

RIOMETER RECORDS OF 30 MHz COSMIC NOISE

AT SYOWA STATION, ANTARCTICA IN 1984

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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 1966 by members of the Radio Research Laboratory. A report has been prepared which includes hourly values and chart records of cosmic noise absorption observed during the period from January 1 to December 31, 1984. Copies of the data are available to users on request. The request should be addressed to:

Radio Research Laboratory
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	-70.0°	80.2°

3. Observer

Shin-ichi YAMAMOTO (Radio Research Laboratory)

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 whose elements are oriented in the east-west direction. The antenna is designed to match a 50 ohm coaxial transmission line (8D-2V) of 80 m in length.

The noise power output is recorded on a strip chart recorder with a 1mm/min chart speed. Noise power levels of 1, 2, 3 and 4 dB from a reference noise diode are also recorded once a day at 13h in 45° EMT (Eastern Meridian Time: UT + 3 hours.)

5. Remarks

The cosmic noise power level shows a remarkable sidereal diurnal variation caused by the passage of the cosmic radio source across the zenith. On account of the revolution of the earth, the time (local time) when the same cosmic radio source passes the zenith becomes earlier by about 4 min from day to the next and returns to its initial state after a year. If the ionosphere is in a quiet condition, the diurnal variation of the cosmic noise power is easily extracted from the chart recordings.

The hourly values of ionospheric absorption given in the CNA (Cosmic Noise Absorption) tables are the deviations (in dB) of cosmic noise intensity from the reference sidereal diurnal variation. The reference sidereal diurnal variation is determined from the diurnal variations on several selected quiet days in each month.

On the strip chart, cosmic noise intensity (indicated by C) and also geomagnetic H-component at Syowa Station (indicated by H) are recorded. The H-component increases upward in the figure and the calibration signal, the vertical bar, at each hour denotes a depression by 200 nT.

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

Observation period	Observers	Literature JARE Data Reports		
		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, I. 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
1979	Ose, M. Ojima, S. Komiya, N.	56 (Ionosphere 22)	84	1980
1980	Ose, M. Nozaki, K.	70 (Ionosphere 26)	97	1982
1981	Ose, M. Kurihara, N.	80 (Ionosphere 27)	94	1983
1982	Kuratani, Y. Igarashi, K.	87 (Ionosphere 29)	86	1984
1983	Kuratani, Y. Yamazaki, I. Tanaka, T.	99 (Ionosphere 31)	93	1985

Table 1. 30 MHz cosmic noise absorption (in dB) at the first minute of each hour.

SYOWA STATION		45° EAST MERIDIAN TIME (U.T. + 3 hours)																				January 1984		
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	0.2	1.5	0.7	0.5	0.9	0.7	1.2	0.7	0.7	0.1	0.7	1.2	1.2	1.2	1.5	1.5	2.0	2.0	1.5	0.8		0.2	0.2
2	0.5	0.2	0.8	0.1	0.2			0.1	0.3	0.1		1.4	0.7	0.7	0.5	0.5	0.2	0.2	0.5	1.0	0.7	0.7	0.6	
3			0.5	2.0	0.5	0.3	0.5	0.3		0.2	0.2	0.7	1.7	0.5	0.4	0.2	0.2	0.2	0.5	0.1	0.1			
4	0.2	0.5		1.0	0.3	0.3	0.6	0.1			1.2	1.3	0.3	0.7	0.5	0.2		0.1	0.3	0.3	0.2	0.5	0.6	0.3
5			0.3	1.0	0.3	0.3	0.9	0.5		0.1	0.8	0.7	0.3	0.5	0.2		0.2	0.5	0.5	0.2				0.1
6	0.6	0.2	0.5	0.5	0.7	0.4		0.2	0.2			0.3	0.5	1.1	1.3	1.2	0.5			0.1				
7							0.1	0.1	0.2															
8			0.2																					
9									1.0	0.1										0.1	0.5			
10	0.3		0.1	0.9			0.7	0.8											0.3	0.5	0.1	0.1		
11						0.2															0.2	0.2		0.5
12	0.1	0.1		0.1																			0.1	
13		0.3													0.2					0.7				
14	0.1	0.2		0.3					0.5	0.1								0.2	0.2	0.2	0.2	0.4	0.2	
15		0.6	0.5	0.1	0.1	0.1					0.5	0.5	0.2	0.1				0.2	0.2	0.2	0.2	0.4	0.2	
16					0.4	0.2		0.2		0.2			0.1	0.2			0.5							
17		0.1	0.5	0.5		0.3	0.3																	
18																								
19		0.1		0.6	0.1					0.2	0.2			0.1	0.4	0.3	0.3	0.6						
20				0.2	0.5	0.2	0.1							0.9	1.2	0.3	0.2	0.1	0.1		0.2	0.1		
21			0.2	0.5	0.4	0.2		0.1	1.3	C	C	C	C	0.2		0.2	0.1	0.1	0.2	0.7	0.8	0.7	0.5	0.1
22		0.2	0.3	0.2	0.2	0.2	0.2	0.2			0.2	0.3			0.7	0.8	0.5		0.2	0.7	0.8	0.7	0.5	0.1
23			0.4	0.5		0.2	0.1	0.2								C	C							
24			C	C	C	C	C	C	C									C						
25													0.3	0.3										
26			0.1	0.3	0.1			0.4		0.2	2.5		0.2			0.2								
27							0.2	0.1																
28	0.2	0.3	0.2		0.3						0.4				0.5	0.8	0.5							
29			0.4	0.2	1.1	0.3			0.2	0.2					0.5	0.4								
30				0.2	0.2	0.2	0.1		0.4	0.6		0.1	0.2	0.2	1.8	1.5	1.1	0.5	0.5		0.5	1.0	0.8	0.5
31	S	S	0.5	0.6	0.2	0.5	0.5	0.1	0.5				0.5	S	S	S		0.2		0.2	0.2		0.4	0.3
Mean	0.08	0.09	0.23	0.31	0.19	0.15	0.16	0.15	0.17	0.09	0.18	0.20	0.21	0.21	0.29	0.26	0.20	0.15	0.14	0.17	0.15	0.11	0.11	0.06

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 1984

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	0.3	0.2		0.2	0.9	0.5	0.2	0.1	0.7	0.6	0.5		0.5	0.3	0.3				
2				0.4	0.2												0.2	0.5				0.1	0.5	
3		1.9	0.1		0.4	0.1		0.1																
4					0.7	0.1	0.1	0.2	0.6		0.1	0.1	0.5	0.8	0.5	0.6	0.1							
5	0.2	0.1	1.2	0.3					0.1		0.1		0.3	0.7	0.2	0.3	0.2	0.5	0.2					
6					0.4	0.3	0.2								0.1	0.5	0.1							
7		0.1			0.2									0.2	0.5	0.4		0.5	0.7	0.1				
8		0.3	0.9	0.1	0.1		0.2					0.2	0.3		0.4		0.2							
9										0.2	0.1	0.3	0.1											
10		0.1	0.7	0.5			0.3						0.2	0.5	0.8	1.3	0.3	0.5	0.8	0.9	0.9	0.7	0.4	0.2
11	0.1	0.1	0.2	0.2		0.1	0.1	0.1						0.1	0.2	0.1	0.1		0.1					
12			0.2					0.2				0.8	0.7	0.8	0.4					0.1				0.3
13		0.2	0.1	0.5	0.4	0.2	0.2			0.1	0.8	0.2	0.2	0.6	1.0	1.0	0.1		0.1	0.2		1.5	0.1	0.1
14	0.2	0.1	0.1	0.1	0.3	0.1	0.5	0.2		0.1	0.9	0.5	0.5	0.1	0.1	0.5	0.5	0.7						
15		0.2	0.2	0.5	0.5	0.2	0.2		0.1	0.1	0.5	0.2	0.2			0.6	0.4							
16	0.1	0.2	0.5	0.2	0.6	0.5	0.5	0.2						3.0	2.8	2.0	1.4	0.5		0.1	0.2			
17	0.1			0.2	0.1	0.1			0.2	0.4	0.2	0.1	0.1		0.1	0.4	1.4	0.3	0.3					
18		0.3	0.1	0.2	0.3		0.7	0.5	0.2		0.4	0.1		0.5	0.9	0.5	0.5	0.2	0.2					
19					0.2		0.2																	
20				0.2	0.1				0.1															
21	0.1			0.1			0.2	0.2	0.2	0.5	0.2					0.2	0.3	0.5	0.7	0.7	0.8	0.3		
22					0.1	0.2					0.2					0.1								
23						0.7				0.1	2.0	0.5	0.3	0.5	0.2			0.6	0.2					
24					0.2											0.1	0.1							
25			0.1	0.7		0.2	0.1							0.1	1.7	1.0	1.0	0.6	0.7	0.5				
26		0.1				0.1						0.2					0.3							
27							0.5			0.3	1.1	0.2	0.5	0.1	0.2			0.1	0.1	0.2	0.2			
28	1.3	0.8			0.2	0.5	0.2		0.1				0.6	1.0	0.9	0.5	0.2					0.2		
29														0.5	0.2	0.5	0.5							
30														0.5	0.2	0.5	0.5							
31																								
Mean	0.07	0.15	0.15	0.14	0.18	0.12	0.15	0.05	0.06	0.09	0.24	0.12	0.15	0.35	0.40	0.38	0.22	0.20	0.15	0.10	0.07	0.09	0.03	0.01

Open spaces without figures correspond to quiet level

* : Quiet day

SYOWA STATION

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

March 1984

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
* 1																	1.0							
2	0.2	0.1	1.0	0.2	0.2	0.4	2.2	0.3	0.5	0.2	0.9	0.5	2.6	0.8	0.5		0.2							
3	1.0	0.5	0.3	0.3	0.2	0.2	1.5	0.5	1.1	0.2	0.9	1.3	1.5	2.0	1.5	1.0	0.2	0.2	1.0	0.2				0.8
4	0.5	0.2	1.5	1.1	0.2	1.1	1.2	1.0	0.2	1.0	1.0	0.8	1.0	1.2	0.9	0.2	0.2	0.1	1.0					
5									0.2		0.2	0.1								0.2				
6					0.2	0.6		0.7	0.2	0.5	0.6	0.1		0.2	0.2	0.2	0.2	0.2					0.2	0.2
7	0.3	1.0	0.5	2.3	0.2	1.7	0.2	2.7	0.5	0.2	0.5	1.0	1.8	1.5	0.9	1.0	0.6	0.5			0.2		0.2	0.1
8	0.1	1.2	0.7	0.3		1.0	1.2	1.8	1.8	1.9	1.2	2.7	2.0	1.6	1.0	1.2	0.5	0.5	0.8	0.2				0.8
9	0.1	0.1	0.1	0.5	0.2	0.5	0.1	0.7	0.2	0.2	0.7	0.5	0.2											
10	0.1	0.2			0.2	0.5	0.1	0.1			0.4	0.8		0.1	0.3				0.1					
11	0.3		0.9	2.6	0.3	0.2									0.3	0.5	0.7	0.1	0.2					0.2
12		0.2					0.3	0.7	0.1	0.4							0.2	0.4	0.2					
13						1.0							0.5	0.5	0.2			0.2	0.2					
14						0.2		0.1	1.0	1.0	0.7	0.2		1.2	0.4									
15										0.2	0.7	0.2												
16										0.5	1.0	0.2												
17					0.2				0.1	1.0			1.2	0.9	0.7	0.8	0.6	0.1						
18						0.3	0.2							1.0	3.8	2.2	0.1	0.3						
19	0.1	0.2	0.3	0.4	1.2	0.5	0.5	0.5	0.2	0.7	1.3	0.8	0.5	0.7	0.8	1.2	1.0	0.5	0.5					
20			0.2																					
21											0.5	0.8	0.5											
22			0.5	0.8					0.5	0.5	0.6	3.5	1.0	1.2	0.1				0.2					0.1
23			1.0	0.2				0.3	0.5	0.3	0.7	1.0	0.2	0.2	0.8	1.0	1.2							
24								0.1												0.1				
25									0.2	1.1	0.5	0.5	1.1	1.2	1.0	0.2	0.2	0.2				0.1	0.1	0.1
26				0.1		0.2									0.7	0.5	0.5	0.1						
27	0.8			0.2		0.2	0.2	0.2	0.3	2.0	1.4	0.5	0.7	0.8	1.5	1.0	0.2	0.2	0.6	0.2				0.2
28		1.7		0.1			0.2	1.2	1.4	2.0	0.9	0.1	1.4	1.0	1.3	1.2	1.2	0.2	0.2					0.5
29	0.5		0.7	0.3		0.3	0.6	0.2	1.1	0.7	1.9	1.0	3.0	1.7	1.5	0.5	0.2						0.2	0.2
30	0.2	0.1	1.3	0.9	0.3	0.5		0.7	0.5	1.5	1.5	2.6	3.1	2.0	1.5	1.0	1.5	0.7	0.2	0.2			0.1	0.2
31	1.2	1.4	0.4	0.1	0.5	0.7	1.5	0.8	0.9	0.7	0.2	0.5	1.0	0.9	1.0	0.7	1.4	0.7						
Mean	0.17	0.22	0.30	0.33	0.12	0.32	0.32	0.40	0.37	0.52	0.57	0.66	0.75	0.67	0.67	0.46	0.38	0.16	0.11	0.03	0.01	0.01	0.03	0.10

Open spaces without figures correspond to quiet level

* : Quiet day

SYOWA STATION

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

April 1984

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		1.8	0.2	0.6	0.1	0.2	2.8	4.3	1.5	1.1	0.8	1.7	1.0	2.6	1.6	1.0	2.1	1.0	0.5					
2			0.2	0.7	2.3	2.3	0.1	0.1	0.1	0.5	1.1	1.9	4.4	1.2	1.0	1.0								
3	0.3	0.3	0.2	3.1	0.5	0.6	0.1	0.3	1.9	1.0	1.2	1.5	1.5	2.0	3.0	1.0	1.6	0.7	0.2				1.0	0.1
4	0.7	0.7	0.8	0.3	0.7	0.2	2.5	1.0	0.7	1.1	1.8	6.0	1.9	1.6	1.5	1.5	0.8	0.7	1.2	0.2	0.2	1.2	0.2	0.2
5	1.1	0.9	0.1		2.0	0.2	1.4	0.2	0.7	5.8	2.4	1.0	3.2	1.5	1.4	0.1	0.6			0.2			0.2	0.3
6	0.2	0.7	0.9	0.3	0.1	0.5	0.5		0.5	0.5	0.1	0.7	1.8	1.7	1.5	1.5	1.5	1.0	0.9	0.1				
7	1.3	0.1			0.4	0.2						0.1	0.1	1.5	1.5	3.4	1.0	0.5						
8	0.1	0.1	0.2	0.2		0.5	0.3	0.3	1.0	3.1	2.1	1.2	1.0	1.0	1.0	1.5	0.9	0.9						
9	0.1	0.2	0.1	0.2	1.0		0.4	0.7	1.0	1.0	0.5	0.5	0.3	0.5		0.5	0.4	0.9	0.1					
10			0.5	0.2	0.1			0.2	0.2															
11					2.0	0.4	0.3					0.3			0.2	1.0	0.7	0.7	0.3					
12								0.1	1.5	1.0	0.6	0.2										0.3		
13	0.1		0.2					0.3	0.2	0.4	0.5	0.5												
14			0.1																					
15	0.2	0.2							0.2	0.7	1.1	0.4	0.1	1.0	0.5	0.5	0.2							
16												0.2	0.1	0.2	0.5									
17				0.1																				
18		0.1								1.0														
19					0.1																C	C	C	C
20	C	0.2			0.2			0.2	1.0	3.6	2.7	1.5	1.5	1.5	1.5	0.6	0.1			C	C	C	C	C
21		0.2			0.3	1.2						1.2	1.0	S	0.5	0.5	0.5	0.5	0.3			0.1		
22			0.2	0.7									0.2										0.2	
23																							0.1	
24		0.5							0.5	0.5	0.5	0.7	1.0	0.6				0.5	0.3					
25		0.5																					0.1	
26		0.1	0.1		0.2	2.9	0.6	2.0	1.0	6.2	2.0	2.5	5.0	7.5	5.0	5.3	6.4	3.0	2.0	2.0	2.0	1.4	1.5	1.5
27	2.0	0.1	0.3	0.5	0.5	1.3	1.0	0.2	1.7	2.5	4.0	5.0	5.5	5.5	3.6	2.9	2.5	1.0	0.4	0.1	0.1	0.2	0.2	0.2
28	0.7	1.0	1.0	0.4	0.3	0.3	0.4	1.0	2.5	3.1	3.2	4.2	2.0	1.5	2.3	2.0	1.7	0.5						
29	0.1	0.2		0.1						1.2	0.7	0.5	0.5	0.4	0.7	1.1	0.2	0.3	0.1					
30	0.2	0.3	0.1	0.3				0.2	0.5	0.7	0.4													
31																								
Mean	0.24	0.20	0.17	0.25	0.36	0.36	0.34	0.37	0.55	1.16	0.85	1.06	1.07	1.06	0.91	0.84	0.70	0.39	0.21	0.10	0.07	0.12	0.10	0.07

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)

May 1984

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1		1.8	0.3	0.6		0.6	0.8	1.0	0.6	0.9	1.8	1.0	1.3	1.3	0.5	1.6	0.3	0.2							
2	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.2	0.5	1.0	0.7	1.0	2.3	4.1	2.2	1.3	1.4	1.2	1.0	0.4	0.1				
3													0.1	0.1	0.2			0.2							
4	0.1	0.1	0.4	0.5		0.1	0.1	0.2	0.3	0.5			0.1	1.0	1.6	2.1	1.8	0.8	0.1	0.2	0.1	0.1			
5			0.1	0.4	0.9	0.6	0.5	0.2	0.1				0.5	1.5	1.0	1.5	1.0								
6				0.9	0.1		0.1			0.5	0.6	0.5													
7	*				0.2												0.2								
8	*										0.1														
9												0.1	0.7	0.7	0.4										
10				0.6			0.1	0.2	0.6	0.5	0.7	1.3	1.1	2.0	1.0	0.5	0.2	0.1	0.1	0.1	0.1				
11																									
12			0.2	0.2								0.2	1.2	0.8	0.5										
13						0.2	0.7	0.2																	
14																		0.1						0.1	
15	0.1						0.3				0.7	0.4	0.4	1.7	1.1	1.1	0.7	0.5	0.5	0.5					
16																0.7	0.5		0.2	0.2					
17					0.2	0.1	0.1	0.2	0.4	0.7	0.1			4.5	2.2	0.7	0.1		0.1	0.3					
18				0.1	0.7	0.5	0.5	1.1	7.4	2.8	1.0		0.2	0.2	0.5	0.5			0.1	0.3					
19	0.2		0.2	0.7	0.7	0.5	0.5	1.1	7.4	2.8	1.0	3.7	1.7	1.6	0.4	0.4	0.2	0.5	0.2	0.5	0.2				
20		0.1	0.1	0.2	0.1	0.6	0.3	0.8	1.1	1.1	3.9	1.2	1.6	0.1	1.0	0.7	0.5	0.2	0.5	0.1	0.1	0.1	0.2	0.3	0.2
21		0.1	0.2		1.1	0.3	3.0	1.7	0.5	0.6	3.0	3.8	1.2	2.0	0.5	0.2	0.5	0.5	0.1						
22	0.1		8.0	1.5	0.2	2.0	0.2	0.5	2.2	7.5	4.5	1.1	0.5	0.5	0.1	0.6	1.3				0.2				
23		0.5	0.7	0.2	0.2	1.6	1.8	0.5	0.2	1.5	1.2	1.9	5.1	1.9	0.9	2.1	1.4			0.2					
24	0.8	1.0	0.2	0.2	0.6	0.6	0.1	0.1		0.3	1.5	2.5	0.5	1.2	2.6	1.9		0.1	0.3		0.1	0.1			
25			0.5	1.2						0.5	0.2	0.1	0.1			0.3									
26		0.1		0.5		0.3	1.0	1.2	0.5	1.5	1.6	3.5	2.5	1.7	1.2	1.4	0.5	0.1	0.1	0.5					
27													0.4	1.0	1.2	0.5	0.5								
28	0.1	0.1					0.2								0.1		0.4							0.2	
29	0.2	0.1	0.2	0.2	0.3	0.3	0.5	3.7	0.8	0.1	0.3	1.0	1.6	1.6	0.7	0.5	0.1	0.3	0.2		0.1				
30			0.1	0.2	0.2	1.1	1.4	1.1	0.7	1.3	1.2	1.1	1.4	1.0	3.5	1.1	0.6	0.3	0.3					0.1	
31	0.1				0.1				0.2	0.1						0.2									
Mean	0.05	0.12	0.36	0.26	0.16	0.29	0.39	0.40	0.46	0.54	0.86	0.89	0.75	0.98	0.80	0.62	0.37	0.19	0.13	0.07	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)

June 1984

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	0.2	0.1									
2						0.1			0.1	0.3	0.2	0.2	0.2	0.1		0.5	0.5	0.5	0.2	0.2				
3												0.5	0.5	0.2								0.1	0.1	
4		0.1	0.1			0.2	0.5	0.7	1.5	2.0	1.3	1.2	1.6	1.1	2.1	1.2	0.2	0.5	0.5					
5		1.0	0.5	0.3	1.0	0.7	2.5	1.0	1.3	1.4	1.6	2.0	4.1	1.9	0.5	1.0	1.5	1.5	1.0	0.2				
6																								
7				0.5	0.7	0.5	1.4	1.5	1.0	1.1	2.7	1.1	0.8	1.5	0.5	0.7	0.1	0.7	0.5					
8					0.5	0.5	0.5	0.3	0.4	1.0	1.0	1.0	1.0	4.6	2.8	2.1	0.5	0.5	1.0	0.5	0.4			
9				0.2				0.1	0.2	0.2	0.2	3.2	0.8	0.5	0.6	0.7	1.0	0.2		0.1	0.1			
10					0.2	0.6	1.2	1.7	2.0	3.5	4.0	2.4	1.7	1.0	1.0	1.5	0.5	0.9	0.3	0.4	0.2	0.1		
11					0.2	1.0	2.3	1.5	1.4	0.6	1.7	0.9	0.2				0.2	0.1	0.2		0.1		0.2	0.2
12						0.8	2.6	1.8	0.9	1.0	1.1	0.7	1.0	0.7	0.2			0.3	0.5	0.2				
13		0.1							0.3	0.5	0.5	0.2												
14														0.2	0.1									
15							0.2	0.1	0.7	0.7						0.2			0.3	0.2			0.2	0.2
16	0.6	0.2	0.5	0.5	1.2	1.8	1.7	1.2	1.7	3.5	2.4	3.7	1.7	4.1	2.6	1.2	0.2	0.5	0.1	0.1				0.5
17	0.2	1.3	0.7	0.3	1.3	0.5				0.1		0.2	6.6	5.6	1.7	1.7	0.1	0.1	0.2	0.1	0.1	0.1	0.1	
18					0.2	0.7	0.1				0.2	0.7	0.1	0.1	0.9								0.1	0.2
19	0.1		0.2	0.5	0.8	0.5	0.5	0.2	0.5	2.5	4.0	1.5	3.1	1.5	3.3	2.9	1.0							0.1
20	0.6	1.9	0.1	1.8	1.0	2.2	0.2	0.6	0.5	1.7	2.2	1.7	2.0	2.0	3.1	1.3	0.7	0.1	0.2	0.6	0.2			0.1
21					0.2																			
22	0.2		0.2	0.5	0.1	0.5	0.4	0.6	0.5	0.5	0.5	0.4	0.5	0.7	0.2				0.3	0.3	0.2	0.2		
23				0.2	0.1							0.1	0.2	0.5										
24		1.2	0.5	0.9	0.5	0.4	0.5	0.1	1.7	0.6				0.7	1.5	0.6	0.2	0.2	0.2					0.3
25			0.2	0.5	0.5	0.5	0.3	0.5	0.5			0.4	0.3	1.5	1.1	0.5			0.9	0.5		0.1		
26						0.2	0.7					1.2	0.9	0.5	1.0	0.7								
27			0.2	0.4	0.9	0.2	1.5	1.5	0.8	1.1	1.1	0.2	1.4	1.0	0.2	1.0	0.7	0.3						
28				0.2	0.3		0.4	1.2	0.1	1.1	0.7	0.2	0.8	0.9	1.2	0.9	0.2	0.2	0.2		0.2		0.3	0.3
29		0.2	0.1	0.2		0.2										0.5	0.2	0.2						
30	0.1	0.6	0.2		1.5	0.7	0.4	0.4	0.2	0.6	1.5	1.0	0.9	0.2	0.6	0.7	0.5	0.2	0.1	1.0	0.1			
31																								
Mean	0.06	0.22	0.11	0.23	0.37	0.42	0.59	0.50	0.53	0.80	0.89	0.83	1.02	0.98	0.81	0.69	0.29	0.23	0.22	0.15	0.05	0.02	0.03	0.06

Open spaces without figures correspond to quiet level

* Quiet day

SYOWA STATION

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

July 1984

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									1.2	0.9	0.2	0.1		0.5	1.9	0.7								
2	0.1	0.2	0.2	0.1	0.5	1.2	0.1					1.0	0.7	0.2										
3				0.4	0.7	0.3	0.1								0.4	0.3	0.1		0.7					
4	0.1						0.5	0.5	0.1		1.2	1.1	0.9	0.5										
5	0.1	0.1	0.1	0.2	1.5	0.5	0.7	1.5	0.6	0.2	0.5	1.7	3.8	2.1	2.0	0.5	0.9	0.3						
6						0.6	0.5	0.5	0.6	0.9	0.1	0.5			0.2	0.2	0.1	0.3	0.5	0.4	0.3	0.1		
7										0.7	0.5	0.4			0.5	0.5	0.1							
8											1.0	0.2	1.1	1.1	0.8		0.3	0.5	0.9	0.1				0.1
9			0.1	0.1			0.1	0.7	0.9	0.2					0.2		0.7	0.4	0.6	0.2	0.4			
10														2.4	0.7	0.4	0.1	0.2	0.5	0.3				
11				0.2	0.8																0.2			
12	0.5					2.2	3.5	1.1	0.5	0.1	2.0	1.0	1.1											
13							0.3	0.9	0.7	0.4	0.4	2.0	2.2	0.9	0.6	1.0		0.2						
14			0.5	0.2		0.7	3.5	0.2	2.3	1.5	0.4	3.4	1.1	0.5	1.0	0.1	0.9							0.1
15	0.1	1.7	0.5	0.5		0.2	3.0	1.5	0.9	3.4	1.5	2.5	7.0	1.5		2.3	1.6	0.1	0.1	0.3	0.2			0.1
16		0.9	0.6	0.7	1.0	0.2	0.9	4.0	1.0	1.0	0.6	0.2	0.5	3.0	2.7	3.4	1.7	0.2		0.2				0.1
17	0.1	0.7	1.0	0.9	0.5	0.5	2.9	1.4	1.7	7.0	1.5	2.0	1.1	1.0	2.0	0.6	1.1	0.1	0.1					
18	0.6	0.5	2.0	0.7	0.2	1.2	2.6	1.0	1.5	1.6	1.1	2.6	1.6	2.1	0.6	0.9	0.5	1.4	1.6	0.2	0.1	0.1		
19	0.1	0.3	1.0	1.1	2.4	1.2	2.5	2.4	2.5	2.0	1.0	0.2	0.5	3.1	2.7	1.5	0.5	1.1	0.7	0.7	0.5	0.1	0.1	
20	0.4	0.2	0.2	0.2	0.5	0.8	0.6	1.0	0.7	0.5	2.6	2.1	1.0	0.5	0.9	3.1	1.4	1.0	0.6	0.2			0.1	0.1
21			0.1	0.1							0.4	1.8	1.5	1.1	0.5	0.2		0.1						
22						0.3		1.0	1.7	0.4	0.3						0.5	0.1	0.2					
23				0.5	0.2			0.2	0.9	0.5								0.4	0.2					
24				0.1	0.1			0.2	0.1						1.5	1.2	0.5							
25						0.2				0.2	0.7	0.2			0.2	0.7	0.5		0.2					
26		0.7	0.2		0.2	0.3	1.2	0.2				0.3				0.2								
27				0.1	1.0	0.2					0.4													0.2
28							0.4	1.2	0.7	2.7	2.8	0.9	0.2	0.1	0.3	0.1				0.2				0.3
29					0.2	0.1			0.2	0.2	0.2	1.1	1.2	0.7	1.3	0.7	0.2	0.2			0.5	0.5		
30				0.4	0.4	0.5	0.2						0.3			0.2								
31													0.8		0.2	0.5				0.4				
Mean	0.06	0.17	0.20	0.20	0.32	0.36	0.66	0.62	0.60	0.78	0.62	0.81	0.88	0.69	0.68	0.62	0.37	0.22	0.22	0.11	0.08	0.01	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 1984

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	0.3	0.8	0.1		0.2	0.5	4.5	1.5	0.2		1.1	1.4	0.5	2.4	0.5	0.2		1.0					0.5
2		0.2	0.5	0.4	0.1			1.0	0.2	1.0	3.2	1.0	0.2	2.1	1.5	0.1	0.5	1.0		0.5	0.2	0.1		
3			0.1	0.2				0.4	0.5	0.1	2.0	1.5	0.7	0.5	1.7	2.0	0.4	0.5						
4	0.2			0.1	0.5	0.4	0.5	0.2	0.2	1.0	1.0	2.0	1.1	0.9	0.1	0.9	0.6	0.6	1.0	0.2				
5	0.1			0.1					0.5	1.1	0.6		1.5	1.4	0.7	0.2	0.5							
6															0.1	1.6	1.0	0.2						
7		0.2														0.2								
8				0.1	0.1	0.2					0.4	0.3	0.1	0.9	0.4	0.1								
9	0.2	0.3	0.3	0.5	0.1								0.5	1.0	1.0	0.3	0.1	0.2						
10	0.6	0.5	0.1			0.1	0.3	0.2				0.3	0.2	1.0	0.4									
11	0.2	0.1	0.5	0.2								0.5	1.0	0.5	0.2	1.0	0.5							
12		0.1	0.5	0.5	0.2	0.2	0.5			0.3			0.1	1.1	1.1	0.5	1.4		0.5					
13			0.5	0.7	1.0	0.2		1.0	1.4	0.5	0.2									0.5				
14																								
15		0.3	0.9	0.6	0.5		1.3	0.6	0.3	1.1	1.1	0.3	0.1	0.2	0.2	1.4	0.5	0.6	1.4	0.1	0.2			
16	0.1		0.2	0.5	1.0	0.5	1.0	0.8	1.0	1.0	0.2			0.7	0.7	0.1	1.2	0.2	0.2	0.1				0.1
17	0.2	0.3	0.5	1.1		0.5	0.2	0.5	1.0	0.3		1.1	3.1	1.1	0.2	0.1		0.2	0.2					
18	0.4	0.1	0.3						0.3	1.1														
19																0.1	0.1							
20	0.5	0.2	0.5	0.2	0.4	0.1	0.4	0.4	0.5	0.6	1.8	1.3	0.5	0.2										0.2
21																								
22																		0.1						
23																								
24									0.3	0.2		0.3	1.5	2.4	1.7	0.5	0.3	0.8	0.2					
25	0.1			0.1	0.8	0.2	0.2	0.1	0.1	2.0	1.0	0.2	0.1	5.0	4.2	1.9	0.7	0.6	0.4					
26	0.2	0.2	0.5	0.9	0.6	0.2	0.5	0.6	0.2	2.8	1.0	0.2								0.1	0.4	0.2		
27						0.4					0.3	0.5		0.3	0.1	0.4	1.3	1.3						
28				3.1						0.1	0.4	3.6	3.2	2.5	1.7	1.2	0.1	0.1						
29		0.2	0.6	1.2	1.4	0.2		0.5	1.5	1.0	4.0	1.2	0.7	0.7	1.5	1.0	0.6	1.2						
30	0.1	0.2	0.2	0.9	0.8	0.7	0.7	0.1	0.4	1.5	0.6	0.7	1.0	0.2	0.7	0.3	1.0	0.5	0.4					
31						1.1	0.7					3.1	1.3	0.7	0.4	0.2		0.1	0.2					
Mean	0.10	0.10	0.22	0.37	0.24	0.16	0.23	0.35	0.31	0.51	0.57	0.61	0.56	0.77	0.67	0.47	0.36	0.26	0.18	0.04	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)

September 1984

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			0.1	0.4	1.0	0.7	0.5	0.1	0.2	1.2	1.0	0.2		0.4										
2		0.3	0.5	0.5	0.4			0.5	0.3		0.2			0.5	0.1	0.1					0.1		0.1	
3								0.9	1.1	0.2			0.2	0.3	0.1									
4						0.3	0.2	0.6	0.2	0.1	1.5	1.2	0.5	0.1	1.4	1.0	1.0	0.2		0.3				
5		0.2		0.4	0.5	0.5	0.5	0.1	7.0	2.5	0.2	2.0	1.0	1.2	0.5	0.5	0.6	0.2		0.2				1.5
6	0.5	0.5	0.5	0.2	0.5	1.0	0.5	0.2	0.2	1.0	1.4	0.5	2.5	1.0	0.7	0.2		1.2	0.5					
7	0.4		0.5	0.1	0.2													0.2	0.4					
8								0.2			0.4	0.5		0.2	0.1									
9		0.2		0.3							0.2	0.8	0.2	0.1		0.4	0.4	0.2		0.1				
10	0.1		1.2	0.2					0.1	0.5	0.5	1.1	1.2	0.2	0.6	2.0	0.1	0.5	0.7	0.1				1.3
11		0.4	1.4	0.5	0.5	0.2	0.1	0.7	0.1	2.5	1.9	1.4	0.5	0.4	0.2		0.1	0.1	0.2		S	S	S	S
12		0.1	0.3	0.5	0.5	0.5					0.1	1.0	0.5	0.1	2.2	0.4	0.4		0.7					
13		0.1	1.6	0.7	0.5	1.5	1.2	0.5				1.4	1.0	1.6	1.5	0.6	0.6	0.2	0.1					
14						0.5				1.5	0.9	0.7	1.4	1.5	0.7	1.2	0.5	0.5	0.2		0.2			
15	0.5	0.4	0.5	2.1	0.6			0.3					0.3		0.4		0.2	0.2		0.5				
16	0.2	0.2	0.1	1.0	0.1	0.2	0.1		0.1	0.3	0.5			0.1										
17			0.2							1.1	1.3													
18									0.3		0.2	0.3												
19							0.2		0.3						0.7	0.4	0.1							0.1
20		0.3	1.2	0.7	0.7	0.6	0.9	1.0	1.5	0.5		0.5	0.7	0.4	1.0	0.6	0.5		0.4		0.2			
21	0.1	0.5	0.2	0.2											2.0	0.8	0.9			0.3				
22						0.5					0.2	1.4	2.4	1.5	0.8		1.4	0.7	0.5					
23	0.1					1.9	0.5	1.2	1.7	1.0	6.1	0.9	0.5	1.7	0.4	4.6	0.2			0.2				
24	3.2	0.5	1.4	2.5	2.5	0.6	0.9	1.0	0.2	5.0	0.5	1.4	4.4	2.0	1.9	1.5	0.5			0.1			0.2	0.5
25		1.5	1.5	1.0		1.0	1.0	0.9	2.8	2.5	0.1	2.7	1.4	1.3	1.6	2.2	1.0	2.6					0.2	0.1
26	0.5	0.5	0.4	1.0	0.7	0.5	1.7	0.1	1.2	0.7	1.1	3.1	4.2	2.4	0.6	0.6	0.1	0.1	0.5					
27			1.0	1.0	0.5	0.2	0.9	0.5	1.0	0.5	0.5	1.4	0.7	0.2	0.1	0.1	1.2	0.6	0.2					
28	0.5	1.1	0.2			0.2	0.2	0.2	2.3								0.2	0.3						0.5
29	0.2			0.3	0.5	2.2	0.1	1.0	0.5	0.5	1.2	0.3									0.1			
30	0.2	2.6	0.9	0.5	0.5	1.5	1.5	1.6	0.5	0.2		1.4	0.5	0.2										
31																								
Mean	0.21	0.31	0.45	0.47	0.34	0.48	0.36	0.35	0.71	0.75	0.66	0.78	0.82	0.58	0.59	0.56	0.33	0.26	0.15	0.06	0.02		0.01	0.13

Open spaces without figures correspond to quiet level

* : Quiet day

*

SYOWA STATION

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

October 1984

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	0.5	0.5	0.5	0.5	0.2		0.5	1.6	1.2	0.3	0.2			0.1				0.2	0.2	0.1	0.1
2					0.5	2.0	0.2													1.0				
3			0.2		1.4	0.5	0.7	2.8	0.2	1.0	0.7	1.8	0.6	0.5	0.2	0.2	0.1							
4		0.2	0.2	0.2																				
5		0.1	0.2	0.1		0.4	0.5	0.5	0.1			0.2	0.2	0.2										
6										0.9														
7		0.5	0.2		1.1	0.5	0.1		0.1	0.2	0.4				0.1			2.6	0.1					
8	0.2		1.1	0.7	0.6	1.1	0.1	0.2	0.1	2.7	0.7	0.6	0.4		1.4	1.0	0.2	0.5						
9	0.9	0.4	C	C	C	0.5	0.9	0.5					0.9	1.5	0.5	0.4	0.2	0.1						0.5
10	1.0	1.7	0.9		1.5	2.1		1.1	1.0	3.1	1.0	0.4	0.1	0.9	1.0	0.2	0.9	0.5	0.9					
11	0.4	1.1	0.5	1.0	1.6	0.6	0.5	0.2			1.5	1.2	0.5	0.1	1.1	0.2	0.2						0.2	0.1
12		1.5	0.5		1.5	2.5	0.6	0.1	0.5	0.1	1.0	0.9	3.0	1.4	0.5	0.2	0.7		0.8	0.1				
13				2.0	1.3	0.1	0.2	0.5	0.1			1.7	1.2	2.2	3.6	0.7	1.0		0.3	0.5				
14				0.2	1.1	0.9	0.2	2.0	0.2		1.0	1.0	0.5	0.4	0.5	0.1			0.1		0.1			
15	0.2	0.7	0.5	0.5	0.5	1.5	0.5	0.3		0.3	0.5											0.2		0.2
16	0.3	0.5	0.2	0.3	0.1			0.1	1.0	0.4	0.6		0.6	1.1		0.7	2.2	0.4						
17	0.1	0.1	1.0	0.5	0.1																			
18									2.9	0.9					0.2	0.5	1.1	0.1						
19	1.2					0.2	0.5	0.5	1.0	1.4	2.4	1.0	1.2	2.9	0.7	1.1	0.4	0.1	0.9		0.1	0.2	2.4	
20	0.1	0.4	2.0	0.3	0.2	0.1	0.1	0.7	1.7	1.4	1.6	2.4	2.6	2.0	0.1	1.2	1.1				0.1	0.2	2.4	0.9
21	1.0	0.5	0.2	1.5	1.0	0.5	1.5	0.9	0.2	1.0	3.1	2.4	1.6	1.9	1.2	0.2	1.2	2.6	0.1				0.5	0.1
22	2.7	0.5	1.0	2.5	1.7	0.1	0.1	0.1	1.1	0.2	1.6	1.6	2.3	2.0	1.6	0.7	0.5	0.2	0.2					
23	3.2	0.6	3.0	0.8	0.1	0.1	0.1	0.5	0.1	1.7	2.5	0.5	0.7	0.5	0.2	0.7	0.7	0.2	0.5	0.2	0.2	0.2		1.0
24	0.2	0.5	0.2	0.2	1.2	0.1	3.5	2.4	0.5	1.7	1.0	1.1	0.2	2.2	0.9	0.5	0.5	0.2	0.2					
25	0.2	0.5	0.2	1.0	1.5	0.5	1.0	1.0	2.1	2.6				1.0	0.2	0.5	0.7		0.2	0.3				
26	0.1	0.5	0.8	0.2																				
27			0.2																0.2					
28									0.3	0.2											0.5			
29		0.2	0.9	0.4				0.2											0.5	0.2				
30										1.1	0.2													
31					0.2																C	C	C	
Mean	0.38	0.34	0.47	0.43	0.59	0.47	0.38	0.47	0.42	0.69	0.69	0.58	0.54	0.67	0.45	0.29	0.38	0.24	0.16	0.07	0.03	0.02	0.18	0.09

Open spaces without figures correspond to quiet level

* : Quiet day

SYOWA STATION

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

November 1984

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	0.2	0.5	0.1		0.7	0.5	0.2	0.3									
2																								0.1
3	0.4		0.2	0.4	0.2	0.1								0.1				0.1						0.5
4	0.2	0.5	0.2	0.6	0.5						0.1				0.5	0.5		0.2	0.1					0.2
5	0.8	0.4	0.7	0.5	1.0	0.1	0.5	1.0	0.7	0.6	0.5			0.5	0.7		0.5	0.5	0.7	0.5		0.2		
6		0.1	0.1	0.1	0.5	0.2					0.2	0.5	0.4		2.0	1.2	0.8	0.2		0.1	0.1			
7	0.1	0.5	0.4			0.1		0.5	1.1	0.1			0.5	0.2	0.4	0.4			0.1		0.6	0.5	0.5	0.2
8		0.5	0.9	1.1	1.5	0.6		0.8	0.9	0.1			0.5	0.2	0.4					0.6				
9		0.5	0.2	0.5				0.1								0.1	0.2		0.2	0.2				0.2
10	0.3	0.5	1.0	0.1	0.6	0.7			1.0	0.9	0.2							1.1	1.3	0.1				
11		0.9	0.6		0.1			0.2	0.6	0.2					0.9	1.0	0.2	0.1	0.1					
12	0.5	1.0	0.2			0.7	0.1	0.5	1.0	0.6				0.2										
13								0.3	0.1			0.1	0.1								1.5	0.5	0.5	0.5
14	0.5	0.5	0.7	0.2	0.4	0.2		0.1		0.2		0.4	0.4	0.2			0.2	0.6	0.5	0.5	0.2			
15	0.1	0.1					0.5					0.3		0.1	0.7	0.1	0.5						0.9	0.5
16					0.1		1.5	1.0	0.6		0.3	0.2	1.5	1.1	0.1		0.1						1.1	0.4
17	1.9	0.6	0.2	0.1	1.5	1.5		0.5	1.1	1.0	2.5	0.7	0.5	0.9	1.0	0.5	0.5	0.2		0.1				0.1
18	1.5	1.7	0.1	0.7	1.2	1.2	0.7	0.1	0.4	0.5	0.2		1.2	1.0	0.3		0.5		0.4	0.4			0.2	0.2
19	1.5	0.1	0.5	0.7	1.2	2.2	2.2	1.1	0.9	1.0	0.4	0.5								0.6	0.5	0.6	0.5	0.5
20	0.5	0.9	1.5		1.0	0.9		0.7	0.2	2.4	2.5	0.6	0.6		0.4	0.2	0.2	0.3	0.4					
21	0.5	0.6	1.0	0.1	0.1			0.5	1.3	0.5	0.3	0.5	0.4				0.5	1.4	0.5	0.7		0.2		0.5
22	1.1	1.5	0.7	0.5	0.2		0.2	0.5	0.7	0.5	0.3	0.1		0.2	0.9	0.6		0.4	0.4					
23	1.0	0.2	0.5	0.5	0.2	0.5				0.2	0.1													
24																					0.4	0.2	0.2	
25	0.3		0.1		0.7	0.4	0.1																0.2	
26	0.5	0.6			1.0	0.5	0.1																	
27																						0.1	0.1	0.4
28	0.5				0.1	0.2	0.2																	
29												0.5	0.9											
30									0.1	0.5	0.2	0.5												0.2
31																								
Mean	0.40	0.39	0.33	0.20	0.40	0.33	0.21	0.27	0.37	0.31	0.26	0.18	0.25	0.16	0.28	0.15	0.14	0.17	0.15	0.12	0.11	0.11	0.11	0.13

Open spaces without figures correspond to quiet level

* : Quiet day

SYOWA STATION

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

December 1984

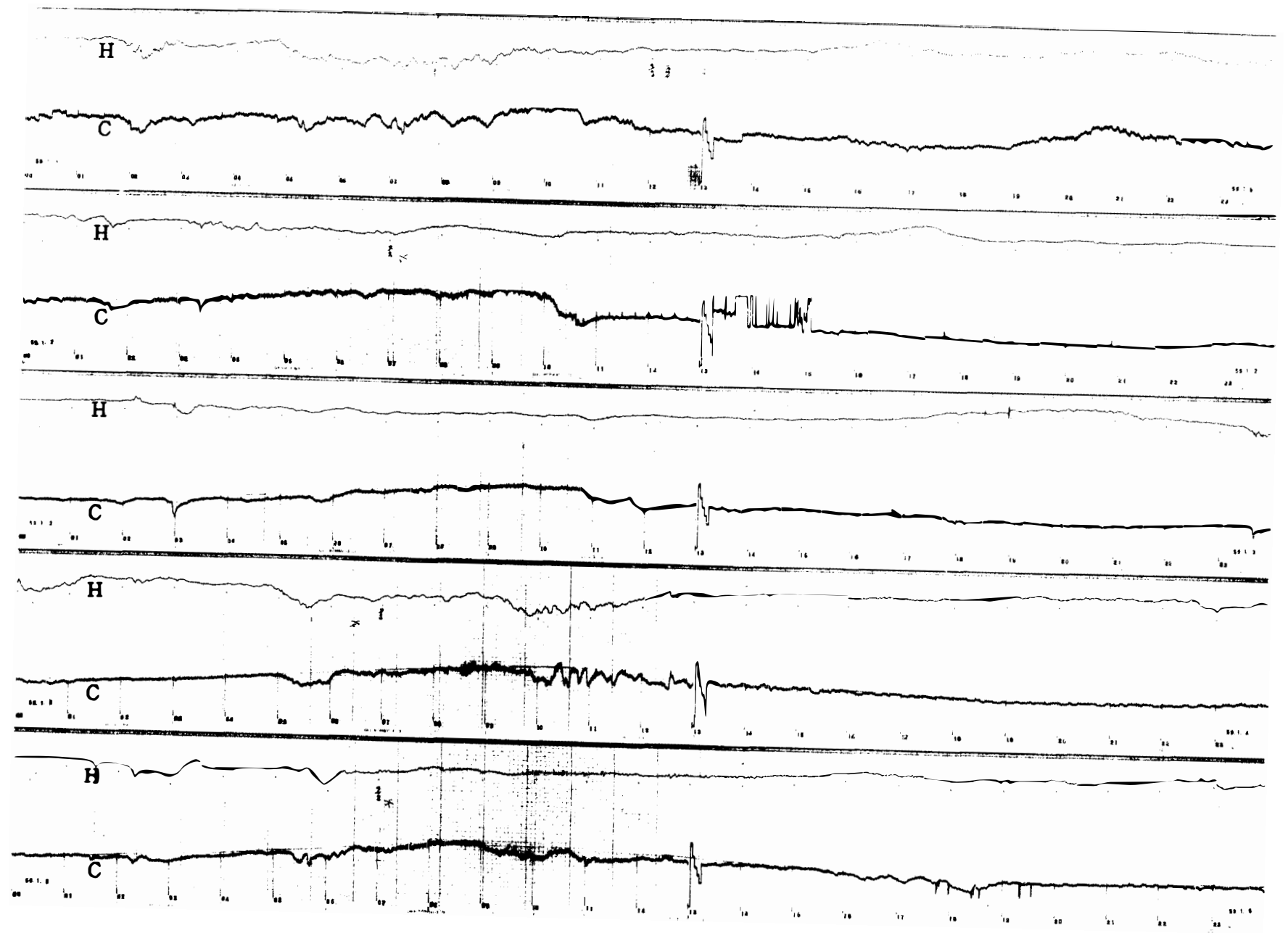
Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.2	1.0	0.5	0.2		0.5	0.2	0.7	0.4	1.8	1.0	0.2				0.4	0.5	1.0	0.7	0.5	0.7	0.4	0.1	
2		0.2	0.5	0.9	1.1	0.7	0.2	1.4	0.2		0.4	0.3	1.2	0.2		0.2	0.2							3.0
3	0.5	0.2	1.2	0.8	1.0	0.1	0.2	1.5	0.6	1.2	0.7	0.5	0.9	0.4		0.4	0.2		0.5		0.2	0.3	0.5	1.0
4	1.0	0.5	0.7	1.0	0.5	0.7	0.5		0.2	0.1	0.2	1.5	0.5	0.4	1.0	1.0	0.9	0.5	0.5	0.2	0.1	0.5	0.5	0.5
5	1.4	0.5	0.9	0.8	0.4	1.1	0.2		0.2					1.2	0.5	0.2	0.2	0.8	0.5	1.0	0.2	0.1		0.1
6		1.2	0.4		1.1	1.5	0.5		0.7	1.0	0.5	0.1		0.5	0.6	2.2	1.2	0.4	1.0	0.2	0.2			
7	0.2	2.5	0.5	0.2	0.2	0.1	0.5	0.2	0.5	0.6					1.0	0.5	0.8	0.7	0.3	0.3				
8	0.2	1.0	0.2	0.1	0.2	0.2	0.5	0.5	0.2	0.6	0.6						0.2	0.5	0.5	0.1	0.1	0.4	0.2	0.5
9	0.2	1.0	0.9	0.5	0.7																	0.4	0.2	0.5
10	0.5	0.6	0.3							1.2	0.2							0.3		0.2		0.4	0.7	0.6
11		0.2			0.1													0.5	0.5	0.2			0.2	0.2
12	0.2	1.3			1.2	1.0	0.1	0.2								0.2	0.4	0.5	0.5	0.2				
13					0.6	0.5	2.5	1.2	0.6									0.5	0.1	0.2				
14	0.1	0.1	0.3	0.4		0.1												0.5						
15	0.4	0.2	0.1			0.5	0.5							1.7	0.5	0.9	1.0	1.1	0.5	0.9	0.2			
16	1.5	0.5		1.0	1.0	1.1	0.9	0.2	0.2	1.0	0.5		0.4	0.7	0.2	0.2	0.5	0.6	0.5	0.1	0.4			0.5
17	2.0		1.7	0.5		0.5	0.2	0.1	0.8	1.0	0.2			0.5		0.2	0.2	0.6	0.2	0.2				0.2
18		2.5	0.5		1.1	0.7	0.9	1.0	0.5	0.9		0.2		0.2	0.2	0.2	0.5	0.5	0.2		0.2			
19			0.2	0.2	0.5	0.5	0.1		0.2					0.4	0.2		0.2	0.7	0.5					
20			0.5	1.0	0.6	0.2								0.4	0.2	0.2	0.2	0.7	0.5					
21									0.4	0.1									0.2	0.5	0.1		0.2	
22			0.1																					
23							0.3		1.1	0.2														
24	0.1	1.5	1.4	1.8	1.2	0.7	0.4							0.2	0.7		C	C	C	C	C	C		
25		0.2					0.2	0.1	0.2															
26						0.4	0.6	0.5	0.7	0.4							0.5	0.2	0.1					0.1
27											0.1													
28			0.4	0.2	0.9	0.7			0.2			1.9	1.0	0.6	0.2	0.2		1.0	0.7	0.5	0.2			0.5
29	0.5	0.7	0.1	0.9	1.5	1.2	0.9	0.2	1.3	0.1	0.1				0.8	1.3	0.5	1.7	0.5	0.8	0.1	0.2	0.3	0.4
30	1.5	1.7	0.9	0.5	0.6	0.1	1.0	0.5	0.5		0.9	0.1		0.6	1.0	0.8	0.9	0.9	0.5	0.6	0.4		0.2	0.2
31	0.4		0.2	0.2	1.0	0.4	0.3	1.0	0.5	0.4	0.2				0.9	1.0	1.4	0.5						1.0
Mean	0.35	0.56	0.40	0.36	0.50	0.43	0.37	0.30	0.32	0.34	0.18	0.15	0.12	0.23	0.23	0.34	0.33	0.44	0.28	0.19	0.09	0.09	0.08	0.27

Open spaces without figures correspond to quiet level

* : Quiet day
C : Failure of equipment

JAN. 1984

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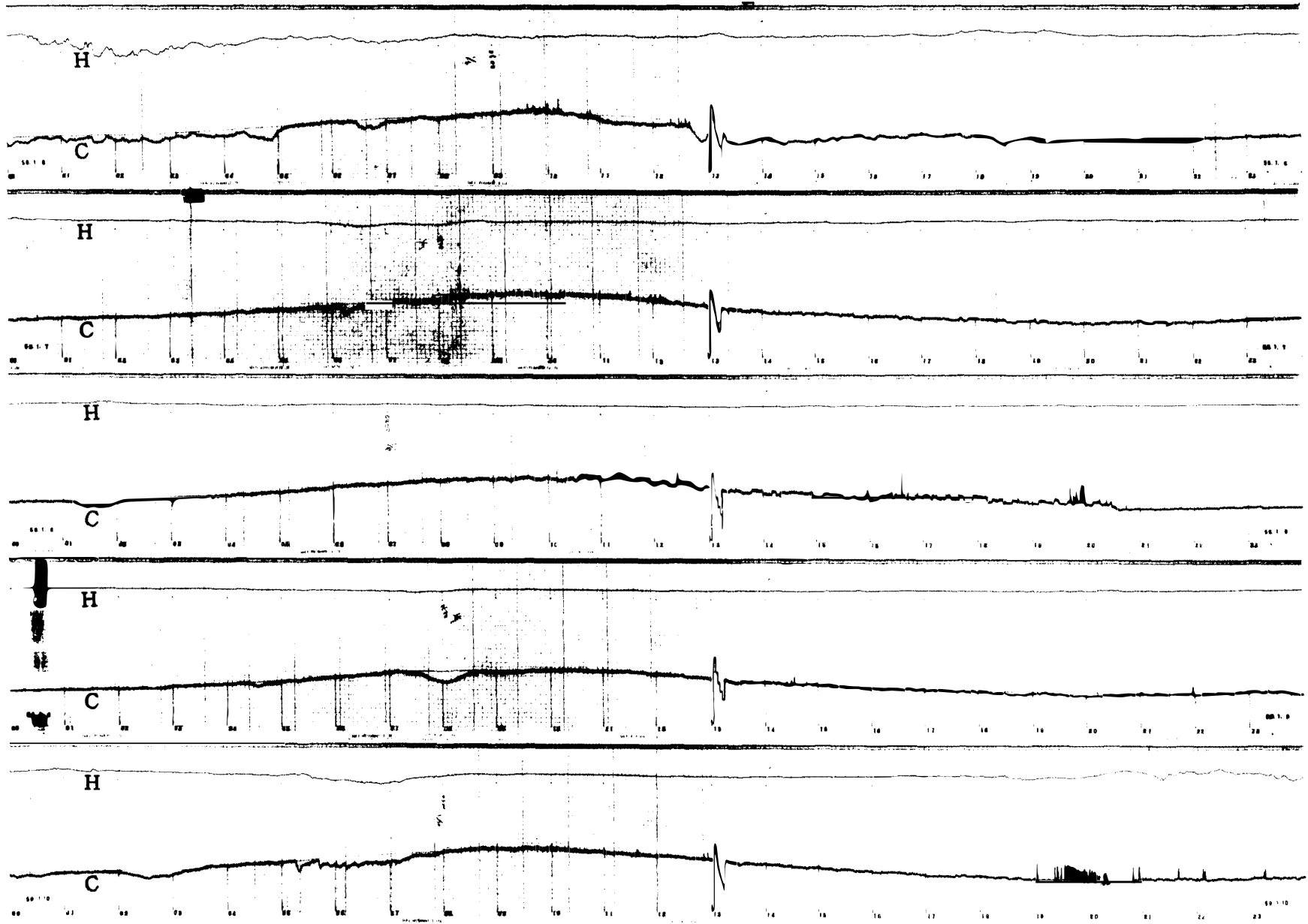


-16-

00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JAN. 1984

6
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9
10



-17-

00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JAN. 1984

11

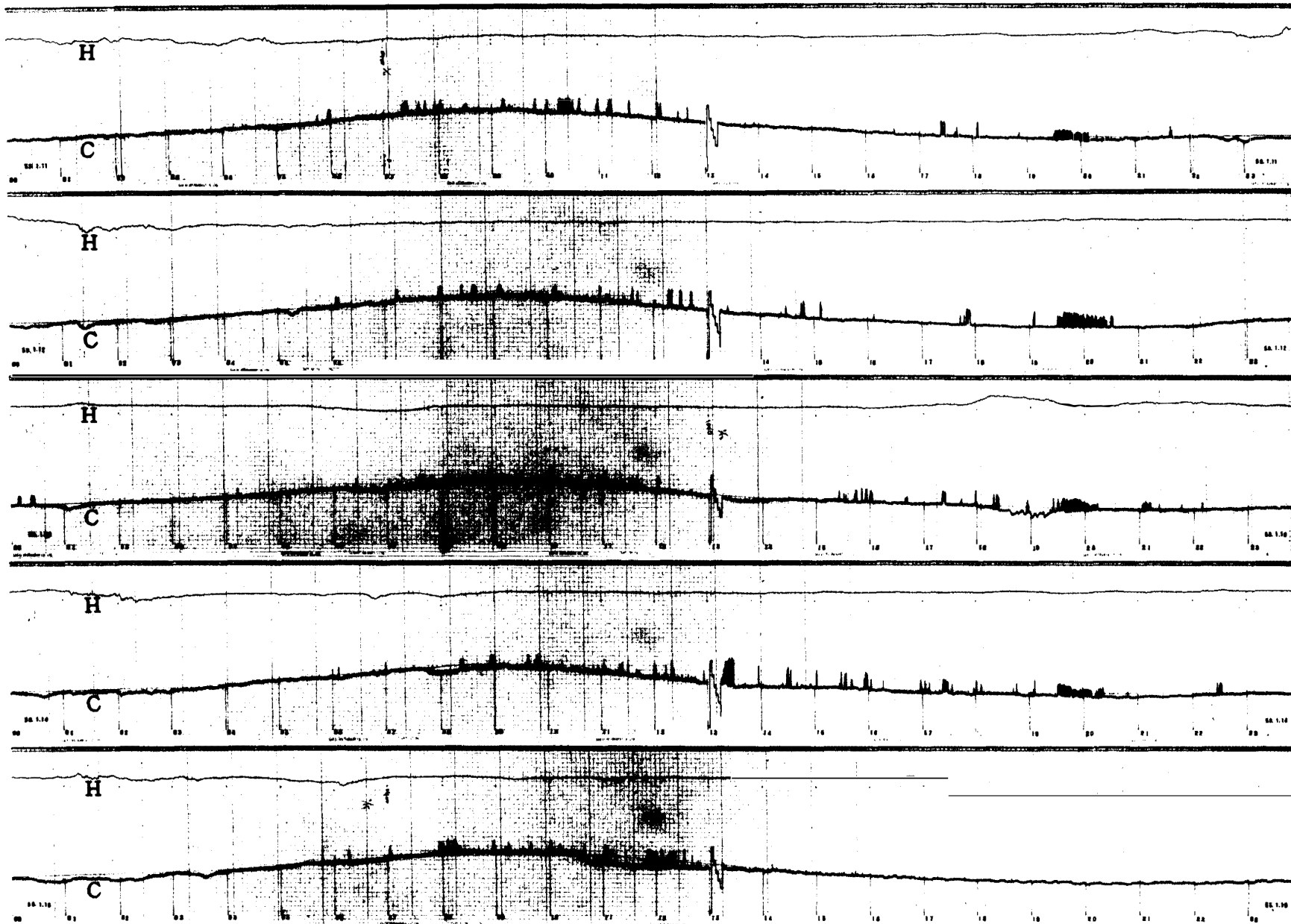
12

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-18-



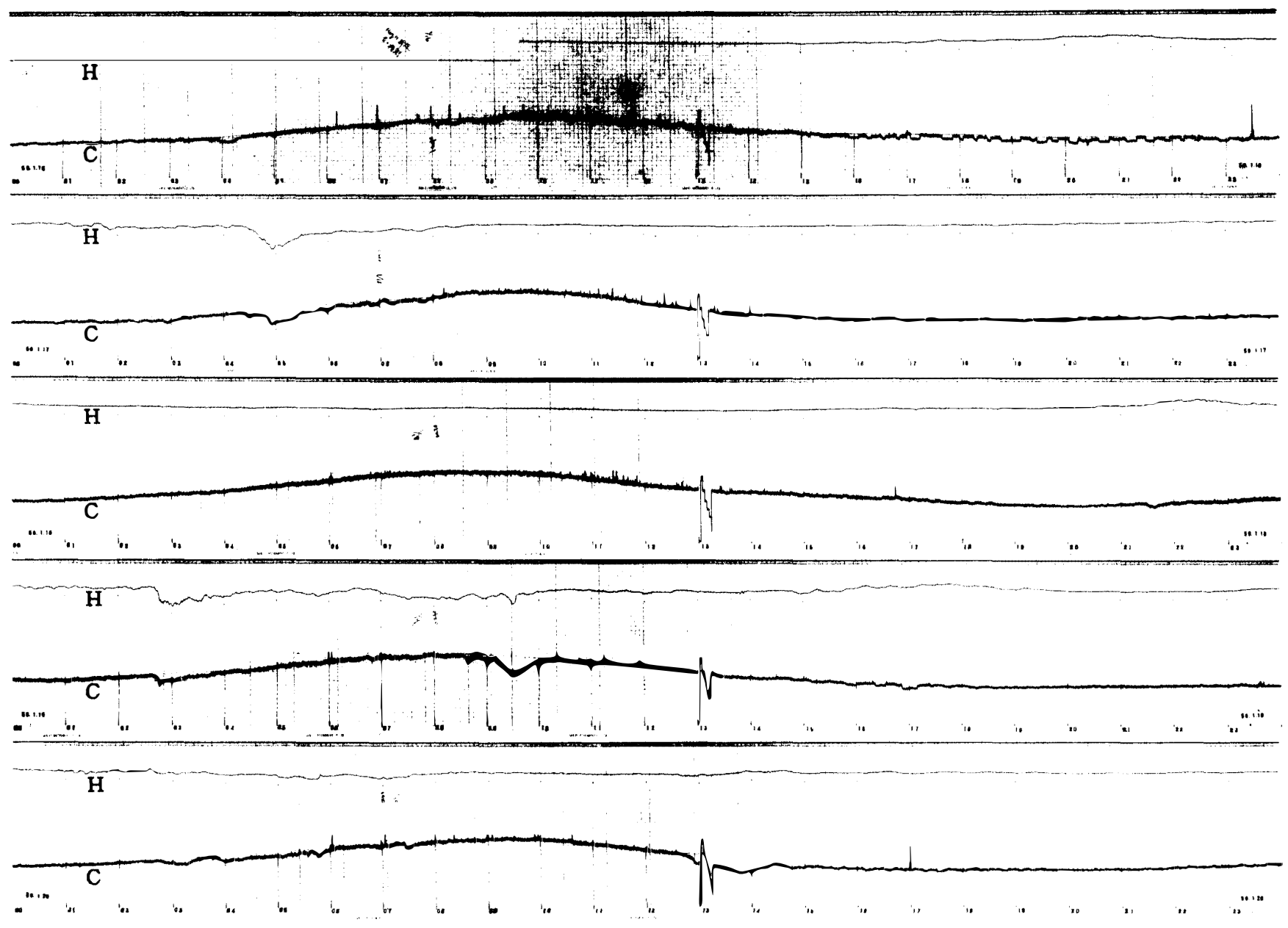
00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JAN. 1984

16
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00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JAN. 1984

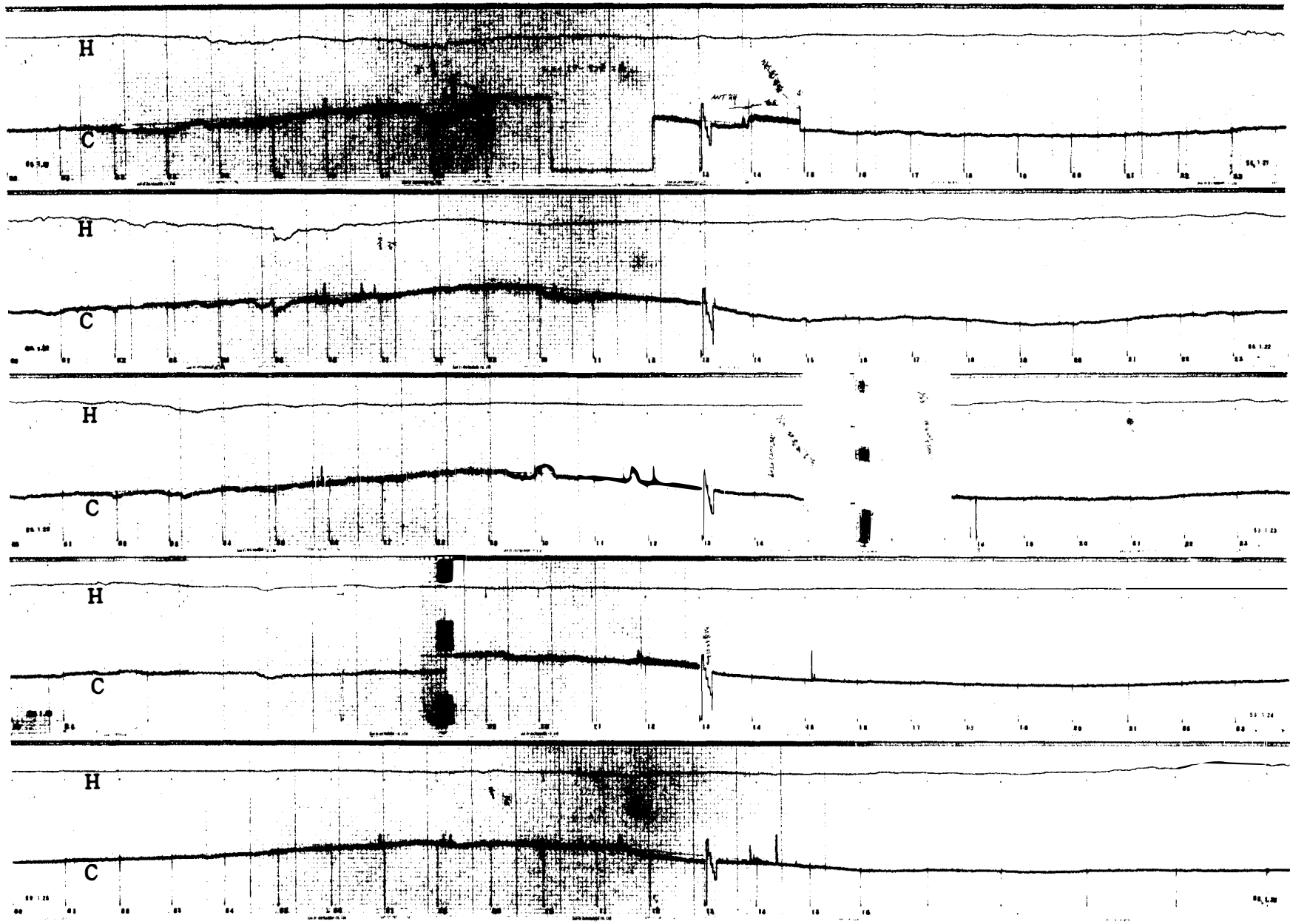
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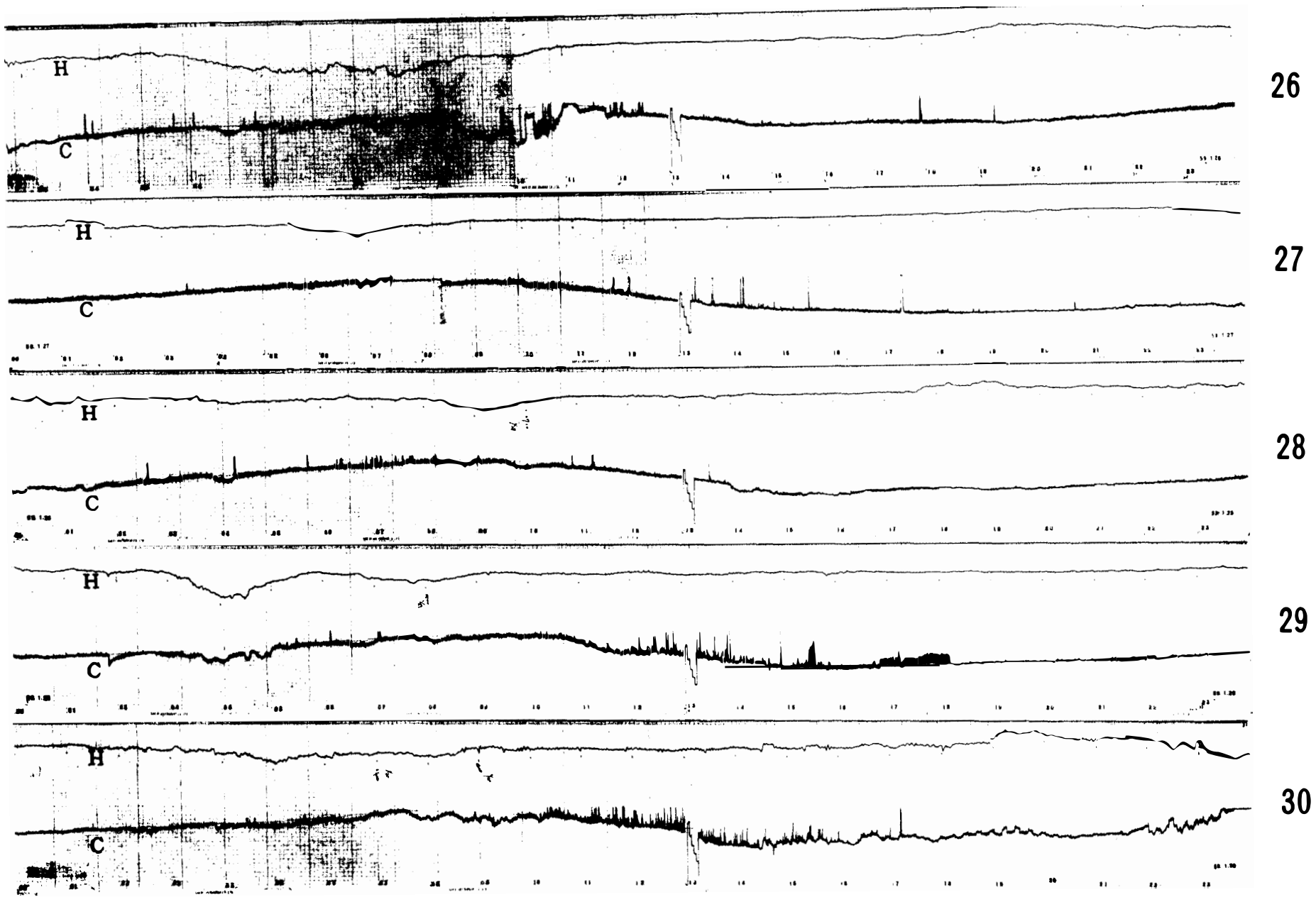


-20-

00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JAN 1984



26

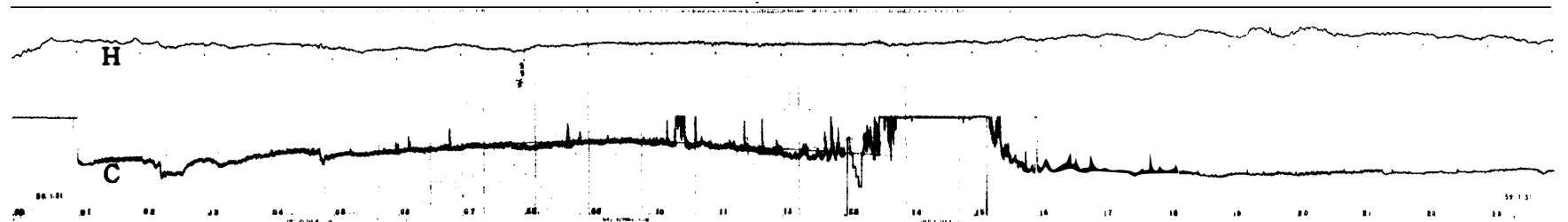
27

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00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE



00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

January	21	09:00 - 12:10	Failure of equipment
	23	15:56 - 17:40	"
	24	02:00 - 08:30	"

FEB. 1984

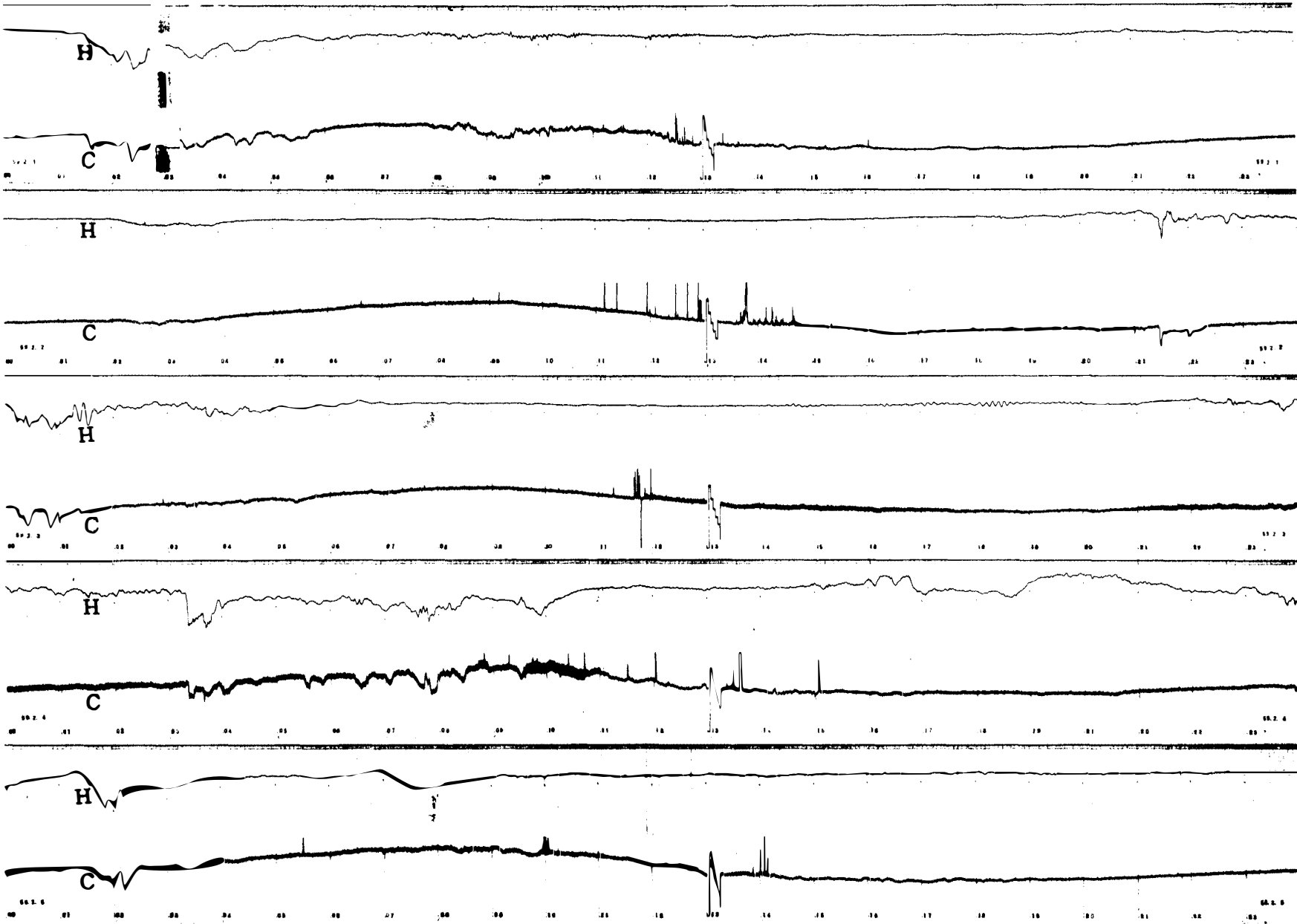
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00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

FEB. 1984

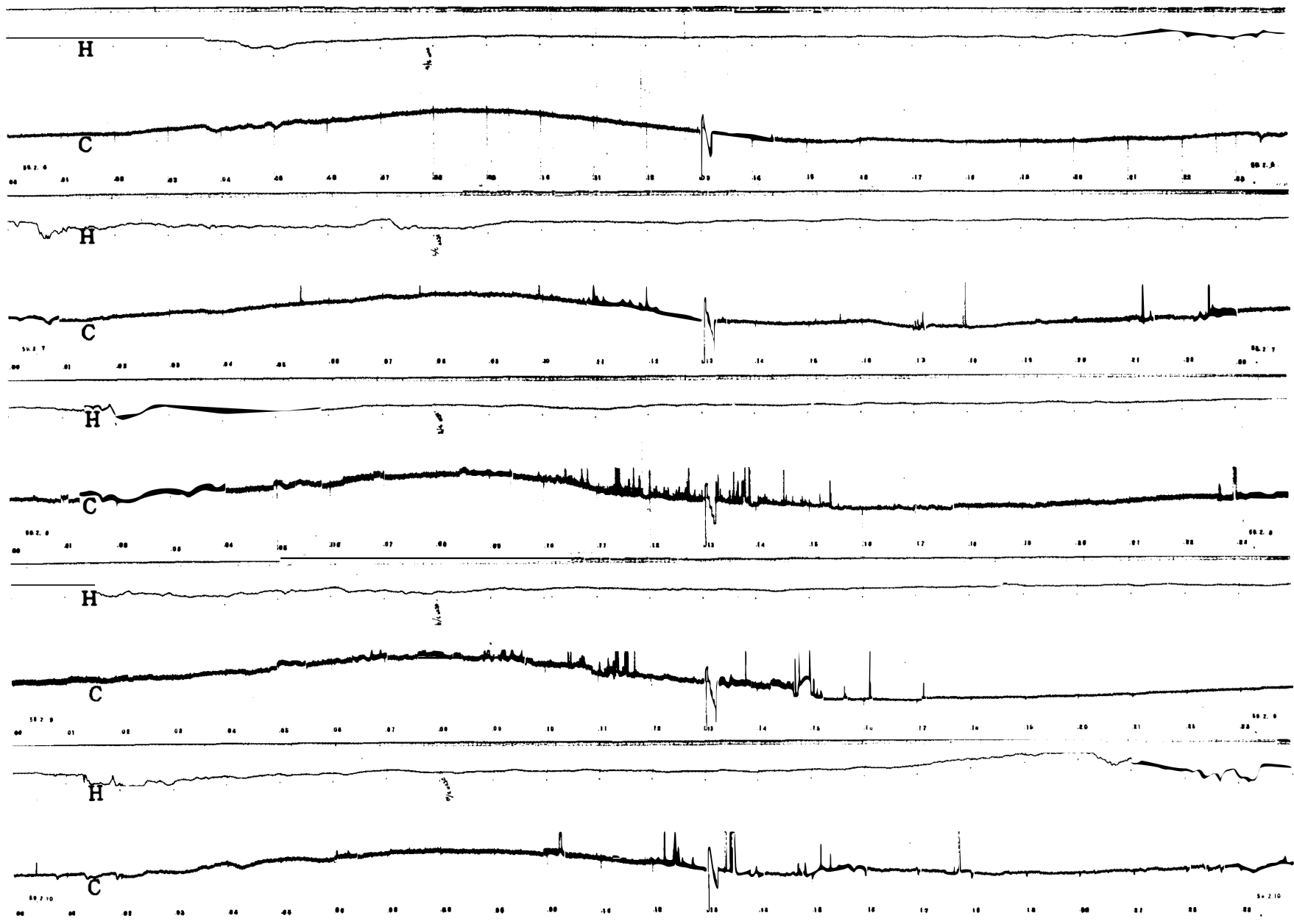
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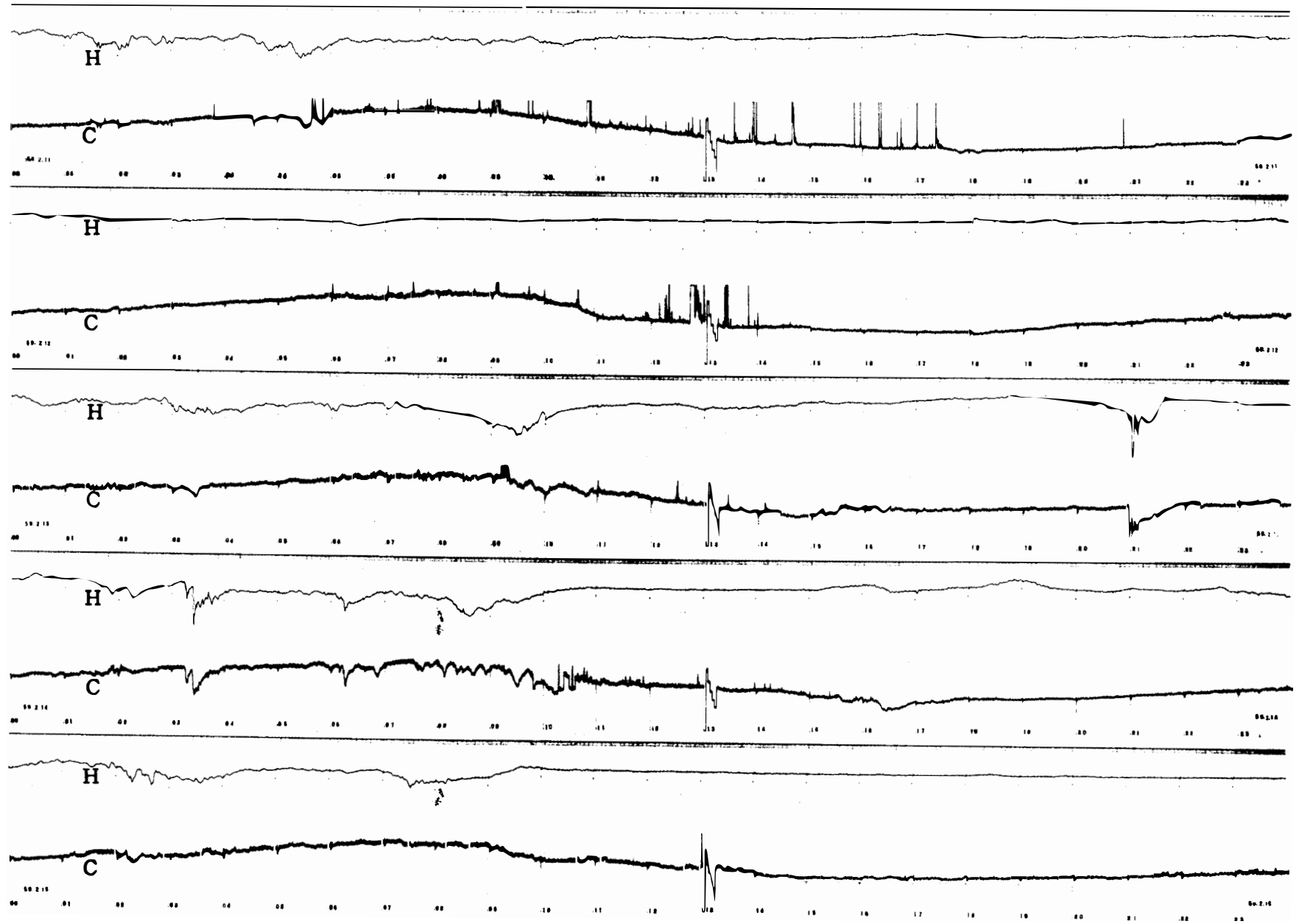


-24-

00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

FEB. 1984

11
12
13
14
15



-25-

00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

FEB. 1984

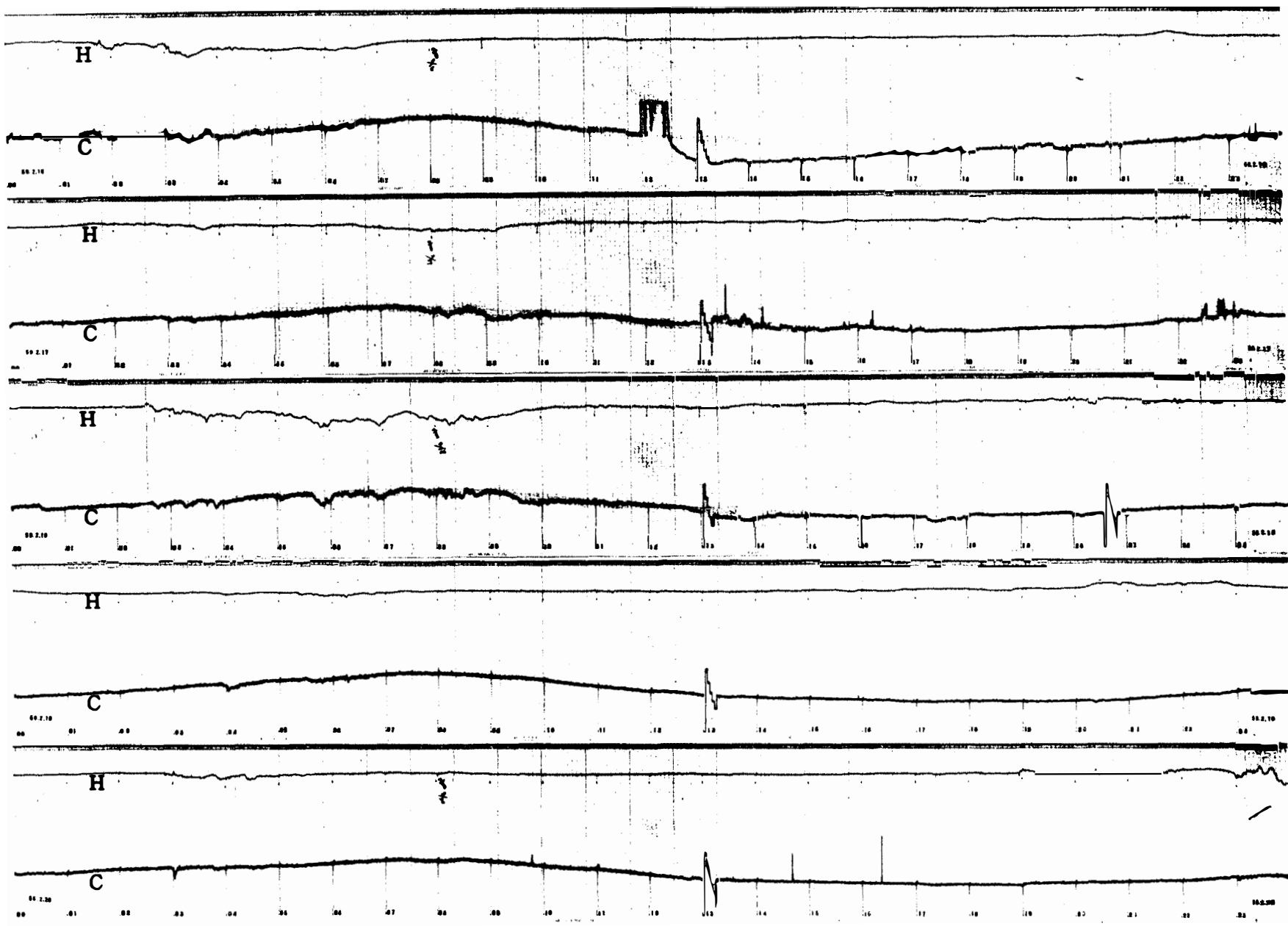
16

17

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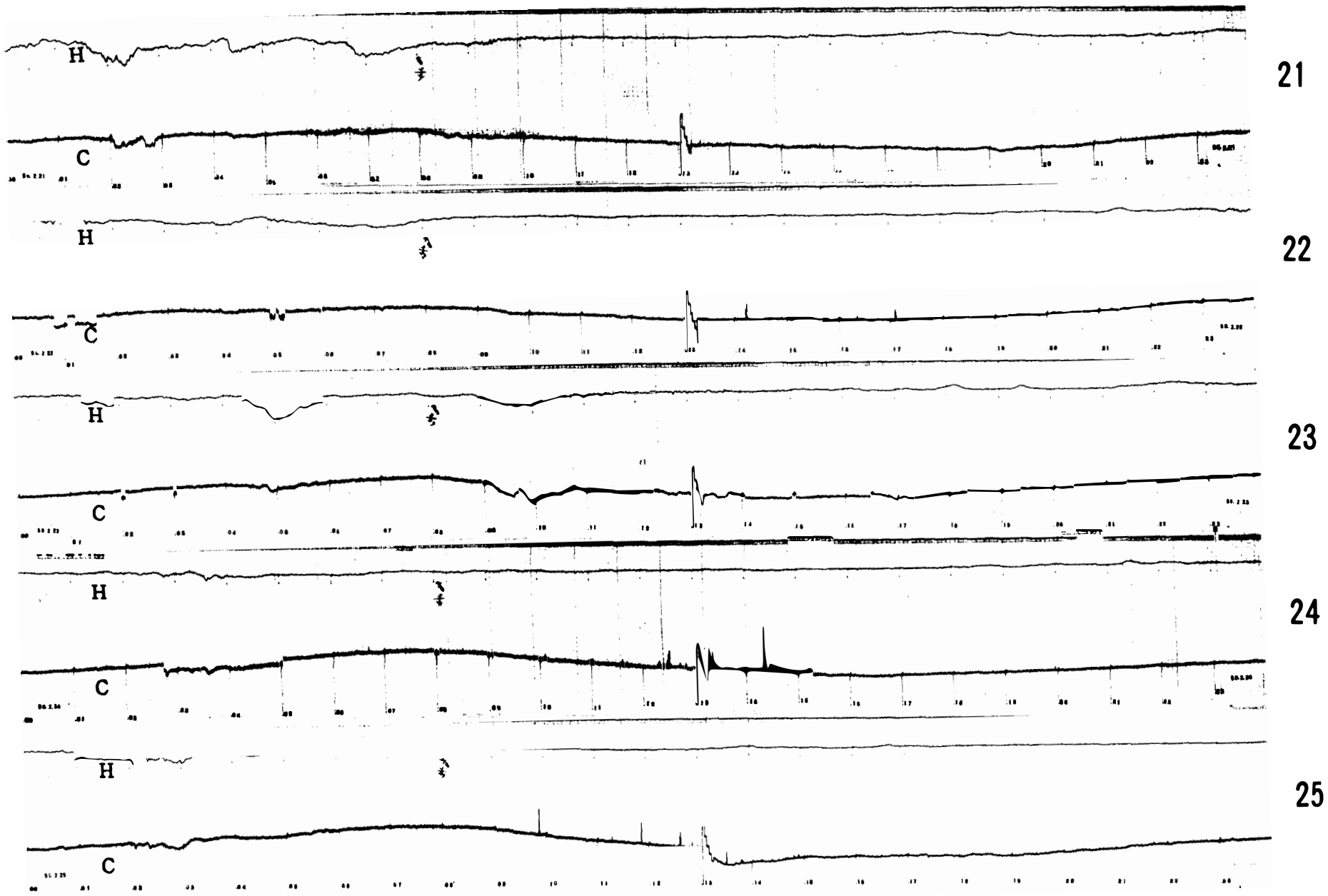


00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

FEB 1 1984



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23
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25

00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

-27-

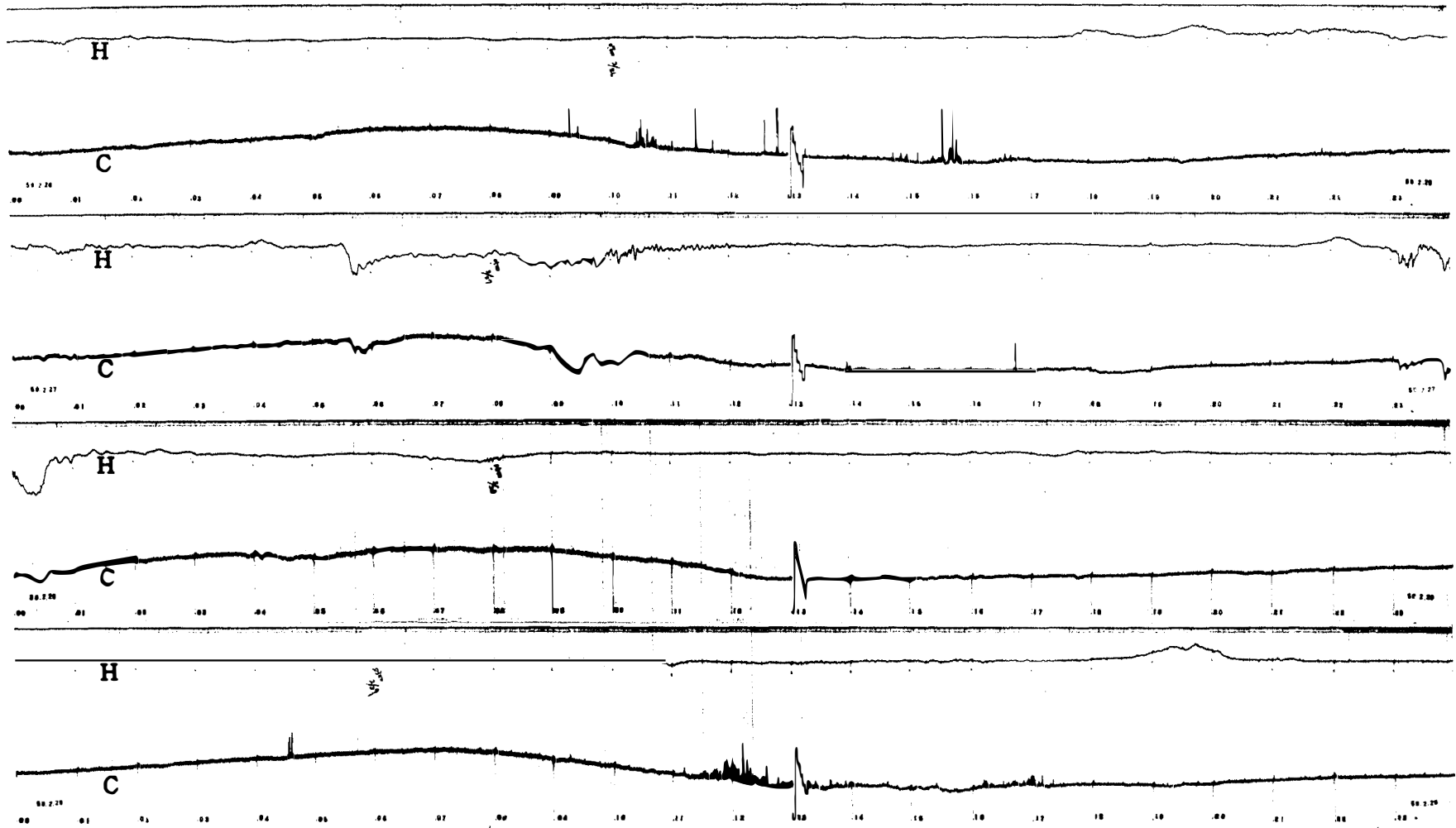
FEB. 1984

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29



00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

MAR. 1984

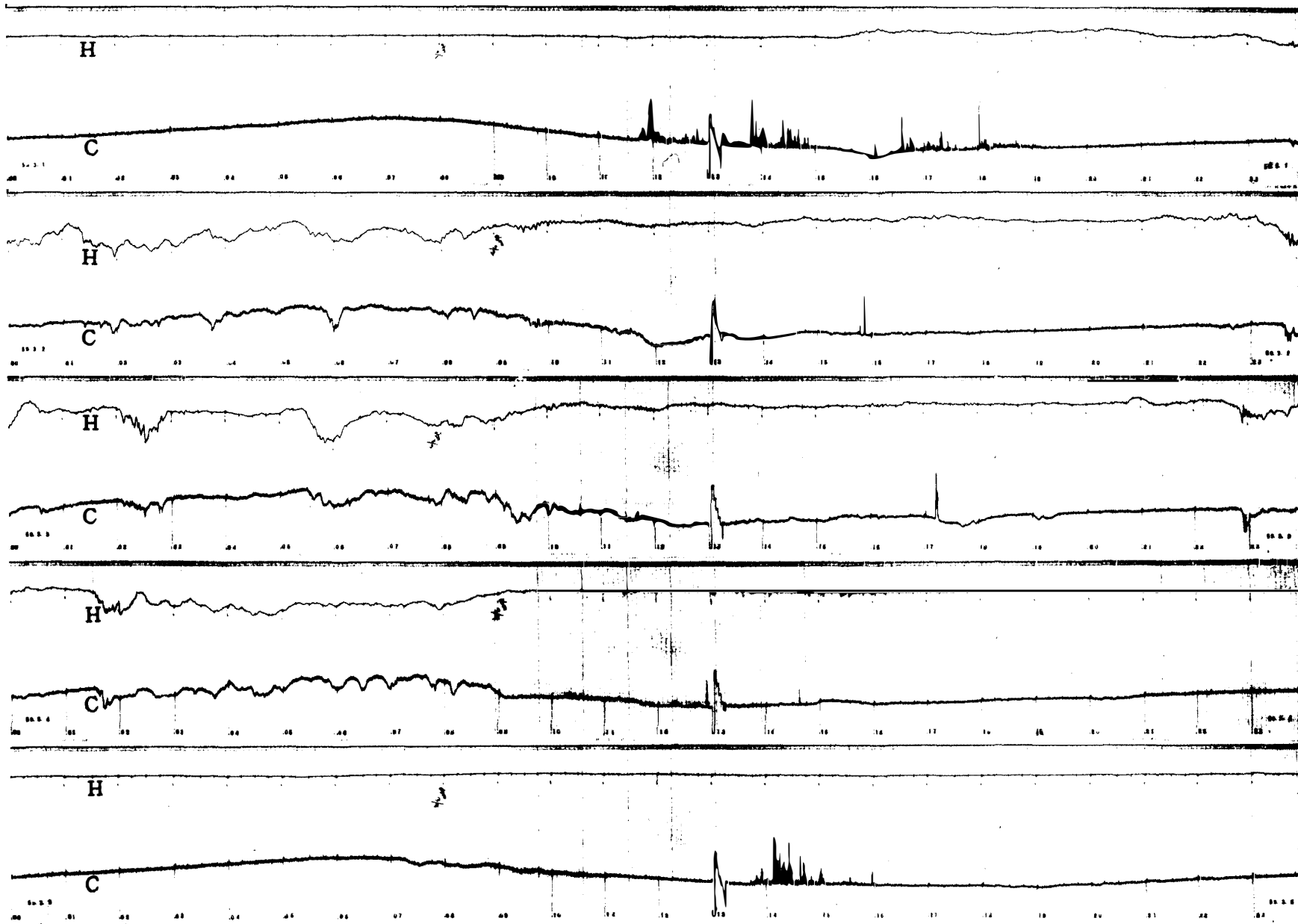
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00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAR. 1984

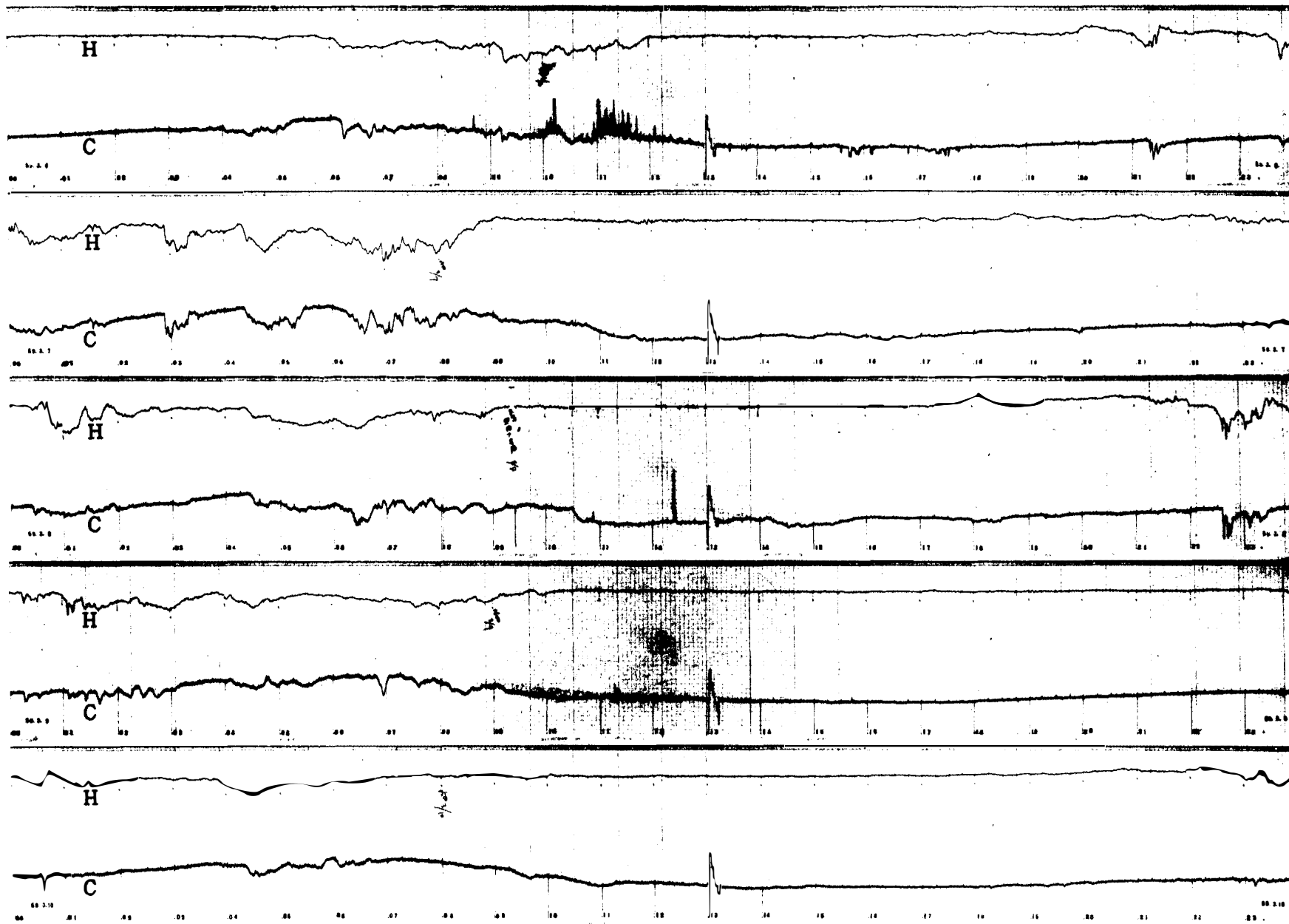
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00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAR. 1984

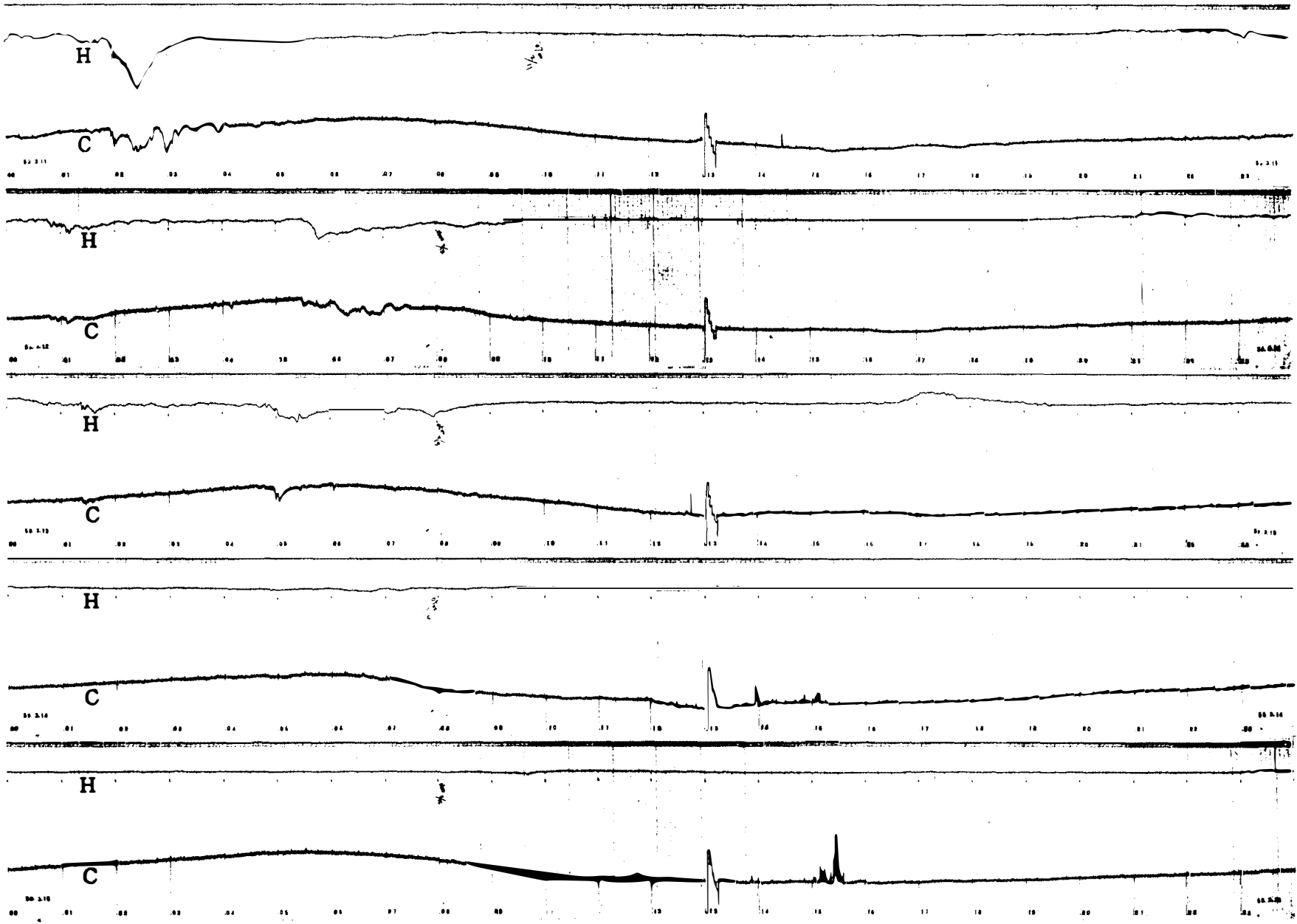
11

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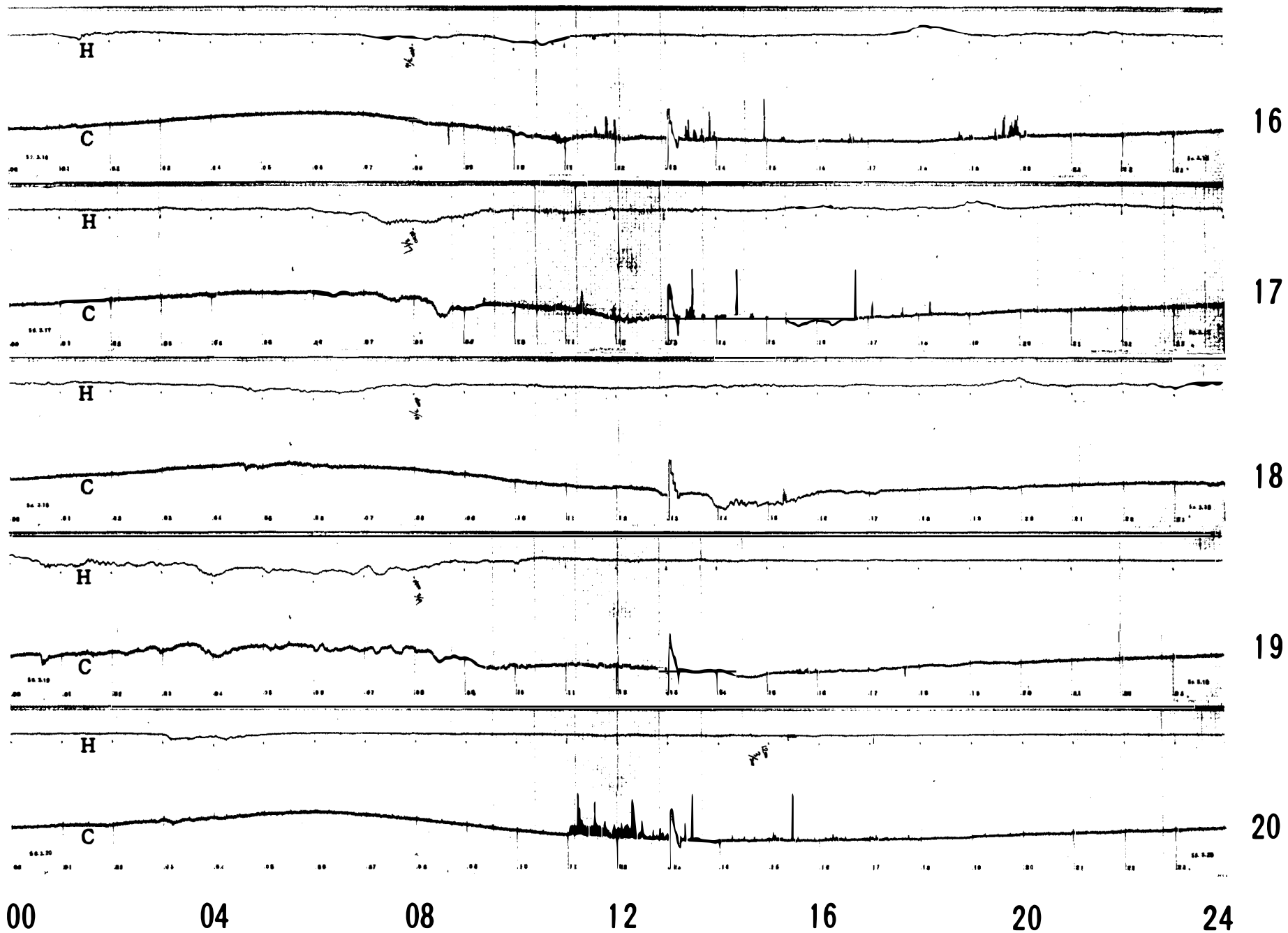
14

15



00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

MAR. 1984



-32-

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAR. 1984

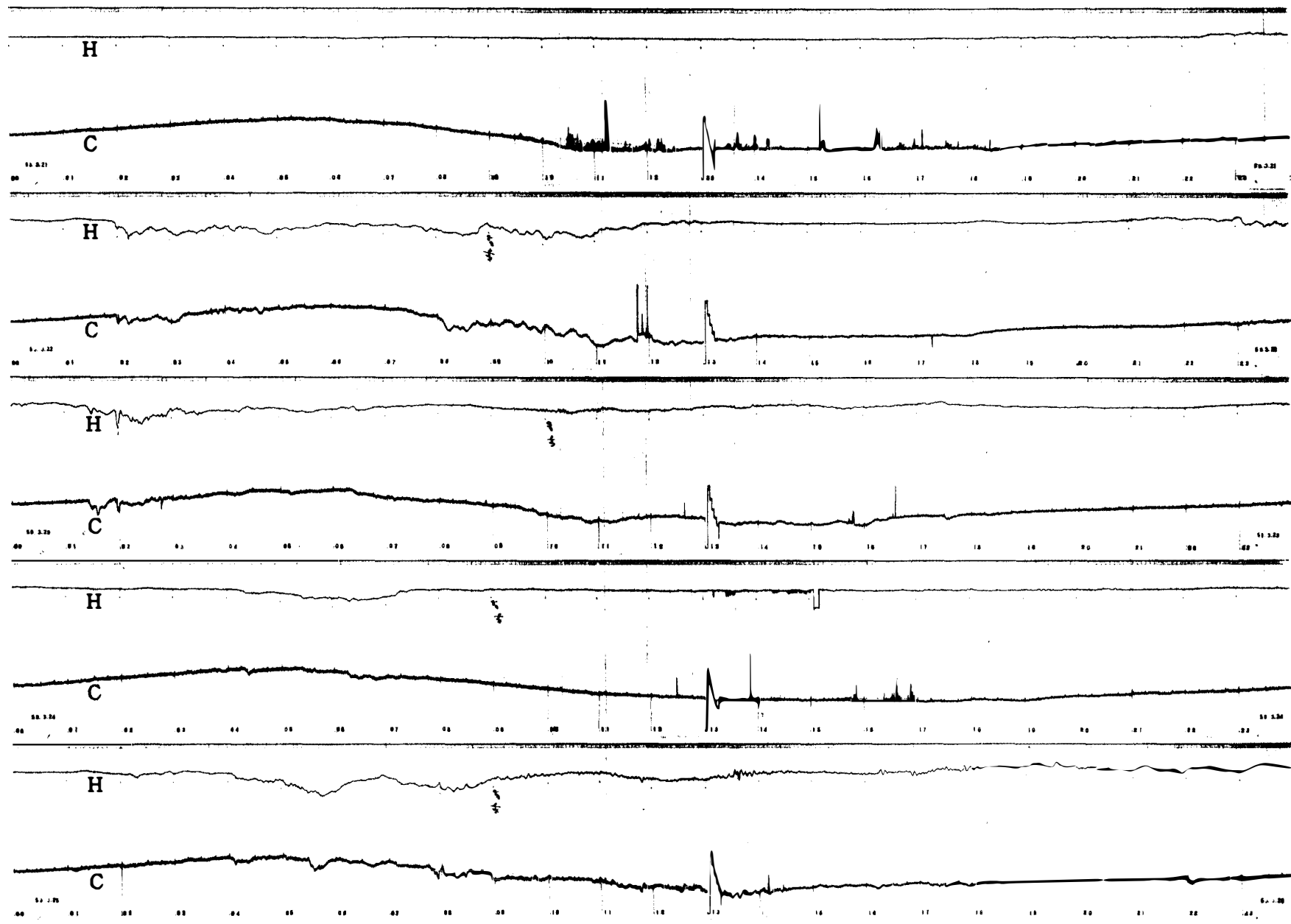
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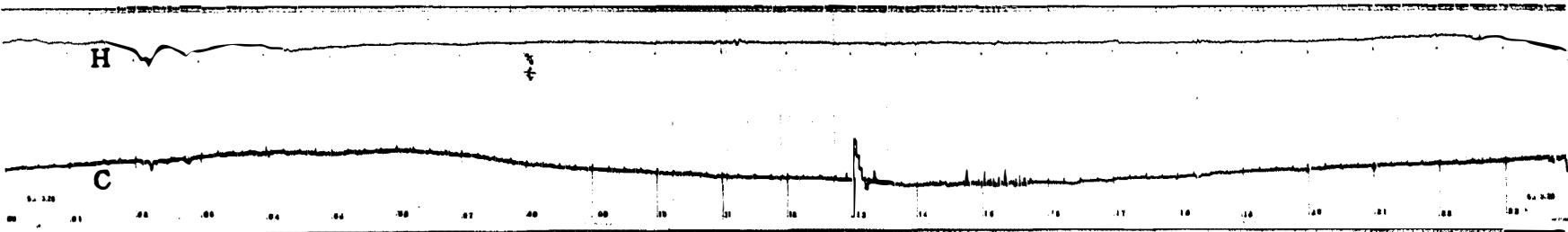
00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

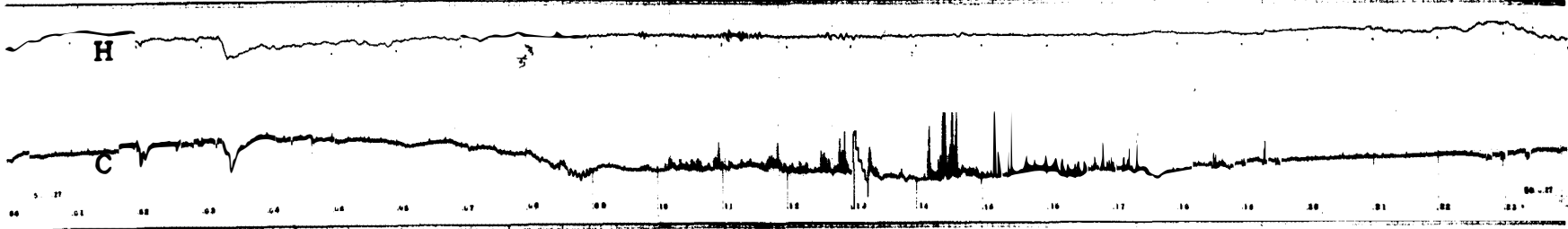
30 MHz COSMIC NOISE

MAR. 1 1984

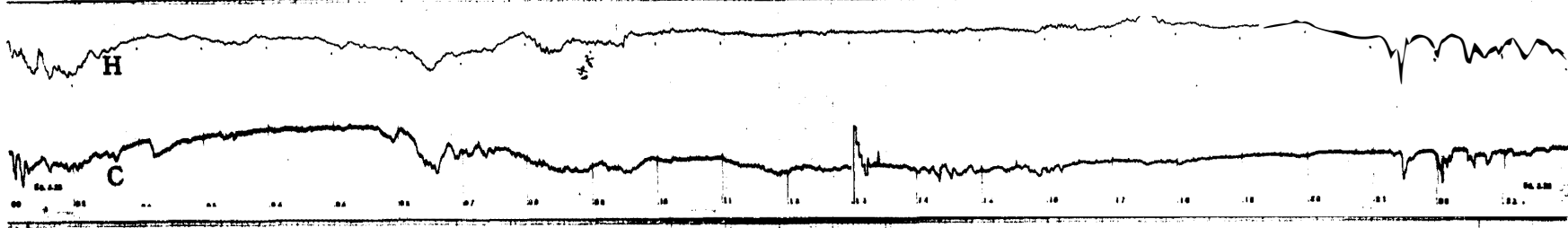
26



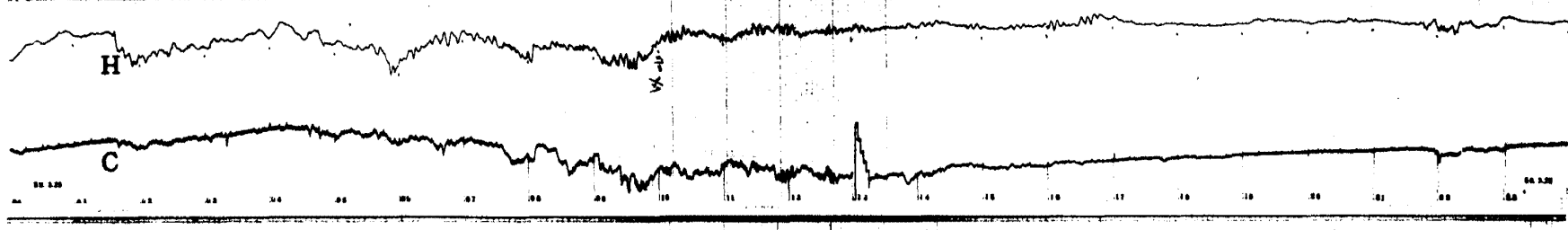
27



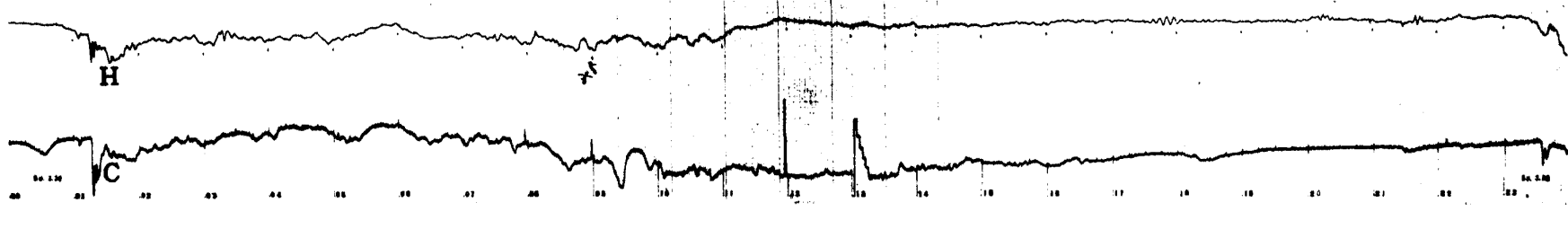
28



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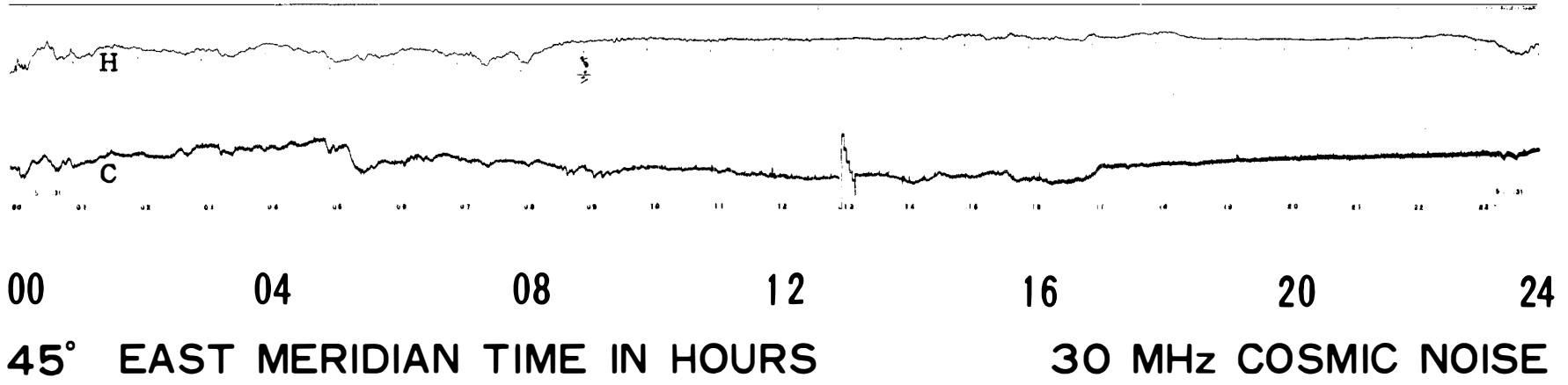
00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

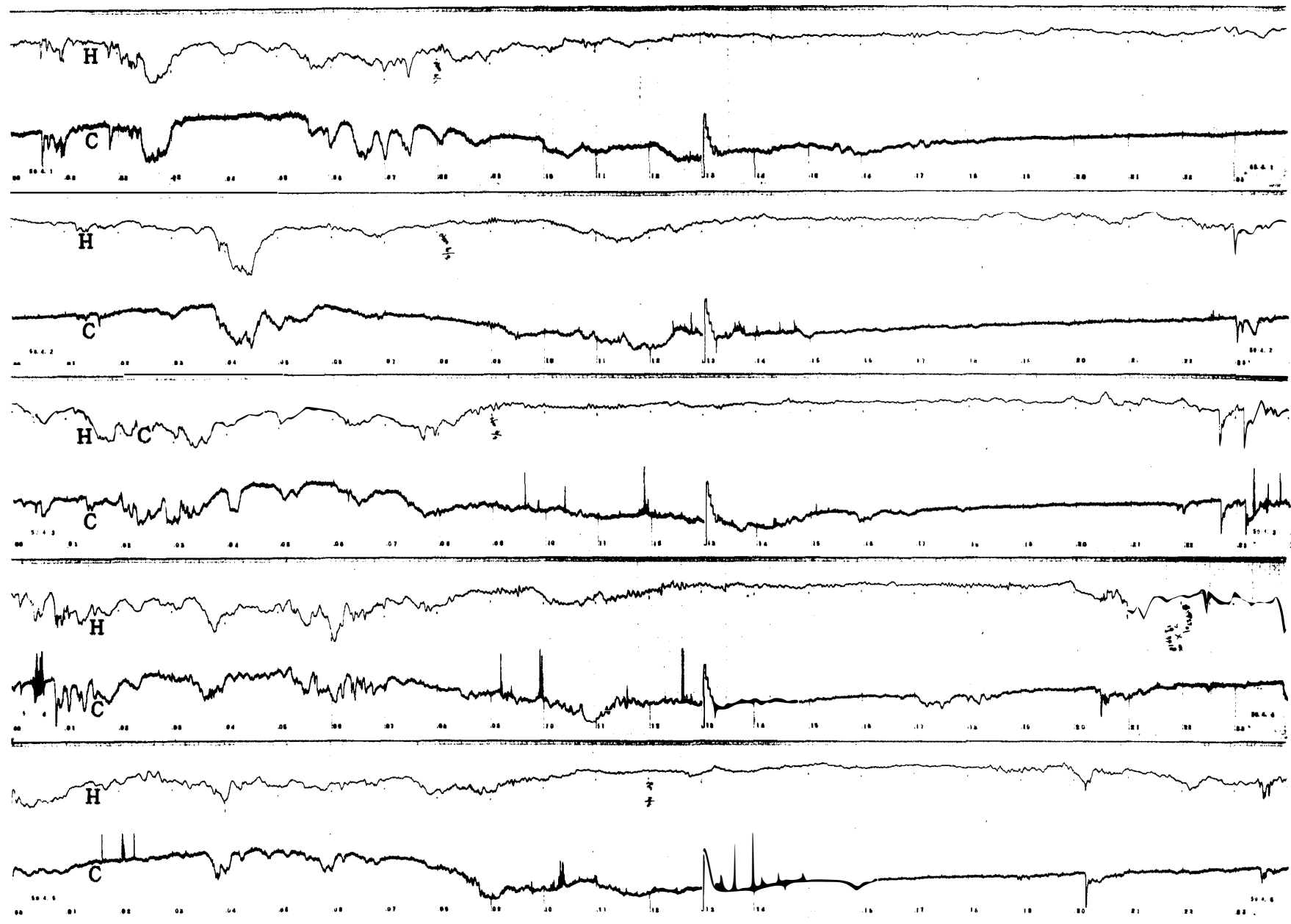
30 MHz COSMIC NOISE

MAR. 1984

31



APR. 1 1984

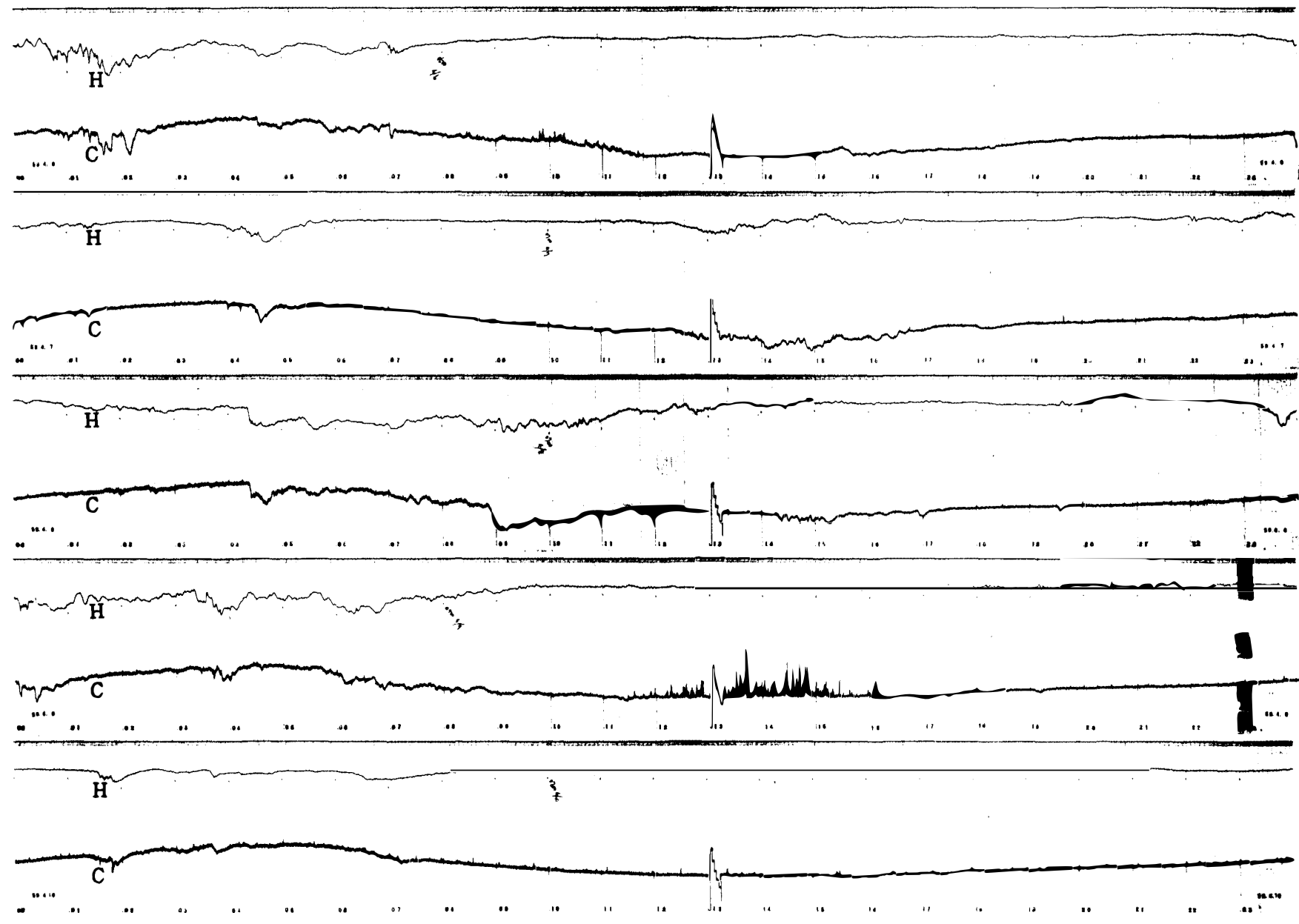


-36-

00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

APR. 1984

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00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

APR. 1984

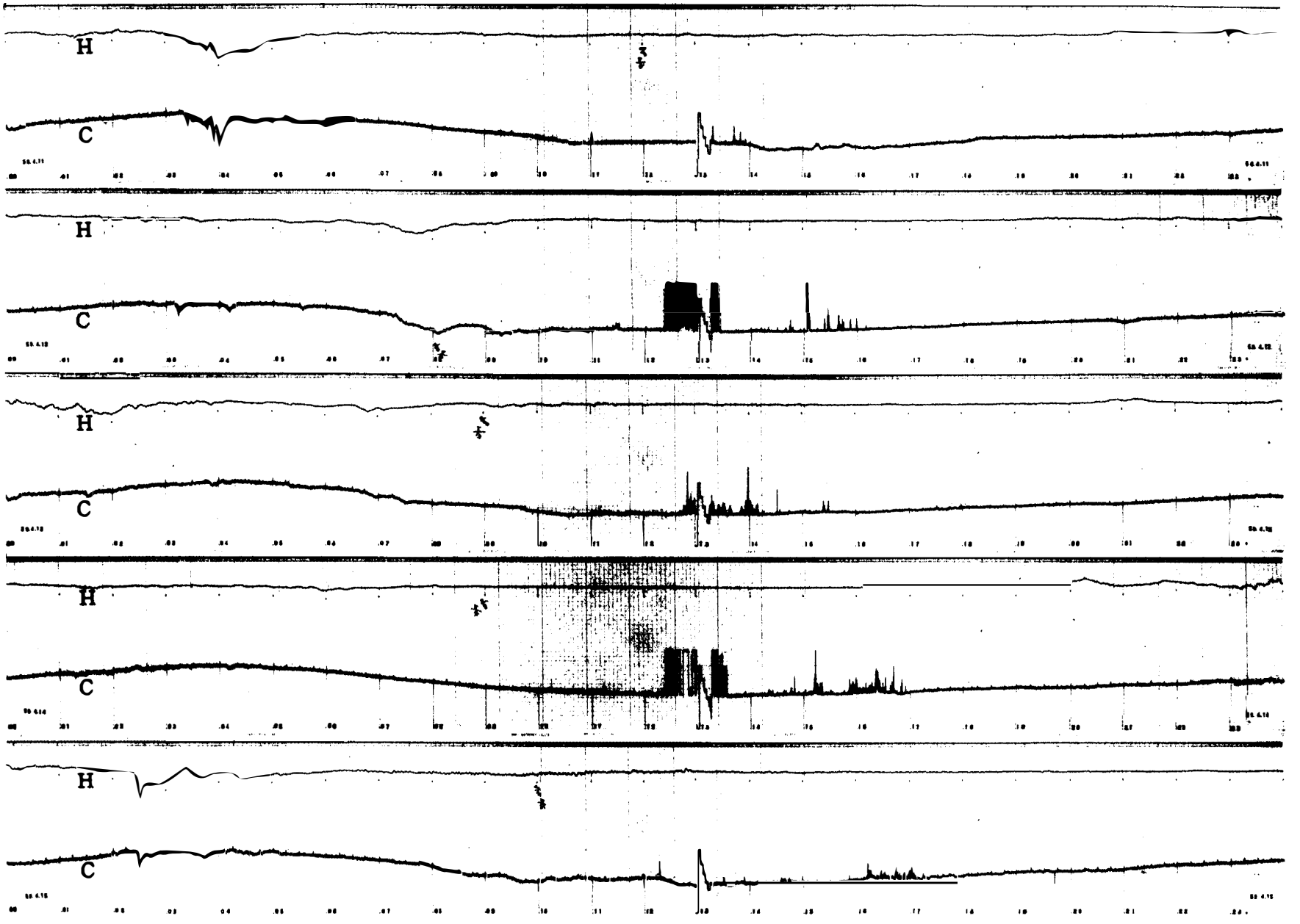
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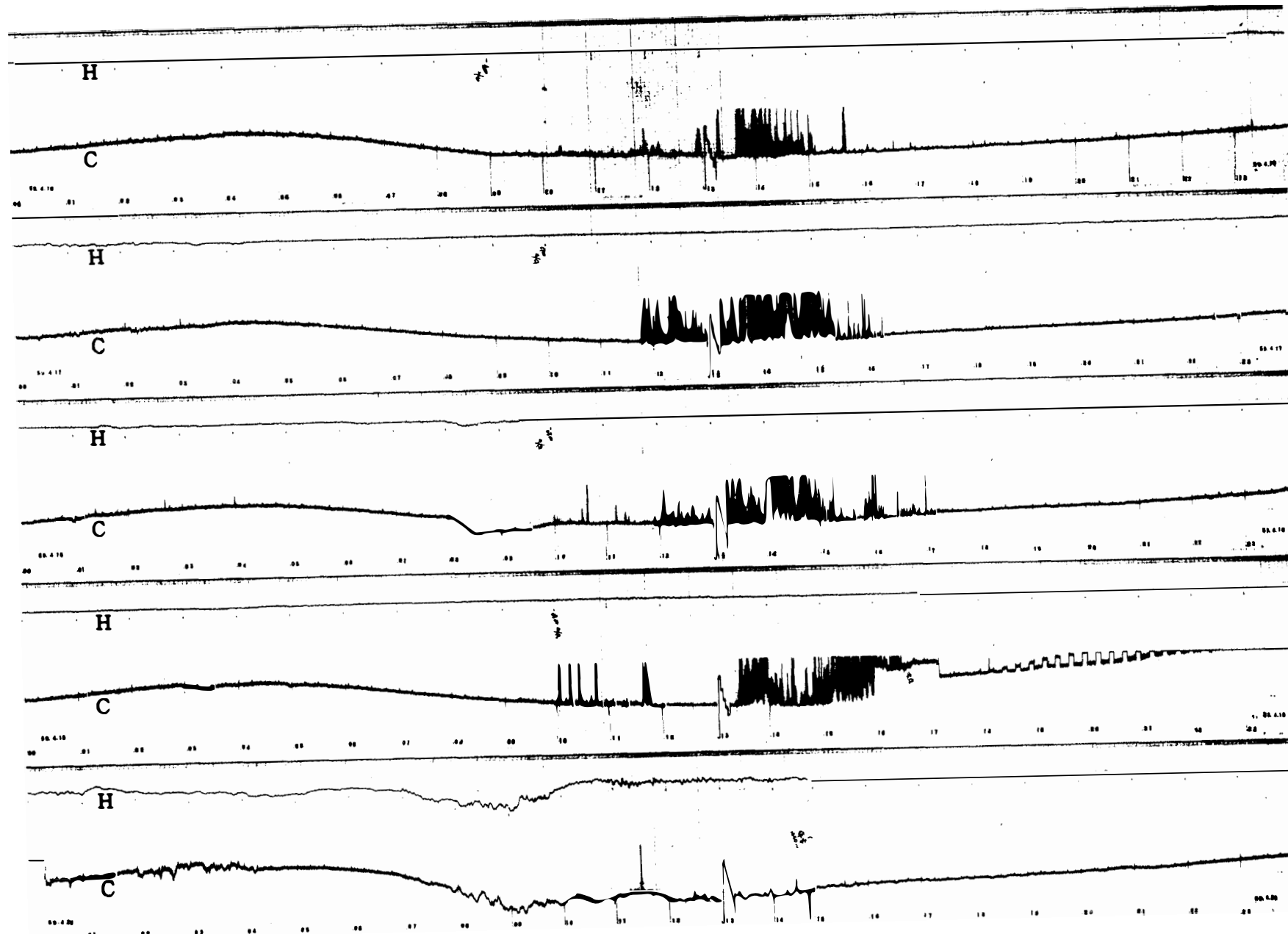
00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

APR. 1984

16
17
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00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

APR. 1984

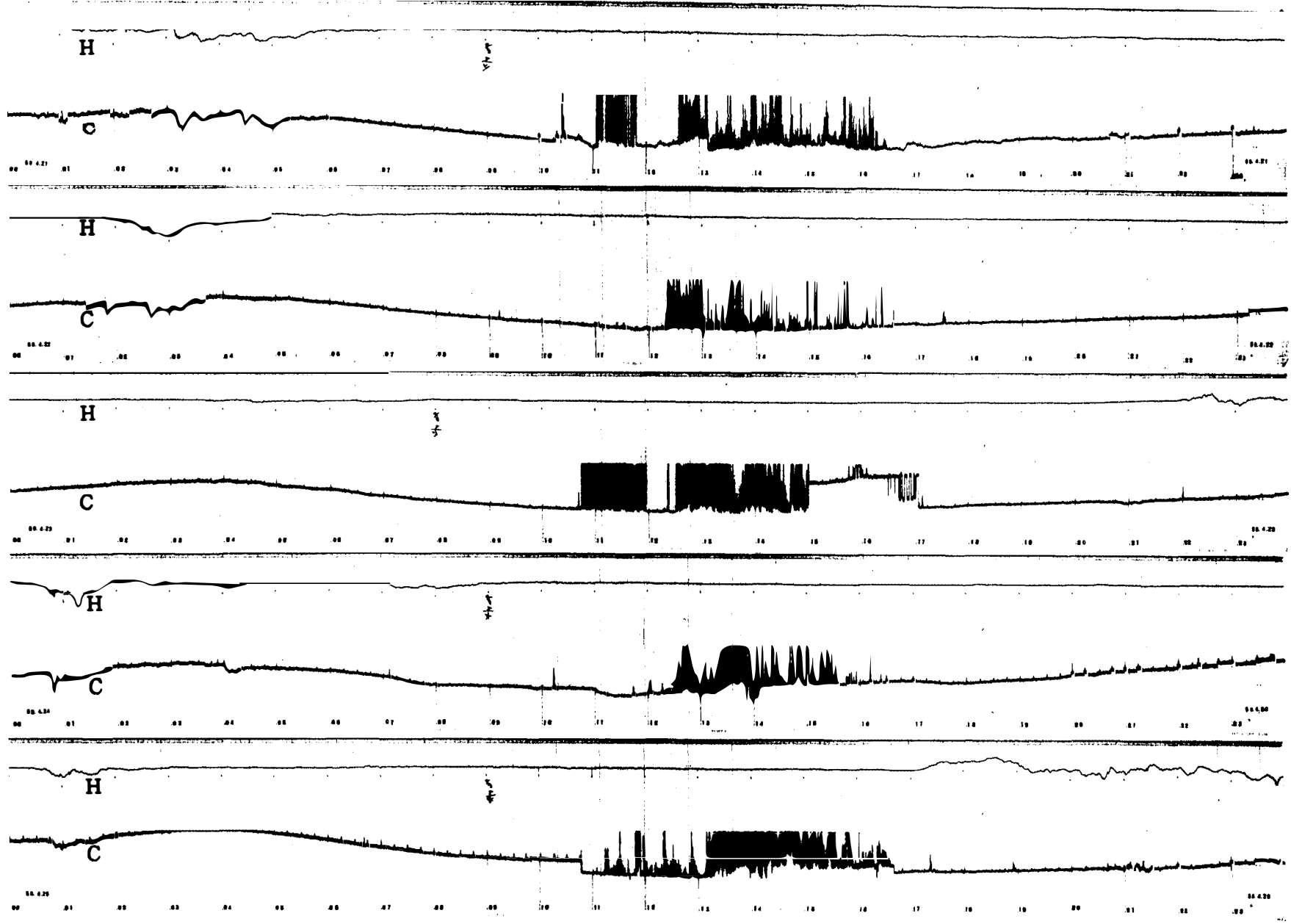
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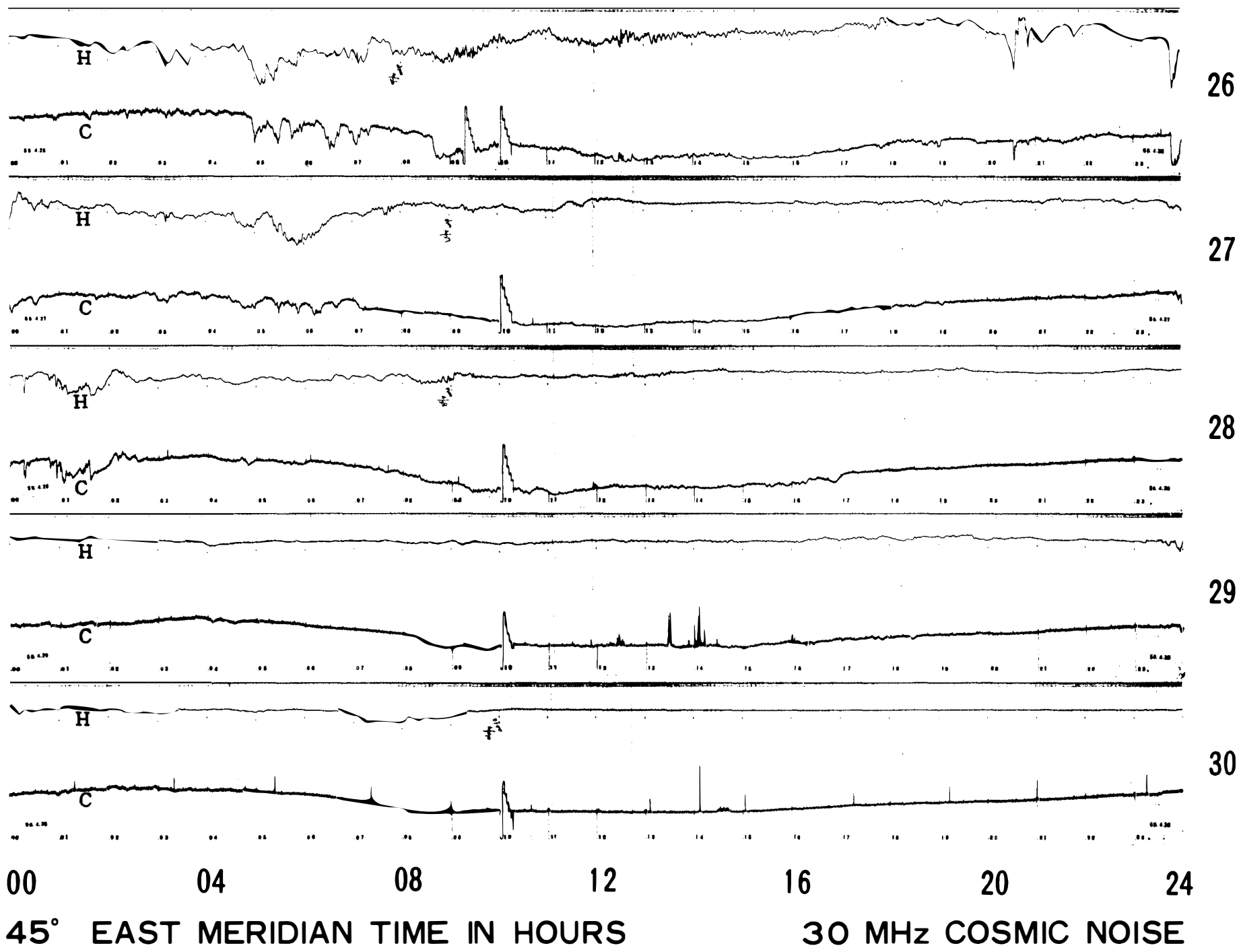
-40-

00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

APR. 1984

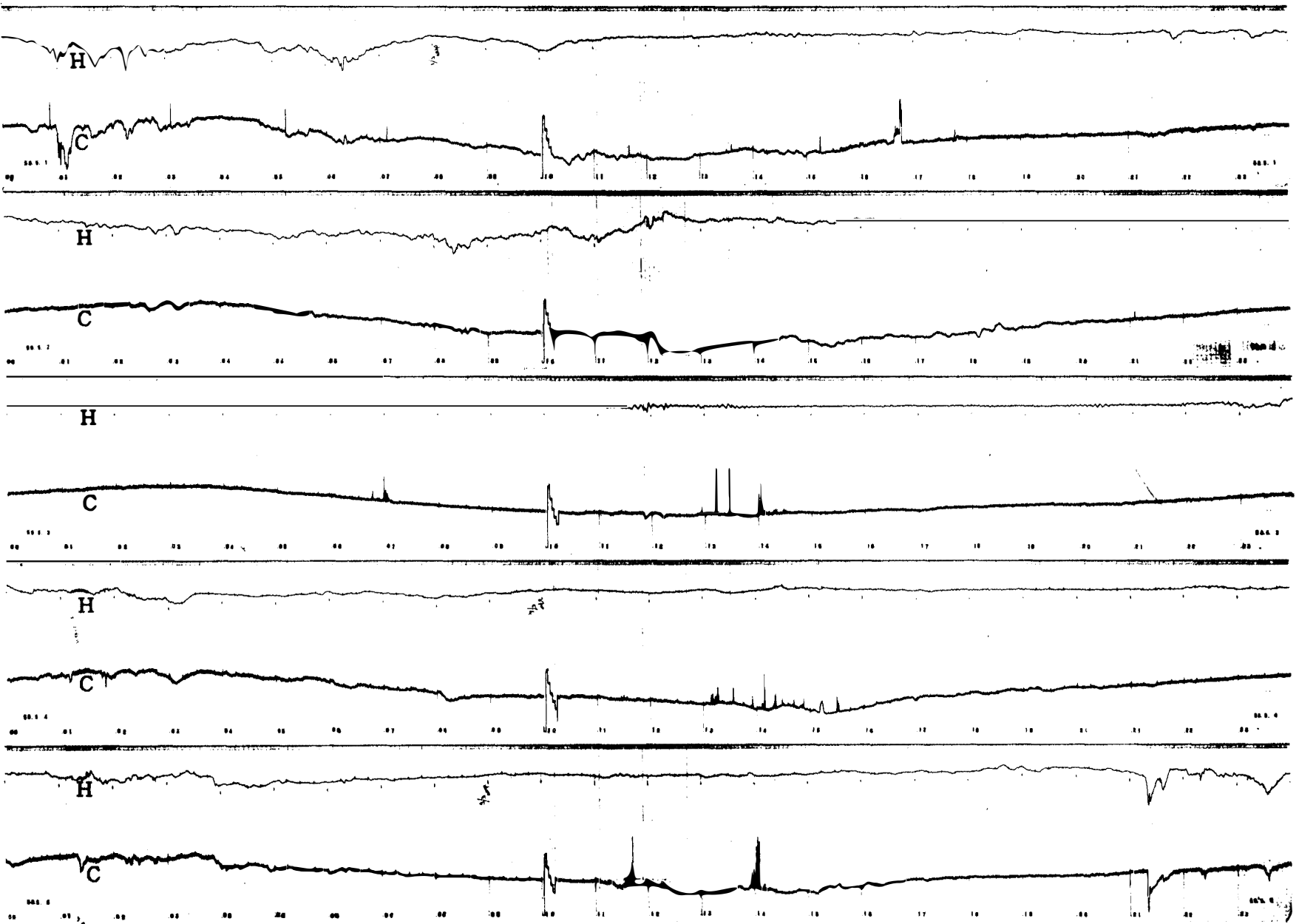


-41-

Cosmic noise level obscured or equipment malfunction.

April	19	19:00 -	Failure of equipment
	20	00:18	

MAY 1984



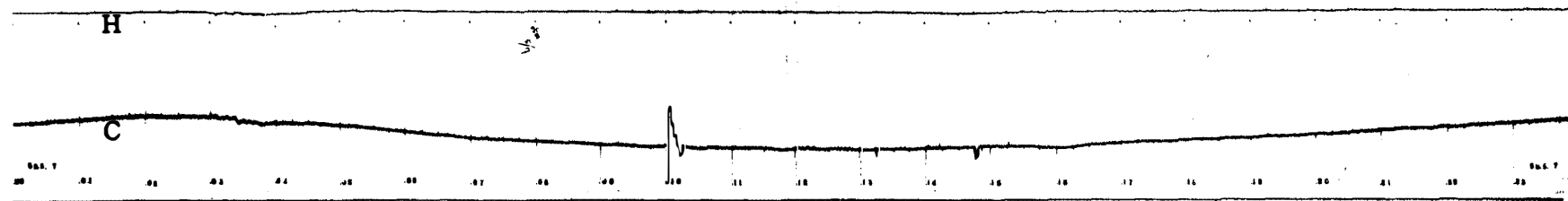
00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

MAY 1984

6



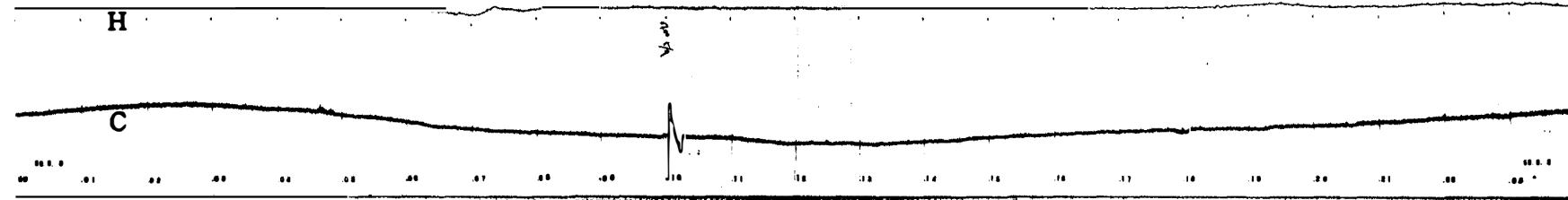
7



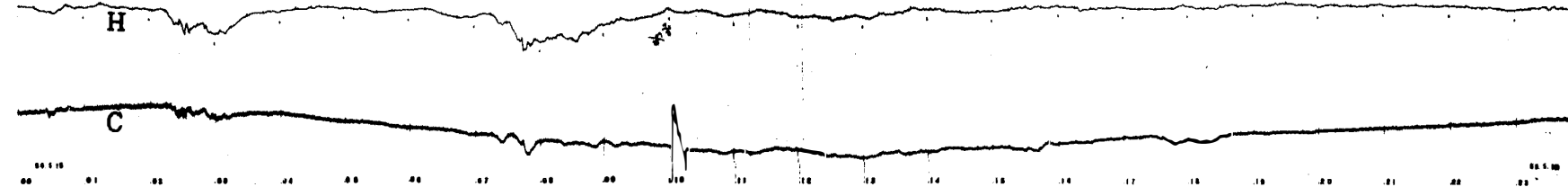
8



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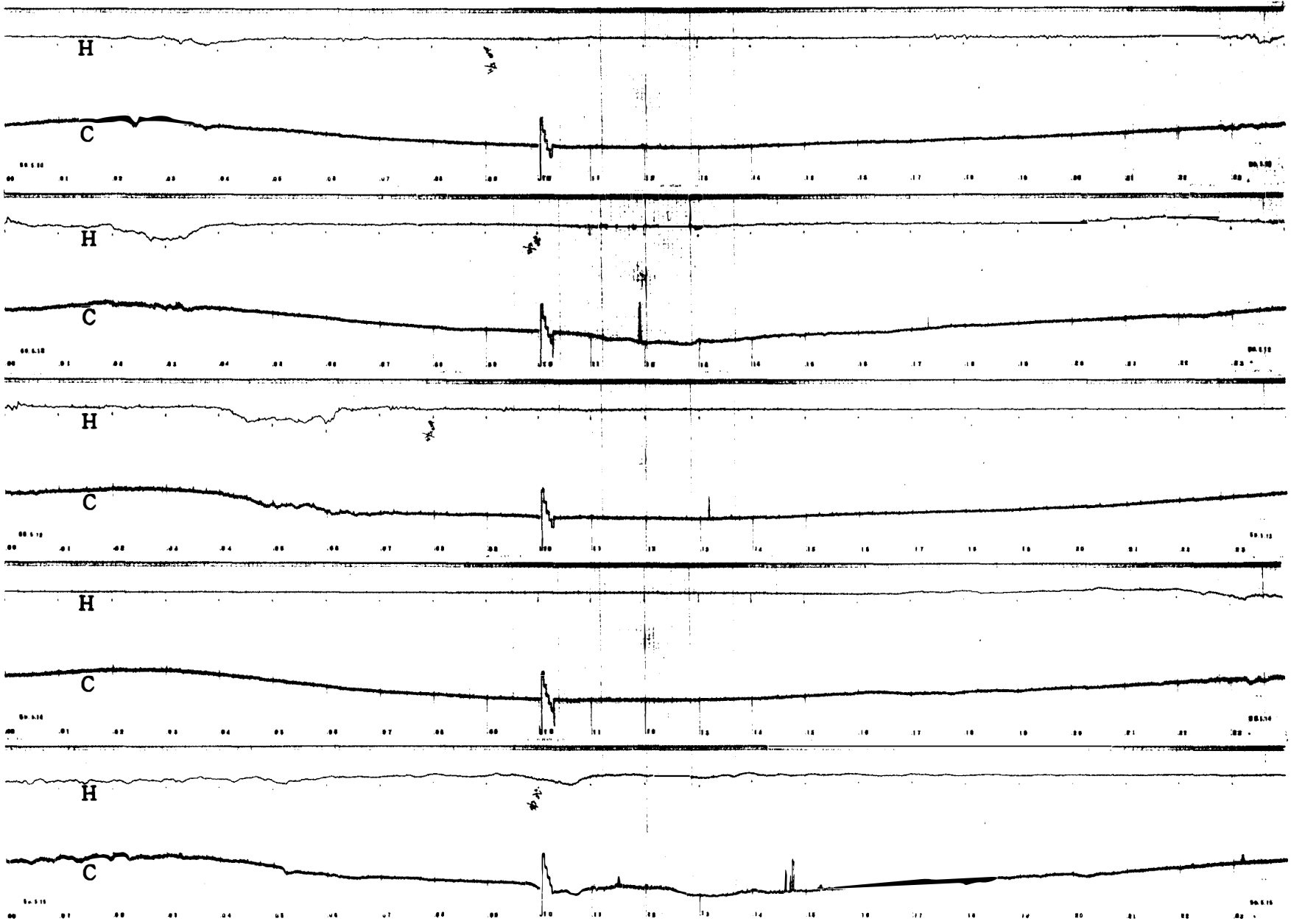
00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

MAY 1984

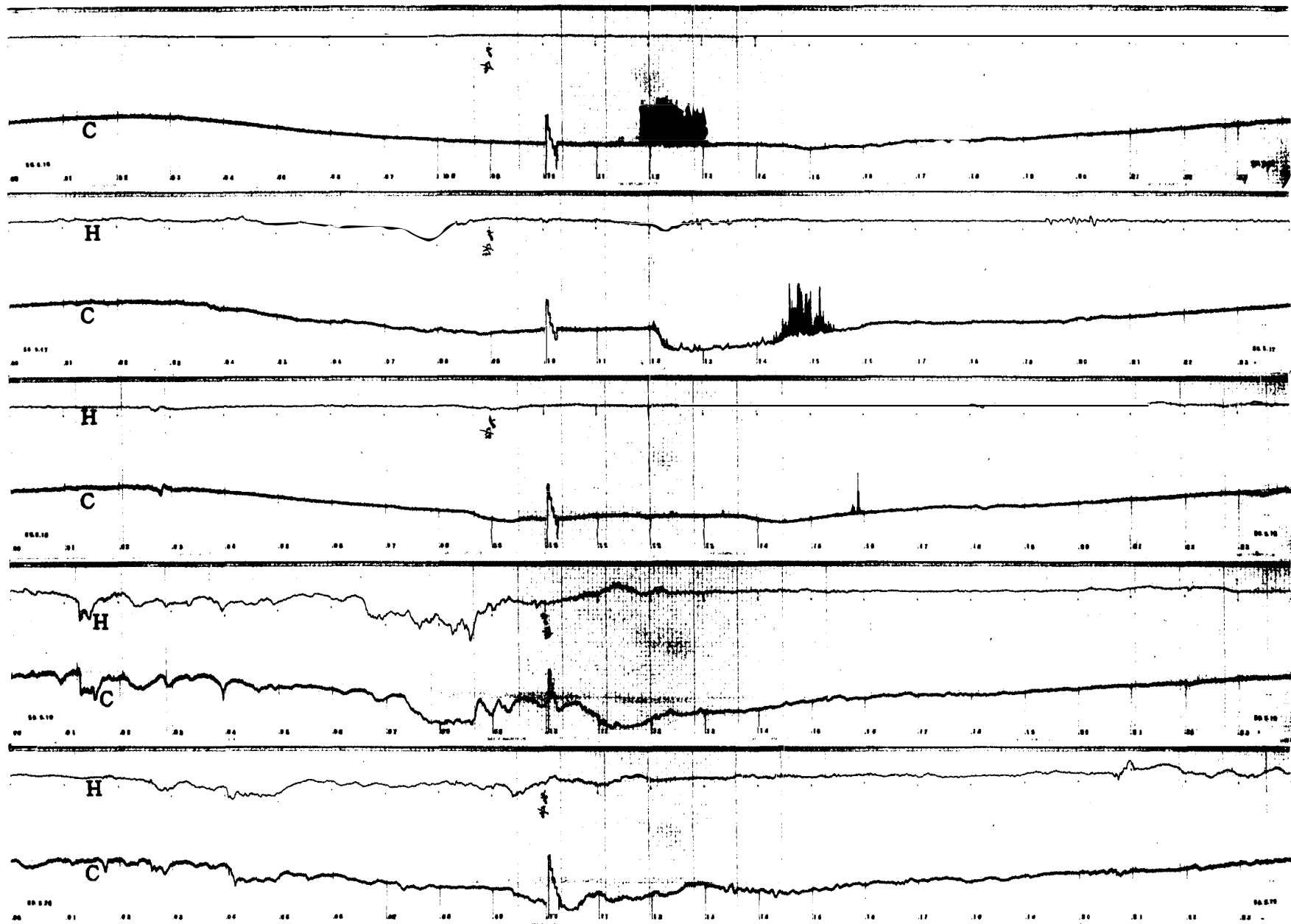
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00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

MAY 1984

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-46-

00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

MAY 1 1984

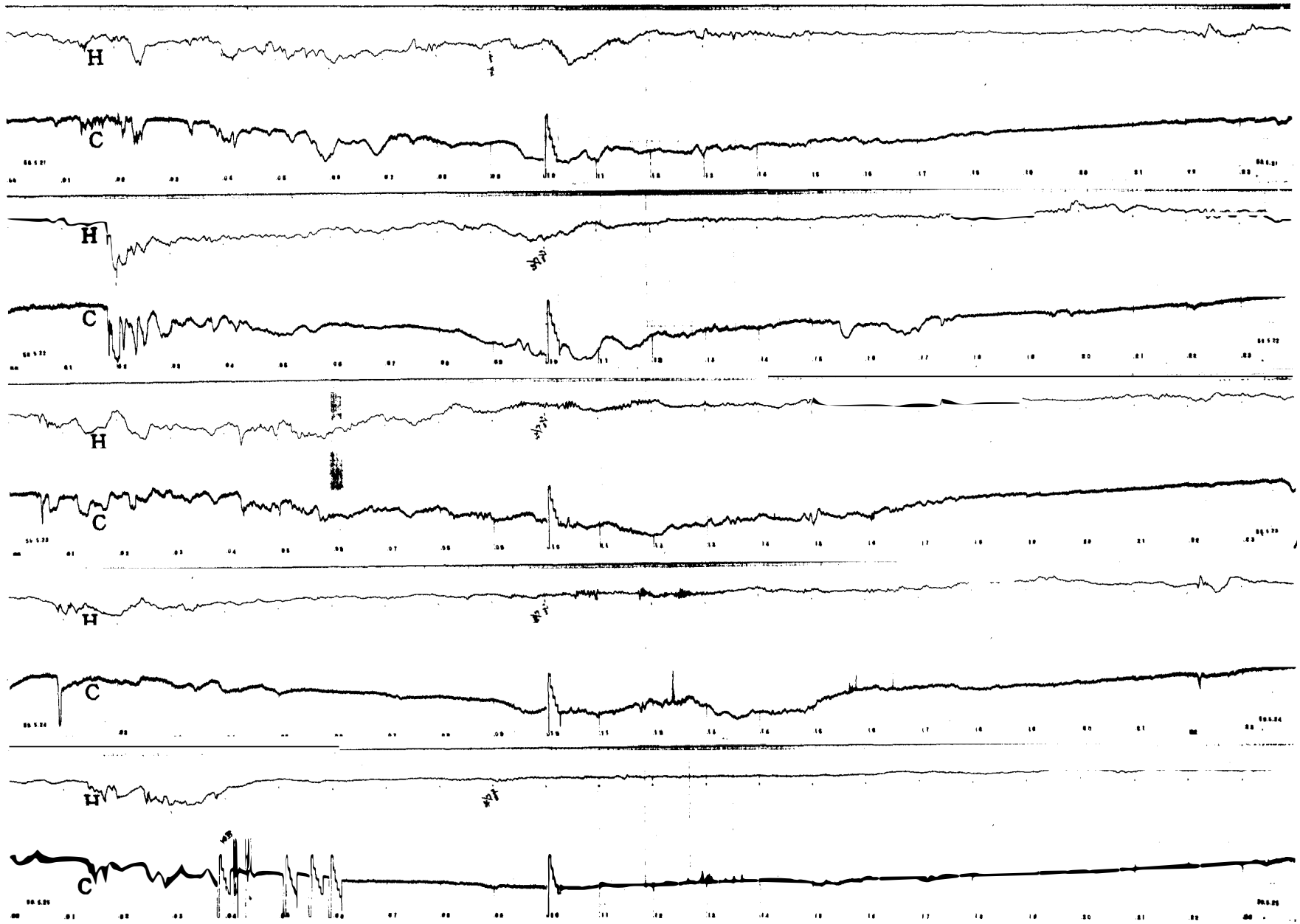
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00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

-47-

MAY 1984

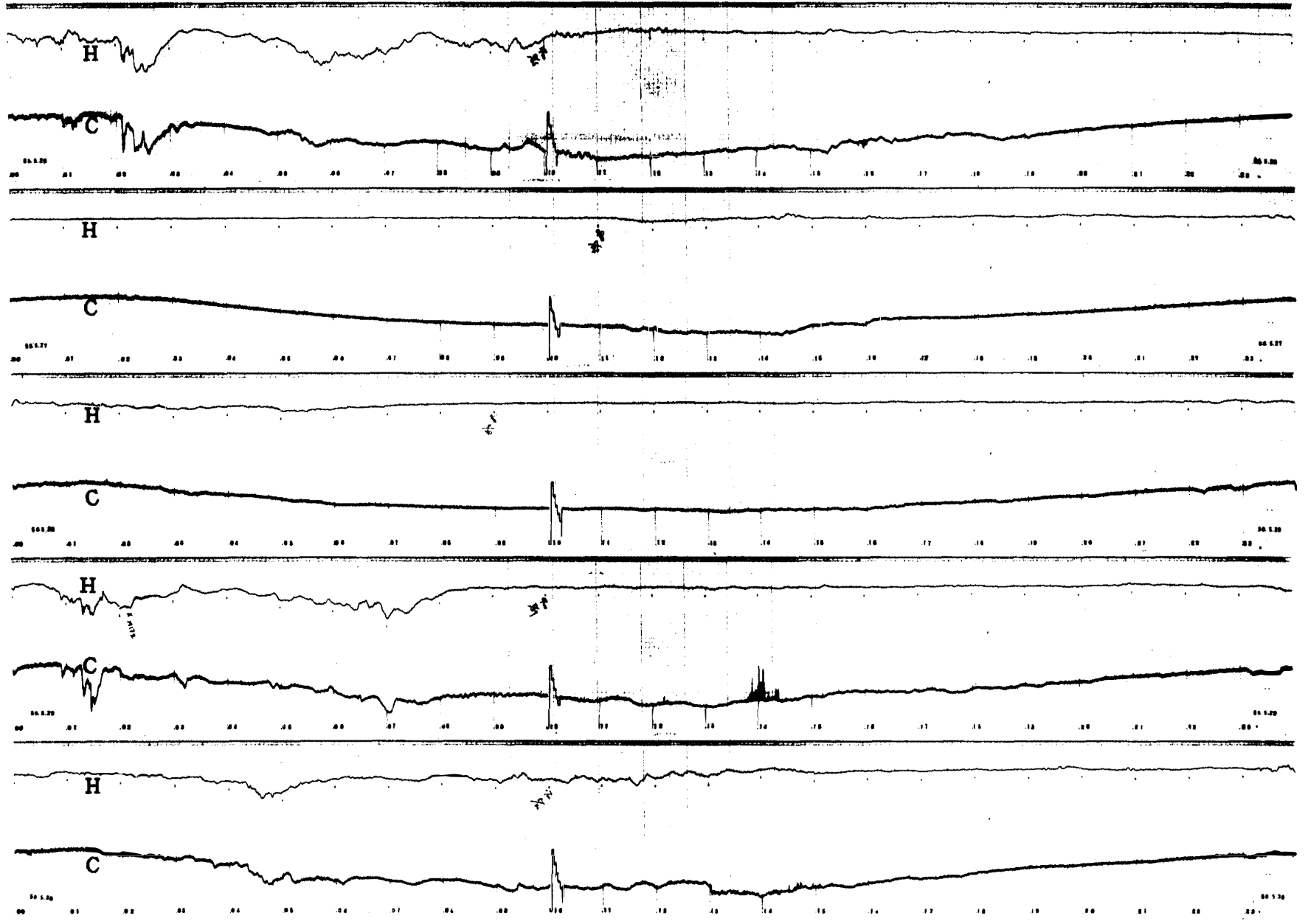
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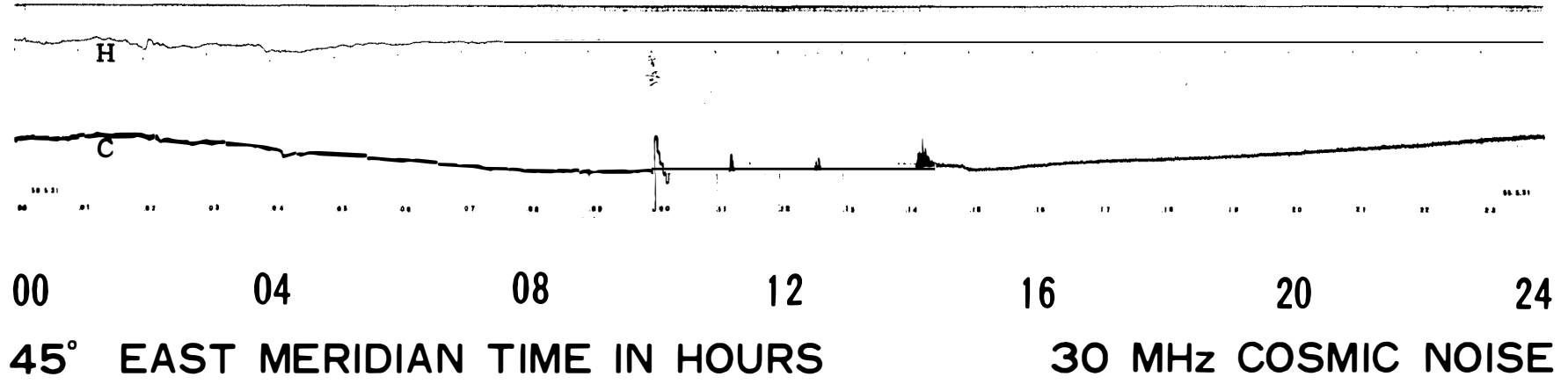
00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

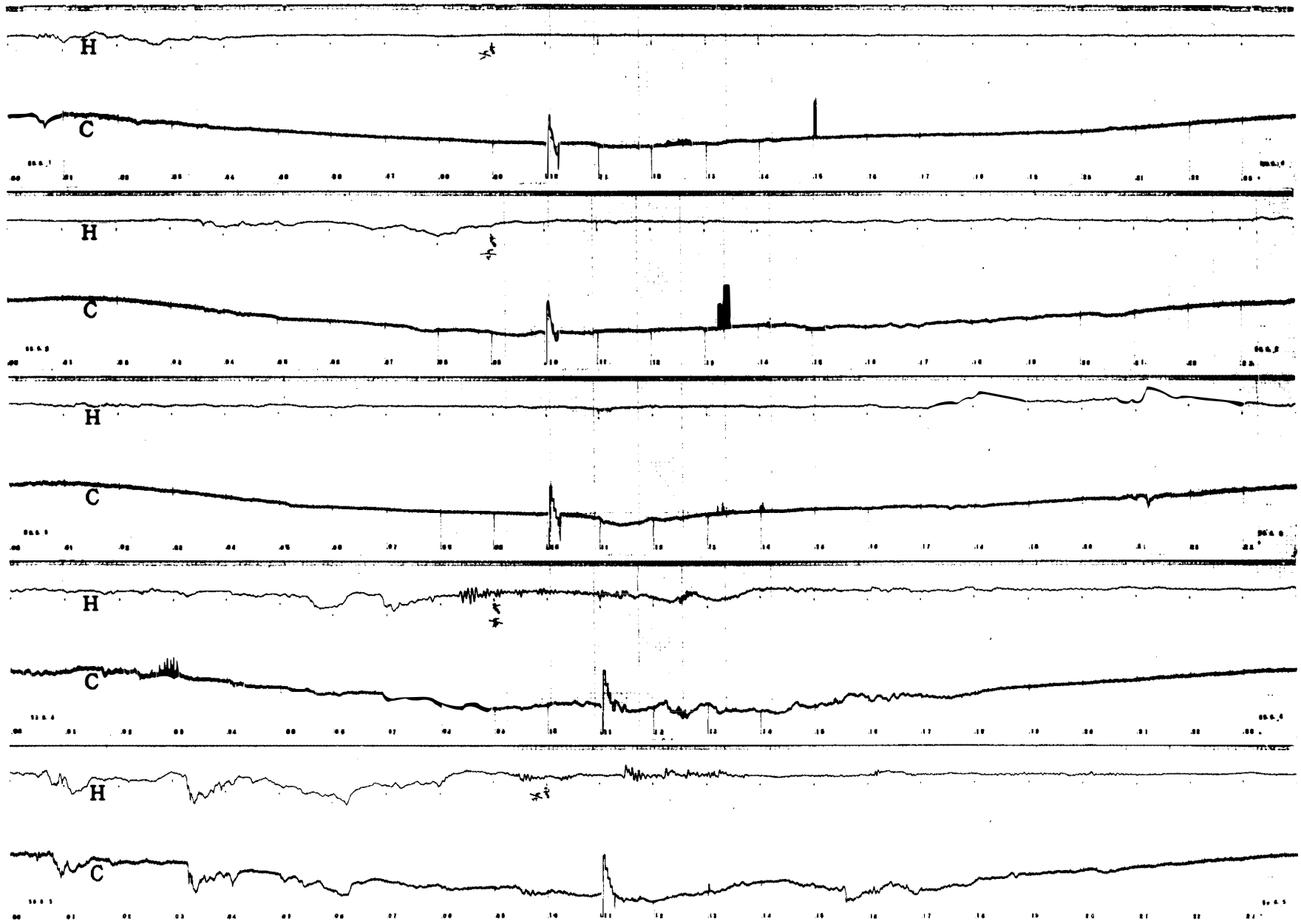
MAY 1984

31



JUNE 1984

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-50-

00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JUNE 1984

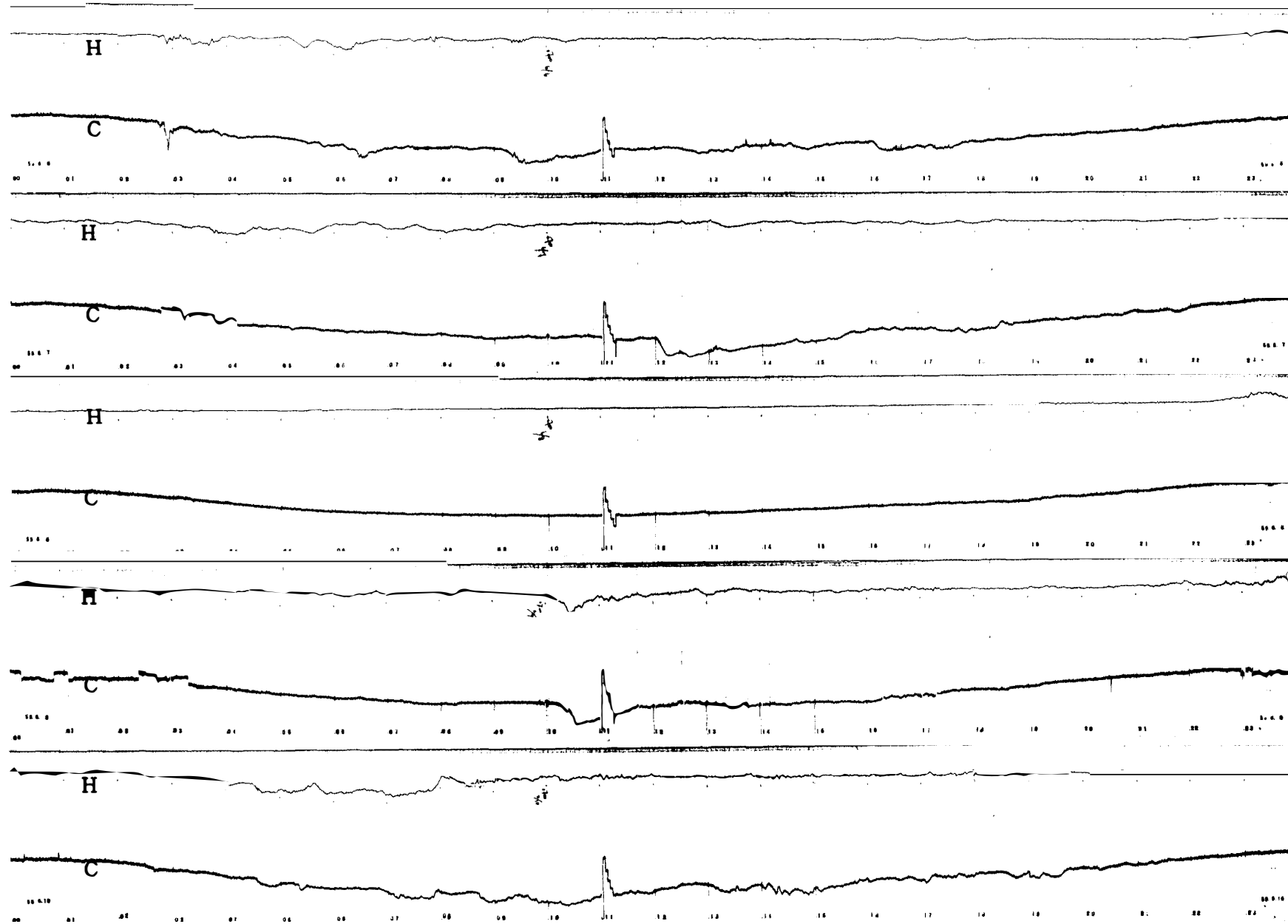
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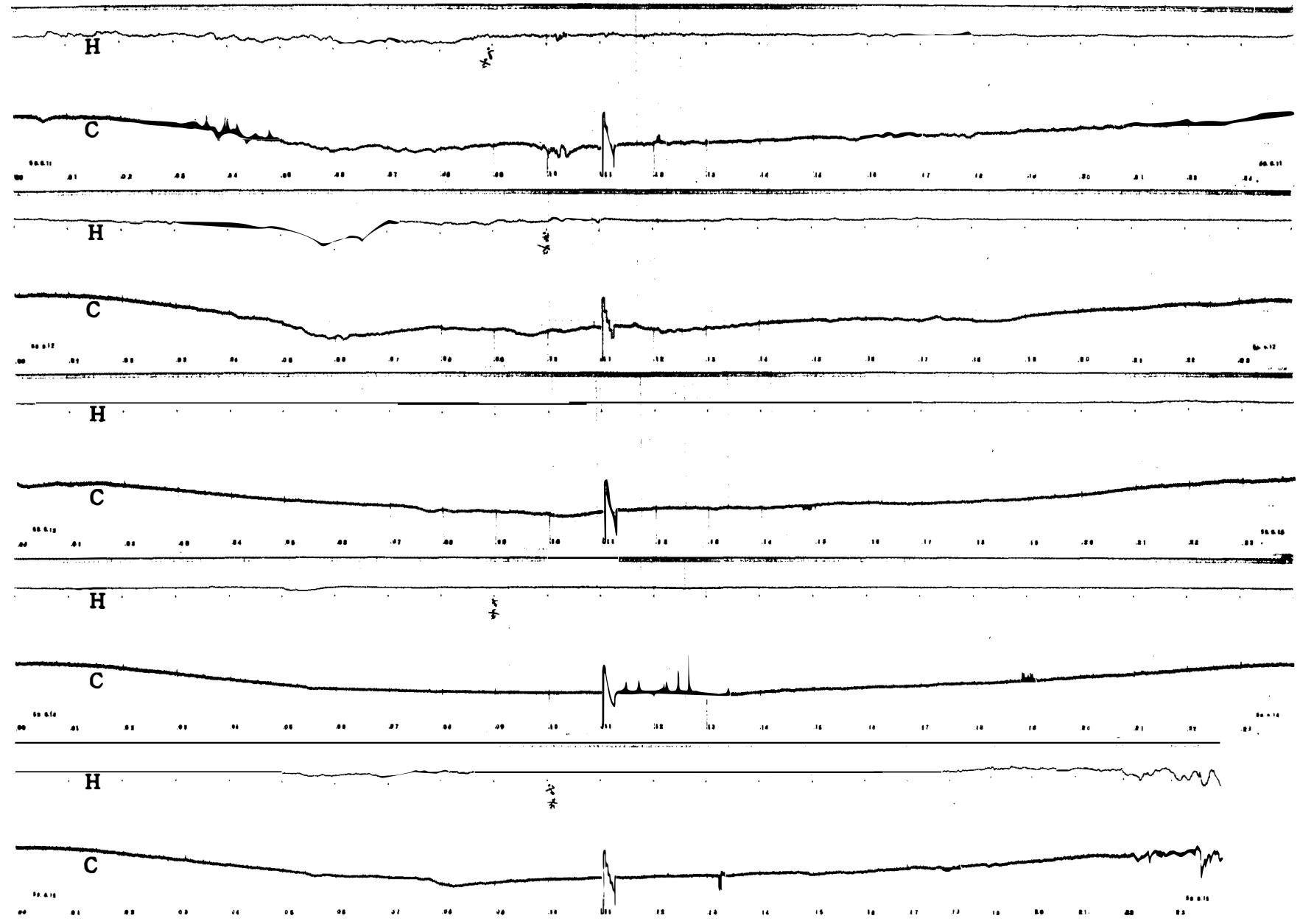
00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

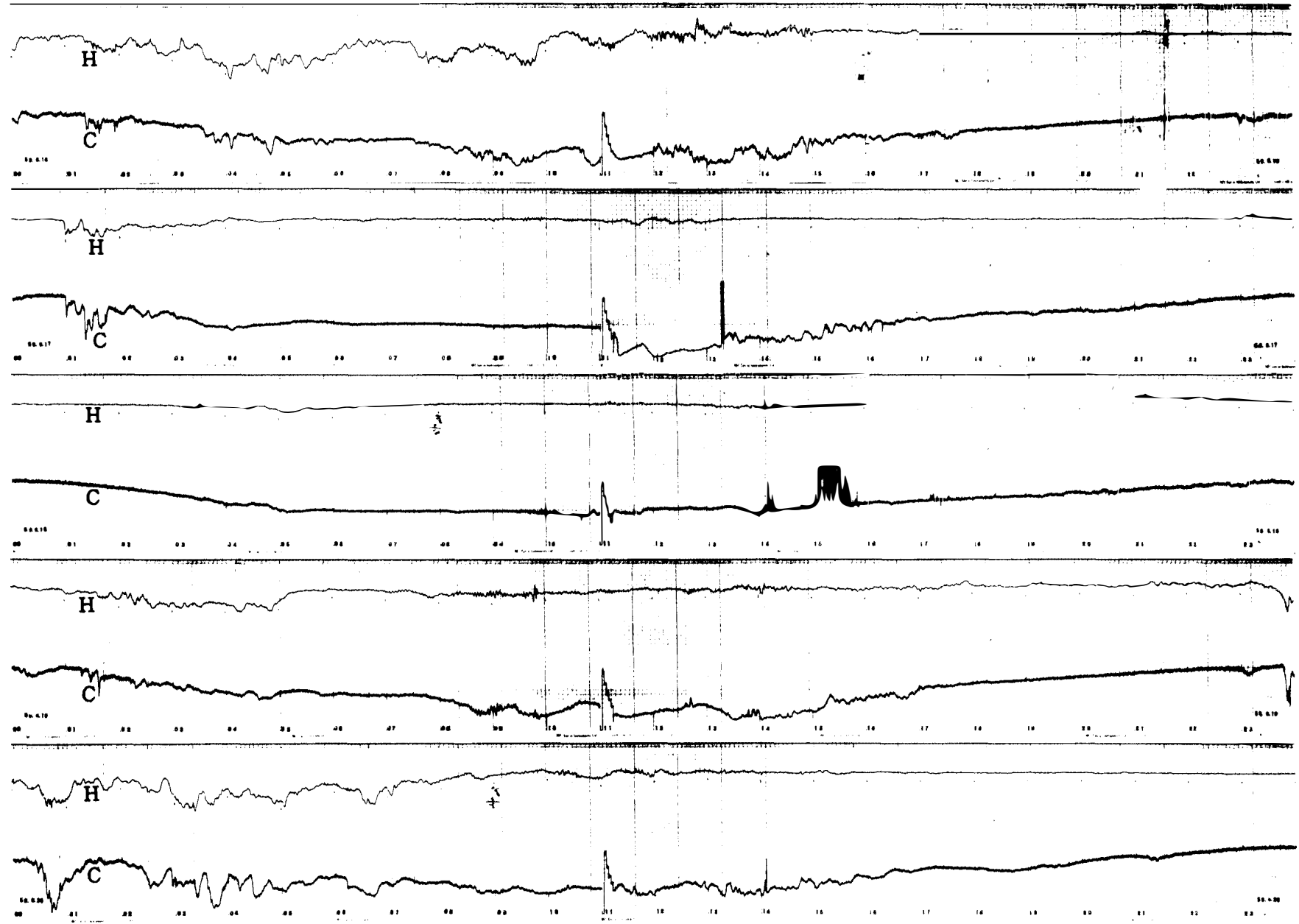
JUNE 1984

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00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JUNE 1984



00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JUNE 1984

21

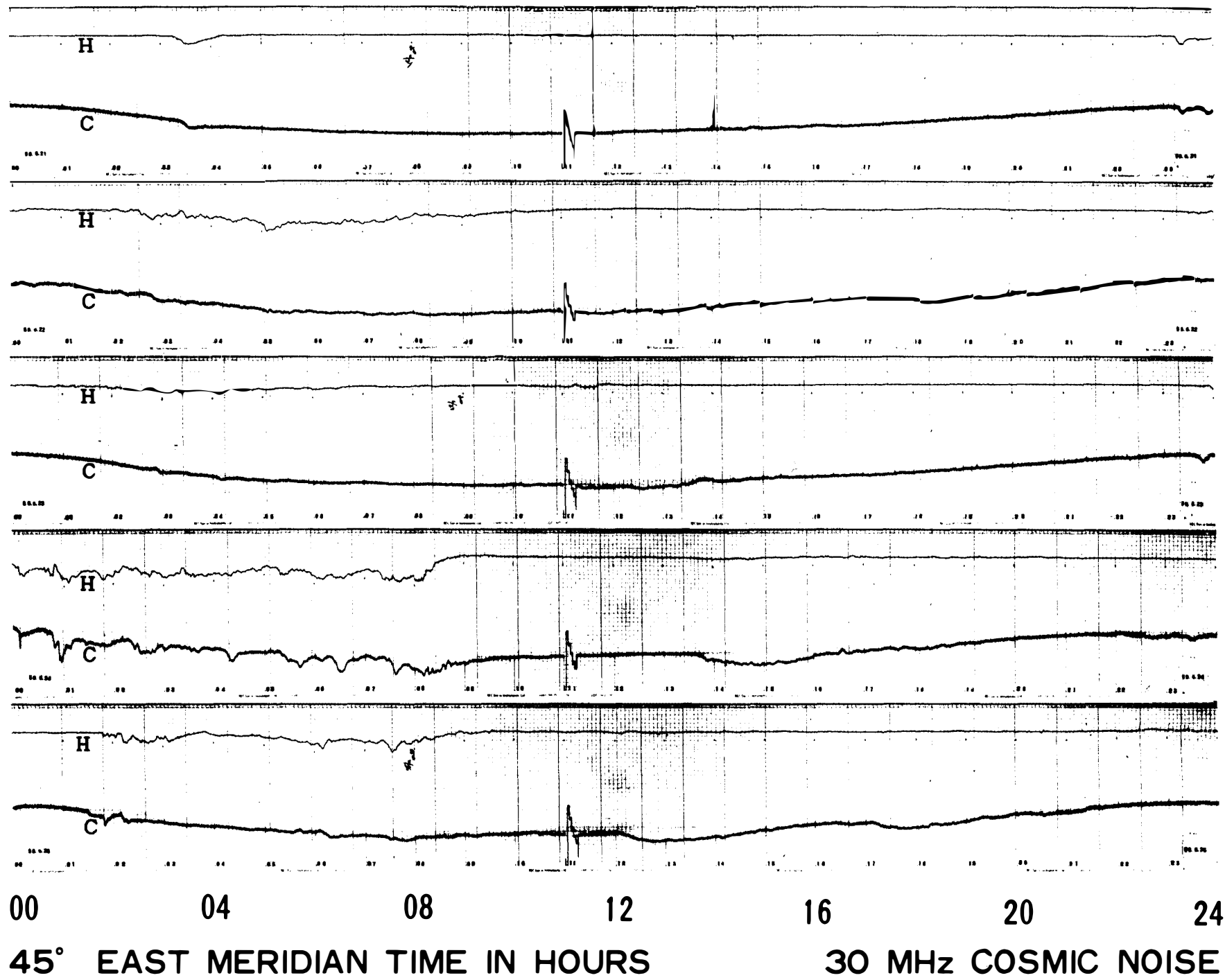
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-54-



00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JUNE 1984

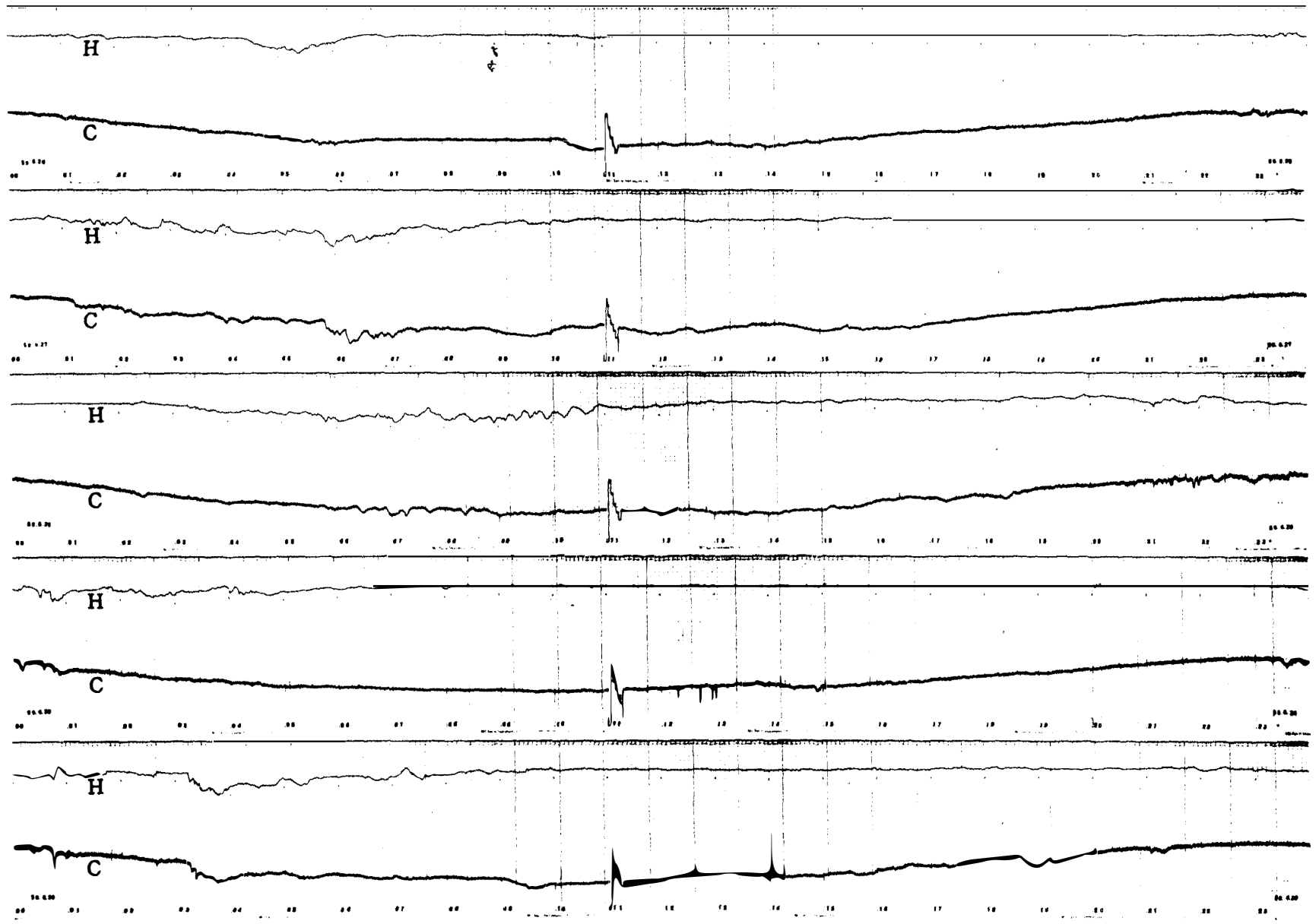
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00 04 08 12 16 20 24

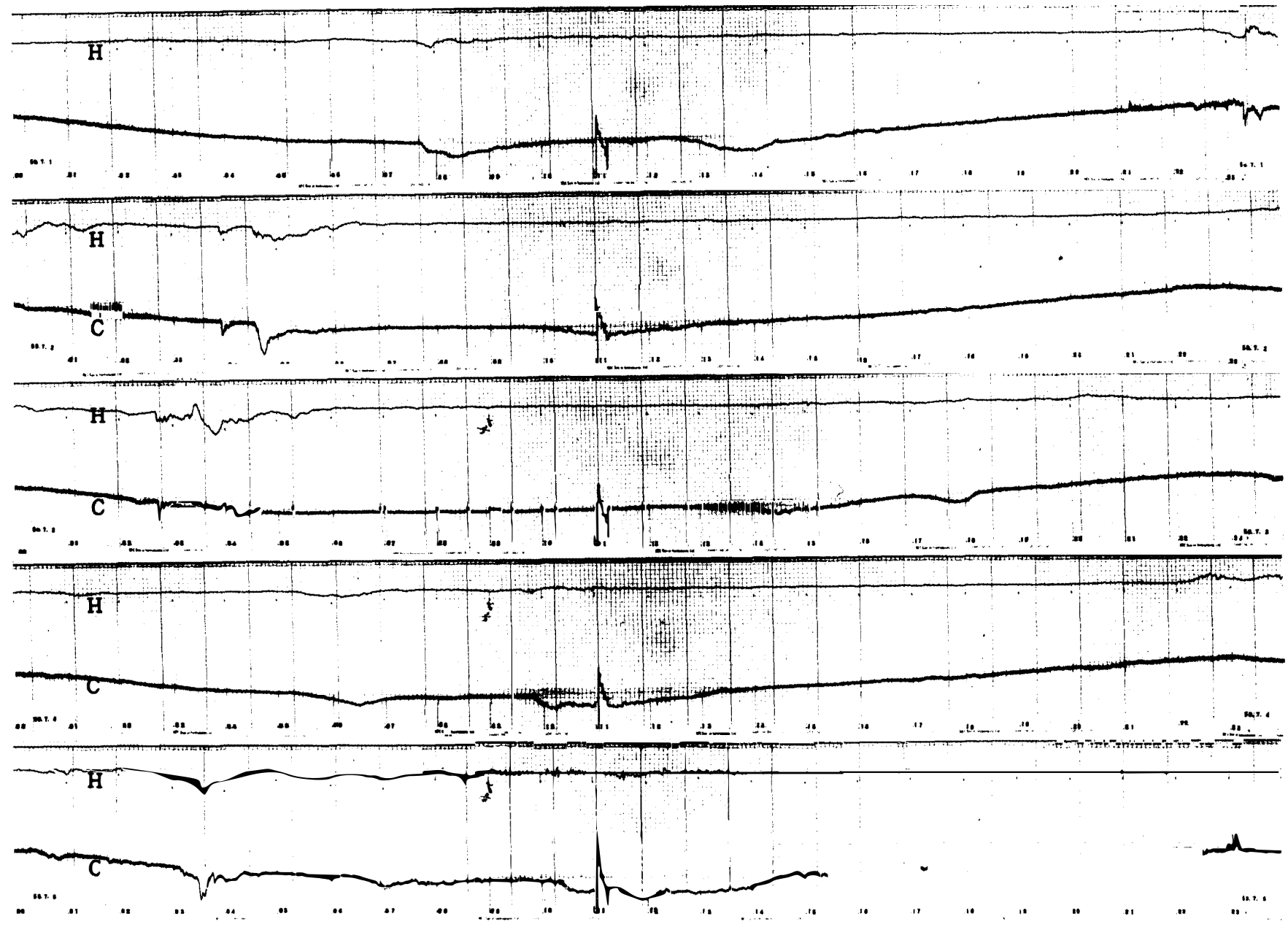
45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

-55-

JULY 1 1984

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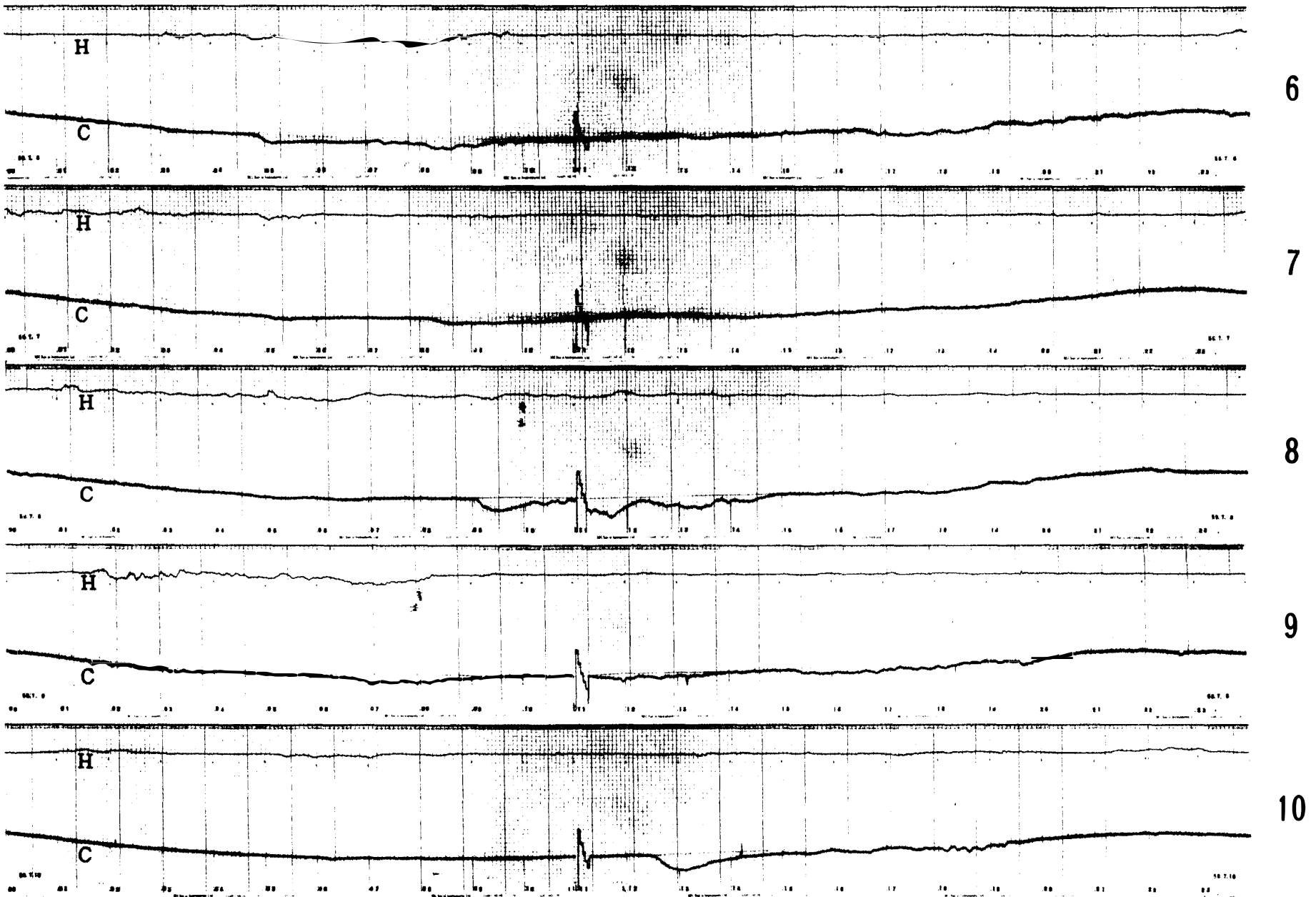
-56-

00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JULY 1984



00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JULY 1984

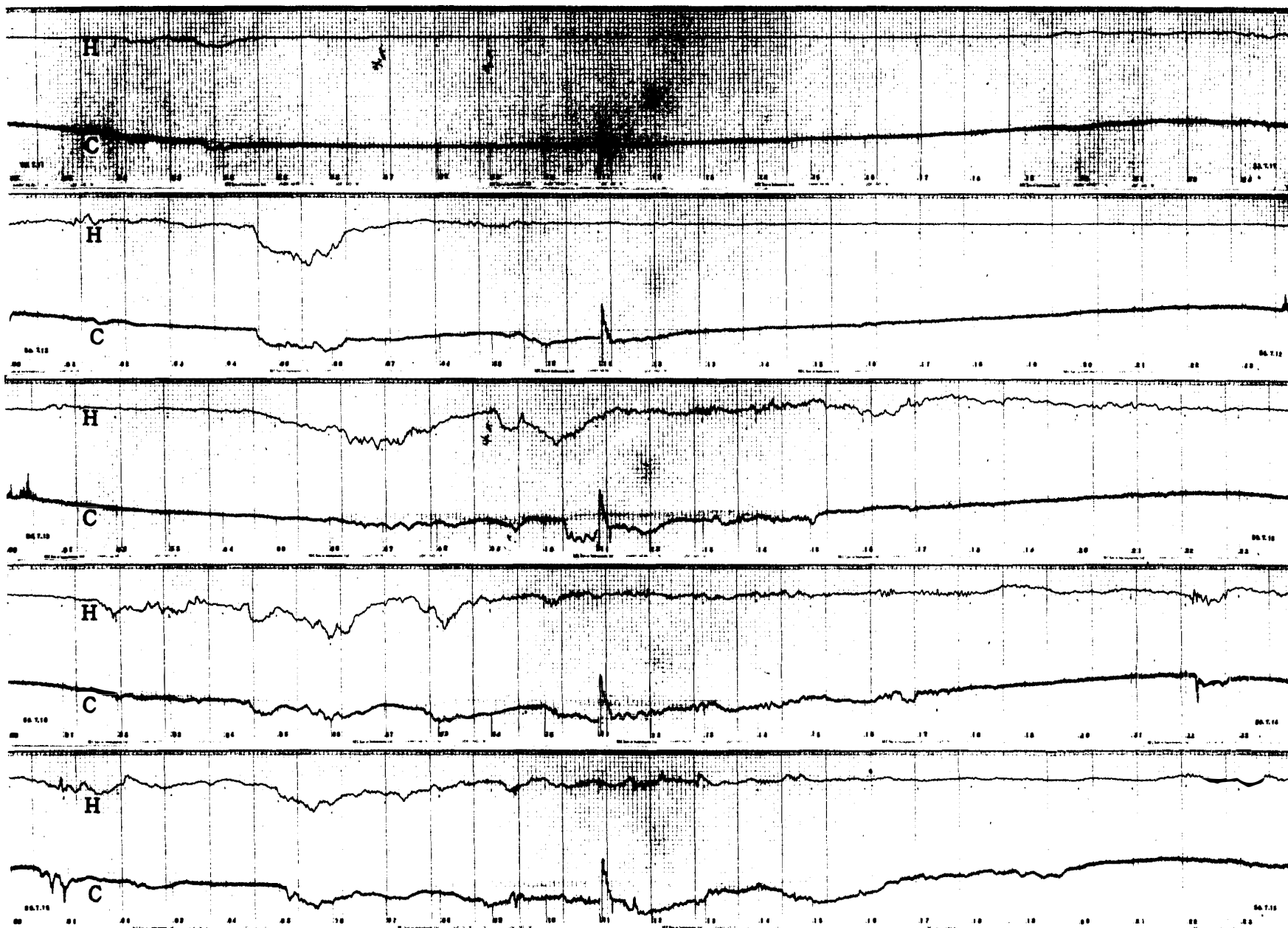
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-58-

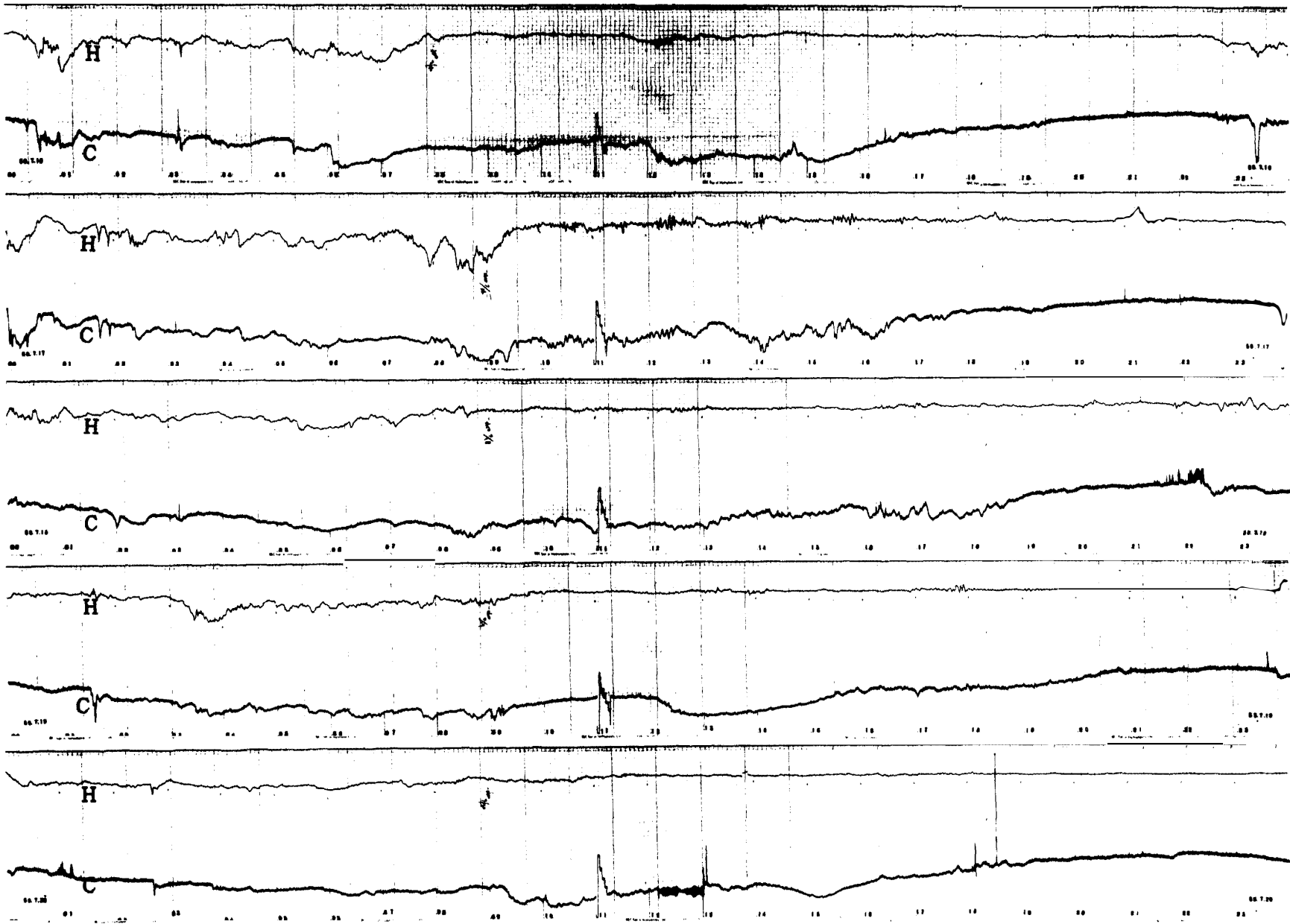
00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JULY 1984

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00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JULY 1984

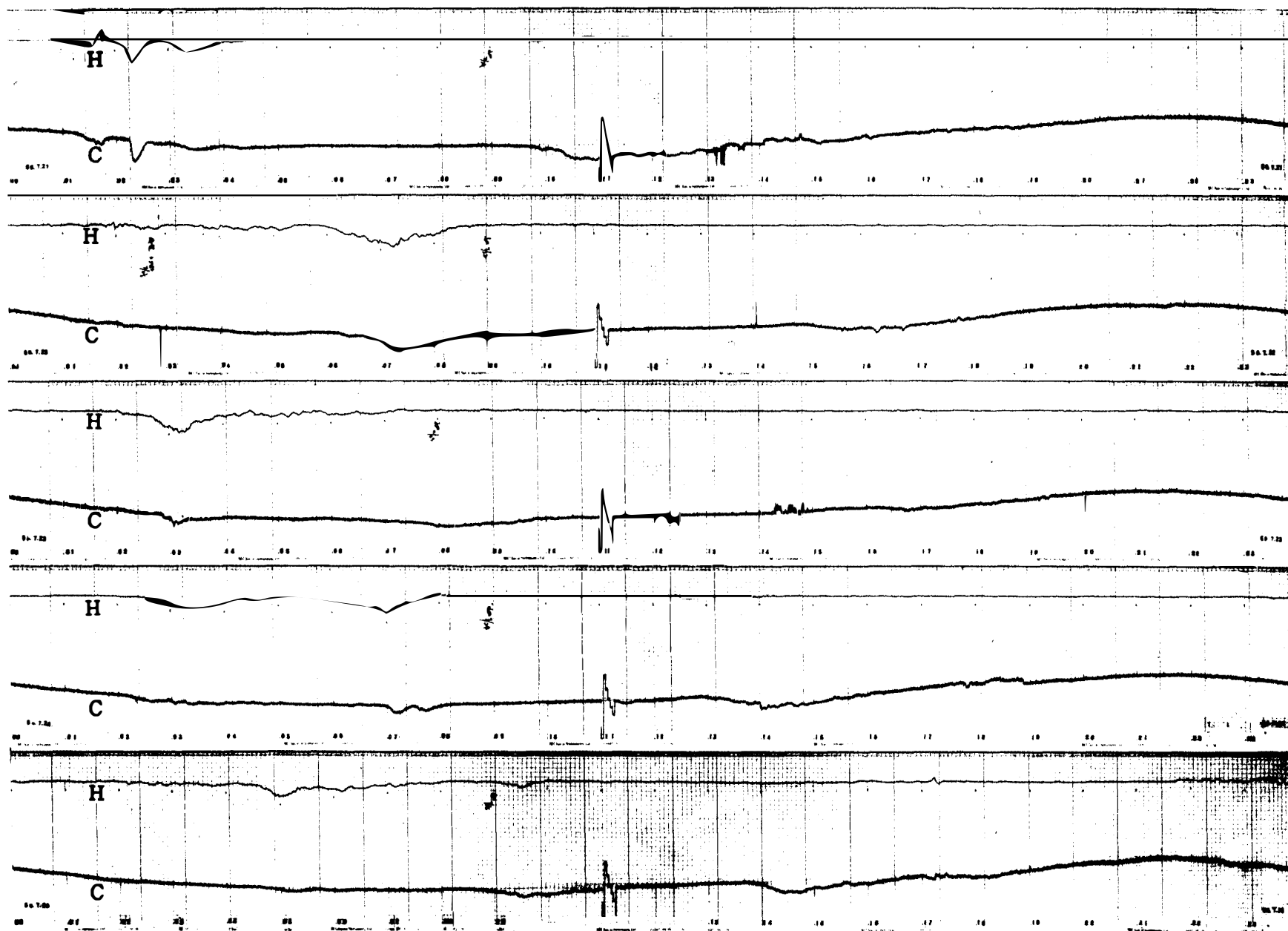
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-60-

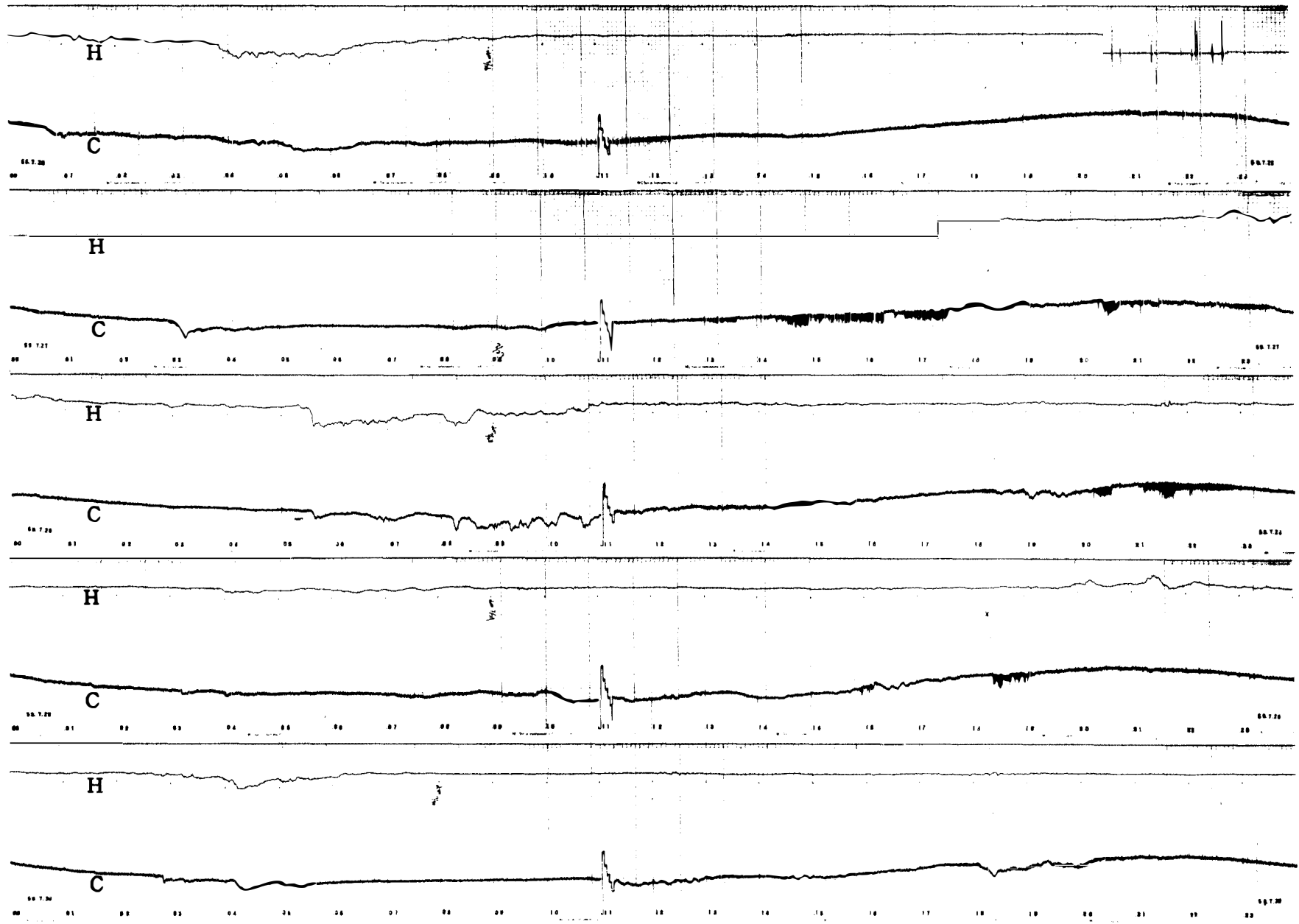
00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

JULY 1984

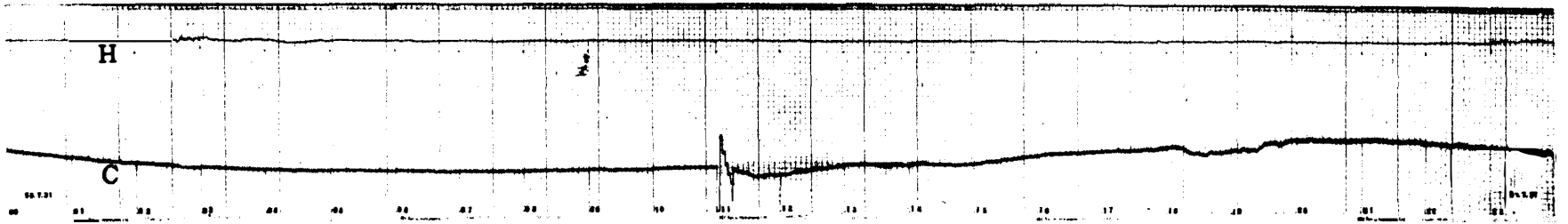
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00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

JULY 1984

31



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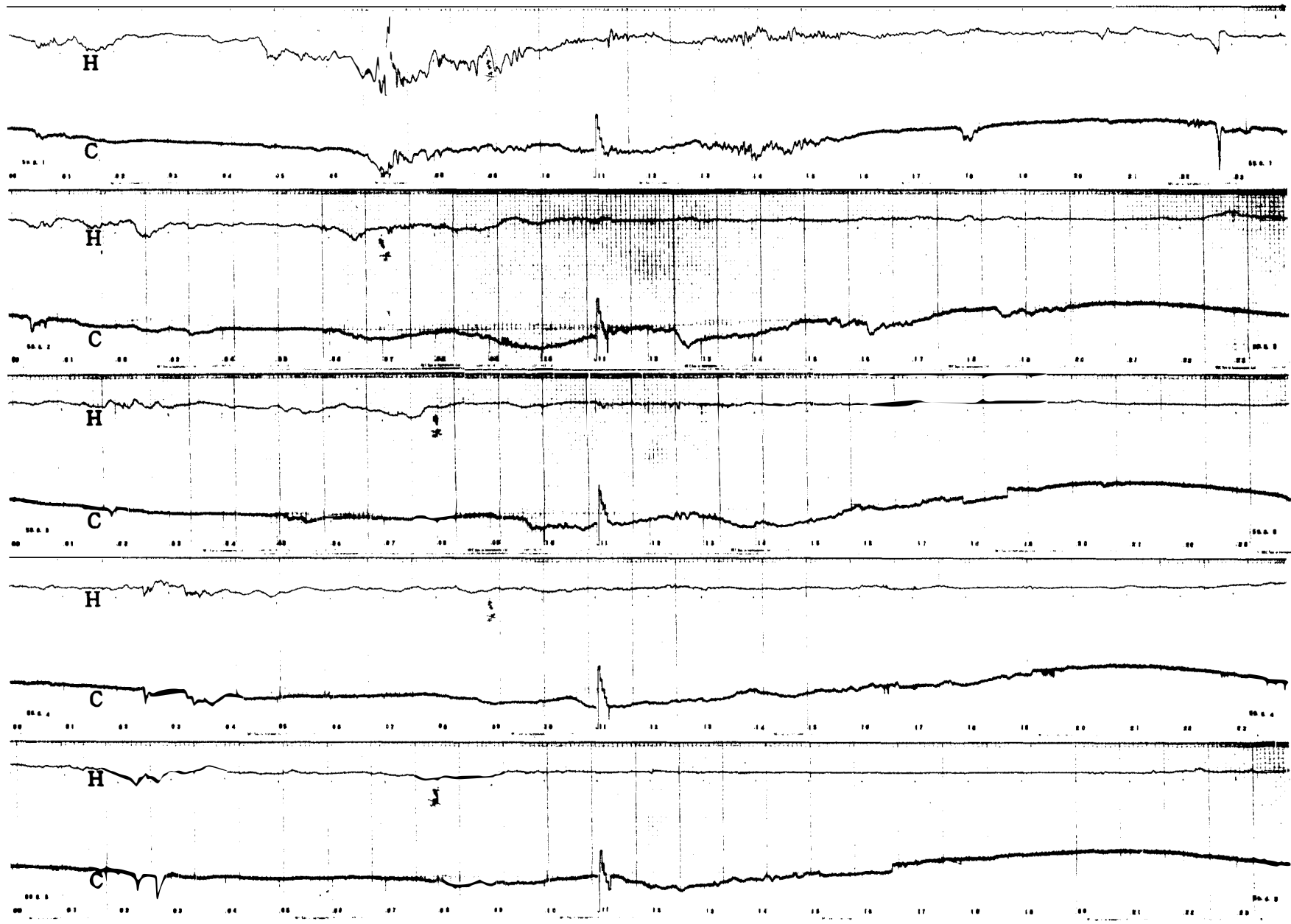
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24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

AUG. 1984



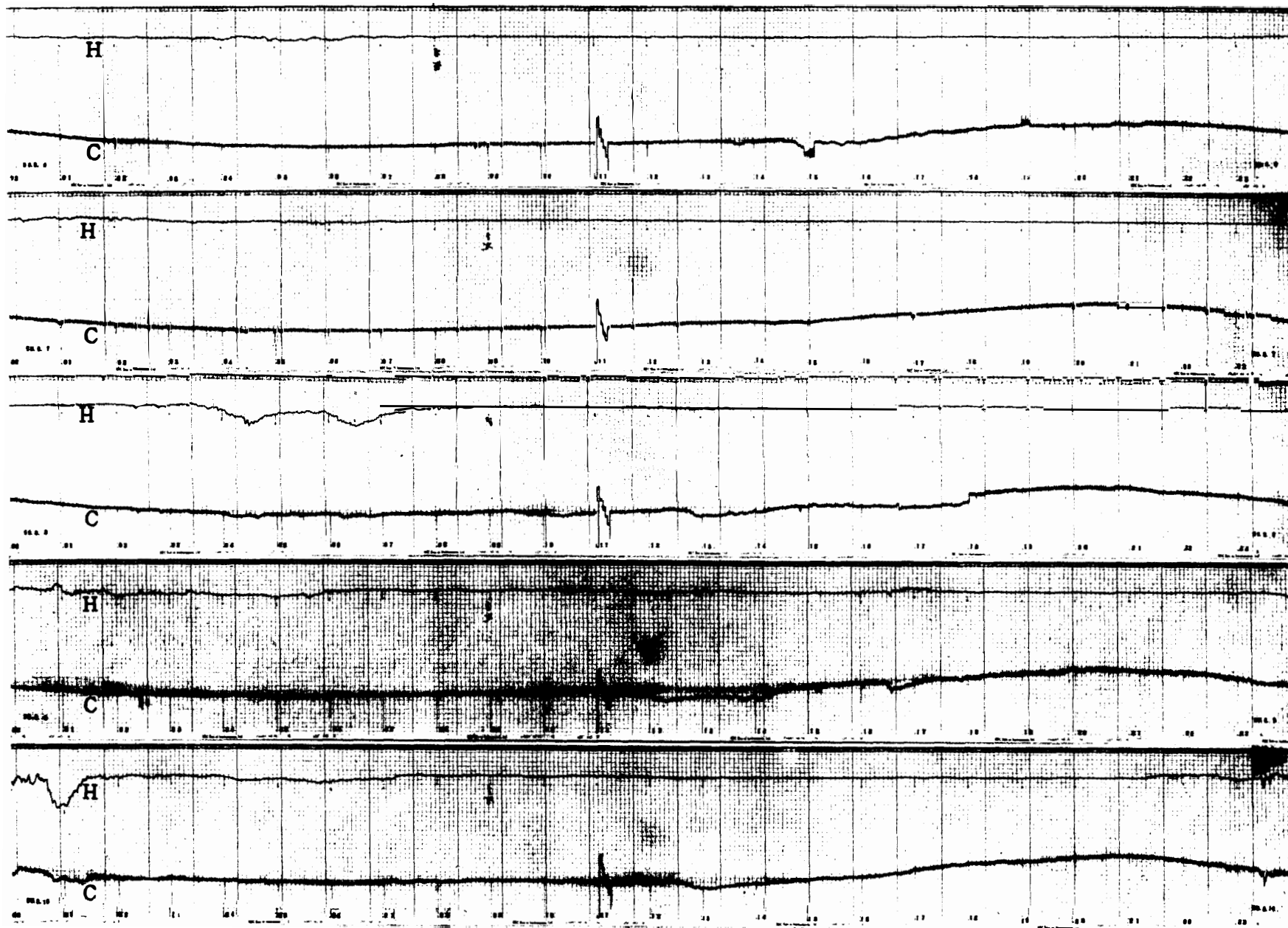
1
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63

00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

AUG. 1984

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00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

AUG. 1984

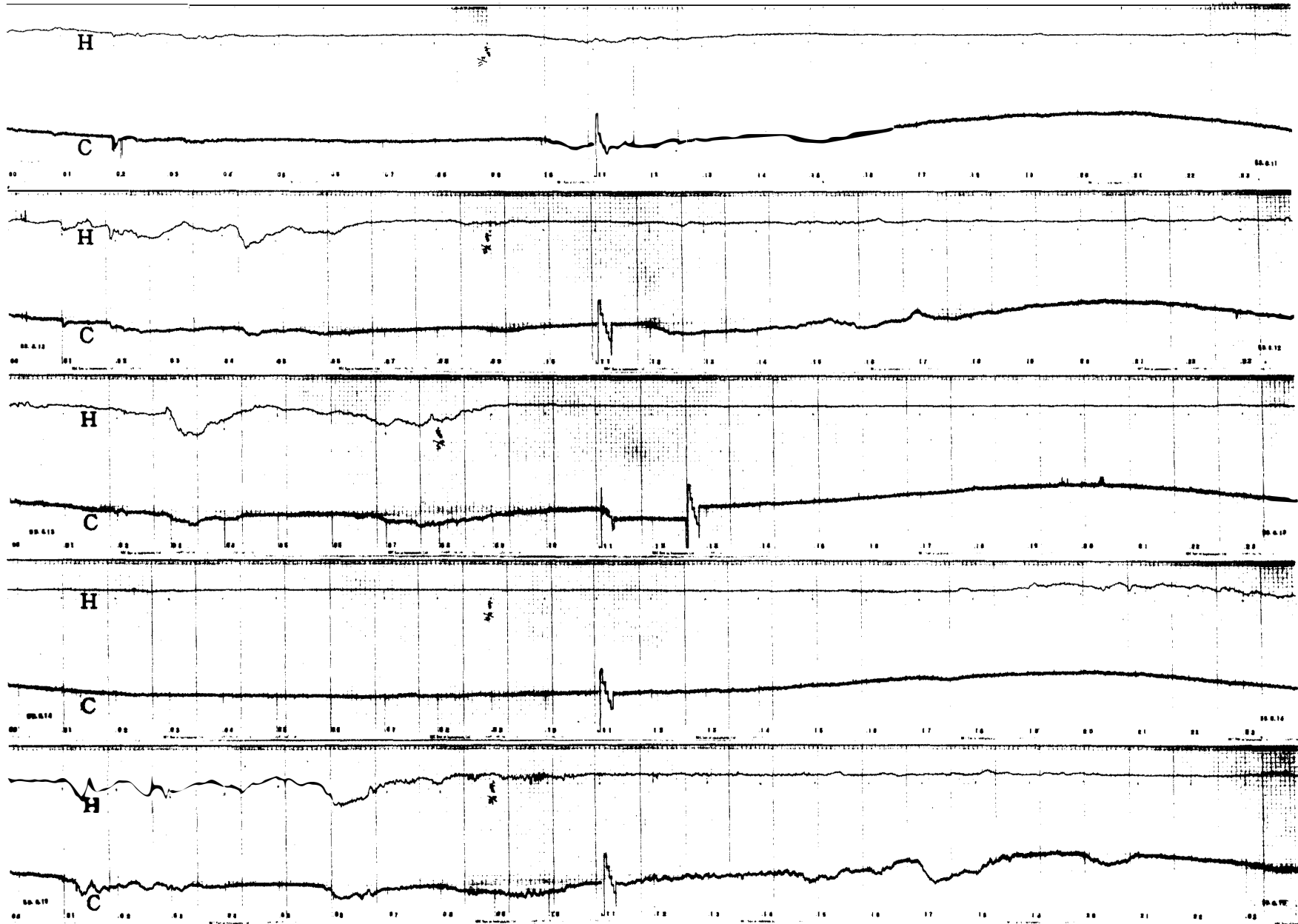
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-65-

00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

AUG. 1984

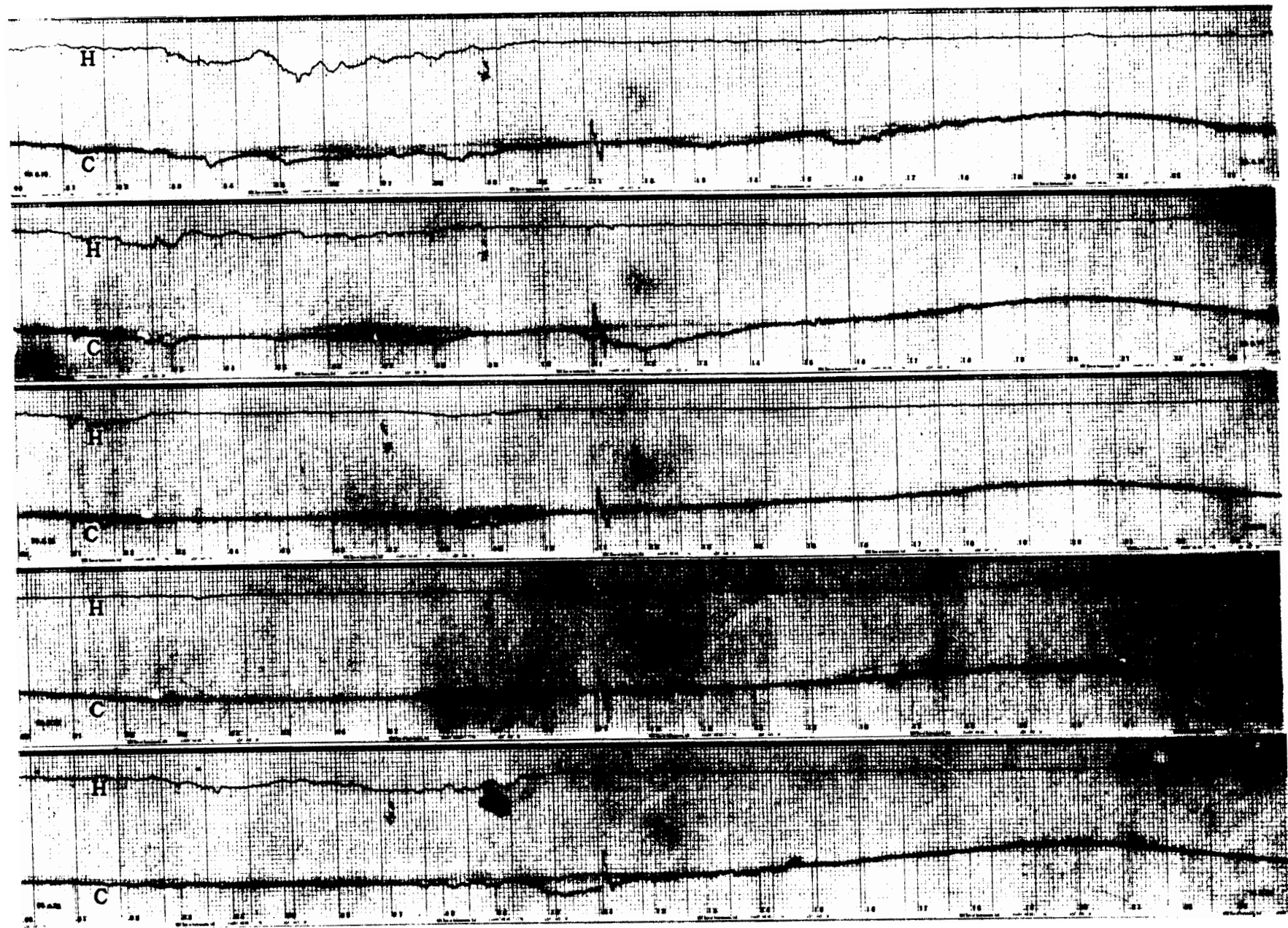
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00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

AUG. 1984

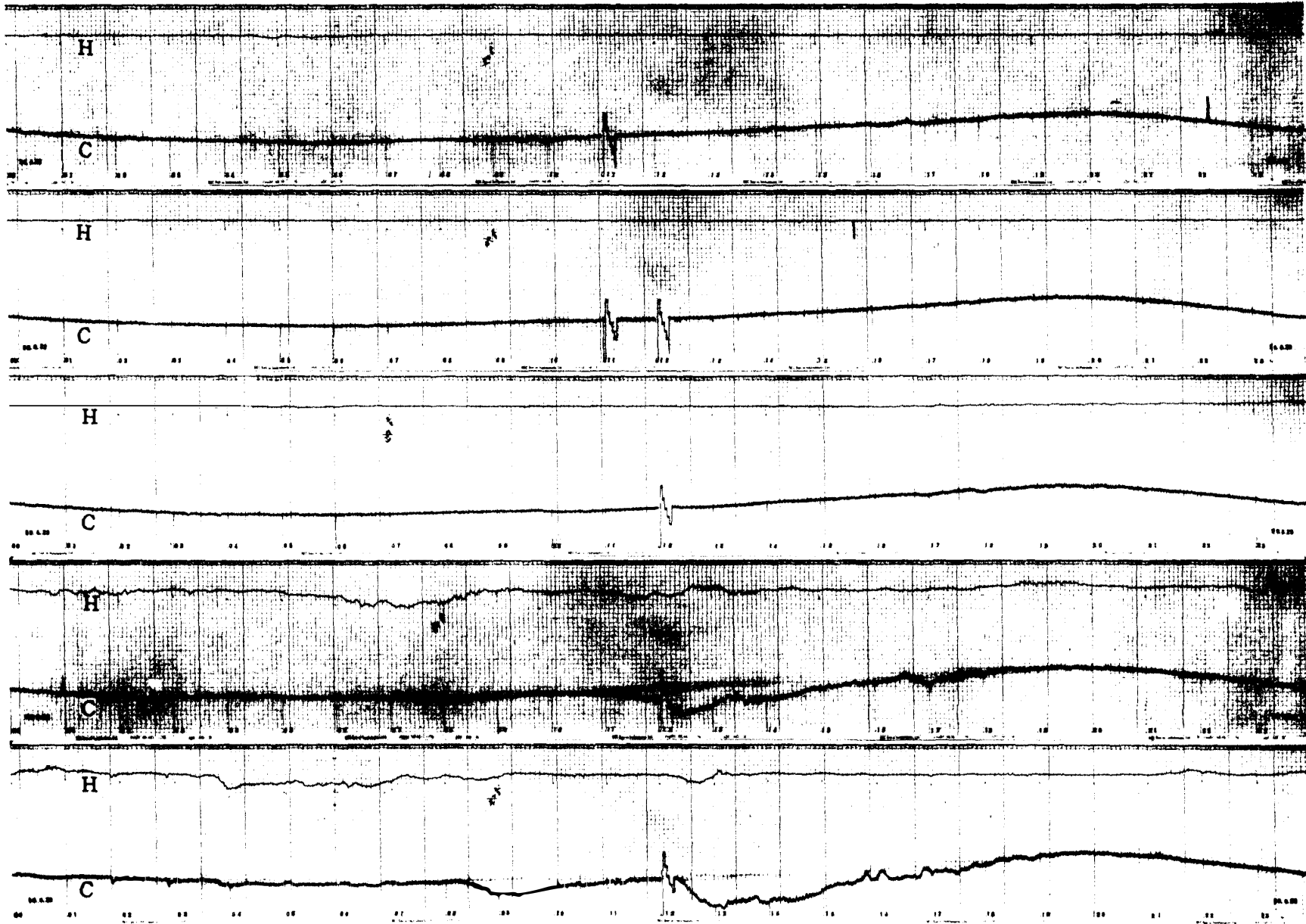
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00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

-67-

AUG. 1984

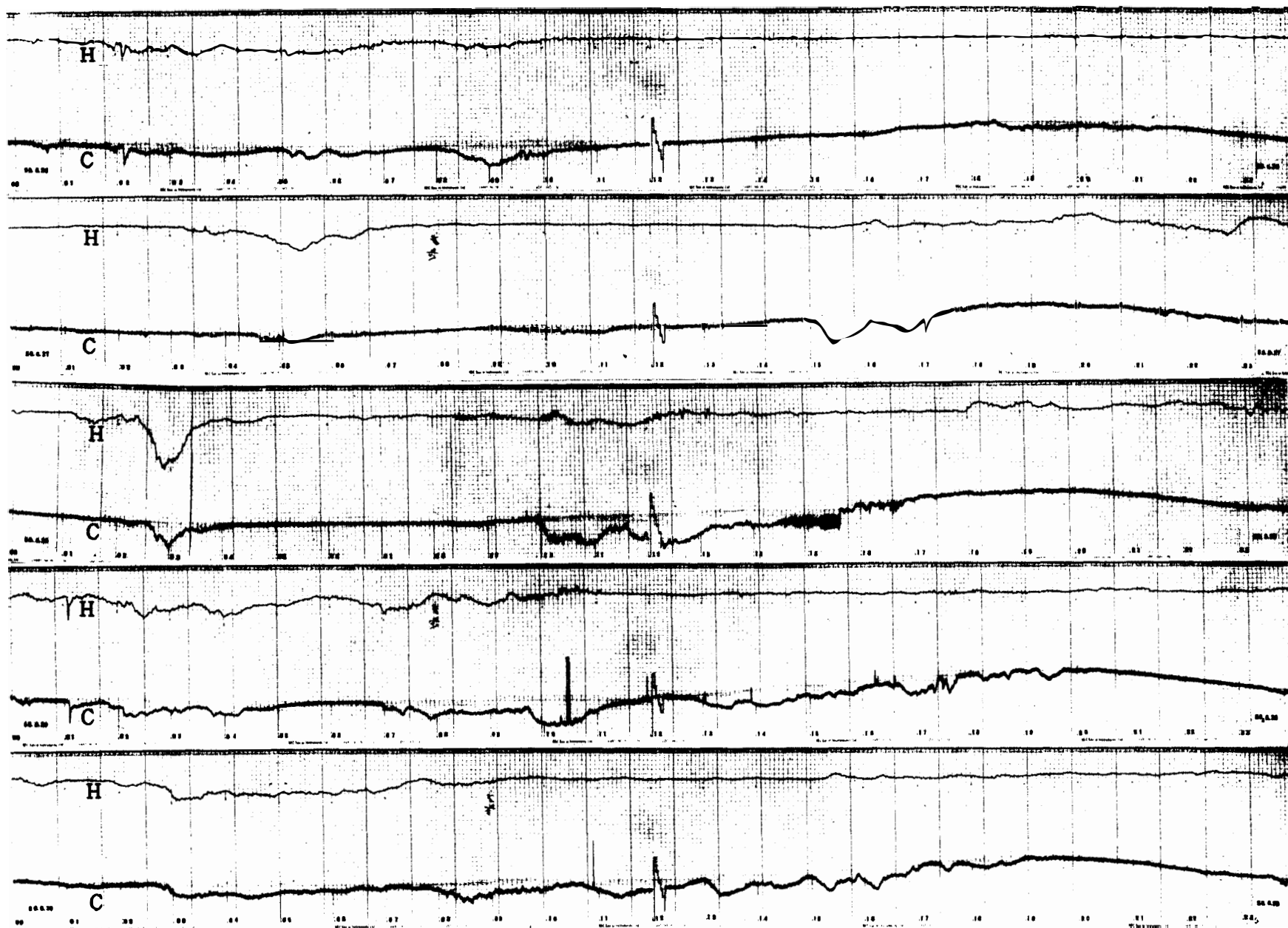
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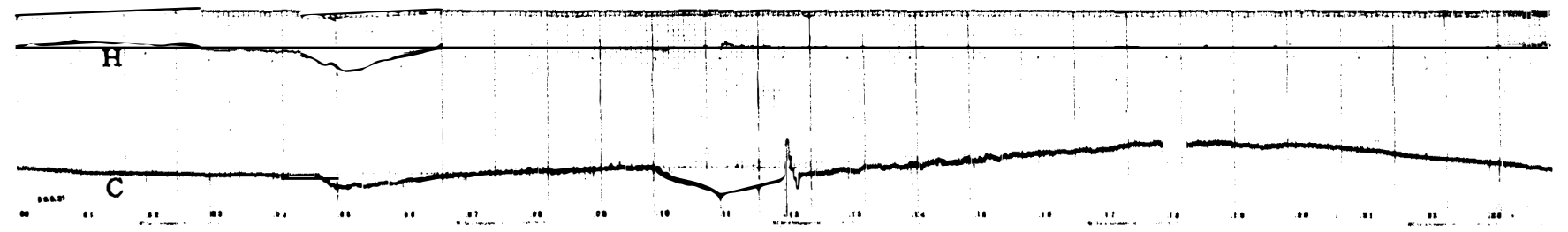
00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

AUG. 1984

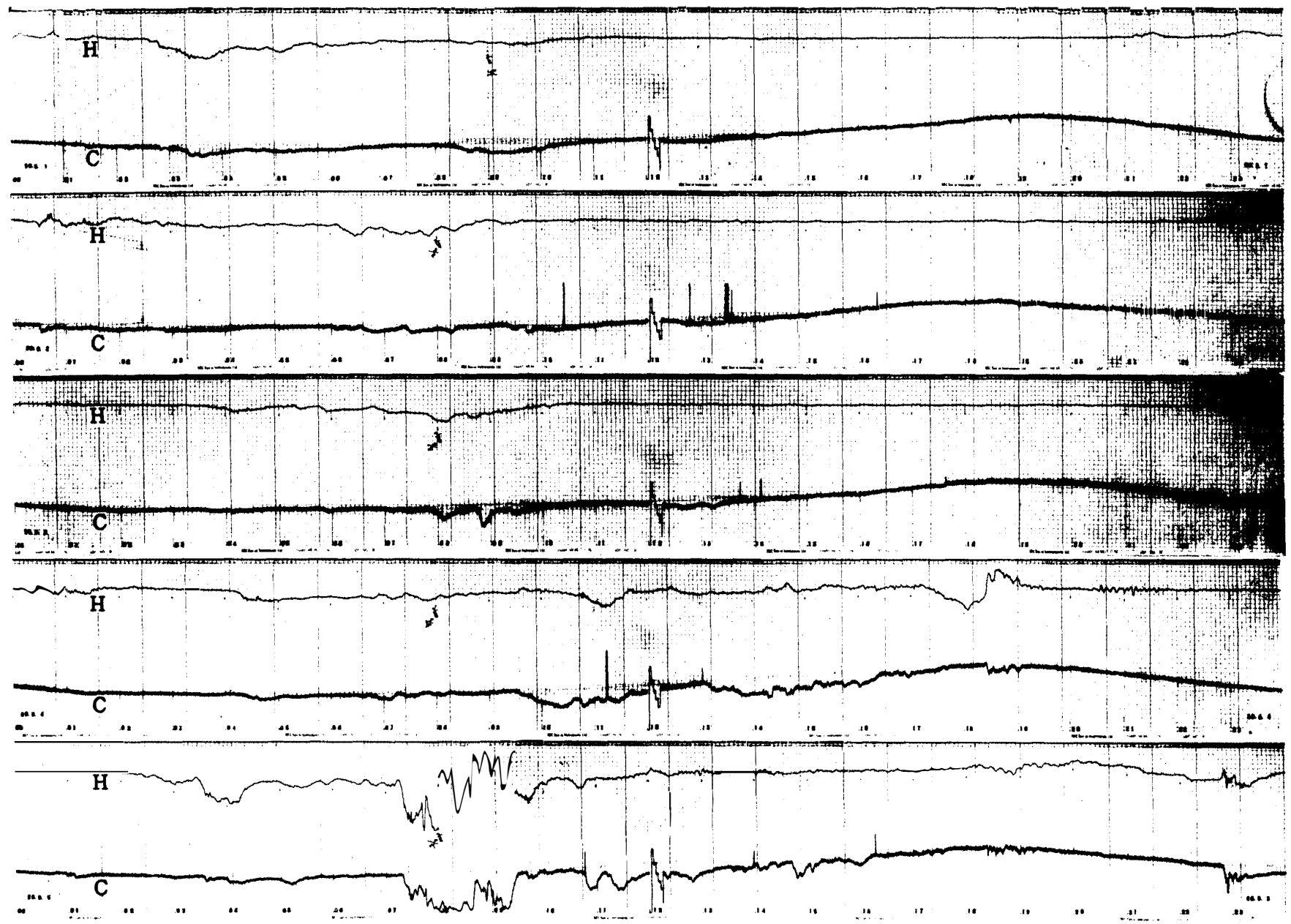
31



00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

SEP. 1984

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-70-

00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

SEP. 1984

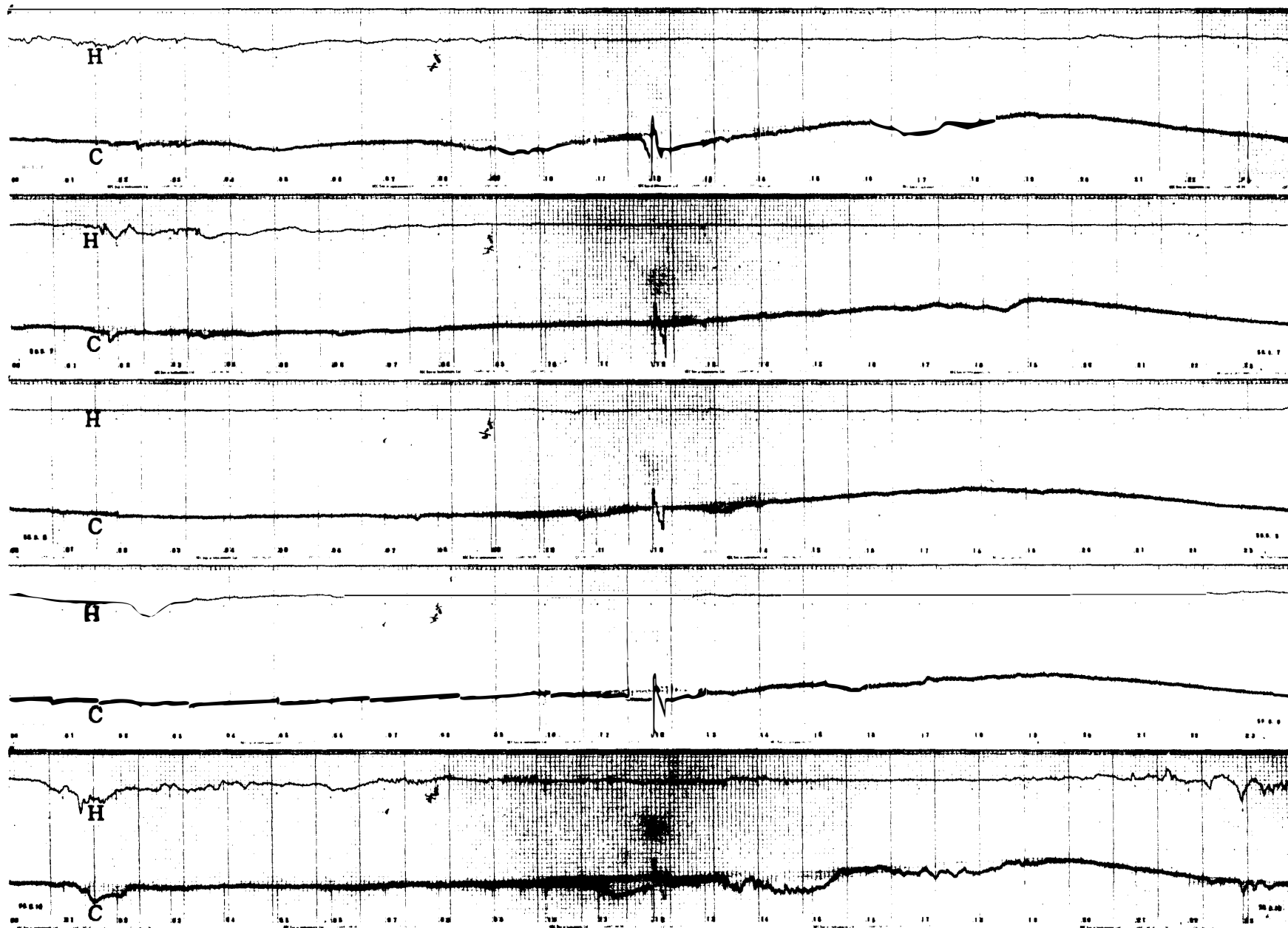
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00 04 08 12 16 20 24

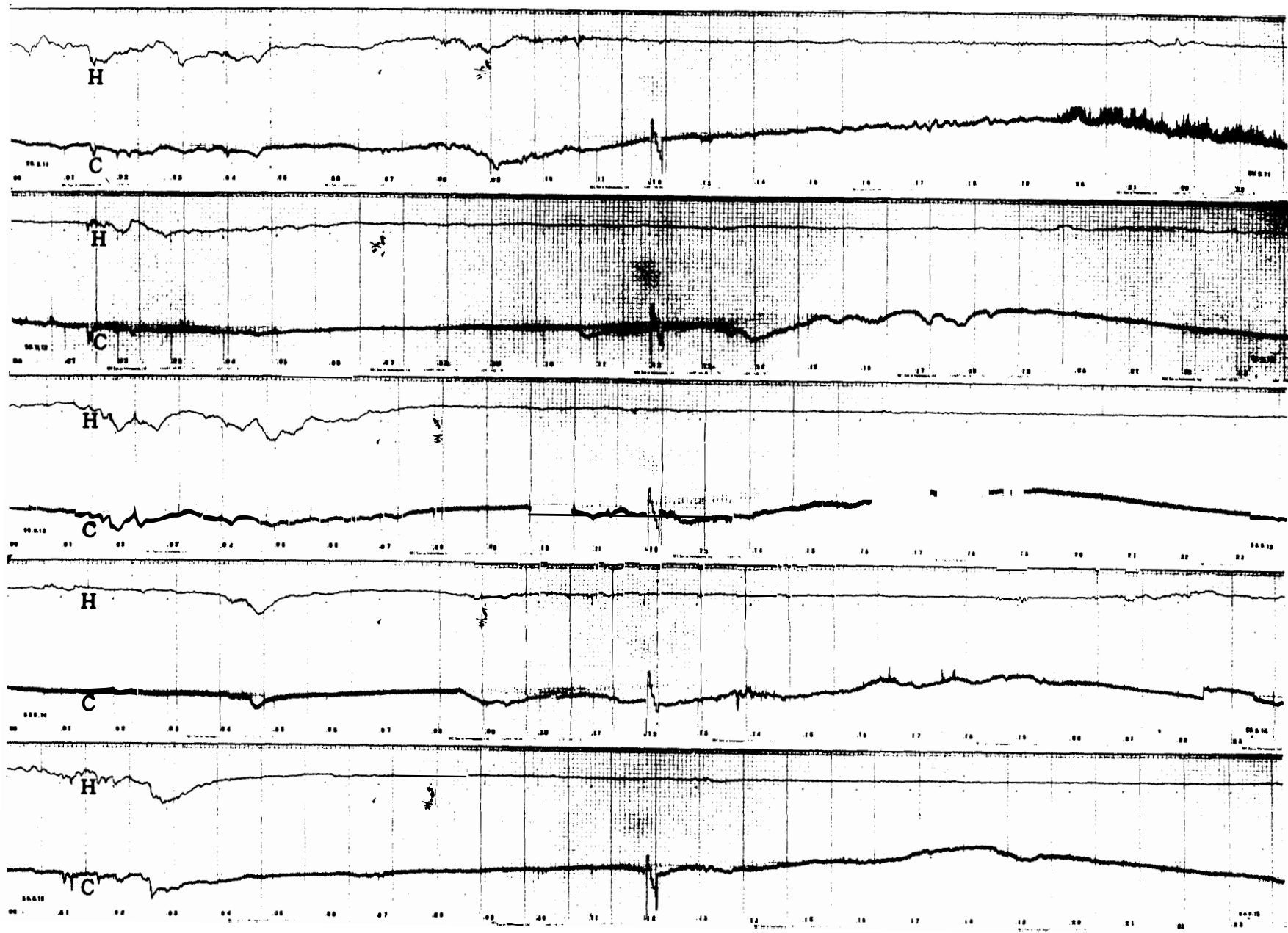
45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

-71-

SEP. 1984

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-72-

00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

SEP. 1984

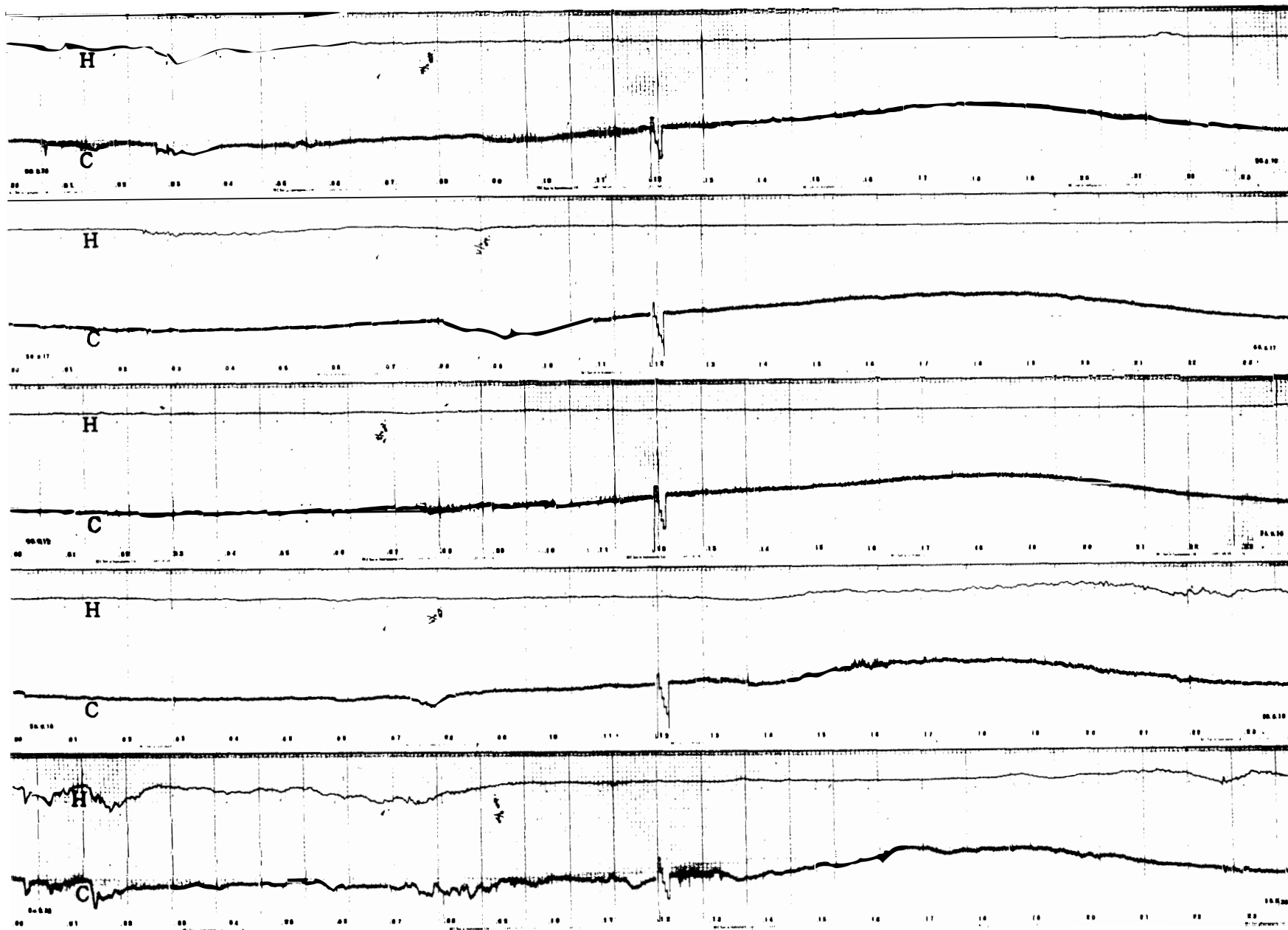
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00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

SEP. 1984

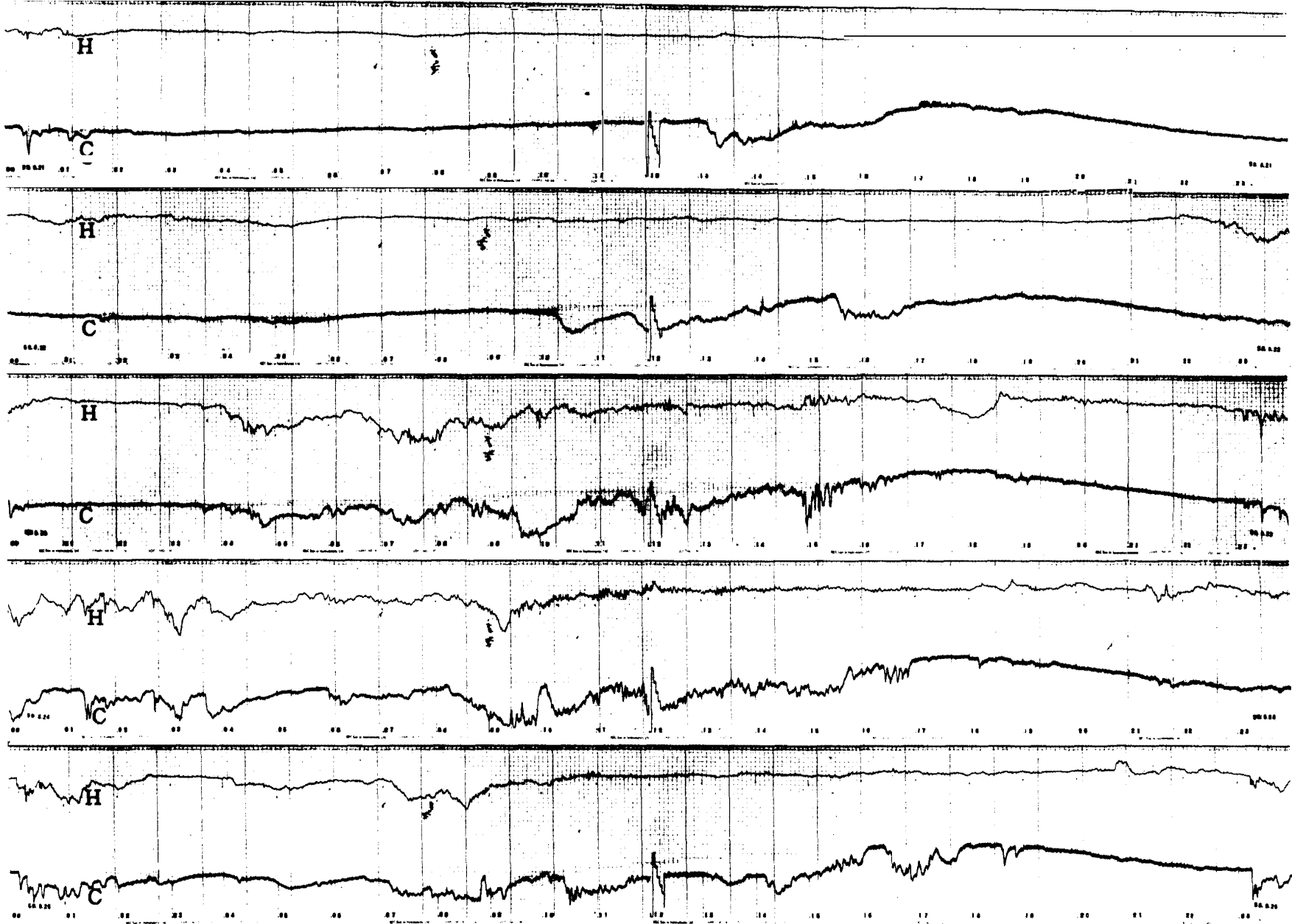
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-74-

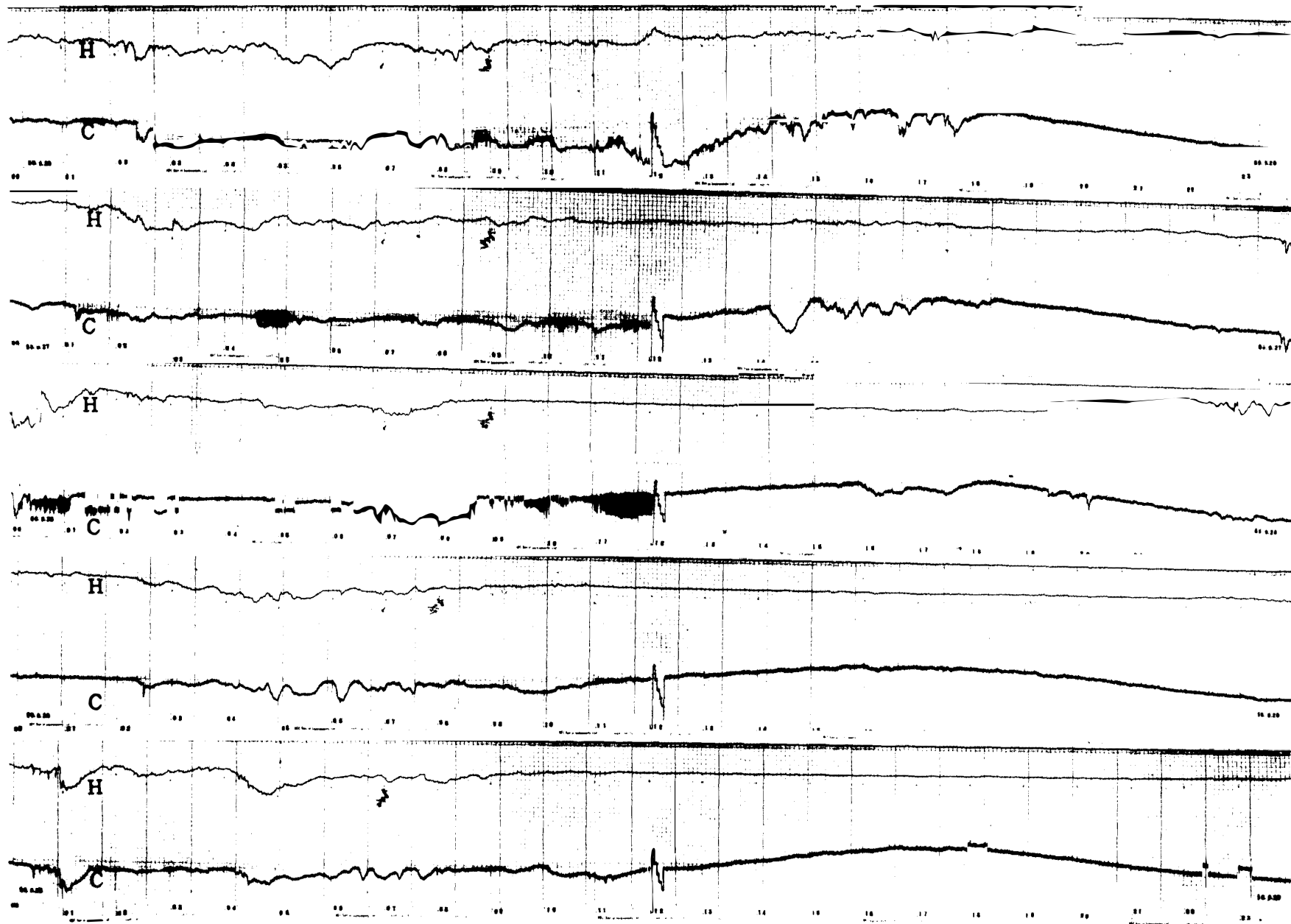
00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

SEP . 08 4

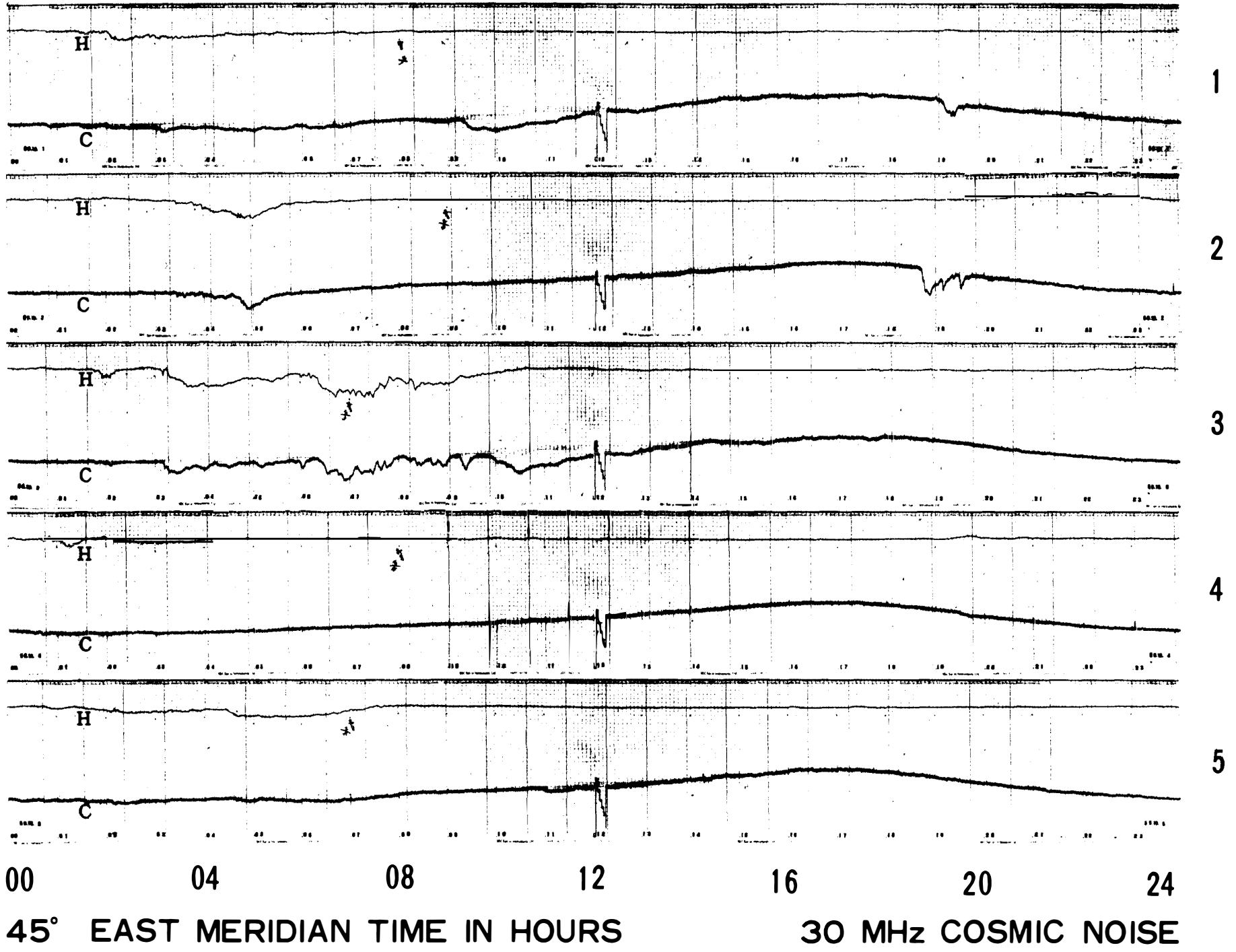
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00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

— 75

OCT. 1984



OCT. 1984

6

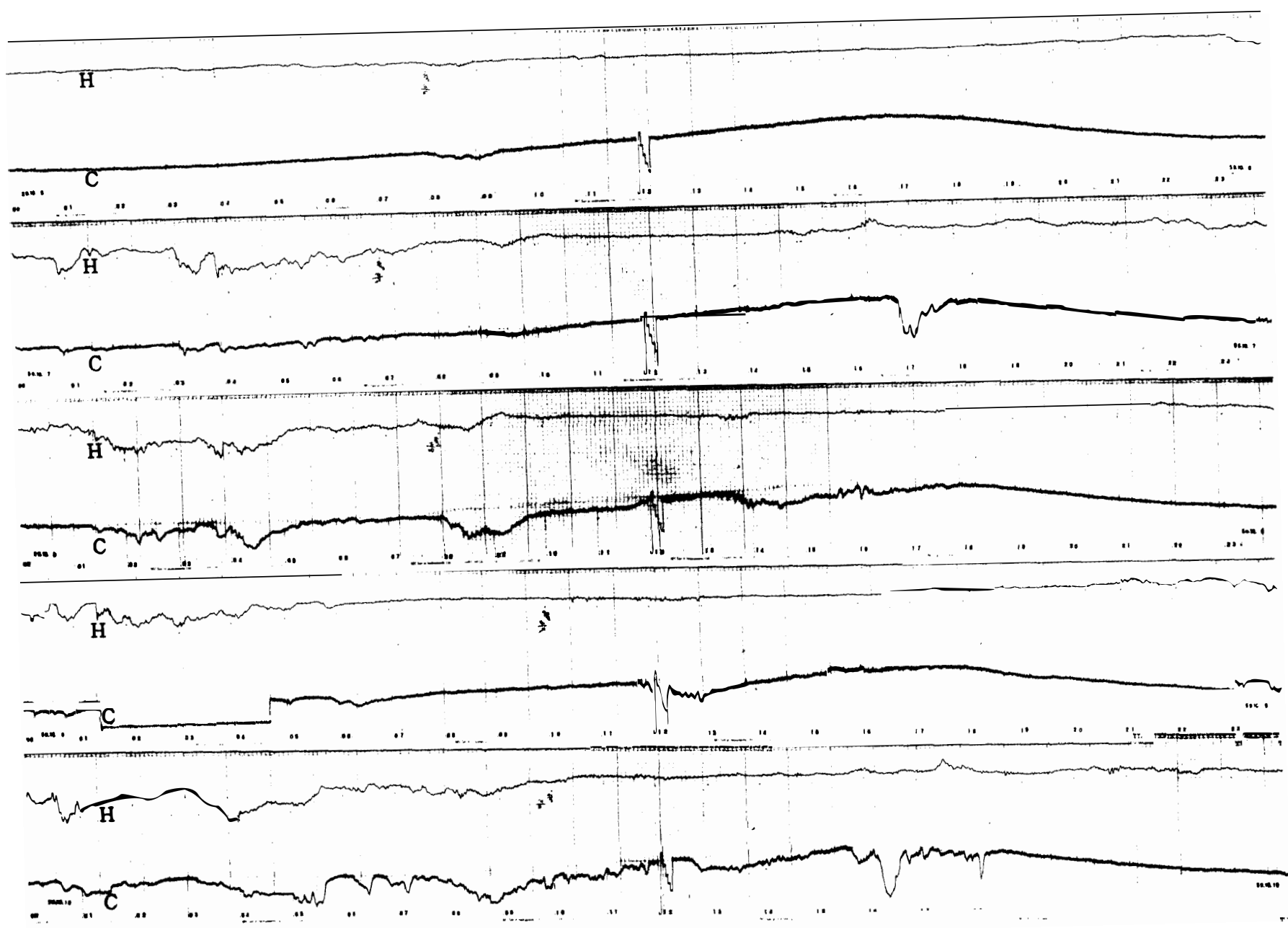
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-77-



00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

OCT. 1984

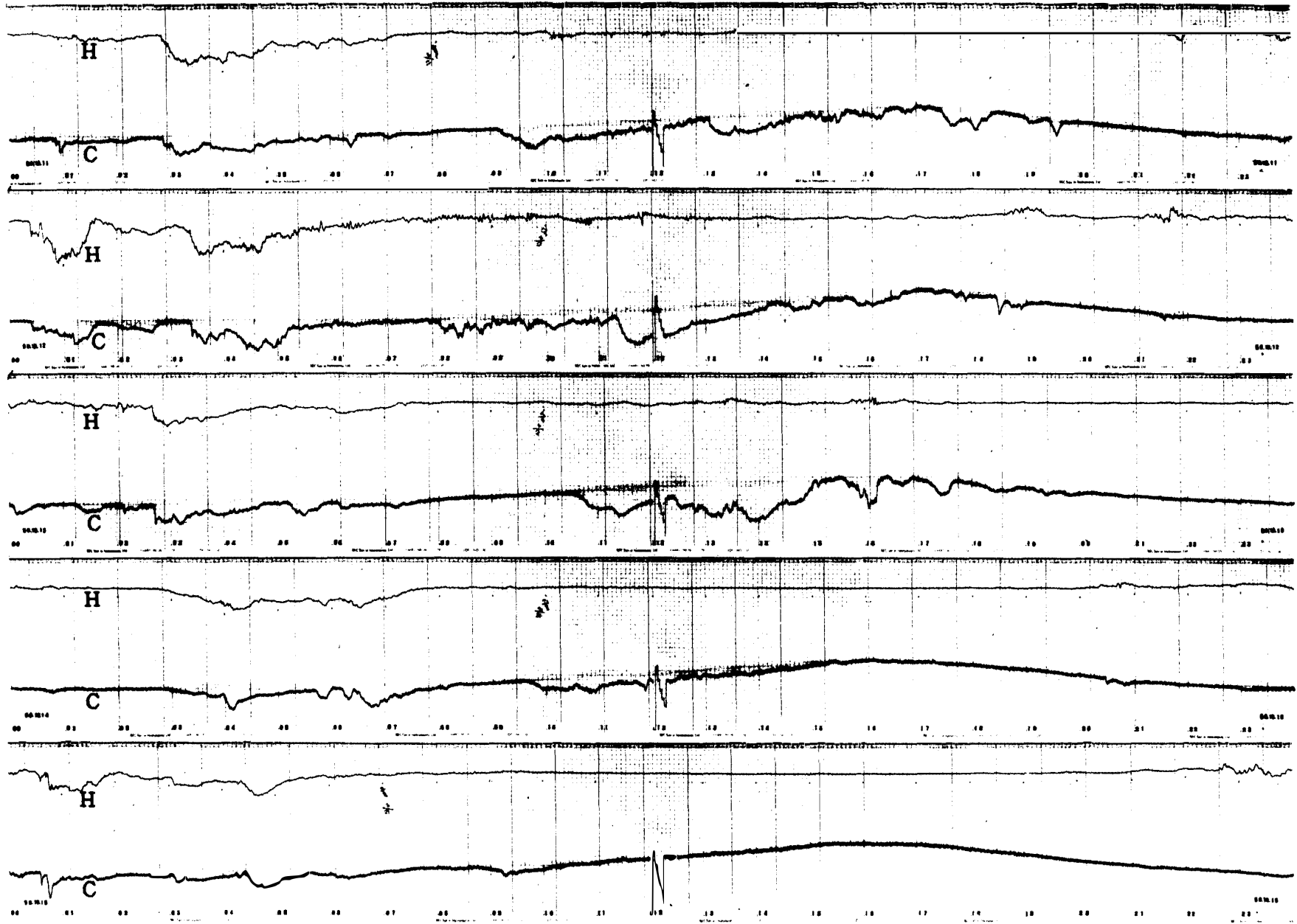
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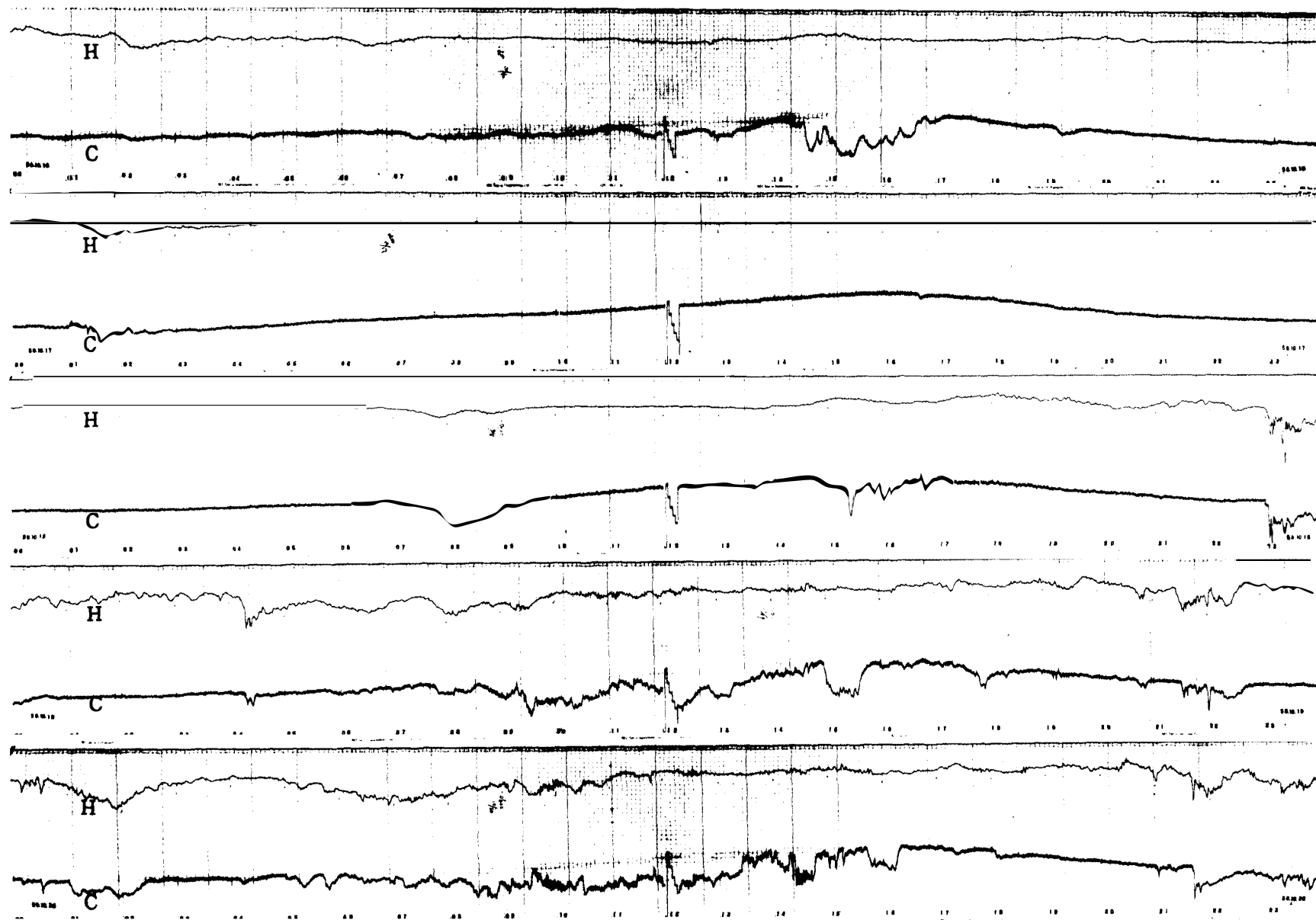


00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

OCT. 1984



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00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

OCT. 1984

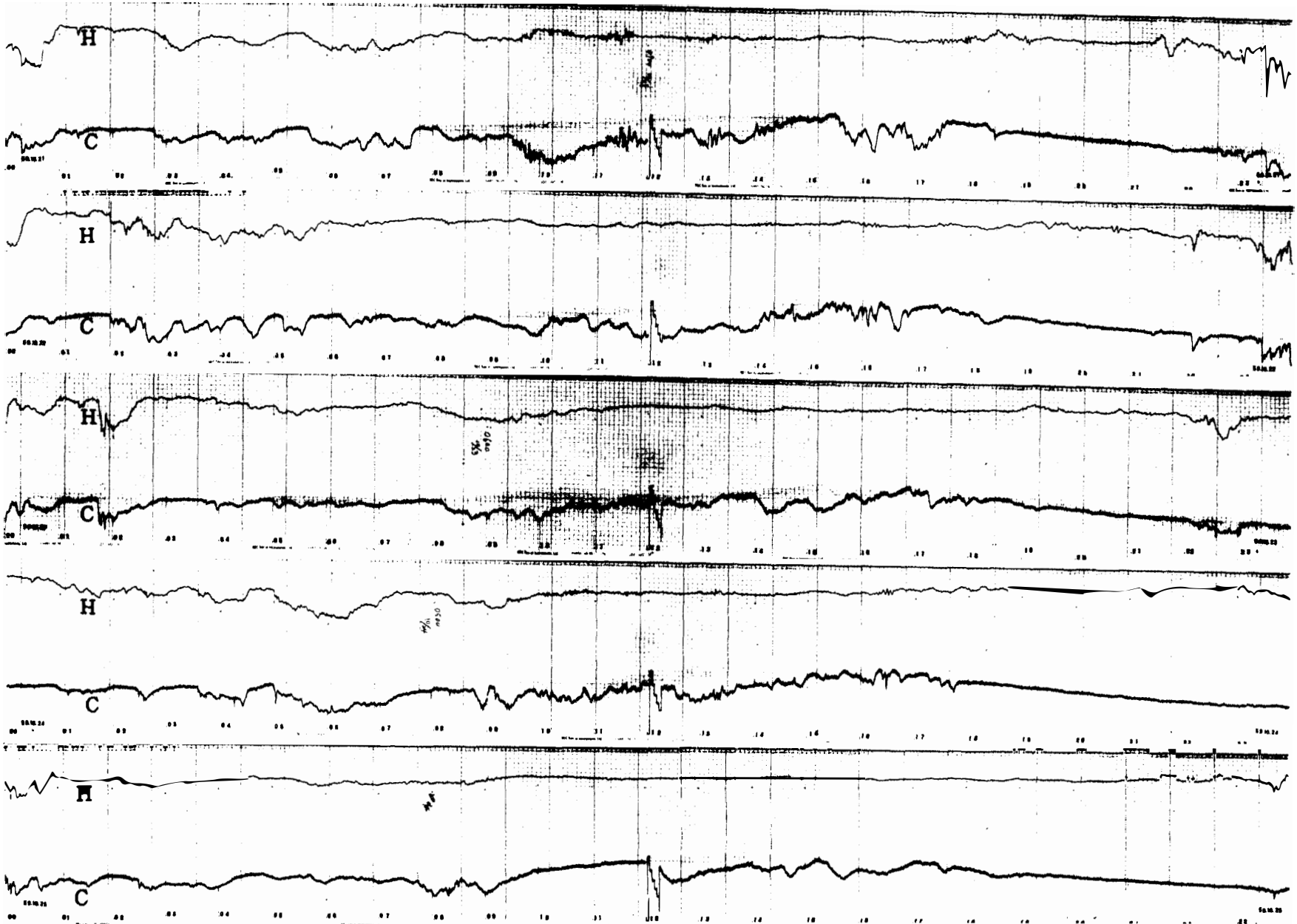
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—80—

00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

OCT. 1984

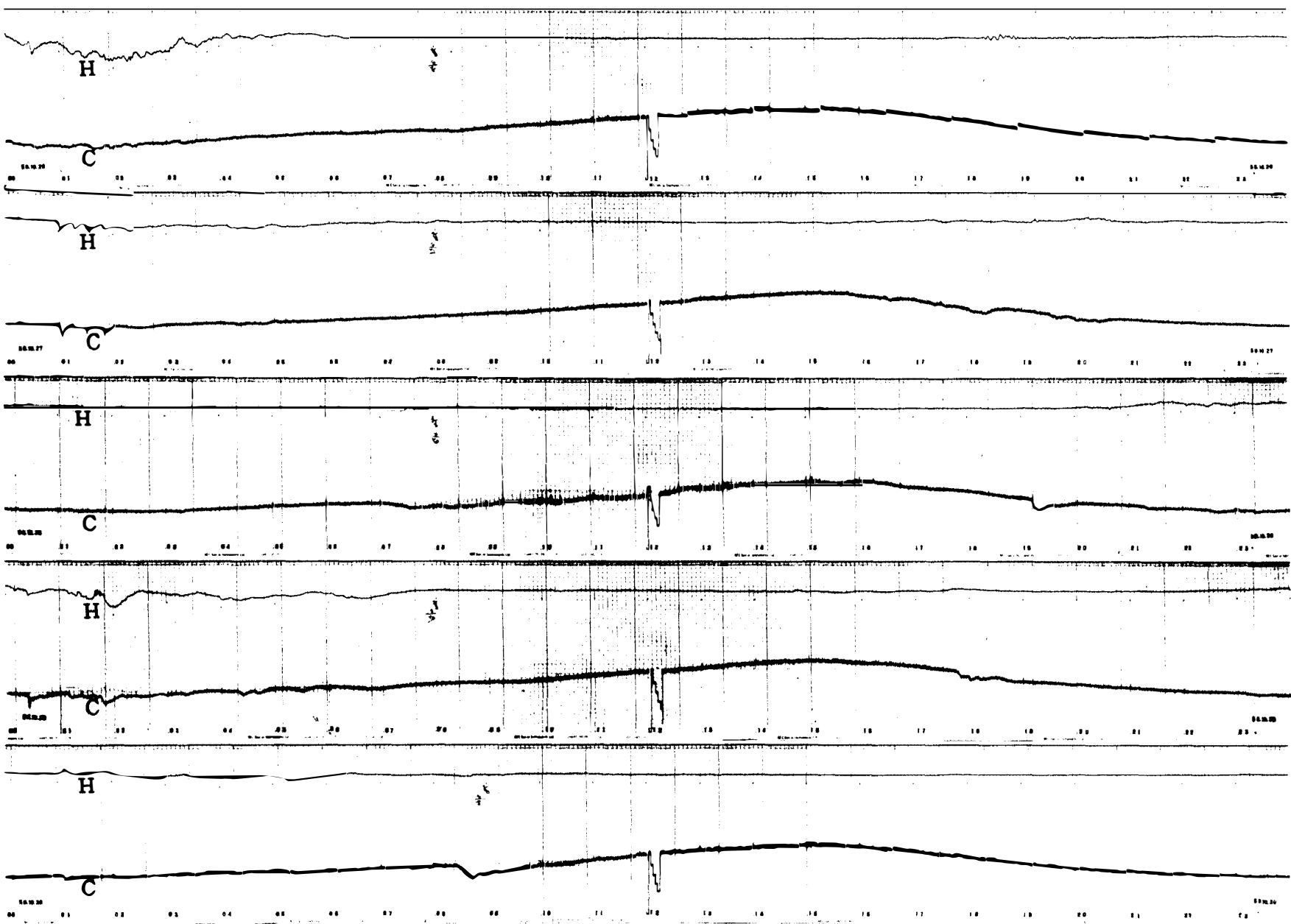
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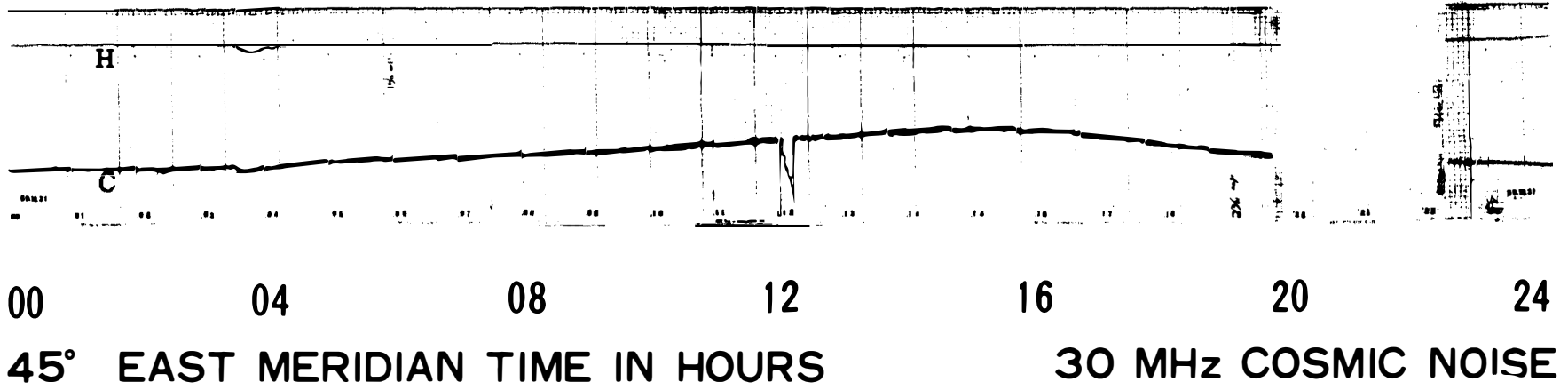


00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

OCT. 1984

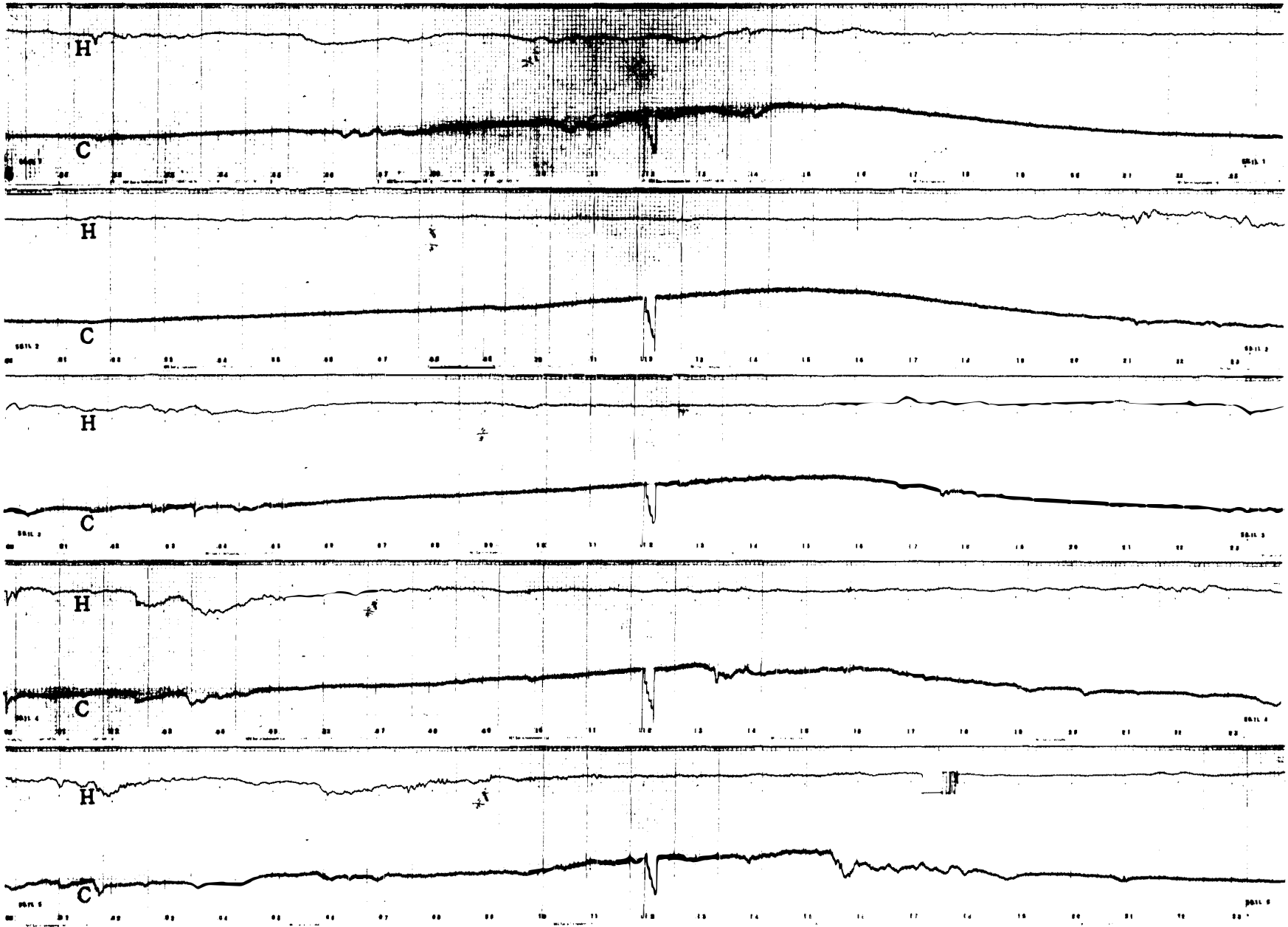
31



Cosmic noise level obscured or equipment malfunction.

October 31 19:40 - 22:25 Failure of equipment

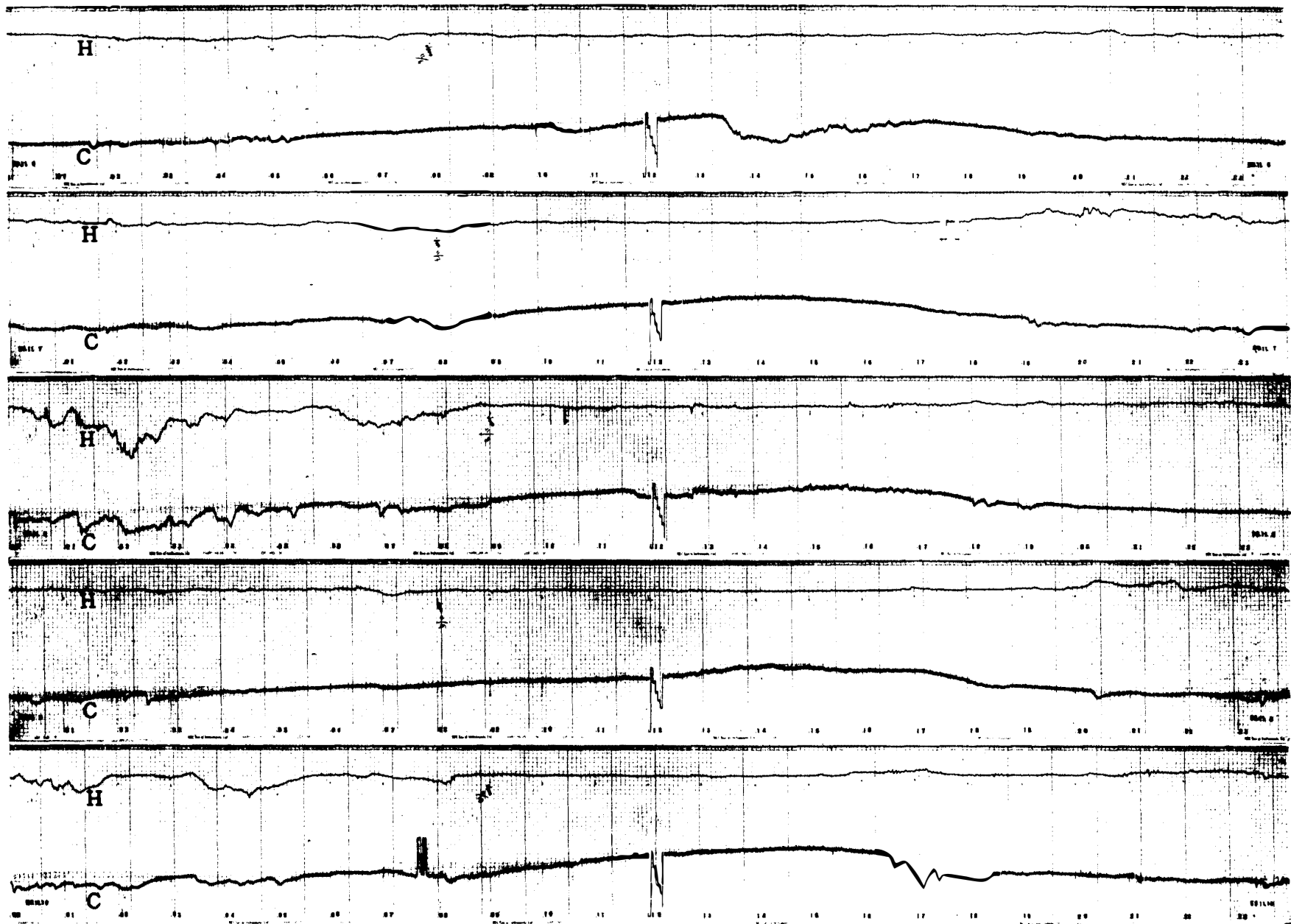
NOV. 1984



00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

NOV. 1984

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-84-

00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

NOV. 1984

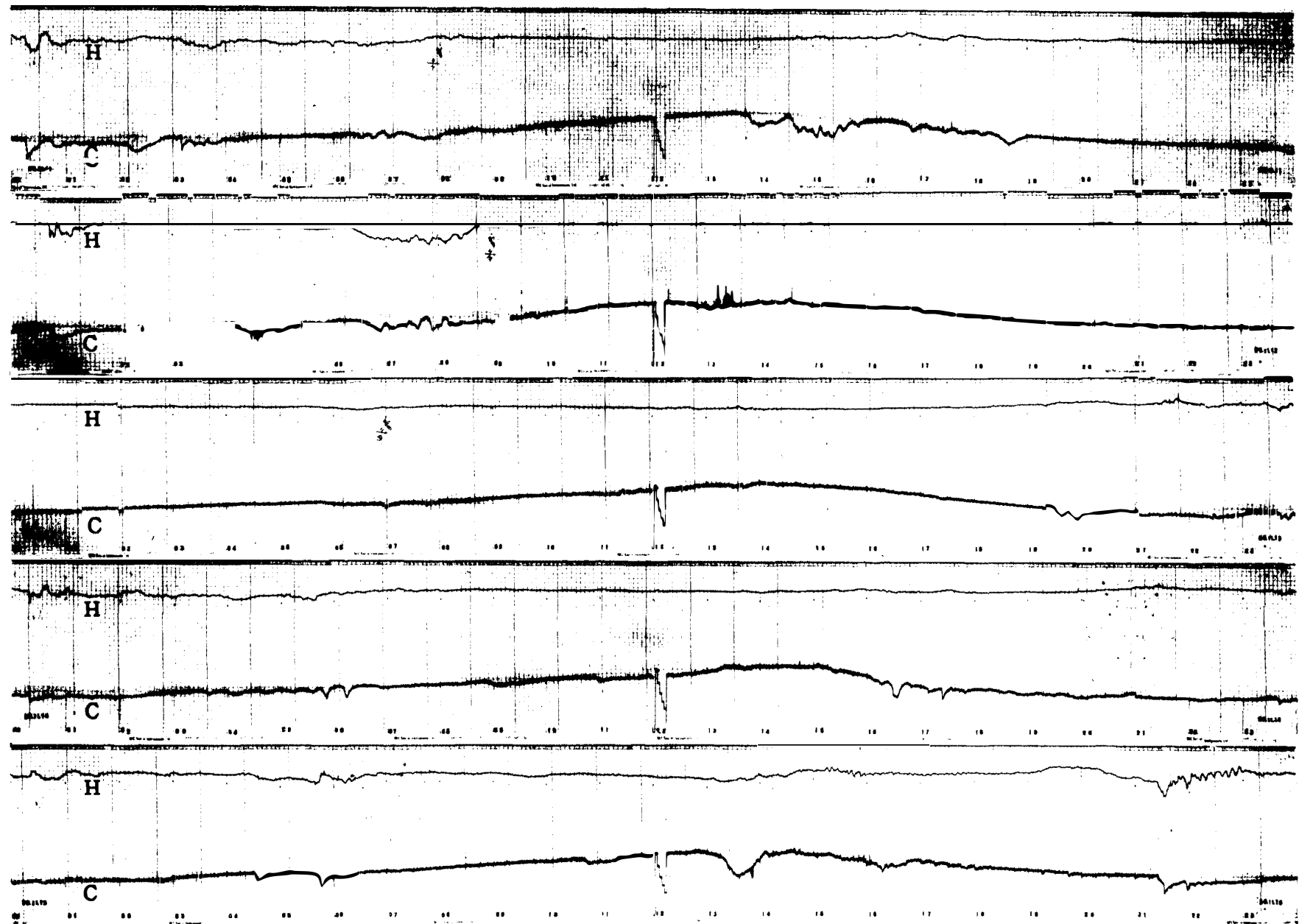
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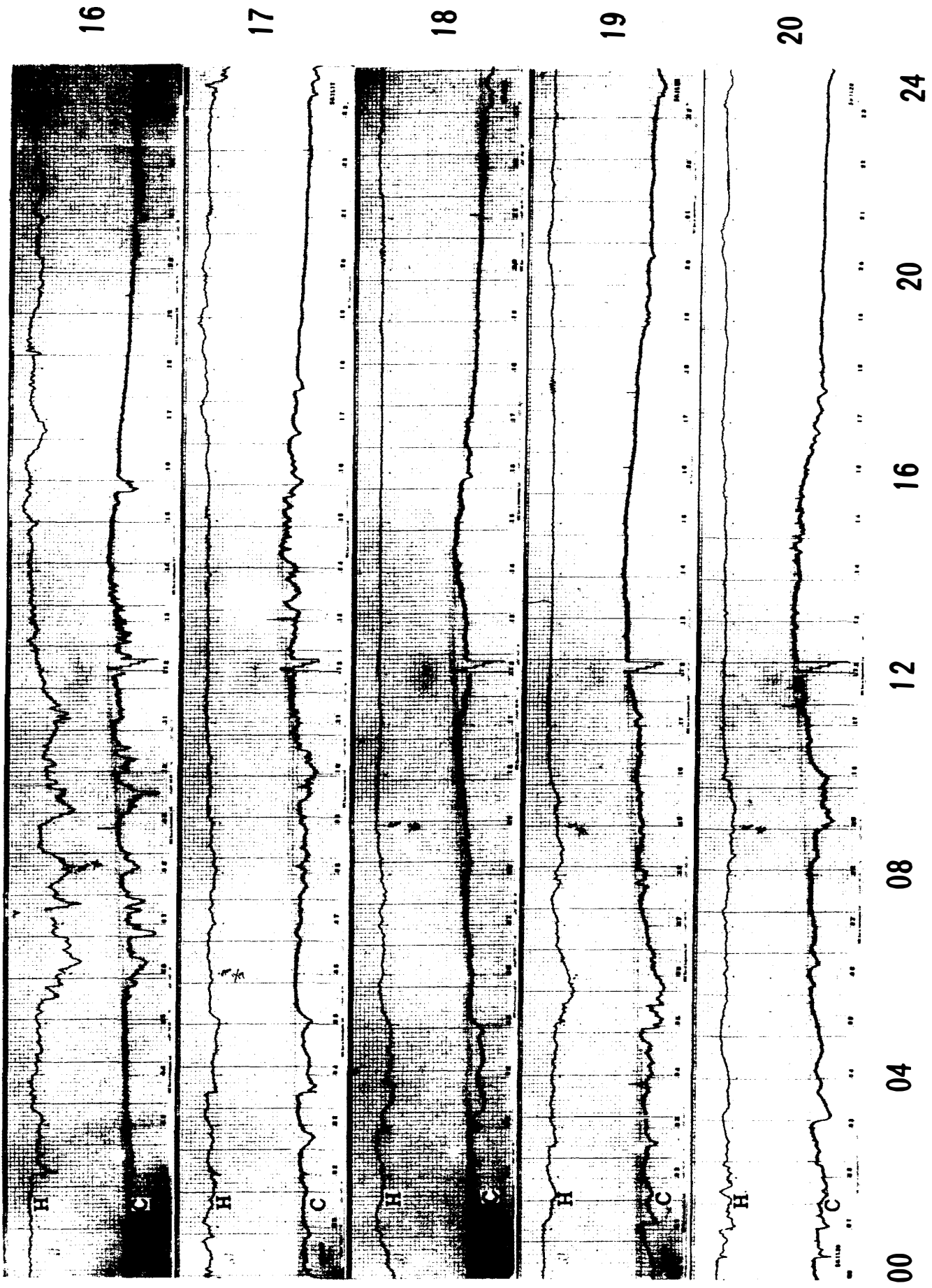


00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

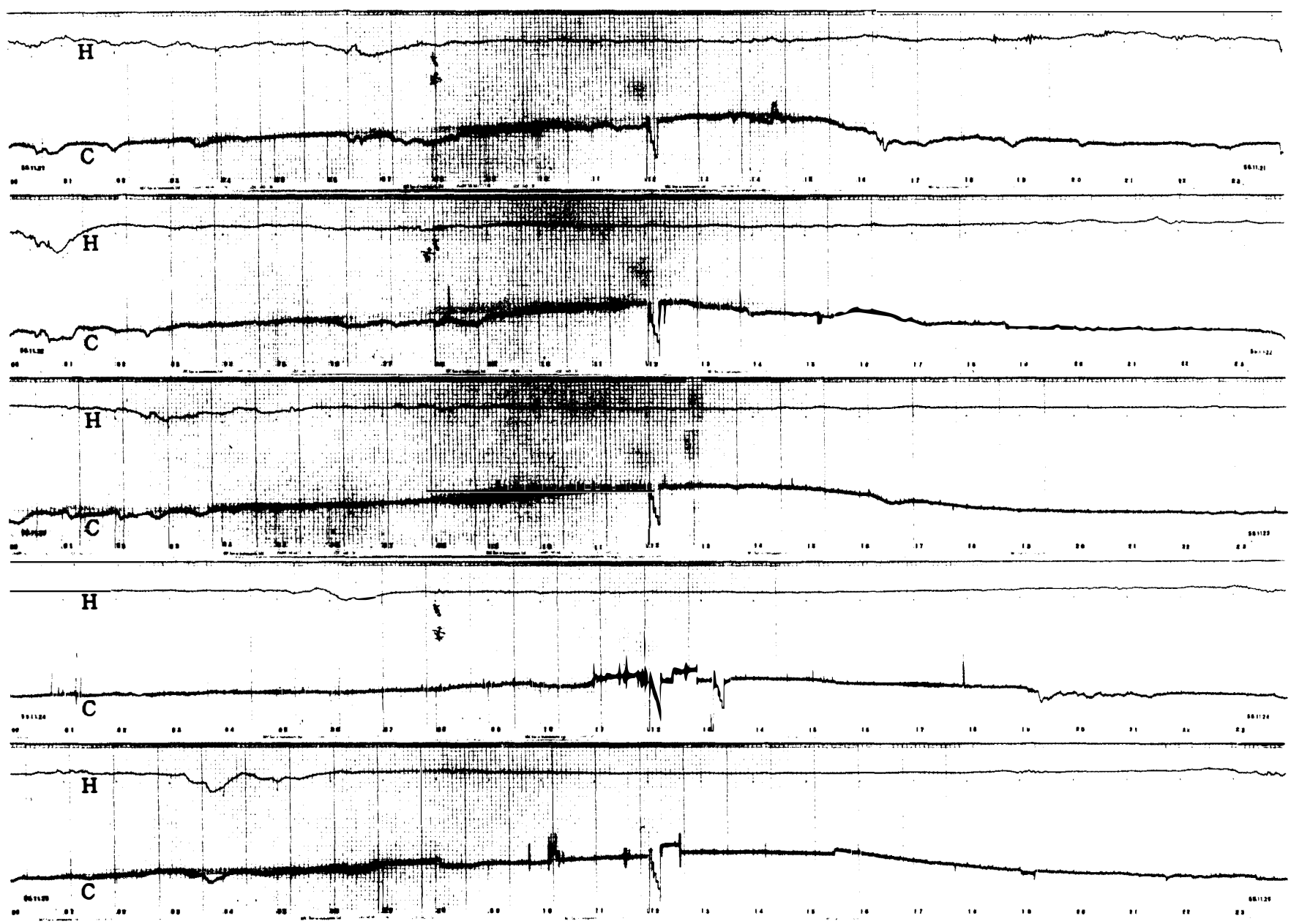
NOV. 1984



00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

NOV. 1984

21
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00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

NOV. 1984

26

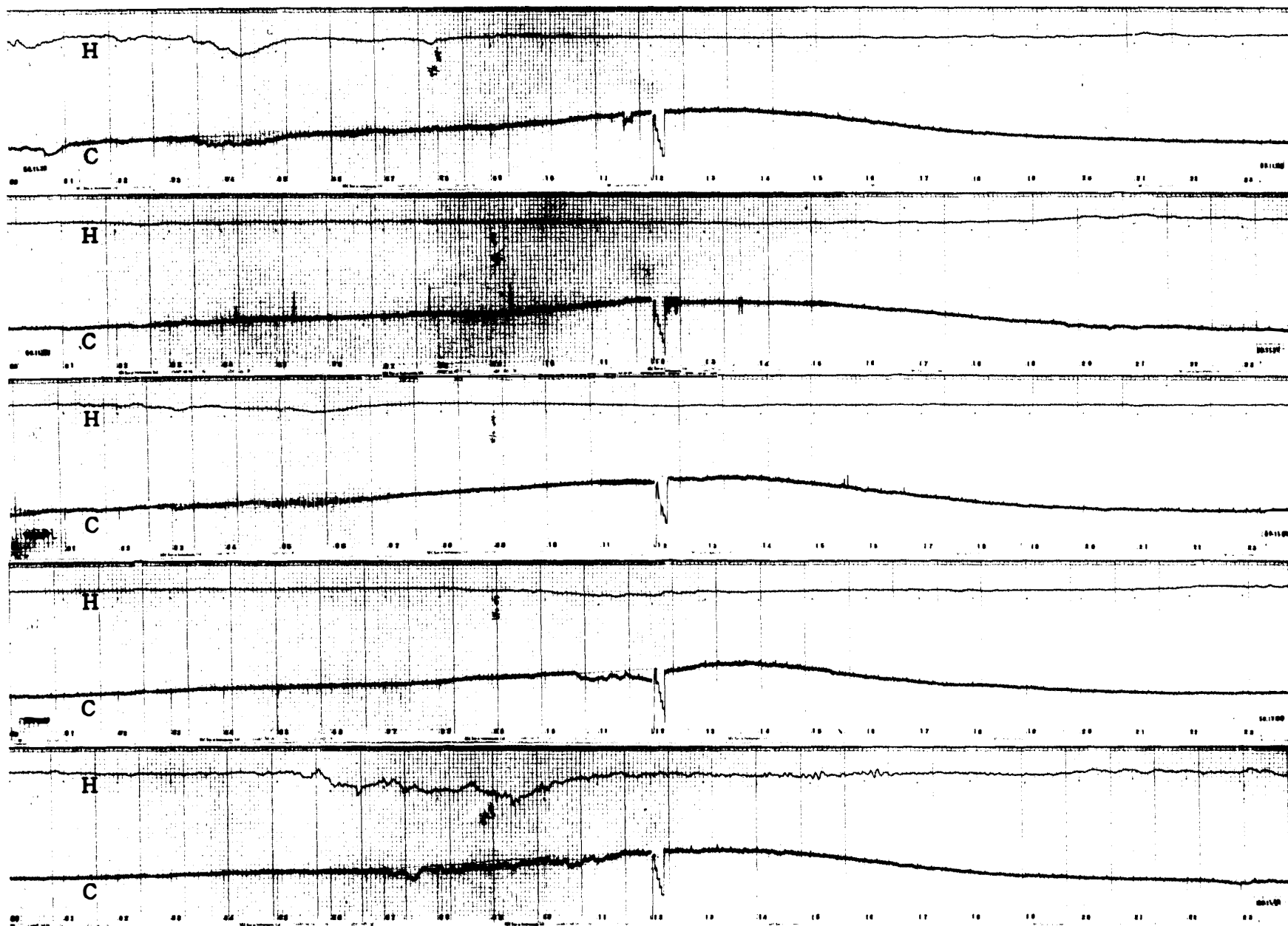
27

28

29

30

—88—



00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS

30 MHz COSMIC NOISE

DEC. 1984

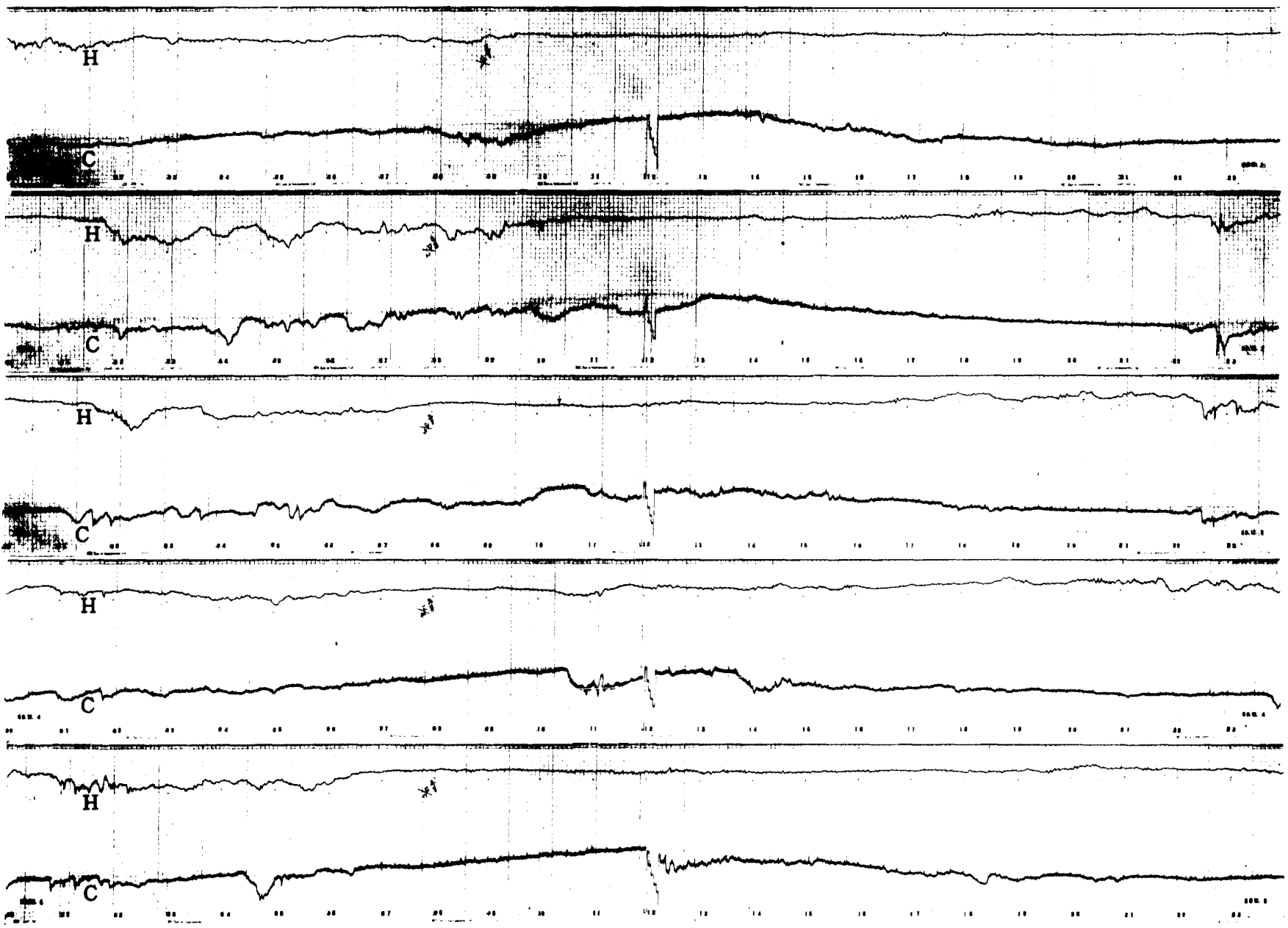
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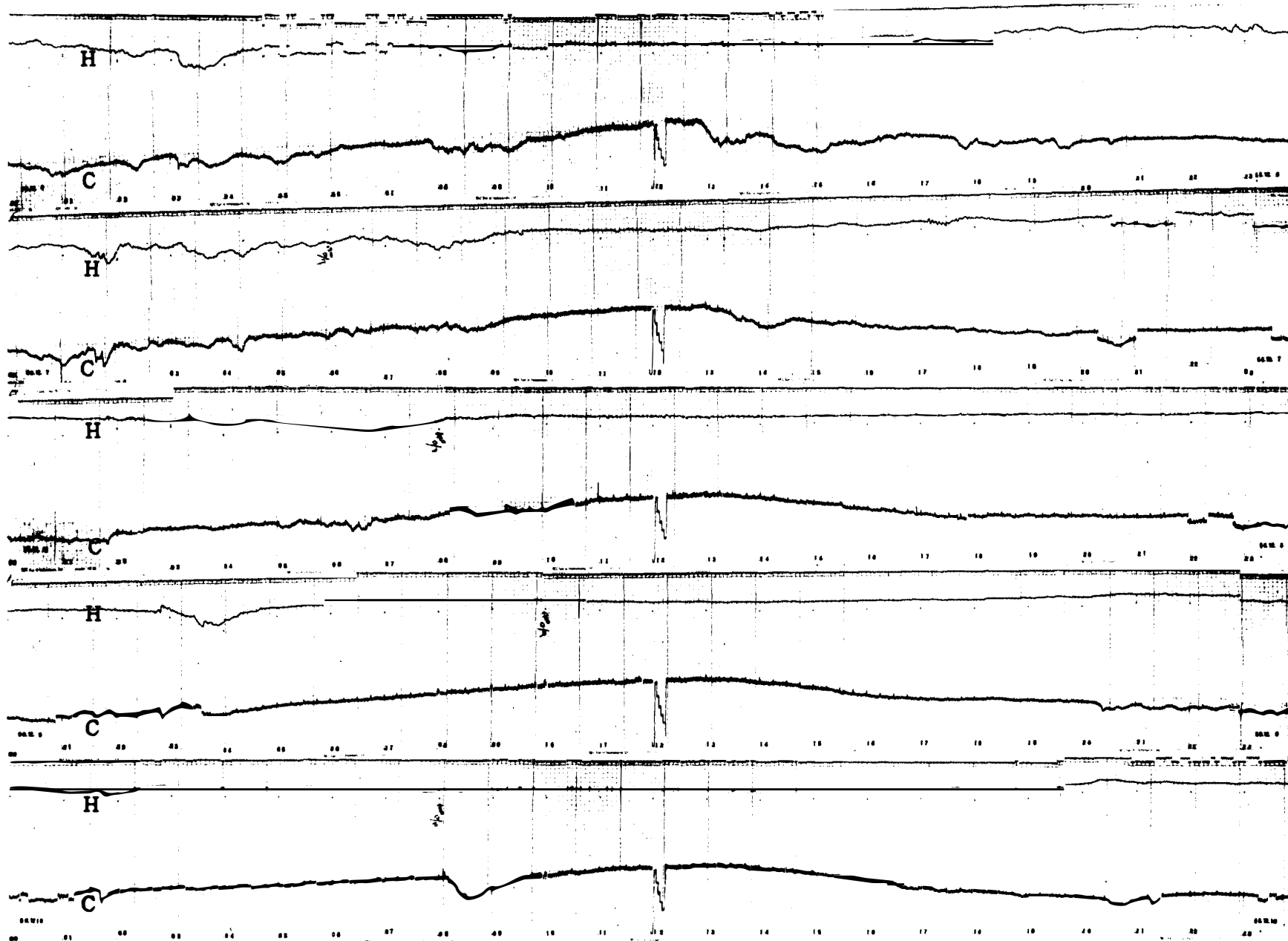
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00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

DEC 1 1964

6
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10



00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

-96-

DEC. 1984

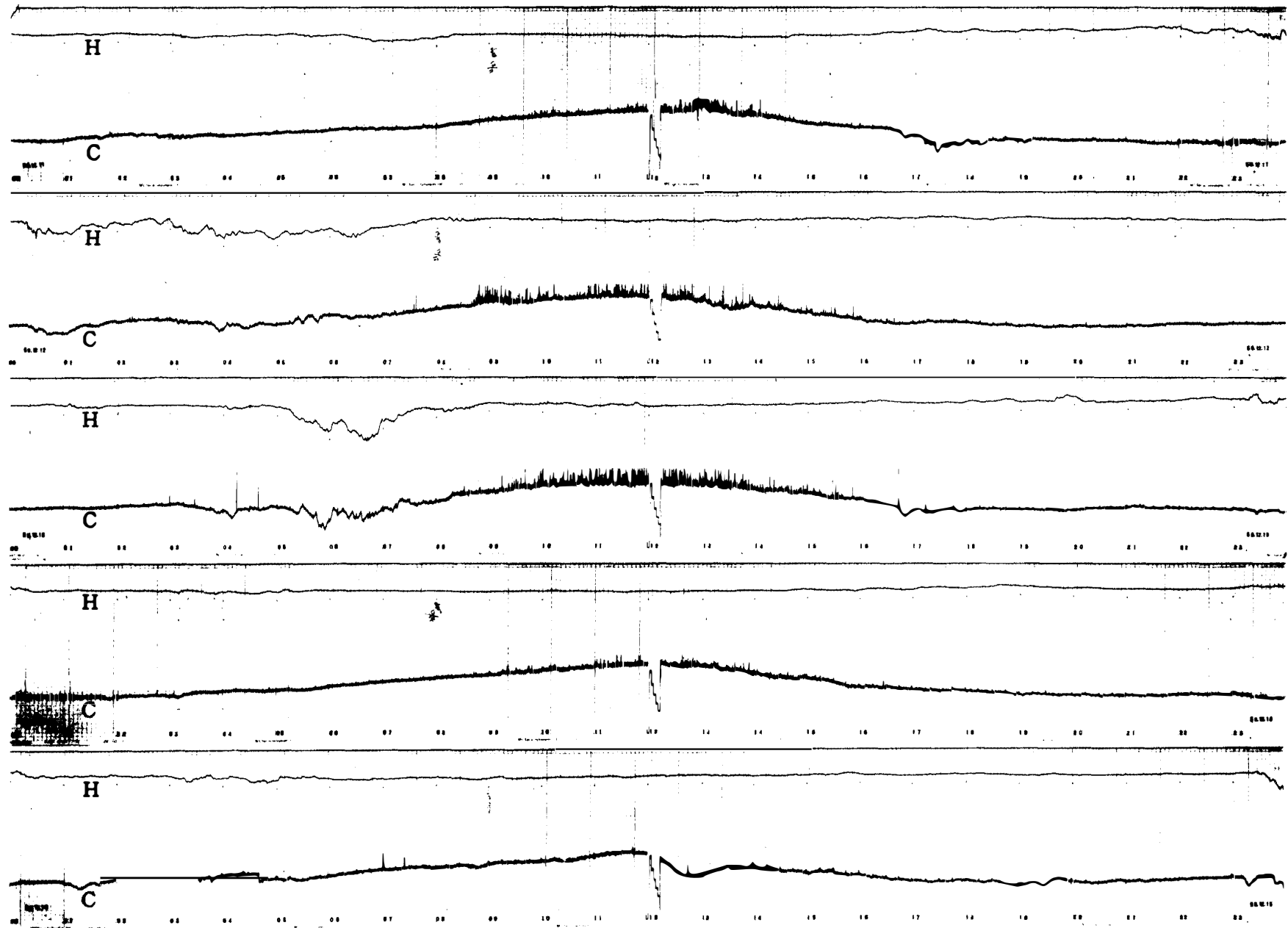
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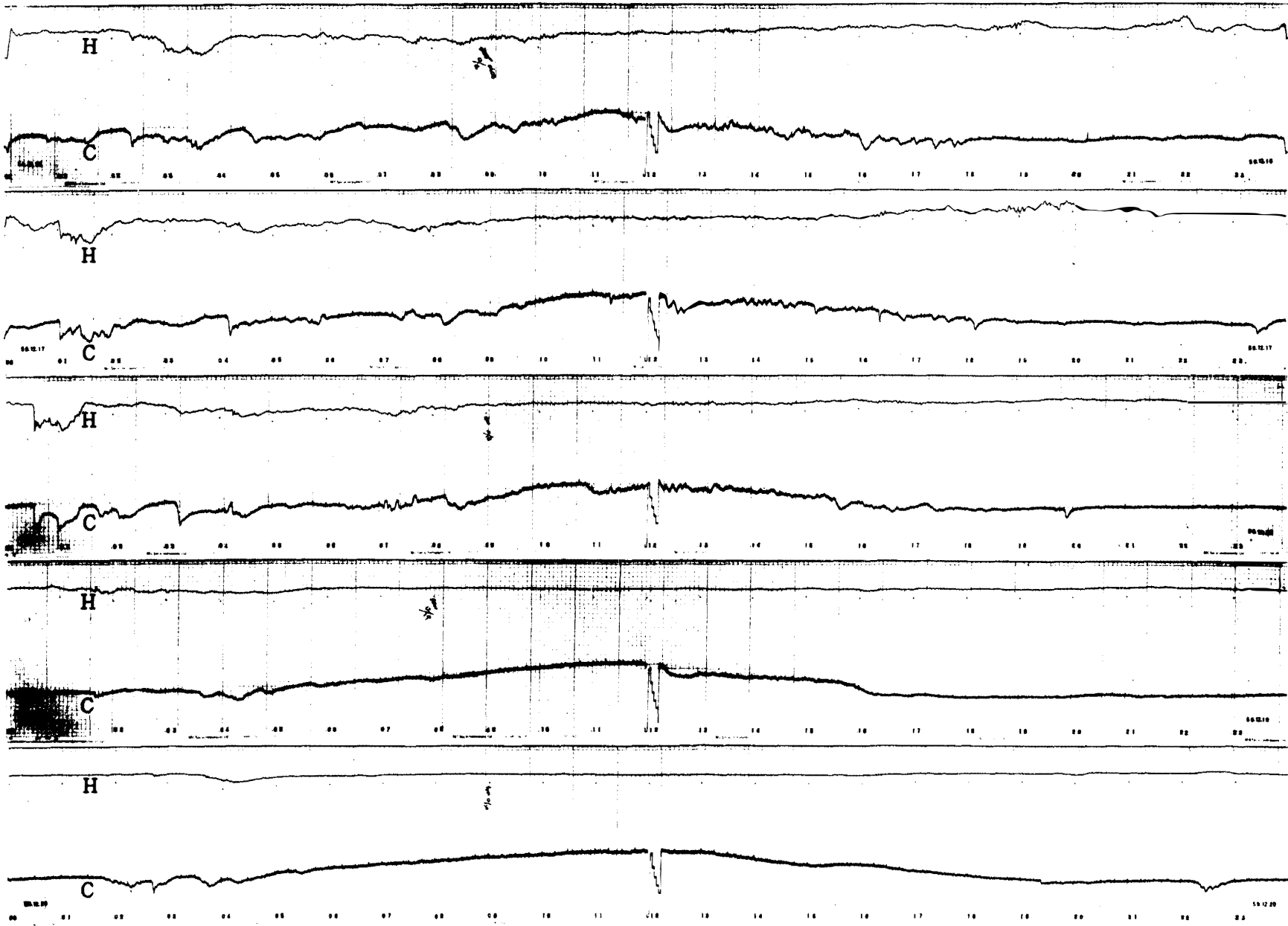


00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

DEC. 1984

16
17
18
19
20



00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

DEC. 1984

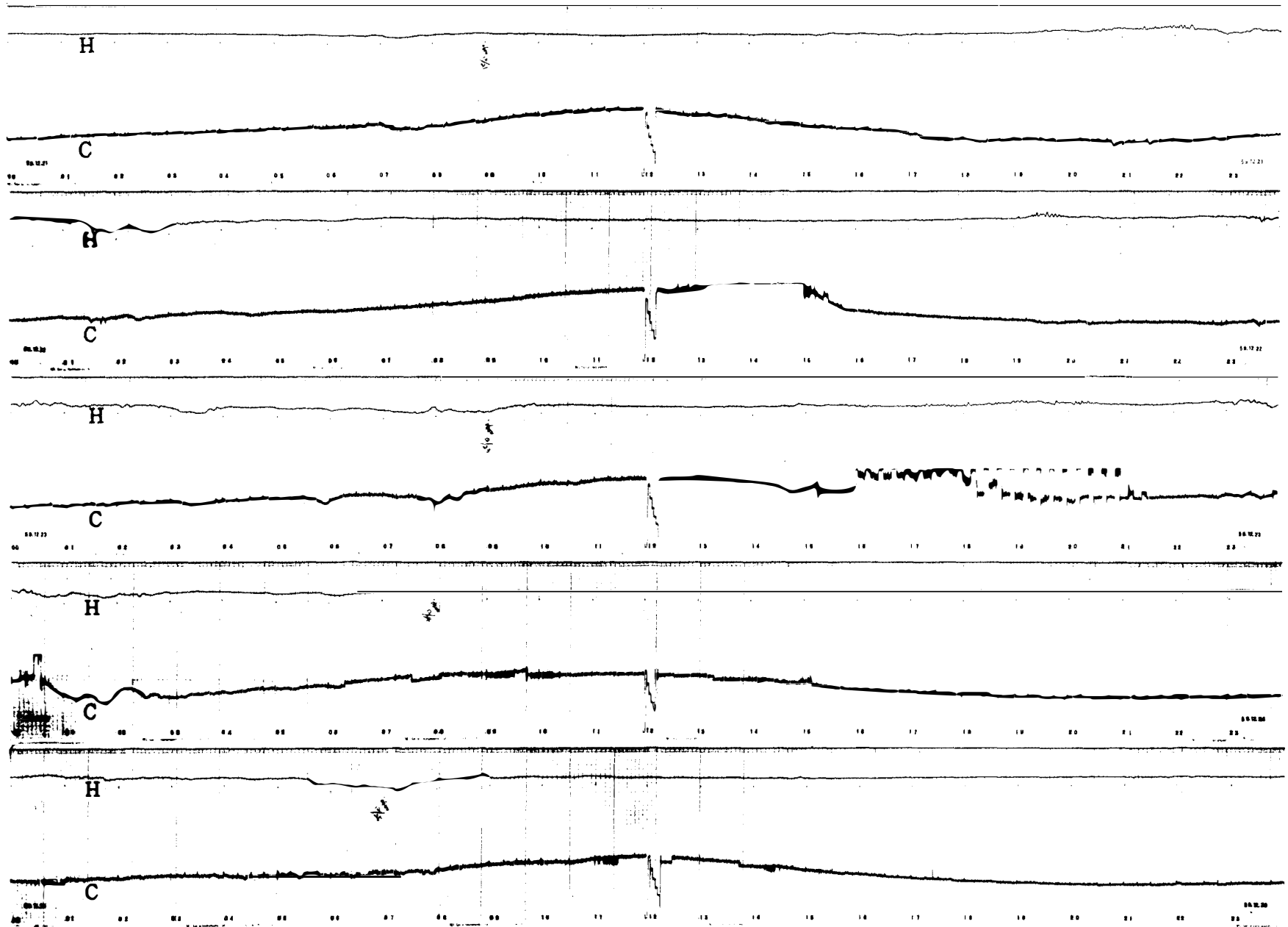
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00 04 08 12 16 20 24

45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

DEC. 1984

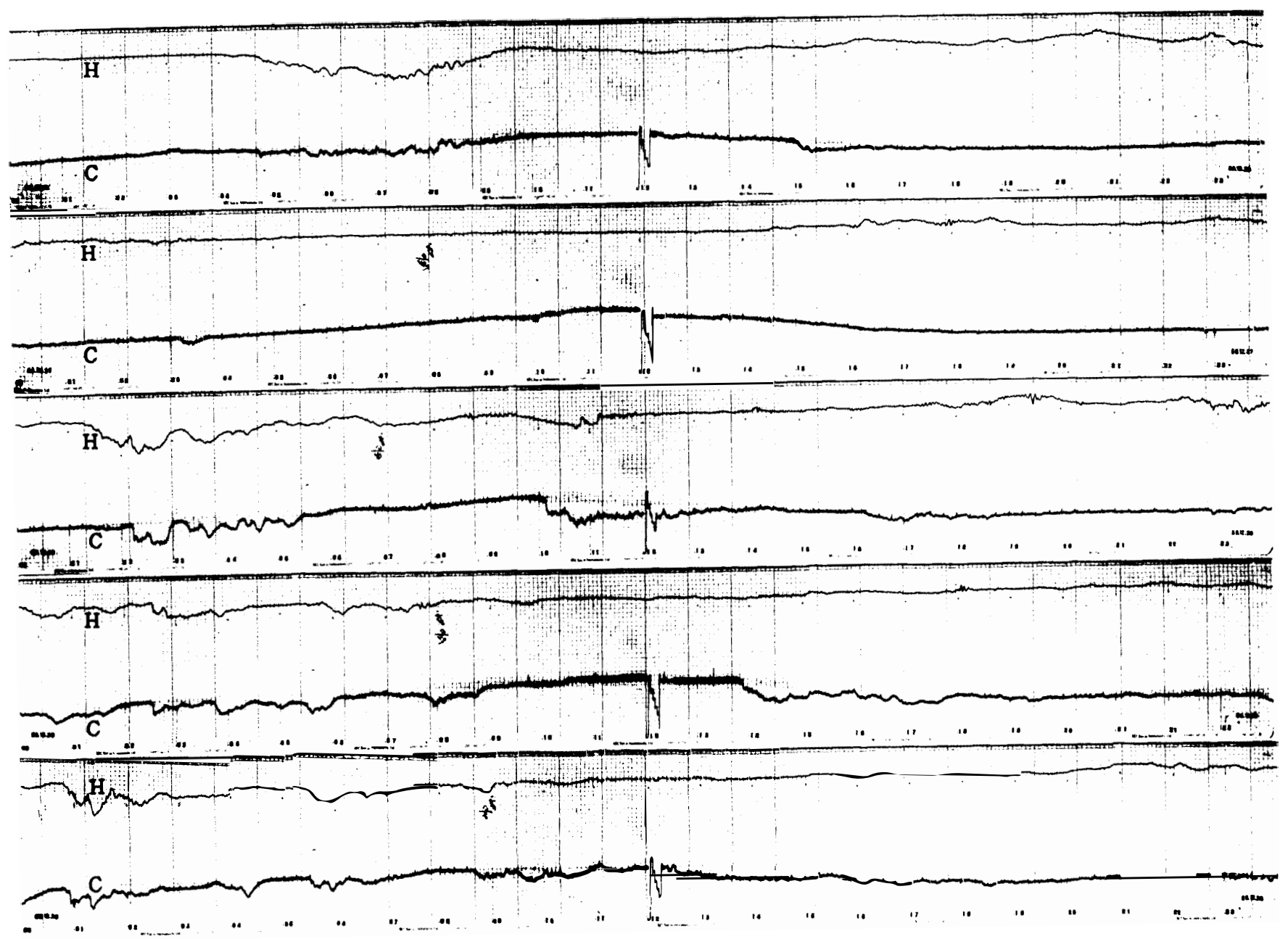
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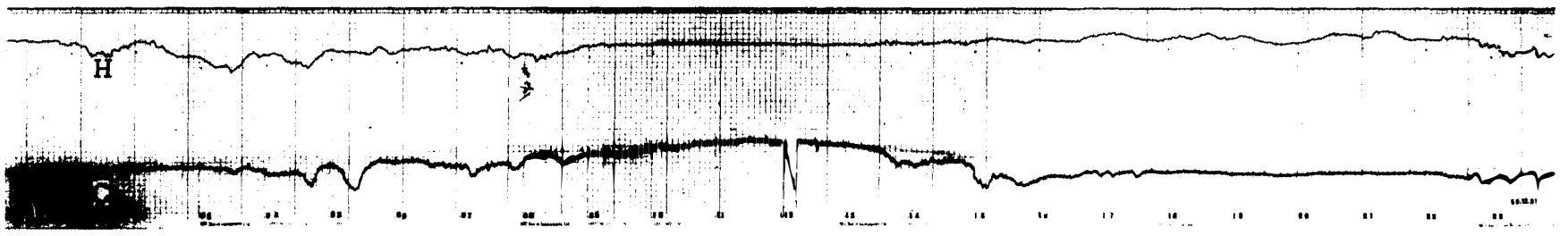
29

30



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00 04 08 12 16 20 24
45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE



00 04 08 12 16 20 24
 45° EAST MERIDIAN TIME IN HOURS 30 MHz COSMIC NOISE

Cosmic noise level obscured or equipment malfunction.

December	22	13:20 - 15:03	Failure of equipment
	23	15:58 - 21:00	