

SCHUMBERGER NEUTRON POROSITY LOG

SIDEWALL

PROVINCE YUKON TERRITORIES
 FIELD WILDCAT
 WELL INEXCO HUSKY ET AL PORCUPINE
 Y.T. G-31
 COMPANY INEXCO OIL COMPANY

26 FEB 72	ONE	4885	990	3895	4887	4900	990	988	STIFF FOAM & AIR	22 MAR 72	TWO	8718	4900	3818	8720	8720	4900	4900	GEL	8.7	8.0	28.5	70	5.09	70
12 1/4"										8 3/4"															

COMPANY INEXCO OIL COMPANY
 WELL INEXCO HUSKY ET AL PORCUPINE
 Y.T. G-31
 FIELD WILDCAT
 PROVINCE YUKON TERRITORIES
 LOCATION 66° 21' 22" N LAT.
 140° 06' 13" W LONG.
 ELEV: KB 3025.0
 Q 3008.4
 Other Settings: FDC-GR, HDT,



MAR 72 CAL PK

REMARKS
 Drilling Stopped 1200 / 24th : Circulation Stopped 2200 / 24th : Tool on Bottom 0900 / 26th : 1st Run Service Order # 7701
 B.H.T. 94

Panel No. EA 188	HOLE DRILLED WITH STIFF FOAM & AIR SEEPING FORMATION WATER PLUS 250 BARRELS OF RIG. WATER FILLED HOLE TO CASING
Cartridge No. A 341	
Sonde No. E 555	
Detector No. A 88	

CALIBRATION: Gamma Ray				Neutron Environmental Cal.	
Background CPS	Test Source CPS	Galv. Deflection	Sens. Tap	Drawer In-CPS	Drawer Out-CPS
30	410	10.0		Before 200	198
Panel Settings: Function Former Temp. Comp. Setting T.C.				Mud Wt./Salinity Comp. set as per recorded value	
LIMESTONE	91	2	from 4885 to 990	After	
				Neutron Auxiliary Cal. - CPS	
				Before	
				After	

This interpretation represents our best judgment. Nevertheless since all interpretations are opinions based solely on inferences from electrical or other measurements, we cannot and do not guarantee the accuracy or correctness of any interpretation and shall not be liable or responsible for any loss, cost, damages, or expenses that may be incurred or sustained resulting from this or any other interpretation.

REMARKS RUN 2:
 Drilling Stopped 2200 / 20th : Circulation Stopped 0500 / 21st : Tool on Bottom 2200 / 21st : 1st Run Service Order # 7701
 B.H.T. 114

Panel No. EA 169	RUN 2: MUD SAMPLES: Rm #1 = 6.37 @ 69°F (0330 / 21st) Rm #2 = 6.29 @ 70°F (0400 / 21st) Rm #3 = 6.17 @ 69°F (0430 / 21st)
Cartridge No. A 68	
Sonde No. E 555	
Detector No. PNHA	

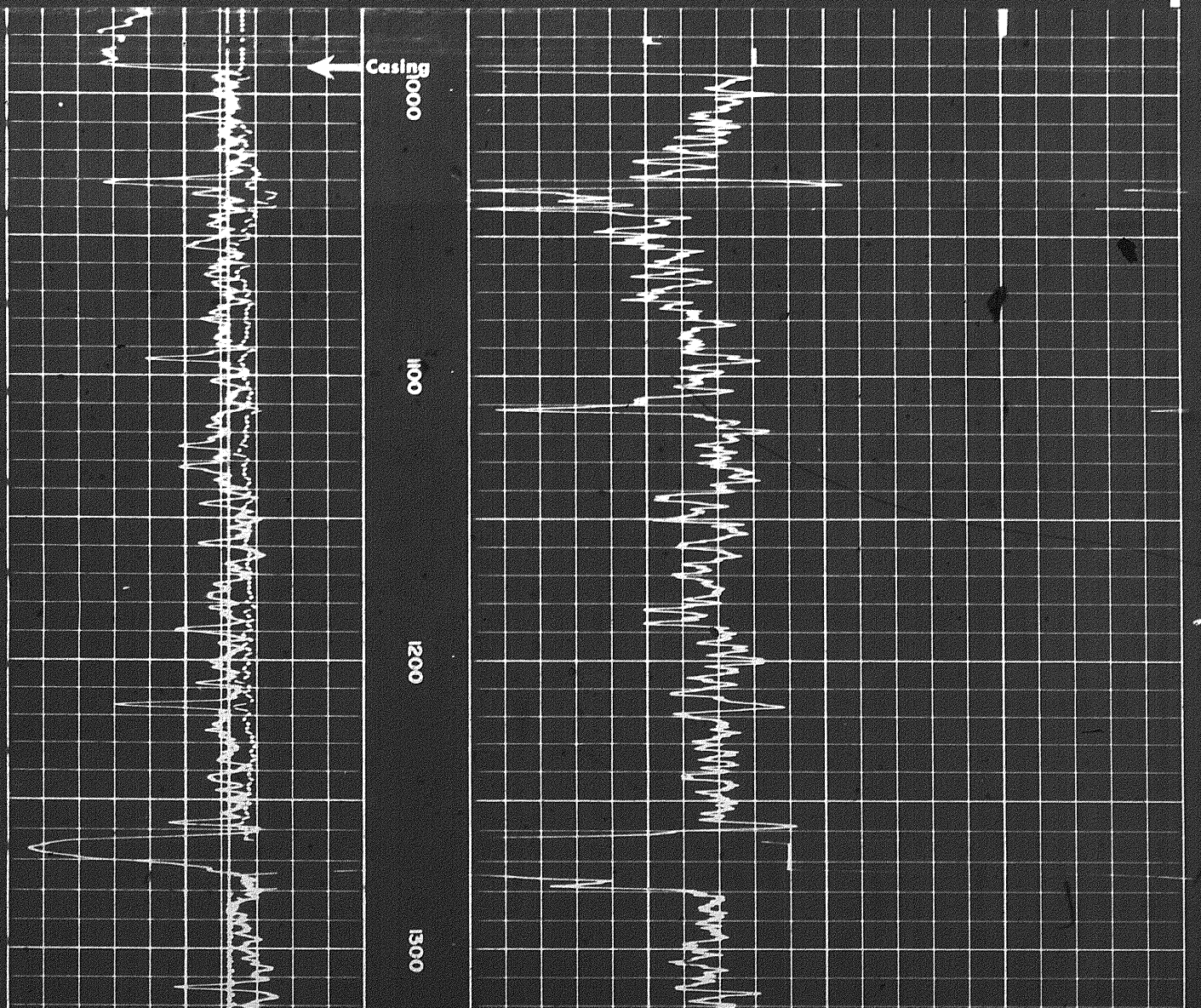
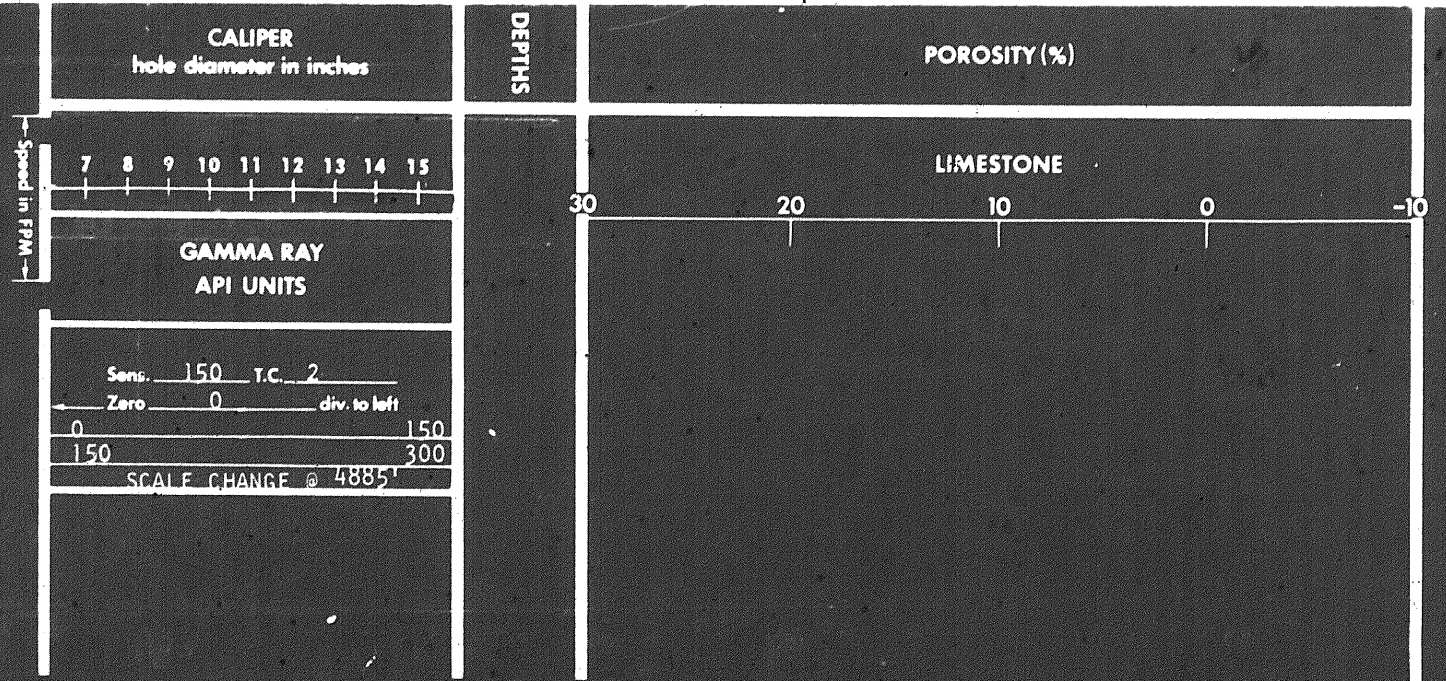
CALIBRATION: Gamma Ray				Neutron Environmental Cal.	
Background CPS	Test Source CPS	Galv. Deflection	Sens. Tap	Drawer In-CPS	Drawer Out-CPS
20	420	10.0	PGP	Before	
Panel Settings: Function Former Temp. Comp. Setting T.C.				Mud Wt./Salinity Comp. set as per recorded value	
LIMESTONE	110	2	from 8718 to 4900	After	
				Neutron Auxiliary Cal. - CPS	
				Before	
				After	

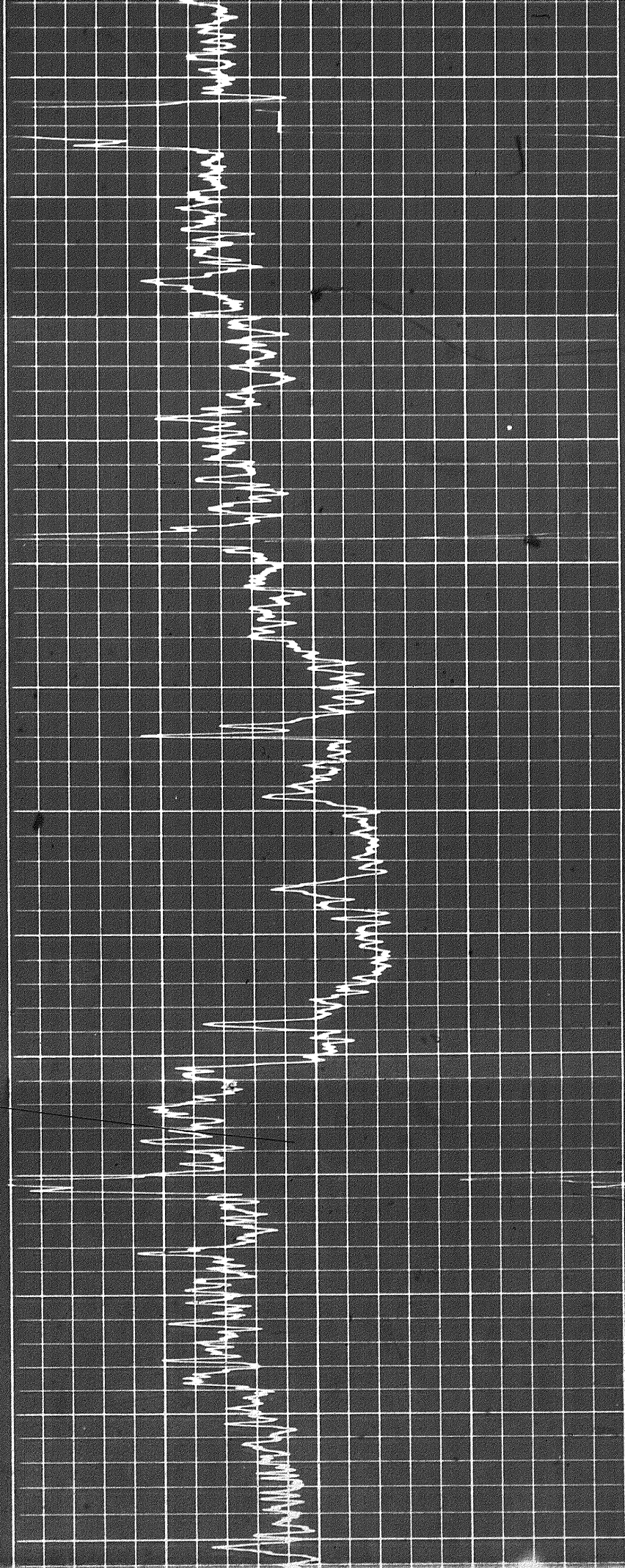
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Detector No. PNHA
 SFT-116 No.

CALIBRATION: Gamma Ray				Neutron Environmental Cal.	
Background CPS	Test Source CPS	Galv. Deflection	Sens. Tap	Drawer In - CPS	Drawer Out - CPS
20	420	10.0	PGP	Before	
Panel Settings: Function Former Temp. Comp. Setting T.C.				After	
LIMESTONE	110	2	Mud Wt./Salinity Comp. set as per recorded value	Neutron Auxiliary Cal. - CPS	
			from 8718 to 4900	Before	
			from to	After	

This interpretation represents our best judgment. Nevertheless since all interpretations are opinions based solely on inferences from electrical or other measurements, we cannot and do not guarantee the accuracy or correctness of any interpretation and shall not be liable or responsible for any loss, cost, damages, or expenses that may be incurred or sustained resulting from this or any other interpretation.





1300

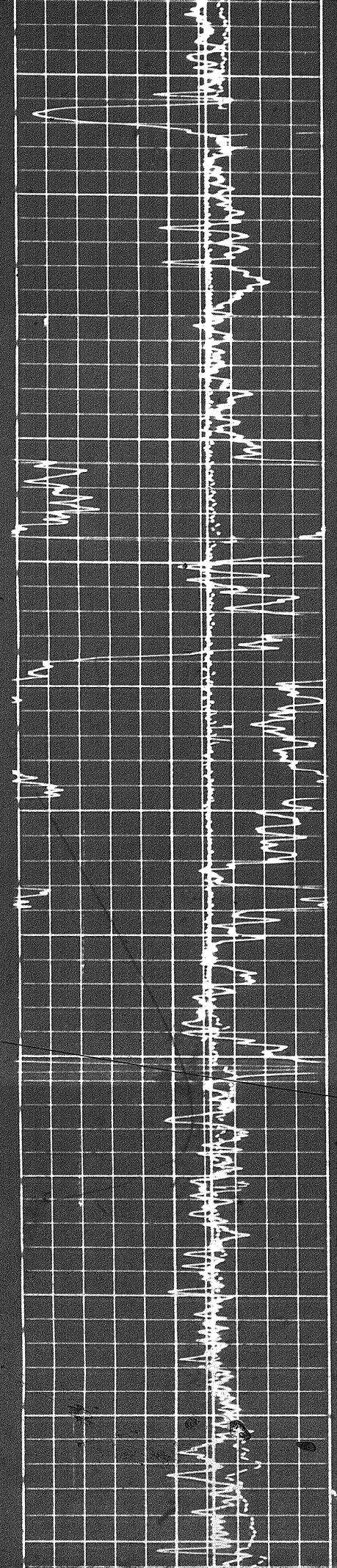
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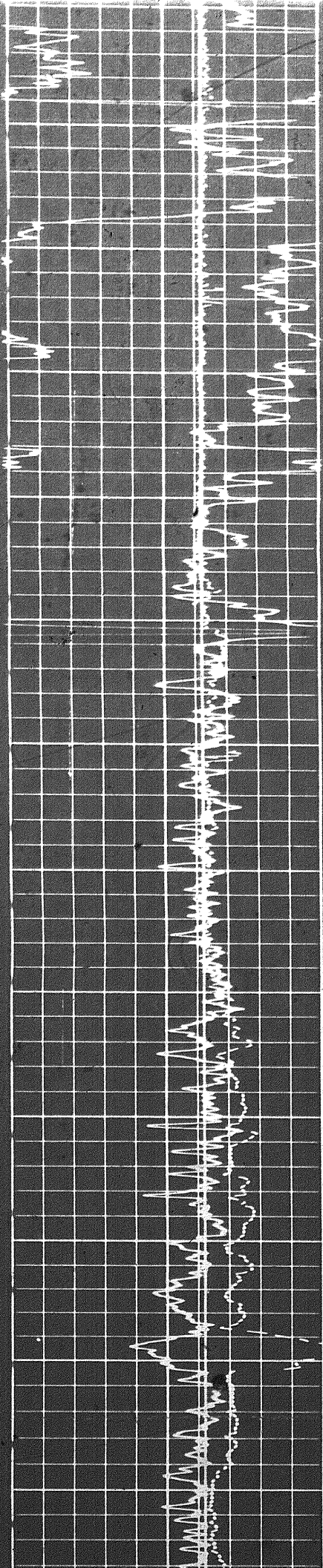
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1600

1700

1800





00

1500

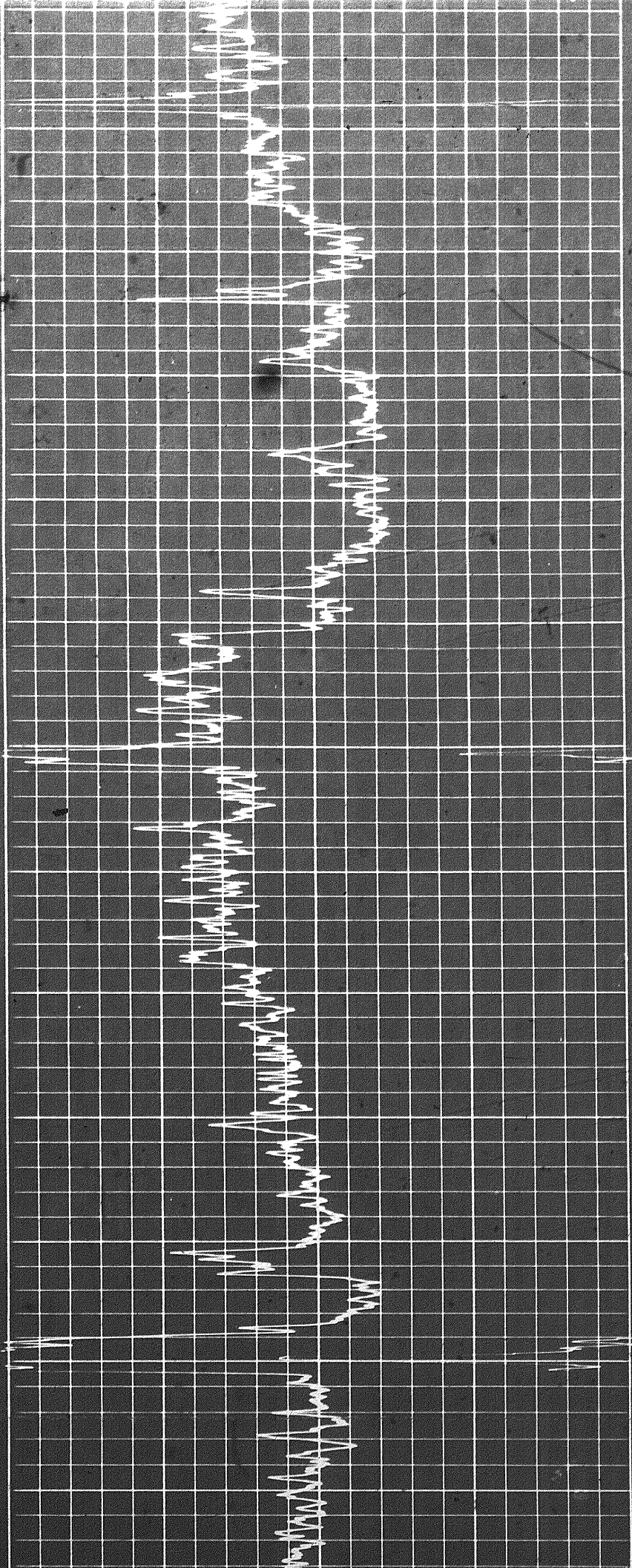
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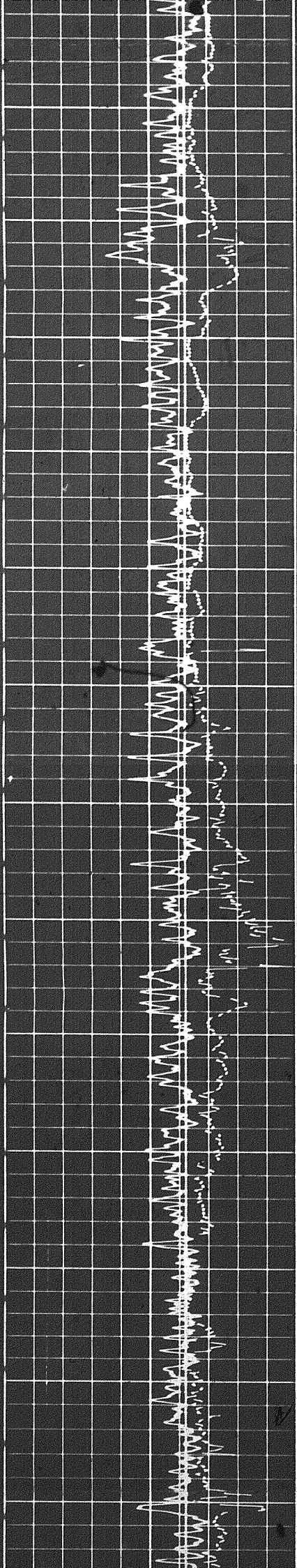
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1900

2000



982



2000

2100

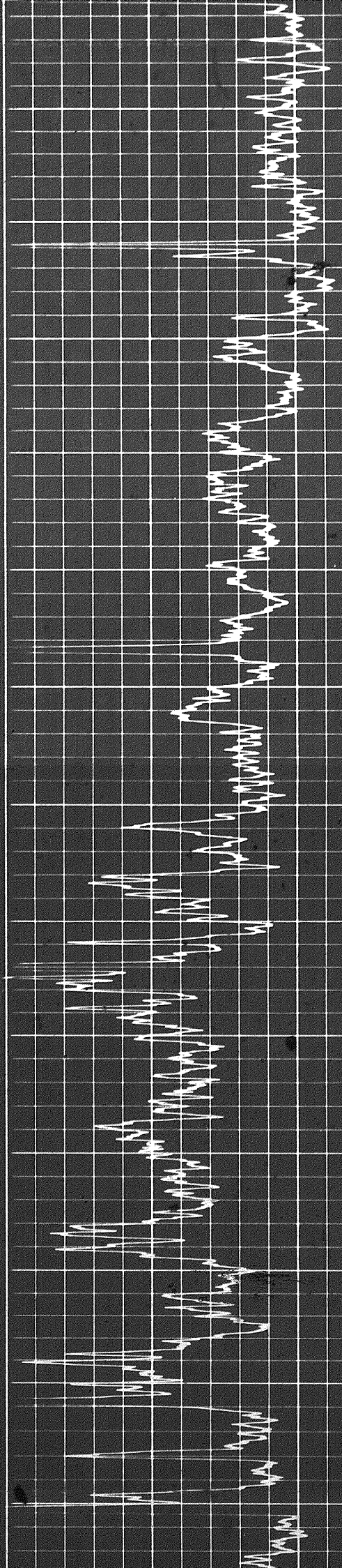
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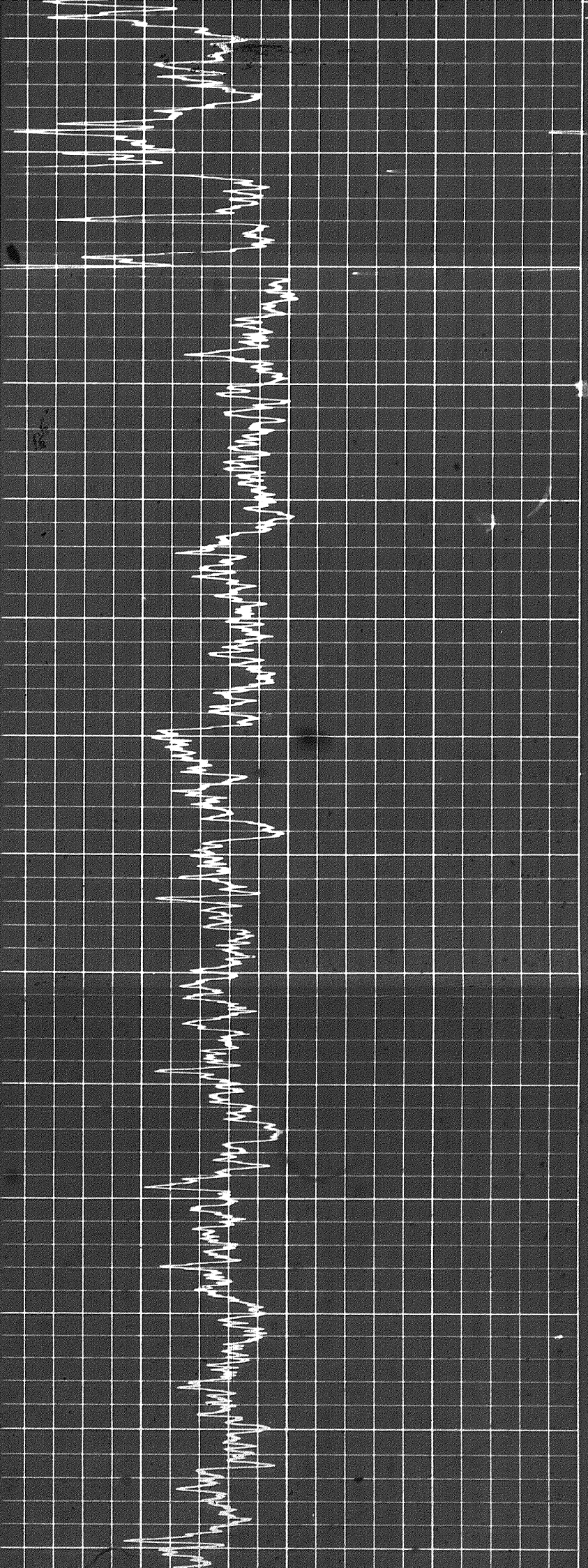
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2500

2600





2500

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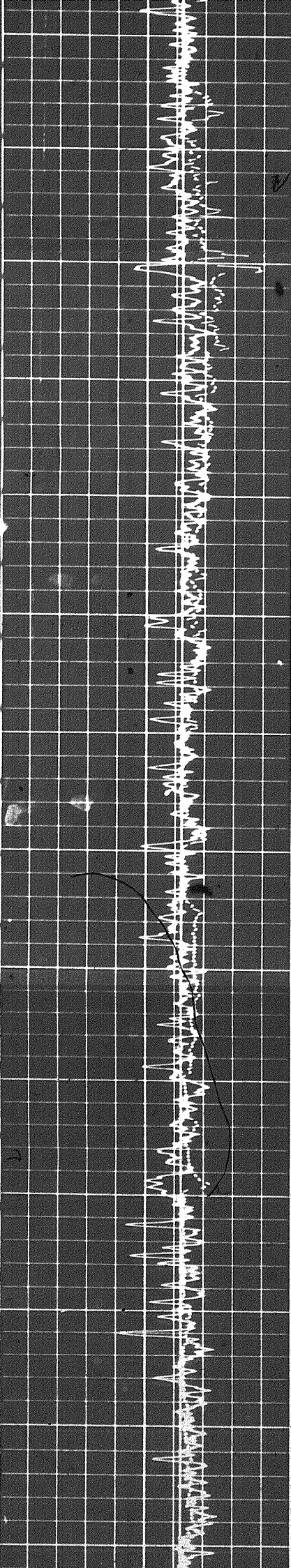
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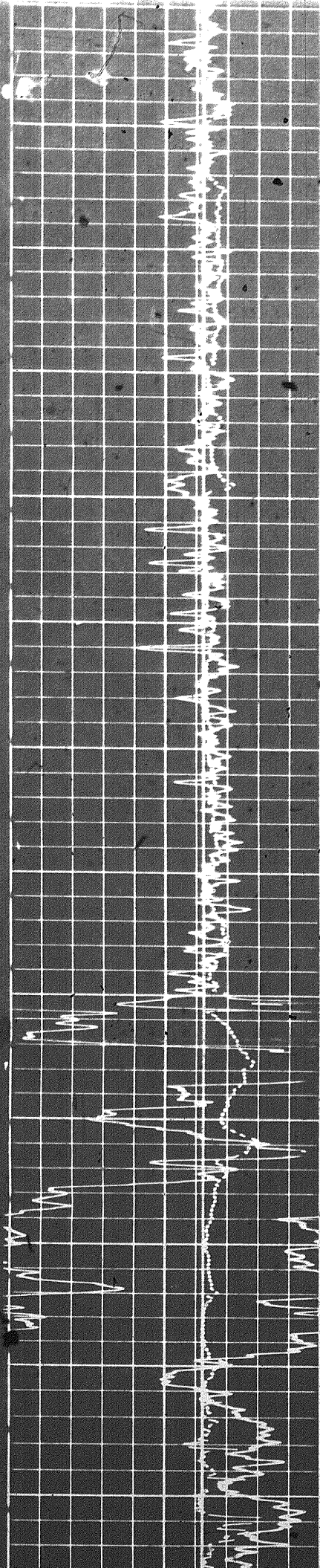
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2900

3000

3100





3000

2800

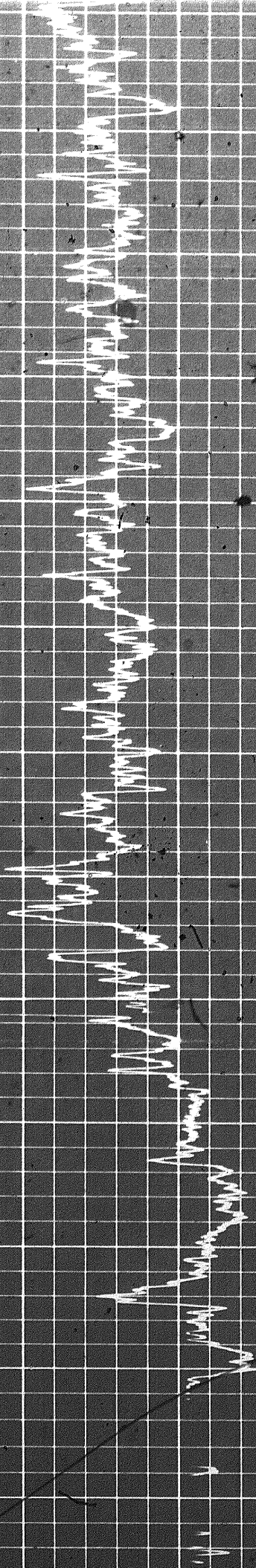
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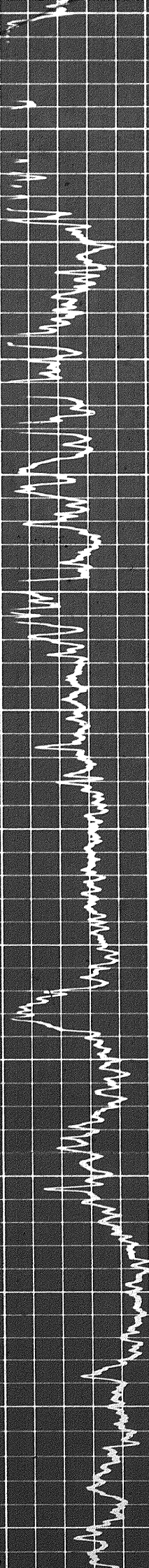
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3200

3300

3400





3400

3500

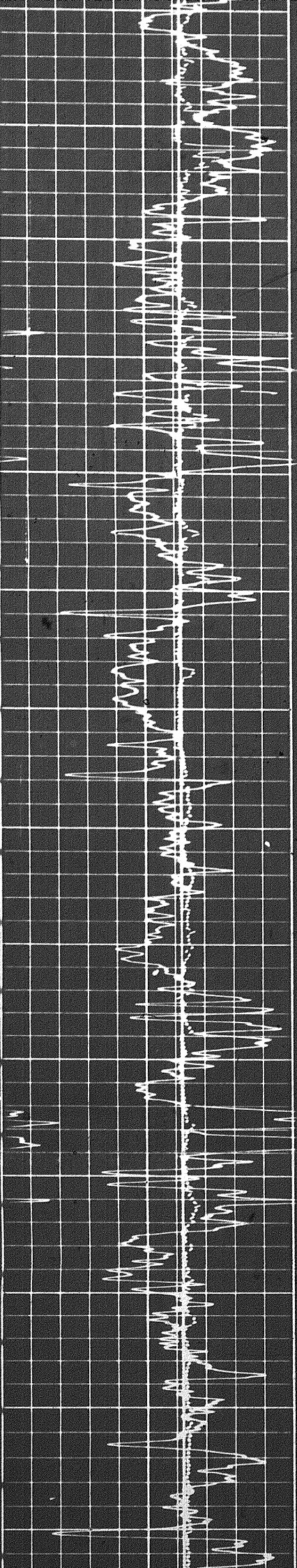
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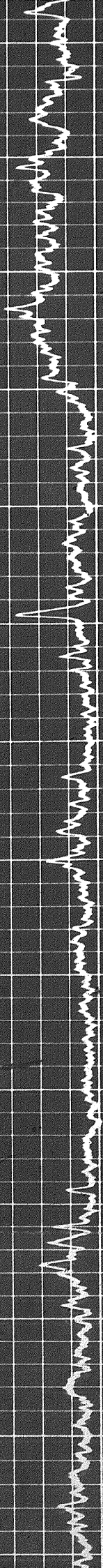
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3800

3900

4000





4000

4100

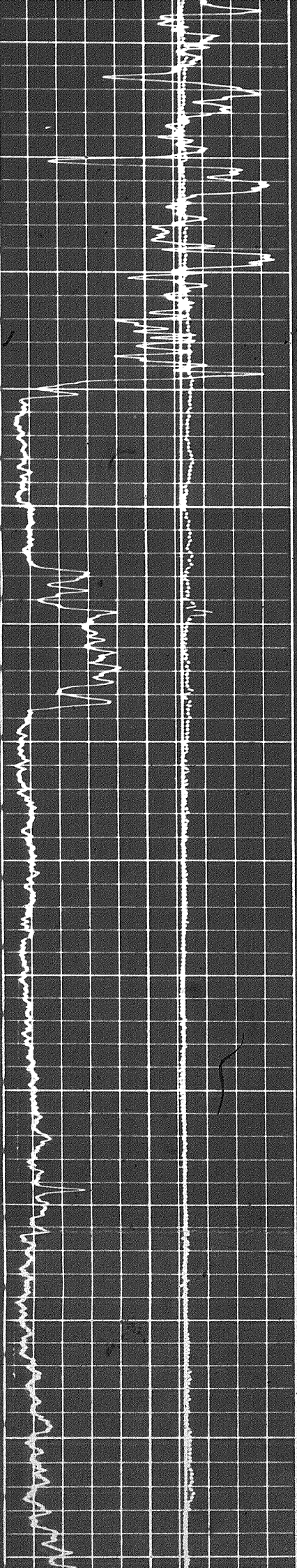
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4300

4400

4500

4600



4800

4800

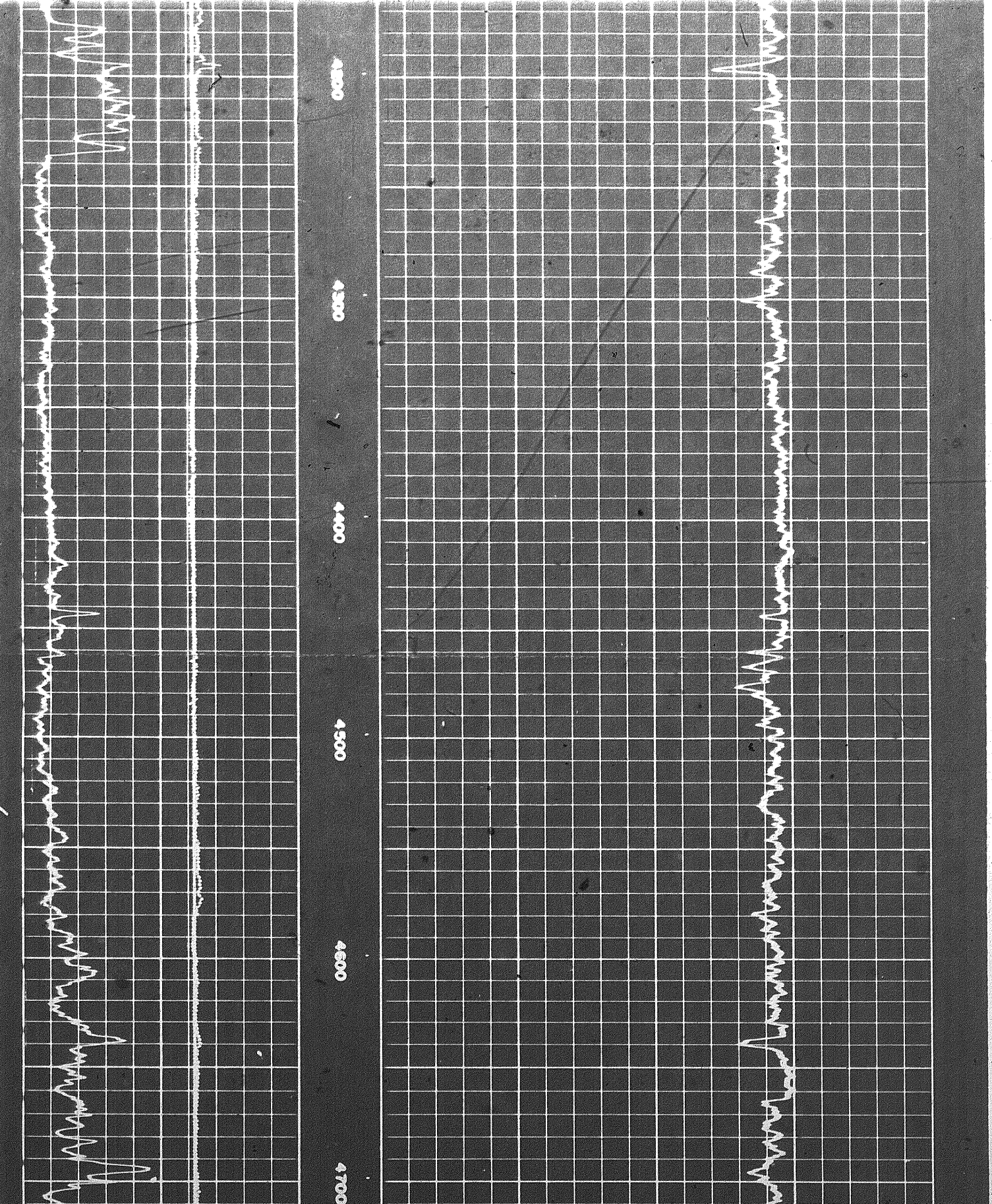
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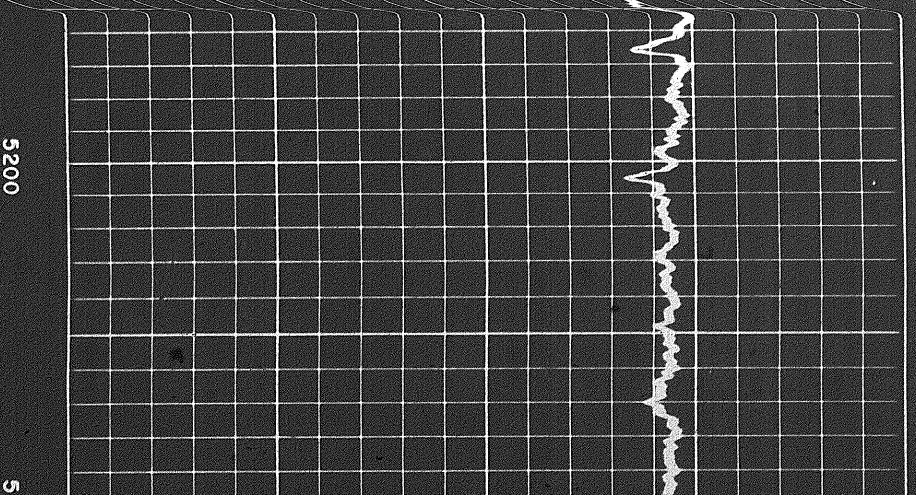
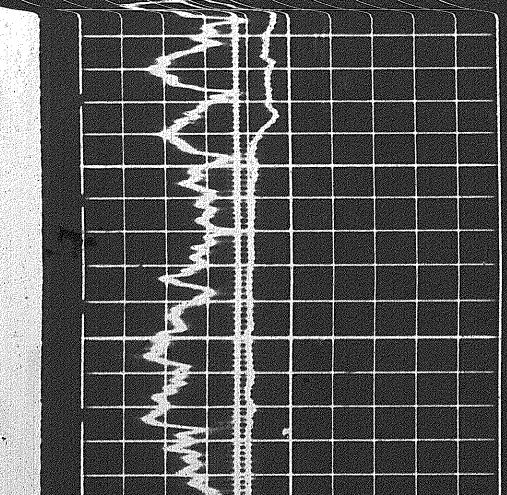
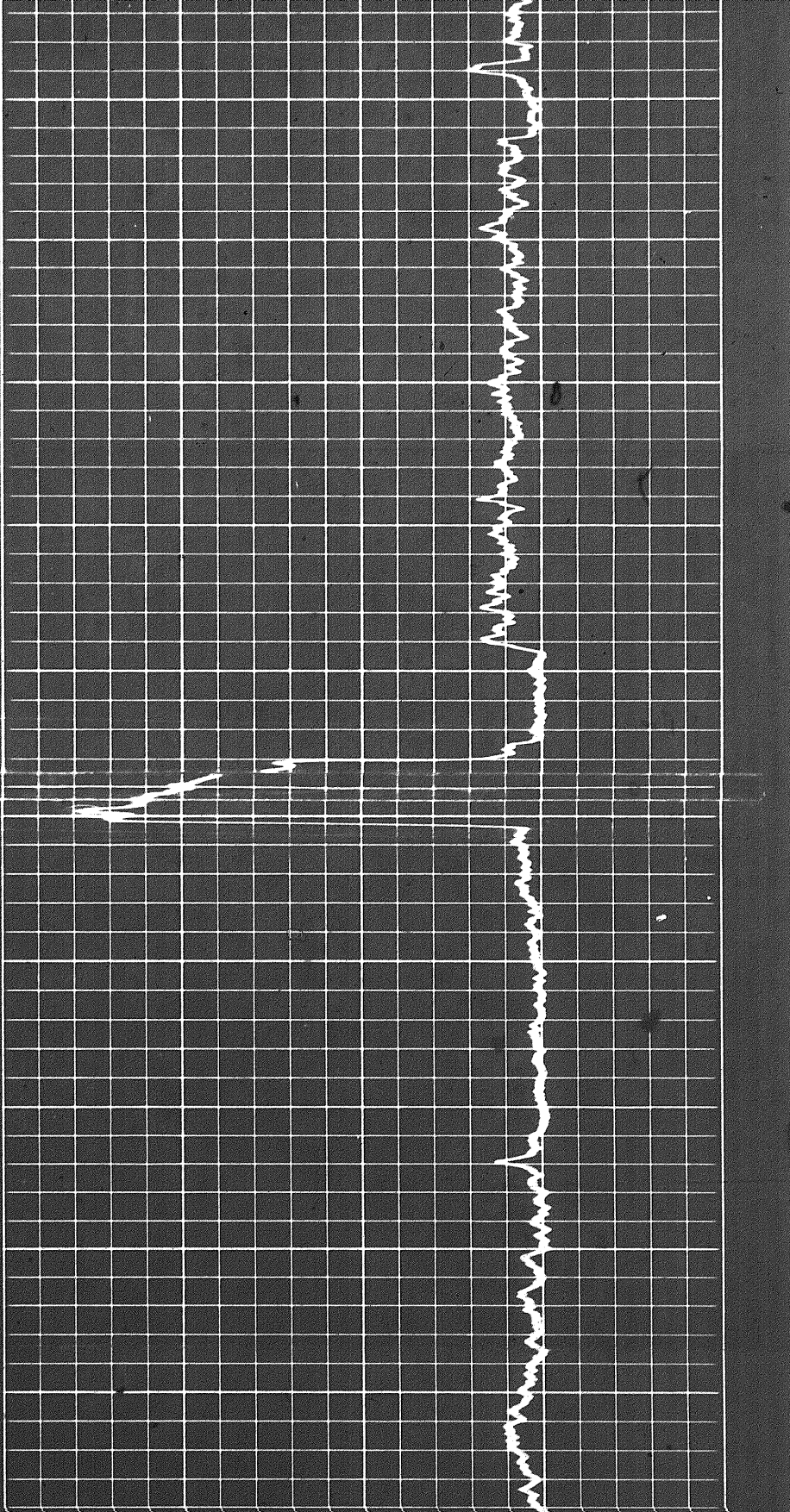
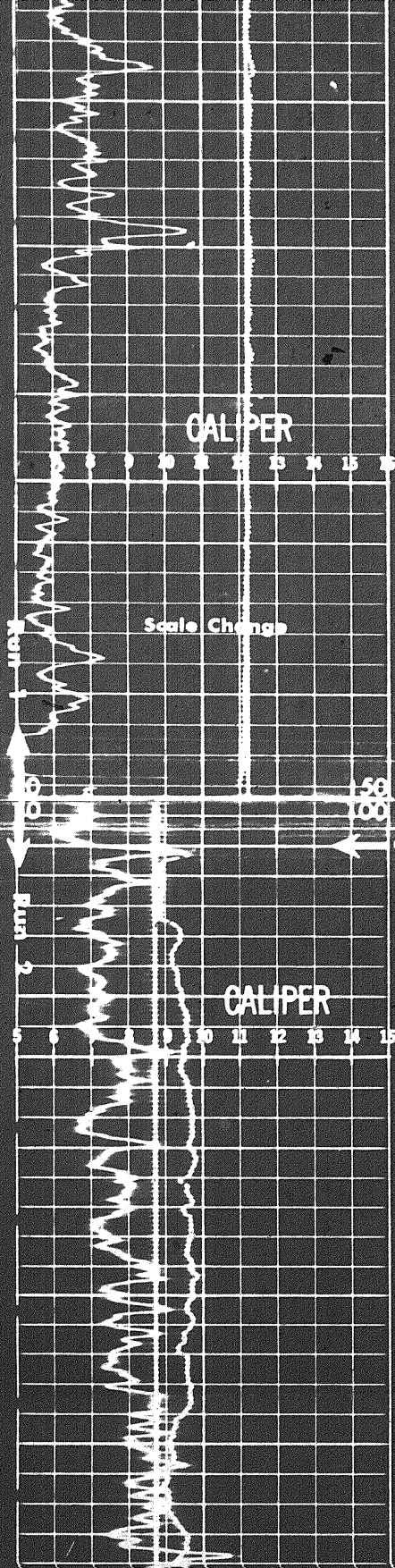
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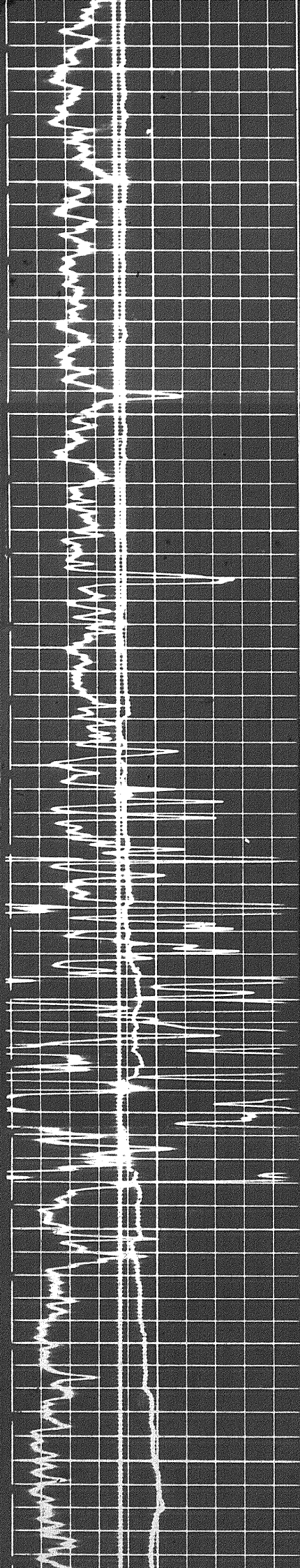
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4600

4700







5300

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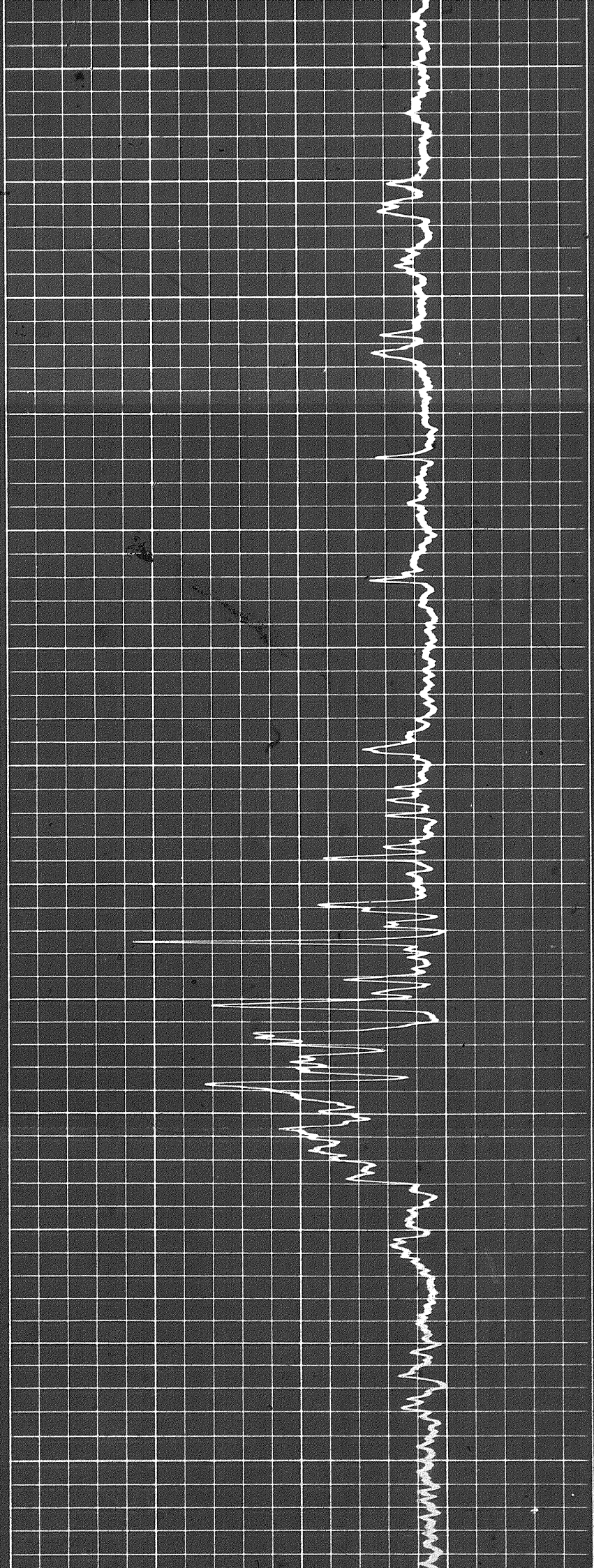
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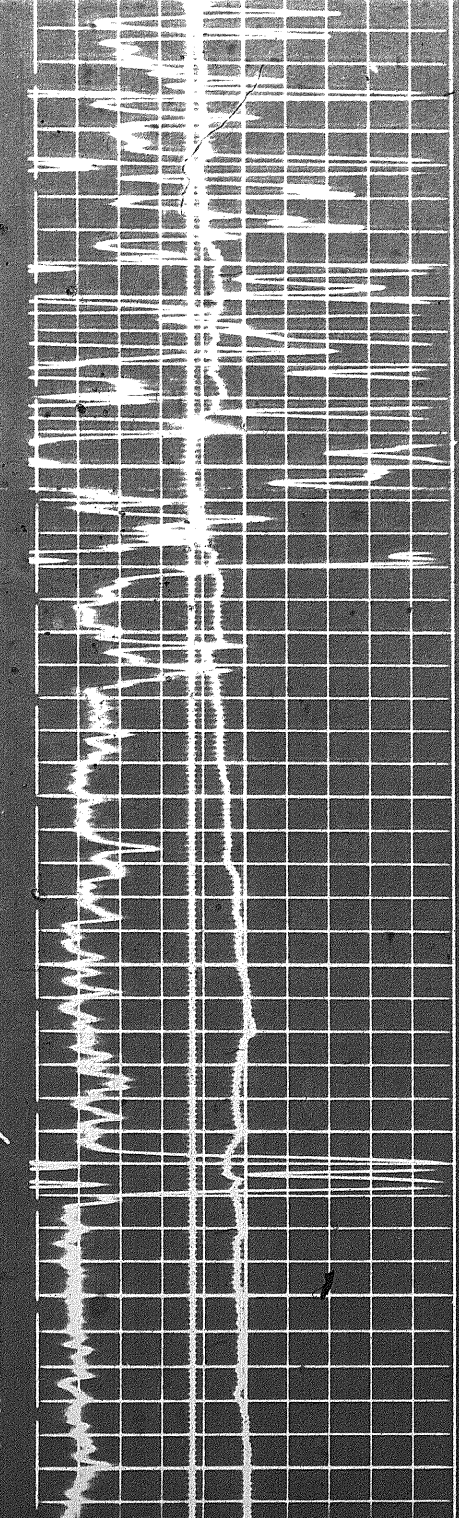
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5700

5800

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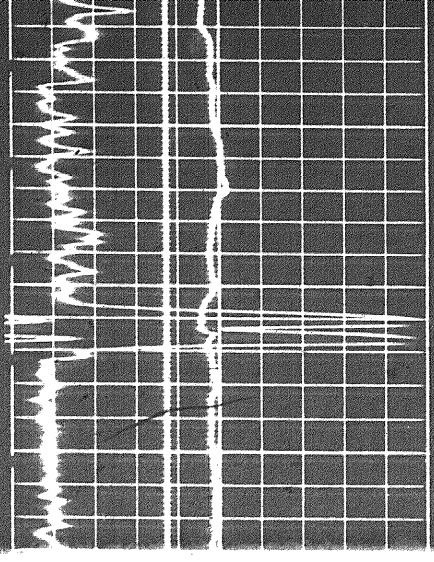
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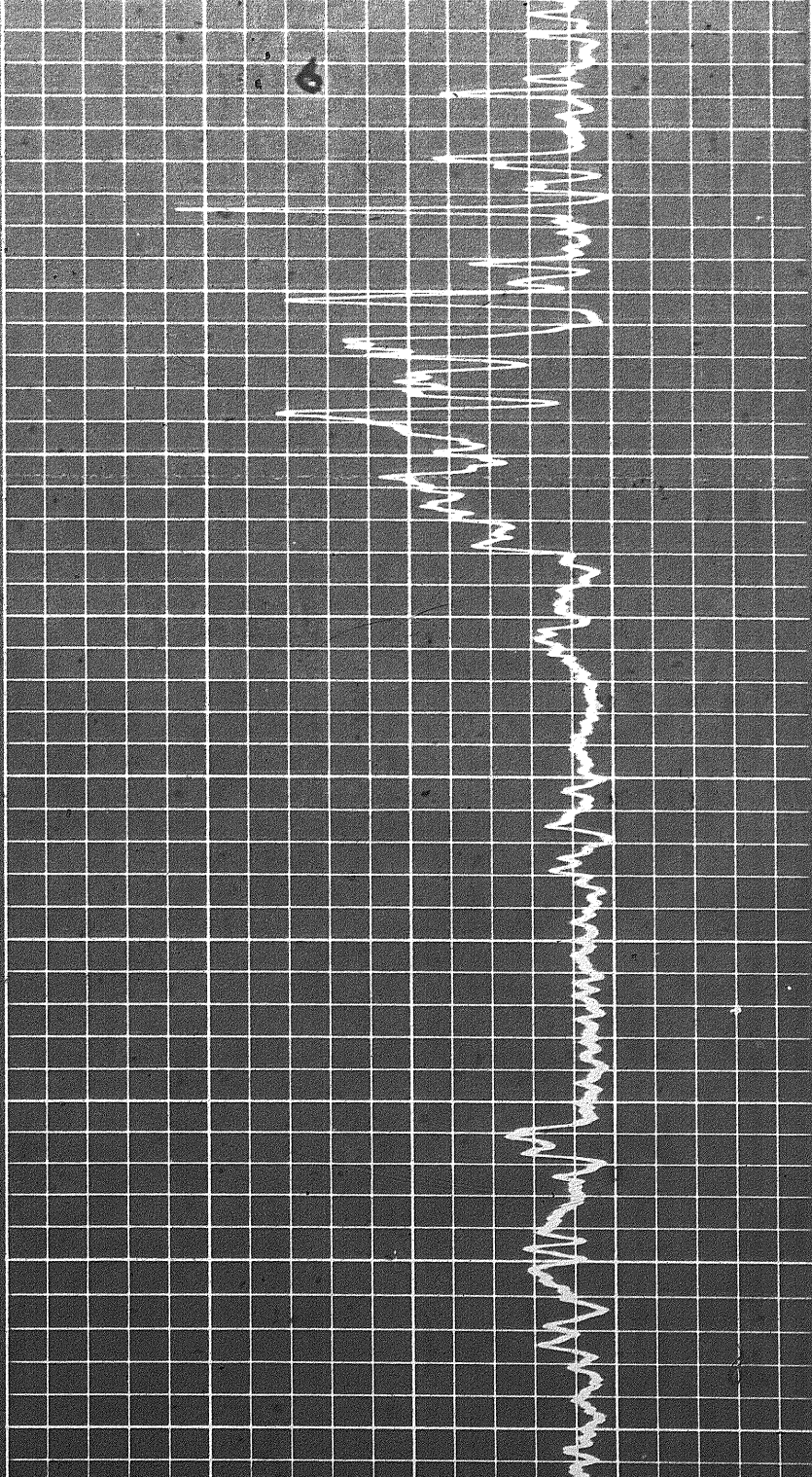
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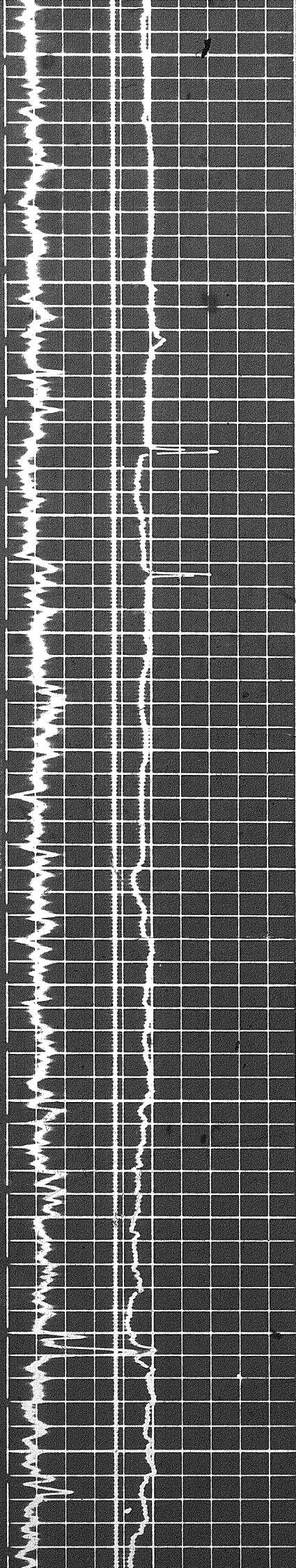


5900



6

5-9



6000

6100

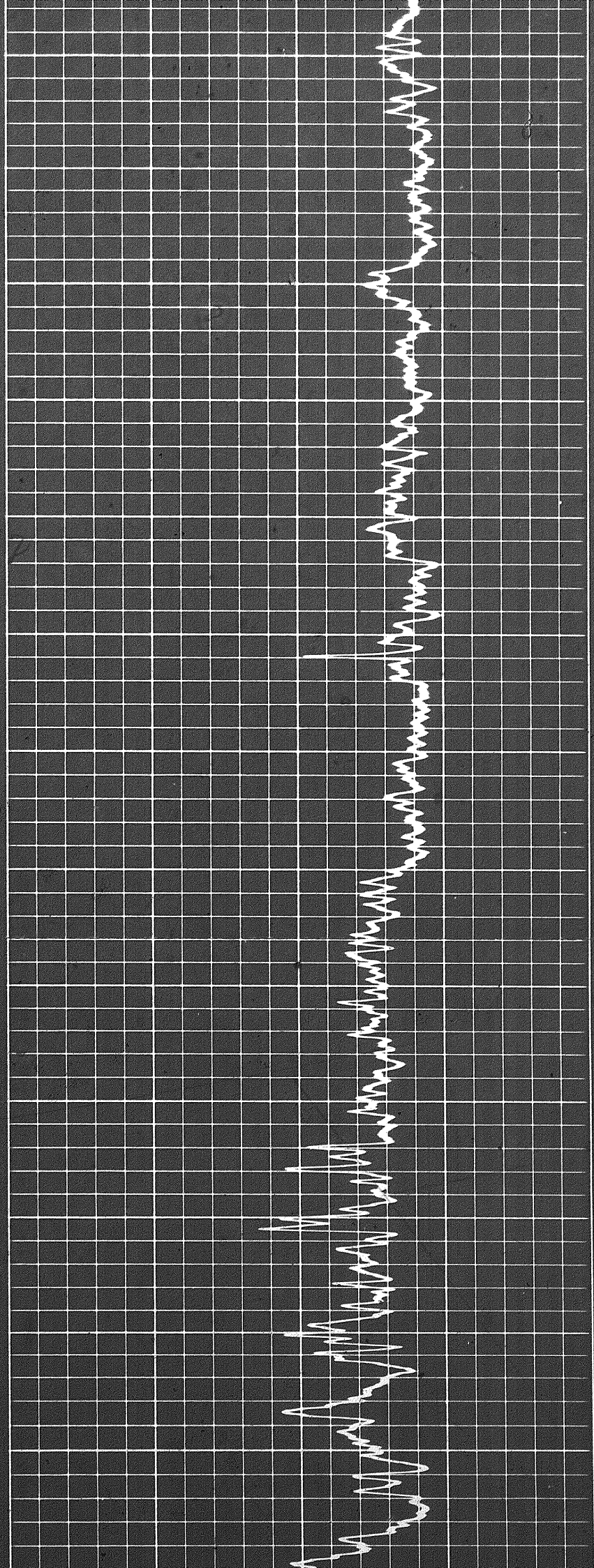
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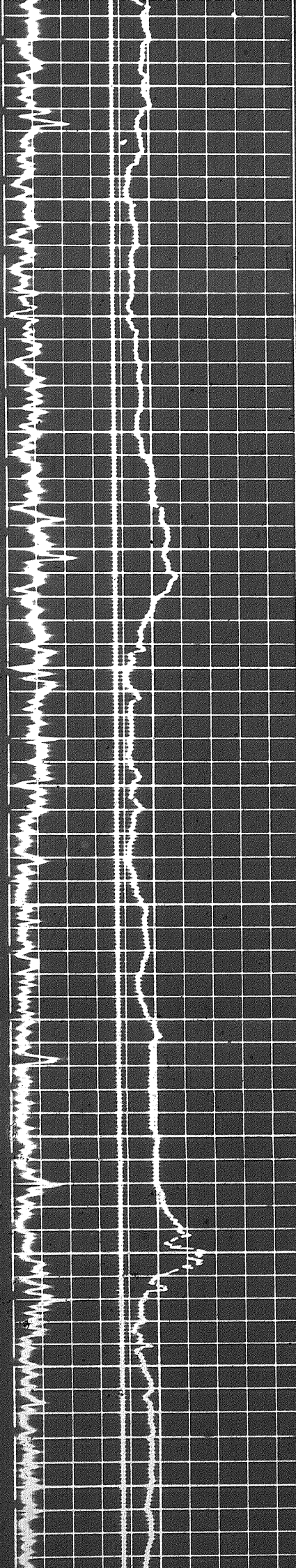
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6600





6600

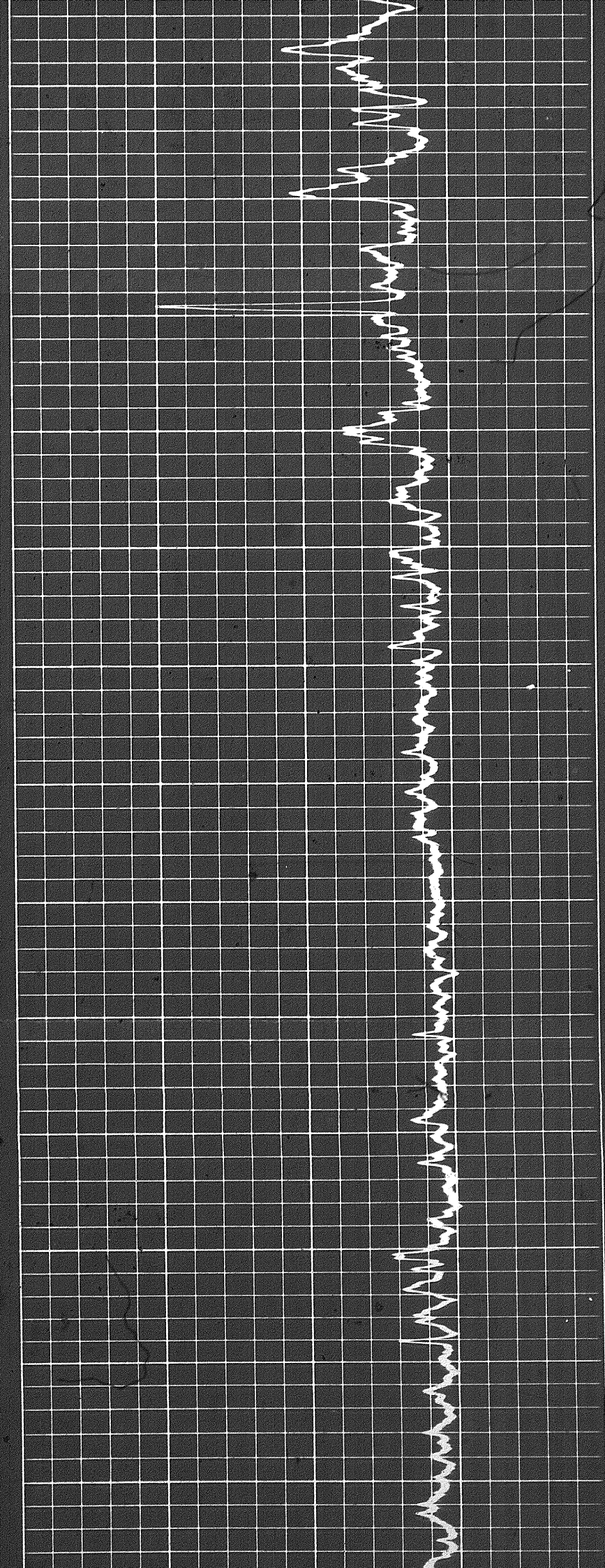
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6800

6900

7000

7100



6800

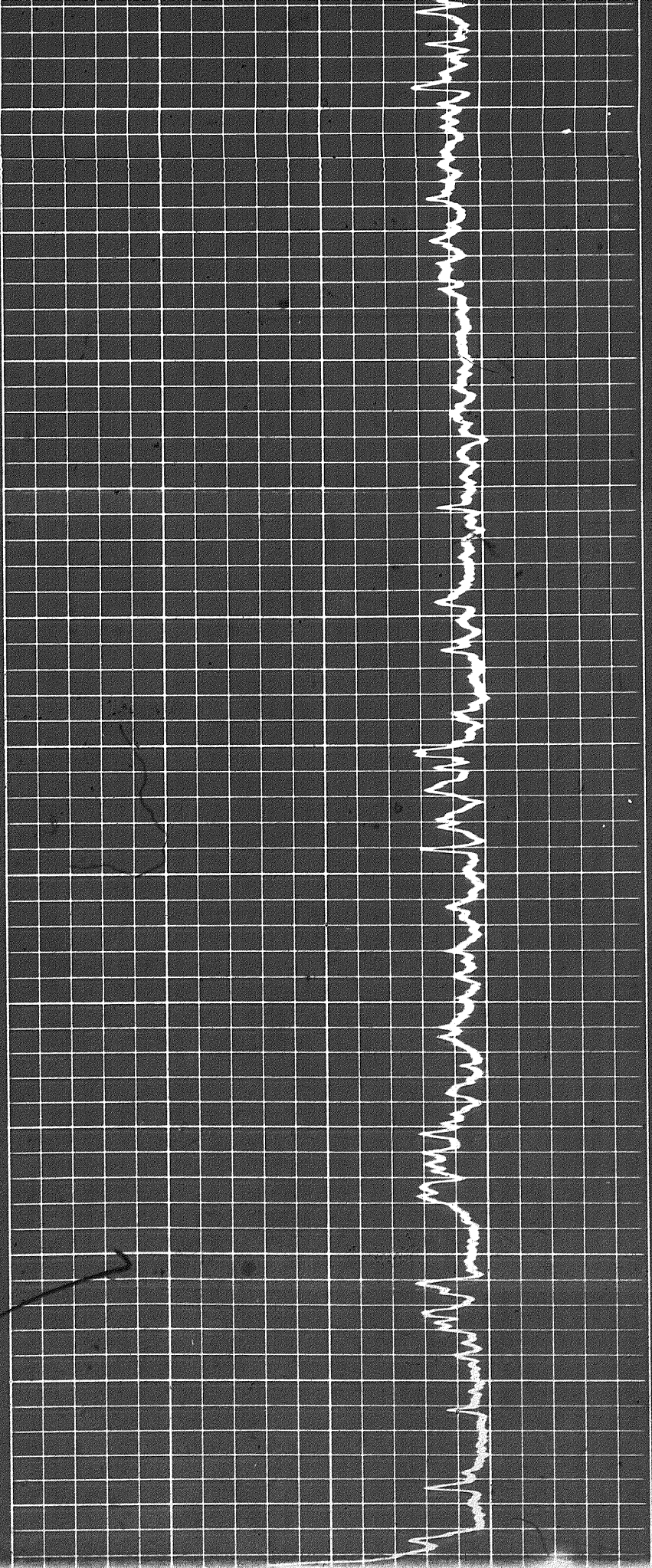
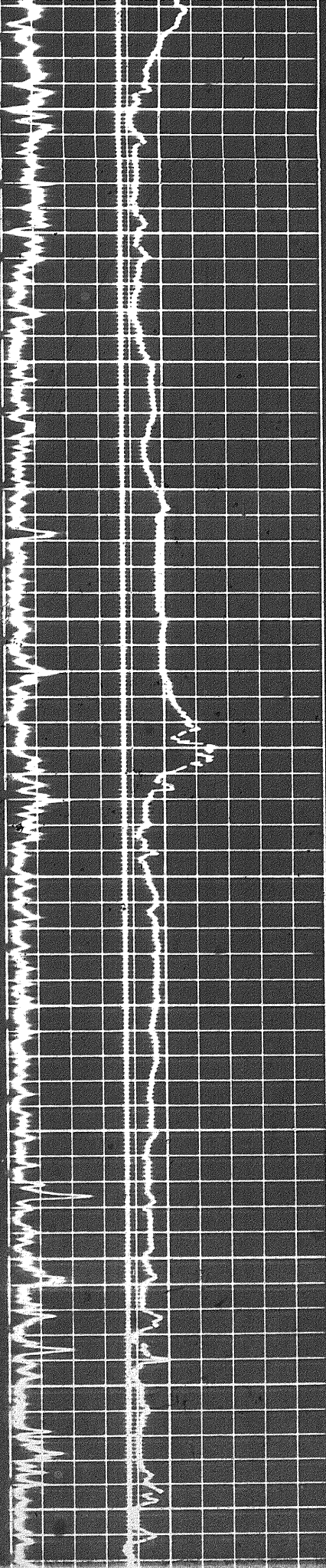
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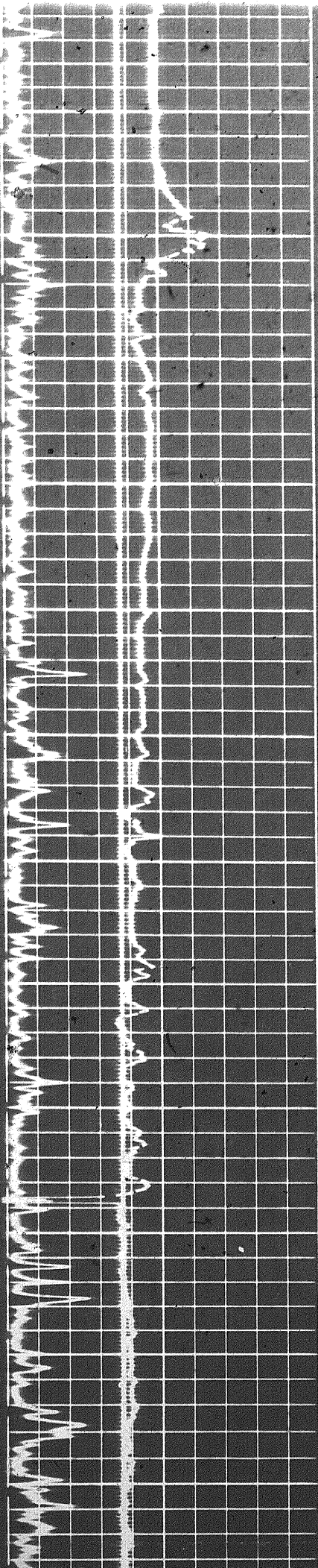
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7100

7200

7300





7000

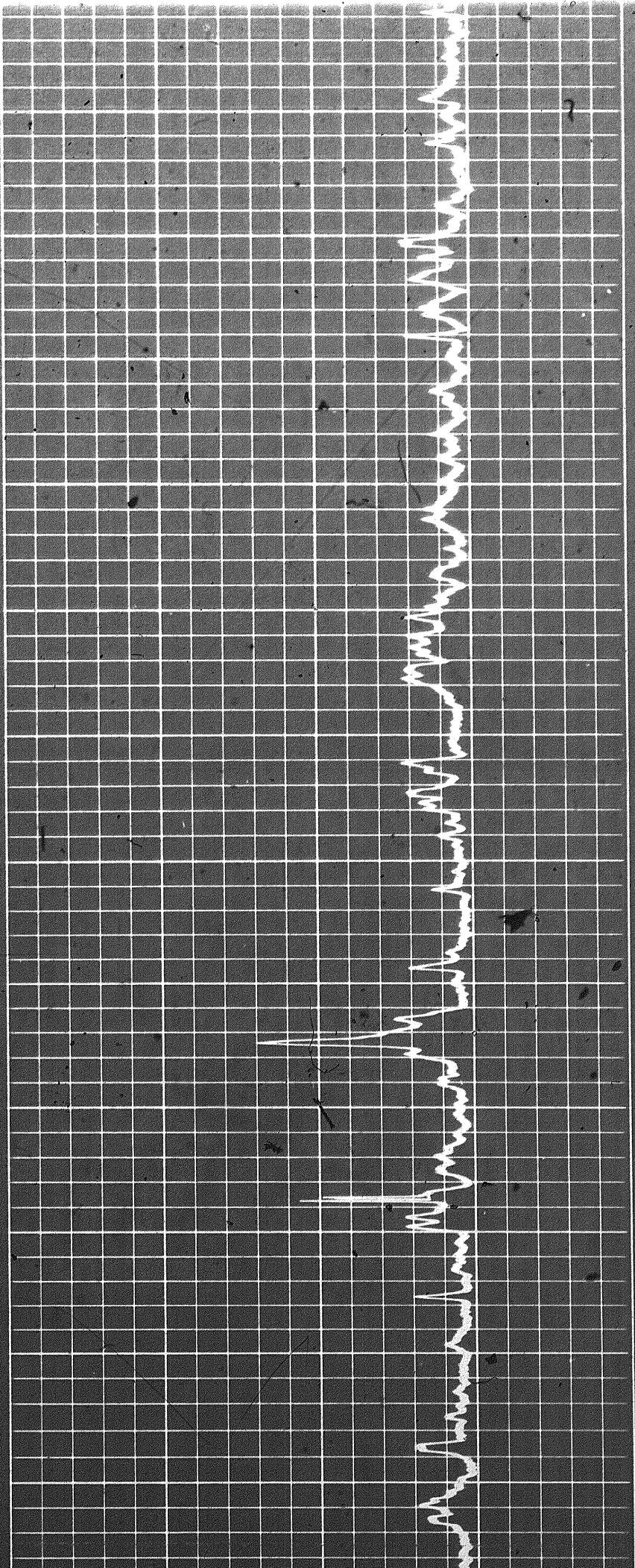
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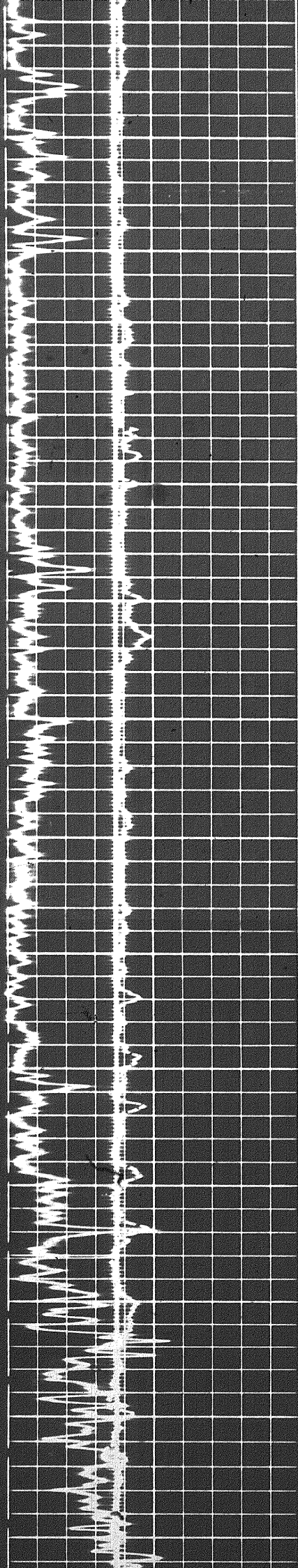
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7500



10



7500

7600

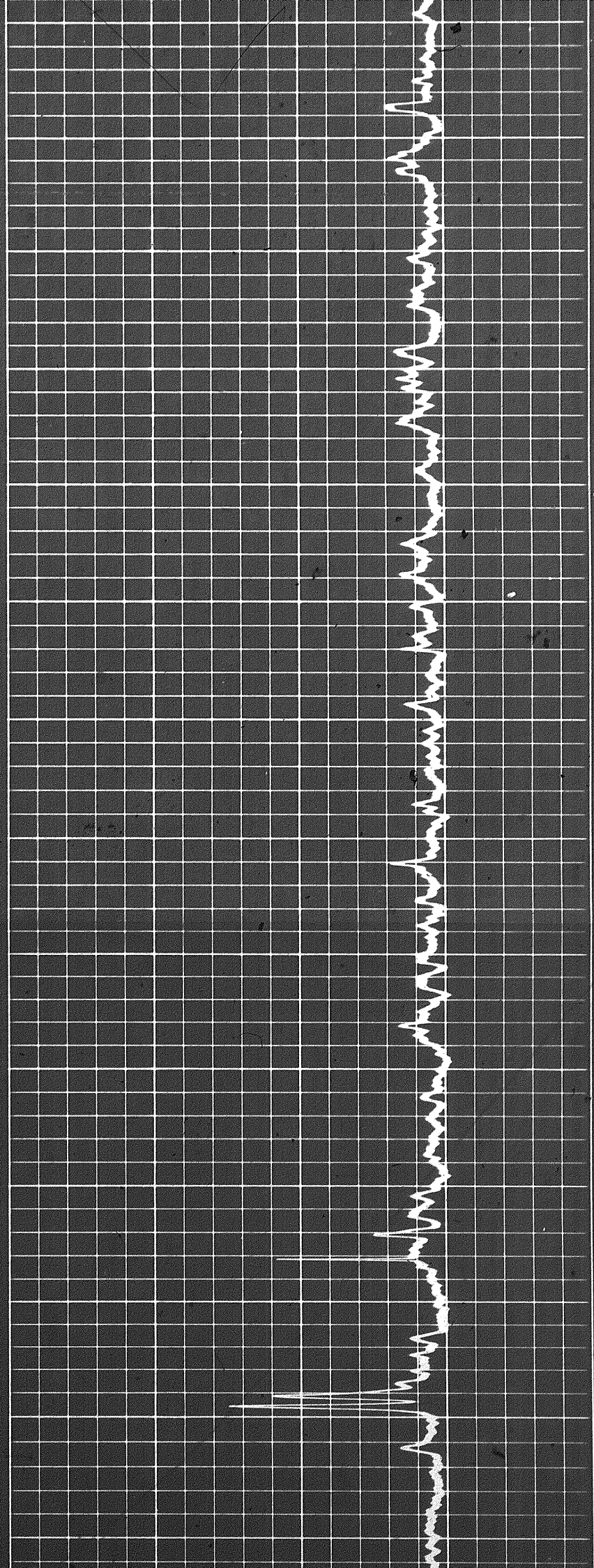
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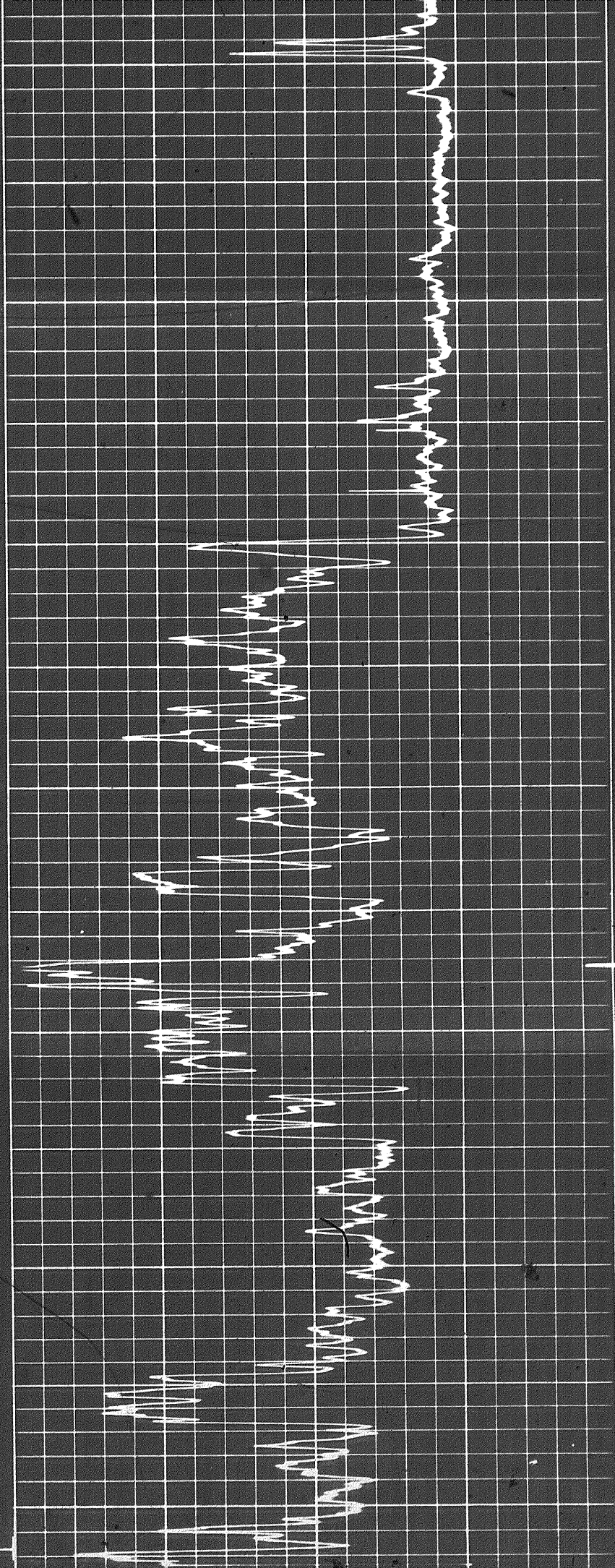
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7900

8000

8100





8100

8200

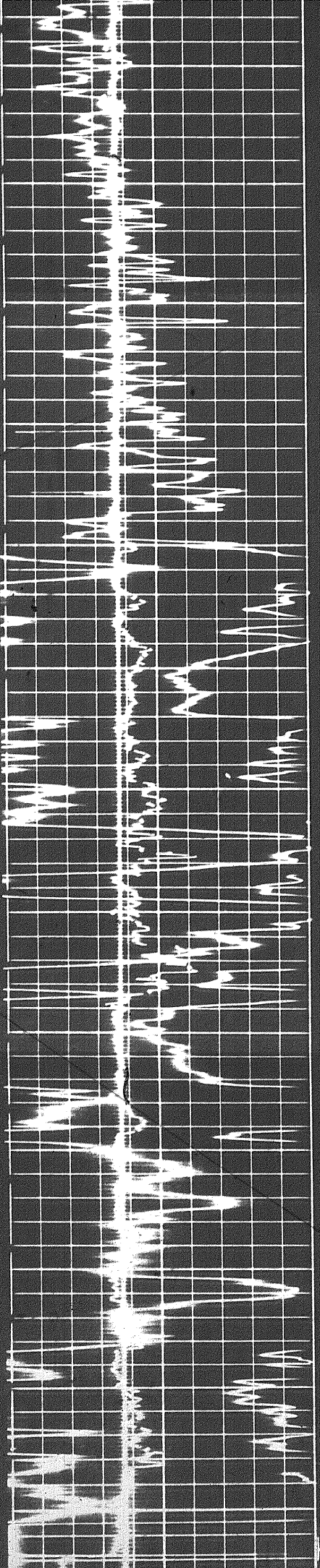
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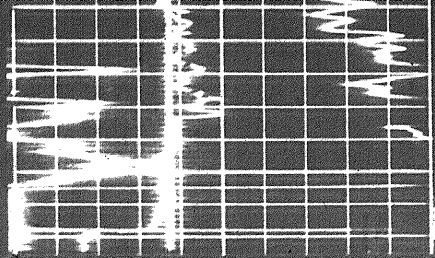
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8500

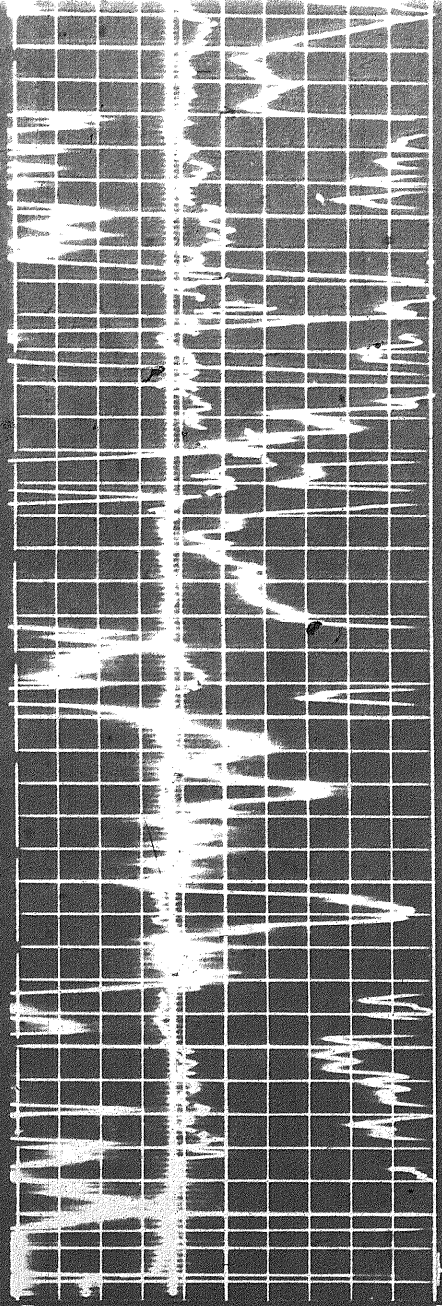
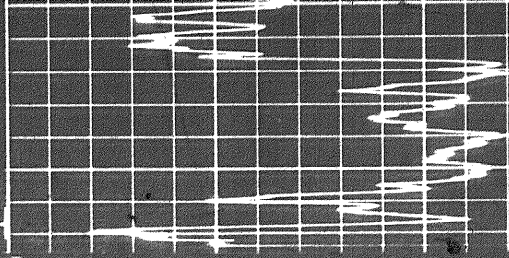
8600

8700 R





8700 R

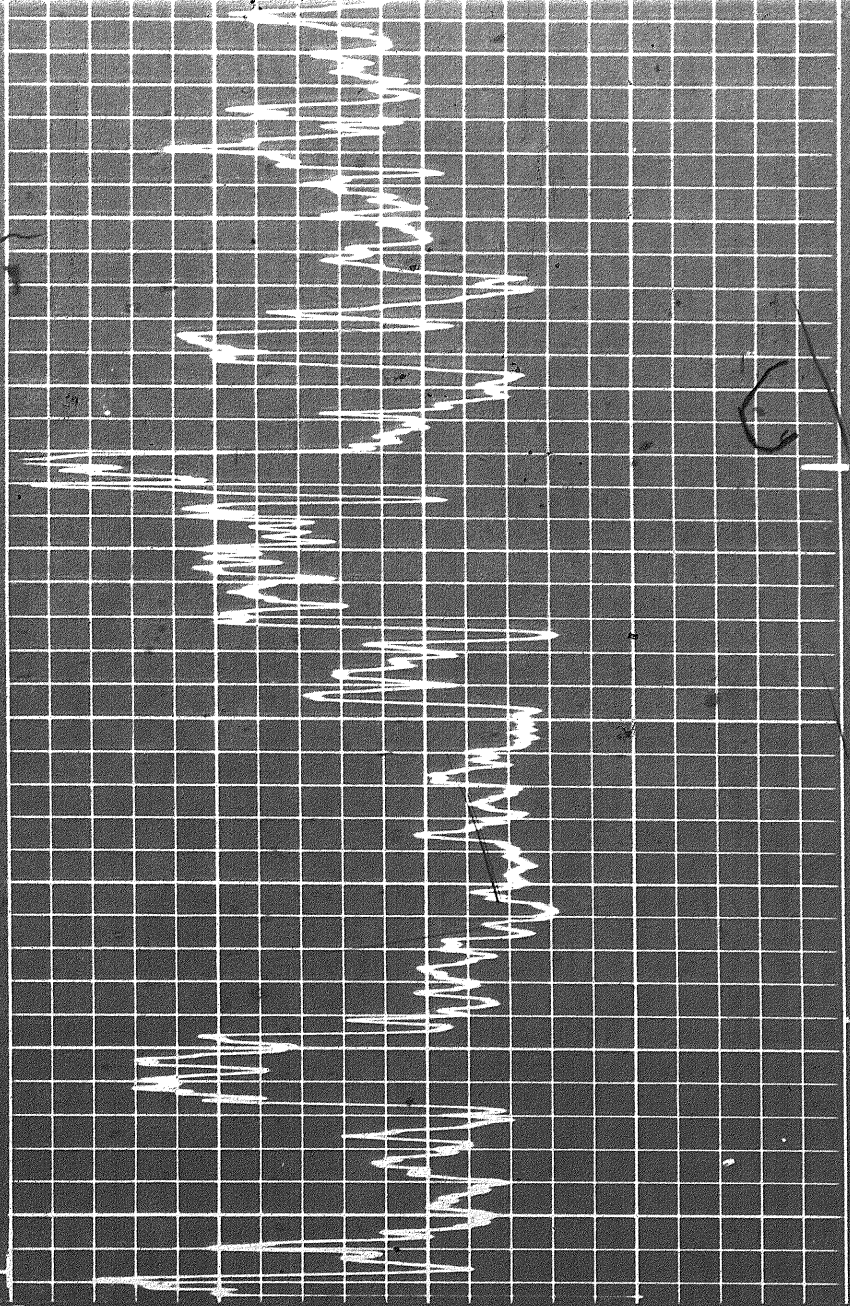


8400

8500

8600

8700 R



Sens. 100 T.C. 2
 Zero 0 div. to left
 0 100
 100 200

Sens. 100 T.C. 2
Zero 0 div. to left

0 100
100 200

GAMMA RAY
API UNITS

Speed in FPM

6 7 8 9 10 11 12 13 14

30 20 10 0 -10

LIMESTONE

CALIPER
hole diameter in inches

DEPTHS

POROSITY (%)

DETAIL LOG
5" = 100'

RUN 1

CALIPER
hole diameter in inches

DEPTHS

POROSITY (%)

Speed in FPM

7 8 9 10 11 12 13 14 15

GAMMA RAY
API UNITS

30 20 10 0 -10

LIMESTONE

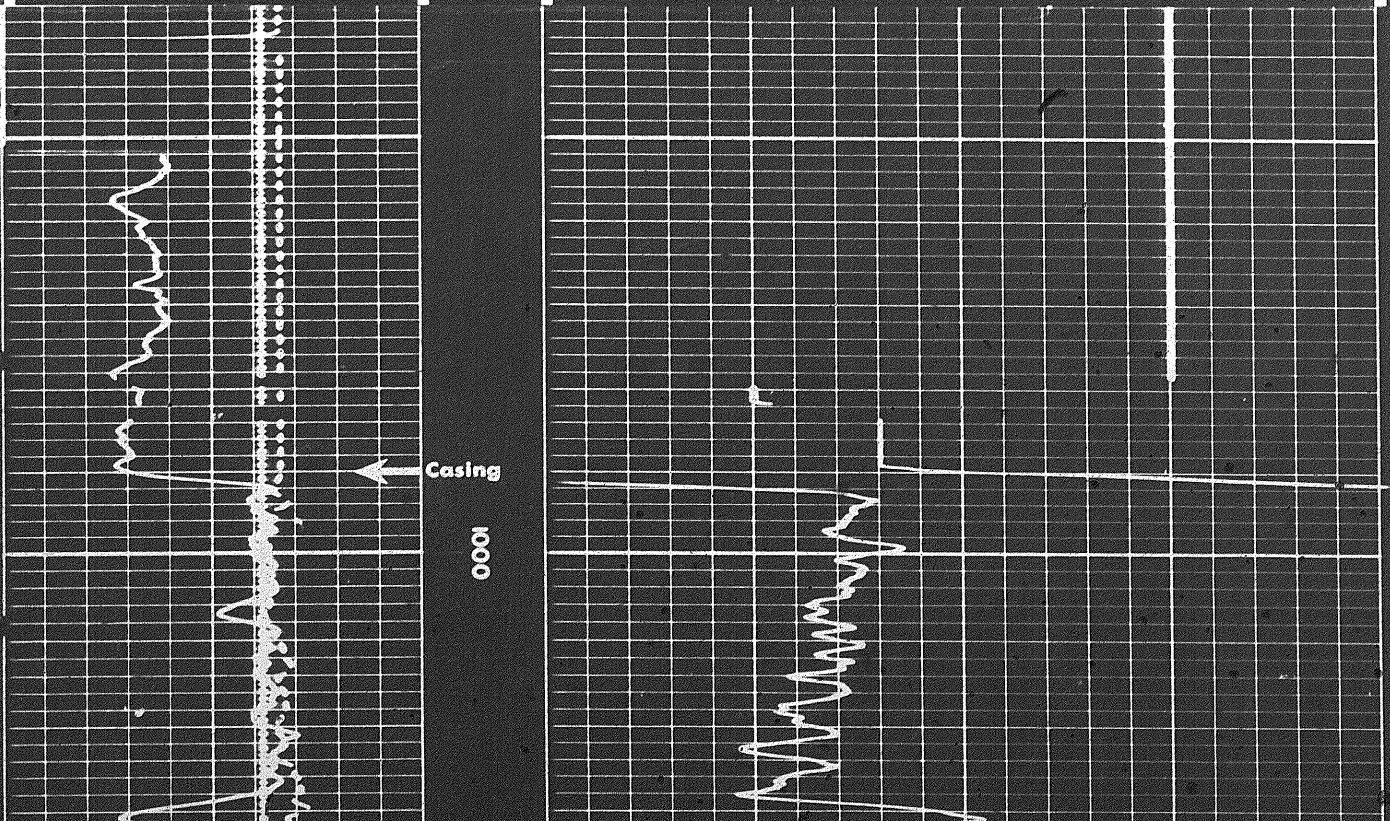
Sens. 150 T.C. 2
Zero 0 div. to left

0 150
150 300

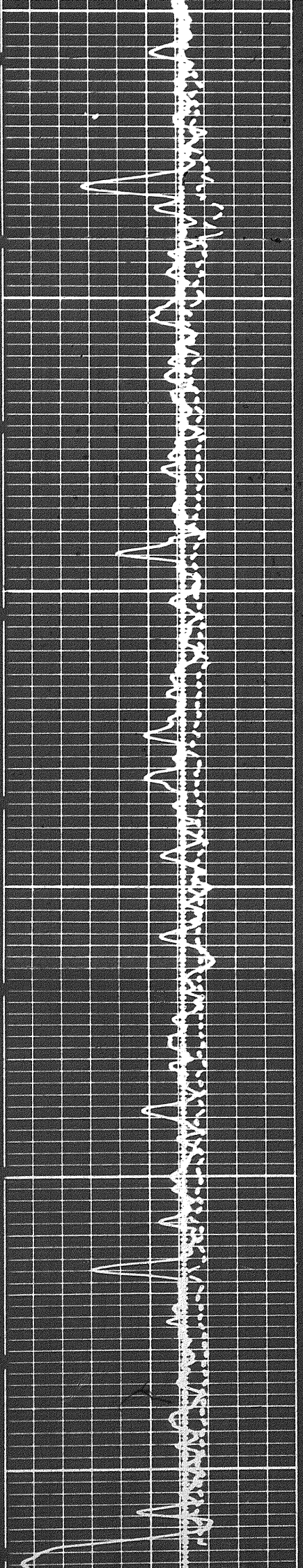
Casing

1000

70



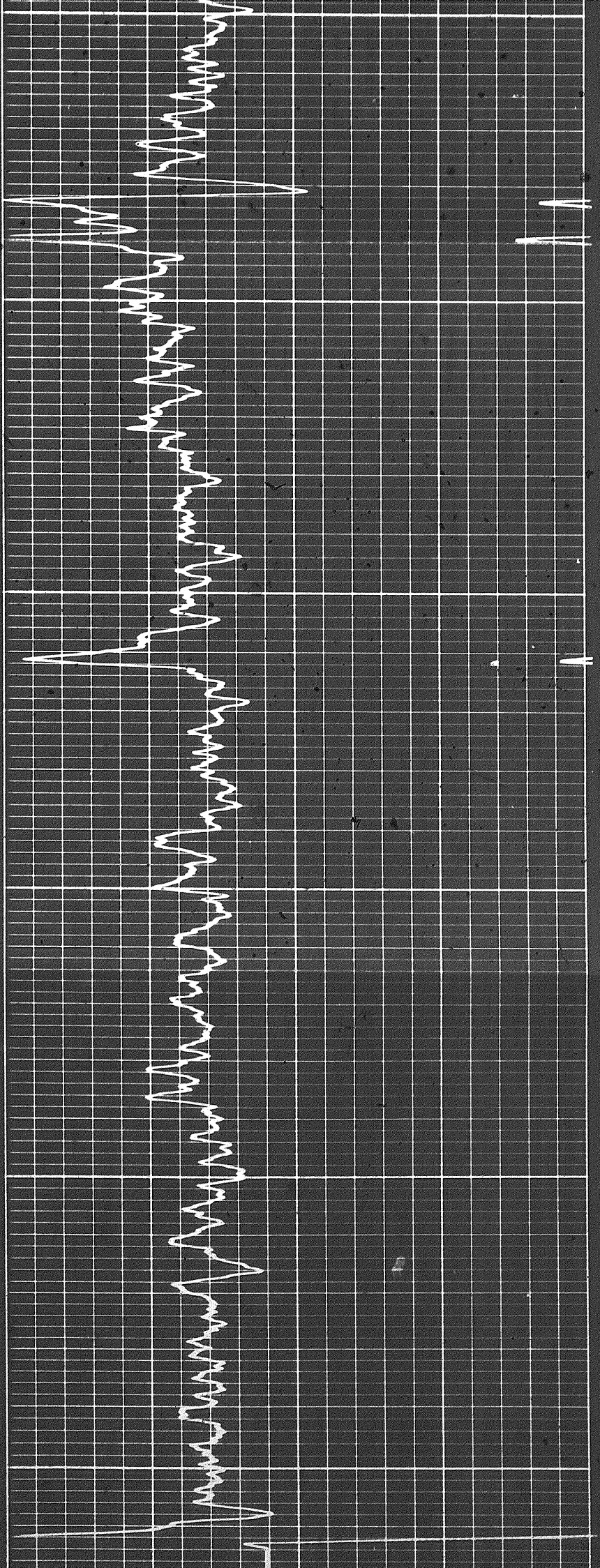
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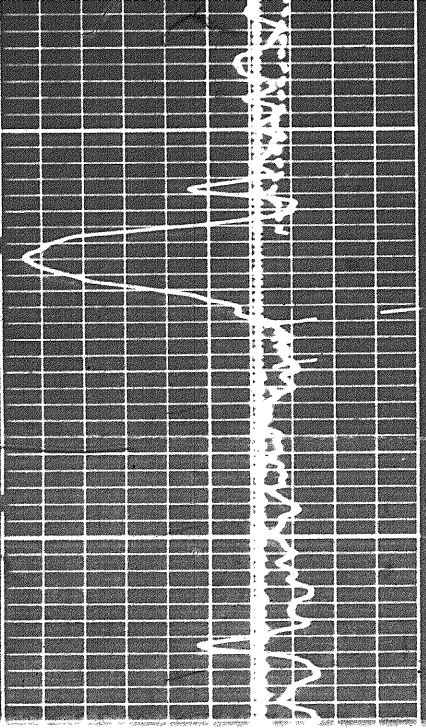


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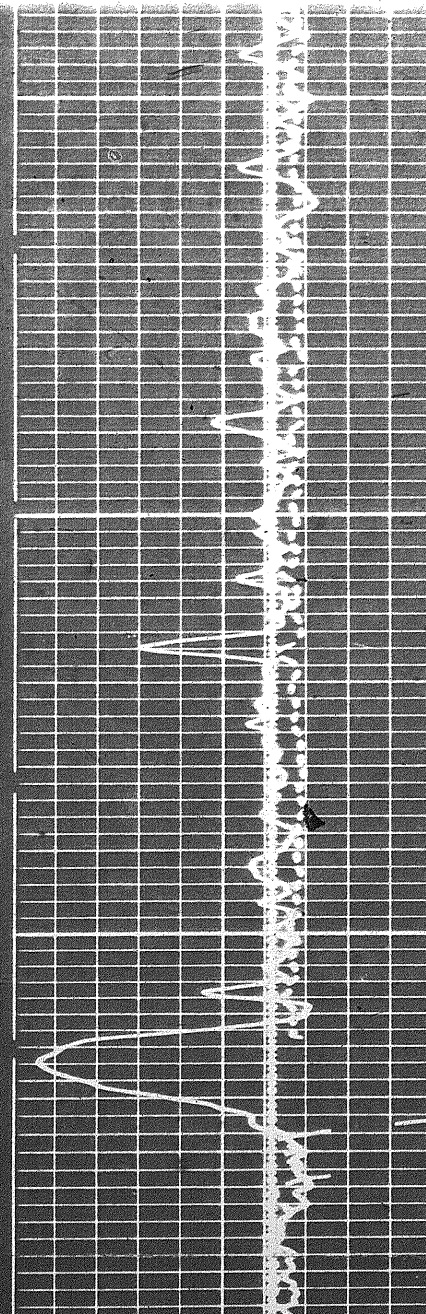
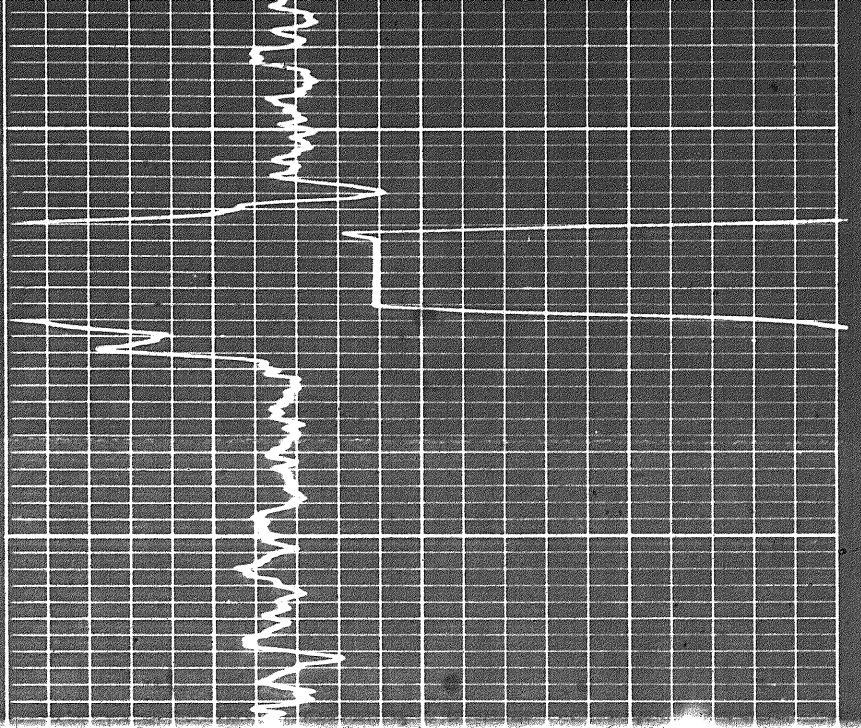
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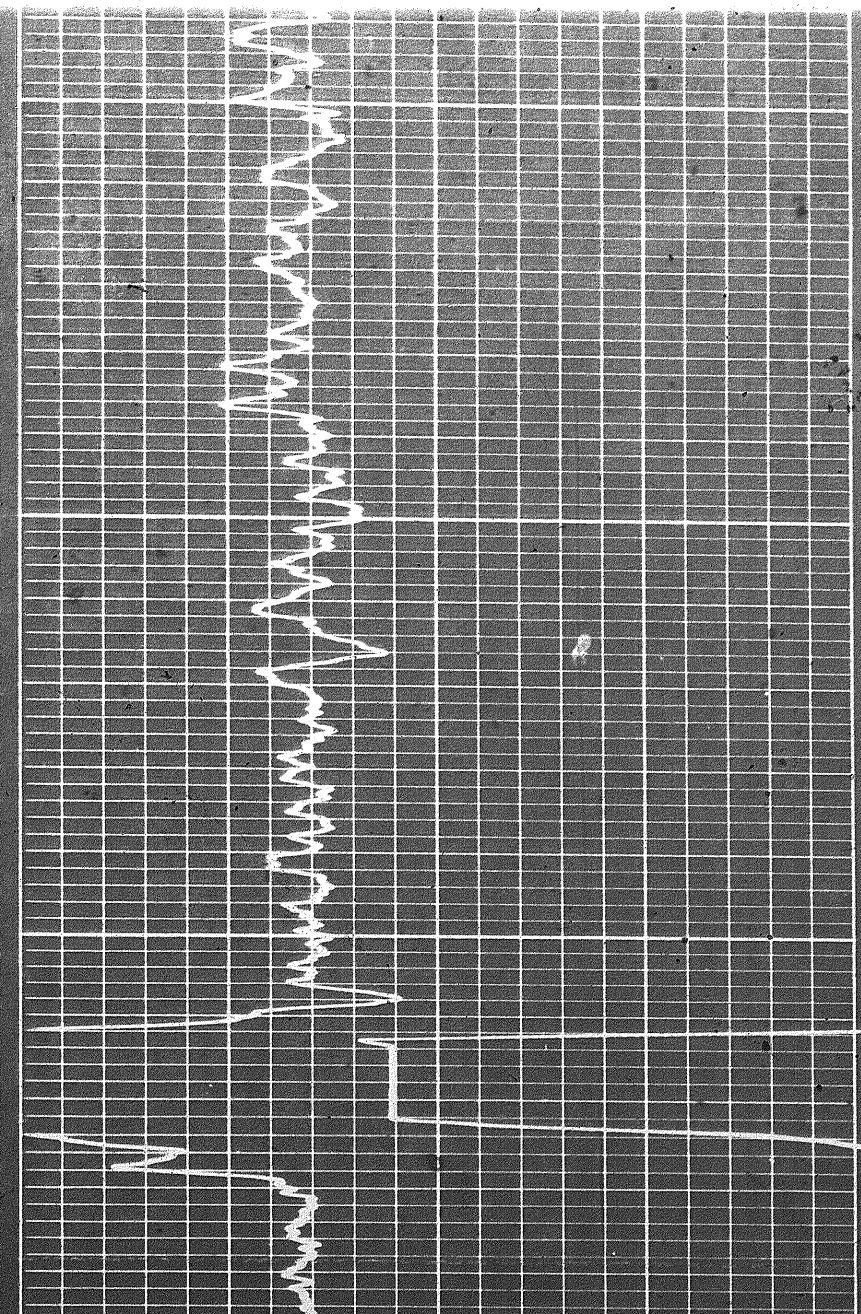


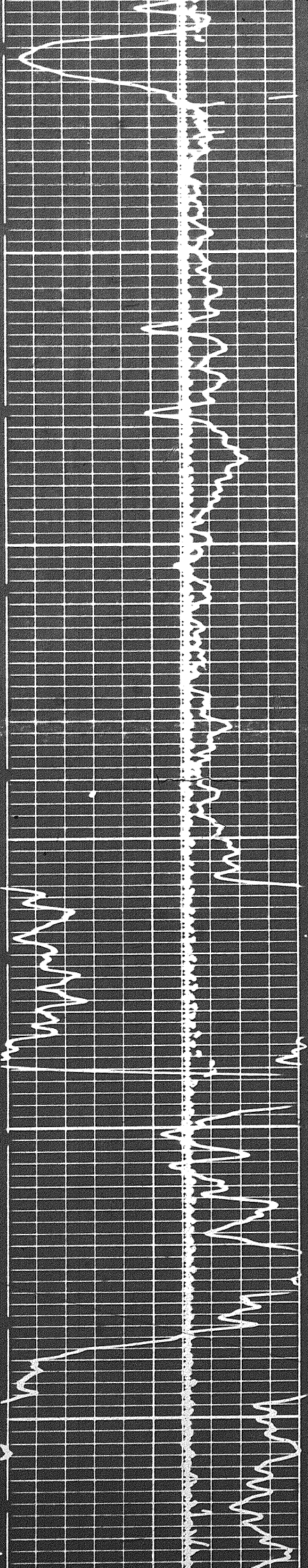


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1300

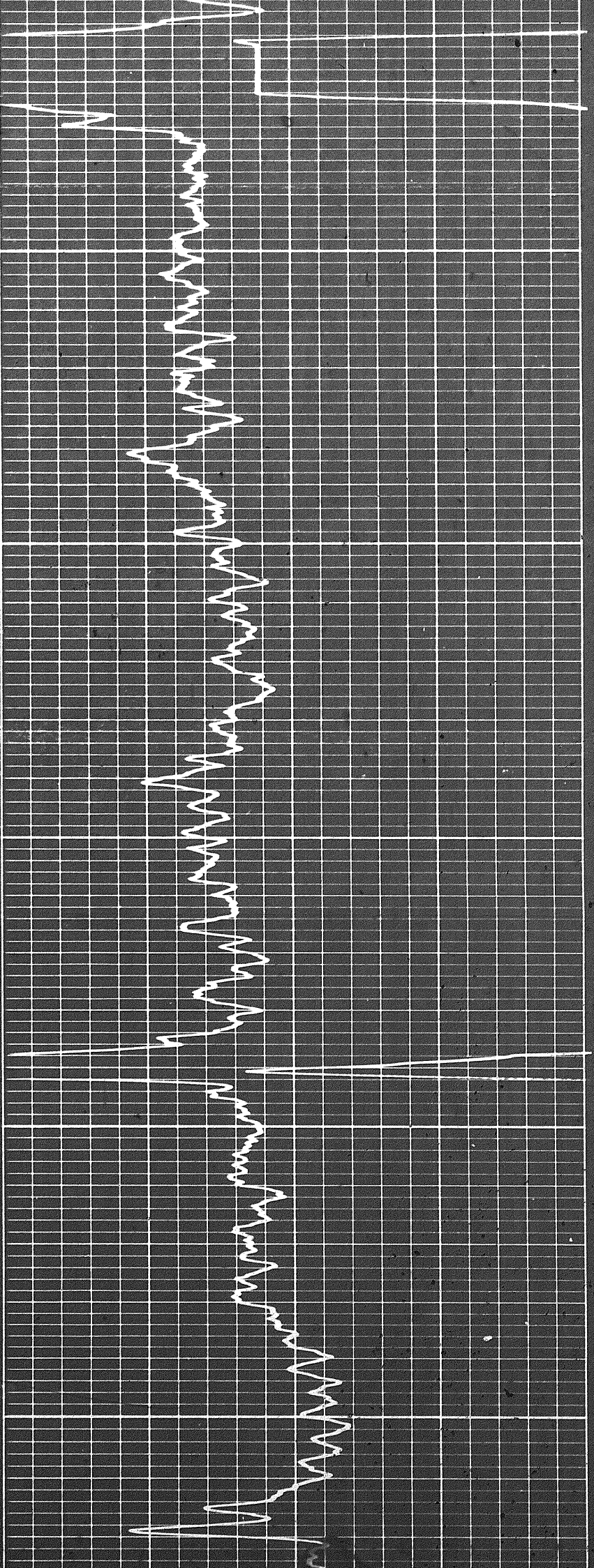


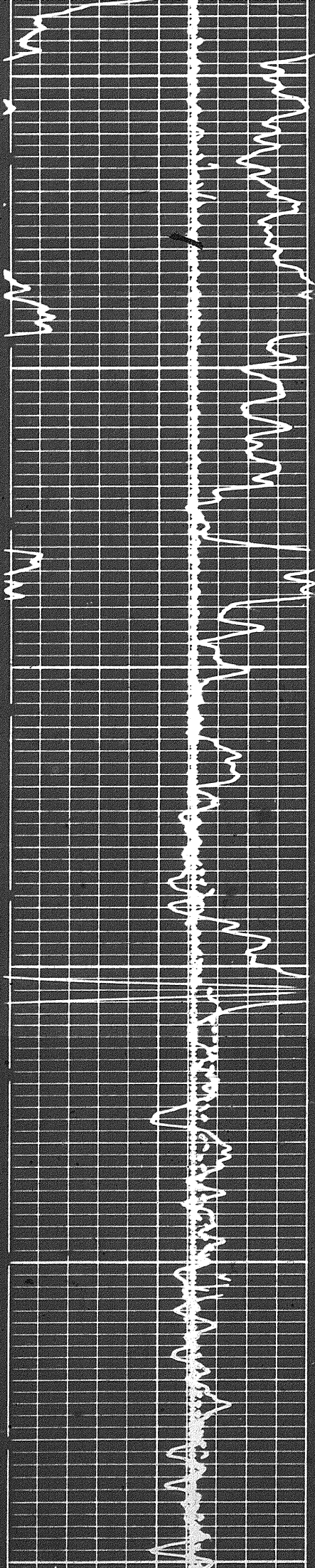


1500

1400

1300

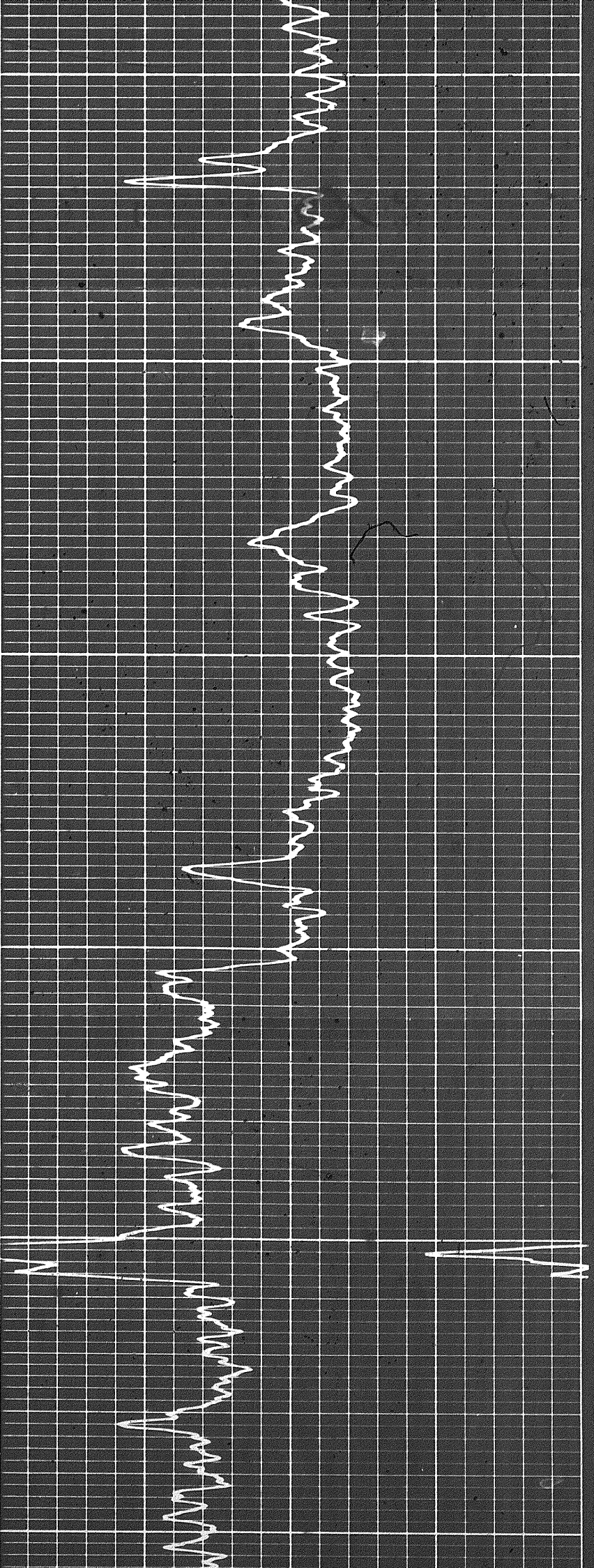


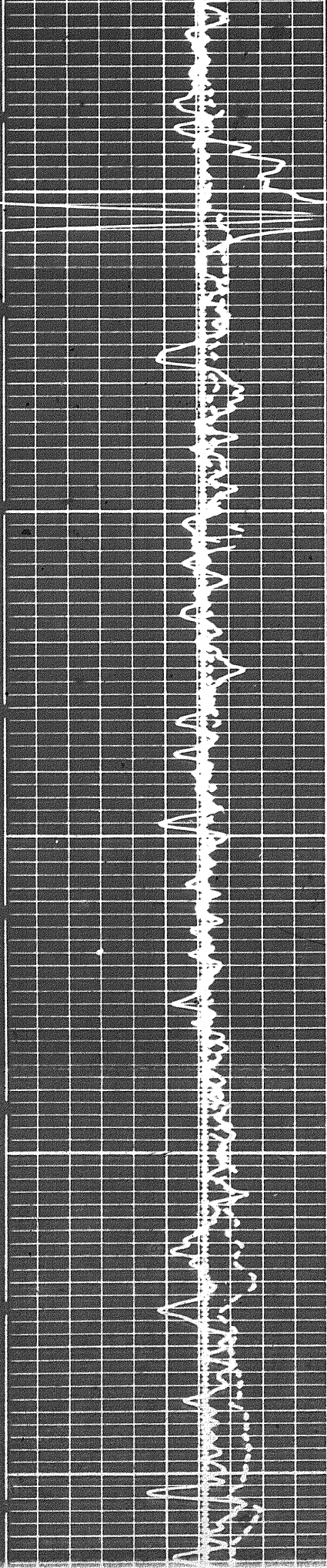


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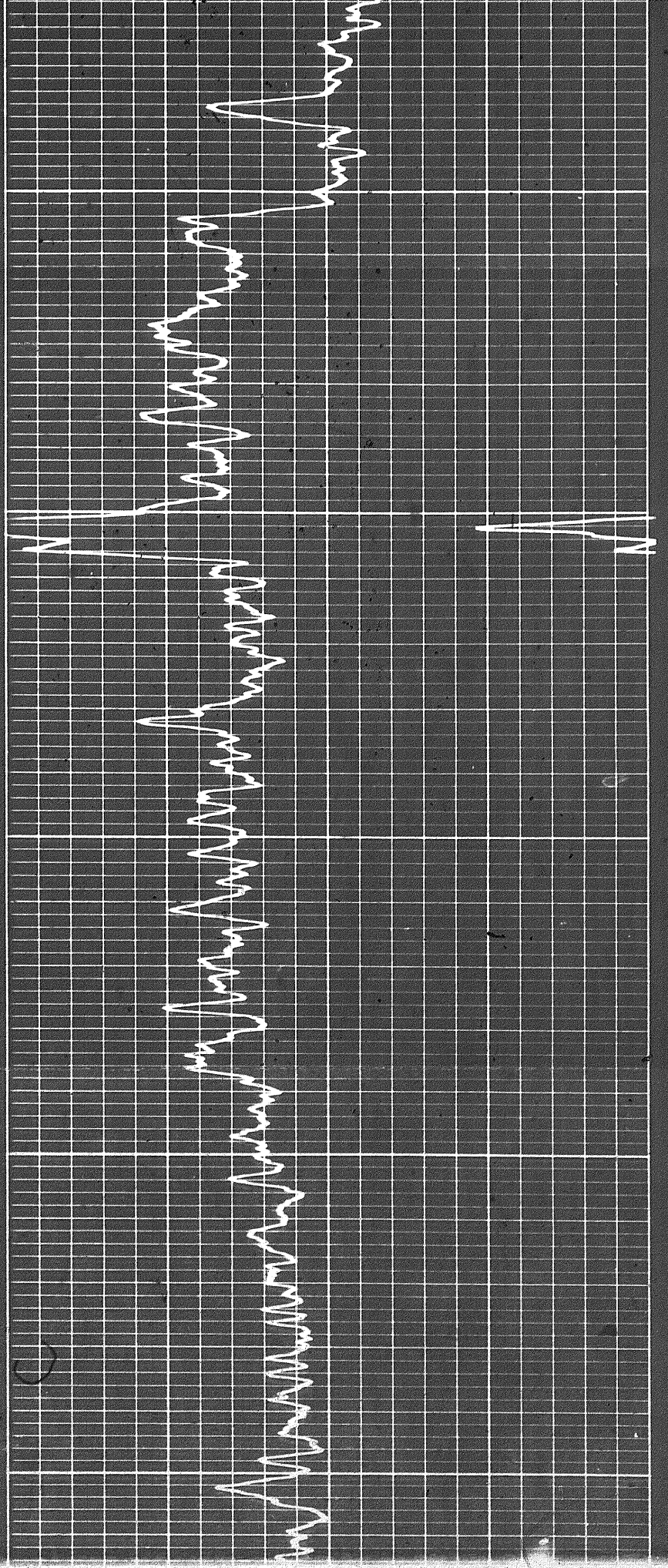
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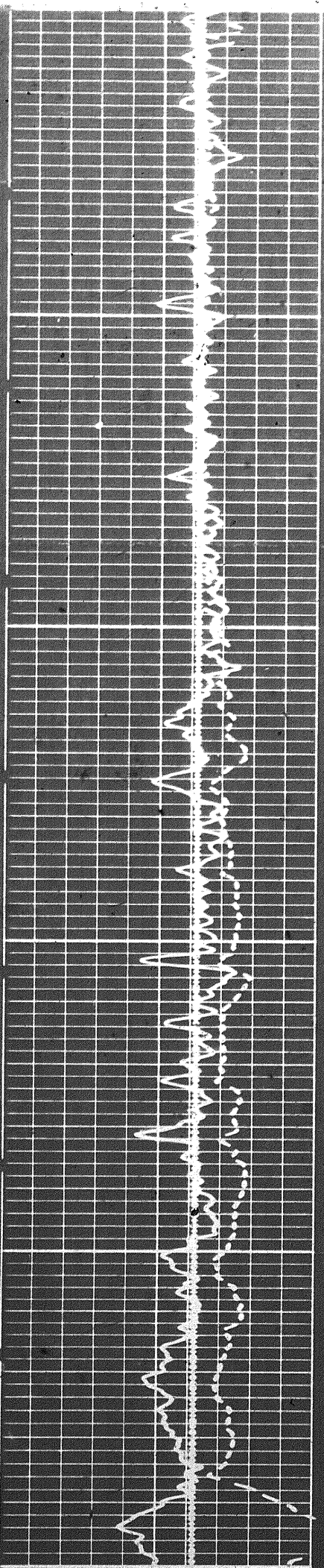




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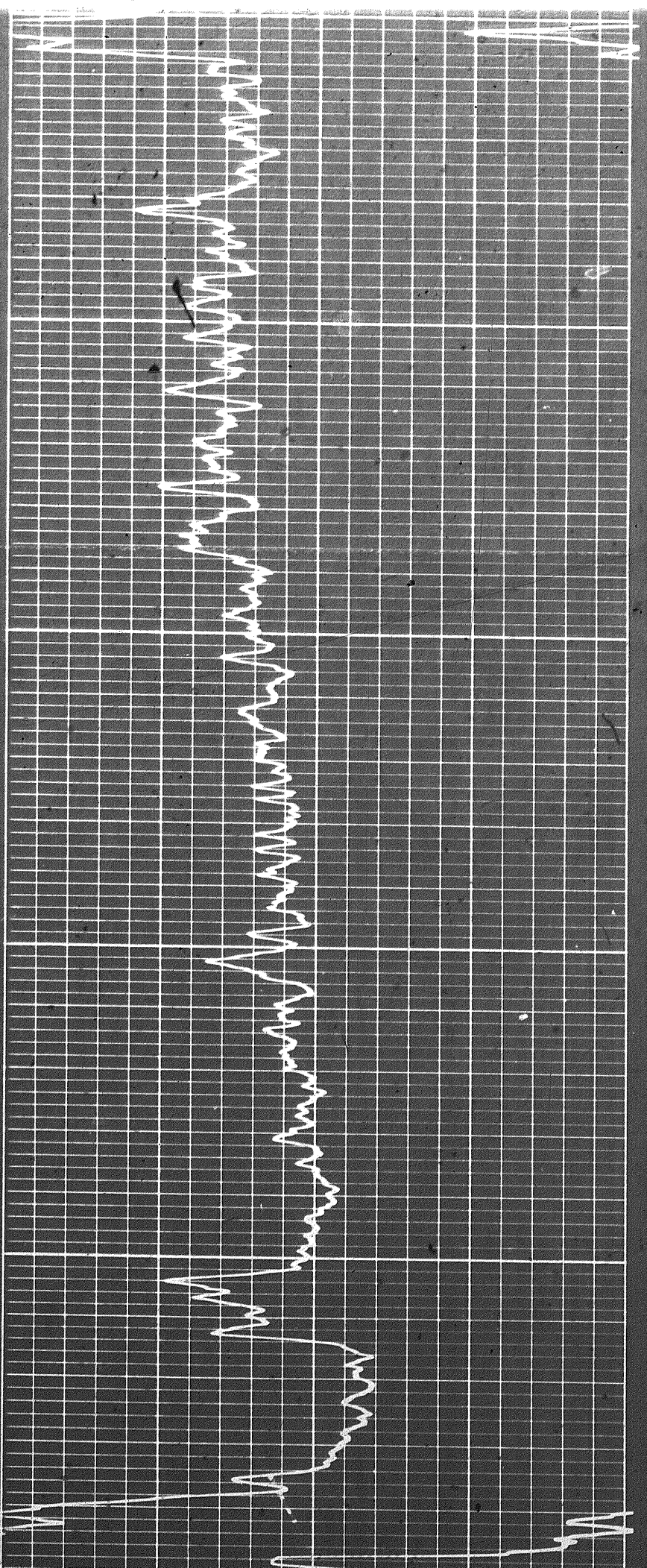
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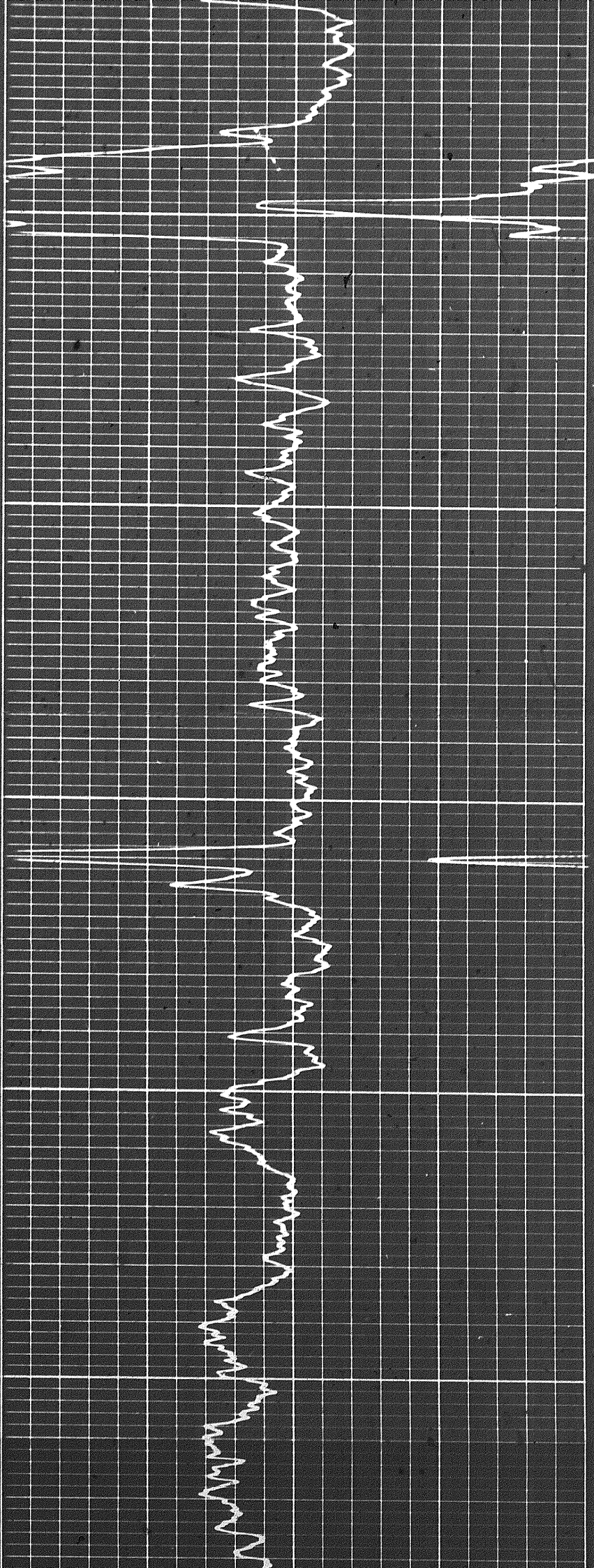




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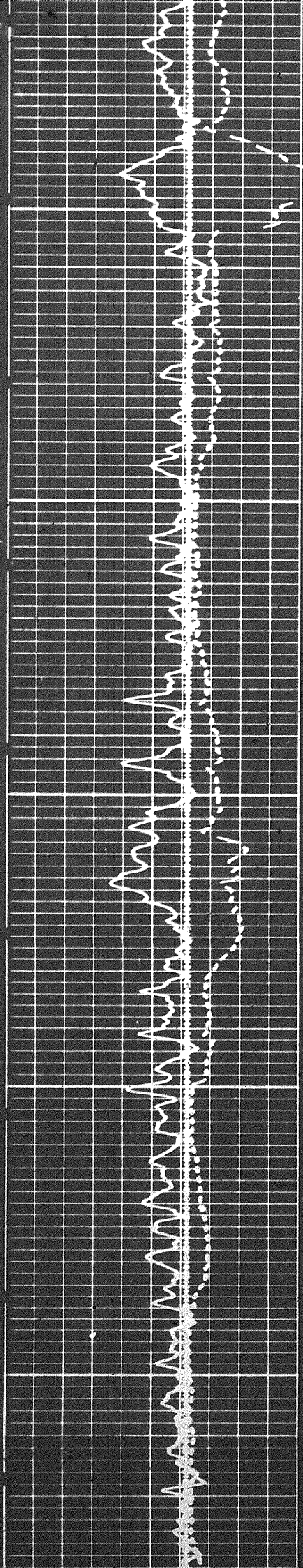
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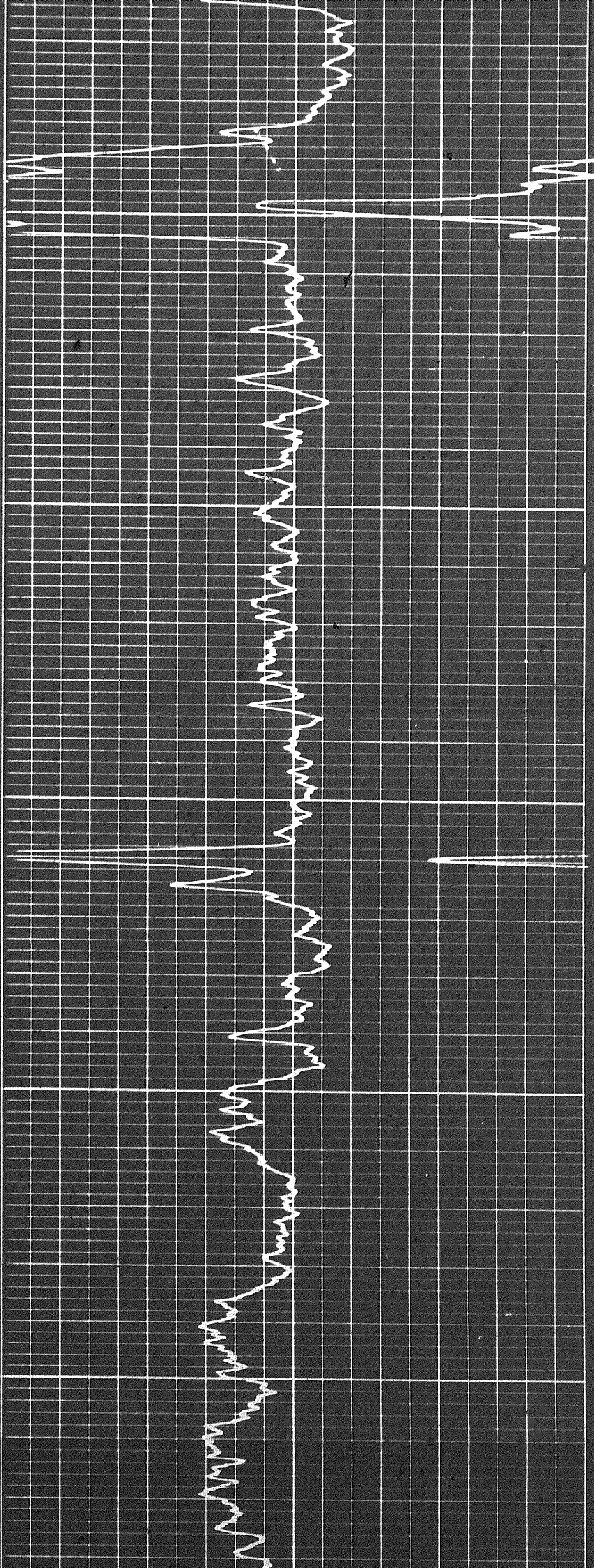




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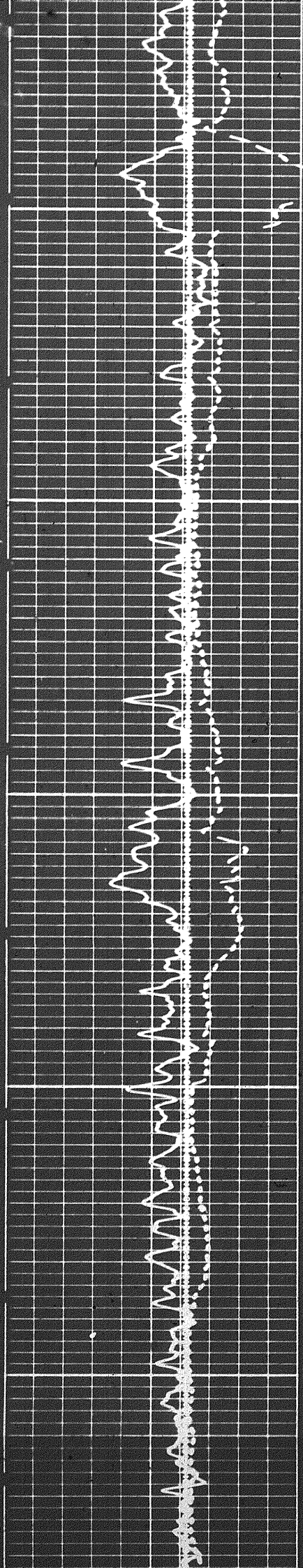
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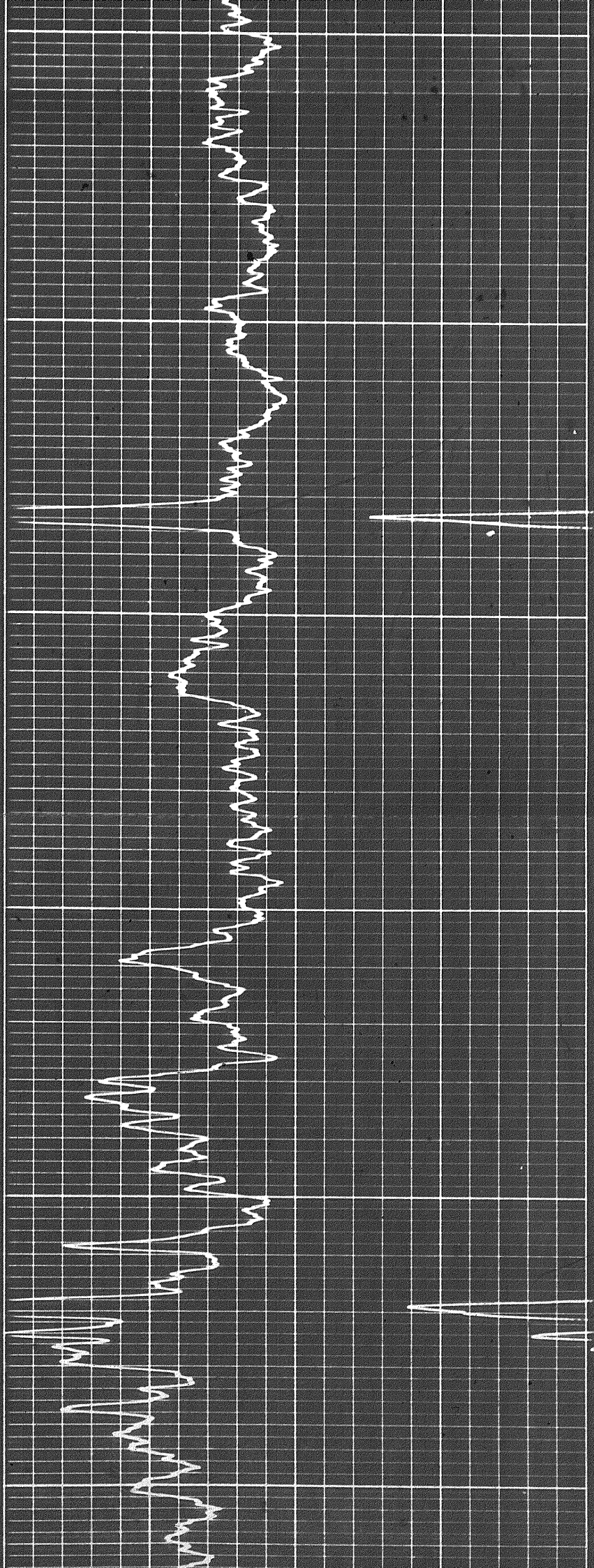




2000

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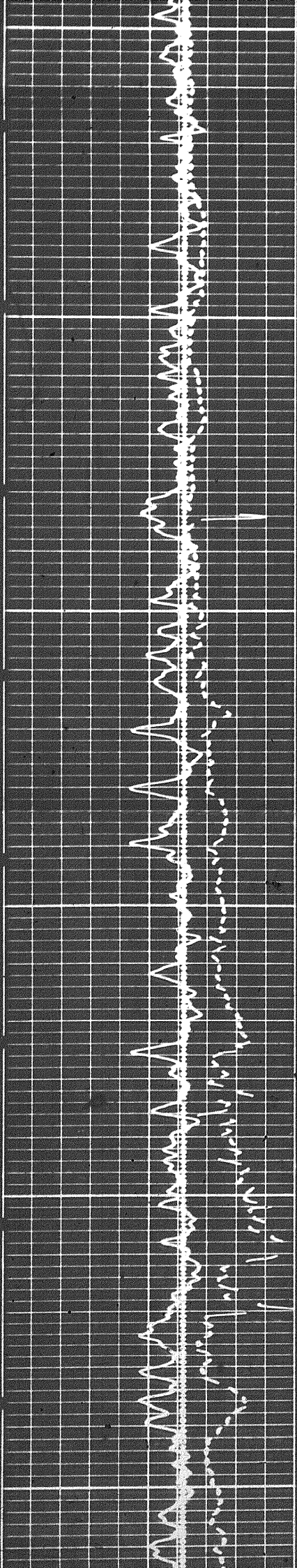


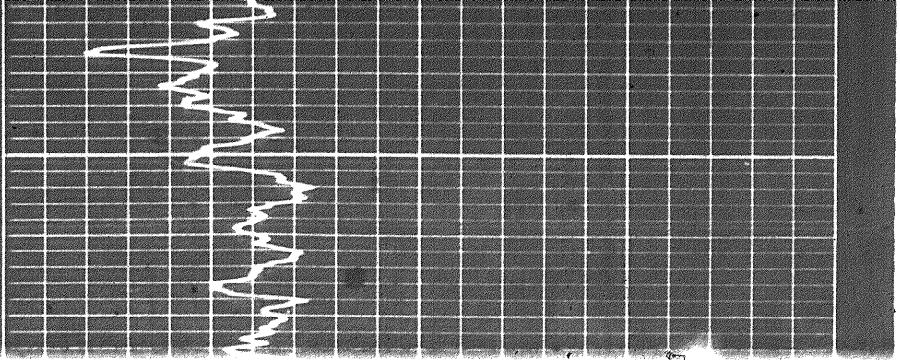


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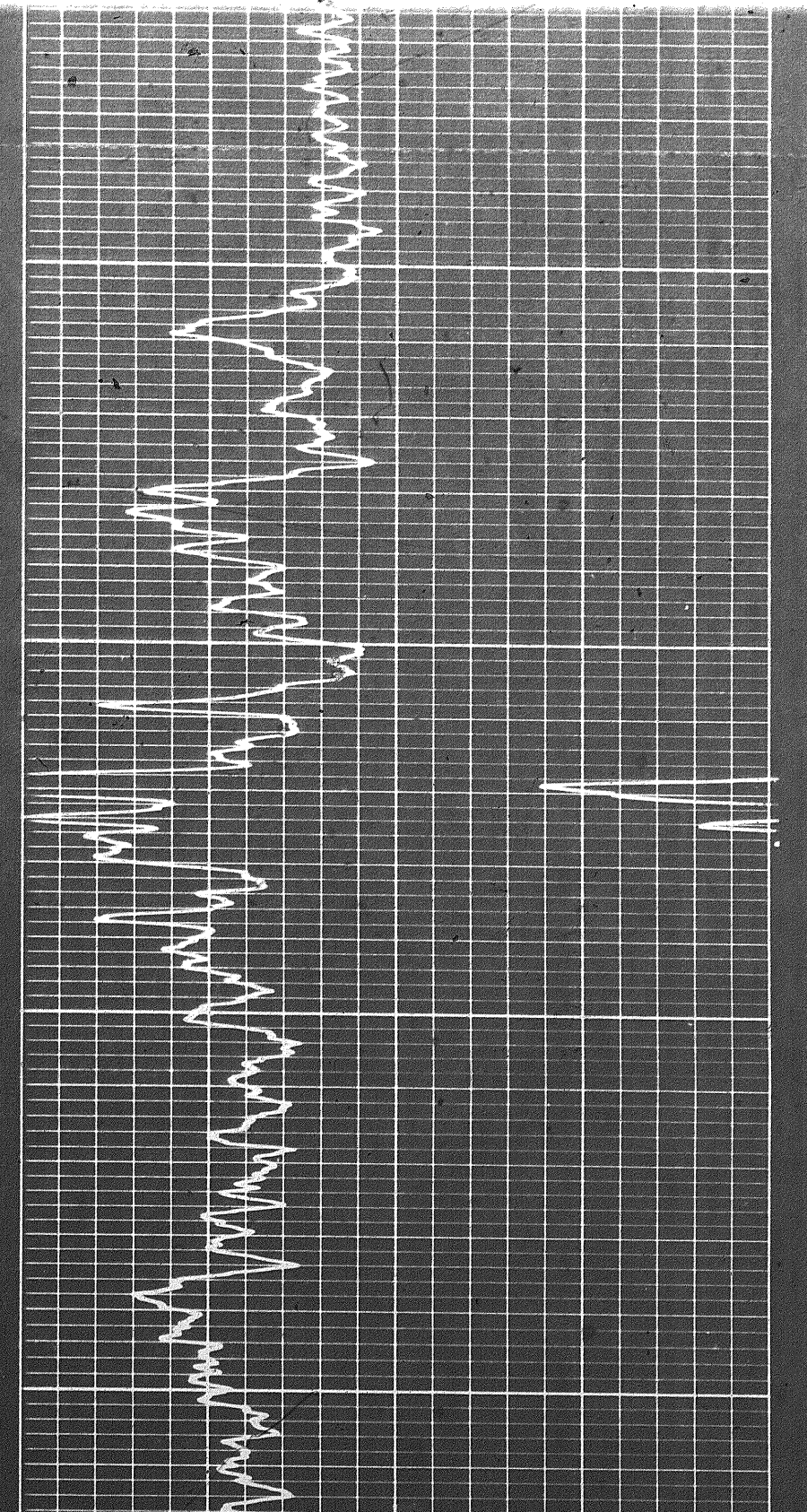
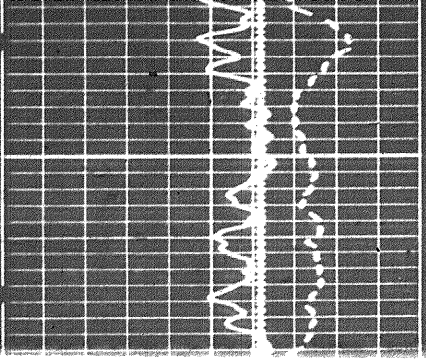
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2400

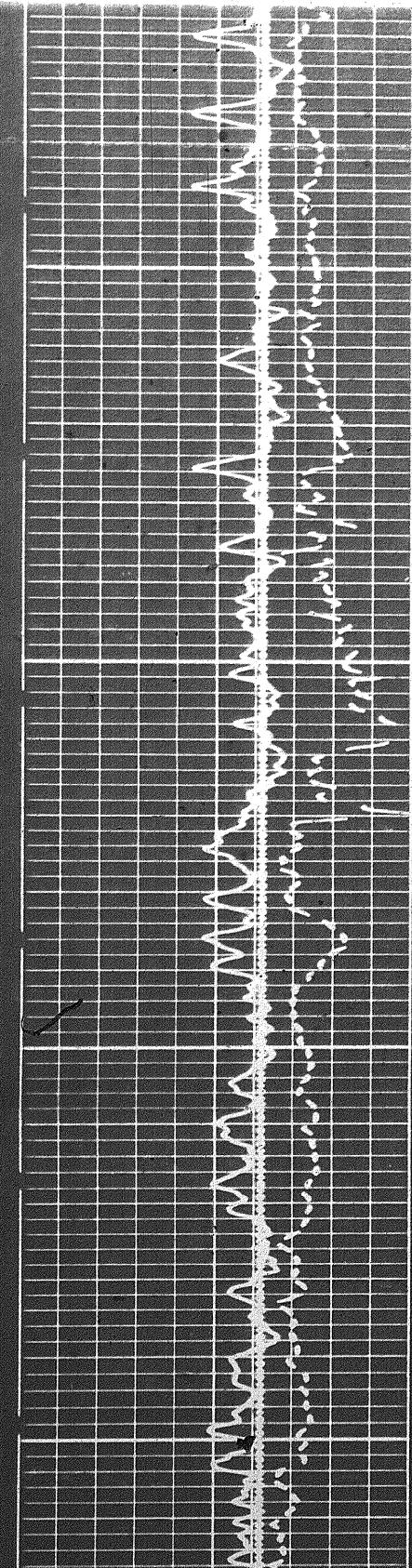




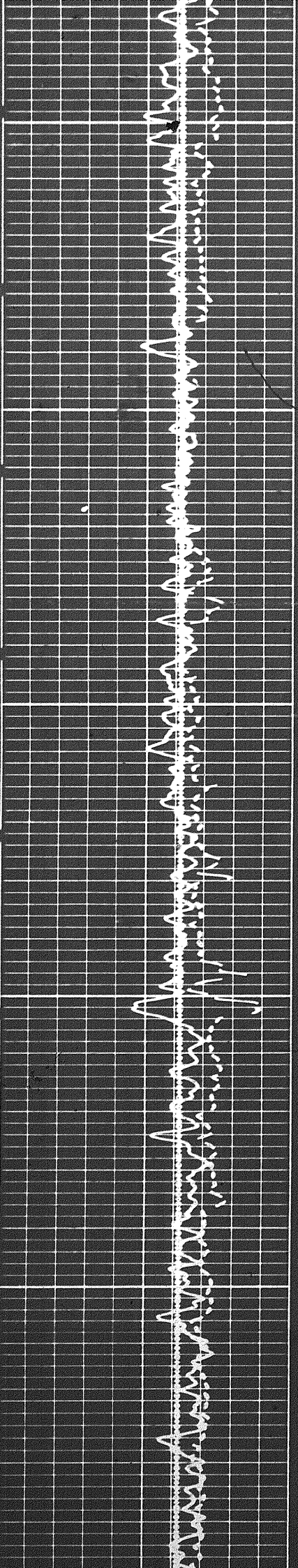
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2300



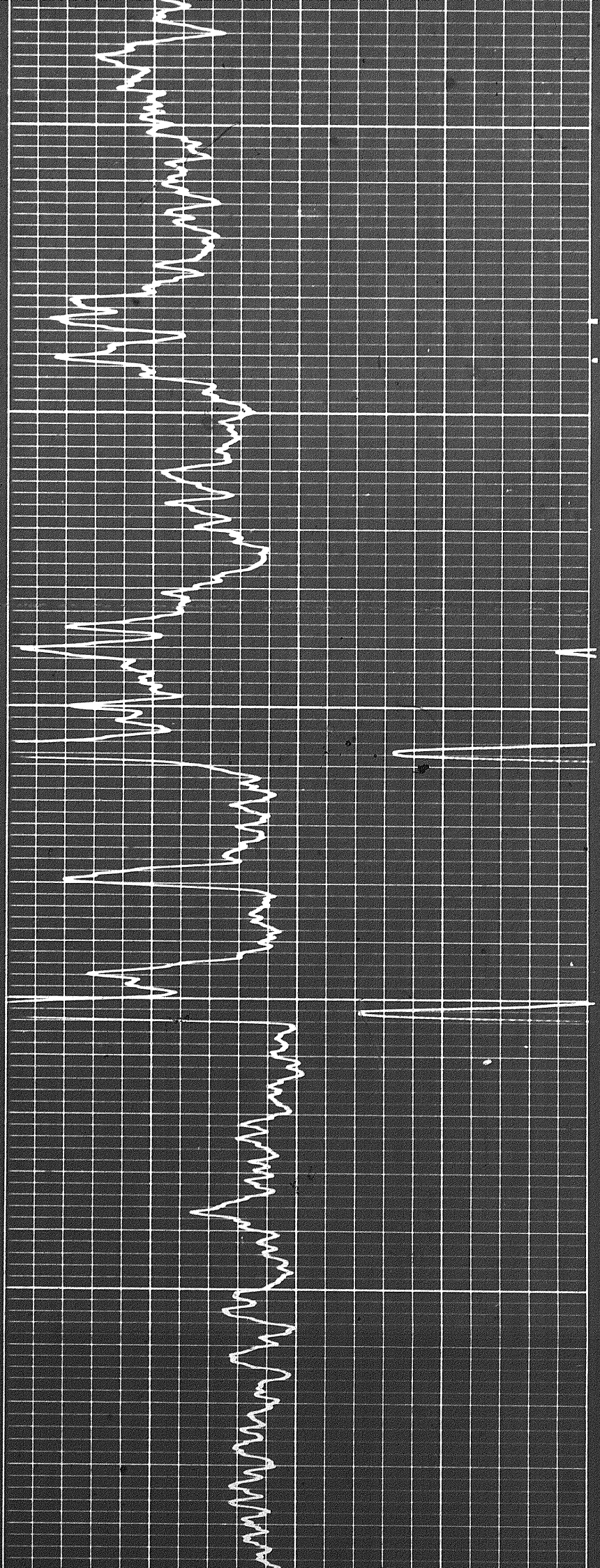
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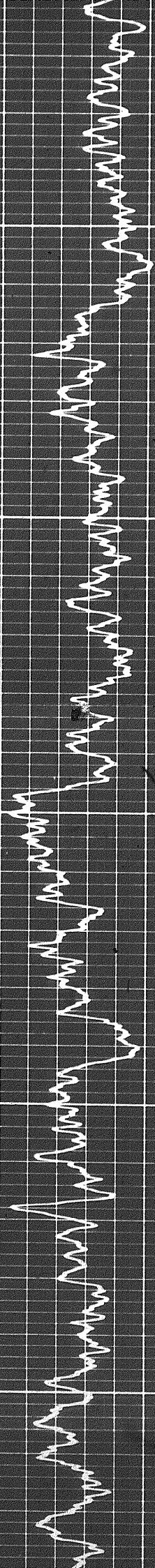


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2



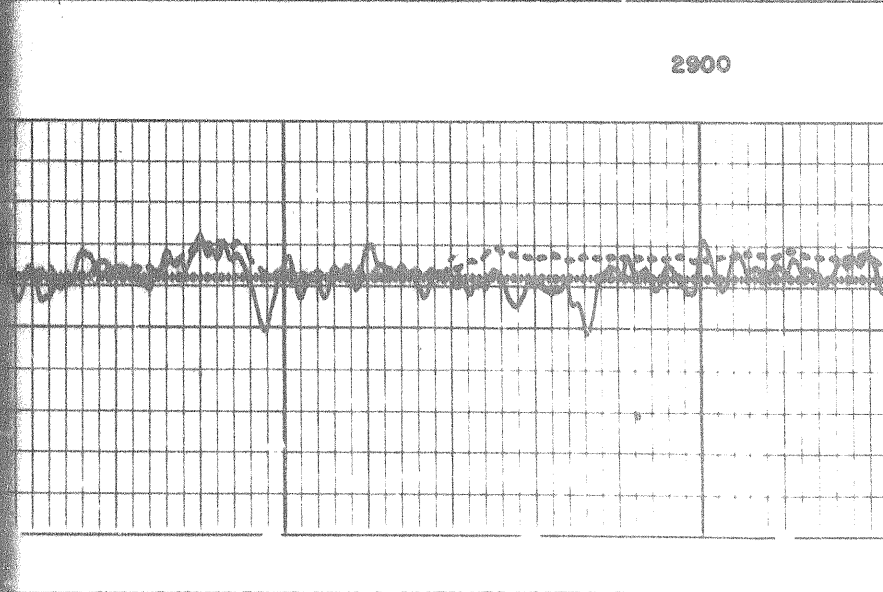
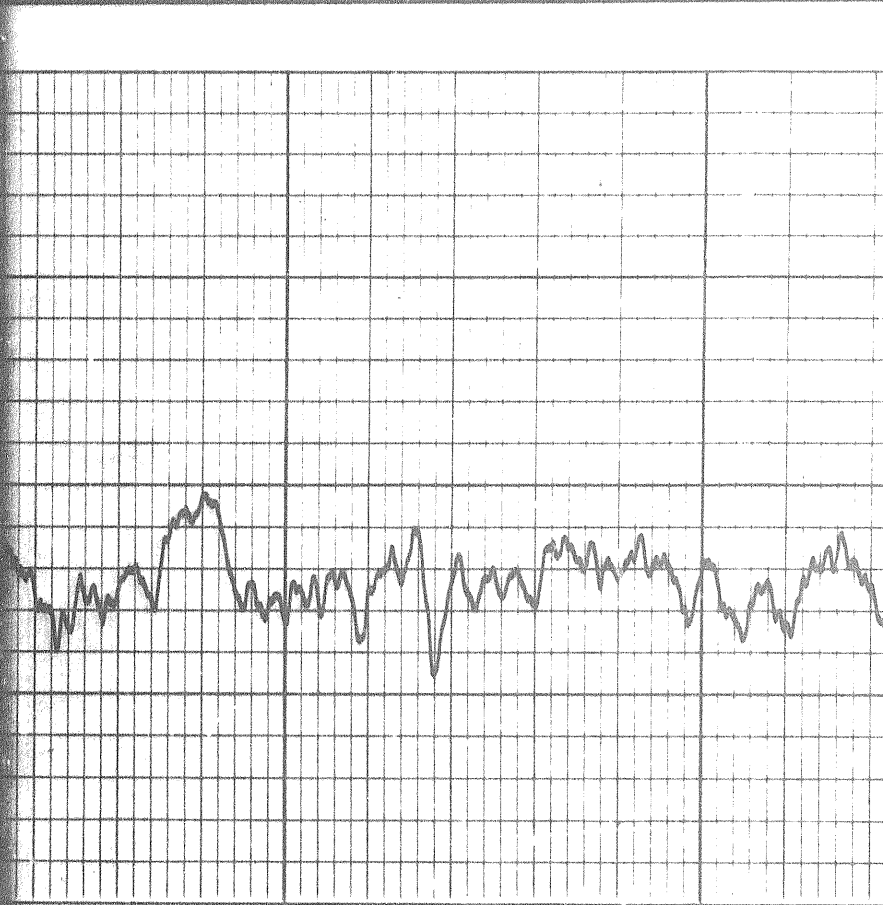
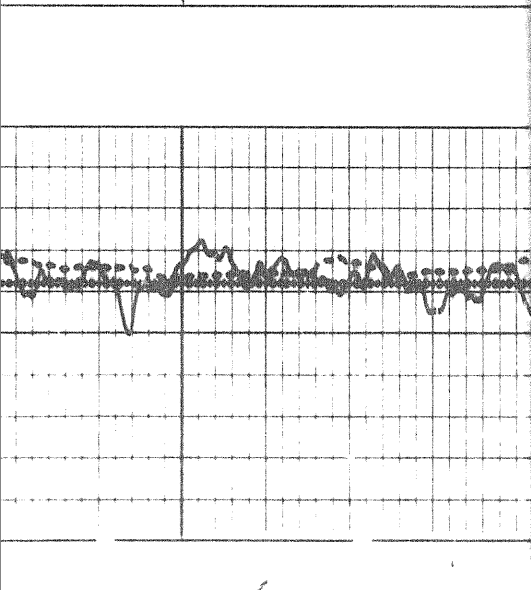
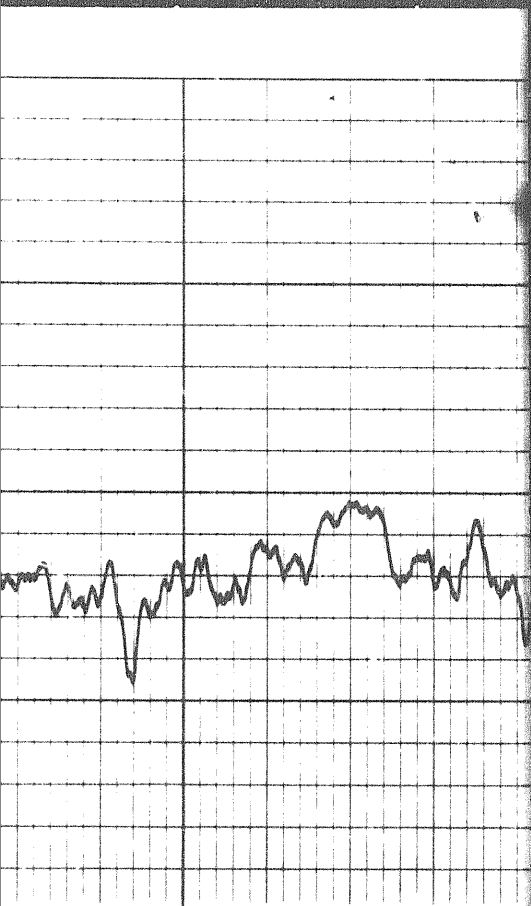


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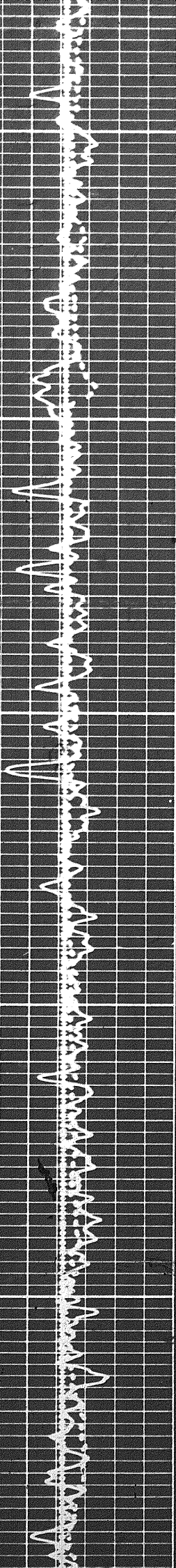
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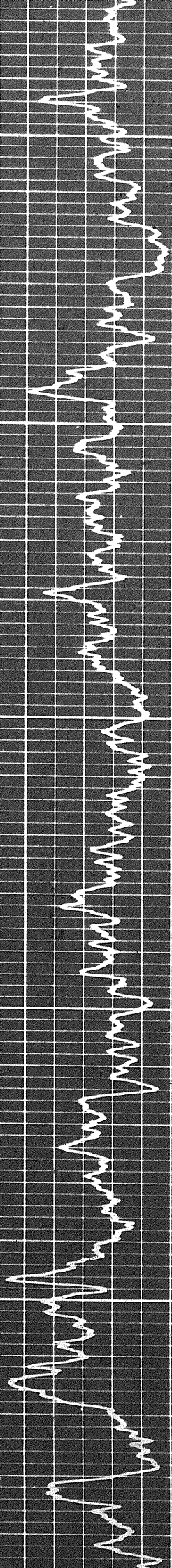


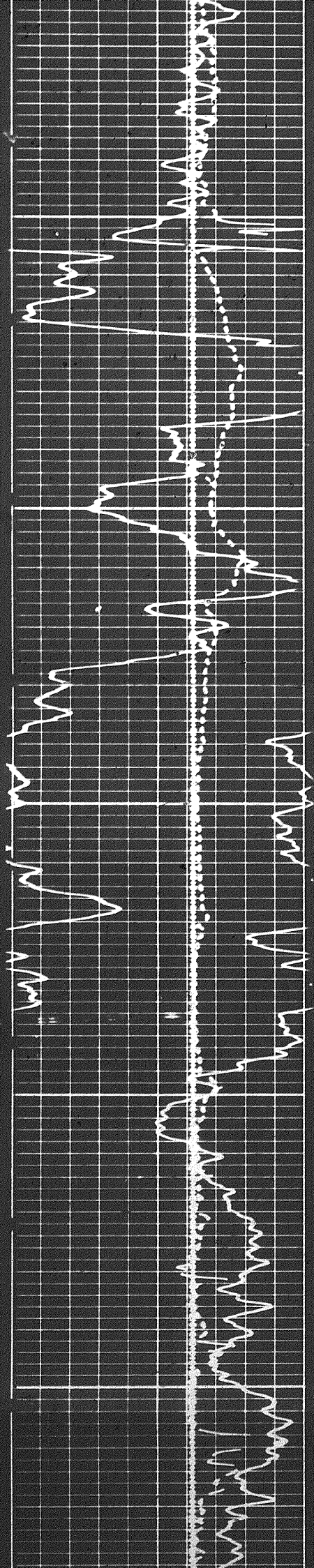
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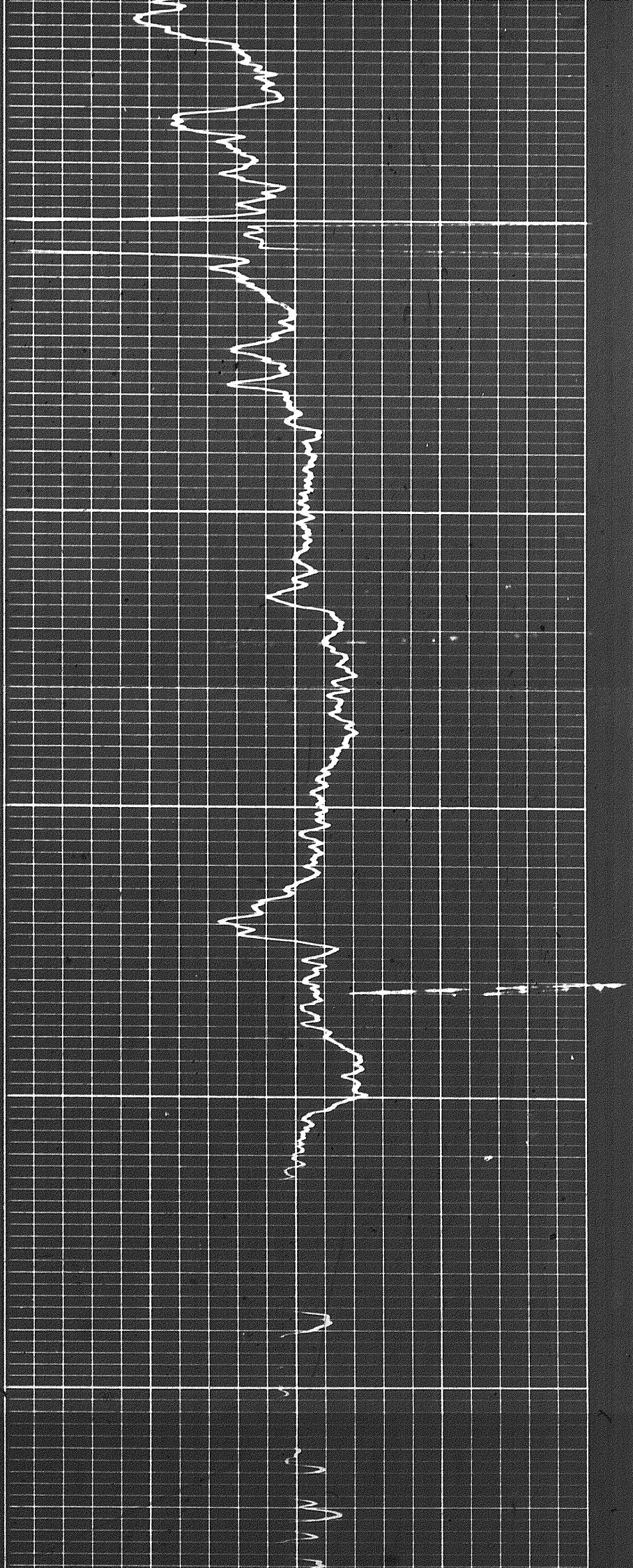


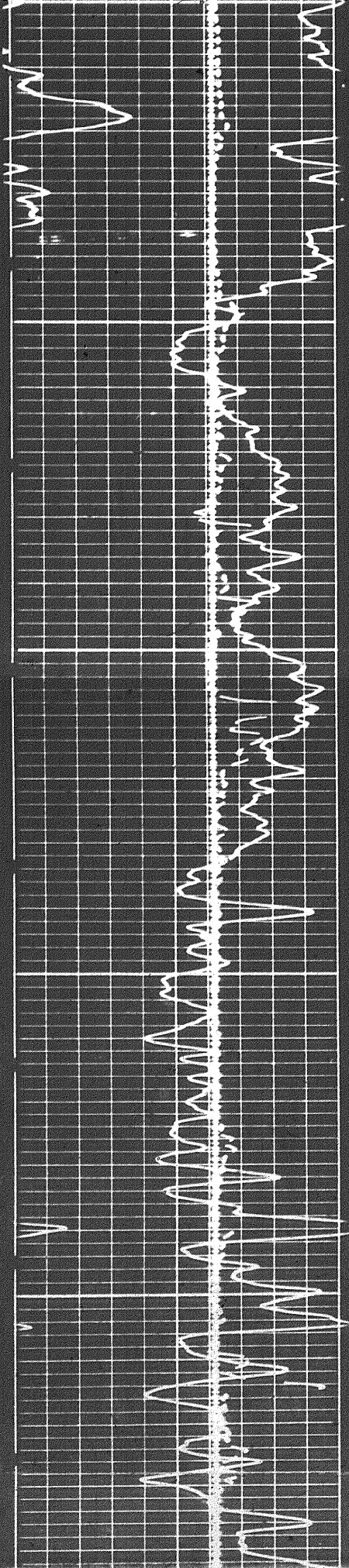


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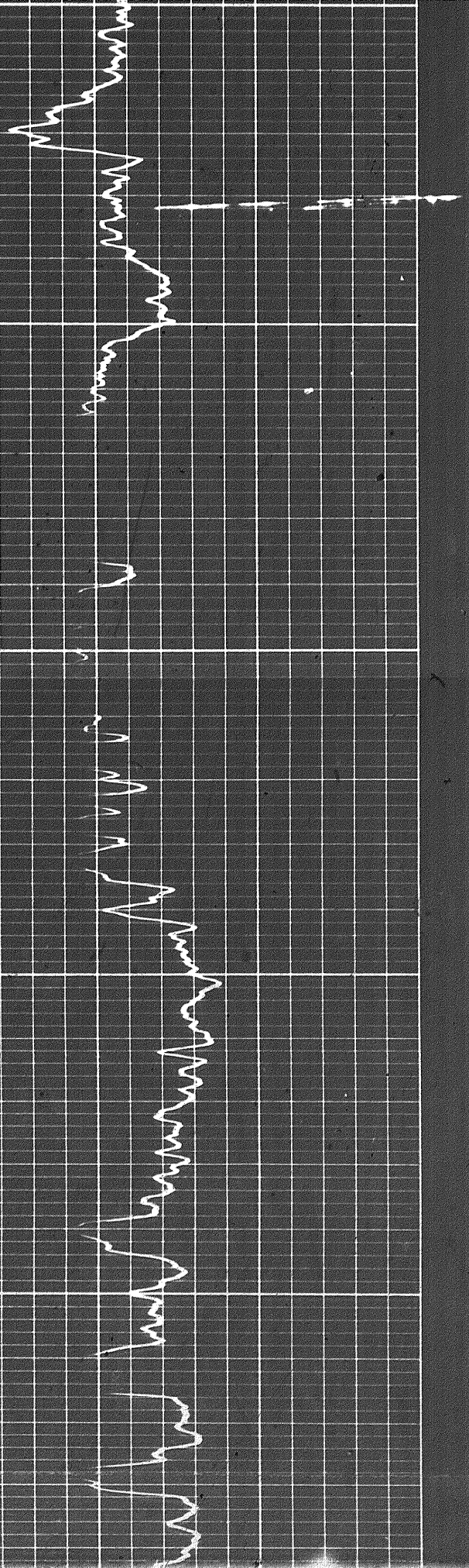


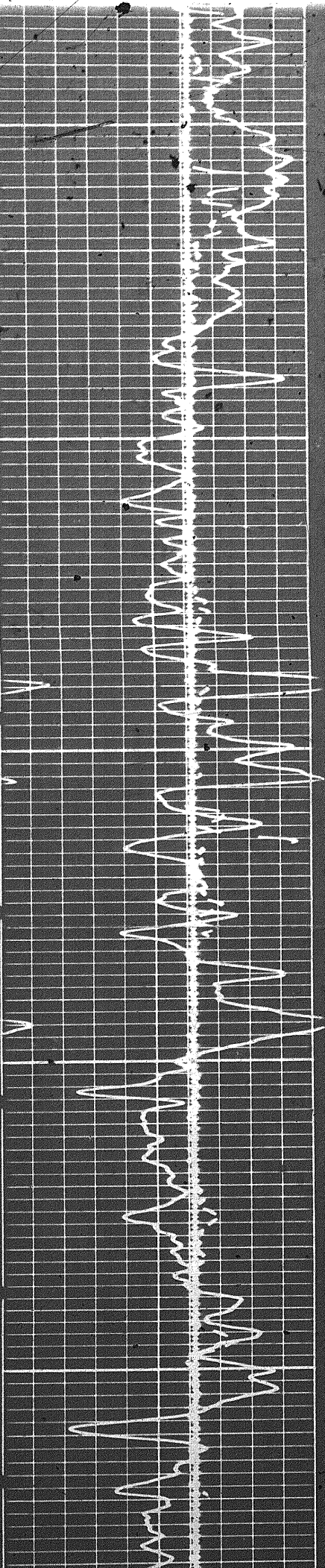


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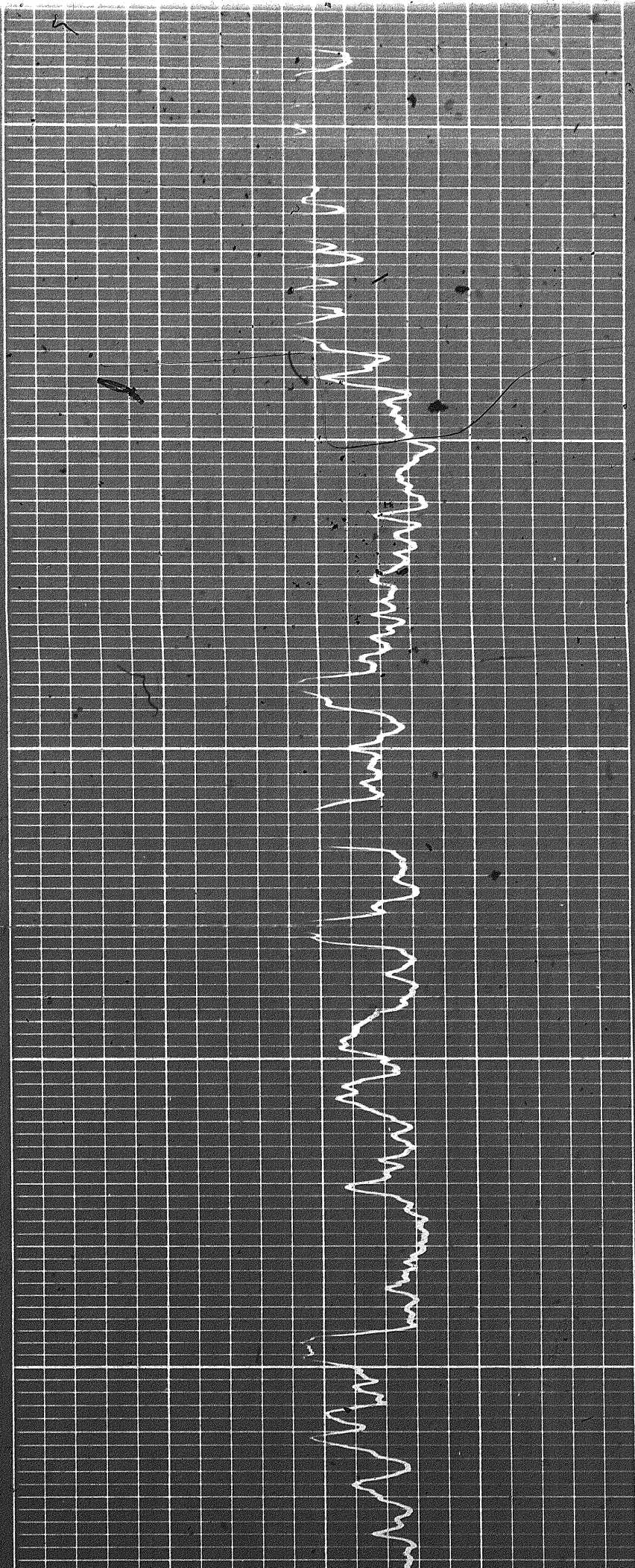


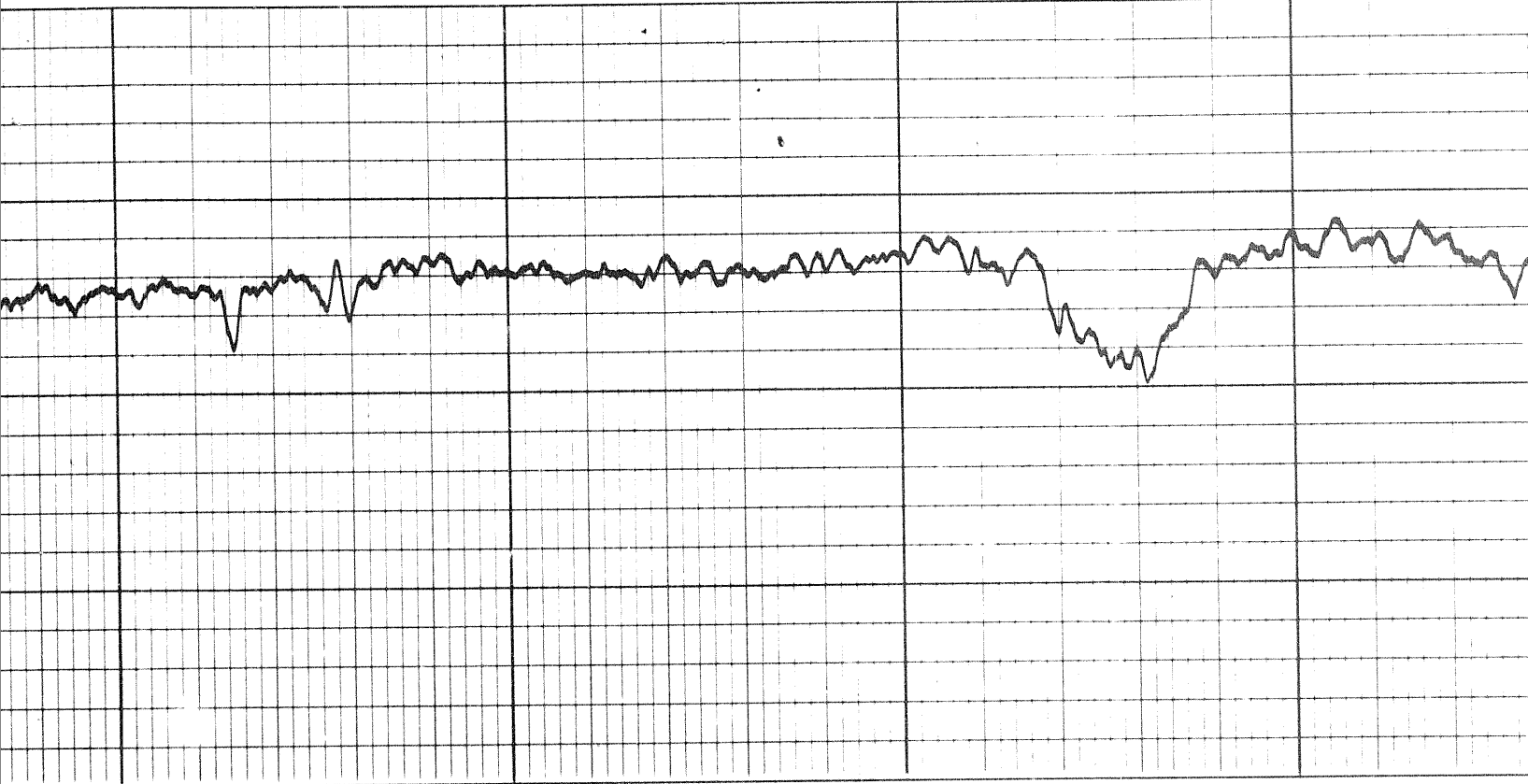


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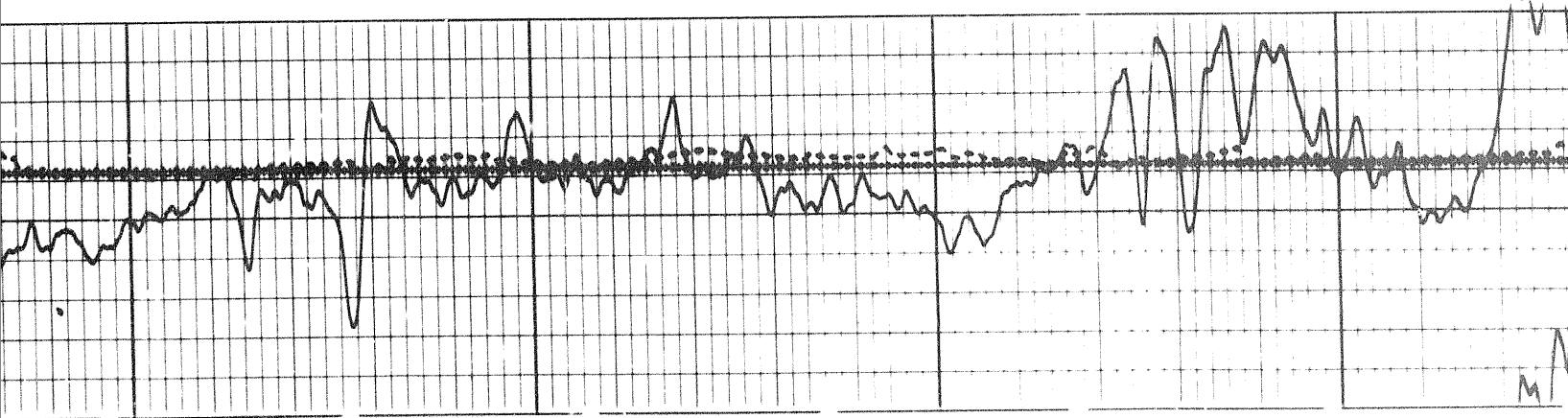
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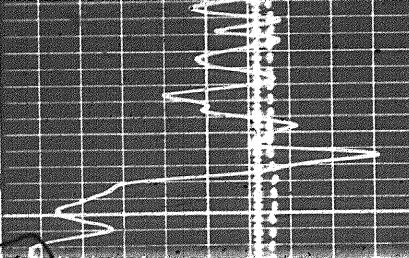


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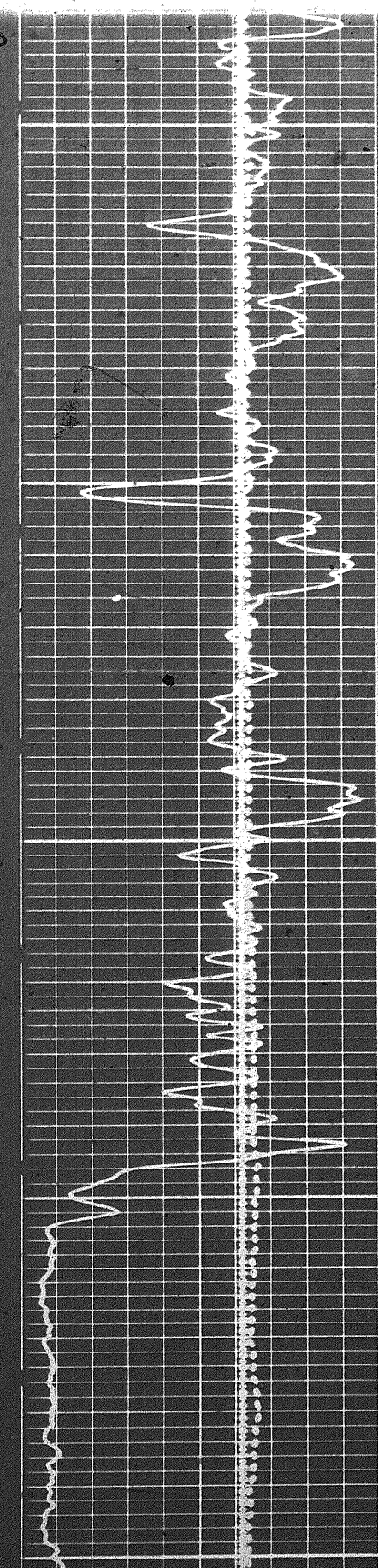
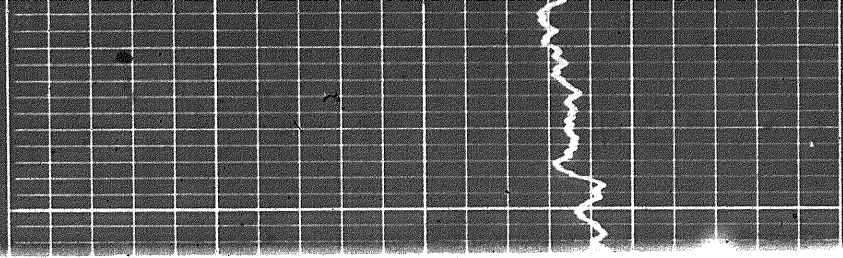
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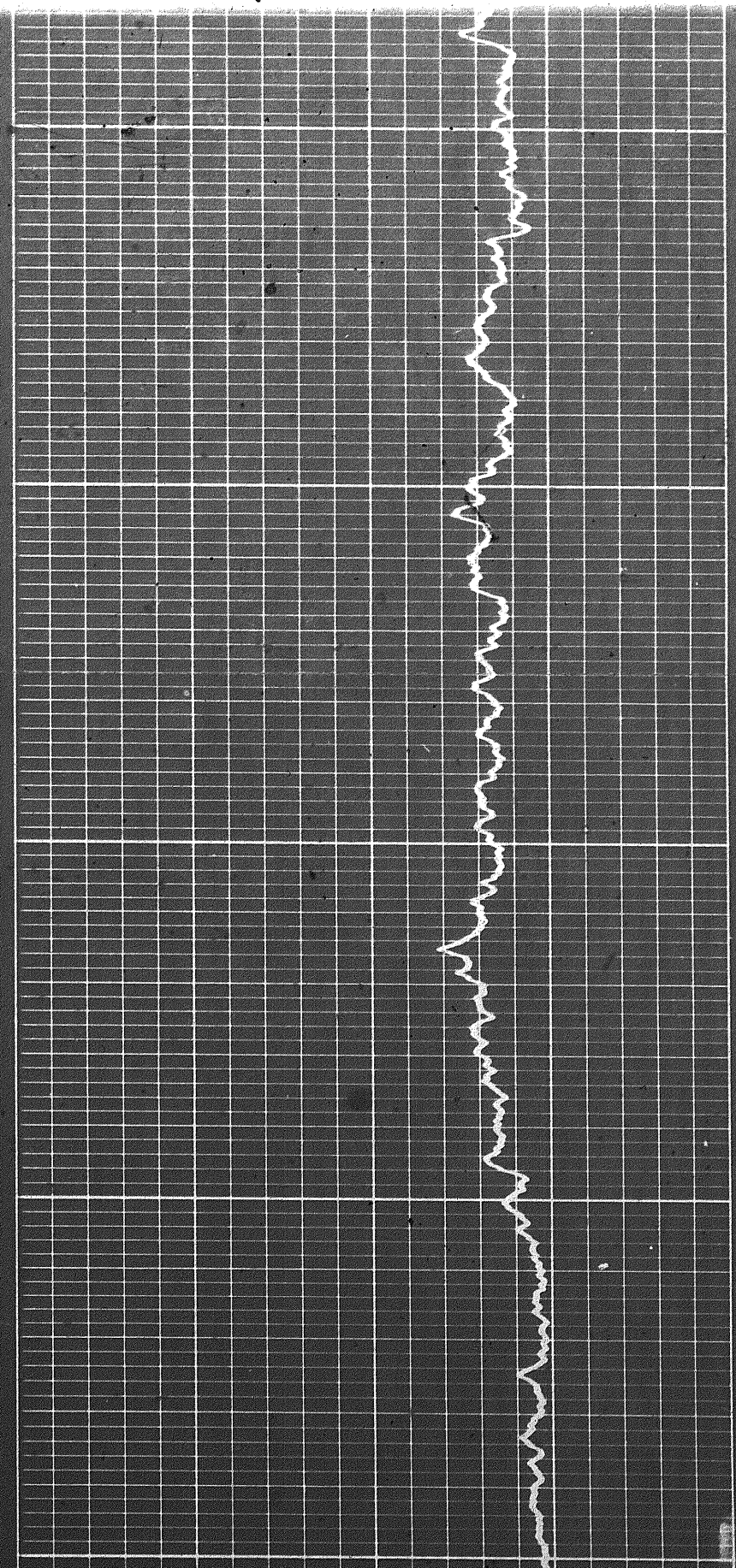
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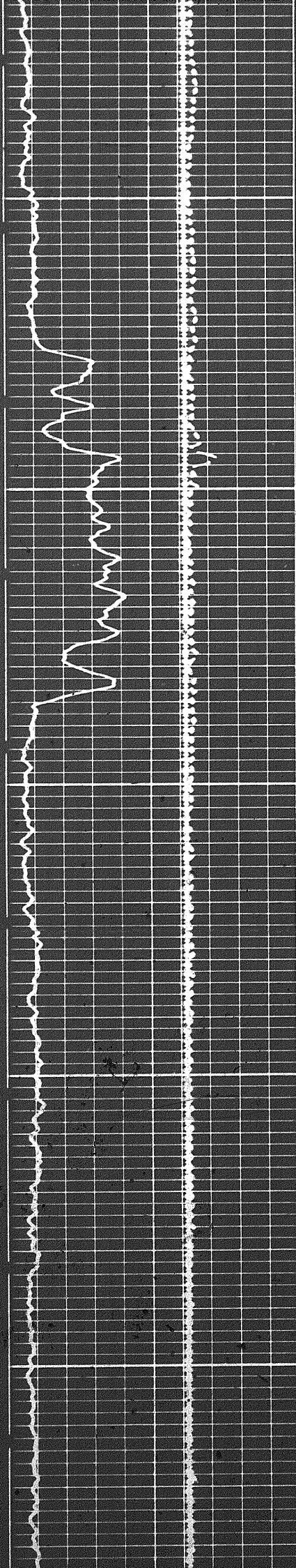


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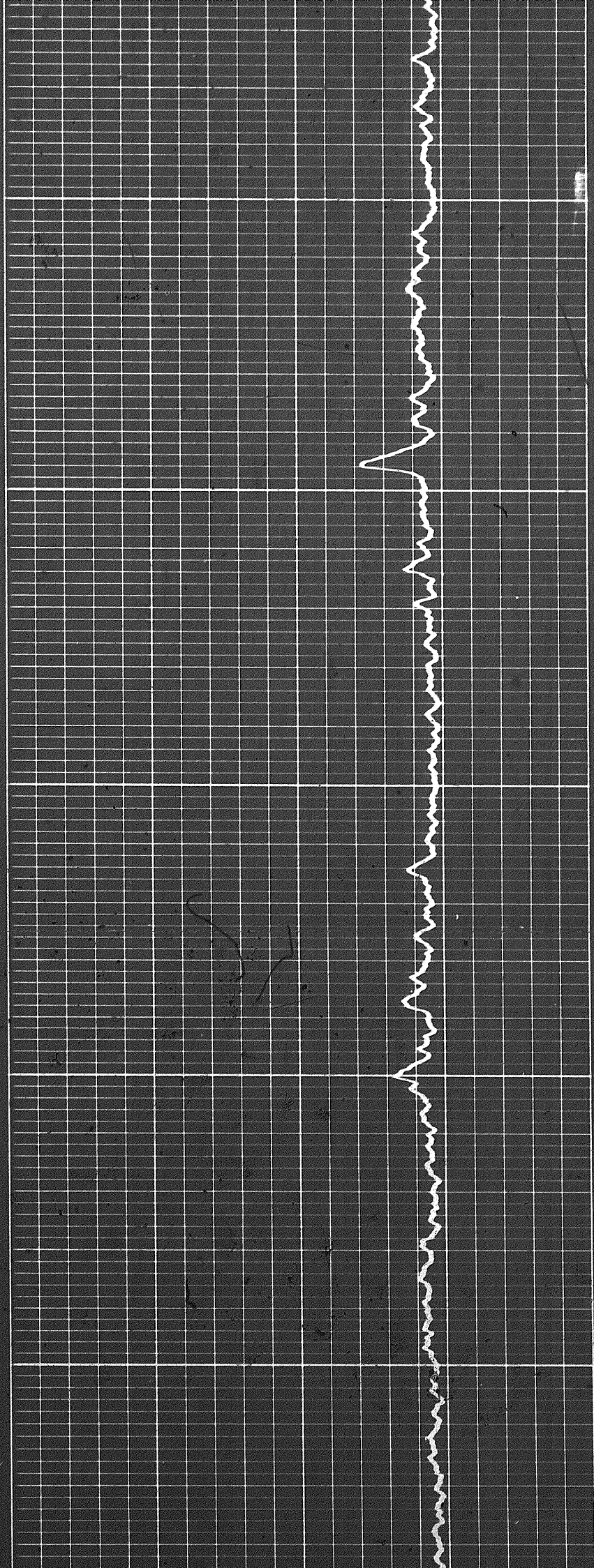
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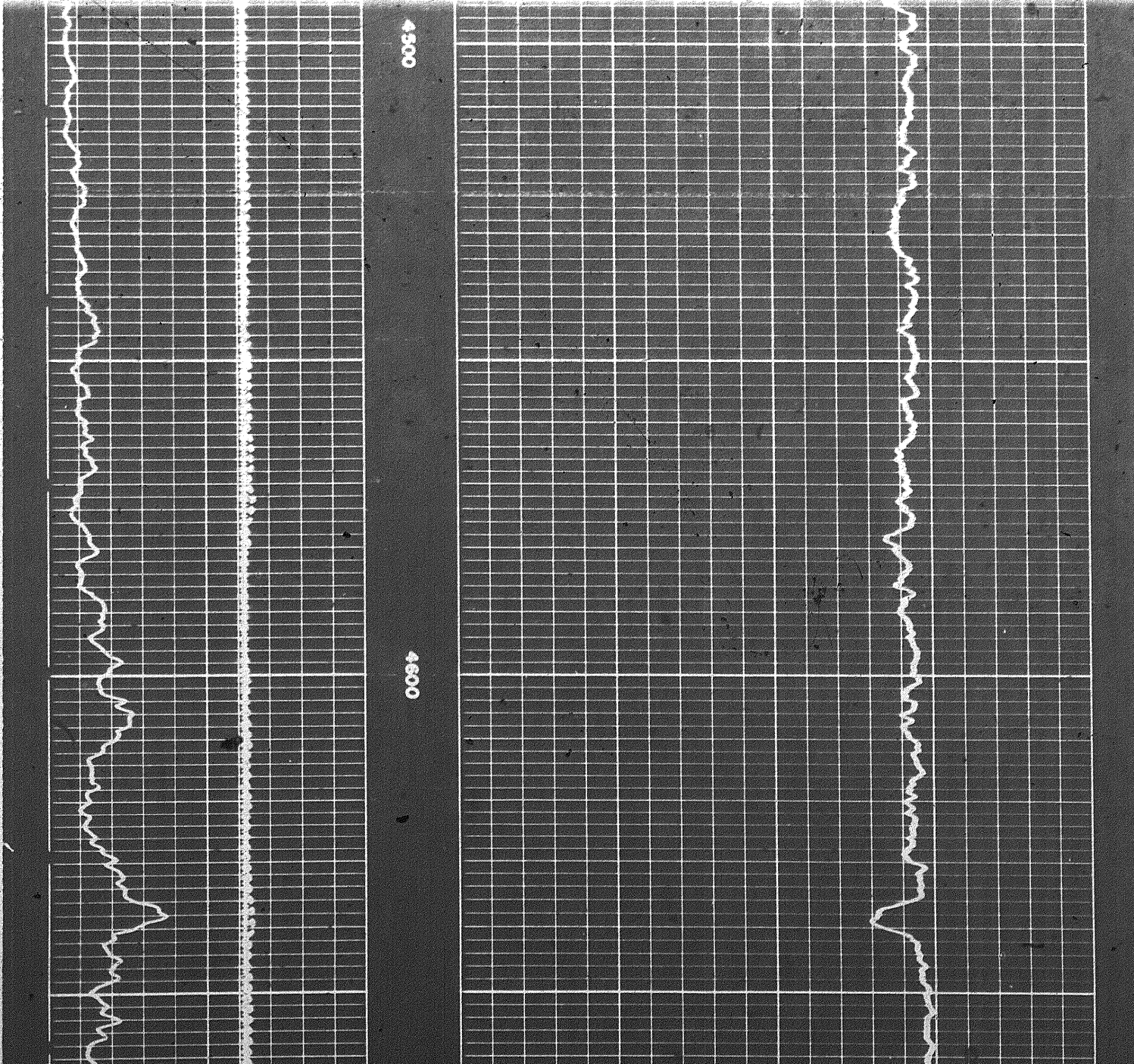
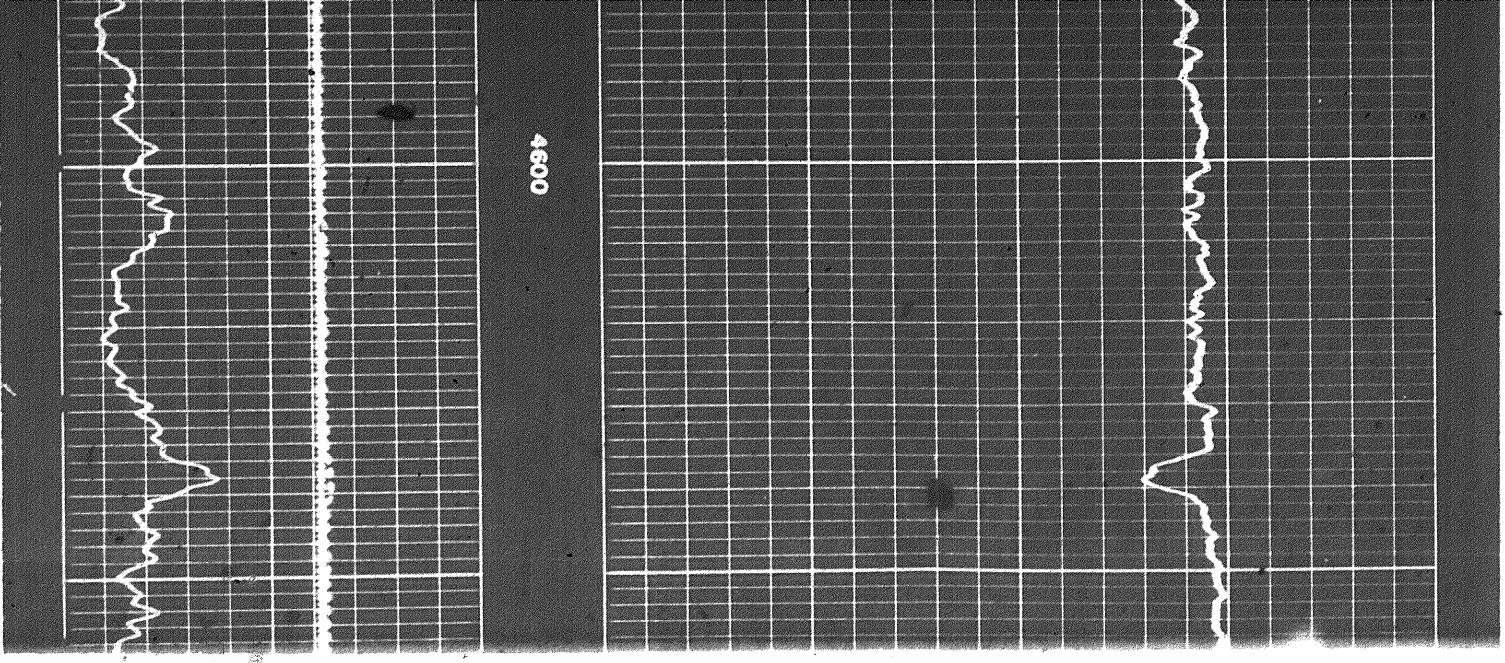
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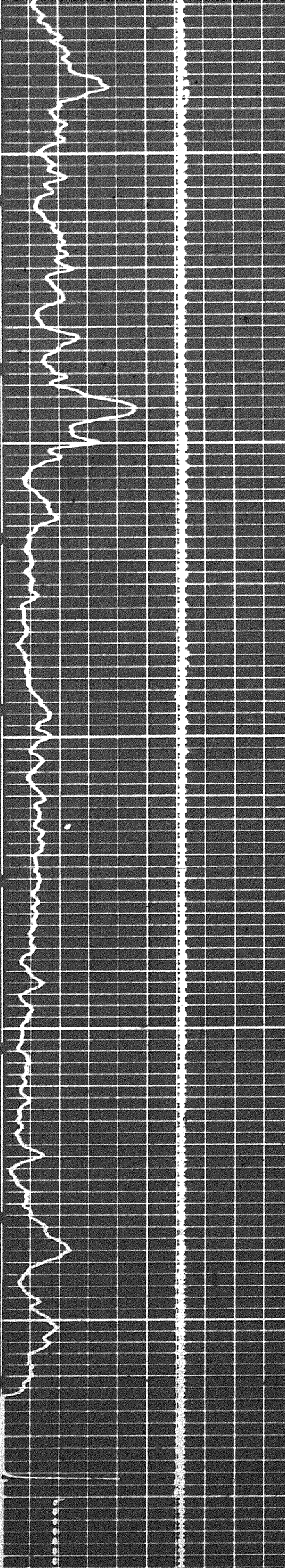
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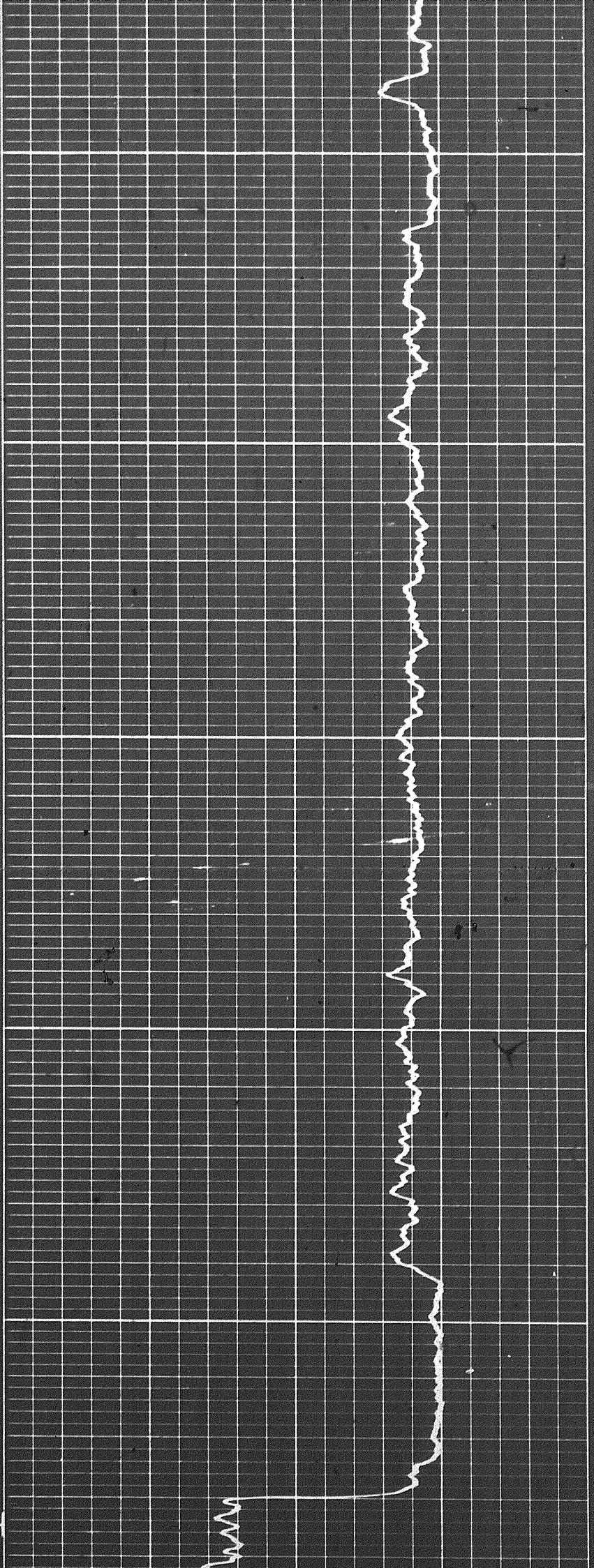
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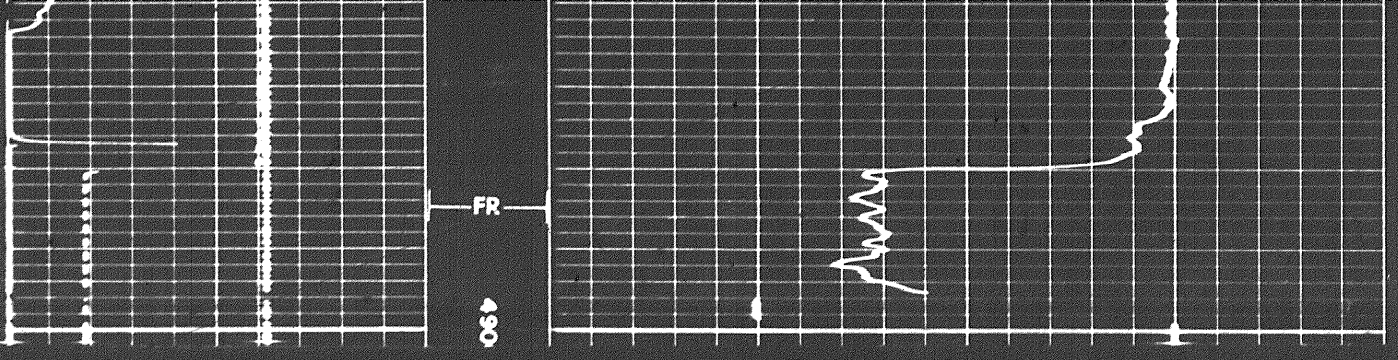
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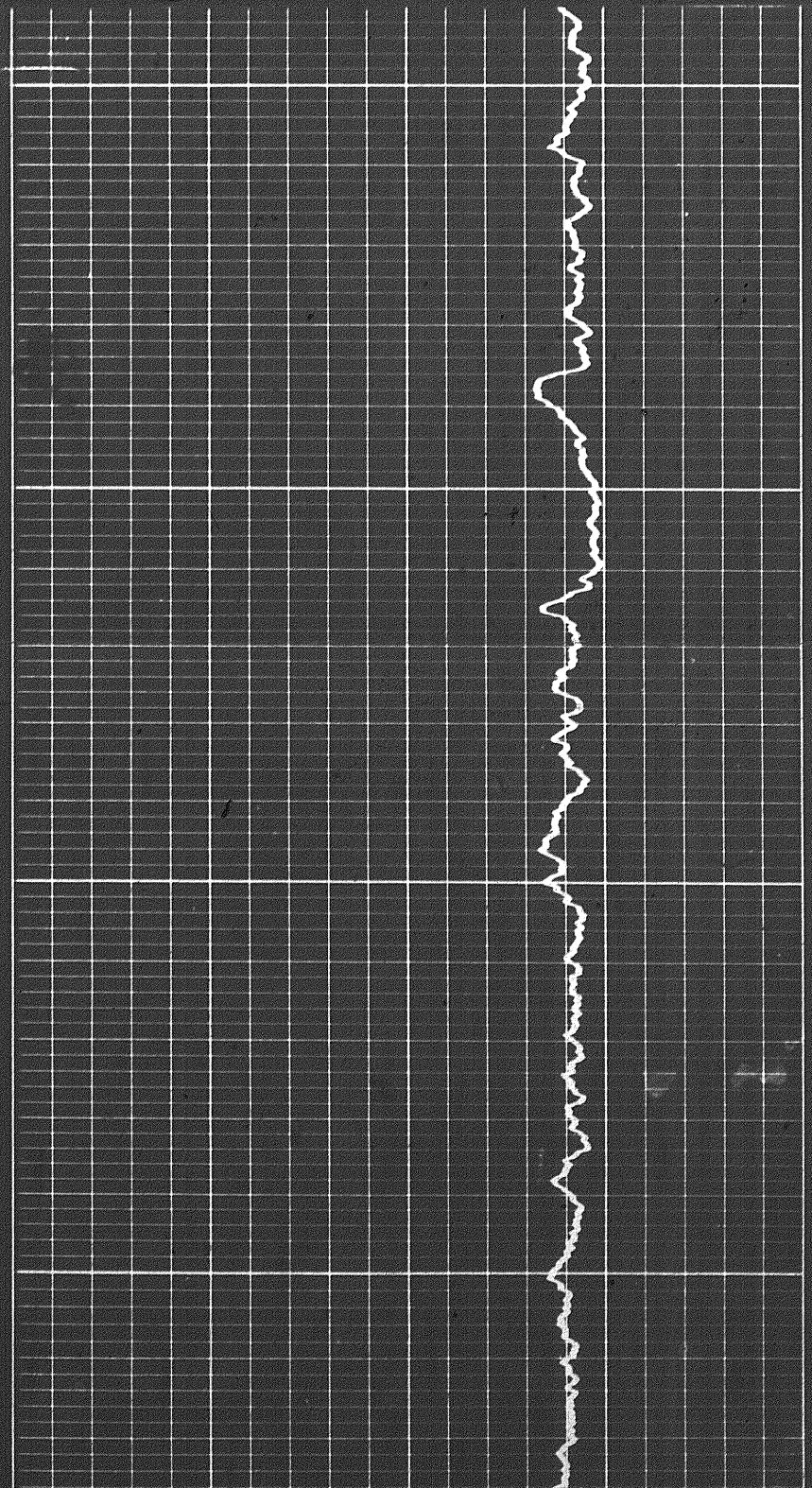
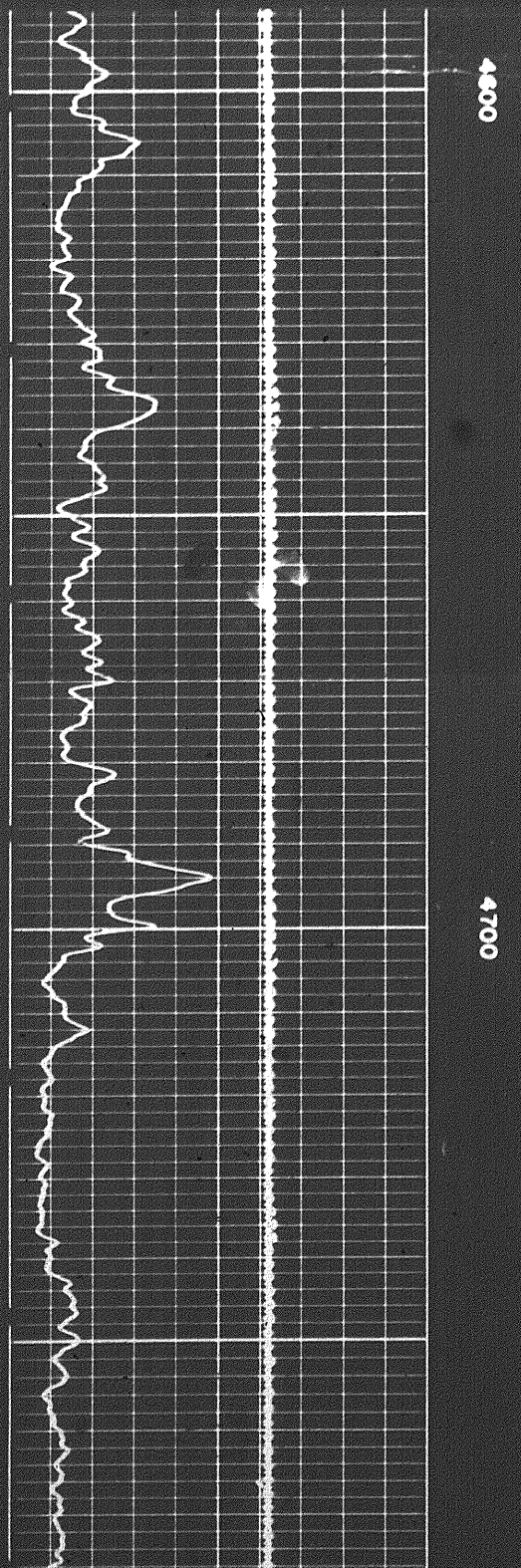
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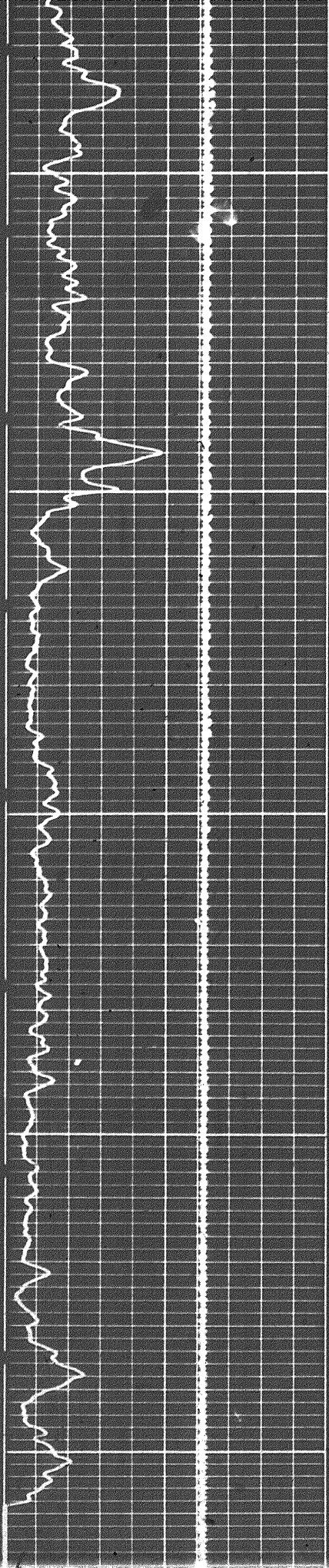


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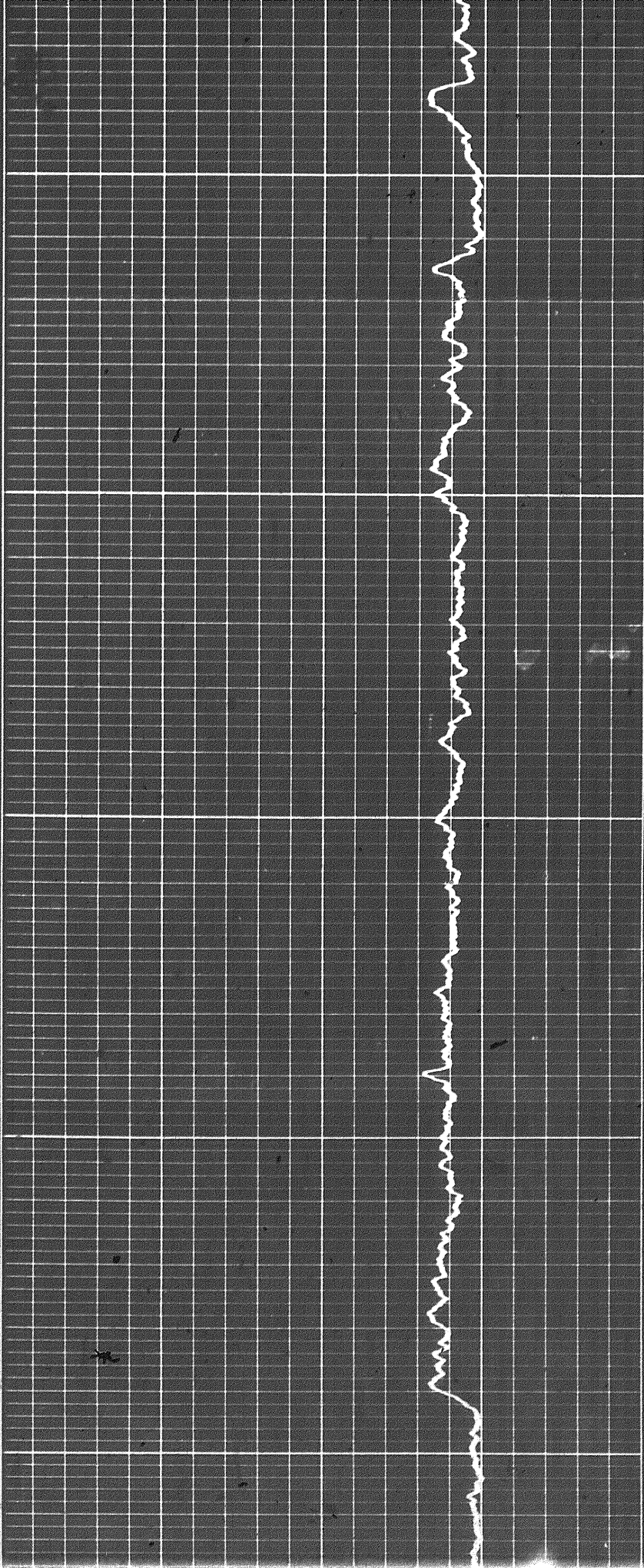
REPEAT SECTION

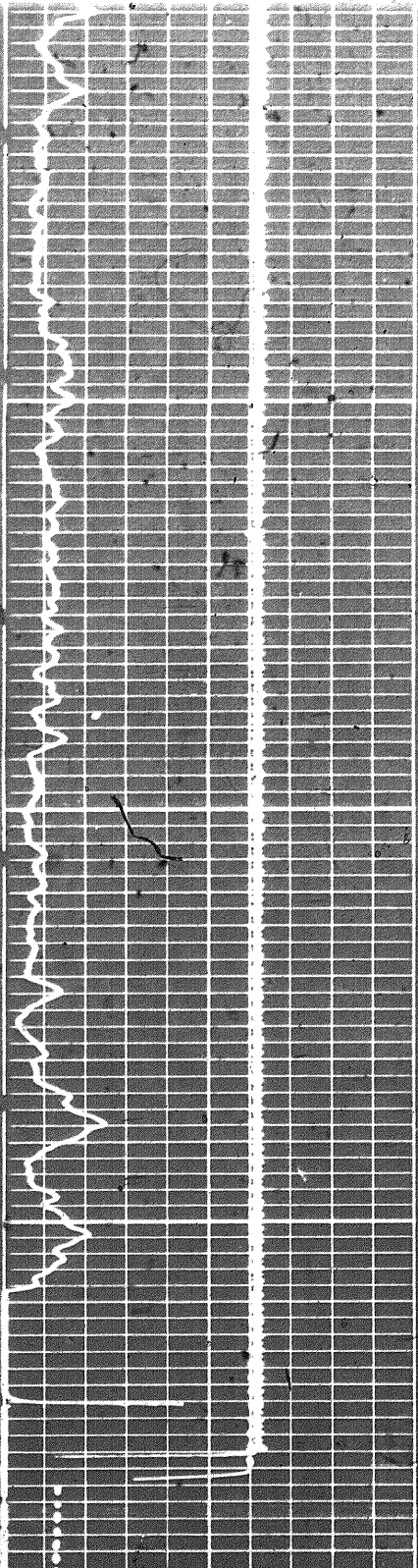




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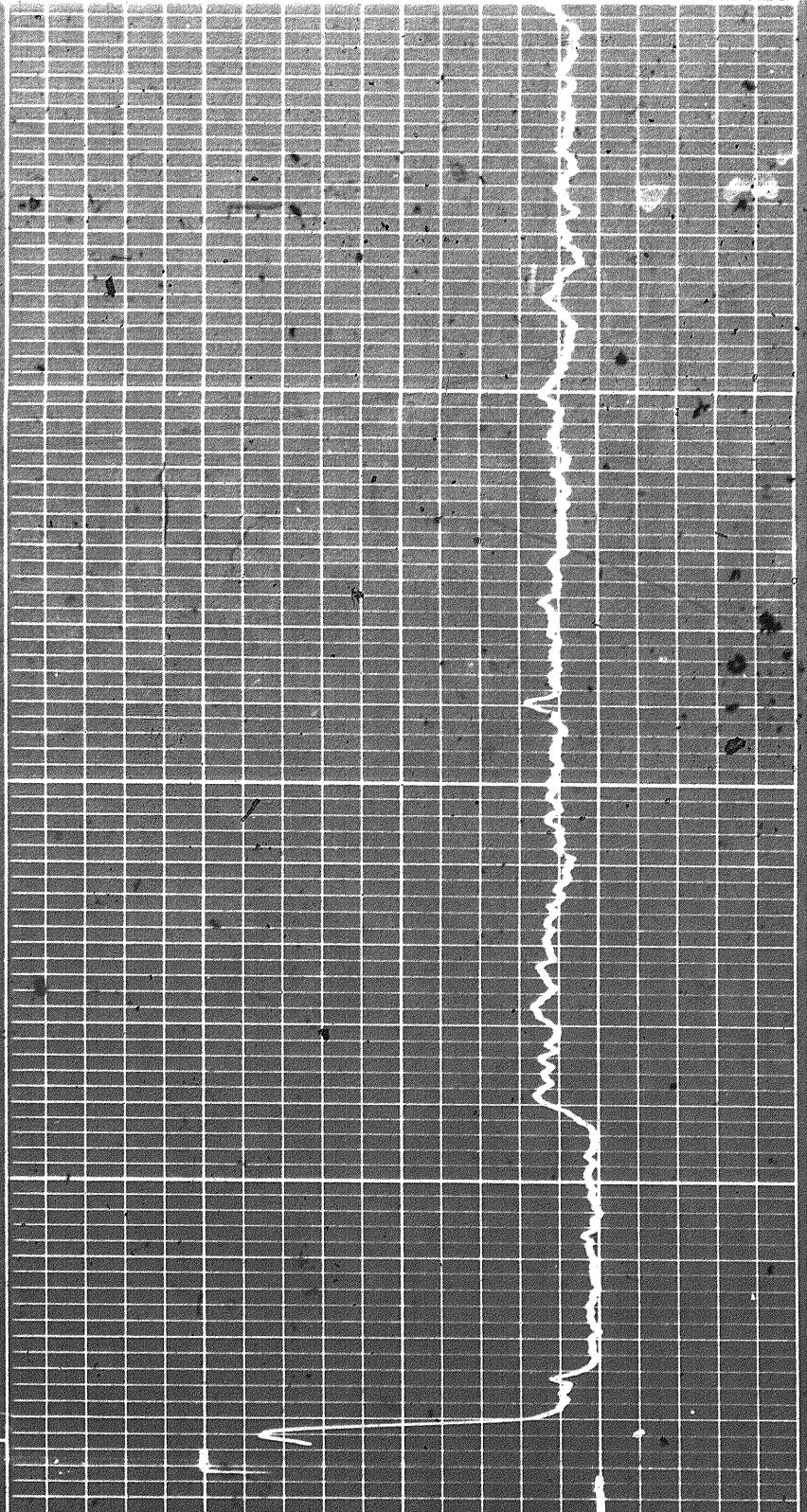
4800





0004

FR



Sens.	150	T.C.	2
Zero	0	div. to left	
0		150	
150		300	

GAMMA RAY
API UNITS

peaks →

Sens. 150 T.C. 2
 Zero 0 div. to left
 0 150
 150 300

GAMMA RAY
 API UNITS

Speed in FPM

7 8 9 10 11 12 13 14 15

30 20 10 0 -10
 LIMESTONE

CALIPER
 hole diameter in inches

DEPTH

POROSITY (%)

DETAIL LOG
 5' = 100'

RUN 2

CALIPER
 hole diameter in inches

DEPTH

POROSITY (%)

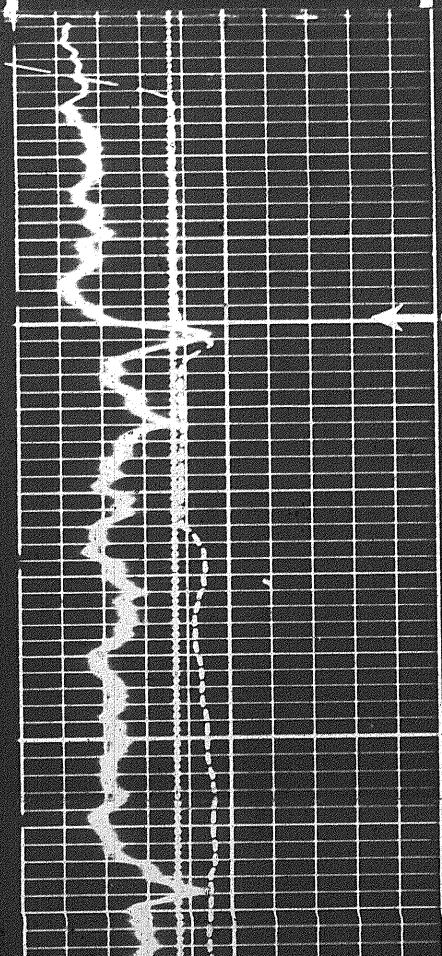
Speed in FPM

6 7 8 9 10 11 12 13 14

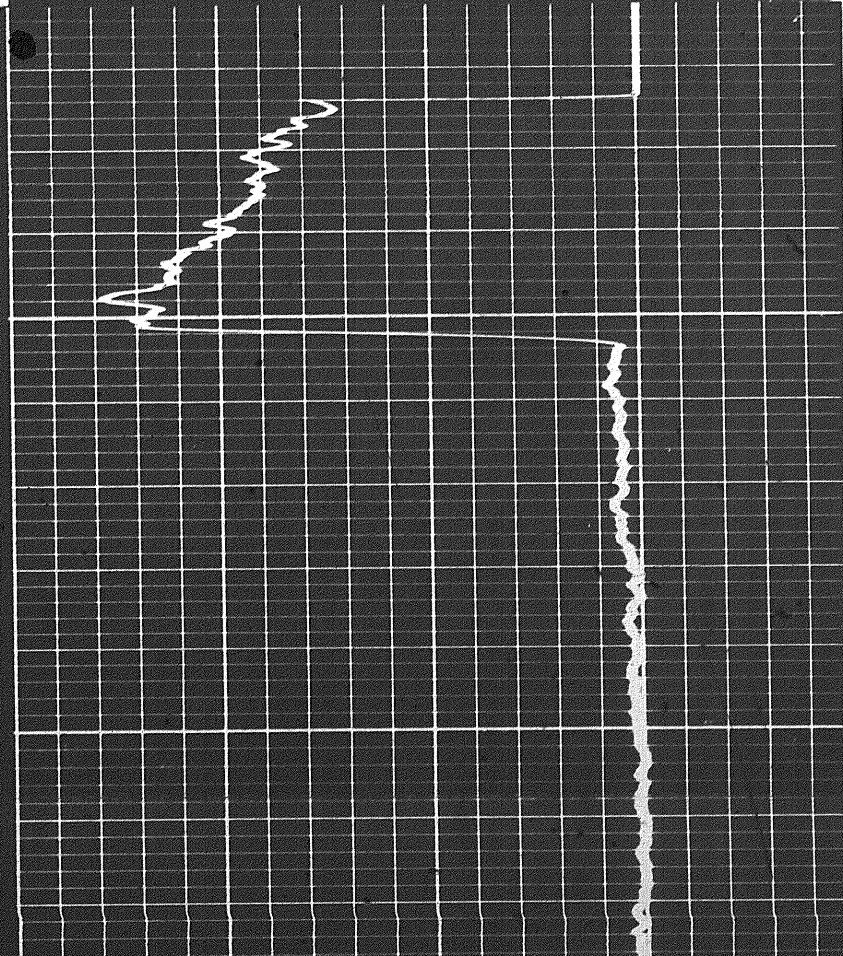
30 20 10 0 -10
 LIMESTONE

GAMMA RAY
 API UNITS

Sens. 100 T.C. 2
 Zero 0 div. to left
 0 100
 100 200

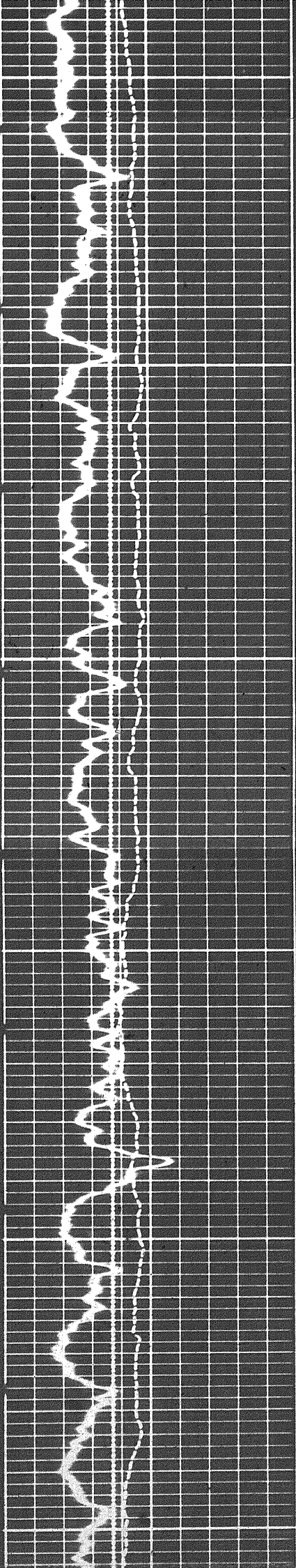


4980
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15.8

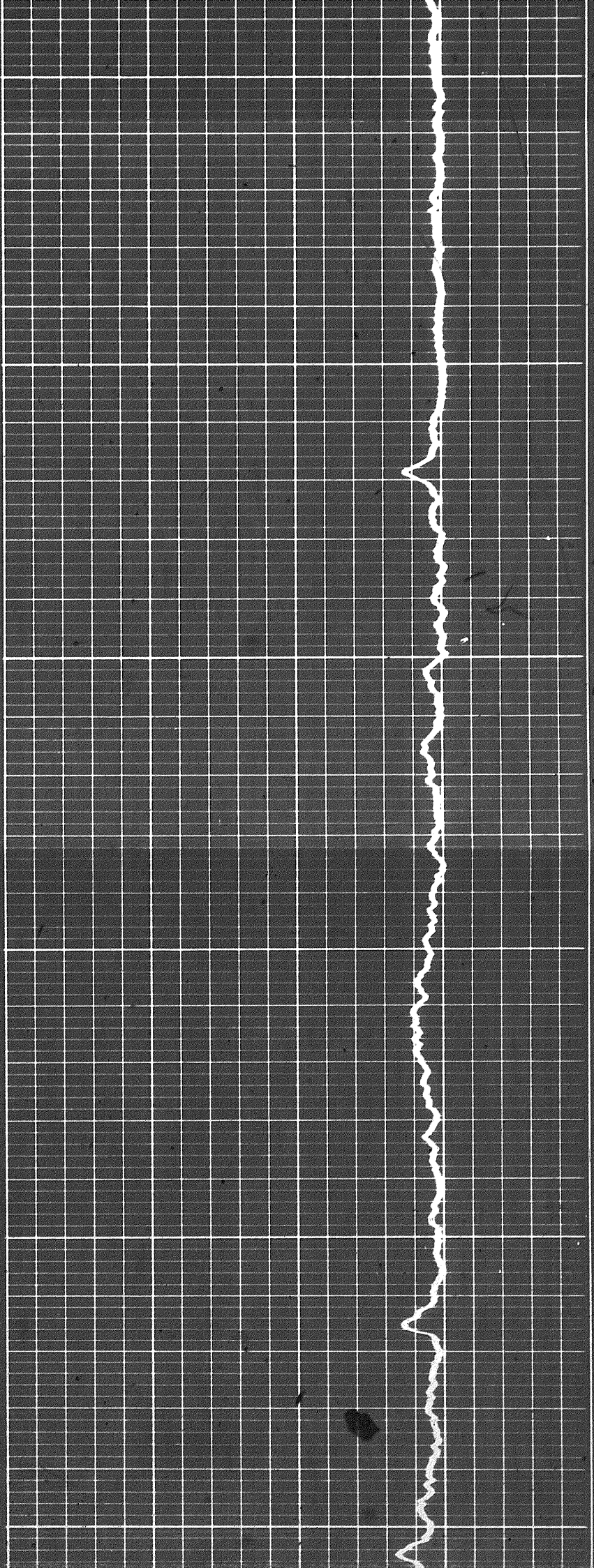
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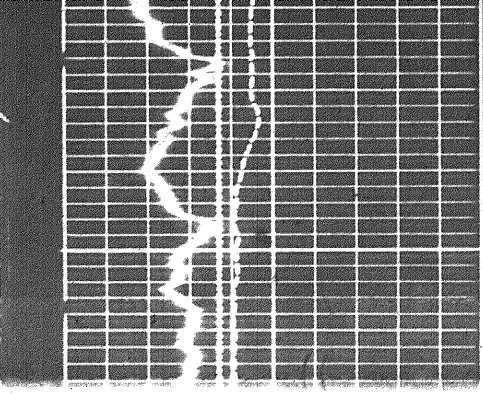


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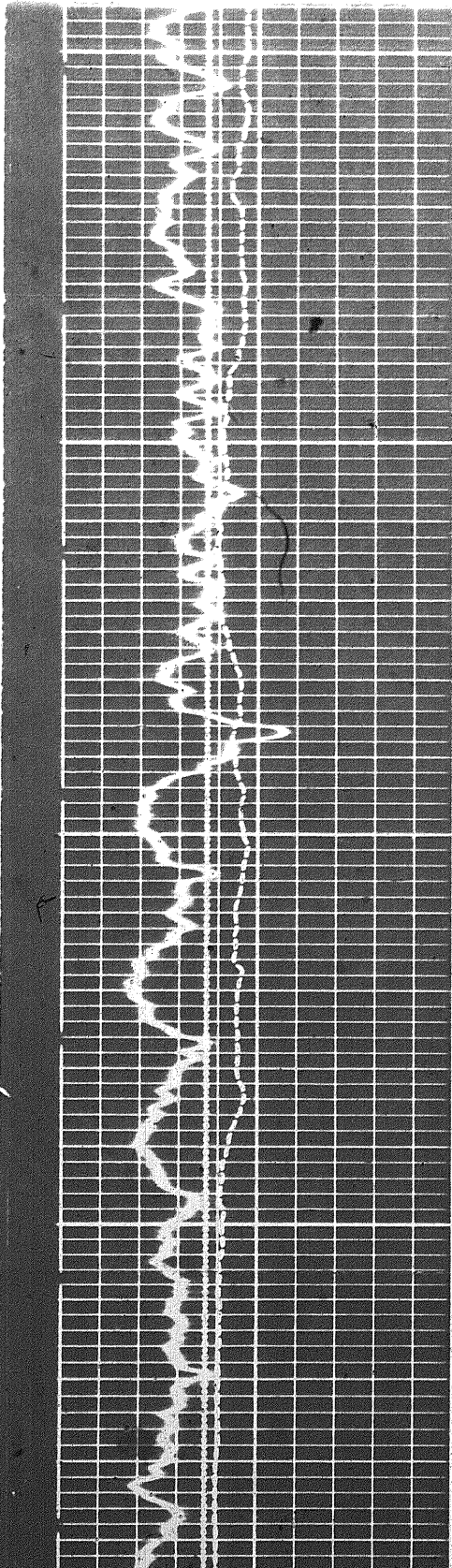
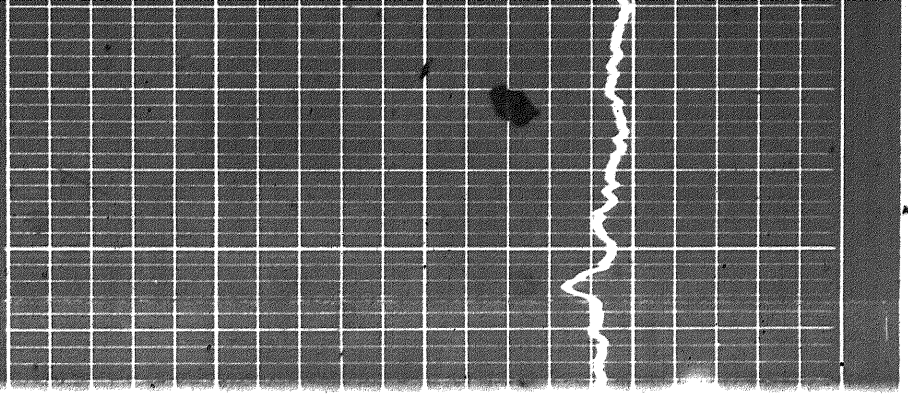
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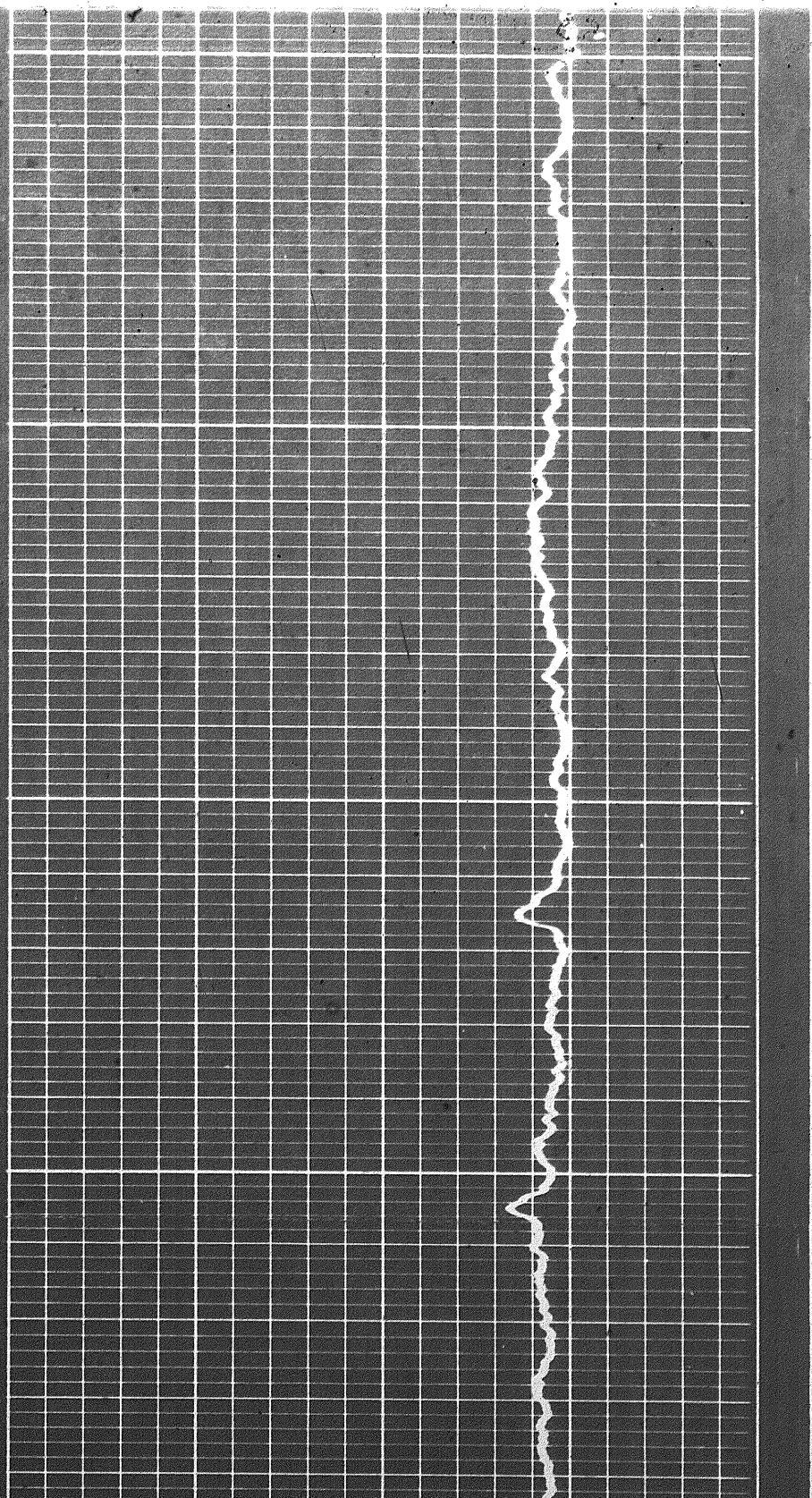




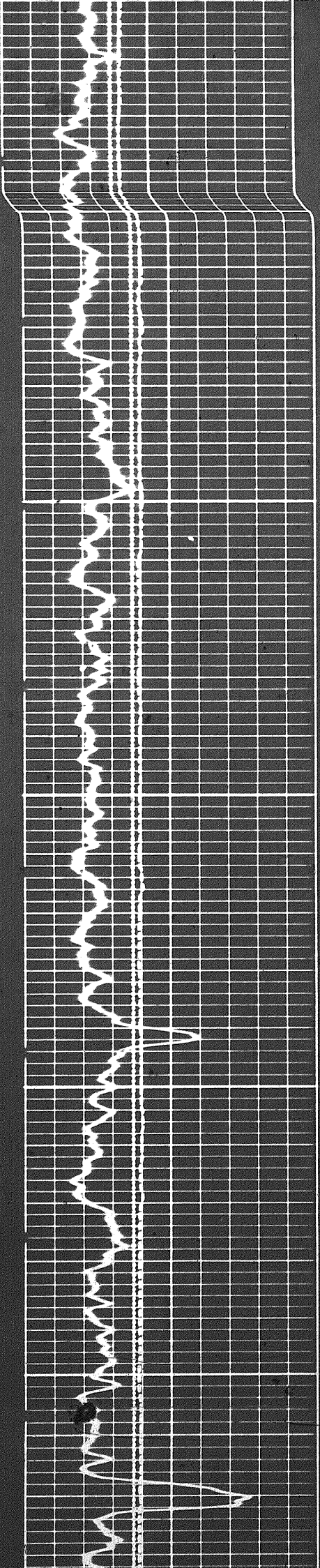
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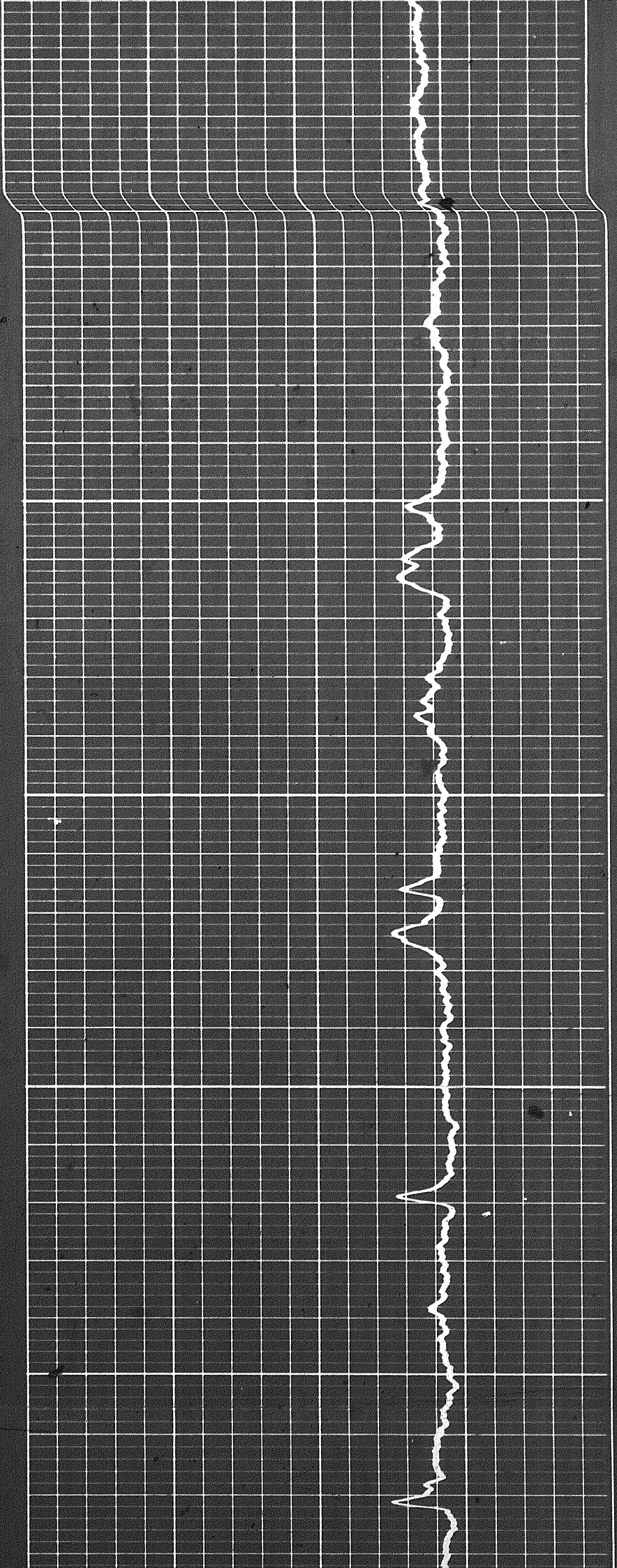


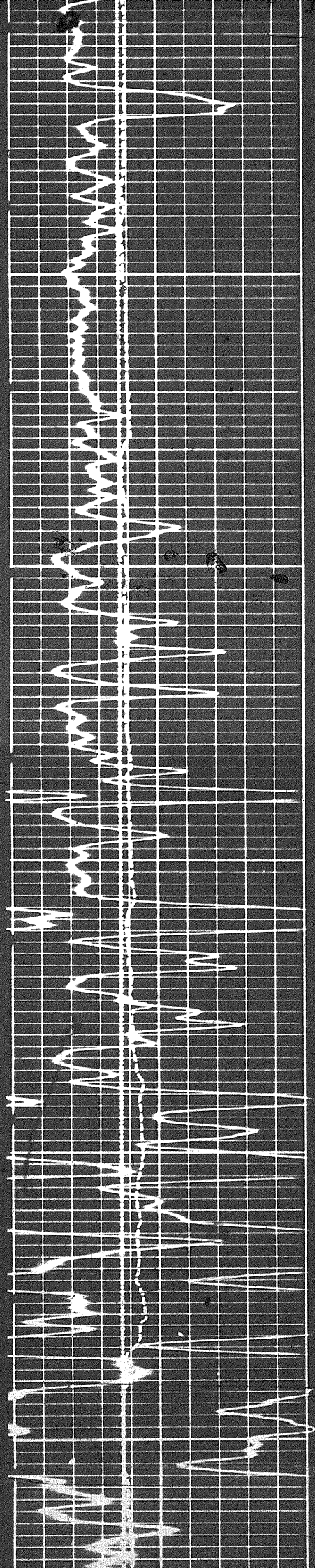
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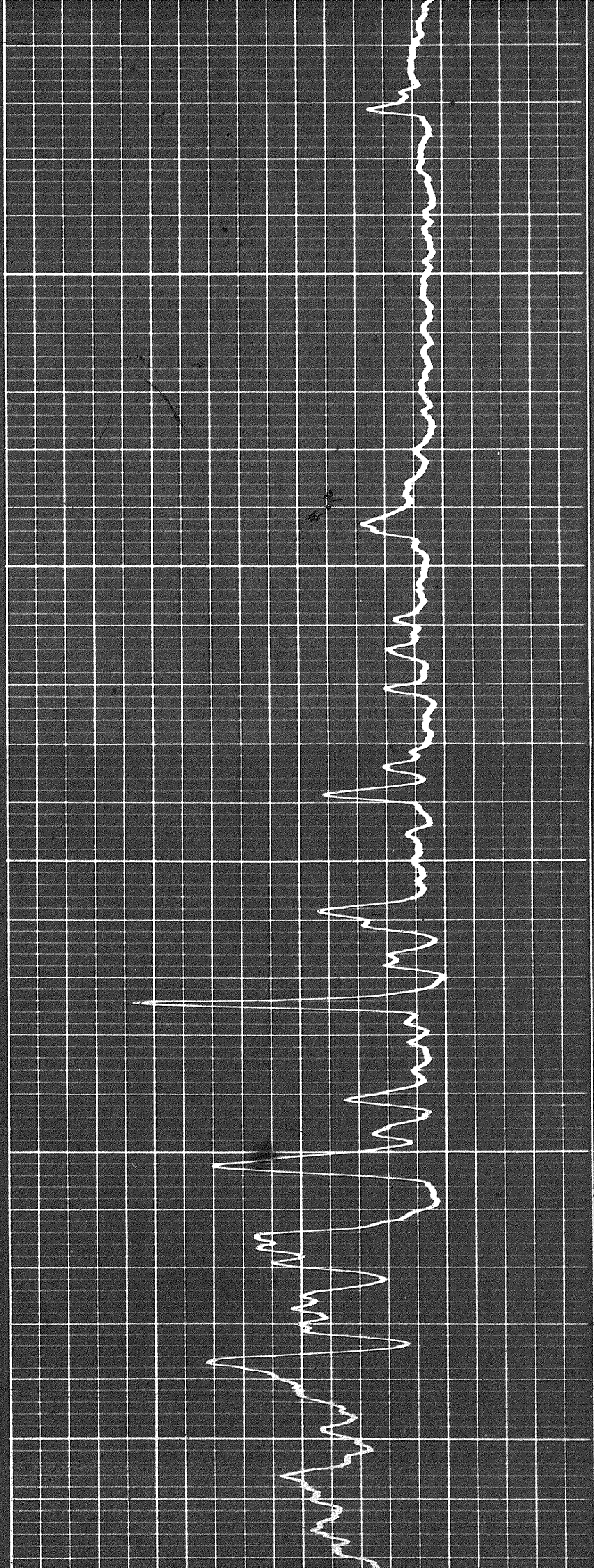


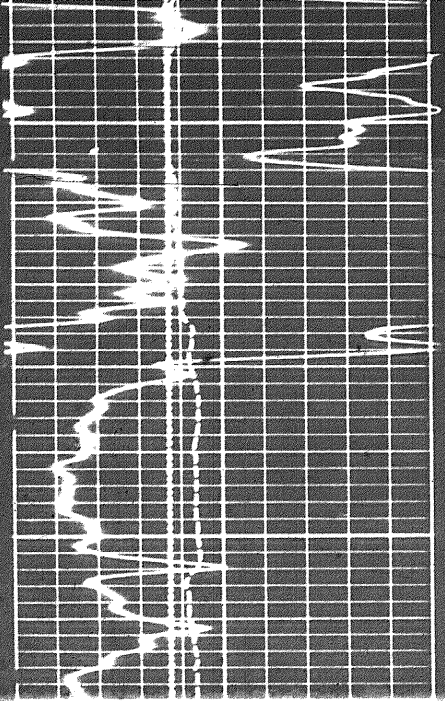


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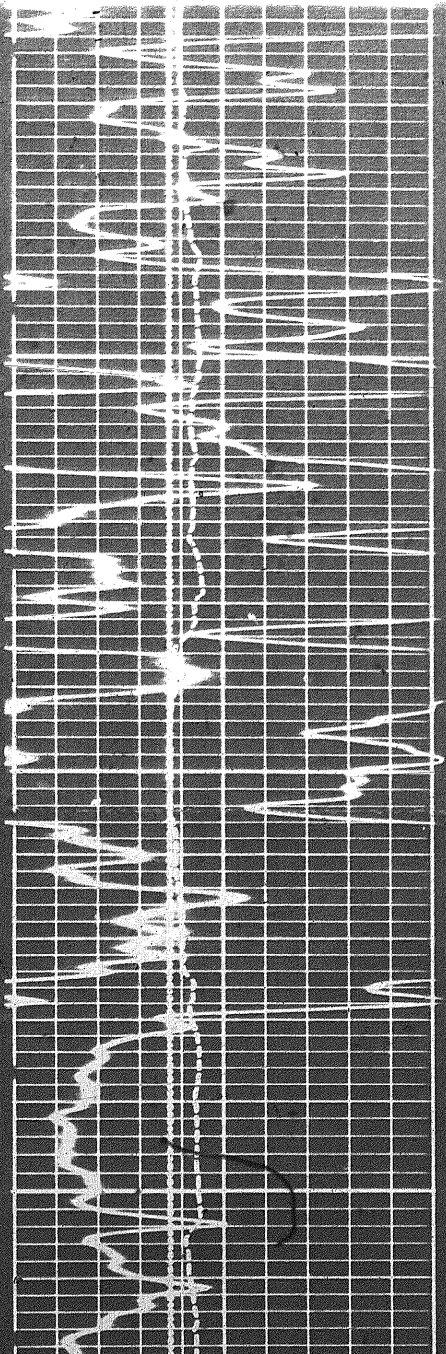
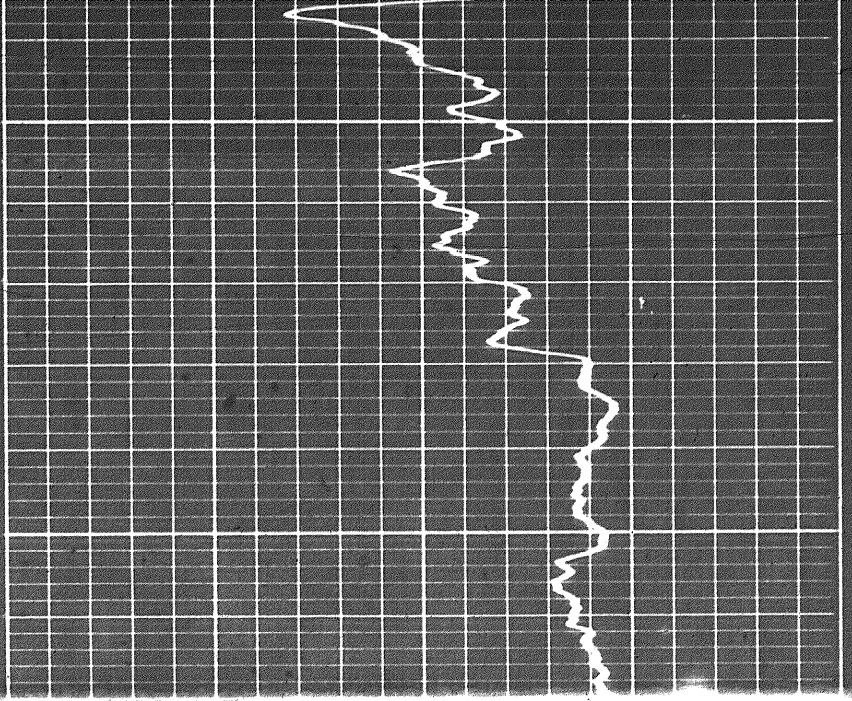
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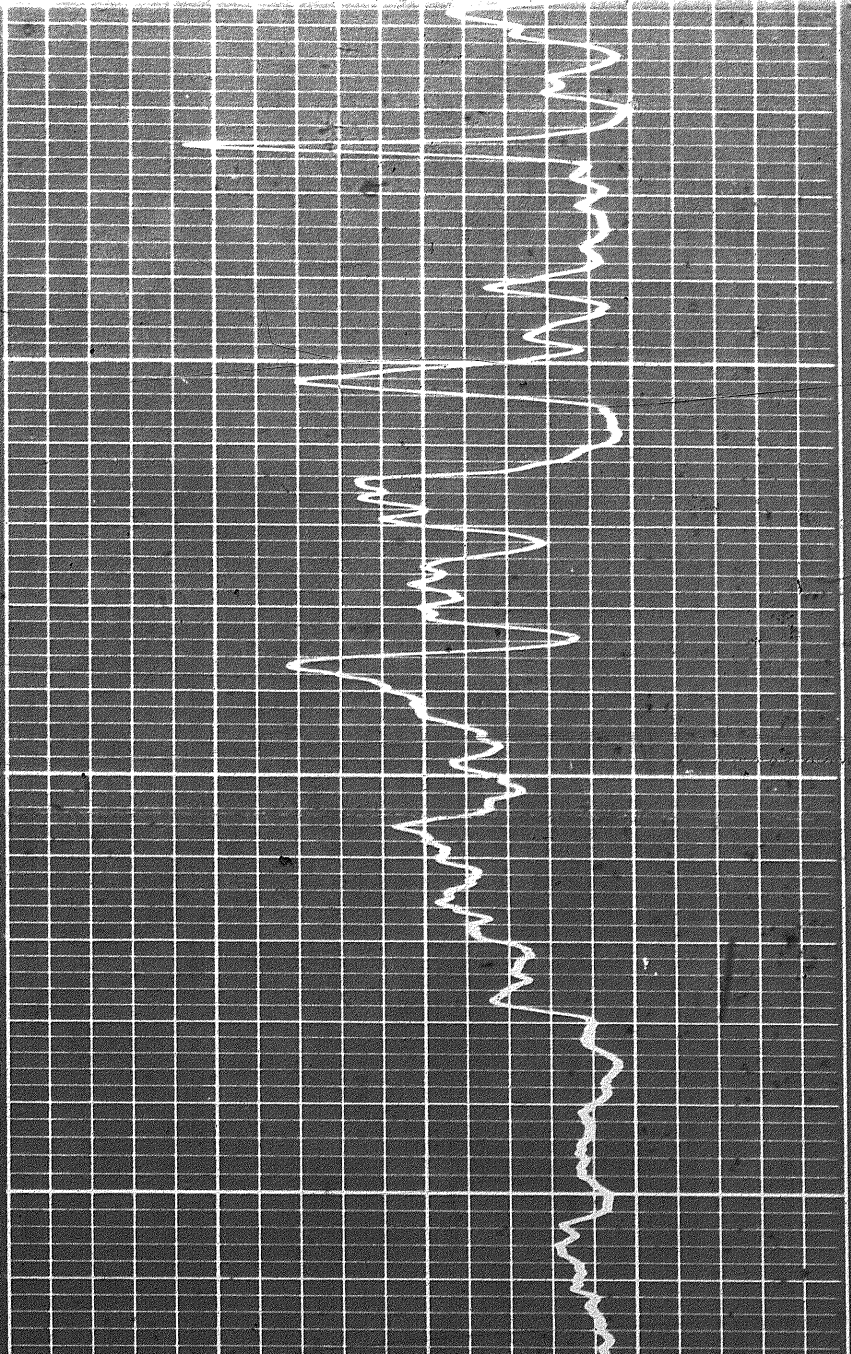




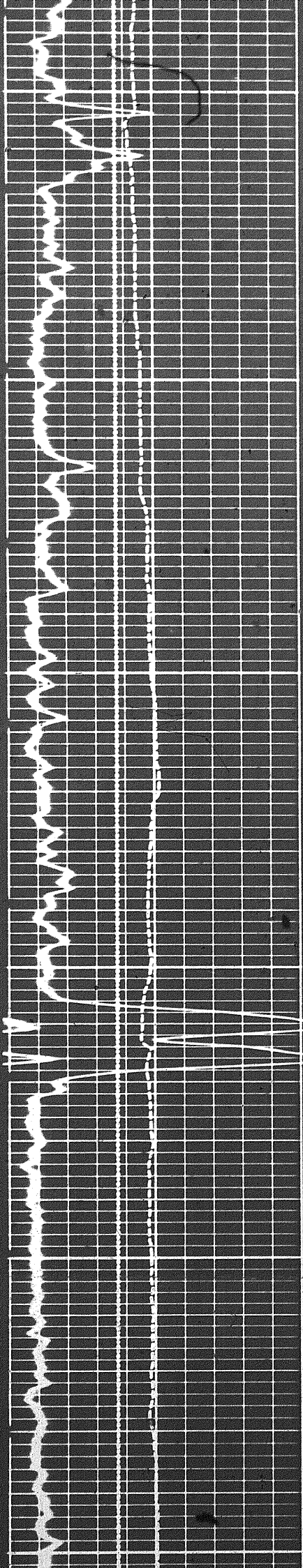
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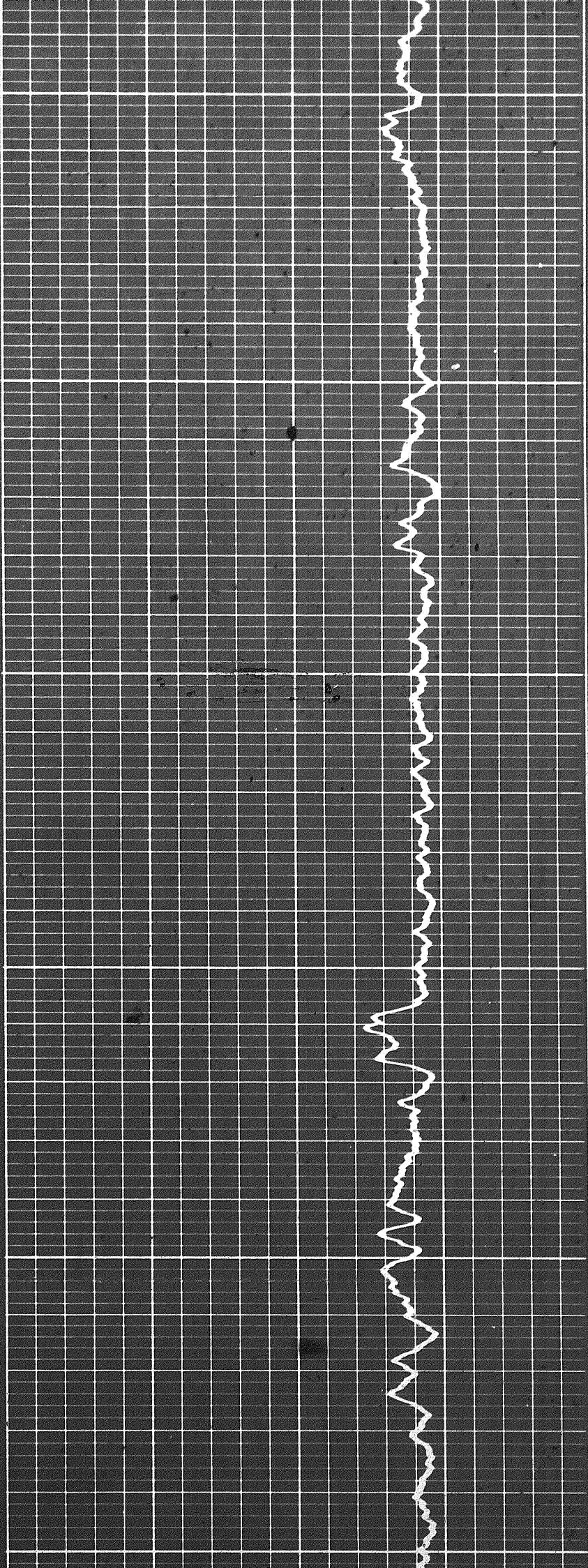
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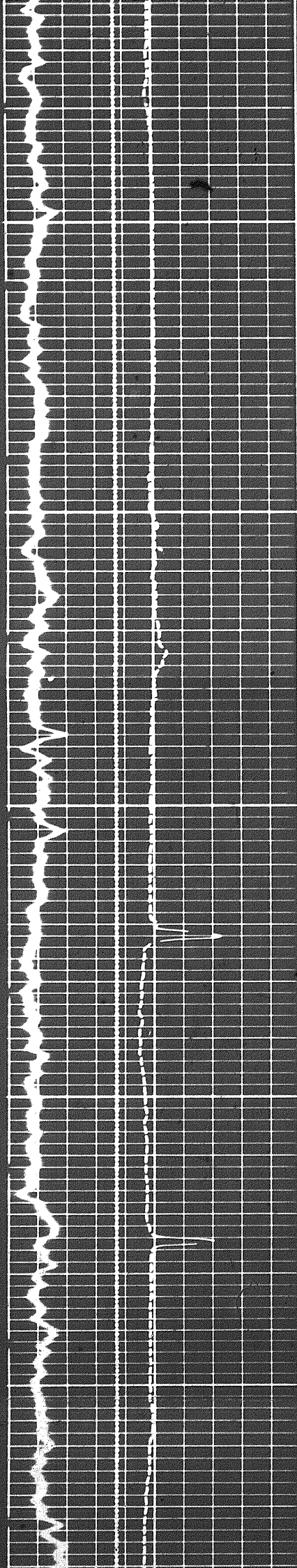
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5900

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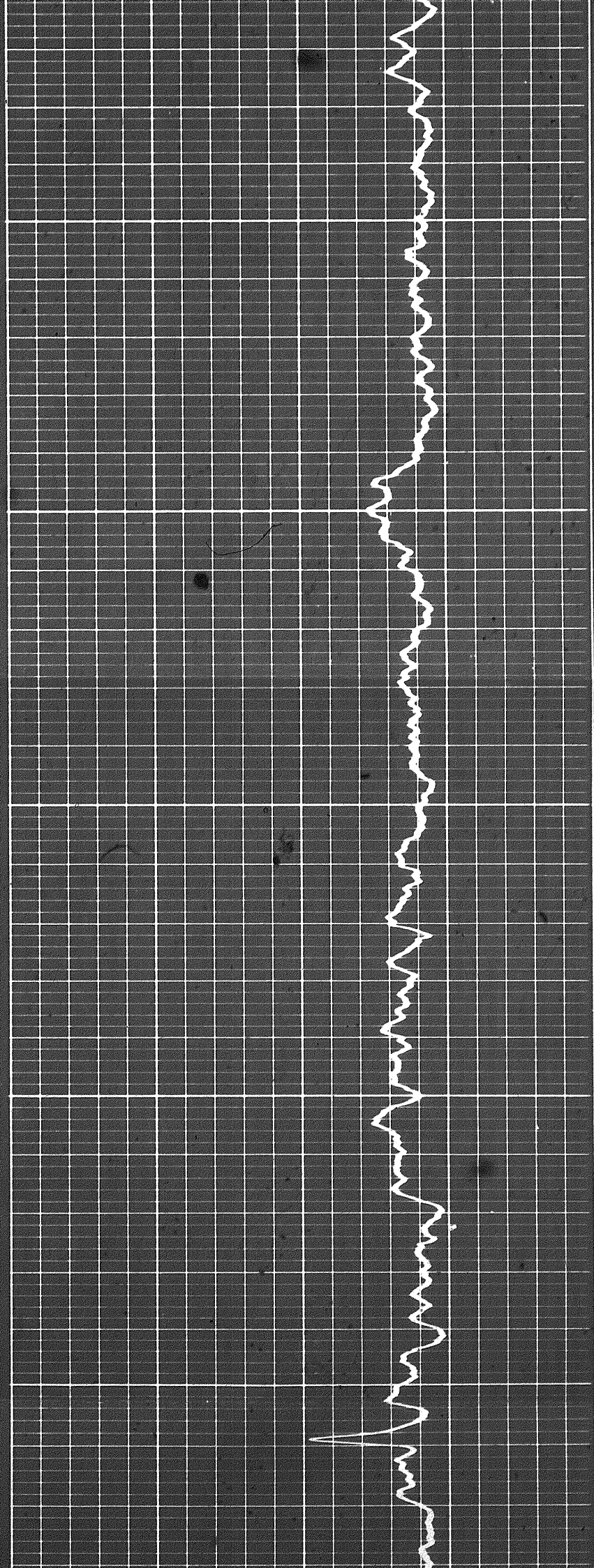
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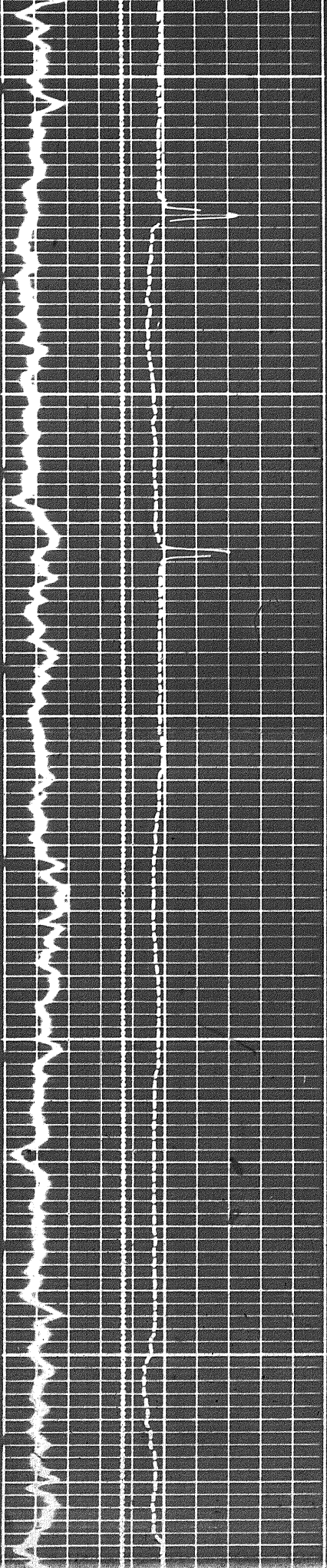


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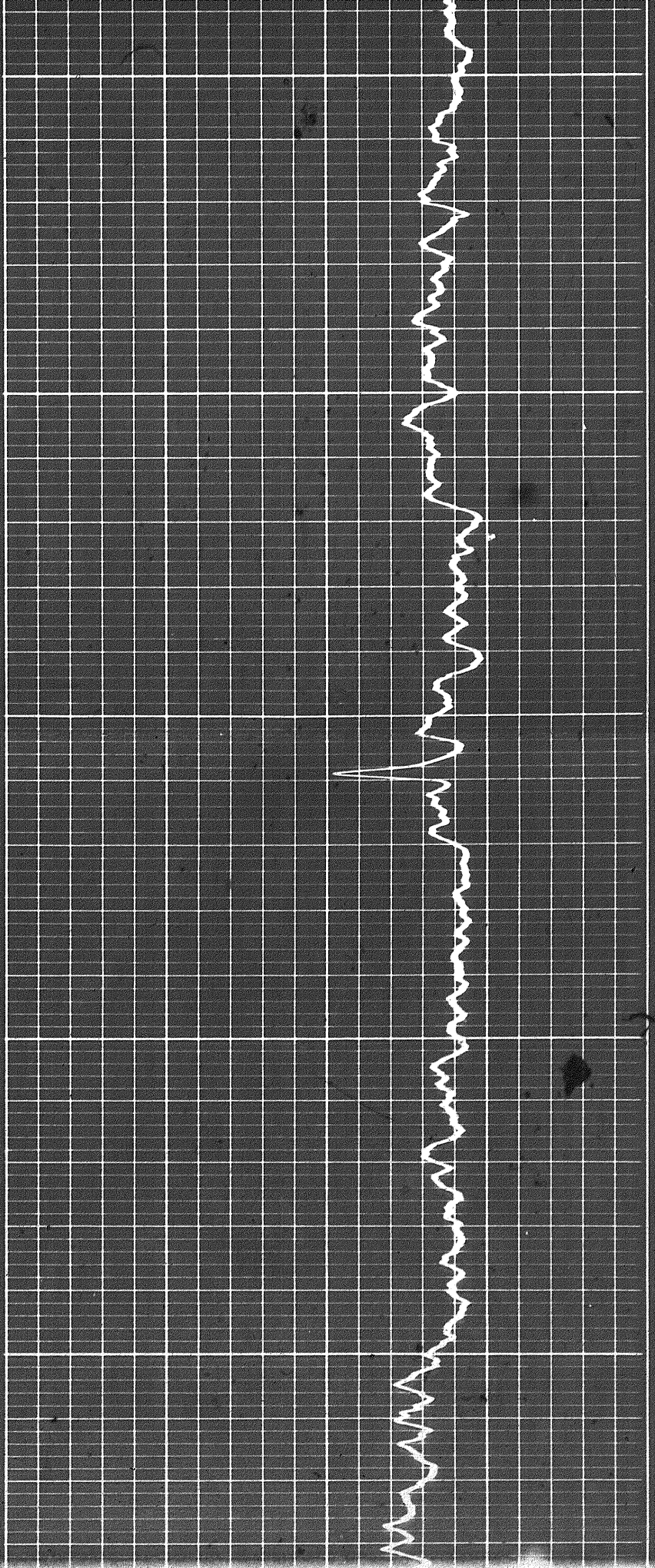




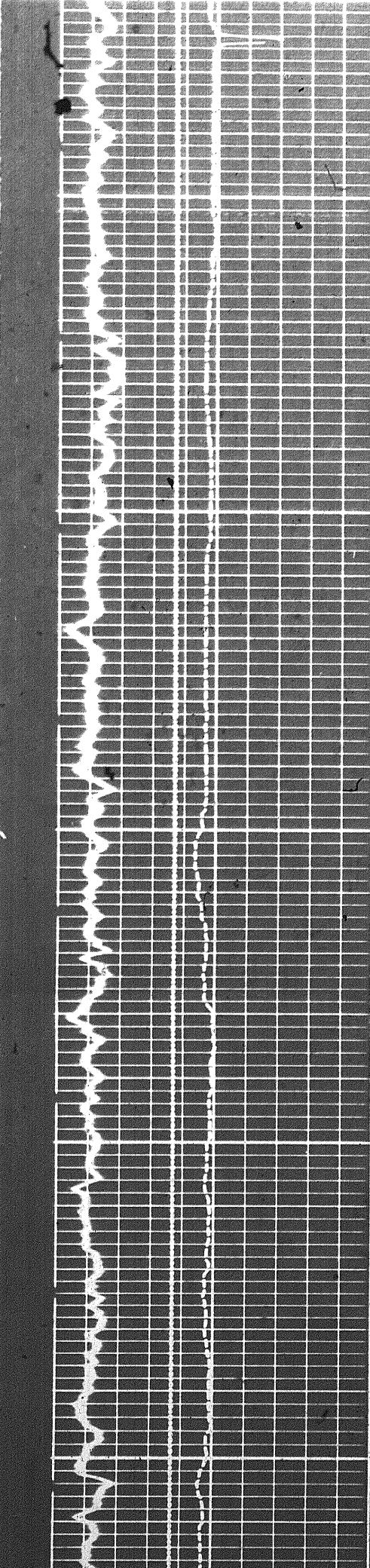
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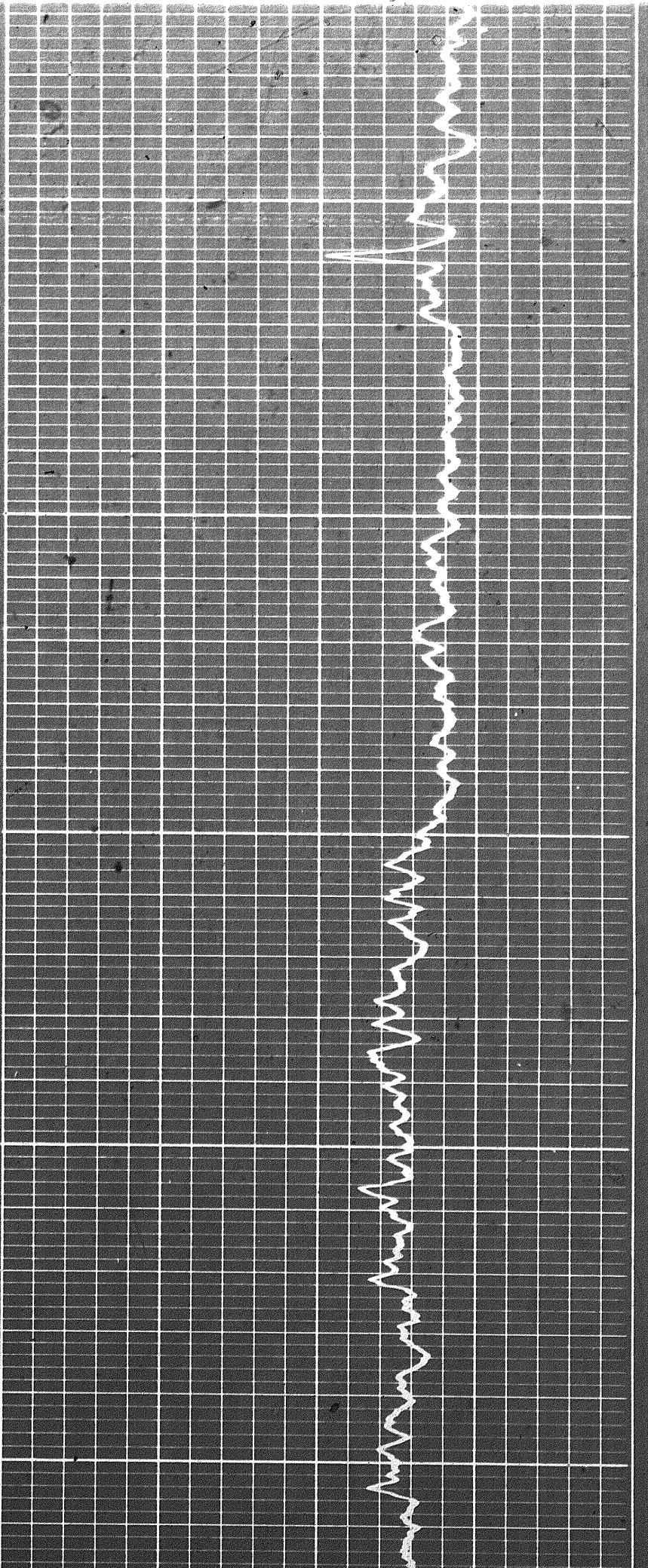
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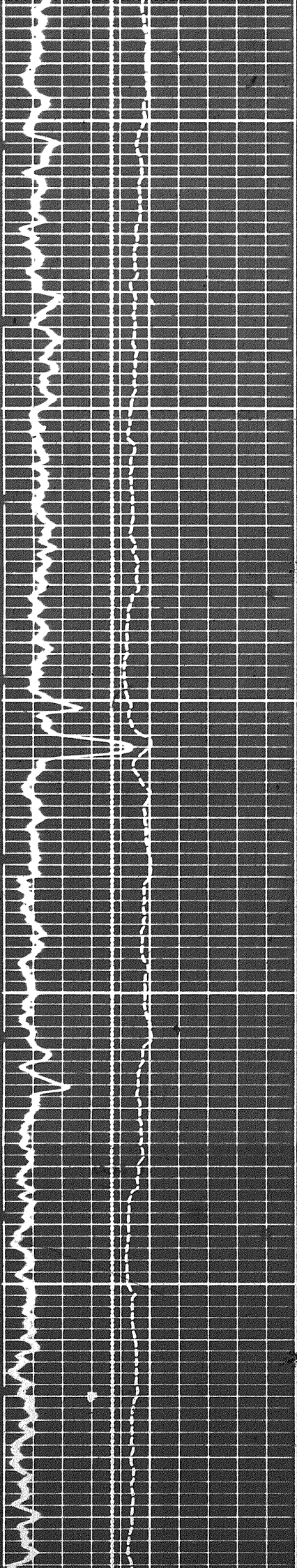


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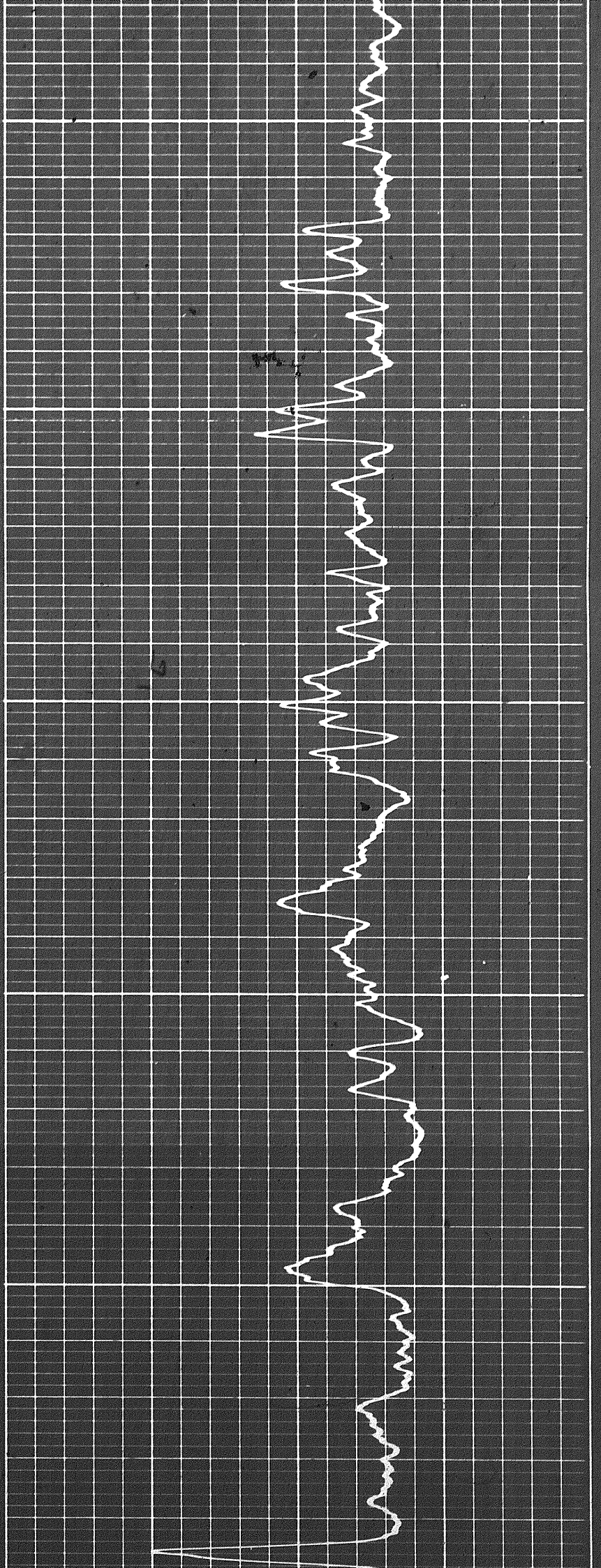


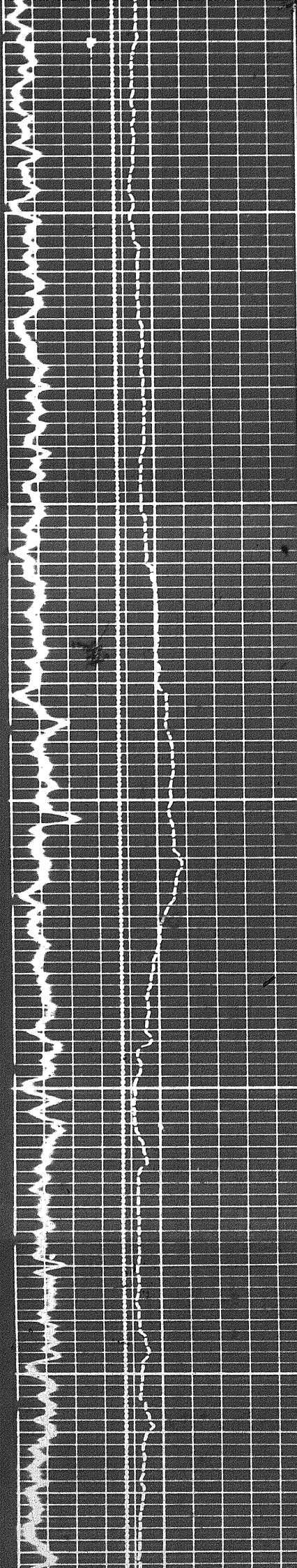


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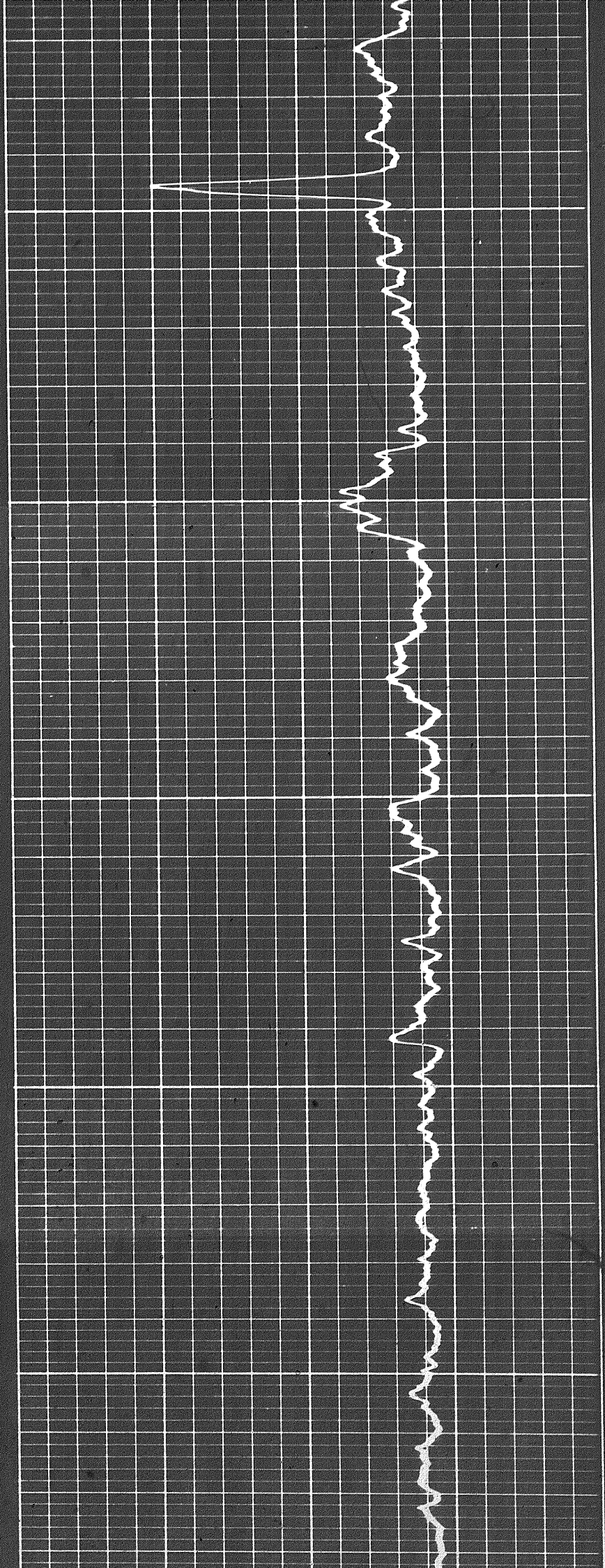
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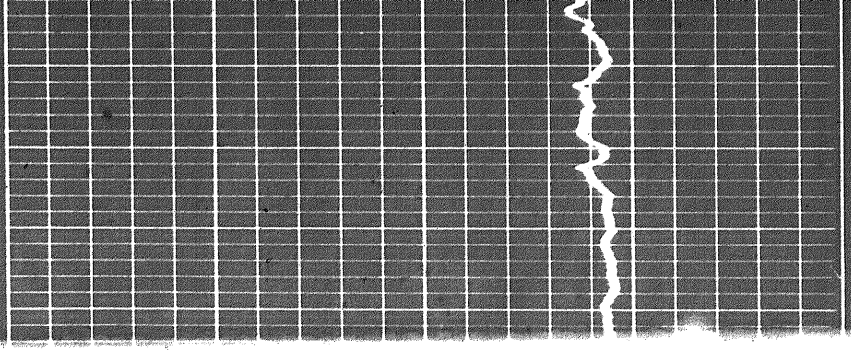
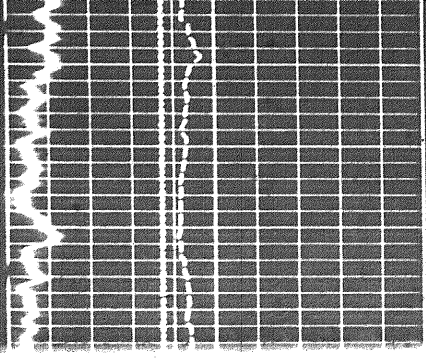
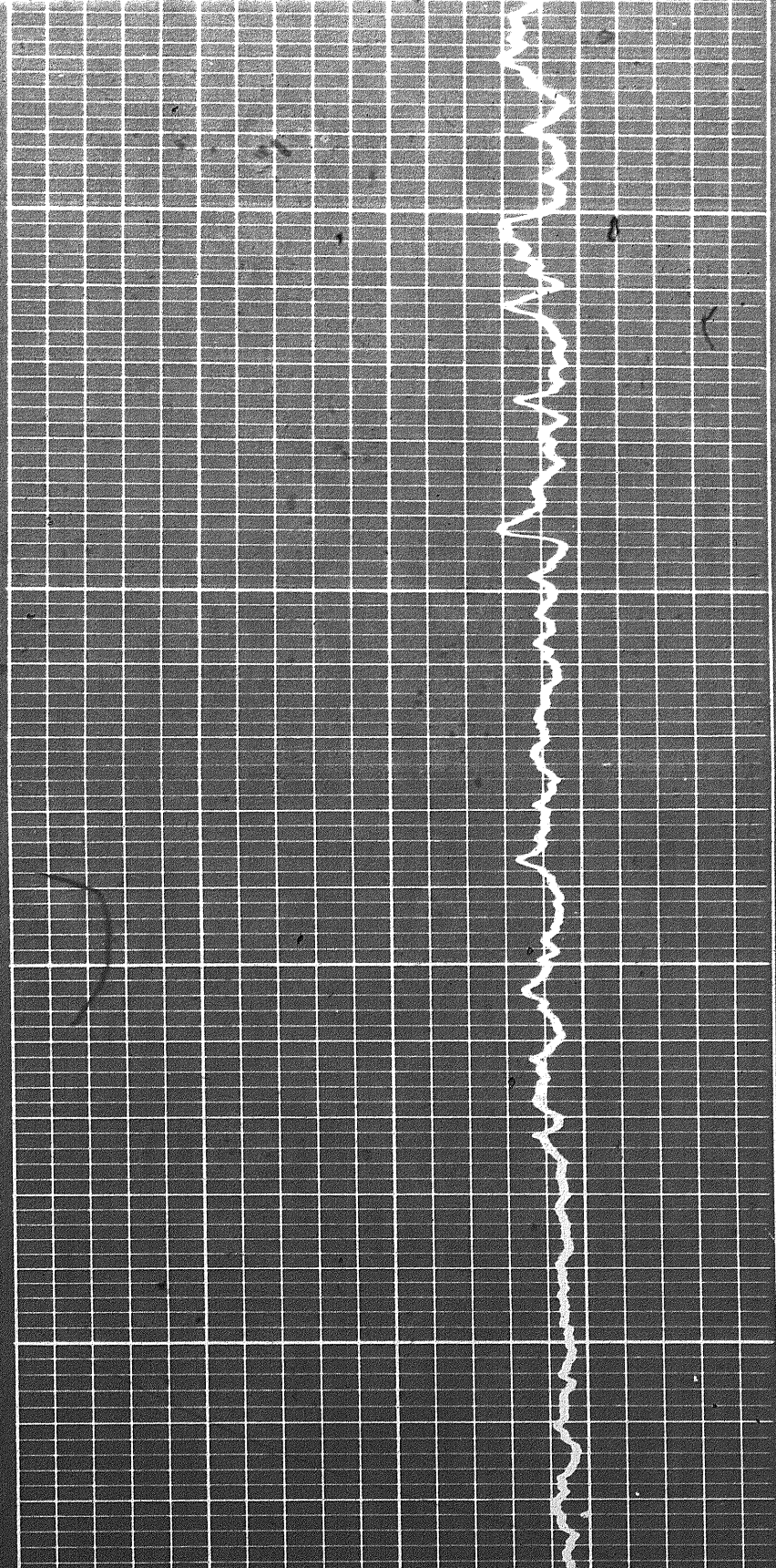
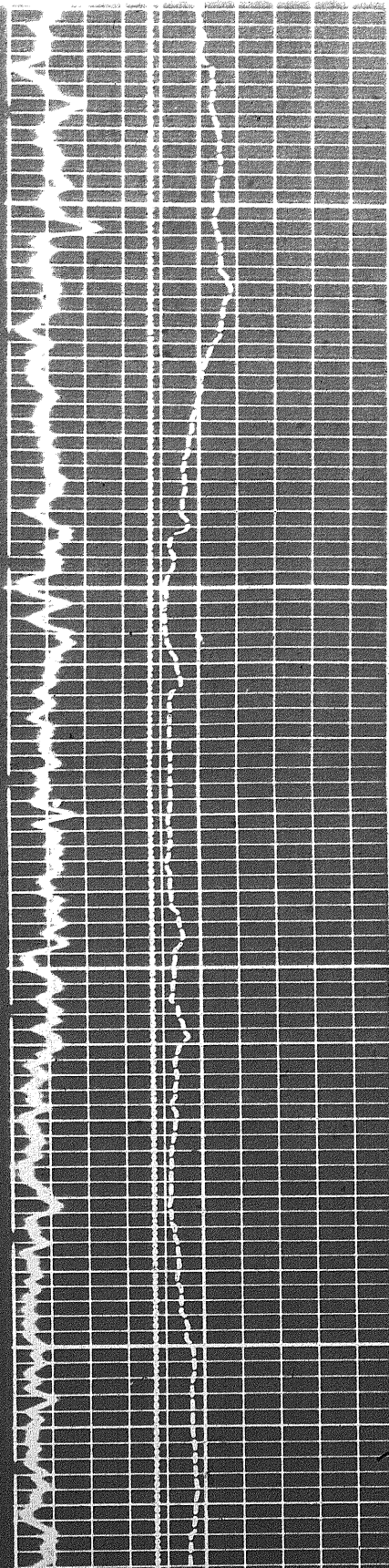
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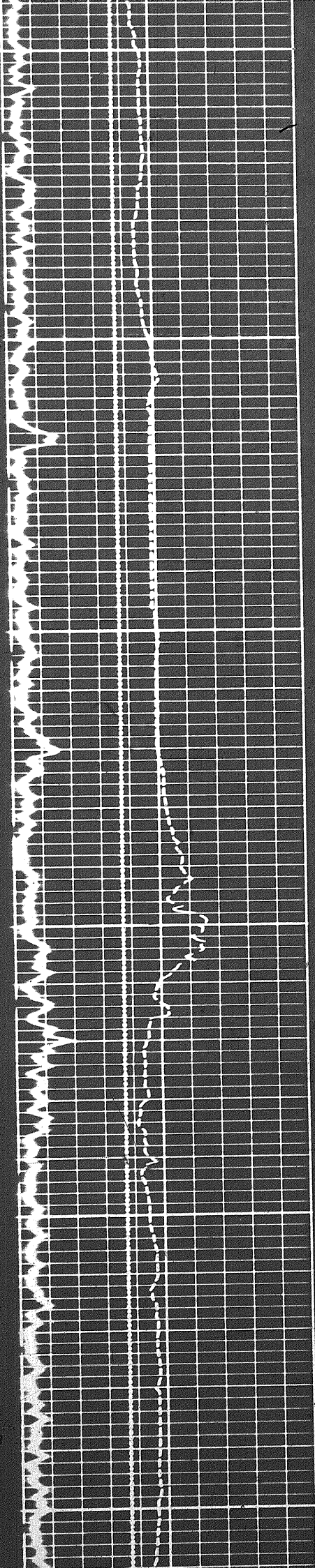


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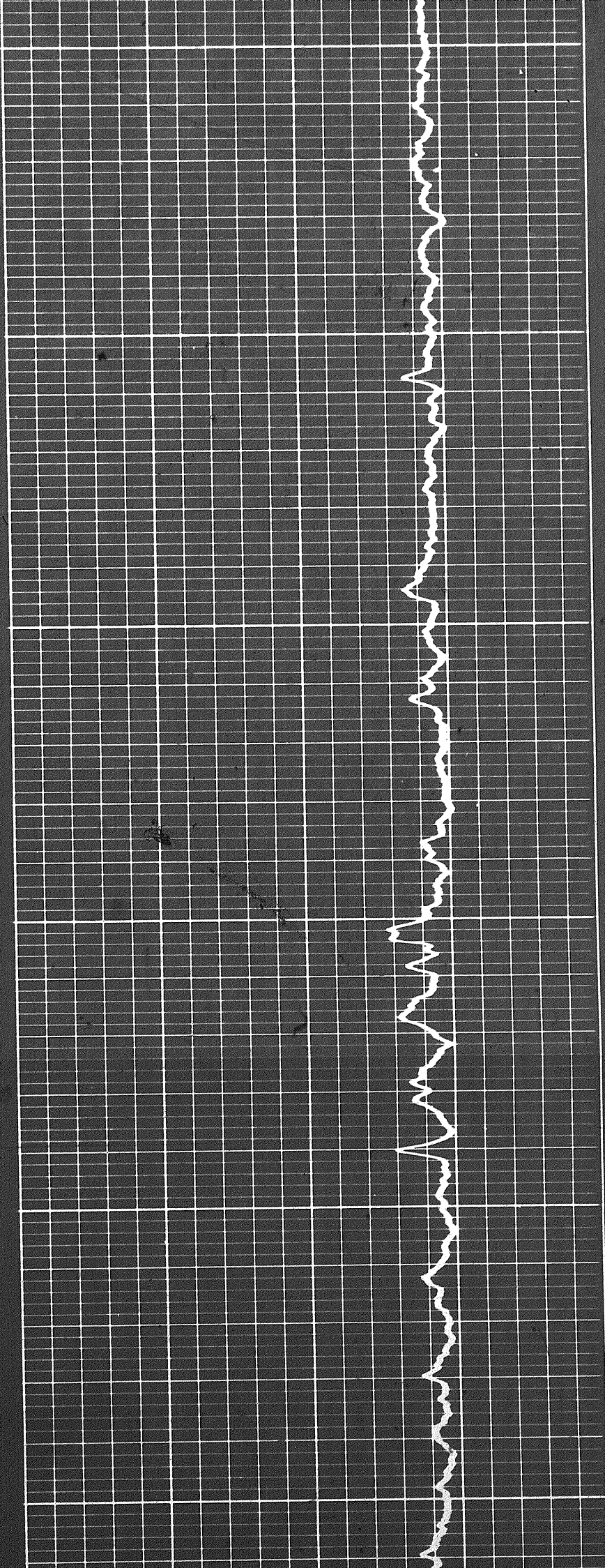
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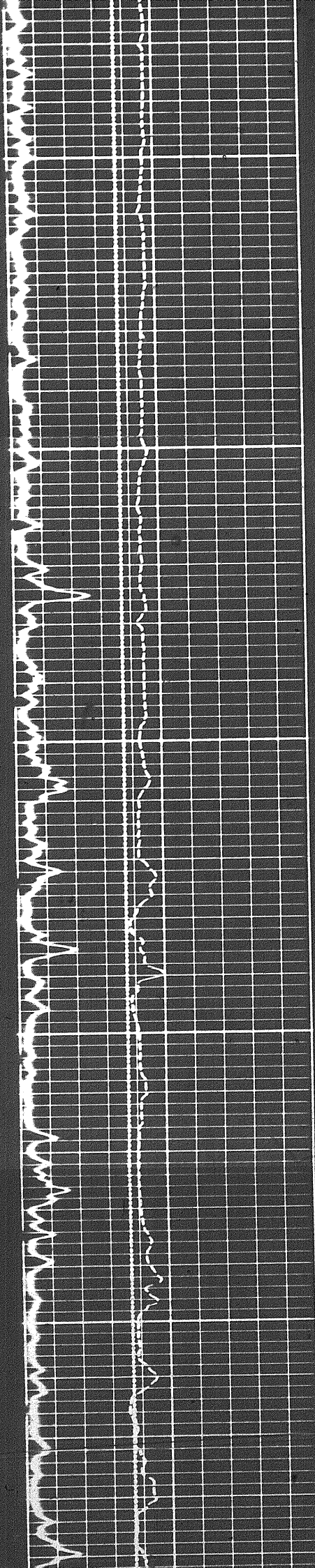


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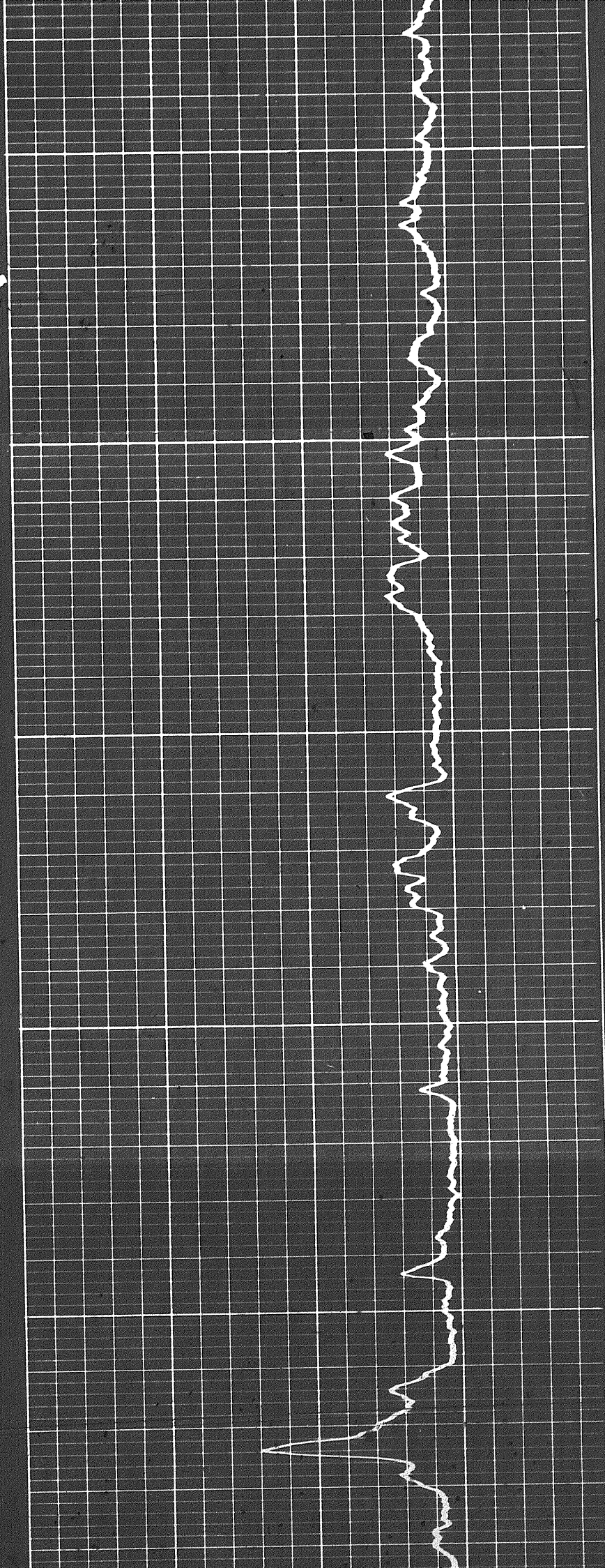
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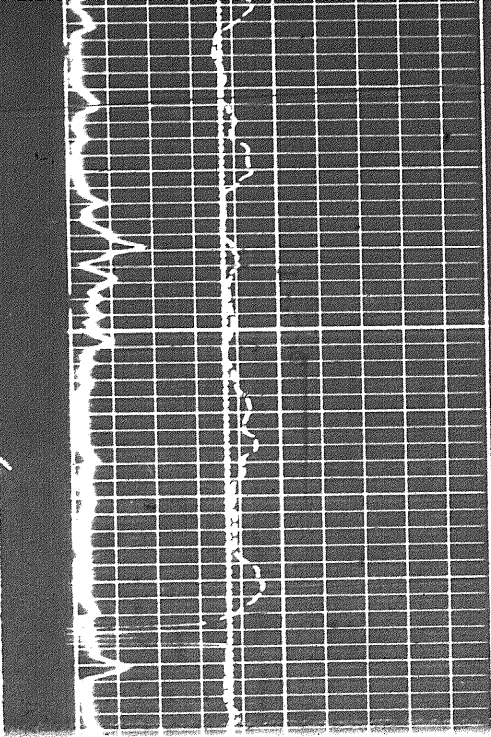




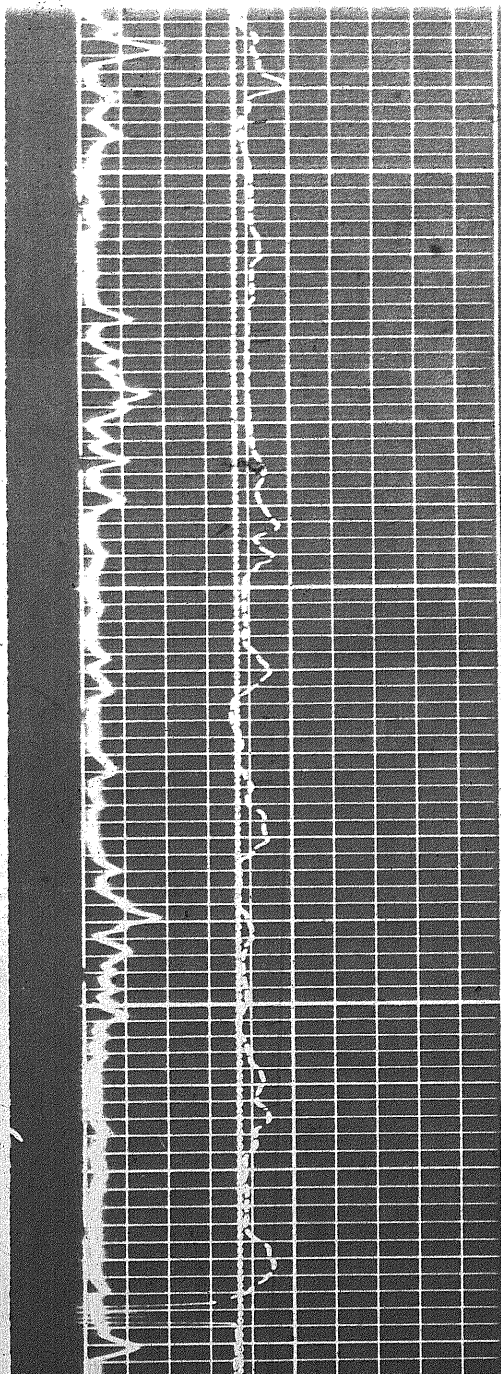
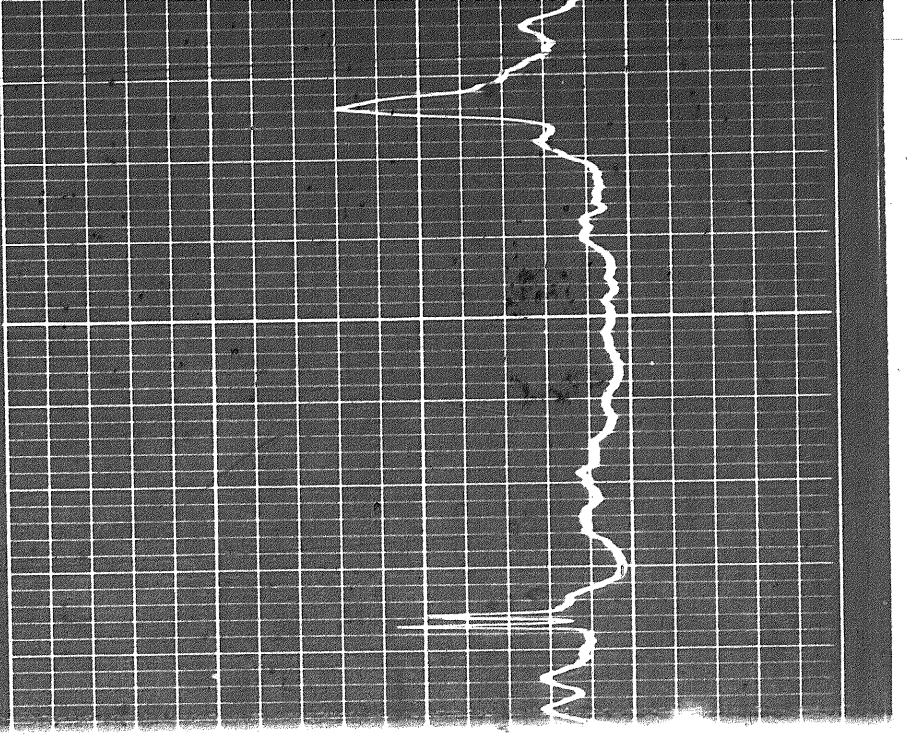
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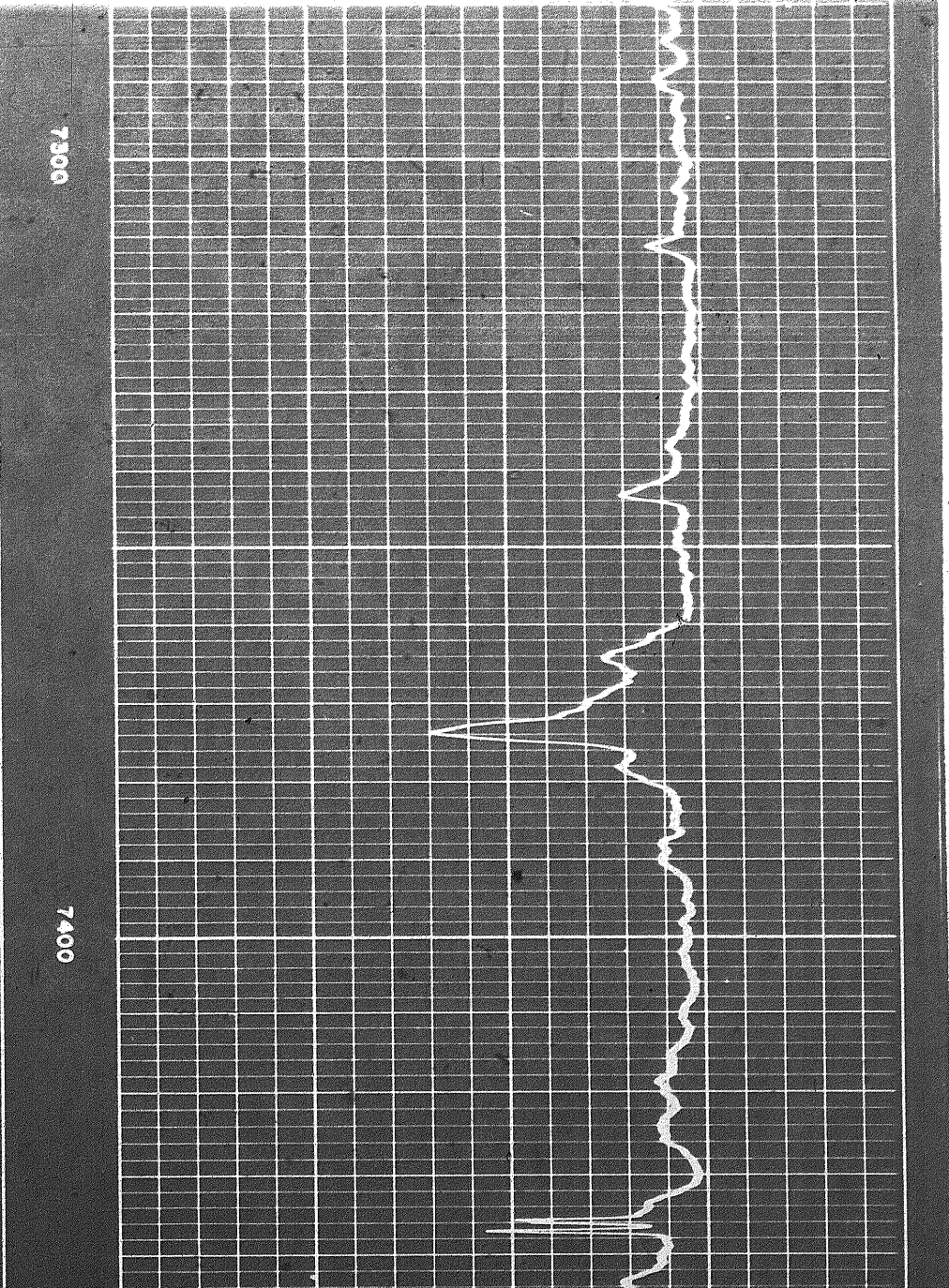




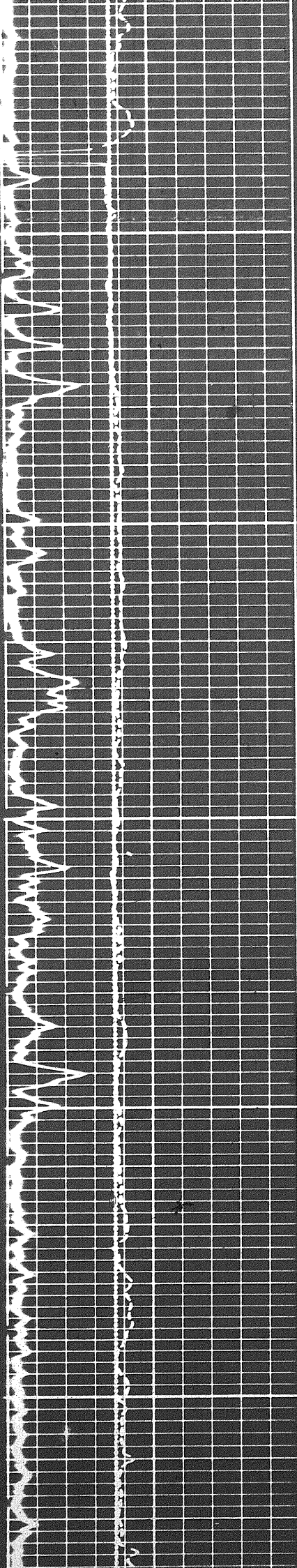
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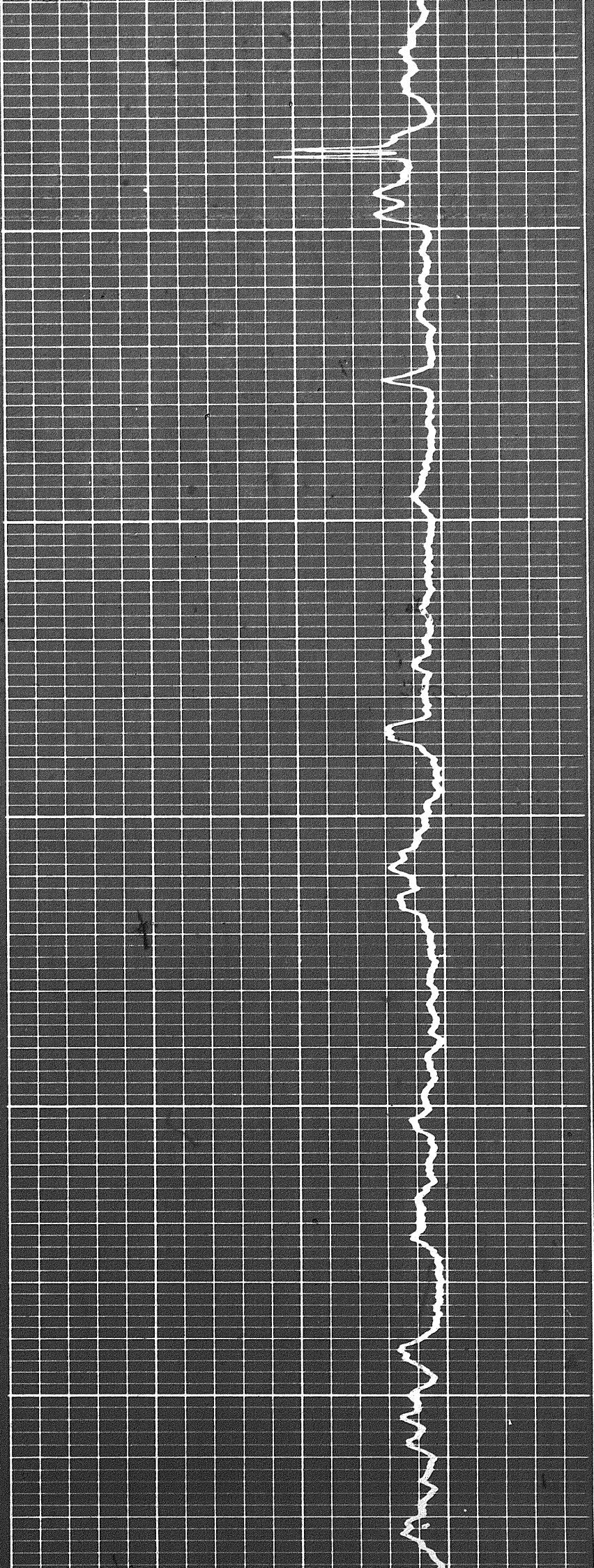


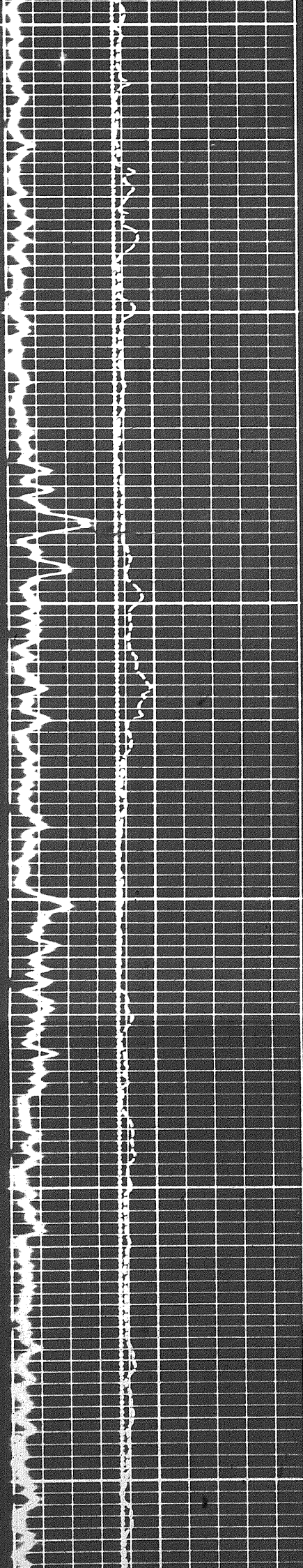
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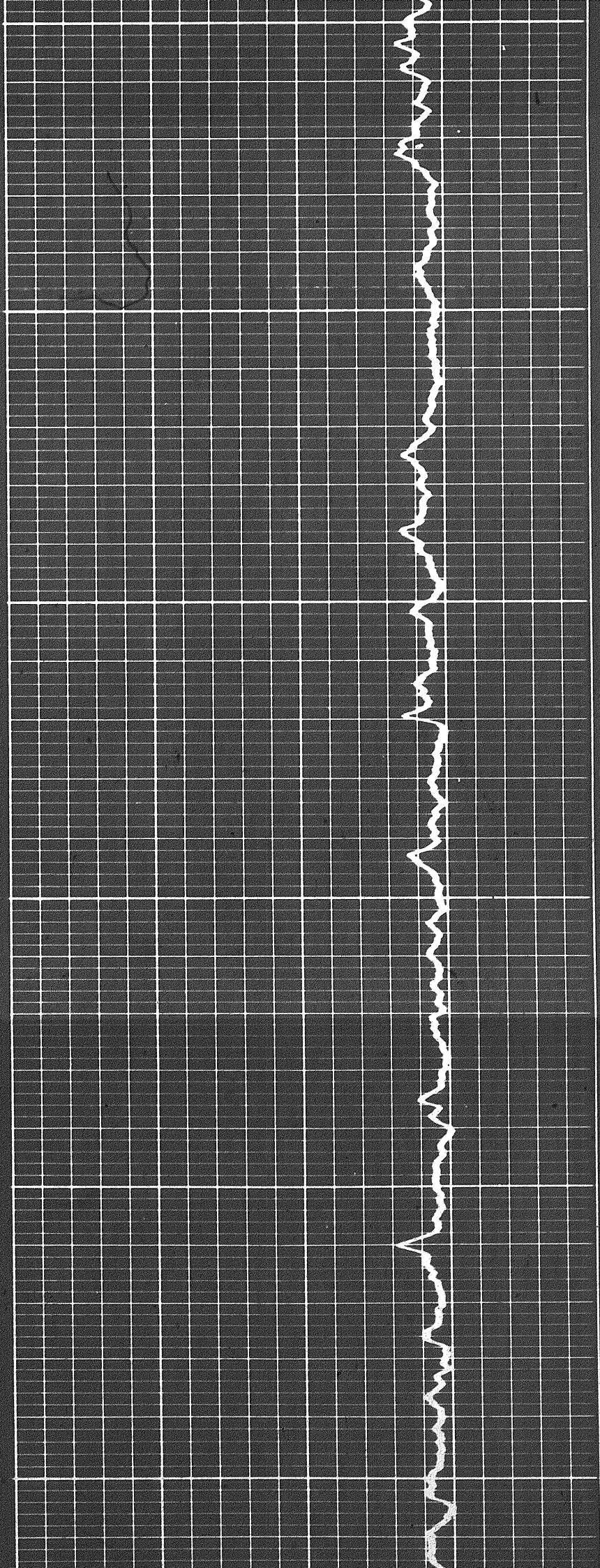


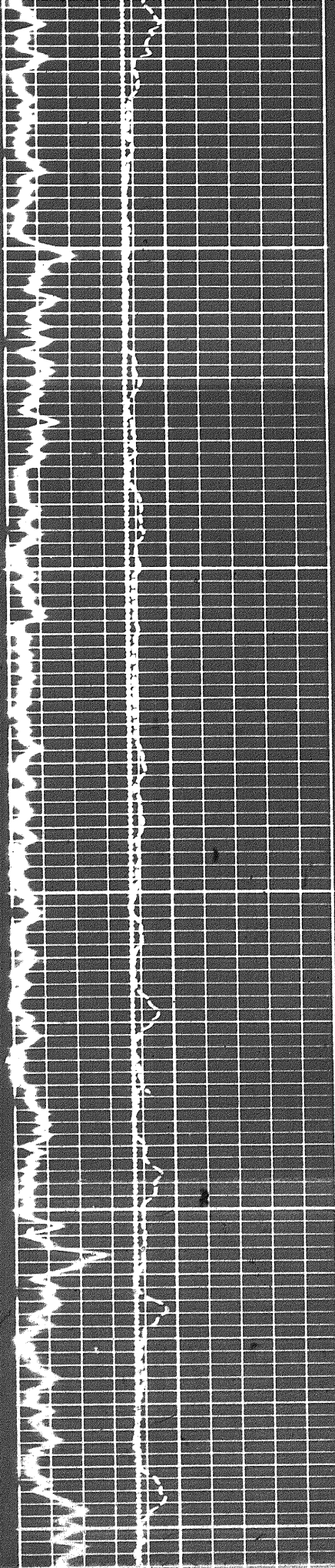


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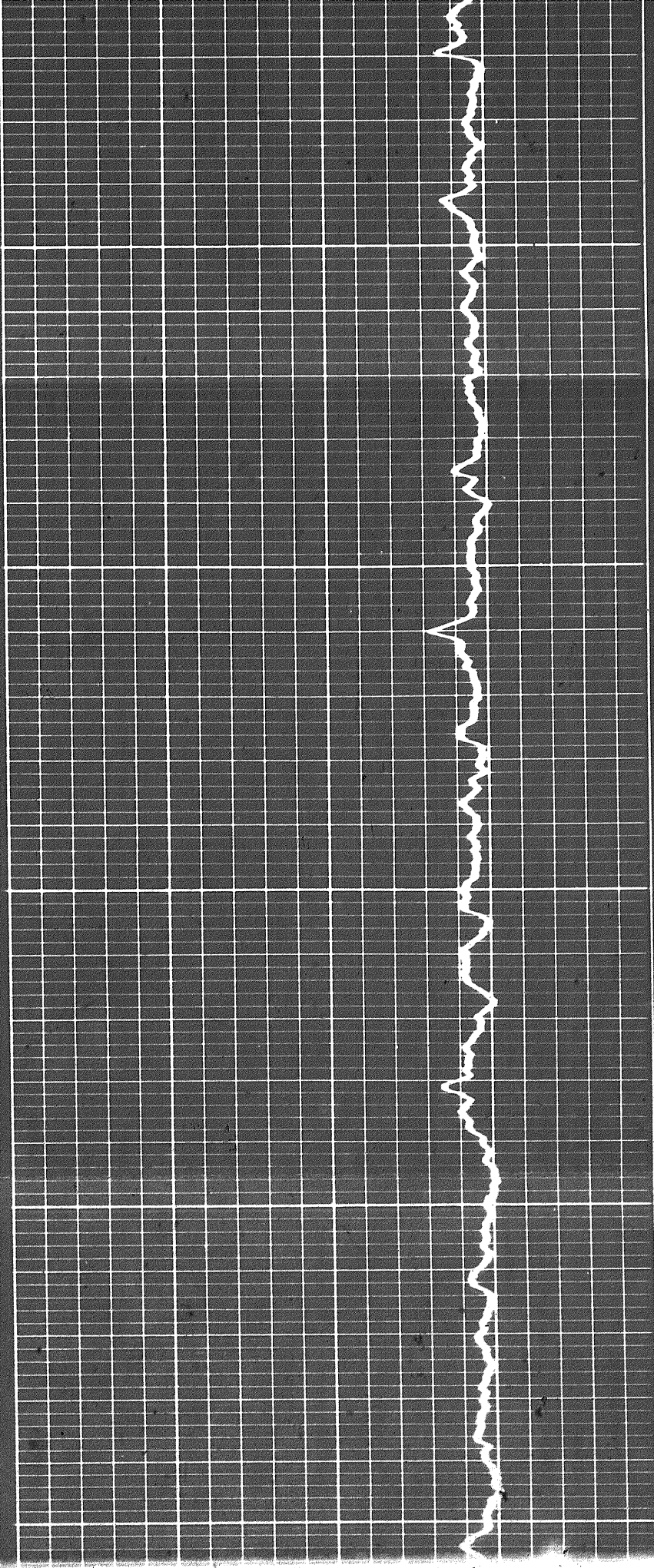


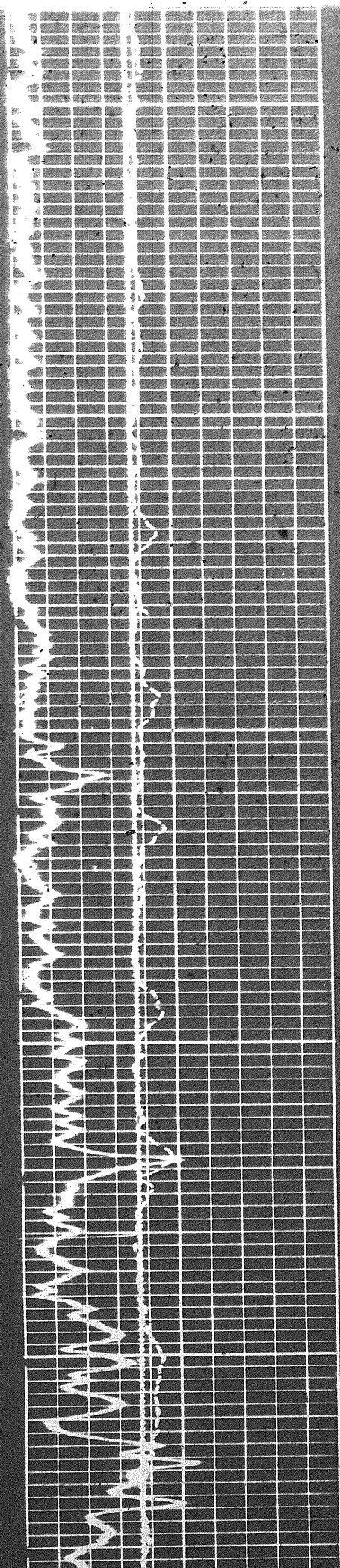


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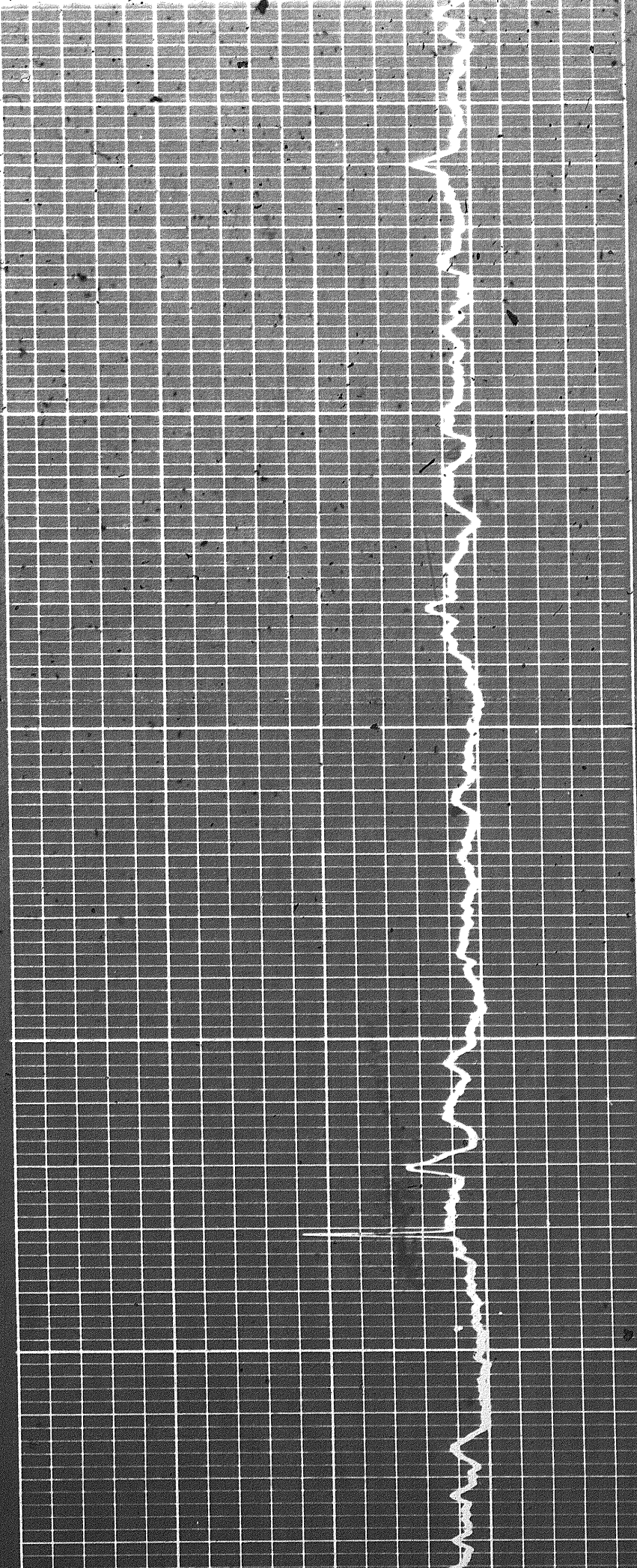
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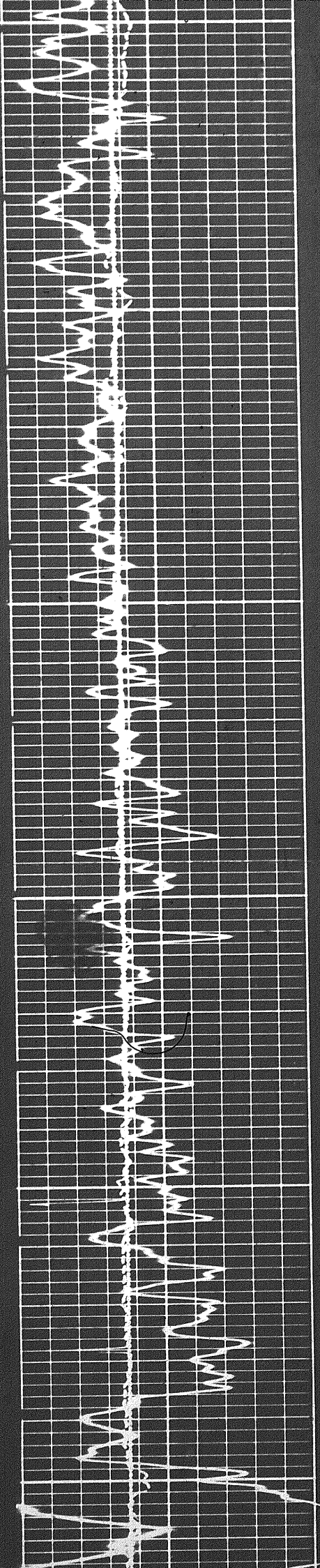


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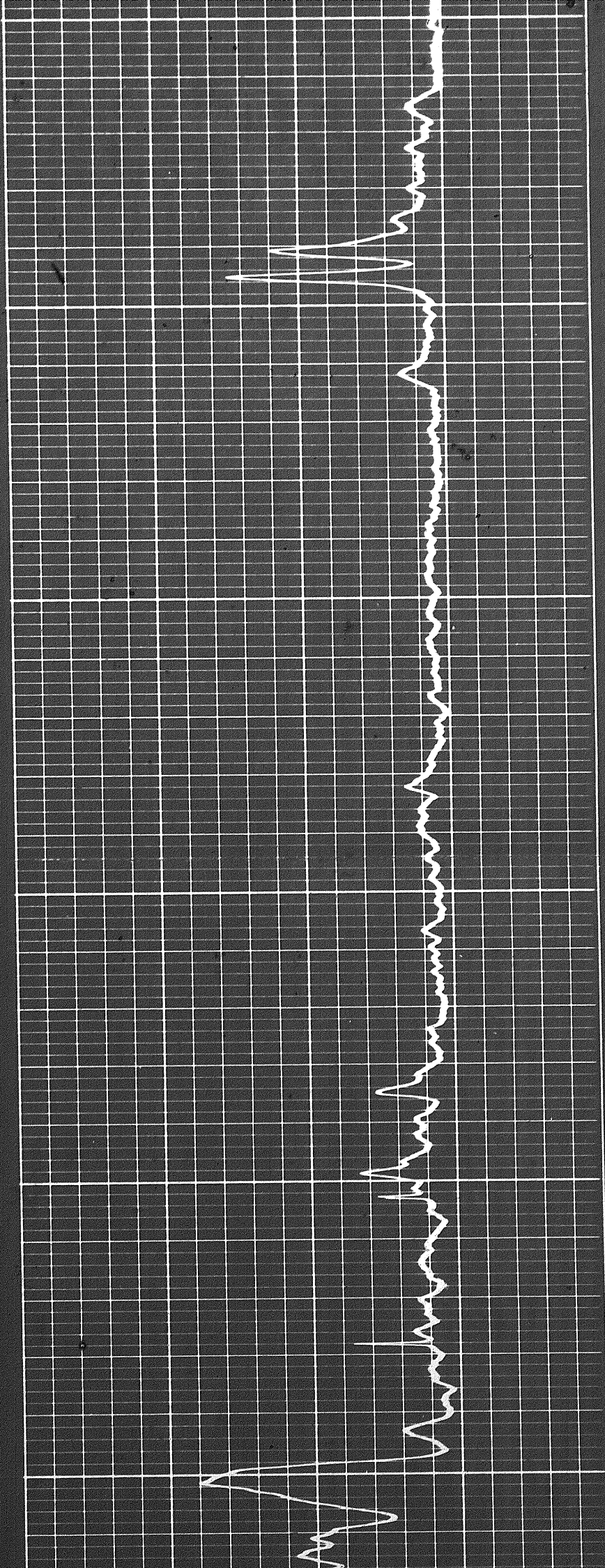
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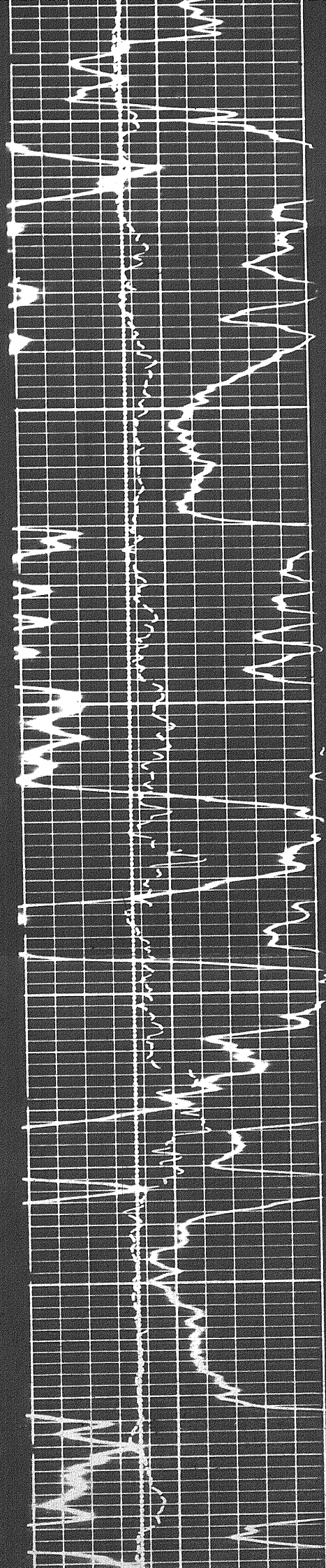


8100

8200

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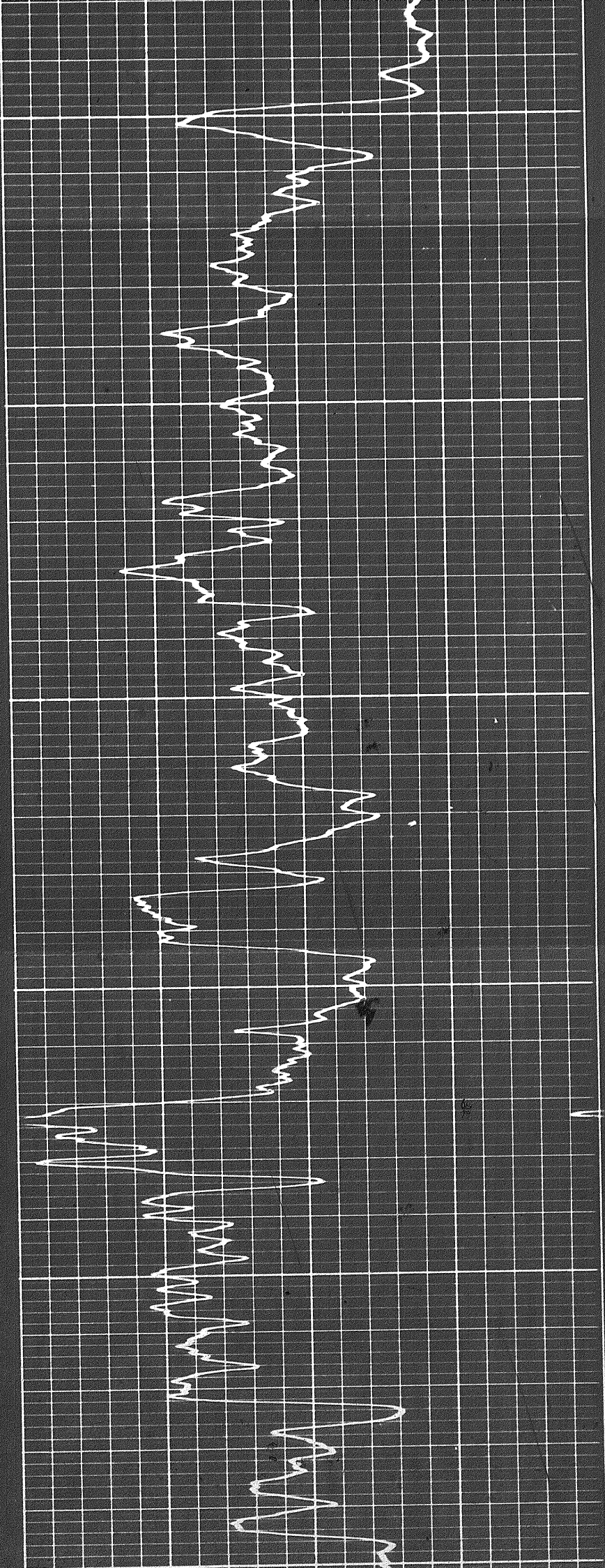


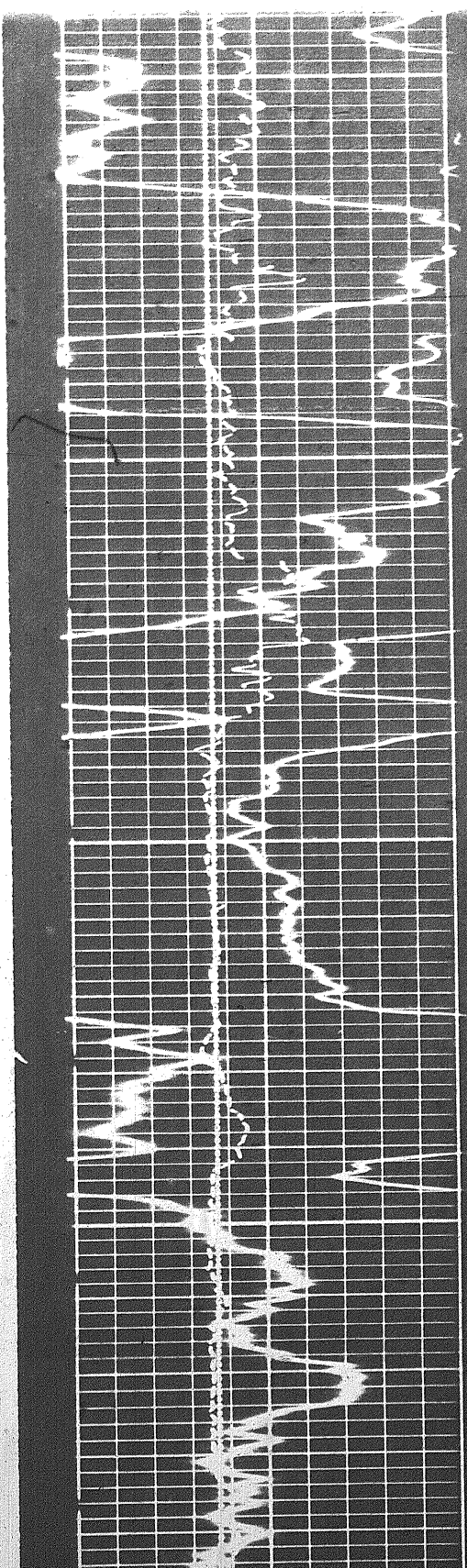
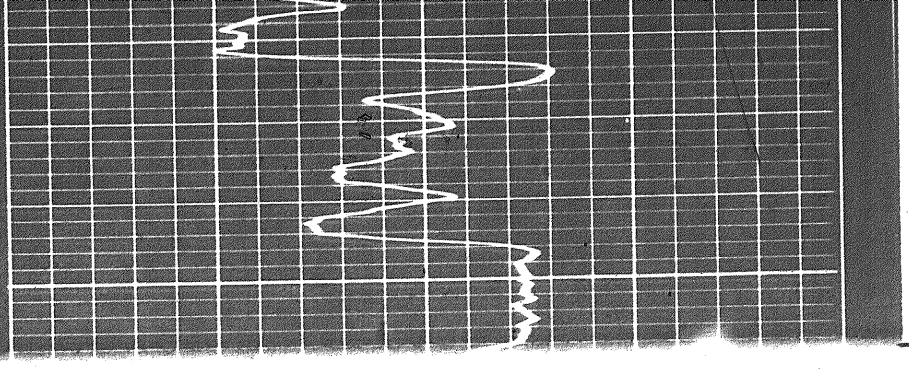
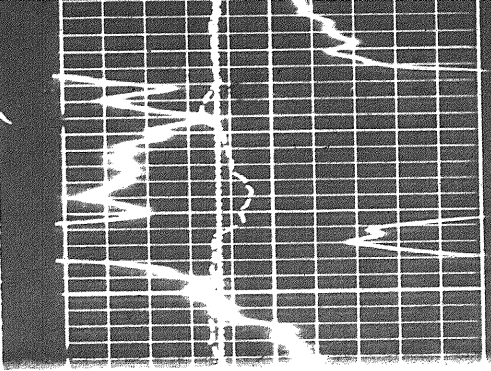


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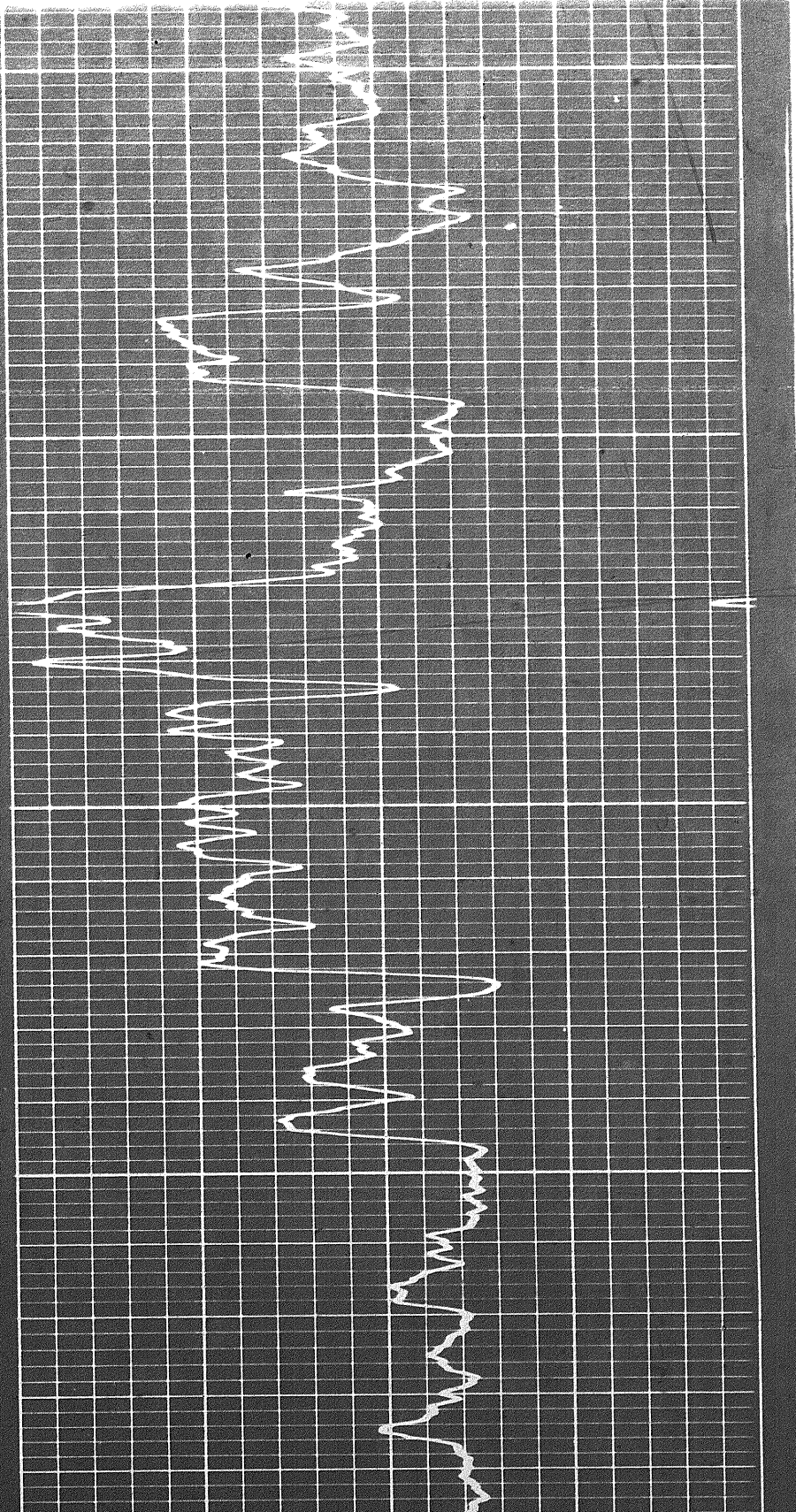
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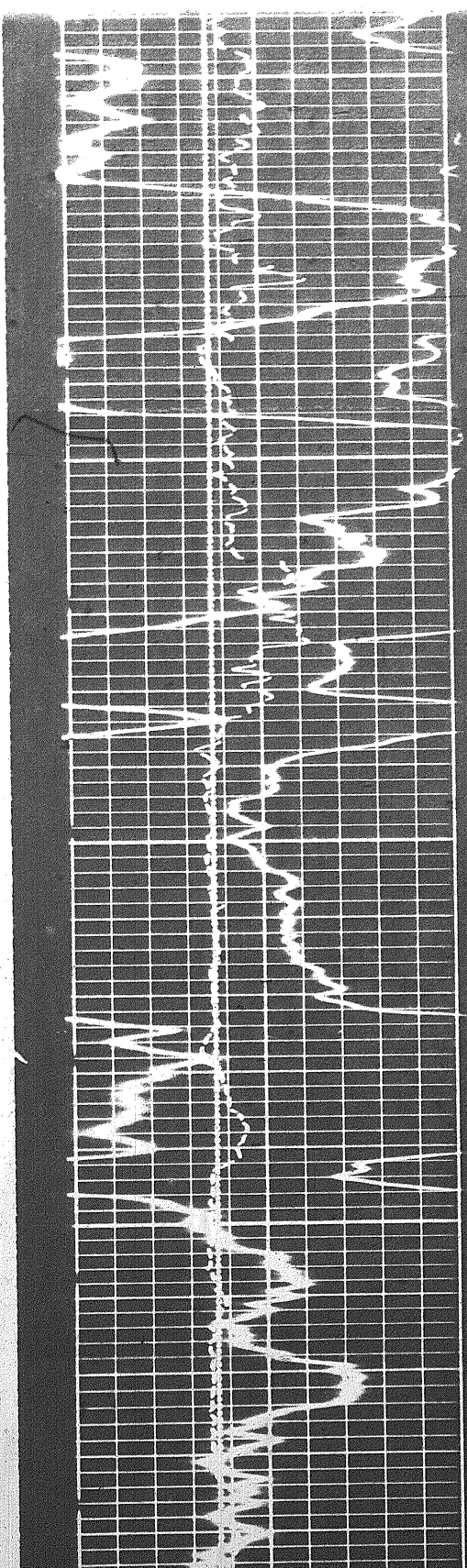
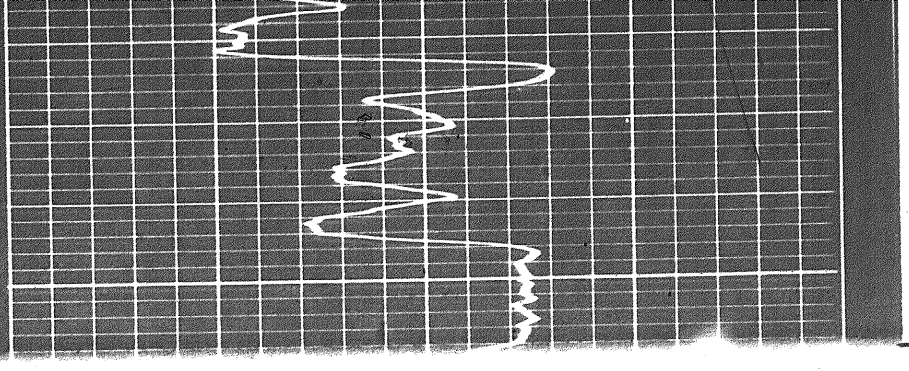
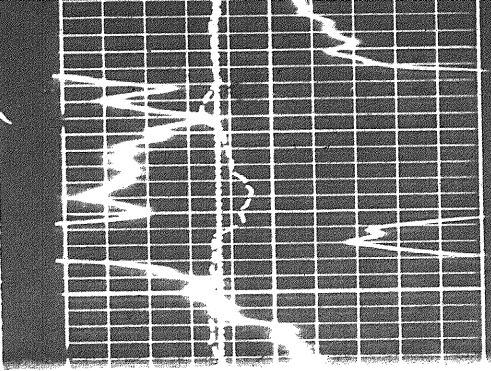




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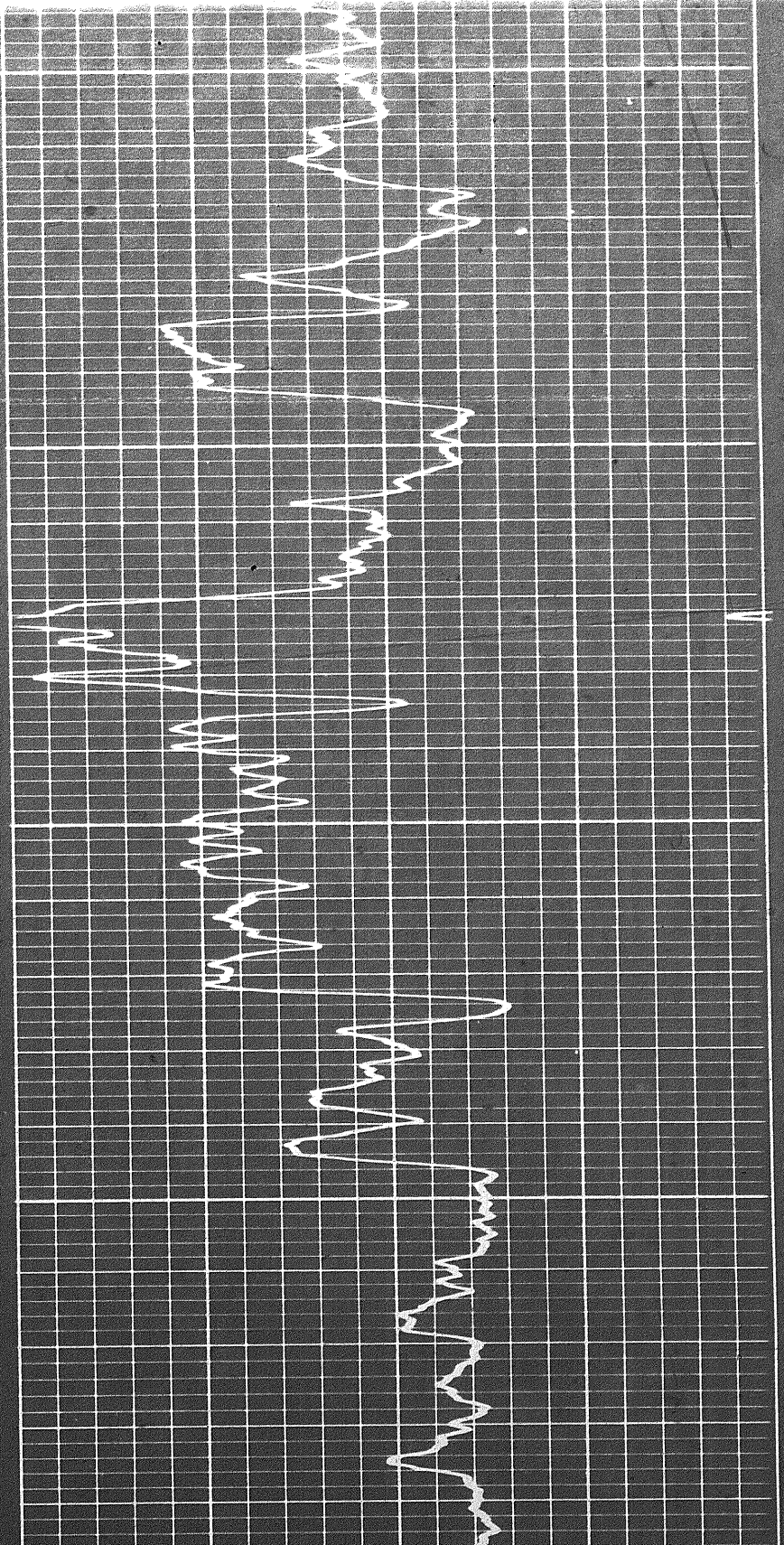
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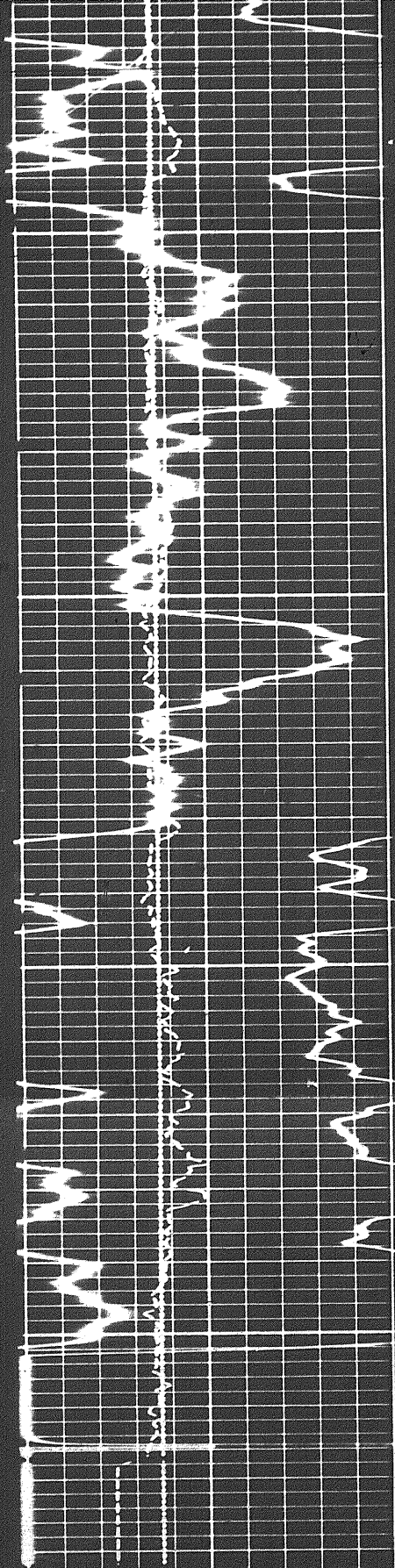




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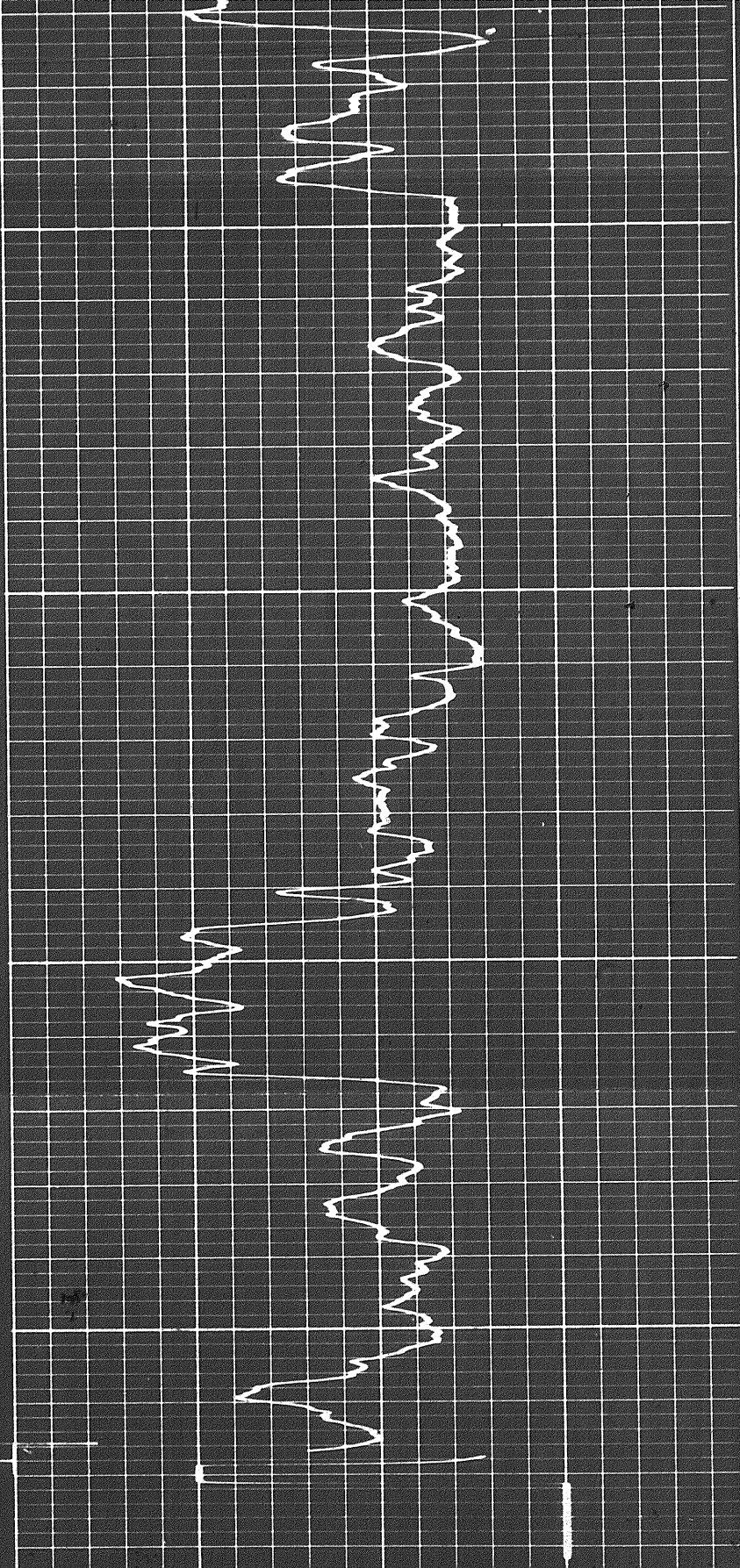




8600

8700

FR



Sens.	100	T.C.	2
Zero	0	div. to left	
0		100	
100		200	

GAMMA RAY

CALIPER
hole diameter in inches

DEPTH

POROSITY (%)

Calibration after Survey

Run 1

14

15

13

12

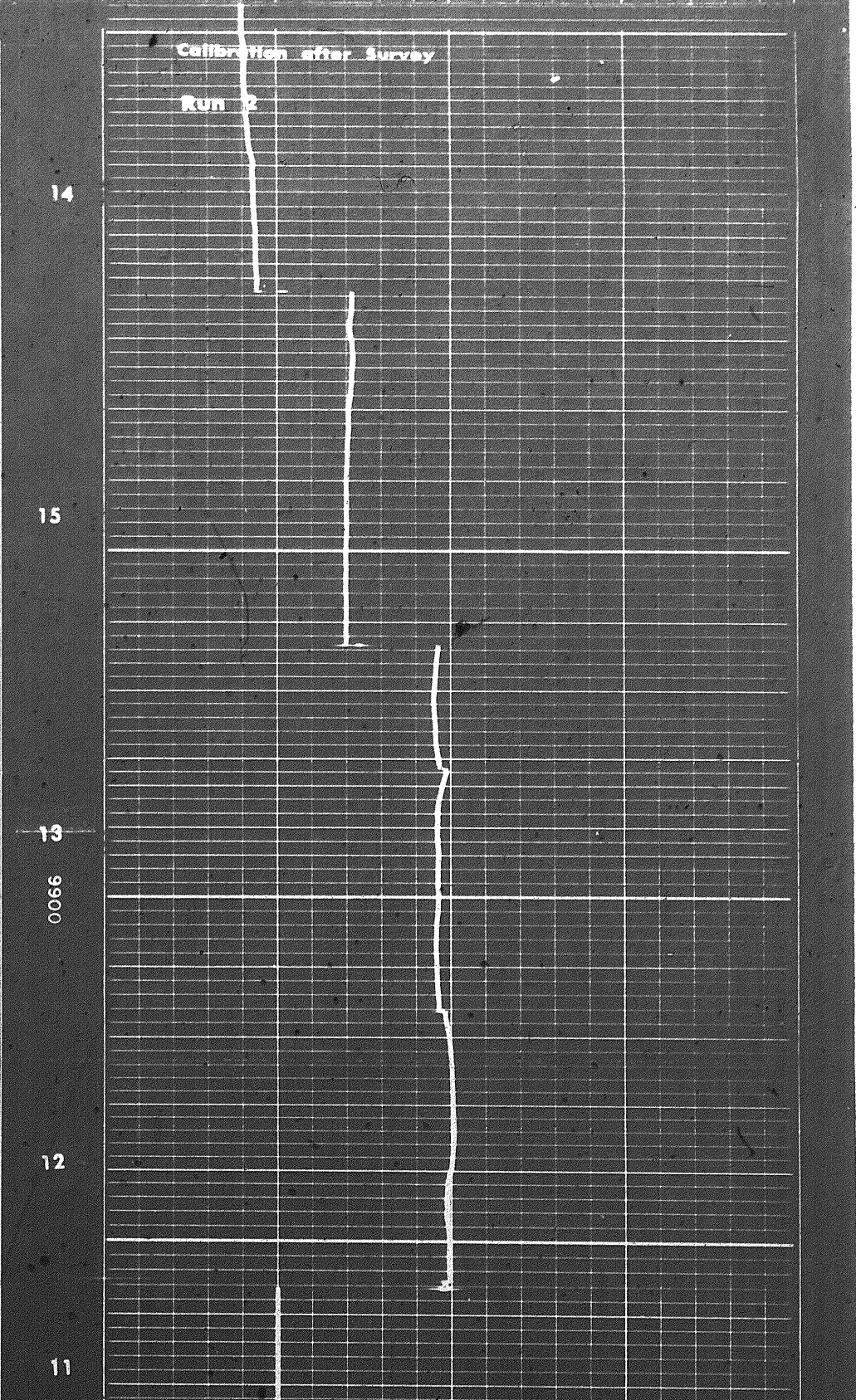
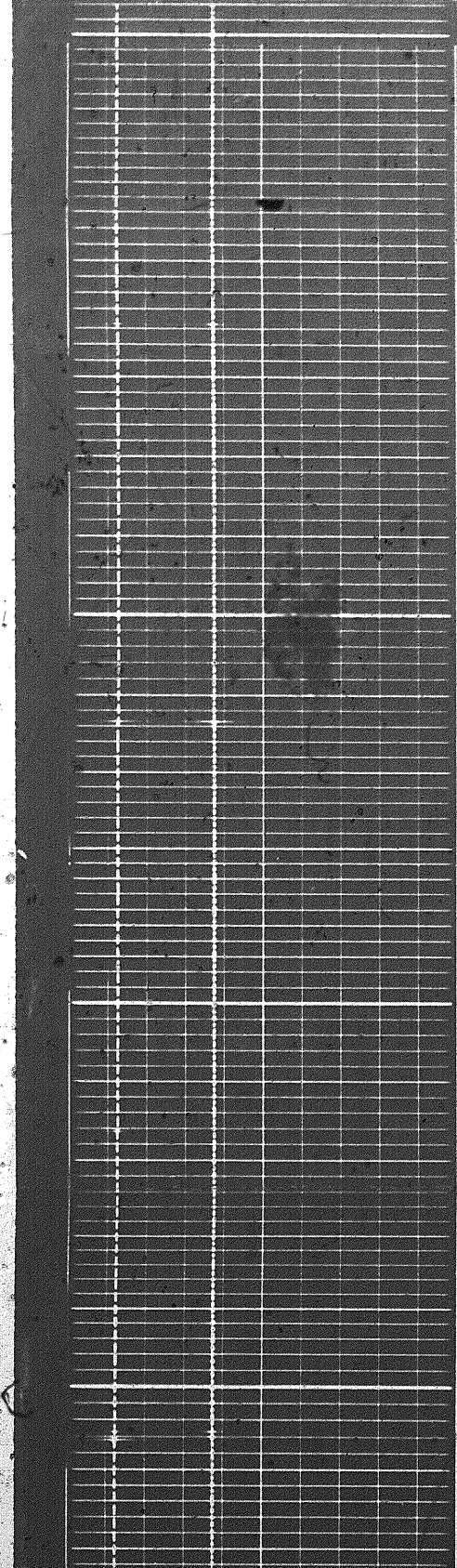
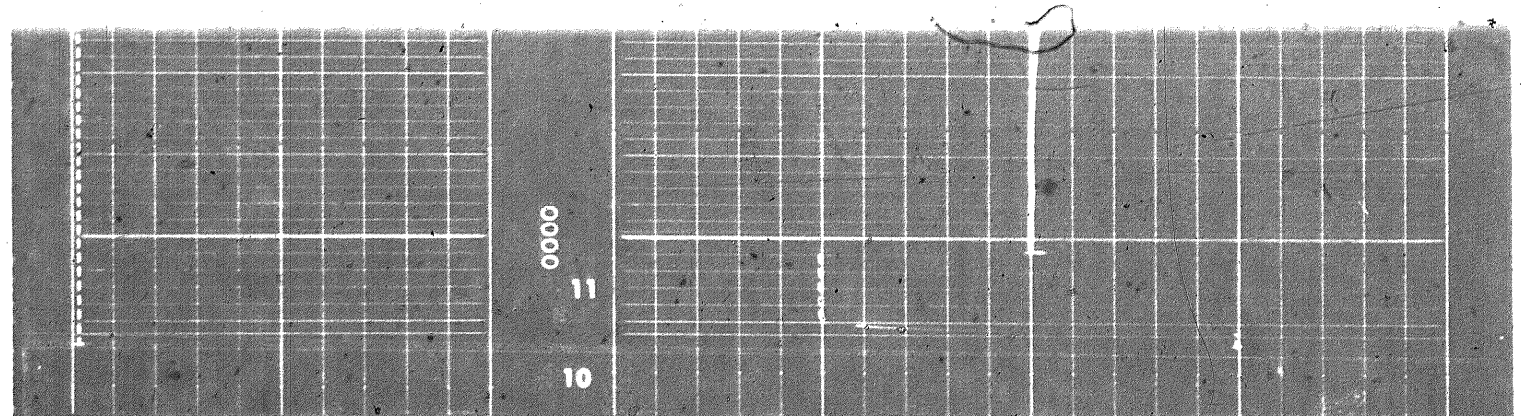
11

10

Calibration before Survey

14





12

0086

11

10

Test Panel

9

8

7

6

0000

5

3

2

1

00

Gamma Ray Cal
@ AM Units

Gamma Ray Background

PURPOSE

The porosity overlay is designed to identify lithology in a matrix comprised of more than one mineral. This information makes possible a more accurate porosity determination.

METHOD

The SNP log is recorded assuming a limestone matrix, with a duplicate curve recorded twelve porosity units to the right. The duplicate curve is referred to as the "Dolomite Limit". Bulk density from the FDC log is converted to limestone porosity and is superimposed on the SNP log.

INTERPRETATION

1) Limestone - Dolomite

- a) Limestone. $\Phi_{FDC} = \Phi_{SNP}$. Porosities are read directly.
- b) Dolomite $\Phi_{FDC} = \Phi_{SNP} - 12$. SNP curve readings are converted to porosity using the dolomite scaler.
- c) Limestone - Dolomite matrix. $\Phi_{SNP} > \Phi_{FDC} > \Phi_{SNP} - 12$. Percentage of dolomite is interpolated from the relative displacement of Φ_{FDC} from the Φ_{SNP} line toward the dolomite limit line. Porosity is calculated by plotting the Φ_{SNP} and the percent dolomite on the dolomite scaler.

2) Other minerals

When minerals other than limestone and dolomite are present, interpretation is made using chart CP-1 of the interpretation manual.

Minerals can be identified according to the accompanying table:

LITHOLOGY IDENTIFICATION SUMMARY

A—Liquid Filled Pores

Additional requirements

Limestone	$\Phi_{FDC} = \Phi_{SNP}$
Dolomite	$\Phi_{FDC} = \Phi_{SNP} - 12$
Sand	$\Phi_{FDC} = \Phi_{SNP} + 6$

B—No Porosity

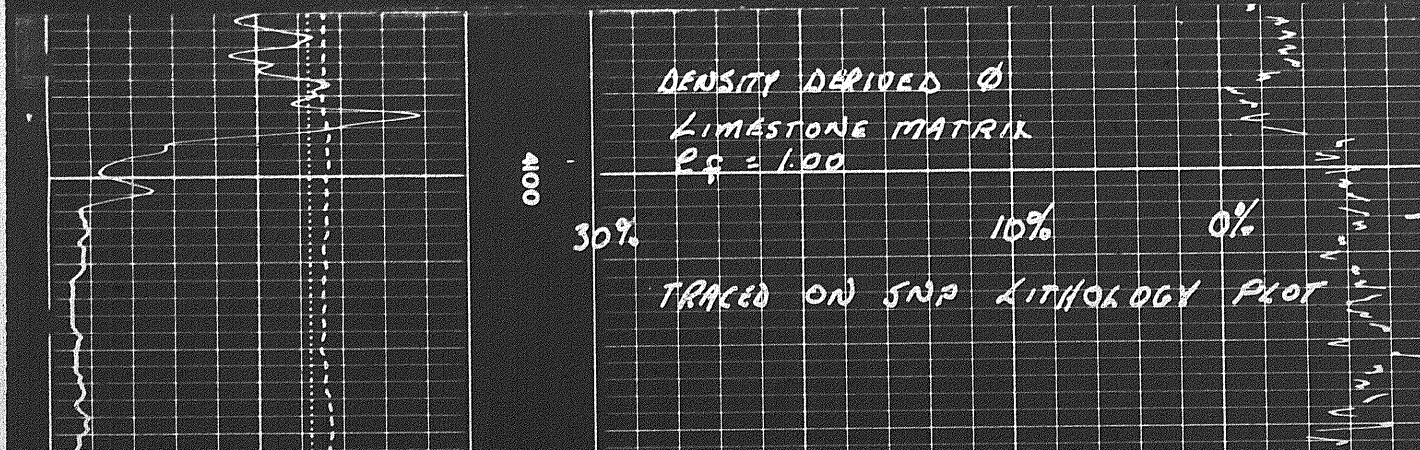
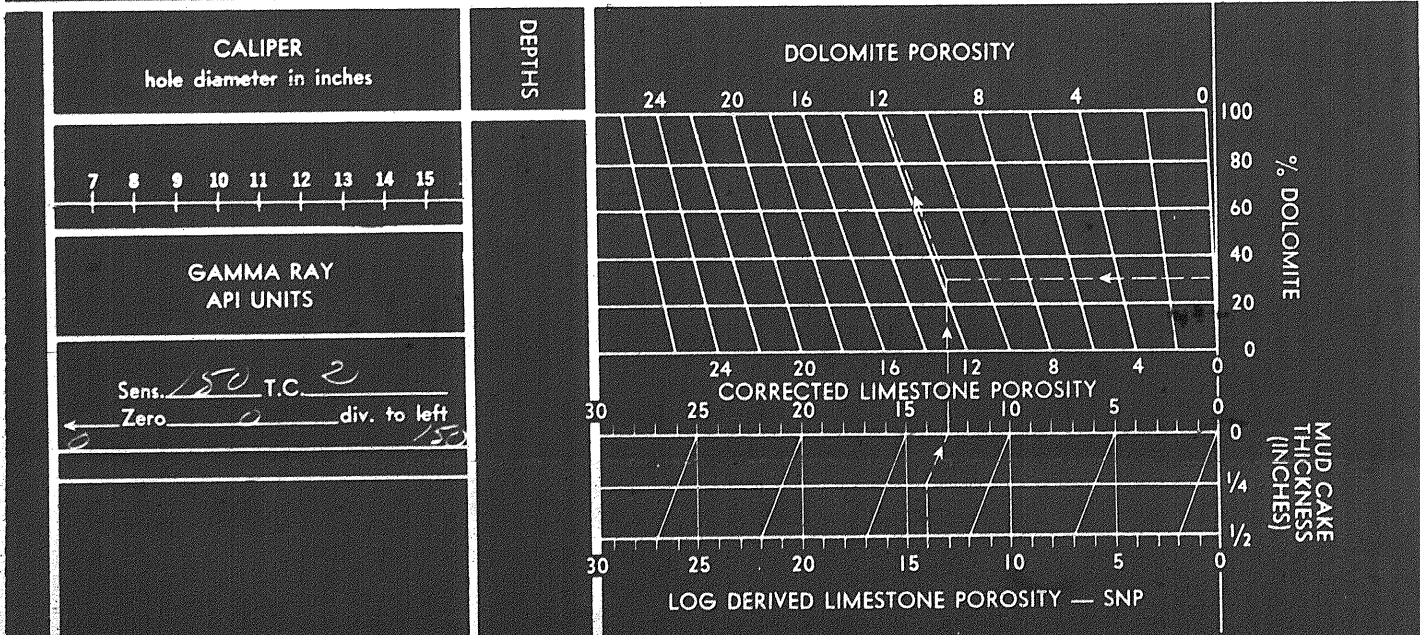
	$\Phi_{FDC} = \Phi_{SNP} + N$	Φ_{SNP}	Φ_{FDC}	ΔT_{SONIC}
Salt	$\Phi_{FDC} = \Phi_{SNP} + 39.5$	4	43.5	67
Gypsum	$\Phi_{FDC} = \Phi_{SNP} - 28$	49	21	52.5
Anhydrite	$\Phi_{FDC} = \Phi_{SNP} - 16$	-1	-17	50
Sulphur	$\Phi_{FDC} = \Phi_{SNP} + 40$	0	40	122
Shale	$\Phi_{FDC} = \Phi_{SNP} - N$			

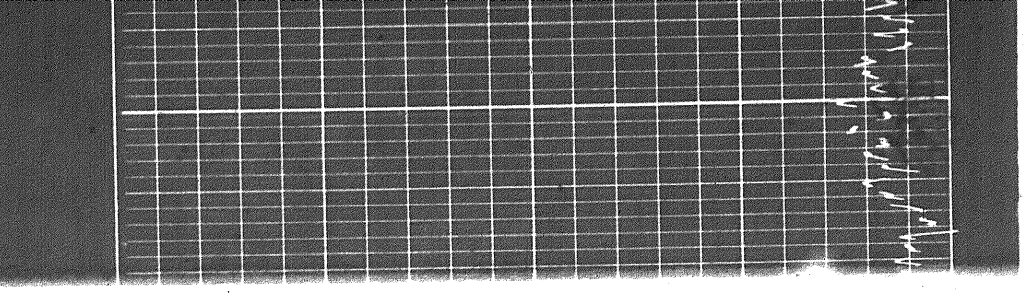
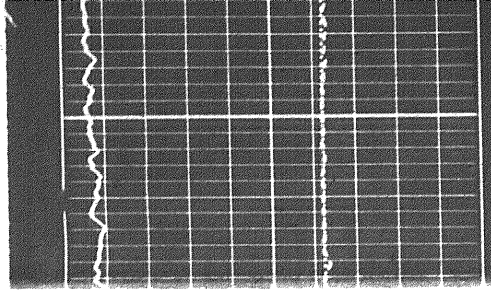
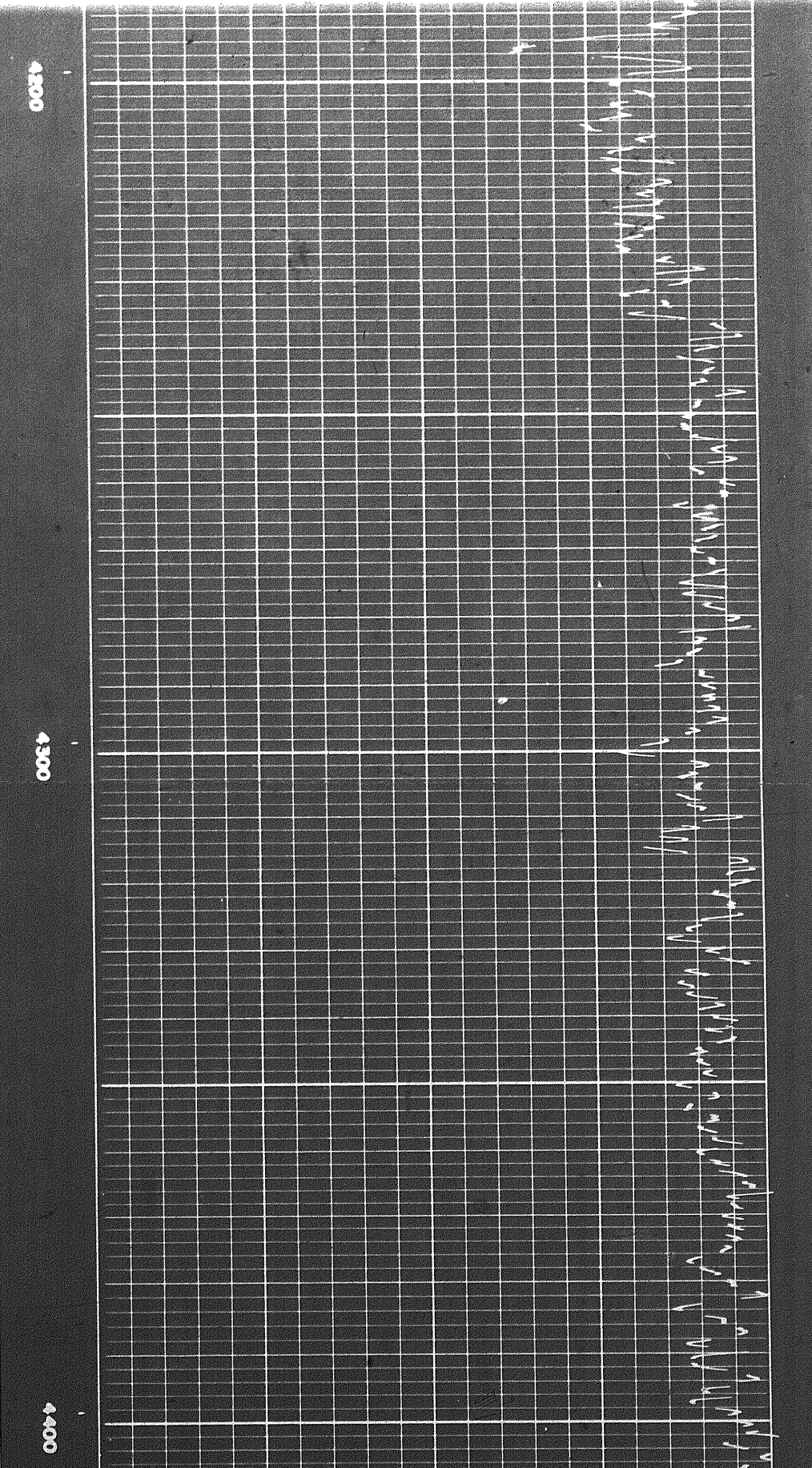
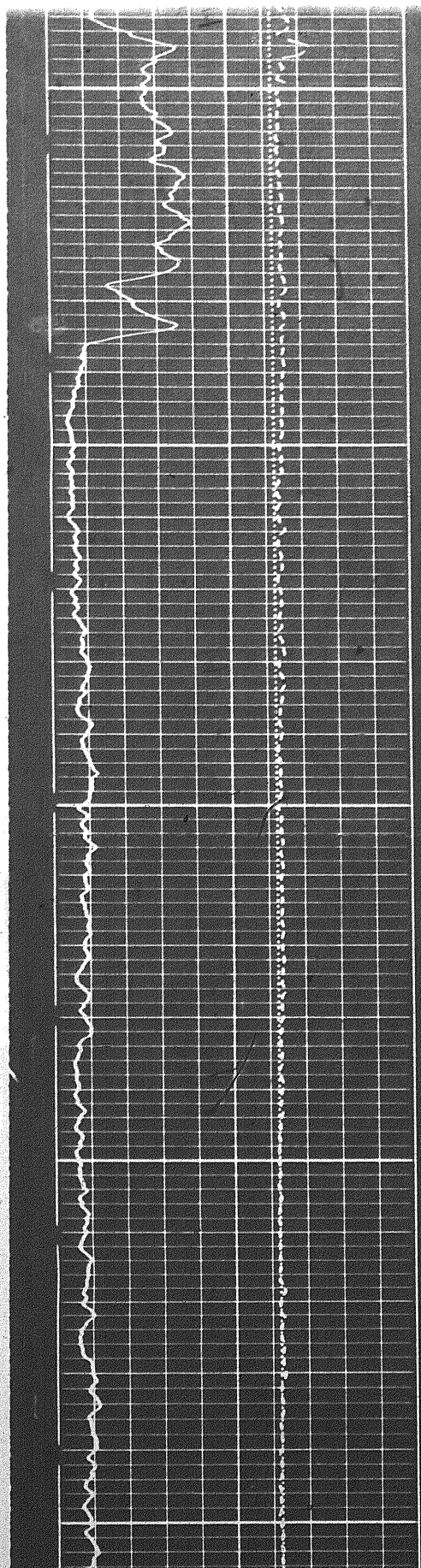
(N is variable - confirm with gamma ray)

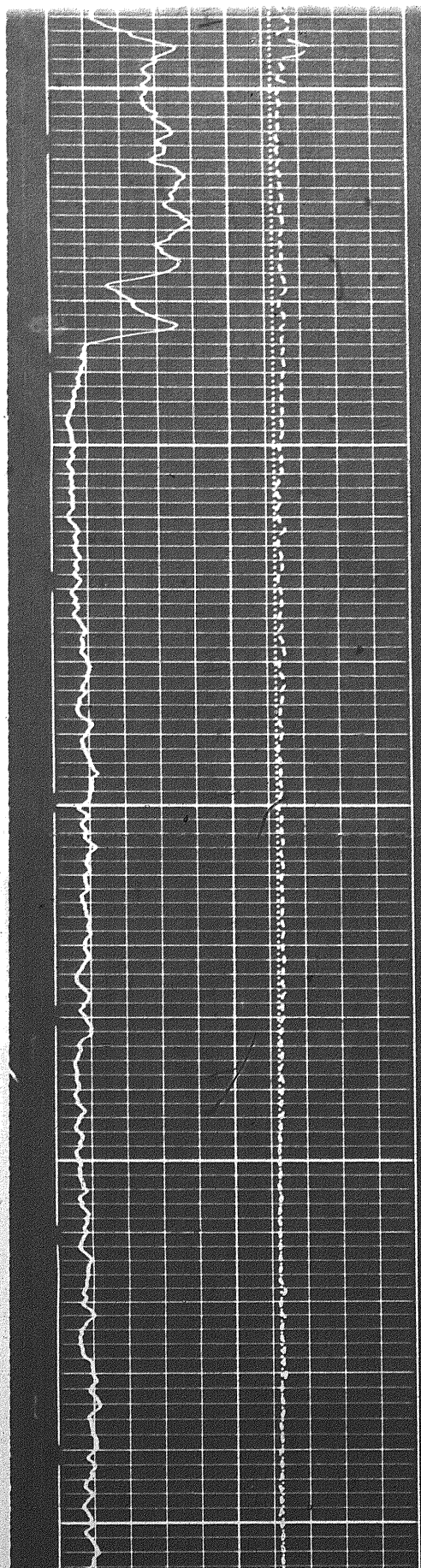
COLOR LEGEND

- Sand
- Shale
- Limestone
- Dolomite
- Anhydrite
- Salt

Remarks:



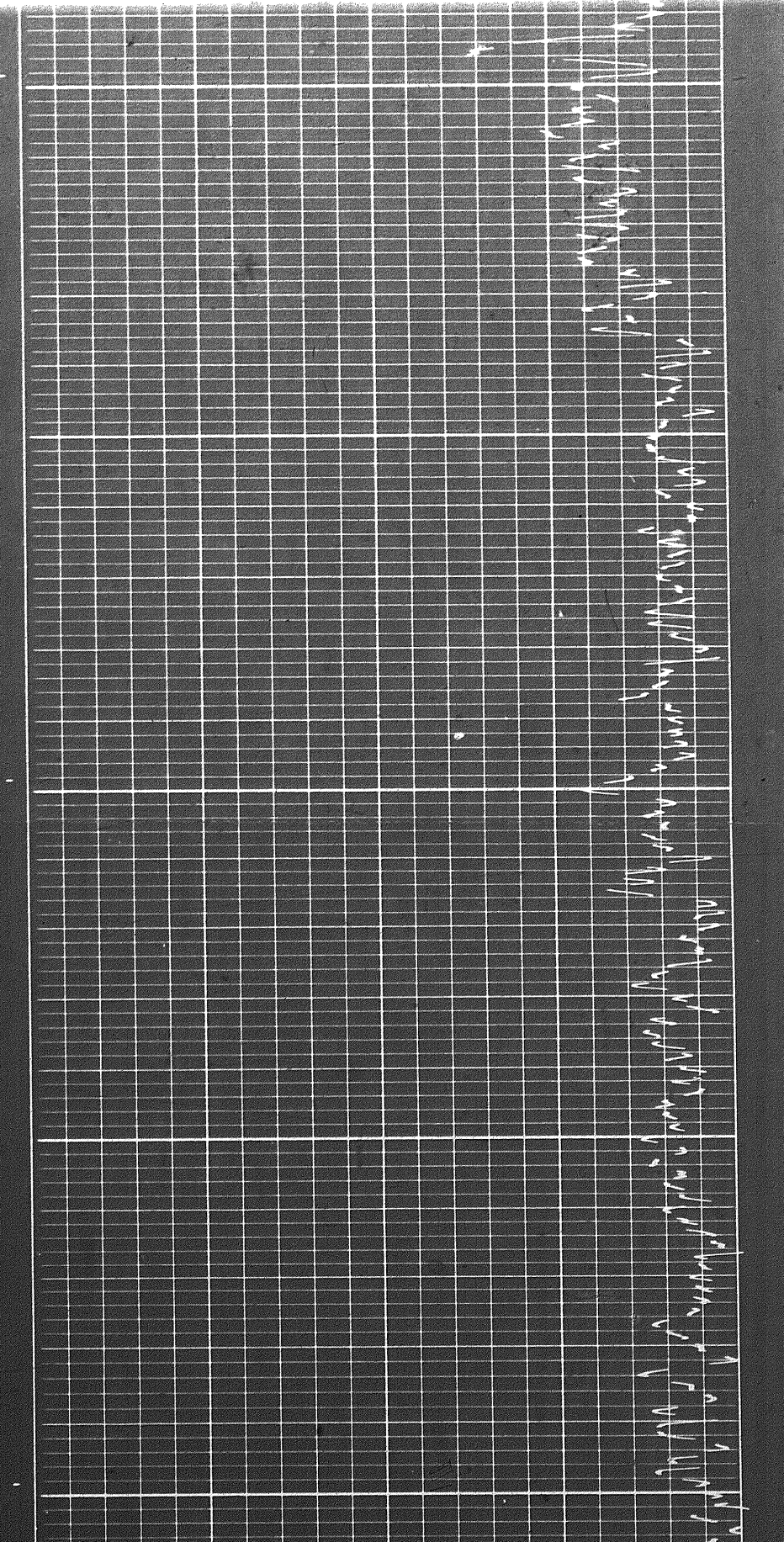


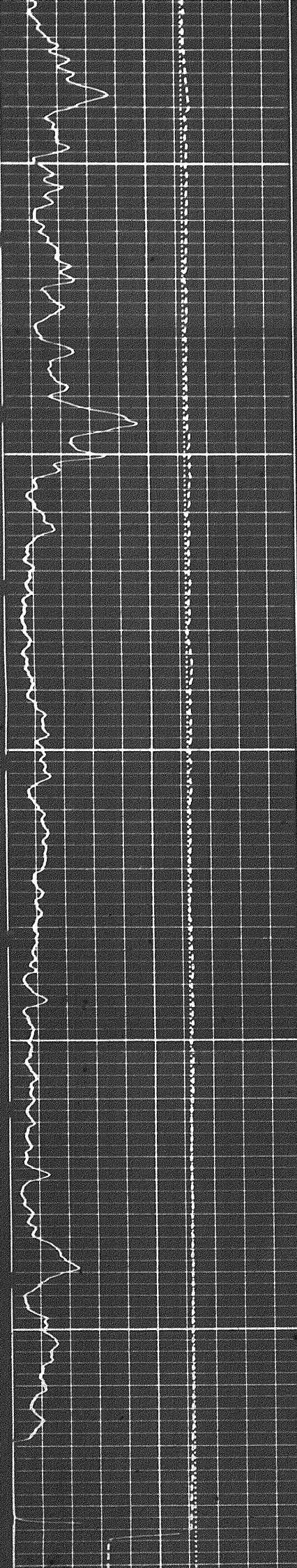


4200

4300

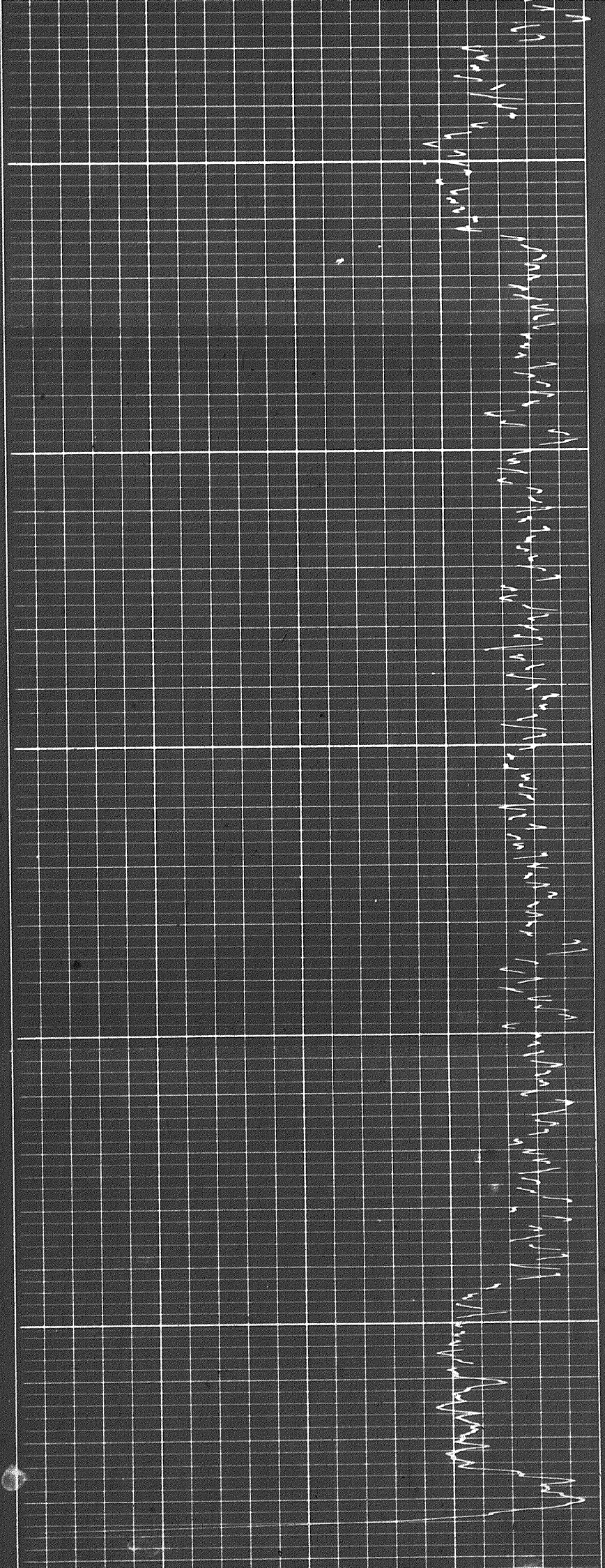
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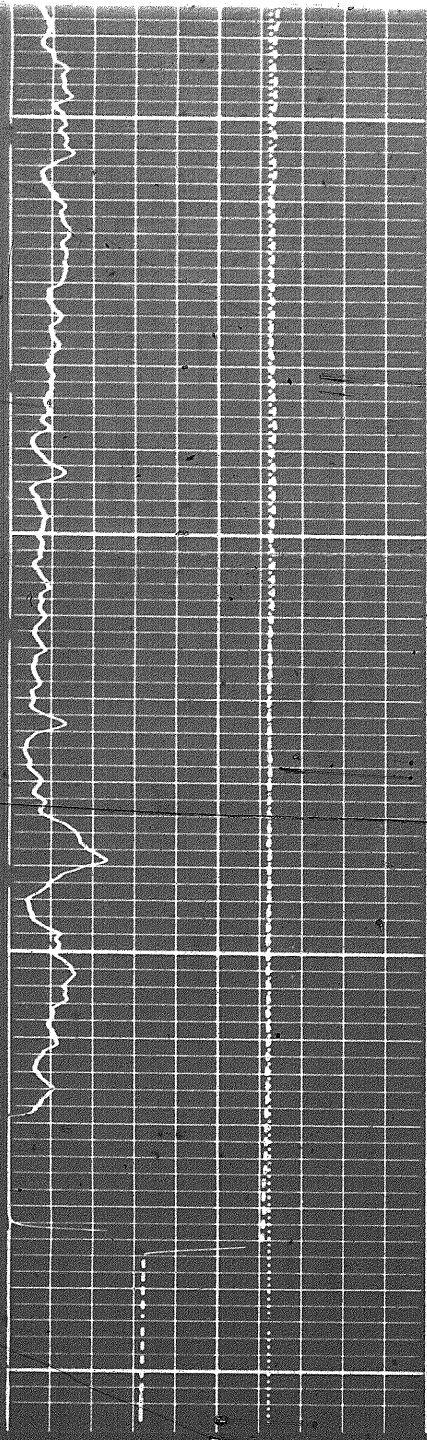




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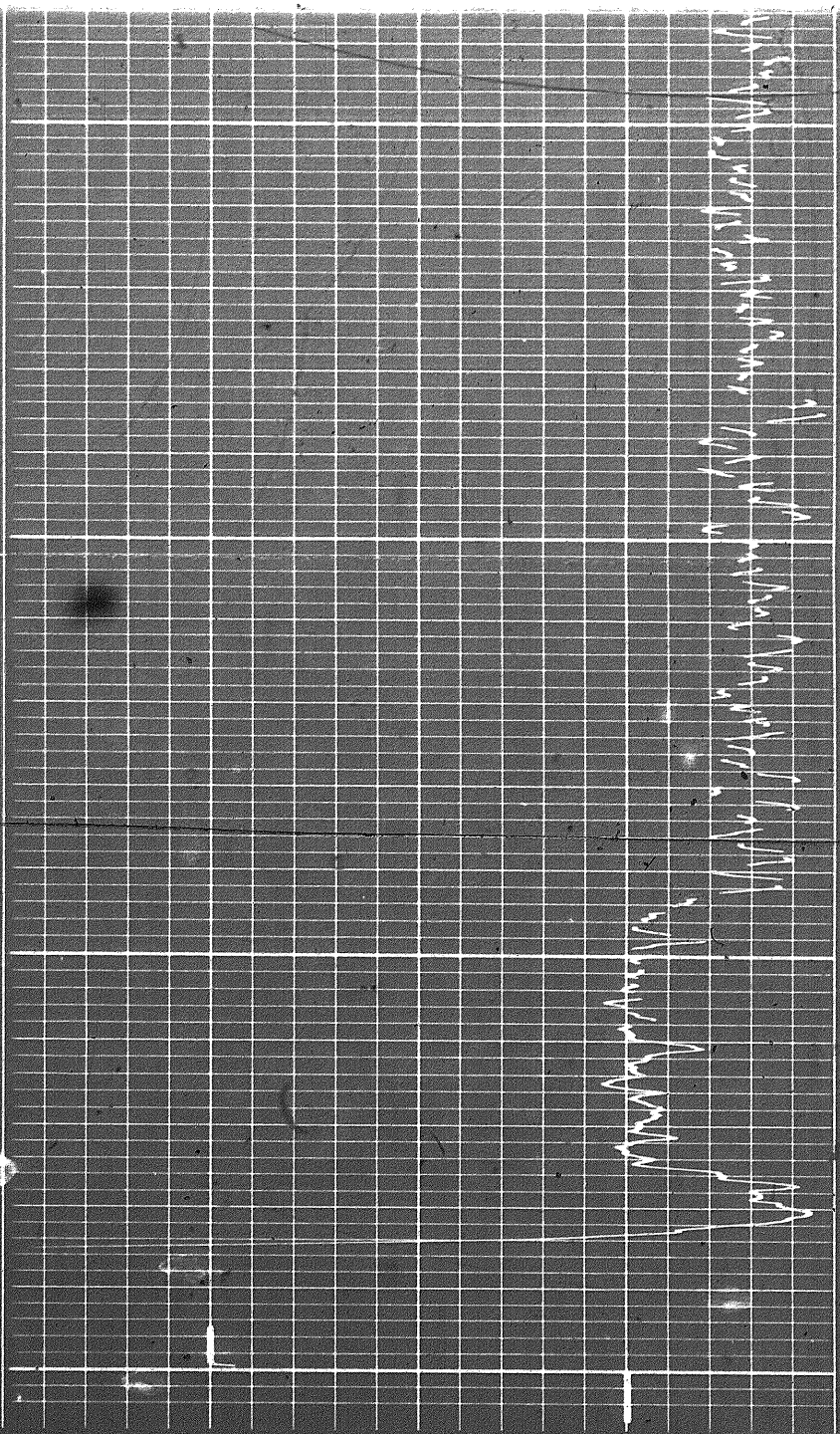
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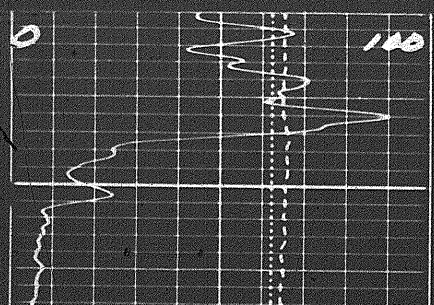
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4300



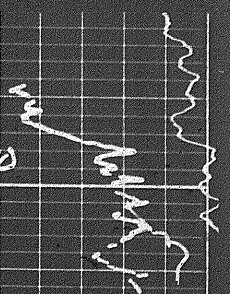
28

Run 2



4100

LITHOLOGY PLOT
 SNP LIMESTONE @ RECORDED
 FOX LIMESTONE @ TRACED



LITHOLOGY PLOT

SMP LIMESTONE ϕ RECORDED

FOX LIMESTONE ϕ TRACED

ϕ UNITS

30%

20%

10%

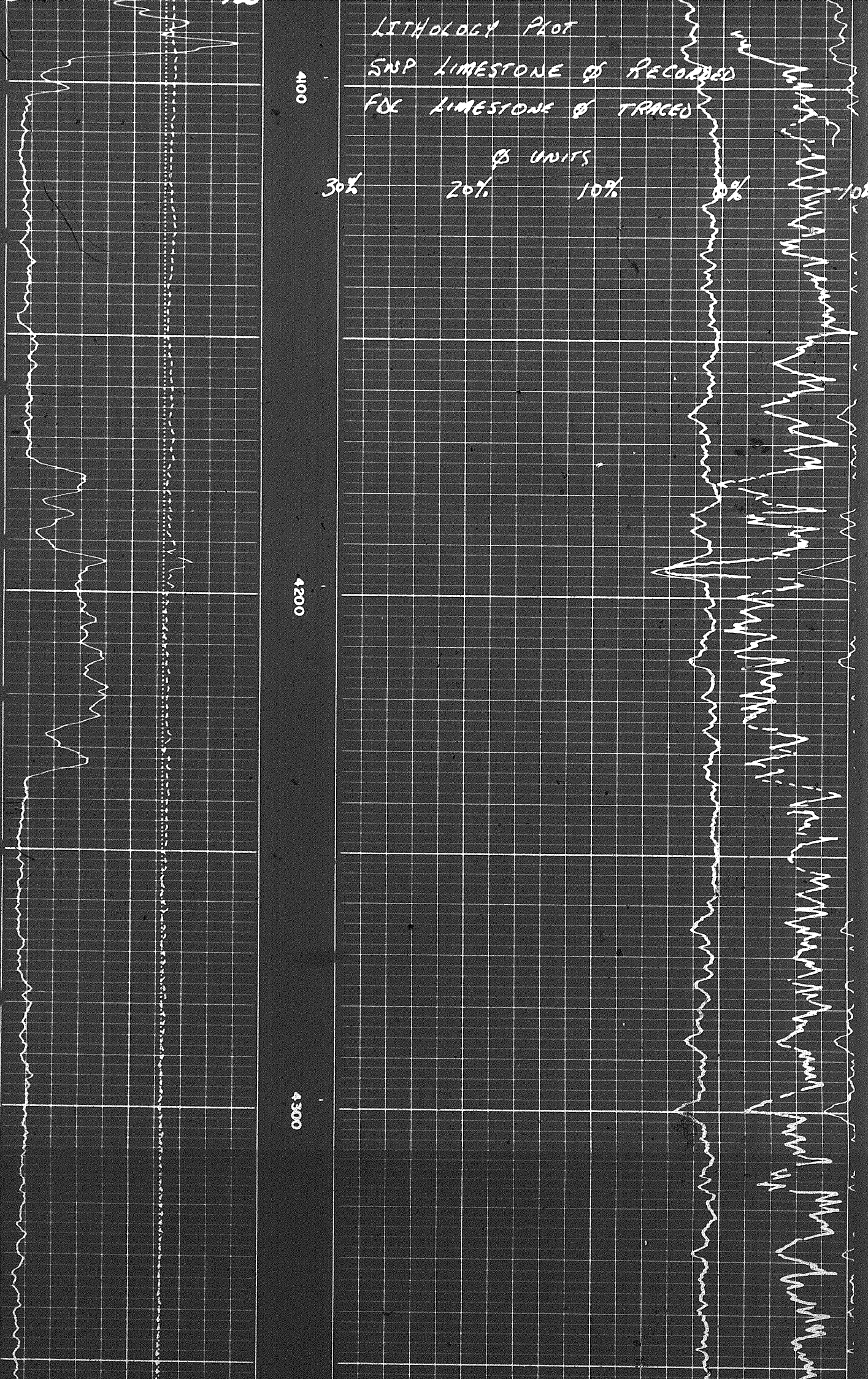
0%

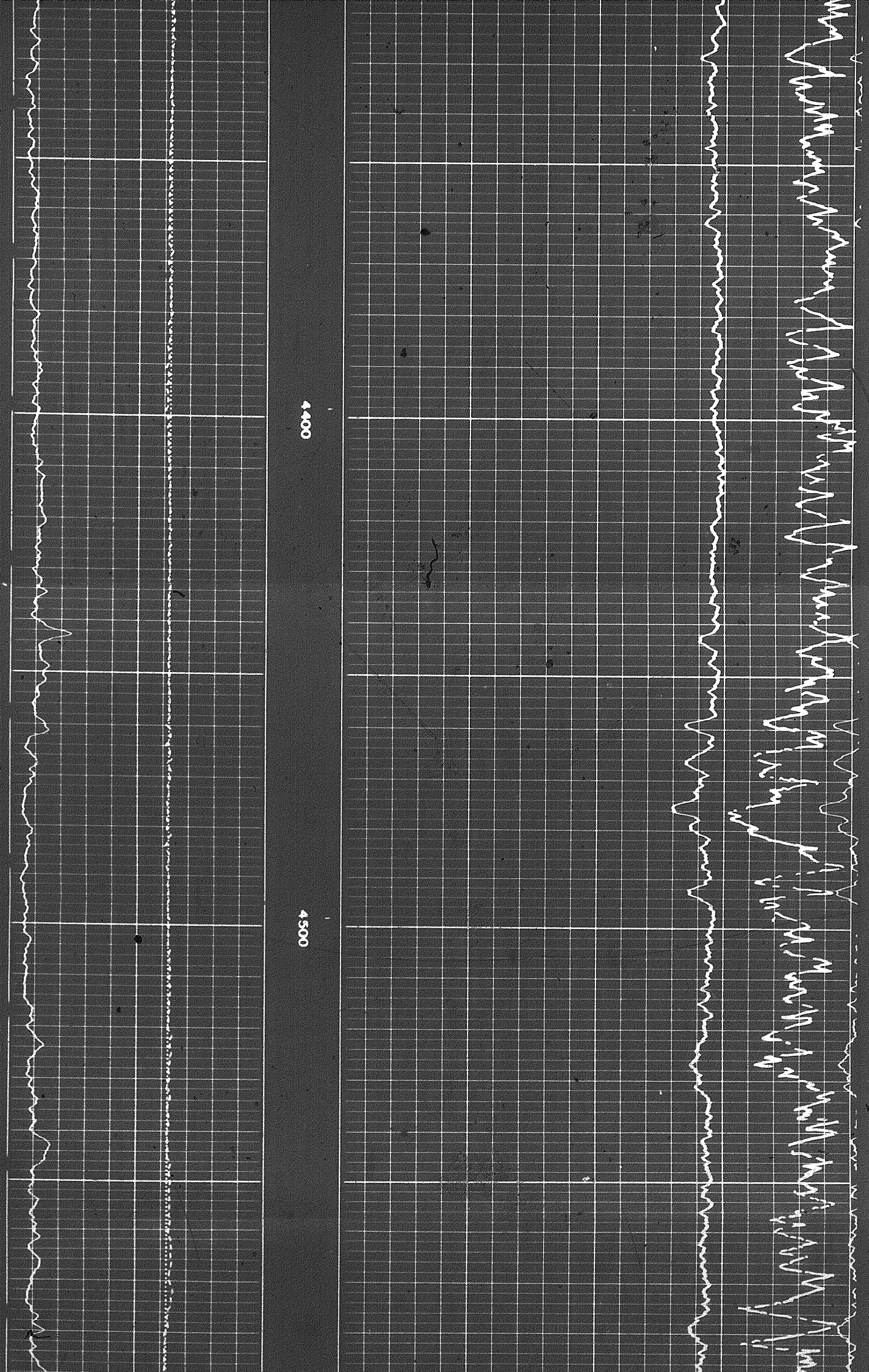
10%

4100

4200

4300

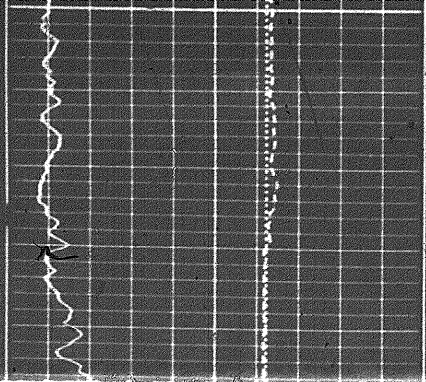
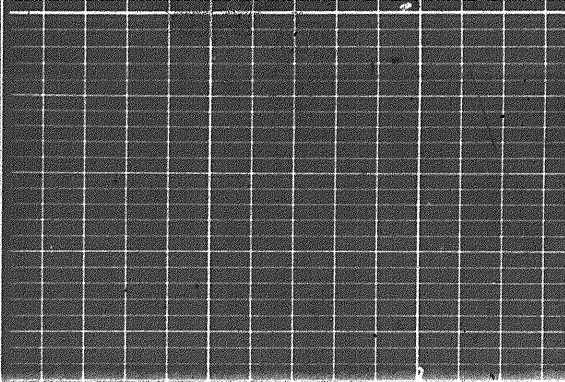
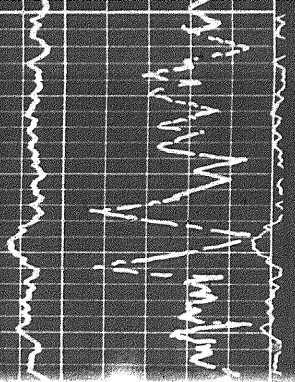




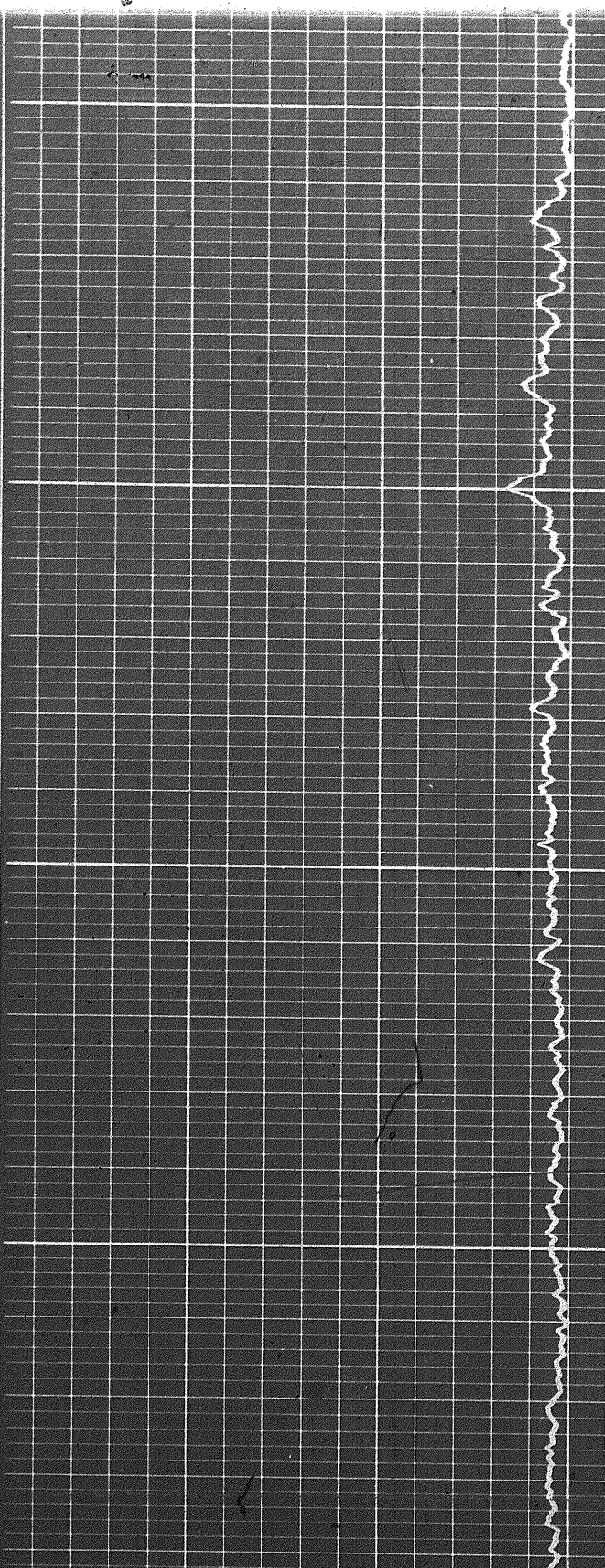
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4500

4:15 PM
1/1/19

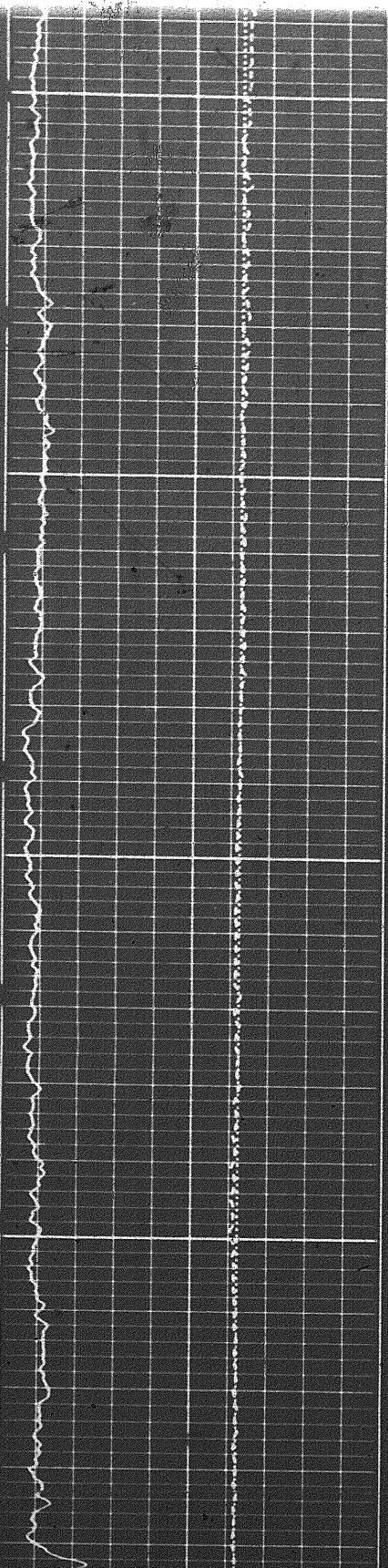


4:30 PM
1/1/19



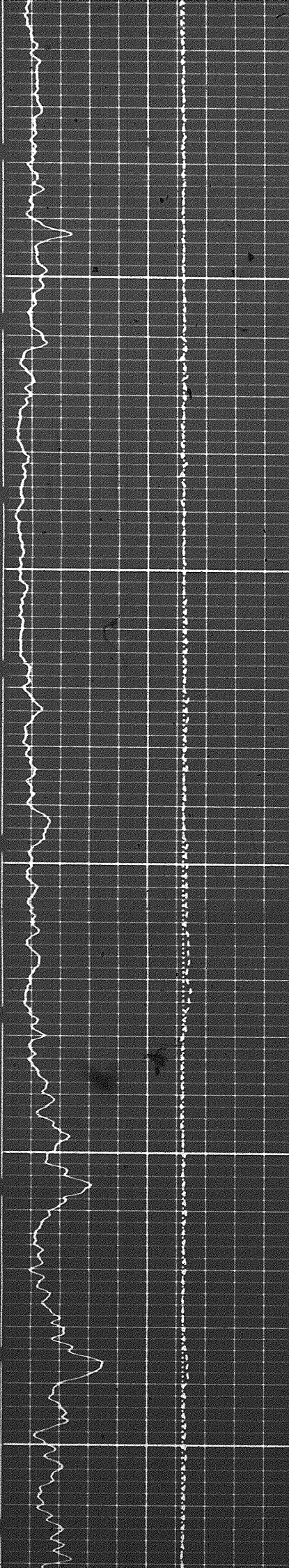
4:30

4:40



5

00098



4500

4600

