

RIOMETER RECORDS OF 30 MHz COSMIC NOISE
AT SYOWA STATION, ANTARCTICA IN 1976

Masami OSE, Akihisa YAMAKOSHI and Tsutomu SASAKI
(Radio Research Laboratories, Koganei-shi, Tokyo)

1. Introduction

Observations of cosmic radio noise with the standard riometer (relative ionospheric opacity meter) at 30 MHz have been carried out at Syowa Station, Antarctica, since February of 1966 by members from the Radio Research Laboratories.

This report has been prepared in order to make the data available to ionosphere physicists. The data records covering the period from January 1 to December 31, 1976 are deposited in the Radio Research Laboratories.

Inquiries about the contents of this report should be addressed to:

Radio Research Laboratories
Ministry of Posts and Telecommunications
2-1, Nukui-Kitamachi 4-chome, Koganei-shi
Tokyo 184, Japan

2. Location

Syowa Station			
Geographic		Geomagnetic	
Latitude	Longitude	Latitude	Longitude
69° 00' S	39° 35' E	69.6° S	77.1° E

3. Observers

Akihisa YAMAKOSHI (Radio Research Laboratories)
Tsutomu SASAKI (Radio Research Laboratories)

4. Method of Measurement

The standard riometer, which is still in operation at Syowa Station, has a frequency of 30 MHz and a bandwidth of 3.5 kHz. It is connected to a vertically directed five-element Yagi antenna which is designed to match the 50 ohm coaxial transmission line(8D-2V) of 80 meters in length. The elements of the antenna are oriented in the east-west direction.

The noise power output is recorded by a strip chart recorder with a 1 mm/min chart speed, and noise power levels of 0, 1, 2, 3 and 4 dB (from a reference noise diode) are introduced into the receiver once a day for calibration.

5. Remarks

The noise power measured by a riometer is not identical with the cosmic noise power itself because of ionospheric absorption. If the ionosphere is in a quiet state the diurnal variation of the cosmic noise power is easily extracted from the chart recordings. However, several complications can occur because of the seasonal, diurnal and abnormal short-term variations in ionospheric absorption.

On account of the rotation of the earth, there is a difference between solar and sidereal time. Therefore the time(local time) when the same radio source passes the zenith gets earlier by about 4 minutes each day and returns to its initial state in a year.

Ionospheric absorption data obtained by means of the riometer method are given in the C.N.A. tables, where the cosmic noise absorption is defined by the deviation of the cosmic noise from its monthly reference level. The reference level is calculated from selected quiet diurnal variations in the month. The hourly values of the cosmic noise absorption are shown in dBm.

References

- Ishizawa, K.(1970): Riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica from February 1968 to January 1969. JARE Data Rep., 7(Ionosphere), 65 p.
- Isozaki, S. and Miyazaki, S.(1973): Riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica in 1972. JARE Data Rep., 20(Ionosphere), 76 p.
- Nishimuta, I. and Yabuuma, H.(1974): Riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica in 1973. JARE Data Rep., 24(Ionosphere), 74 p.
- Ogata, T. and Ose, M.(1972): Riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica in 1971. JARE Data Rep., 18(Ionosphere), 62 p.
- Ose, M. and Nishimuta, I.(1968): Riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica from February 1967 to February 1968. JARE Data Rep., 2(Ionosphere), 62 p.
- Ota, Y.(1970): Riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica, 1969. JARE Data Rep., 8(Ionosphere), 74 p.
- Shiro, I. and Sakamoto, T.(1971): Riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica in 1970. JARE Data Rep., 14(Ionosphere), 62 p.
- Sugiuchi, H. and Komiya, K.(1976): Riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica, 1975. JARE Data Rep., 35(Ionosphere), 84 p.
- Yamazaki, I. and Shiro I.(1975): Riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica in 1974. JARE Data Rep., 29(Ionosphere). 84 p.

Table 1, 30 MHz cosmic noise absorption at the first minute of each hour.

SYOWA STATION				45° EAST MERIDIAN TIME (U.T.+3 hours)										January 1976										
Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
* 1			0.4													0.1								
2			0.7	0.8				0.4	0.4															
3	0.3		0.5		0.5	0.8											0.1	0.7	0.6		0.1			
4	0.2		0.7		0.2	0.4		0.2	0.1	0.2								0.5	0.1			0.2		
5			0.2	0.2	0.2	0.3				0.8	0.5					0.4						0.4	0.3	
6	0.2		0.3		0.3		0.1	0.5	0.2												0.4	0.3	0.1	0.5
7	0.3	0.2	0.7	0.3	0.3	0.1	0.5			0.7	0.2										0.1	0.2		
8			0.1	0.1						0.3	0.4	0.3												
9					0.1					0.4														
10			0.3		0.3	0.1													0.5					0.2
11		0.3		0.1	0.4		0.6	0.2	0.2	0.1														0.2
12	0.2			0.7	0.4			0.2	0.2	0.1							0.1							0.2
13			0.5	0.2	0.5	0.1	0.3	0.2	0.4															0.3
14	0.1		0.2	0.5	0.7	0.2	0.1				0.1	0.5	0.2	0.4	0.2	0.2	0.9	0.8	0.3		0.5			0.1
* 15																								0.1
16			0.9	0.3	0.2	0.2	0.3																	0.8
17		0.3	0.1	0.1	0.2	0.2	0.6	0.3	0.2	0.5		0.4	0.3	1.4	1.1	0.4	0.1		0.4	0.1	0.1			
18		0.1	0.1	0.2	0.3	0.3				0.1	0.5				0.3	0.4	0.1		0.1					
19		0.1	0.4		0.2	0.2	0.2	0.2	0.2	0.6						0.1					0.1	0.4		
20	0.1		0.1		0.1		0.1	0.4	0.7	0.1	0.1													
21	0.2					0.1	0.5	0.2		0.5	0.2		0.1	0.5	0.5	0.2	0.6	0.5		0.2	0.2			
22		0.5		0.7	0.8	0.2	1.3	0.5	0.4		0.2			0.2	0.2	0.2	0.7	0.1	0.7	0.1		0.1	0.3	
23	0.1		0.2		0.2	0.2	0.6	0.5	0.2							0.3	0.5	0.9	0.9	0.6	0.4	0.2		
24			0.2	1.1	0.3		0.1		0.3										0.2	0.4	0.1	0.1	0.1	
25	0.1	0.6	0.9	0.2	0.4	0.2		C	C	C	C	0.2	0.2						0.2	0.4	0.1	0.1	0.1	
26	0.1	0.1	0.8			0.1															0.1	0.1		
27	0.3		0.3			0.1							1.6	0.2	0.1	0.1			0.2				0.2	
28				0.1	0.1				C	C		0.1									0.1	0.4		
29		0.2			0.1					0.1		1.2	0.2	0.1	0.3		0.5	0.4	0.4	0.2	0.6	0.4	0.1	
30																								
31			1.3	0.5	0.1	0.2	0.2	0.2		0.6	0.2	0.1		0.2	0.4			0.3	0.5	0.3				
Mean	0.07	0.07	0.31	0.19	0.21	0.12	0.14	0.10	0.10	0.10	0.08	0.09	0.09	0.09	0.10	0.09	0.10	0.15	0.12	0.08	0.08	0.08	0.03	0.06

* : Quiet day

Open spaces without figures correspond to quiet level

C : Failure of equipment

SYOWA STATION

45° EAST MERIDIAN TIME (U.T.+3 hours)

February 1976

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		1.5	0.6	0.2	0.7	0.2	0.7	1.0				0.1		1.0	0.9	0.1	0.8	0.2	1.3	0.2	0.4			
2	C	0.5	3.0	2.0	0.5	1.0	0.9	0.7	0.5			0.1	0.6	0.5	0.2	0.3		1.0	2.2	0.4	0.6			
3		0.3	0.4	1.2	0.2	1.5	0.9				0.5	2.5	1.1	0.9	0.6	1.1	0.6		0.9	0.8	0.2			
4	0.2	0.2		1.9	2.4	0.8	1.0	0.2						0.2	0.6	0.2		0.1			0.5			0.2
5	1.9	0.5	0.2														0.2		0.2		0.3			
6		0.5		1.6	0.7	0.4	0.5	0.4	0.1															
7	C		0.2	0.3	0.5	0.2								C	0.8	0.8	1.4	0.2	0.6	0.2				
8		0.2	0.2		0.7	0.2					0.2	0.2	0.2	C	C	0.1	1.6	0.1	0.2	0.2	0.1	0.2	0.1	
9	1.0	0.4		1.5	2.2	1.6		0.6	0.2	0.5	0.6	0.2	0.2	C		2.1	1.1	0.2		0.2				
10	0.8		3.0	0.5	0.6		0.4	0.5	0.5	0.5	0.1	0.6	1.8	1.0	0.9	0.5	0.6	0.6	1.9	0.6				0.1
11	0.3	0.1	0.4	0.3	0.3	0.3	0.1			0.3			0.8	0.7	2.0	1.2	0.6	0.5	1.0	0.5		0.1		
12	0.8		0.3	0.7	0.5	0.3	0.7	0.3			1.3	1.0	0.7	0.5	0.1	0.2	0.4	0.6	0.4	0.1	0.2	0.2		
13	0.2	0.9	0.9		2.0	1.2	0.2		0.9	0.2	0.2	0.4		C	0.4	0.2	0.1		0.7	0.1	1.0	0.8		
14				1.1	0.8		0.2	0.9	0.5					C	C		1.0	0.4	0.9	0.2	0.6			
15	0.2										0.3		0.1			0.6	0.2				1.0	0.5		
* 16																								0.5
17			0.1	0.1	0.5	0.2		0.5			0.1	0.1	0.1	C	1.3	0.6	0.5	0.5	0.6			0.6		
18				0.2						0.1		0.1	0.6	1.5	1.1	0.1	0.2	0.1	0.4	0.2		0.1		0.1
19			0.3	0.4	0.1	0.5	0.4			1.3	0.7	0.5	0.6	0.8	1.5	0.2	1.5	1.2	2.1	0.5				
20		0.1	0.3	0.5	0.4	0.2	0.3	0.7	0.5			1.6	0.4		0.4	C		0.5		0.2	0.1			
21	0.2				0.2	0.5	0.1	0.1		0.2	0.4	0.2	0.4	0.1	3.3	1.0	1.5	1.1	0.6	0.5		0.2		0.1
22		0.2		0.4		1.5	1.0				0.3			0.4	0.2		0.6	0.4	0.3		0.2	0.5		0.2
23		0.1																0.2						
* 24																								
* 25	C		0.1		0.2	0.1																		
26					0.4	0.2		0.7	0.8	1.1	1.1	0.9	0.6	0.9	0.2	0.2	1.3	0.6	0.5					
27	0.1	0.5	0.4	0.2								0.3		C	0.9	0.3	0.2		0.2		0.3			
28		0.7	0.7	1.0	0.5	0.5	0.5	C	C	C	C	C	C	C	0.5	0.5	0.1	0.1	0.3	0.1				0.5
29		0.5	0.4	0.4	2.2	0.4		2.9	0.2	1.5	0.1	1.0	1.0	0.5									0.2	
Mean	0.21	0.24	0.39	0.50	0.54	0.42	0.27	0.33	0.15	0.20	0.20	0.33	0.33	0.42	0.58	0.36	0.50	0.29	0.52	0.18	0.17	0.12	0.01	0.03

Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure of equipment

SYOWA STATION

45° EAST MERIDIAN TIME (U.T.+3 hours)

March

1976

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.2	0.8	1.9	1.2	0.5	1.1	0.4		1.8	0.4	0.2	0.3	1.0	0.2		0.7	0.8	0.2		0.6	0.2			
2		0.2		0.2	0.1	0.8	0.7	1.4	0.7	0.6	0.3	0.1		0.3	C	C		0.7		0.2				0.4
3	0.2	0.1	2.0	0.8	0.1	1.4	2.2	1.0	1.0	0.5	0.2	1.1	0.8	C	0.3	0.2	1.2	0.7	0.2			0.2		
4		0.5	2.6	0.2	1.2	2.2	0.4				C	C	0.1	C	1.3	1.0	1.1	0.7	0.3	0.4	0.1			
5							0.9		0.2	0.1	0.1	C	1.5	0.5	1.0		0.5	0.1			0.2			
6		0.2	0.2	0.1	0.1	0.6	0.7	0.4	0.1	0.9	0.9	0.4	0.1	0.7	0.7	0.6	0.4	0.1		0.4				0.1
7		2.5	0.8	0.6	2.0	1.7	0.8		0.4	0.1	0.8	0.2	0.2	0.5	2.3	2.3	2.6	1.0	0.1	0.1				
8	0.7	0.6	0.1	0.7	0.2	0.8	1.5	2.5	1.2	1.1	2.2	2.7	4.0	0.4	1.1	1.7	0.4	3.0	0.1	0.1	0.1			0.5
9	0.7	0.5		2.5	0.7	0.5	0.2	1.3	2.5	0.1	0.9	3.4	1.0	0.6		0.9	0.8	0.7	0.7	0.2	0.3		0.1	0.1
10			2.1	0.8	0.4	1.2	0.5	2.6	1.8		0.3	1.0	0.5	1.0	0.8	1.0	0.4	0.5	0.1	0.2				
11		0.1	0.7	0.4	0.2	0.1	1.0	1.3	0.2	1.0	0.6	1.2	0.8	0.4	0.1	2.7	0.5	1.5	0.6	0.8				
12	0.1	0.1	0.8	0.2	2.9	0.8	0.3	0.8	1.5	0.6	0.2	1.0	2.0	1.2	4.1	2.2	0.2	0.5	1.3	1.4				
13		0.4	0.3	0.6		3.0	0.4	0.1		0.7	2.3	0.9	0.8	0.1	1.0	1.1	1.0	0.5	0.6	0.7	0.4		0.1	0.1
14		0.3	0.4	0.4	0.2		1.0	0.9	0.5	1.9	1.0	0.3	0.1	0.3	0.6	0.3	0.5	0.4	0.3	0.2	0.2			
15			0.1	0.2		0.1		0.3	0.7	0.9	1.2	0.9	0.8	0.5	C	C	C	0.1	1.8	2.2	0.1			
16					0.1	0.1	0.3	0.2	0.2			1.1	0.6	C	C			0.8	0.2	0.1	0.1			0.1
17		0.4	0.5	0.5	0.2	0.2	0.2	0.2	0.2	0.1	2.5	3.2	1.9	0.5	2.0	1.0	1.1	0.7	0.9	0.7	0.2	0.2		
18		0.1	1.4	0.4	0.2	0.3	0.2				0.2	0.4	0.2	1.5	1.4	1.0	1.2	0.5	0.8	0.1				
19			0.2		0.1	0.3			1.0	0.1	0.5	1.1	0.6	1.0	0.5	0.8	0.7		0.2	0.2				
20			0.2	0.2	0.4			0.9	0.1		0.3	2.0	1.6	0.4	0.2	0.7	1.0	0.5	1.4	0.5	0.1			
21			0.1						0.3	0.1	0.1	1.0	0.3	0.5	0.5	0.1	0.5	0.9	0.6	0.2				
* 22										0.2	0.2	0.1												
* 23							0.2	0.2	0.3	0.6	0.2	0.2		0.2	0.5	0.5	0.4	0.6	0.3				0.1	
24	0.4	0.2	0.5			0.2																		
25												1.3	0.5	0.2		0.1	0.1							
26				0.7	0.2	0.2	0.5	0.4	2.3	1.2	0.2		0.2	C			0.1					0.1	0.2	0.1
27		2.0	0.5	0.3		3.7	0.8		1.2	0.9	0.5	1.2	1.2	0.5	0.4	0.3	0.3	0.6	2.2	0.8			0.2	
28	2.4	0.1	0.4	2.2	0.2	0.1	0.1	0.7	1.2	1.8	0.7	1.1	0.9	0.5	0.5	0.2	1.2	0.5	0.5	0.4	0.3			
29		0.1	0.2	0.1	0.3	1.3	1.3	0.8	0.4	2.2	0.4	1.5	0.7	0.2	1.3	1.0	0.7	0.8	0.6	0.1	0.2	0.1		
30		0.1		0.2	0.2		0.1	0.3	0.3	0.1	C	1.3	1.2	0.5	0.4	0.1		0.1	0.7	0.2				
31		0.2	0.2			0.2						0.4	0.8	0.9	C			0.2	0.7	0.2				
Mean	0.15	0.30	0.57	0.37	0.33	0.66	0.50	0.56	0.57	0.54	0.67	0.93	0.77	0.48	0.81	0.70	0.58	0.45	0.47	0.35	0.07	0.02	0.01	0.05

* : Quiet day

Open spaces without figures correspond to quiet level

C : Failure of equipment

SYOWA STATION

45° EAST MERIDIAN TIME (U.T.+3 hours)

April 1976

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				0.2	1.6	3.0	1.5	7.2	0.4	0.5	1.0		0.1	0.1		0.1	0.1					0.6		
2	0.1	0.1			0.2		0.4		0.2		0.4	0.5	0.5	0.2	0.5	0.2	0.1	0.5	0.3	0.2	0.2			
3		0.2	0.1	0.2	1.2	0.1	0.3	0.3	0.2		0.7	1.9	0.9	0.7	0.4	0.7	0.3		0.1			0.1	0.6	0.1
4		0.2	3.9	0.2		3.4	0.2	0.6	0.2	0.7	1.3	2.0	0.6	2.6	1.1	2.6	1.3	0.4						
5	0.2	1.5		0.2	0.2	0.7	1.0	1.9			1.1	1.0	0.9						1.2	0.4			0.1	0.3
6	0.5	0.6	3.3	1.0	1.7	1.2	1.0	1.4	0.6	2.0	1.5	1.6	1.3	3.1	1.7	1.1	1.0	0.2	0.4					
7		0.6		1.6	0.3	0.1	0.1	1.3				3.2	3.0	1.8	1.7	2.9	1.6	1.6	1.8	0.1				
8	0.2	1.1	0.5	3.5		0.6	0.2	0.2	1.5	1.2	1.1		0.6	1.9	1.8	0.6	0.4	0.5	0.7	0.1	0.2			
9		0.5	0.2	0.6	1.0		2.3	0.7	0.1						0.2		0.1	0.4	0.2	0.5				
10	0.5	0.3	0.5		0.2	0.3	0.5	0.8	0.7		1.7	1.5	1.2		0.5	1.0	1.7	0.5	0.3					
11					0.5	0.5										2.0	0.4	0.1	1.0	0.6	0.3			
12	0.1	0.1	0.1		0.4	0.1	0.2	0.4	0.5	1.0		4.0	3.3	1.5	1.2	1.7	1.3	0.7	0.3	0.1				
13					0.4	0.2	0.2		0.7	0.9	0.6		0.1	0.3	0.8	1.0	0.8	0.3	0.1		0.2	0.2	0.1	0.1
14	0.5		0.1	0.1	0.4	0.4	0.2	0.2	0.7	1.6	0.5	1.5	0.6	1.1	1.0	0.4	1.9	0.7		0.1	0.1			
* 15	0.4	0.1		0.9	0.8																			
16				0.1	0.1		0.1	0.5	0.1	0.1			0.1	0.3	0.4									
17		0.1	0.3	0.2																				
18	0.1												0.1		0.1		0.2							
** 19														C	C	0.8	0.5							
** 20																								
* 21																	0.4	0.1						
22								0.2	0.1	0.1	0.4	0.7	1.1	2.5	2.0	1.5	C		0.1					
23	0.1	0.5	0.3	1.2	1.3	1.7	0.1		1.4	1.5	1.1	0.1				0.1	0.4	0.5						
24									0.1	1.4	1.1	0.5	0.2	0.5	1.2	1.5	0.4	0.2	0.2	0.2				
25		0.1	0.2	0.2			0.3		0.1	1.2	0.4		0.3	0.5		0.1					0.2	0.2	0.3	0.1
26	1.0	0.2			0.3				0.1	0.7	0.1		0.6	1.2	1.0	0.6	0.4	0.1		0.5	0.5	0.2	0.3	0.3
27					0.1		0.2	0.2	0.5	1.5	0.3								0.2	0.1			0.2	0.8
28	1.0	0.5	1.1	0.9	0.4	0.4	0.4	0.6	0.4	0.2	1.2	C	0.5	0.2			0.2							
29		0.4					0.5	0.3								0.6	3.1	1.3	0.5			0.1		
30		0.9	1.5	0.1		0.5	0.5	0.5	1.8	1.1	0.2		2.6	C	C	C	C	C	0.8	0.2	0.2	0.2		
Mean	0.15	0.23	0.40	0.36	0.37	0.44	0.34	0.57	0.34	0.52	0.49	0.63	0.62	0.66	0.52	0.63	0.59	0.28	0.27	0.10	0.06	0.03	0.08	0.05

Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure of equipment

SYOWA STATION

45° EAST MERIDIAN TIME (U.T.+3 hours)

May

1976

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					1.6	0.4					0.7	0.8	0.5	0.5										
2	0.4	0.4	0.5	0.4	0.4		0.8	0.7	0.1	C	C			1.2	0.3	1.3	0.2	0.1	0.1				0.3	0.2
3	0.9		6.0			1.6	2.6	0.7		1.3	5.0	0.8	2.3	0.8	C	C	C	C	C					0.1
4	0.1	C			0.1			C	C	1.1	1.5	C	2.6		0.4	1.7	C	0.5	0.2		0.1	C		0.4
5		0.2	0.9	C	C	1.0	2.3	1.9	C	0.2	0.3	C	C	C	0.2	1.5	C	0.2	0.2					0.2
6		0.3	0.2		0.9	0.5	0.6	1.0	0.6	0.1	0.3	2.7	1.5	4.4	2.4	1.5	0.8	0.4			0.1	0.5		
7		0.3	0.2		0.7	1.5	0.3		0.2			C		0.4	0.2	C	C				0.1	0.4	0.1	
8	0.2	0.4	1.5		0.4	0.1	C	C	C	C	1.2	1.5	0.5		C	C	C	C	C	C	C	C	C	C
9	C	0.2				0.2		0.4							C									
10									0.1	0.1		C	C	0.4	0.1						0.2			
11								0.1		0.4	0.5	0.4	0.6	0.6	C	0.4	0.2		0.1					0.1
12	0.1		0.5	0.3	0.1	0.2		C	C	C			1.5	0.4	C	0.6	0.2		C		C	C	C	
13			C	C			C	C	C	C	C	C	C	C	C	C	C	C						
14												C	C	C	C							C		C
15	C	C	C											C										
16			0.1			0.2	0.1	0.2						C										
17																								
18																								
19																								
20				0.1			0.4	0.2	0.6	2.6	2.2	1.0	0.5	2.0	1.7	0.6	0.2	0.2						
21	0.6		0.2	1.1	0.8	1.3	1.9	1.3	1.0	0.7	1.0	1.1	1.8	2.8	C	C	C	0.4		0.5	0.4	0.1		
22		0.1	0.2	0.1	0.1	0.2	0.3	0.1			C	1.9	1.3	0.7	0.5	0.2			0.2	0.2	0.5	0.1		
23	0.3											3.5	1.4	0.4	0.2	0.4		0.5		0.1				
24					0.1	0.5	0.5			1.5	1.4	0.5	1.1	0.6		0.1								
25					0.2	0.1				2.3	0.7	1.2	1.1	0.2						0.1	0.2	0.2		
26						0.1														0.2	0.2	0.1		
27									0.1	0.1	0.5	0.1	C	0.7	0.7	0.1								
28				0.3	0.5	0.5	1.2	0.7	0.2	0.4	0.2	1.1	0.5	1.2	2.4	1.8	1.1	0.2						
29	0.5	0.3	0.2		0.8	1.0	1.3	1.0	0.2		0.3	0.6	0.7	1.9	1.4	1.4	0.4				0.2	0.2		0.2
30	0.3	0.2		1.3	1.3	0.2	0.9	1.1	0.7		0.5	1.4	1.6	3.3	2.9	1.3	0.7	0.3	0.5					
31		1.0		0.3	0.1	0.3	0.1	0.5	0.5	0.5	0.2	0.1	2.5	1.2	1.9	0.9	0.5							
Mean	0.11	0.11	0.36	0.13	0.27	0.31	0.45	0.36	0.15	0.41	0.41	0.73	0.85	0.92	0.66	0.55	0.18	0.10	0.04	0.03	0.06	0.05	0.01	0.04

* : Quiet day

Open spaces without figures correspond to quiet level

C : Failure of equipment

SYOWA STATION

45° EAST MERIDIAN TIME (U.T.+3 hours)

June 1976

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		0.1										0.4	0.5	1.0	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	0.3				C	C	C													0.3
4	0.9	0.2			0.4	0.3	0.8	1.5		0.2	0.3	2.0	1.0	C	1.7	0.3	0.4	0.7	1.0	0.4	0.6	0.5		
5		0.1	0.7	0.2	0.5	1.2	0.9	0.9	1.3	1.3	1.8	2.3	2.9	0.7	0.3	1.1	1.8	1.2	0.3		0.2			
6		0.3	0.7	0.1						1.2	1.8	2.5	0.9	0.8	0.4	0.1	0.7	0.2			0.2			
7				0.4	0.3	0.4	0.8	0.1		1.2	2.1	2.9	1.1	0.8		0.3		0.2	0.4	0.3	0.3	0.2	0.2	
8		0.2	0.2	0.4	0.2	0.3	0.5	1.6	0.2	0.9	0.5	0.4	2.9	2.2	1.4	0.3	0.4	0.2	0.1	0.1		0.2		
9							0.2	0.2	0.5				0.4	1.3	C	C	C	C	C					
* 10			0.1	0.2														0.1	0.2					
11				0.1	0.4	0.8	0.9	0.3	1.5	1.1	1.5	1.7	1.1	0.7	1.0	2.5	2.0		0.4					
12		0.1			0.3	0.2	0.3		0.2		0.8	1.0	0.6	0.6	0.4	0.5	1.8	0.2	0.2					
13									0.6	0.2	0.1	0.1	0.7	0.4	0.2			0.2	0.2		0.1			
14									0.3	0.8	0.5													
* 15																								
* 16						0.1	0.1																	
17								0.1	0.4						3.5	1.0	0.6	0.2						0.1
18			0.1	0.2	0.2	0.7	1.1	0.2	1.5	0.2	2.0	1.5	1.7	1.1	1.9	1.2	0.7	0.5	0.5	0.2	0.1			
19			0.2	0.1			0.2	0.2			0.1	0.9			0.5	0.1			0.1	0.1				
20					0.2								1.0	0.7	0.4	0.5	0.1		0.3	0.1				
21																								
** 22																								
** 23								0.5	0.2															
** 24								0.1	0.5	0.5														0.1
25				0.1	0.2	0.1	0.5	0.5	1.0	0.9	2.0	1.5	0.7	C	0.2	0.1	0.3	0.4	0.2		0.2	0.1		
26		0.2	0.8	0.3	0.5	1.2	0.1																	
27				0.2	0.7	1.3	0.2		0.3	0.2		0.4	0.4	0.2										
28			0.4	0.4	0.7			0.1	0.1	0.5	1.9	1.2	0.5	0.1										
* 29																								
30							0.5	0.1	0.1	0.2	0.1	1.2	1.8	0.3	0.3	5.2	2.9	0.8	0.7	0.2				
Mean	0.03	0.04	0.11	0.08	0.15	0.22	0.26	0.21	0.30	0.31	0.55	0.68	0.69	0.37	0.45	0.48	0.43	0.18	0.17	0.05	0.06	0.03	0.01	0.01

Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure of equipment

JARE Data Reports

SYOWA STATION				45° EAST MERIDIAN TIME (U.T.+3 hours)																	July		1976	
Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			0.2	0.6	0.4	0.9	1.0	1.3	1.0	0.2	0.4	1.0	2.0	2.5	0.8	2.8	2.0	0.7	0.5	0.2				
2		0.2	0.2	0.1	0.7	0.5	0.3	0.2		0.1	0.2	1.0	1.0	0.5	1.9	1.0	1.1	0.6	0.5	0.4	0.2		0.1	
3									0.6	0.9		1.5	2.4	1.6	1.1	2.3	0.4	0.5	0.1		0.7	0.6		
4	0.2	0.2				0.2	0.1	0.2	0.2		1.2	0.5	2.7	3.1	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				0.1	0.4	0.3	0.5		
7				0.1		0.2	1.0				1.5	0.5	1.0	C	0.5	0.5	0.7		0.2	0.4	0.4			
8				0.4				2.2	0.6	1.2	0.4	1.7	0.1	0.7										
9	C	C		0.5	0.4	0.2	0.3	0.2	0.4	1.5	1.0	0.3	0.7	0.2	0.2	1.0	0.5	0.1	0.5					
10		0.1	0.1						1.0	1.0	2.0	1.0			0.5	0.2	0.2							
* 11					0.1																0.1			0.1
* 12					1.1																			
13								0.1				0.9	0.7	0.4				0.2	0.2					
14												0.9	0.2											
15						0.1	0.1				0.1	0.1				0.2								
16			0.3	0.4	0.2	0.3	0.2		0.2	0.6	1.2	3.8	4.5	0.7	0.6		0.5	1.0	0.3					
17		0.2							0.2	0.1			0.5	0.2										
18									0.5			0.6	0.2	0.2										
19			0.1	0.2	0.2	0.1																		
20						0.4			0.1															
* 21																			0.2					
* 22																								
* 23							0.3															0.3		
* 24																								
25														0.2			0.7	0.6	0.1	0.1	0.1			
* 26				0.1	0.1	1.3																		
27															0.1	1.3	0.7	0.1	0.1					
28				0.5	0.4		0.2				3.5	3.9	1.0	0.5	0.6	1.3	0.3	0.7	0.7	0.1				
29		0.1	0.2	0.7	0.3	0.5	0.4	0.9	0.7	0.2	2.9	1.5	1.9	2.3	1.0	0.2	0.7	0.5	0.7	0.4				
30			0.3	0.1	0.7	0.9	0.9	0.9	1.3	1.4	4.0	0.6	0.1		0.2	0.2	1.6	4.0	0.8	0.4				
31		0.2	0.3	0.5							1.4	2.1	2.4	0.9	1.7	1.0	1.0			0.5		0.1		0.1
Mean	0.01	0.03	0.04	0.13	0.13	0.20	0.18	0.23	0.21	0.24	0.68	0.75	0.73	0.50	0.31	0.41	0.35	0.34	0.17	0.10	0.06	0.05	0.01	0.01

Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure of equipment

SYOWA STATION

45° EAST MERIDIAN TIME (U.T.+3 hours)

August 1976

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									0.1	0.1			0.9	0.5	0.7	0.5	0.7	0.3		0.1	0.2			0.4
2	0.4	0.1				0.5	1.2	0.4		1.0	0.6	0.1	1.2	0.4			0.5	0.2	0.1	0.1				
3				0.1				0.3		1.8	1.4	0.9			0.3	0.4					0.4	0.2	0.1	
4	C	0.2	0.3	0.2	0.2	1.0	0.1		0.6	0.3								0.5	0.4					
5			0.2	0.1	0.1	0.2	0.2											0.4				0.2		
6							1.3	0.2			0.1	0.6	0.2	C										
7													0.2	1.9	0.5	0.1		0.5	0.3					
8	0.4				0.5	0.1				0.7														
9					0.1						2.2	1.7	0.4	0.3	1.4	0.1	0.2	0.2						
10			0.2	0.3	0.1		0.9	0.9	1.4	0.5						0.7	0.9	0.3	0.1	0.1	0.3	0.2	0.1	
11		0.1	0.1	0.3	0.1	0.7	0.5	0.4	0.1	0.1	2.0	1.2	0.2		0.6	1.0	0.8	0.4			0.2			
* 12							0.2	0.1																
* 13												C	C	C		0.2	0.2							
* 14															0.2	0.1		0.3	0.4					
* 15																								
16								0.2				C	C	C				0.2	0.3					
* 17		0.2		0.2	0.4																			
* 18								0.2																
* 19			0.1						0.1	0.4		0.2	0.3											
* 20						0.2																		
21											0.5	0.2	C	0.7	0.6	0.3								
22		0.1	0.1		0.2	0.5	0.6						0.6	3.3	1.0	0.9	0.7	0.2	0.2	0.1	0.1			
23				0.2			0.3						0.6	3.3	1.0	0.9	0.7	0.2	0.2	0.1	0.1			
24				1.7	0.6			0.8	1.1	0.6	1.2	0.2	2.6	0.3	0.6	3.0	2.7	0.7	1.0					
25		0.2	0.6	0.3	0.4	0.1	1.0	1.4	0.2	1.0	2.9	1.7	3.0	2.1	2.2	1.4	0.2	0.1	0.9	0.1			0.1	
26			0.2	0.2	0.5	0.4	2.1	0.4		1.3	1.2	1.6	1.7	0.5	2.6	2.0	1.8	0.4	0.3	0.2	0.3			
27		0.6		1.0	0.9	0.3							0.2	C	3.3	2.5	2.3	0.9	0.6	0.1				
28			0.6	0.9	0.4	0.5	0.6	0.1					1.3	1.3	1.1	0.8	0.5	0.6						
29								0.2	0.5	0.2			0.6	1.5	0.4	0.1			0.5	0.2	0.2			
30			0.1	0.1	0.7	0.5	0.4	0.1	0.1	0.4							0.1							
31			0.1											C				0.2	0.2	0.1				
Mean	0.02	0.04	0.08	0.18	0.16	0.16	0.27	0.18	0.13	0.27	0.37	0.30	0.46	0.48	0.50	0.46	0.39	0.20	0.17	0.03	0.05	0.01	0.01	0.01

Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure of equipment

SYOWA STATION			45° EAST MERIDIAN TIME (U.T.+3 hours)																	September 1976				
Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
* 1				0.1				0.5	0.1	0.1														
2			0.2	0.7	0.4	0.2	0.6			2.7	0.5	2.4	0.2		0.7	0.7	0.1	0.3	0.5	0.2				
3	0.2	0.2		0.2	0.5	1.0	0.3		2.0	0.5	0.2	C	1.8	0.8	0.2	0.7	0.8	0.5	0.4	0.1	0.4	0.2		
4	0.4	0.7		0.1	0.7	0.5	1.4	0.8	0.6	1.5			3.2	1.5	1.1	0.2	1.3	0.1		1.1	0.8	0.4		
5	0.4	0.2		1.5	0.4	0.2		0.5	0.4					0.5	0.7	0.7	0.8	0.4	0.1					
6			0.1	0.2		0.5	0.5	0.9	0.5			C	C	C	C	0.1			0.1			0.2	0.1	
7				0.5	2.5	1.0	1.5	0.5	0.1	0.1		0.5	1.7	0.9	C	C	0.2	0.4	0.2		0.2		0.2	0.1
8		0.2		0.8	1.3	0.6											0.4		0.2				0.2	0.1
9					0.4	0.2	0.4	0.1				0.1	0.4			0.3	0.5	0.8	1.0	0.4		0.2		
10						0.3	0.1	0.2	0.1	0.1			0.4	C	C									
11										0.4	0.2													
* 12					0.1			0.1	0.1		0.1													
13	0.1	0.1	0.2		0.1	0.5	0.2	0.1				C	C	C										
14									0.2			C	C	C					0.2	0.2	0.1			
15								0.3	0.9		C	C	C				0.5	0.1						
16					0.1	0.7	0.1			0.3	0.1			C	C									
* 17							0.3	0.1						C										
18			0.2	0.5	0.5	0.2		0.5	0.6	4.1	1.7	0.1	0.5	1.5	C	0.3			0.1	0.2				
19														0.1	0.7	0.4	0.4							0.1
20		0.1	0.6	0.2	2.8	1.4	0.5	2.6	2.4	1.1	1.1	1.0	0.2	0.2	1.1	0.2	0.2	1.0		0.2		0.9	0.2	
21	1.3	1.2	0.1	0.5		0.1	1.1	1.6	2.3	0.6	0.1		0.6	1.0	0.9	0.2	1.1		0.5					0.2
22	0.1			0.9	0.1		0.2	0.5	0.6	3.6	1.0	C	C	C	0.8	1.0	0.9	0.4	1.4	0.4		0.1		0.1
23	0.1	0.6		0.5	0.5	0.6	0.1	0.1	0.1				4.1	1.2	0.9	5.8	1.8		3.2	0.9	0.2	0.1		
24			0.2			0.6	0.1					C	C	C			0.2	0.1		0.4				
25		0.2	0.4	0.3	0.7	1.0	0.2	0.3	0.1	0.3	0.2	0.2	0.5	1.6	0.9	0.3	0.2		0.3	0.2		0.2	0.1	
26				0.8	0.2		0.1		0.5	0.3		0.1					0.8	0.3	0.2	0.4				
27			0.4	0.3	0.1	0.6	0.8	0.5	0.1	0.3		0.5	0.4		0.1	0.4		0.1	0.3			0.2	0.3	
28		0.2	1.2	0.4	0.6	0.2	0.2					0.4	0.1	C	C	C								
29	0.1	0.1						0.1		1.5	0.3				0.1									
30				0.4	0.1		0.1	0.2						C	C									
Mean	0.09	0.12	0.12	0.29	0.40	0.34	0.29	0.35	0.39	0.58	0.18	0.38	0.54	0.46	0.30	0.39	0.34	0.15	0.25	0.12	0.06	0.03	0.06	0.04

Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure of equipment

SYOWA STATION				45° EAST MERIDIAN TIME (U.T.+3 hours)												October 1976								
Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		0.6	0.4	0.3	0.3	0.1	0.1						1.2	C	1.3	1.0	0.2	0.1	0.4	0.4	0.4	0.1		
2		0.8	0.6	0.4	0.8	2.0		2.7	0.9		1.5	0.8	0.8	0.7	1.4	1.0	1.5	0.4	0.5					
3			0.2	0.4	0.4	0.5		0.5	0.8	0.1	0.3	0.3	0.1		1.4	0.6	0.5	0.2	0.3	0.9	0.5	0.2		
4				0.4	0.2							0.4	0.2	C	0.1						0.4			
5				0.1	0.2	1.0	2.2	0.5	0.5	0.3			C			0.8								
6			0.2	0.3	0.5	0.2			0.3	0.1	0.4	0.2	0.3	C	1.7	0.2					0.5	0.2	0.2	
* 7												C	C	C										
8												C	C	C	C									
9							0.5	0.2						C					0.4	0.5	0.2			
10				0.2		0.3				0.2					0.2	0.3					0.7			
11		0.2	0.2	0.1		1.0	0.3	0.2						C		C	C	C	C		C	C	C	C
12		0.3	0.2	0.3		0.3		1.2	0.2			C									C	C	C	C
13		0.5	0.4	0.2		0.2		0.3	0.2	0.2	0.5	1.0	C	C	0.1	0.3								
* 14													C	C										
15				0.5						0.6	0.6	0.5		C	0.6		0.2	0.2	0.1	0.1		0.1	0.2	1.0
16	2.4	0.5	1.3	0.1	0.4	1.3	0.8	2.8	0.9		1.7	1.7	2.0	0.9	0.8	0.4	0.8	1.7	0.4	0.8	0.2			
17	0.8	0.1	2.3	1.5	1.3	0.7		0.4	1.8	2.6	0.6	2.3	1.0	0.6	1.0	0.9	0.9	0.8		0.2	0.3	0.3	0.1	
18		0.4	0.4	2.2	1.6		2.0	1.4	1.0		0.8	2.3	0.8	0.7	0.4	1.0	1.2	1.1	0.2	0.4	0.1	0.4	0.1	
19														C	C		0.1	0.4						0.2
20		0.5	0.4	0.7	1.1	0.3	0.1					0.6	0.5	C		0.5		0.1						
21				0.5	0.6	0.5		1.0	0.4	0.5														
22				0.3	0.4	0.2	0.1						0.2	C			0.3							
23							0.3							C	0.4	0.1		0.3				0.2	0.6	
24		0.1	0.1		0.1	0.1								C							0.7			
25					1.0	0.1	0.1							C										
26			0.2	0.2	0.2	0.2				0.1	0.2													
* 27			0.2									C	0.1	C					0.1					
28		0.1		0.9	0.2																			
* 29									0.4															
30																	0.3	0.4	0.5				0.1	
31			1.0	2.2	0.1		0.2	0.1	0.1	0.8	0.5	0.7	0.4	1.3	1.2	1.1								0.1
Mean	0.10	0.13	0.26	0.28	0.30	0.29	0.21	0.36	0.24	0.17	0.22	0.40	0.28	0.24	0.36	0.27	0.20	0.19	0.10	0.11	0.14	0.06	0.02	0.04

Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure of equipment

SYOWA STATION					45° EAST MERIDIAN TIME (U.T.+3 hours)														November 1976					
Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.1	0.5	1.4	1.8	0.4	0.1	0.7	0.1		0.7	0.6	0.1	0.4	1.3	0.5	0.3		0.2	0.2					
2	0.1		0.5	1.2	1.2	0.1	0.7	0.1				1.2	0.2											0.1
3												0.2	0.2	0.5	0.1			C						
4	0.1	0.5	0.6	0.7	0.2				0.3	0.1														
5															0.1	0.2								
6						1.8																		
7		0.1	C	C						0.9	0.4	C												
8					0.2	0.2	0.2							C						C			0.2	
9							0.2						C	0.2		0.1	0.2							
10			0.2		0.1					0.8	0.2		C	C						0.3	0.2	C		
11	0.9	C	0.1	0.6	0.4	0.5		0.2	0.7	0.4	0.2	0.1	0.3	0.3	0.2	C	C	C	C	C	C	C		
12			0.8	1.0	0.7	0.1	0.2	0.1	0.1	0.6	0.3	0.3	0.1	0.1	C	C	0.4			0.6				0.2
13	0.1	1.8	1.1	1.0	2.6	2.1	0.2		1.0	0.2	0.5	1.3	0.4	C		0.3		0.1					0.4	0.4
14	1.5	2.5	0.5	0.5	1.1	1.2	0.5		0.1						0.1	0.2		0.7	0.8	0.1				
15	1.4	1.1	0.7	0.7	0.9	0.2	0.3	0.2				C	C	C	C	0.1		0.5	0.4					
16		0.3		0.2	0.6					0.1	0.2		0.2	0.1	0.1						0.5	0.1		
17		0.2	0.2	0.5	0.6	0.4	0.2																	0.4
18		0.1	0.1	0.6	0.1		0.1	0.2										0.1						0.3
19	0.5	0.5	0.6	0.2	0.1			0.3																0.5
20	0.1	0.1	0.1				0.2														0.1			0.1
21			0.1			0.2																		
22			0.1																		0.1	0.1		0.2
23	0.4			0.1																				
24		0.1							0.3	0.2														
25								0.5	0.1	0.5	0.5	0.2			1.1	0.2	0.2							
26		0.1						0.2	0.4	0.2														0.1
27	0.7	0.1				0.1		0.5	0.1		0.5	0.3												
28	0.5	0.4																						
29													0.1		0.1	0.1		0.2	0.2		0.2			
30		0.6		0.1	0.1	0.1	0.2	0.6	0.6													0.2		
Mean	0.24	0.30	0.23	0.30	0.31	0.23	0.14	0.10	0.12	0.15	0.11	0.13	0.07	0.09	0.04	0.05	0.02	0.06	0.10	0.01	0.03	0.01	0.02	0.07

Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure of equipment

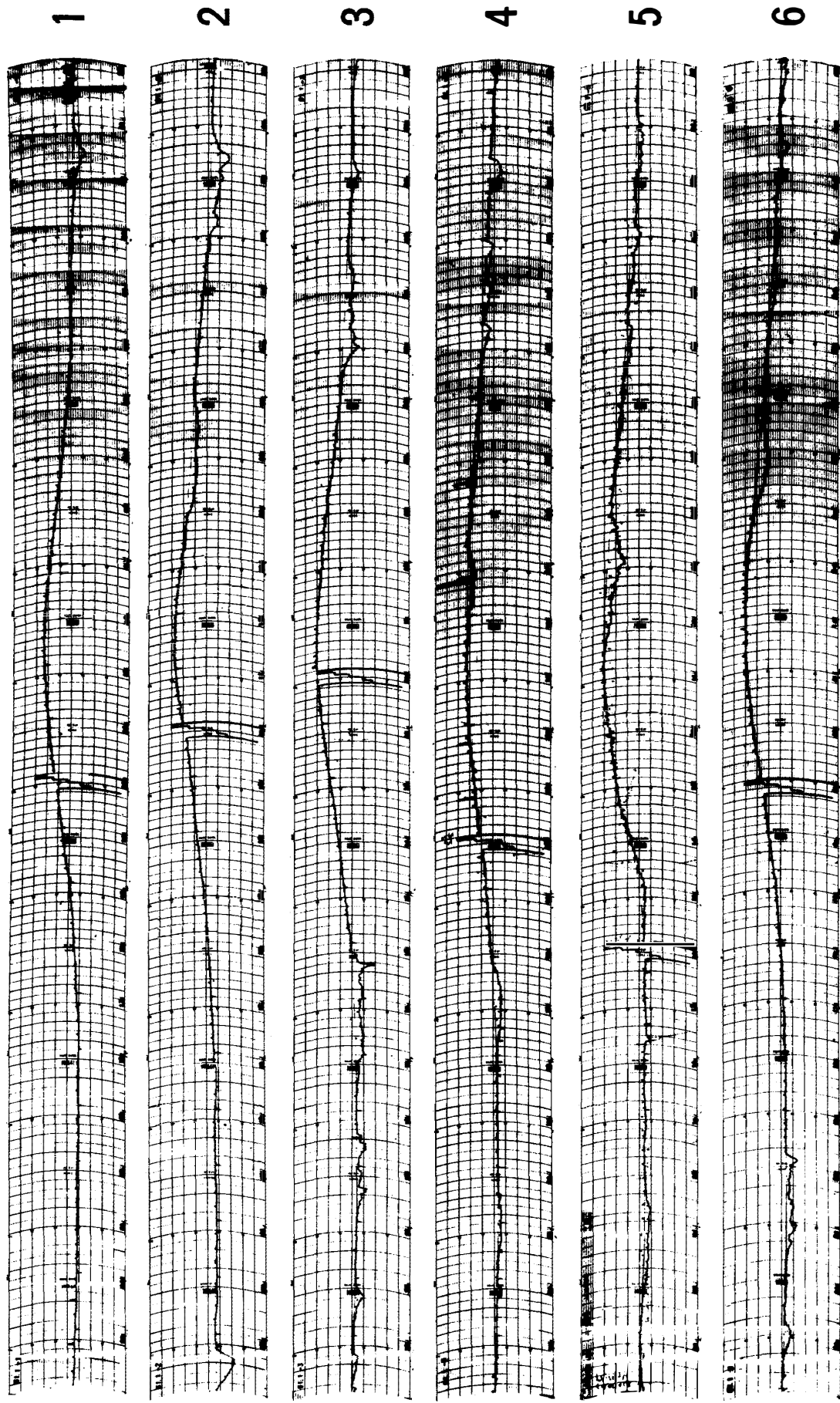
SYOWA STATION							45° EAST MERIDIAN TIME (U.T.+3 hours)										December 1976							
Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.2	0.4	0.2	0.2	0.1																			
* 2		0.2																						
* 3		0.4																						
4			0.2	0.1			0.1	0.4											0.1					
5				0.2	0.1	0.1													0.1					
* 6																								0.1
7	0.1		0.1			0.1	0.7																	0.1
8					0.2	1.4	0.3	0.1			0.5	0.3		0.2		0.2								0.1
9			0.2	0.2			0.1			0.1	2.1	0.4	0.5	2.2	1.9	0.5	0.5	0.1						0.2
10	0.1	0.6	0.4		0.5	0.1	0.2	0.1		0.1	0.3	0.1		C	0.5	0.2								
11		0.2	0.8	0.6	1.7		0.2	0.4	1.2	0.2	0.2		0.7	0.2	C	C						0.1	0.1	
12		0.3	0.1	0.1		1.0	0.2	0.1			0.1	0.2	0.4	0.3	0.1	C		0.8	0.2			0.1	0.1	
13	0.6	0.4	0.5	1.0	0.3	0.2			0.2	0.8		0.1			0.1	0.2	0.3		0.3	0.1				
14		0.2	0.2	0.7	0.1				0.5															
* 15														C	C									
16									0.4	0.3	0.1			C				0.3	0.2		0.2	0.2		
17	0.3		0.3		0.1	0.1																		0.2
18		0.4		0.2		0.1	0.4	0.5	0.5	1.1	0.5		0.1		0.1									
19	0.3	0.7	0.6	0.6		0.1	0.1	0.2	0.1	0.1	0.2					0.1								
20			0.3	0.4	0.1																			
* 21												C	C	C								0.4	0.1	
22	0.5	0.1	0.1			0.2		0.1	0.1	0.1		0.2	C	C		0.3	0.2	0.1				0.2	0.4	
23	0.1	0.2		0.1	0.2	0.1	0.1	0.1	0.1	0.1														
24			0.2								0.1				0.1									
25					0.1	0.1	0.1	0.3							0.4	0.1		0.1						
26			0.2	0.2	0.5	0.2					0.5	0.1												
27		0.2	0.2		0.2																	0.2	0.2	0.5
28	0.2	0.1	0.1	0.4	0.2	0.2	0.5	0.2			0.1													
29					0.1	2.0	0.8	0.1	0.1	0.1		1.9	1.6											
30														C	0.1	0.1	0.2	0.4	0.1	0.1				
31	0.4	0.5	0.2					0.3	0.6	0.1													0.1	
Mean	0.09	0.15	0.16	0.16	0.14	0.19	0.12	0.09	0.12	0.08	0.13	0.10	0.11	0.11	0.11	0.04	0.06	0.04	0.04	0.01	0.01	0.02	0.03	0.03

Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure of equipment

JAN 1976

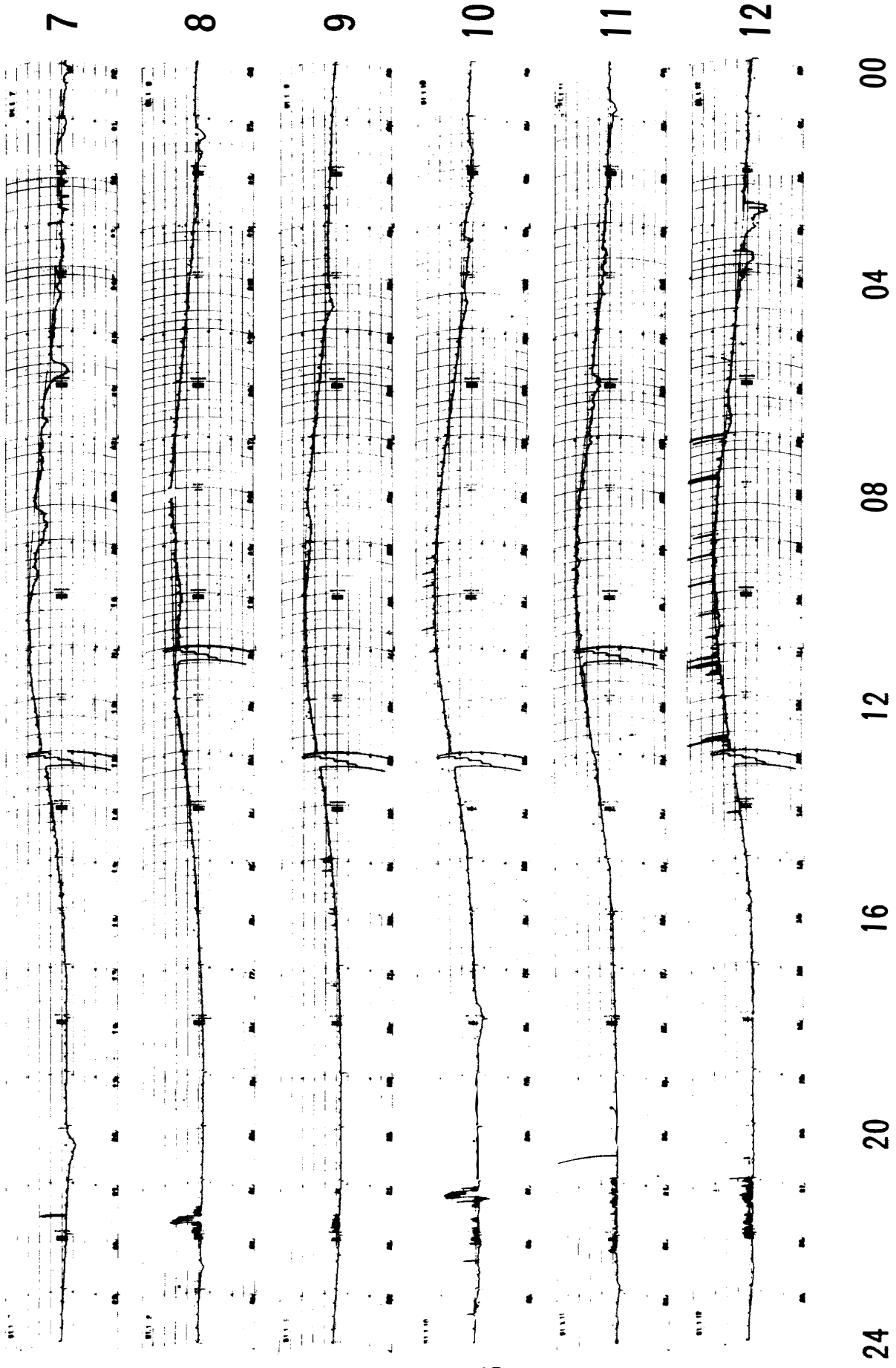


24 20 16 12 08 04 00

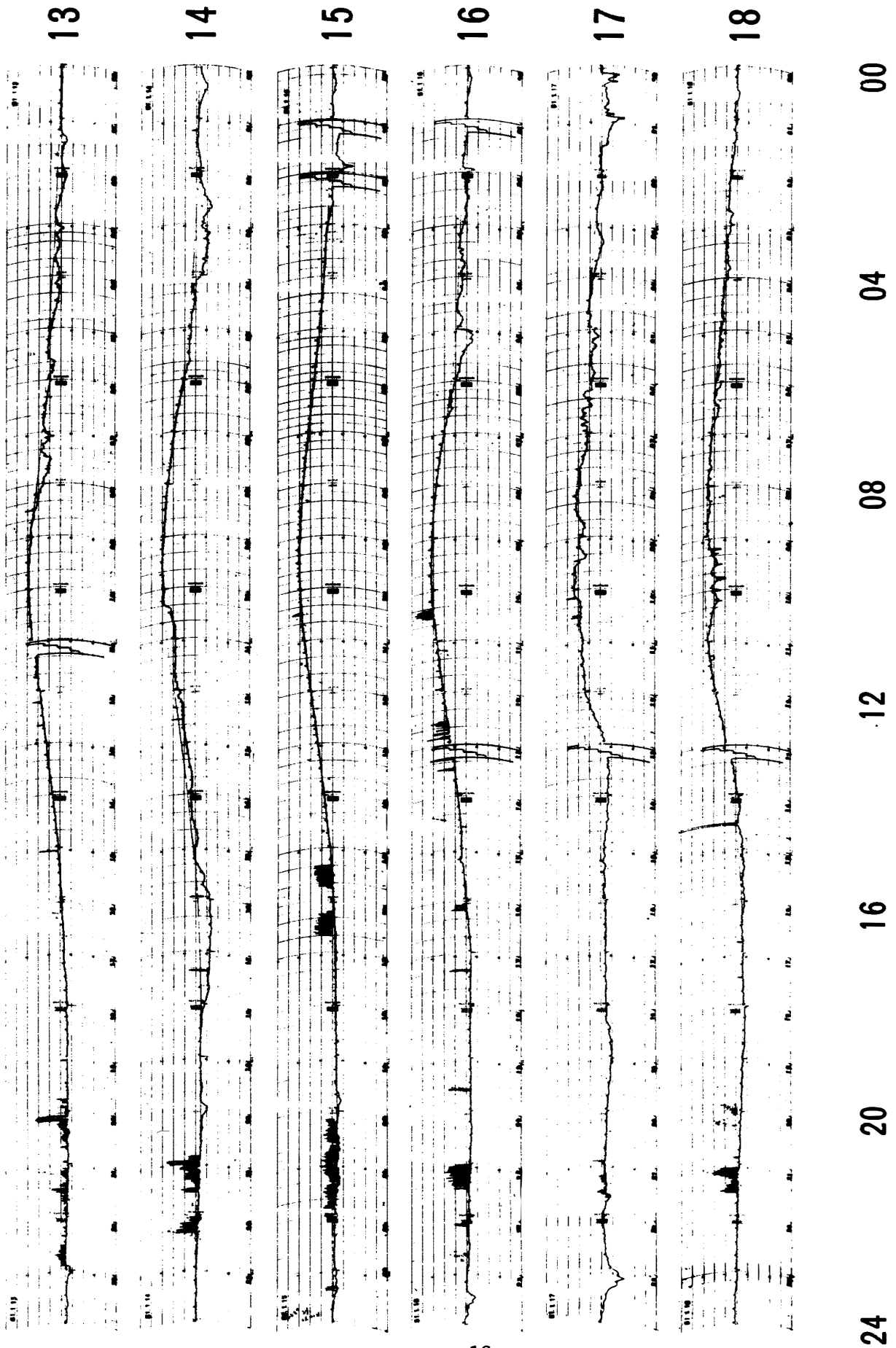
45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JAN 1976



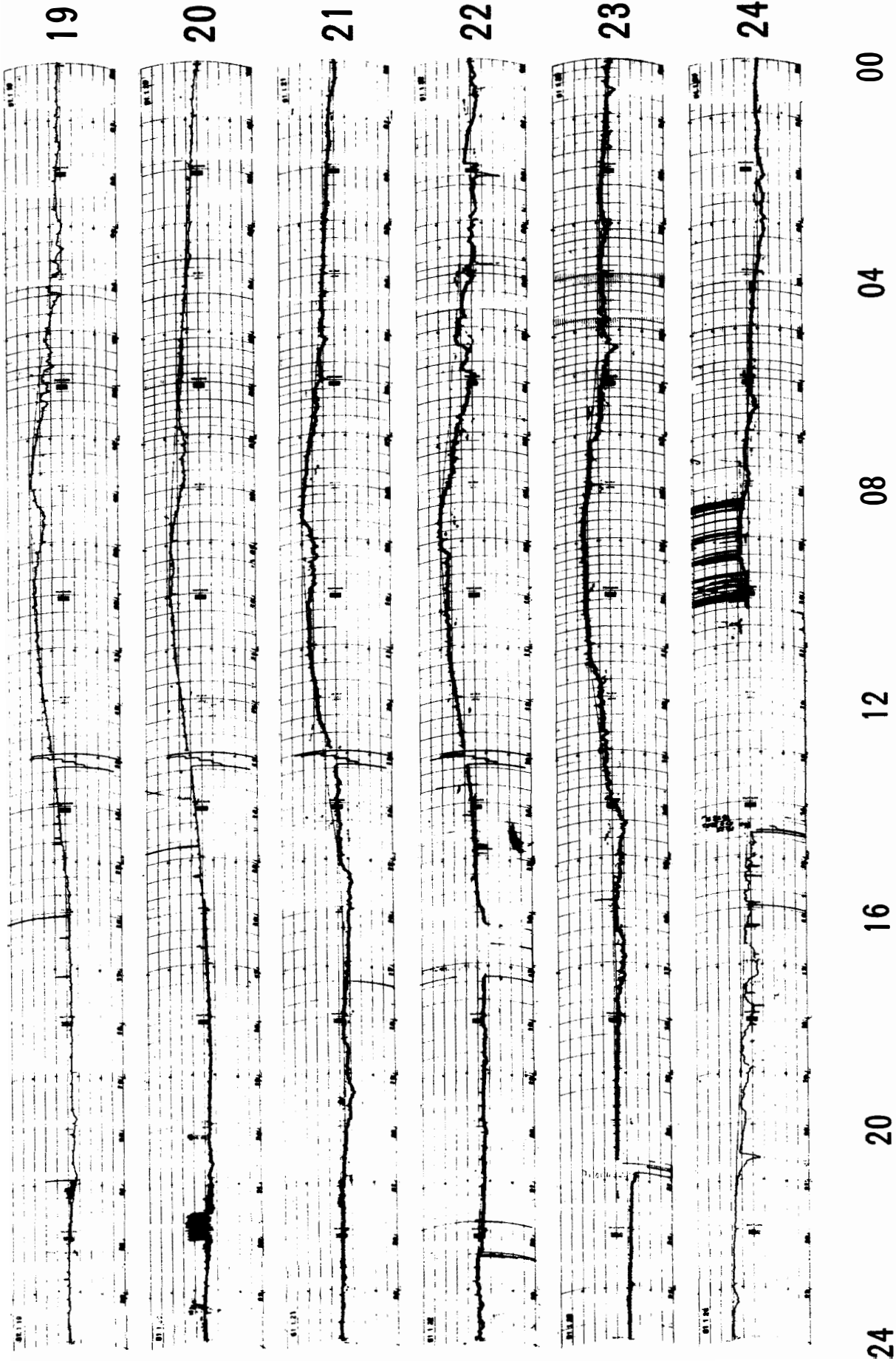
JAN 1976



45° EAST MERIDIAN TIME IN HOURS

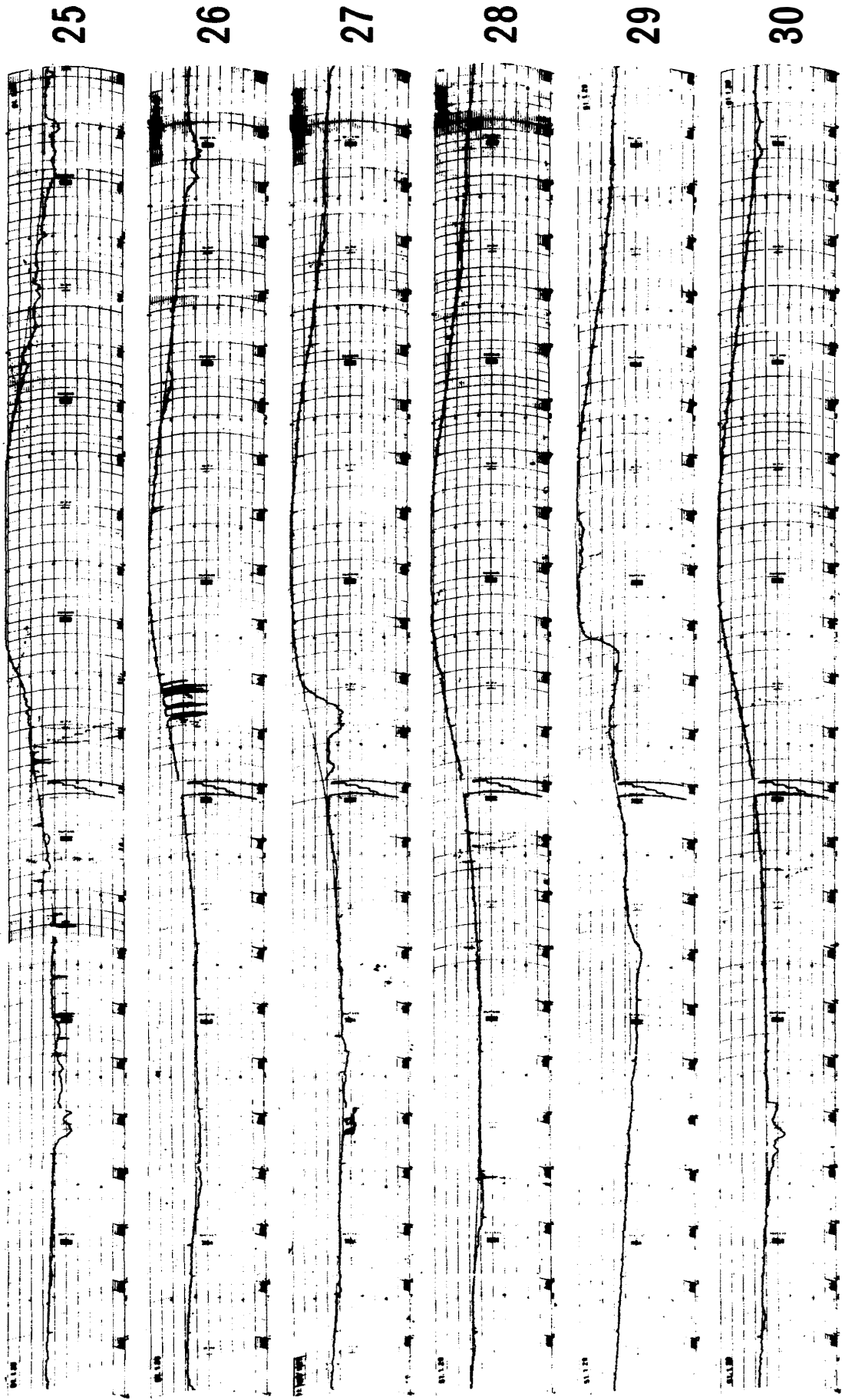
30 MHz COSMIC NOISE

JAN 1976



45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

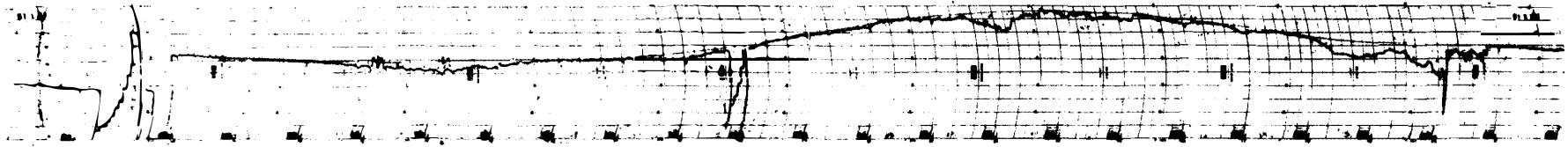
JAN 1976



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE



31

JAN 1976

24

20

16

12

08

04

00

45° EAST MERIDIAN TIME IN HOURS

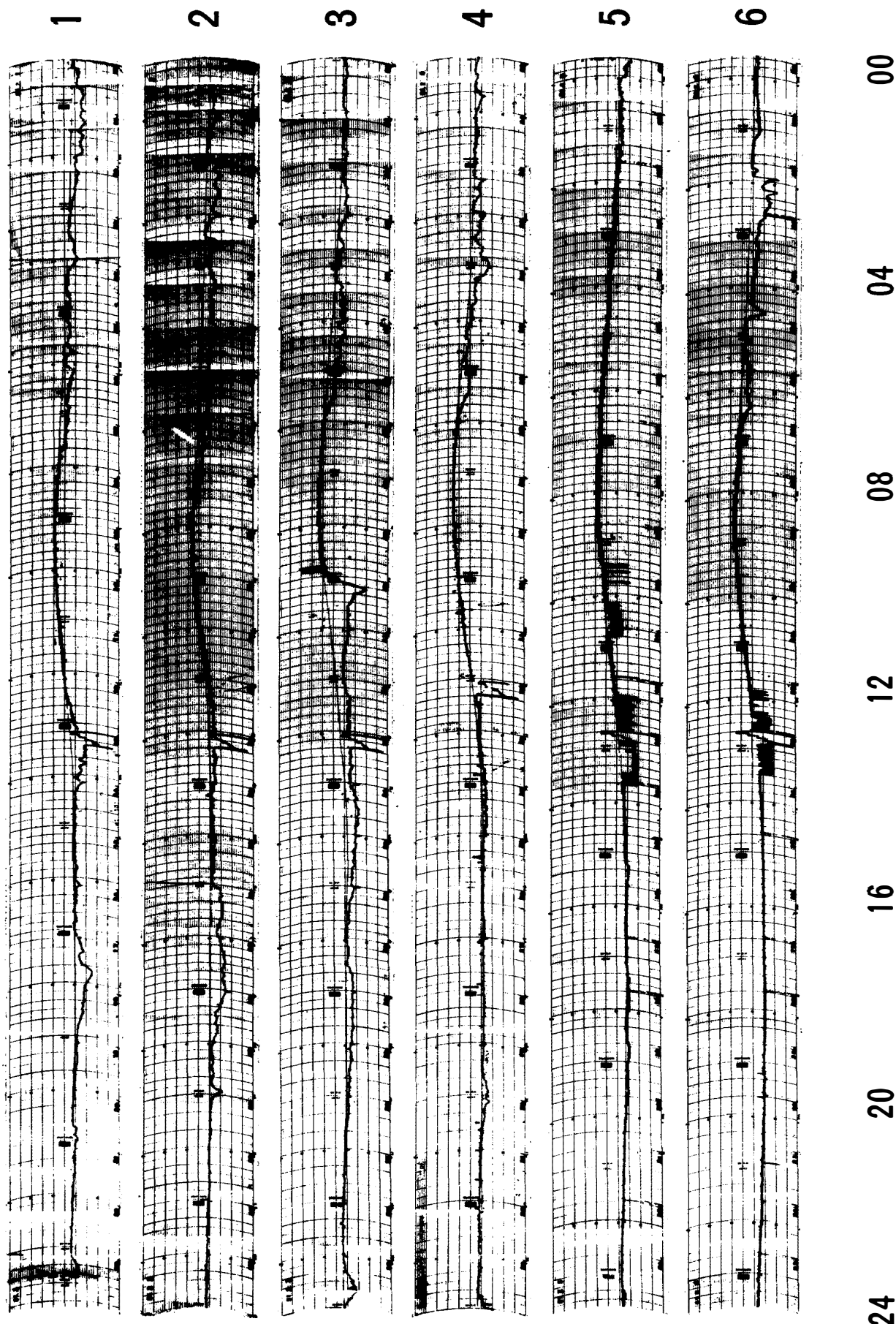
30 MHz COSMIC NOISE

- 21 -

Cosmic noise level obscured or equipment malfunction.

January	22	1619 – 1720	failure of equipment.
	23	2043 – 2057	"
	24	1024 – 1439	"
	25	0700 – 1030	"
		1430 – 1530	"
	28	0800 – 0930	"
	29	0700 – 0800	"
	30	0800 – 0920	"

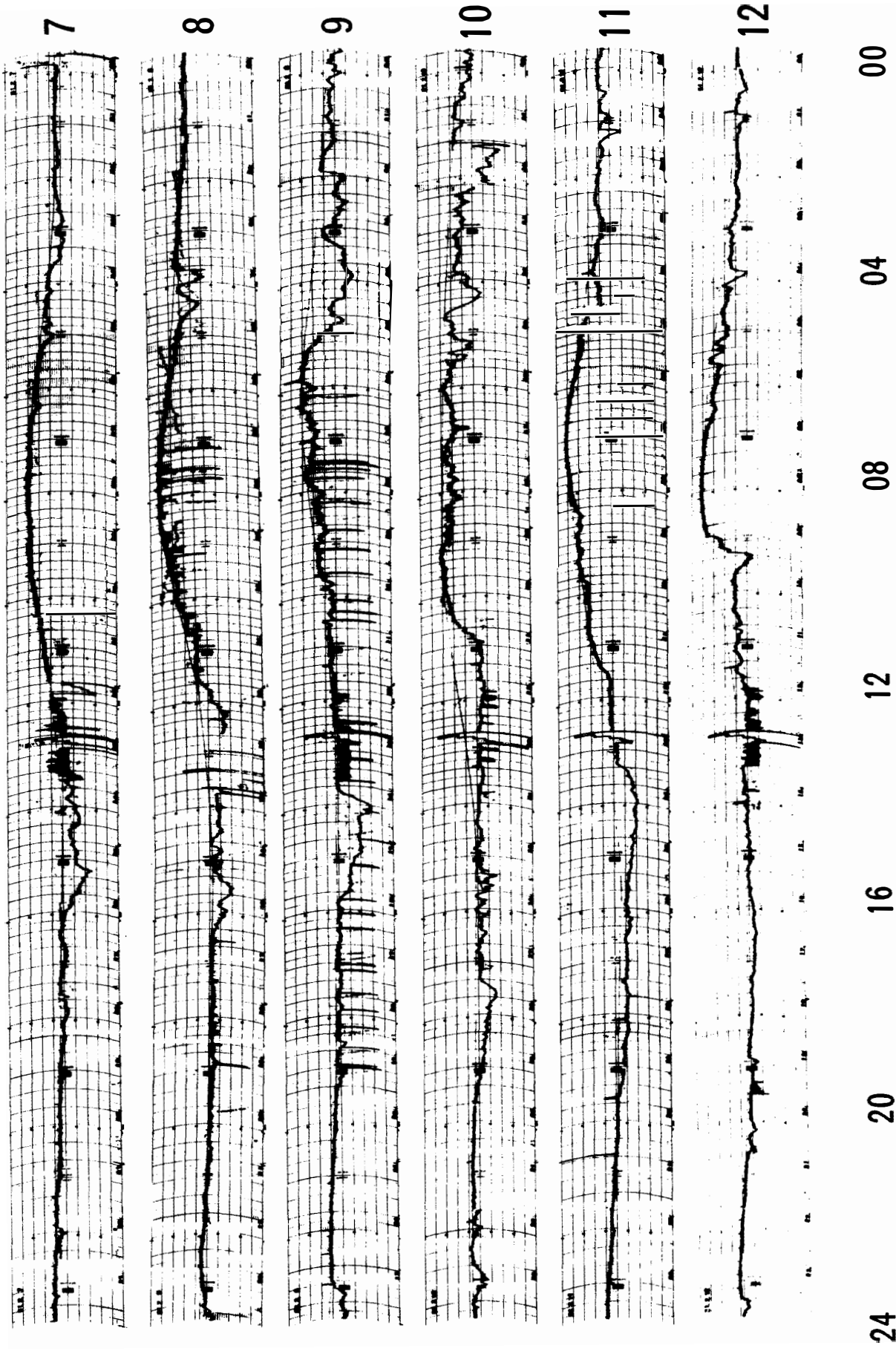
FEB 1976



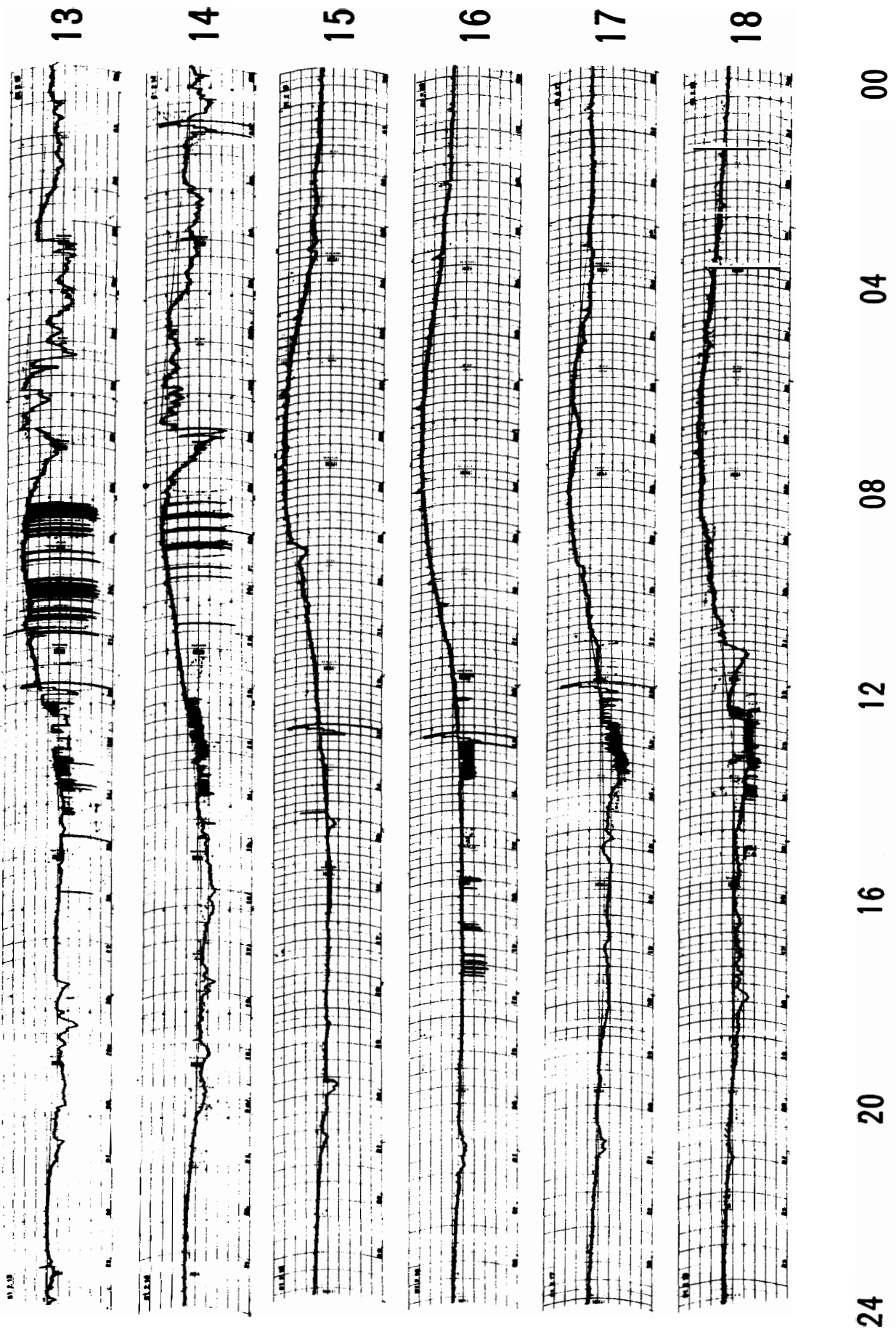
30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

FEB 1976



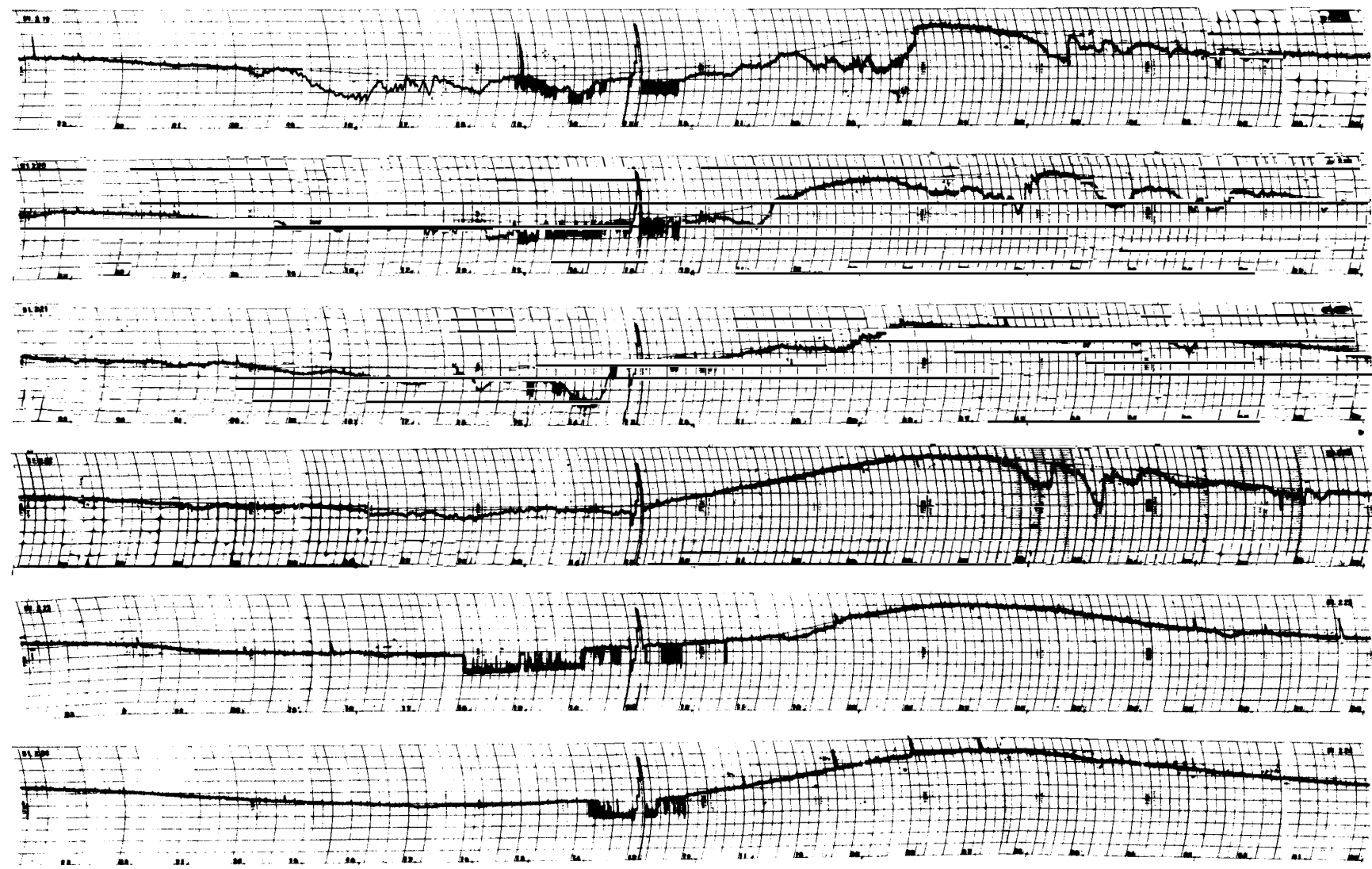
FEB 1976



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

FEB 1976



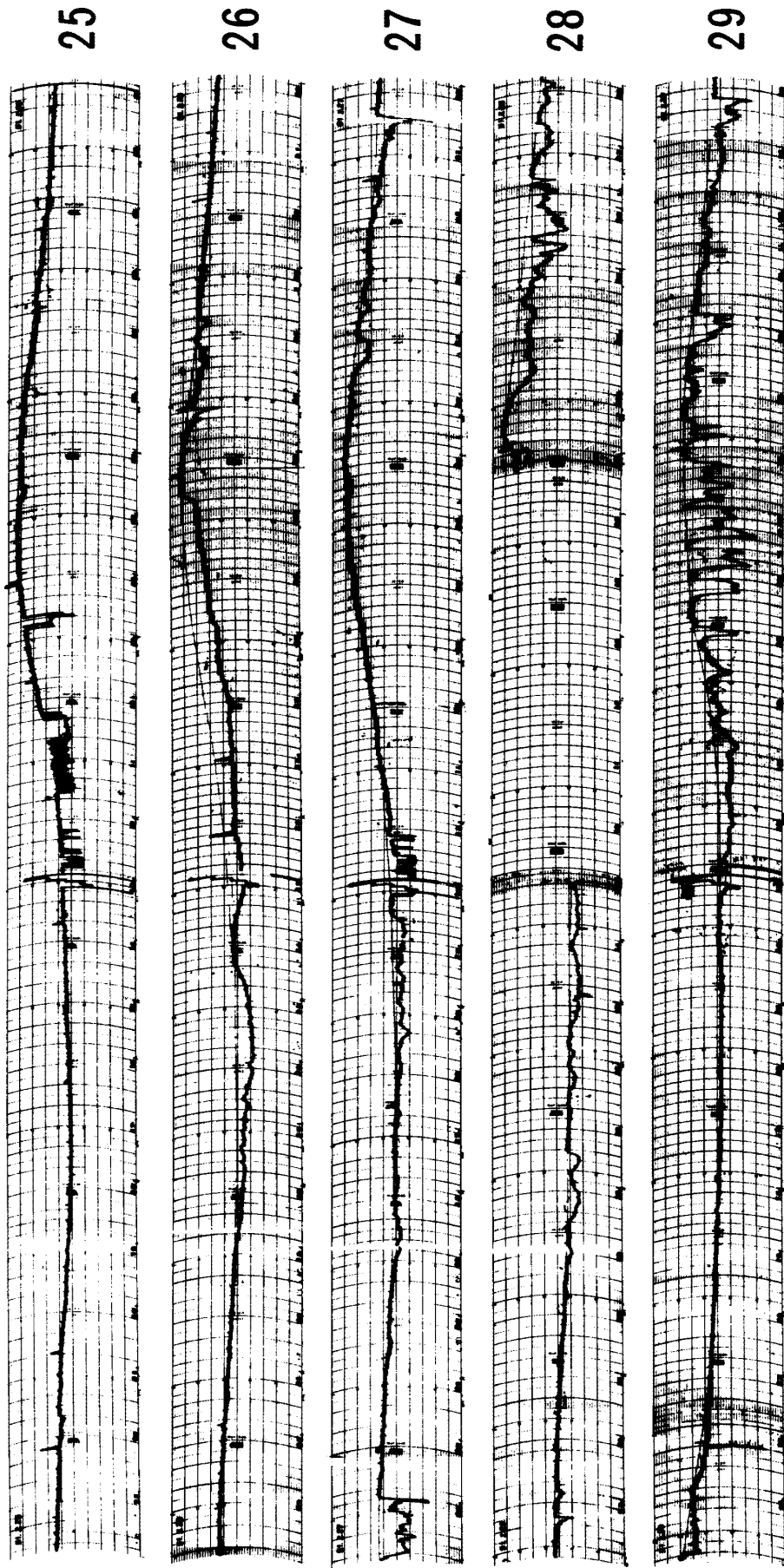
-25-

24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

FEB 1976



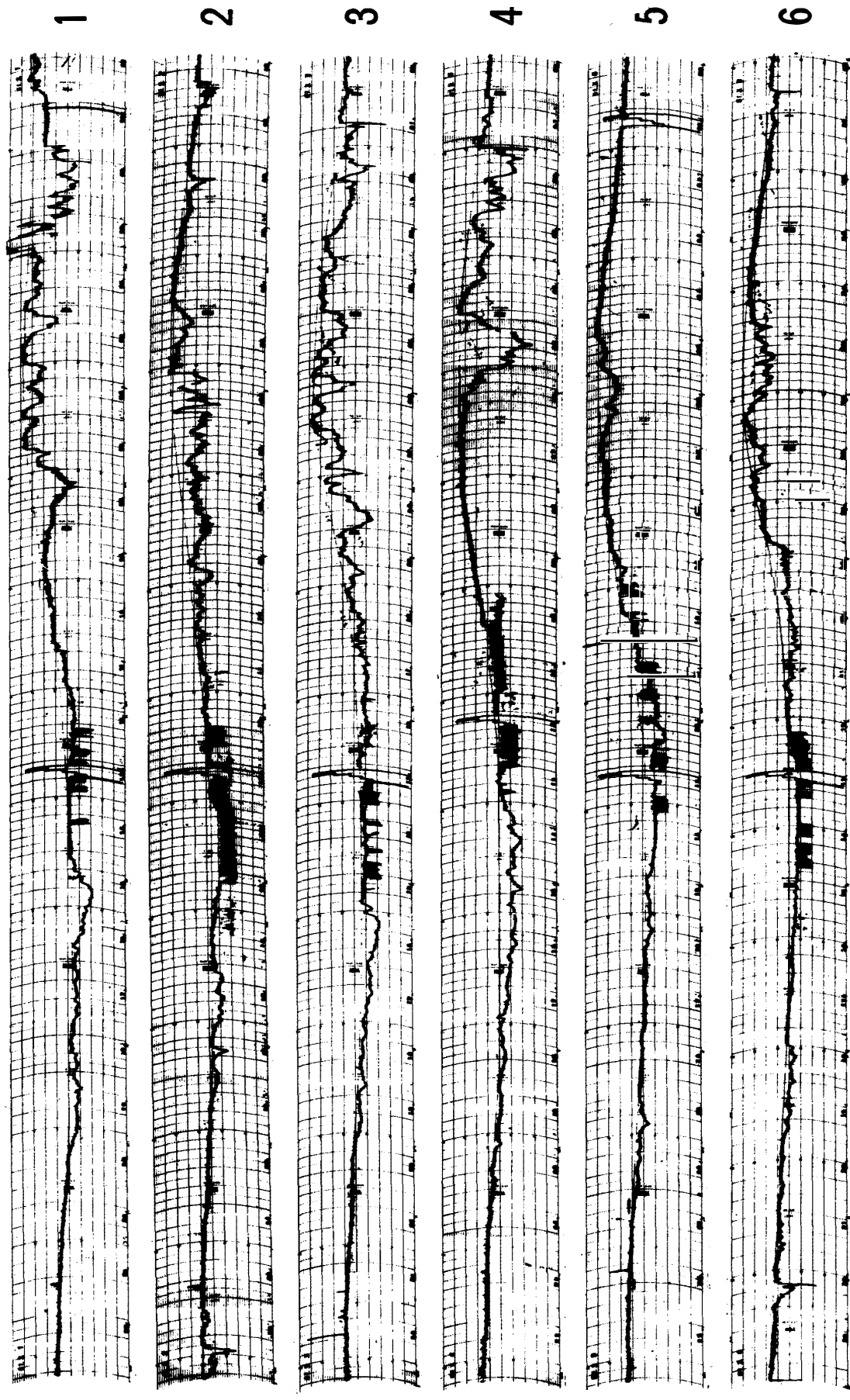
24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

February	1	2329 – 2400	failure of equipment.
	2	0000 – 0035	“
	8	1300 – 1407	“
	28	0620 – 1305	“

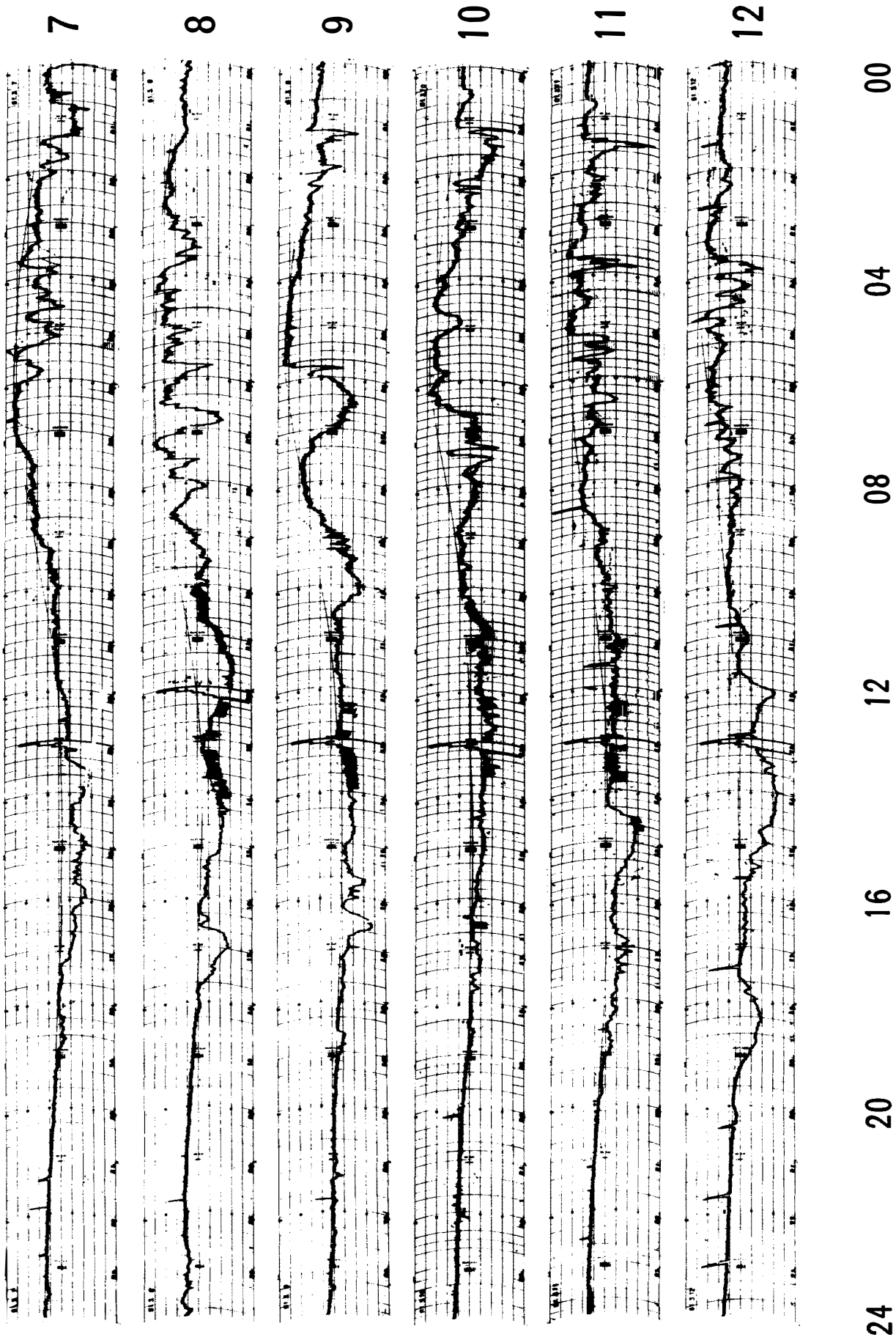
MAR 1976



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

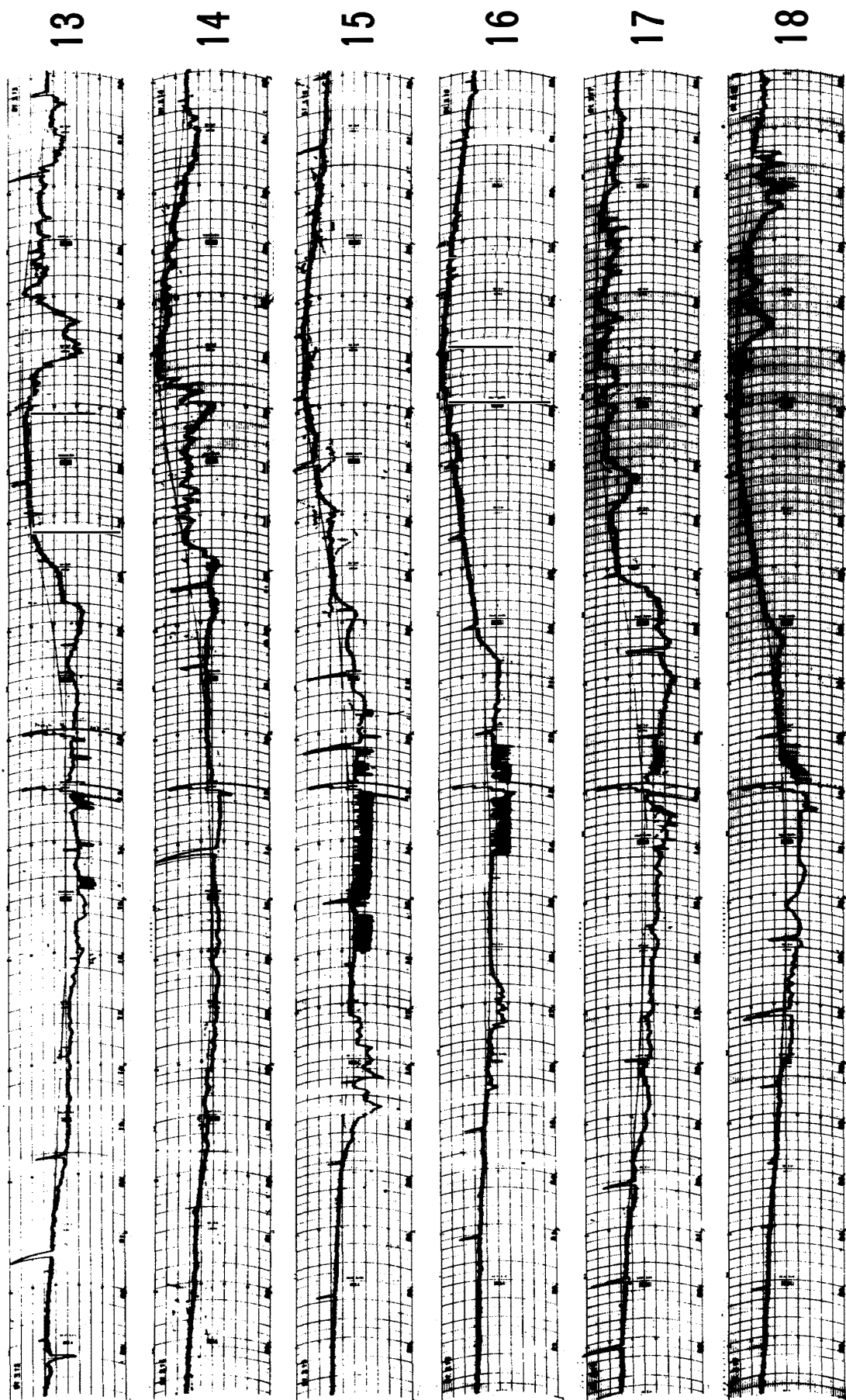
MAR 1976



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

MAR 1976

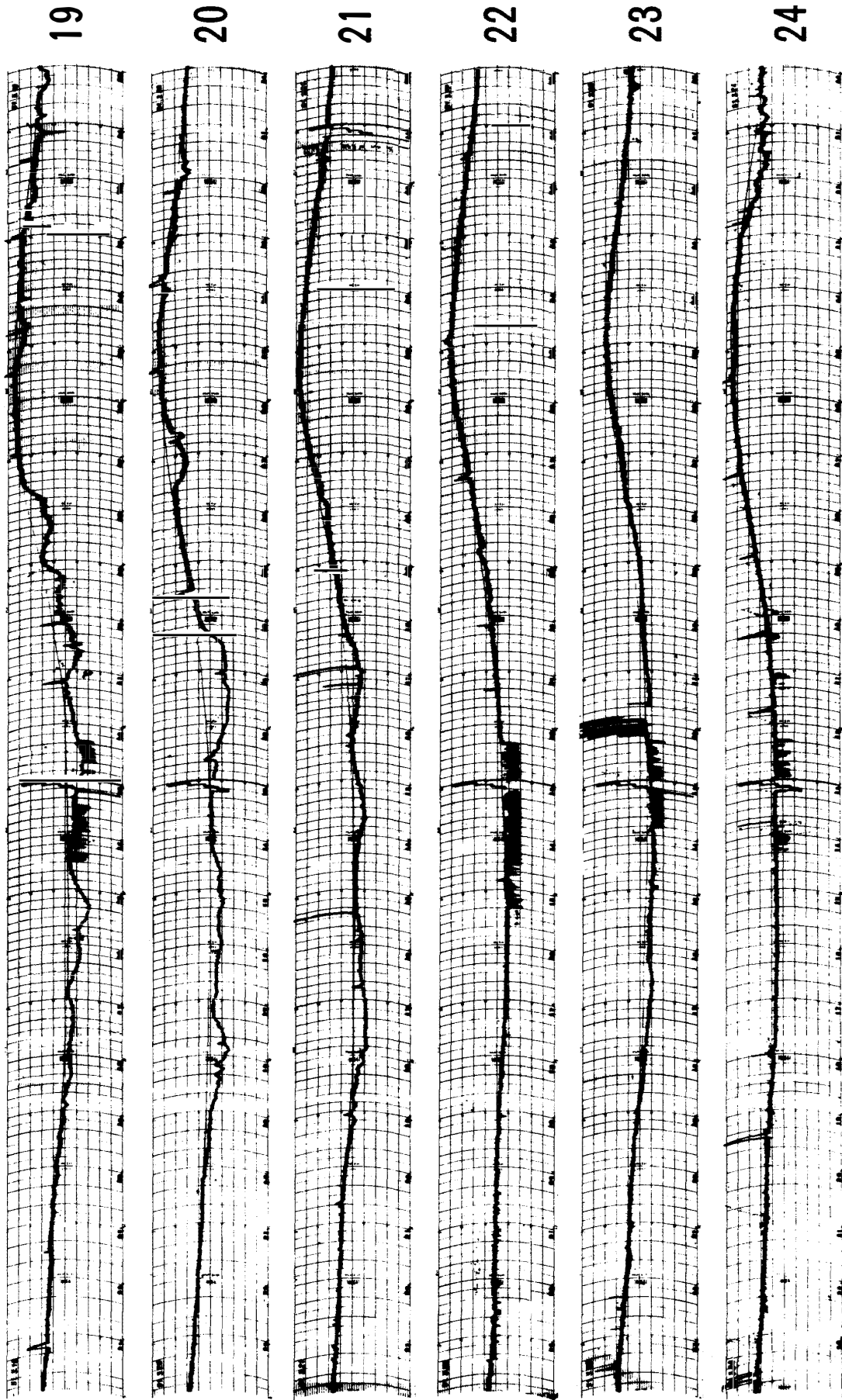


24 20 16 12 08 04 00

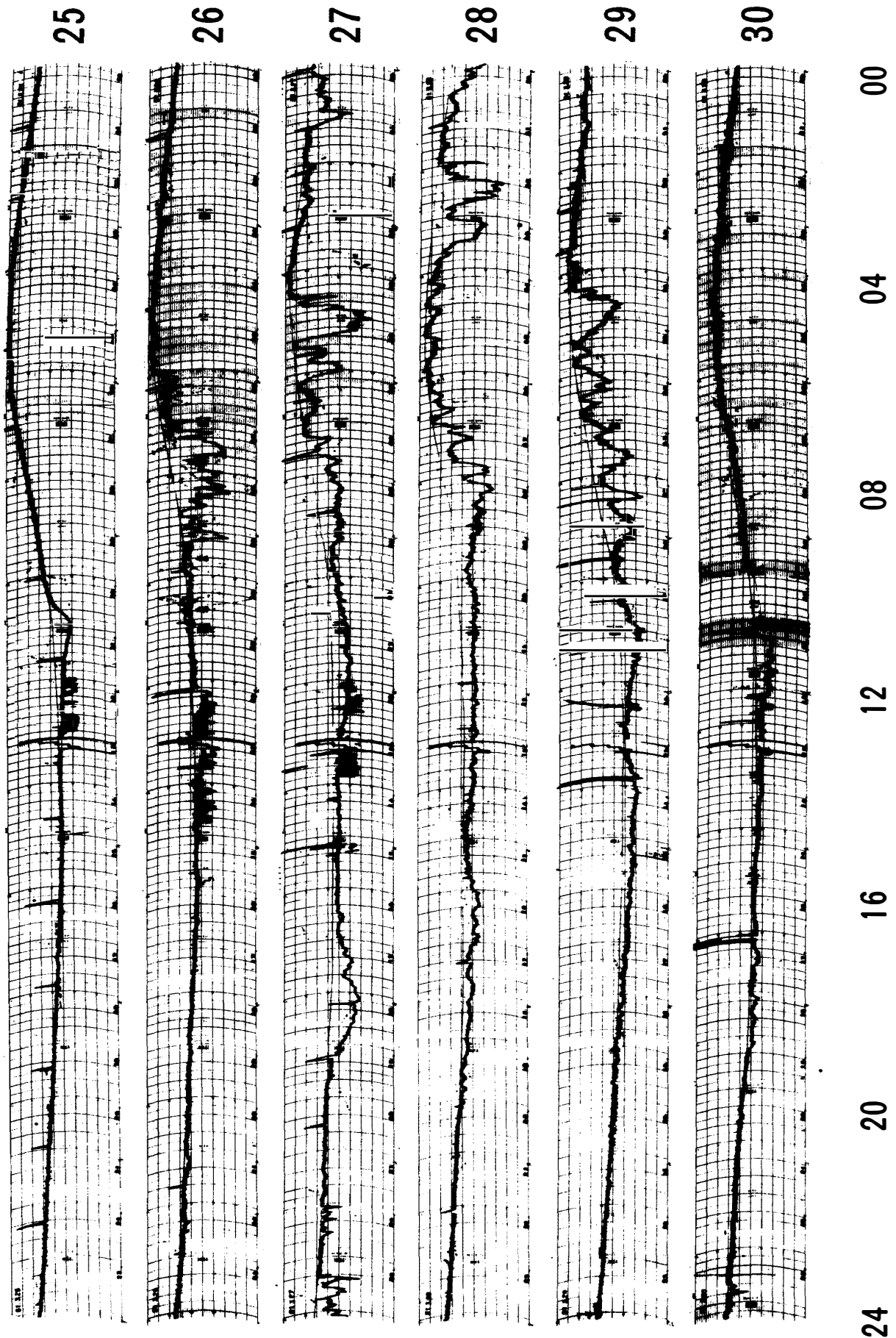
45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAR 1976



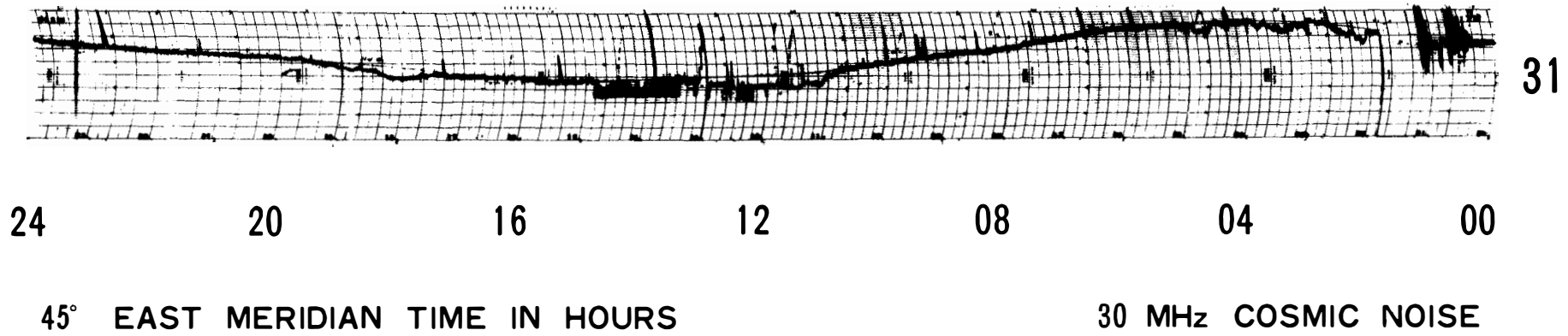
MAR 1976



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

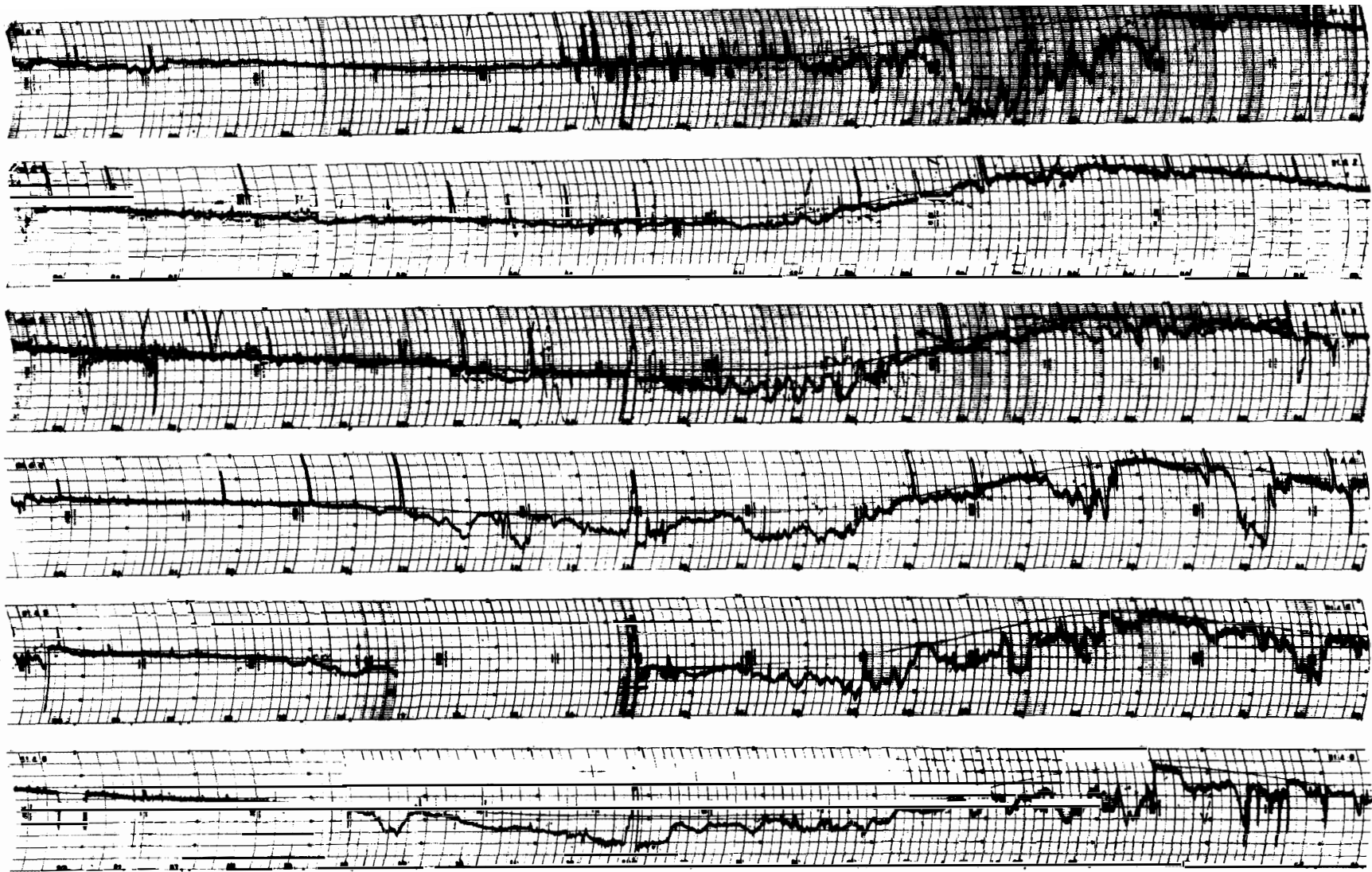
MAR 1976



Cosmic noise level obscured or equipment malfunction.

March	1	0316 – 0330	failure of equipment.
	23	1142 – 1214	“
	30	0950 – 1043	“
	31	0130 – 0157	“

APR 1 1976



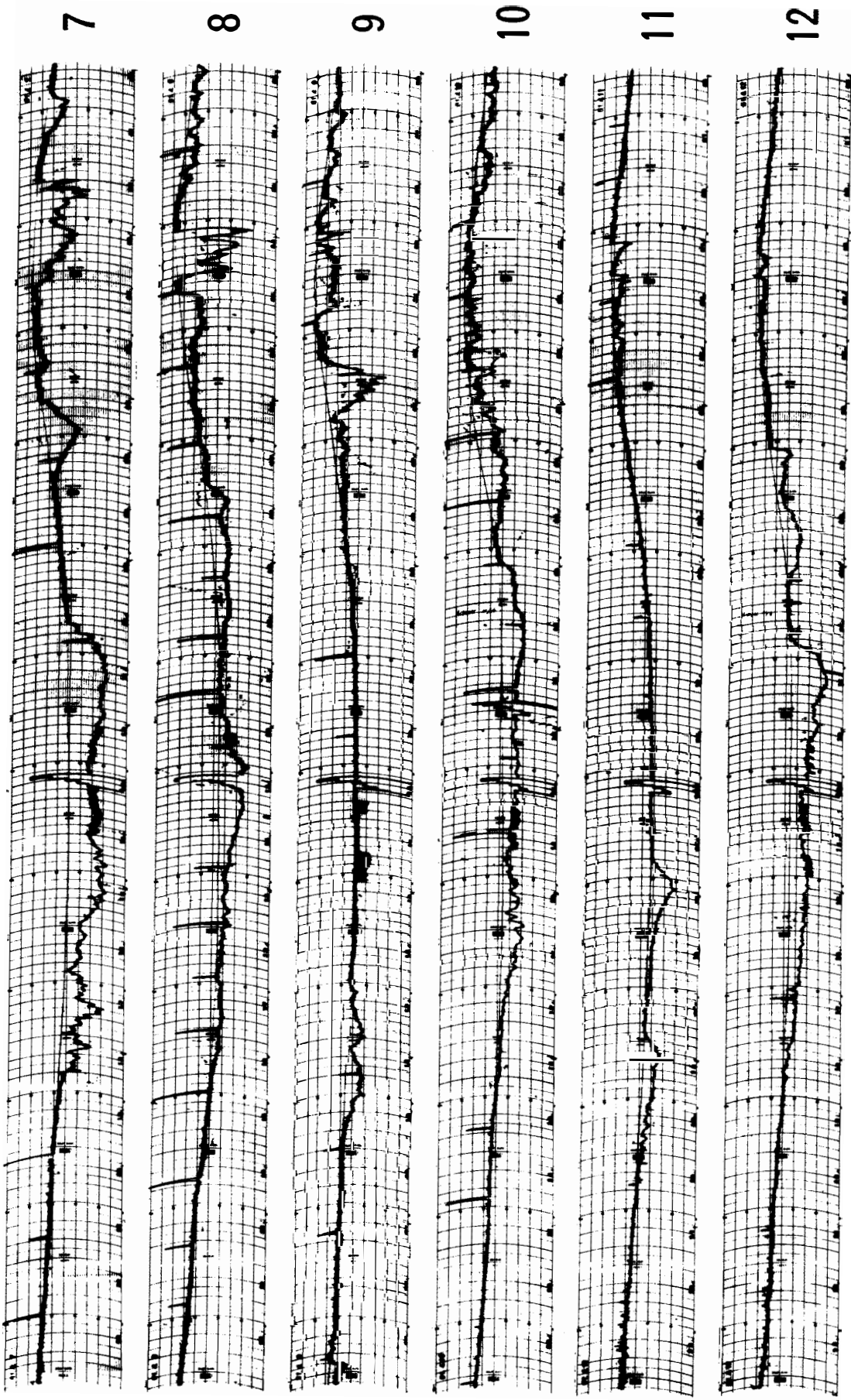
-34-

24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

APR 1976



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

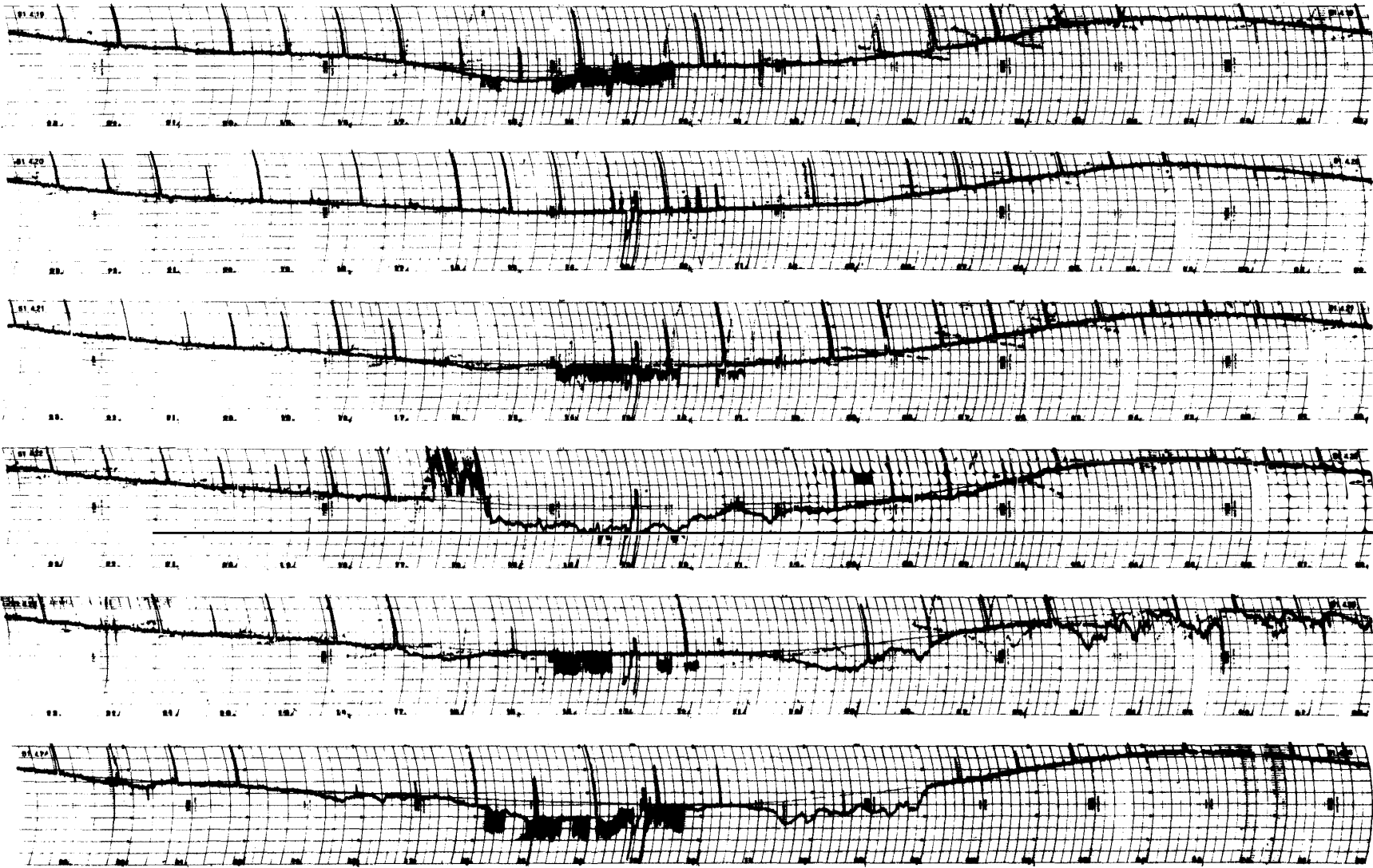
APR 1976



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

APR 1976



— 37 —

24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

APR 1976



— 38 —

24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

April	5	1315 – 1716	failure of equipment.
	22	1545 – 1640	“
	24	0149 – 0200	“
	30	1315 – 1730	“

MAY 1976



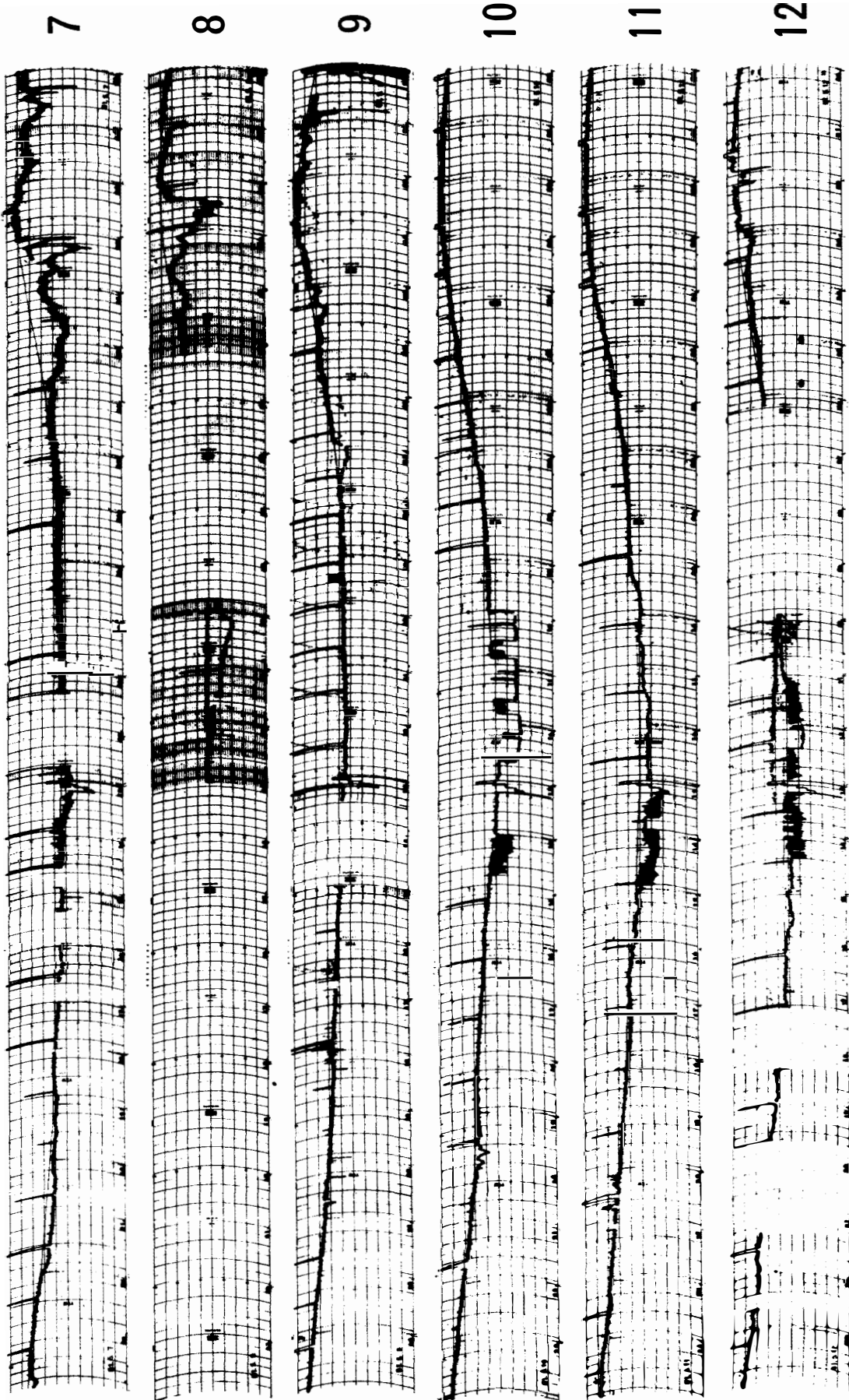
- 40 -

24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAY 1976

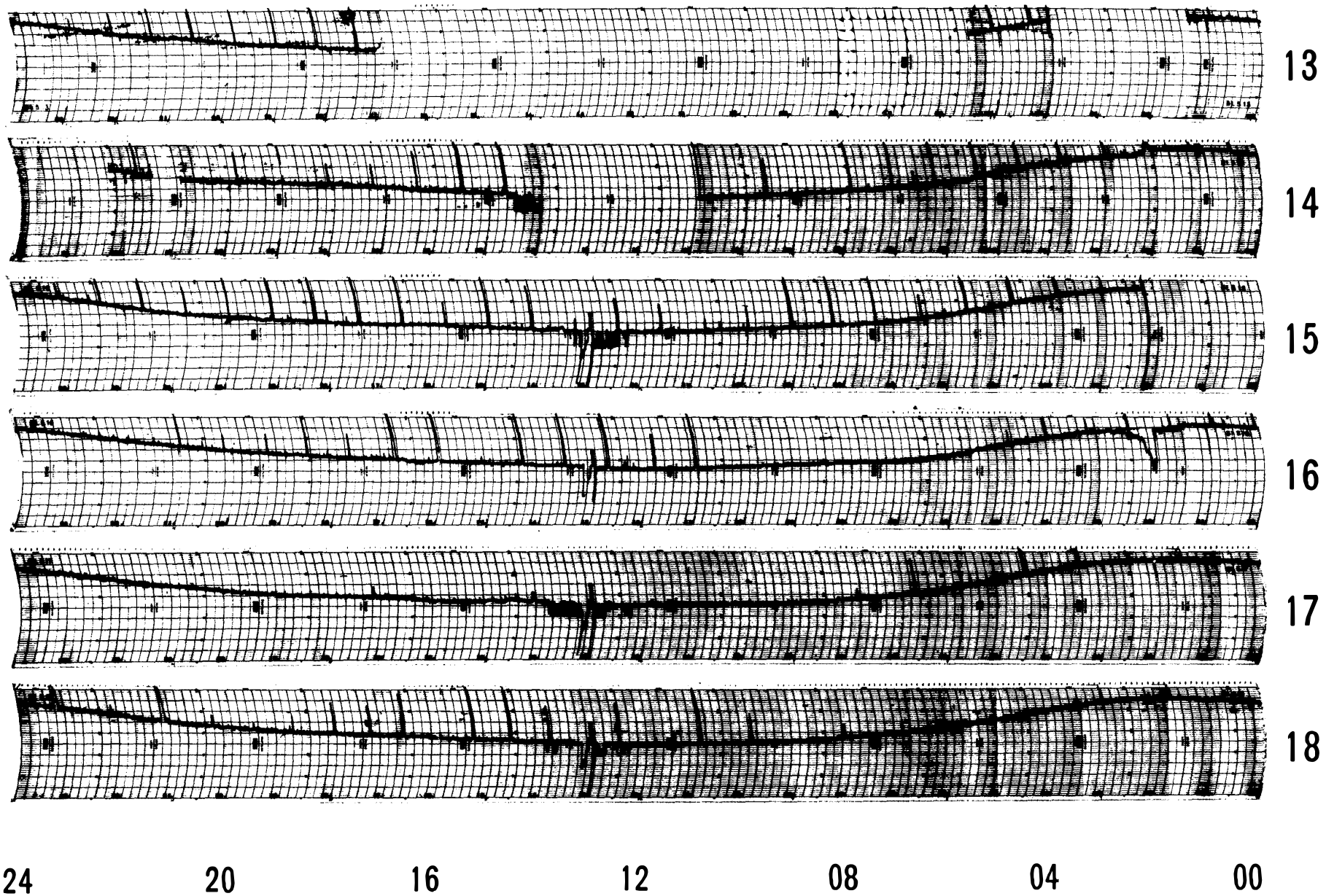


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAY 1976

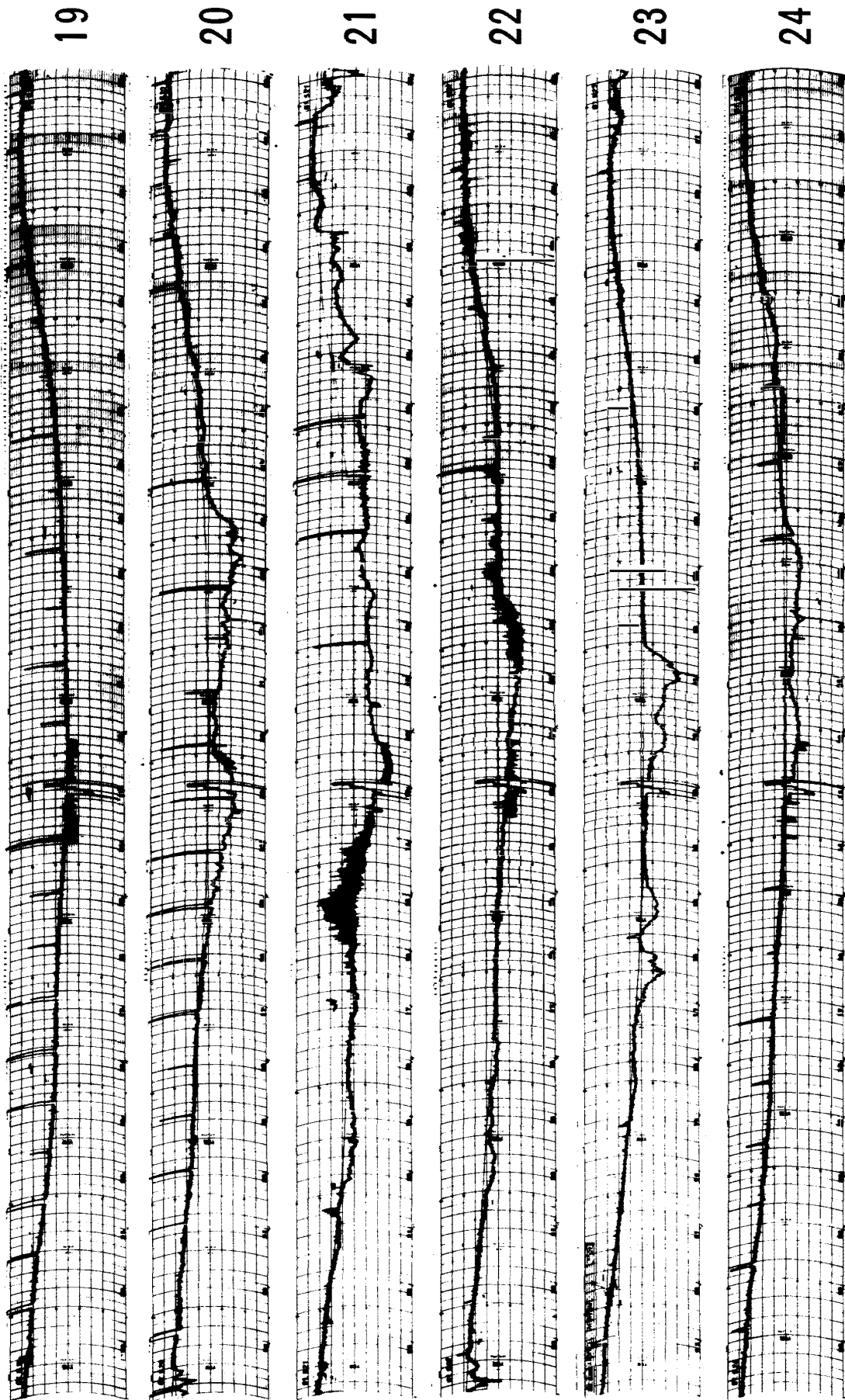


-42-

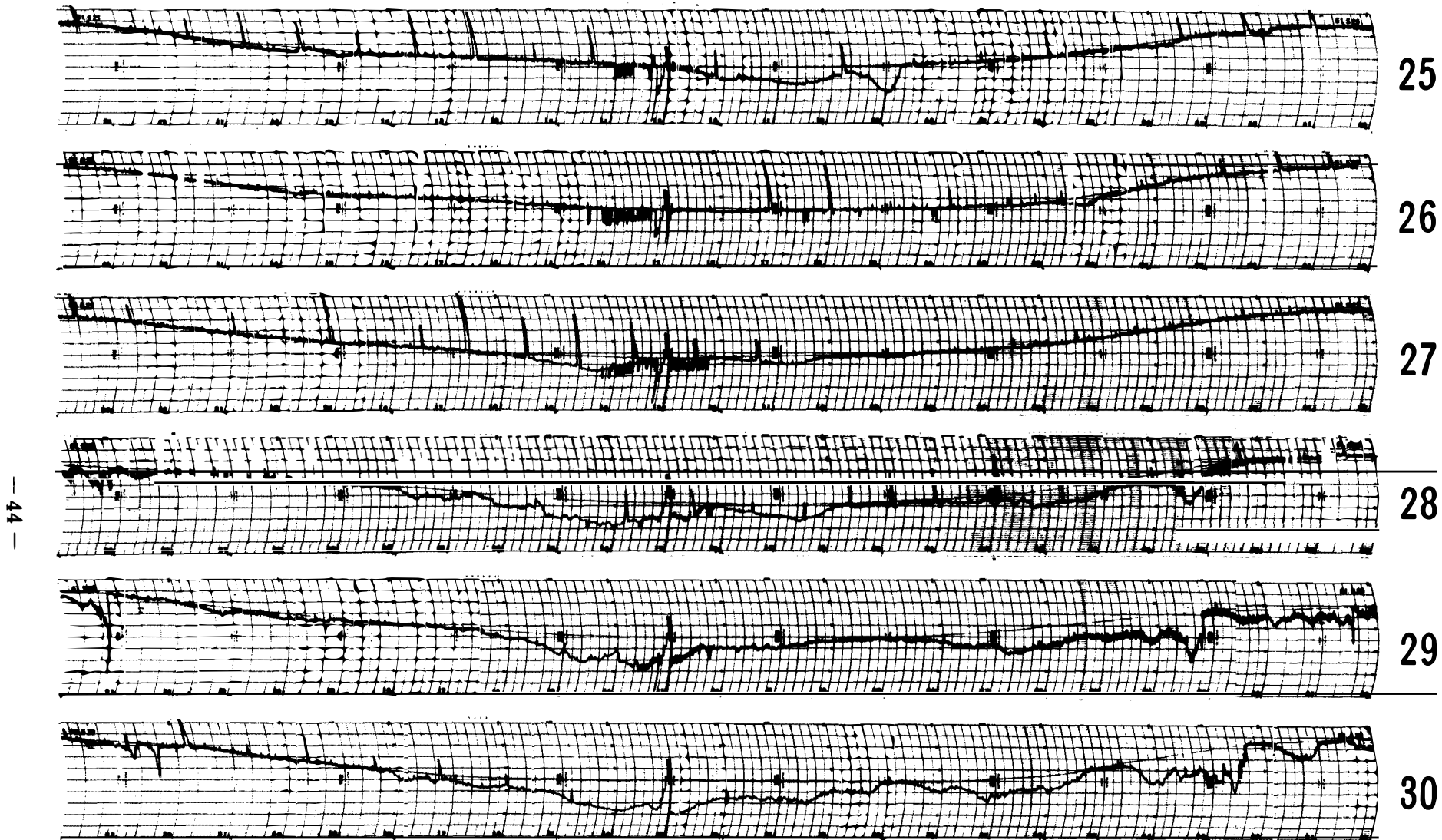
45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAY 1976



MAY 1976



- 44 -

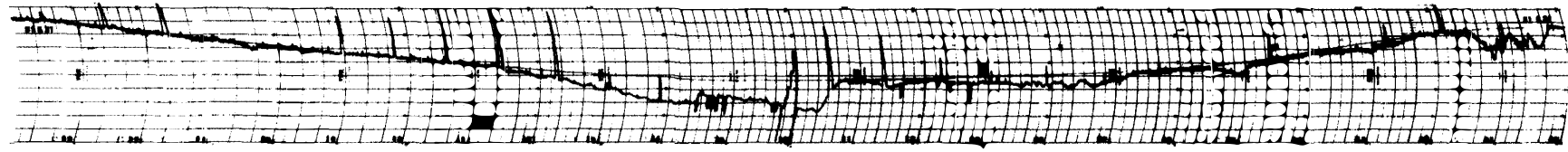
24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAY 1976

31



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

May	2	0850 – 1025	failure of equipment.
	3	1315 – 1900	"
	4	0031 – 0132	"
		0646 – 0724	"
		1025 – 1135	"
		2050 – 2140	"
	5	0231 – 0300	"
		0316 – 0411	"
		0723 – 0813	"
		1025 – 1351	"
		1512 – 1610	"
	7	1125 – 1247	"
		1523 – 1600	"
		1638 – 1700	"
	8	0516 – 0951	"
		1308 – 2400	"
	9	1328 – 1500	"
	12	0613 – 1000	"
		1718 – 1800	"
		1942 – 2100	"
	13	0121 – 0400	"
		0536 – 1708	"
	14	1055 – 1400	"
		2221 – 2400	"
	15	0000 – 0217	"

JUNE 1976

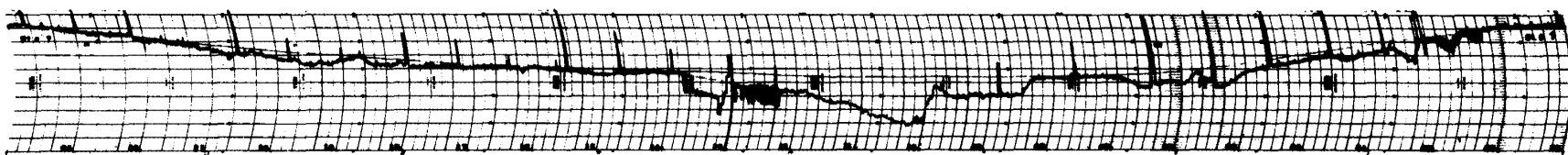


24 20 16 12 08 04 00

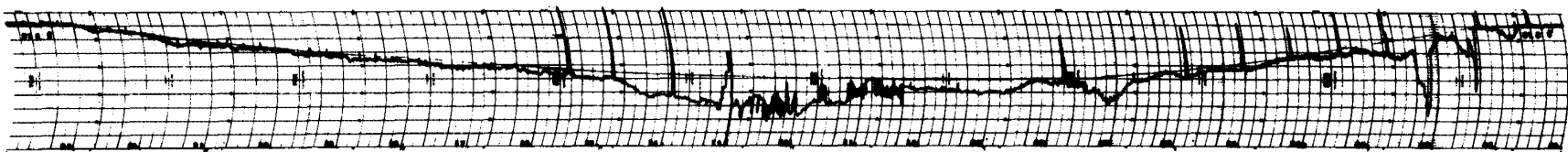
45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

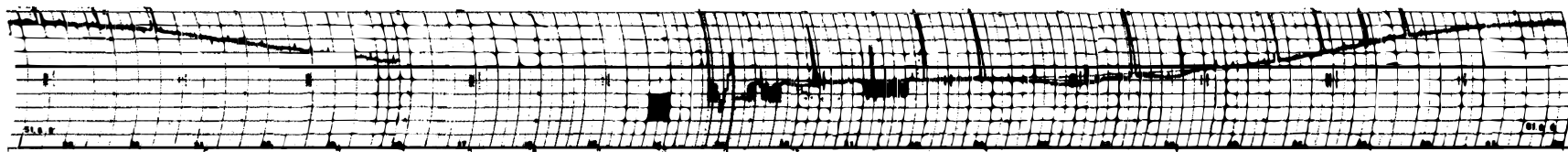
JUNE 1976



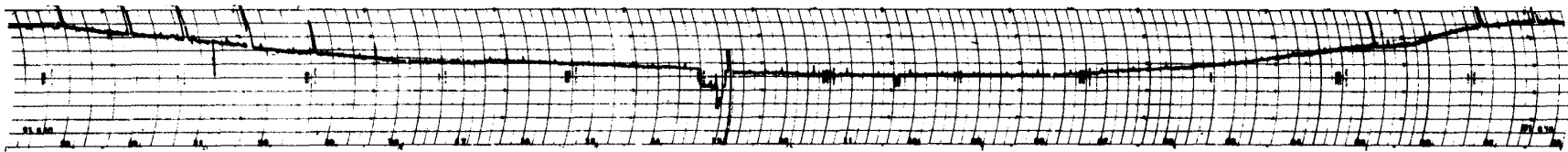
7



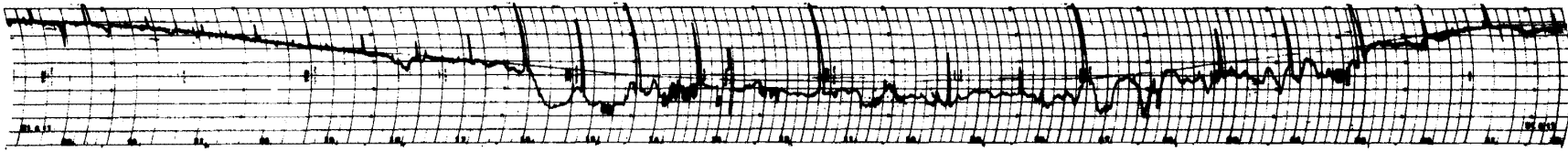
8



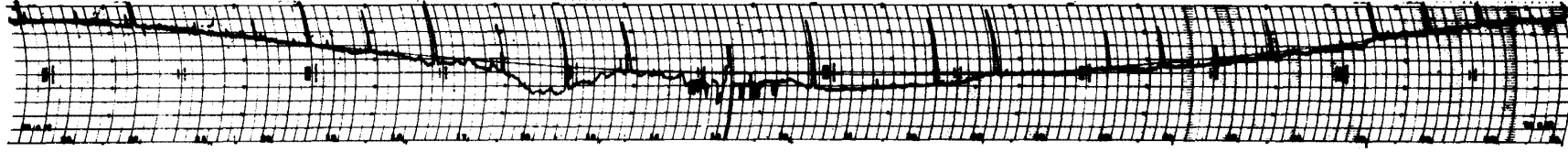
9



10



11



12

24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JUNE 1976



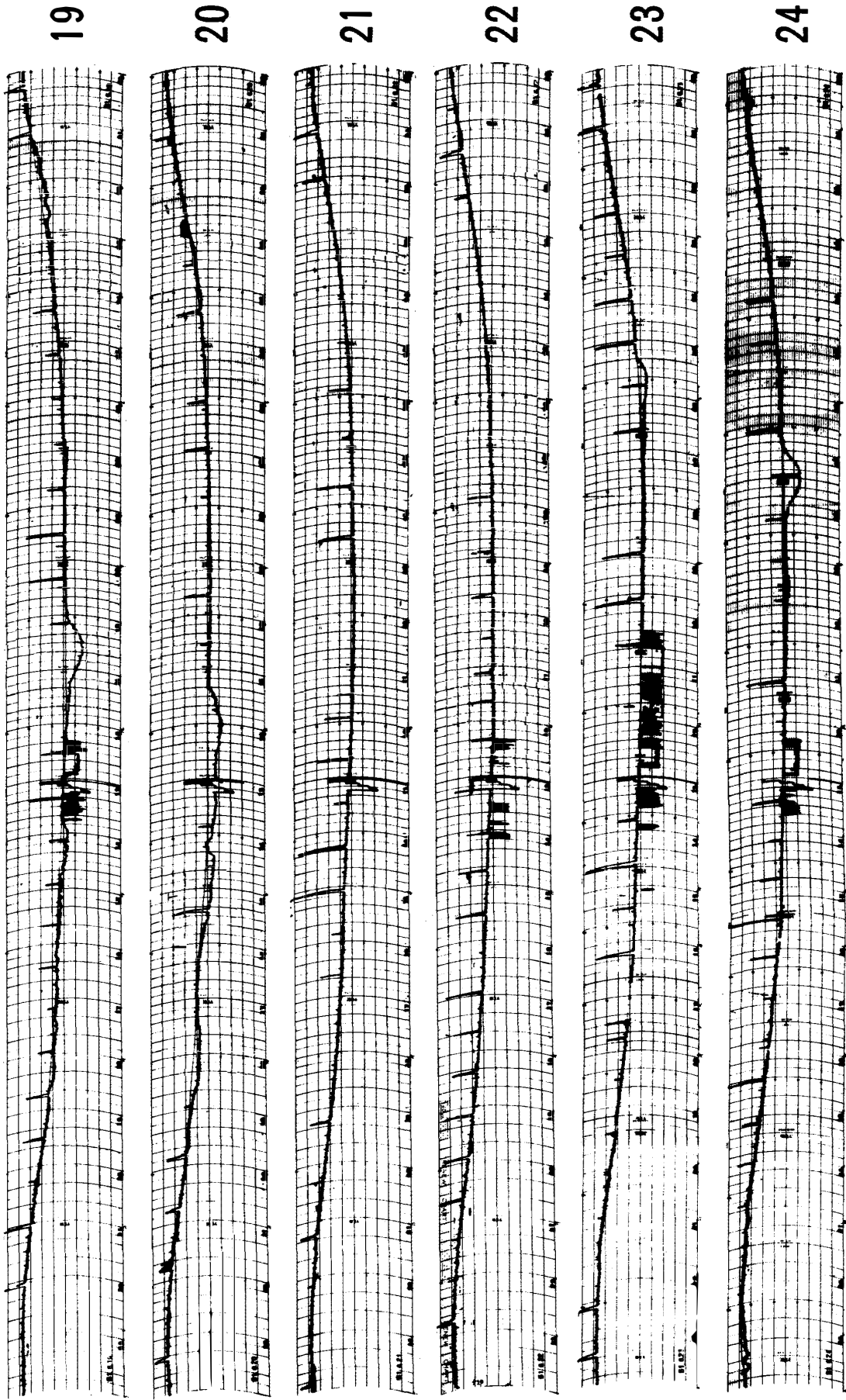
— 49 —

24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

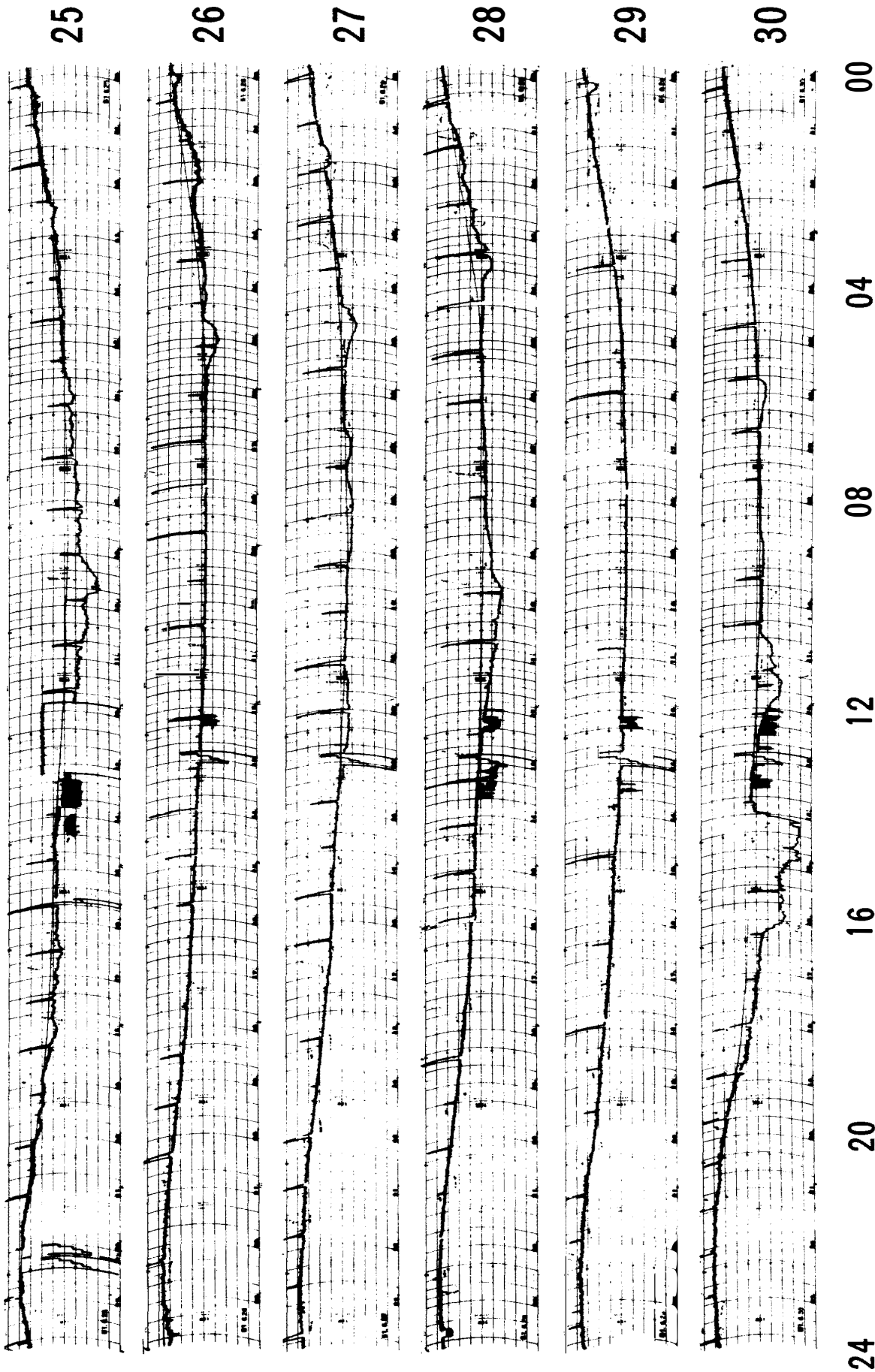
JUNE 976



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JUNE 1976



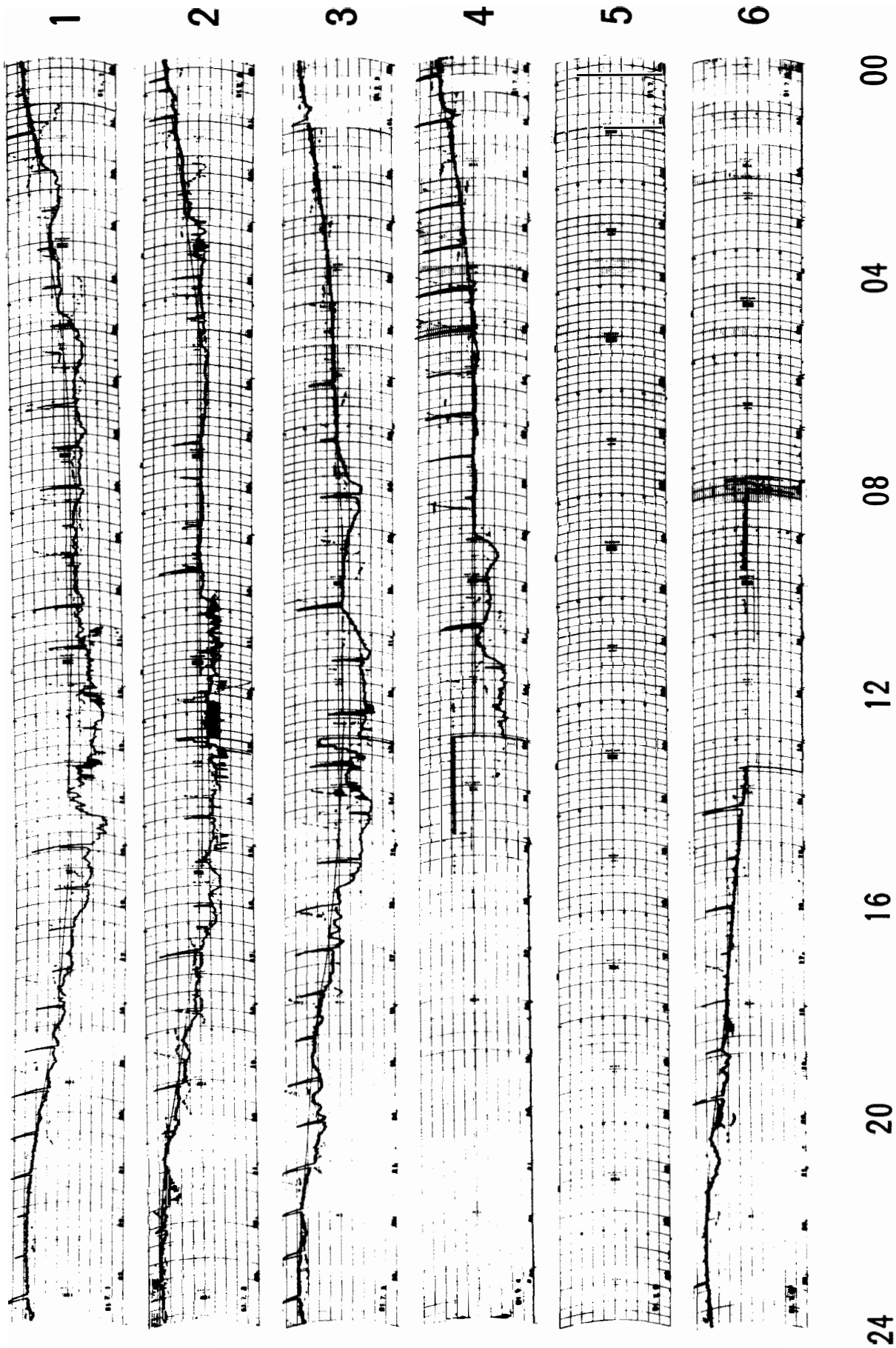
30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

Cosmic noise level obscured or equipment malfunction.

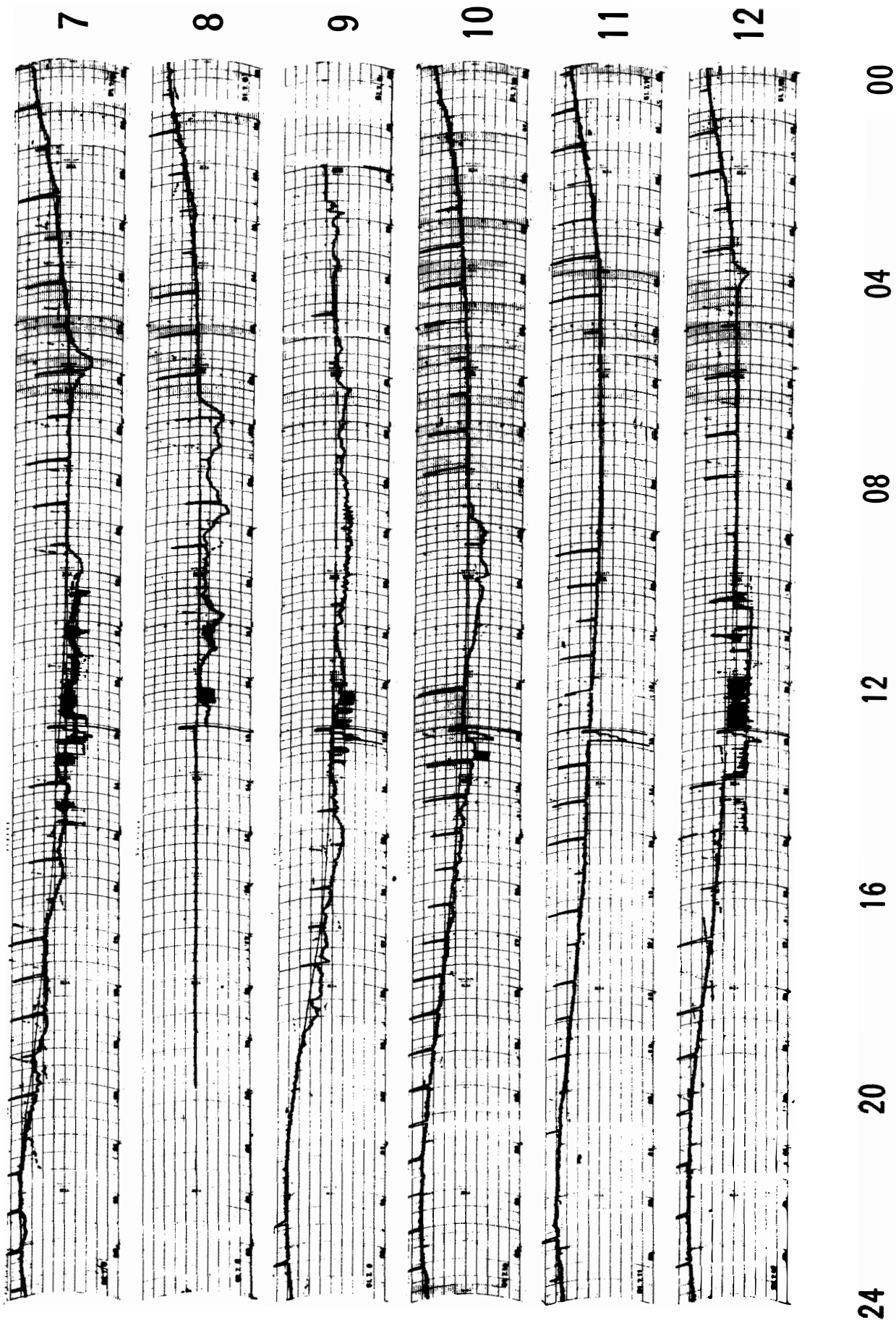
June	1	1318 – 2400	failure of equipment.
	2	0000 – 2400	“
	3	0000 – 0330	“
		0725 – 1100	“
	9	1324 – 1810	“
	23	1647 – 1728	“

JULY 1976



30 MHz COSMIC NOISE

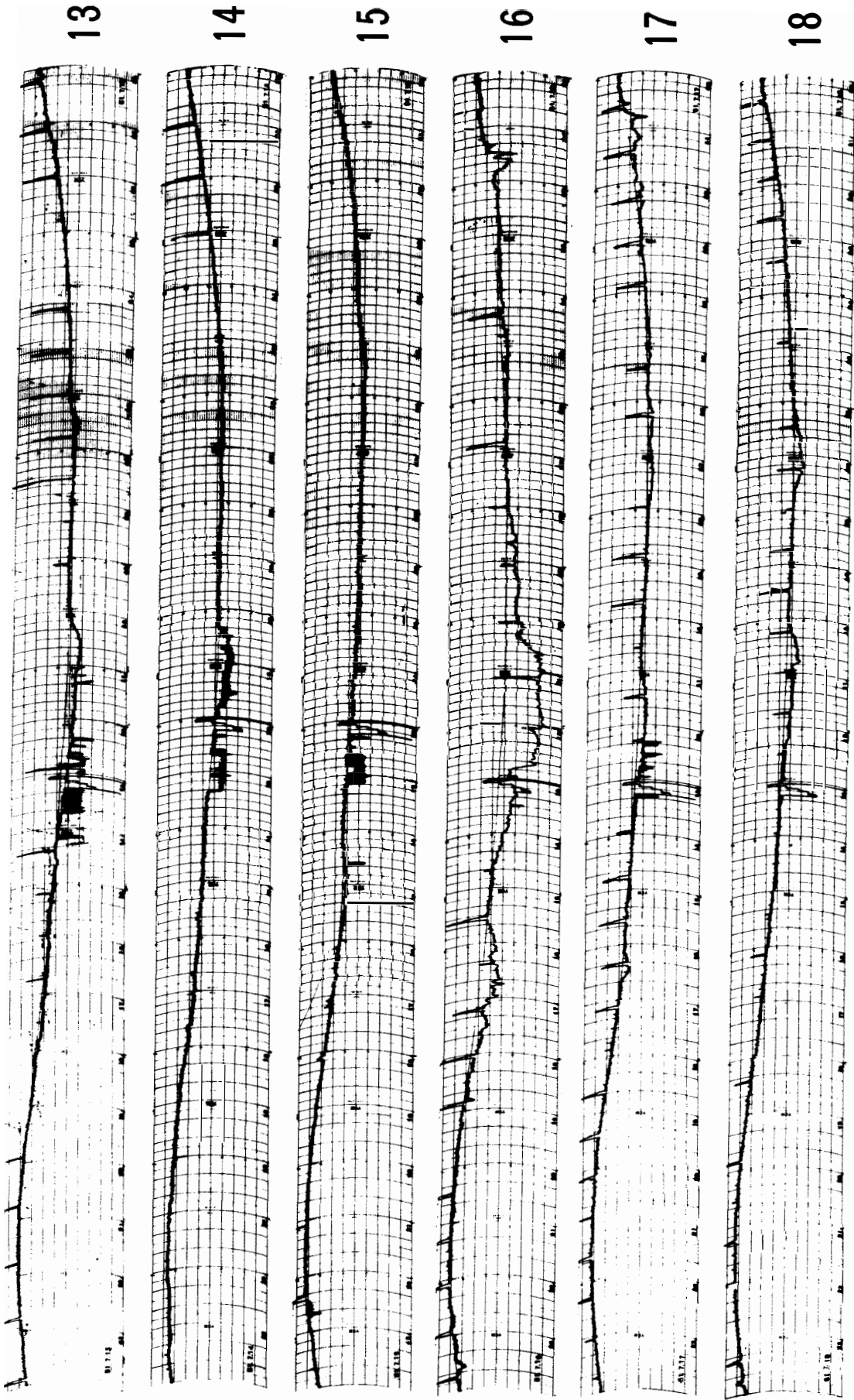
JULY 1976



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

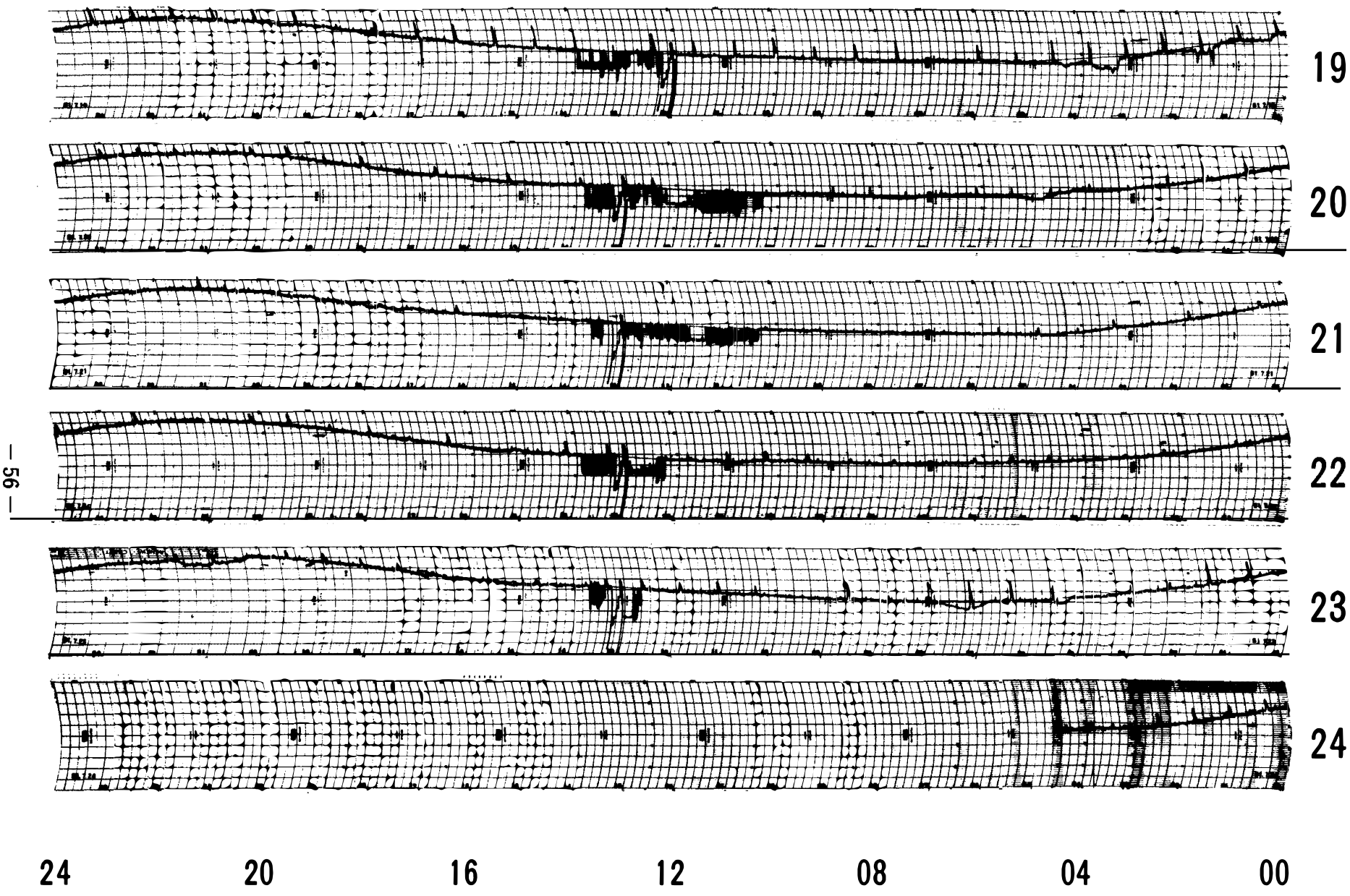
JULY 1976



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JULY 1976

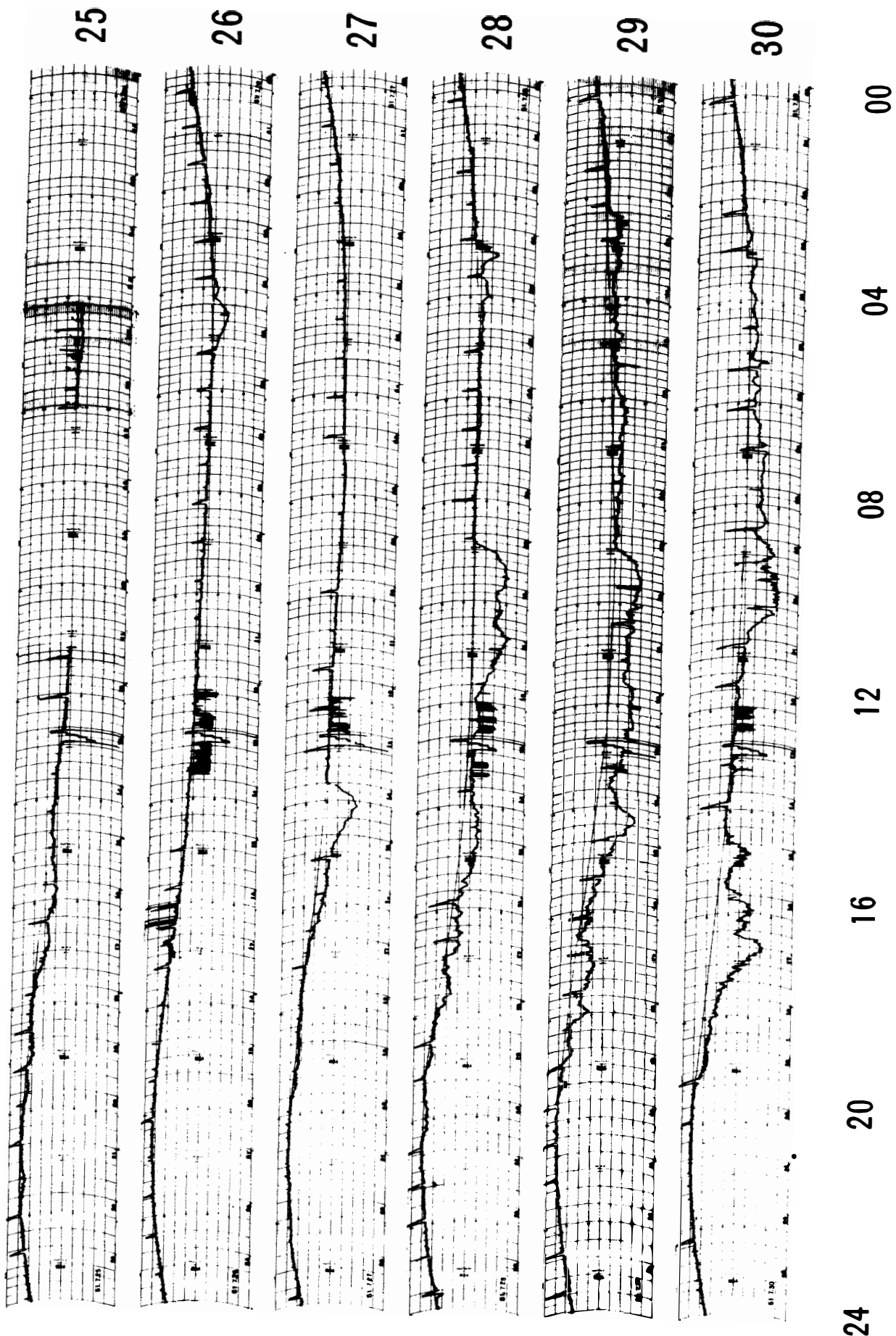


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JULY 1976

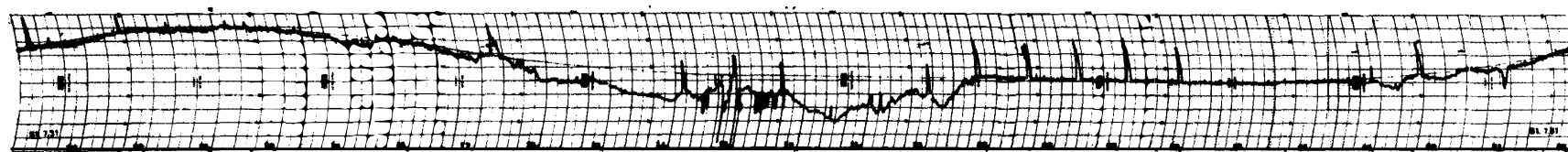


45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JULY 1976

31



24

20

16

12

08

04

00

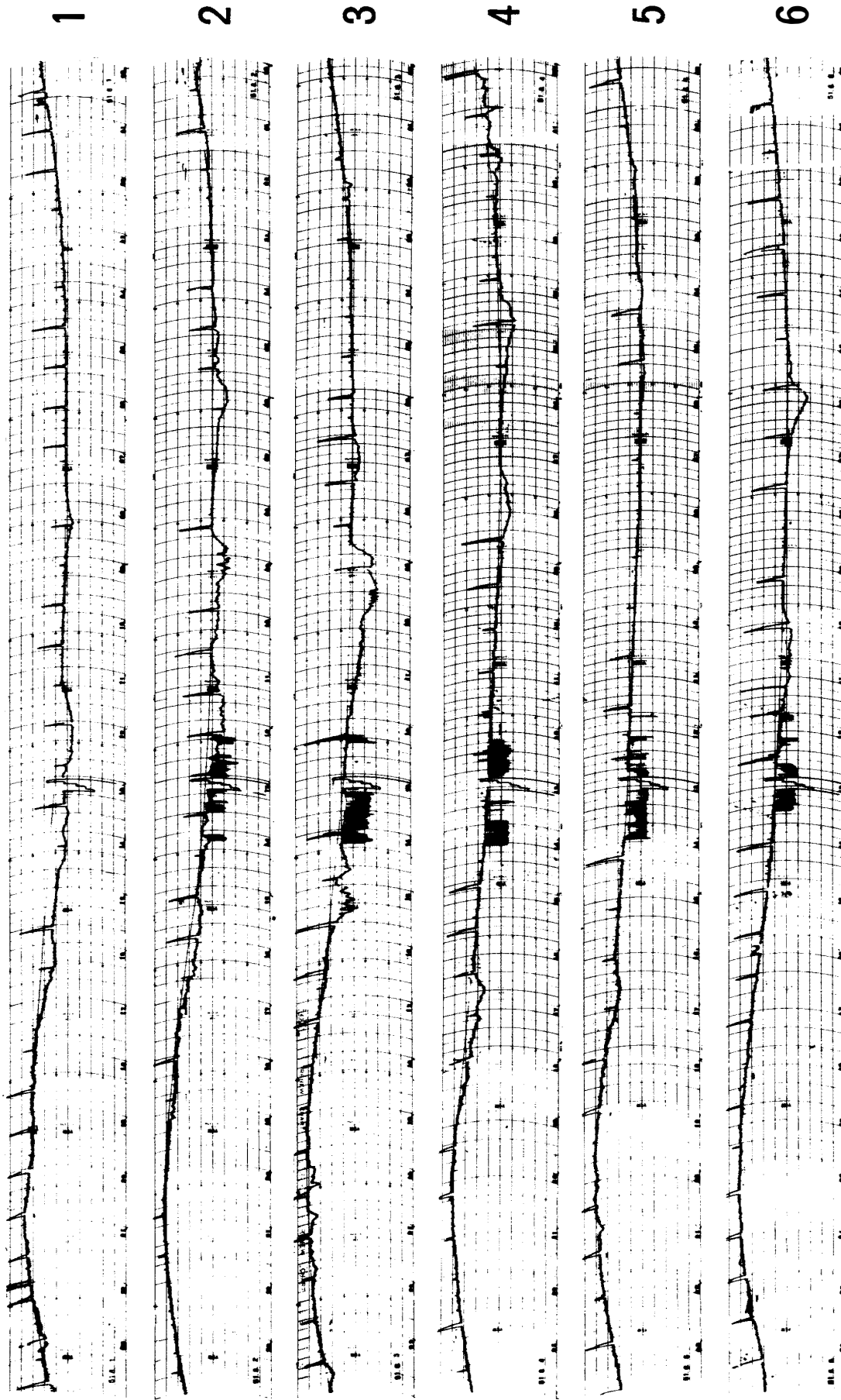
45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

July	4	1300 – 2400	failure of equipment.
	5	0000 – 2400	"
	6	0000 – 0800	"
		0949 – 1335	"
	8	1300 – 2400	"
	9	0000 – 0157	"
	24	0435 – 2400	"
	25	0000 – 0435	"
		0641 – 1125	"

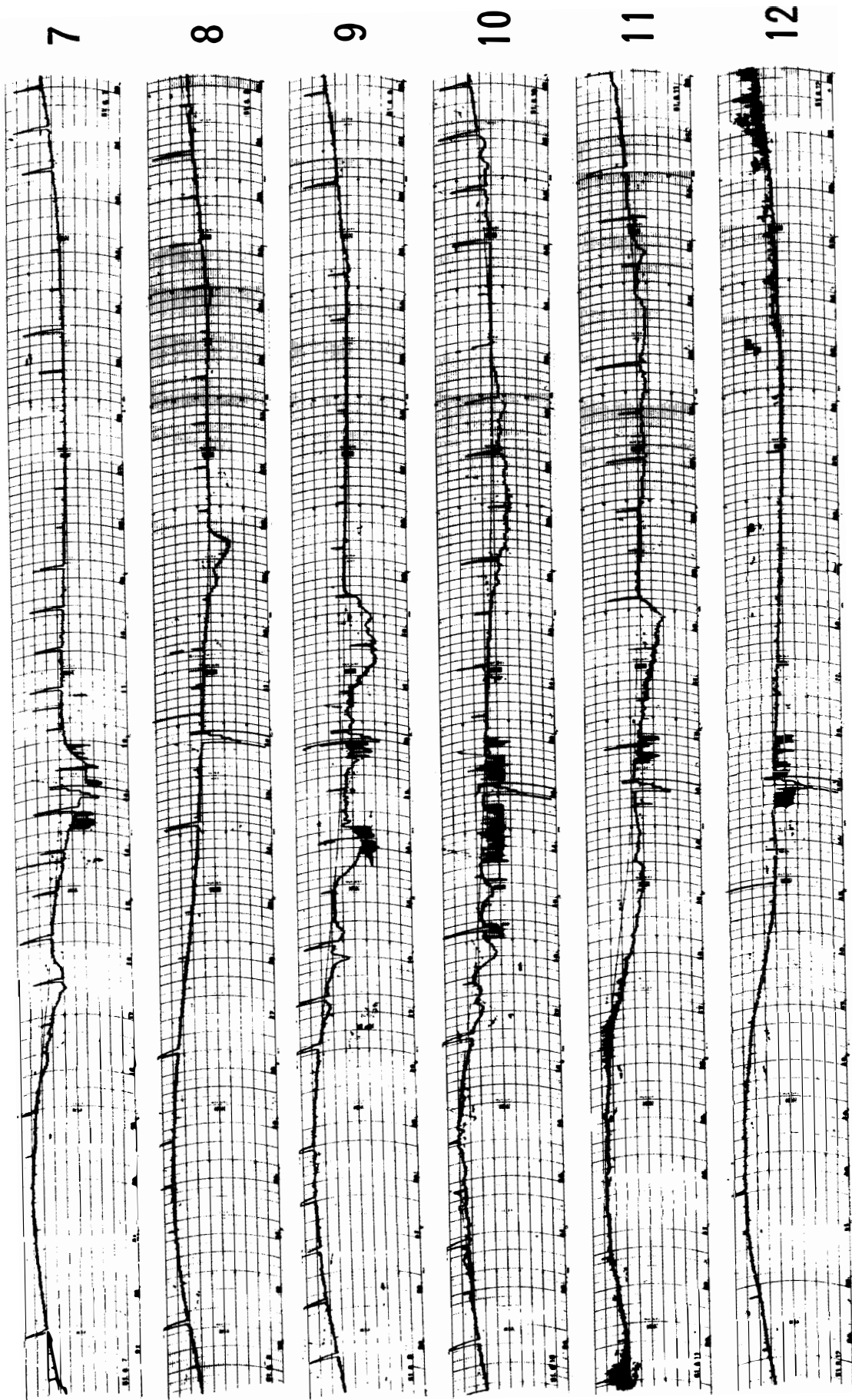
AUG 1976



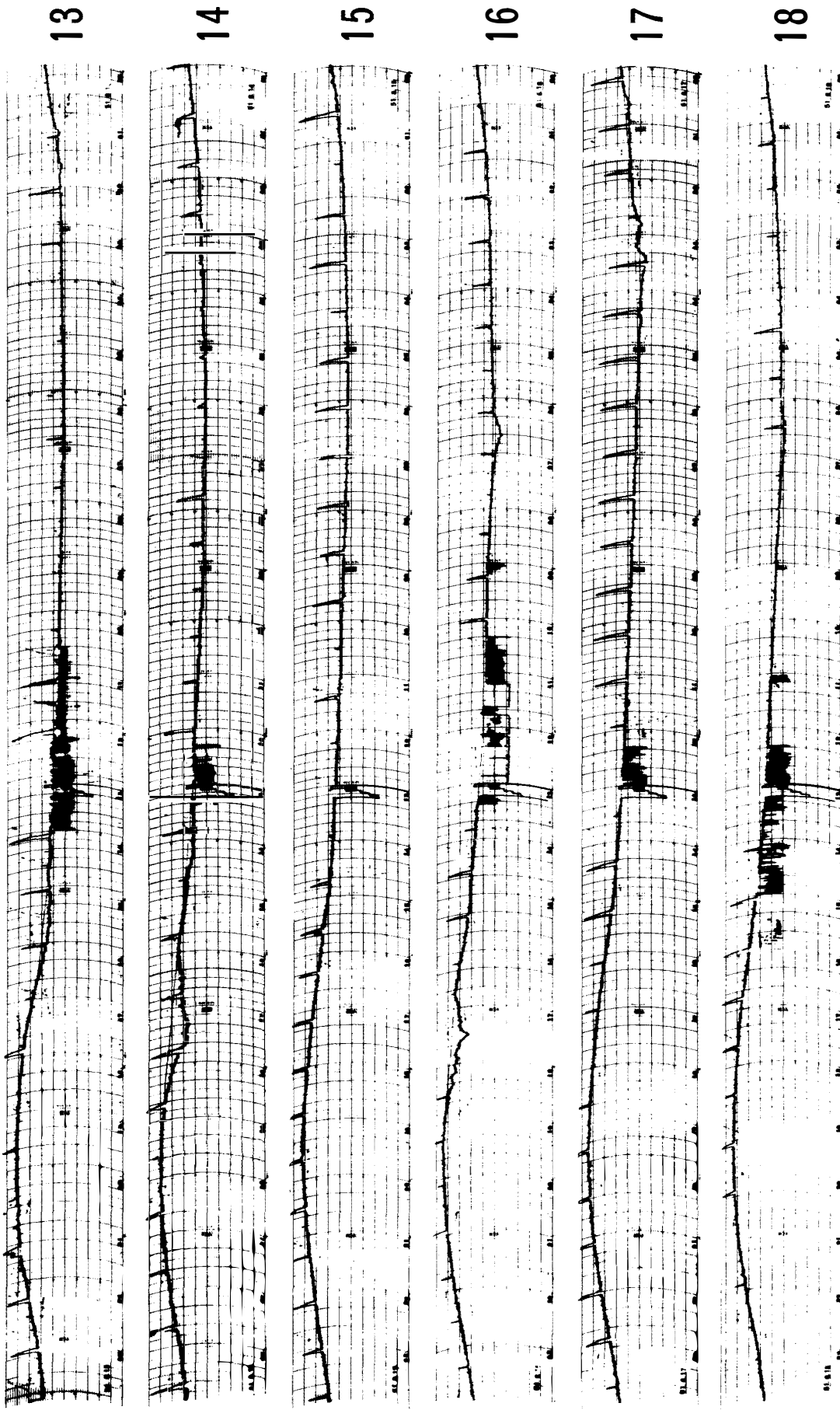
24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

AUG 1976



AUG 1976

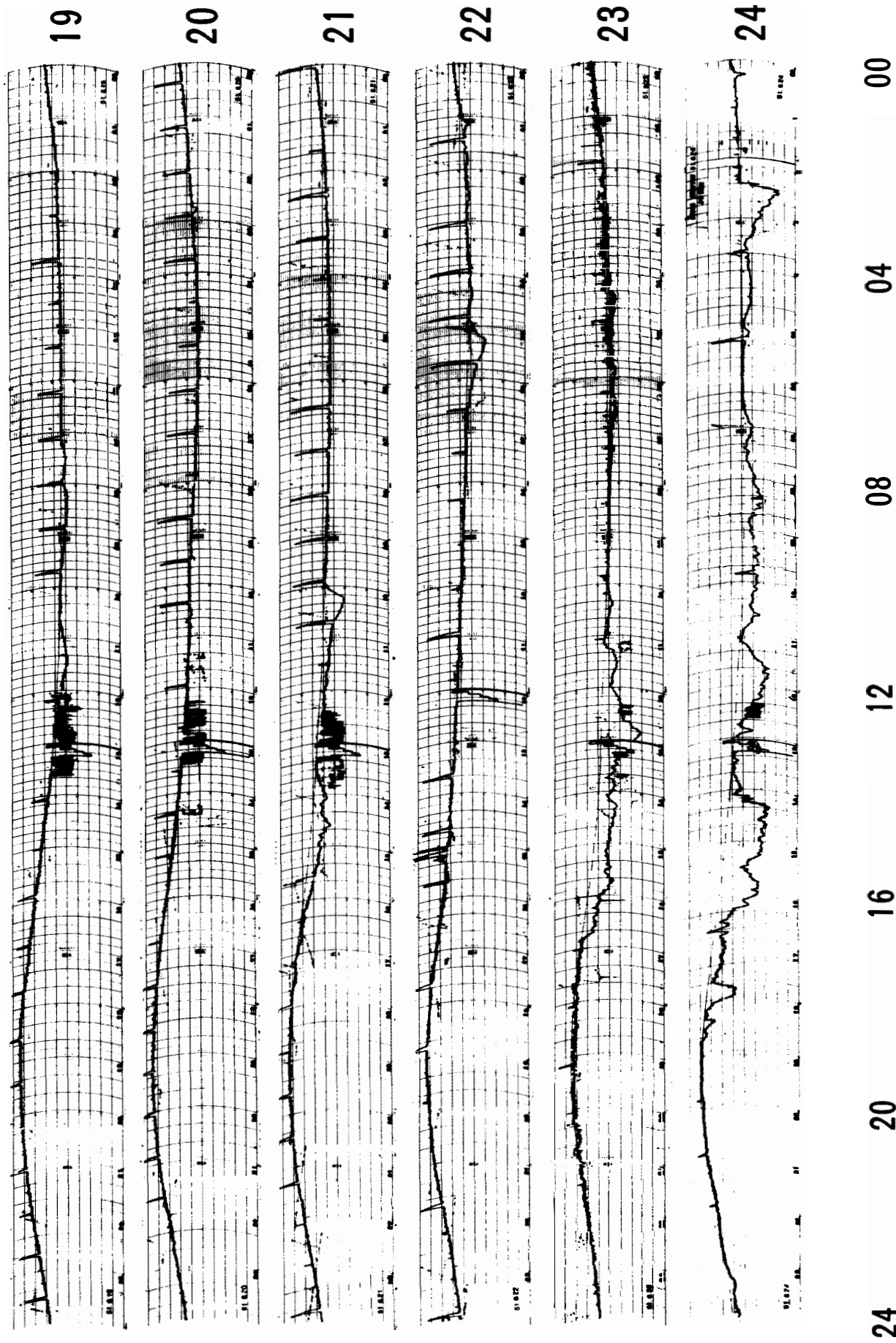


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

AUG 1976



AUG 1976



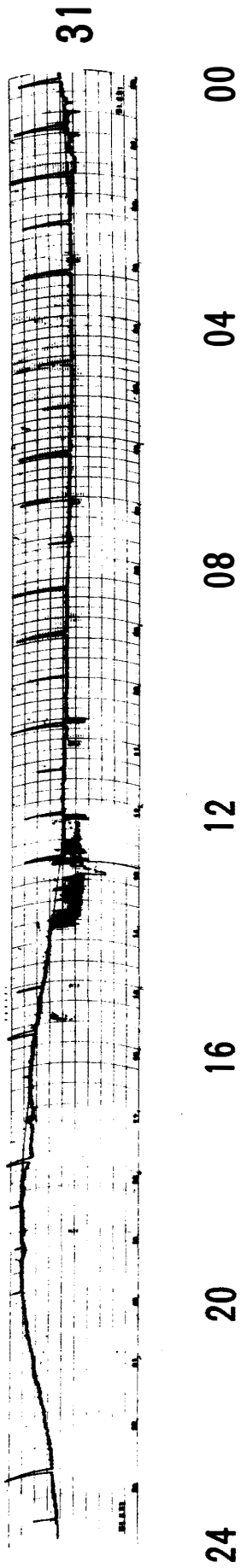
—63—

24 20 16 12 08 04 00

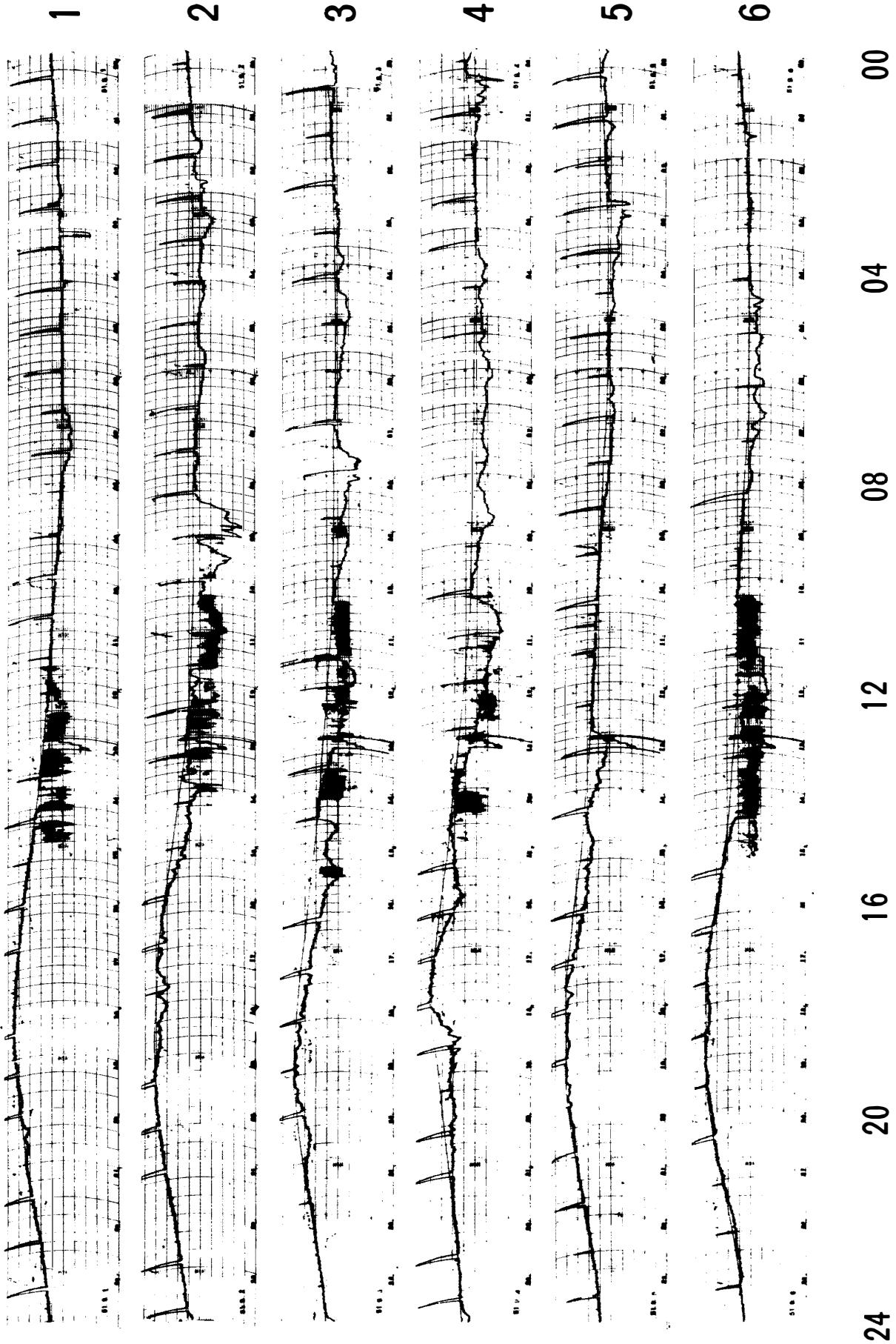
45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

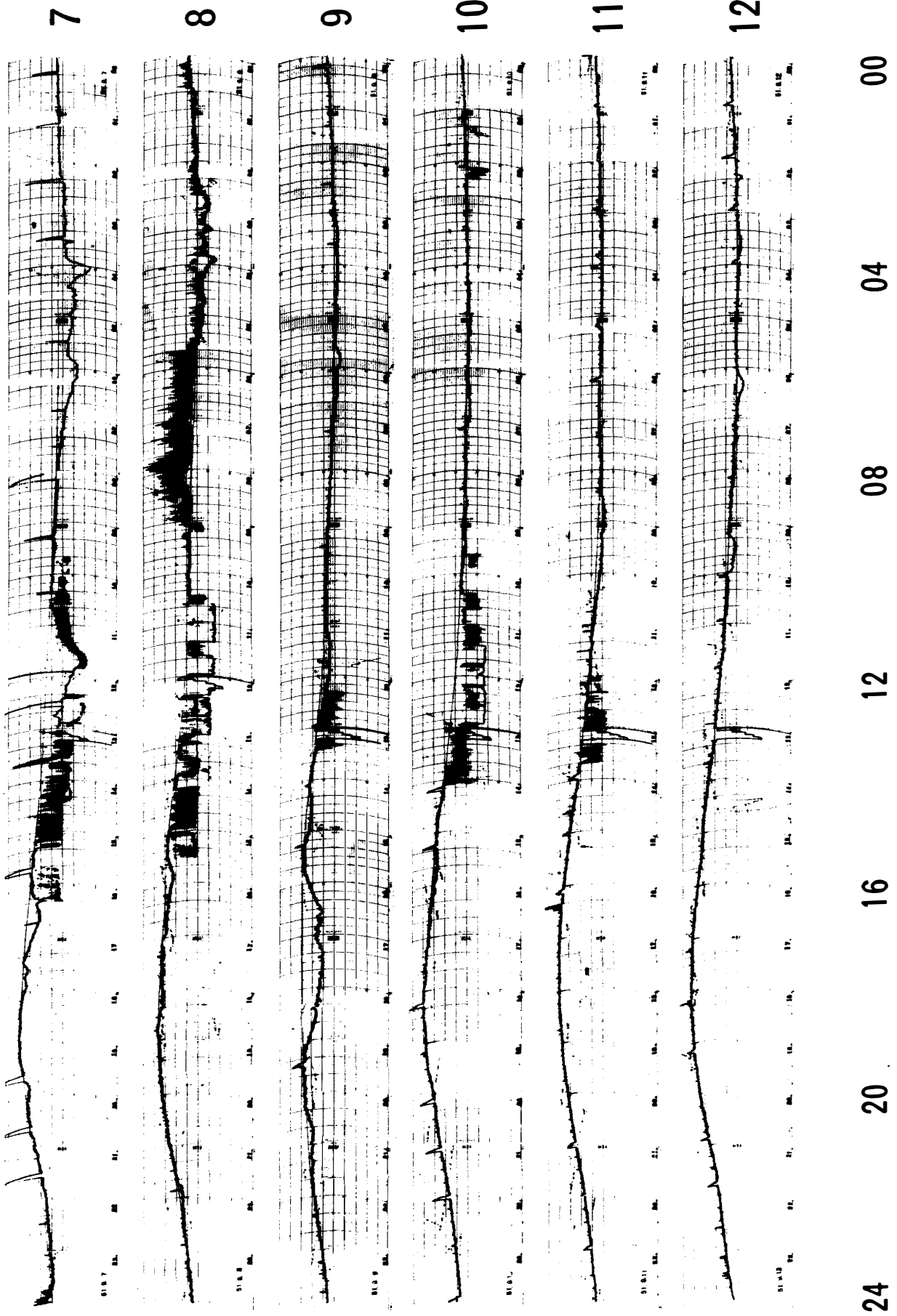
AUG 1976



SEP 1976



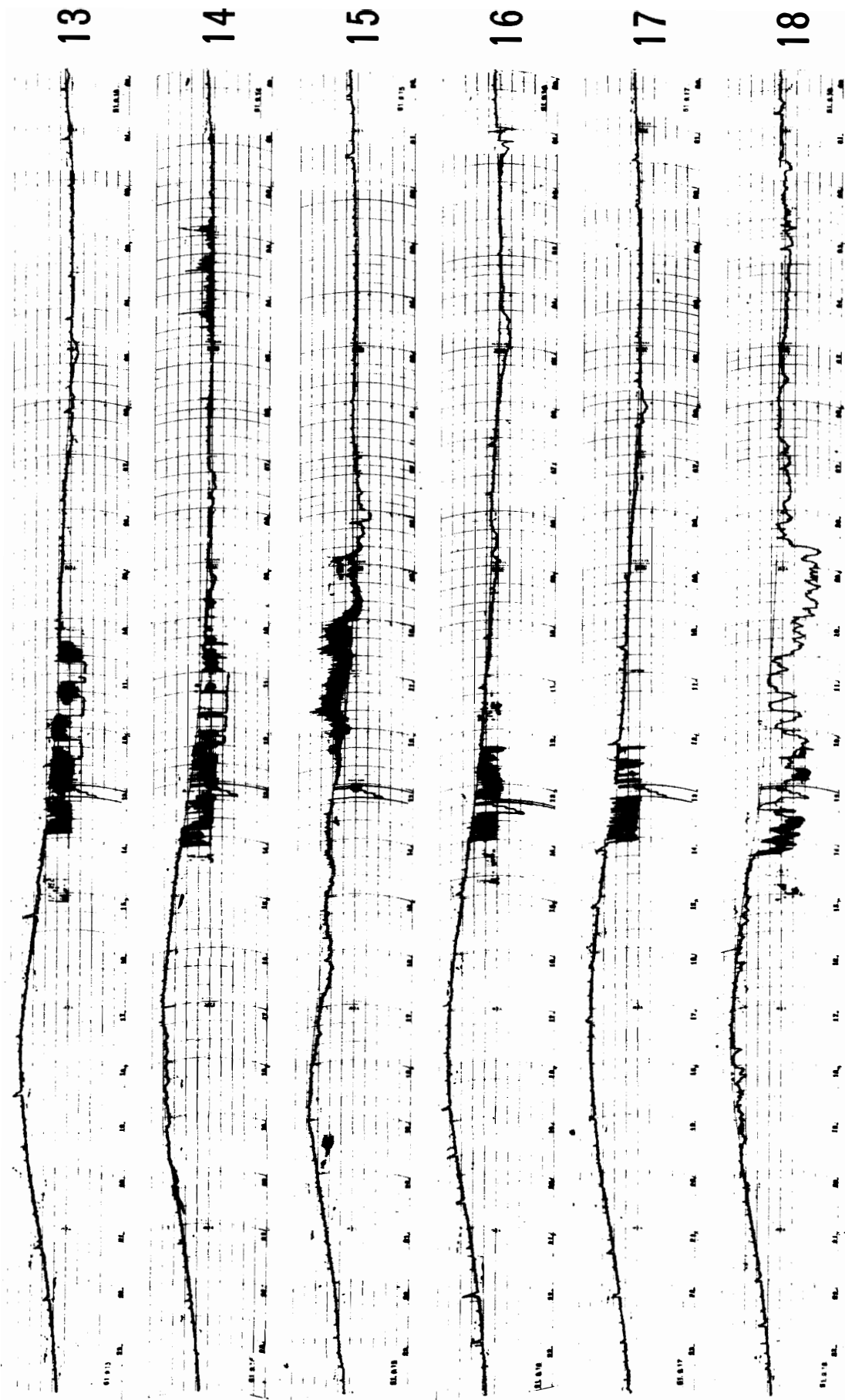
SEP 1976



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

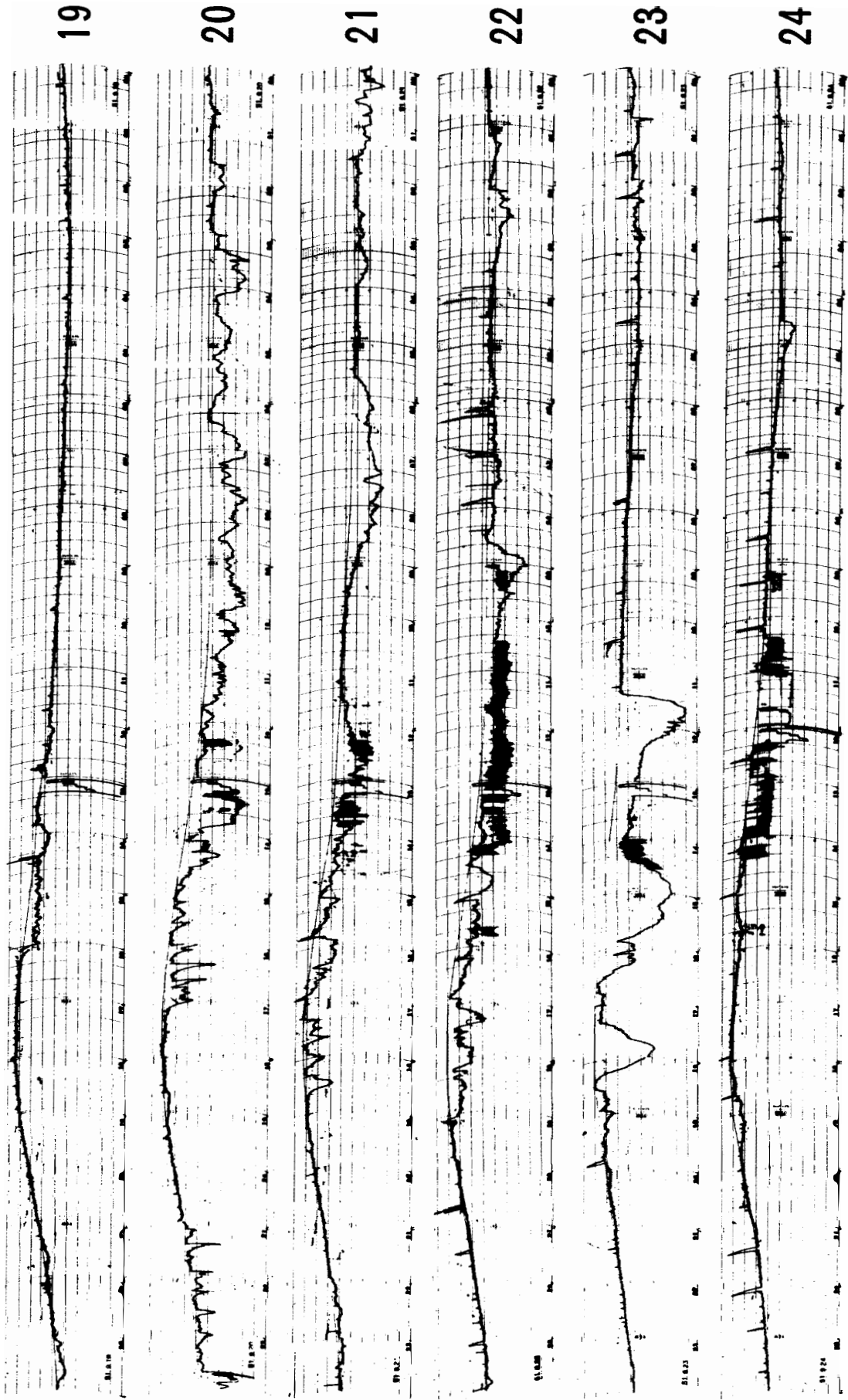
SEP 1976



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

SEP 1976

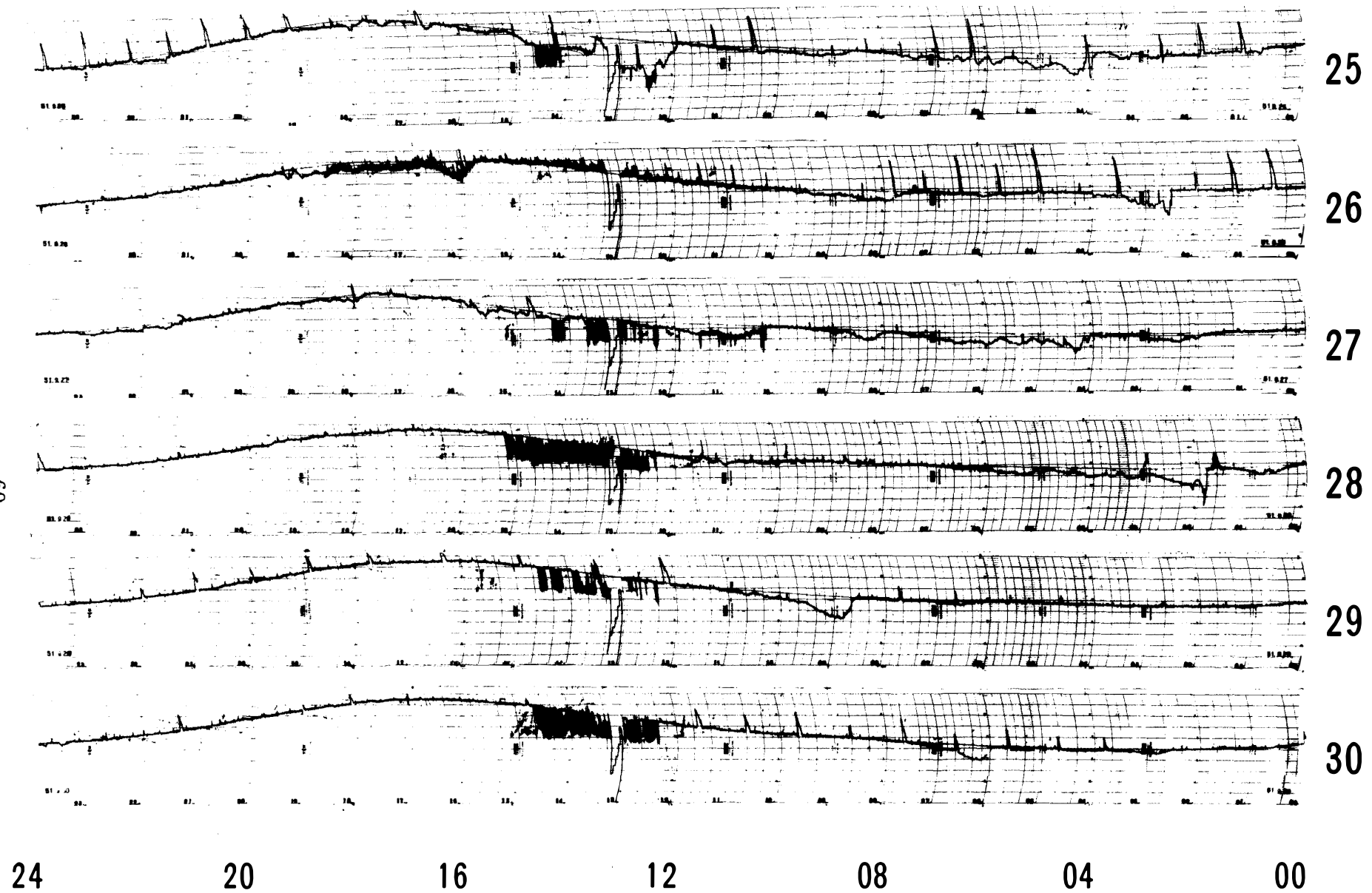


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

SEP 1 1976

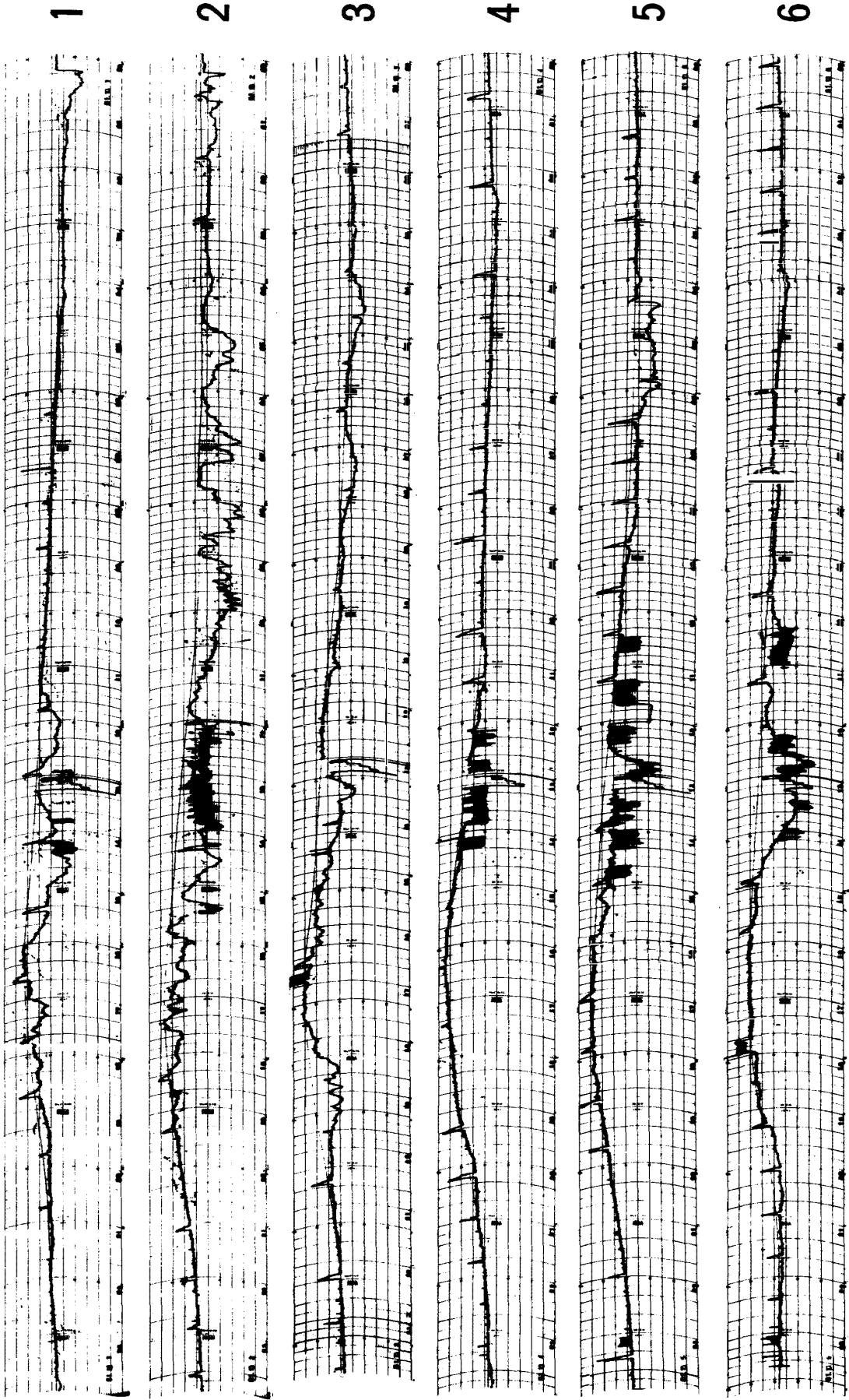
— 69 —



45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

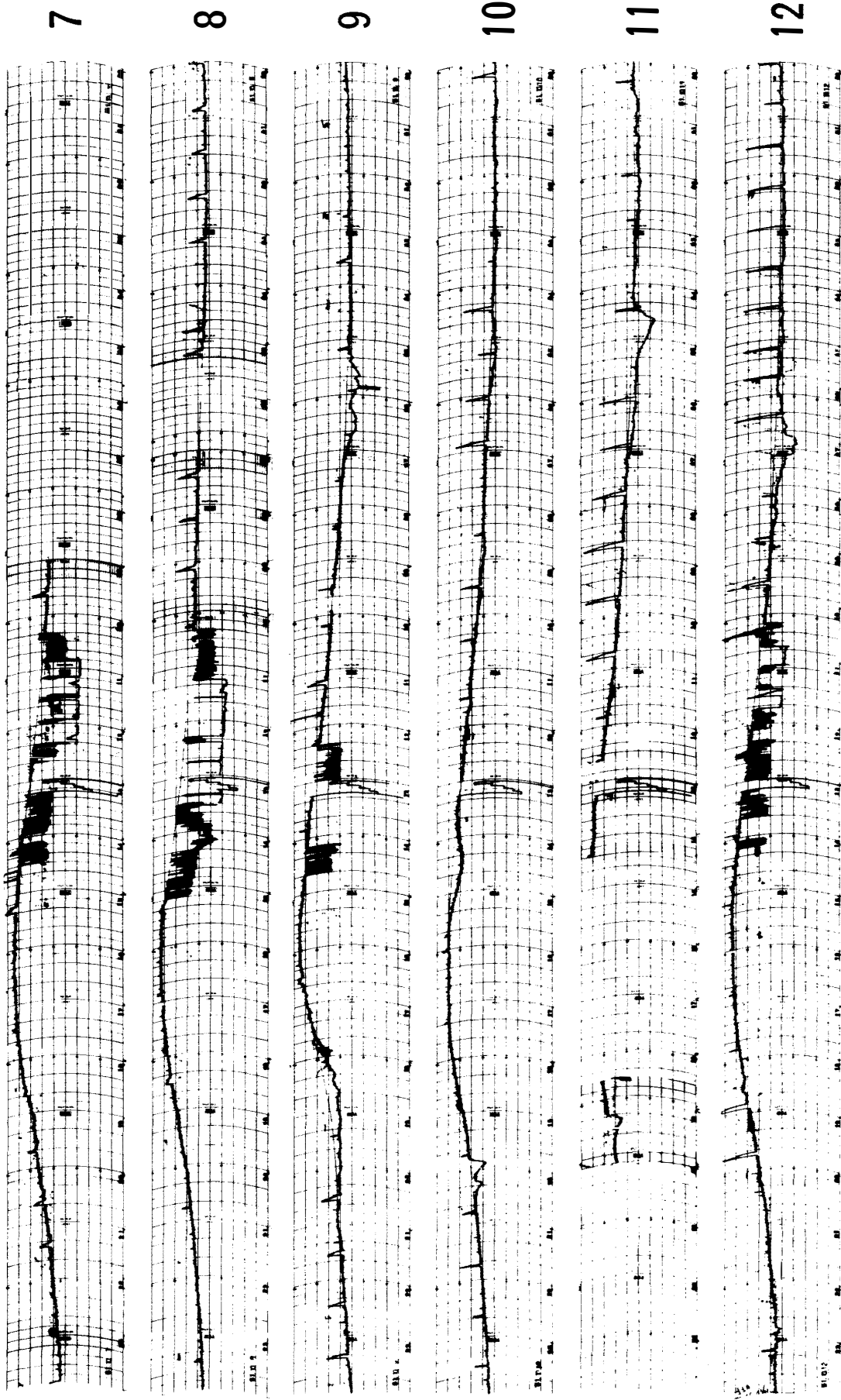
OCT 1976



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

OCT 1976



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

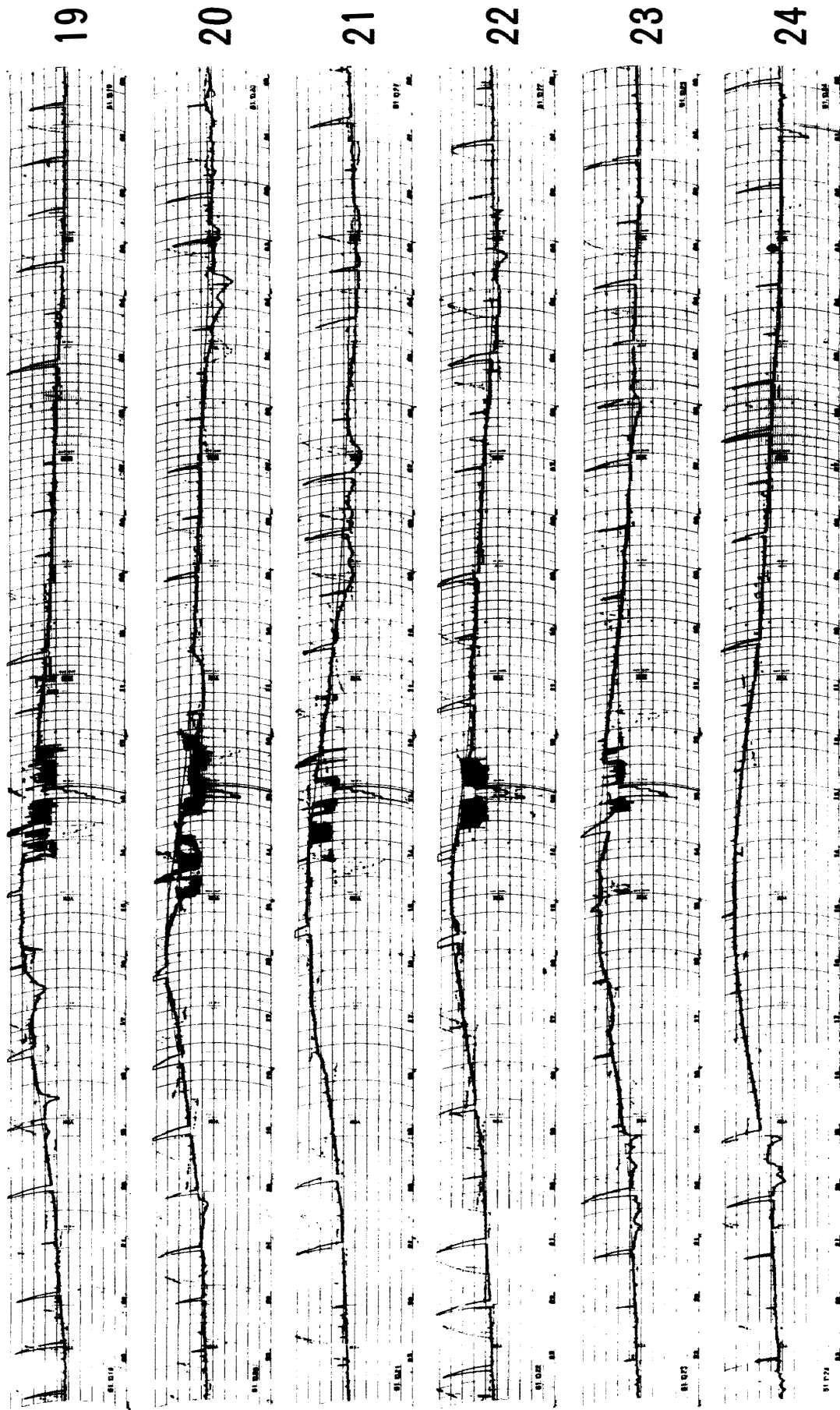
OCT 1976



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

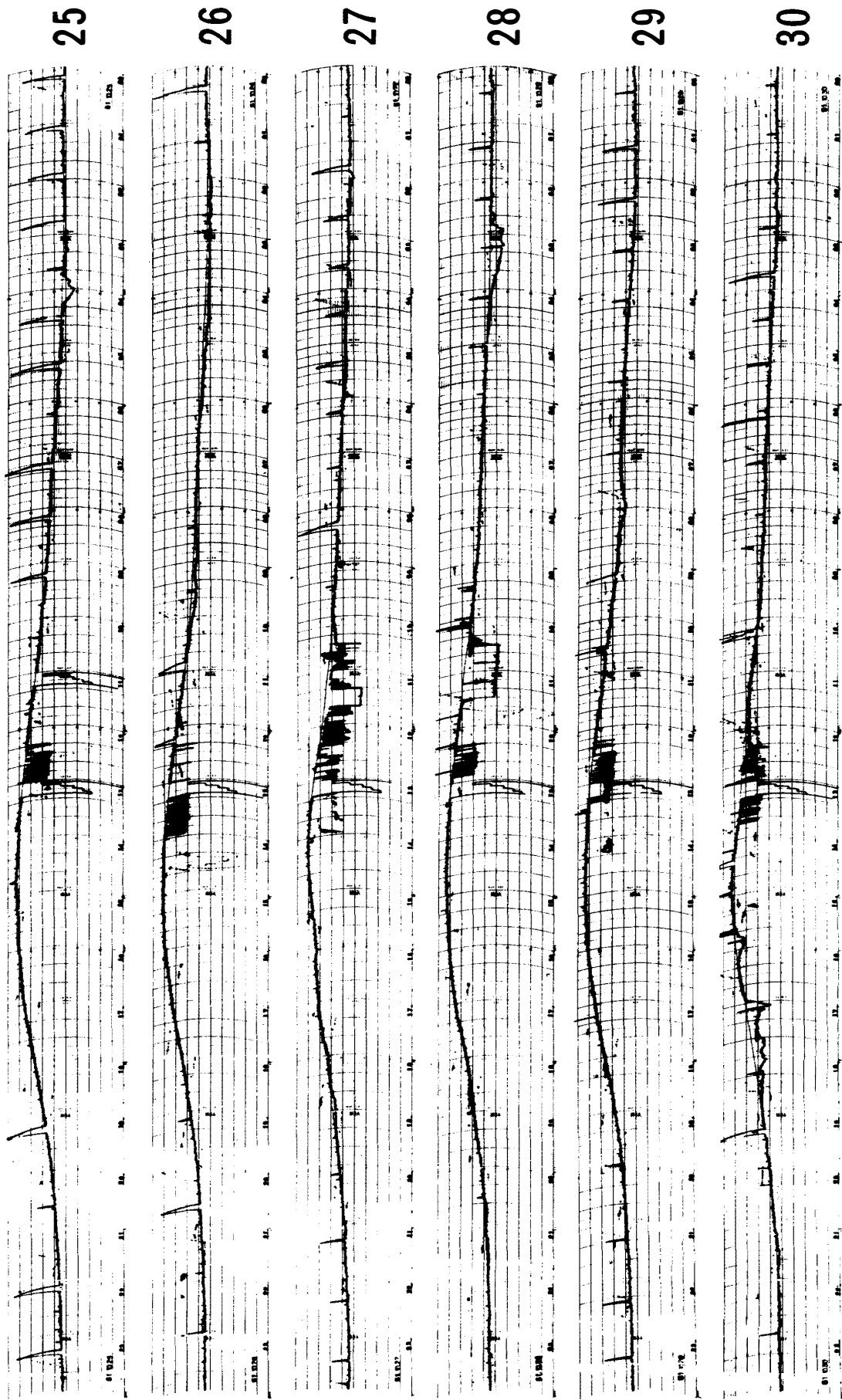
OCT 1976



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

OCT 1976

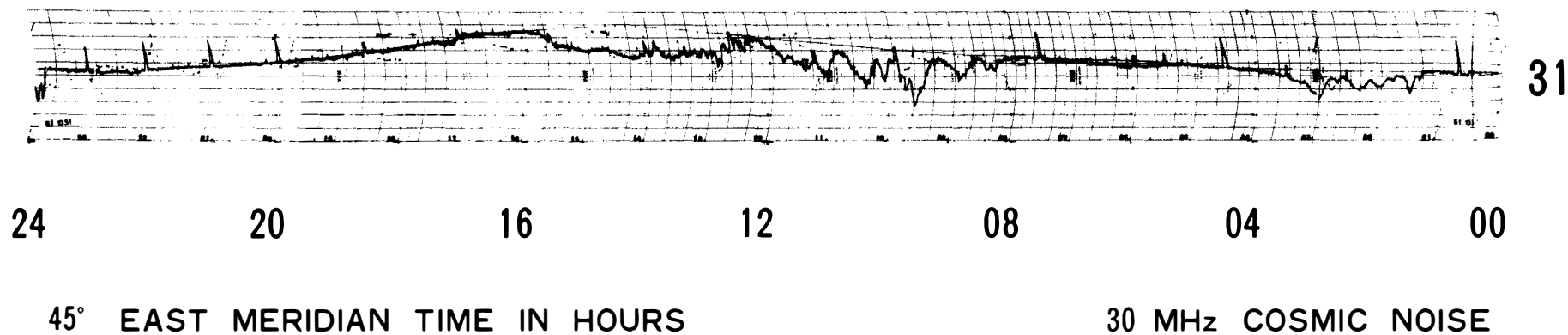


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

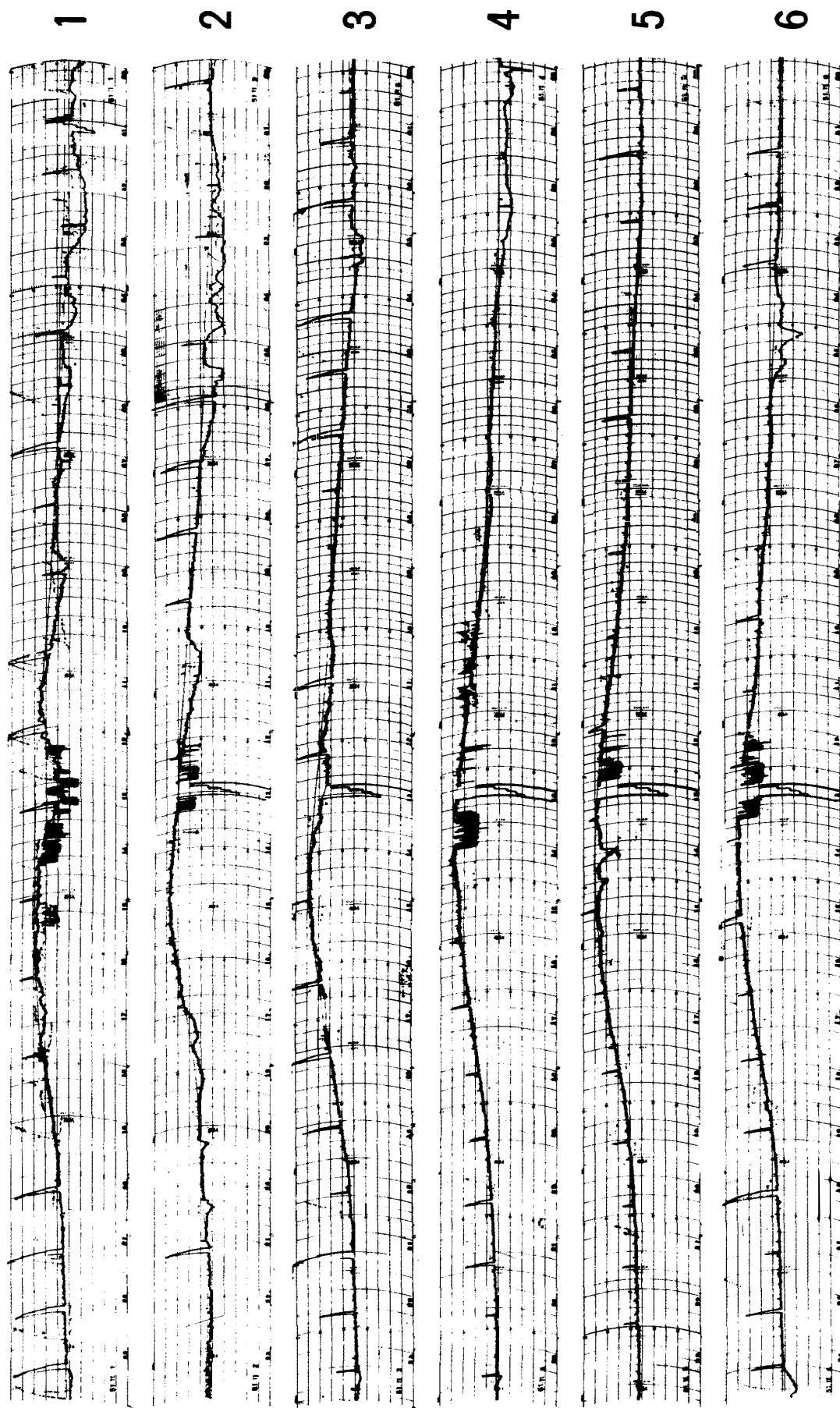
OCT 1976



Cosmic noise level obscured or equipment malfunction.

October	6	2338 - 2400	failure of equipment.
	7	0000 - 0900	"
	8	0520 - 0700	"
	11	1420 - 2400	"

NOV 1976

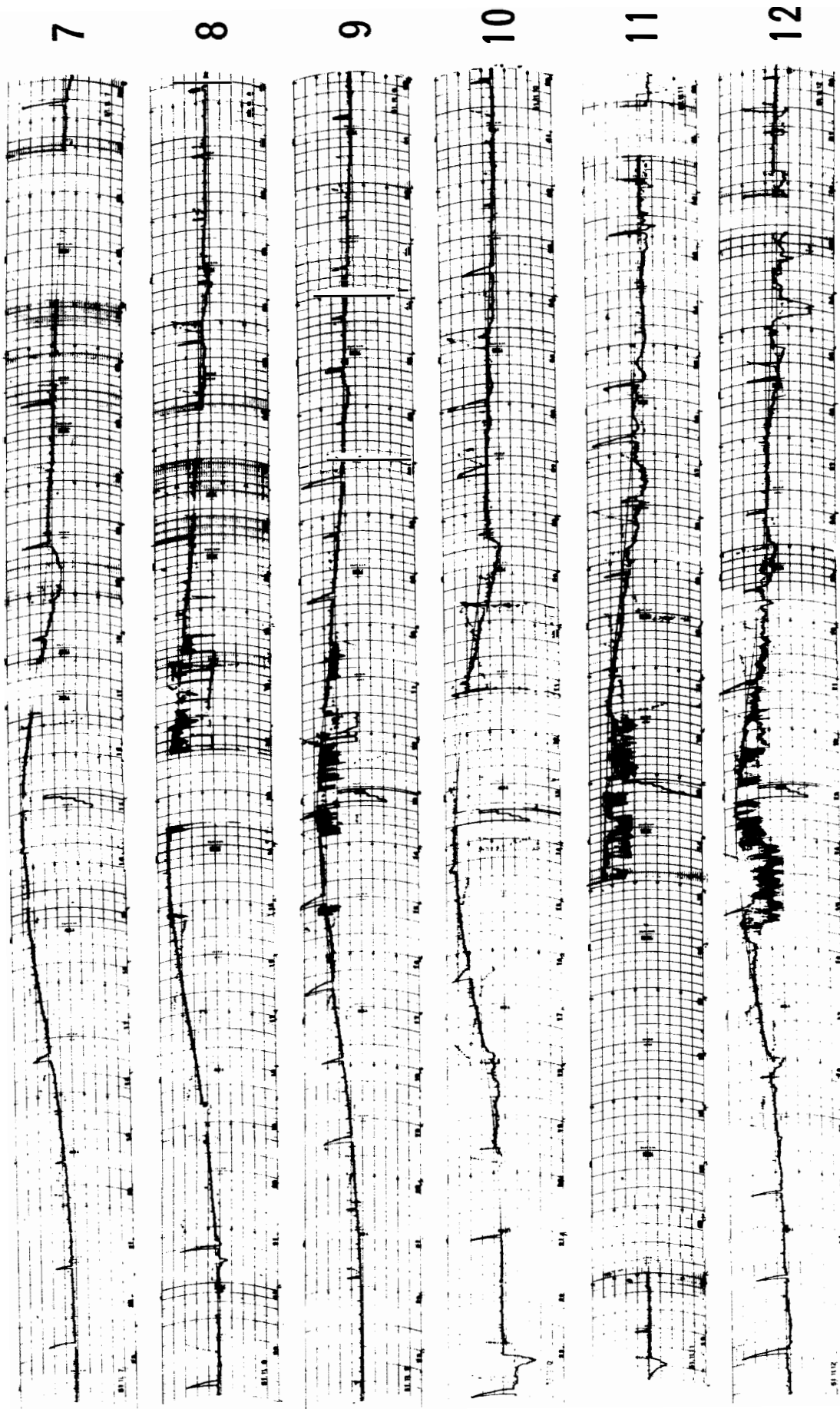


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

NOV 1976



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

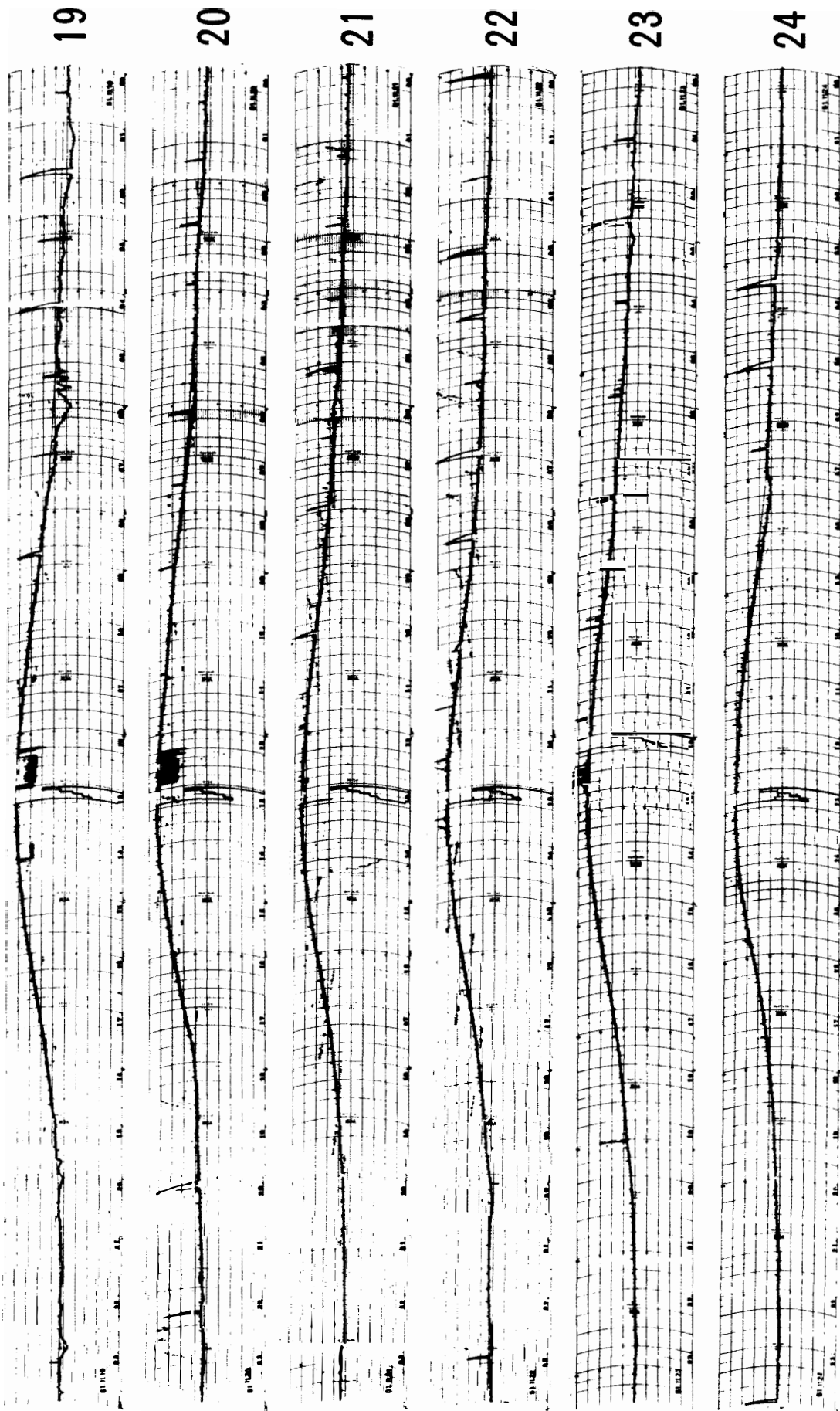
NOV 1976



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

NOV 1976

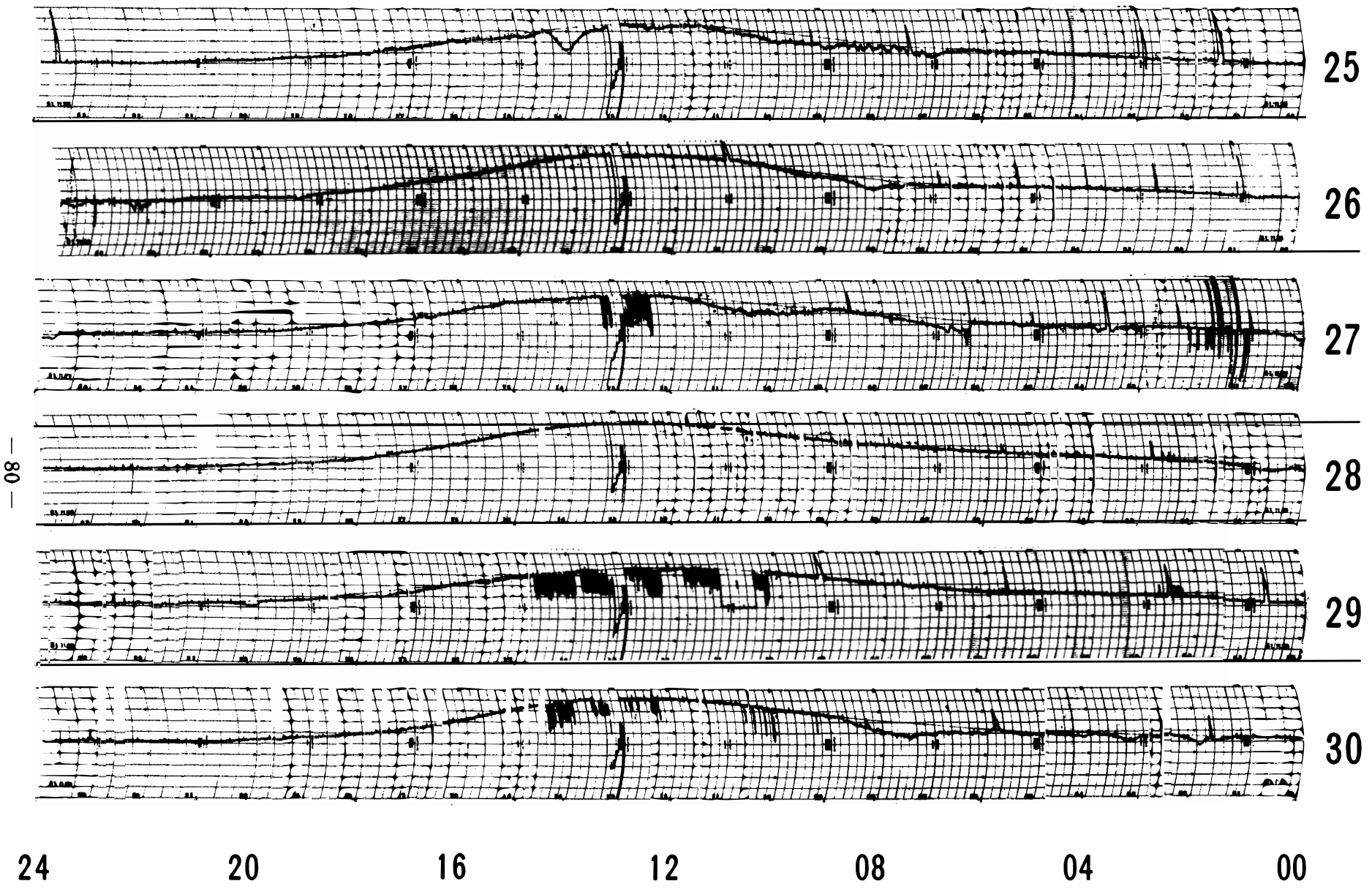


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

NOV 1976



45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

November	3	1647 – 1719	failure of equipment.
	7	0121 – 0400	"
		0500 – 0531	"
		0854 – 0911	"
		1039 – 1132	"
	8	0605 – 0700	"
		0740 – 0857	"
		1221 – 1342	"
		1846 – 1920	"
	10	1115 – 1325	"
		1936 – 2103	"
	11	0035 – 0130	"
		1449 – 2200	"
	12	0225 – 0300	"

DEC 1976



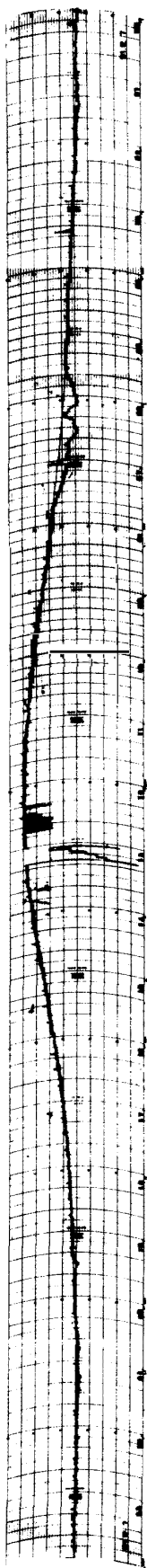
24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

DEC 1976

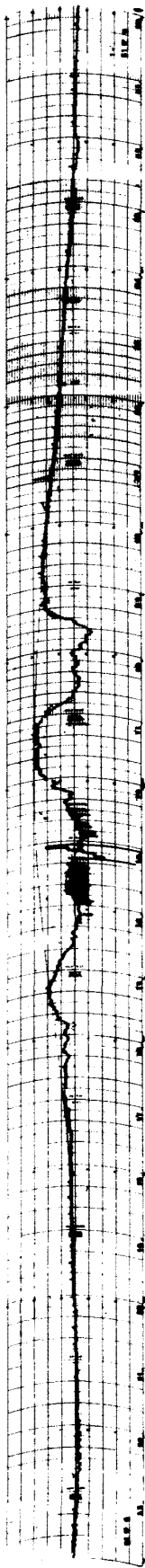
7



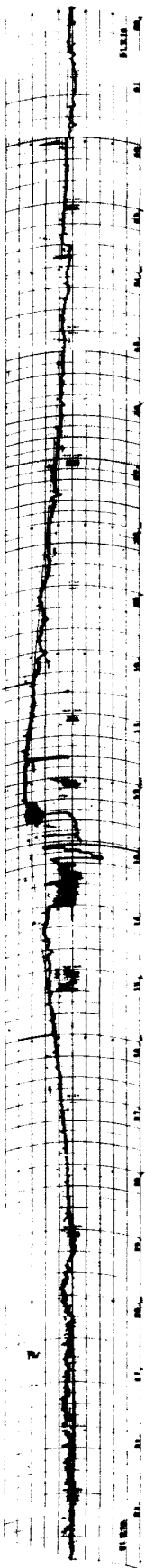
8



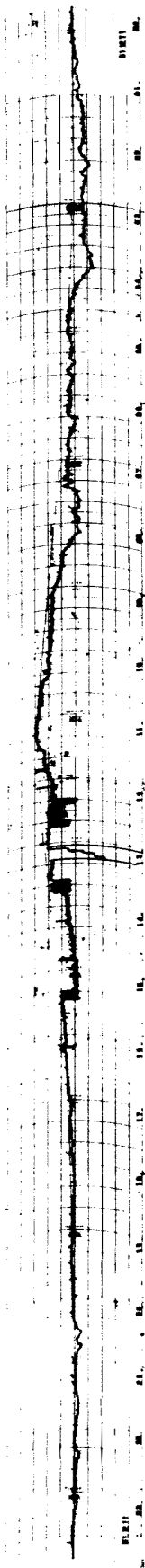
9



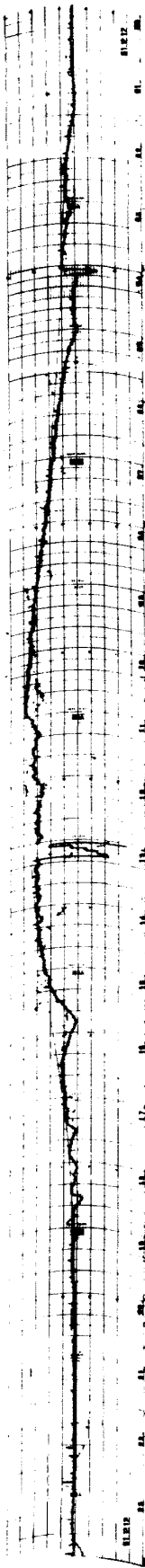
10



11



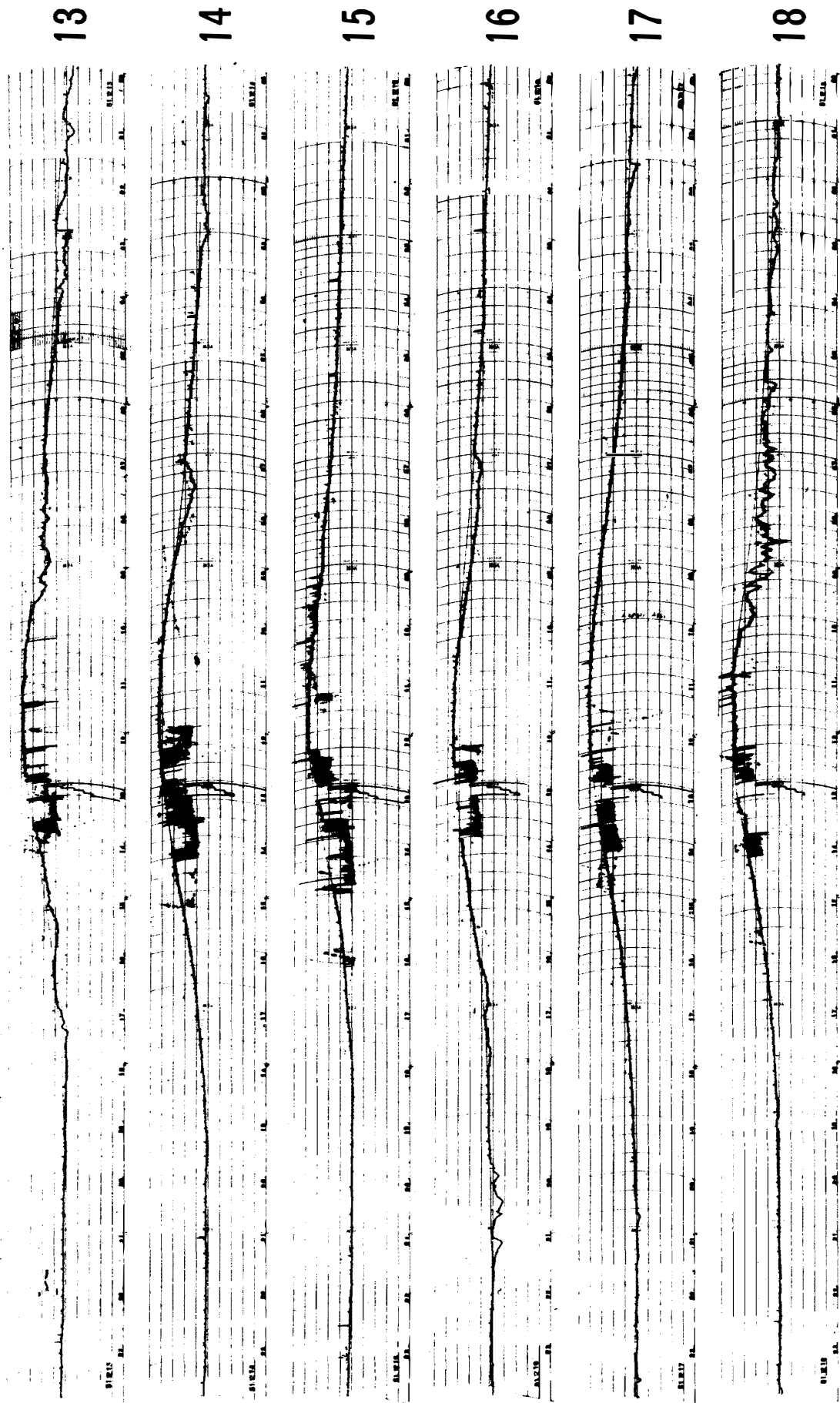
12



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

DEC 1976

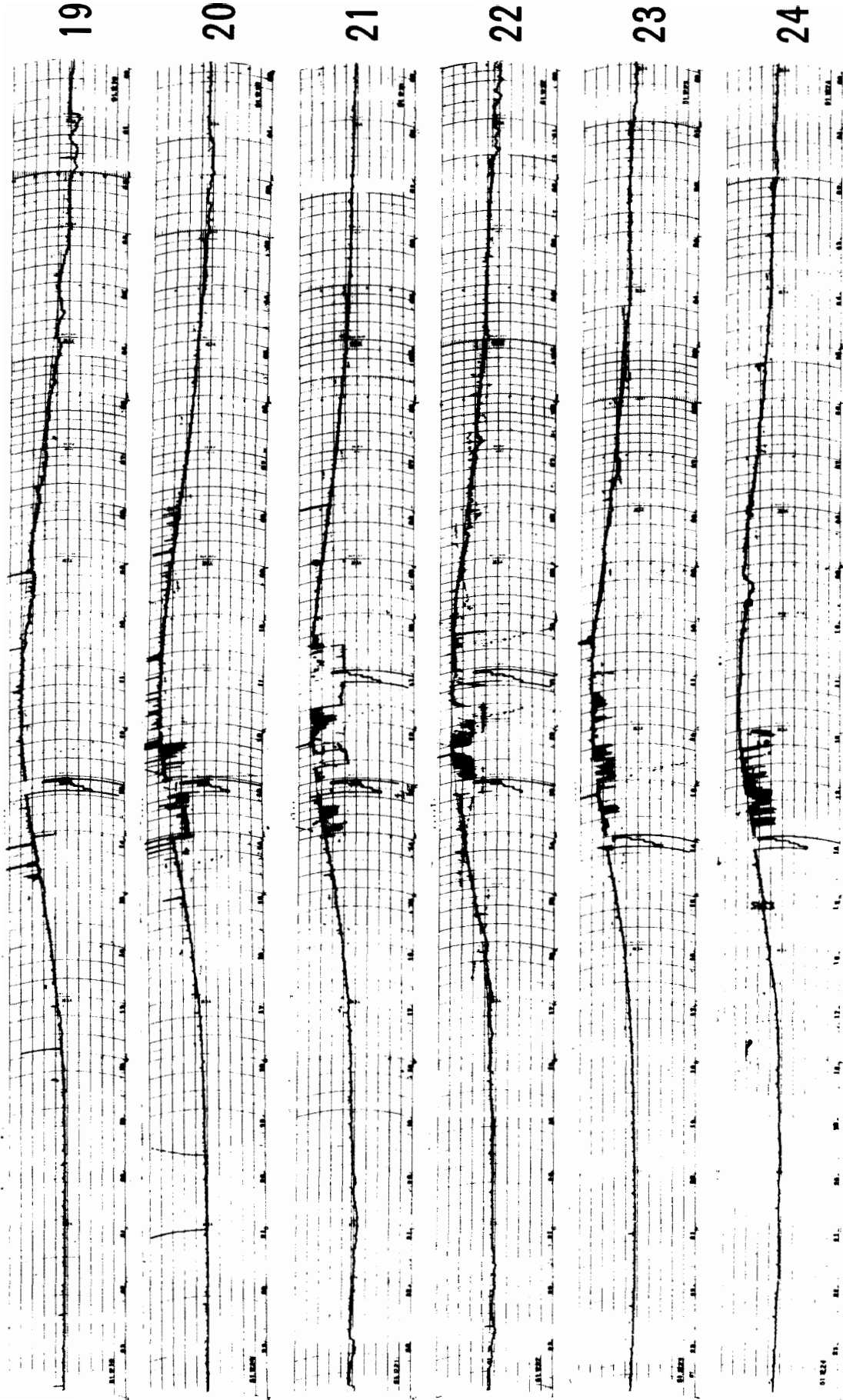


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

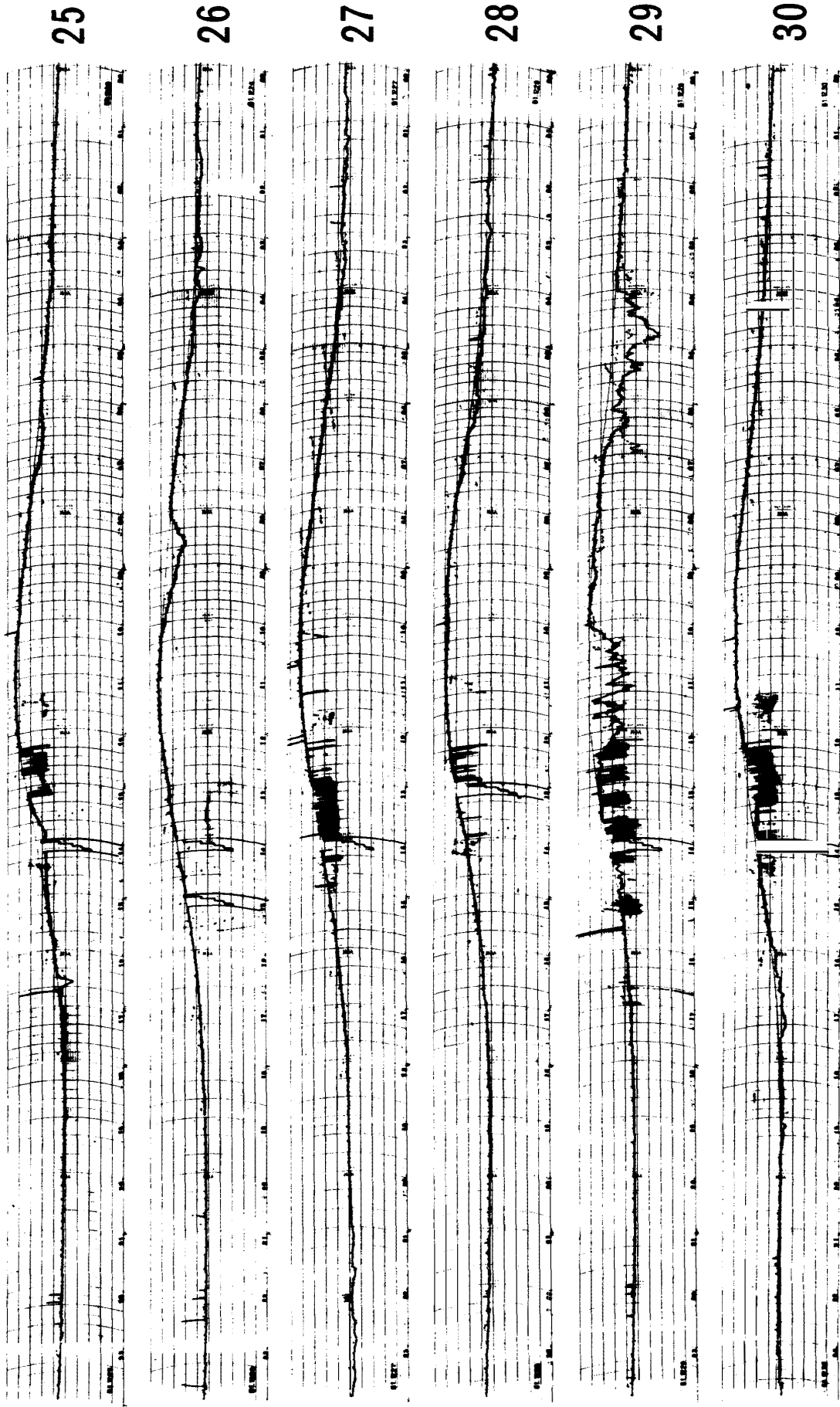
DEC 1976



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

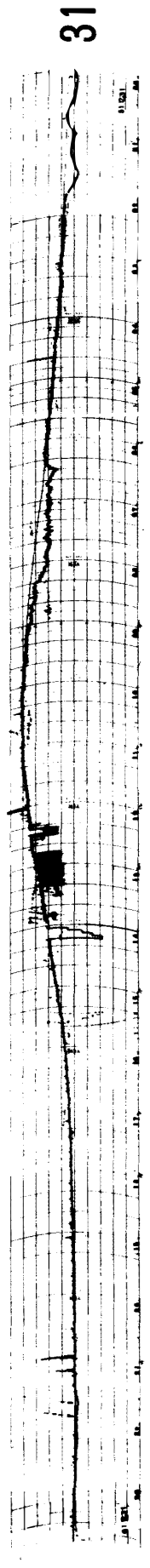
DEC 1976



24 28 00 04 08 12 16 20

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

DEC 1976



31

24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE