Weatherford®

COMPACT WELL SHUTTLE
COMPACT ARRAY INDUCTION
LOG

COMPANY	CMX INC.
WELL	SOCRATES 1H
FIELD	WHERRY
PROVINCE/COUNTY	RICE
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	2490' FNL & 1320' FEL
	S2 S2 S2 NE

SEC	TWP	RGE	Other Services
10	21S	7W	MDN/MPD
			CMI

API Number 15159226670100
Permit Number

Permanent Datum G.L., Elevation 1602 feet
Log Measured From D.F. 12 FEET above Permanent Datum
Drilling Measured From D.F.

Elevations:	feet
KB	1614.00
DF	1614.00
GL	1602.00

Date	20-JAN-2012			
Run Number	1			
Depth Driller	7950.00	feet		
Depth Logger	7828.00	feet		
First Reading	7822.00	feet		
Last Reading	3749.00	feet		
Casing Driller	3749.00	feet		
Casing Logger	3749.00	feet		
Bit Size	6.125	inches		
Hole Fluid Type	WATER BASED			
Density / Viscosity	8.40 g/c3	30.00 CP		
PH / Fluid Loss	8.00	88.00 ml/30Min		
Sample Source	FLOWLINE			
Rm @ Measured Temp	1.34 @ 76.0	ohm-m		
Rmf @ Measured Temp	1.07 @ 76.0	ohm-m		
Rmc @ Measured Temp	1.60 @ 76.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.96 @106.0	ohm-m		
Time Since Circulation	.5 HOUR			
Max Recorded Temp	106.00	deg F		
Equipment Name	COMPACT			
Equipment / Base	18064	OKC		
Recorded By	C. GRIFFIN			
Witnessed By	L. KASTEN			
S.O. #	3534193			

BOREHOLE RECORD

Last Edited: 20-JAN-2012 04:34

Bit Size inches	Depth From feet	Depth To feet
6.125	3749.00	7950.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
INTERMED	7.000	0.00	3749.00	26.00

REMARKS

WLS SOFTWARE VERSION 11.02. 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 7727 FT.
AFTER DEPLOYMENT LOGGING TOOL WAS AT 7828 FT.

4.5 " PRODUCTION CASING USED TO CALCULATE ANNULAR HOLE VOLUMES.

OPERATORS: S. WORLEY, D. TURNER
S.O. # 3534193
RIG: DUKE RIG 20

employees. These interpretations are also subject to our general terms and conditions in our price schedule.

DSC

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 20-JAN-2012 04:56
Filename: C:\Data\CMX\CMX Socrates 1\MMS166 Depthlog.dta
Recorded on 20-JAN-2012 03:46
System Versions: Logged with 11.02.3186 Processed with 11.02.3186 Plotted with 11.02.3186

Timing Marks
every 60.0 sec

MGS Gamma Ray
API
0 75 150
150 225 300

Depth In Feet

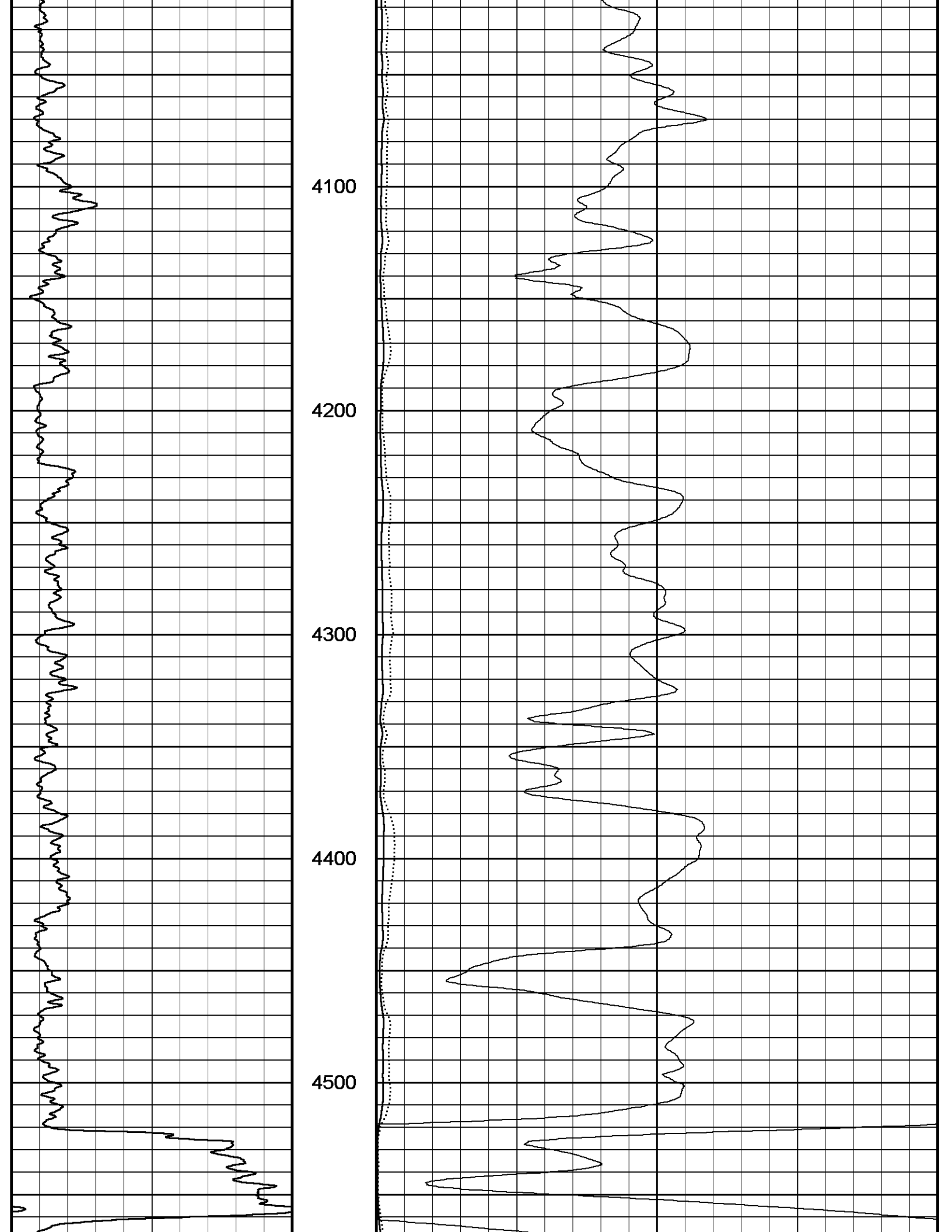
Array Ind. Six Cond Ct
mmhos
400 300 200 100 0
800 700 600 500 400

Array Ind. Six Res 20
ohm metres
0 100 200
0 1000 2000

Array Ind. Six Res Rt
ohm metres
0 100 200
0 1000 2000

Replay Scale 1:600

3700
3800
3900
4000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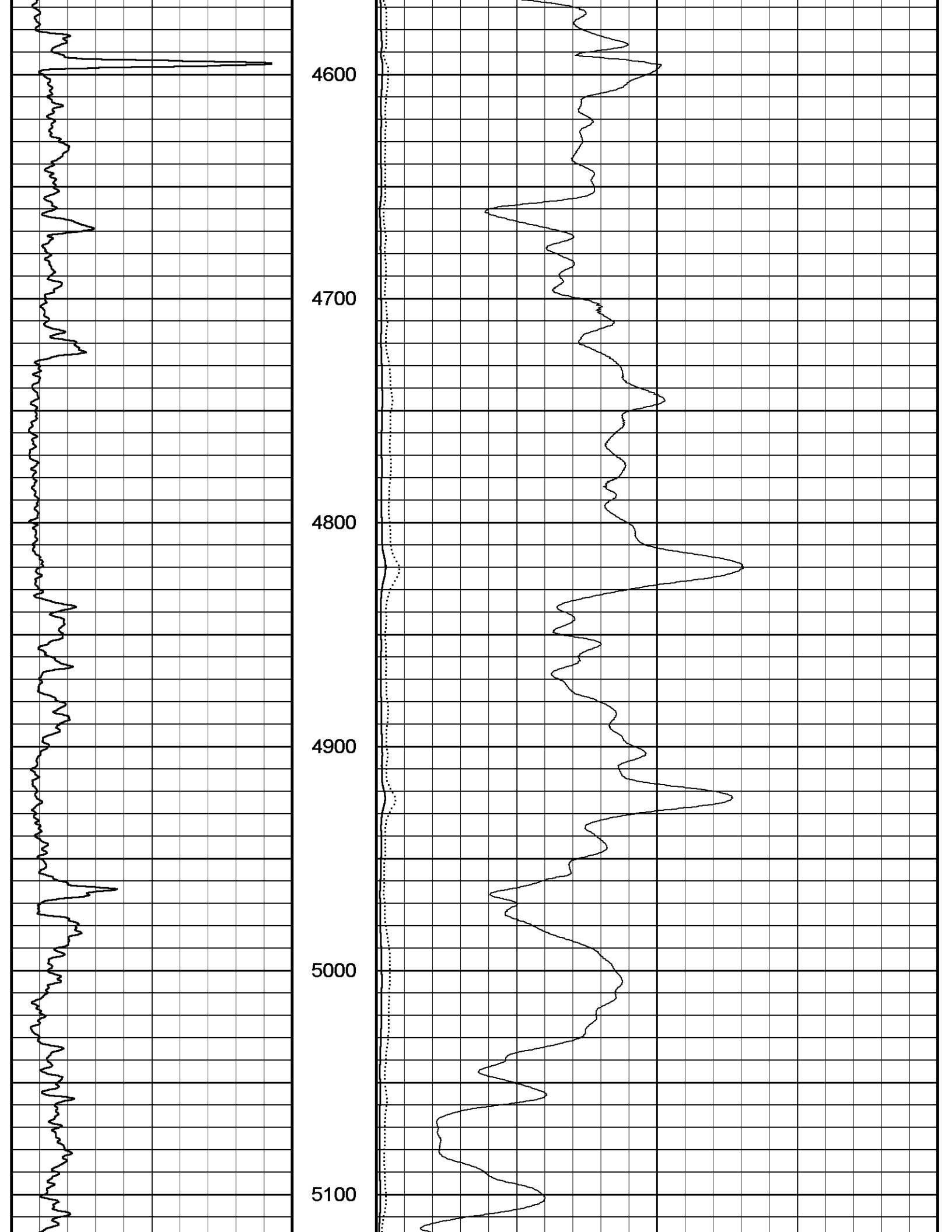
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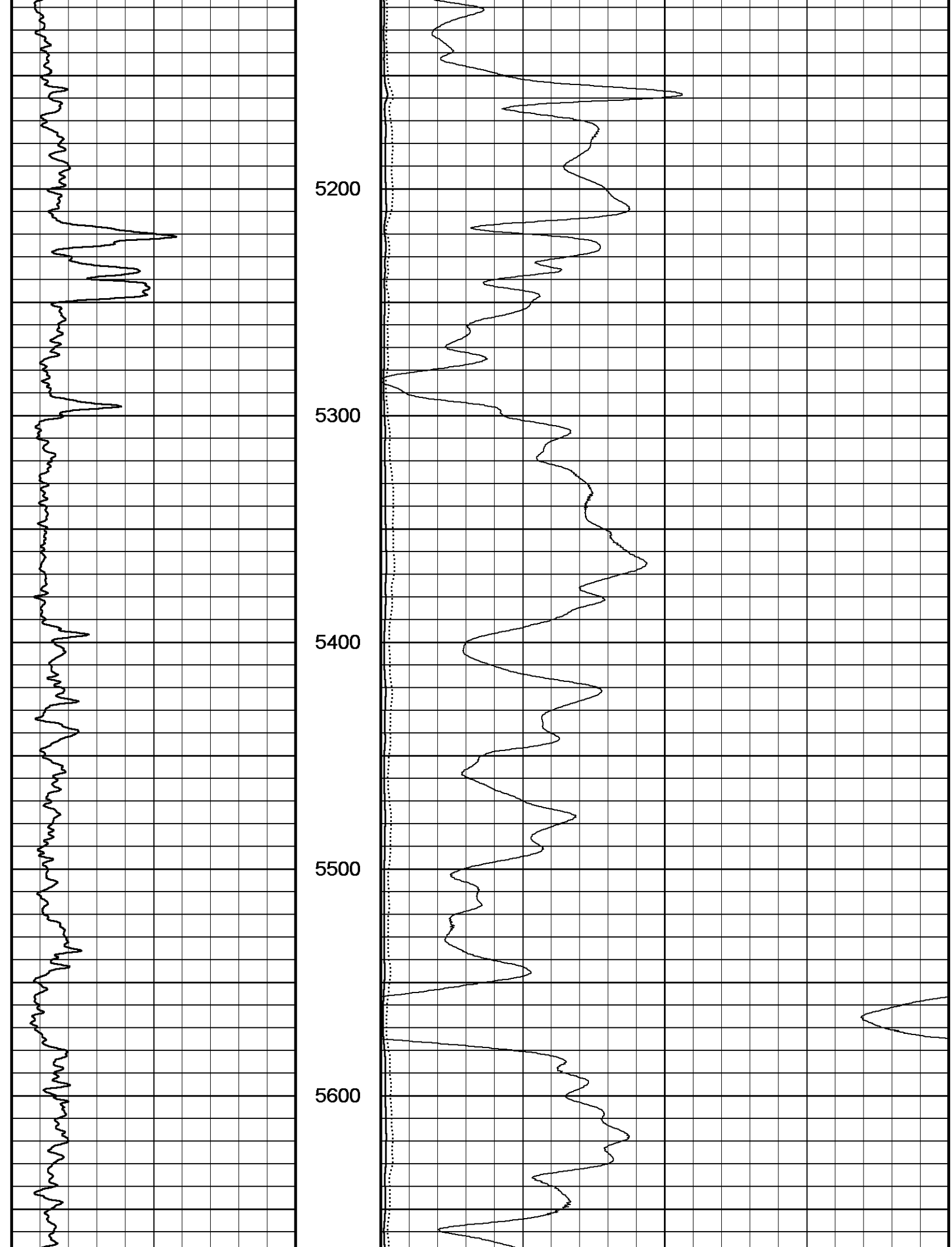
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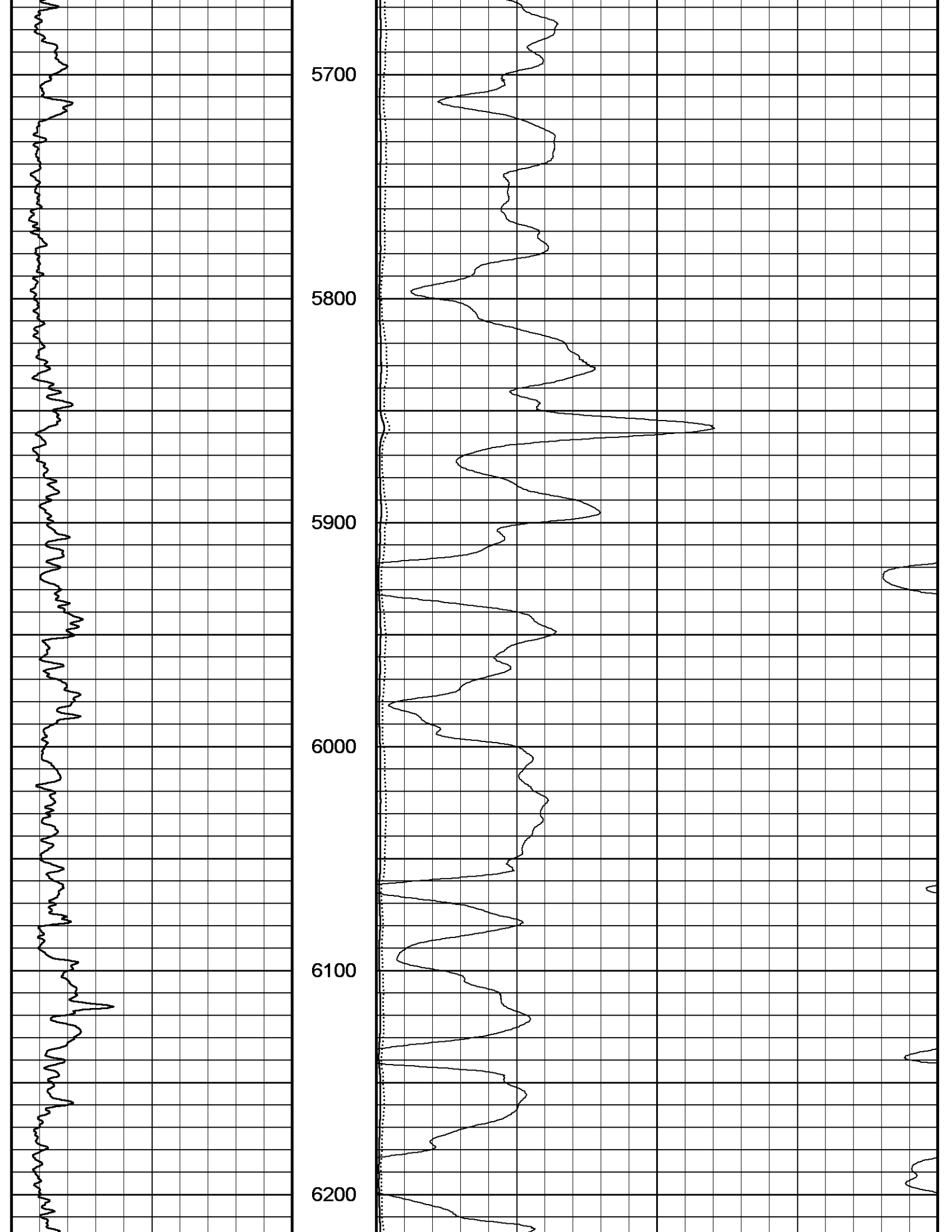
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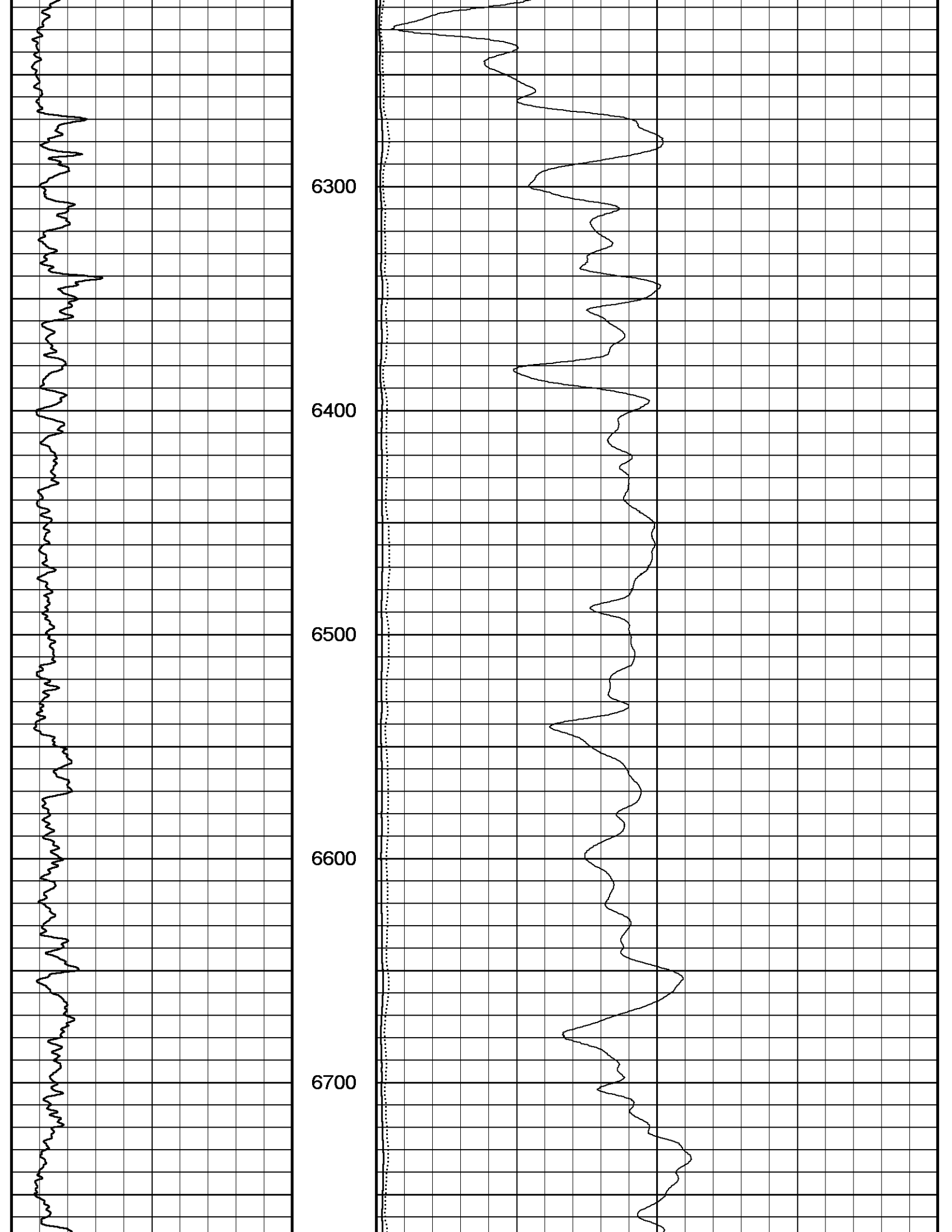
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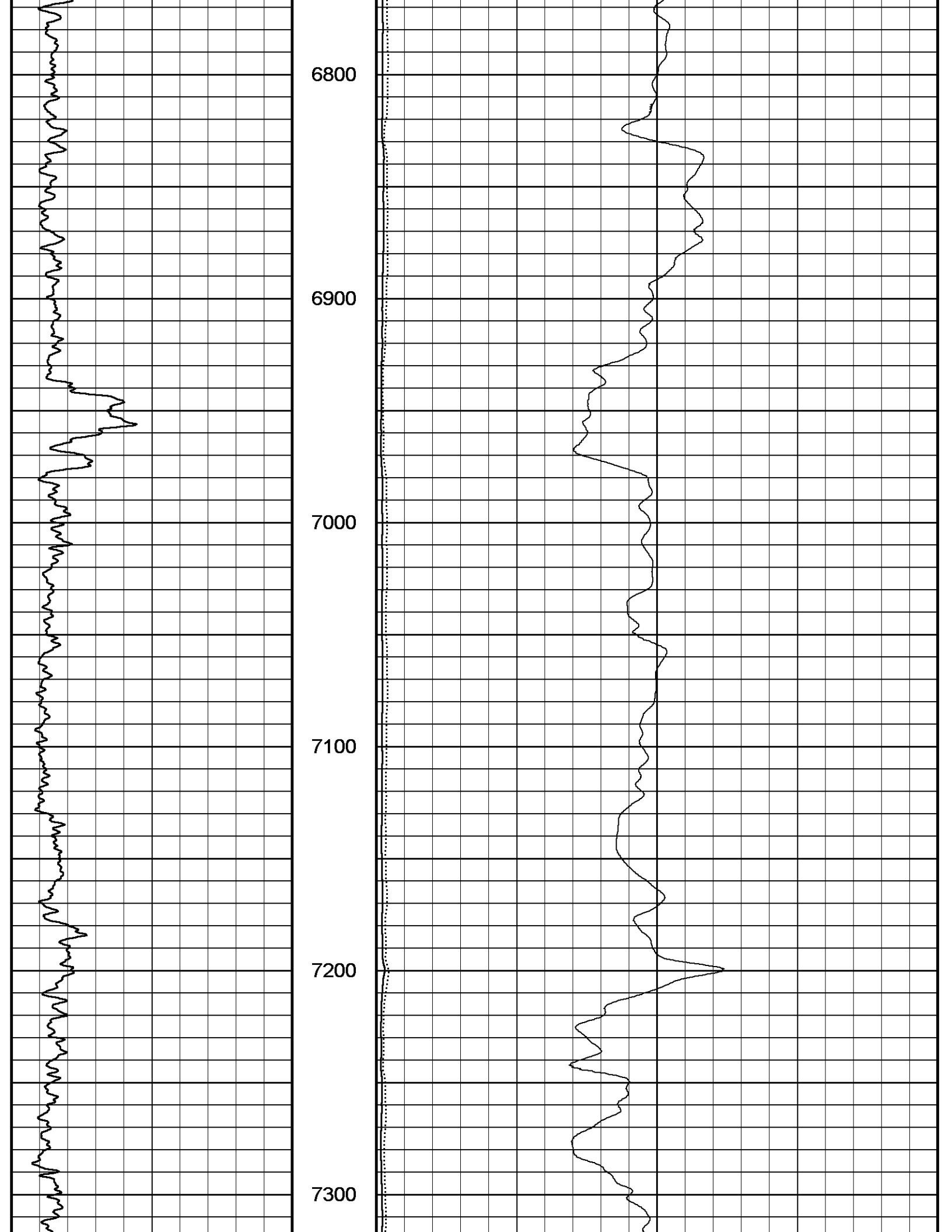
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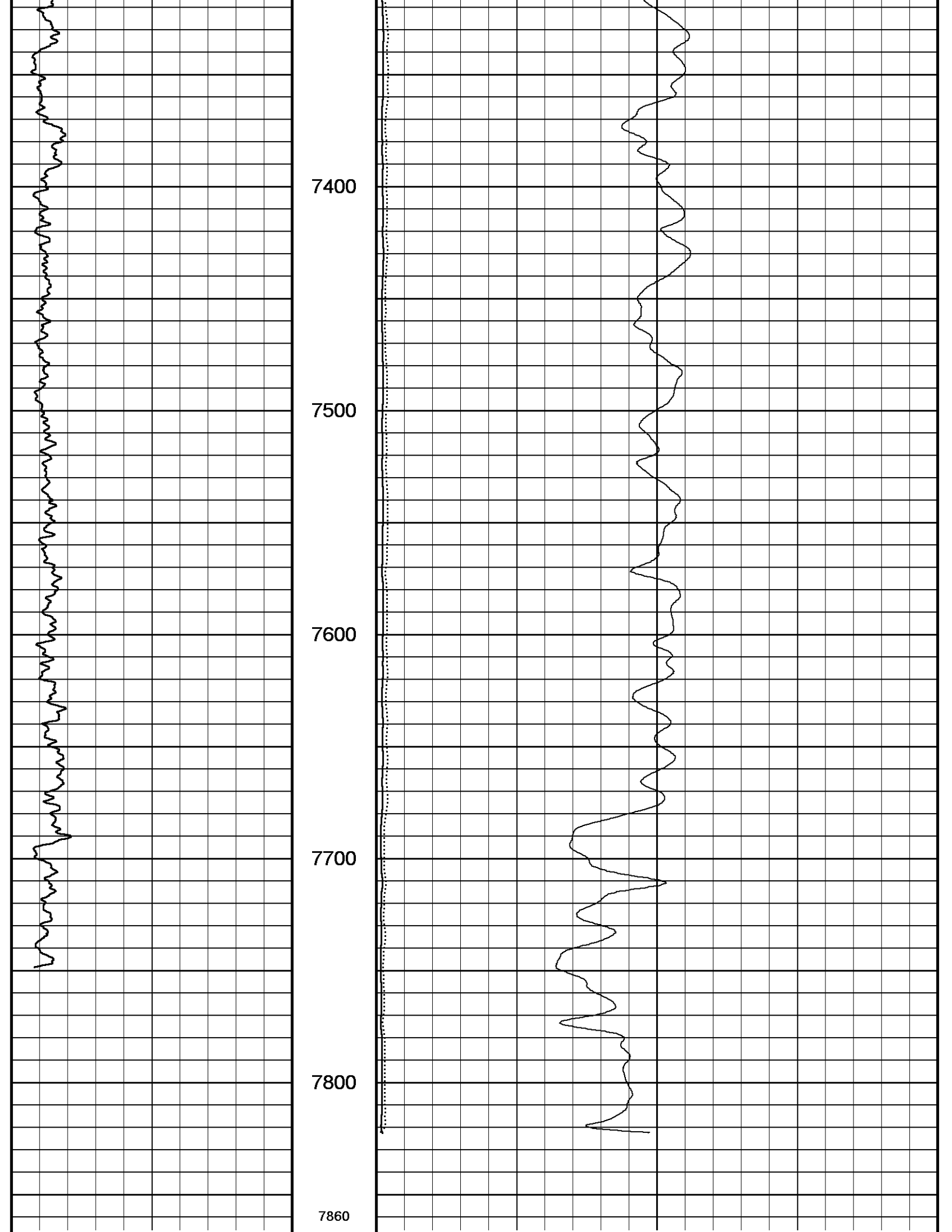
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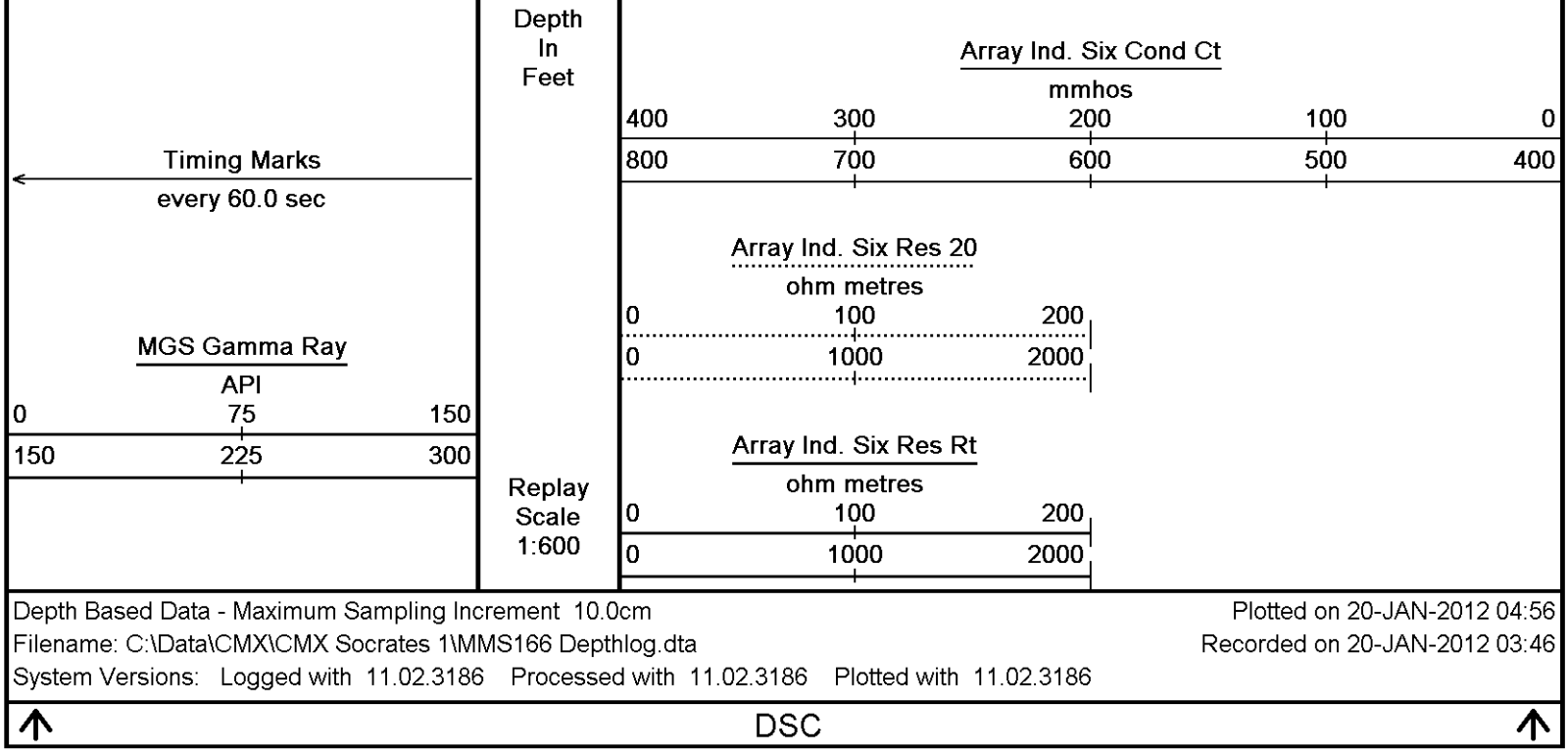
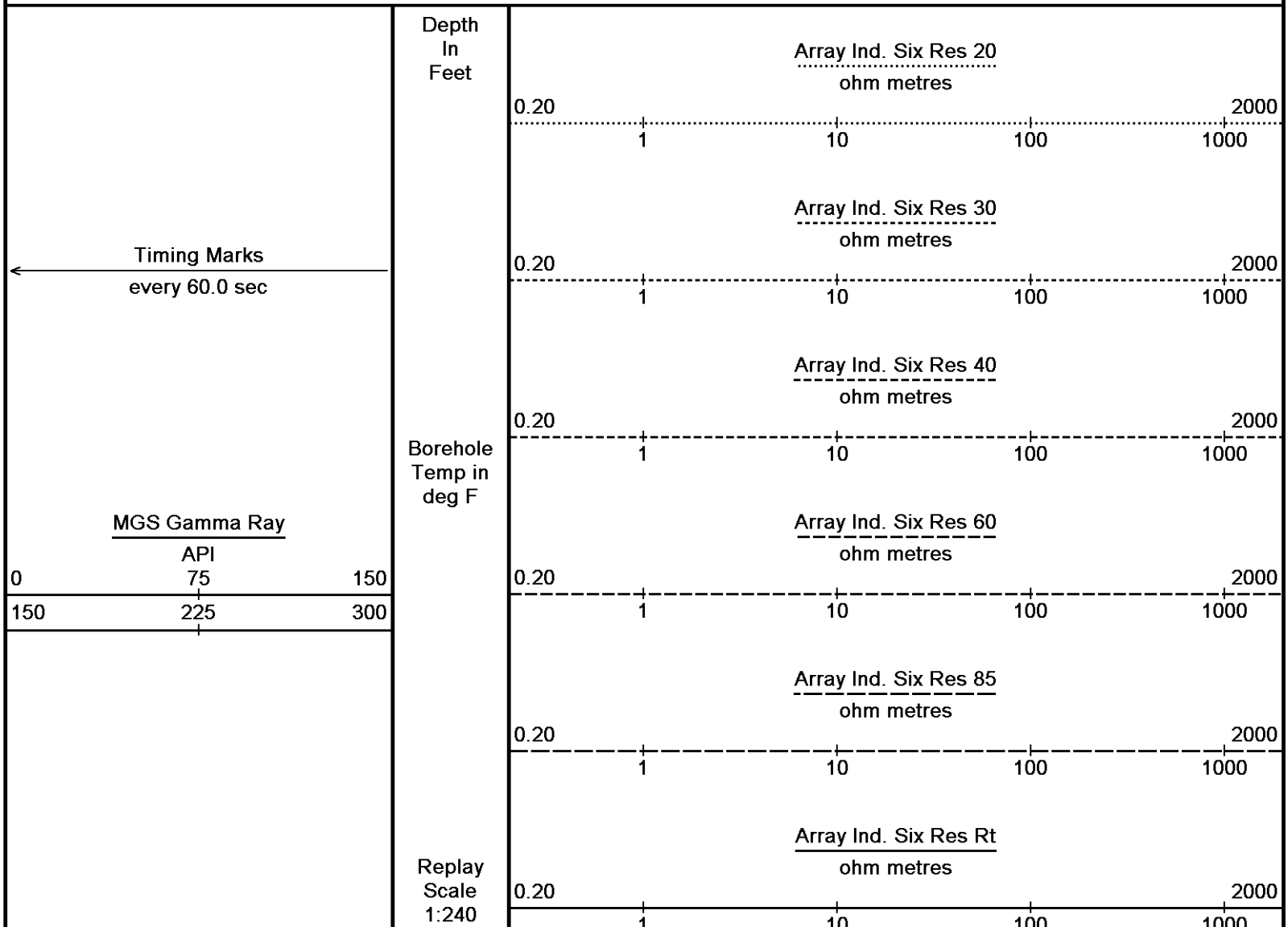


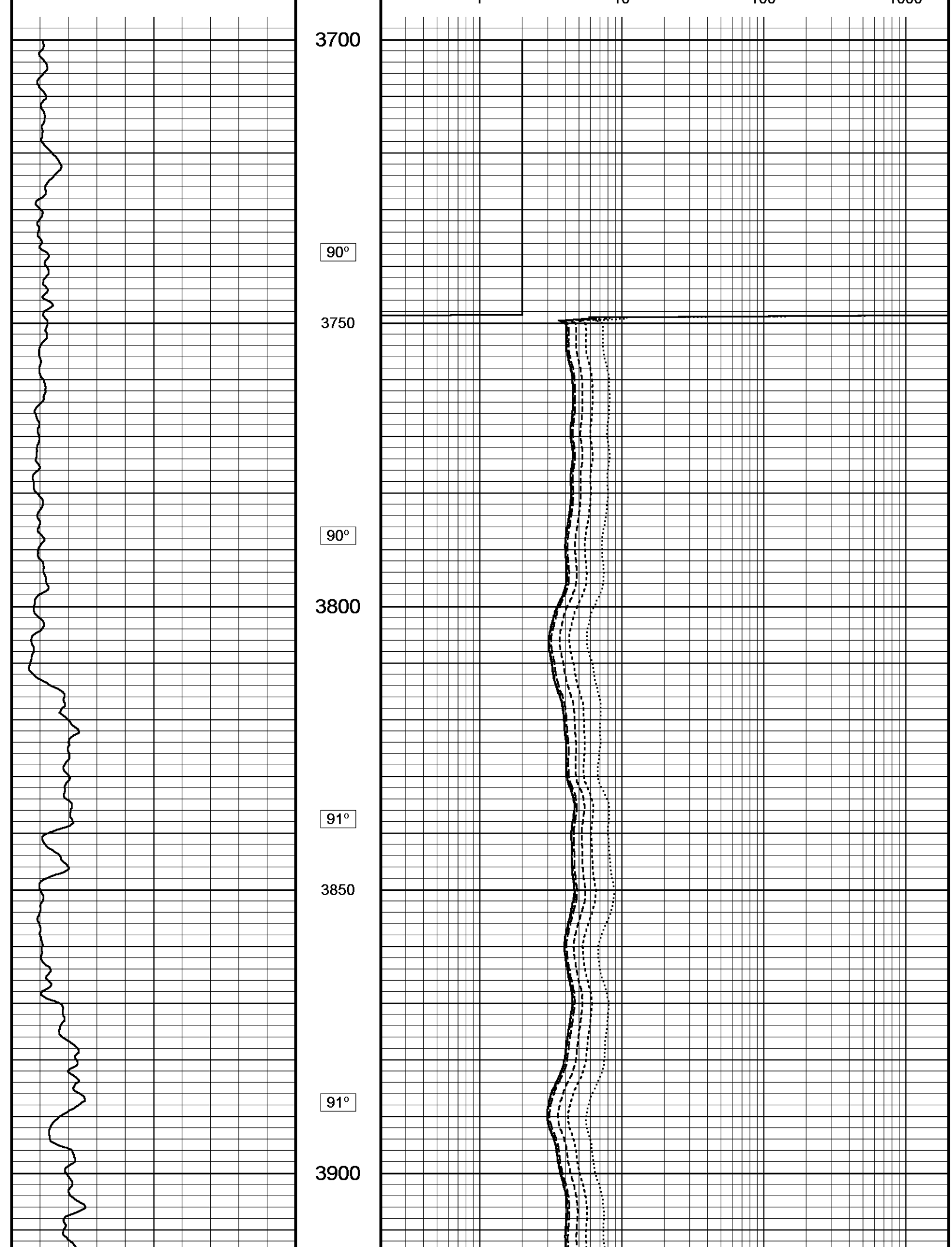
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 20-JAN-2012 04:56
Filename: C:\Data\CMX\CMX Socrates 1\MMS166 Depthlog.dta — Recorded on 20-JAN-2012 03:46
System Versions: Logged with 11.02.3186 Processed with 11.02.3186 Plotted with 11.02.3186

DSC

DSC

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 20-JAN-2012 04:56
Filename: C:\Data\CMX\CMX Socrates 1\MMS166 Depthlog.dta — Recorded on 20-JAN-2012 03:46
System Versions: Logged with 11.02.3186 Processed with 11.02.3186 Plotted with 11.02.3186

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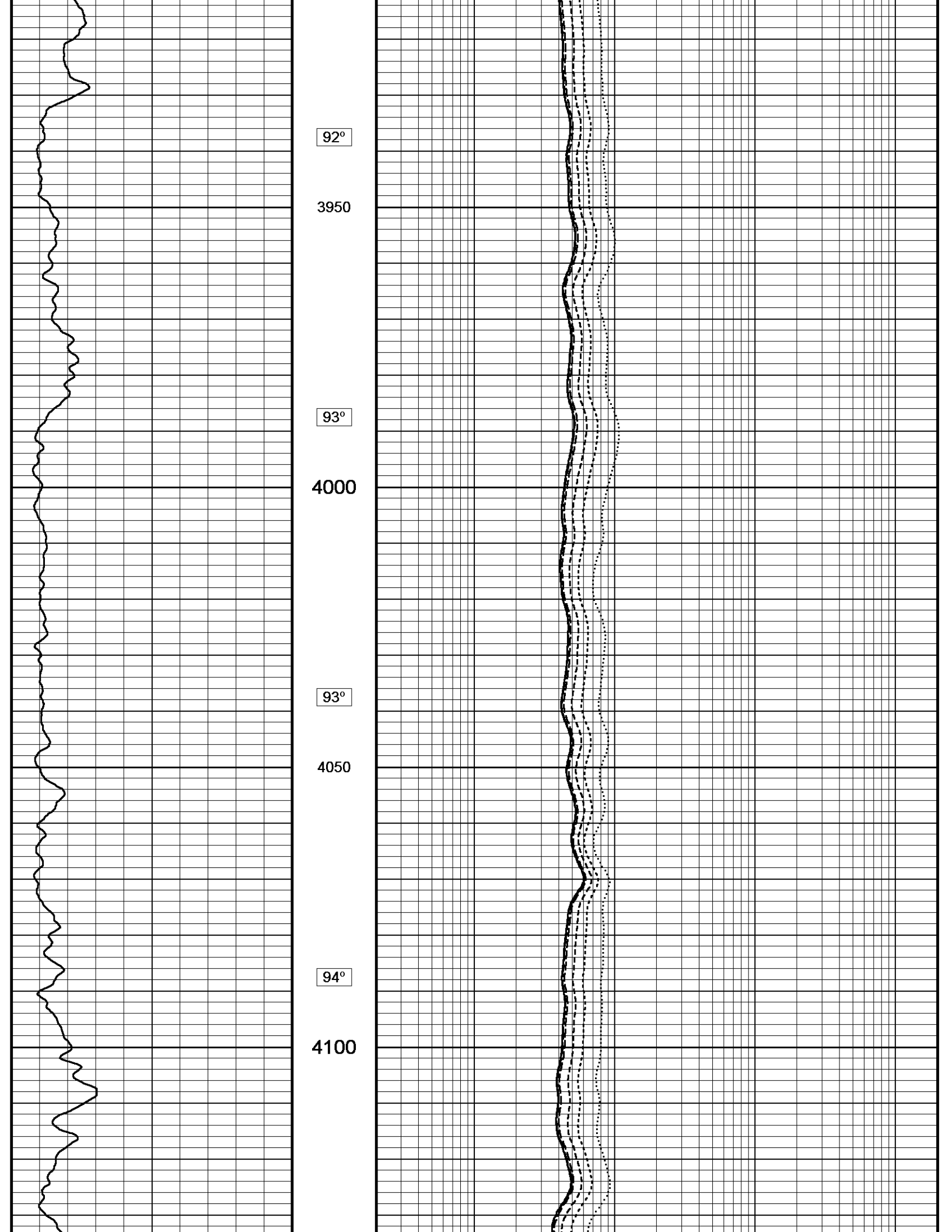
90°
3800
91°
3850
91°
3900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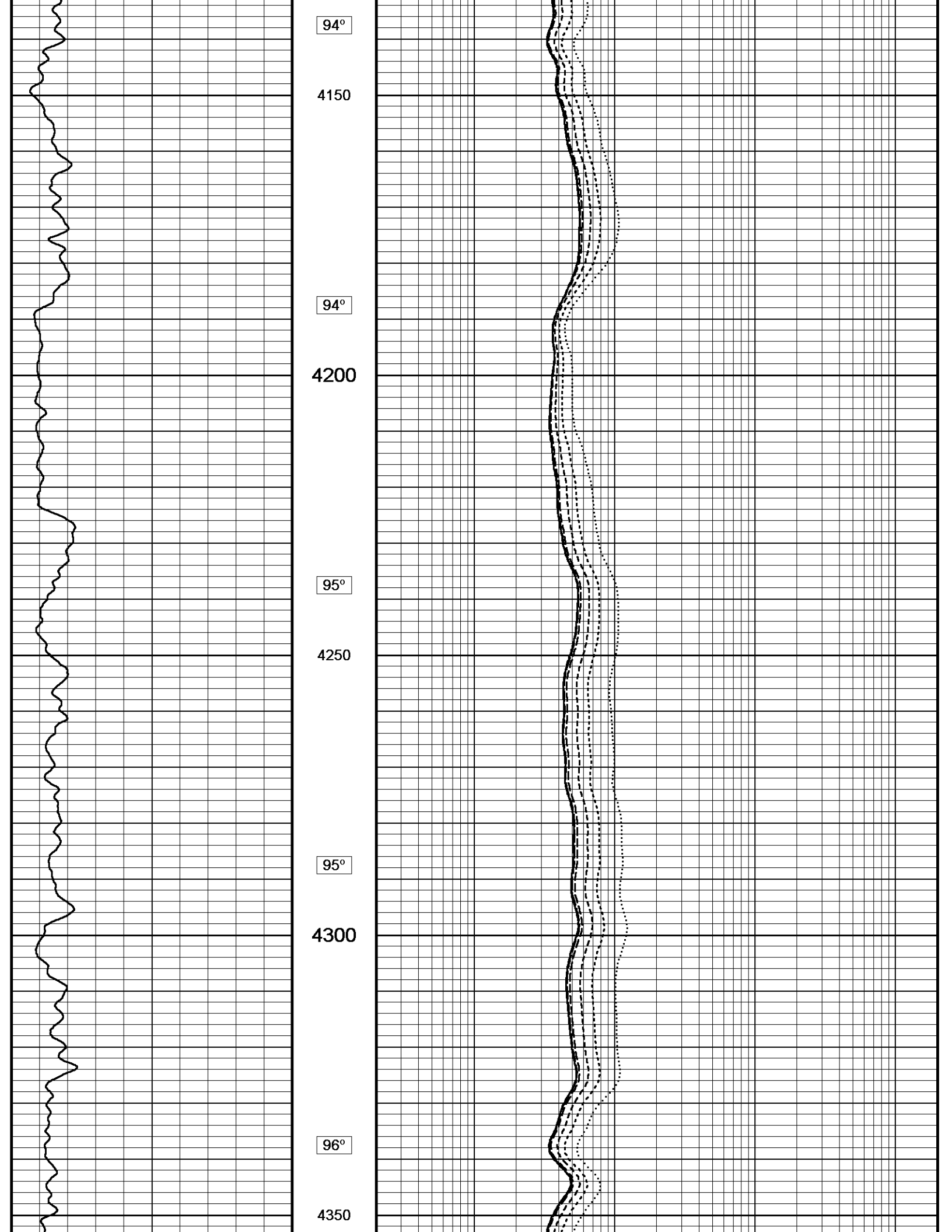
93°
4000
93°
4050
94°
4100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94°
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95°
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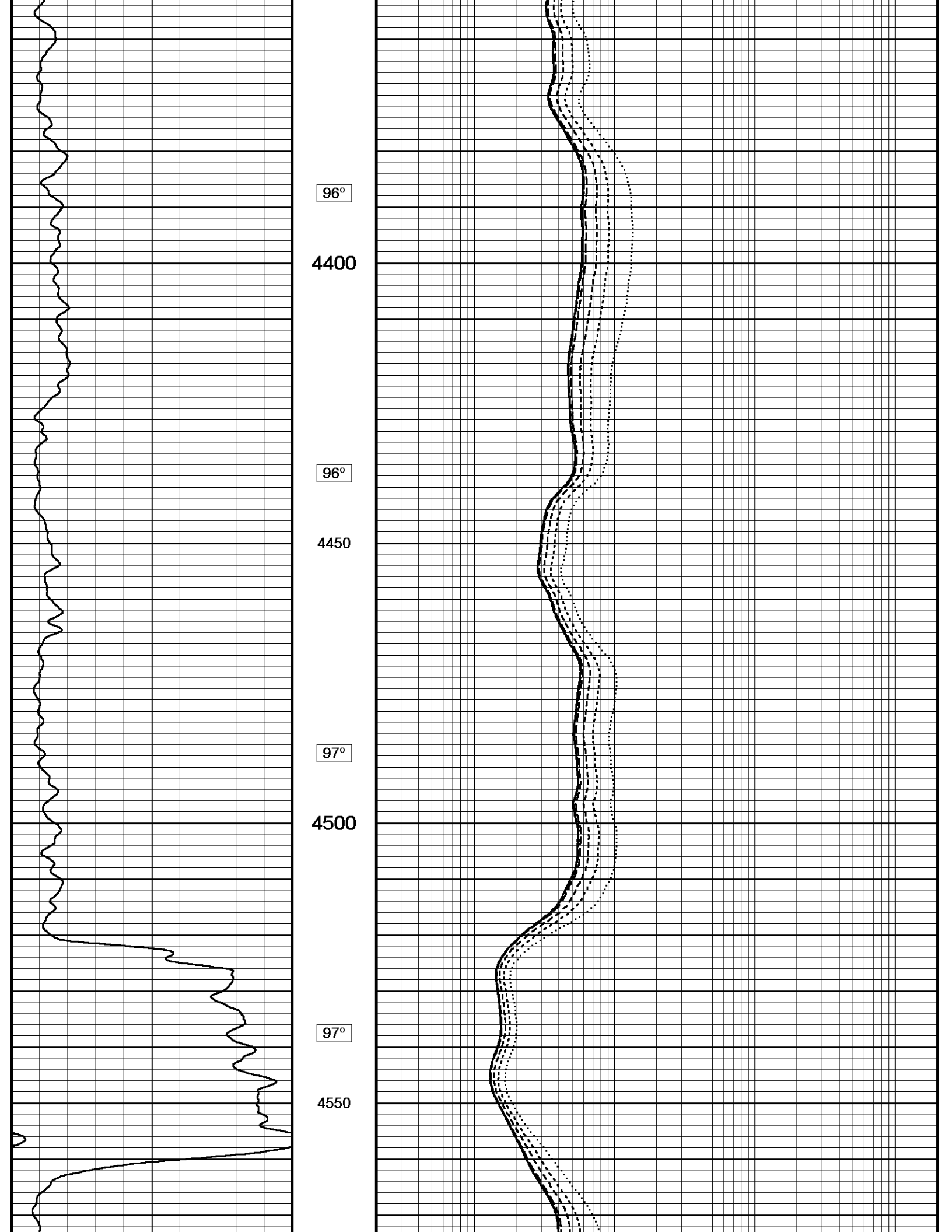
95°
4300
96°
4350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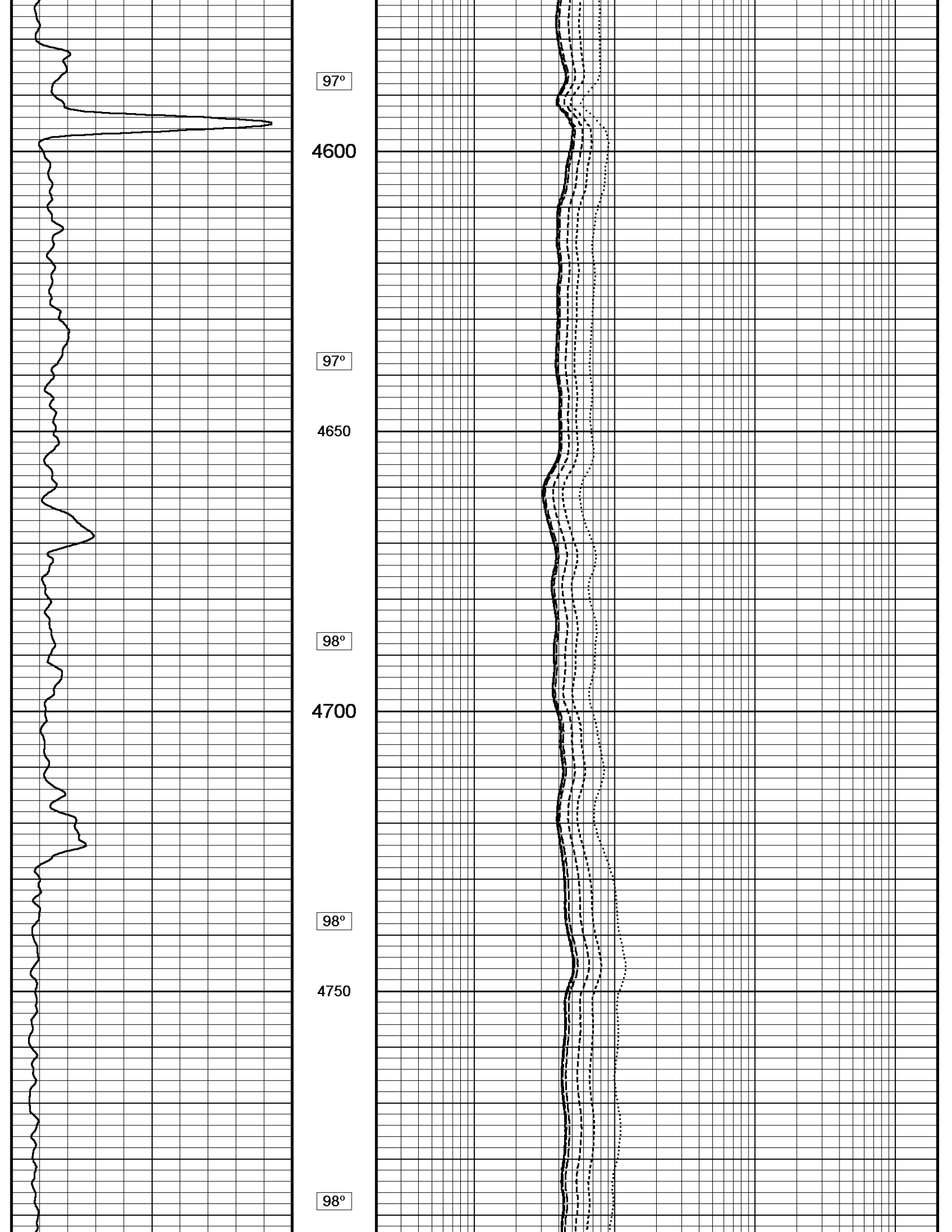
96°
4450
97°
4500
97°
4550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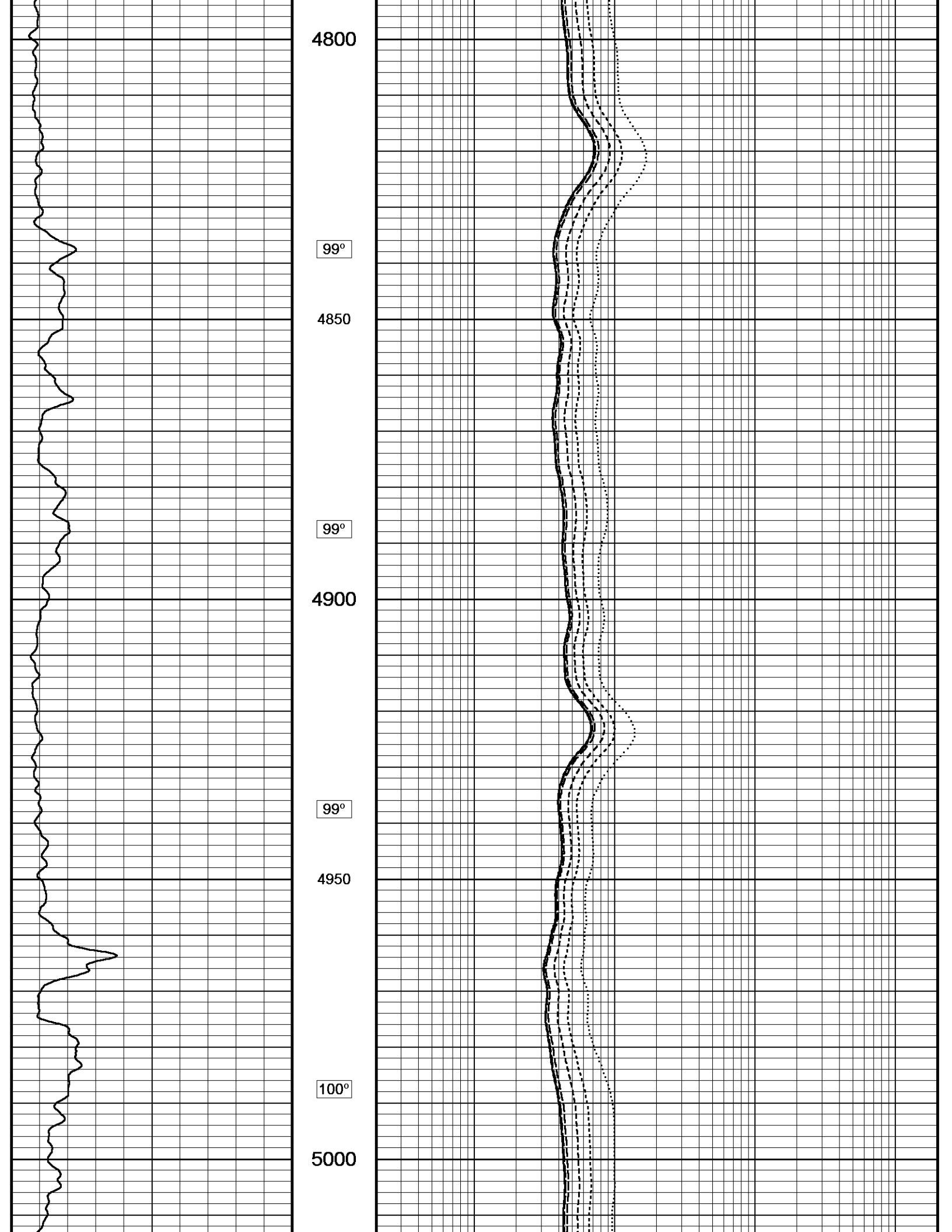
98°
4750
98°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99°
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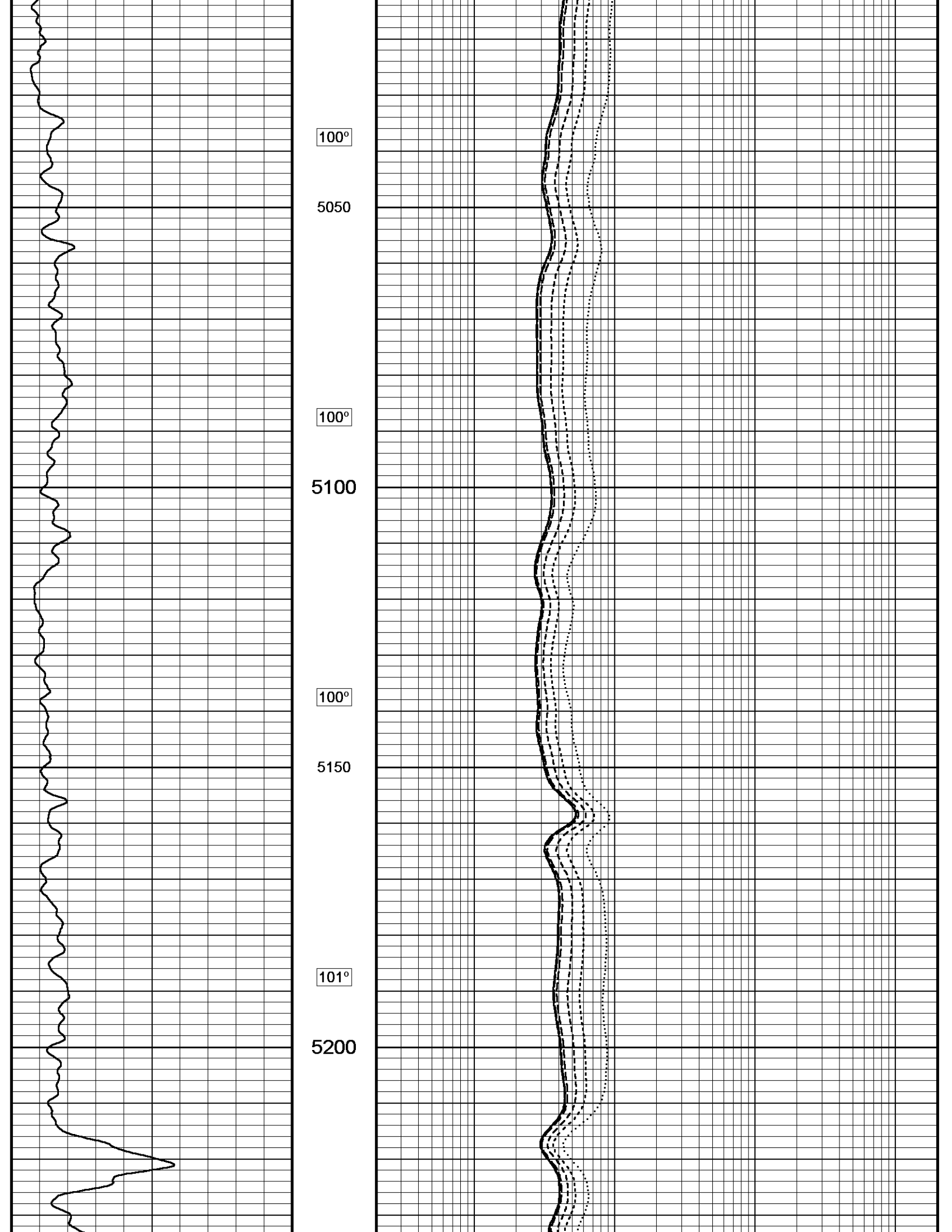
99°
4900
99°
4950
100°
5000


100°
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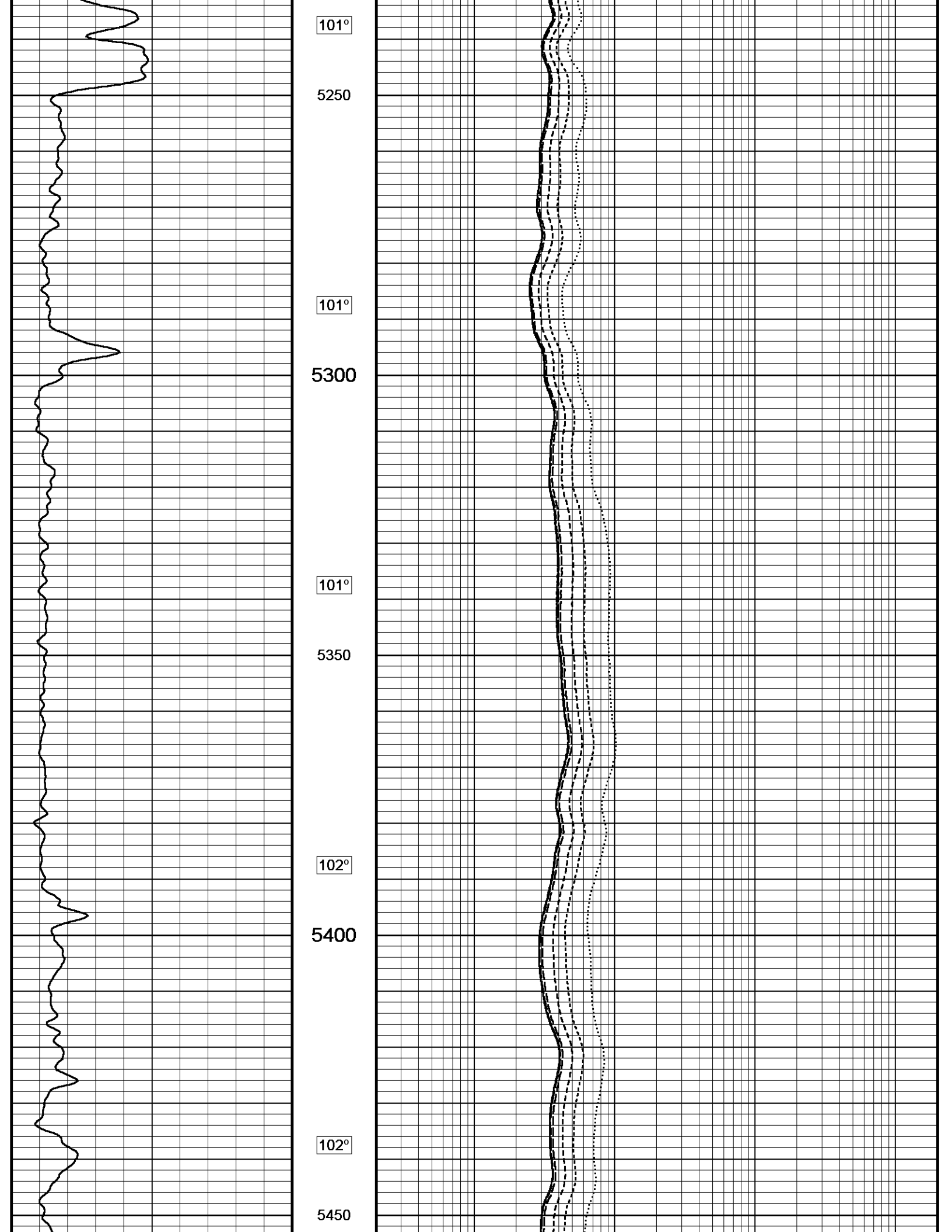
100°
5100
100°
5150
101°
5200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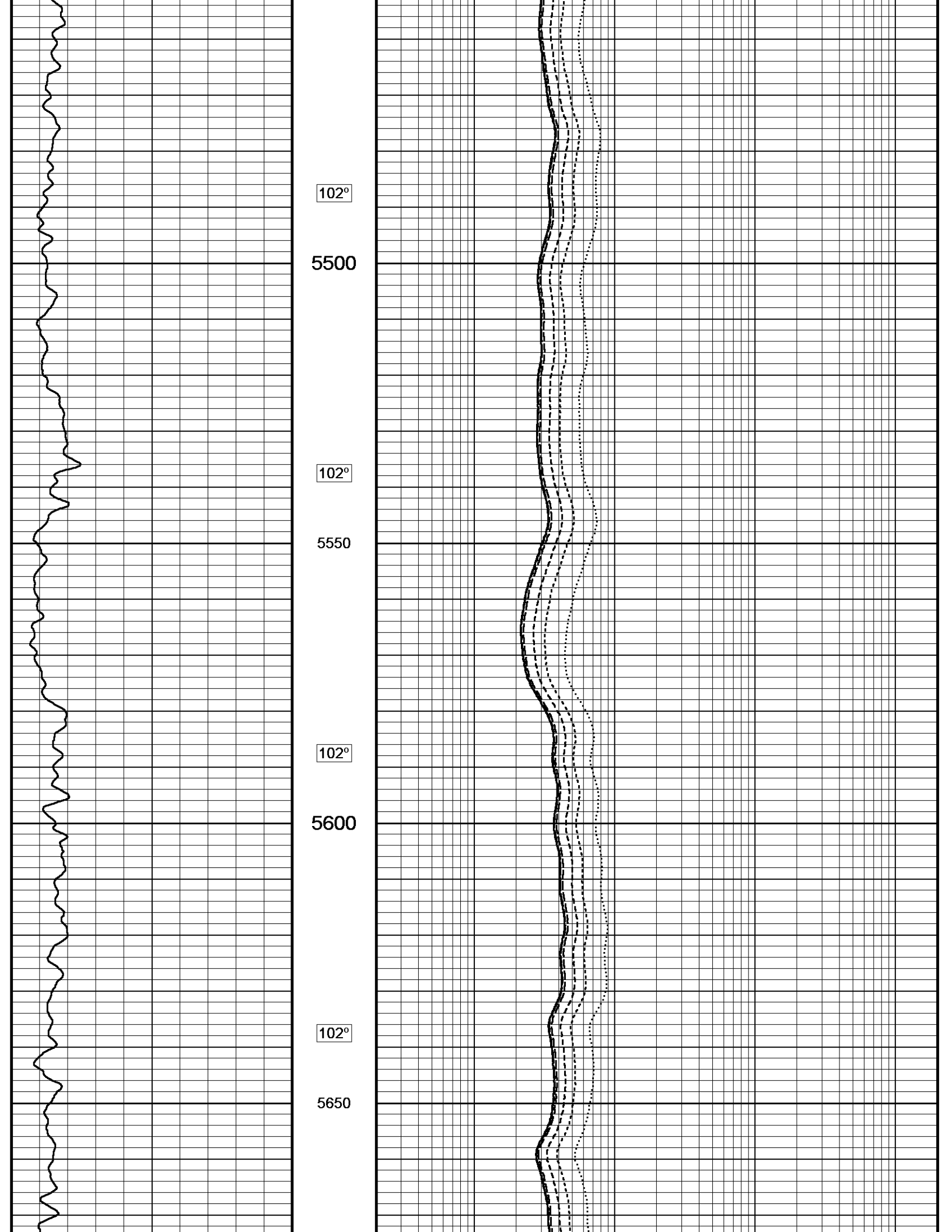
101°
5350
102°
5400
102°
5450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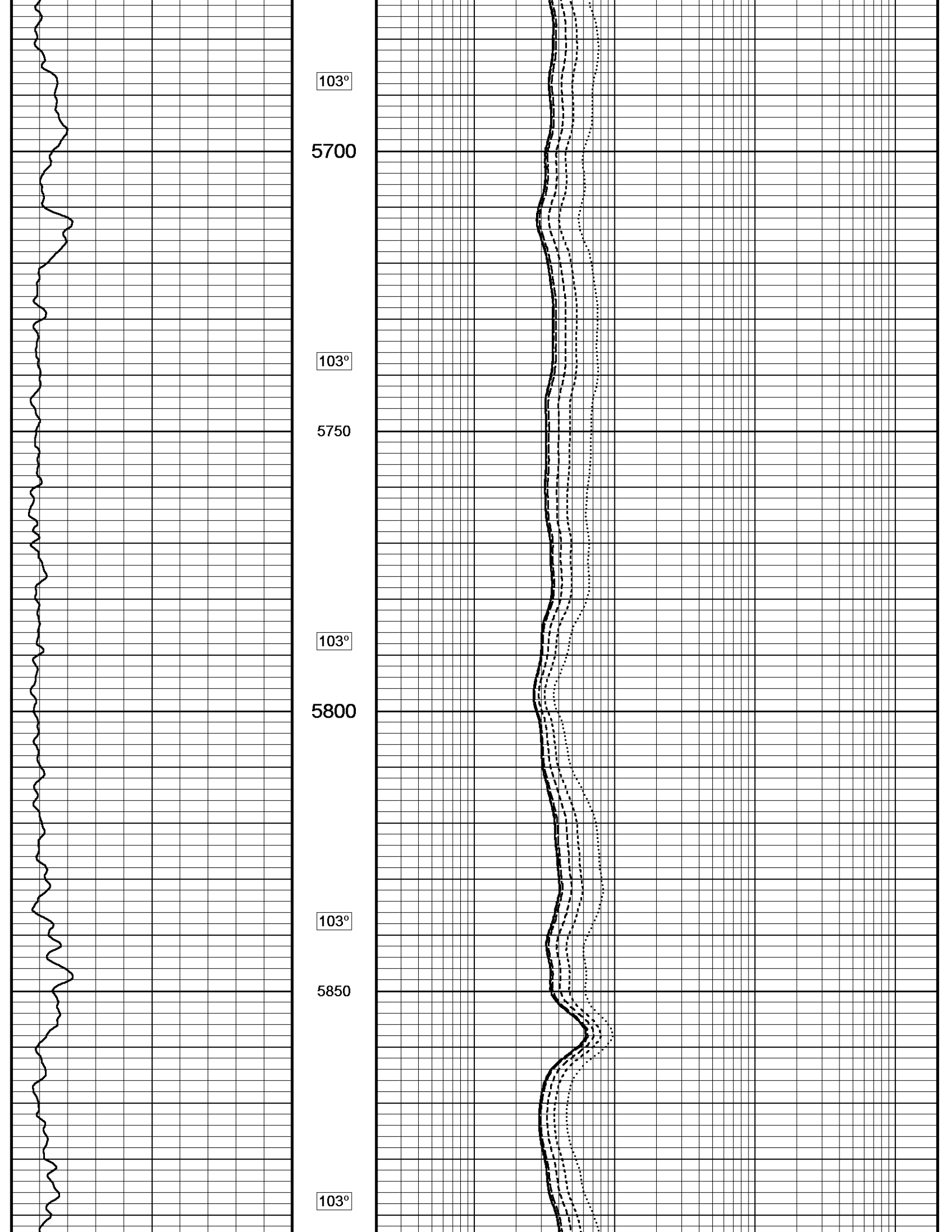
102°
5600
102°
5650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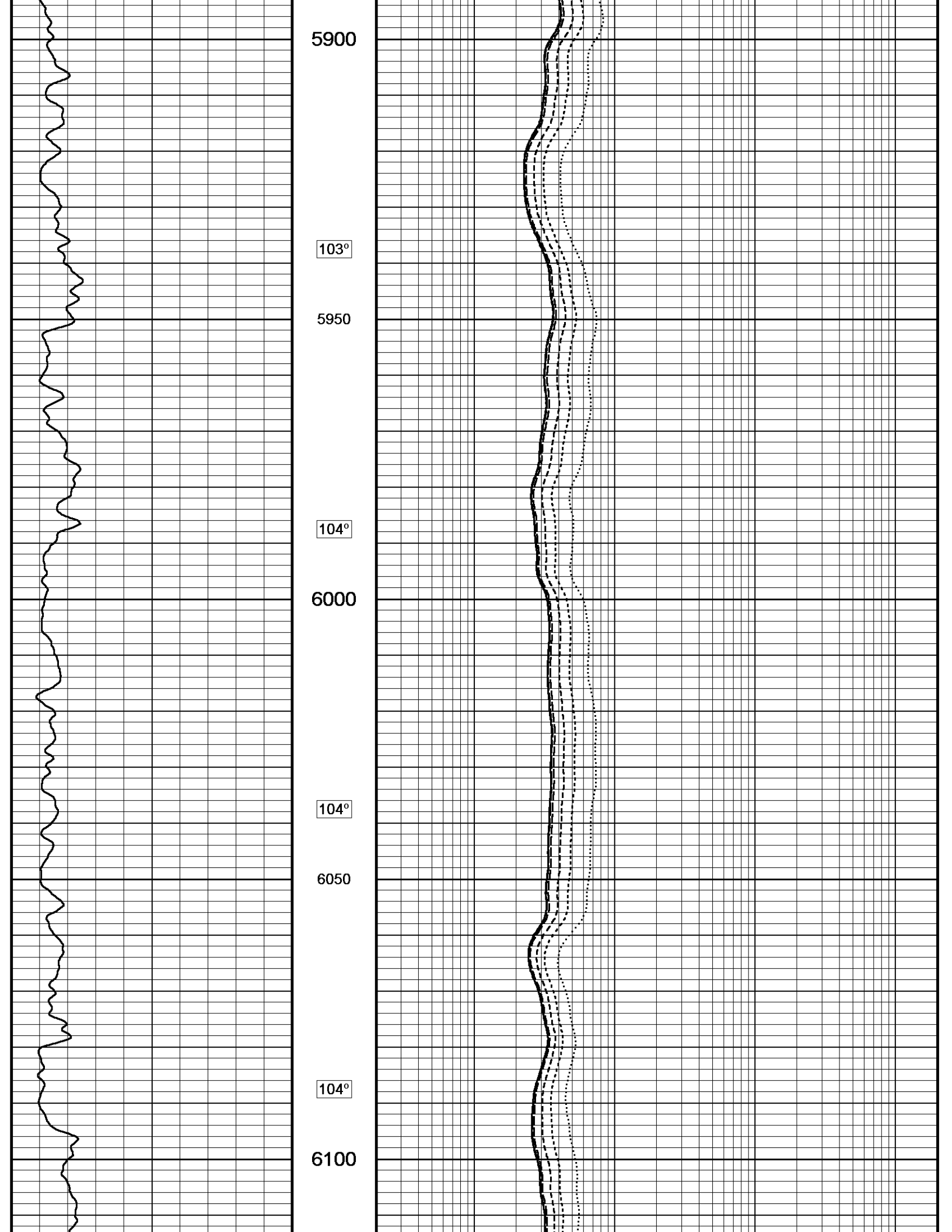
103°
5750
103°
5800
103°
5850
103°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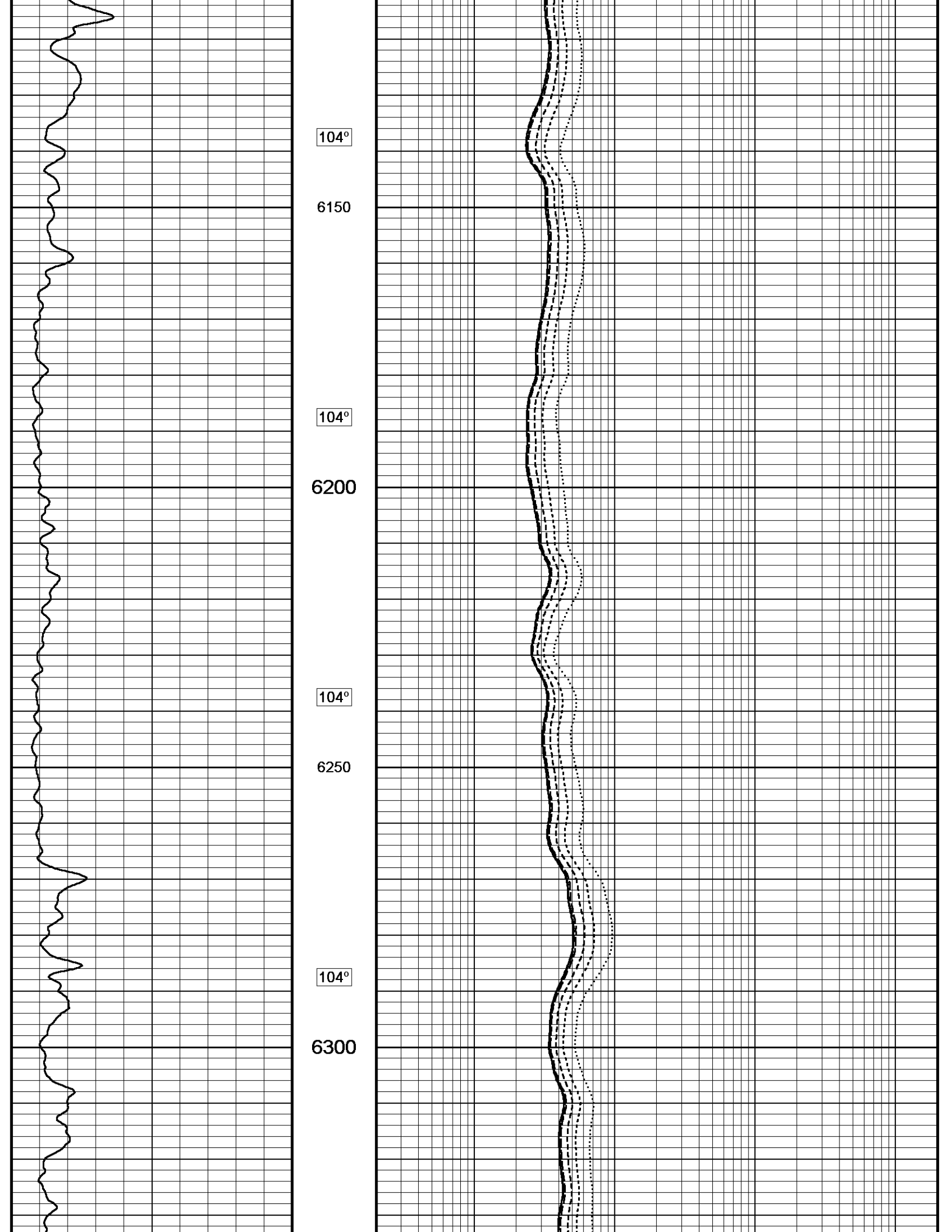
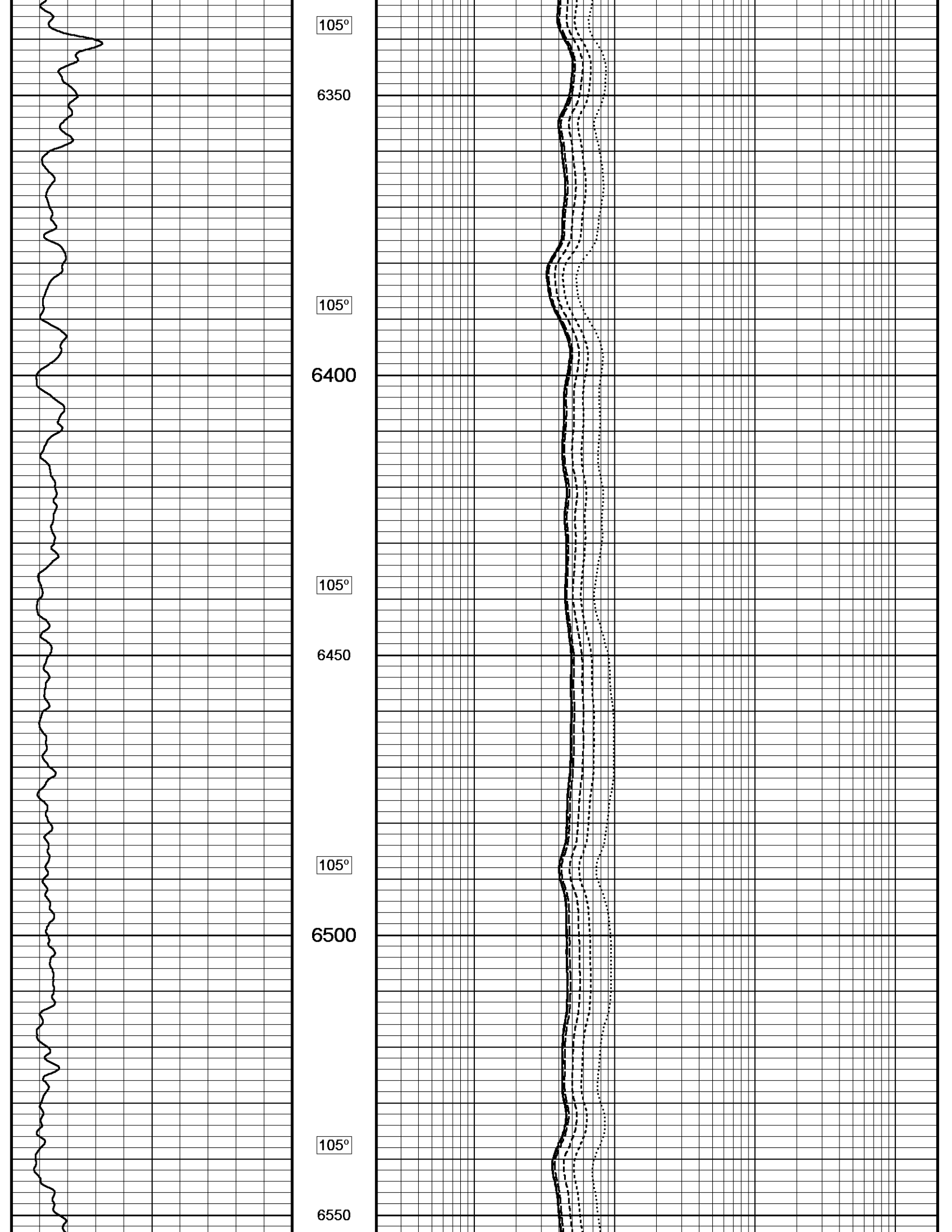
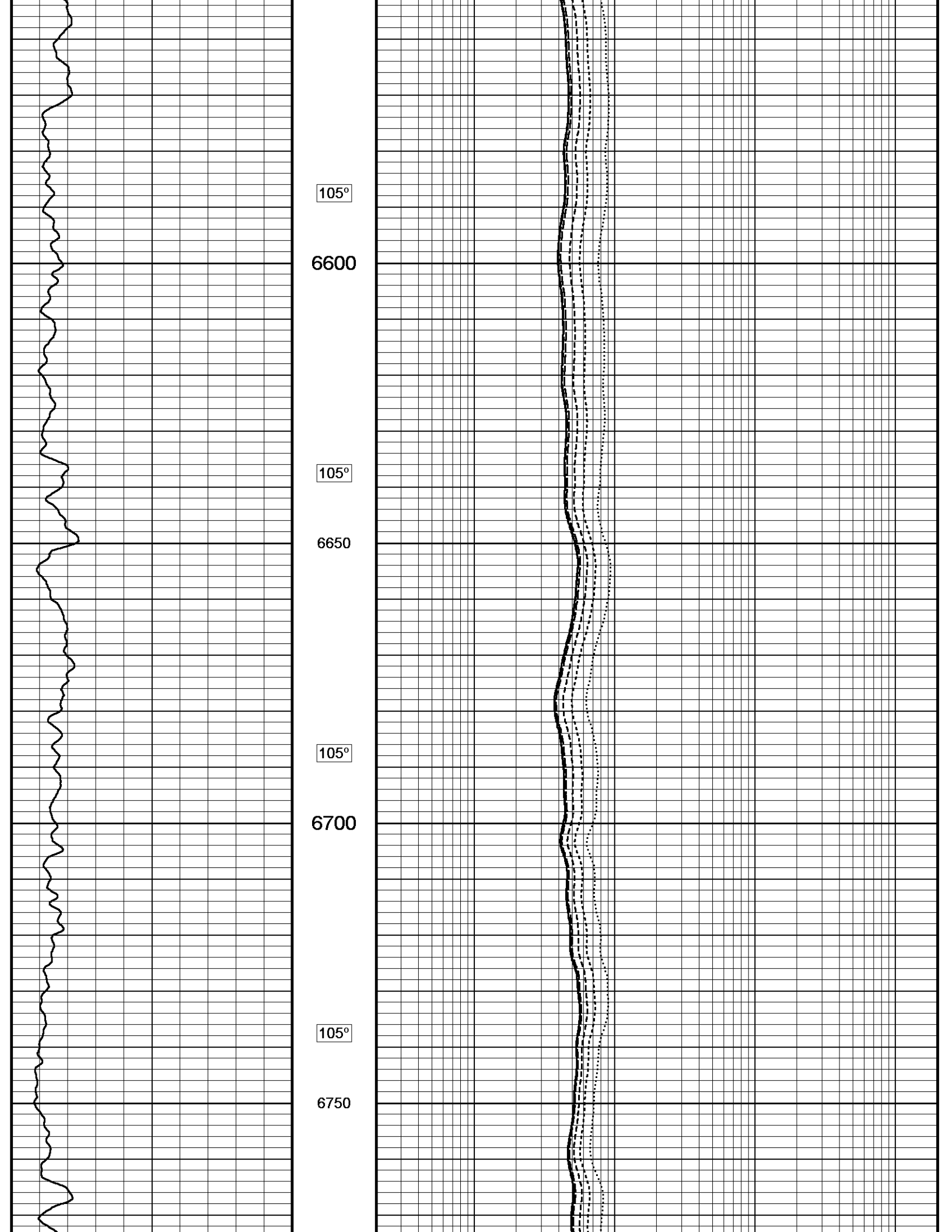
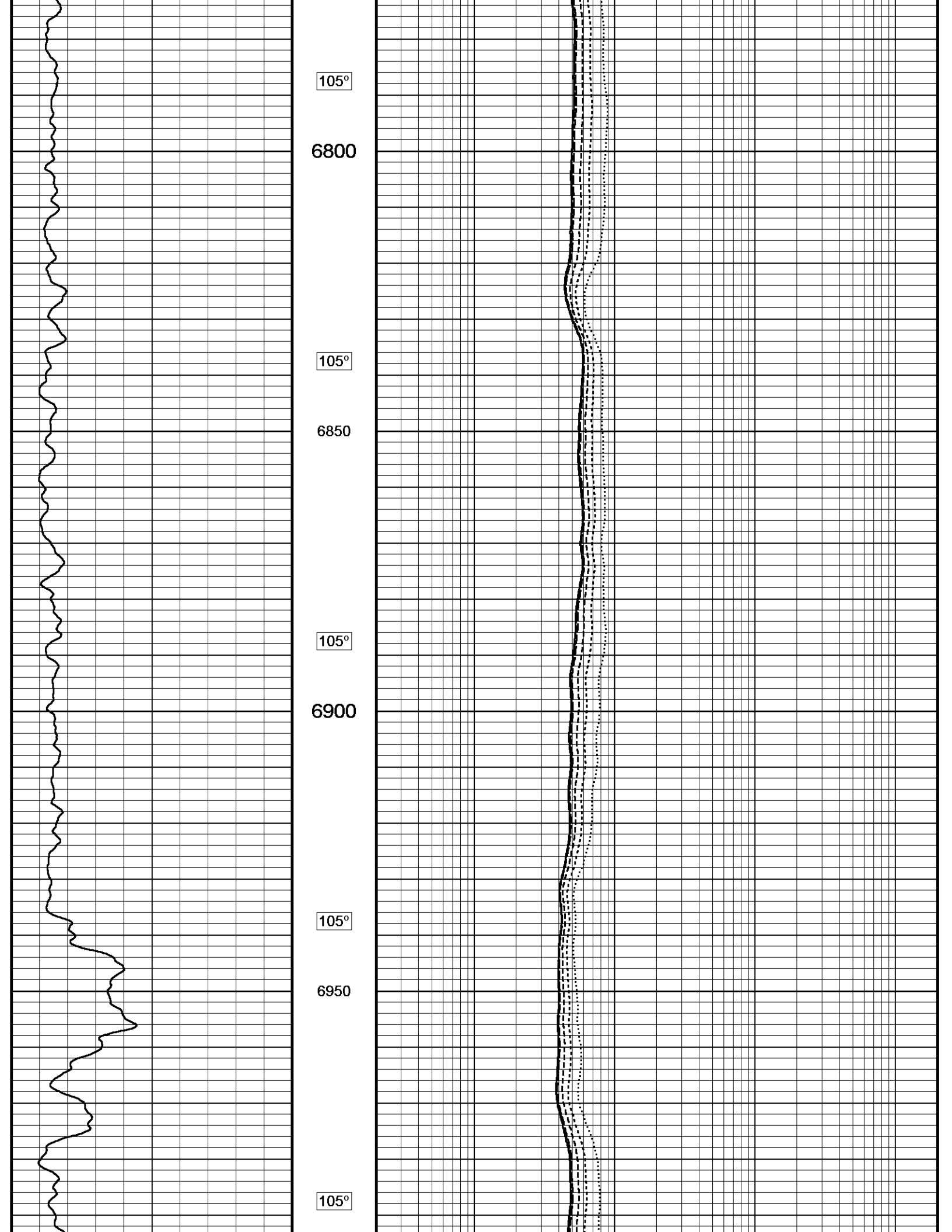
103°
5950
104°
6000
104°
6050
104°
6100


104°
6150
104°
6200
104°
6250
104°
6300


105°
6350
105°
6400
105°
6450
105°
6500
105°
6550


105°
6600
105°
6650
105°
6700
105°
6750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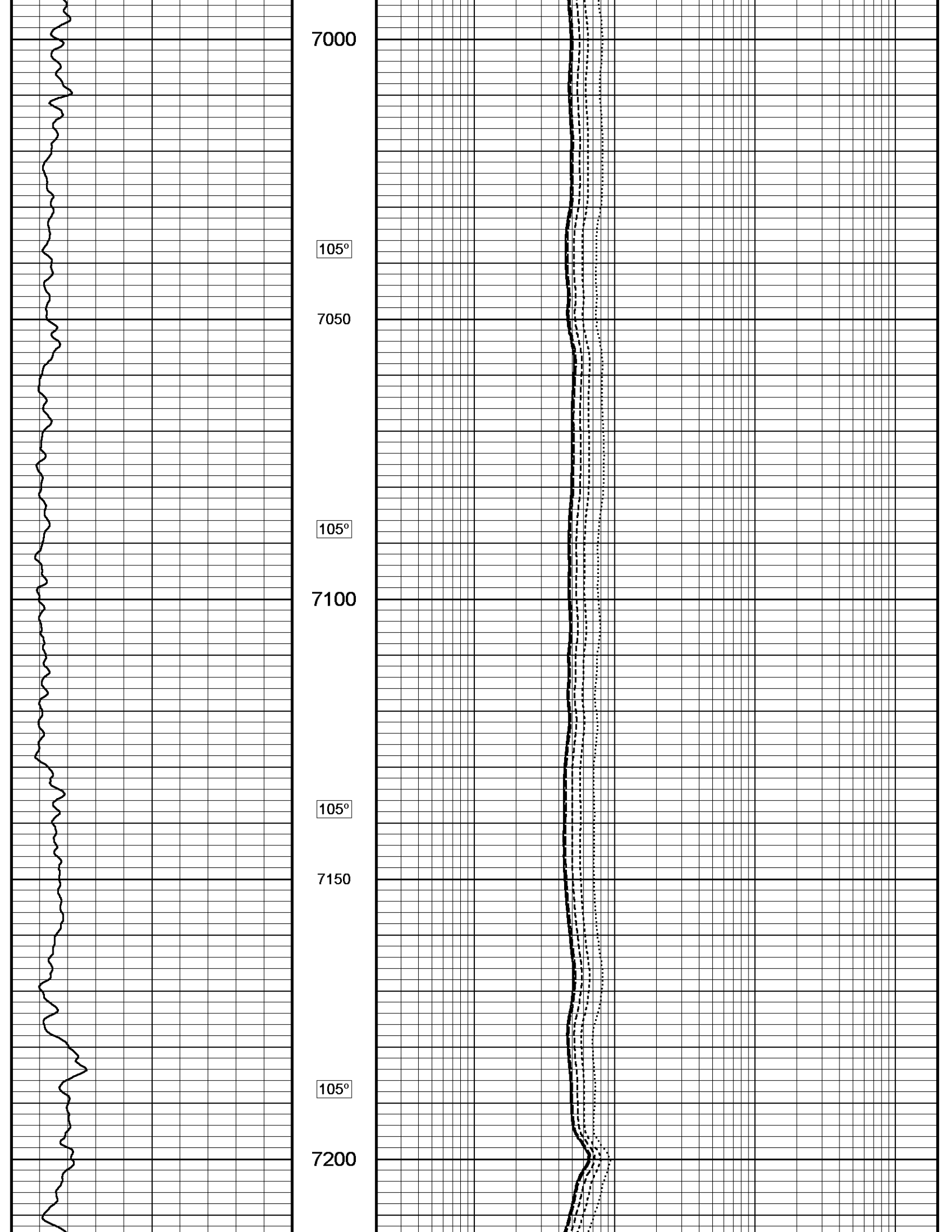
105°
6850
105°
6900
105°
6950
105°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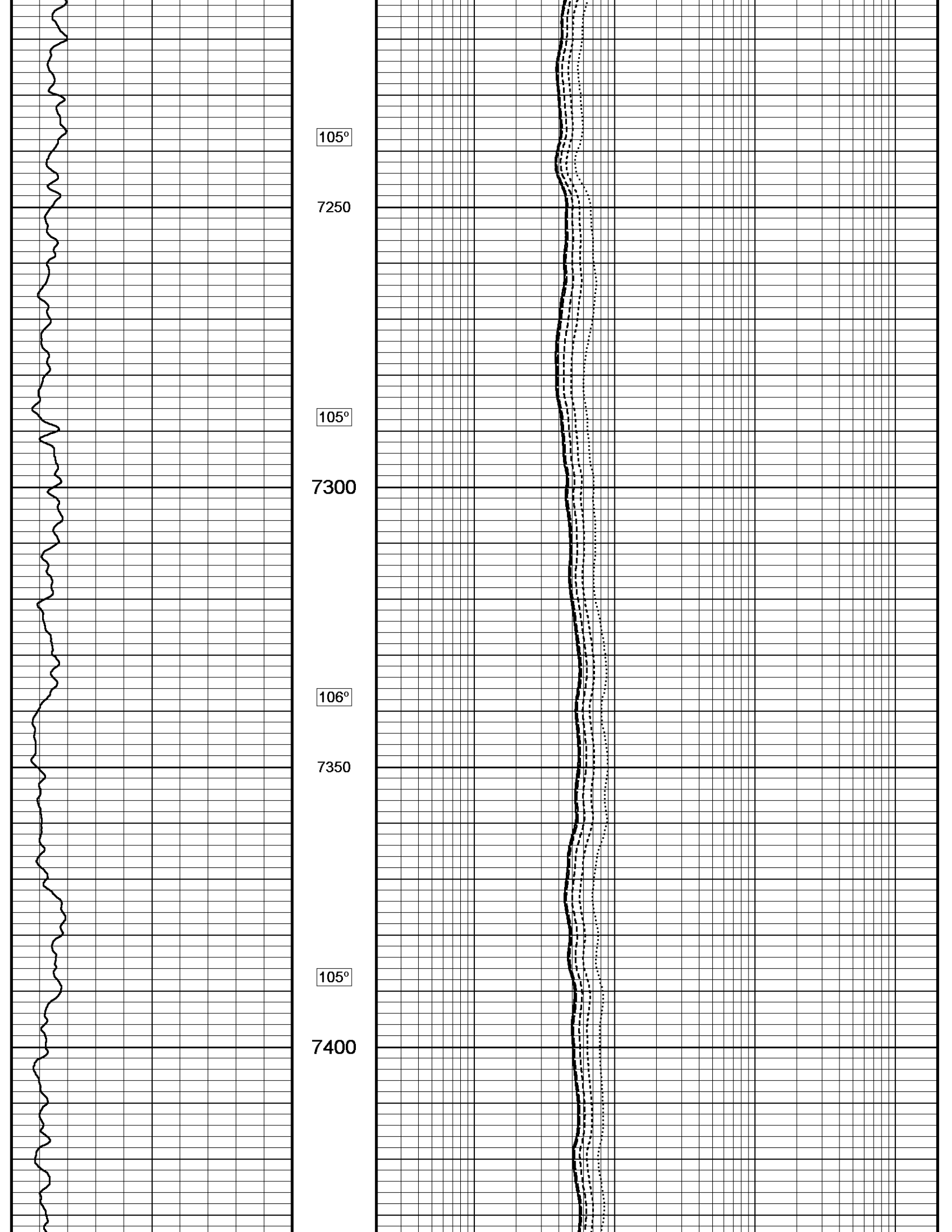
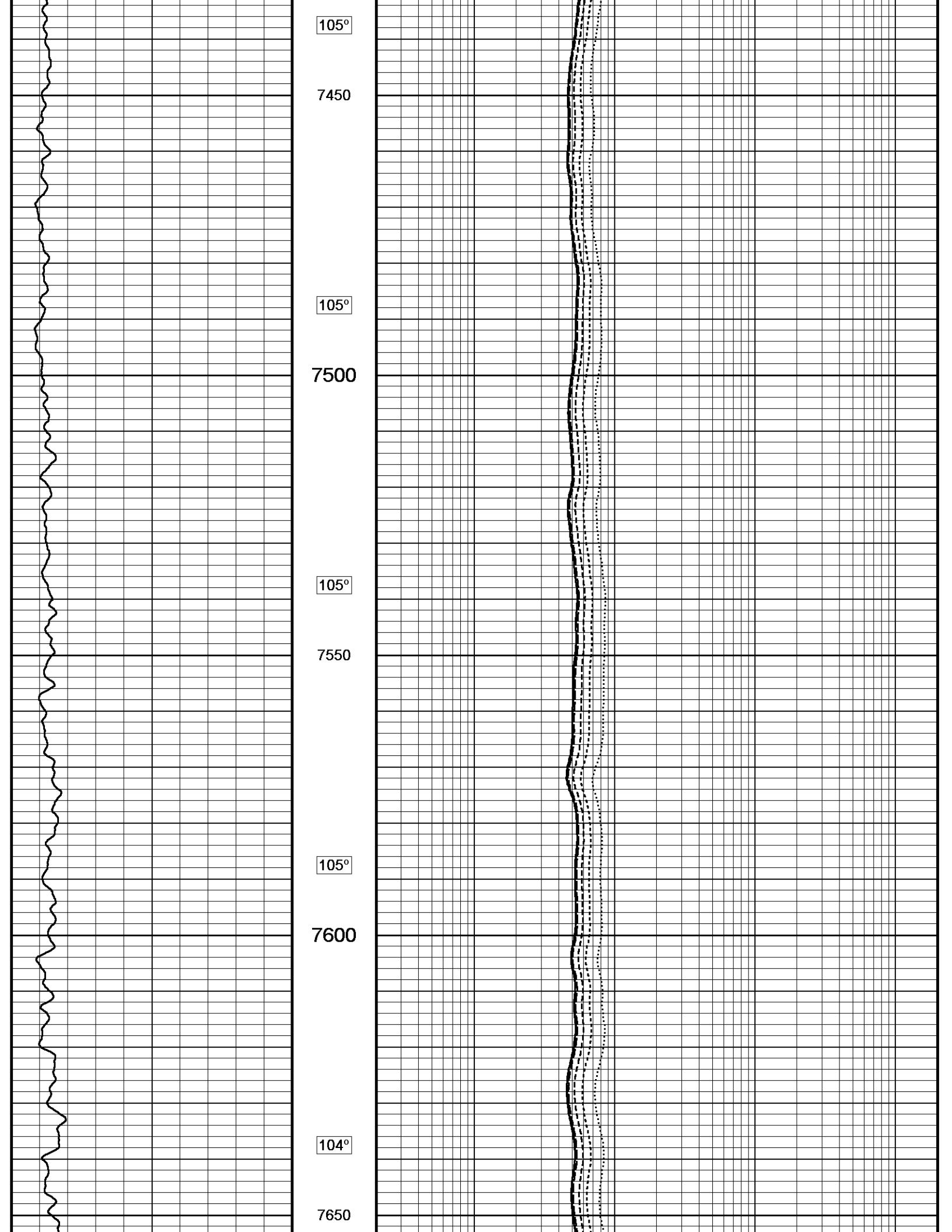
105°
7050
105°
7100
105°
7150
105°
7200


105°
7250
105°
7300
106°
7350
105°
7400


105°
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105°
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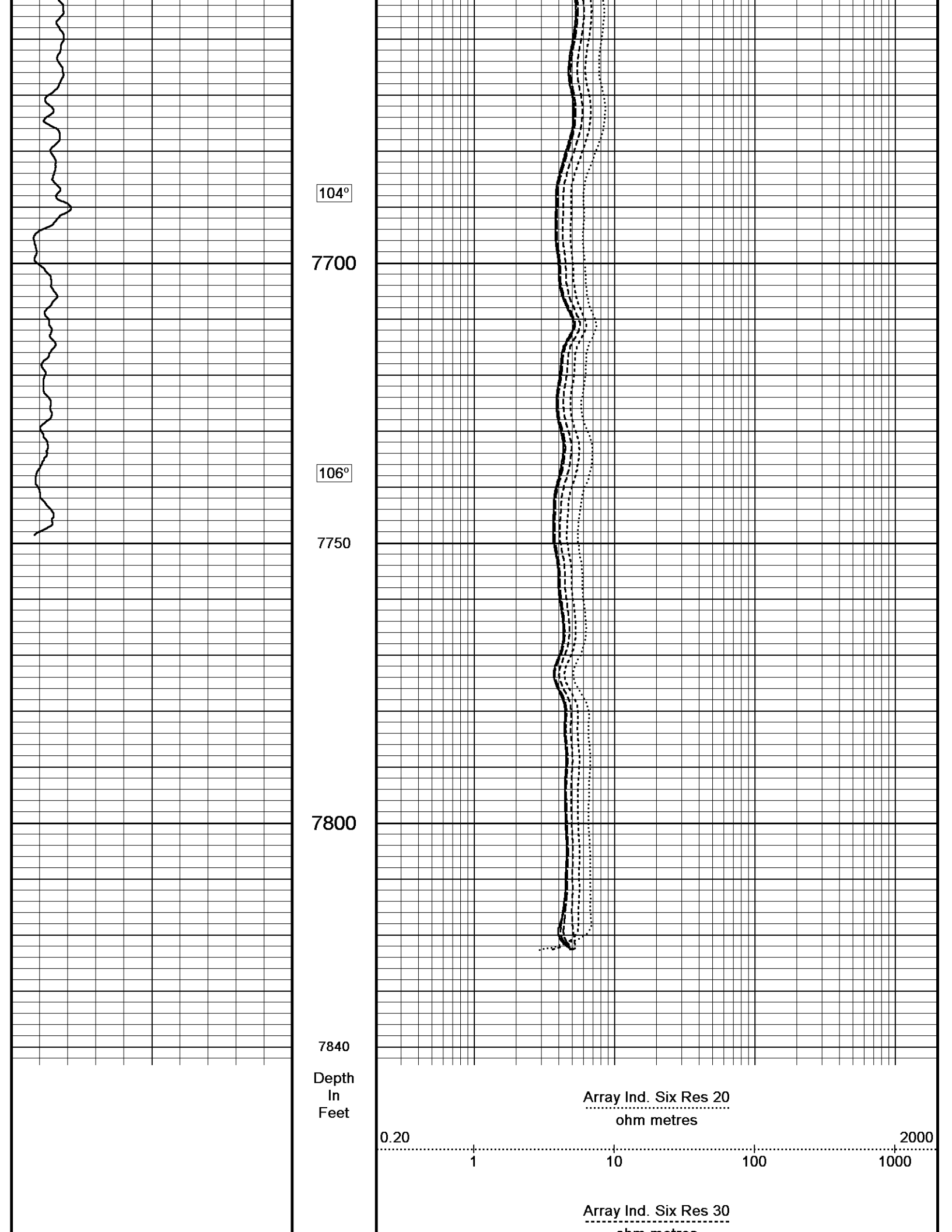
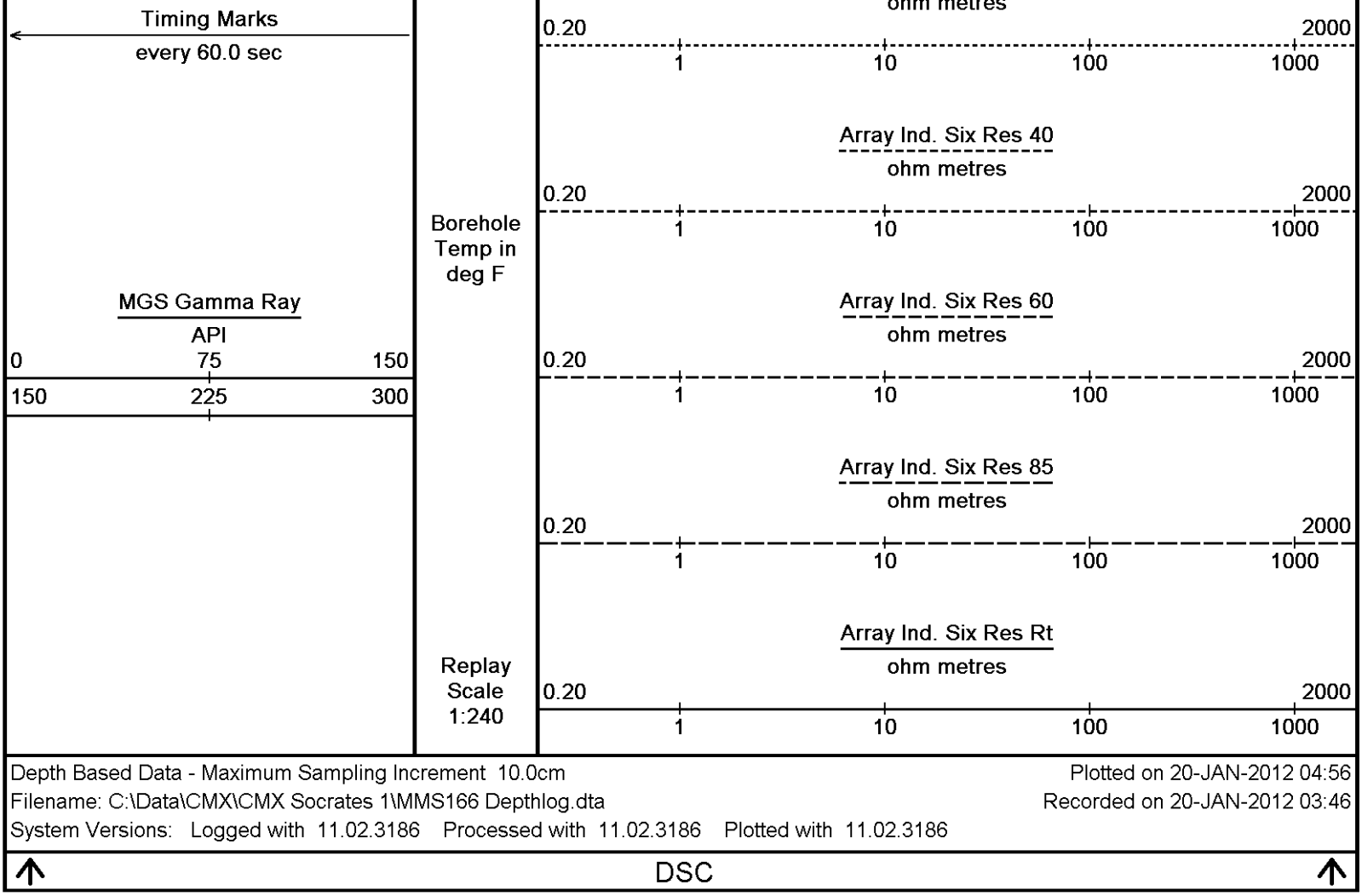
105°
7550
105°
7600
104°
7650


104°
7700
106°
7750
7800
7840
Depth
In
Feet
Array Ind. Six Res 20
ohm metres
0.20
2000
1
10
100
1000
Array Ind. Six Res 30



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 20-JAN-2012 04:56
Filename: C:\Data\CMX\CMX Socrates 1\MMS166 Depthlog.dta — Recorded on 20-JAN-2012 03:46
System Versions: Logged with 11.02.3186 Processed with 11.02.3186 Plotted with 11.02.3186

DSC

BEFORE SURVEY CALIBRATION

C:\Data\CMX\CMX Socrates 1\MMS166 Depthlog.dta

General Constants All 000

Last Edited on 20-JAN-2012,04:30

General Parameters		
Mud Resistivity	1.340	ohm-metres
Mud Resistivity Temperature	76.000	degrees F
Water Level	0.000	feet
Density/Neutron Processing	Wet Hole	
Hole/Annular Volume and Differential Caliper Parameters		
HVOL Method	Single Caliper	
HVOL Caliper 1	Density Caliper	
HVOL Caliper 2	N/A	
Annular Volume Diameter	4.500	inches
Caliper for Differential Caliper	Density Caliper	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Deep Induction	
RWA Constant A	0.610	
RWA Constant M	2.150	

Down-hole Tension Calibration SMS 0

Field Calibration on 27-APR-2009 11:57

Reading No	Measured	Calibrated (lbs)
1	15257.84	0.00
2	16706.18	410.00

High Resolution Temperature Calibration MGS-C.J 138

Field Calibration on 22-DEC-2011,11:48

	Measured	Calibrated(Deg F)
Lower	50.00	50.00

Upper	100.00	100.00

High Resolution Temperature Constants MGS-C.J 138

Last Edited on

Pre-filter Length	11

SP Calibration MGS-C.J 138

Field Calibration on 22-DEC-2011,12:11

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

Gamma Calibration MGS-C.J 138

Field Calibration on 19-JAN-2012,03:30

	Measured	Calibrated (API)
Background	56	33
Calibrator (Gross)	1482	890
Calibrator (Net)	1427	857

Gamma Constants MGS-C.J 138

Last Edited on 22-DEC-2011,12:11

Gamma Calibrator Number		
Mud Density	1.02	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

Neutron Calibration MDN-B.J 389

Base Calibration on 31-OCT-2011,09:50
Field Check on 19-JAN-2012,03:29

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2849	86	3714	110
Ratio	33.085		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	2236	3339
Ratio	0.670	

Field Check

	Calibrated (cps)	
	2246	3378
Ratio	0.665	

Neutron Constants MDN-B.J 389

Last Edited on 02-JAN-2012,13:16

Neutron Source Id	712b	
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	Constant Value	
Formation Pressure	0.00	kpsi
Temperature Source	None	
Temperature	N/A	degrees F
Mud Salinity	0.00	kppm
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

Imager Pad Check MIE-A.A 113

Field Check on 16-AUG-2008,11:45

Pad 1	Pad Not Tested	Pad 5	Pad Not Tested
Pad 2	Pad Not Tested	Pad 6	Pad Not Tested
Pad 3	Pad Not Tested	Pad 7	Pad Not Tested
Pad 4	Pad Not Tested	Pad 8	Pad Not Tested

Compact Micro Imager Constants MIE-A.A 113

Last Edited on 22-MAY-2010,05:16

Centre Pad 1 Rotational Offset	0.00	degrees
Image/Parabola Quality Reference	Relative Bearing	

Image/Borehole Ovality Reference	Relative Bearing		
Non Active Buttons	Omit		
Search Angle	0.00	degrees	
Correlation Interval	3.28	feet	
Correlation Step	1.64	feet	
Current Offset	0.0000	mAmp	
Squasher Start	0.0500	mAmp	
Image Processing	Enabled		

Navigation Constants MIE-A.A 113

Last Edited on 22-DEC-2011,12:01

Magnetic Declination	3.62	degrees	East

Magnetometer Parameters MIE-A.A 113

Date Of Last Magnetometer Calibration 01-JAN-1998

	X Magnetometer	Y Magnetometer	Z Magnetometer
Slope	-1.000000	-1.016573	-1.003898
Offset	0.006568	-0.015949	0.006438

Magentometer Constants MIE-A.A 113

Last Edited on

Magnetometer Calibrator Number 000

Accelerometer Parameters MIE-A.A 113

Date Of Last Accelerometer Calibration 01-JAN-1998

	X Accelerometer	Y Accelerometer	Z Accelerometer
Slope	-1.105490	-1.103970	-1.107420
Offset	0.000458	0.006135	0.003353

Accelerometer Constants MIE-A.A 113

Last Edited on 11-JUN-2009,17:18

Accelerometer Calibrator Number 000

Accelerometer Temperature Characterisation

X Accelerometer

Serial Number	282			
Calibration Date	18-Jul-2007			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	3.41234e-005	-1.69705e-008	1.28660e-010
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.70372e-004	8.31146e-007	-1.22715e-009

Y Accelerometer

Serial Number	284			
Calibration Date	18-Jul-2007			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	1.41306e-005	-2.62559e-009	9.20272e-011
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.83655e-004	6.88154e-007	-5.98912e-010

Z Accelerometer

Serial Number	287			
Calibration Date	20-Jul-2007			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	2.30753e-005	-5.40650e-010	3.42223e-011
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.66160e-004	7.47858e-007	-1.03559e-009

Caliper Calibration MIE-A.A 113

Base Calibration on 23-JUN-2008,12:29

Field Calibration on

Base Calibration

Reading No	Pads 1-5 Meas.	Pads 3-7 Meas.	Calibrator Size (in)
1	24856	25276	5.97
2	35545	35312	7.99
3	44370	44687	9.86
4	55326	56381	11.93
5	0	0	0.00

Reading No	Pad 2 Meas.	Pad 4 Meas.	Pad 6 Meas.	Pad 8 Meas.	Calibrator Size (in)
1	23517	25136	25351	23970	5.97
2	32111	33147	34289	33287	7.99
3	39601	41110	42395	41619	9.86

4	49214	50836	52775	51339	11.93
5	0	0	0	0	0.00

Field Calibration

Measured Pads 1-5 Caliper(in)	Measured Pads 3-7 Caliper(in)	Actual Caliper(in)
0.00	0.00	0.00

Measured Pad 2 Caliper(in)	Measured Pad 4 Caliper(in)	Measured Pad 6 Caliper(in)	Measured Pad 8 Caliper(in)	Actual Caliper(in)
0.00	0.00	0.00	0.00	0.00

Caliper Constants MIE-A.A 113

Last Edited on

Caliper Difference for BRKT	3.000	mm

High Resolution Temperature Calibration MAI-B.J 394

Field Calibration on 04-OCT-2010,19:11

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

High Resolution Temperature Constants MAI-B.J 394

Last Edited on

Pre-filter Length	11

Induction Calibration MAI-B.J 394

Base Calibration on 18-NOV-2011,14:19
Field Check on 19-JAN-2012 03:22

Base Calibration

Test Loop Calibration Channel	Measured Low	Measured High	Calibrated (mmho/m) Low	Calibrated (mmho/m) High
1	16.7	473.5	9.3	966.2
2	5.6	368.9	7.6	821.4
3	3.3	256.4	5.2	566.0
4	1.8	133.4	2.6	279.2

Array Temperature	71.8	Deg F

Channel	Base Check (mmho/m) Low	Base Check (mmho/m) High	Field Check (mmho/m) Low	Field Check (mmho/m) High	
1	0.0	0.0	11.5	3832.2	
2	0.0	0.0	31.5	3652.4	
3	0.0	0.0	28.8	3084.6	
4	0.0	0.0	19.5	2069.2	
Deep	0.0	0.0	16.2	1912.2	
Medium	0.0	0.0	43.3	4146.2	
Shallow	0.0	0.0	49.0	5540.3	
Array Temperature	0.0		31.5		Deg F

Induction Constants MAI-B.J 394

Last Edited on 20-JAN-2012,04:24

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	0.0030	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-C.J 395

Base Calibration on 23-APR-2011 16:36
Field Calibration on 19-JAN-2012,03:22

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	15488	3.99
2	24960	5.97
3	34848	7.99
4	44224	9.86
5	55360	11.93
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.90	5.97

Photo Density Calibration MPD-C.J 395

Base Calibration on 17-AUG-2011 10:29
Field Check on 19-JAN-2012 03:27

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	54132	26425	60364	31945
Reference 2	22529	2716	25079	2547

Field Check at Base

	1281.2	1499.3

Field Check

	1251.3	1487.7

PE Calibration

Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	231	1150		
Reference 1	23934	53929	0.449	0.399
Reference 2	6456	22390	0.293	0.273

Field Check at Base

231.5	1150.1	

Field Check

229.5	1123.2	

Density Constants MPD-C.J 395

Last Edited on 28-AUG-2011,16:06

Density Source Id	246	
Nylon Calibrator Number	DNCE603	
Aluminium Calibrator Number	DACA509	
Density Shoe Profile	4 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.07	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

DOWNHOLE EQUIPMENT

C:\Data\CMX\CMX Socrates 1\MMS166 Depthlog.dta

SRT Post Deployment
MLK-A 1 LG: 4.87 ft WT: 30.9 lb OD: 2.24 in

Empty Battery
MLK-A 2 LG: 14.17 ft WT: 30.9 lb OD: 2.24 in

Empty Battery
MLK-A 3 LG: 14.17 ft WT: 30.9 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 166 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MBS-F.A 200v Compact Battery Sub
MBS-F.A 119 LG: 17.06 ft WT: 123.5 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 72 LG: 1.54 ft WT: 13.2 lb OD: 2.24 in

Compact Short Gamma
MGS-C.J 138 LG: 3.41 ft WT: 24.3 lb OD: 2.24 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 471 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor
SHA-J.A 450 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

MIS-D.A Compact Inline Bowspring sub
MIS-D.A 310 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

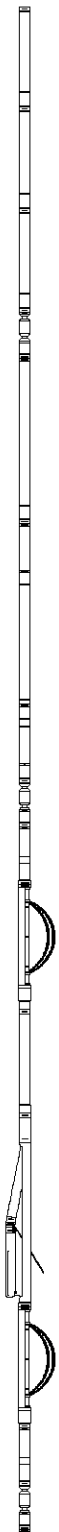
Compact Neutron
MDN-B.J 389 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-C.J 395 LG: 9.59 ft WT: 90.4 lb OD: 2.24 in

MIS-D.A Compact Inline Bowspring sub
MIS-D.A 609 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor
SHA-J.A 454 LG: 2.30 ft WT: 22.0 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

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

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 207 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MIS-D.A Compact Inline Bowspring sub
MIS-D.A 590 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

Compact MMI Memory Section
MIM-A.A 205 LG: 4.65 ft WT: 26.5 lb OD: 2.24 in

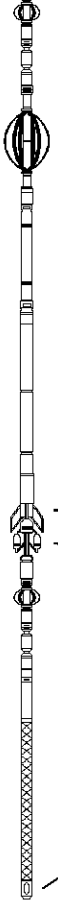
Compact MMI Electrode Section
MIE-A.A 113 LG: 13.96 ft WT: 99.2 lb OD: 4.10 in

MIS-E.B Compact Inline Standoff sub
MIS-E.B 596 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 472 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Induction
MAI-B.J 394 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 141.26 ft Weight: 901.7 lb



17.35 ft IECY - MIE Caliper Y
17.35 ft IECX - MIE Caliper X
16.83 ft IAP1 - Azimuth of Reference
16.83 ft IMGR - MMI Image

Tool Zero (0.13ft from bottom)
All measurements relative to tool zero.

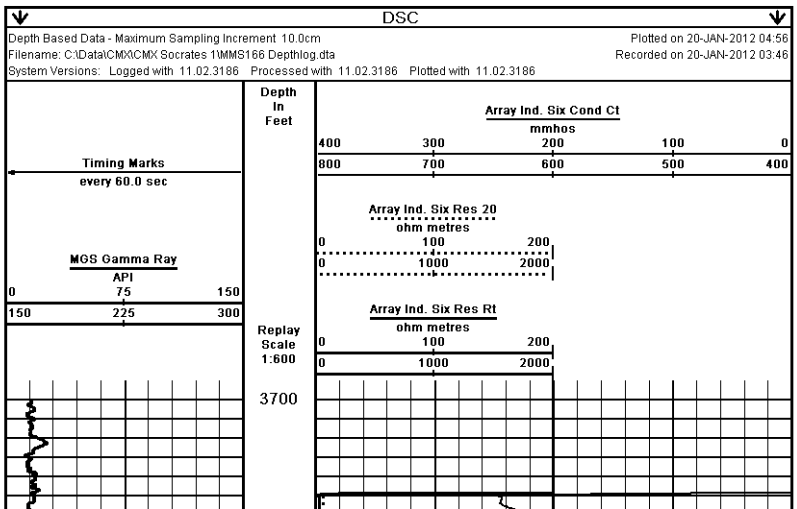
COMPANY	CMX INC.
WELL	SOCRATES 1H
FIELD	WHERRY
PROVINCE/COUNTY	RICE
COUNTRY/STATE	U.S.A. / KANSAS

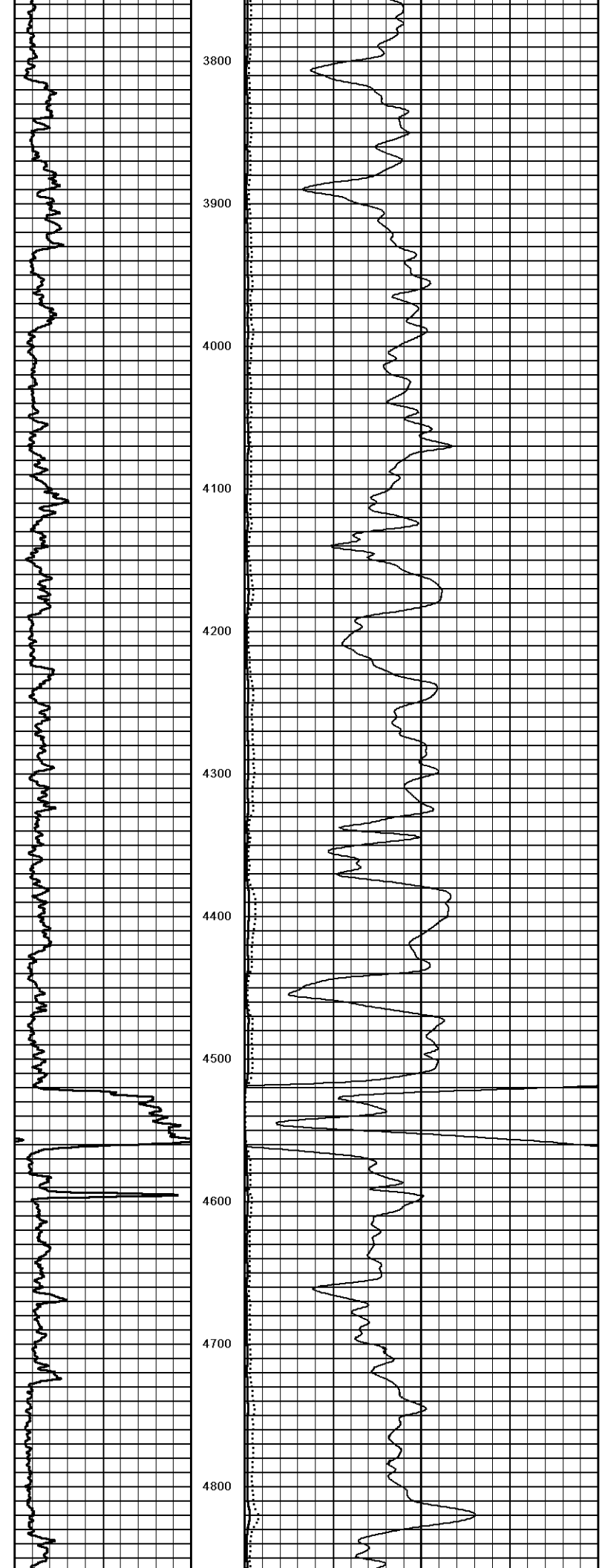
Elevation Kelly Bushing	1614.00	feet	First Reading	7822.00	feet
Elevation Drill Floor	1614.00	feet	Depth Driller	7950.00	feet
Elevation Ground Level	1602.00	feet	Depth Logger	7828.00	feet

Weatherford®

COMPACT WELL SHUTTLE COMPACT ARRAY INDUCTION LOG

40 Years of Wireline 1970 2010

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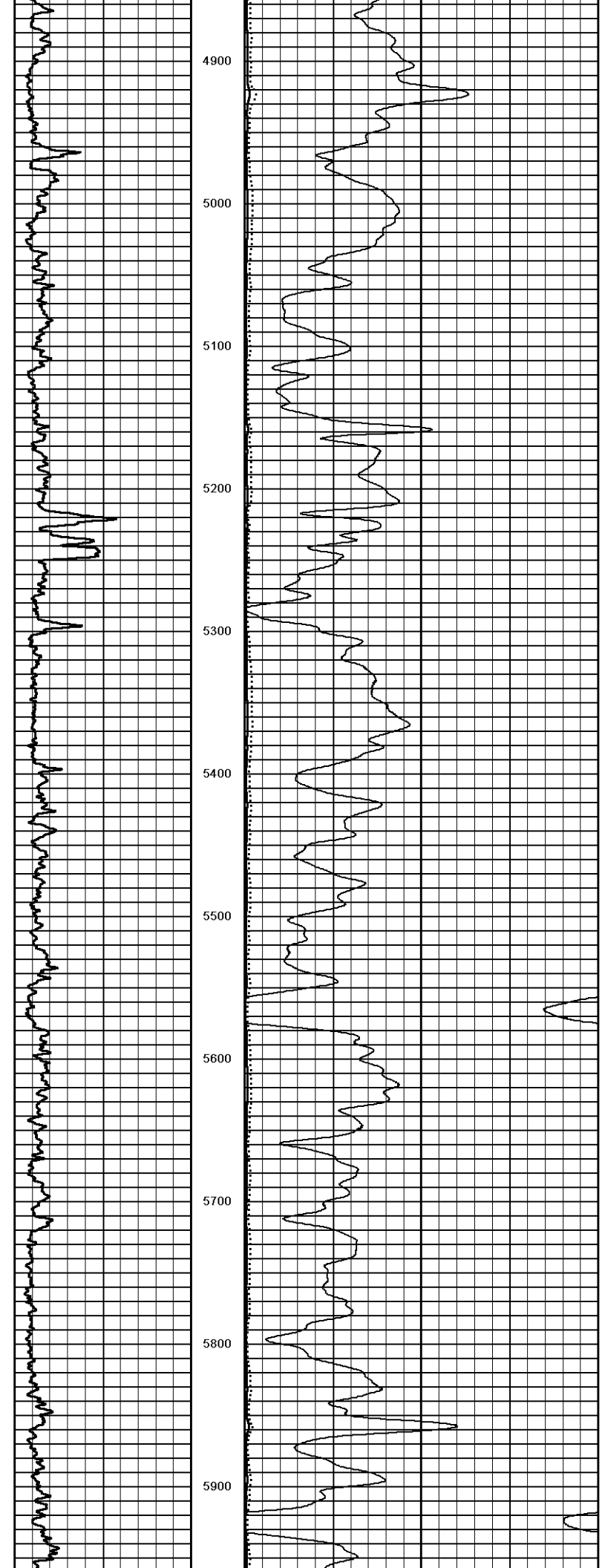
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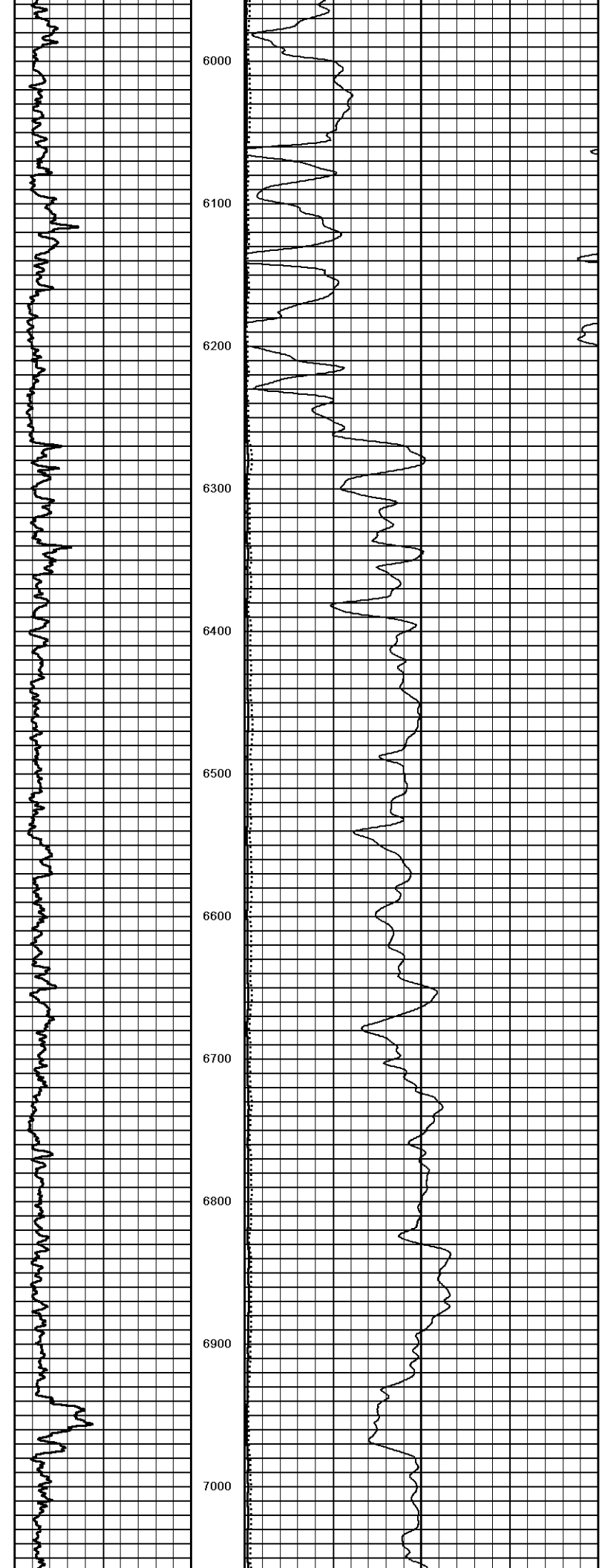
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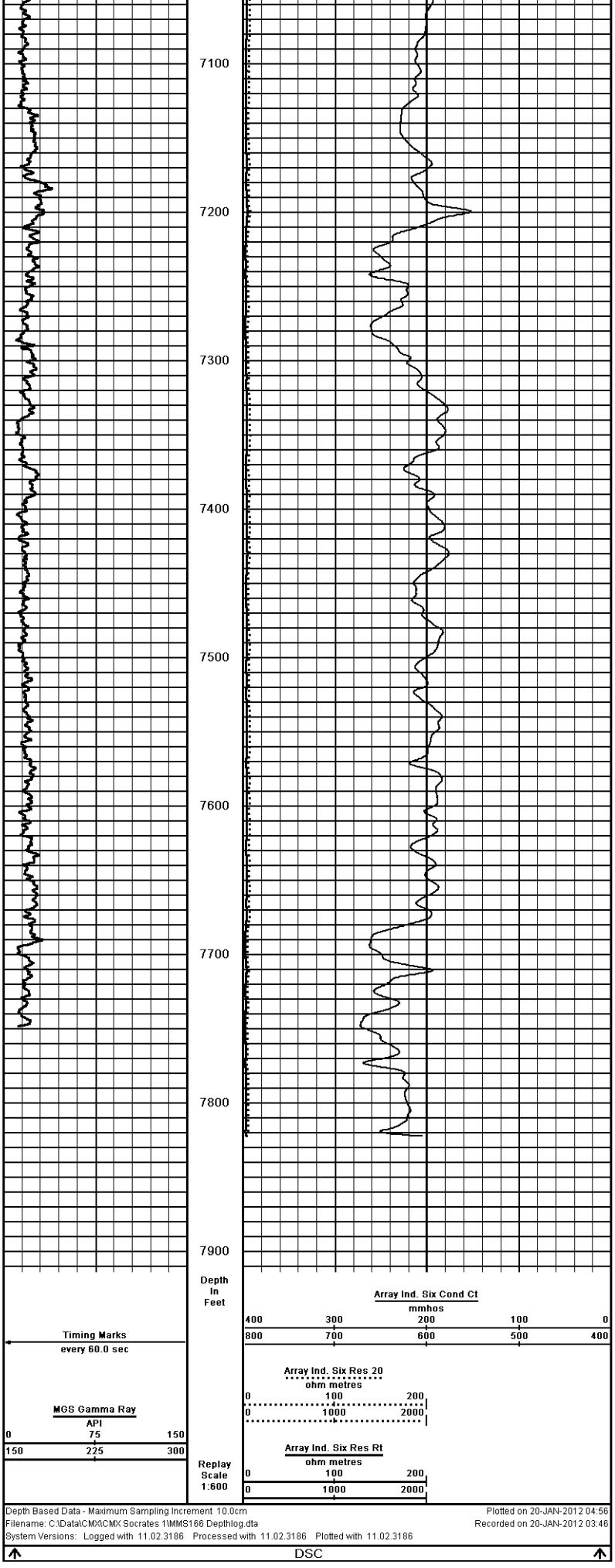

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Data\CMX\CMX Socrates 1\MMS166 Depthlog.dta
System Versions: Logged with 11.02.3186 Processed with 11.02.3186 Plotted with 11.02.3186

Plotted on 20-JAN-2012 04:56
Recorded on 20-JAN-2012 03:46

DSC

COMPANY	CMX INC.
WELL	SOCRATES 1H
FIELD	WHERRY

PROVINCE/COUNTY	RICE
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1614.00	feet	First Reading	7822.00	feet
Elevation Drill Floor	1614.00	feet	Depth Driller	7950.00	feet
Elevation Ground Level	1602.00	feet	Depth Logger	7828.00	feet

Weatherford

COMPACT WELL SHUTTLE
COMPACT ARRAY INDUCTION
LOG