

RIOMETER RECORDS OF 30 MHz COSMIC NOISE  
AT SYOWA STATION, ANTARCTICA IN 1977

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1. Introduction

Observations of cosmic radio noise with a 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 includes hourly values and chart records of cosmic noise absorption in the period from January 1 to December 31, 1977. Copies of the data are available to users on request. The request 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

Noboru NISHIYAMA (Radio Research Laboratories)  
Jun'ichi SAKAMOTO (Radio Research Laboratories)

#### 4. Instrumentation

The receiver of the riometer which has a center-frequency of 30 MHz and a bandwidth of 3.5 kHz is connected to a vertically directed five-element Yagi antenna 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 also recorded once a day for calibration.

#### 5. Remarks

The cosmic noise power level shows a diurnal variation due to changes in path length through the ionosphere. If the ionosphere is in a quiet state the diurnal variation of the cosmic noise power is easily extracted from the chart recordings. On account of the revolution of the earth, the time(local time) when the same radio source passes the zenith becomes earlier by about 4 minutes each day and returns to its initial state in a year.

The hourly values of ionospheric absorption given in the CNA tables are the deviation(in dBm) of cosmic noise intensity from its monthly reference level. The reference level is calculated from selected quiet diurnal variations in the month.

## References

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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 1977		
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		0.3		0.2		0.3		0.2					0.7	1.4	0.4		1.0	0.1	0.5	0.2				
2	0.4	0.1		0.4	1.7	0.2		0.2															0.7	
3	0.5	0.1					0.3												0.1					
4	0.2	0.6	0.1	0.2	0.3	0.3									0.4		0.5	0.1		0.5		0.1		0.3
5	0.2		0.1		0.6	0.5	0.6		0.3	0.5														
* 6			0.1		0.1		0.1	0.1													0.1	0.2		
7			0.1			0.3						0.2									0.2	0.7		0.2
8																0.1								
9			0.2					0.3										0.2	0.1					
* 10																								
11						1.4	0.3					0.1		0.2						0.3	0.3	0.1		
12																								
13		0.1		0.1	0.2			0.6																
14		0.4			0.1			0.1	0.1	0.1	0.2										0.3	0.1		0.4
15		0.5			0.5	0.3	0.8		0.6	0.2	0.1	0.3	0.7		0.1		0.2	0.2	0.2					
16			0.3	0.2	0.1					0.6	0.2													
17		0.2	0.6																					
18			0.1		0.2		0.6		0.2	0.4														
* 19					0.1	0.4								S										
20				0.6			0.3	0.3	0.5	0.3														
21			0.6	0.2																				
22										0.5	0.1												0.1	C
23		0.3	0.2	0.2	0.2																	C	C	C
24						0.8	0.5																	
* 25			0.2	0.2																0.2				
26	0.3		0.4	0.4	0.2	0.1																		
27			0.2	0.1																				
* 28	0.1																				0.2			
29	0.5	0.5		0.2												0.7	0.1				0.1			0.2
30			0.3	0.4	1.2	0.1	2.1	0.5	1.1	1.4	2.1	1.7	1.0	1.1	1.1	0.7	0.4	0.3	0.2			0.5	0.1	0.1
31					0.3	0.1	1.0	0.6			0.2	1.0	1.0	0.7			0.1	0.7	0.5	0.2	0.1	0.2		
Mean	0.07	0.10	0.10	0.10	0.18	0.15	0.21	0.09	0.08	0.12	0.09	0.11	0.10	0.10	0.06	0.04	0.07	0.05	0.07	0.05	0.05	0.03	0.04	0.02

Open spaces without figures correspond to quiet level

\* : Quiet day

C : Failure of equipment

S : Interference

SYOWA STATION

45° EAST MERIDIAN TIME [U. T.+3 hours]

February 1977

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	0.5			0.2														
2			0.3	0.9				0.3	0.8	0.5	0.3		0.2	0.1		0.3	0.5	0.1		0.1	0.1			
3			0.3	1.2	0.6			0.2	0.2												0.1			
4		0.1		0.5	0.1																			
5												0.1	0.9	0.2	0.4				0.1					
6				0.1	0.1													0.2	0.6	0.1	0.2			0.3
7		0.6	0.5	0.6	2.0	0.6	0.4		0.2						0.5	0.2	0.4		0.5	0.2	0.1			0.1
8			0.3		0.3	0.5	0.5													0.3	0.6	0.2		0.3
9	0.5	0.2	0.6	0.5		1.2	1.2	0.5	0.6	0.2	0.7	0.7	0.6	0.5		1.7	1.2	0.5	0.2	0.4				0.2
10	0.4	0.2	0.4	0.7	0.3	0.1			0.3	0.3			0.2	1.0	0.1	0.5		0.6		0.8	0.2			
11		0.5	0.3		0.7	0.8			0.7	0.1	0.7	1.0	0.9	0.2	1.0	1.0	0.2	1.3	0.4					
12				0.7	0.3		C	C				C				0.2	0.5	0.2			0.2	0.1		
13				0.1	0.2	0.7	0.5	0.2	1.1													0.1		0.3
14			0.3							0.2	0.1							0.1	0.1		0.3		0.1	
15	0.2	0.2	0.5		0.2	0.2																		0.1
16		0.2				0.2		0.1				0.2												
17						0.2																		0.1
18									0.7	0.2														
19							0.2																	
20			0.1			0.2																		
21					0.1	0.1																		
22			0.1					0.2																
23		0.3		0.1		0.2	0.4			0.4	0.4	0.2			0.2	0.1	0.2		0.5	0.2	0.3			
24	0.1	0.3	0.7	0.5	0.7	0.4								0.2	0.3	0.1		0.4	0.3	0.5			0.5	
25			0.3		0.6	0.1	0.5	0.1		0.3			S					0.1	0.1			0.5		
26			0.5	0.2	0.2		0.6		0.7							0.3								
27																								
28				1.0	0.2	0.7	0.3	0.2			0.1	0.2												
29																								
30																								
31																								
Mean	0.04	0.09	0.18	0.25	0.24	0.22	0.18	0.06	0.18	0.07	0.08	0.08	0.08	0.10	0.08	0.17	0.10	0.12	0.10	0.09	0.07	0.03	0.02	0.04

Open spaces without figures correspond to quiet level

\* : Quiet day

C : Failure of equipment

S : Interference

SYOWA STATION

45° EAST MERIDIAN TIME [U. T.+3 hours]

March 1977

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			0.3	0.1	0.2																	0.1		
2	0.8															0.1	0.1		0.2					
3			0.1																					
4																								
5										0.5														
6																			0.1					
7																								
8							0.2																	
9				0.1	0.5	0.2		0.1	0.8		1.6	2.1	1.0	0.2										
10		1.5	0.5		1.2	0.8	0.5	0.4	0.2	0.8	1.0	0.2	0.7	1.2	0.4	0.4	0.6	1.7	0.2					
11	0.2		0.7		0.2	0.3					0.2		1.5	0.3	0.5	0.5					0.2		0.2	0.3
12	0.5	0.2	0.3	0.1	0.4	1.7		0.1	0.2	0.6	0.2	0.4	2.7	1.4	1.0		0.4	0.1	0.2					0.9
13		0.2			2.5					1.4	0.4		0.2	0.1		0.1		0.1						
14		0.2	0.2	0.7	0.2		0.9	1.2	0.2	0.2	0.4	0.5	0.3							0.1				
15																		0.7	0.2					
16					0.2						1.3	0.7	0.8	0.2										
17						0.2		0.2												0.2				
18	0.2	0.2		0.2	1.1	0.1		0.5	0.3								0.5	0.4						
19										0.5	0.4	0.2												
20					0.3		0.2																	
21		0.2		0.2																				
22	0.2	0.1	0.1	0.4	0.3		0.5			0.7		0.1	0.1			0.4	0.4	0.3						4.0
23							0.2					2.2	1.0				0.4	0.7	0.4	0.1				
24			0.5	0.6	0.2	0.4	0.2	0.1		0.2	0.7	0.1						0.1						0.1
25				0.1		1.1	0.3									0.7								
26	0.3	0.3			0.4	0.3	0.8	0.4	1.5	0.2		1.2	0.3	0.3										
27											0.5	0.5	0.3	0.4										
28			0.2		0.3	0.2	0.1	0.1	0.4				0.2	0.5				0.2						
29	0.4	0.8	0.6				0.6																	
30																								
31			0.2	0.1																				
Mean	0.08	0.11	0.11	0.08	0.25	0.17	0.14	0.10	0.10	0.16	0.21	0.26	0.29	0.14	0.06	0.07	0.07	0.13	0.05	0.01	0.06	0.01	0.01	0.07

Open spaces without figures correspond to quiet level

\* : Quiet day

SYOWA STATION

45° EAST MERIDIAN TIME [U. T.+3 hours]

April 1977

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	0.3								0.2	0.1			
2											0.1													
3				0.2	0.5			0.1	0.1			0.2	0.3		0.1		0.5							
4			0.1	0.2	1.4	0.1	1.4	0.2	0.3	0.4	3.2	1.0	0.2	0.2	0.8	0.5	0.6	1.1						
5	0.1	0.2	0.5	0.3	2.0	0.2	0.1						0.5	1.9	1.1	0.8	0.2	0.1	0.5				0.1	
6	0.1	0.2	0.1	0.7	0.3	1.0	0.2	0.3	0.4	1.0	2.4	0.7	0.2	0.1						0.1	2.4	0.1		0.1
7	0.5	0.5	1.4	0.1	1.4	0.7		0.7	4.2	1.7	2.8	1.4	1.2	0.5	0.4	0.3	0.4	1.5	0.1					
8	0.1	0.1		0.2	0.1	0.4	0.2		0.2	0.7	1.3	0.5	0.7	1.7	1.1	1.3	0.8	0.9	0.1					
9	0.5	0.2	0.2	1.1	0.2	0.4	0.1		0.4	0.2	3.5	3.2	1.4	1.0	0.9	0.7	0.7		1.0	0.1		0.1		
10	0.2		0.2	0.4		0.6	2.0	0.3	0.6	1.7	0.1		2.7	1.7	0.9	0.7	0.1	0.1	0.1					
11	0.3	0.5	1.3			1.3	0.3		2.0	1.5		0.2		0.5				1.4	0.6	0.2		0.1		0.2
12		0.5	0.2	1.0	0.2													0.3						
13			1.4	0.4		0.1							0.2	0.1										
14				0.7	0.9	0.7							2.4	1.2	0.2			0.2		0.2				
15		0.2	0.8		0.3	0.7	0.6	0.5		1.5	0.7	0.5	0.7	0.2		0.1								
16							0.1		0.4	0.2												0.1		
17	0.7	0.1	0.5	0.8		0.1		0.5	0.1	0.5	0.3	1.0		0.1	1.5	1.0	0.4	0.1	0.1					
18		0.2			0.4	0.2									1.2	0.8	0.7	0.6						
19			0.2		0.8	0.5	0.3	0.3	1.3	1.9		0.5	2.2	0.3			0.5	0.2						
20	0.4			3.8	0.5	1.1		0.4		3.5	3.6	1.5	1.6	2.5	3.6	3.6	2.0	0.9			0.1			0.8
21	0.1					1.0	0.2	0.4	0.9			3.5	2.2	2.8	2.6	1.7	1.0	0.3						
22	0.2	0.3	0.1			0.2	0.2	0.1	0.2				2.5	1.7	1.4	0.9	0.4	0.2						
23								0.1	1.0	0.2			0.5	0.6			0.1			0.1				
24			0.3		0.3							0.7	0.3		0.2	0.3							0.1	
25	0.2	0.2				1.0	1.1	0.4		1.0	2.1	0.4	1.9	1.5	2.1	1.3	0.5							0.1
26										0.5	0.4	0.1												
27																								
28																								
29									0.3	1.3	0.3	0.3	0.6	0.8	0.4	1.2	1.0	0.2						
30		0.1		0.2	0.1	0.2		0.5	0.2	1.3	0.2	0.5	0.2	0.2	0.1				0.4	0.2				
31																								
Mean	0.11	0.11	0.24	0.33	0.31	0.35	0.22	0.16	0.42	0.63	0.72	0.55	0.75	0.65	0.62	0.50	0.33	0.27	0.09	0.03	0.08	0.01	0.01	0.04

Open spaces without figures correspond to quiet level

\* : Quiet day

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SYOWA STATION

45° EAST MERIDIAN TIME [U. T.+3 hours]

May 1977

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	0.2			0.6	0.1	0.7	0.1										0.4	0.1	0.2	0.4		
2	0.2	0.1	0.2		2.9	4.0	0.8	0.2		2.0	1.9	1.1	2.2	1.2	1.2	1.5	1.6		0.4		0.1	0.1		
3	0.2				0.2	0.7	0.3	0.2	0.1	0.5	0.2			1.7	0.3	0.7	0.7	0.5			0.1		0.2	
* 4														0.1			0.1	0.2			0.1			0.2
5			0.3	0.2		0.5	0.2				3.0	0.7	0.9	1.5	1.0	0.7		0.3	0.1		0.1		0.2	0.5
6	0.4	0.6		0.5			1.0	0.2							0.5	1.3	0.5							
* 7	0.2	0.5	0.1	0.5	0.4	1.0	1.2	0.5																
* 8										0.2														
9					0.1																			
10												2.5	4.0	1.9	0.9	0.7	0.2			0.1	0.1			
11			0.5	0.3							1.4	0.4	4.1	2.4	1.6	0.8			0.1			0.1	0.3	0.2
12							0.3		0.6	1.6	2.0	1.4	1.6	0.8	0.5	0.4								
13							0.2	0.1				0.1	0.1	0.7	0.5	0.4								
* 14		0.2				0.3																		
15							0.2							1.2	1.5	0.9	0.6		0.2					
16	0.2	0.1	1.5	0.1	0.7		1.2	0.9		1.1				2.2	1.8		0.4	0.2	1.0		0.1			
17	0.6	0.2	0.2	0.2		2.0	1.7	1.0	0.1	0.5		>2.7	>2.8	2.7		2.5	2.2	0.5	0.4					
18		0.1		0.3	0.5	0.3			0.9	1.9	1.3	1.9	2.5	1.4	0.5		1.2	0.4	0.5	0.5	0.1		0.2	0.1
* 19																								
20							0.2	0.1	0.1	0.1							0.3							
* 21											1.8	1.0	0.2											
* 22																					0.2			
* 23																								
* 24								0.2	1.0												0.2			
* 25			0.1	0.1		0.2															0.2	0.3		
* 26																								
* 27																								
* 28															0.1	0.5	0.4							
* 29																								
* 30																								
* 31							0.1							S				0.1	0.1					
Mean	0.05	0.06	0.08	0.07	0.16	0.30	0.23	0.13	0.09	0.25	0.37	0.38	0.59	0.89	0.35	0.34	0.26	0.07	0.12	0.01	0.04	0.03	0.03	0.02

Open spaces without figures correspond to quiet level

\* : Quiet day

S : Interference



SYOWA STATION

45° EAST MERIDIAN TIME [U. T.+3 hours]

June 1977

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																			0.5	0.5				
2	0.3	0.3		0.2	0.7	1.5	0.4			1.5	1.0	0.2		0.8	1.1	0.4		0.7	1.3					
3			2.0	0.1					0.1	0.6	0.2			0.2	0.2	0.1								
* 4																								
5								0.3	0.1								0.7	0.7	0.3					
6						0.2	0.3					0.7	0.7	0.7	0.3									
* 7																0.1								
* 8																								
* 9			0.3																					
10			0.1	0.1		0.1			0.2	0.1	0.3													
11								0.5	0.6															
* 12						0.2																		
13										0.5	0.6	0.3	0.2											
14			0.1		0.7	0.3	0.5	1.0	0.7															
* 15										0.2	0.2													
16																			0.2			0.4		
17								0.2		0.3								0.2	0.3			0.4		
18									0.1	0.2		0.3	0.7	0.7	1.2	0.3		0.3						
19				0.3			0.2	0.1	0.1	0.5	0.7	1.4	1.2	1.0	0.7	0.4	0.2	0.2	0.2	0.1	0.1	0.3	0.2	
20					0.2							0.2			0.3		1.1	0.5	0.1	0.1				
21											1.0	0.9	0.6			0.3				0.2				
22										0.3							0.1			0.2				
23				0.1			0.2	0.3		0.5	0.7						0.5		0.2		0.1			0.1
24								0.7		0.5		2.6	0.7	0.2				0.2			0.1			0.1
25				0.2					0.2	0.2	0.2													
* 26																								
* 27									0.1															
28							0.5				0.2	0.2		0.3	4.5	1.7	0.7	0.2						
* 29		0.1	0.4	0.5	0.1	1.0		0.3	0.2	0.2				S	0.5									
* 30					0.3																			
31																								
Mean	0.01	0.01	0.09	0.05	0.06	0.11	0.07	0.11	0.08	0.18	0.17	0.22	0.13	0.13	0.29	0.11	0.11	0.10	0.09	0.03	0.02	0.01	0.01	0.01

Open spaces without figures correspond to quiet level

\* : Quiet day

S : Interference

SYOWA STATION

45° EAST MERIDIAN TIME [U. T.+3 hours]

July 1977

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	0.1	0.4	0.7	0.5			0.3		0.1	0.2	0.7	S	S	S	S	S						
2					1.4	0.7					0.1	0.3	0.2	0.5										
3			0.7		0.2										0.2	0.2								
4							0.2				0.6	0.5	0.1		0.1	0.3			0.1				0.2	
5			0.2	0.2											0.2					0.2				
6	0.1				0.2																			
7					0.2	0.1	0.1		0.2	0.5	0.2	1.9	1.2	0.4	0.7		0.1		0.2		0.2			
8			0.5	0.5	0.9	0.1		1.9	0.8	0.4	0.8	0.7				0.2	0.8	0.2	0.2		0.2	0.8	0.5	
9		0.2	0.1	0.3	0.5		1.0	0.4	0.3	0.7				2.2	1.7	1.3	0.3							
10			0.6	1.7	3.8	0.9	0.7	0.7	1.2	1.0			0.5	0.3	0.2	0.5	0.7	0.3		0.7	0.2			
11	0.1	0.4	0.7	0.3				1.2	1.2	0.2		1.5	1.7	1.0	0.2	0.1		0.1	0.7	0.3				
12	0.3	0.2	0.2	0.3			0.2																	
13				0.4					1.2	0.1	0.2			0.5	0.1	0.3					0.2			
14				0.4	0.3			1.2	0.9	0.2			1.7	1.9	0.2	1.9	1.2	0.4						
15						0.2			0.7				0.4	0.6	0.2	0.2								
16			0.2		0.1	0.1		0.4			3.0	0.2		1.7	3.2	3.5								0.1
17	0.1	0.5	2.0	0.7	0.2	0.7	0.2		0.5	1.5	1.4	0.6	0.1	0.5	1.9	0.9	0.3		0.2				0.1	0.5
18					0.2	0.2			0.3					0.2	1.2	0.2		0.4	1.6	0.4	0.1	0.5	0.4	
19						0.8	0.1				3.2	1.3	1.5	1.8	1.7	0.5	0.2			0.6	0.4			
20		0.1		0.5	1.8	0.3		0.4	0.9	0.7	0.5	1.6	3.1	3.3	0.7	2.0	1.0	0.3		0.2				
21		0.5	0.4	0.5			1.3	0.3		0.2	1.2	0.9	0.7		0.2	0.2	0.3	0.2						
22				0.9			0.1		0.9	1.2	0.5	3.4	1.4	1.4	3.5	2.2	0.7	0.2				0.2		
23		0.2	0.4	0.3		C	C	C	C	C	C			0.3		0.1								
24					C									2.2	2.1	1.0	0.4		0.1		0.1			0.1
25	0.2			0.2	0.6					0.1														
26								0.1																
27											0.2	0.2												
28					0.1																			
29					0.5	0.5					0.1	1.1		0.1			0.4	0.7	0.2	0.4		0.1		
30						0.7			0.2	0.7	0.4	0.4			1.5	1.5	0.5							
31						0.2			0.4	0.1						0.3	0.4	0.1						0.1
Mean	0.02	0.07	0.19	0.24	0.37	0.19	0.12	0.21	0.32	0.24	0.40	0.47	0.43	0.64	0.60	0.55	0.24	0.09	0.10	0.09	0.05	0.04	0.02	0.02

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 1977

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	0.5						0.6		0.2	0.6				0.3	0.2	0.2	0.1		
2							0.1					0.1					0.2							
3									0.1															
4								0.5																
5			0.3		0.4	0.9				0.7	1.1		1.7		0.6	0.2	0.2							
6			1.1	1.1	2.0	0.4	1.3	1.3	1.6	>2.4	2.2	0.5	1.0	1.5	1.0	1.3	0.8							0.1
7		0.4	0.3	3.2	0.6	0.1	0.4	0.4	0.7	0.3	0.5	0.5	>1.5	>1.6	>1.5	1.4	1.3	2.1	0.3	0.1				
8			0.2	0.5	0.2	3.1	0.3	0.1	0.2	2.0	1.7	1.4	0.1		0.2			0.2			C			
9		0.2		0.5	3.3	0.7	0.1		1.5	0.4	3.0	1.2	0.5	0.2	0.7	2.4	0.9	0.7		0.1				
10	0.2		0.4		1.7	0.3	0.8	1.9	1.7	1.5	0.2	0.4	2.2		1.5	0.5		0.8	0.5	0.2	0.3			
11			0.2	1.4	0.5	0.3	0.6		0.2	0.7	1.4		>3.2	2.5	1.0	0.5	0.1		0.7	0.5	0.1	0.3		
12	0.1		0.1				0.1	0.4	1.4	0.2		0.5	0.4	3.5	2.4	2.2	1.0	0.8	0.3	0.3	0.2	0.2		
13			0.3	0.3	0.1	0.3	1.1	0.2		1.3	0.5	1.6	1.4	1.5	0.3	0.7	0.9	0.8	0.8		0.1			
14			0.1											0.2	0.1		0.3	1.5	0.2		0.1			
15					0.6	0.3	0.2	1.8	1.7			0.7	1.5		0.5	0.7	0.4	0.4		0.2				
16									0.4									0.6	1.0	0.2				
17				0.2	0.3			0.5	0.1		0.5	3.4	1.6	0.7	2.7	>4.3	0.8	0.2						
18			0.8	0.2	0.6	1.0	1.0		0.7	0.6	0.3	0.9	0.2				0.5	0.2	0.2	0.2				
19						2.3	1.4	1.5	1.6	1.3	0.2			0.3	2.3	1.7	1.0	0.3	0.2	0.2	0.1			
20	0.1		0.9	0.5	0.4						0.2	1.8	1.5	0.7	0.5	0.4	0.2	0.3		0.1				
21			0.1		0.2						0.3	0.9	0.1		0.3	0.2		0.2	0.2					
22							0.1				1.6	1.0						0.1						
23																								
24								0.7	0.5	0.1			0.3			1.0	1.9	0.5	0.2			0.1	0.1	
25										0.3	0.5			0.4		0.5	0.9	0.3			0.1			0.3
26				0.5	0.3	0.2	0.1	0.4	1.0	0.7	0.2	0.4	0.7	0.7	0.9		1.9	0.7						
27					0.1	0.1	0.2	0.9	0.3	0.2	0.1	0.6	0.1	1.1	1.8	1.0	0.9	0.7	0.2	0.2				
28						0.1		0.1	0.2	1.3	1.1						0.2	0.2						
29					0.2					0.6	0.2	0.2				0.4	1.0	1.0	0.4	0.2	0.2			
30											0.4	0.7	0.2				0.1							
31												0.1												
Mean	0.01	0.01	0.12	0.28	0.26	0.35	0.25	0.27	0.41	0.52	0.50	0.58	0.59	0.55	0.59	0.60	0.43	0.41	0.17	0.08	0.04	0.02		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 1977

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																								
* 2																								
3					0.2	0.1		0.7	0.2															
4													0.5	0.5	0.2	0.2	0.1							
* 5																								
* 6																								
7								0.9	0.2															
8		0.5	0.3		0.1	0.2	0.2					1.0	0.5											
9					0.2	0.2		0.2					0.2				0.4	0.2	0.5	0.2				
10			0.4	0.1	1.3	0.9	1.0	1.1	0.1	1.0	0.2		0.3			1.0	2.0	0.8						
11		0.2	0.5	0.1	0.2	0.6	0.4	0.4			0.4	0.4	0.5	1.0	0.4	0.5	0.3							
12		0.1	0.1	0.1				0.4	0.5															
13					0.2	1.1	0.4	0.2				1.8	0.8	0.2		1.5	1.9							0.5
14	0.1				0.1	0.3	0.9	0.5	1.0	0.1		0.1	0.8	0.1										
15				0.2		0.1	0.3		0.4	0.4	0.1	0.4	0.1	1.6	3.9	1.5	0.2	0.2	0.1					
* 16										0.1	0.1	0.1	0.1	0.3								0.1		
* 17							0.4	0.8	0.7	0.4	2.0	0.7							0.2	0.1			0.1	
18																								
19										0.2	0.5	0.4	0.4	1.2	0.7	0.9	1.2	1.7	1.4	0.8	0.9	0.8	1.9	
20	1.6	1.2	1.4	2.2	2.3	2.2	2.7	3.3	3.5	>3.4	>3.7	>4.0	>4.3	>4.7	>5.0	>5.3	4.8	3.4	2.3	1.5	0.9	0.7	0.8	0.5
21	1.2	0.9	0.5	0.3	0.5	0.7	0.6	2.6	2.1	1.5	1.6	4.0	2.0	1.5	5.0	2.0	0.3	0.4	0.2	0.2				
22		0.5		>3.3	0.5	0.4		0.5	2.0	0.9	1.0	1.4	2.7	0.7	0.8	1.4	0.2	0.7	0.1	0.4	0.2		0.3	0.3
23	0.3		1.3	0.1	0.1											0.3	0.5		0.1	0.1			0.8	0.5
24			0.1	1.5	0.5	0.2	0.4	0.3	0.6	0.7	0.9	0.6	1.5	2.0	1.0	0.7	0.4	0.4			0.2	0.1		
25	0.1	0.1	0.1	0.2		0.6	0.9	1.0	0.6	0.2	0.7	1.4	0.2	0.8	0.4				0.1					0.1
26			0.2						0.9	0.2	1.0	0.5			1.5	0.5	0.3			0.1				
27		0.1	1.0	0.2		0.3	0.1	0.2	0.1	2.6	0.5	0.1	0.2	S	S	0.2	0.1	0.1						
28								0.5	0.2	0.3	0.1	0.1	0.1	0.9	1.1	0.2	0.1		0.1					
29	0.2	0.2								0.2	0.2	0.6												
* 30										0.1	0.1		S	S	S									
31																								
Mean	0.11	0.12	0.19	0.27	0.20	0.26	0.27	0.45	0.43	0.40	0.42	0.59	0.48	0.48	0.68	0.53	0.41	0.24	0.18	0.13	0.06	0.06	0.09	0.12

Open spaces without figures correspond to quiet level

\* : Quiet day

S : Interference

SYOWA STATION

45° EAST MERIDIAN TIME [U. T.+3 hours]

October 1977

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	0.1				0.2				S	1.3	0.3	0.2	0.1		0.1				
2										0.2				S	0.6	0.4	0.1							
3										0.2				S			0.1							
4							0.4	0.4			0.5			S			0.1							
* 5					0.3																			
6			0.1	0.1			0.4				0.1	0.1												
* 7															0.3	0.2								
8									0.2	0.4	0.1													
* 9							0.1	0.1	0.1															
* 10																								
* 11							0.1																	
12		0.1	0.3	0.1	0.9	0.5	0.3	0.5	1.9	1.5	0.6	2.1	1.7	0.8	0.4	2.9	1.4	0.7	0.3	0.3	0.1			
13			0.1			0.1			0.3	0.7	0.5	0.2	0.5	0.3	0.1			0.5	0.7	0.1	0.1	0.1	0.1	
* 14			0.1	0.2	0.1							S		S	S									
15		0.6	1.0	0.2		1.4					1.0	0.9	0.2	1.2	0.2	0.4	0.4							
16			0.5	0.3				0.1	0.3	0.4							0.1		0.3	0.5	0.2			
17			0.3	0.5	0.5	0.1		0.1	0.2	0.2	S	S	S	S										
18		0.4	0.6	0.2			0.6	0.5	0.6	0.2	0.8	0.6	0.4	0.9	0.9	0.3	0.2		0.5		0.1			1.1
19	0.3	1.0			0.1	0.1	0.3	0.3	1.5	0.6	0.3	1.7	0.7	0.5	0.4		0.5							
20										0.2	0.3	0.6	0.5		0.5		0.4	0.3	0.2					
21			0.4	0.7		0.3								0.2	0.4		0.1	0.1	0.3					
22	0.1		0.1		1.0	0.3	1.4	1.6	1.4	0.6	1.3	0.8	1.8	1.3	0.5	0.2	0.2	0.4	0.2			0.1	0.1	
23		0.7	0.3	0.5	0.1	0.2	0.1	0.2	0.7	0.3				0.7	0.2	0.1		0.4	0.2	0.1			0.1	0.1
* 24					0.2	0.5	0.1											0.2						
25				0.2	0.2	0.1																		0.1
26					0.1	0.1				0.5	0.1													
27				0.4	0.4	0.1								1.5	0.1	0.5								0.5
28			0.2	0.1	0.1	0.4	0.4			0.2	0.4	0.2	0.2	S										0.2
29	0.4	0.3	0.1	0.4	0.1	0.1	0.1								0.2		0.1							
* 30		0.4		0.1	0.4	0.1	0.1					0.1									0.1	0.1		0.1
31		0.1		0.1	0.1	0.2	0.5					0.1	0.1	0.2			0.1	0.1			0.1			
Mean	0.02	0.11	0.12	0.12	0.15	0.13	0.15	0.13	0.23	0.20	0.14	0.25	0.21	0.21	0.22	0.16	0.12	0.09	0.08	0.03	0.02	0.01	0.01	0.06

Open spaces without figures correspond to quiet level

\* : Quiet day

S : Interference

SYOWA STATION

45° EAST MERIDIAN TIME [U. T.+3 hours]

November 1977

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																								
* 2			0.1	0.2	0.1	0.1																		
* 3										0.2														
* 4																						0.8		
* 5		0.1			0.5	1.2	0.3	0.3	0.1															
* 6		0.2	0.1	0.2	0.3	0.2	0.1	0.2	0.3	0.4		0.4	0.1					0.1				0.2	0.1	
* 7						0.2	0.2	0.2	0.3	0.4		0.1	0.3											
* 8							0.1																	
* 9																								
* 10																								
* 11				0.1																				
* 12						0.1	0.5	0.5	0.6	0.2			0.1				0.3	0.1						
* 13	0.2	0.2		0.6	0.6		0.4	0.2	0.9	0.1	0.2	0.1		0.4	0.7	0.1	0.2	0.2	0.1		0.1			
* 14	0.2	0.2		0.6	0.4	0.1	0.5		0.2	0.4	0.6	0.1	0.2	0.4	0.3	0.1	0.2	0.1						
* 15	0.2	0.2		3.2	1.2	0.4	0.2	0.3	0.1	0.7	0.7	0.3			1.5	0.2	0.5		0.2				0.1	0.1
* 16		0.5	0.2	3.2	1.2	1.0	0.7	0.4		0.3	1.4	0.3		0.8	0.6	0.9	0.5	1.4						
* 17	0.1		0.4			0.4	0.1	0.5		0.1					0.5	0.1		0.1				0.1		
* 18		0.3	0.3	0.2	0.2				0.9	0.1				0.2	0.2	0.1	0.2	0.3		0.1		0.1		0.2
* 19	0.1	0.1	0.2	0.1	0.4	0.4	0.3	0.4	0.2	0.5	0.3	0.2				0.1								0.5
* 20		1.1	0.1	0.2		0.1	0.1																	
* 21	0.5	0.6	1.4	0.8	0.5																			
* 22	0.3	0.6	0.4	0.7	0.1										S	2.1	3.7	4.5	>4.2	>3.9	>3.5	>3.4	>3.2	3.1
* 23	2.6	2.5	2.7	2.7	2.6	2.6	2.4	2.0	1.6	1.0	0.7	0.5	0.4	0.3	0.2	0.4	0.5	0.5	0.8	0.7	0.7	0.4	0.7	1.0
* 24	1.0	1.1	1.2	1.1	1.0	0.8	0.6	1.0	0.4	0.2	0.2	0.2	0.2	0.1										
* 25																								
* 26				0.1					0.1								0.1	0.4	0.4	0.1		0.1		0.1
* 27			0.1																					
* 28					0.2																			
* 29					0.3																			
* 30	0.1			0.2	0.1	0.1					0.2	0.2	0.1	S			0.2							
* 31																								
Mean	0.17	0.25	0.23	0.46	0.32	0.26	0.21	0.19	0.18	0.14	0.14	0.08	0.04	0.07	0.13	0.10	0.21	0.25	0.19	0.16	0.17	0.14	0.13	0.17

Open spaces without figures correspond to quiet level

\* : Quiet day

S : Interference

SYOWA STATION

45° EAST MERIDIAN TIME [U. T.+3 hours]

December 1977

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																								
* 2	0.9	0.1	0.4	1.3		0.5	1.2	0.5	1.0	1.1	0.1	0.2		S	0.1							0.2		0.3
* 3							0.2														0.2	0.2		
* 4			0.2	0.1			0.2		0.2															
* 5			0.2			0.2	0.3	0.2	0.5	1.0	0.2	0.3	0.2	S	0.1				0.1					
* 6				0.5		0.1	0.5																	
* 7				0.1	0.2																			
* 8	0.2	0.2																						
* 9										0.1	0.5	0.4												
* 10																								
* 11	0.2					0.2	0.1		0.5		0.5		0.2			0.3								
* 12		0.2	0.2			0.8	0.2	0.3	0.1					S										
* 13		0.5		0.1		0.6	0.3					0.2			0.1	0.6	0.2	0.2			0.1			
* 14			0.2		0.5	0.5	0.9	0.3		1.1	0.6	0.2		S					0.4	0.6				
* 15							0.1		0.1					S										
* 16			0.1	0.1	0.1			0.1	0.4	0.2	0.1	0.1		S	S	0.2					0.1	0.3	0.1	
* 17	0.1				0.1	0.3	0.1	0.1	0.2		0.1			S							0.1	0.1	0.1	
* 18	0.2	0.3																						
* 19																								
* 20						0.1		0.2															0.1	
* 21	0.1		0.1																					
* 22				0.1	0.3				0.1	0.2														
* 23				0.1	0.2																			
* 24		0.1		0.1																				
* 25																								
* 26									0.1															
* 27				0.3	0.2									S	0.2		S							
* 28																								
* 29	0.4			0.3				0.2	0.2		0.1													
* 30					0.1																			
* 31																								
Mean	0.06	0.04	0.04	0.09	0.05	0.10	0.13	0.06	0.10	0.11	0.07	0.04	0.01	S	0.01	0.04	0.01	0.01	0.02		0.01	0.02	0.01	0.01

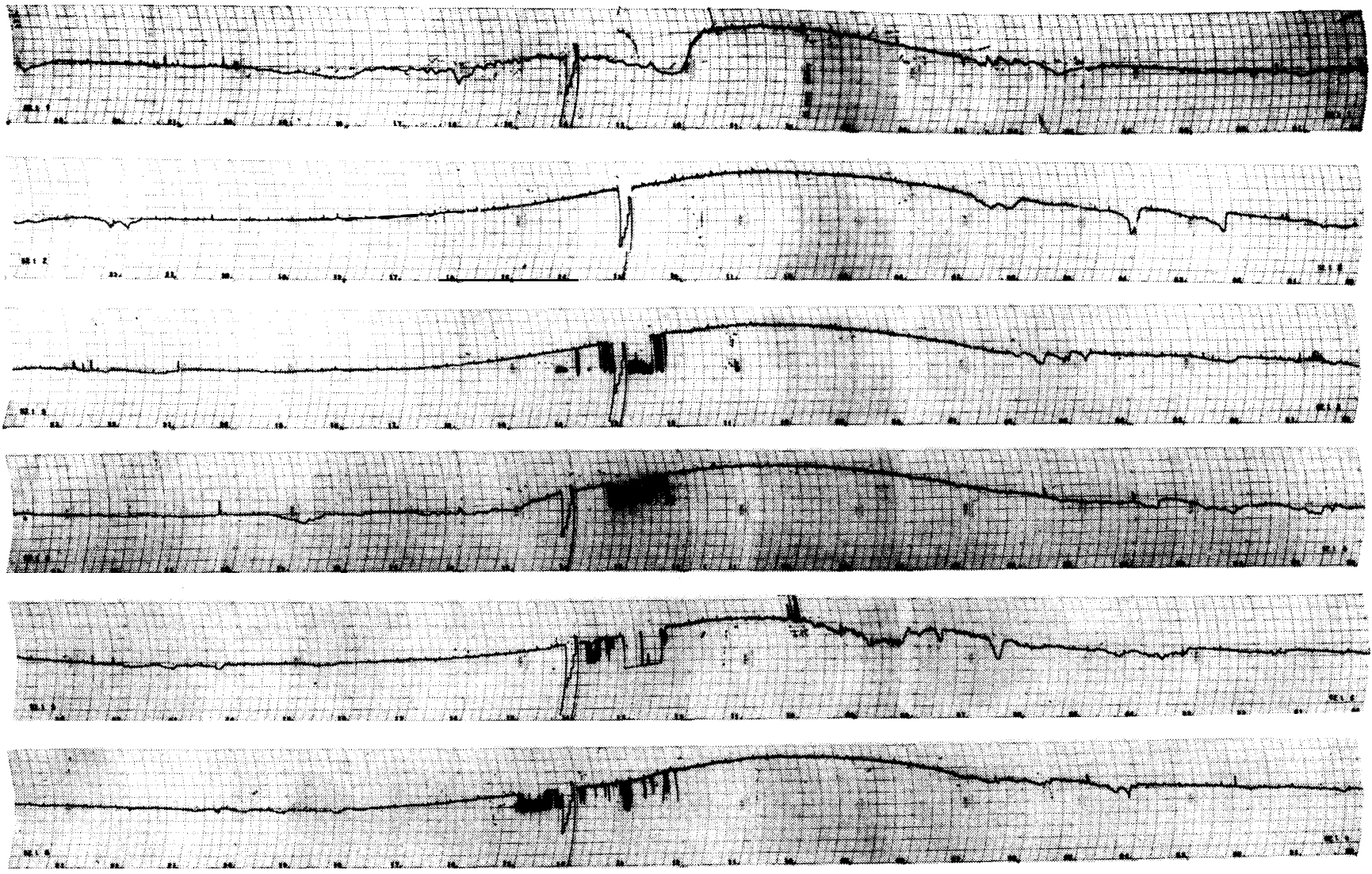
Open spaces without figures correspond to quiet level

\* : Quiet day

S : Interference

JAN 1977

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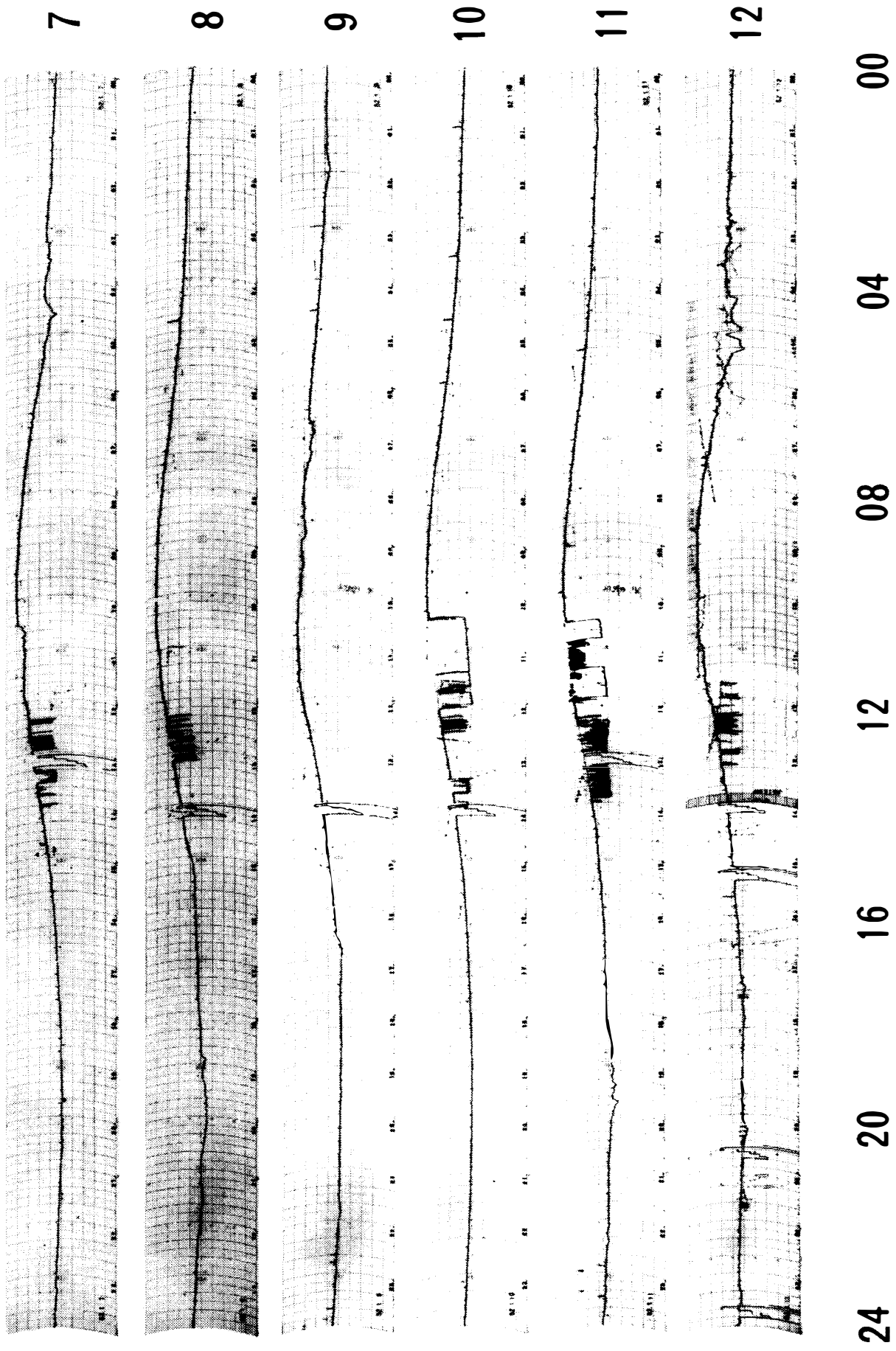
24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE



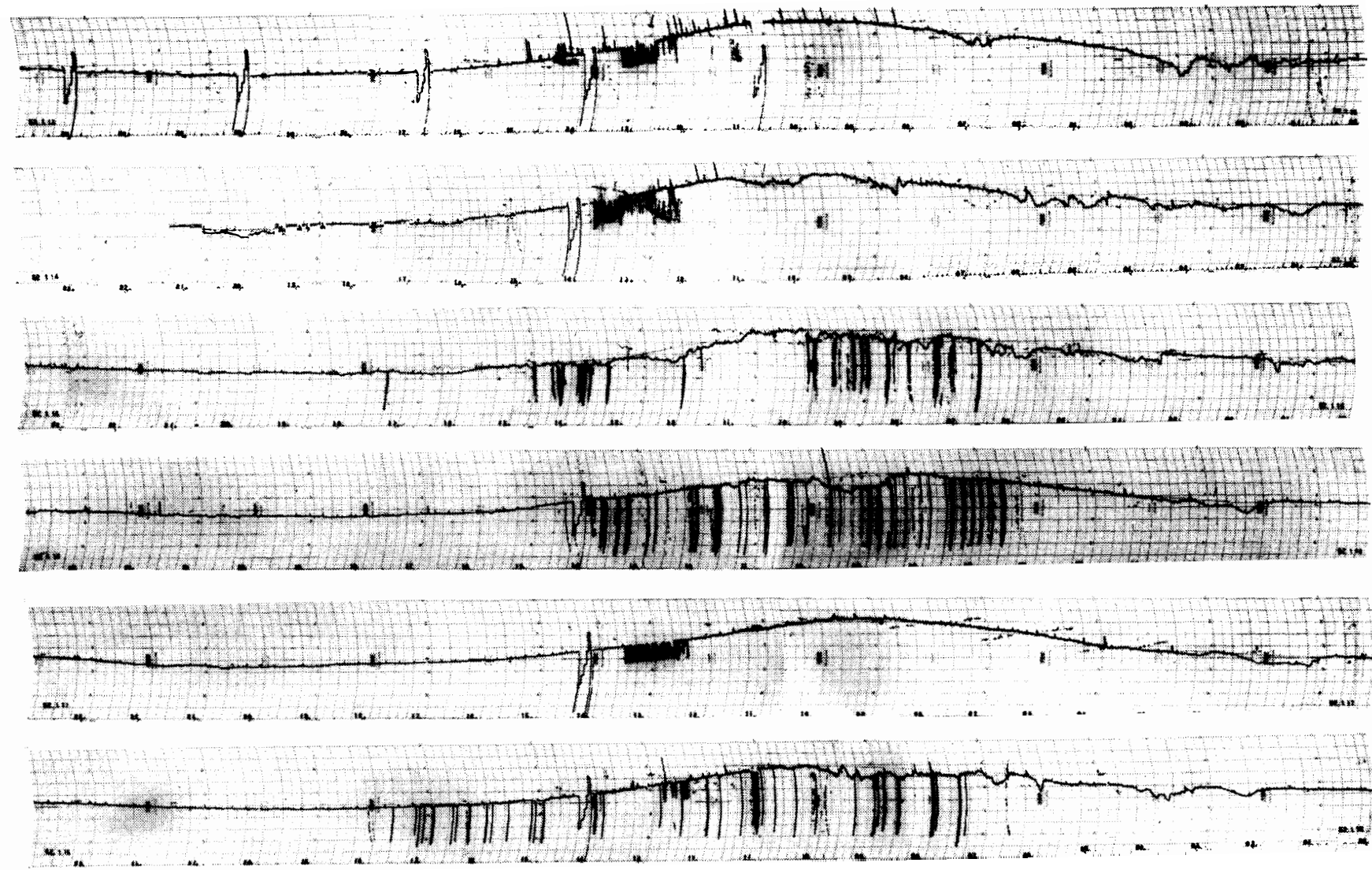
JAN 1977



45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JAN 1977

13  
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— 18 —

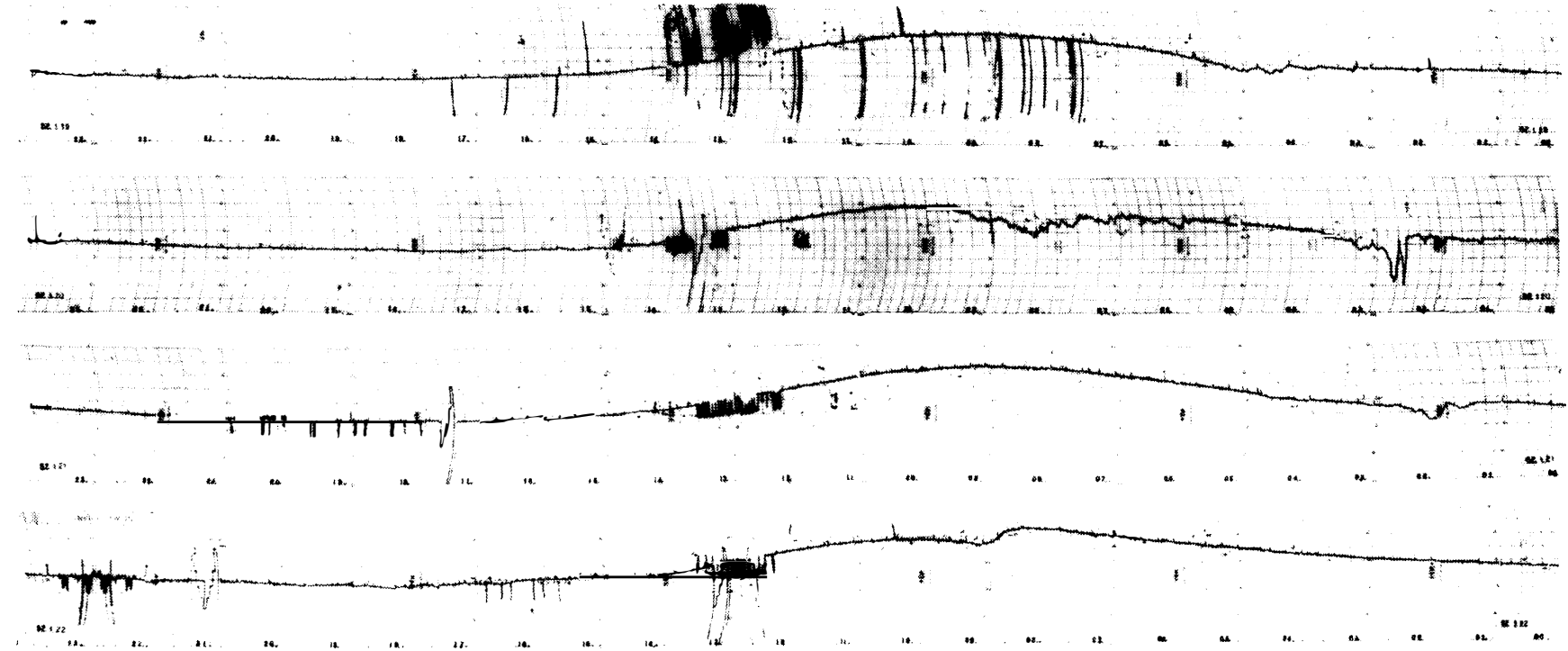
24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JAN 1977

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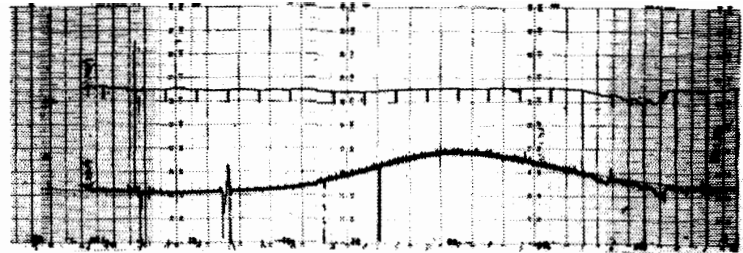
24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JAN 1977

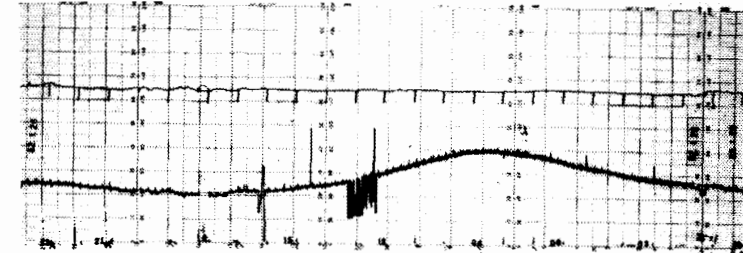
23



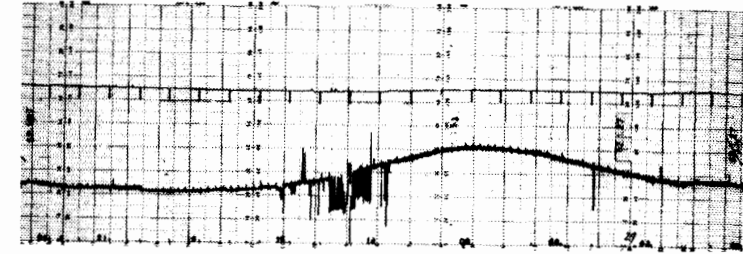
24



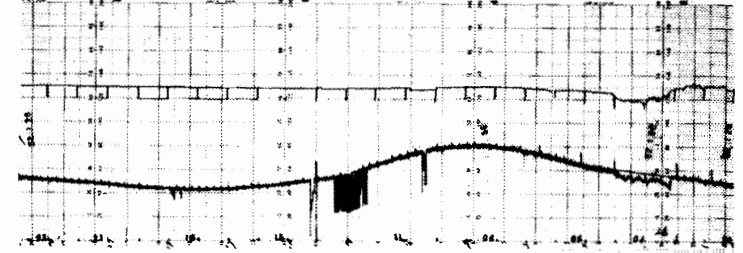
25



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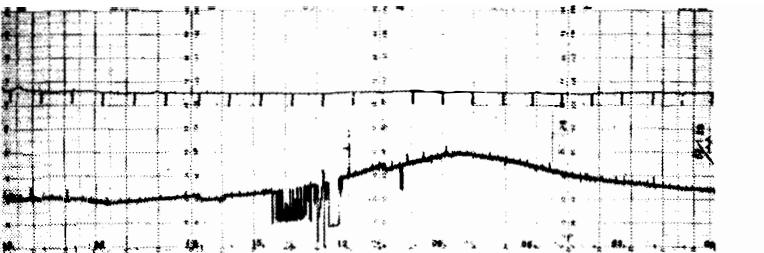
27



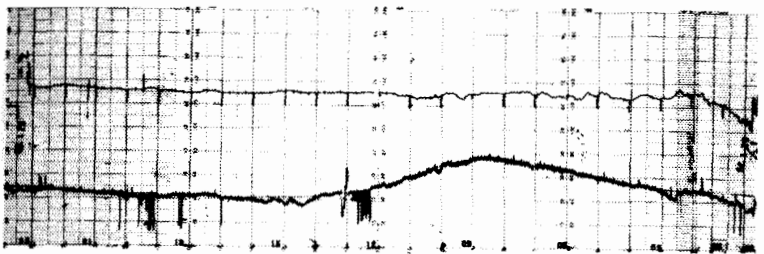
24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

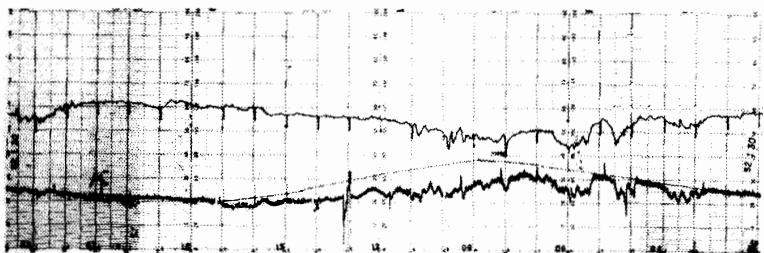
28



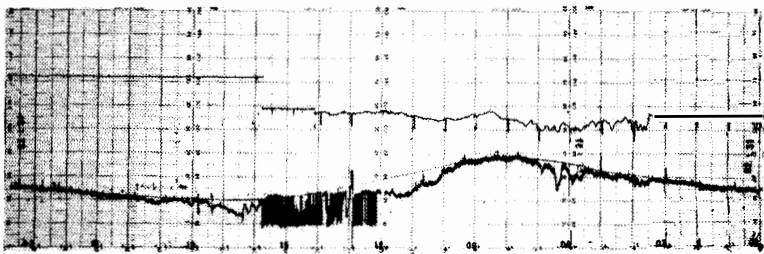
29



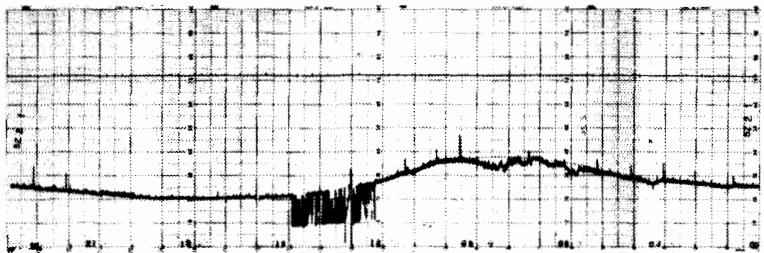
30



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1



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

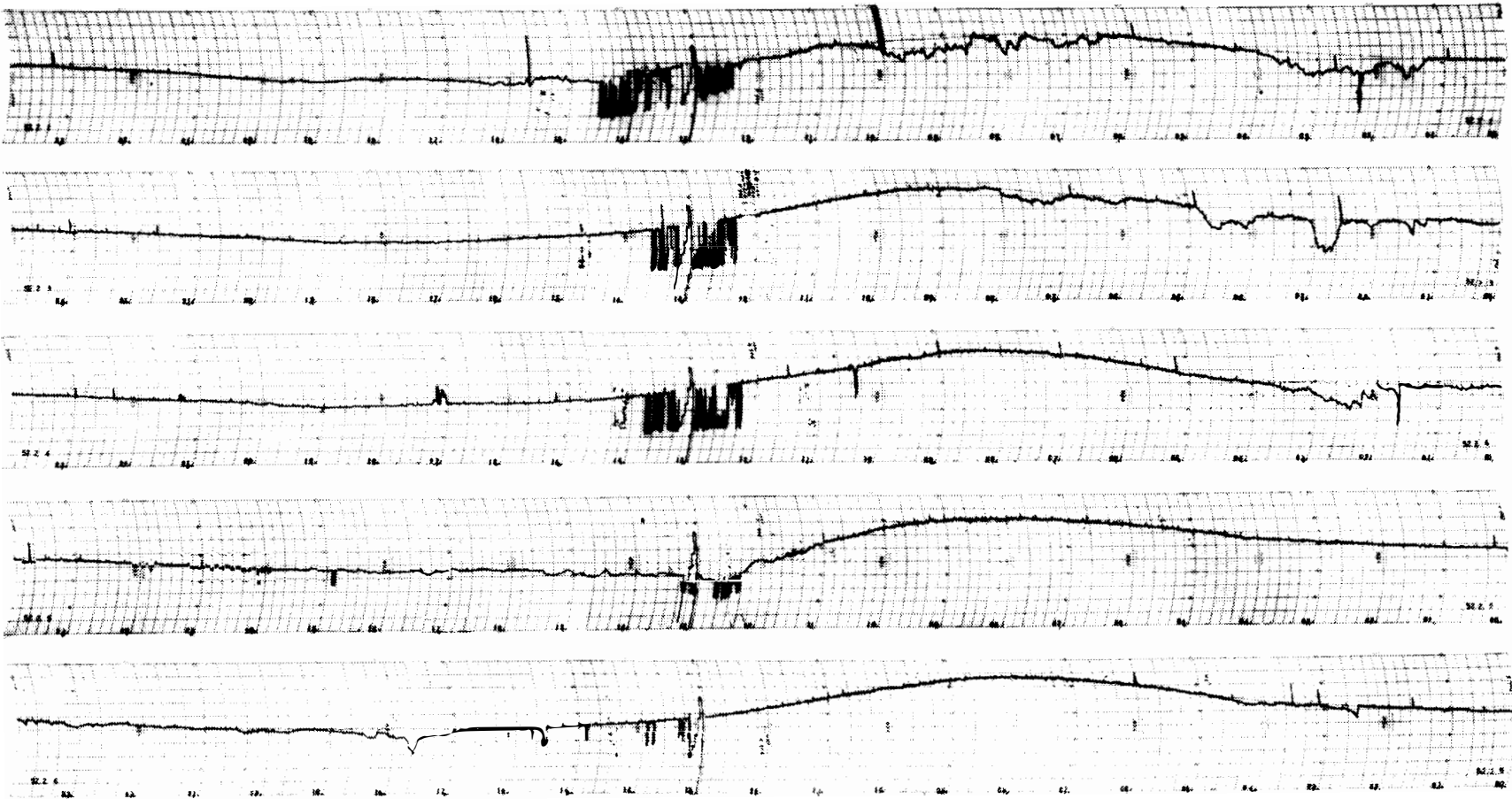
FEB 1977

Cosmic noise level obscured or equipment malfunction.

January 23 2130 – 2400 failure of equipment.

FEB 1977

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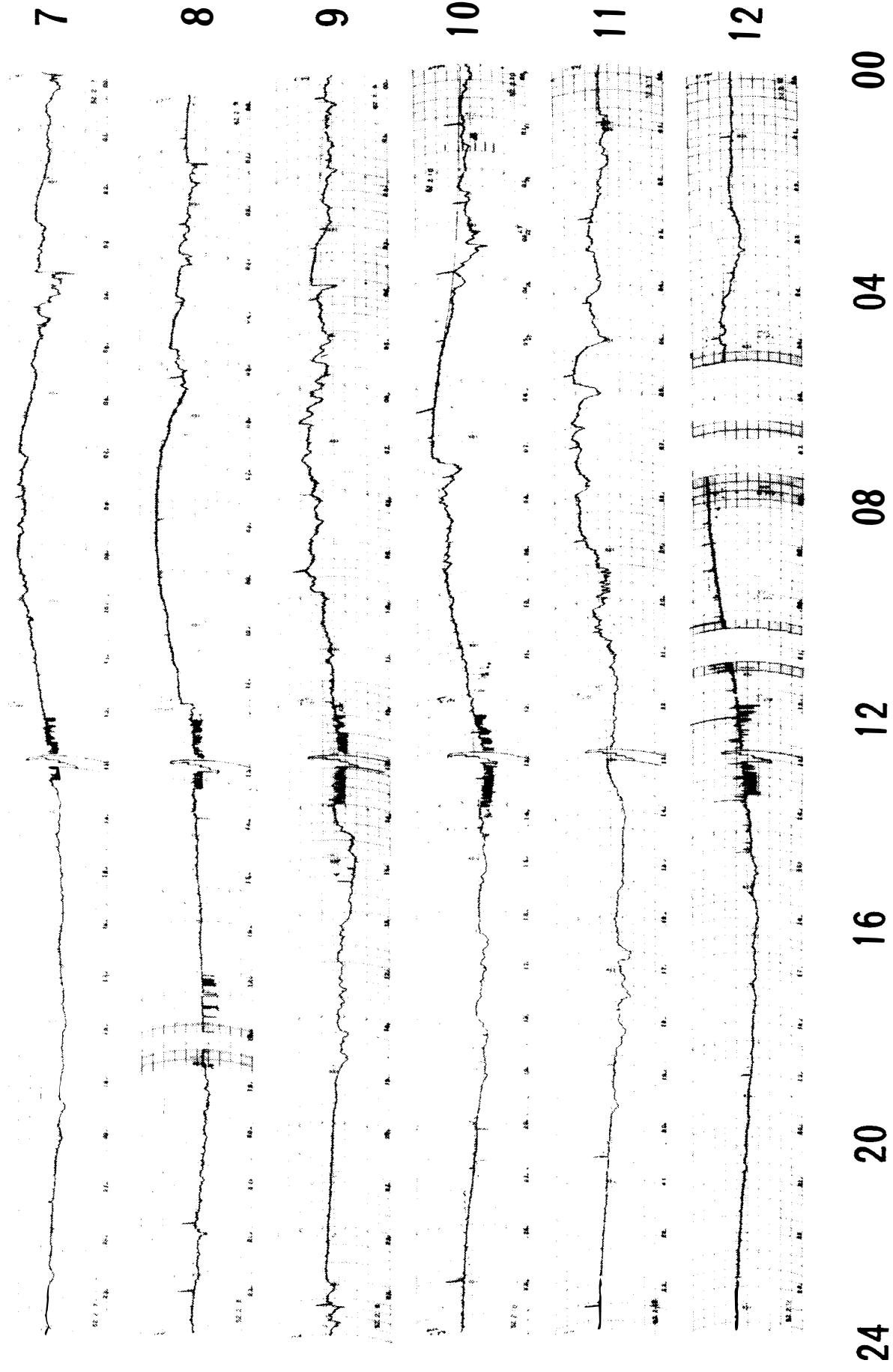


24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

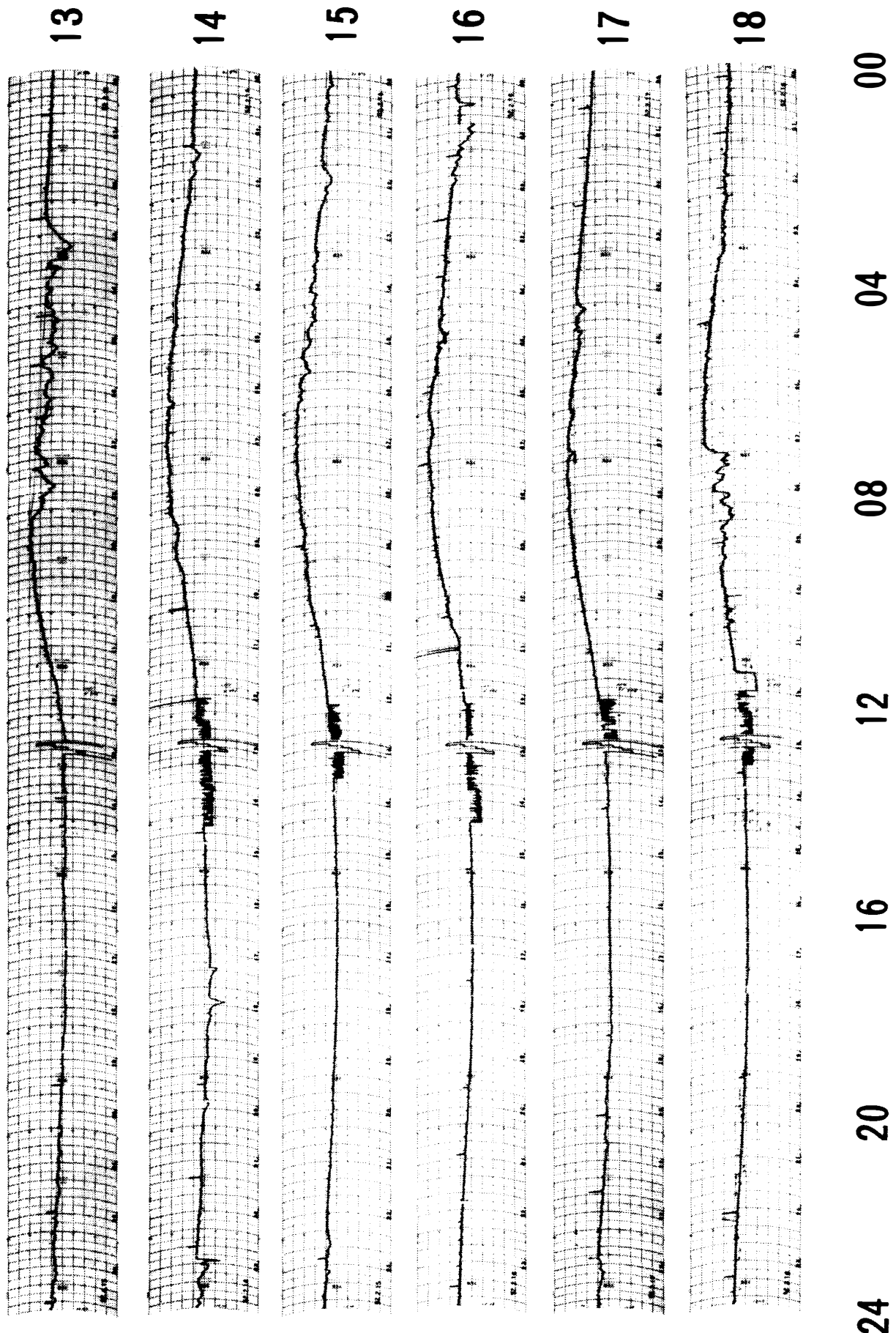
30 MHz COSMIC NOISE

FEB 1977



45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

FEB 1977





FEB 1977

19

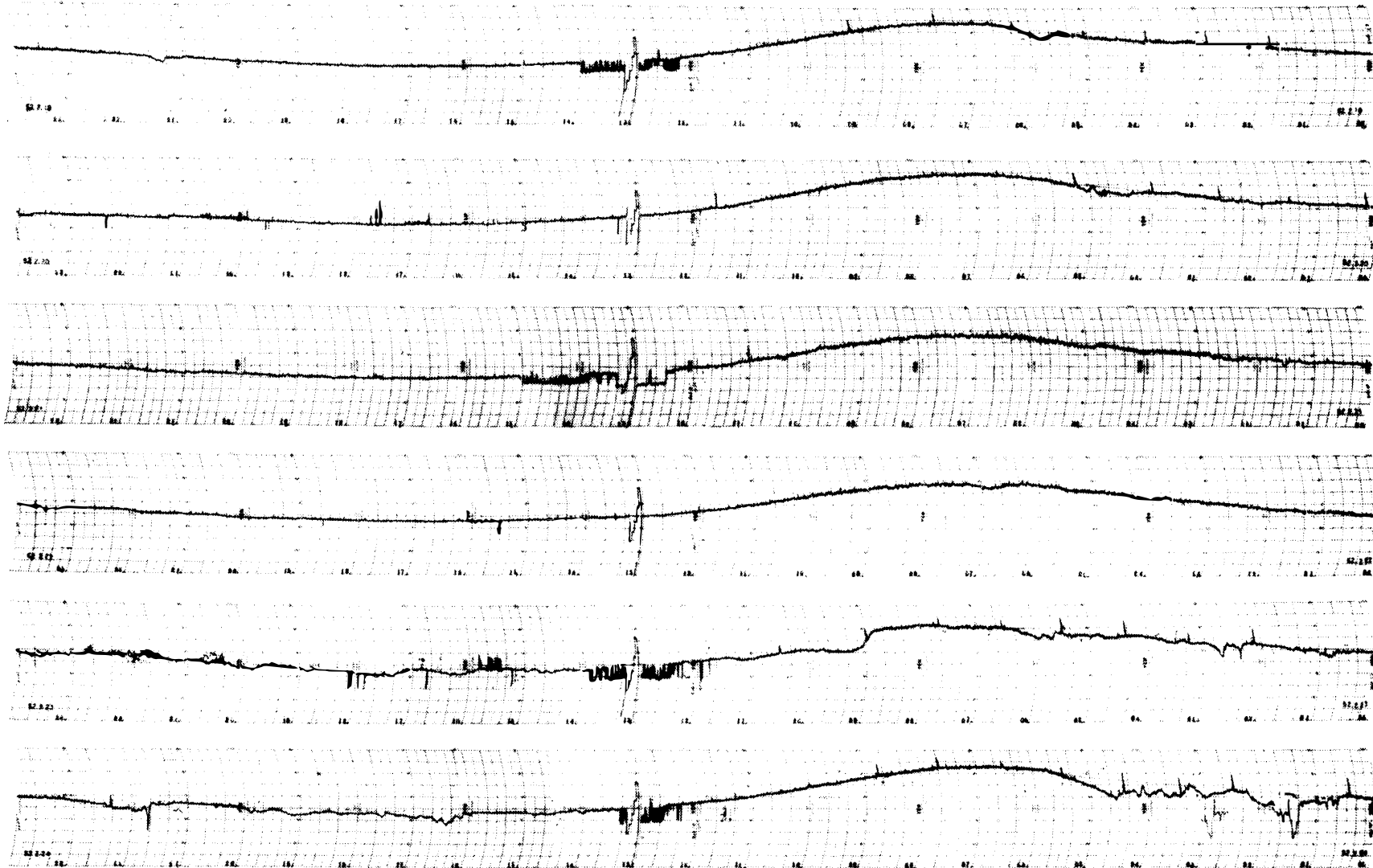
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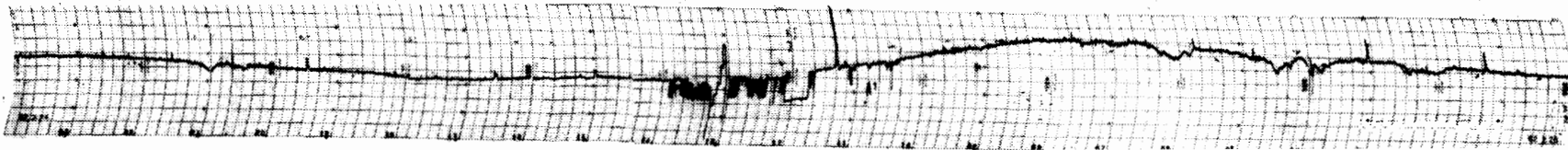
24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

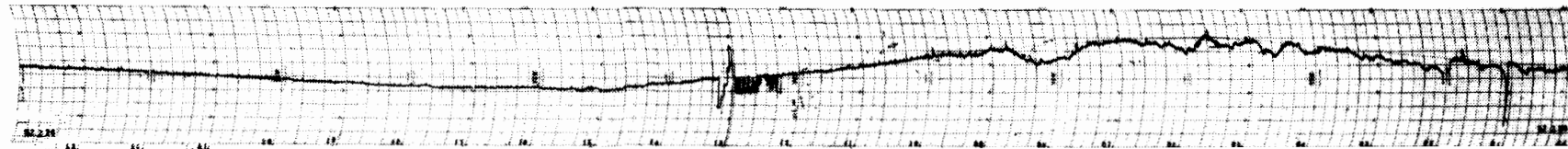
30 MHz COSMIC NOISE

FEB 1977

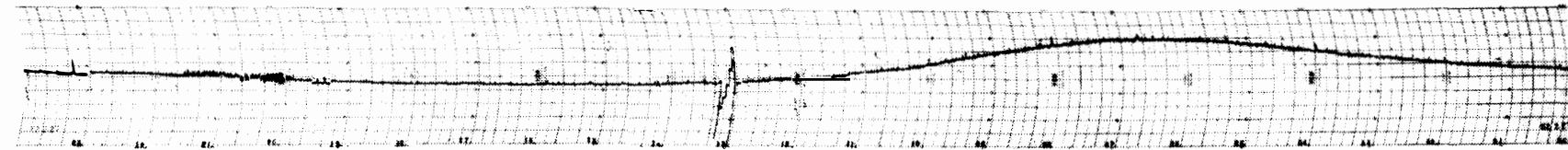
25



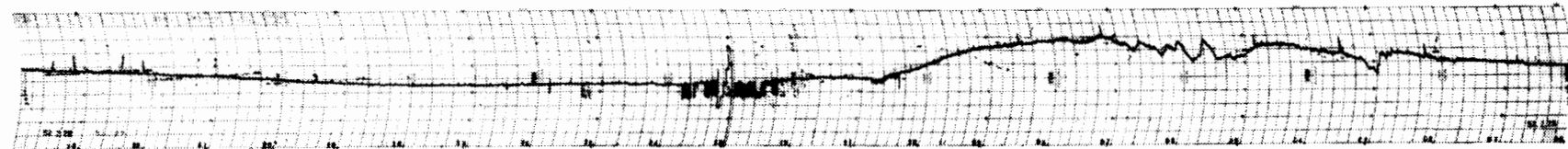
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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

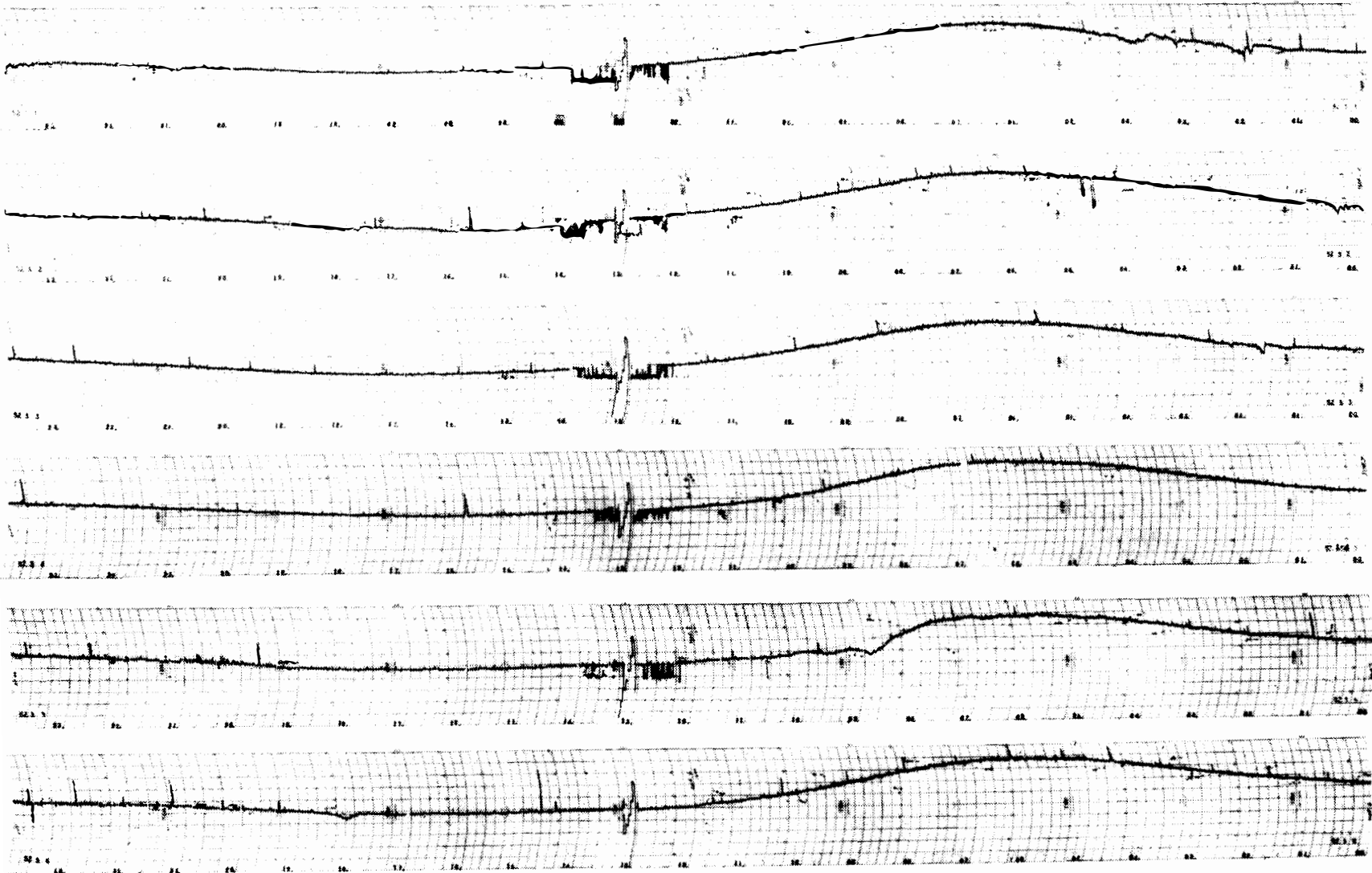
Cosmic noise level obscured or equipment malfunction.

February	8	1810 - 1828	failure of equipment
	12	0532 - 0740	"
	12	1040 - 1120	"

1977 02 08 10 30

MAR 1977

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24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAR 1977

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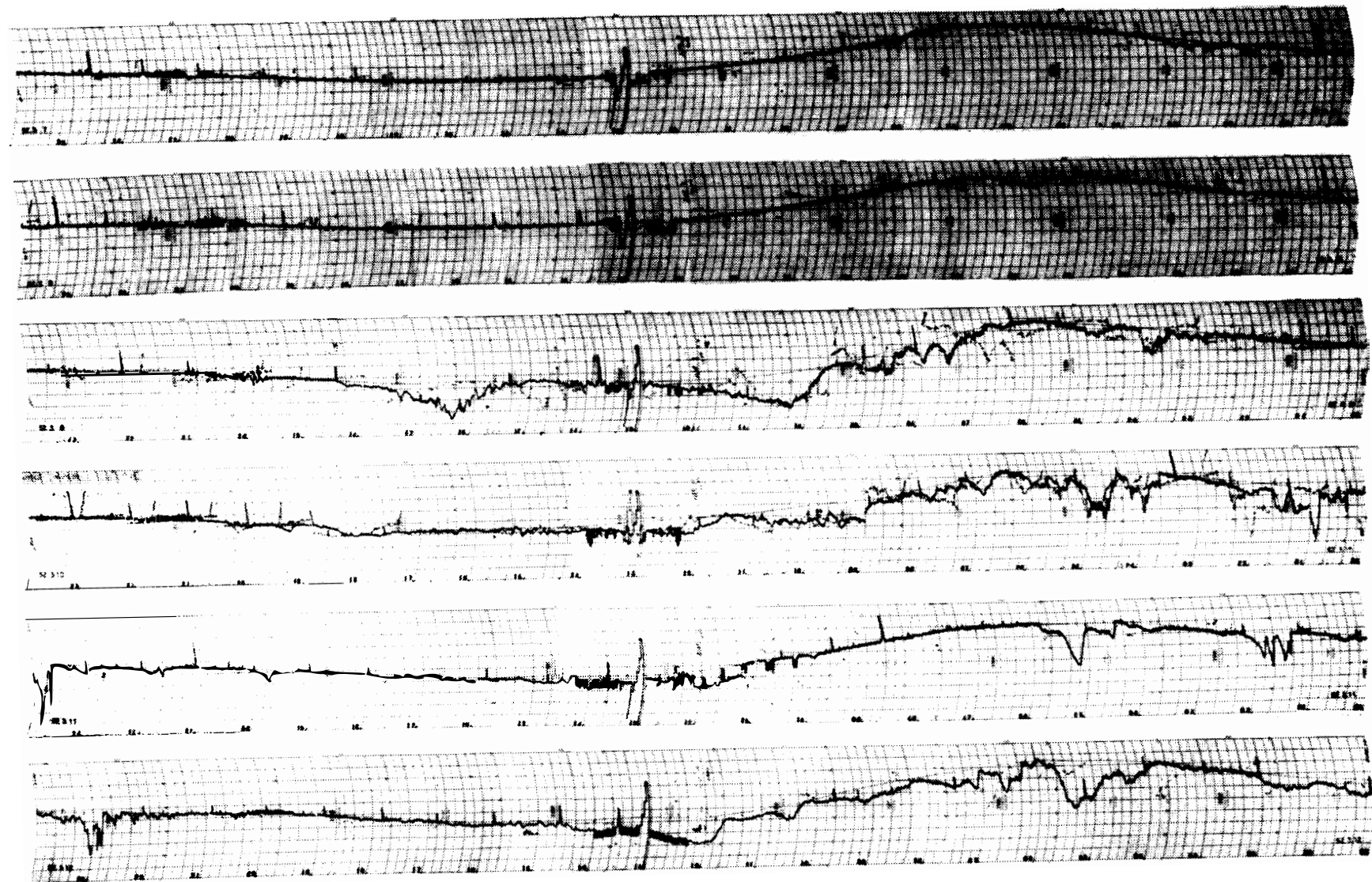
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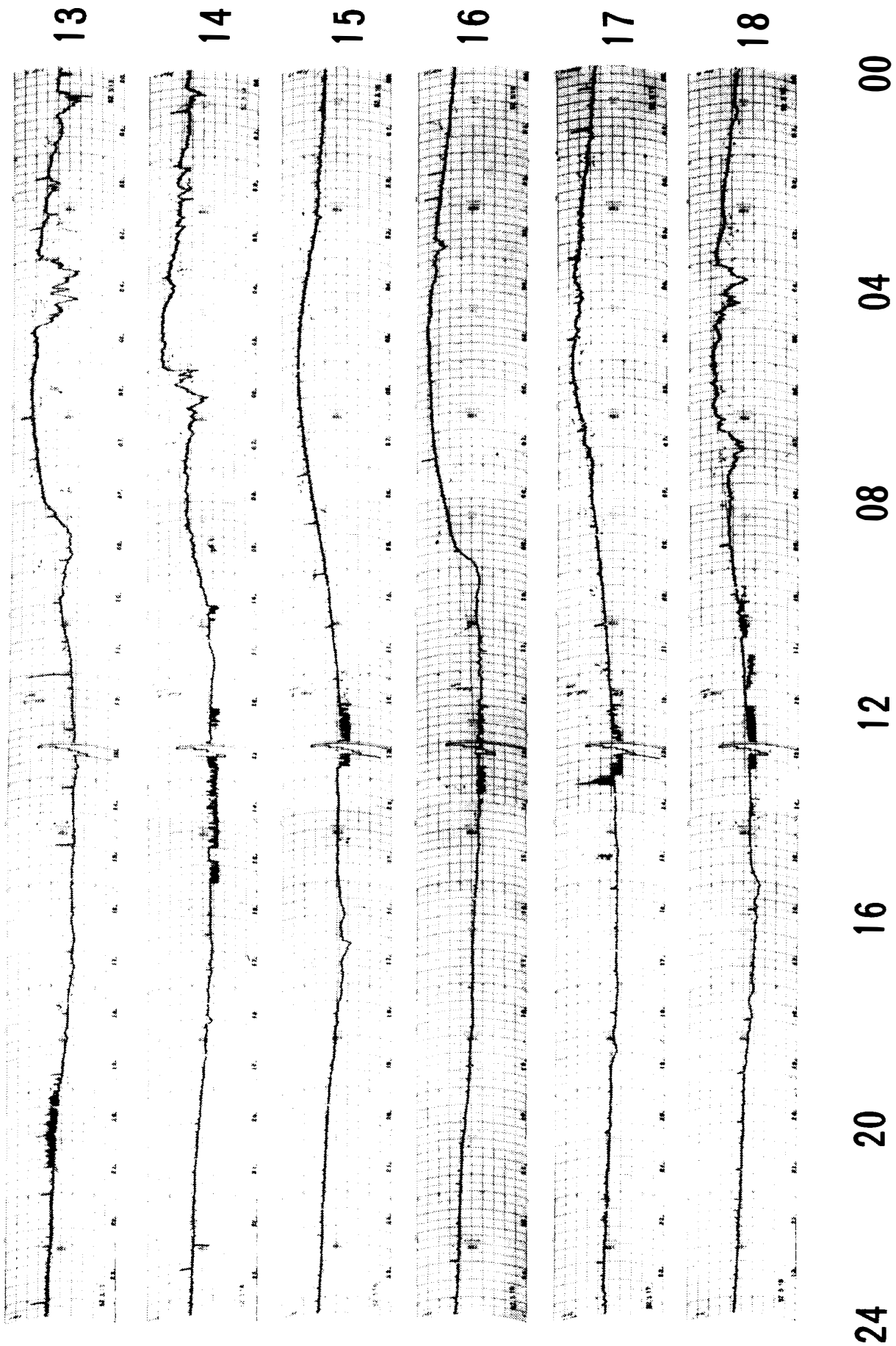
04

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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAR 1977



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

MAR 1977

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24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAR 1977

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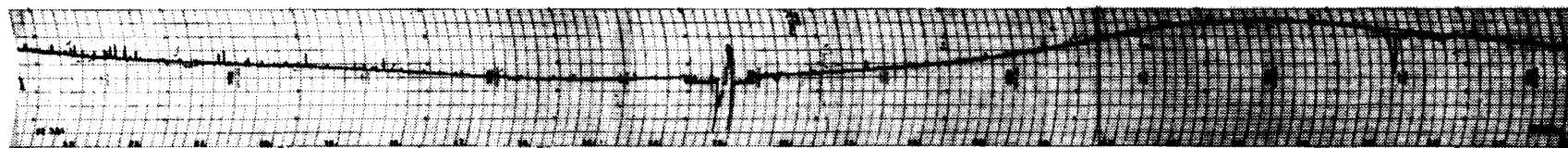
24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAR 1977

31



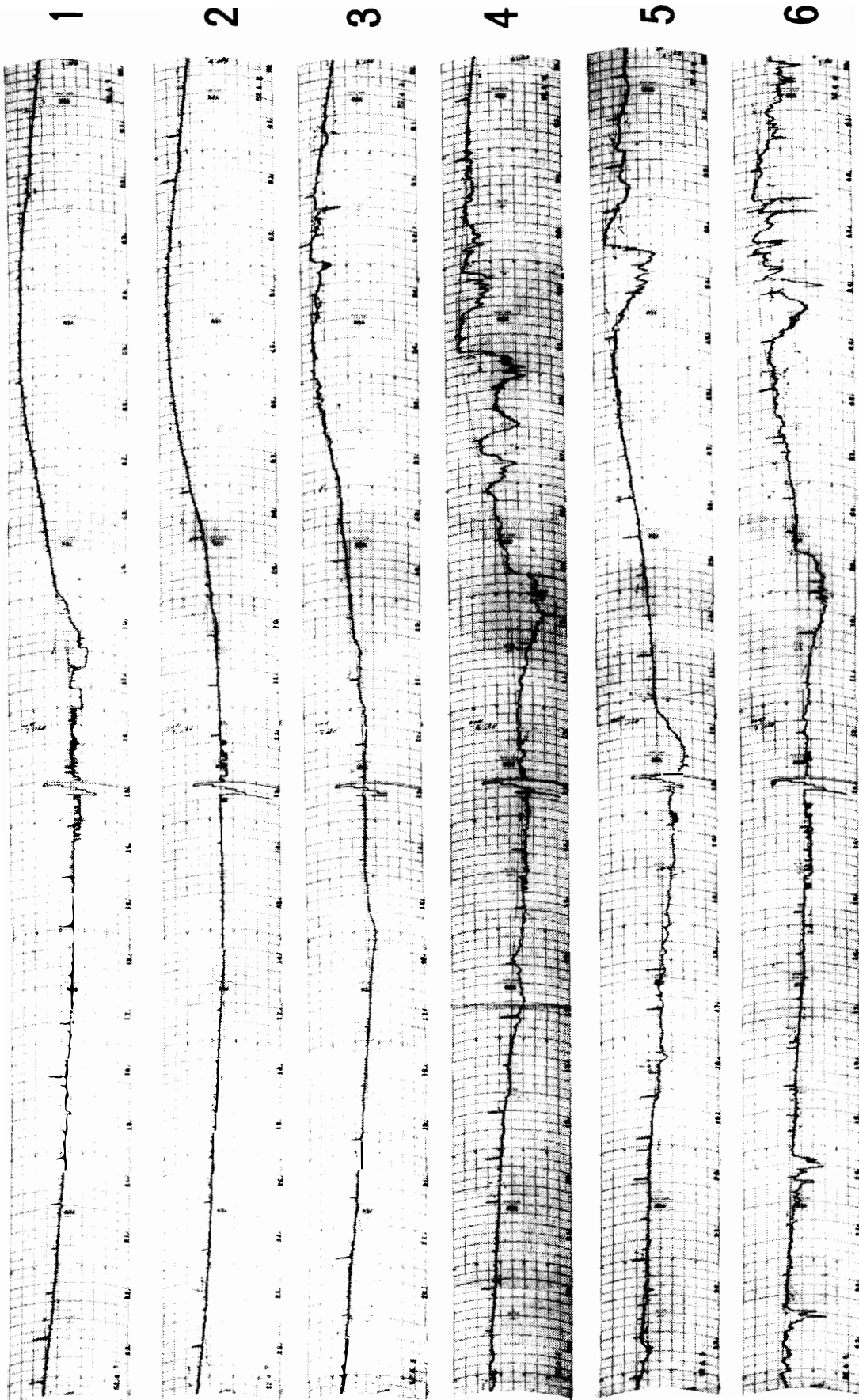
24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE



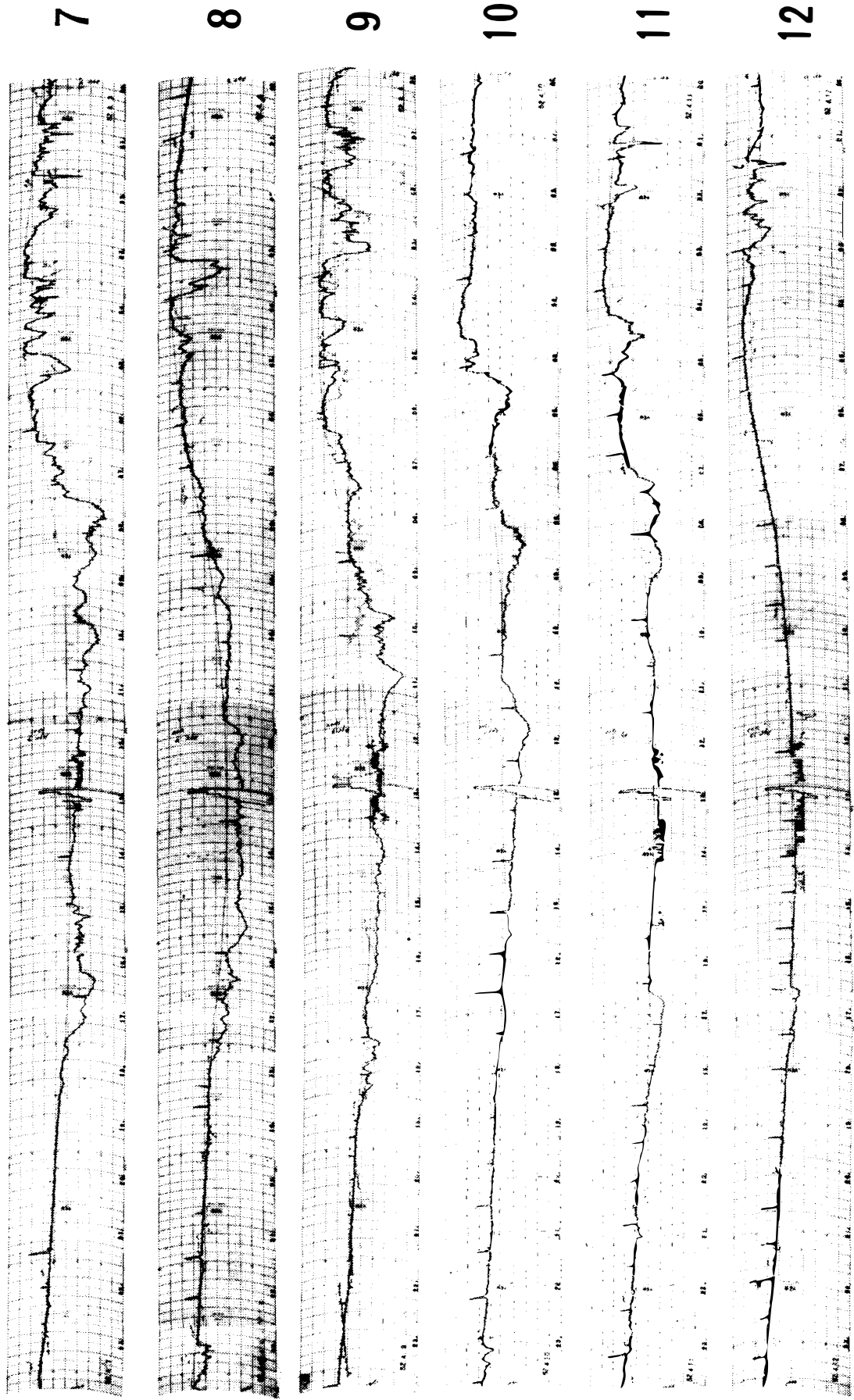
APR 1977



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

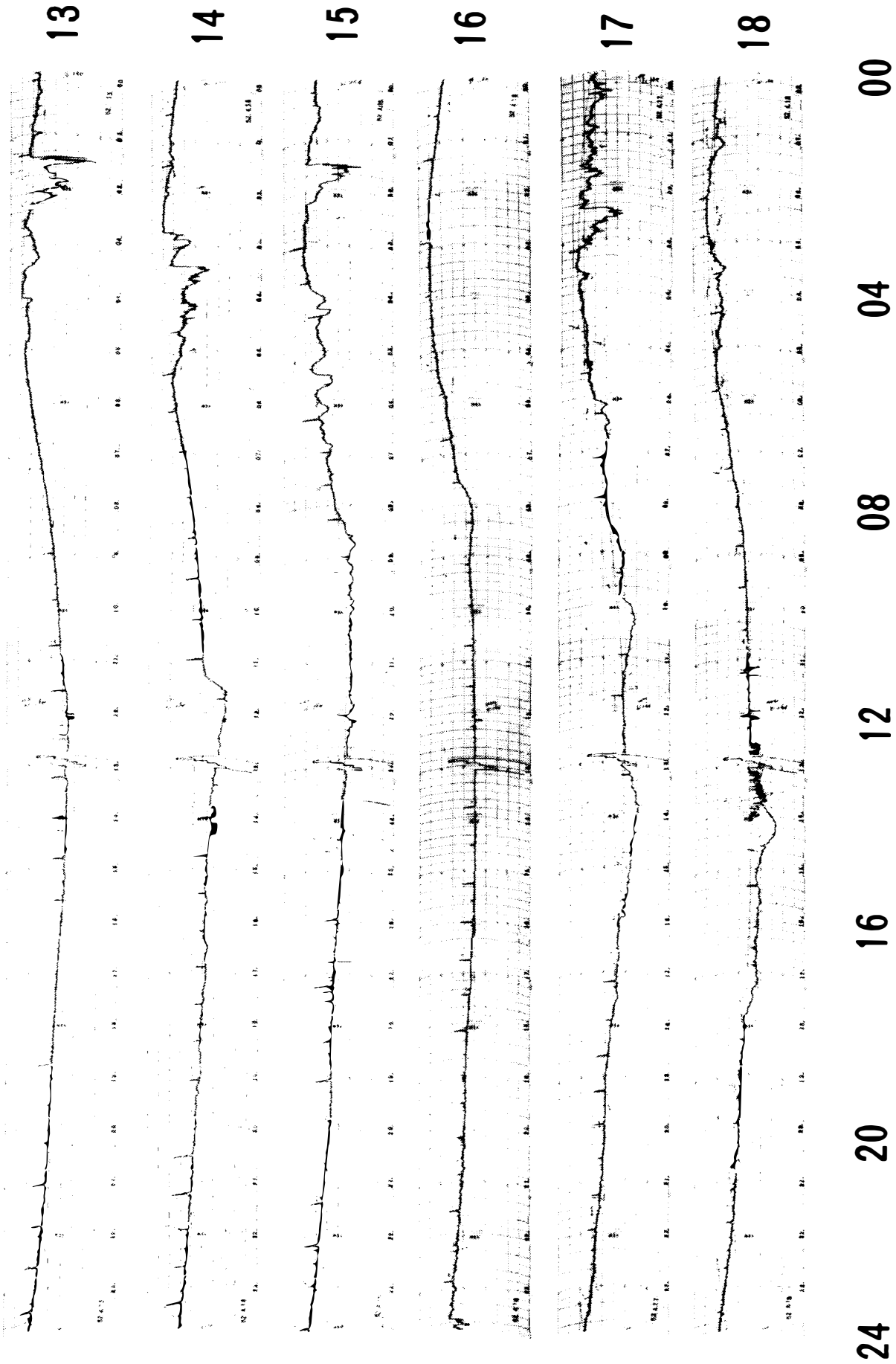
APR 1977



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

APR 1977



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

APR 1977

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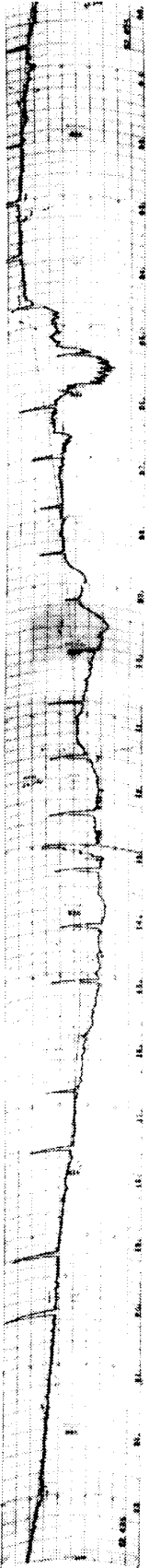
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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

APR 1977

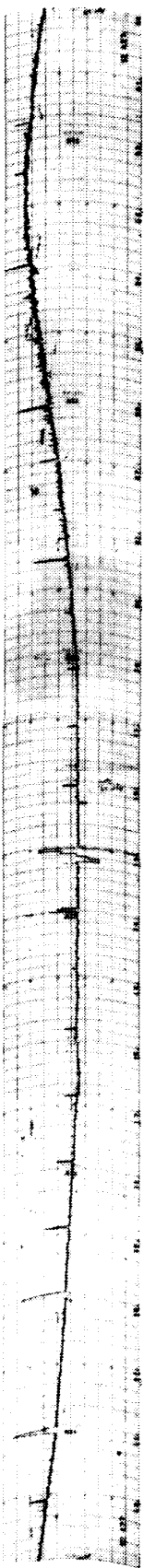
25



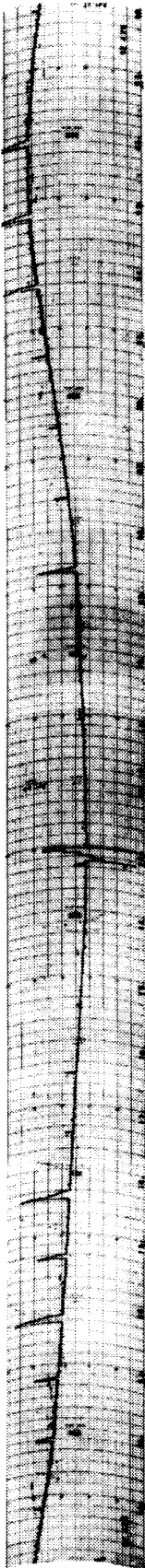
26



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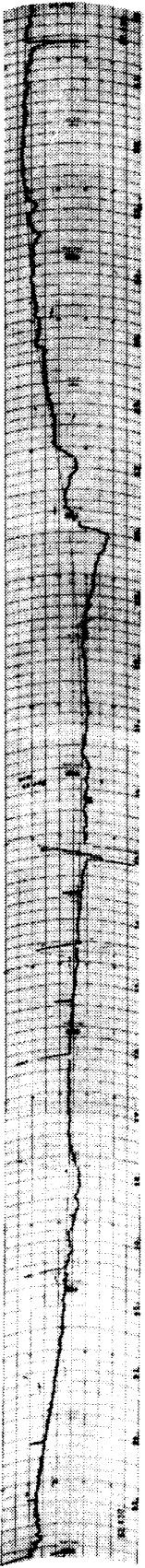
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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

MAV 1977

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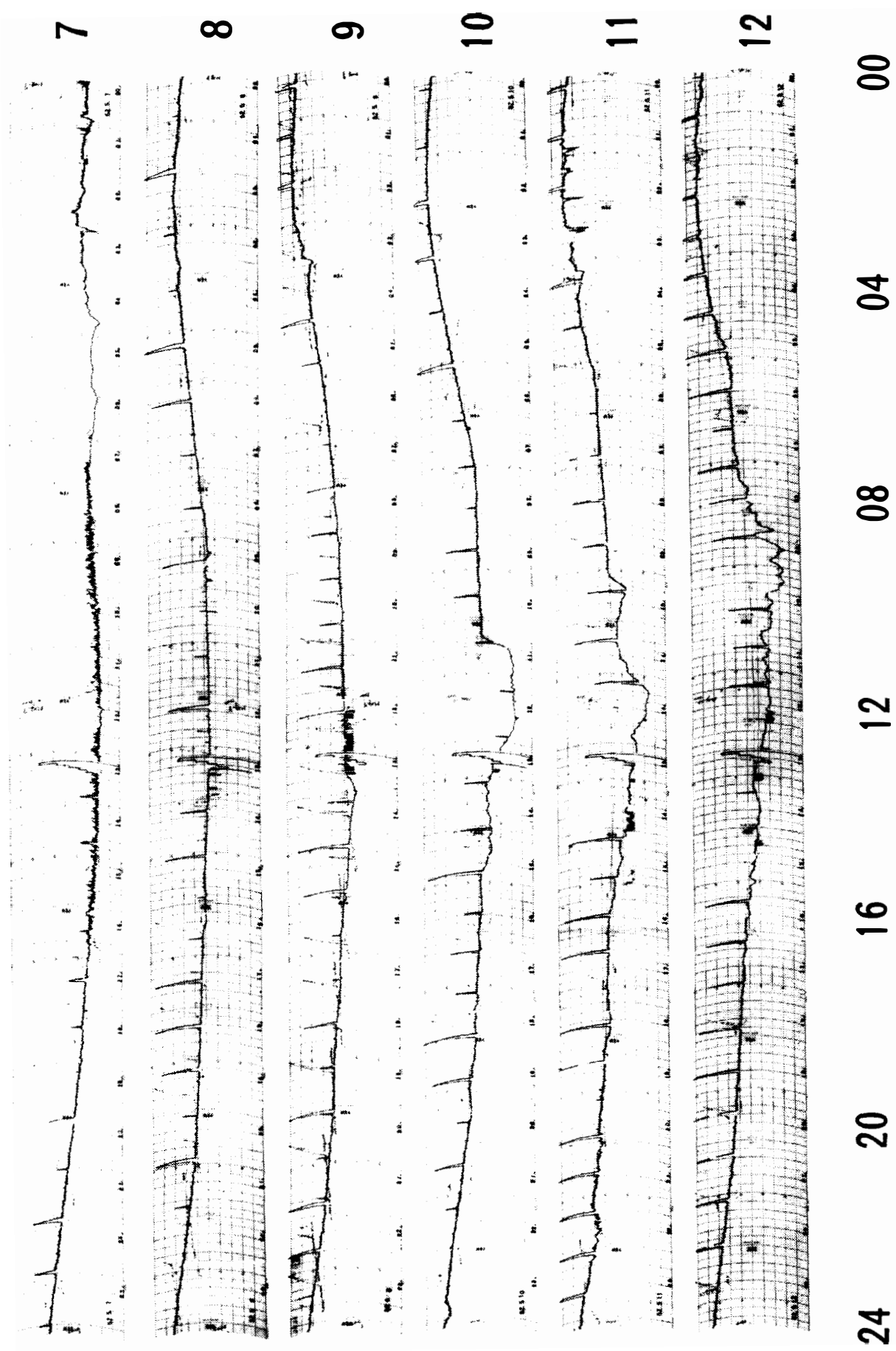
04

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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

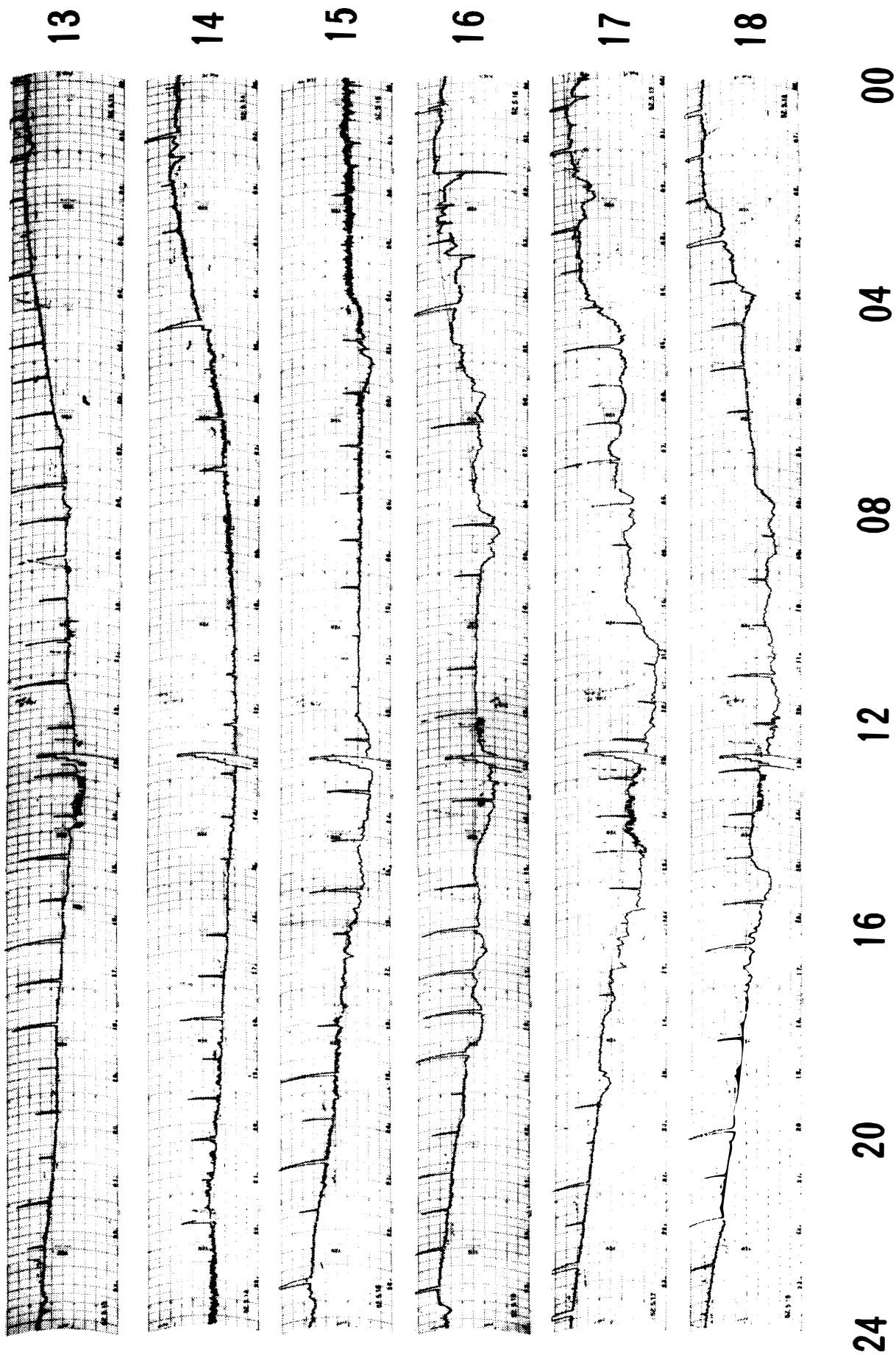
MAY 1977



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

MAY 1977



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS



MAY 1977

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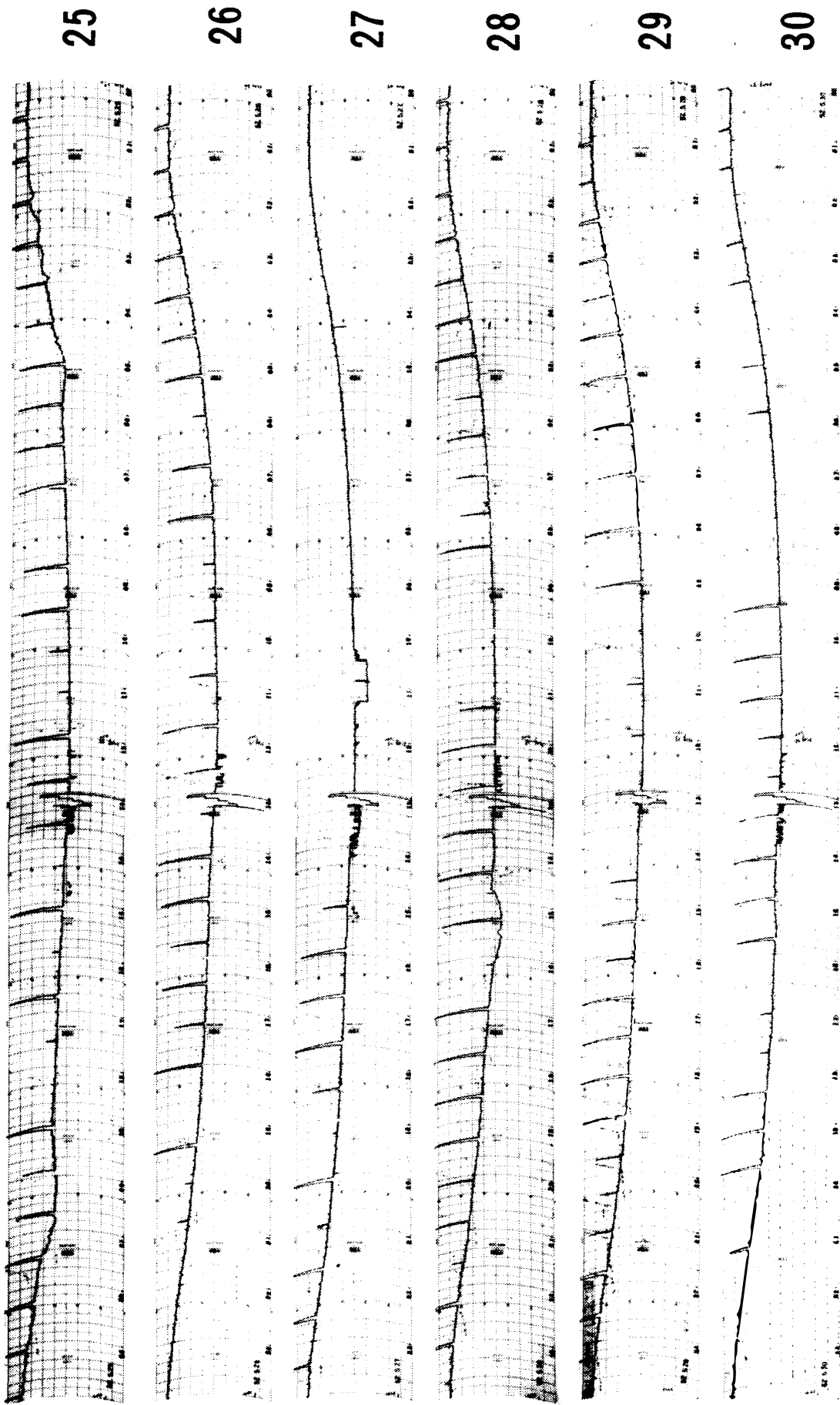
—41—

24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAY 1977

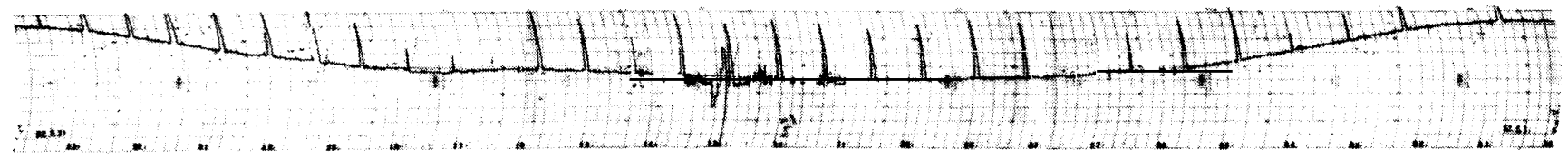


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

MAY 1977

31



24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JUNE 1977

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— 44 —

24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JUNE 1977

7

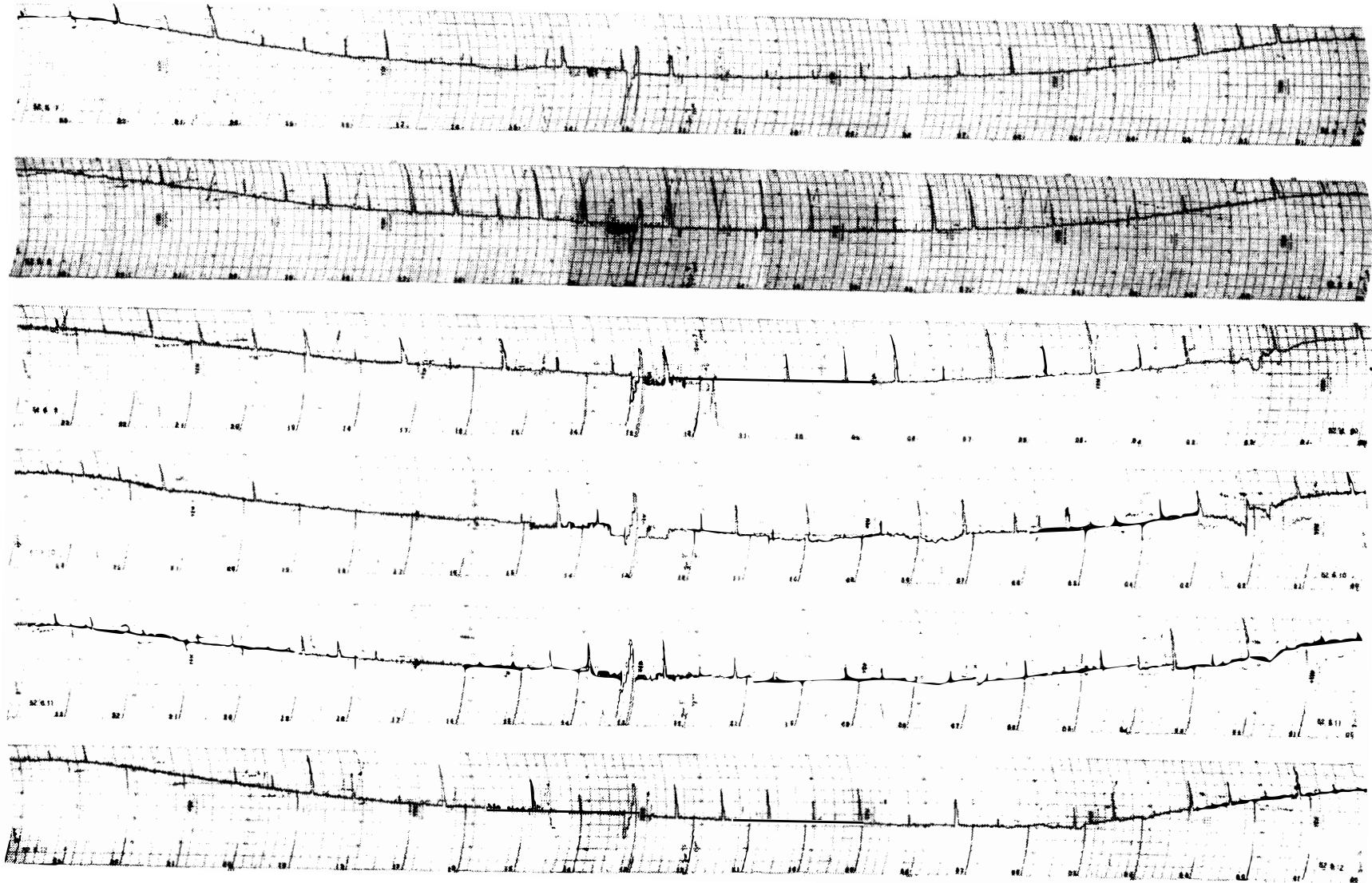
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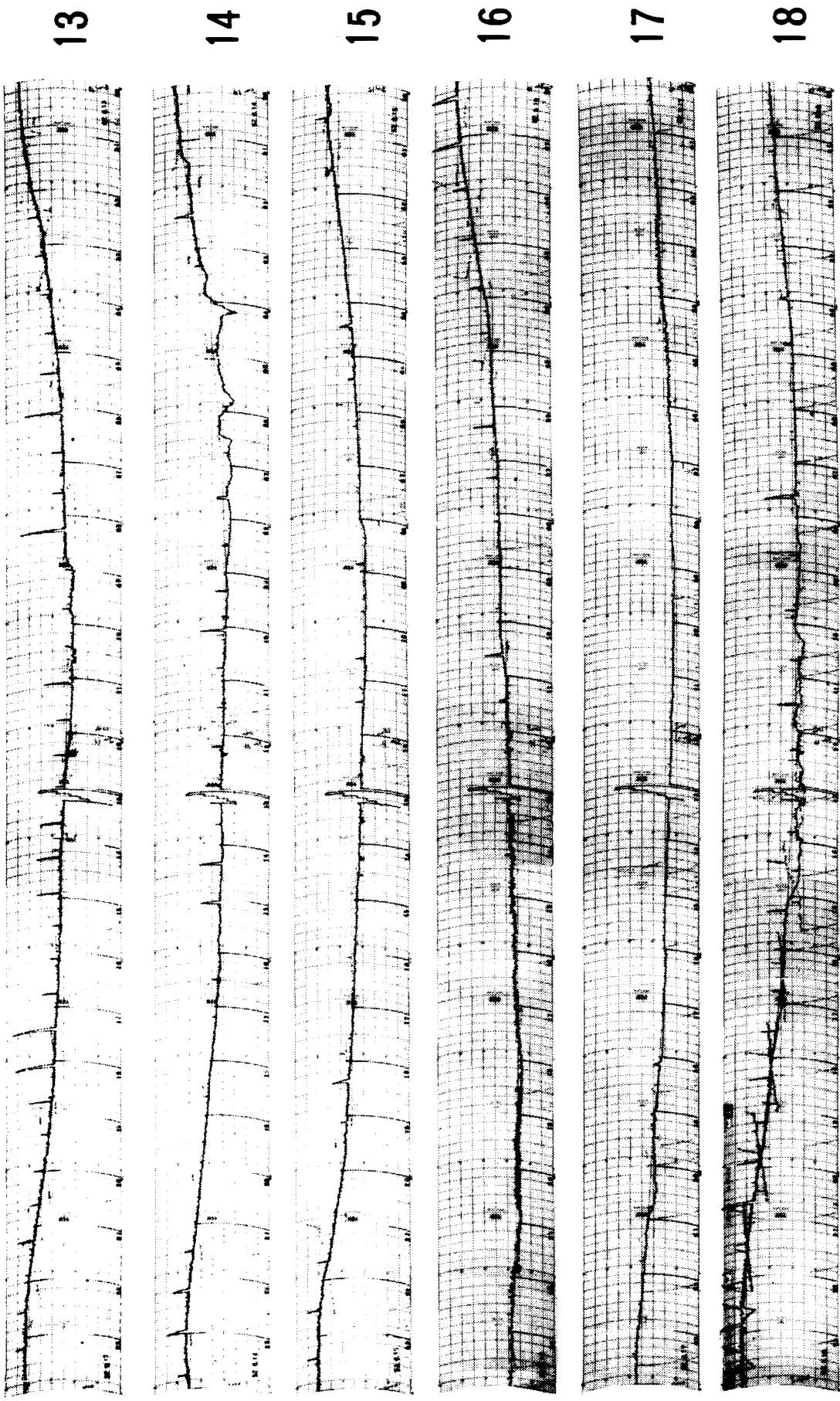


24                      20                      16                      12                      08                      04                      00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JUNE 1977



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

JUNE 1977

19

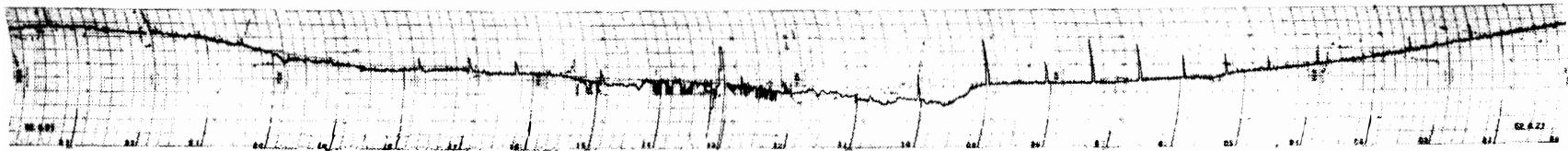
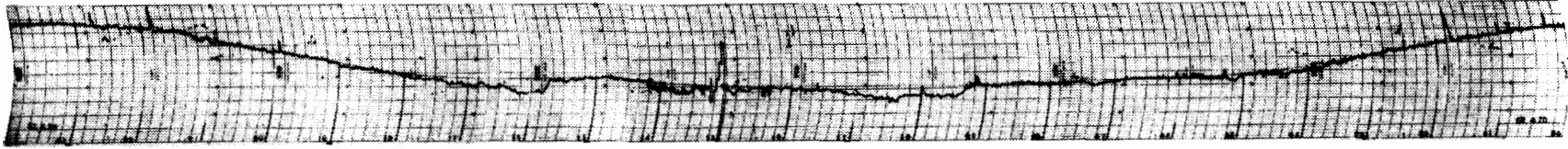
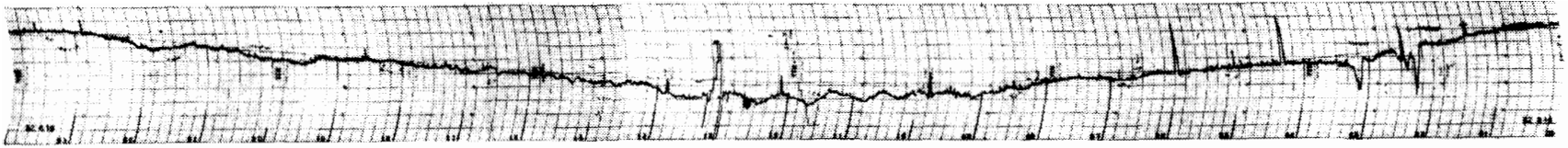
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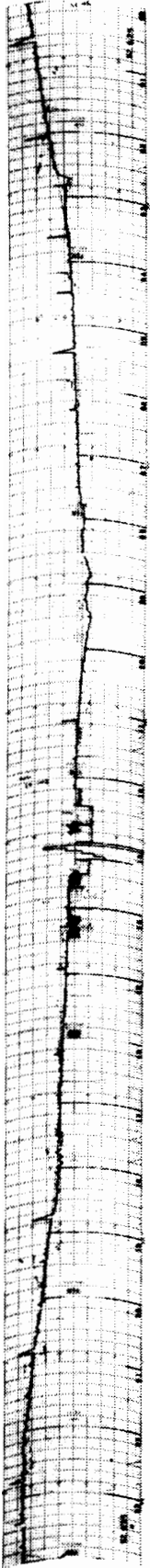
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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JUNE 1977

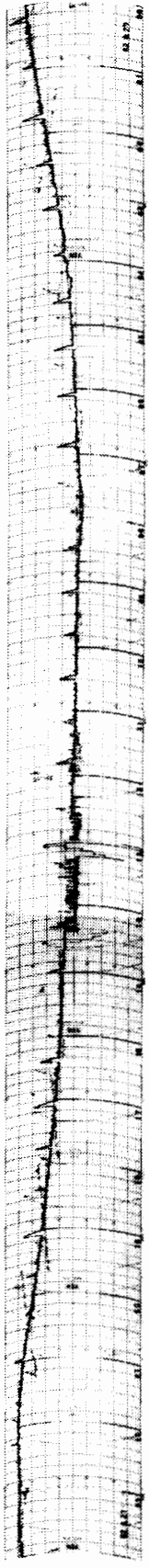
25



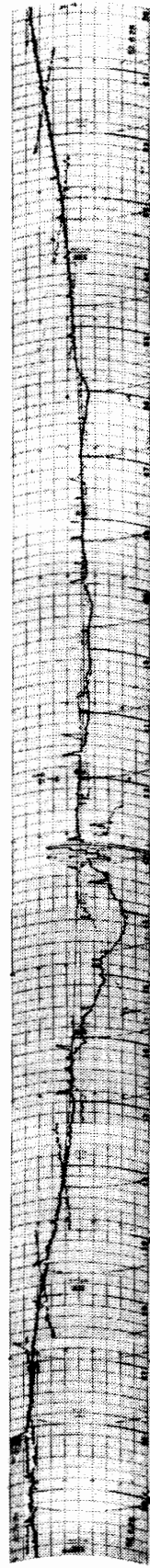
26



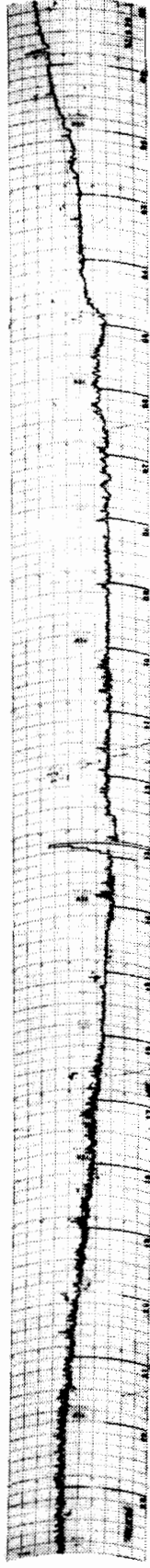
27



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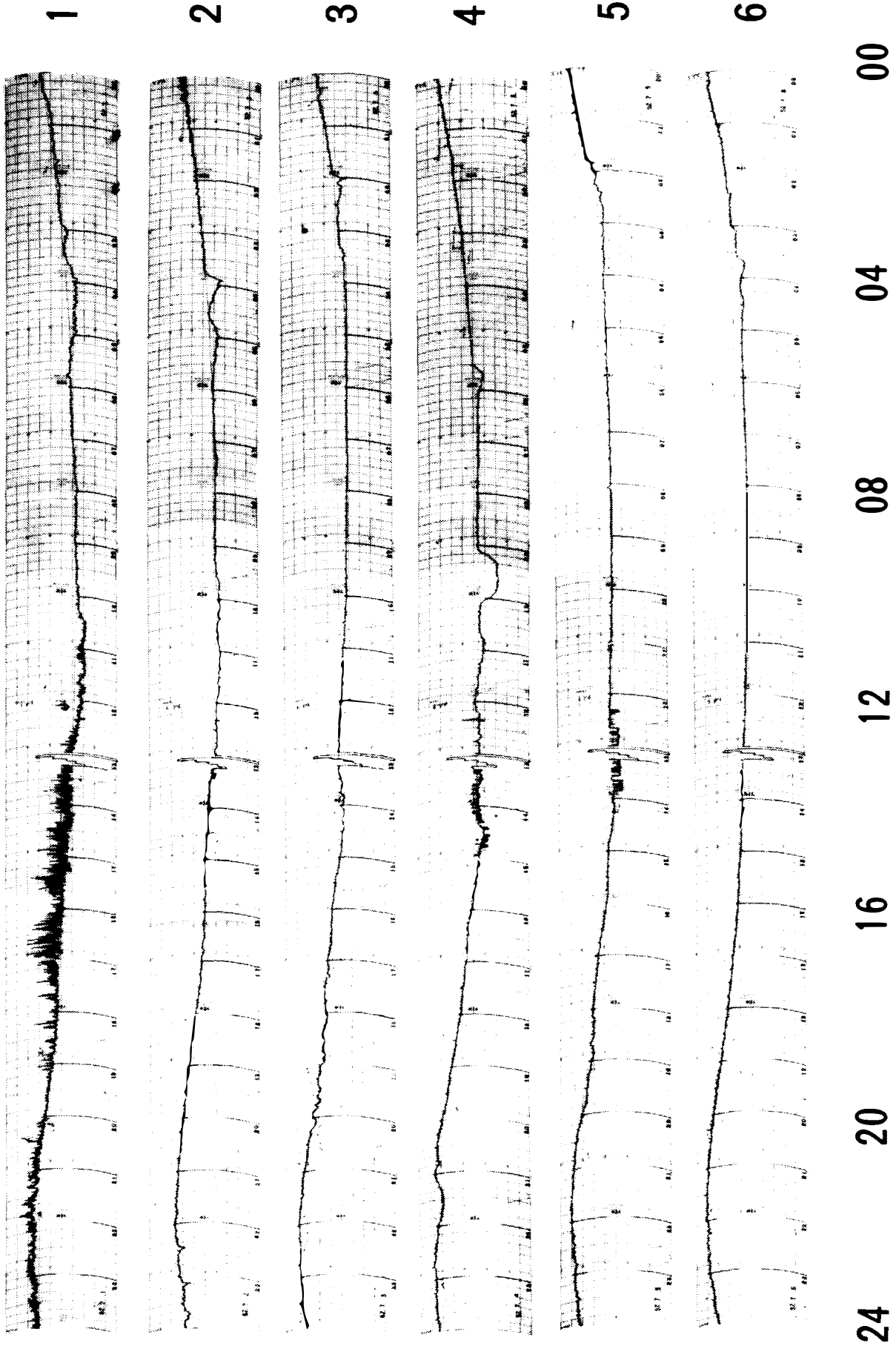


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE



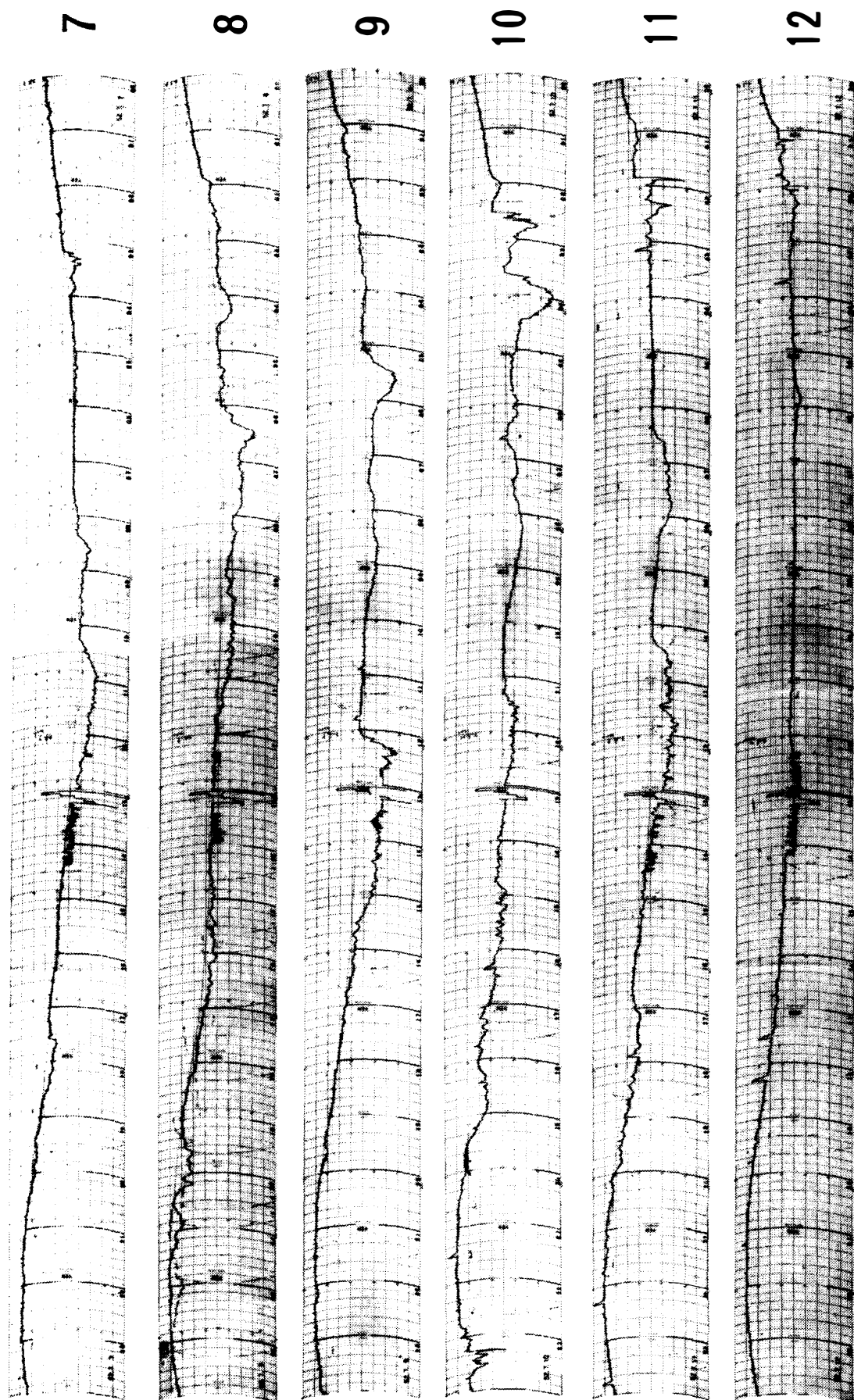
JULY 1977



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

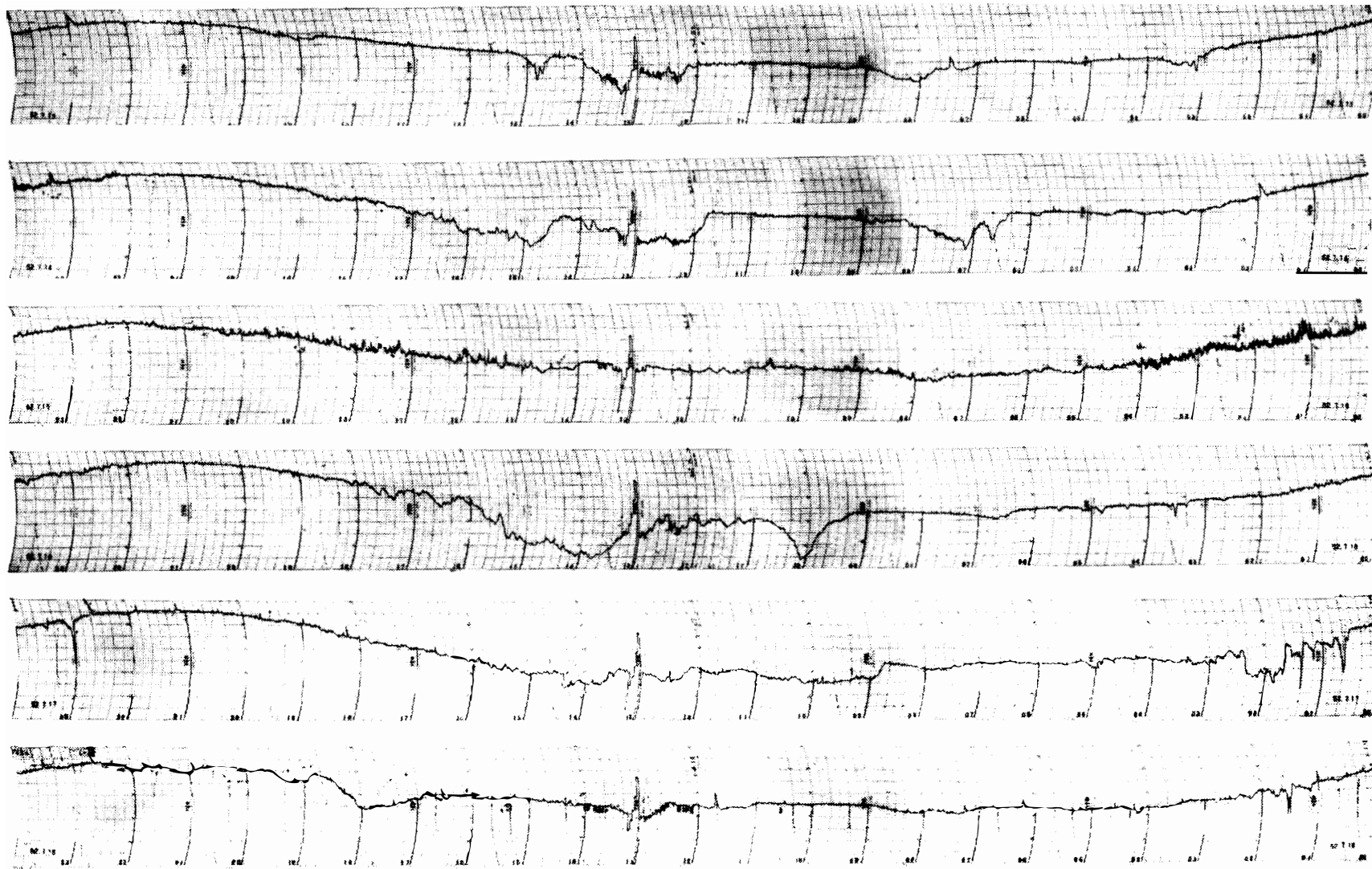
JULY 1977



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JULY 1977



— 51 —

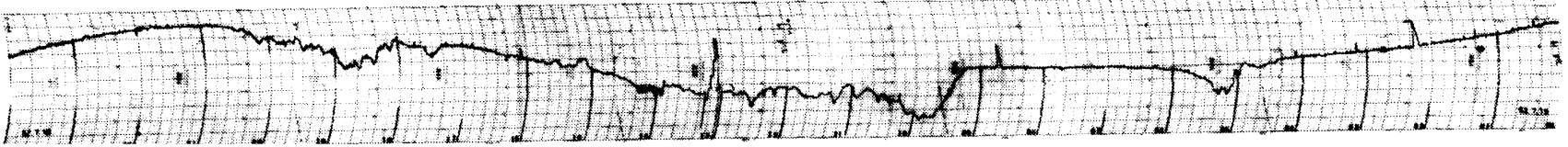
24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

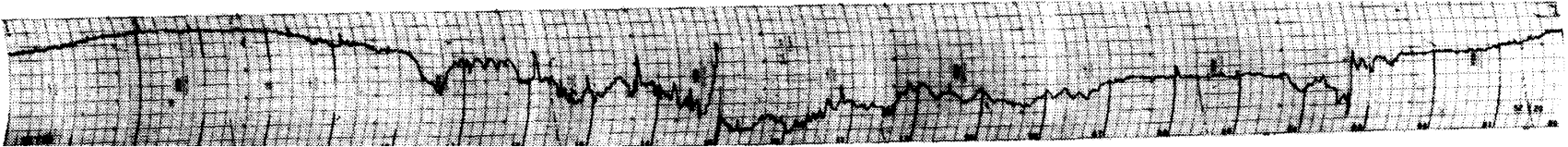
30 MHz COSMIC NOISE

JULY 1977

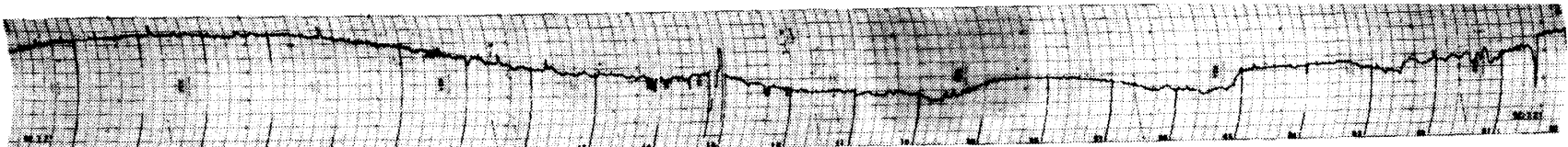
19



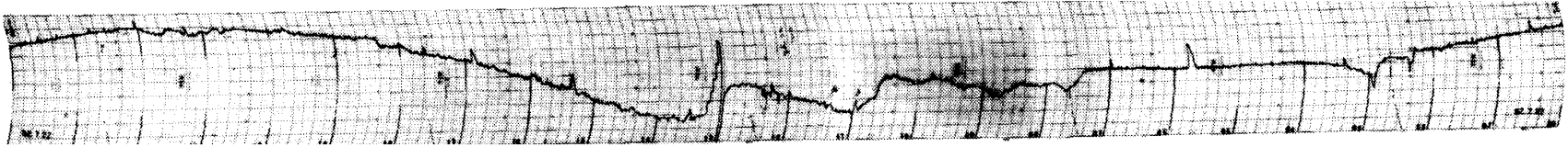
20



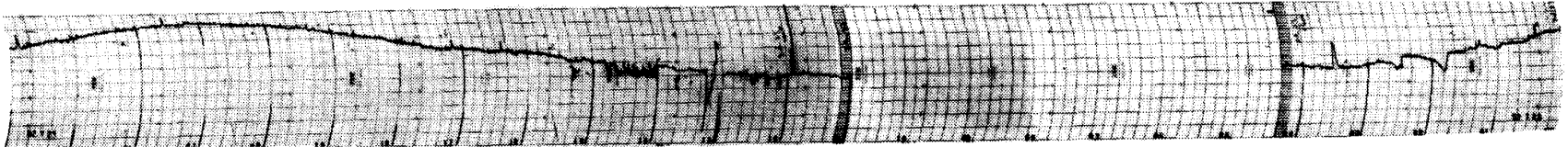
21



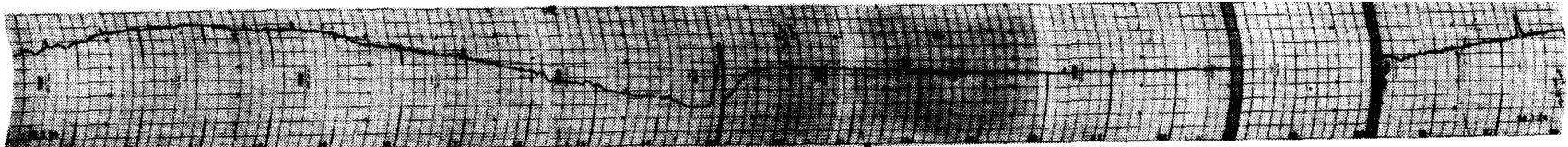
22



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24



—52—

24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JULY 1977

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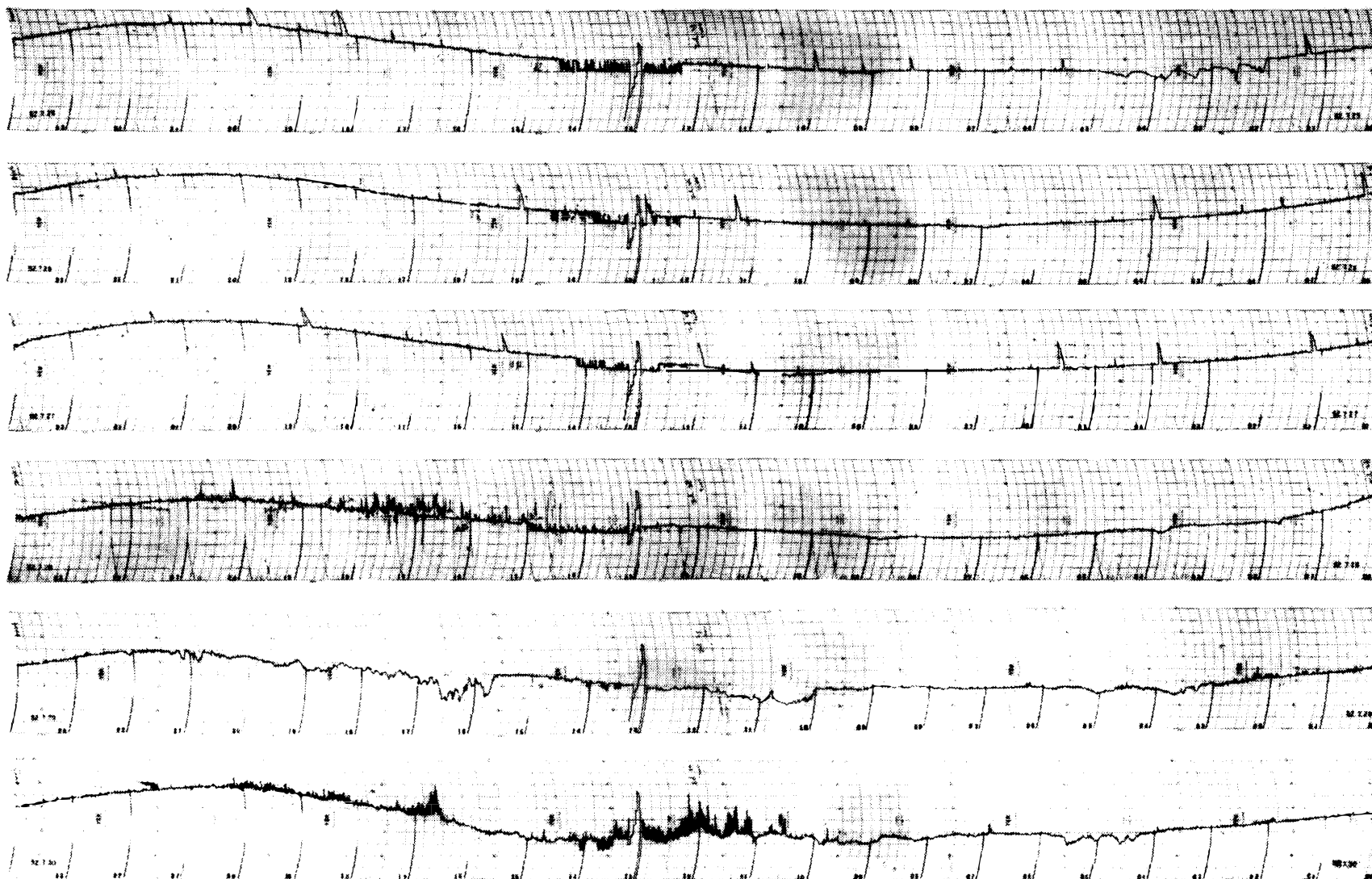
08

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00

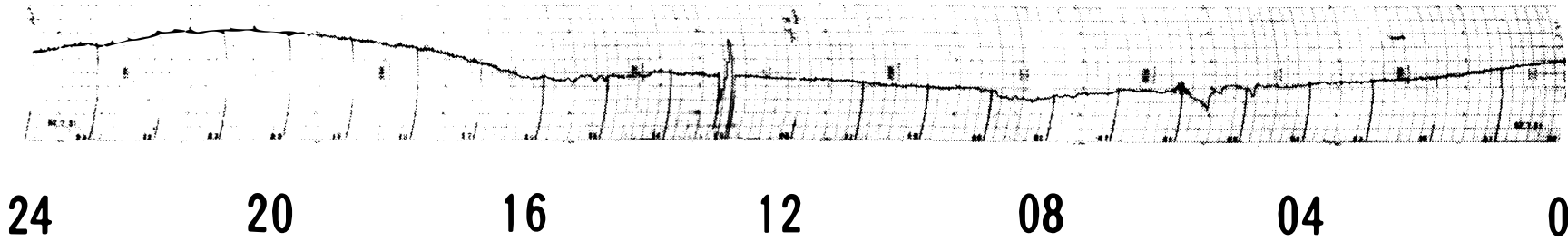
45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE



JULY 1977

31



45° EAST MERIDIAN TIME IN HOURS

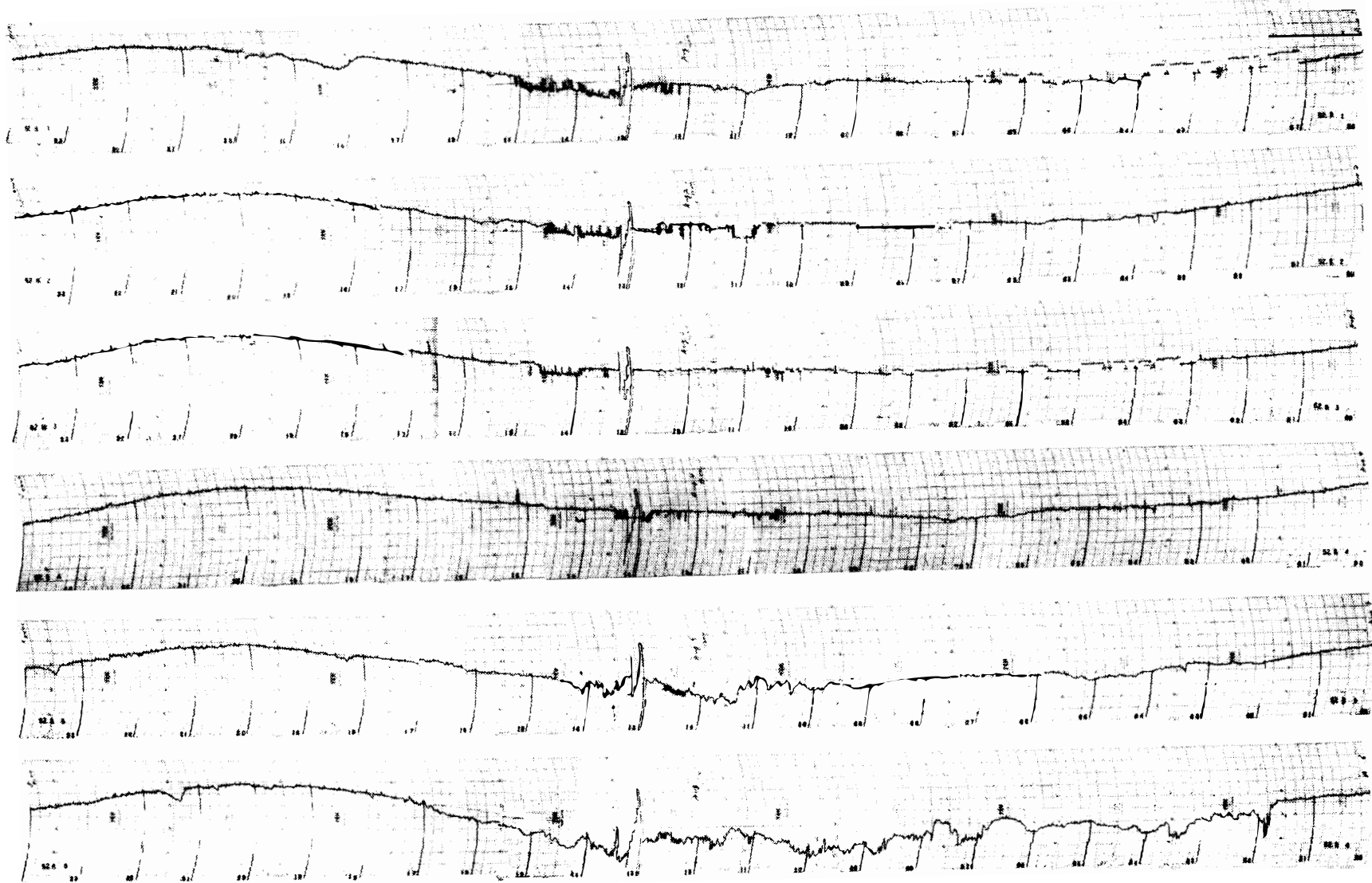
30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

July	23	0420 - 1100	failure of equipment
	24	0300 - 0500	"

AUG 1 1977

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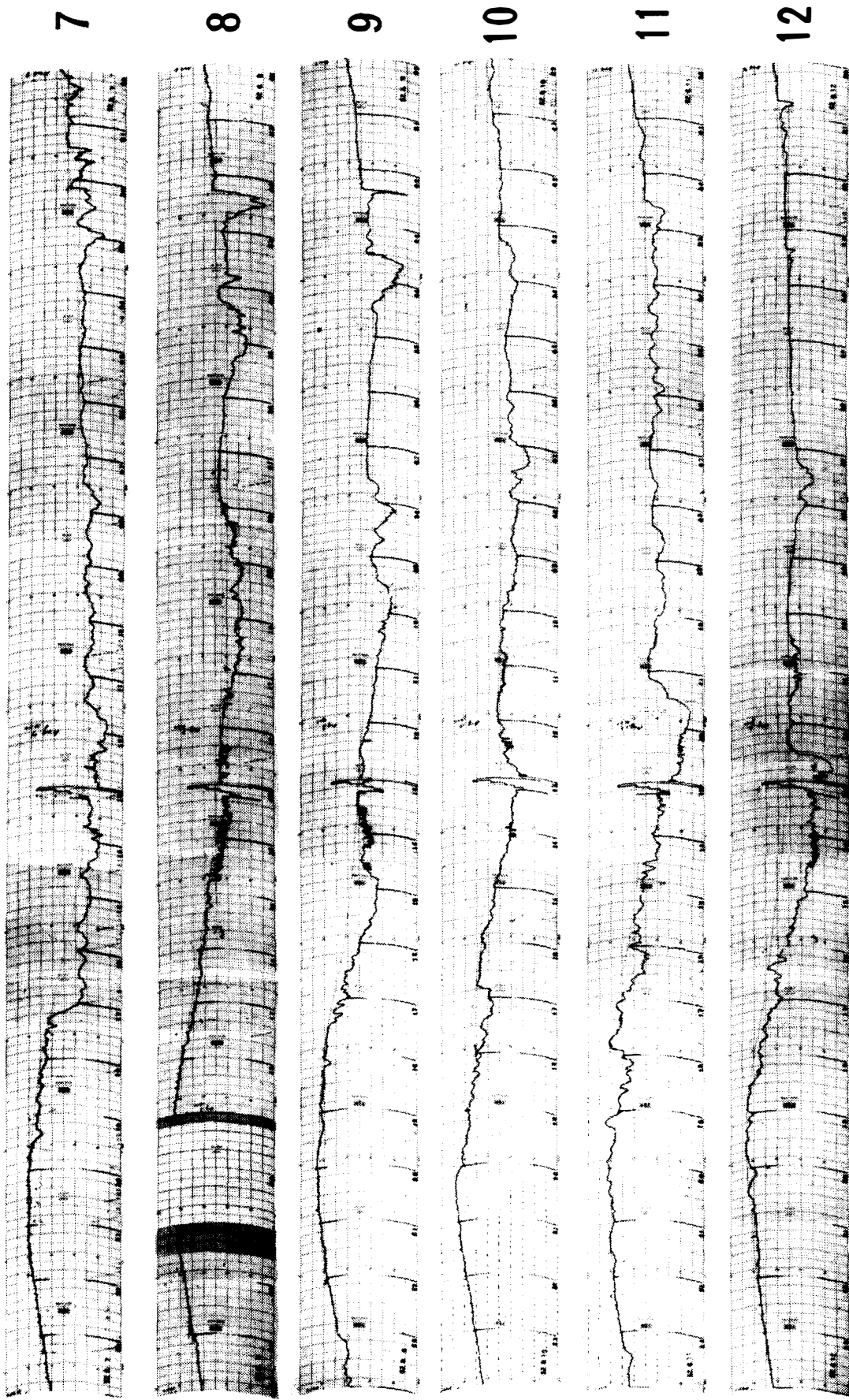


24      20      16      12      08      04      00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

AUG 1977

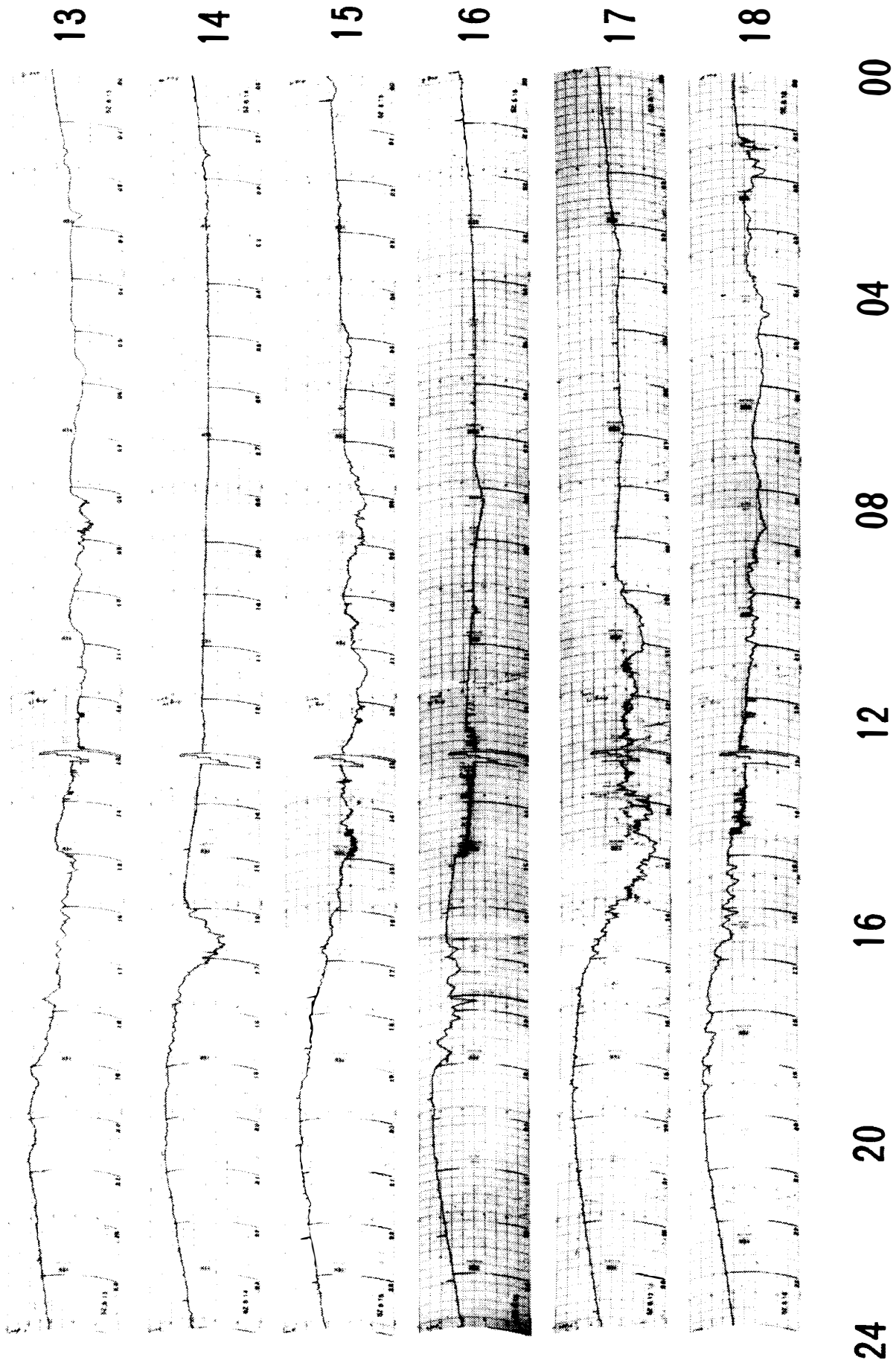


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE



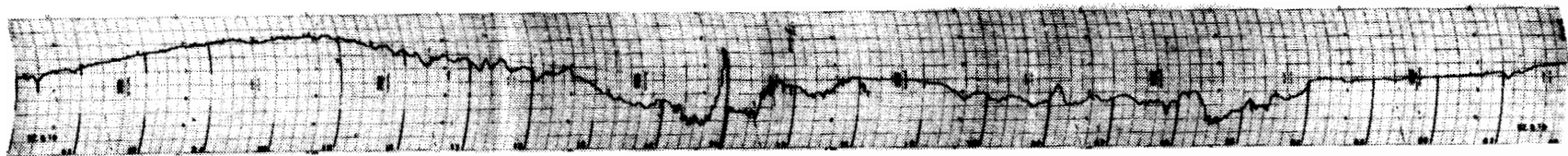
AUG 1977



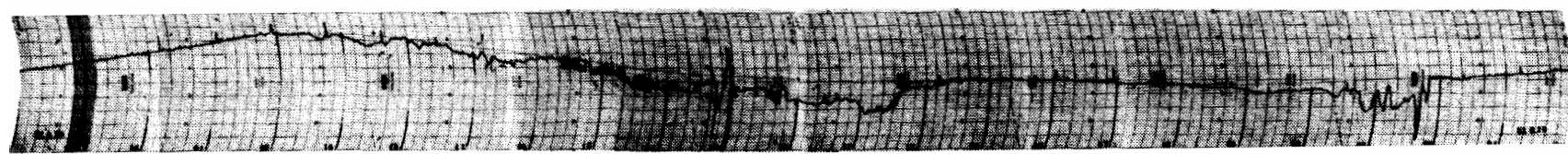
30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

AUG 1977



19



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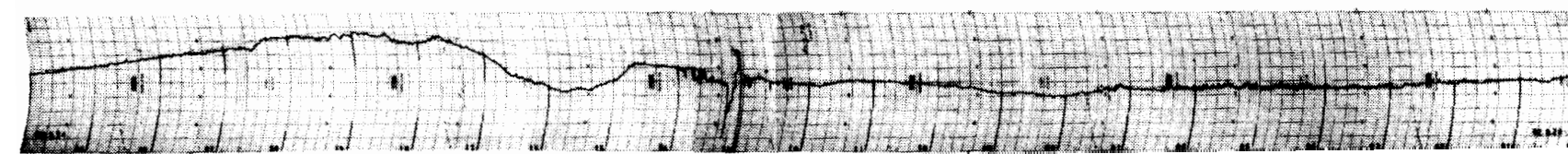
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24                      20                      16                      12                      08                      04                      00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

AUG 1977

25

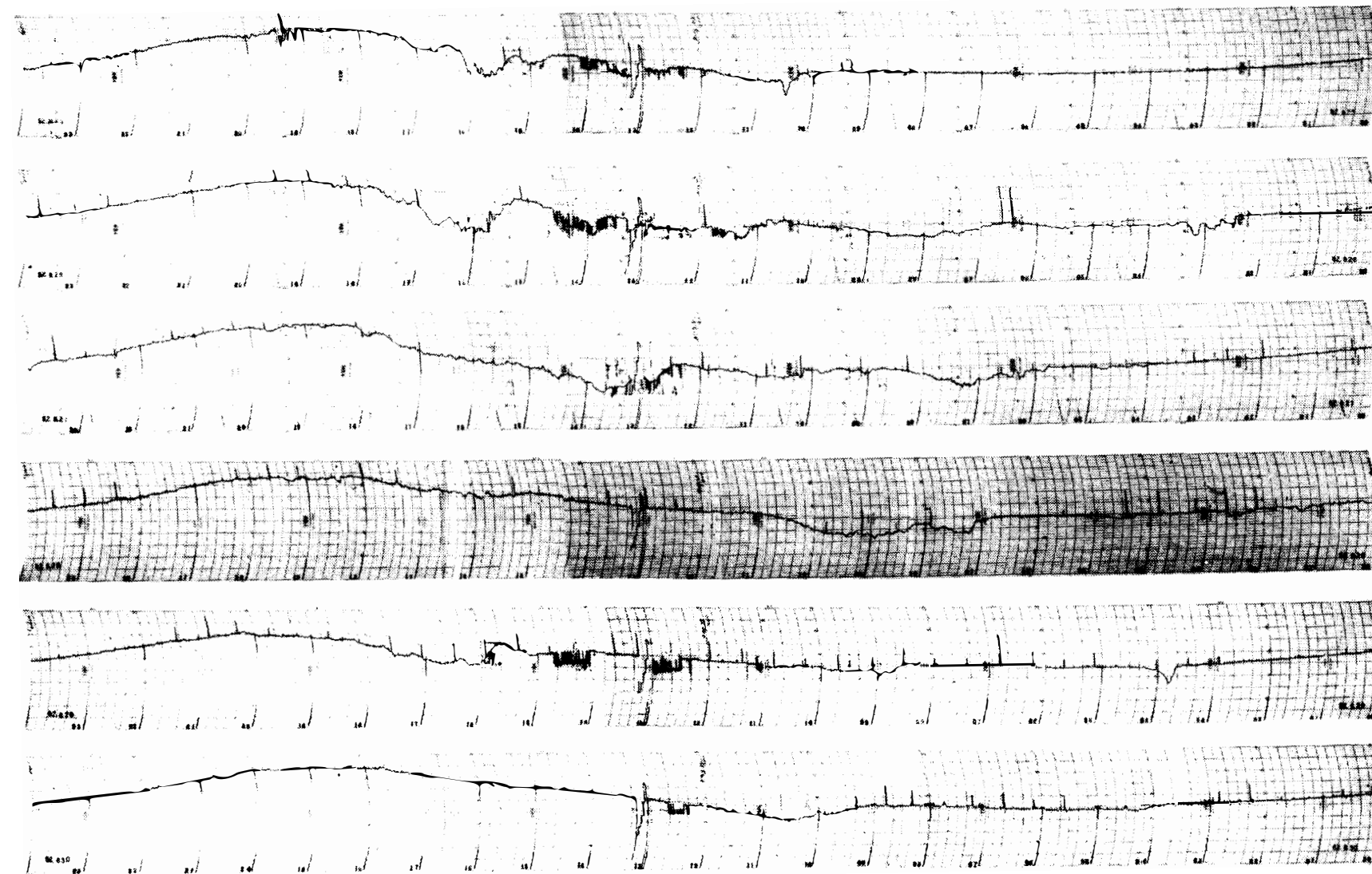
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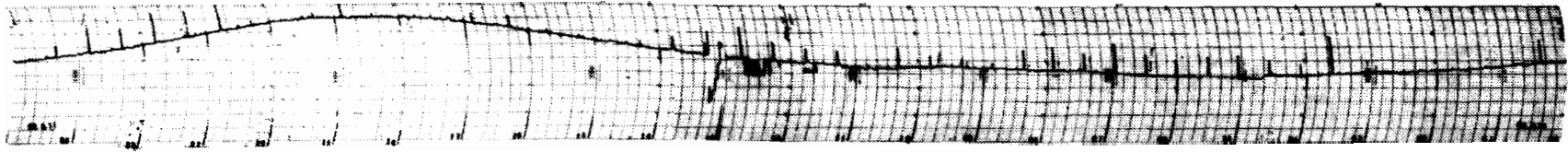
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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

AUG 1977

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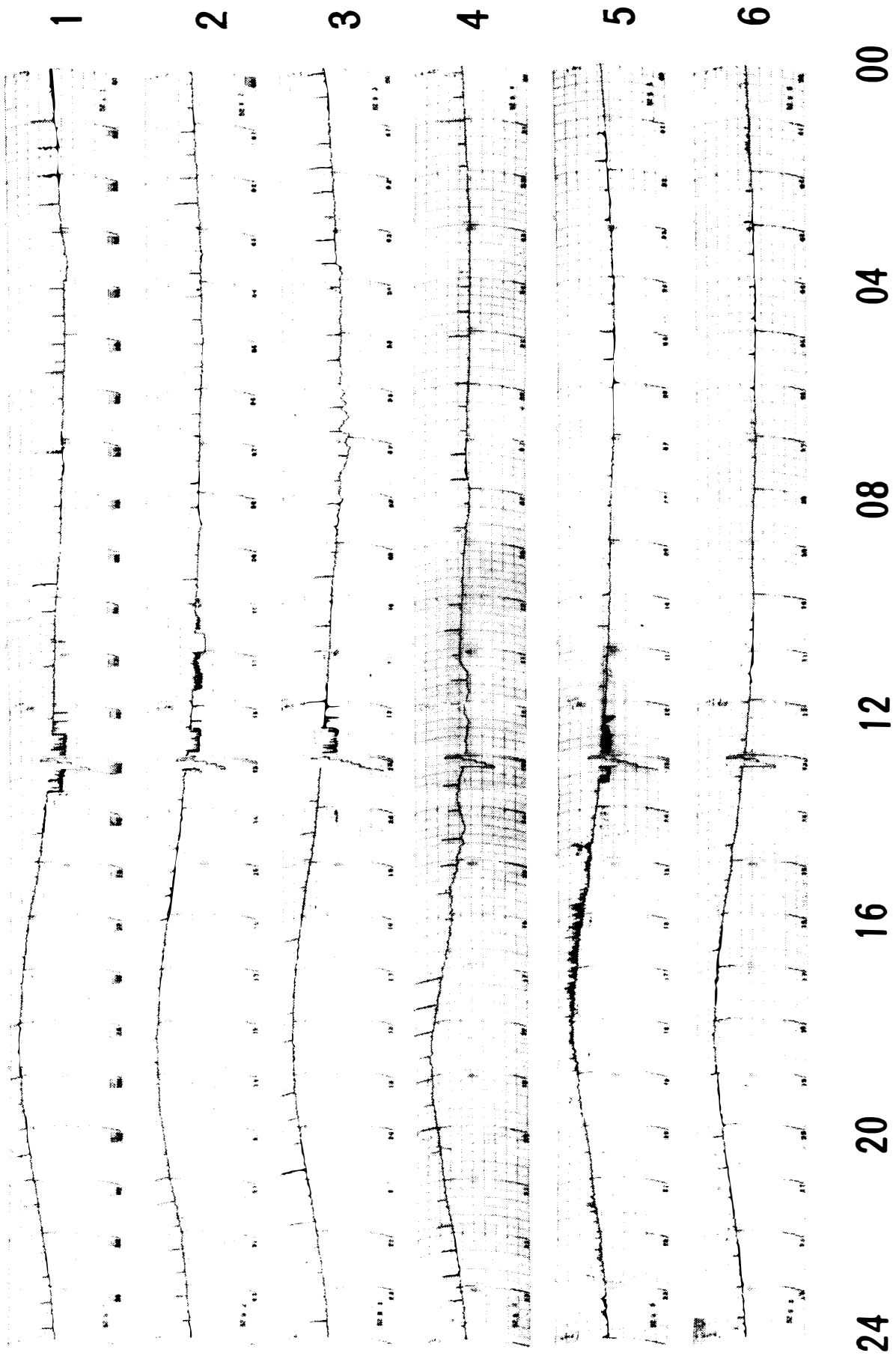
45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

August 8 1910 - 2100 failure of equipment

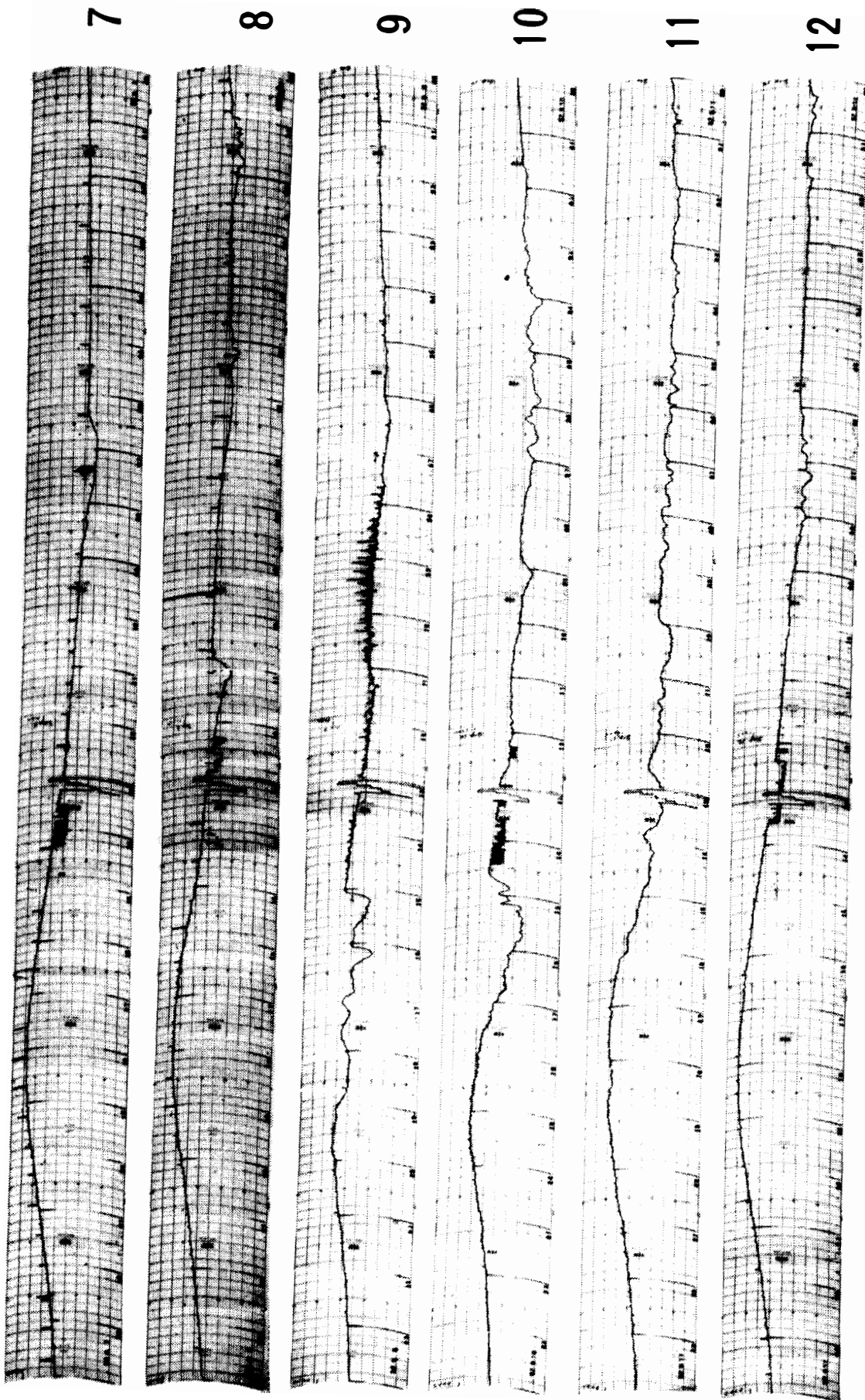
SEP 1977



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

SEP 1977



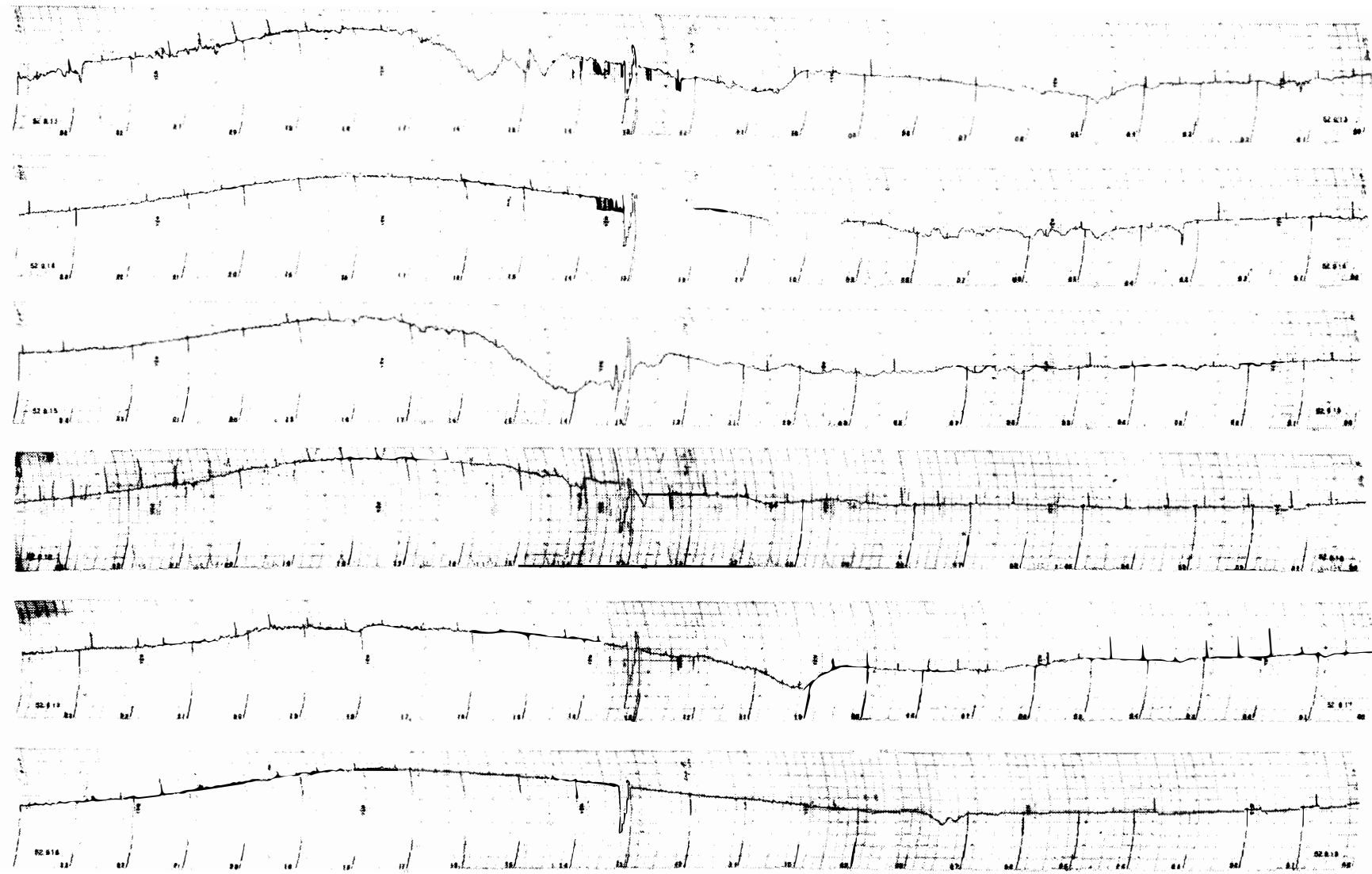
24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

SEP 1977

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24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

SEP 1977

19

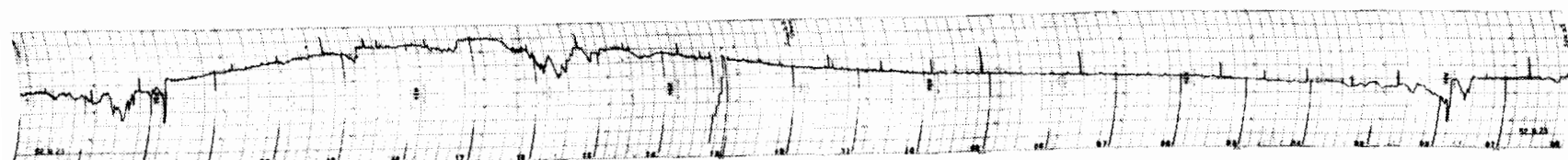
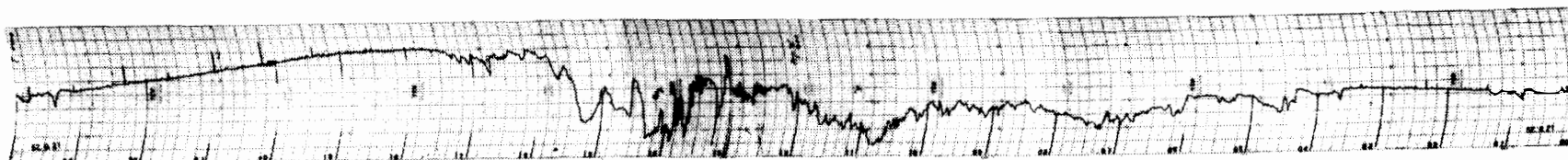
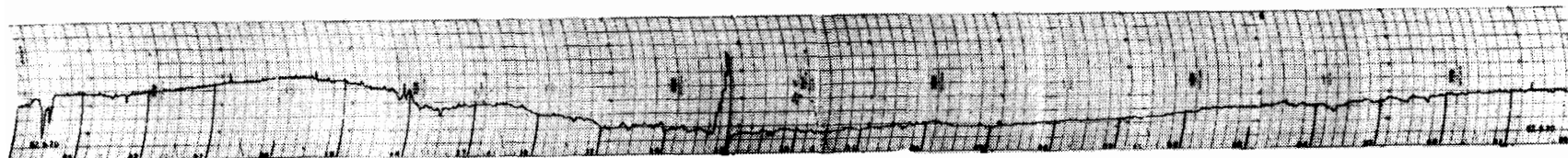
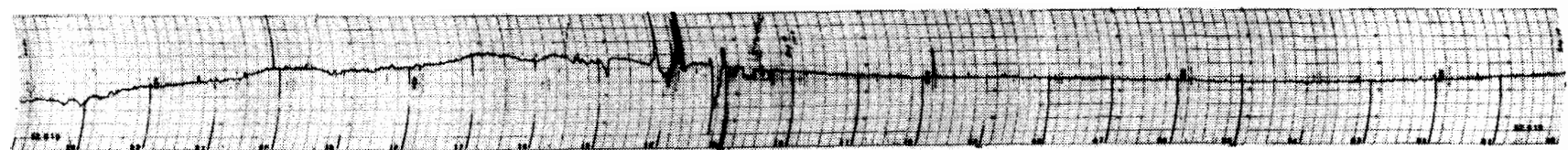
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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE



SEP 1977

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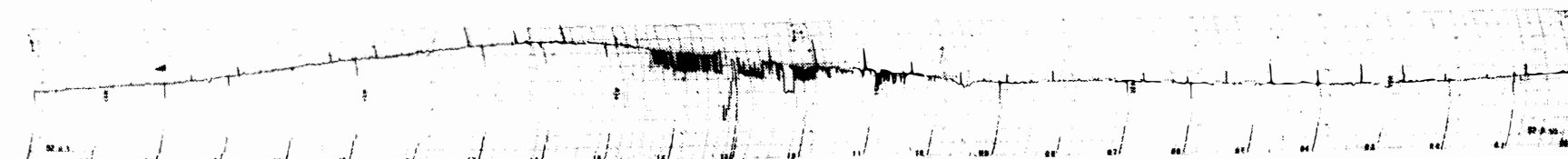
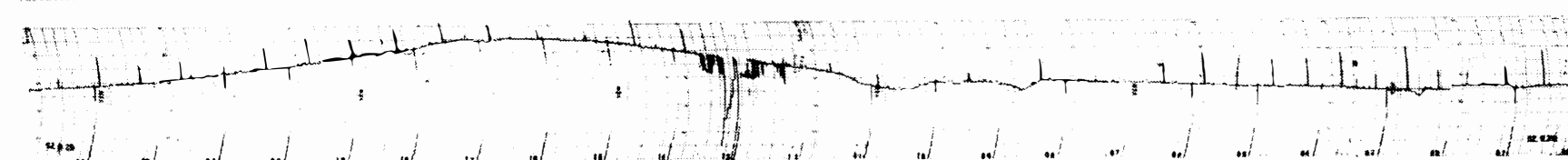
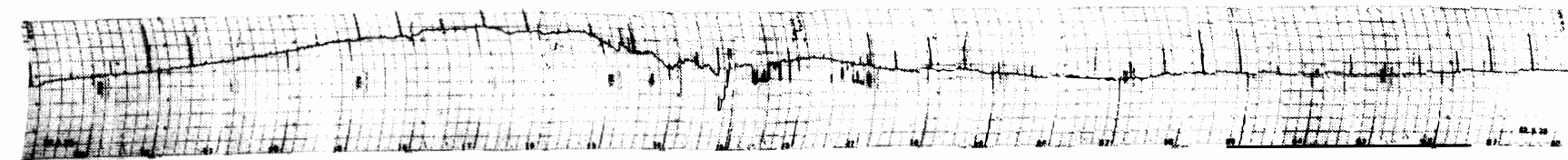
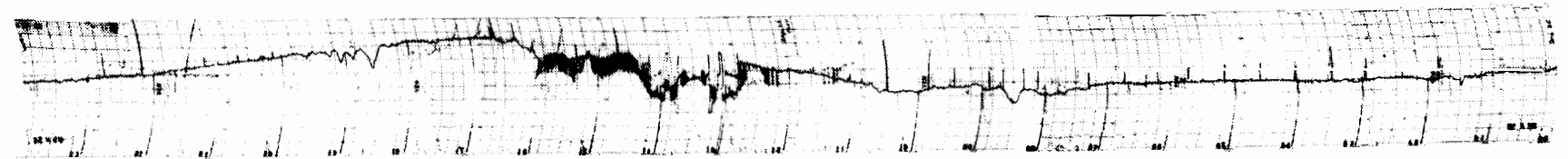
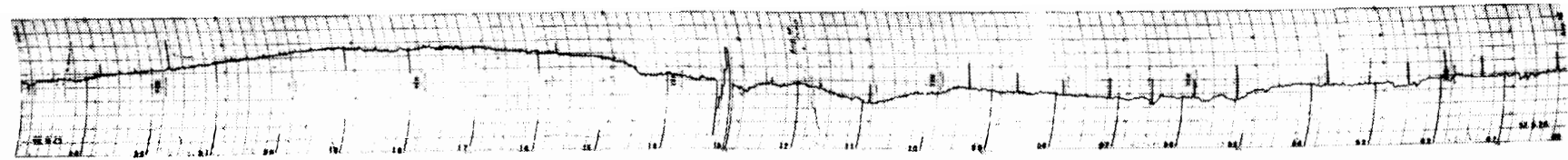
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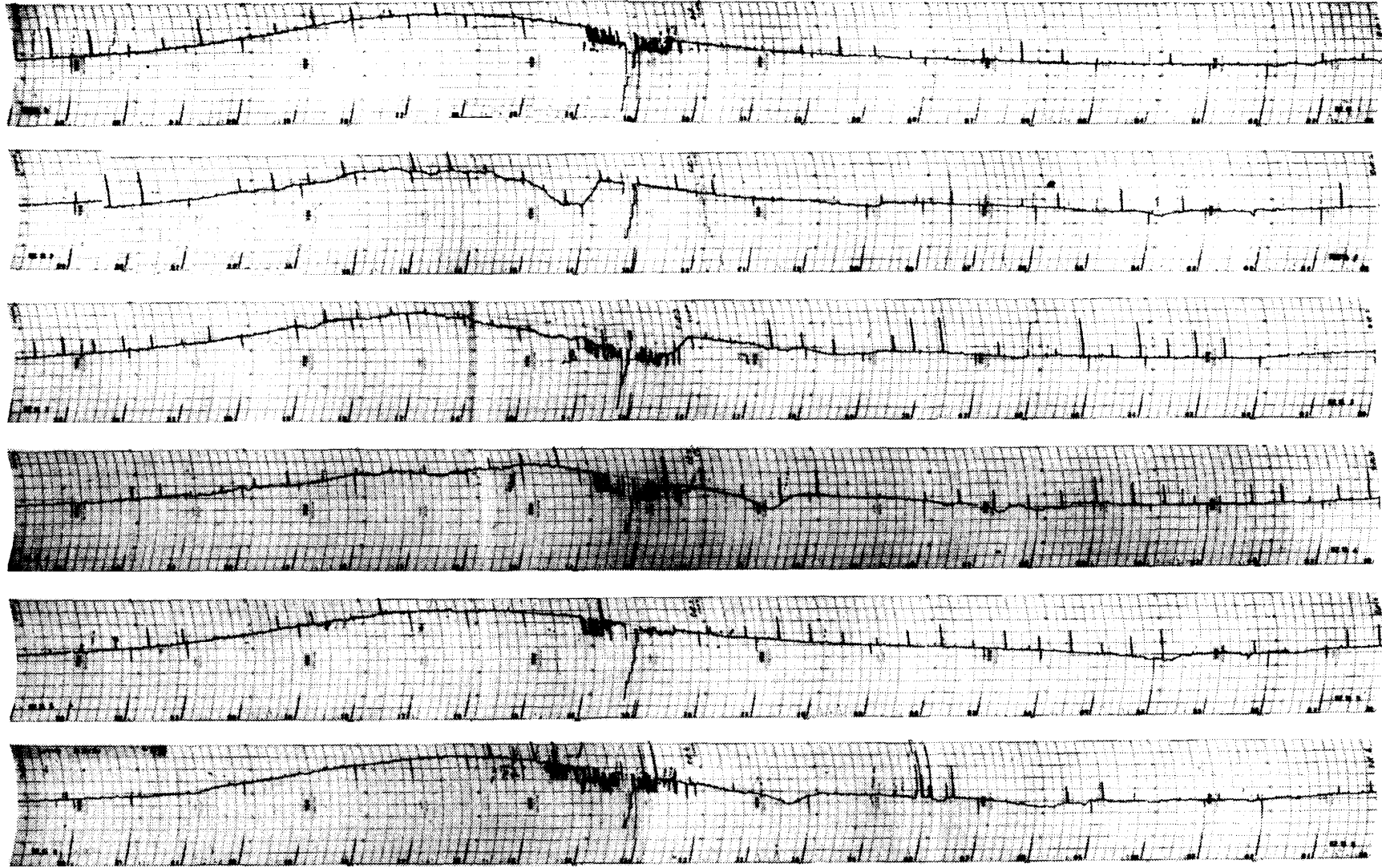
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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

OCT 1977

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24            20            16            12            08            04            00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

OCT 1977

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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

OCT 1977

13

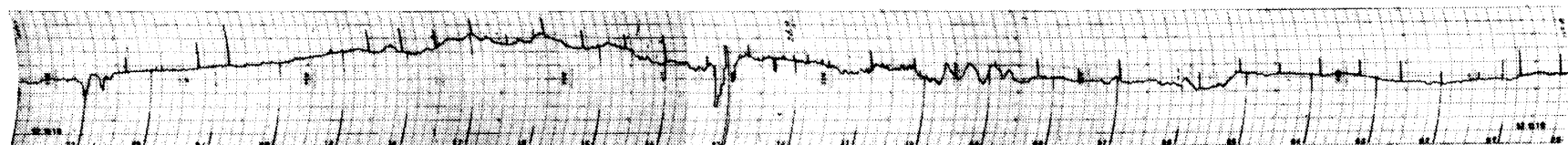
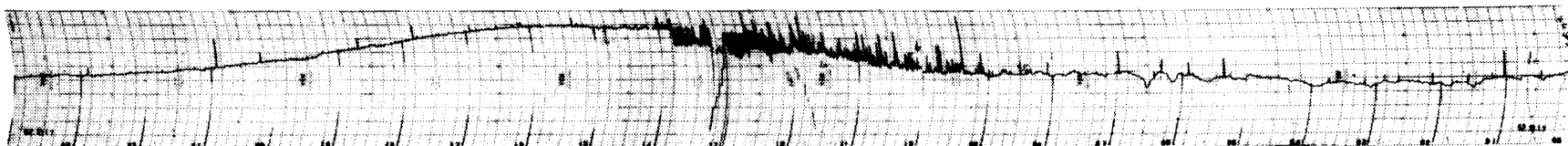
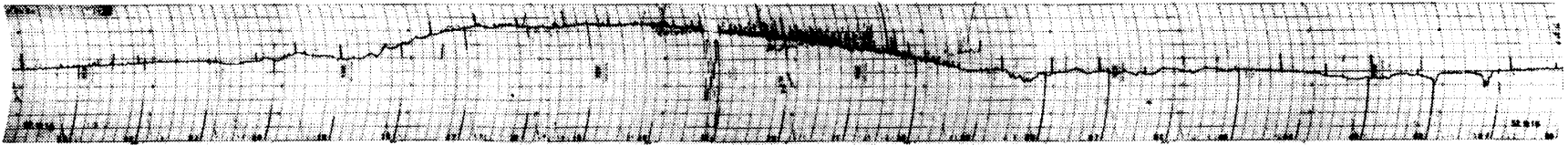
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24                    20                    16                    12                    08                    04                    00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

OCT 1977

19

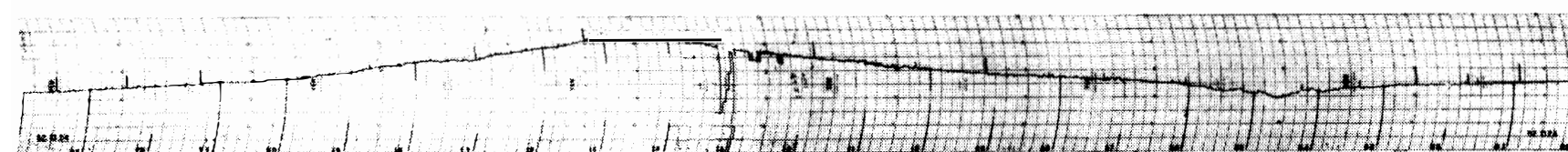
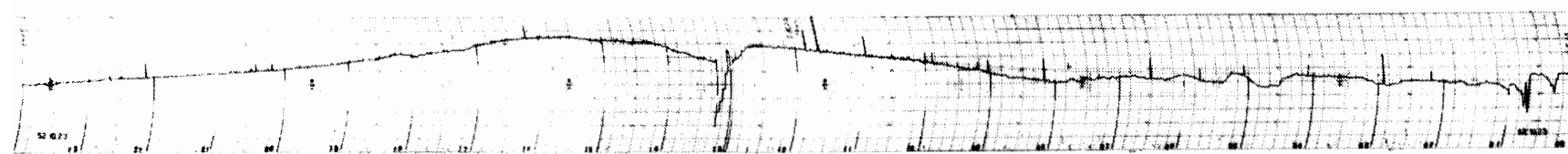
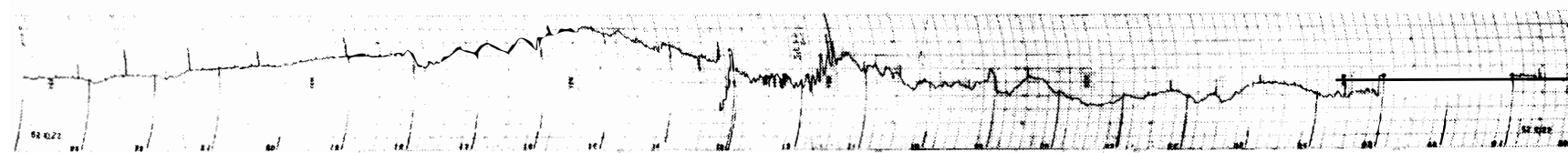
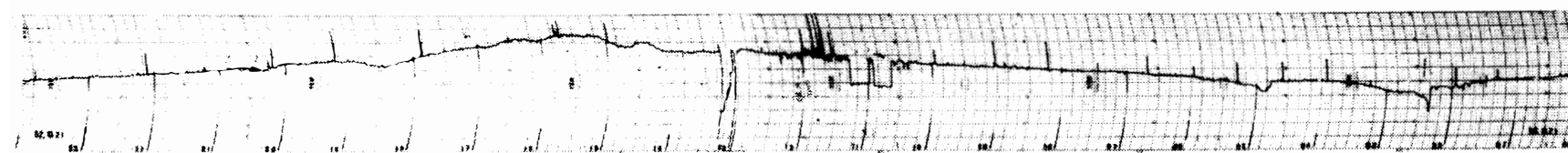
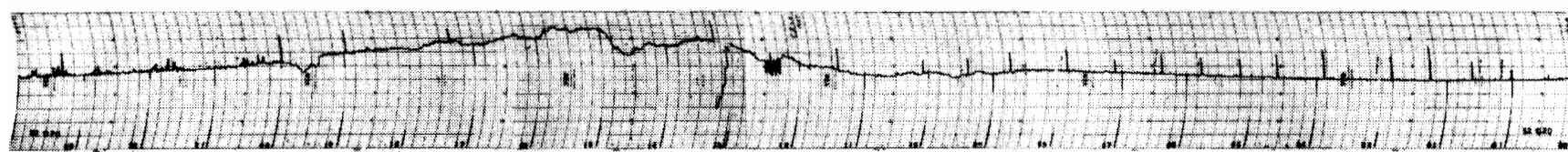
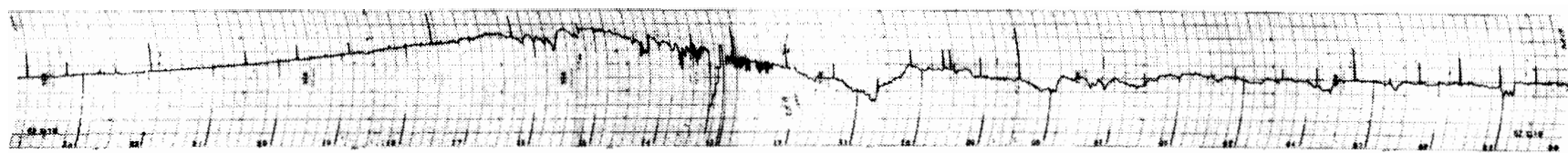
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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

OCT 1977

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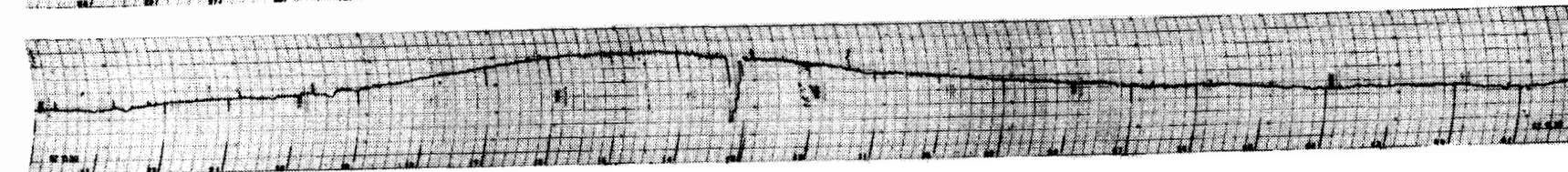
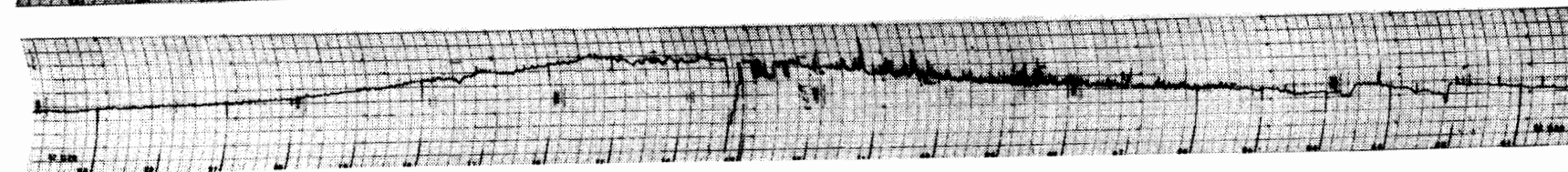
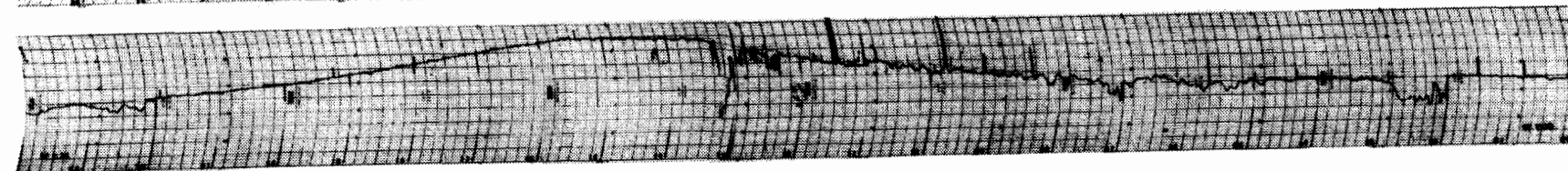
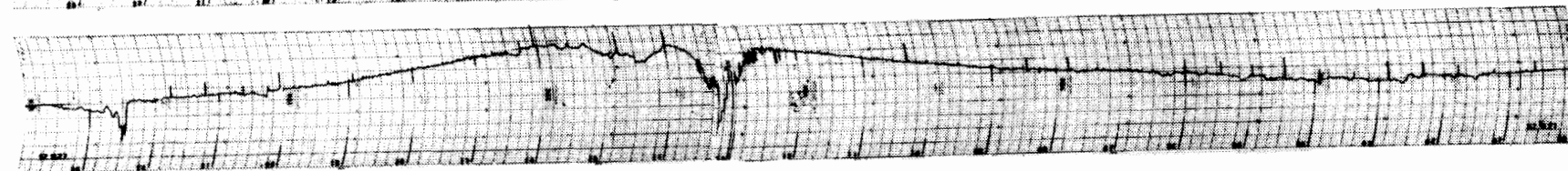
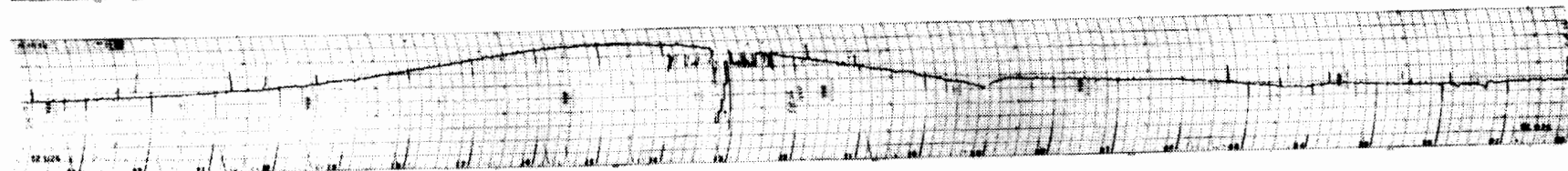
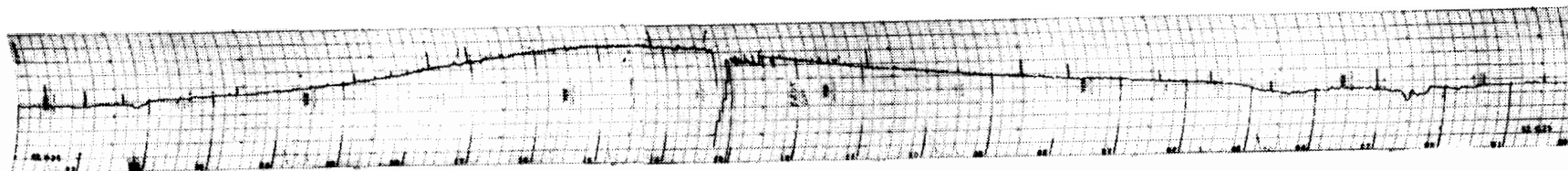
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24                    20                    16                    12                    08                    04                    00

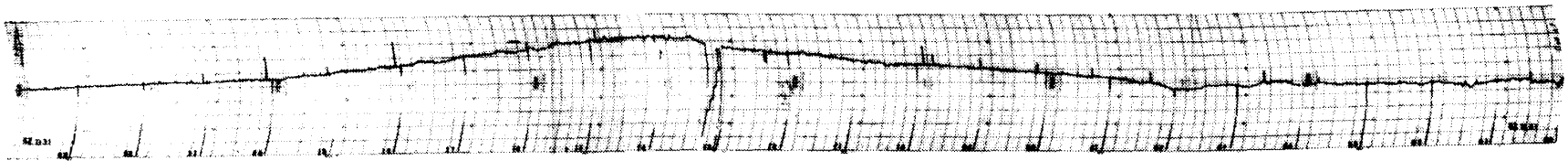
45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

— 70 —

OCT 1977

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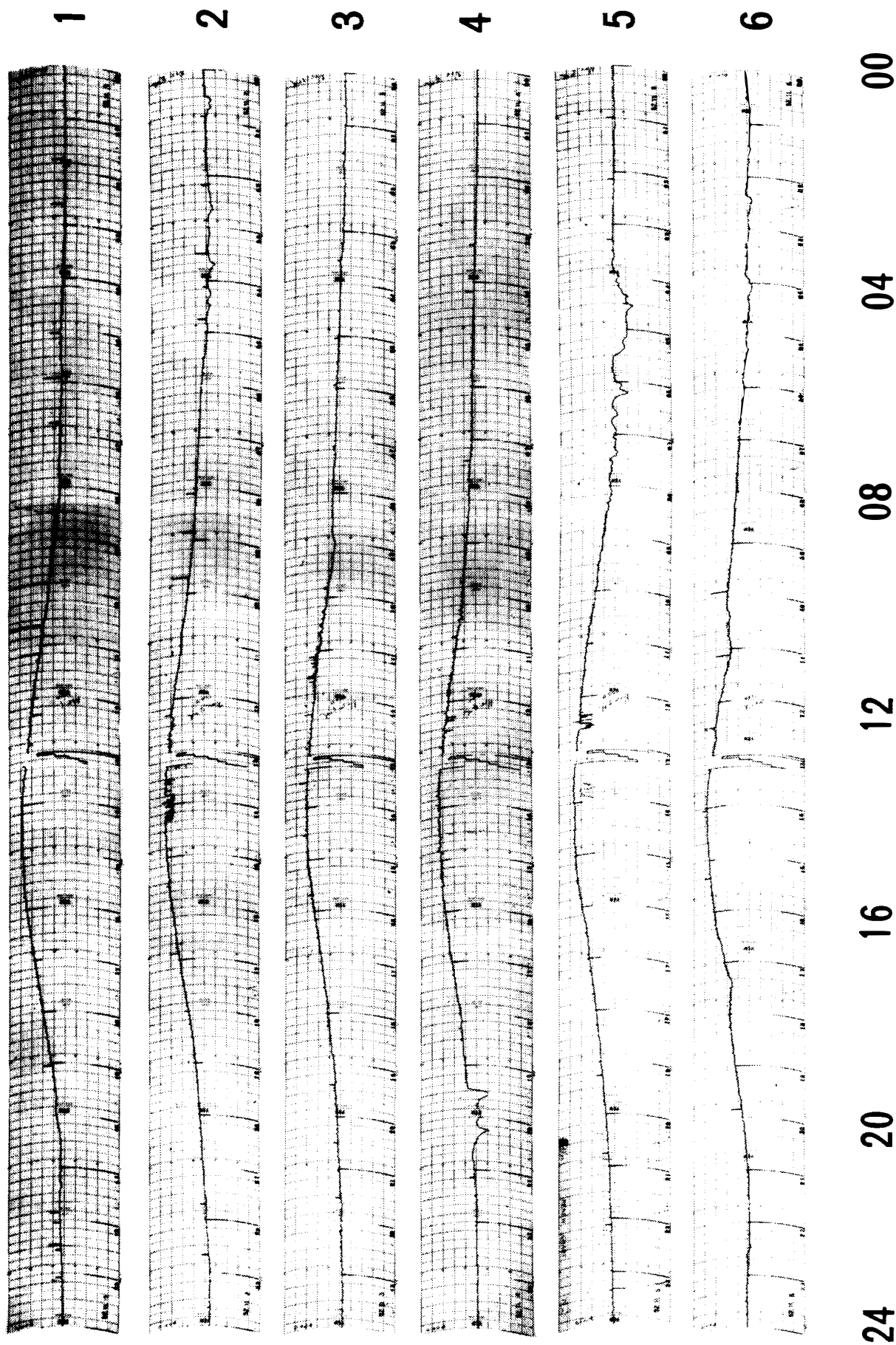


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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

NOV 1977

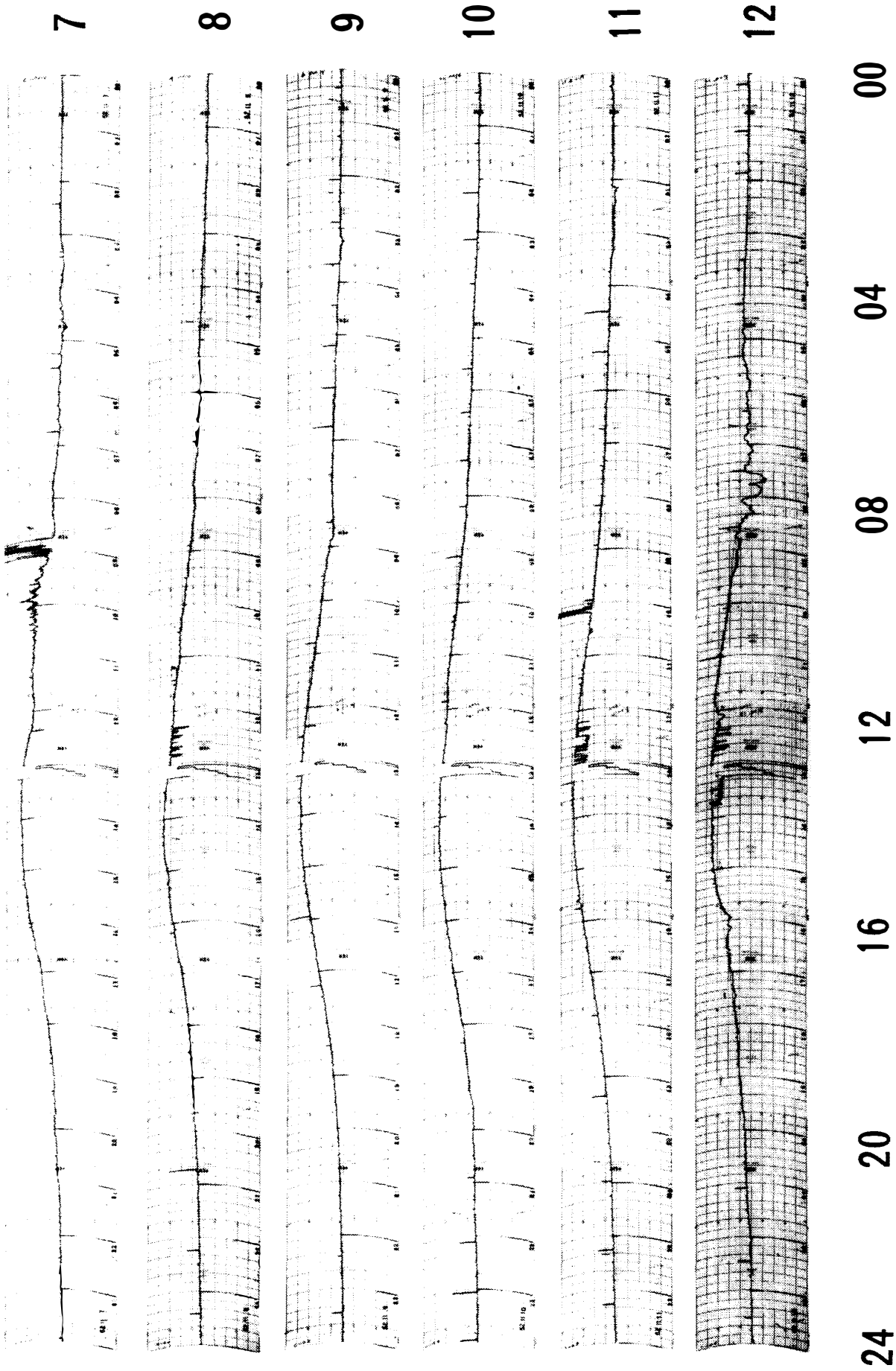


30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS



NOV 1977



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

NOV 1977

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24      20      16      12      08      04      00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

NOV 1977

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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

NOV 1977

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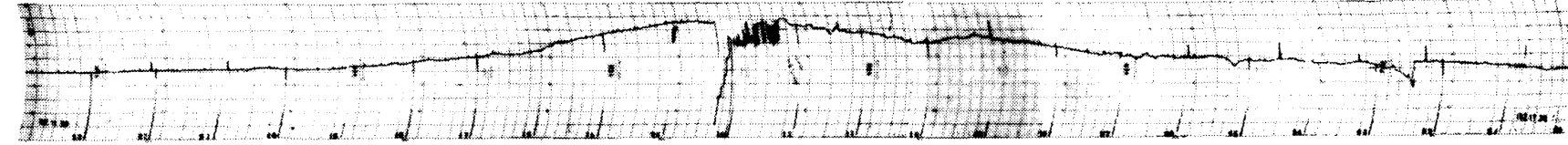
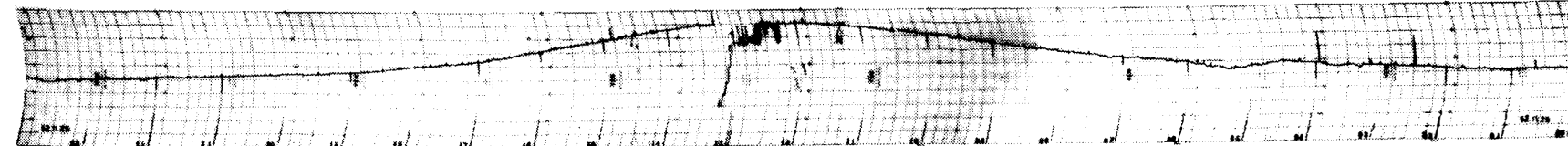
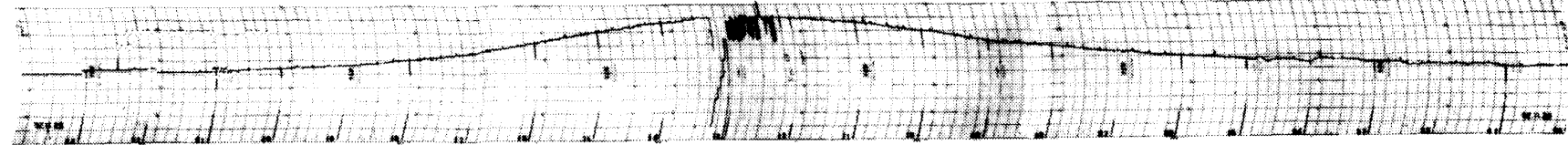
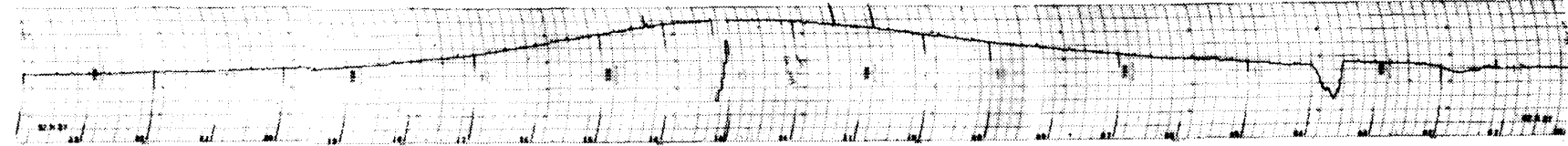
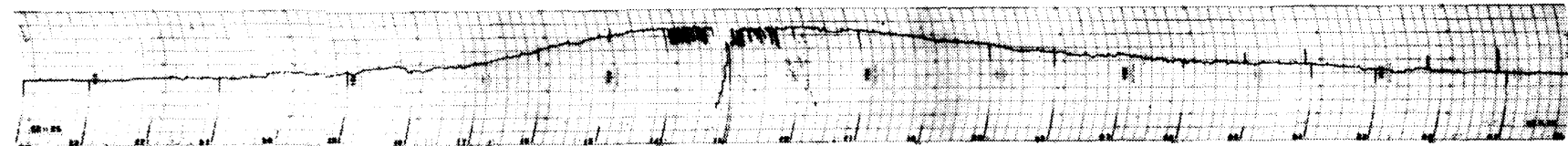
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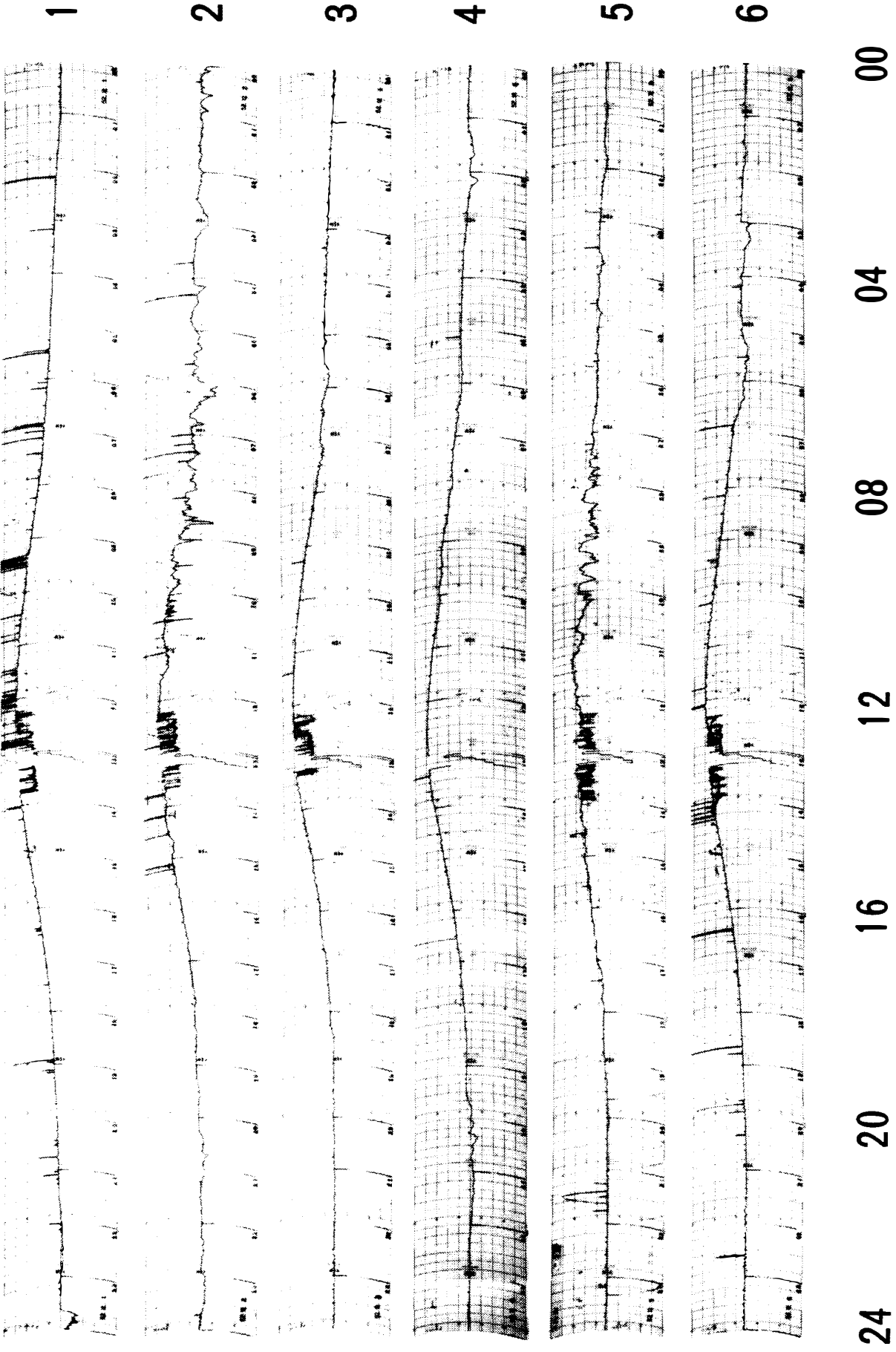


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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

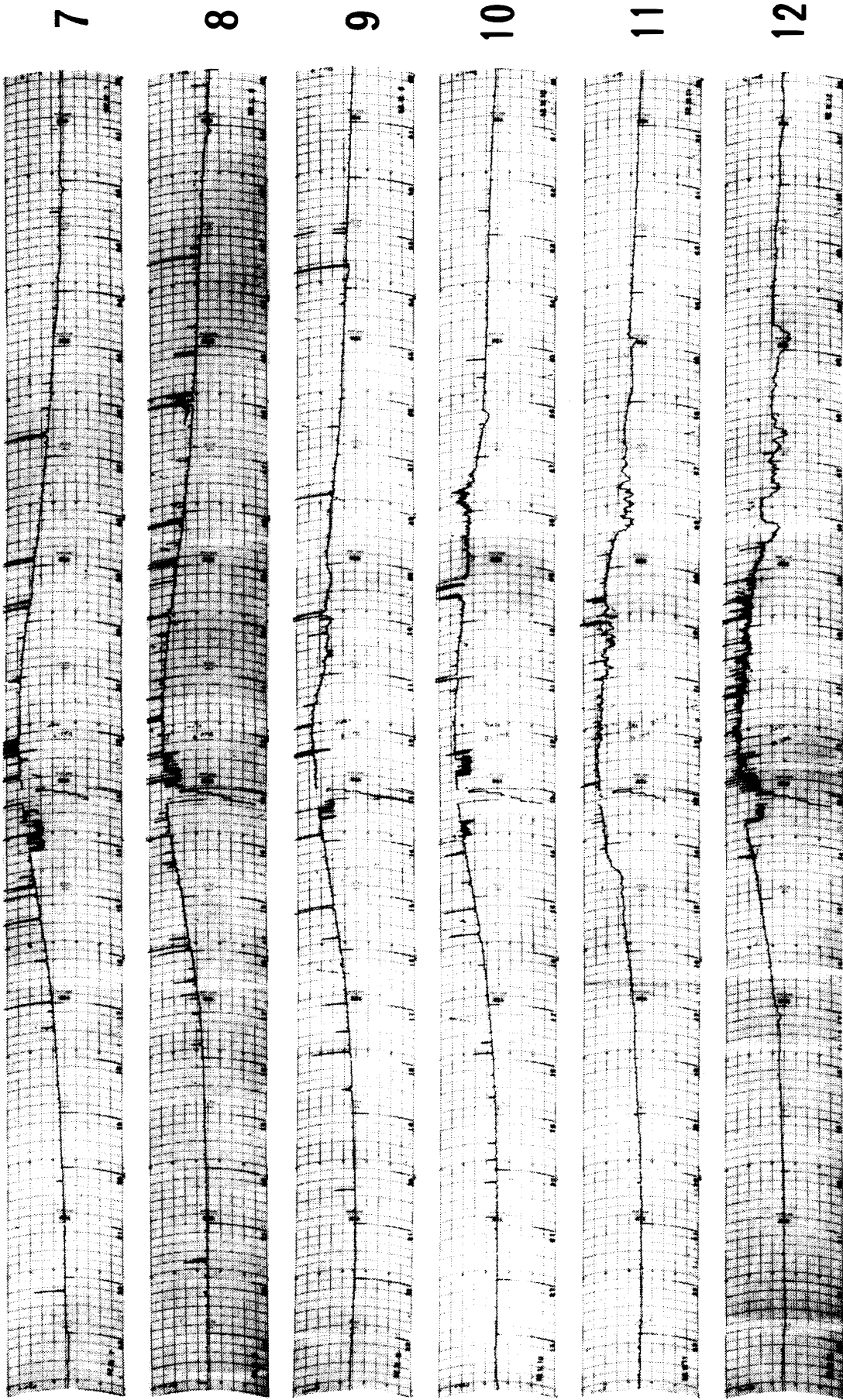
DEC 1977



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

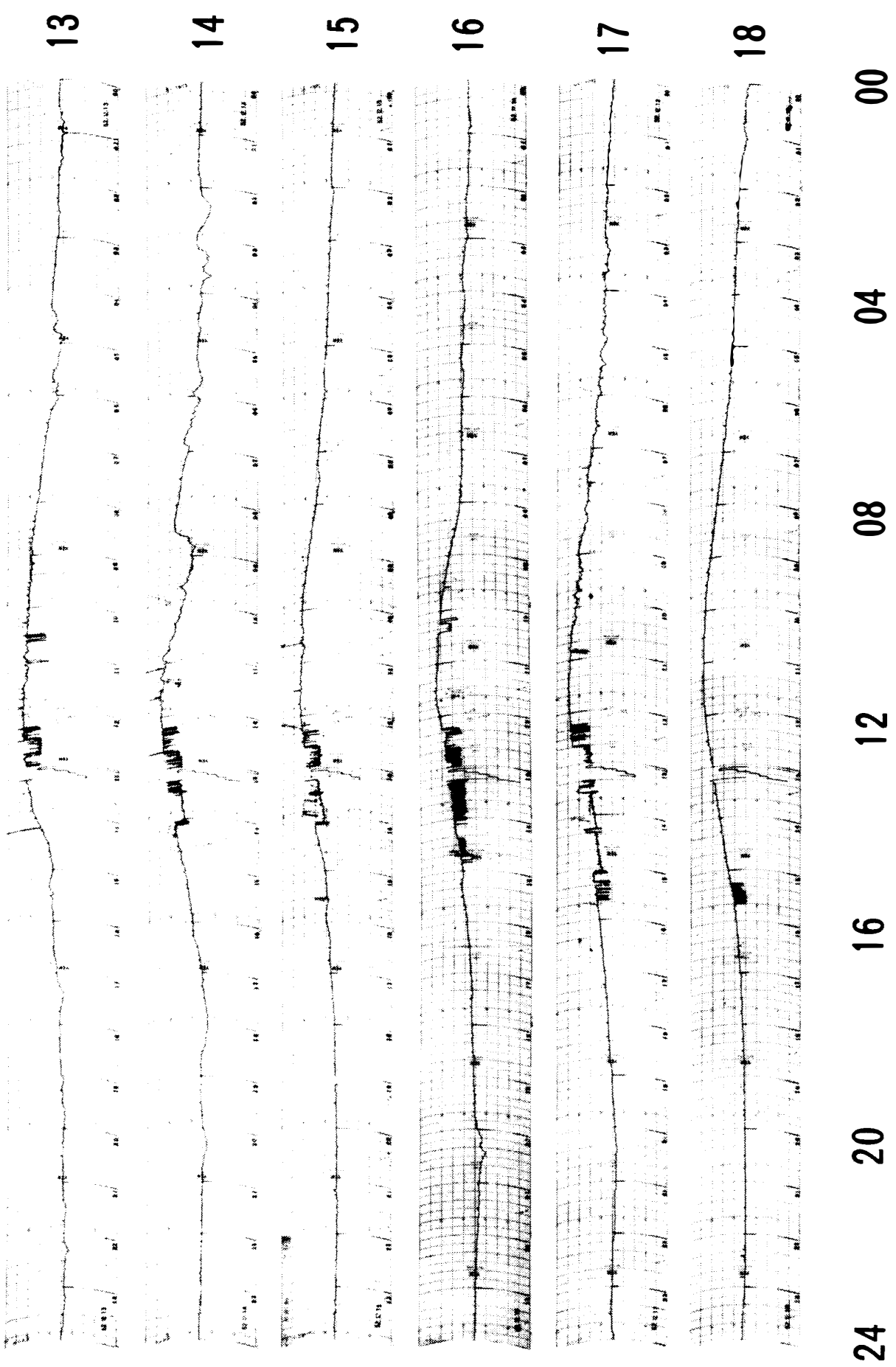
DEC 1977



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

DEC 1977



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

DEC 1977

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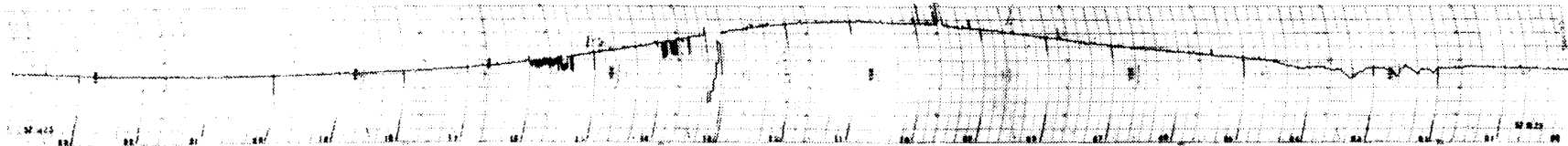
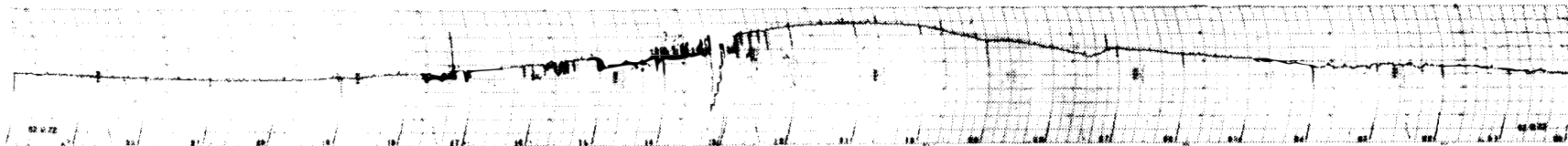
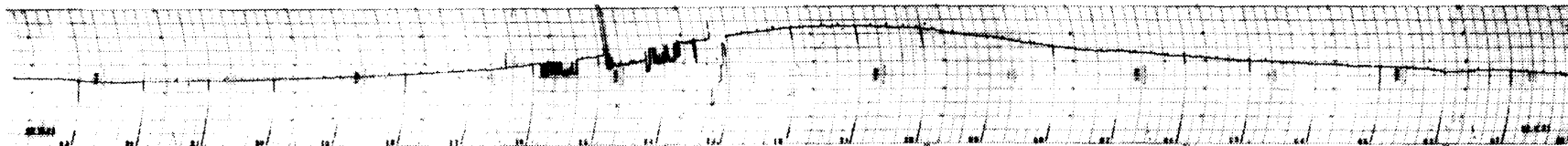
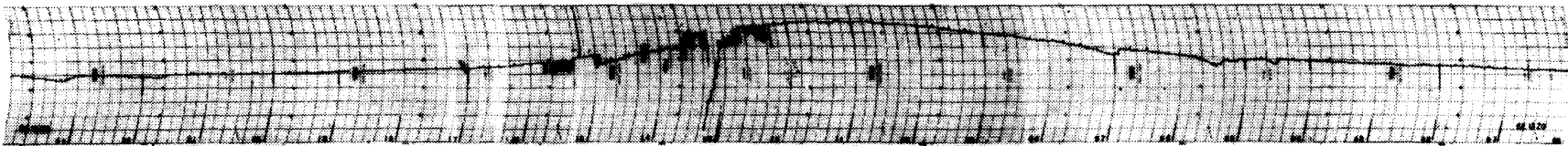
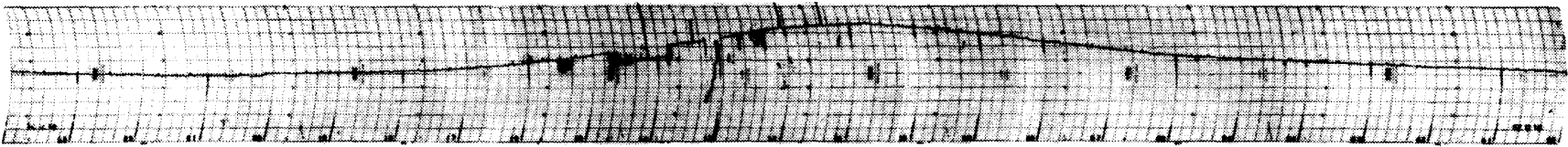
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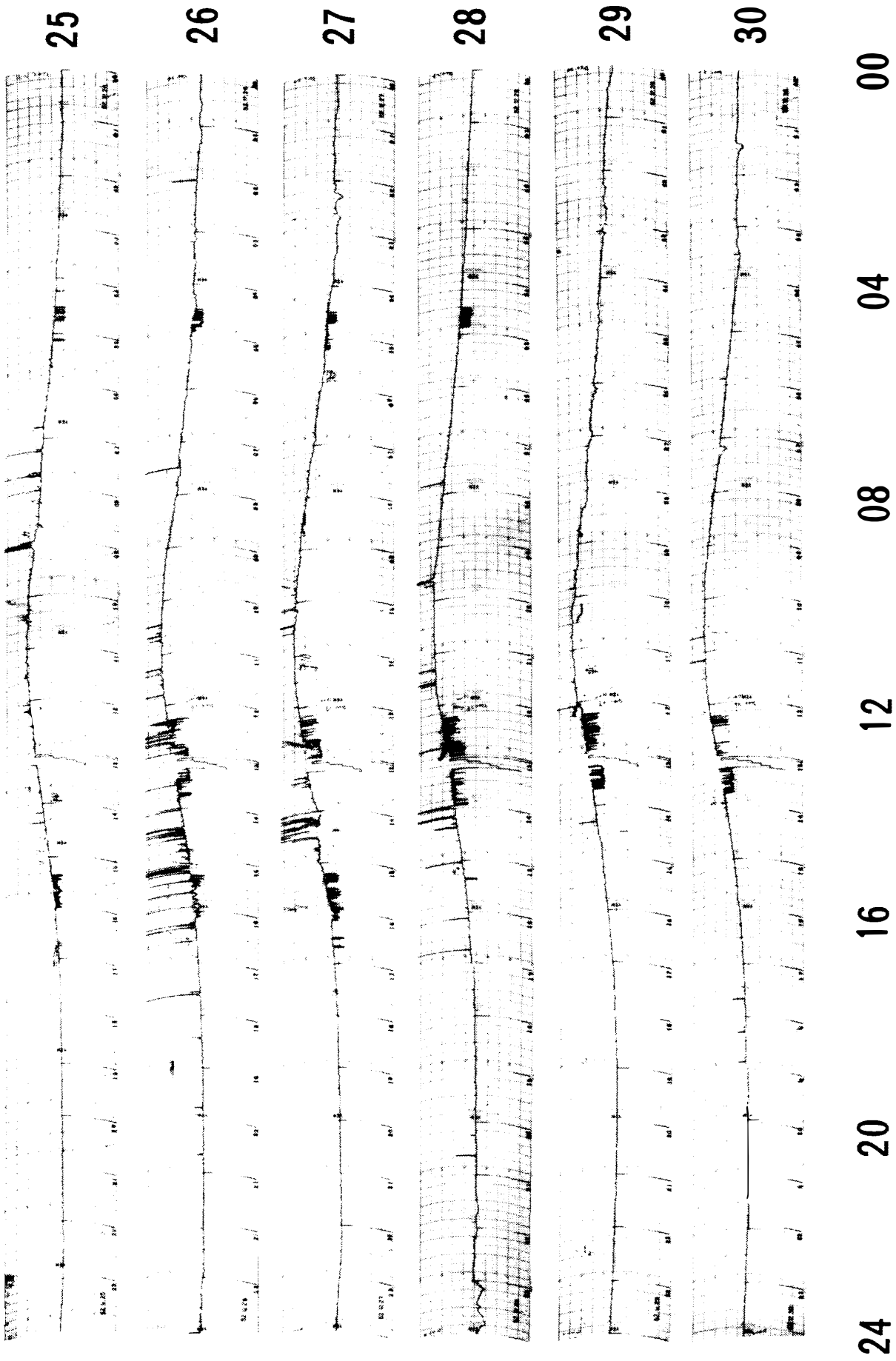
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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE



DEC 1977

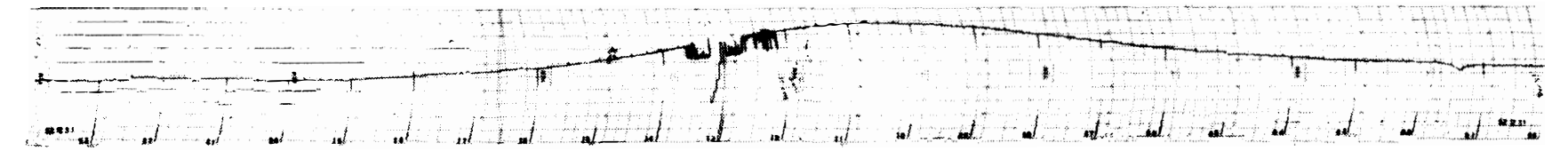


30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

DEC 1977

31



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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

November 22 1300 – 1338 failure of equipment