



**Weatherford**

**CML WELL SHUTTLE  
COMPACT ARRAY INDUCTION  
LOG**

COMPANY **SANDRIDGE EXPLORATION & PRODUCTION**  
 WELL **DALRYMPLE FARMS 3506 1-13H**  
 FIELD **SIX MOONS**  
 PROVINCE/COUNTY **HARPER**  
 COUNTRY/STATE **USA / KANSAS**  
 LOCATION **250' FSL & 2170' FWL**  
**SW SE SE SW**

SEC	TWP	RGE	Other Services
13	35S	6W	MDN/MPPD
API Number	15-077-21900-01		
Permit Number			
Permanent Datum G.L., Elevation 1224 feet			
Log Measured From KB			
Drilling Measured From K.B.			
Date	01-FEB-2013		
Run Number	ONE		
Depth Driller	9199.00	feet	
Depth Logger	9179.00	feet	
First Reading	9172.00	feet	
Last Reading	5220.00	feet	
Casing Driller	5220.00	feet	
Casing Logger	5220.00	feet	
Bit Size	6.125	inches	
Hole Fluid Type	WATER		
Density / Viscosity	8.40 lb/USg	27.00 CP	
PH / Fluid Loss	9.50	60.00 ml/30Min	
Sample Source	FLOWLINE		
Rm @ Measured Temp	0.35 @ 60.5	ohm-m	
Rmf @ Measured Temp	0.28 @ 60.5	ohm-m	
Rmc @ Measured Temp	0.42 @ 60.5	ohm-m	
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.14 @149.0	ohm-m	
Time Since Circulation	2 HOURS		
Max Recorded Temp	149.00	deg F	
Equipment Name	COMPACT		
Equipment / Base	18064	OKC	
Recorded By	C. GRIFFIN		
Witnessed By	T. ALCORN		
S.O.#/AFE	3539584/ DC12187		

Elevations:	feet
KB	1243.00
DF	1243.00
GL	1224.00

**BOREHOLE RECORD**

Last Edited: 01-FEB-2013 08:54

Bit Size inches	Depth From feet	Depth To feet
6.125	5220.00	9199.00

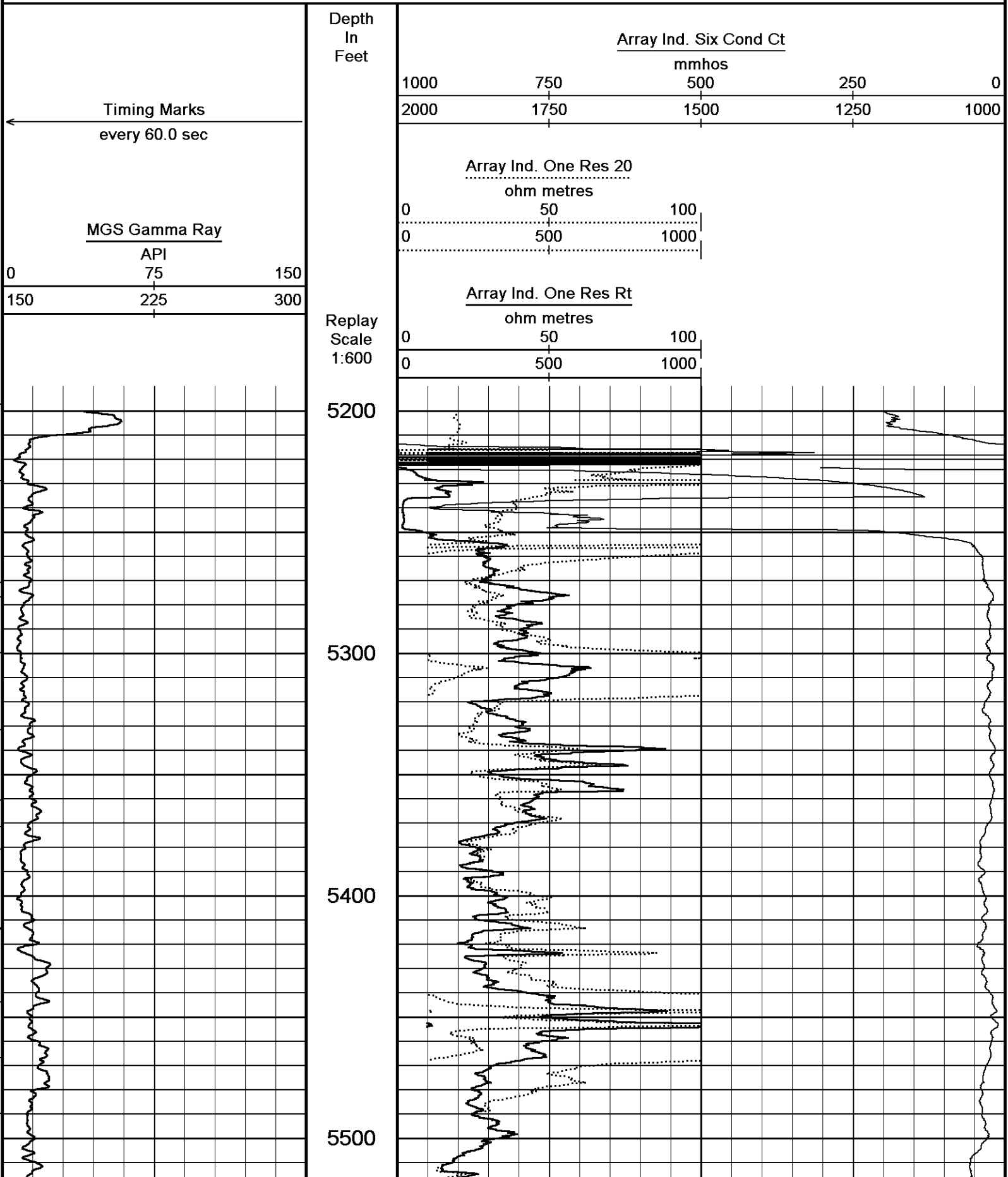
**CASING RECORD**

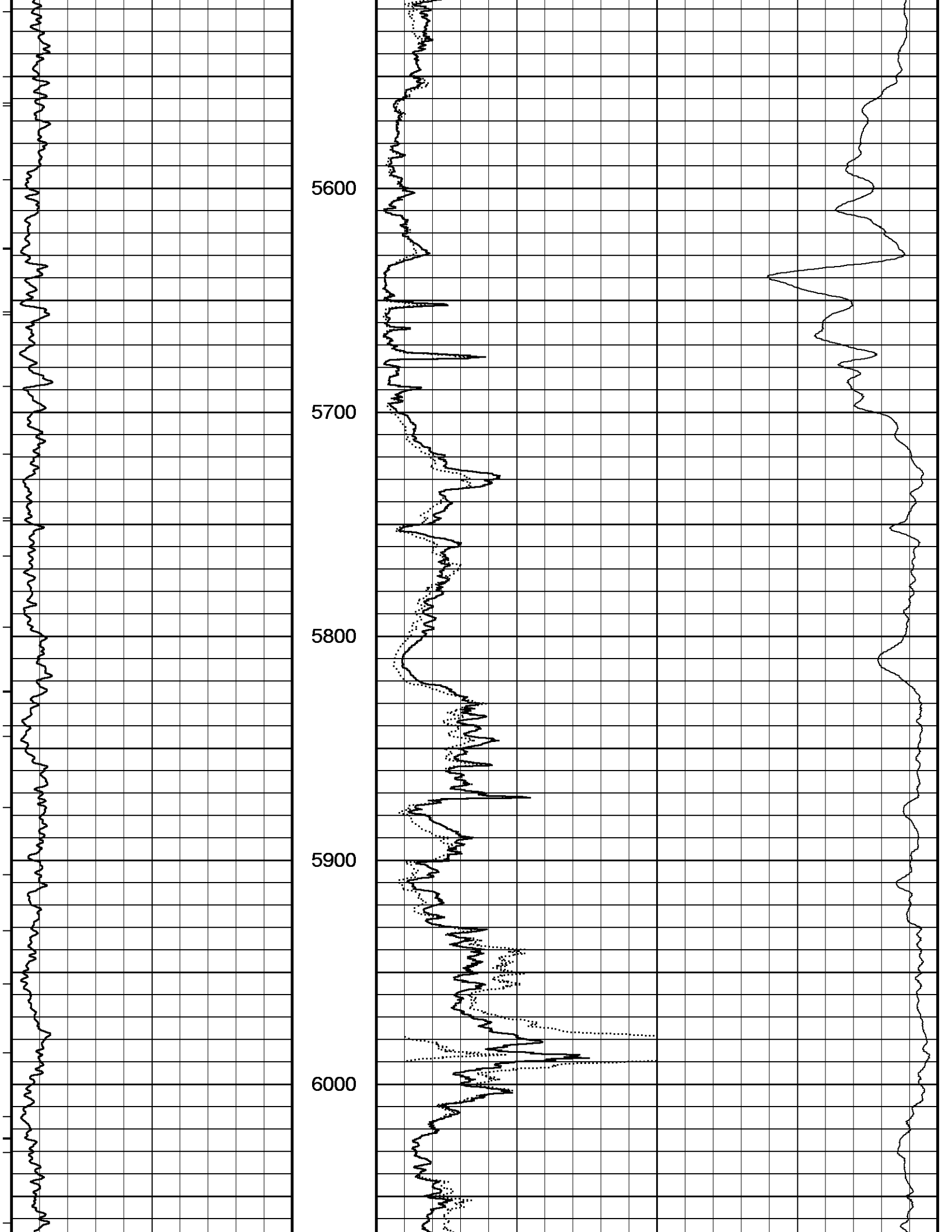
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
INTERMED	7.000	0.00	5220.00	26.00
INTERMED	9.625	0.00	657.00	36.00

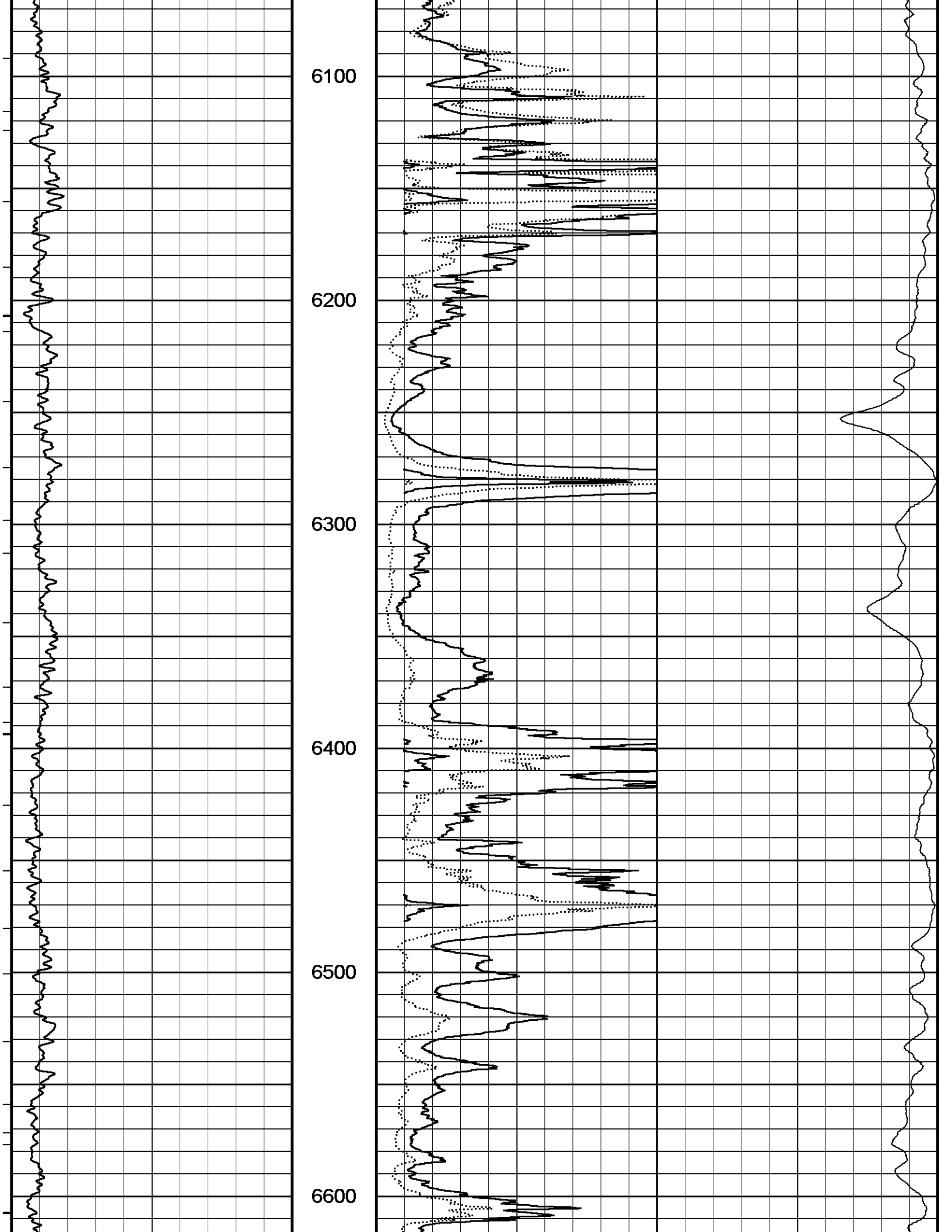
**REMARKS**

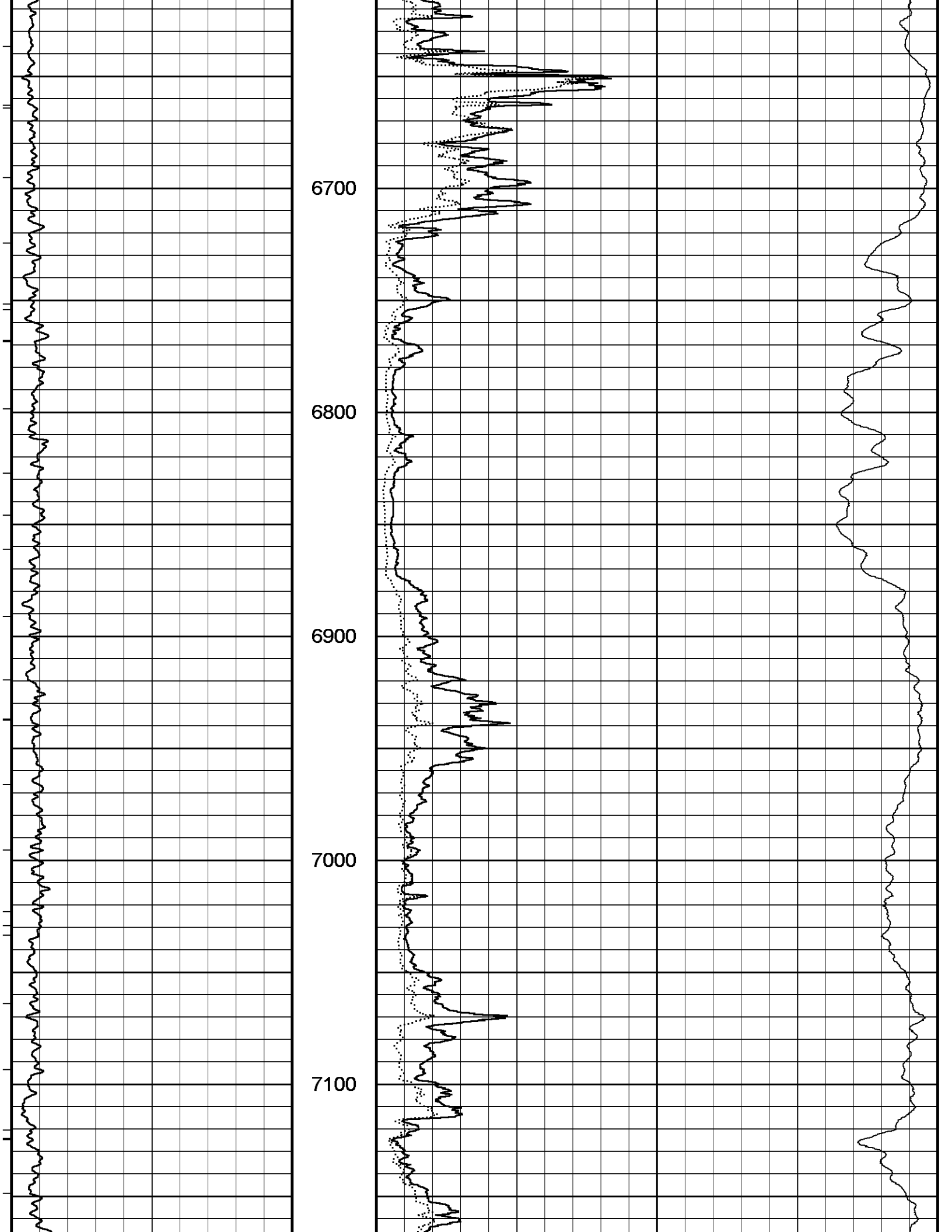
WLS SOFTWARE VERSION 13.03. USED.  
 TOOLS RUN ON DRILLPIPE USING COMPACT WELL SHUTTLE DEPLOYMENT TECHNIQUE.  
 DEPTH MEASURED USING ADVANTAGE RIG DEPTH CORRECTED TO PIPE TALLY.  
 TOOLS DEPLOYED WITH MULE SHOE SITTING AT 9098 FT.  
 AFTER DEPLOYMENT LOGGING TOOL WAS AT 9172 FT.  
 4.5 " PRODUCTION CASING USED TO CALCULATE ANNULAR HOLE VOLUMES.  
 OPERATORS: J. TURNER, S. WORLEY  
 RIG: HORIZON 15

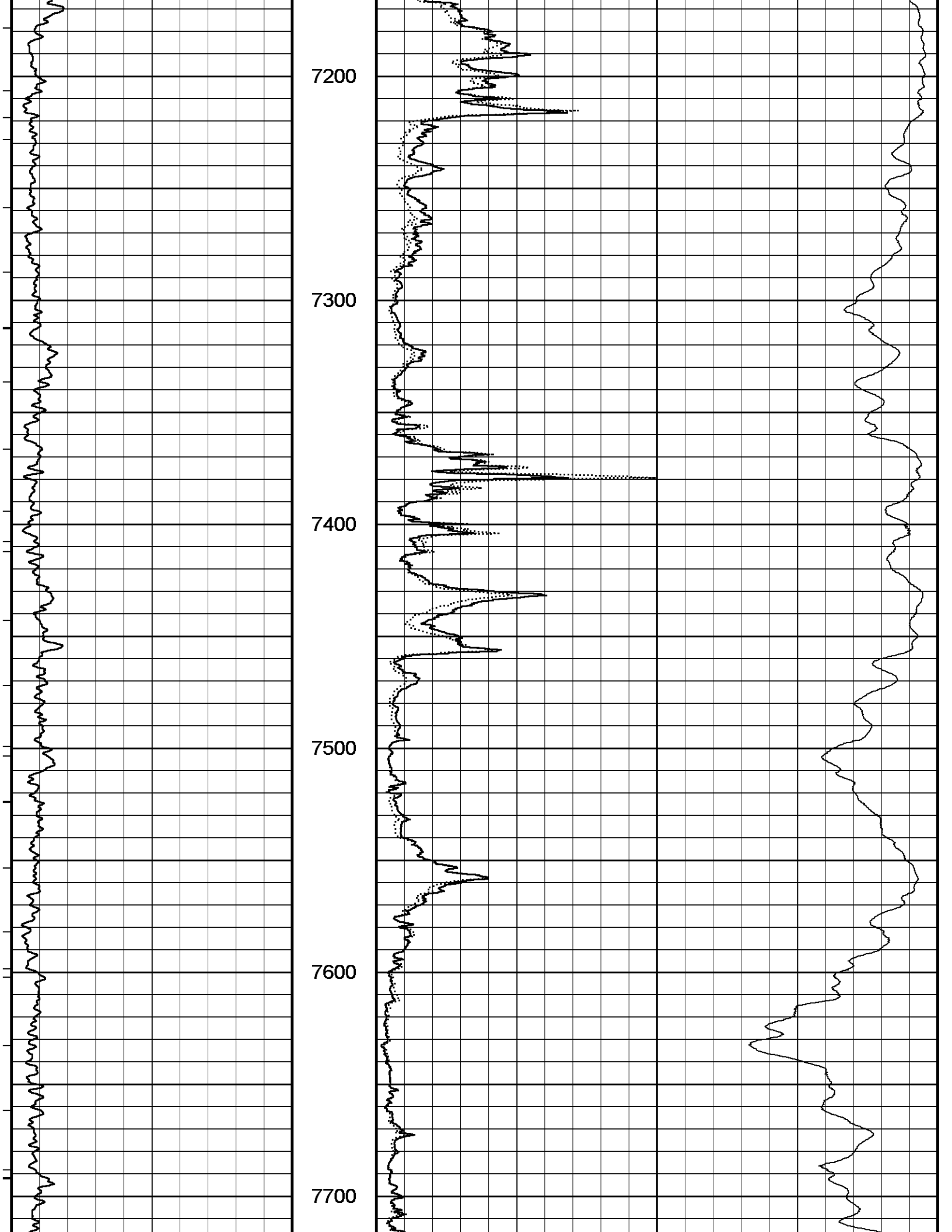
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or

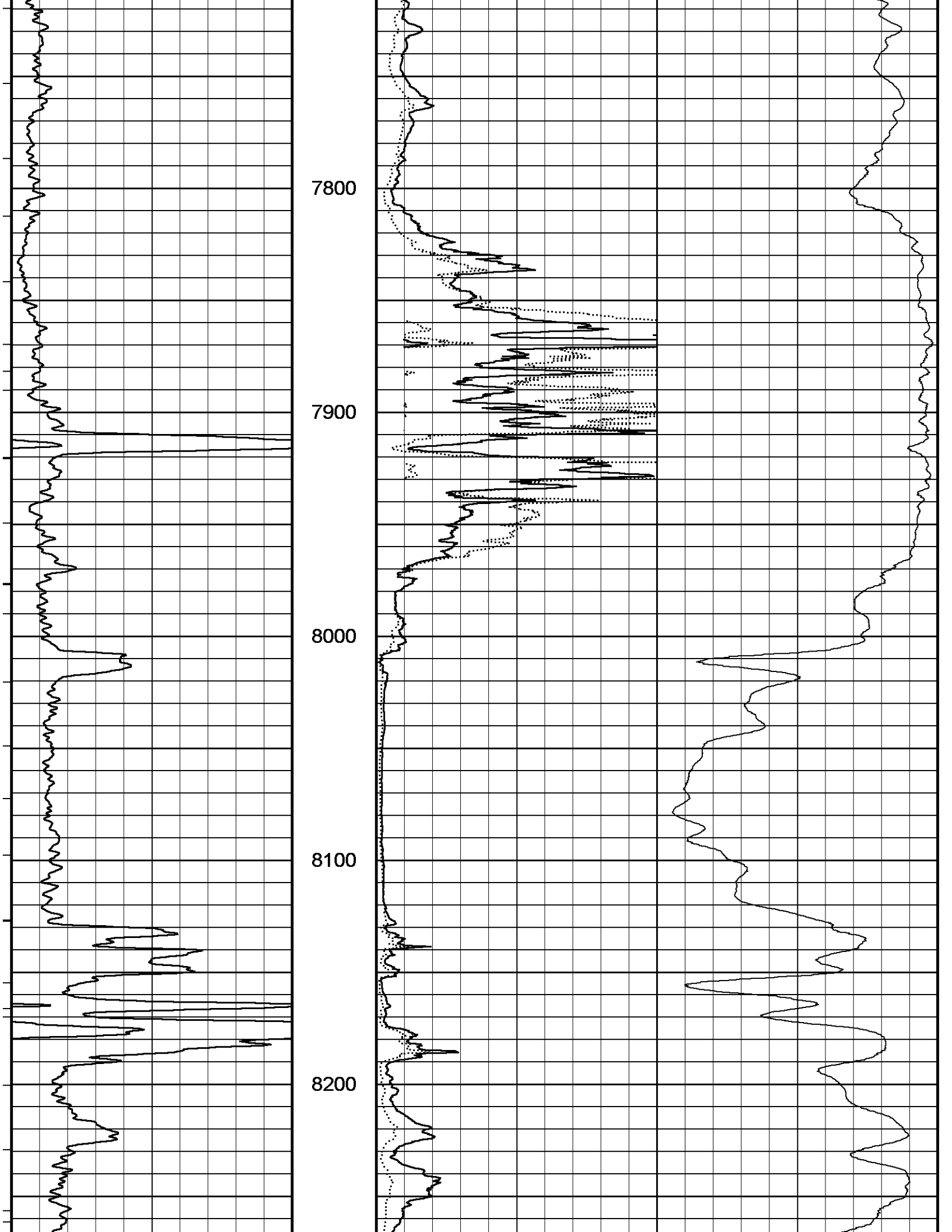


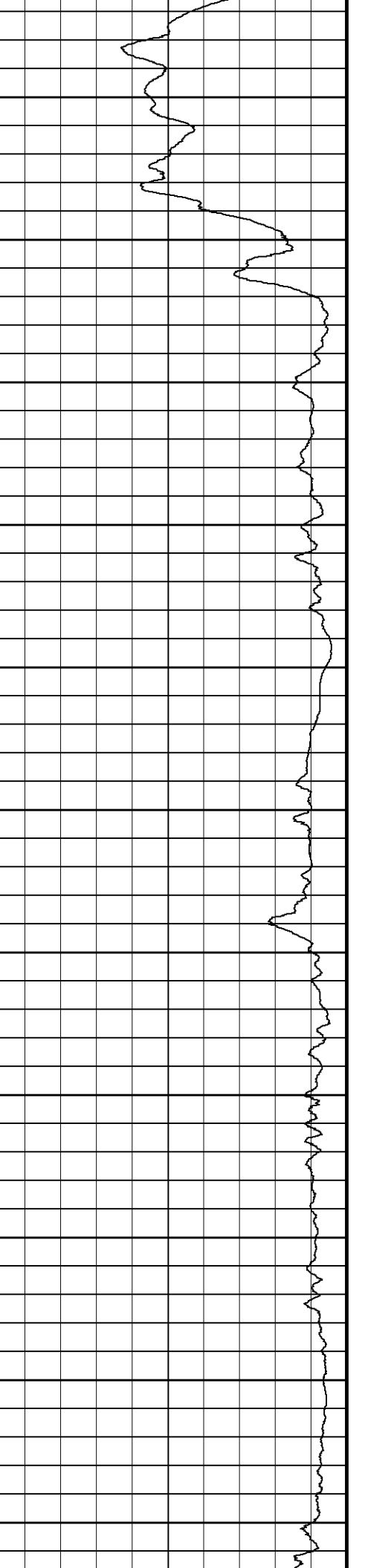
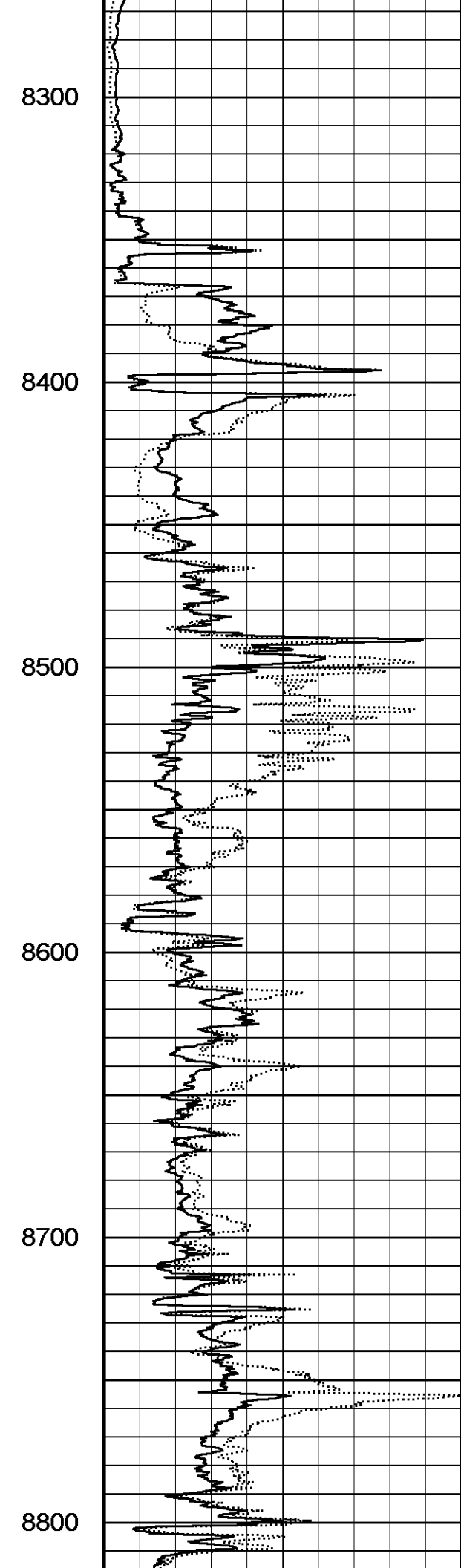
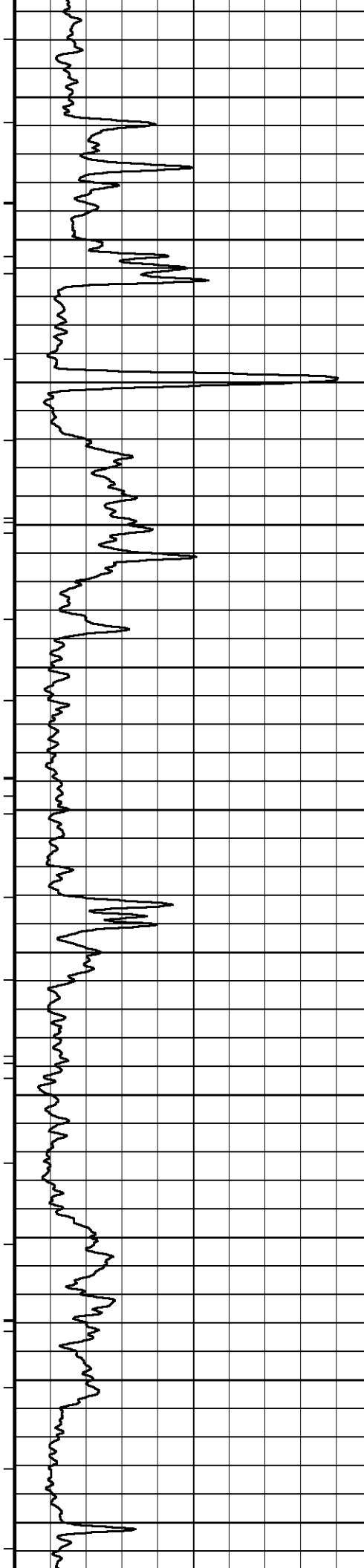




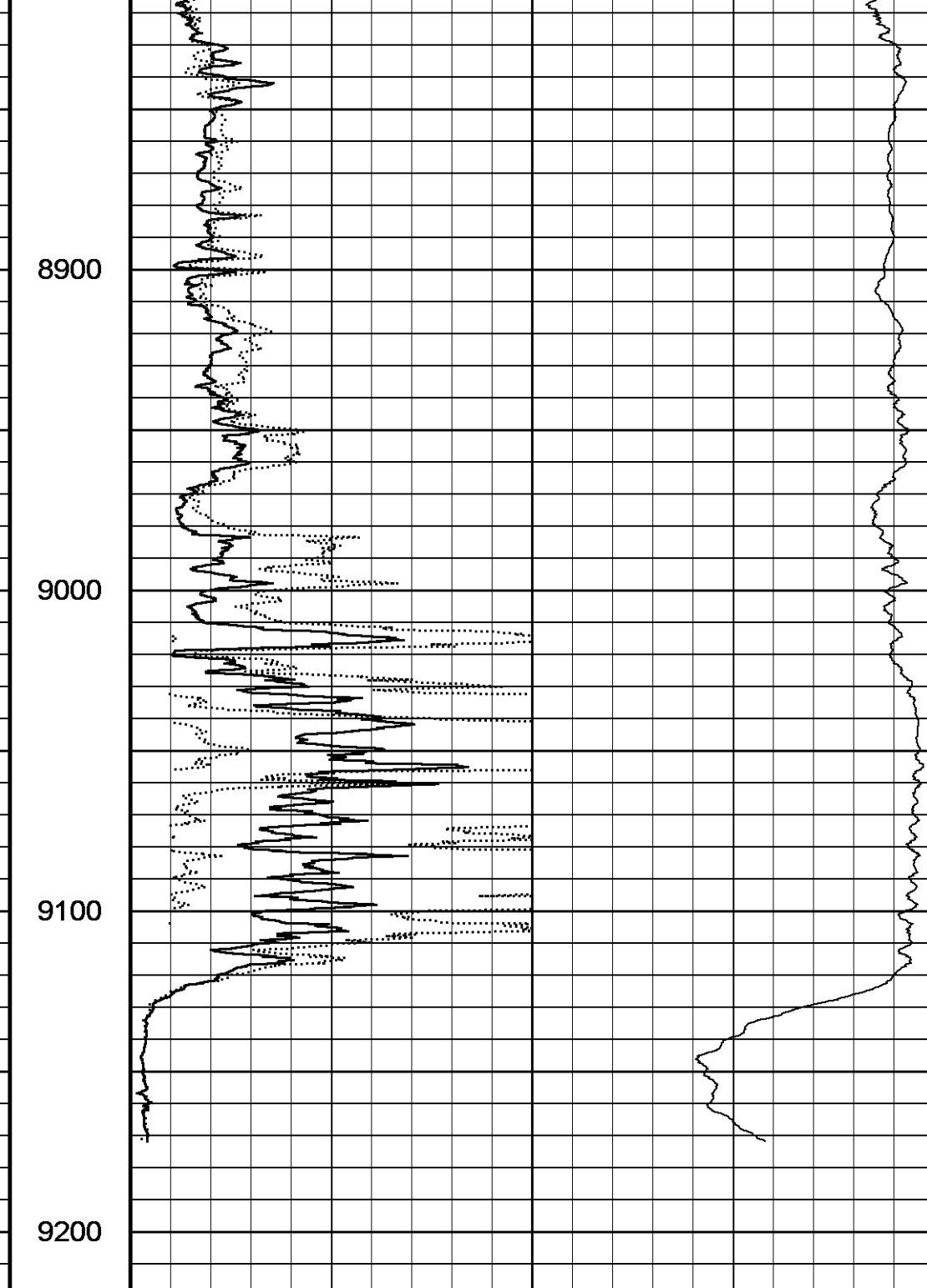
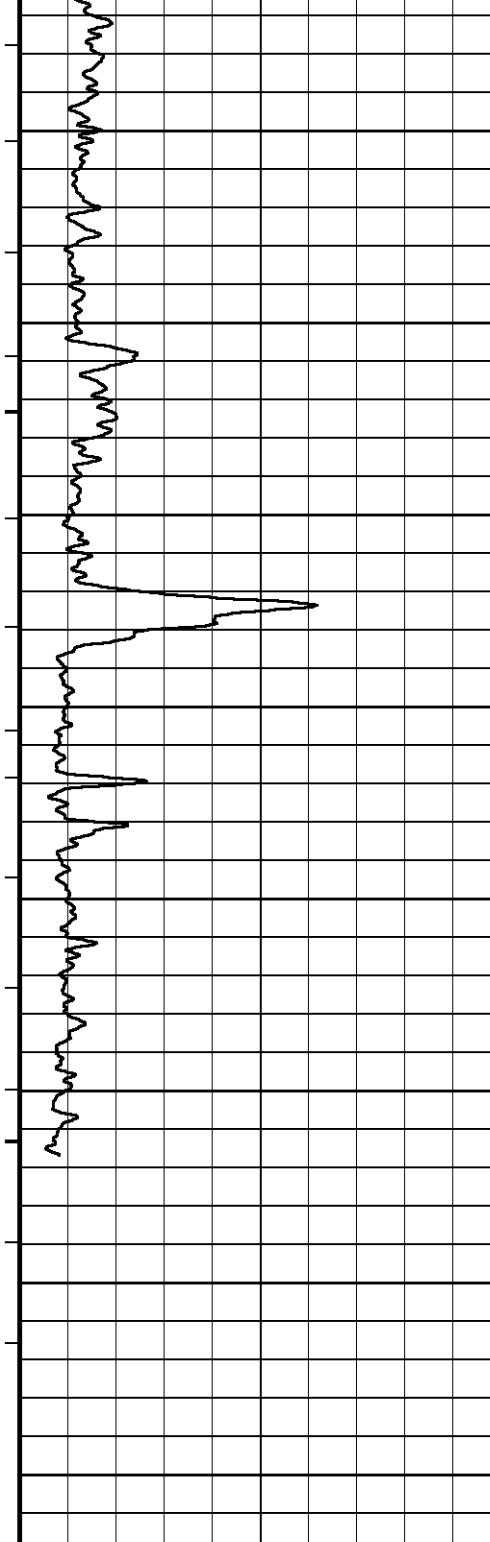












Timing Marks  
every 60.0 sec

MGs Gamma Ray  
API  
0 75 150  
150 225 300

Depth  
In  
Feet

Array Ind. Six Cond Ct  
mmhos  
1000 750 500 250 0  
2000 1750 1500 1250 1000

Array Ind. One Res 20  
ohm metres  
0 50 100  
0 500 1000

Array Ind. One Res Rt  
ohm metres  
0 50 100

Replay  
Scale

1:600

0

500

1000

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 02-FEB-2013 05:11

Filename: C:\Data\Sandridge\Sandridge Dalrymple\MMS166 Depthlog.dta

Recorded on 02-FEB-2013 04:48

System Versions: Processed with 13.03.7779 Plotted with 13.03.7779



DSC



DSC



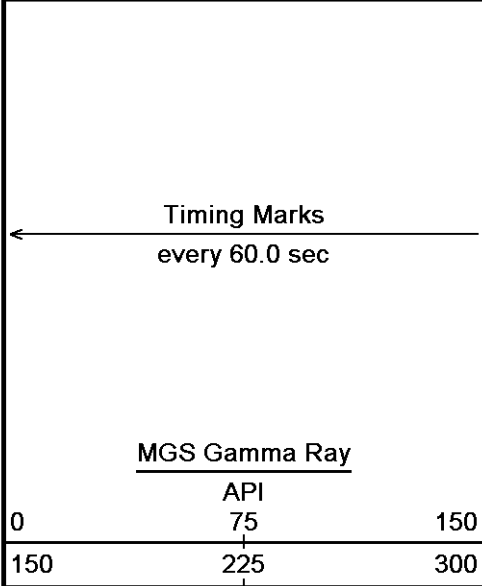
Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 02-FEB-2013 05:11

Filename: C:\Data\Sandridge\Sandridge Dalrymple\MMS166 Depthlog.dta

Recorded on 02-FEB-2013 04:48

System Versions: Processed with 13.03.7779 Plotted with 13.03.7779



Depth In Feet

Borehole Temp in deg F

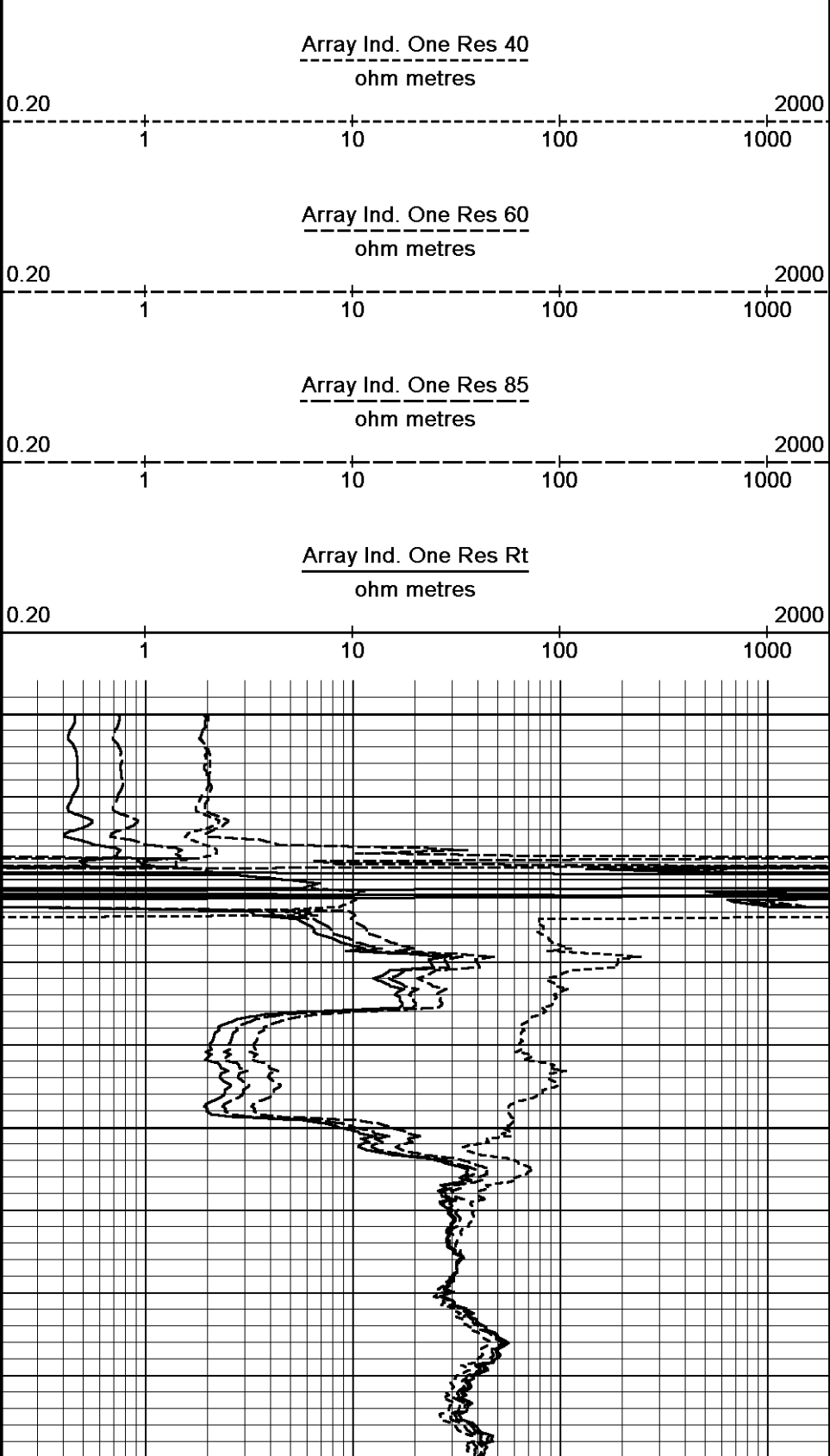
Replay Scale 1:240

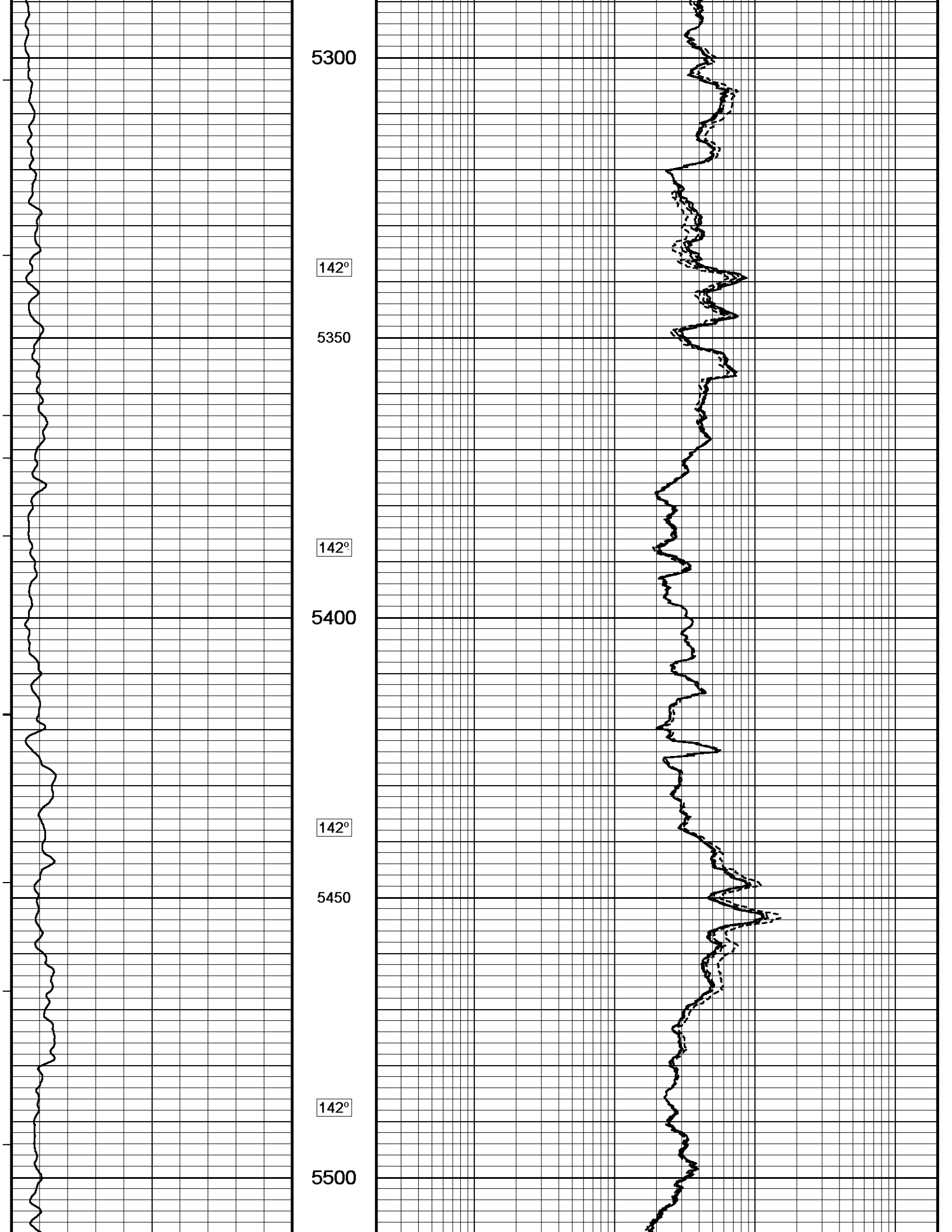
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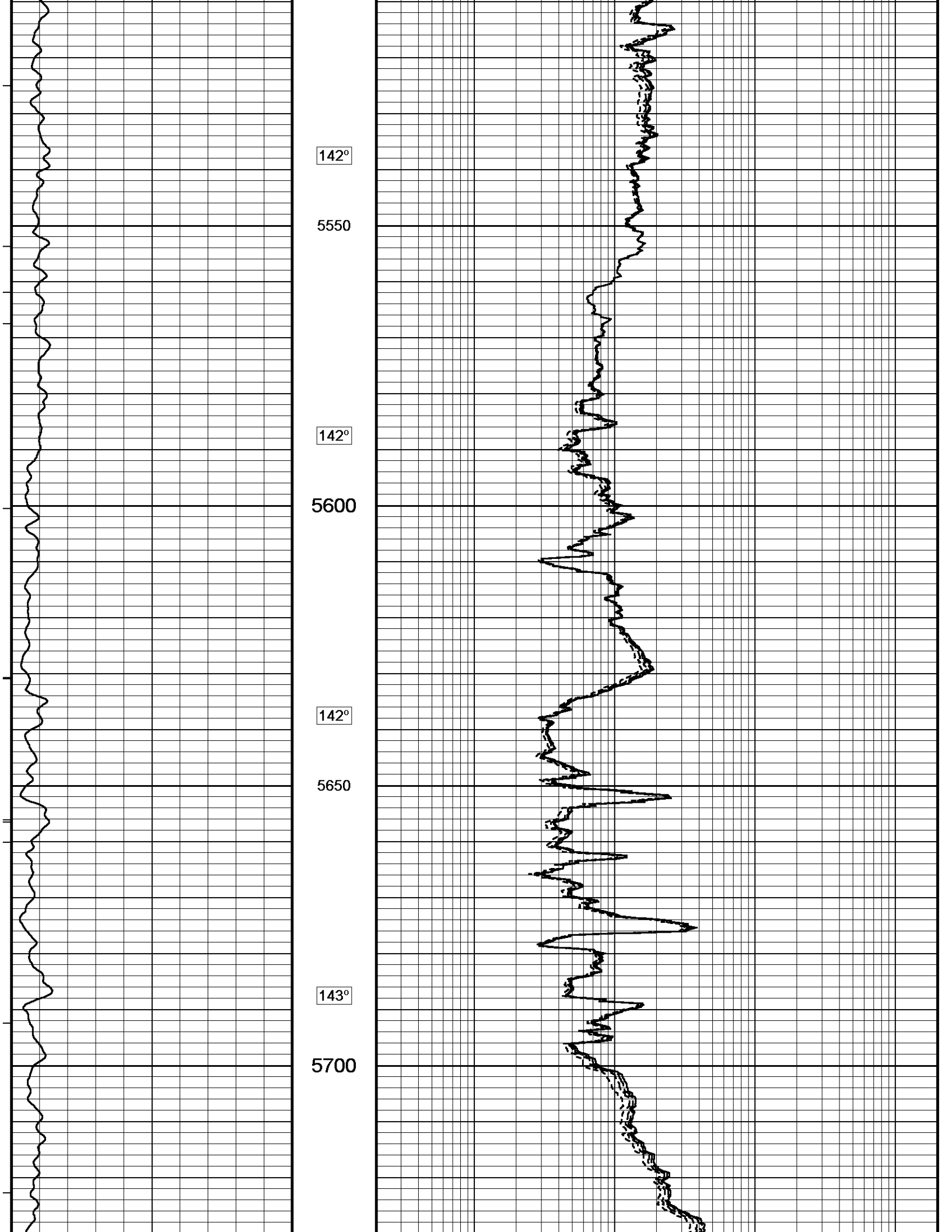
141°

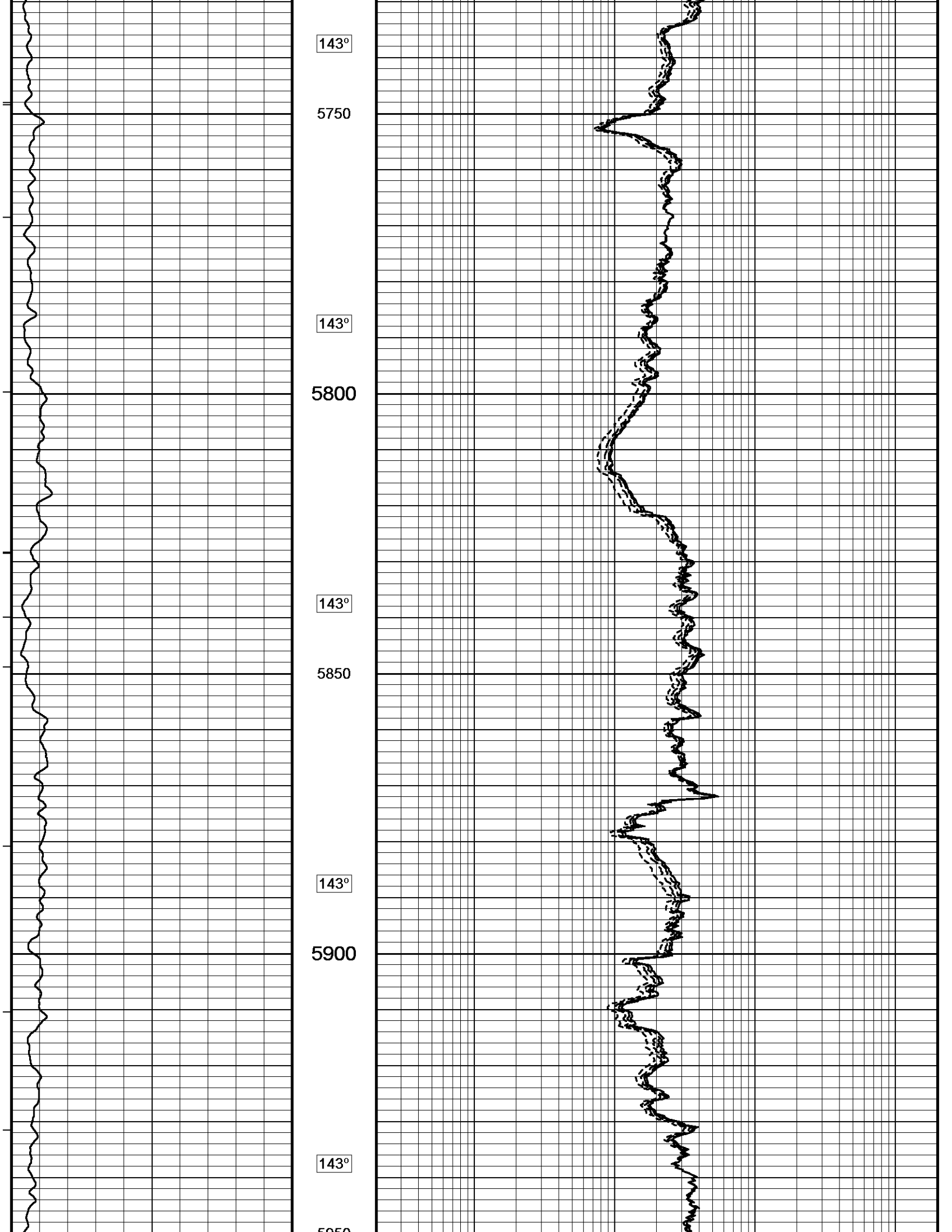
5250

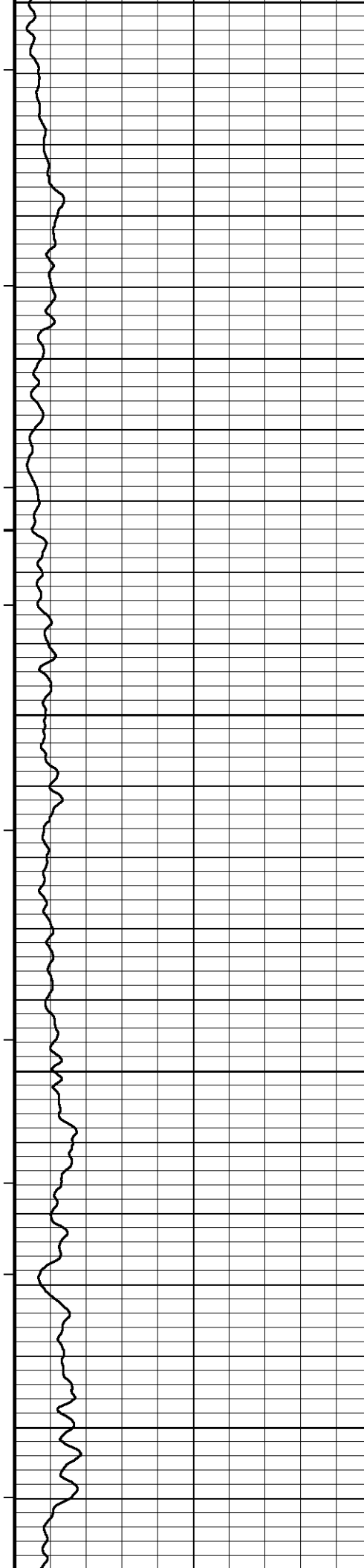
141°











5950

144°

6000

144°

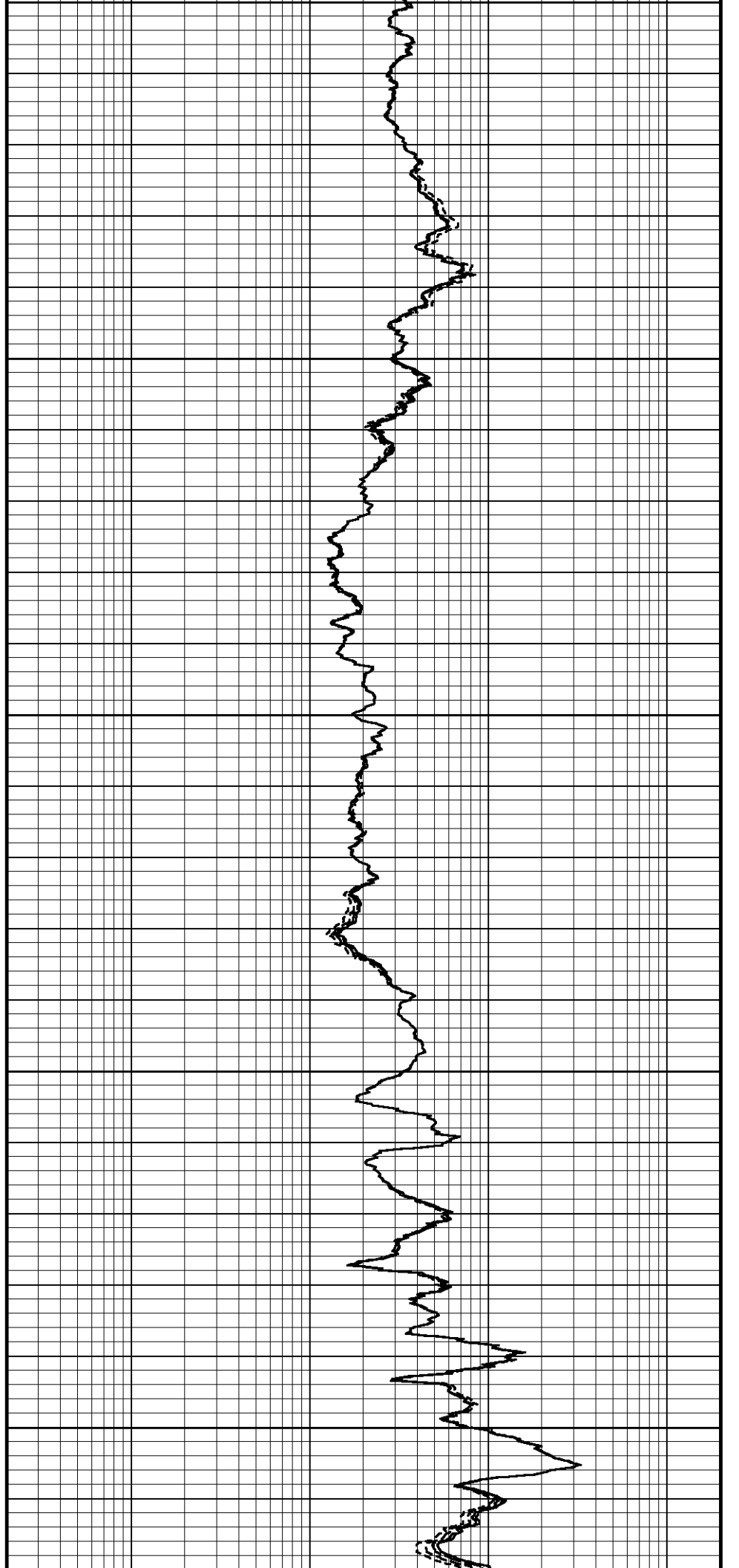
6050

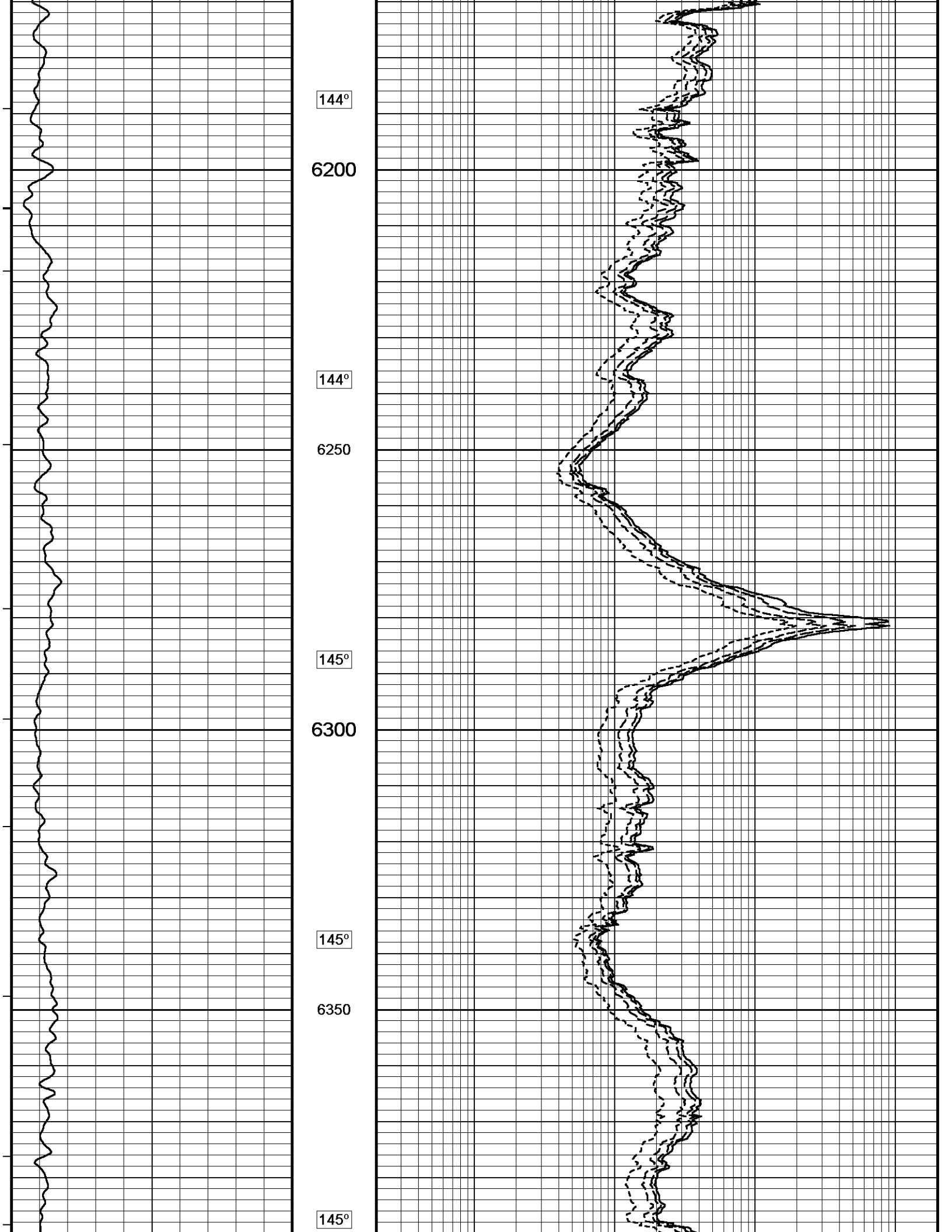
144°

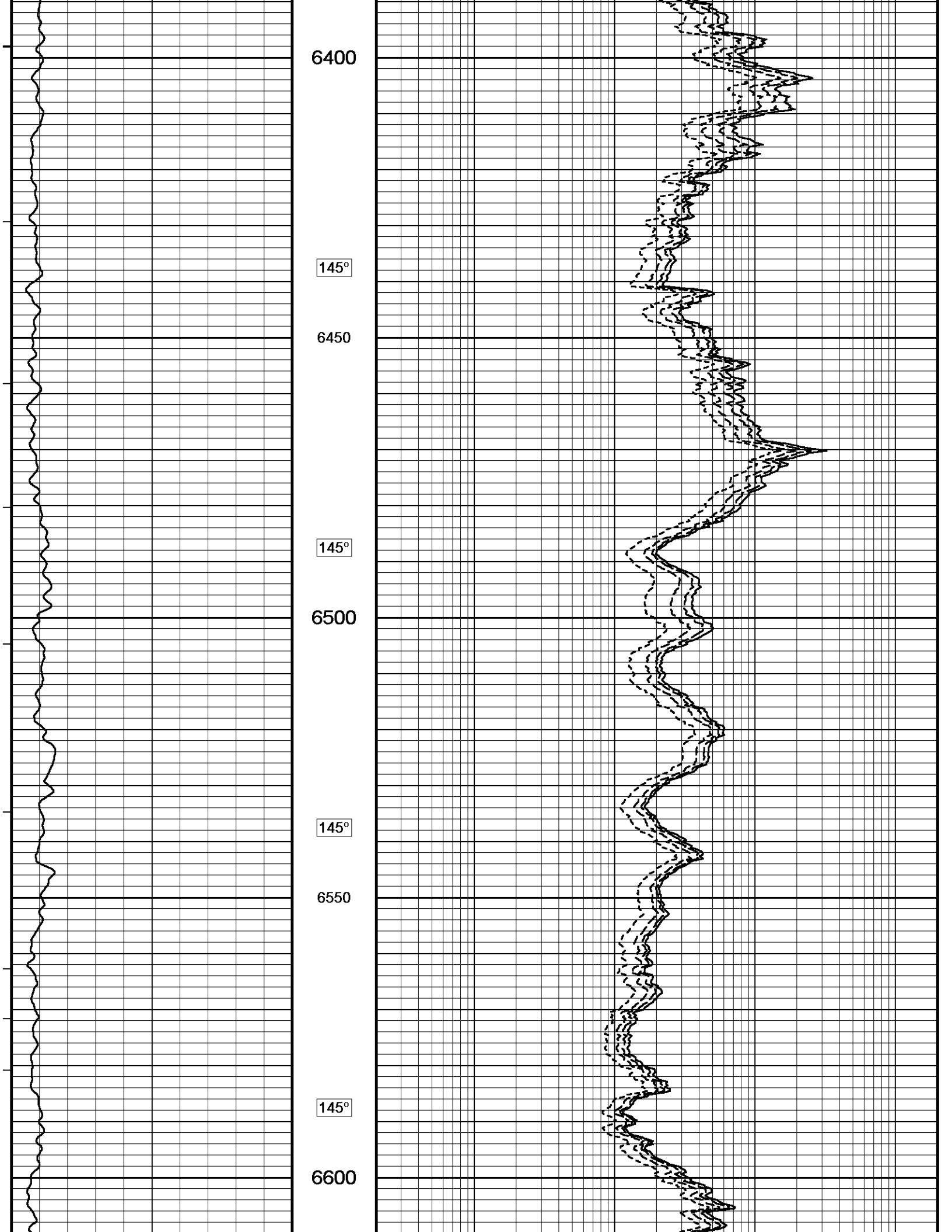
6100

144°

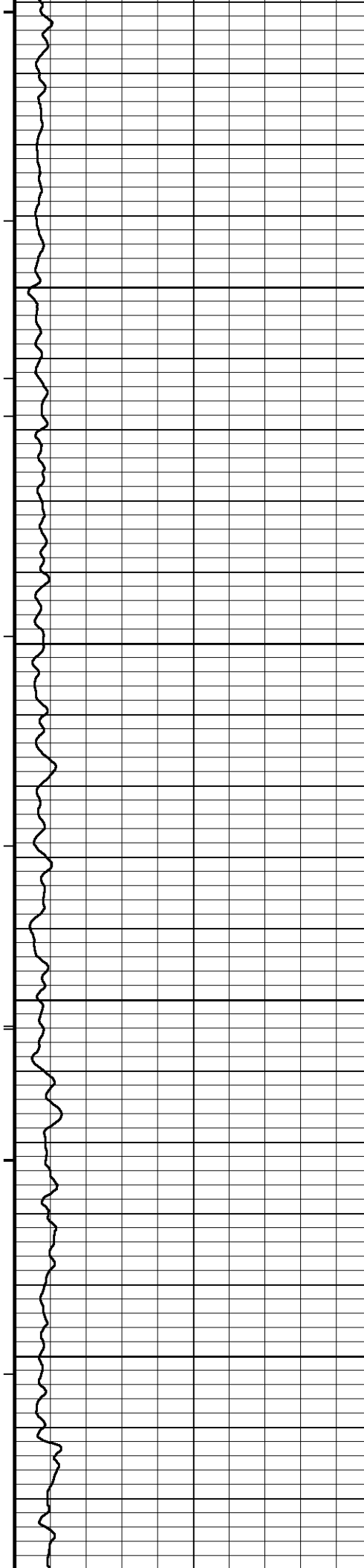
6150











146°

6650

146°

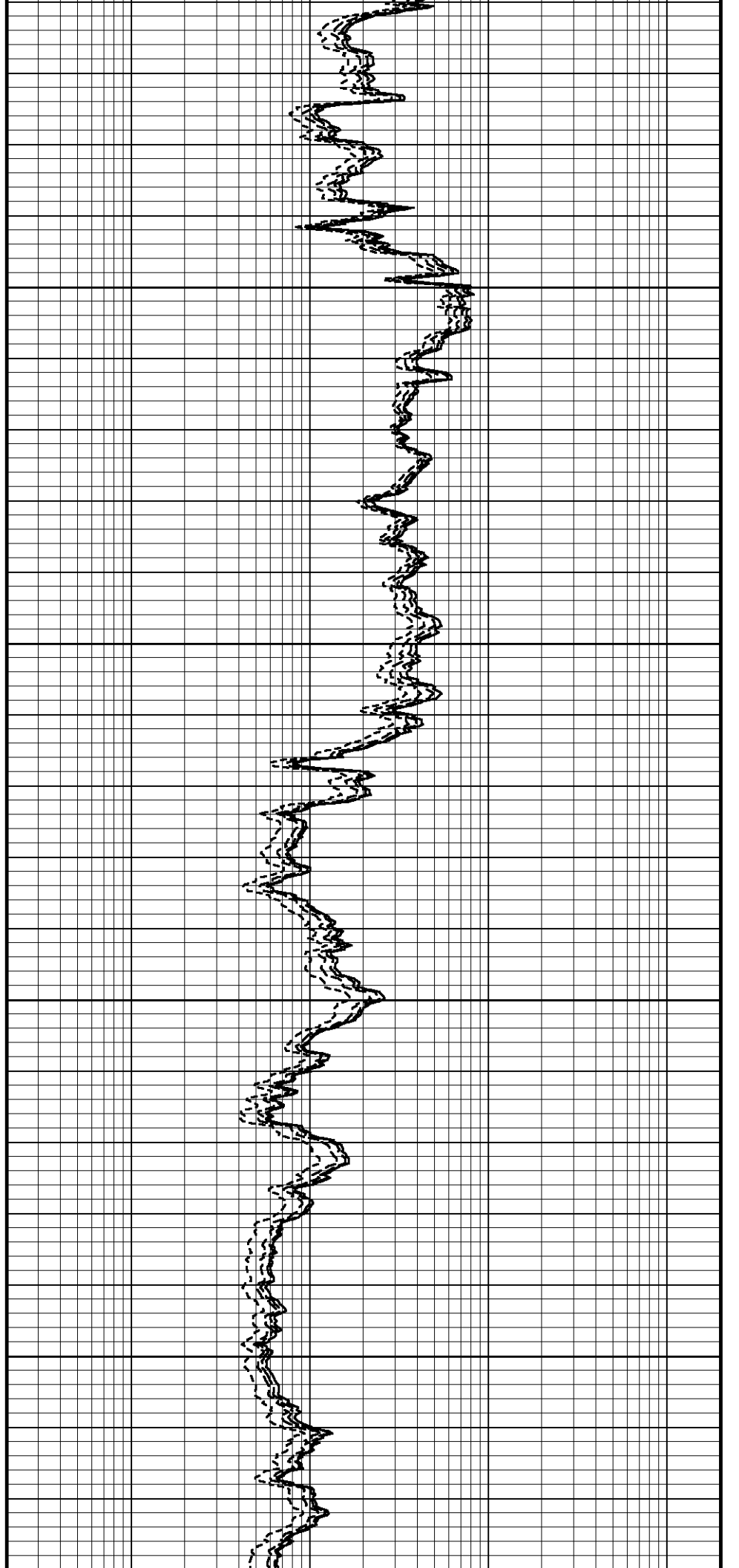
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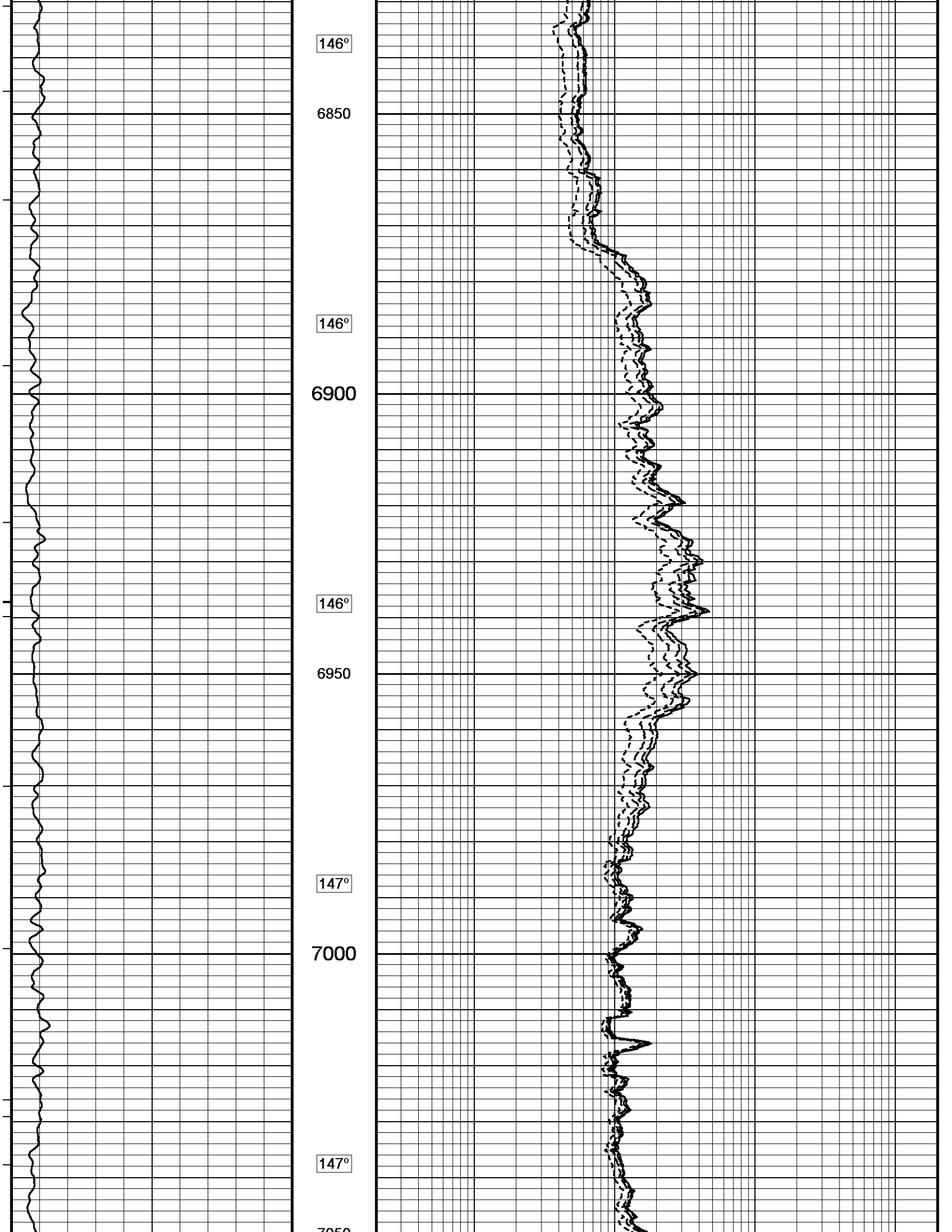
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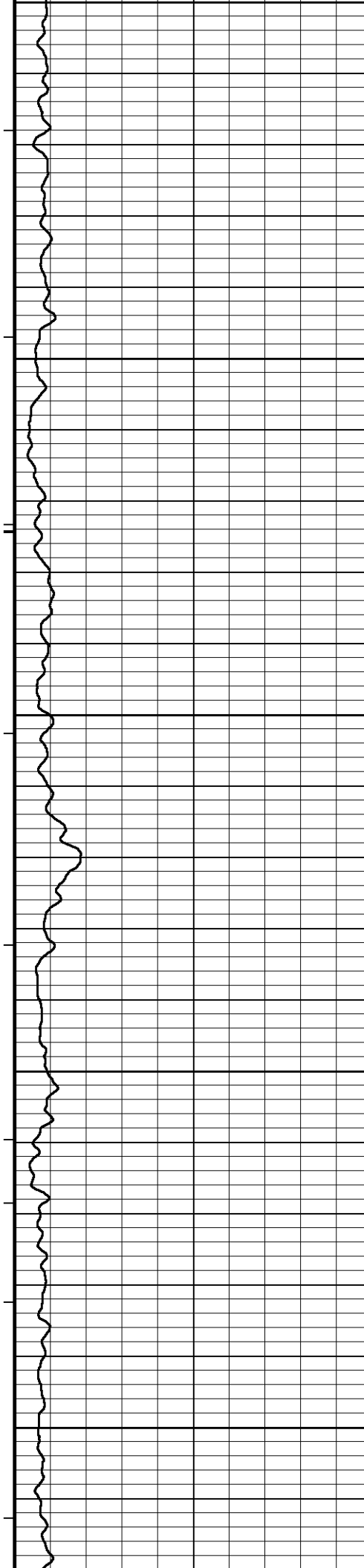
6750

146°

6800







7050

147°

7100

147°

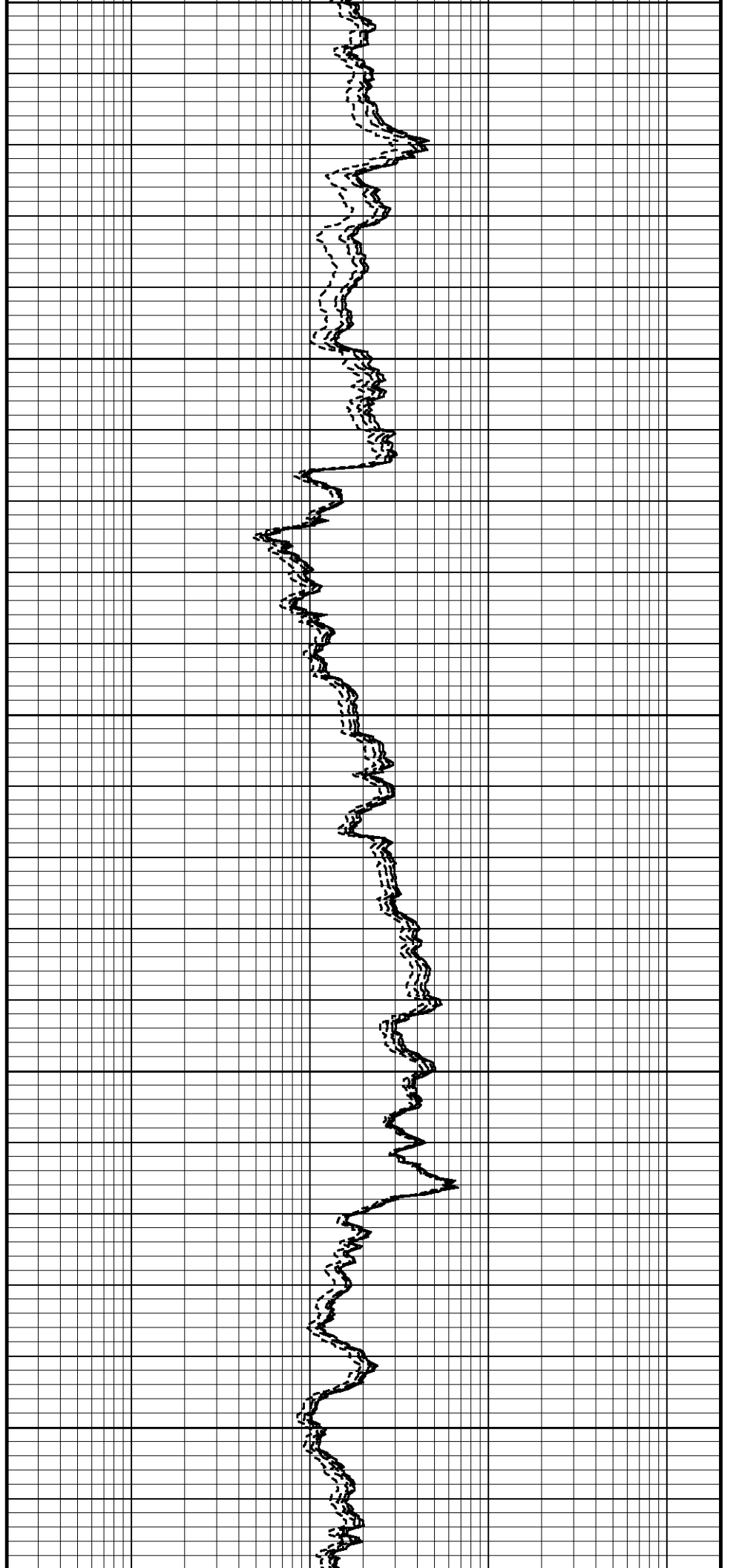
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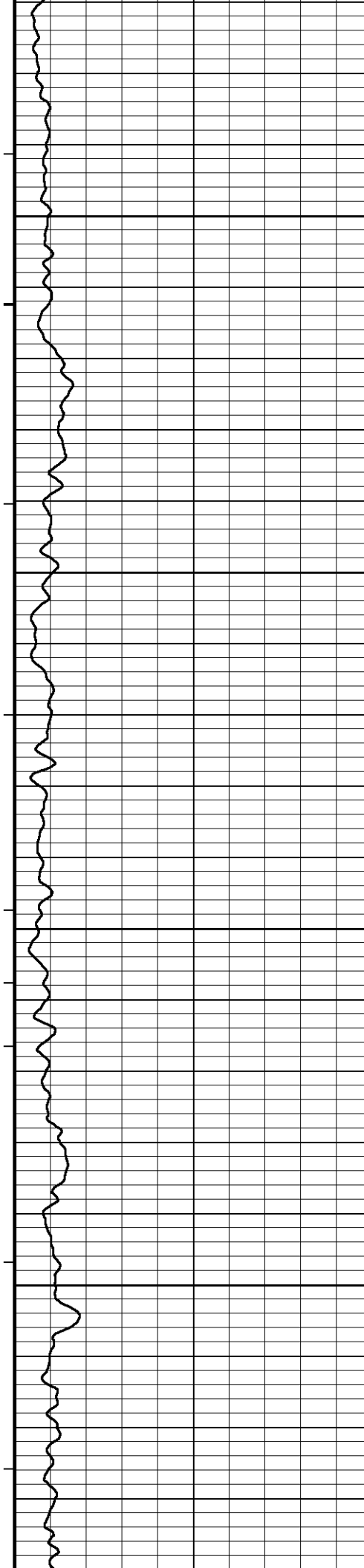
147°

7200

147°

7250





147°

7300

147°

7350

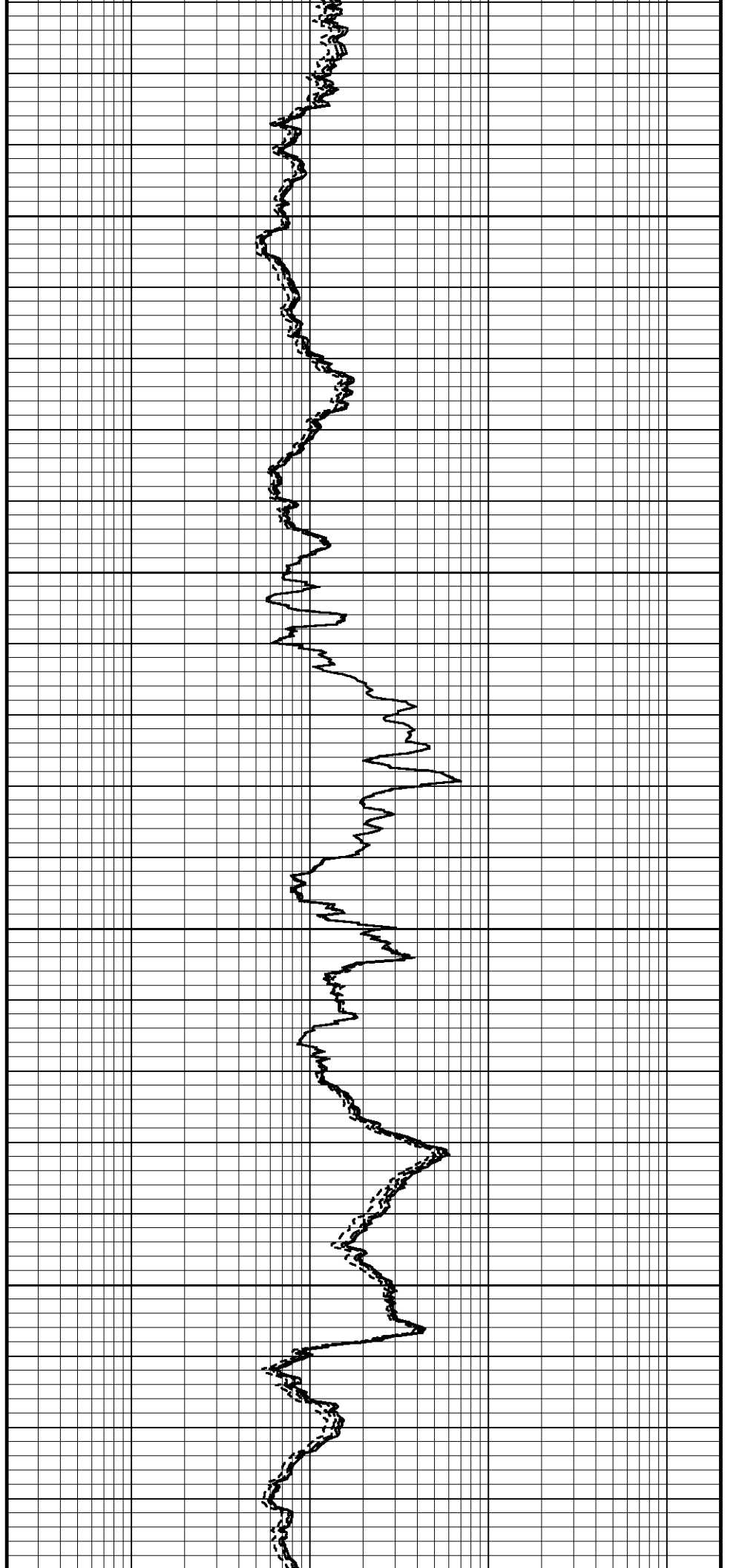
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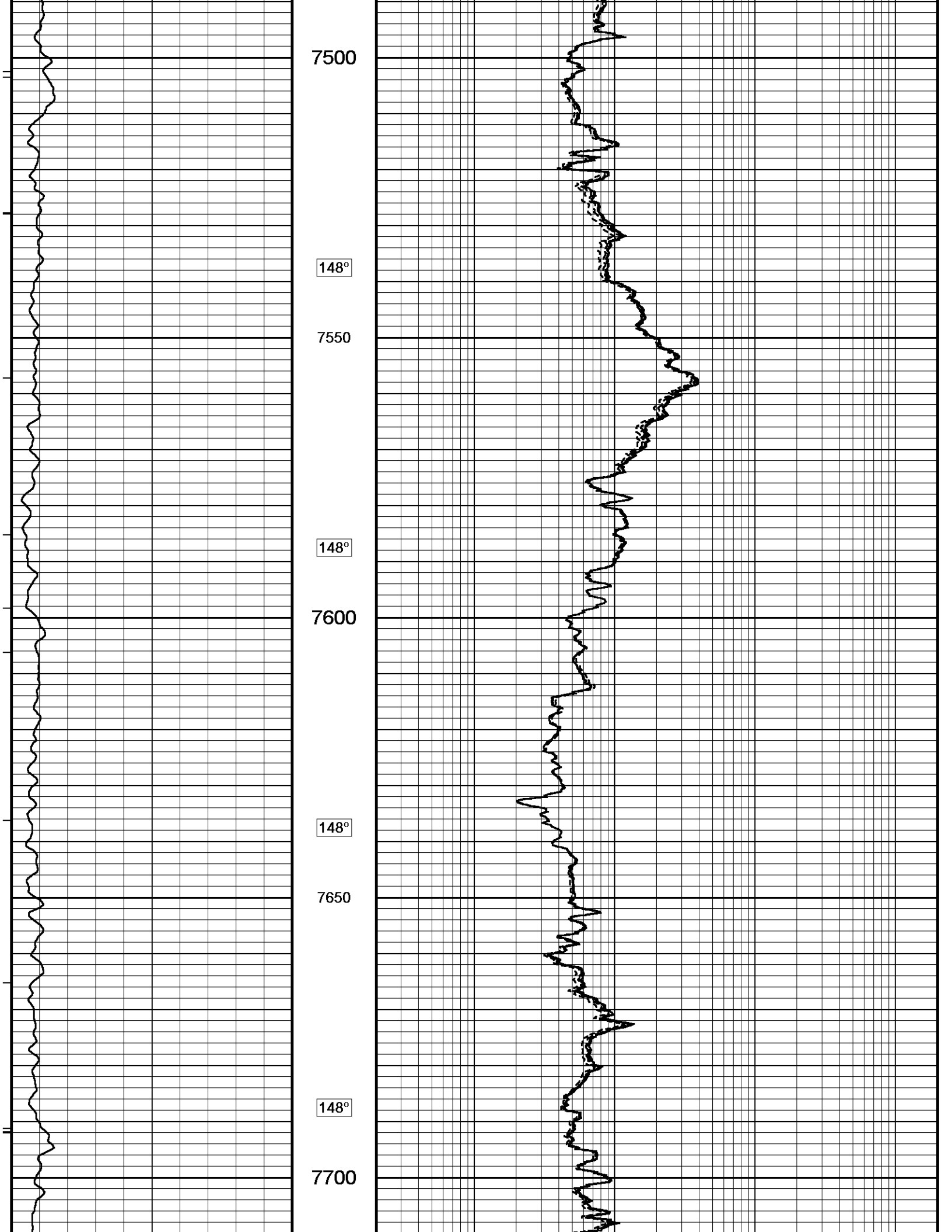
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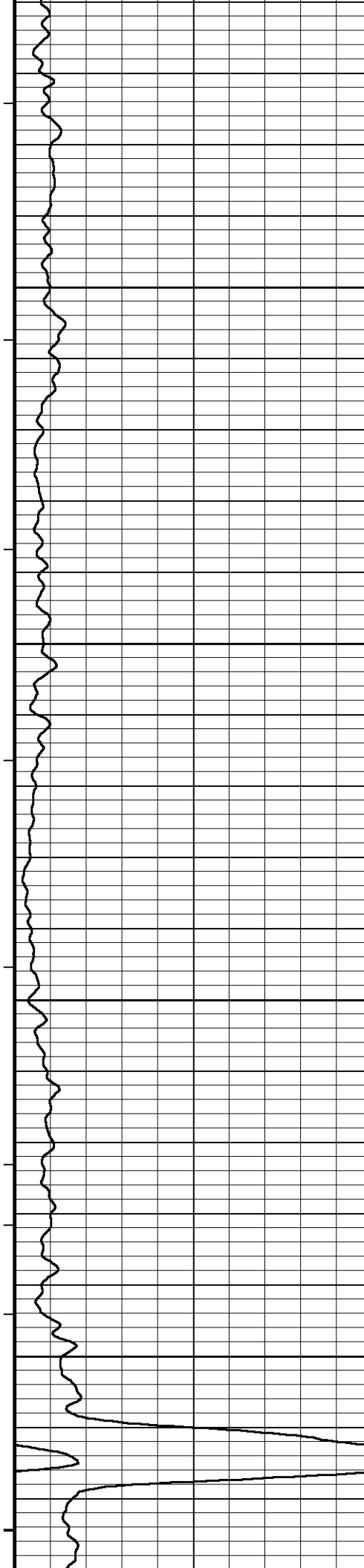
148°

7450

148°







148°

7750

148°

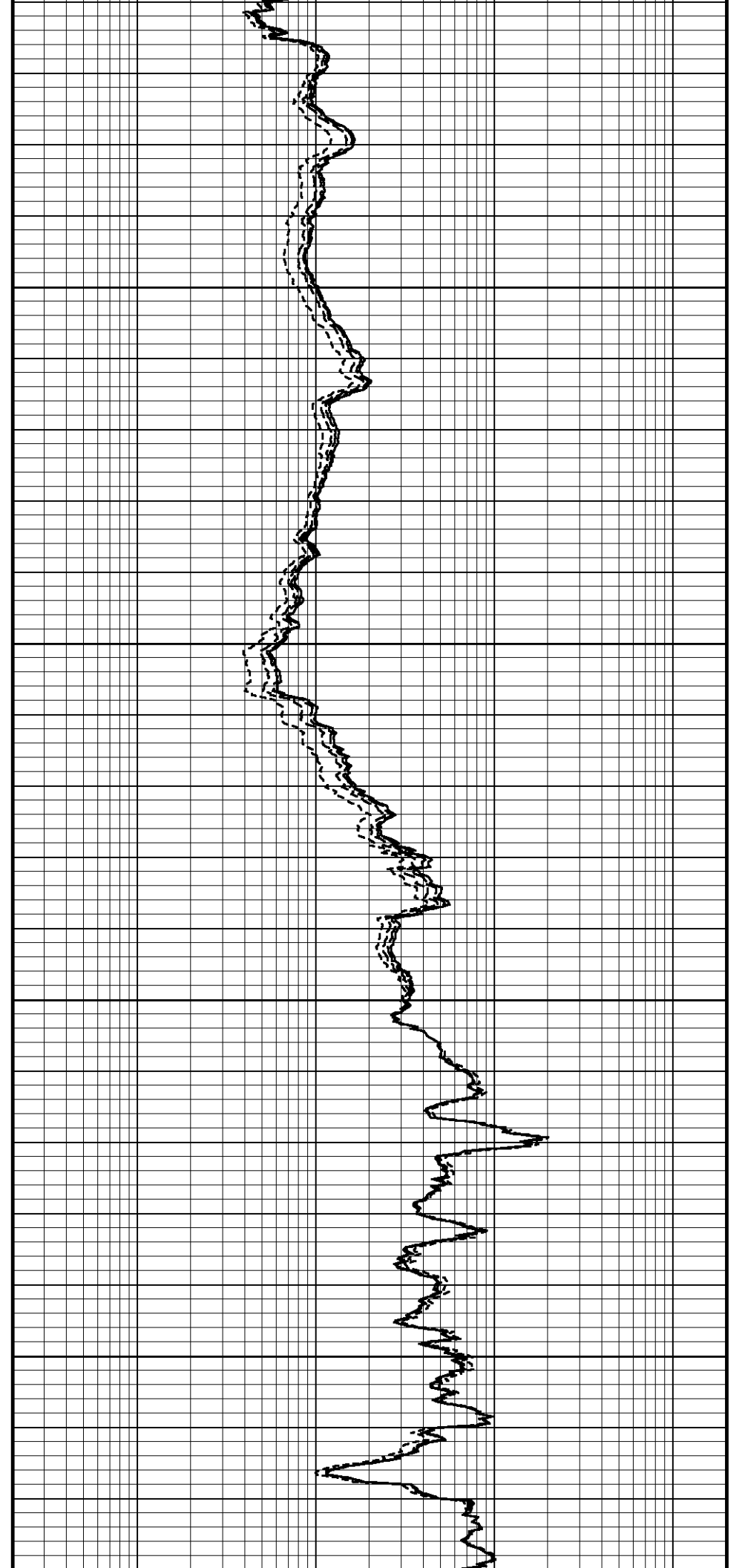
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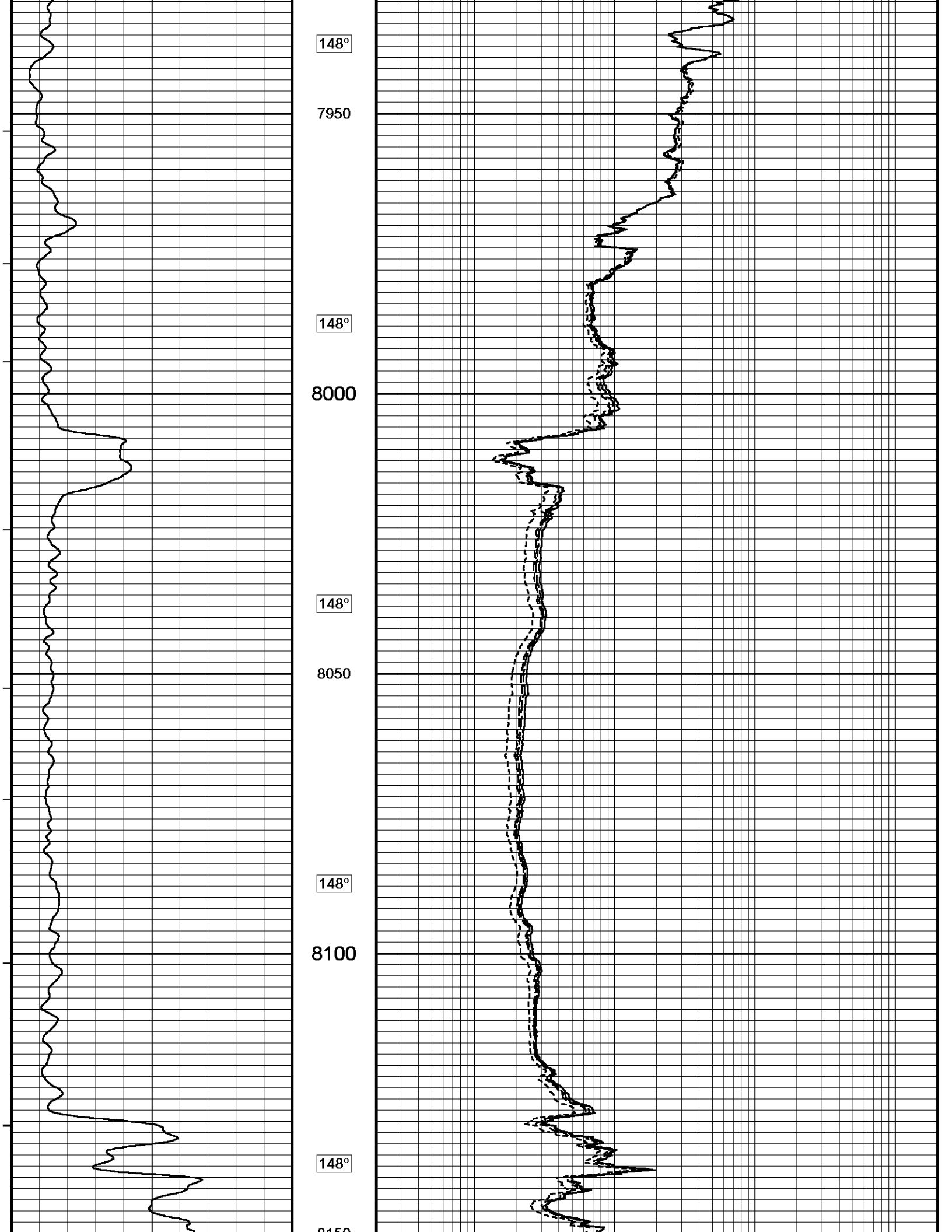
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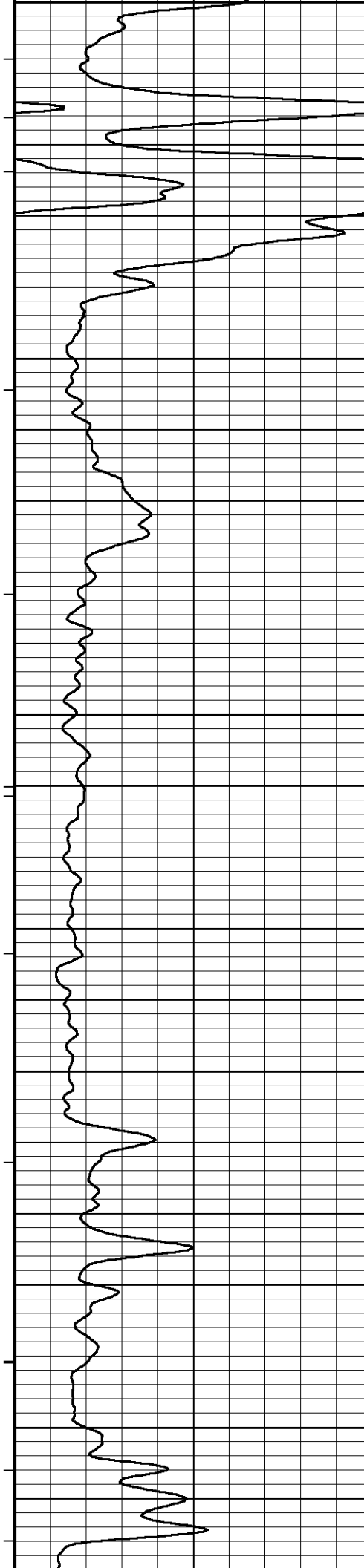
7850

148°

7900







8150

148°

8200

148°

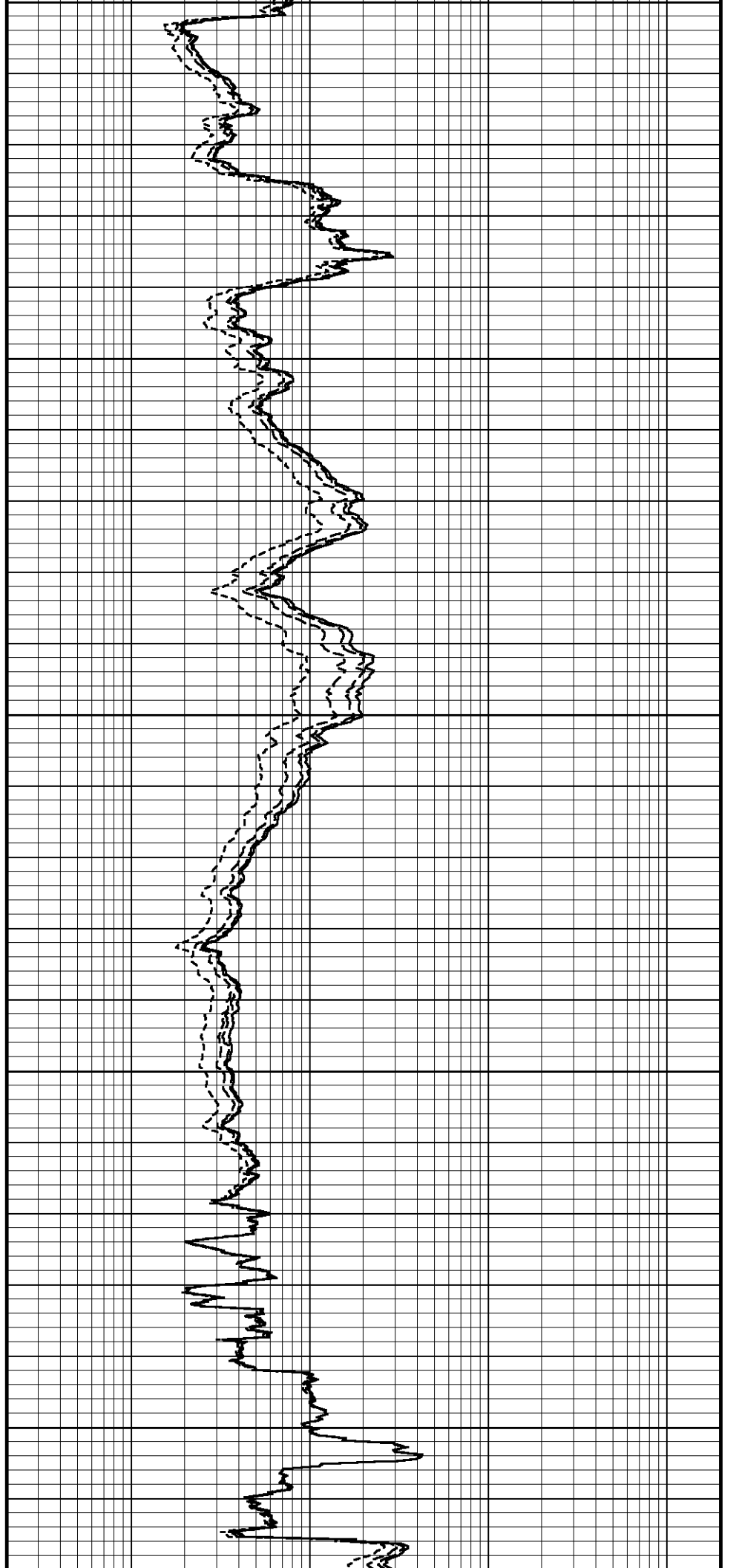
8250

148°

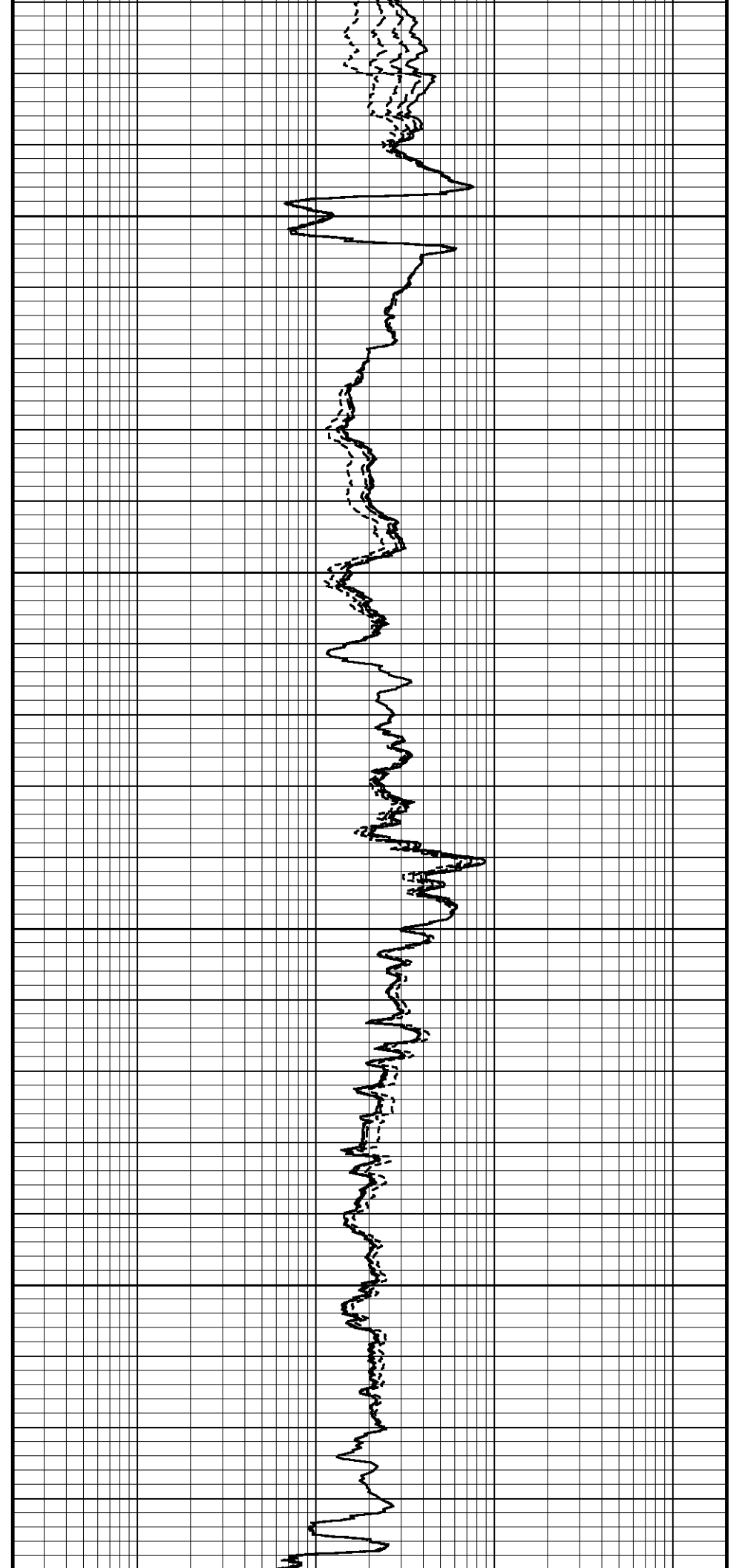
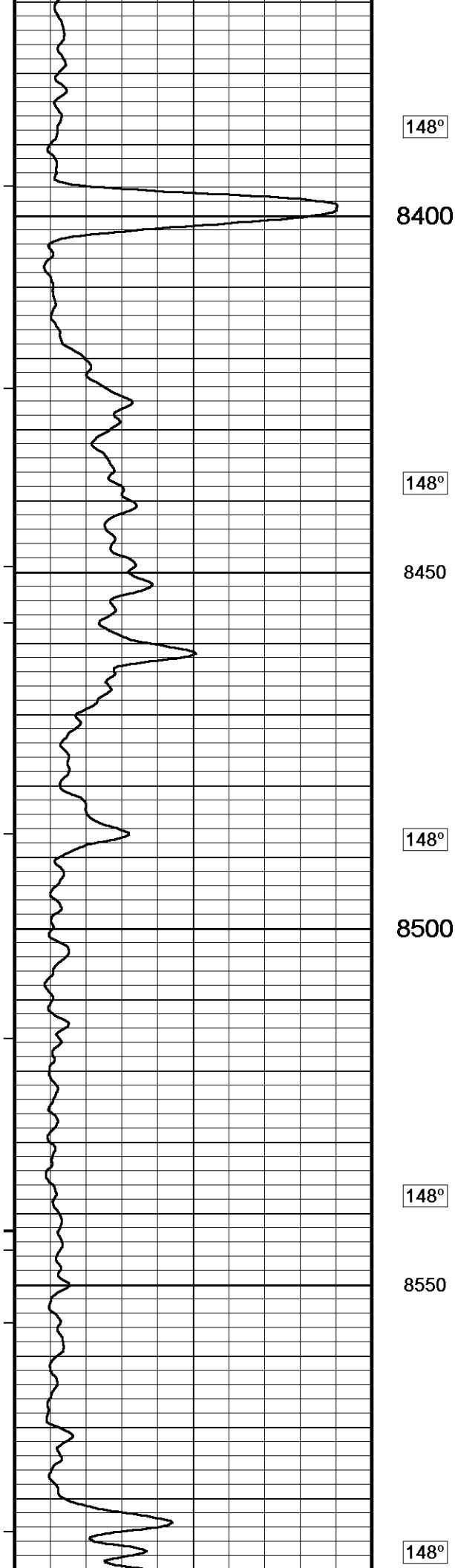
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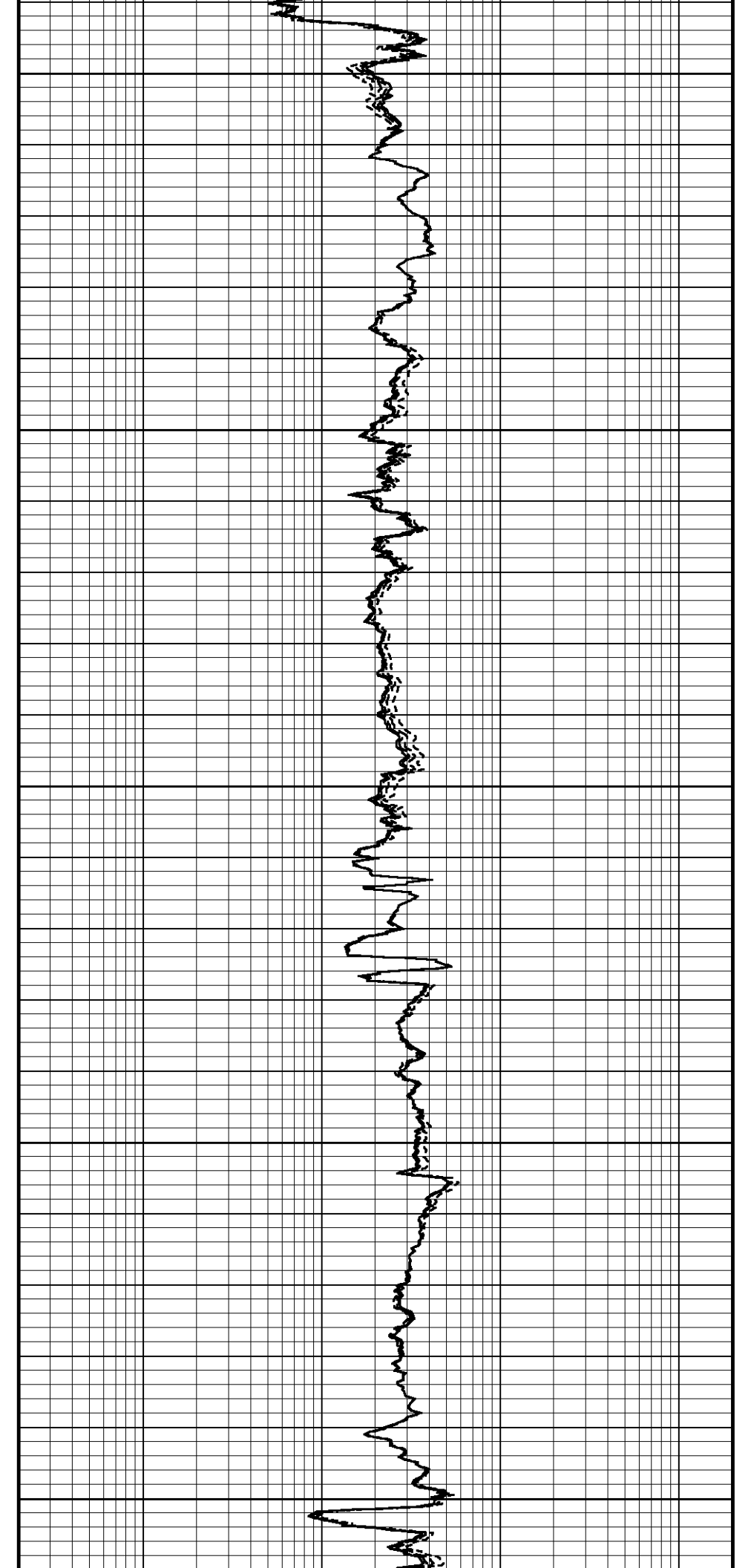
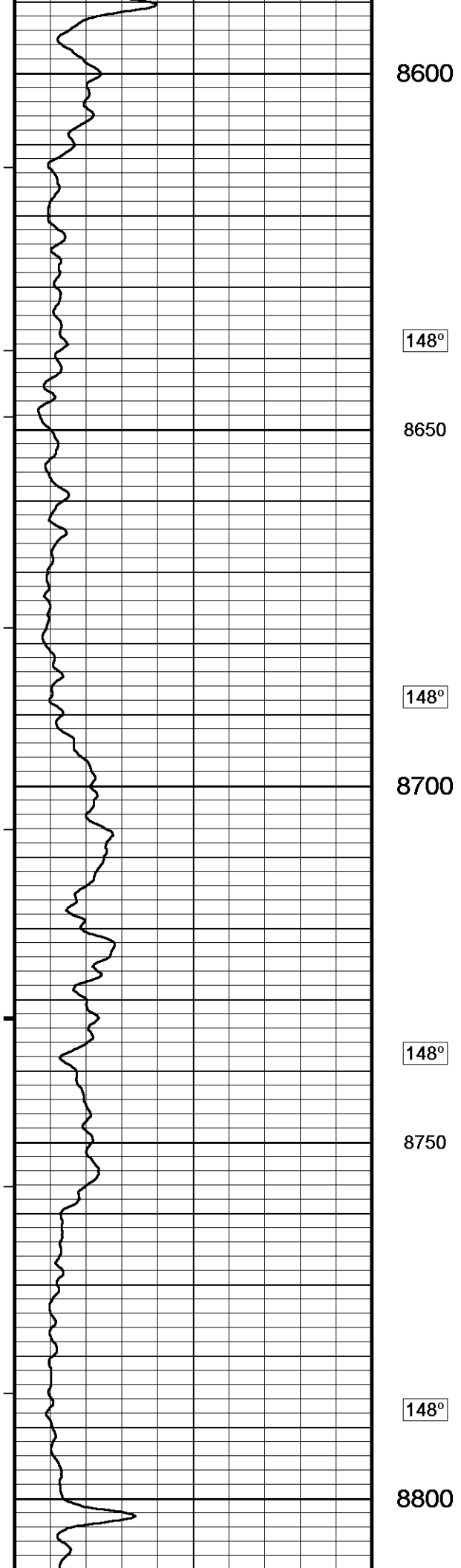
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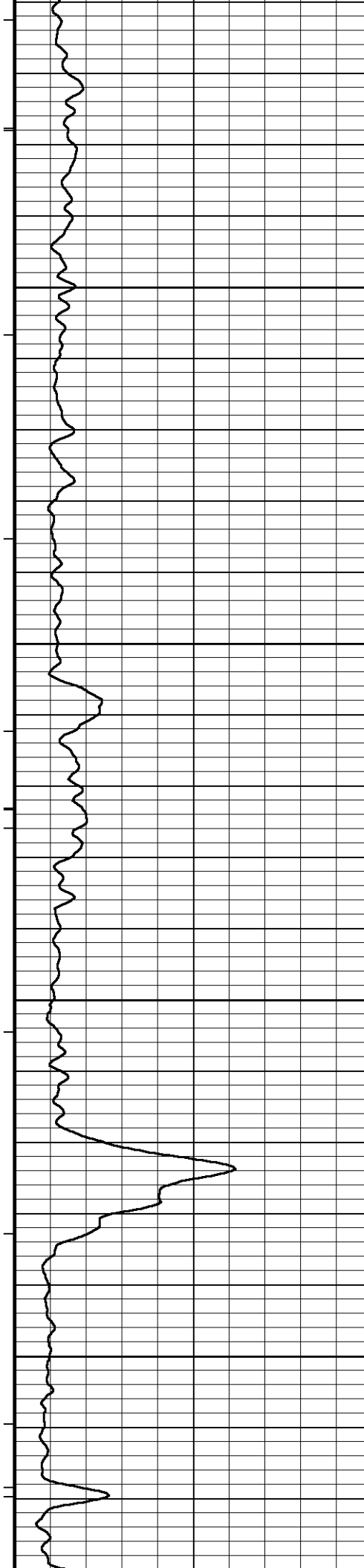
8350











148°

8850

148°

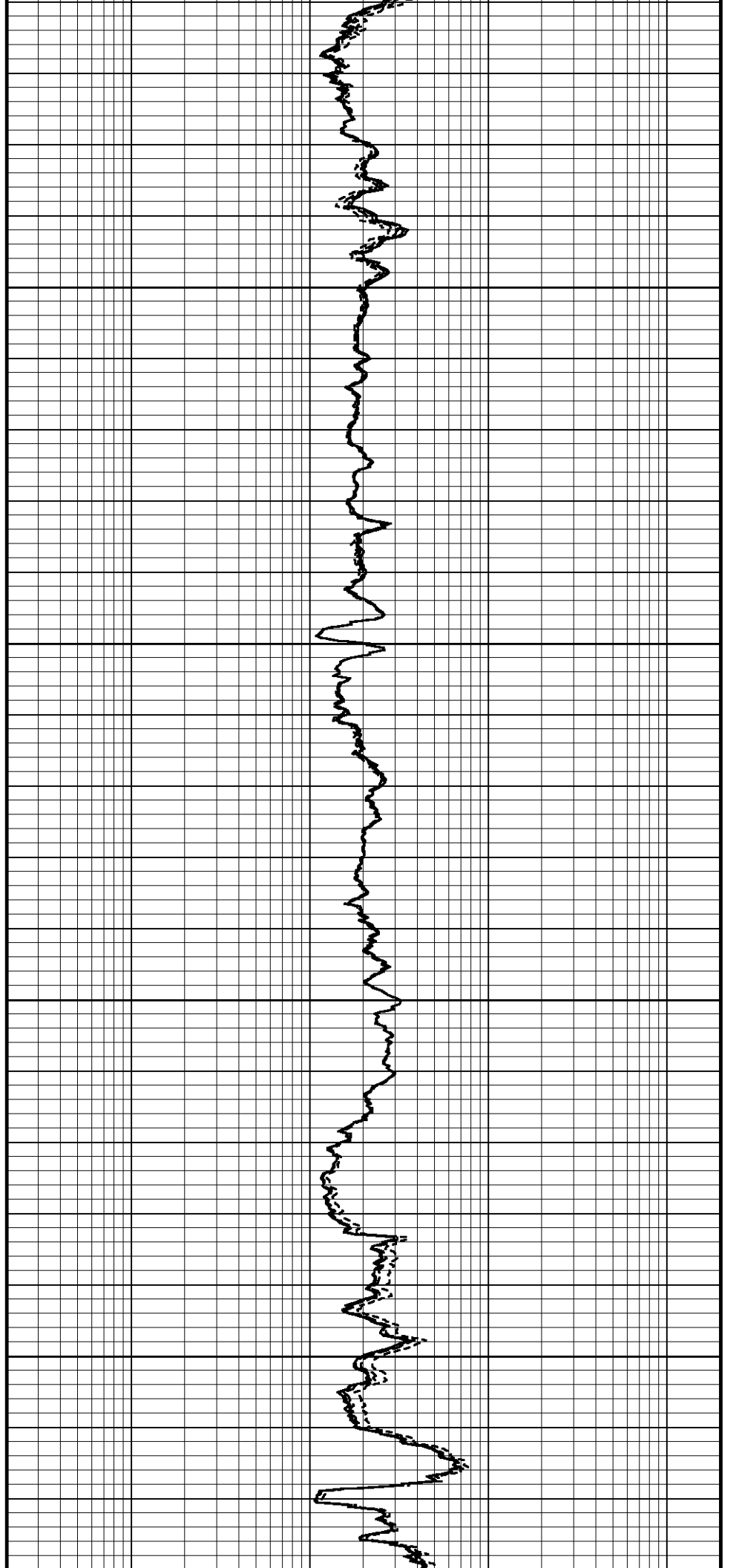
8900

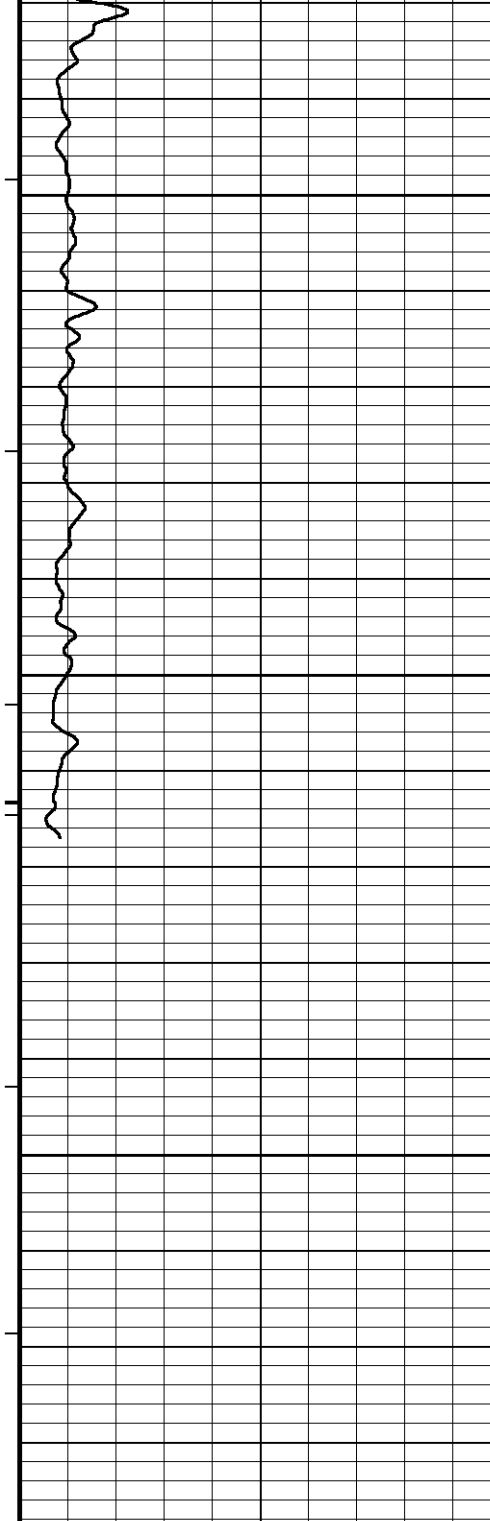
148°

8950

148°

9000





148°

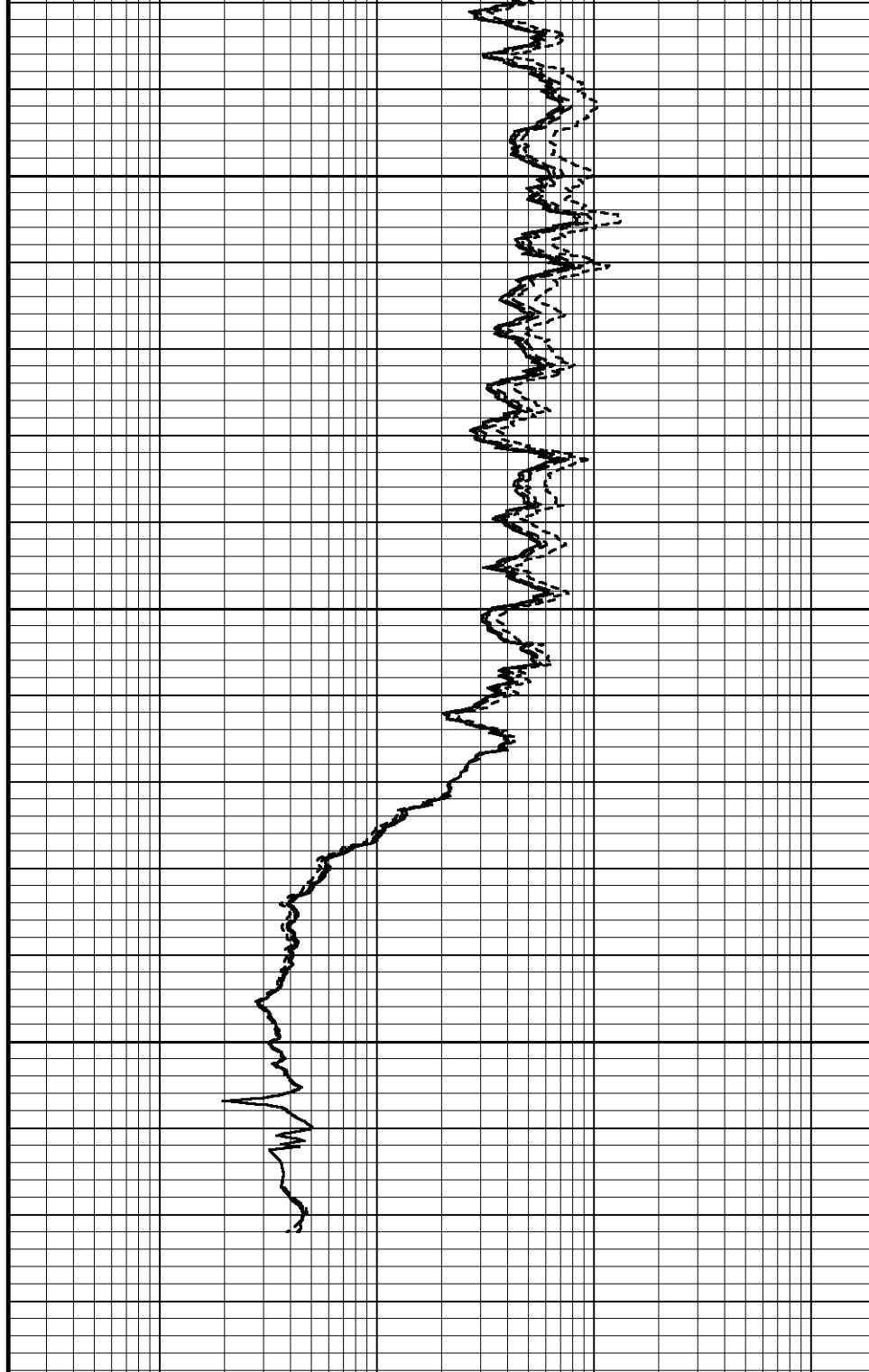
9050

149°

9100

9150

9188  
Depth  
In  
Feet



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 85  
ohm metres

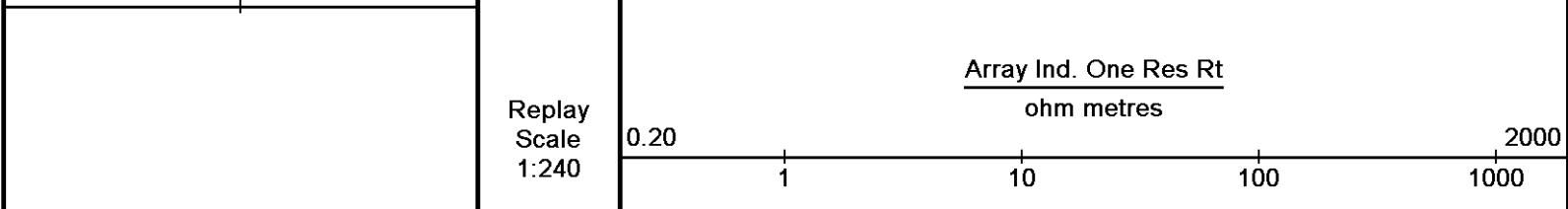
0.20 1 10 100 1000 2000

Timing Marks  
every 60.0 sec

Borehole  
Temp in  
deg F

MGS Gamma Ray

0	75	150
150	225	300



Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 02-FEB-2013 05:11  
 Filename: C:\Data\Sandridge\Sandridge Dalrymple\MMS166 Depthlog.dta  
 Recorded on 02-FEB-2013 04:48  
 System Versions: Processed with 13.03.7779 Plotted with 13.03.7779

DSC

## BEFORE SURVEY CALIBRATION

C:\Data\Sandridge\Sandridge Dalrymple\MMS166 Depthlog.dta

**General Constants All 000** Last Edited on 02-FEB-2013,04:51

**General Parameters**

Mud Resistivity	0.350	ohm-metres
Mud Resistivity Temperature	60.500	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	None	

**Rwa Parameters**

Porosity used	Base Density Porosity
Resistivity used	Array Ind. One Res Rt
RWA Constant A	0.610
RWA Constant M	2.150

**Down-hole Tension Calibration SMS 0** Field Calibration on 05-SEP-2012,13:01

Reading No	Measured	Calibrated (lbs)
1	15152.07	0.00
2	18386.74	2000.00

**Strain Gauge Constants MMS-E.B 166** Last Edited on 30-JAN-2013,09:56

Atmospheric Pressure 14.70 psi

Serial Number 262005

Calibration Date 04-Jan-2011

Base Check Date

Dead Weight Serial Number 0

Dead Weight Gravitational Correction 1.0

Temperature	75.0		150.0		250.0		350.0		degrees F
	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	
Pressure psia									
0.0	0.096	0.097	0.113	0.113	0.129	0.129	0.138	0.139	
3000.0	5.275	5.280	5.290	5.294	5.303	5.306	5.307	5.310	
6000.0	10.464	10.472	10.478	10.485	10.488	10.494	10.487	10.494	
9000.0	15.664	15.672	15.676	15.684	15.683	15.691	15.679	15.687	
12000.0	20.876	20.882	20.888	20.893	20.892	20.898	20.885	20.890	
15000.0	26.101		26.111		26.114		26.103		

**Gamma Calibration MGS-C.J 133** Field Calibration on 30-JAN-2013 09:17

	Measured	Calibrated (API)
Background	146	106
Calibrator (Gross)	1106	802
Calibrator (Net)	959	696

**Gamma Constants MGS-C.J 133** Last Edited on 30-JAN-2013,21:43

Gamma Calibrator Number	036
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Mud Density	1.00	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

SP Calibration MGS-C.J 133			Field Calibration on 30-JAN-2013,09:12
	Measured	Calibrated (mV)	
Reference 1	-100.0	-100.0	
Reference 2	100.0	100.0	

High Resolution Temperature Calibration MGS-C.J 133			Field Calibration on 30-JAN-2013,09:11
	Measured	Calibrated(Deg F)	
Lower	0.00	0.00	
Upper	0.00	0.00	

High Resolution Temperature Constants MGS-C.J 133			Last Edited on 30-JAN-2013,09:11
Pre-filter Length	11		

Neutron Calibration MDN-B.J 423			Base Calibration on 21-JAN-2013 09:28		Field Check on 30-JAN-2013 09:25
Base Calibration					
	Measured		Calibrated (cps)		
	Near	Far	Near	Far	
	2797	85	3714	110	
Ratio	32.949		33.764		
Field Calibrator at Base					
			Calibrated (cps)		
			2242	3339	
Ratio			0.671		
Field Check					
			Calibrated (cps)		
			2206	3107	
Ratio			0.710		

Neutron Constants MDN-B.J 423			Last Edited on 01-FEB-2013,04:21
Neutron Source Id	000		
Neutron Jig Number	000		
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	20.00	degrees F	
Mud Salinity	0.00	kppm	
Salinity Correction	Not Applied		
Formation Fluid Salinity Source	None		
Formation Fluid Salinity	N/A	kppm	
Barite Mud Correction	Not Applied		

FE Calibration MFE-B.J 328			Base Calibration on 27-JAN-2013,14:37	Field Check on 30-JAN-2013 09:00
Base Calibration				
	Measured	Calibrated (ohm-m)		
Reference 1	0.0	0.0		
Reference 2	981.4	126.8		
Base Check	274.7			
Field Check	274.8			

FE Constants MFE-B.J 328			Last Edited on 30-JAN-2013,08:59
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.	MGS External Temperature	
Stand-off	0.5	inches

High Resolution Temperature Calibration MAI-C.A 427

Field Calibration on 27-JAN-2013,14:35

	Measured	Calibrated(Deg F)
Lower	10.00	10.00
Upper	100.00	100.00

High Resolution Temperature Constants MAI-C.A 427

Last Edited on 30-JAN-2013,08:54

Pre-filter Length 11

Induction Calibration MAI-C.A 427

Base Calibration on 27-JAN-2013,14:35

Field Check on 01-FEB-2013 04:16

Base Calibration

Test Loop Calibration

Channel	Measured		Calibrated (mmho/m)	
	Low	High	Low	High
1	14.4	434.9	9.3	966.2
2	5.8	355.4	7.6	821.4
3	2.7	244.4	5.2	566.0
4	1.8	129.3	2.6	279.2

Array Temperature 22.9 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			15.6	4140.9
2			31.1	3770.9
3			30.8	3209.9
4			19.7	2124.5
Deep			19.1	2019.9
Medium			45.2	4288.9
Shallow			45.8	5679.9

Array Temperature 24.9 Deg F

Induction Constants MAI-C.A 427

Last Edited on 02-FEB-2013,04:51

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	6.0000	
Stand-off Fin Angle	60.00	degrees
Stand-off Fin Width	0.5000	inches
Borehole Corr. Rm Source	Temperature Corr	
Temp. for Rm Corr.	MGS 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	

Photo Density Calibration MPD-D.A 471

Base Calibration on 26-DEC-2012 09:33  
Field Check on 01-FEB-2013 04:21

Density Calibration		Measured		Calibrated (sdu)	
Base Calibration		Near	Far	Near	Far
Reference 1	54132	27447	59869	31110	
Reference 2	22673	2730	24557	2522	
Field Check at Base					
	1281.3	1476.8			
Field Check					
	1284.8	1477.5			

PE Calibration		Measured		Calibrated
Base Calibration		WS	WH	Ratio
Background	246	1128		
Reference 1	23825	53911	0.447	0.369
Reference 2	6960	22516	0.314	0.271
Field Check at Base				
	245.7	1128.4		
Field Check				
	244.4	1137.5		

Density Constants MPD-D.A 471

Last Edited on 17-JAN-2013,10:31

Density Source Id	243	
Nylon Calibrator Number	633	
Aluminium Calibrator Number	633	
Density Shoe Profile	4 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.04	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	

Caliper Calibration MPD-D.A 471

Base Calibration on 14-DEC-2012,07:31  
Field Calibration on 11-JAN-2013 09:46

Base Calibration		Measured	Calibrator Size (in)
Reading No			
1		19410	3.99
2		29147	5.97
3		38815	7.99
4		48375	9.86
5		59610	11.93
6		N/A	N/A



DOWNHOLE EQUIPMENT

C:\Data\Sandridge\Sandridge Dalrymple\MMS166 Depthlog.dta

Shuttle Running Tool 3.5" )  
SRT-A.A 40 LG: 6.62 ft WT: 37.5 lb OD: 2.52 in

MBS-G.A 200v Compact Battery Sub  
MBS-G.A 115 LG: 10.61 ft WT: 70.5 lb OD: 2.24 in

Compact Memory Sub E.B  
MMS-E.B 166 LG: 5.20 ft WT: 37.5 lb OD: 2.24 in

Compact Tool Isolator sub.  
MTI-B.A 63 LG: 1.54 ft WT: 13.2 lb OD: 2.24 in

Compact Short Gamma  
MGS-C.J 133 LG: 3.41 ft WT: 24.3 lb OD: 2.24 in

Compact Collar Locator  
MCL-B.J 72 LG: 3.17 ft WT: 26.5 lb OD: 2.24 in

SKJ-E.B Compact Knuckle Joint  
SKJ-E.B 456 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor  
SHA-J.A 432 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

MIS-A.A Compact Inline Bowspring sub  
MIS-A.A 275 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

Compact Neutron  
MDN-B.J 423 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper  
MPD-D.A 471 LG: 9.59 ft WT: 90.4 lb OD: 2.24 in

MIS-D.B Compact Inline Bowspring sub  
MIS-D.B 591 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor  
SHA-J.A 205 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

SKJ-E.B Compact Knuckle Joint  
SKJ-E.B 477 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MIS-E.B Compact Inline Standoff sub  
MIS-E.B 565 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Focussed Electric  
MFE-B.J 328 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

MIS-E.A Compact Inline Standoff sub  
MIS-E.A 336 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in



42.89 ft NPRL - Limestone Neutron Por.

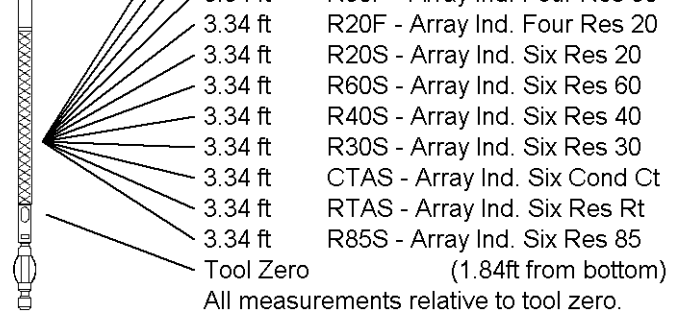
35.65 ft AVOL - Annular Volume  
 35.65 ft HVOL - Hole Volume  
 35.65 ft CLDC - Density Caliper  
 33.72 ft DPRL - Limestone Density Por.  
 33.72 ft DEN - Compensated Density  
 33.72 ft DCOR - Density Correction  
 33.65 ft PDPE - PE

Compact Induction  
MAI-C.A 427 LG: 12.52 ft WT: 48.5 lb OD: 2.24 in

3.34 ft R85F - Array Ind. Four Res 85  
 3.34 ft R60F - Array Ind. Four Res 60  
 3.34 ft R40F - Array Ind. Four Res 40  
 3.34 ft R30F - Array Ind. Four Res 30

Total Length: 88.26 ft Weight: 637.1 lb

Total Length: 68.56 ft Weight: 657.1 lb



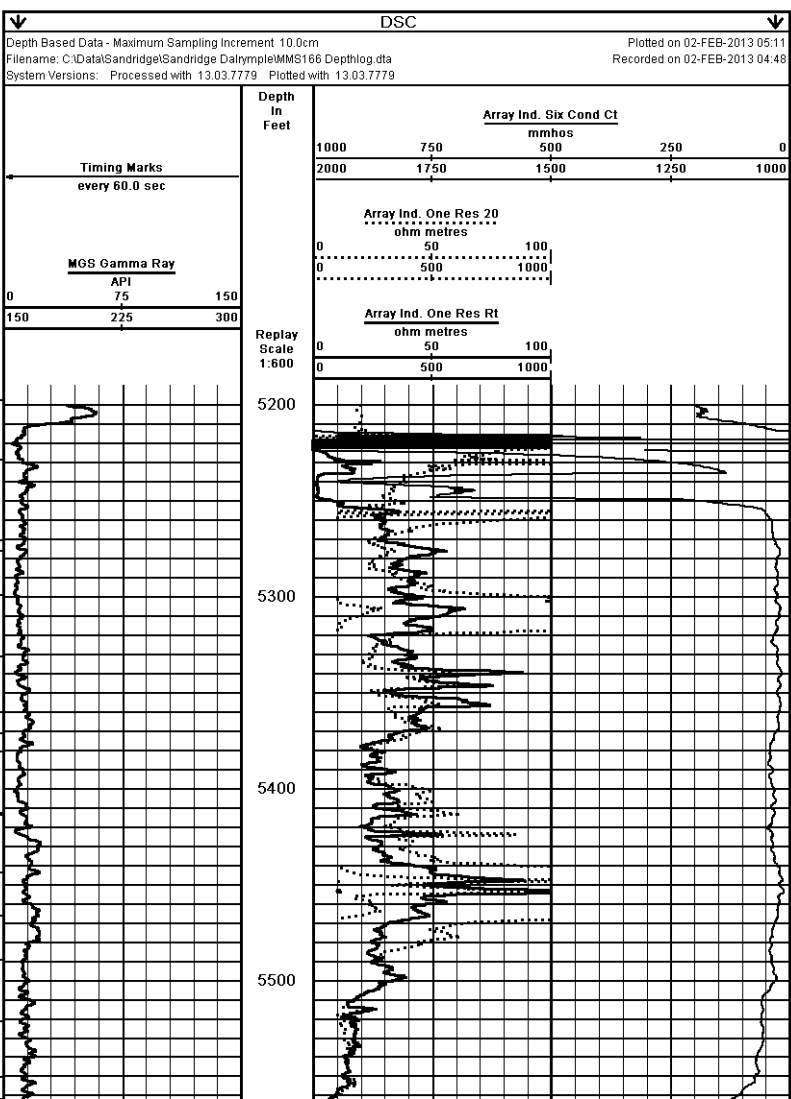
<b>COMPANY</b>	<b>SANDRIDGE EXPLORATION &amp; PRODUCTION</b>
<b>WELL</b>	<b>DALRYMPLE FARMS 3506 1-13H</b>
<b>FIELD</b>	<b>SIX MOONS</b>
<b>PROVINCE/COUNTY</b>	<b>HARPER</b>
<b>COUNTRY/STATE</b>	<b>USA / KANSAS</b>

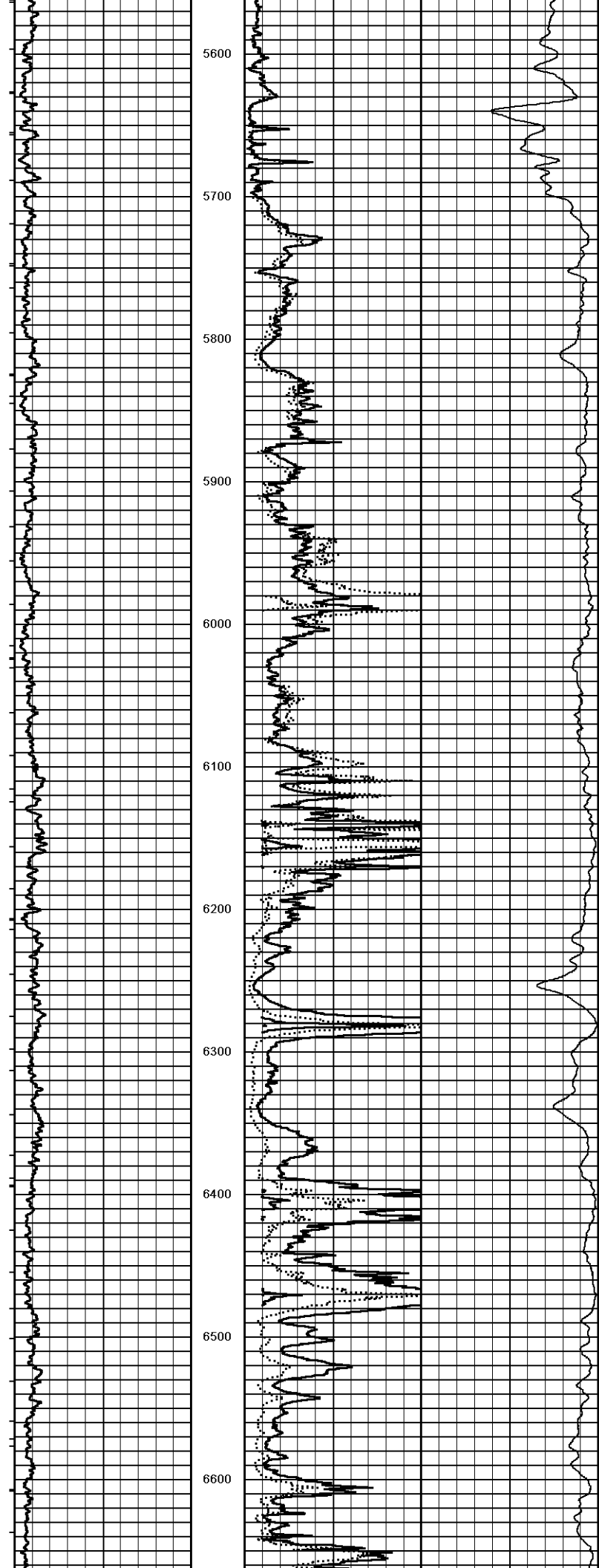
Elevation Kelly Bushing	1243.00	feet	First Reading	9172.00	feet
Elevation Drill Floor	1243.00	feet	Depth Driller	9199.00	feet
Elevation Ground Level	1224.00	feet	Depth Logger	9179.00	feet

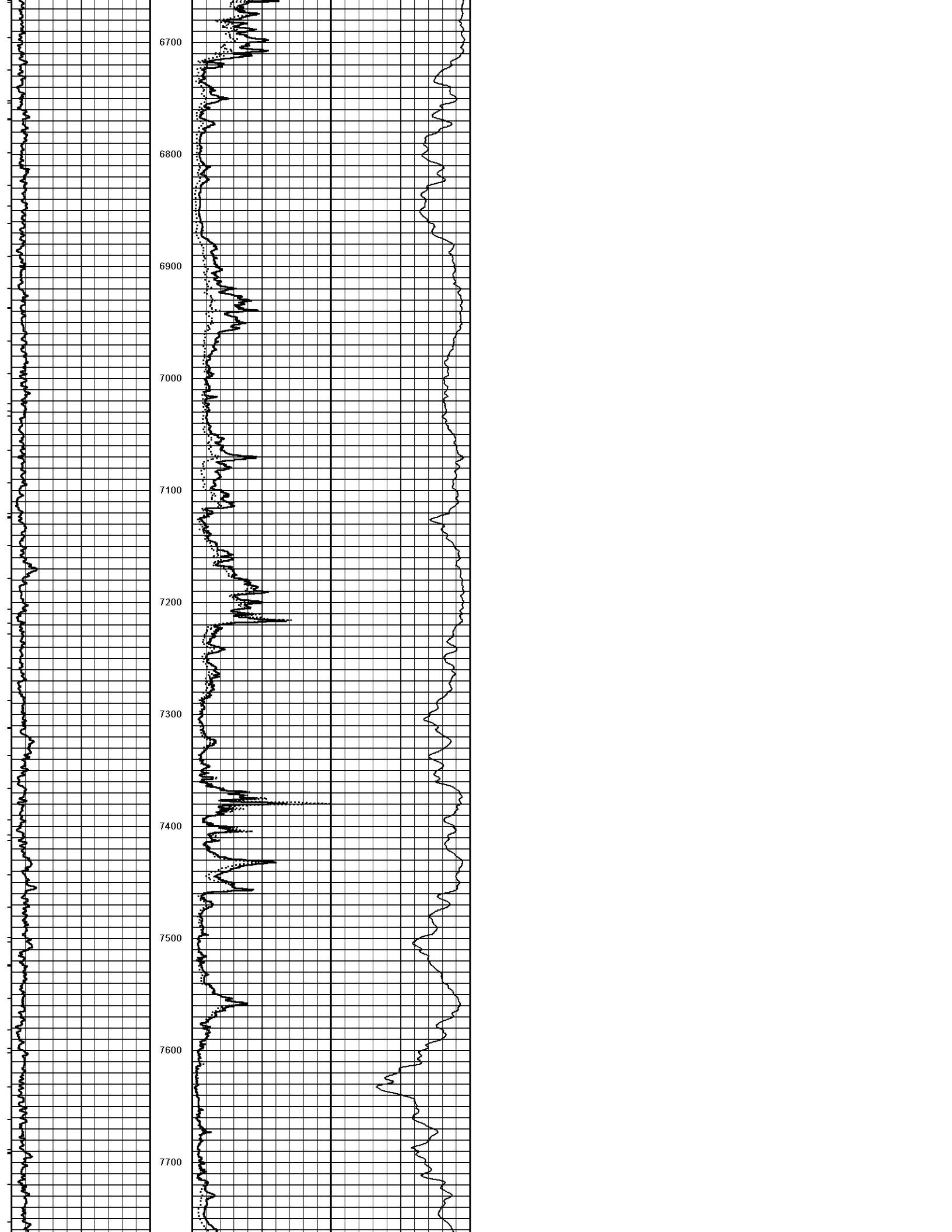


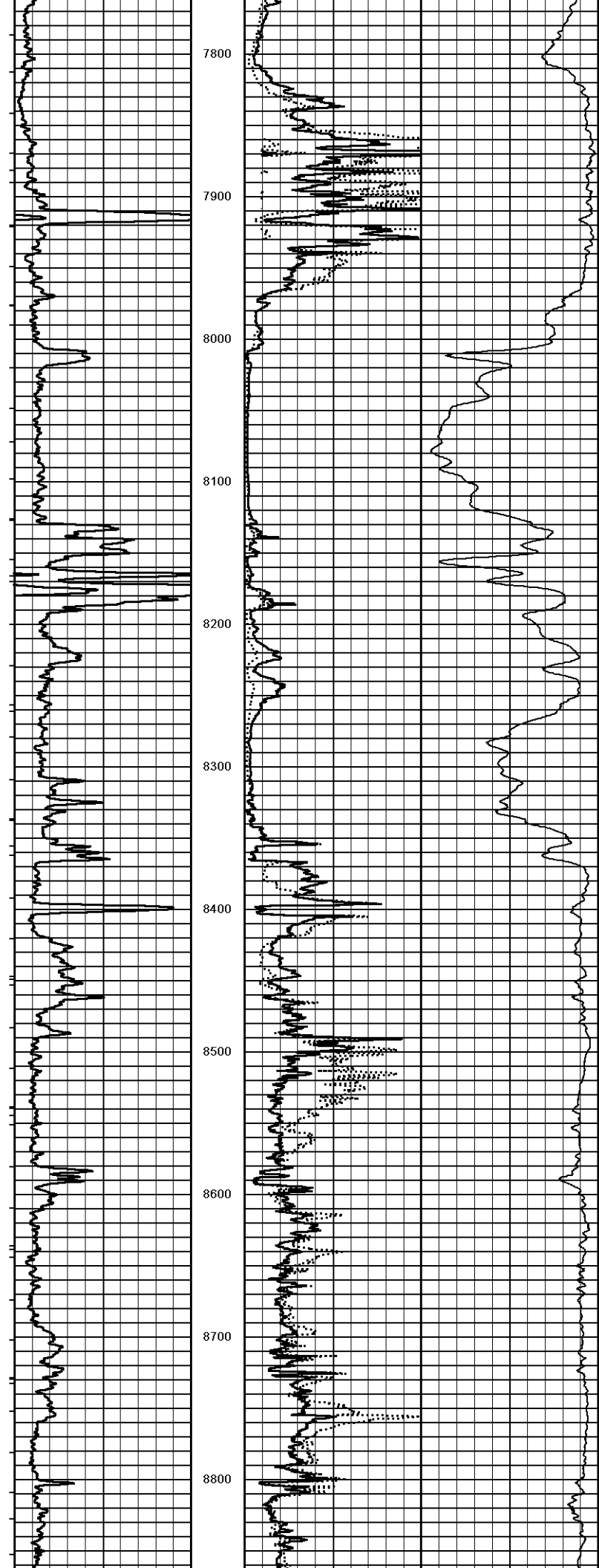
**Weatherford**<sup>®</sup>

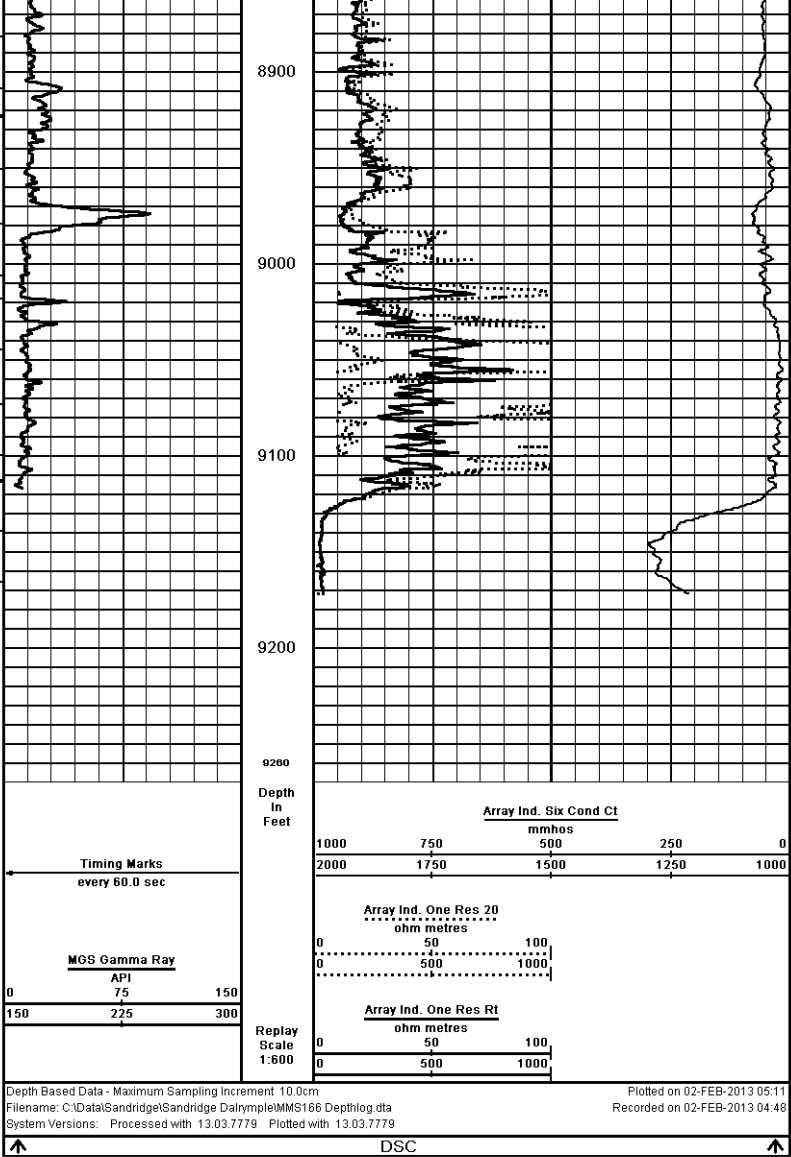
**CML WELL SHUTTLE  
COMPACT ARRAY INDUCTION  
LOG**












COMPANY	SANDRIDGE EXPLORATION & PRODUCTION				
WELL	DALRYMPLE FARMS 3506 1-13H				
FIELD	SIX MOONS				
PROVINCE/COUNTY	HARPER				
COUNTRY/STATE	USA / KANSAS				
Elevation Kelly Busting	1243.00	feet	First Reading	9172.00	feet
Elevation Drill Floor	1243.00	feet	Depth Driller	9199.00	feet
Elevation Ground Level	1224.00	feet	Depth Logger	9179.00	feet
	CML WELL SHUTTLE COMPACT ARRAY INDUCTION LOG				