



Weatherford[®]

**ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG**

COMPANY **SDOCO, LLC.**
 WELL **REES RANCH 4-19**
 FIELD **REES RANCH**
 PROVINCE/COUNTY **WICHITA**
 COUNTRY/STATE **U.S.A. / KANSAS**
 LOCATION **878' FNL & 394' FWL
NE SW NW NW**

SEC **19** TWP **19S** RGE **35W** Other Services **MML**
 MPPD/MDN
 MSS
 API Number **15-203-20219**
 Permit Number
 Permanent Datum GL, Elevation 3172 feet
 Log Measured From **KB**
 Drilling Measured From **KB**

Date	15-MAY-2013	Elevations:	feet
Run Number	ONE	KB	3183.00
Service Order	3539044	DF	3182.00
Depth Driller	5250.00	GL	3172.00
Depth Logger	5254.00		
First Reading	5251.00		
Last Reading	352.00		
Casing Driller	350.00		
Casing Logger	352.00		
Bit Size	7.875		
Hole Fluid Type	CHEMICAL		
Density / Viscosity	9.40 lb/USg	61.00 CP	
PH / Fluid Loss	9.50	8.80 ml/30Min	
Sample Source	FLOWLINE		
Rm @ Measured Temp	0.60 @ 84.0	ohm-m	
Rmf @ Measured Temp	0.48 @ 84.0	ohm-m	
Rmc @ Measured Temp	0.72 @ 84.0	ohm-m	
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.40 @125.0	ohm-m	
Time Since Circulation	8 HOURS		
Max Recorded Temp	125.00	deg F	
Equipment / Base	13096	LIB	
Recorded By	ADAM SILL		
Witnessed By	GARY DOKE		
JOB #	LB13-137		

BOREHOLE RECORD

Last Edited: 15-MAY-2013 19:01

Bit Size inches	Depth From feet	Depth To feet
7.875	350.00	5250.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	350.00	24.00

REMARKS

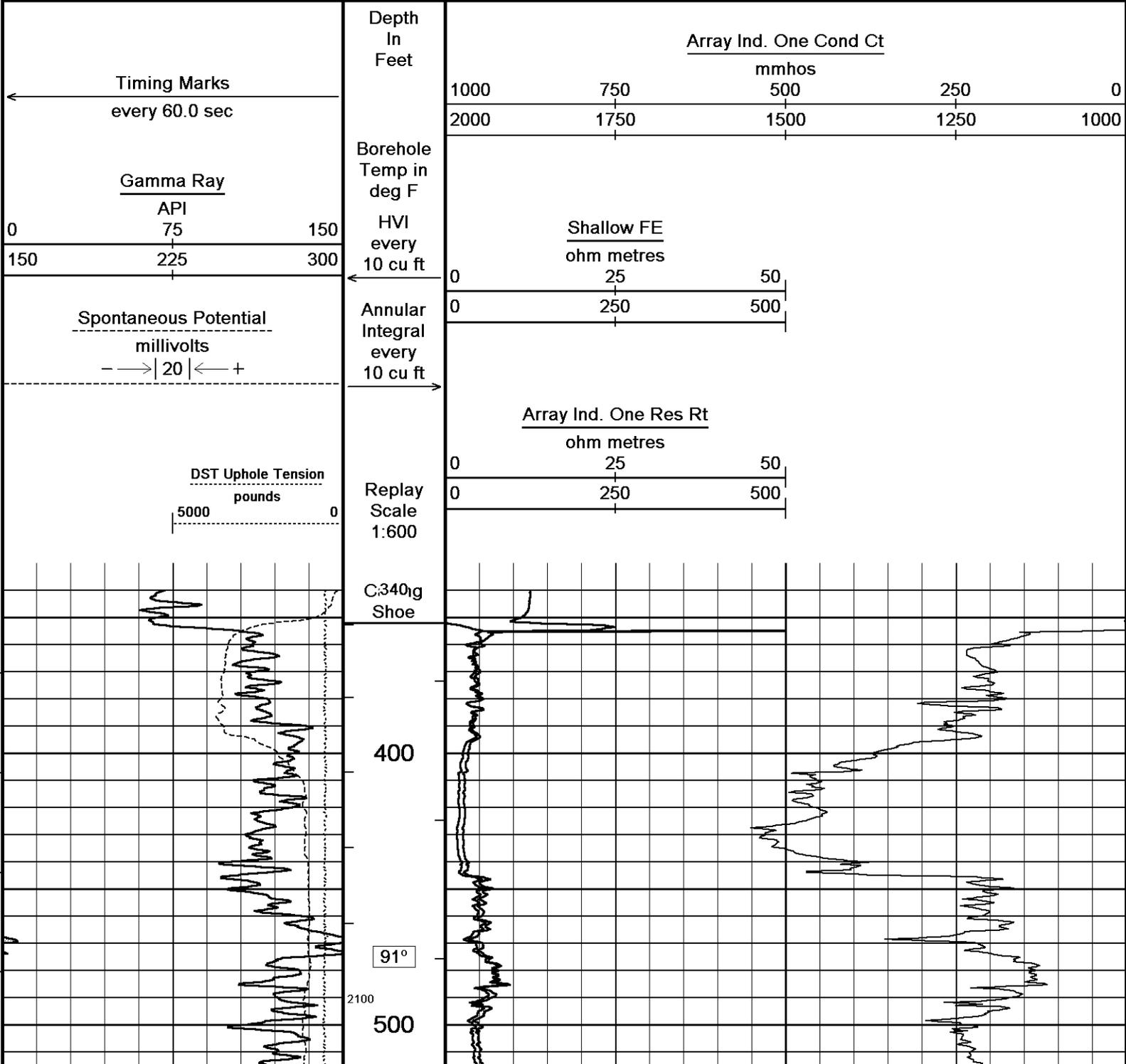
- SOFTWARE ISSUE: WLS 13.05.9583.
- MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION.
 - HARDWARE: DUAL BOWSPRING USED ON MDN.
 - 0.5 INCH STANDOFF USED ON MFE.
 - TWO 0.5 INCH STANDOFFS USED ON MSS.
 - 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 2149 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH CASING FROM TD TO 2500 FEET: 553 CU. FT.

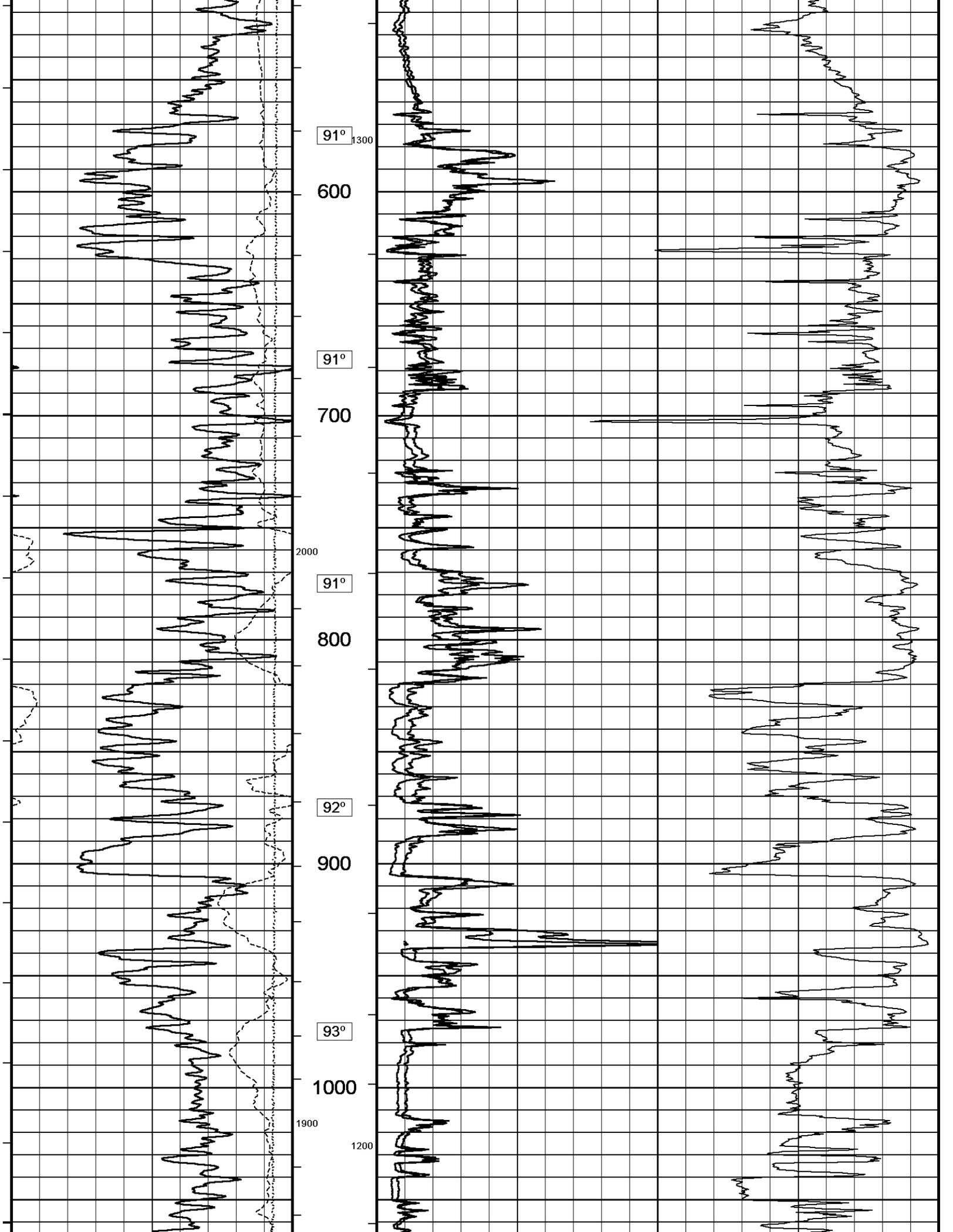
- SERVICE ORDER # 3539044.
 - RIG: H2 DRILLING #1.
 - ENGINEER: A. SILL.
 - OPERATOR(S): N. ADAME.

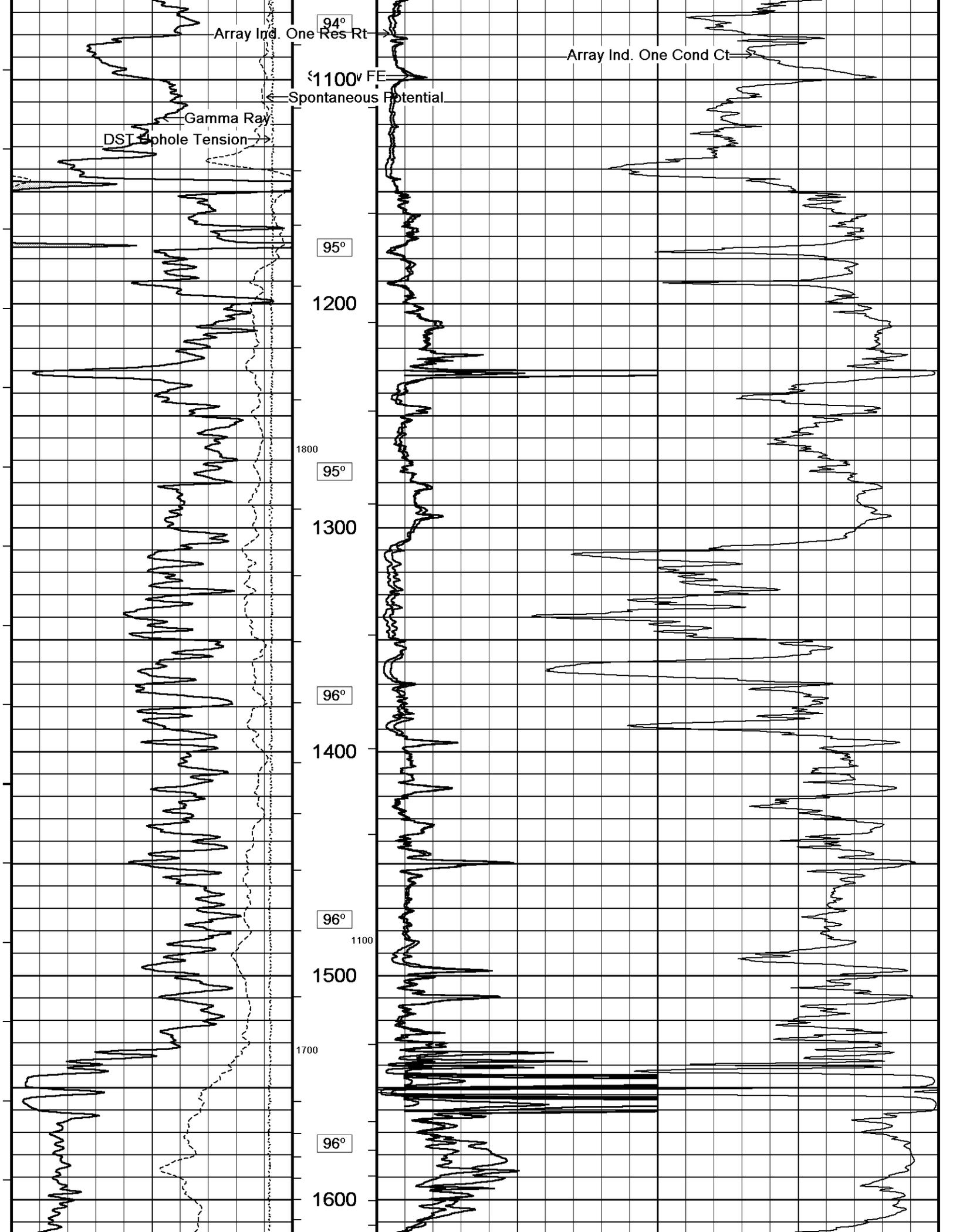
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, 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.

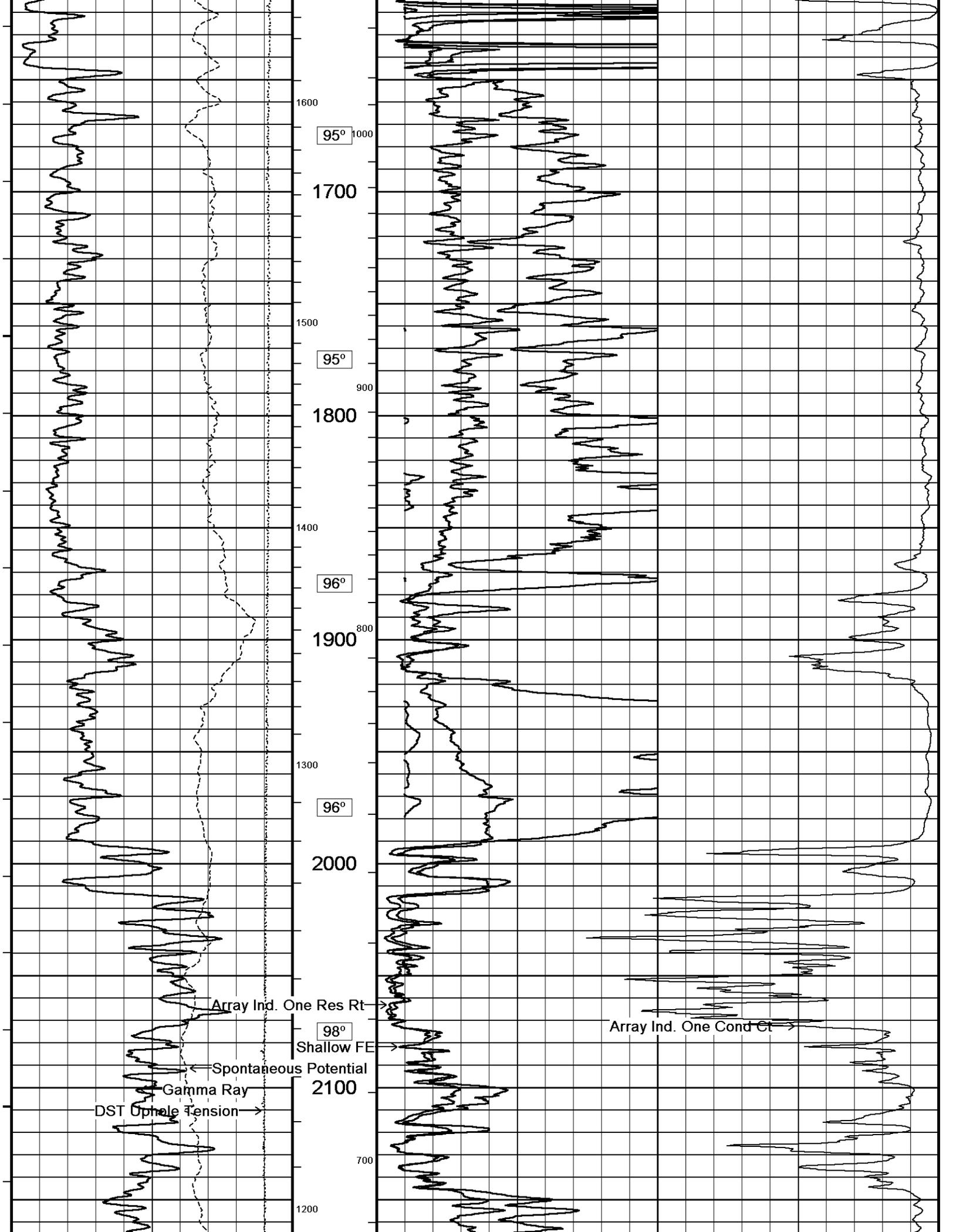
2 INCH MAIN

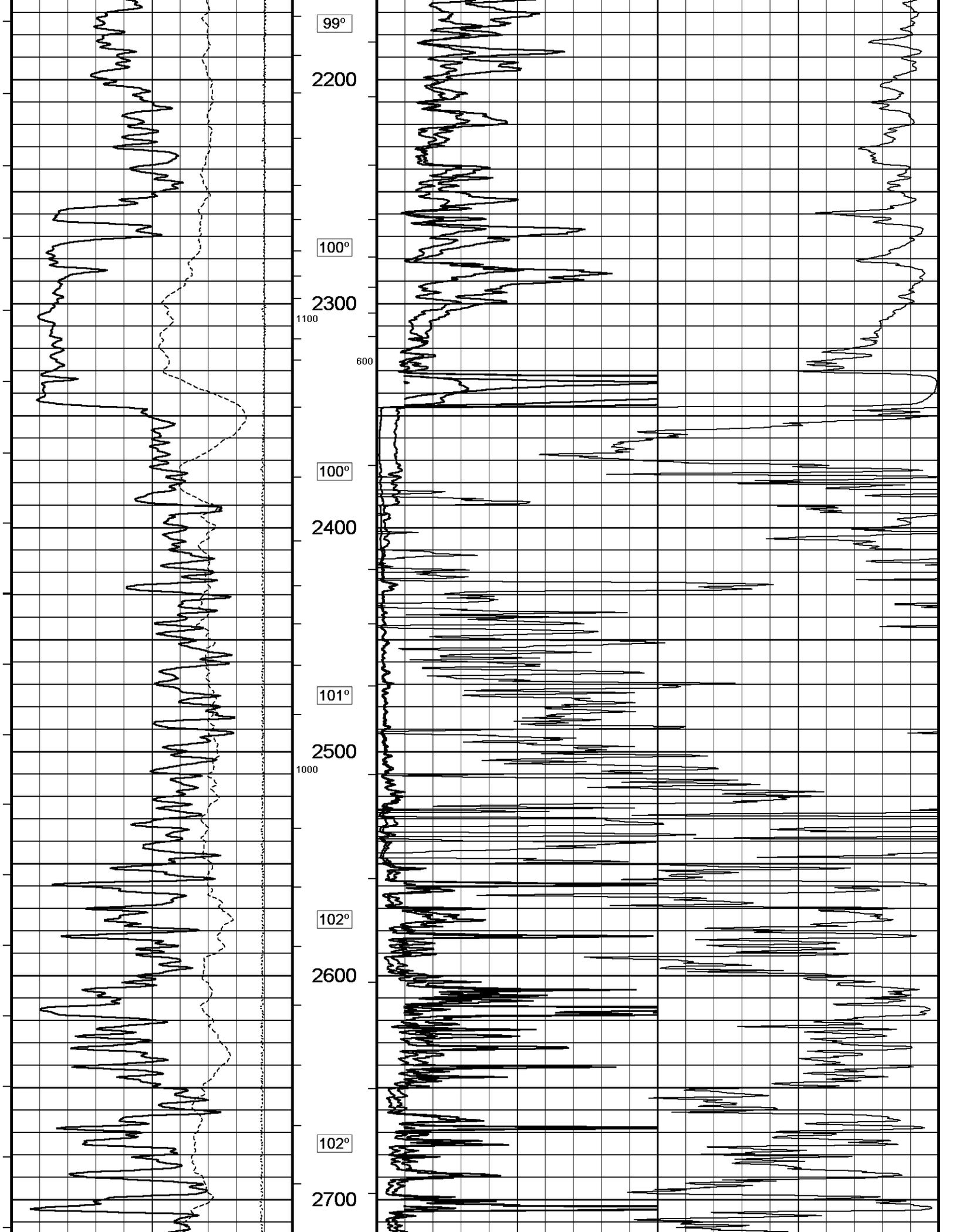
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 Filename: C:\Minimus 13.05.9583\Log\SDOCO Ress Ranch 4-19\SDOCO Reese Ranch 4-19 Main.dta Recorded on 15-MAY-2013 20:23
 System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

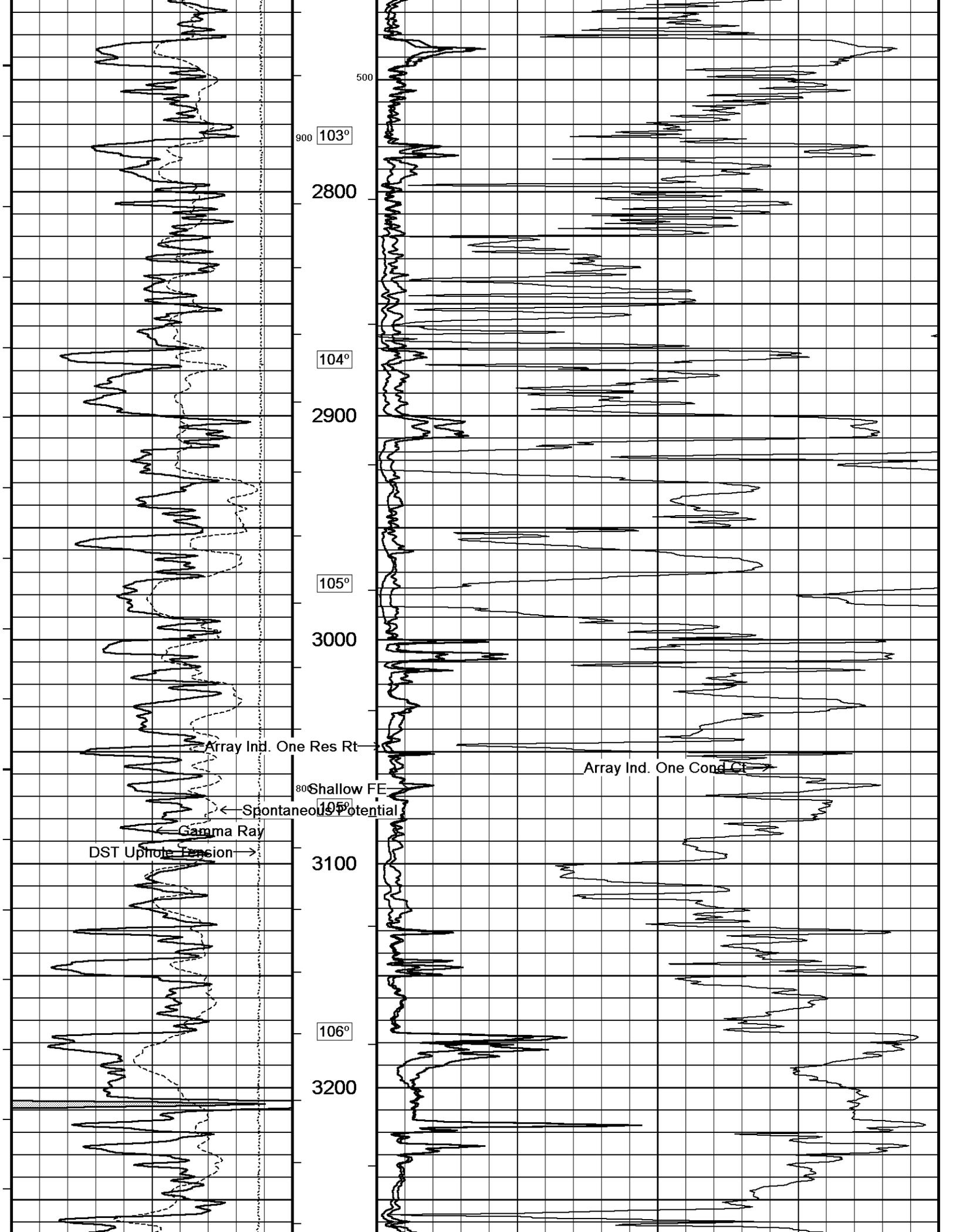


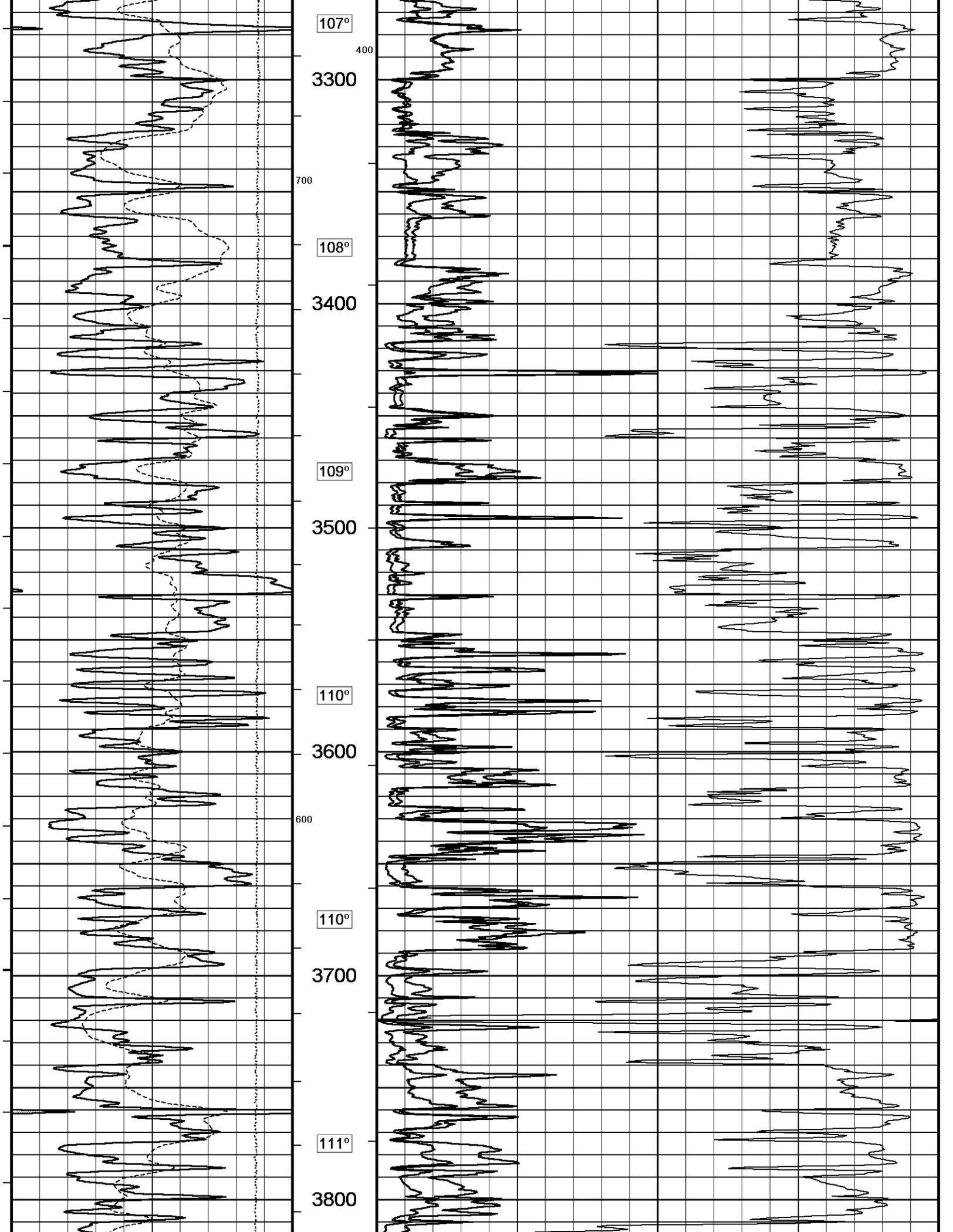


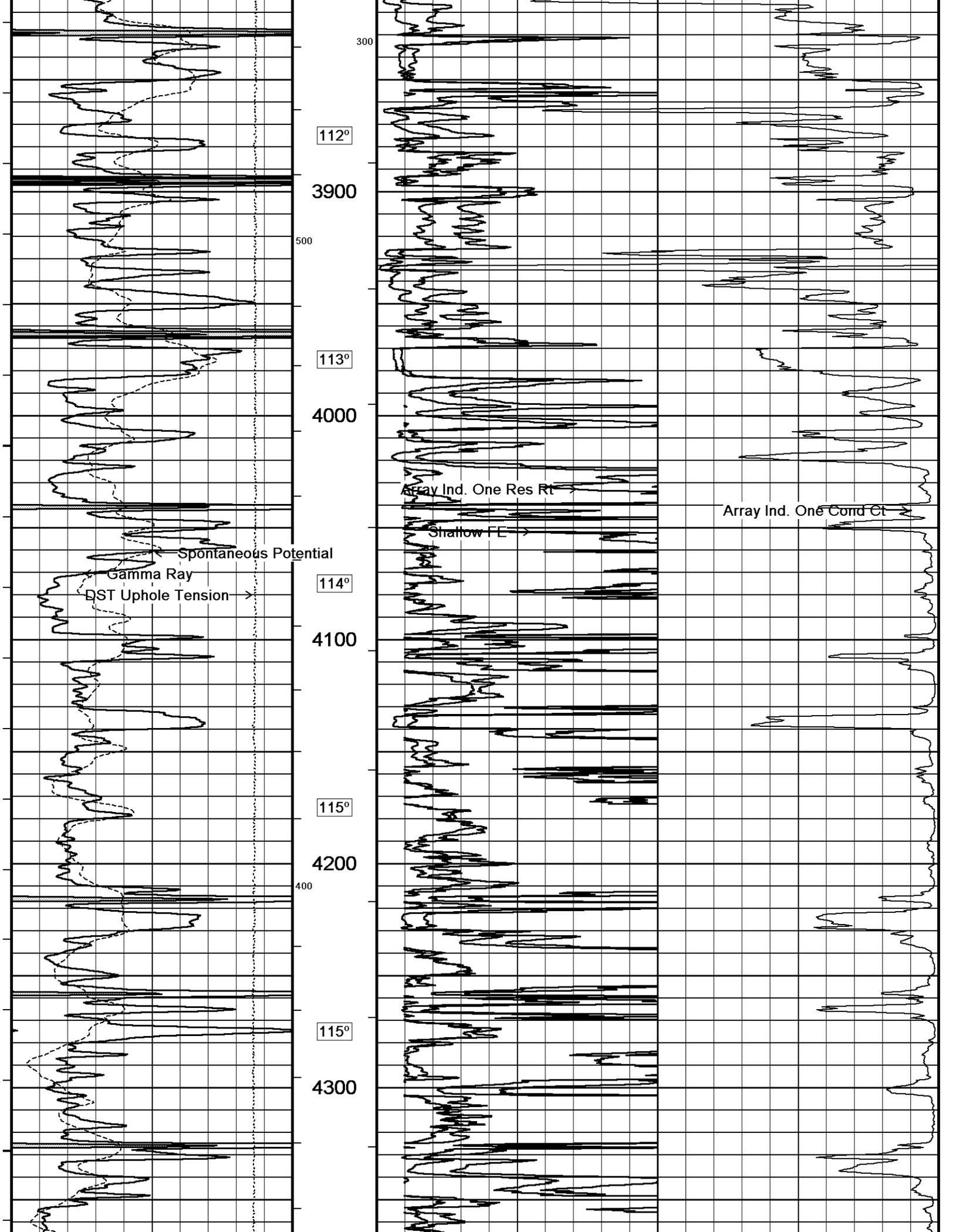


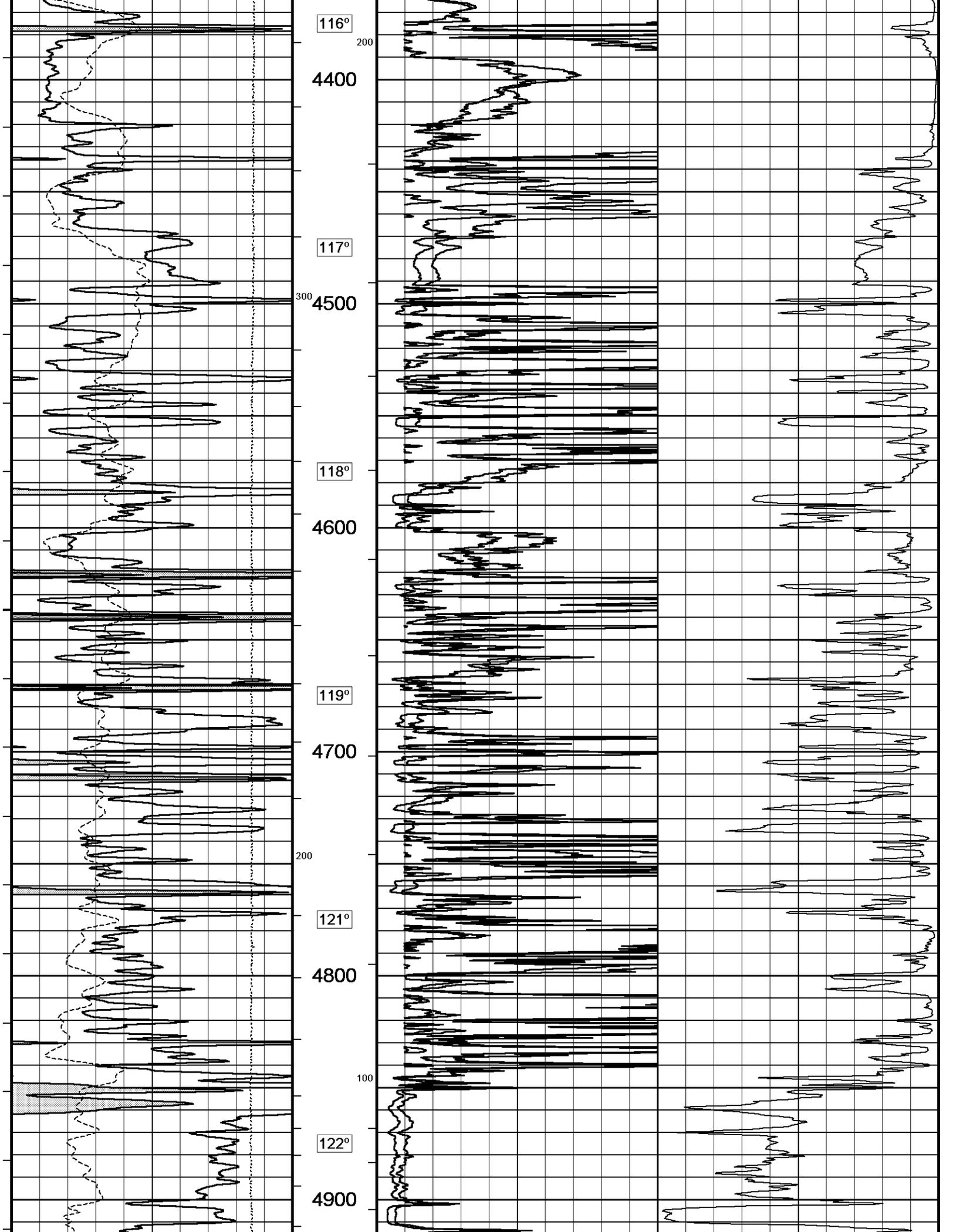


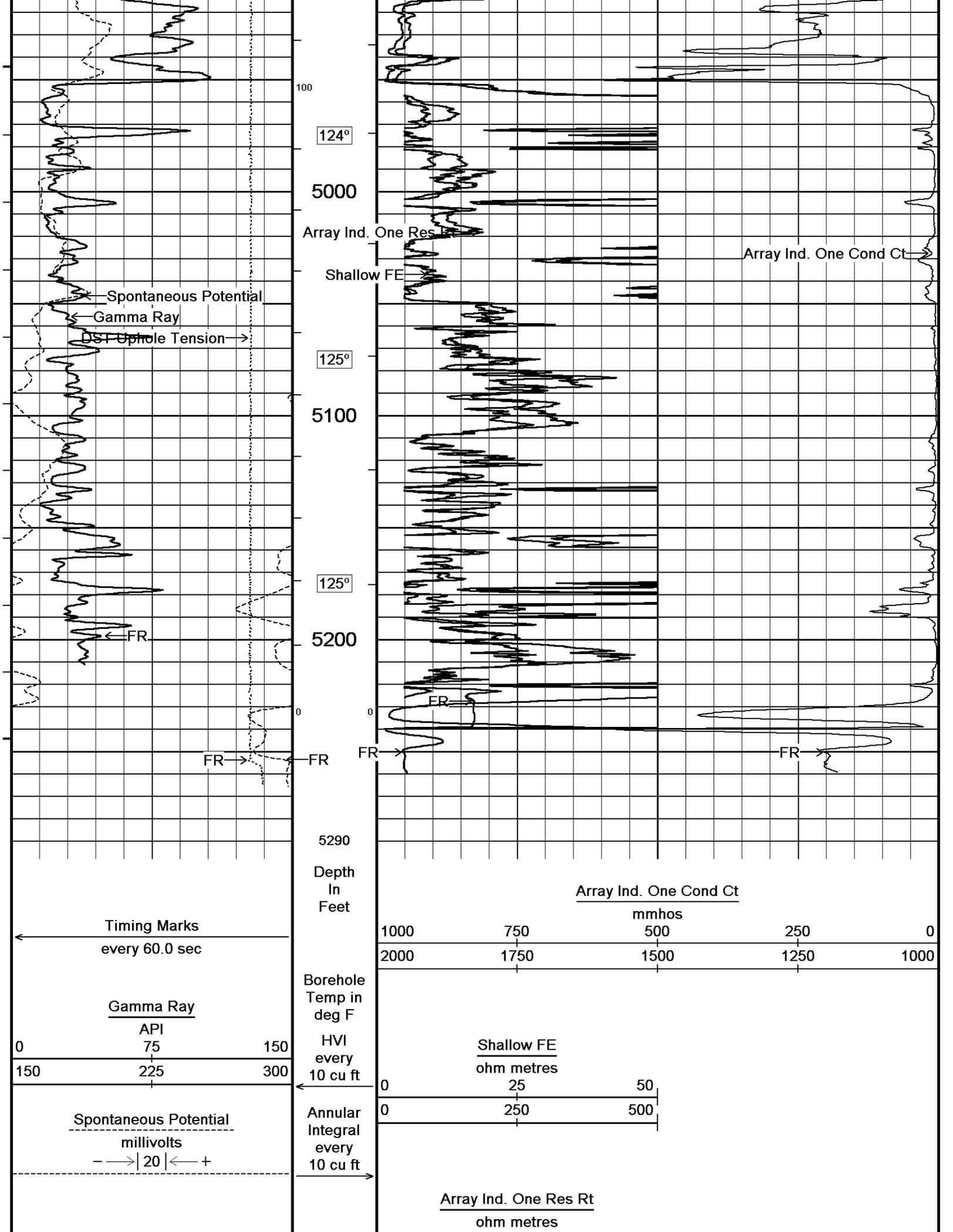


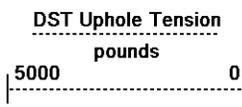




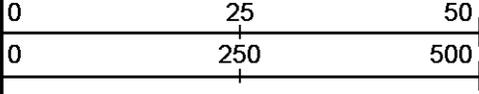








Replay
Scale
1:600

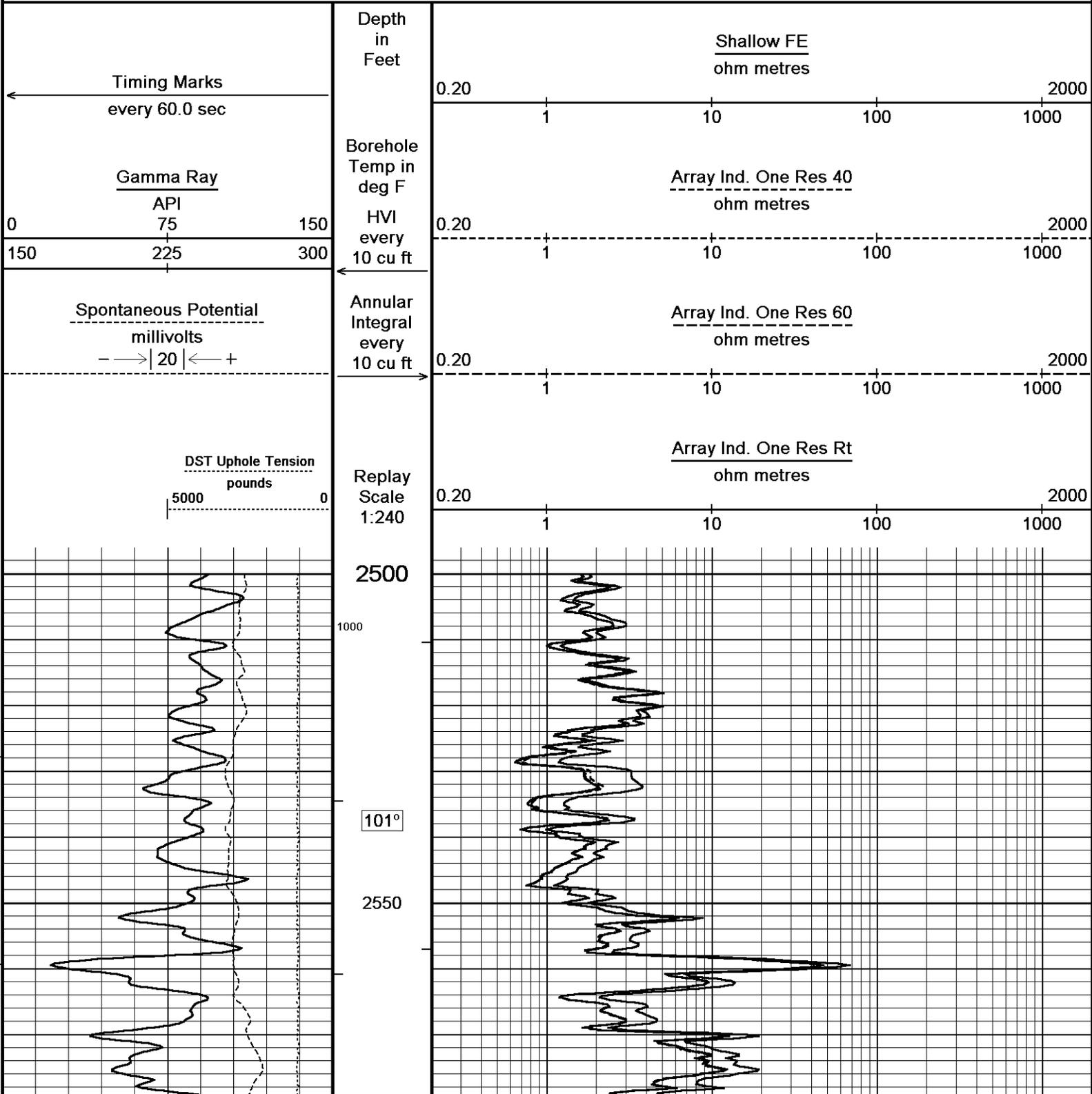


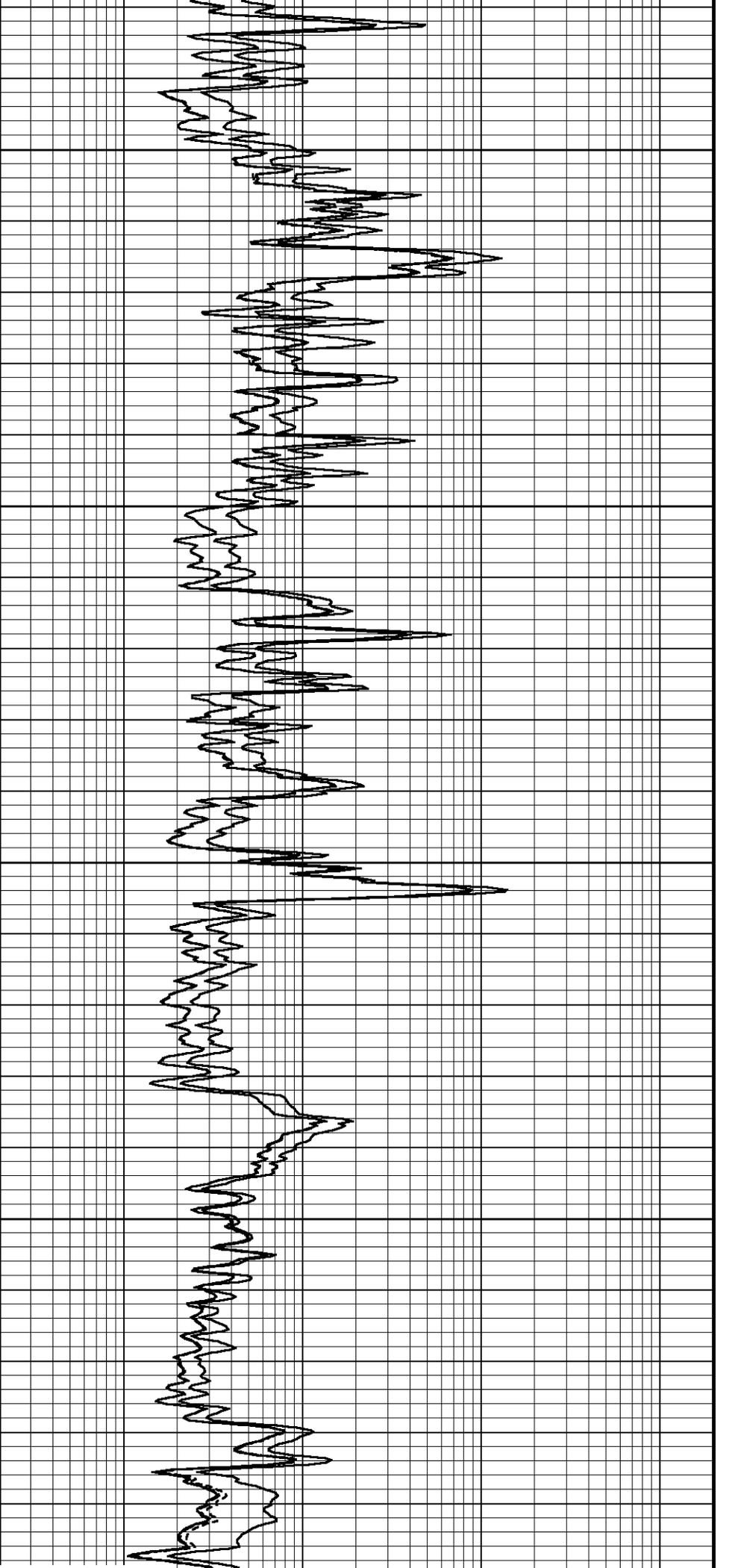
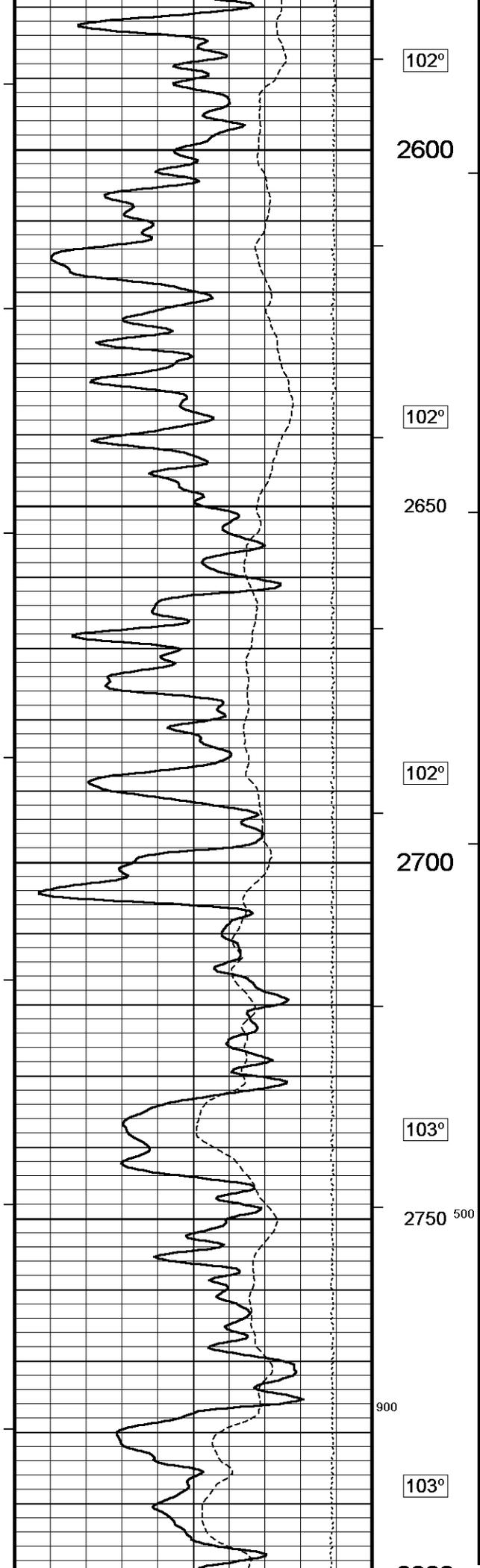
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↑ 2 INCH MAIN ↑

↓ 5 INCH MAIN ↓

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2800 Array Ind. One Res Rt

Array Ind. One Res 60

Array Ind. One Res 40

Shallow

Spontaneous Potential

Gamma Ray

DST Uphole Tension

103°

2850

104°

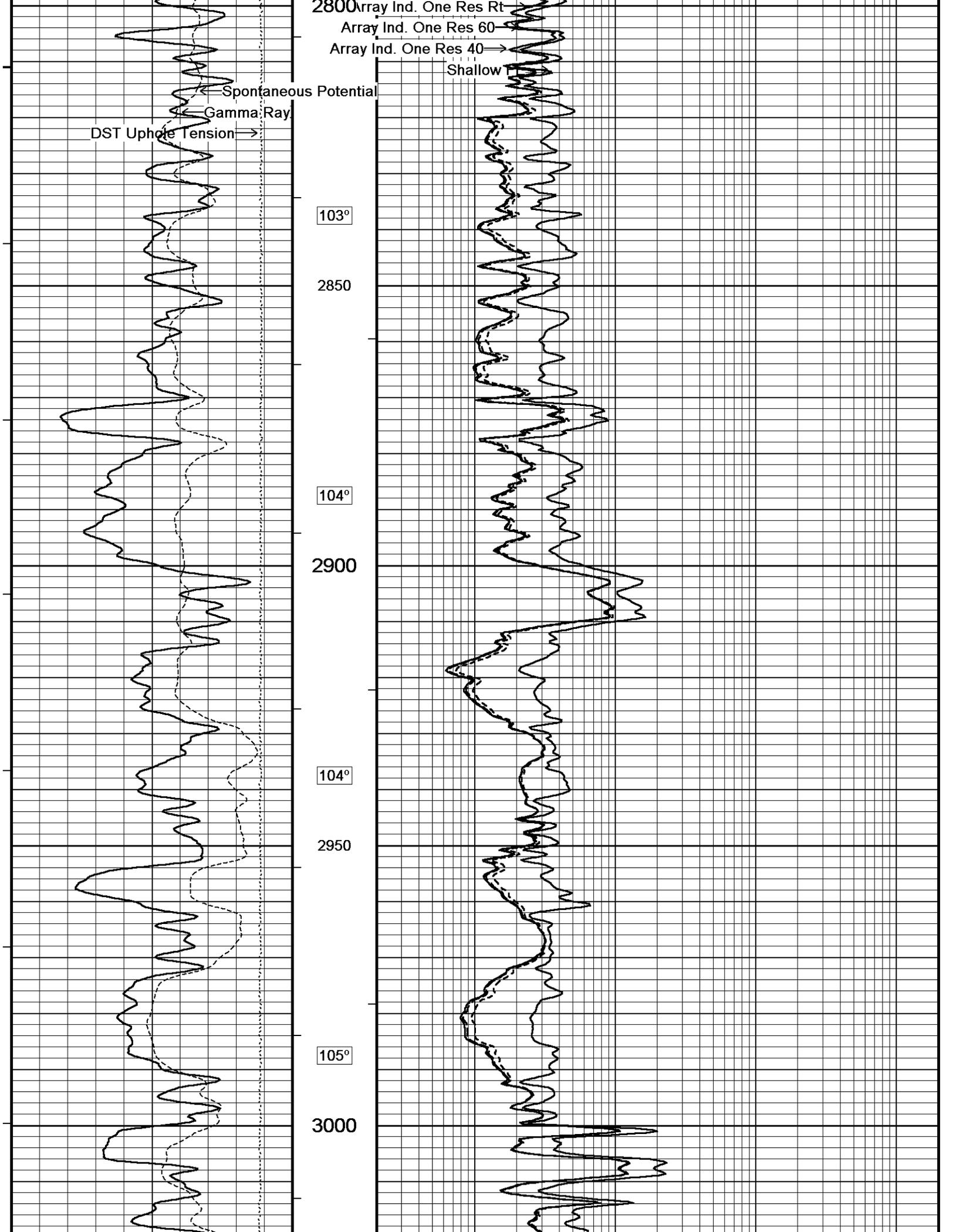
2900

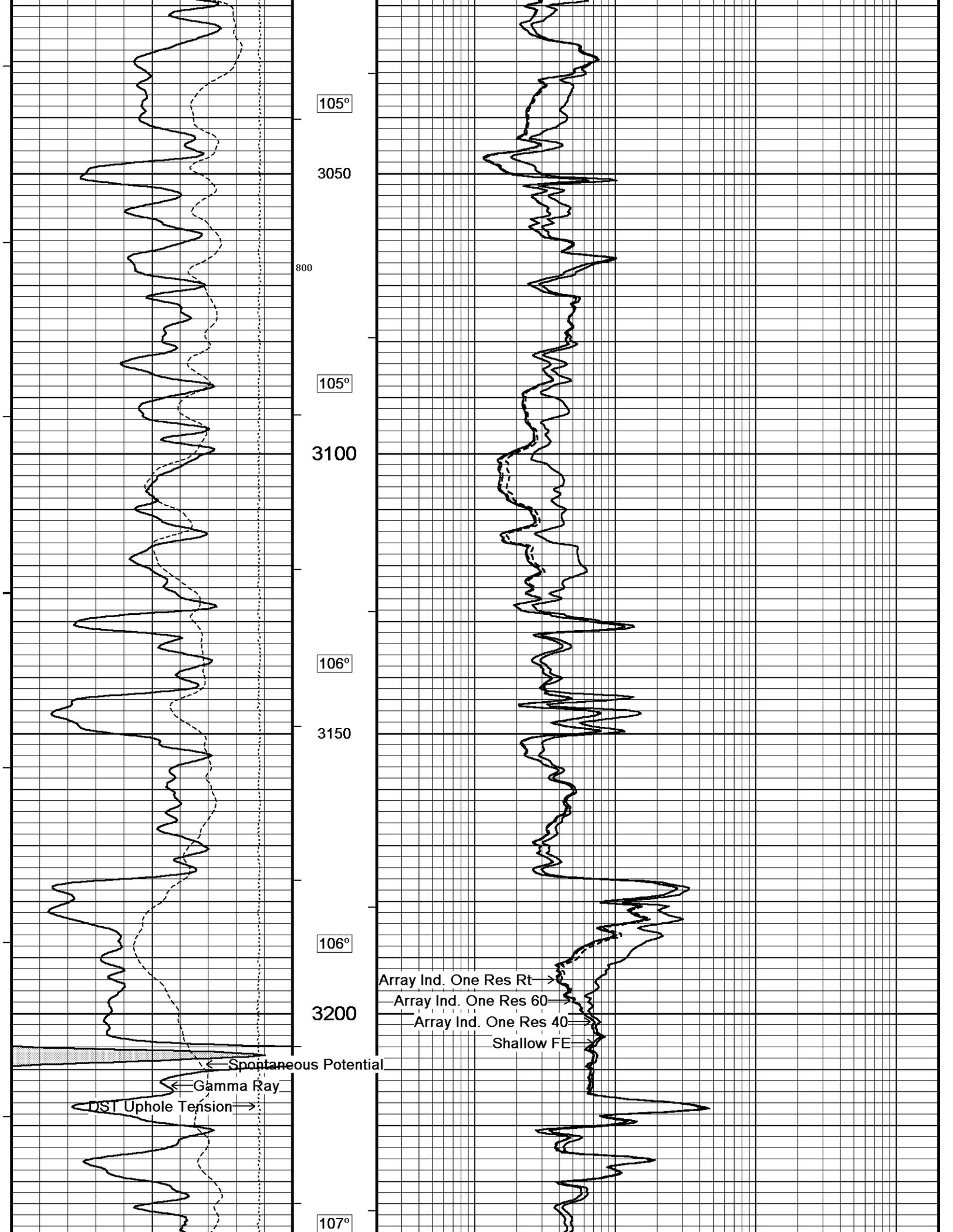
104°

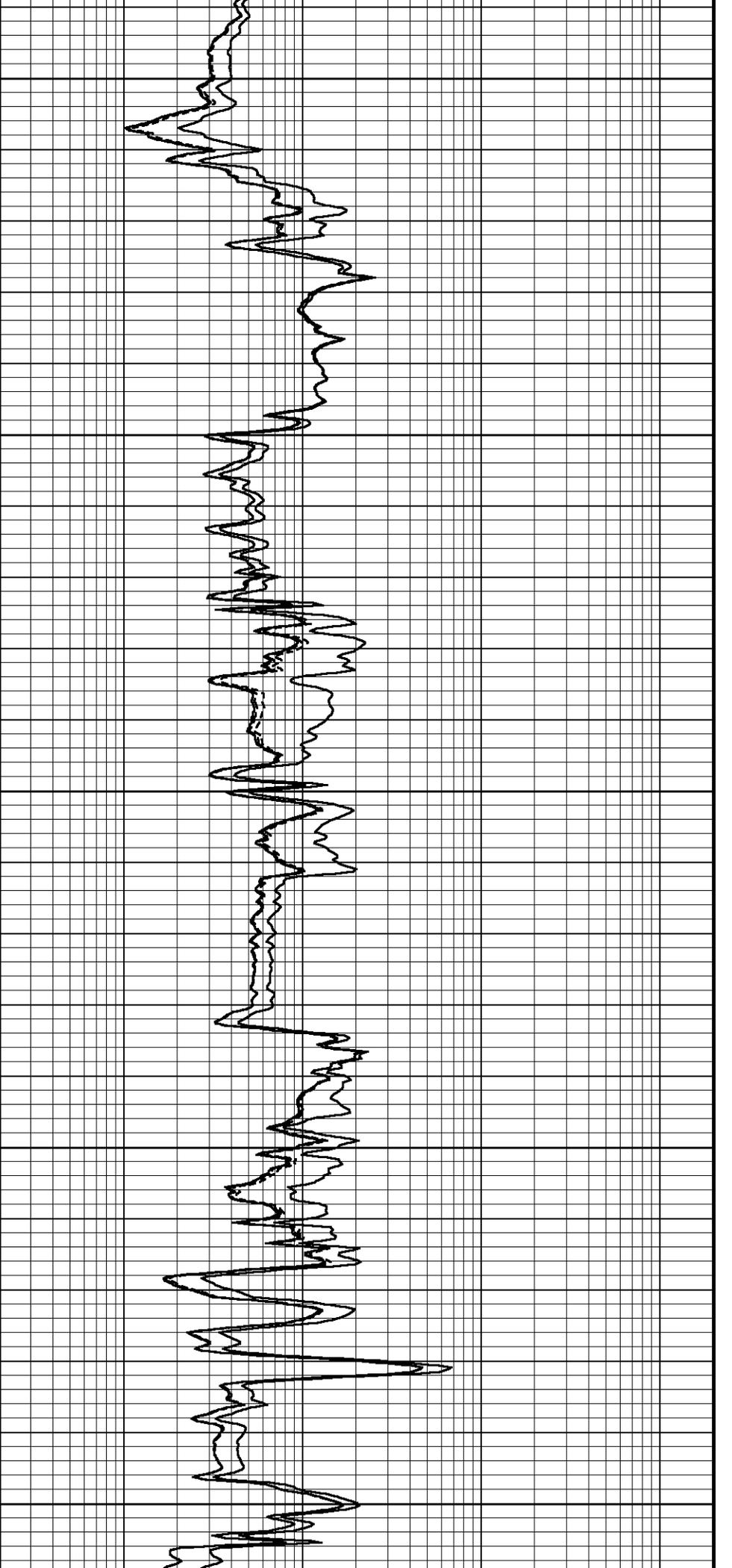
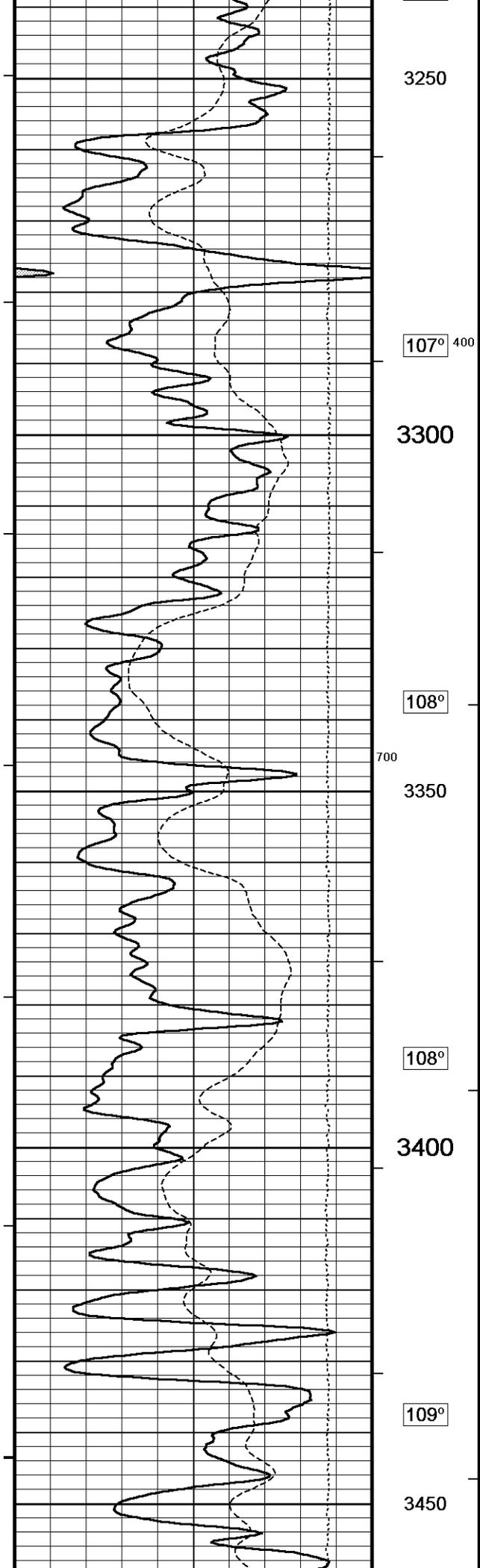
2950

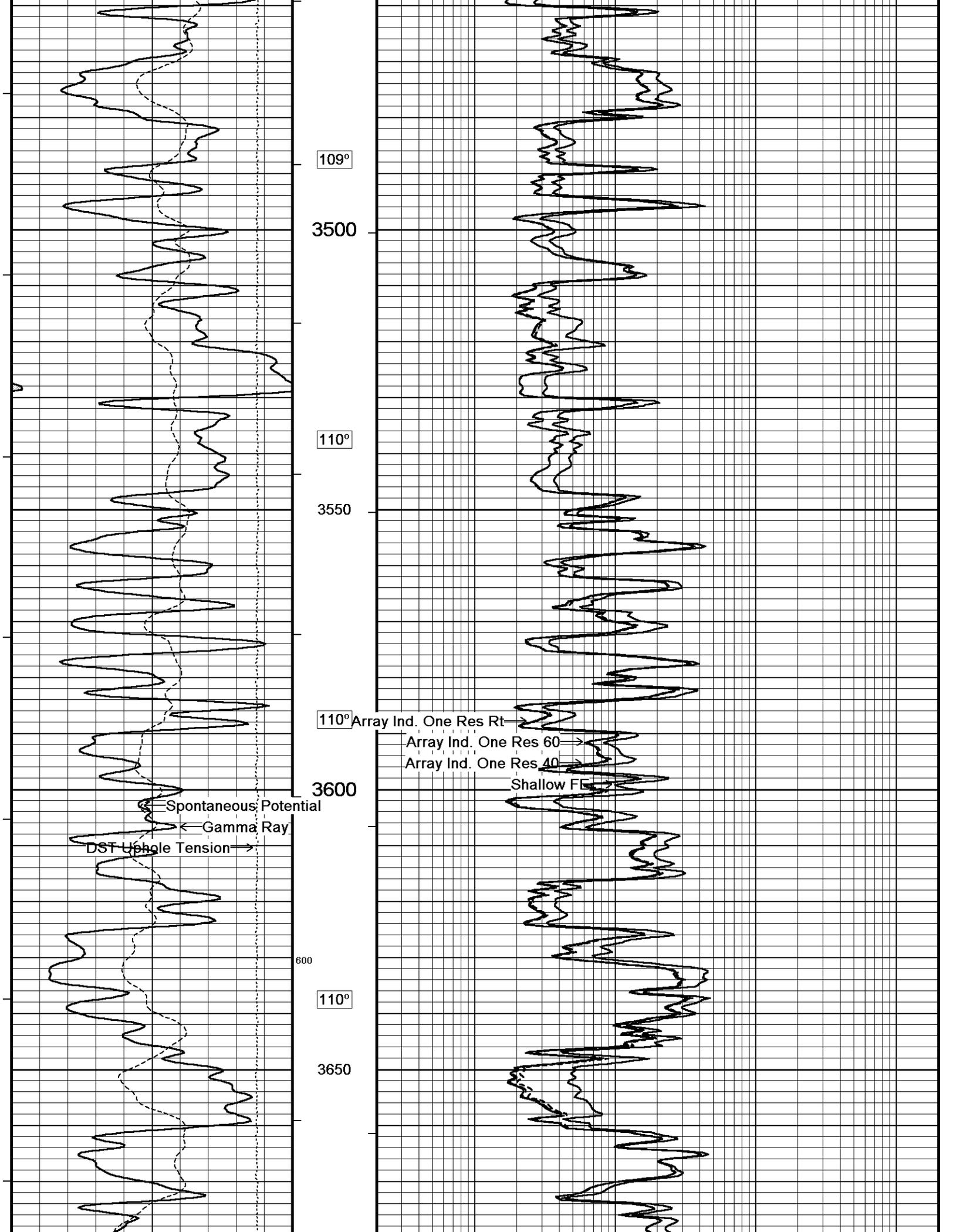
105°

3000









109°

3500

110°

3550

110°

3600

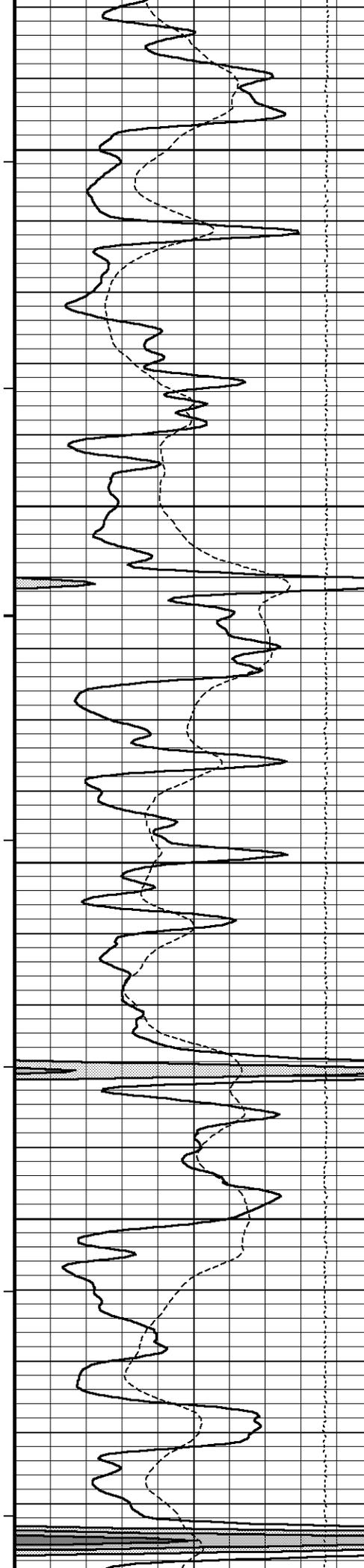
600

110°

3650

Spontaneous Potential
Gamma Ray
DST Uphole Tension

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



111°

3700

111°

3750

111°

3800

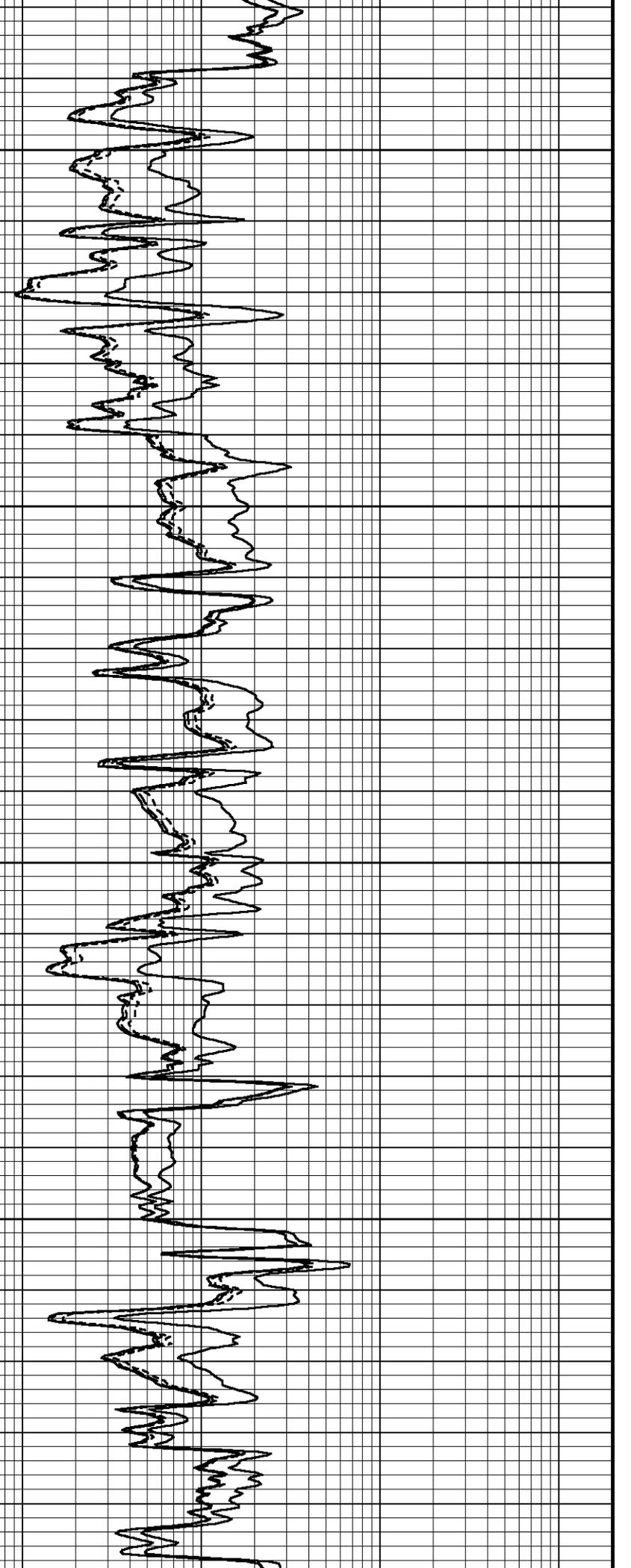
112°

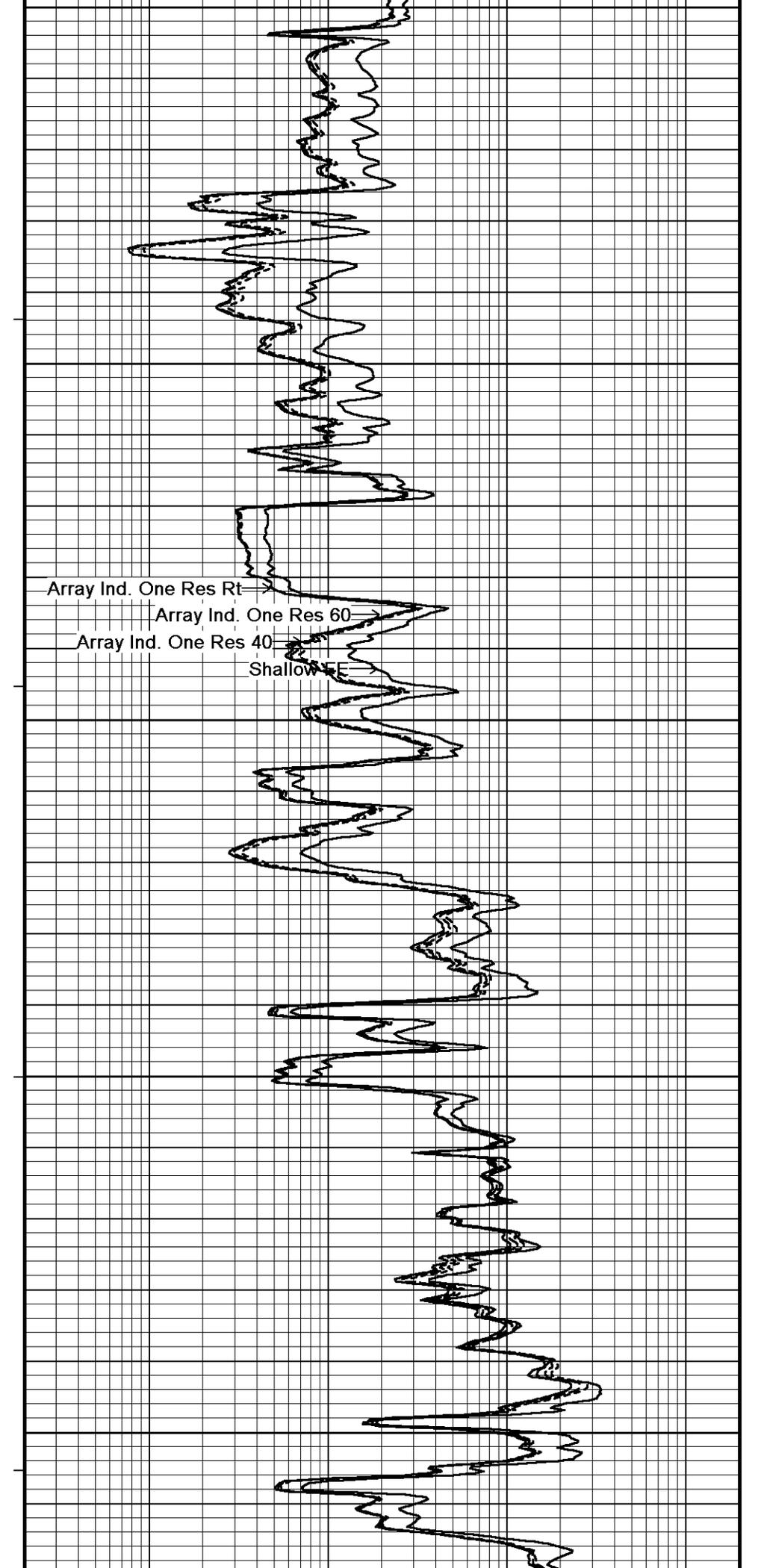
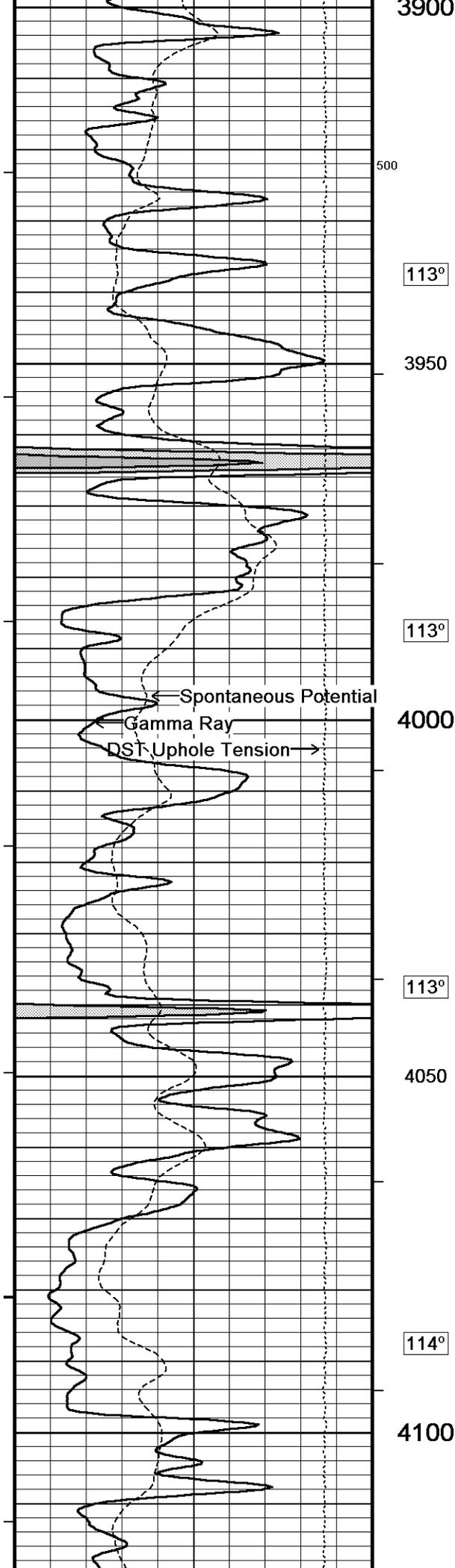
3850

112°

300

3900





3900

500

113°

3950

113°

4000

113°

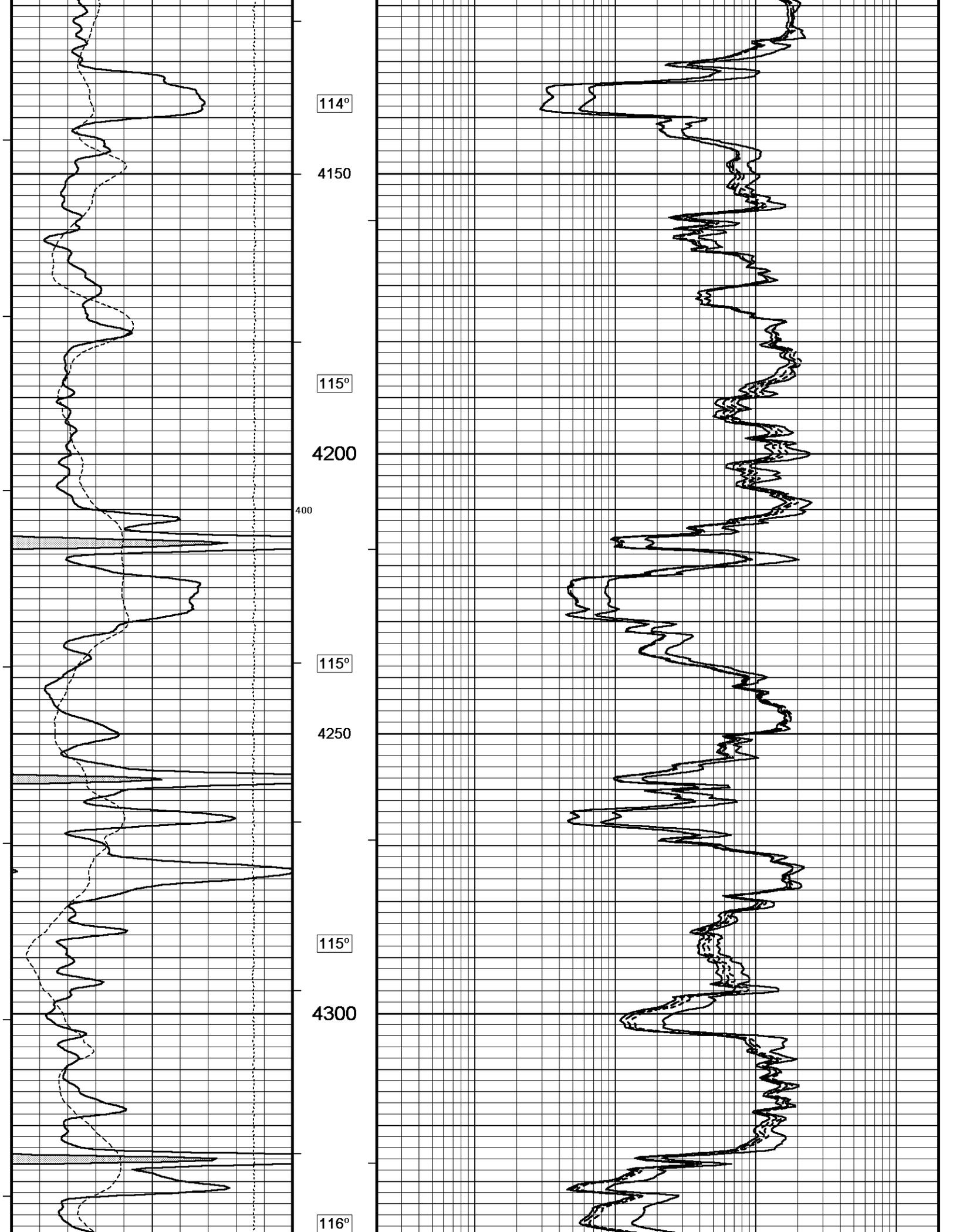
4050

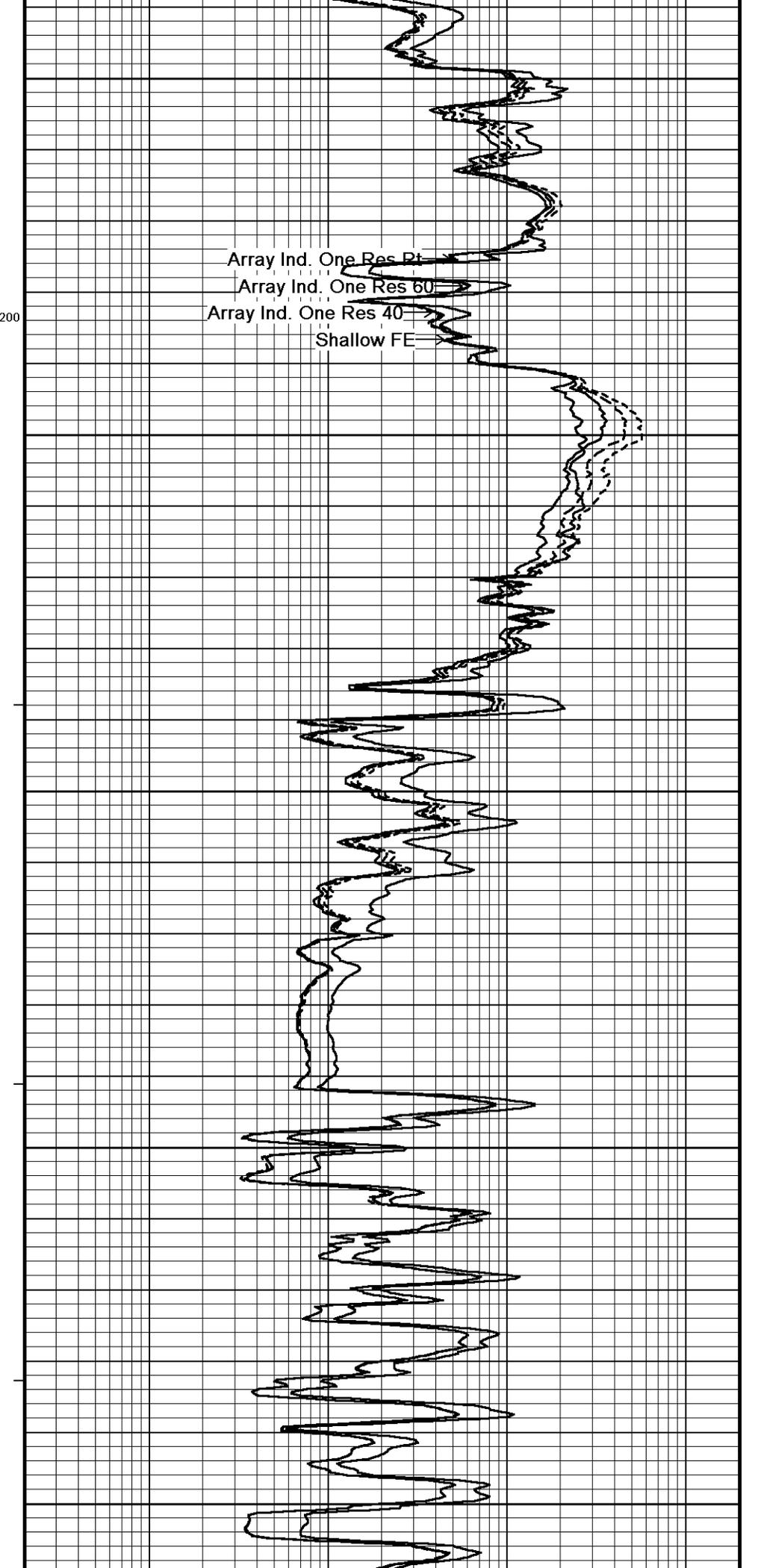
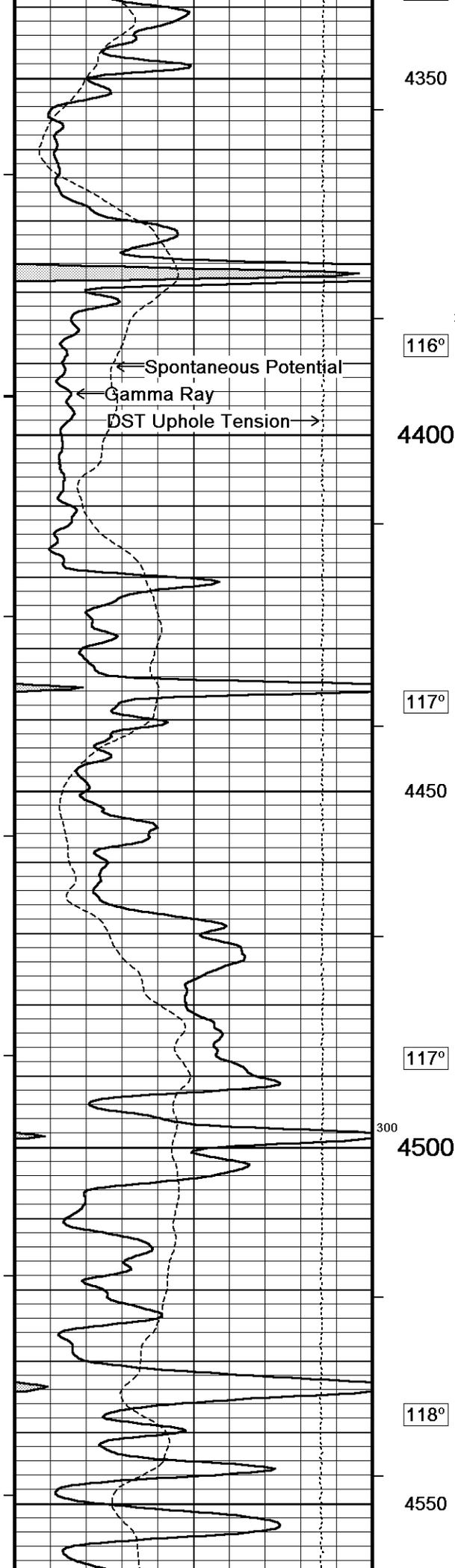
114°

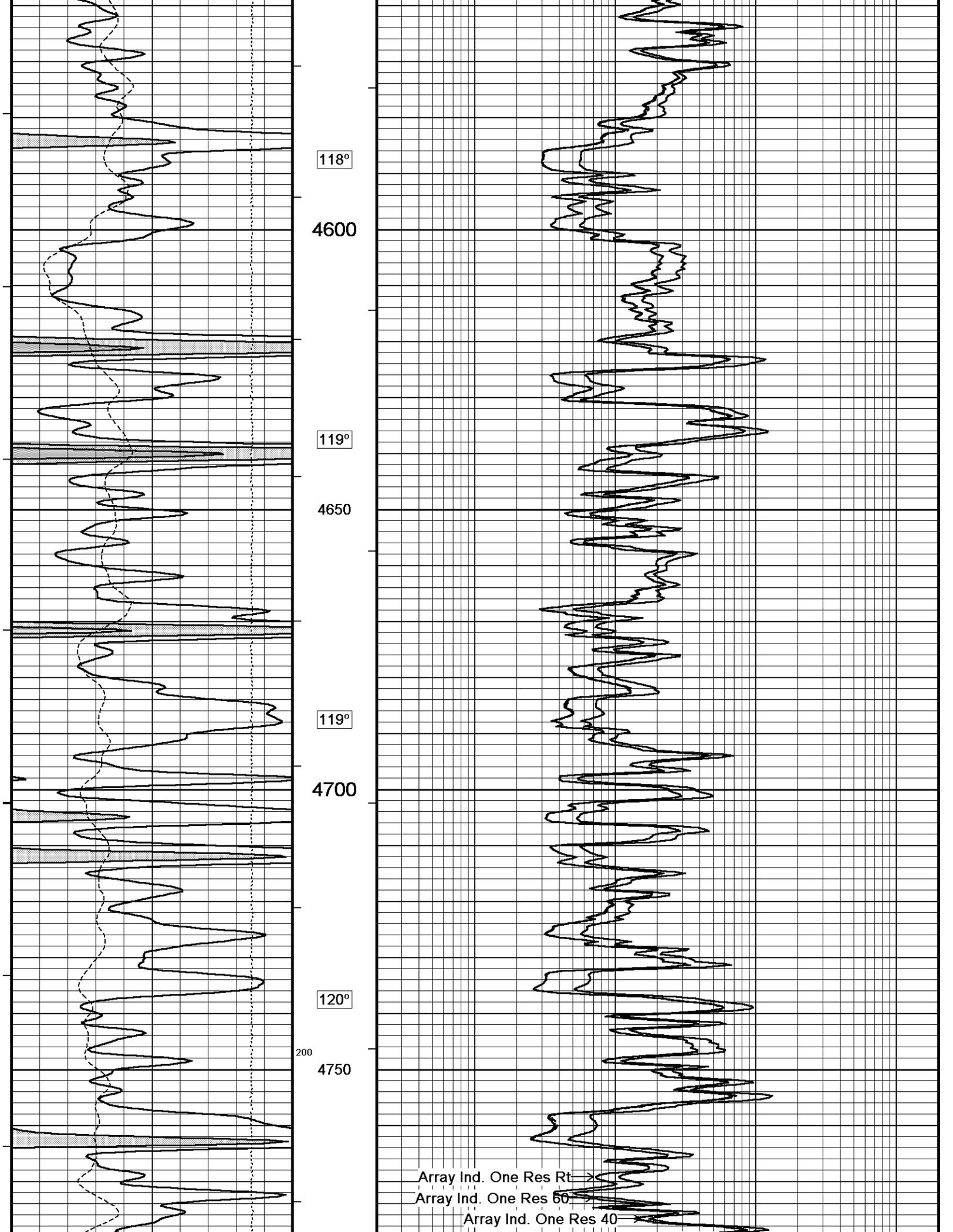
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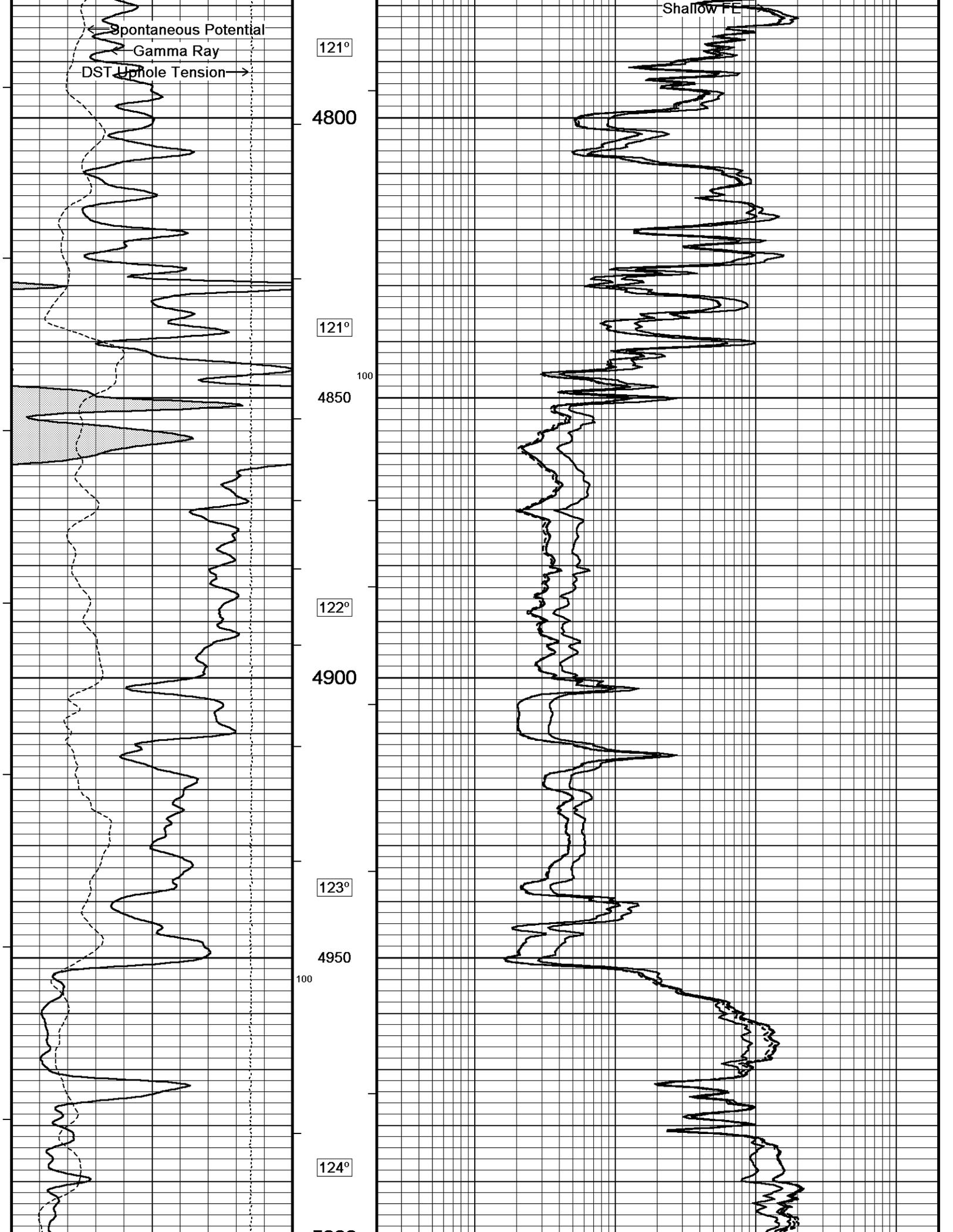
Spontaneous Potential
Gamma Ray
DST Uphole Tension

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









Spontaneous Potential

Gamma Ray

DST Uphole Tension

121°

4800

121°

4850

122°

4900

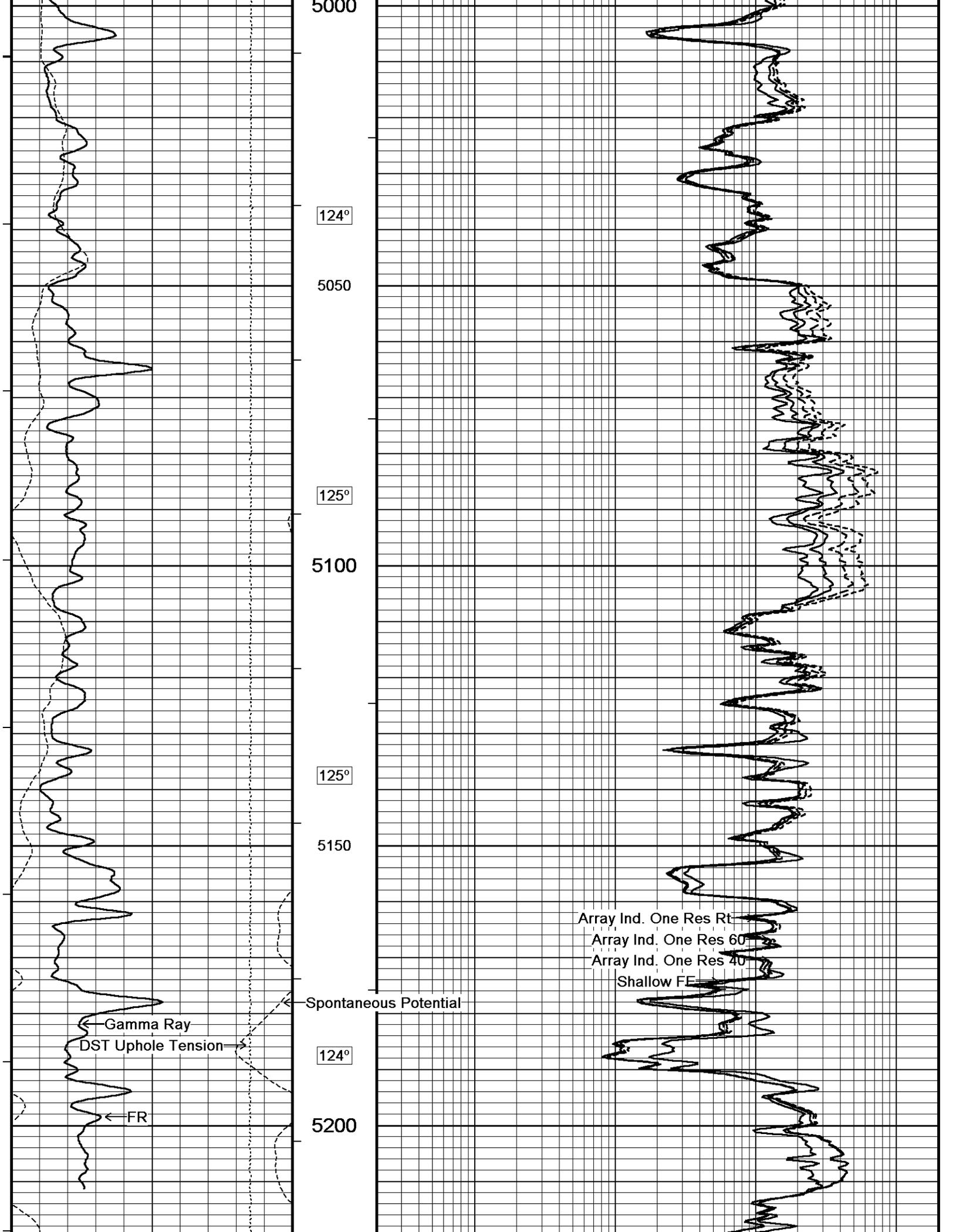
123°

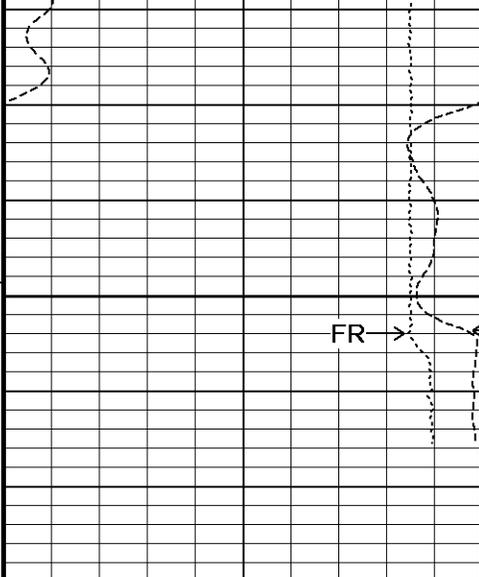
4950

124°

100

Shallow FE





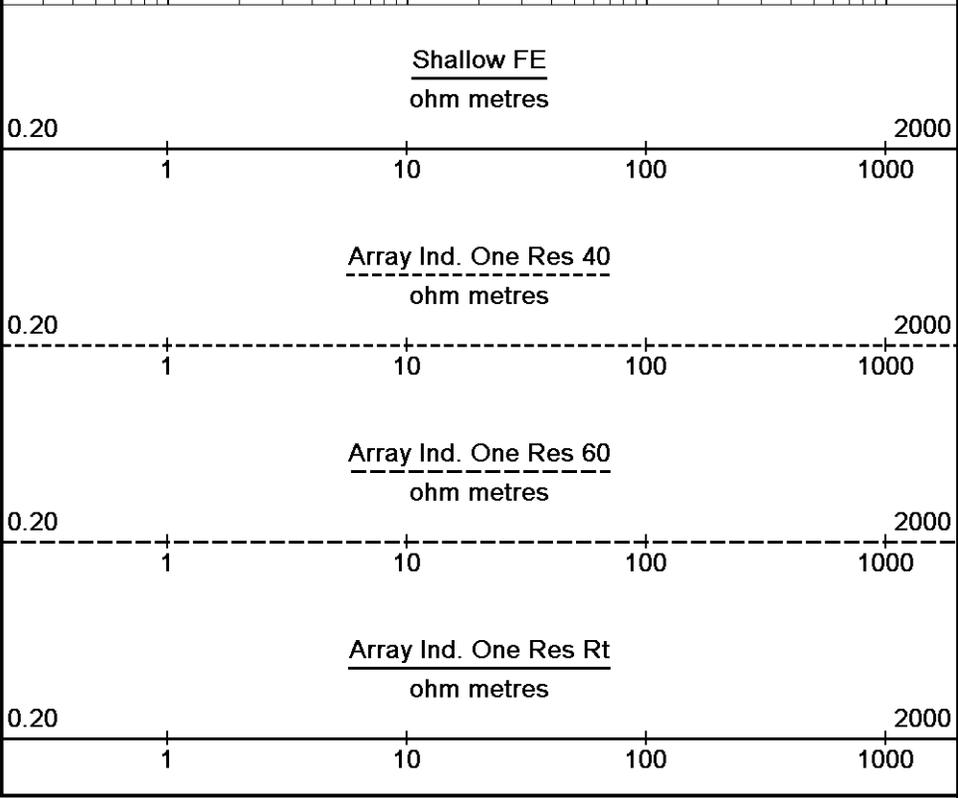
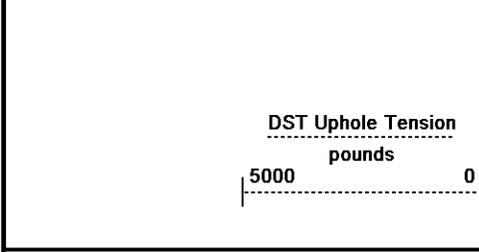
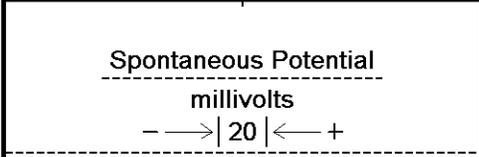
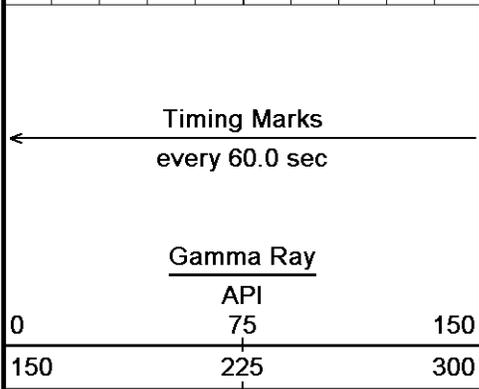
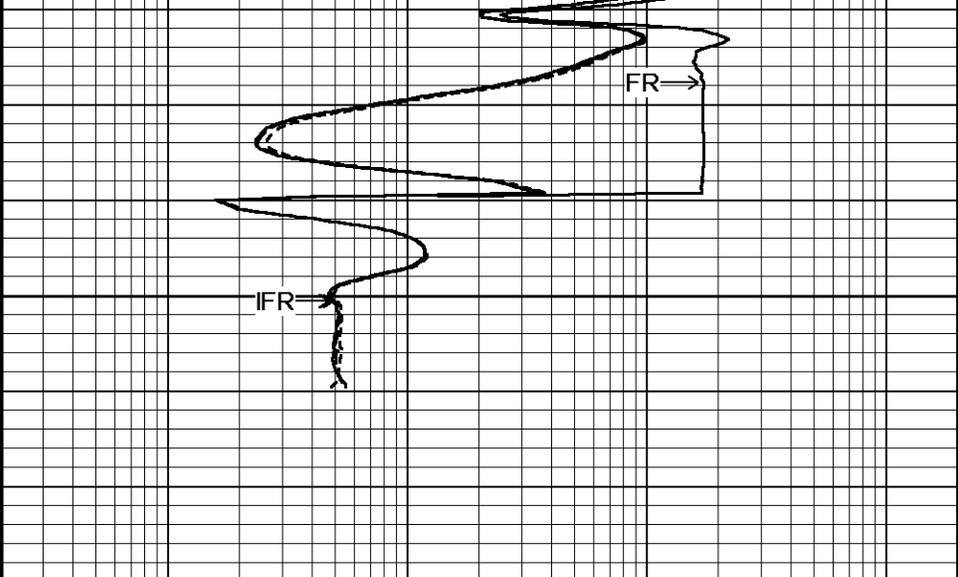
5250
FR

5278
Depth in Feet

Borehole Temp in deg F
HVI every 10 cu ft

Annular Integral every 10 cu ft

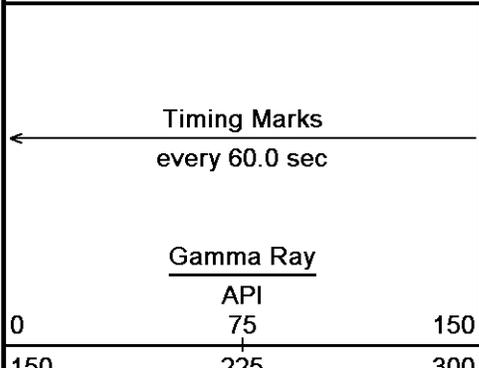
Replay Scale 1:240



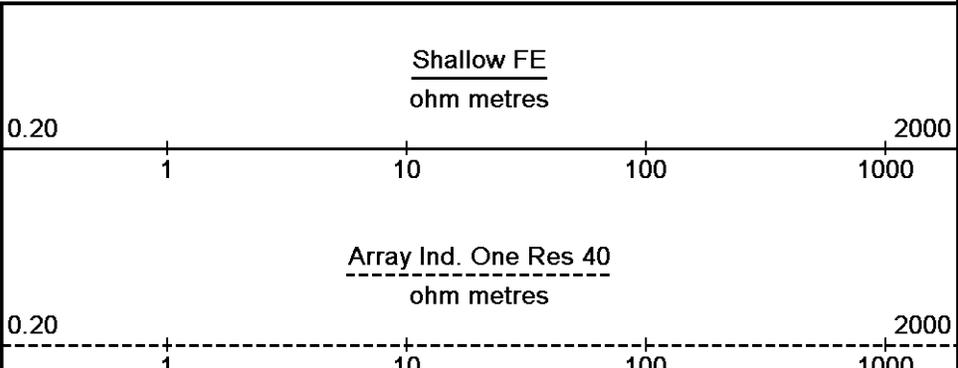
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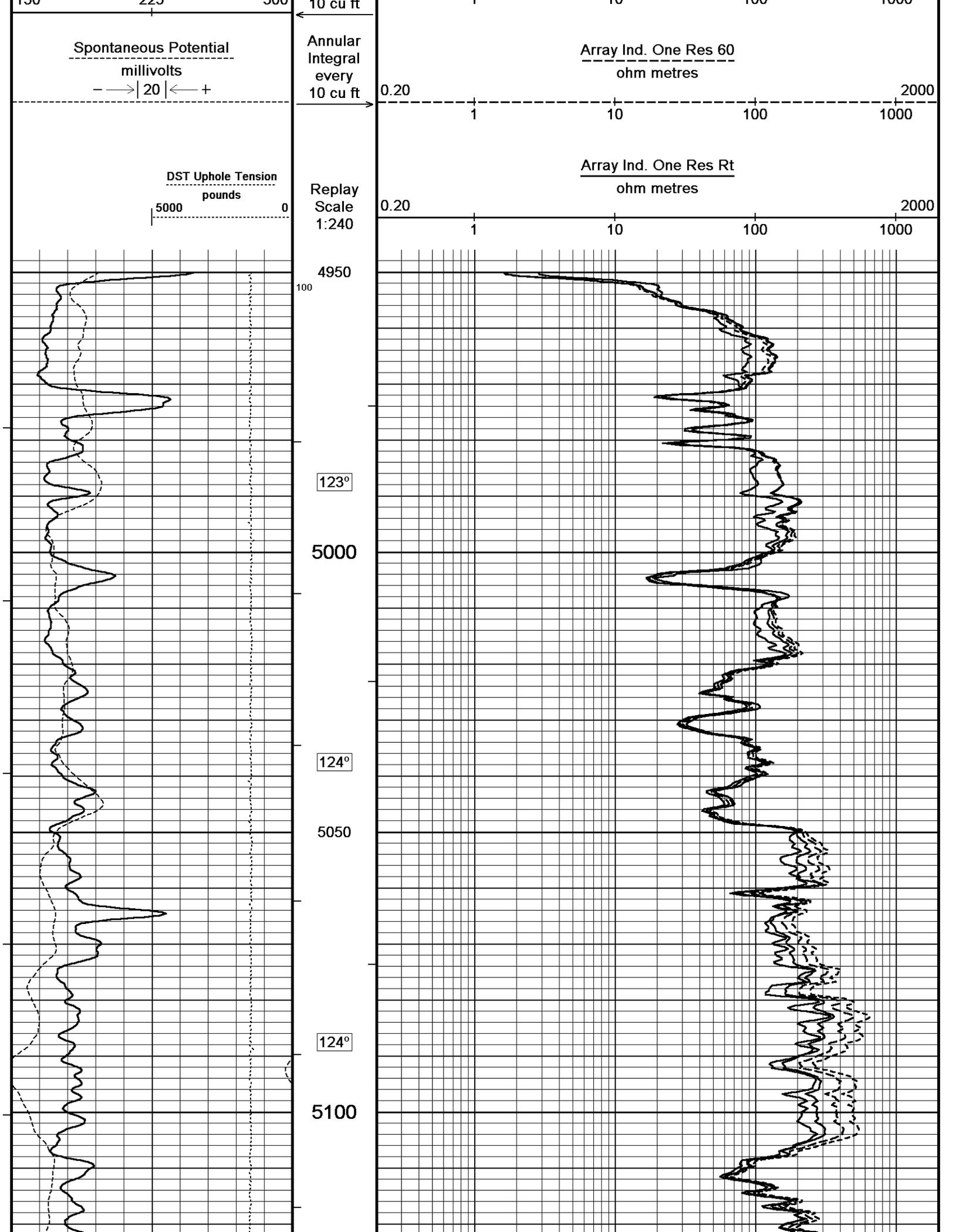
5 INCH MAIN

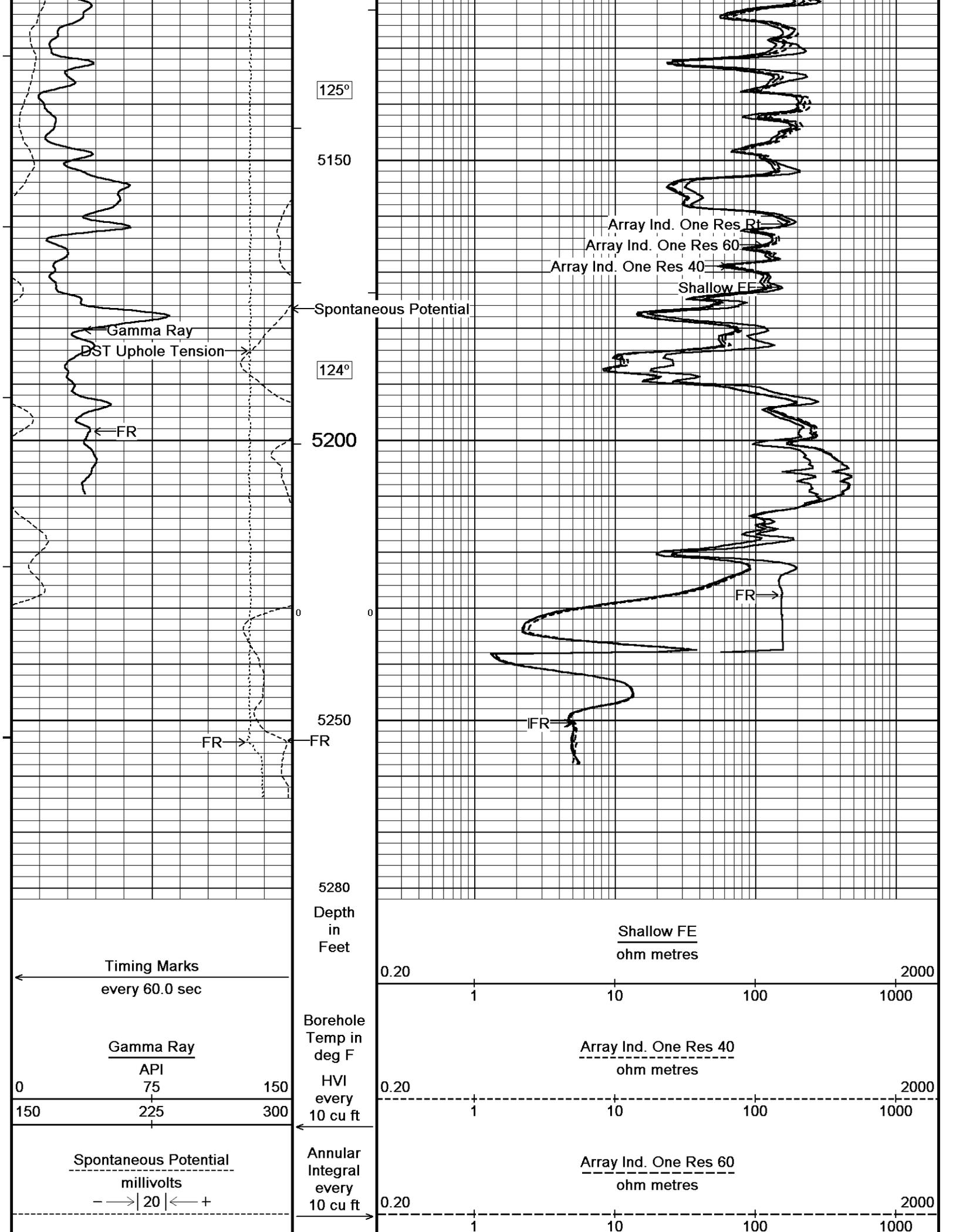
REPEAT SECTION
 Depth Based Data - Maximum Sampling Increment 10.0cm
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 Recorded on 15-MAY-2013 20:01

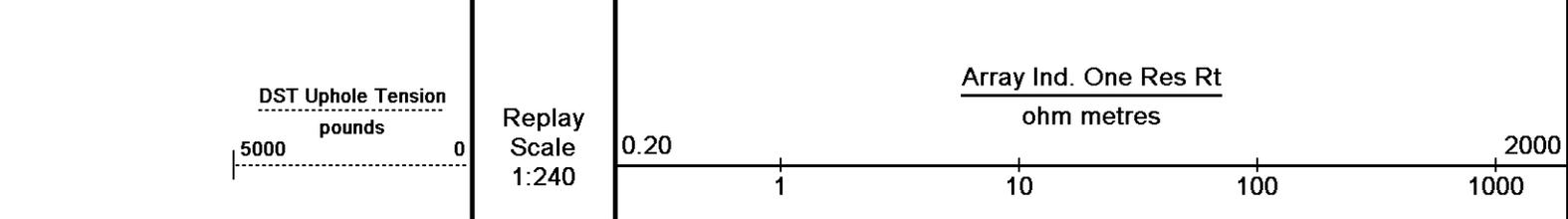


Depth in Feet
 Borehole Temp in deg F
 HVI every 10 cu ft









Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 16-MAY-2013 00:05
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 System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION
 C:\Minimus 13.05.9583\Log\SDOCO Rees Ranch 4-19\SDOCO Rees Ranch 4-19_001.dta

General Constants All 000 Last Edited on 15-MAY-2013,18:58

General Parameters		
Mud Resistivity	0.600	ohm-metres
Mud Resistivity Temperature	84.000	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	Deep Induction	
RWA Constant A	0.610	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

Gamma Calibration MCG-D.K 469 Field Calibration on 13-MAY-2013 11:25

	Measured	Calibrated (API)
Background	75	51
Calibrator (Gross)	1138	776
Calibrator (Net)	1063	725

Gamma Constants MCG-D.K 469 Last Edited on 15-MAY-2013,18:48

Gamma Calibrator Number	GRC38	
Mud Density	1.13	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

High Resolution Temperature Calibration MCG-D.K 469 Field Calibration on 07-MAY-2013,09:42

	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 07-MAY-2013,09:42

Pre-filter Length	11
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FE Calibration MFE-B.J 353 Base Calibration on 19-APR-2013 16:39
Field Check on 13-MAY-2013 11:04

Base Calibration		
	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	965.3	126.8

Reference 2	303.3	120.0
Base Check		280.7
Field Check		280.7

FE Constants MFE-B.J 353

Last Edited on 15-MAY-2013,08:06

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 13-MAY-2013 11:02

Base Calibration				
Test Loop Calibration				
Channel	Low	High	Calibrated (mmho/m)	
			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			12.8	3840.1
2			29.5	3478.0
3			29.1	3054.2
4			19.8	2082.6
Deep			18.6	2050.0
Medium			42.2	3992.7
Shallow			42.8	5055.3
Array Temperature			69.8	Deg F

Induction Constants MAI-A.A 167

Last Edited on 15-MAY-2013,18:47

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		

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 19-APR-2013 14:25
Field Calibration on 13-MAY-2013 11:06

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13997	3.99
2	22559	5.98
3	31072	7.97
4	39474	9.86
5	48864	11.92
6	N/A	N/A

Field Calibration

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

DOWNHOLE EQUIPMENT

C:\Minimus 13.05.9583\Log\SDOCO Rees Ranch 4-19\SDOCO Rees Ranch 4-19_001.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

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

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

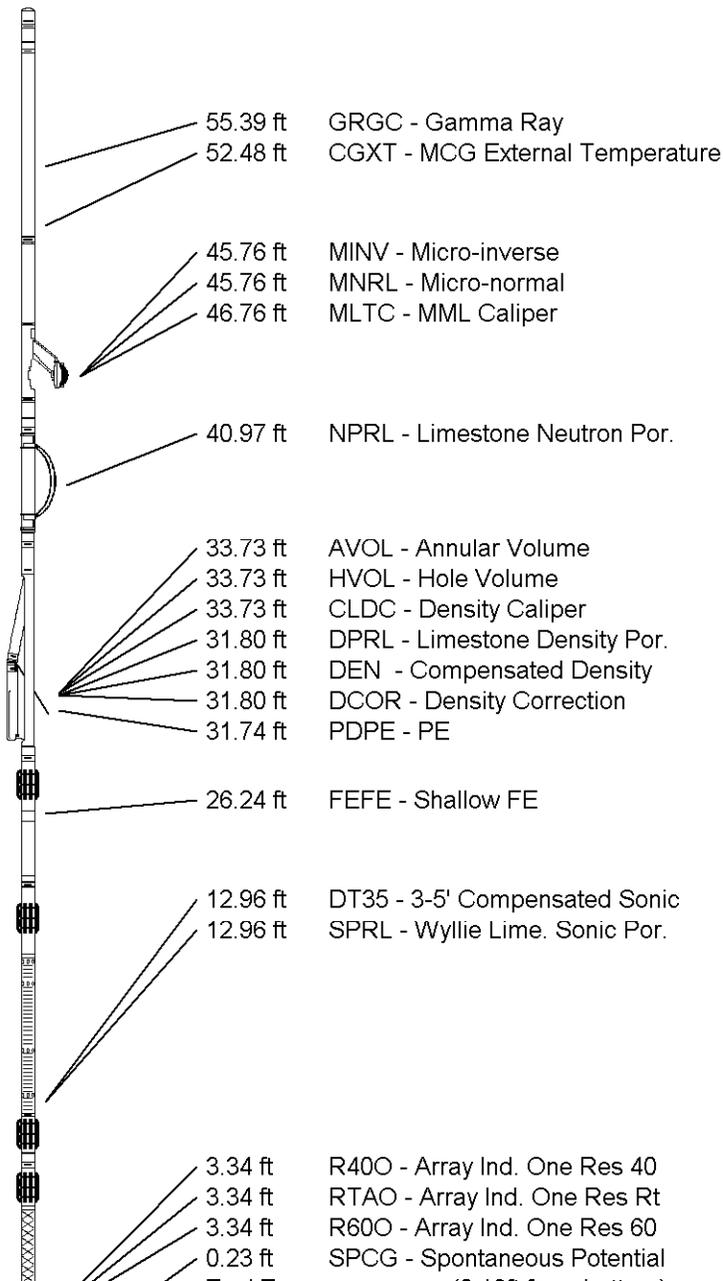
Compact Density/Caliper
MPD-B 64 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

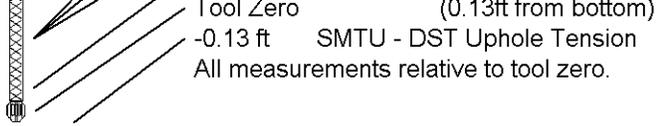
Compact Focussed Electric
MFE-B.J 353 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-A.A 55 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

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

Total Length: 62.25 ft Weight: 471.8 lb





COMPANY SDOCO, LLC.
WELL REES RANCH 4-19
FIELD REES RANCH
PROVINCE/COUNTY WICHITA
COUNTRY/STATE U.S.A. / KANSAS

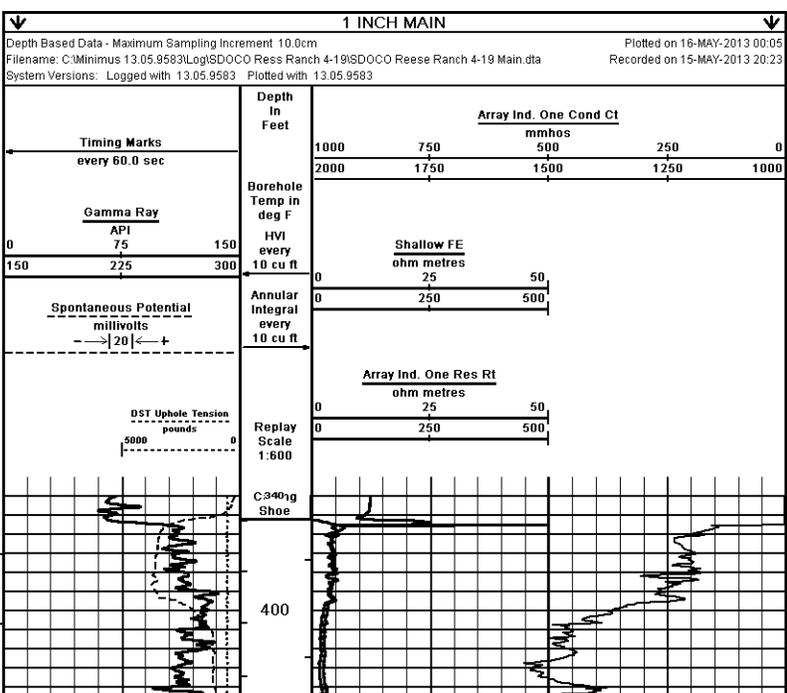
Elevation Kelly Bushing	3183.00	feet	First Reading	5251.00	feet
Elevation Drill Floor	3182.00	feet	Depth Driller	5250.00	feet
Elevation Ground Level	3172.00	feet	Depth Logger	5254.00	feet

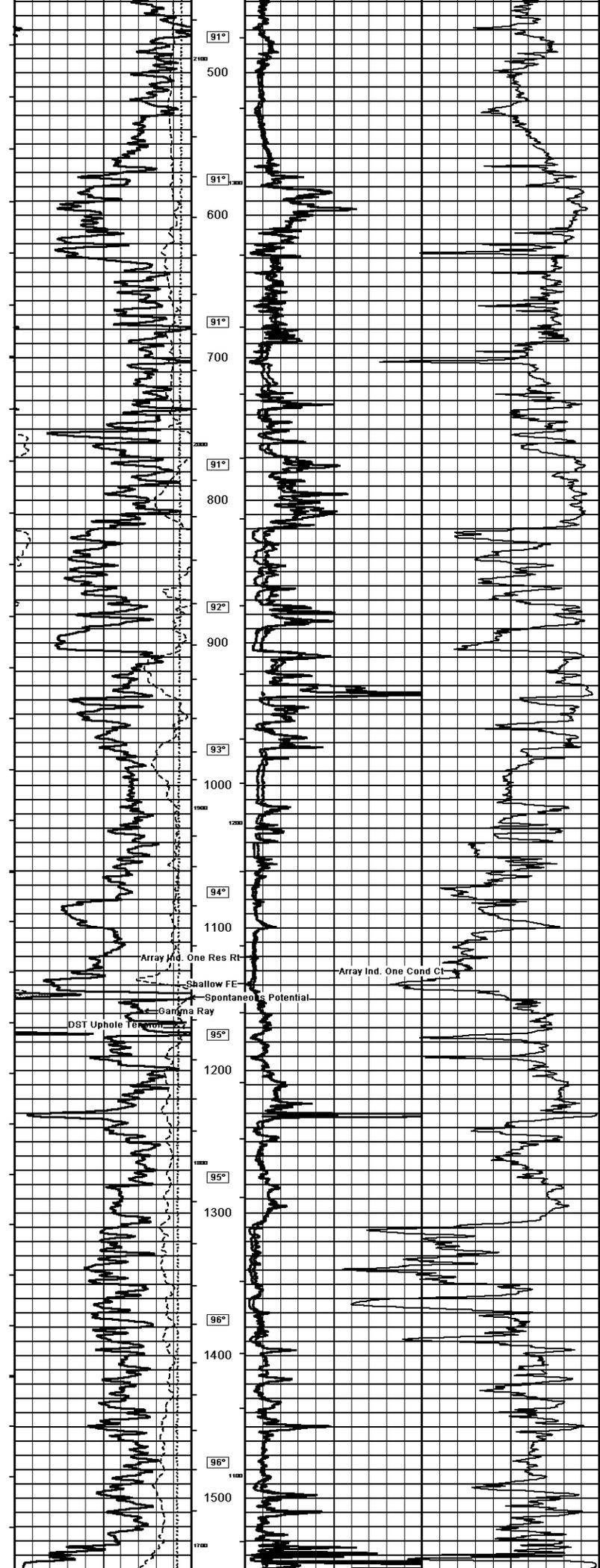


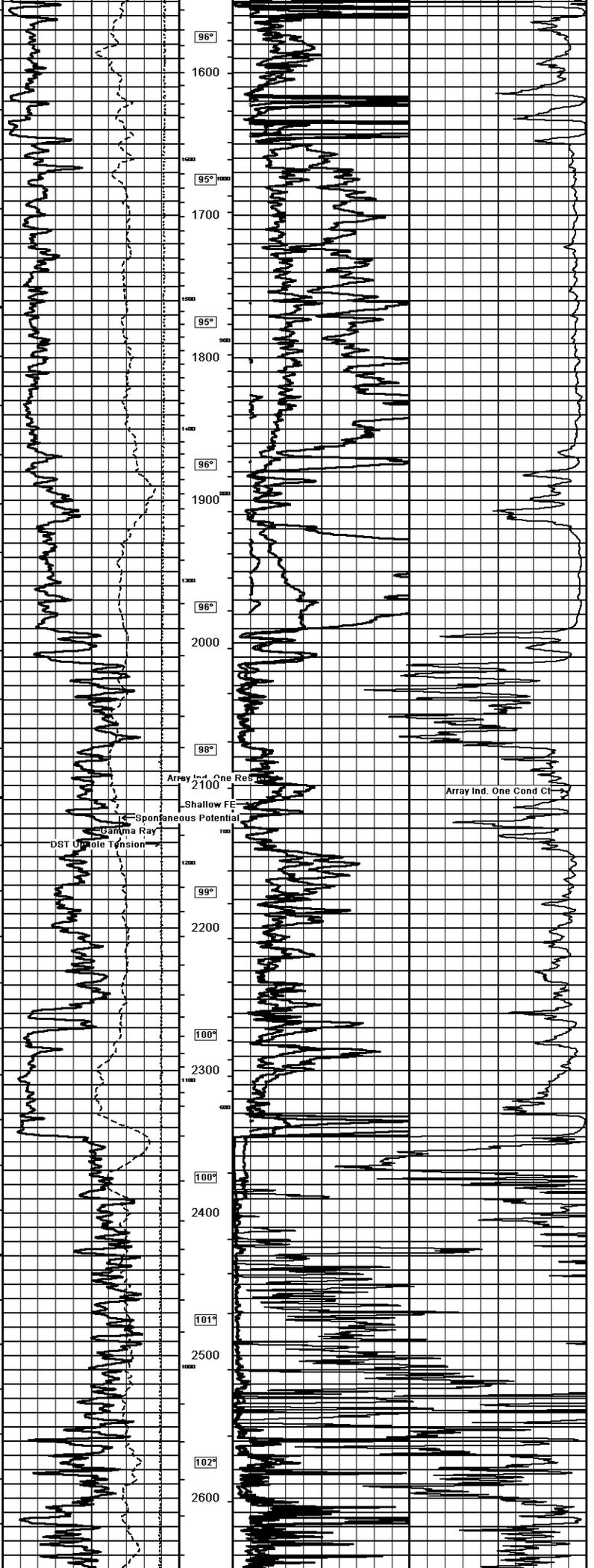
Weatherford[®]

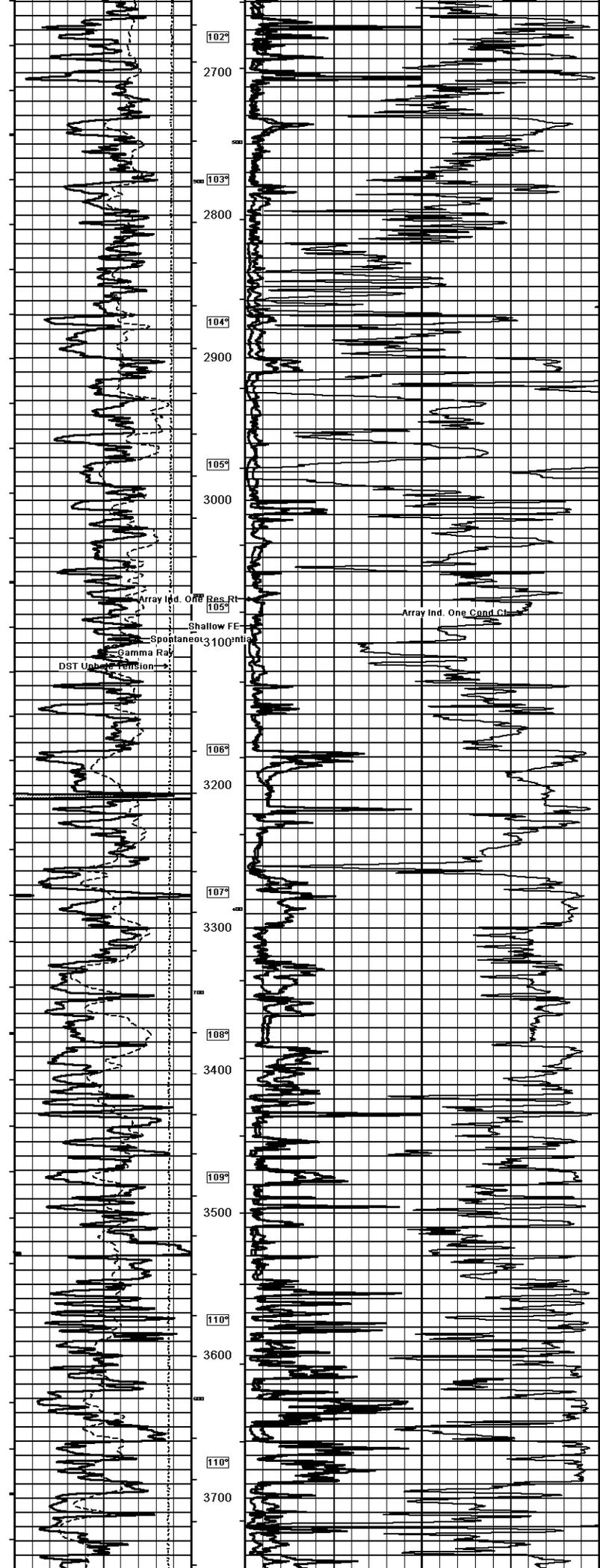
**ARRAY INDUCTION
 SHALLOW FOCUSED
 ELECTRIC LOG**

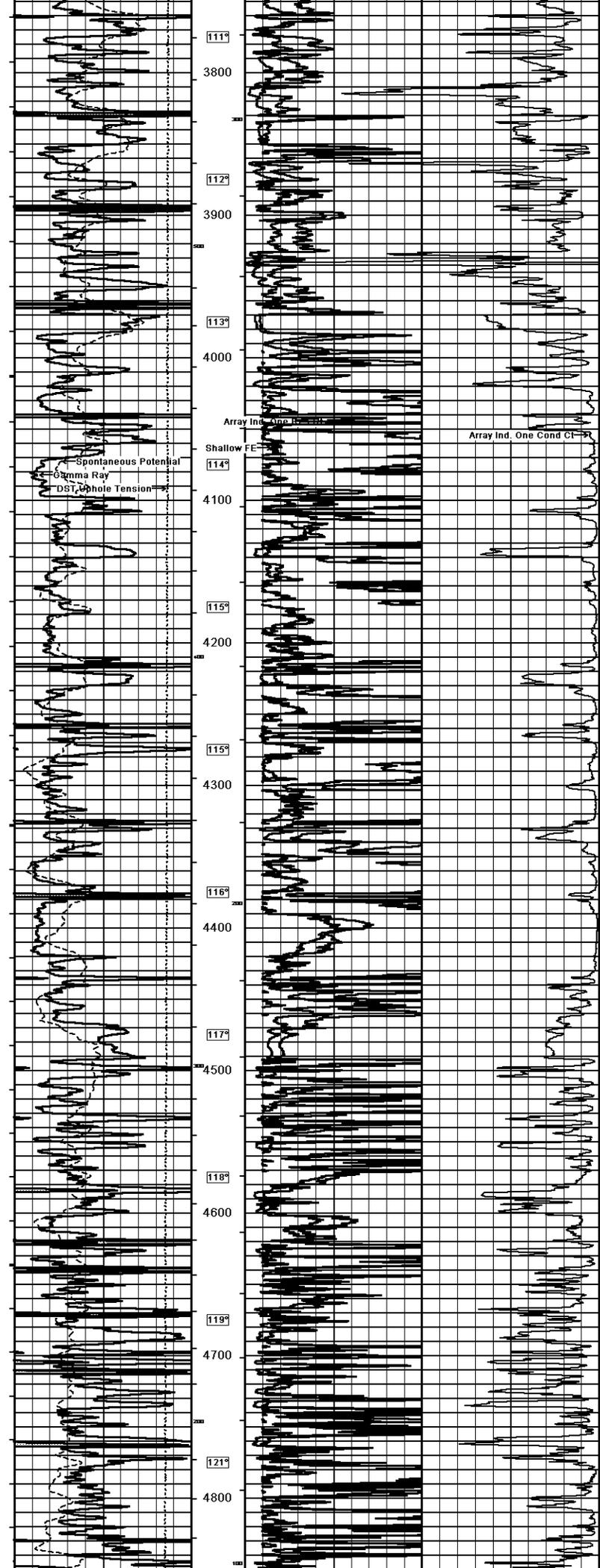
Weatherford		ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG	
COMPANY	SDOCO, LLC.	WELL	REES RANCH 4-19
FIELD	REES RANCH	PROVINCE/COUNTY	WICHITA
COUNTRY/STATE	U.S.A. / KANSAS	LOCATION	878' FNL & 394' FWL NE SW NW NW
LOG NUMBER	15-203-20219	DATE	15-MAY-2013
PERMANENT DATUM Q.L. ELEVATION	3172 feet	LOG MEASURED FROM	KB
DATE	15-MAY-2013	TIME	09:00
SERVICE ORDER	3529004	DEPTH DRILLER	5250.00
DEPTH DRILLER	5250.00	DEPTH LOGGER	5254.00
FIRST READING	5251.00	CASING DRILLER	352.00
CASING DRILLER	352.00	CASING LOGGER	352.00
BIT SIZE	7.875	FLOWLINE	8.80 MICROMIN
PH / FLUID LOSS	9.40	DENSITY / VISCOSITY	9.40
SAMPLE SOURCE	FLOWLINE	PH @ MEASURED TEMP	0.60 @ 84.0
PH @ MEASURED TEMP	0.48 @ 84.0	PH @ MEASURED TEMP	0.72 @ 84.0
SOURCE PH / PH @ MEASURED TEMP	CALC	PH @ BHT	0.40 @ 26.0
PH @ BHT	0.40 @ 26.0	TIME SINCE CIRCULATION	8 HOURS
MAX RECORDED TEMP	135.00	EQUIPMENT BASE	13006
RECORDED BY	ADAM SILL	RECORDED BY	ADAM SILL
DATE	15-MAY-2013	TIME	09:00











111

3800

112

3900

113

4000

Shallow FE

114

4100

115

4200

115

4300

116

4400

117

4500

118

4600

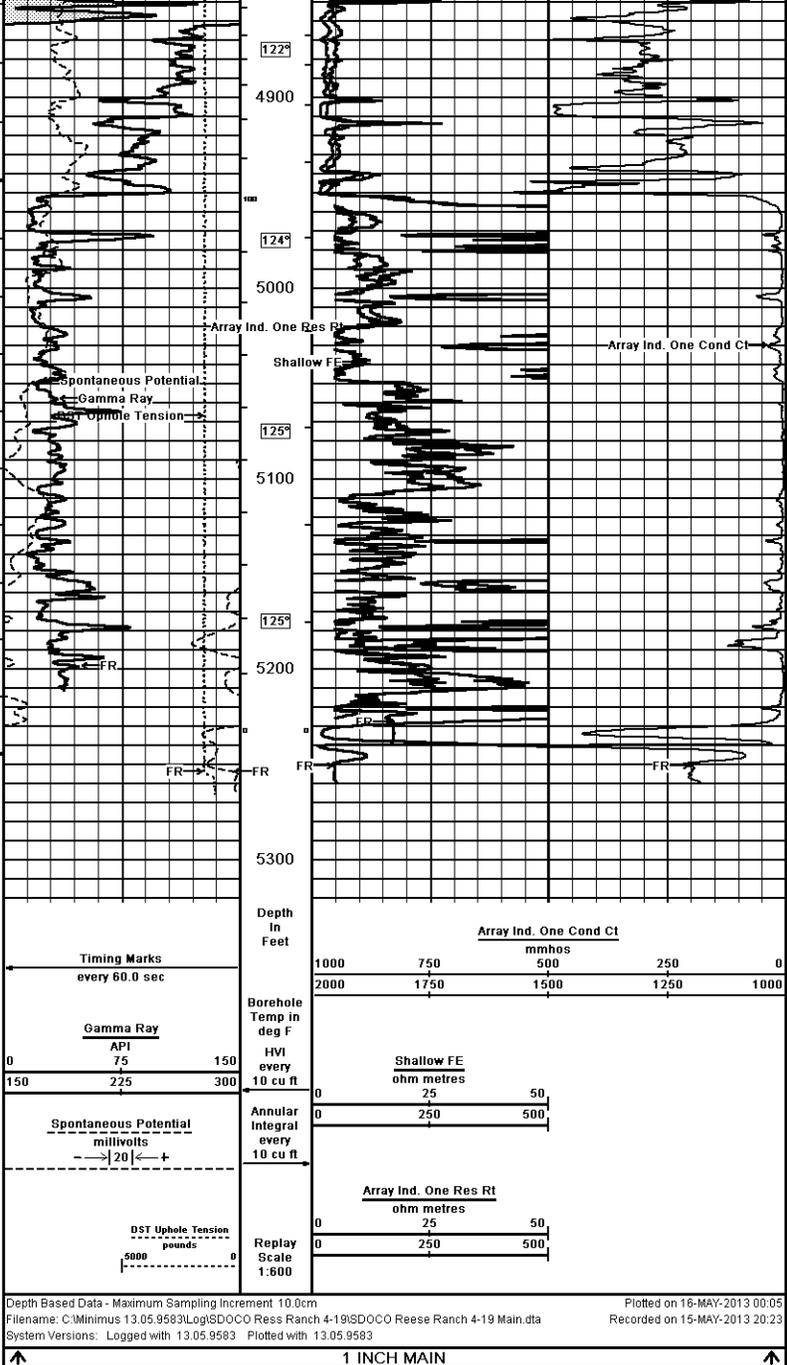
119

4700

121

4800

Array Ind. One Cond Cl



Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 16-MAY-2013 00:05
 Filename: C:\Minimus 13.05.9583\Log\SDOCO Reese Ranch 4-19\SDOCO Reese Ranch 4-19 Main.dta
 Recorded on 15-MAY-2013 20:23
 System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

↑ 1 INCH MAIN ↑

COMPANY		SDOCO, LLC.	
WELL		REES RANCH 4-19	
FIELD		REES RANCH	
PROVINCE/COUNTY		WICHITA	
COUNTRY/STATE		U.S.A. / KANSAS	
Elevation Kelly Bushing	3183.00 feet	First Reading	5251.00 feet
Elevation Drill Floor	3182.00 feet	Depth Driller	5250.00 feet
Elevation Ground Level	3172.00 feet	Depth Logger	5254.00 feet



**ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG**