



Weatherford

**SHALLOW FOCUSED
ARRAY INDUCTION
ELECTRIC LOG**

COMPANY	DEUTSCH OIL COMPANY		
WELL	BAUMAN #7-4		
FIELD	BAUMAN		
PROVINCE/COUNTY	PRATT		
COUNTRY/STATE	U.S.A. / KANSAS		
LOCATION	1656' FNL & 1626' FEL		
SEC 4	TWP 26S	RGE 11W	Other Services
Latitude			MPD/MDN
Longitude			MML
API Number	15-151-22441		
Permanent Datum GL, Elevation	1829 feet		
Log Measured From	KB		Elevations: KB 1836.00
Drilling Measured From	KB @ 7 FEET		DF 1834.00
			GL 1829.00
Date	24-OCT-2014		
Run Number	ONE		
Service Order	7606-101310475		
Depth Driller	4175.00		feet
Depth Logger	4172.00		feet
First Reading	4168.66		feet
Last Reading	262.00		feet
Casing Driller	264.00		feet
Casing Logger	262.00		feet
Bit Size	7.875		inches
Hole Fluid Type	CHEM		
Density / Viscosity	8.80 lb/USg	53.00 CP	
PH / Fluid Loss	10.00	9.60 ml/30Min	
Sample Source	MUD PIT		
Rm @ Measured Temp	0.31 @ 75.0	ohm-m	
Rmf @ Measured Temp	0.25 @ 75.0	ohm-m	
Rmc @ Measured Temp	0.37 @ 75.0	ohm-m	
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.21 @114.0	ohm-m	
Time Since Circulation	3 HOURS		
Max Recorded Temp	114.00	deg F	
Equipment / Base	13057	LIB	
Recorded By	BEN WELDIN		
Witnessed By	KENT DEUTSCH		
JOB #	LB14-331		

BOREHOLE RECORD				Last Edited: 24-OCT-2014 11:49
Bit Size inches		Depth From feet		Depth To feet
7.875		262.00		4172.00
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	262.00	24.00

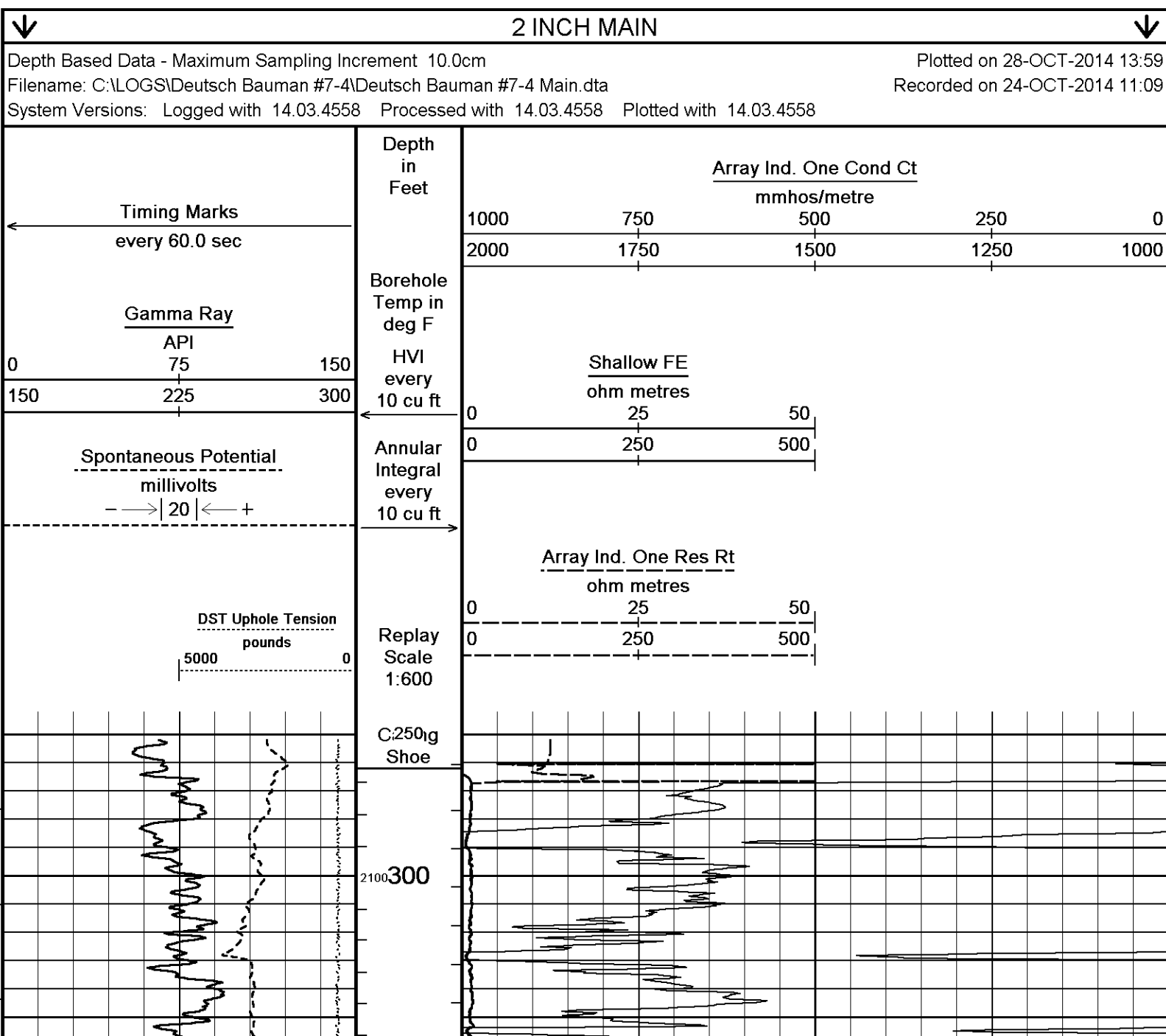
REMARKS
- SOFTWARE ISSUE: WLS 14.03.4558
- TOOL STRING: MCG, MML, MDN, MPD, MFE, MAI RUN IN COMBINATION
- HARDWARE: MDN: DUAL BOWSPRING ECCENTRALIZER MFE: 1 X 0.5 INCH STANDOFF MAI: 2 X 0.5 INCH STANDOFF
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 2130 CU. FT.
- ANNUILLAR HOLE VOLUME WITH 5.5 INCH CASING FROM TD TO SURFACE CASING: 1490 CU. FT.

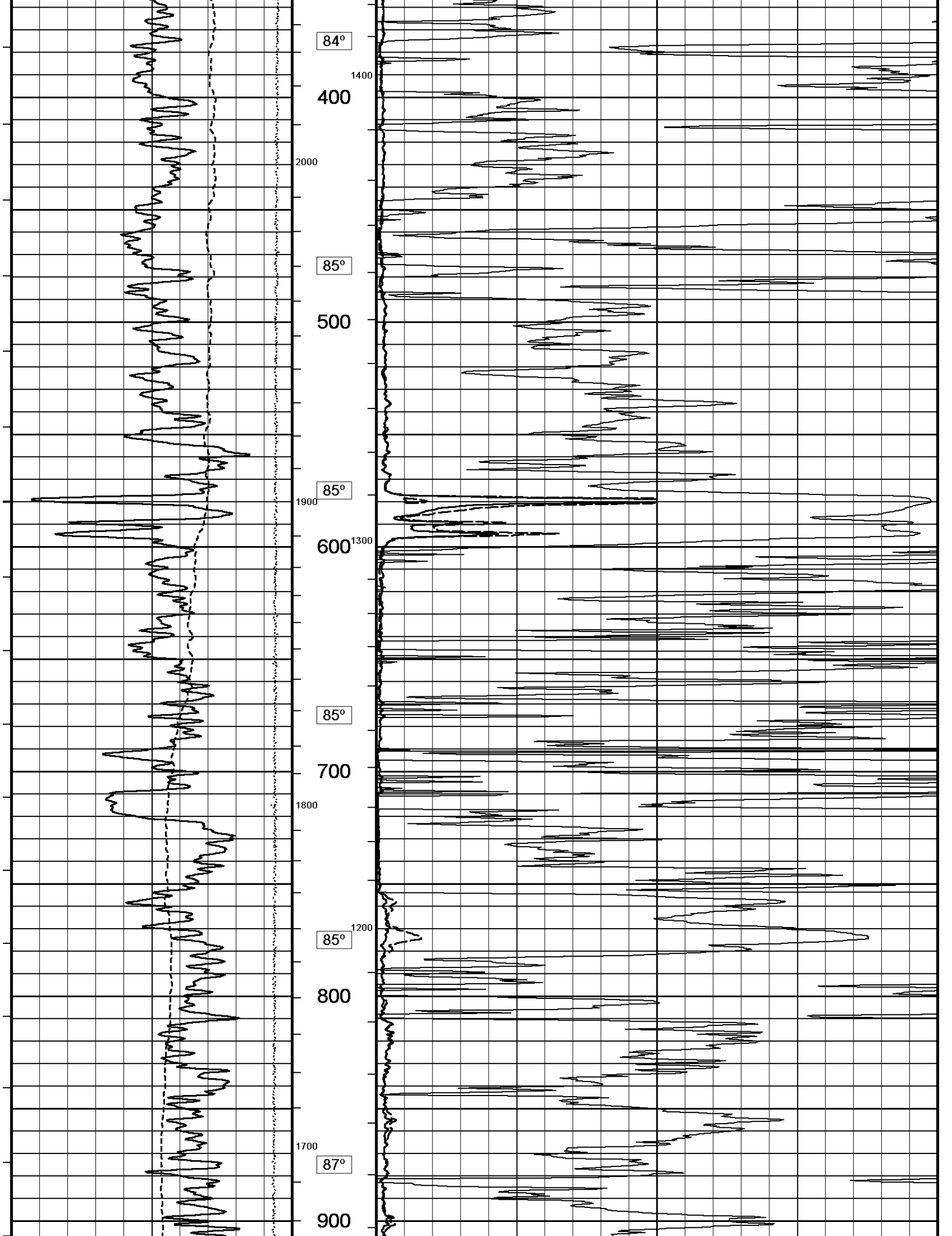
- RIG: PICKRELL DRILLING RIG #10

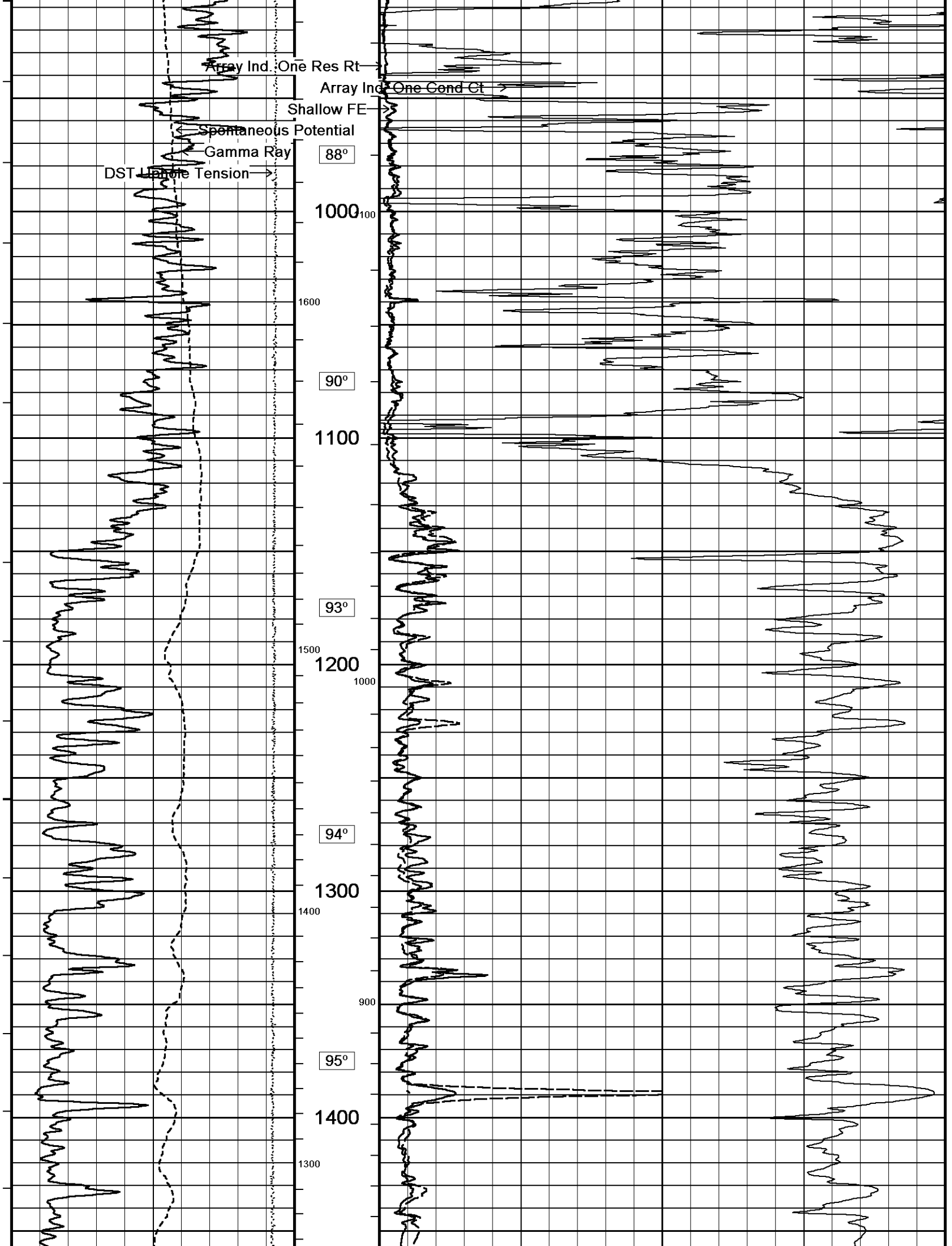
- ENGINEER: BEN WELDIN

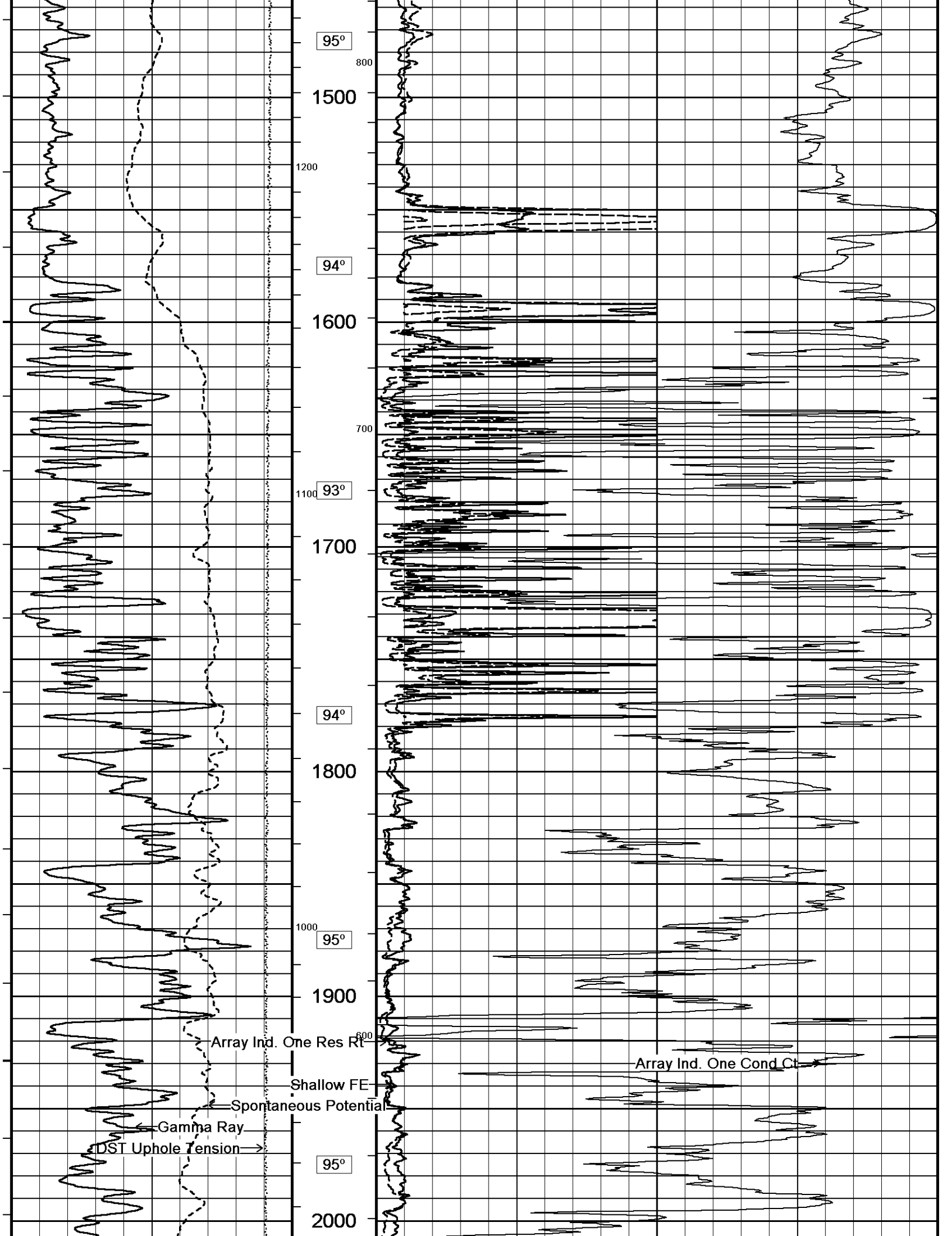
- OPERATOR: KEN RINEHART
JOHN DUNLAP

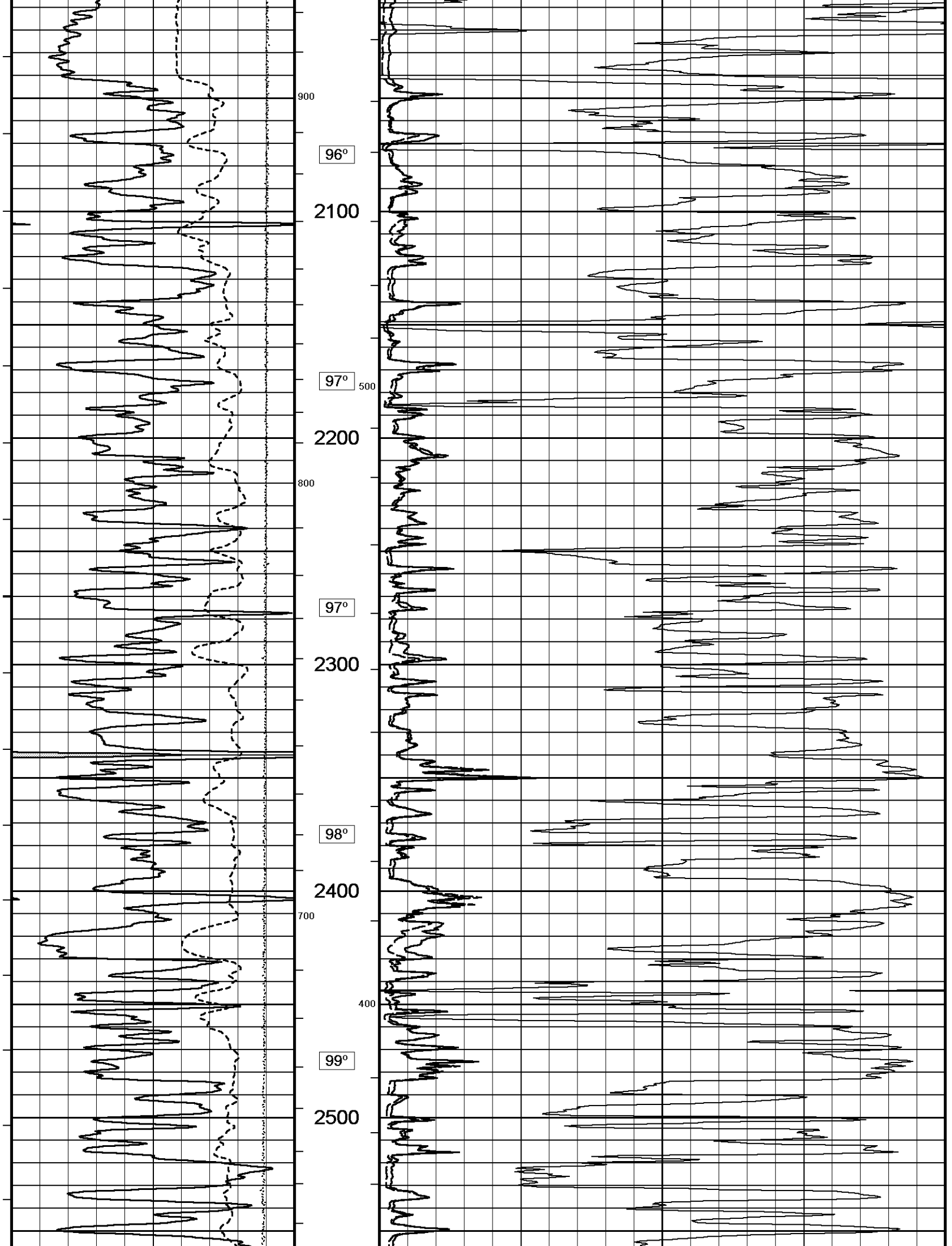
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.

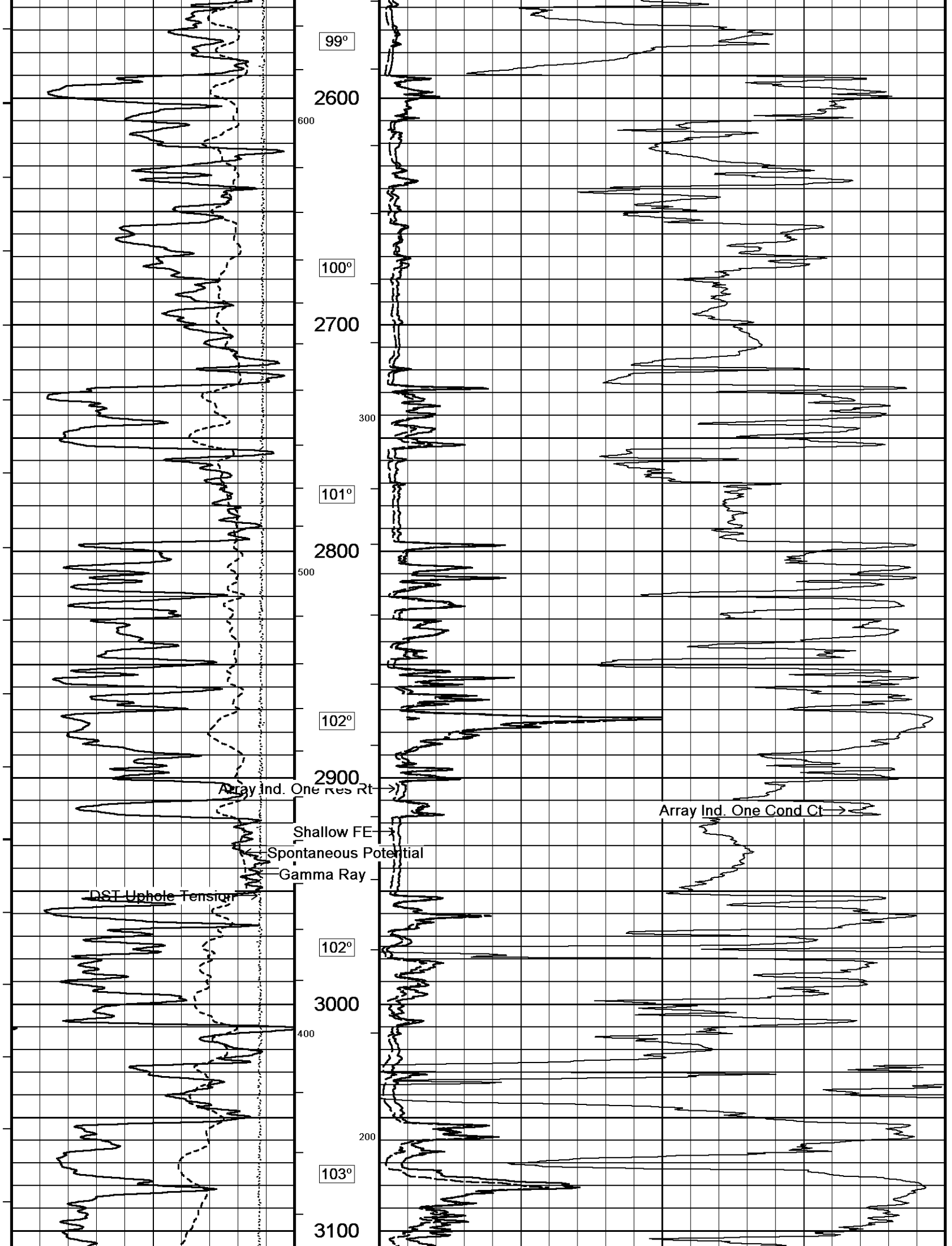


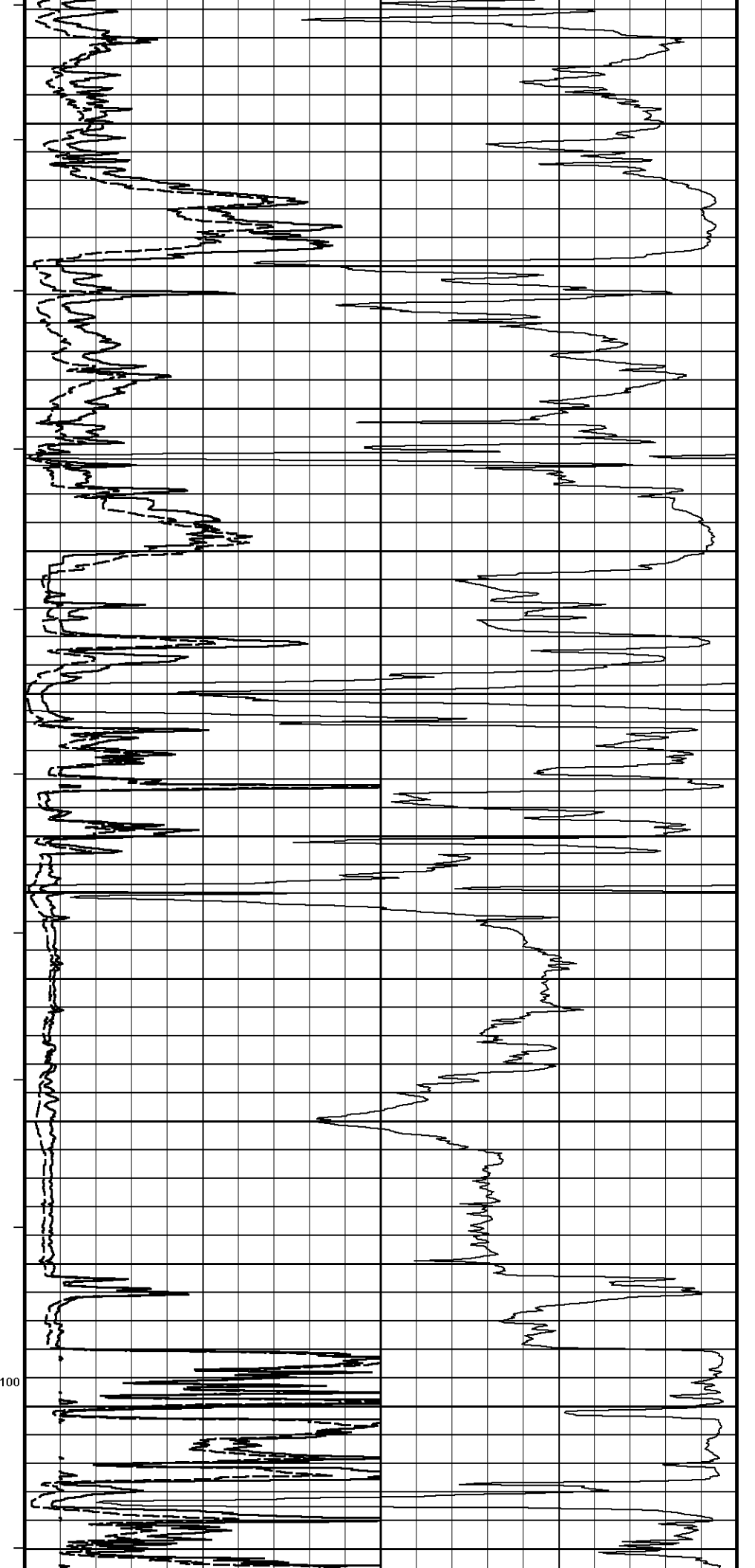
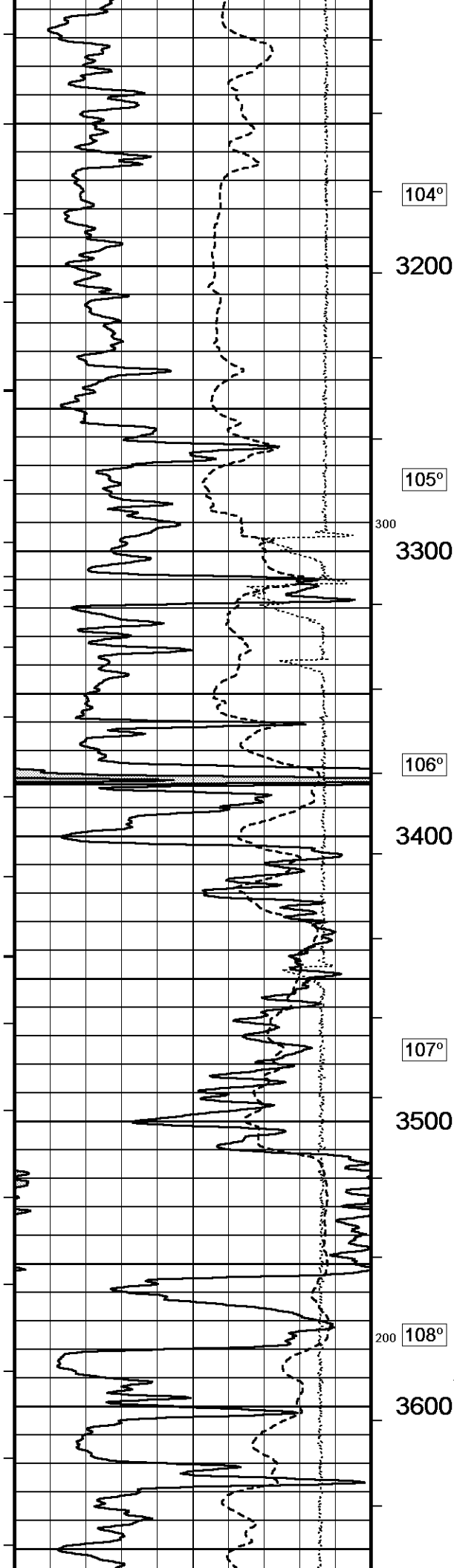


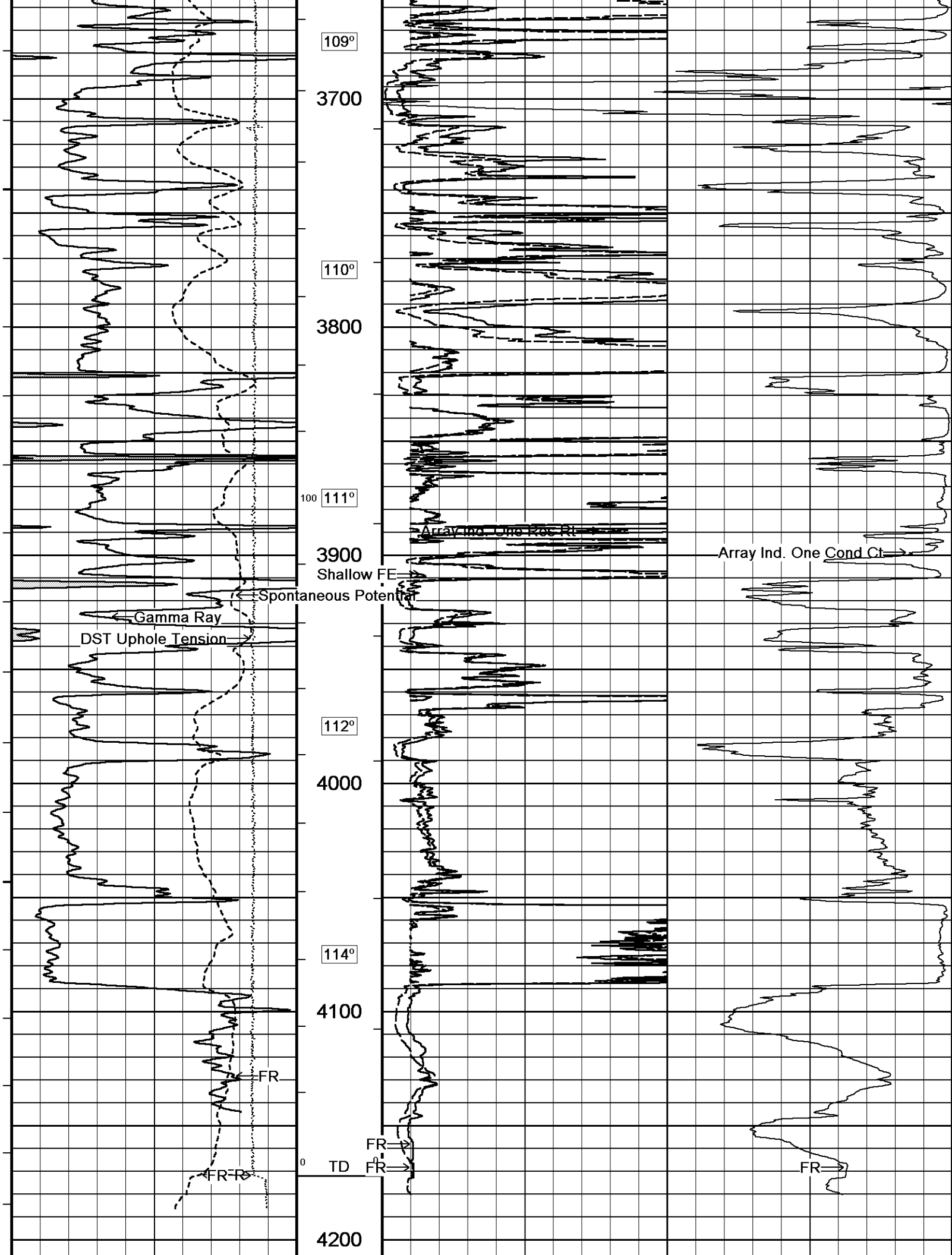


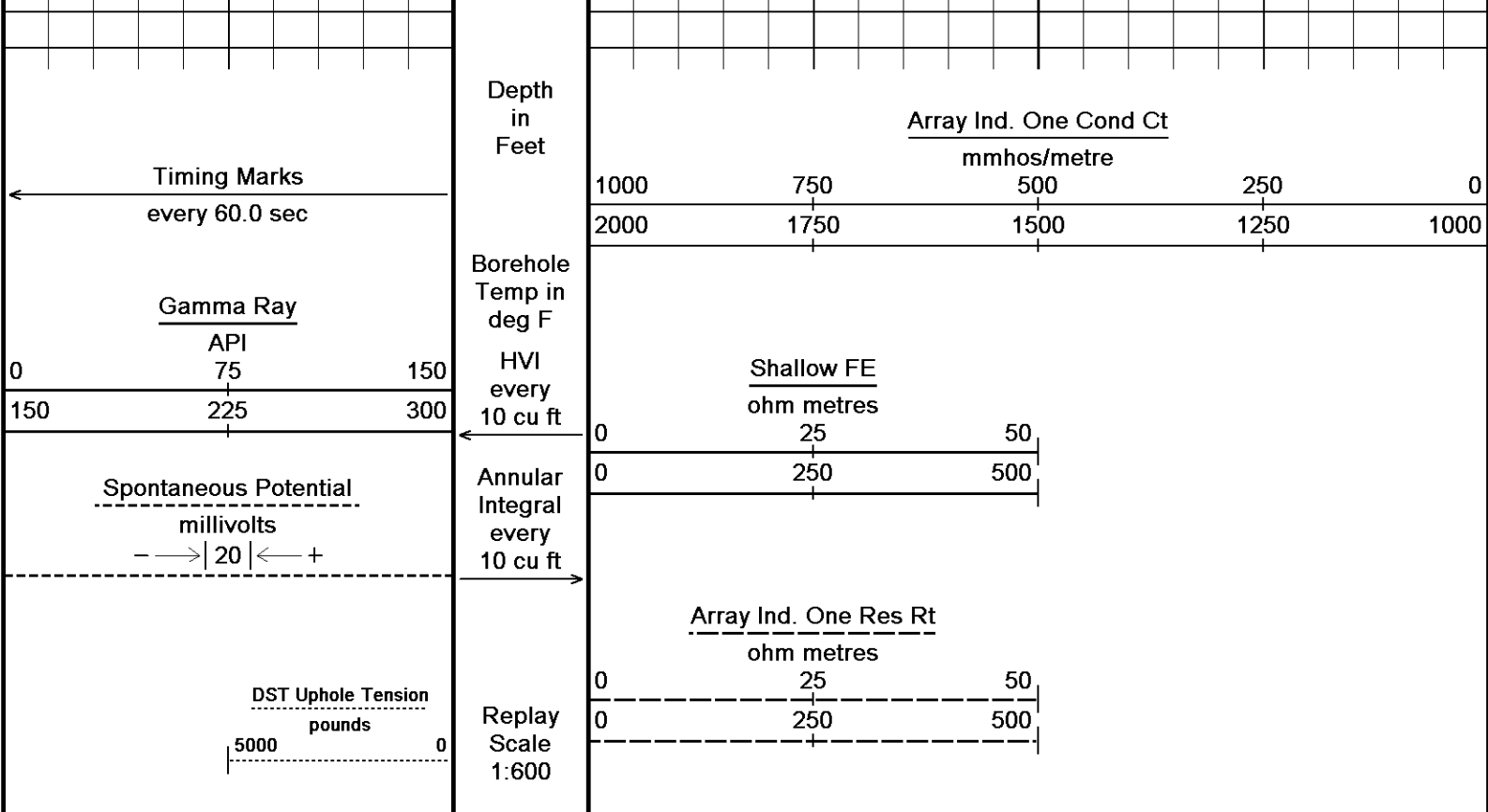












Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 28-OCT-2014 13:59

Filename: C:\LOGS\Deutsch Bauman #7-4\Deutsch Bauman #7-4 Main.dta

Recorded on 24-OCT-2014 11:09

System Versions: Logged with 14.03.4558 Processed with 14.03.4558 Plotted with 14.03.4558

↑

2 INCH MAIN

↑

↓

5 INCH MAIN - ANHYDRITE SECTION

↓

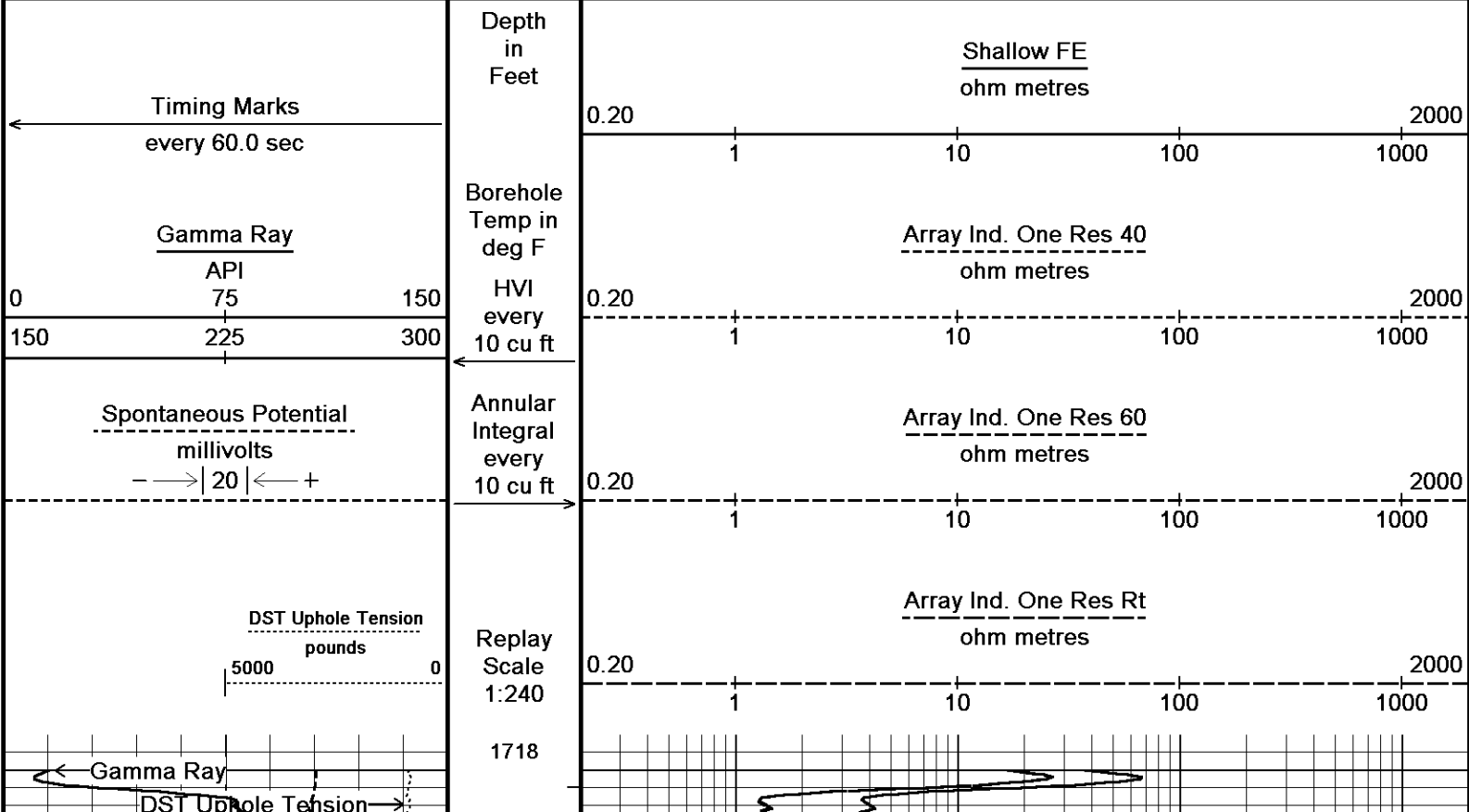
Depth Based Data - Maximum Sampling Increment 10.0cm

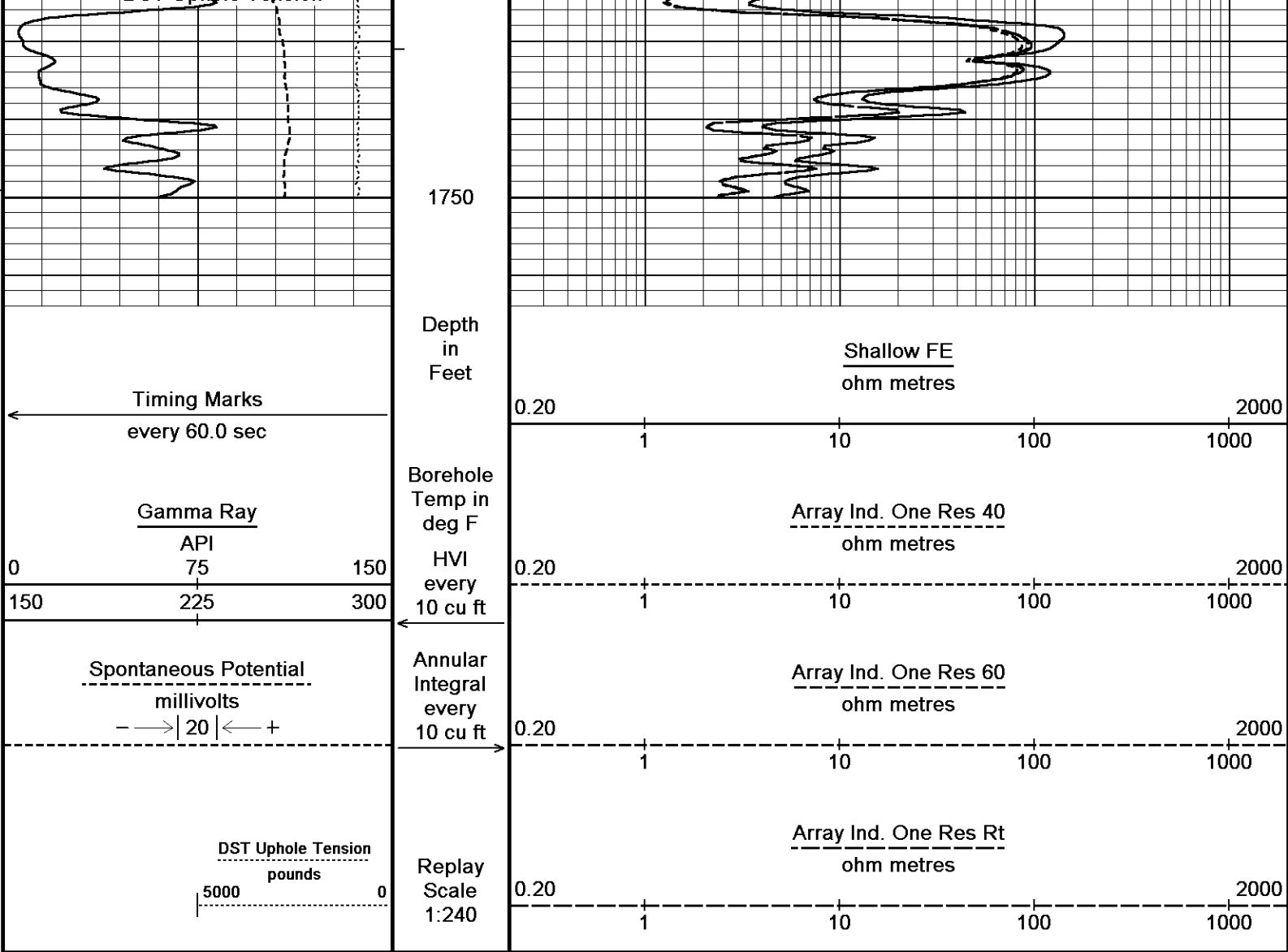
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Recorded on 24-OCT-2014 11:09

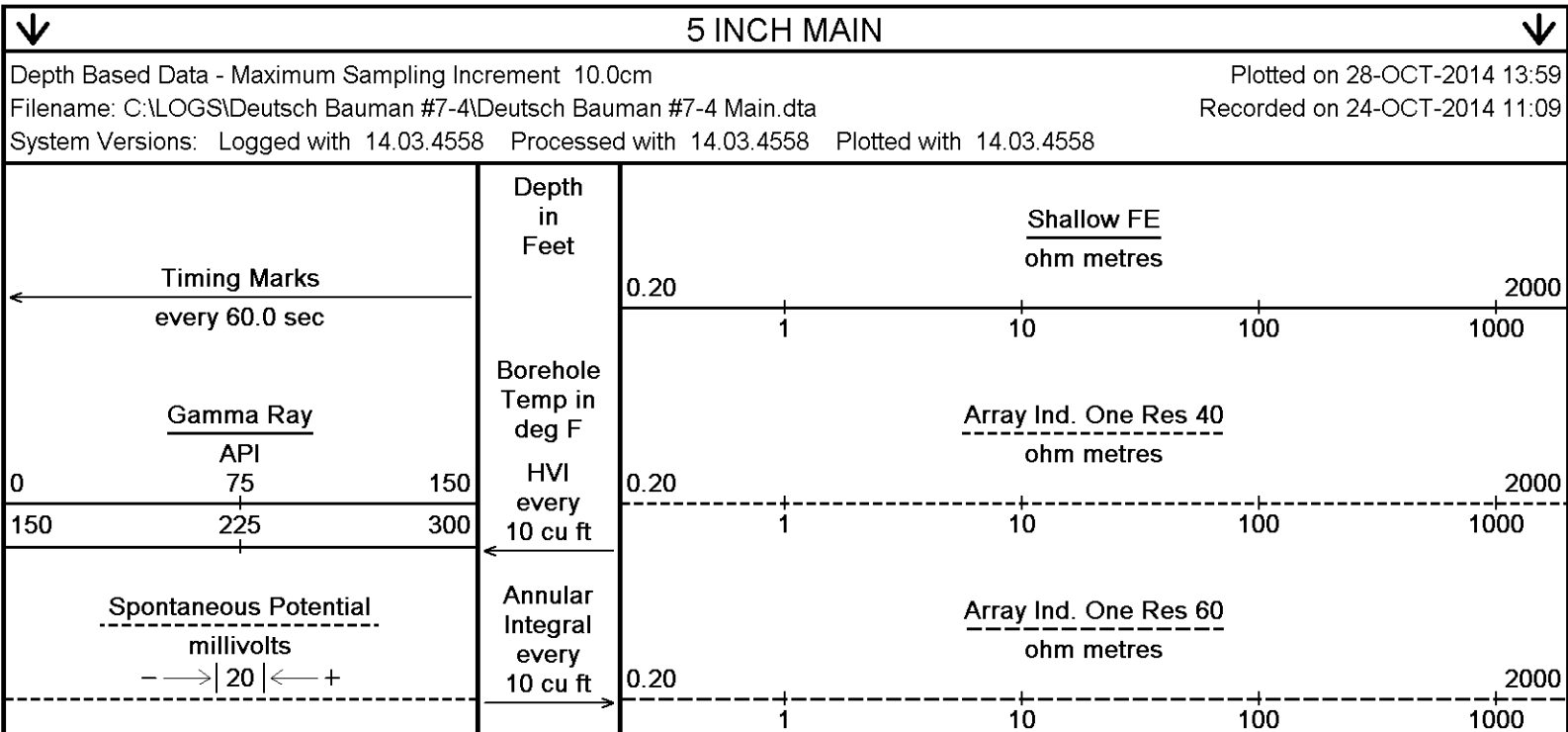
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5 INCH MAIN - ANHYDRITE SECTION



DST Uphole Tension
pounds

5000 0

Replay
Scale
1:240

3300

106°

3350

106°

3400

107°

3450

107°

Array Ind. One Res Rt
ohm metres

0.20

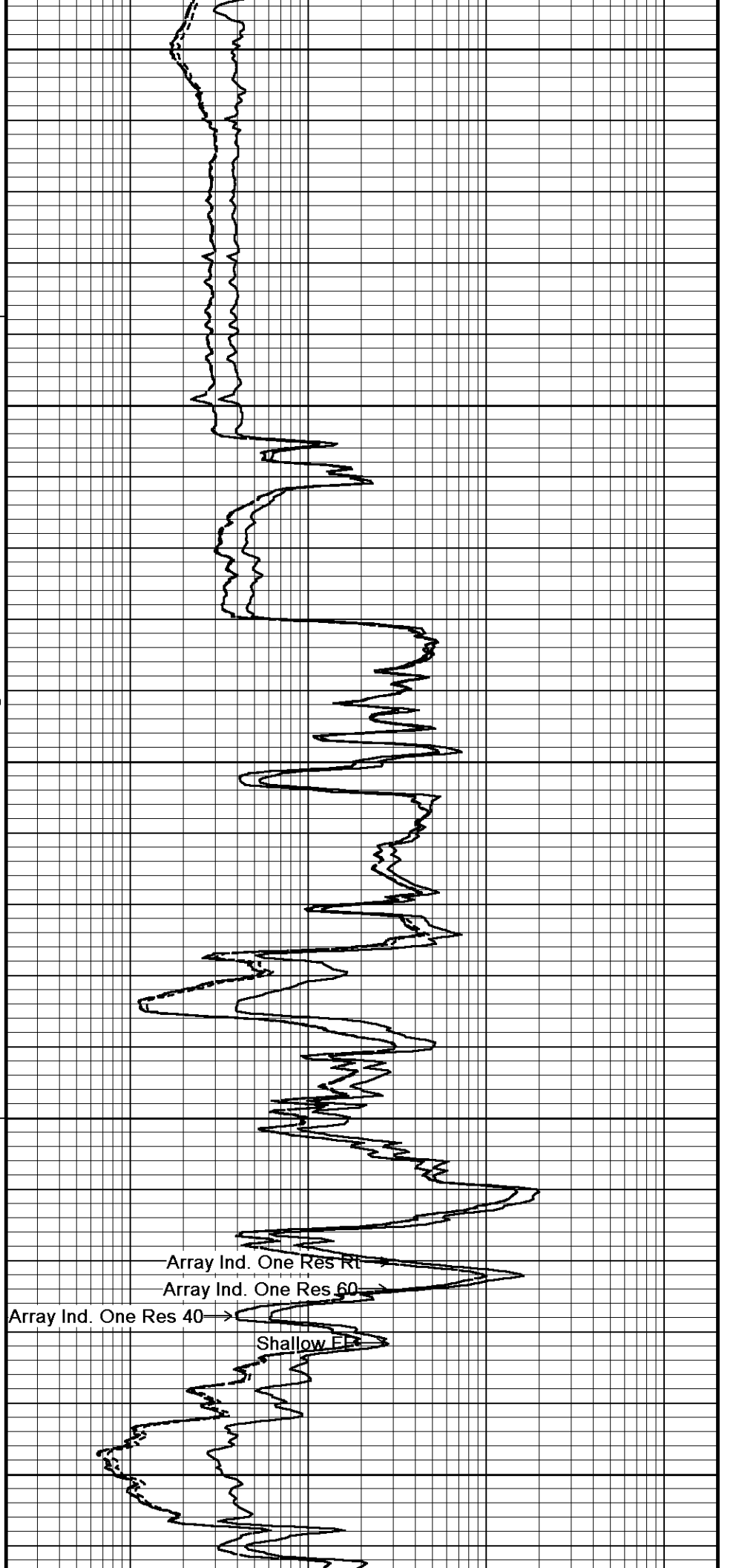
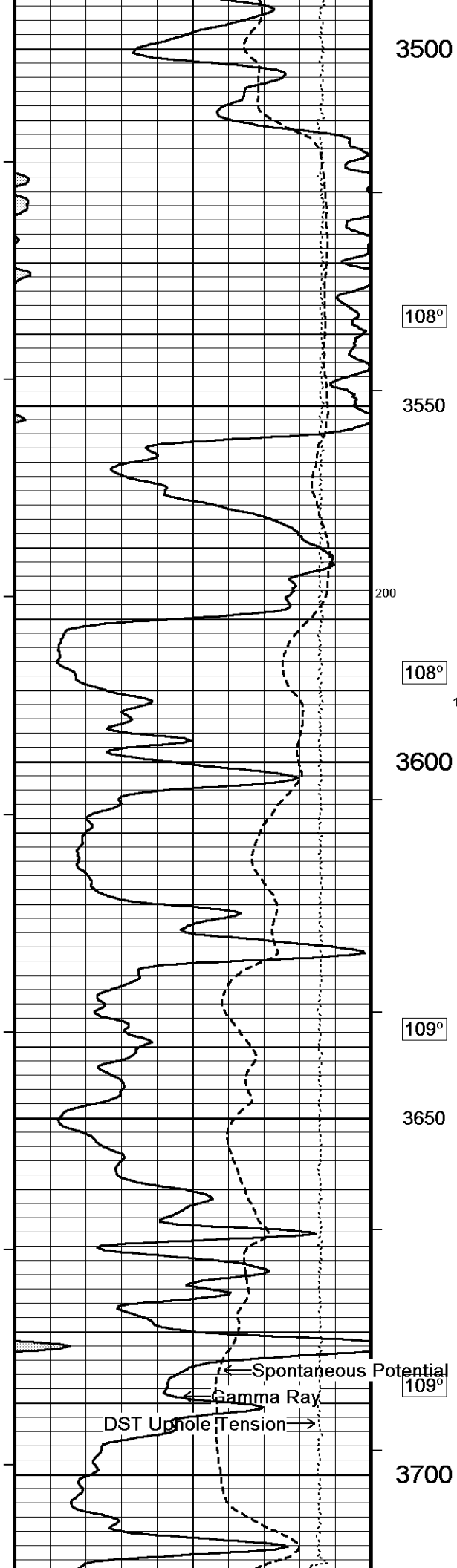
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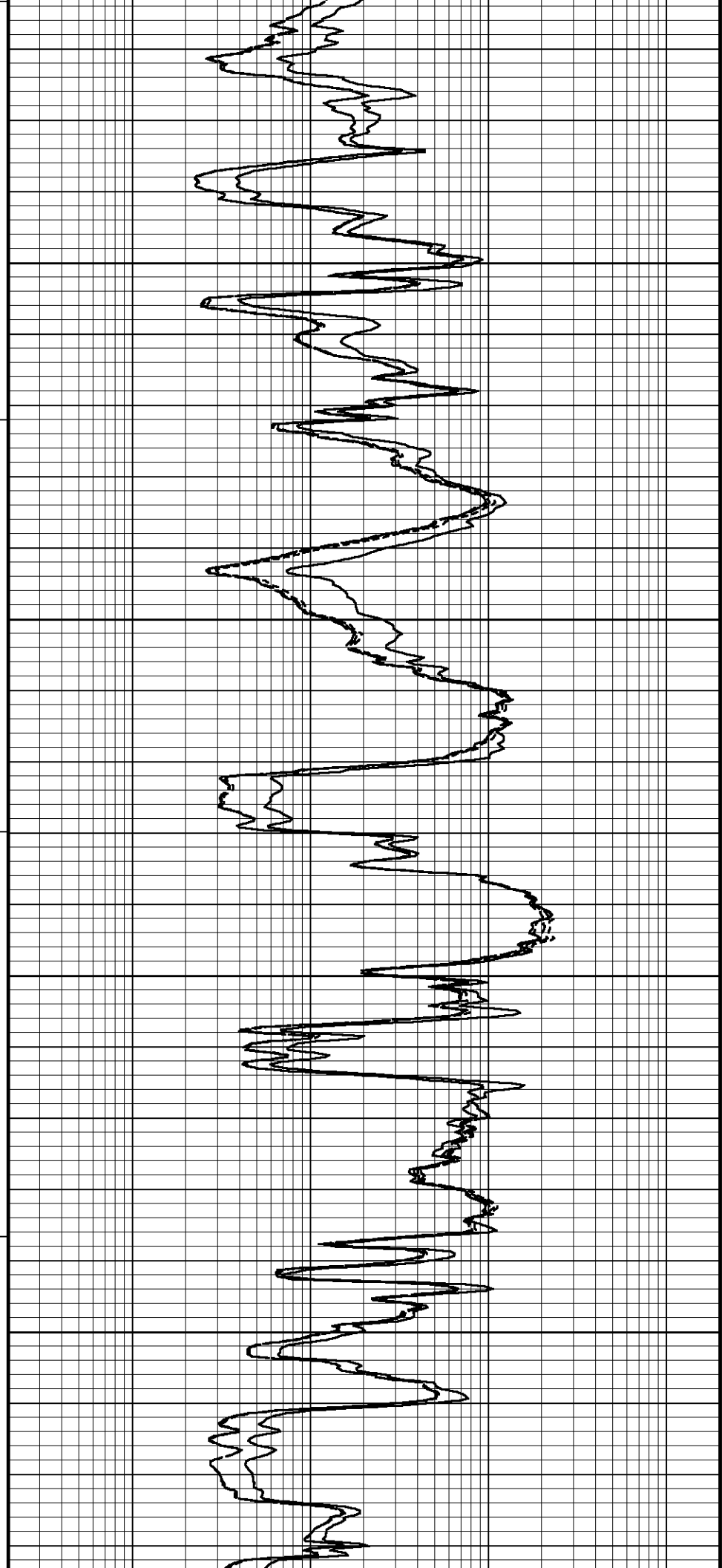
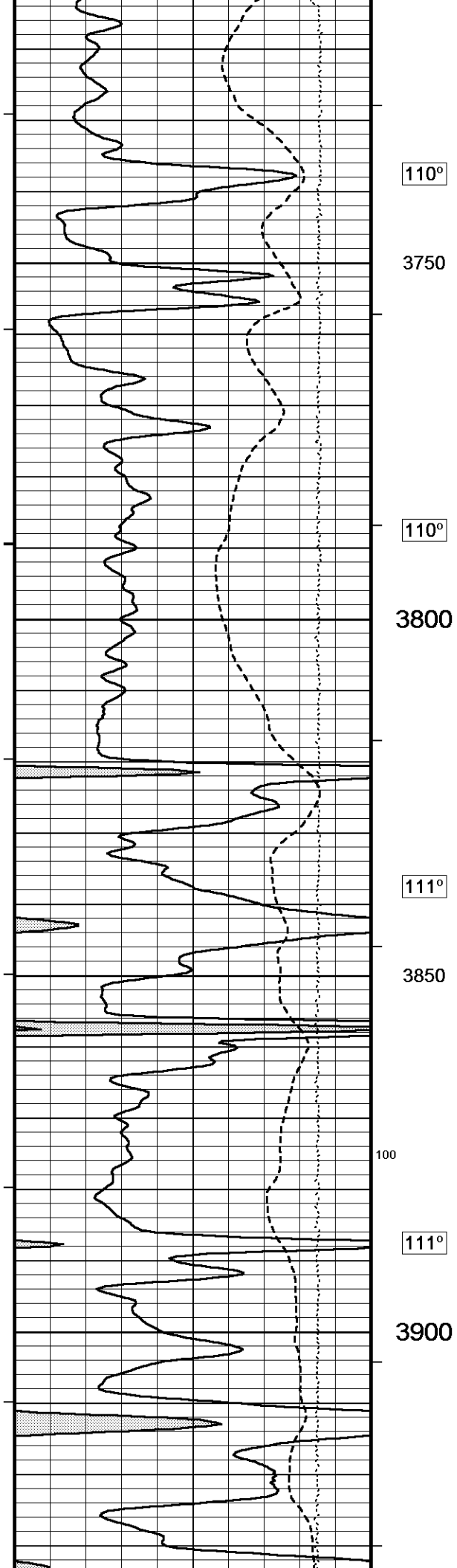
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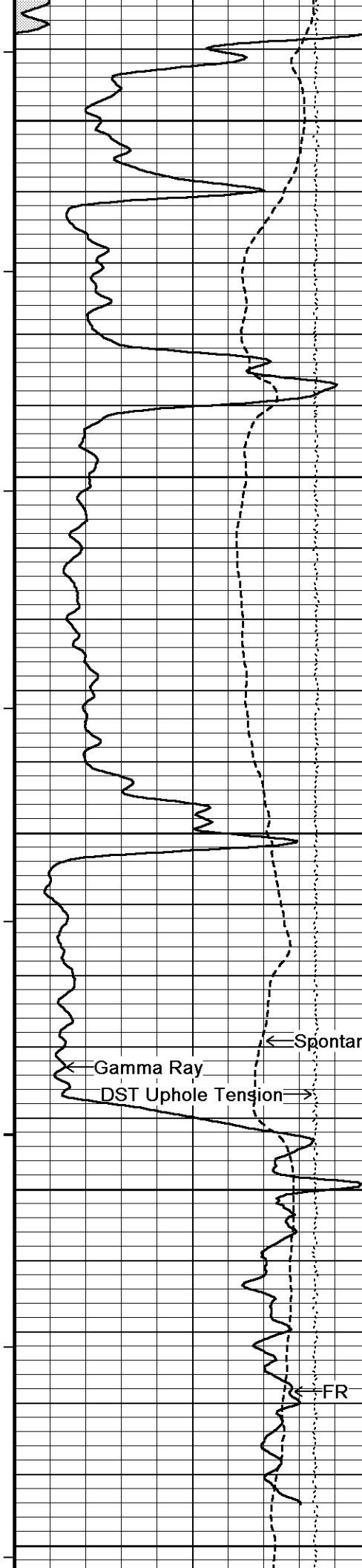
100

1000

2000







112°

3950

113°

4000

113°

4050

114°

4100

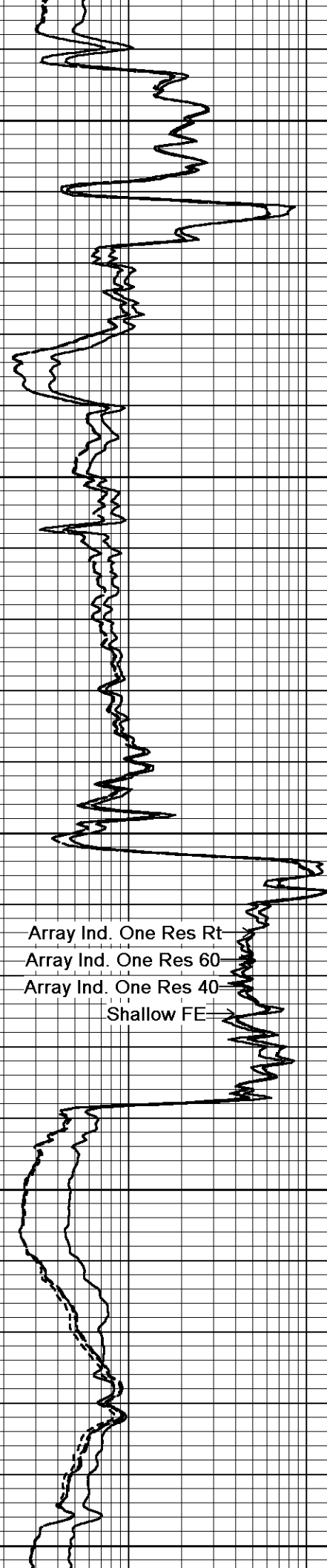
114°

4150

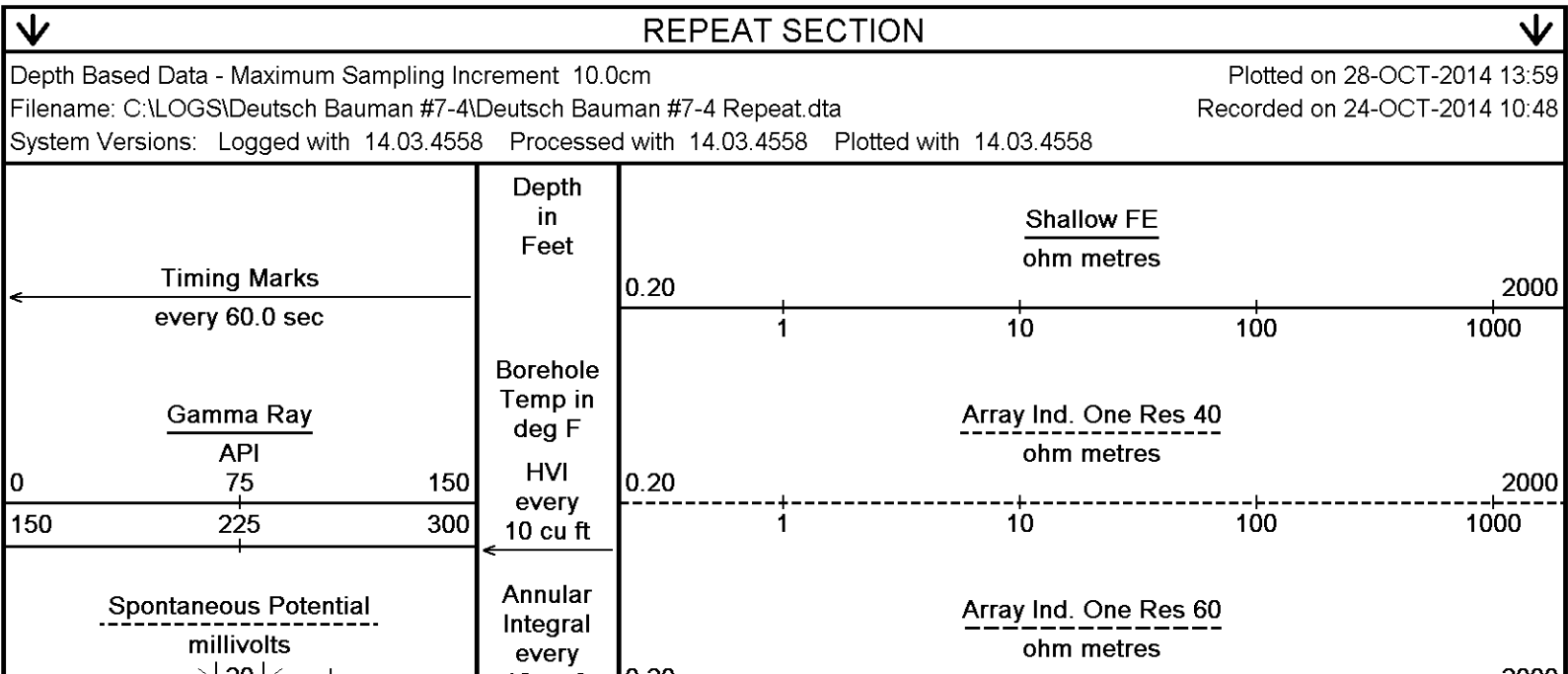
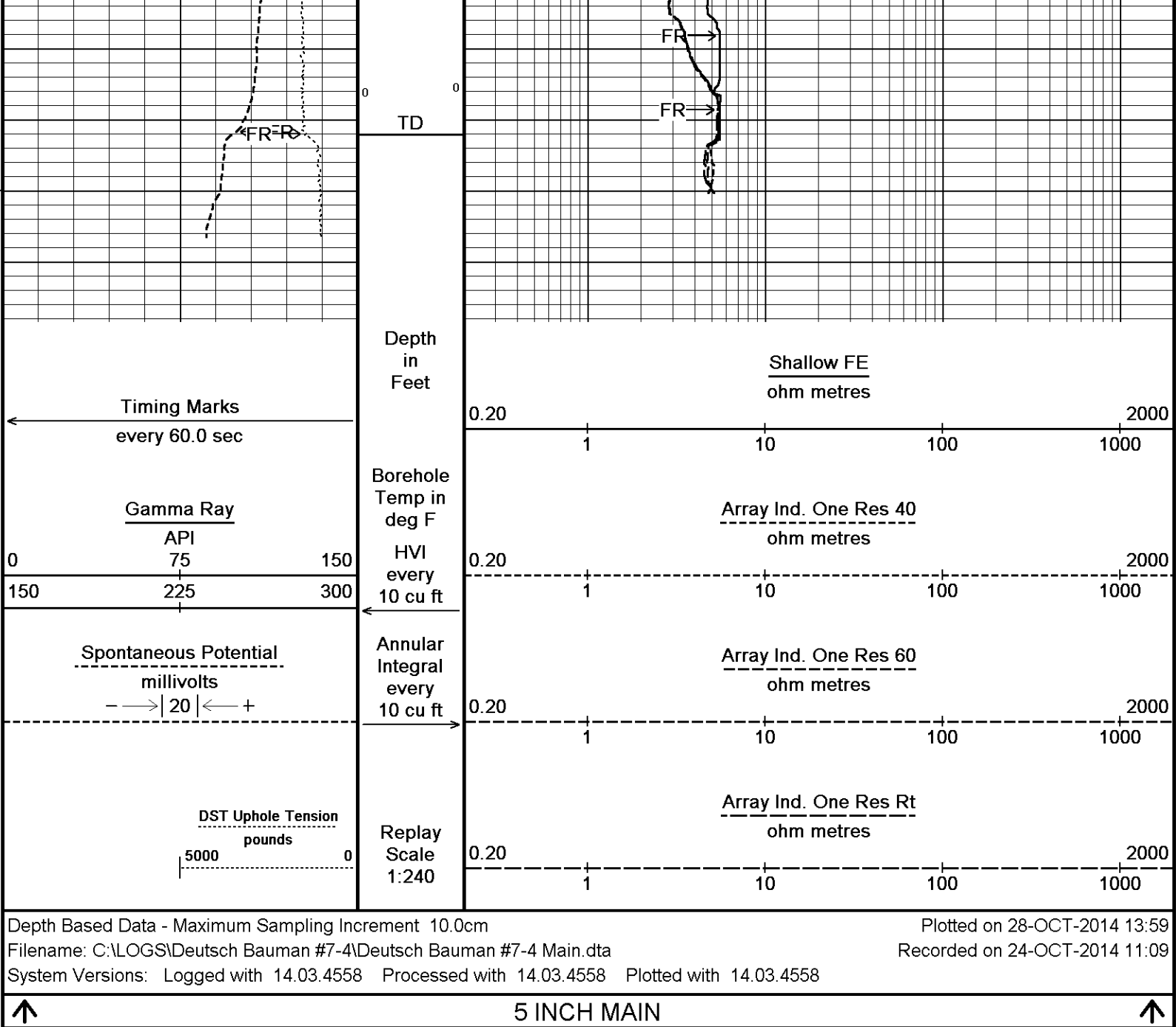
← Gamma Ray
DST Uphole Tension →

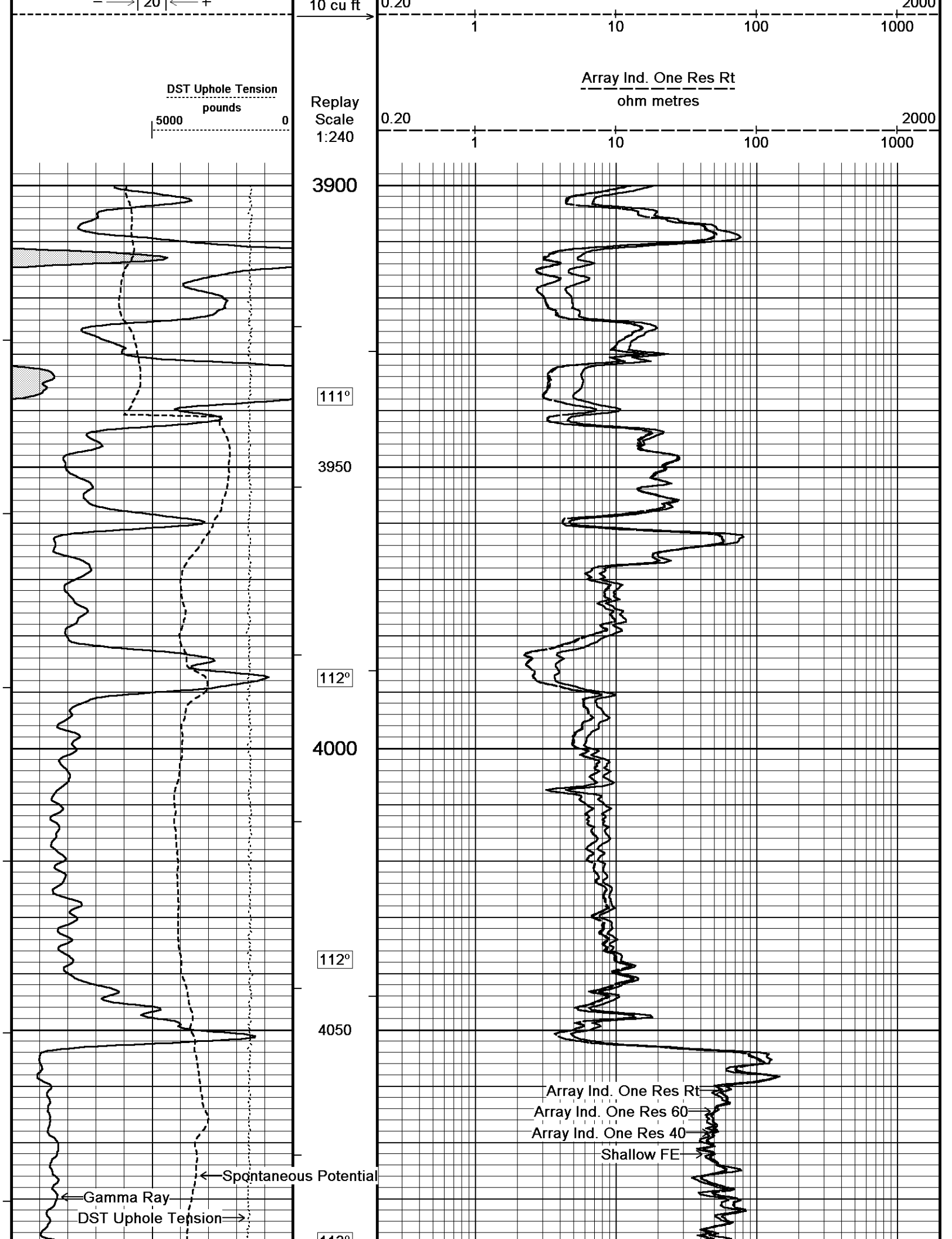
← Spontaneous Potential

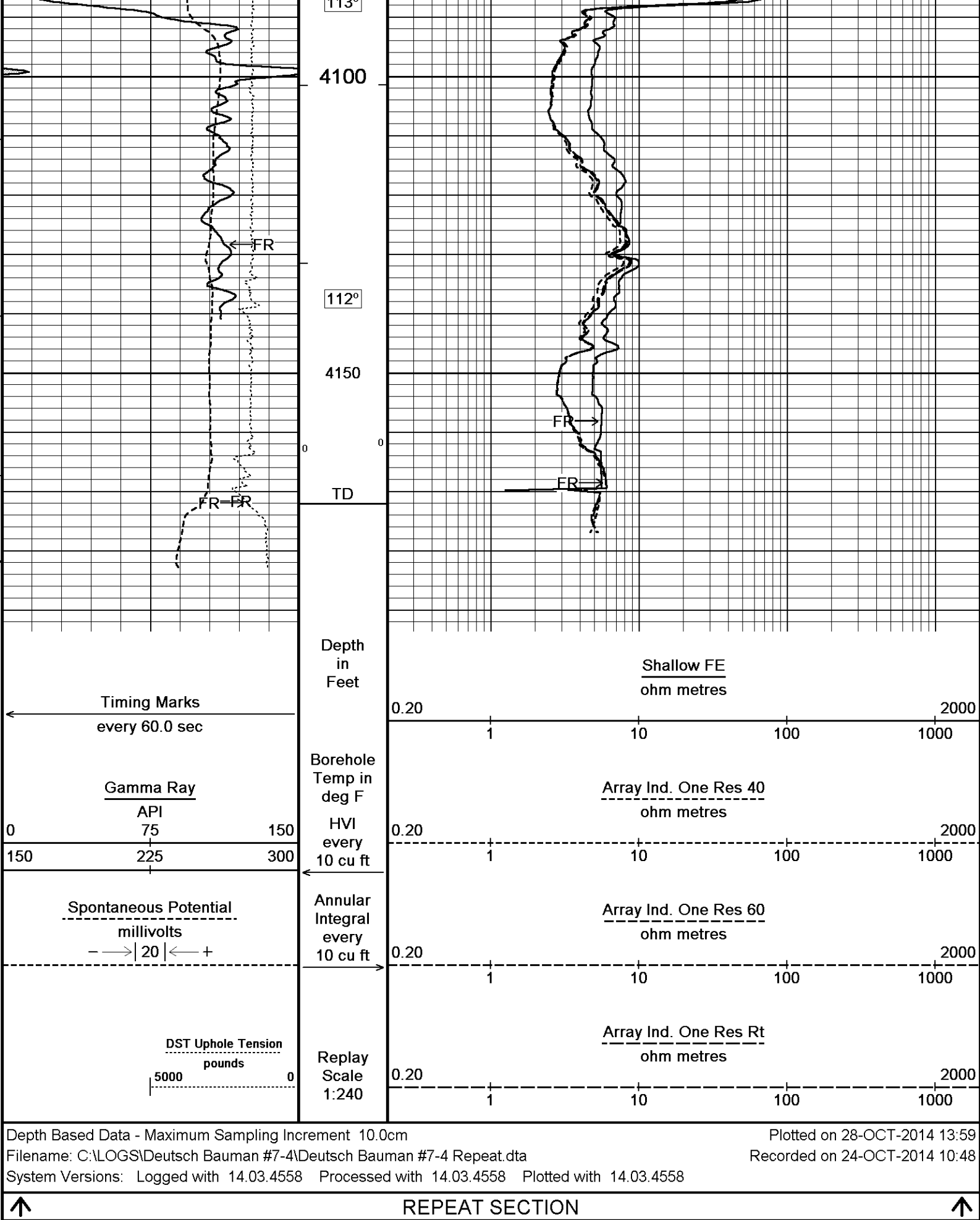
← FR



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







BEFORE SURVEY CALIBRATION

C:\LOGS\Deutsch Bauman #7-4\Deutsch Bauman #7-4 Main.dta

General Parameters

Mud Resistivity	0.310	ohm-metres
Mud Resistivity Temperature	75.000	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	None	

Rwa Parameters

Porosity used	Crossplot Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

High Resolution Temperature Calibration MCG-C 84

Field Calibration on 22-JUL-2014,11:40

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

High Resolution Temperature Constants MCG-C 84

Last Edited on 09-SEP-2014,02:23

Pre-filter Length	11
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Gamma Calibration MCG-C 84

Field Calibration on 23-OCT-2014 23:11

	Measured	Calibrated (API)
Background	69	48
Calibrator (Gross)	1117	773
Calibrator (Net)	1048	725

Gamma Calibration Tolerances MCG-C 84

Ratio	1.445		Counts/API
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Gamma Constants MCG-C 84

Last Edited on 24-OCT-2014,04:11

Gamma Calibrator Number	GRC038	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.05	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

FE Calibration MFE-B.J 352

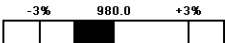
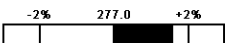
Base Calibration on 08-OCT-2014 09:33

Field Check on 23-OCT-2014 22:52

Base Calibration

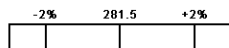
	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	963.6	126.8
Base Check		281.5
Field Check		281.5

FE Calibration Tolerances MFE-B.J 352

Reference 2	963.6		ohm
Base Check	281.5		ohm-m

Field Check

281.5



ohm-m

FE Constants MFE-B.J 352

Last Edited on 23-OCT-2014,22:51

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 45

Base Calibration on 10-JUL-2014,11:31

Field Check on 23-OCT-2014 22:51

Base Calibration

Test Loop Calibration

Measured

Calibrated (mmho/m)

Channel	Low	High	Low	High
1	14.5	473.5	9.3	966.2
2	5.2	373.4	7.6	821.4
3	2.8	260.6	5.2	566.0
4	1.6	132.2	2.6	279.2

Array Temperature 86.2 Deg F

Test Loop Calibration Verified

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			18.7	3844.4
2			32.9	3631.3
3			30.0	3050.3
4			20.4	2093.9
Deep			17.9	1920.7
Medium			43.3	4050.8
Shallow			49.9	5474.6

Array Temperature 70.9 Deg F

Induction Calibration Tolerances MAI-A.A 45

Low Conductivity 1	14.5		mmho/m	High Conductivity 1	473.5		mmho/m
Low Conductivity 2	5.2		mmho/m	High Conductivity 2	373.4		mmho/m
Low Conductivity 3	2.8		mmho/m	High Conductivity 3	260.6		mmho/m
Low Conductivity 4	1.6		mmho/m	High Conductivity 4	132.2		mmho/m
Background Vx 1	0.0		mmho/m	Phase Check Loop 1	0.0		%
Background Vx 2	0.0		mmho/m	Phase Check Loop 2	0.0		%
Background Vx 3	0.0		mmho/m	Phase Check Loop 3	0.0		%
Background Vx 4	0.0		mmho/m	Phase Check Loop 4	0.0		%

Induction Constants MAI-A.A 45

Last Edited on 24-OCT-2014,04:11

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-D.A 482

Base Calibration on 14-OCT-2014 00:28
Field Calibration on 23-OCT-2014 22:56

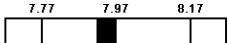
Base Calibration

Reading No	Measured	Calibrator Size (in)
1	15681	3.99
2	25747	5.98
3	35898	7.97
4	45735	9.86
5	56738	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.91	7.97

Caliper Calibration Tolerances MPD-D.A 482

Short Arm Field Cal. 7.91  in

DOWNHOLE EQUIPMENT

C:\LOGS\Deutsch Bauman #7-4\Deutsch Bauman #7-4 Main.dta

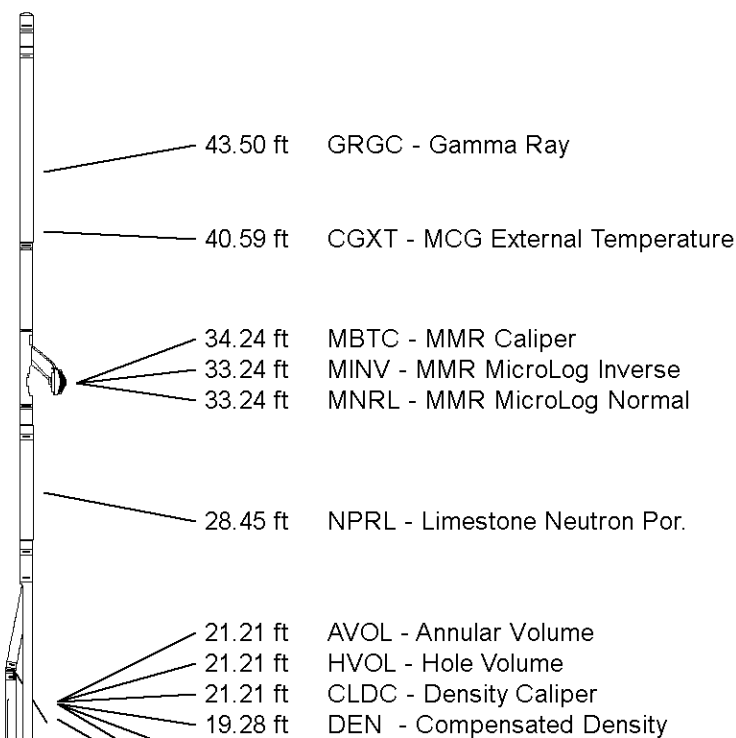
3/8" Triple Cone Cable Head (MCB C A)
MCB-C.A 5 LG: 1.58 ft WT: 15.4 lb OD: 2.244 in

Compact Comms Gamma
MCG-C 84 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

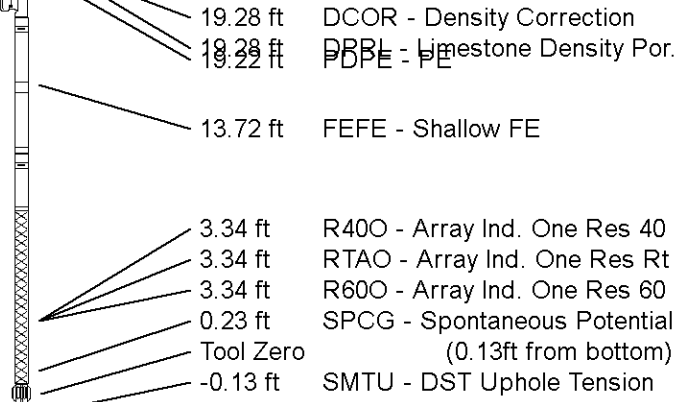
Compact Micro-Resistivity
MMR-A 11 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-D.A 482 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in



Total Length: 50.36 ft Weight: 399.0 lb



COMPANY	DEUTSCH OIL COMPANY
WELL	BAUMAN #7-4
FIELD	BAUMAN
PROVINCE/COUNTY	PRATT
COUNTRY/STATE	U.S.A. / KANSAS

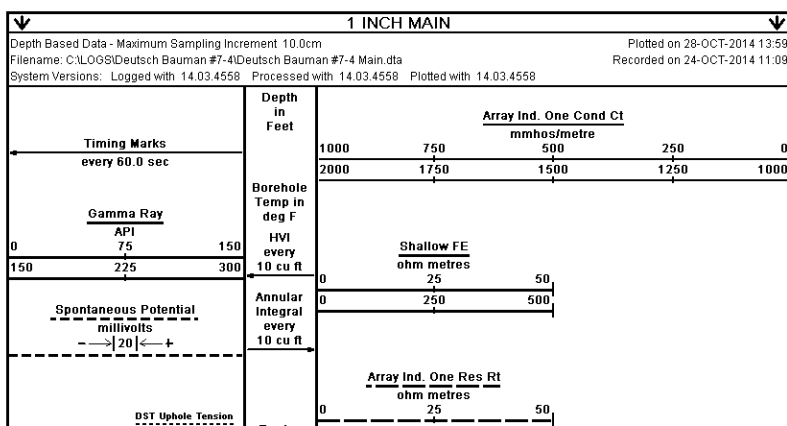
Elevation Kelly Bushing	1836.00	feet	First Reading	4168.66	feet
Elevation Drill Floor	1834.00	feet	Depth Driller	4175.00	feet
Elevation Ground Level	1829.00	feet	Depth Logger	4172.00	feet

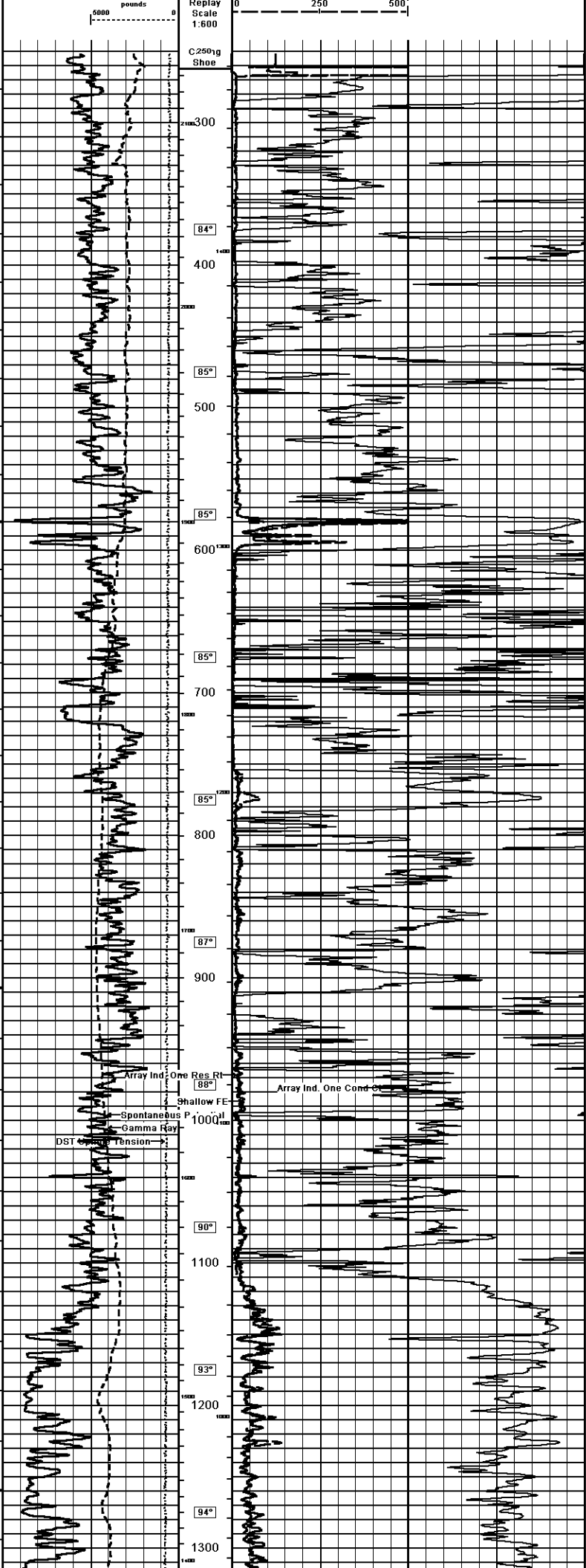


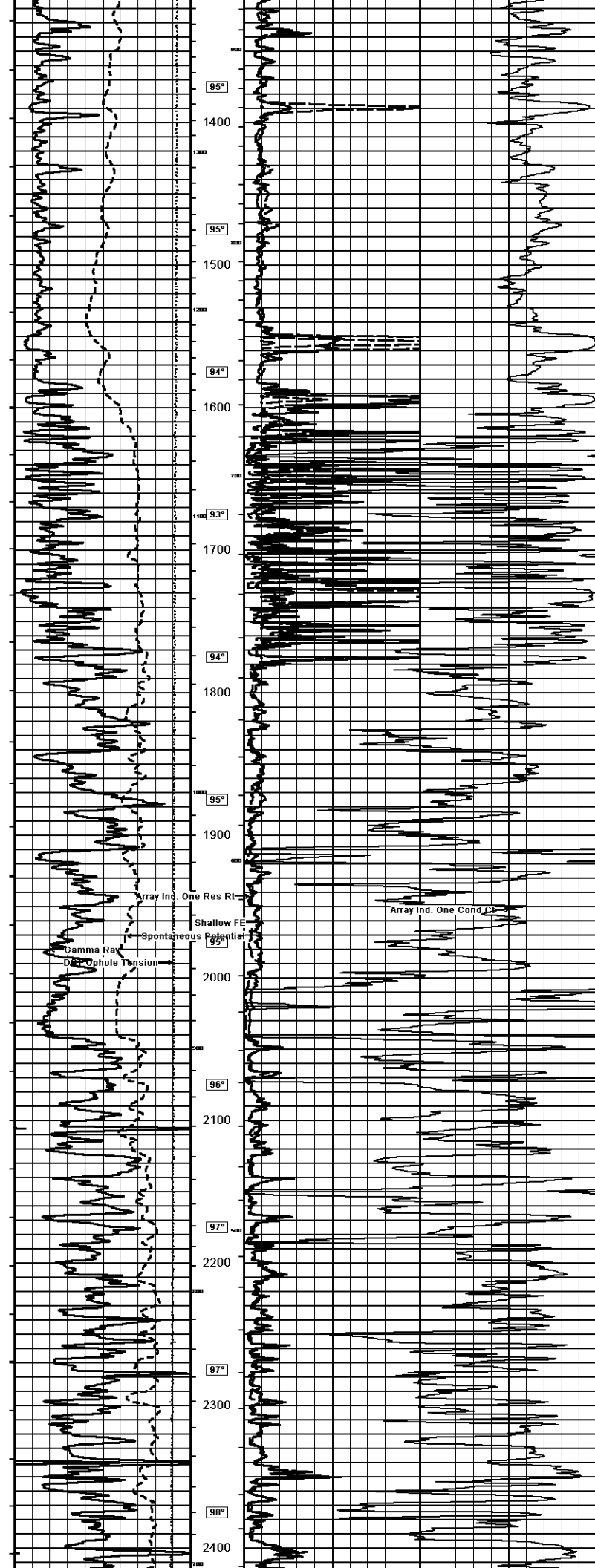
SHALLOW FOCUSED ARRAY INDUCTION ELECTRIC LOG

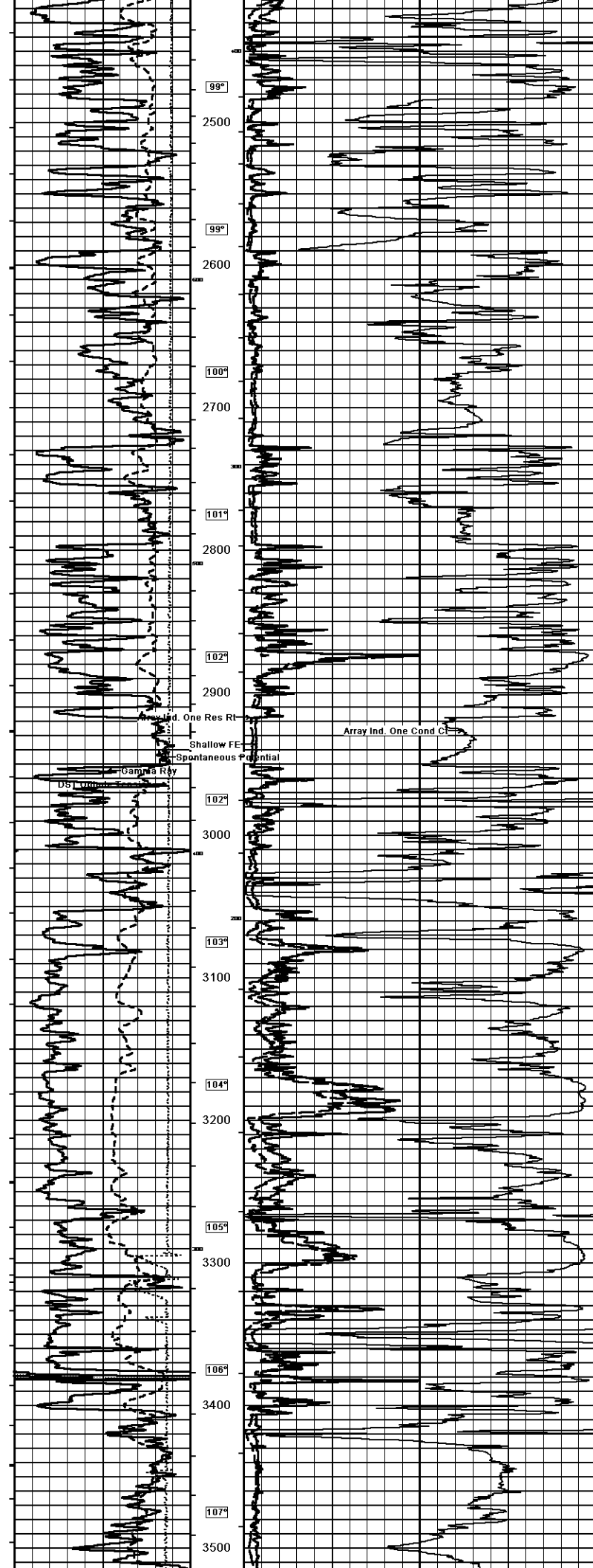
Weatherford®

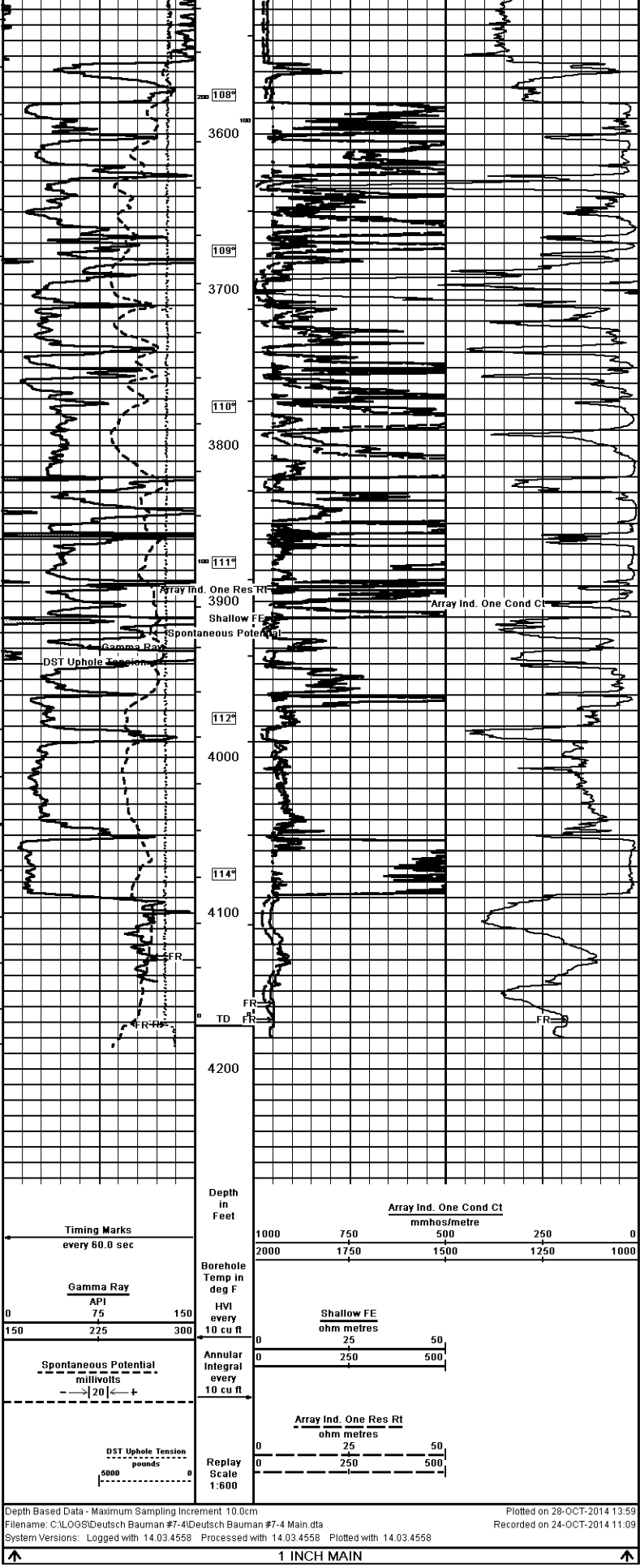
Weatherford		SHALLOW FOCUSED ARRAY INDUCTION ELECTRIC LOG	
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WELL		BAUMAN #7-4	
FIELD		BAUMAN	
PROVINCE/COUNTY		PRATT	
COUNTRY/STATE		U.S.A. / KANSAS	
LOCATION		1656' FNL & 1626' FEL	
SEC 4		TWP 28S	
RGE 11W		Other Services	
MFDNON		MML	
API Number		15-151-22341	
Longitude		Elevations:	
Permanent Datum GL		1626.00	
Log Measured From KB		1634.00	
Drilling Measured From KB @ 7 FEET		1623.00	
Date		24-OCT-2014	
Run Number		ONE	
Service Order		7606-101316475	
Depth Driller		4173.00	
Depth Logger		4172.00	
First Reading		4168.86	
Last Reading		262.00	
Casing Driller		264.00	
Casing Logger		262.00	
Bit Size		7.875	
Hole Fluid Type		CHEM	
Density/Viscosity		8.80	
PH/Turb Loss		10.00	
Sample Source		MOD PIT	
Rm @ Measured Temp		0.31 @ 75.0	
Rmt @ Measured Temp		0.25 @ 75.0	
Rmt @ Measured Temp		0.37 @ 75.0	
Source Rmt/ Rmc		CALC	
Rm @ BHT		0.21 @ 114.0	
Time since Circulation		3-HOURS	
Max Recorded Temp		114.00	
Equipment Base		13067	
Recorded By		BEN WEIDON	
Witnessed By		KENT DEWOLSH	
JOB #		LB14-331	











COMPANY	DEUTSCH OIL COMPANY
WELL	BAUMAN #7-4
FIELD	BAUMAN
PROVINCE/COUNTY	PRATT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1836.00	feet	First Reading	4168.66	feet
Elevation Drill Floor	1834.00	feet	Depth Driller	4175.00	feet

