

RIOMETER RECORDS OF 30 MHz COSMIC NOISE

AT SYOWA STATION, ANTARCTICA IN 1979

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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, 1979. 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

Seishin OJIMA (Radio Research Laboratories)

Noriaki KOMIYA (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, and 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 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 the passage of the radio source across the zenith. 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 on 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 dB) of cosmic noise intensity from its monthly reference level. The reference level is calculated from selected quiet diurnal variations in the month.

Bibliography relevant to
riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica.

Observing period	Observers	Literature		
		JARE Data Report		
		Volume	Pages	Year
Feb. 1967 - Feb. 1968	Ose, M. Nishimuta, I.	2 (Ionosphere 1)	62	1968
Feb. 1968 - Jan. 1969	Ishizawa, K.	7 (Ionosphere 3)	65	1970
1969	Ota, Y.	8 (Ionosphere 4)	74	1970
1970	Shiro, I. Sakamoto, T.	14 (Ionosphere 5)	62	1971
1971	Ogata, T. Ose, M.	18 (Ionosphere 7)	62	1972
1972	Isozaki, S. Miyazaki, S.	20 (Ionosphere 8)	76	1973
1973	Nishimuta, I. Yabuuma, H.	24 (Ionosphere 11)	74	1974
1974	Yamazaki, I. Shiro, I.	29 (Ionosphere 13)	84	1975
1975	Sugiuchi, H. Komiya, N.	35 (Ionosphere 15)	84	1976
1976	Ose, M. Yamakoshi, A. Sasaki, T.	41 (Ionosphere 17)	87	1977
1977	Ose, M. Nishiyama, N. Sakamoto, J.	46 (Ionosphere 19)	82	1978
1978	Ose, M. Igarashi, K. Tsuzurahara, S.	51 (Ionosphere 20)	86	1979

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 1979

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		0.7		0.3	0.1	0.5			0.4															
2			0.5	0.1	0.4	0.2																		
3			0.3	0.2																				0.7
4					0.2	0.8	0.3	0.2	0.6	0.2		0.2	0.8	0.7	0.6	1.0	0.2	0.2						0.4
5	0.3		0.8		0.6						0.3	0.4		1.1	0.2		0.3	0.1			0.4		1.0	
6																		0.1						
7		0.2	0.2	0.4	0.2	0.3	0.3										0.9	0.6	0.4					
8	0.1	0.3	0.2												0.2								1.4	0.4
9				0.5	0.2																			
10						0.2	0.3	0.1																
11				0.2		0.1																		
12							0.1	0.2																
13		0.1	0.3	2.2													0.2							
14								0.2	0.3								0.2							
15																	0.6	0.6	0.1					0.5
16	0.6			0.2	0.1			0.1	0.3					0.1							S	S		
17																								
18	0.2			0.7	0.2	0.1																		
19		0.2		0.2	0.4	0.4			0.1									0.3		0.5	0.2			
20				0.5	0.4			0.1			0.1			0.3	0.3	0.2	0.2	0.1						
21																								
22		0.2				0.1																		
23	0.1			0.4							0.2				0.2	0.3							0.2	
24			1.0	0.2			0.2																2.9	0.1
25			0.1	0.1	0.1		0.1	0.4				0.1	0.5			0.1	0.4	0.3	0.4					
26	0.3	1.0		0.1	0.2				0.1						0.4	0.3	0.9	0.2	0.2	1.1	1.0	0.9	0.5	2.0
27	0.5	0.2	1.2	0.6	0.5	0.2	0.7	0.4			1.3				0.5	0.3	0.1	0.2	0.2					
28		0.5	0.4	0.3	0.2	0.2		0.1	0.1	3.2	2.3	0.8	0.2	0.8	0.1	1.0	1.1	1.1	0.4	0.7	0.8	0.2	1.3	
29	0.9	0.1	0.8	0.1	0.2		0.2	0.2		0.1	0.1				0.1	1.0	1.1	0.5	0.8	0.2				
30			0.6	0.7	1.1	0.1	0.1	0.3		0.2							0.8	0.8	0.8	0.4				
31		0.3	0.3	0.4	0.6	0.4	0.5	0.2			0.1			0.2			0.3	0.2			0.4			0.2
Mean	0.09	0.12	0.21	0.26	0.15	0.13	0.10	0.08	0.06	0.11	0.14	0.07	0.11	0.15	0.12	0.13	0.18	0.16	0.10	0.12	0.07	0.04	0.19	0.18

Open spaces without figures correspond to quiet level

* : Quiet day

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		0.3																				
2						0.5	0.5	0.4		0.5	0.4	0.4	0.5	0.1					0.5	0.6				
3		0.2	0.2				0.2																0.4	0.4
4	0.1	0.2				0.1	0.3								0.4	0.3	0.2			0.2	0.2		0.1	
5		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6				0.1		0.1	0.5	0.1	1.2	0.5									0.3	0.4	0.2	0.2		
7		1.0																						
8		0.1	0.1				0.1																	
9			0.6									0.2												
10	C	C	C	C	C	C	C	C	C	C	C	C												
11				0.1		0.4	0.2		0.1	0.1														
12						0.1	0.3	0.2	0.1	0.4	0.2	0.1	0.5	0.5	0.1	0.5	0.6	0.3	0.2					
* 13																								
* 14						0.2																		
* 15														0.5	0.3									
* 16									0.2	0.2														
* 17																								
* 18							0.1				0.2		S	S	S	S								
* 19	0.4	0.1	0.1	0.1						0.1	0.2										0.1			
* 20					0.2																			
21						0.1		0.6	2.0	0.4	0.2	2.9	0.9											0.1
22						0.3						0.3	0.7	0.9		0.6								
23	0.1						0.2			0.5	0.1		0.2											
24			0.2	0.1	0.2	1.2	0.6	0.3	0.2		0.7	0.1	0.1	1.2	0.6			0.3	0.5					
25	0.8	0.5	0.1	0.3		0.5		0.2	0.3	0.2	S	0.4	1.2	1.0			0.1	0.3	0.3	0.5	0.1			
26		0.4	0.2	0.3	0.4					0.7	0.7			0.3	0.5	0.2	0.4	0.3	0.5					
27	0.6	0.3	0.1	0.1	0.7	0.8	0.3	0.2				0.6	1.2	0.5	0.3	0.4	0.1							
28			0.1	0.1	1.6	0.7	0.1	0.1						0.2										
29																								
30																								
31																								
Mean	0.07	0.11	0.06	0.05	0.11	0.19	0.13	0.08	0.15	0.13	0.10	0.19	0.19	0.19	0.07	0.07	0.06	0.04	0.08	0.06	0.02	0.01	0.01	0.01

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 1979

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	0.1	0.2	0.3		0.1		0.1								0.4							
2				0.1	0.6	0.1	0.1	0.2	0.1	0.1	0.4	0.4						0.2						
3	0.2	0.2	0.1	0.2	0.1		0.1						0.4											
4	0.2				0.7		0.1			0.1			0.1	0.5	0.9	0.7	0.2							
5							0.4	0.1					0.2				0.3							
6				0.1	0.2	0.1	0.1	1.3	0.3	0.2	0.2	0.3	0.7			0.5								
7		0.2	0.1		0.3	0.1	0.2	0.1	0.1	0.2				0.2										
8		0.6		0.1	0.5	0.6													0.4	0.2				
9			0.1	0.2	0.3	0.8	0.2							0.7	1.3	0.5	0.6	0.5						
10	0.1	0.1				0.6	0.2	0.4	0.6	2.0	1.3	0.5		0.6	0.1			0.1		0.2				
11	0.9	0.1	0.1		0.1	0.4					0.3						0.2	0.7	0.6	0.9	0.8	0.1		
12										0.1			0.7	0.2										
13								0.1	0.2															
14													S	S	S	S	S							
15													S	S	S	S								
16				0.1	0.3	0.2	0.2	0.1											S					
17				0.1	0.1						0.1	0.6					0.1				0.2			
18				0.1	0.1	0.1	0.1			0.9			S	S	S									
19											1.7	0.8			0.2		0.9	0.5	0.6	0.1				
20		0.1	0.1							0.5	0.5		S	S	S	S								
21																								
22								0.2	0.4							0.3	1.0	0.1	0.1					
23						0.3	0.5				0.2	0.2												
24				0.2	0.2					0.3	0.4	0.4	0.2	0.3		0.1	0.2				0.2			0.1
25	1.1	0.4	0.4	0.7	0.3	0.1	0.2	0.7	0.4	0.7	1.8	1.0	1.0	0.2	0.1	0.5	0.2							
26		1.5	0.1		0.1	0.4	0.2	0.1	0.5	0.5	0.2	0.2	1.4	2.0	0.8	0.2							0.8	
27		0.1				0.2			0.1		1.3	0.9	0.6			0.2	0.4	0.3					0.4	0.2
28		0.9	0.2	0.2	0.4	0.1	0.4	0.5			0.3	0.7	0.7	0.5	0.2	0.5	0.6	0.2						
29		0.2	0.2	4.4	0.1	0.6	0.9	0.2	0.9	0.9	0.9	0.9	1.7	1.2		0.1		0.6					0.4	0.1
30			0.7		0.6	0.3	0.2	0.3	2.2	1.0	0.2								0.2	0.5	0.2			
31		0.4	0.2		0.5		0.1	0.5					0.4											
Mean	0.08	0.15	0.07	0.21	0.18	0.14	0.12	0.17	0.16	0.24	0.31	0.23	0.26	0.20	0.12	0.14	0.15	0.10	0.06	0.07	0.01	0.02	0.02	0.01

Open spaces without figures correspond to quiet level

* : Quiet day
S : Interference

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

April 1979

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	0.9	0.1				0.3	0.1				0.1	0.3											
2		1.0	0.8	0.1	0.4	2.3	0.1		0.1	0.1	0.1	0.2	0.2	0.4	0.8	0.3	0.2	0.2	0.1					0.2	
3	0.3	0.1	0.1			0.1	0.6	0.2			0.6	1.5	0.8	0.2			0.4	0.3					0.1		
4		0.4	0.1	2.2	0.5	0.2	0.2	1.1	1.0	1.0	1.5	0.4	0.5	1.2	1.0	0.5	0.2	0.3	0.4				0.3	0.2	
5						0.1		0.2	0.6	0.2						0.2								0.1	
6	0.2			0.1																					
7			0.1					0.1	2.4	1.3	0.7	0.5	0.1	0.5									0.7	0.3	
8			0.2	0.8		0.1				1.8	0.5	0.2	1.0	0.5	0.5	1.1	0.5								
9	0.6	0.1		0.2	0.3	0.2				0.4	0.4						0.3	0.1	0.1	0.3				0.1	
10				0.1	0.2			0.1									0.2	S	S	S					
11											S	S	S	S	S	S	S	S	S	S					
12																						C	C	C	
13	0.1		0.7	0.4									0.2	0.4	0.5	0.2	0.5	0.2	S	S		0.1			
14		0.1	0.1	0.1			0.2	0.3			0.3	0.2				0.2	0.2	0.2							
15		0.2	1.2	0.3	0.4	0.1	0.6								0.2	0.5	0.8	0.4	0.9	0.3	0.2				
16		0.1		0.1	0.1	0.1	2.7	1.1	0.3	0.2	0.8	1.2	1.0	0.8	0.2	0.1					0.3	0.4			
17	0.2			0.2	0.2					0.1	2.4	0.6	0.2												
18	0.4	0.1	0.7	0.2	0.1				0.7	0.1					1.4	1.2	1.0	1.2	1.0	0.6	0.3	0.1	0.2	0.1	0.3
19			0.1						0.4	0.7	0.3	0.3													
20															0.2							0.1			
21		0.2								0.5	0.3	0.4				0.2	0.3	0.2	0.5						
22	0.1	0.2	0.2	0.2	0.4	0.2				0.1	0.3	0.3	0.5	0.2	0.1	0.5	1.1	0.2	0.1				0.2	0.4	
23	0.1		0.1	0.2	0.1			0.5	0.2	1.0	0.4	1.0	0.6			1.0	0.2	0.2	0.2						
24	0.1	0.1	0.3		0.7	0.1	0.5	0.3	1.7	1.1	1.6	3.0	1.5	0.8	0.1	1.0	1.7	0.7			0.4				
25	0.4	0.1	0.1	0.9	1.1	0.1	0.2			0.4	1.4	0.3	0.2	0.2										0.1	
26	1.3	0.3		3.1	0.1	0.3	0.1				0.1			0.2											
27		0.1		0.7		0.4	1.5	1.0		1.3	1.1	0.5	0.4	0.6	1.0	0.6	0.2								
28	0.1	0.1	0.1	0.3	0.6	0.6	0.3		0.5	2.5	3.2	0.2	1.1	0.9	1.3	0.5	0.5	0.2	0.3			0.1			
29	0.5	0.2	0.3		0.2	0.4	0.2	0.5	1.6	1.2	3.6	3.5	0.8	1.2	3.2	0.5	0.1	0.1					0.1	0.3	
30	0.1	0.4	0.3	2.0	3.5	0.1	0.2	0.2	0.1	1.6	1.9	1.0	1.1	1.5	2.4	1.8	0.5			1.7	0.5		0.1	0.8	
31																									
Mean	0.15	0.13	0.21	0.40	0.29	0.18	0.24	0.18	0.31	0.42	0.71	0.59	0.34	0.41	0.43	0.40	0.34	0.16	0.07	0.09	0.03	0.05	0.03	0.08	

Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure of equipment

S : Interference

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	0.2	0.5	1.6	0.5	0.5	0.1	0.5	1.0		1.2	1.0	1.5	1.6	1.5	1.1	0.8	0.1				0.1	
2	0.1	0.4	0.4	0.1			0.4	0.9		0.5	2.7	2.5	1.4	0.5	0.5	0.3	0.9	0.4						0.2
3	0.1			0.1			0.6	0.1										S	S	0.2				
4				0.2								S	S	S	S	S	S							0.1
5	0.2			1.4	0.1		0.1		0.4		0.1					0.7	0.7	0.5	0.6	0.5	0.3	0.1		
* 6											0.2	0.4												
* 7					0.1									1.6	1.4	0.5	0.9	0.7	0.6	0.5				
* 8	0.2											0.7	0.4											
* 9	0.2	0.6	0.1	0.3	0.2						0.2		0.5	0.6	0.5		0.1				0.2			
					0.2				0.4		0.2	0.8	0.5	0.4	0.6	0.5	0.5							
* 12		0.1	0.4	0.3			0.4		0.2	1.5	1.3	0.2		0.3				0.1	0.2					
* 13									0.2	0.2	0.4													
* 14									0.9	1.9	0.5	0.2												
15									0.2	0.2	0.4			0.5	0.6	0.7	0.2	0.1						
16						0.2	0.5	0.3			1.2	0.3	0.1											
* 17					0.1						0.3	0.6	0.1											
18																								
19	0.1	0.1	0.1	0.1	0.9	0.5	0.7	0.5	0.2	0.7	0.7	0.8	0.6		1.7	1.3	0.7	0.1						
20		0.9		1.7	0.6	0.2	0.7	0.5	0.3	0.5	1.5	2.6	1.3	1.0	0.1			0.5					0.1	0.3
21	0.2	0.2											1.1	1.3	0.2								0.1	0.2
22							0.7			0.1	1.0	0.9	0.3	0.1	0.5	0.1	0.5		0.1			0.2	0.2	0.1
23		0.8	0.5	0.3		0.3	0.5	0.1	0.1	1.2	0.7	0.2	0.4											0.1
24	0.3	0.1		0.1		0.3		0.4	0.3	0.4	1.0	1.0	3.1	0.5	2.9	2.3	0.2	0.1	0.7					0.1
25	0.3	0.1	0.5	0.3	0.1			2.1	4.2	3.3	0.3	0.8	1.4	0.7	0.2	1.5	0.3							1.6
26	0.4	0.2	0.3	1.6		0.5	0.1		1.0	1.7	3.7	2.0	1.9	0.8	1.0	0.2								0.8
27			0.4	0.2	0.2	0.7	3.5	2.8	4.2	1.6	0.9	2.8	2.4	1.0	3.5	2.2	1.3	0.7						
28			0.1	0.1	0.6	0.5	0.2			0.9	0.7	0.2						0.4						
29	0.1		0.3	0.7	0.4				0.5	0.2						0.5	2.2	1.2	1.0	0.5	0.3	0.1	0.1	0.1
30	0.5		0.1			0.3			0.2	0.3						0.3			0.1	0.2				
* 31																								
Mean	0.08	0.11	0.10	0.25	0.16	0.13	0.28	0.25	0.43	0.52	0.57	0.57	0.53	0.34	0.51	0.40	0.30	0.18	0.10	0.05	0.01	0.01	0.01	0.11

Open spaces without figures correspond to quiet level

* : Quiet day

S : Interference

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												0.9	0.5	0.1										
* 2	0.2	0.1		0.1					1.0															
* 3		0.1																						
* 4					0.1																			
* 5																								
* 6								0.2																0.3
7	0.3	0.1	0.4	1.5	2.1	2.0	1.9	1.3	2.3	2.2	2.3	>2.3	>2.3	>2.2	>2.2	2.4	0.2	0.2				0.1		
8	0.1		0.4		0.5	0.9	1.2	0.2	0.1	0.1	>3.0	2.4	1.9	2.2	0.7	0.5	0.1							
9			0.2		0.1	0.2		0.1	0.7		0.5			1.0	>3.2	1.9	0.7	0.2			0.1			
10		0.2				0.2	1.0	0.8	1.3	0.1	1.3	>3.3	2.4	2.0	>3.6	2.6	1.6	0.1	0.5	0.3	0.5			
11				0.2			0.4	1.0	0.3			1.7	1.3	0.6	0.3		0.5	0.2	0.4	0.3		0.1		
12						0.3	0.1	0.1		1.2	0.6	0.6												
* 13																			0.3		0.1	0.1		
* 14							0.8	0.2				0.6	0.3											
* 15								0.2																
16	0.1	0.1	0.2		0.1	0.6	0.5		1.0	0.8	1.1	1.1	2.0	1.0	-0.1	0.1					0.4			
* 17	0.2	0.1						0.2	0.5	0.5	0.3		1.4	0.5	0.4	1.0	1.4							
* 18																								
* 19						0.3	0.3		0.4		0.5	0.5	0.5	0.5		0.4								0.1
* 20					0.3	0.1																		0.1
21									0.2	0.2	0.1	0.5	0.4	0.1	0.2		0.1	0.5					0.1	0.1
22	0.1				1.0					0.1	0.5	>3.0	2.9	0.9	0.4	0.2	0.3							
23						0.3	1.0	0.3	0.1	0.2	1.6	1.3	0.2	1.0	0.7	0.5	0.2	0.5			0.2			
24	0.2		0.4	0.4	0.5	0.9	0.7	2.0	0.3	0.7	0.2	>3.0	3.2	1.2		0.3	0.6	0.2	0.2	0.3	0.1			
25			0.1						0.5	1.2	1.1	0.2	0.2		0.7	1.8	0.7	0.1	0.1	0.3				
26							0.4	0.7		0.3	1.0	1.3	0.9	0.2	0.2	1.9	1.1	0.3				0.1	0.1	
* 27	0.1	0.1	0.1	0.1	0.1				0.1	0.4	0.5	1.4	0.9	1.3	0.9	0.7								
* 28																		0.1						
* 29																								
* 30		0.3								1.0														
31																								
Mean	0.04	0.03	0.06	0.07	0.16	0.19	0.27	0.24	0.29	0.30	0.48	0.80	0.71	0.49	0.45	0.47	0.25	0.08	0.05	0.06	0.02	0.01	0.01	0.02

Open spaces without figures correspond to quiet level

* : Quiet day

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

July 1979

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														
* 2						0.3													0.2	0.1				
* 3																								
* 4	0.1	1.8	0.1			0.2		0.1	0.5	0.3	2.0	0.6	1.6	1.0	0.7	0.2		0.2	0.3		0.1			
* 5															0.5	0.3	0.4	0.1		0.2	0.1			
6				0.1							0.3	0.6	0.2	0.2	0.4									
7	0.1								0.6	0.1		0.6	0.2	0.2	0.4		0.9	0.4		0.1	0.1			0.2
8				0.5	0.1			0.1		0.2	0.3	1.0	1.1	0.5	0.1	0.2	0.3		0.2	0.2	0.3			
9		0.1							0.4		0.3	1.0	0.9	1.4	1.0	1.3	0.5	0.2						
10								0.2						0.3								0.1	0.3	
11												0.3		0.4	0.2									
* 12																								
* 13	0.2	0.1	0.2		0.3			0.2		0.7	0.2	0.4			0.2	0.1	0.3					0.3		
14																						0.2		
15	0.1	0.2	0.3	1.3	1.1	1.0		1.2	0.3	0.2	0.8	0.7	0.5	0.7	0.7	1.4	0.9					0.2		0.1
16	0.1		0.2	0.3	0.1	2.3	1.4	0.1				1.5	0.9	0.7		0.1	0.1	0.1						0.2
17	0.1	0.1	0.2	3.3	0.4	0.8	0.8	0.1	0.8	0.7					0.2	1.3	0.2	0.3		0.2				
18			0.6	0.3	0.2		0.3	0.4	0.8	1.0	1.3	0.9	0.3	0.4		0.7	1.1	0.7	0.3	0.2				
19	0.1	0.2	0.2	2.3	0.5			1.5	0.7	0.2	0.3	0.2	0.3	0.2				0.7						
20		0.1							0.4	0.7				0.8	1.3	2.0				0.2		0.1		
21			0.4	0.4	0.1		0.1	0.2	0.7	0.3	1.0	0.8	0.5	0.1	2.3	1.2								
22		0.1	0.6	0.3	0.5	0.6	0.3		0.7	0.6	0.1		0.7	0.4	0.2	0.1								
23									0.3	0.7	0.1													
* 24				0.1	0.6	0.1	0.5	0.2		0.1	0.4	0.3					0.2							
25																								
* 26																								
* 27			0.1	0.1	0.3				0.1		0.6												0.1	
28						3.1	0.8	0.2																0.1
* 29																			0.1					
30			0.5															0.2	0.1					
* 31																		0.2	0.4					
Mean	0.02	0.08	0.09	0.30	0.13	0.27	0.13	0.14	0.20	0.19	0.24	0.26	0.22	0.22	0.26	0.29	0.16	0.08	0.07	0.02	0.02	0.02	0.01	0.01

Open spaces without figures correspond to quiet level

* : Quiet day

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

August 1979

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				0.2					
2		0.1	0.1	0.1						3.7	2.0	0.4	3.1	4.3	1.9	0.7	0.1				0.2	0.3			
3								1.3	0.2	0.2	0.2	1.0	2.0	0.3	2.4	0.5	0.6	1.0	0.8	0.2	0.2	0.3	0.2		
4			0.3	0.5	0.7	0.9	0.7	1.0	0.5	1.0	0.8	0.1	2.7	1.8	1.3		0.5	0.6	0.1	0.2	0.2		0.2	0.1	
5								0.7	0.6	S	S														
6		0.1	0.1	0.1				0.4	0.5	0.6	3.3	>3.3	0.7	0.6	1.4	0.8	2.2	1.4	0.1						
7					0.1					0.2	0.5	0.4	1.2			1.5	1.0	0.2							
8	0.2	0.3	0.4	0.2						0.8		0.7	0.4	0.2	0.2										
9				0.9						0.4	0.8	0.2	0.1												
10										0.5	0.5							0.3	0.3	0.6	0.7				
* 11		0.1					0.1	0.2										0.2				0.1			
12	0.1	0.4	0.5				0.1			0.4	0.2			0.3	1.8		0.2								
13	0.2	0.2	0.2										0.2	0.3		1.3	0.2				0.2			0.4	
14	0.1		0.3	0.3	0.1				0.2		0.3	0.2													
* 15												0.1	0.1												
* 16											0.7		0.2	0.2											
* 17																									
* 18										0.6					-0.6										
19				0.1	0.1	0.1			0.1	0.5	0.8	0.3	0.5	0.2	0.2	0.2	0.1								
20		0.1	0.2	0.2		0.7	0.3		0.2	1.2	1.0	0.7	0.7			0.3	0.4					0.1		0.1	
21	0.8	0.1			3.2	1.1	0.2		1.5	1.2	1.9	>2.7	3.3	3.2	2.9	2.9	1.9	0.5	0.3		0.1				
22			0.2		0.5	0.2		0.1	0.3	0.8	0.8	0.3	0.6	0.4	0.2	0.3	0.2								
23										0.2	0.4	0.3													
* 24																									
25														0.4		1.2	1.0	0.4	0.5						
26				0.3	0.2	0.1		0.5		0.1	0.5	0.9	0.4	0.2					0.2	0.3					
27	0.1	0.1					0.1	0.3	0.3	0.3	0.1	0.8	0.4	0.7	0.6	0.7	0.7	0.3	0.3		0.2				
28				0.4	0.3	0.3	0.3	0.1	0.1	1.3	0.6		0.2	0.2	1.0	0.4	0.3		S	S					
29		0.1	0.1	0.8	0.3	0.3	0.3	0.3	0.3	0.8	1.4	0.5	0.1	0.5	0.2	0.6	0.3	0.2	0.3	0.2			1.1	2.8	
30			0.1		0.3	0.2				0.5	0.4				0.1	0.1	0.4								
* 31																									
Mean	0.04	0.05	0.08	0.11	0.19	0.12	0.06	0.15	0.18	0.50	0.51	0.40	0.55	0.43	0.49	0.37	0.30	0.16	0.09	0.04	0.08	0.02	0.10	0.02	

Open spaces without figures correspond to quiet level

* : Quiet day

S : Interference

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

September 1979

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	0.1	0.1	0.1																0.2	
* 2			0.1	0.5	0.2	0.2	0.3	0.2	0.2	0.1	0.3	0.7	0.6	0.5	0.1			0.1	1.0	0.3	0.3	0.2	0.1		
3					0.2	0.2	0.3	0.2	0.2	0.1	0.3	0.1	0.7	0.5	0.8	0.5	0.2			0.1					
4							0.1	1.3	0.5	0.2	0.1	0.1	0.2	0.2	0.2	0.2		0.2							
5				0.1																					
* 6		0.1	0.2		0.2	0.7			1.4	1.6	0.7	0.1		0.1		0.1		0.1	0.4			0.4	0.1		
* 7					0.1		0.4																		
8				0.1		0.2	0.4	0.2	0.1	0.2		0.1	1.3	0.9	0.3	0.4	0.1	0.4	0.4	0.1	0.1				
9				0.1		0.2	0.1	0.1		0.1	0.6	0.1						S	0.4	0.5					
10					0.1	0.2	0.1	0.1						0.1											
11			0.2			0.2		0.1		0.1	0.1	0.2	0.2		0.8	1.2	0.9	0.6	0.5						
* 12			0.2	0.2	0.1	0.1																			
* 13				0.2	0.1		0.1	0.1																	
* 14											0.1														0.2
* 15				0.1																					
* 16					0.1																				
17			0.7						0.1	0.1	0.1	0.3	0.1												
18				0.3	0.2			0.1	0.2	0.2	0.1						0.3	0.3	0.8	0.4					
* 19																									
* 20		0.1	0.2	0.3																S	S	0.1			
21					0.8	0.5	0.3	0.6	0.4	0.3	0.3	0.1		0.2		0.1									
22					0.1	0.1			0.2											S	S				
* 23																									
24								0.1	0.1	0.2	0.2						0.3	0.4							
25	0.4	0.2		0.1	0.1	0.1	0.4	0.2	0.2	0.2	0.2														
26	0.1	0.3	0.1	0.2		0.7	0.3	0.2	0.2		0.1	0.3	0.2	0.1		0.3									0.3
27			0.1	0.2	0.3	0.4	0.3		0.3	0.2			0.1	0.2				0.3							
28			0.1			0.3	0.1	0.1	0.2	0.7	0.5		0.1	0.5		0.1	0.2								0.1
29		0.1		0.1	0.1	0.2			0.1	0.1			0.2	0.2	0.1			0.2	0.4	0.1					0.1
30			0.3	0.5	0.1		0.2	1.1	0.9	0.4	0.4	0.6	0.7	0.7	0.3		0.4		0.2						
31																									
Mean	0.01	0.02	0.07	0.10	0.09	0.13	0.10	0.15	0.17	0.16	0.12	0.09	0.14	0.14	0.08	0.10	0.06	0.10	0.12	0.05	0.03	0.01			0.02

Open spaces without figures correspond to quiet level

* : Quiet day

S : Interference

SYOWA STATION

45° EAST MERIDIAN TIME (U.T. + 3 hours)

October 1979

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	0.2	0.5	0.3	0.2	0.1	0.1	0.1	0.2	0.1			0.1			1.0						
2			0.1																S	S			0.1	
3				0.2	0.1		0.2	0.2	0.3	0.1	0.1													
* 4			0.2	0.1	0.3	0.2	0.1						0.3	0.7		0.4	0.5							
5																0.4	0.1							0.1
6	0.1		0.3	0.3			0.1	0.2	0.2	0.3	0.4	0.9	0.5		0.1									0.2
7				0.1			0.1				0.2	0.2	0.2	0.3	0.1									
8							0.3	0.2				0.2	0.7	0.3	0.4	0.2	0.7	0.7						
9		0.2	0.1	0.2	0.4	0.1	0.1			0.1	0.1	1.4	1.2	0.7	0.4	1.2	0.4	0.5						
10		0.3	0.1	0.2	0.1	0.2	0.6	0.1	0.2	0.1	0.1	0.1				0.1	0.1		1.1	0.5		0.2		
* 11				0.1	0.1	0.2																		
* 12																								
* 13				0.2	0.1	0.1		0.1	0.1		0.1			0.3										
* 14		0.1	0.1		0.1																			
15														0.2		0.5		0.3	0.4					
* 16						0.1	0.1	0.2	0.2		0.1	0.1	0.2											
* 17																								
* 18														0.1										
* 19															0.9									
20				0.1						0.1			0.3	0.2		0.2						0.1		
* 21								0.2	0.2															
22		0.1								0.2	0.2	0.2		0.4			0.1							
23					0.1					S	S	S		S										0.1
24										0.3		0.5	0.5	S		0.3		0.1	0.2					
25									0.1	0.1		0.6	0.1	0.1	0.2				0.2					
26						0.1											0.1							
27		0.4							0.1	0.2	0.1													
28								0.2	0.1					0.3		0.2								
* 29																								
* 30				0.1																				
* 31																								
Mean	0.01	0.03	0.03	0.05	0.06	0.03	0.05	0.04	0.05	0.05	0.05	0.13	0.12	0.11	0.07	0.11	0.06	0.08	0.05	0.01	0.01	0.01	0.01	0.01

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)

November 1979

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			0.2	0.2		0.1																0.1
2		0.4	0.4	0.2	0.4	0.2		0.4		0.6	0.3								0.3					
3																							0.1	
4	0.2	0.1	0.1	0.1				0.2							0.1	0.1								
5			0.2	0.2									S	S	S	S	S							
6												0.3												
7																								
8													S	S	S	S								
9										S	S	S	S	S	S	S								
10	0.2																							
11				0.1	0.1	0.1																		
12																	0.2							
13								0.1		0.1			0.3					0.1						
14	0.2	0.2	0.2	0.5	0.1		0.2		0.2			0.2	0.2											
15																								
16					0.2		0.2	0.2	0.3	0.2		0.2	0.3	0.2	0.1	0.1	0.5			0.1				
17	0.1		0.1							0.2	0.1			0.2										
18																								
19																0.1			0.1					
20	0.1	0.1	0.4	0.4		0.1	0.1			0.2														
21		0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1		0.1													
22									0.1															
23									0.1															
24		0.3	0.2	0.1	0.1		0.1	0.1	0.1	0.3	0.2	0.3		0.1			0.1							0.1
25		0.1						0.2	0.1															
26																								
27	0.2	0.2	0.2																					
28																								
29																								
30		0.3		0.1	0.1		0.1						0.5											
31																								
Mean	0.03	0.06	0.06	0.06	0.04	0.02	0.03	0.04	0.03	0.05	0.02	0.04	0.02	0.01	0.01	0.01	0.02	0.01	0.02	0.01	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)

December 1979

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	0.3	0.4		0.6		0.4	0.2	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	0.2	0.2						0.2	0.4	0.2		0.1	0.5	0.3			0.1	0.1	0.2	0.2			
4									0.3	0.3	1.7	1.1	0.1	0.6	0.6	0.9								
5											S	S	0.2											
* 6					0.2			0.2					0.3		0.3									
* 7		0.2																						
* 8			0.2	0.1		0.1	0.2	0.1	0.2		0.1													0.1
* 9		0.1																	0.2					
* 10			0.2				0.1		0.1	0.1														
* 11				0.5	0.1																			
* 12			0.1																					
* 13																								
* 14		0.1	0.1					0.1									0.3							
* 15									0.5	0.1					0.6	0.2								
16		0.2						0.1			0.5													
17		0.2							0.2	0.2	0.1	0.2	0.1										0.1	0.1
* 18		0.2		0.1																				
* 19							0.1	0.1	0.1	0.1													0.2	0.4
* 20																								
* 21																								
* 22							0.3	0.1	0.4	0.4					0.2	0.6		0.2						
* 23	0.1																							
* 24				0.1	0.1			0.4	0.1															
* 25																								
* 26							0.1																	
27	0.3								0.3			0.2	0.3				0.1							
28					0.2	0.3													0.4	0.2				
29		0.3	0.9	0.8	0.1	0.8	0.4	0.1	0.2	0.3	0.9		0.1	0.7	0.9	0.5	0.2							0.3
30	0.3		0.3				0.5	0.1	0.4	0.3	0.2	0.3	1.5	0.8	0.5	0.3	0.5	0.1	0.1	0.1	0.1			
* 31						0.1																		
Mean	0.02	0.04	0.06	0.05	0.03	0.05	0.05	0.06	0.09	0.08	0.11	0.06	0.09	0.08	0.10	0.08	0.03	0.01	0.02	0.01	0.01	C	0.01	0.03

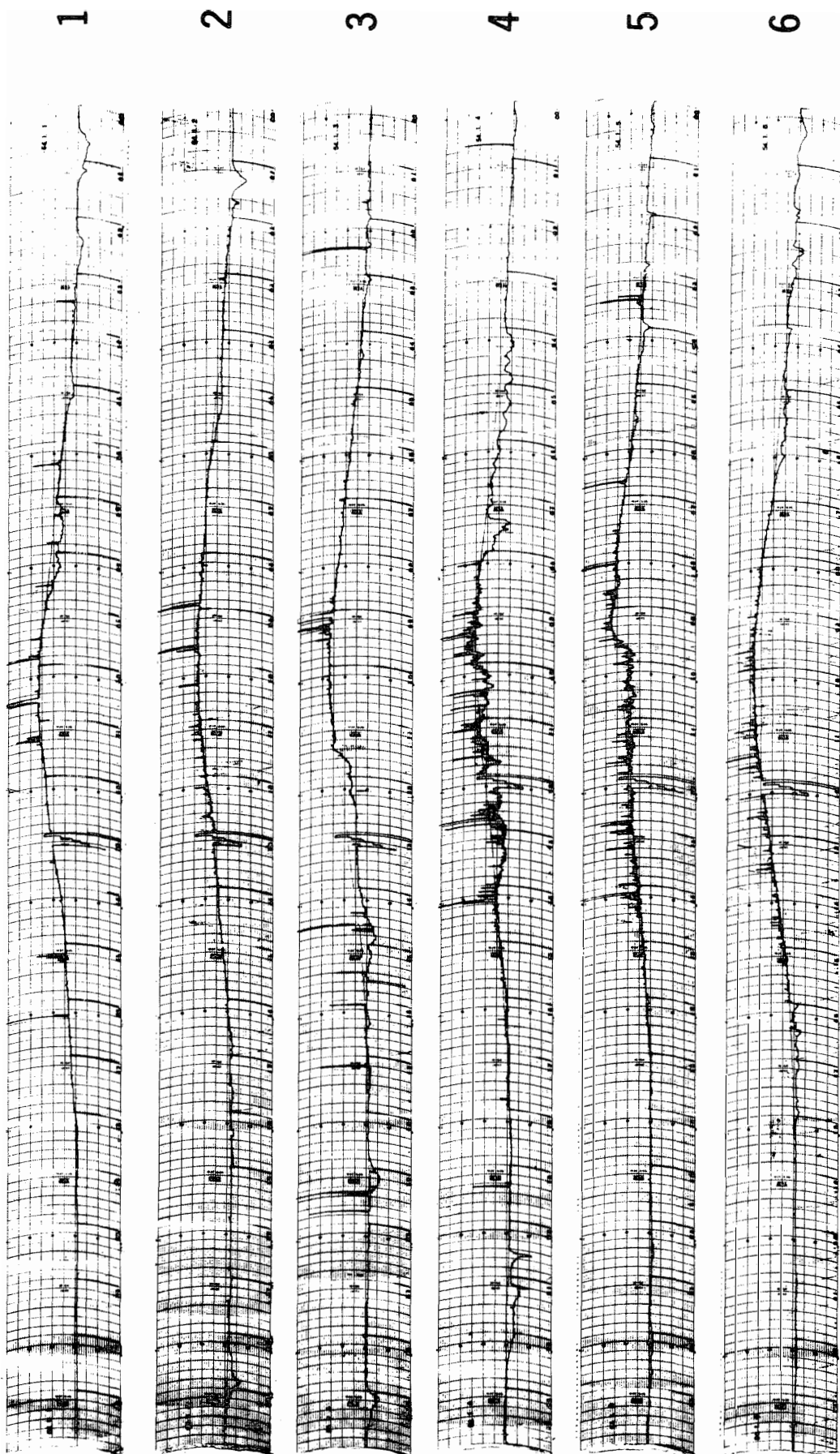
Open spaces without figures correspond to quiet level

* : Quiet day

C : Failure of equipment

S : Interference

JAN 1979



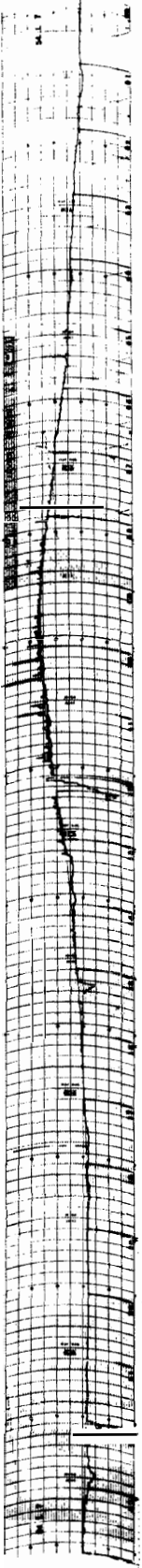
24 20 16 12 08 04 00

30 MHz COSMIC NOISE

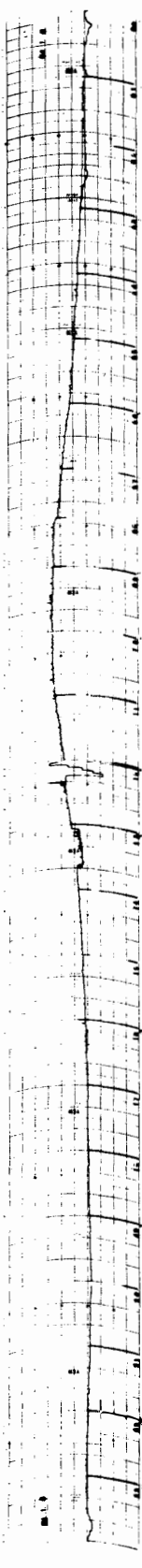
45° EAST MERIDIAN TIME IN HOURS

JAN 1979

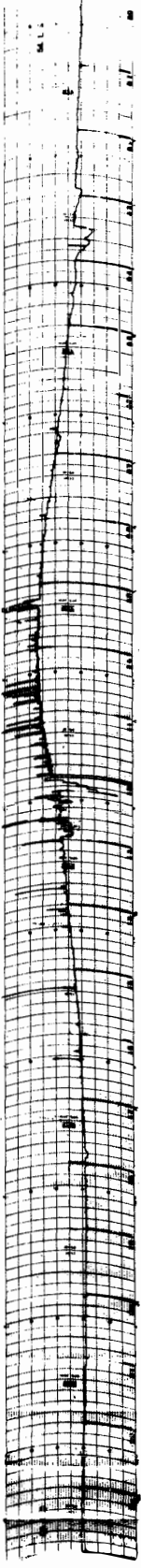
7



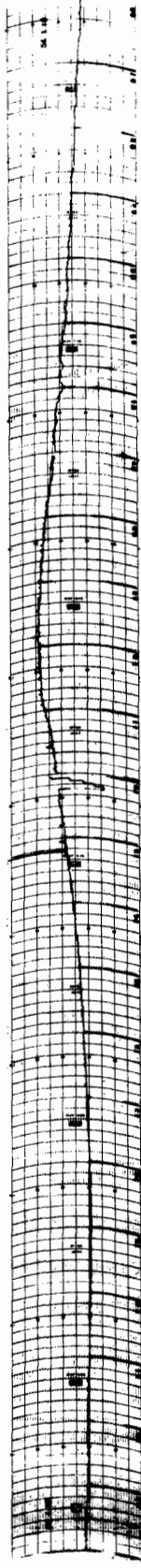
8



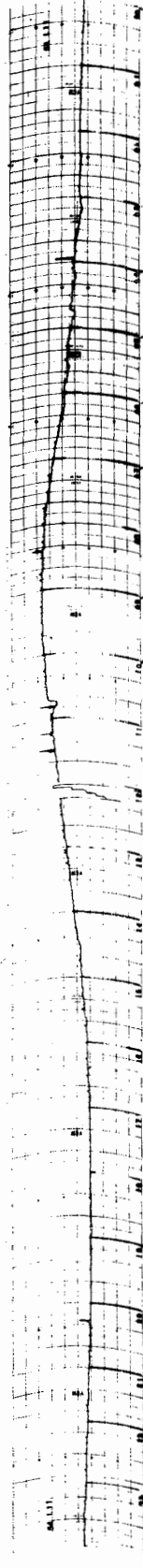
9



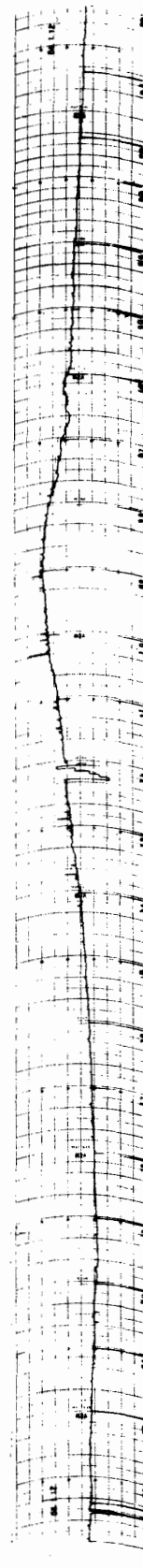
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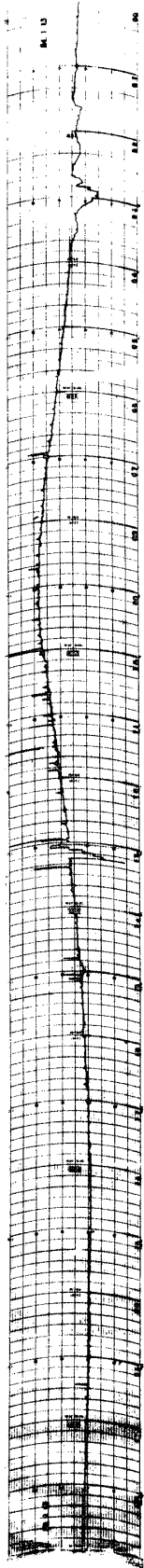
24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

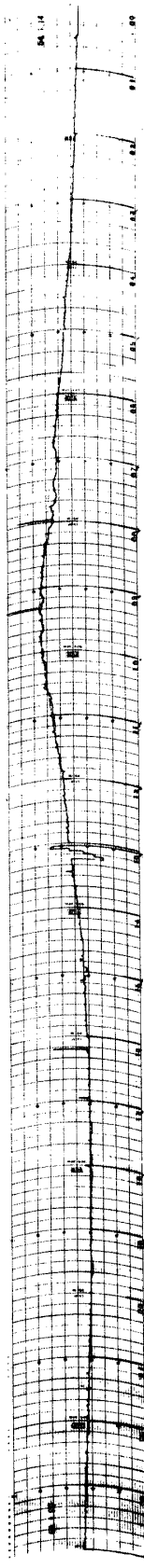
30 MHz COSMIC NOISE

JAN 1979

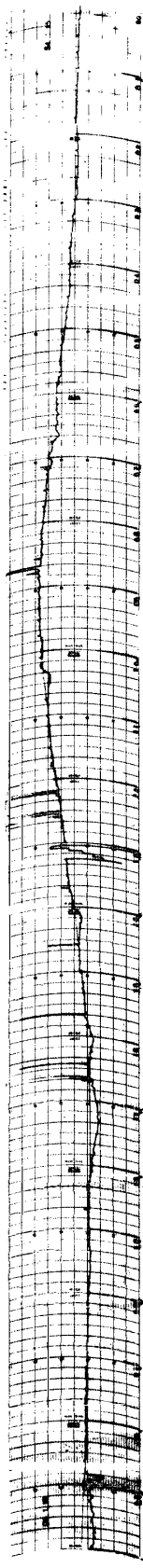
13



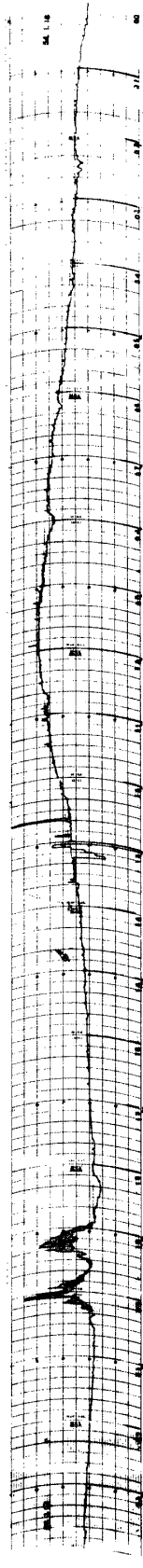
14



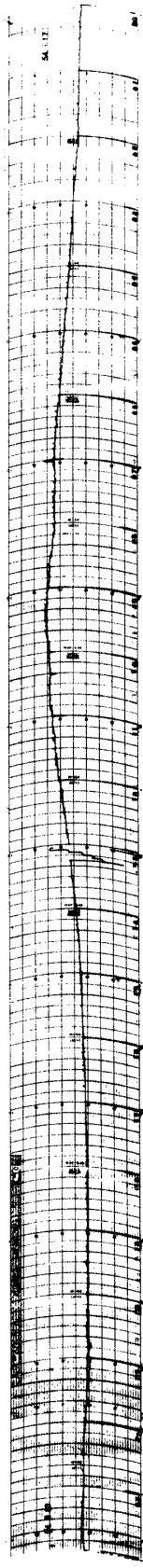
15



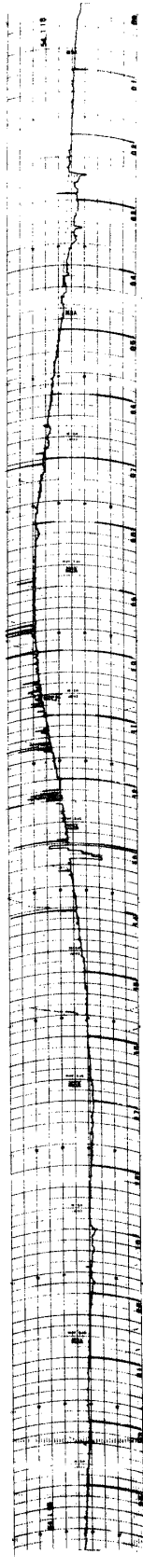
16



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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JAN 1979

19

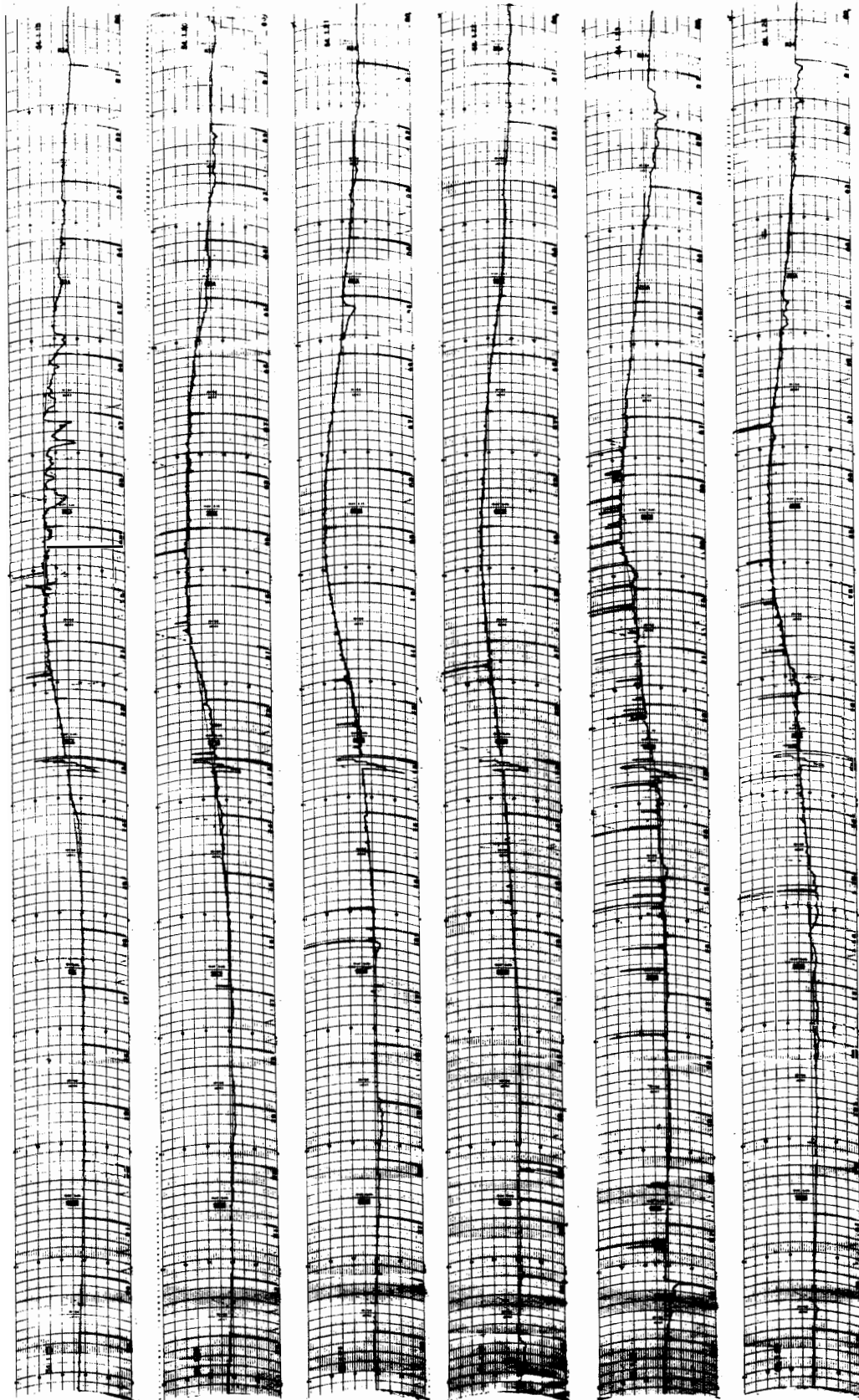
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24 20 16 12 08 04 00

30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

JAN 1979

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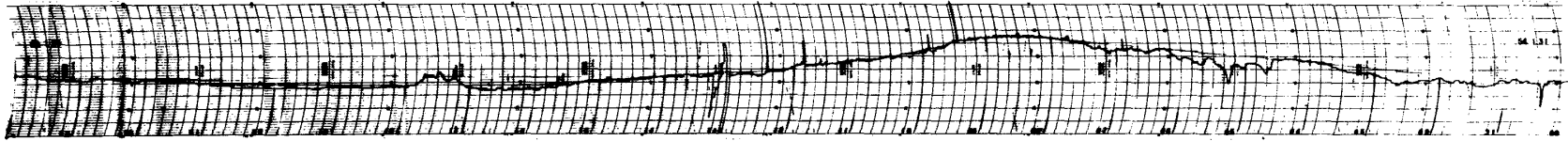
30



24 20 16 12 08 04 00

30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS



31

JAN 1979

24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

FEB 1979

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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

FEB 1979

7

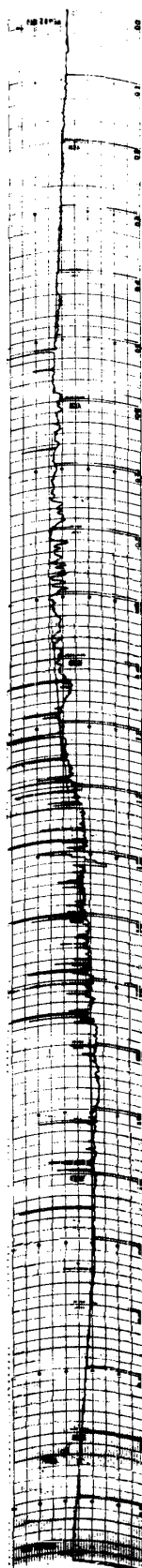
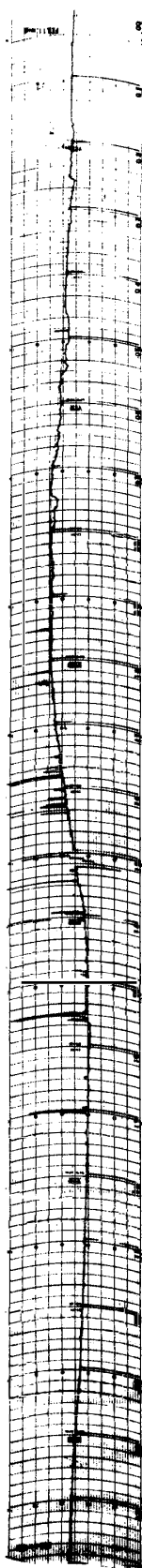
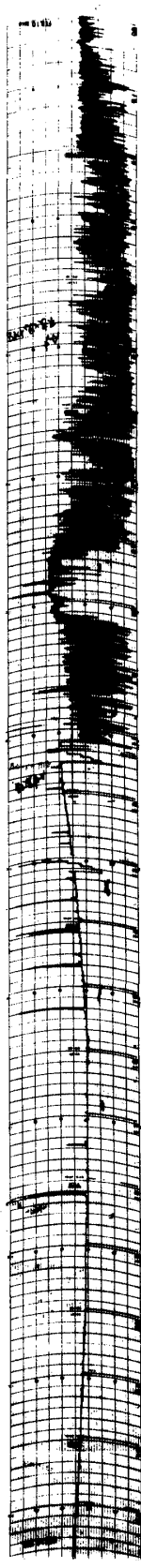
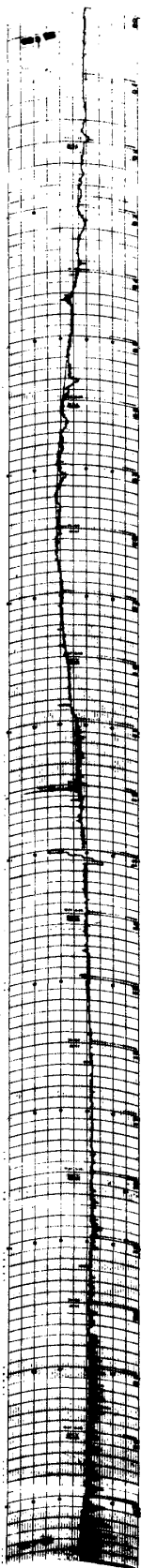
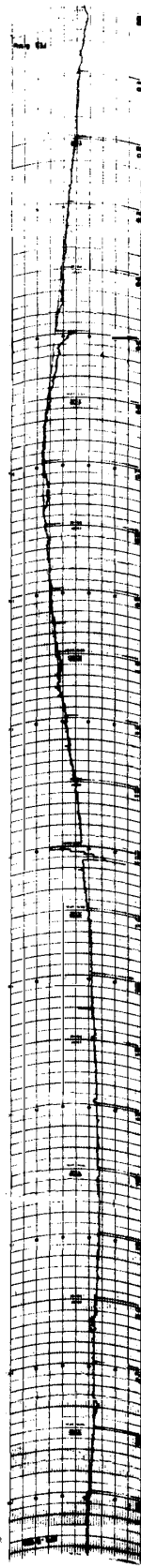
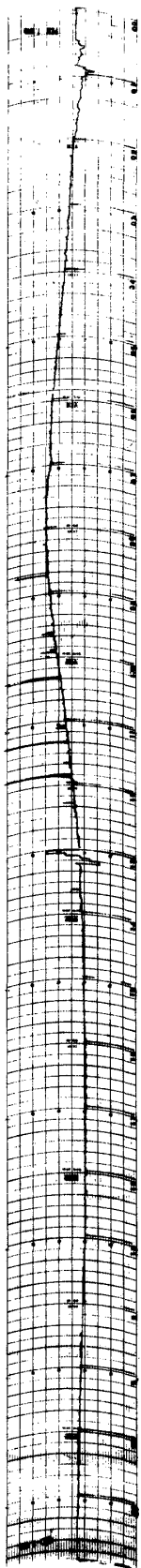
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30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

FEB 1979

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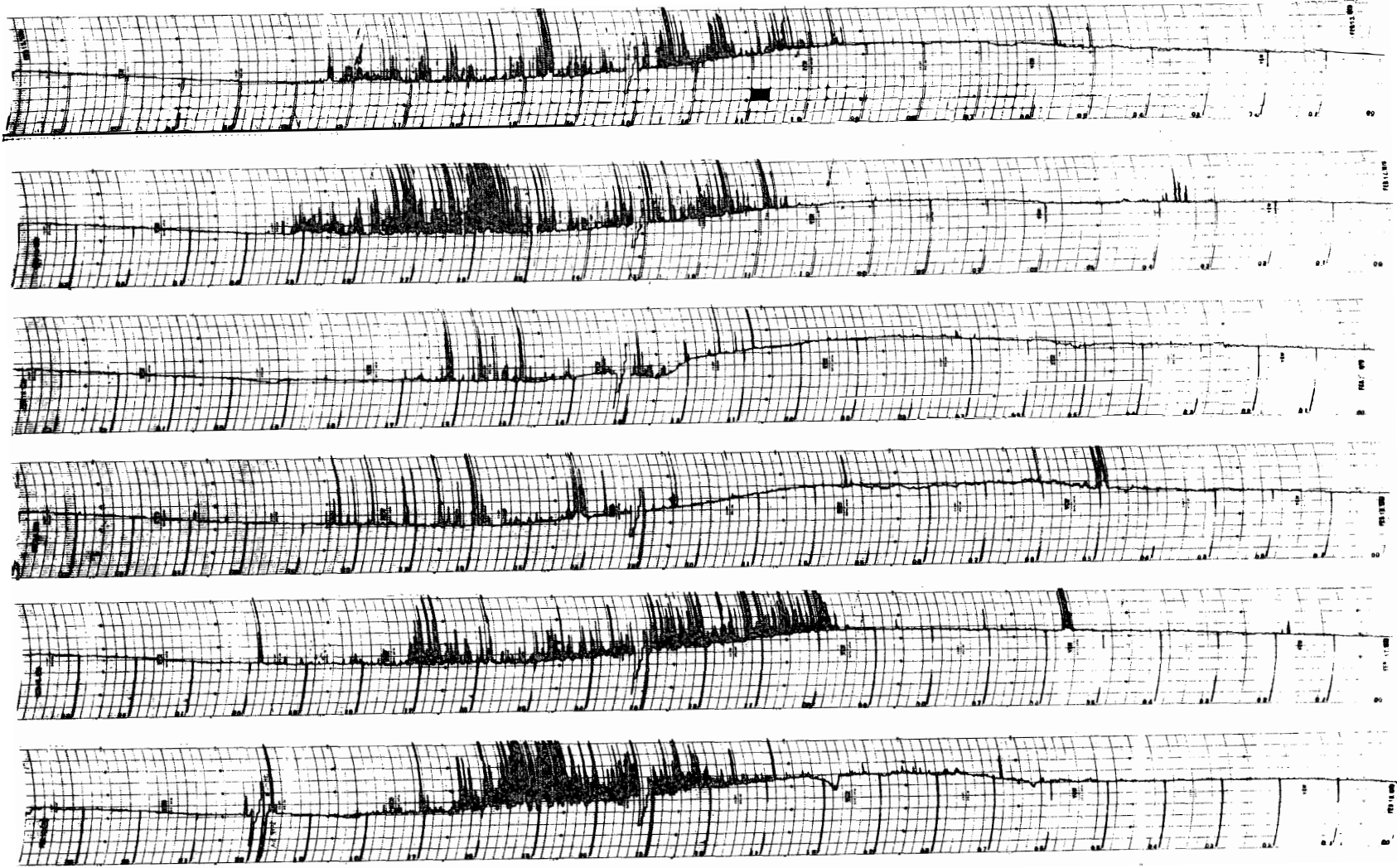
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-24-

24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

FEB 1979

19

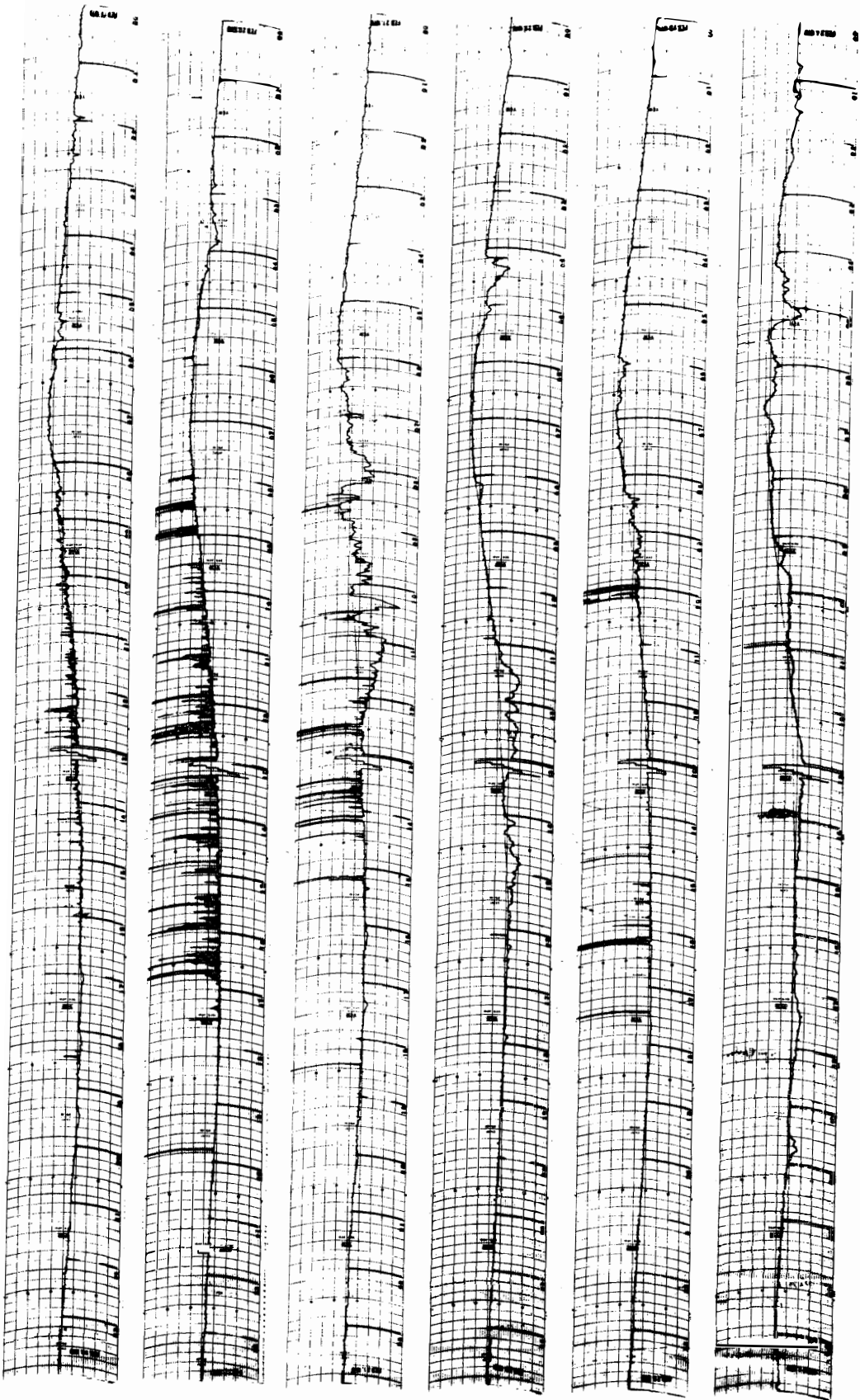
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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

FEB 1979

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-26-

24 20 16 12 08 04 00

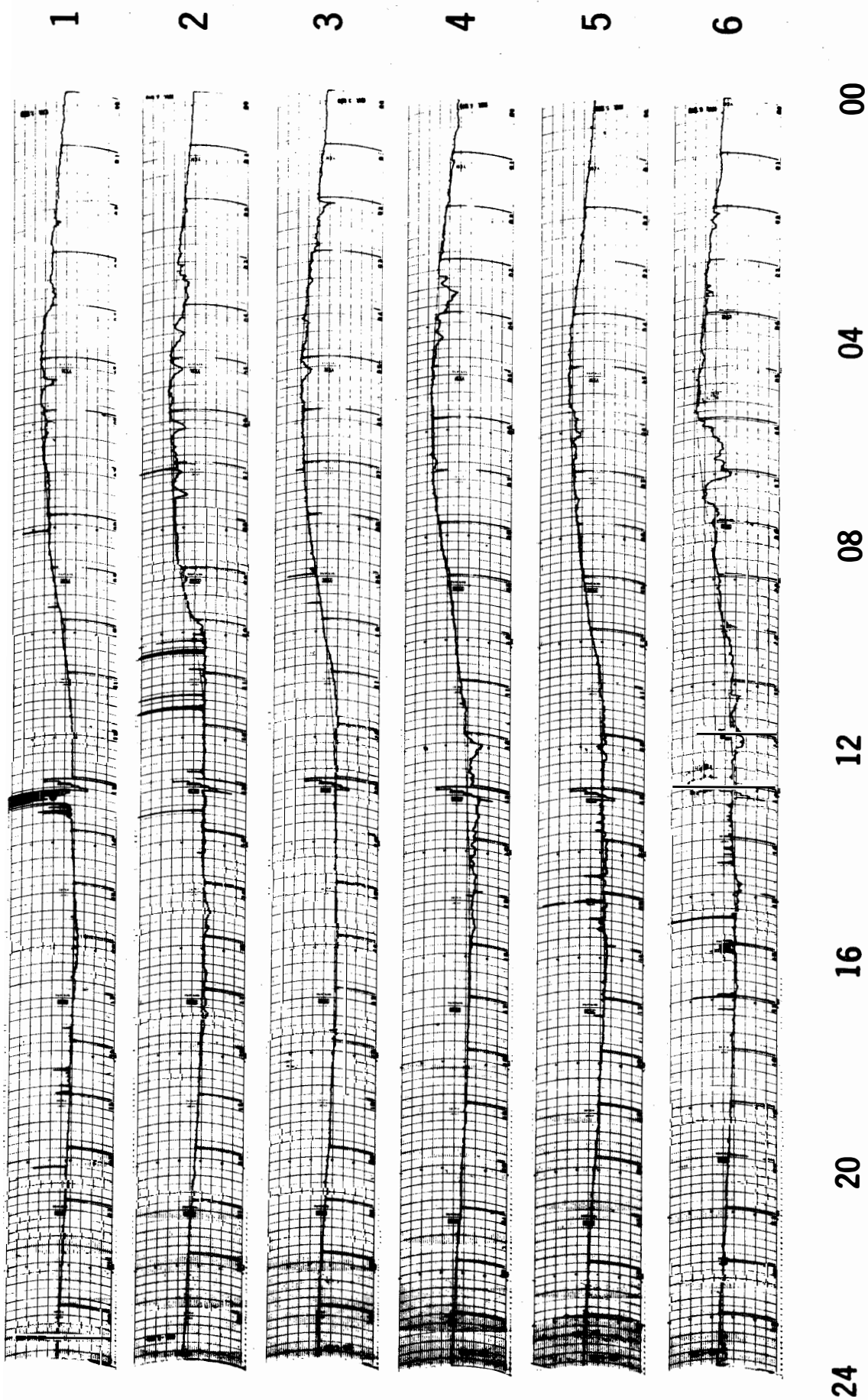
45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

February	5	0029	-	0000	failure of equipment
	6				
	10	0000	-	1110	"

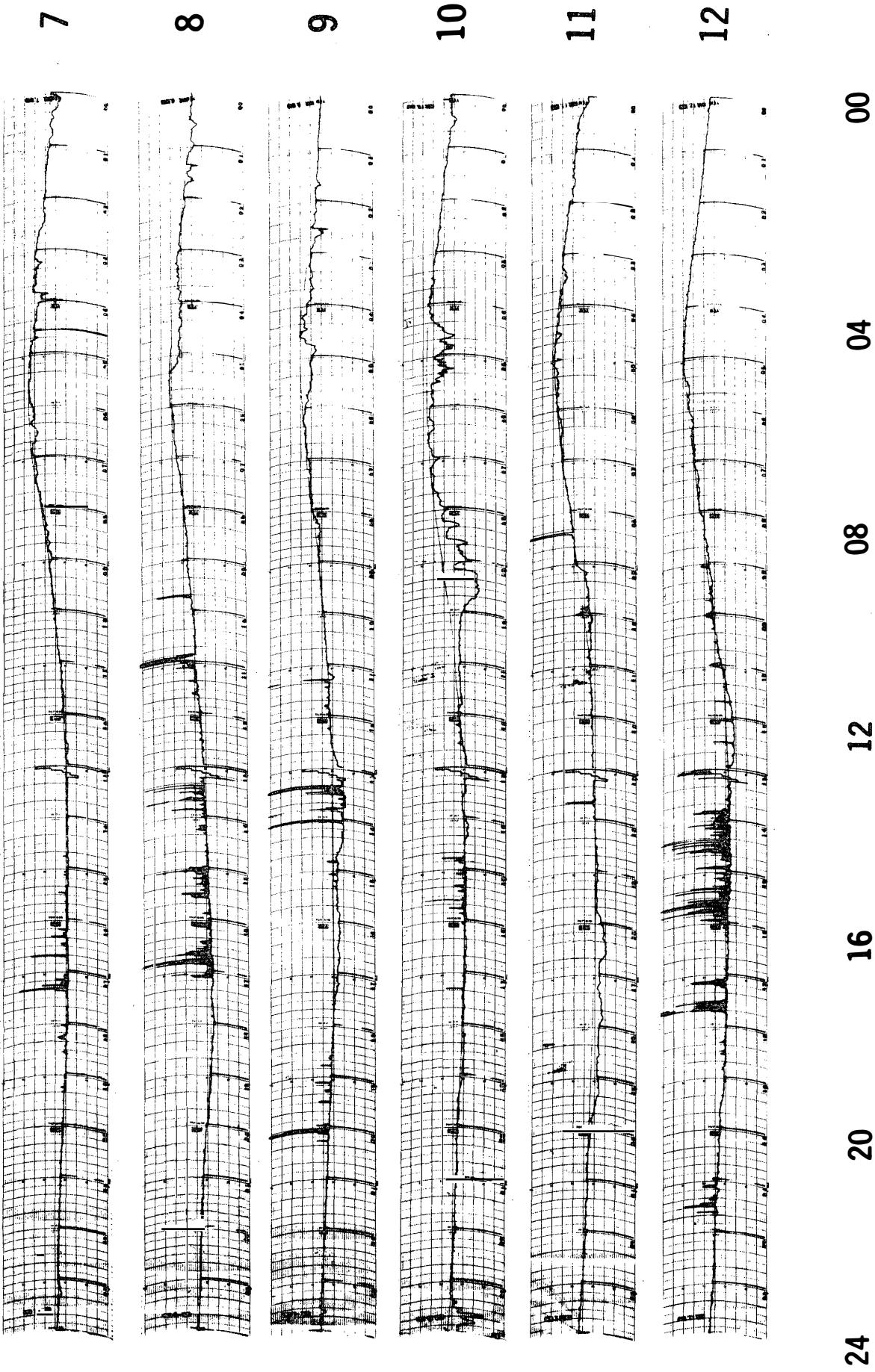
MAR 1979



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

MAR 1979



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

MAR 1979

13

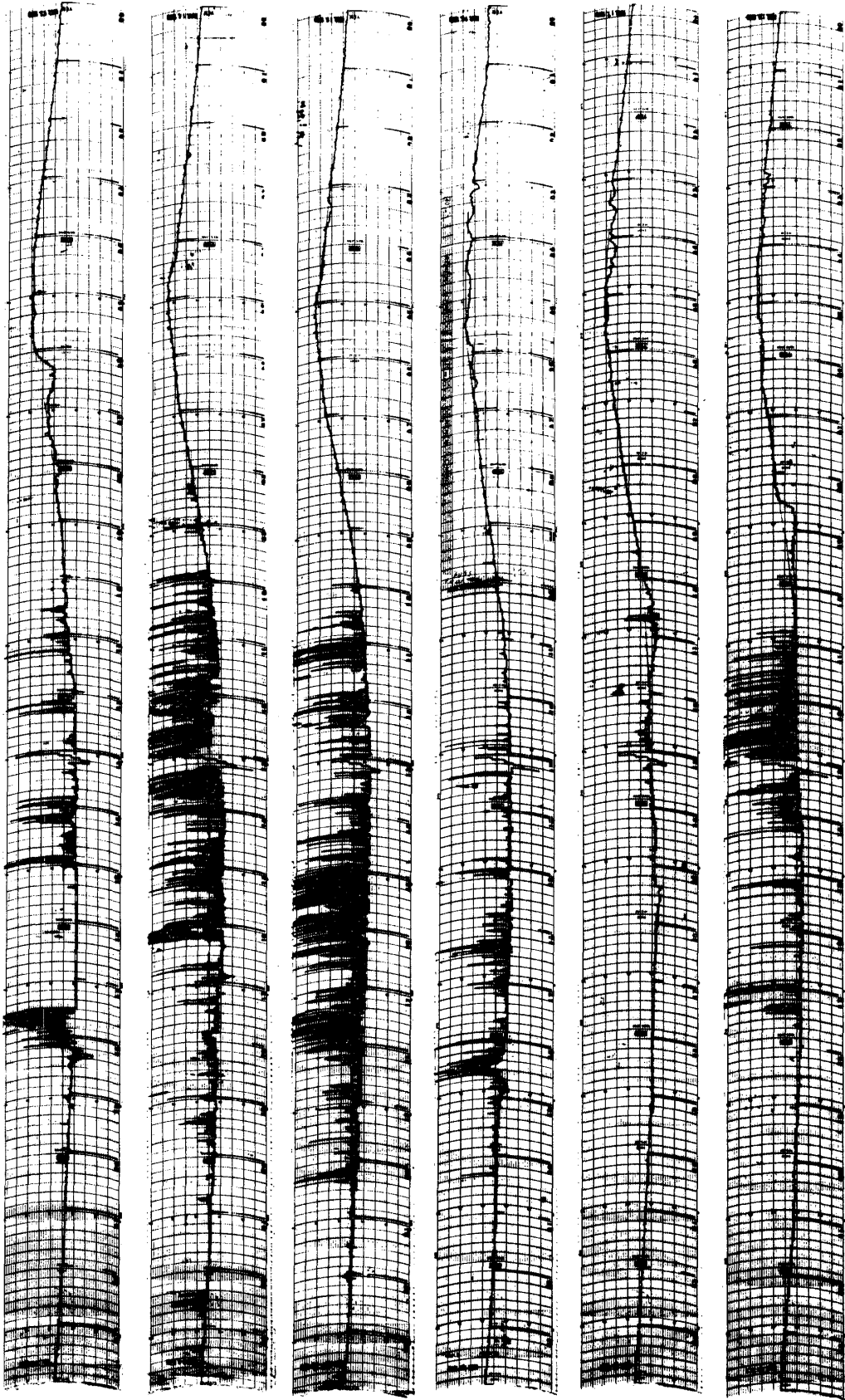
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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

MAR 1979

19

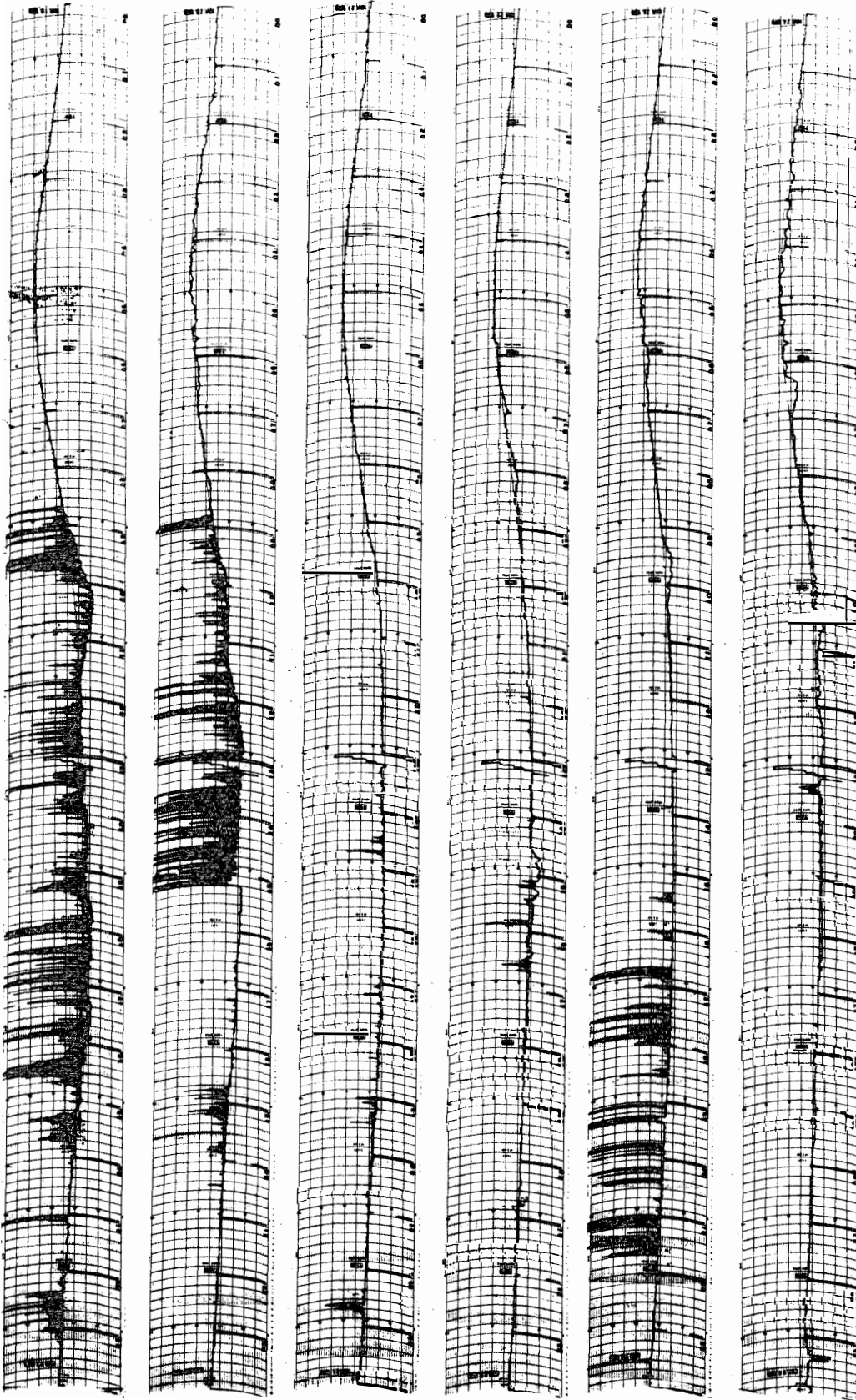
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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

MAR 1979

25

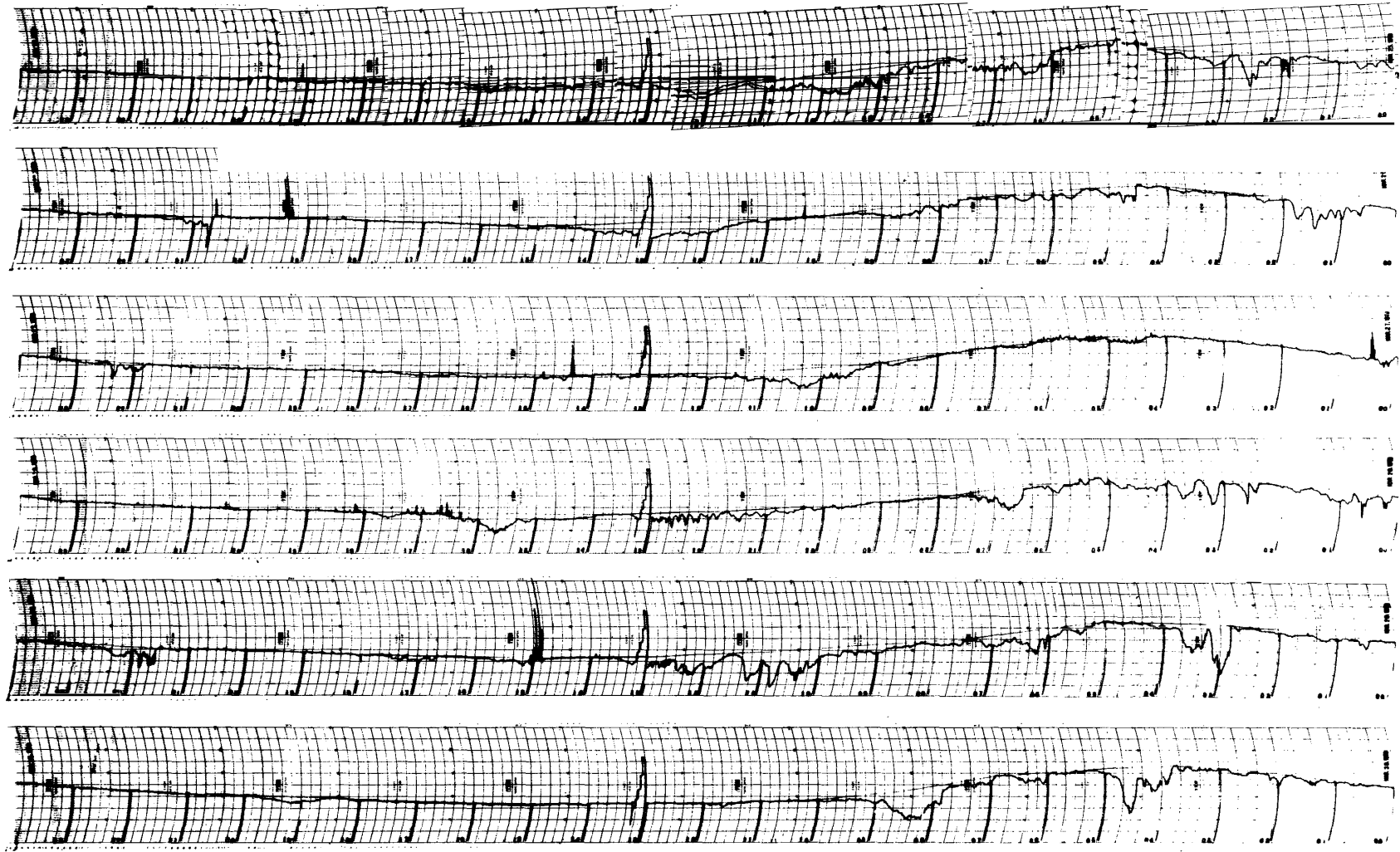
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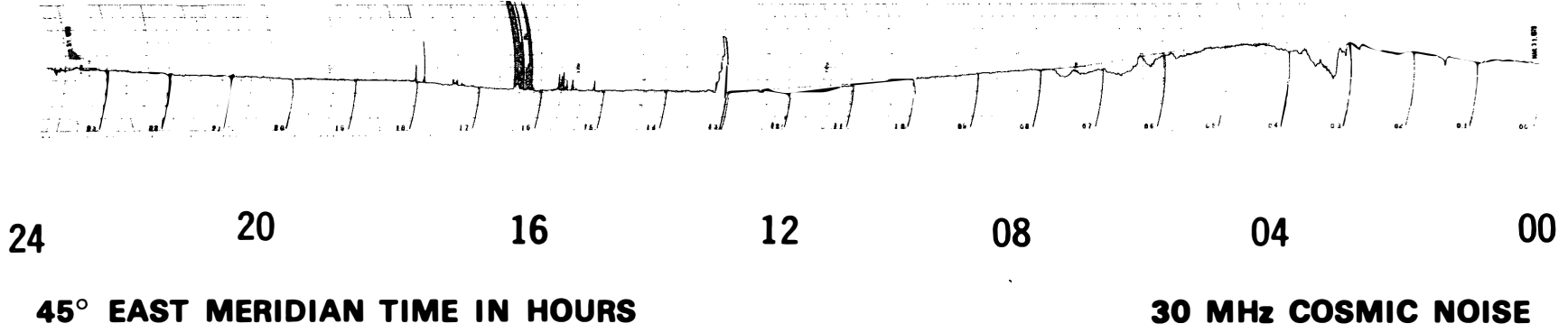
24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

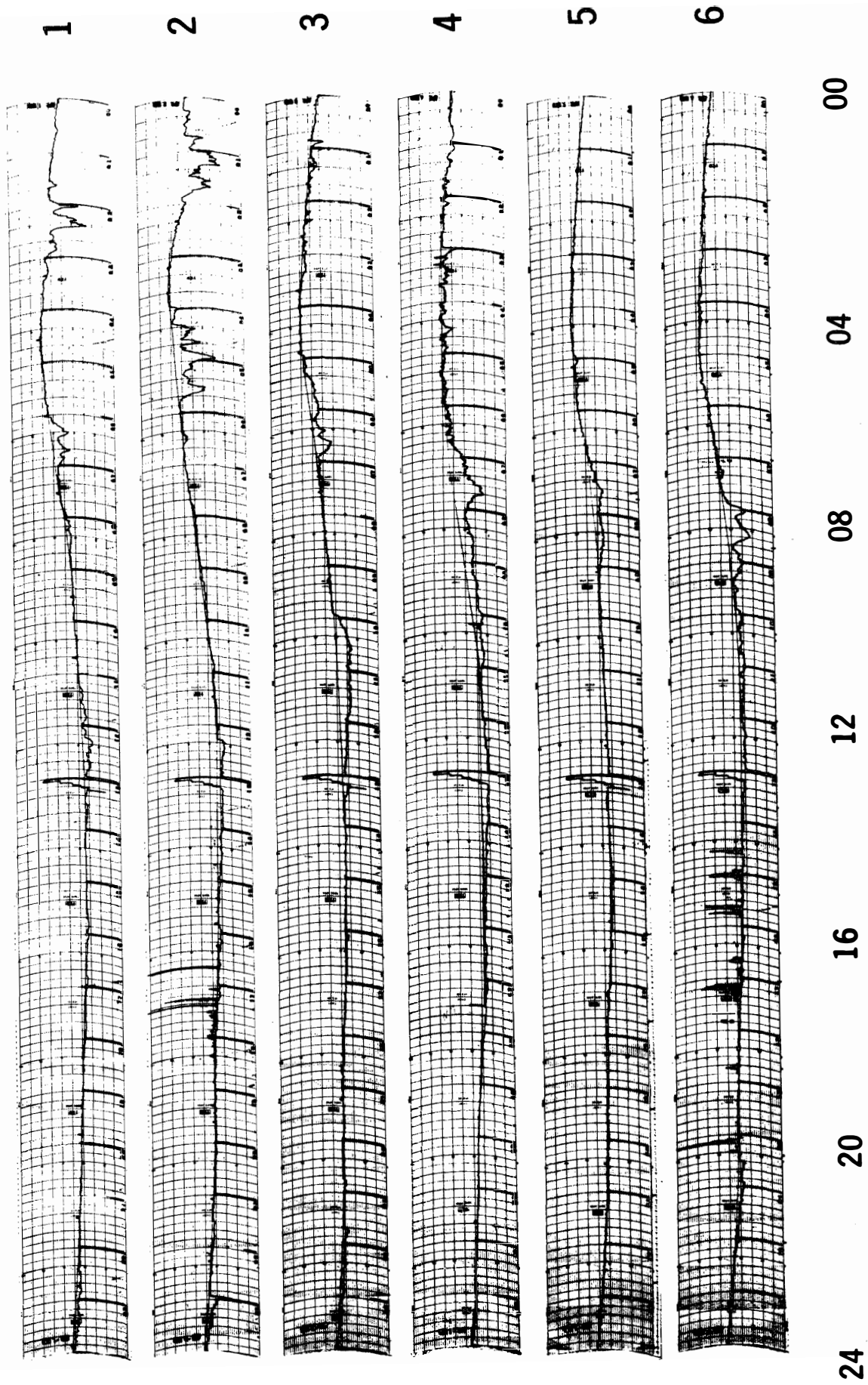
30 MHz COSMIC NOISE

MAR 1979

31



APR 1979

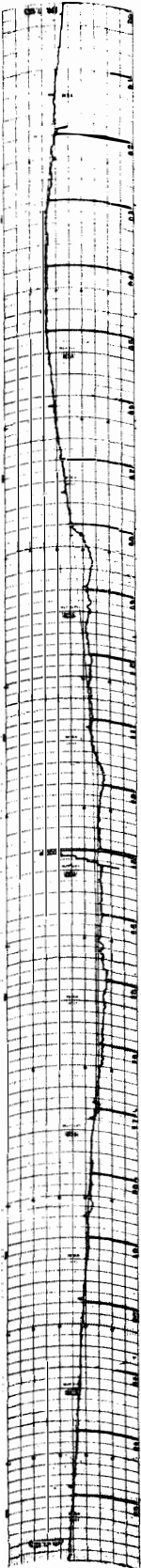


30 MHz COSMIC NOISE

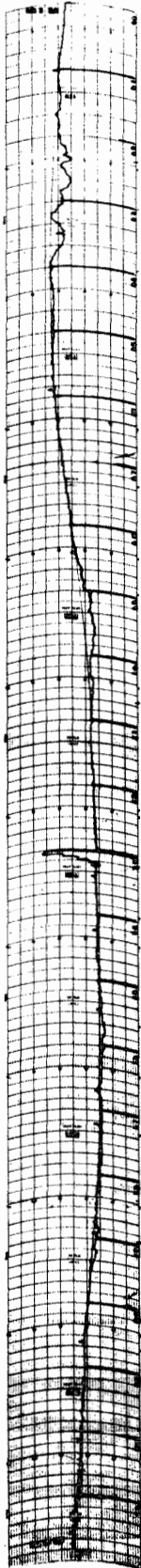
45° EAST MERIDIAN TIME IN HOURS

APR 1979

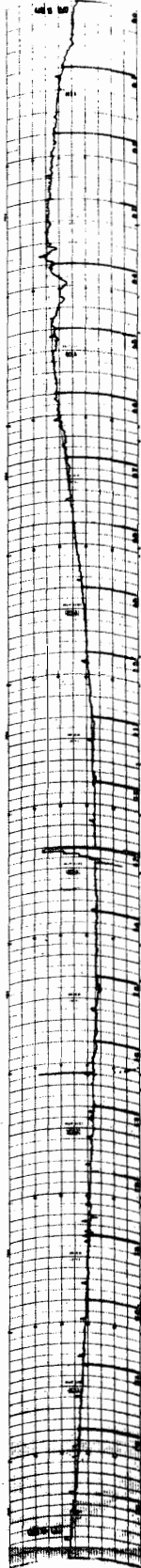
7



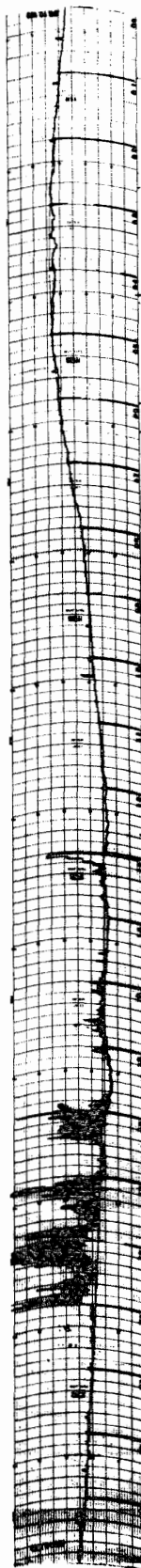
8



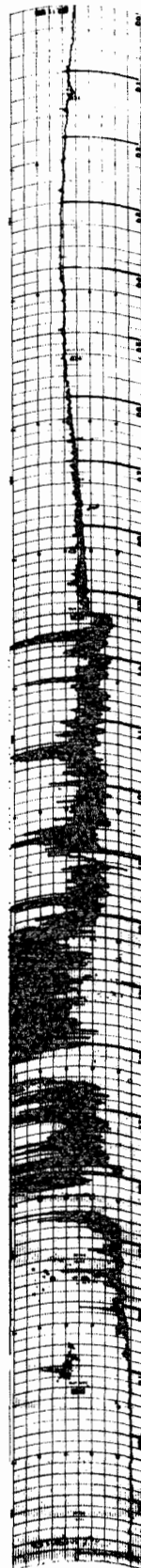
9



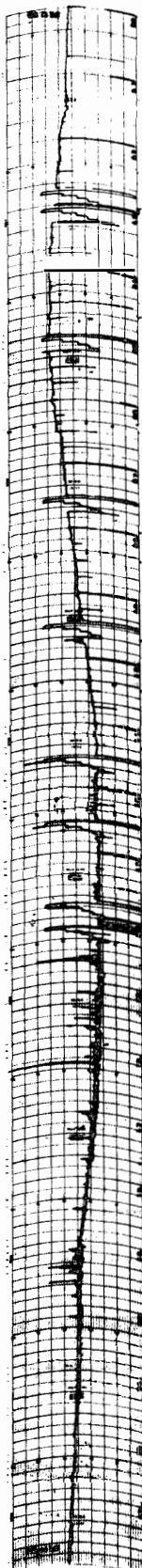
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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

APR 1979

13

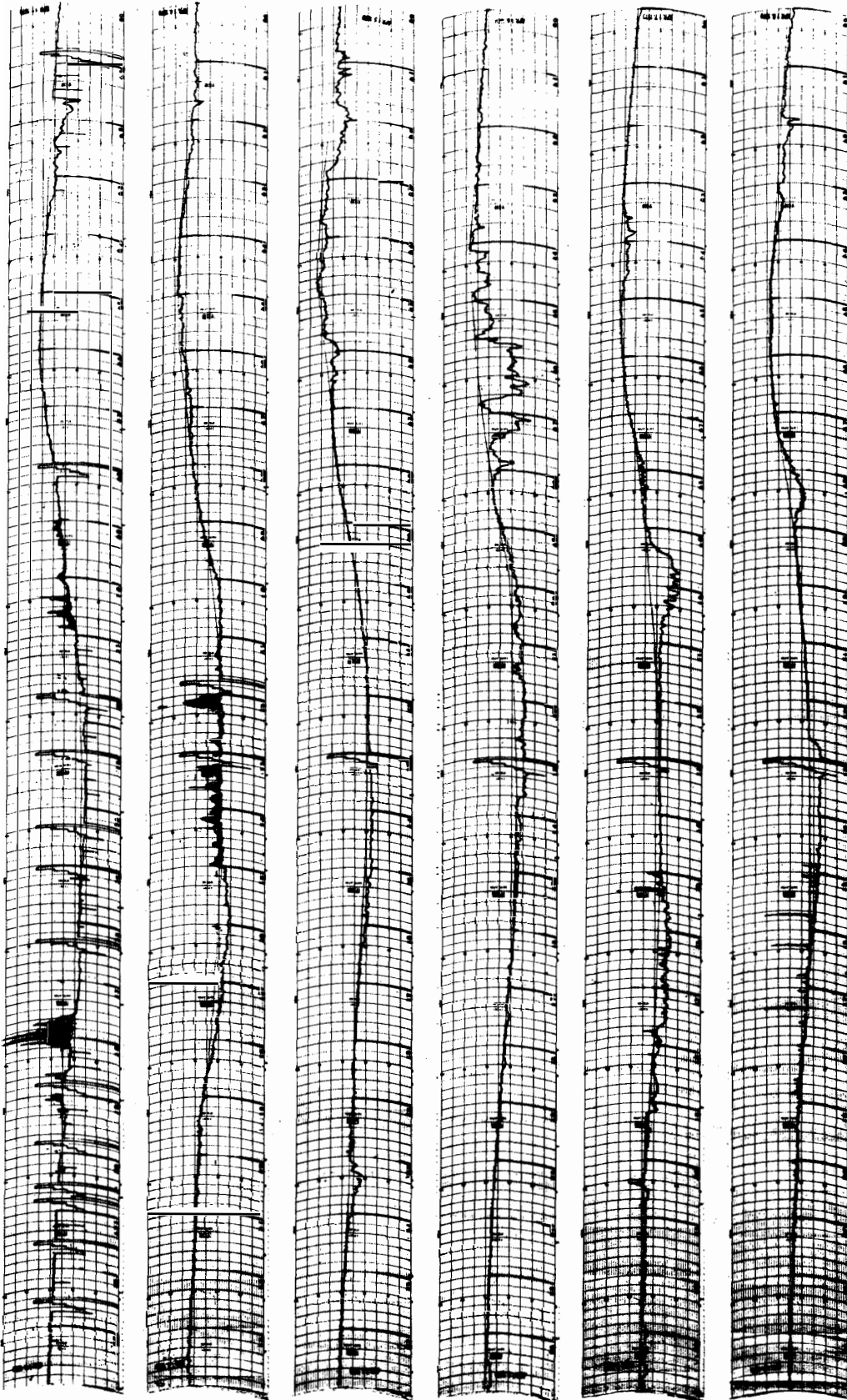
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24 20 16 12 08 04 00

30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

APR 1979

19

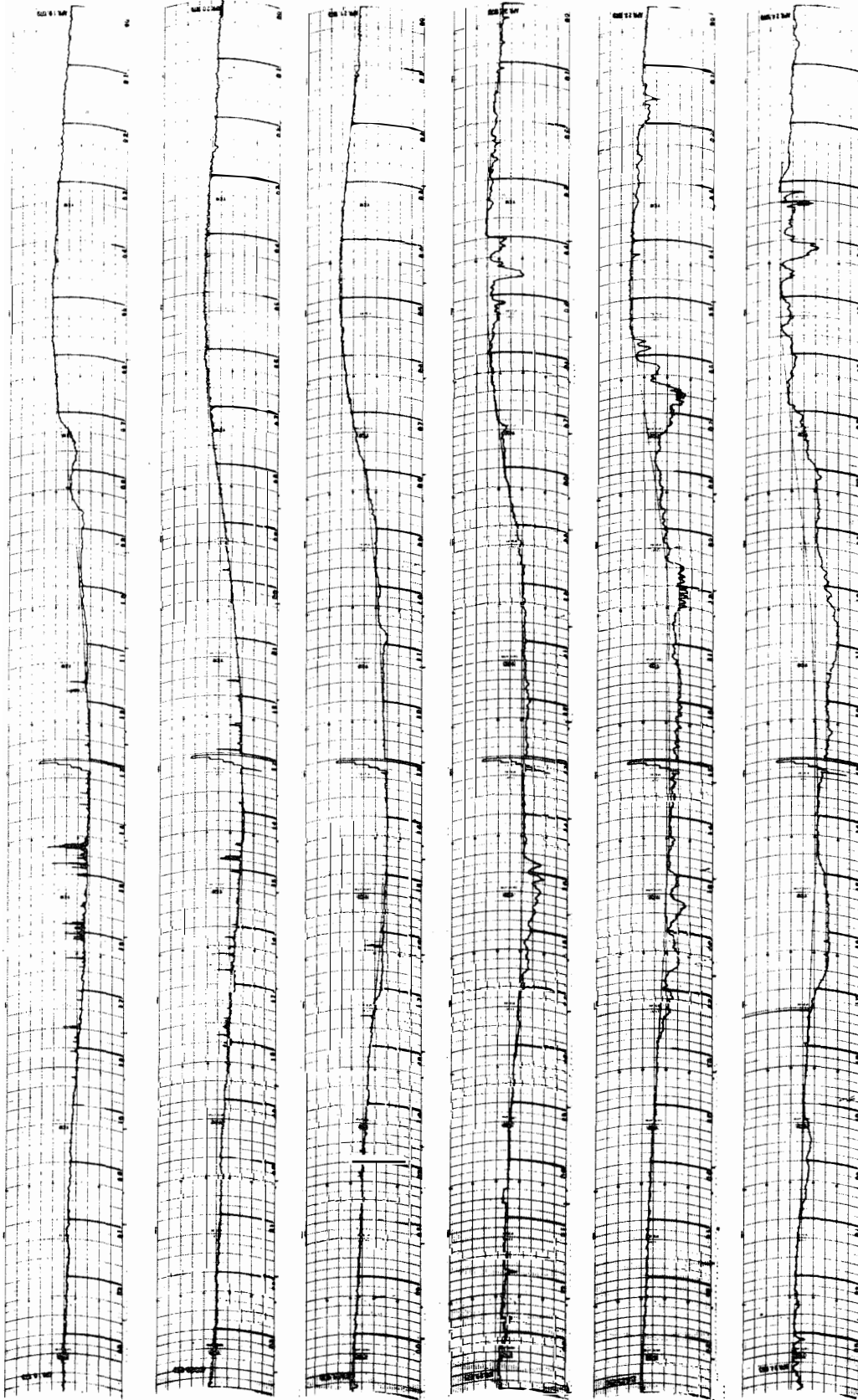
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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

APR 1979

25

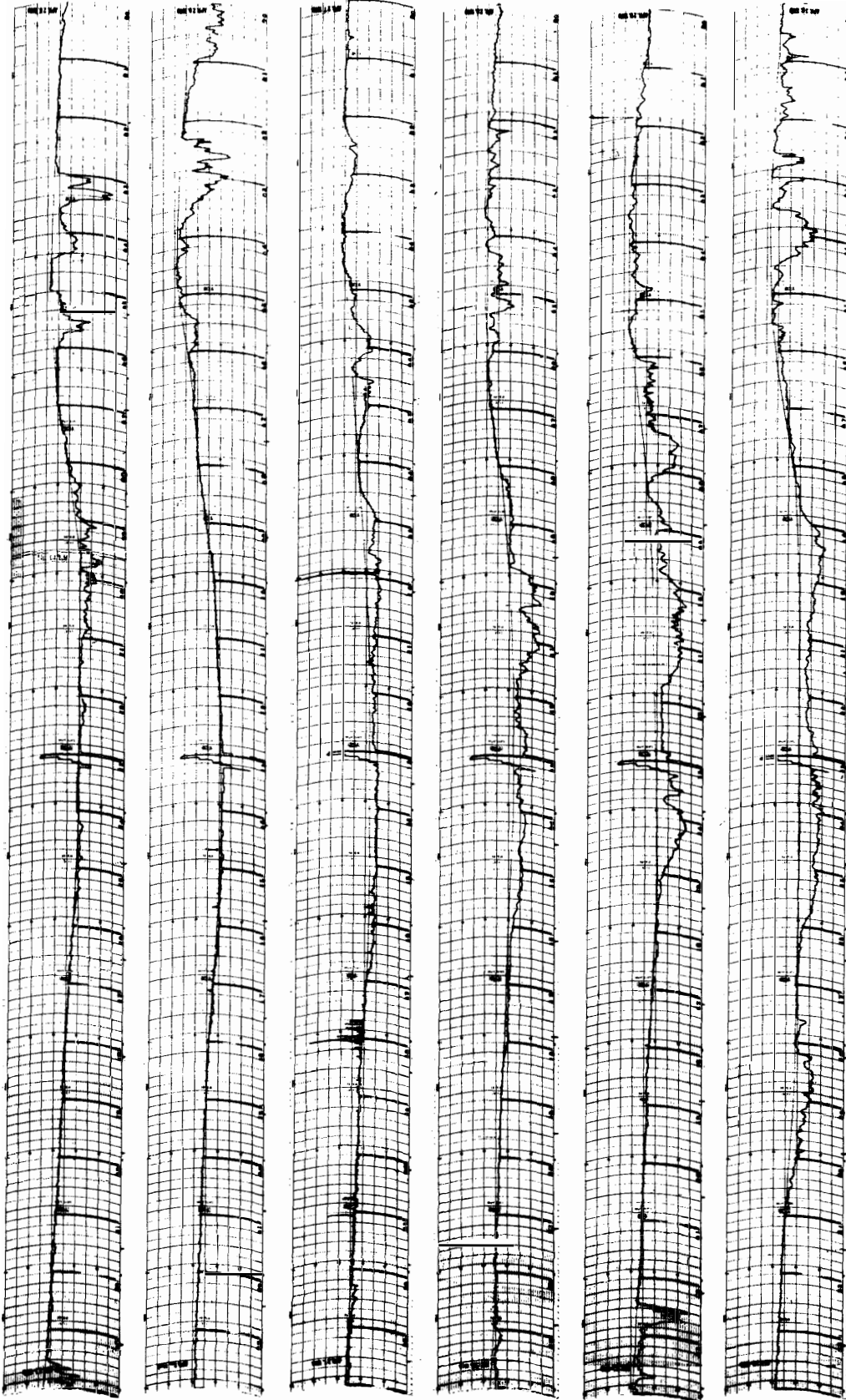
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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

April 11 2100 - 2300 failure of equipment

APR 1979

MAY 1979

1

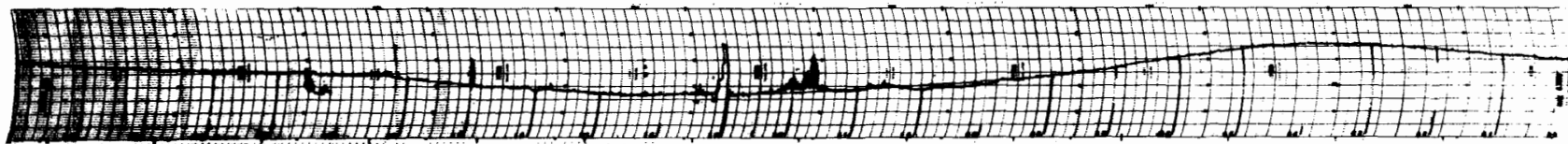
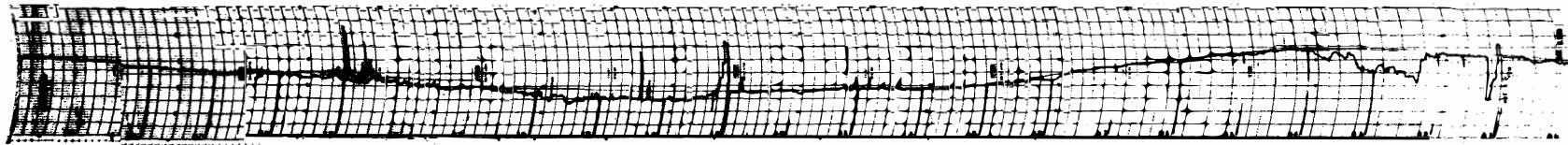
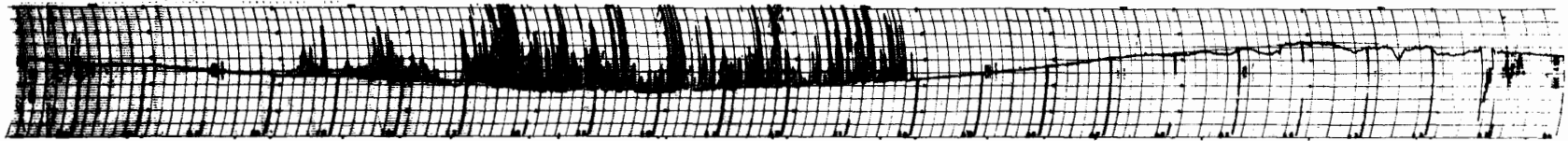
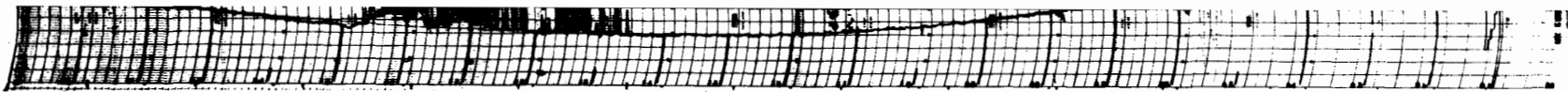
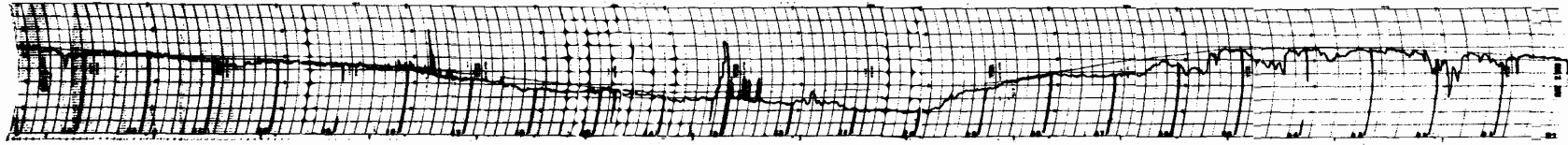
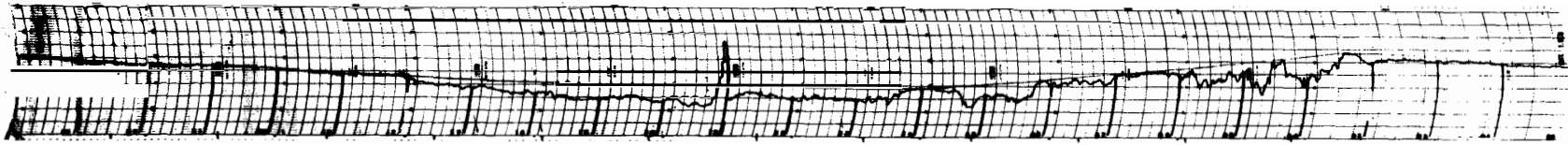
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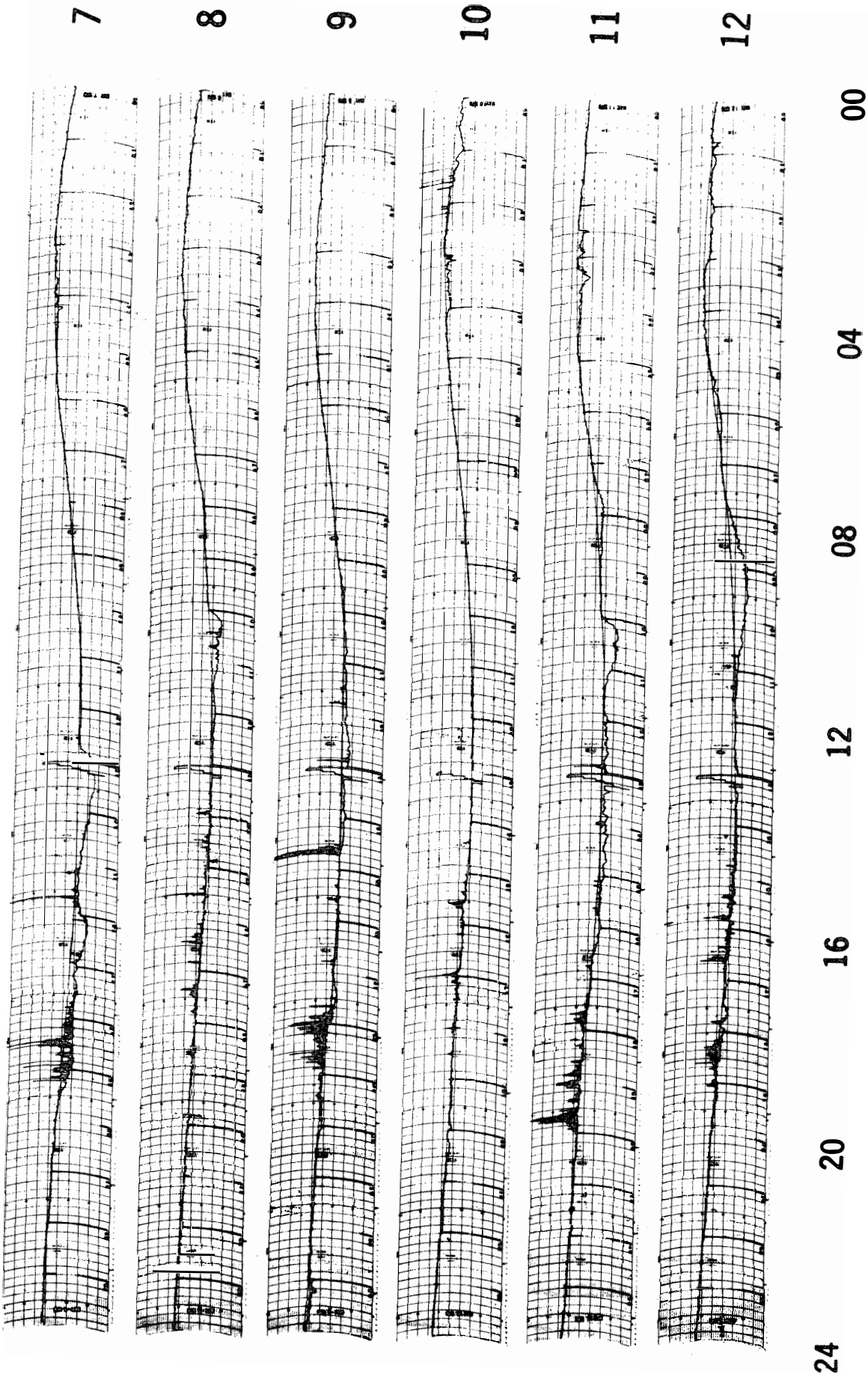


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAY 1979

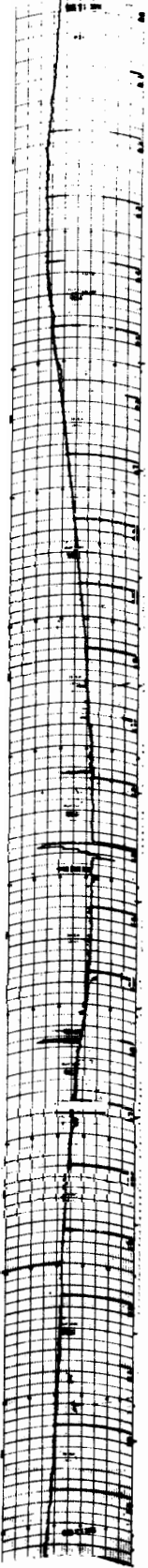


45° EAST MERIDIAN TIME IN HOURS

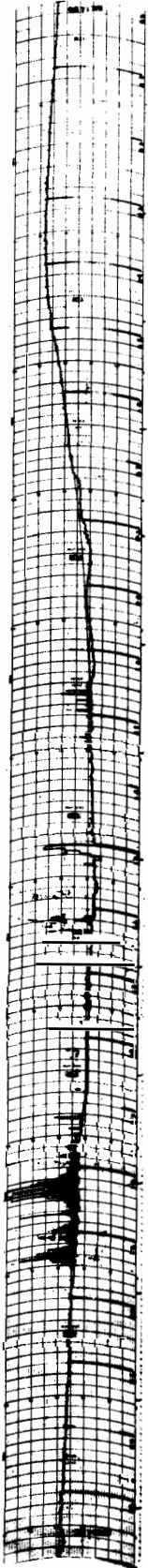
30 MHz COSMIC NOISE

MAY 1979

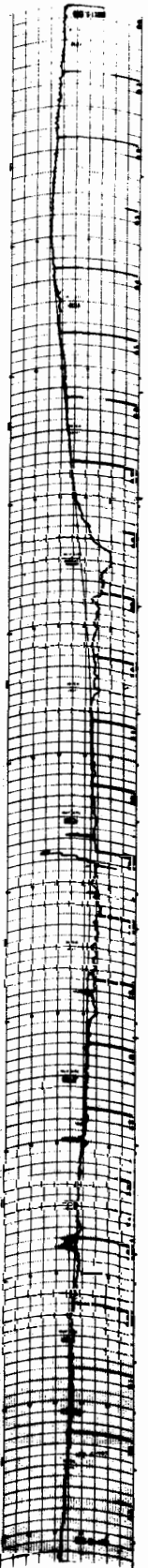
13



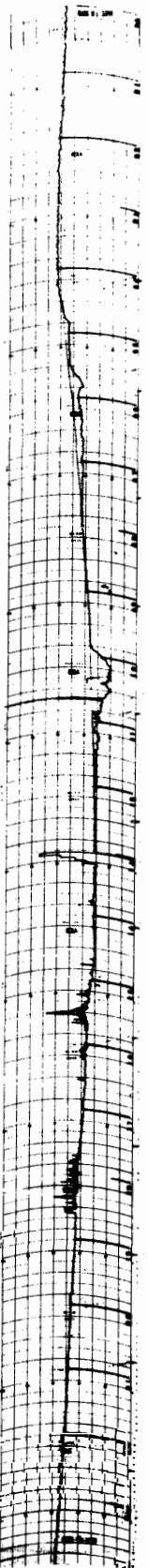
14



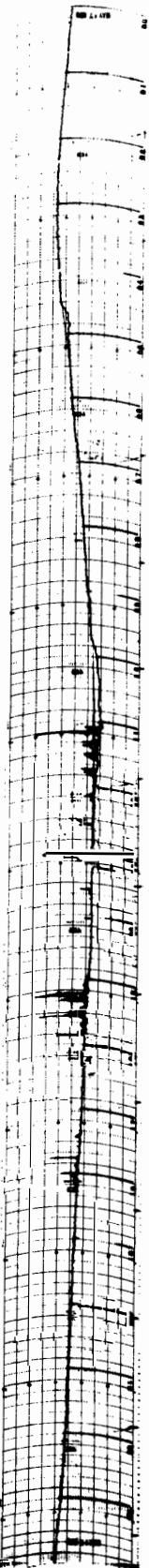
15



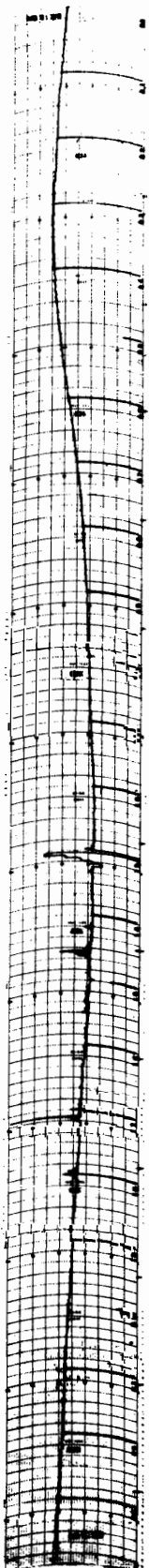
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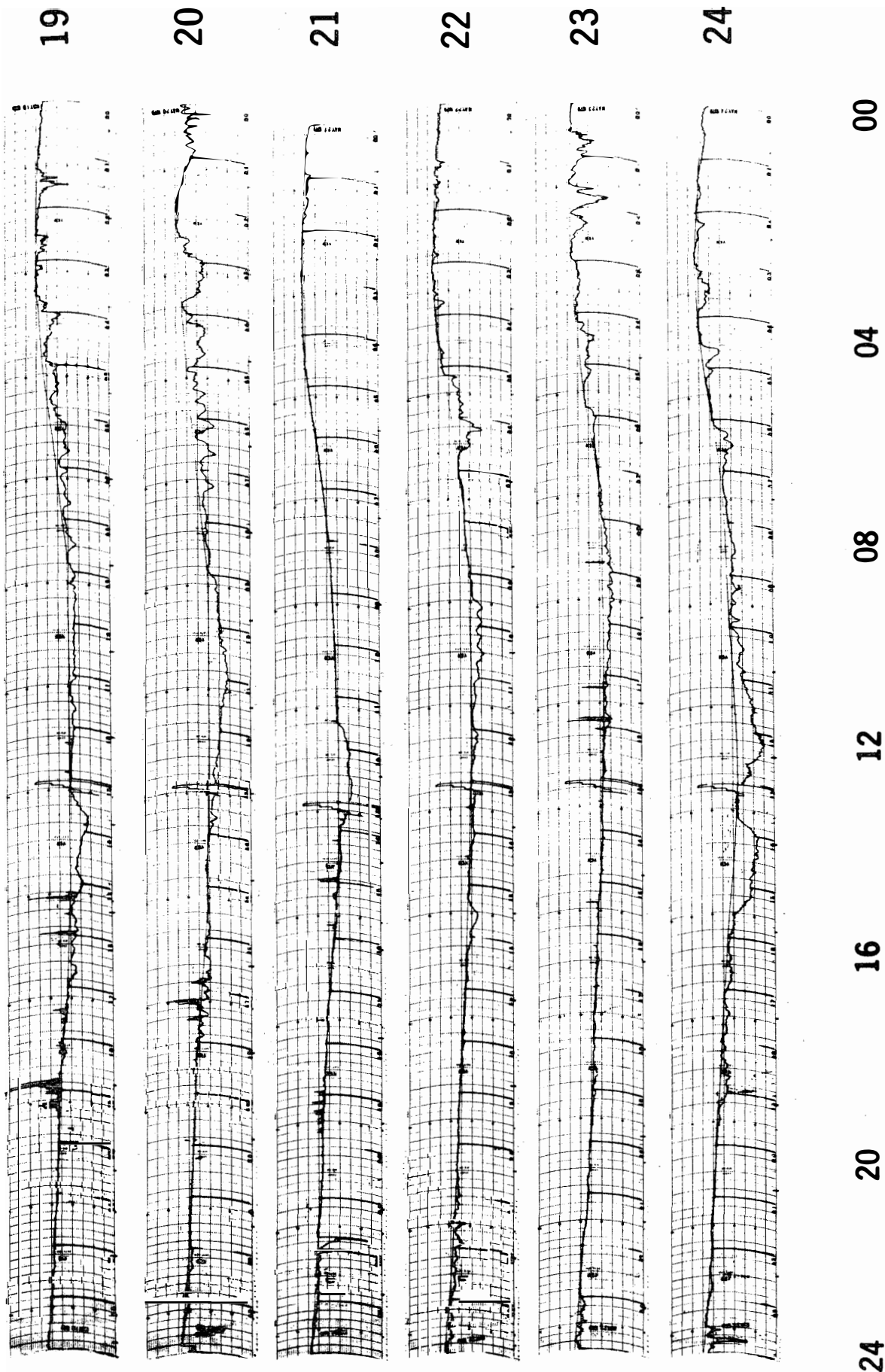


24 20 16 12 08 04 00

30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

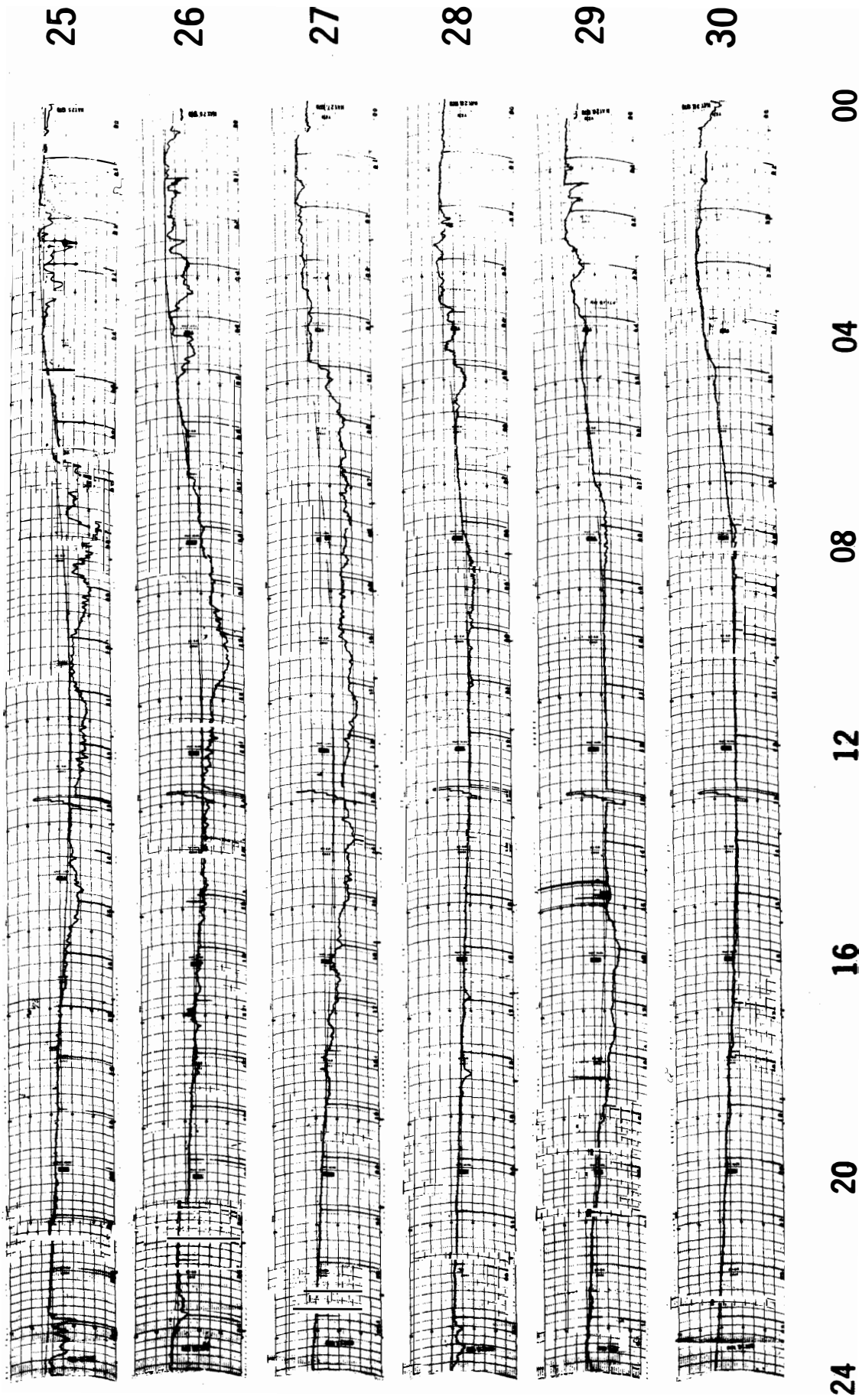
MAY 1979



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

MAY 1979

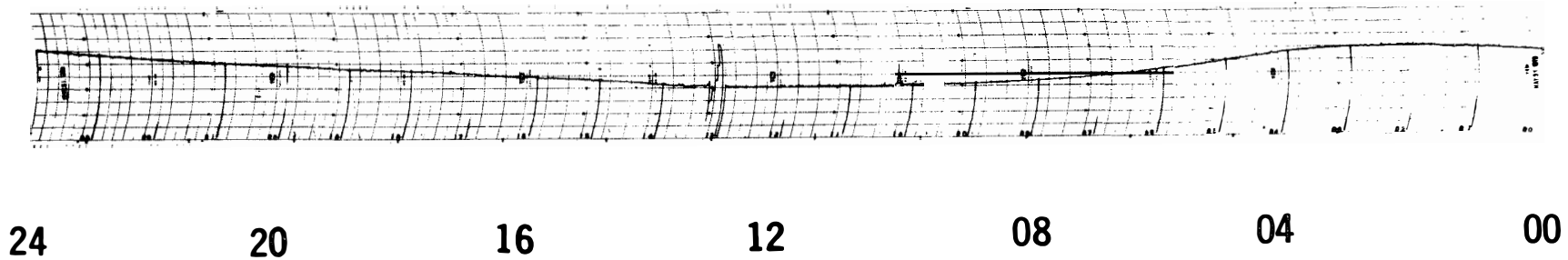


30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

MAY 1979

31



45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JUNE 1979

1

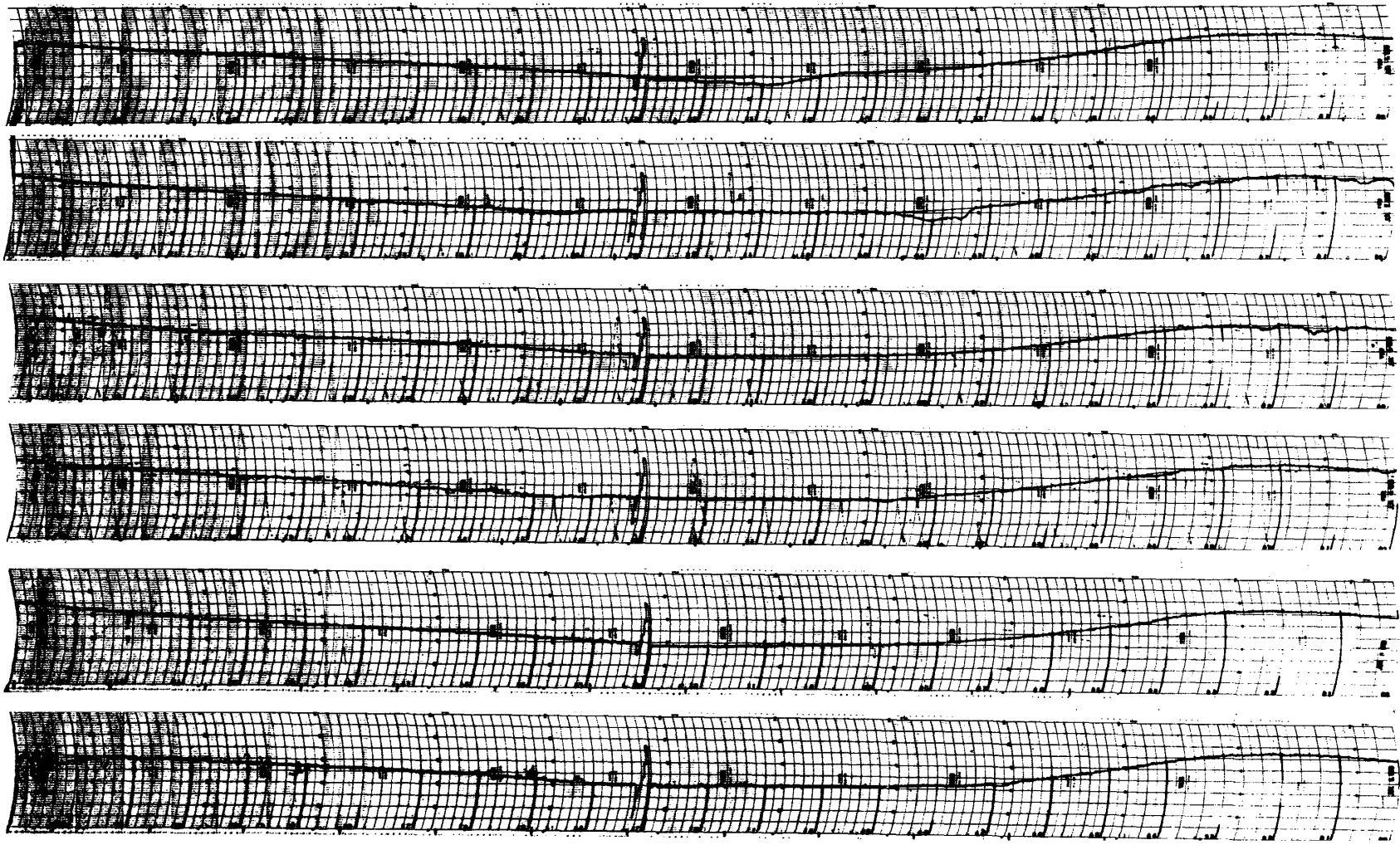
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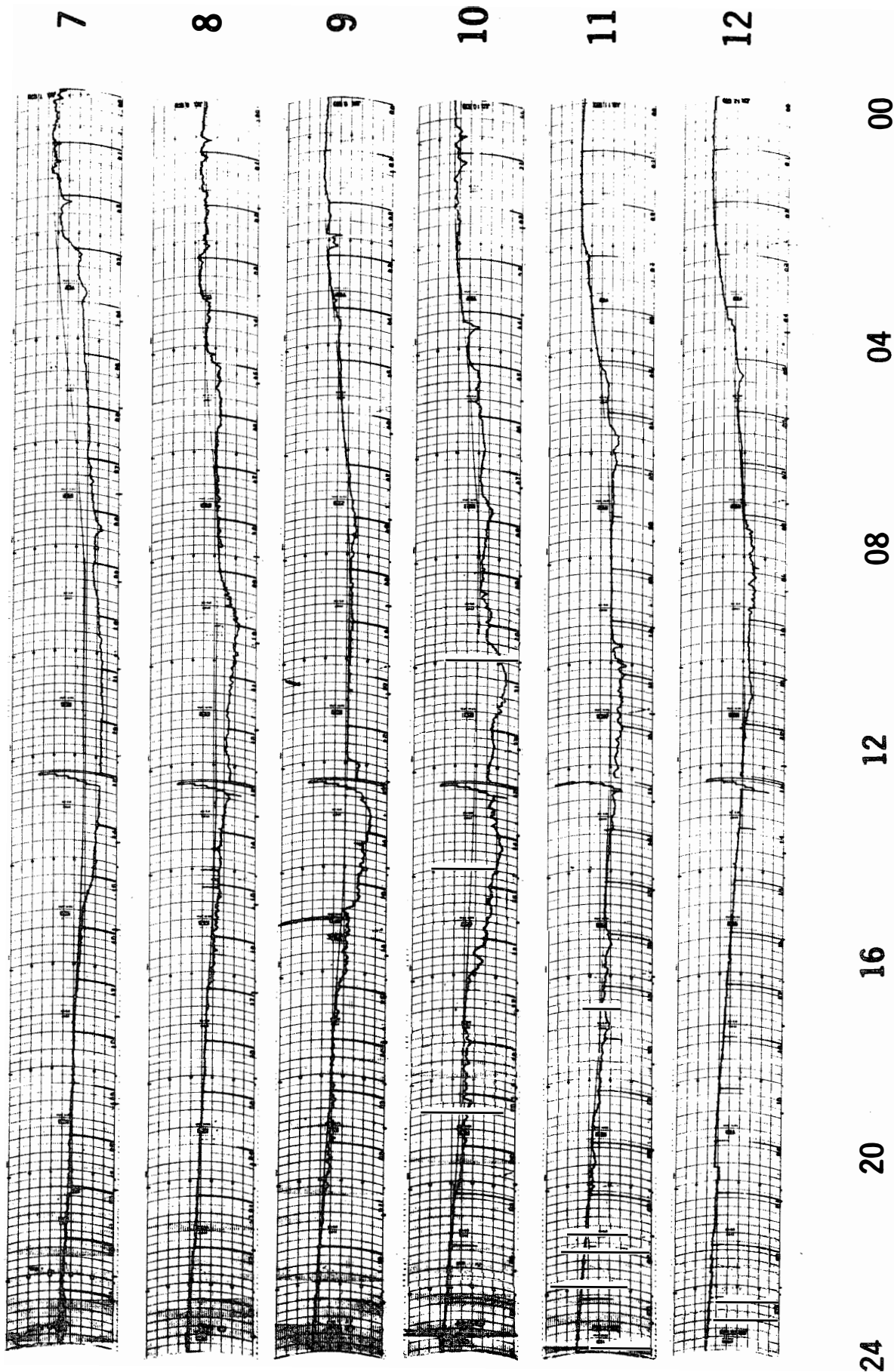
04

00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JUNE 1979



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

JUNE 1979

13

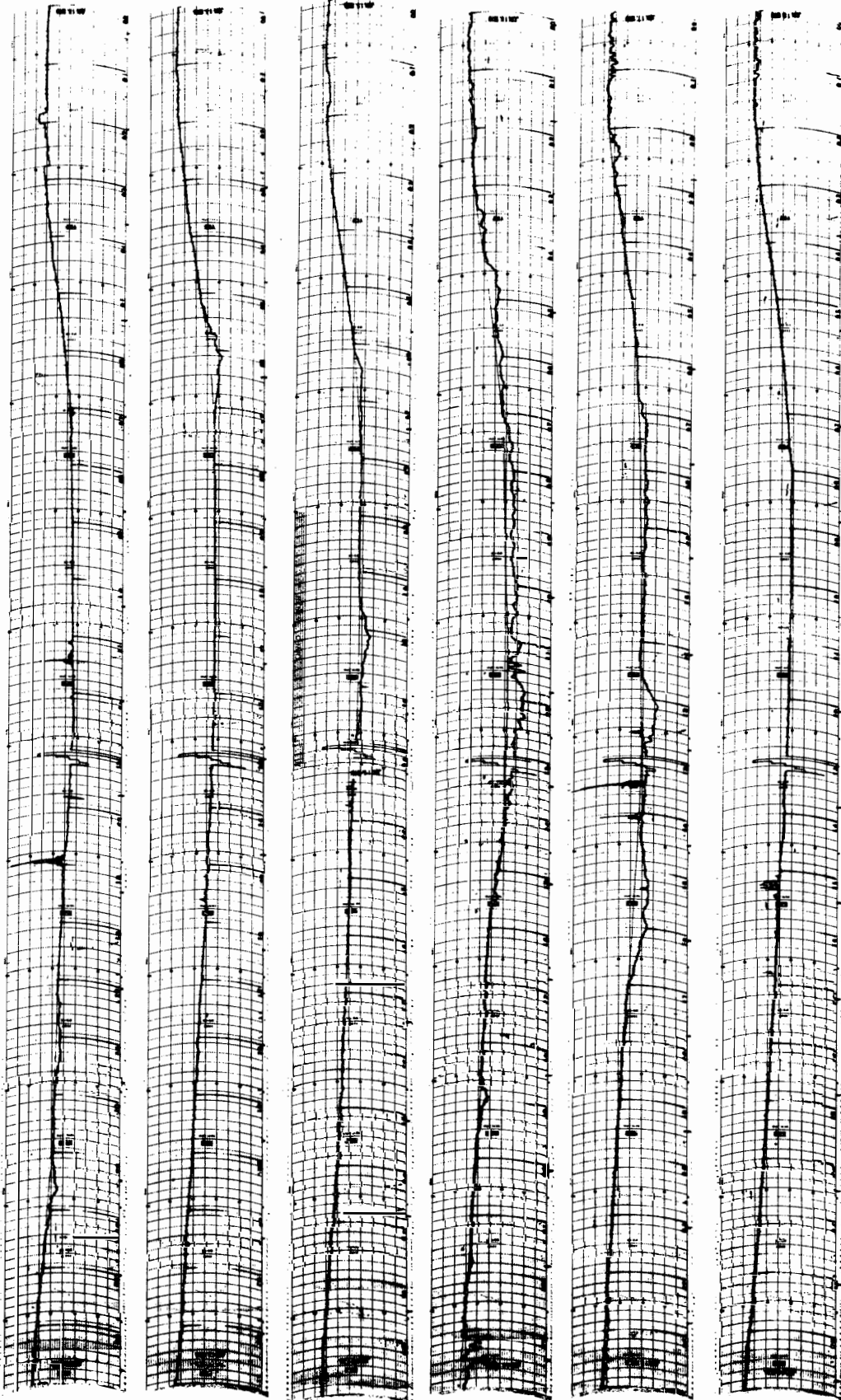
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24 20 16 12 08 04 00

30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

JUNE 1979

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24 20 16 12 08 04 00

30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

JUNE 1979

25

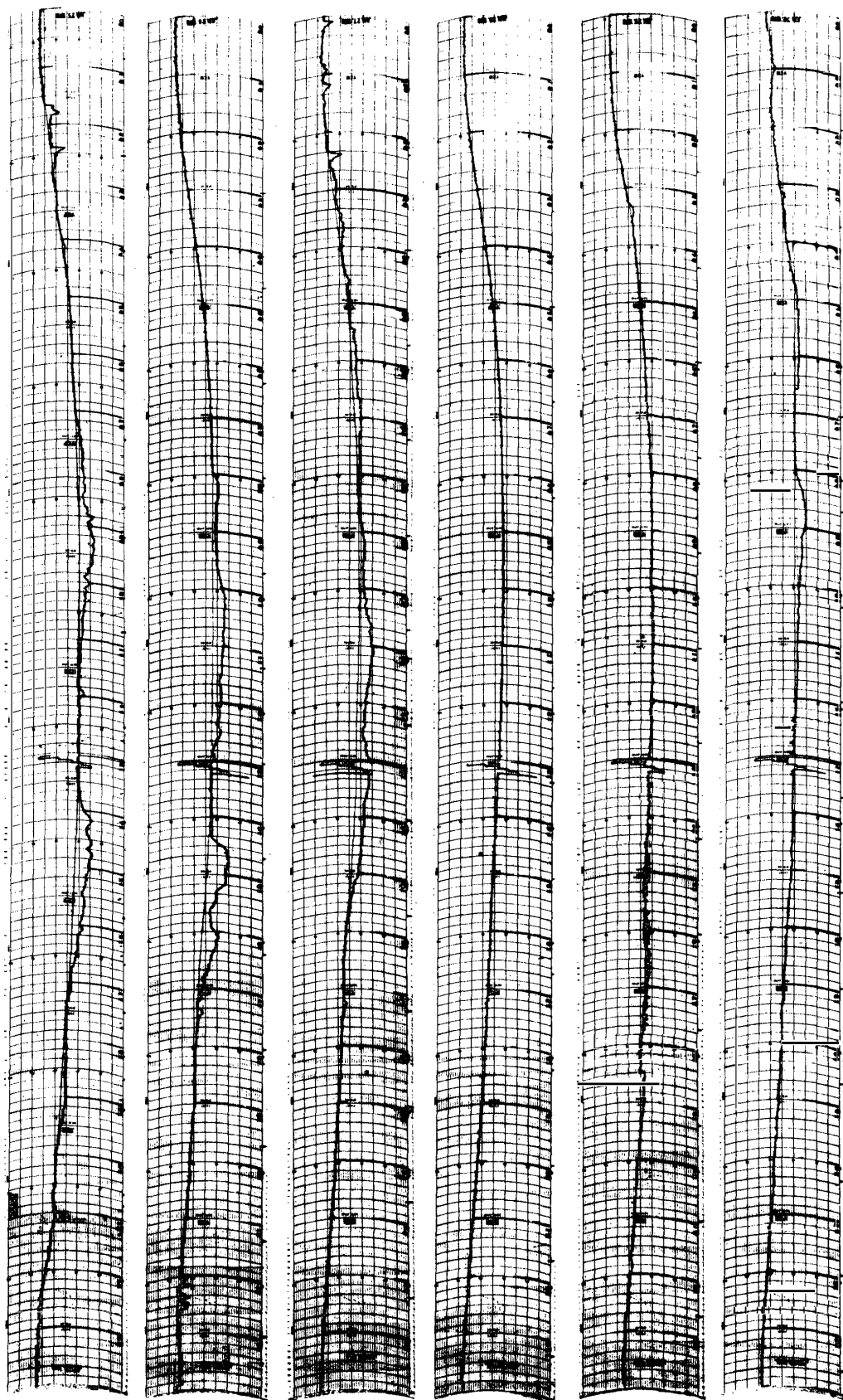
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30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

JULY 1978

1

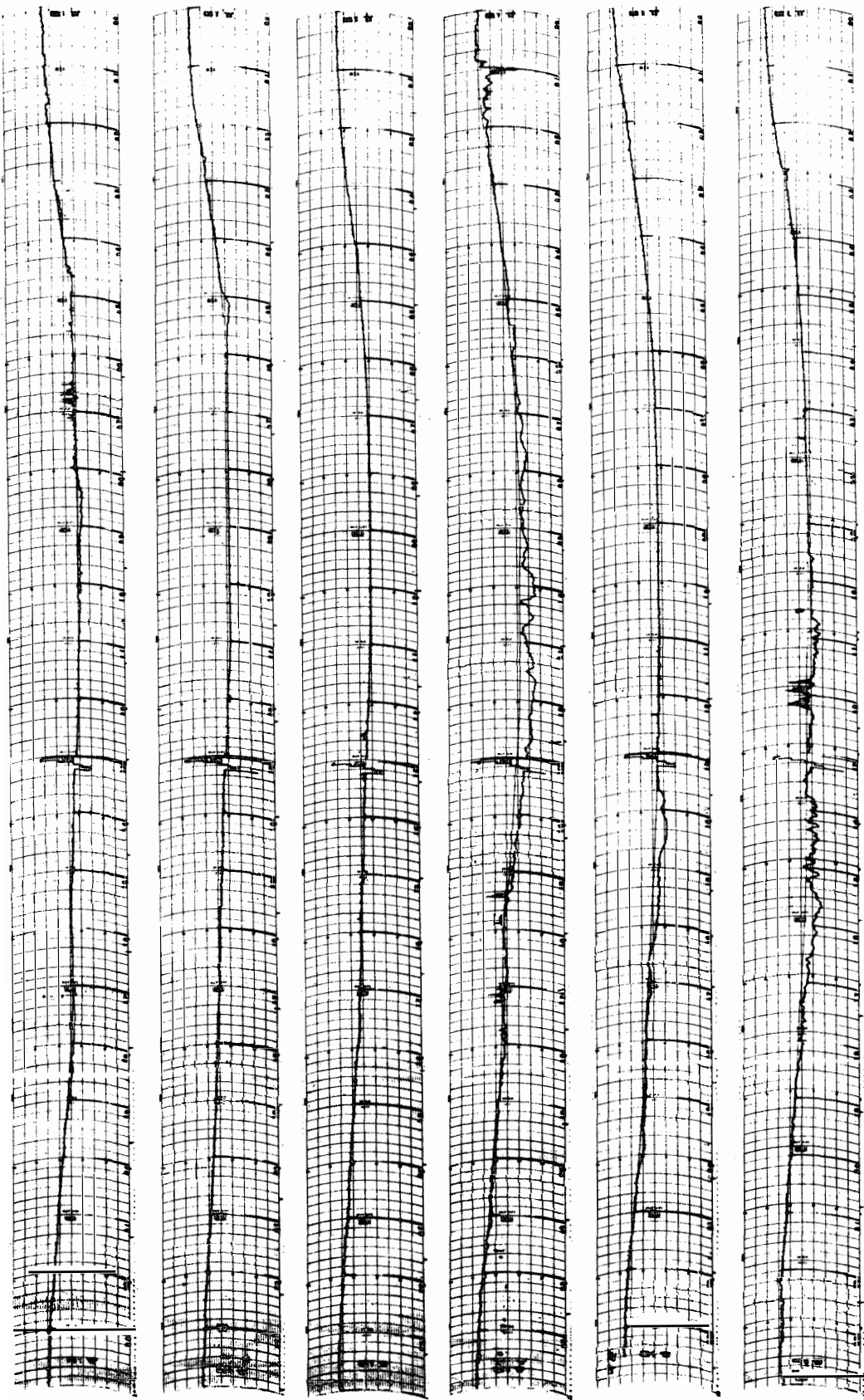
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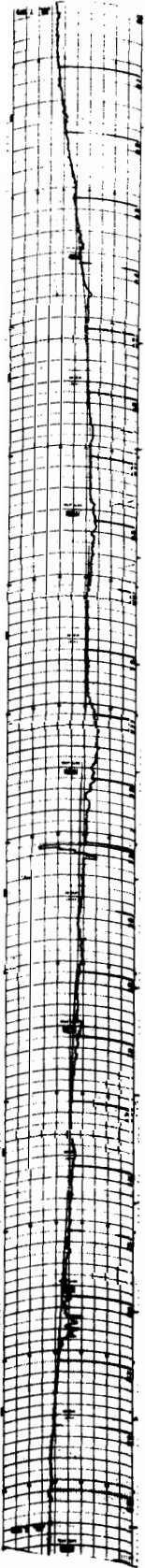


24 20 16 12 08 04 00

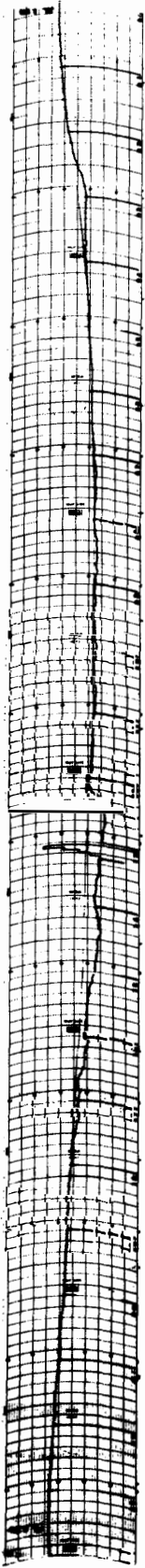
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JULY 1979

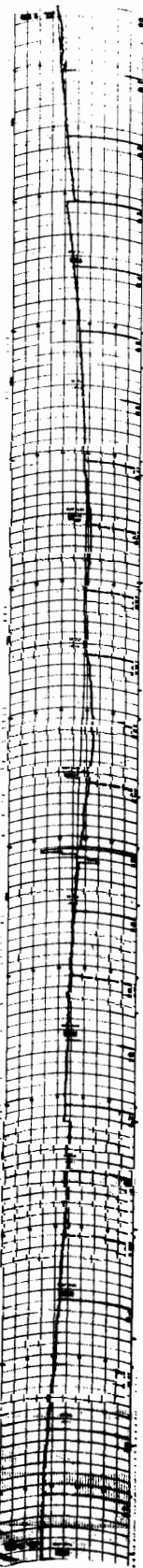
7



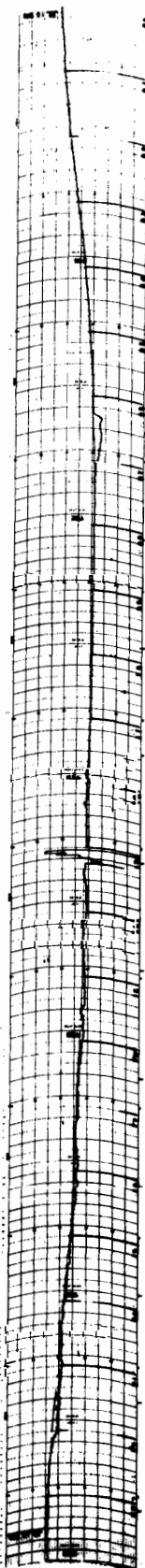
8



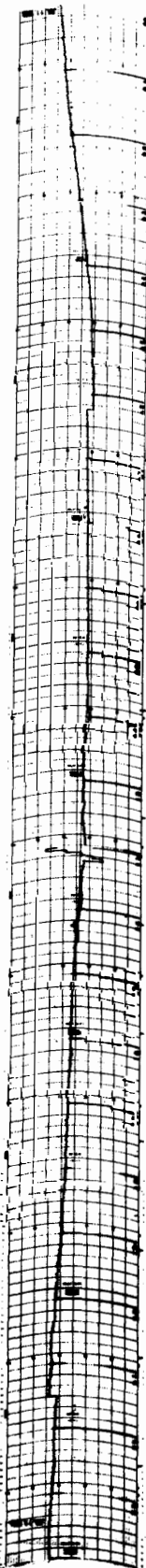
9



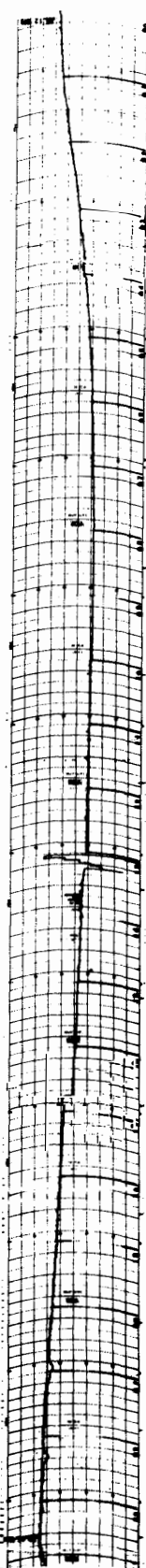
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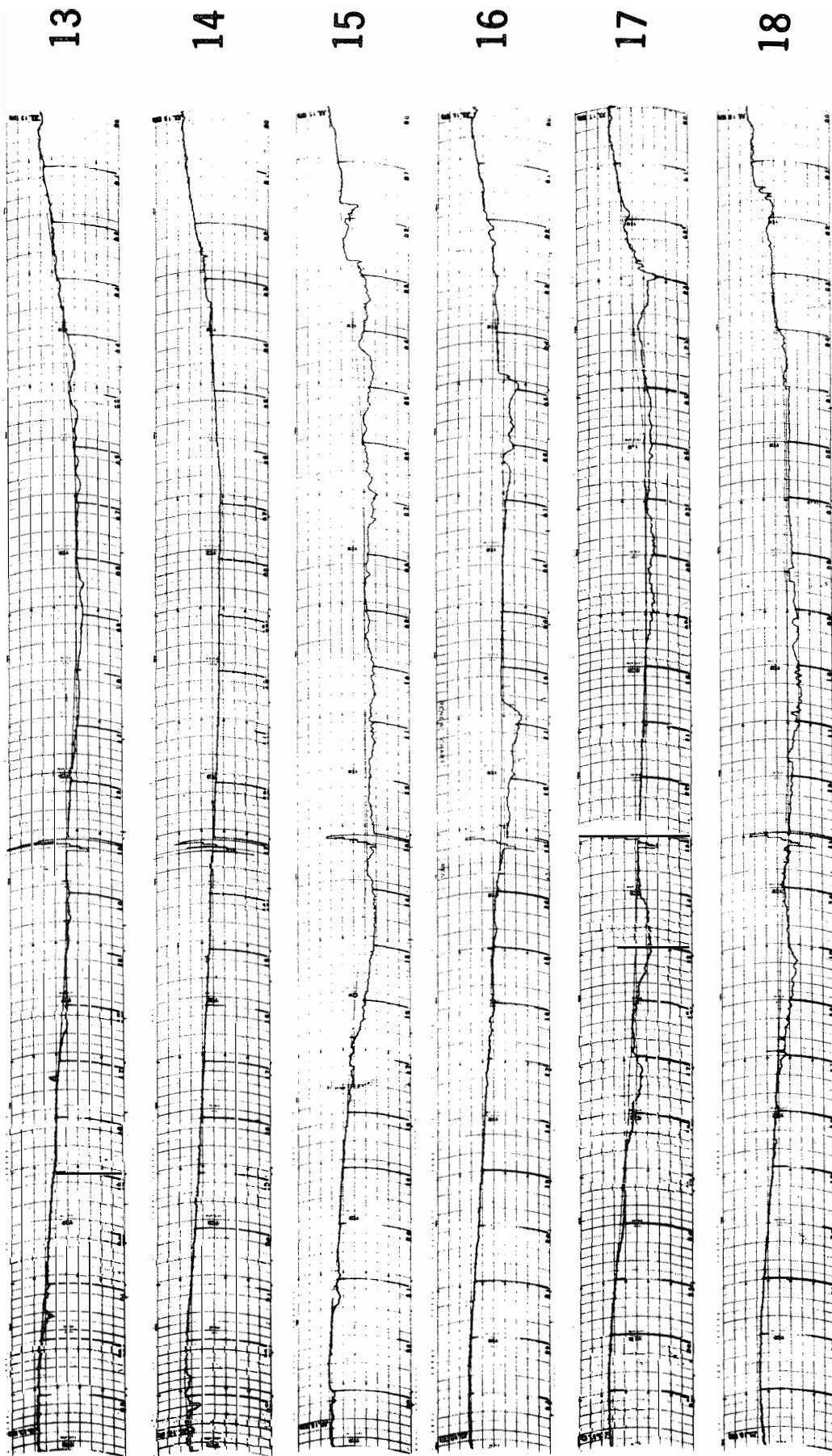


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JULY 1979



24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JULY 1979

19

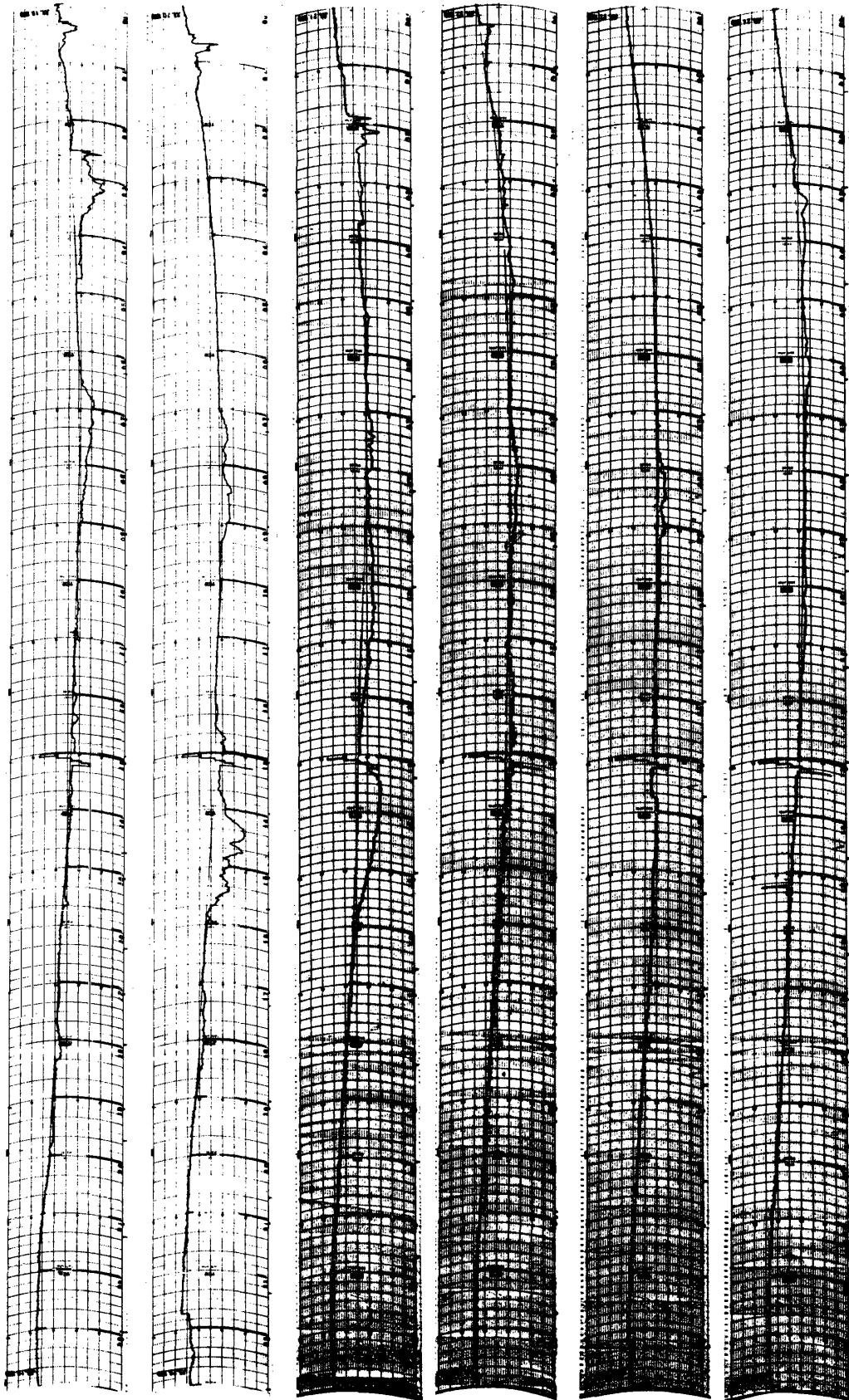
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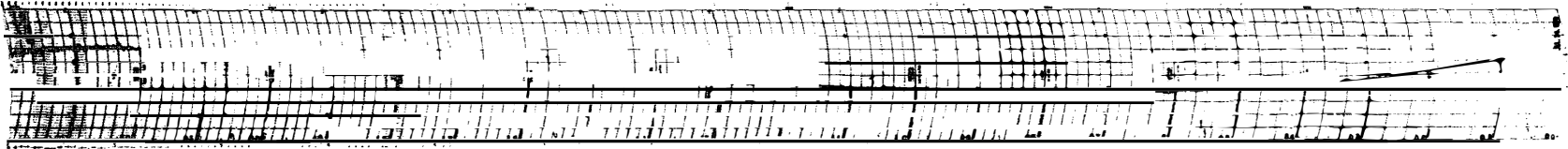
24

30 MHz COSMIC NOISE

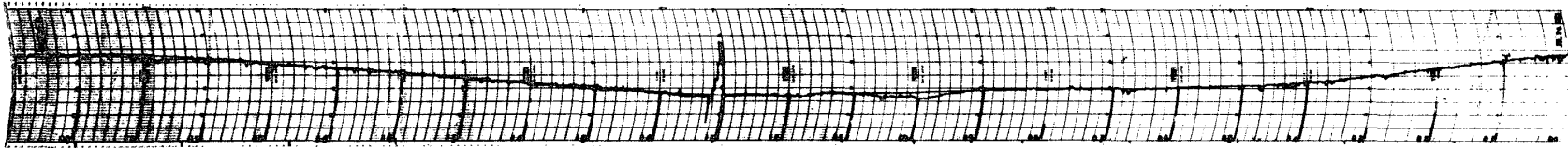
45° EAST MERIDIAN TIME IN HOURS

JULY 1979

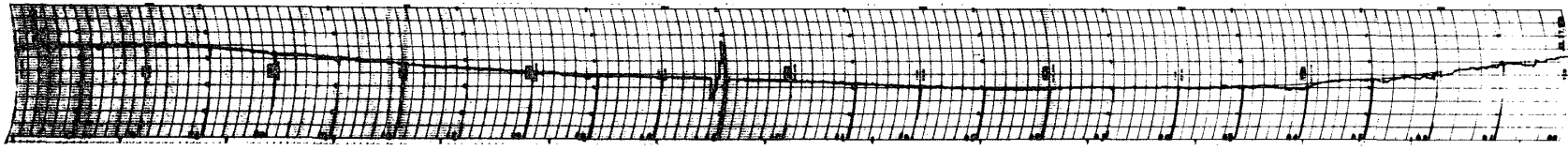
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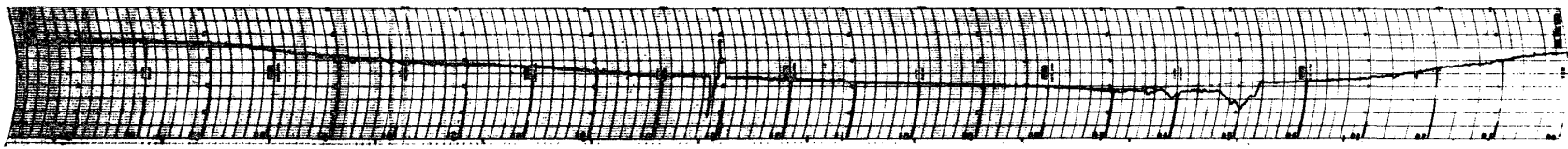
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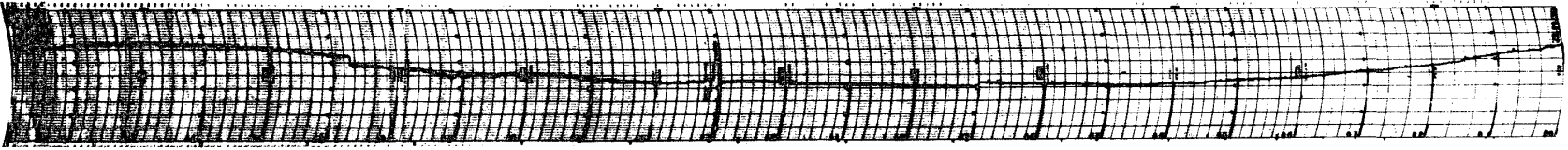
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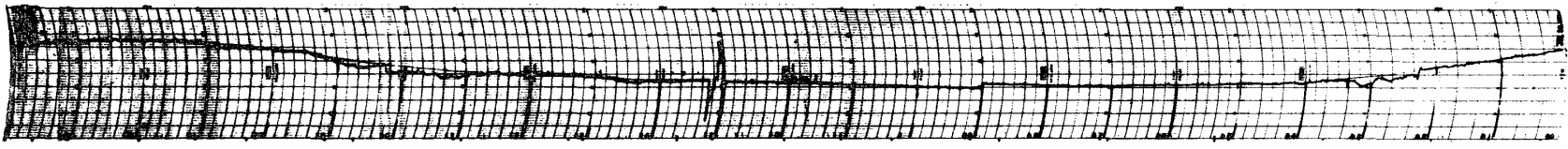
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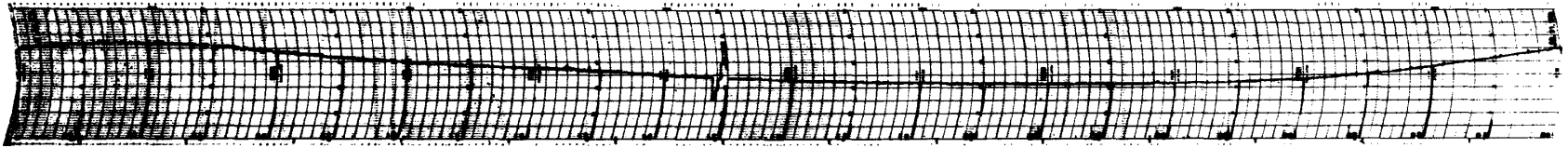
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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JULY 1979

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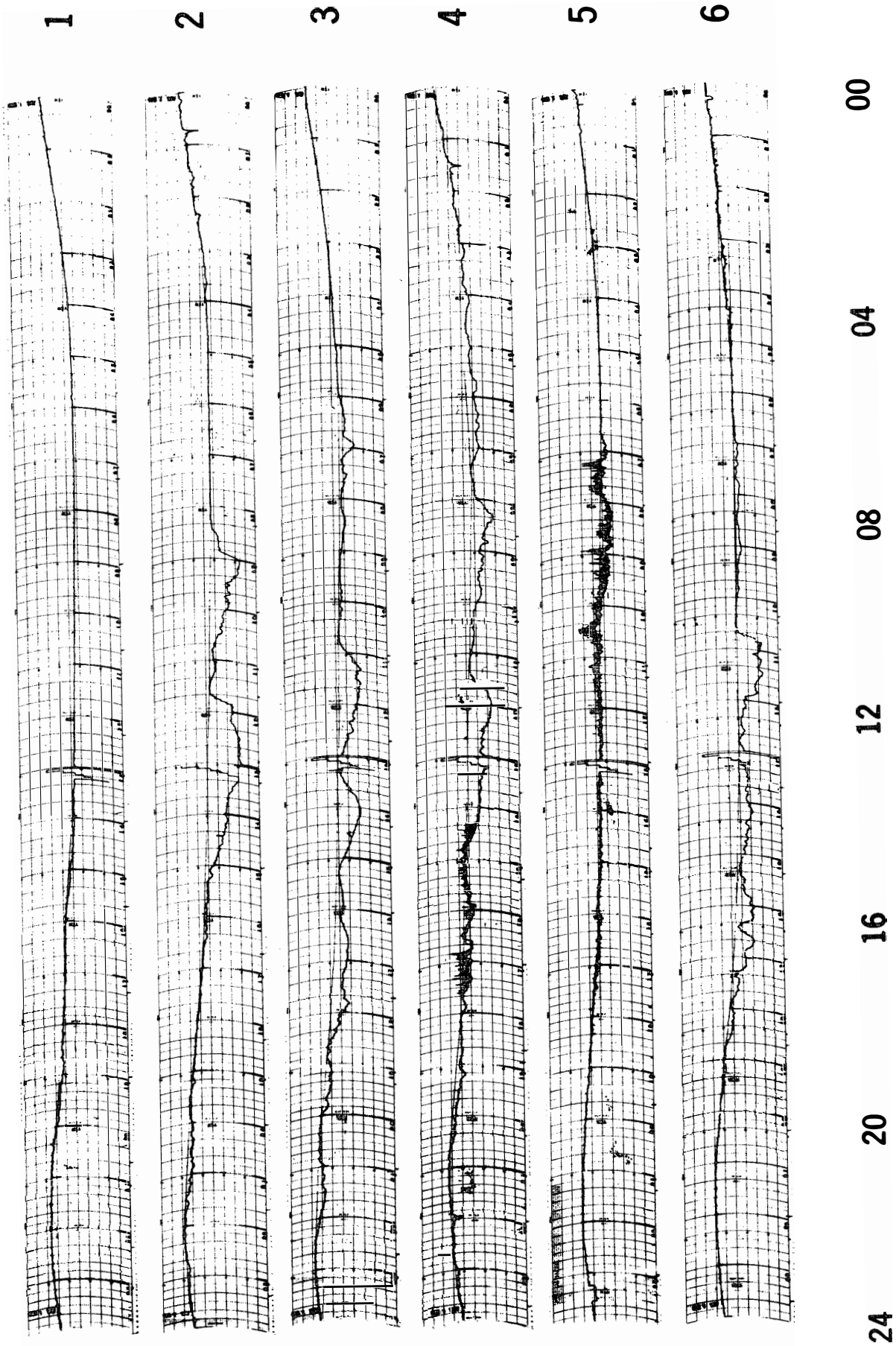
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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

AUG 1979



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

AUG 1979

7

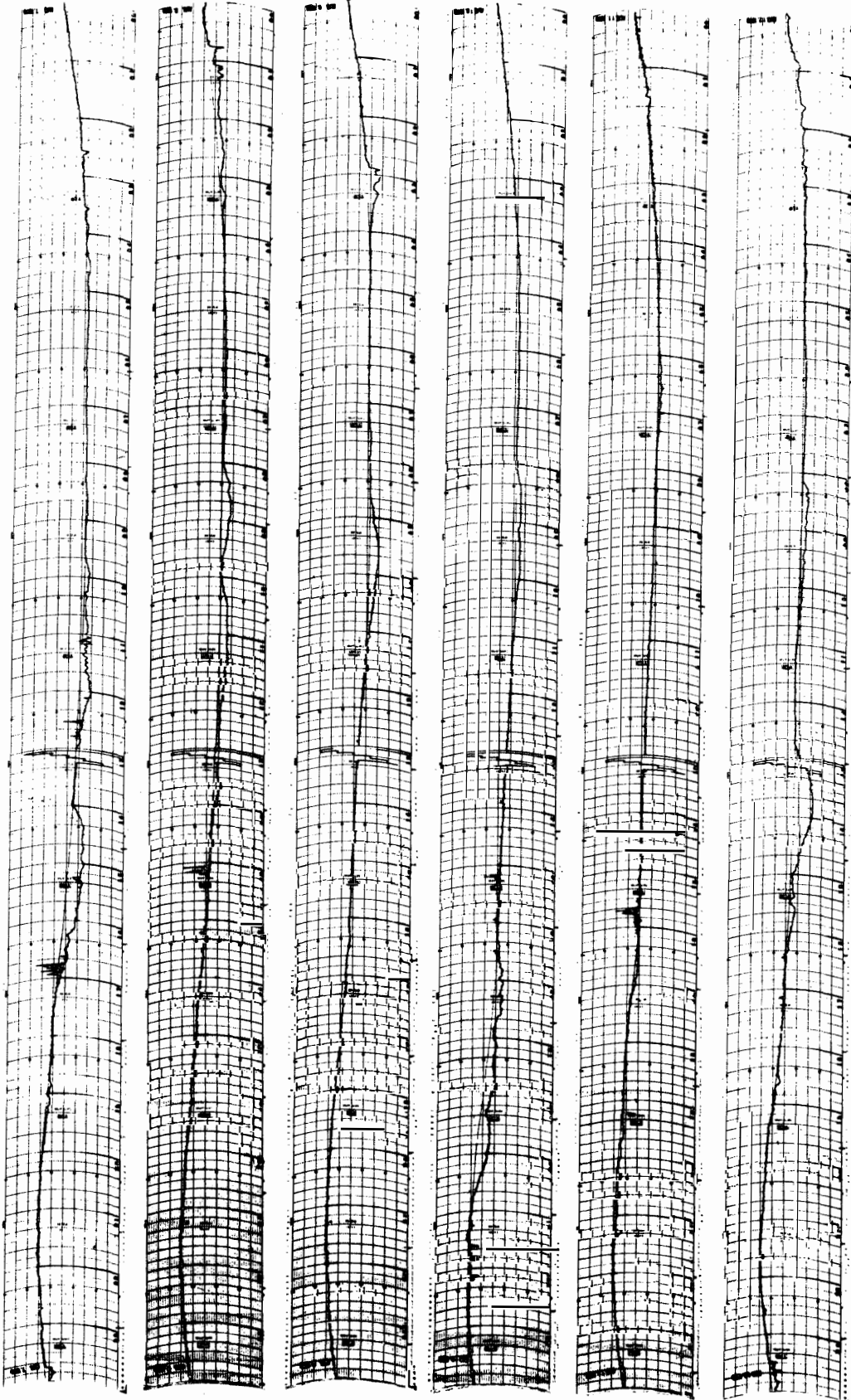
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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

AUG 1979

13

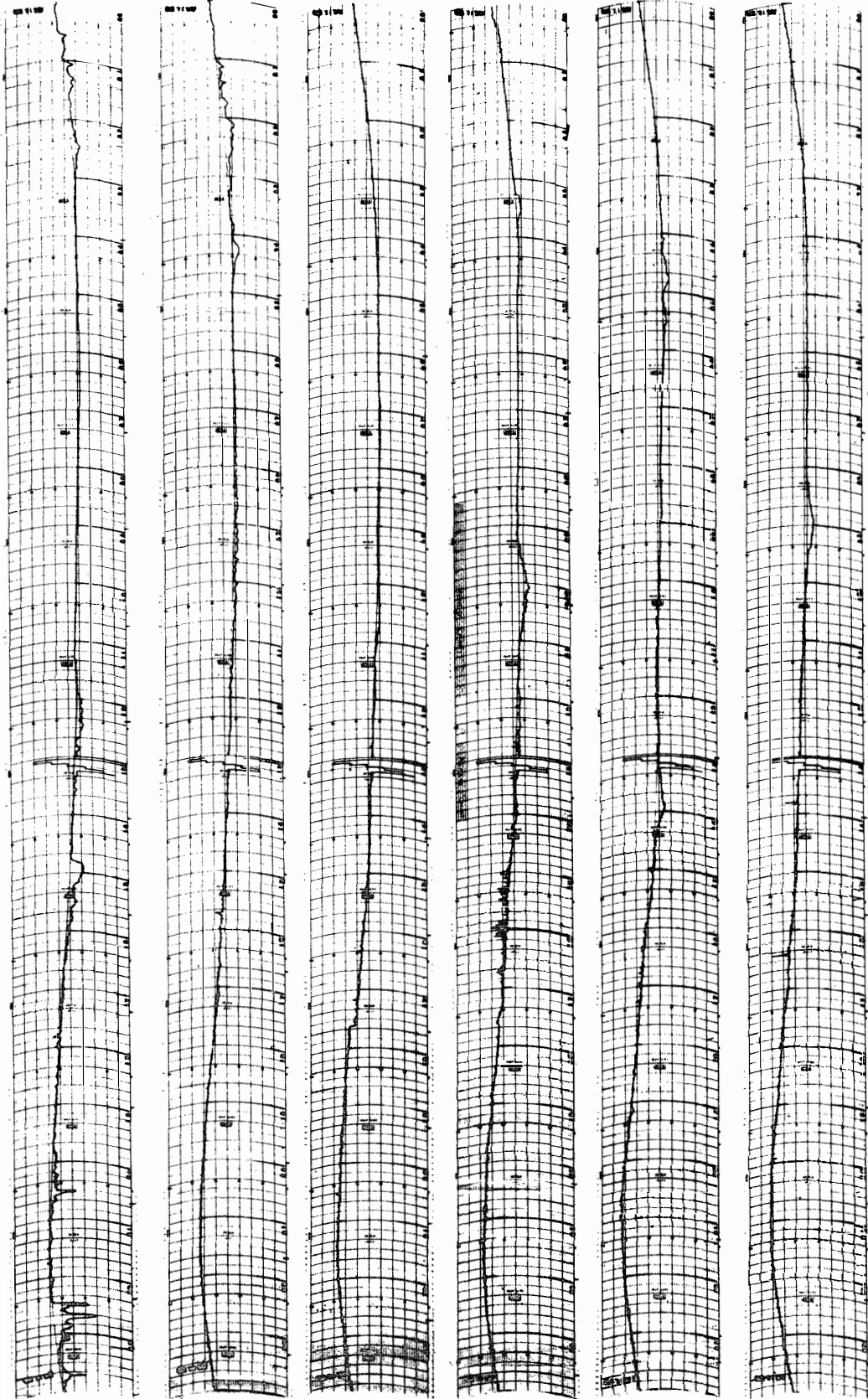
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30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

AUG 1979

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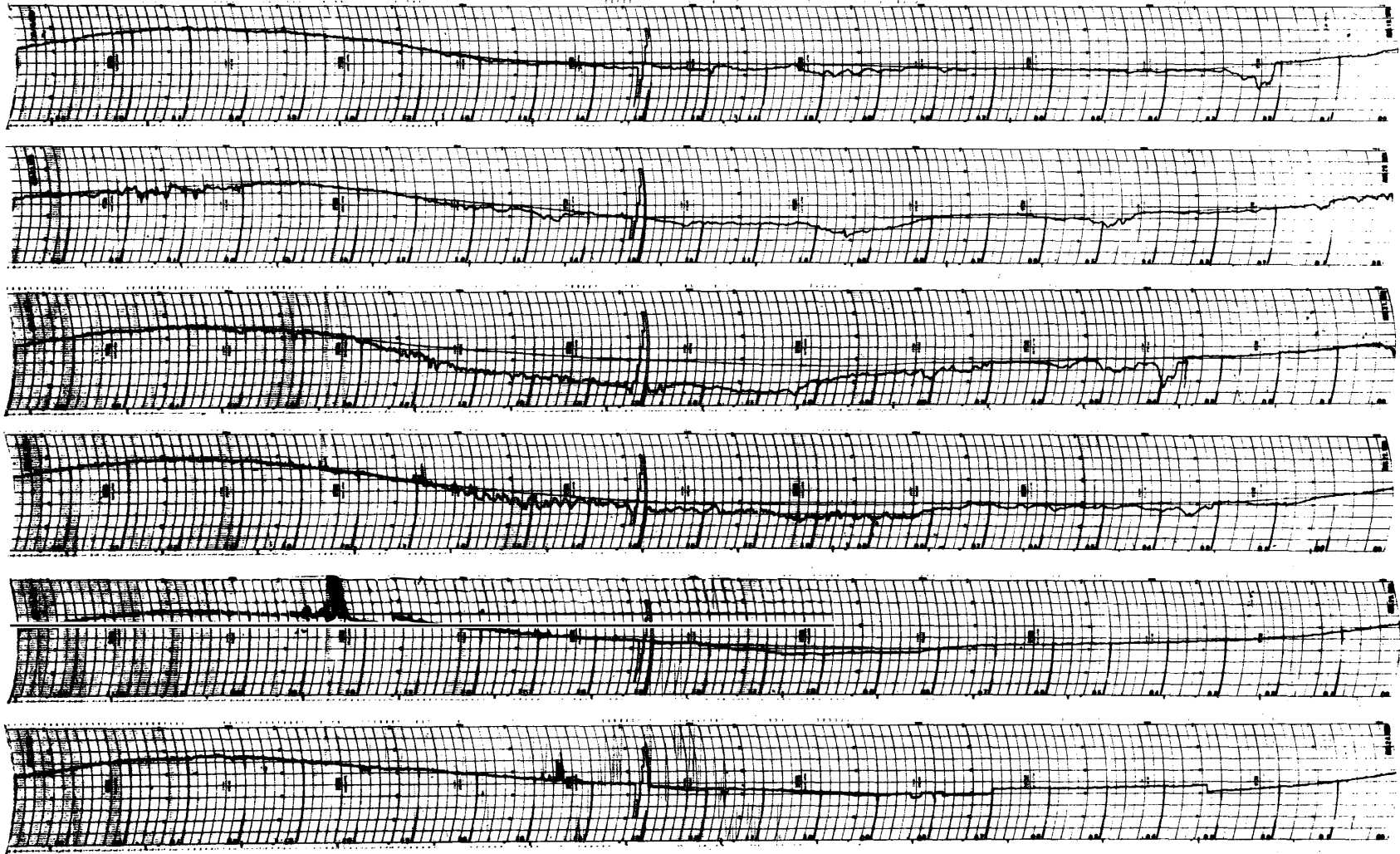
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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

AUG 1979

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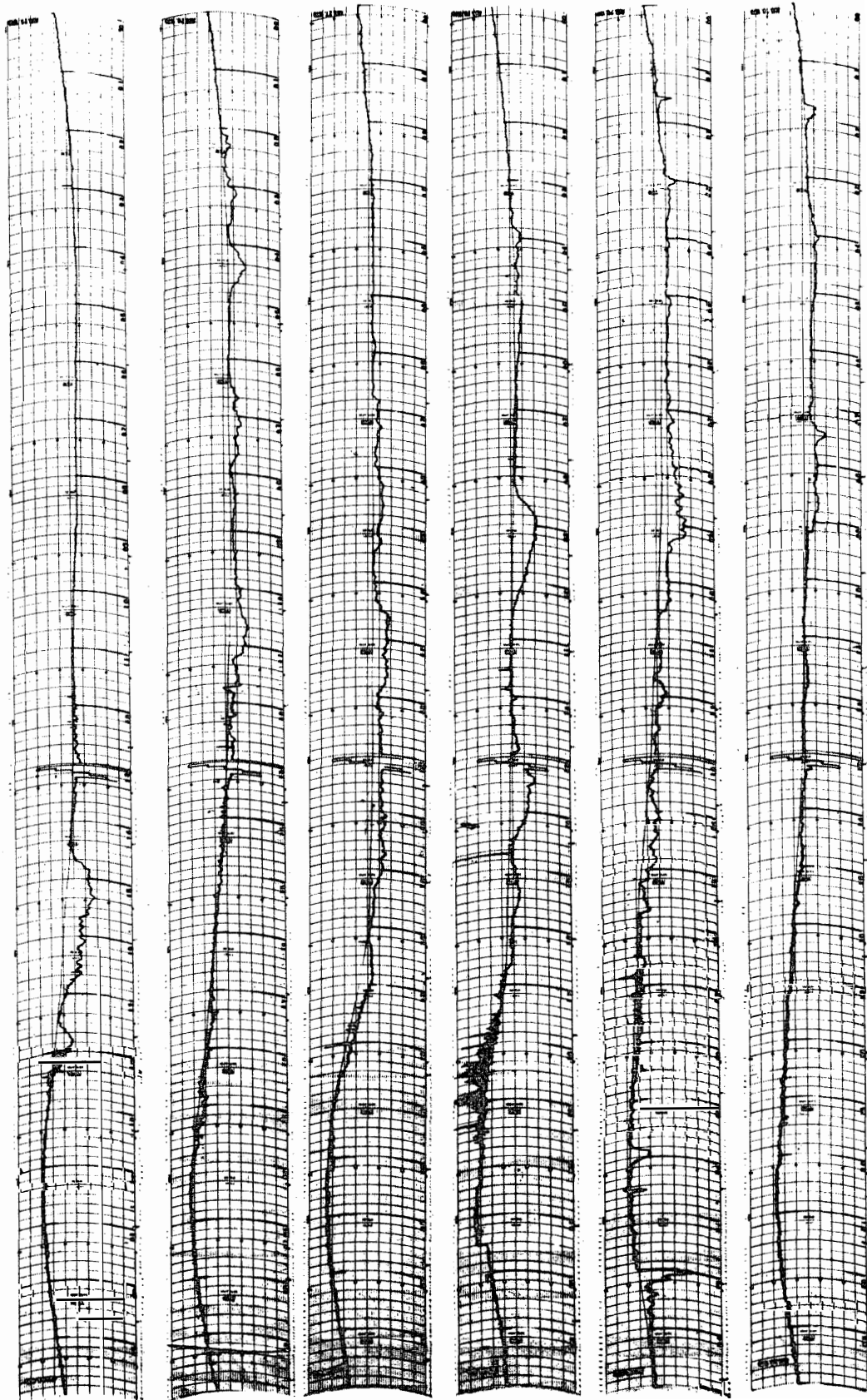
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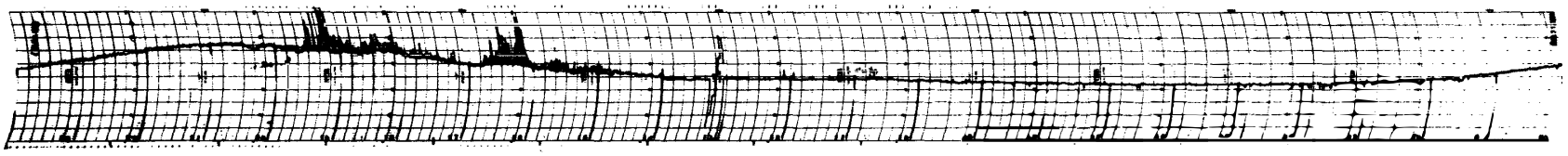
24

30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

AUG 1979

31

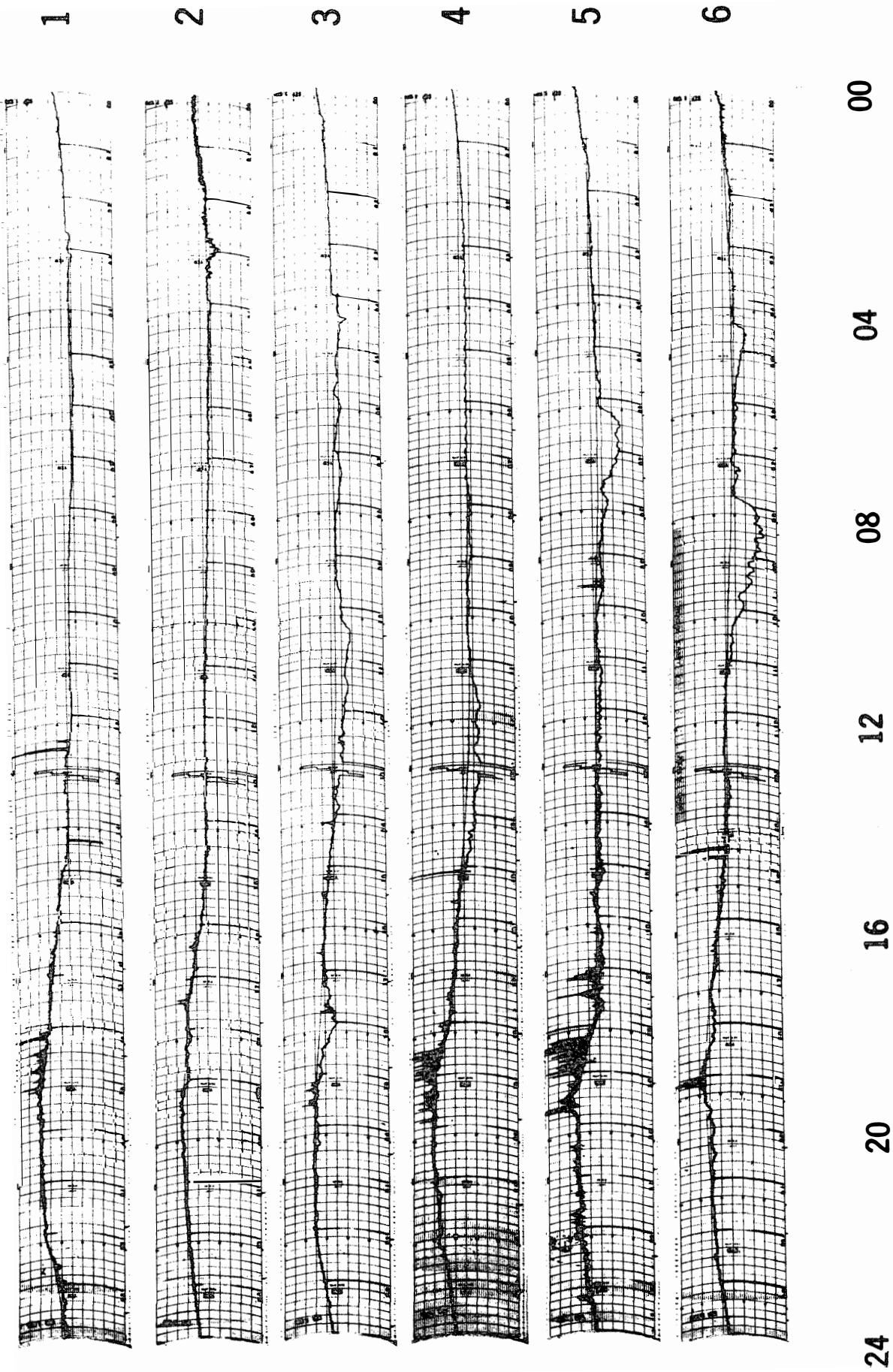


24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

SEP 1979



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

SEP 1979

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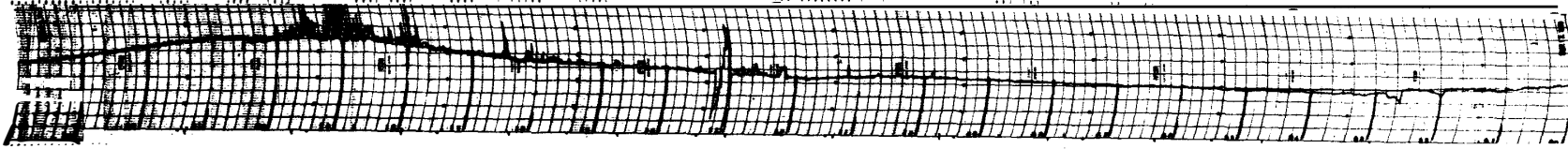
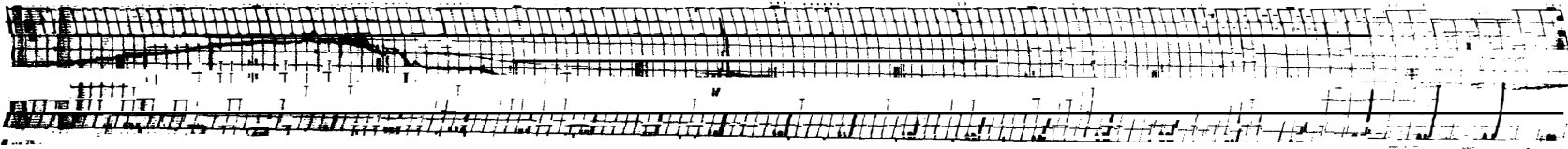
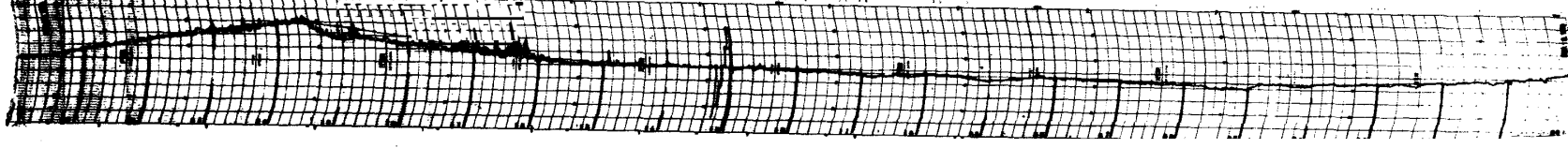
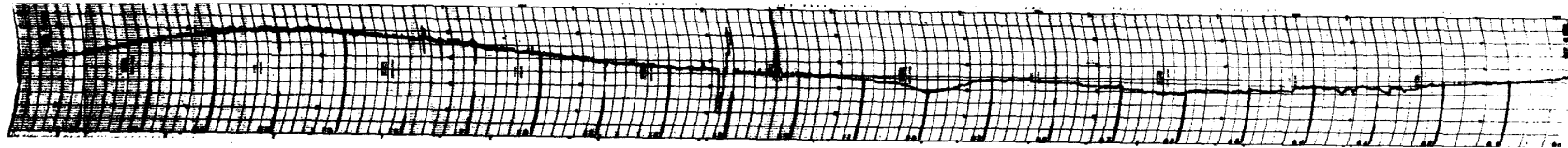
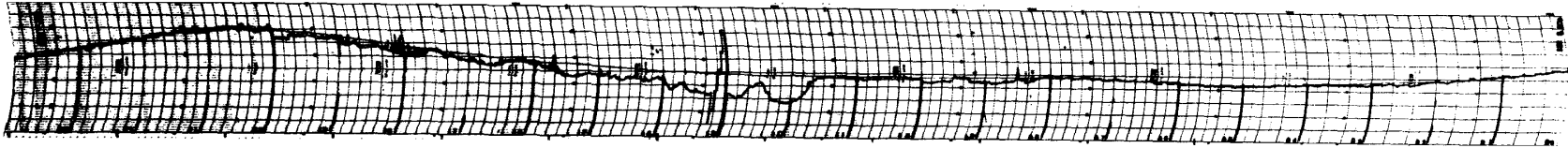
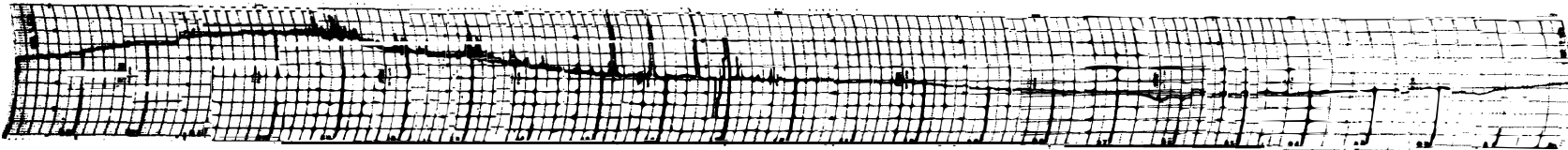
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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

SEP 079

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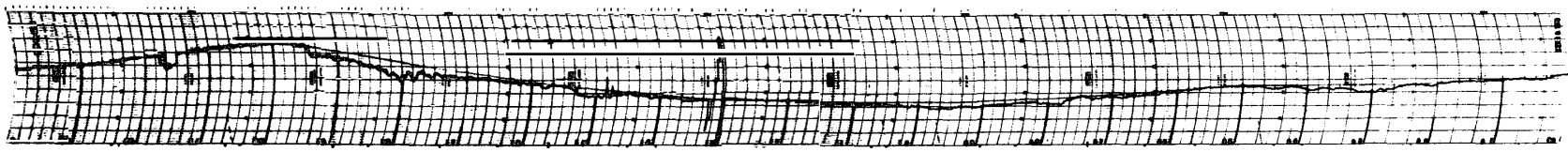
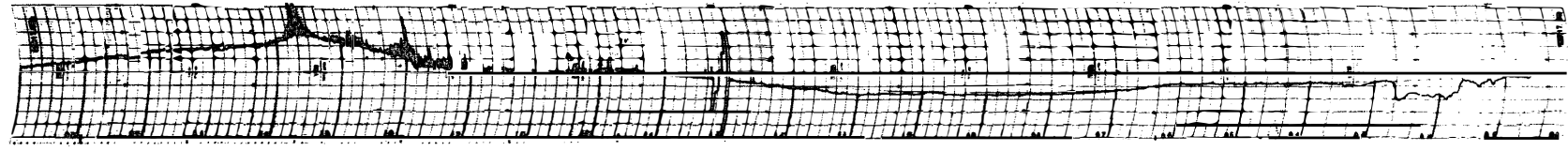
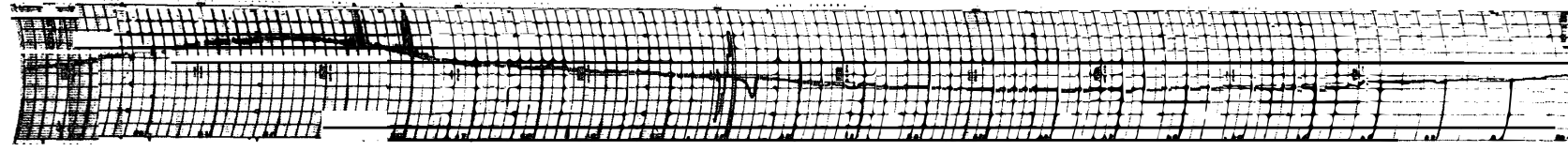
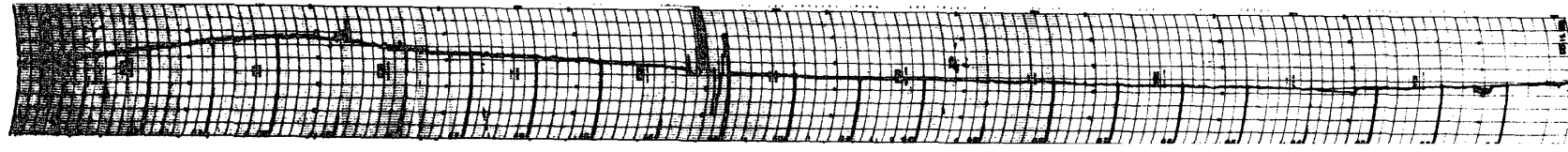
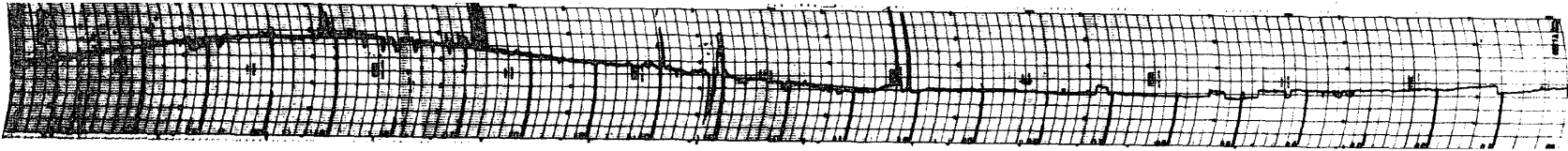
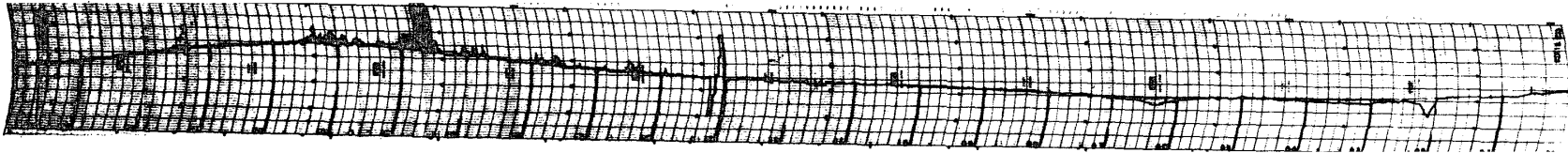
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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

SEP 1979

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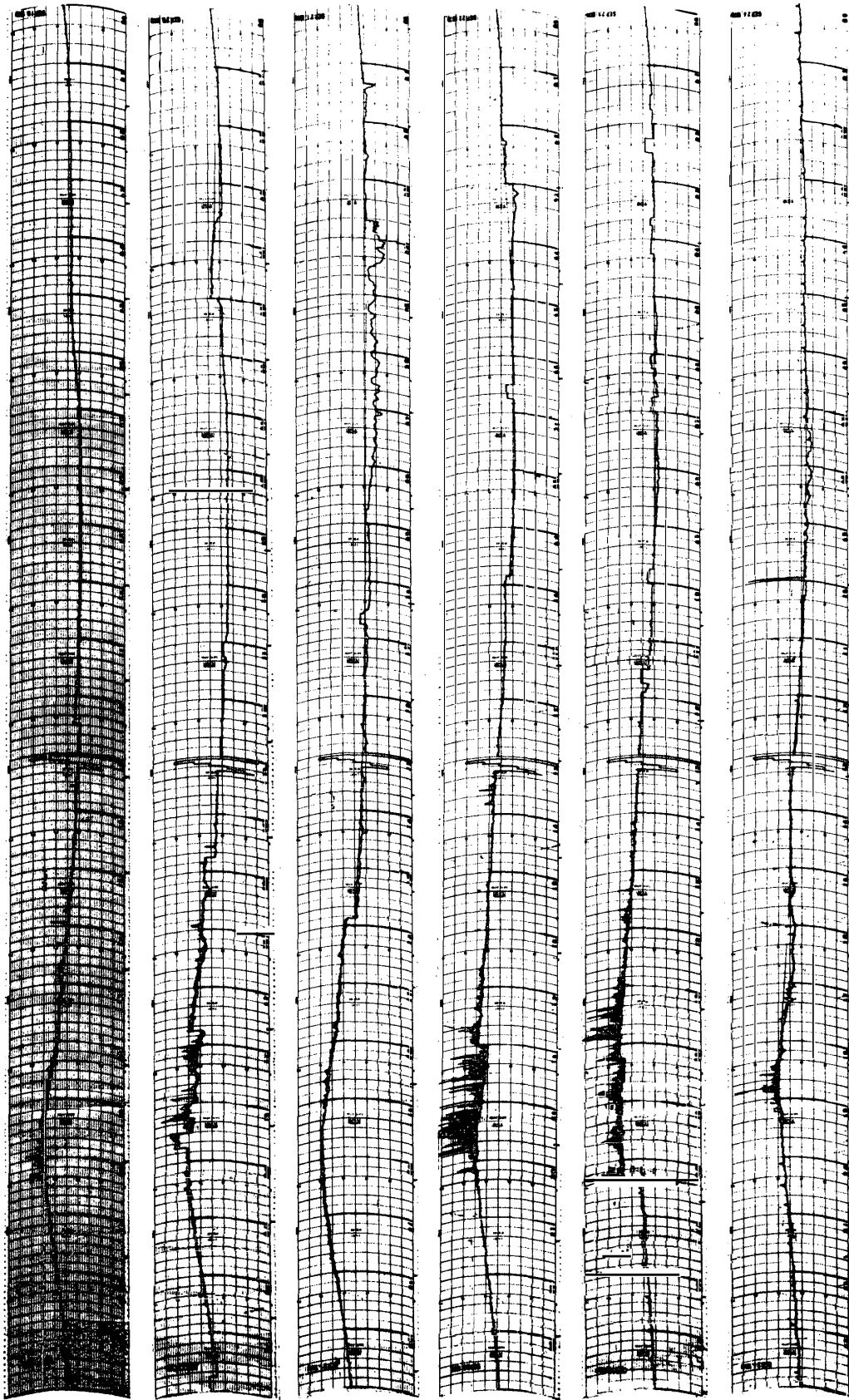
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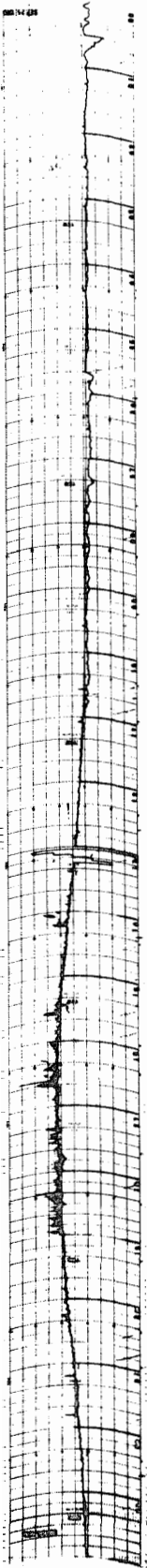


24 20 16 12 08 04 00

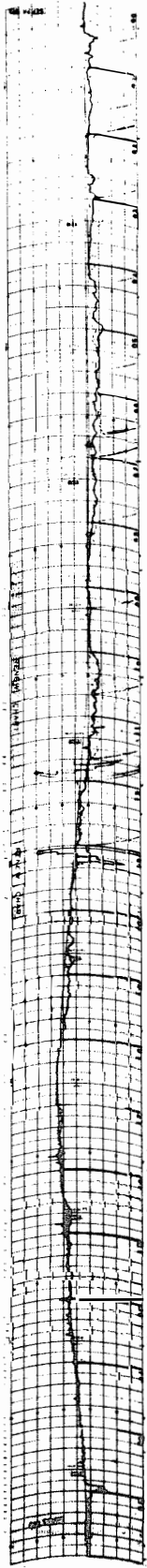
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

SEP 1979

25



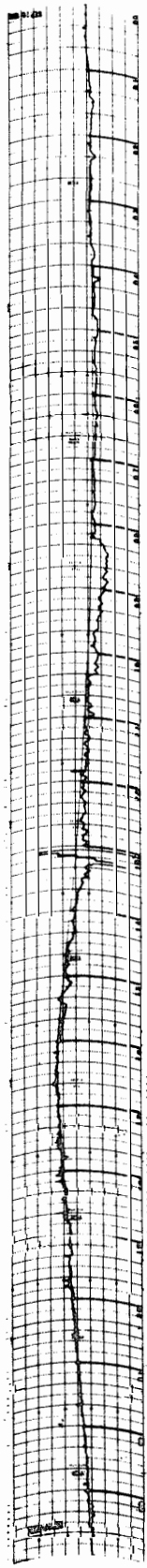
26



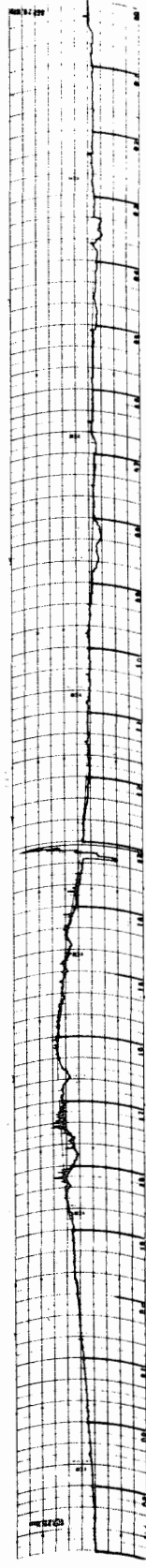
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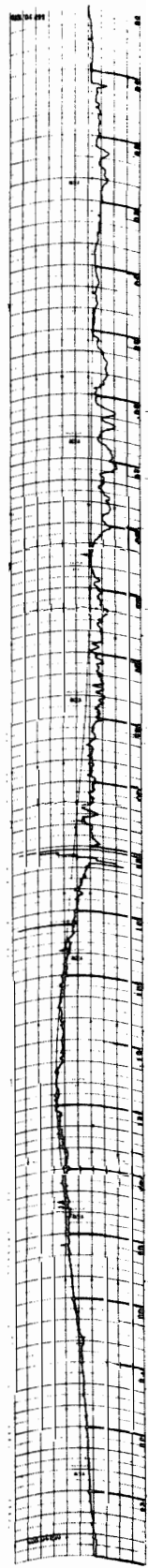
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24 20 16 12 08 04 00

30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

OCT 1979

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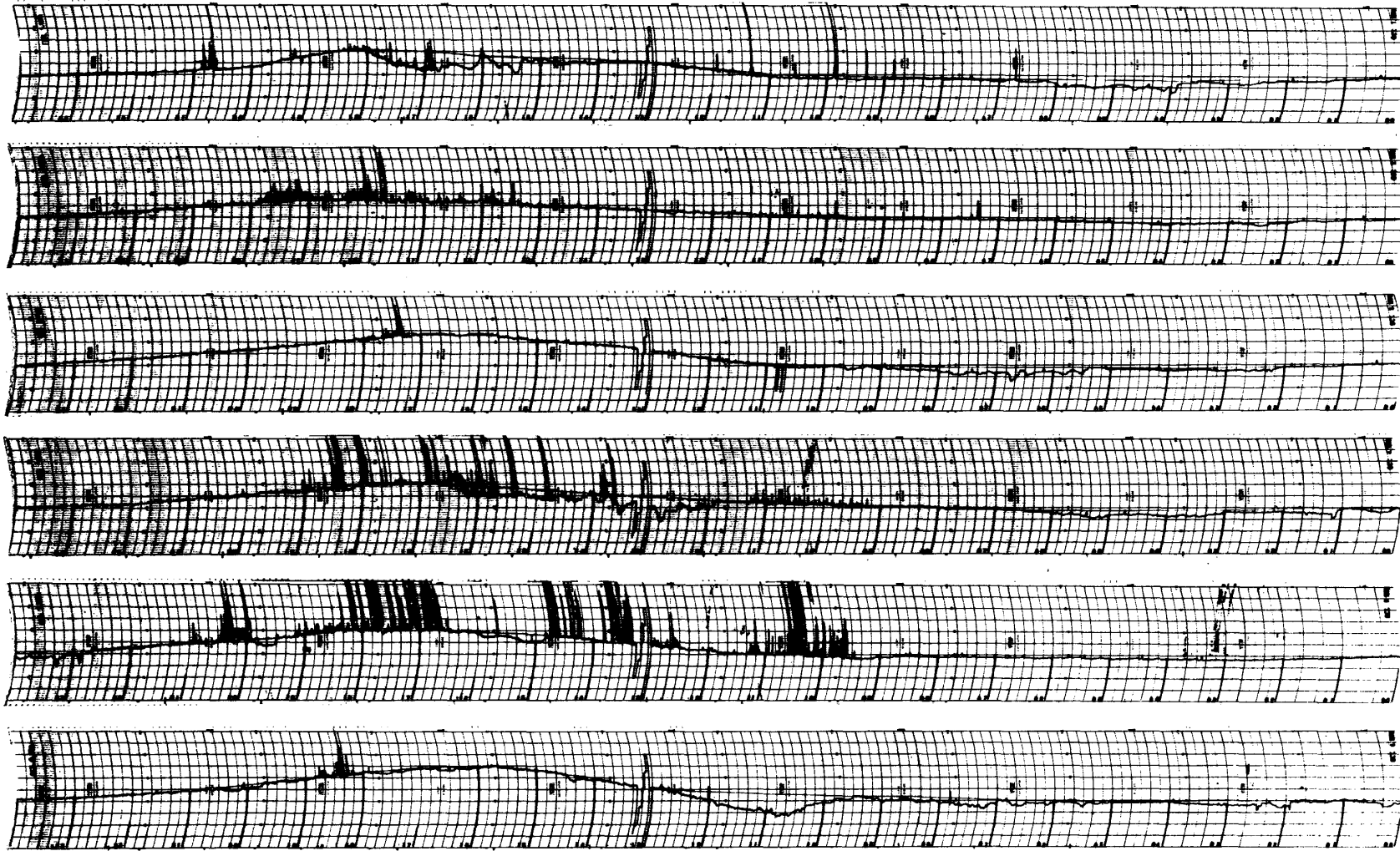
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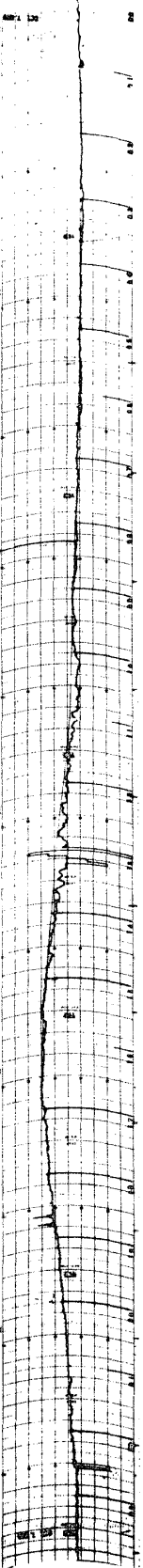
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45° EAST MERIDIAN TIME IN HOURS

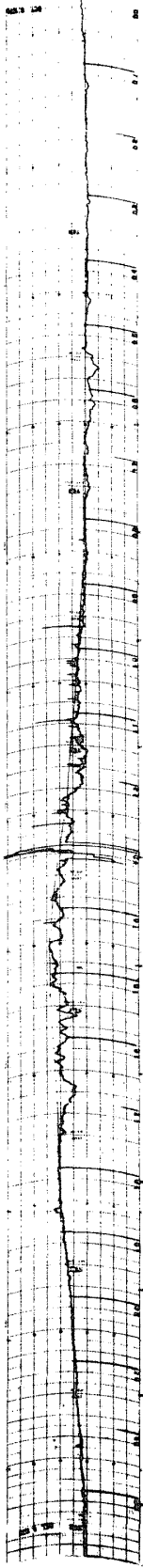
30 MHz COSMIC NOISE

OCT 1979

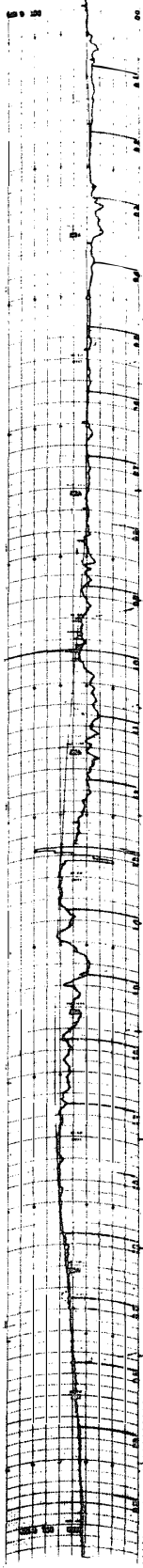
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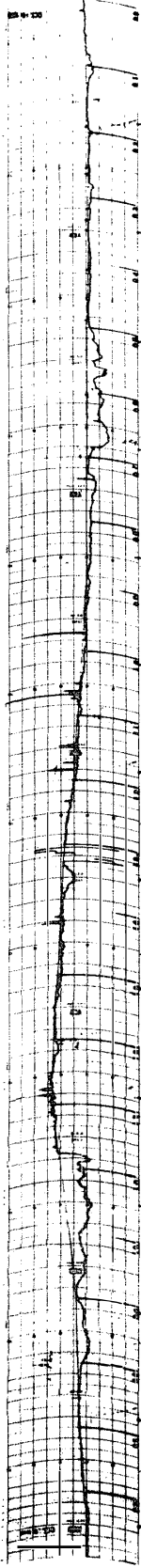
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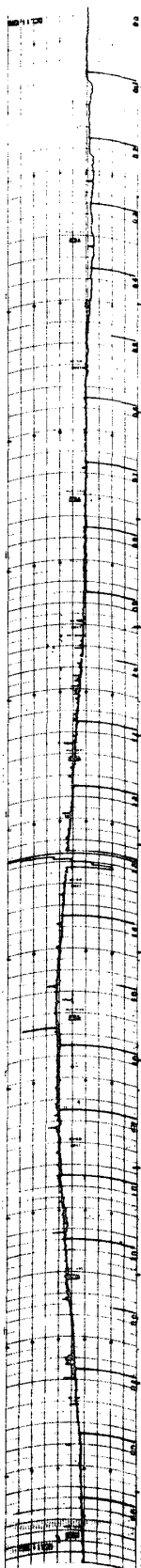
9



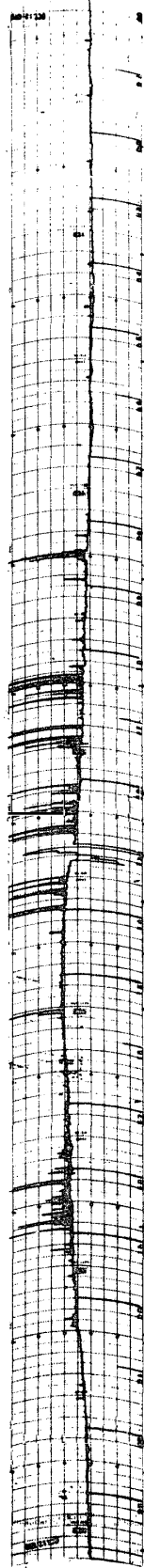
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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

OCT 1979

13

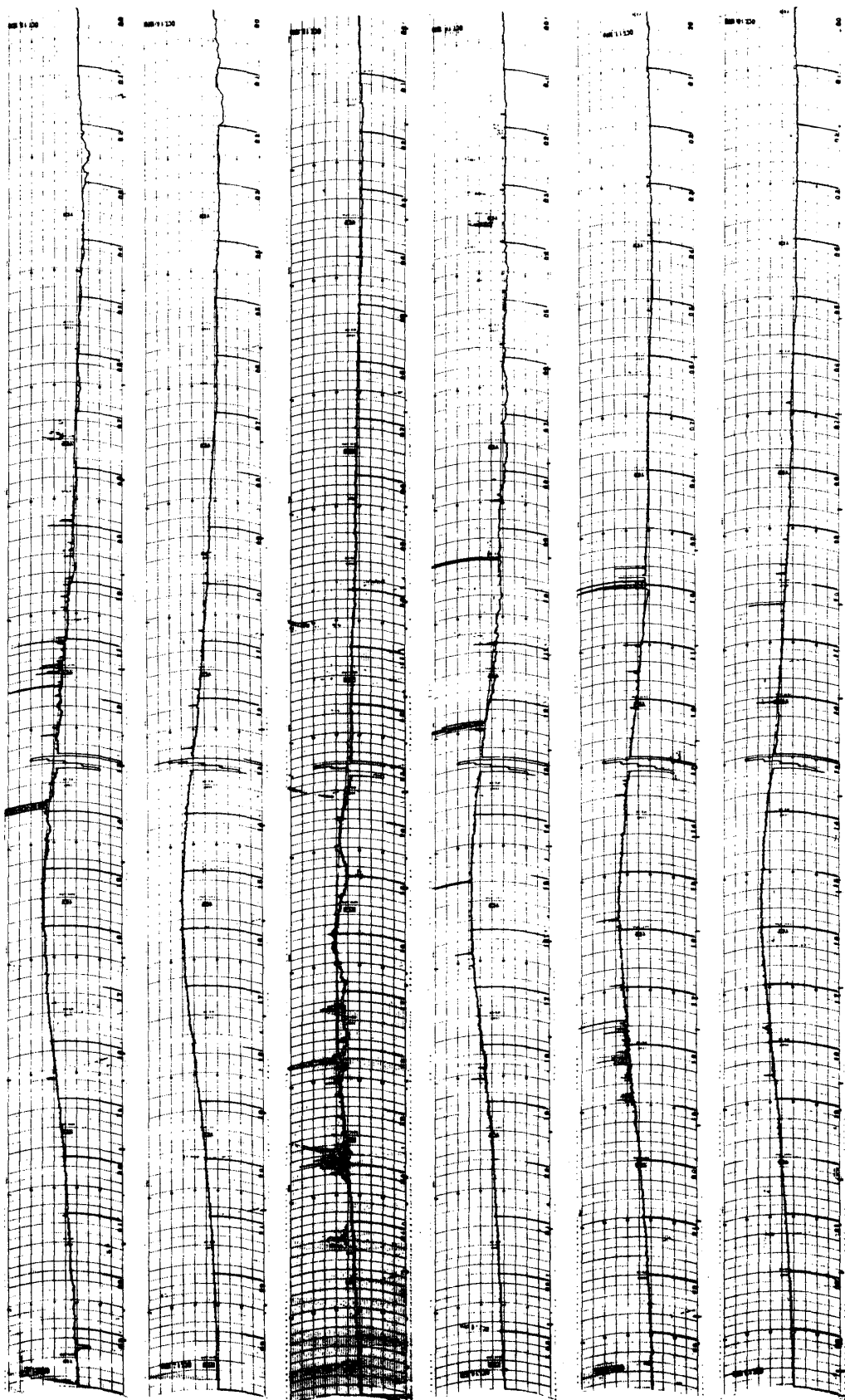
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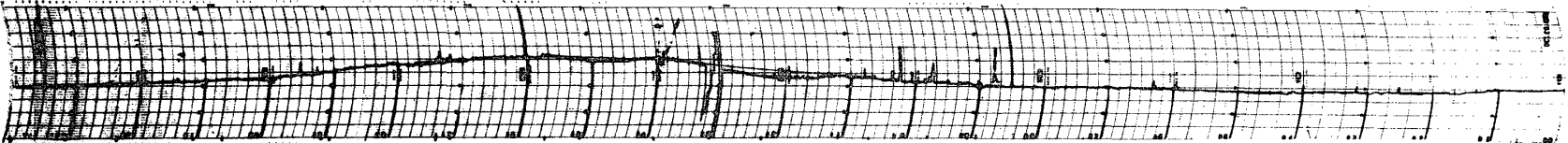
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

OCT 1979

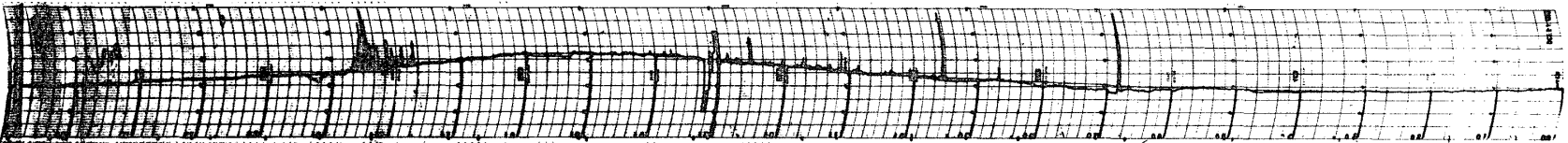
19



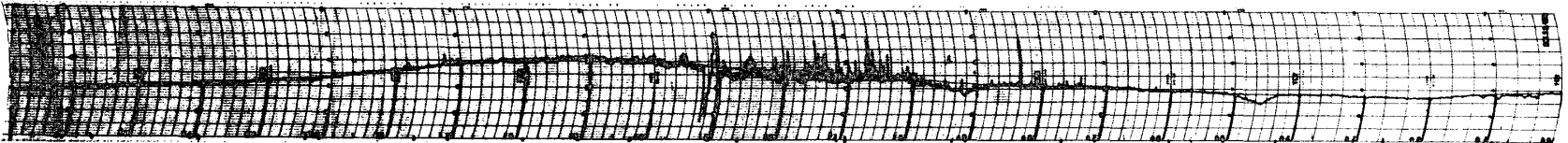
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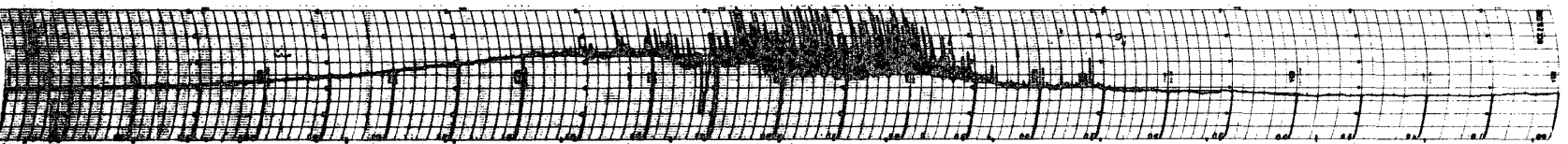
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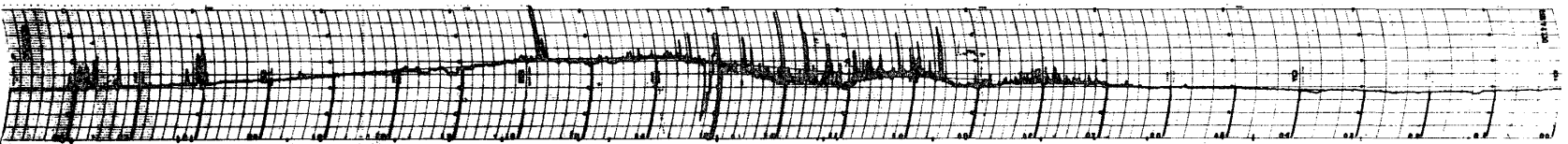
22



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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

OCT 1979

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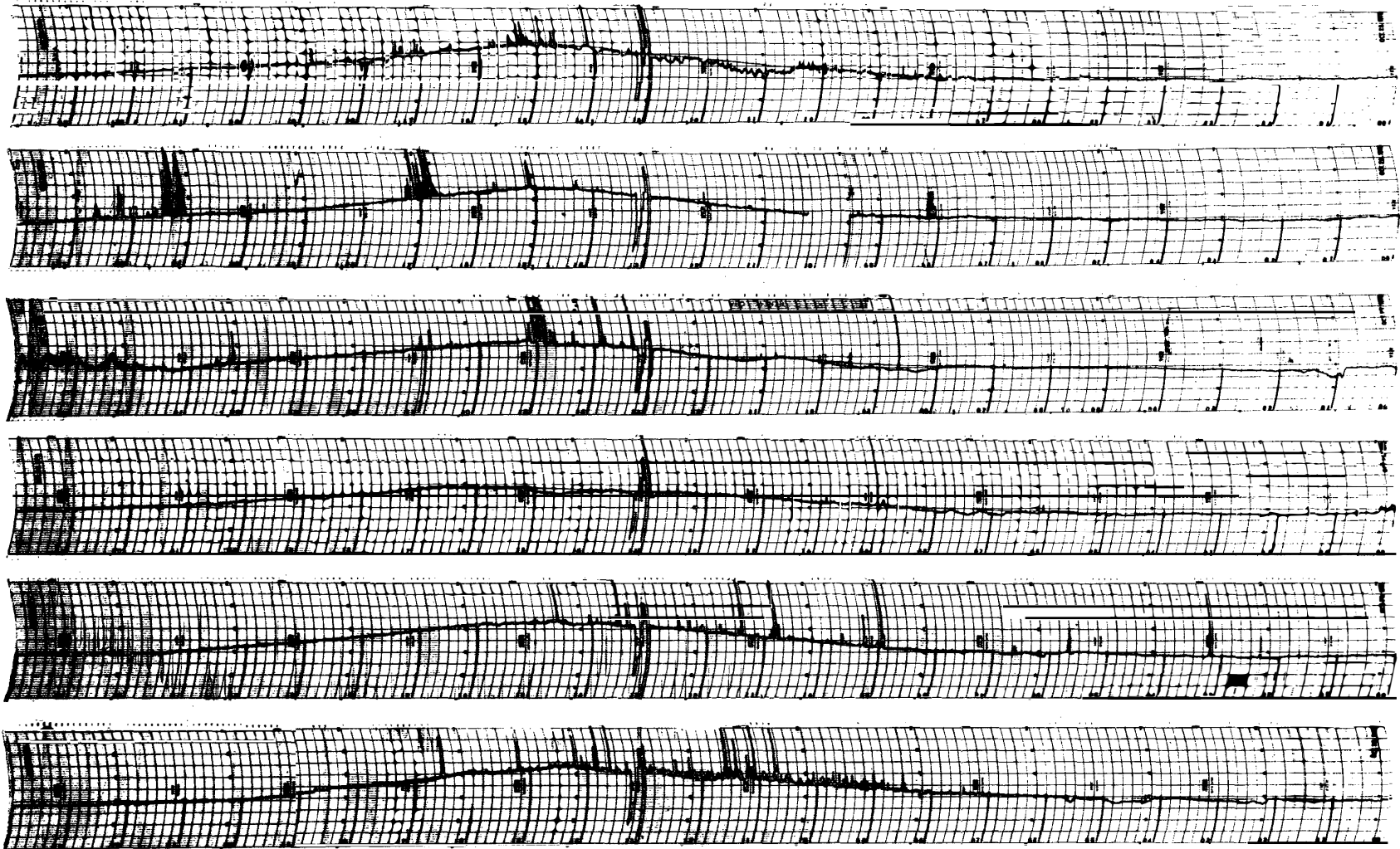
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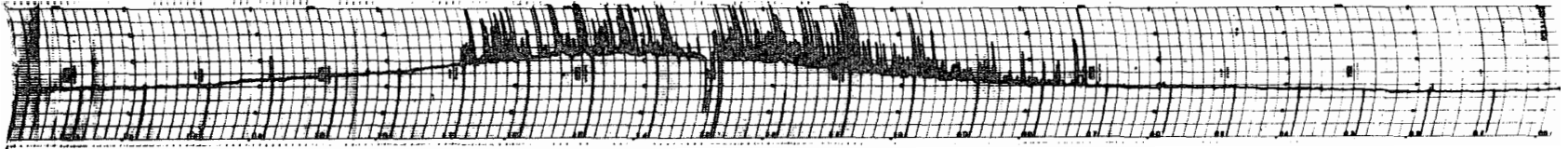
45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

-71-

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OCT 1979



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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

October 26 0930 - 1020 failure of equipment

NOV 1979

1

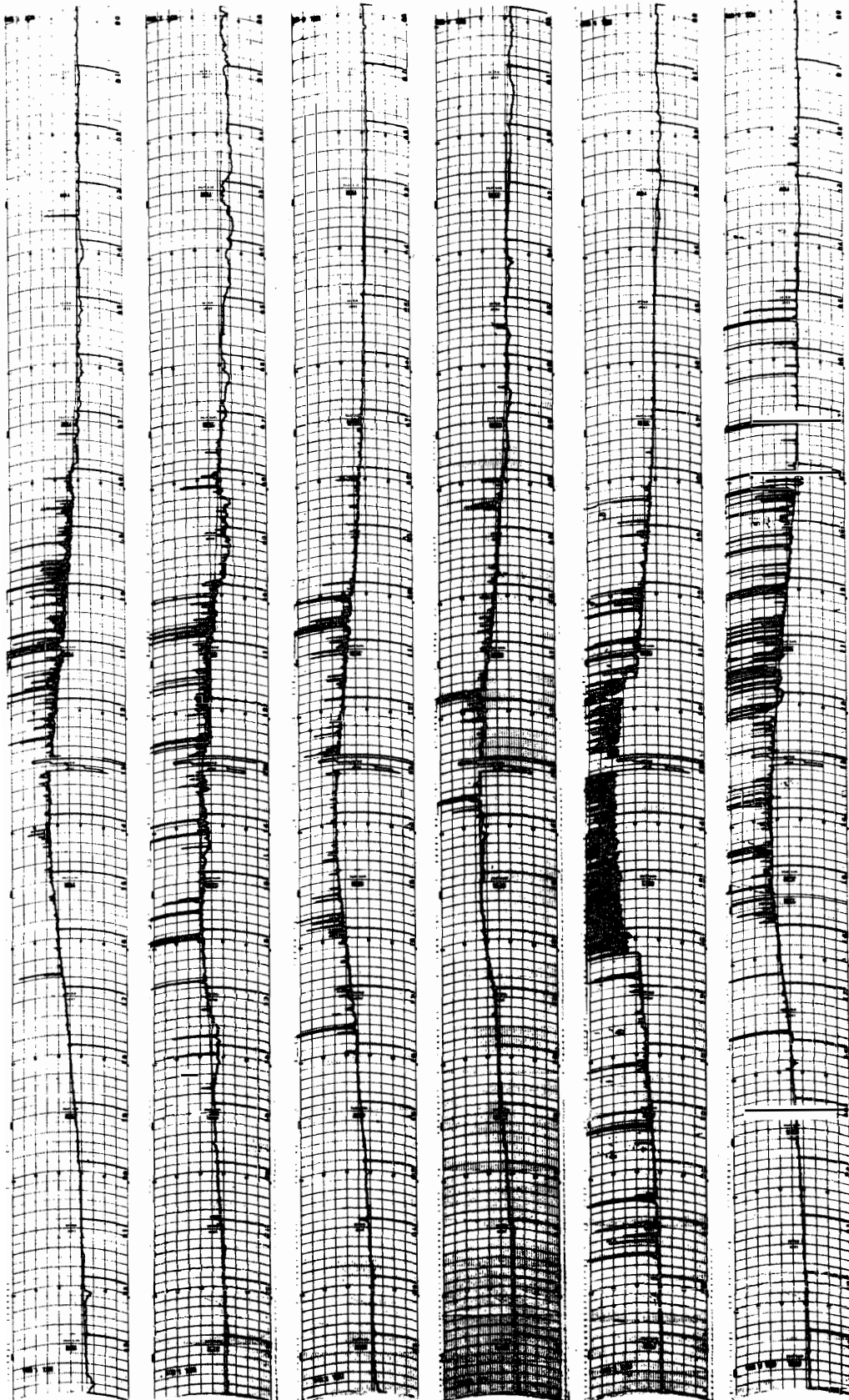
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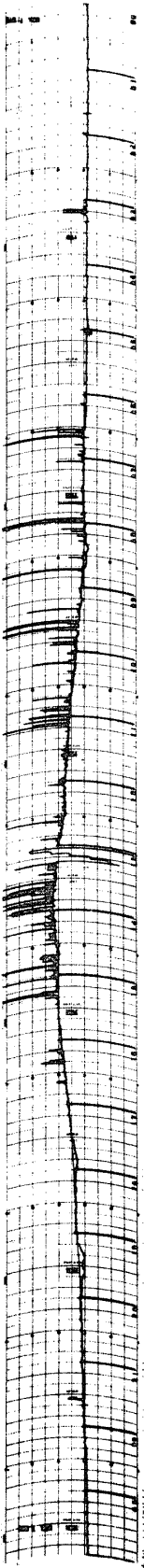
24

30 MHz COSMIC NOISE

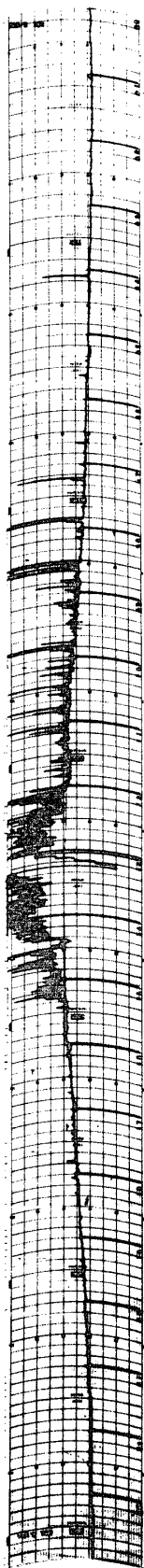
45° EAST MERIDIAN TIME IN HOURS

NOV 1979

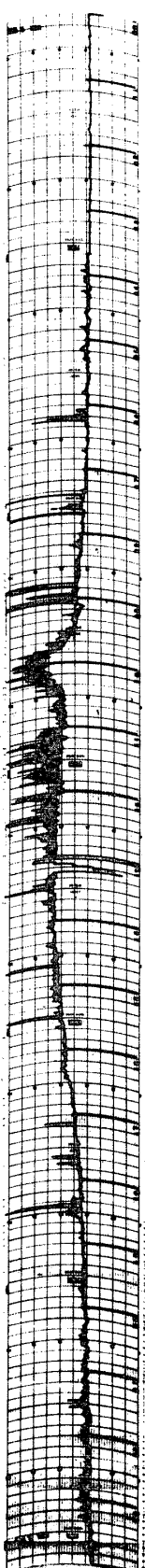
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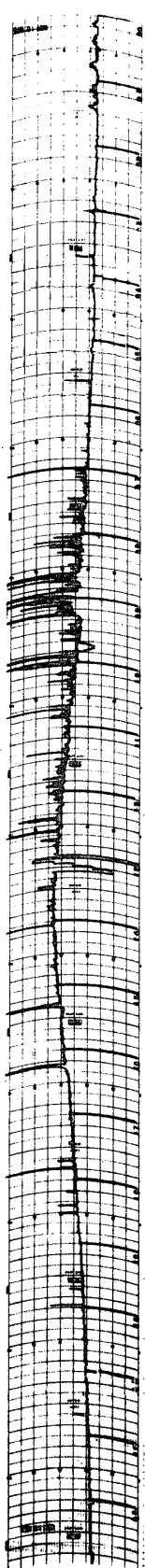
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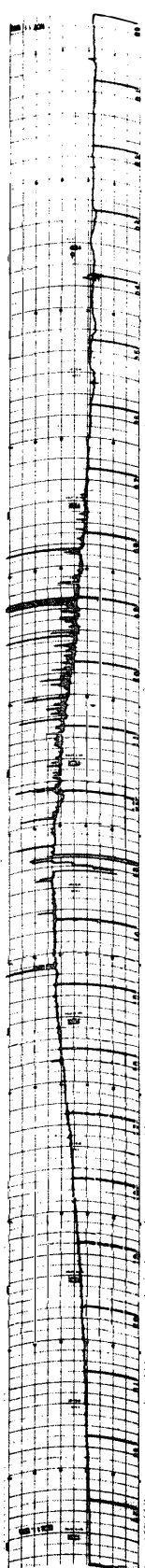
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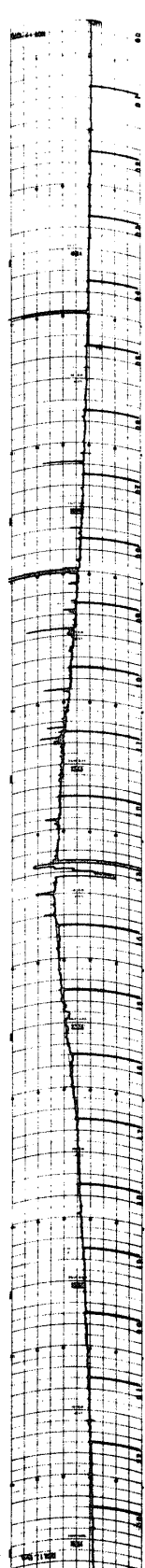
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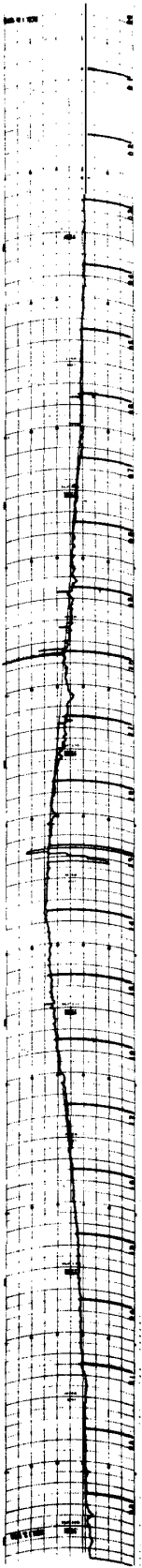


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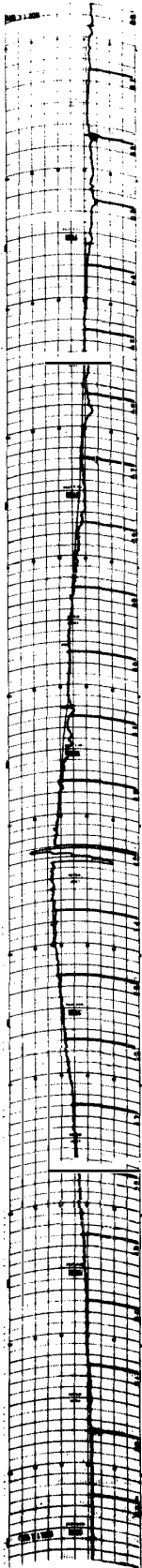
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

NOV 1979

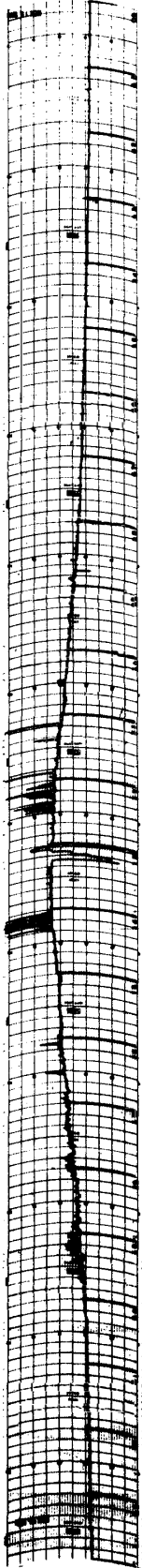
13



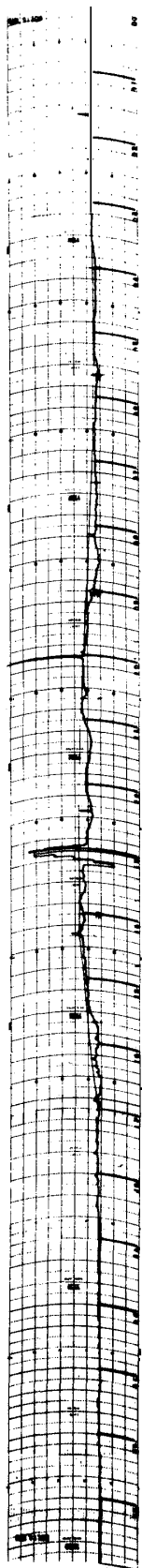
14



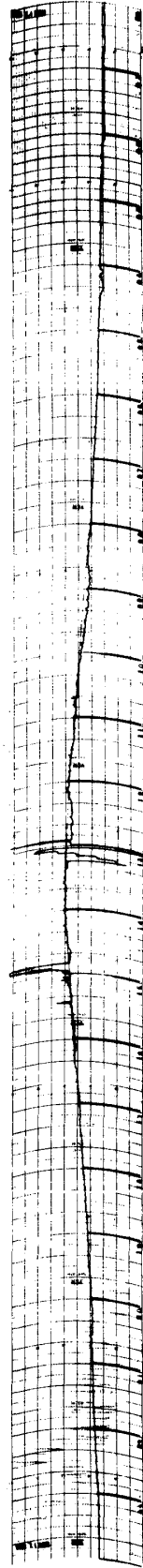
15



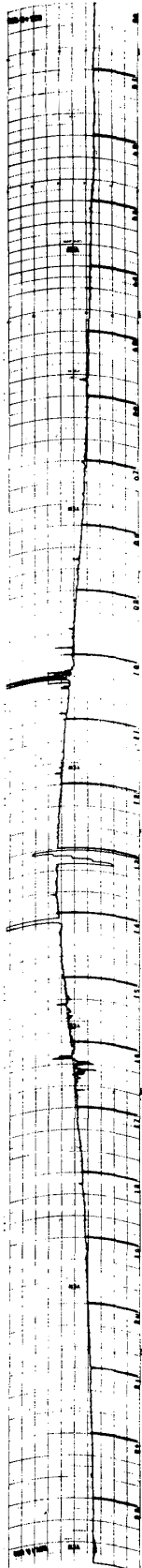
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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

NOV 1979

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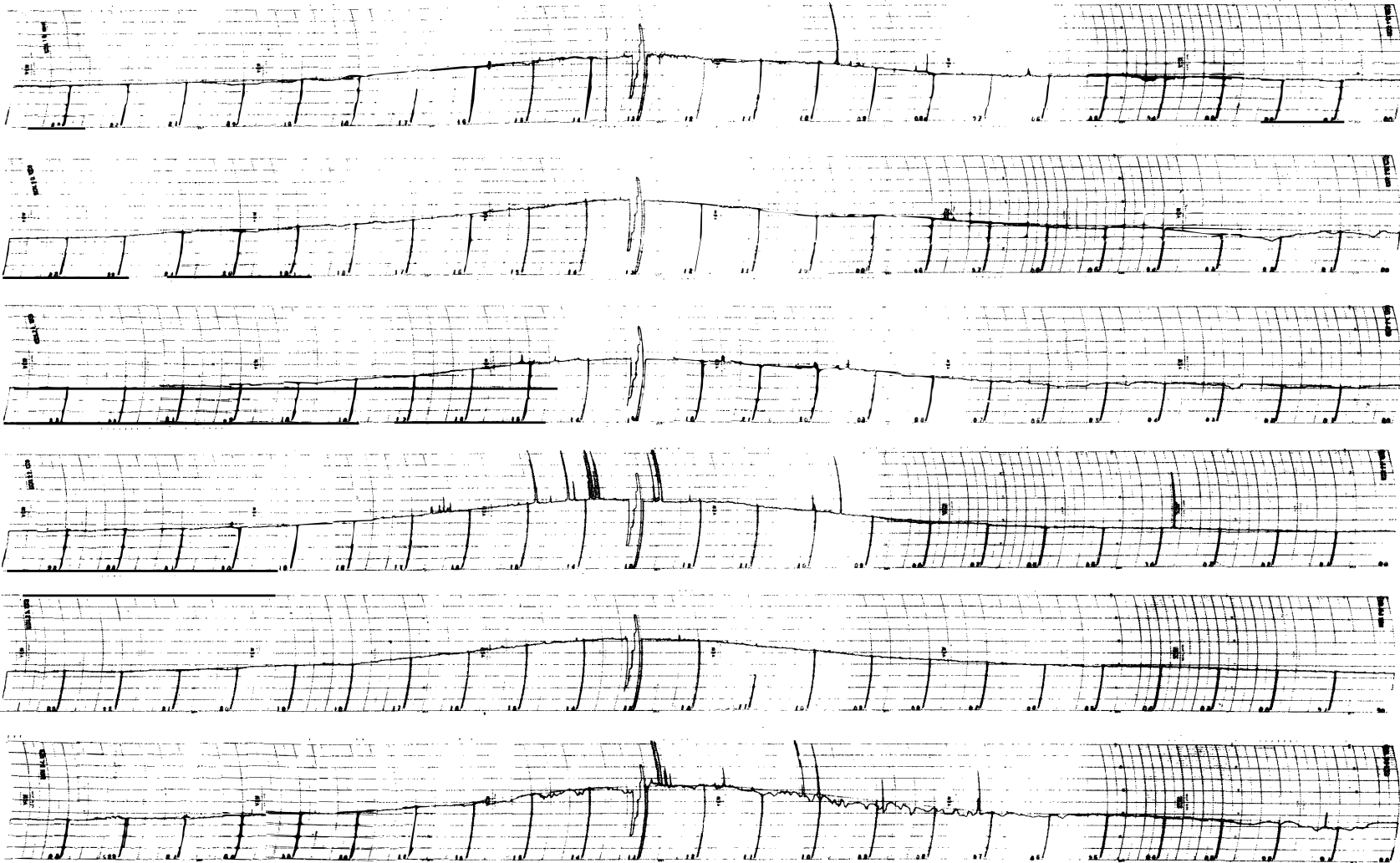
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24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

NOV 1979

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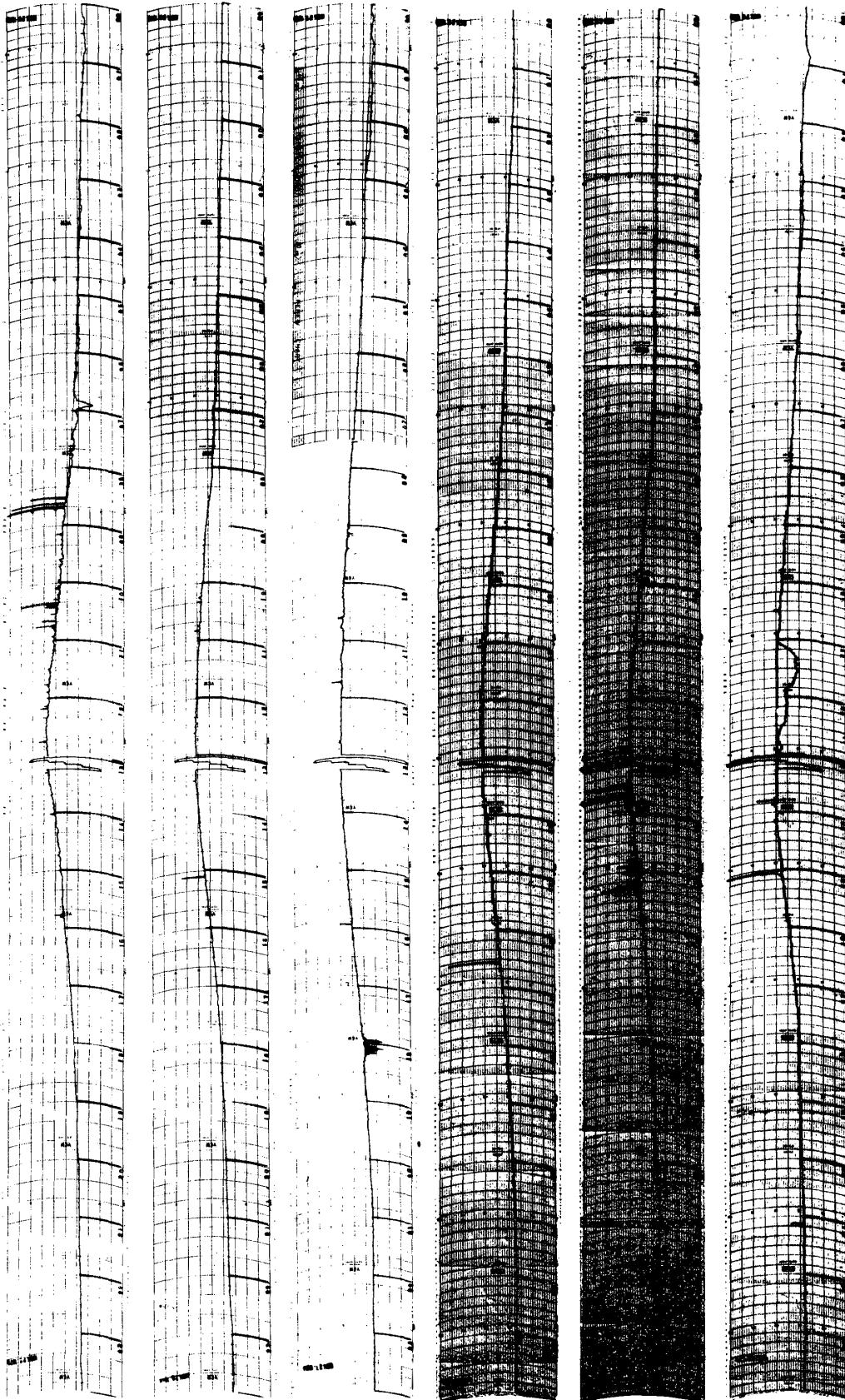
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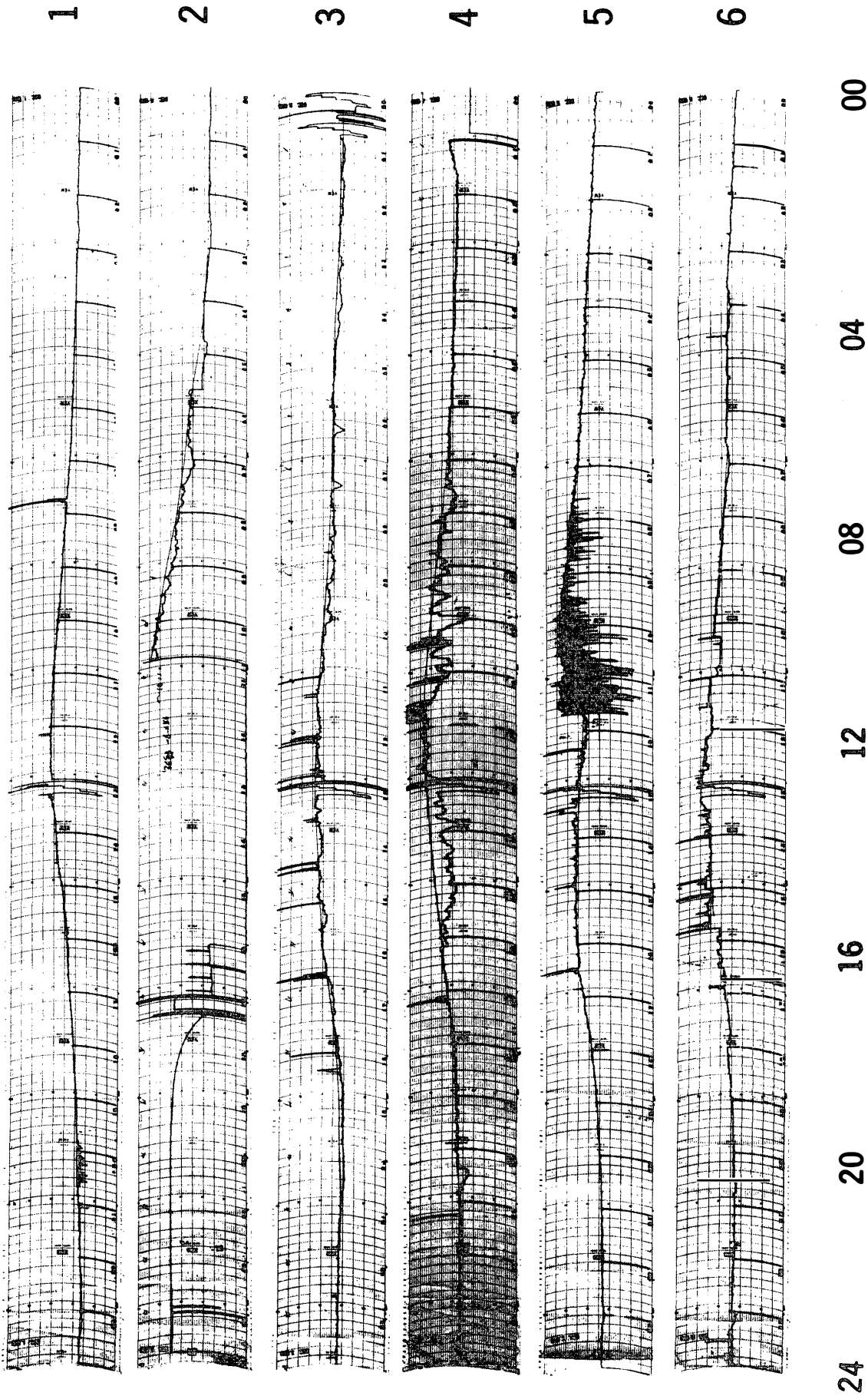


24 20 16 12 08 04 00

30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

DEC 1979



30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

DEC 19 9

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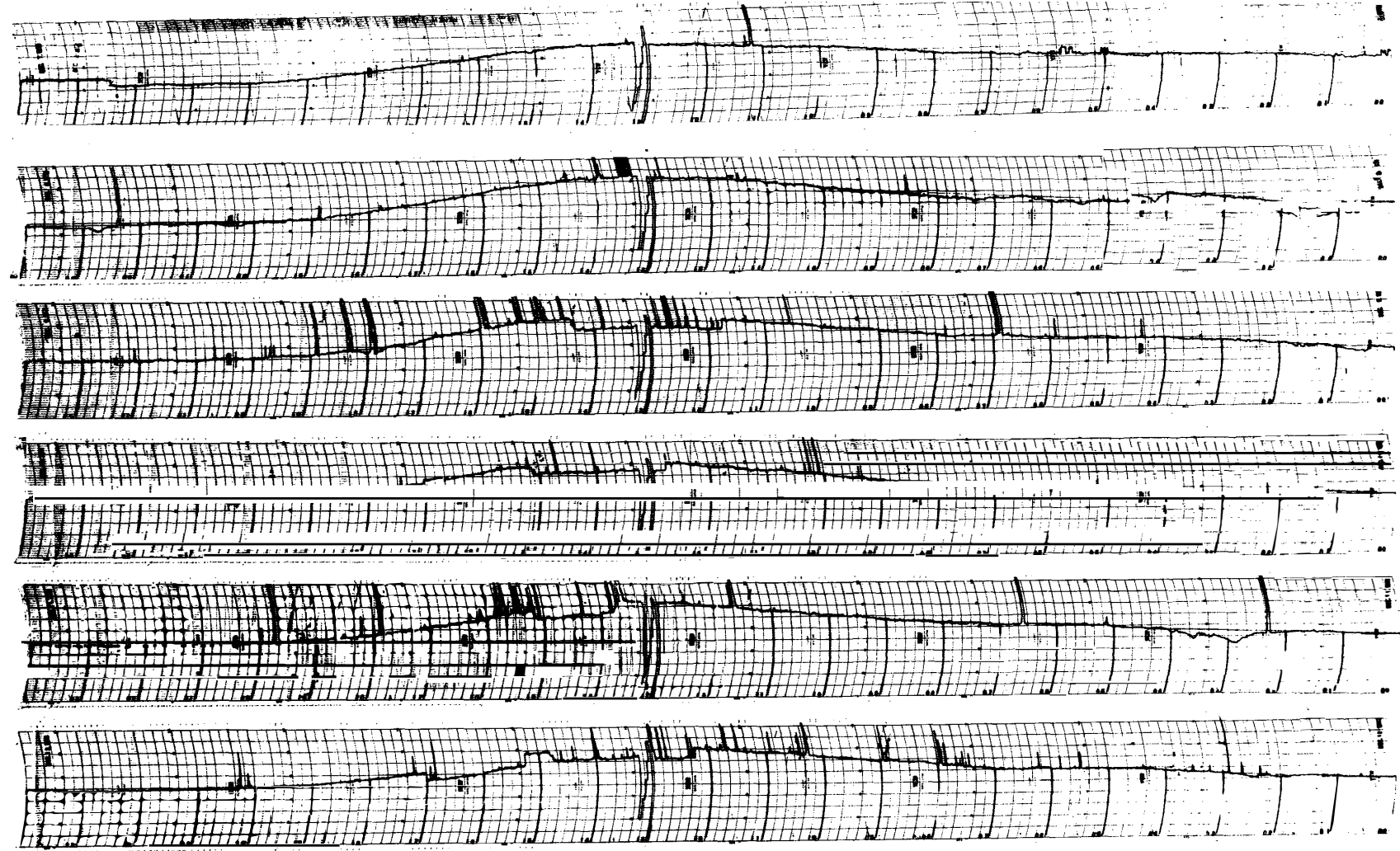
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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

DEC 1979

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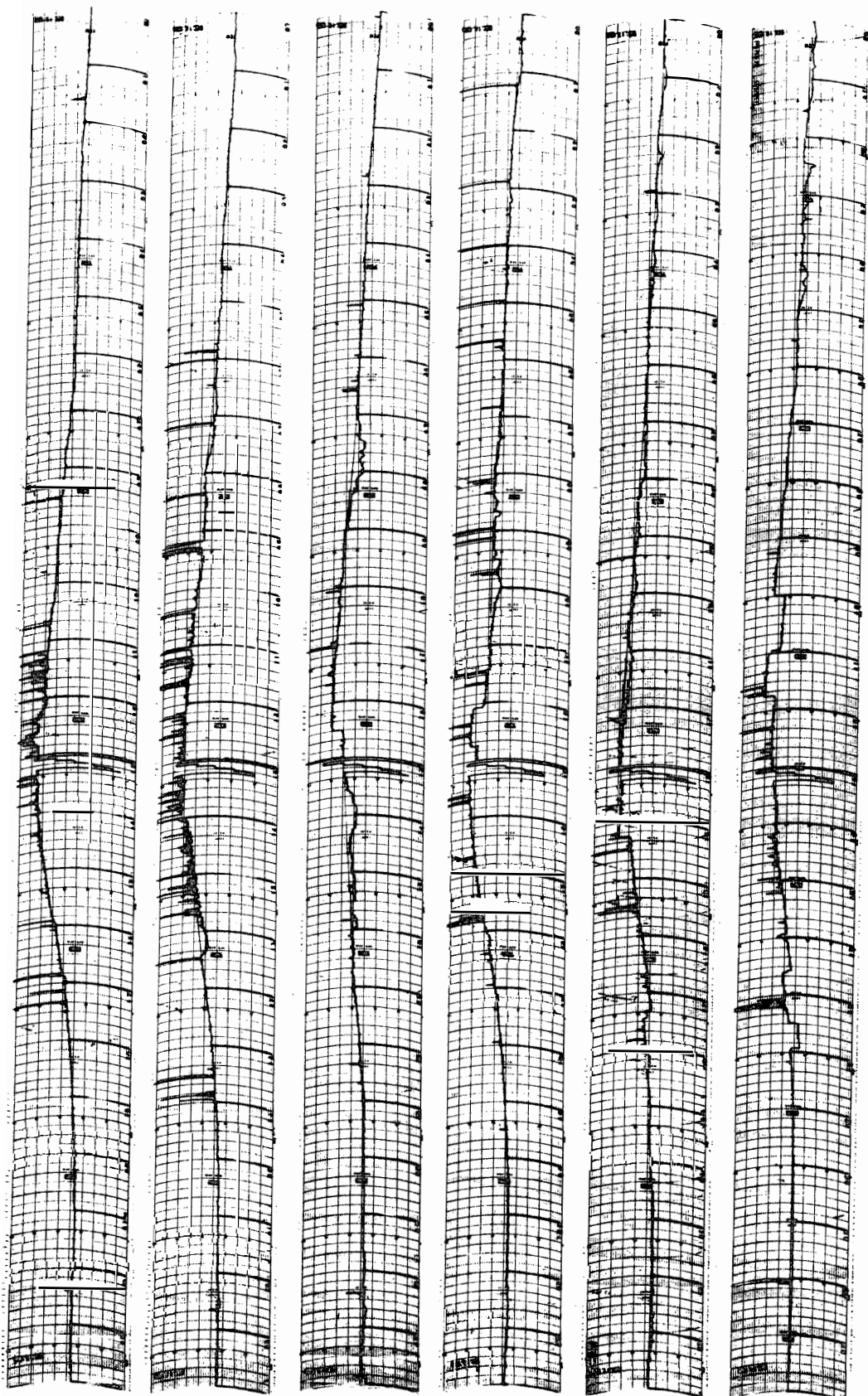
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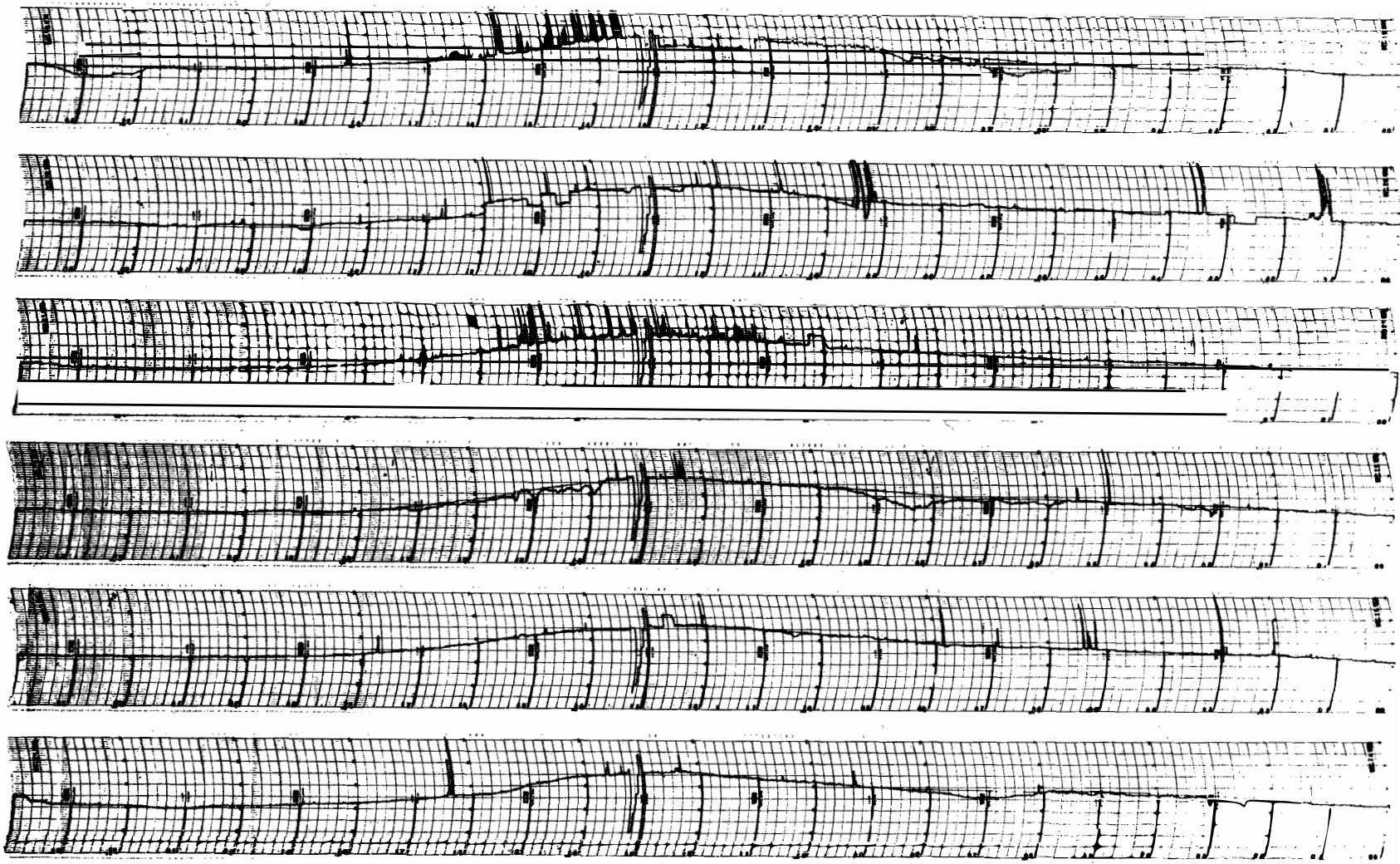
24 20 16 12 08 04 00

30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

DEC 1979

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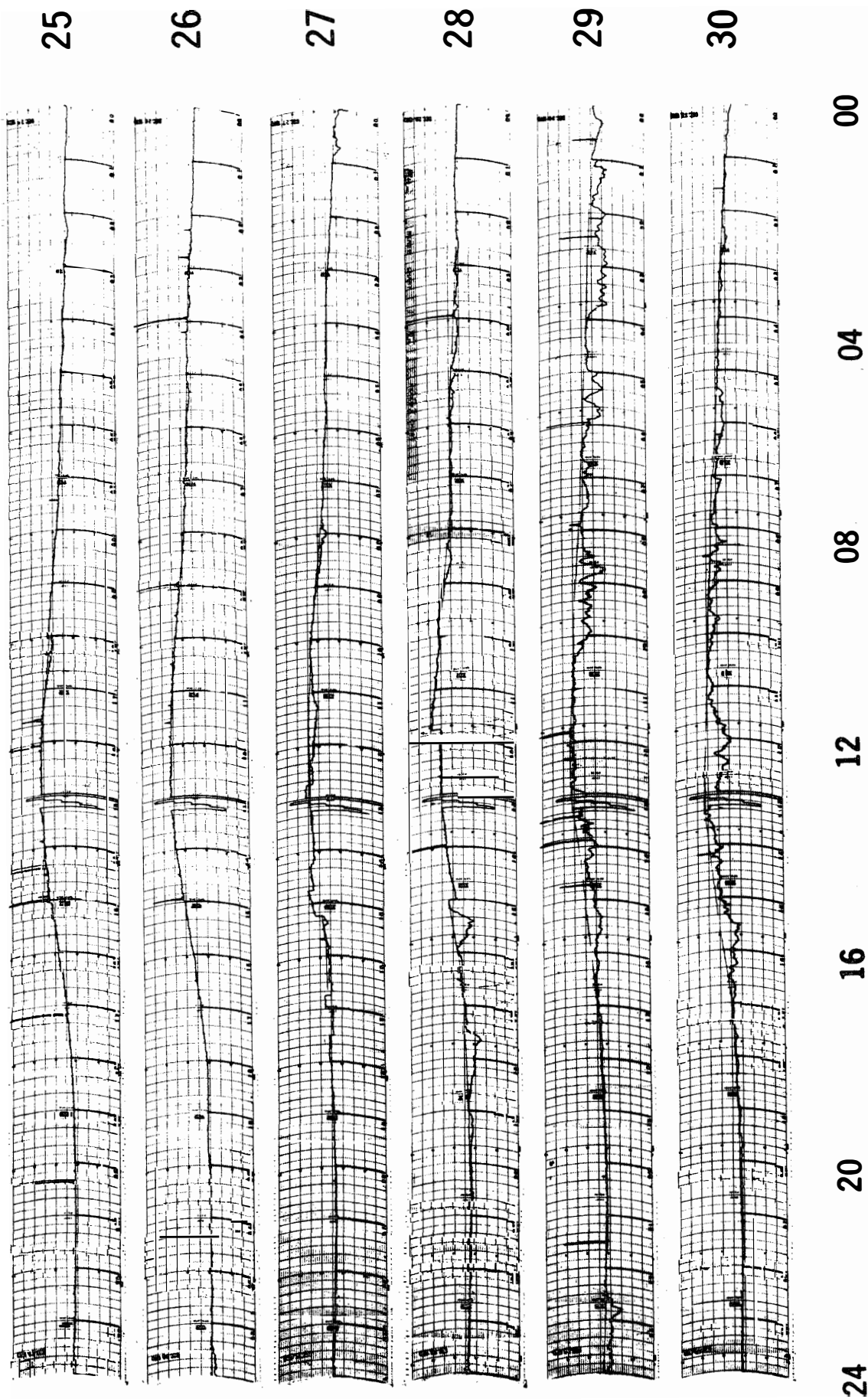
-81-

24 20 16 12 08 04 00

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

DEC 1979

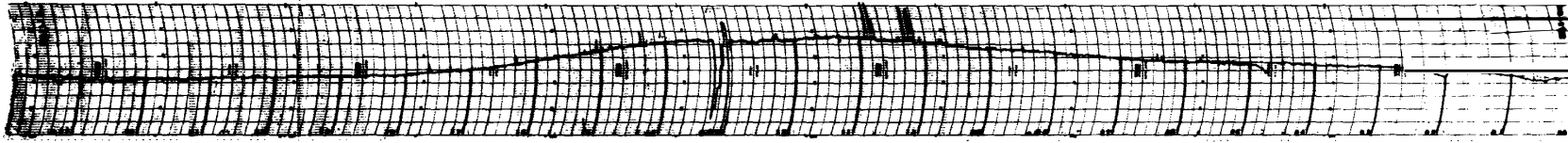


30 MHz COSMIC NOISE

45° EAST MERIDIAN TIME IN HOURS

DEC 1979

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45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

December 2 1043 -

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failure of equipment