC-2011 15:10  
Field Check on 21-DEC-2011 16:34

Density Calibration					
Base Calibration		Measured		Calibrated (sdu)	
	Near	Far	Near	Far	
Reference 1	47904	25079	59556	30836	
Reference 2	19725	2537	24941	2541	
Field Check at Base					
	1205.0	1399.0			
Field Check					
	1206.1	1403.9			

PE Calibration					
Base Calibration		Measured		Calibrated	
	WS	WH	Ratio	Ratio	
Background	220	1077			
Reference 1	18004	47717	0.381	0.371	
Reference 2	5349	19592	0.277	0.272	
Field Check at Base					
	219.9	1077.0			
Field Check					
	218.2	1078.1			

Density Constants MPD-B 64

Last Edited on 21-DEC-2011,22:04

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 Multiplier	1.11	
Mud Filtrate Density	1.00	gm/cc
Dry Hole Mud Filtrate Density	1.00	gm/cc

Dry Hole Mud Filtrate Density	1.00	gm/cc
DNCT	0.00	gm/cc
CRCT	0.00	gm/cc
Density Z/A Correction	Hybrid	
Matrix Density (gm/cc)	Depth (ft)	
2.71	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	

**Caliper Calibration MPD-B 64**

Base Calibration on 08-DEC-2011 14:37  
Field Calibration on 21-DEC-2011 16:38

**Base Calibration**

Reading No	Measured	Calibrator Size (in)
1	12765	3.99
2	21501	5.98
3	30128	7.97
4	38369	9.86
5	47411	11.92
6	N/A	N/A

**Field Calibration**

Measured Caliper (in)	Actual Caliper (in)
5.93	5.96

**DOWNHOLE EQUIPMENT**

C:\Minimus 11.03.4044\Data\Jo-Allyn Howell # 1-10\Jo-Allyn Howell # 1-10\_003.dta

MCB-A.A 11B Tension Cablehead  
MCB-A.A 175 LG: 2.40 ft WT: 19.8 lb OD: 2.24 in

MCB-A.A 11B Tension Cablehead  
MCB-A.A 175 LG: 2.40 ft WT: 19.8 lb OD: 2.24 in

SHA-F Compact Swivel Head Adaptor  
SHA-F 88 LG: 2.74 ft WT: 26.5 lb OD: 2.24 in

SHA-F Compact Swivel Head Adaptor  
SHA-F 88 LG: 2.74 ft WT: 26.5 lb OD: 2.24 in

Compact Comms Gamma  
MCG-B 34 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Comms Gamma  
MCG-B 34 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

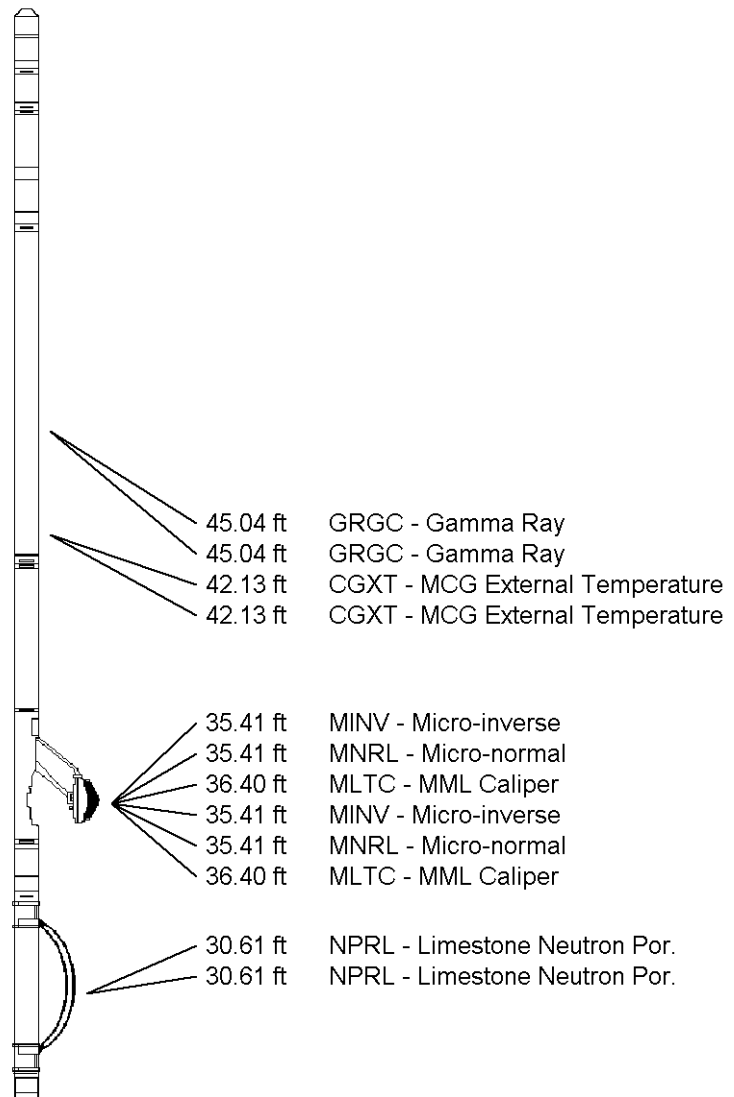
Compact Micro-log  
MML-A 4 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Micro-log  
MML-A 4 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

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

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

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



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

SKJ-D.A Compact Knuckle Joint  
SKJ-D.A 37 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint  
SKJ-D.A 37 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Focussed Electric  
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

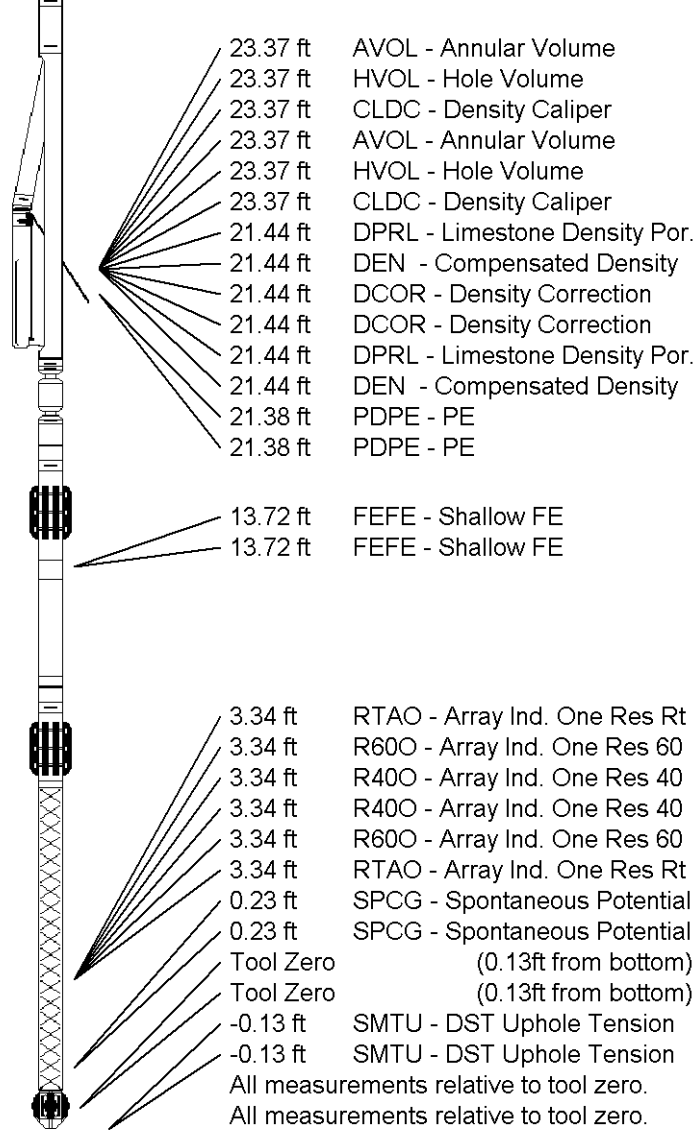
Compact Focussed Electric  
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Induction  
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Compact Induction  
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 55.46 ft Weight: 454.2 lb

Total Length: 55.46 ft Weight: 454.2 lb



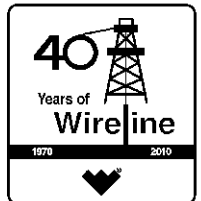
**COMPANY** JO-ALLYN OIL CO., INC.  
**WELL** HOWELL # 1-10  
**FIELD** SNAKE CREEK WEST  
**PROVINCE/COUNTY** CLARK  
**COUNTRY/STATE** U.S.A. / KANSAS

Elevation Kelly Bushing	1859.00	feet	First Reading	5596.00	feet
Elevation Drill Floor	1857.00	feet	Depth Driller	5600.00	feet
Elevation Ground Level	1852.00	feet	Depth Logger	5599.00	feet



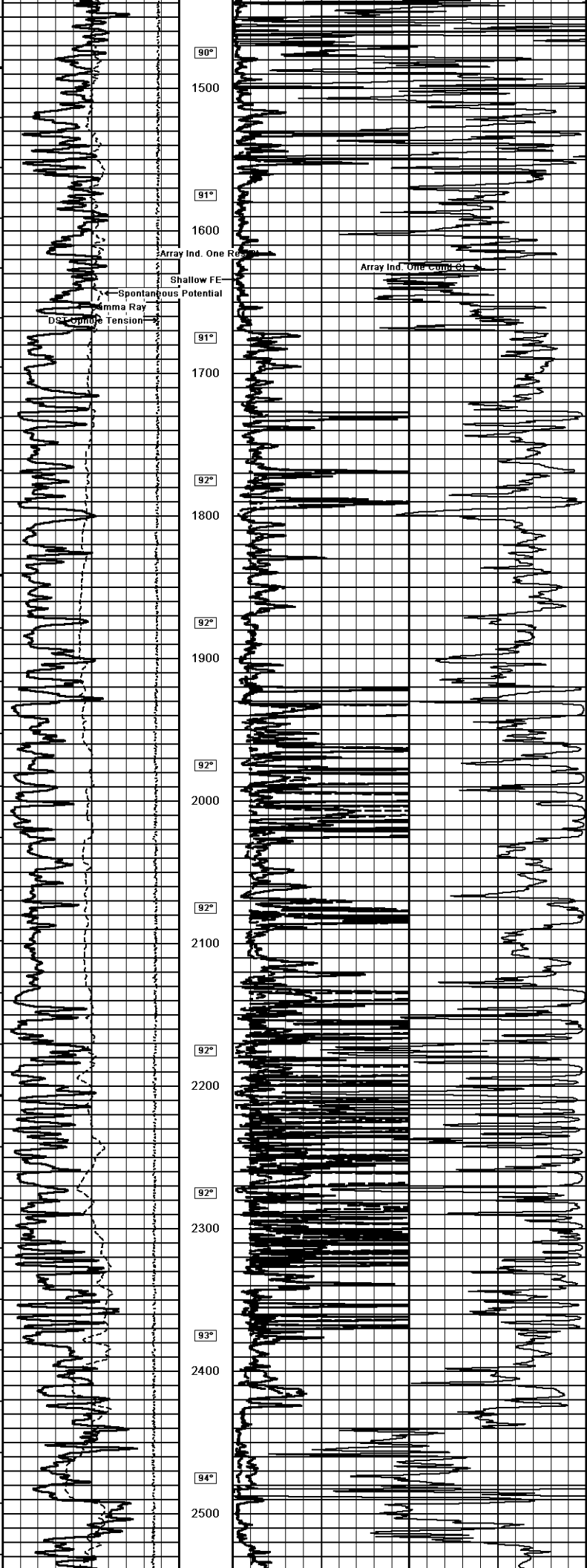
**Weatherford**

**ARRAY INDUCTION  
SHALLOW FOCUSED  
ELECTRIC LOG**



<b>Weatherford</b>		JO-ALLYN OIL CO. HOWELL # 1-10 SNAKE CREEK WEST PROVINCE/COUNTY CLARK U.S.A. / KANSAS COUNTRY/STATE LOCATION SW SE SE 330' FSL & 990' FE	
COMPANY	JO-ALLYN OIL CO.	WELL	HOWELL # 1-10
FIELD	SNAKE CREEK WEST	PROVINCE/COUNTY	CLARK
COUNTRY/STATE	U.S.A. / KANSAS	LOCATION	SW SE SE
LOG NUMBER	154025-21535	DATE	31-DEC-2011
PERMANENT DATUM	Q.L., Elevation 1692 feet	LOG MEASURED FROM	K.B @ 7 FEET
DRILLING MEASURED FROM	K.B @ 7 FEET	DATE	31-DEC-2011
RUN NUMBER	ONE	DEPTH DRILLER	5600.00
DEPTH DRILLER	5600.00	DEPTH LOGGER	5599.00
FIRST READING	5596.00	CASING DRILLER	754.00
CASING DRILLER	754.00	CASING LOGGER	754.00
BHT SIZE	7.875	FLOWLINE	COMPACT
FLOWLINE	COMPACT	PH/FLUID LOSS	11.00
DENSITY / VISCOSITY	9.30 / 100/89	SAMPLE SOURCE	1.30 @ 65.0
PH / FLUID LOSS	11.00	RPM @ MEASURED TEMP	104 @ 65.0
SAMPLE SOURCE	1.30 @ 65.0	RPM @ MEASURED TEMP	1.56 @ 65.0
RPM @ MEASURED TEMP	104 @ 65.0	SOURCE RPM / RPM	0.75 @ 115.0
RPM @ MEASURED TEMP	1.56 @ 65.0	TIME SINCE CIRCULATION	5 HOURS
SOURCE RPM / RPM	0.75 @ 115.0	EQUIPMENT NAME	COMPACT
TIME SINCE CIRCULATION	5 HOURS	EQUIPMENT BASE	A. OMMARAYO
EQUIPMENT NAME	COMPACT	MEASURED BY	ALLEN BARBY
EQUIPMENT BASE	A. OMMARAYO	LOG NUMBER	3531240
MEASURED BY	ALLEN BARBY		
LOG NUMBER	3531240		





90°

1500

91°

1600

91°

1700

92°

1800

92°

1900

92°

2000

92°

2100

92°

2200

92°

2300

93°

2400

94°

2500

Array Ind. One Re

Shallow FE

Spontaneous Potential

Gamma Ray

DSI Comp. Tension

Array Ind. One Comp. C1

95°  
Array Ind. One Res Rt  
2600  
Shallow FE  
Spontaneous Potential  
Gamma Ray  
DST Upole Tension

Array Ind. One Cond Ct

95°  
2700

96°  
2800

97°  
2900

97°  
3000

97°  
3100

98°  
3200

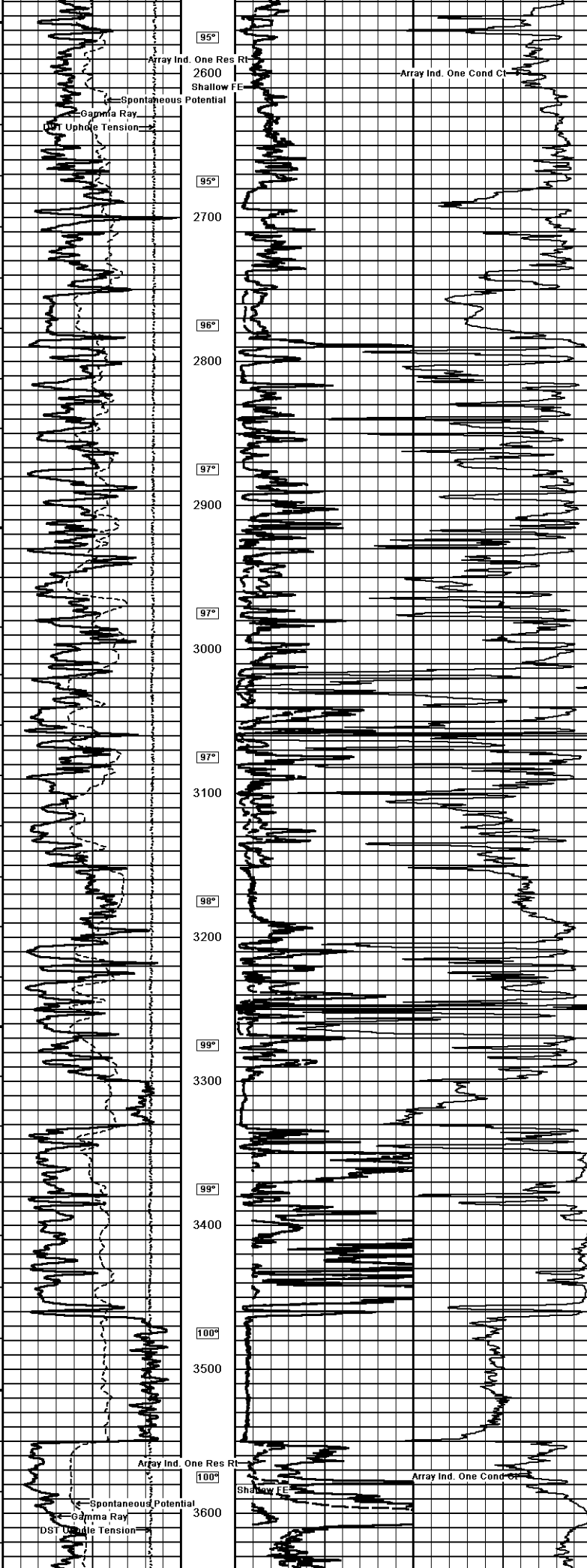
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3300

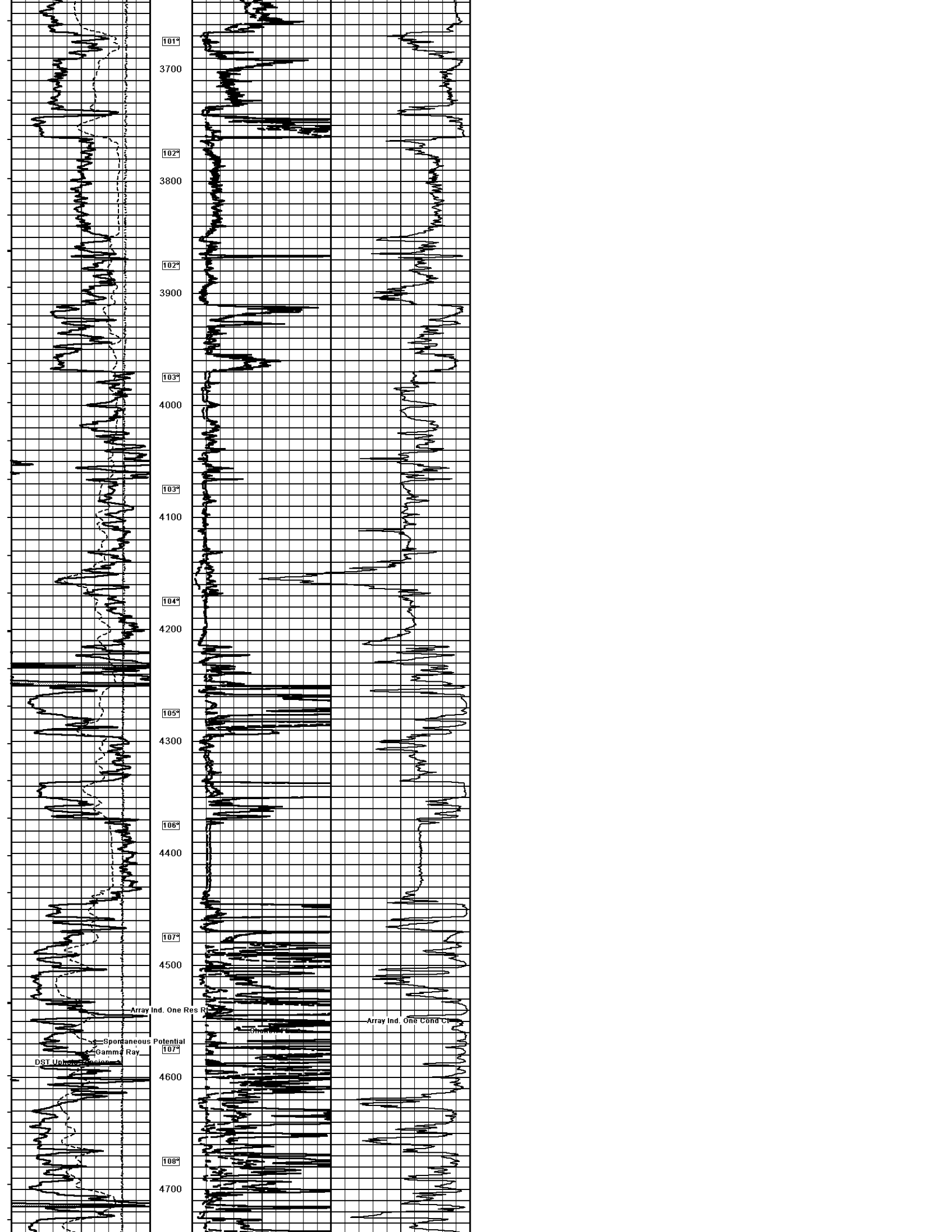
99°  
3400

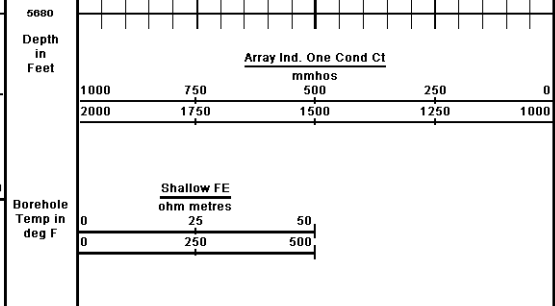
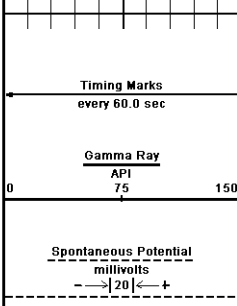
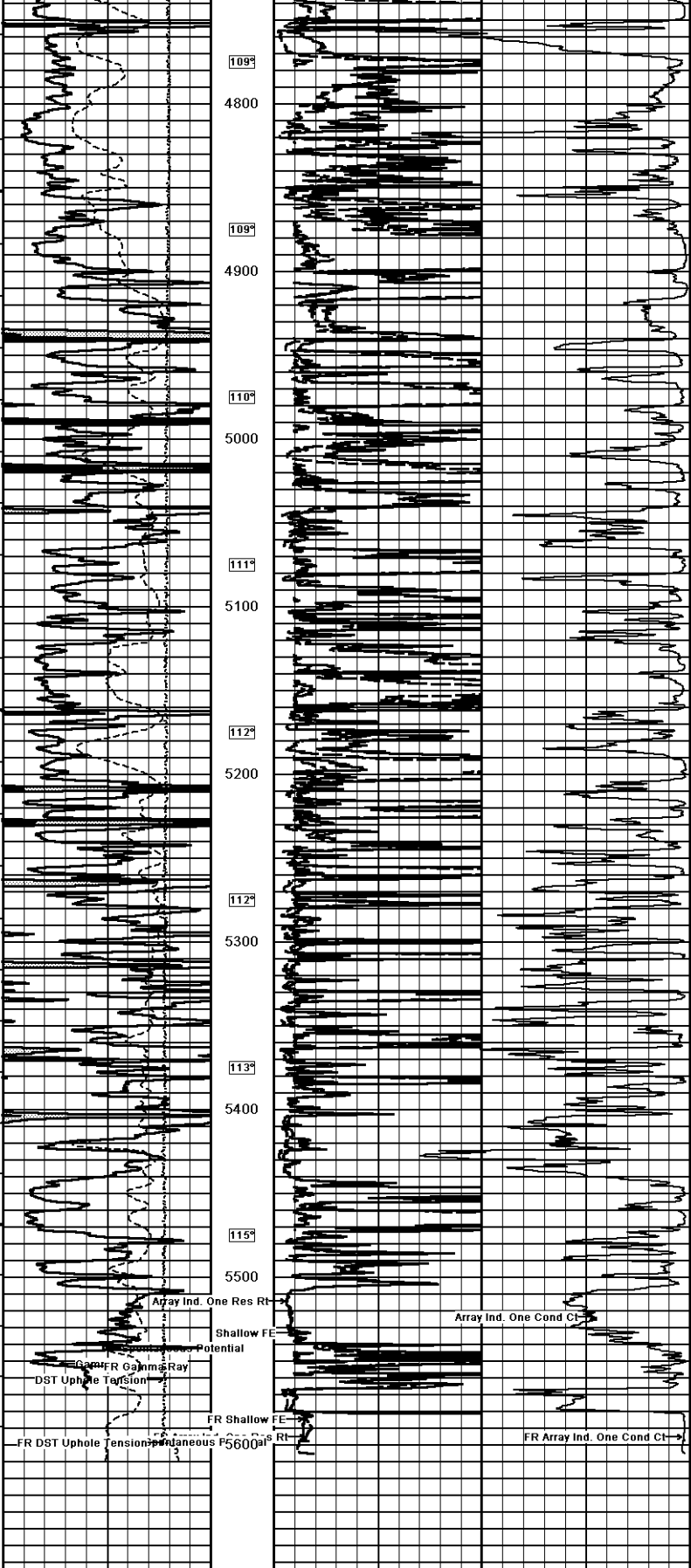
100°  
3500

Array Ind. One Res Rt  
100°  
Spontaneous Potential  
Gamma Ray  
DST Upole Tension  
3600

Array Ind. One Cond Ct







Array Ind. One Res Rt

DST Uphole Tension  
pounds  
5000

Replay  
Scale  
1:600


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

Depth Based Data - Maximum Sampling Increment 10.0cm  
Plotted on 22-DEC-2011 04:42  
Filename: C:\Minimus 11.03.4044\Data\Jo-Allyn Howell # 1-10\Jo-Allyn Howell # 1-10\_003.dta  
Recorded on 22-DEC-2011 01:56  
System Versions: Logged with 11.03.4044 Plotted with 11.03.4044

↑ 1 INCH MAIN PASS ↑

COMPANY JO-ALLYN OIL CO., INC.  
WELL HOWELL # 1-10  
FIELD SNAKE CREEK WEST  
PROVINCE/COUNTY CLARK  
COUNTRY/STATE U.S.A. / KANSAS

Elevation Kelly Bushing	1859.00	feet	First Reading	5596.00	feet
Elevation Drill Floor	1857.00	feet	Depth Driller	5600.00	feet
Elevation Ground Level	1852.00	feet	Depth Logger	5599.00	feet



ARRAY INDUCTION  
SHALLOW FOCUSED  
ELECTRIC LOG

