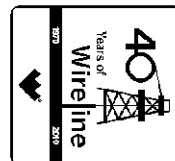




Weatherford

ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG



COMPANY **GRAND MESA**
WELL **ELLIS 1-23**
FIELD **WILDCAT**
PROVINCE/COUNTY **LOGAN**
COUNTRY/STATE **U.S.A./KANSAS**
LOCATION **1711' FSL & 2310' FWL**

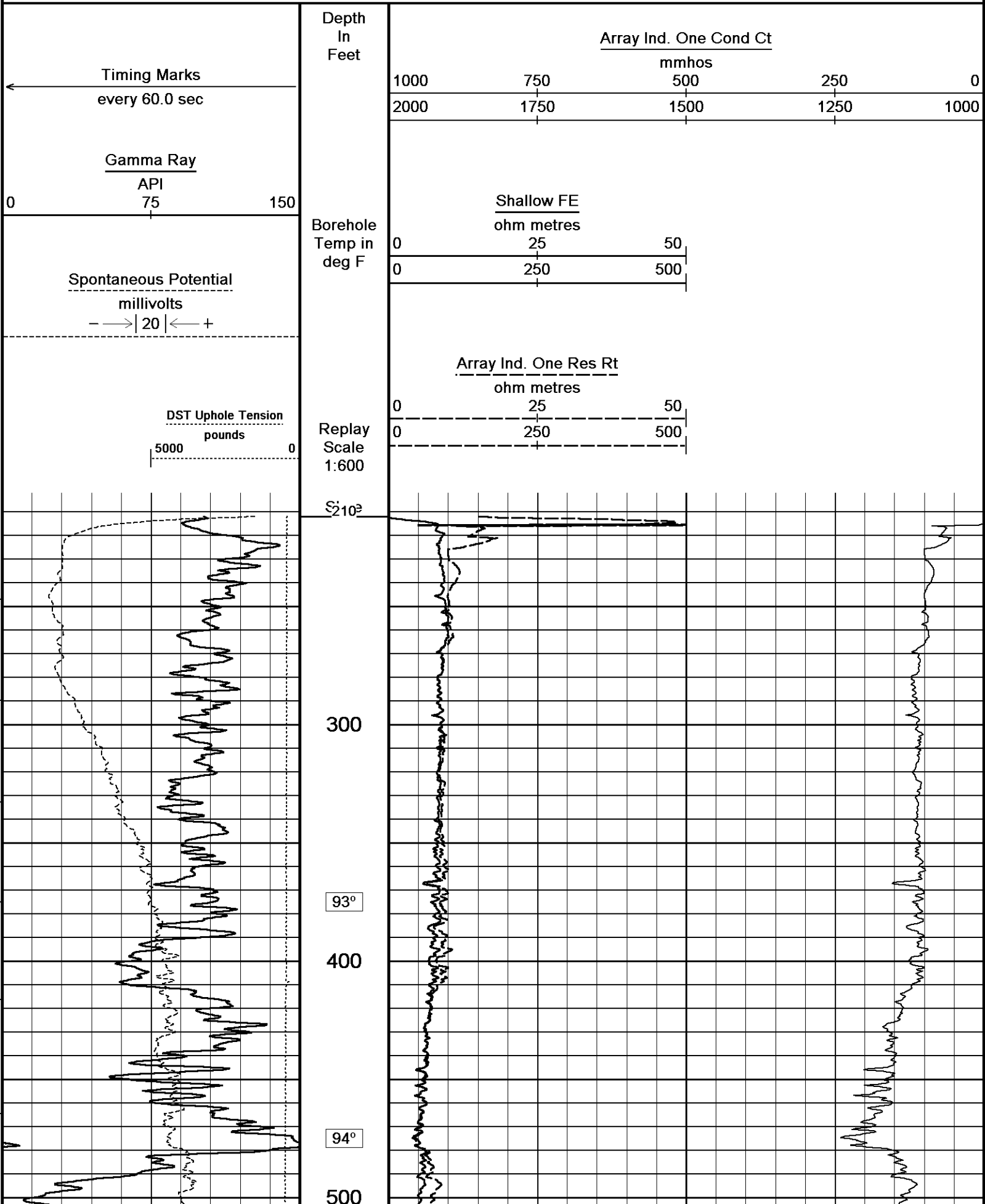
SEC	TWP	RGE	Other Services	MML
23	14S	32W	MPD/MDN	
API Number	15-109-21001		MSS	
Permit Number				
Permanent Datum G.L., Elevation 2780 feet				Elevations: KB DF GL
Log Measured From K.B. @ 5 FEET above Permanent Datum				
Drilling Measured From K.B.				

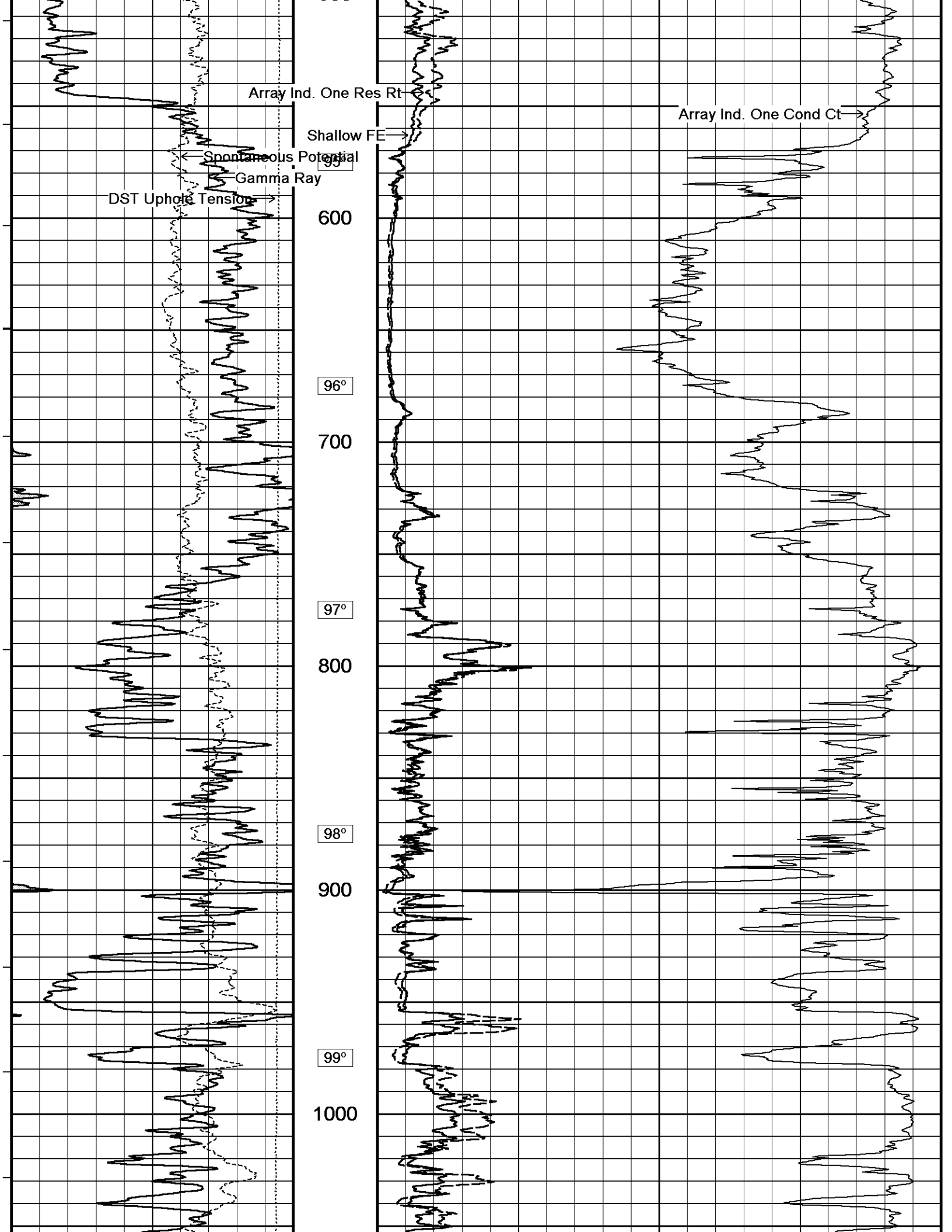
Date	26-APR-2011		
Run Number	ONE		
Depth Driller	4570.00	feet	
Depth Logger	4572.00	feet	
First Reading	4569.00	feet	
Last Reading	212.00	feet	
Casing Driller	214.00	feet	
Casing Logger	212.00	feet	
Bit Size	7.880	inches	
Hole Fluid Type	CHEMICAL		
Density / Viscosity	9.50 lb/USg	59.00 CP	
PH / Fluid Loss	9.00	10.40 ml/30Min	
Sample Source	FLOWLINE		
Rm @ Measured Temp	0.70 @ 81.0	ohm-m	
Rmf @ Measured Temp	0.56 @ 81.0	ohm-m	
Rmc @ Measured Temp	0.84 @ 81.0	ohm-m	
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.50 @114.0	ohm-m	
Time Since Circulation	3 HOURS		
Max Recorded Temp	114.00	deg F	
Equipment Name	COMPACT		
Equipment / Base	13025	LIB	
Recorded By	SHAWN NUTT		
Witnessed By	WES HANSEN		
S.O.#/JOB#	3529182		LB11-091

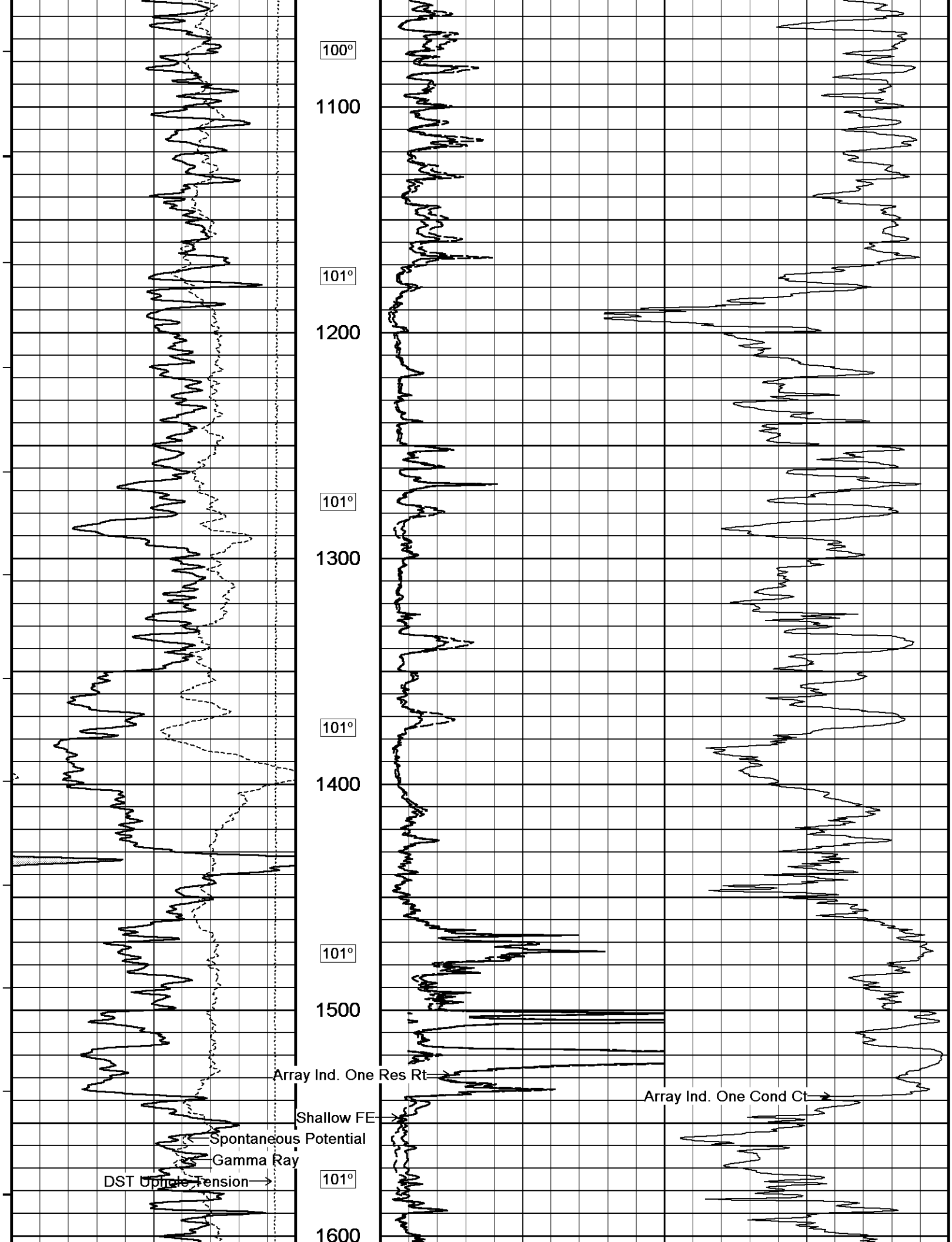
BOREHOLE RECORD			Last Edited: 26-APR-2011 17:21	
Bit Size inches	Depth From feet		Depth To feet	
7.880	212.00		4572.00	
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	212.00	24.00

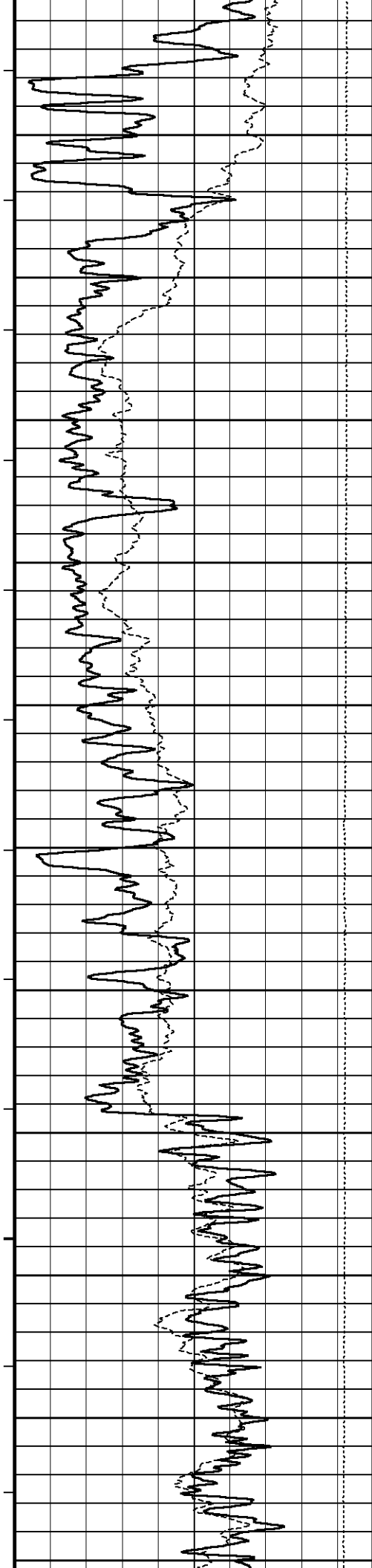
REMARKS	
Tools Used: MPD, MCG, MDN, MFE, MAI, MML, MSS Hardware: MPD: 8 inch profile plate used. MAI, MSS AND MFE: 0.5 Inch standoffs used. MDN: Dual Bowspring used. 2.71 G/CC Limestone density matrix used to calculate porosity. Borehole rugosity, tight pulls, and washouts will affect data quality. All intervals logged and scaled per customer's request. Annular volume with 5.5 inch production casing = cu. ft Service order #3529182 Rig: Murfin #8 Engineer: Shawn Nutt Operator(s): Ken Rinehart, Nick 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.









103°

1700

103°

1800

103°

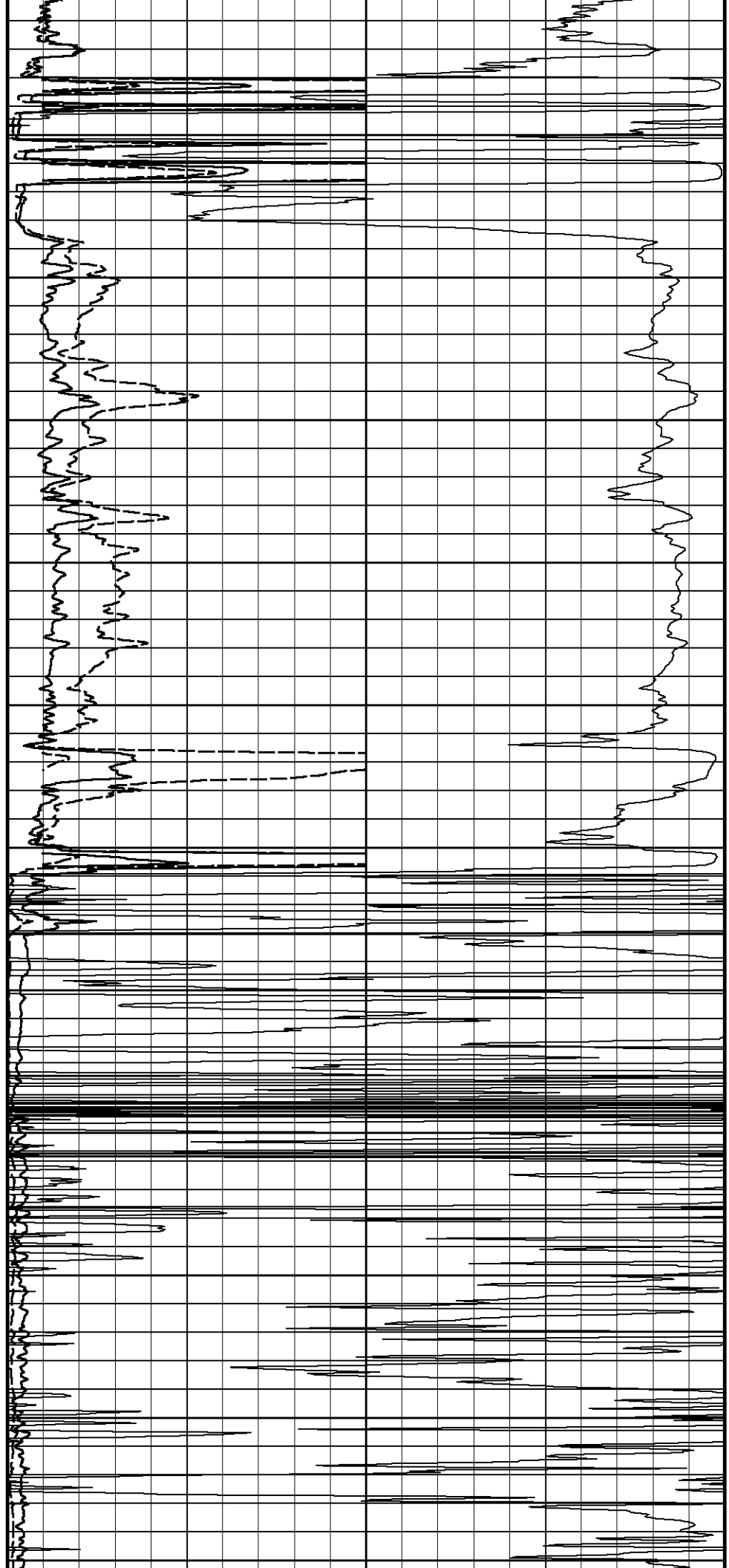
1900

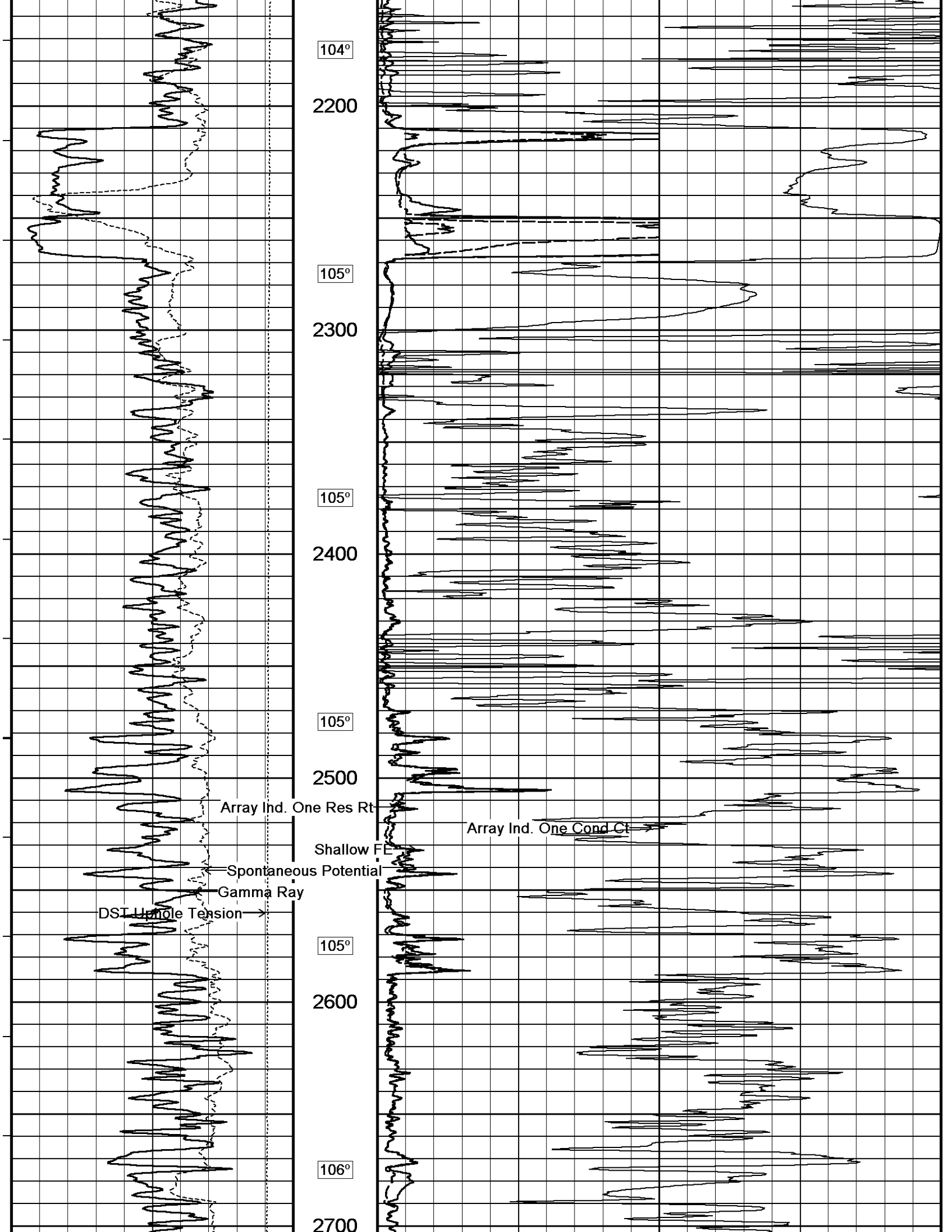
103°

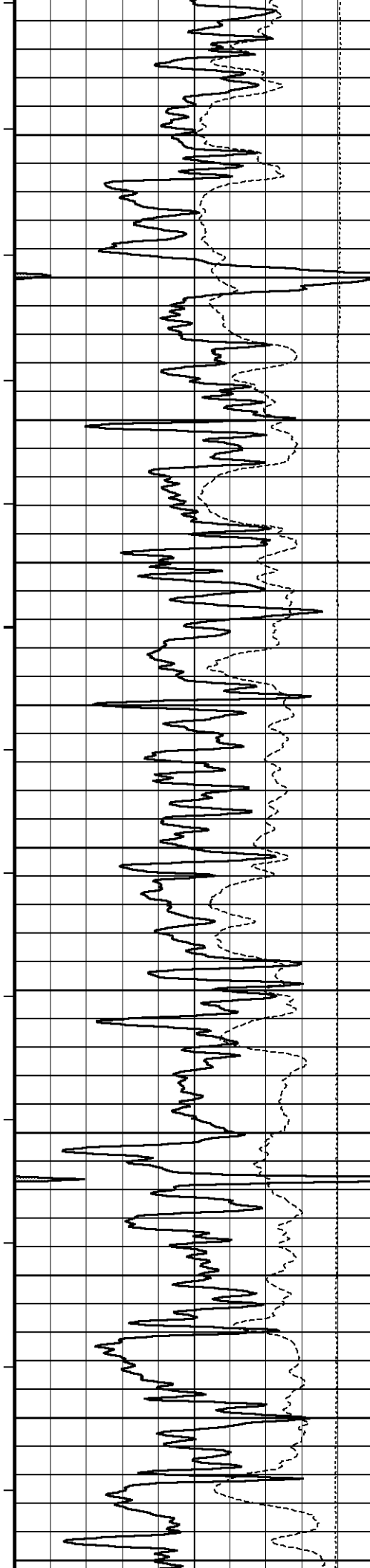
2000

103°

2100







106°

2800

107°

2900

107°

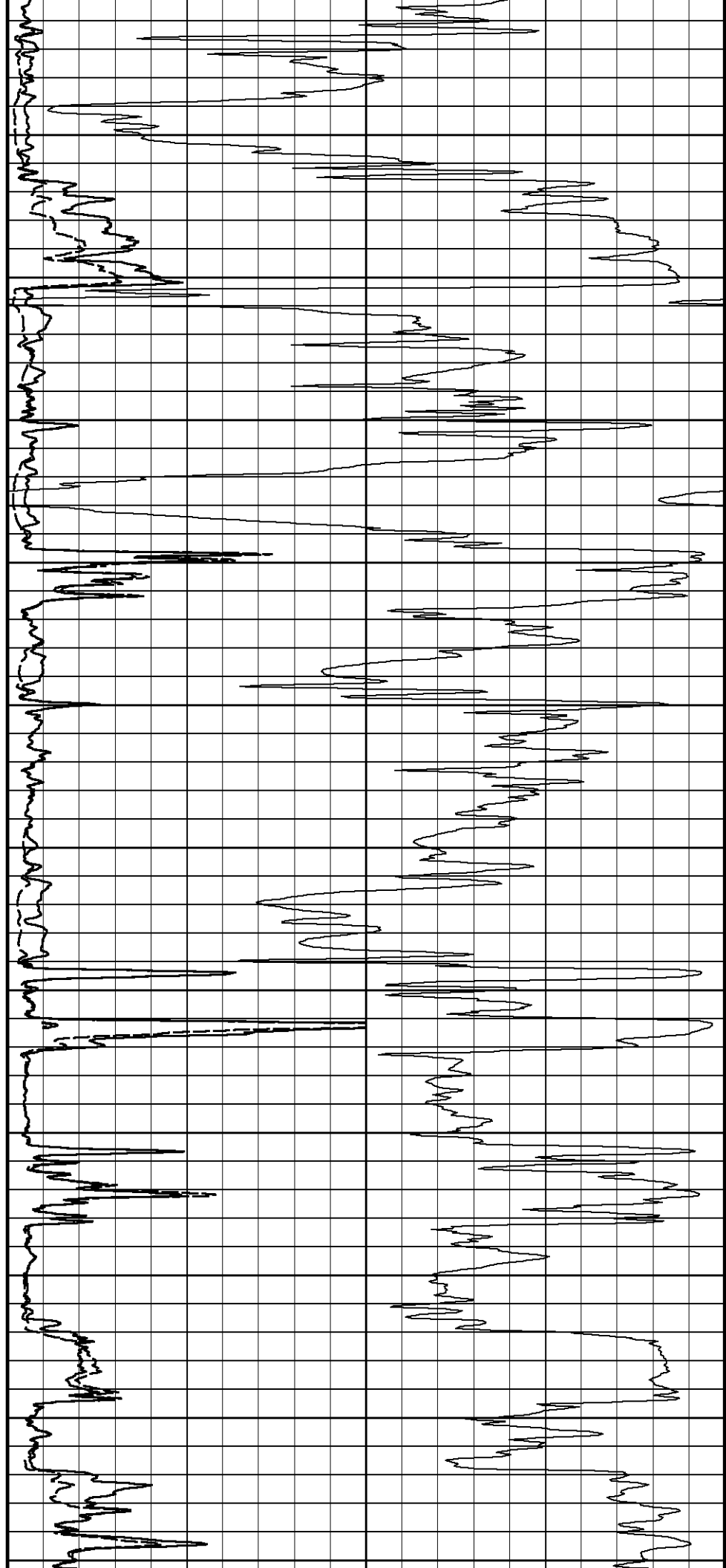
3000

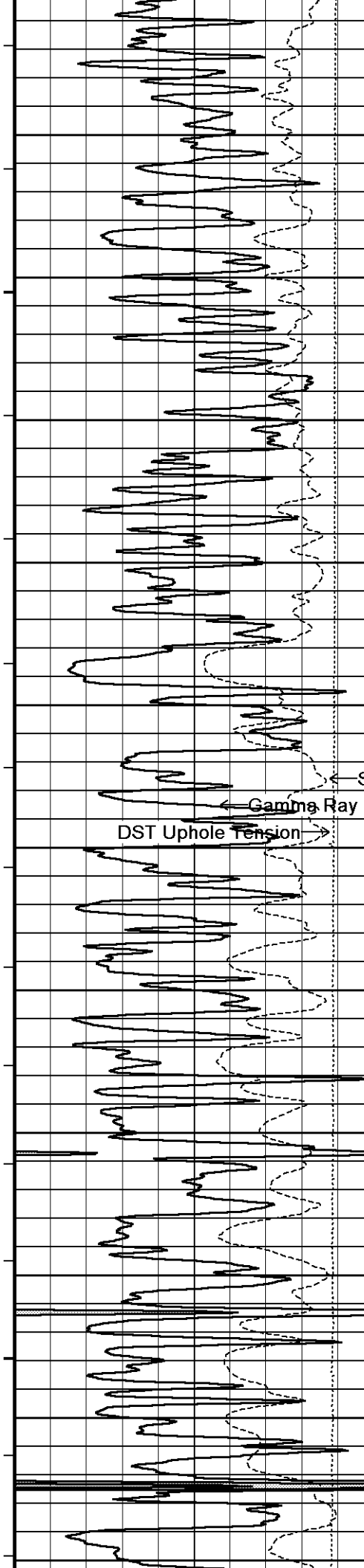
108°

3100

108°

3200





108°

3300

109°

3400

109°

3500

Array Ind. One Res. Ind.

Array Ind. One Cond Ct

Shallow IE

← Spontaneous Potential

← Gamma Ray

DST Uphole Tension →

109°

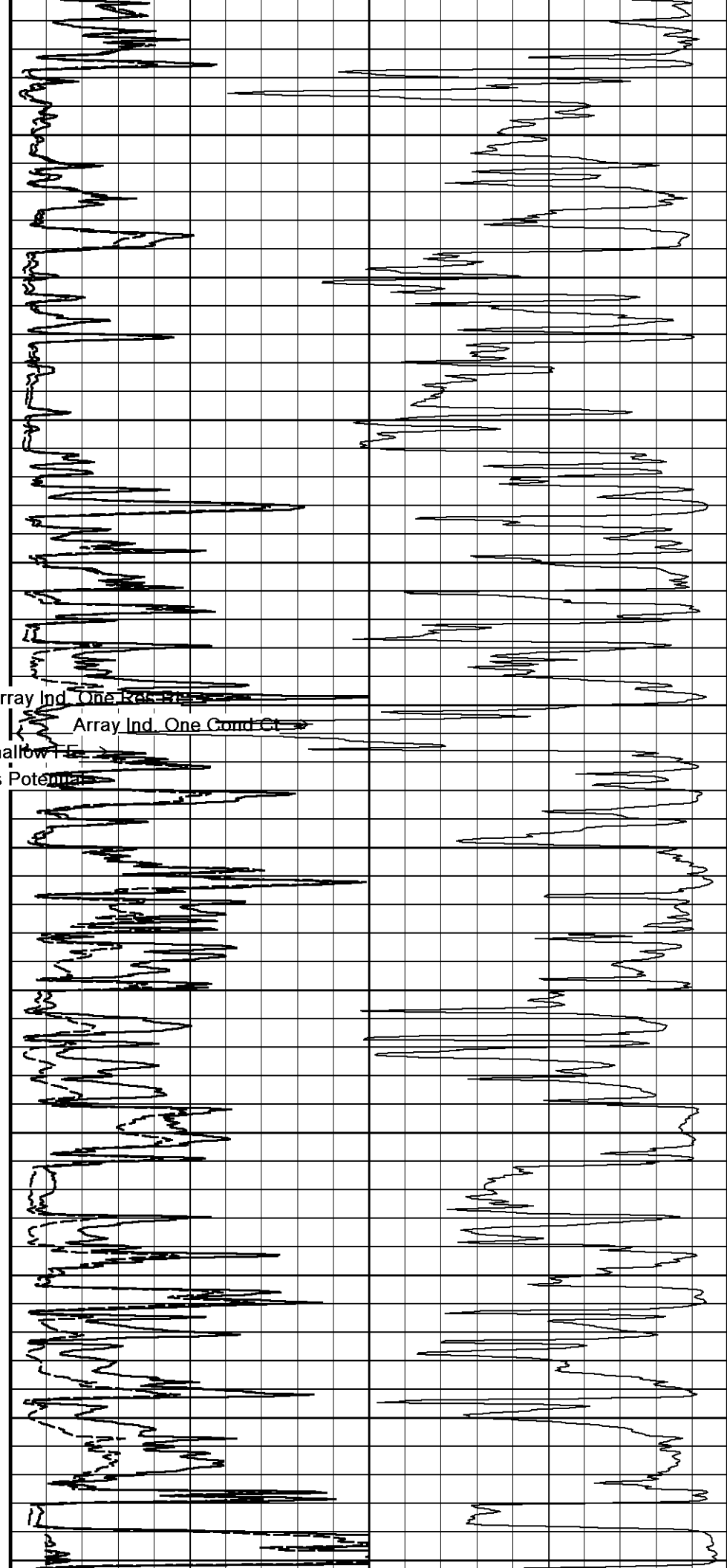
3600

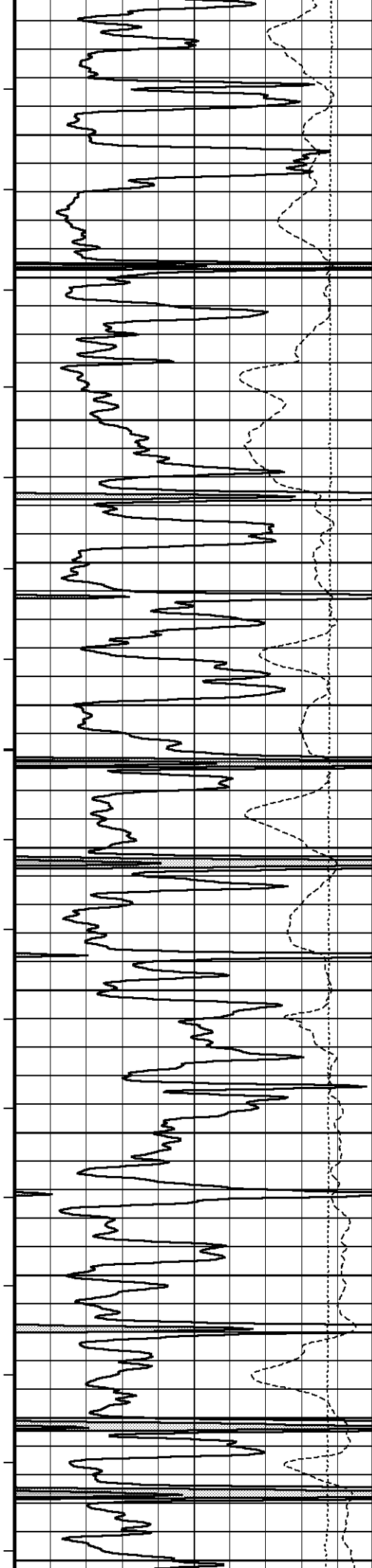
110°

3700

110°

3800





111°

3900

111°

4000

111°

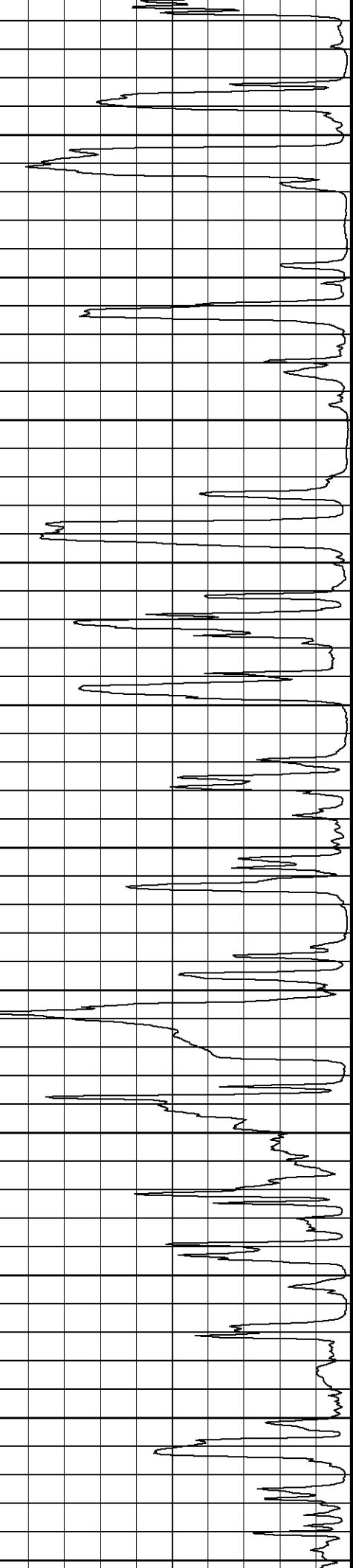
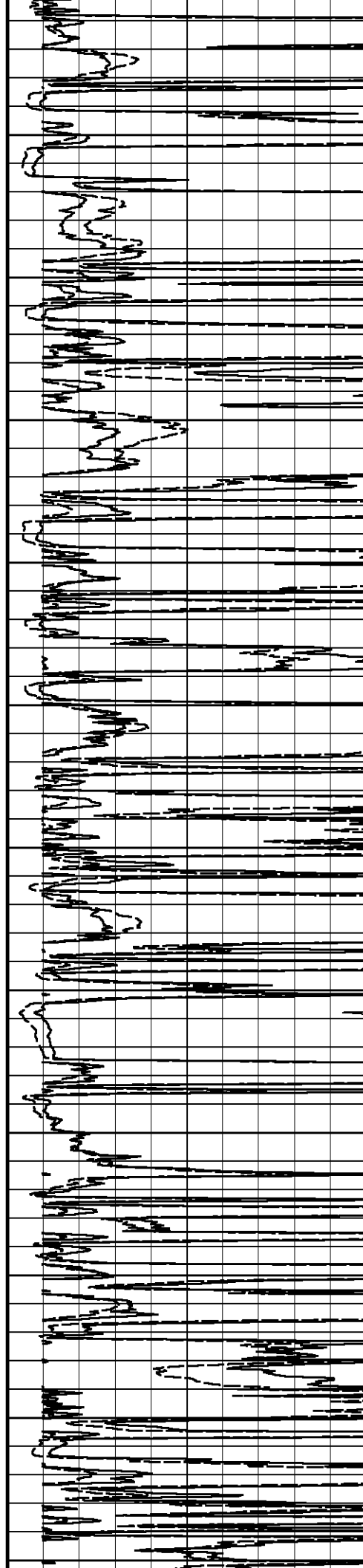
4100

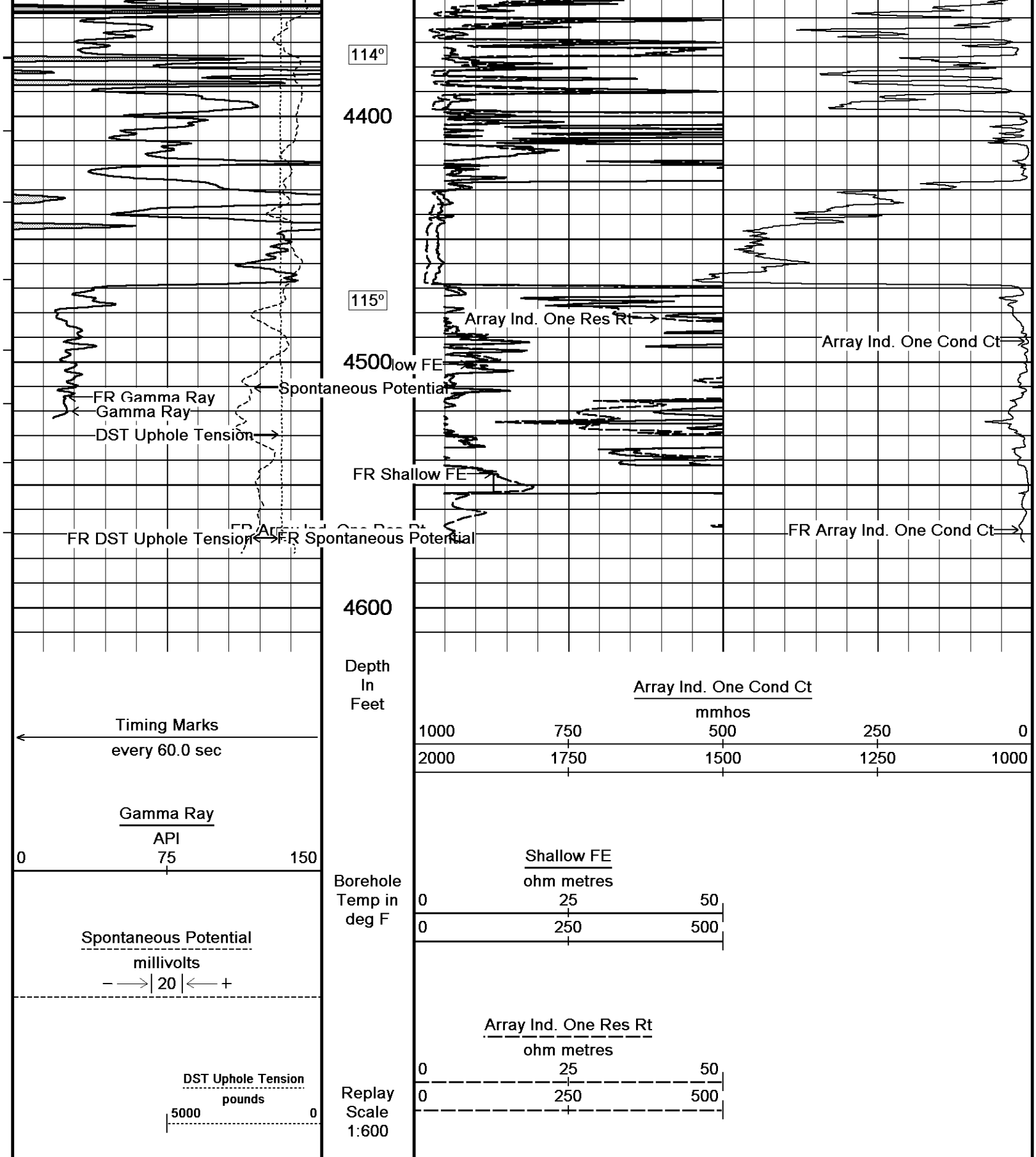
112°

4200

113°

4300





Depth Based Data - Maximum Sampling Increment 10.0cm
 Filename: C:\Users\SSTRIB~1\AppData\Local\Temp\Weatherford PreView0\Ellis 1-23_002.dta
 System Versions: Logged with 11.03.2789 Plotted with 11.02.2164

Plotted on 02-MAY-2011 10:30

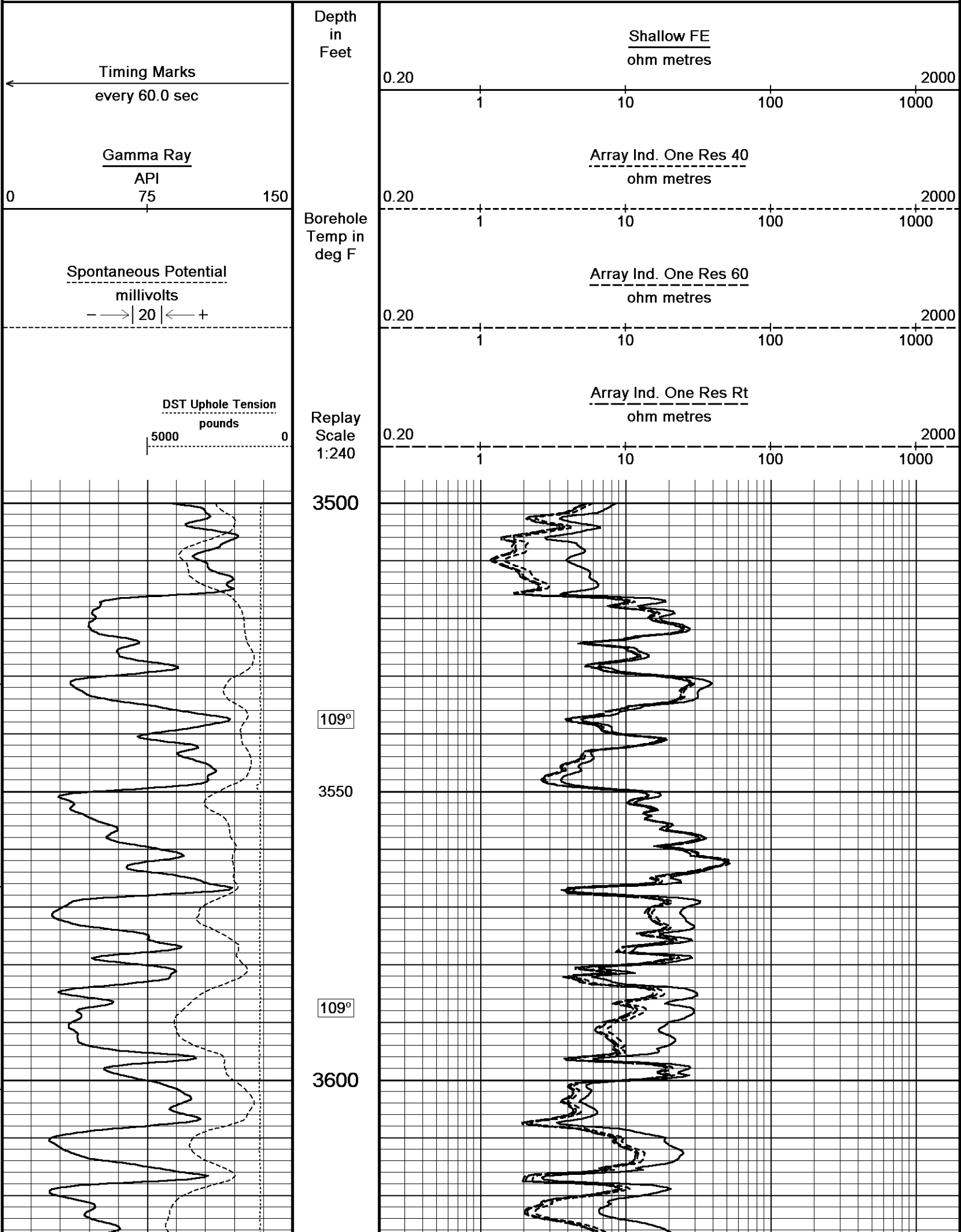
Recorded on 26-APR-2011 15:33

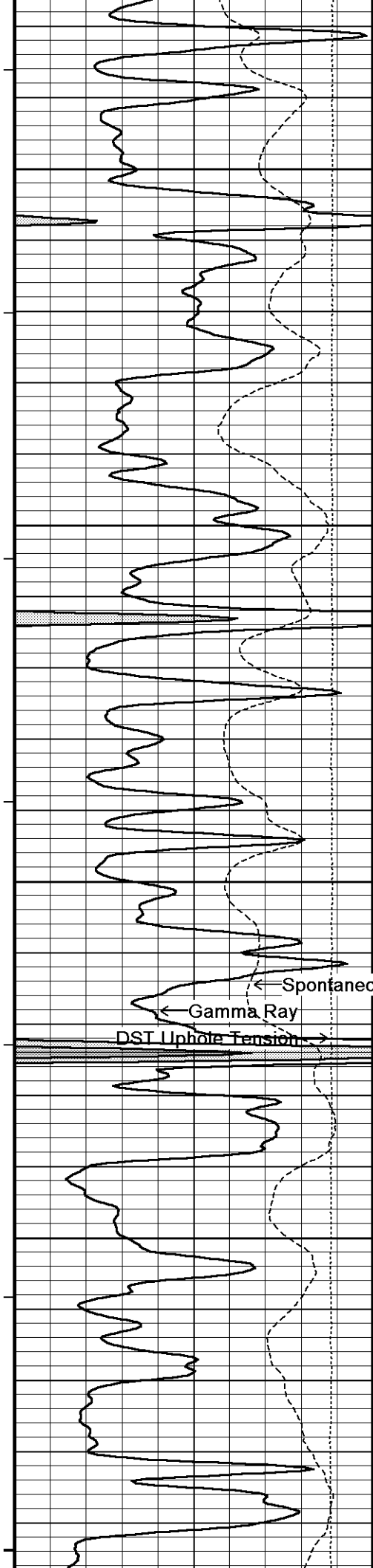
↑ 2 INCH MAIN ↑

↓ 5 INCH MAIN ↓

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 02-MAY-2011 10:30





110°

3650

110°

3700

110°

3750 Array Ind. One Res Rt

Array Ind. One Res 60

Array Ind. One Res 40

Shallow F

← Spontaneous Potential

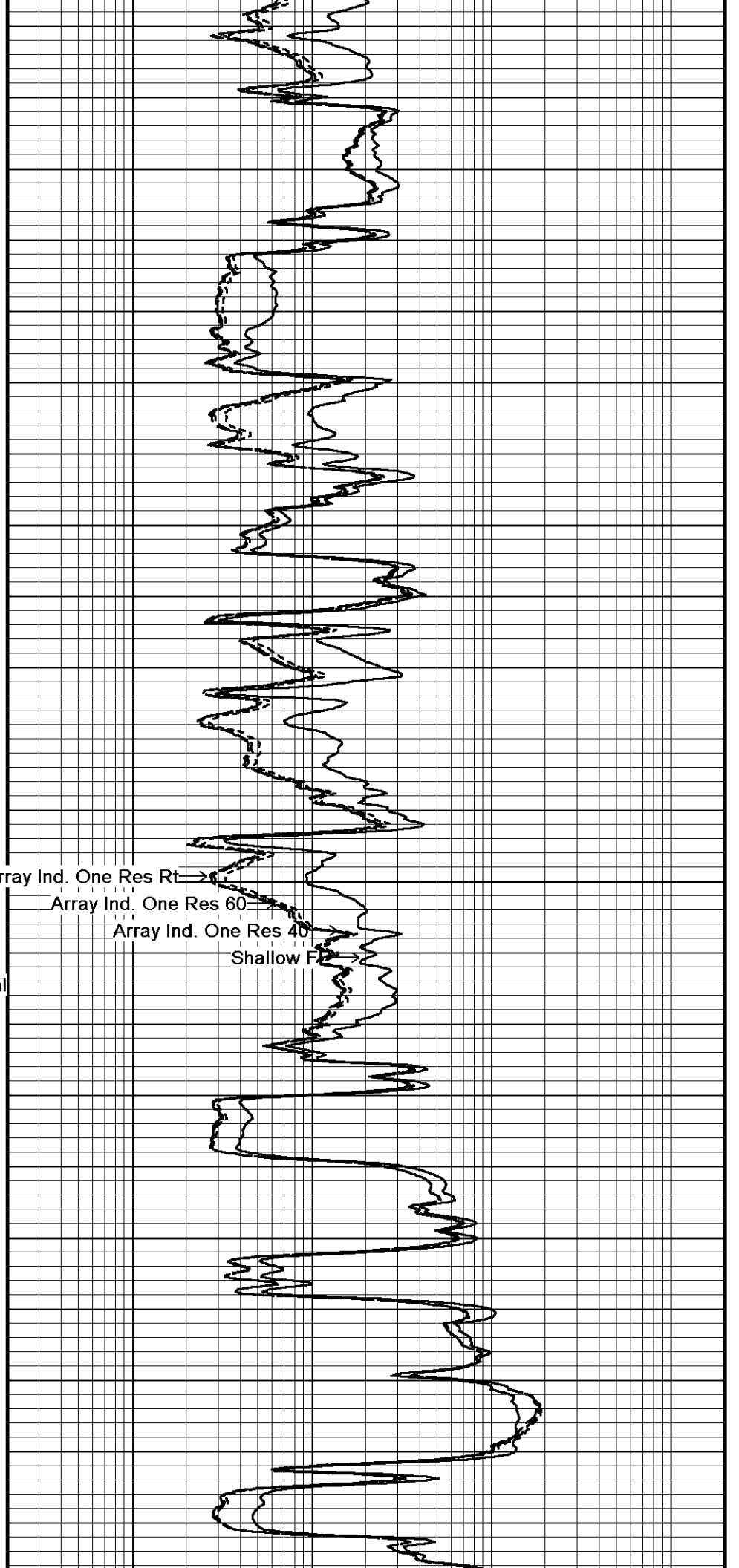
← Gamma Ray

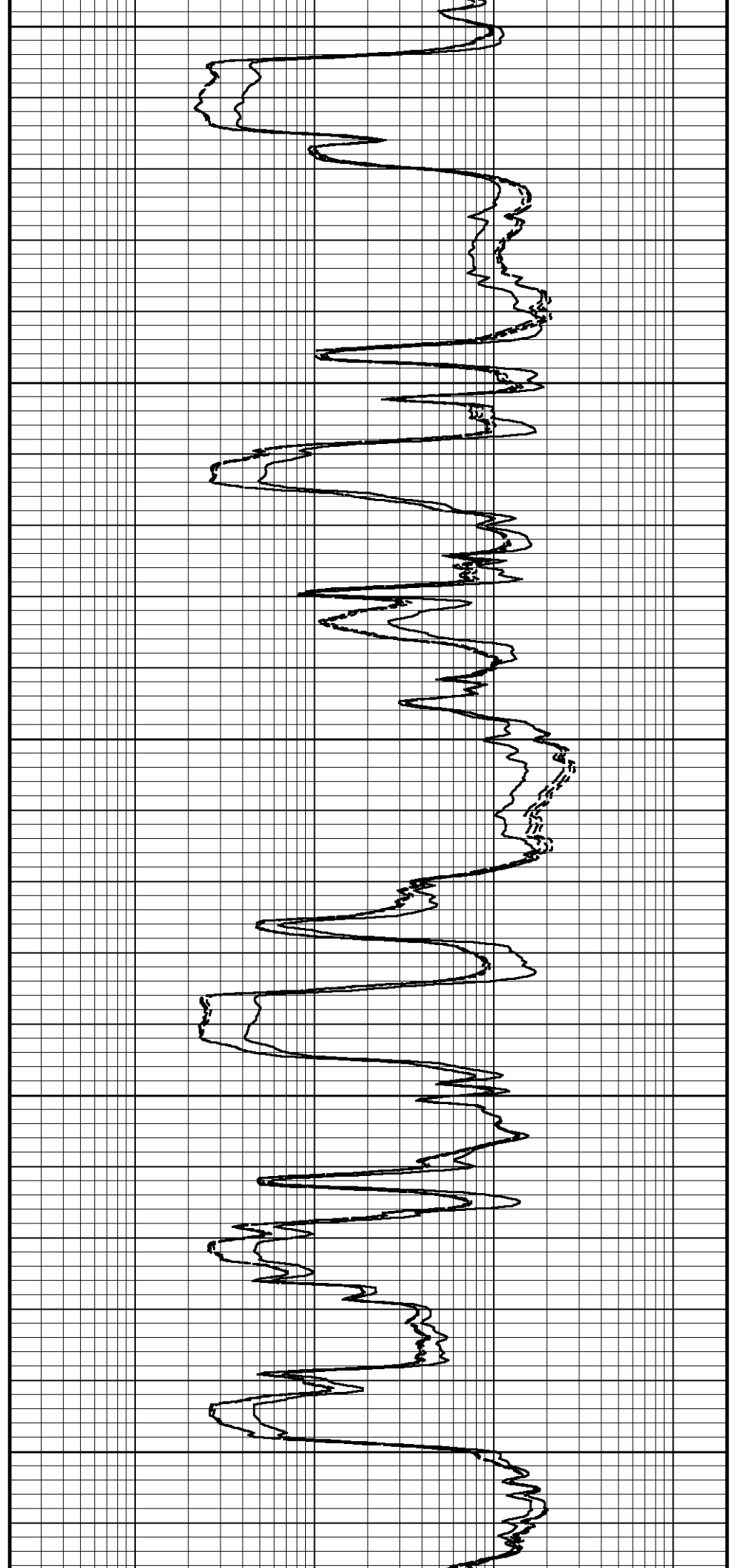
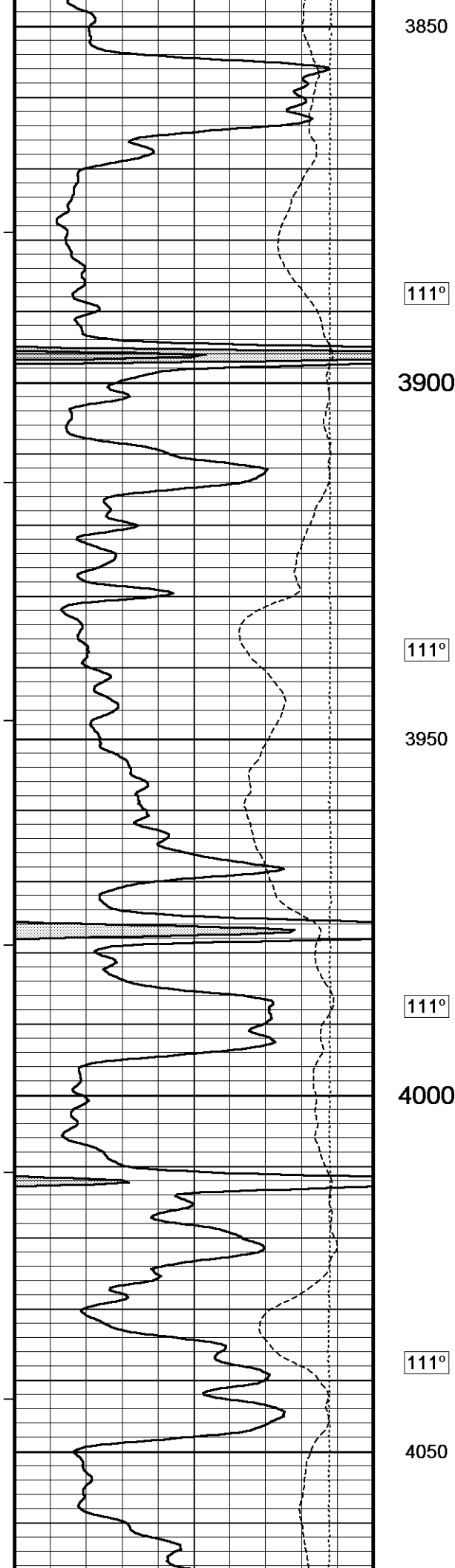
DST Uphole Tension →

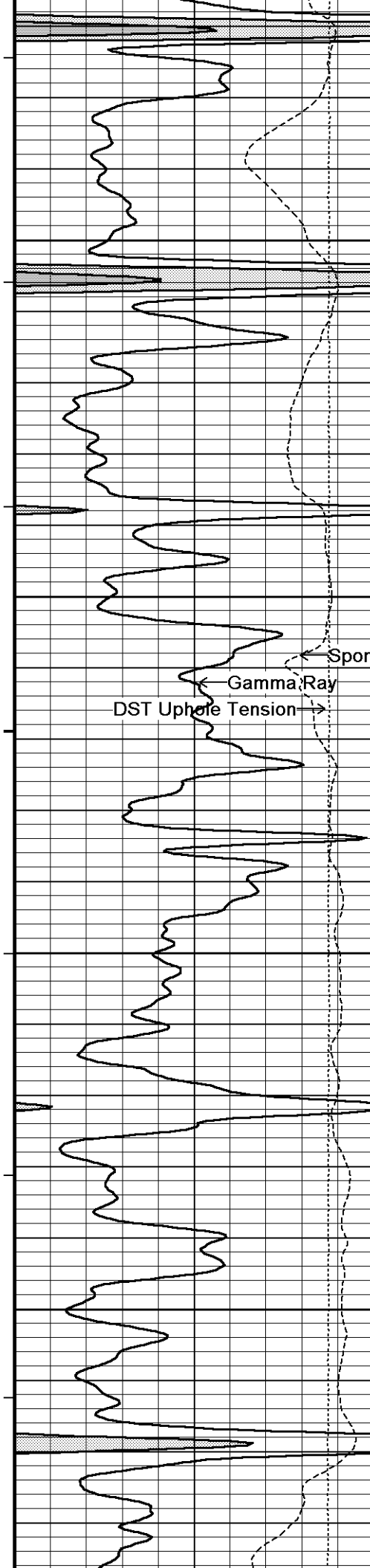
110°

3800

111°







111°

4100

111°

4150

← Gamma Ray
DST Uphole Tension →

← Spontaneous Potential

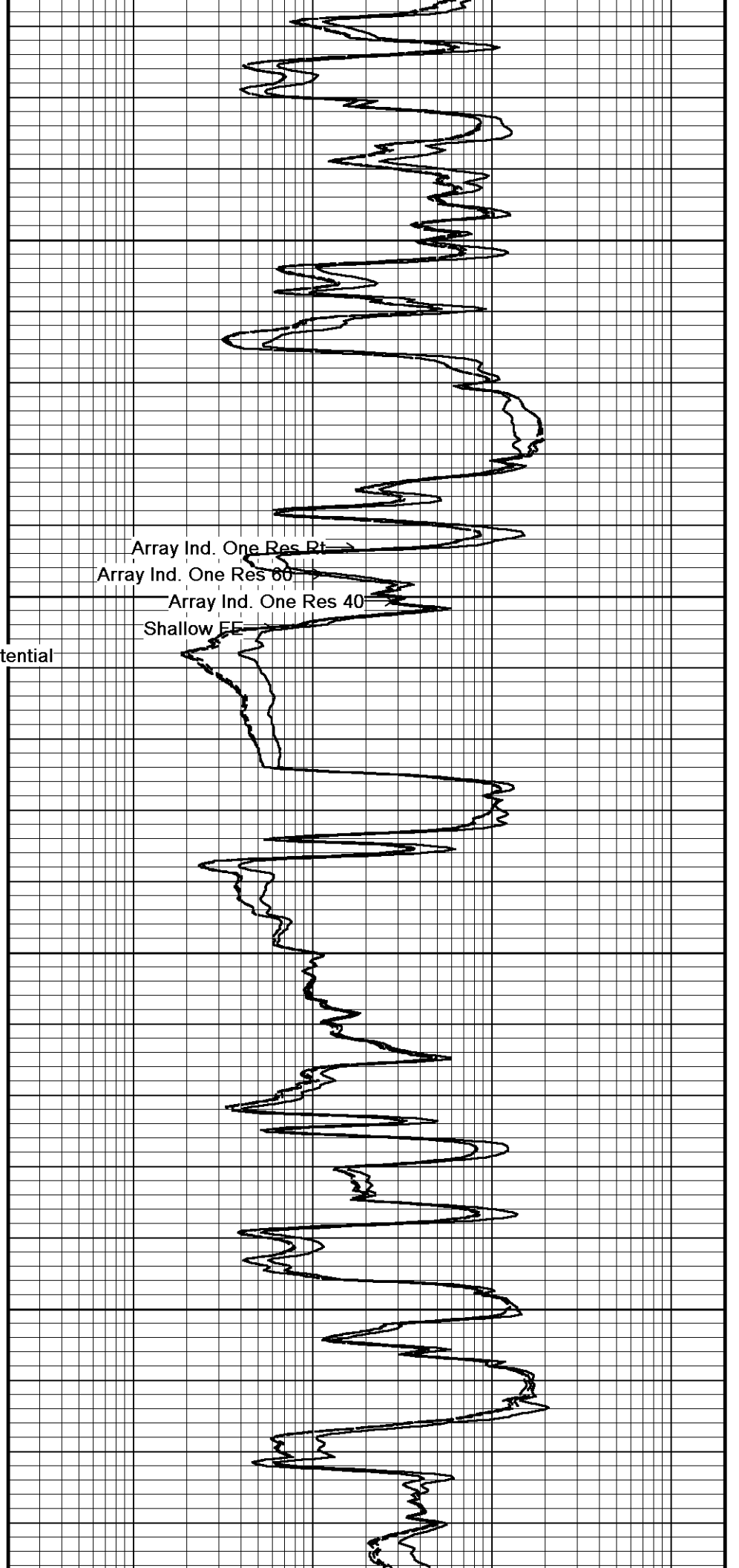
112°

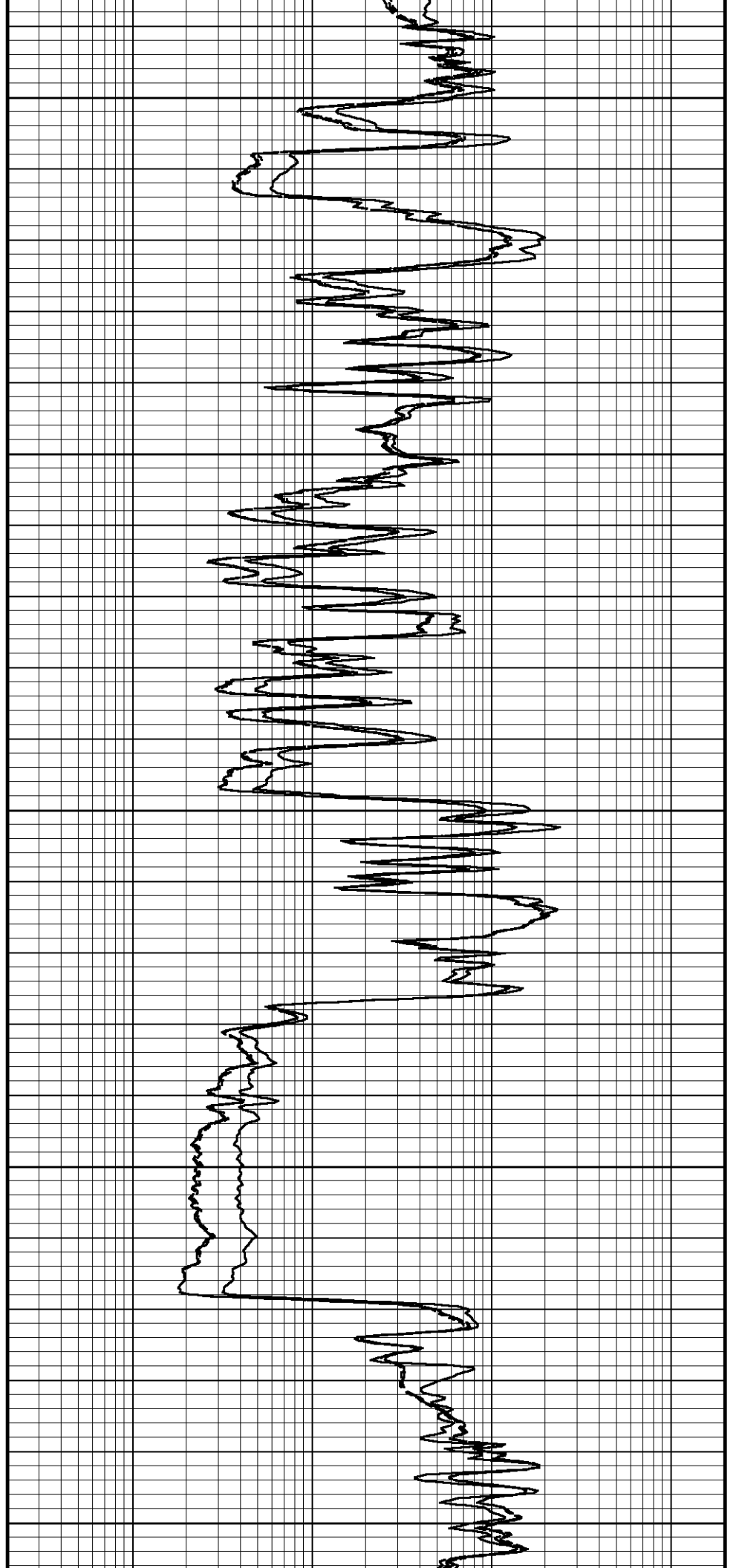
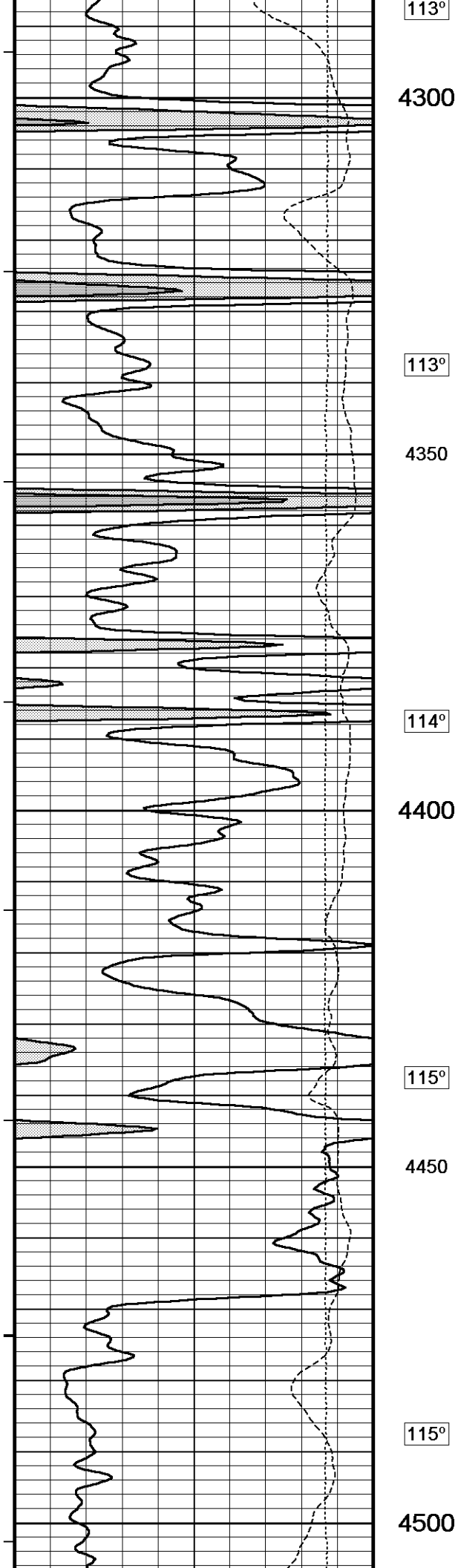
4200

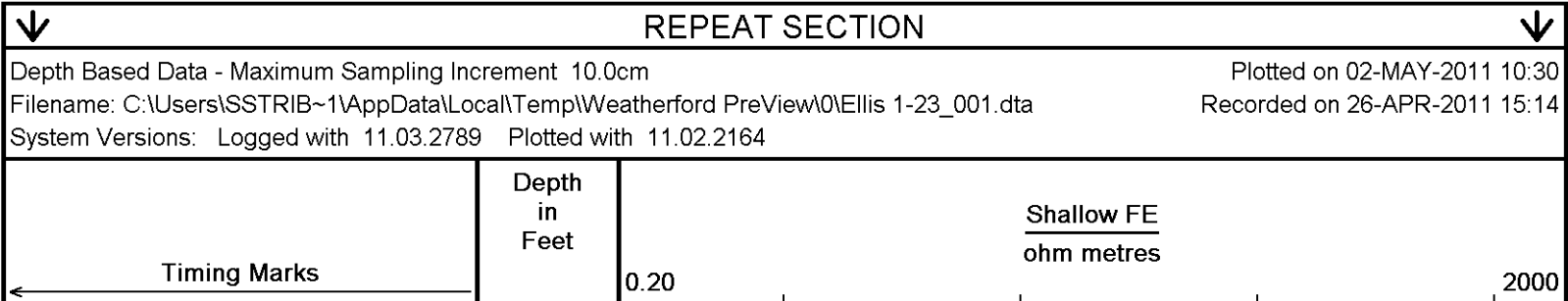
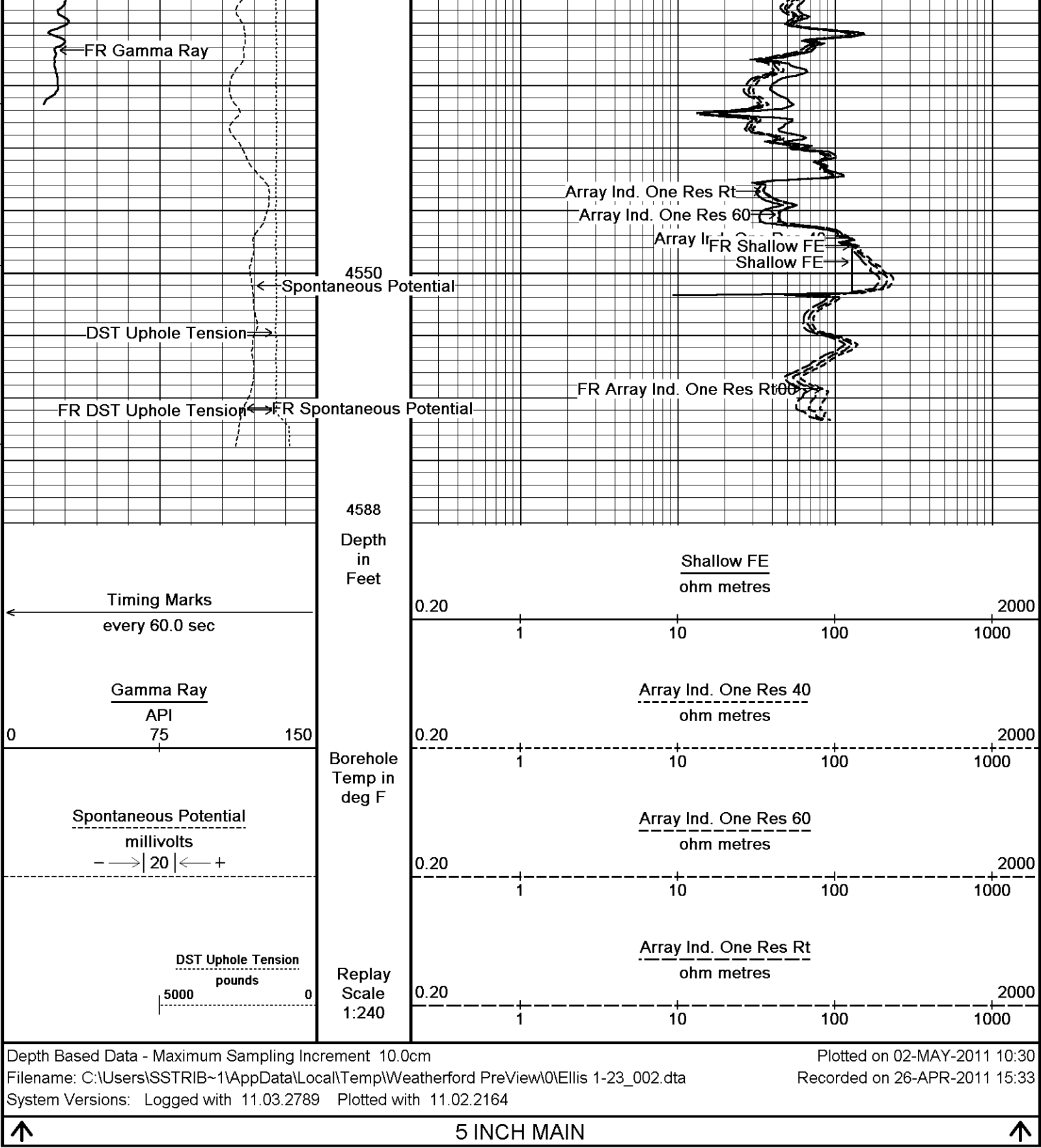
112°

4250

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







every 60.0 sec

Gamma Ray

API

75

0 150

Spontaneous Potential

millivolts

- -> | 20 | <- - +

DST Uphole Tension

pounds

5000

0

Borehole
Temp in
deg F

Replay
Scale
1:240

4268

4300

112°

4350

113°

4400

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

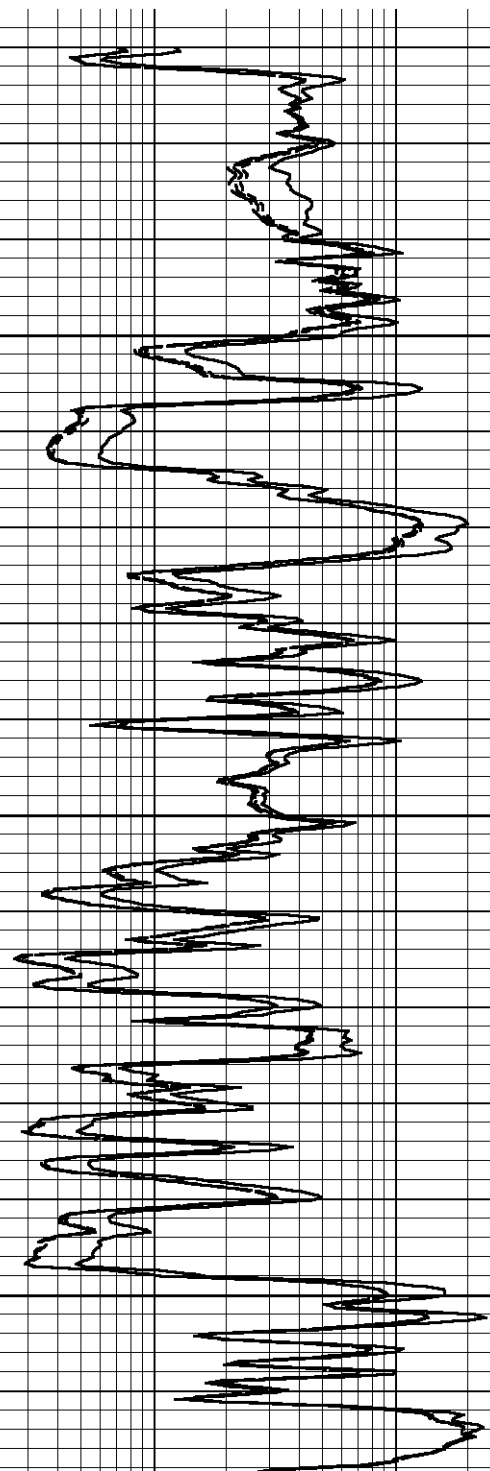
1

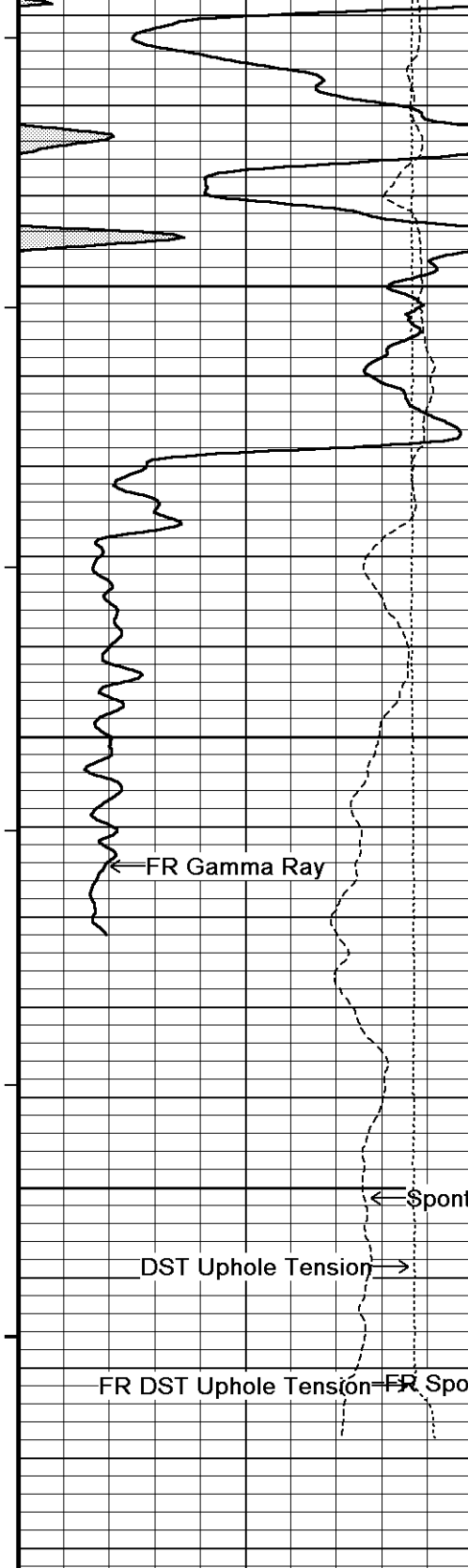
10

100

1000

2000





113°

4450

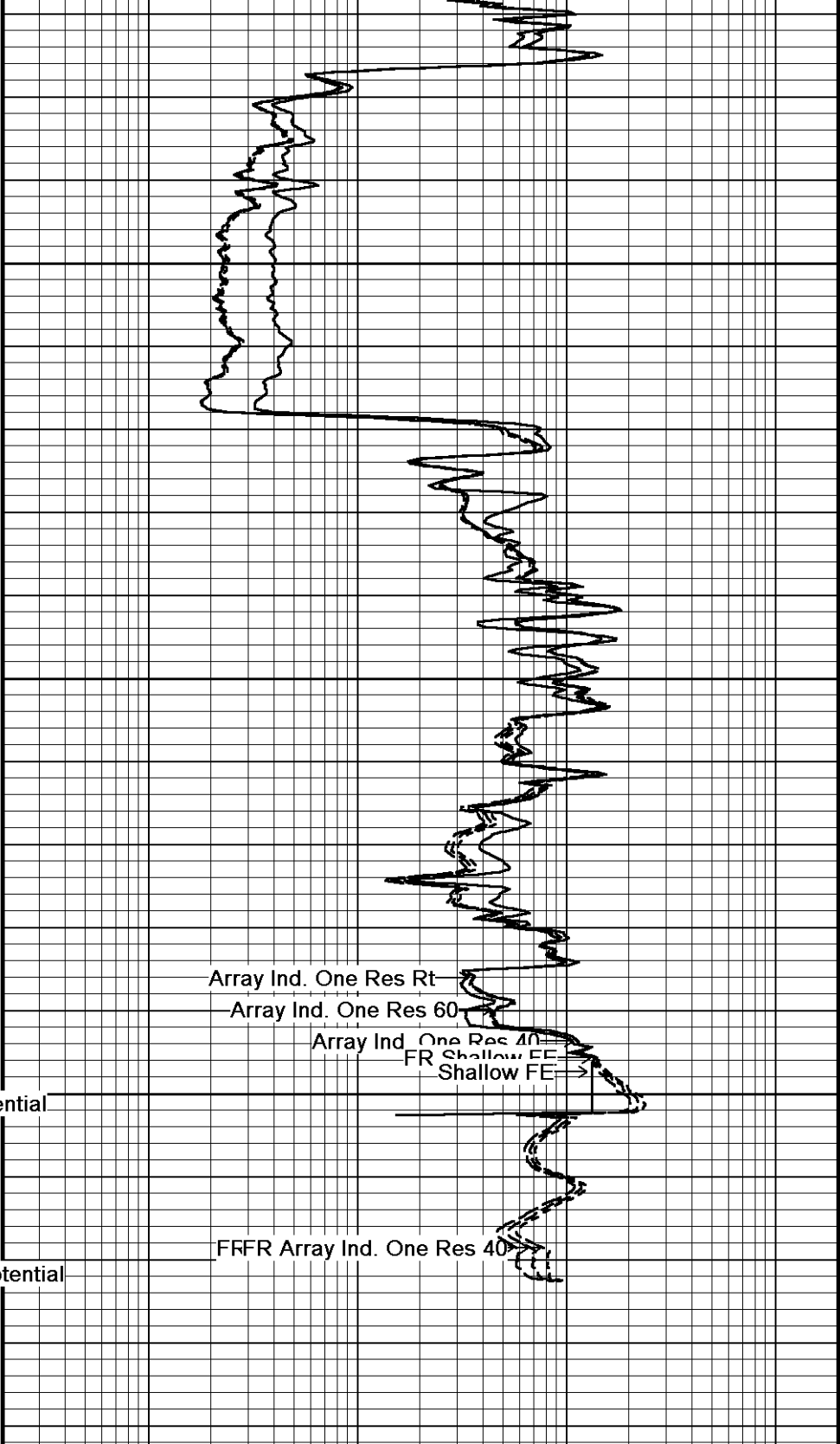
114°

4500

4550

4590
Depth
in
Feet

Borehole
Temp in
deg F



0.20

1

Shallow FE
ohm metres

10

100

2000

1000

Array Ind. One Res 40
ohm metres

0.20

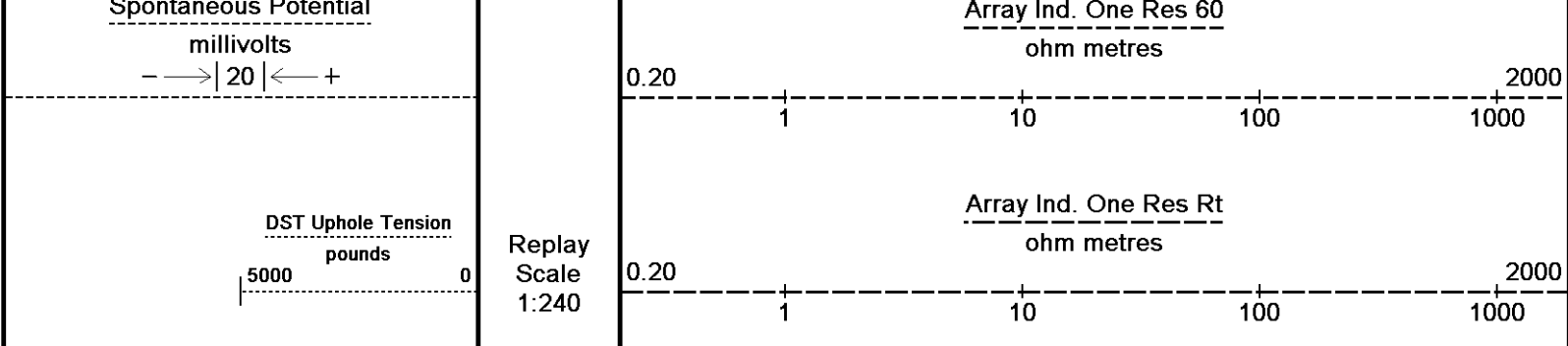
1

10

100

2000

1000



Depth Based Data - Maximum Sampling Increment 10.0cm
 Filename: C:\Users\SSTRIB~1\AppData\Local\Temp\Weatherford PreView\0\Ellis 1-23_001.dta
 System Versions: Logged with 11.03.2789 Plotted with 11.02.2164

Plotted on 02-MAY-2011 10:30
 Recorded on 26-APR-2011 15:14

↑
REPEAT SECTION
↑

BEFORE SURVEY CALIBRATION			
C:\Users\SSTRIB~1\AppData\Local\Temp\Weatherford PreView\0\Ellis 1-23.dta			
General Constants All 000		Last Edited on 26-APR-2011,14:20	
General Parameters			
Mud Resistivity	0.700	ohm-metres	
Mud Resistivity Temperature	81.000	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 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 25-APR-2011 20:54	

		Measured	Calibrated (API)	
Background		92	61	
Calibrator (Gross)		1187	786	
Calibrator (Net)		1095	725	
Gamma Constants MCG-C 139			Last Edited on 26-APR-2011,14:21	
Gamma Calibrator Number		grc38		
Mud Density		1.14	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 25-APR-2011 20:38	
Base Calibration				
Channel	Resistor 1	Measured Resistor 2	Calibrated (ohm-m) Resistor 1	Resistor 2
Micro Normal	12.2	60.2	2.6	12.8
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 11-APR-2011,09:08	
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 25-APR-2011 20:37	
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)	
		6.03	5.98	
Neutron Calibration MDN-A.B 66			Base Calibration on 11-MAR-2011 13:54 Field Check on 25-APR-2011 20:50	
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)	
			1673	2396
Ratio	0.698			
Neutron Constants MDN-A.B 66			Last Edited on 26-APR-2011,14:21	
Neutron Source Id		P58125B		
Neutron Jig Number		5824NE		
Epithermal Neutron		No		
Caliper Source for Processing		Density Caliper		
Stand-off		0.00	inches	
Mud Density		1.14	gm/cc	
Limestone Sigma		7.10	cu	
Sandstone Sigma		4.26	cu	

Sandstone Sigma	4.20	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 25-APR-2011 20:34	
Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	965.7	126.8	
Base Check		279.9	
Field Check		279.9	

FE Constants MFE-A.A 52		Last Edited on 26-APR-2011,02:53	
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	

Sonic Constants MSS-A.A 126			Last Edited on 11-APR-2011,08:33		
Maximum Boundary Contrast	100.00	micro-sec/ft			
Fluid Transit Time	189.00	micro-sec/ft			
Limestone Transit Time	47.50	micro-sec/ft			
Sandstone Transit Time	55.50	micro-sec/ft			
Dolomite Transit Time	43.50	micro-sec/ft			
Sonic used for Porosities	3-5' Compensated Sonic				
Correction for Sonde Skew	Applied				
Cycle Stretch Algorithm	Applied				
MN3FT	N/A	micro-sec			
MX3FT	N/A	micro-sec			
Hunt-Raymer Constant	83.13	micro-sec/ft			
Sonde Mode	Compensated				
Hole Type	Open Hole				
Sonde Parameters					
	Measured	Calibrated			
Offset	N/A	0.0000			
Free Pipe	N/A	N/A			
Peak Amplitude Source	N/A				
Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	N/A	N/A	N/A	N/A	N/A
4'	N/A	N/A	N/A	N/A	N/A
5'	N/A	N/A	N/A	N/A	N/A
6'	N/A	N/A	N/A	N/A	N/A
Processed Fixed Gate Parameters					
Waveform Used For Processing	N/A				
Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)	Depth (ft)		
N/A	N/A	N/A	0.00		
N/A	N/A	N/A	0.00		
N/A	N/A	N/A	0.00		
N/A	N/A	N/A	0.00		
N/A	N/A	N/A	0.00		

Full Waveform Parameters

Use 3' Waveform to derive TR	N/A	
Use 4' Waveform to derive TR	N/A	
Use 5' Waveform to derive TR	N/A	
Use 6' Waveform to derive TR	N/A	
3' Waveform Discriminator Level	N/A	mV
4' Waveform Discriminator Level	N/A	mV
5' Waveform Discriminator Level	N/A	mV
6' Waveform Discriminator Level	N/A	mV
3' Waveform Filter	N/A	
4' Waveform Filter	N/A	
5' Waveform Filter	N/A	
6' Waveform Filter	N/A	
Semblance Level	N/A	
Semblance Window Width	N/A	micro-sec
Sonic 1 Despiker	N/A	N/A
Sonic 2 Despiker	N/A	N/A

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
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Induction Calibration MAI-A.A 167

Base Calibration on 11-MAR-2011,09:58

Field Check on 25-APR-2011 20:33

Base Calibration

Test Loop Calibration

Channel	Measured		Calibrated (mmho/m)	
	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
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Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	12.0	3842.1
2	0.0	0.0	29.3	3480.2
3	0.0	0.0	28.9	3055.9
4	0.0	0.0	19.7	2083.5
Deep	0.0	0.0	18.4	2050.7
Medium	0.0	0.0	42.1	3995.2
Shallow	0.0	0.0	42.5	5059.1

Array Temperature	0.0	57.8	Deg F
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Induction Constants MAI-A.A 167

Last Edited on 24-APR-2011,22:39

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
MPM1	0.0000	MPC1	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 35

Base Calibration on 11-MAR-2011 11:34
Field Calibration on 25-APR-2011 20:40

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)
6.02	5.98

Photo Density Calibration MPD-B 35

Base Calibration on 11-MAR-2011 11:54
Field Check on 25-APR-2011 20:44

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
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Field Check

1171.2	1390.3
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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
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Field Check

210.1	1035.0
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Density Constants MPD-B 35

Last Edited on 26-APR-2011,14:21

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	1.14 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

DOWNHOLE EQUIPMENT

C:\Users\SSTRIB~1\AppData\Local\Temp\Weatherford PreView\0\Ellis 1-23.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

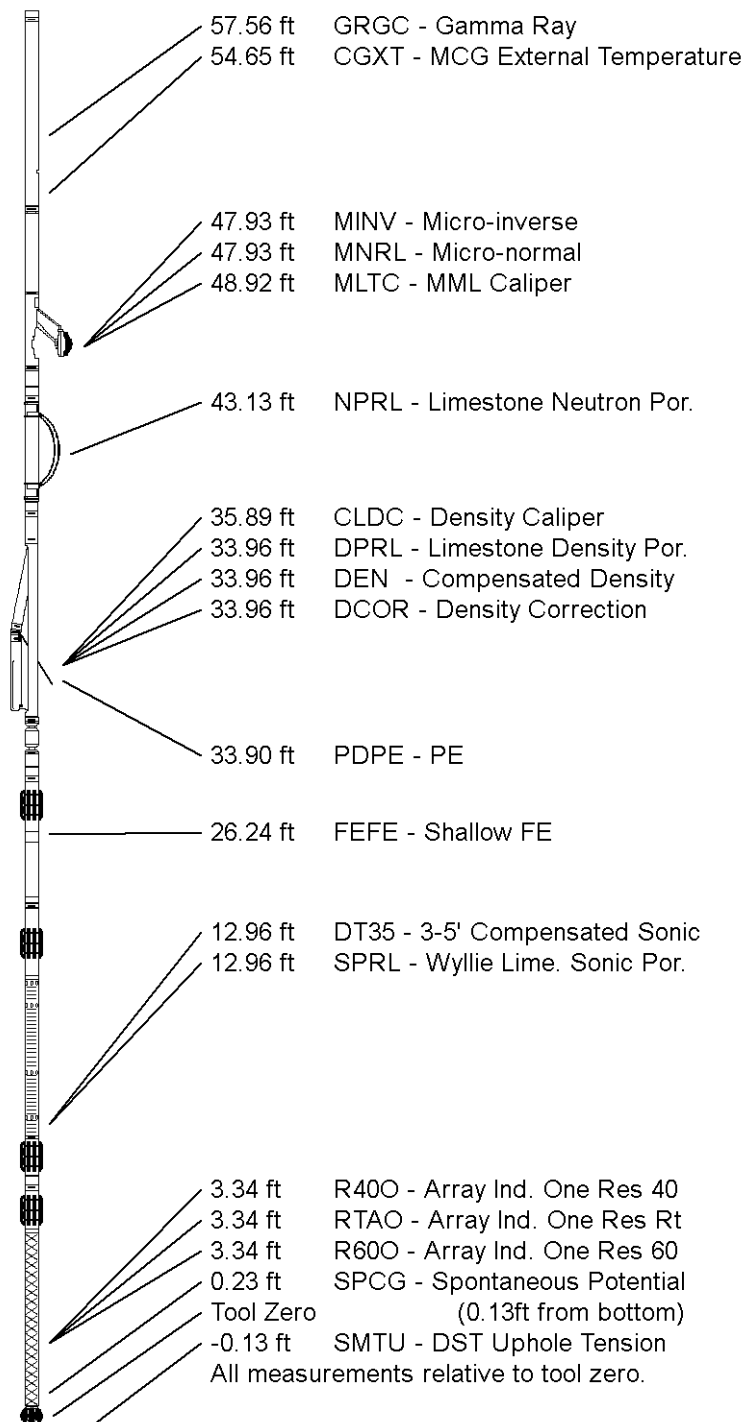
SKJ-D.A Compact Knuckle Joint
SKJ-D.A 36 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 52 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-A.A 126 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

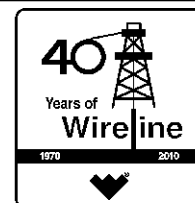
Compact Induction
MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 62.84 ft Weight: 480.6 lb



COMPANY	GRAND MESA
WELL	ELLIS 1-23
FIELD	WILDCAT
PROVINCE/COUNTY	LOGAN
COUNTRY/STATE	U.S.A./KANSAS

Elevation Kelly Bushing	2785.00	feet	First Reading	4569.00	feet
Elevation Drill Floor	2784.00	feet	Depth Driller	4570.00	feet
Elevation Ground Level	2780.00	feet	Depth Logger	4572.00	feet



 Weatherford		GRAND MESA ELLIS 1-23 WILDCAT WILDCAT PROVINCE/COUNTY U.S.A./KANSAS CON/INVEST/STATE 1711' FSL & 2310' FWL LOCATION		ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG	
COMPANY MELL FIELD PERMIT NUMBER 15-109-21001 DATE 26-APR-2011		SEC TWP 23 14S RGE 32W Other Services MP/MDN MSS		ELEVATIONS: Permanent Datum O.L. Elevation 2760 feet Log Measured From K/B @ 5 FEET above Permanent Datum Casing Measured From K/B Oiling Measured From K/B Feet K/B I/F O/L	
Run Number Depth Driller Depth Logger Last Reading Casing Driller Casing Logger Bit Size Hole Fluid Type Density/Viscosity PH/Fluid Loss Sample Source Flowline Run @ Measured Temp Run @ Measured Temp Rmc @ Measured Temp Rmc @ Measured Temp Rm @ BHT Time Since Circulation Max Recorded Temp Equipment Name Equipment Base Recorded By Witnessed By S.O.#/JOB#		ONE 4570.00 4572.00 4569.00 212.00 214.00 212.00 7.880 CHEMICAL 9.50 10.40 0.70 @ 81.0 0.50 @ 81.0 0.84 @ 81.0 0.50 @ 114.0 3 HOURS 114.00 COMPACT 13025 SHAWN NUTT WES HANSEN 3529182		feet feet feet feet feet feet inches CP m2/min ohm-m ohm-m ohm-m ohm-m deg F LB LB LB LB LB11-091	

