

Correlation Records of VLF Hiss
and Ionospheric Absorption of Cosmic Radio Noises
at Syowa Station, Antarctica in 1972

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This compilation includes correlation records of the VLF narrow-band hiss receivers (750 ± 35 Hz, 5.0 ± 0.2 kHz, 12.0 ± 0.5 kHz, 25.0 ± 1.0 kHz, and 50.0 ± 1.0 kHz) and of the ionospheric absorption of 30 MHz cosmic radio noises observed from May to December 1972 at Syowa Station, Antarctica (Geographic lat. $69^{\circ}00'S$, long. $39^{\circ}35'E$; Geomagnetic lat. $69.6^{\circ}S$, long. $77.1^{\circ}E$). The original records are kept at the Radio Wave Division, Radio Research Laboratories, Ministry of Posts and Telecommunications, 2-1, Nukui-Kitamachi 4-chome, Koganei-shi, Tokyo 184, Japan.

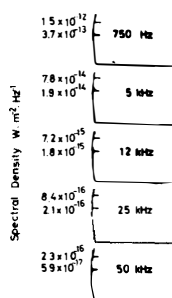
The VLF antenna is a triangle loop (18.5 m height and 39 m base) of two turns in the geographic N-S meridian. Output signals from the preamplifier at foot of the antenna are led to the main amplifier in the observation room by a twin axes cable of 350 m long. After amplification and rectification in the narrow band amplifiers ($Q = 10$), the signals are averaged for 10 milli-seconds, and then applied to the minimum reading circuit which has a charging time constant of 5 seconds and a discharging time constant of 2 milli-seconds. The d-c outputs of the VLF hiss are recorded on a

6-channel paper chart moving at 6 cm/hour together with the 30 MHz riometer data.

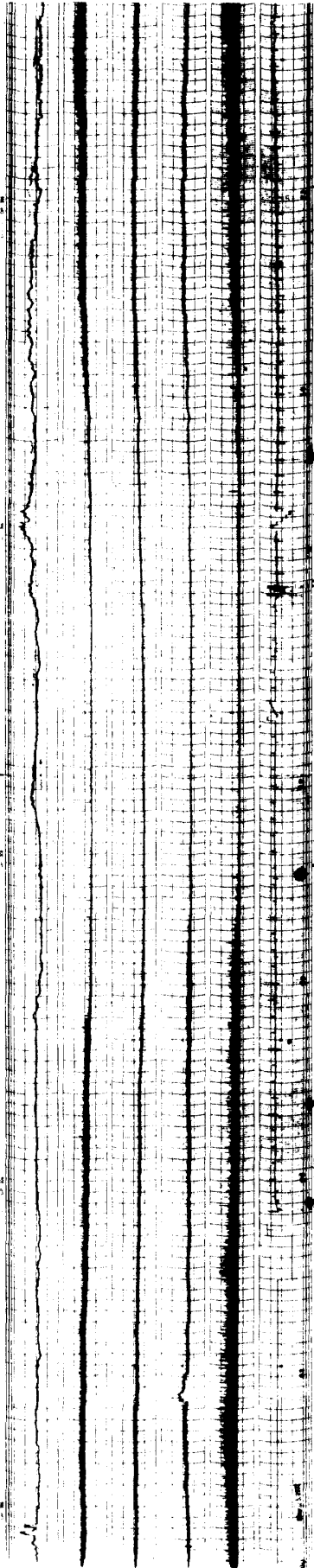
The 30 MHz riometer with 3.5 kHz bandwidth is connected to a five-element Yagi antenna by the 50 ohm coaxial transmission line. The Yagi antenna is directed parallel to the earth's rotation axis in order to minimize the diurnal variation of cosmic radio noises. The correlation data are in order from the top 750 Hz, 5.0 kHz, 12.0 kHz, 25.0 kHz, 50.0 kHz, and 30 MHz traces, and the time shown on the chart record is the 45° East Meridian Local Time (= UT + 3 hours).

Scale values of the VLF spectral density ($W \cdot m^{-2} \cdot Hz^{-1}$) are given in the attached figure below, and the riometer amplitude calibration of 0, 1, 2, 3, and 4 dB is inserted once a day on the bottom trace of the paper chart.

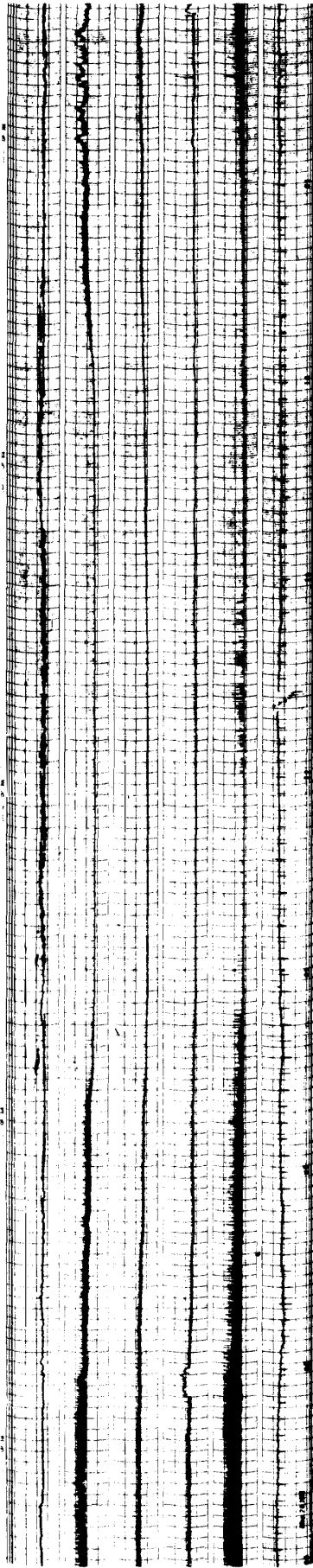
The VLF facilities were installed by the wintering member (Y. Tanaka) from the Research Institute of Atmospheric, Nagoya University, and have been taken over by the wintering members from the Radio Research Laboratories. We would like to thank Prof. A. Iwai, Dr. T. Kamada, and Dr. Y. Tanaka of the Research Institute of Atmospheric, Nagoya University for their useful advices on the VLF observation and scale value problem.



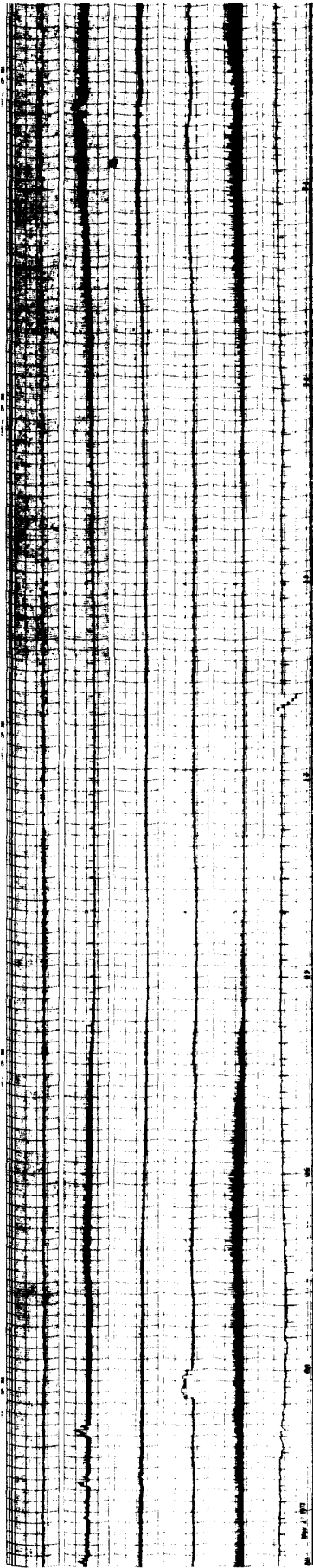
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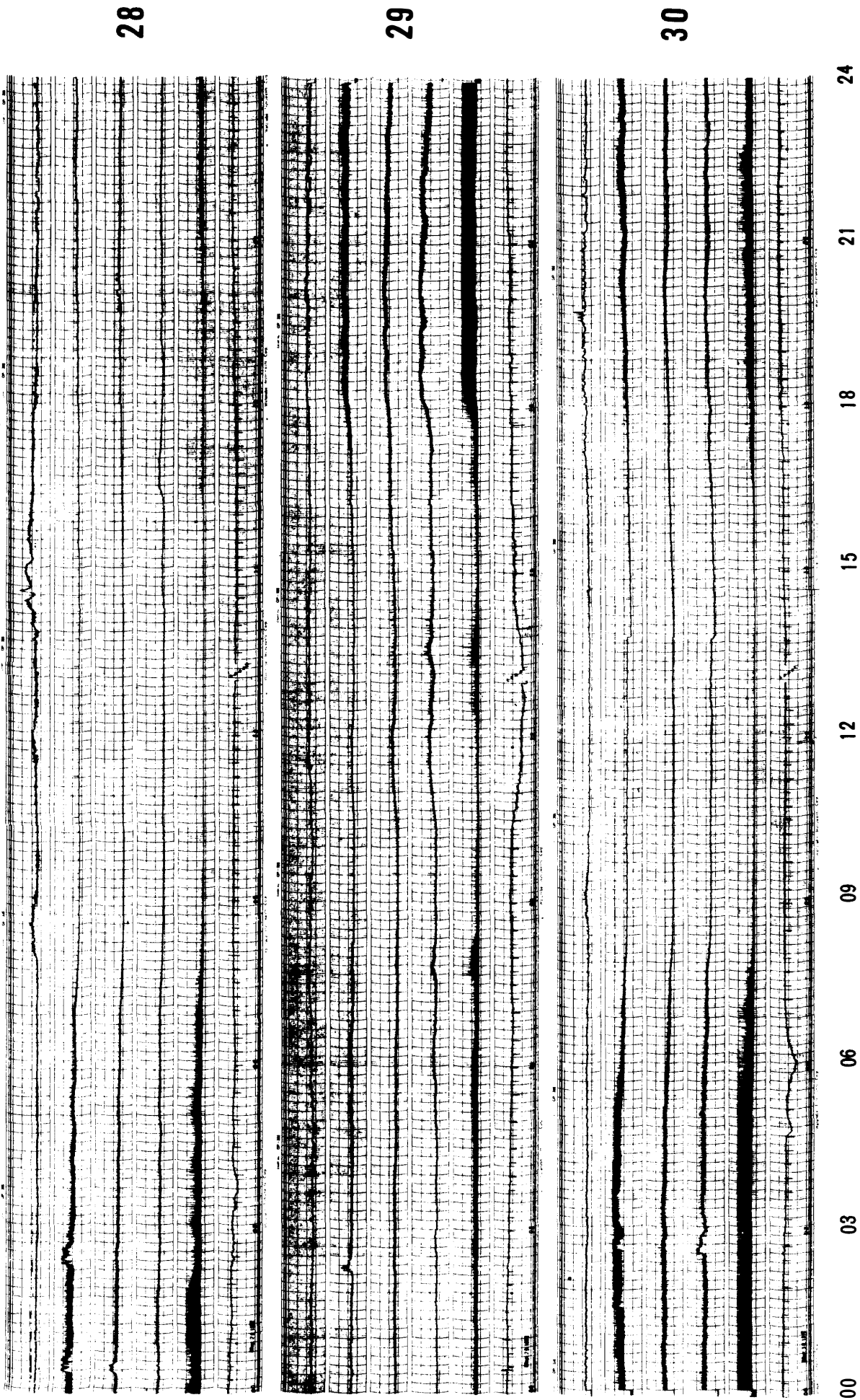
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45° EAST MERIDIAN TIME IN HOURS

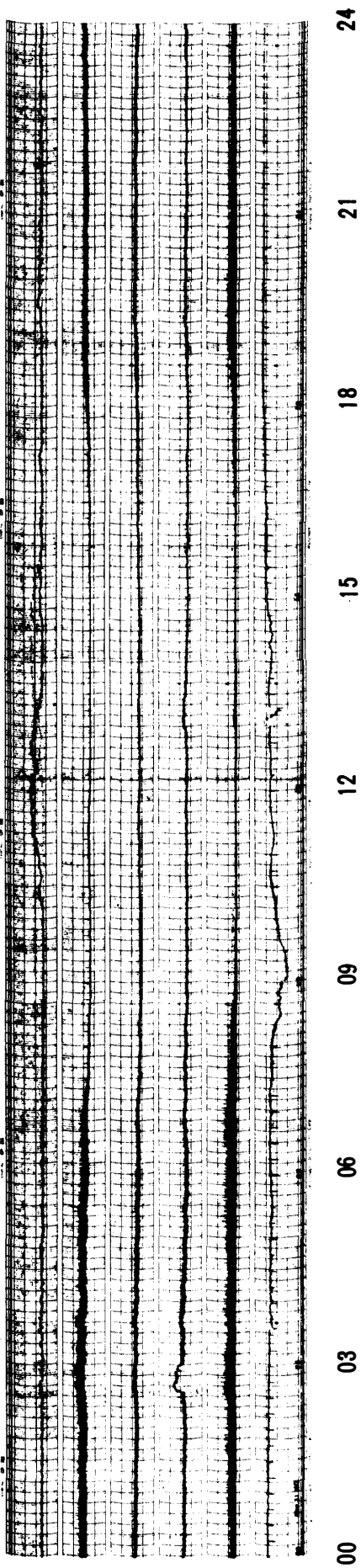
MAY 1972



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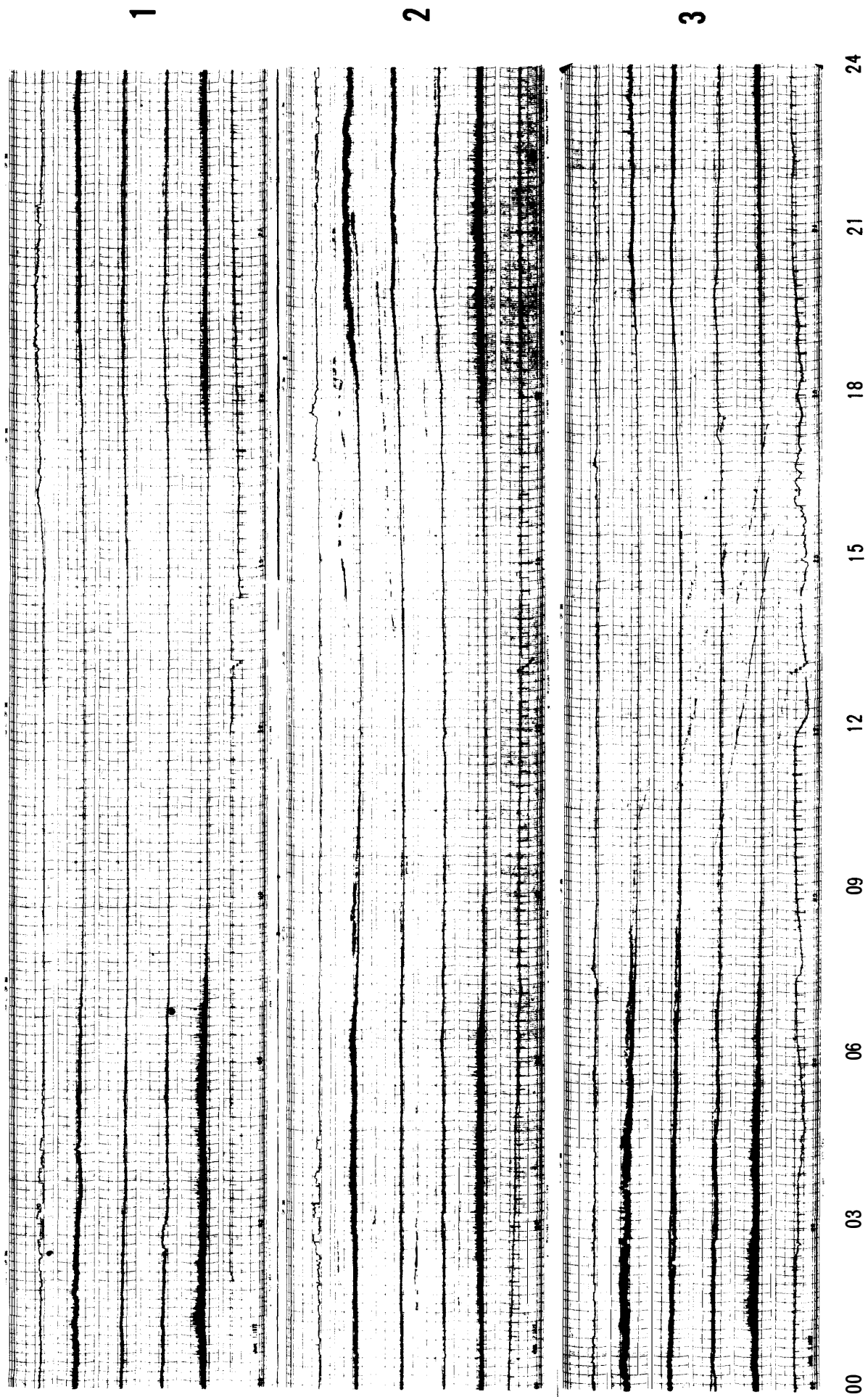
MAY 1972

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45° EAST MERIDIAN TIME IN HOURS

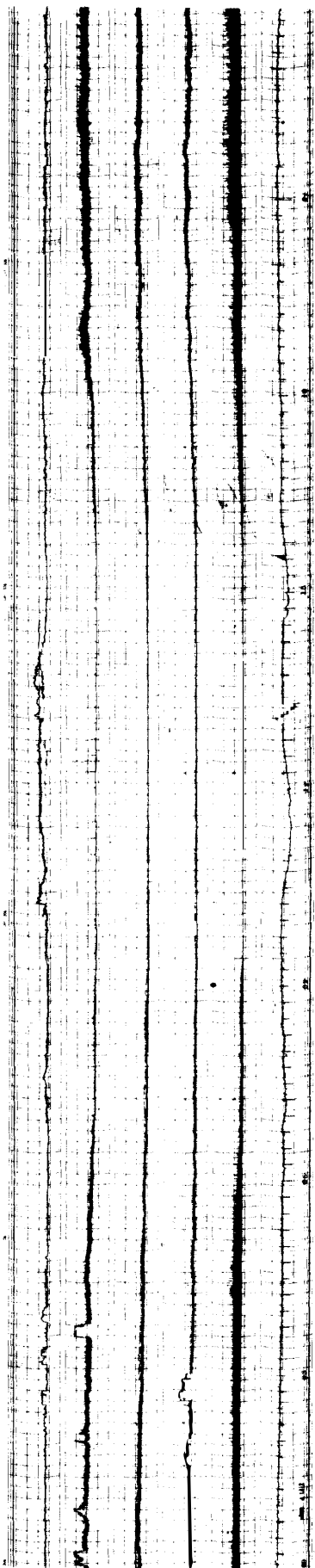
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45° EAST MERIDIAN TIME IN HOURS

JUNE 1972

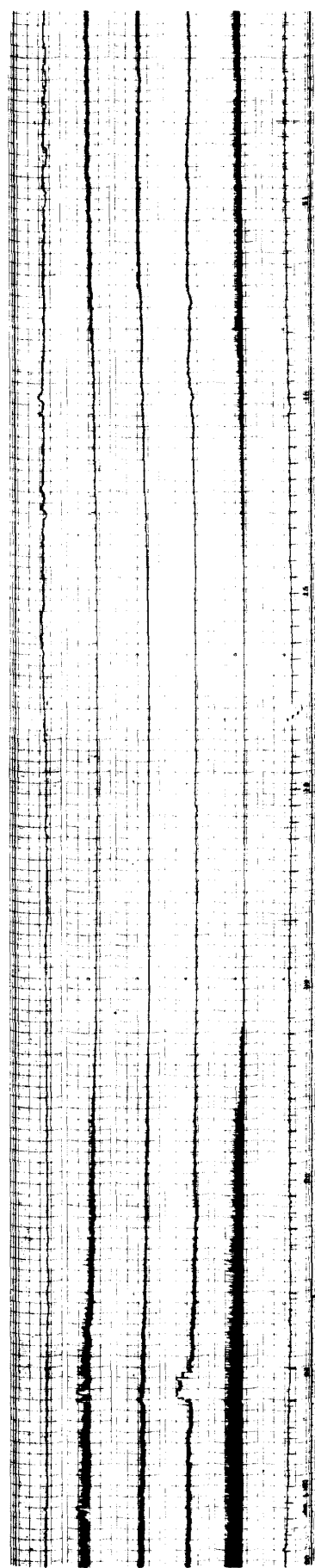
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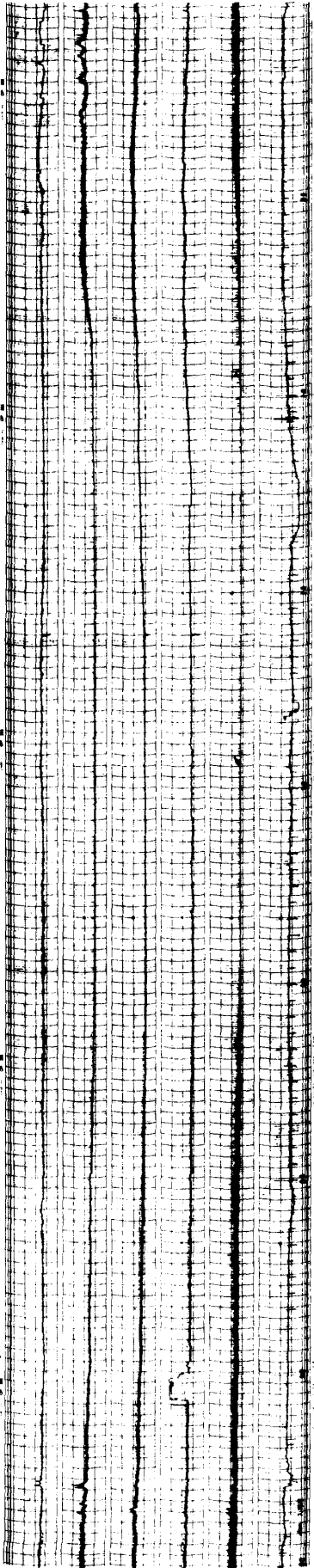


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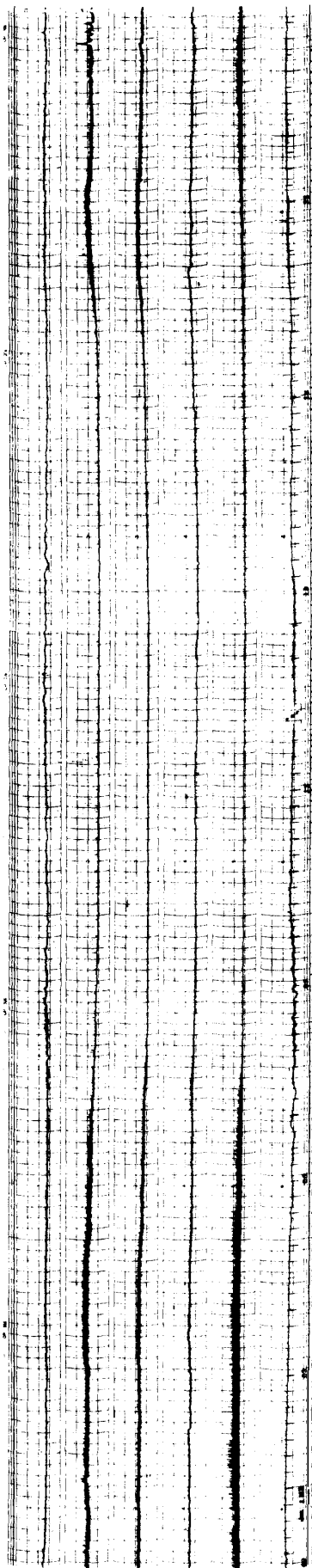
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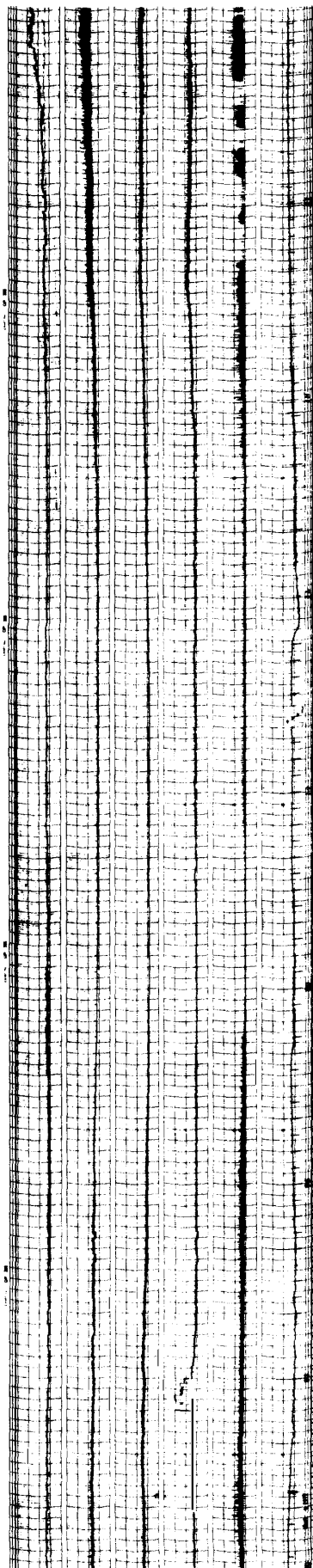
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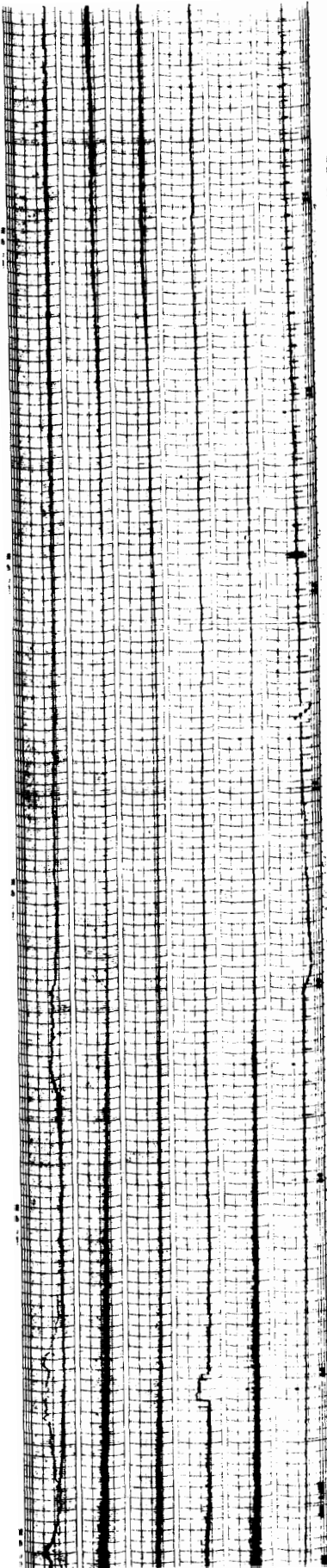
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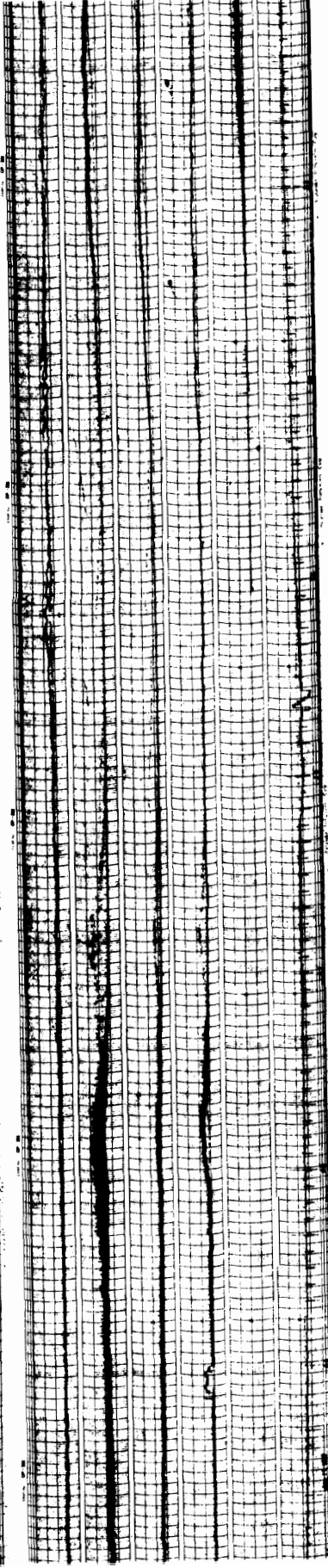
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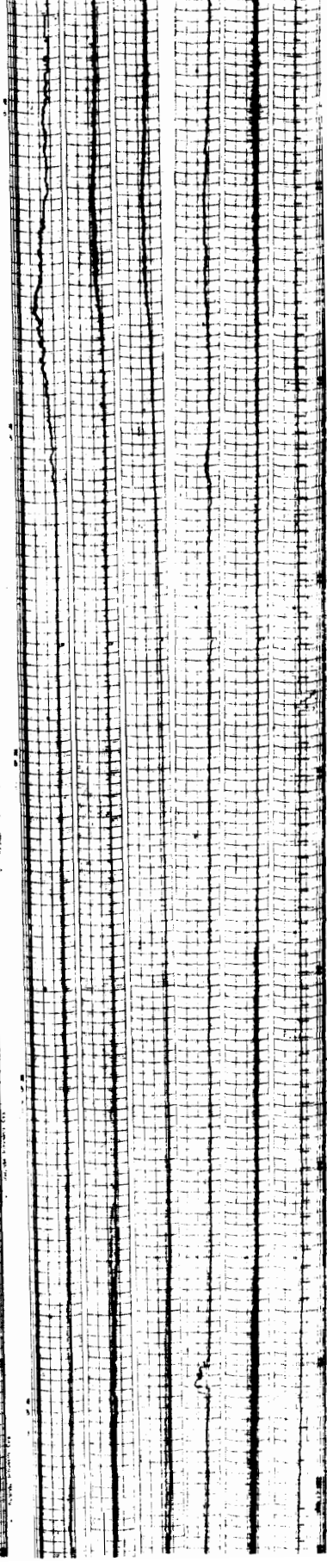
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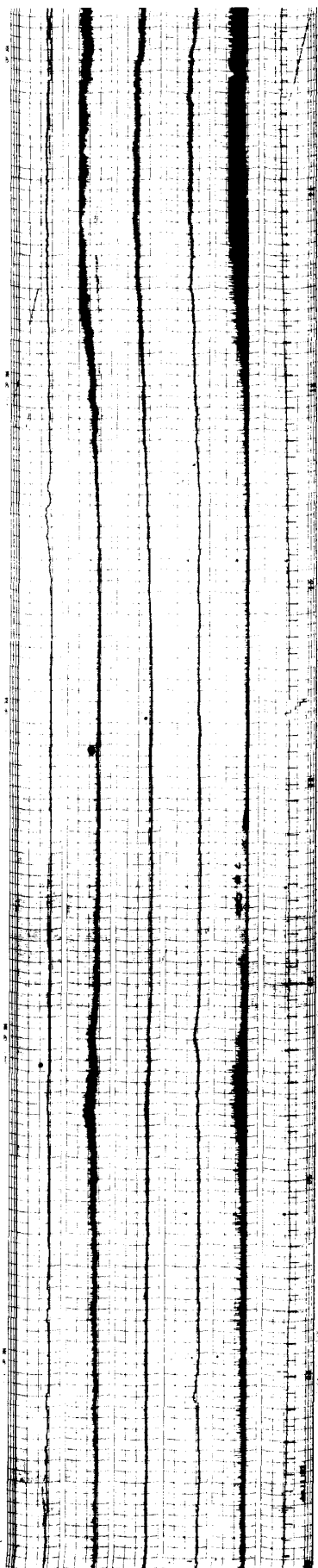


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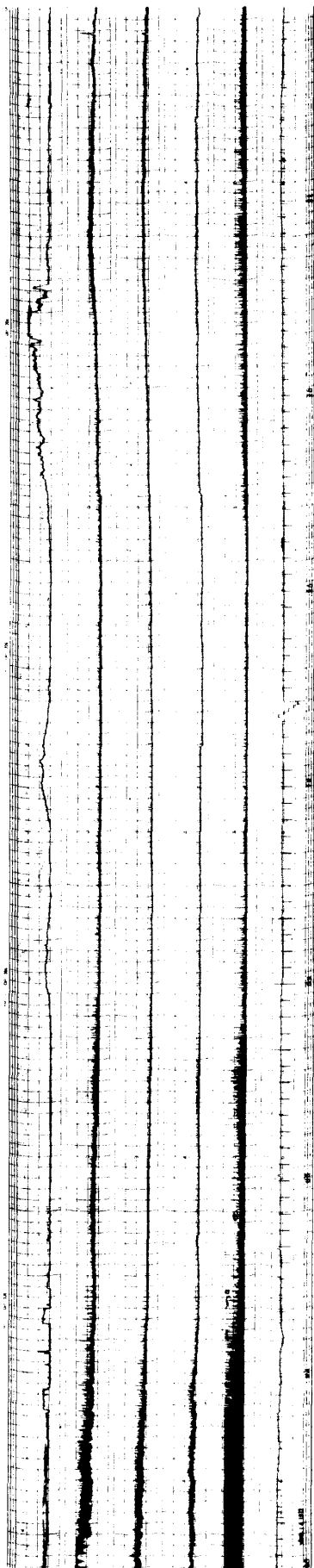
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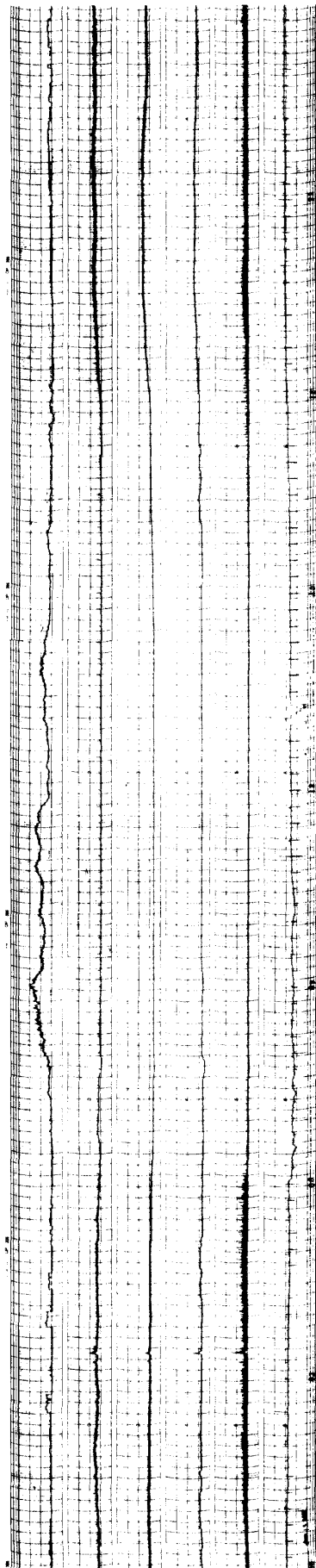
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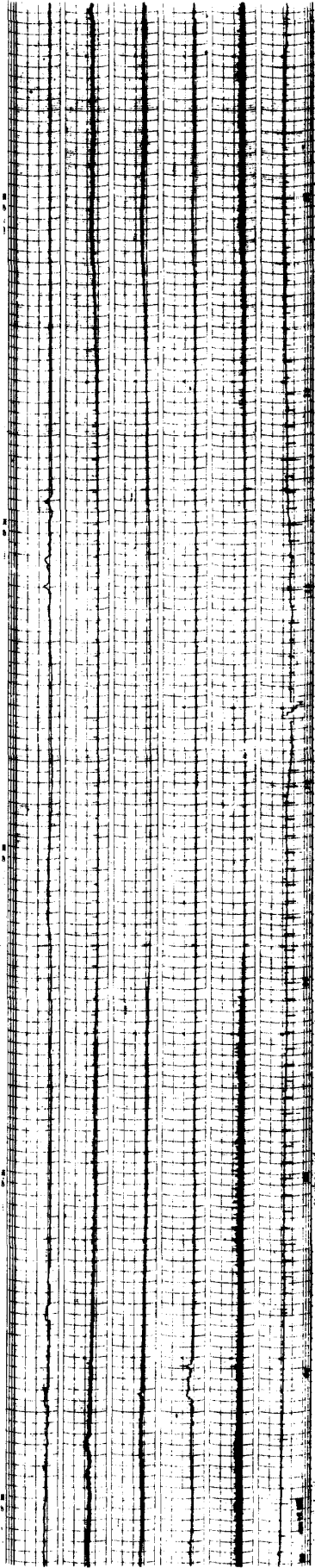
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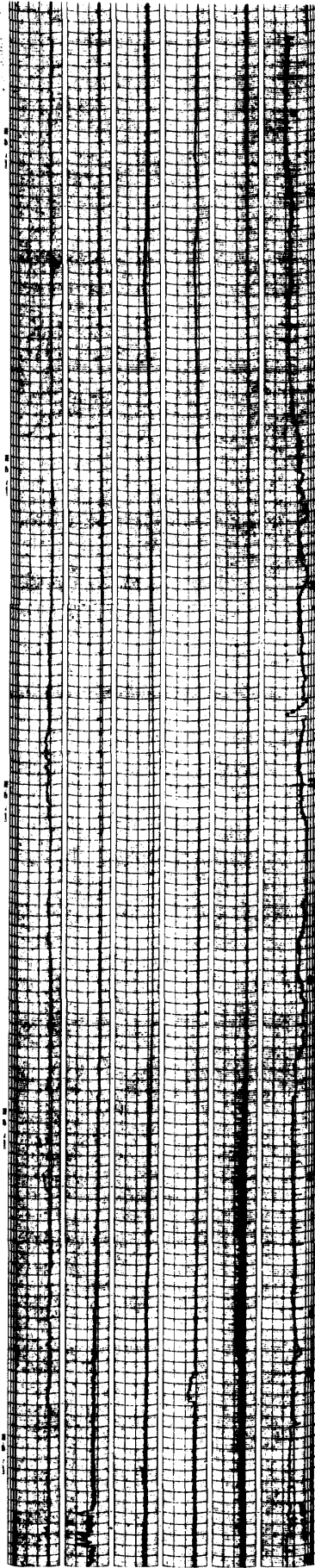
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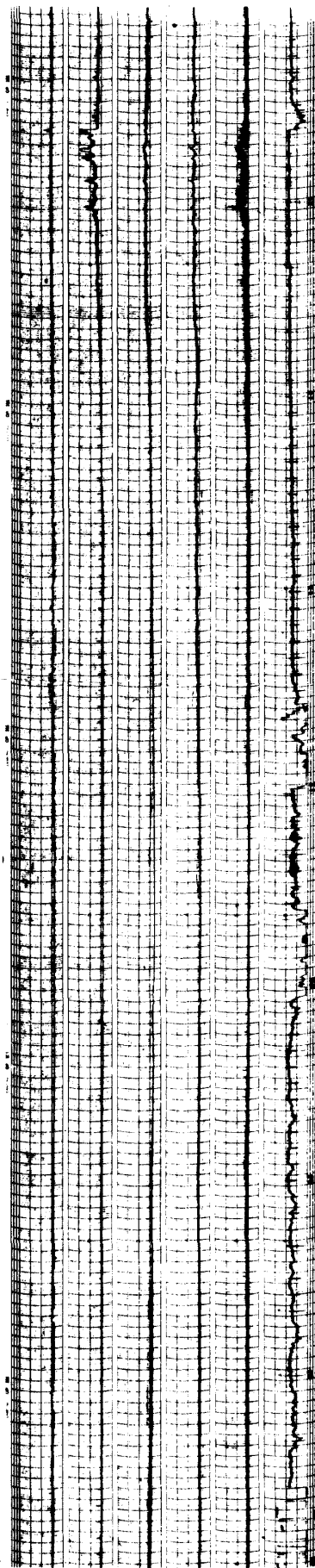
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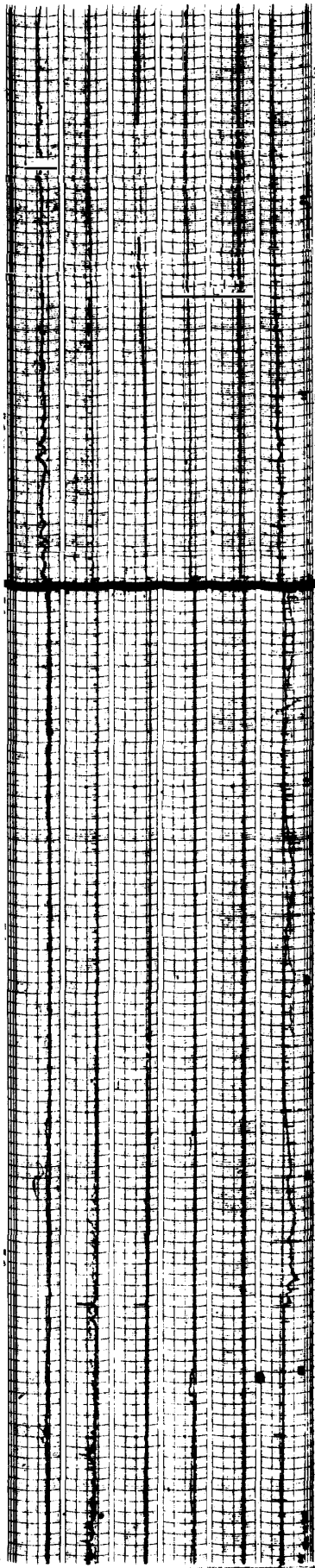
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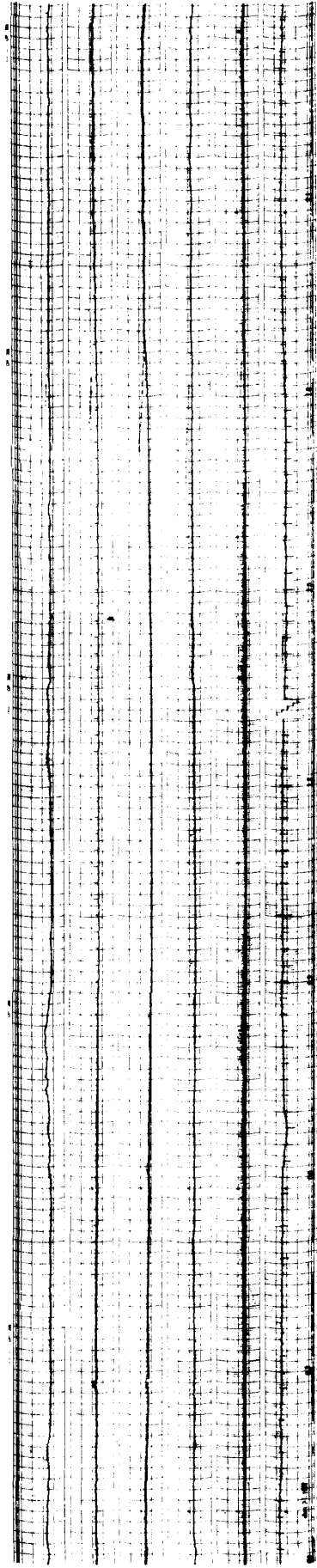
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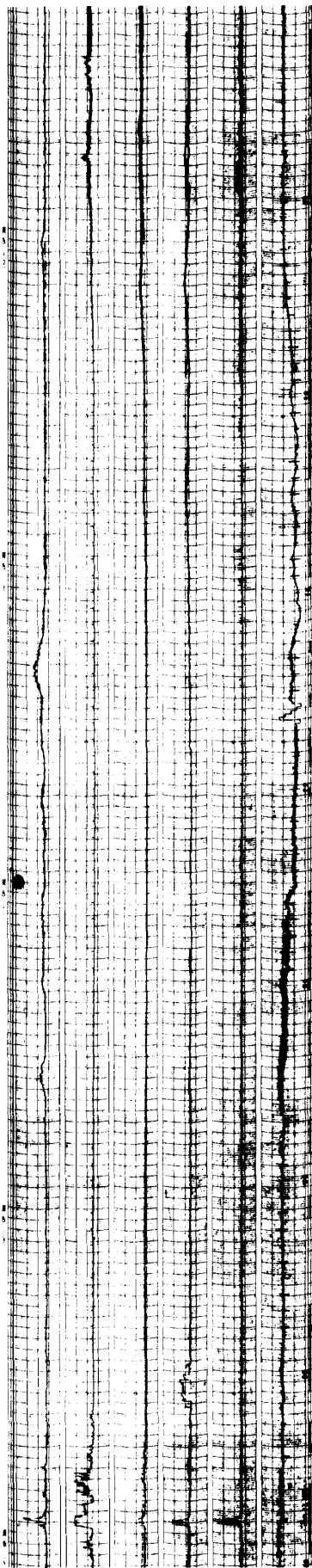
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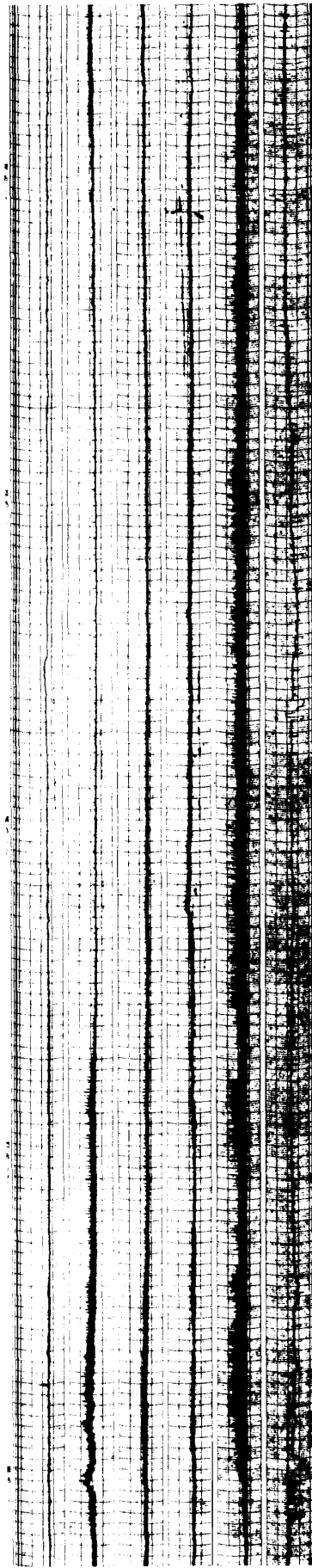
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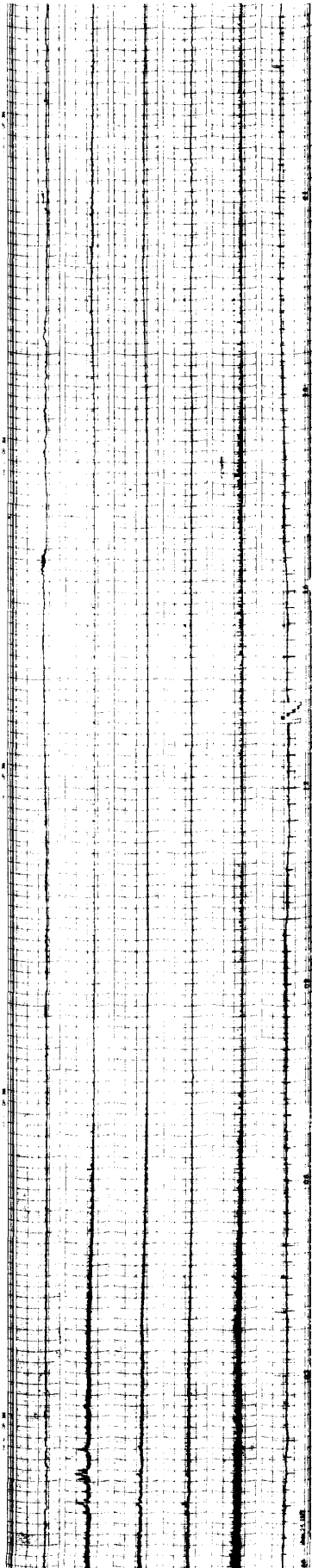


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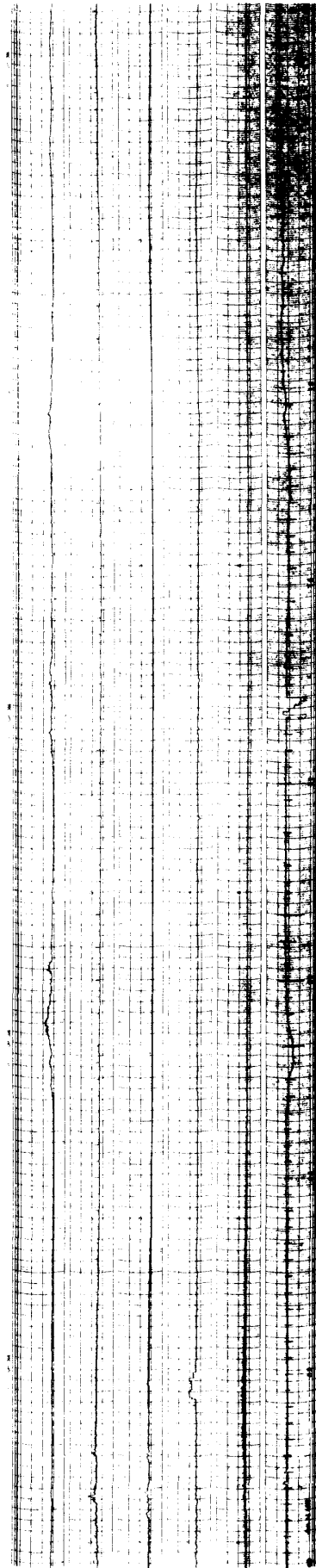
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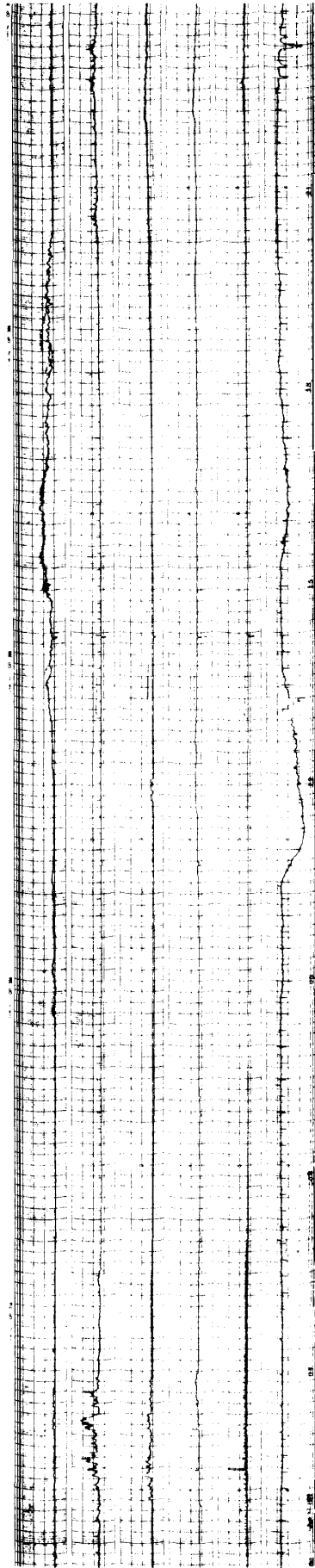
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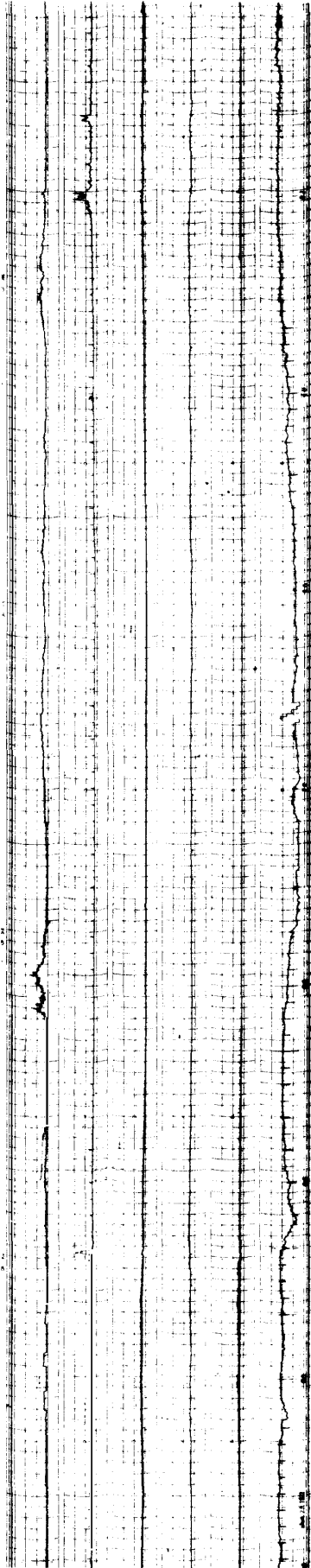


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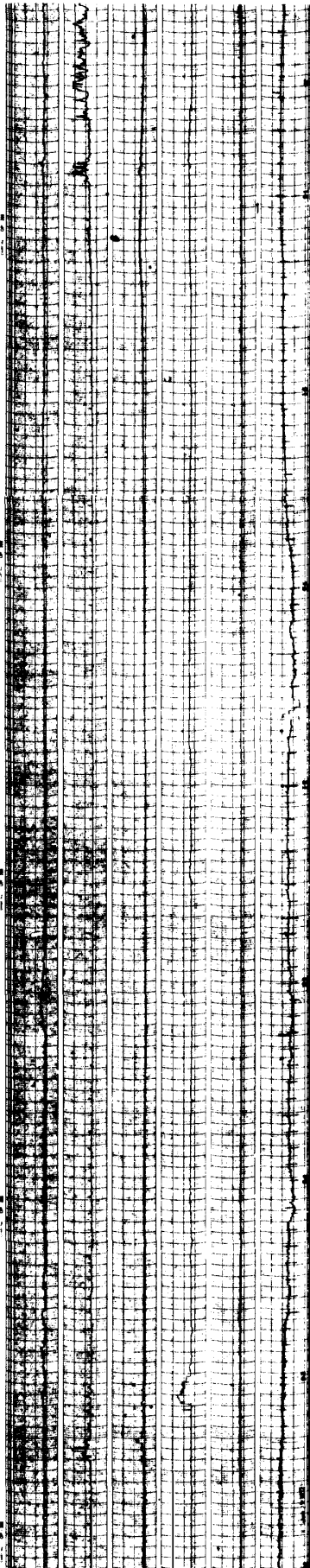
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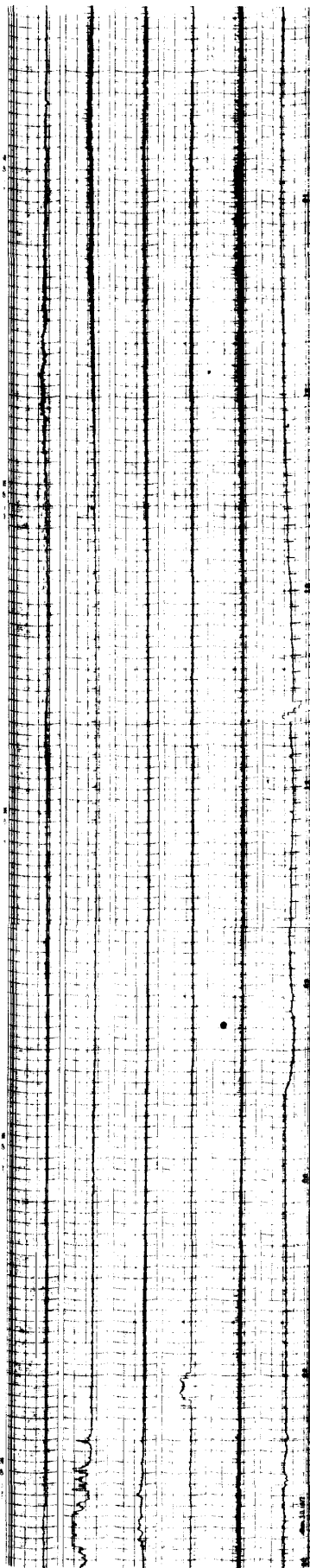
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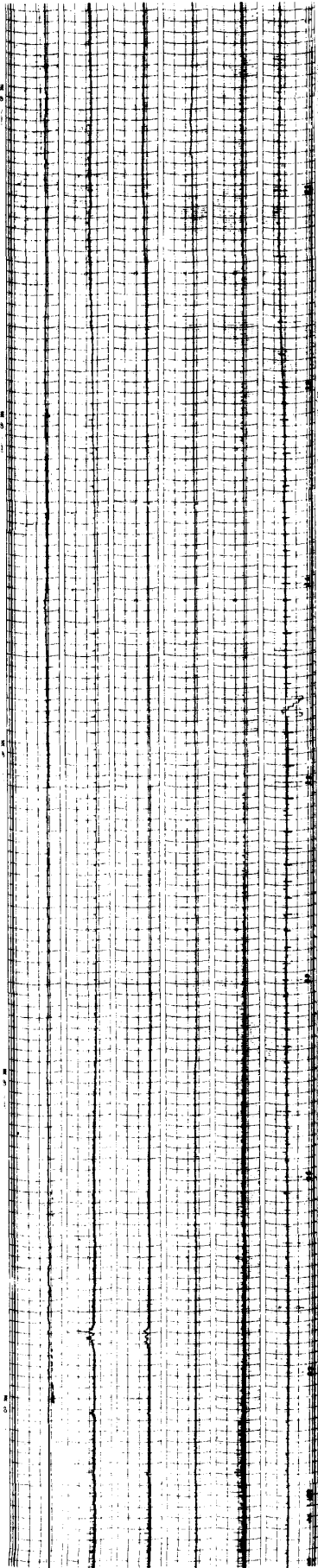


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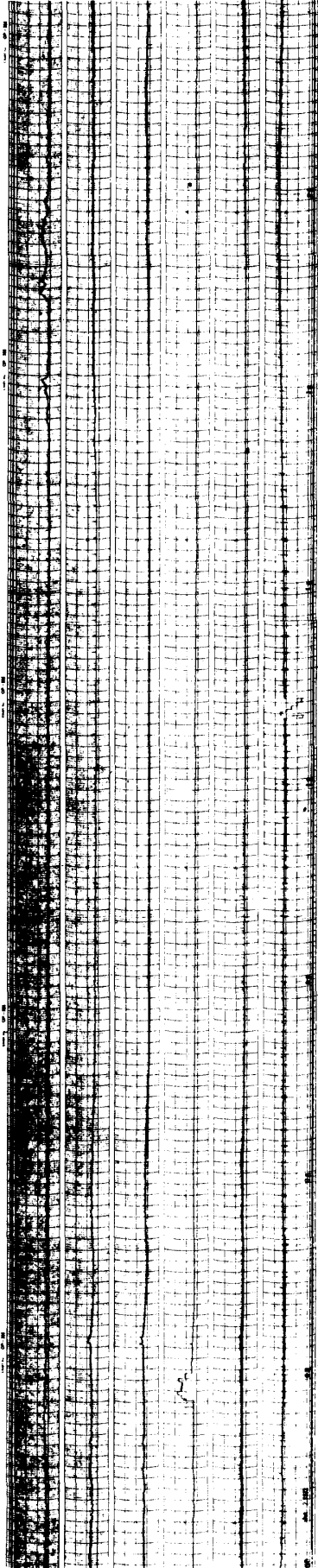
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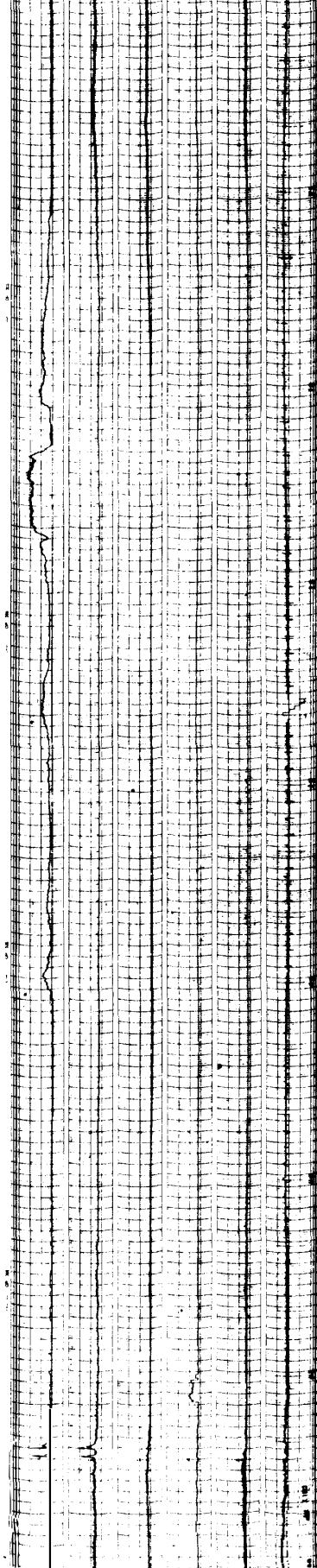
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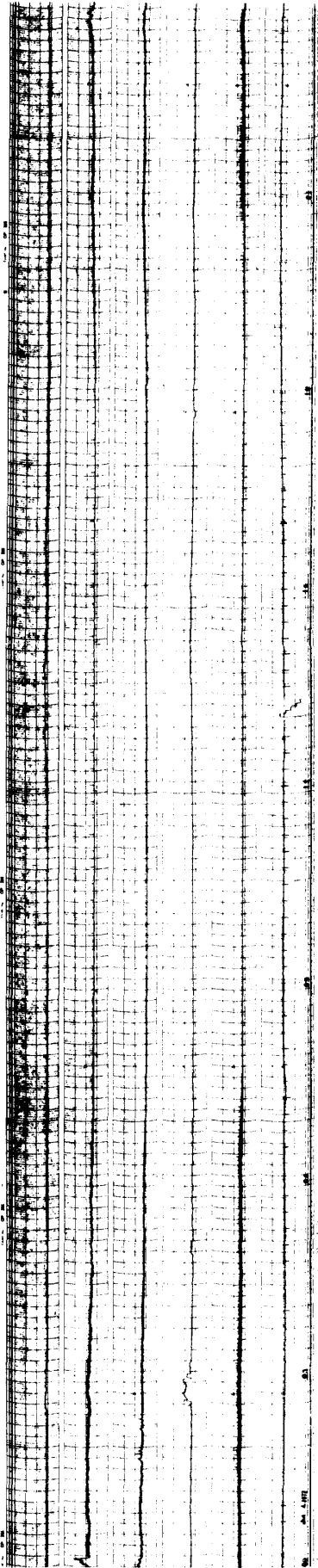
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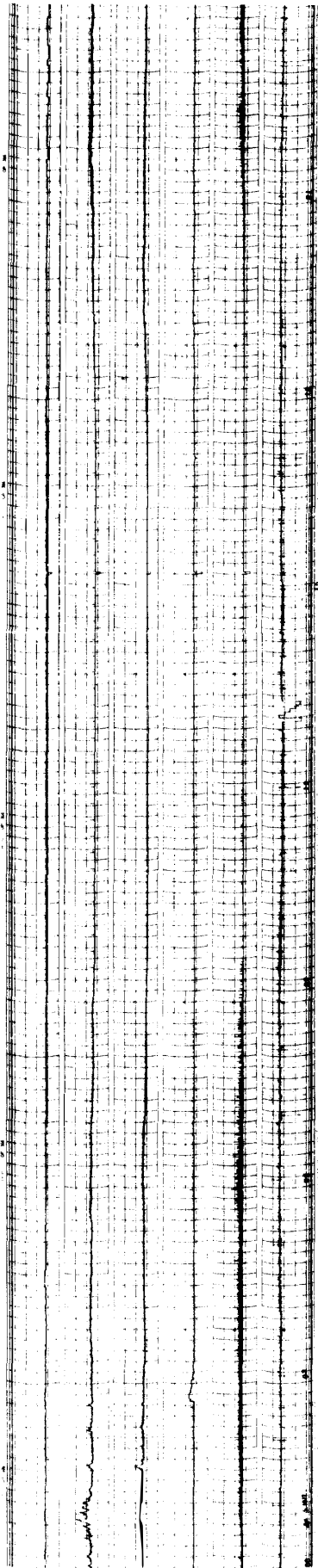
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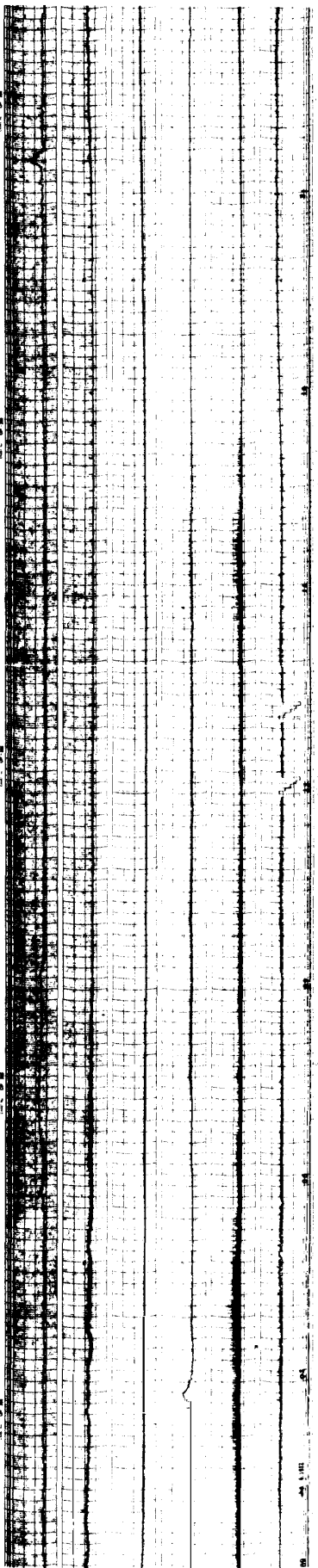
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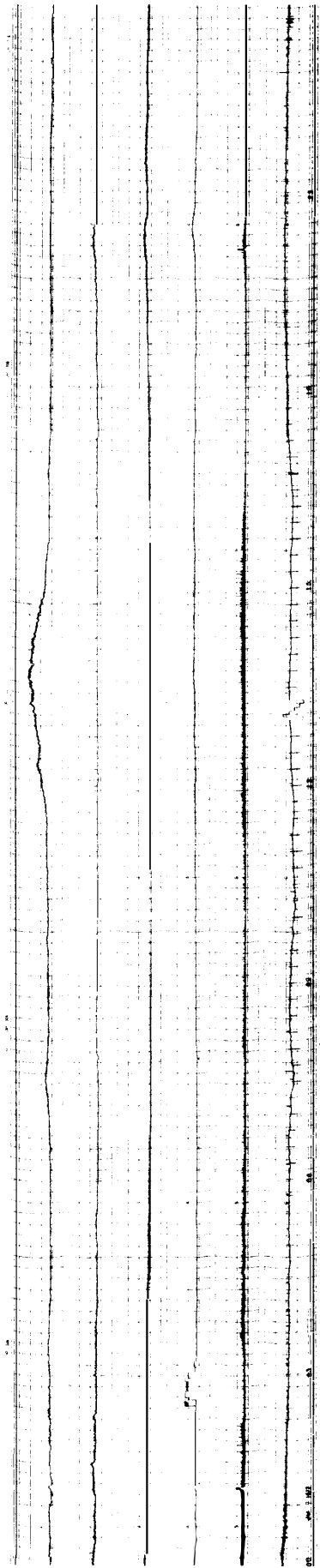
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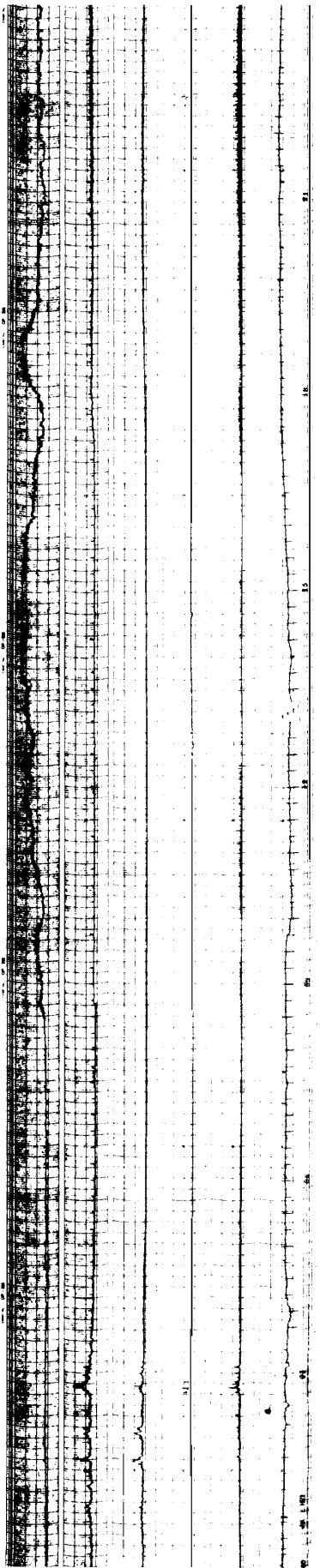
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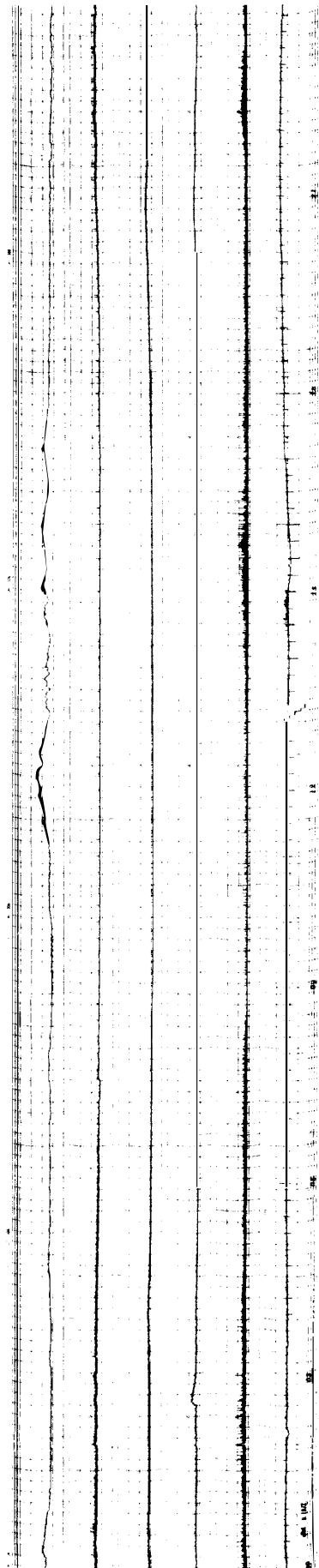
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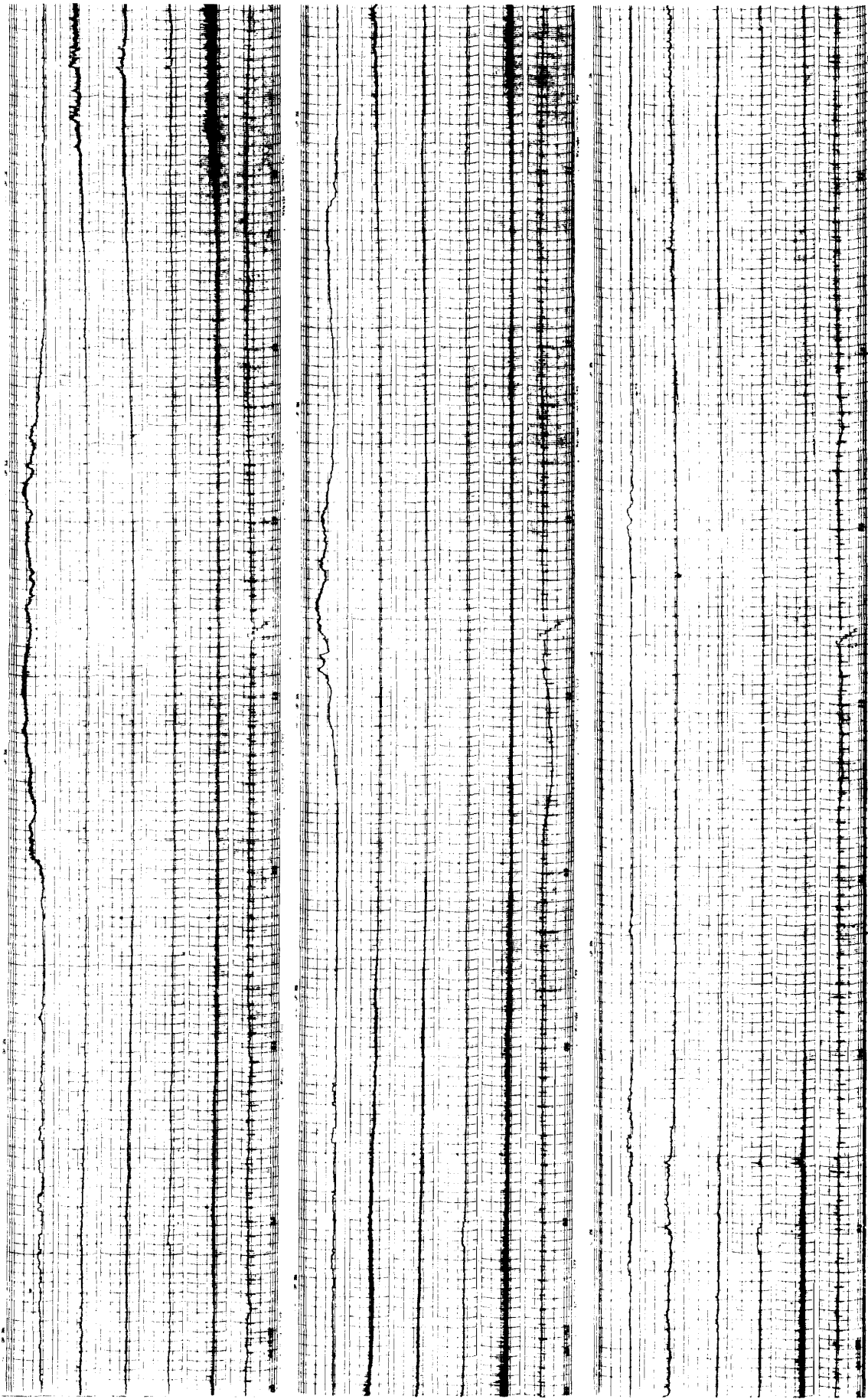
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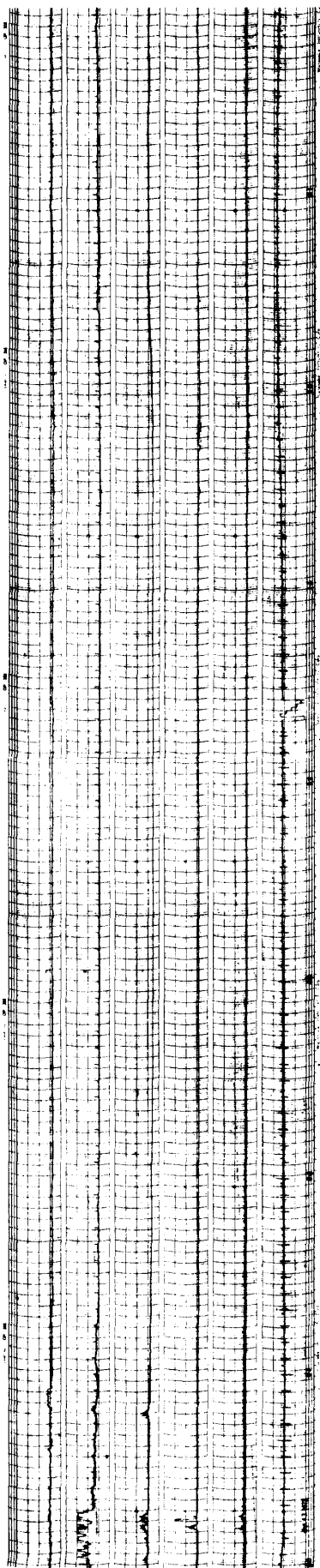
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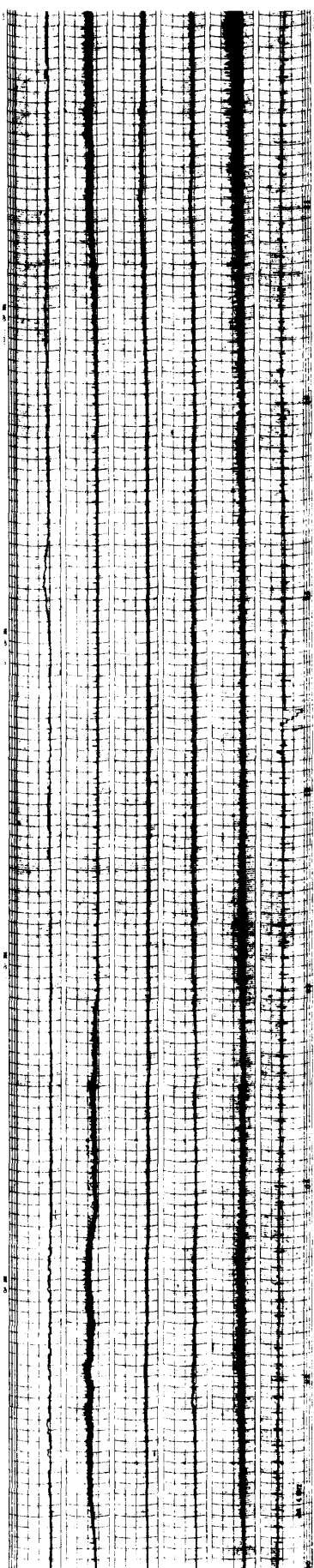
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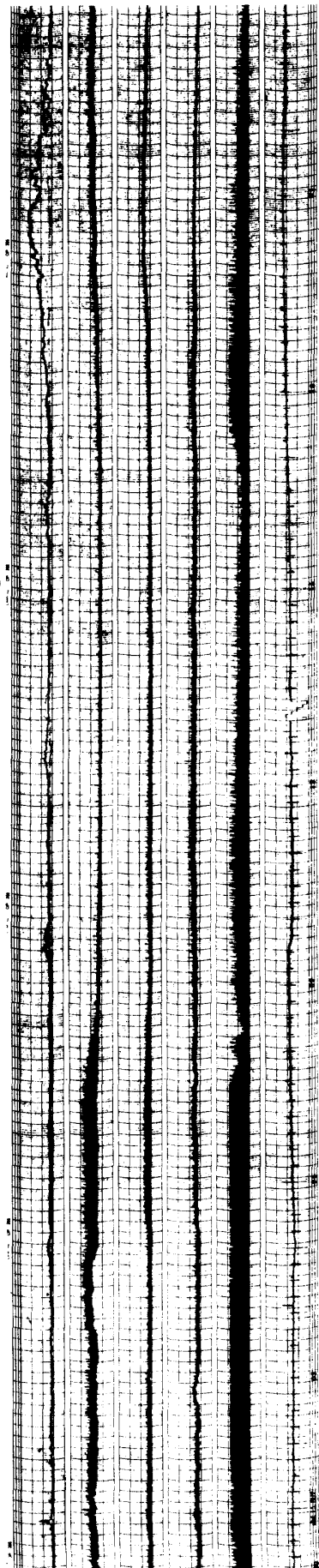
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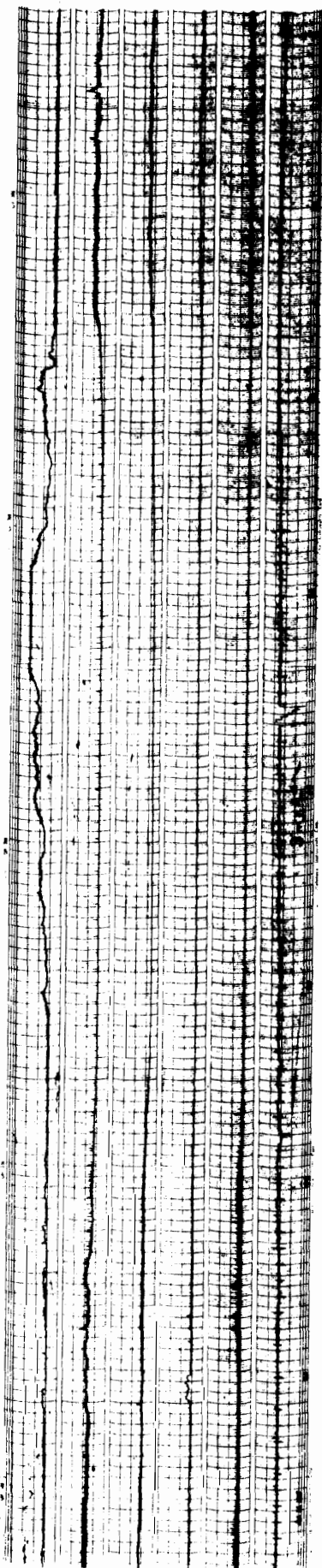
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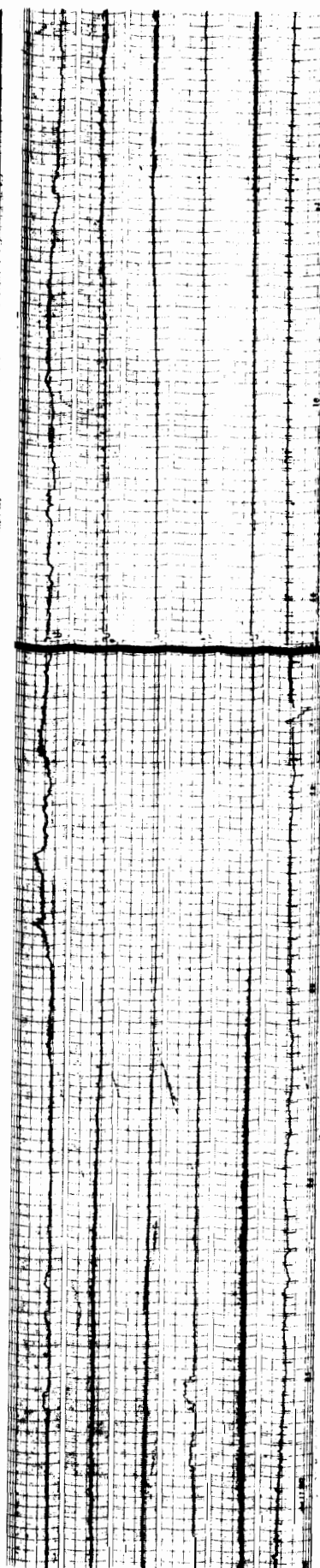
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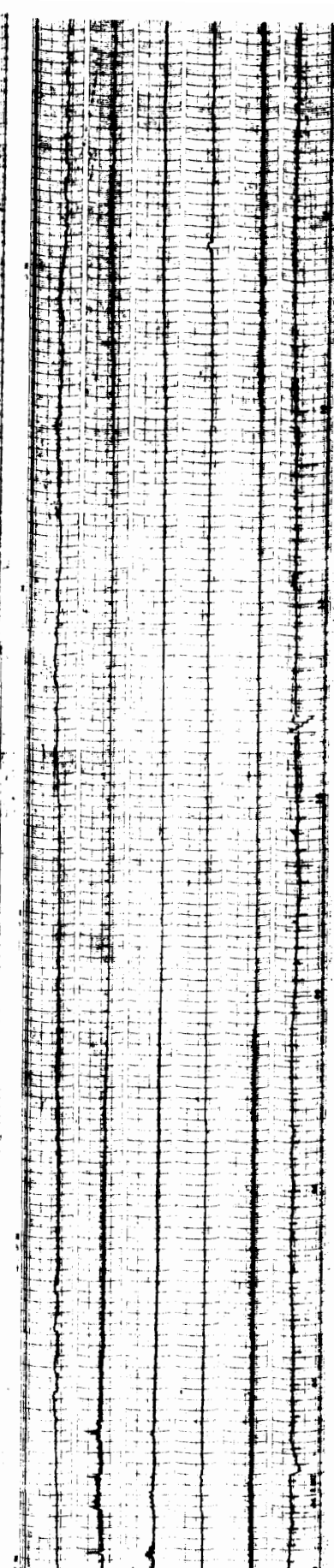
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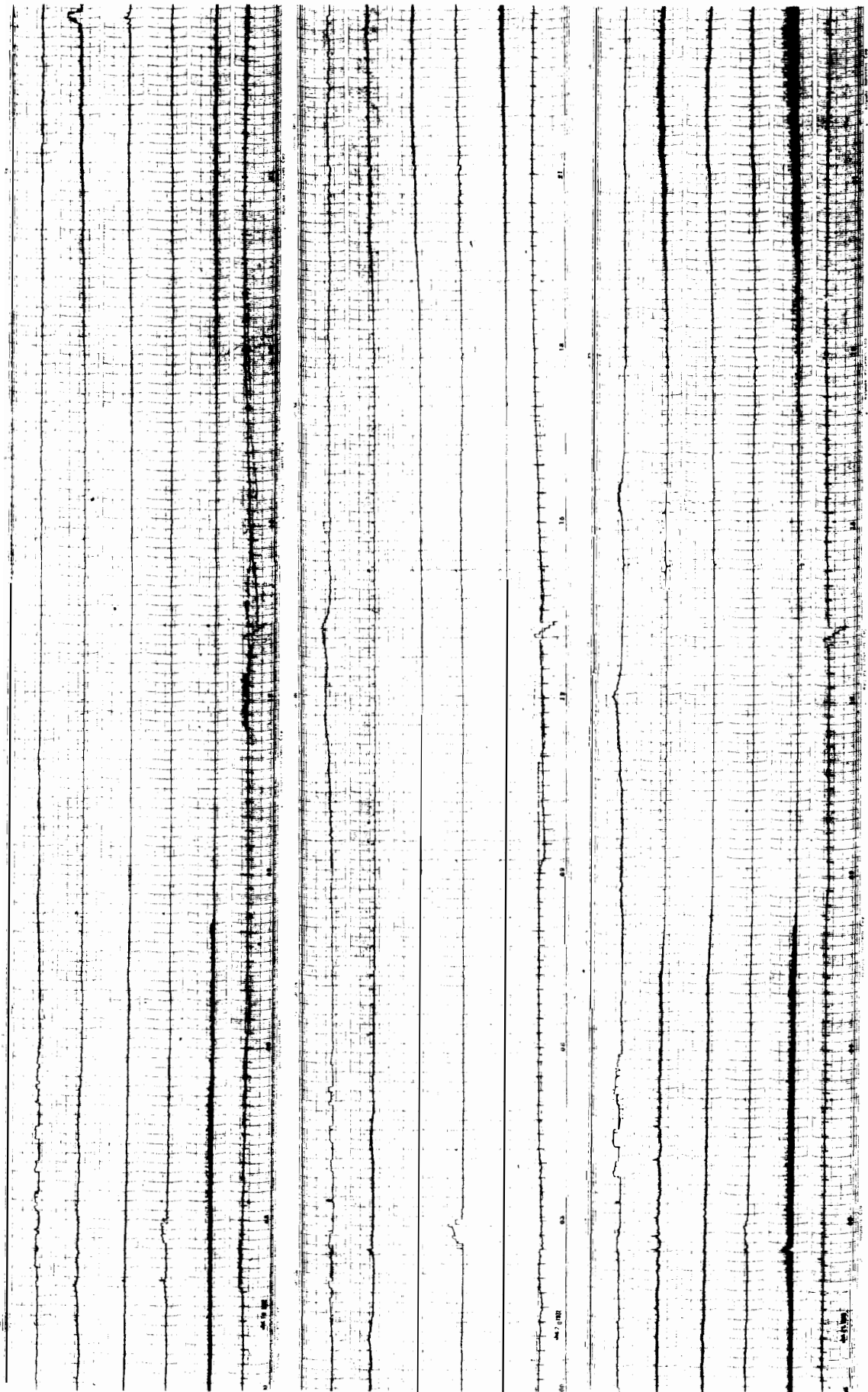
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JULY 1972

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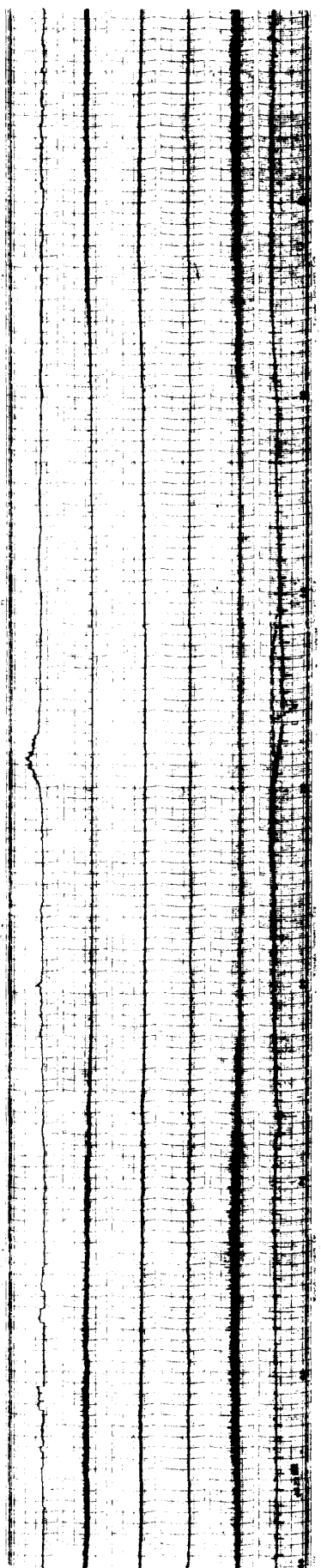
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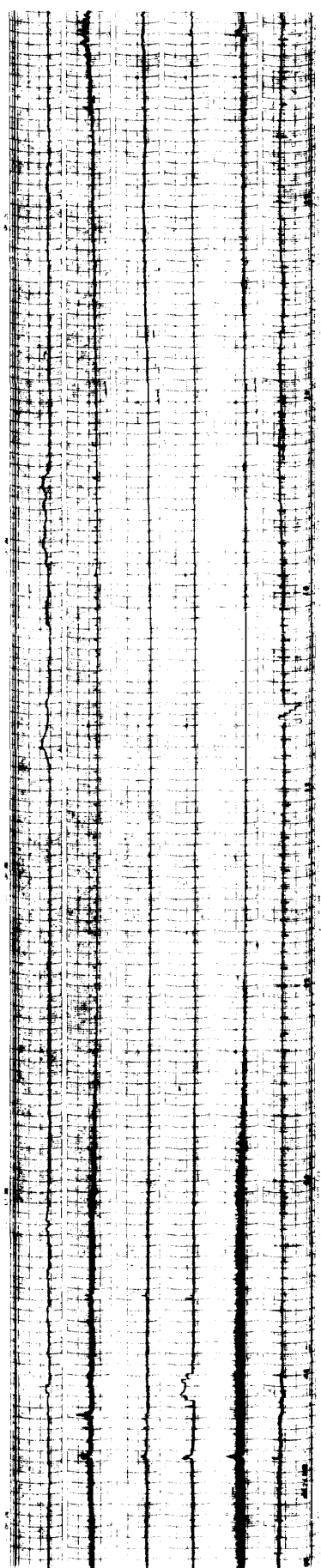
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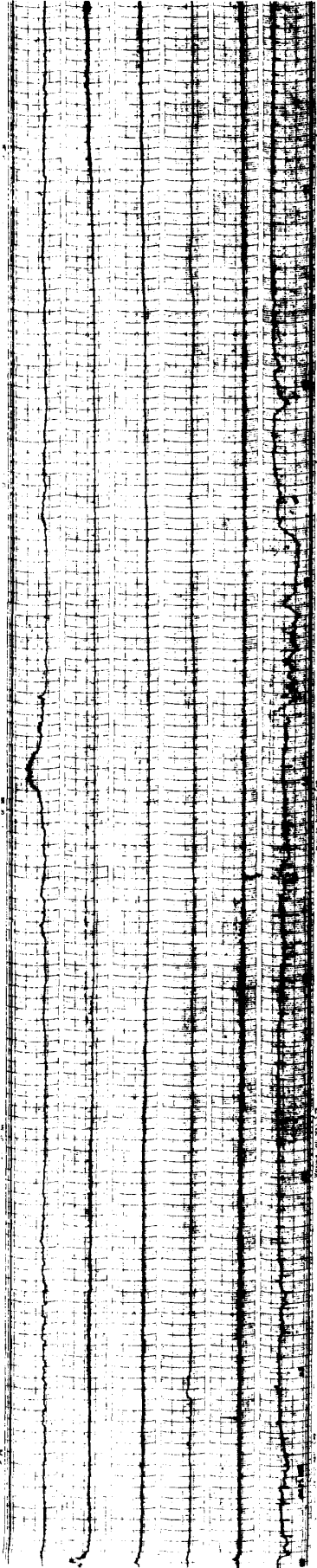


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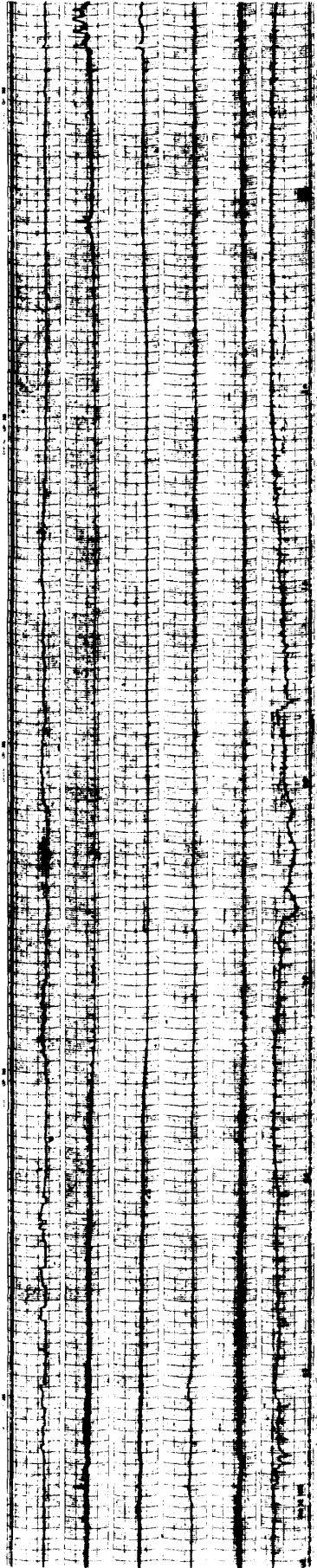
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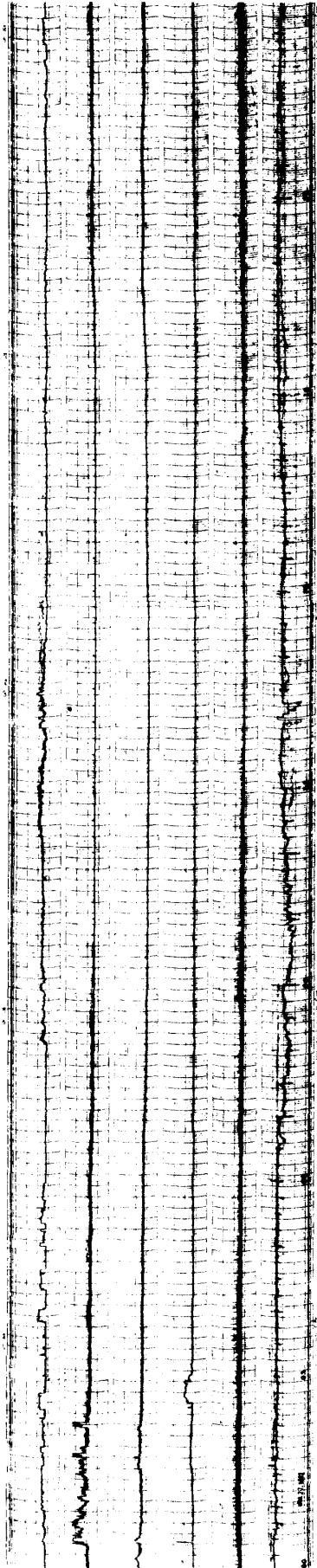
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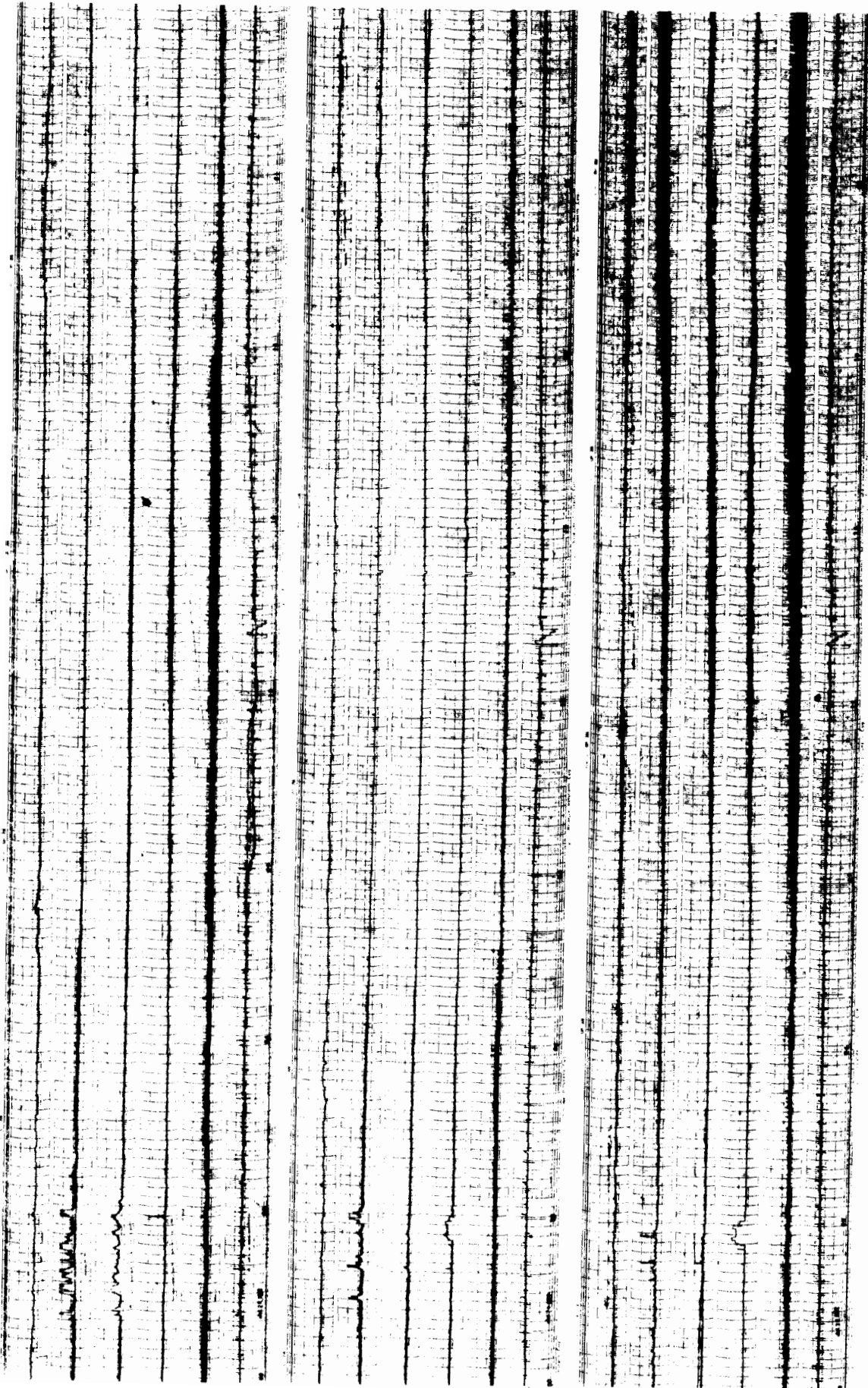
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45° EAST MERIDIAN TIME IN HOURS

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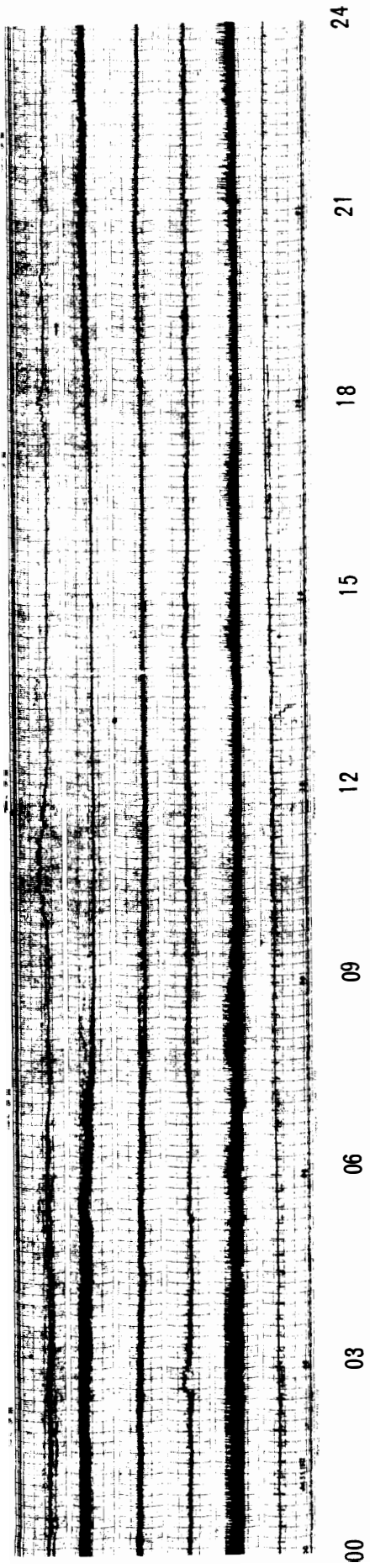
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45° EAST MERIDIAN TIME IN HOURS

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45° EAST MERIDIAN TIME IN HOURS

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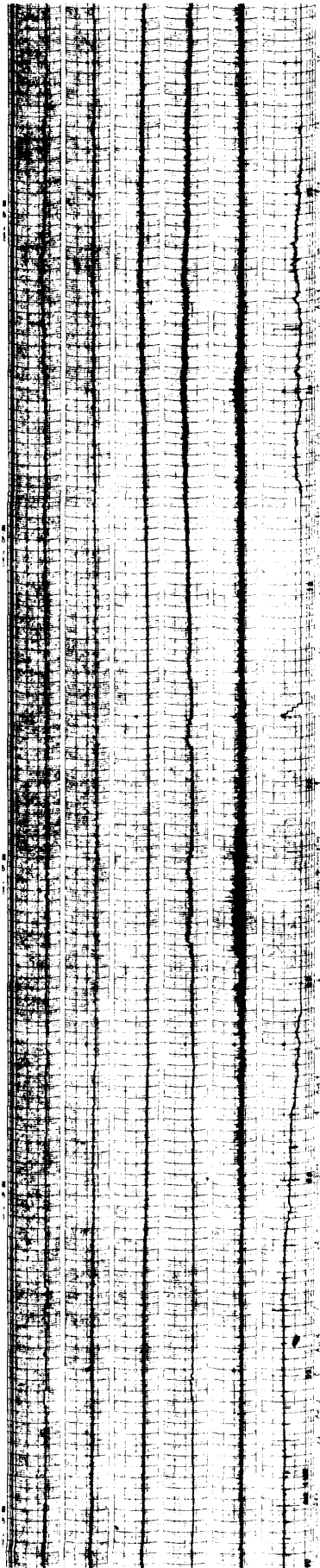


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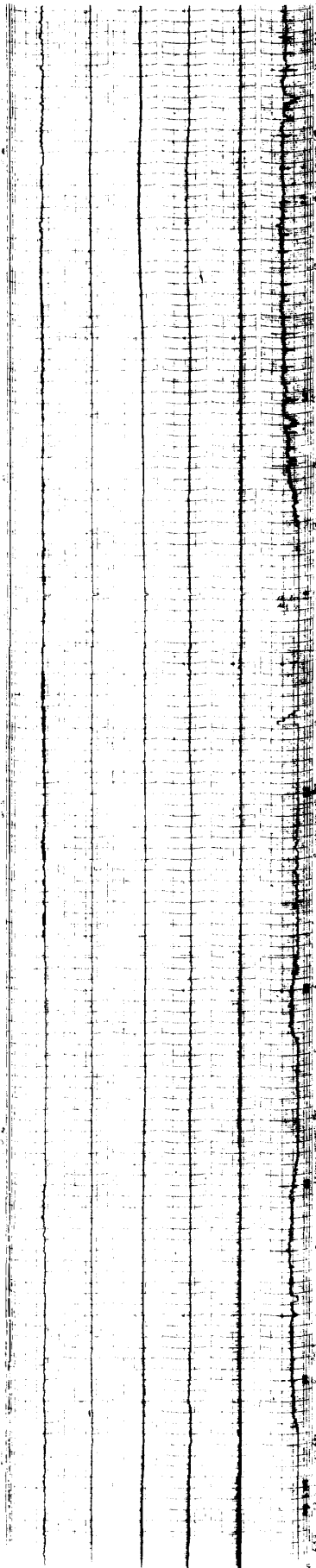
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AUG 1972

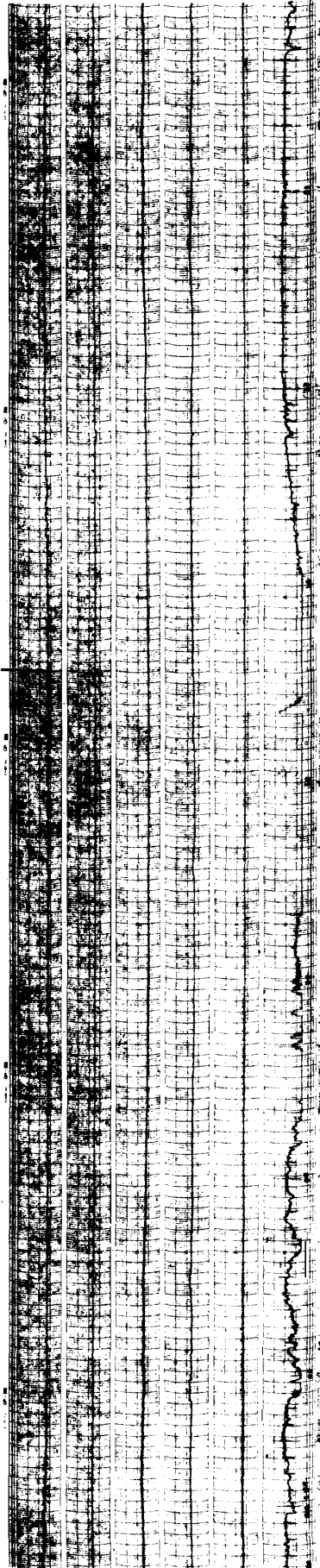
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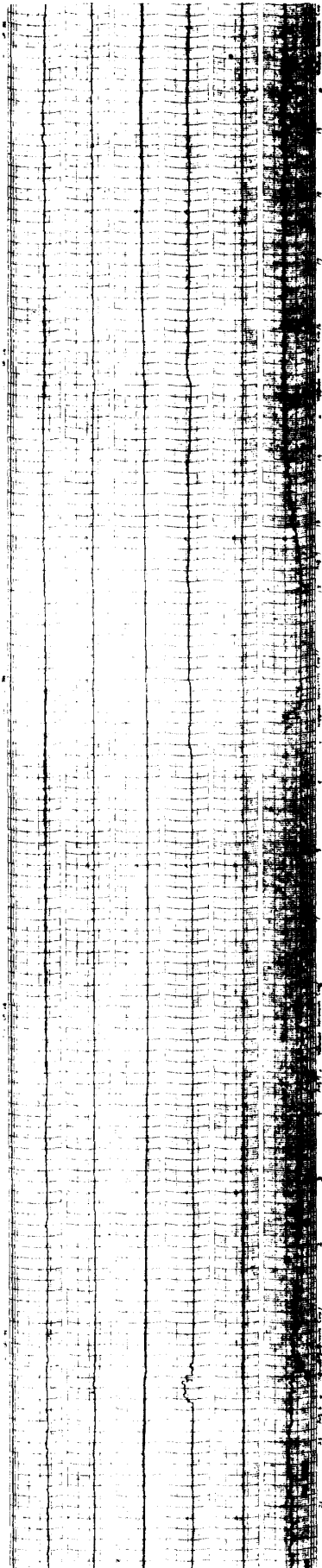


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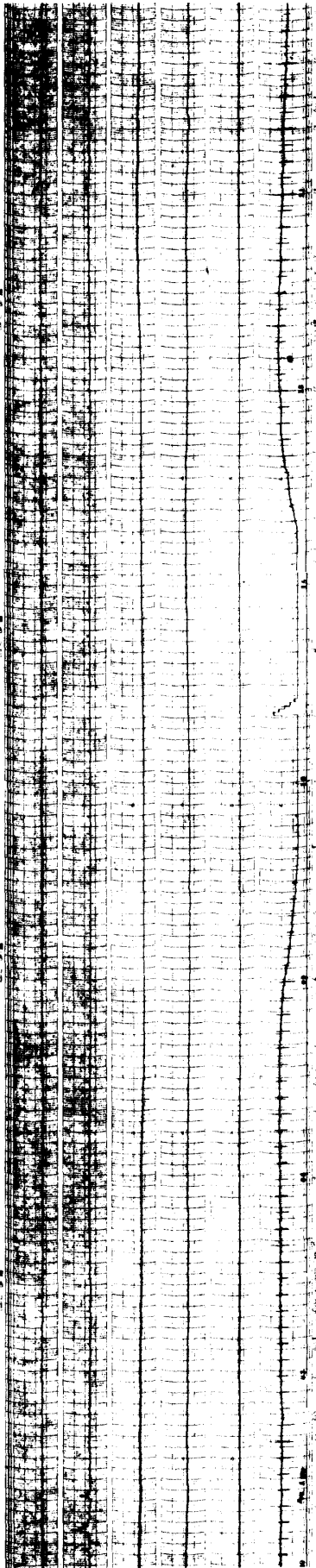
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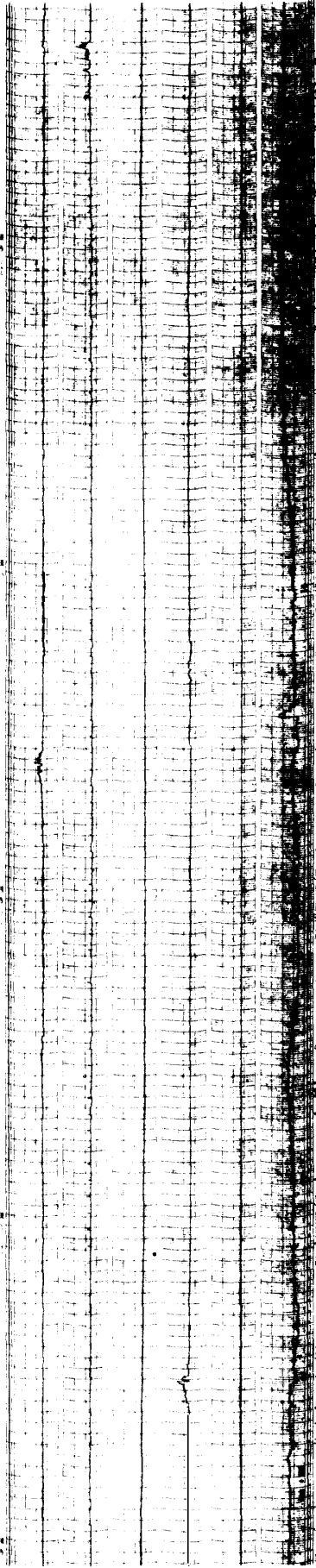
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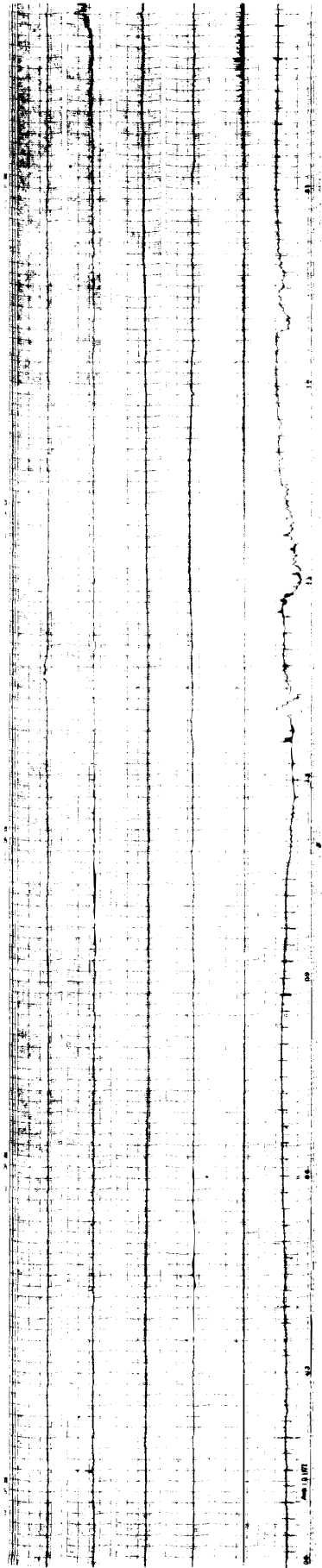


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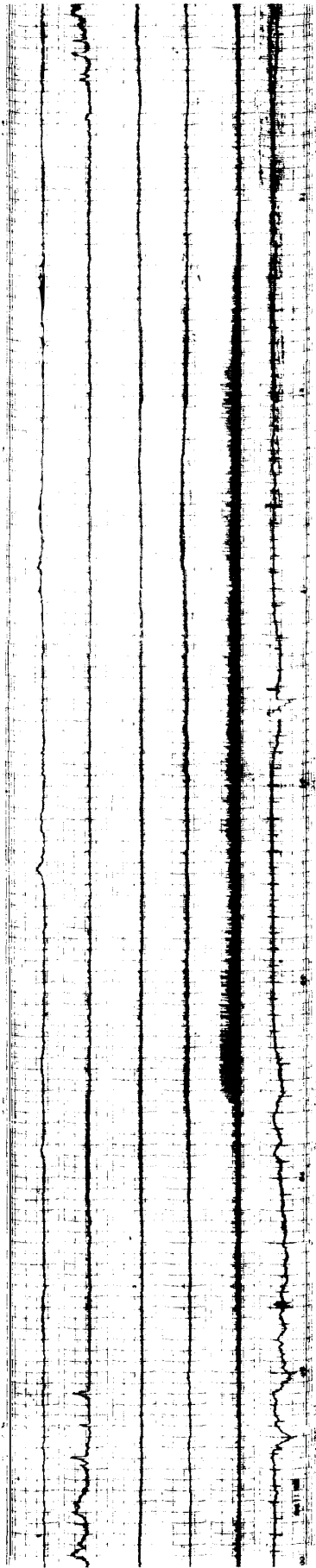
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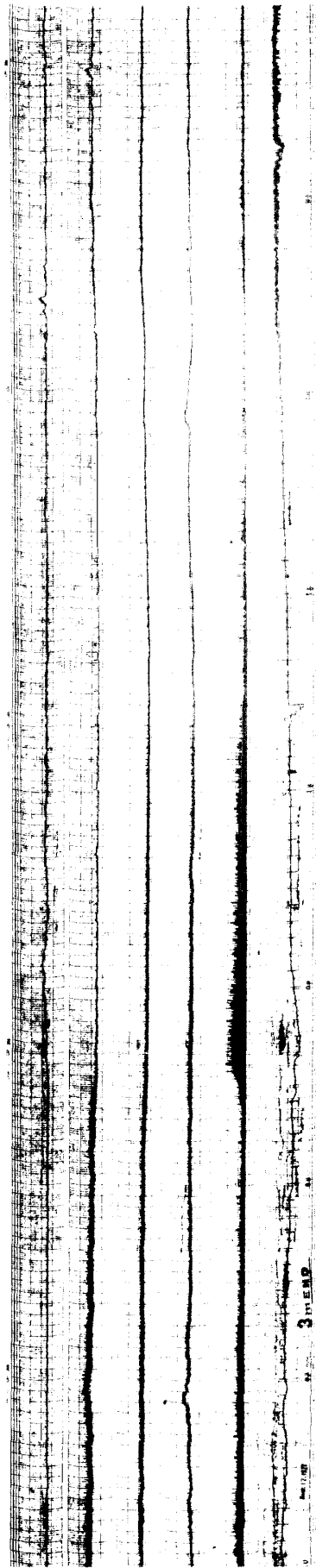
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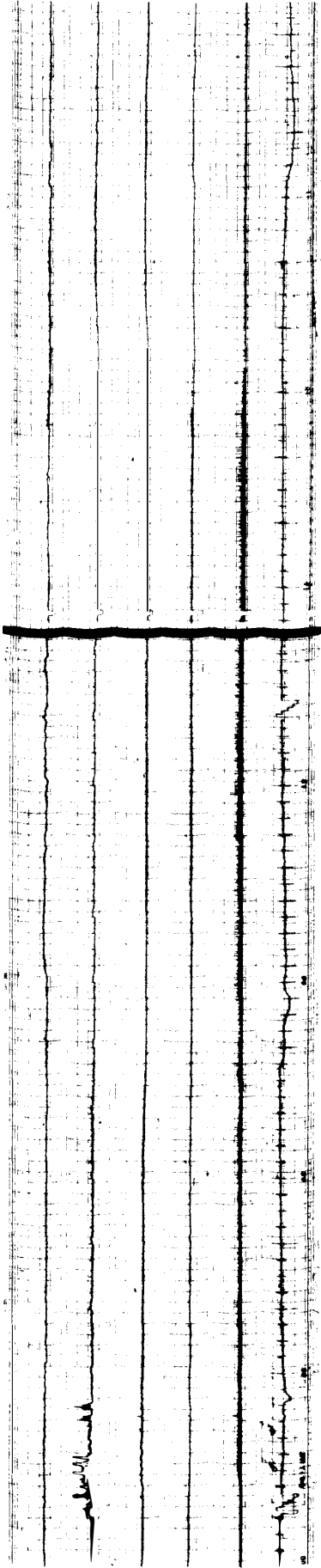
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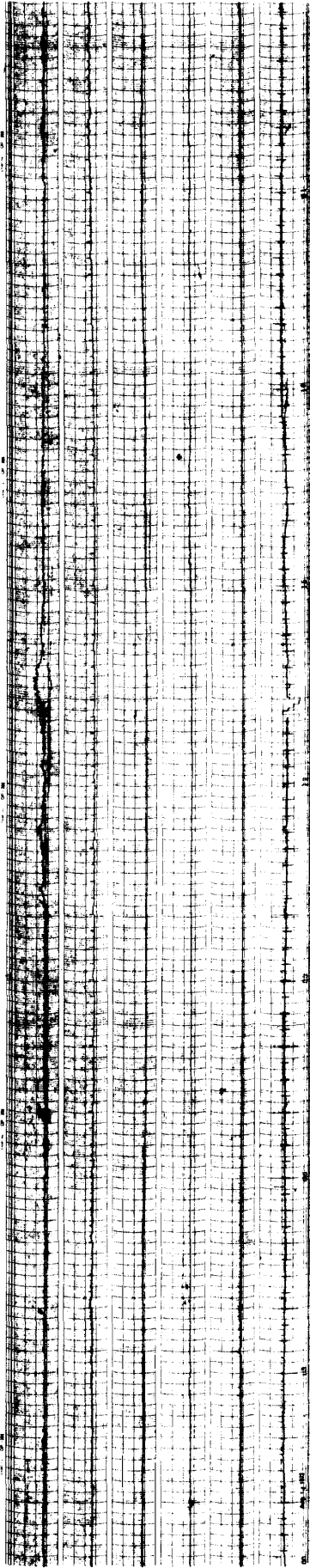
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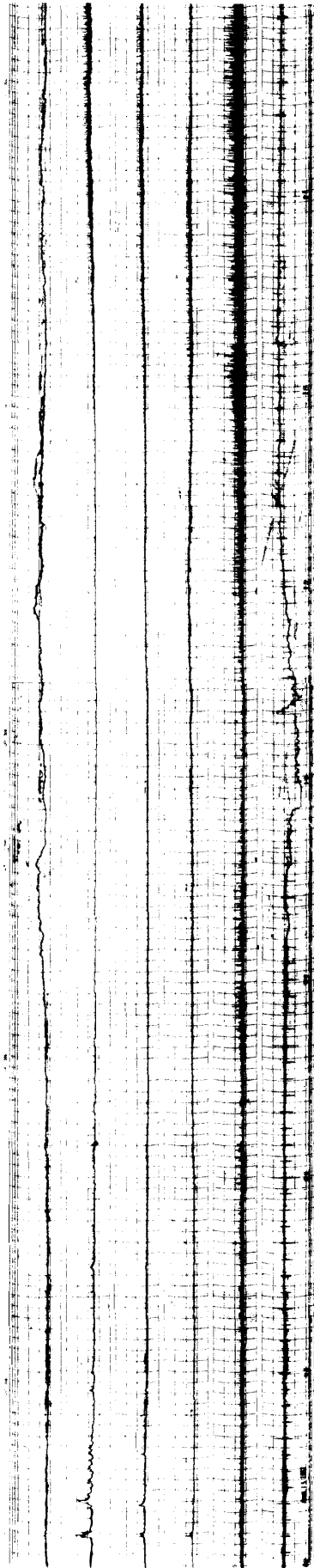
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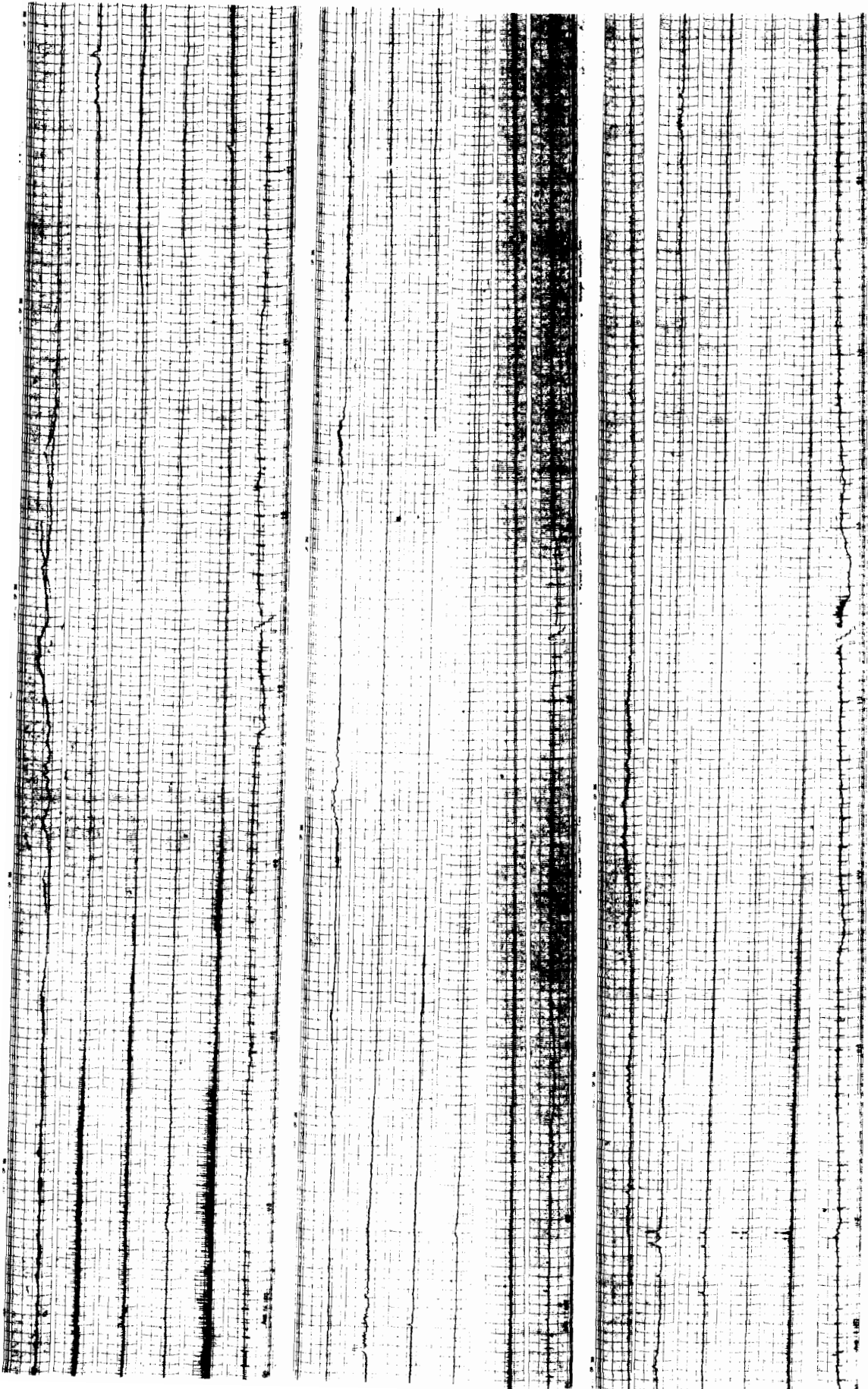
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45° EAST MERIDIAN TIME IN HOURS

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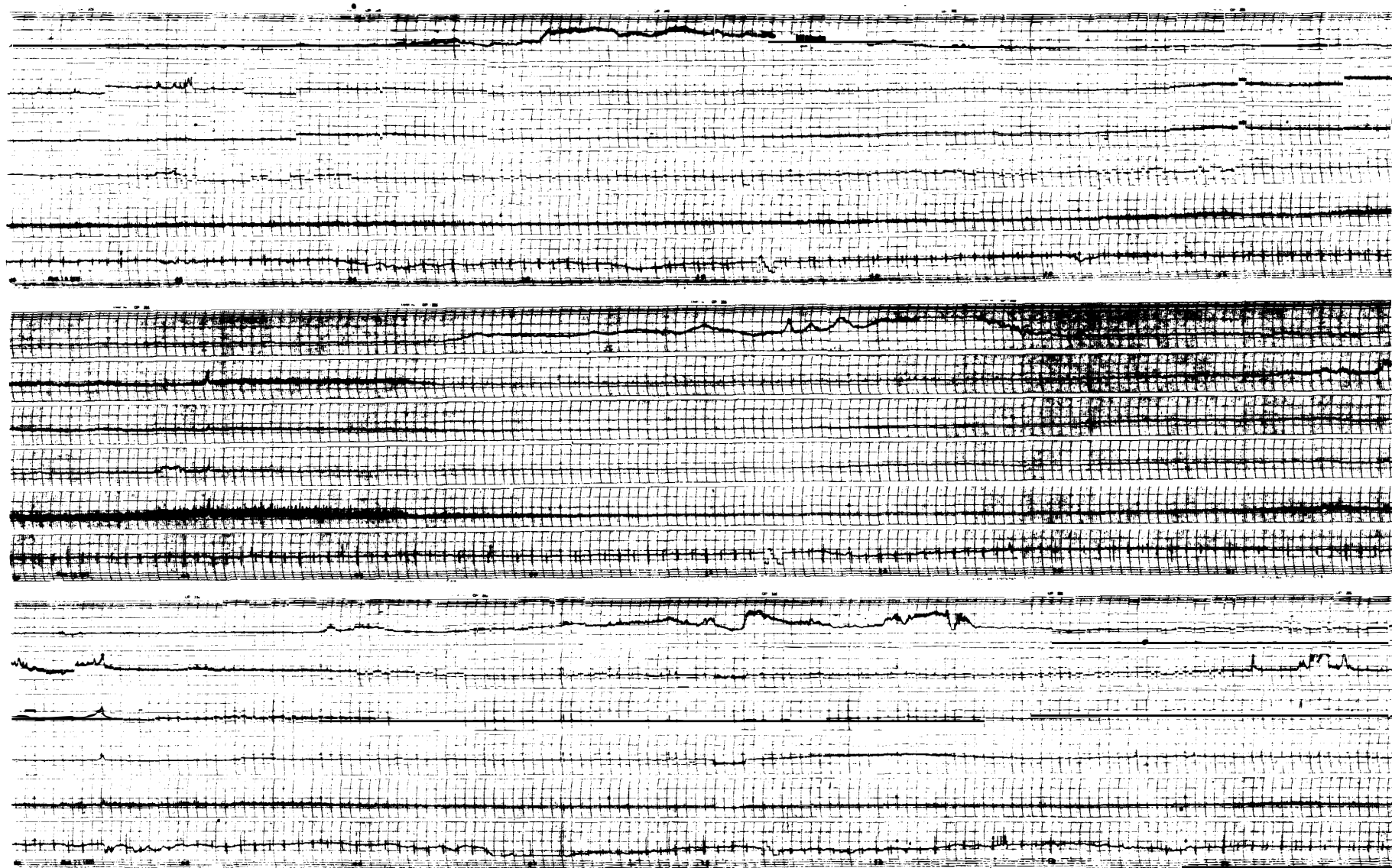
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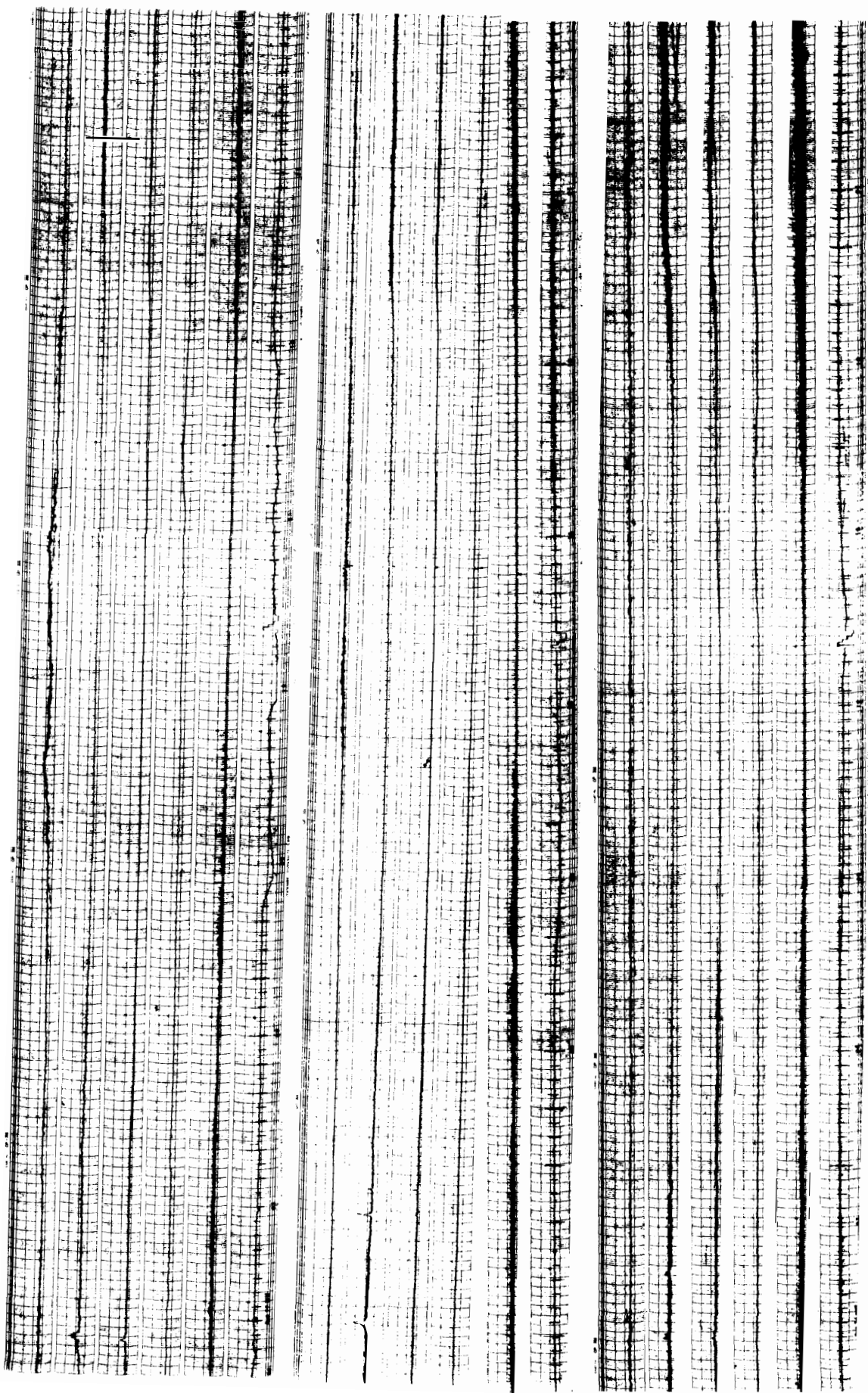
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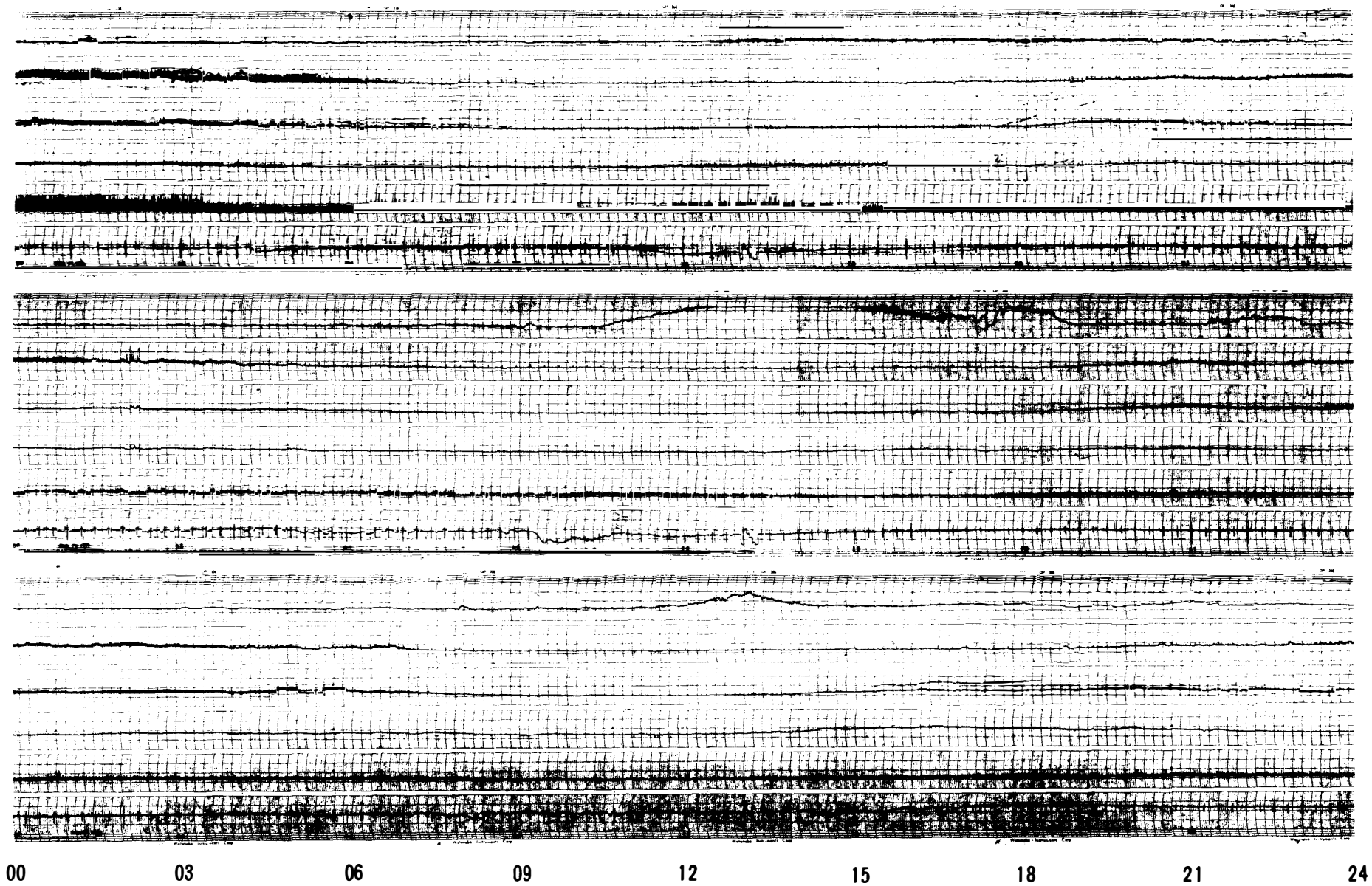
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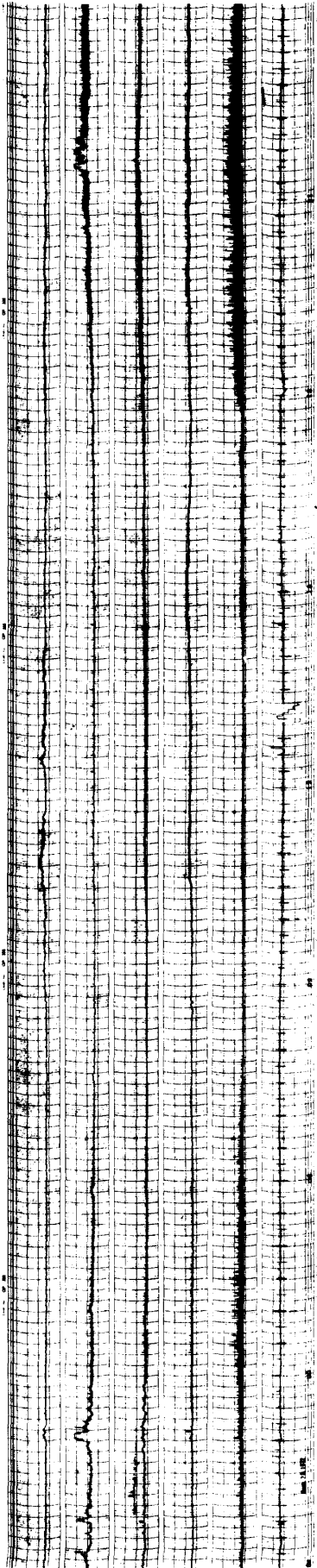


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45° EAST MERIDIAN TIME IN HOURS

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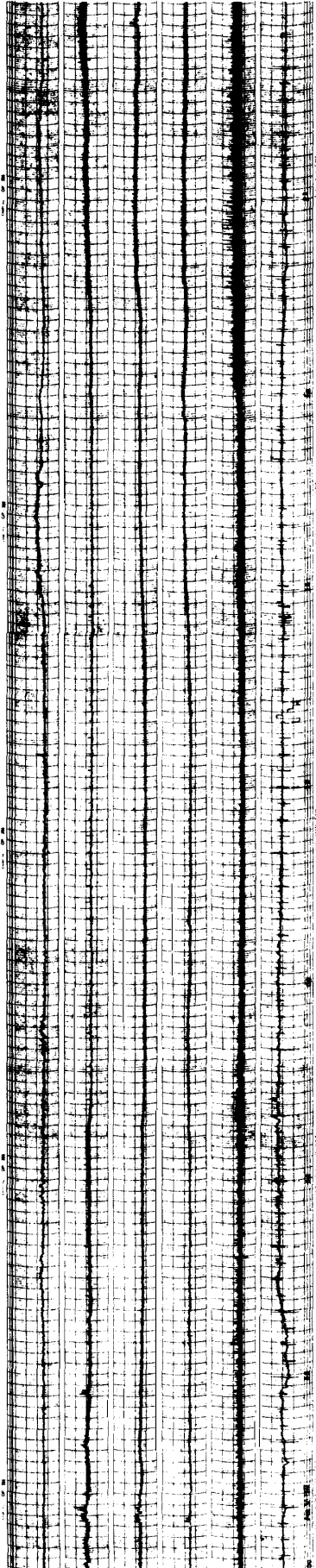
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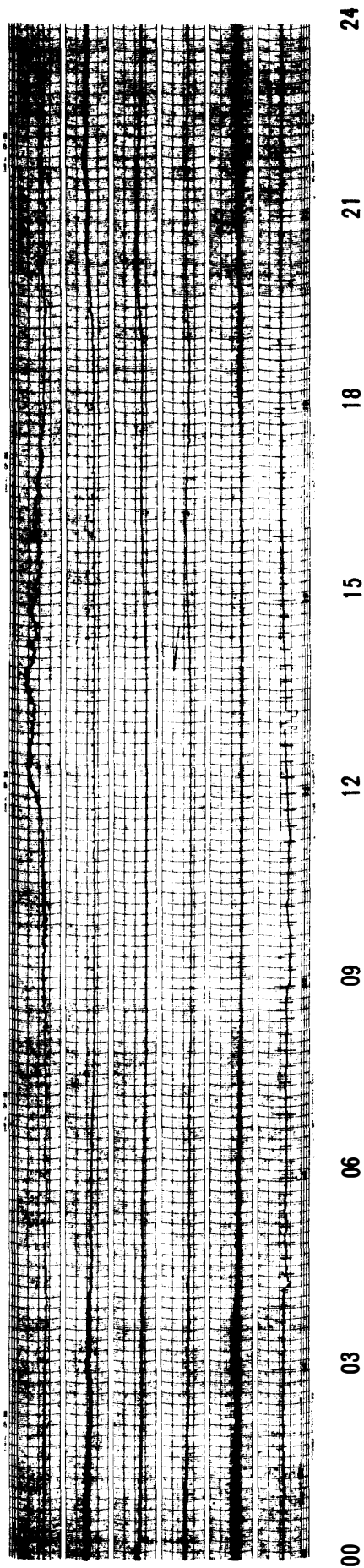
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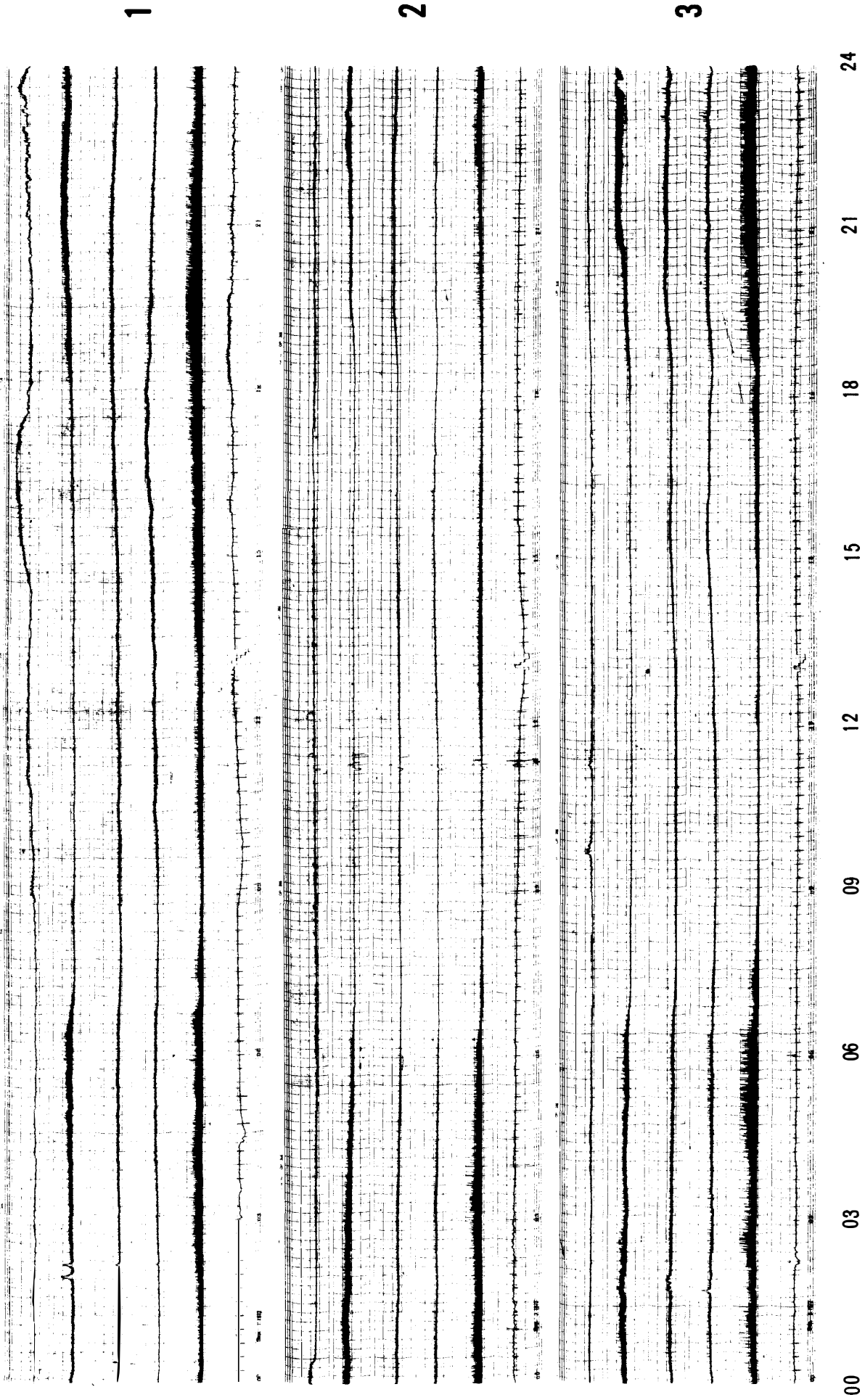
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45° EAST MERIDIAN TIME IN HOURS

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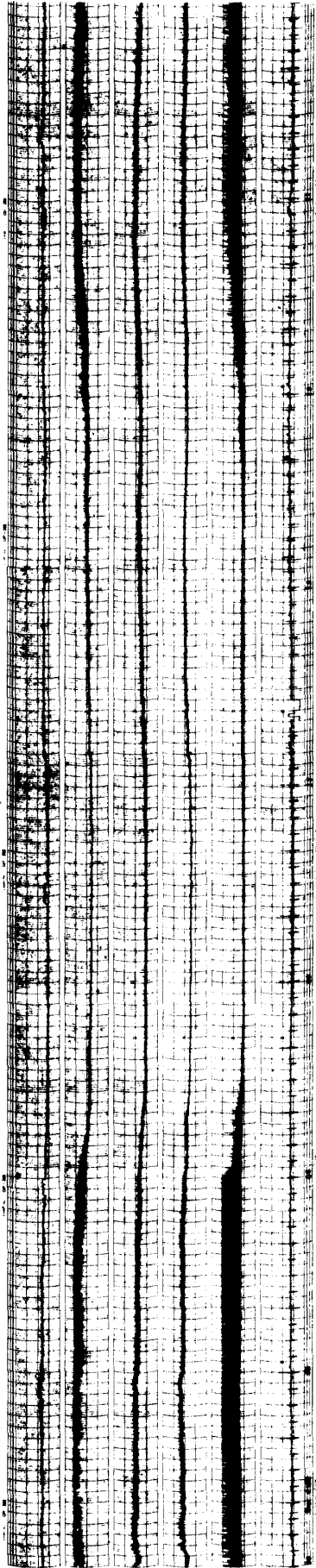
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45° EAST MERIDIAN TIME IN HOURS

SEP 1972

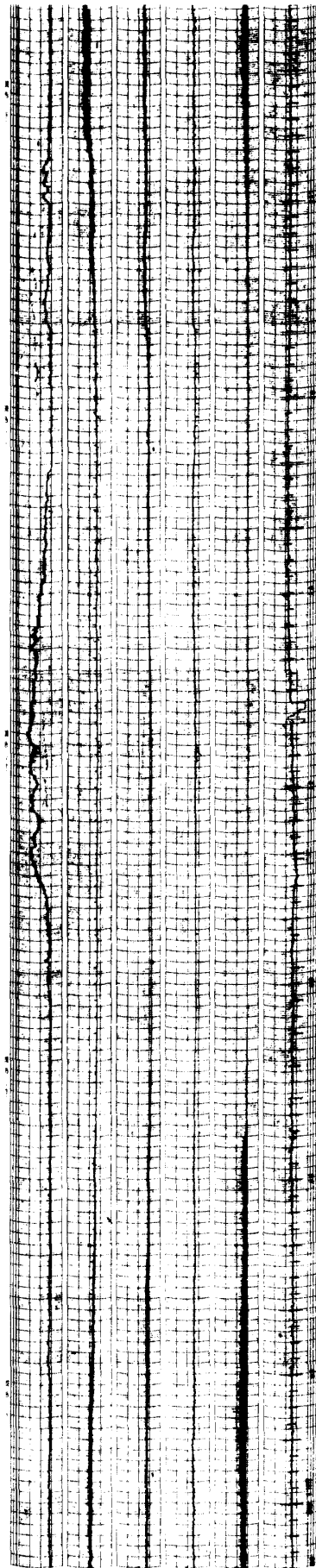
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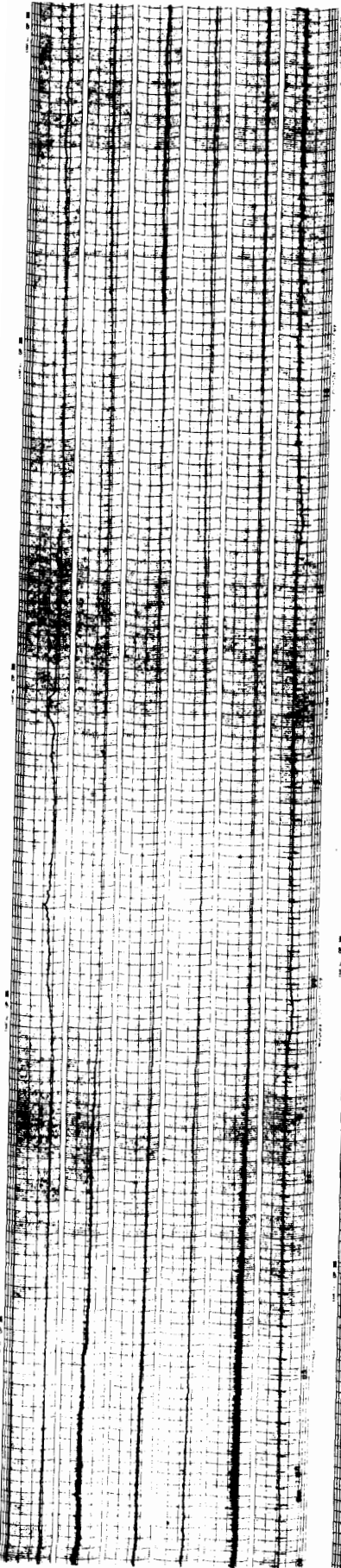


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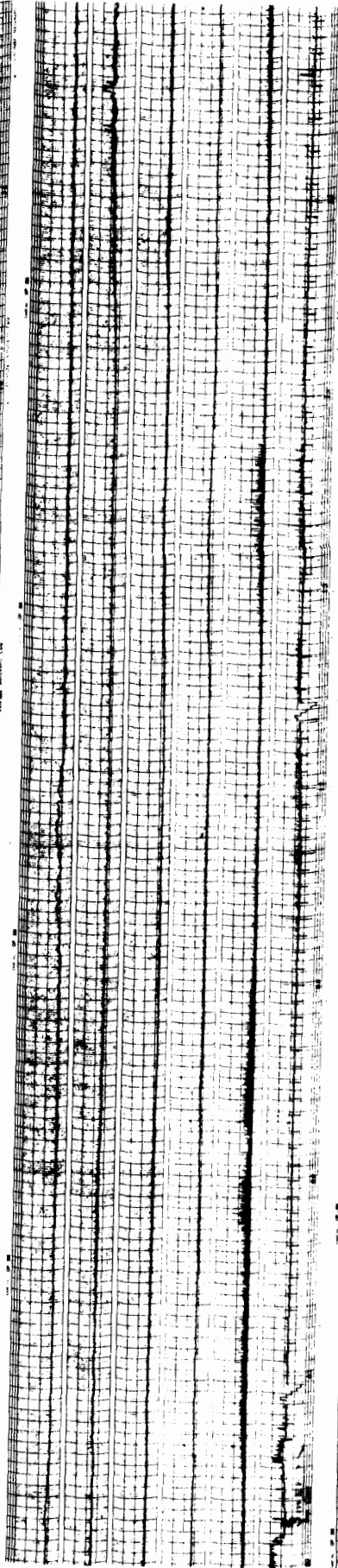
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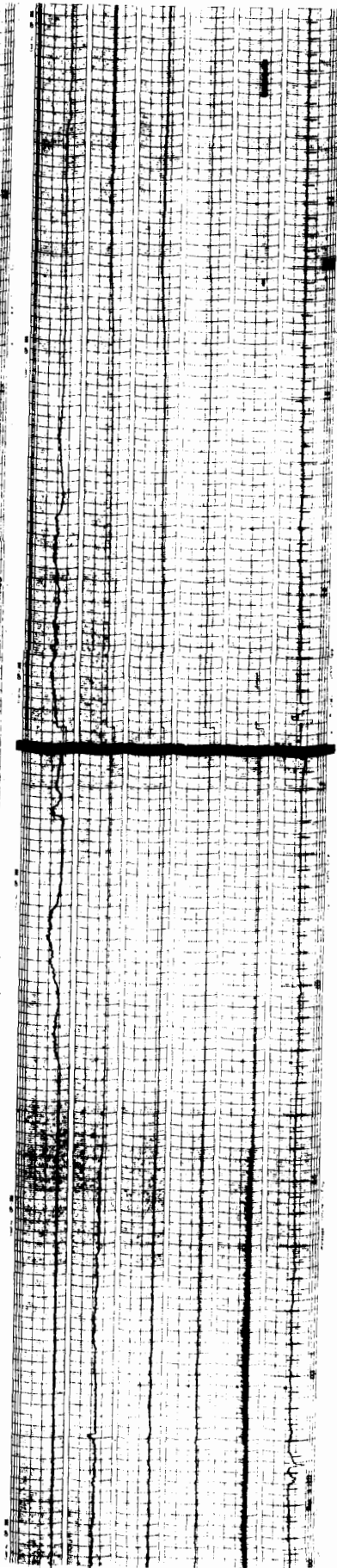
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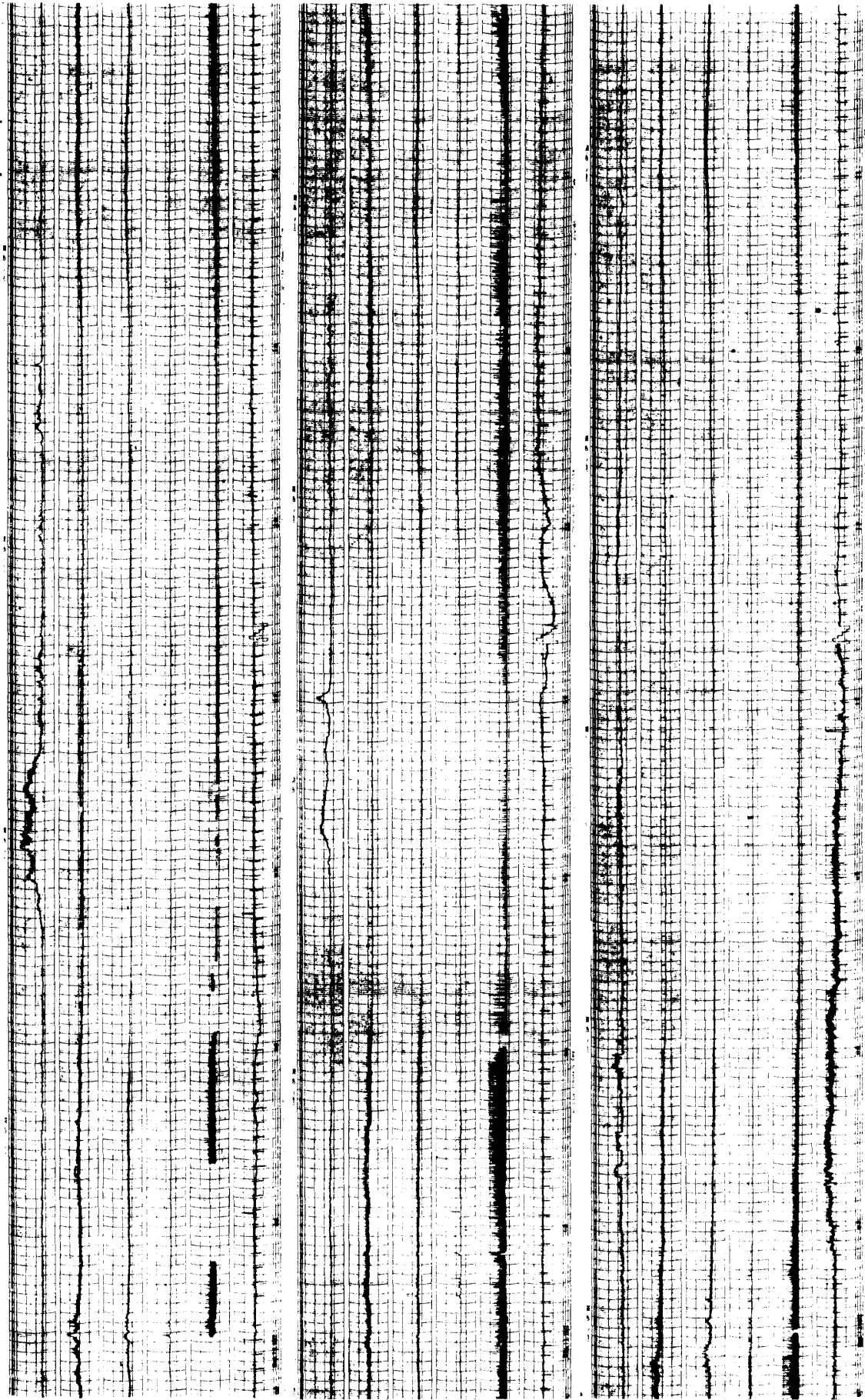
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SEP 1972

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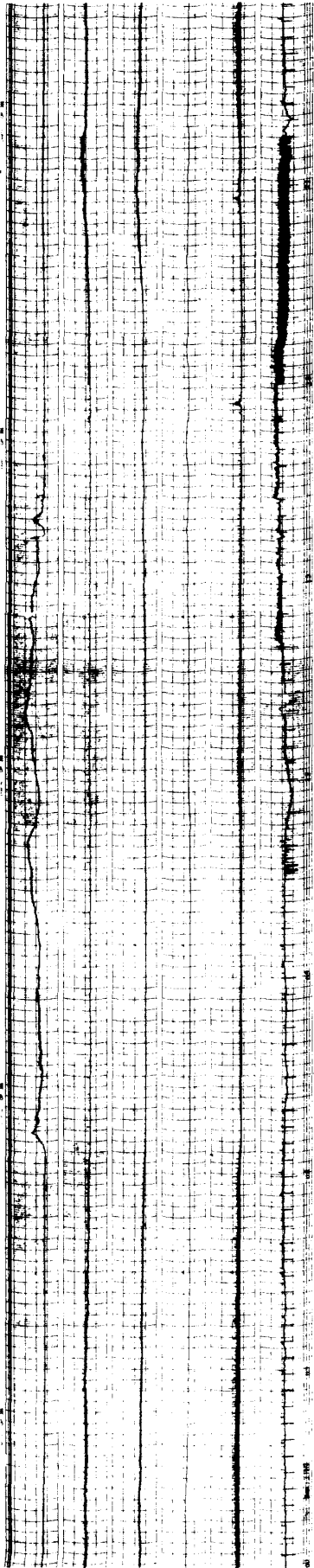


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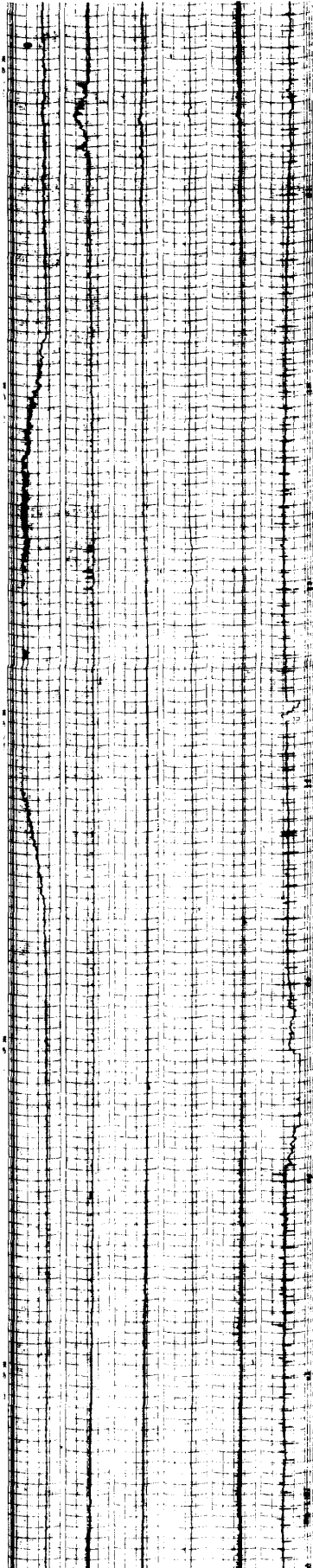
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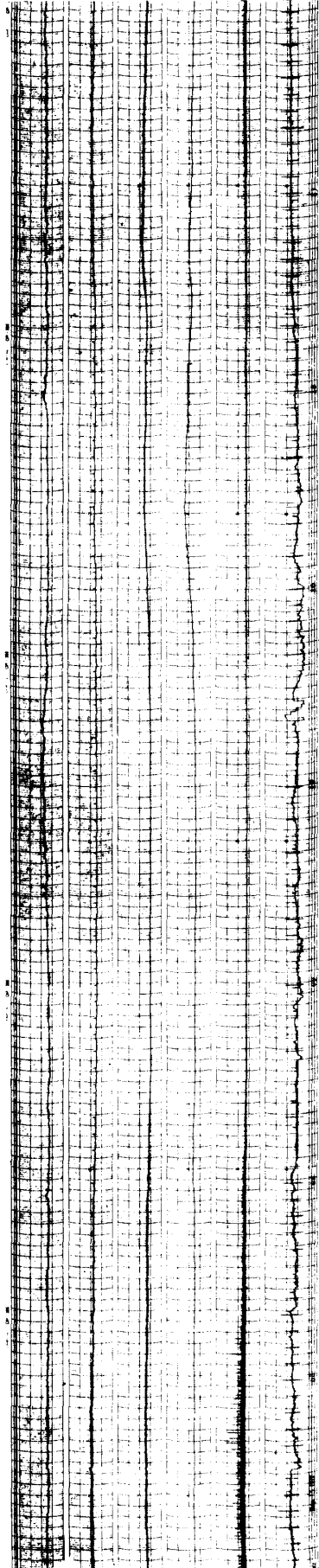
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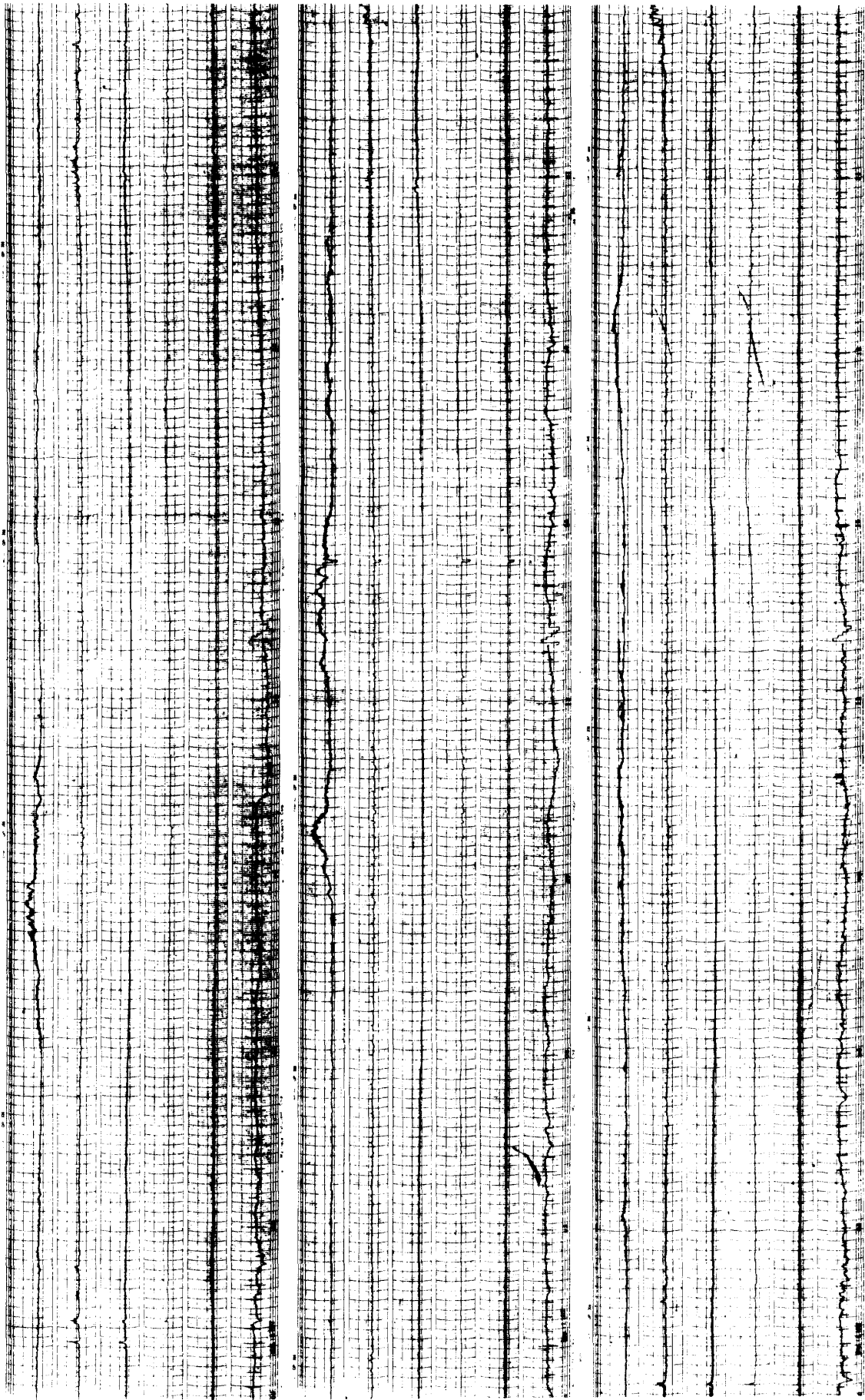
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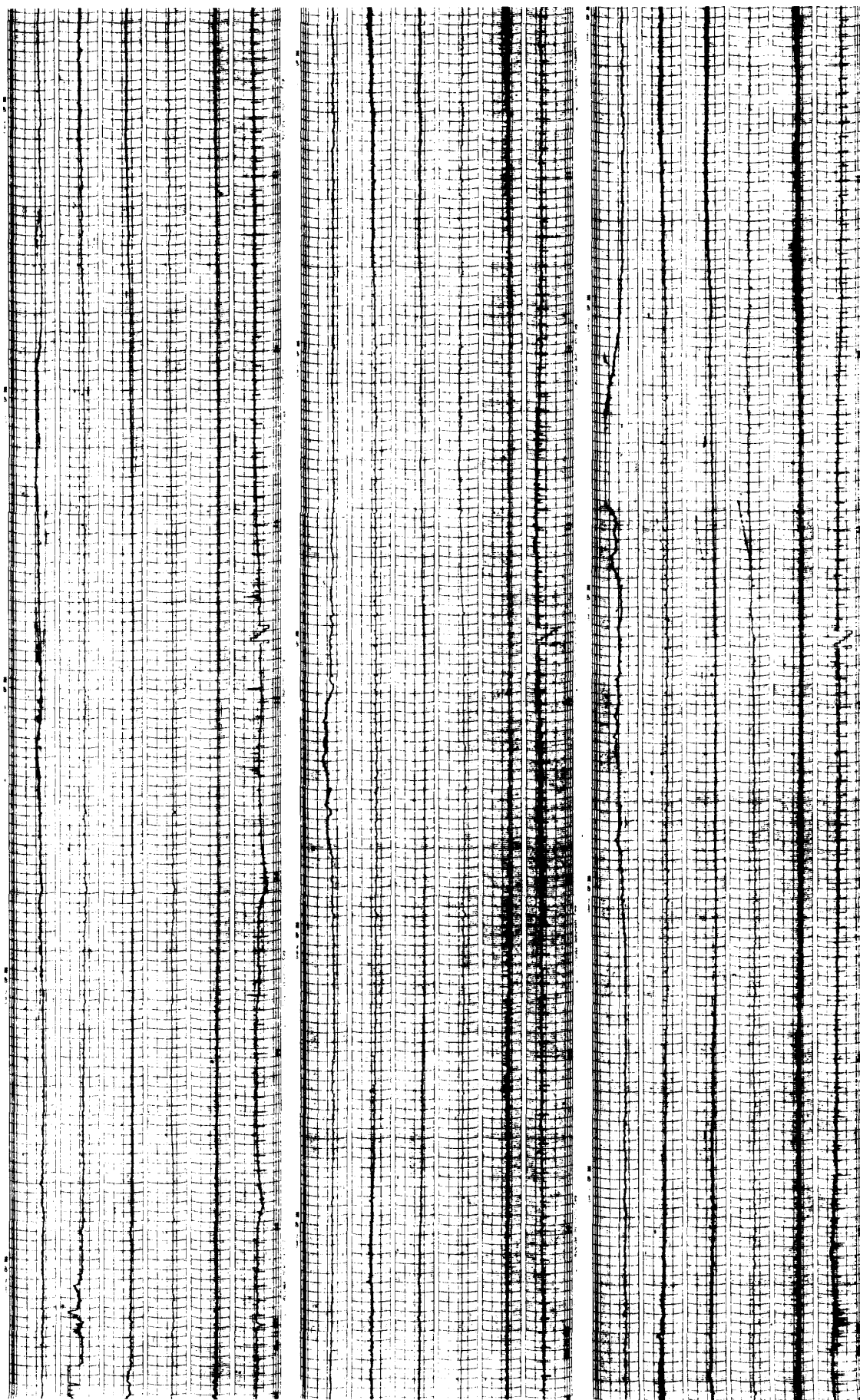
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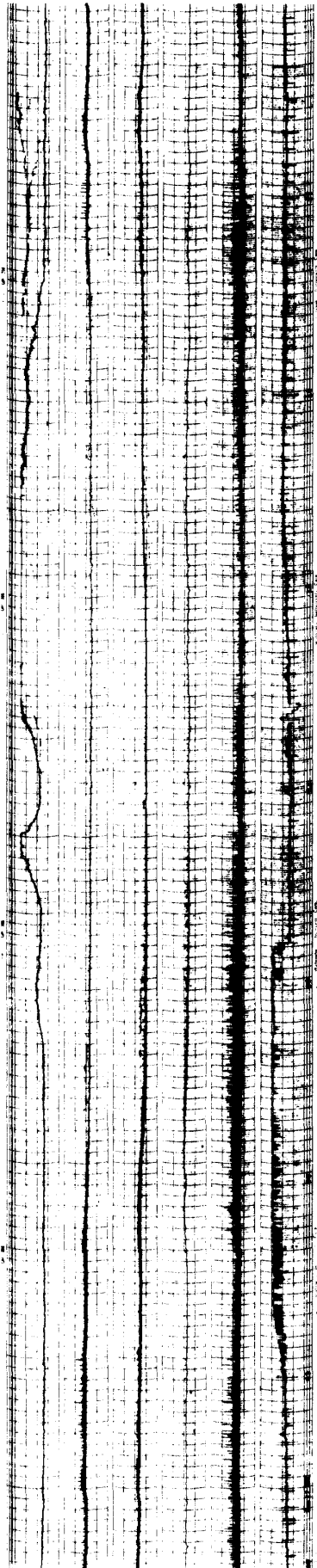
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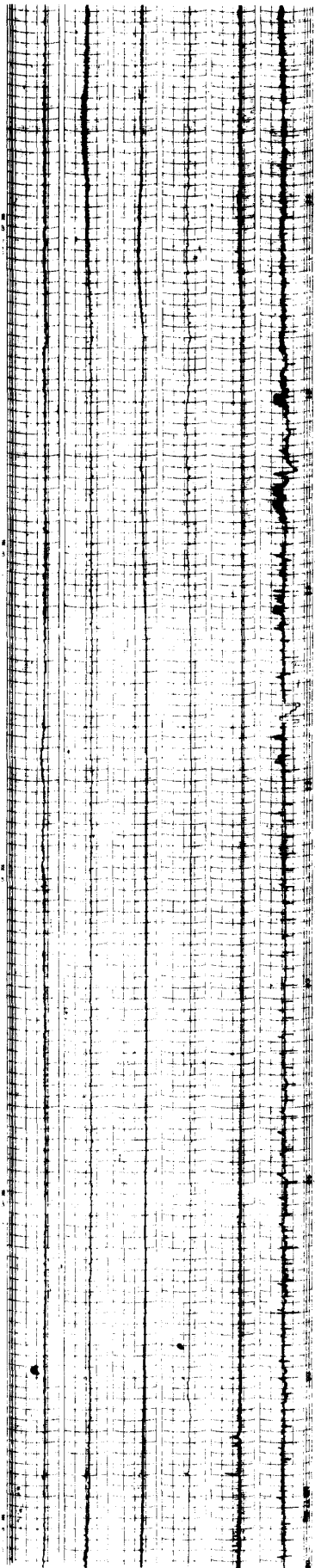
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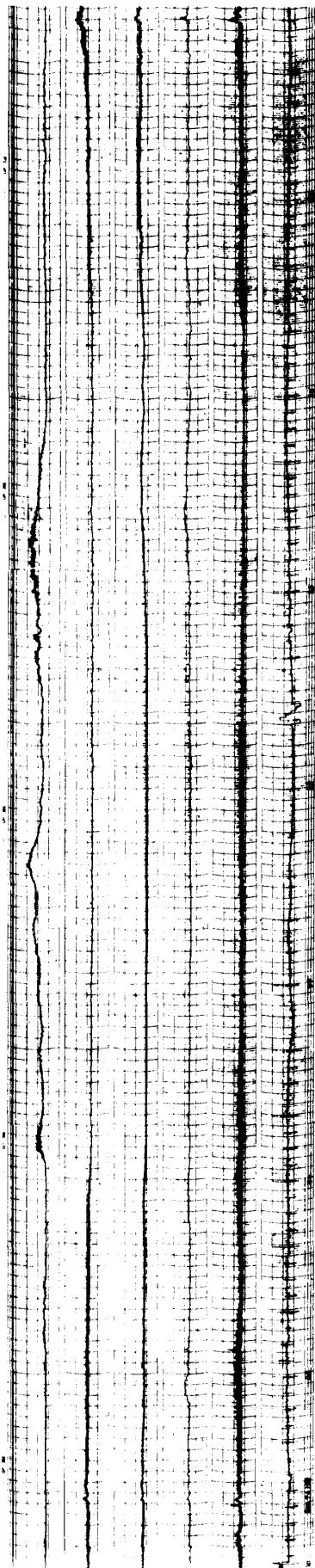
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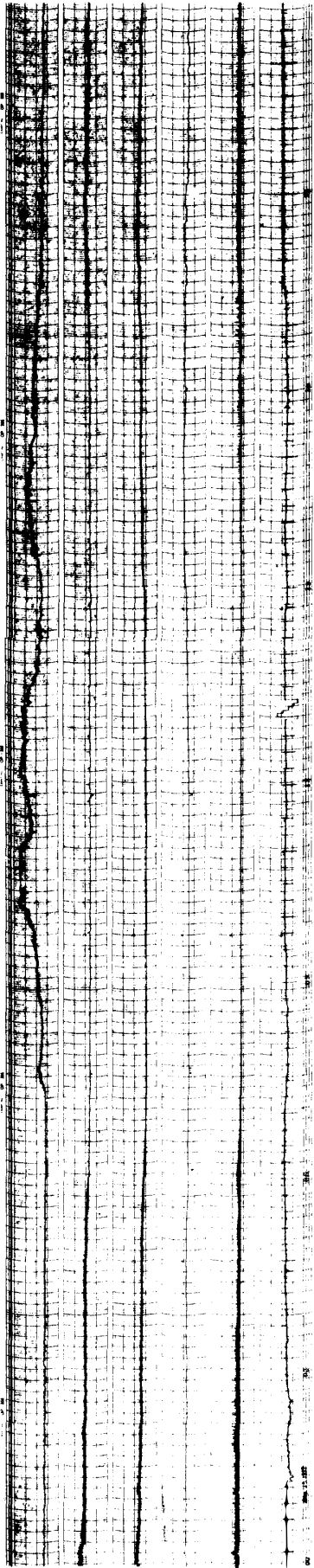


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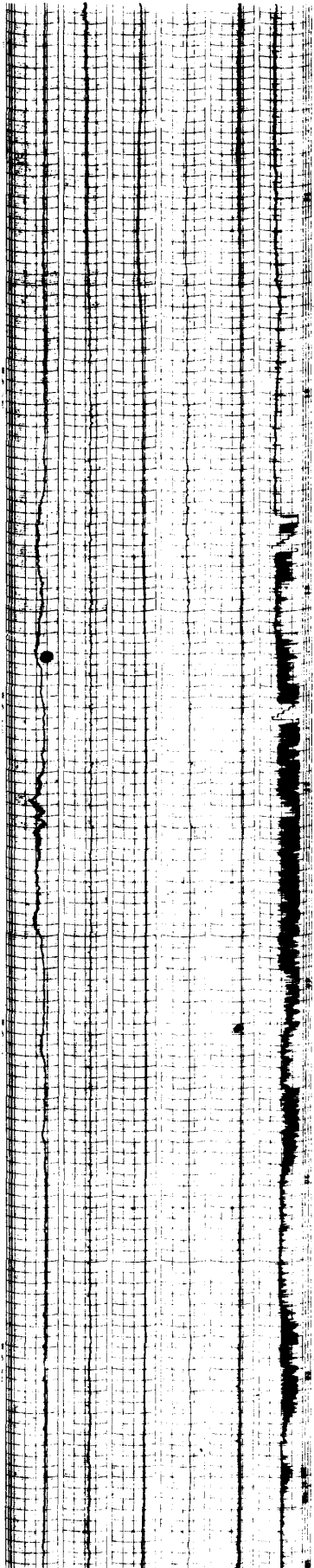
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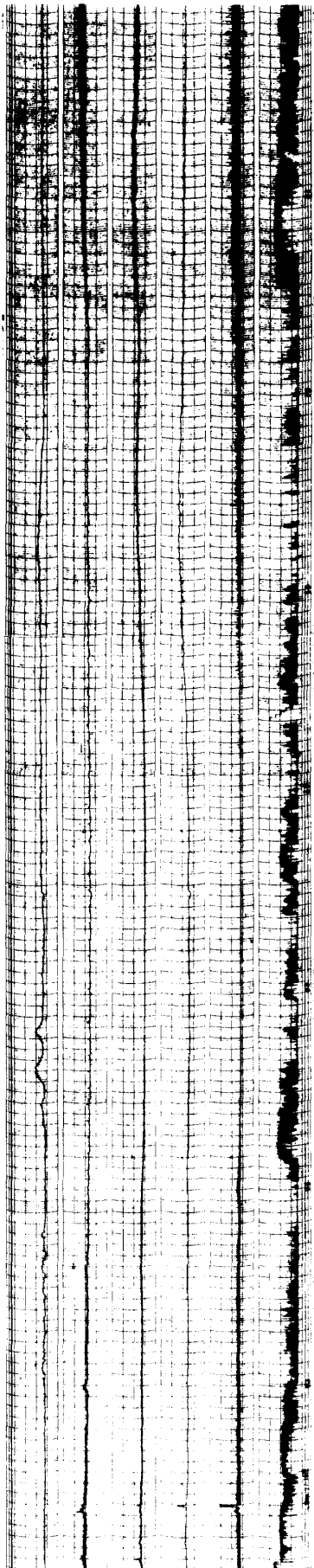
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45° EAST MERIDIAN TIME IN HOURS

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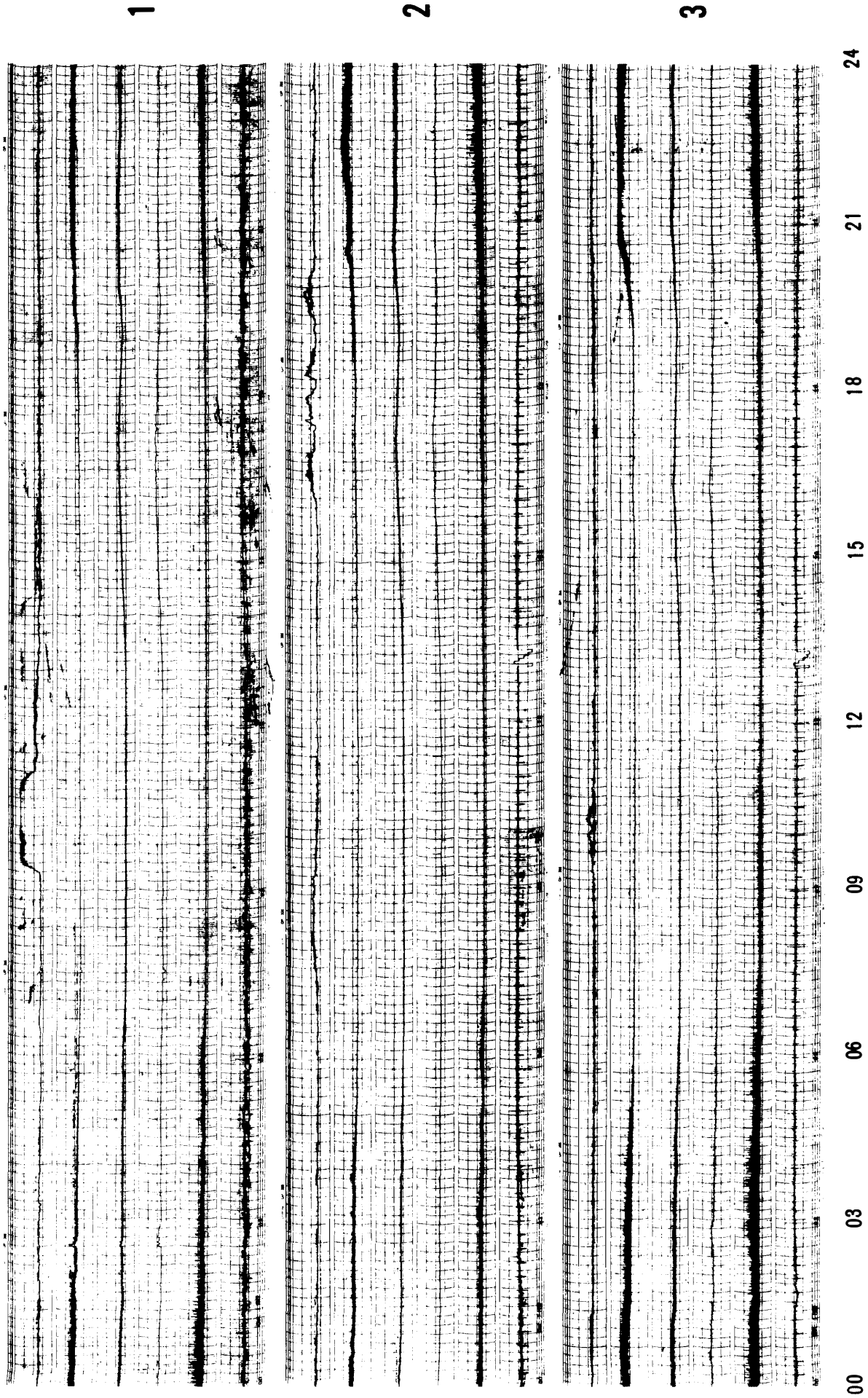
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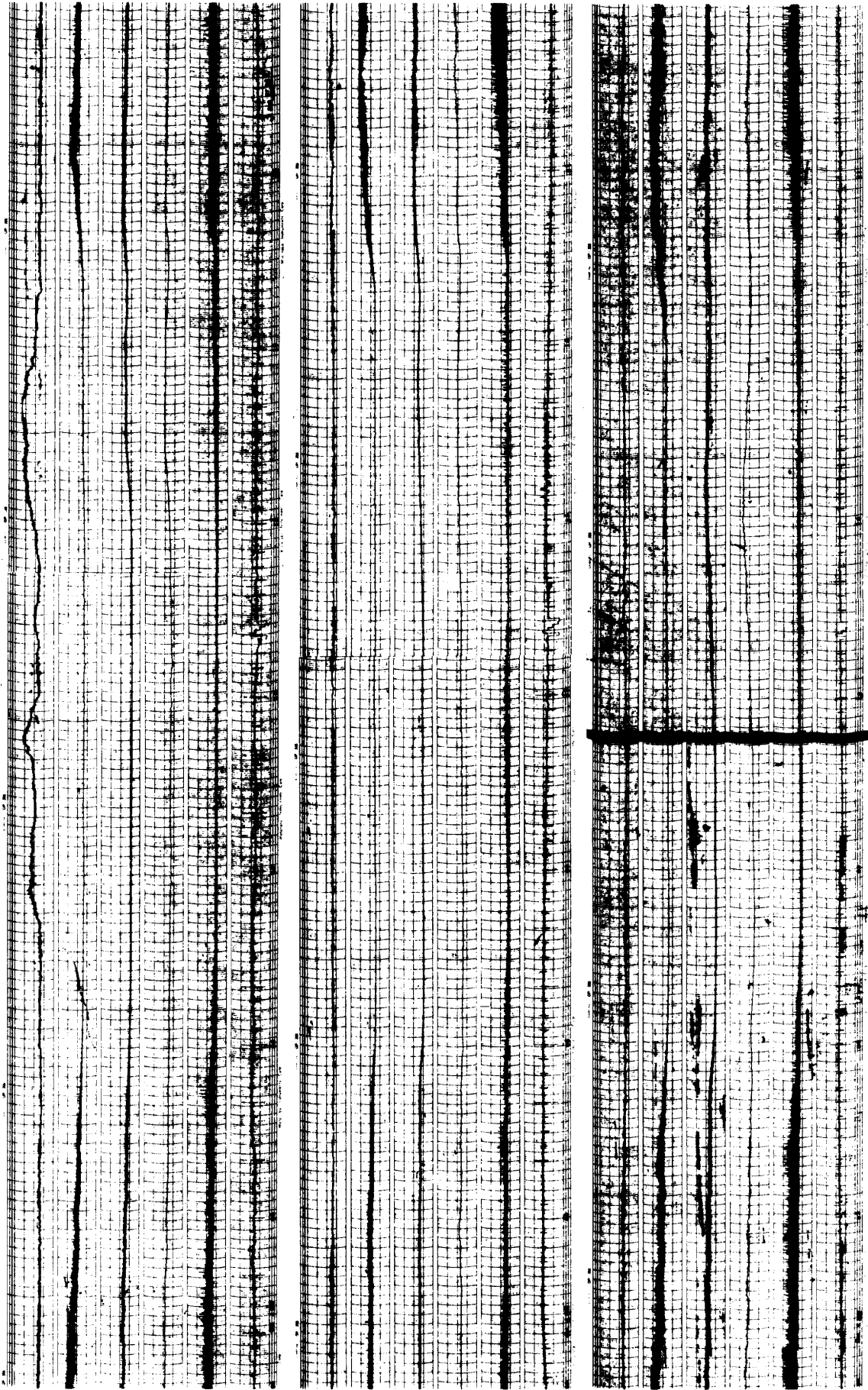
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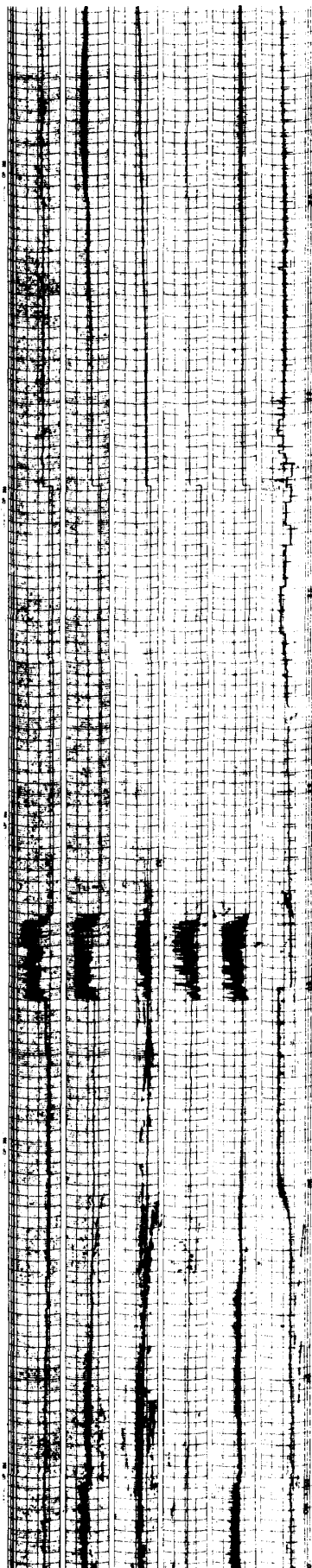
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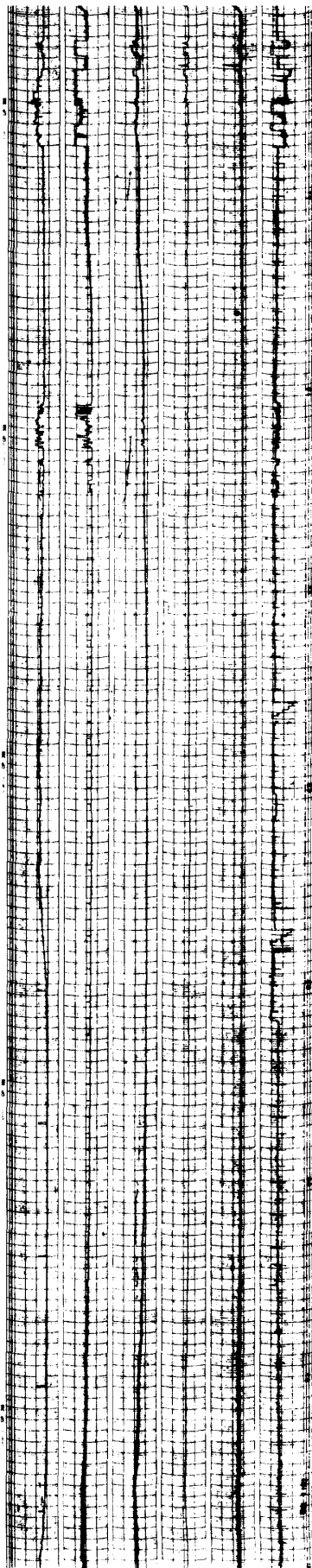
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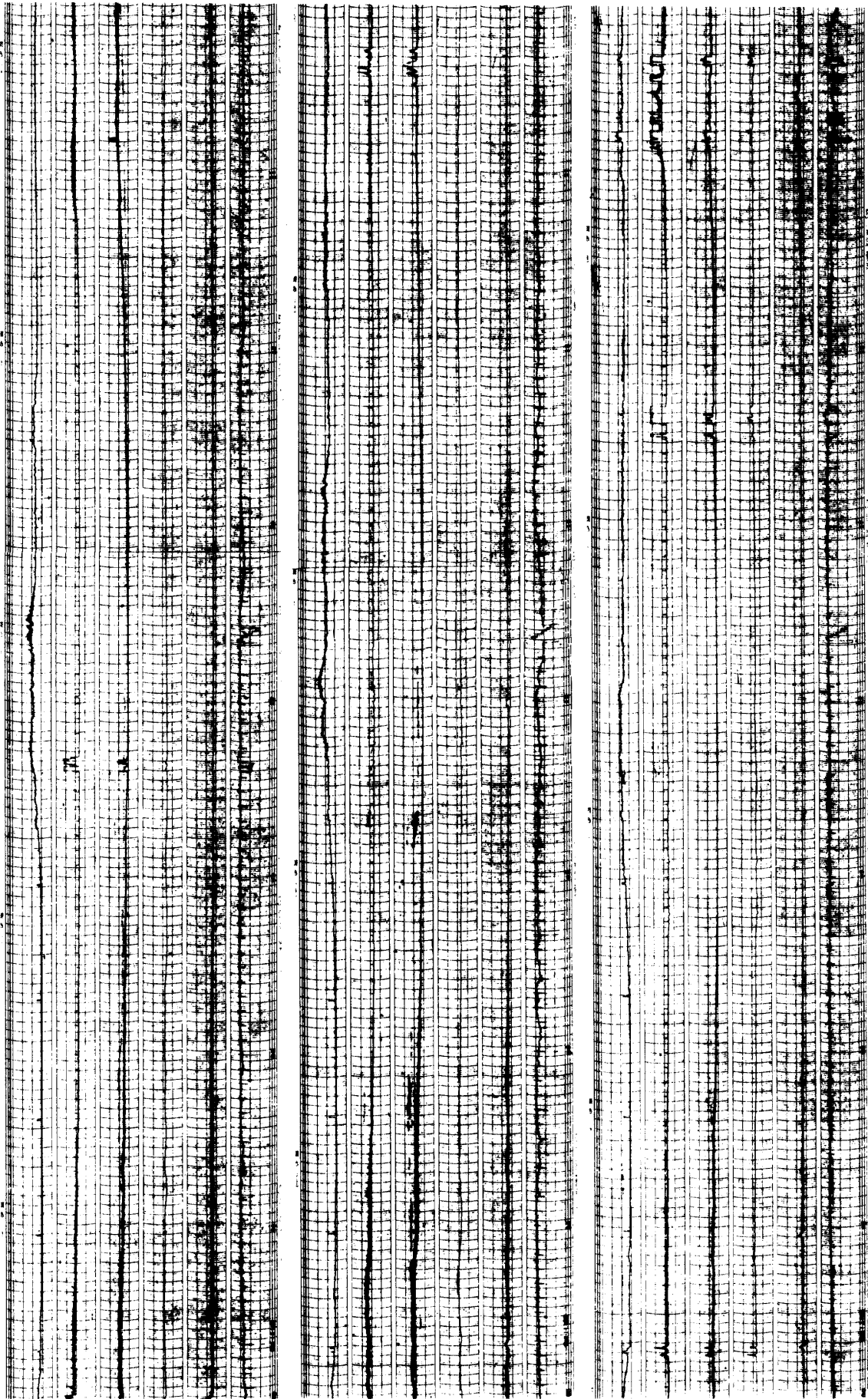
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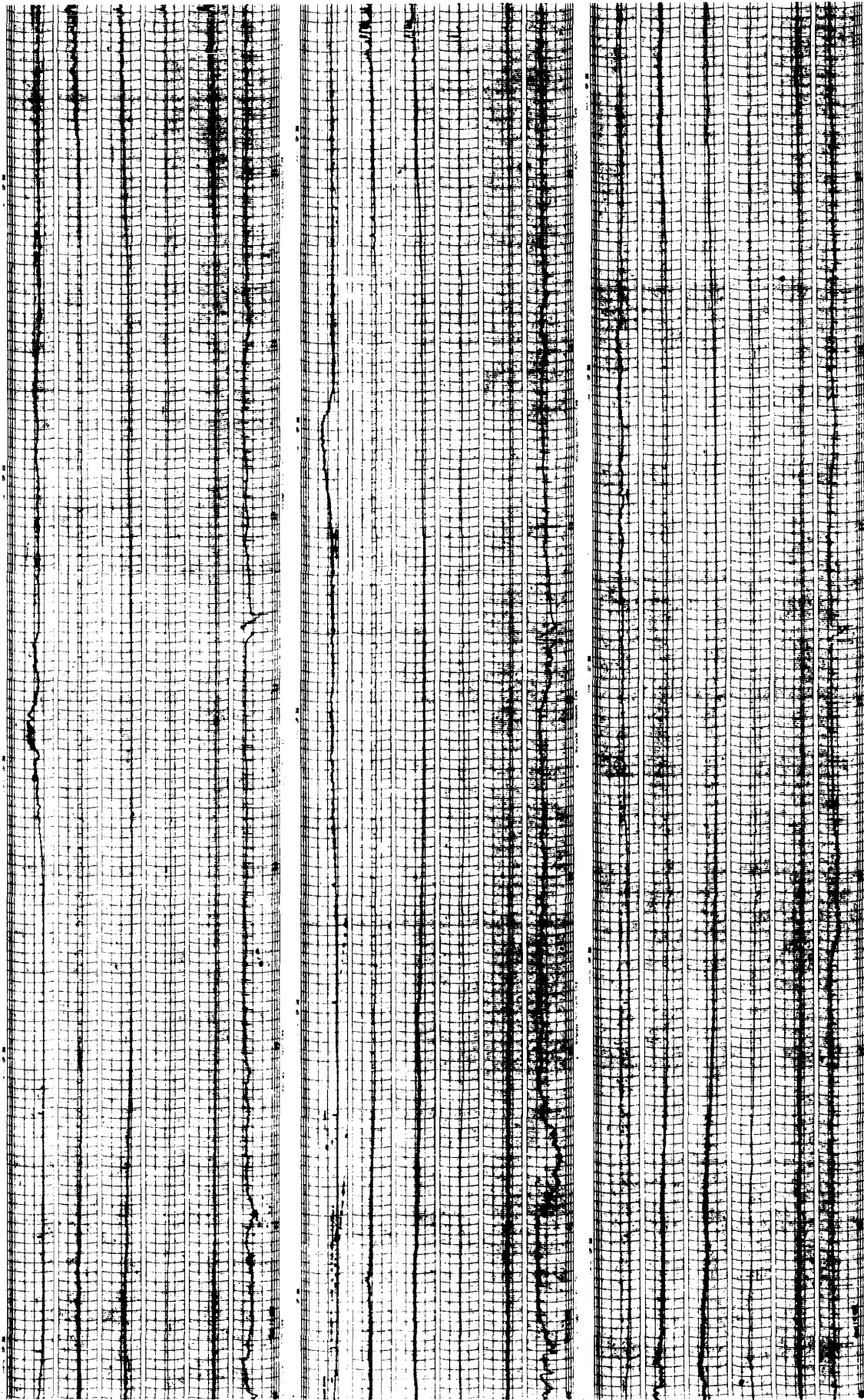
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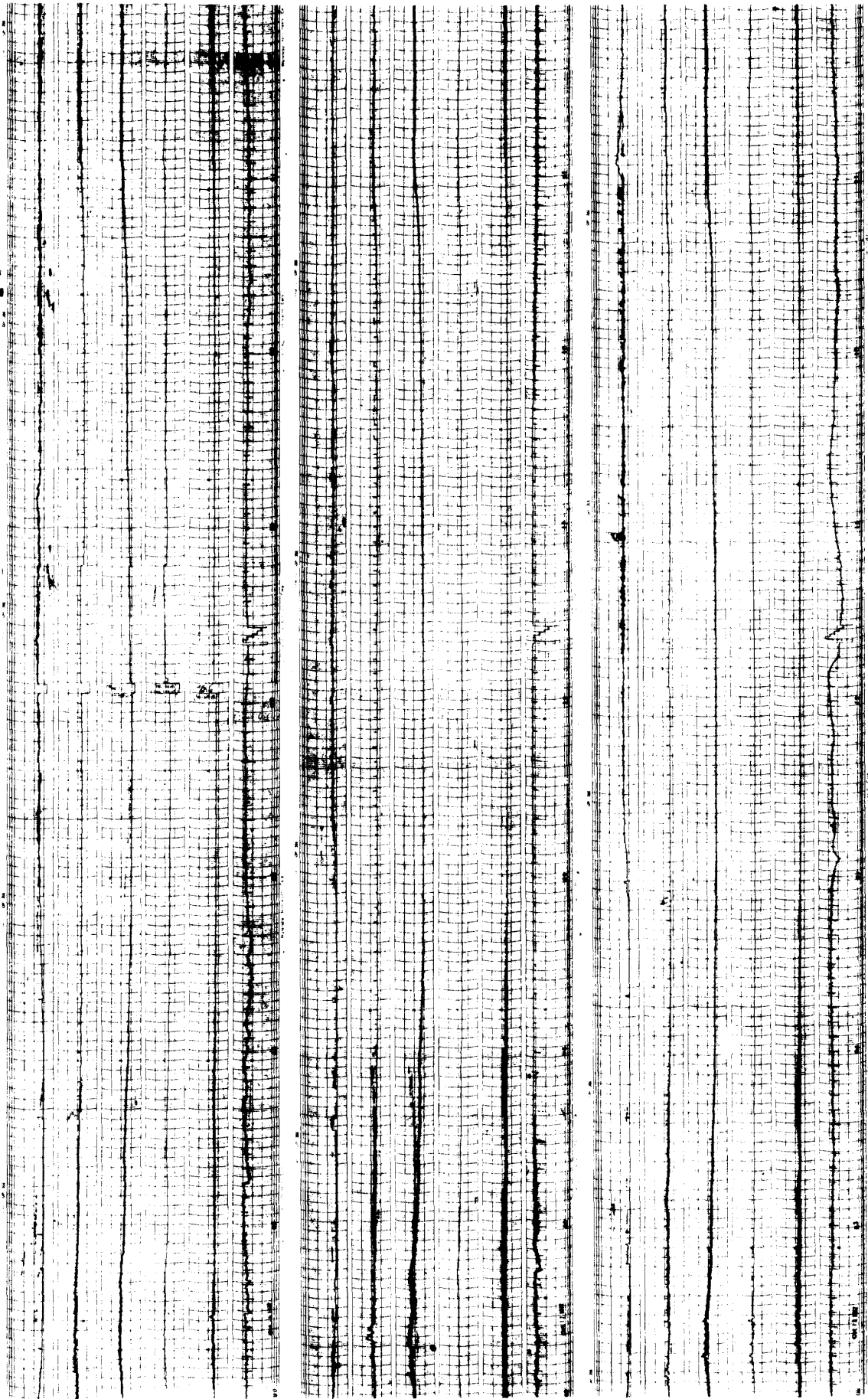
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45° EAST MERIDIAN TIME IN HOURS

OCT 1972

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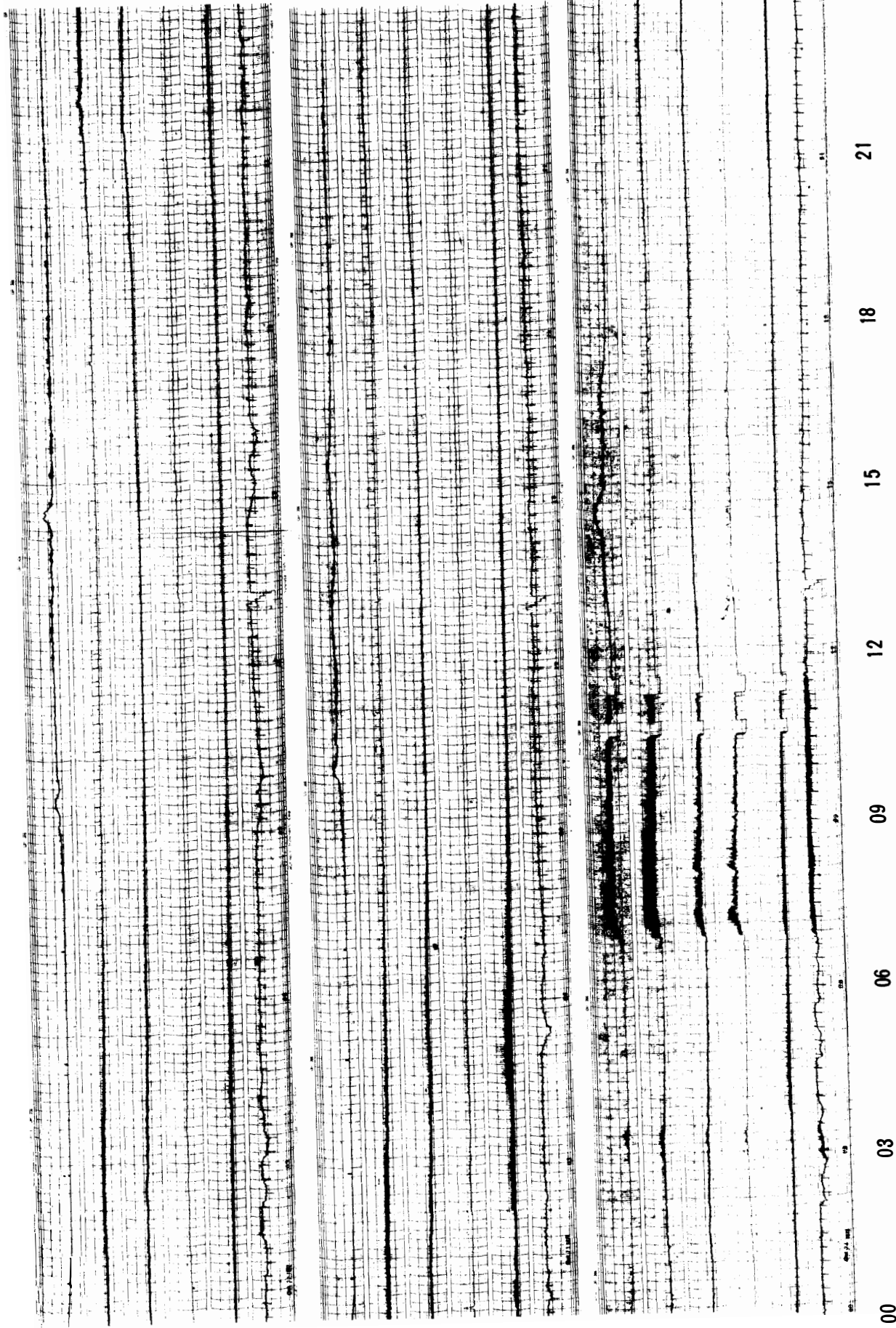
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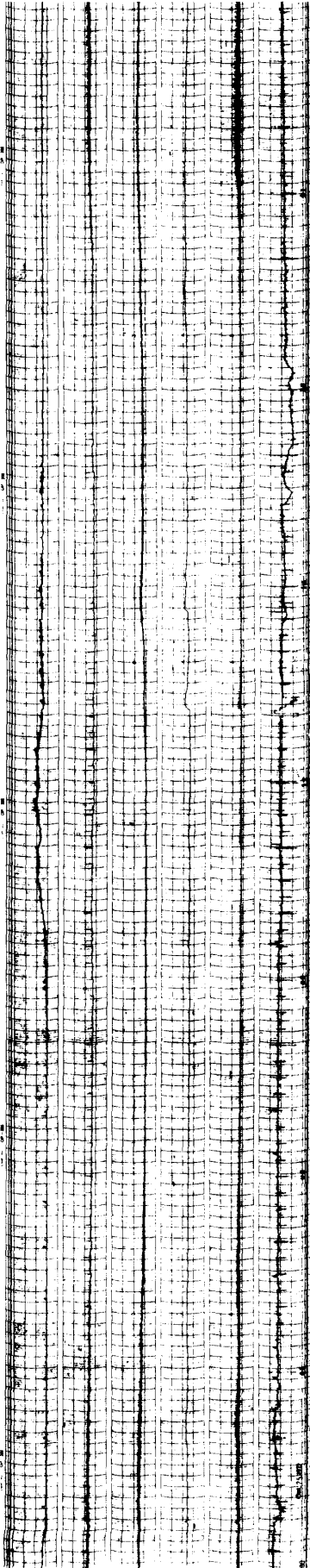
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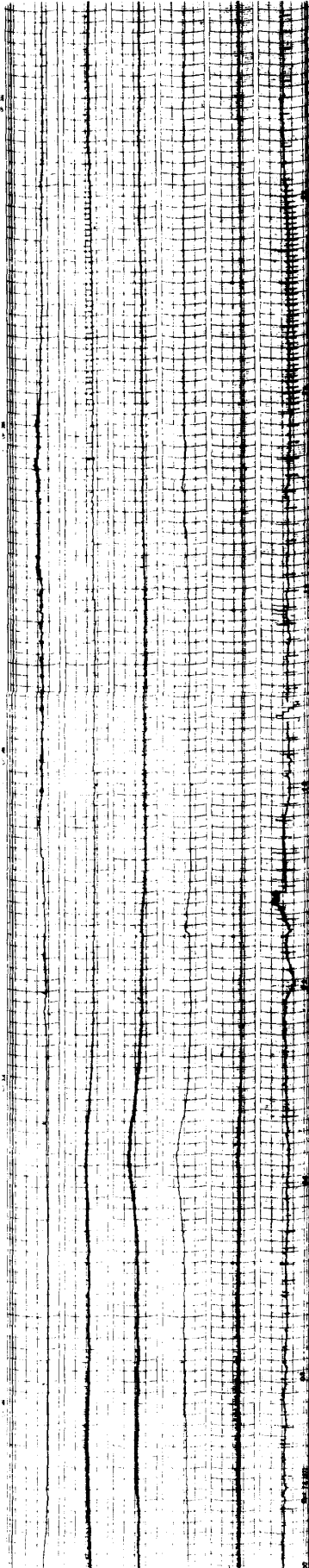
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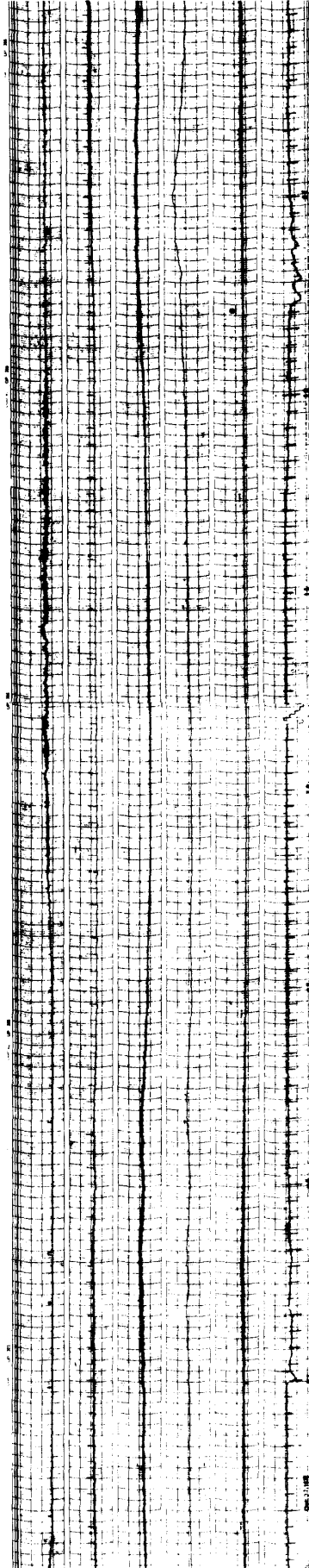
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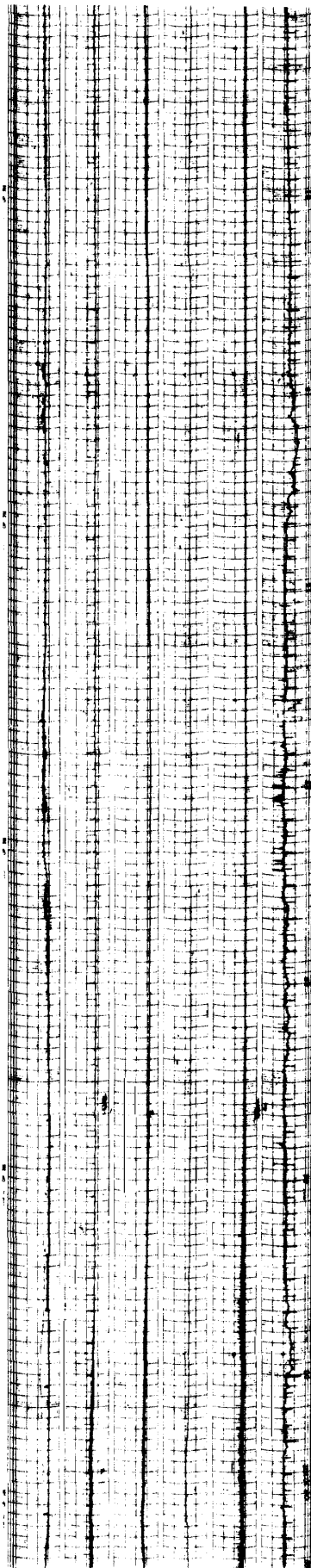
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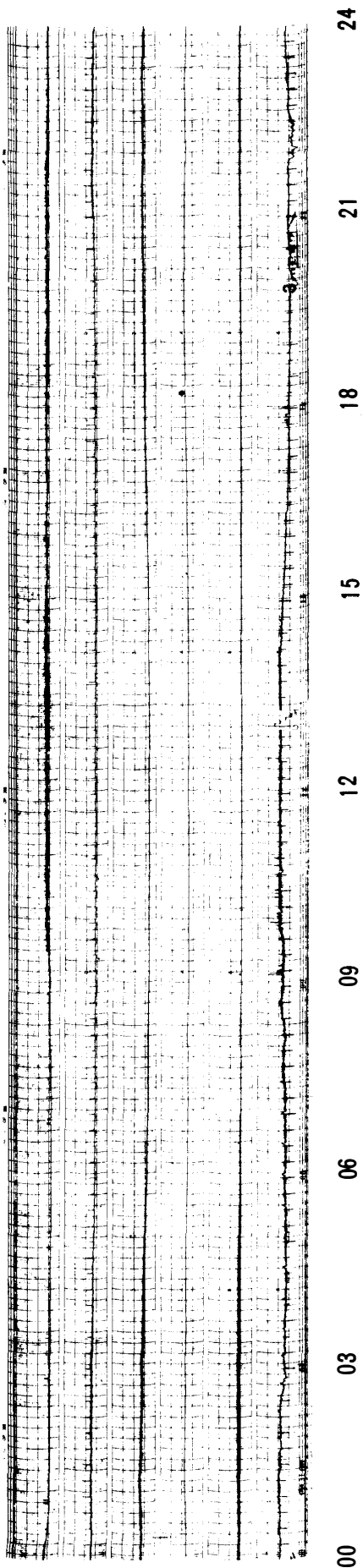


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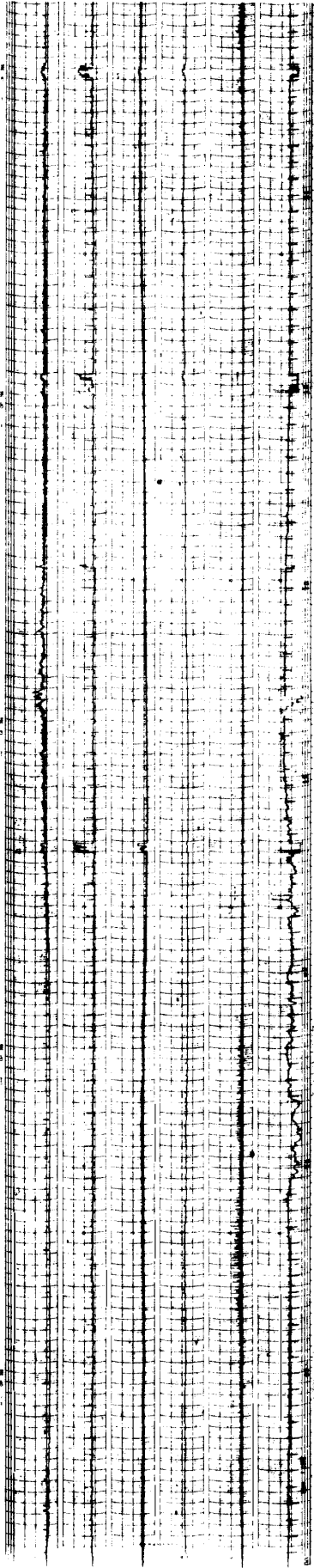
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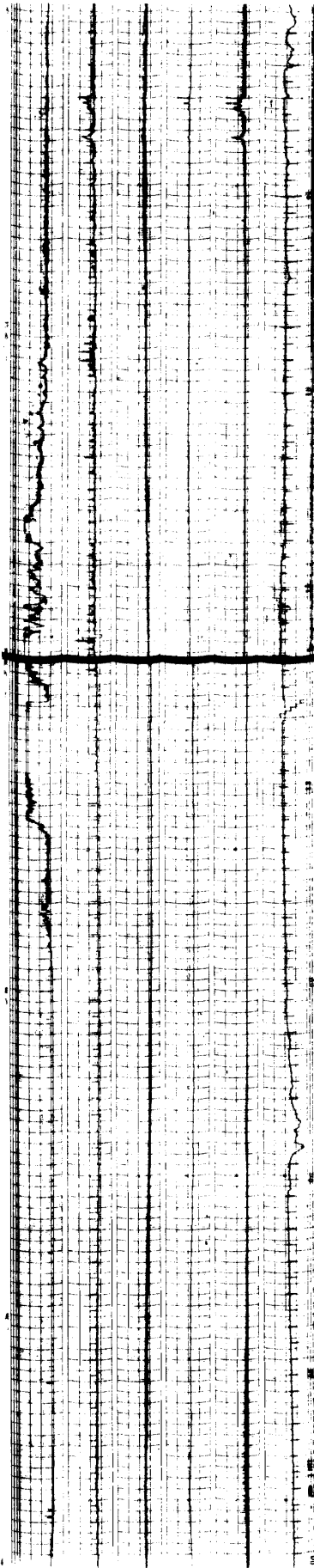


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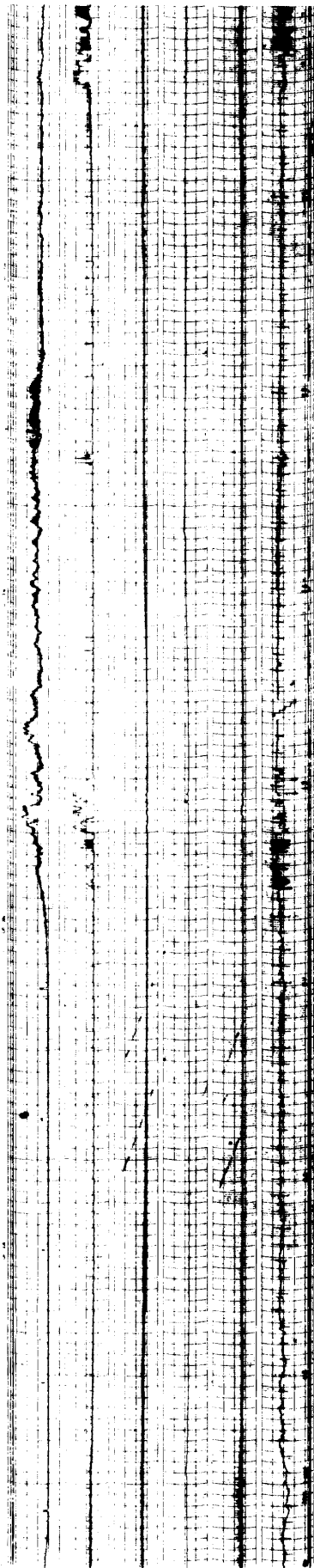
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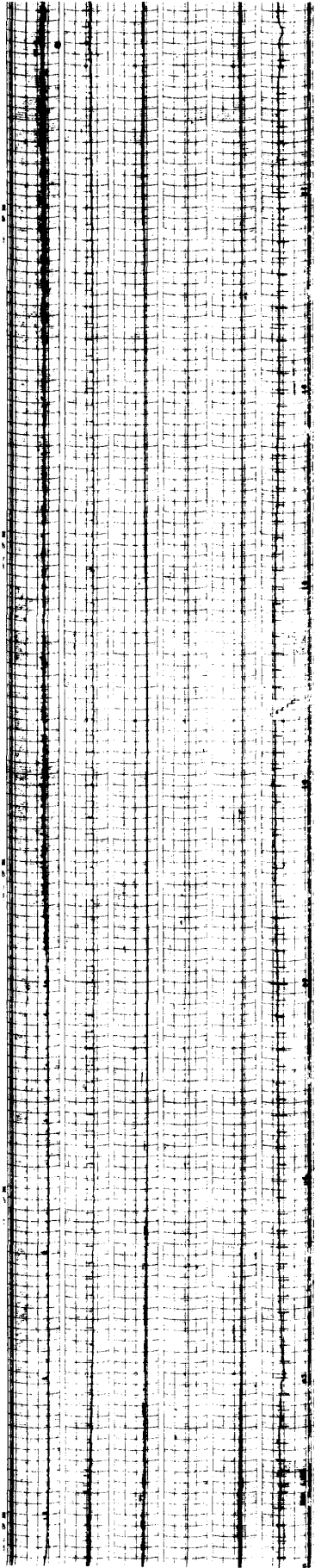


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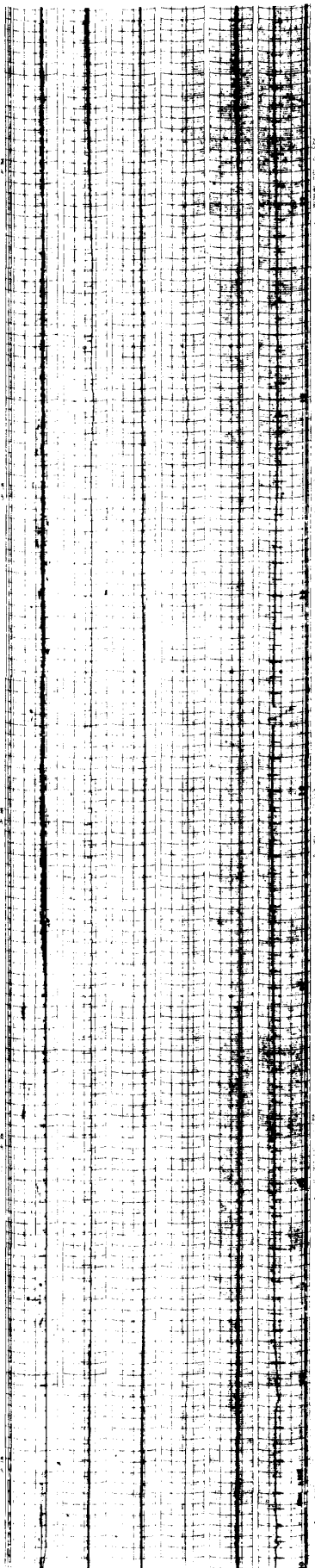
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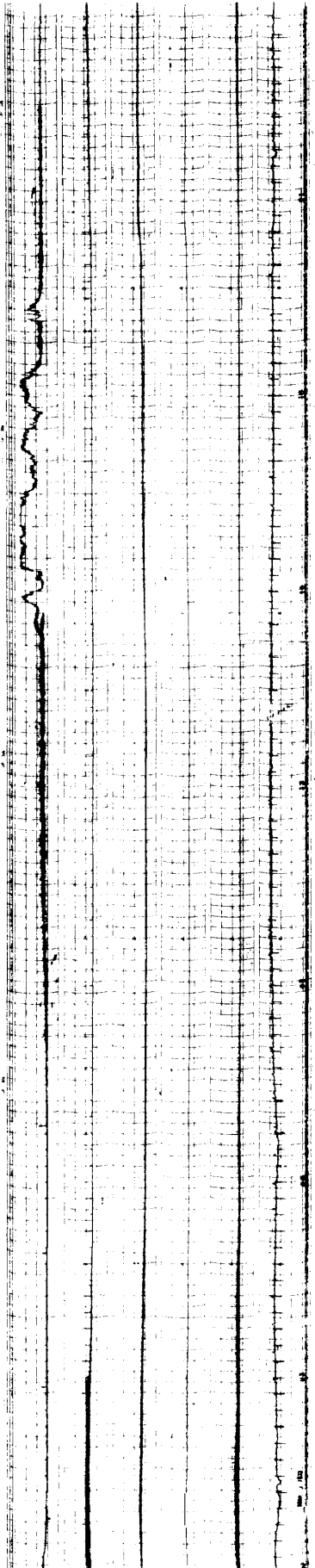
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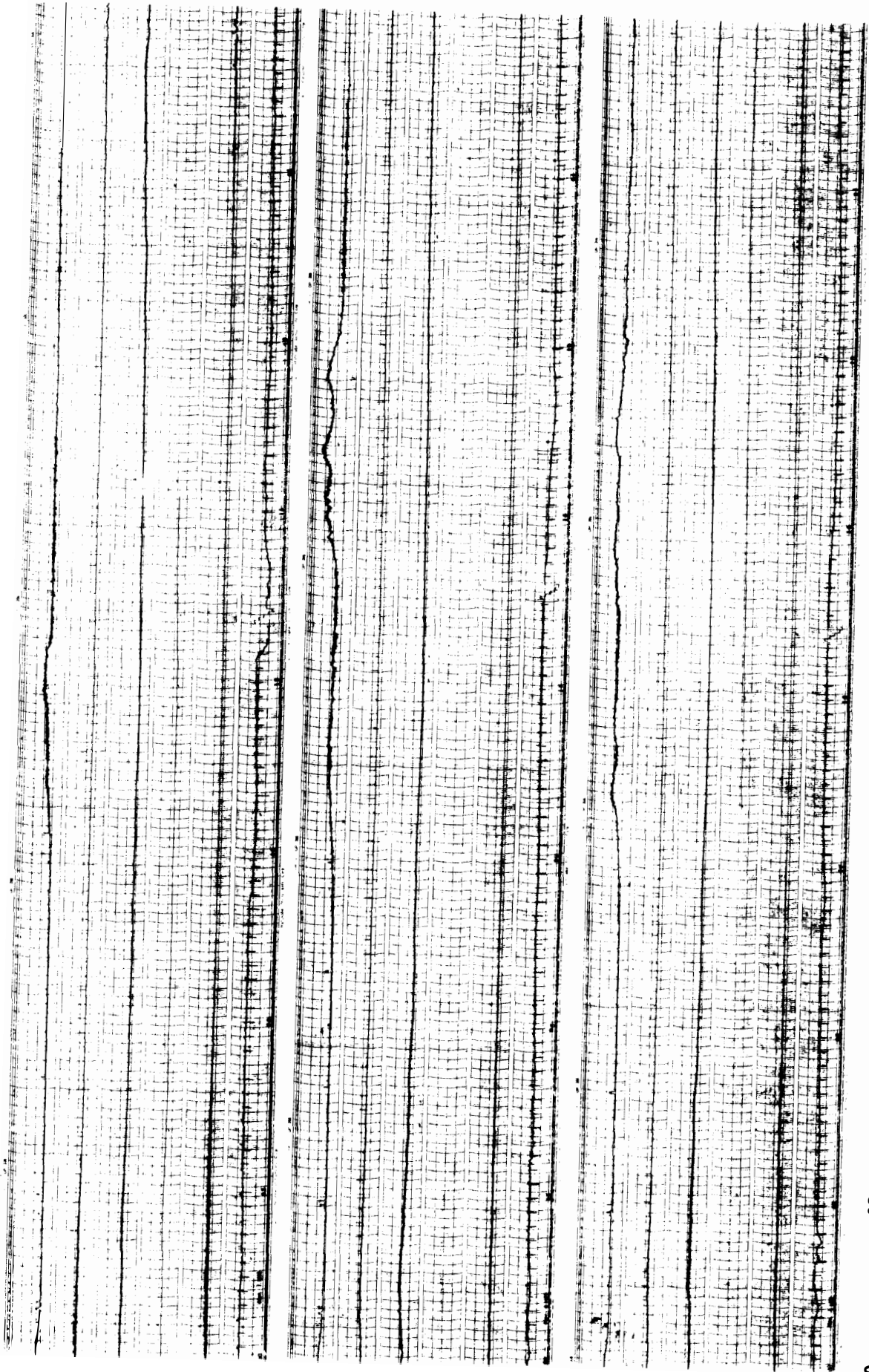
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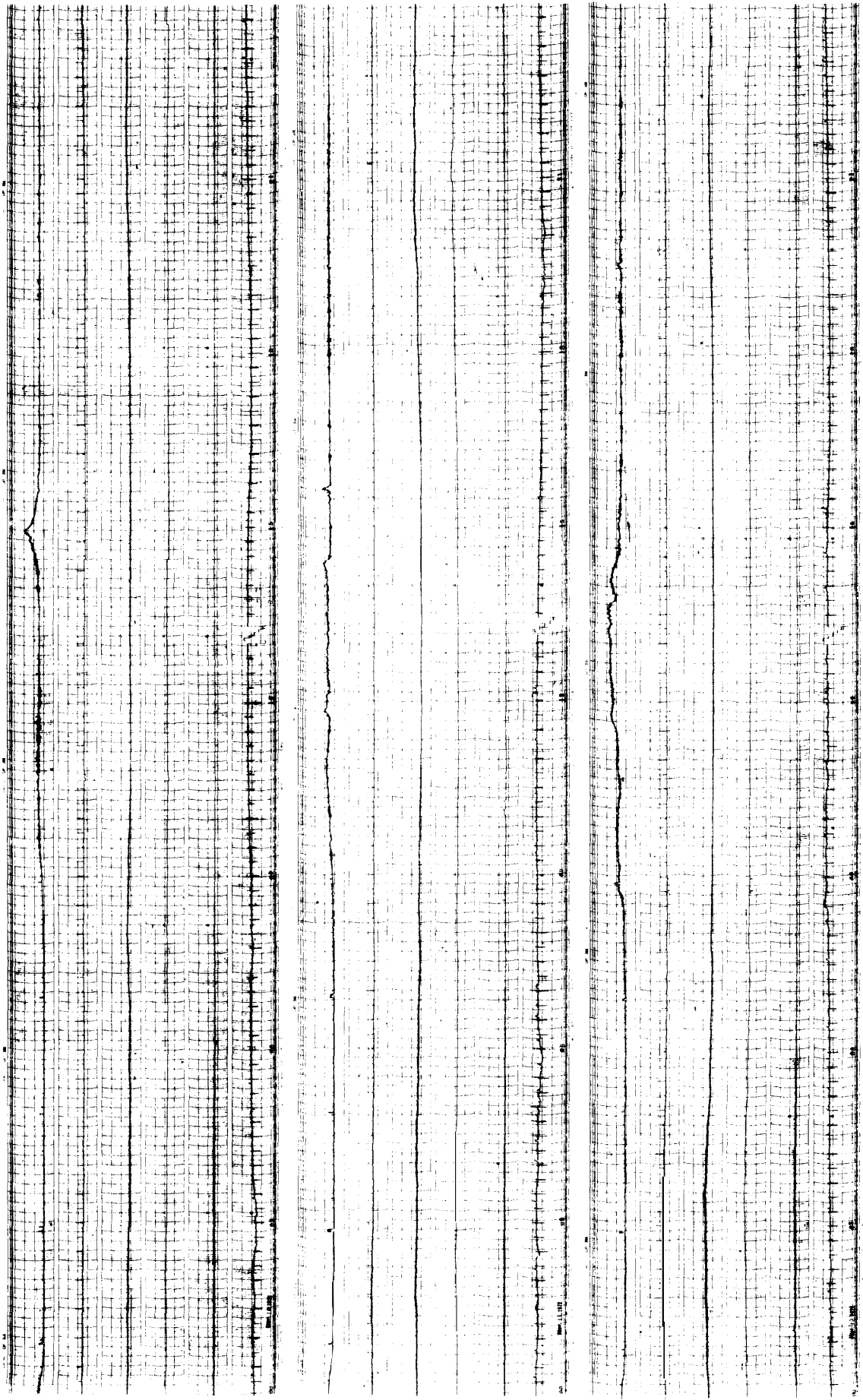
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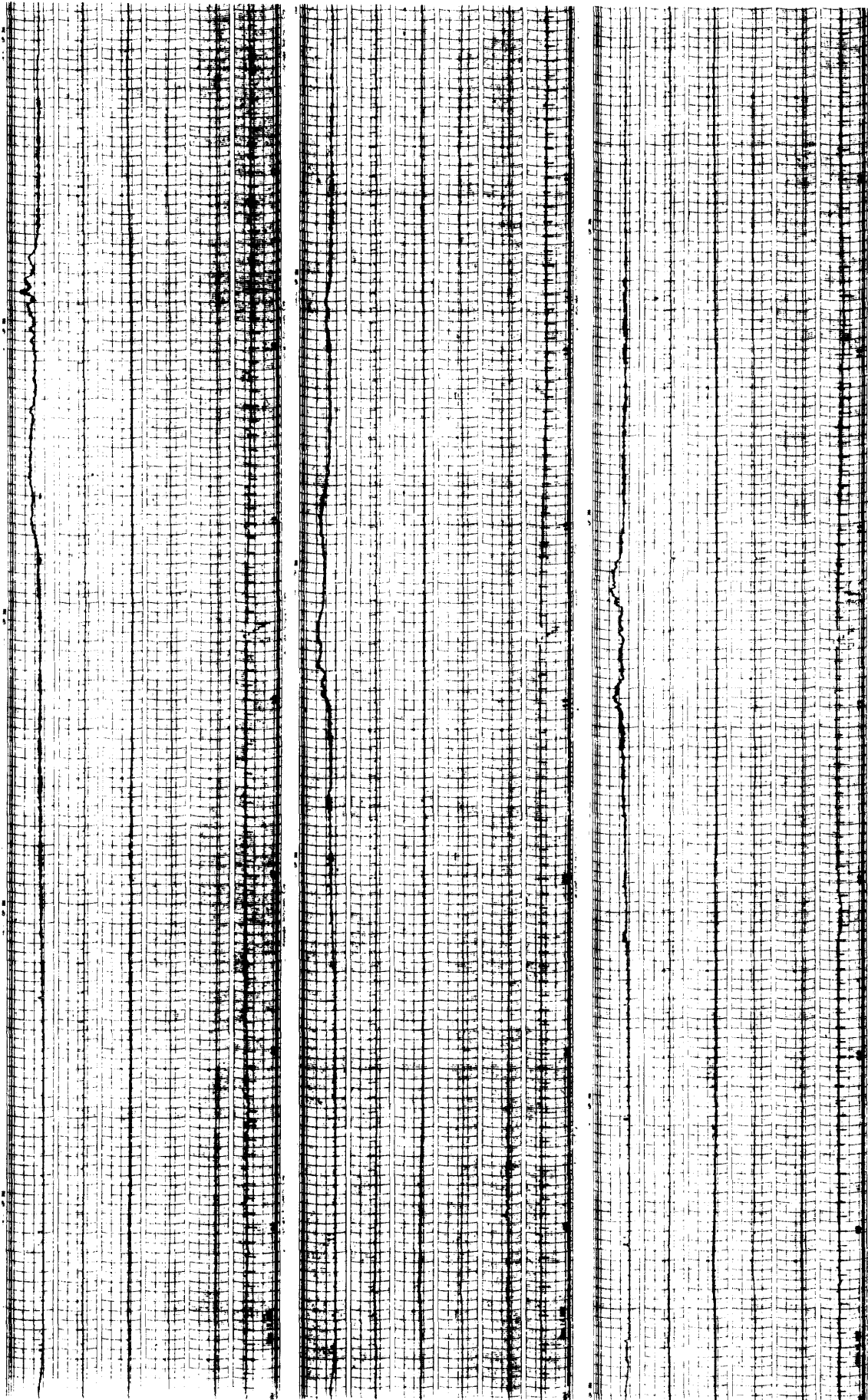
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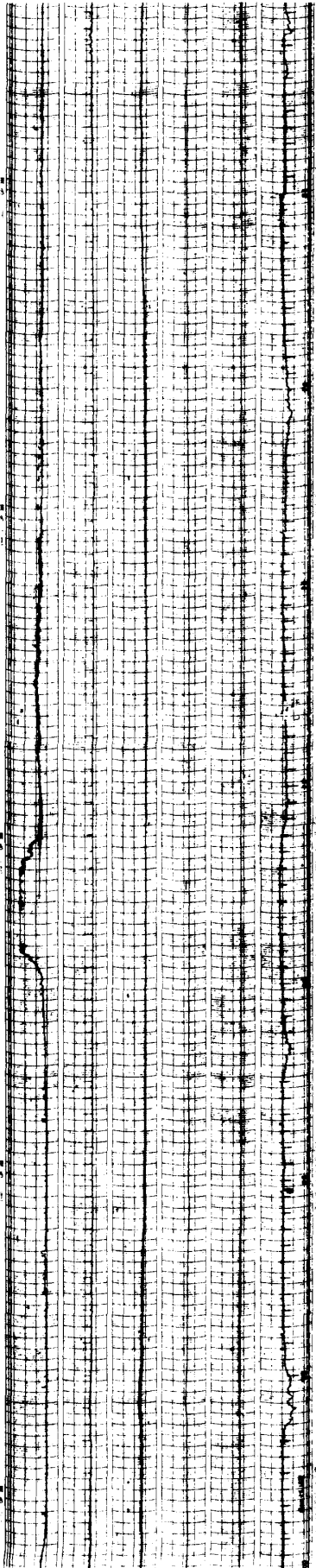
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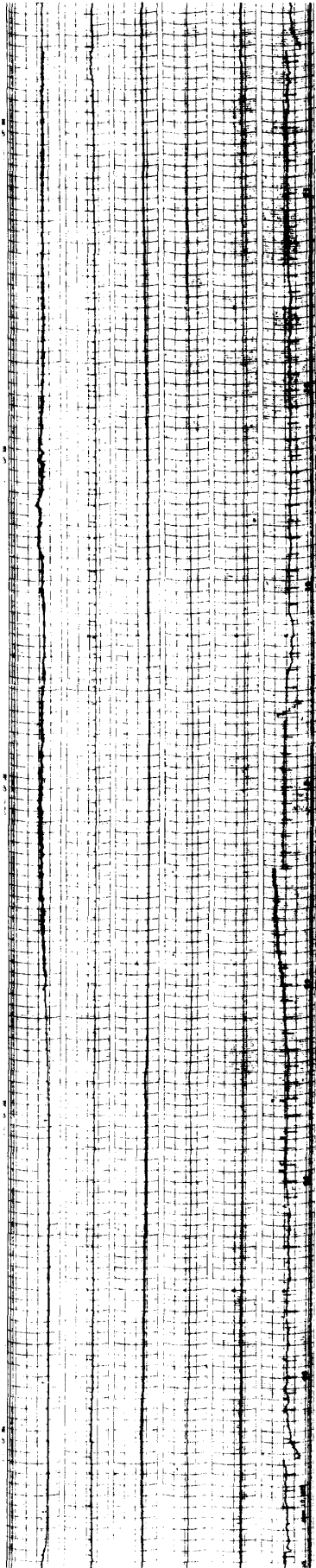
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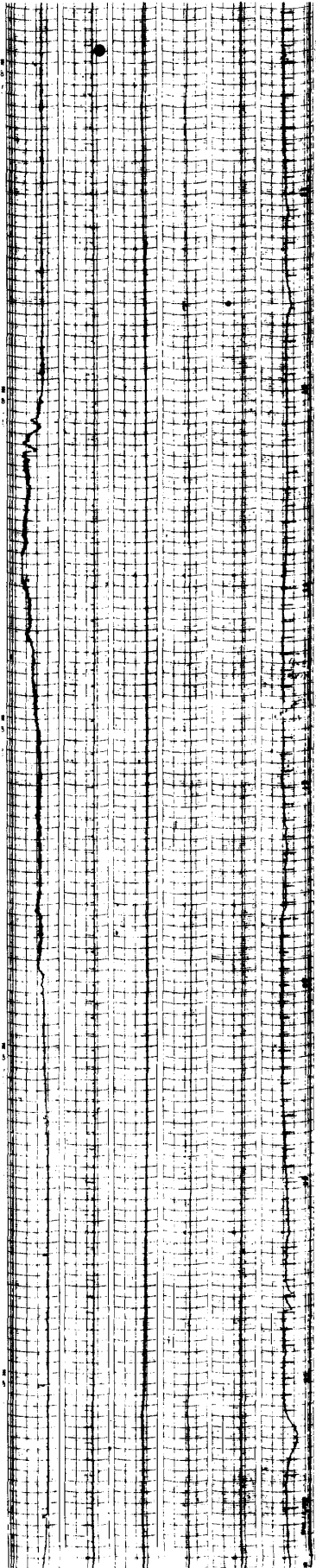
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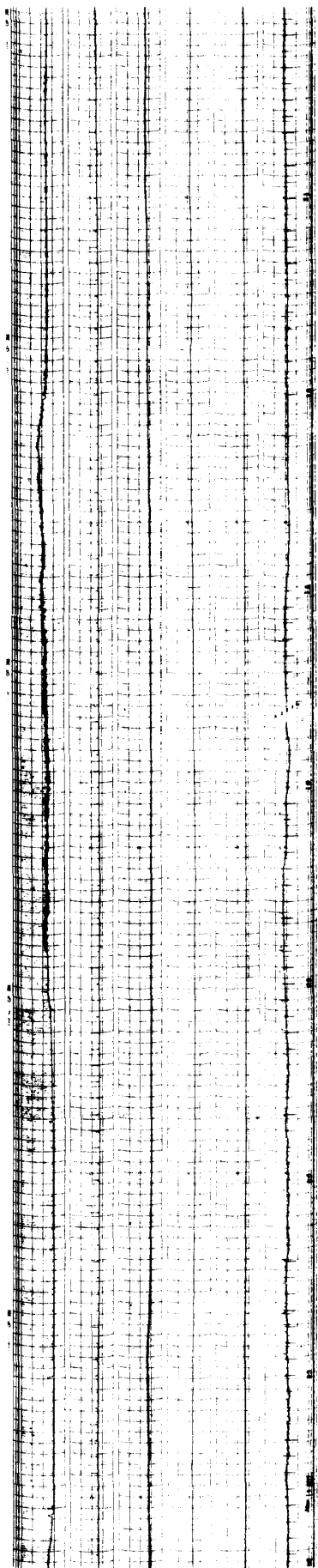
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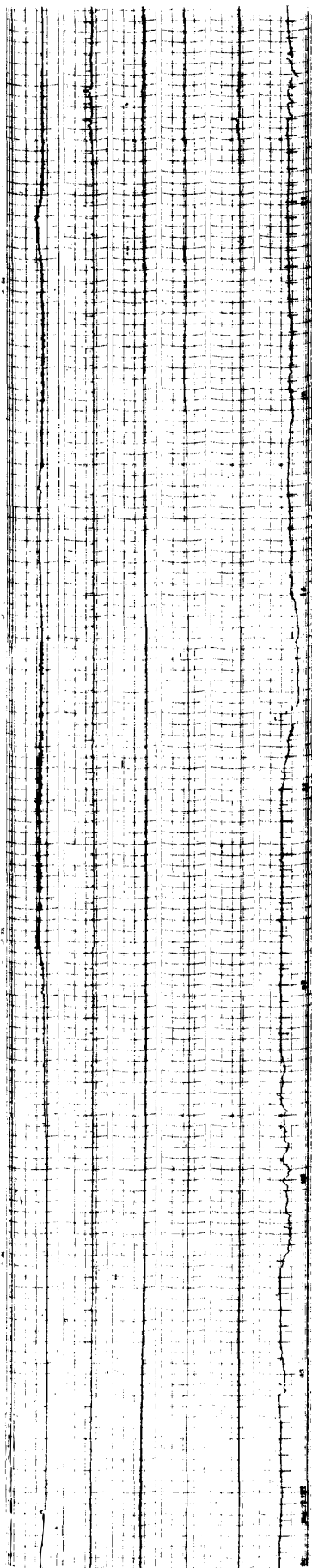
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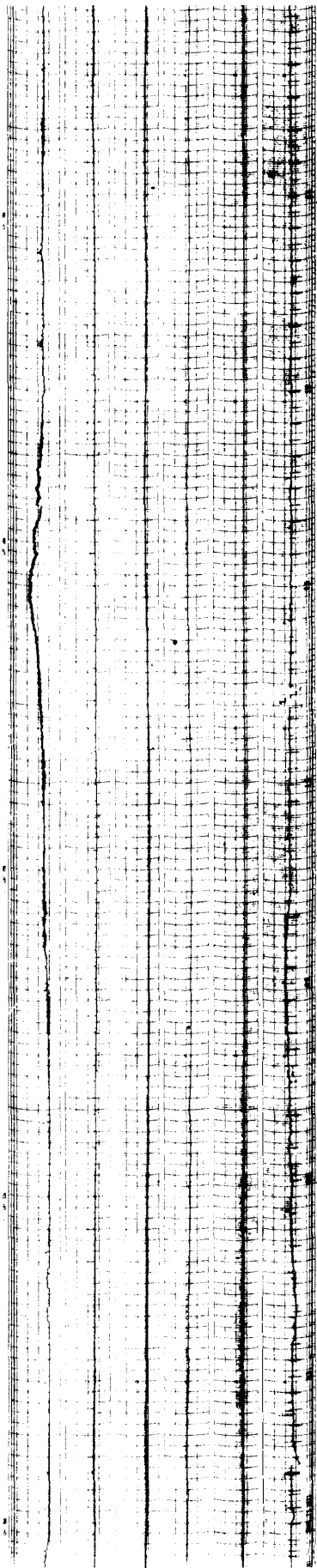
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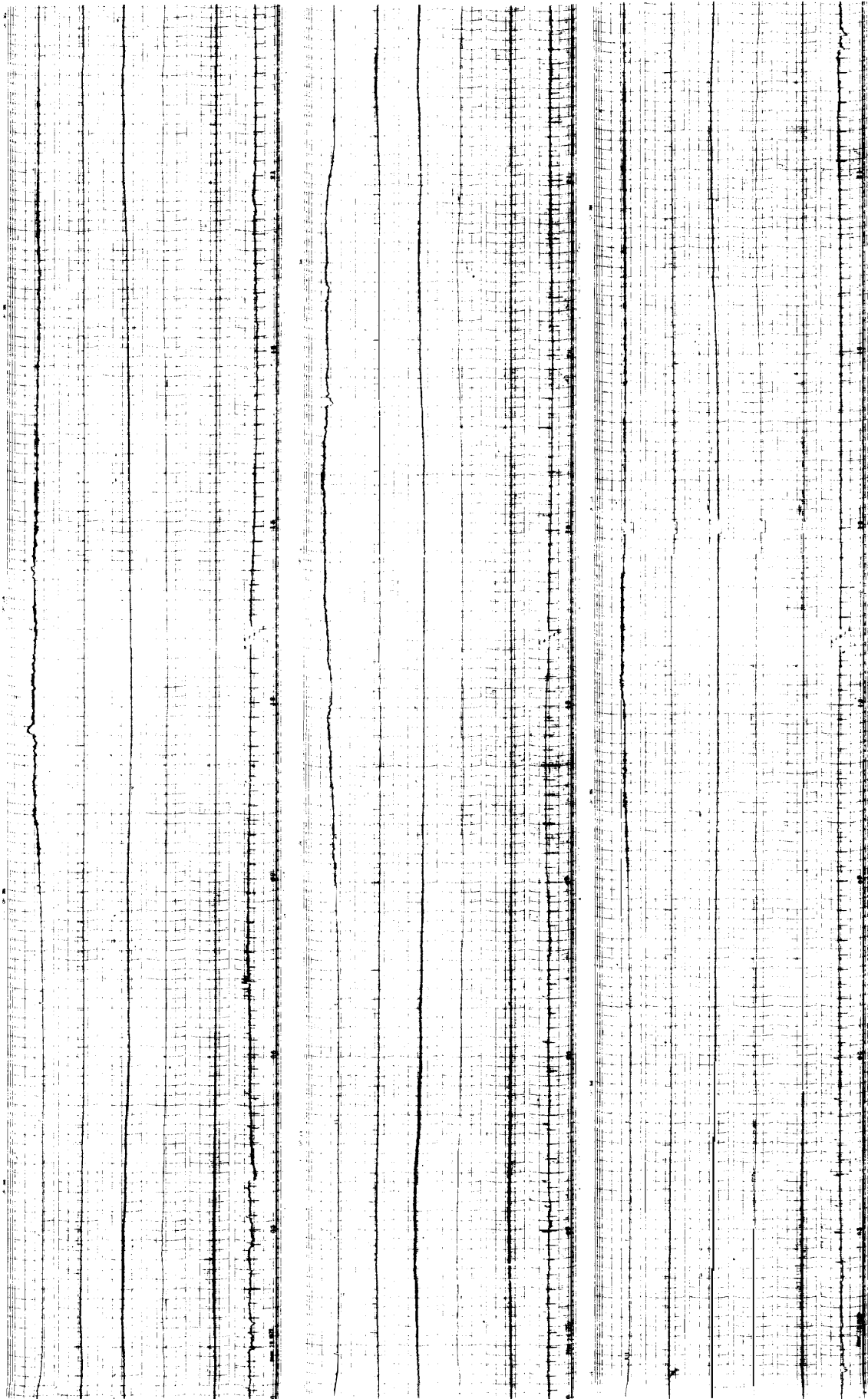
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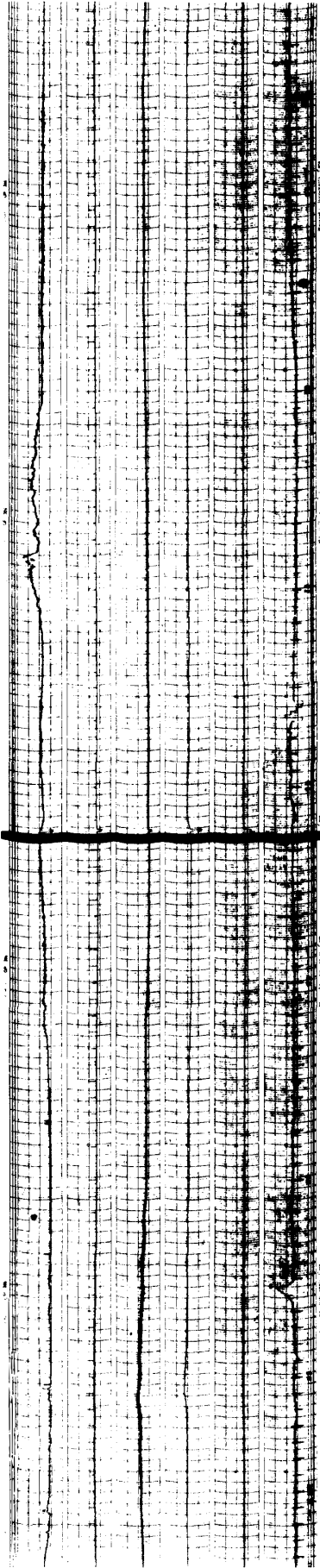
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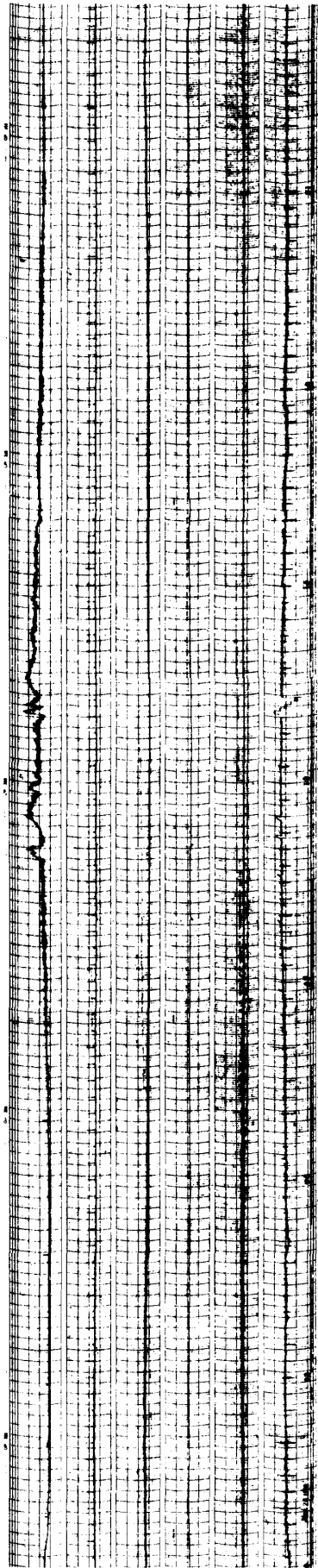
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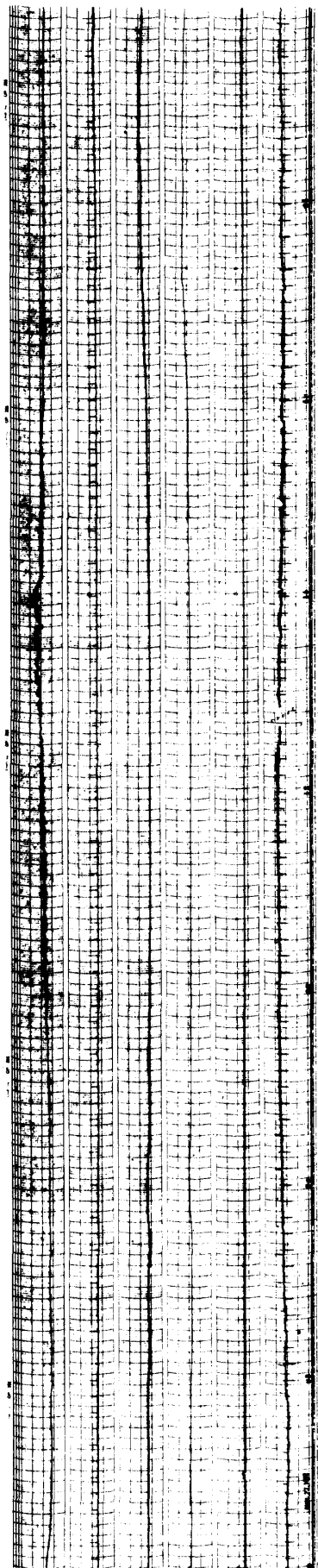
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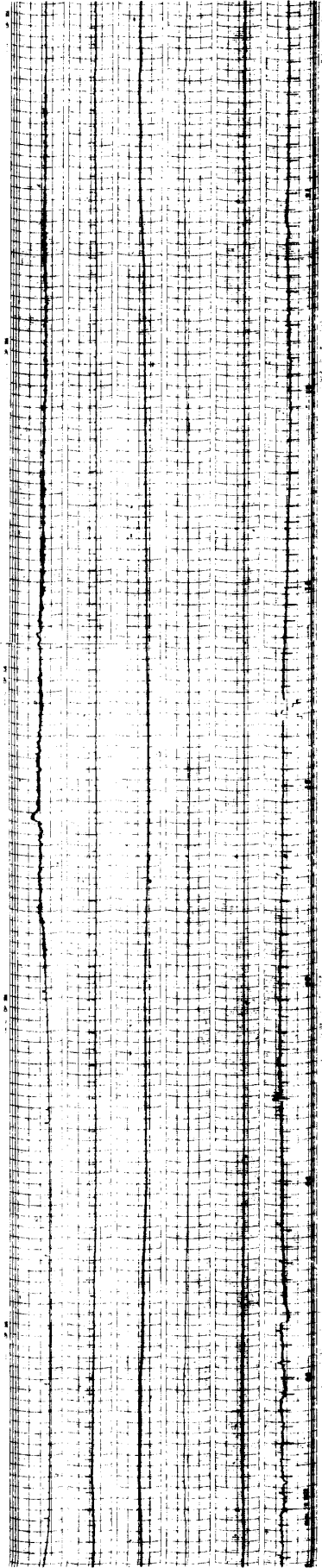
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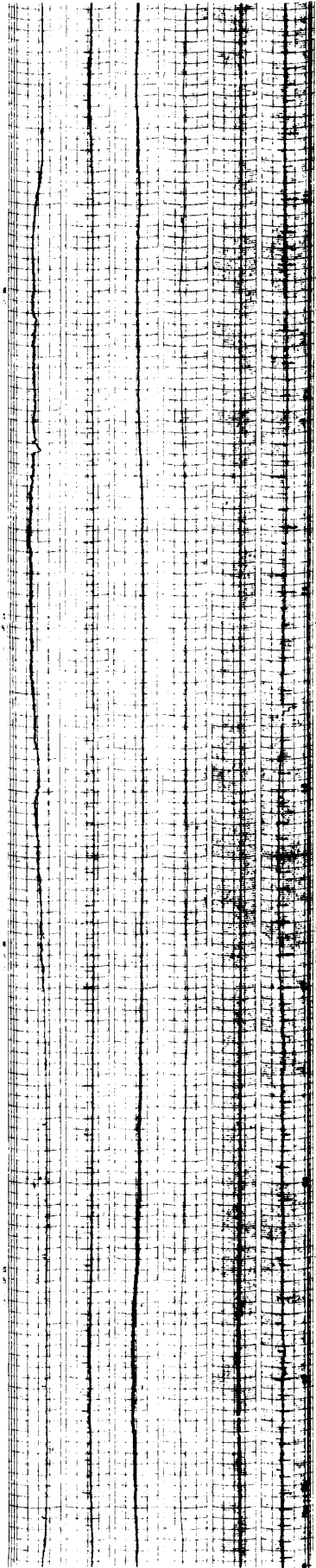
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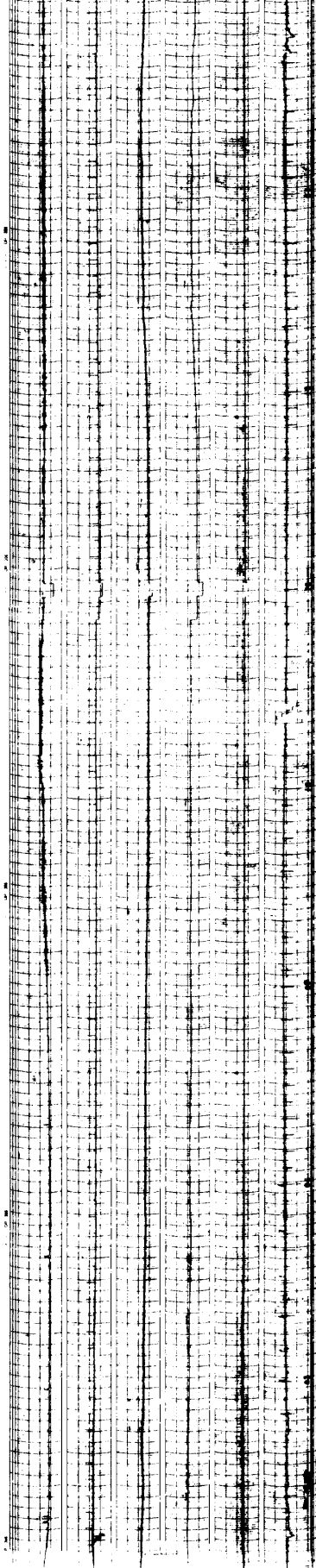
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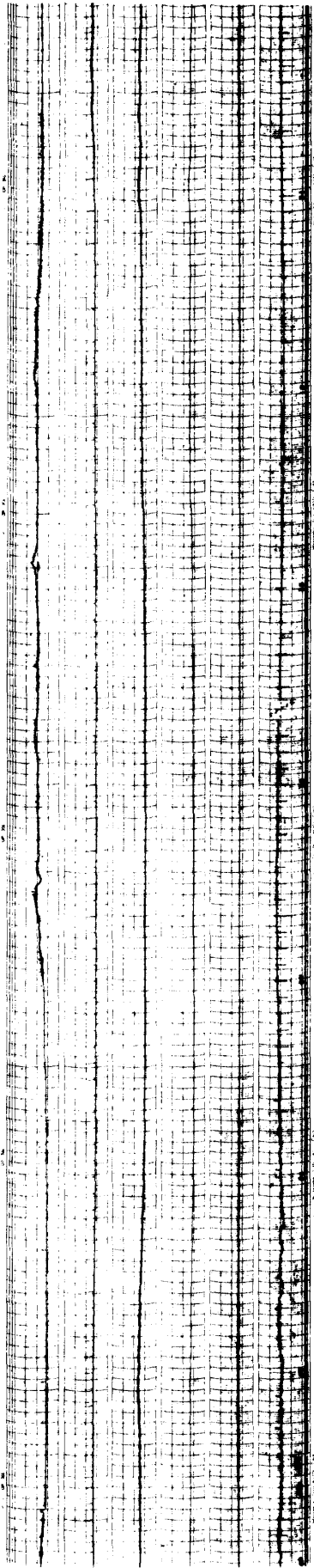
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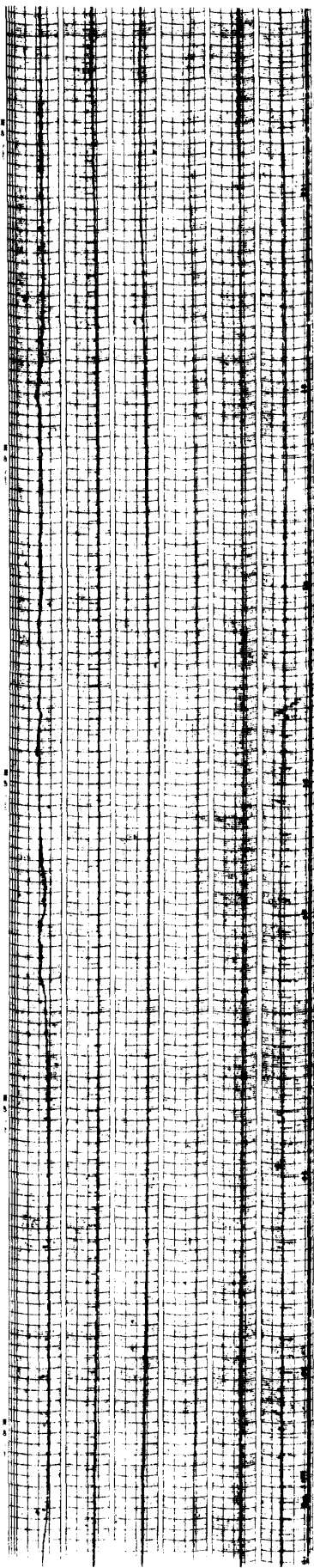
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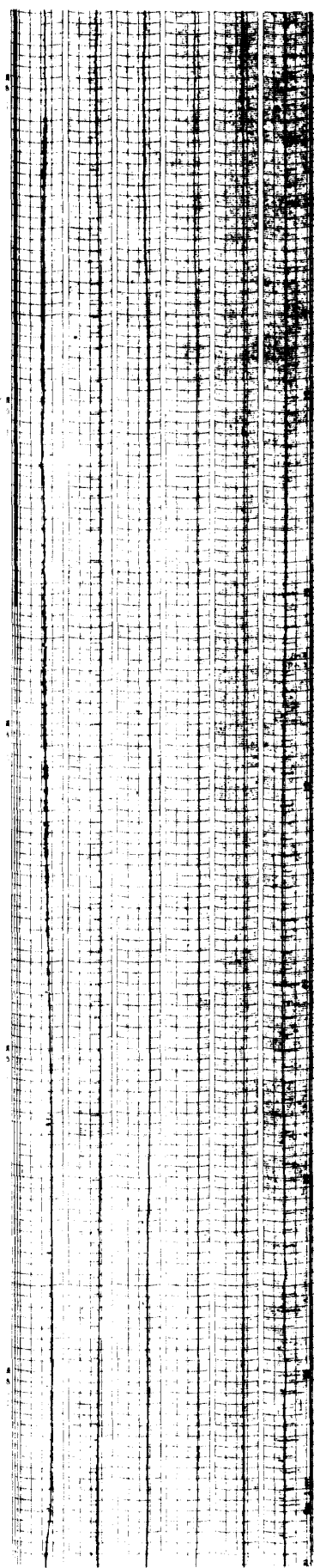
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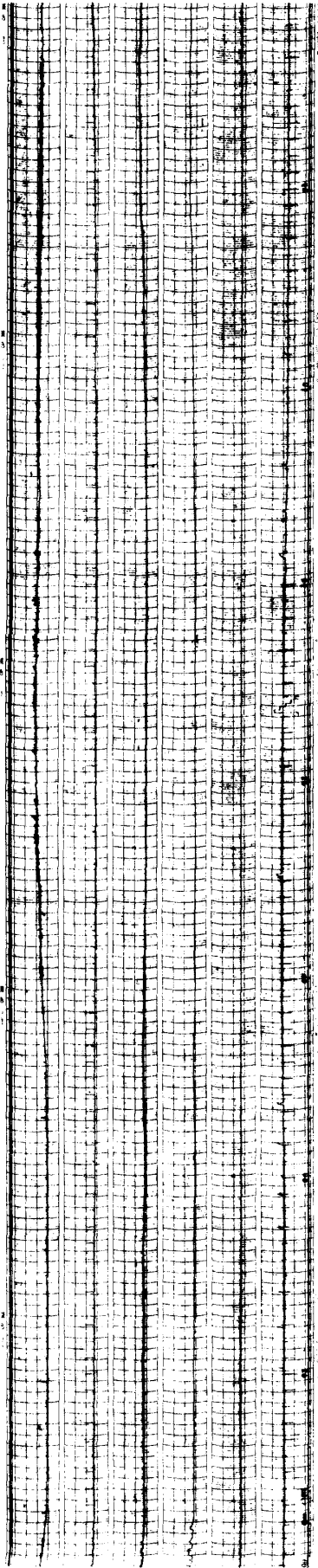
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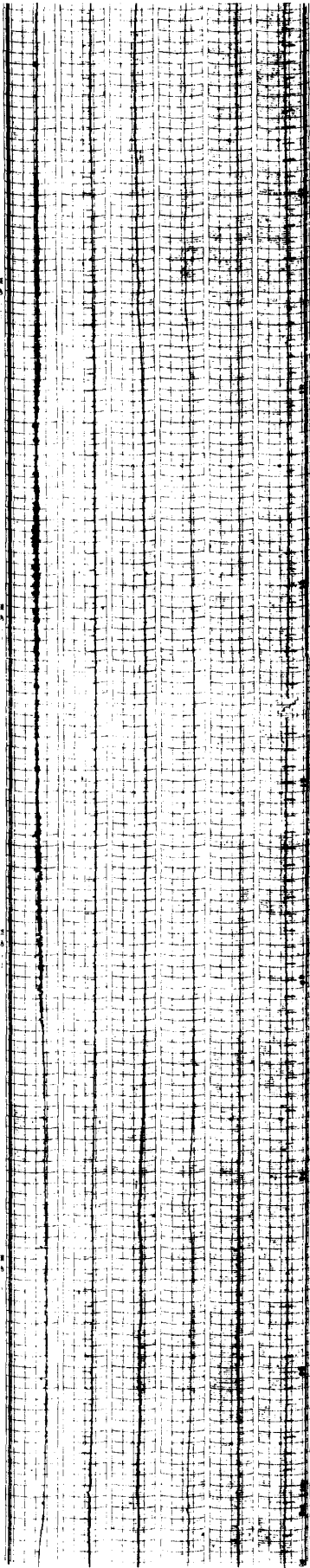
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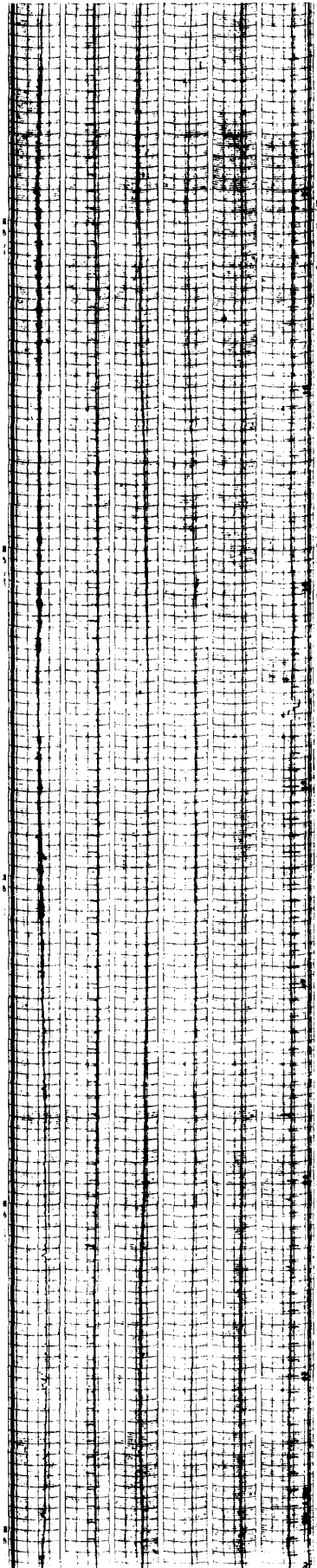
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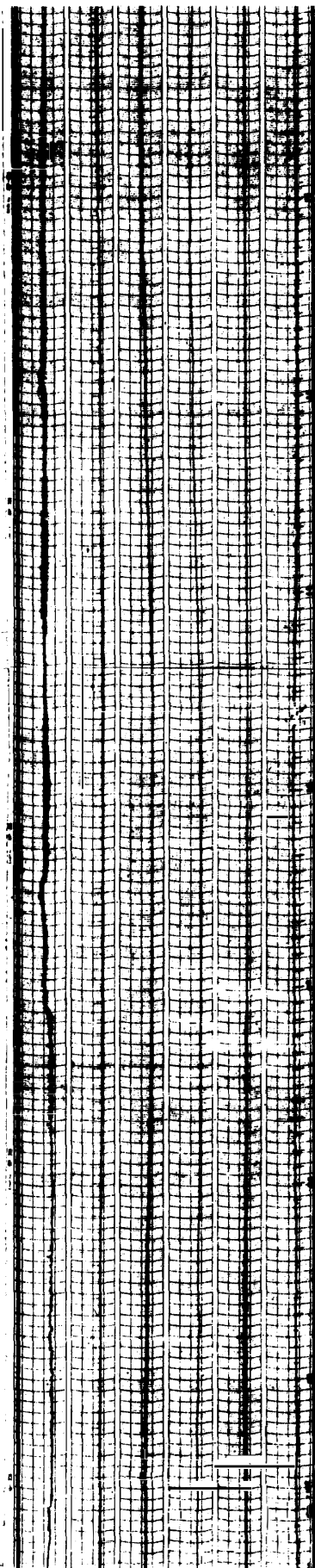
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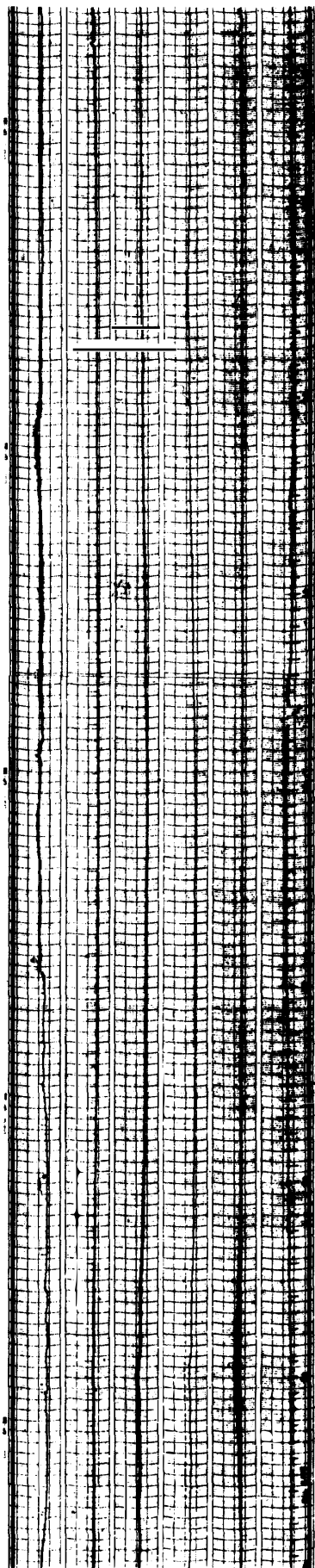
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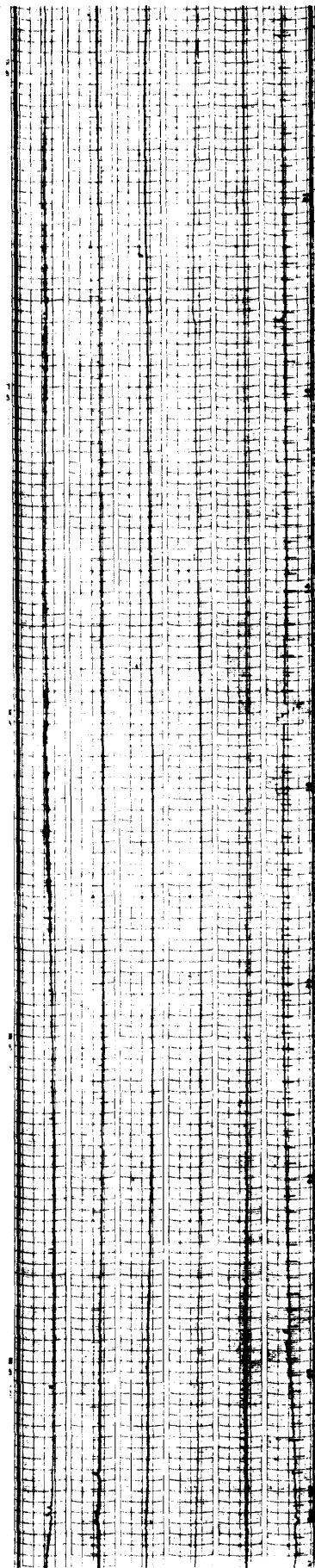
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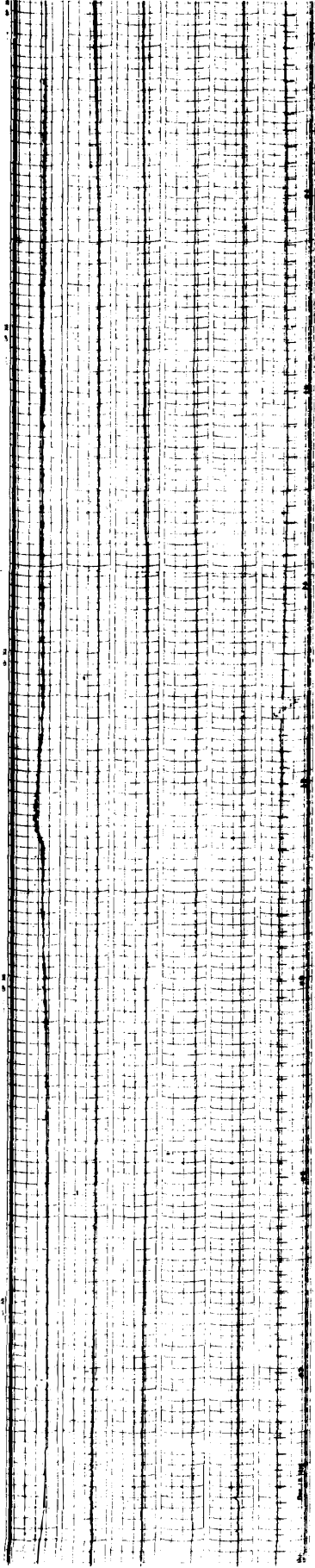


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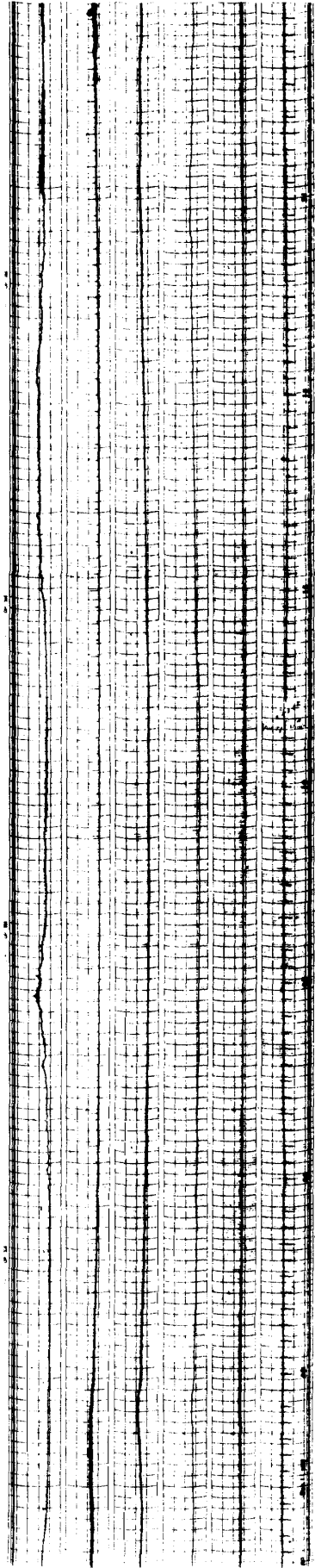
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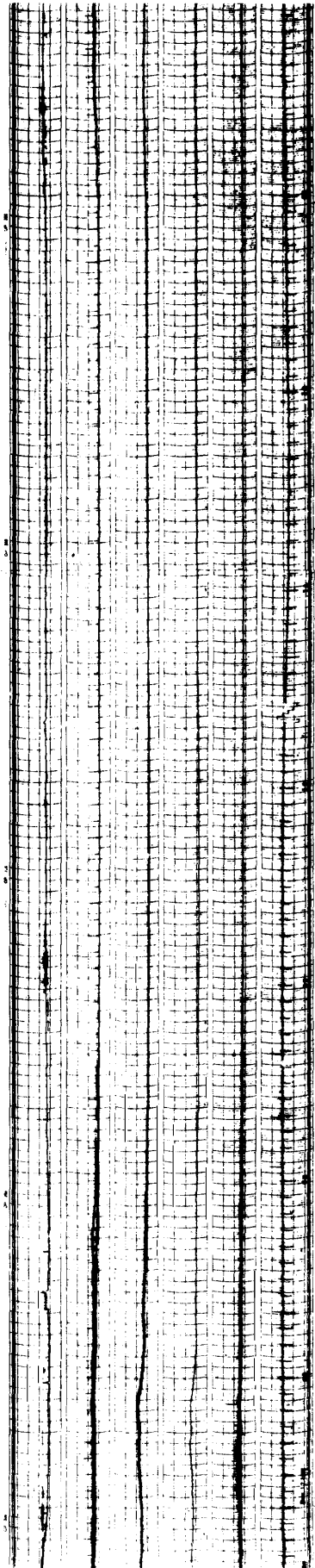
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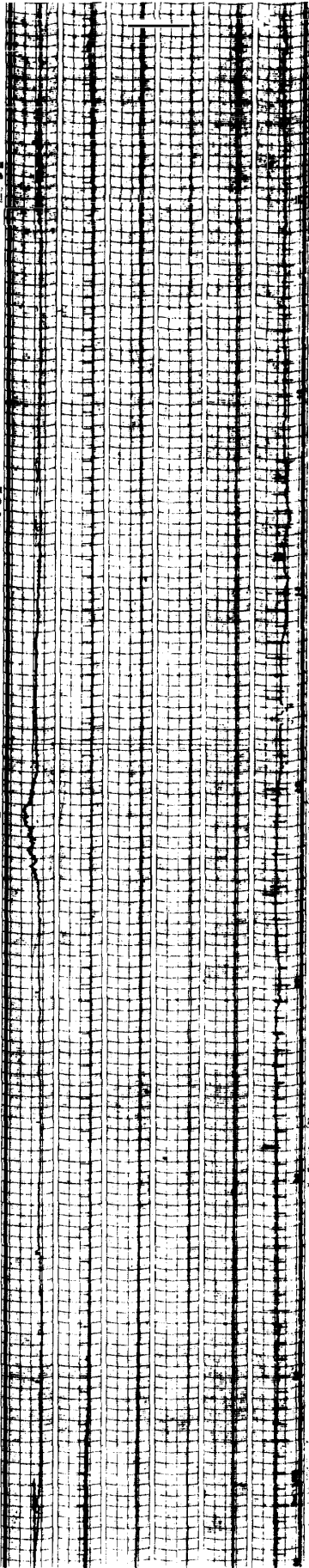
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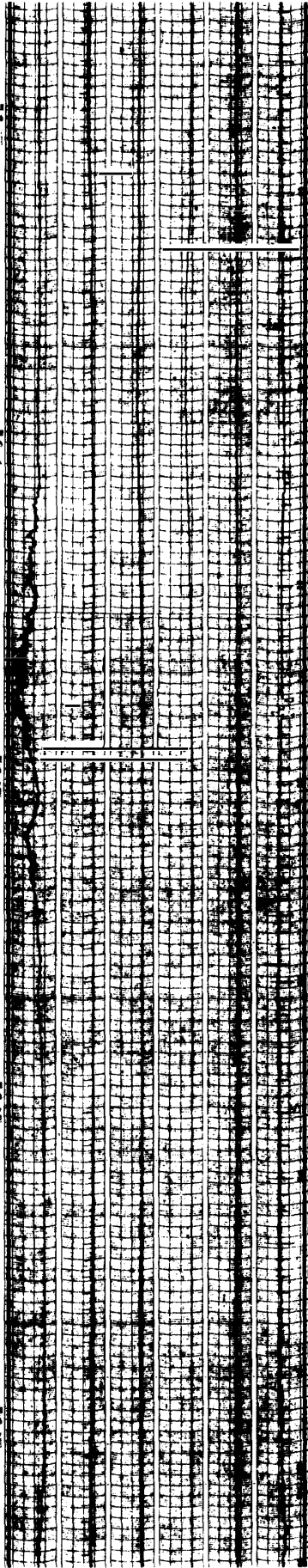
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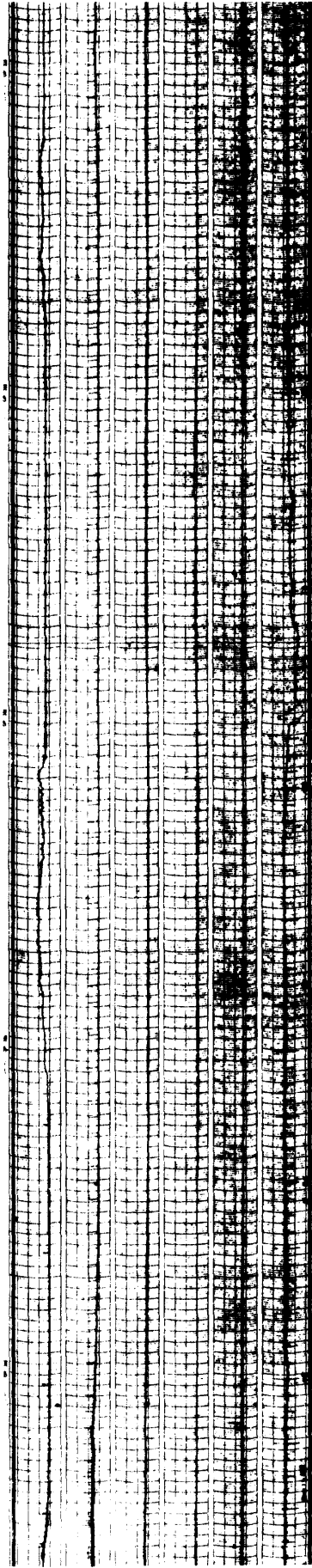
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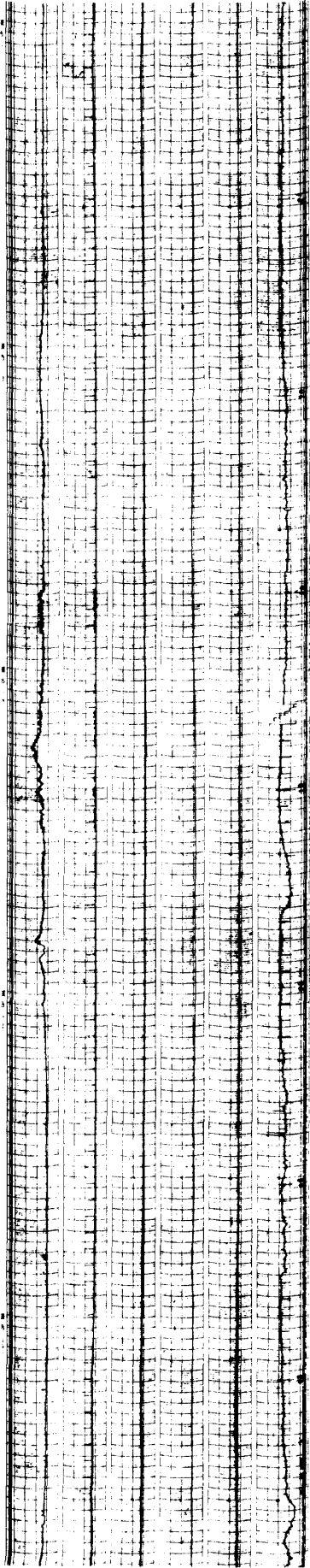


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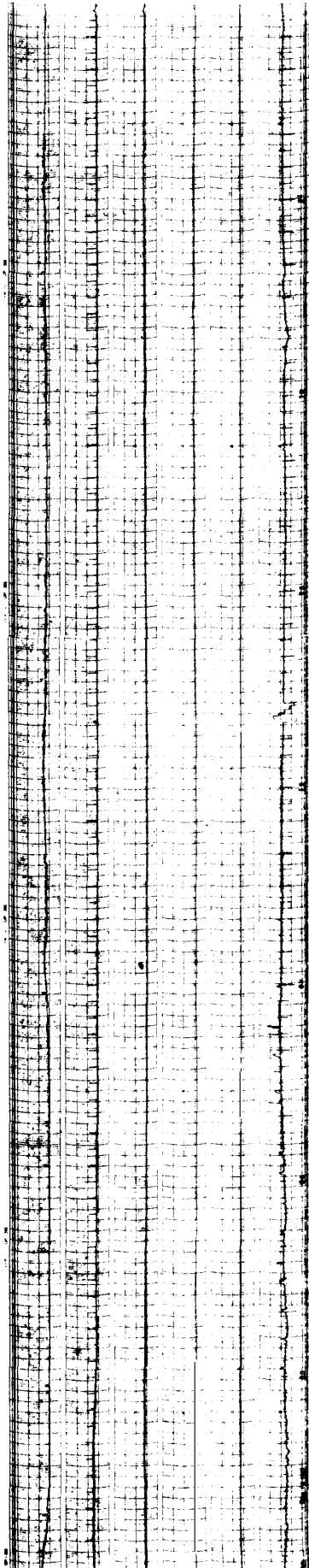
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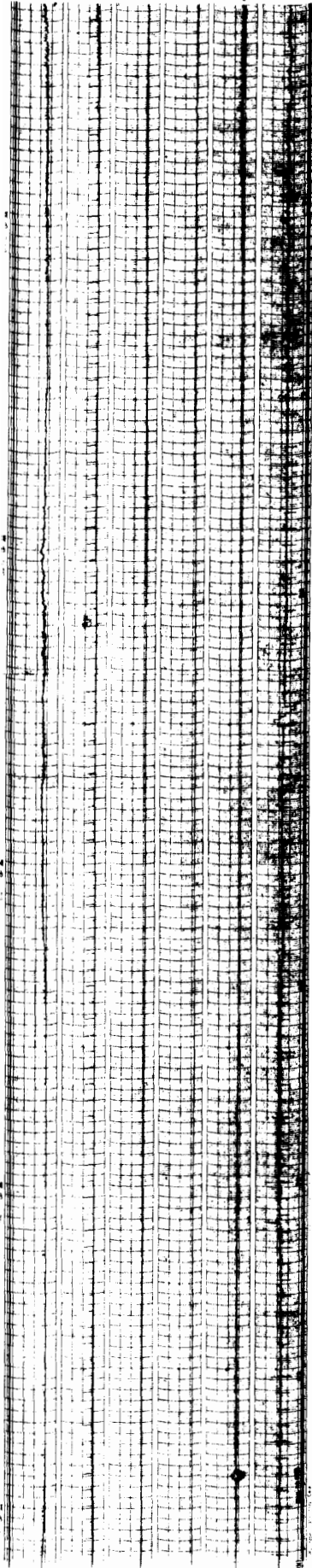
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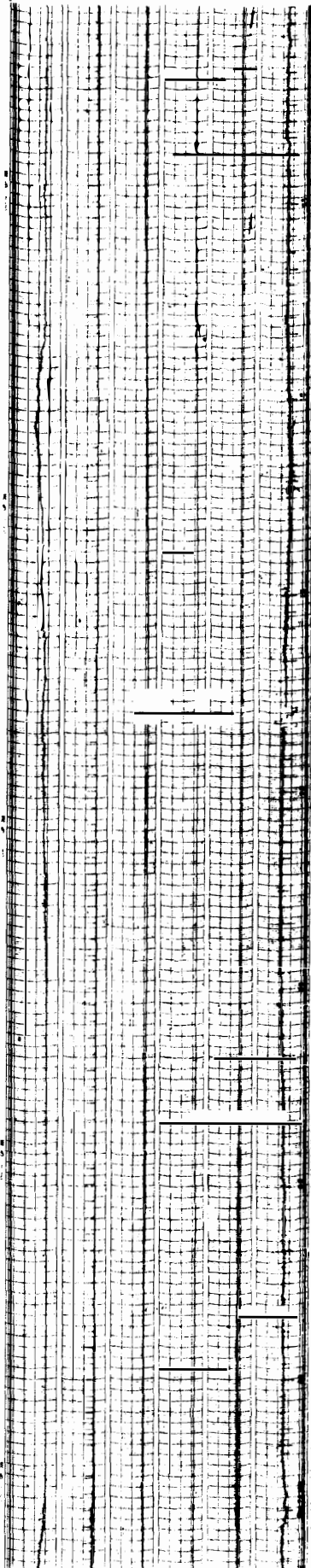
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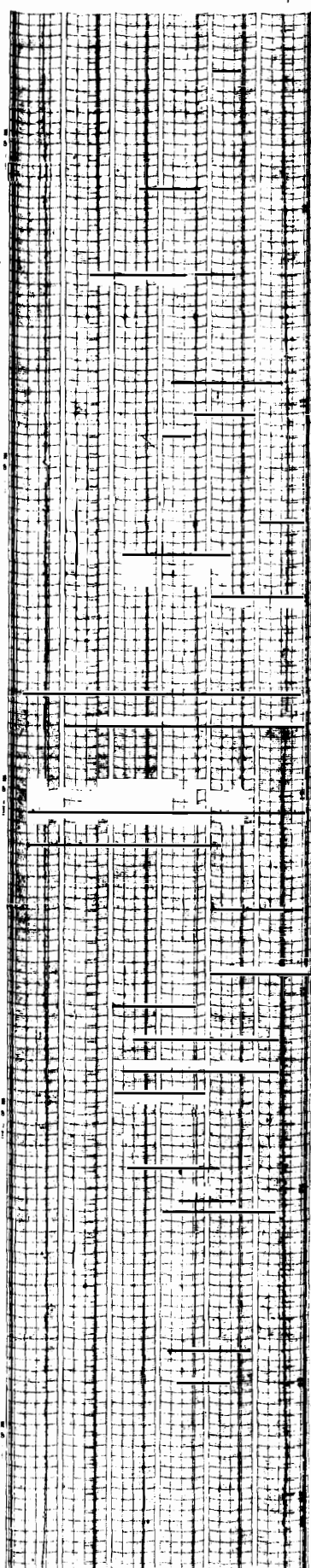
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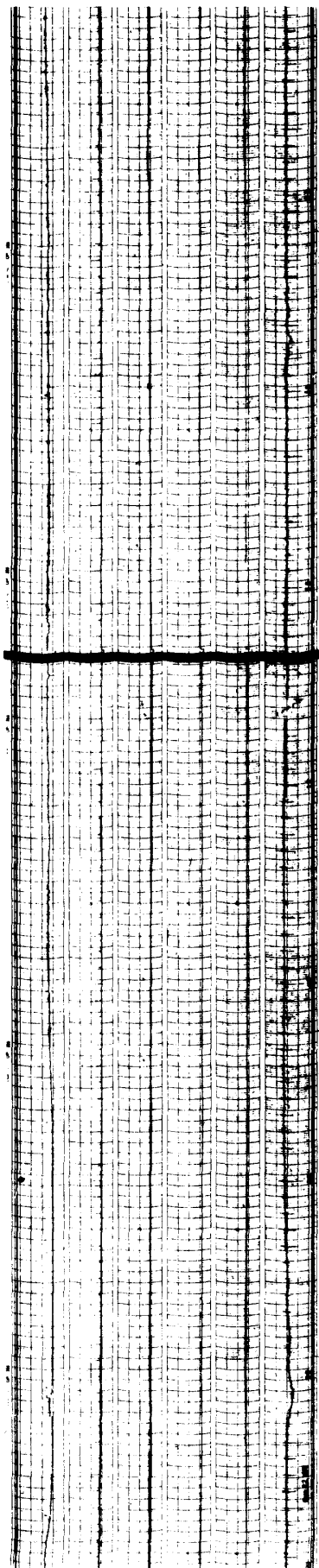
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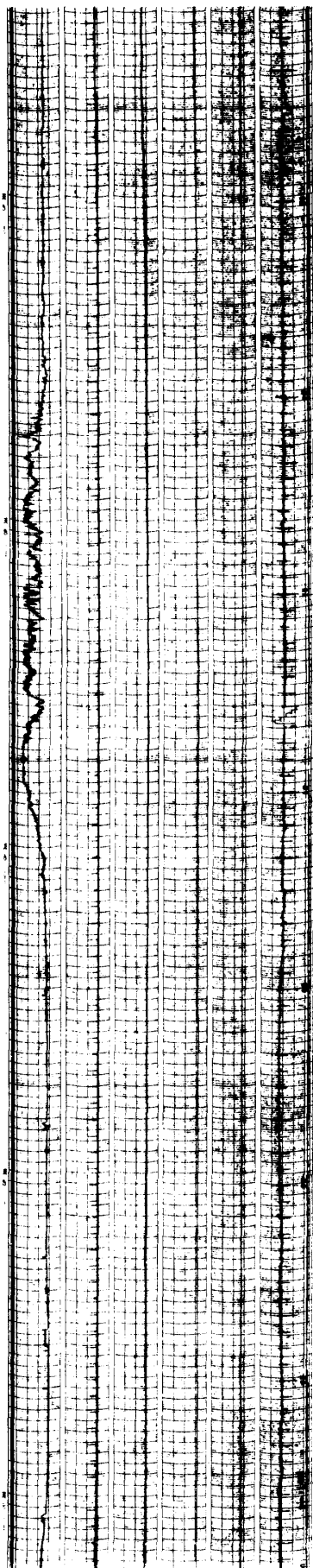
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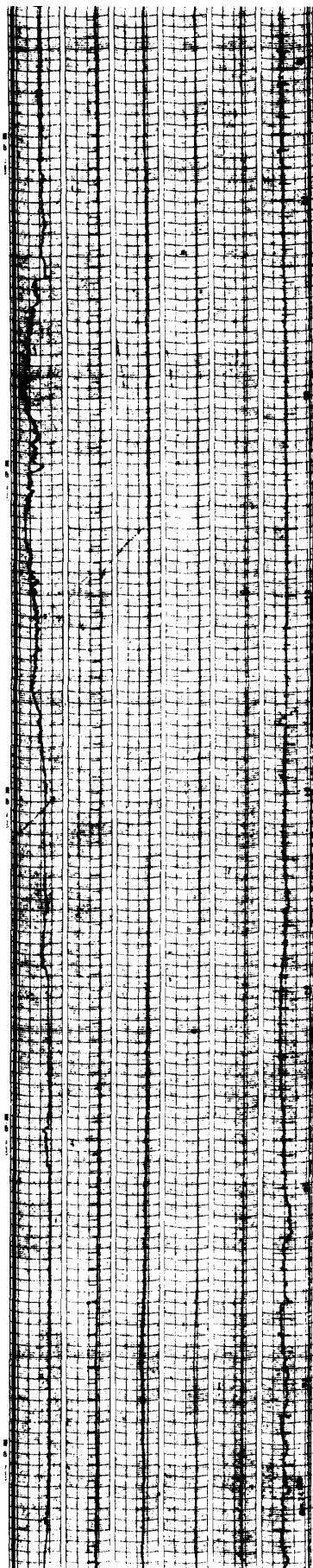
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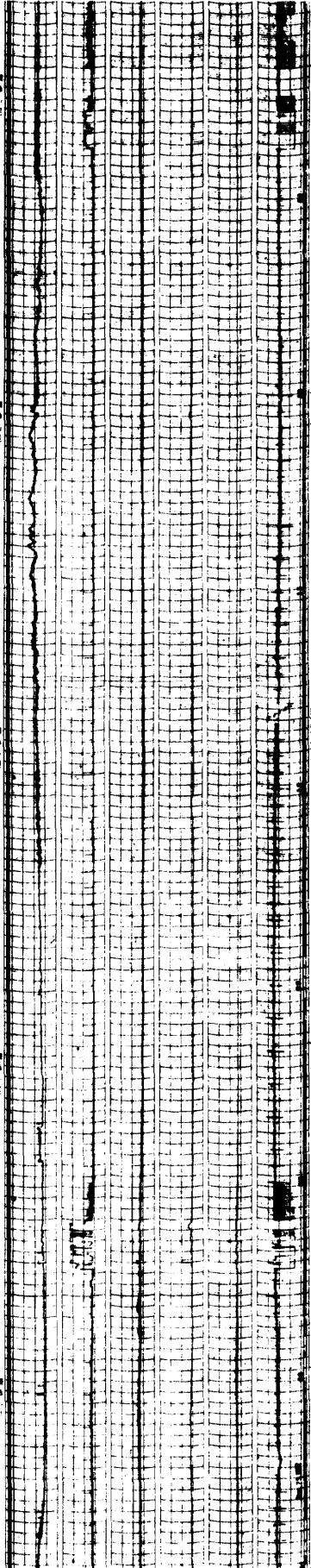


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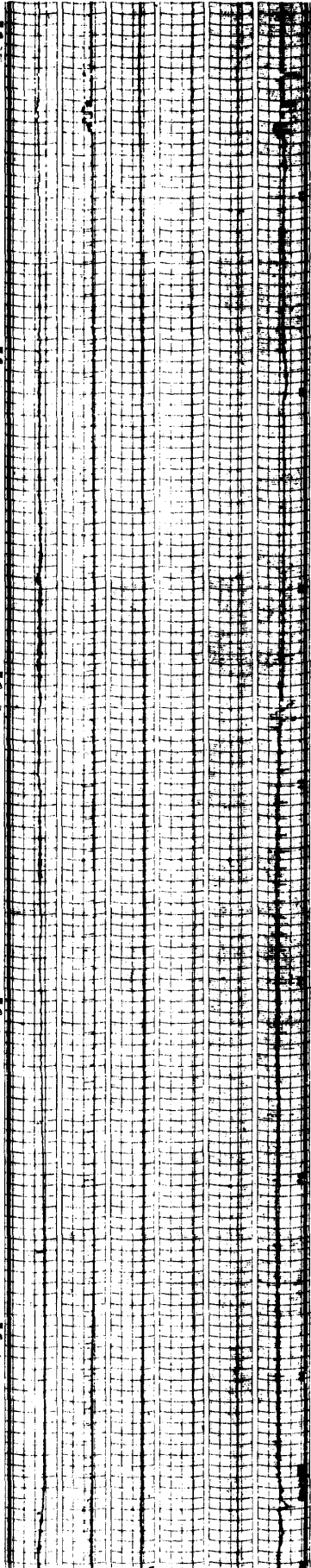
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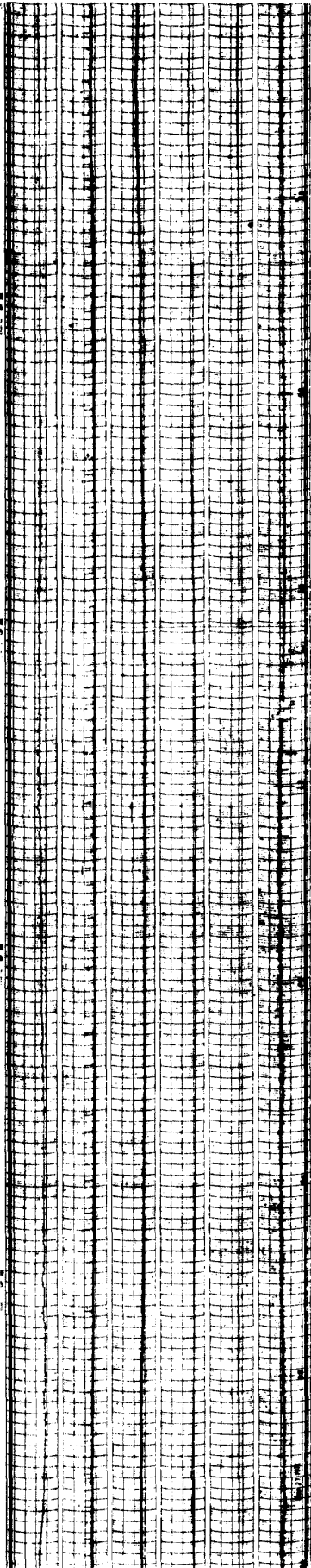
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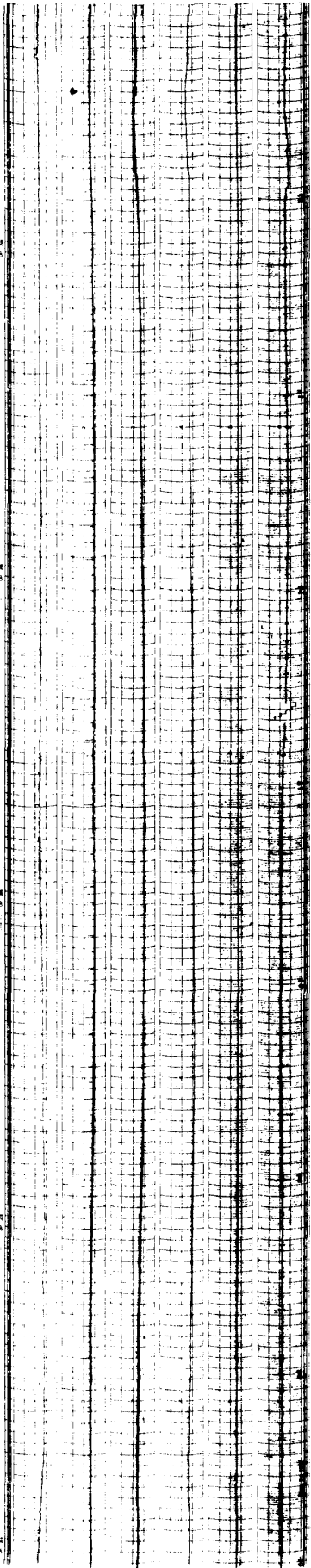


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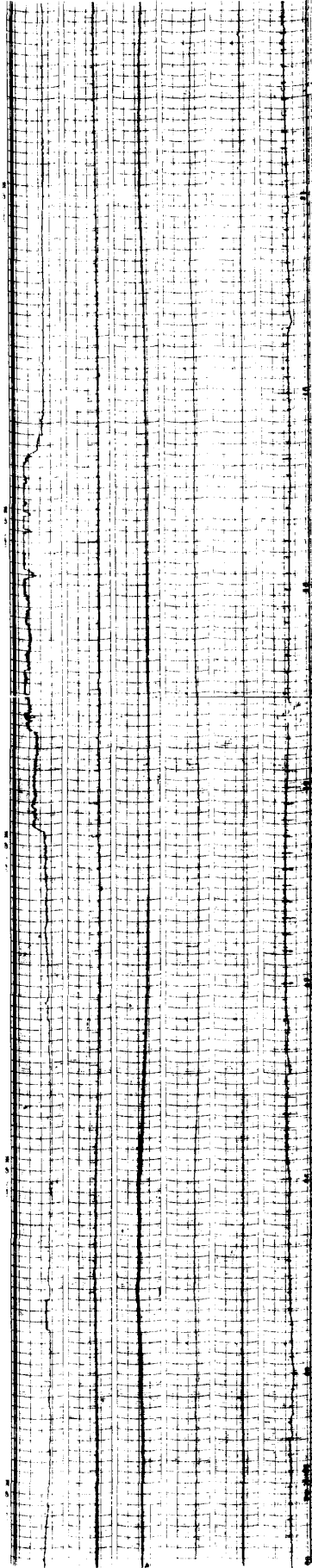
45° EAST MERIDIAN TIME IN HOURS

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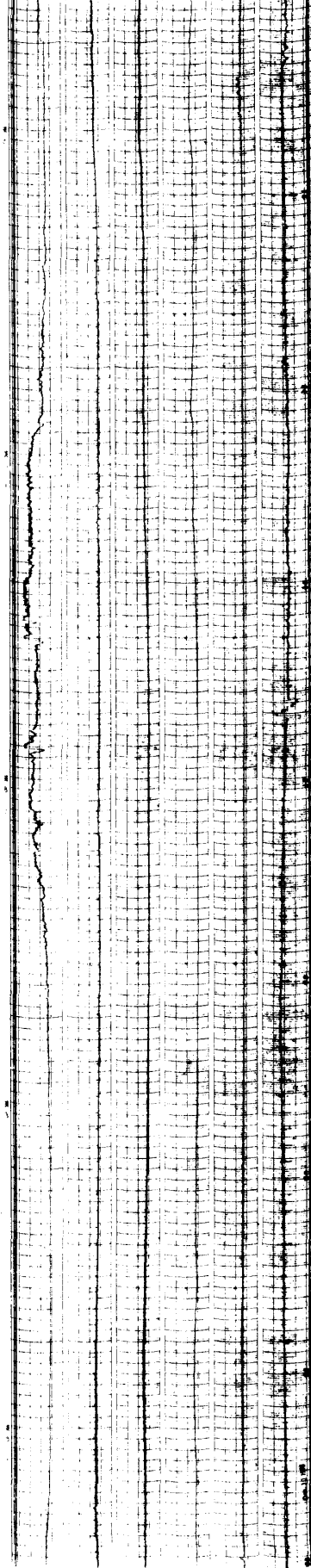
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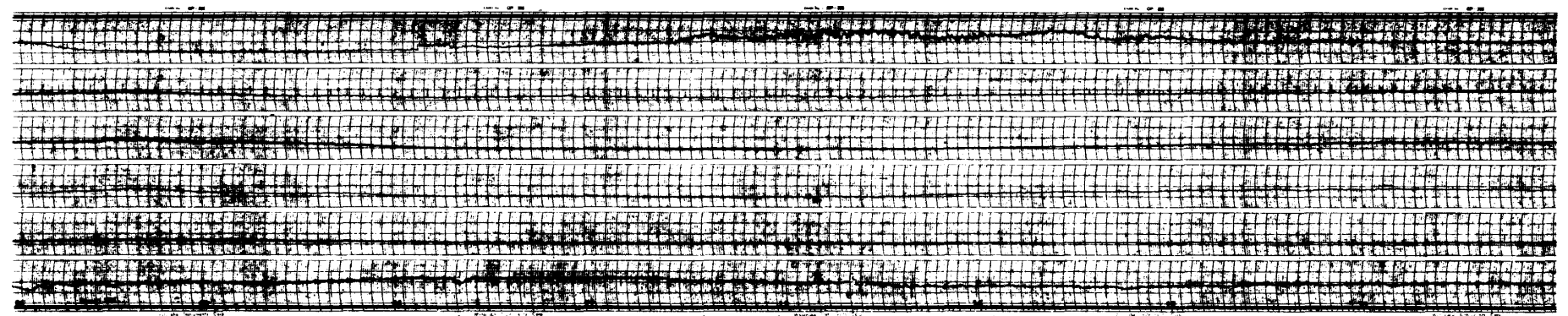
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45° EAST MERIDIAN TIME IN HOURS



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45° EAST MERIDIAN TIME IN HOURS