



Weatherford[®]

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

COMPANY

CHOLLA PRODUCTION, LLC.

WELL

METZGER #2-16

FIELD

UNNAMED

PROVINCE/COUNTY

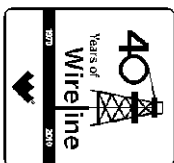
SCOTT

COUNTRY/STATE

U.S.A. / KANSAS

LOCATION

660' FSL & 660' FEL



SEC

TWP

RGE

Other Services
MPD/MDN

MML

API Number

15-171-20796

Permit Number

Permanent Datum G.L., Elevation 2961 feet

Log Measured From KB

Drilling Measured From K.B.

Date

27-MAR-2011

Elevations:

feet

Run Number

ONE

Depth Driller

4700.00 feet

Depth Logger

4700.00 feet

First Reading

4697.00 feet

Last Reading

264.00 feet

Casing Driller

264.00 feet

Casing Logger

264.00 feet

Bit Size

7.875

inches

Hole Fluid Type

CHEMICAL

Density / Viscosity

9.30 lb/USg

57.00 CP
10.40 ml/30Min

PH / Fluid Loss

9.00

Sample Source

FLOWLINE

Rm @ Measured Temp

0.78 @ 73.0 ohm-m

Rmf @ Measured Temp

0.62 @ 73.0 ohm-m

Rmc @ Measured Temp

0.94 @ 73.0 ohm-m

Source Rmf / Rmc

CALC

CALC

Rm @ BHT

0.50 @ 115.0 ohm-m

Time Since Circulation

5 HOURS

Max Recorded Temp

115.00 deg F

Equipment Name

COMPACT

Equipment / Base

13057

Recorded By

L. SCOTT

LIB

ROGER PEARSON

Witnessed By

BILL GOFF

LB11-056

S.O.# / JOB#

3529124

BOREHOLE RECORD

Last Edited: 27-MAR-2011 07:36

Bit Size
inches

7.875

Depth From
feet

264.00

Depth To
feet

4700.00

CASING RECORD

Type

SURFACE

Size
inches

8.625

Depth From
feet

0.00

Shoe Depth
feet

264.00

Weight
pounds/ft

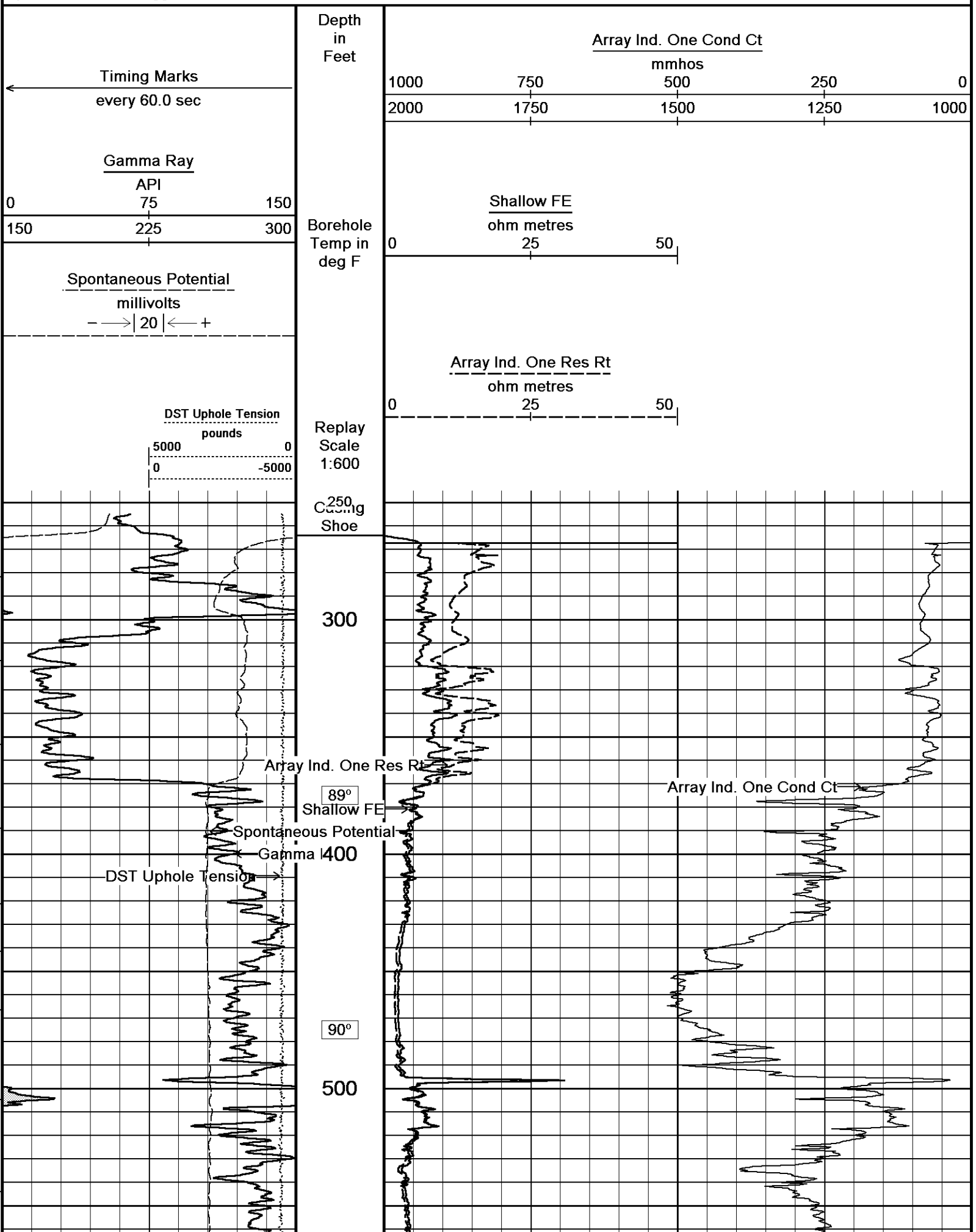
24.00

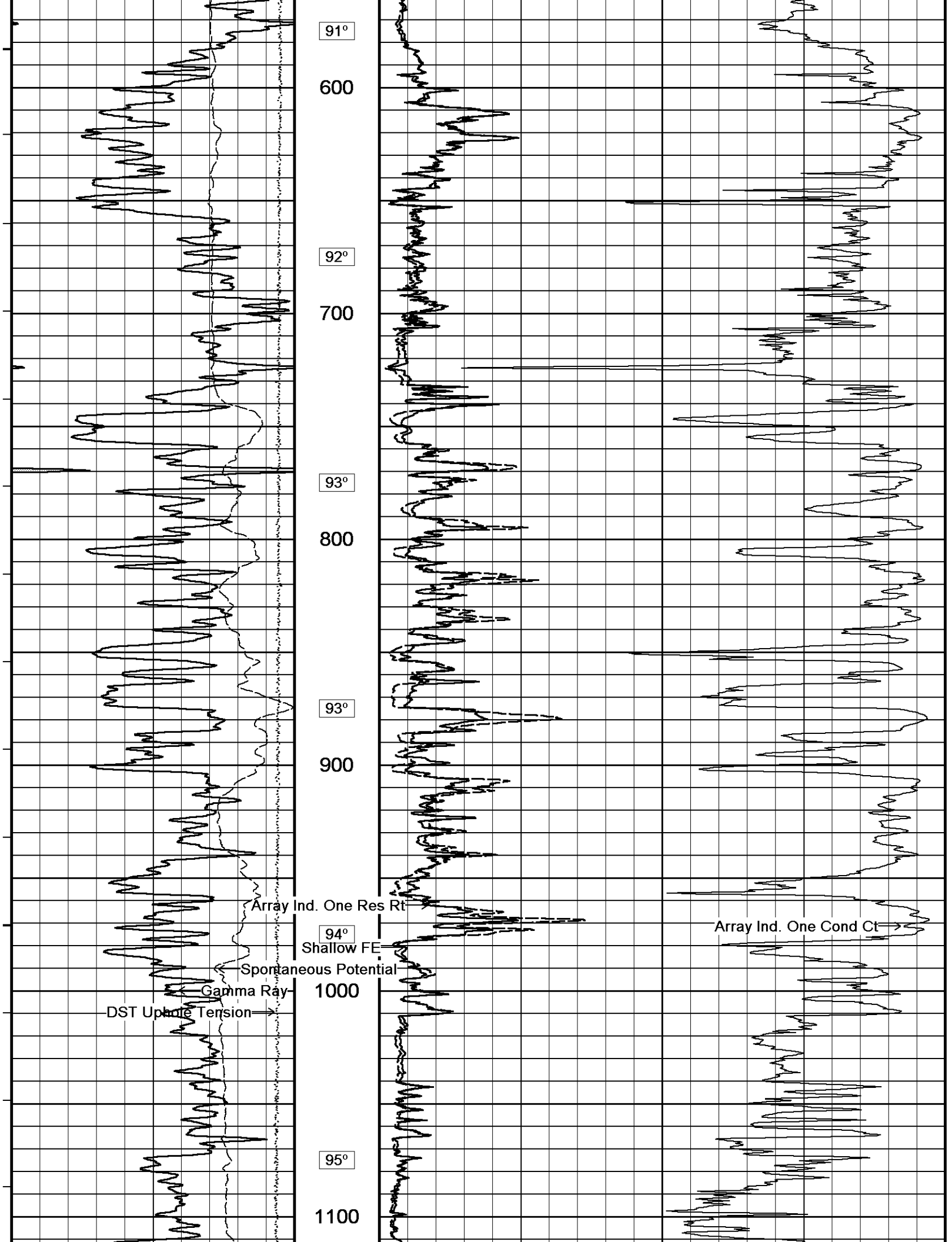
REMARKS

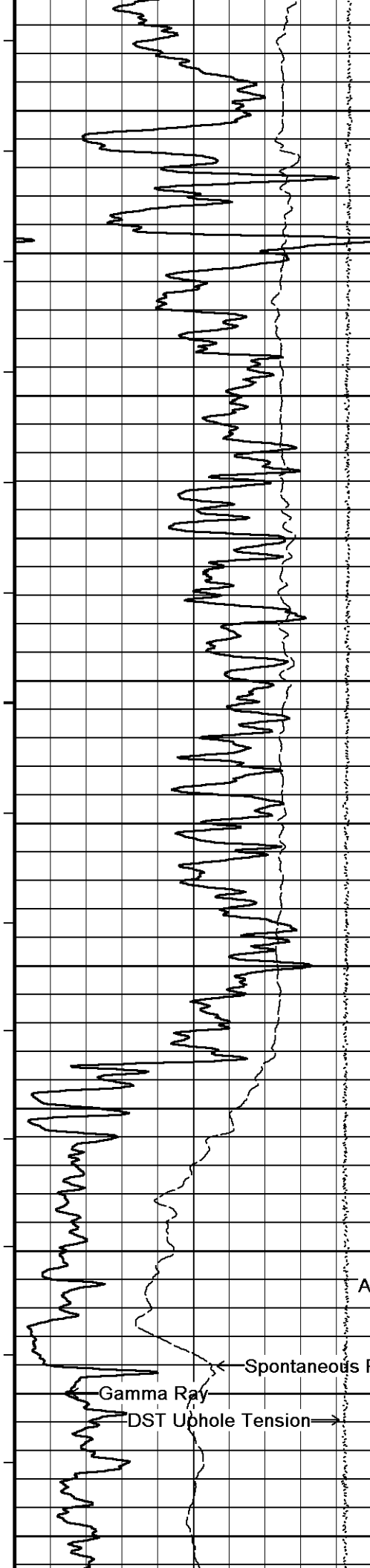
Tools Ran: MCG, MML, MDN, MPD, SKJ, MFE, MAI.
Hardware Used: MDN Dual Eccentralizer used. MPD 8 inch profile plate used. MFE and MAI 0.5 inch standoffs used.
2.71 g/cc Limestone Density Matrix used to calculate porosity.
All intervals logged and scaled per customer's request.
Annular volume with 5.5 inch production casing= 526 cu. ft.
Service order #3529124
Engineer: L. Scott
Operator(s): M. Stegman

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.

5 INCH MAIN







96°

1200

97°

1300

97°

1400

98°

1500

Array Ind. One Res Rt

98°

Shallow FE

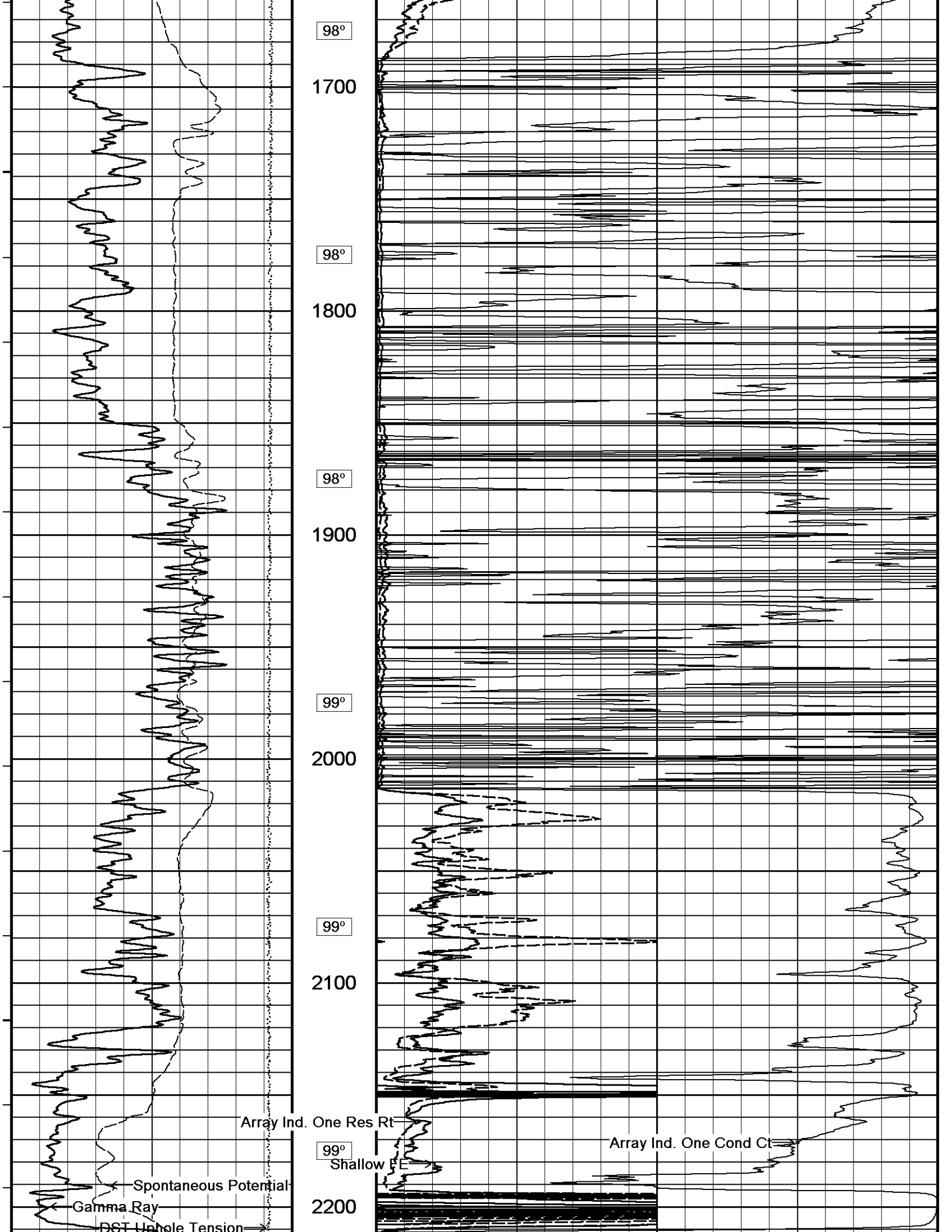
Array Ind. One Cond Ct

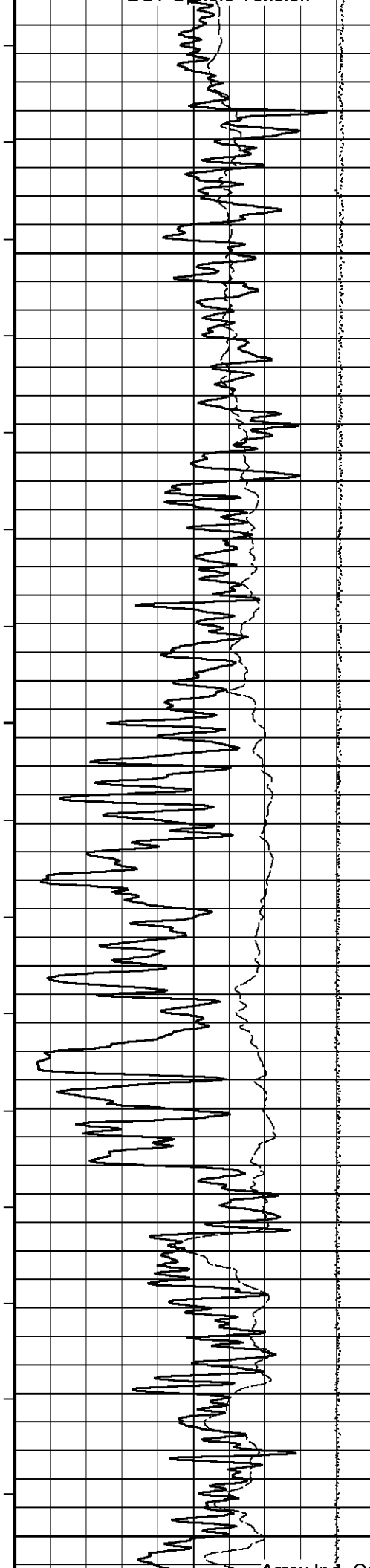
1600

Gamma Ray

DST Uphole Tension

Spontaneous Potential





100°

2300

101°

2400

101°

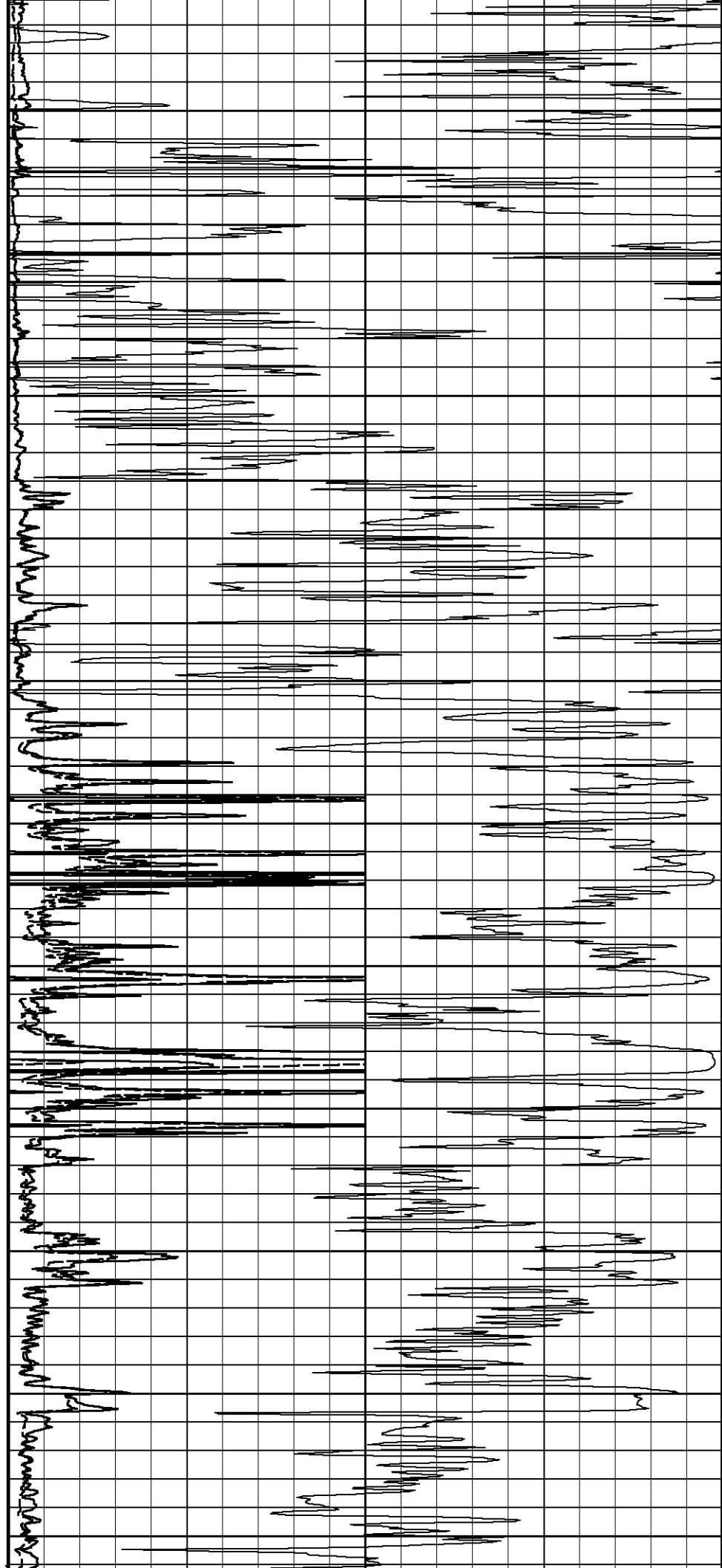
2500

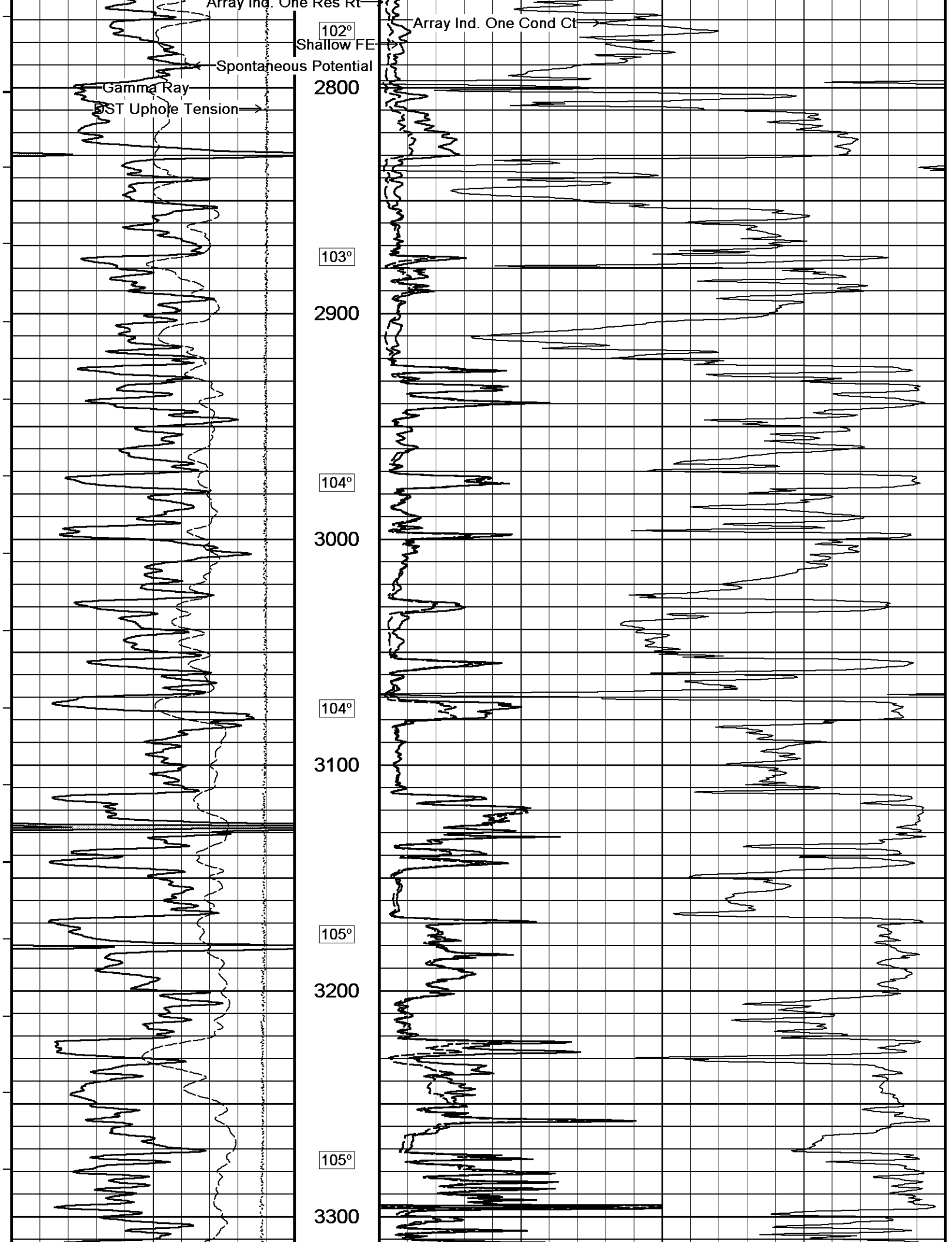
101°

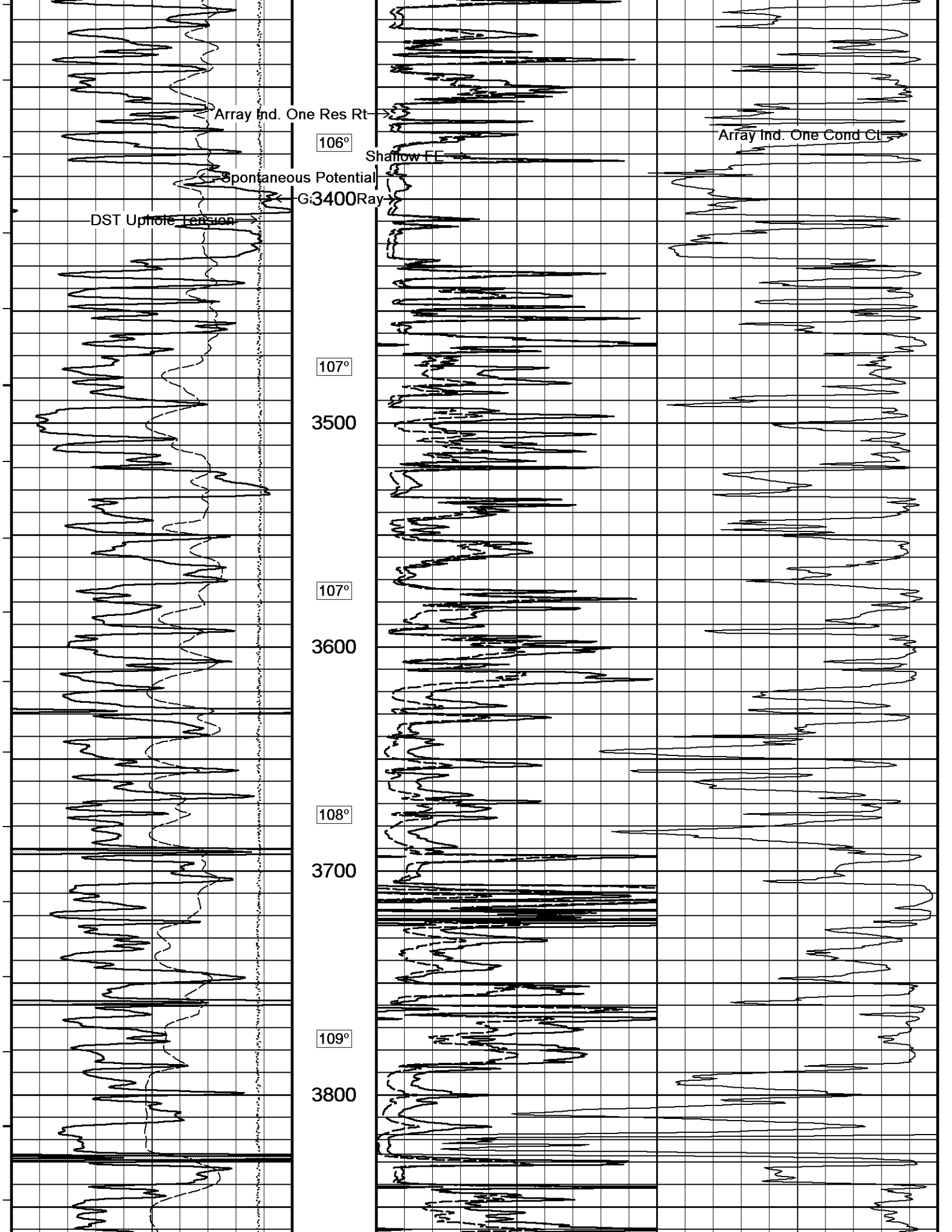
2600

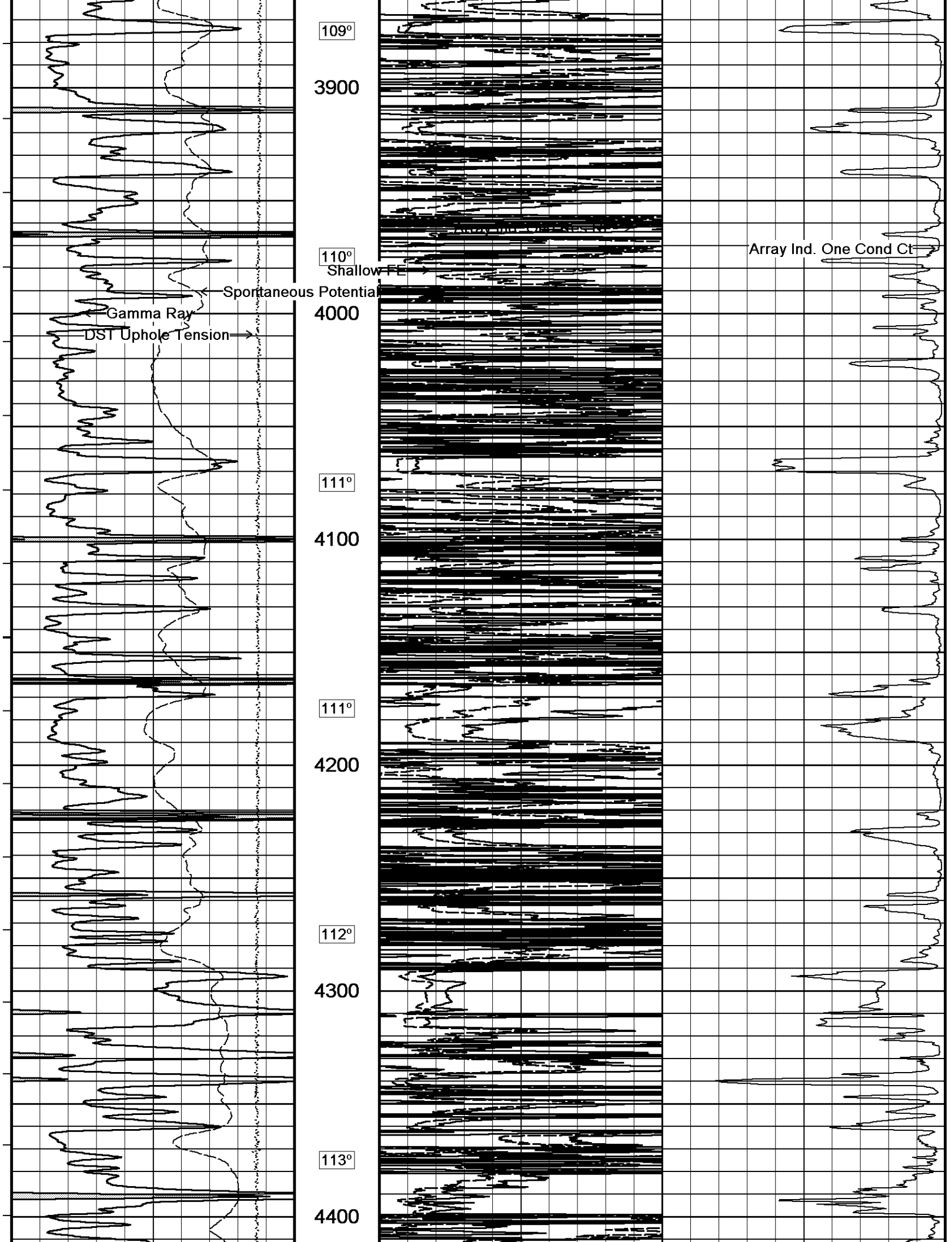
102°

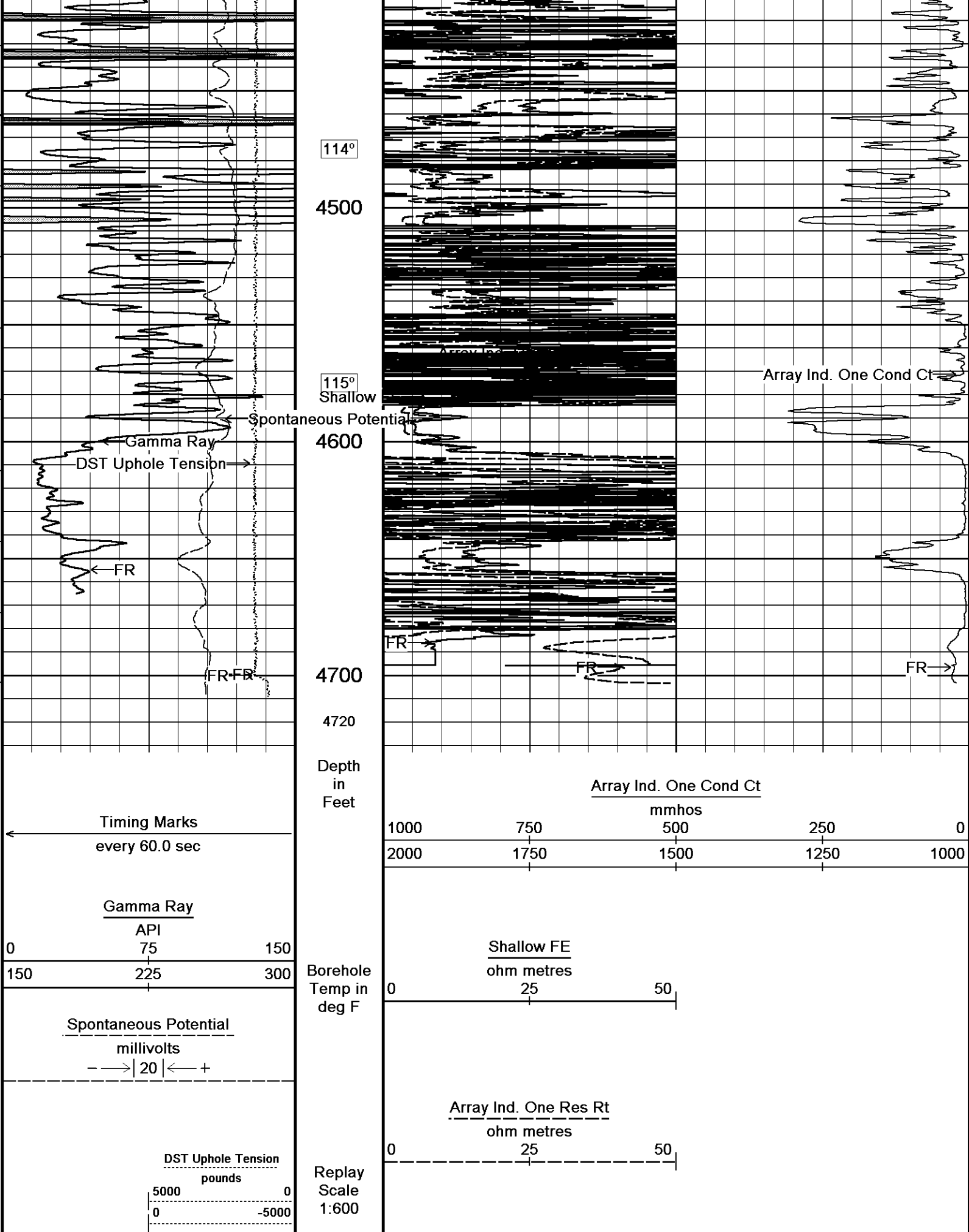
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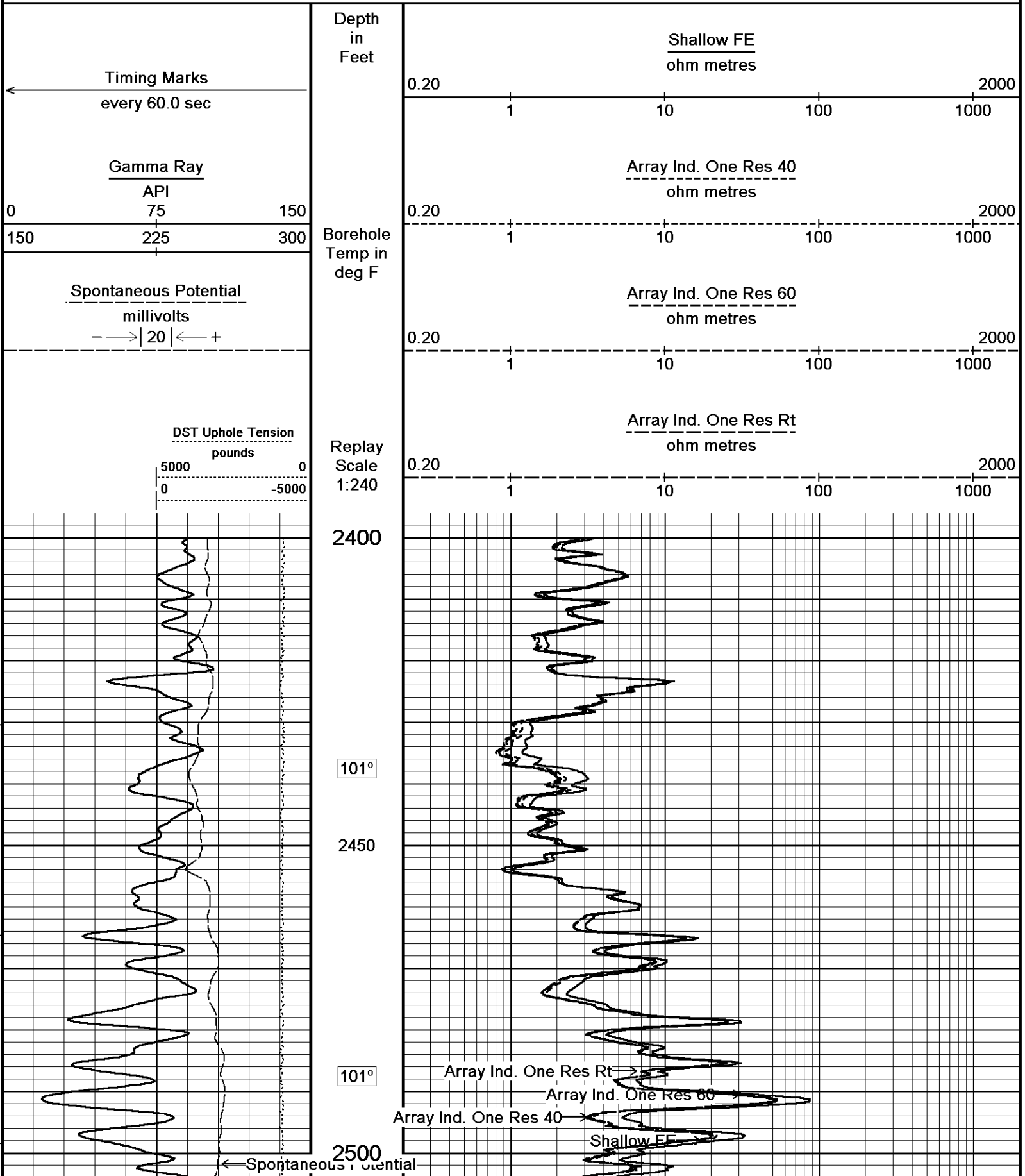


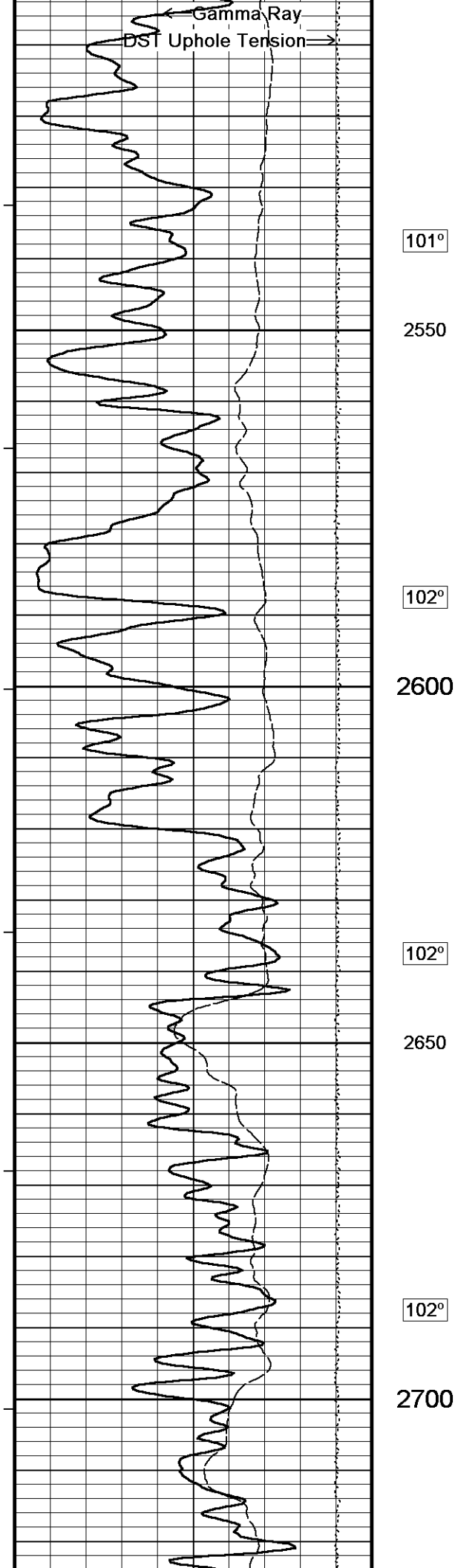






Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 27-MAR-2011 09:05
Filename: C:\Program Files\Weatherford\WLS 11.03\Data\CHOLLA\CHOLLA METZGER #2-16_002.dta
Recorded on 27-MAR-2011 05:36
System Versions: Logged with 11.03.3274 Processed with 11.03.3274 Plotted with 11.03.3274





101°

2550

102°

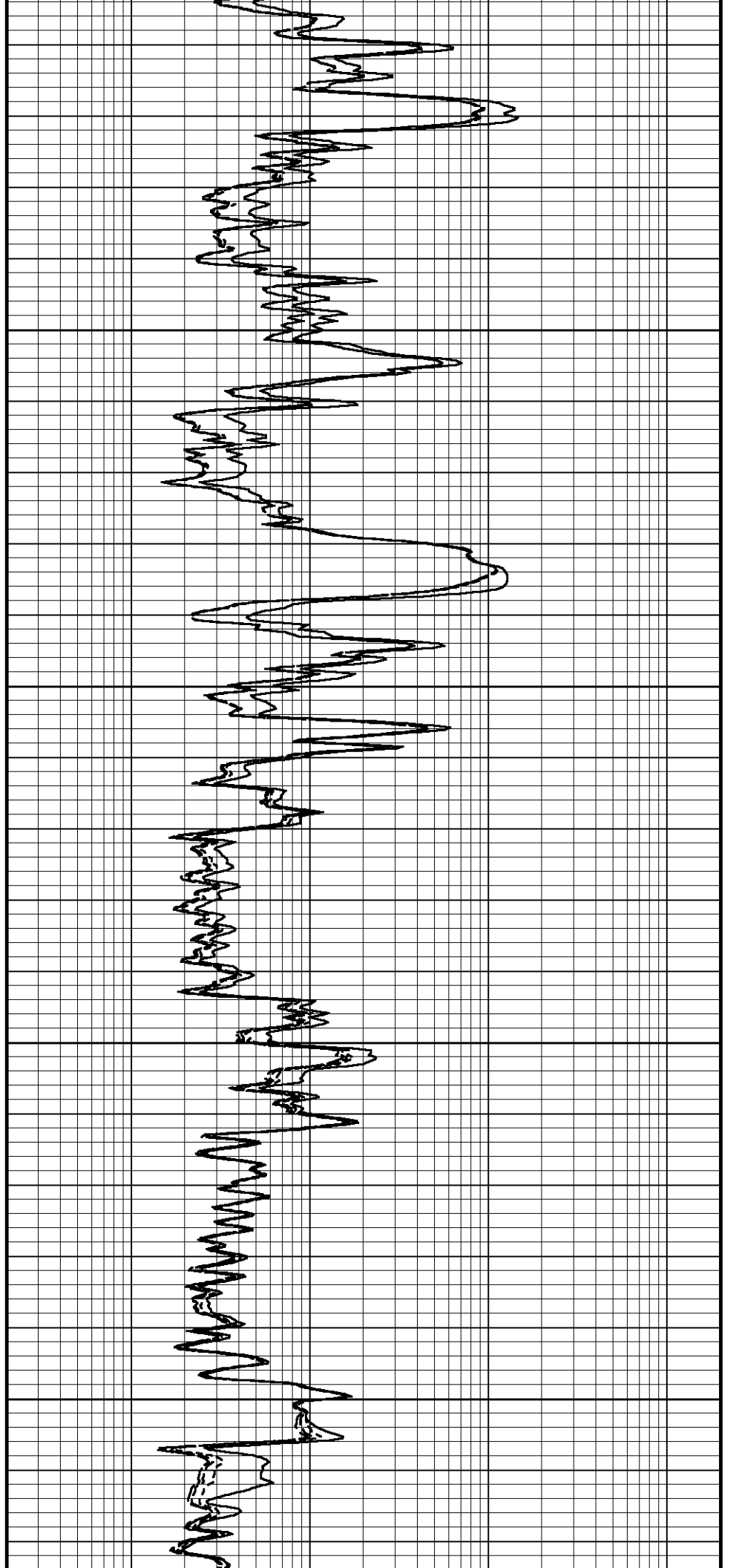
2600

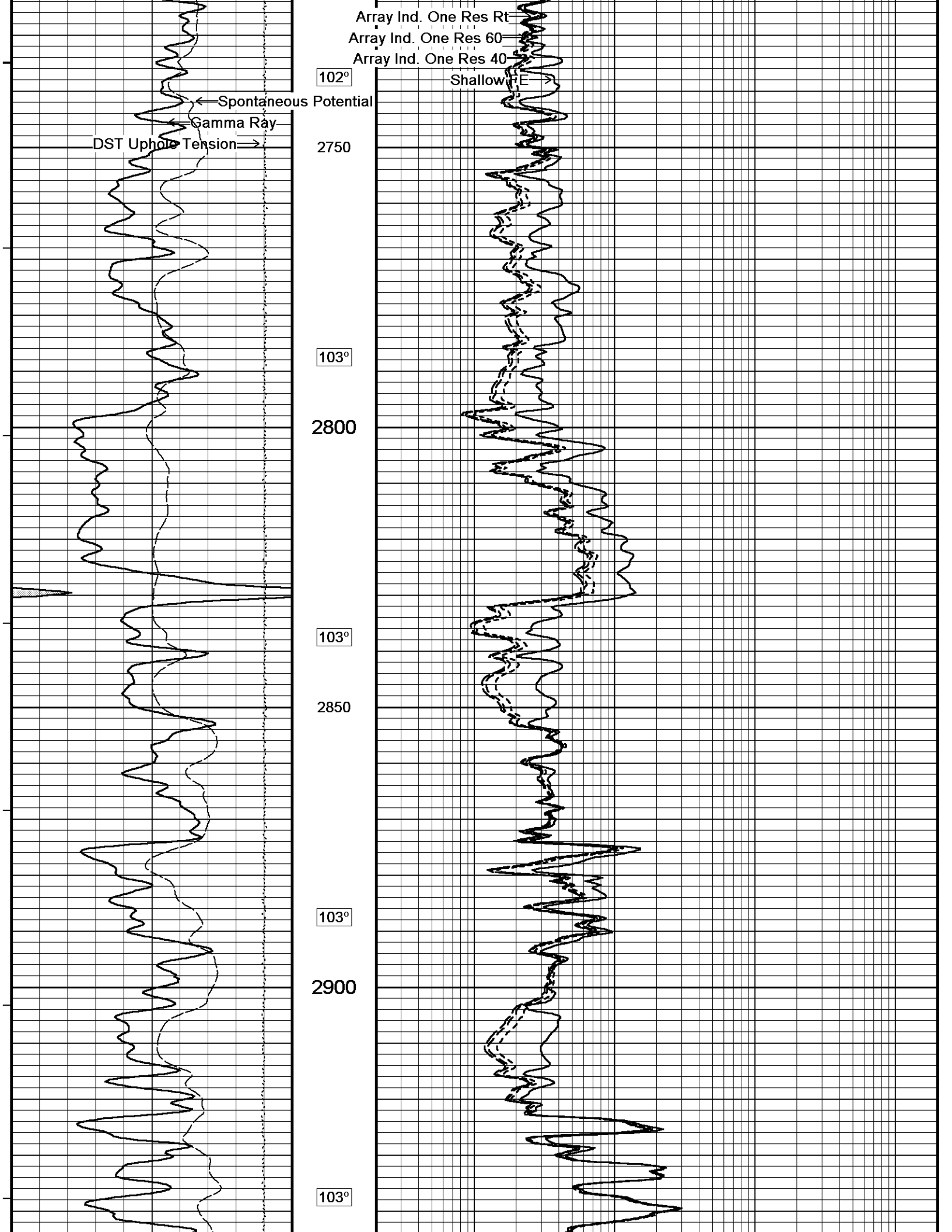
102°

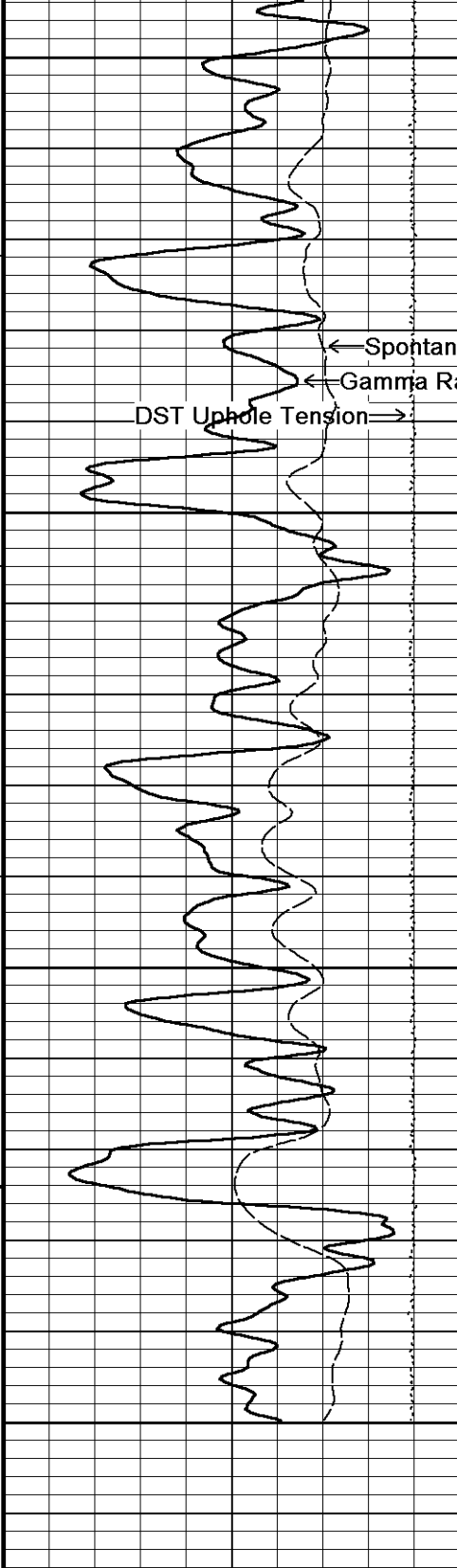
2650

102°

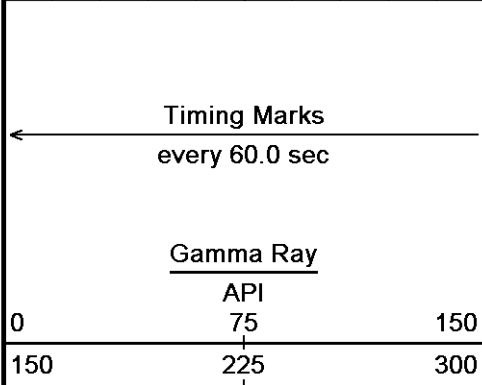
2700



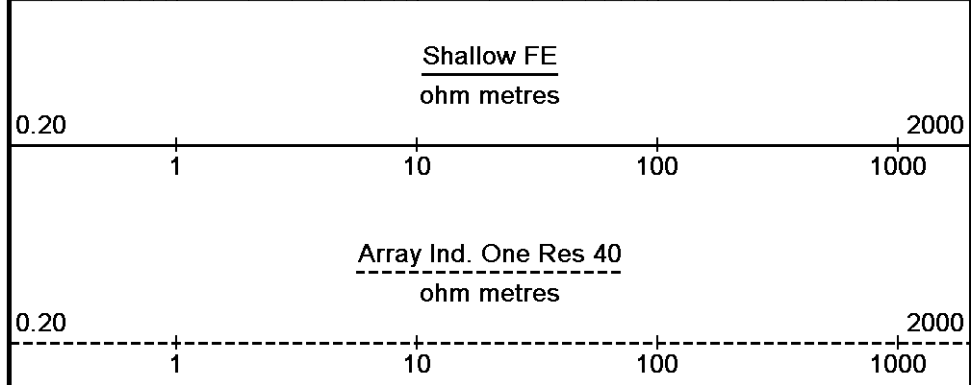
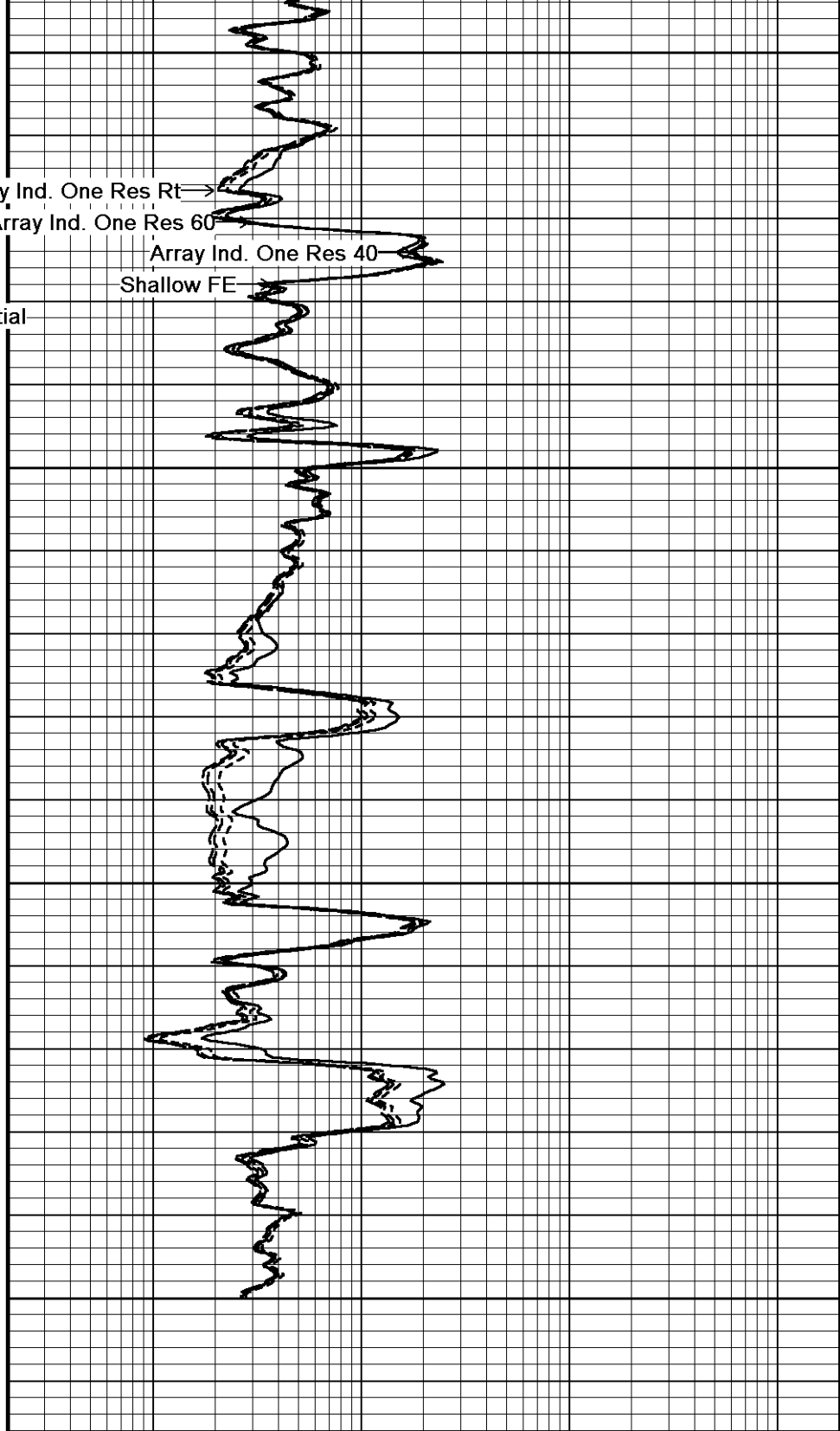




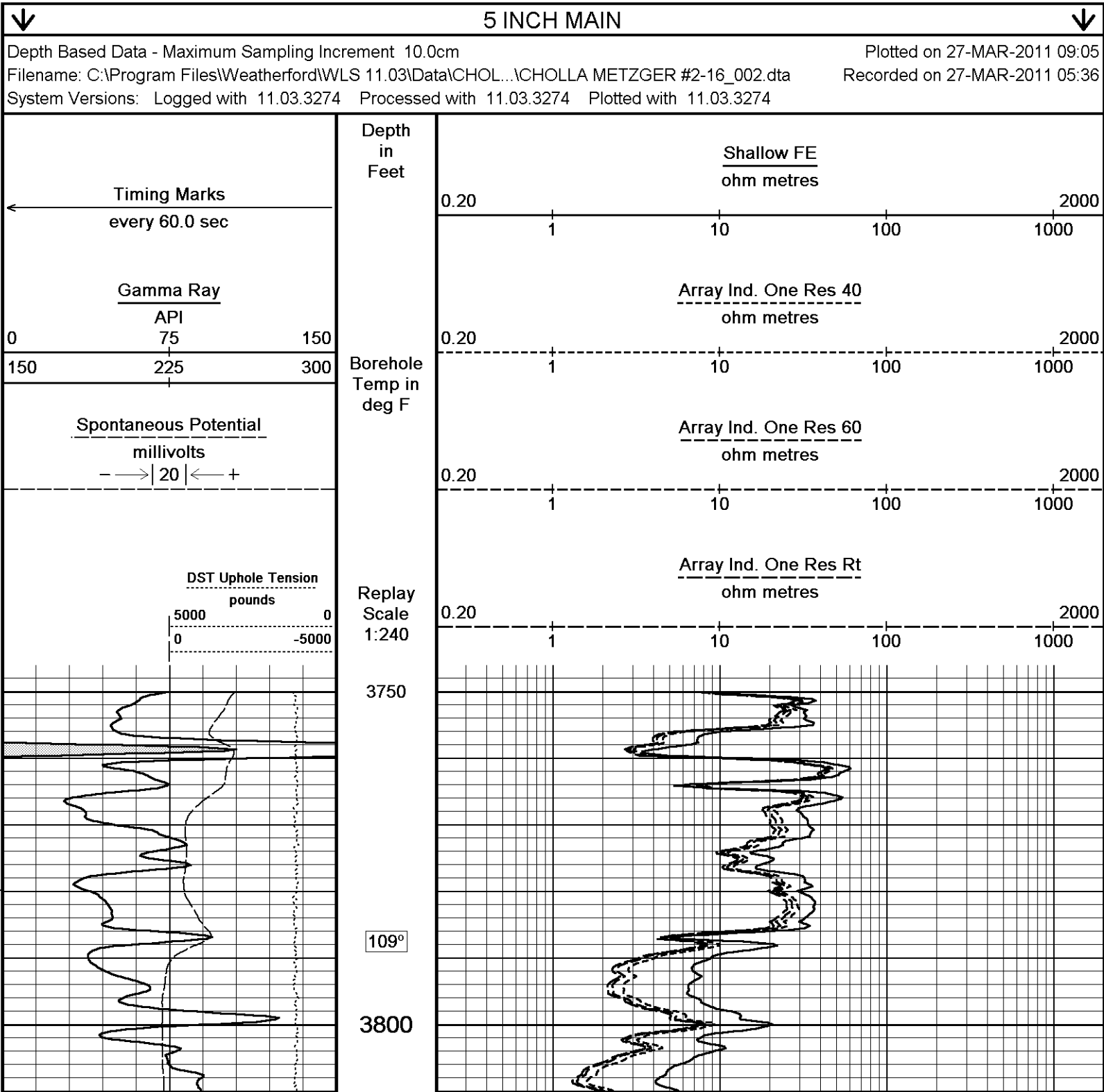
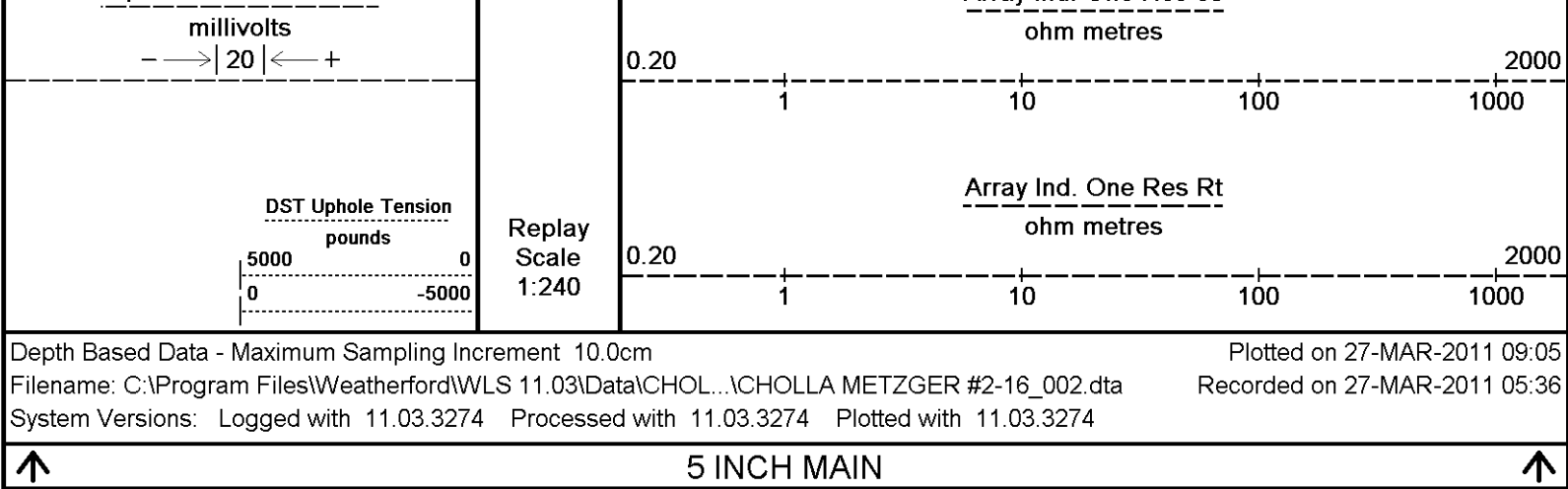
2950
3000
3050
3100
3114
Depth
in
Feet

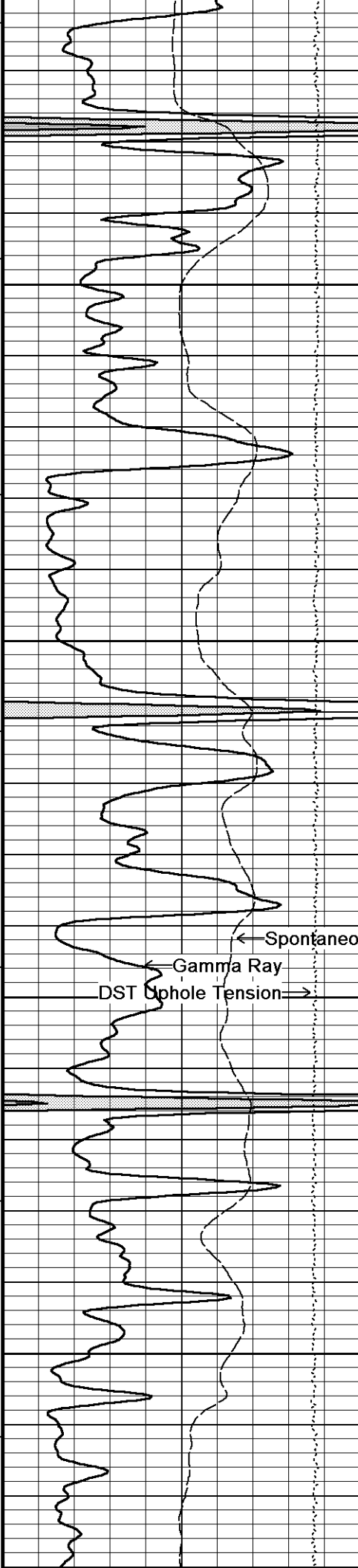


Timing Marks
every 60.0 sec
Gamma Ray
API
0 75 150
150 225 300
Borehole
Temp in
deg F



Shallow FE
ohm metres
0.20 1 10 100 1000 2000
Array Ind. One Res 40
ohm metres
0.20 1 10 100 1000 2000
Array Ind. One Res 60





109°

3850

109°

3900

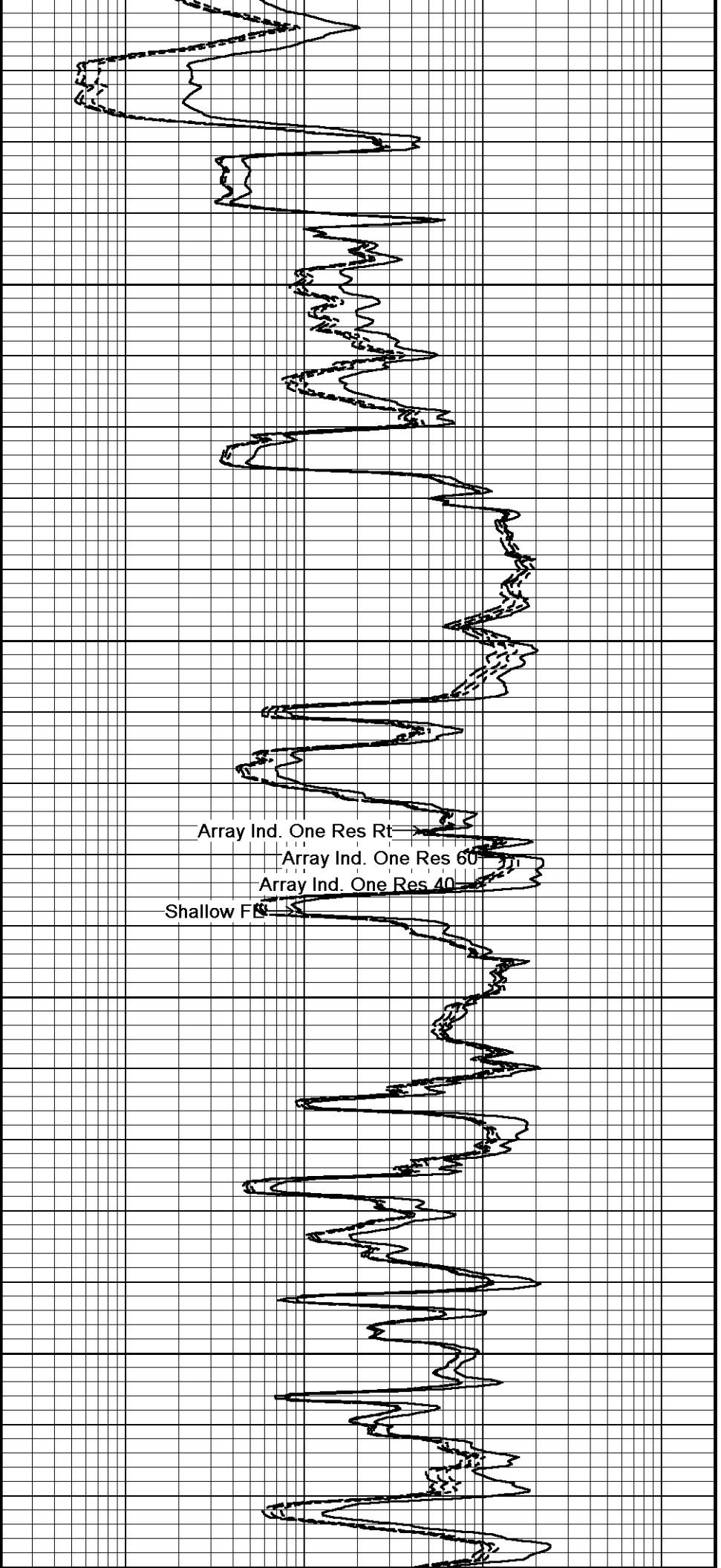
110°

3950

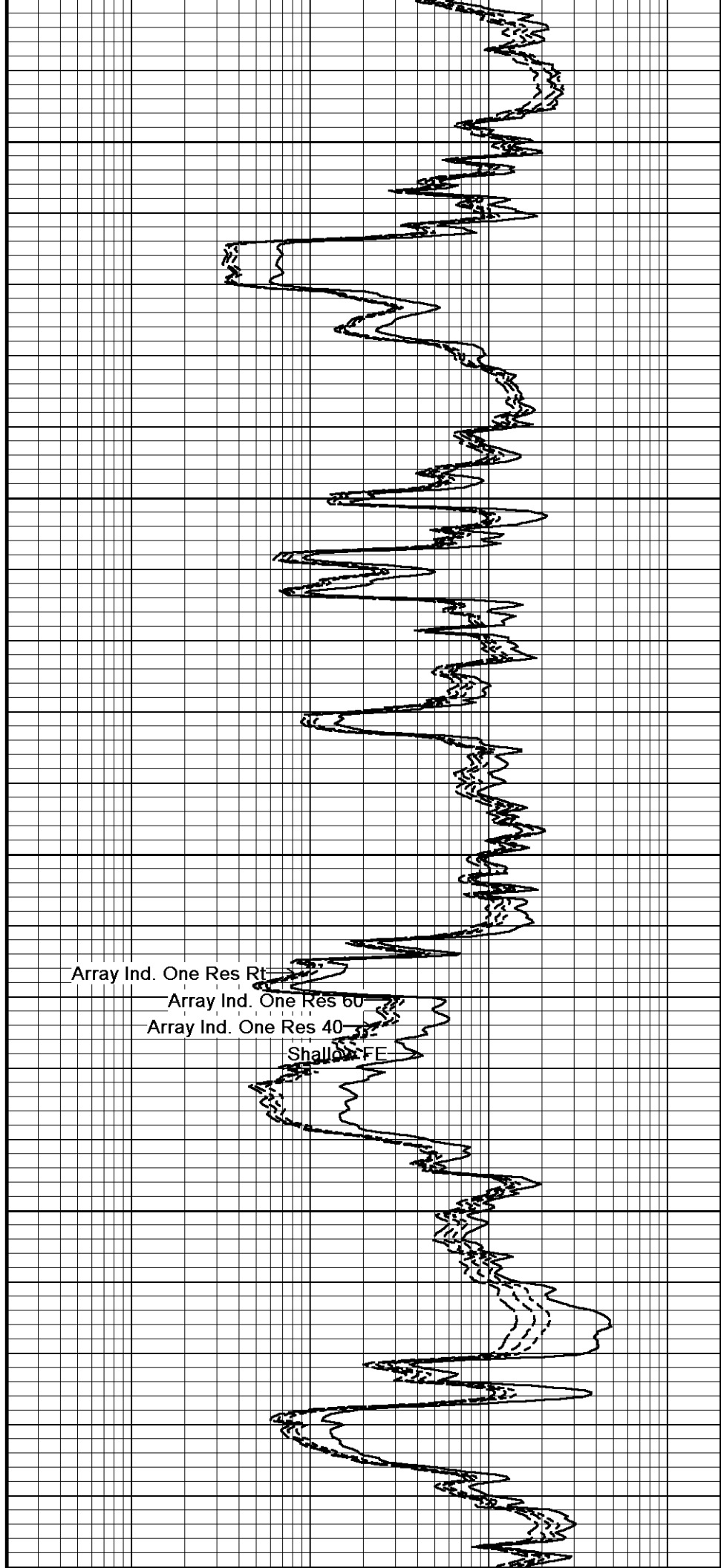
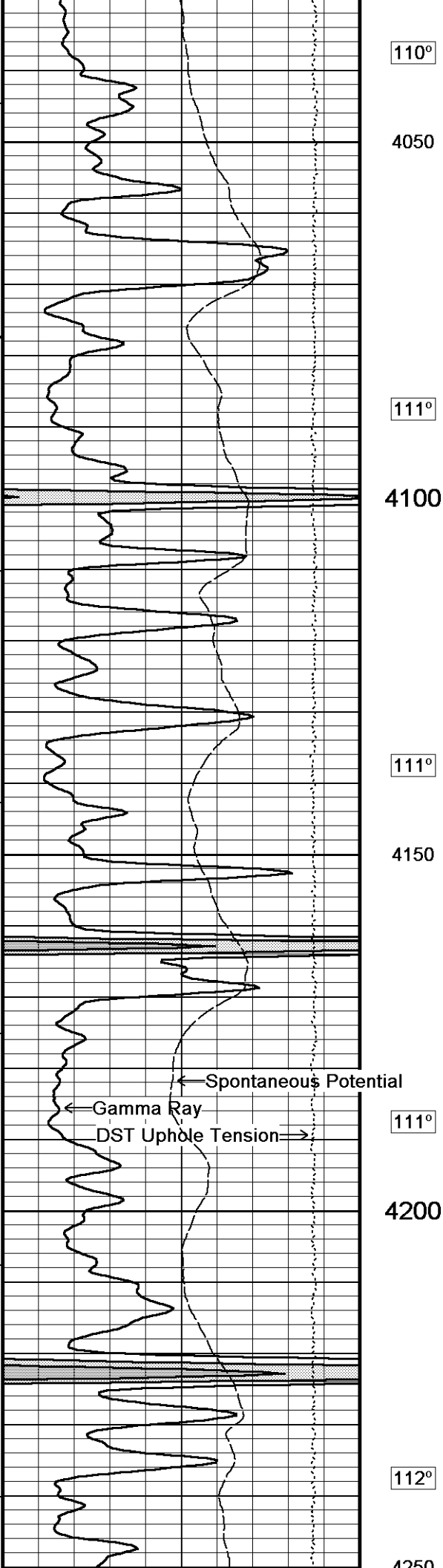
110°

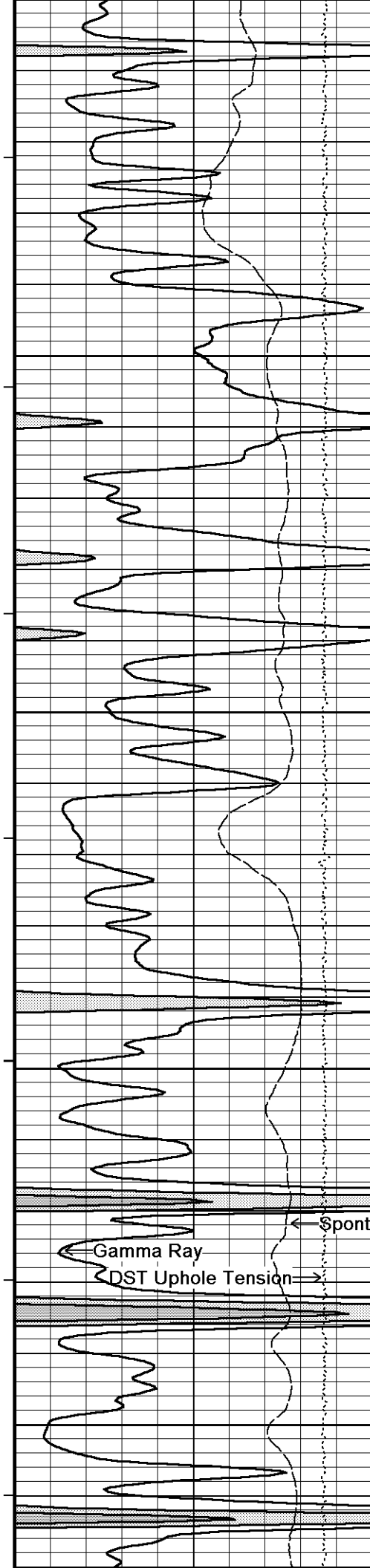
4000

← Gamma Ray
DST Spontaneous Potential →

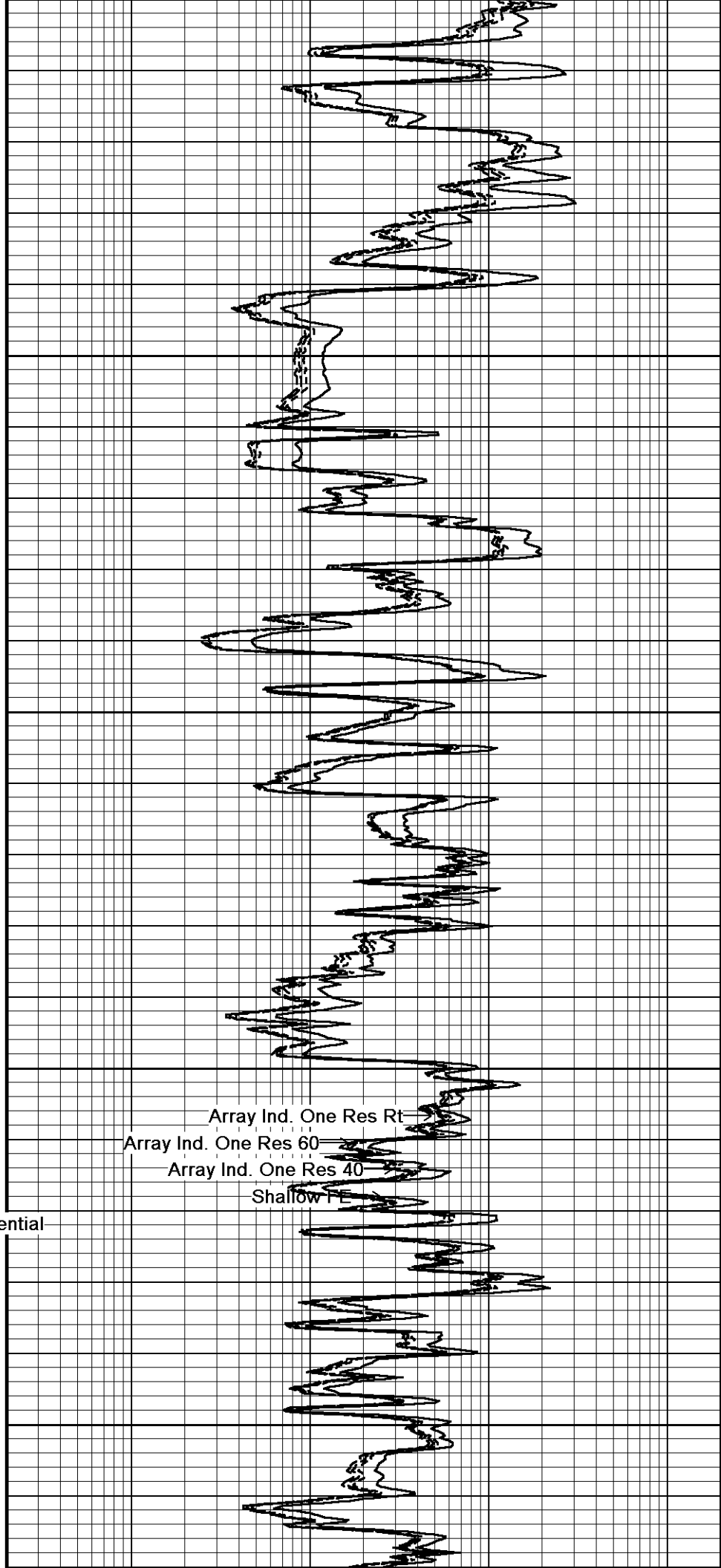


Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow Fm

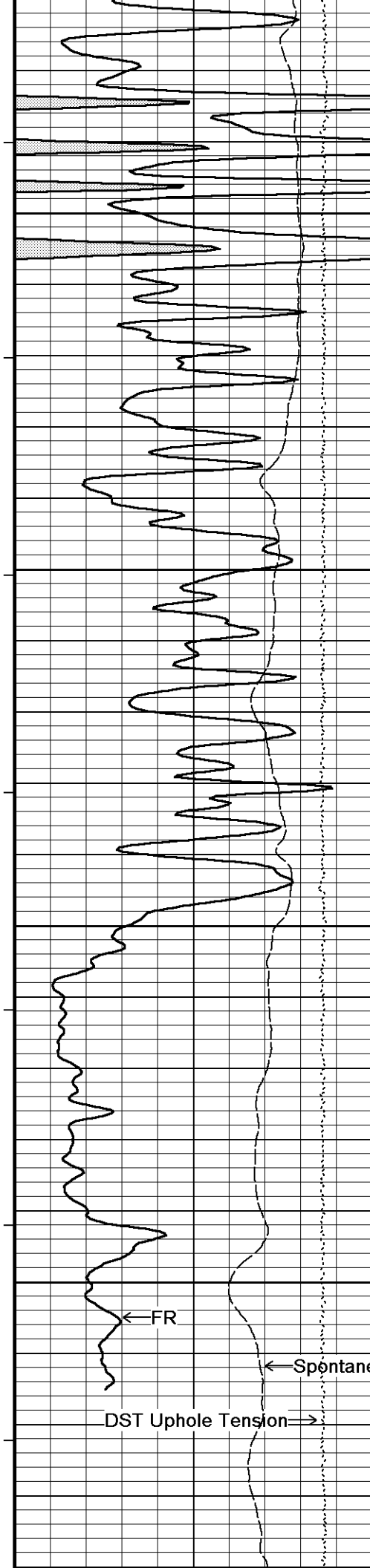




4250
112°
4300
112°
4350
113°
4400
113°
4450



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



114°

4500

114°

4550

115°

4600

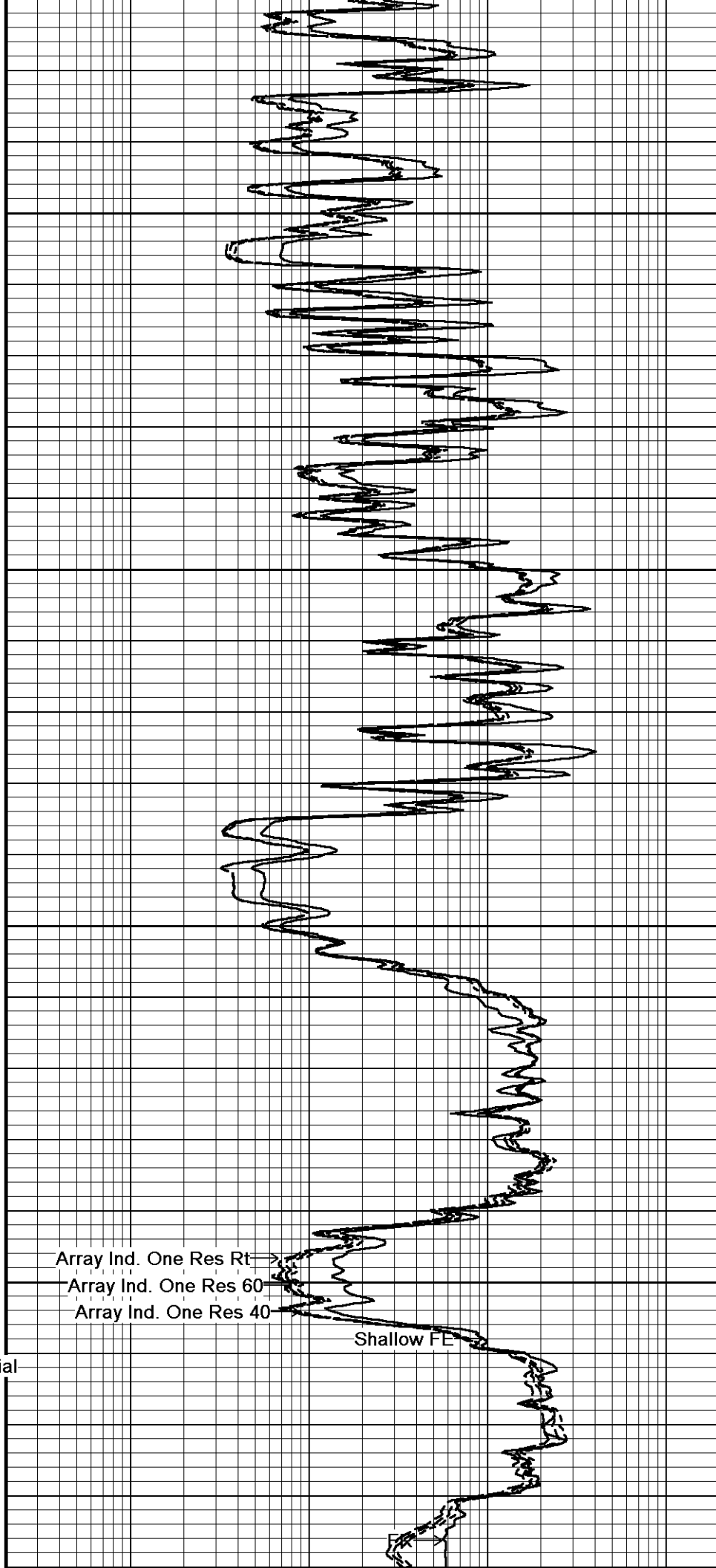
115°

4650

← FR

← Spontaneous Potential

DST Uphole Tension →

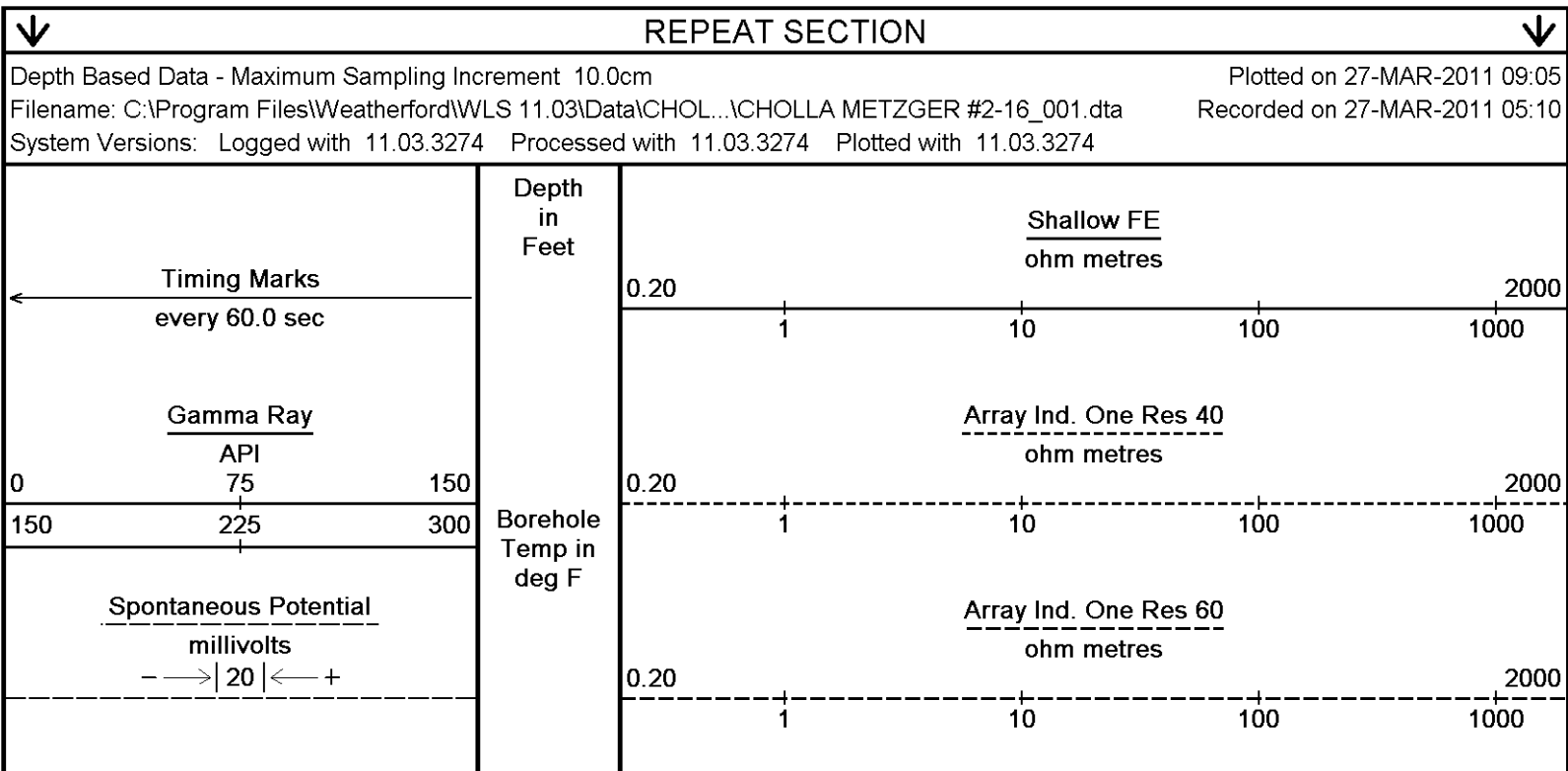
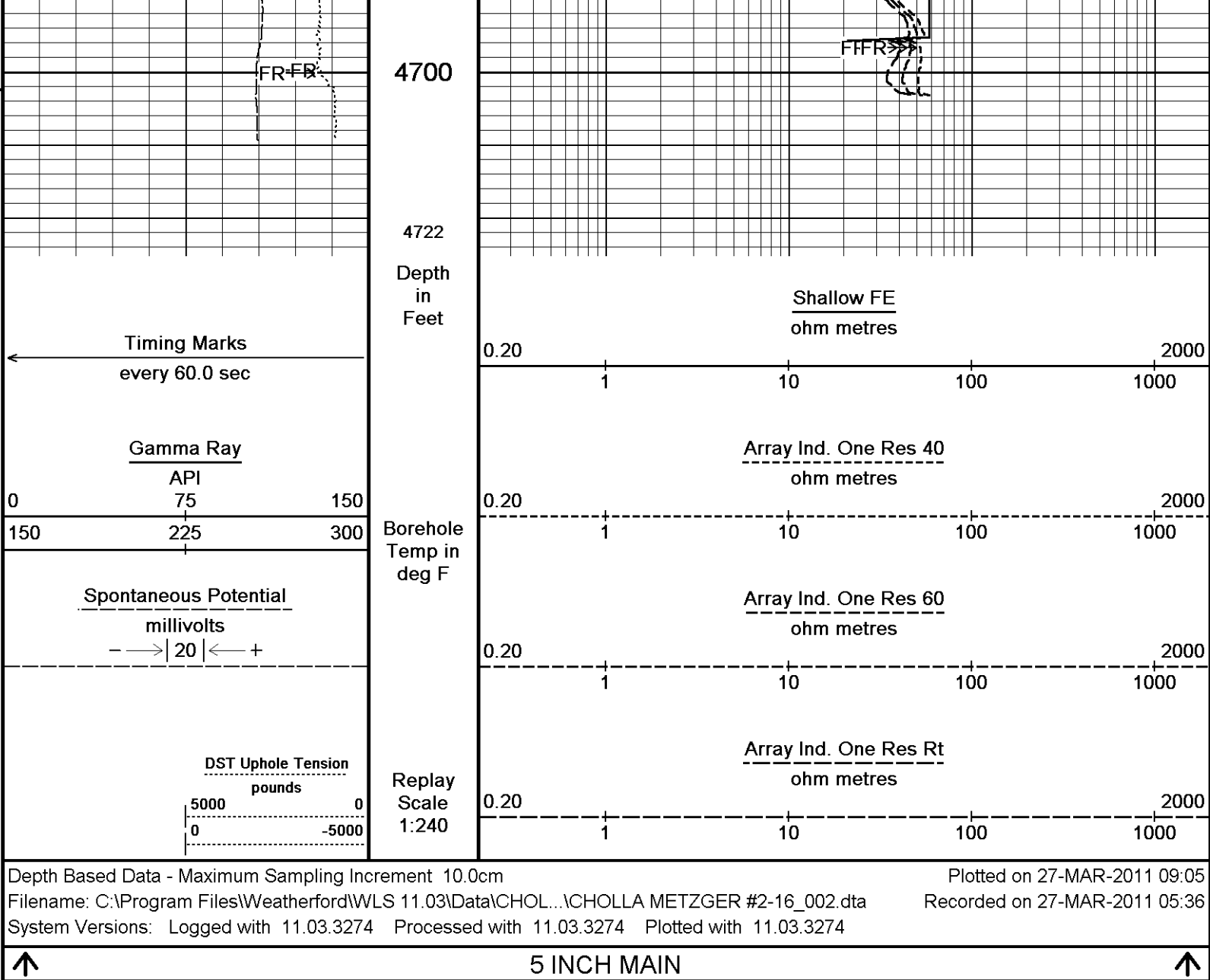


Array Ind. One Res Rt →

Array Ind. One Res 60 →

Array Ind. One Res 40 →

Shallow FE





Replay
Scale
1:240

4400

113°

4450

113°

4500

113°

4550

114°

0.20

1

10

100

1000

2000

Array Ind. One Res Rt

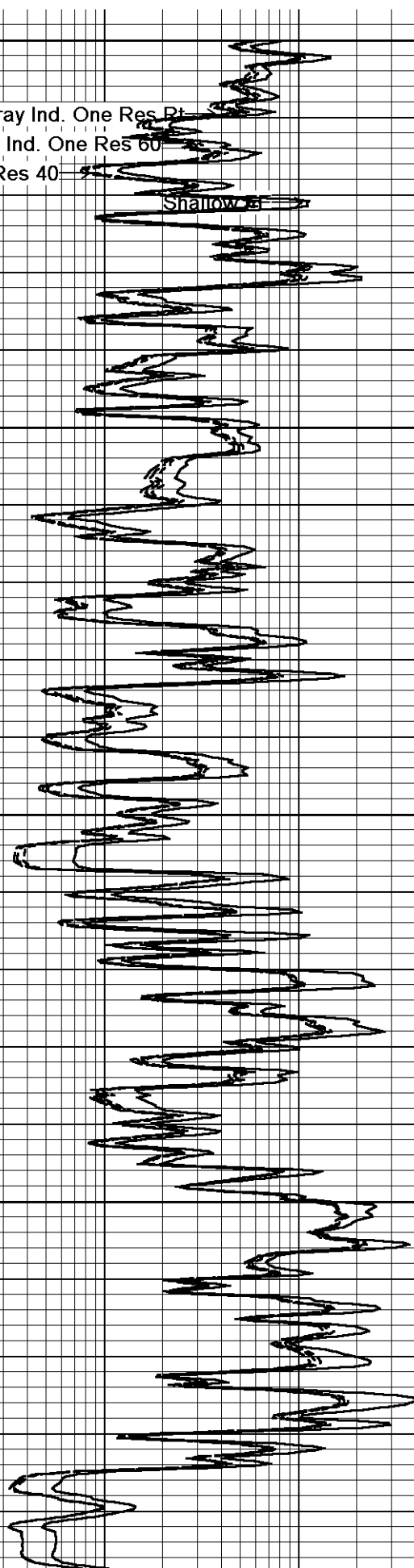
ohm metres

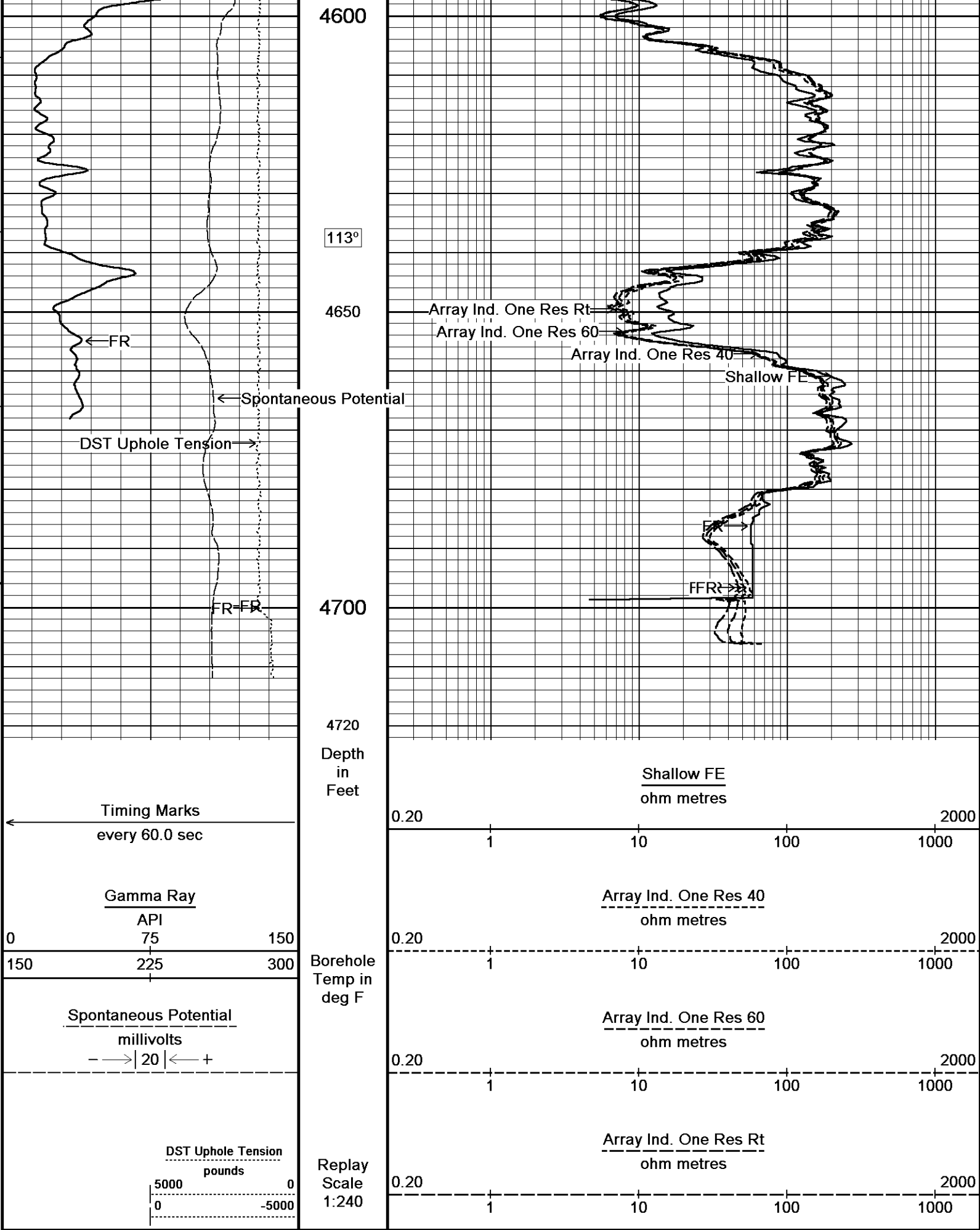
Array Ind. One Res Rt

Array Ind. One Res 60

Array Ind. One Res 40

Shallow







BEFORE SURVEY CALIBRATION

C:\Program Files\Weatherford\WLS 11.03\Data\CHOLLA METZGER #2-16\CHOLLA METZGER #2-16_002.dta

General Constants All 000

Last Edited on 27-MAR-2011,08:08

General Parameters

Mud Resistivity	0.780	ohm-metres
Mud Resistivity Temperature	73.000	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	None	

Rwa Parameters

Porosity used	Base Density Porosity
Resistivity used	Array Ind. One Res Rt
RWA Constant A	1.000
RWA Constant M	2.000

High Resolution Temperature Calibration MCG-B 34

Field Calibration on 19-OCT-2009,11:45

	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
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SP Calibration MCG-B 34

Field Calibration on 9-NOV-2009,18:07

	Measured	Calibrated (mV)
Reference 1	107.7	100.0
Reference 2	-93.8	-100.0

Gamma Calibration MCG-B 34

Field Calibration on 26-MAR-2011 18:43

	Measured	Calibrated (API)
Background	64	45
Calibrator (Gross)	1107	770
Calibrator (Net)	1043	725

Gamma Constants MCG-B 34

Last Edited on 27-MAR-2011,02:41

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

Micro Normal and Micro Inverse Calibration MML-A 4

Base Calibration on 07-JAN-2011 11:32

Field Check on 26-MAR-2011 18:45

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 23-MAR-2011,04:07

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159
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Micro Normal K Factor	0.5110	
Micro Inverse K Factor	0.3380	
Standoff Offset	N/A	inches

Caliper Calibration MML-A 4

Base Calibration on 07-JAN-2011 11:28
Field Calibration on 26-MAR-2011 18:53

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14856	5.96
2	18273	7.98
3	21730	9.95
4	25542	11.91
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.96	5.98

Neutron Calibration MDN-A.B 65

Base Calibration on 17-JAN-2011 15:12
Field Check on 26-MAR-2011 18:50

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3079	97	3714	110
Ratio	31.797		33.764	

Field Calibrator at Base

	Calibrated (cps)
	1654 2338
Ratio	0.708

Field Check

	Calibrated (cps)
	1667 2368
Ratio	0.704

Neutron Constants MDN-A.B 65

Last Edited on 27-MAR-2011,02:41

Neutron Source Id	757	
Neutron Jig Number	5824NE	
Epithermal Neutron	No	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.12	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	MCG External Temperature	
Temperature	N/A	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 17-JAN-2011 13:58
Field Check on 26-MAR-2011 18:36

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	954.8	126.8

Base Check	281.8
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Field Check	281.2
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FE Constants MFE-A.A 55

Last Edited on 27-MAR-2011,08:11

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 178			Field Calibration on 28-MAR-2010,00:50	
	Measured	Calibrated(Deg F)		
Lower	1.00	33.80		
Upper	11.00	51.80		

High Resolution Temperature Constants MAI-A.A 178			Last Edited on	
Pre-filter Length	11			

Induction Calibration MAI-A.A 178			Base Calibration on 17-JAN-2011,15:37	
			Field Check on 26-MAR-2011 18:27	
Base Calibration				
Test Loop Calibration		Measured	Calibrated (mmho/m)	
Channel	Low	High	Low	High
1	17.6	484.7	9.3	966.2
2	6.2	391.4	7.6	821.4
3	4.0	264.5	5.2	566.0
4	2.3	135.1	2.6	279.2
Array Temperature	77.0	Deg F		
Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	11.6	3763.3
2	0.0	0.0	29.5	3467.3
3	0.0	0.0	27.1	3015.6
4	0.0	0.0	18.7	2064.3
Deep	0.0	0.0	15.7	1996.1
Medium	0.0	0.0	40.3	3958.3
Shallow	0.0	0.0	45.5	5082.3
Array Temperature	0.0		61.5	Deg F

Induction Constants MAI-A.A 178			Last Edited on 27-MAR-2011,08:10	
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 Exponent (A)	100.00			

Base Calibration on 26-MAR-2011 21:35
Field Calibration on 26-MAR-2011 21:36

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13025	3.99
2	21664	5.98
3	30144	7.97
4	38507	9.86
5	47728	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.95	5.98

Photo Density Calibration MPD-B 65

Base Calibration on 26-MAR-2011 21:55
Field Check on 26-MAR-2011 21:59

Density Calibration

Base Calibration

Case Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	50493	24334	59556	30836
Reference 2	20772	2298	24941	2541

Field Check at Base

1251.7 1197.0

Field Check

1252.3 1199.9

PE Calibration

Base Calibration

Use Calibration	Measured		Ratio	Calibrated Ratio
	WS	WH		
Background	228	1114		
Reference 1	19703	50302	0.396	0.371
Reference 2	5658	20626	0.278	0.272

Field Check at Base

227.6 1114.3

Field Check

228.2 1111.8

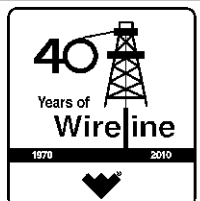
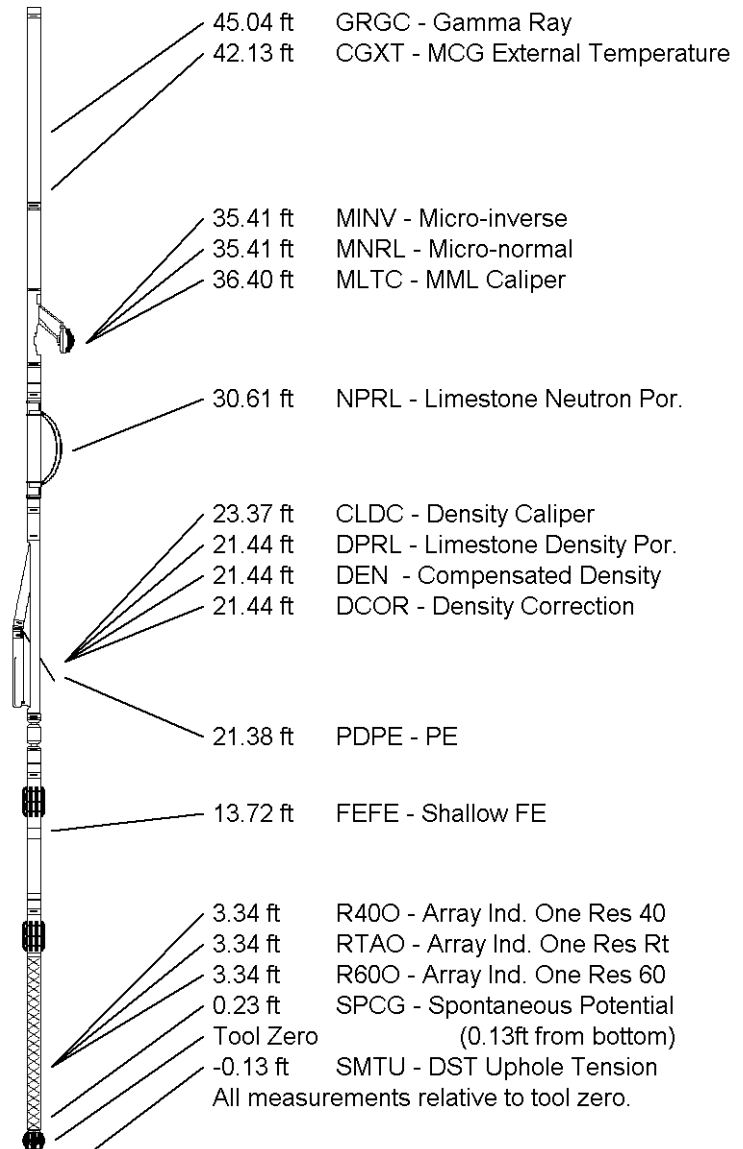
Density Constants MPD-B 65

Last Edited on 27-MAR-2011,02:41

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
DNCT	0.00	gm/cc
CRCT	0.00	gm/cc
Density Z/A Correction	Hybrid	

[illegible]

C:\Program Files\Weatherford\WLS 11.03\Data\CHOLLA METZGER #2-16\CHOLLA METZGER #2-16_002.dta



ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

Weatherford

CHOLLA PRODUCTION, LLC.
METZGER #2-16
UNNAMED
SCOTT
U.S.A. / KANSAS
WYSTATE
6607 FSL & 6607 FEL

TYPE
19S

Rate
33W

Other Services
MP/DMDU

Location
15-171-20796

Well
15-171-20796

Well Name
15-171-20796

Well Type
15-171-20796

Well Status
15-171-20796

Well Depth
15-171-20796

Well Completion
15-171-20796

Well Production
15-171-20796

Well Injection
15-171-20796

Well Flow Rate
15-171-20796

Well Pressure
15-171-20796

Well Temperature
15-171-20796

Well Density
15-171-20796

Well Viscosity
15-171-20796

Well Porosity
15-171-20796

Well Permeability
15-171-20796

Well Saturation
15-171-20796

Well Core
15-171-20796

Well Log
15-171-20796

Well History
15-171-20796

Well Notes
15-171-20796

Well Operator
15-171-20796

Well Engineer
15-171-20796

Well Geologist
15-171-20796

Well Chemist
15-171-20796

Well Electrician
15-171-20796

Well Welder
15-171-20796

Well Driller
15-171-20796

Well Cementer
15-171-20796

Well Completion
15-171-20796

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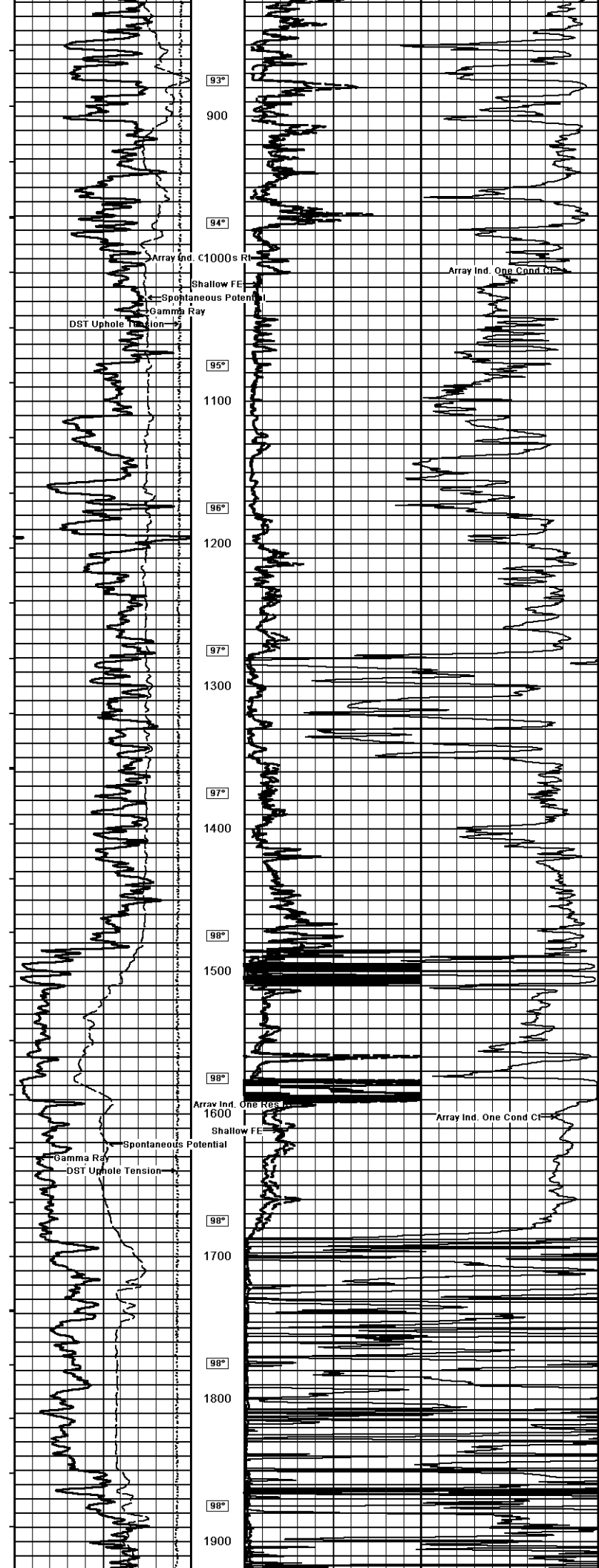
Well Operator
15-171-20796

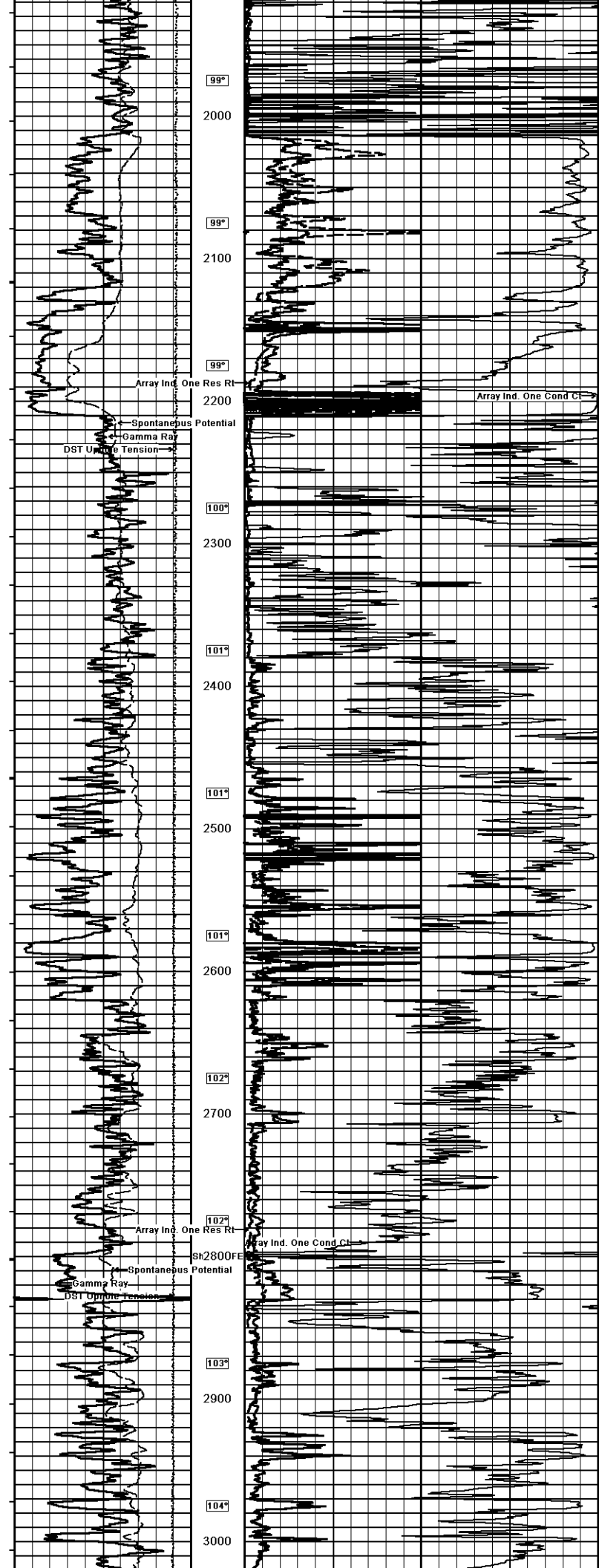
Well Engineer
15-171-20796

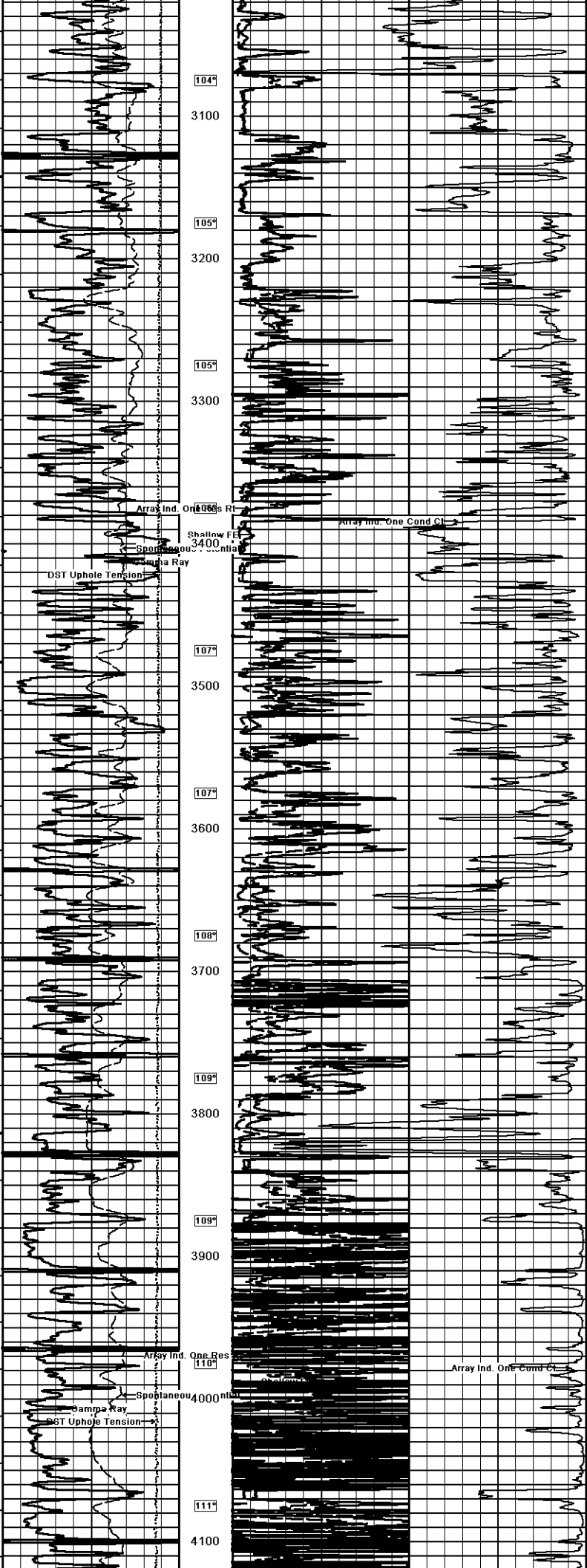
Well Geologist
15-171-20796

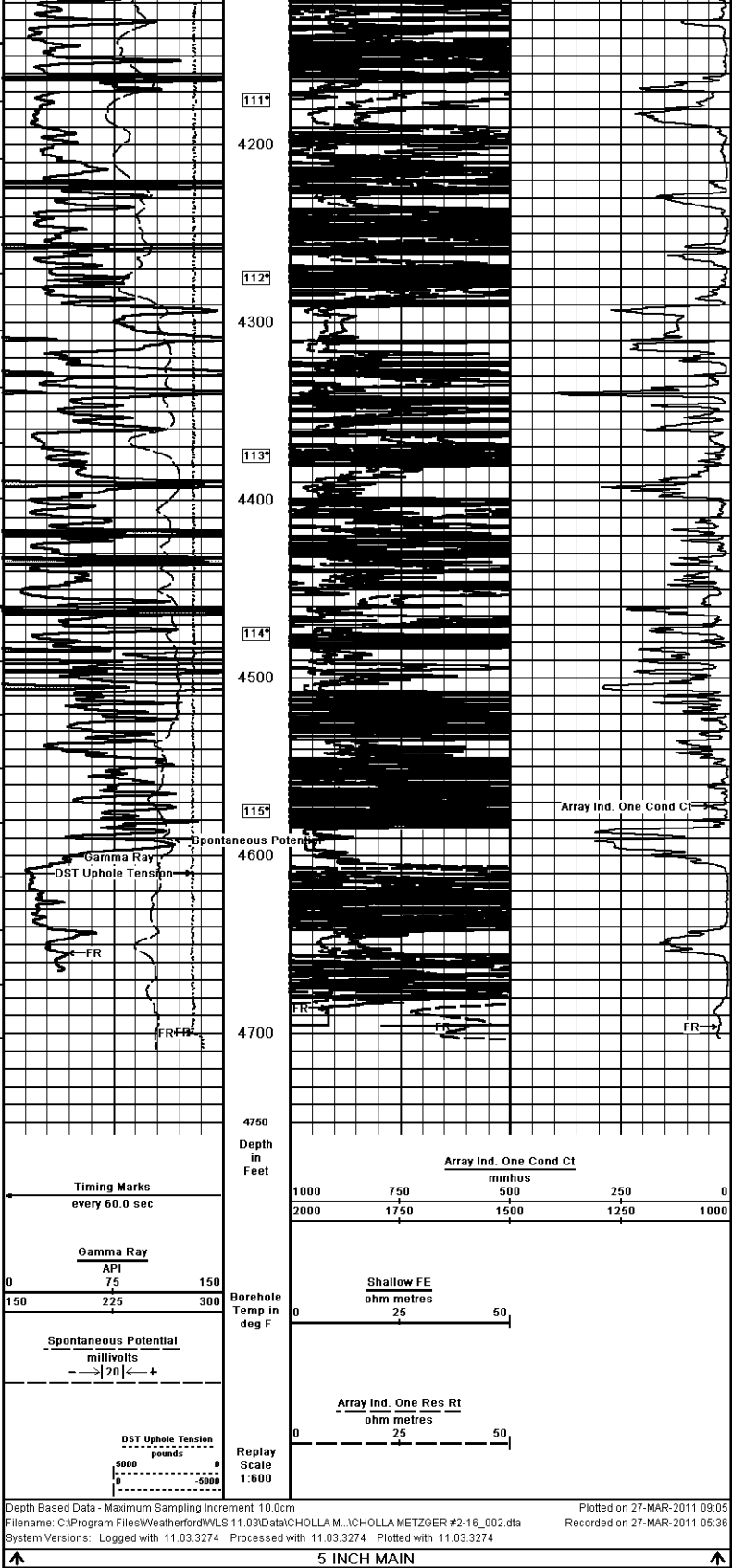
Well Chemist
15-171-20796

Well Electrician









COMPANY	CHOLLA PRODUCTION, LLC.			
WELL	METZGER #2-16			
FIELD	UNNAMED			
PROVINCE/COUNTY	SCOTT			
COUNTRY/STATE	U.S.A. / KANSAS			
Elevation Kelly Bushing	2966.00	feet	First Reading	4697.00 feet
Elevation Drill Floor	2965.00	feet	Depth Driller	4700.00 feet
Elevation Ground Level	2961.00	feet	Depth Logger	4700.00 feet

Weatherford

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

40
Wireline

