



ARRAY INDUCTION

COMPANY **PARAMOUNT RESOURCES LTD.**
WELL **PARA ET AL CAMERON L-29**
FIELD **CAMERON HILLS**
PROVINCE/COUNTY **NORTHWEST TERRITORIES**
COUNTRY/STATE **CANADA**
LOCATION **300L296010117300** **FIELD PRINT**

LSD SEC TWP RGE Other Services

API Number **2041** COMPENSTATED SONIC MICROLOG PHOTO DENSITY
Permit Number **2041** DUAL SPACED NEUTRON

Permanent Datum GROUND LEVEL, Elevation 754.1 metres Elevations: metres
Log Measured From 5.4 M above Permanent Datum KB DF 759.50
Drilling Measured From KB GL 754.10

Date **05-FEB-2006**

Run Number **1**

Depth Driller **1515.50** metres

Depth Logger **1516.70** metres

First Reading **1515.40** metre

Last Reading **436.00** metre

Casing Driller **435.50** metres

Casing Logger **436.00** metres

Bit Size **200.00** mm

Hole Fluid Type **GEL CHEM**

Density / Viscosity **1135.0 kg/M3** **80.00 CP**

PH / Fluid Loss **10.50** **10.00 ml/30Min**

Sample Source **FLOWLINE**

Rm @ Measured Temp **0.92 @ 25.0** ohm-m

Rmf @ Measured Temp **0.69 @ 25.0** ohm-m

Rmc @ Measured Temp **1.12 @ 25.0** ohm-m

Source Rmf / Rmc **PRESS** **FILTER**

Rm @ BHT **0.60 @ 49.0** ohm-m

Time Since Circulation **7.0 HRS**

Max Recorded Temp **49.00** deg C

Equipment Name **COMPACT**

Equipment / Base **QUINT** **GPR**

Recorded By **M. BONNELL**

Witnessed By **B. POWELL**

CIRC. STOP TIME **FEB-05 21:00** Last Line

BOREHOLE RECORD

Last Edited: 5-FEB-2007 23:19

Bit Size millimetres	Depth From metres	Depth To metres
311.000	0.00	435.50
200.000	435.50	1515.50

CASING RECORD

Type	Size millimetres	Depth From metres	Shoe Depth metres	Weight Kg/metre
SURFACE	219.100	0.00	435.50	35.72

REMARKS

- 1) SOFTWARE ISSUE: WLS 7.01.0195.
- 2) CUSTOMER SCALES AND LOGGED INTERVALS USED
- 3) TOOLS RUN: MAI, MSS, MPD, MDN, MML, ISC, MGS, MTC, MFE, MCG RUN IN COMBINATION
- 4) HARDWARE: MAI: TWO 25.4 MM STANDOFFS
MSS: THREE 25.4 MM STANDOFFS
MDN: DUAL BOWSPRING AND INTERSONDE CRANK
MTC: SIX LEAF CENTRALIZER

5) SERVICE ORDER #: 30073223

SAP #: 4146696

FIELD PRINTS = 1

6) RIG: PD 220

7) SONIC FREE PIPE: FOUND FROM 382-386M

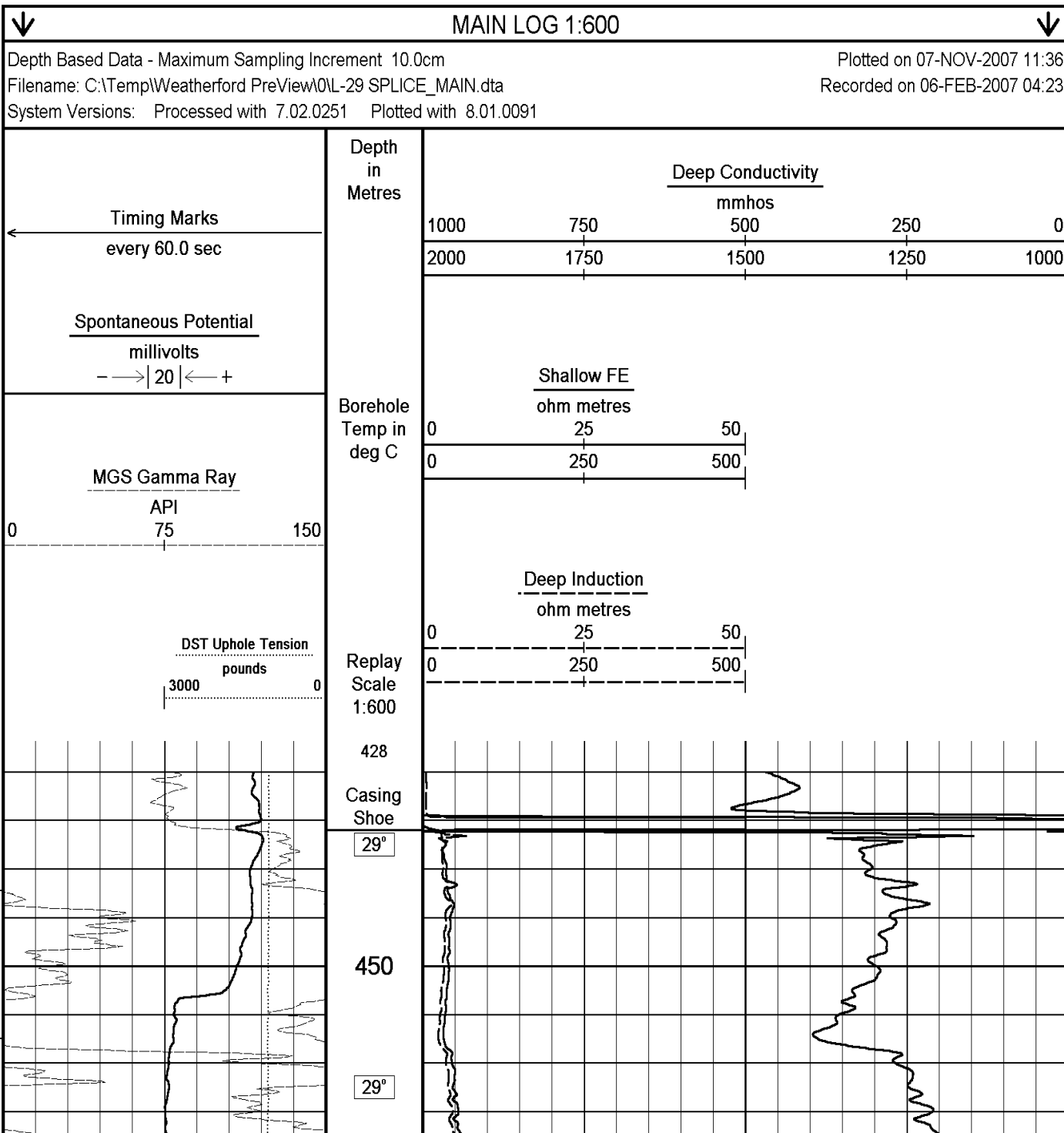
8) HOLE AND CEMENT VOLUMES FROM TD-SURFACE CASING CALCULATED USING DENSITY AND 2-ARM CALIPERS :

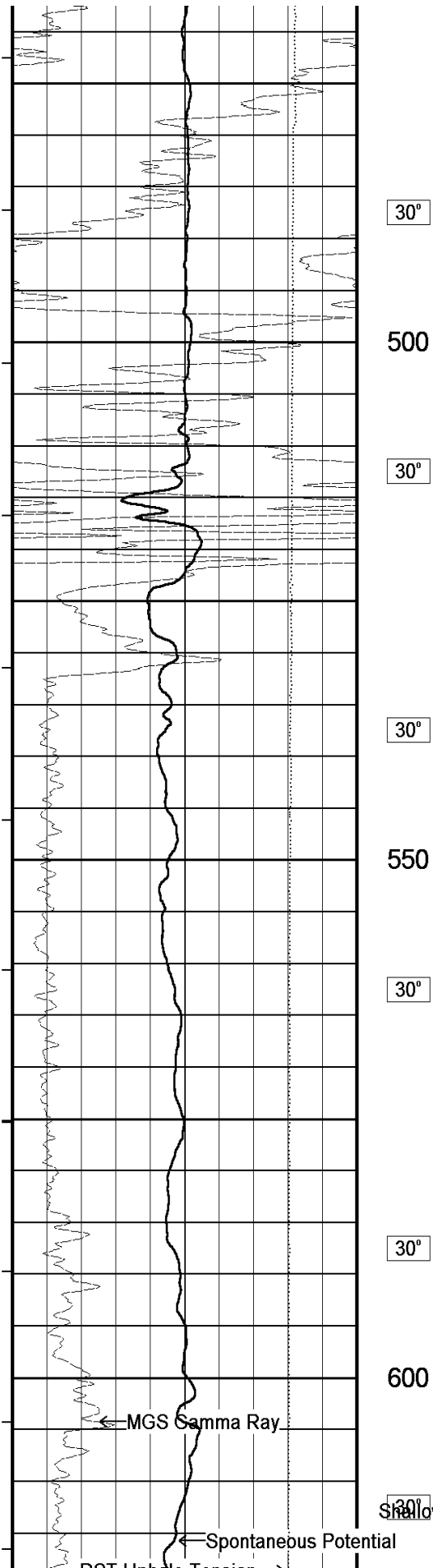
HOLE VOLUME = 41.0 CU.M.

ANNULAR VOLUME USING 139.7 MM PRODUCTION CASING = 24.6 CU.M

9) SALTY INDUCTION MODEL PRESENTED OFF BOTTOM.

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.





30°

500

30°

30°

550

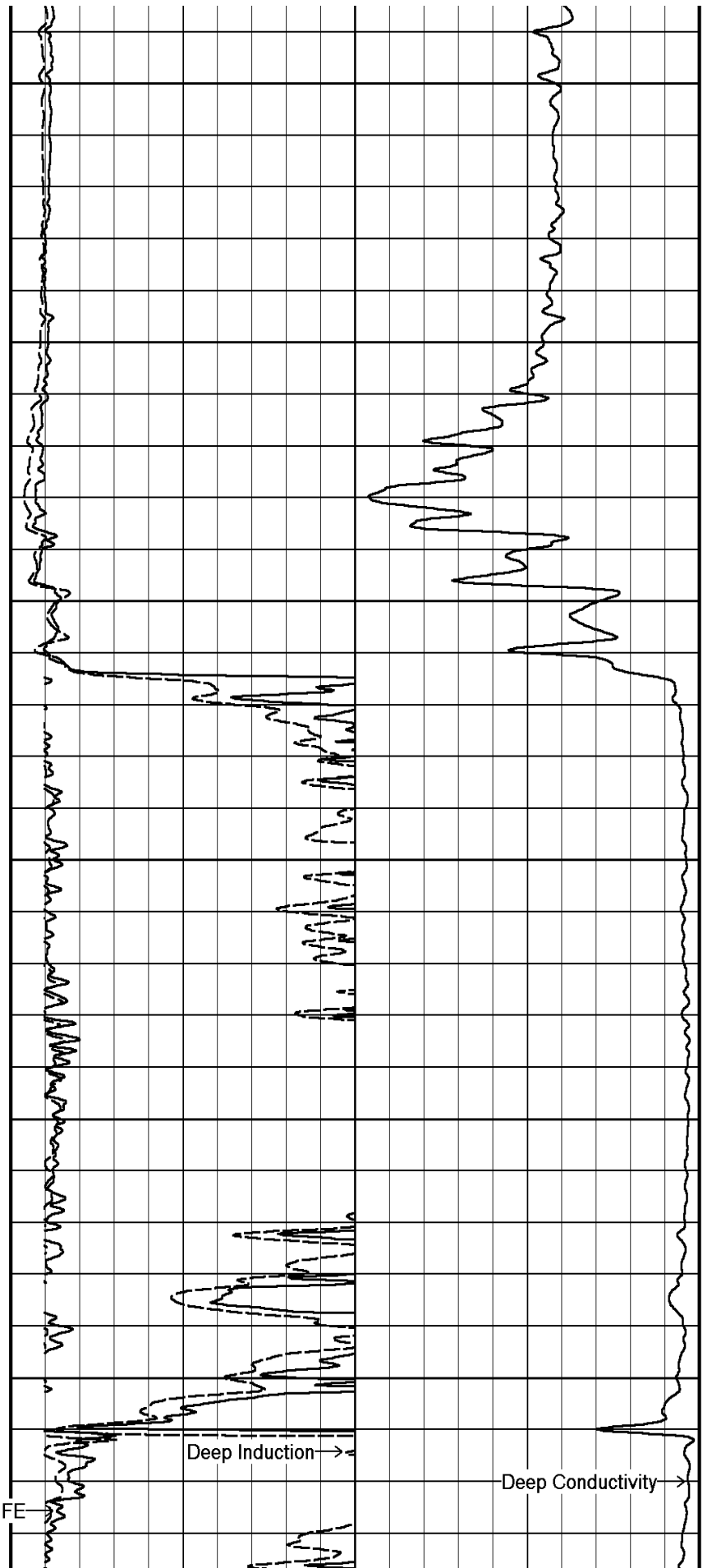
30°

30°

600

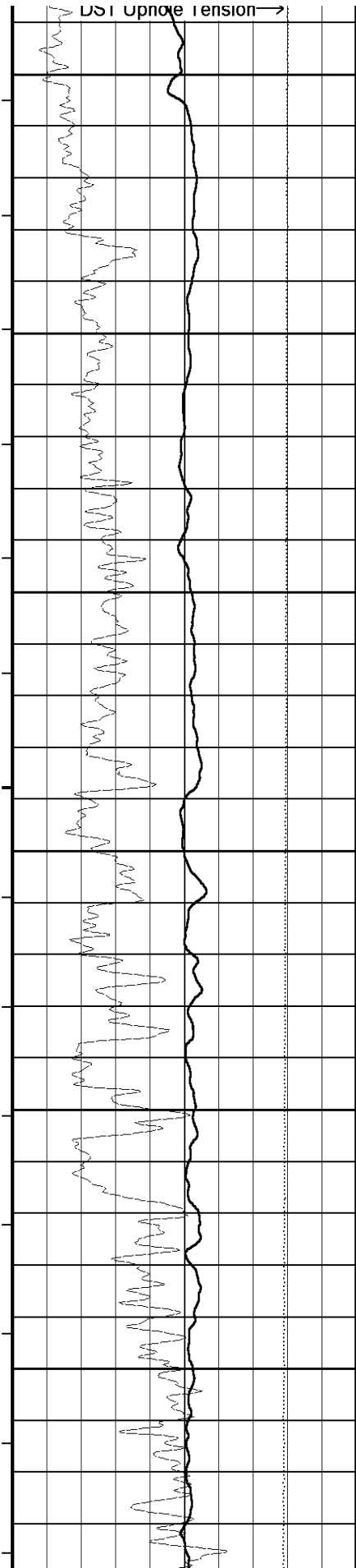
30°

Shallow FE



Deep Induction →

Deep Conductivity →



31°

650

31°

32°

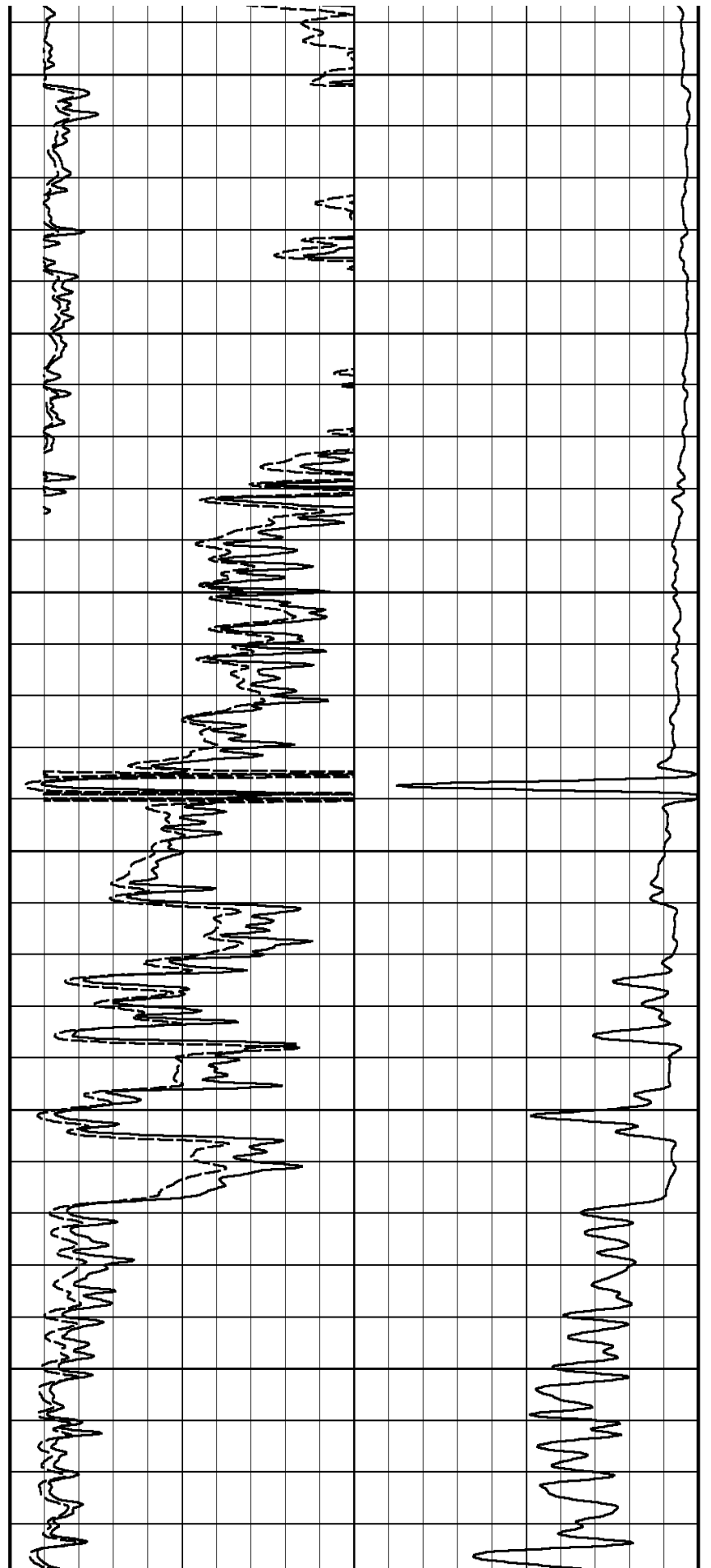
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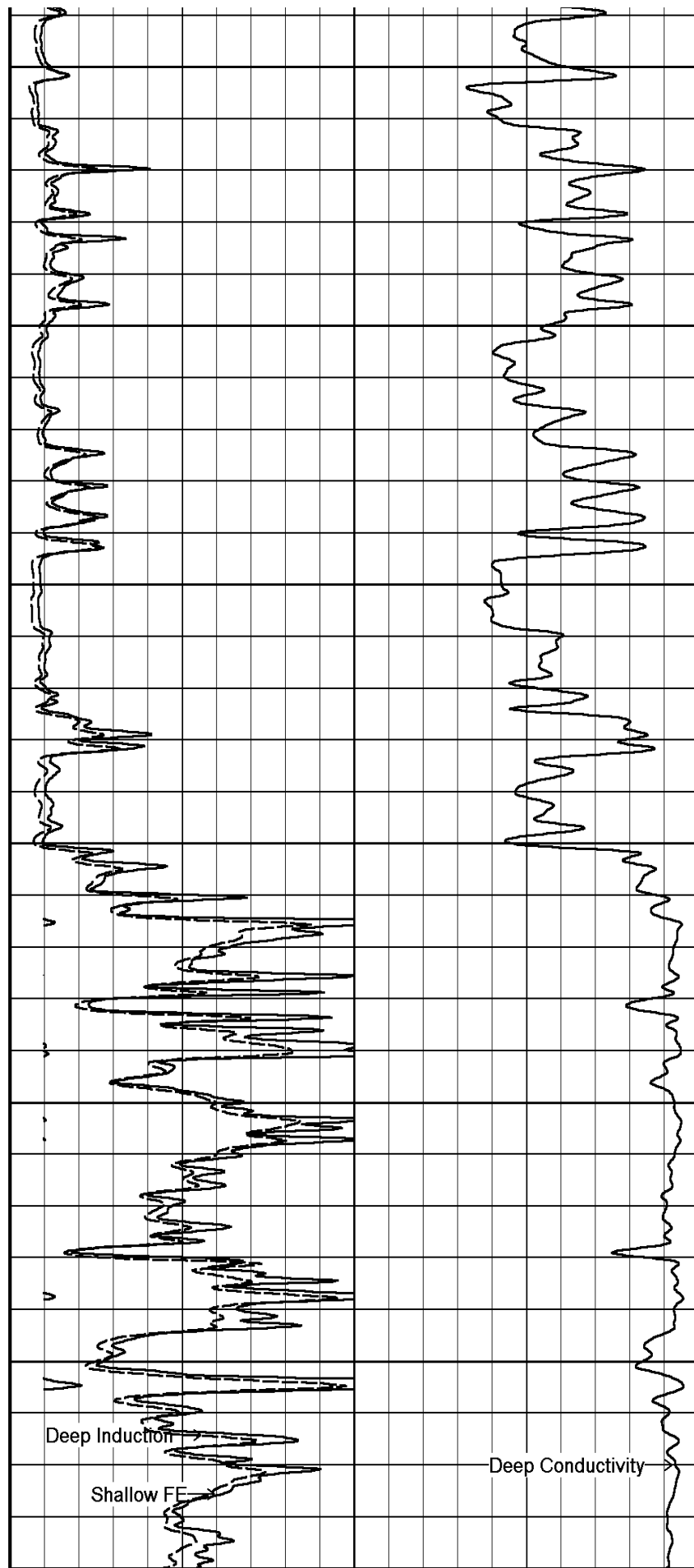
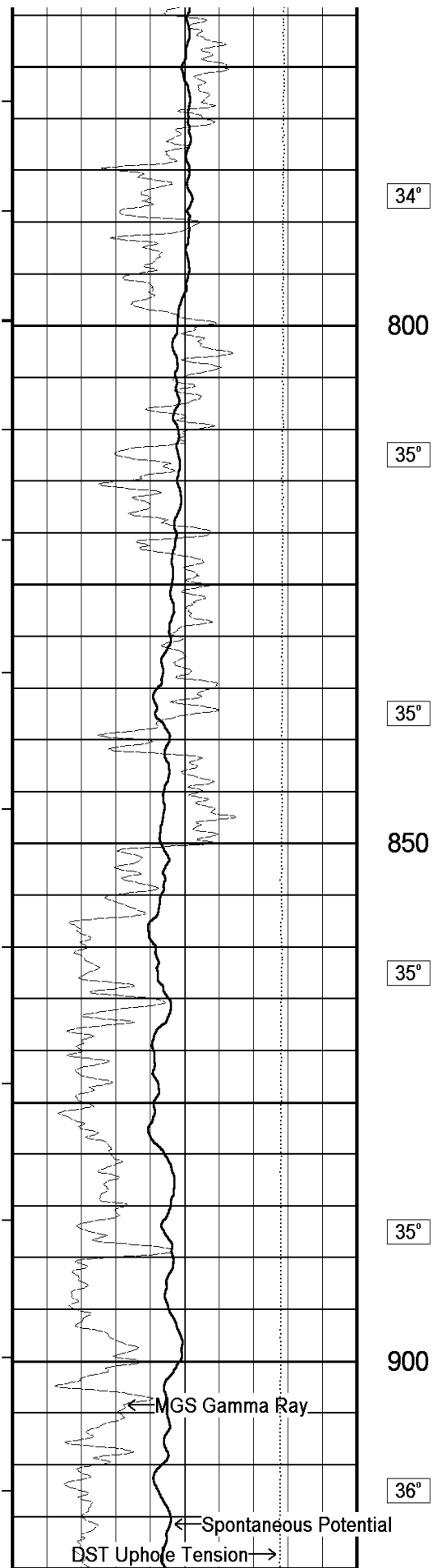
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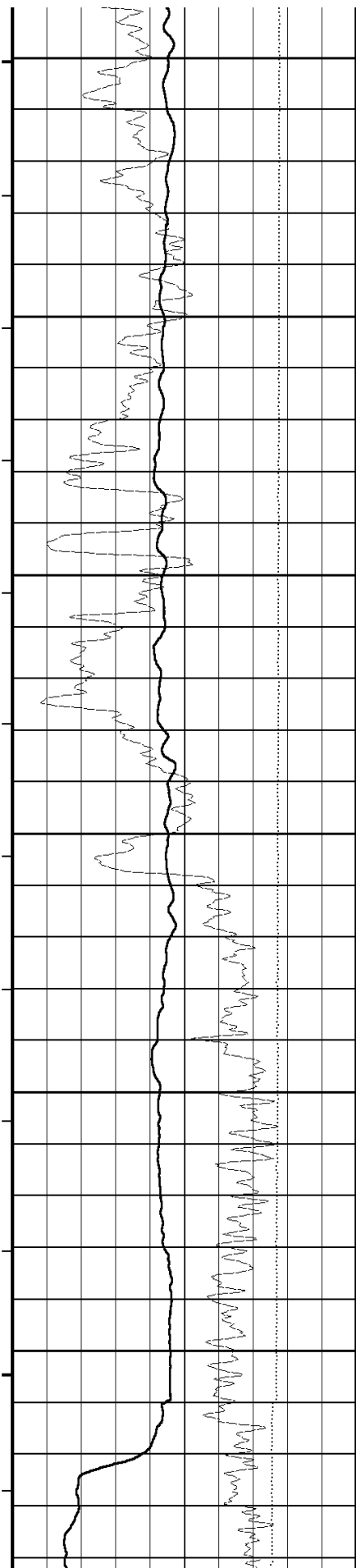
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750

33°







36°

950

36°

37°

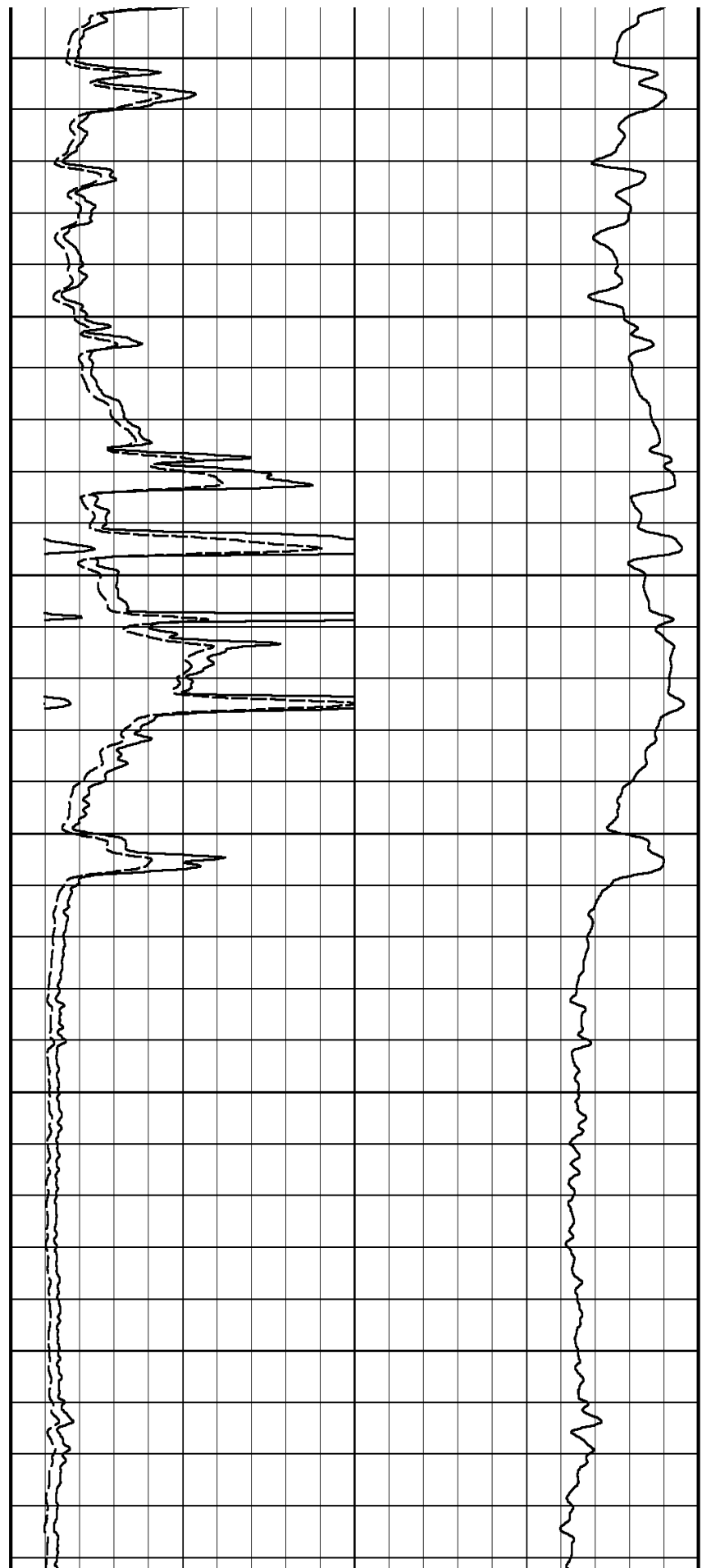
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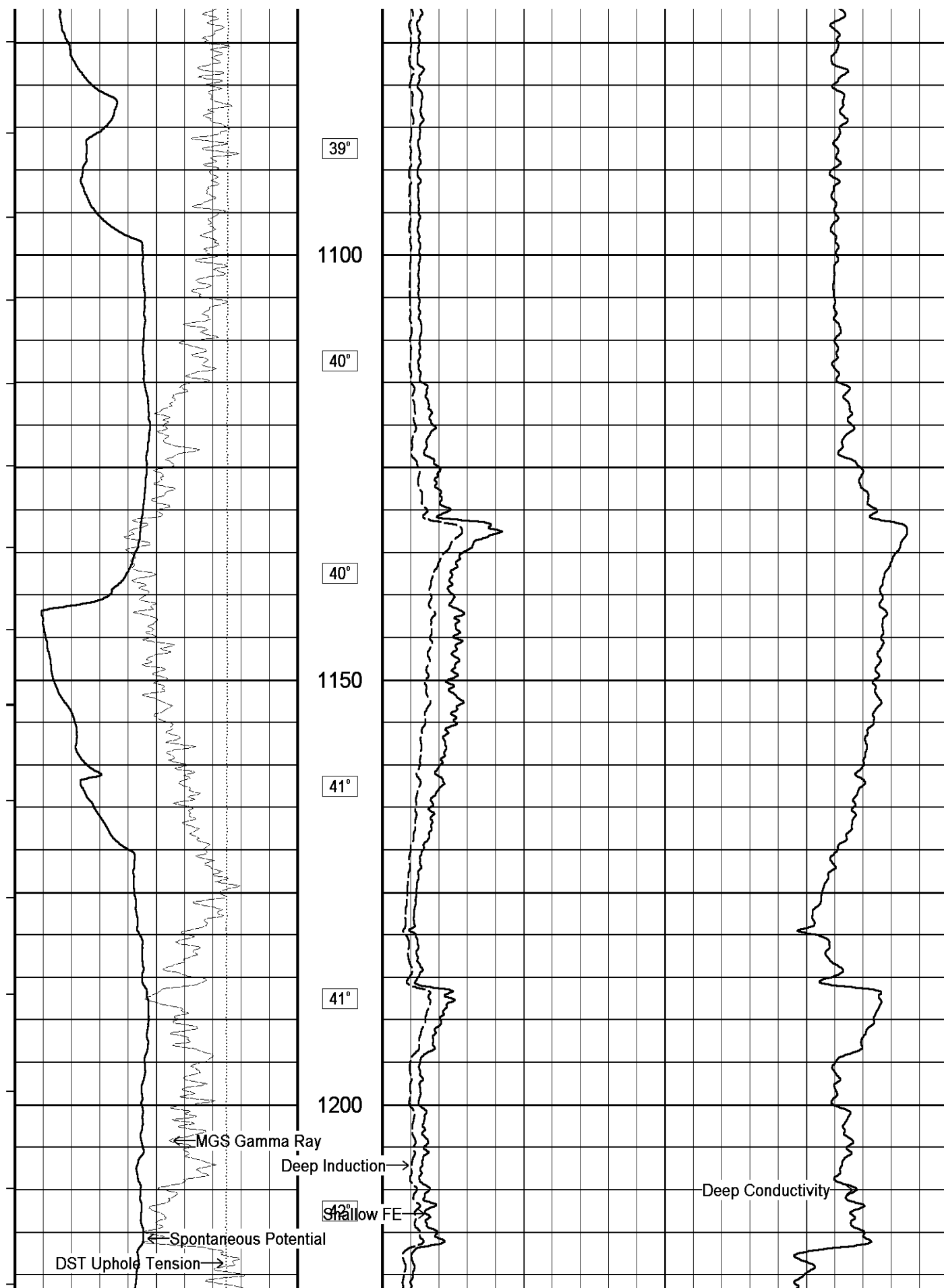
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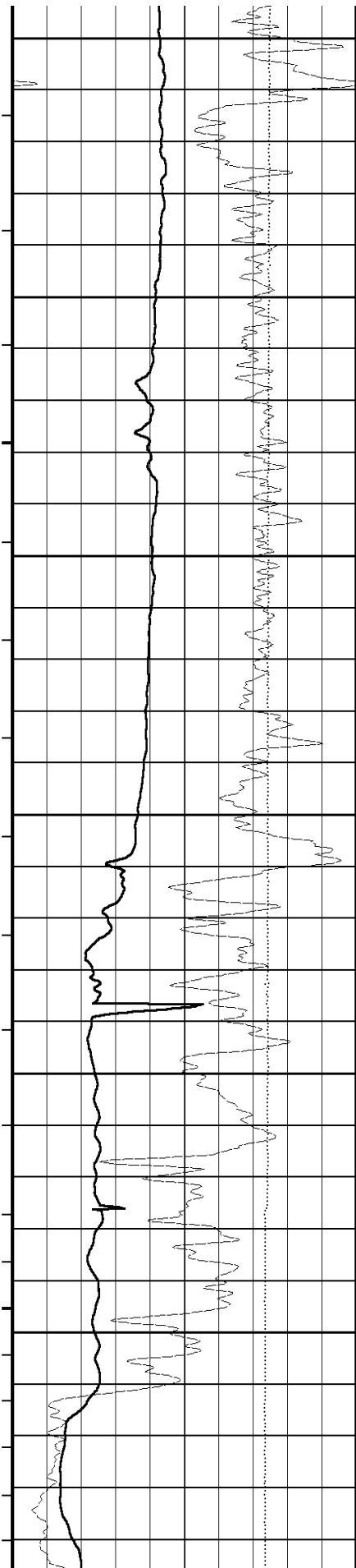
38°

1050

39°







43°

1250

44°

45°

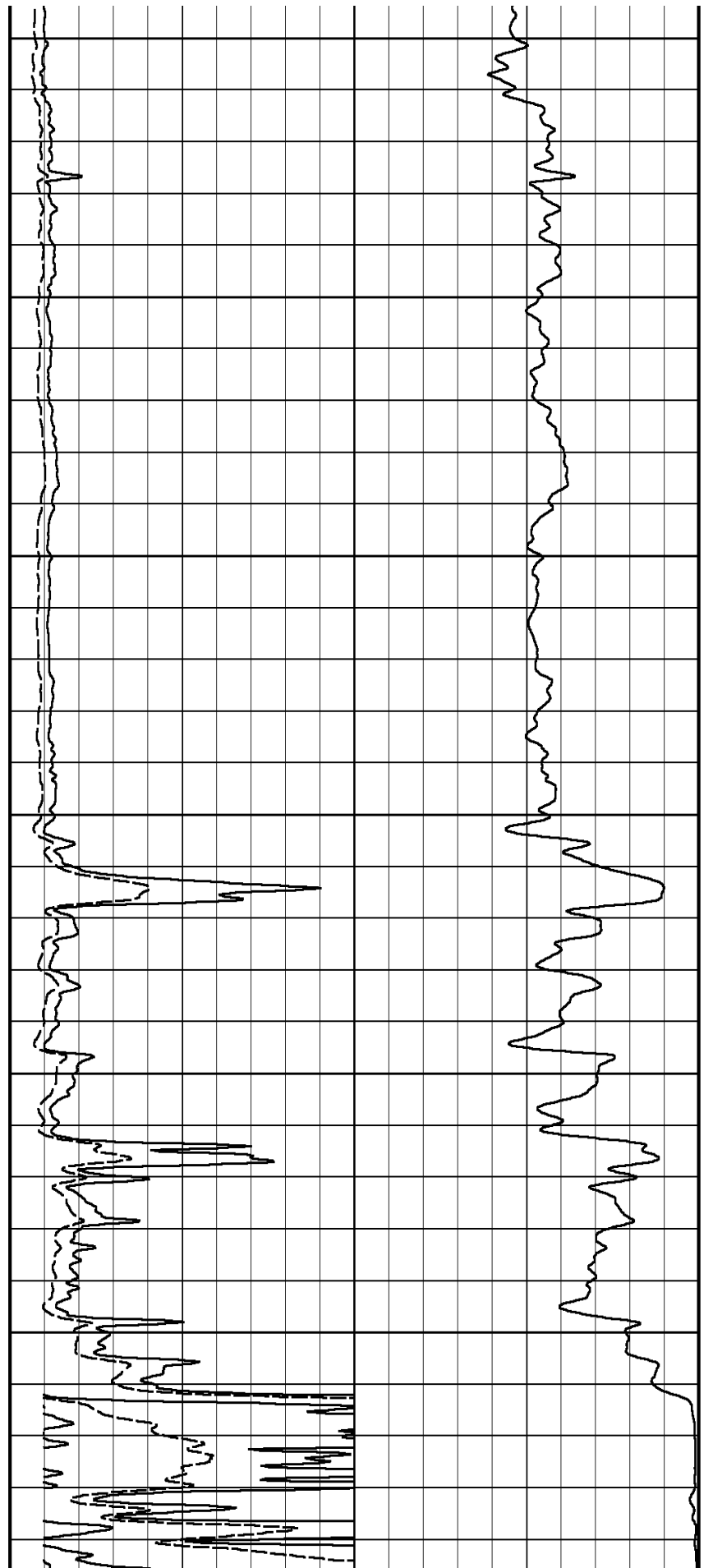
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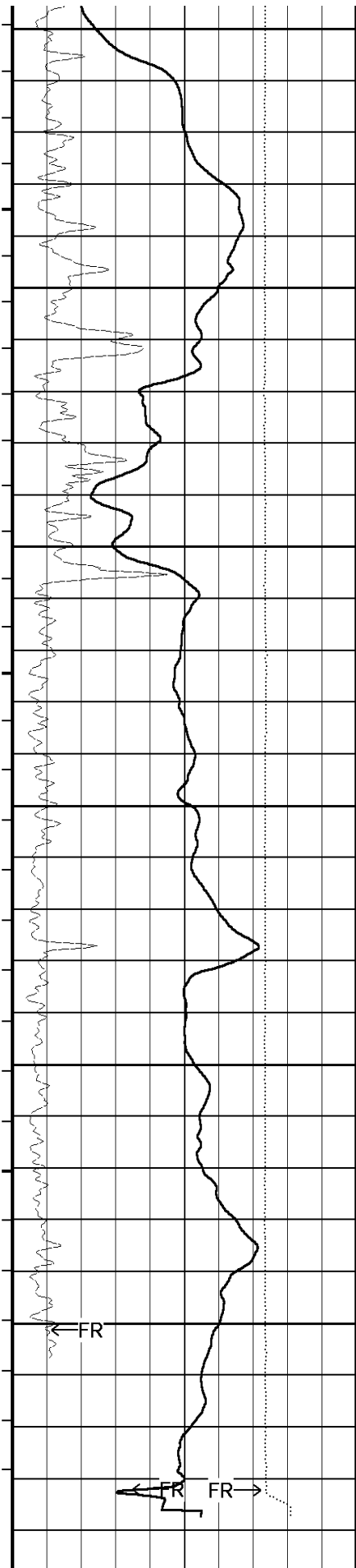
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45°

1350

46°





47°

1400

48°

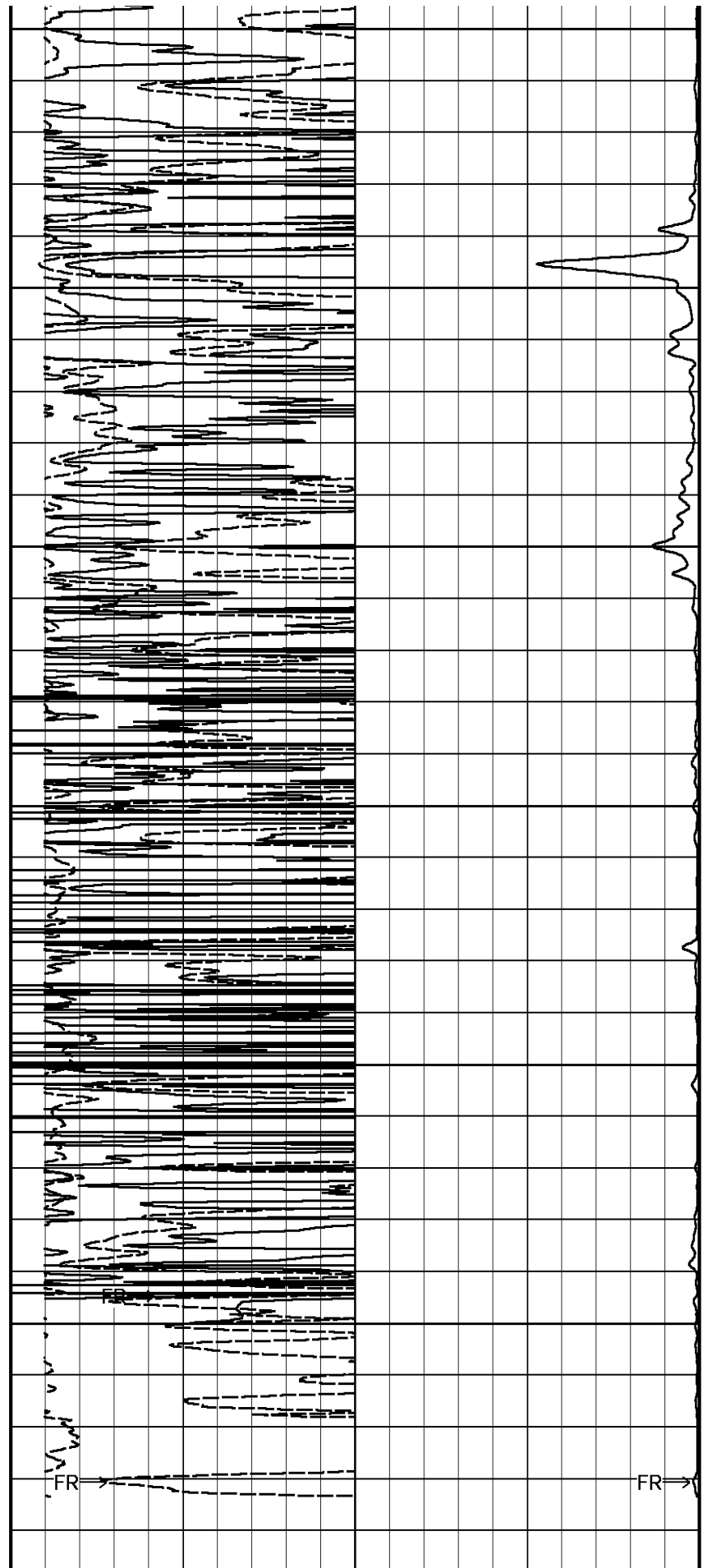
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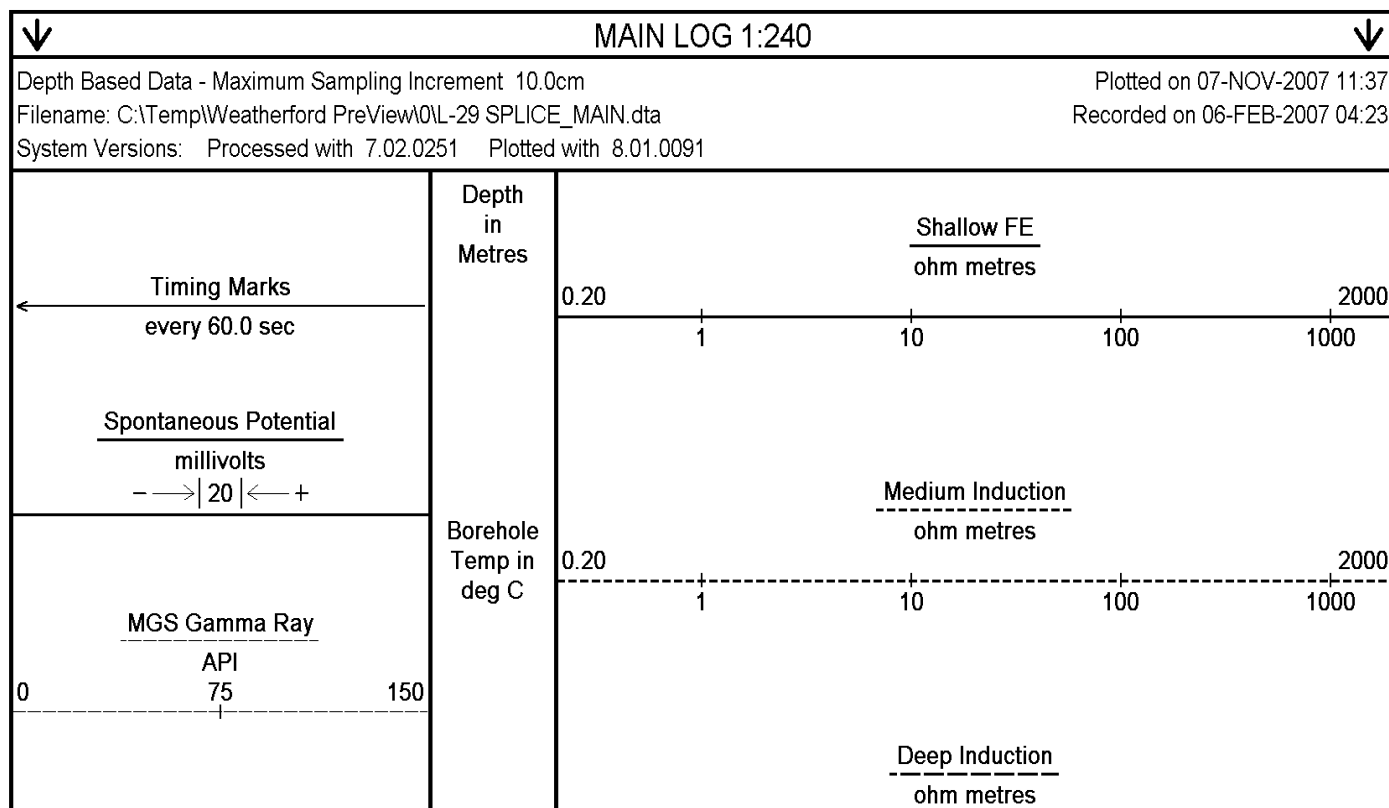
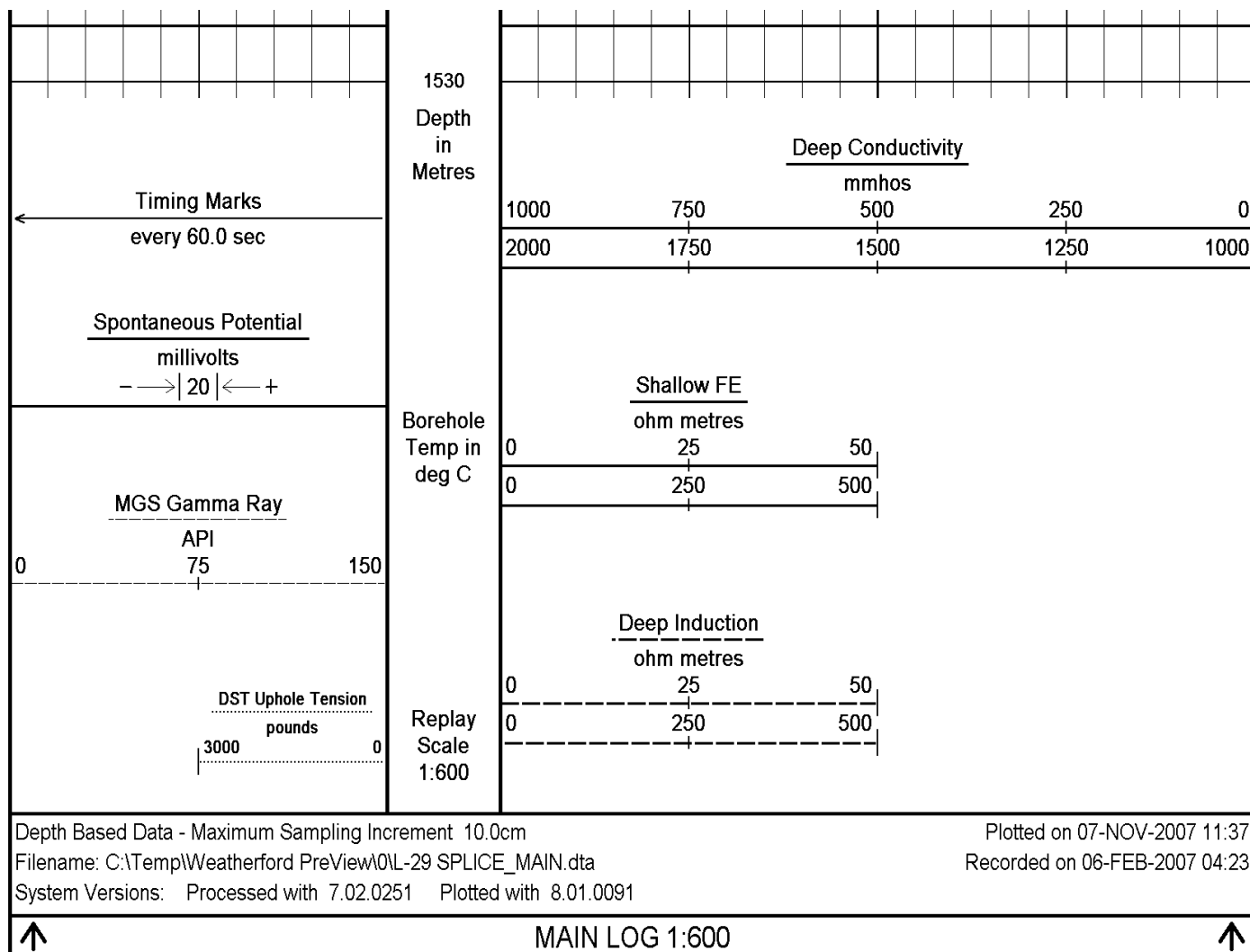
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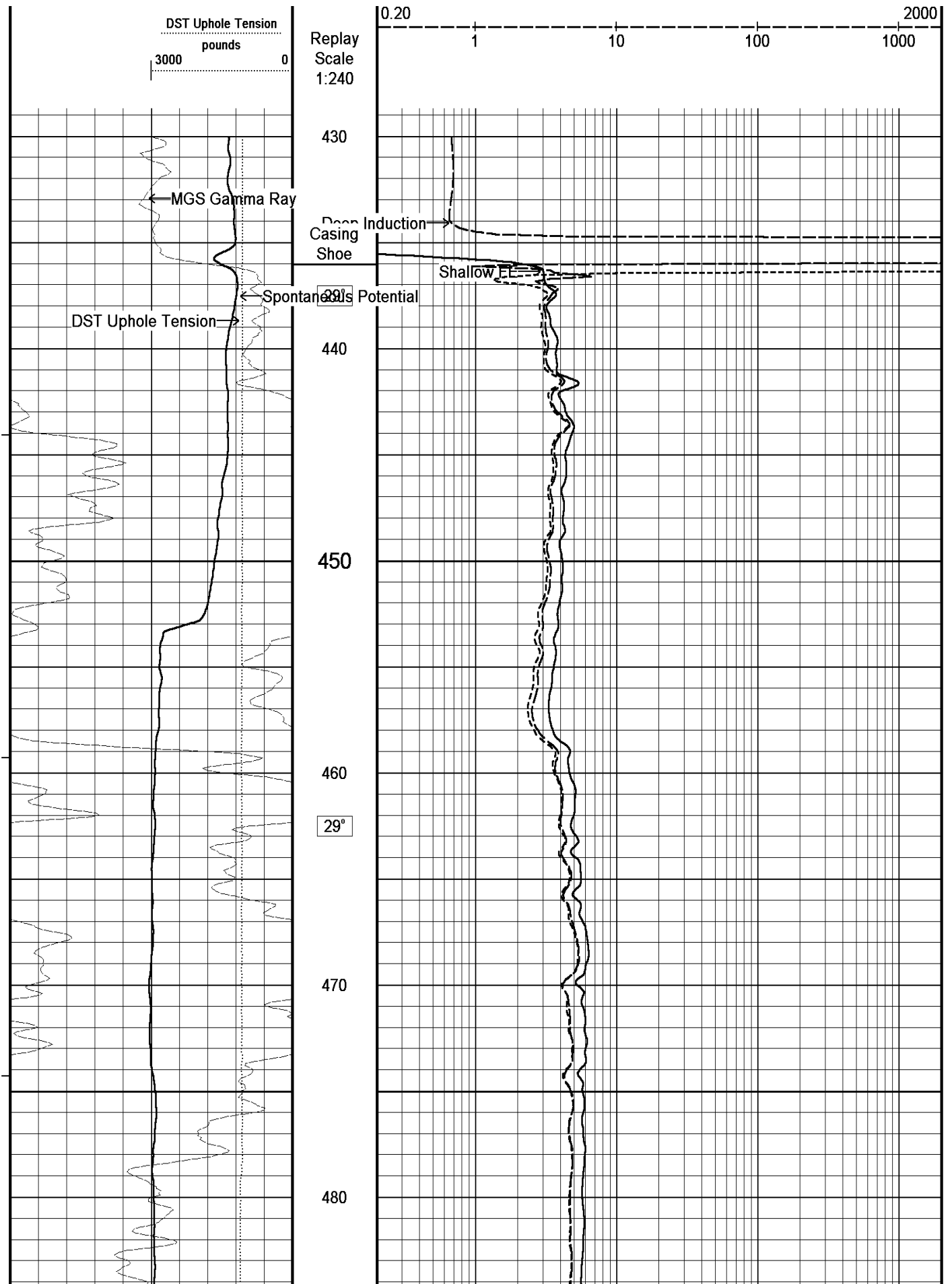
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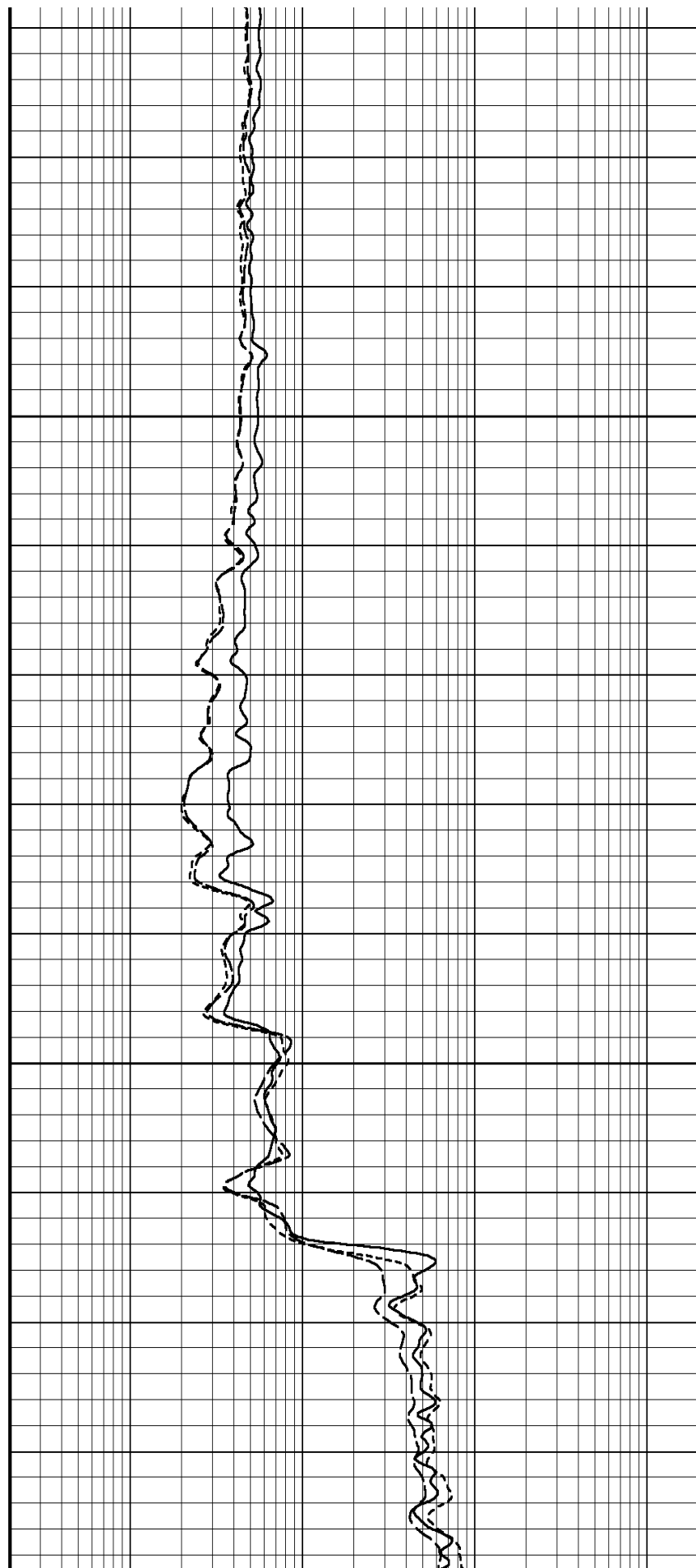
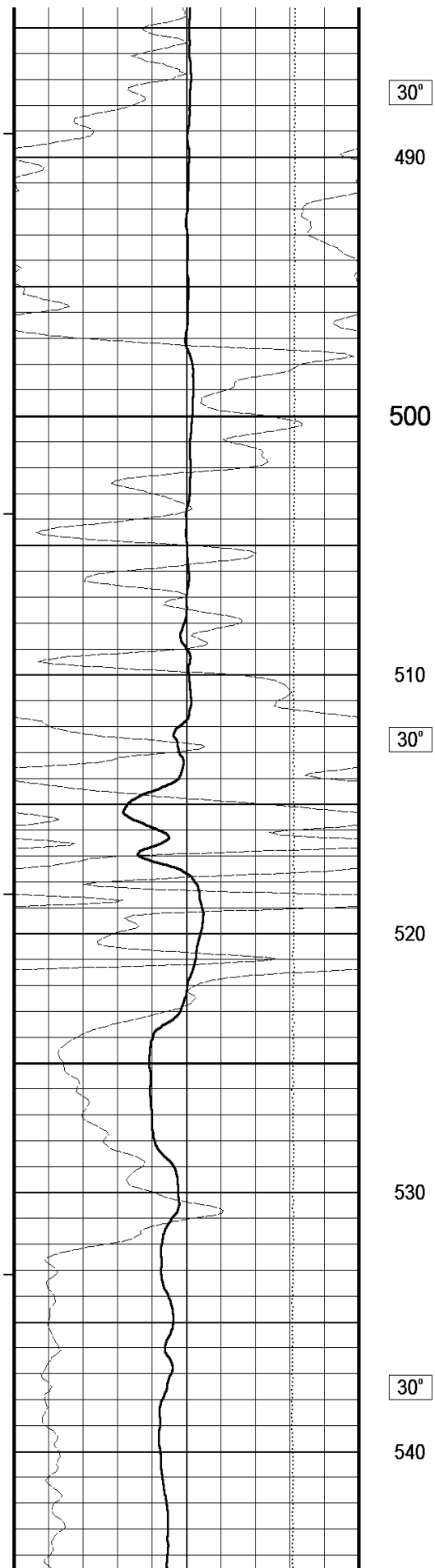
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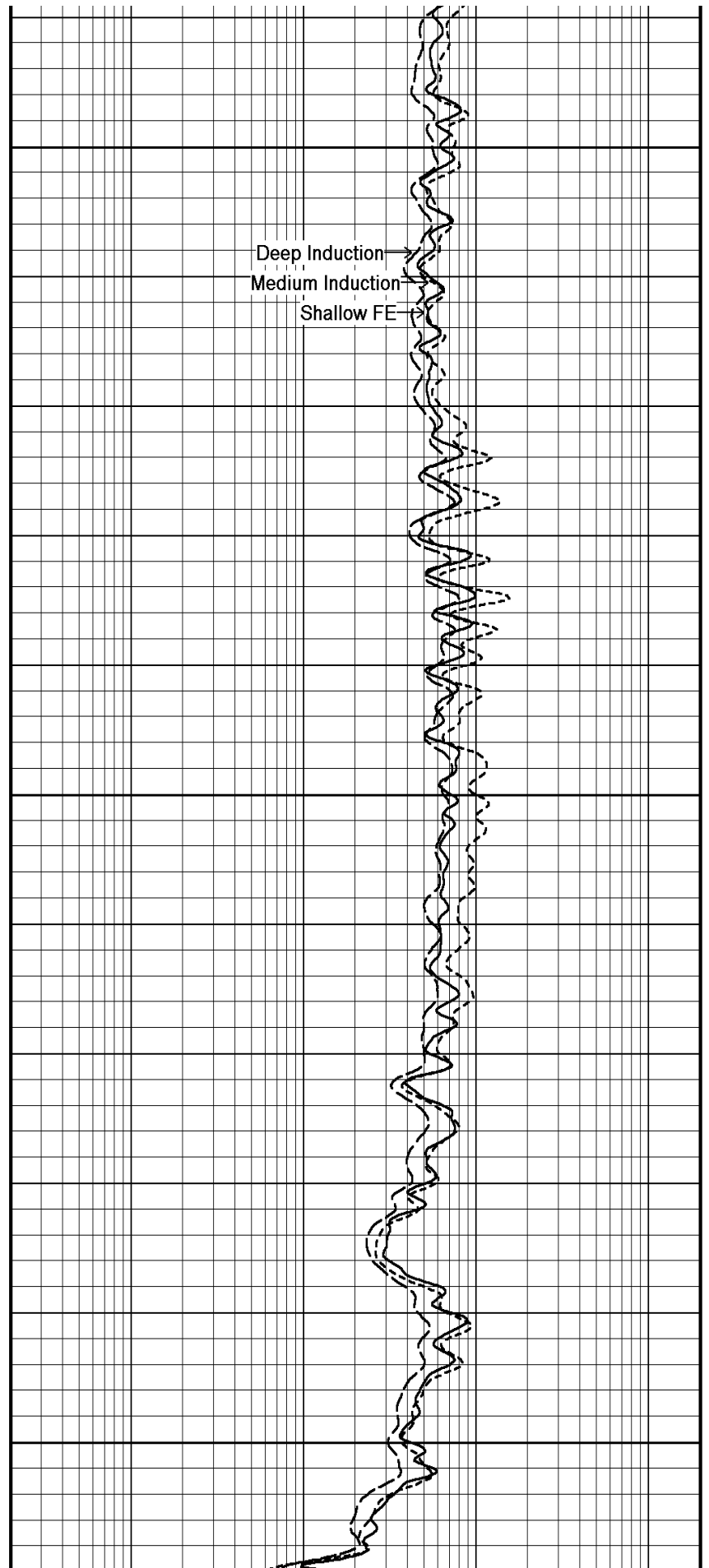
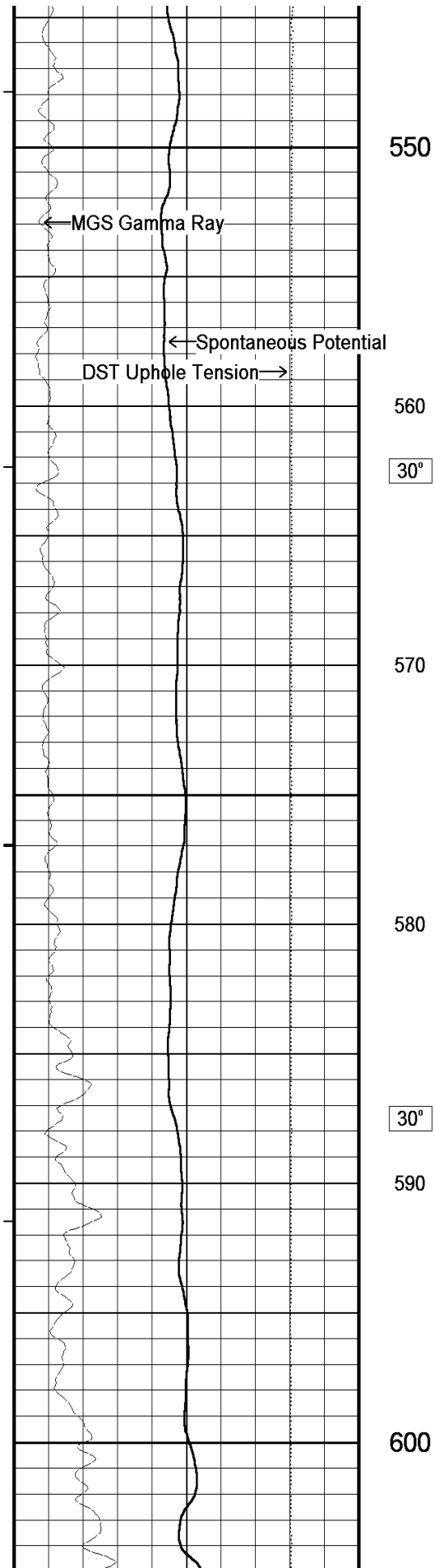
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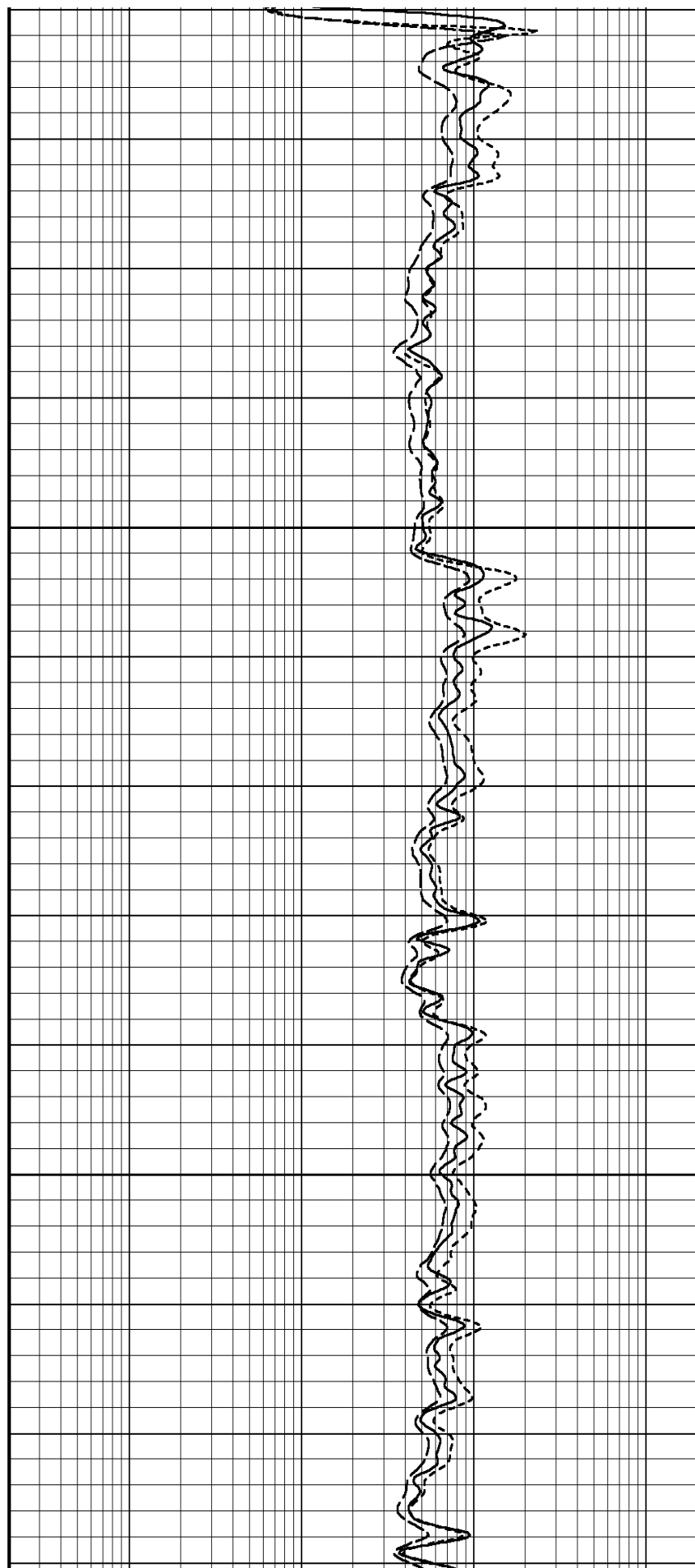
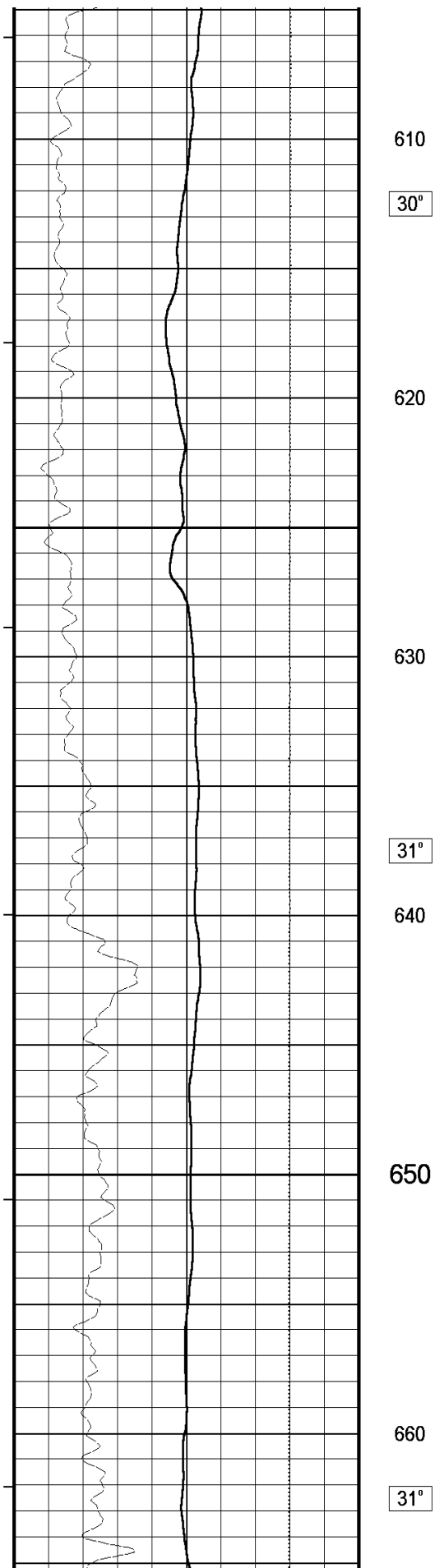


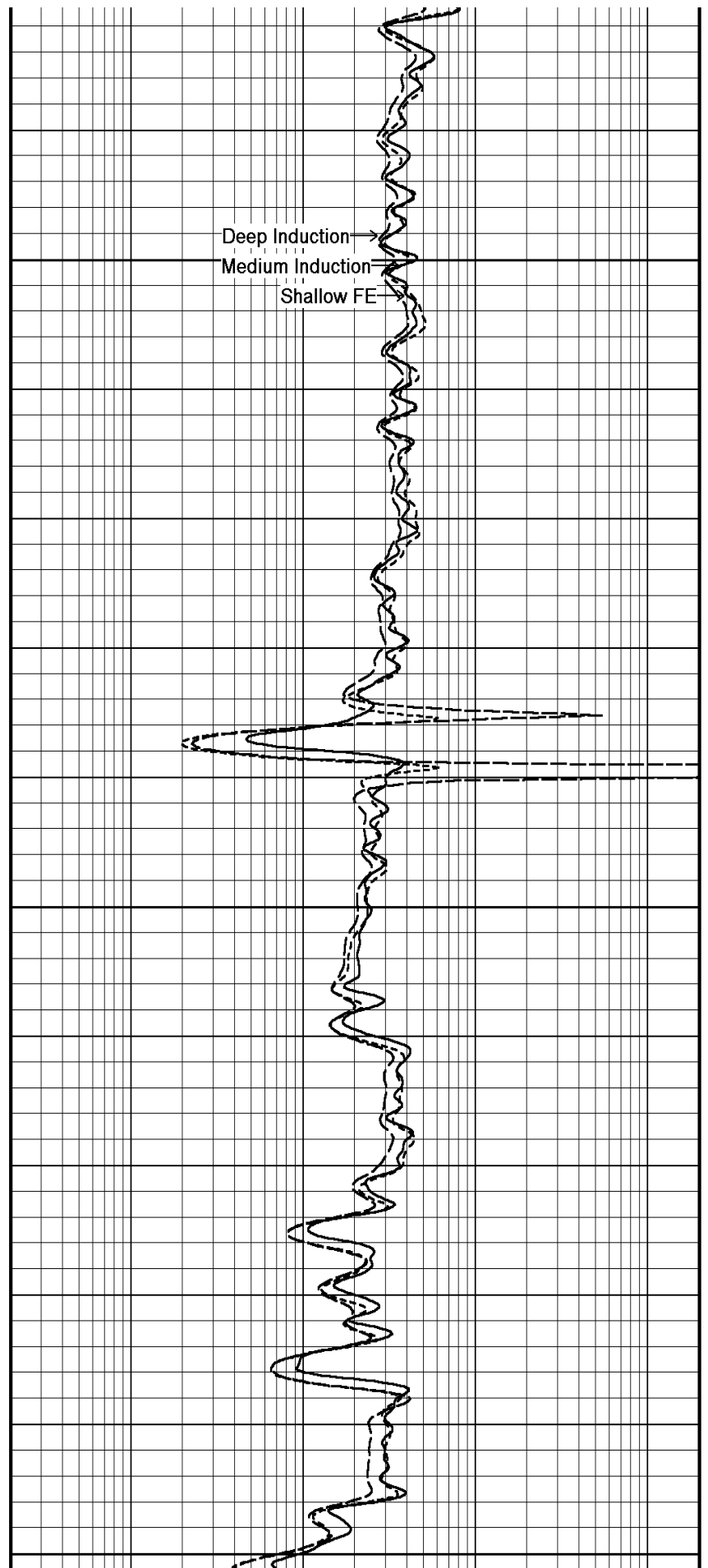
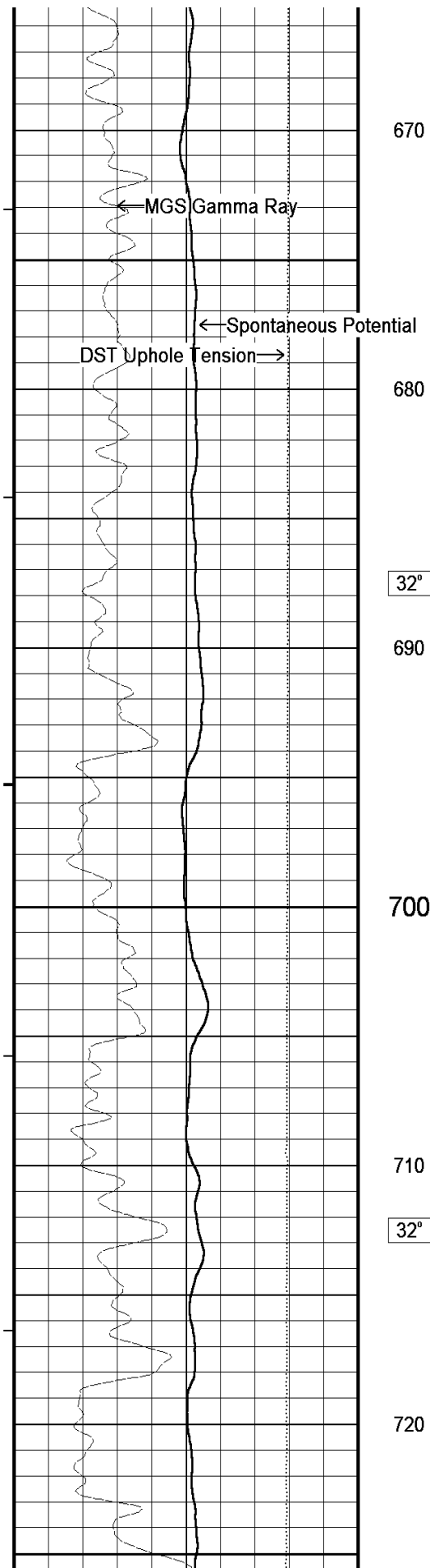


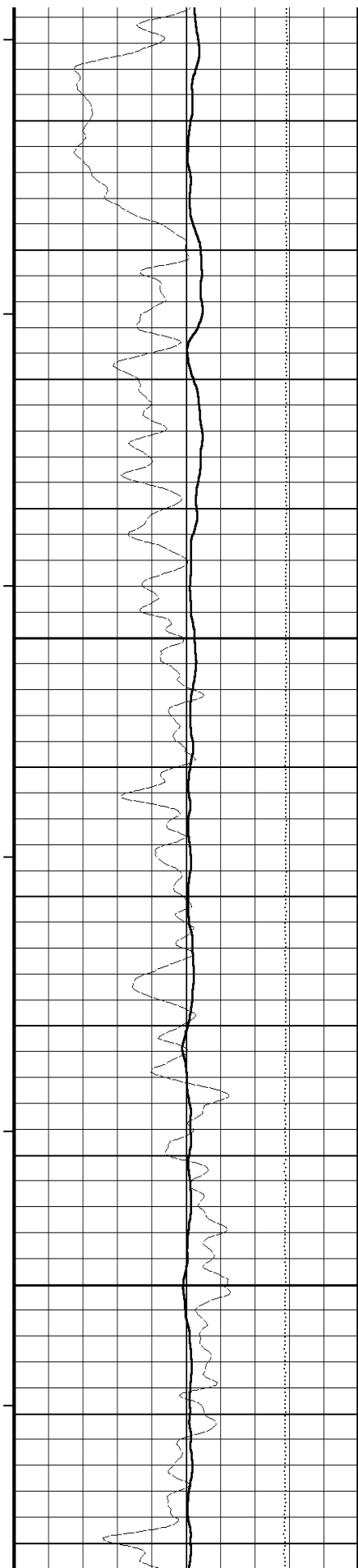












730

33°

740

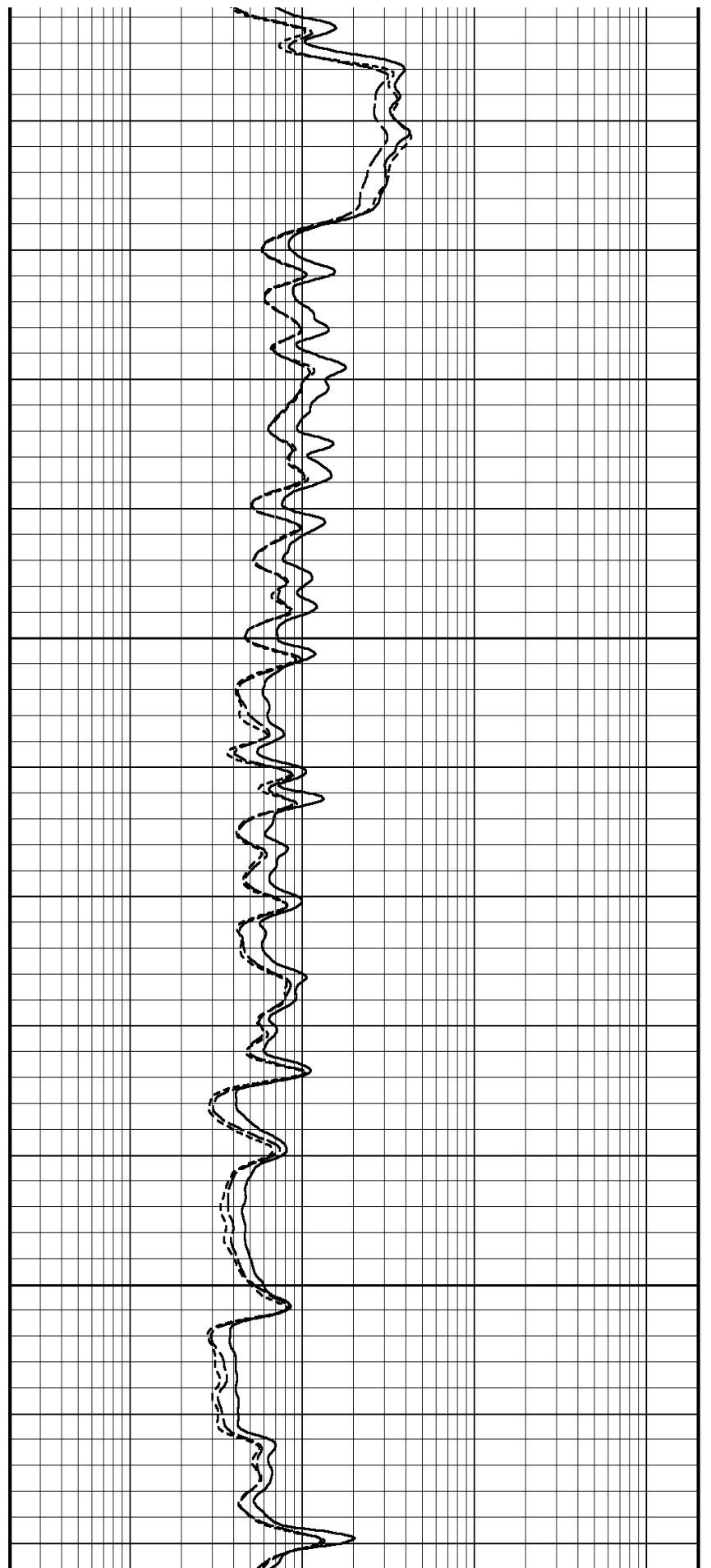
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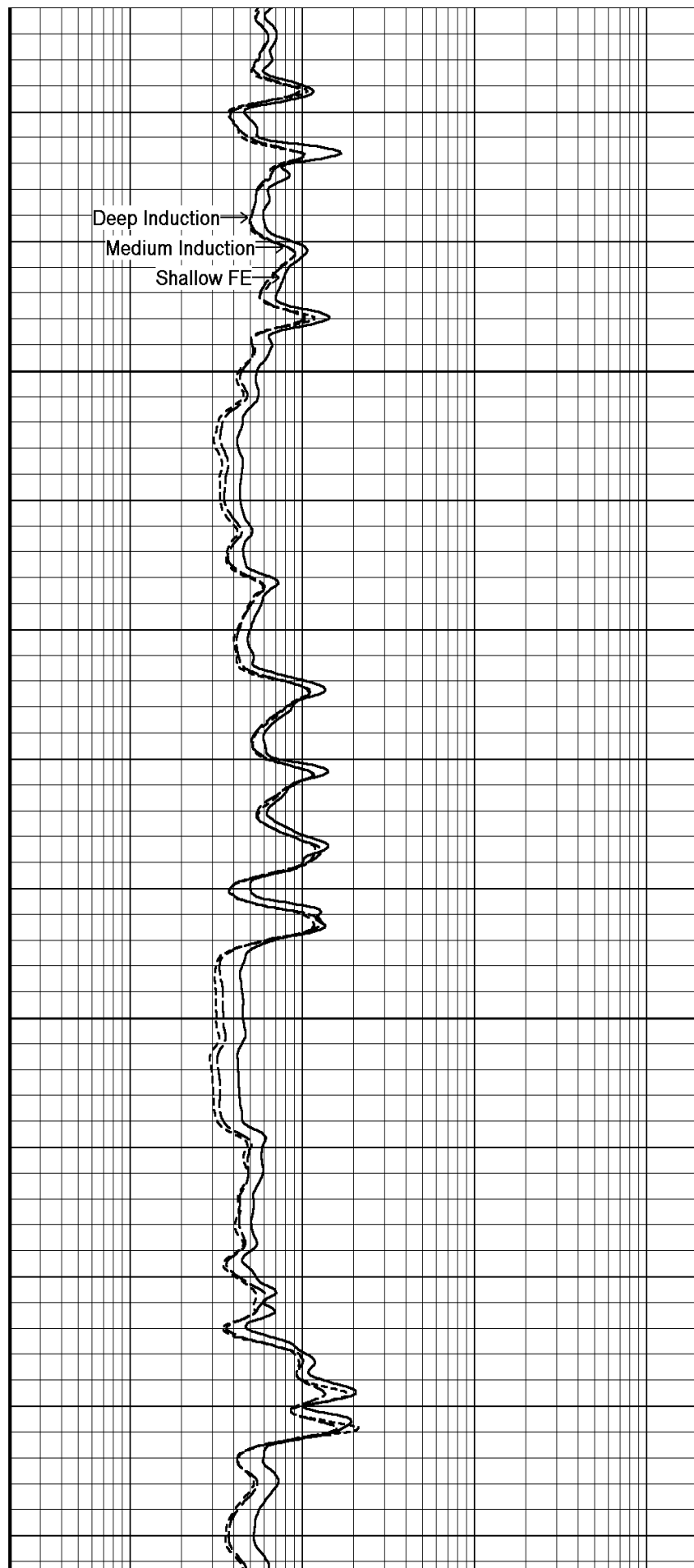
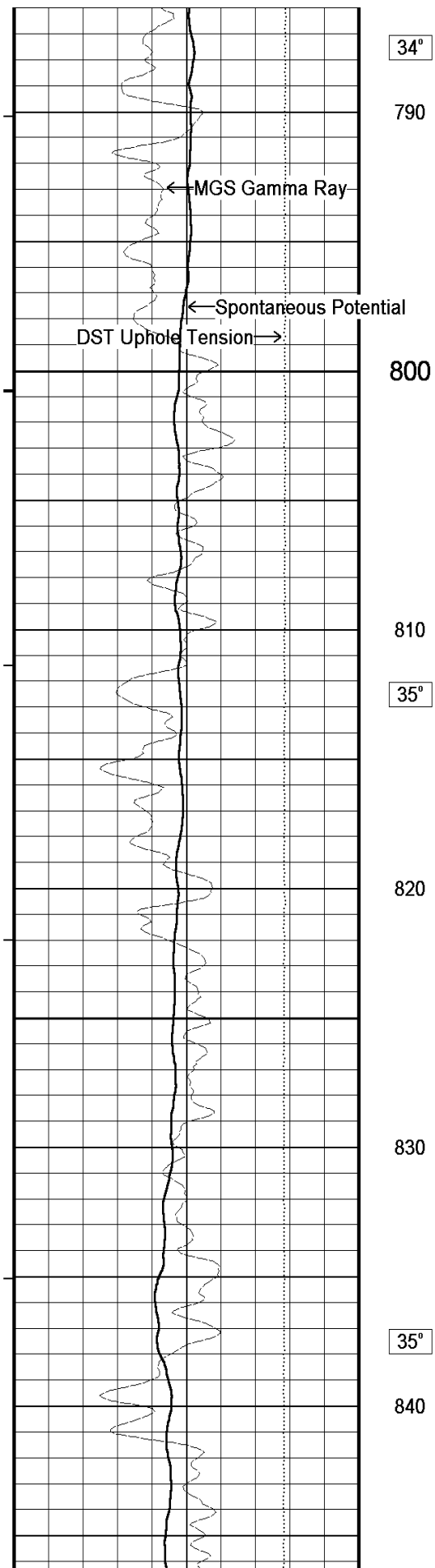
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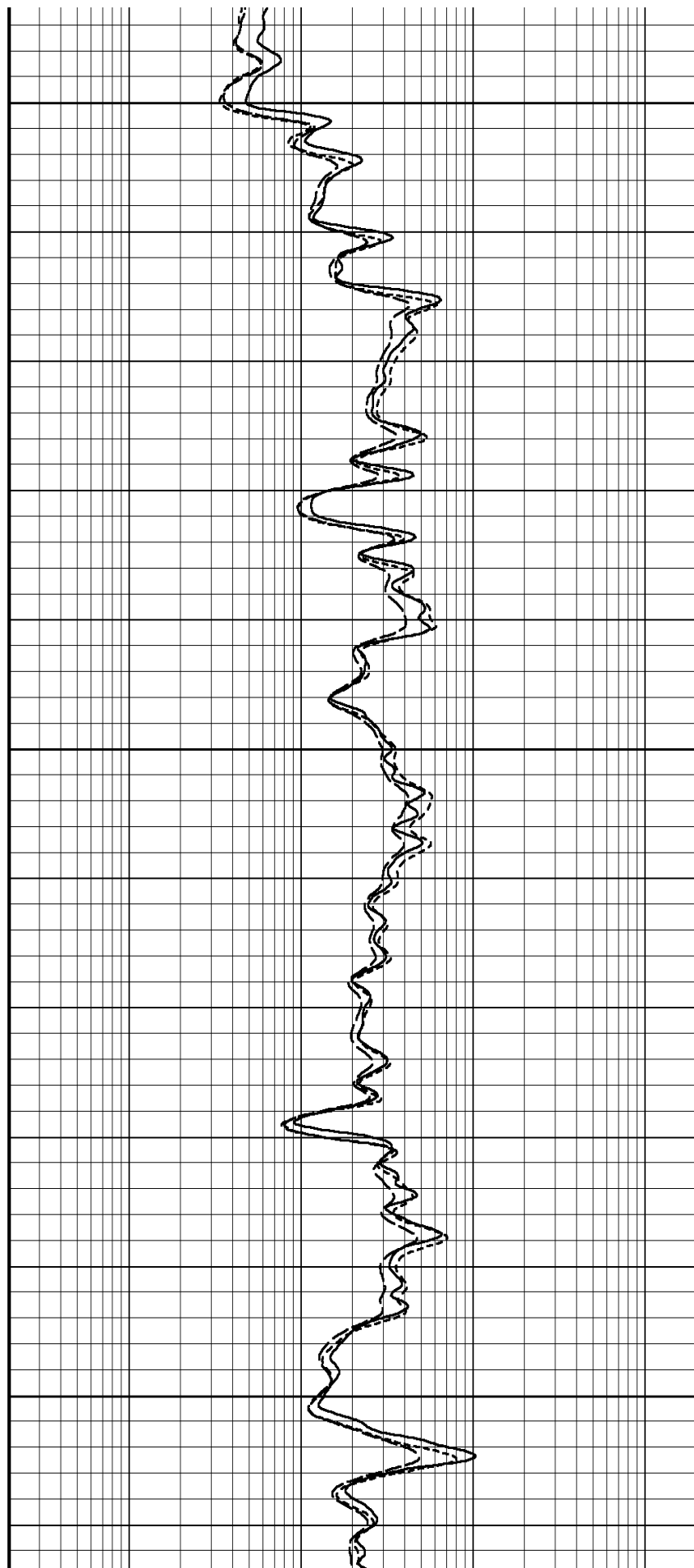
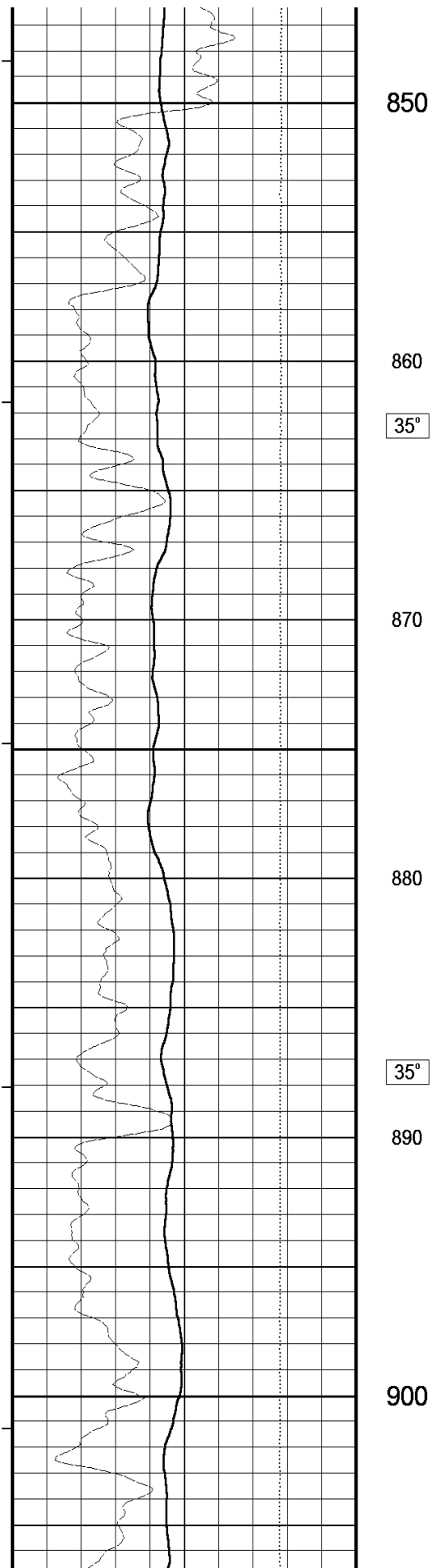
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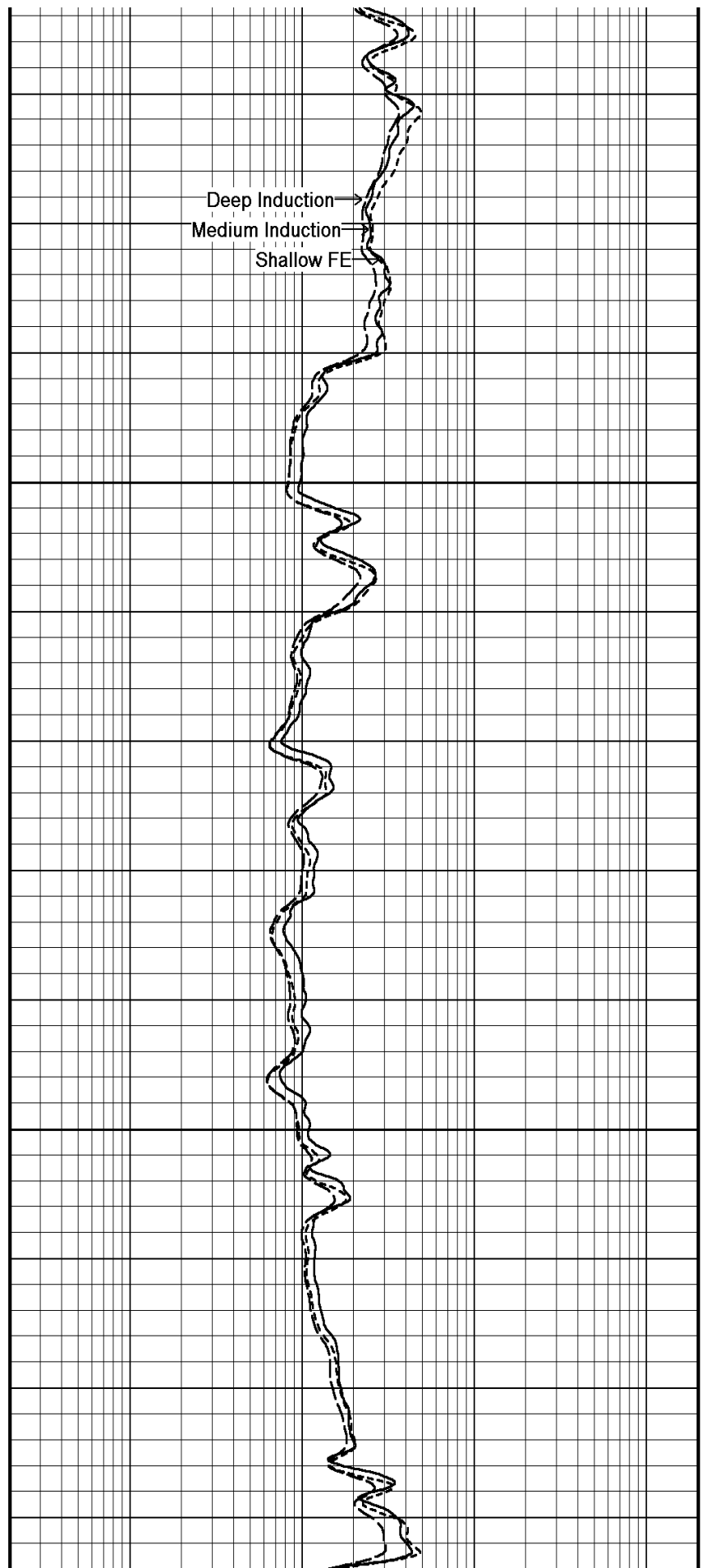
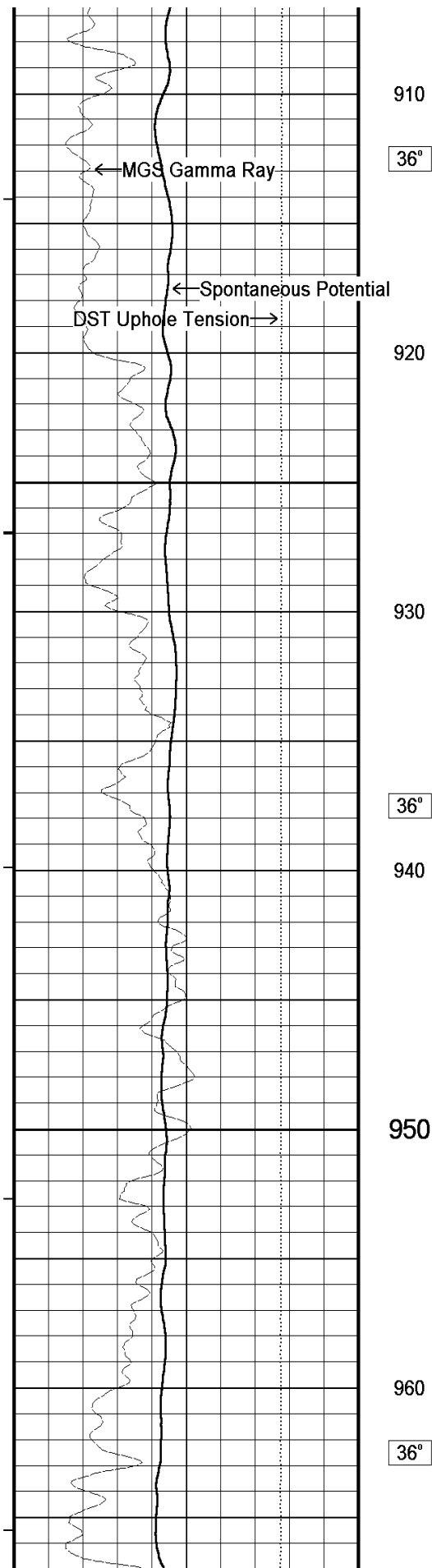
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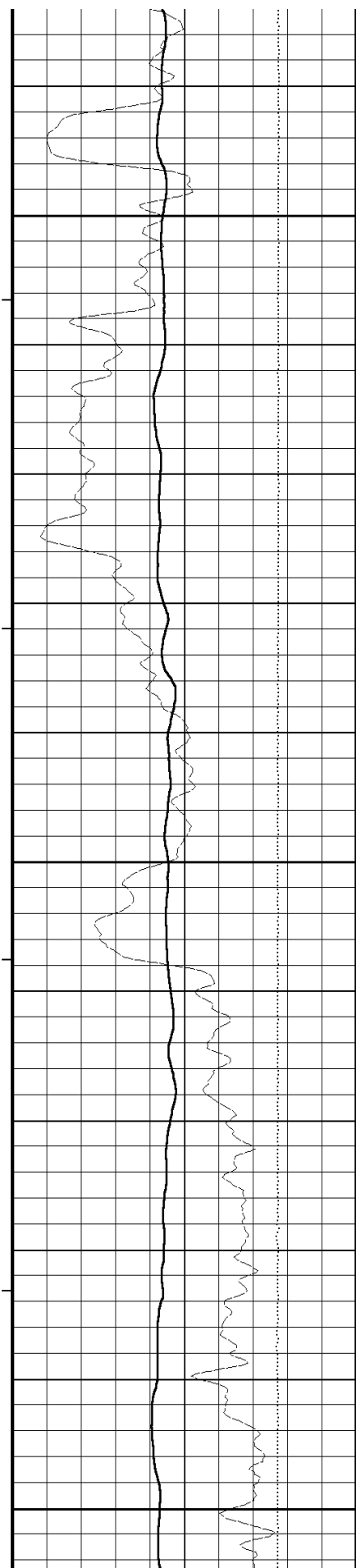
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970

980

37°

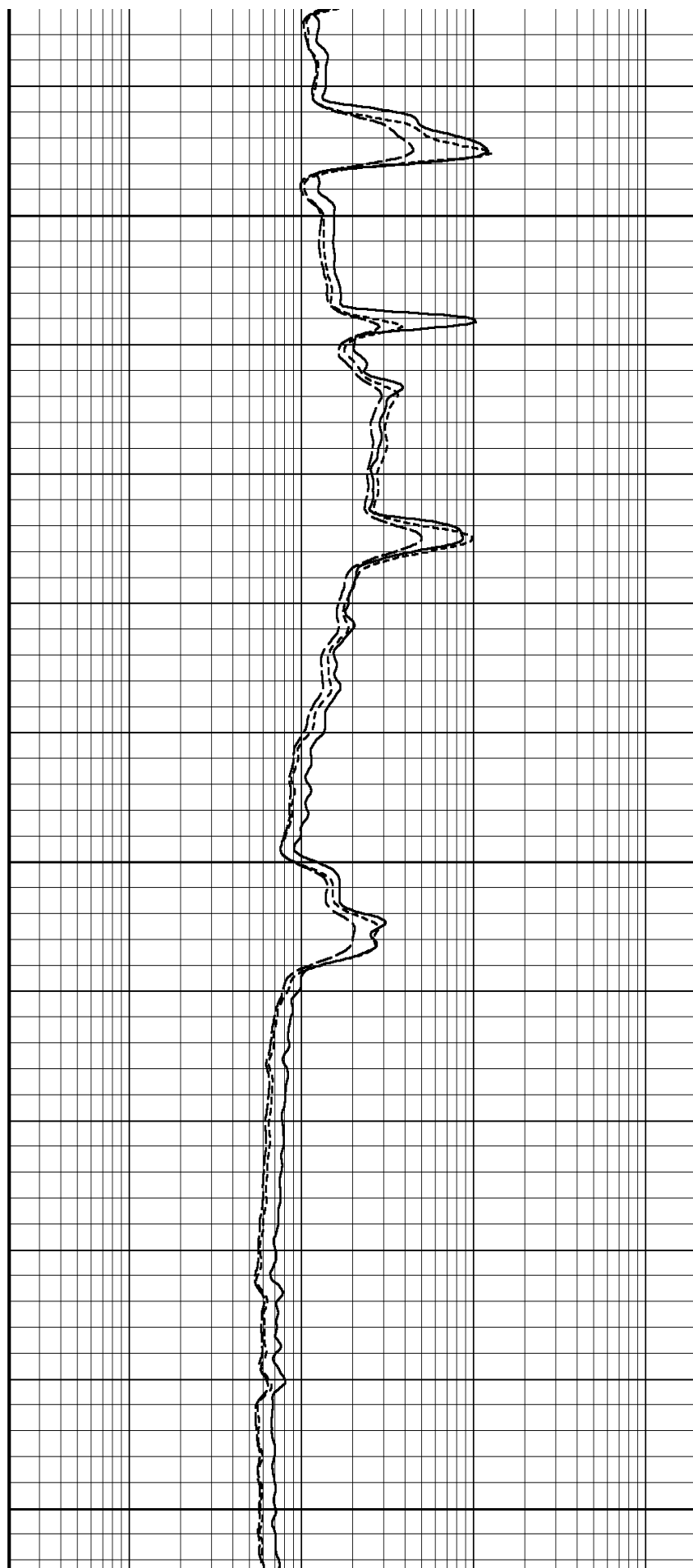
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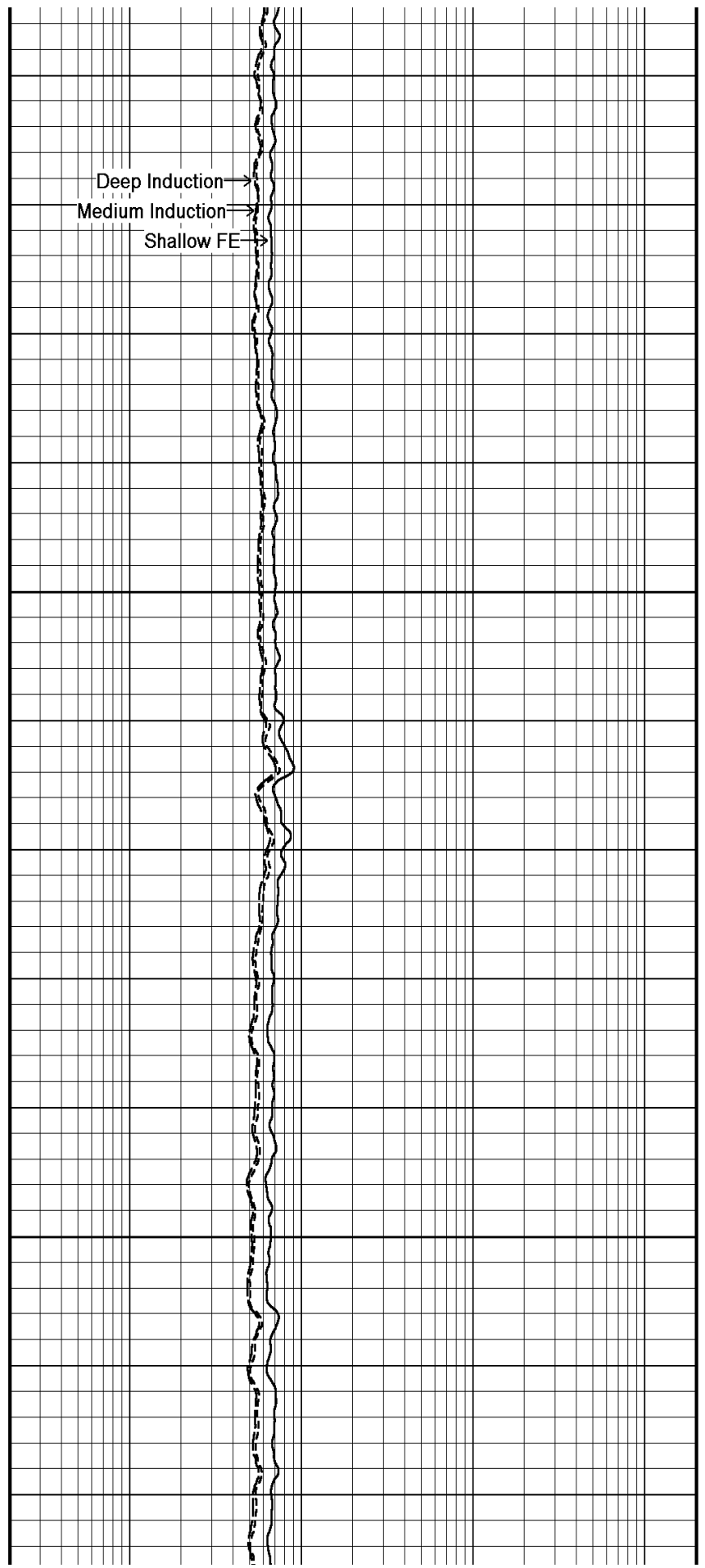
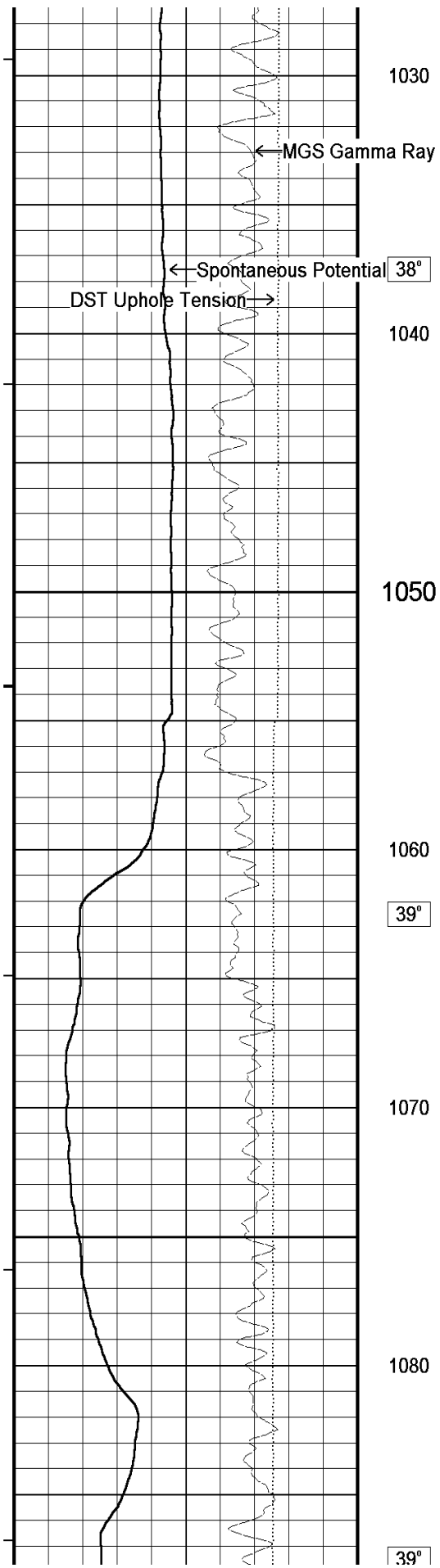
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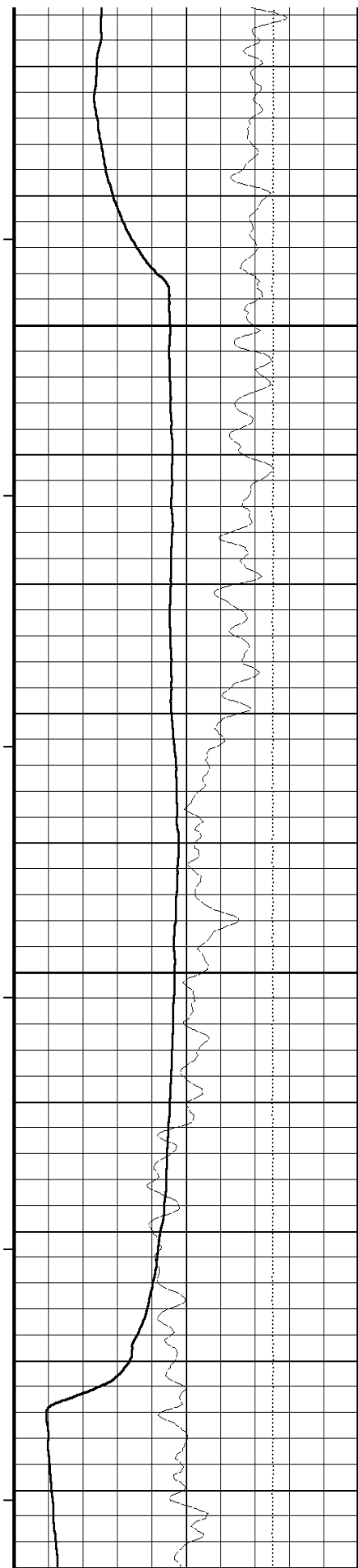
1010

37°

1020







1090

1100

1110

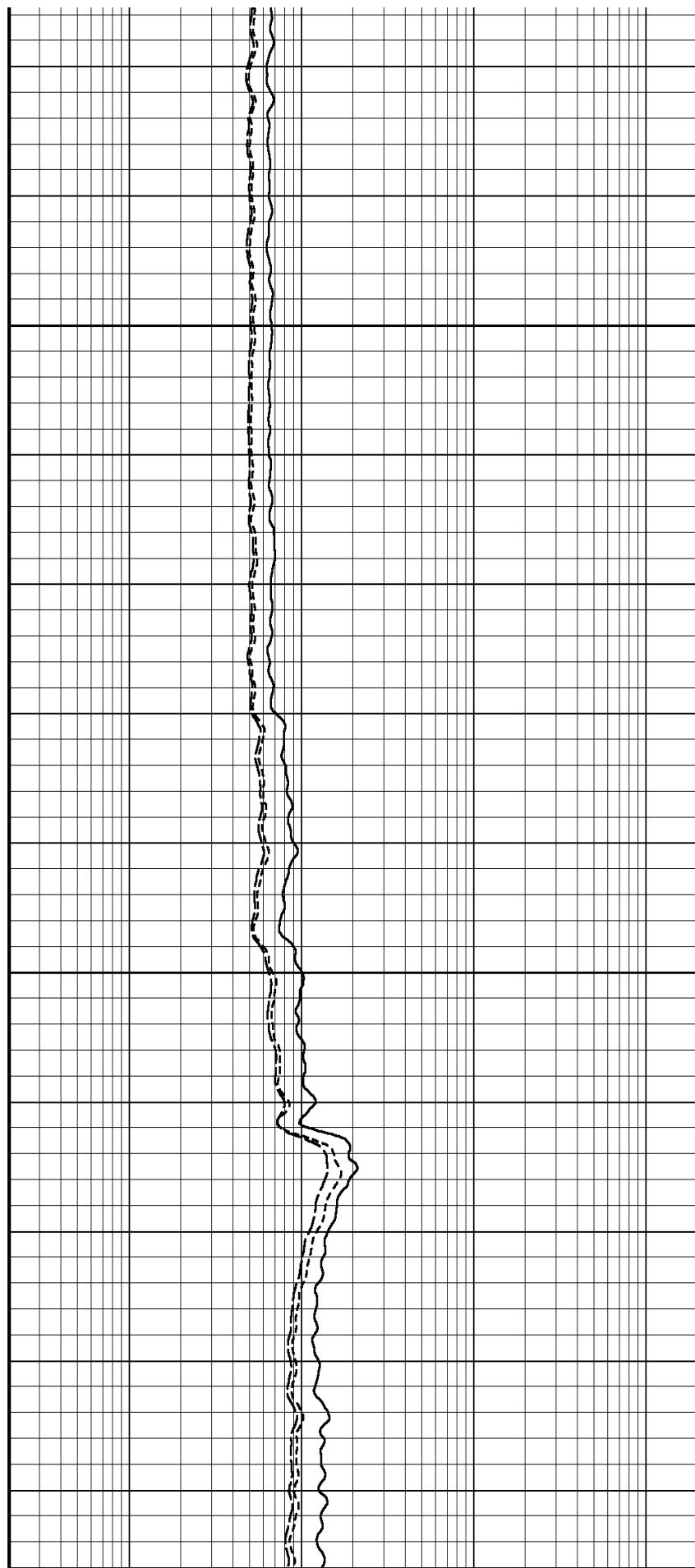
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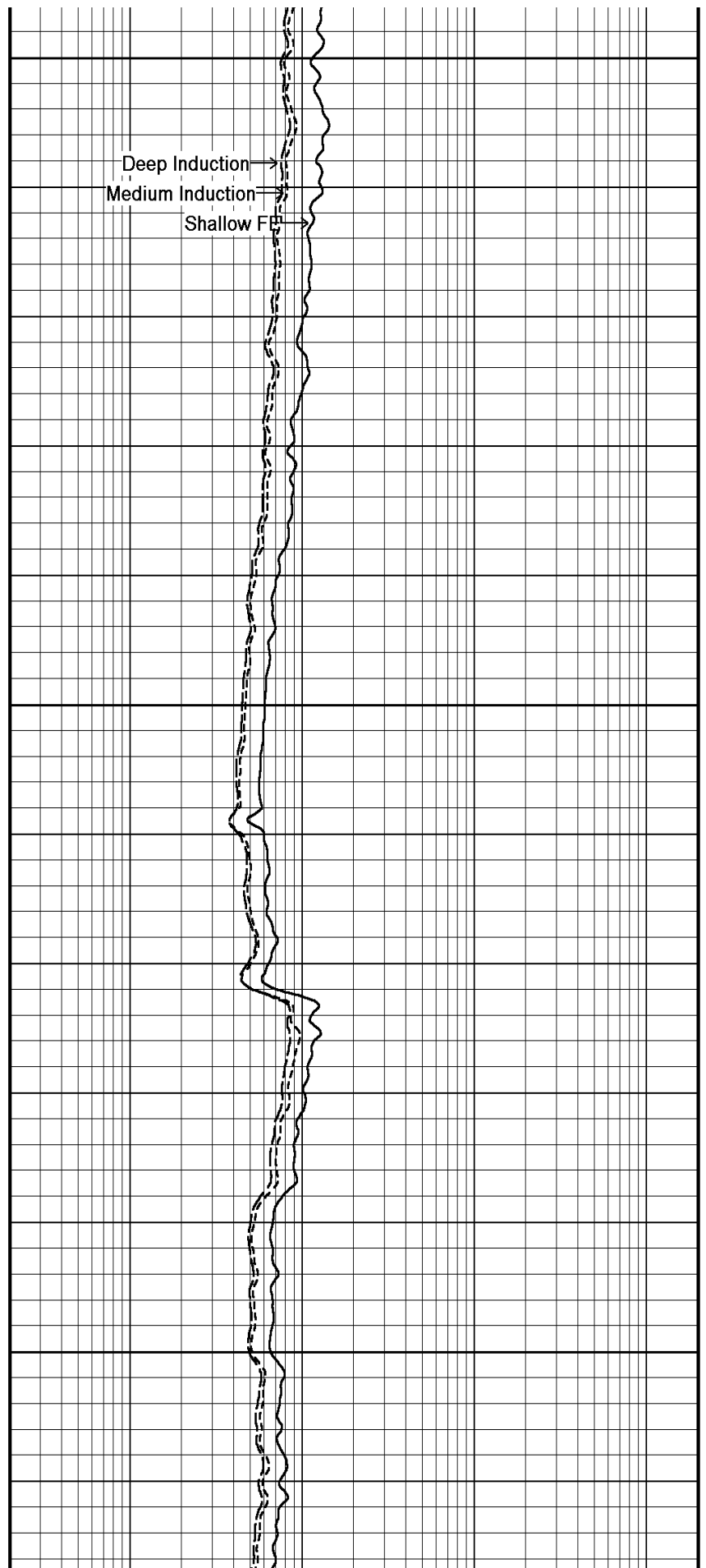
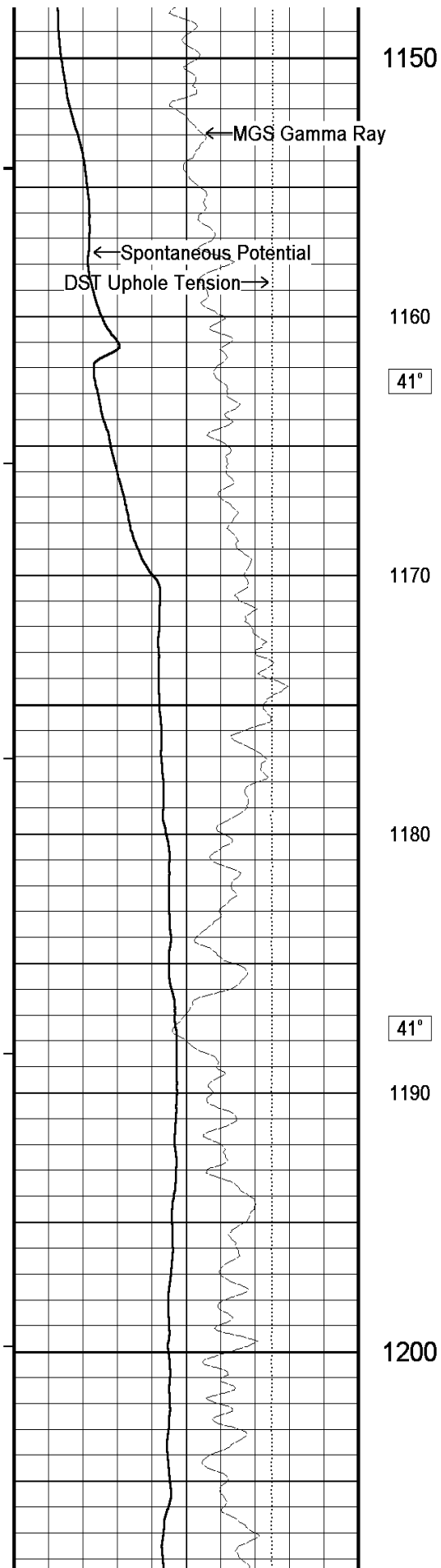
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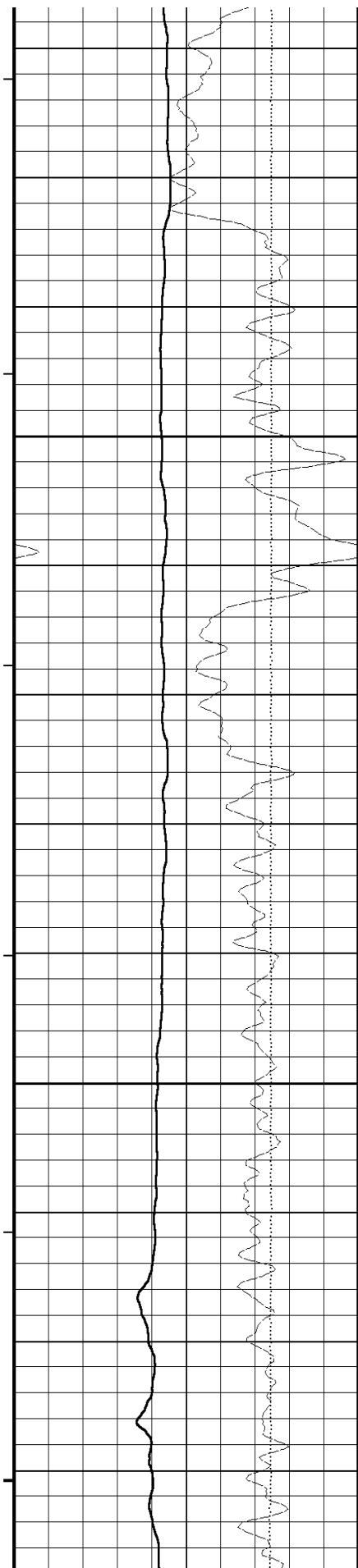
1130

40°

1140







1210

42°

1220

1230

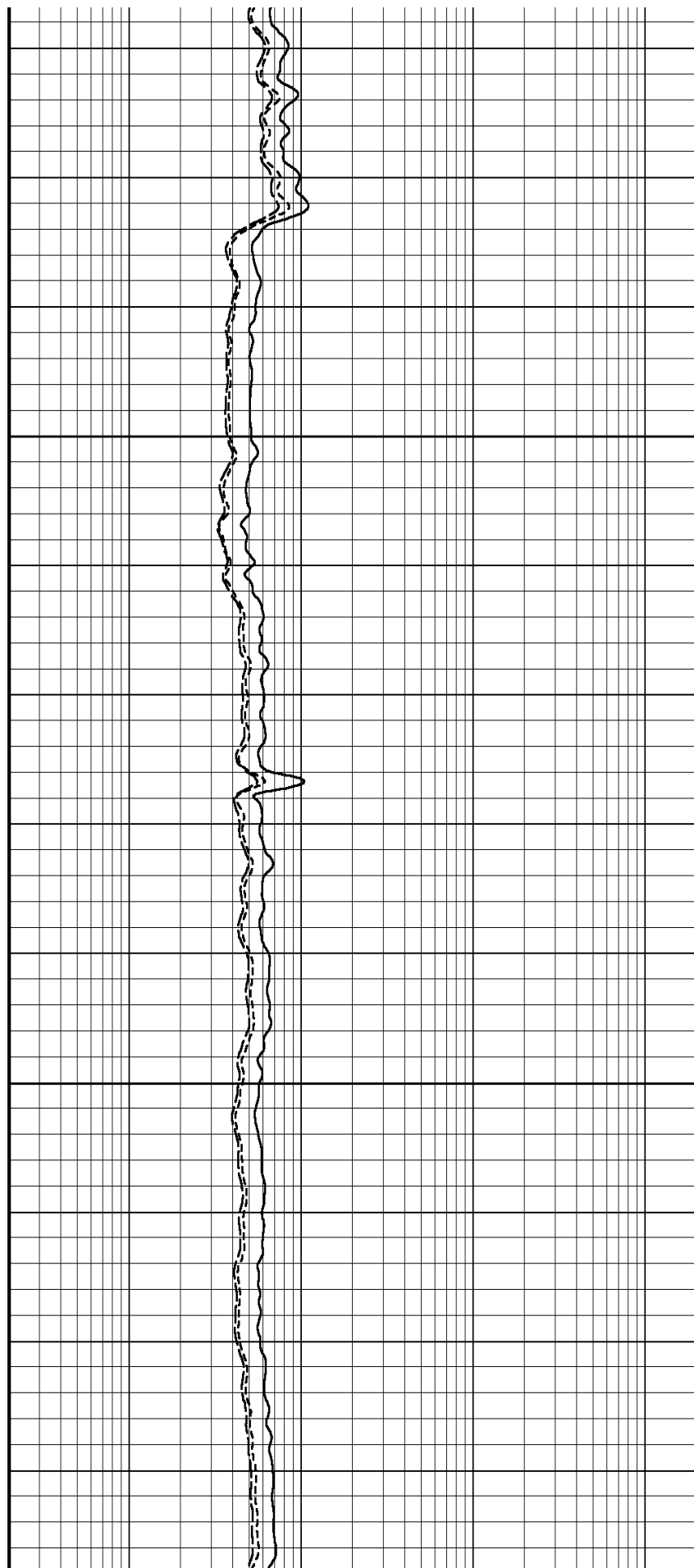
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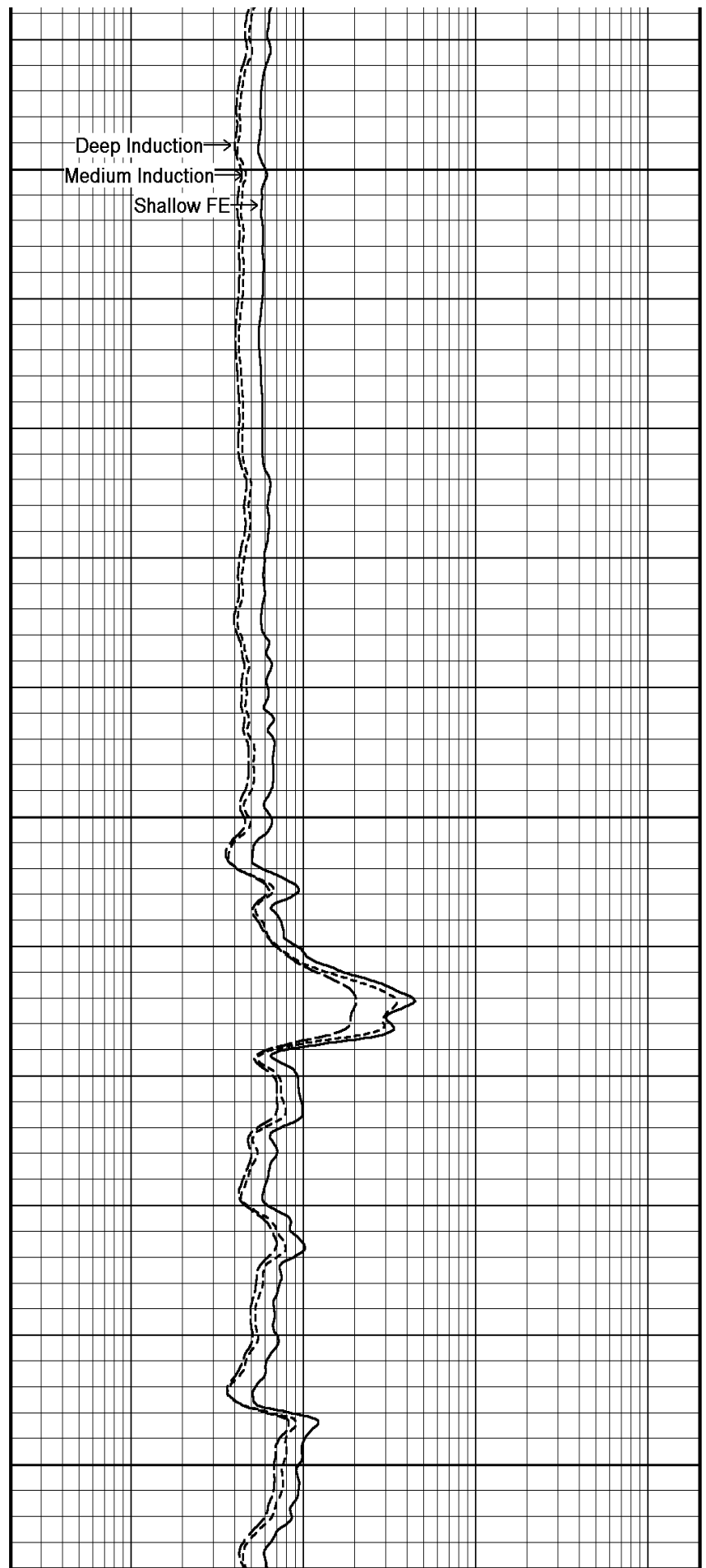
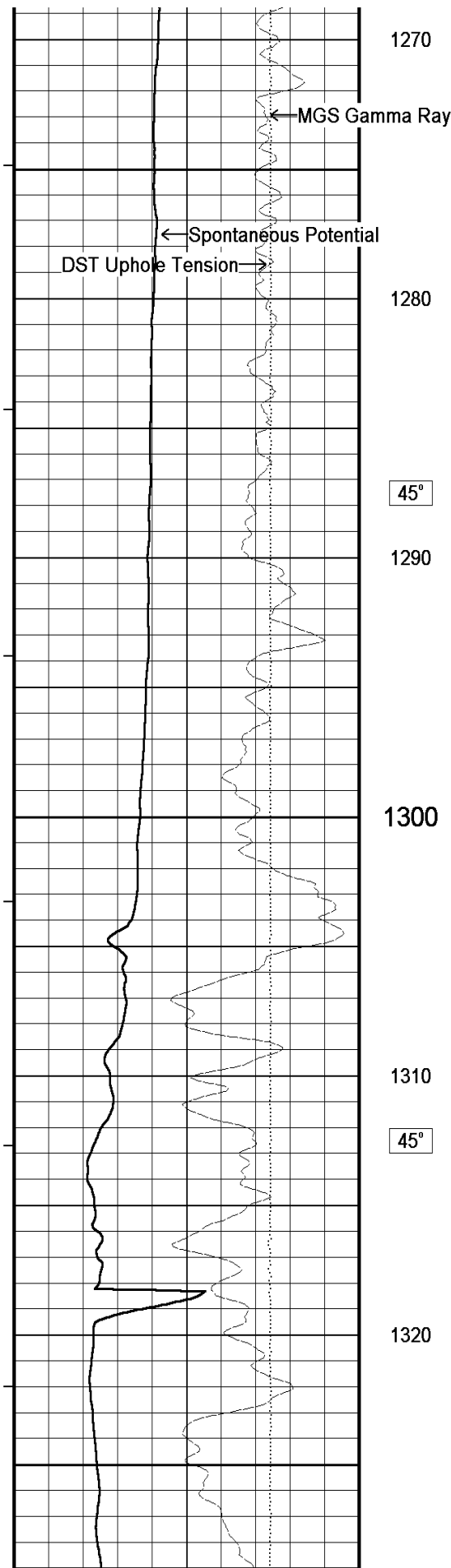
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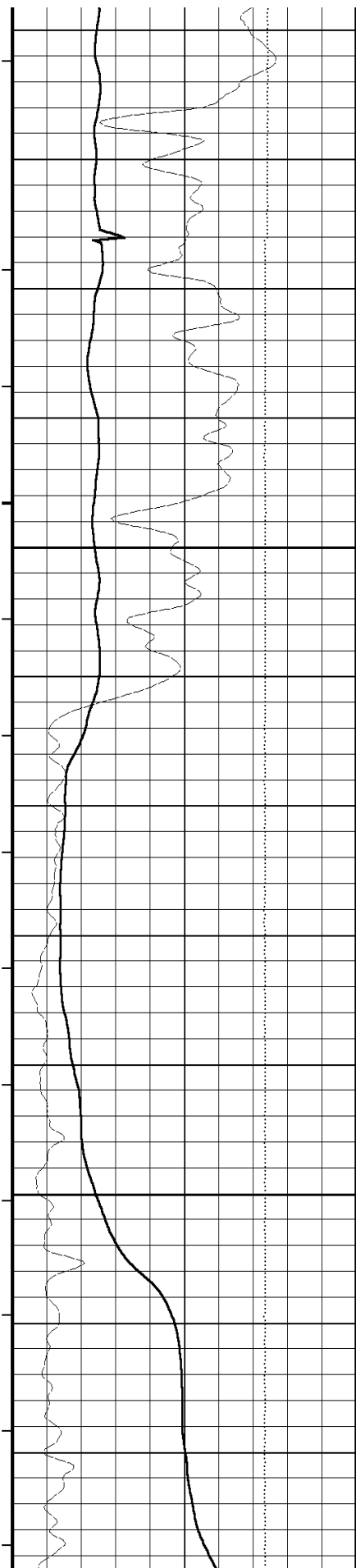
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1260

44°







1330

45°

1340

1350

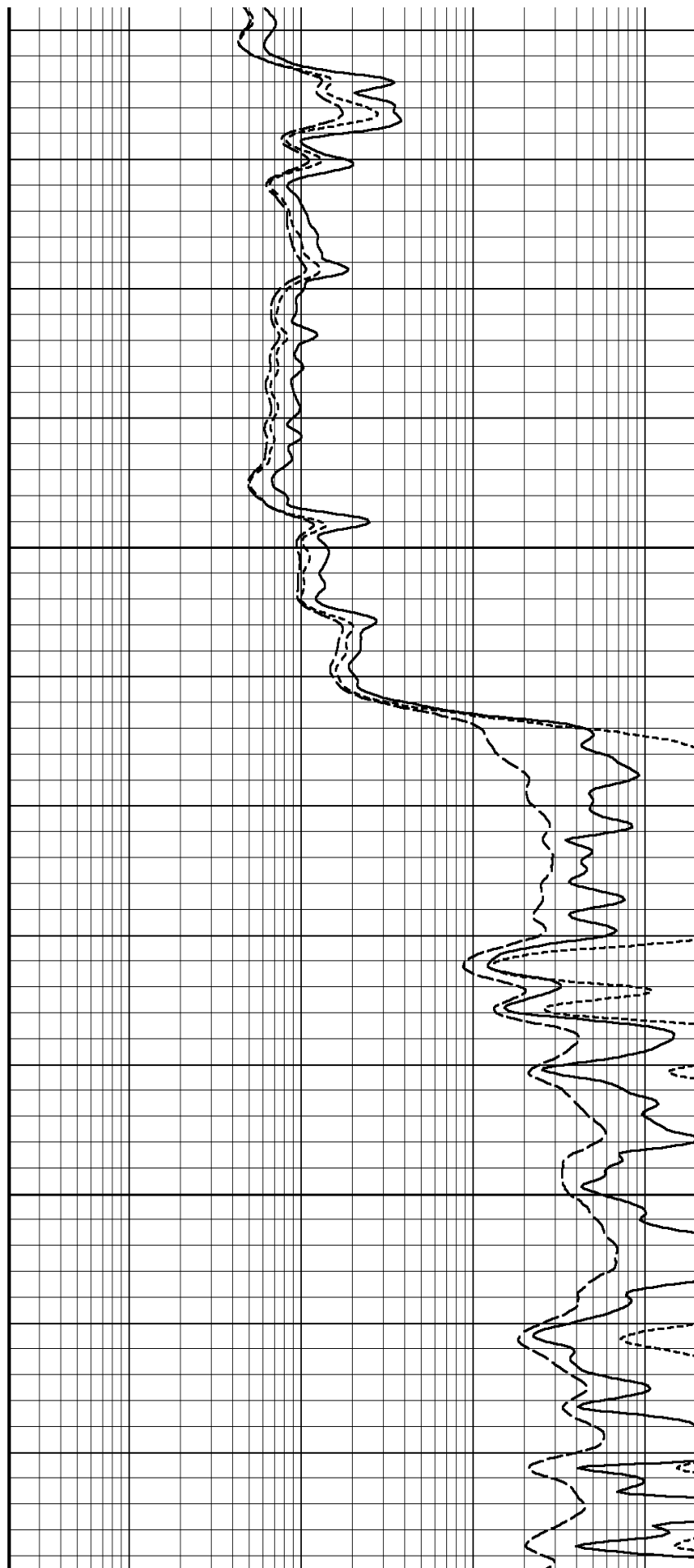
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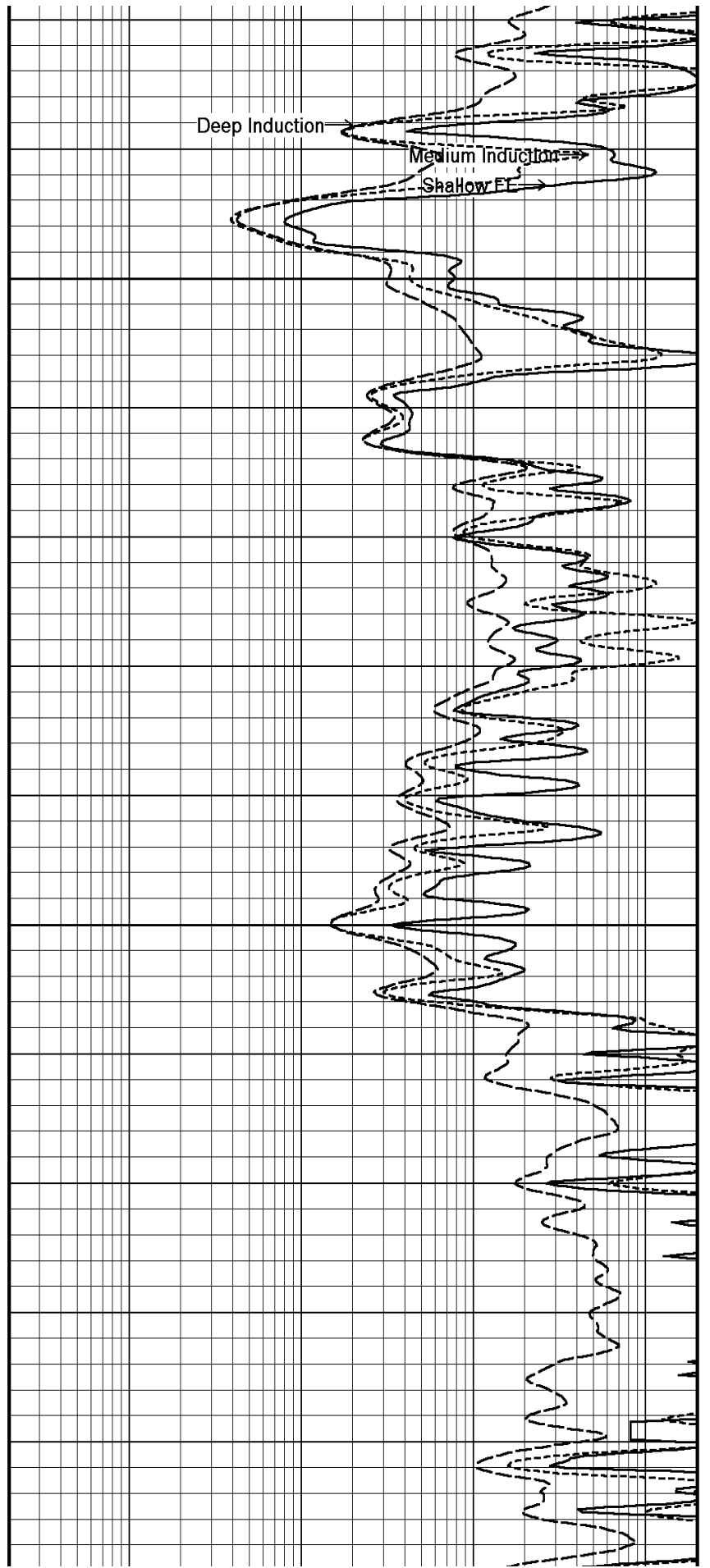
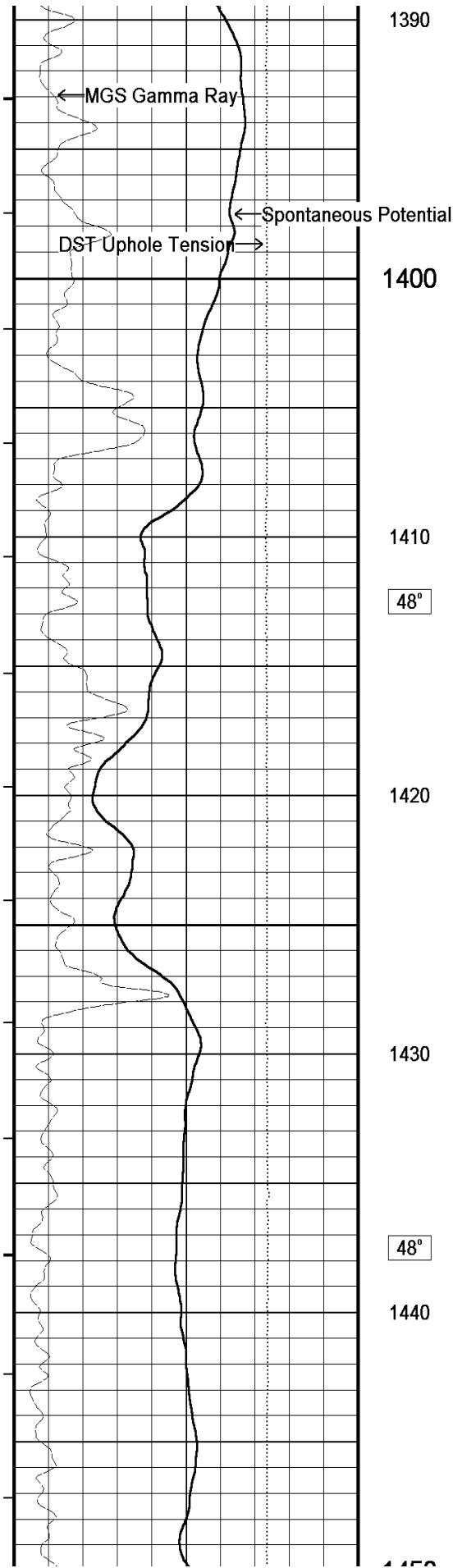
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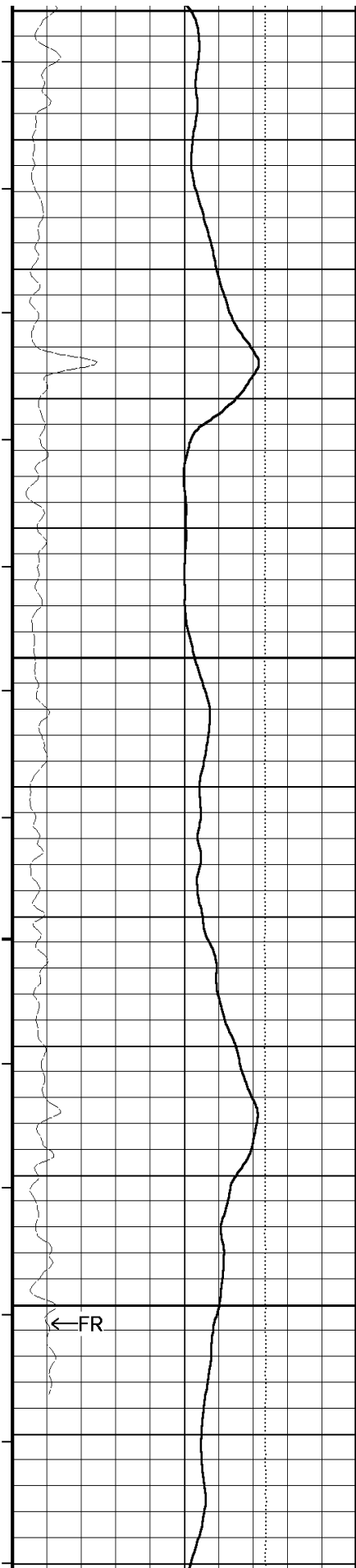
1370

1380

47°







1450

1460

49°

1470

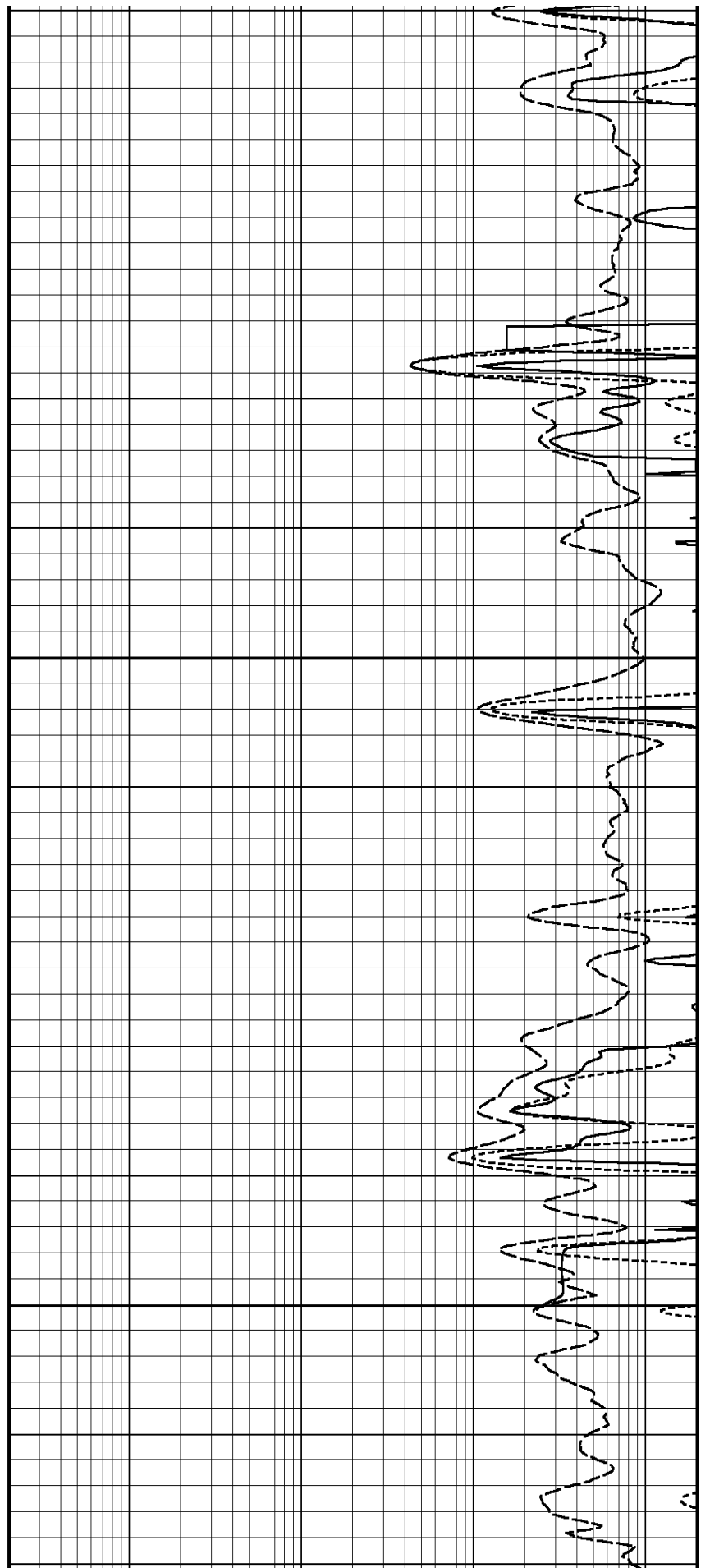
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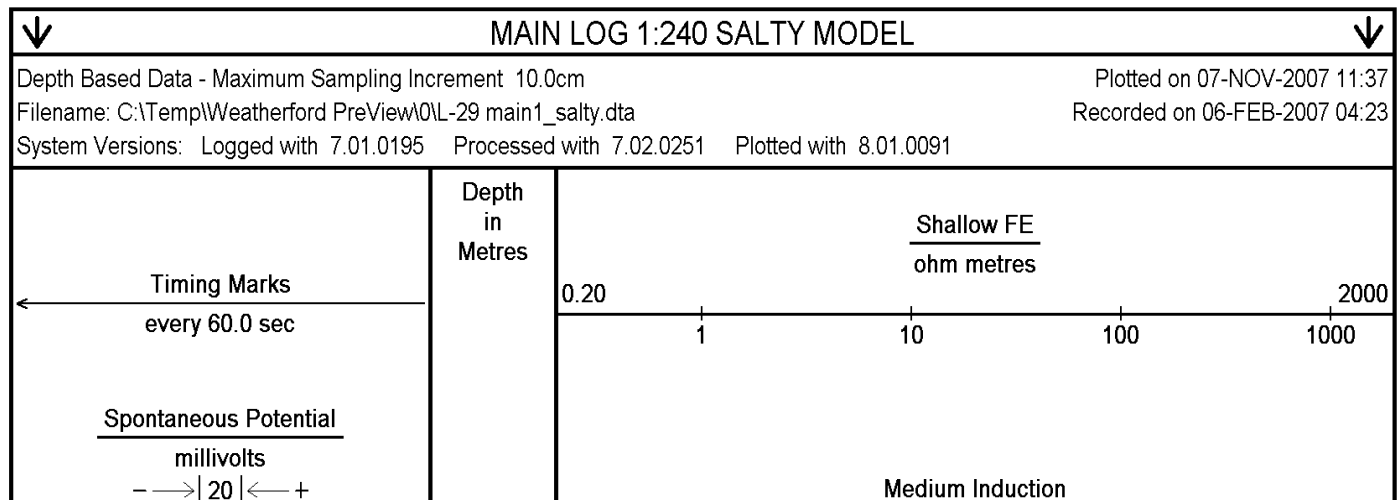
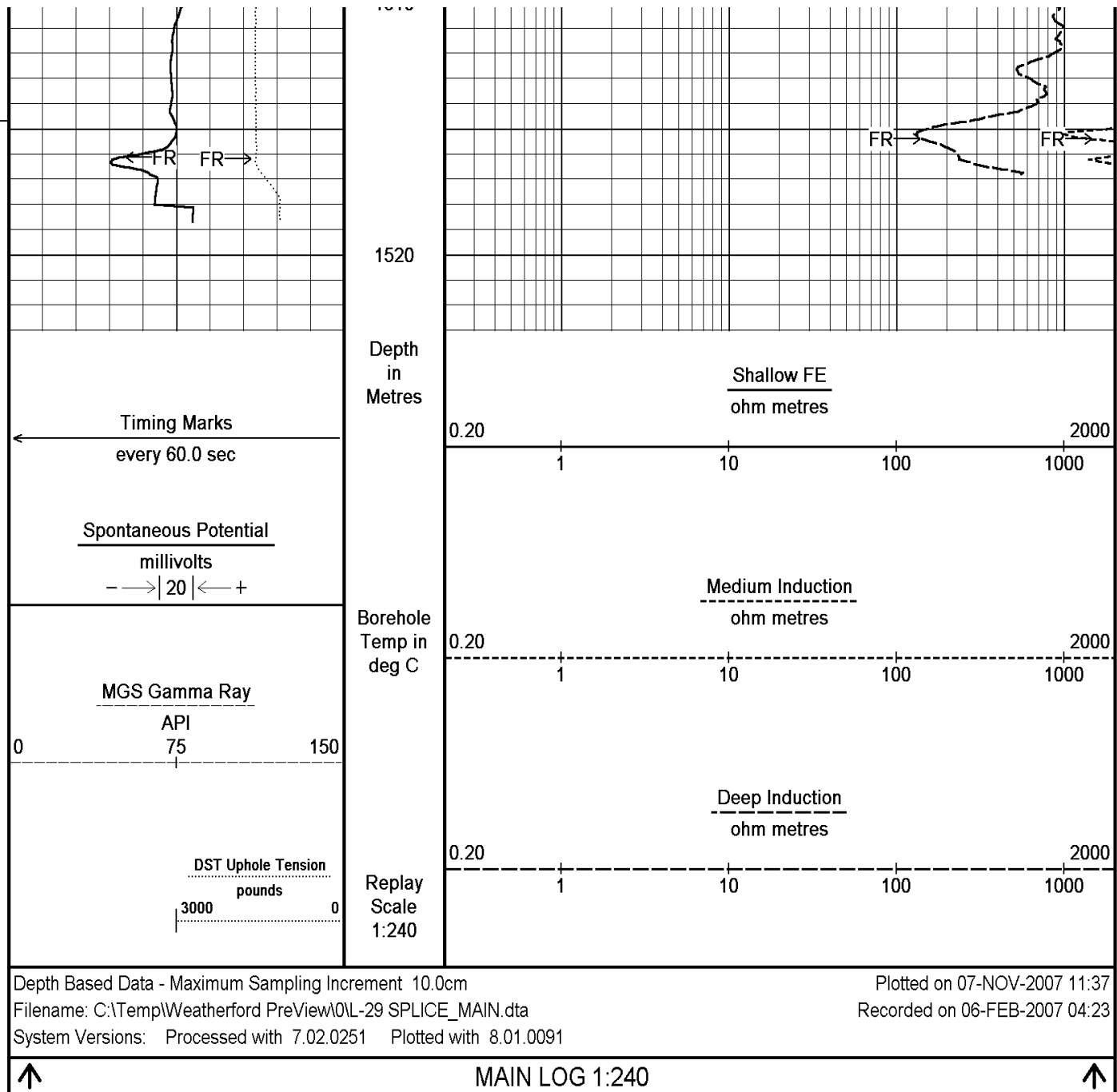
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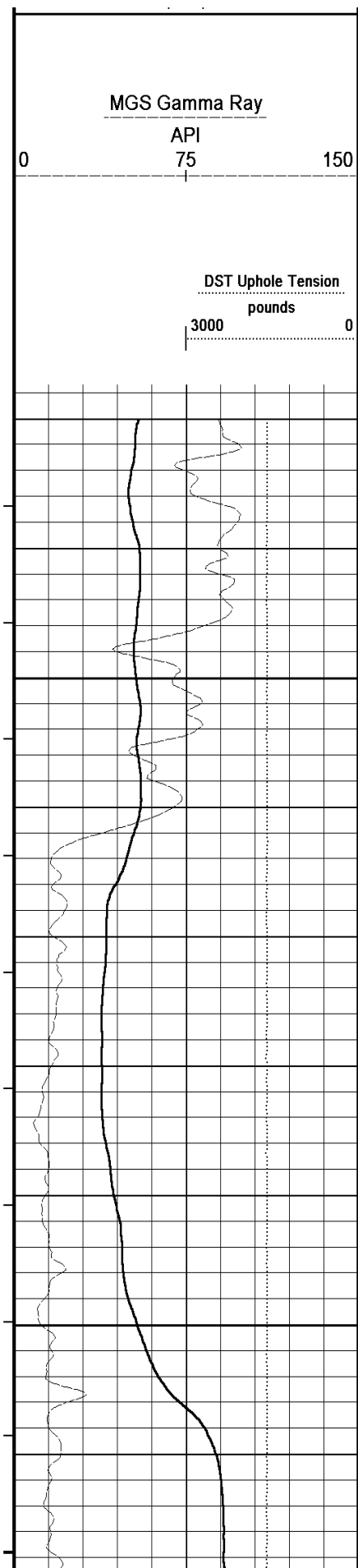
1490

1500

1510







Borehole
Temp in
deg C

Replay
Scale
1:240

1340

1350

1360

46°

1370

1380

ohm metres

Deep Induction
ohm metres

0.20

1

10

100

1000

2000

0.20

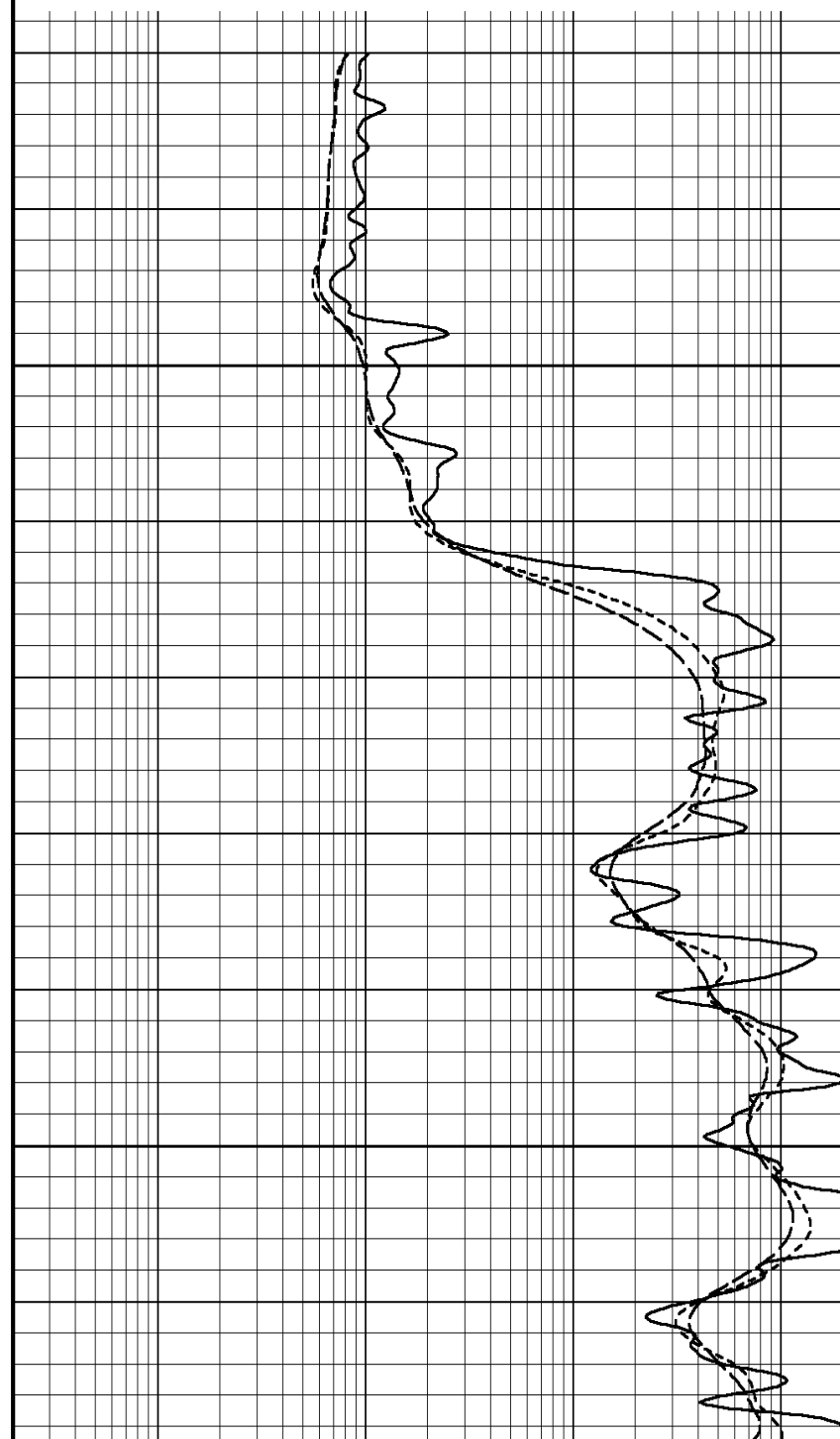
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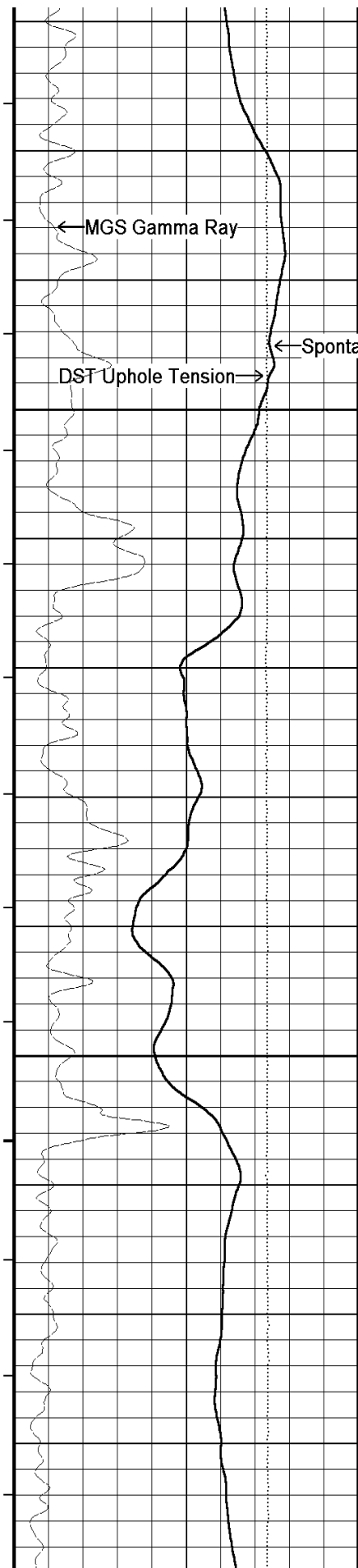
10

100

1000

2000





47°

1390

1400

1410

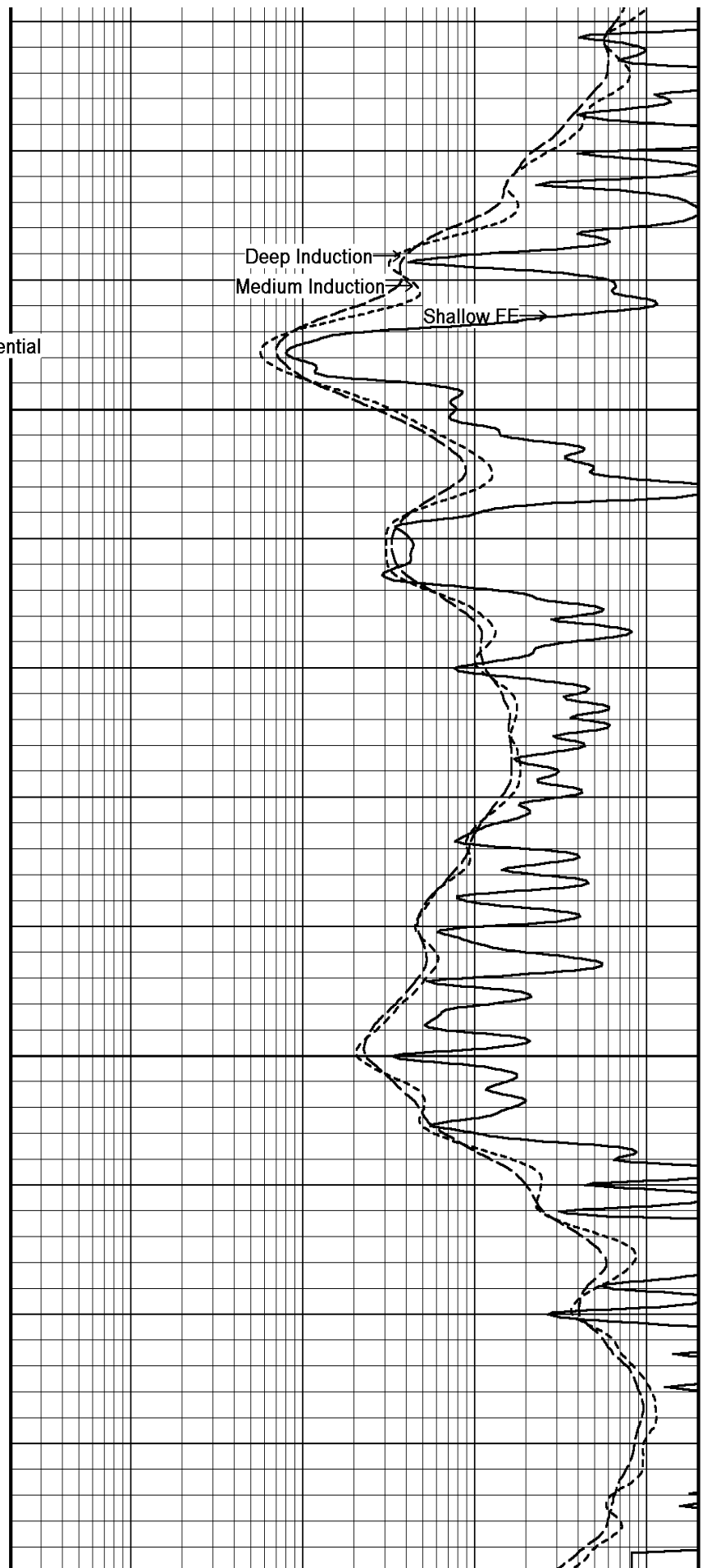
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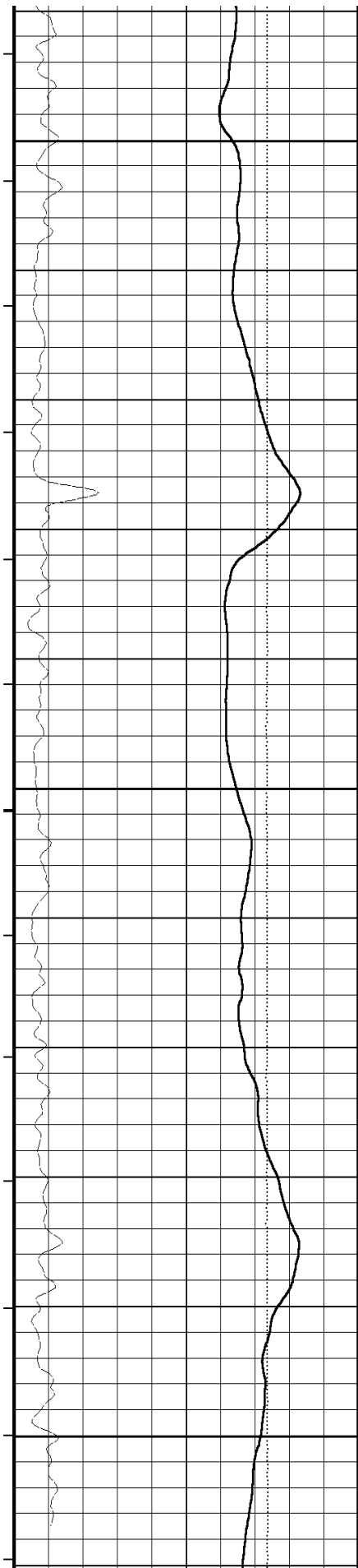
1420

1430

48°

1440





1450

1460

49°

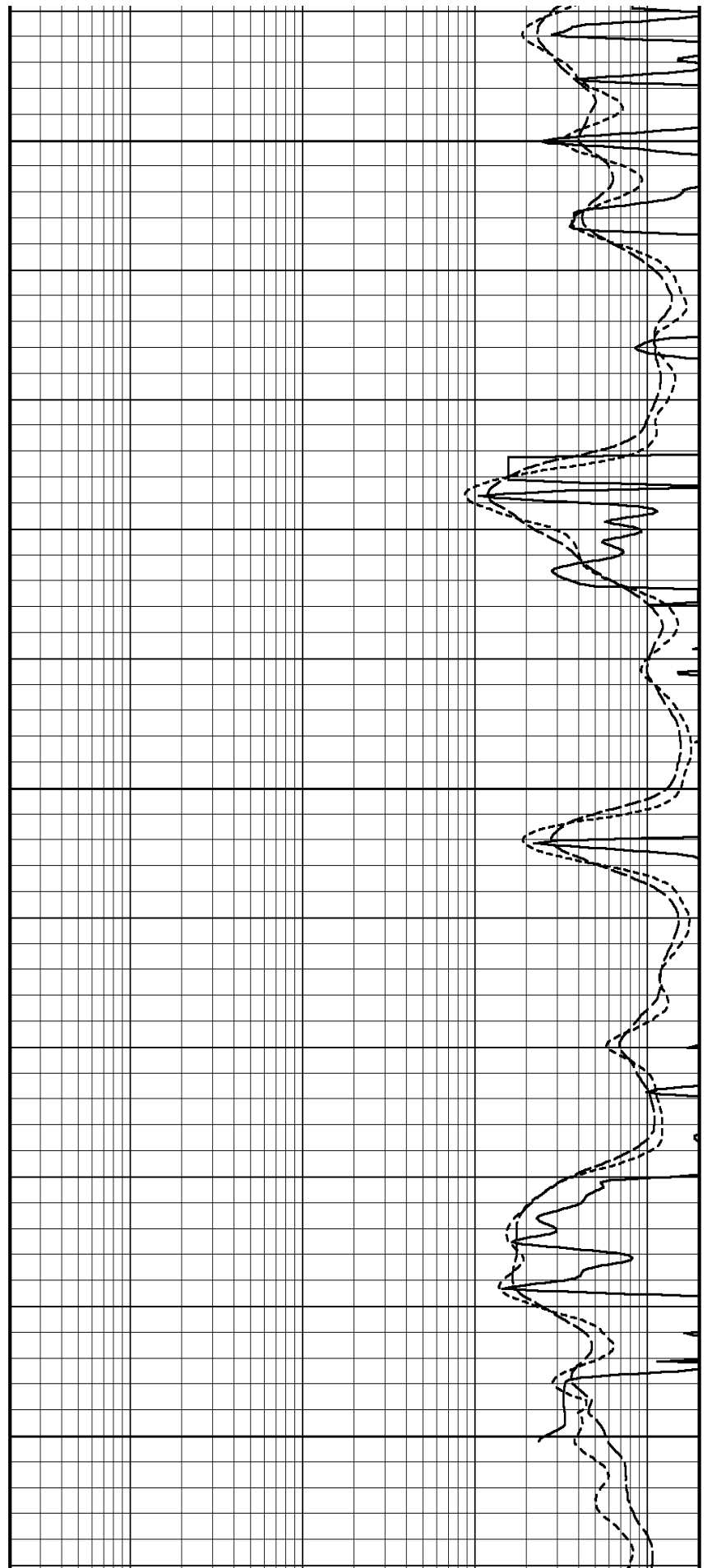
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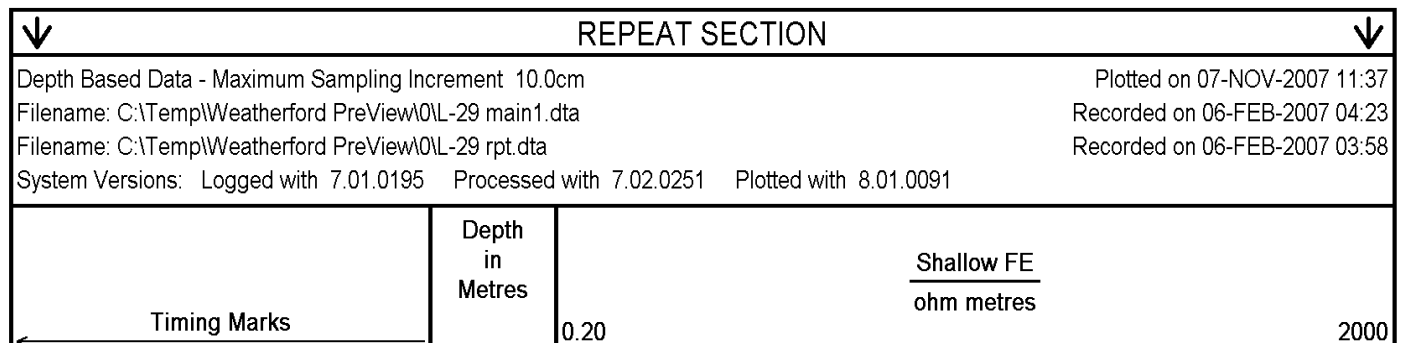
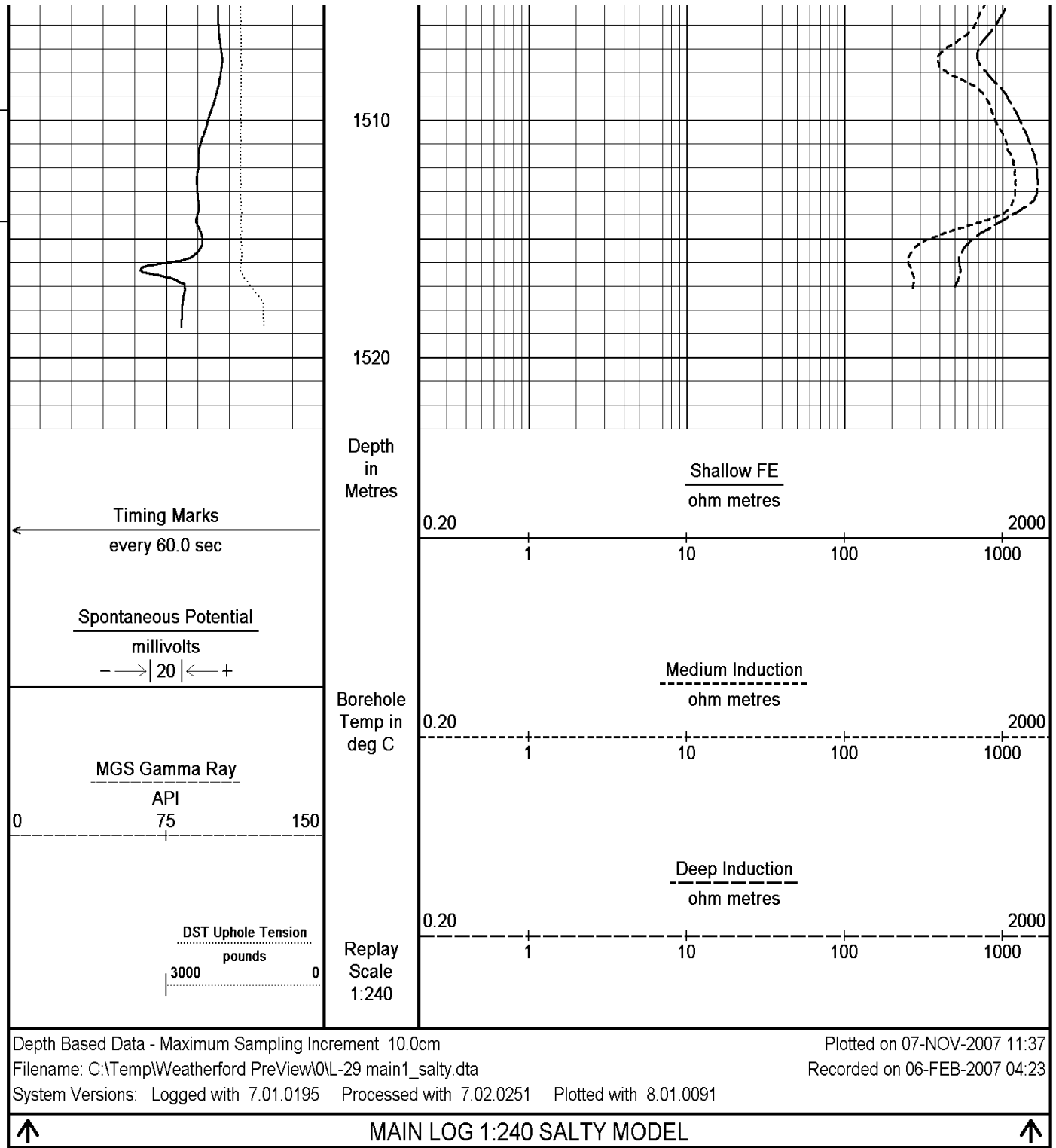
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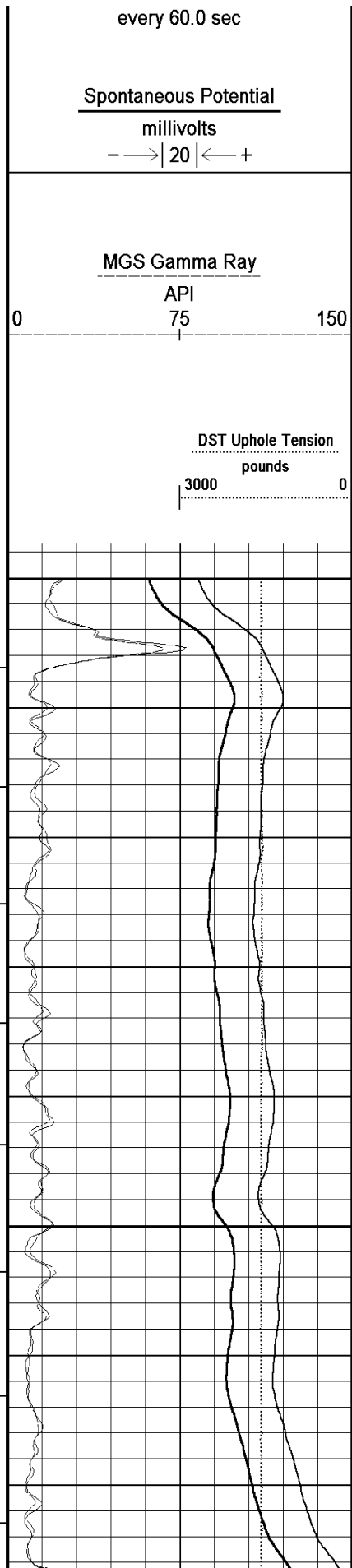
49°

1490

1500







Borehole
Temp in
deg C

Replay
Scale
1:240

1425

1430

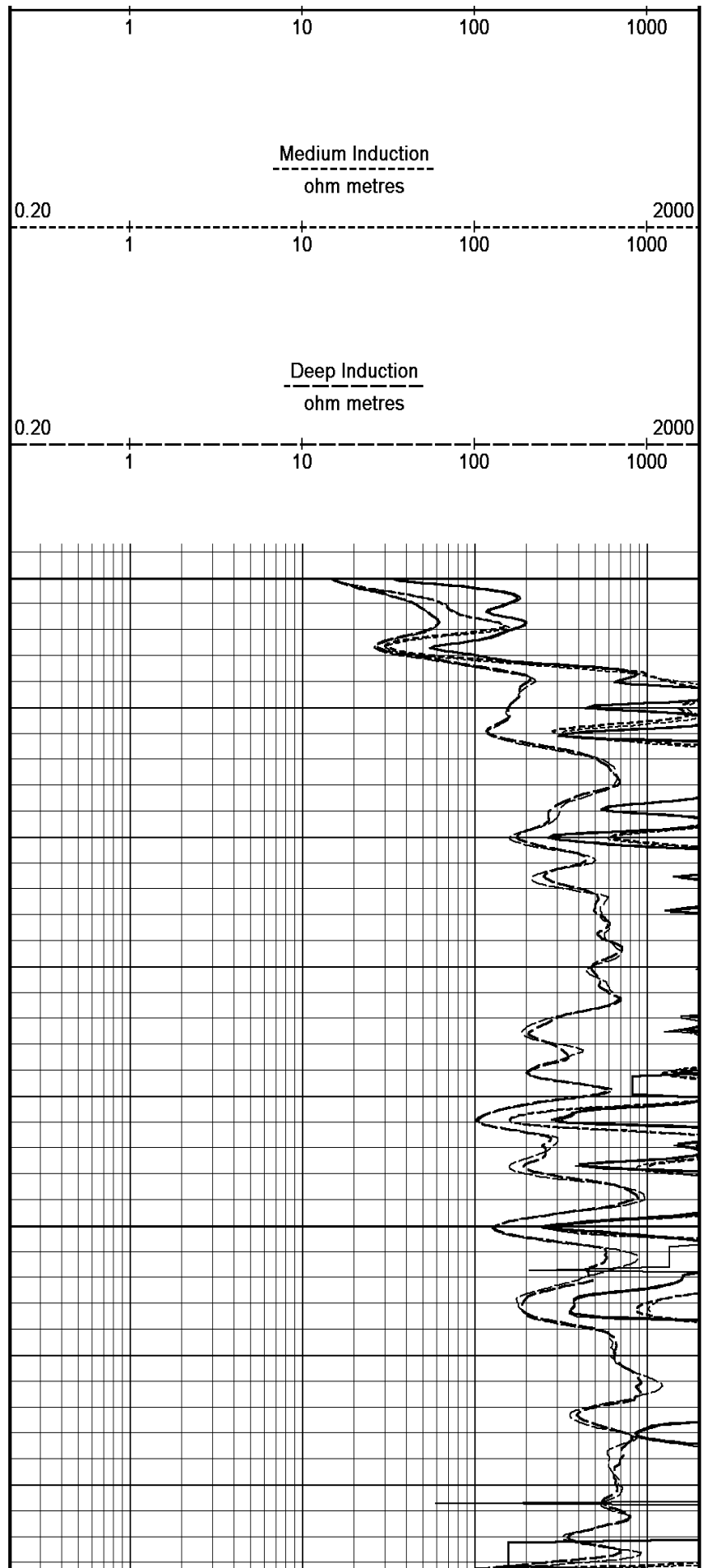
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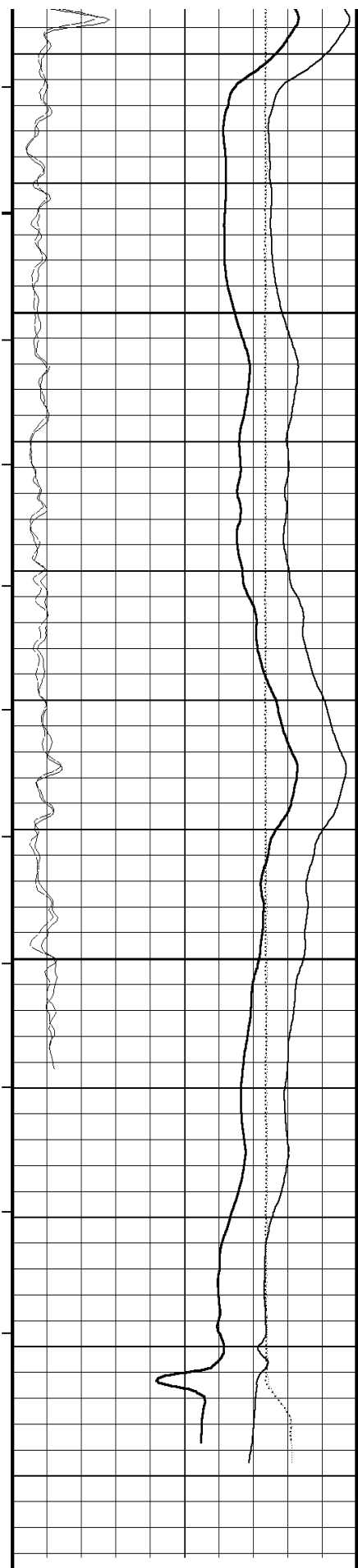
1440

1450

1460

49°





1470

1480

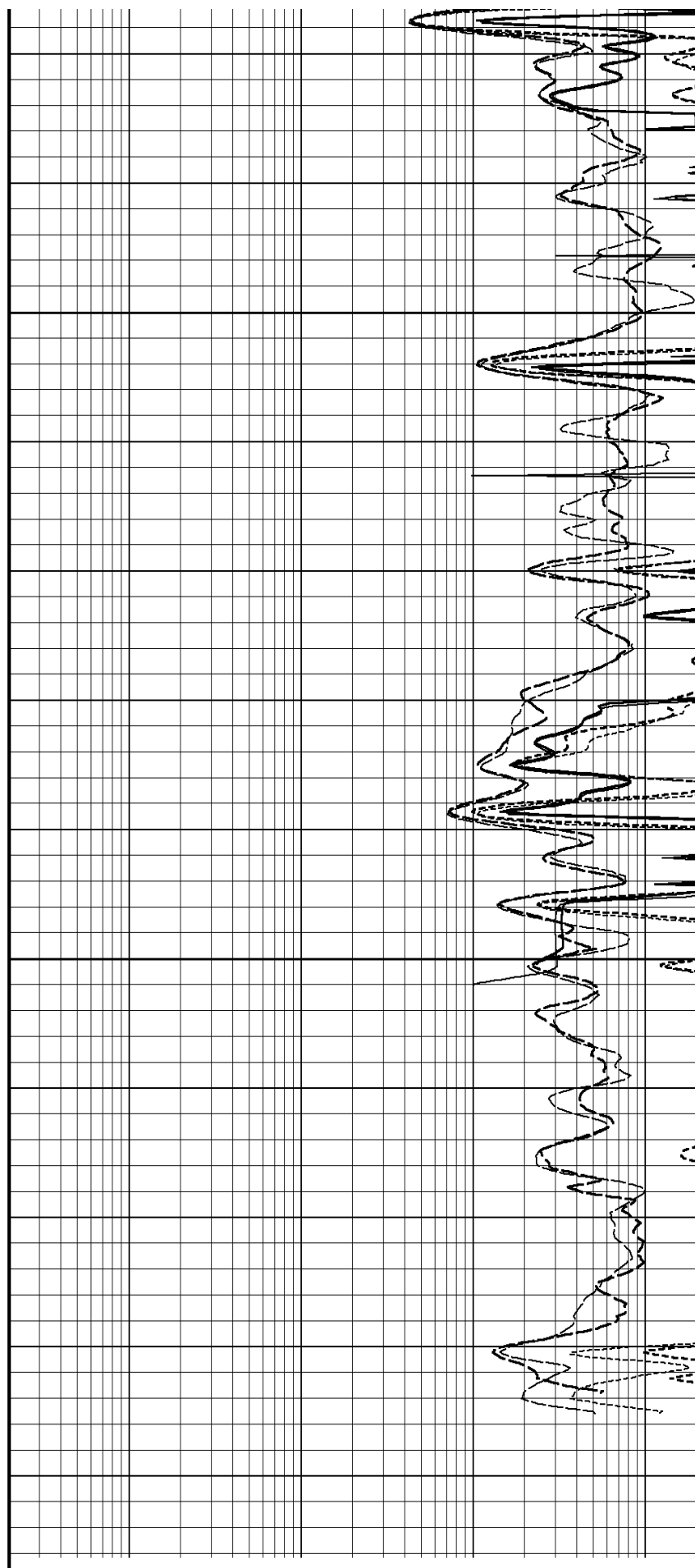
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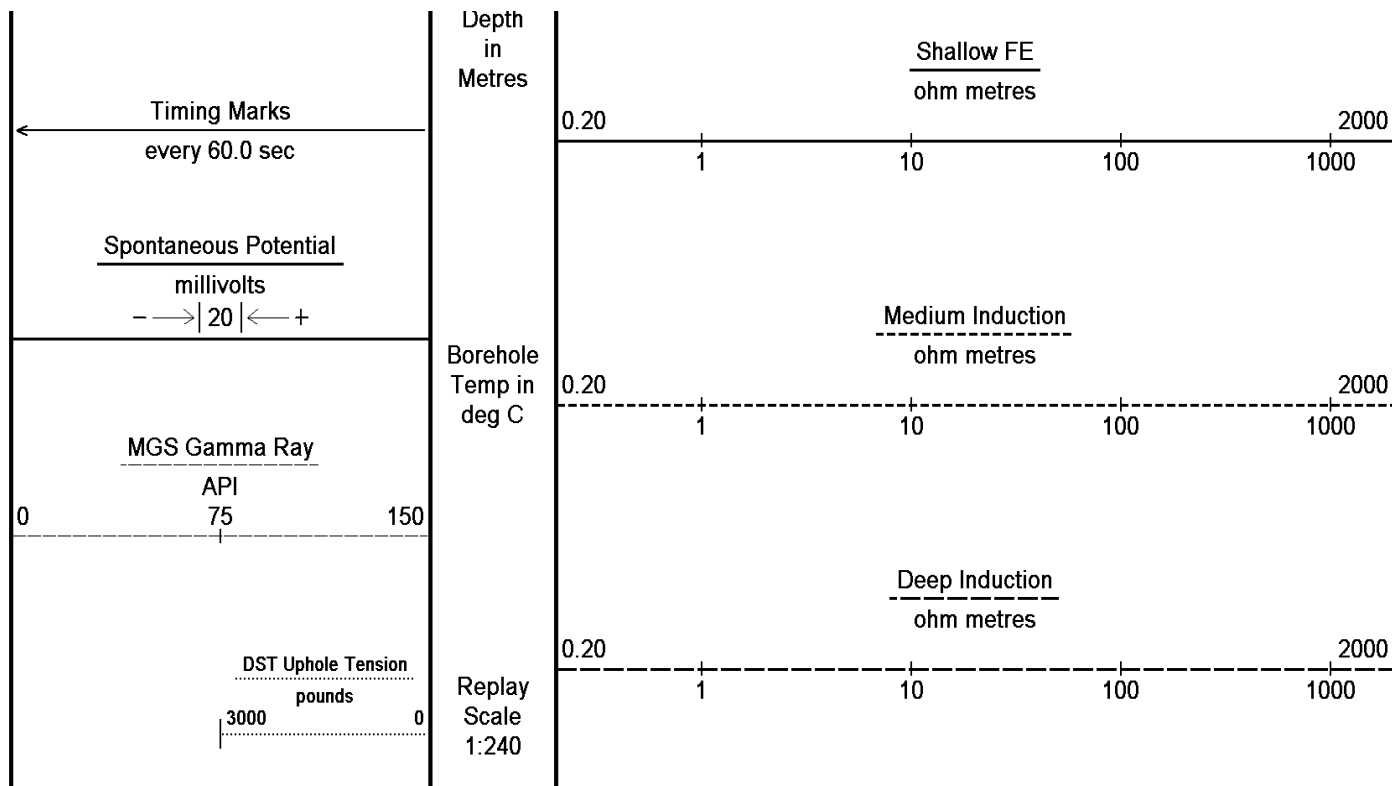
1490

1500

1510

1520





Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 07-NOV-2007 11:37

Filename: C:\Temp\Weatherford PreView\0\L-29 main1.dta

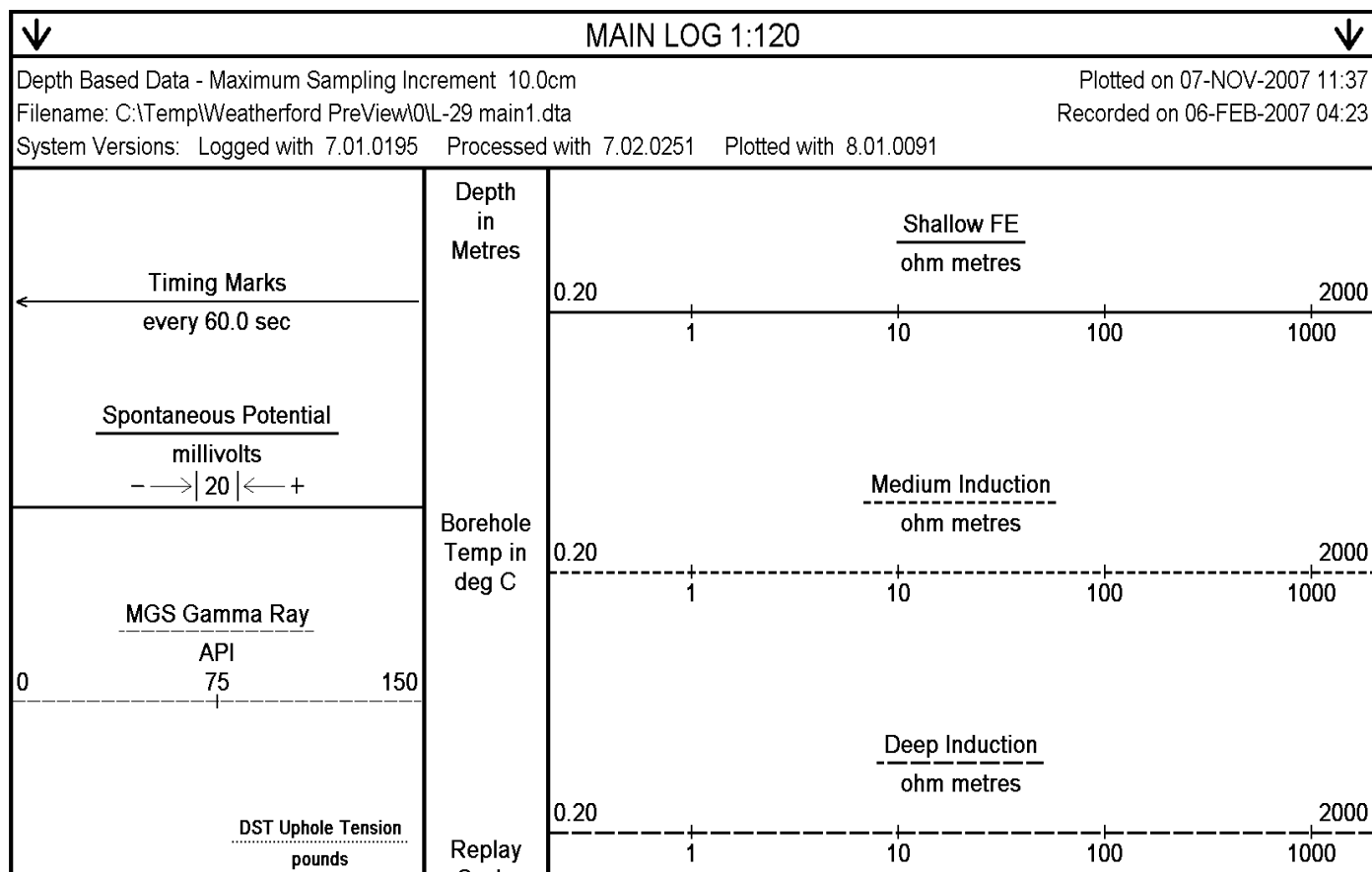
Recorded on 06-FEB-2007 04:23

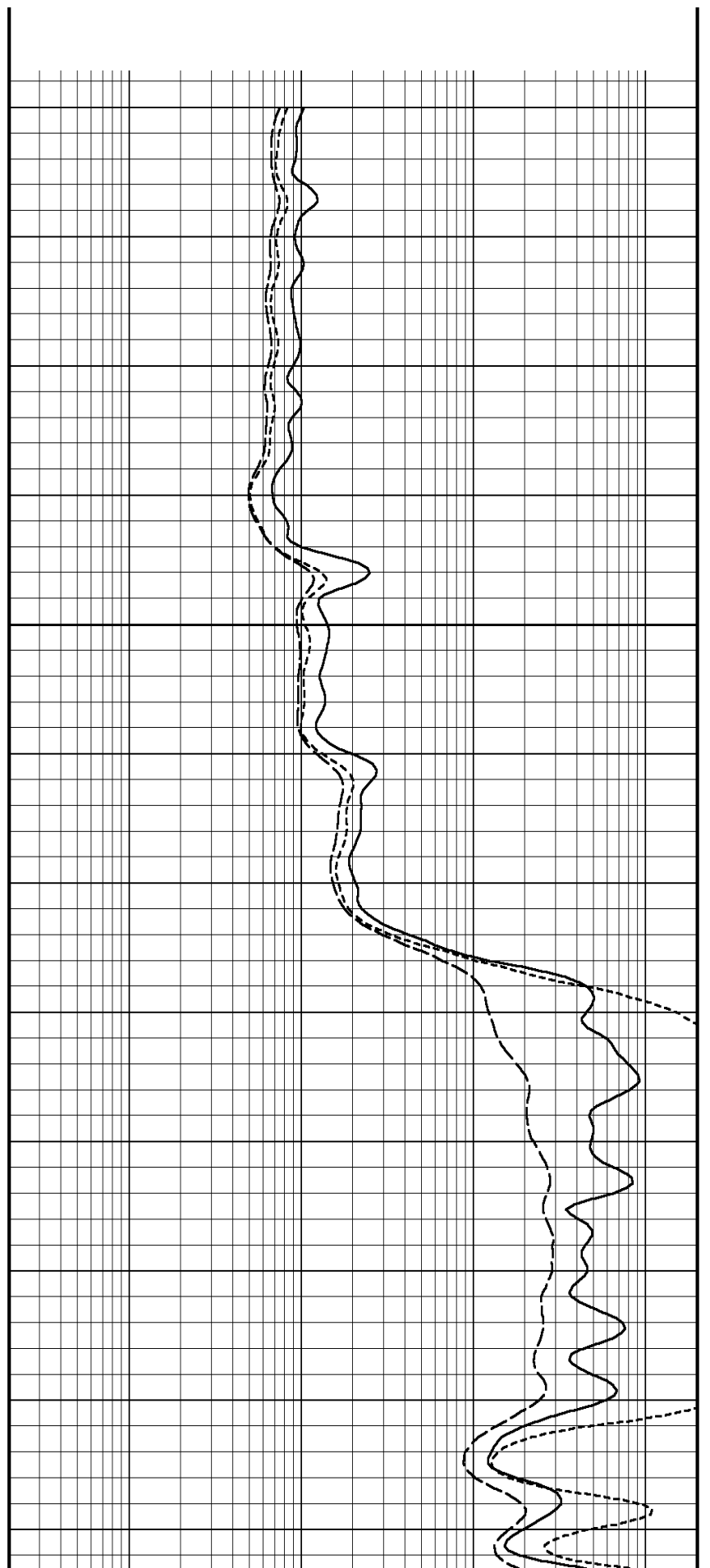
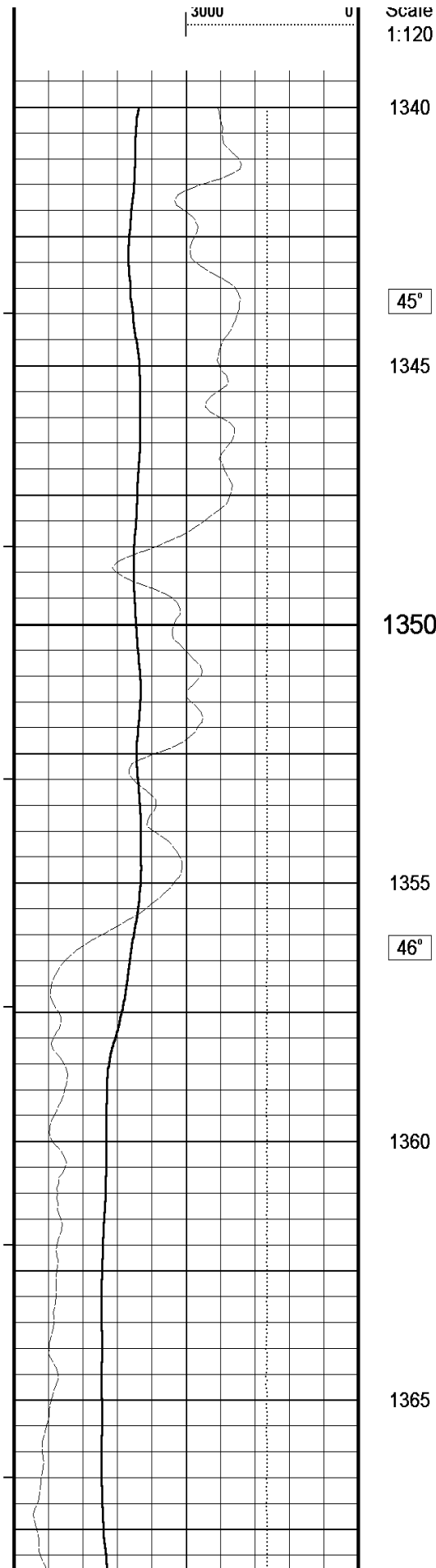
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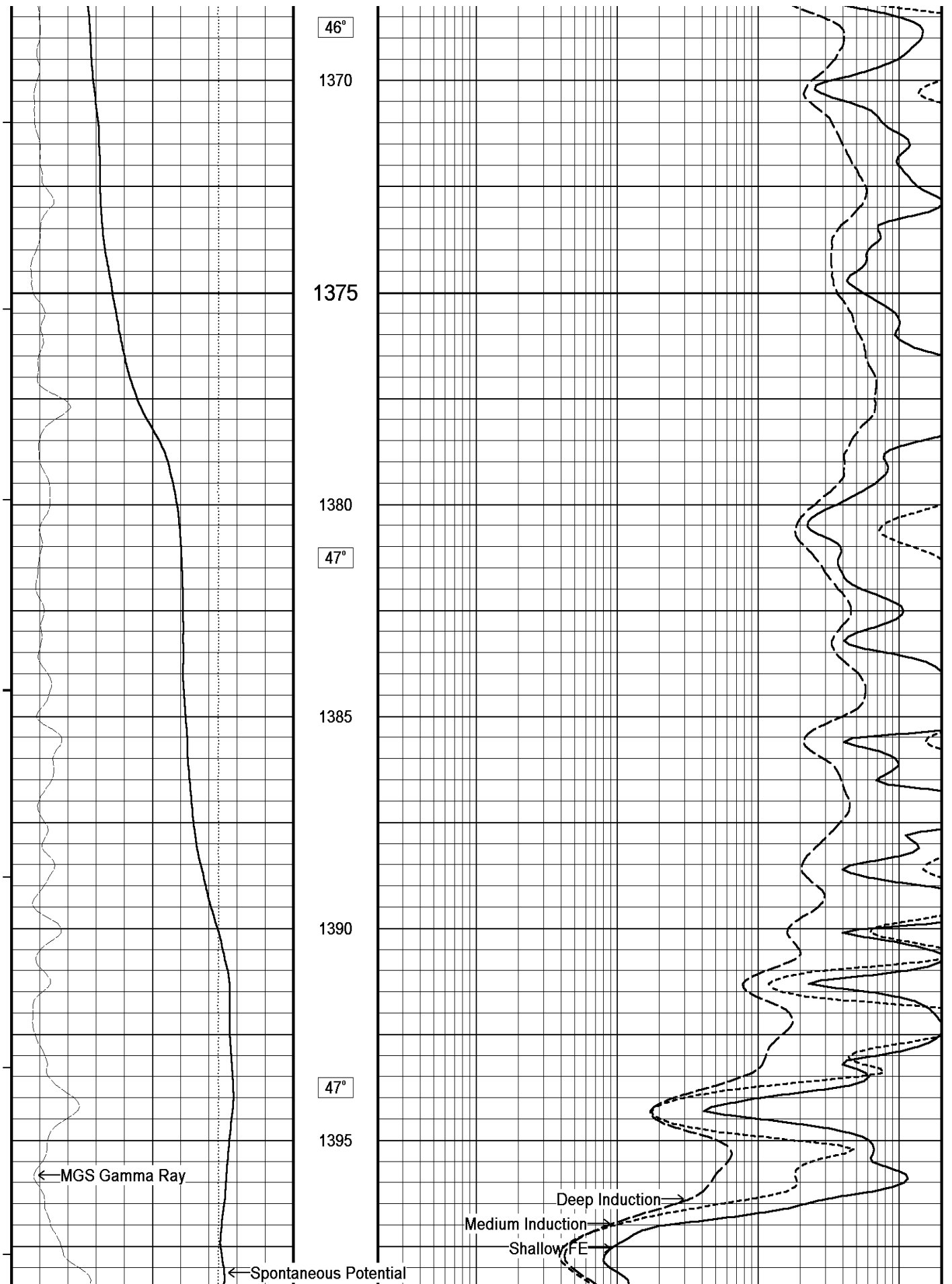
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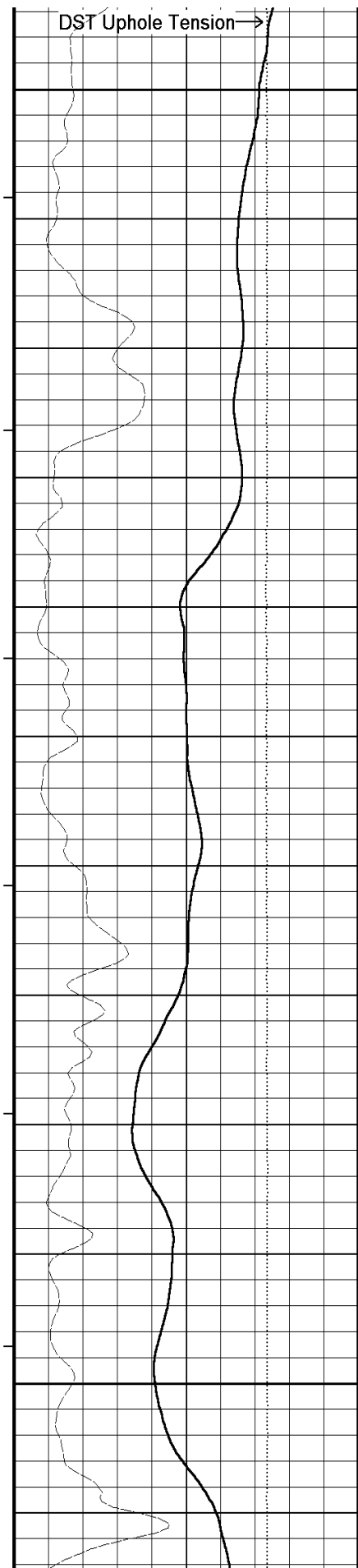
System Versions: Logged with 7.01.0195 Processed with 7.02.0251 Plotted with 8.01.0091

↑ REPEAT SECTION ↑









1400

1405

47°

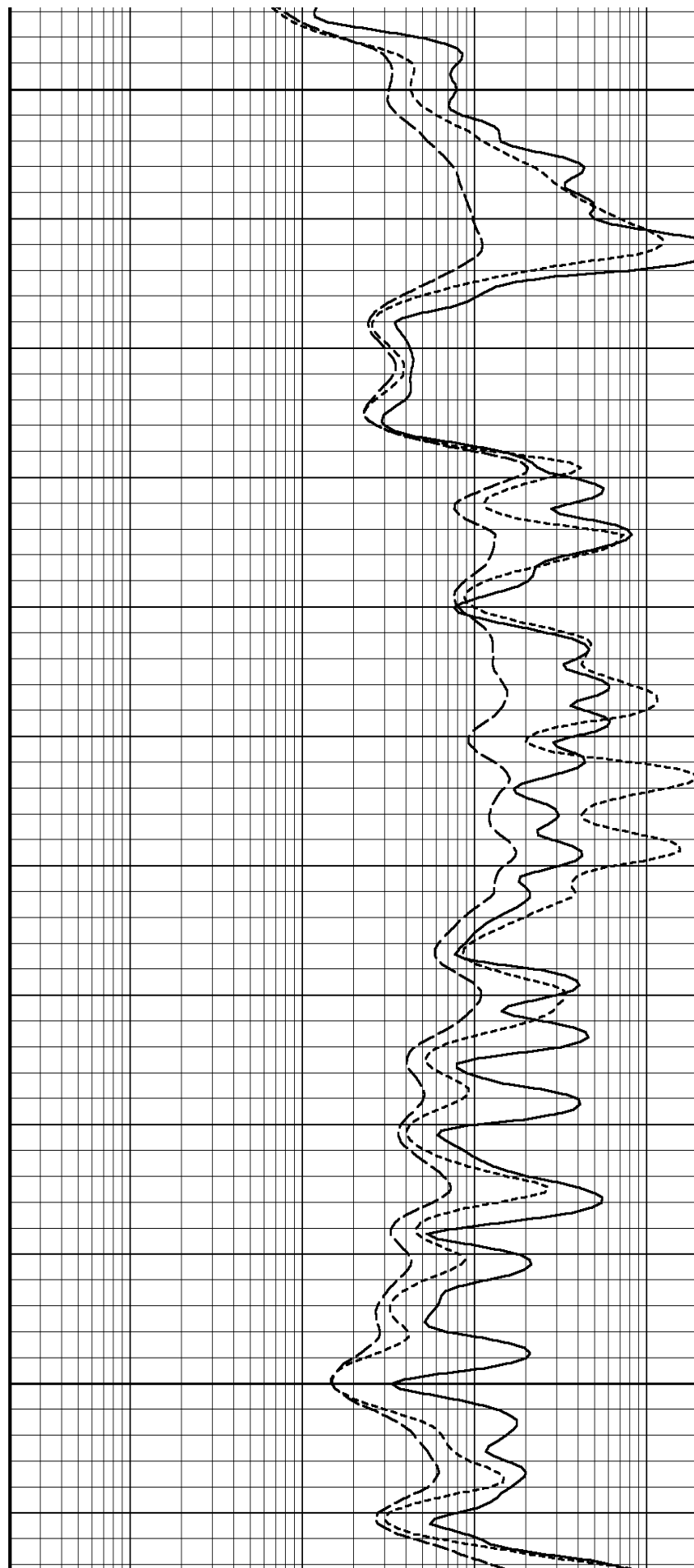
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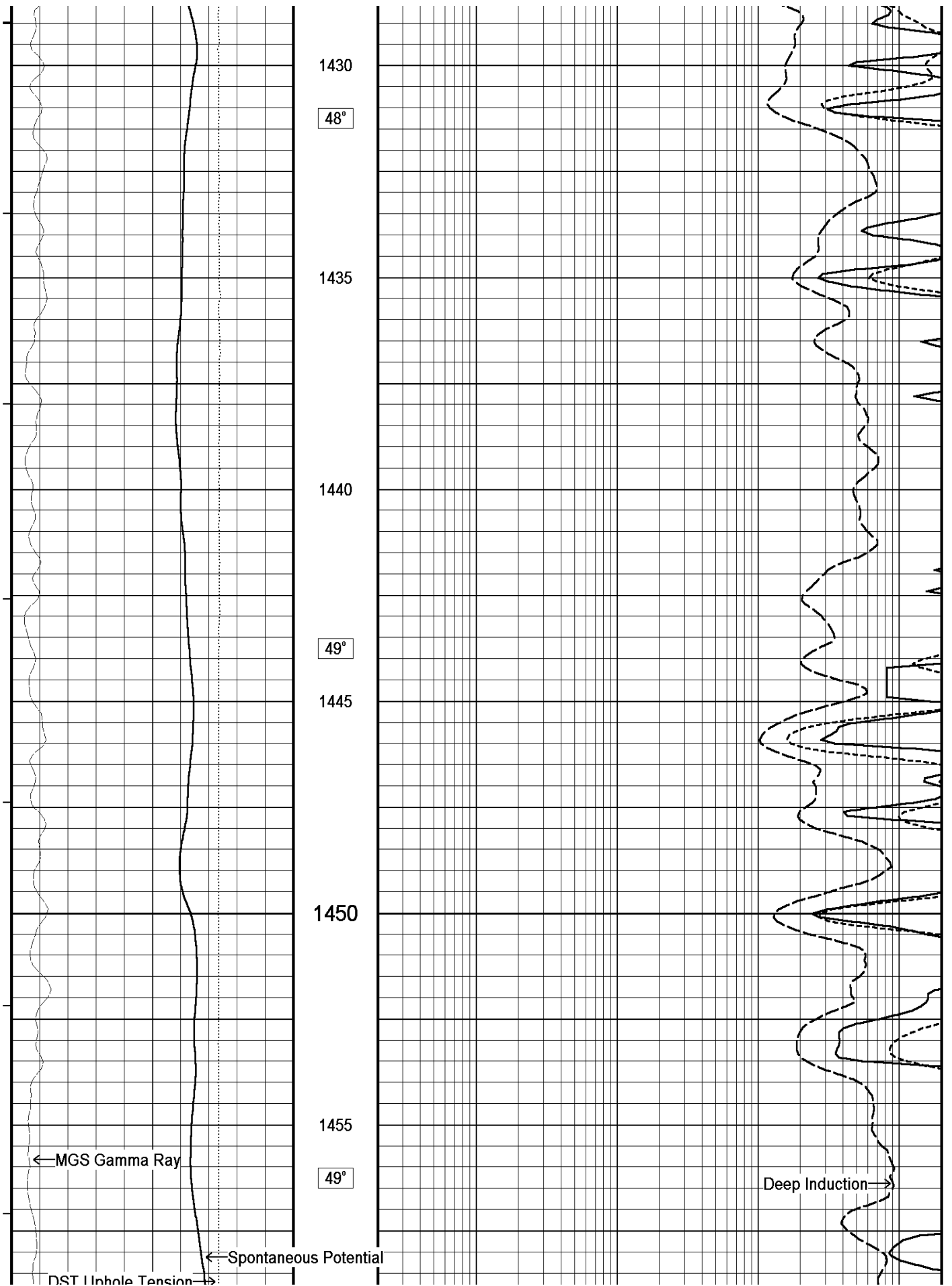
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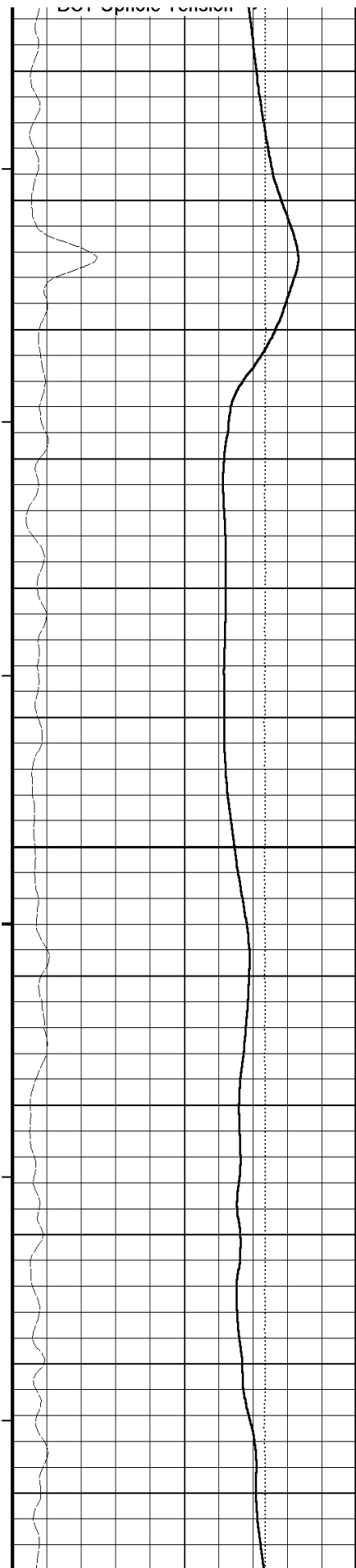
48°

1420

1425







1460

1465

49°

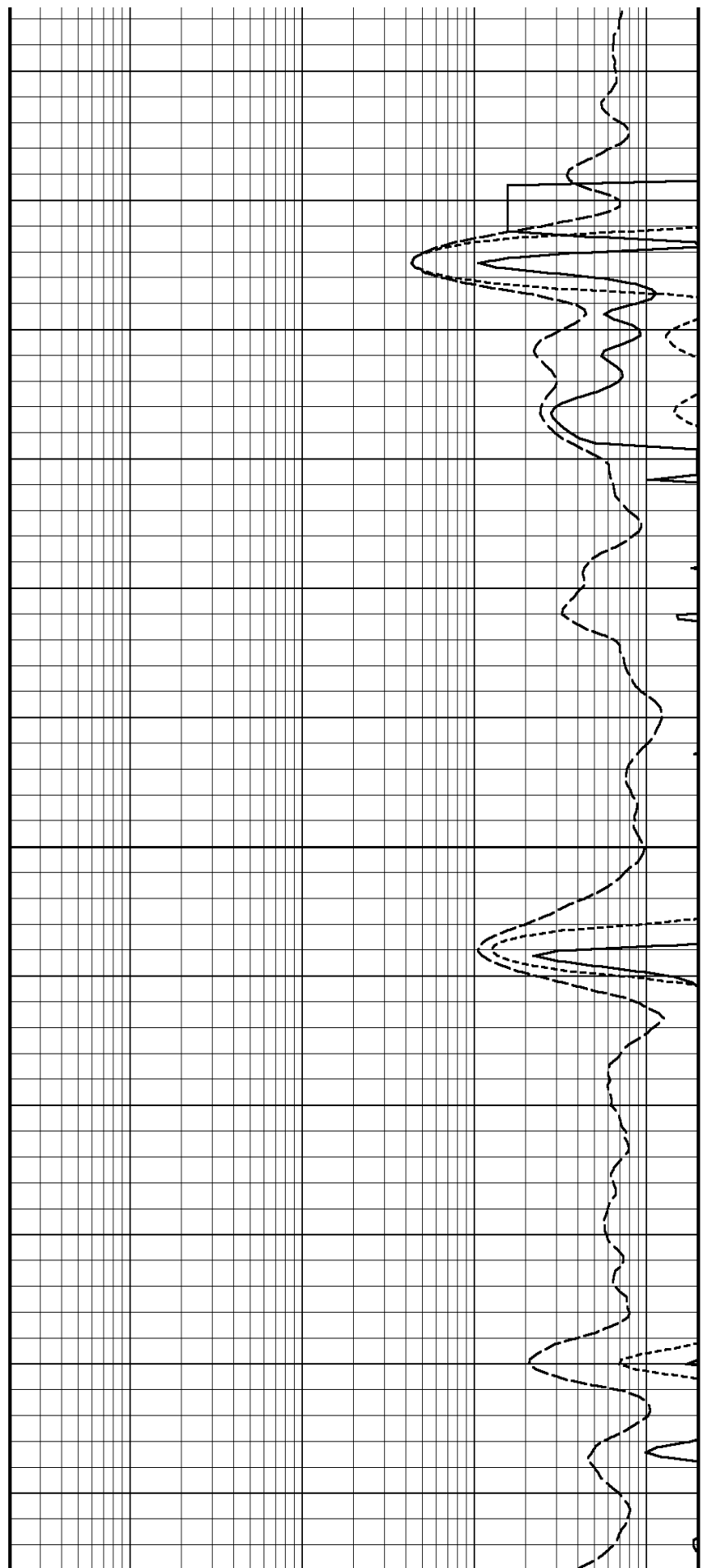
1470

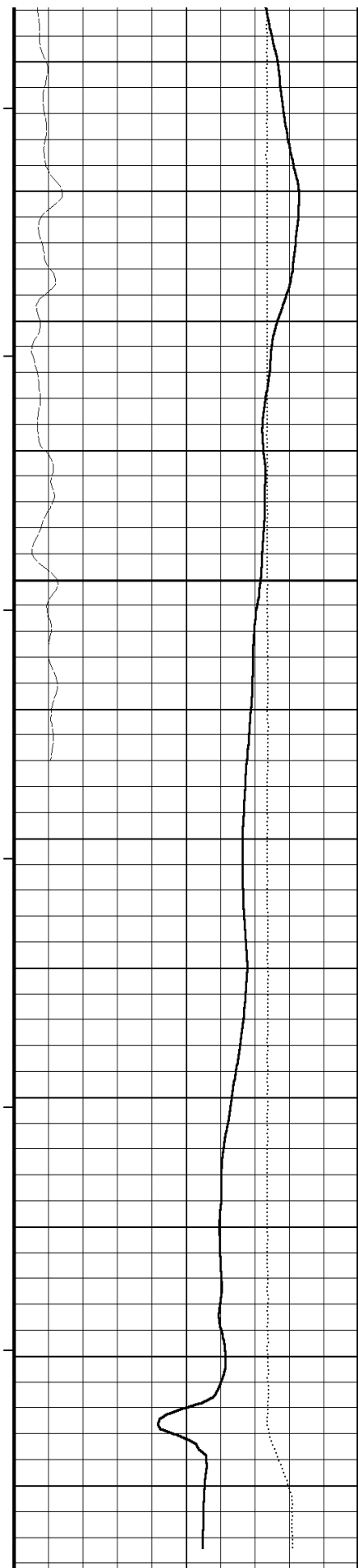
1475

1480

49°

1485





1490

48°

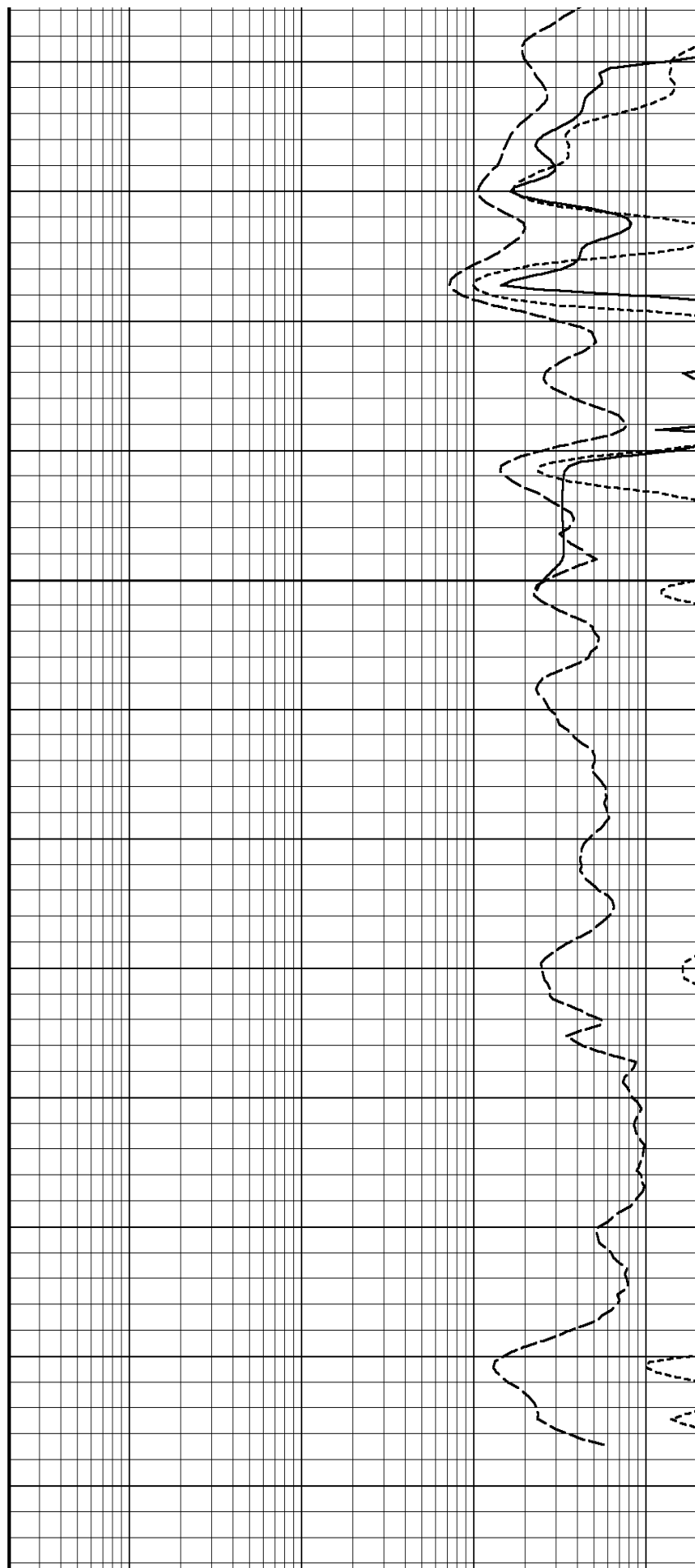
1495

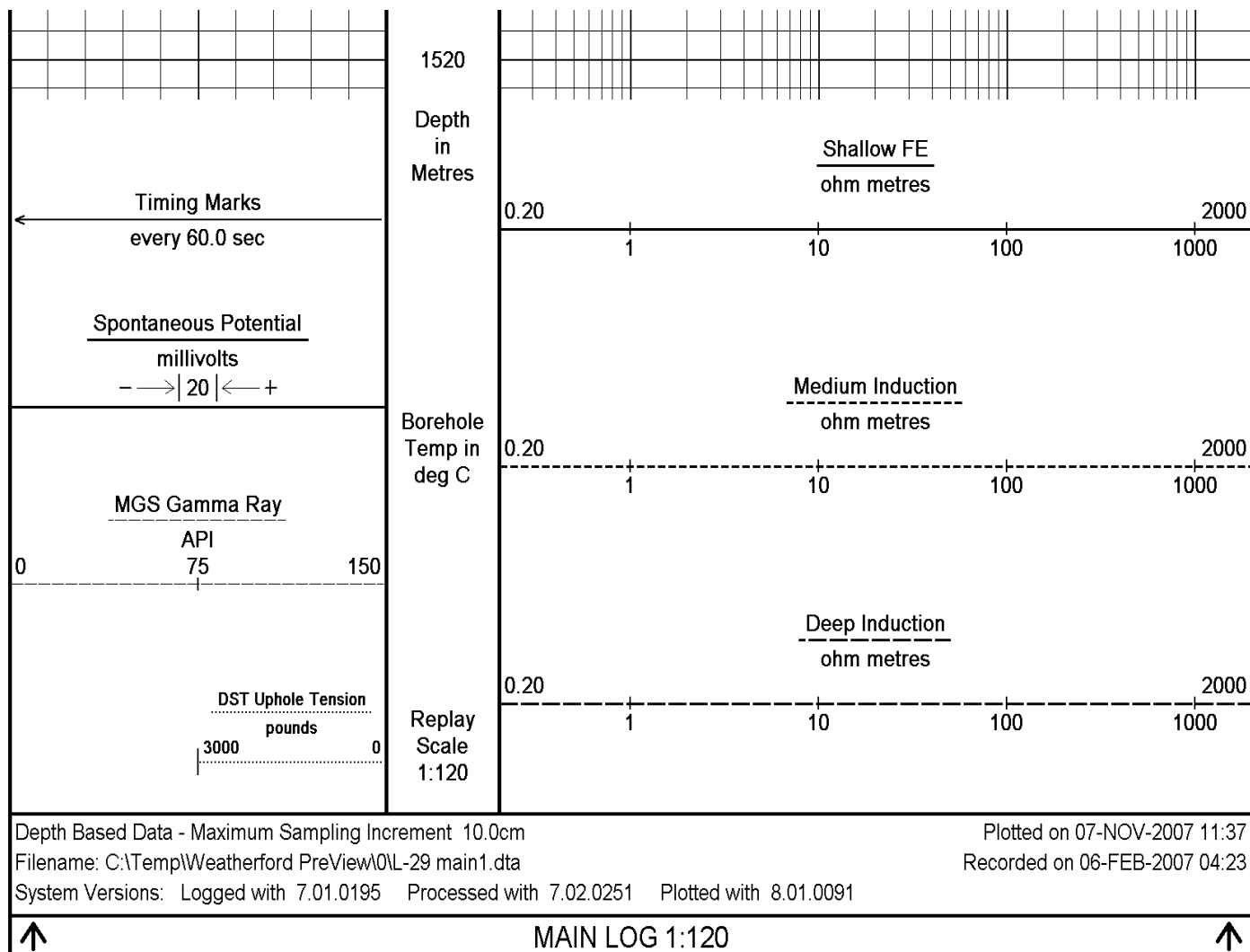
1500

1505

1510

1515





BEFORE SURVEY CALIBRATION		
C:\Temp\Weatherford PreView\0\L-29 rpt.dta		
General Constants All 000		Last Edited on 6-FEB-2007,03:32
General Parameters		
Mud Resistivity	0.690	ohm-metres
Mud Resistivity Temperature	25.000	degrees C
Water Level	0.000	metres
Density/Neutron Processing	Wet Hole	
Hole/Annular Volume and Differential Caliper Parameters		
HVOL Caliper 1	Density Caliper	
HVOL Caliper 2	Y Two Arm Caliper	
Annular Volume Diameter	139.700	mm
Caliper for Differential Caliper	Density Caliper	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Deep Induction	
RWA Constant A	0.610	
RWA Constant M	2.150	
Gamma Calibration MCG 159		
Measured	Calibrated (API)	Field Calibration on 5-FEB-2007,23:16

Background	50	34	
Calibrator (Gross)	1224	828	
Calibrator (Net)	1174	794	
Gamma Constants MCG 159			Last Edited on 6-FEB-2007,02:31
Gamma Calibrator Number	GRCC075		
Mud Density	1135.00	kg/m3	
Caliper Source for Processing	Density Caliper		
Tool Position	Centred		
Concentration of KCl	0.00	kppm	
SP Calibration MCG 159			Field Calibration on 25-JAN-2007 17:35
	Measured	Calibrated (mV)	
Reference 1	99.9	99.5	
Reference 2	-99.3	-99.5	
High Resolution Temperature Calibration MCG 159			Field Calibration on 28-NOV-2006,15:40
	Measured	Calibrated(Deg C)	
Lower	10.00	10.00	
Upper	50.00	50.00	
High Resolution Temperature Constants MCG 159			Last Edited on 28-NOV-2006,15:40
Pre-filter Length	11		
FE Calibration MFE 017			Base Calibration on 25-JAN-2007 17:46 Field Check on 1-FEB-2007 08:10
Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	971.0	126.8	
Base Check		279.5	
Field Check		280.6	
FE Constants MFE 017			Last Edited on 29-JAN-2007,21:47
Caliper Source for FE correction	Density Caliper		
Rm Source for FE correction	Temperature Corr		
Temp. for Rm Corr.	MCG External Temperature		
Stand-off	Centred	millimetres	
Caliper Calibration MTC 006			Base Calibration on 25-JAN-2007,18:14 Field Calibration on 6-FEB-2007,03:31
Base Calibration			
Reading No	Measured	Calibrator Size (mm)	
1	14734	110.00	
2	17539	162.00	
3	20248	212.00	
4	22990	262.00	
5	25897	311.00	
6	N/A	N/A	
Field Calibration			
	Measured Caliper (mm)	Actual Caliper (mm)	
	208.40	205.70	
Gamma Calibration MGS 010			Field Calibration on 5-FEB-2007,23:15
	Measured	Calibrated (API)	
Background	48	31	
Calibrator (Gross)	1256	825	
Calibrator (Net)	1208	794	

Calibrator (net)

1200

124

Gamma Constants MGS 010				Last Edited on 6-FEB-2007,02:31	
Gamma Calibrator Number	grcc075				
Mud Density	1135.00	kg/m3			
Caliper Source for Processing	Density Caliper				
Tool Position	Centred				
Concentration of KCl	0.00	kppm			

SP Calibration MGS 010				Field Calibration on 8-NOV-2006,19:47	
	Measured	Calibrated (mV)			
Reference 1	0.0	0.0			
Reference 2	10.0	10.0			

High Resolution Temperature Calibration MGS 010				Field Calibration on 28-NOV-2006,15:40	
	Measured	Calibrated(Deg C)			
Lower	10.00	10.00			
Upper	50.00	50.00			

High Resolution Temperature Constants MGS 010					
Pre-filter Length	11				

Micro Normal and Micro Inverse Calibration MML 015				Base Calibration on 25-JAN-2007,17:08 Field Check on 31-JAN-2007 18:48	
Base Calibration					
		Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2	
Micro Normal	9.9	48.5	5.1	25.6	
Micro Inverse	9.9	48.7	3.4	16.9	
Channel	Base Check (ohm-m)		Field Check (ohm-m)		
Micro Normal	79.8		0.0		
Micro Inverse	52.6		0.0		

Micro Normal and Micro Inverse Constants MML 015				Last Edited on 5-FEB-2007,23:14	
Micro Normal K Factor	0.5110				
Micro Inverse K Factor	0.3380				
Standoff Offset	N/A		millimetres		

Caliper Calibration MML 015				Base Calibration on 25-JAN-2007,18:15 Field Calibration on 6-FEB-2007,03:32	
Base Calibration					
Reading No	Measured		Calibrator Size (mm)		
1	13860		162.00		
2	17089		212.00		
3	20617		262.00		
4	24375		311.00		
5	27976		355.00		
6	N/A		N/A		
Field Calibration					
	Measured Caliper (mm)		Actual Caliper (mm)		
	211.00		205.70		

Neutron Calibration MDN 144				Base Calibration on 25-JAN-2007 18:05 Field Check on 5-FEB-2007 23:56	
Base Calibration					
		Measured		Calibrated (cps)	
	Near	Far	Near	Far	
	2967	93	3714	110	
Ratio	31.886		33.764		

Field Calibrator at Base	Calibrated (cps)
	2065 2999
Ratio	0.689
Field Check	Calibrated (cps)
	2075 3068
Ratio	0.676

Neutron Constants MDN 144

Last Edited on 18-JAN-2007,02:18

Neutron Source Id	16145b
Neutron Jig Number	
Epithermal Neutron	No
Caliper Source for Processing	Density Caliper
Stand-off	0.00 mm
Mud Density	1000.00 kg/m3
Limestone Sigma	7.10 cu
Sandstone Sigma	4.26 cu
Dolomite Sigma	4.70 cu
Formation Pressure Source	Constant Value
Formation Pressure	0.00 kPa
Temperature Source	MCG External Temperature
Temperature	20.00 degrees C
Mud Salinity	0.00 kppm
Formation Fluid Salinity Source	Constant Value
Formation Fluid Salinity	0.00 kppm
Barite Mud Correction	Not Applied

Photo Density Calibration MPD 036

Base Calibration on 23-JAN-2007 04:10

Field Check on 5-FEB-2007 23:46

Density Calibration				
Base Calibration		Measured		Calibrated (sdu)
		Near	Far	Near Far
Reference 1	52802	28585		60352 31615
Reference 2	21780	2767		25043 2540

Field Check at Base

1184.8 1494.9

Field Check

1184.7 1500.0

PE Calibration

Base Calibration		Measured		Calibrated
	WS	WH	Ratio	Ratio
Background	213	1052		
Reference 1	22151	52610	0.425	0.400
Reference 2	5909	21638	0.277	0.272

Field Check at Base

213.1 1051.7

Field Check

211.7 1051.4

Density Constants MPD 036

Last Edited on 6-FEB-2007,02:32

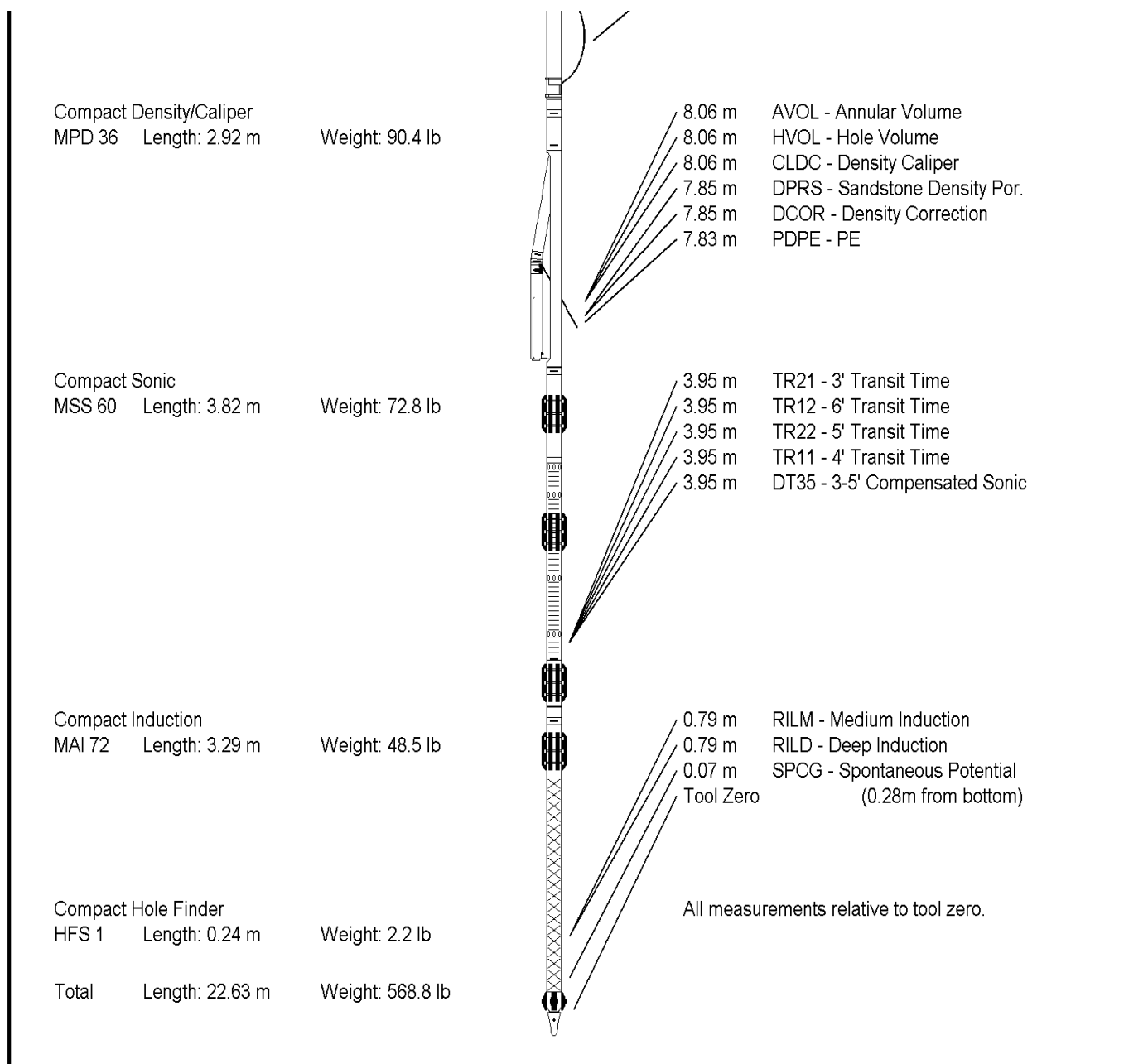
Density Source Id	2834GW
Nylon Calibrator Number	608
Aluminium/Fe Calibrator Number	608
Density Shoe Profile	4 inch
Caliper Source for Processing	Density Caliper
PE Correction to Density	Not Applied
Mud Density	1135.00 kg/m3
Mud Density Z/A Correction	1.11

Mud Density Z/A Correction	1.11	
Mud Filtrate Density	1000.00	kg/m3
Dry Hole Mud Filtrate Density	1000.00	kg/m3
DNCT	0.00	kg/m3
CRCT	0.00	kg/m3
Density Z/A Correction	0	
Matrix Density (kg/m3)	Depth (m)	
2710.00	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	0.00	
Caliper Calibration MPD 036		
Base Calibration		Base Calibration on 23-JAN-2007 04:20
		Field Calibration on 6-FEB-2007,03:32
Reading No	Measured	Calibrator Size (mm)
1	18576	110.00
2	28032	162.00
3	37841	212.00
4	48080	262.00
5	57920	311.00
6	N/A	N/A
Field Calibration		
	Measured Caliper (mm)	Actual Caliper (mm)
	206.00	205.70
Sonic Constants MSS 060		
Last Edited on 6-FEB-2007,03:32		
Maximum Boundary Contrast	328.08	micro-sec/m
Fluid Transit Time	620.08	micro-sec/m
Limestone Transit Time	155.84	micro-sec/m
Sandstone Transit Time	182.09	micro-sec/m
Dolomite Transit Time	142.72	micro-sec/m
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	0.00	0
Fixed Gate Parameters		
Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
Down Hole Fixed Gate Parameters		
Gate Start	N/A	micro-sec
Gate Width	N/A	micro-sec
Initial Discriminator Level	0.0000	mVolts
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
Induction Calibration MAI 072		Base Calibration on 25-JAN-2007, 18:16 Field Check on 6-FEB-2007 03:36
Base Calibration		
Test Loop Calibration	Measured	Calibrated (mmho/m)
Channel	Low High	Low High
1	13.9 459.6	9.3 966.2
2	5.3 373.2	7.6 821.4
3	2.9 254.1	5.2 566.0
4	1.3 130.4	2.6 279.2
Array Temperature	18.5	Deg C
Channel	Base Check (mmho/m)	Field Check (mmho/m)
	Low High	Low High
1	18.0 3925.2	21.4 3925.8
2	31.0 3598.6	33.0 3598.2
3	29.0 3101.3	30.5 3101.0
4	20.3 2105.9	21.3 2105.5
Deep	18.4 2019.9	19.5 2019.8
Medium	40.9 4089.6	42.7 4089.1
Shallow	45.6 5324.4	48.5 5323.6
Array Temperature	18.5	32.0 Deg C
Induction Constants MAI 072		Last Edited on 6-FEB-2007, 03:33
Induction Model	VECTAR	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	N/A	millimetres
Stand-off	25.40	millimetres
Number of Fins on Stand-off	5.0000	
Stand-off Fin Width	25.4000	millimetres
Borehole Corr. Rm Source	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
Squasher Start	0.0020	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
High Resolution Temperature Calibration MAI 072		
	Measured	Calibrated(Deg C)
Lower	1.00	1.00
Upper	10.00	10.00
High Resolution Temperature Constants MAI 072		
Pre-filter Length	11	

DOWNHOLE EQUIPMENT			C:\Temp\Weatherford PreView\0\L-29 rpt.dta	
Compact Gamma MCG 159 Length: 2.65 m Weight: 63.9 lb		20.78 m 19.90 m	GRGC - Gamma Ray CGXT - MCG External Temperature	
Compact Focussed Electric MFE 17 Length: 1.84 m Weight: 48.5 lb		18.79 m	FEFE - Shallow FE	
Compact Two Arm Caliper MTC 6 Length: 2.17 m Weight: 61.7 lb		16.33 m	CLYC - Y Two Arm Caliper	
Compact Short Gamma MGS 10 Length: 1.04 m Weight: 24.3 lb		15.46 m	GRGM - MGS Gamma Ray	
Compact InterSonde Crank ISC 159 Length: 0.70 m Weight: 24.3 lb				
Compact Micro-log MML 15 Length: 2.43 m Weight: 81.6 lb		12.10 m 12.10 m 12.10 m	MINV - Micro-inverse MNRL - Micro-normal MLTC - MML Caliper	
Compact Neutron MDN 144 Length: 1.53 m Weight: 50.7 lb		10.64 m	NPRS - Sandstone Neutron Por.	



COMPANY		PARAMOUNT RESOURCES LTD.			
WELL		PARA ET AL CAMERON L-29			
FIELD		CAMERON HILLS			
PROVINCE/COUNTY		NORTHWEST TERRITORIES			
COUNTRY/STATE		CANADA			
Elevation Kelly Bushing	759.50	metres	First Reading	1515.40	metre
Elevation Drill Floor		metres	Depth Driller	1515.50	metres
Elevation Ground Level	754.10	metres	Depth Logger	1516.70	metres


Weatherford®

ARRAY INDUCTION

