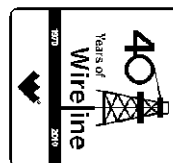




Weatherford

ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

COMPANY GRAND MESA
WELL DALE #1-34
FIELD WILDCAT
PROVINCE/COUNTY LOGAN
COUNTRY/STATE U.S.A./KANSAS
LOCATION 2548' FSL & 352' FEL



SEC TWP RGE Other Services
34 12S 32W MPD/MDN
API Number 15-109-20995 MML
Permit Number

Permanent Datum G.L., Elevation 2983 feet
Log Measured From K.B. @ 5 FEET above Permanent Datum
Drilling Measured From K.B.

Elevations:
KB 2988.00
DF 2987.00
GL 2983.00

Date	06-APR-2011	
Run Number	ONE	
Depth Driller	4750.00	feet
Depth Logger	4747.00	feet
First Reading	4744.00	feet
Last Reading	214.00	feet
Casing Driller	216.00	feet
Casing Logger	214.00	feet
Bit Size	7.880	inches
Hole Fluid Type	CHEMICAL	
Density / Viscosity	9.70 lb/USg	54.00 CP
PH / Fluid Loss	9.00	10.40 ml/30Min
Sample Source	FLOWLINE	
Rm @ Measured Temp	0.46 @ 78.0	ohm-m
Rmf @ Measured Temp	0.37 @ 78.0	ohm-m
Rmc @ Measured Temp	0.55 @ 78.0	ohm-m
Source Rmf / Rmc	CALC	CALC
Rm @ BHT	0.31 @115.0	ohm-m
Time Since Circulation	3 HOURS	
Max Recorded Temp	115.00	deg F
Equipment Name	COMPACT	
Equipment / Base	13025	LIB
Recorded By	SHAWN NUTT	
Witnessed By	MACKLIN ARMSTRONG	
S.O.#/JOB#	3529713	LB11-069

BOREHOLE RECORD

Last Edited: 06-APR-2011 11:54

Bit Size inches	Depth From feet	Depth To feet
7.880	214.00	4747.00

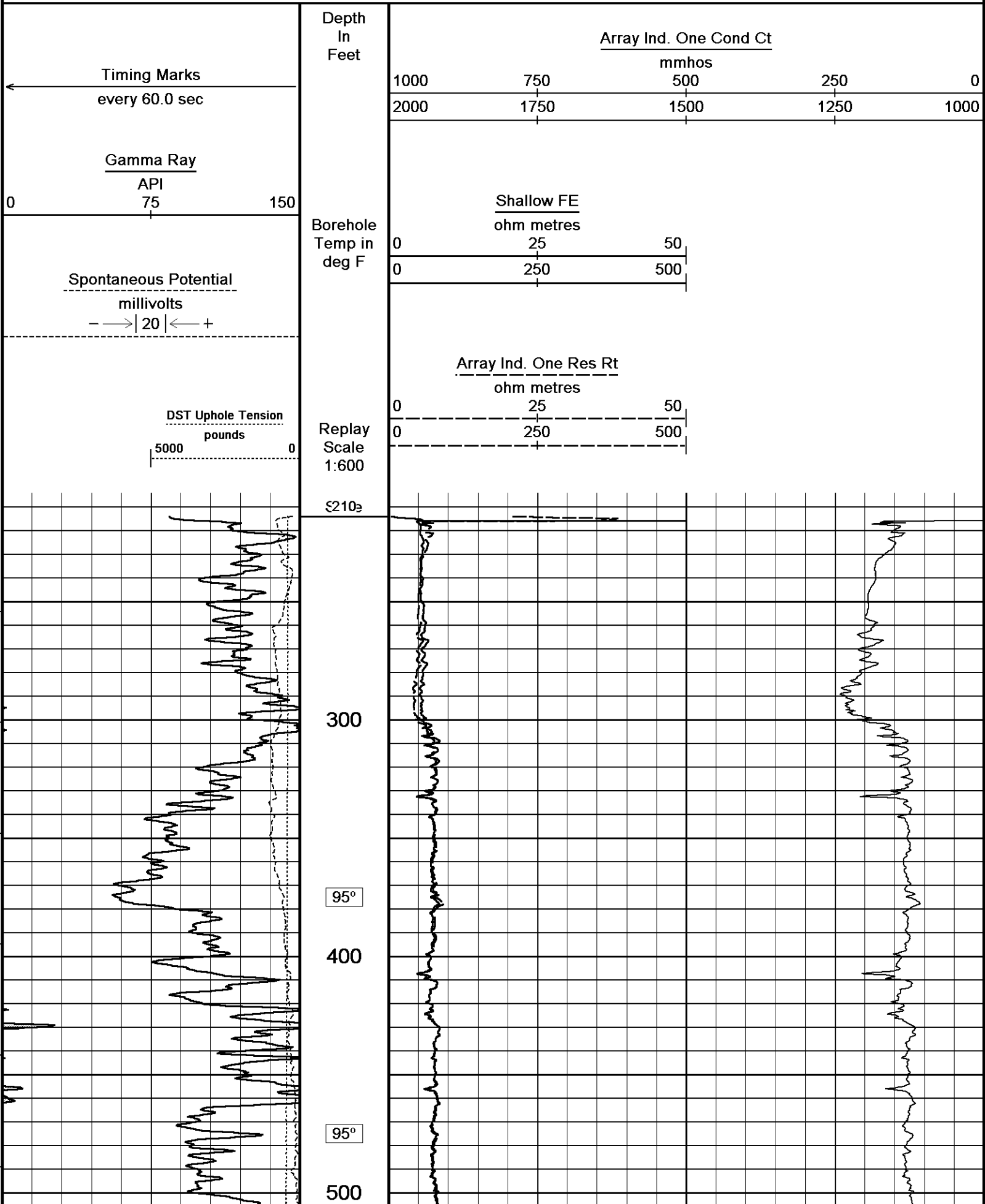
CASING RECORD

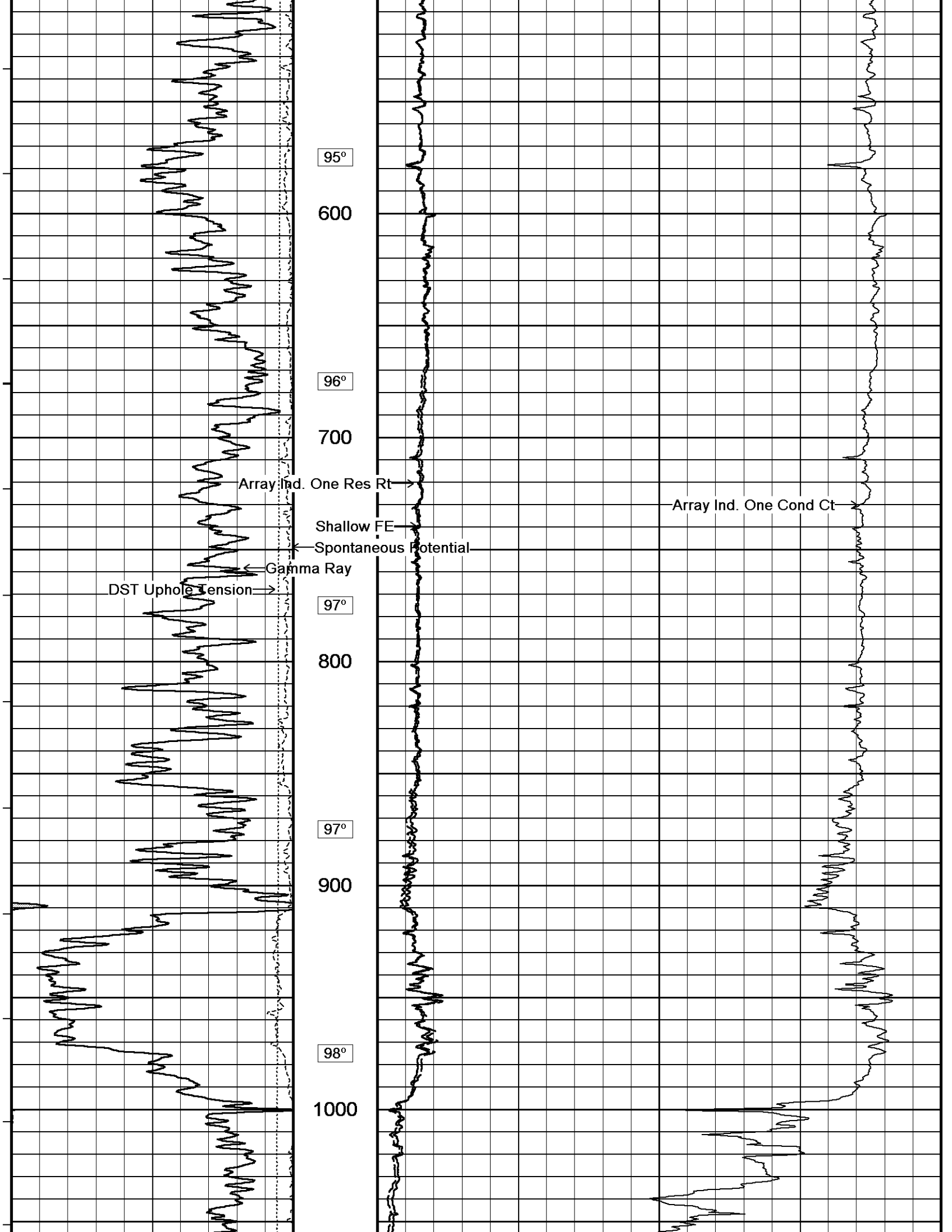
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	214.00	24.00

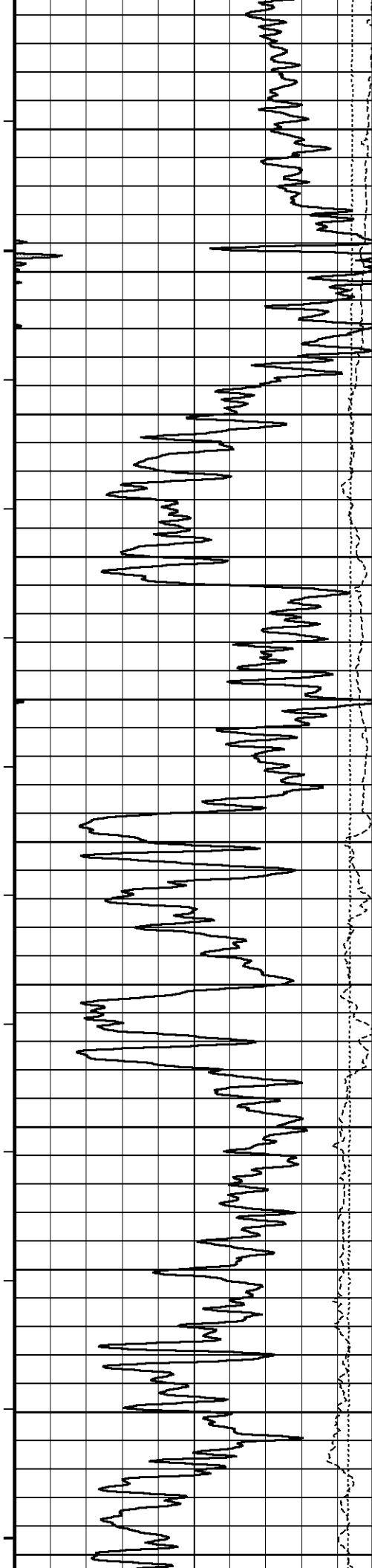
REMARKS

ols Used: MAI, MPD, MCG, MDN, MML, MFE, SKJ,
Hardware: MPD: 8 inch profile plate. MAI and MFE: 0.5 Inch standoffs 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 5.5 inch production casing = 222 cu. ft.
Service order #3529173
Rig: Murfin #24
Engineer: Shawn Nutt
Operator(s): K. Rinehart

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.







99°

1100

99°

1200

100°

1300

100°

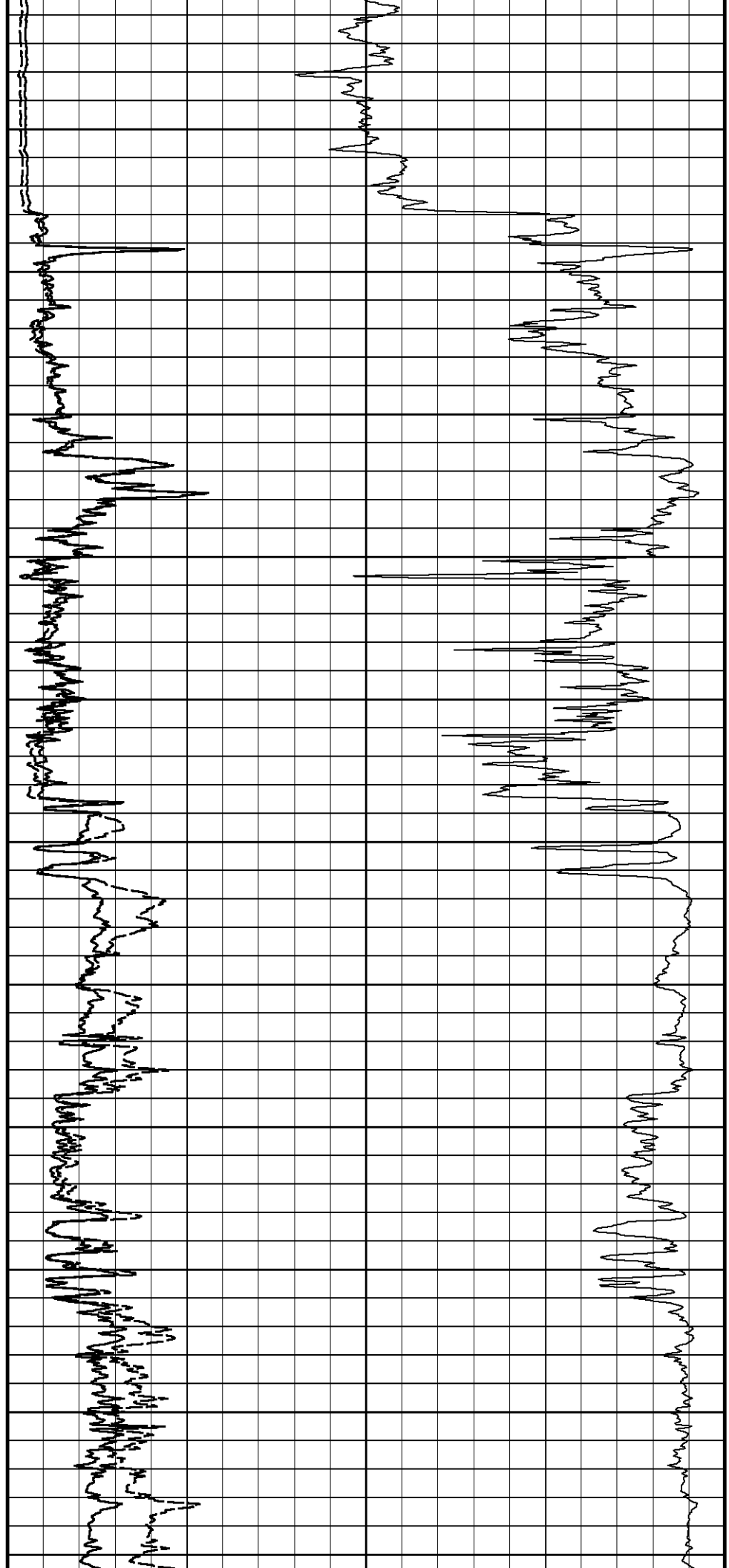
1400

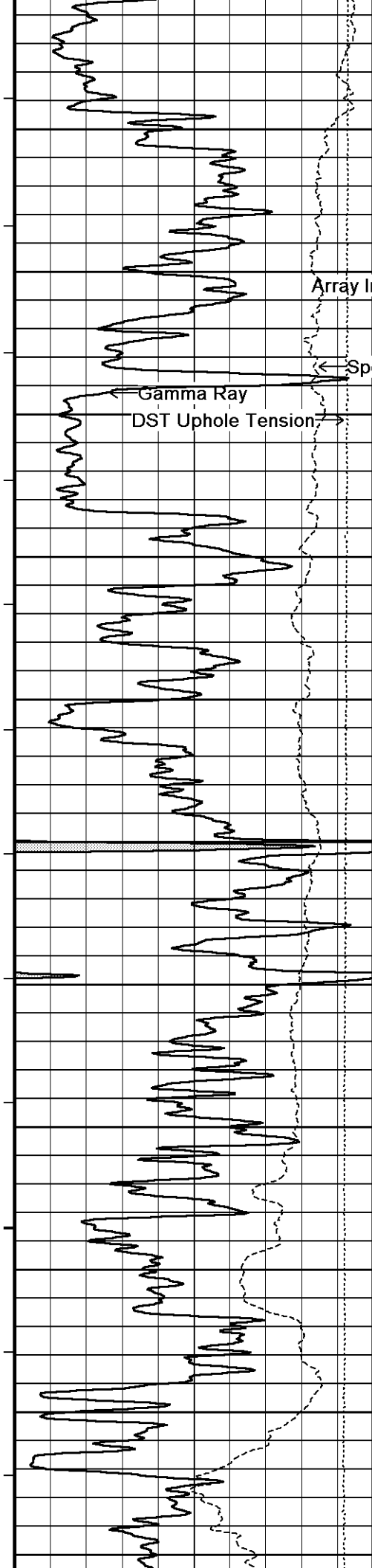
101°

1500

101°

1600





102°

1700

Array Ind. One Res Rt →

Shallow FE →

← Spontaneous Potential

← Gamma Ray

DST Uphole Tension →

102°

1800

103°

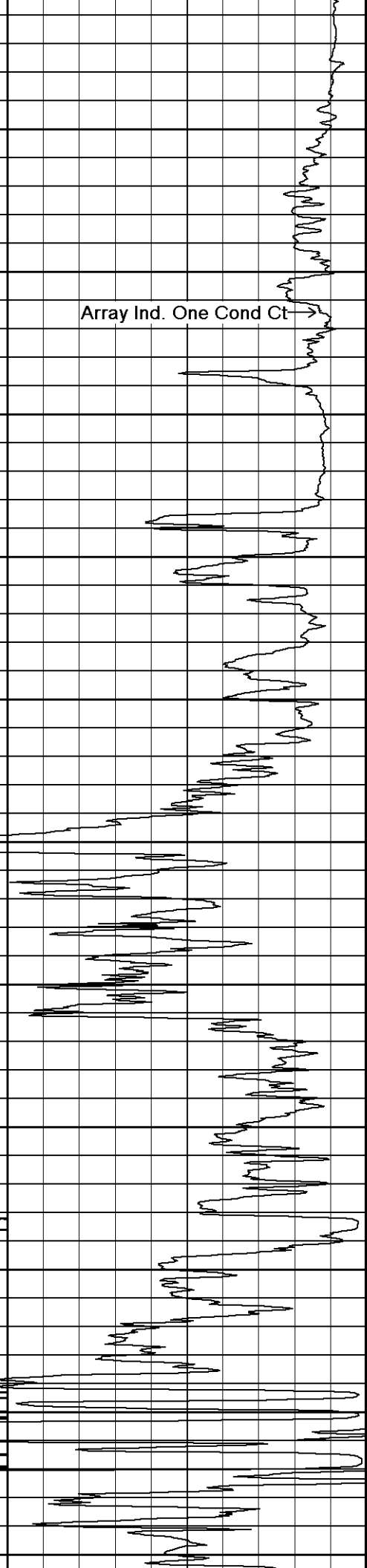
1900

103°

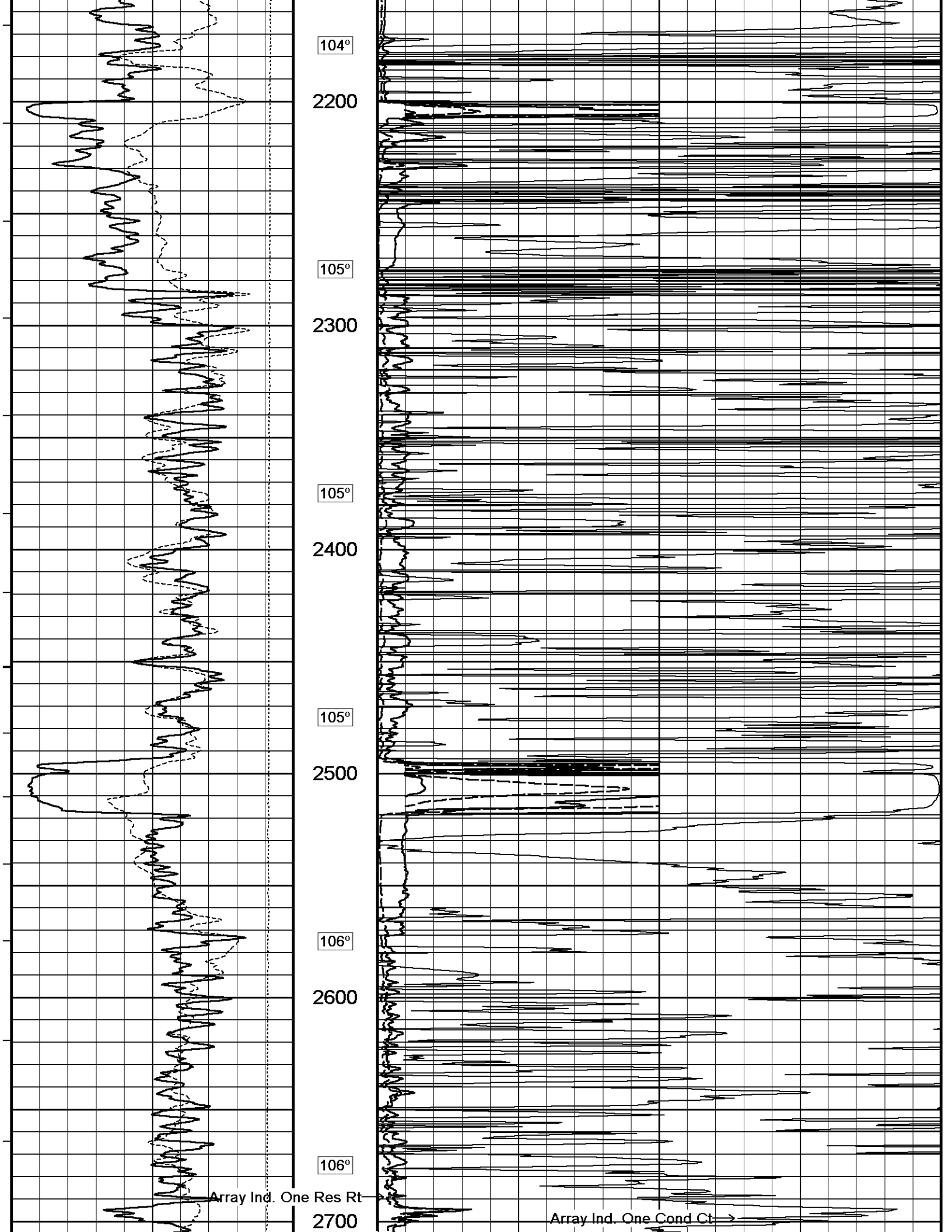
2000

104°

2100



Array Ind. One Cond Ct →



Shallow FE

Spontaneous Potential

Gamma Ray

DST Up-hole Tension →

107°

2800

107°

2900

107°

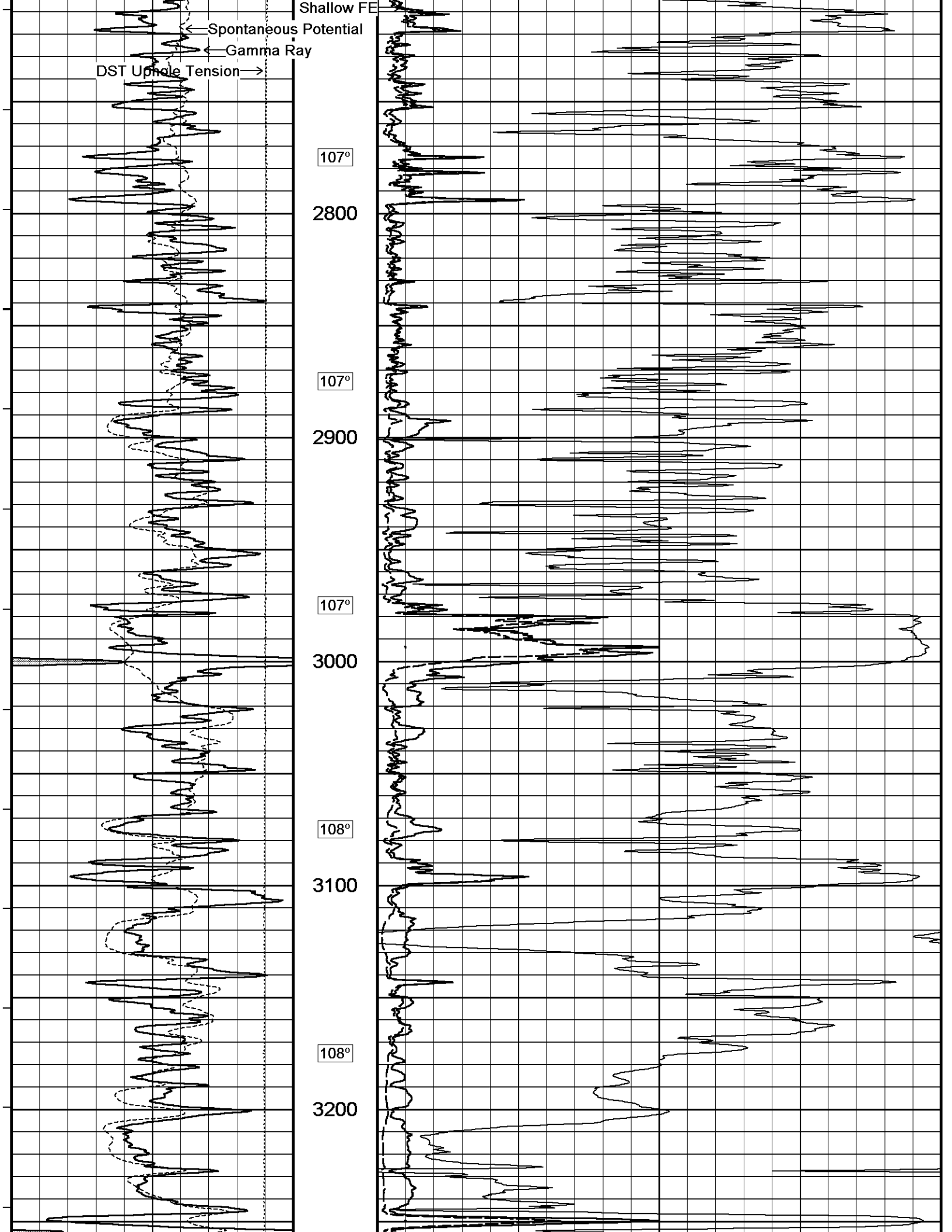
3000

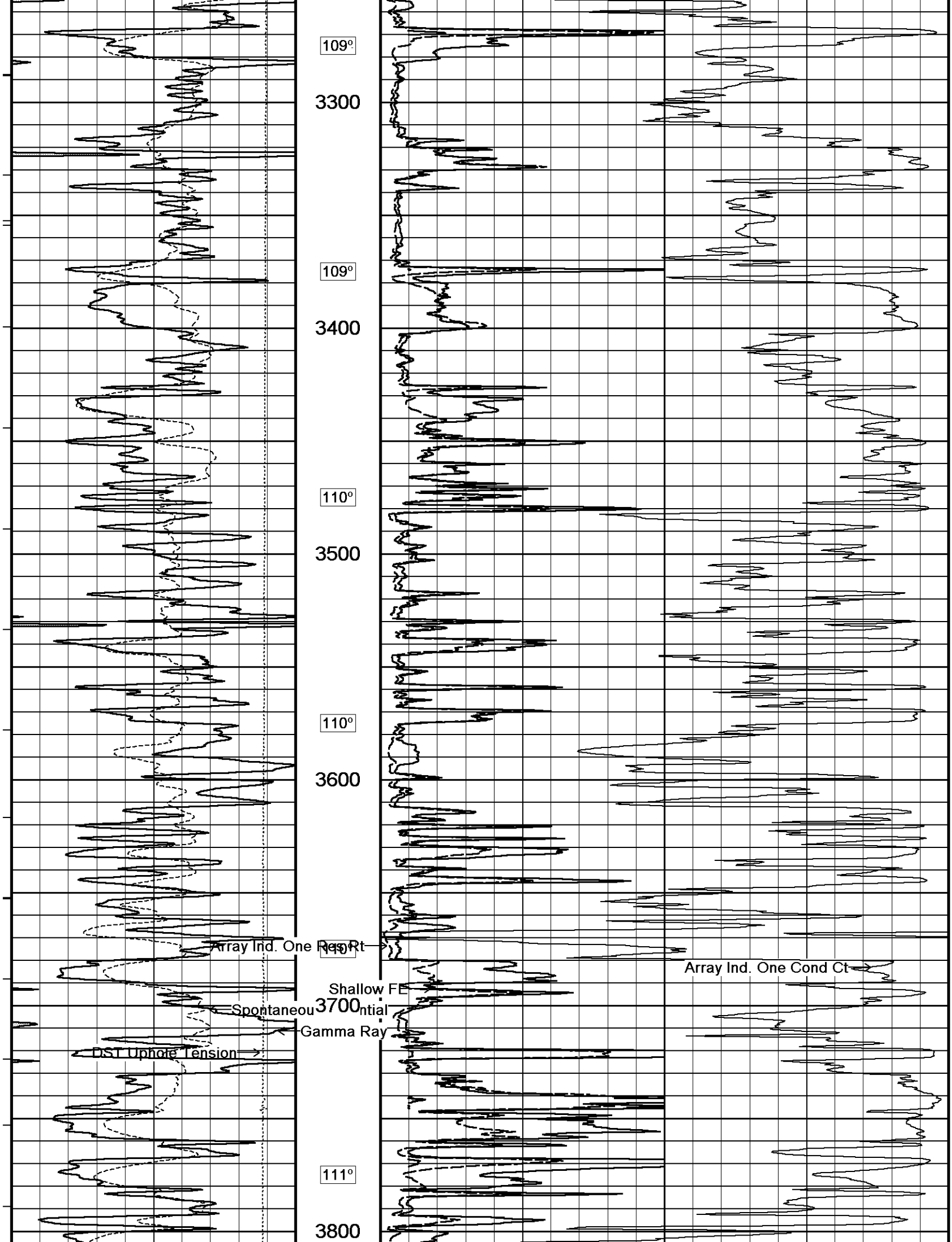
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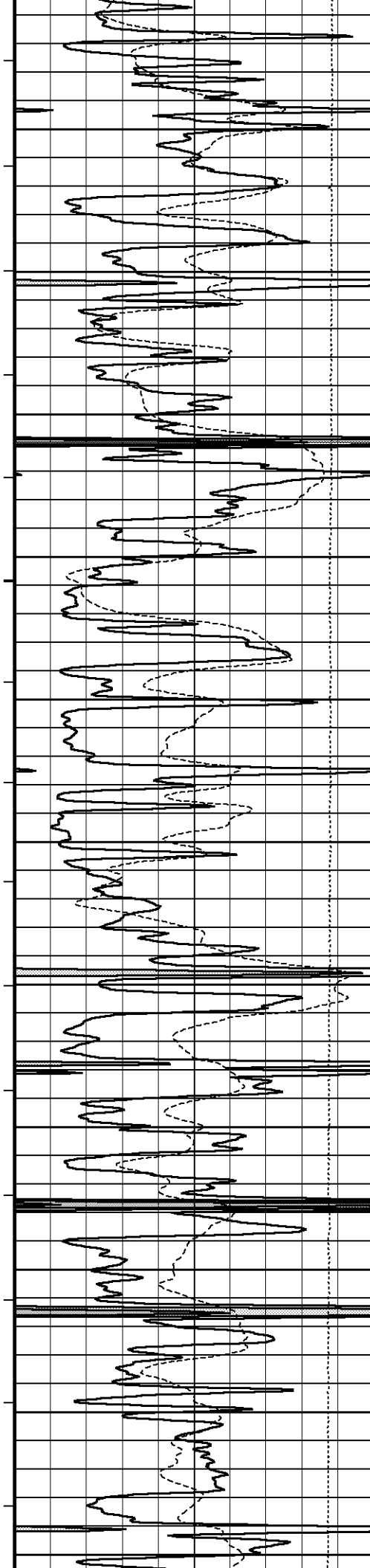
3100

108°

3200







111°

3900

112°

4000

112°

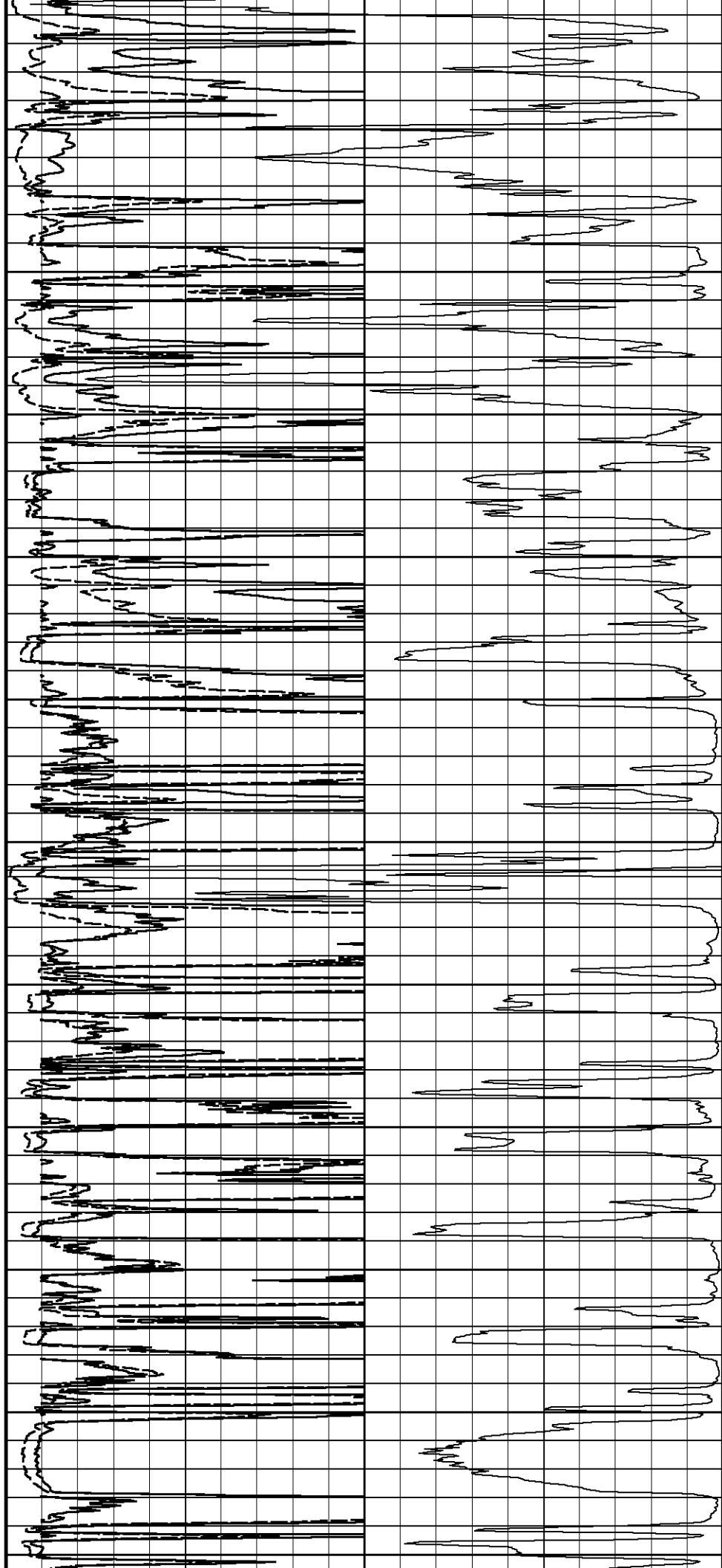
4100

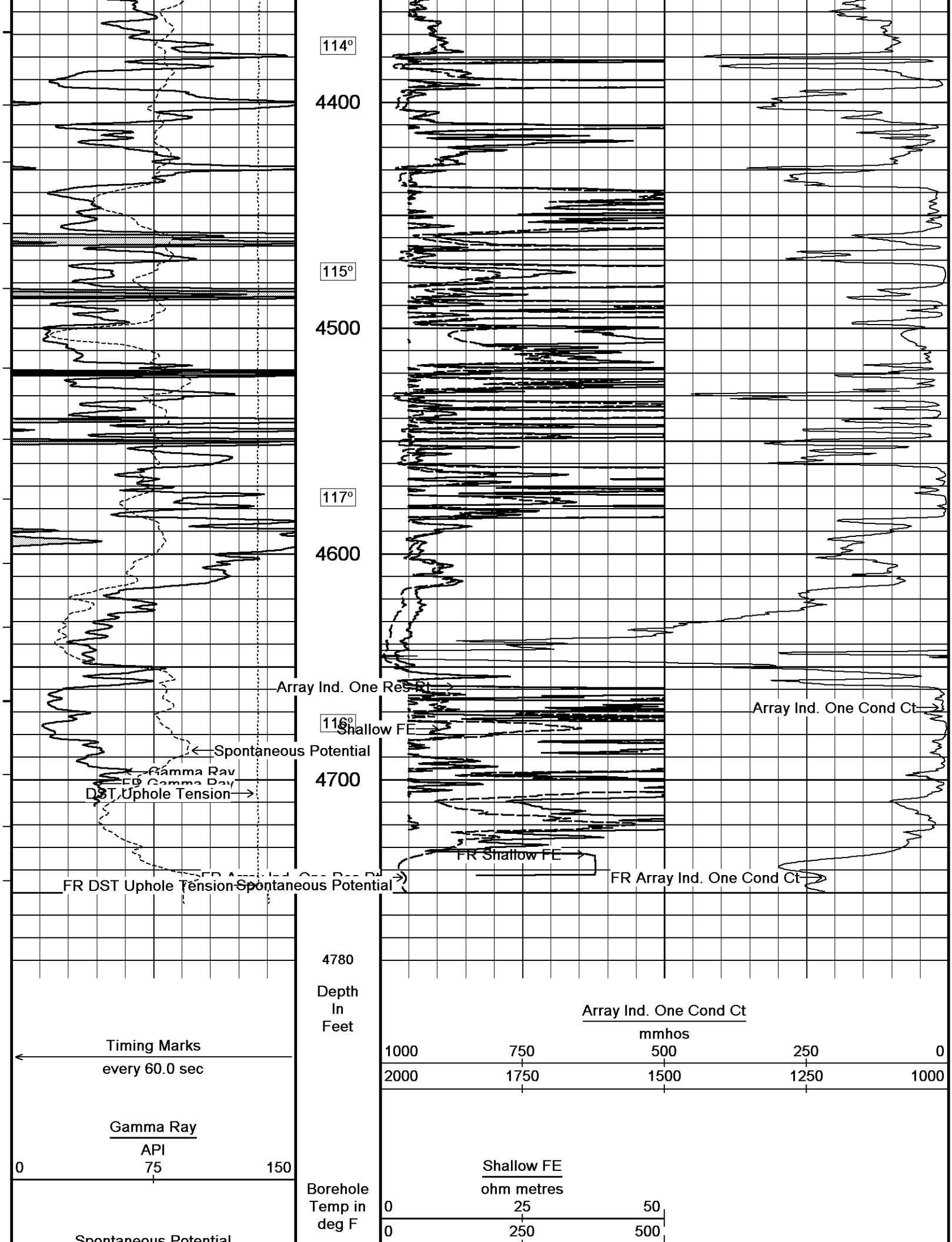
113°

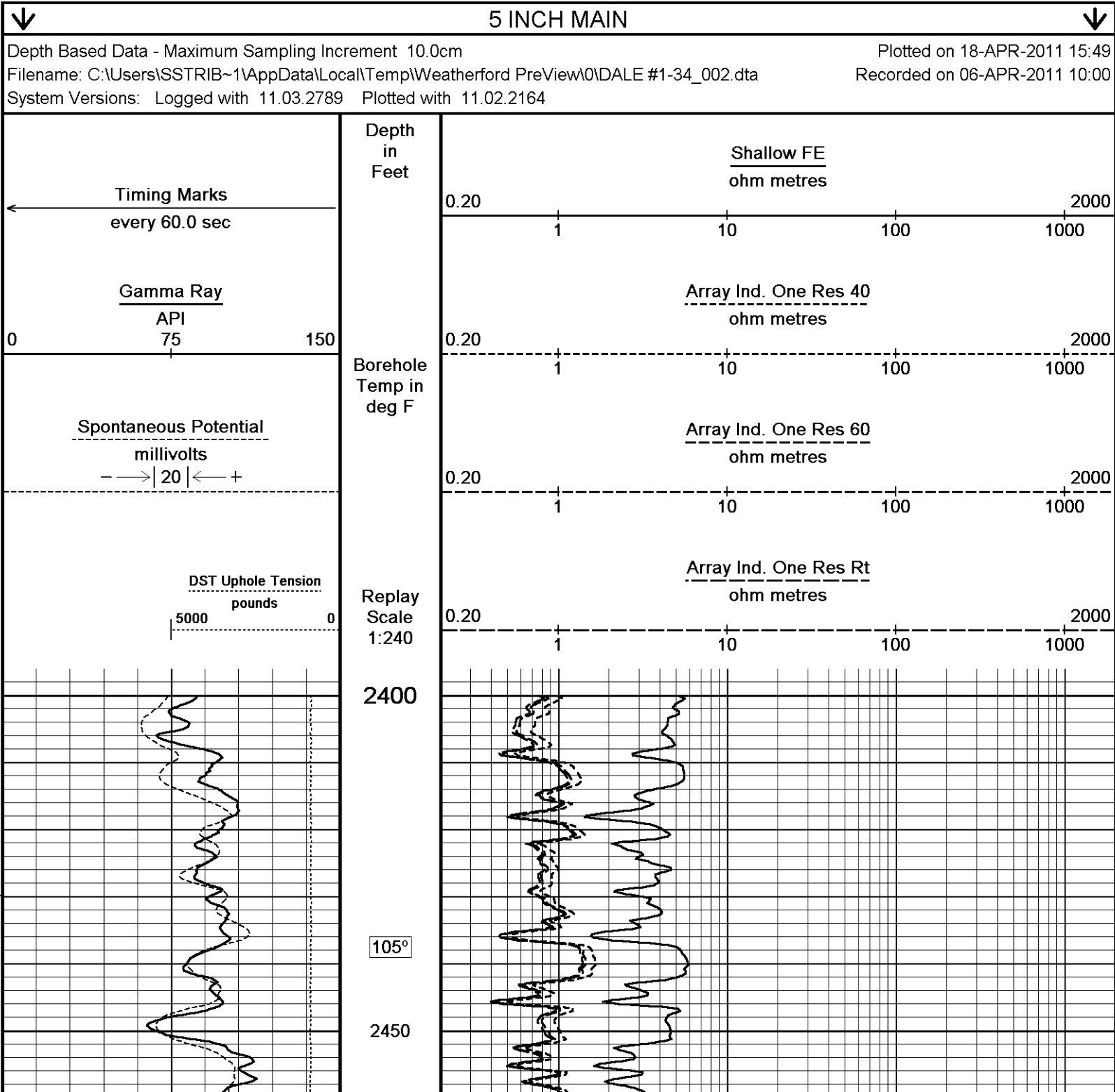
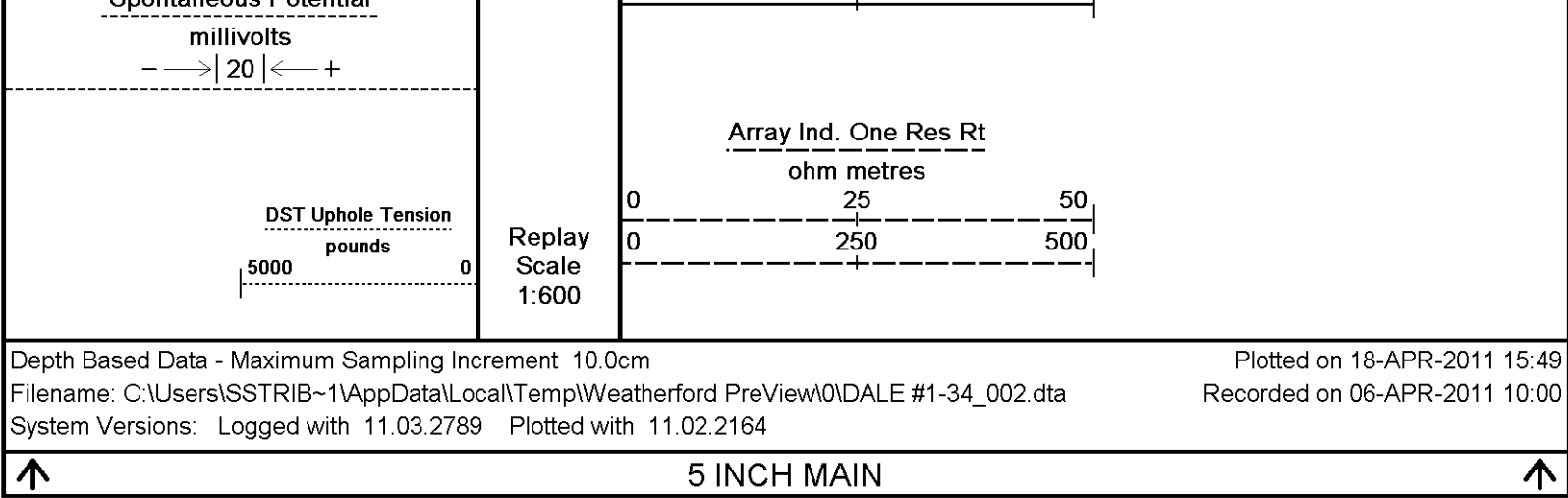
4200

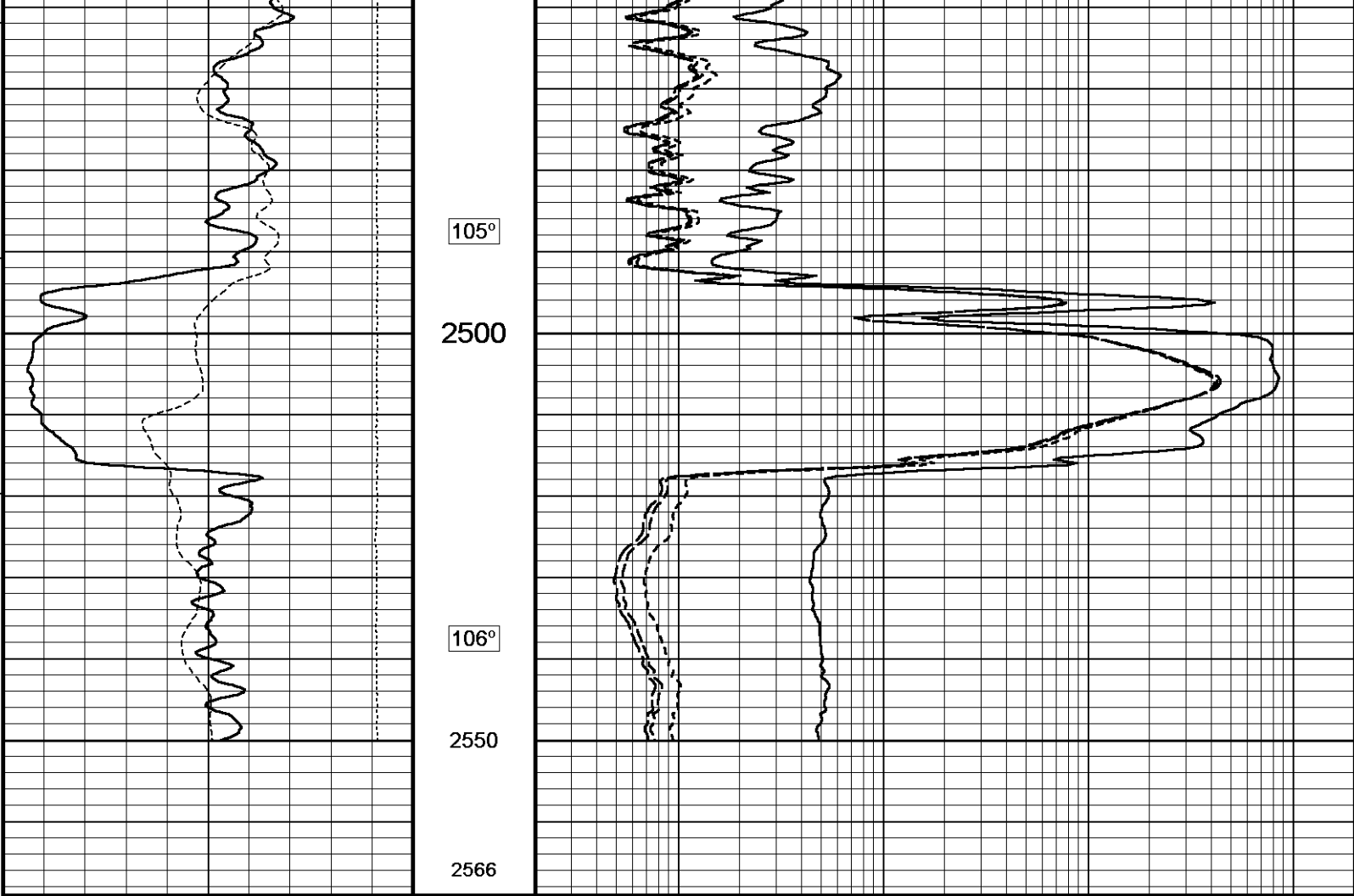
113°

4300







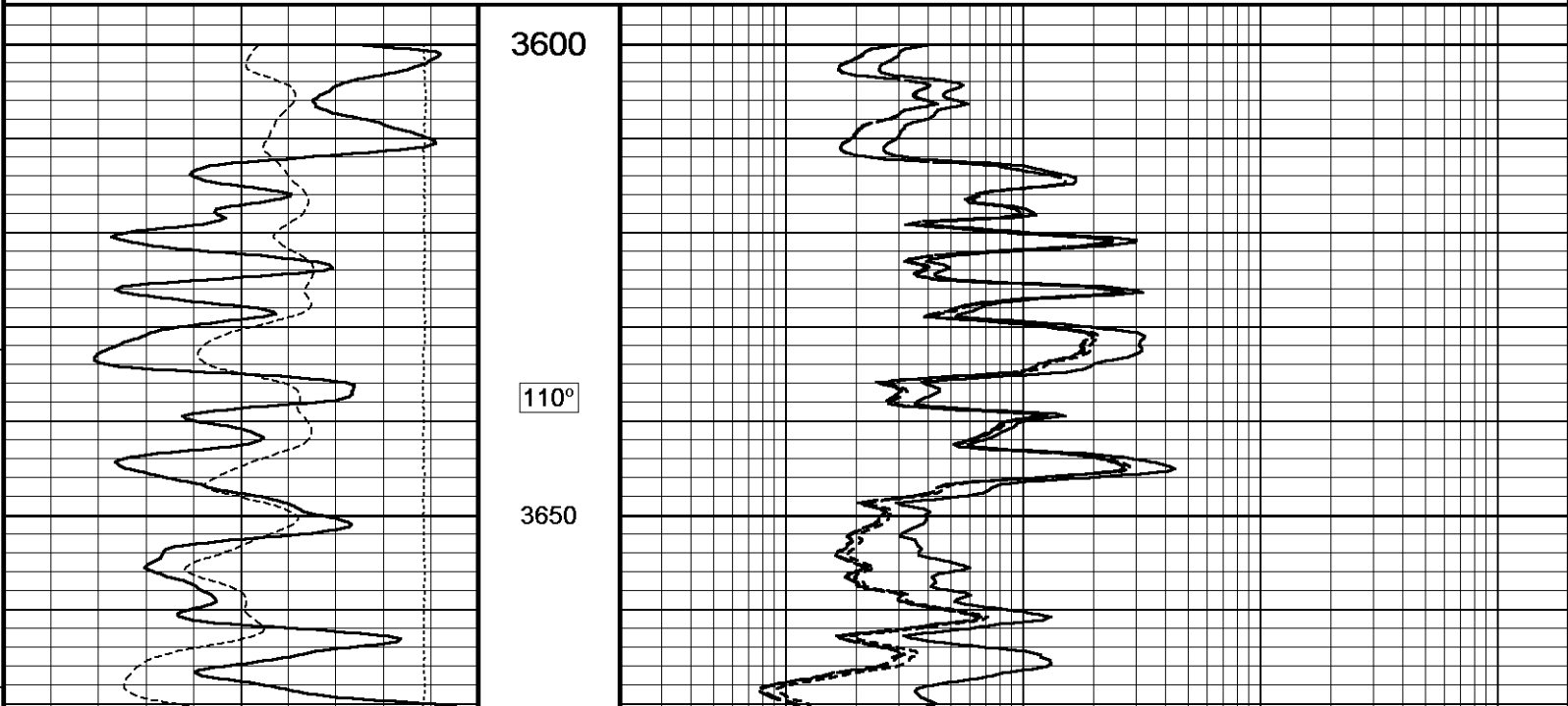


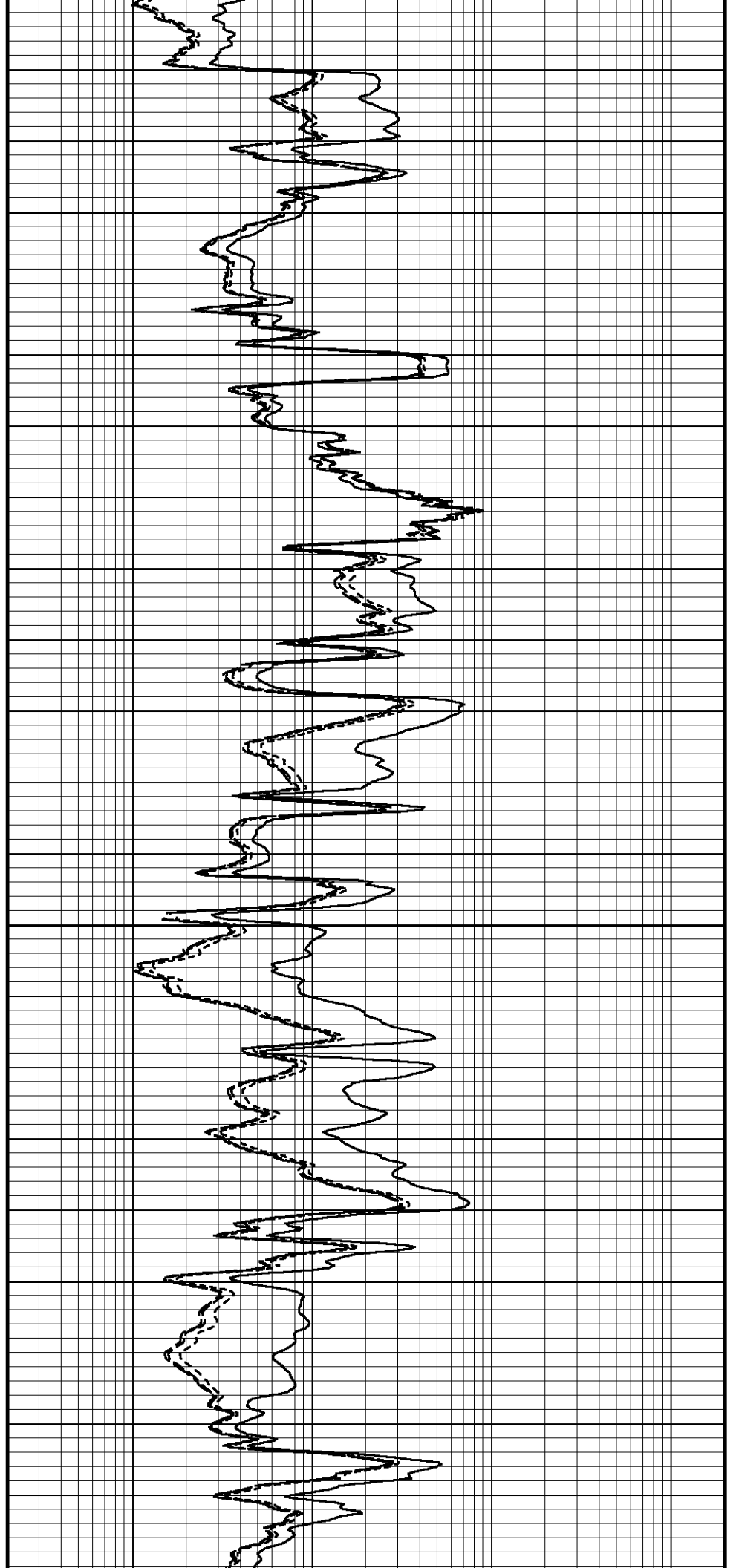
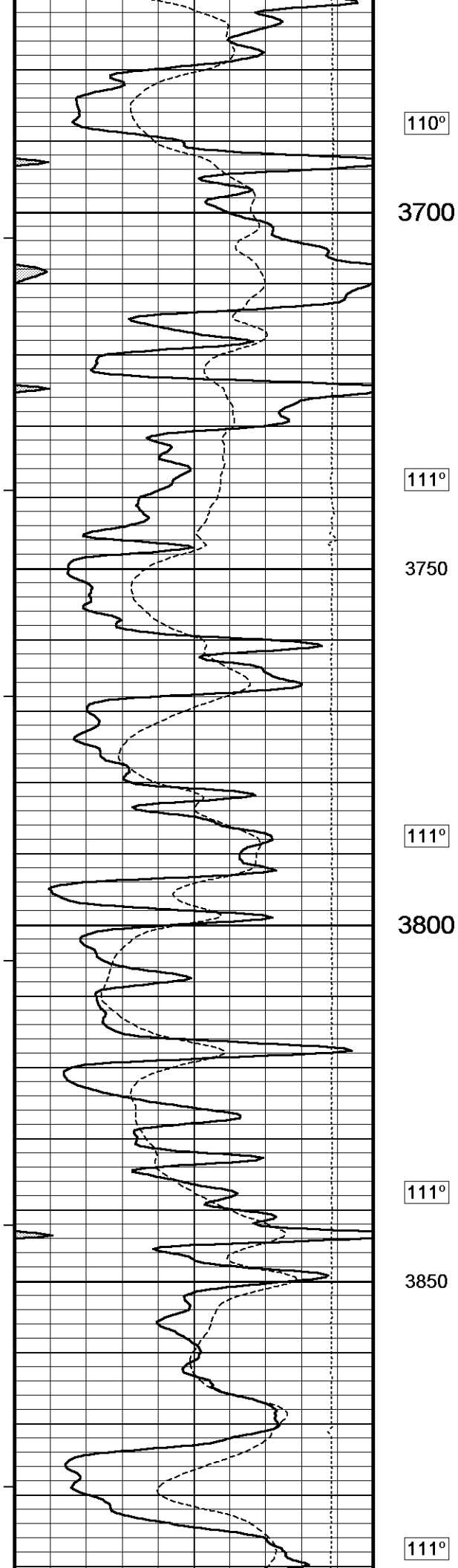
Depth Based Data - Maximum Sampling Increment 10.0cm
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System Versions: Logged with 11.03.2789 Plotted with 11.02.2164

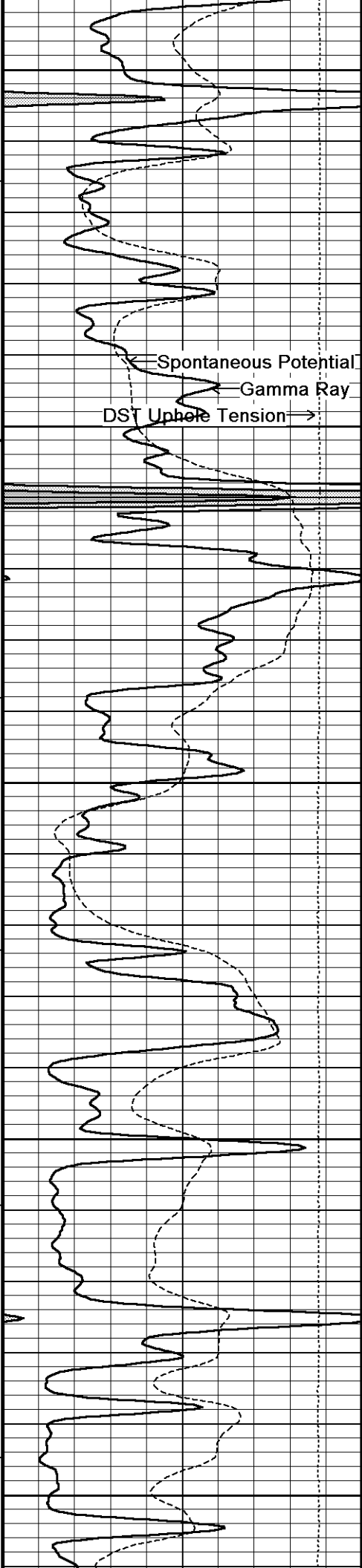
↑ 5 INCH MAIN ↑

↓ 5 INCH MAIN ↓

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Users\SSTRIB~1\AppData\Local\Temp\Weatherford PreView0\DALE #1-34_002.dta
System Versions: Logged with 11.03.2789 Plotted with 11.02.2164







3900

112°

3950

112°

4000

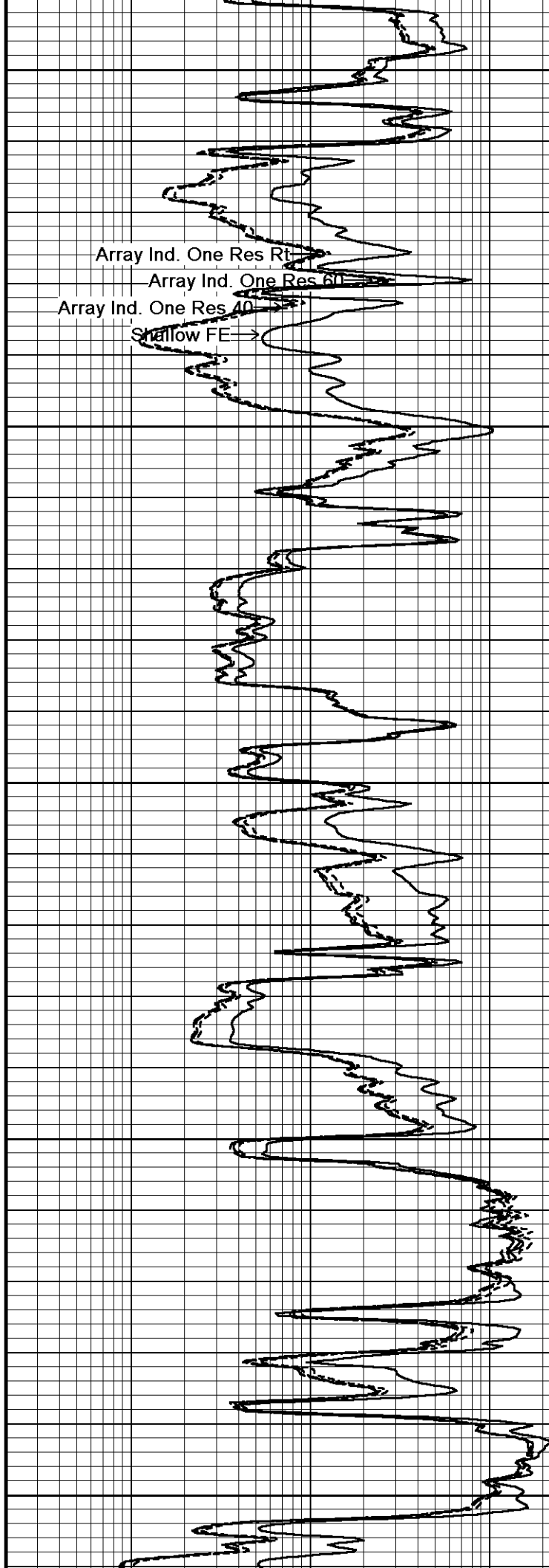
112°

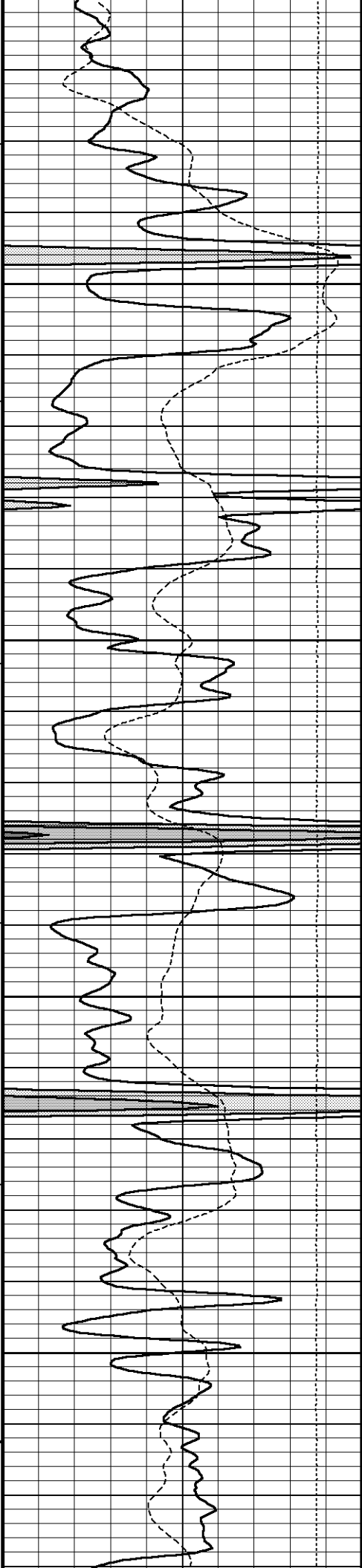
4050

112°

4100

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





112°

4150

113°

4200

113°

4250

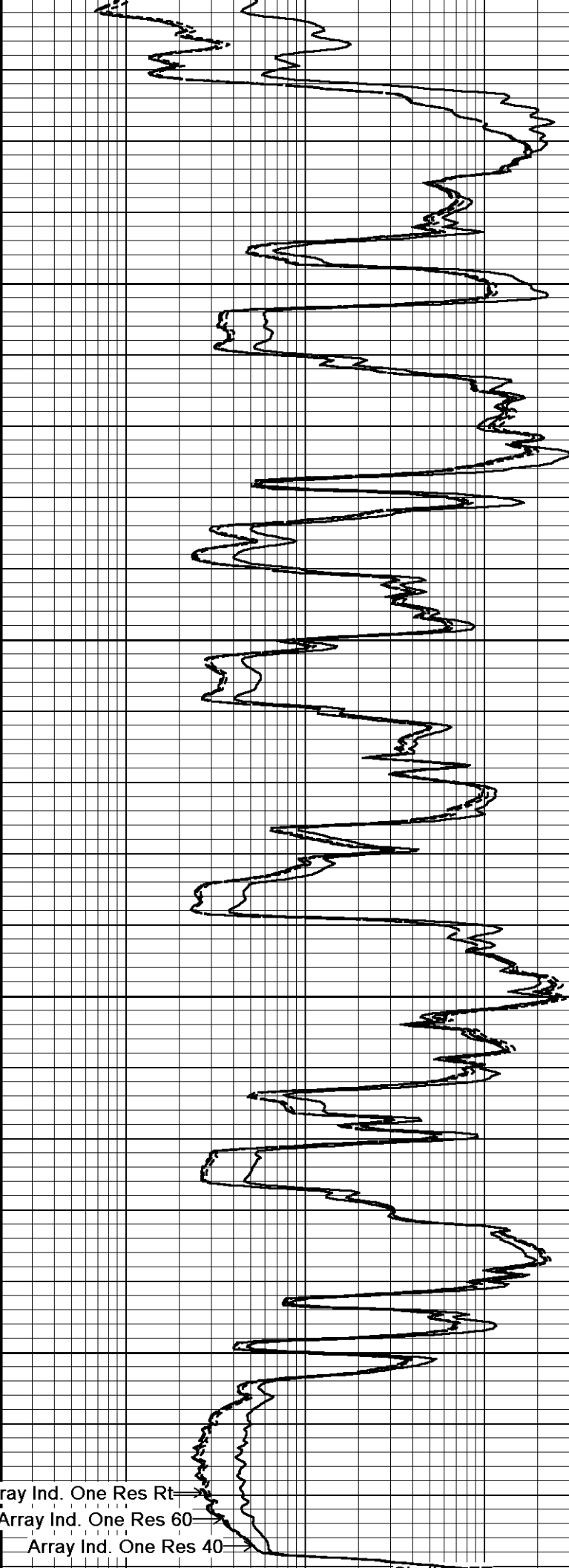
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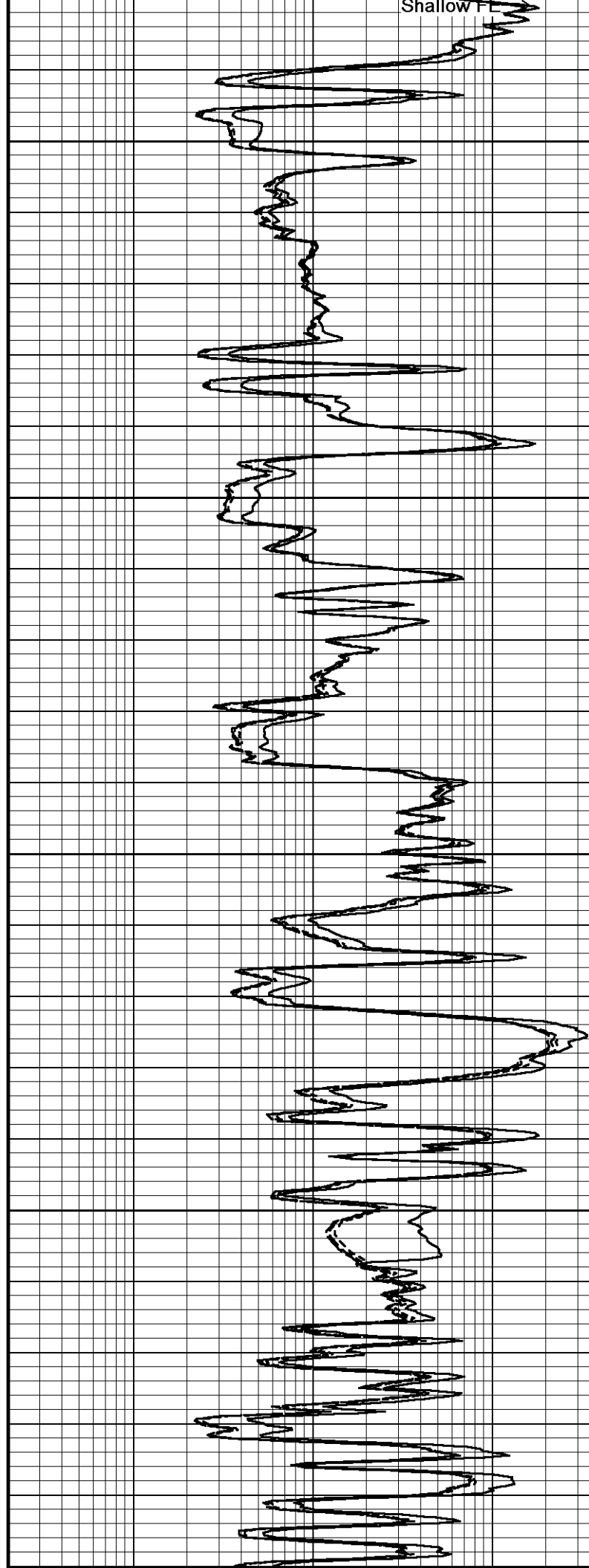
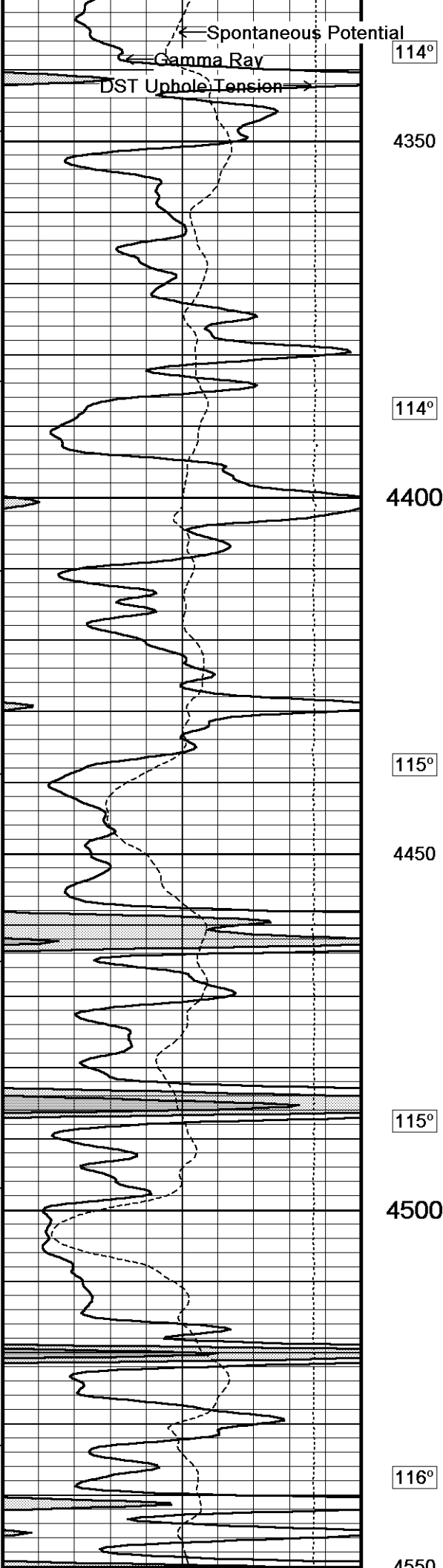
4300

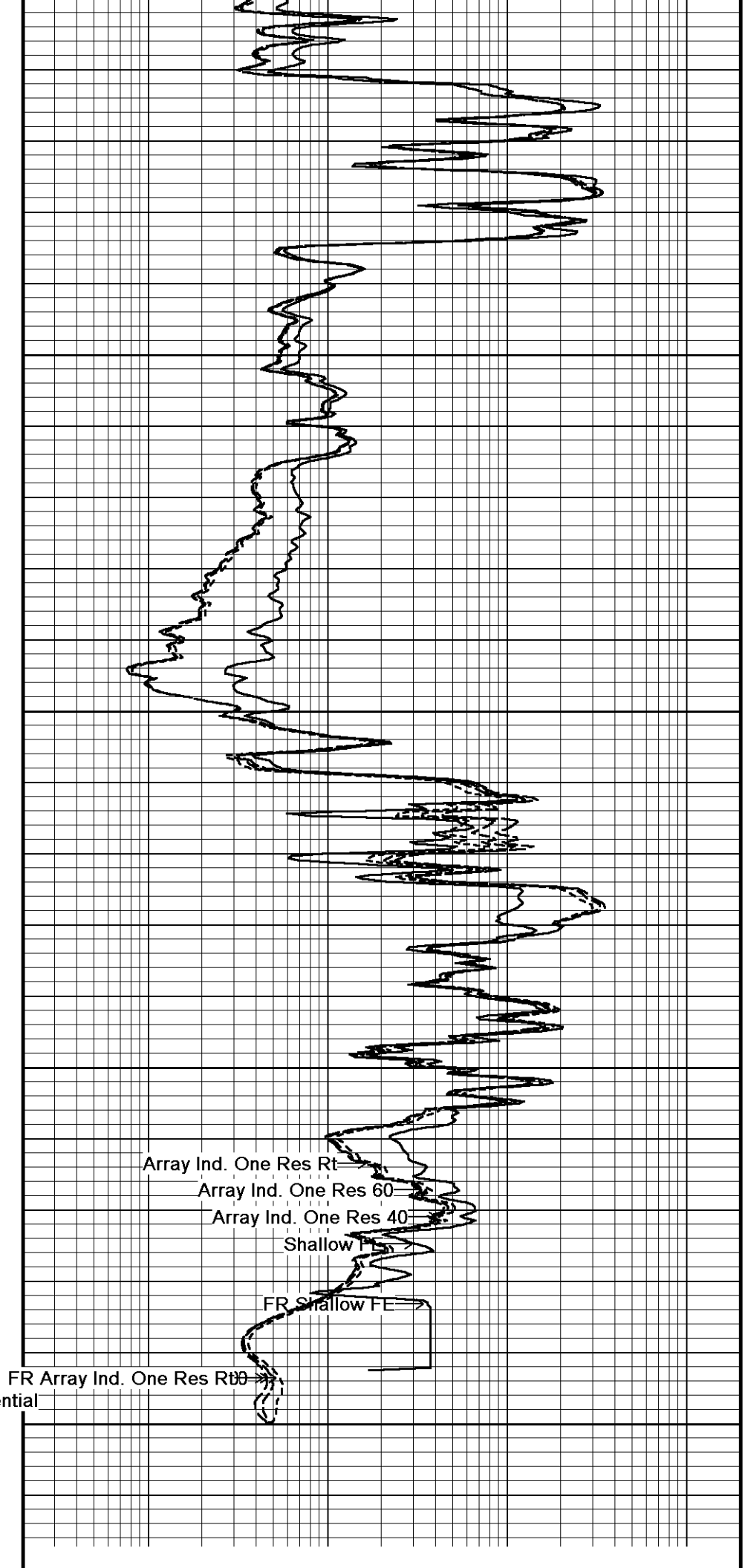
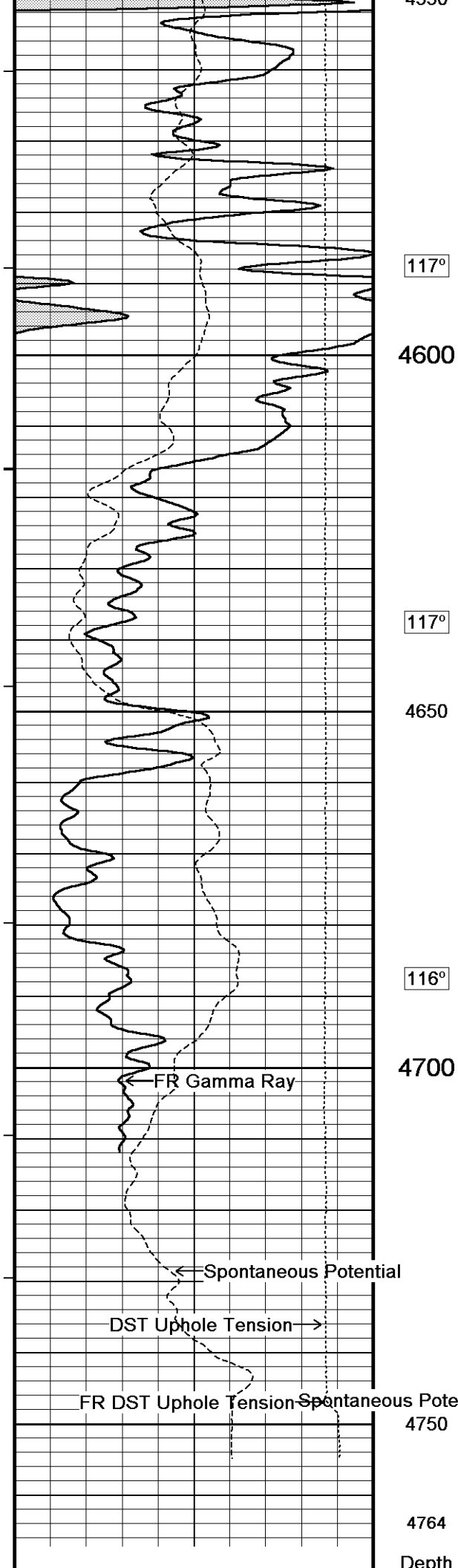
Array Ind. One Res Rt

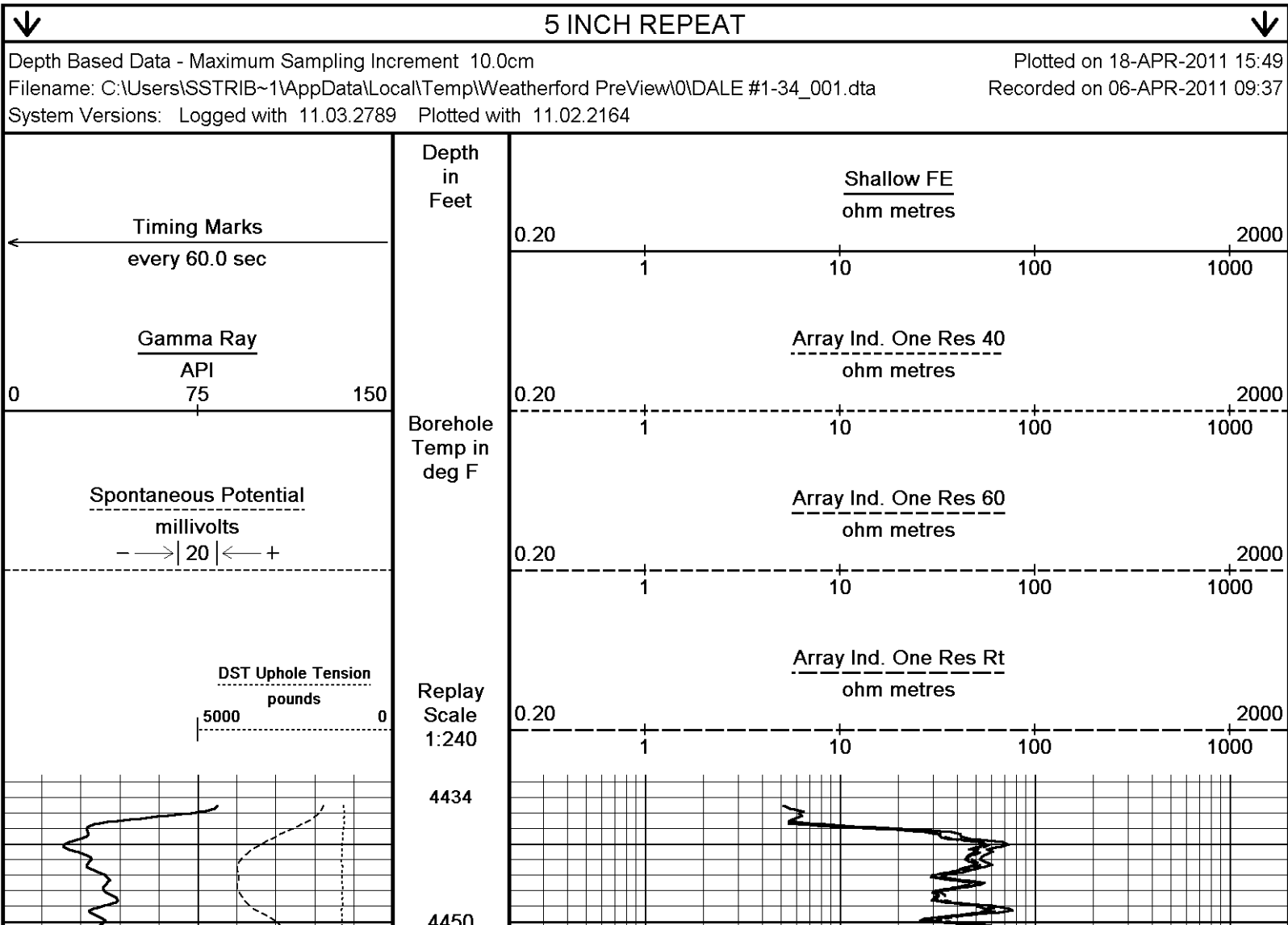
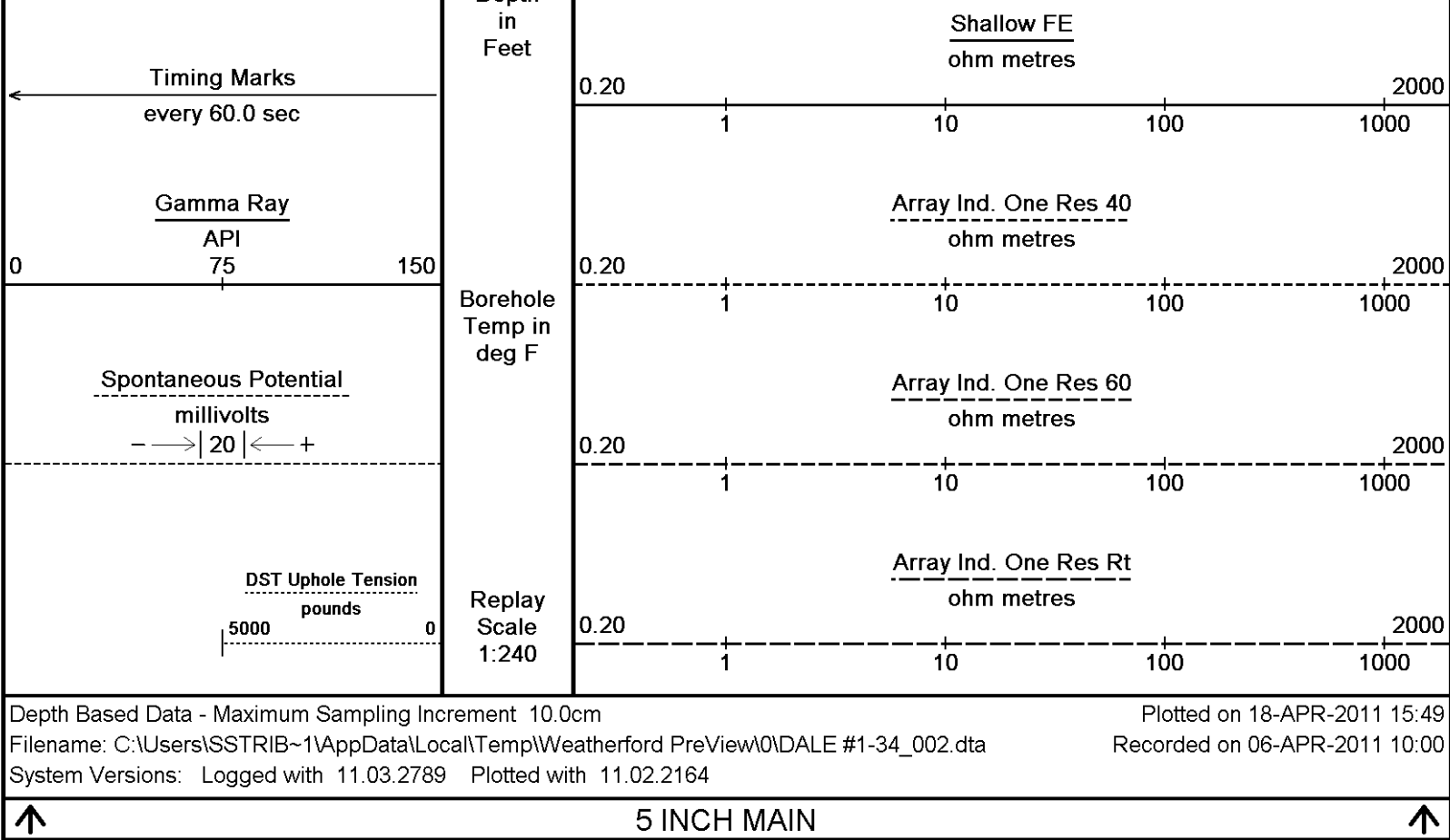
Array Ind. One Res 60

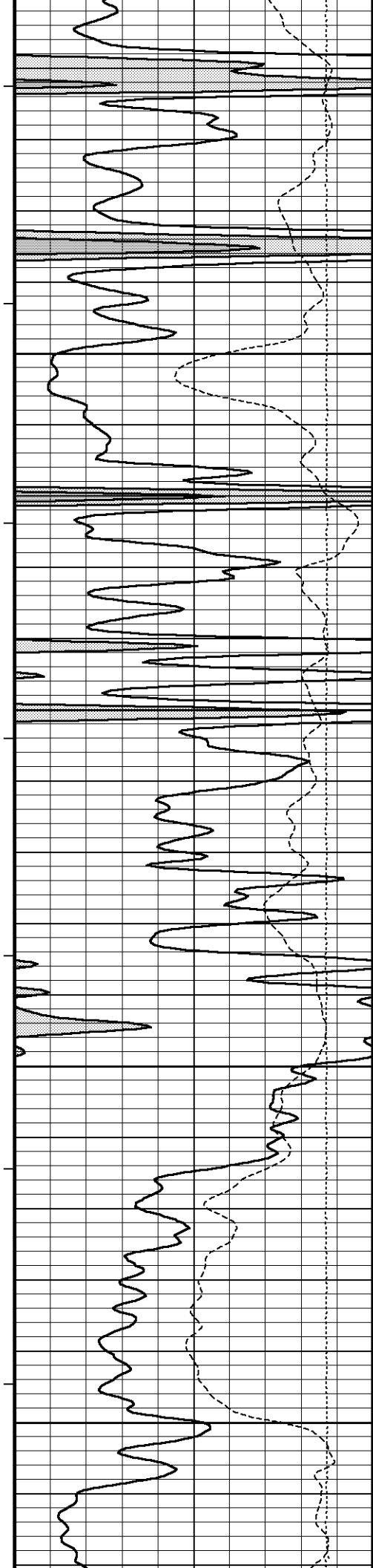
Array Ind. One Res 40











4488

114°

4500

114°

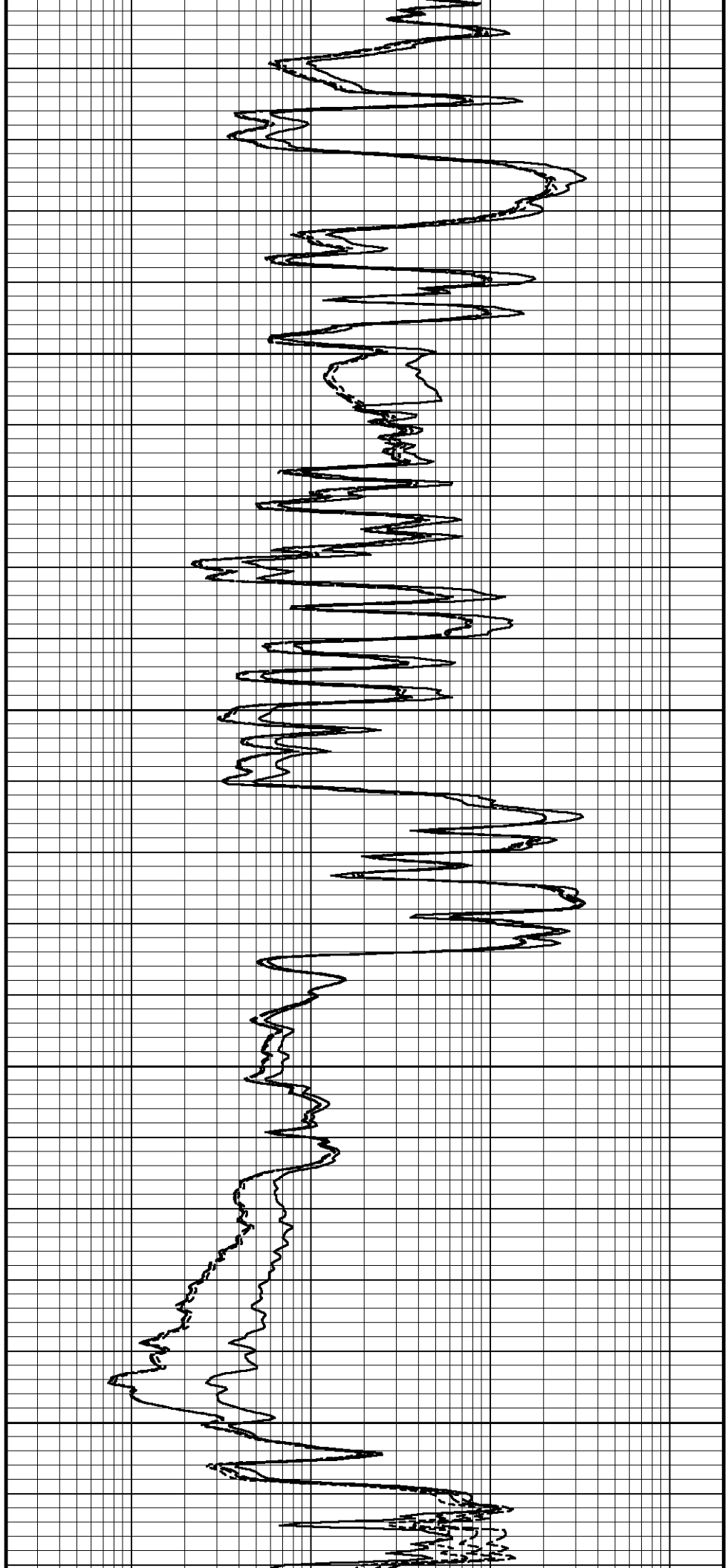
4550

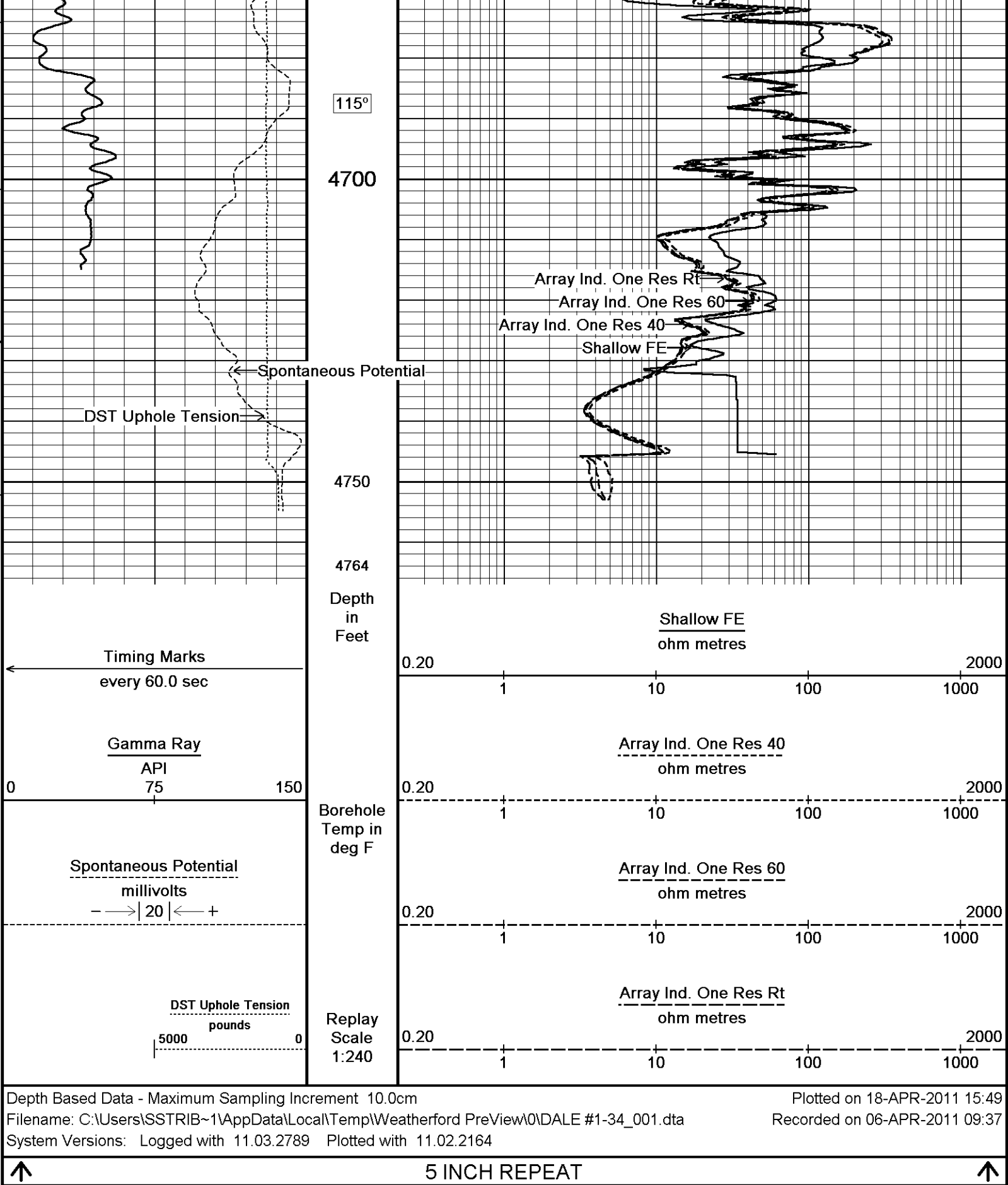
116°

4600

115°

4650





BEFORE SURVEY CALIBRATION

C:\Users\SSTRIB~1\AppData\Local\Temp\Weatherford PreView\0\DALE #1-34.dta

General Constants All 000

Last Edited on 06-APR-2011,06:54

General Parameters

General Parameters		0.460	ohm-metres	
Mud Resistivity		78.000	degrees F	
Mud Resistivity Temperature		0.000	feet	
Water Level				
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	0.610			
RWA Constant M	2.150			
Down-hole Tension Calibration All 000				
			Field Calibration on 30-JUN-2010	
Reading No	Measured	Calibrated (lbs)		
1	14112.01	10.00		
2	15164.79	427.00		
Down-hole Tension Calibration SMS 0				
			Field Calibration on 30-JUN-2010	
Reading No	Measured	Calibrated (lbs)		
1	14112.01	10.00		
2	15164.79	427.00		
High Resolution Temperature Calibration MCG-C 139				
			Field Calibration on 03-SEP-2010,11:23	
	Measured	Calibrated(Deg F)		
Lower	50.00	50.00		
Upper	75.00	75.00		
High Resolution Temperature Constants MCG-C 139				
			Last Edited on	
Pre-filter Length	11			
SP Calibration MCG-C 139				
			Field Calibration on 04-MAR-2011 06:37	
	Measured	Calibrated (mV)		
Reference 1	103.7	100.0		
Reference 2	-96.9	-100.0		
Gamma Calibration MCG-C 139				
			Field Calibration on 02-APR-2011 19:01	
	Measured	Calibrated (API)		
Background	68	46		
Calibrator (Gross)	1138	771		
Calibrator (Net)	1071	725		
Gamma Constants MCG-C 139				
			Last Edited on 06-APR-2011,06:54	
Gamma Calibrator Number	grc38			
Mud Density	1.16	gm/cc		
Caliper Source for Processing	Density Caliper			
Tool Position	Eccentred			
Concentration of KCl	0.00	kppm		
Micro Normal and Micro Inverse Calibration MML-A 16				
			Base Calibration on 11-MAR-2011 11:10	
			Field Check on 02-APR-2011 18:47	
Base Calibration				
Channel	Resistor 1	Measured	Calibrated (ohm-m)	
		Resistor 2	Resistor 1	Resistor 2
	Micro Normal	12.2	60.2	2.6
Micro Inverse	15.6	78.3	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 16				
			Last Edited on 02-APR-2011 18:46	

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

Caliper Calibration MML-A 16

Base Calibration on 11-MAR-2011 11:20
Field Calibration on 02-APR-2011 18:51

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13875	5.98
2	17350	7.97
3	20581	9.86
4	24656	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.01	5.98

Neutron Calibration MDN-A.B 66

Base Calibration on 11-MAR-2011 13:54
Field Check on 02-APR-2011 18:55

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3091	97	3714	110
Ratio	31.957		33.764	

Field Calibrator at Base

Calibrated (cps)	
1660	2371
Ratio 0.700	

Field Check

Calibrated (cps)	
1663	2382
Ratio 0.698	

Neutron Constants MDN-A.B 66

Last Edited on 06-APR-2011,06:54

Neutron Source Id	P58125B
Neutron Jig Number	5824NE
Epithermal Neutron	No
Caliper Source for Processing	Density Caliper
Stand-off	0.00 inches
Mud Density	1.16 gm/cc
Limestone Sigma	7.10 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 52

Base Calibration on 11-MAR-2011 10:55
Field Check on 02-APR-2011 18:41

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	965.7	126.8

Base Check	279.9
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Field Check	279.9
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FE Constants MFE-A.A 52

Last Edited on 02-APR-2011,18:40

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 167			Field Calibration on 17-JAN-2011,18:32	
	Measured		Calibrated(Deg F)	
Lower	1.00		33.80	
Upper	11.00		51.80	

High Resolution Temperature Constants MAI-A.A 167			Last Edited on	
Pre-filter Length	11			

Induction Calibration MAI-A.A 167			Base Calibration on 11-MAR-2011,09:58	
			Field Check on 02-APR-2011 18:40	
Base Calibration				
Test Loop Calibration				
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	13.0	3839.1
2	0.0	0.0	29.5	3476.9
3	0.0	0.0	29.0	3053.1
4	0.0	0.0	19.7	2081.9
Deep	0.0	0.0	18.5	2049.2
Medium	0.0	0.0	42.1	3991.2
Shallow	0.0	0.0	42.9	5053.8
Array Temperature	0.0		74.7	Deg F

Induction Constants MAI-A.A 167			Last Edited on 02-APR-2011,18:37	
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			
Formation Factor (F)	0.22			

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 35

Base Calibration on 11-MAR-2011 11:34

Field Calibration on 02-APR-2011 18:49

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	17936	3.99
2	28079	5.98
3	38384	7.97
4	48048	9.86
5	59047	11.92
6	N/A	N/A

Field Calibration

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

Photo Density Calibration MPD-B 35

Base Calibration on 11-MAR-2011 11:54

Field Check on 02-APR-2011 18:46

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	57876	27553	59556	30836
Reference 2	23524	2615	24941	2541

Field Check at Base

1175.2 1398.5

Field Check

1173.8 1392.5

PE Calibration

Base Calibration	WS	Measured		Calibrated	
		WH	Ratio	Ratio	
Background	211	1039			
Reference 1	21426	57673	0.375	0.371	
Reference 2	6234	23377	0.270	0.272	

Field Check at Base

211.2 1039.0

Field Check

209.4 1039.0

Density Constants MPD-B 35

Last Edited on 06-APR-2011,06:55

Density Source Id	p50557b	
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	1.16	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
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
0.00

DOWNHOLE EQUIPMENT

C:\Users\SSTRIB~1\AppData\Local\Temp\Weatherford PreView\0\DALE #1-34.dta

Compact Comms Gamma
MCG-C 139 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log
MML-A 16 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

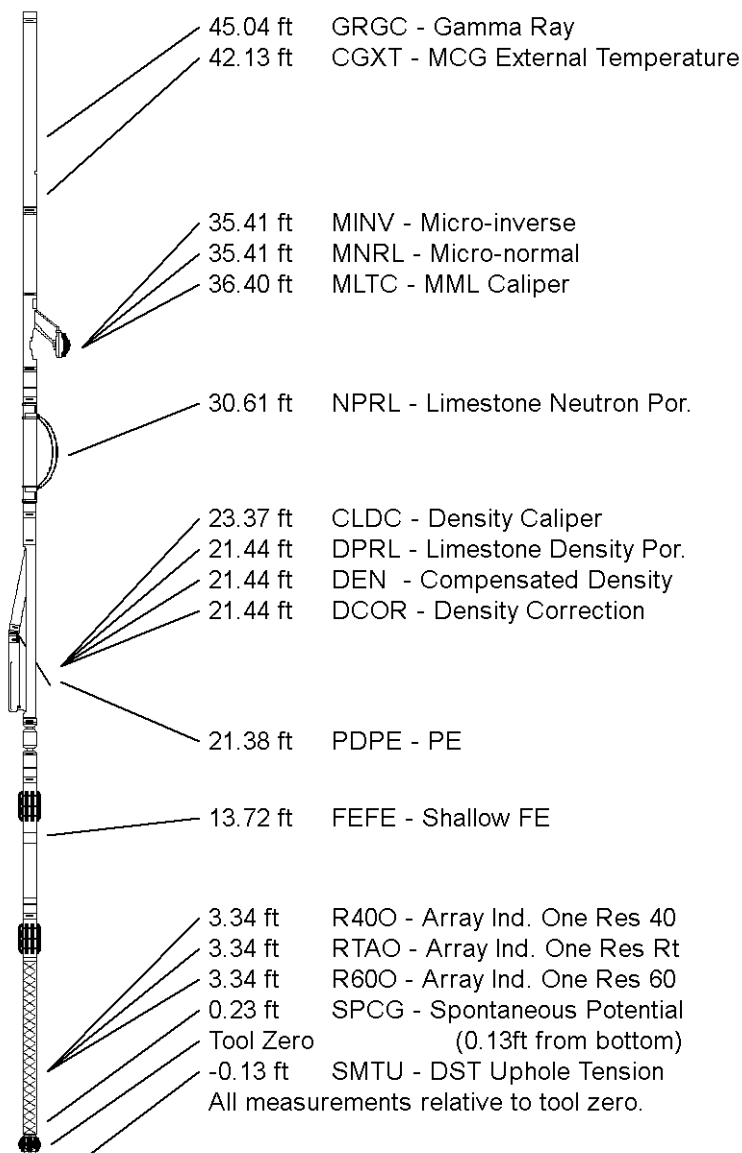
Compact Density/Caliper
MPD-B 35 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 36 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 52 LG: 6.05 ft WT: 48.5 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: 50.32 ft Weight: 407.9 lb



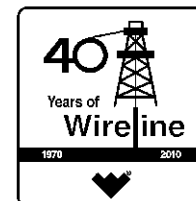
COMPANY GRAND MESA
WELL DALE #1-34
FIELD WILDCAT
PROVINCE/COUNTY LOGAN
COUNTRY/STATE U.S.A./KANSAS

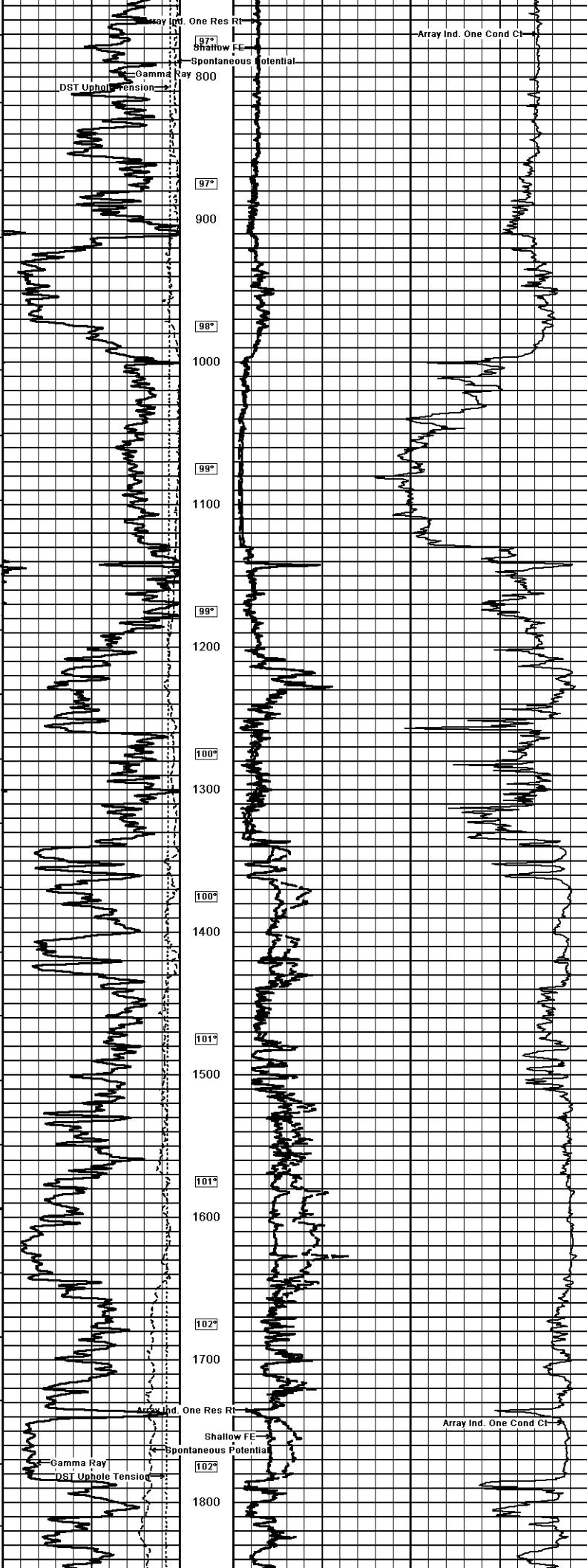
Elevation Kelly Bushing	2988.00	feet	First Reading	4744.00	feet
Elevation Drill Floor	2987.00	feet	Depth Driller	4750.00	feet
Elevation Ground Level	2983.00	feet	Depth Logger	4747.00	feet

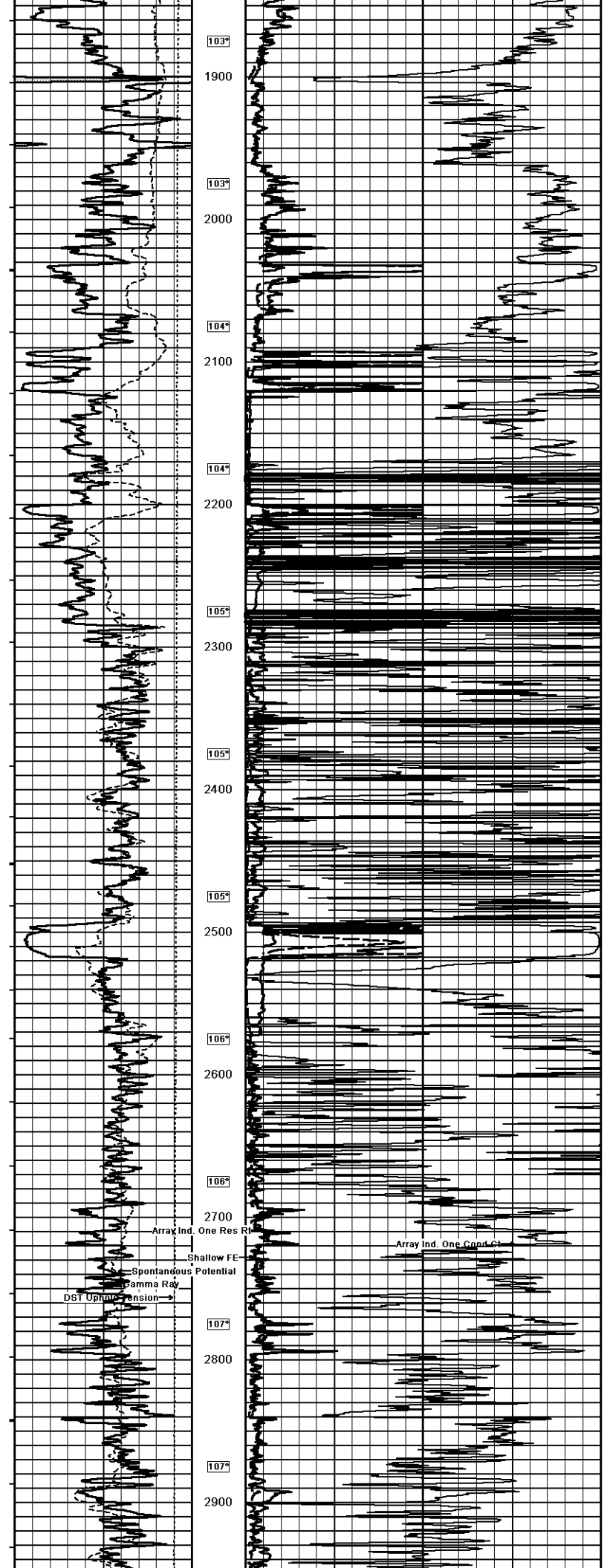


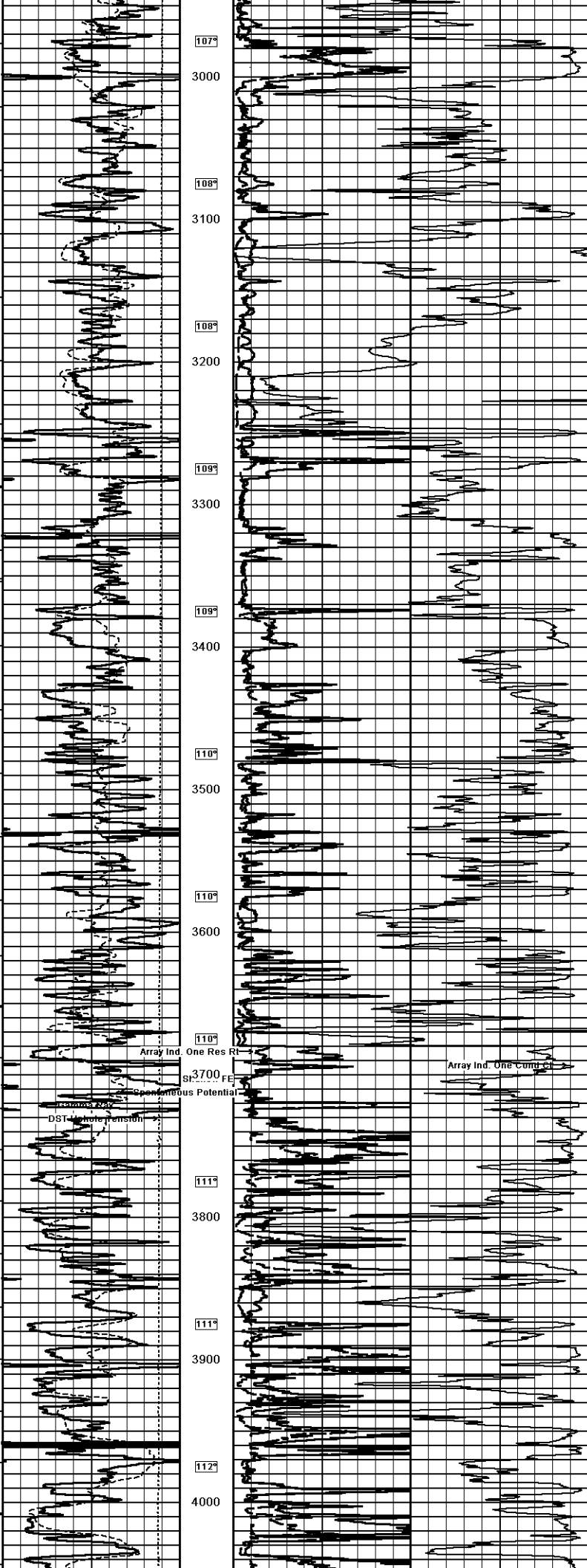
Weatherford®

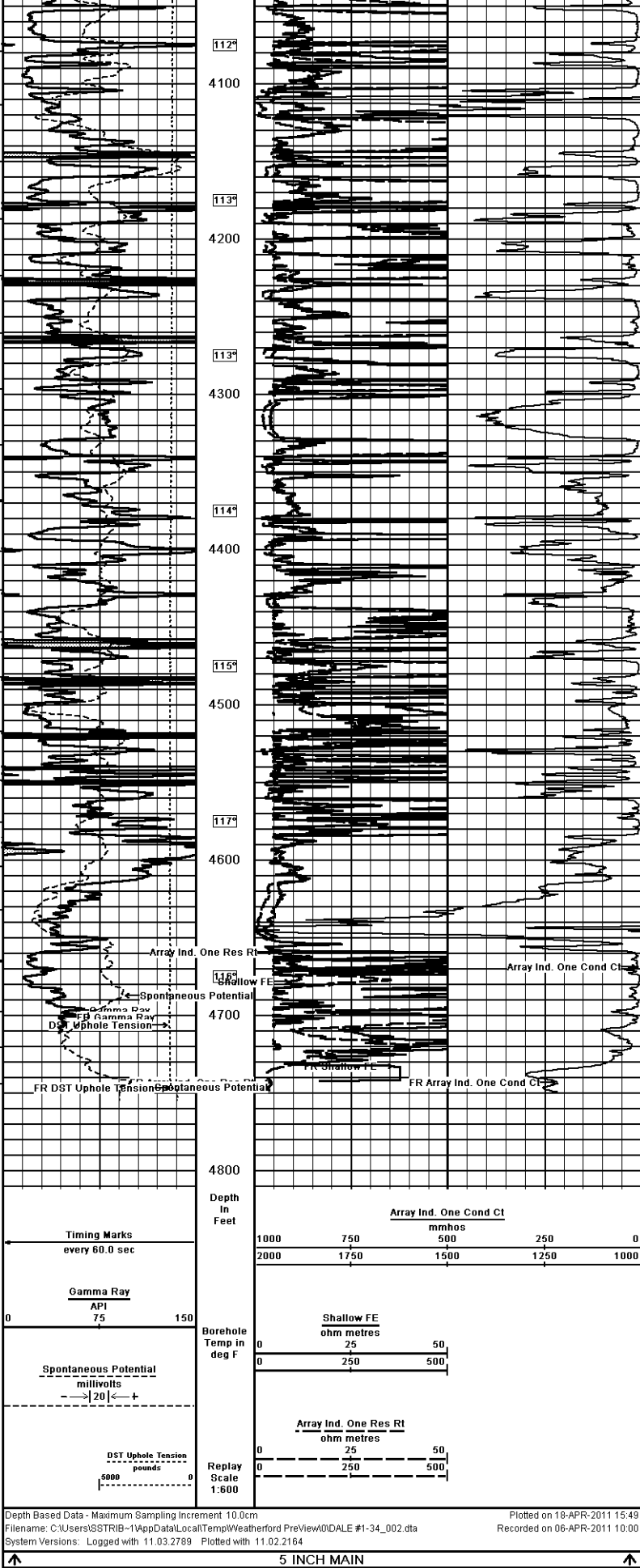
ARRAY INDUCTION
SHALLOW FOCUSSED
ELECTRIC LOG











COMPANY	GRAND MESA
WELL	DALE #1-34
FIELD	WILDCAT
PROVINCE/COUNTY	LOGAN
COUNTRY/STATE	U.S.A./KANSAS

Elevation Kelly Bushing	2988.00	feet	First Reading	4744.00	feet
Elevation Drill Floor	2987.00	feet	Depth Drilling	4750.00	feet

Elevation Onset Point	2987.00	feet	Depth Logger	4750.00	feet
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ARRAY INDUCTION
SHALLOW FOCUSSED
ELECTRIC LOG

