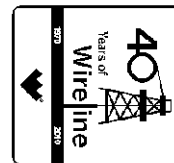




Weatherford¹⁸⁰

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

COMPANY REDLAND RESOURCES, INC.
WELL CHERYL #31-15
FIELD MCVICKER SE
PROVINCE/COUNTY NESS
COUNTRY/STATE U.S.A. / KANSAS
LOCATION 610' FSL & 2080' FEL
SE/4



SEC	TWP	RGE	Other Services	
31	20S	25W	MPD/MDN	MML
API Number 15-135-25364				
Permit Number				
Permanent Datum G.L., Elevation 2399 feet				
Log Measured From KB				
Drilling Measured From K.B.				
Date	22-MAR-2012			Elevations: KB 2407.00 DF 2405.00 GL 2399.00
Run Number	ONE			
Depth Driller	4500.00	feet		
Depth Logger	4497.00	feet		
First Reading	4494.00	feet		
Last Reading	214.00	feet		
Casing Driller	213.00	feet		
Casing Logger	214.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.50 lb/USg	48.00 CP		
PH / Fluid Loss	9.50	8.00 ml/30Min		
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.87 @ 77.0	ohm-m		
Rmf @ Measured Temp	0.70 @ 77.0	ohm-m		
Rmc @ Measured Temp	1.04 @ 77.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.61 @110.0	ohm-m		
Time Since Circulation	4 HOURS			
Max Recorded Temp	110.00	deg F		
Equipment Name	COMPACT			
Equipment / Base	13096	LIB		
Recorded By	L. SCOTT			
Witnessed By	CHASE THOMAS			
S.O.# / JOB#	3534694		LB12-072	

BOREHOLE RECORD

Last Edited: 22-MAR-2012 11:54

Bit Size inches	Depth From feet	Depth To feet
7.875	214.00	4497.00

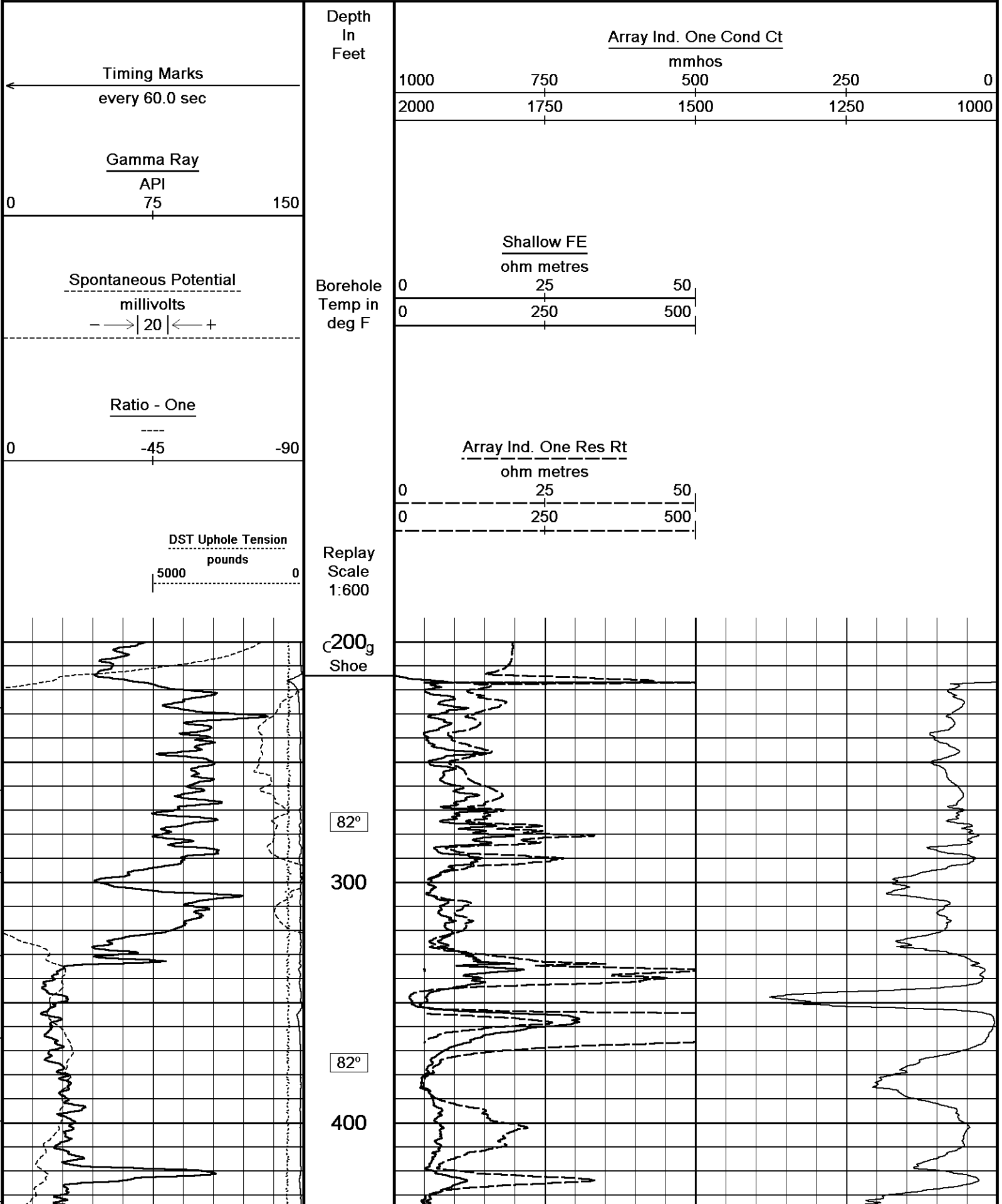
CASING RECORD

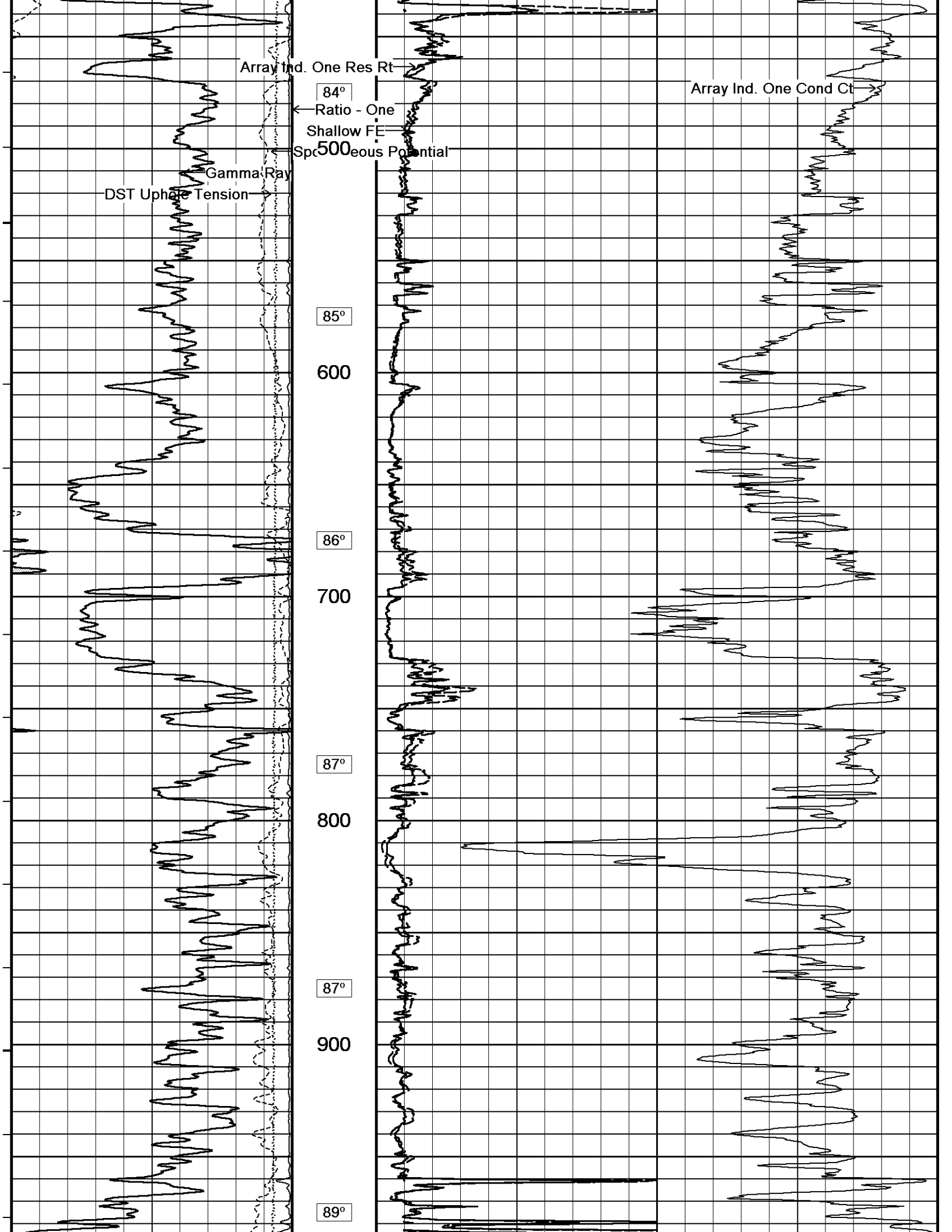
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	214.00	24.00

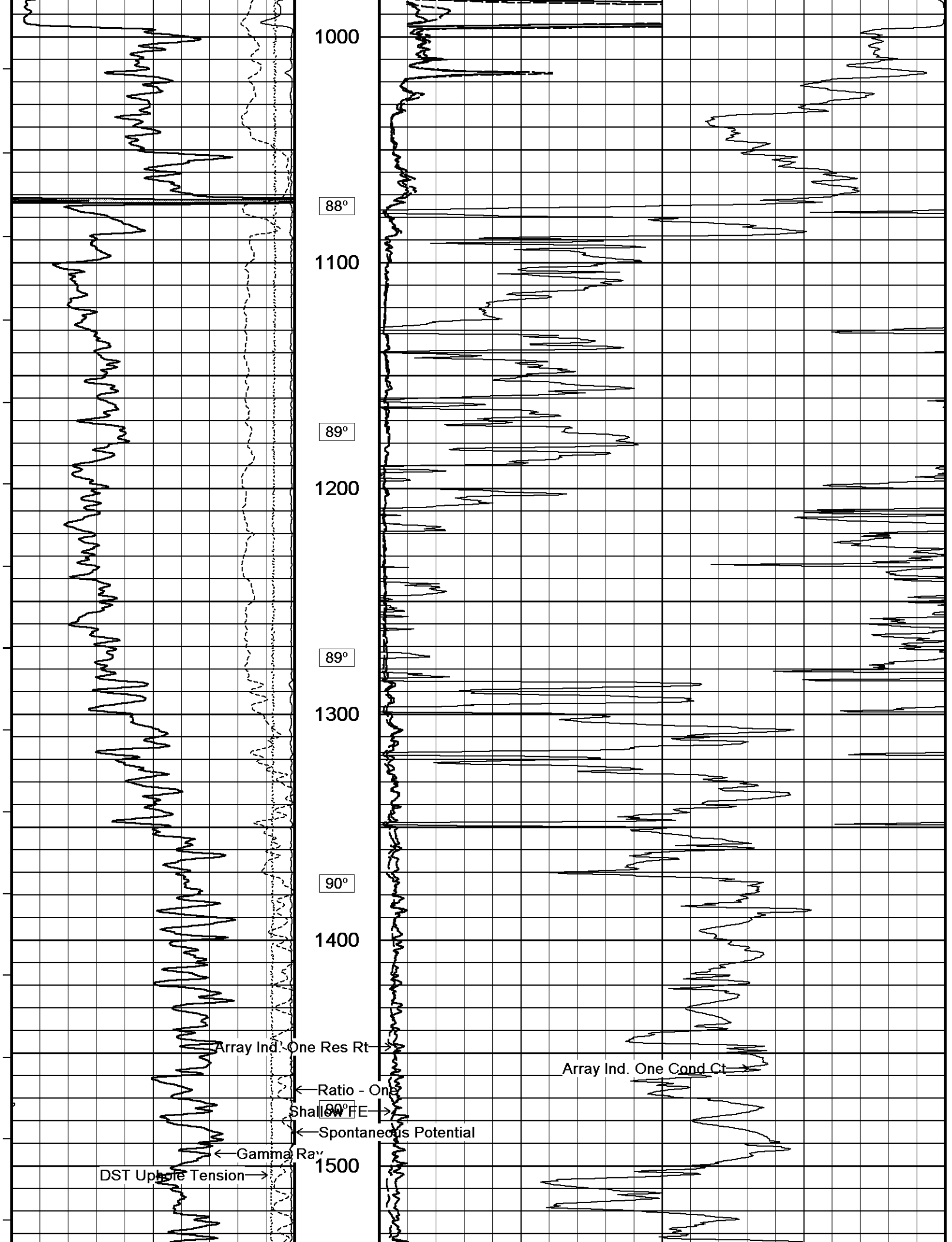
REMARKS

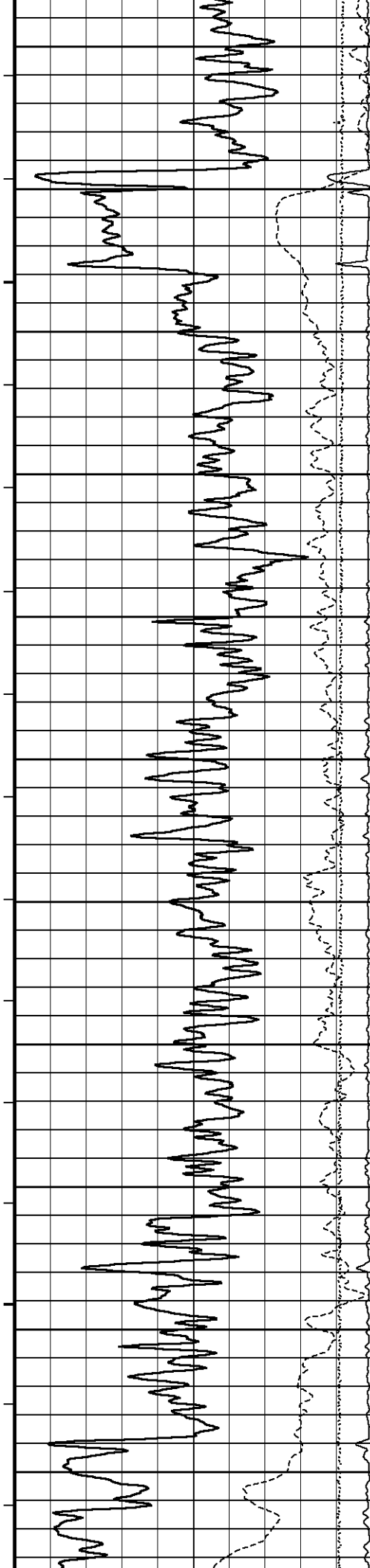
Tools Used: MPD, MCG, MDN, MFE, MAI, MML
Hardware: MPD: 8 inch profile plate used. MAI and MFE: 0.5 Inch standoffs used. MDN: Dual Bowspring used.
2.71 G/CC Limestone density matrix used to calculate porosity.
Borehole rugosity, tight pulls, and washouts will affect data quality.
All intervals logged and scaled per customer's request.
Annular volume with 4.5 inch production casing = 263 cu. ft
Total hole volume from TD to Surface Casing= 2037 cu. ft.
Service order #3534694
Rig: Duke # 2
Engineer: L. Scott
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.









91°

1600

92°

1700

93°

1800

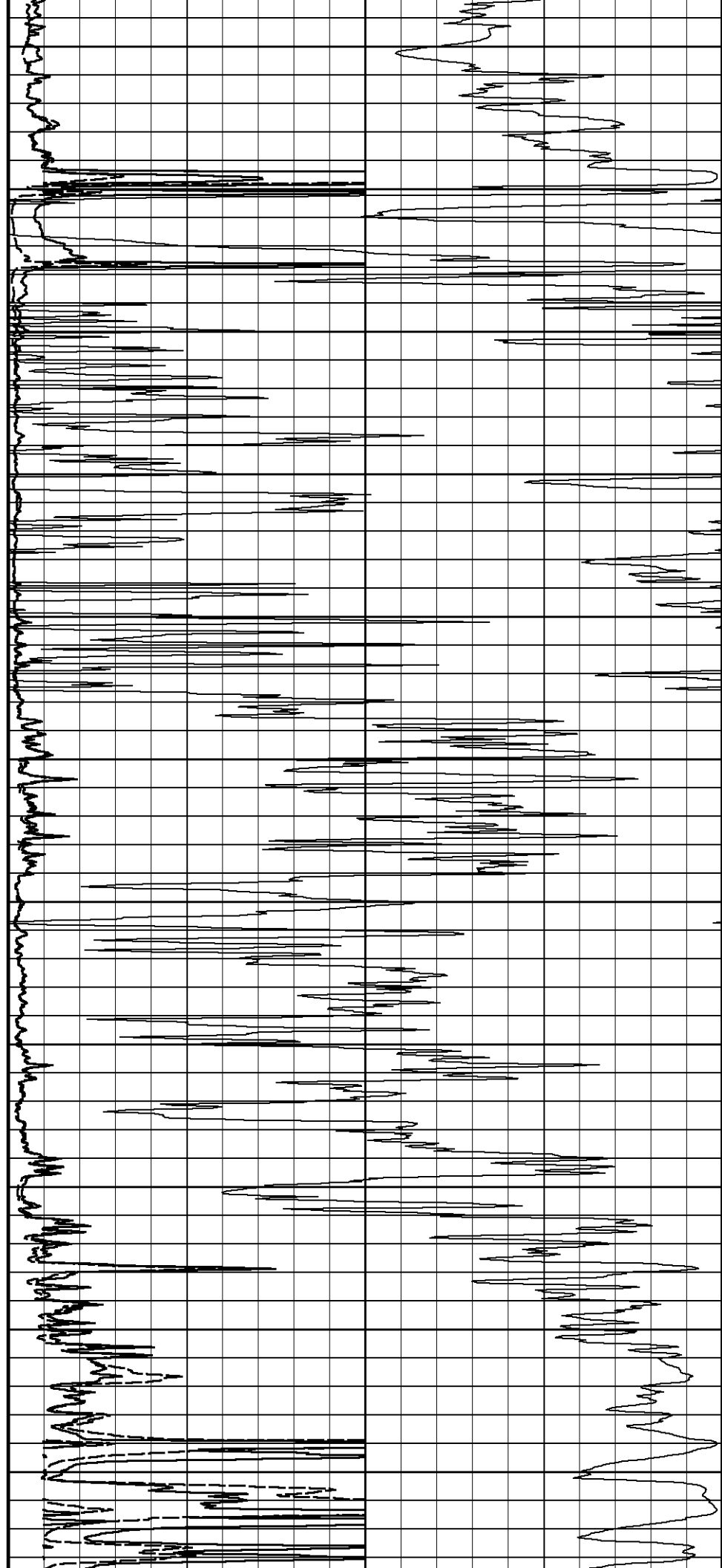
93°

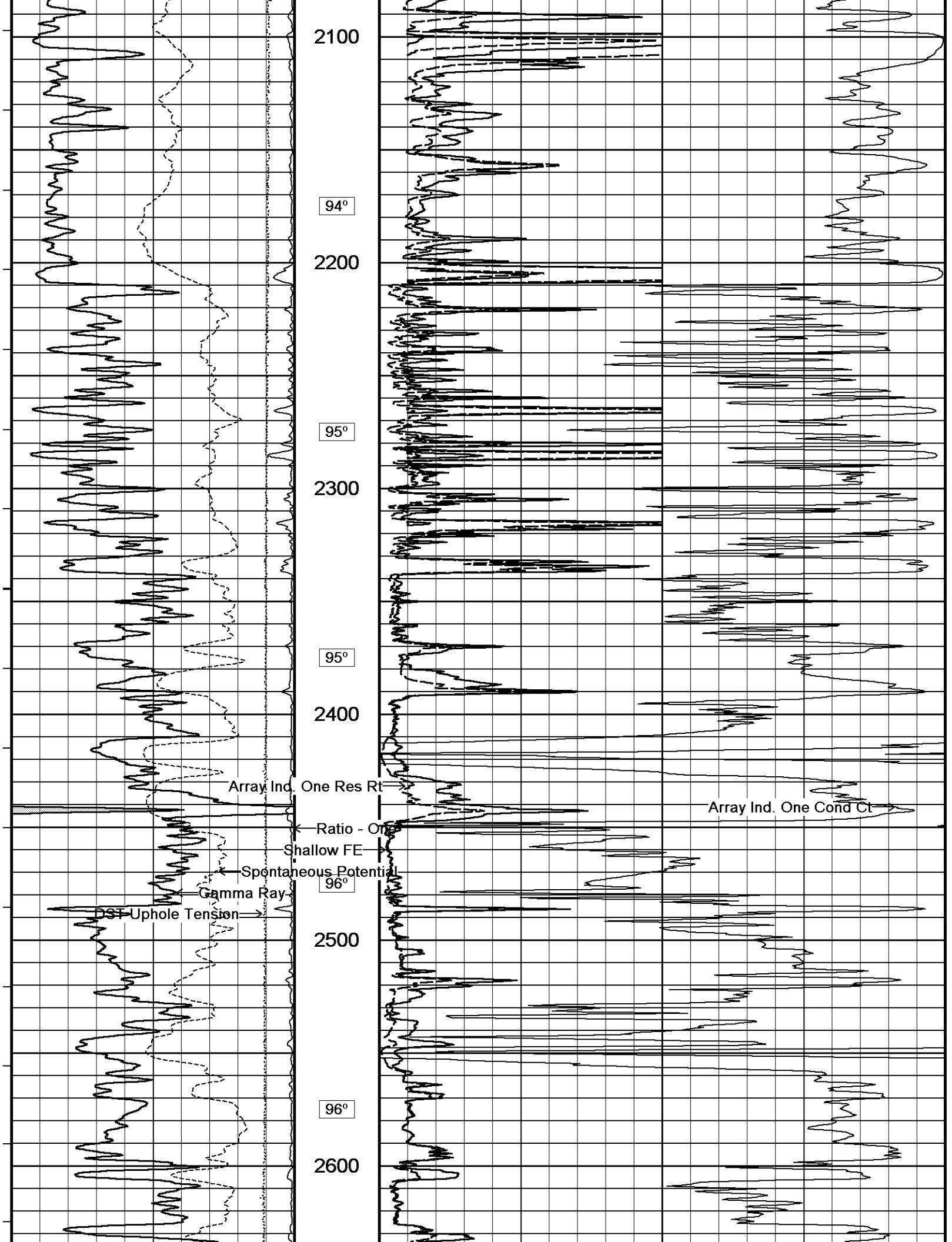
1900

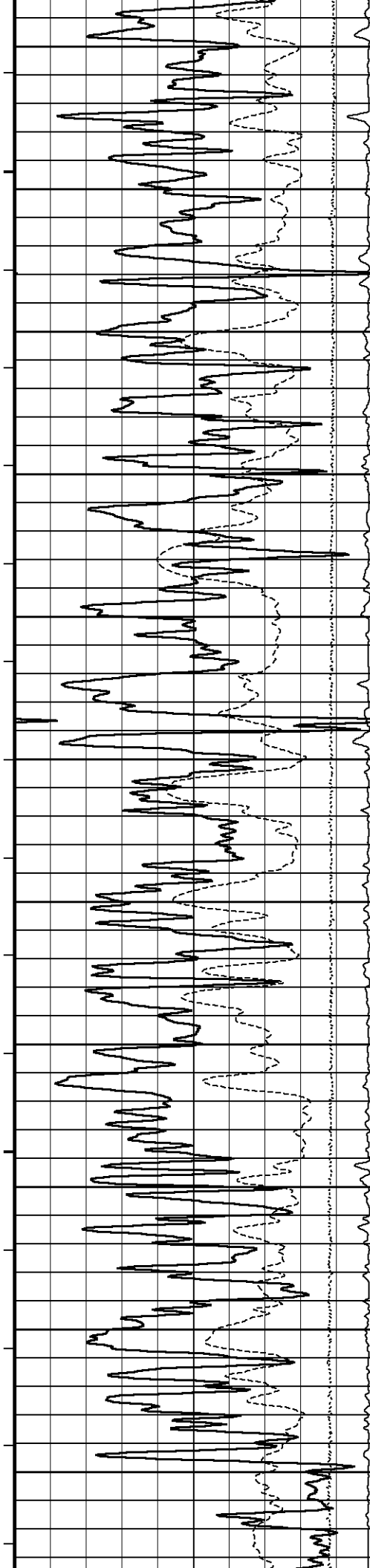
93°

2000

94°







97°

2700

97°

2800

98°

2900

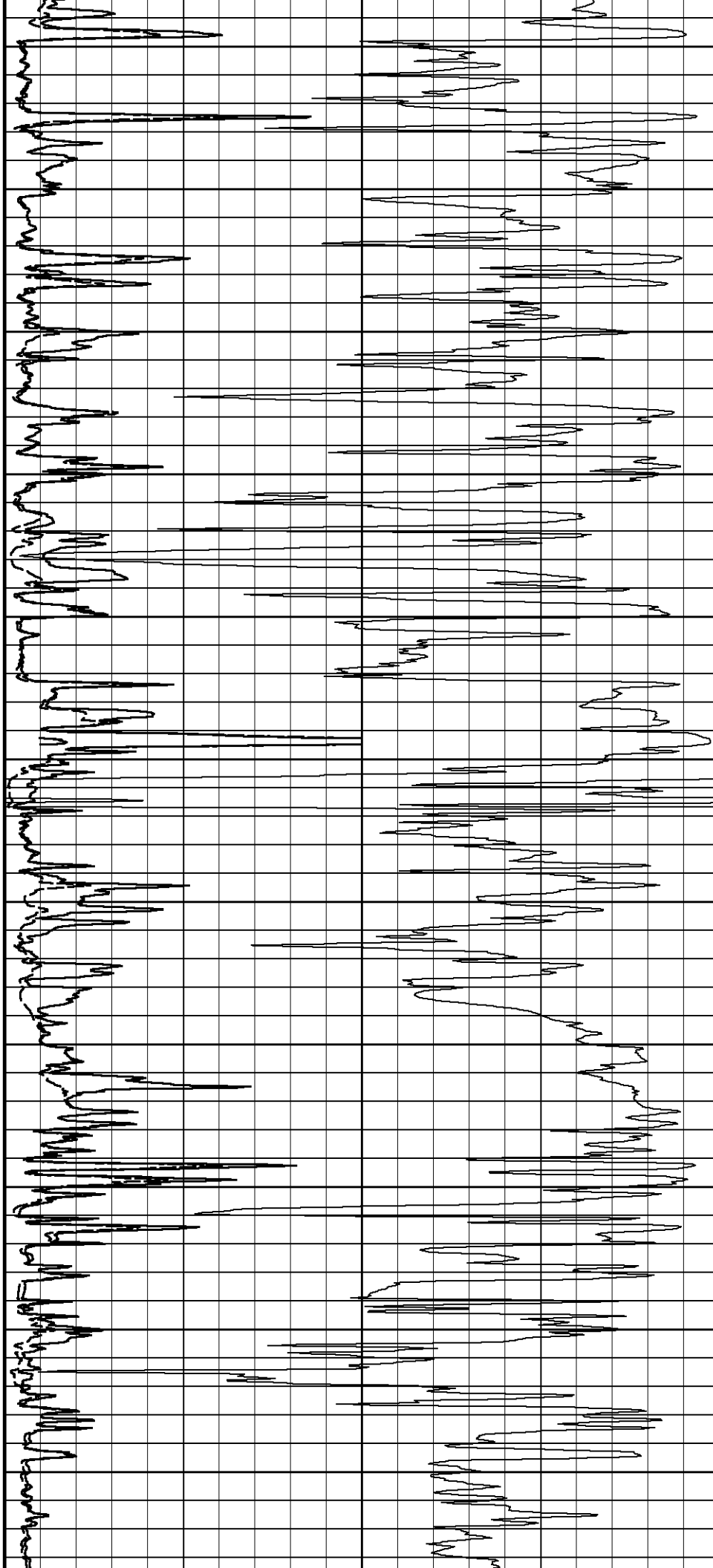
99°

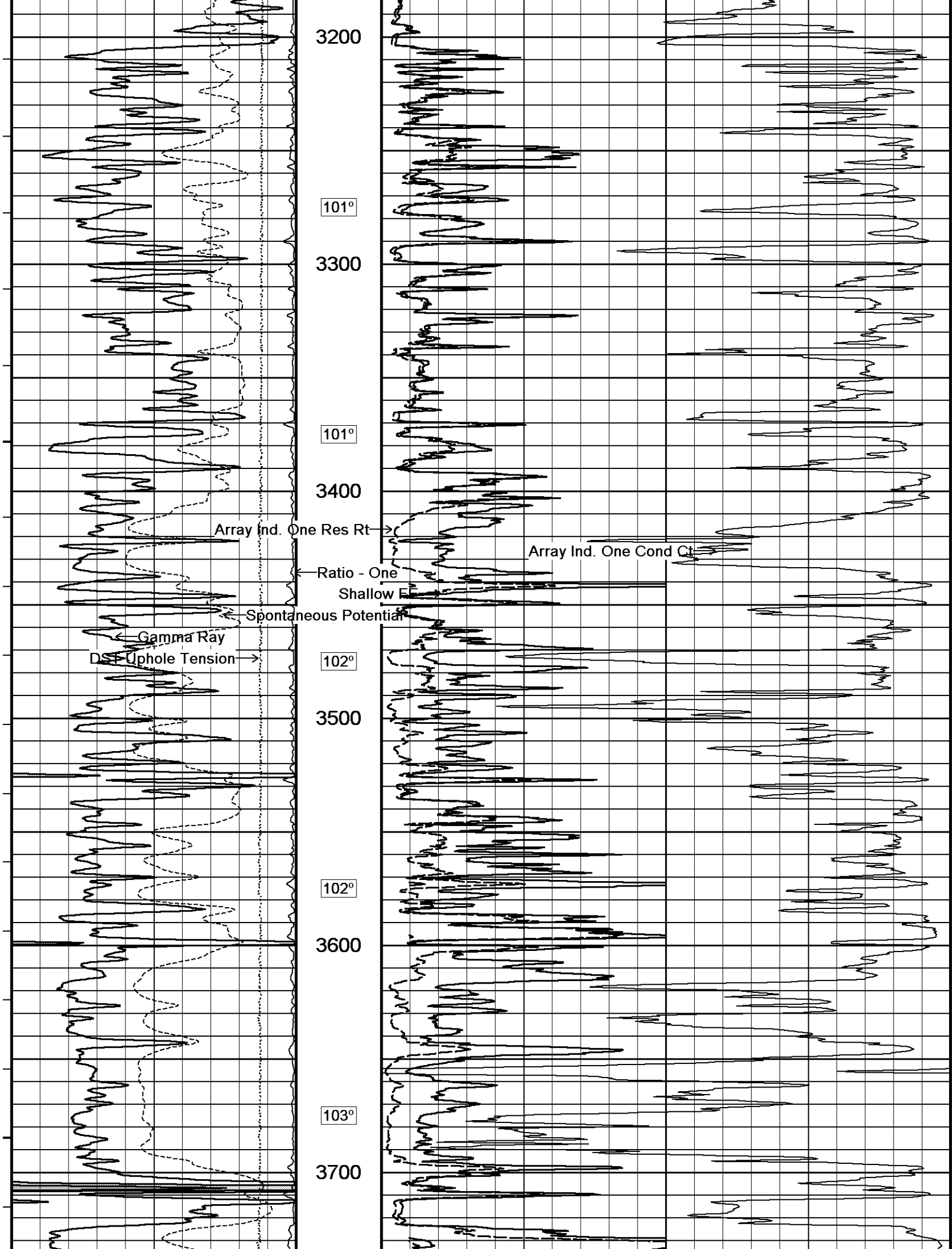
3000

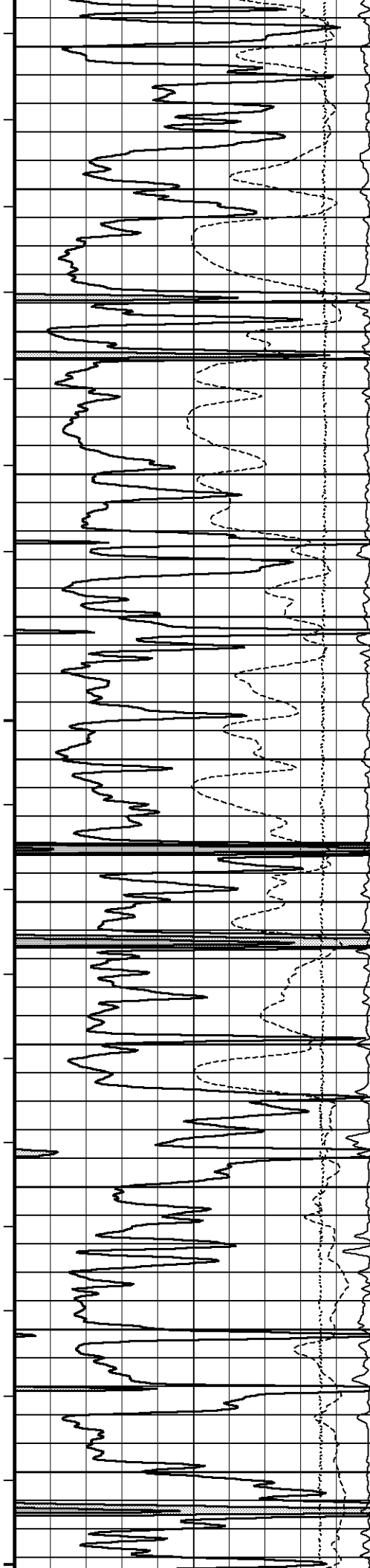
99°

3100

100°







104°

3800

105°

3900

105°

4000

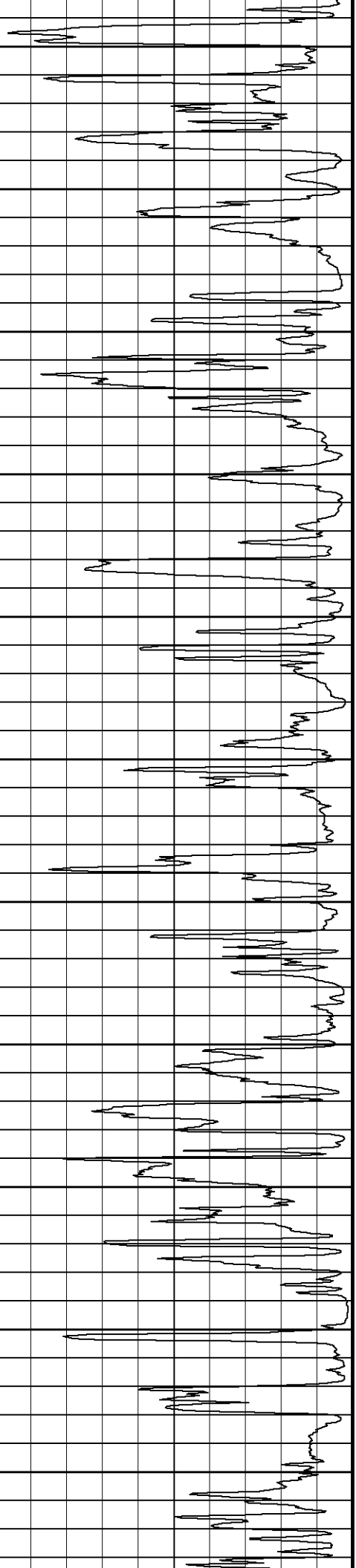
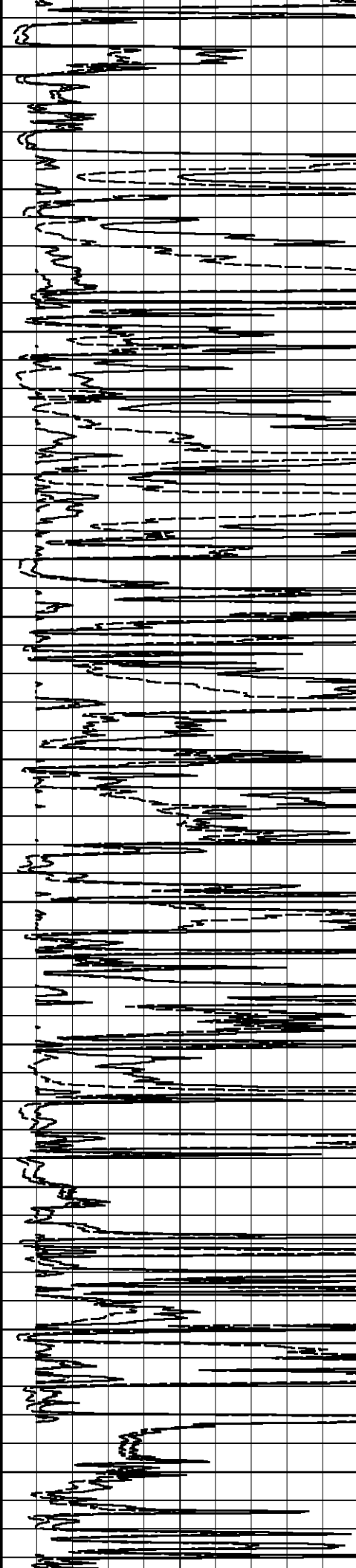
105°

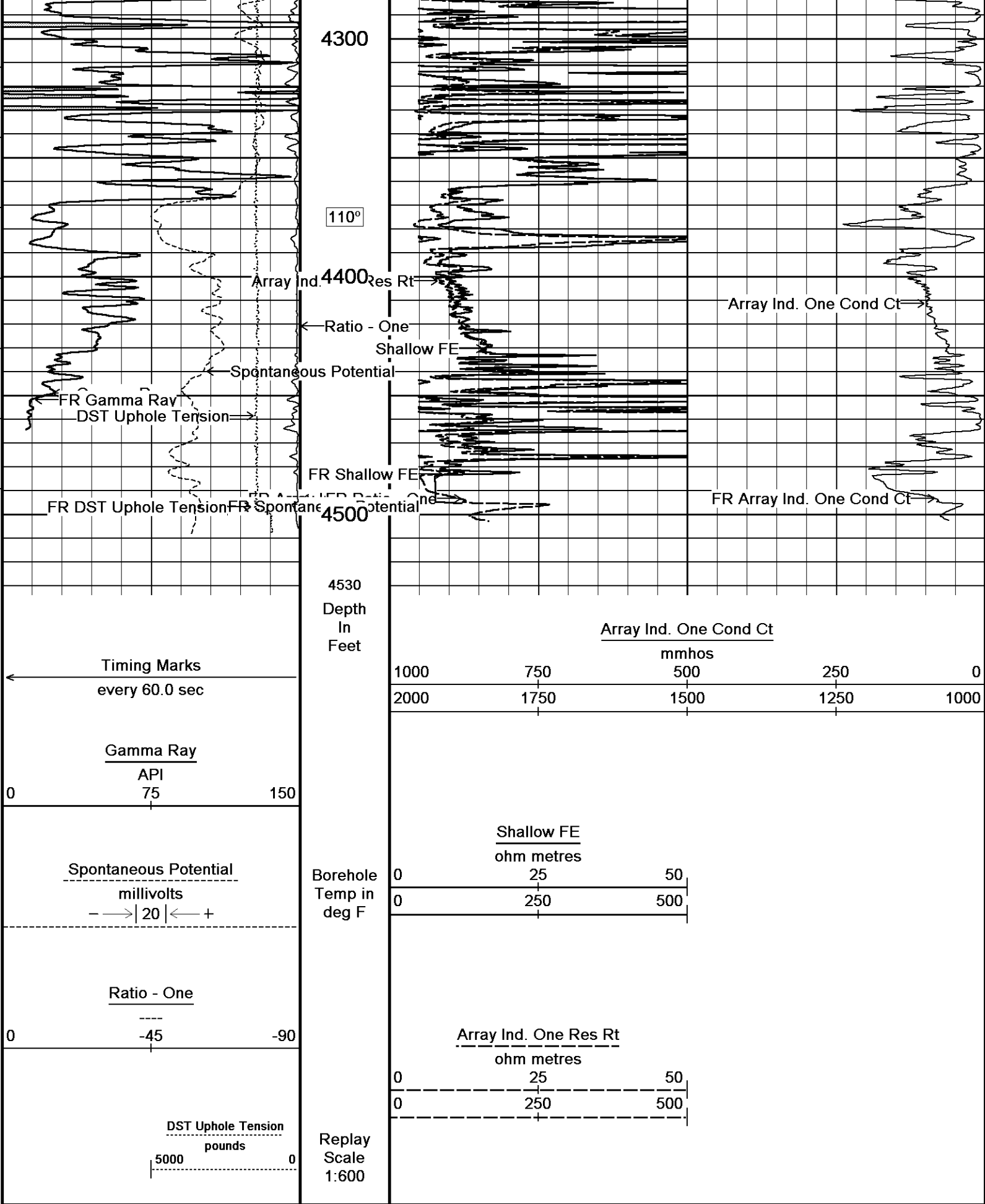
4100

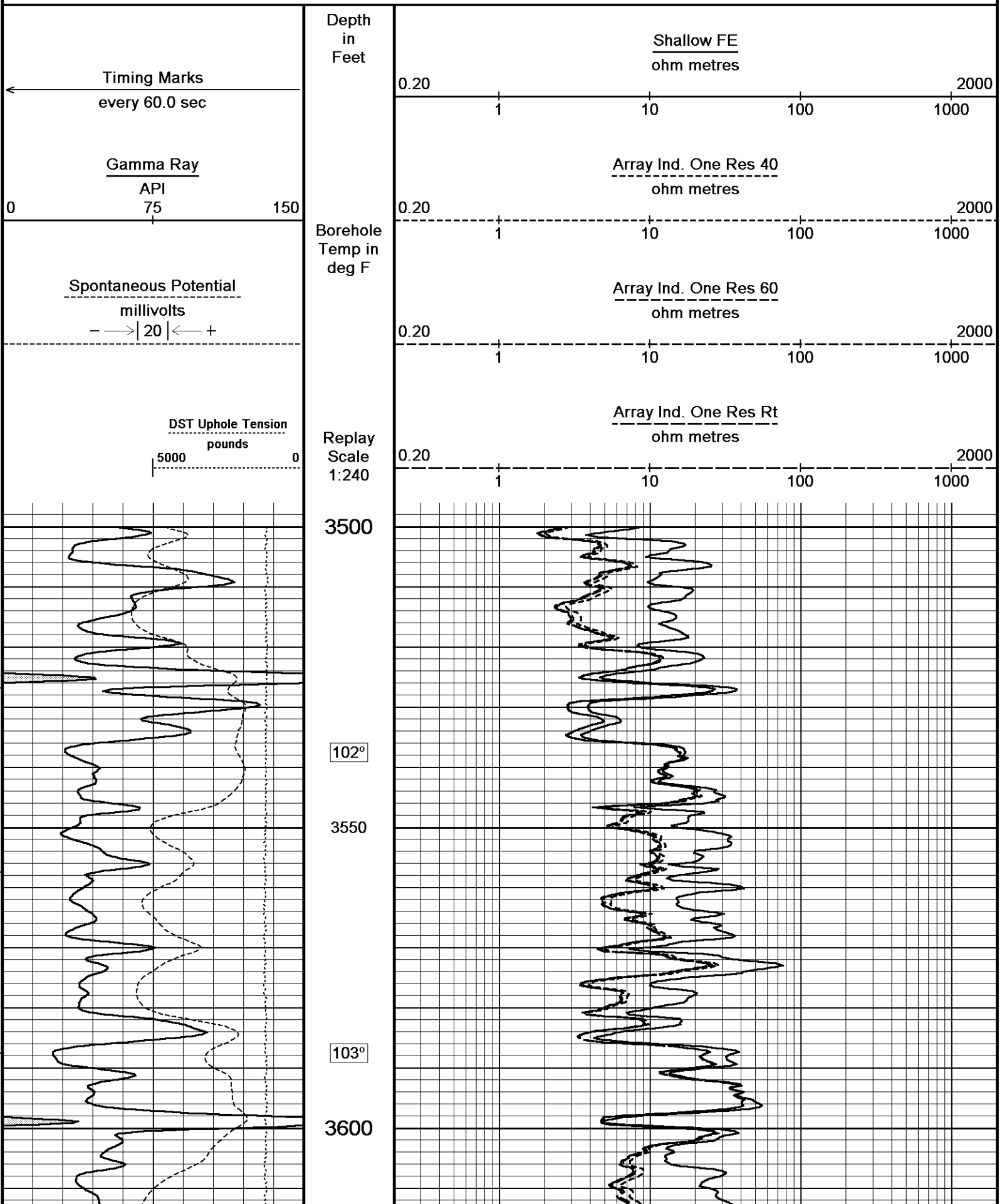
107°

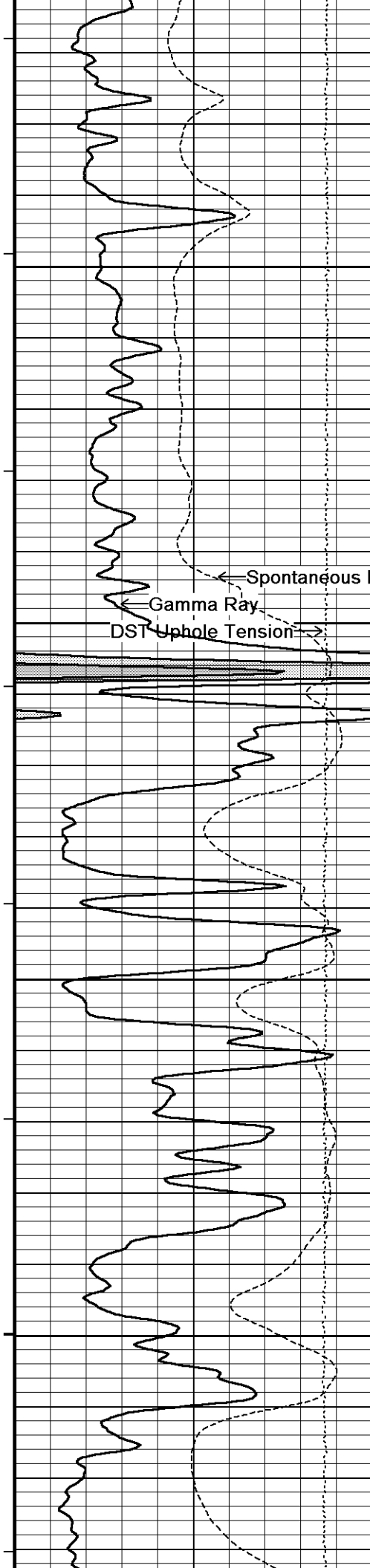
4200

109°









103°

3650

Array Ind. One Res Rt

Array Ind. One Res 60

Array Ind. One Res 40

103°

Shallow FE

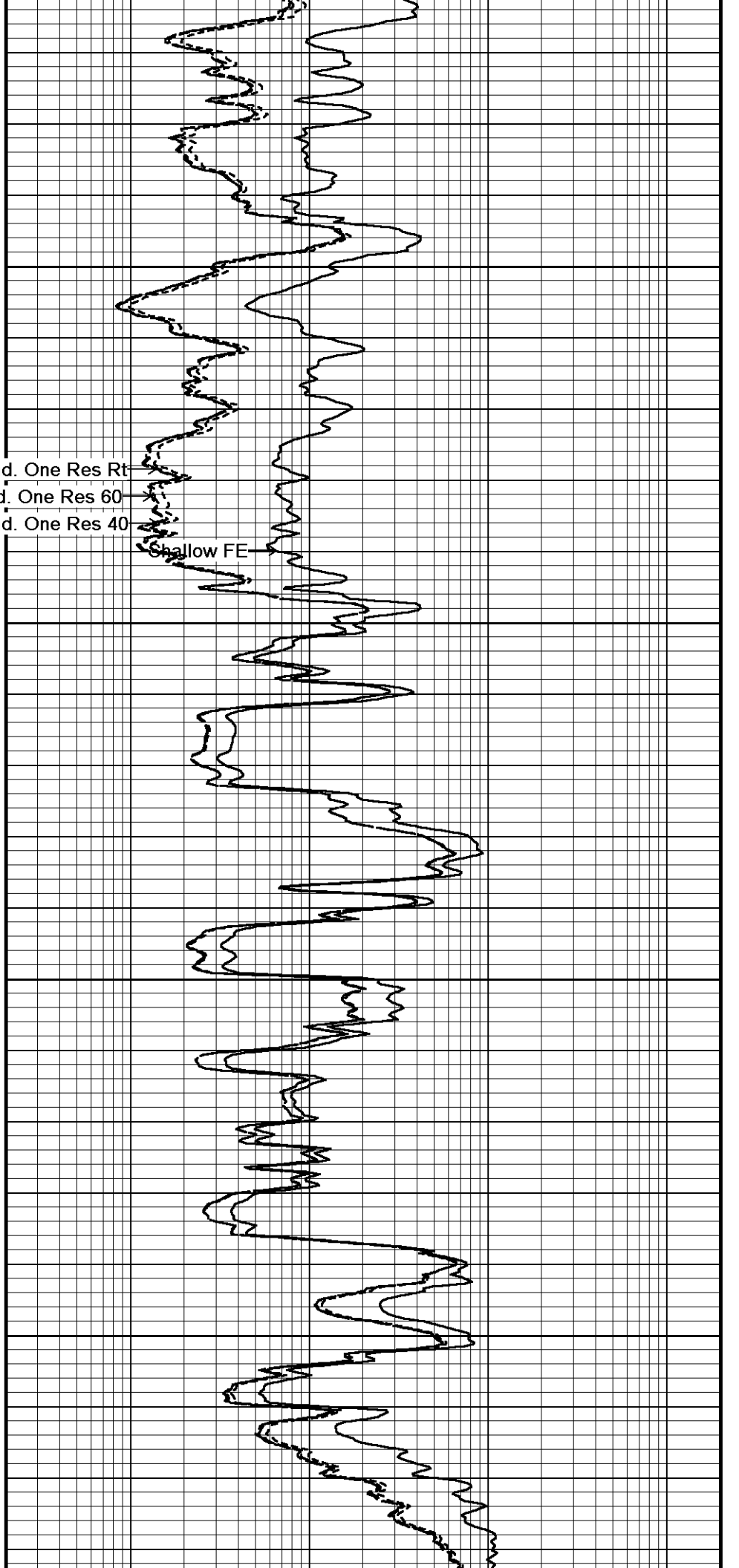
3700

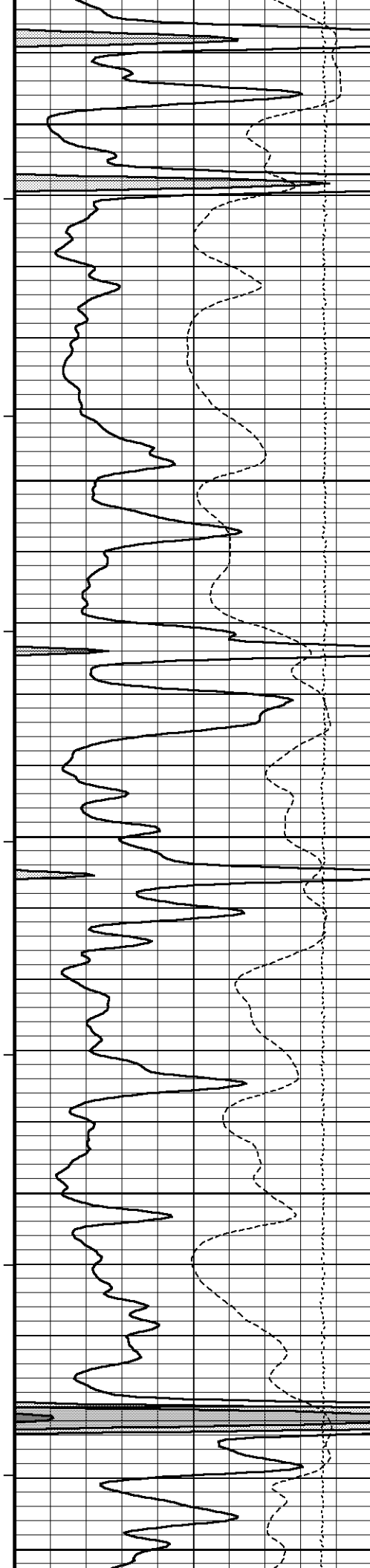
104°

3750

104°

3800





104°

3850

104°

3900

105°

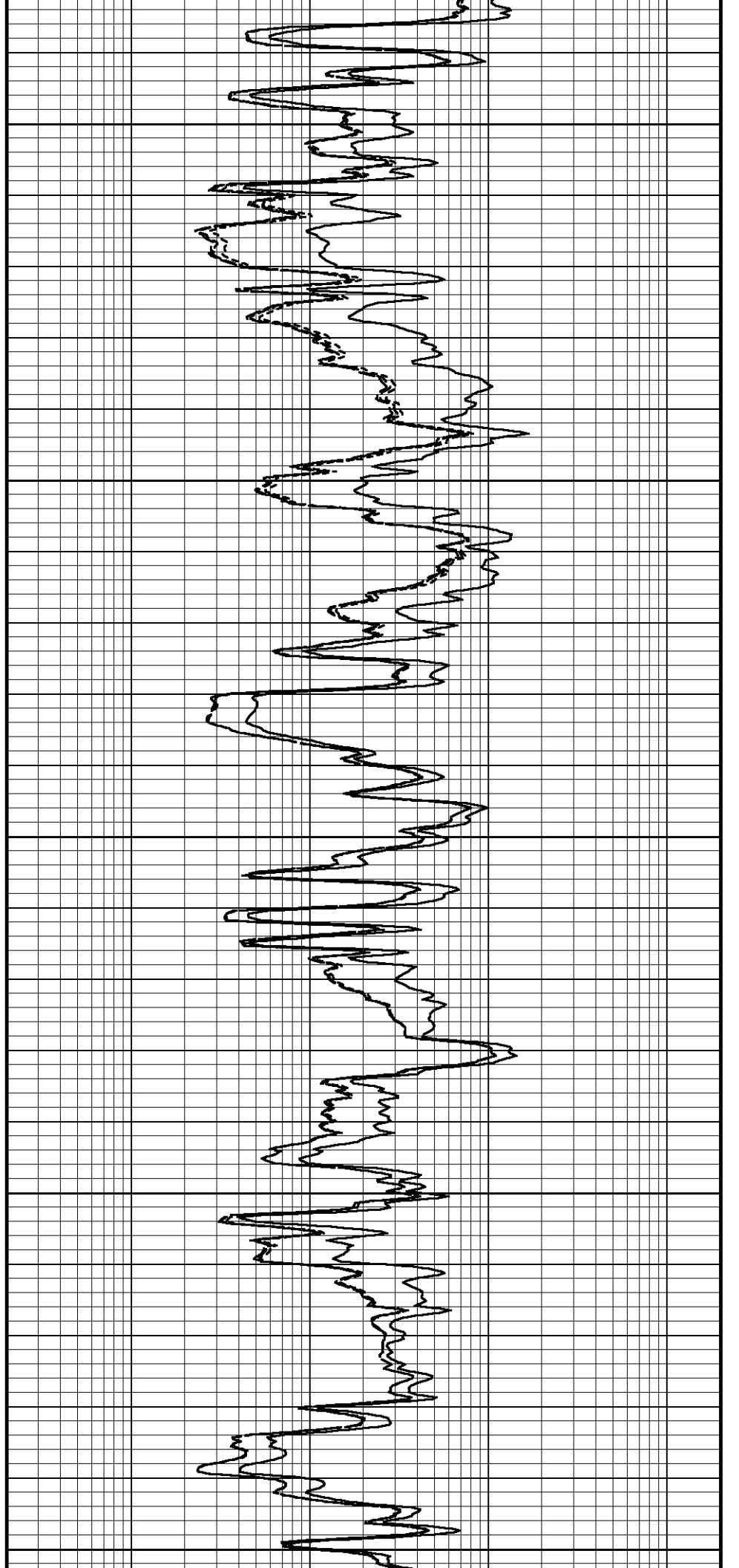
3950

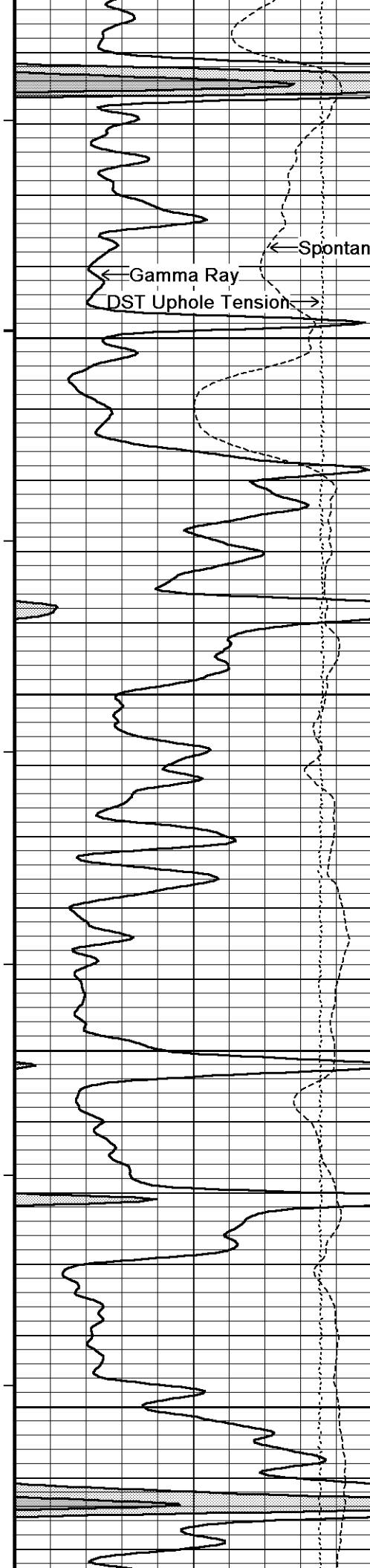
105°

4000

105°

4050





Spontaneous Potential

Gamma Ray

DST Uphole Tension

4100

106°

4150

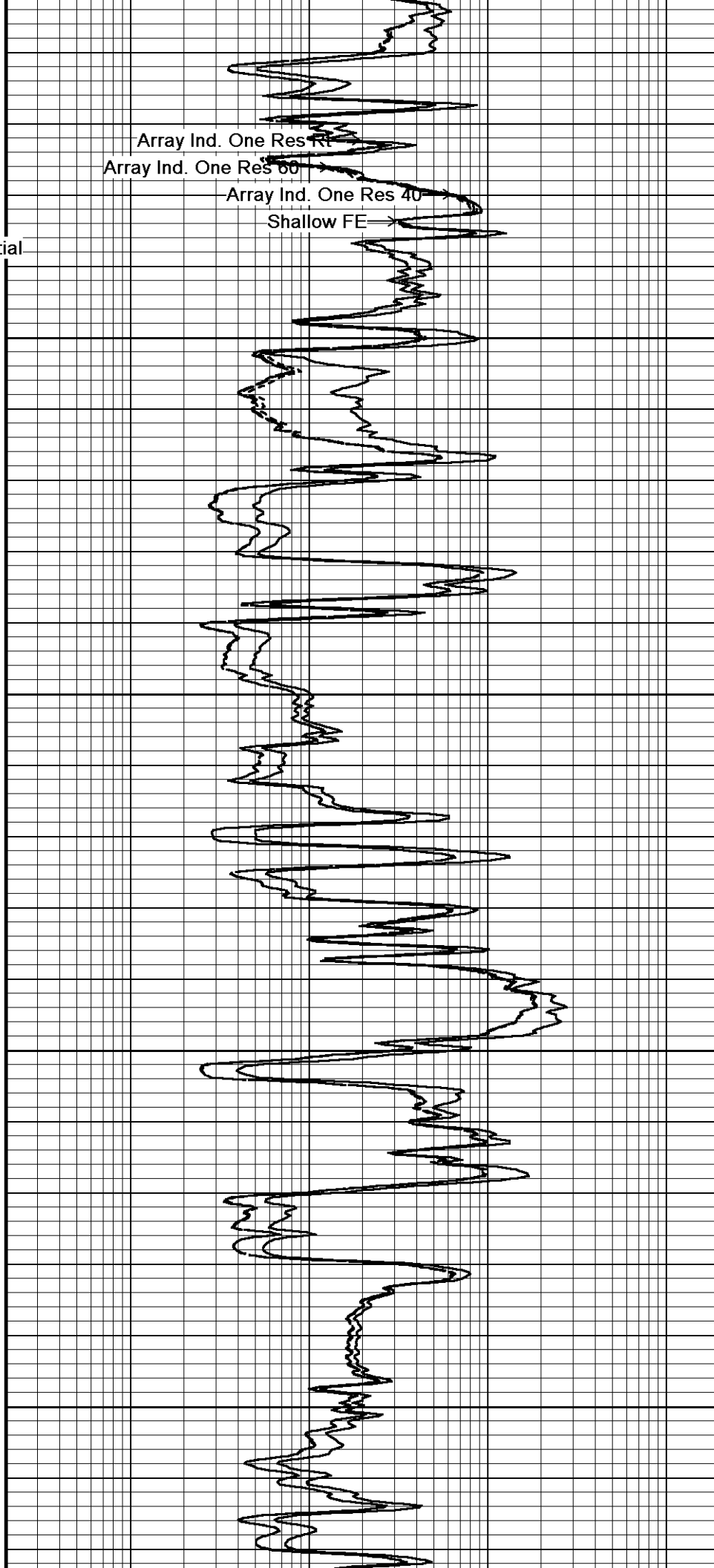
107°

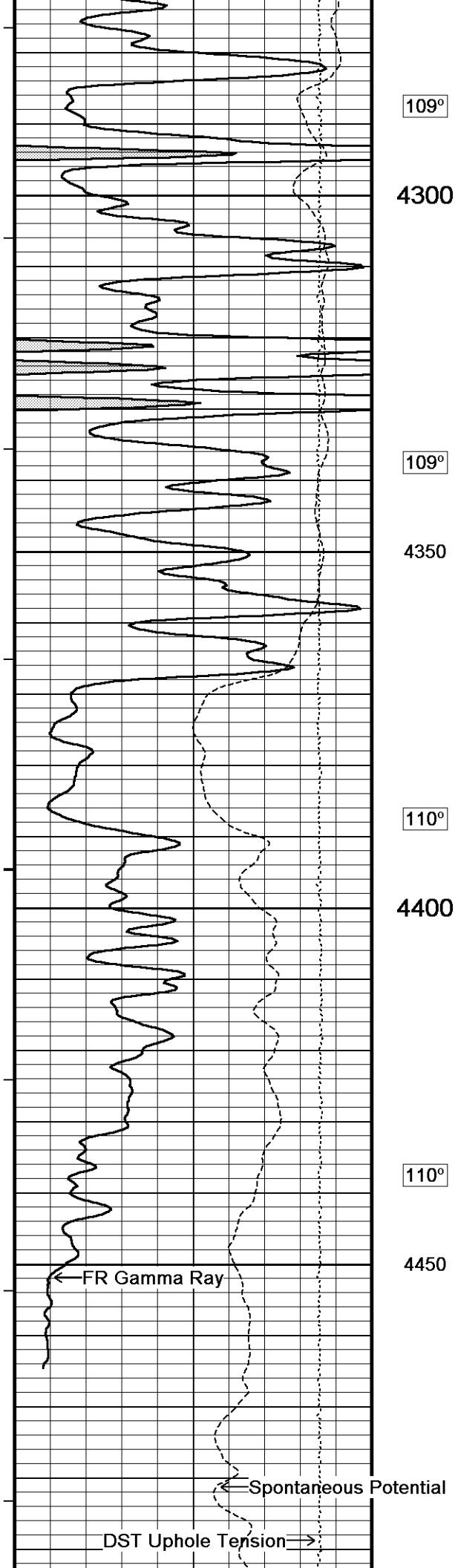
4200

108°

4250

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





109°

4300

109°

4350

110°

4400

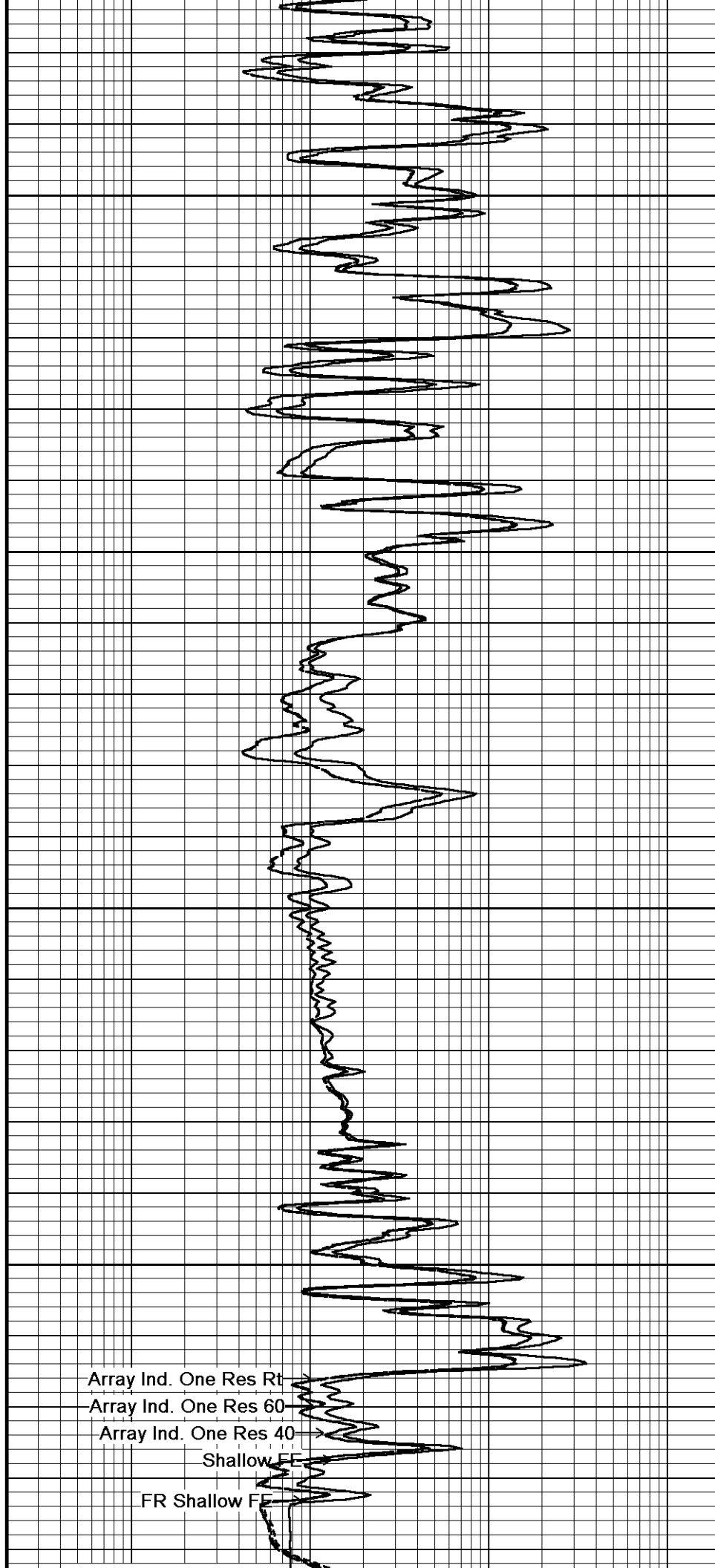
110°

4450

← FR Gamma Ray

← Spontaneous Potential

DST Uphole Tension →



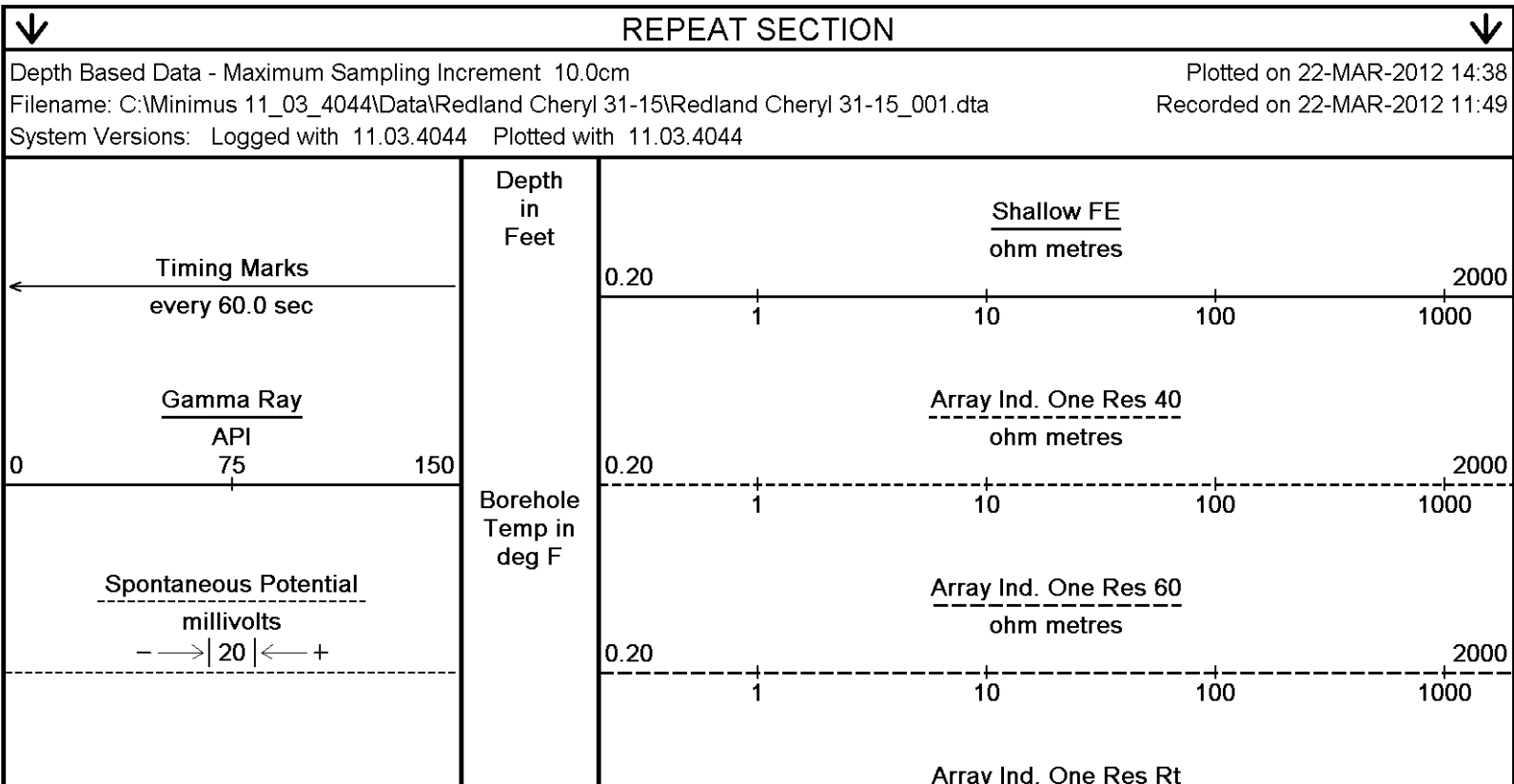
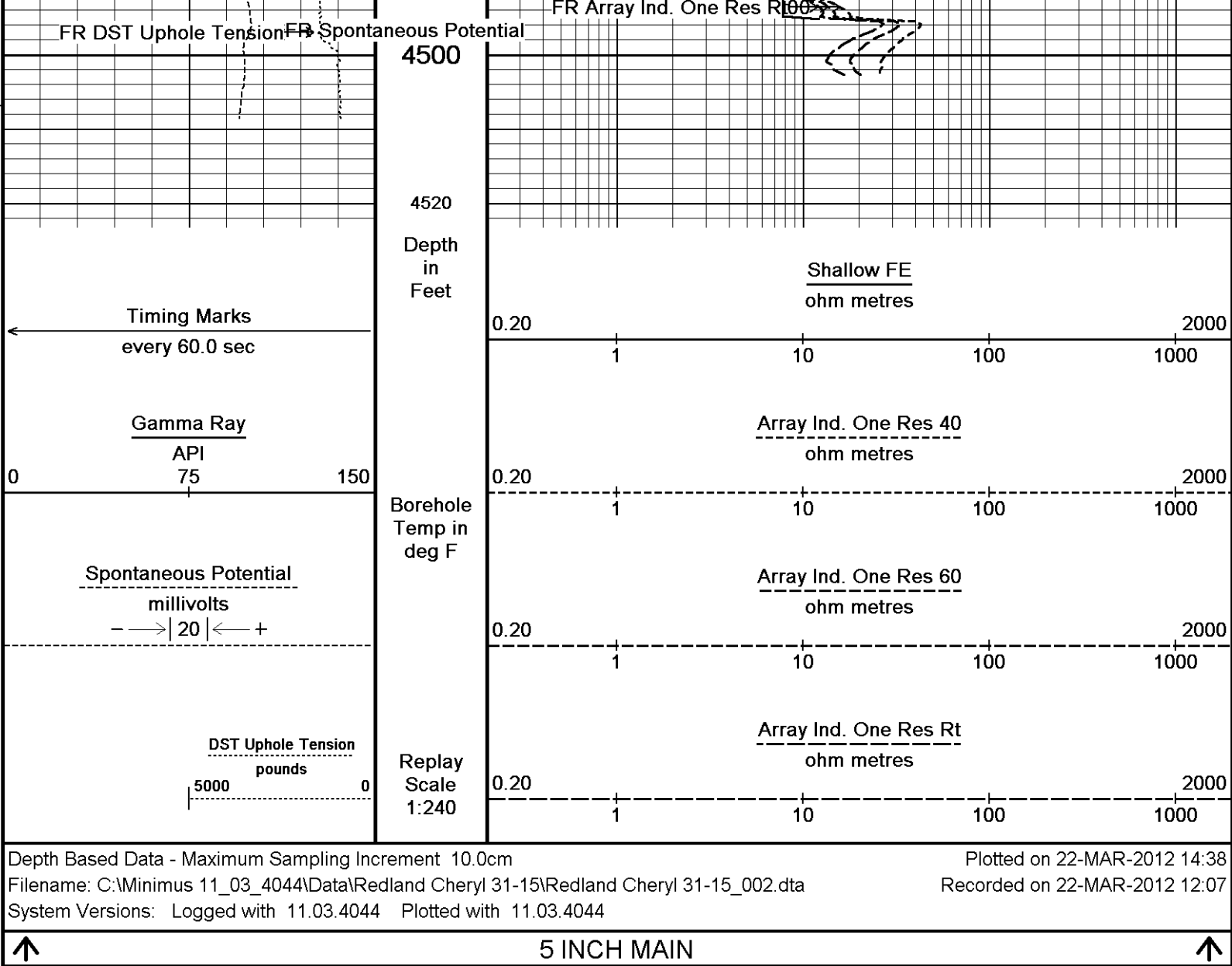
Array Ind. One Res Rt →

Array Ind. One Res 60 →

Array Ind. One Res 40 →

Shallow FF →

FR Shallow FF →



DST Uphole Tension
pounds

5000 0

Replay
Scale
1:240

4200

107°

4250

108°

4300

109°

4350

109°

4400

ohm metres

0.20

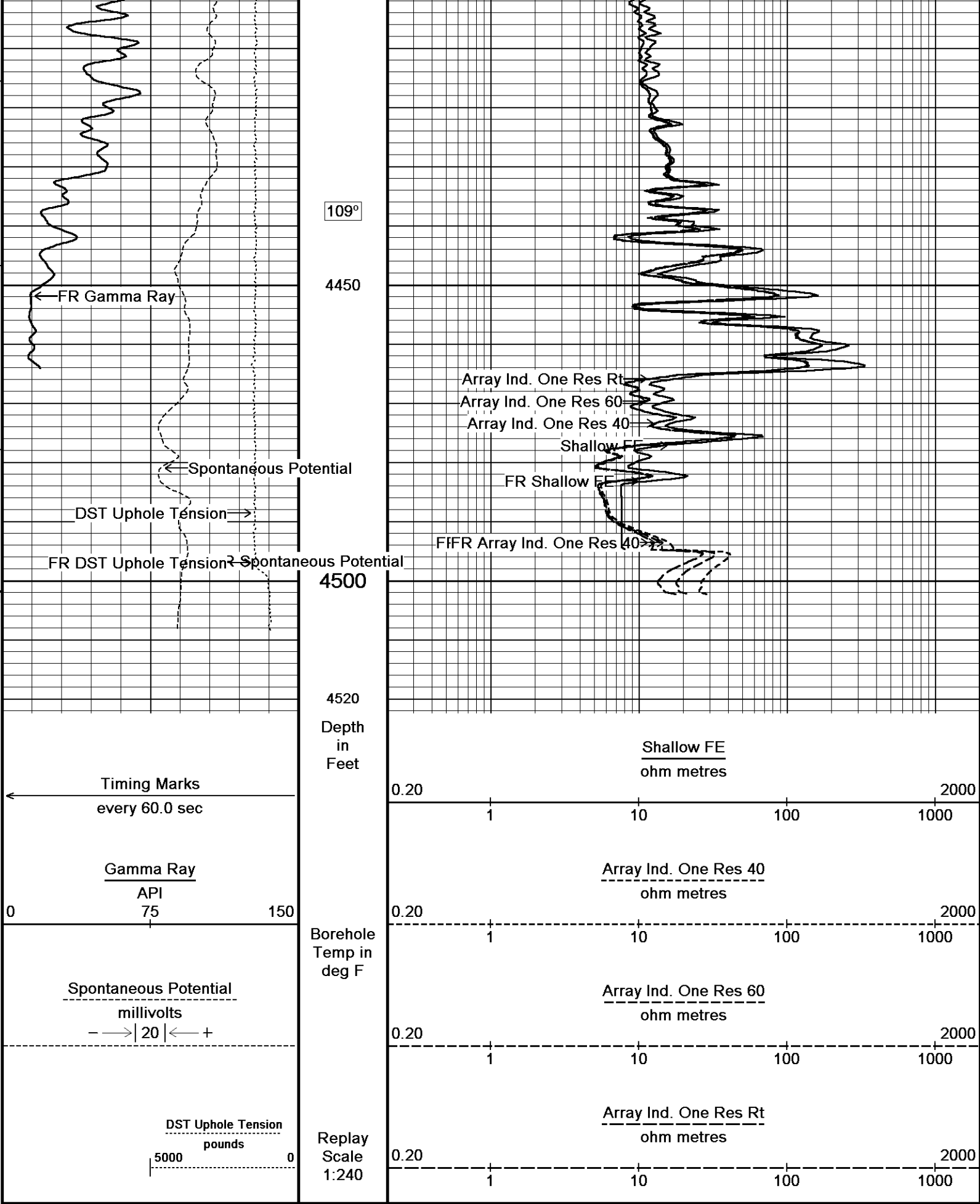
1

10

100

1000

2000



BEFORE SURVEY CALIBRATION

C:\Minimus 11_03_4044\Data\Redland Cheryl 31-15\Redland Cheryl 31-15.dta

General Constants All 000

Last Edited on 22-MAR-2012,11:05

General Parameters

Mud Resistivity	0.870	ohm-metres
Mud Resistivity Temperature	77.000	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	4.500	inches
Caliper for Differential Caliper	Density Caliper	

Rwa Parameters

Porosity used	Limestone Density Por.
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 23-FEB-2012 23:25

Reading No	Measured	Calibrated (lbs)
1	13693.36	0.00
2	14387.39	407.90

Gamma Calibration MCG-C 84

Field Calibration on 22-MAR-2012 00:55

	Measured	Calibrated (API)
Background	79	54
Calibrator (Gross)	744	510
Calibrator (Net)	665	456

Gamma Constants MCG-C 84

Last Edited on 22-MAR-2012,11:06

Gamma Calibrator Number	grc141	
Mud Density	1.14	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

SP Calibration MCG-C 84

Field Calibration on 22-MAR-2012,00:48

	Measured	Calibrated (mV)
Reference 1	100.3	100.0
Reference 2	-99.7	-100.0

High Resolution Temperature Calibration MCG-C 84

Field Calibration on 22-MAR-2012,00:47

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

High Resolution Temperature Constants MCG-C 84

Last Edited on

Pre-filter Length	11
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Caliper Calibration MML-A 9

Base Calibration on 15-MAR-2012 11:46

Field Calibration on 22-MAR-2012 00:37

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	15186	5.98
2	18659	7.97
3	21935	9.86
4	25881	11.92
5	0	0.00
6	N/A	N/A

Field Calibration	Measured Caliper (in) 5.98	Actual Caliper (in) 5.98	
Micro Normal and Micro Inverse Calibration MML-A 9			Base Calibration on 15-MAR-2012 14:42 Field Check on 22-MAR-2012 00:35
Base Calibration			
Channel	Resistor 1	Measured Resistor 2	Calibrated (ohm-m) Resistor 1 Resistor 2
Micro Normal	12.0	59.5	2.6 12.8
Micro Inverse	15.5	77.7	1.7 8.4
Channel	Base Check (ohm-m)		Field Check (ohm-m)
Micro Normal	32.5		32.5
Micro Inverse	16.4		16.5
Micro Normal and Micro Inverse Constants MML-A 9			Last Edited on 20-MAR-2012,03:51
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 39			Base Calibration on 12-MAR-2012 14:56 Field Check on 22-MAR-2012 01:02
Base Calibration			
	Near	Measured Far	Calibrated (cps) Near Far
	2762	87	3714 110
Ratio	31.770		33.764
Field Calibrator at Base	Calibrated (cps)		
	2387 3366		
Ratio	0.709		
Field Check	Calibrated (cps)		
	2368 3400		
Ratio	0.696		
Neutron Constants MDN-A.B 39			Last Edited on 22-MAR-2012,01:02
Neutron Source Id	N1095		
Neutron Jig Number	NECD117		
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
Dolomite Sigma	4.70		cu
Formation Pressure Source	None		
Formation Pressure	N/A		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 67			Base Calibration on 15-MAR-2012 15:00 Field Check on 22-MAR-2012 00:32
Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	958.8	126.8	
Base Check	281.1		
Field Check	281.0		
FE Constants MFE-A.A 67			Last Edited on 21-MAR-2012,06:58

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 188			Field Calibration on 12-AUG-2011,21:41
	Measured	Calibrated(Deg F)	
Lower	32.00	32.00	
Upper	68.00	68.00	

High Resolution Temperature Constants MAI-A.A 188		Last Edited on 21-JUN-2011,19:05
Pre-filter Length	11	

Induction Calibration MAI-A.A 188					Base Calibration on 04-JAN-2012,13:31	
					Field Check on 22-MAR-2012 00:31	
Base Calibration						
Test Loop Calibration			Measured		Calibrated (mmho/m)	
Channel		Low	High		Low	High
1		16.9	470.2		9.3	966.2
2		6.4	377.1		7.6	821.4
3		3.9	257.8		5.2	566.0
4		1.7	135.1		2.6	279.2
Array Temperature			66.3	Deg F		
Channel	Base Check (mmho/m)			Field Check (mmho/m)		
		Low	High		Low	High
1		0.0	0.0		13.3	3867.7
2		0.0	0.0		30.0	3585.1
3		0.0	0.0		28.0	3079.1
4		0.0	0.0		19.9	2047.1
Deep		0.0	0.0		17.3	1955.2
Medium		0.0	0.0		40.5	4115.4
Shallow		0.0	0.0		44.8	5370.2
Array Temperature			0.0		60.7	Deg F

Induction Constants MAI-A.A 188			Last Edited on 22-MAR-2012,00:28
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	

Caliper Calibration MPD-B 65

Base Calibration on 06-FEB-2012 15:42
Field Calibration on 22-MAR-2012 00:33

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	14246	3.99
2	22911	5.98
3	31473	7.97
4	39776	9.86
5	48992	11.92
6	N/A	N/A

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

Photo Density Calibration MPD-B 65

Base Calibration on 06-FEB-2012 16:03
Field Check on 22-MAR-2012 00:47

Density Calibration				
Base Calibration		Measured		Calibrated (sdu)
		Near	Far	
Reference 1	58421	27705	59556	30836
Reference 2	23654	2410	24941	2541

Field Check at Base	1233.9	1179.6
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Field Check	1230.9	1175.8
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PE Calibration				
Base Calibration		Measured		Calibrated
	WS	WH	Ratio	Ratio
Background	226	1097		
Reference 1	21385	58213	0.370	0.371
Reference 2	6241	23505	0.268	0.272

Field Check at Base	225.7	1097.3
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Field Check	223.6	1093.0
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Density Constants MPD-B 65

Last Edited on 22-MAR-2012,11:07

Density Source Id	P57072B	
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
0.00
0.00

DOWNHOLE EQUIPMENT

C:\Minimus 11_03_4044\Data\Redland Cheryl 31-15\Redland Cheryl 31-15.dta

Compact Comms Gamma
MCG-C 84 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log
MML-A 9 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Neutron
MDN-A.B 39 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

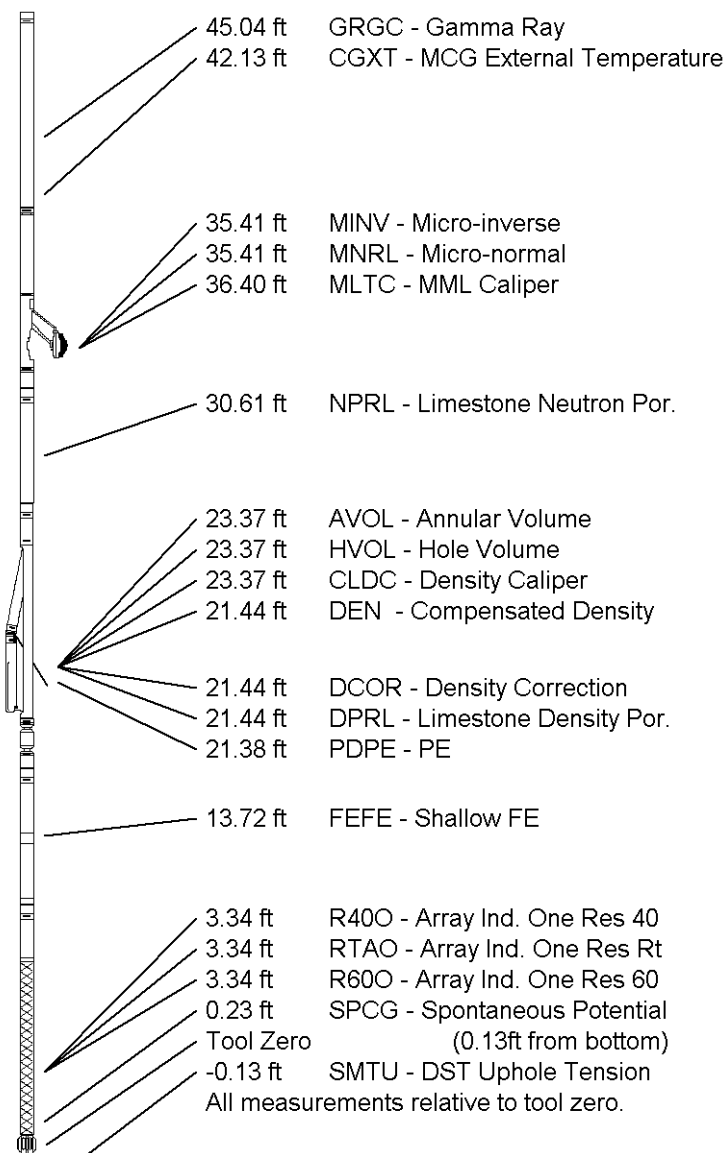
Compact Density/Caliper
MPD-B 65 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 91 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 67 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Induction
MAI-A.A 188 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 50.32 ft Weight: 407.9 lb



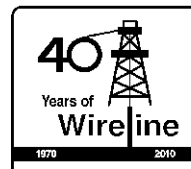
COMPANY	REDLAND RESOURCES, INC.
WELL	CHERYL #31-15
FIELD	MCVICKER SE
PROVINCE/COUNTY	NESS
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2407.00	feet	First Reading	4494.00	feet
Elevation Drill Floor	2405.00	feet	Depth Driller	4500.00	feet
Elevation Ground Level	2399.00	feet	Depth Logger	4497.00	feet



Weatherford®

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG



ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

WELL	MCVICKER SE
FIELD	CHERTLE #3-113
PROVINCE/COUNTY	NESS
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	610' FSL & 2080' FELL
	SE/4

SEC	TRAP	RGE	Other Services
31	208	25W	MPD/MDN

Permanent Datum G.L., Elevation 2399 feet
Log Measured From KB
Drilling Measured From K.B.

Elevations:	feet
KB	2407.00
DF	2405.00
GL	2399.00

Date	4-27-MAR-2011
Run Number	ONE
Depth Driller	4500.00

Depth Logger	4497.00
First Reading	4494.00
Last Reading	214.00

Casing Driller	213.00
Casing Logger	214.00
Bit Size	7 875

Hole Fluid Type	CHEMICAL
Density / Viscosity	9.50 lb/US
RM / Fluid Loss	0.50

Sample Source	FLOWLINE
Rm @ Measured Temp	0.87 @ 77.0

Rmc @ Measured Temp	1.04 @ 77.0
Source Rmif / Rmc	CALC

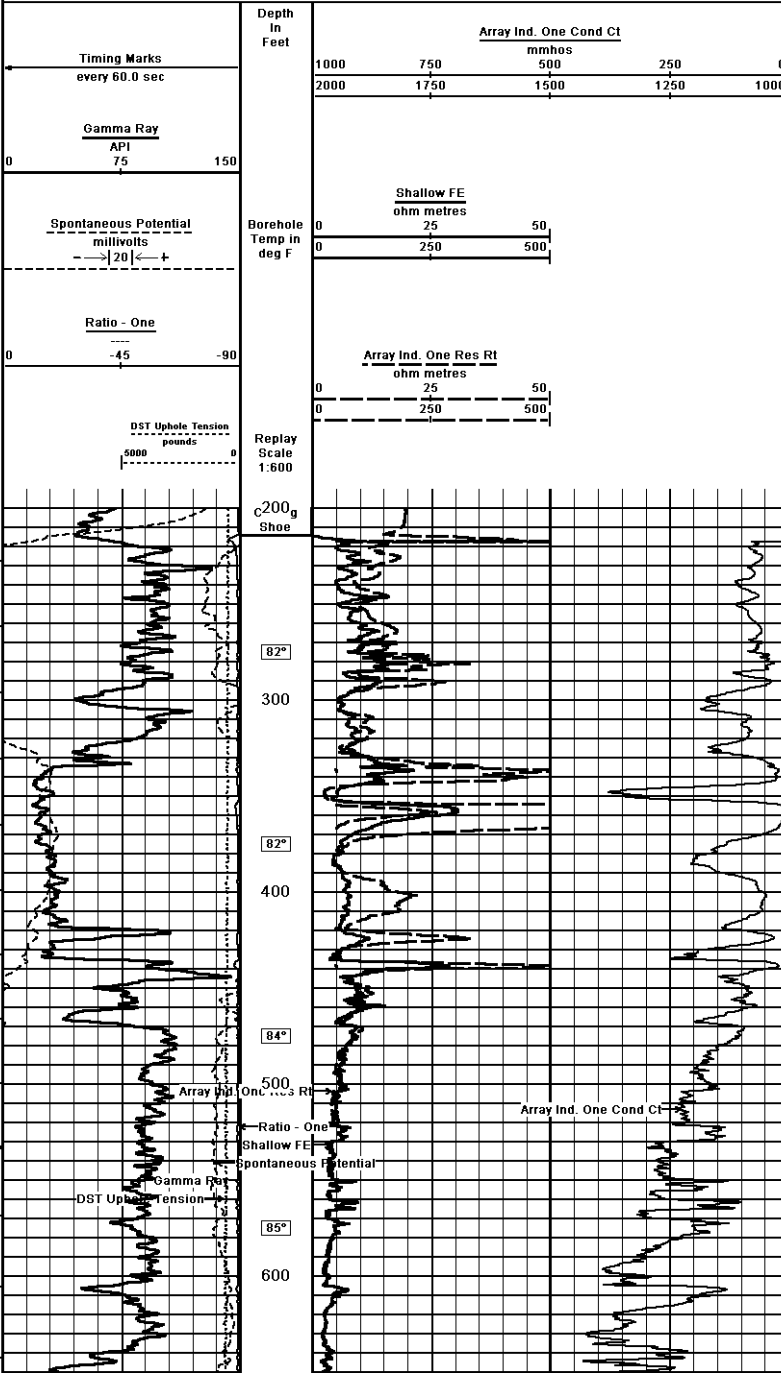
Time Since Circulation	4 HOURS
Max Recorded Temp	110.00

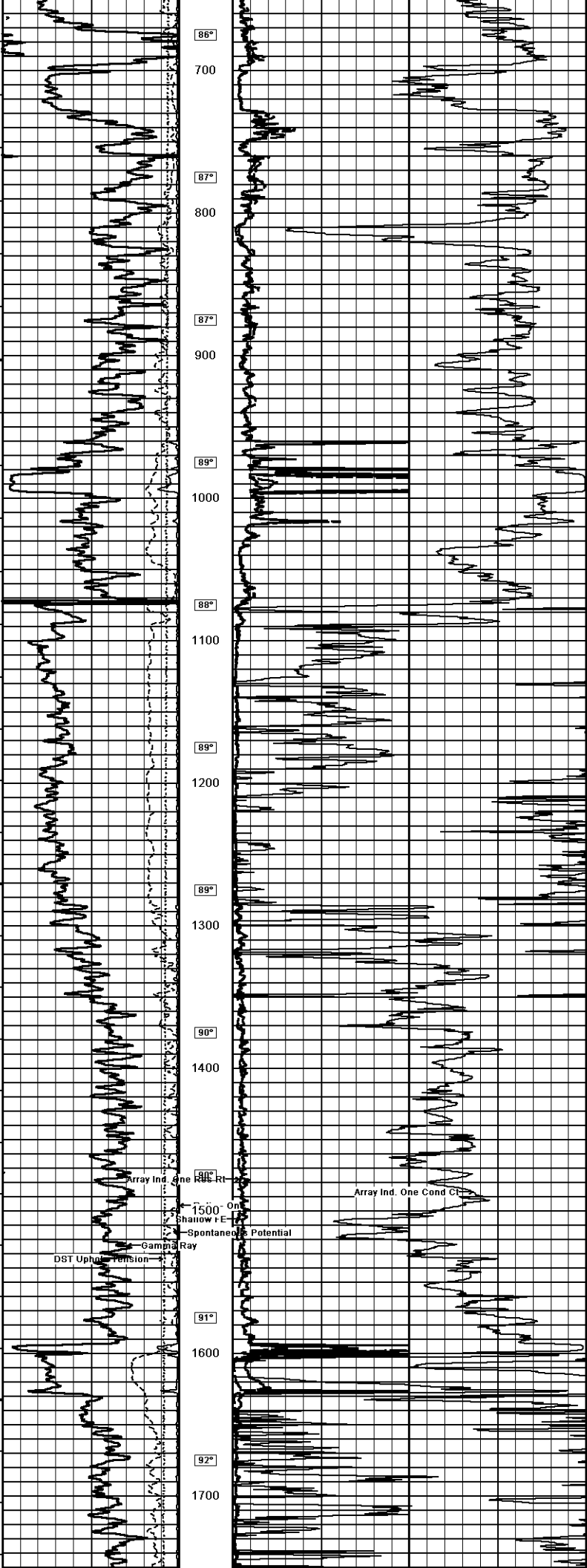
Equipment / Base	13096
Recorded By	L. SCOTT

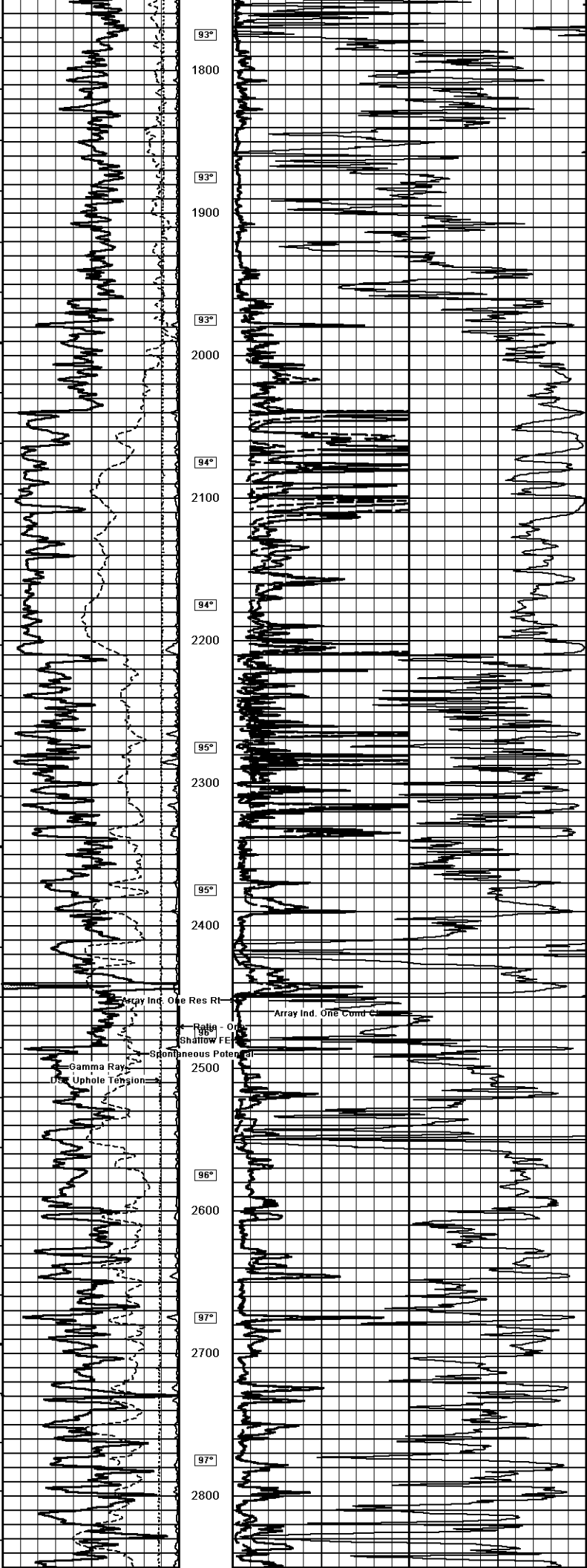
Witnessed by	CHASE INC
S.O.#/JOB#	3534694

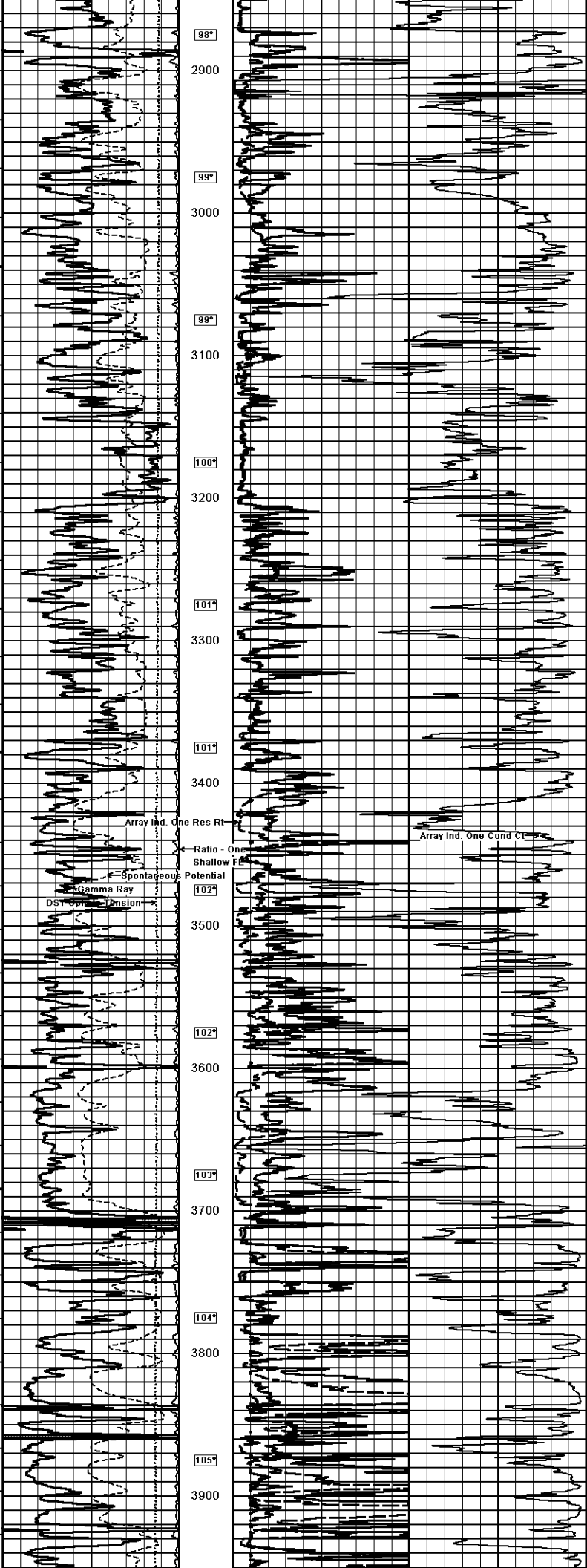
Plotted on 22-MAR-2012 14:38
Recorded on 22-MAR-2012 12:00

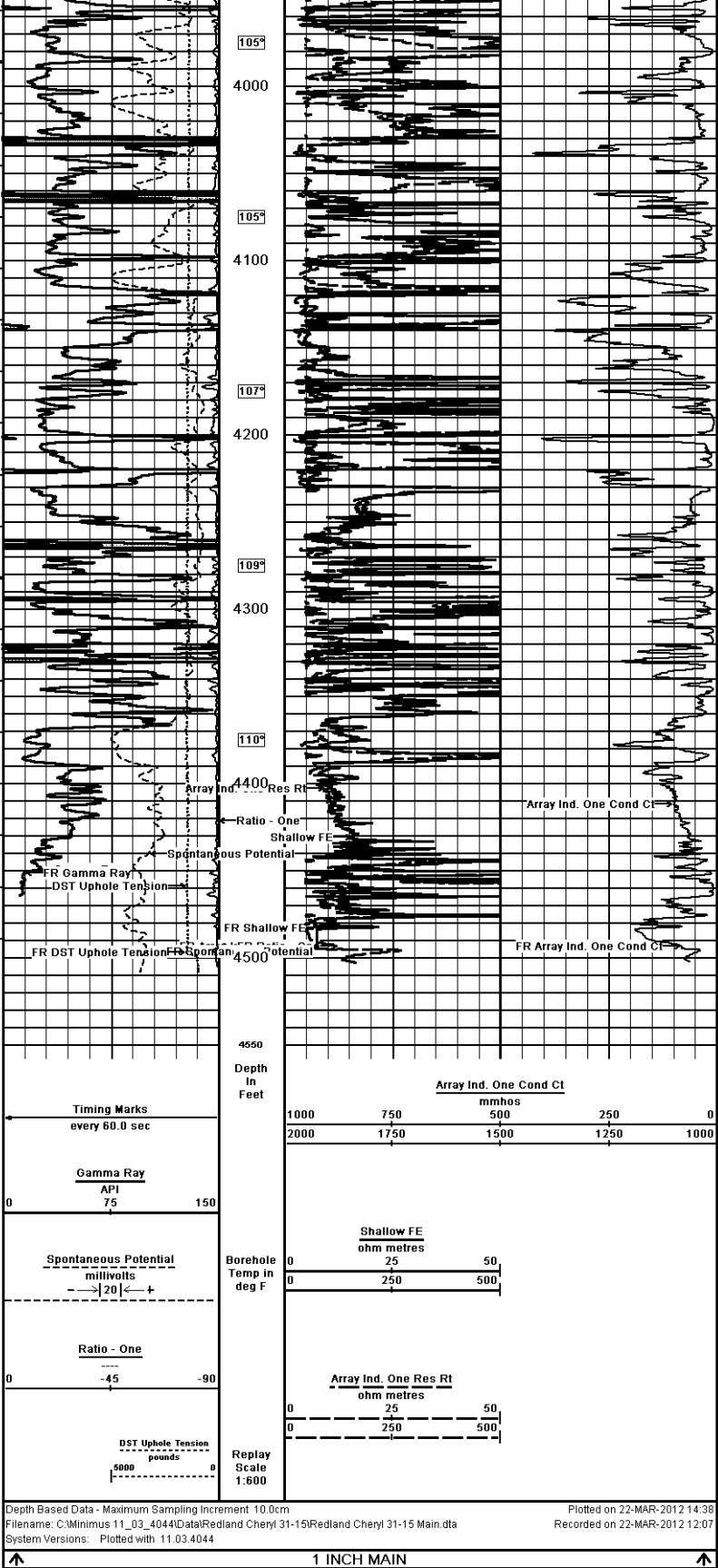
Depth Based Data - Maximum Sampling Increment 10.0cm
 Filename: C:\Minimus 11_03_4044\Data\Redland Cheryl 31-15\Redland Cheryl 31-15 Main.dta
 System Versions: Plotted with 11.03.4044











COMPANY		REDLAND RESOURCES, INC.			
WELL		CHERYL #31-15			
FIELD		MCVICKER SE			
PROVINCE/COUNTY		NESS			
COUNTRY/STATE		U.S.A. / KANSAS			
Elevation Kelly Bushing	2407.00	feet	First Reading	4494.00	feet
Elevation Drill Floor	2405.00	feet	Depth Driller	4500.00	feet
Elevation Ground Level	2399.00	feet	Depth Logger	4497.00	feet



ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG



