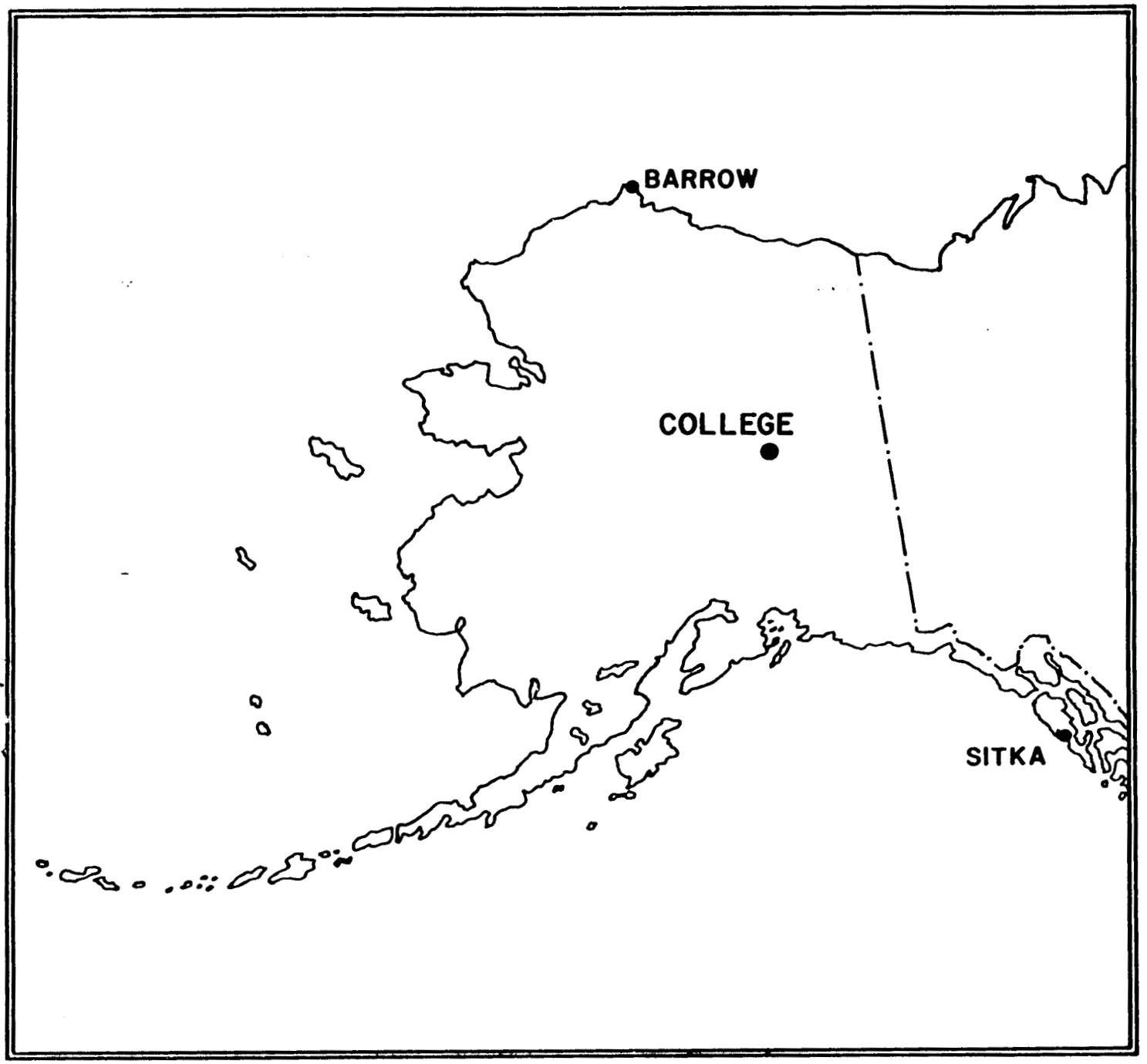
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

MAY 1978

OPEN FILE REPORT 78-300E



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THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSHEND, CHIEF OF THE COLLEGE OBSERVATORY WITH THE ASSISTANCE OF OBSERVATORY STAFF MEMBERS J. E. PAPP, ASST. CHIEF, AND S. P. TILTON, AND IN COOPERATION WITH THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF ALASKA. THE COLLEGE OBSERVATORY IS A PART OF THE BRANCH OF ELECTROMAGNETISM AND GEOMAGNETISM OF THE U.S. GEOLOGICAL SURVEY.

COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

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
Yukon Drive on West Ridge
Fairbanks, Alaska 99701

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

World Data Center A-NOAA
Environmental Data Service
Boulder, Colorado 80302

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 latitude.....$64^{\circ}51.6'$N
Geographic longitude.....$147^{\circ}50.2'$W
Geomagnetic latitude.....$+64.6^{\circ}$
Geomagnetic longitude.....$+256.5^{\circ}$
Elevation.....200 meters

GEOMAGNETIC DATA

Normal, Storm, and Rapid Run magnetograms and appropriate calibration data are processed daily at the observatory and are available for analysis or copying. Also available are mean hourly scalings, K-Indices, selected magnetic phenomena reports, and on a real-time basis are recordings from a 3-component fluxgate magnetometer and F-component proton magnetometer.

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 beginning 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 Equivalent 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 10 γ has been chosen so as not to give the illusion of an 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)

The Magnetic Daily Character Figure, C. To each Universal day a character is assigned on the basis C=0, if it is quiet; C=1 if it is moderately disturbed; C=2 if it is greatly disturbed. The method used to assign characters at the College Observatory is based on AK as follows:

AK Range	C
0≈11	0
11≈50	1
50+	2

Routine assignment of C was discontinued at College on January 1, 1976.

Selected Phenomena & Outstanding Magnetic Effects

Prior to January 1, 1976, the Normal & Rapid Run records were reviewed at the observatory for selected magnetic phenomena and the events identified were forwarded to the IUGG Commission on Magnetic Variations and Disturbances. This was discontinued on January 1, 1976, but a report on Outstanding Magnetic Effects is prepared monthly for this report.

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 averages 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 sheets 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 he is interested in the detailed morphology of the magnetic field, he should 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: MAY 1978

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	4	5	5	6	7	5	6	6	44	69
2	5	6	8	6	6	6	3	4	44	81
3	4	5	7	6	6	7	7	5	47	88
4	5	7	7	7	6	4	5	1	42	78
5	1	2	1	0	1	0	2	2	09	04
6	2	1	1	1	1	1	1	2	10	04
7	2	2	2	2	2	2	3	2	17	08
8	2	1	1	6	5	3	3	2	23	22
9	4	5	8	6	7	5	4	3	42	78
10	2	2	0	2	2	1	3	3	15	08
11	4	5	6	5	4	4	3	3	34	36
12	3	4	7	5	5	4	3	2	33	41
13	4	3	2	3	3	2	2	2	21	13
14	3	3	3	3	3	1	2	2	20	12
15	1	0	0	3	2	2	2	2	12	06
16	1	2	1	1	3	2	2	1	13	06
17	1	3	4	3	2	2	1	1	17	10
18	2	2	0	2	3	3	1	0	13	07
19	1	0	1	3	1	1	0	0	07	03
20	0	1	1	1	0	2	3	1	09	04
21	2	3	2	2	3	1	5	5	23	19
22	5	3	3	5	5	6	6	3	36	44
23	3	4	4	4	3	3	3	4	28	21
24	4	4	6	6	6	3	3	3	35	42
25	4	3	3	2	4	1	1	2	20	13
26	3	3	2	5	4	3	1	0	21	16
27	2	1	2	1	1	0	0	1	08	03
28	2	2	2	4	3	3	2	1	19	11
29	0	1	1	2	3	1	2	3	13	07
30	5	4	5	3	4	3	3	3	30	26
31	3	3	2	2	3	1	1	1	16	09

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	h	m	END d	h	m

K SCALE USED:	D	H	Z	
LOWER LIMIT FOR K = 9.....	683.8	321.7		(mm)
CURRENT SCALE VALUE.....	3.75	7.80		(γ/mm)
LOWER LIMIT FOR K = 9	2560	2510		(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED JOHN B. TOWNSHEND, CHIEF, COLLEGE OBSERVATORY
OBSERVER IN CHARGE

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973-761-867

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY: COLLEGE, ALASKA

MONTH: MAY

YEAR: 1978

DATE	TIME U.T.	NATURE OF PHENOMENON [1]	REMARKS
10	10XX	pi2	
10	2004	ssc*	
29	1830	ssc*	

IDENTIFIED BY: JBT

VERIFIED BY: JEP

1. NATURE OF PHENOMENON: ssc, ssc*, si, si*, b, bp, bs, bps, pc1, pc2 - - - pc5, pg, pi 1, pi 2, sfe.

NOAA FORM 86-500
(11/73)

PRINCIPAL MAGNETIC STORMS

WDC-A FOR SOLAR-TERRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80302 U.S.A.

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA

MAY 1978

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	08	10XX	..	..	..	..	09	3	8	274	1670	1160	10	04
		10	2004	s.c.*	-4	+14	-6	12	3	7	149	1010	650	13	04
		21	18XX	..	..	..	..	22	6, 7	6	208	1140	660	24	15
								24	3, 4, 5	6					

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: MAY 1978

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T. 5-1-78	2400 U.T. 5-31-78	1.0'/mm	3.8γ/mm	28° 46.9' E
H	0000 U.T. 5-1-78	2400 U.T. 5-31-78	7.8γ/mm		12761γ
Z	0000 U.T. 5-1-78	2400 U.T. 5-31-78	7.8γ/mm		55120γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T. 5-1-78	2400 U.T. 5-31-78	7.9'/mm	29.7γ/mm	24° 19.1' E
H	0000 U.T. 5-1-78	2400 U.T. 5-31-78	44.1γ/mm		11516γ
Z	0000 U.T. 5-1-78	2400 U.T. 5-31-78	48.8γ/mm		54022γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION
	FROM	TO	SCALE VALUE
D			
H	RAPID RUN MAGNETOGRAPH OPERATION WAS DISCONTINUED 4-1-78.		
Z			

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 14.7' E	13038γ	55386γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: MAY 5, 6, 7, 15, 16, 18, 19, 20, 27, 29

NOAA FORM 76-186 (3-72)

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

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150W M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	78	MAY	D

Day	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM
01	208	245	248	220	172	-86*	112*	107	99	-78*	-22*	165	287*	1002*	517*	525*	381	421	402*	521*	307*	1045*	1029*	243*	8070
02	355*	513*	295	203	198	132	-27*	-361*	632*	-90*	-27*	338*	489*	521*	600*	188*	408	391	388	359	356	371	324	279	6835
03	249	276	209	227	207	164*	269	69*	53*	188*	44*	252*	370*	275*	252*	314*	363*	291*	585*	425*	466*	433*	537*	481*	6999
04	458*	513*	324	124*	-194*	-11*	77*	-67*	-83*	28*	36*	172*	307*	172*	489*	378*	350	416	279	344	331	261	238	221	5163
05	222	238	244	253	274	273	280	271	274	269	271	272	280	292	307	351	365	366	377	359	412	319	193	200	6962
06	206	207	231	237	261	261	268	270	259	271	271	280	290	293	322	338	373	400	372	365	341	331	250	221	6918
07	224	230	214	223	267	312	304	281	270	270	251	249	241	248	279	340	330	331	349	350	322	300	289	244	6718
08	246	232	229	244	258	271	278	281	278	268	259	442	344	403	357	374	457	486	428	381	314	271	284	254	7639
09	216	208	68	135	236	211	-11*	-257*	-320*	140*	433*	180*	330*	664*	489*	433*	593	501	372	328	333	279	261	237	6059
10	223	221	217	226	242	251	270	275	274	282	280	291	279	290	310	342	382	384	367	340	376	297	311	281	7011
11	219	210	233	267	154	100*	-178*	47	47	92*	314*	267	276	331	369	444	497	462	361	350	344	307	289	266	6068
12	242	259	176	199	166	198	134	213	203*	171	226	244	278	192	340	357	491	446	418	337	294	209	249	244	6286
13	223	219	237	209	248	258	270	268	250	230	238	269	302	326	341	376	397	384	373	342	301	290	248	211	6810
14	208	190	200	203	190	189	222	258	247	250	253	256	310	342	367	417	472	467	471	400	289	288	196	191	6876
15	193	214	229	231	244	260	267	267	270	265	259	310	279	270	310	361	381	413	401	357	330	267	240	218	6836
16	195	213	230	250	269	279	269	277	270	261	268	262	297	254	294	331	394	378	324	317	317	280	221	236	6686
17	211	216	226	248	234	229	261	277	260	250	309	252	267	322	358	361	373	378	367	369	321	281	242	192	6804
18	236	222	217	221	232	257	268	259	249	251	210	239	240	298	367	391	404	370	340	330	264	242	217	194	6518
19	192	214	237	250	260	264	268	270	302	213	259	250	288	282	317	369	412	400	380	328	280	251	239	226	6751
20	222	222	221	241	259	261	251	258	277	257	267	287	268	280	315	350	370	420	437	321	172	229	252	230	6667
21	204	208	190	147	216	261	242	260	252	253	253	260	240	301	330	383	419	413	380	453	393	309	11	202	6580
22	226	170	160	208	257	271	242	227	208	229	146	206	114	234	513*	267*	553*	632*	600*	452	181	157	199	184	6636
23	181	177	168	129	139	173	187	140	202	197	180	324	195	260	287	341	392	419	437	324	477	194	176	251	5950
24	144	164	159	154	180	167	193	77*	322*	266	162	206	505*	521*	441*	356	389	393	339	361	310	253	243	239	6544
25	253	189	190	213	161	240	276	271	238	269	250	249	240	247	260	319	364	391	390	384	327	254	244	160	6379
26	172	209	219	179	194	227	291	259	244	260	281	233	291	331	379	398	407	421	405	344	304	264	229	233	6774
27	228	221	222	218	256	221	279	262	250	281	256	256	277	291	327	356	381	389	378	337	294	250	252	238	6720
28	219	206	198	200	209	228	243	253	243	241	249	219	278	340	375	448	459	437	400	307	283	260	250	230	6775
29	221	228	227	224	250	252	257	258	249	250	248	260	290	361	372	392	400	400	401	359	329	242	171	110	6751
30	184	177	154	28	41	70	159	140*	121	140	109	152	197	300	387	371	393	392	362	336	273	230	233	203	5152
31	227	230	214	188	189	249	271	277	212	238	221	193	126	225	308	400	437	440	403	342	287	270	254	232	6433

SCALED BY	SPT, JEP
CHECKED BY	JEP, SPT
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated
[ ] Significant portion of hour interpolated.
☐ No record; or no values available because of faulty record.
* Derived from Storm Mgph., converted to Normal Mgph.
[ ] Scaling uncertain because of magnetic storm.
<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

MONTHLY SUM	205370
MONTHLY MEAN	276
DATES WITH GAPS:	

☆ U.S. G.P.O. 1973-769-571/932 REG. #6

NOAA FORM 76-106
3-72

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

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

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150W M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	78	MAY	H

C	Q or S	Test ?	Hr	01	02	03	04	05	06	07	08	09	10	11	12	Hr	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	359	378	488	751	981	956	555*	527	529	503	193*	229	01	-640*	-1195*	-120*	226	408	486	401	141*	289*	260*	424*	515*	7644
			02	663*	617*	684	481*	645*	620	499*	113*	-816*	-75*	249	-143*	02	-312*	-374*	-176*	17*	174	353	421	381	372	376	423	374	5566
			03	380	442	554	605*	539*	504*	559	323*	-28*	-6*	-335*	-109	03	0*	-131*	-278*	-233*	-675*	-449*	-386*	62*	241	221	482	554	2836
			04	713*	770*	436	356*	102*	306*	186*	-103*	-239*	-6*	28*	-5	04	-233*	-374*	-153*	-107	-28	13	207	386	398	341	359	347	3700
			05	344	347	360	350	369	340	340	339	344	346	351	350	05	361	360	366	354	354	354	351	334	311	296	309	319	8249
			06	325	321	336	351	340	344	349	355	356	359	368	366	06	366	366	354	356	360	350	328	321	309	311	310	330	8231
			07	373	320	370	344	381	407	424	383	390	397	359	359	07	350	329	254	310	316	330	293	340	335	329	340	330	8383
			08	325	334	371	340	351	354	370	364	363	369	377	-75*	08	-103*	28	176	339	351	366	399	381	366	349	349	339	7183
			09	330	350	493	583	798*	556	396*	289*	411	282	-414*	-148*	09	-296*	-435*	-148*	151	134	119	407	409	349	380	371	346	5723
			10	361	359	361	370	350	350	345	342	354	364	364	351	10	339	349	306	330	328	331	337	338	312	311	349	419	8320
			11	414	420	621	730	627	396*	617*	519	403	328*	71	220	11	287	160	181	203	198	171	331	360	351	323	356	419	8706
			12	456	498	484	519	520	605	719	448	78*	131	331	353	12	50*	-2	181	303	240	185	256	249	319	336	349	361	7969
			13	441	613	379	371	342	361	357	370	389	400	379	301	13	276	250	298	340	360	363	341	317	304	322	321	342	8537
			14	379	372	450	442	472	509	516	458	431	435	387	370	14	296	271	340	326	309	313	339	349	340	330	310	310	9054
			15	310	320	341	350	353	359	366	374	388	400	410	332	15	399	379	344	340	370	389	393	378	363	332	341	329	8660
			16	332	332	351	366	370	360	354	380	386	389	381	370	16	359	317	346	330	320	374	399	386	371	340	358	342	8633
			17	337	336	353	342	400	461	547	473	401	387	277	330	17	299	279	281	317	344	370	371	341	339	316	320	330	8571
			18	350	360	389	410	444	390	383	379	390	396	371	390	18	311	261	316	337	264	330	361	329	315	307	310	325	8418
			19	339	340	360	359	347	361	371	389	390	411	390	381	19	379	366	364	371	389	386	369	353	334	323	330	350	8752
			20	354	350	361	361	370	365	379	391	381	390	396	391	20	389	381	389	390	404	371	277	273	311	340	330	329	8673
			21	336	350	391	459	437	369	374	360	386	408	393	399	21	381	333	380	430	421	419	350	194	39	233	294	531	8667
			22	504	309	366	399	432	388	389	450	442	401	25	187	22	-80*	101	-51	-266*	-397*	-165*	-156	-17*	243	321	399	391	4615
			23	436	540	566	622	553	650	629	571	461	400	367	247	23	264	342	343	327	283	334	323	353	263	291	367	418	9950
			24	461	470	359	393	446	501	504	367	33	131	336	165*	24	-165*	-278*	57*	300	323	336	409	361	326	329	339	371	6874
			25	472	360	414	407	476	464	409	406	391	369	351	350	25	356	109	353	370	364	378	366	339	326	324	289	314	8757
			26	379	471	390	391	369	387	397	367	375	390	230	72	26	106	261	227	241	310	340	339	333	311	319	315	319	7639
			27	331	331	376	402	374	403	412	410	382	391	361	377	27	370	365	354	349	339	343	350	349	339	330	329	336	8703
			28	347	350	374	368	380	374	369	373	403	419	264	330	28	295	269	254	231	290	318	294	293	324	328	340	350	7937
			29	359	359	359	375	356	359	370	379	385	399	410	370	29	309	261	338	380	381	369	353	333	331	331	344	380	8590
			30	459	735	939	888	925	785	619	492	459	441	411	390	30	339	330	219	361	384	369	356	296	341	340	323	390	11591
			31	471	440	494	460	533	417	380	391	414	360	367	389	31	369	291	369	379	374	361	350	343	344	349	341	347	9333

SCALED BY	SPT, JEP
CHECKED BY	JEP, SPT
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated

⌜⌟ Significant portion of hour interpolated.

☐ No record; or no values available because of faulty record.

[ ] Scaling uncertain because of magnetic storm.

<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

* Derived from Storm Mgph., converted to Normal Mgph.

MONTHLY SUM	244464
MONTHLY MEAN	329
DATES WITH GAPS:	

* U.S. G.P.O. 1973-769-871/932 REG.#6

NOAA FORM 76-106 (3-72)

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

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight, Hour 01 of local day (150 M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	78	MAY	Z

C	Q.M.S.	Tech. C.	Hr.	01	02	03	04	05	06	07	08	09	10	11	12	Hr.	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	380	371	384	446	326	51	81*	361	338	376	516*	440	01	774*	1196*	592*	428*	386	369	371	444*	348*	746*	606*	582*	10912
			02	361*	66*	33	299	291	263	-192*	28*	770*	501	510	759*	02	683*	569*	770*	431*	306	301	377	381	368	379	410	399	9069
			03	400	423	404	361*	324*	248*	303	236*	298*	387*	652*	501*	03	740*	803*	733*	859*	759*	658*	431*	272	374*	462*	506*	481*	11595
			04	337*	63	-51	22*	-48*	-557*	-14	462*	387*	494*	626*	683*	04	714*	796*	683*	455*	249	350	274	339	361	354	350	354	7683
			05	356	361	370	368	380	380	371	366	361	359	360	359	05	354	360	365	372	369	366	367	370	379	361	341	356	8751
			06	367	366	370	362	361*	361*	355*	355*	355*	353	354	359	06	360	361	366	364	369	371	350	346	348	358	366	376	8653
			07	381	393	382	381	386	408	406	390	376	377	359	351	07	350	340	321	339	364	370	331	303	346	351	360	360	8725
			08	360	358	369	370	357	356	351	361	353	346	340	259	08	306	277	267	279	306	319	321	326	327	338	340	337	7923
			09	359	368	344	390	305*	406	305*	173*	228	379	663*	613*	09	840*	853*	846*	853*	744	521	337	355	381	357	348	347	11315
			10	343	341	340	341	358	364	371	376	376	368	342	329	10	329	351	369	377	368	361	353	343	361	338	336	357	8492
			11	406	397	399	302	60	79*	66*	261	303	386	409	370	11	346	393	381	320	304	291	290	319	351	359	379	392	7563
			12	393	390	401	403	414	323	324	373	235	228	316	346	12	429	203	199	251	227	232	227	270	291	313	361	381	7530
			13	378	380	399	376	372	377	376	363	353	350	321	307	13	291	309	382	310	330	336	332	324	316	320	336	354	8292
			14	361	360	389	383	397	420	441	419	382	350	331	329	14	324	270	302	310	294	266	264	260	280	317	320	336	8105
			15	334	338	337	338	343	347	347	346	345	343	346	332	15	339	340	326	312	329	329	338	322	324	321	330	339	8045
			16	340	349	360	370	379	362	347	344	346	341	332	318	16	311	260	299	316	301	319	317	340	340	339	338	343	8011
			17	340	339	342	350	347	389	381	421	396	369	294	301	17	302	297	304	304	332	344	346	348	339	337	340	351	8213
			18	357	337	351	381	417	411	390	360	351	344	307	344	18	320	321	311	319	273	237	294	313	311	321	322	331	8023
			19	340	344	350	352	350	346	347	351	356	321	327	341	19	326	325	331	337	343	346	344	339	339	339	341	342	8177
			20	347	342	340	340	346	340	330	341	349	336	341	344	20	330	337	340	351	358	351	320	261	234	293	320	330	7921
			21	330	334	331	341	399	390	351	347	340	351	350	339	21	328	346	329	351	344	330	329	343	278	209	288	358	8056
			22	361	370	347	387	389	380	401	387	360	341	421	320	22	259	217	365*	252*	510*	415*	459*	192	241	337	360	364	8435
			23	368	381	420	382	408	397	269	304	393	361	329	298	23	319	320	327	330	329	271	312	293	347	263	296	339	8056
			24	376	380	377	369	380	370	351	302	294	191	281	459	24	435*	252*	342	291	284	317	330	350	340	333	340	367	8131
			25	399	379	380	400	369	421	380	326	324	351	323	319	25	341	303	311	349	350	341	341	340	327	333	351	363	8421
			26	380	399	390	380	387	388	378	350	338	341	327	310	26	176	226	274	239	268	306	313	320	330	334	341	349	7844
			27	351	355	358	361	380	366	389	361	358	340	309	322	27	331	334	331	322	316	311	321	320	316	315	329	340	8136
			28	354	351	350	347	342	351	350	342	349	321	230	297	28	339	316	277	261	242	267	271	241	260	304	329	347	7438
			29	349	354	350	346	347	339	337	337	331	341	337	321	29	314	299	271	311	322	321	333	321	325	321	321	327	7875
			30	330	346	182	189	180	287	293	183	349	367	320	297	30	353	367	351	261	317	326	329	329	311	319	336	362	7284
			31	390	436	506	478	414	411	423	377	369	378	354	350	31	343	327	356	368	360	340	330	321	312	316	330	336	8925

SCALED BY	SPT, JEP
CHECKED BY	JEP, SPT
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated

[Significant portion of hour interpolated.

□ No record; or no values available because of faulty record.

[ ] Scaling uncertain because of magnetic storm.

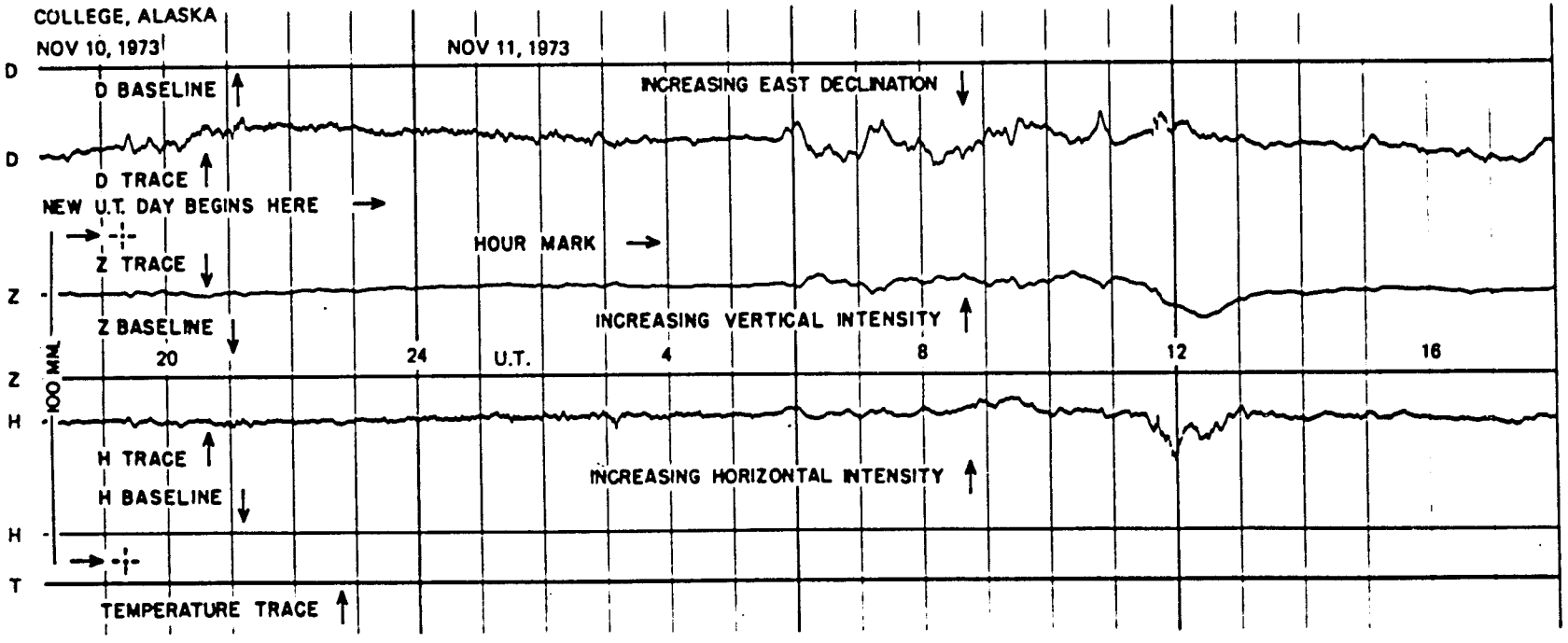
<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

* Derived from Storm Mgph., converted to Normal Mgph.

MONTHLY SUM	261593
MONTHLY MEAN	352
DATES WITH GAPS:	

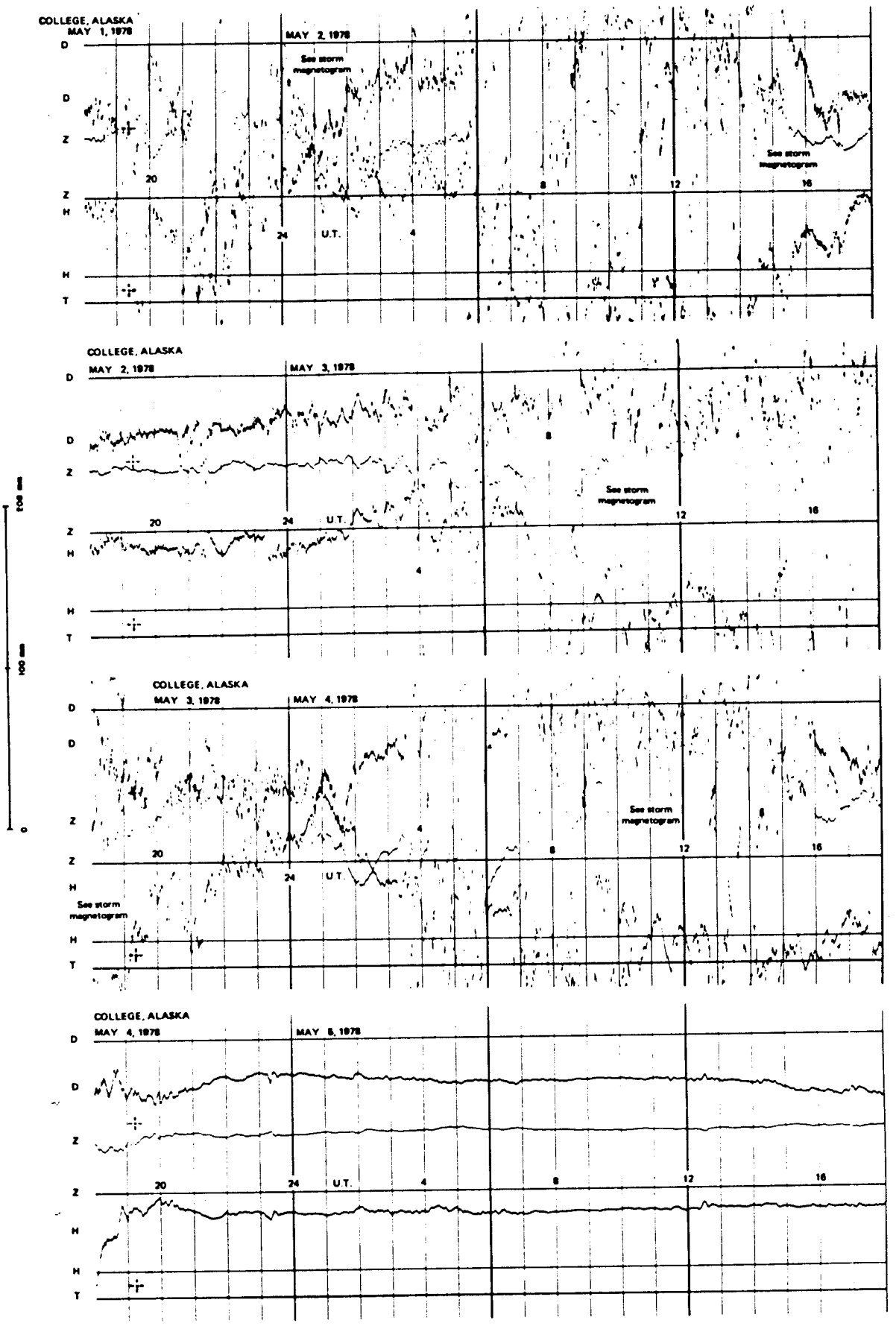
* U.S. G.P.O. 1973-769-871/932 REG.#6

FORMAT FOR NORMAL & STORM MAGNETOGRAMS
(SAMPLE ONLY)

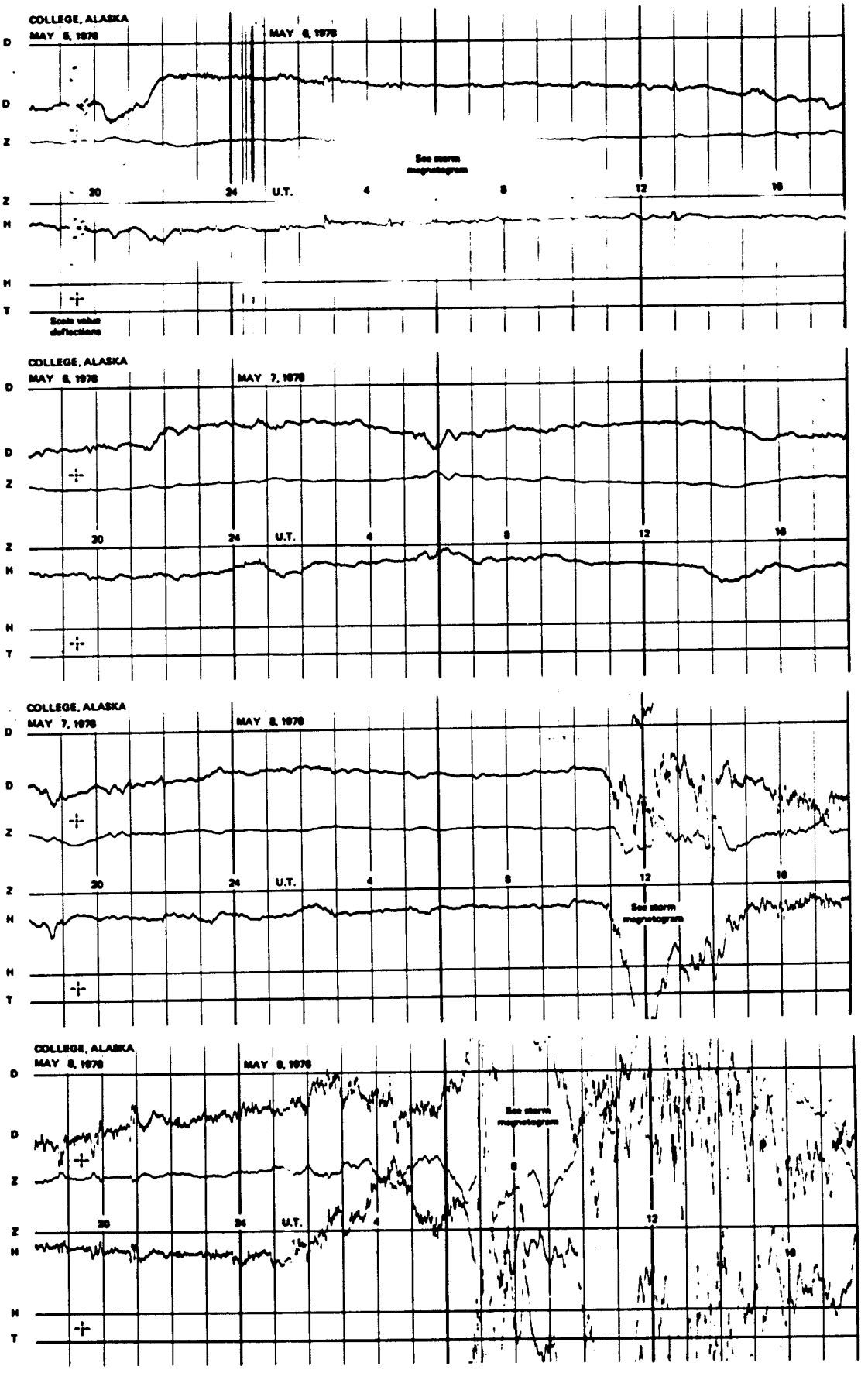


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

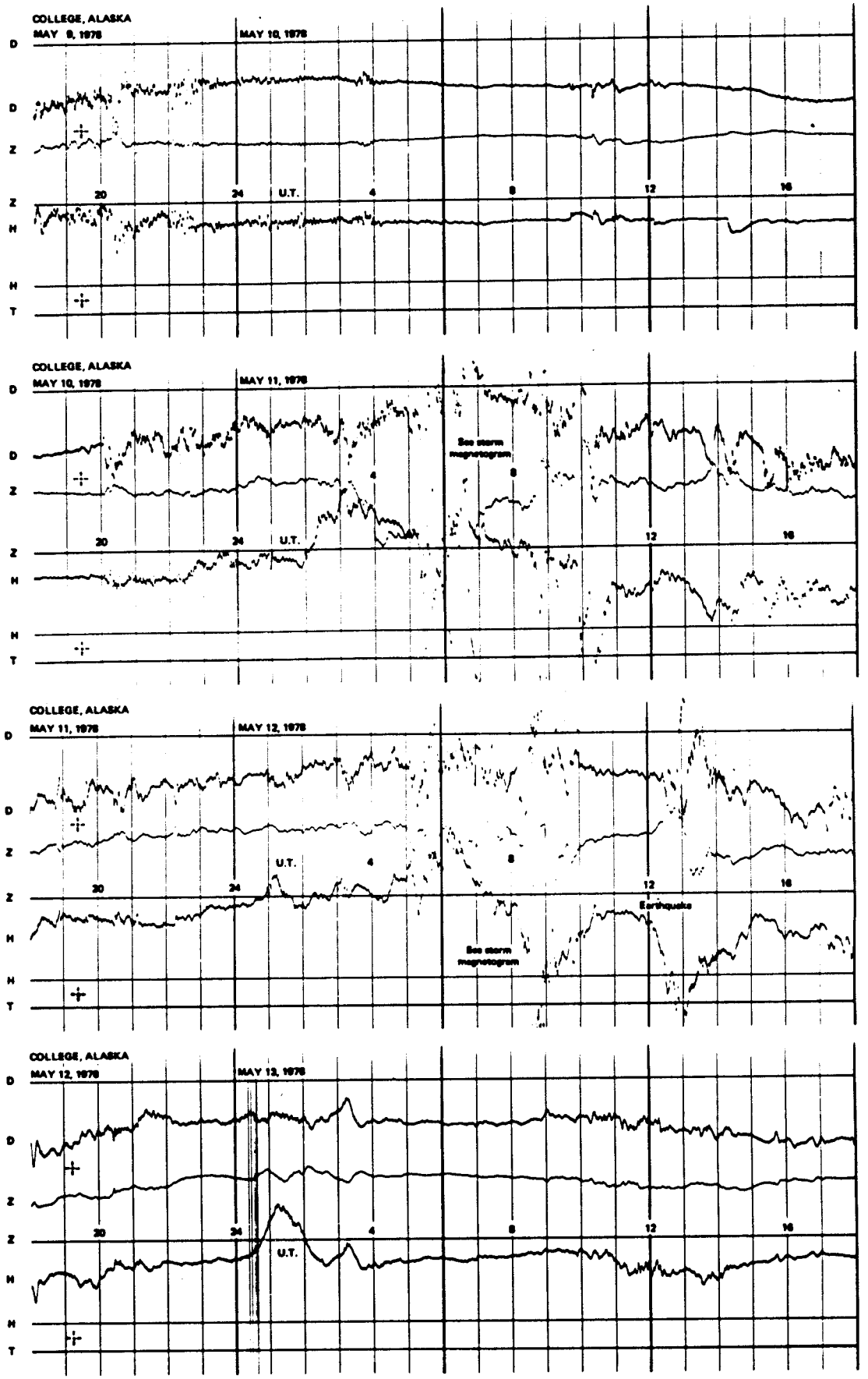
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



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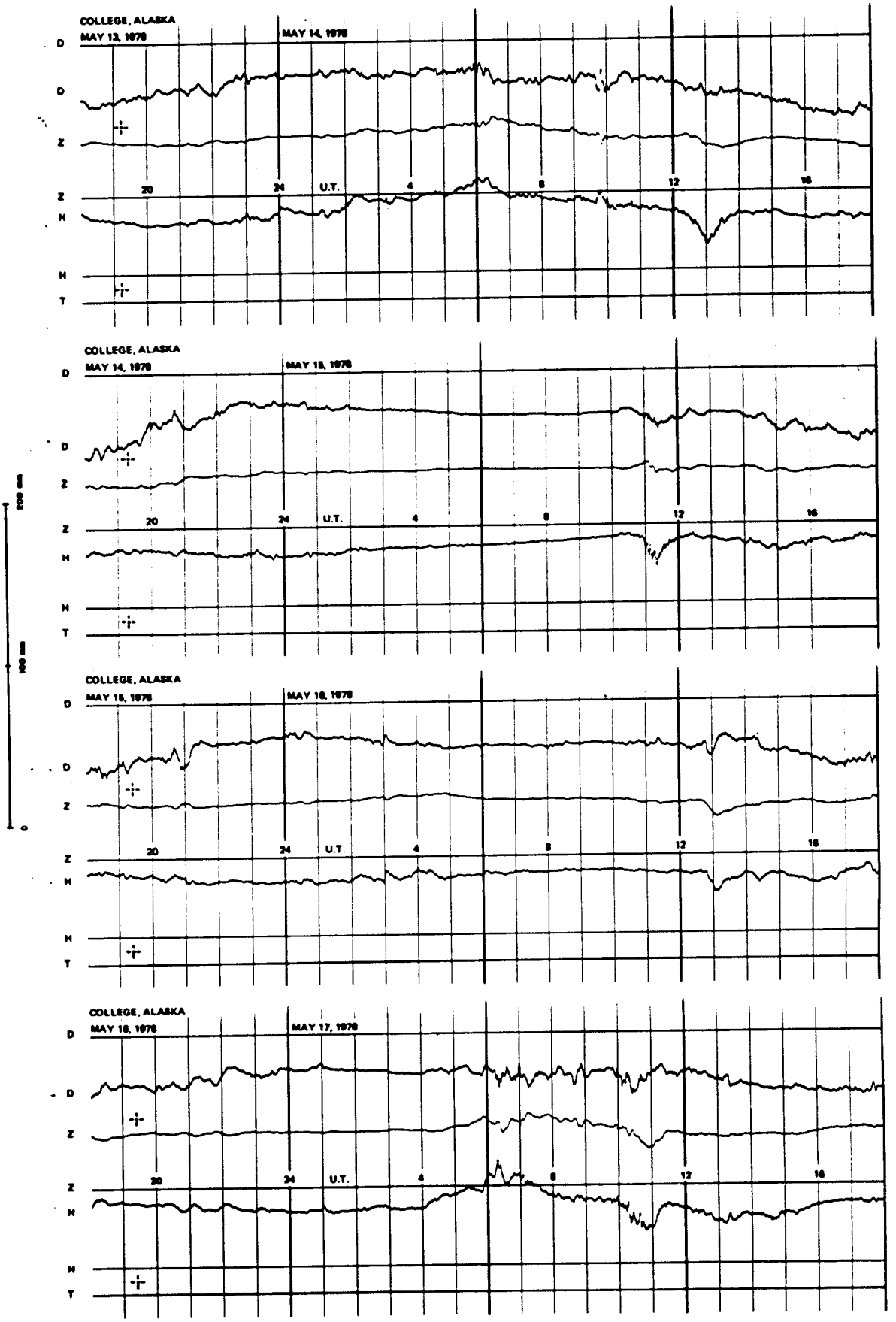

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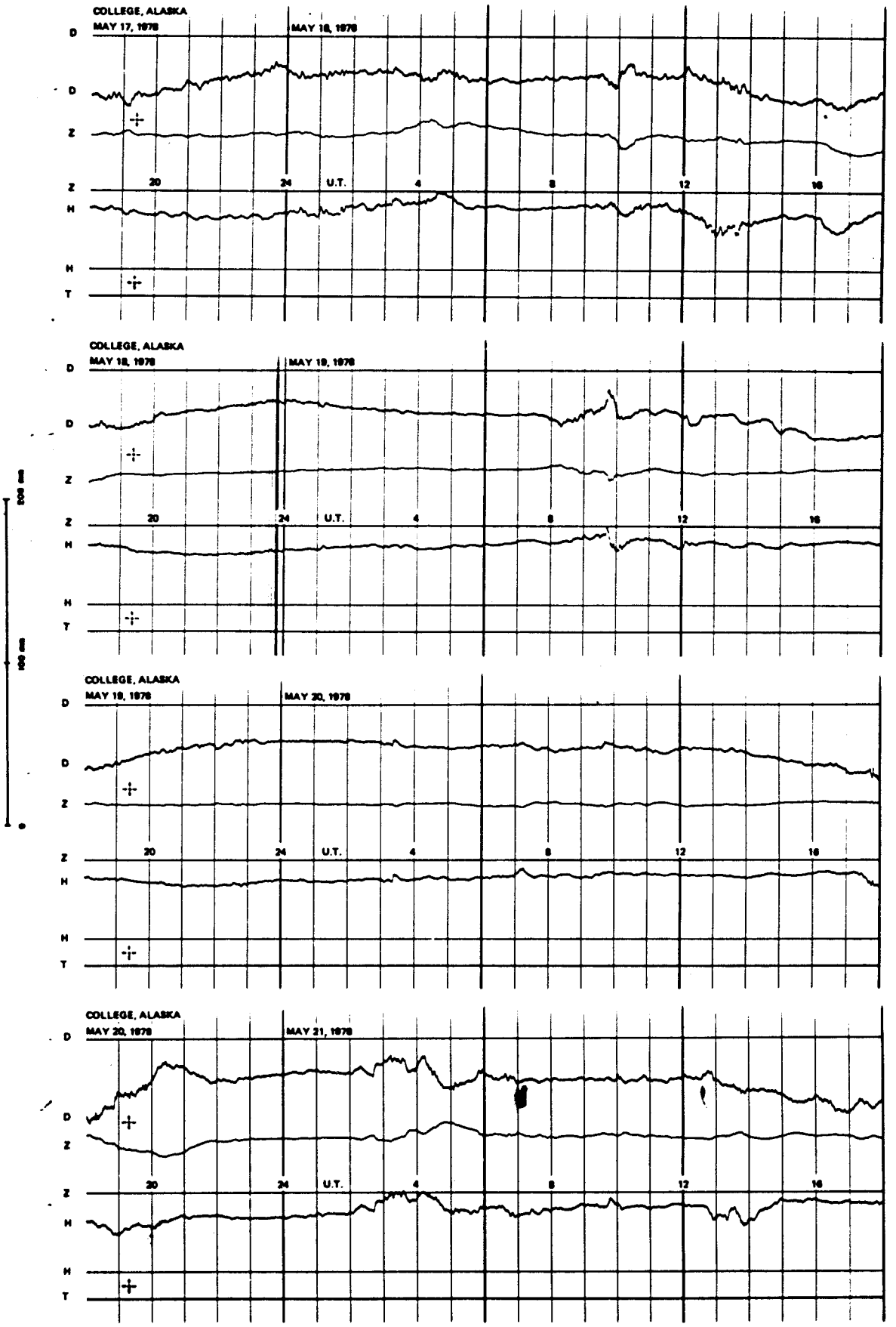

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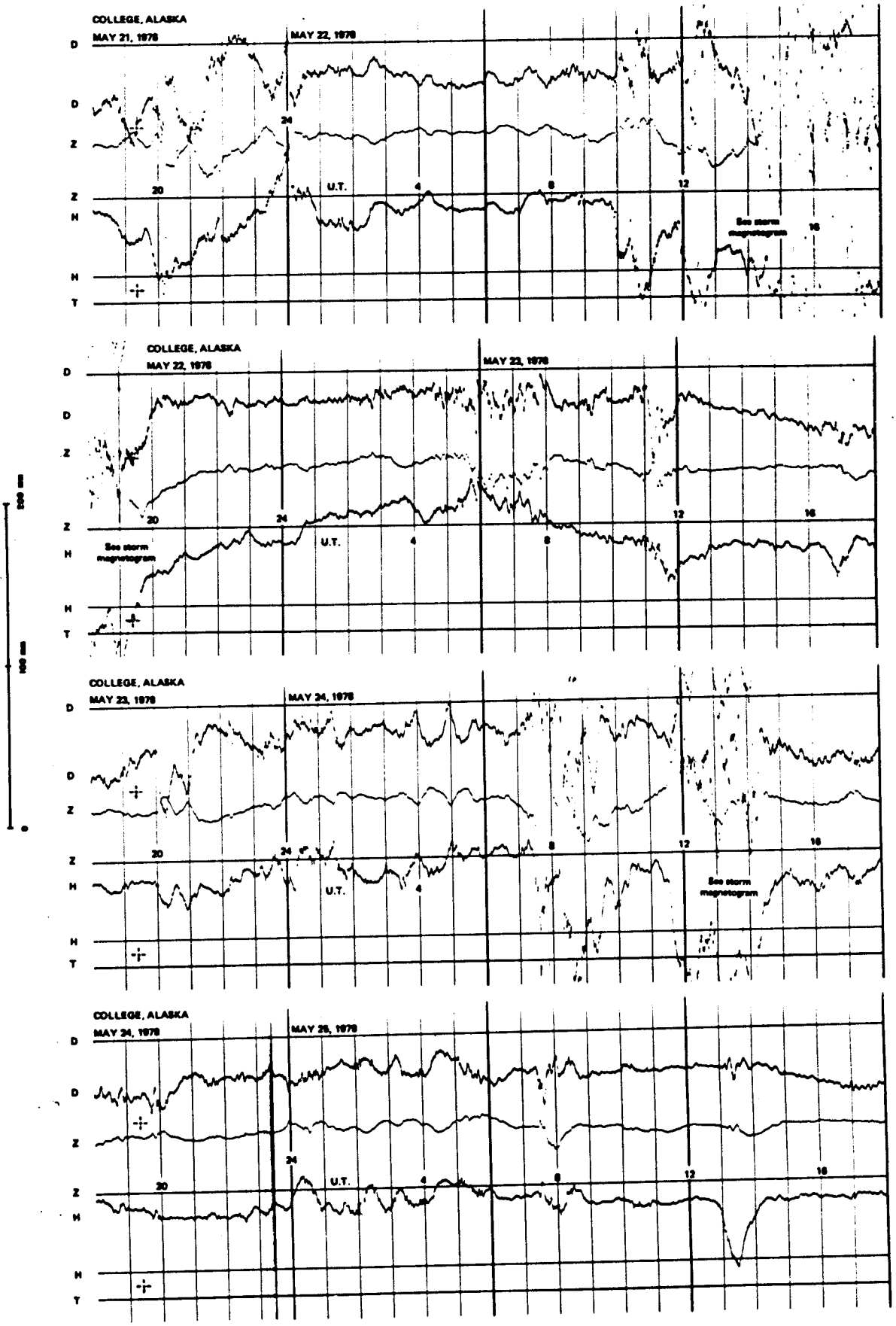

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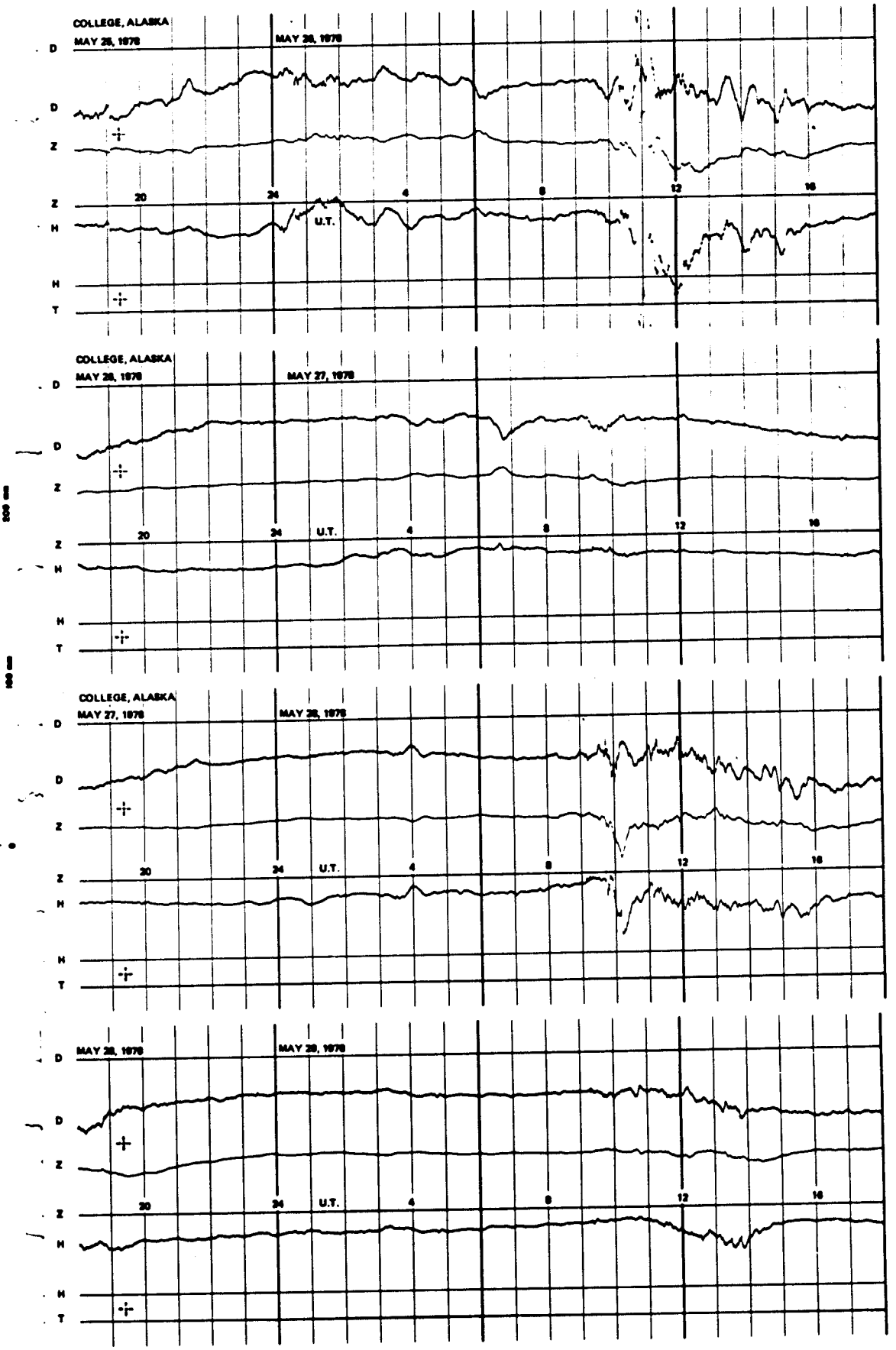

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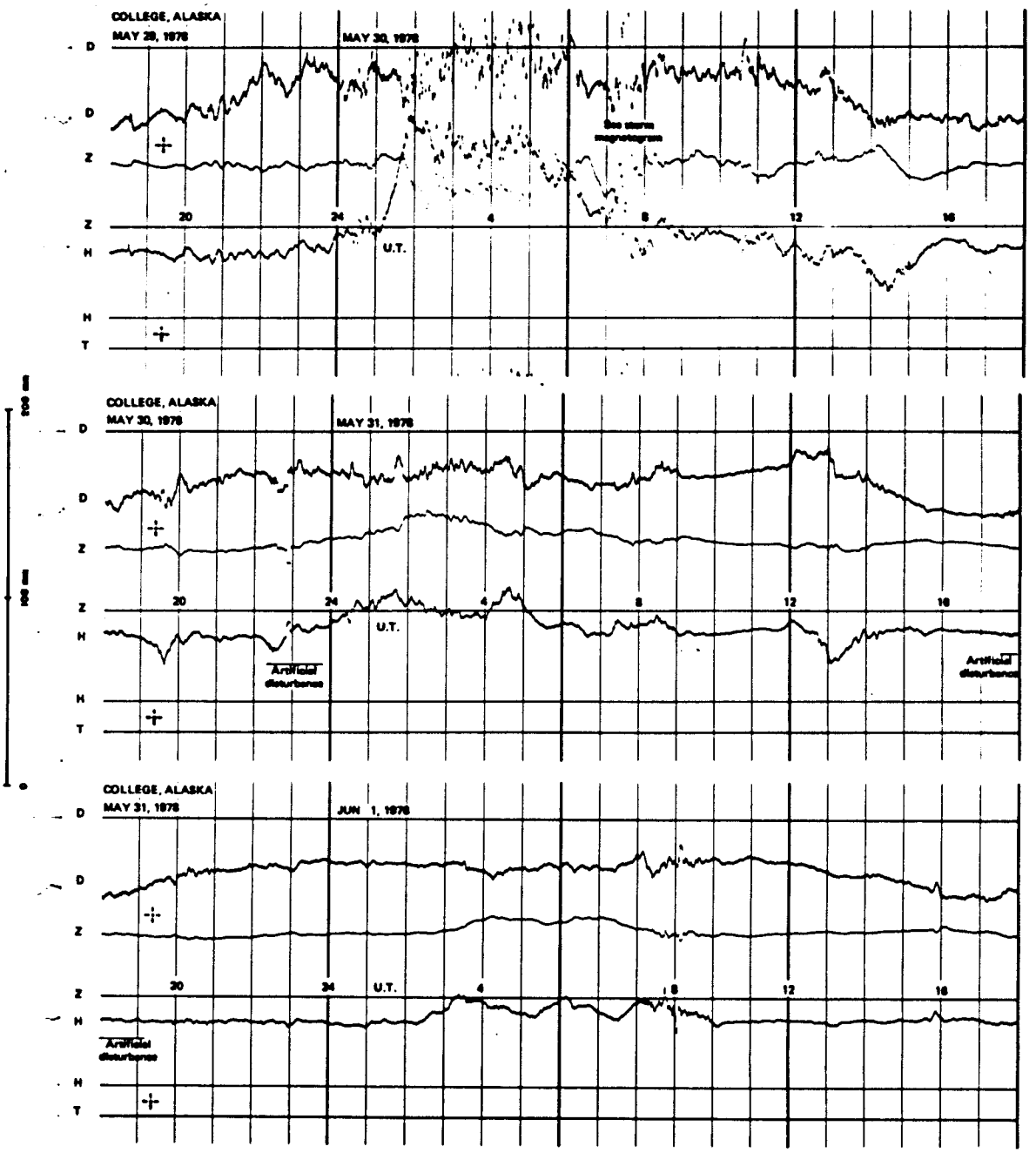
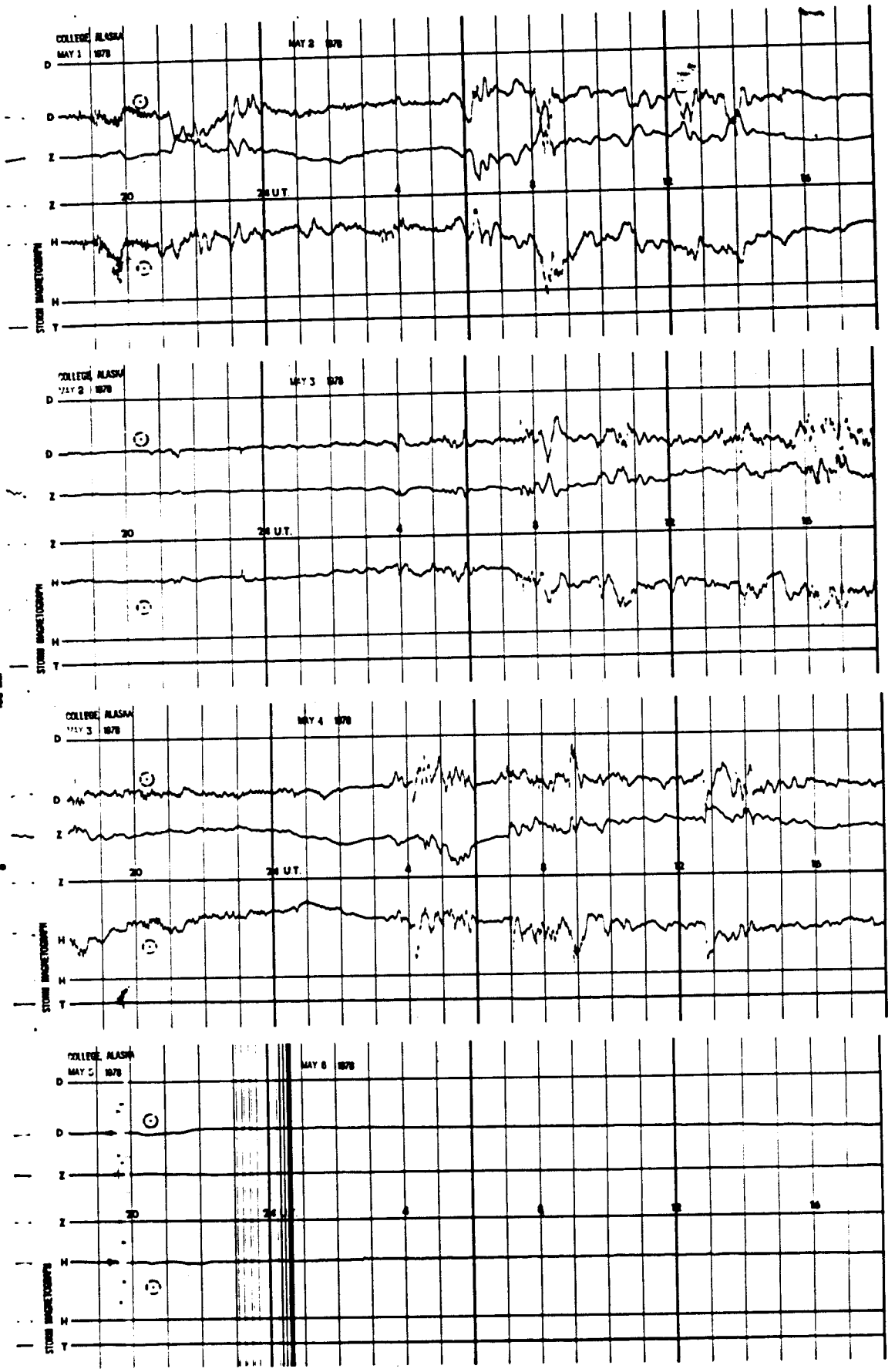
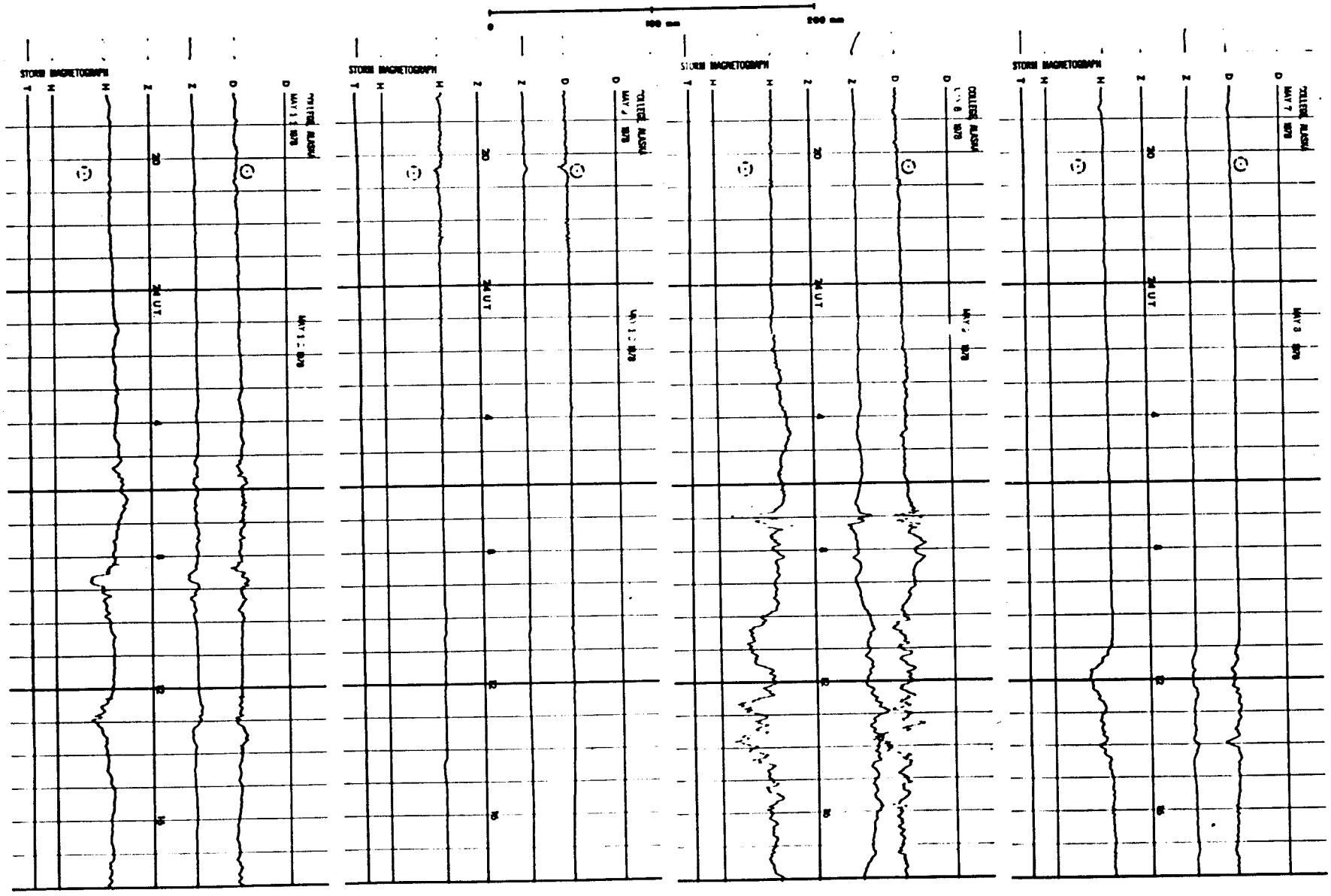


STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS