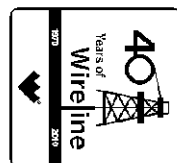




Weatherford¹⁸⁰

**CML IMPULSE SHUTTLE
COMPACT ARRAY INDUCTION
LOG**



COMPANY	SANDRIDGE EXPLORATION & PRODUCTION		
WELL	SUTTON 1825 1-3H		
FIELD	ALDRICH		
PROVINCE/COUNTY	NESS		
COUNTRY/STATE	USA / KANSAS		
LOCATION	200' FSL & 800' FWL		
SEC	TWP	RGE	Other Services
03	18S	25W	MDN/MPD
API Number	15-135-25436-01		CMI
Permit Number			
Permanent Datum G.L., Elevation 2355 feet			Elevations: feet
Log Measured From KB			KB 2375.00
Drilling Measured From K.B.			DF 2375.00
			GL 2355.00
Date	01-AUG-2012		
Run Number	ONE		
Depth Driller	7576.00	feet	
Depth Logger	7551.00	feet	
First Reading	7545.00	feet	
Last Reading	2000.00	feet	
Casing Driller	4768.00	feet	
Casing Logger	4768.00	feet	
Bit Size	6.125	inches	
Hole Fluid Type	WATER		
Density / Viscosity	9.40 lb/USg	58.00 CP	
PH / Fluid Loss	9.00	4.00 ml/30Min	
Sample Source	FLOWLINE		
Rm @ Measured Temp	1.76 @ 81.0	ohm-m	
Rmf @ Measured Temp	1.40 @ 81.0	ohm-m	
Rmc @ Measured Temp	2.11 @ 81.0	ohm-m	
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	1.07 @ 133.0	ohm-m	
Time Since Circulation	0 HOURS		
Max Recorded Temp	133.00	deg F	
Equipment Name	COMPACT		
Equipment / Base	18064	OKC	
Recorded By	C. GRIFFIN		
Witnessed By	J. BORELL		
S.O.# / AFE	3536651/DC12142		

BOREHOLE RECORD

Last Edited: 01-AUG-2012 09:51

Bit Size inches	Depth From feet	Depth To feet
6.125	4768.00	7576.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
INTERMED	7.000	0.00	4768.00	26.00

REMARKS

WLS SOFTWARE VERSION 13.02. USED.
TOOLS RUN ON DRILLPIPE USING COMPACT WELL SHUTTLE DEPLOYMENT TECHNIQUE.

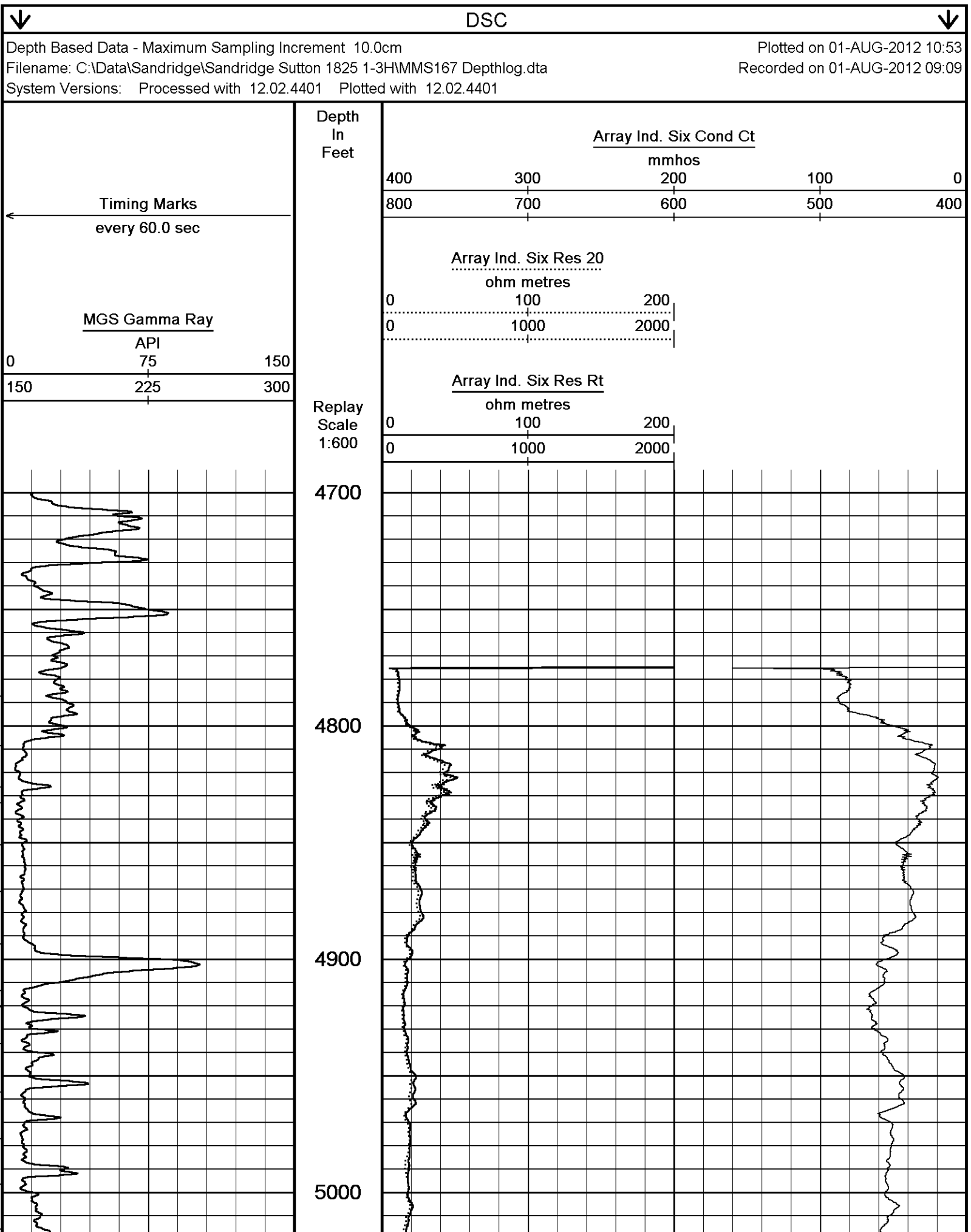
DEPTH MEASURED USING ADVANTAGE RIG DEPTH CORRECTED TO PIPE TALLY.

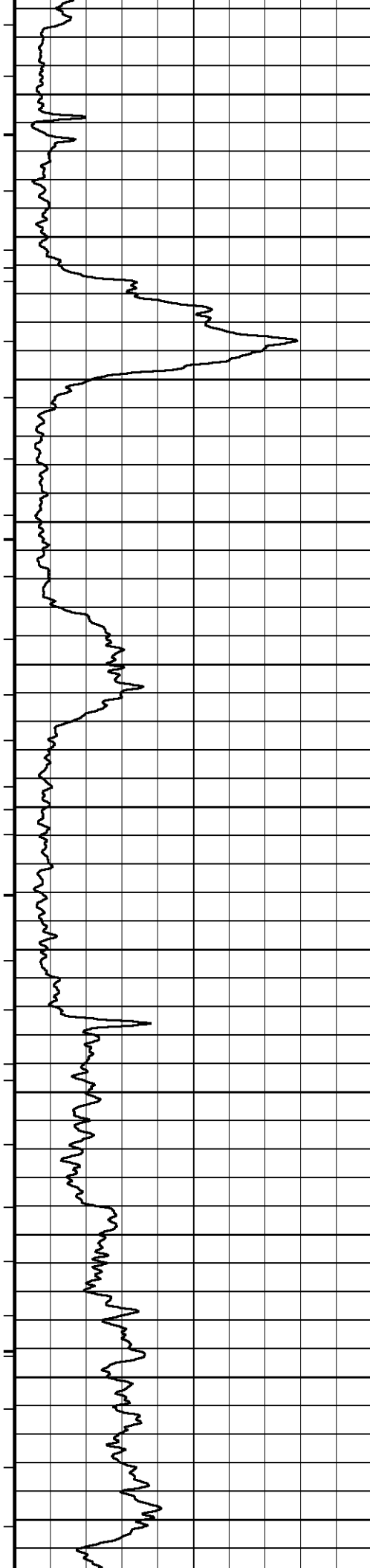
TOOLS DEPLOYED WITH MULE SHOE SITTING AT 7450 FT.
AFTER DEPLOYMENT LOGGING TOOL WAS AT 7551 FT.

4.5 " PRODUCTION CASING USED TO CALCULATE ANNULAR HOLE VOLUMES.

OPERATORS: J. TURNER
S.O. # 3536651
RIG: LARIAT 19

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





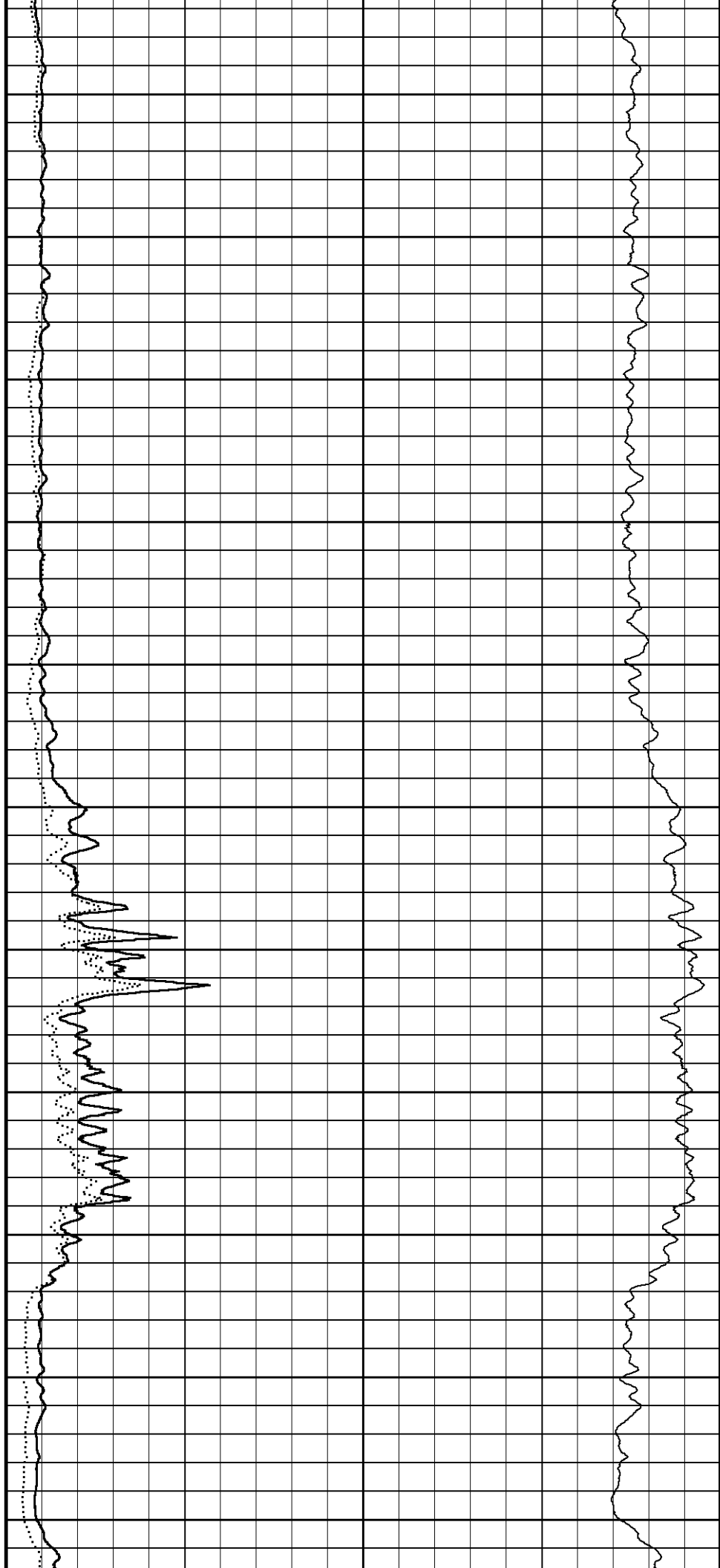
5100

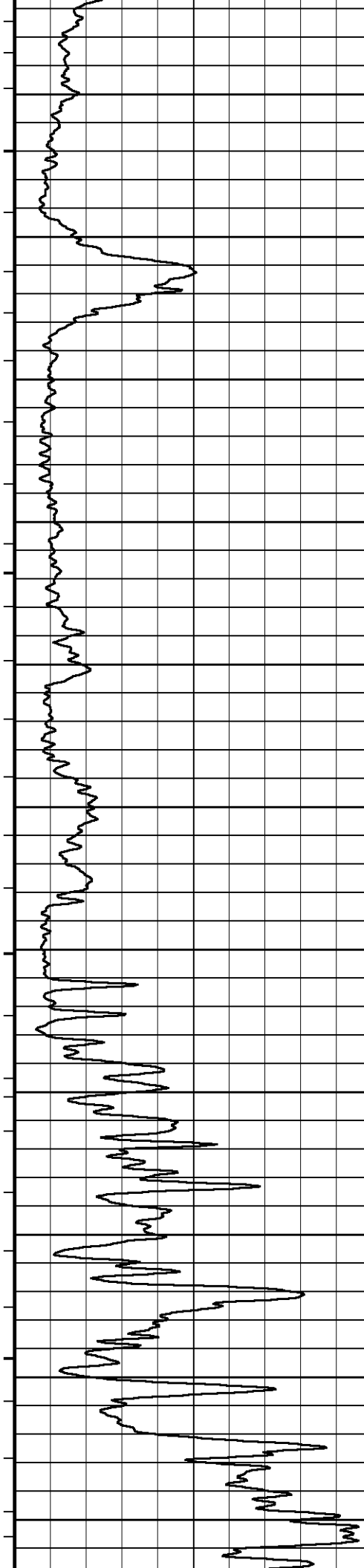
5200

5300

5400

5500





5600

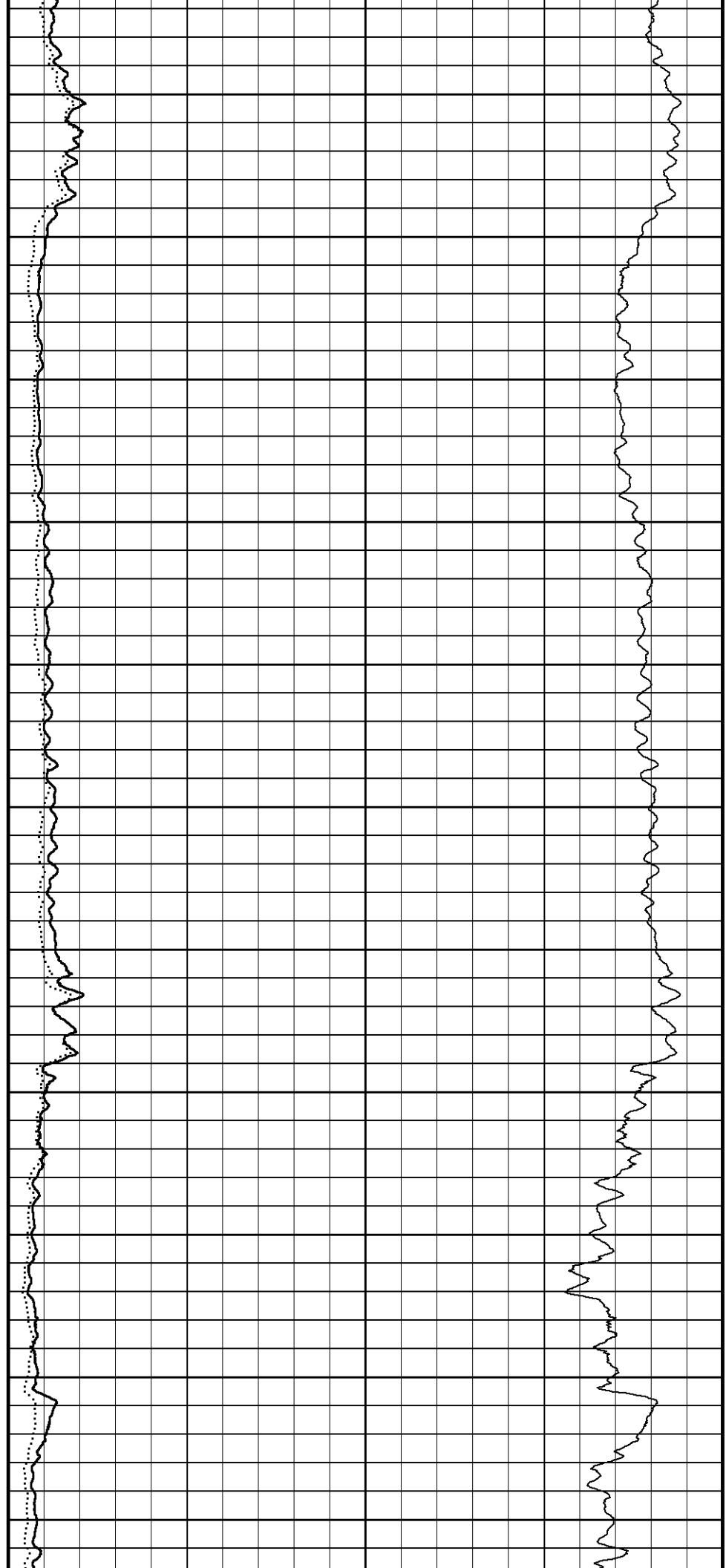
5700

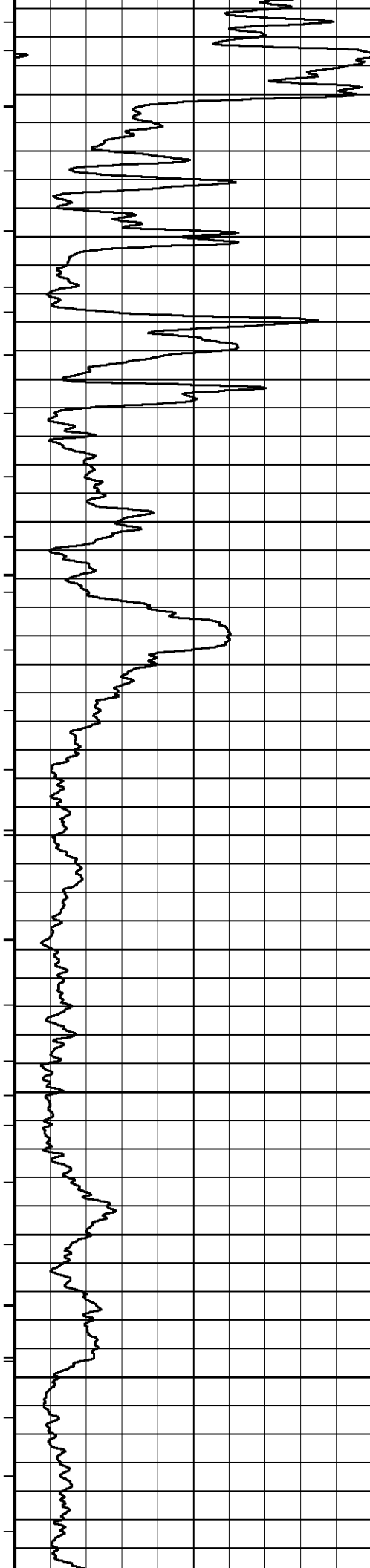
5800

5900

6000

6100





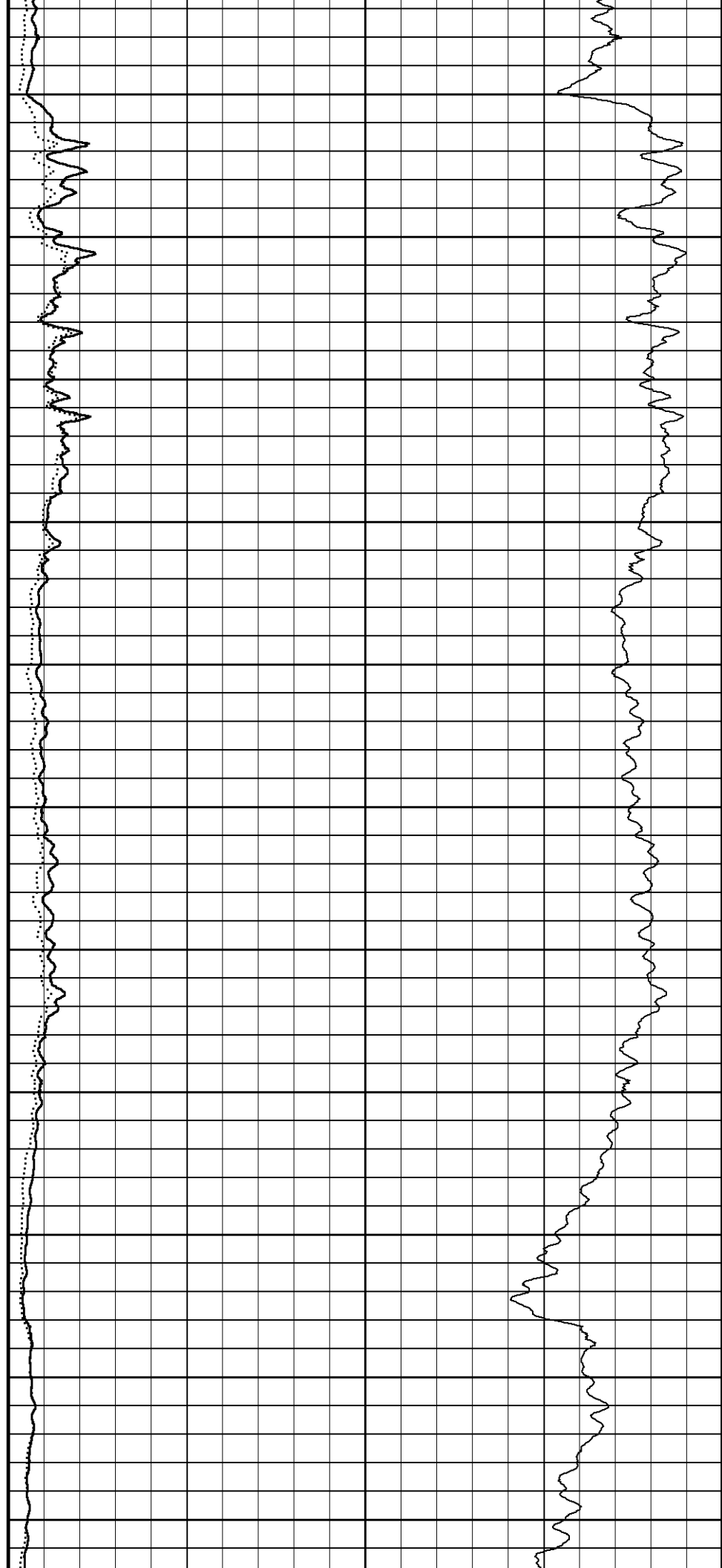
6200

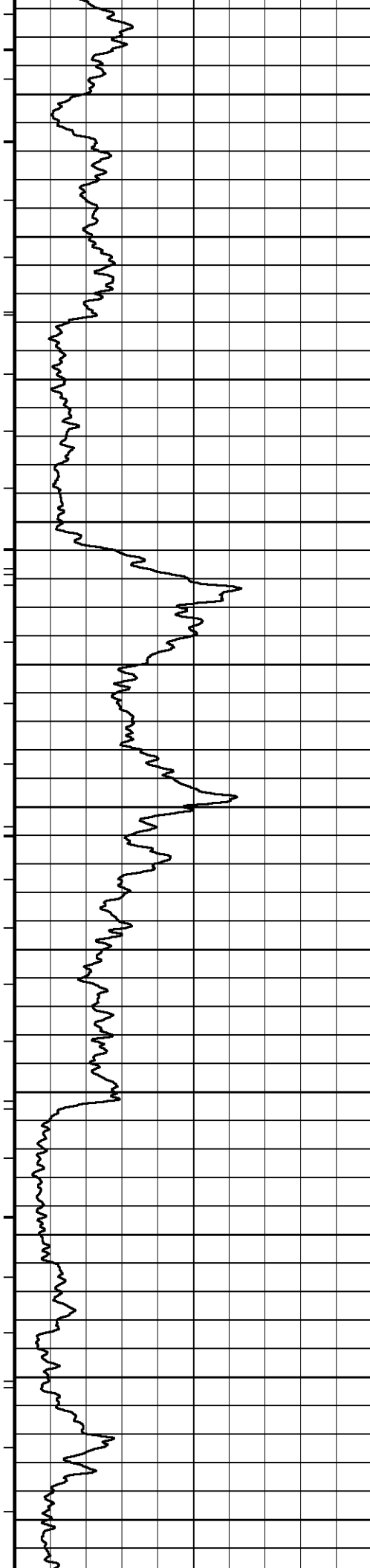
6300

6400

6500

6600





6700

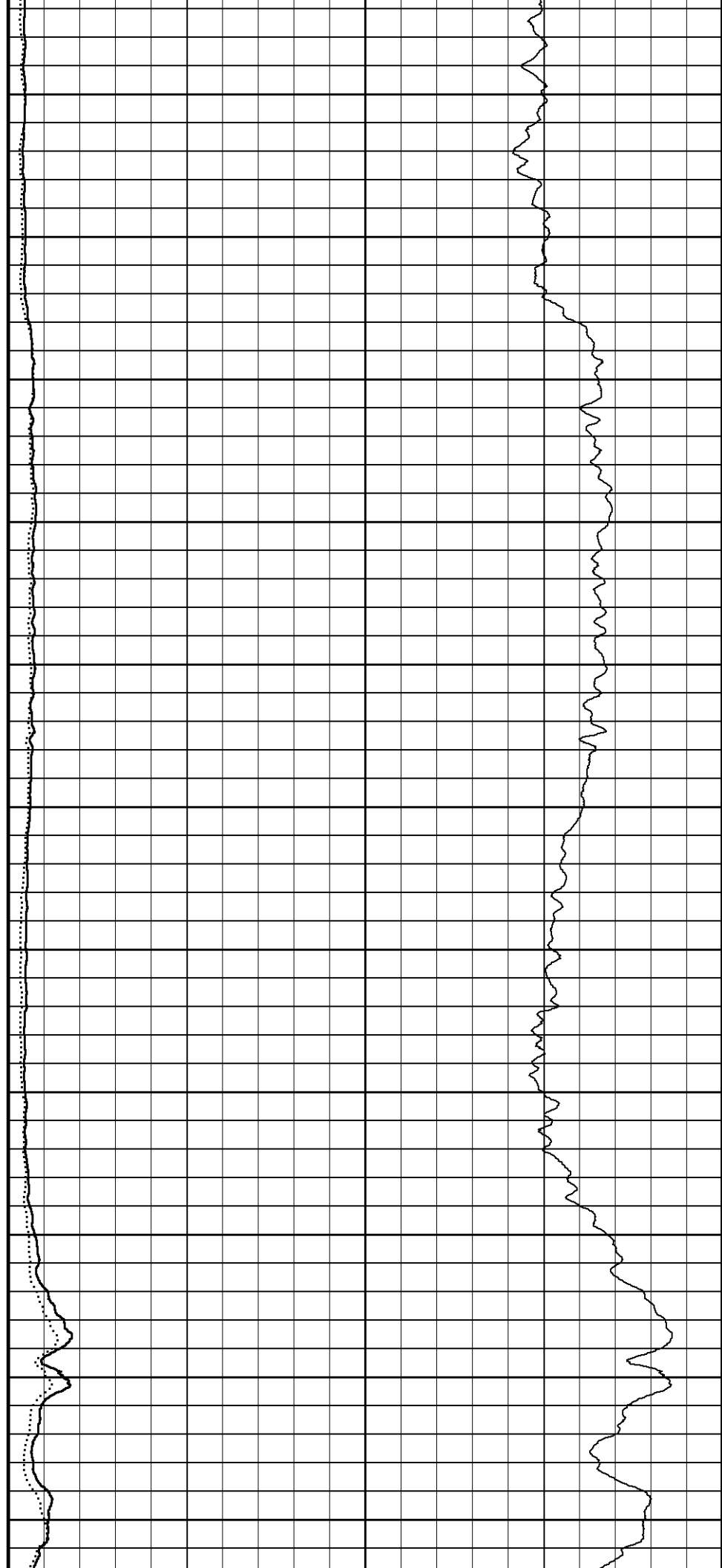
6800

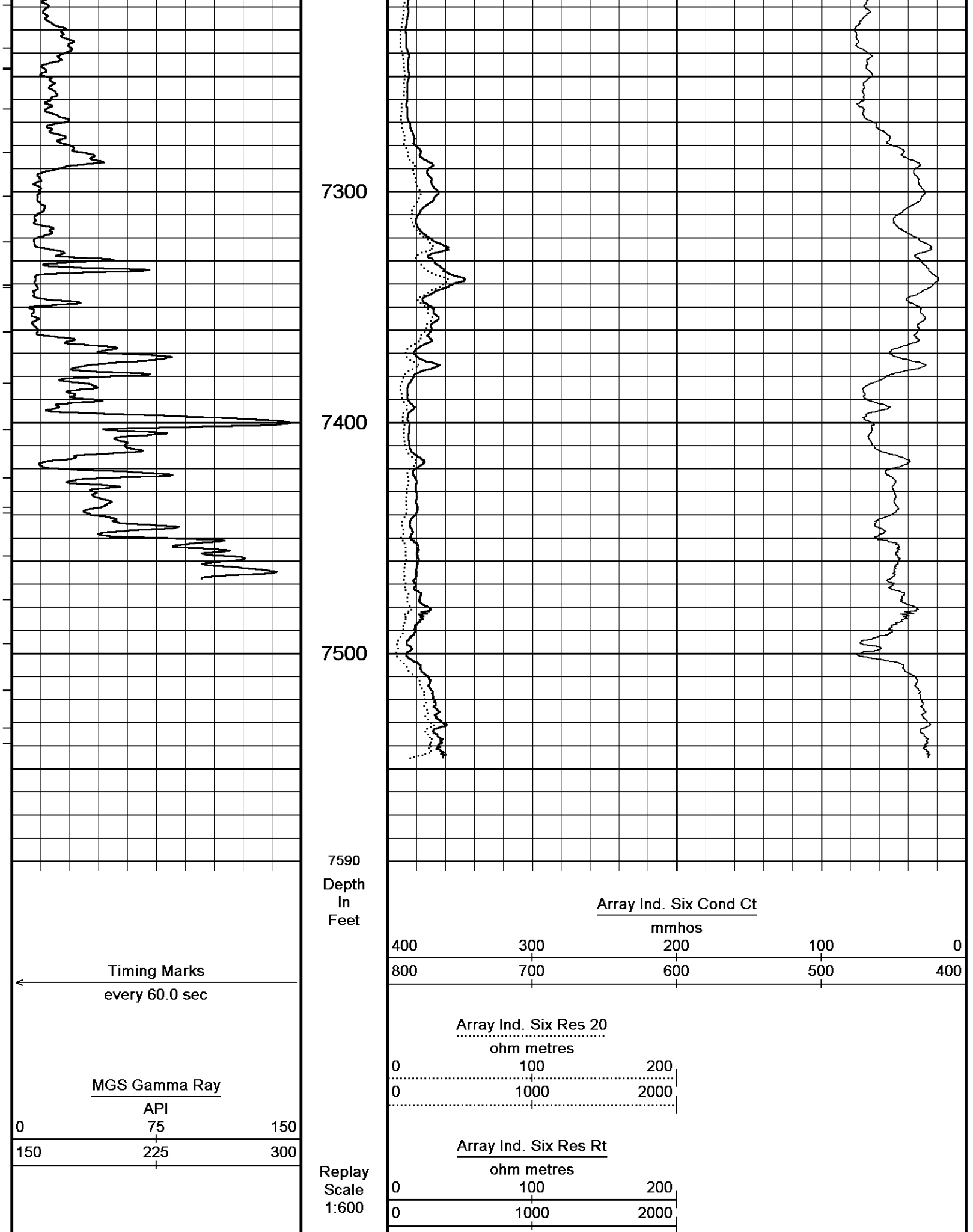
6900

7000

7100

7200





Depth Based Data - Maximum Sampling Increment 10.0cm

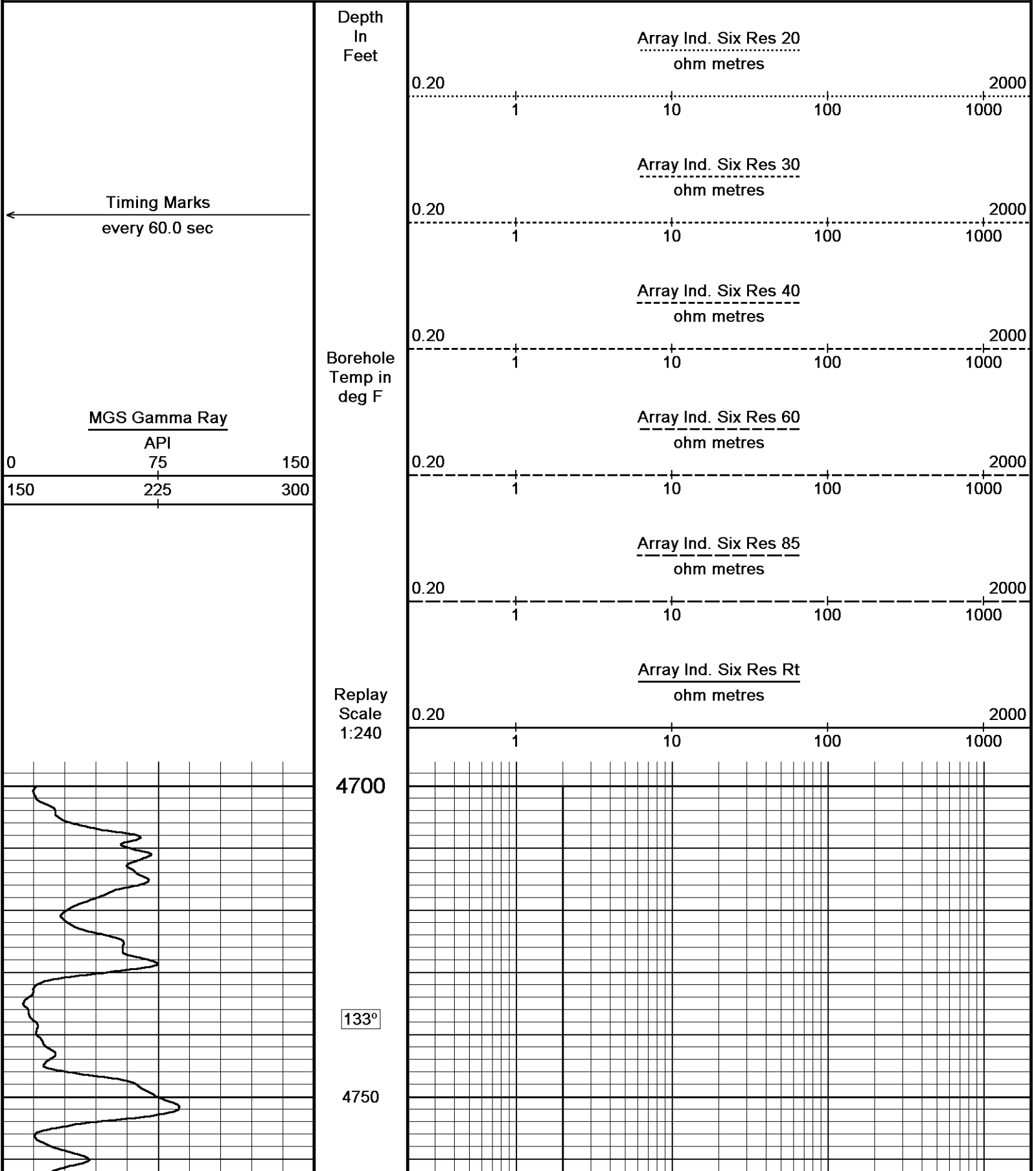
Filename: C:\Data\Sandridge\Sandridge Sutton 1825 1-3HMMS167 Dentblog dta

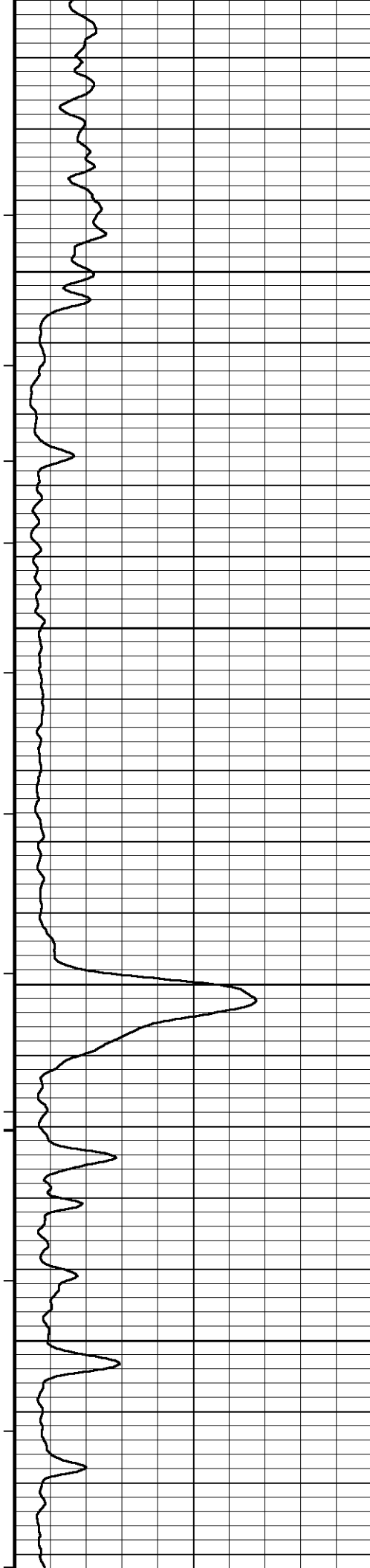
Plotted on 01-AUG-2012 10:53

Recorded on 01-AUG-2012 09:09

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Data\Sandridge\Sandridge Sutton 1825 1-3HMMS167 Depthlog.dta
System Versions: Processed with 12.02.4401 Plotted with 12.02.4401

Plotted on 01-AUG-2012 10:53
Recorded on 01-AUG-2012 09:09





133°

4800

133°

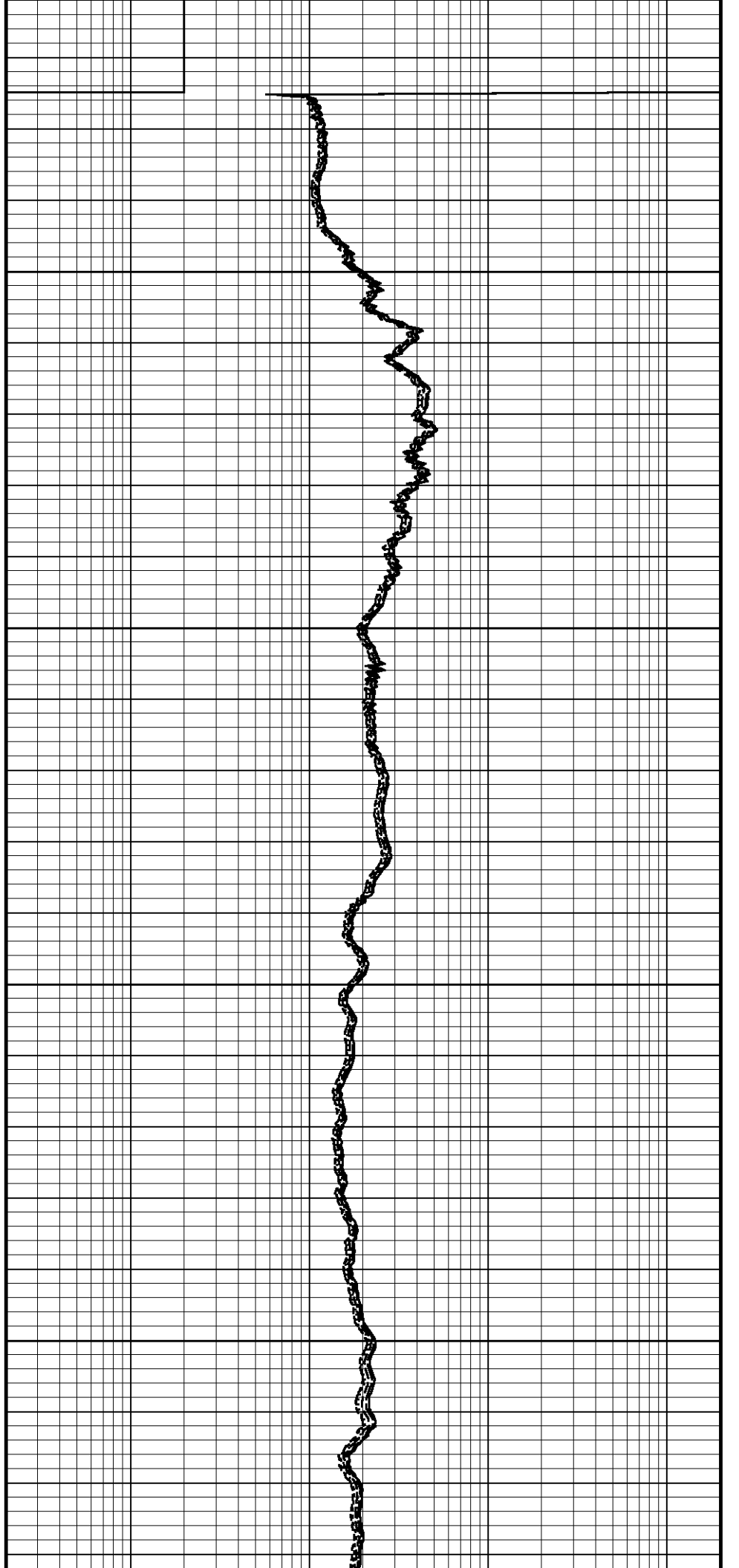
4850

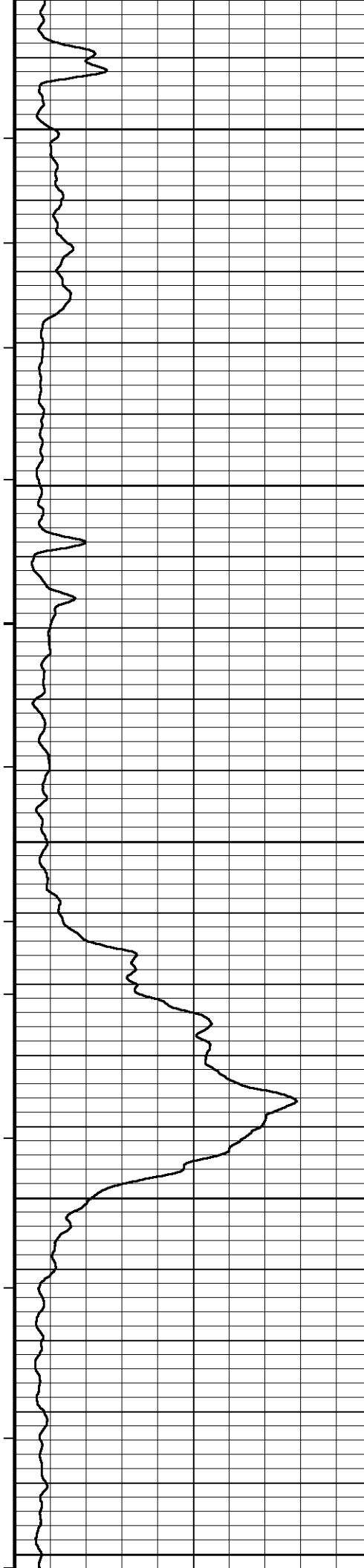
133°

4900

133°

4950





133°

5000

133°

5050

133°

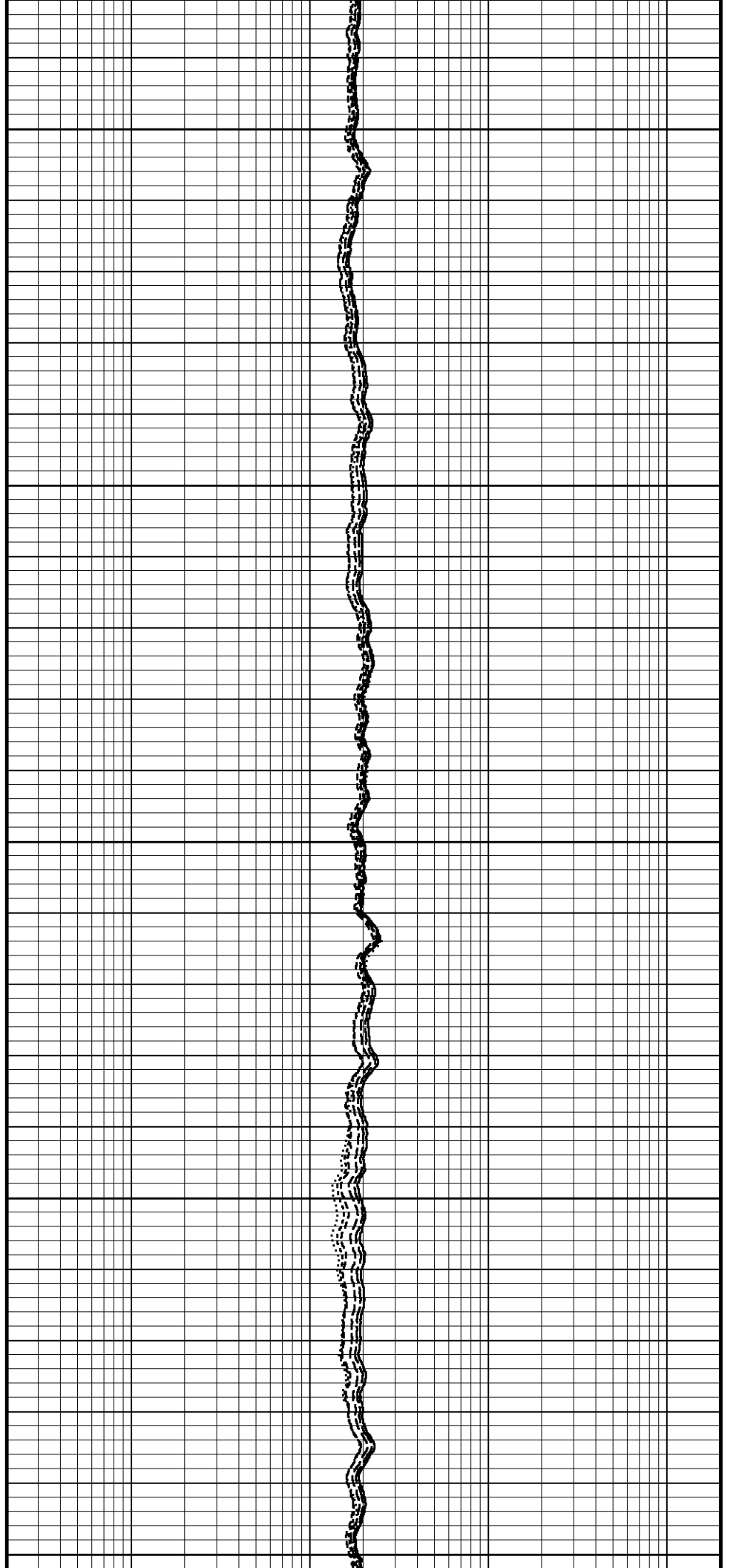
5100

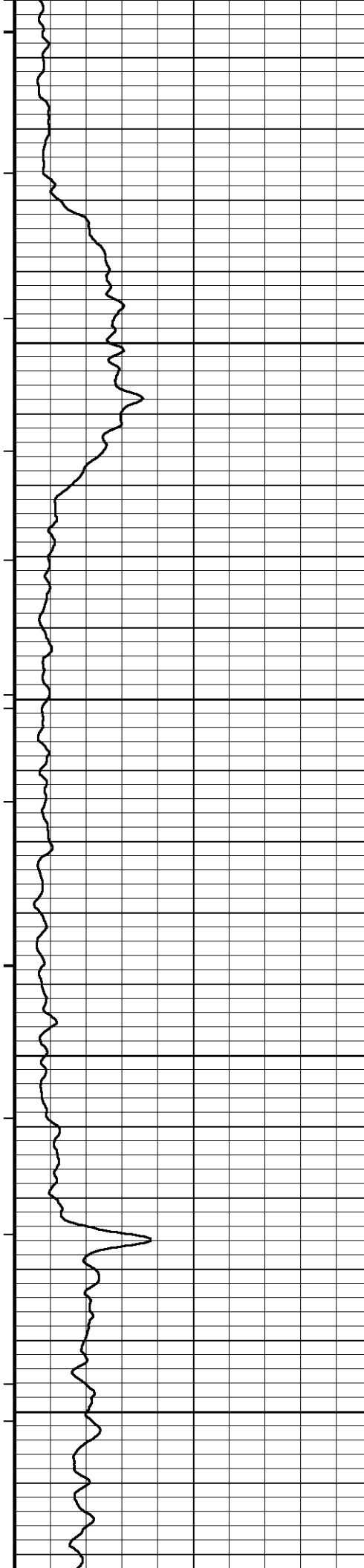
133°

5150

133°

5200





134°

5250

134°

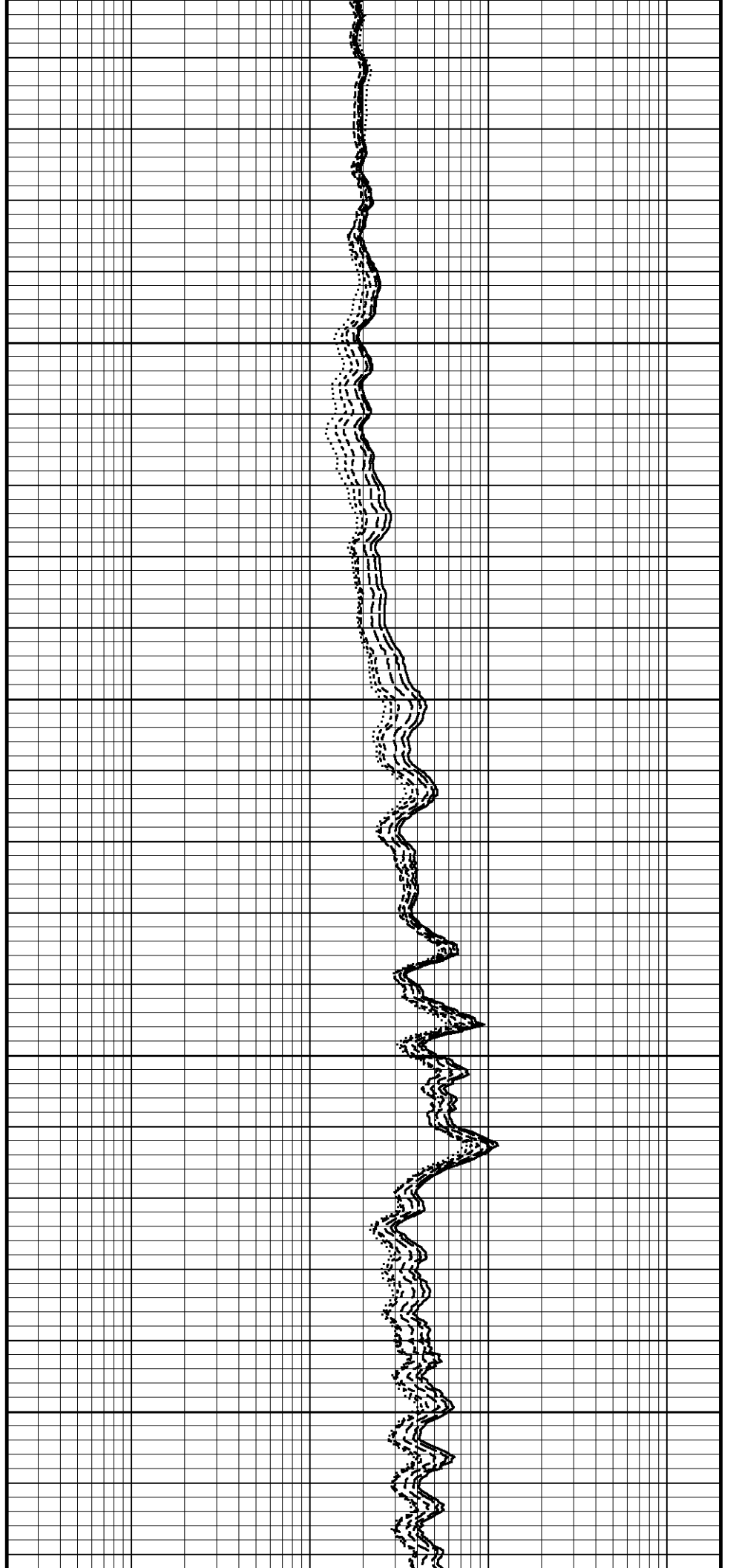
5300

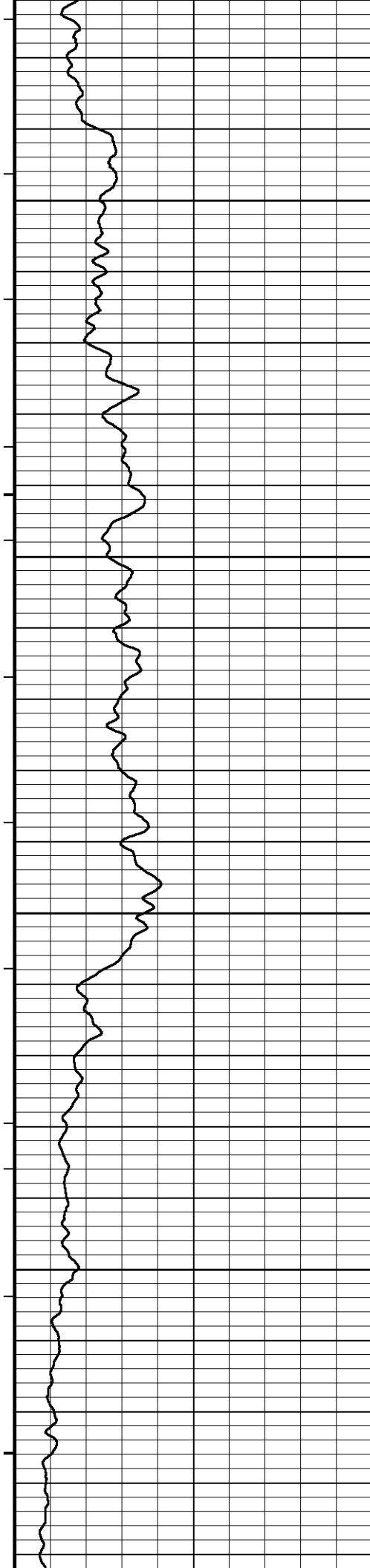
134°

5350

134°

5400





134°

5450

134°

5500

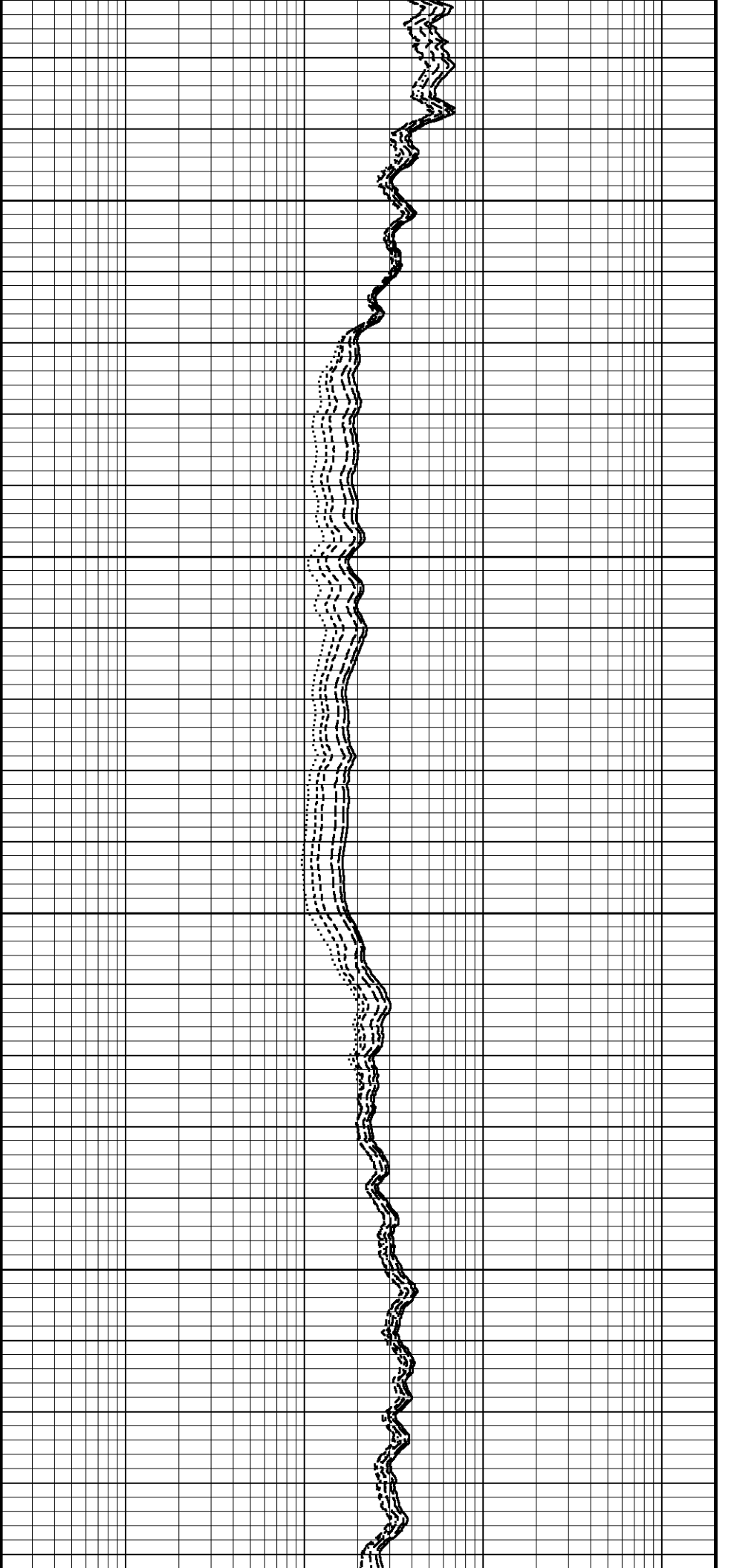
134°

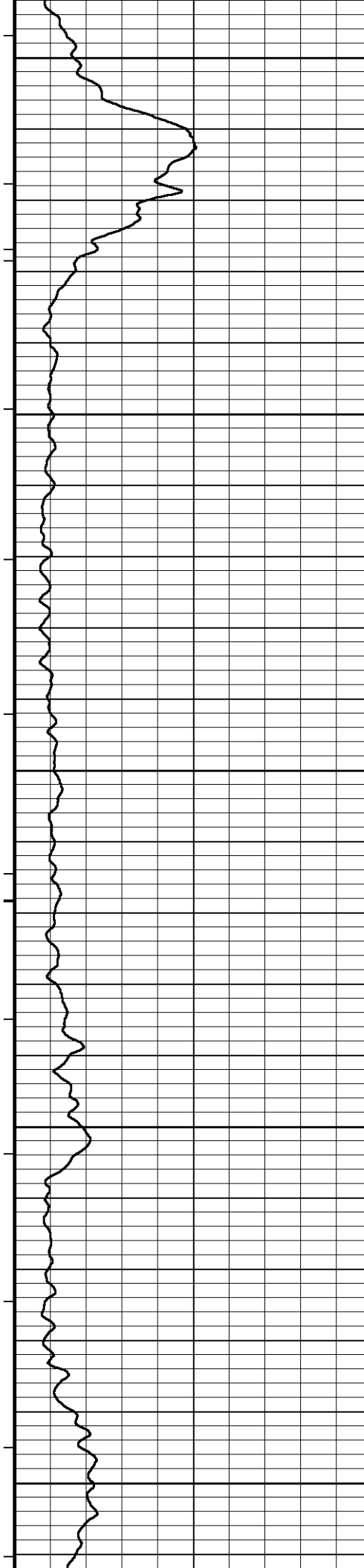
5550

134°

5600

134°





5650

134°

5700

134°

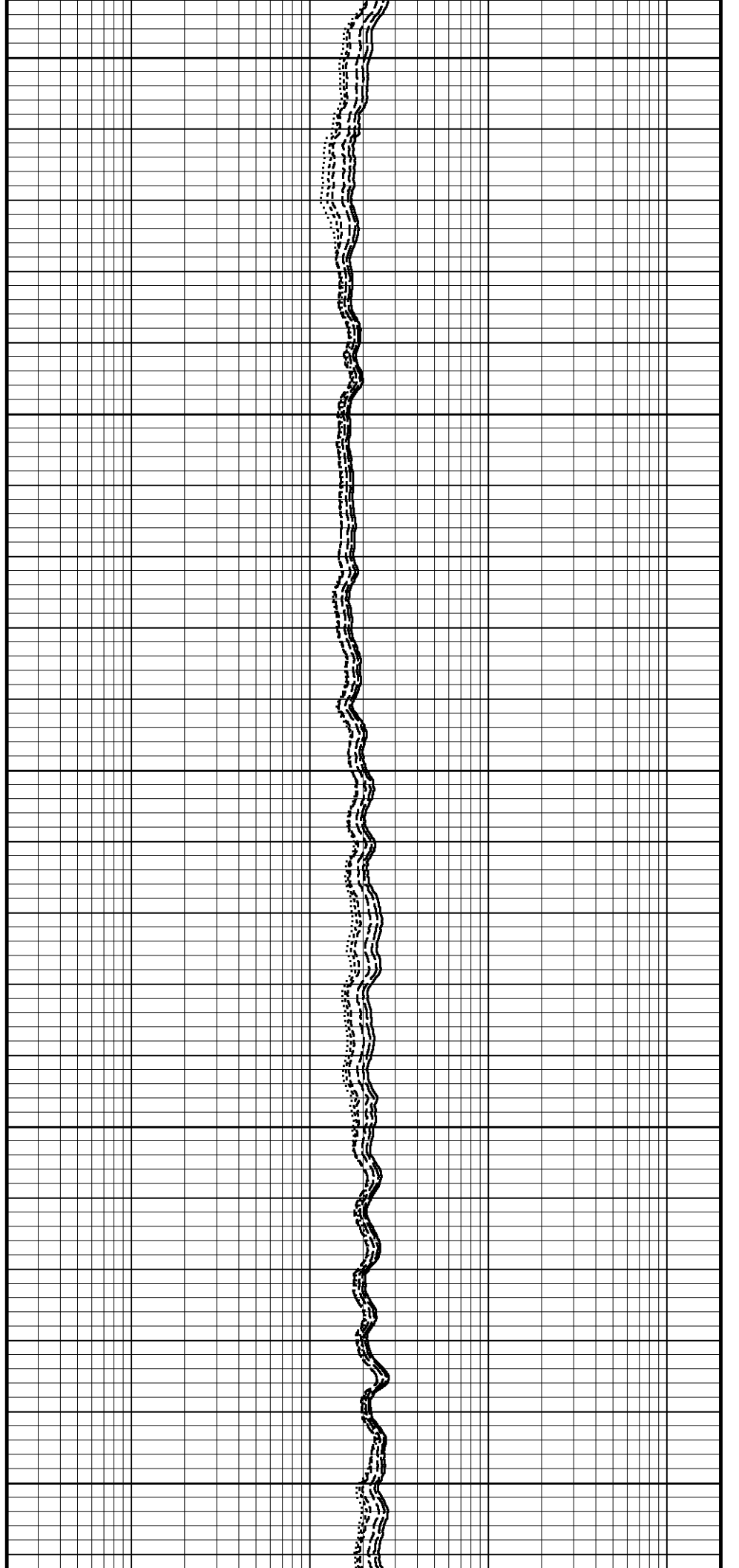
5750

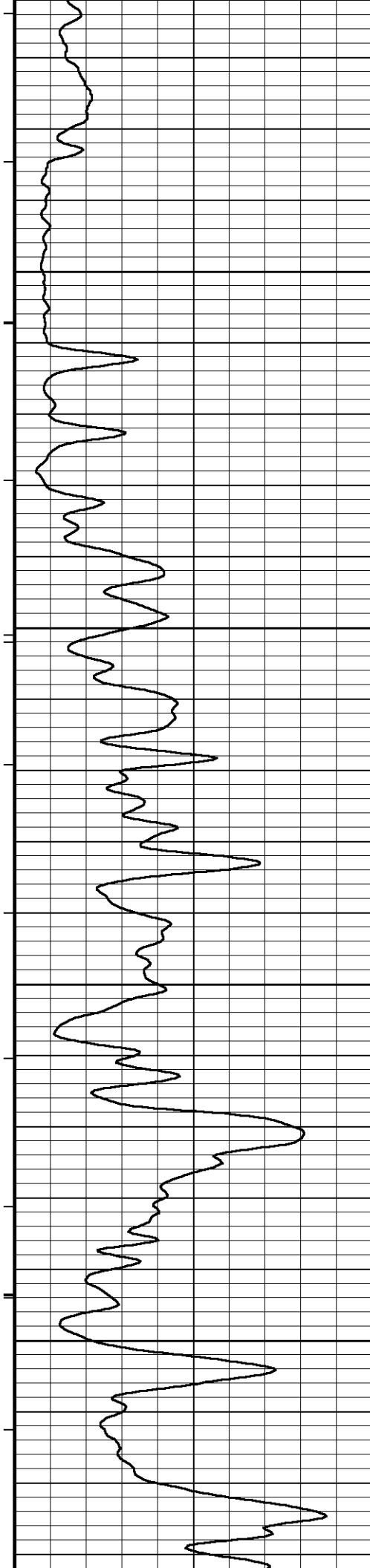
134°

5800

134°

5850





134°

5900

134°

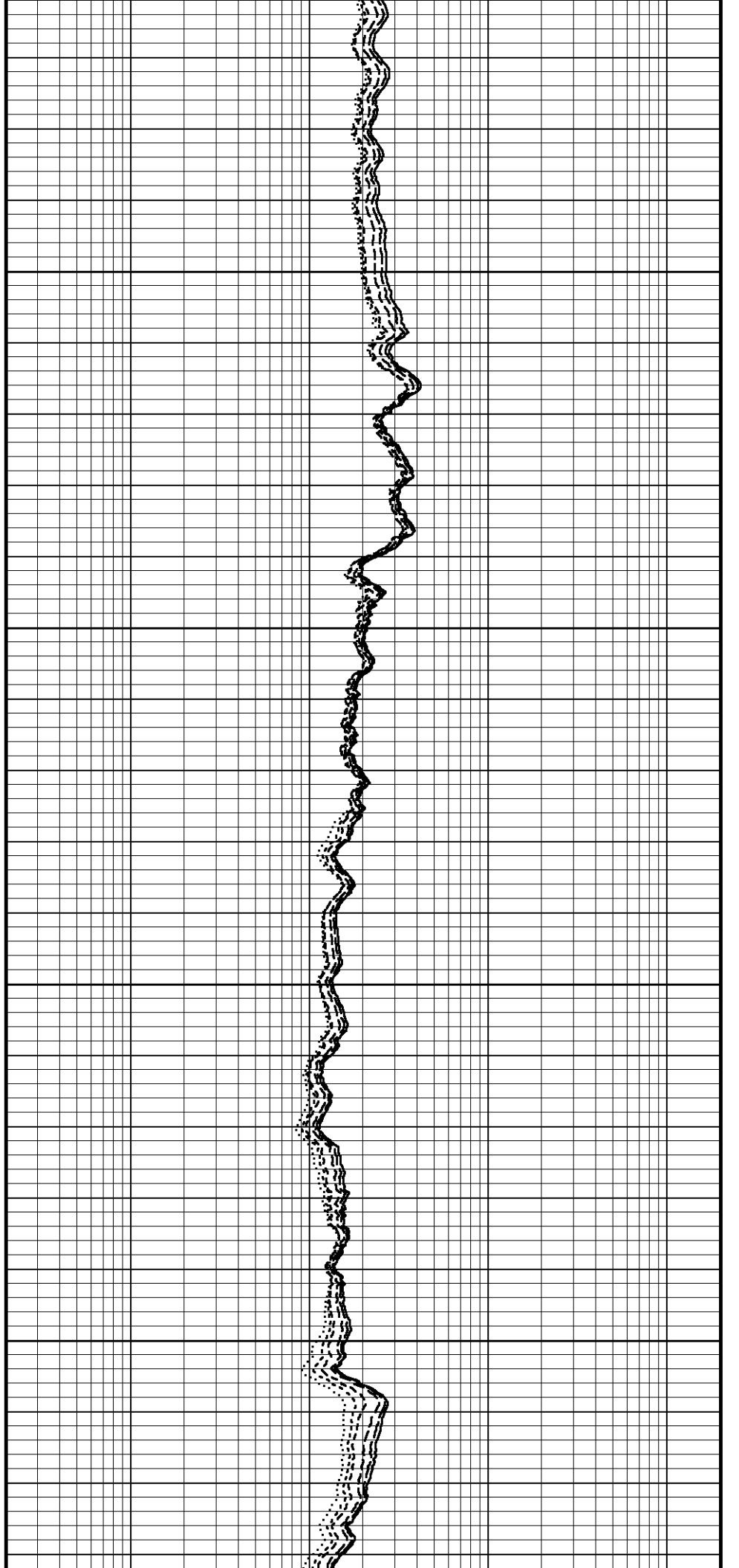
5950

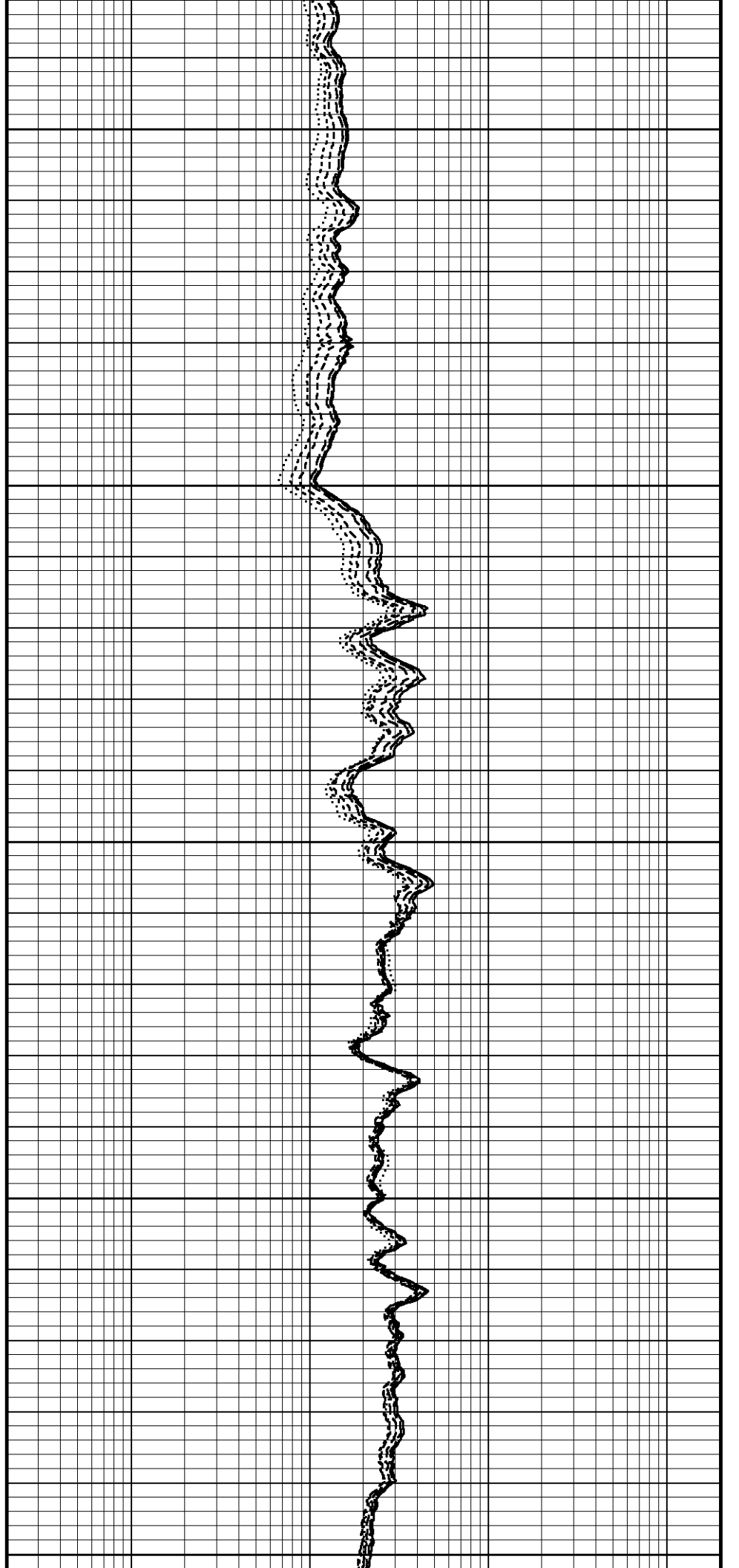
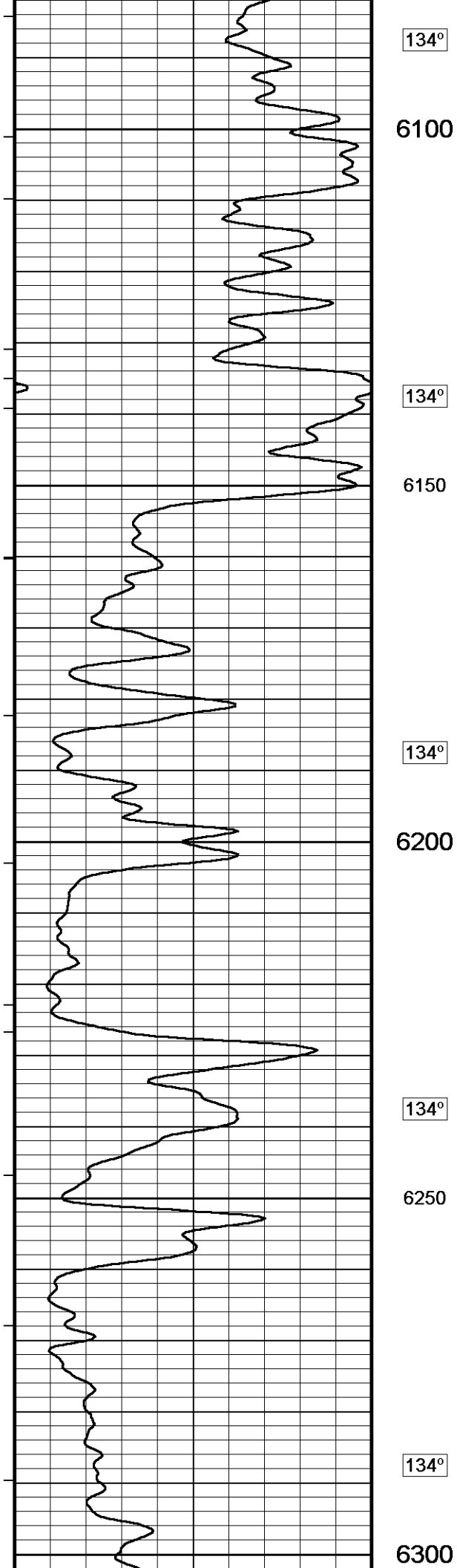
134°

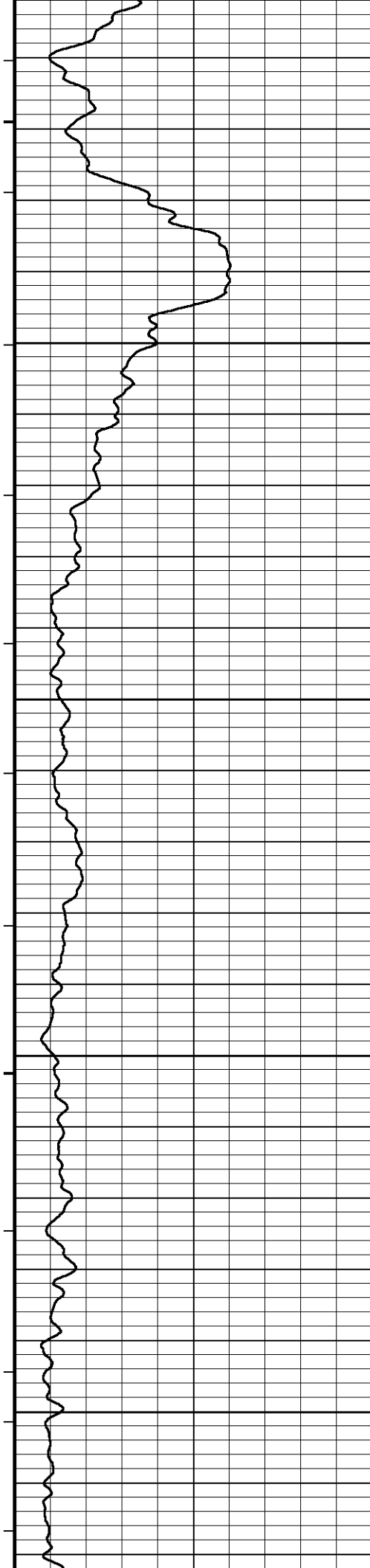
6000

134°

6050







133°

6350

134°

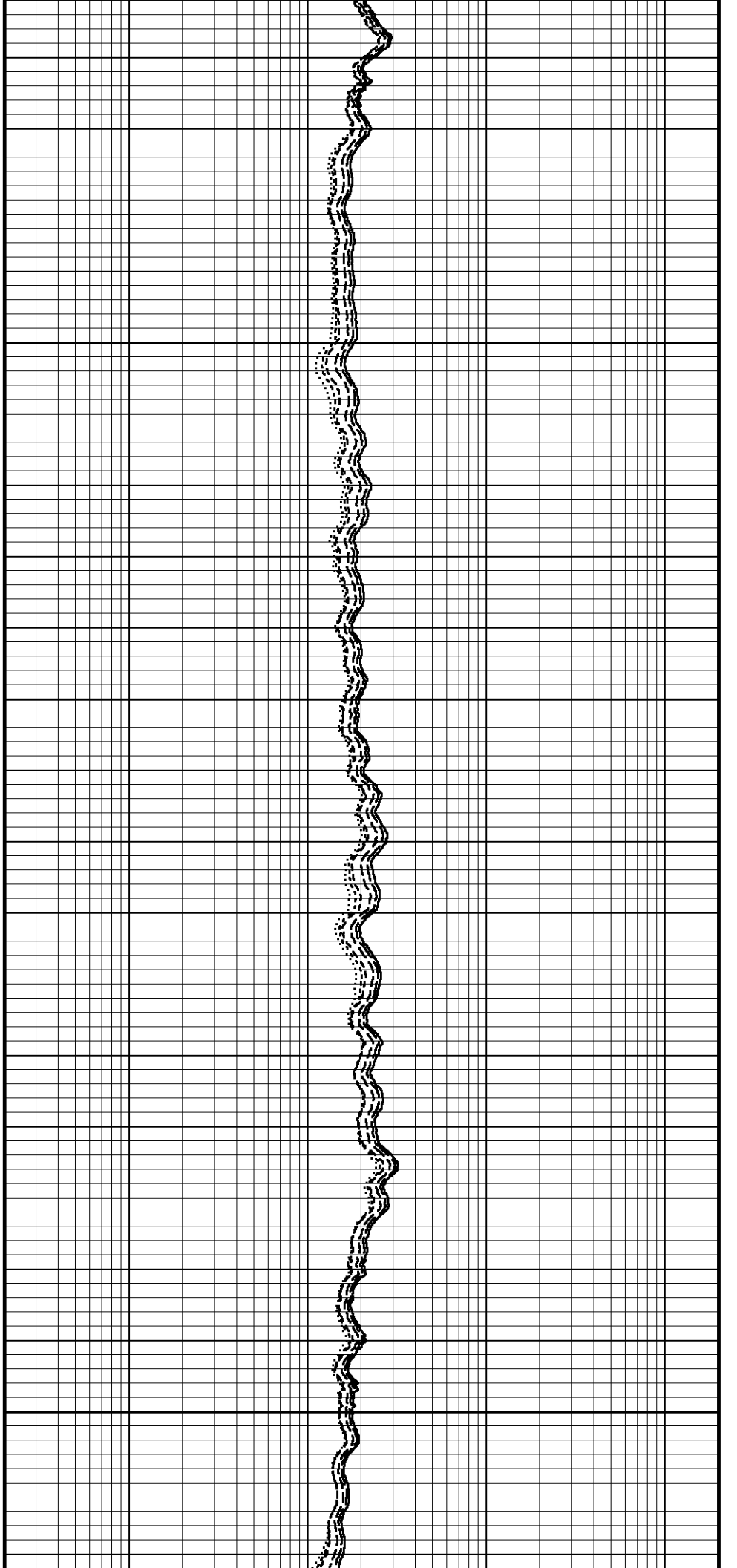
6400

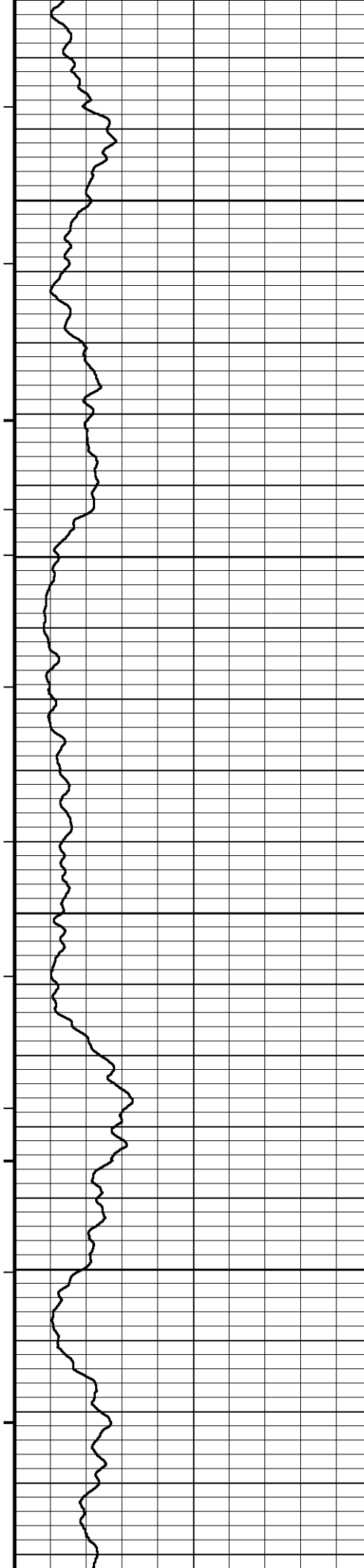
133°

6450

133°

6500





133°

6550

134°

6600

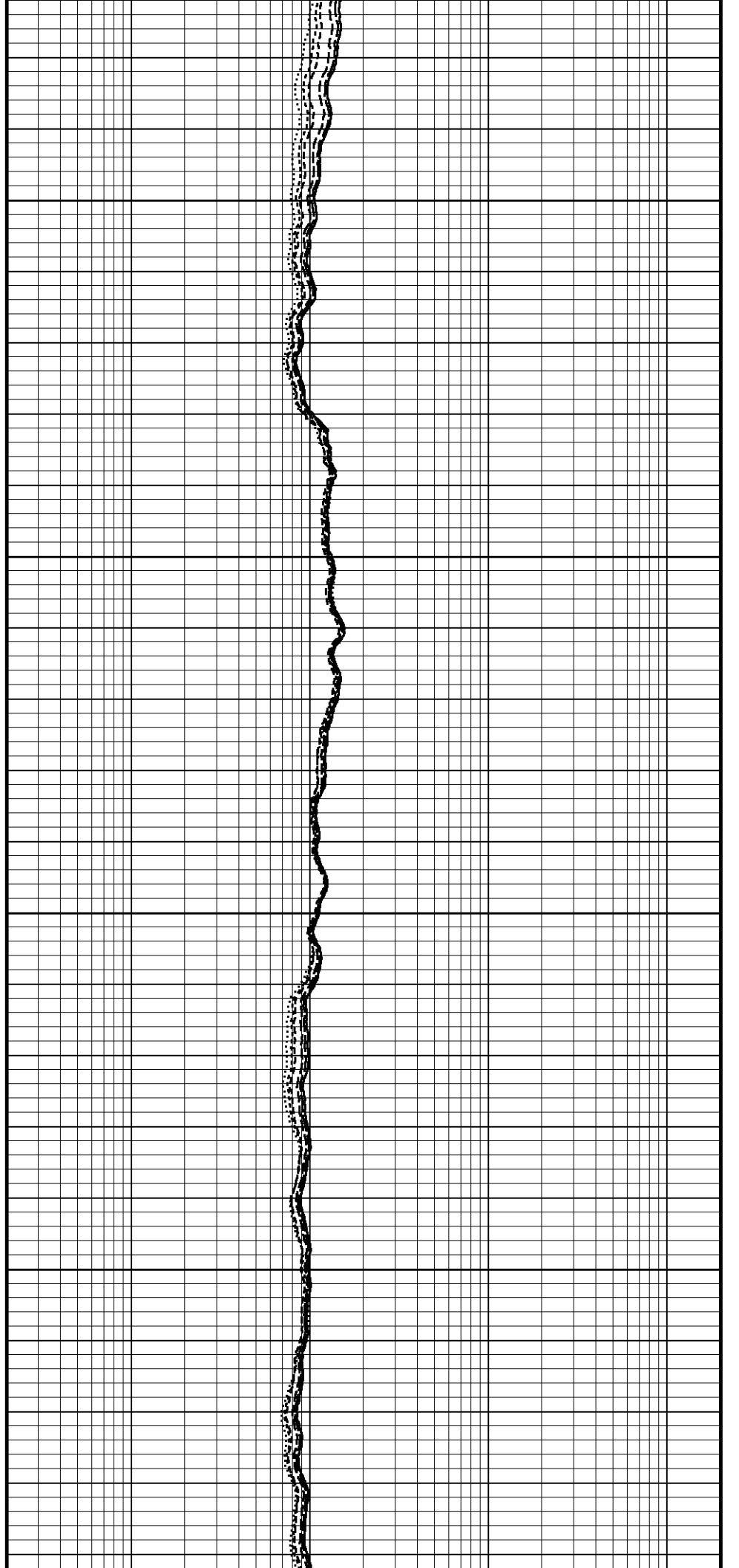
133°

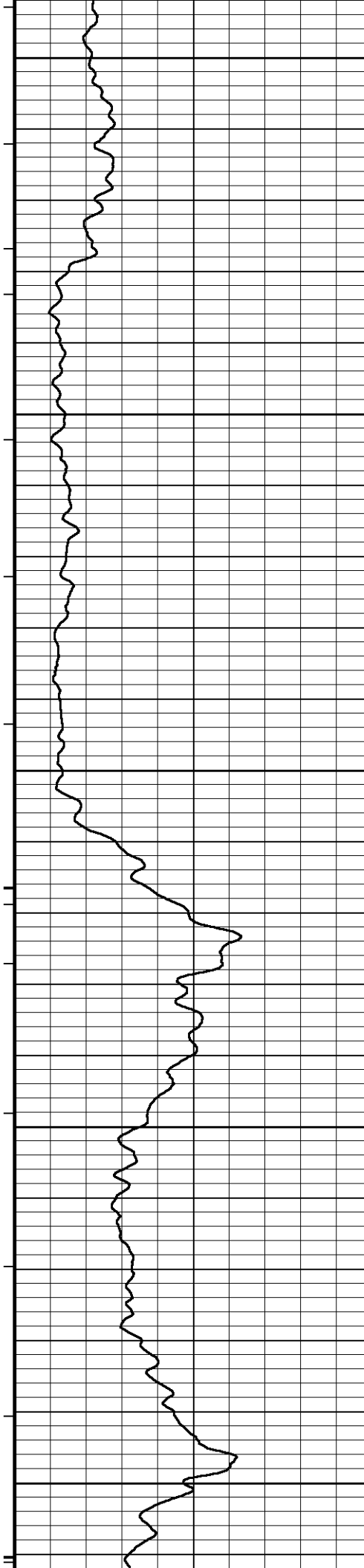
6650

133°

6700

133°





6750

133°

6800

133°

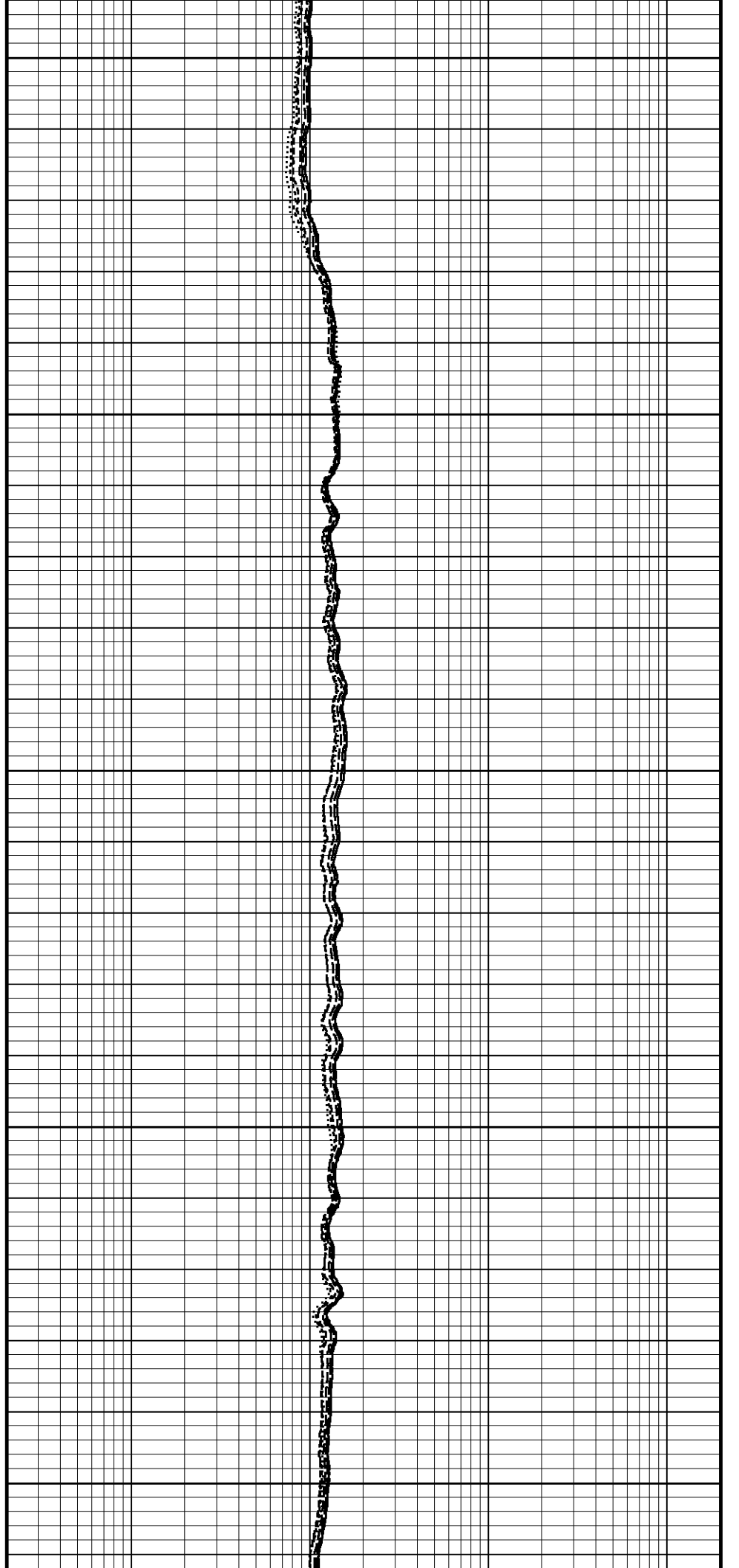
6850

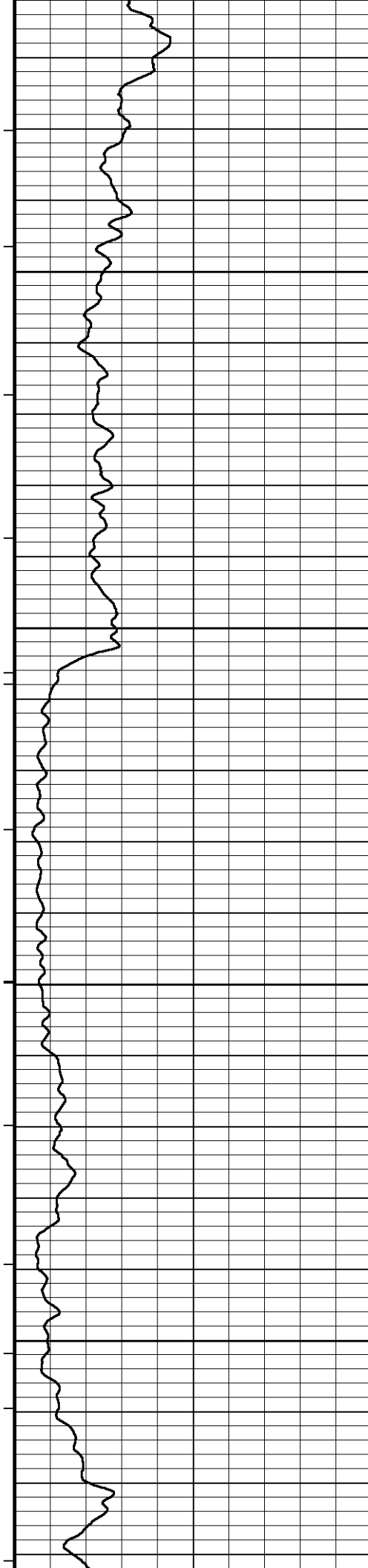
133°

6900

133°

6950





132°

7000

132°

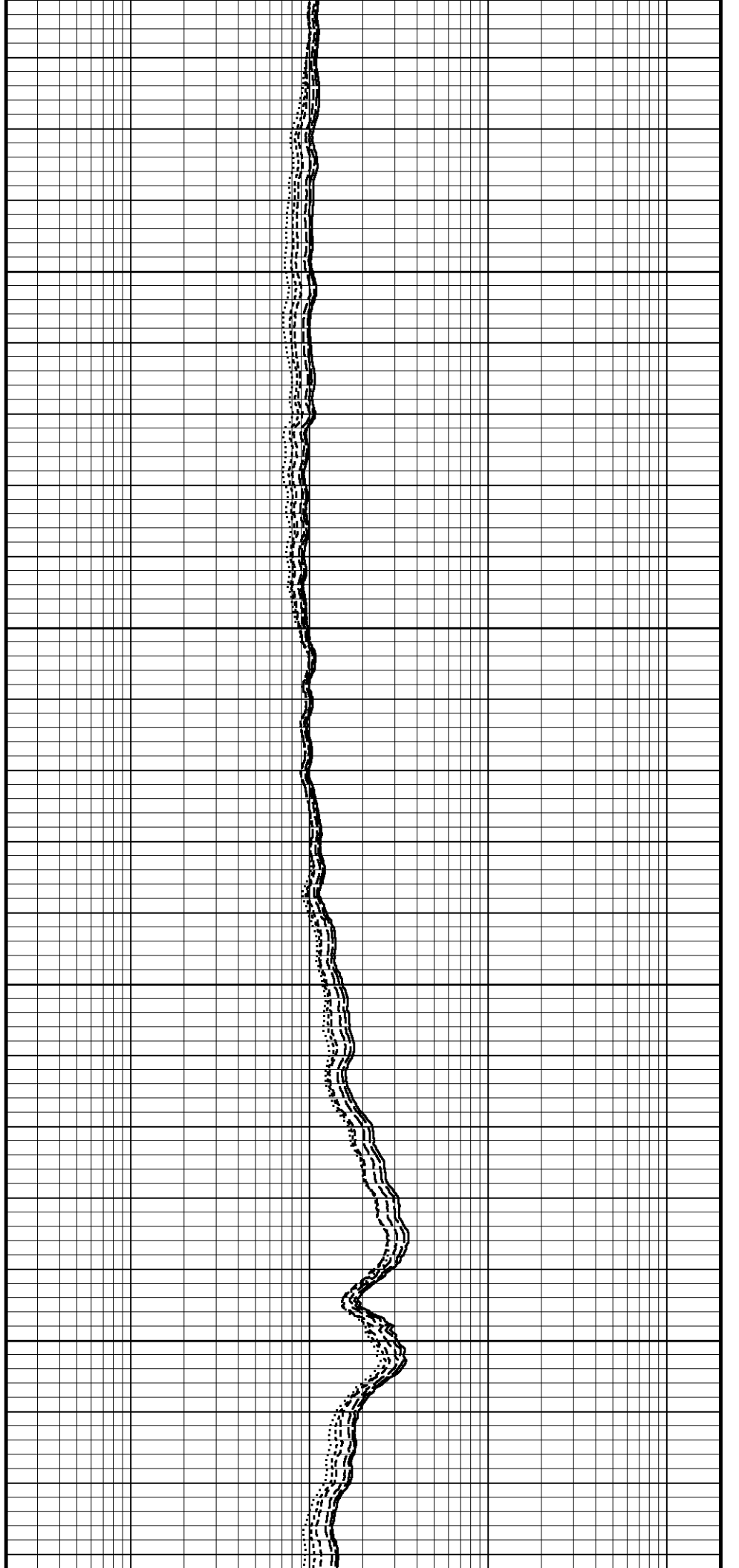
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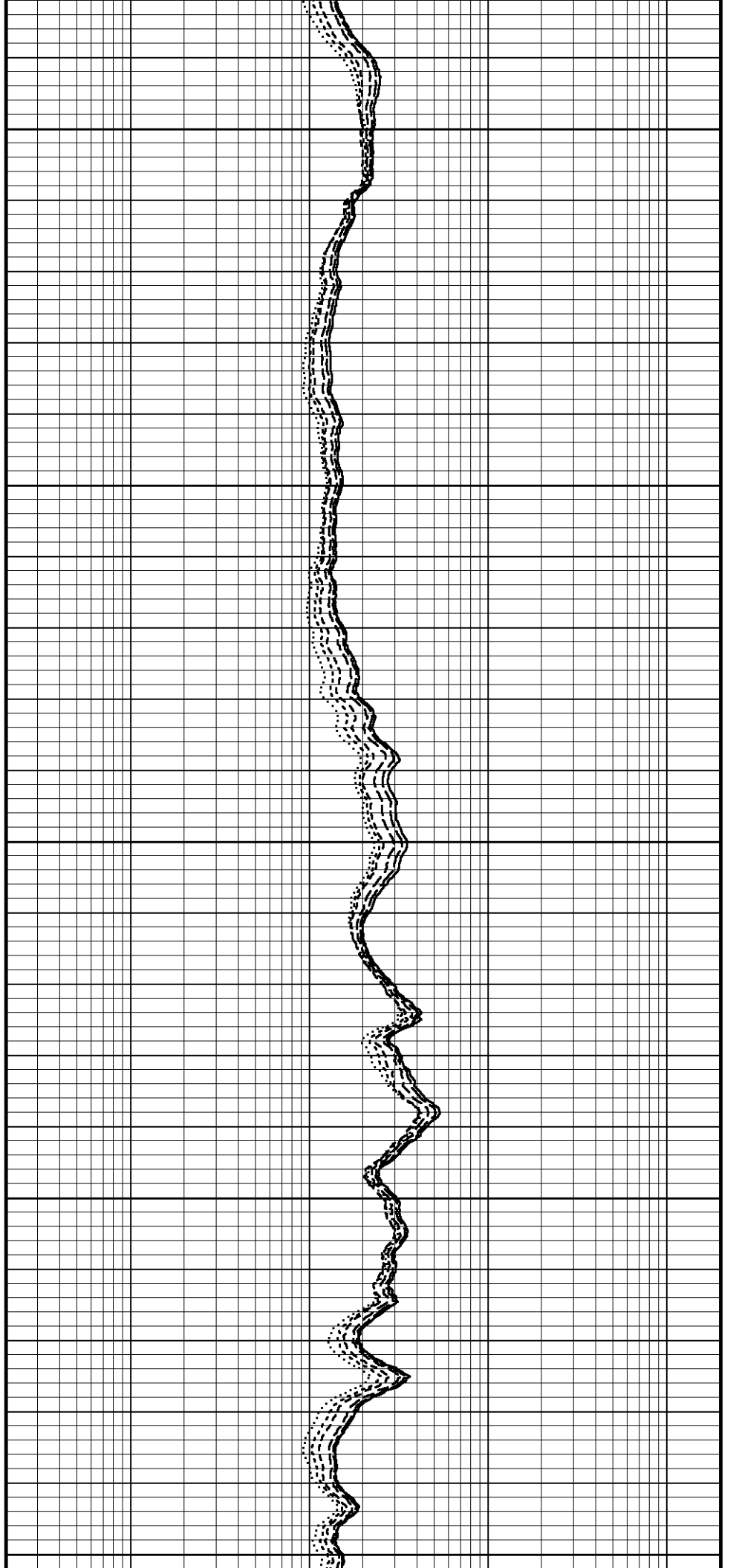
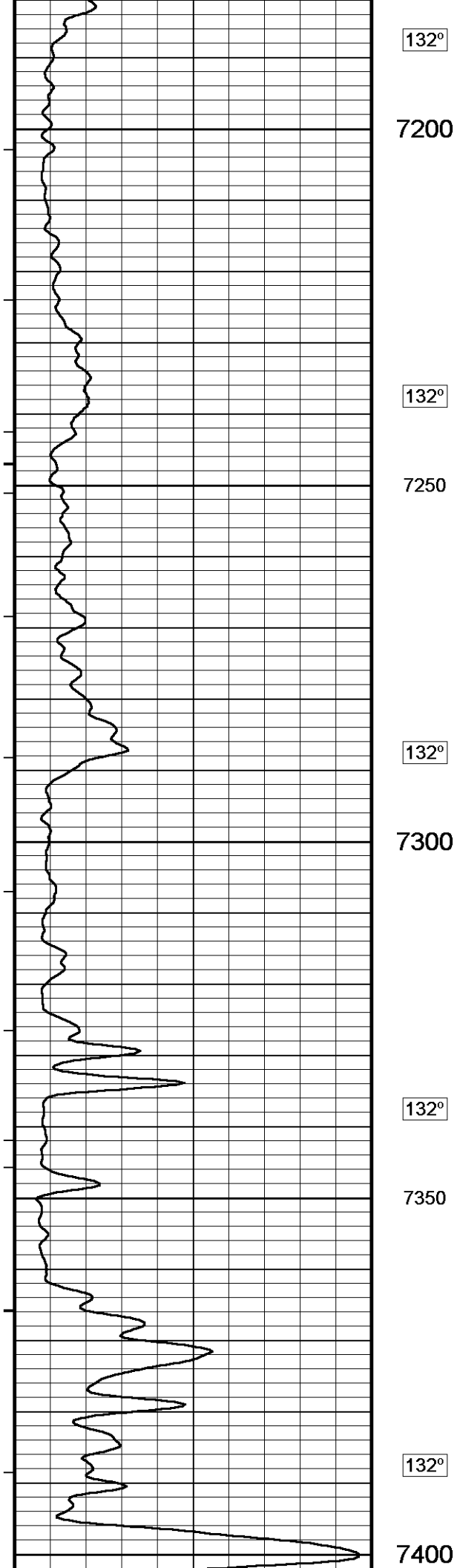
132°

7100

132°

7150





133°

7450

7500

7550

7564
Depth
In
Feet

Timing Marks
every 60.0 sec

Array Ind. Six Res 20
ohm metres

0.20

1

10

100

1000

2000

Array Ind. Six Res 30
ohm metres

0.20

1

10

100

1000

2000

Array Ind. Six Res 40
ohm metres

0.20

2000

4000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10000.0	0.000		0.000		0.000		0.000	
Gamma Calibration MGS-C.J 108								
					Field Calibration on 30-JUL-2012 10:43			
		Measured		Calibrated (API)				
Background		38		26				
Calibrator (Gross)		1048		722				
Calibrator (Net)		1010		696				
Gamma Constants MGS-C.J 108								
Last Edited on 11-JUL-2012 14:32								
Gamma Calibrator Number								
Mud Density		1.74		gm/cc				
Caliper Source for Processing		Density Caliper						
Tool Position		Eccentred						
Concentration of KCl		0.00		kppm				
High Resolution Temperature Constants MGS-C.J 108								
Last Edited on								
Pre-filter Length		11						
Neutron Calibration MDN-C.A 423								
Base Calibration on 03-JUN-2012 17:50								
Field Check on 26-JUL-2012 04:18								
Base Calibration								
		Measured		Calibrated (cps)				
		Near	Far	Near	Far			
		3350	100	3714	110			
Ratio		33.500		33.764				
Field Calibrator at Base								
				Calibrated (cps)				
				1130	1749			
Ratio				0.646				
Field Check								
				Calibrated (cps)				
				1130	1755			
Ratio				0.644				
Neutron Constants MDN-C.A 423								
Last Edited on 27-JUL-2012 08:26								
Neutron Source Id								
Neutron Jig Number								
Epithermal Neutron								
Caliper Source for Processing		No						
Stand-off		Density Caliper						
		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		MGS External Temperature						
Temperature		N/A		degrees F				
Mud Salinity		0.00		kppm				
Formation Fluid Salinity Source		Constant Value						
Formation Fluid Salinity		140.00		kppm				
Barite Mud Correction		Not Applied						
Salinity Correction		Not Applied						
Imager Pad Check MIE-A.A 113								
Field Check on 12-JUN-2012 13:25								
Pad 1	16/20 Buttons Verified	Pad 5	19/20 Buttons Verified					
Pad 2	24/24 Buttons Verified	Pad 6	22/24 Buttons Verified					
Pad 3	19/20 Buttons Verified	Pad 7	20/20 Buttons Verified					
Pad 4	24/24 Buttons Verified	Pad 8	24/24 Buttons Verified					
Compact Micro Imager Constants MIE-A.A 113								
Last Edited on 23-JUL-2012 21:17								
Sonde Configuration								
Arm-Pad Kit		Imager Mode		degrees				
		Normal Pads (12.25 in)						
Centre Pad 1 Rotational Offset		0.00						

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

Navigation Constants MIE-A.A 113	Last Edited on 22-DEC-2011 12:01		
Magnetic Declination	3.62	degrees	East

Magnetometer 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
Bias(g)	0.00000e+000	3.41234e-005	-1.69705e-008
	SF0	SF1	SF2
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
Bias(g)	0.00000e+000	1.41306e-005	-2.62559e-009
	SF0	SF1	SF2
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
Bias(g)	0.00000e+000	2.30753e-005	-5.40650e-010
	SF0	SF1	SF2
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.
1	23517	25136	25351
2	32111	33147	34289
3	39601	41110	42395
4	49214	50836	52775
5	0	0	0
Field Calibration			
	Measured	Measured	Actual
	Pads 1-5 Caliper(in)	Pads 3-7 Caliper(in)	Caliper(in)

	0.00		0.00		0.00	
	Measured Pad 2 Caliper(in) 0.00	Measured Pad 4 Caliper(in) 0.00	Measured Pad 6 Caliper(in) 0.00	Measured Pad 8 Caliper(in) 0.00	Actual Caliper(in) 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 08-MAR-2012 12:02
	Measured	Calibrated(Deg F)				
Lower	10.00	50.00				
Upper	100.00	212.00				
High Resolution Temperature Constants MAI-B.J 394						Last Edited on
Pre-filter Length		11				
Induction Calibration MAI-B.J 394						Base Calibration on 08-MAR-2012 11:57 Field Check on 30-JUL-2012 10:36
Base Calibration						
Test Loop Calibration		Measured		Calibrated (mmho/m)		
Channel	Low	High	Low	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)		Field Check (mmho/m)		
		Low	High	Low	High	
1		0.0	0.0	15.0	3832.7	
2		0.0	0.0	32.4	3650.8	
3		0.0	0.0	29.3	3083.4	
4		0.0	0.0	19.7	2068.9	
Deep		0.0	0.0	16.6	1912.3	
Medium		0.0	0.0	43.5	4143.6	
Shallow		0.0	0.0	50.5	5536.9	
Array Temperature		0.0		88.5	Deg F	
Induction Constants MAI-B.J 394						Last Edited on 01-AUG-2012 09:15
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 10-JUL-2012 00:07
Field Calibration on 20-JUL-2012 05:38

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)
7.89	7.99

Photo Density Calibration MPD-C.J 395

Base Calibration on 08-MAR-2012 11:47
Field Check on 30-JUL-2012 10:41

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	54938	28656	60364	31945
Reference 2	22898	2647	25079	2547

Field Check at Base

1172.4	1346.5
--------	--------

Field Check

1244.1	1467.1
--------	--------

PE Calibration

Base Calibration	Measured		Calibrated
	WS	WH	Ratio
Background	218	1051	
Reference 1	24528	54744	0.453
Reference 2	6633	22766	0.295

Field Check at Base

218.2	1051.4
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Field Check

228.1	1119.4
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Density Constants MPD-C.J 395

Last Edited on 23-JUL-2012 22:55

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	1.01	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
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0.00	0.00
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0.00
0.00
0.00
0.00
0.00
0.00

C:\Data\Sandridge\Sandridge Sutton 1825 1-3H\MMS167 Depthlog.dta

MIS D A Compact Inline Bowspring sub



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 113 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: 4.09 in

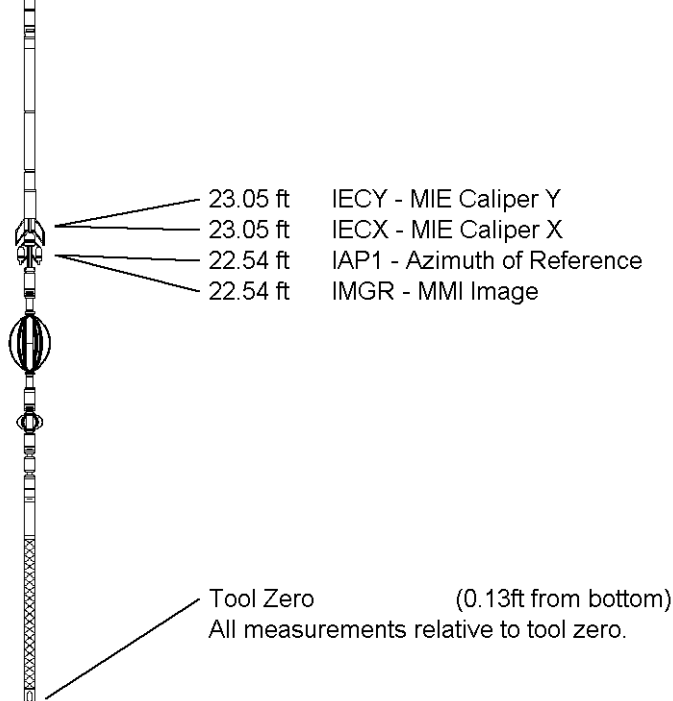
MIS-D.A Compact Inline Bowspring sub
MIS-D.A 596 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

MIS-E.B Compact Inline Standoff sub
MIS-E.B 749 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: 128.77 ft Weight: 956.8 lb



COMPANY	SANDRIDGE EXPLORATION & PRODUCTION
WELL	SUTTON 1825 1-3H
FIELD	ALDRICH
PROVINCE/COUNTY	NESS
COUNTRY/STATE	USA / KANSAS

Elevation Kelly Bushing	2375.00	feet	First Reading	7545.00	feet
Elevation Drill Floor	2375.00	feet	Depth Driller	7576.00	feet
Elevation Ground Level	2355.00	feet	Depth Logger	7551.00	feet



Weatherford®

CML IMPULSE SHUTTLE
COMPACT ARRAY INDUCTION
LOG

