



Weatherford[®]

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

COMPANY				SHAKESPEARE OIL CO. INC			
WELL				CARSON 1-26			
FIELD				PENCE EAST			
PROVINCE/COUNTY				SCOTT			
COUNTRY/STATE				U.S.A. / KANSAS			
LOCATION				649' FNL & 1371' FEL SE NE NW NE			
SEC	TWP	RGE	Other Services				
26	16S	34W	MPD/MDN				
API Number		15-171-20969	MML				
Permit Number			MSS				
Permanent Datum GL, Elevation 3114 feet							
Log Measured From KB							
Drilling Measured From KB AT 10 FEET							
Date	07-SEP-2013					Elevations:	feet
Run Number	ONE					KB	3124.00
Service Order	3541037					DF	3122.00
Depth Driller	4890.00					GL	3114.00
Depth Logger	4889.00						
First Reading	4886.00						
Last Reading	267.00						
Casing Driller	267.00						
Casing Logger	267.00						
Bit Size	7.875						
Hole Fluid Type	CHEM						
Density / Viscosity	9.10 lb/USg		60.00 CP				
PH / Fluid Loss	10.00		10.80 ml/30Min				
Sample Source	PIT						
Rm @ Measured Temp	0.30 @ 91.0					ohm-m	
Rmf @ Measured Temp	0.24 @ 91.0					ohm-m	
Rmc @ Measured Temp	0.36 @ 91.0					ohm-m	
Source Rmf / Rmc	CALC		CALC				
Rm @ BHT	0.24 @ 113.0					ohm-m	
Time Since Circulation	4 HRS						
Max Recorded Temp	113.00					deg F	
Equipment / Base	13244					KANSAS	
Recorded By	D. COLE						
Witnessed By	S. DAVIS						
IOB#	LB 13 - 251						

BOREHOLE RECORD					Last Edited: 07-SEP-2013 09:46
Bit Size inches		Depth From feet		Depth To feet	
7.875		267.00		4890.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
CASING	8.625	0.00	267.00	24.00	

REMARKS
- SOFTWARE ISSUE: WLS 13.05.9583
- TOOLS: MCG, MML, MDN, MPD, MFE, MSS, MAI
- HARDWARE: - MDN: DUAL BOWSPRING ECCENTRALIZER - MFE: 1 X 0.5 INCH STANDOFF - MSS: 2 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 3800 FEET: 410 CU.FT.

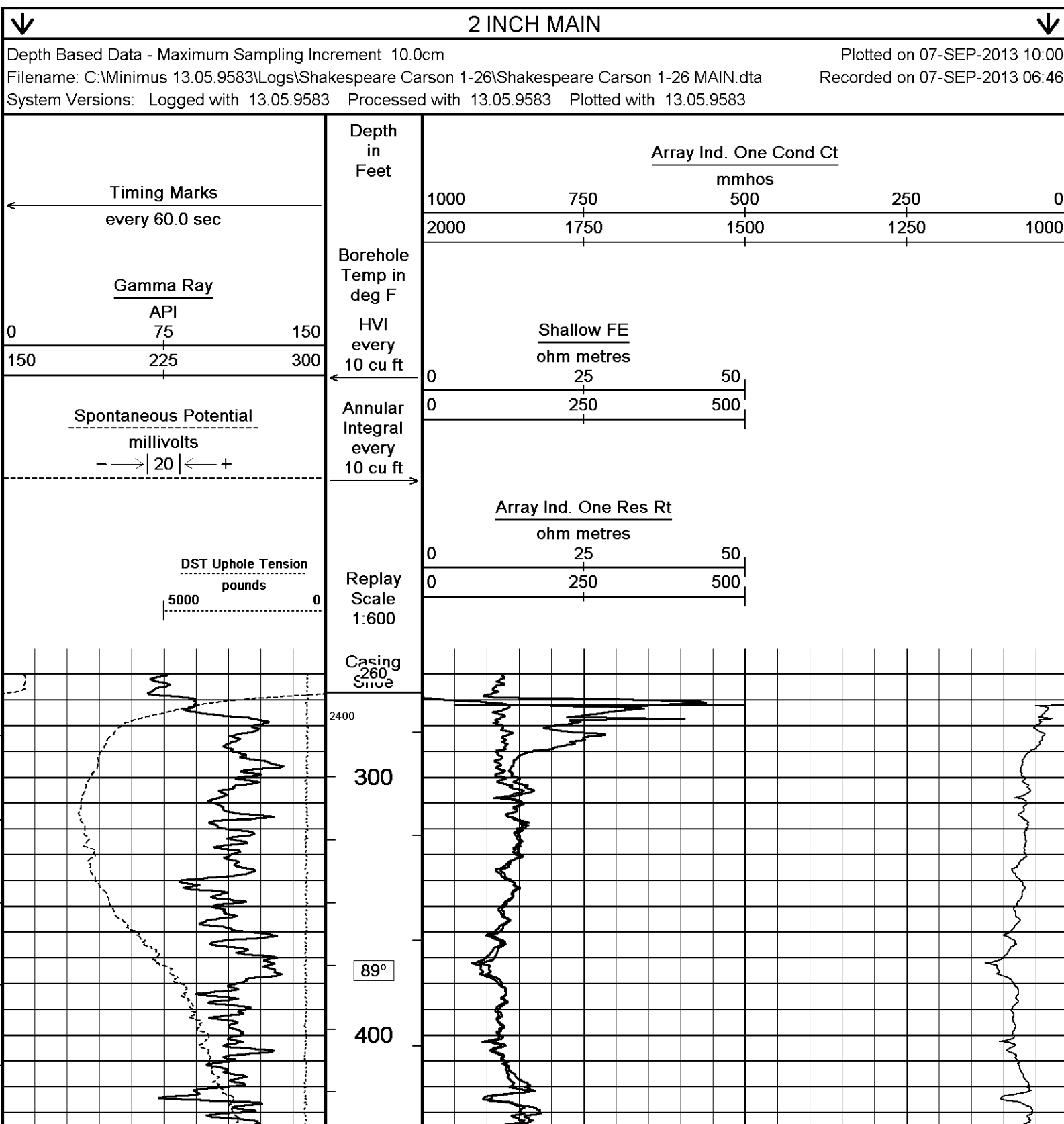
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3800 FEET: 230 CU.FT.

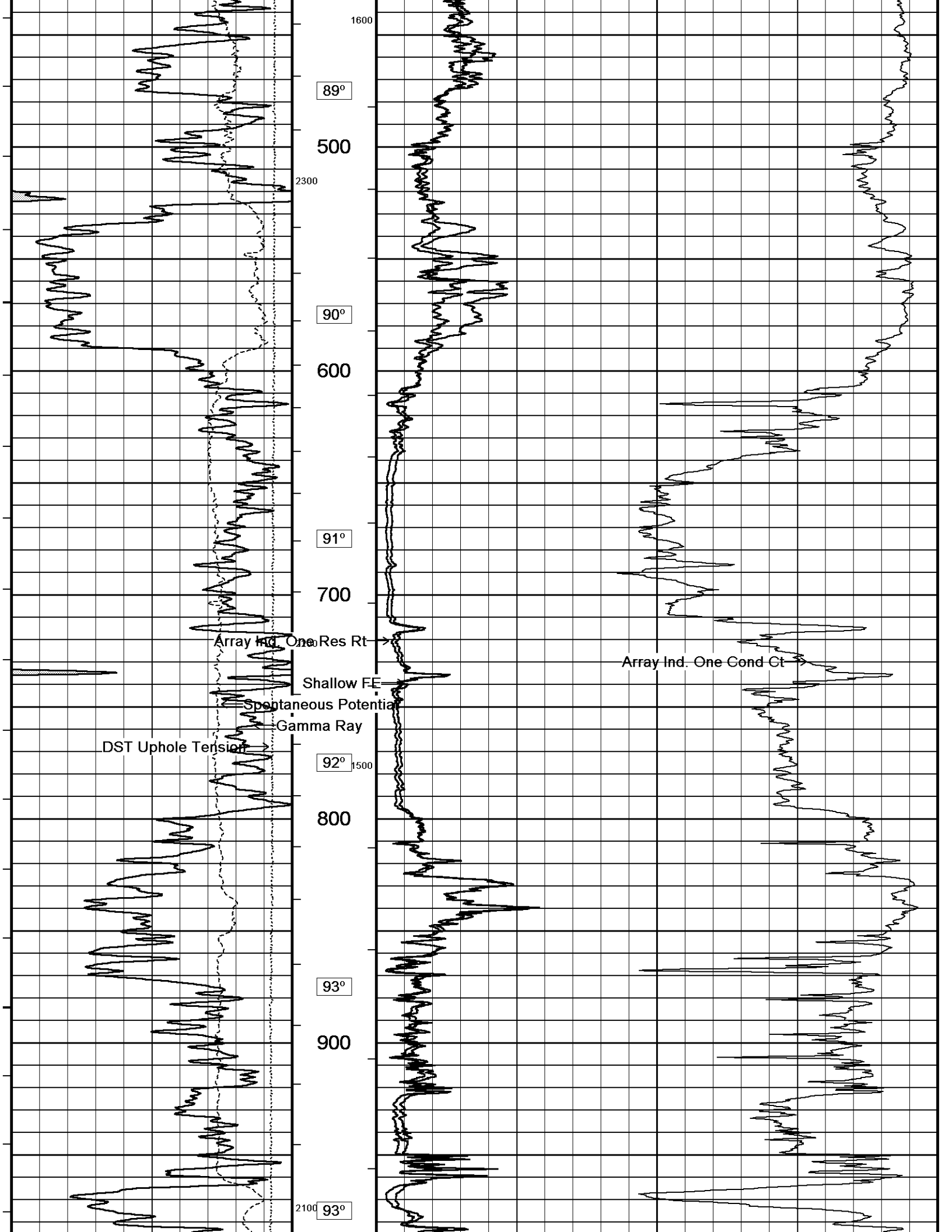
- RIG: HD #2

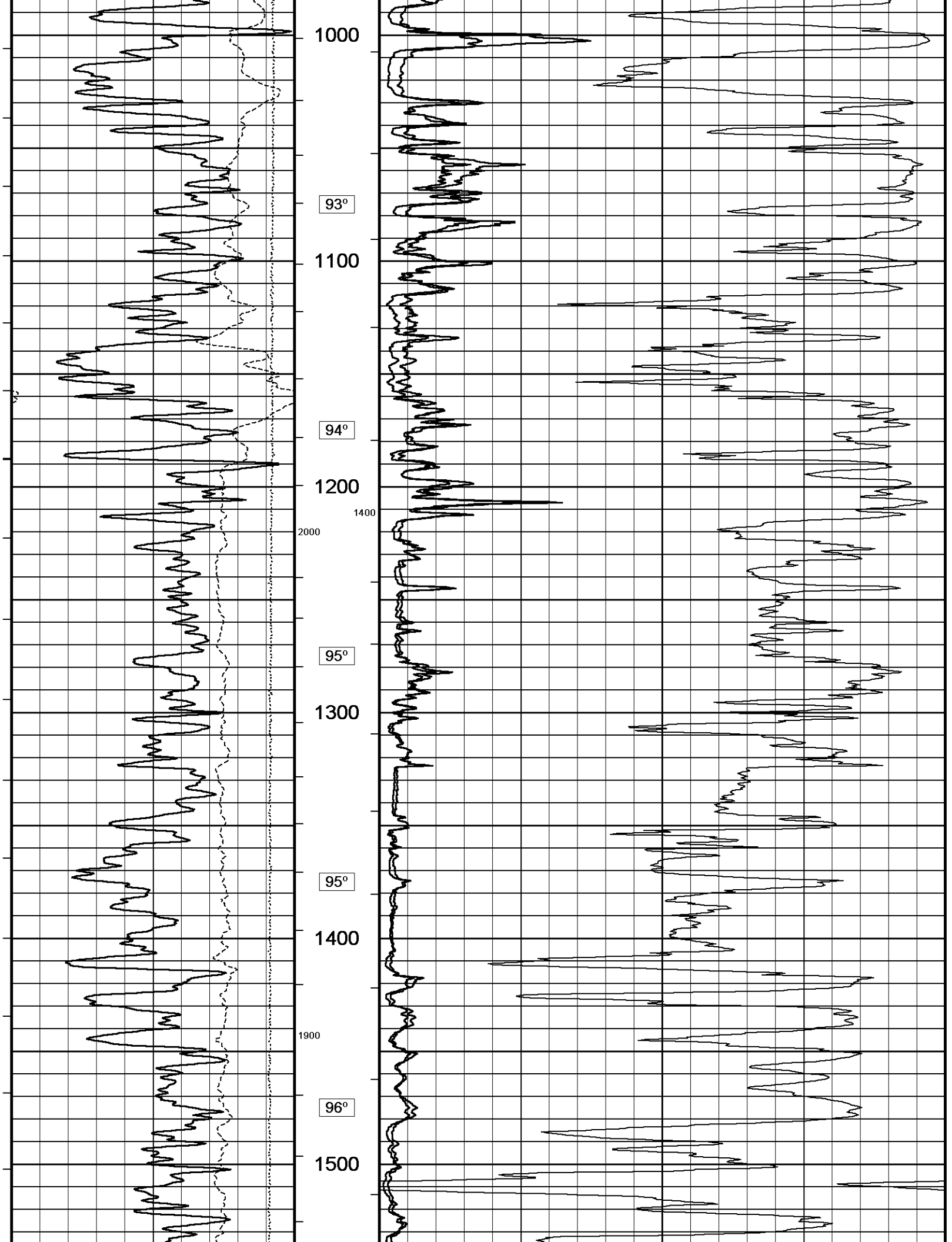
- ENGINEER: D. COLE

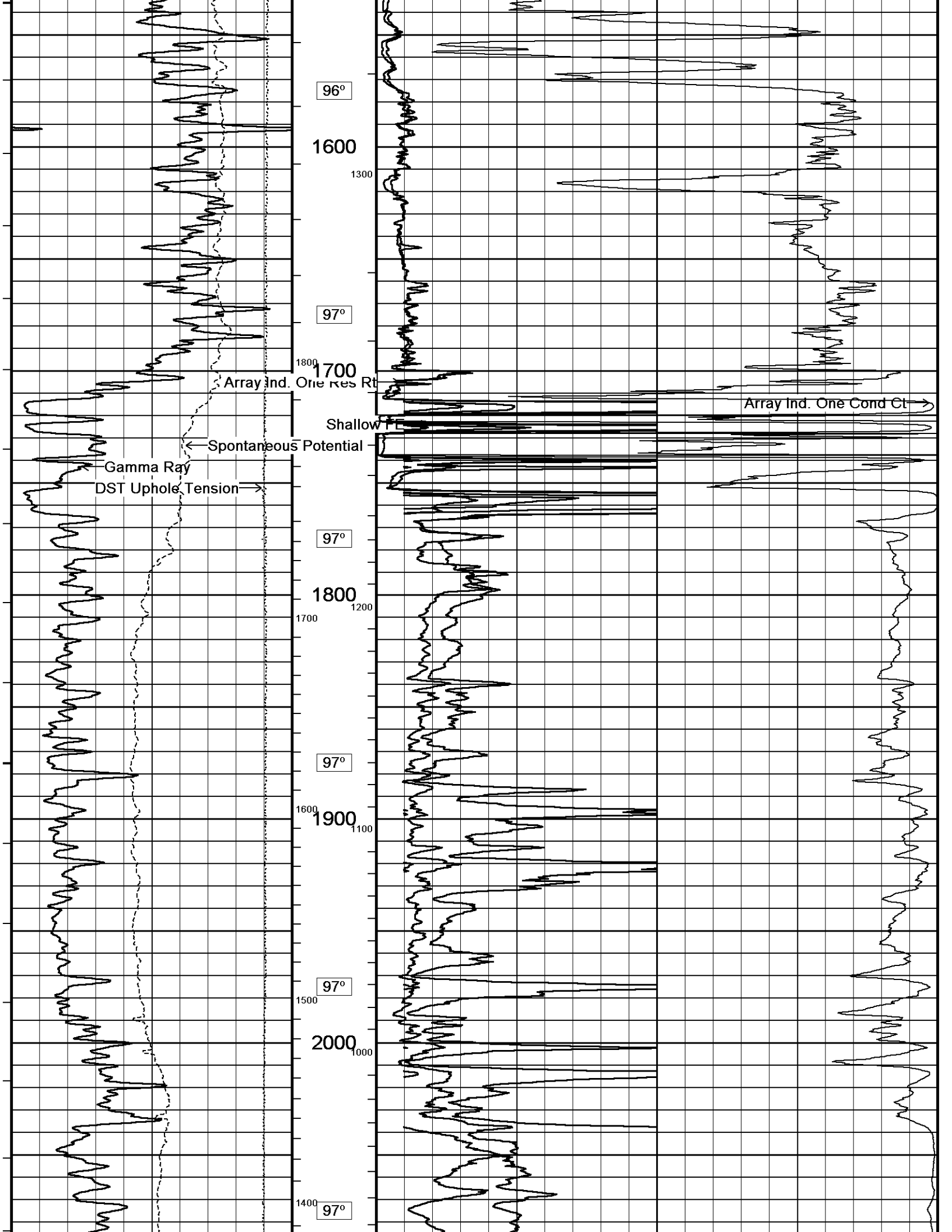
- OPERATOR: C. RAMIREZ

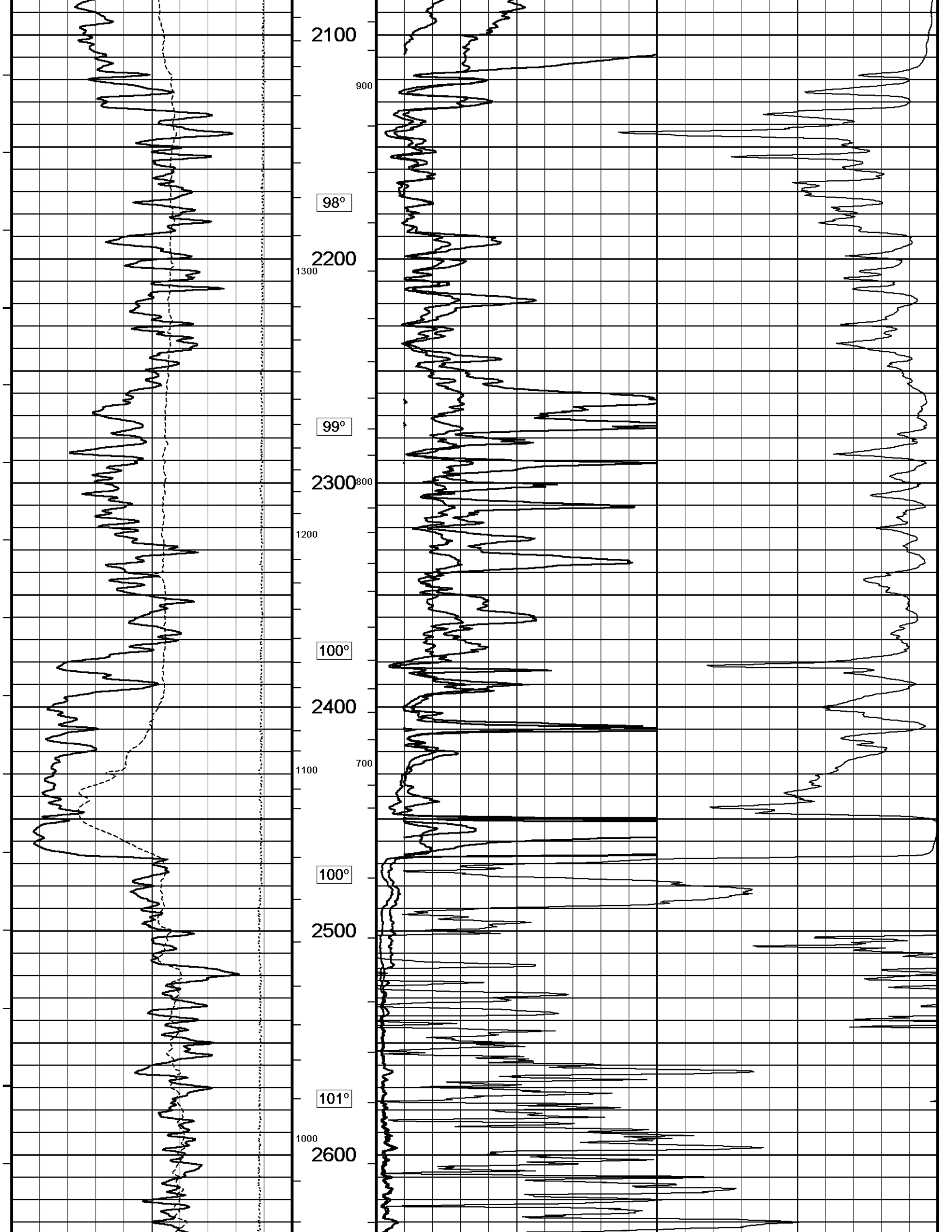
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, 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.

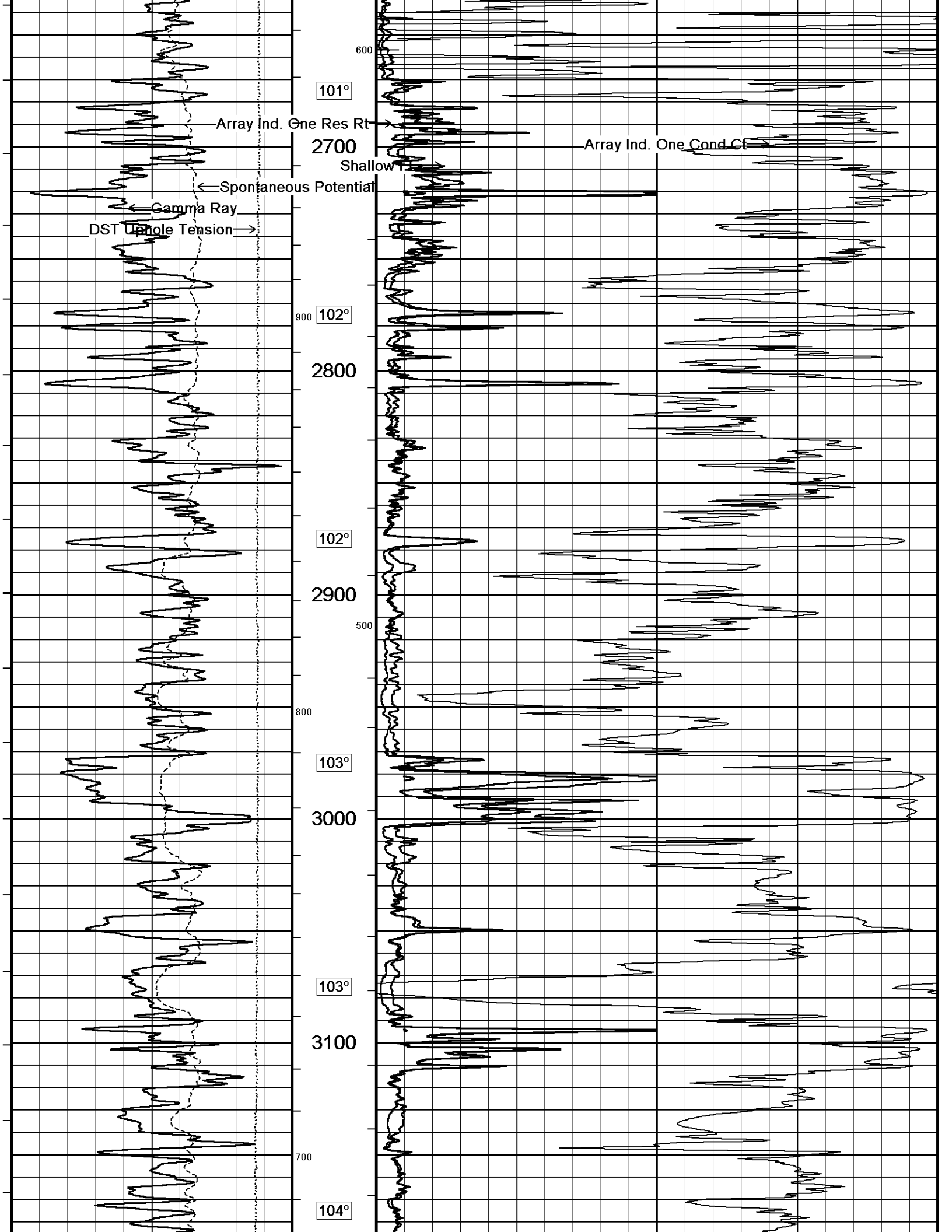


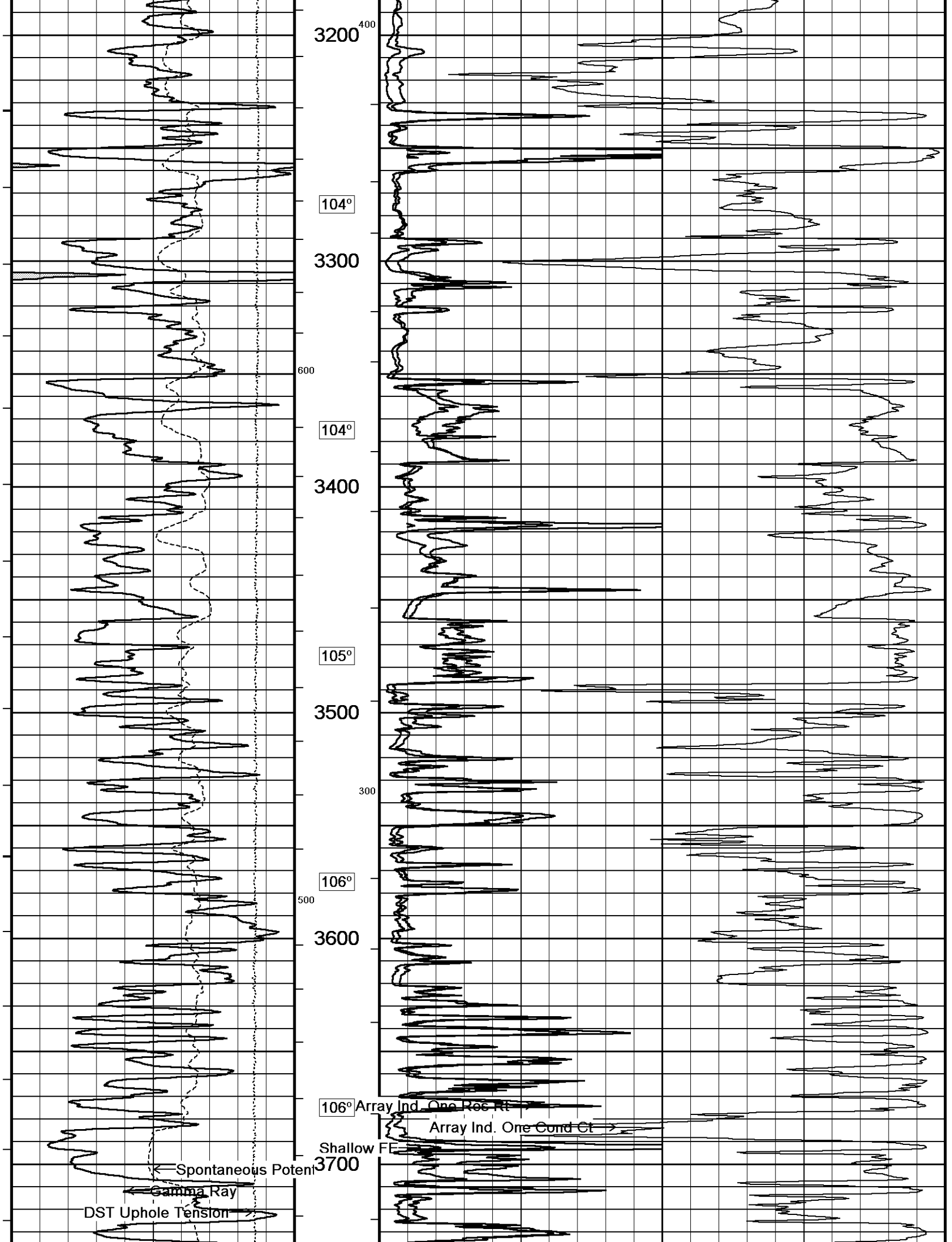


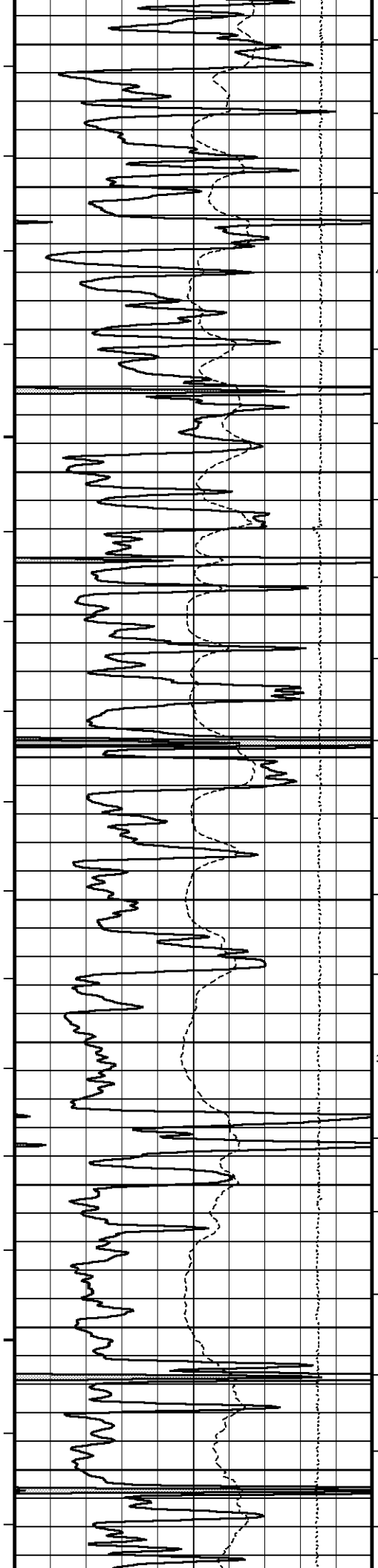












107°

3800

400

107°

3900

200

108°

4000

300

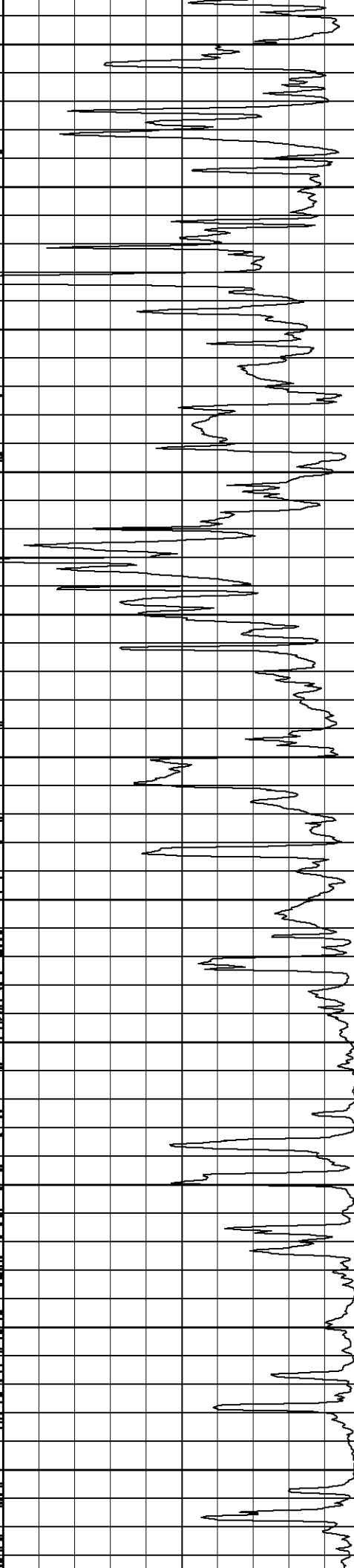
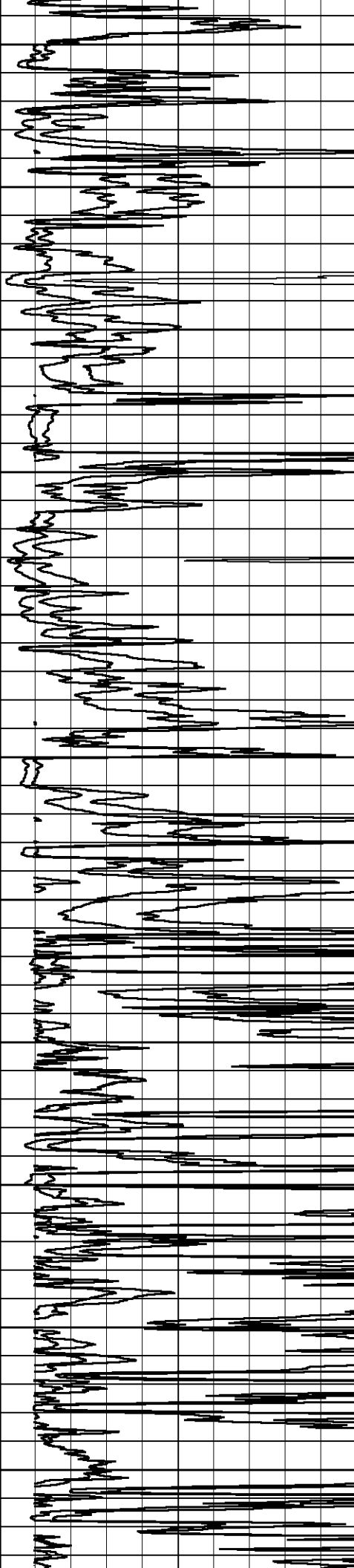
108°

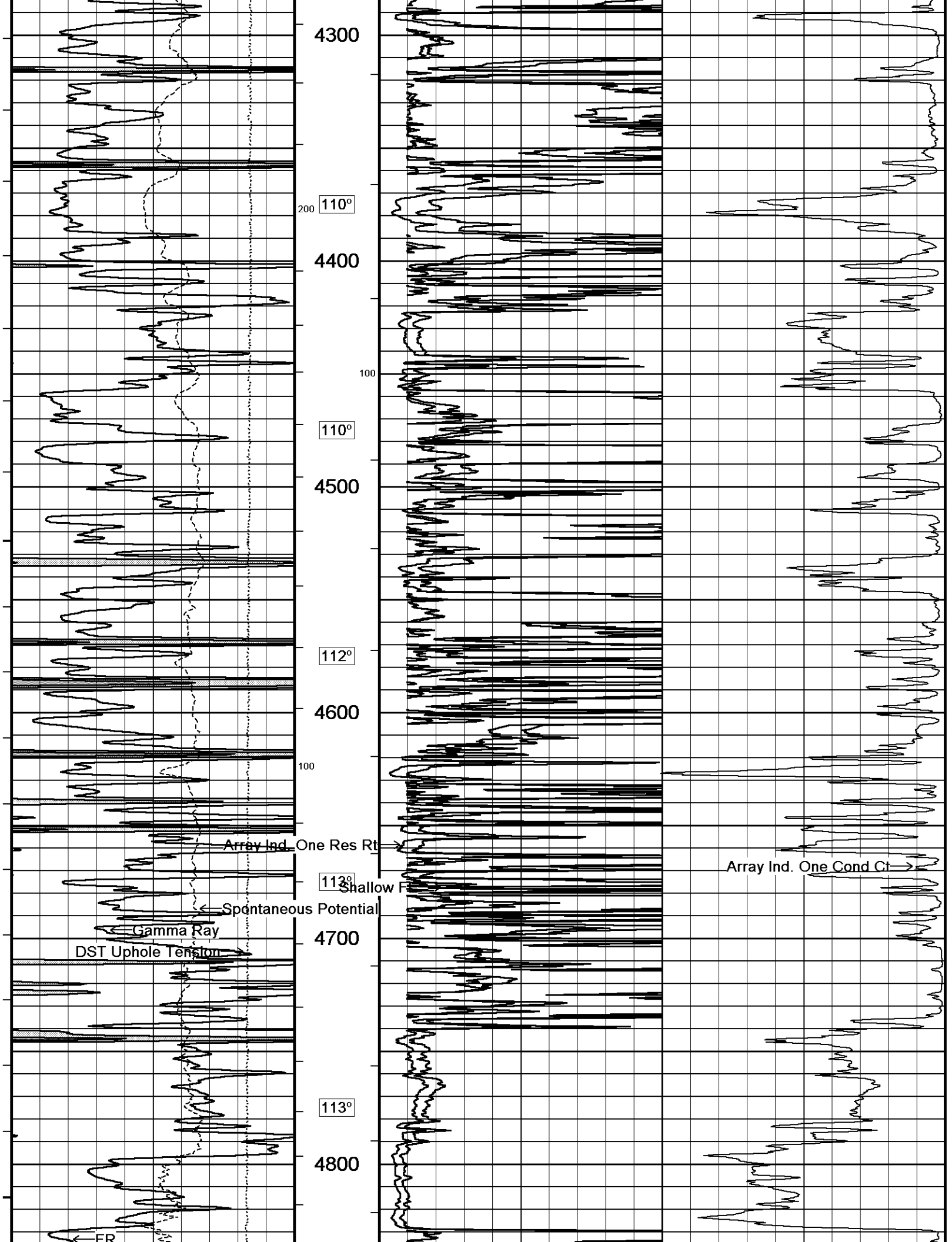
4100

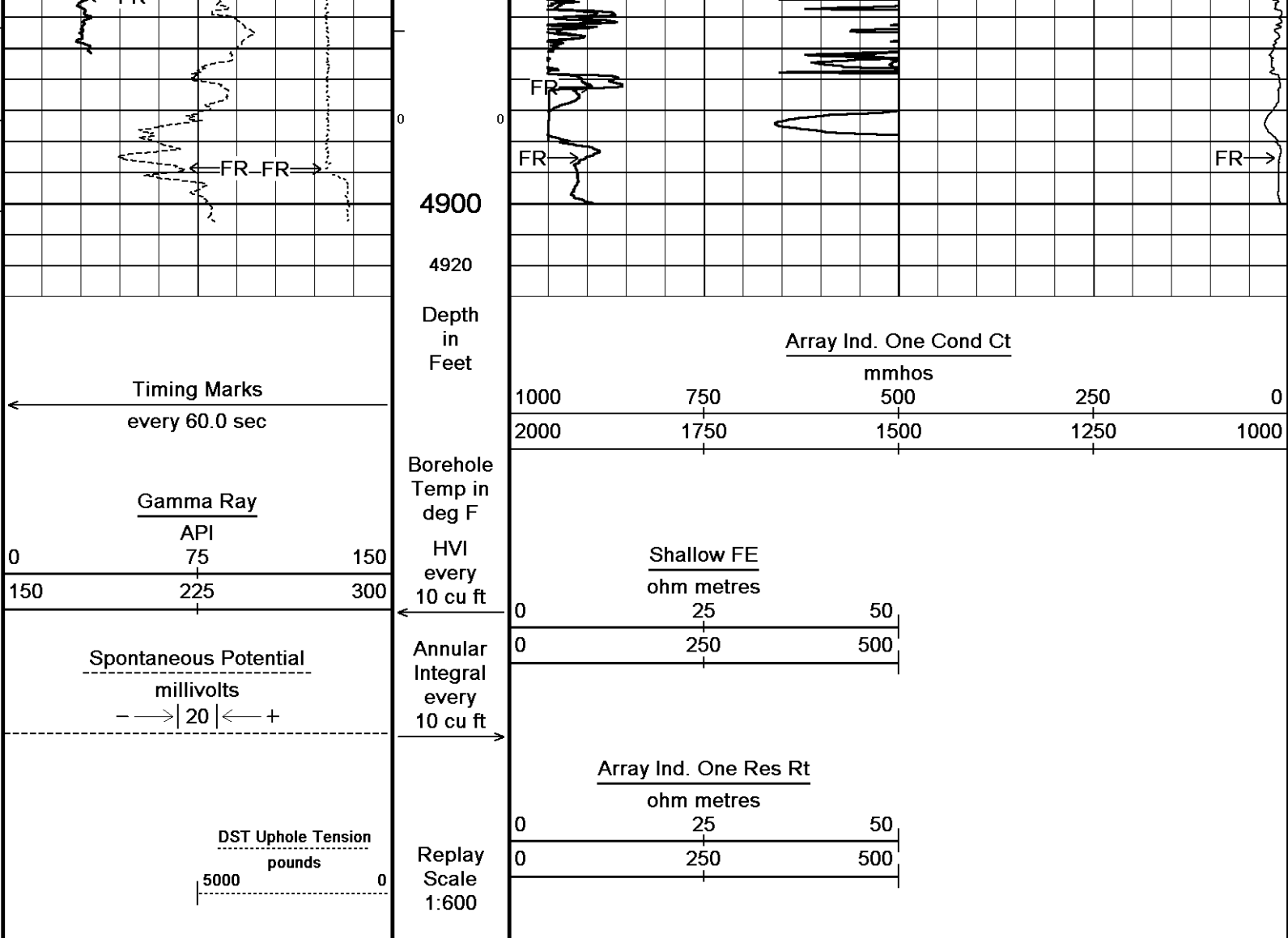
109°

4200

109°





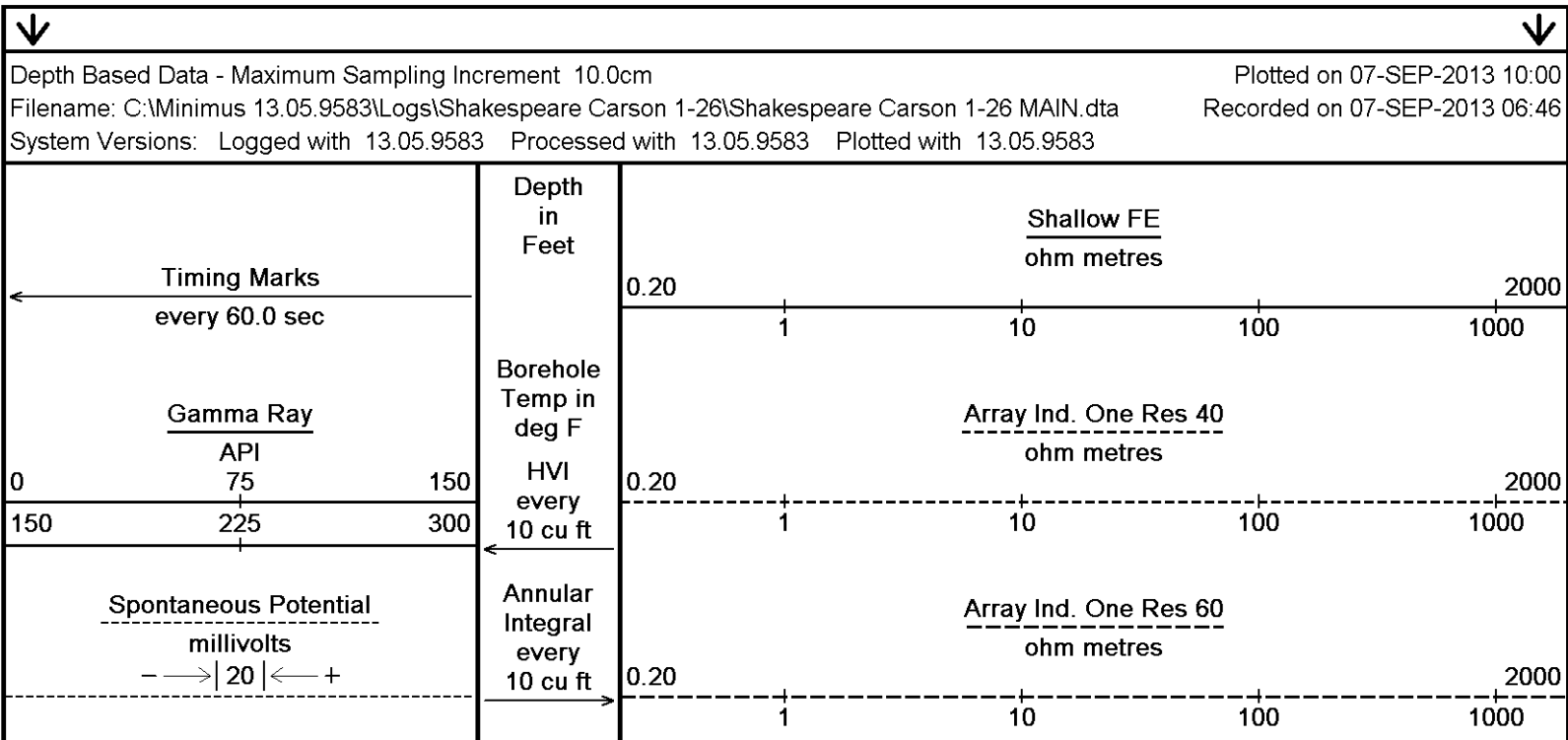


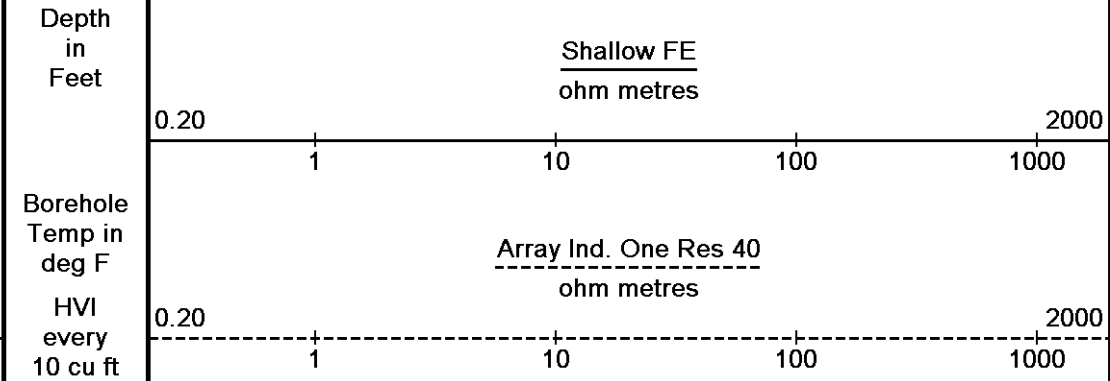
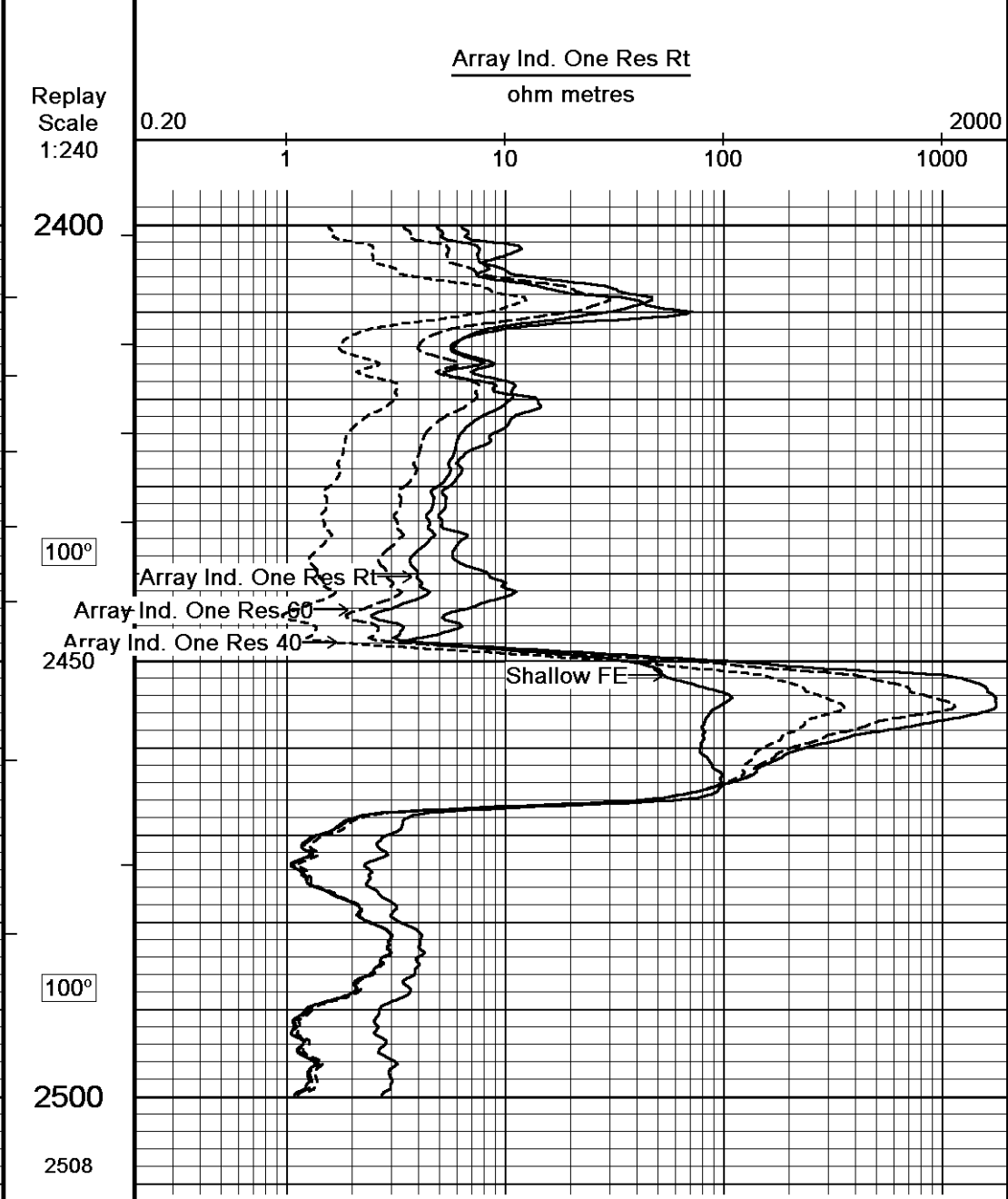
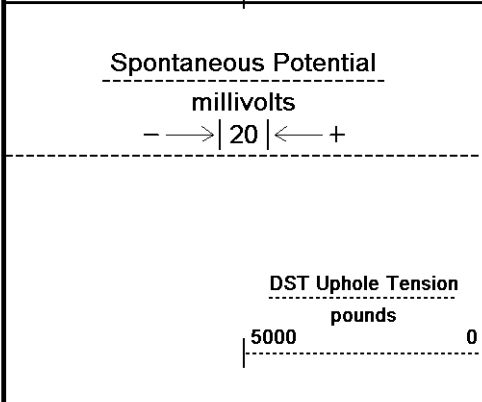
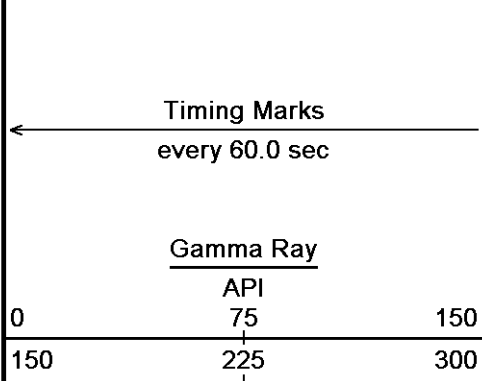
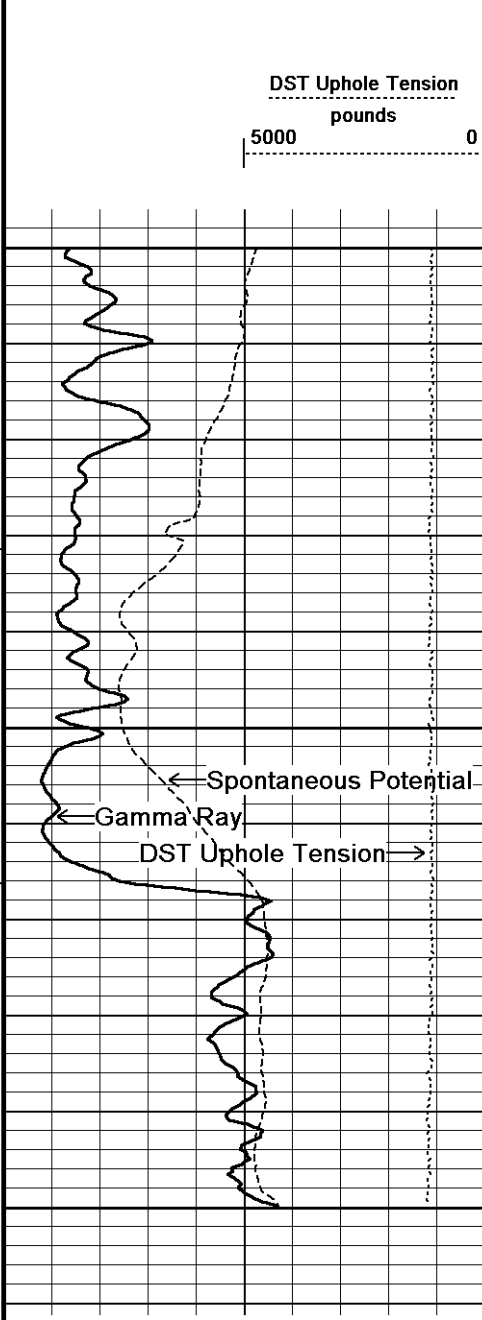
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 07-SEP-2013 10:00

Filename: C:\Minimus 13.05.9583\Logs\Shakespeare Carson 1-26\Shakespeare Carson 1-26 MAIN.dta Recorded on 07-SEP-2013 06:46

System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

↑ 2 INCH MAIN ↑







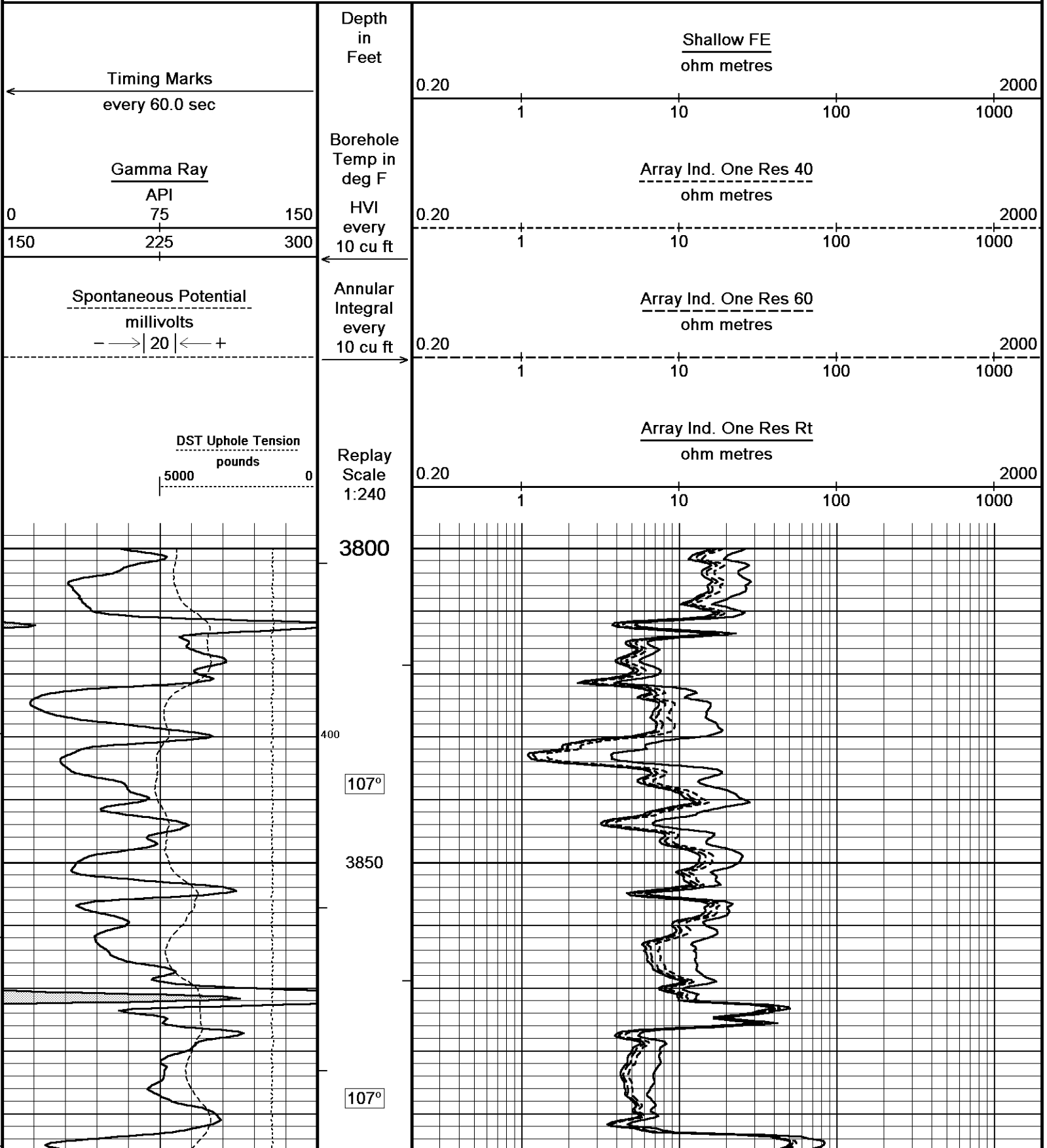
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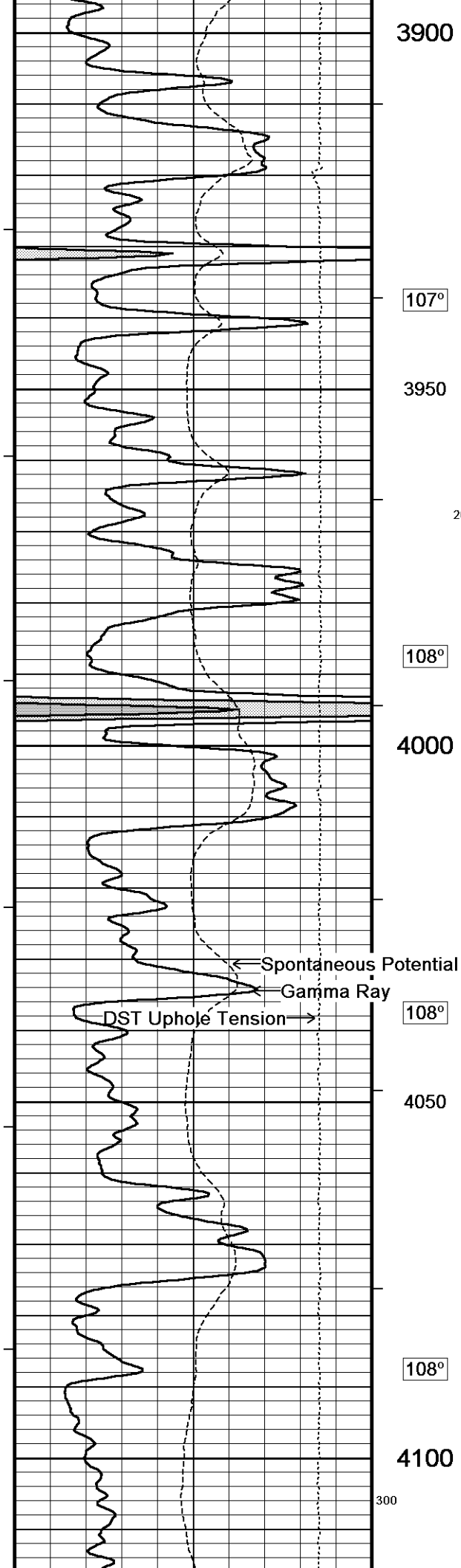
5 INCH MAIN

↓

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.05.9583\Logs\Shakespeare Carson 1-26\Shakespeare Carson 1-26 MAIN.dta
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

Plotted on 07-SEP-2013 10:00
Recorded on 07-SEP-2013 06:46





3900

107°

3950

200

108°

4000

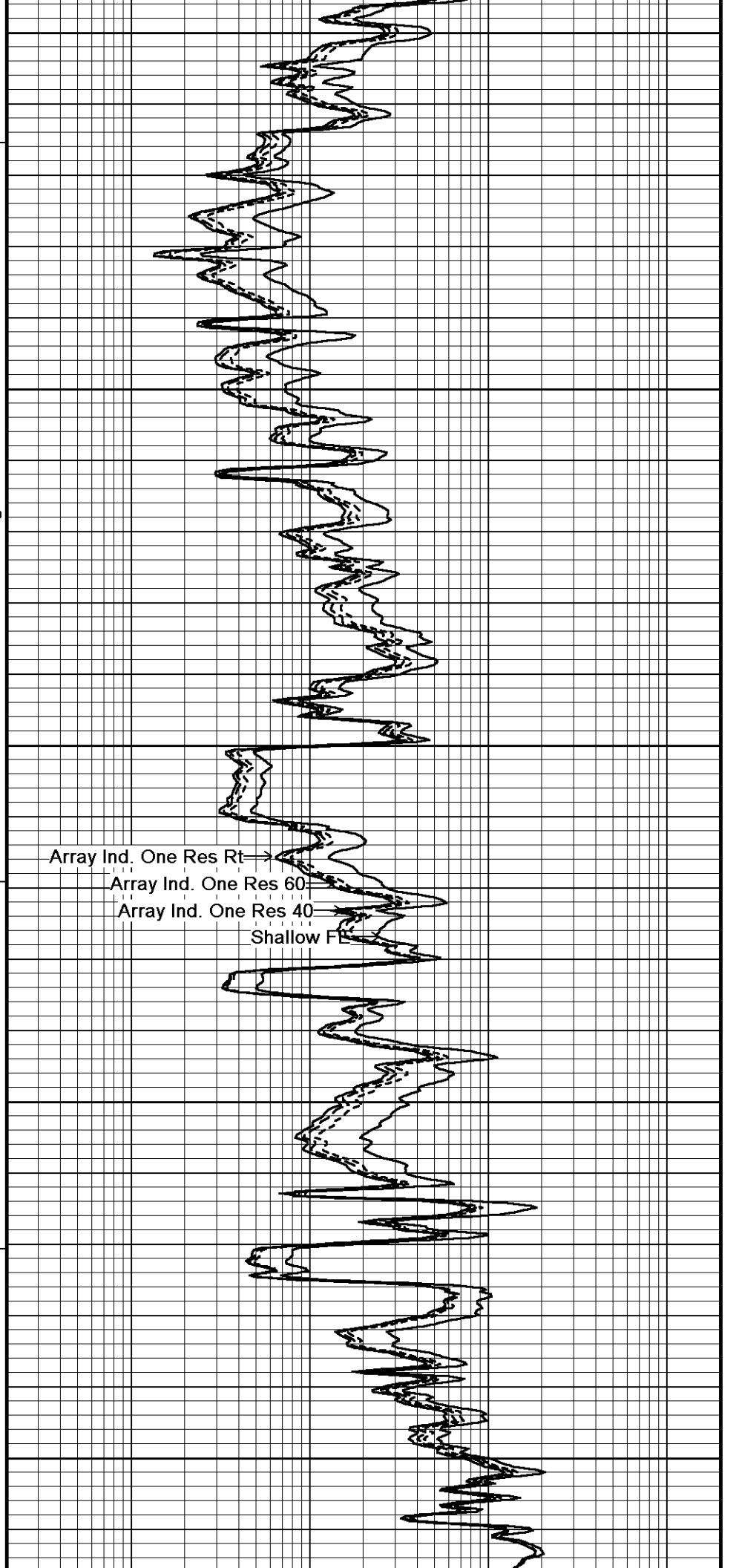
108°

4050

108°

4100

300

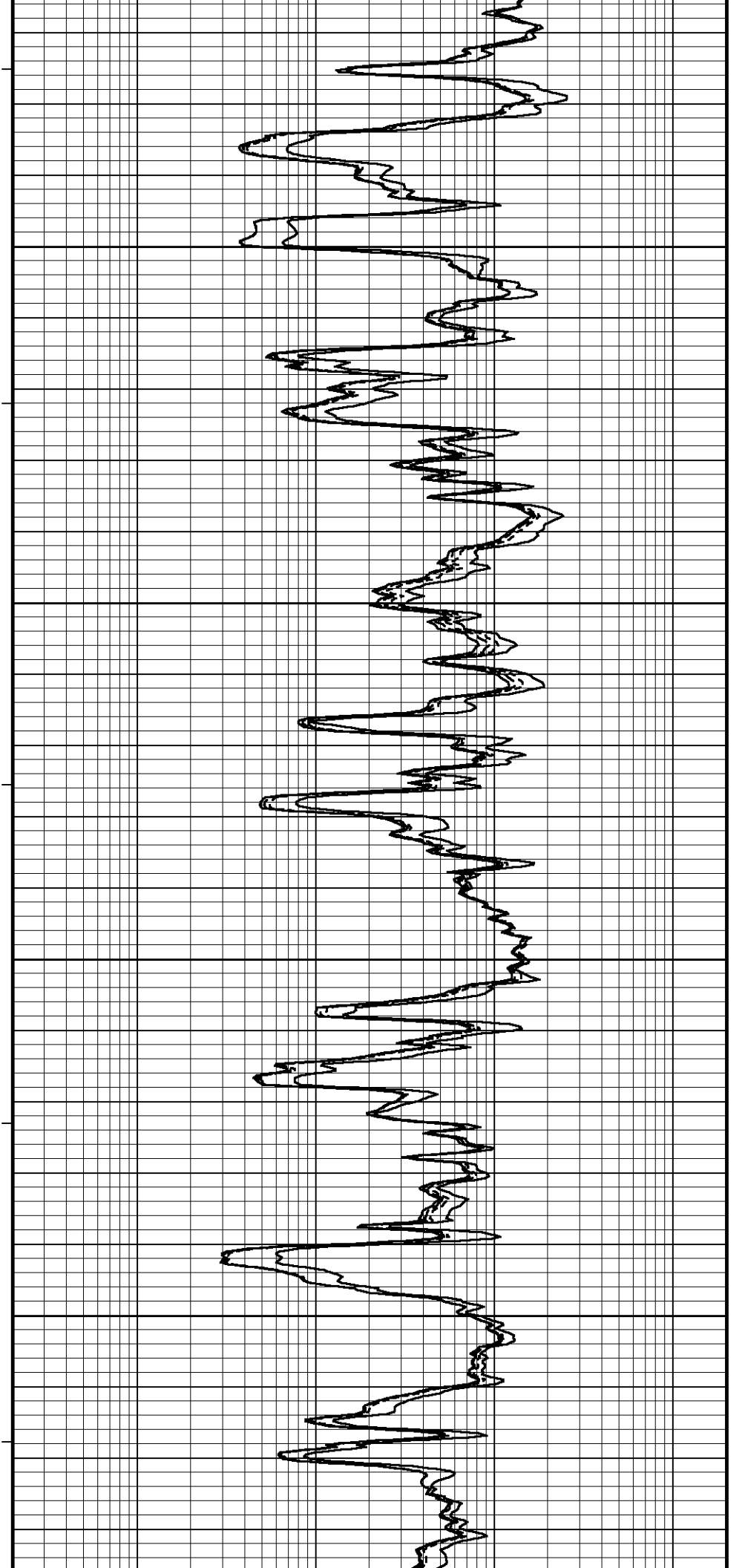
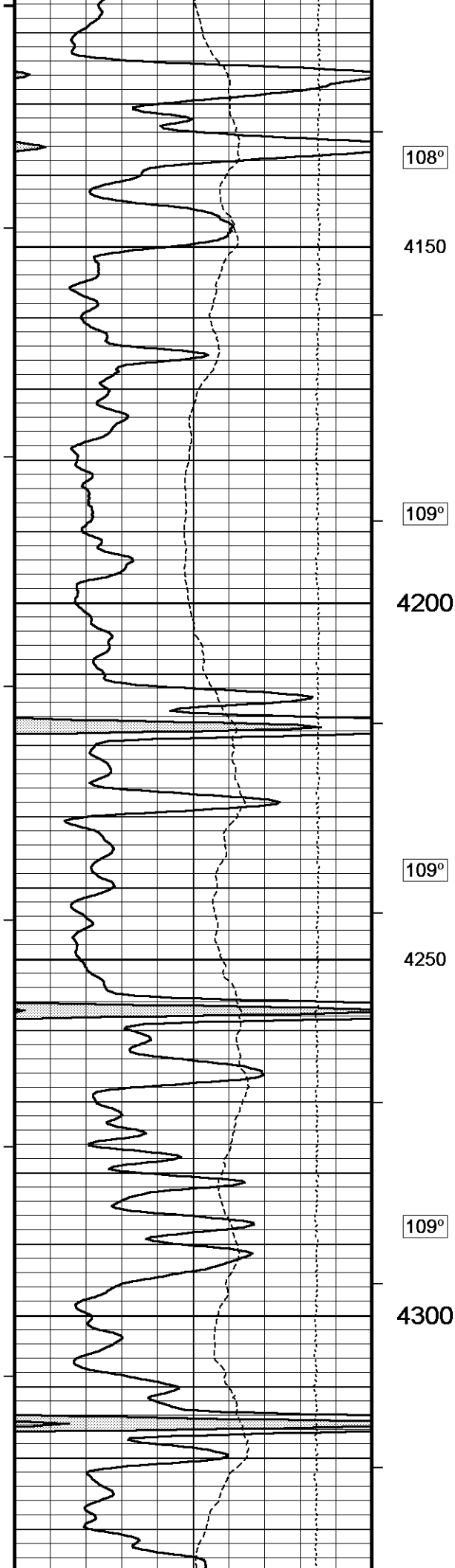


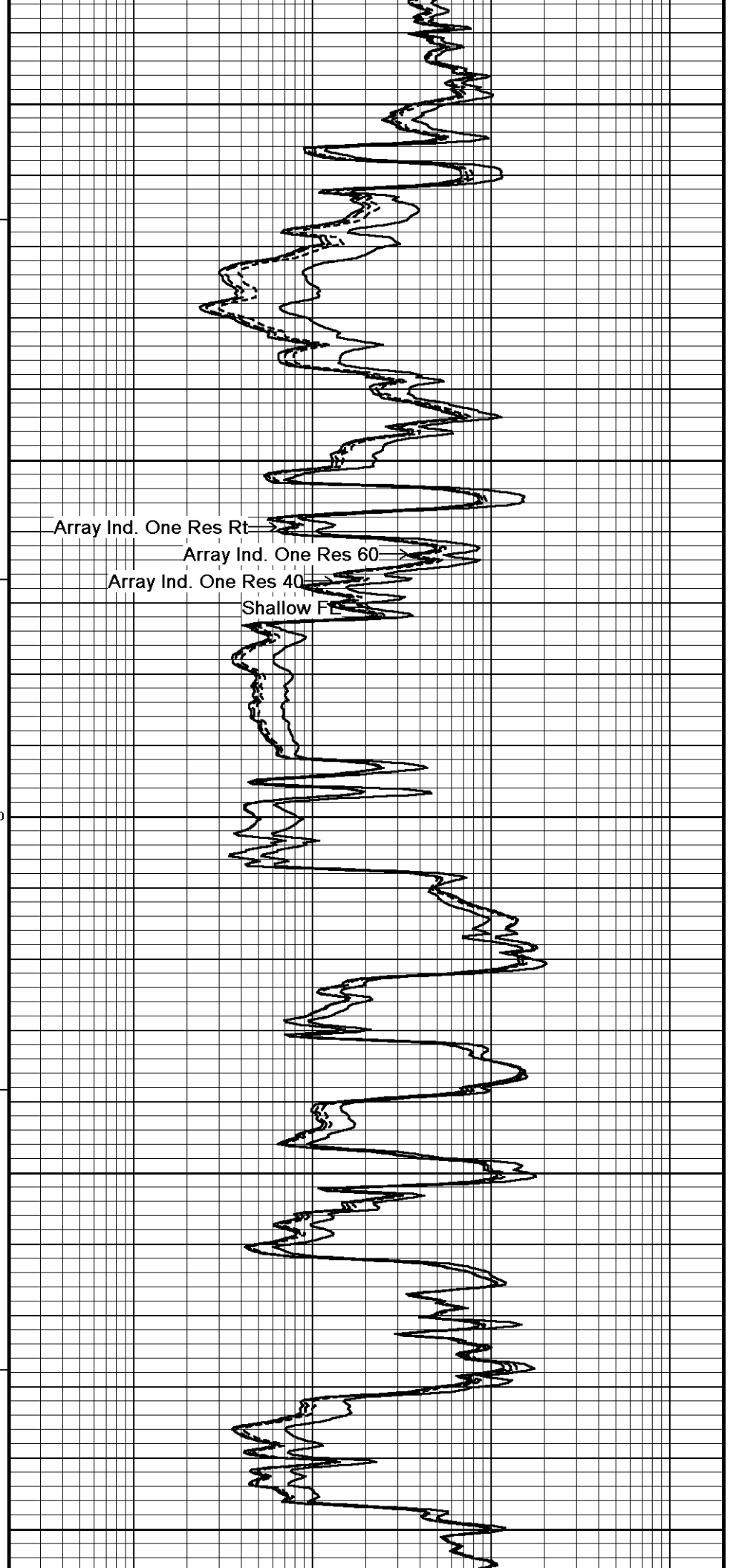
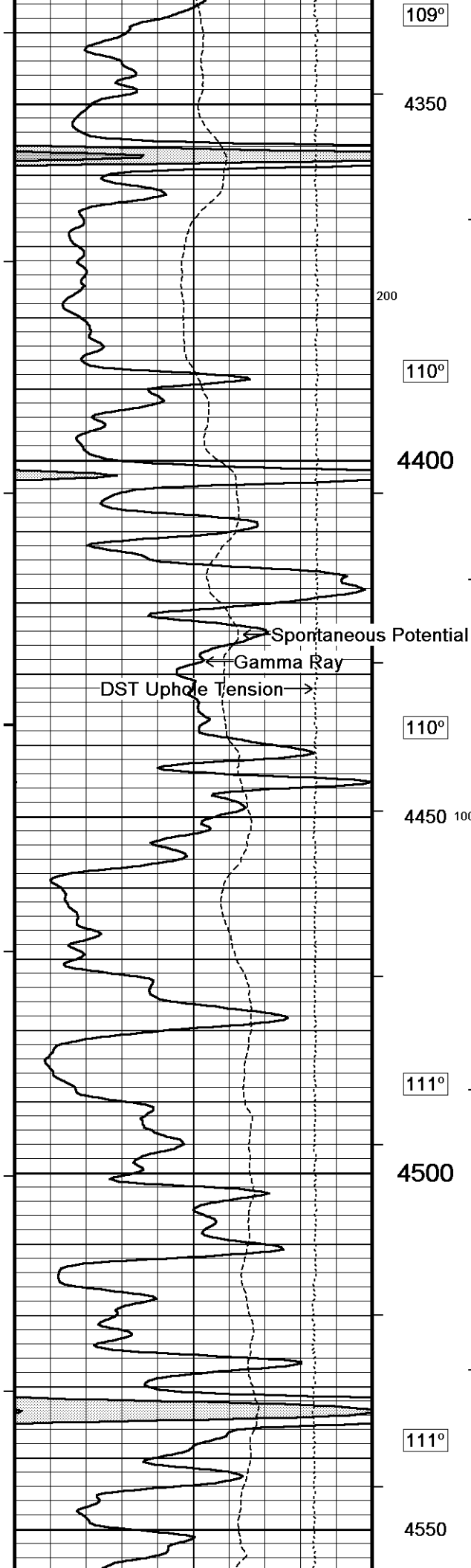
Array Ind. One Res Rt

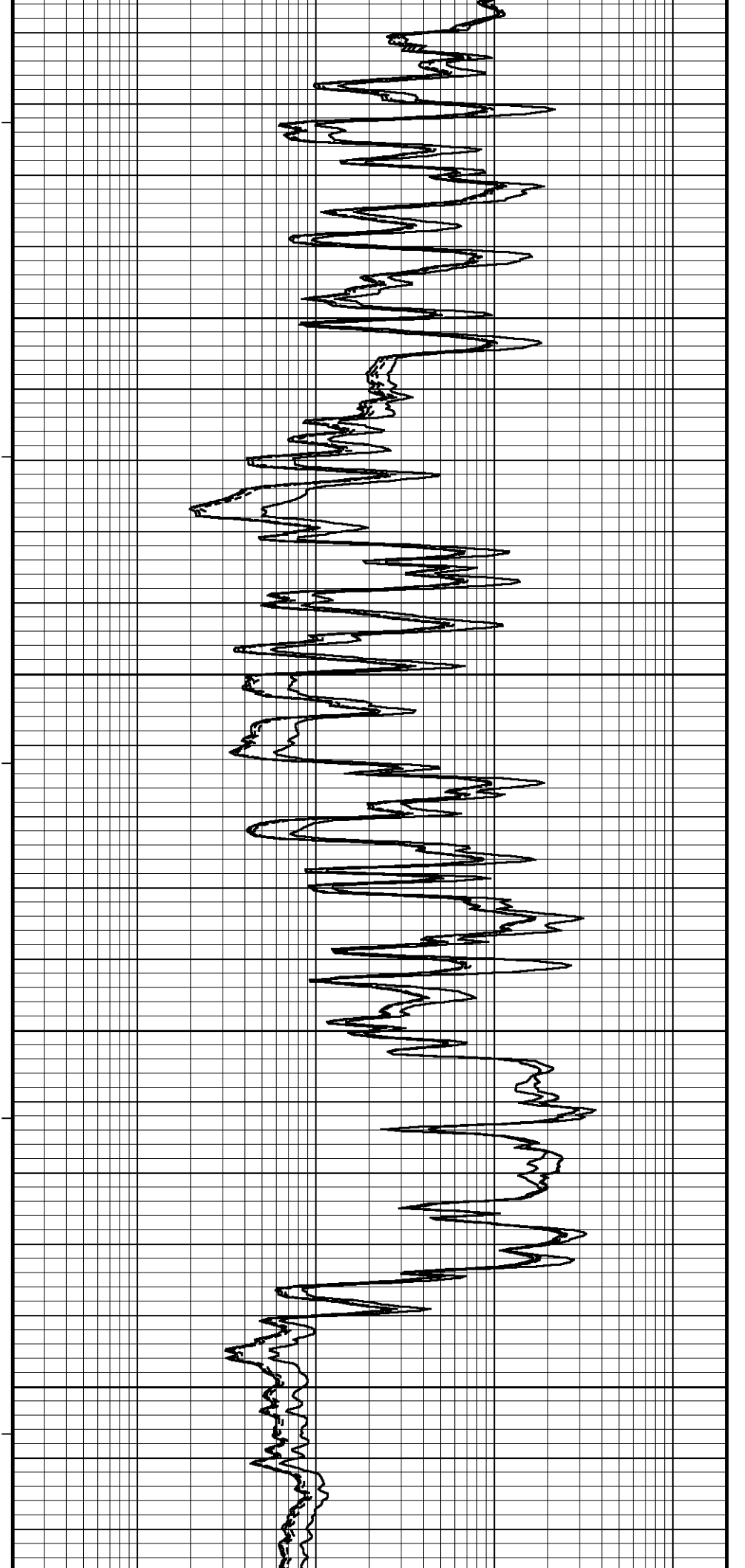
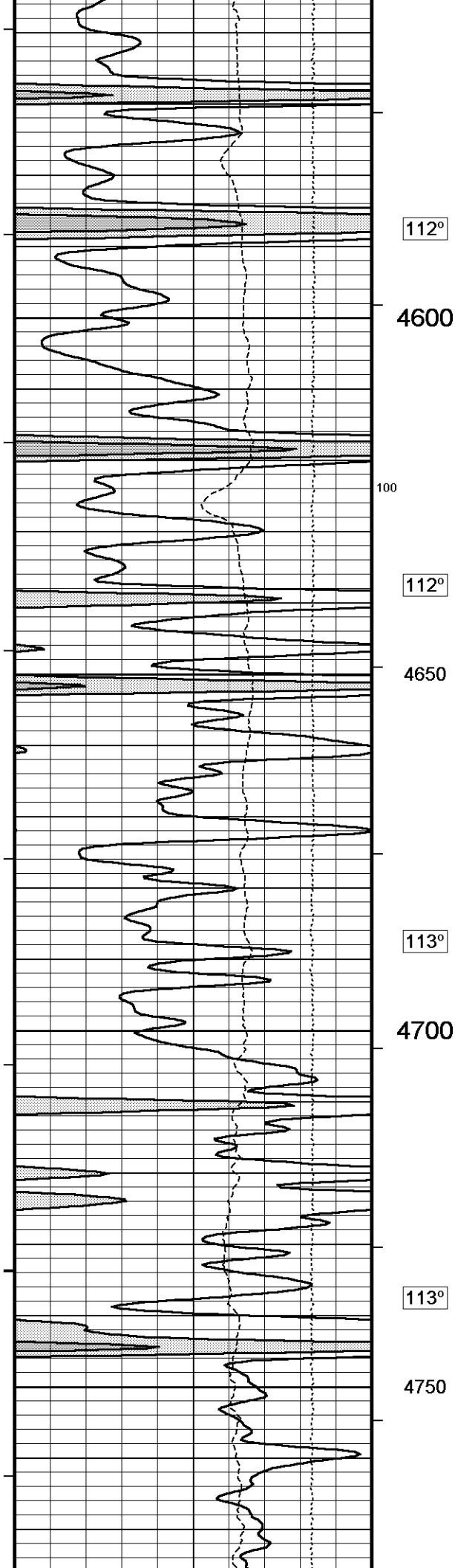
Array Ind. One Res 60

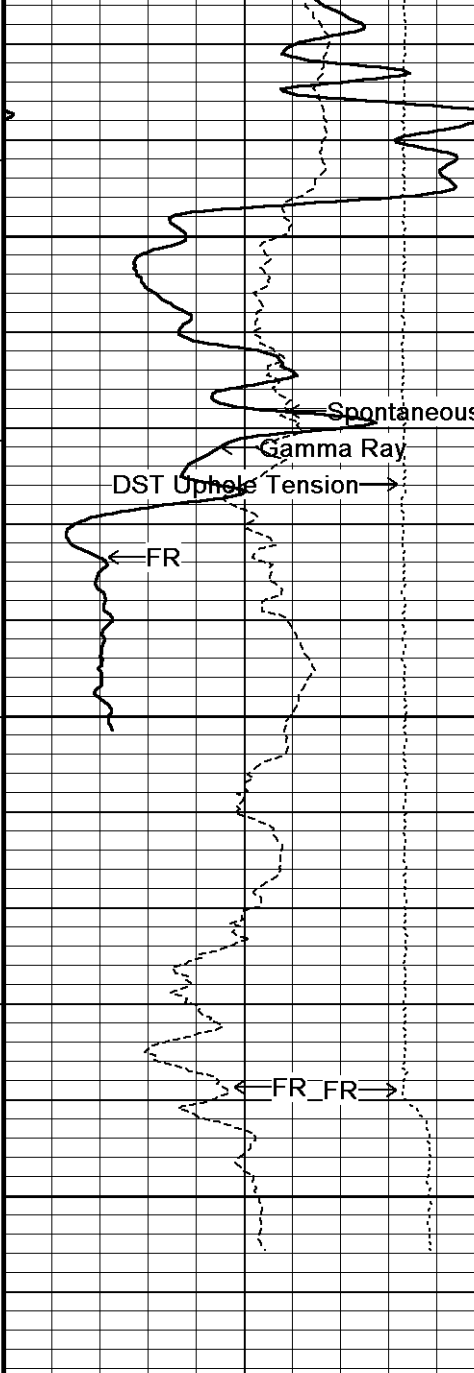
Array Ind. One Res 40

Shallow Fm









113°

4800

113°

4850

4900

4916

Depth
in
Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
- -> | 20 | <- +

DST Uphole Tension
pounds
5000 0

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

FR
FR

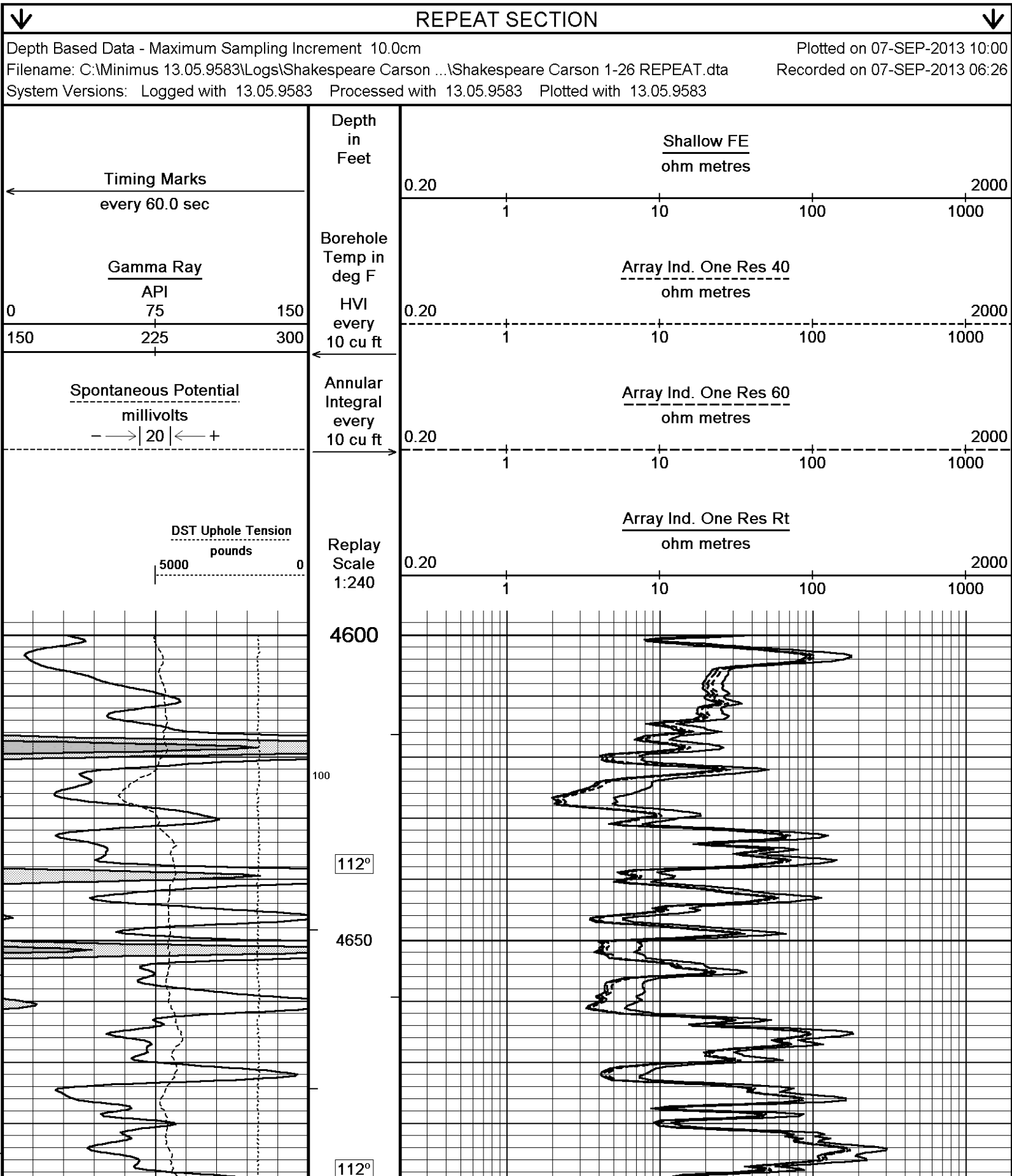
Shallow FE
ohm metres
0.20 1 10 100 1000 2000

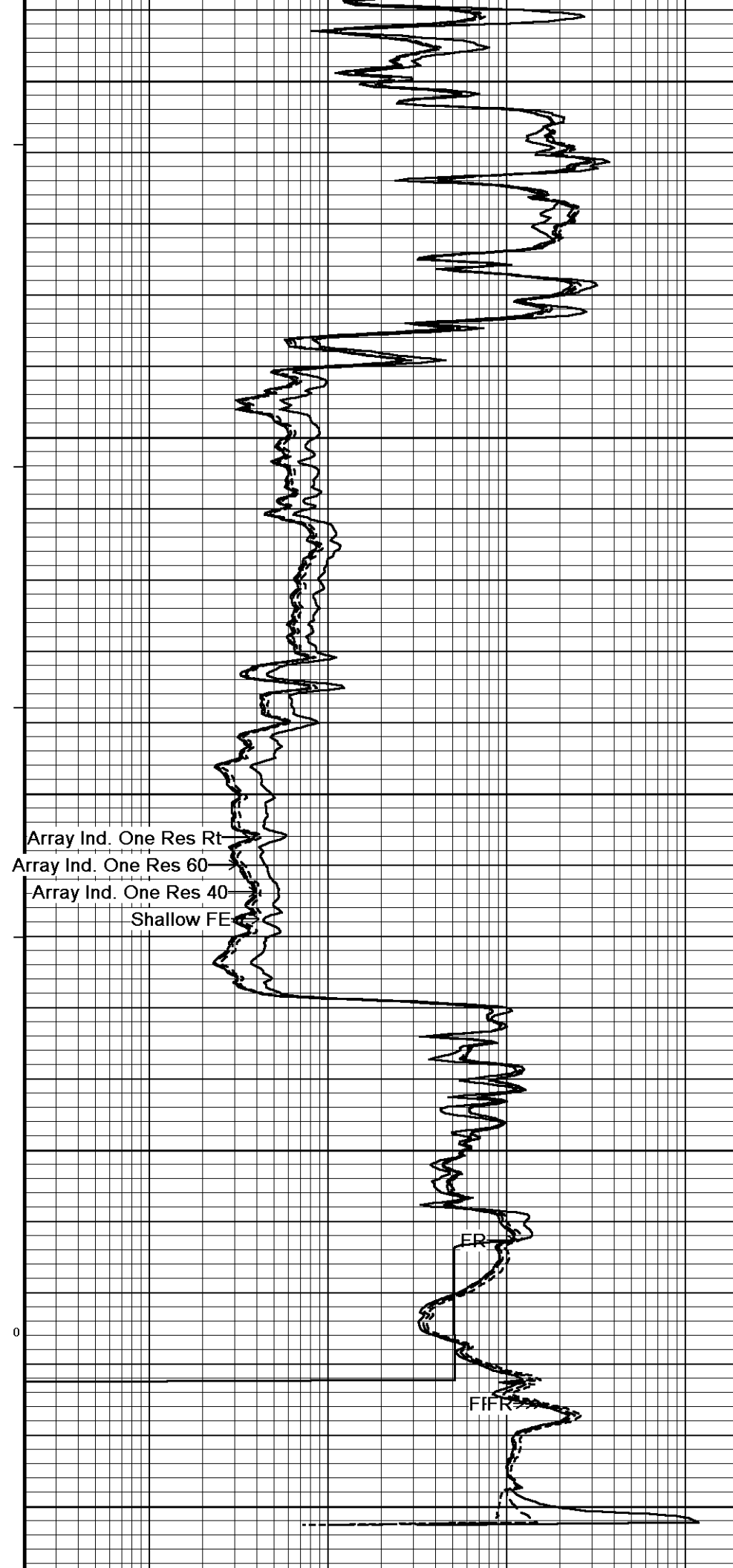
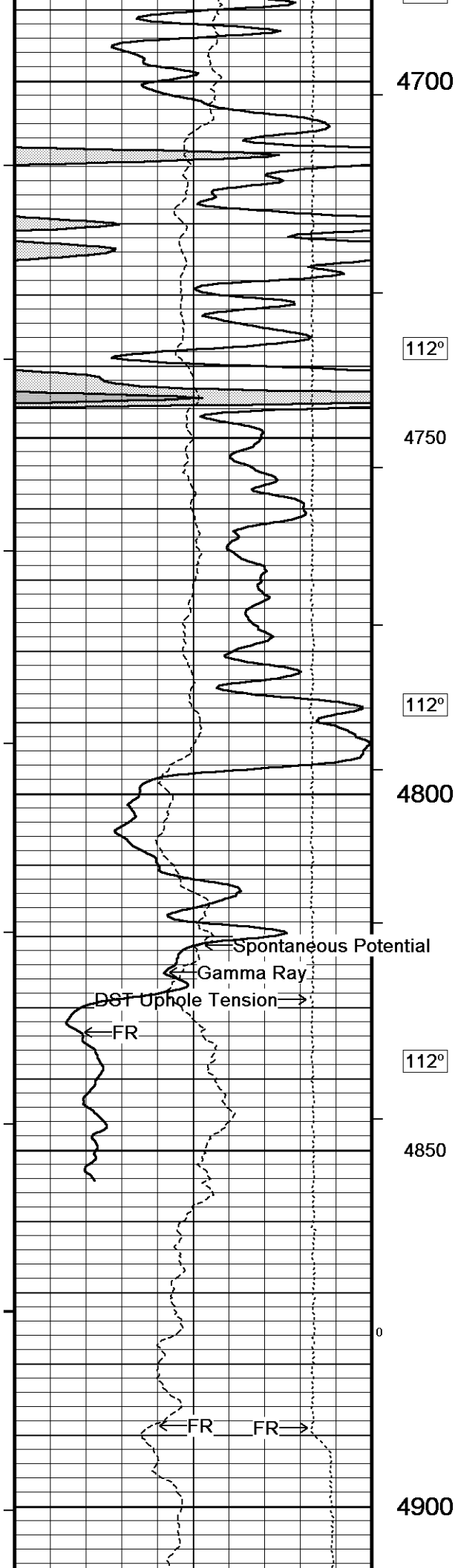
Array Ind. One Res 40
ohm metres
0.20 1 10 100 1000 2000

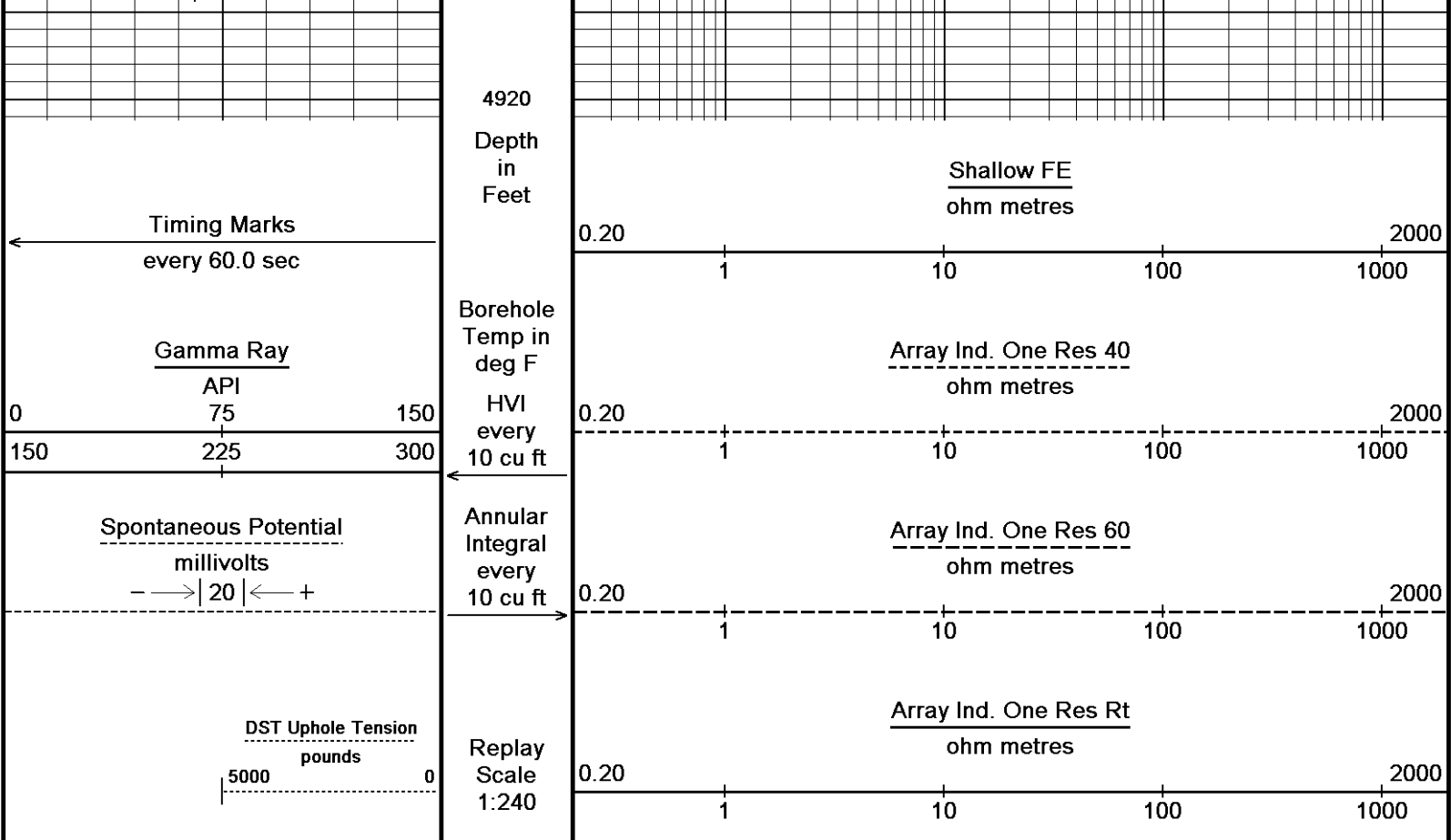
Array Ind. One Res 60
ohm metres
0.20 1 10 100 1000 2000

Array Ind. One Res Rt
ohm metres
0.20 1 10 100 1000 2000

Replay
Scale







Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 07-SEP-2013 10:00

Filename: C:\Minimus 13.05.9583\Logs\Shakespeare Carson ...\Shakespeare Carson 1-26 REPEAT.dta Recorded on 07-SEP-2013 06:26

System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION			
C:\Minimus 13.05.9583\Logs\Shakespeare Carson 1-26\Shakespeare Carson 1-26 REPEAT.dta			
General Constants All 000		Last Edited on 07-SEP-2013,05:52	
General Parameters			
Mud Resistivity	0.300	ohm-metres	
Mud Resistivity Temperature	91.000	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	MML Caliper		
Rwa Parameters			
Porosity used	Crossplot Porosity		
Resistivity used	Array Ind. One Res Rt		
RWA Constant A	1.000		
RWA Constant M	2.000		
SW/APOR Tool Source	0.000		
Gamma Calibration MCG-D.K 443		Field Calibration on 28-AUG-2013 04:17	
	Measured	Calibrated (API)	
Background	53	36	
Calibrator (Gross)	1112	761	
Calibrator (Net)	1059	725	

Gamma Calibrator Number	GRC38	
Mud Density	1.09	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

High Resolution Temperature Calibration MCG-D.K 443			Field Calibration on 28-AUG-2013,04:08
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	75.00	75.00	

High Resolution Temperature Constants MCG-D.K 443			Last Edited on 28-AUG-2013,04:08
Pre-filter Length	11		

FE Calibration MFE-A.A 55			Base Calibration on 16-AUG-2013 08:59 Field Check on 28-AUG-2013 03:57
Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	950.9	126.8	
Base Check		281.6	
Field Check		281.7	

FE Constants MFE-A.A 55			Last Edited on 07-SEP-2013,05:52
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 178				Base Calibration on 28-AUG-2013,08:48	
				Field Check on 28-AUG-2013,09:29	
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			12.8	3763.8	
2			29.8	3468.0	
3			27.3	3014.6	
4			18.8	2065.2	
Deep			16.0	1995.4	
Medium			40.3	3955.8	
Shallow			45.7	5083.6	
Array Temperature		0.0	81.0	Deg F	

Induction Constants MAI-A.A 178			Last Edited on 07-SEP-2013,05:52
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 59

Base Calibration on 23-AUG-2013 11:17
Field Calibration on 06-SEP-2013,15:20

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16284	3.99
2	23984	5.98
3	31584	7.97
4	39888	9.86
5	49152	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.93	7.77

DOWNHOLE EQUIPMENT

C:\Minimus 13.05.9583\Logs\Shakespeare Carson 1-26\Shakespeare Carson 1-26 REPEAT.dta

CBH-C, Cablehead, 11 pin

CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.24 in

Compact Comms Gamma

MCG-D.K 443 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-B.J 387 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper



55.39 ft

52.48 ft

45.76 ft

45.76 ft

46.76 ft

40.97 ft

33.73 ft

GRGC - Gamma Ray

CGXT - MCG External Temperature

MINV - Micro-inverse

MNRL - Micro-normal

MLTC - MML Caliper

NPRL - Limestone Neutron Por.

AVOL - Annular Volume

MPD-B 59 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focused Electric

MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

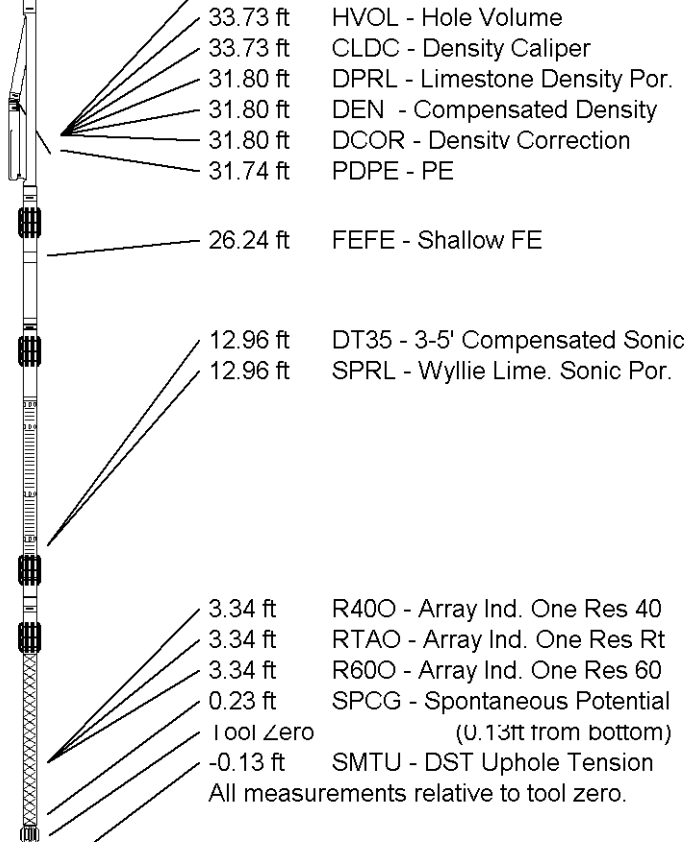
Compact Sonic

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

Compact Induction

MAI-A.A 178 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 63.07 ft Weight: 480.6 lb



COMPANY SHAKESPEARE OIL CO. INC
WELL CARSON 1-26
FIELD PENCE EAST
PROVINCE/COUNTY SCOTT
COUNTRY/STATE U.S.A. / KANSAS

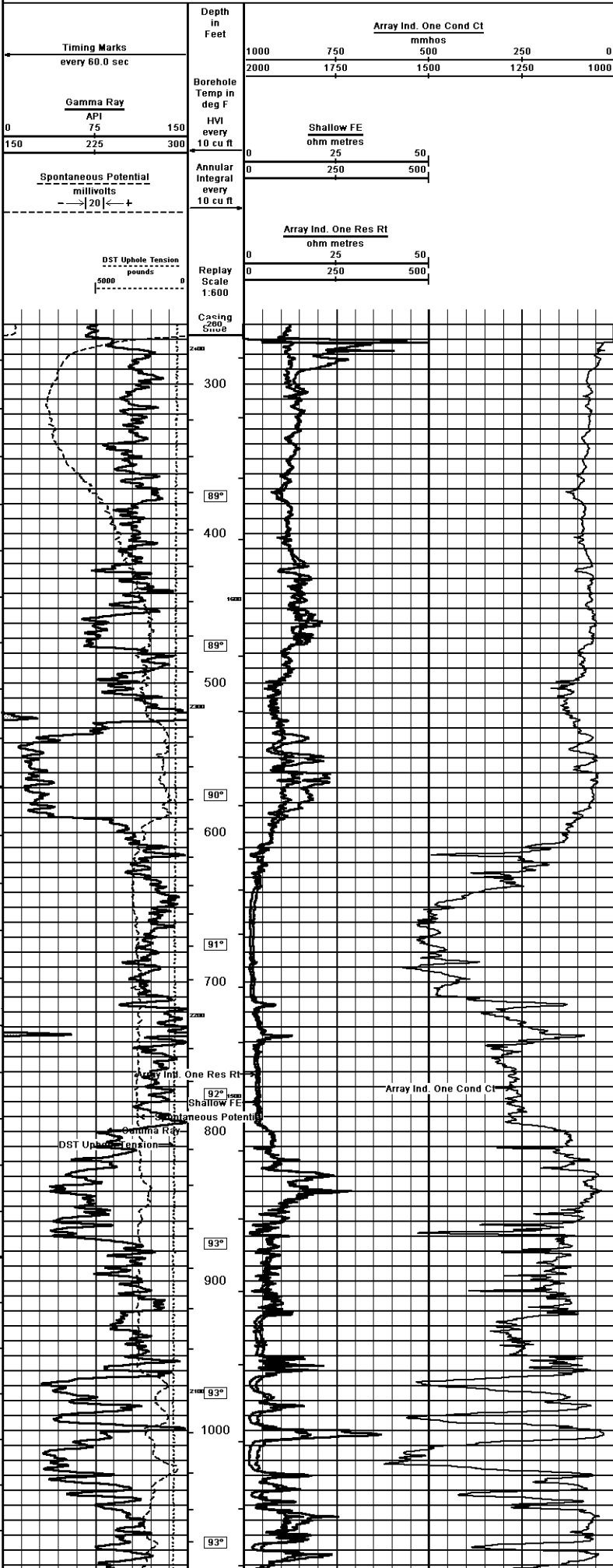
Elevation Kelly Bushing	3124.00	feet	First Reading	4886.00	feet
Elevation Drill Floor	3122.00	feet	Depth Driller	4890.00	feet
Elevation Ground Level	3114.00	feet	Depth Logger	4889.00	feet

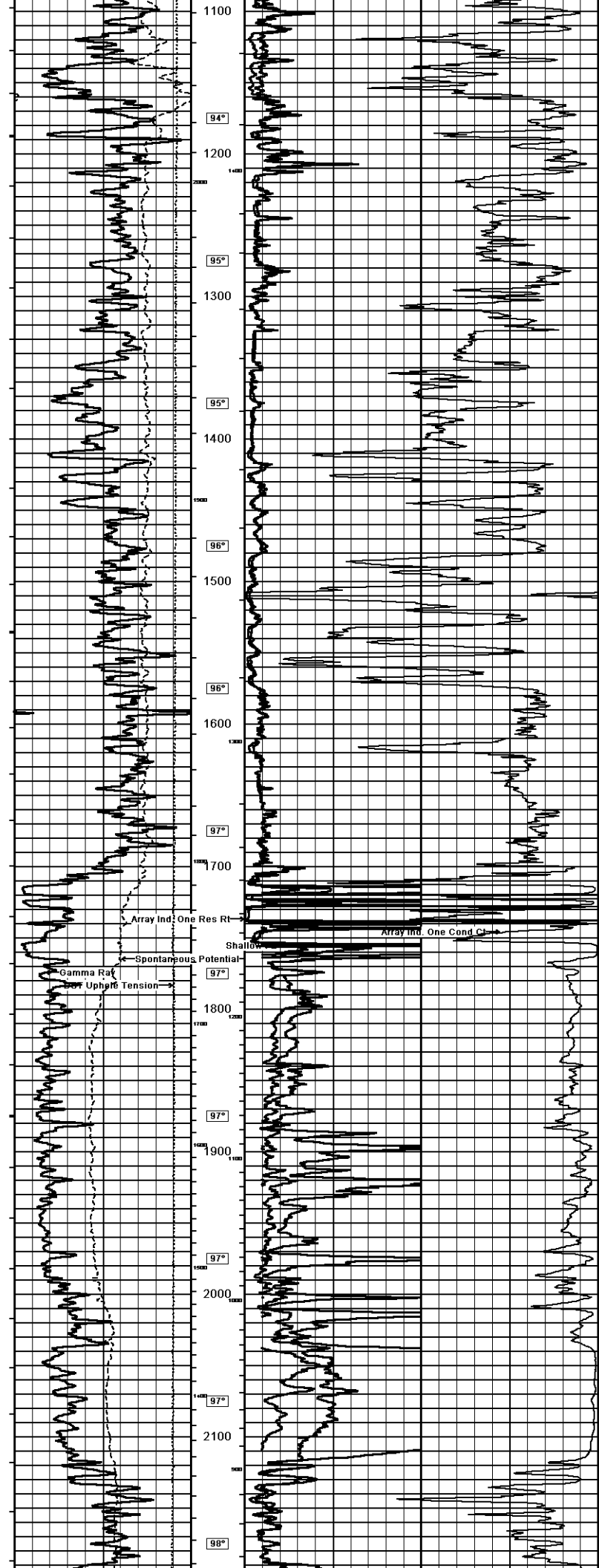


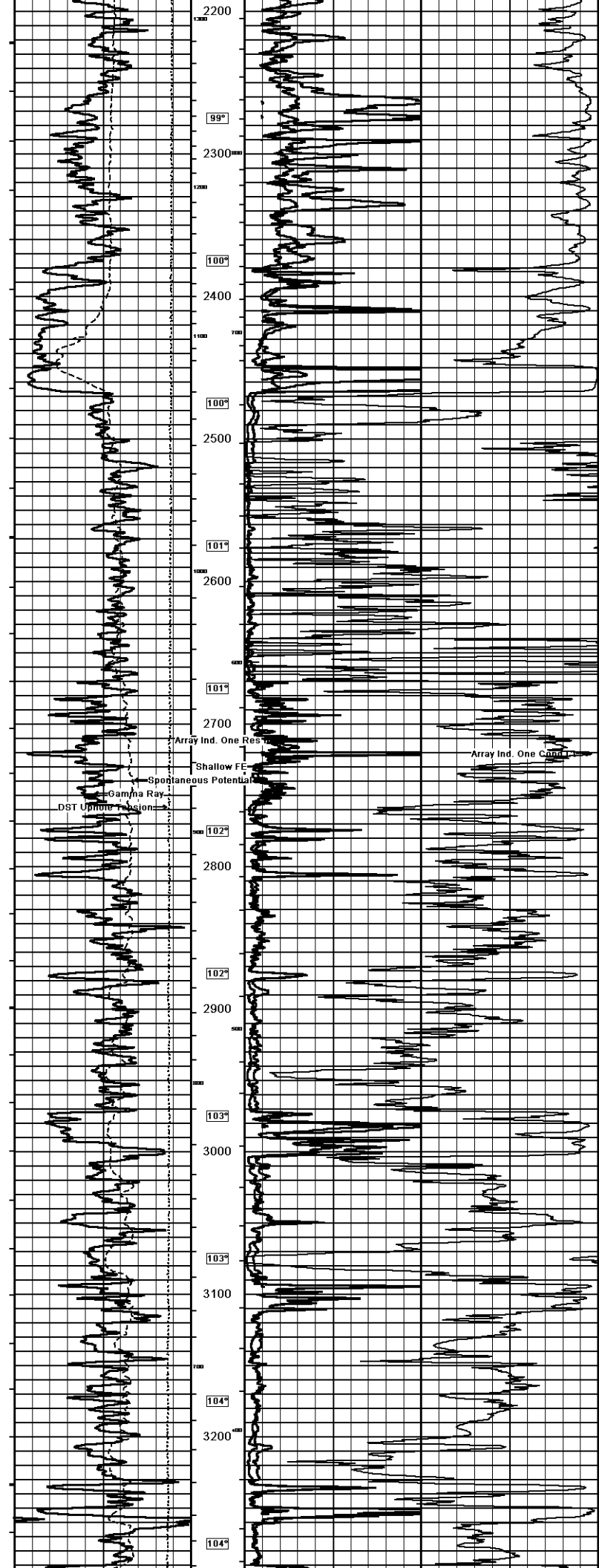
ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

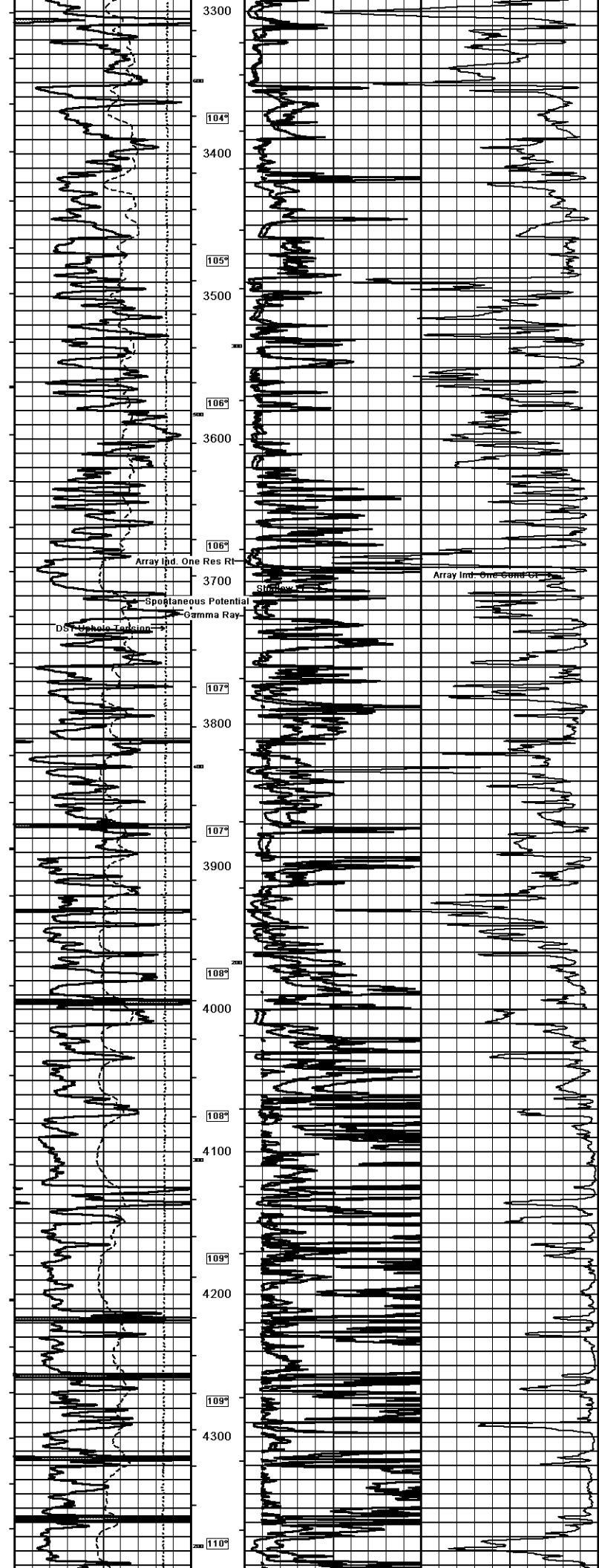
Weatherford

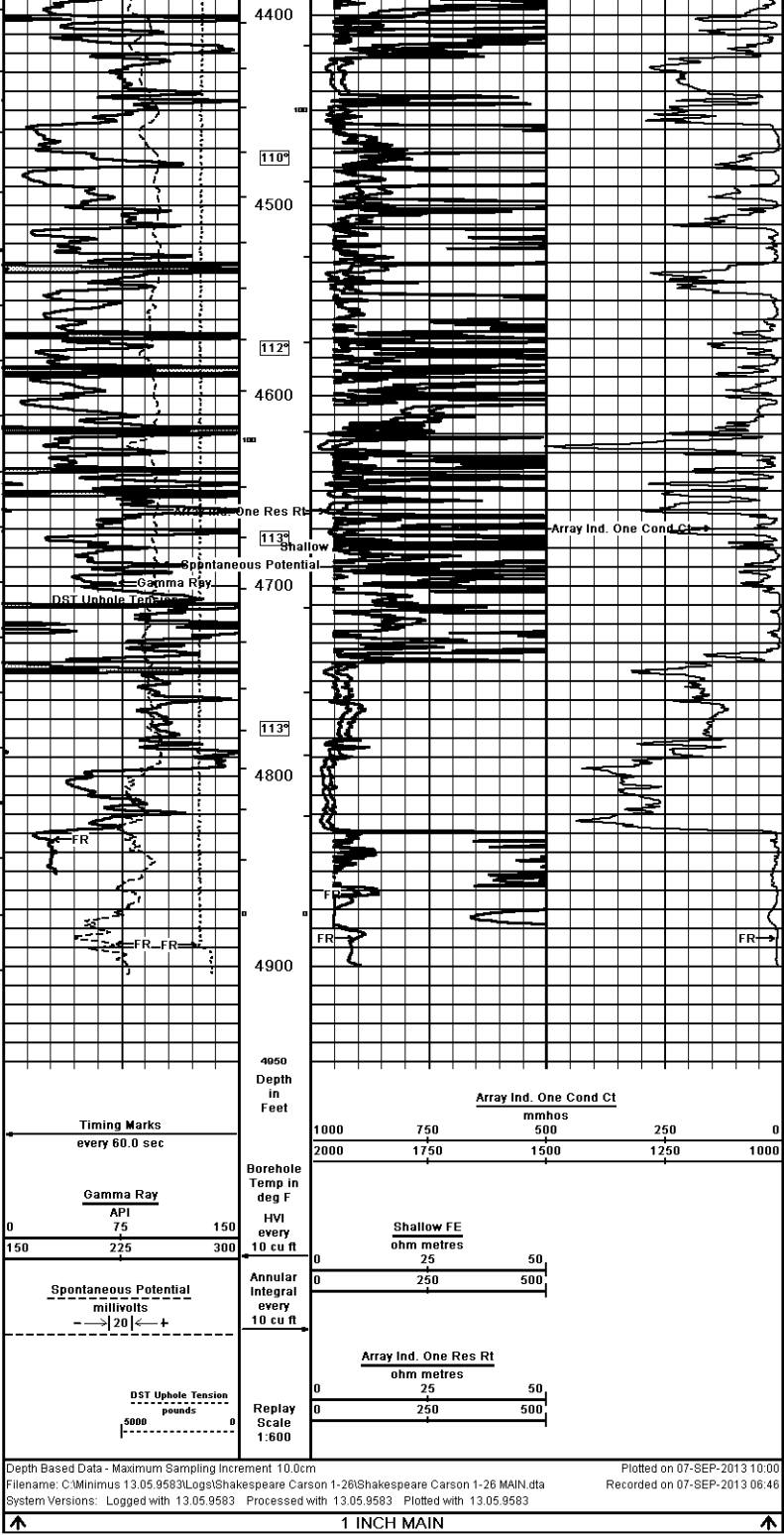
		ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG	
COMPANY SHAKESPEARE OIL CO. INC WELL CARSON 1-26 FIELD PENCE EAST PROVINCE/COUNTY SCOTT COUNTRY/STATE U.S.A. / KANSAS LOCATION 649° EML & 1371° FEL SE NE NW NE			
SEC 20	TWP 16S	RGE 34W	Other Services
APR Number 15-171-20989	WELL MSS	WELL MSS	
Permanent Datum Q.L. Elevation 3114 feet Log Measured From KB Drilling Measured From KB AT 10 FEET			
Date 07-SEP-2013	Run Number ONE	Service Order 3541037	
Depth Driller	4890.00	feet	
Depth Logger	4889.00	feet	
First Reading	4886.00	feet	
Last Reading	287.00	feet	
Casing Driller	287.00	feet	
Casing Logger	287.00	feet	
BIT Size 7.875	inches		
Hole Fluid Type CHEM	10.00	lb/USG	60.00 CP
PH / Fluid Loss	10.00	mi/30min	
Sample Source PIT	0.30 @ 91.0	ohm-m	
Rm @ Measured Temp	0.24 @ 91.0	ohm-m	
Rm @ Measured Temp	0.36 @ 91.0	ohm-m	
Source Rm / Rm	CALC	CALC	
Rm @ BHT	0.24 @ 113.0	ohm-m	
Time Since Circulation	4 HRS		
Max Recorded Temp	113.00	deg F	
Equipment / Base	13244		
Recorded By	S. DAVIS	KANSAS	
Witnessed By			
DOB#	1813 - 291		











COMPANY		SHAKESPEARE OIL CO. INC			
WELL		CARSON 1-26			
FIELD		PENCE EAST			
PROVINCE/COUNTY		SCOTT			
COUNTRY/STATE		U.S.A. / KANSAS			
Elevation Kelly Bushing	3124.00	feet	First Reading	4886.00	feet
Elevation Drill Floor	3122.00	feet	Depth Driller	4890.00	feet
Elevation Ground Level	3114.00	feet	Depth Logger	4889.00	feet
 Weatherford		ARRAY INDUCTION			
		SHALLOW FOCUSED			
		ELECTRIC LOG			