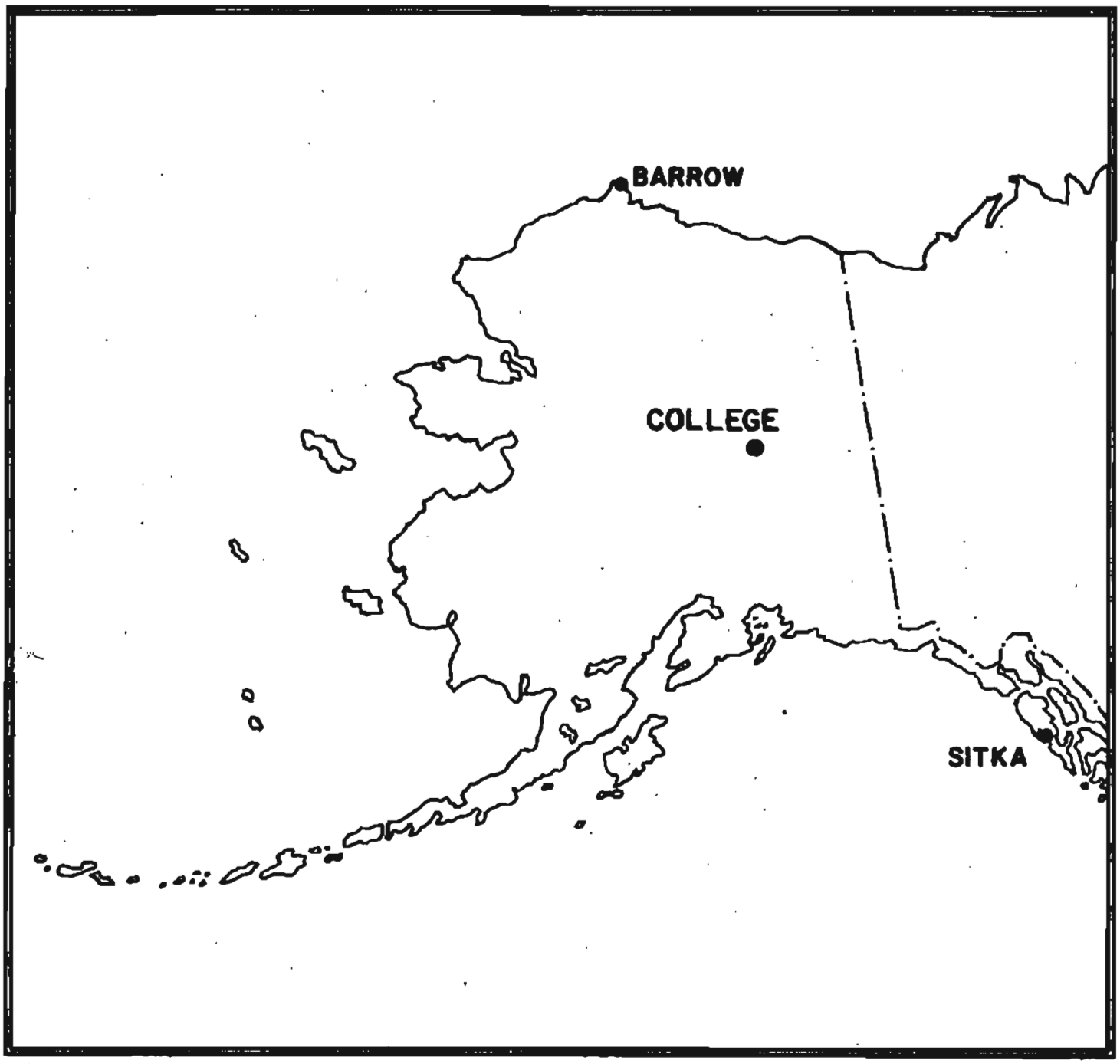
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

JUNE 1987

OPEN FILE REPORT 87-0300F



THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSHEND, CHIEF OF THE COLLEGE OBSERVATORY, WITH THE ASSISTANCE OF THE OBSERVATORY STAFF MEMBERS: R.V. O'CONNELL AND L.Y. TORRENCE AND IN COOPERATION WITH THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF ALASKA. THE COLLEGE OBSERVATORY IS A PART OF THE BRANCH OF GLOBAL SEISMOLOGY AND GEOMAGNETISM OF THE U.S. GEOLOGICAL SURVEY.

COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

EXPLANATION OF DATA AND REPORTS

INTRODUCTION

The preliminary geomagnetic data included here is made available to scientific personnel and organizations as part of a cooperative effort and on a data exchange basis because of the early need by some users. To avoid delay, all of the data is copied from original forms processed at the observatory; therefore, it should be regarded as preliminary. Inquiries about this report or about the College Observatory should be addressed to:

Chief, College Observatory
U.S. Geological Survey
800 Yukon Drive
Fairbanks, Alaska 99775-5160

Requests for copies of the magnetograms except for the current month should be addressed to:

World Data Center A
NOAA D63m 325 Broadway
Boulder, Colorado 80303

OBSERVATORY LOCATION

The College Observatory, operated by the U.S. Geological Survey, is located at the University of Alaska, Fairbanks, Alaska. It is near the Auroral Zone and the northern limit of the world's greatest earthquake belt, the Circum-Pacific Seismic Belt. Although the observatory's basic operation is in geomagnetism and seismology, it cooperates with other scientists and organizations in areas where the facility and personnel can be of service.

The observatory is one of three operated by the USGS in Alaska. The others are located at Barrow and Sitka.

The position of the observatory site is:

Geographic latitute.....64° 51.6'N
Geographic longitude.....147° 50.2'W
Geomagnetic latitude.....+64.6°
Geomagnetic longitude.....+256.5°
Elevation.....200 meters

GEOMAGNETIC DATA

Normal and storm magnetograms and appropriate calibration data are processed at the observatory and are available for analysis or copying. Also available are mean hourly scalings for the five quietest days for the month and K-Indices.

Magnetic Activity

The K-Index: The K-Index is a logarithmic measurement of the range of the most disturbed component (D or H) of the geomagnetic field for eight intervals 0000-0300, 0300-0600...2100-2400 UT. It is a measure of the difference between the highest and lowest deviation from a smooth curve to be expected for a component on a magnetically quiet day, within a three hour interval.

The Equivelent Daily Amplitude, AK: The K-Index is converted into an equivalent range, ak, which is near the center of the limiting gamma ranges for a given K. The average of the eight values is called equivalent daily amplitude AK. The unit 10γ has been chosen so as not to give the illusion of a accuracy not justified.

The schedule for converting gamma range to K, and K to ak is as follows:

Gamma Range	K - Index	ak
0< 25	0	0
25< 50	1	3
50< 100	2	7
100< 200	3	15
200< 350	4	27
350< 600	5	48
600< 1000	6	80
1000< 1650	7	140
1650< 2500	8	240
2500+	9	400 (10γ)

Principal Magnetic Storms

Gradual and sudden commencement magnetic disturbances with at least one K-Index of 5 or greater, which are believed to be part of a world-wide disturbance, are classified as principal magnetic storms. The time of the storm beginning and ending; direction and amplitude of sudden commencements; period of maximum activity; and storm range are reported. Monthly reports of these data are forwarded to the World Data Center A in Boulder, Colorado.

Magnetogram Hourly Scalings

Magnetogram hourly scalings are averaged for successive periods of one hour for the D, H, and Z elements. The Value in the column headed "01" is the average for the hour beginning 0000 and ending 0100. Note that the values on the scaling sheet are in tenths of mm with the decimal point omitted. The user of these scalings should keep in mind that the tabular values are hourly means and if one is interested in the detailed morphology of the magnetic field, refer directly to the magnetograms.

Magnetograms

The normal magnetograms in this report are reproduced at about one-third the size of the originals. Preliminary base-line values and scale values adopted for use with the original magnetograms are included. For days when the magnetic field is too disturbed for the Normal magnetogram to be readable, Storm magnetograms are reproduced.

Absolutes, Base-lines and Scale Values

To determine the absolute value of the magnetic field from the hourly means or from point scalings the following equations should be used:

$D=B_D+d\cdot S_D$; $H=B_H+h\cdot S_H$; $Z=B_Z+z\cdot S_Z$

where D, H and Z are absolute values;
B_D, B_H and B_Z are base-line values;
S_D, S_H and S_Z are scale values;
and d, h and z are scalings in millimeters.

NOAA FORM 76-133 (9-72)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

OBSERVATORY: College Alaska

MONTH AND YEAR: June 1987

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	3	2	1	4	4	1	2	2	19	12
2	3	3	4	4	1	0	1	1	17	12
3	0	1	0	1	1	0	1	1	05	02
4	1	1	1	4	4	1	1	1	14	09
5	0	1	1	1	3	3	1	1	11	06
6	1	2	5	5	6	4	5	3	31	35
7	3	1	1	4	5	2	2	1	19	14
8	2	1	1	2	2	0	0	1	09	04
9	1	1	1	0	0	1	0	1	05	02
10	1	2	0	0	1	1	1	1	07	03
11	2	1	1	5	3	1	1	1	15	11
12	2	4	3	4	3	2	2	2	22	14
13	2	3	1	2	5	1	1	1	16	11
14	1	2	3	3	2	0	0	1	12	06
15	1	0	0	0	0	1	1	0	03	01
16	1	1	3	0	1	1	2	2	11	05
17	2	2	1	1	3	0	0	1	10	05
18	1	2	2	0	1	1	1	2	10	04
19	2	4	6	5	5	1	1	2	26	28
20	2	2	1	3	4	4	3	2	21	14
21	2	2	1	0	0	1	1	1	08	03
22	1	1	1	2	2	0	1	0	08	03
23	1	1	0	0	0	1	0	1	04	02
24	1	1	2	0	0	1	2	1	08	03
25	0	1	1	3	1	0	2	2	10	05
26	2	3	2	2	2	1	1	3	16	08
27	2	2	2	4	4	0	0	0	14	09
28	1	1	1	2	0	0	1	1	07	03
29	1	1	0	2	0	1	1	1	07	03
30	1	1	0	3	0	0	0	0	05	03
31										

TIME SCALE ON MAGNETOGRAMS: 20 mm/hr

SUDDEN COMMENCEMENTS

d	h	m

POSSIBLE SOLAR-FLARE EFFECTS BASED ON INSPECTION OF GRAMS ALONE (WITHOUT REFERENCE TO DATA FROM OTHER SOURCES)

BEGIN d	BEGIN h	BEGIN m	END d	END h	END m

K SCALE USED:	D	H	Z	
LOWER LIMIT FOR K = 9.....	675.7	322.2		(mm)
CURRENT SCALE VALUE.....	3.70	7.81		(γ/mm)
LOWER LIMIT FOR K = 9	2500	2520		(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED John B. Townshend, Chief, College Observatory
OBSERVER IN CHARGE

NOAA FORM 76-133 SUPERSEDES C&GS FORM 615

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NOAA FORM 86-500
(11/73)

PRINCIPAL MAGNETIC STORMS

WDC-A FOR SOLAR-TERRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80303 U.S.A.

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA

June 1987

Obs. 2 letter IAGA code	Geomag. lat.	Commencement			SC - amplitudes			Max. 3 hr - index K			Ranges			UT End
		day	hr min (UT)	type	D(')	H(γ)	Z(γ)	day	(3 hr - period)	K	D(')	H(γ)	Z(γ)	day hr
CO	64.6 N													

NO MAJOR STORMS OBSERVED DURING THIS MONTH

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: June 1987

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 UT, 6/1/87	2400 UT, 6/30/87	1.0'/mm	37"/mm	27° 01.3' E
H	0000 UT, 6/1/87	2400 UT, 6/22/87	7.8"/mm		12636"
	0001 UT, 6/23/87	2400 UT, 6/30/87	7.8"/mm		12647"
Z	0000 UT, 6/1/87	2400 UT, 6/30/87	7.7"/mm		55163"

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 UT, 6/1/87	2400 UT, 6/30/87	7.9'/mm	29.5"/mm	
H	(same)	(same)	43.7"/mm		
Z	(same)	(same)	48.7"/mm		

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION	
	FROM	TO	SCALE VALUE	
D				
H				
Z				

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
27° 22.0' E	12857"	55310"

* COMPUTED FROM FIVE QUIETEST DAYS DURING MONTH.

DAYS USED: JUNE 3, 9, 15, 23, 30,

U.S. Dept. of Interior
Geological Survey

Observatory: COLLEGE, ALASKA | Month: June | Year: 1987

Jep-CO - 1/86

MAGNETOGRAM HOURLY SCALINGS - FIVE QUIETEST DAYS

(UNIVERSAL TIME)

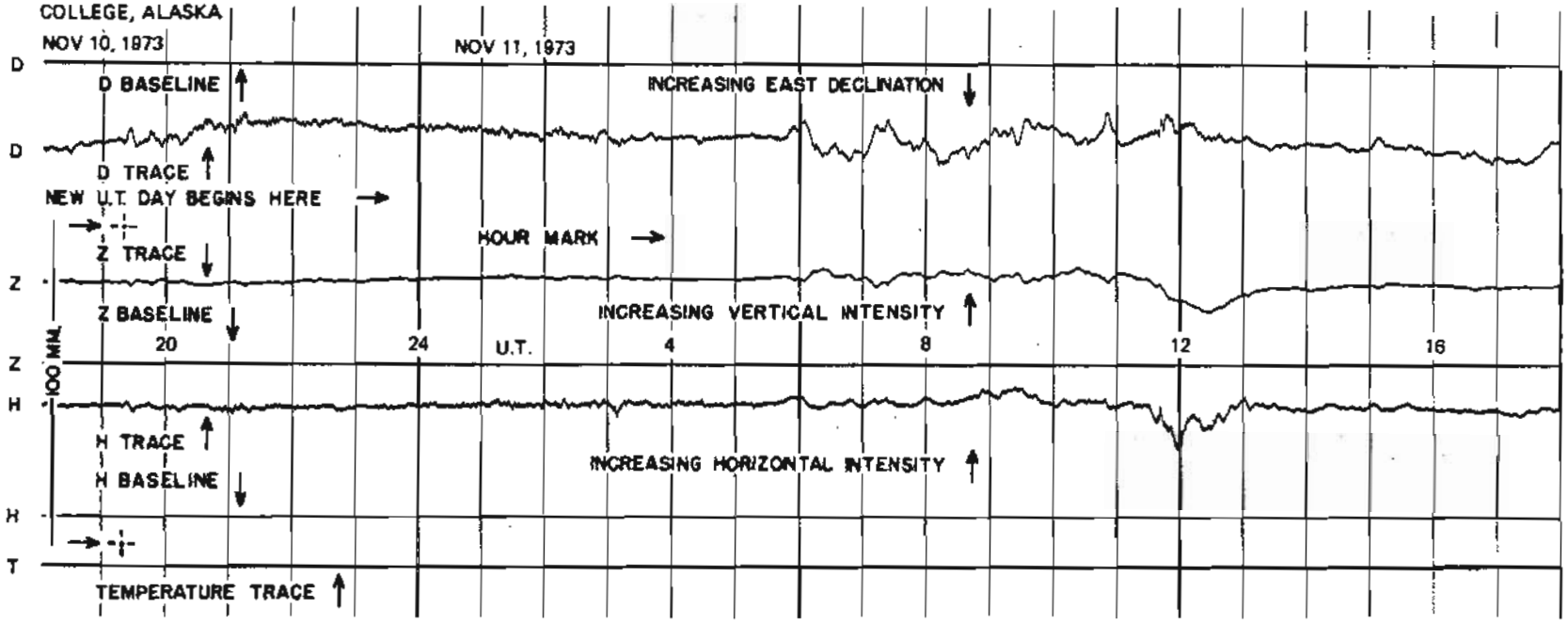
Values are in Tenths of mm and are Averages for Successive Periods of One Hour beginning at Midnight. Shrinkage Corrections have been applied. Negative Values in Red with Minus.

COMPONENT		D					H					Z					COMPONENT
DAY		03	09	15	23	30	03	09	15	23	30	03	09	15	23	30	DAY
A_t		02	02	01	02	03	02	02	01	02	03	02	02	01	02	03	A_t
HOUR	01	153	130	129	113	113	269	263	265	260	252	184	193	197	191	194	01 HOUR
	02	163	141	141	117	123	269	280	288	268	269	194	200	196	203	193	02
	03	177	159	146	135	140	280	273	292	272	280	196	200	189	212	185	03
	04	178	171	151	147	162	294	297	299	286	279	194	200	187	217	189	04
	05	190	203	167	166	155	290	302	299	309	300	199	217	189	233	186	05
	06	193	216	180	203	180	293	294	297	297	286	193	224	187	237	209	06
	07	194	207	183	210	191	296	297	289	275	289	196	215	187	217	210	07
	08	195	193	190	205	189	298	299	288	273	290	198	206	188	207	200	08
	09	198	182	193	197	189	294	303	293	271	287	200	214	188	203	197	09
	10	191	176	193	195	200	297	300	297	273	297	200	212	191	199	189	10
	11	207	171	186	187	198	302	297	303	280	290	200	199	191	197	123	11
	12	207	177	184	192	199	294	298	300	280	292	197	203	188	201	161	12
	13	227	199	196	197	183	279	294	301	279	293	176	206	188	202	188	13
	14	229	215	207	213	197	280	297	297	279	290	167	211	186	199	199	14
	15	249	253	237	234	219	297	298	300	279	281	177	207	194	200	200	15
	16	263	277	264	267	269	297	298	299	272	291	196	206	196	199	202	16
	17	282	313	300	299	279	299	297	284	259	297	197	202	186	196	203	17
	18	287	340	326	307	300	297	293	269	247	291	190	202	167	193	198	18
	19	277	333	307	312	311	290	280	288	243	276	186	189	139	186	187	19
	20	274	295	287	297	306	280	263	293	246	251	186	187	149	186	189	20
	21	226	264	249	245	270	253	245	269	253	240	179	177	157	176	182	21
	22	203	197	230	187	218	253	246	254	264	230	179	167	166	171	173	22
	23	157	168	197	165	173	256	260	250	249	233	172	174	167	179	171	23
	24	132	155	163	138	153	270	277	250	237	242	171	183	176	187	173	24
DAILY SUM		5052	5135	5005	4928	4907	6827	6853	6864	6451	6576	4527	4794	4349	4790	4501	DAILY SUM
DAILY MEAN		210	214	209	205	204	284	286	286	269	274	189	200	181	200	188	DAILY MEAN
MEAN			209					280					191				MEAN

Scaled LYT | Checked RVO

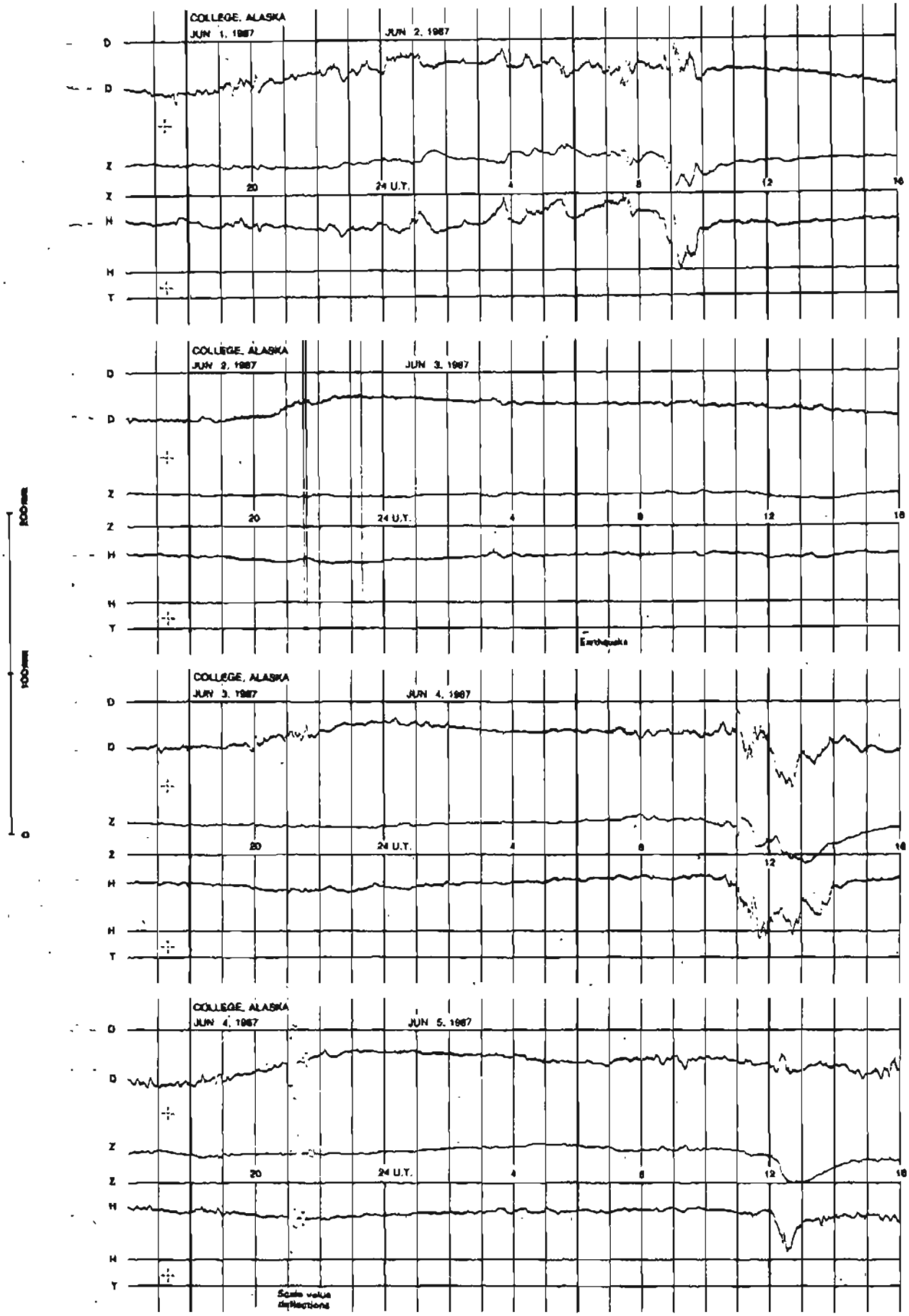
FORMAT FOR NORMAL & STORM MAGNETOGRAMS

(SAMPLE ONLY)



SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

NORMAL MAGNETOGRAMS



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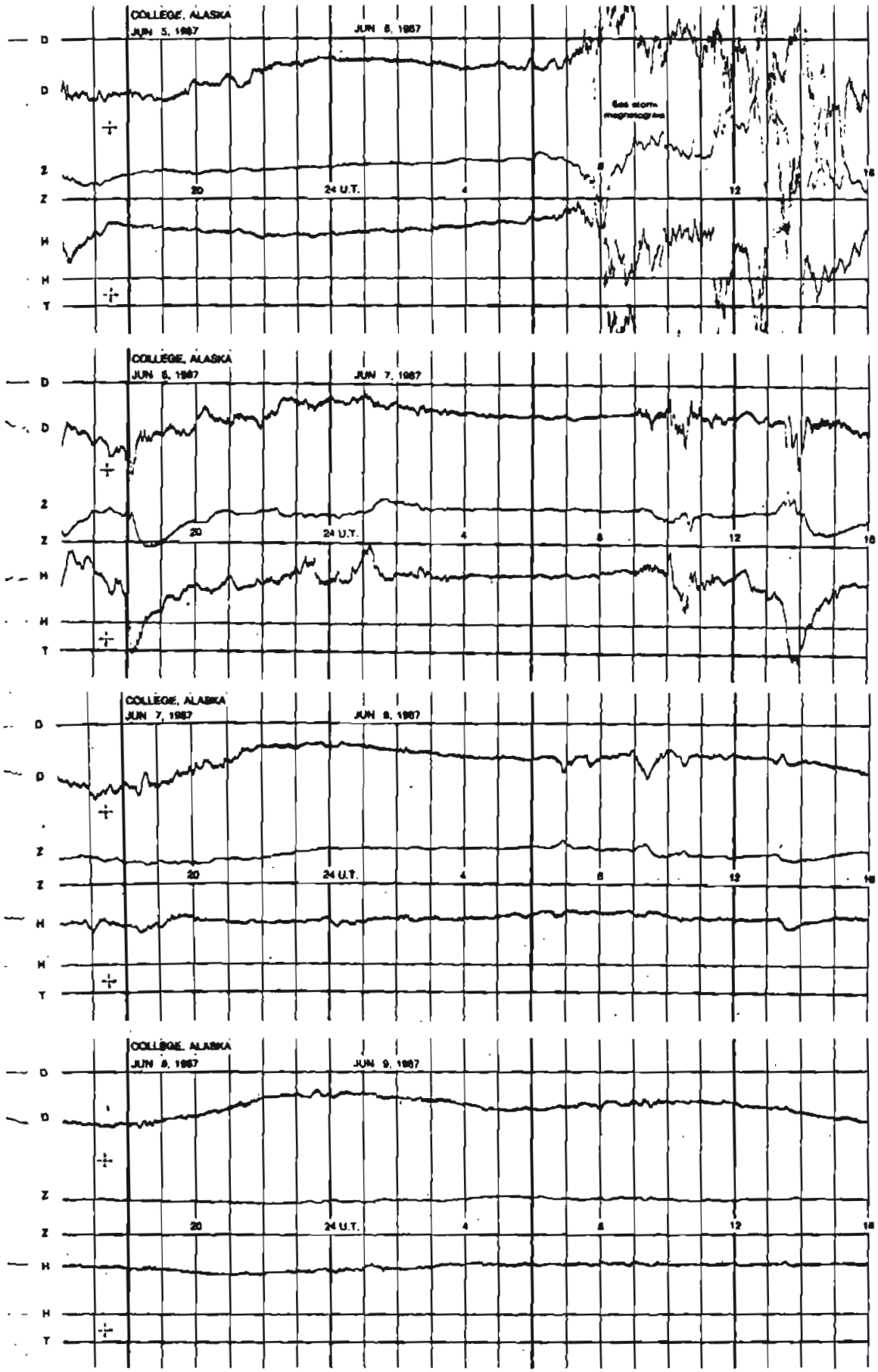

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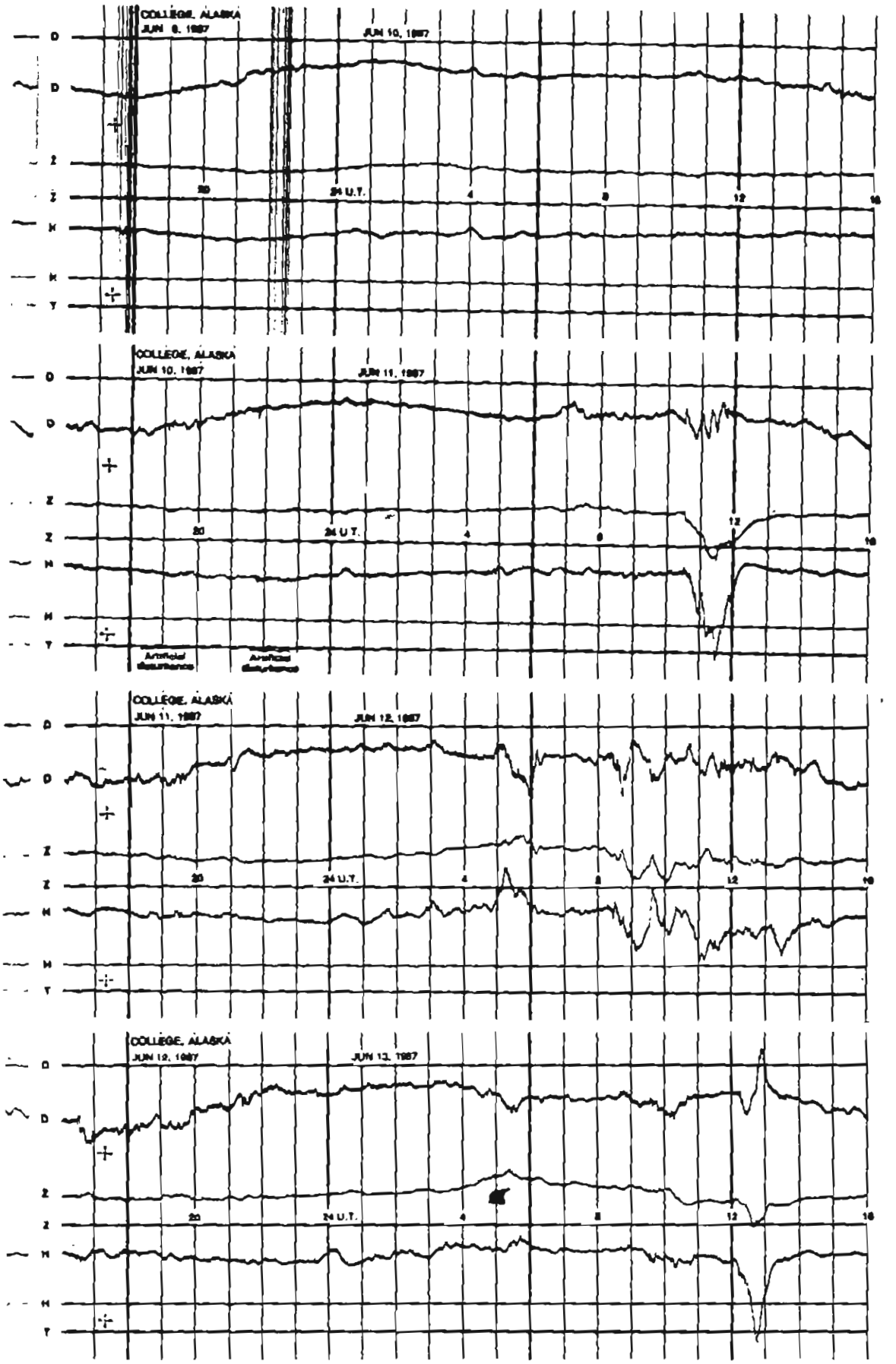

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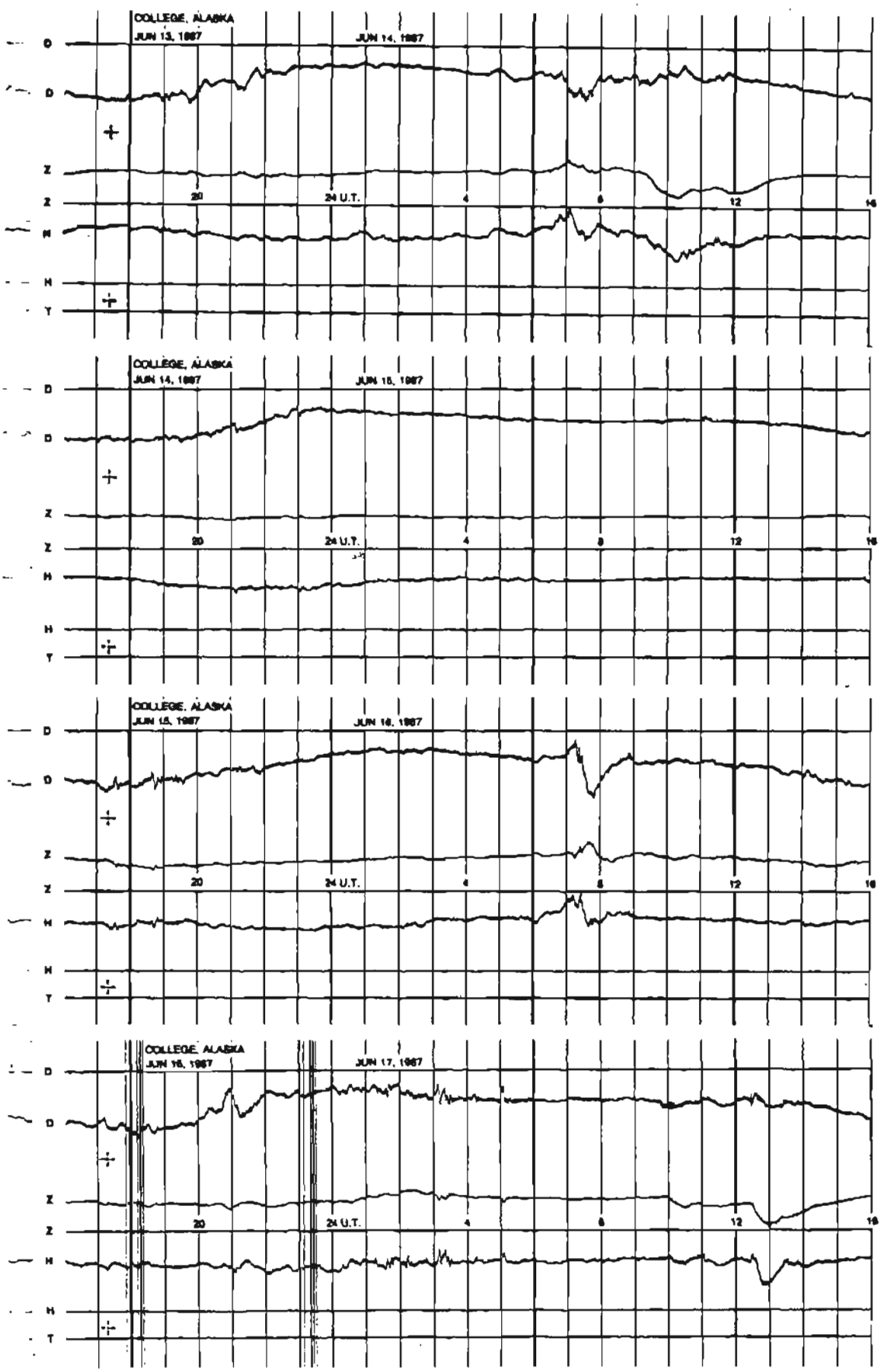

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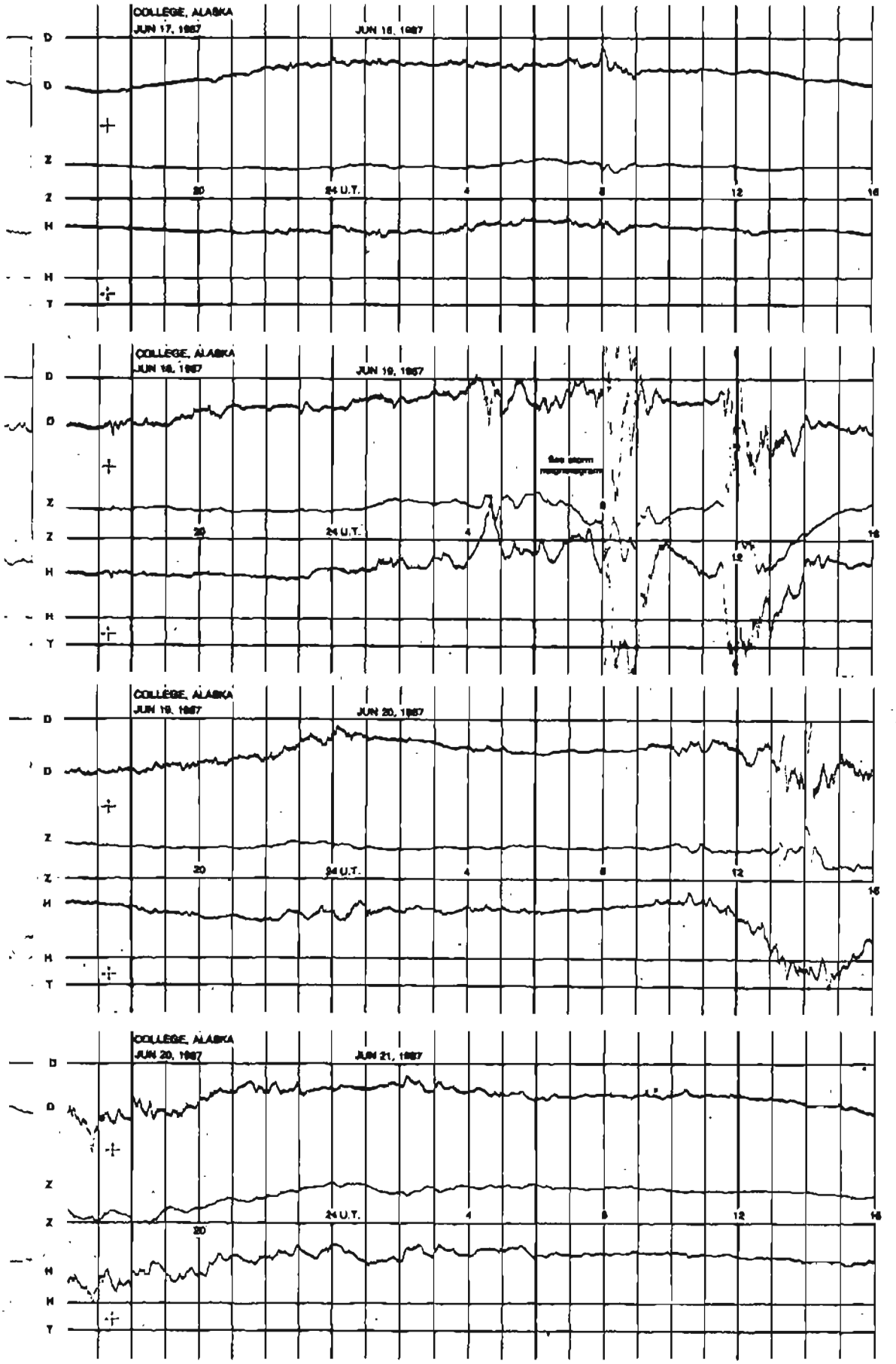

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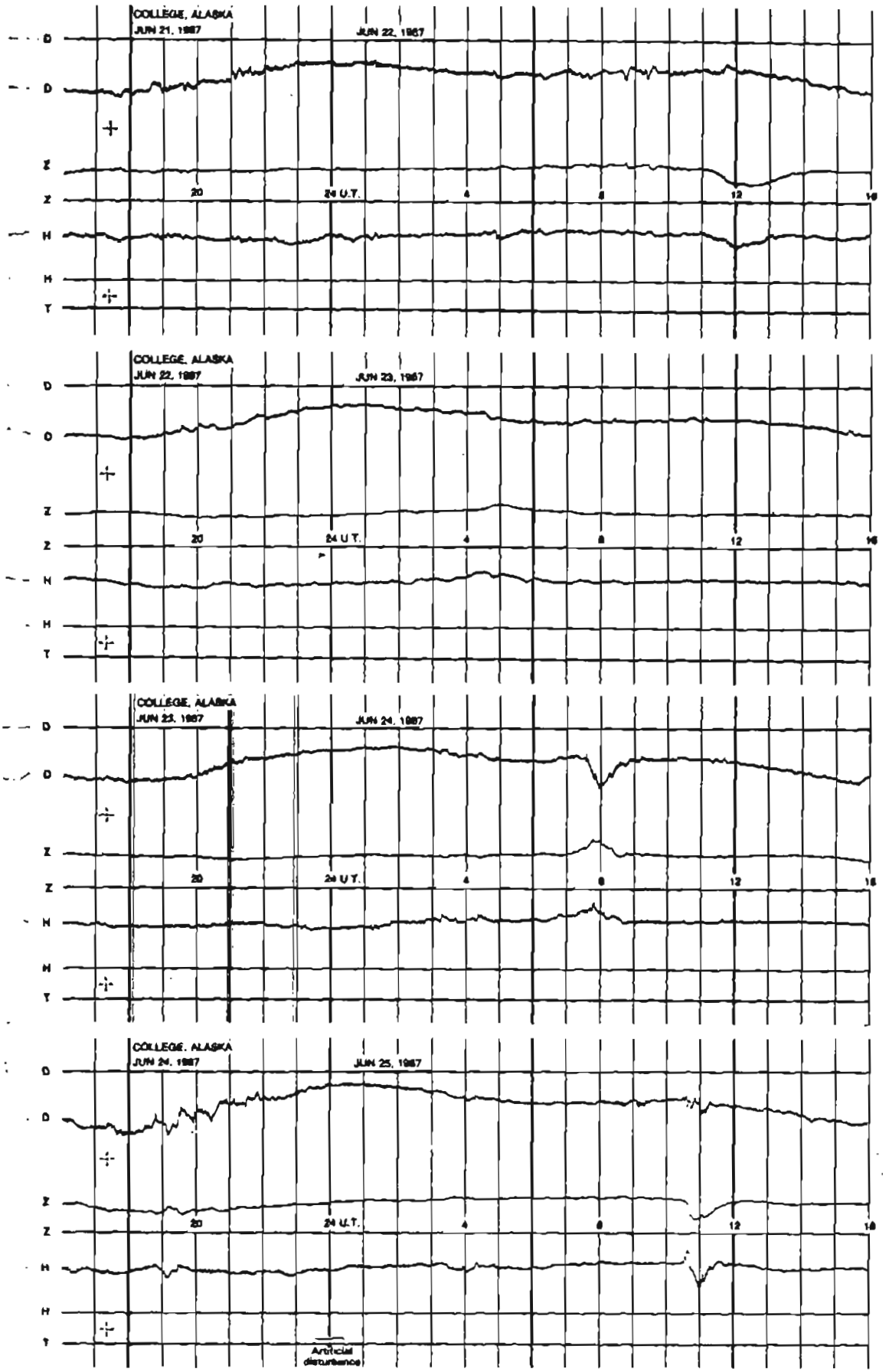

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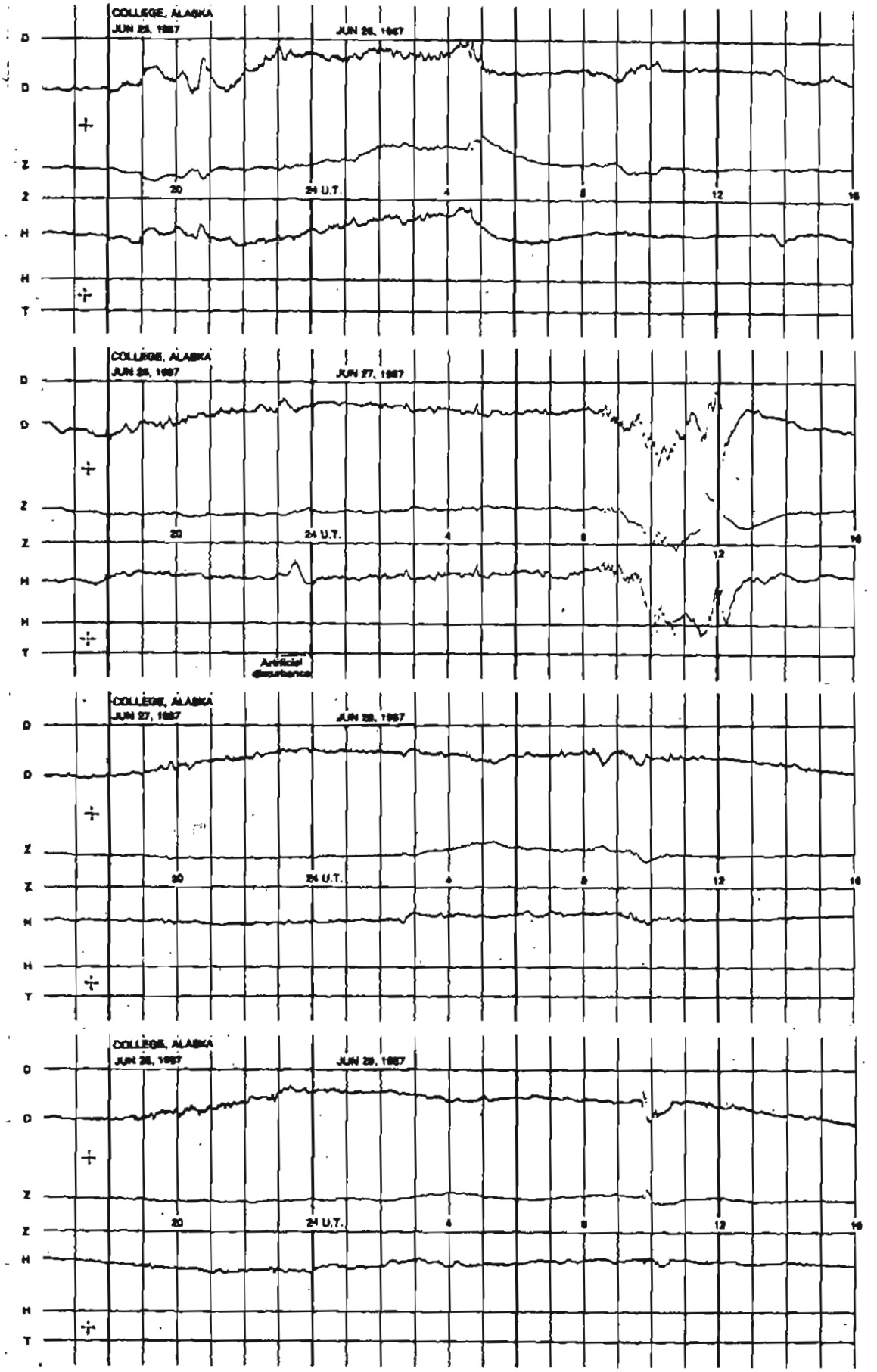

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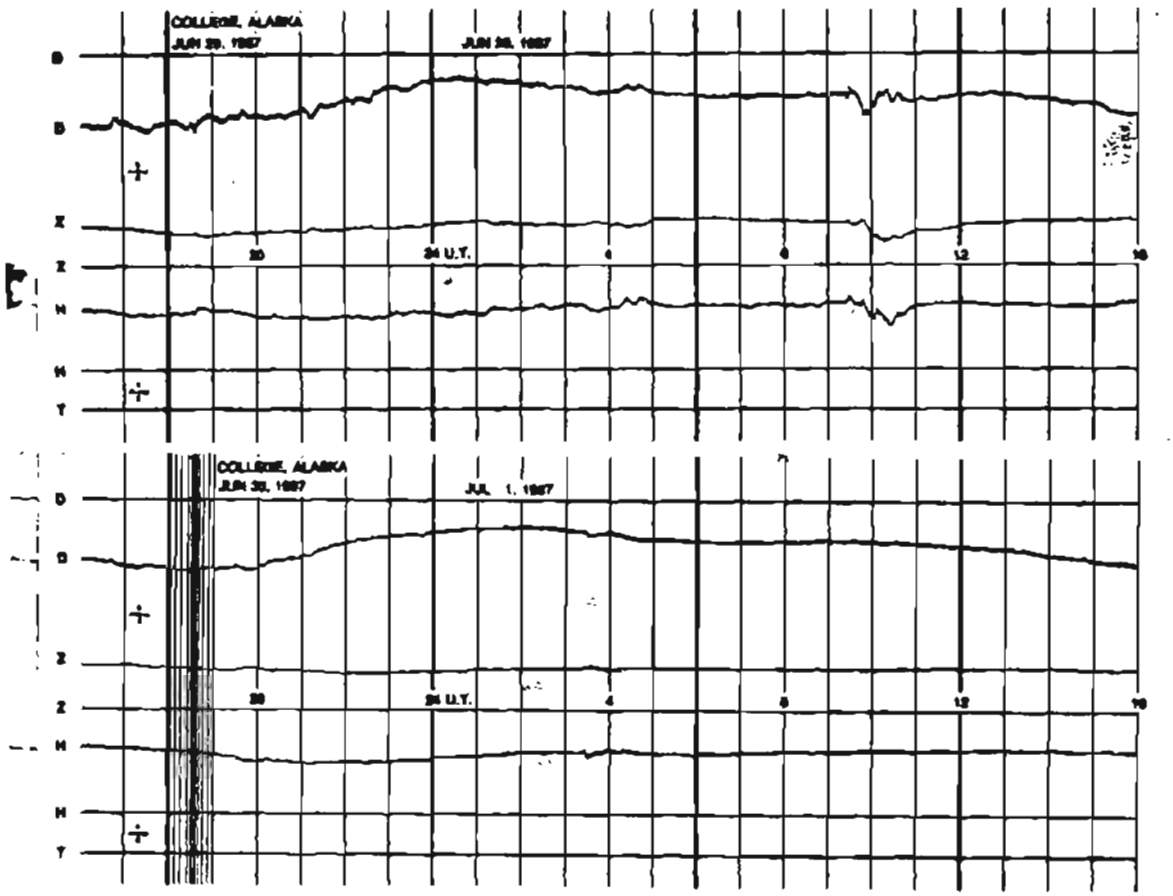

STORM MAGNETOGRAMS